

FCC Radio Test Report

FCC ID: 2ABES-PILOTX01

Original Grant

Report No. : TB-FCC170699

Applicant : Pathway Innovations and Technologies, Inc.

Equipment Under Test (EUT)

EUT Name : PilotX Tablet

Model No. : KR2102

Serial Model No. : PilotX Tablet, PilotX, PilotS, PilotY, PilotZ, PilotV

Brand Name : HoverCam

Receipt Date : 2019-11-30

Test Date : 2019-12-01 to 2019-12-18

Issue Date : 2019-12-19

Standards : FCC Part 15, Subpart E (15.407)

Test Method : ANSI C63.10: 2013

Conclusions : PASS

In the configuration tested, the EUT complied with the standards specified above,

The EUT technically complies with the FCC and IC requirements

Test/Witness Engineer : 

Jack Deng

Test/Witness Engineer : 

Ivan Su

Approved& Authorized : 

Ray Lai



This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

TB-RF-074-1.0

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Revision History

Report No.	Version	Description	Issued Date
TB-FCC170699	Rev.01	Initial issue of report	2019-12-19

1. General Information about EUT

1.1 Client Information

Applicant	:	Pathway Innovations and Technologies, Inc.
Address	:	9985 Pacific Heights Blvd., Suite 100 San Diego, CA 92121, USA
Manufacturer	:	ShenZhen KerunVisual Technology Co., LTD.
Address	:	Unit A, F/11, Bldg.1, Senyang Electronic Technology Park, Tianliao Community, Guangming High Tech Zone, Guangming New District, Shenzhen, China 518132.

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	PilotX Tablet								
Models No.	:	KR2102, PilotX Tablet, PilotX, PilotS, PilotY, PilotZ, PilotV								
Model Different	:	All these models are the same PCB, layout and electrical circuit, the only difference is model name.								
Product Description	:	<table border="1"><tr><td>Operation Frequency:</td><td>U-NII-1: 5180MHz~5240MHz</td></tr><tr><td>RF Output Power:</td><td>U-NII-1-802.11 a:6.44dBm(Max)</td></tr><tr><td>Modulation Type:</td><td>802.11a: OFDM (QPSK, BPSK, 16QAM) 802.11n: OFDM (QPSK, BPSK, 16QAM, 64QAM) 802.11ac: OFDM (QPSK, BPSK, 16QAM, 64QAM, 256QAM)</td></tr><tr><td>Bit Rate of Transmitter:</td><td>802.11a: 6/9/12/18/24/36/48/54 Mbps 802.11n: up to 150Mbps 802.11ac: at most 433.3 Mbps</td></tr></table>	Operation Frequency:	U-NII-1: 5180MHz~5240MHz	RF Output Power:	U-NII-1-802.11 a:6.44dBm(Max)	Modulation Type:	802.11a: OFDM (QPSK, BPSK, 16QAM) 802.11n: OFDM (QPSK, BPSK, 16QAM, 64QAM) 802.11ac: OFDM (QPSK, BPSK, 16QAM, 64QAM, 256QAM)	Bit Rate of Transmitter:	802.11a: 6/9/12/18/24/36/48/54 Mbps 802.11n: up to 150Mbps 802.11ac: at most 433.3 Mbps
Operation Frequency:	U-NII-1: 5180MHz~5240MHz									
RF Output Power:	U-NII-1-802.11 a:6.44dBm(Max)									
Modulation Type:	802.11a: OFDM (QPSK, BPSK, 16QAM) 802.11n: OFDM (QPSK, BPSK, 16QAM, 64QAM) 802.11ac: OFDM (QPSK, BPSK, 16QAM, 64QAM, 256QAM)									
Bit Rate of Transmitter:	802.11a: 6/9/12/18/24/36/48/54 Mbps 802.11n: up to 150Mbps 802.11ac: at most 433.3 Mbps									
Power Supply	:	Input: DC 10-15V, 4A DC 7.4V by 10000mAh Li-ion battery								
Software Version	:	win10								
Hardware Version	:	V0.8								
Connecting I/O Port(S)	:	Please refer to the User's Manual								
Remark	:	The adapter and antenna gain provided by the applicant, the verified for the RF conduction test provided by TOBY test lab.								
Note: More detailed features description, please refer to the manufacturer's specifications or the User's Manual.										

Note:

- (1) This Test Report is FCC Part 15, Subpart E(15.407) for 802.11a/n/ac, the test procedure follows the FCC KDB 789033 D02 General UNII Test Procedures New Rules V02r01.
(2) Channel List:

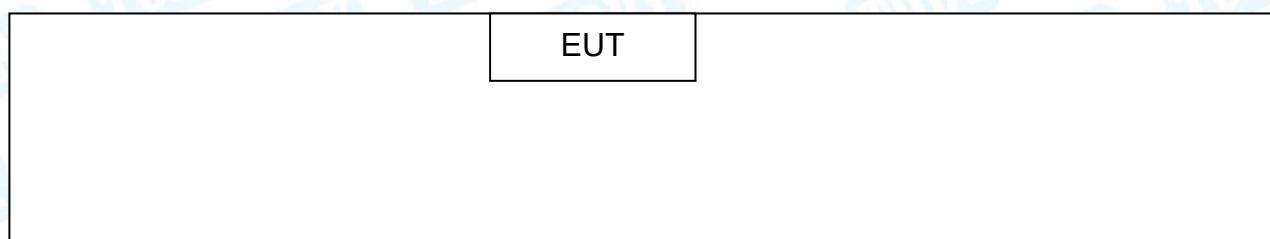
5G Band 5150~5250 MHz (U-NII-1)				
Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5180~5240 MHz Band 1	36	5180 MHz	44	5220 MHz
	38	5190 MHz	46	5230 MHz
	40	5200 MHz	48	5240 MHz
	42	5210 MHz		

Remark:
For 20 MHz Bandwidth, use channel 36, 40, 48.
For 40 MHz Bandwidth, use channel 38, 46.
For 80 MHz Bandwidth, use channel 42.

(3) Antenna information:

Mode	TX Antenna (s)		Remark	
802.11a	1		The worst case is ANT. A TX	
802.11n (HT20)	2		ANT. A+ ANT. B	
802.11n (HT40)	2		ANT. A+ ANT. B	
802.11ac (20)	2		ANT. A+ ANT. B	
802.11ac(VHT40)	2		ANT. A+ ANT. B	
802.11ac (80)	2		ANT. A+ ANT. B	
Antenna	Brand	Model Name	Type	Antenna Gain(dBi)
Main ANT.	N/A	N/A	Dipole	2
Main ANT.	N/A	N/A	Dipole	2

1.3 Block Diagram Showing the Configuration of System Tested



1.4 Description of Support Units

Equipment Information				
Name	Model	FCC ID/VOC	Manufacturer	Used "✓"
N/A	N/A	----	N/A	

1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

For Conducted Test		
Final Test Mode	Description	
Mode 1	TX 802.11a Mode	
For Radiated Test		
Test Band	Final Test Mode	Description
U-NII-1	Mode 2	TX Mode 802.11a Mode Channel 36/40/48
	Mode 3	TX Mode 802.11n(HT20) Mode Channel 36/40/48
	Mode 4	TX Mode 802.11n(HT40) Mode Channel 38/46
	Mode 5	TX Mode 802.11ac(VHT20) Mode Channel 36/40/48
	Mode 6	TX Mode 802.11ac(VHT40) Mode Channel 38/46
	Mode 7	TX Mode 802.11ac(VHT80) Mode Channel 42

Note:

- (1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.

According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels, and the worst case data rate as follows:

802.11a Mode: OFDM (6 Mbps)

802.11n (HT20) Mode: MCS 8

802.11n (HT40) Mode: MCS 8

802.11ac(VHT20) Mode: MCS 1/Nss2

802.11ac(VHT40) Mode: MCS 1/Nss2

802.11ac(VHT80) Mode: MCS 1/Nss2

- (2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.

- (3) The EUT is considered a fixed unit; in normal use it was positioned on X-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.

1.6 Description of Test Software Setting

During testing channel& Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of WLAN.

Test Software Version	RFTestTool.exe		
U-NII-1			
Mode:	5180MHz	5200MHz	5240MHz
IEEE 802.11a	DEF	DEF	DEF
IEEE 802.11n (HT20)	DEF	DEF	DEF
IEEE 802.11ac (VHT20)	DEF	DEF	DEF
Mode:	5190MHz	5230MHz	
IEEE 802.11n (HT40)	DEF	DEF	
IEEE 802.11ac (VHT40)	DEF	DEF	
Mode:	5210 MHz		
IEEE 802.11ac (VHT80)	DEF		

1.7 Test Facility

The testing was performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at: 1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China.

At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.

FCC Accredited Test Site Number: 854351.

IC Registration No.: (11950A-1)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A-1.

2. Test Summary

FCC Part 15 Subpart E(15.407)/RSS-210: 2010				
Standard Section		Test Item	Judgment	Remark
FCC	IC			
15.203	/	Antenna Requirement	PASS	N/A
15.207	RSS-GEN 7.2.4	Conducted Emission	PASS	N/A
15.407(b)	RSS-GEN 7.2.2	Band Edge Emissions	PASS	N/A
15.407(a)	RSS-24 A.9.2	26dB Bandwidth&99% Bandwidth	PASS	N/A
15.407(e)	RSS-210 A.9.2	6dB Bandwidth(only for UNII-3)	PASS	N/A
15.407(a)	RSS-210 A.9.2	Peak Output Power	PASS	N/A
15.407(a)	RSS-210 A.9.2	Power Spectral Density	PASS	N/A
15.407(b)	RSS-210 A.9.2	Transmitter Radiated Spurious Emission	PASS	N/A
15.407(a)	RSS-210 A.9.2	Peak Excursion	PASS	N/A
15.407(g)	RSS-210 A.9.2	Frequency Stability	PASS	N/A

Note: (1)"/" for no requirement for this test item.(2)N/A is an abbreviation for Not Applicable.
 (3)All tests were conducted using the adapter and antenna gain provided by the applicant, The laboratory tests only according to the information provided by the applicant.

Test Software

Test Item	Test Software	Manufacturer	Version No.
Conducted Emission	EZ-EMC	EZ	CDI-03A2
Radiation Emission	EZ-EMC	EZ	FA-03A2RE
RF Conducted Measurement	MTS-8310	MWRFtest	V2.0.0.0

3. Test Equipment

Conducted Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 13, 2019	Jul. 12, 2020
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 13, 2019	Jul. 12, 2020
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 13, 2019	Jul. 12, 2020
LISN	Rohde & Schwarz	ENV216	101131	Jul. 13, 2019	Jul. 12, 2020
Radiation Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 13, 2019	Jul. 12, 2020
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 13, 2019	Jul. 12, 2020
Spectrum Analyzer	Rohde & Schwarz	FSVR	1311.006K40-10 0945-DH	Feb. 10, 2019	Feb. 09, 2020
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Jan. 27, 2019	Jan. 26, 2020
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Jan. 27, 2019	Jan. 26, 2020
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.03, 2019	Mar. 02, 2020
Horn Antenna	ETS-LINDGREN	3117	00143209	Mar.03, 2019	Mar. 02, 2020
Horn Antenna	ETS-LINDGREN	BBHA 9170	BBHA9170582	Mar.03, 2019	Mar. 02, 2020
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 13, 2019	Jul. 12, 2020
Pre-amplifier	Sonoma	310N	185903	Mar.04, 2019	Mar. 03, 2020
Pre-amplifier	HP	8449B	3008A00849	Mar.03, 2019	Mar. 02, 2020
Pre-amplifier	SKET	LNPA_1840G-50	SK201904032	Jul. 27, 2019	Jul. 26, 2020
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar.03, 2019	Mar. 02, 2020
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Antenna Conducted Emission					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 13, 2019	Jul. 12, 2020
Spectrum Analyzer	Rohde & Schwarz	ESCI	100010/007	Jul. 13, 2019	Jul. 12, 2020
MXA Signal Analyzer	Agilent	N9020A	MY49100060	Sep. 16, 2019	Sep. 15, 2020
Vector Signal Generator	Agilent	N5182A	MY50141294	Sep. 16, 2019	Sep. 15, 2020
Analog Signal Generator	Agilent	N5181A	MY50141953	Sep. 16, 2019	Sep. 15, 2020
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO26	Sep. 16, 2019	Sep. 15, 2020
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO29	Sep. 16, 2019	Sep. 15, 2020
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO31	Sep. 16, 2019	Sep. 15, 2020
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO33	Sep. 16, 2019	Sep. 15, 2020

4. Conducted Emission Test

4.1 Test Standard and Limit

4.1.1 Test Standard

FCC Part 15.207

4.1.2 Test Limit

Conducted Emission Test Limit

Frequency	Maximum RF Line Voltage (dB μ V)	
	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

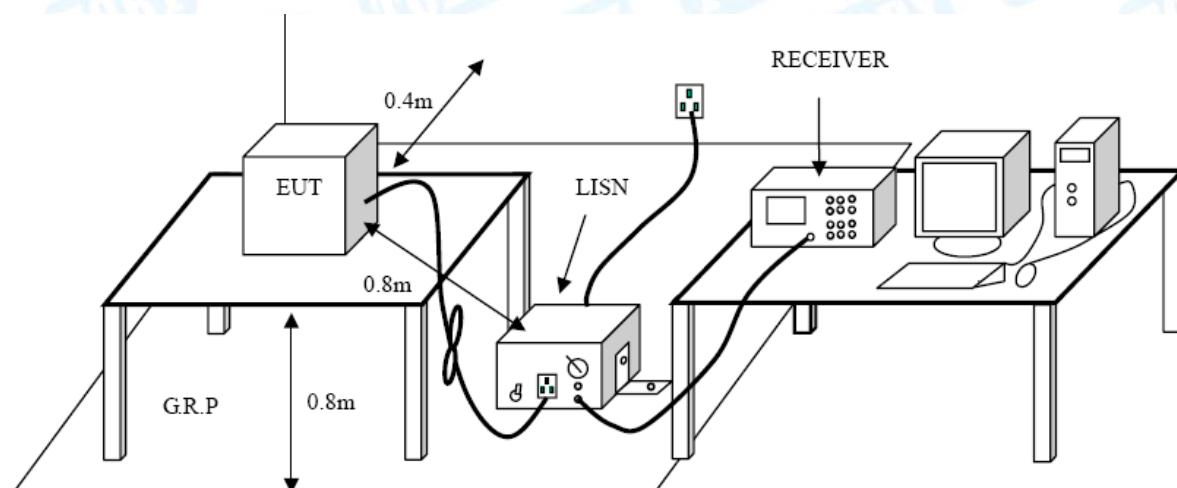
Notes:

(1) *Decreasing linearly with logarithm of the frequency.

(2) The lower limit shall apply at the transition frequencies.

(3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2 Test Setup



4.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

4.4 EUT Operating Mode

Please refer to the description of test mode.

4.5 Test Data

Please refer to the Attachment A.

5. Radiated Emission Test

5.1 Test Standard and Limit

5.1.1 Test Standard
FCC Part 15.209

5.1.2 Test Limit

Radiated Emission Limits (9kHz~1000MHz)

Frequency (MHz)	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Radiated Emission Limit (Above 1000MHz)

Frequency (MHz)	Distance Meters(at 3m)	
	Peak	Average
Above 1000	74	54

Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission Level(dBuV/m)=20log Emission Level(uV/m)

Limits of unwanted emission out of the restricted bands

Frequency (MHz)	EIRP Limits (dBm)	Equivalent Field Strength at 3m (dBuV/m)
5150~5250	-27	68.2
5250~5350	-27	68.2
5470~5725	-27	68.2
	-27(Note 2)	68.2
	10(Note 2)	105.3
	15.6(Note 2)	110.9
	27(Note 2)	122.2

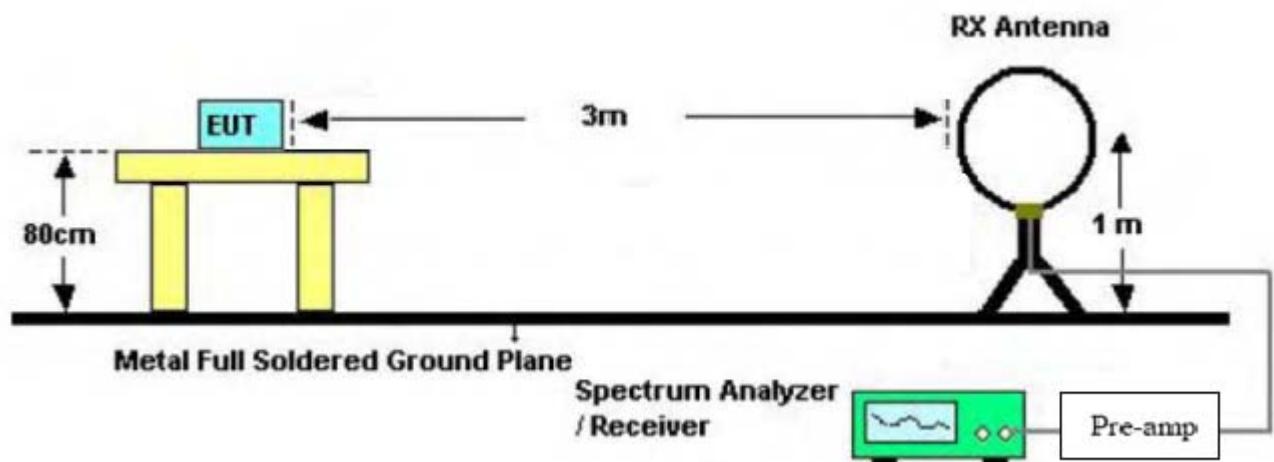
NOTE:

1, The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

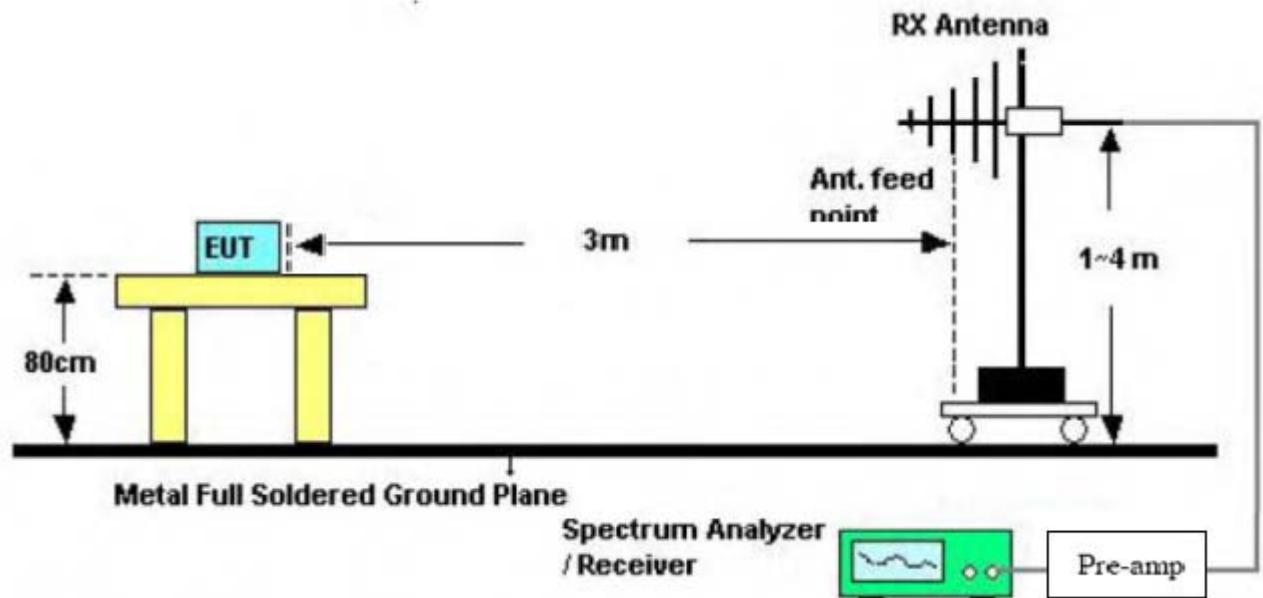
$$E = \frac{1000000\sqrt{30P}}{3} \text{ uV/m, where } P \text{ is the eirp (Watts)}$$

2, According to FCC 16-24, All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27dBm/MHz at the band edge.

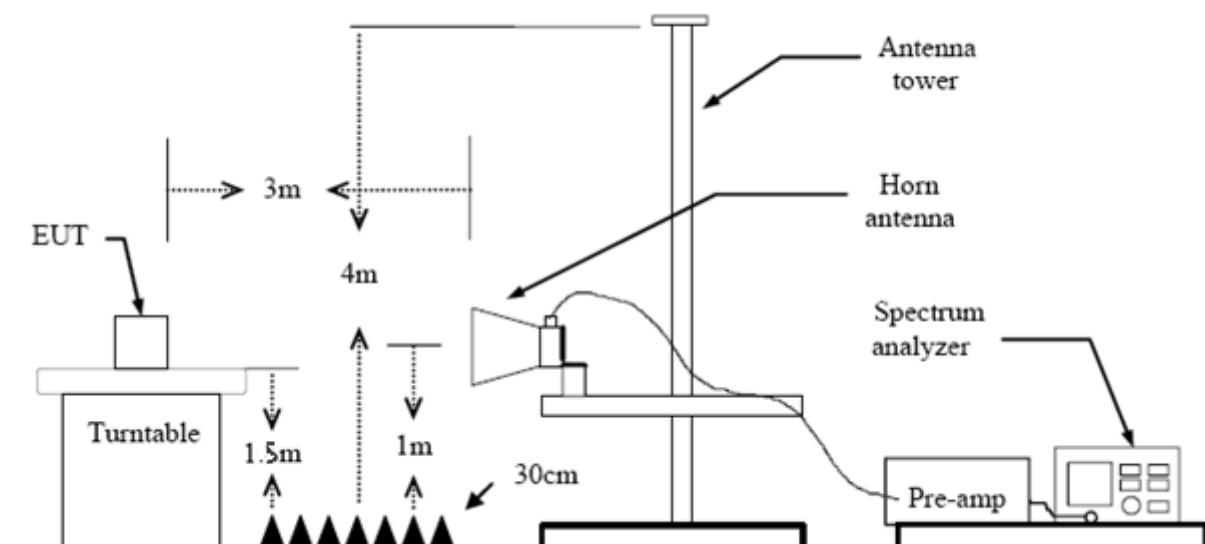
5.2 Test Setup



Below 30MHz Test Setup



Below 1000MHz Test Setup



Above 1GHz Test Setup

5.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz. The EUT was placed on a rotating 0.8m high above the ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by

3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.

- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Below 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.

5.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

5.5 Test Data

Remark: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

Please refer to the Attachment B.

6. Band Edge Emissions

6.1 Test Standard and Limit

6.1.1 Test Standard

FCC Part 15.407(b)

6.1.2 Test Limit

Limits of unwanted emission out of the restricted bands

Frequency (MHz)	EIRP Limits (dBm)	Equivalent Field Strength at 3m (dBuV/m)
5150~5250	-27	68.2
5725~5825	-27(Note 2)	68.2
	10(Note 2)	105.3
	15.6(Note 2)	110.9
	27(Note 2)	122.2

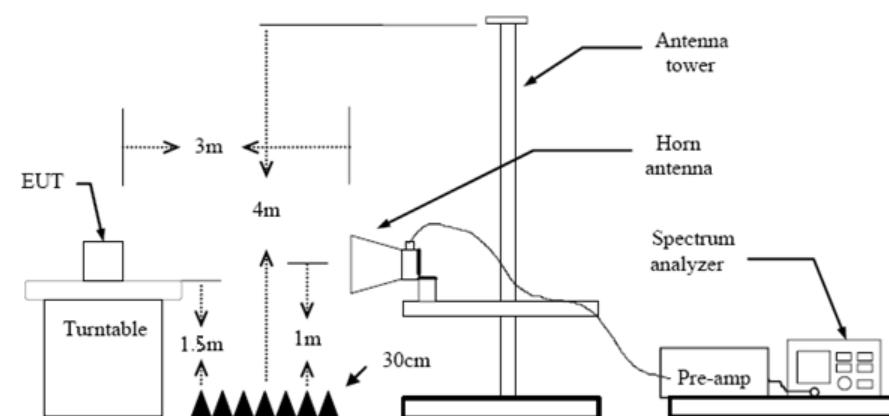
NOTE:

1, The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3} \text{ uV/m, where } P \text{ is the eirp (Watts)}$$

2, According to FCC 16-24, All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27dBm/MHz at the band edge.

6.2 Test Setup



6.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz. The EUT was placed on a rotating 0.8m high above the ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Below 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.

6.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

6.5 Test Data

Please refer to the Attachment C.

7. Bandwidth Test

7.1 Test Standard and Limit

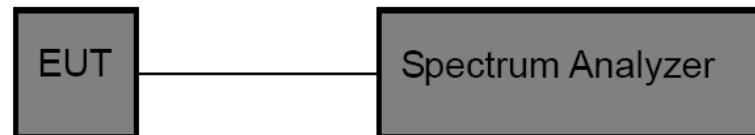
7.1.1 Test Standard

FCC Part 15.407

7.1.2 Test Limit

FCC Part 15 Subpart C(15.407)/RSS-210		
Test Item	Limit	Frequency Range (MHz)
26 Bandwidth	N/A	5150~5250
6 dB Bandwidth	>500kHz	5725~5850

7.2 Test Setup



7.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) The setting of the spectrum analyser as below:

26dB Bandwidth Test	
Spectrum Parameters	Setting
Attenuation	Auto
Span	>26 dB Bandwidth
RBW	Approximately 1% of the emission bandwidth
VBW	VBW>RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

6dB Bandwidth Test	
Spectrum Parameters	Setting
Attenuation	Auto
Span	>6 dB Bandwidth
RBW	100 kHz
VBW	$VBW \geq 3 \times RBW$
Detector	Peak
Trace	Max Hold
Sweep Time	Auto
99% Occupied Bandwidth Test	
Spectrum Parameters	Setting
Attenuation	Auto
RBW	1% to 5% of the OBW
VBW	$\geq 3RBW$
Detector	Peak
Trace	Max Hold

7.4 EUT Operating Condition

The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

7.5 Test Data

Please refer to the Attachment D.

8. Output Power Test

8.1 Test Standard and Limit

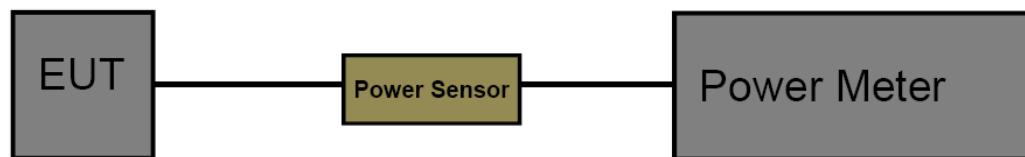
8.1.1 Test Standard

FCC Part 15.407 (a)

8.1.2 Test Limit

FCC Part 15 Subpart E(15.407)/RSS-210		
Test Item	Limit	Frequency Range(MHz)
Conducted Output Power	Fixed: 1 Watt (30dBm) Mobile and Portable: 250mW (24dBm)	5150~5250
	1 Watt (30dBm)	5725~5850

8.2 Test Setup



8.3 Test Procedure

The measurement is according to section 3 of KDB 789033 D02 General UNII Test Procedures New Rules V02r01.

The EUT was connected to RF power meter via a broadband power sensor as show the block above.

8.4 EUT Operating Condition

The EUT was set to continuously transmitting in the max power during the test.

8.5 Test Date

Please refer to the Attachment E.

9. Power Spectral Density Test

9.1 Test Standard and Limit

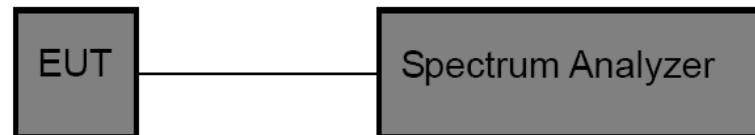
9.1.1 Test Standard

FCC Part 15.407 (a)

9.1.2 Test Limit

FCC Part 15 Subpart E(15.407)		
Test Item	Limit	Frequency Range(MHz)
Power Spectral Density	Other than Mobile and Portable : 17dBm/MHz Mobile and Portable : 11dBm/MHz	5150~5250
	30dBm/500kHz	5725~5850

9.2 Test Setup



9.3 Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement is according to KDB 789033 D02 General UNII Test Procedures New Rules V02r01.

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Set analyser centre frequency to transmitting frequency.
- (3) Set the span to encompass the entire emissions bandwidth (EBW)(alternatively, the entire 99% OBW) of the signal.
- (4) Set the RBW to: 1 MHz
- (5) Set the VBW to: 3 MHz
- (6) Detector: RMS
- (7) Trace: Max Hold
- (7) Sweep time: auto
- (8) Trace average at least 100 traces in power averaging.
- (9) User the peak marker function to determine the maximum amplitude level within the RBW.
Apply correction to the result if different RBW is used.

9.4 EUT Operating Condition

The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

9.5 Test Data

Please refer to the Attachment F.

10. Frequency Stability Measurement

10.1 Test Standard and Limit

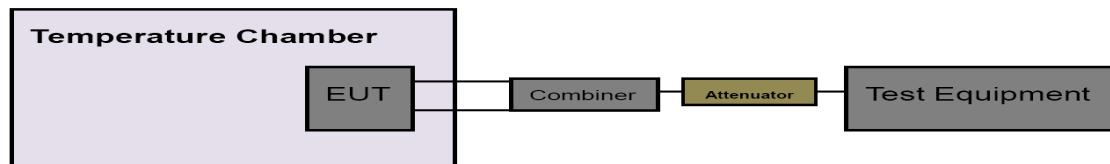
10.1.1 Test Standard

FCC Part 15.407

10.1.2 Test Limit

FCC Part 15 Subpart C(15.407)		
Test Item	Limit	Frequency Range(MHz)
Peak Excursion Measurement	Specified in the user's manual, the transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band (IEEE 802.11n specification)	5150~5250
		5725~5850

10.2 Test Setup



10.3 Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above.

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Set analyser centre frequency to transmitting frequency.
- (3) Set the span to encompass the entire emissions bandwidth (EBW) of the signal.
- (4) Set the RBW to: 10 kHz, VBW=10 kHz with peak detector and maxhold settings.
- (5) The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.
- (6) Extreme temperature is 0°C~50°C

10.4 EUT Operating Condition

The EUT was set to continuously transmitting in continuously un-modulation transmitting mode.

10.5 Test Data

Please refer to the Attachment G.

11. Antenna Requirement

11.1 Standard Requirement

11.1.1 Standard

FCC Part 15.203

11.1.2 Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

11.2 Antenna Connected Construction

The directional gains of the antenna used for transmitting is (5150MHz-5250MHz: 2dBi), and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

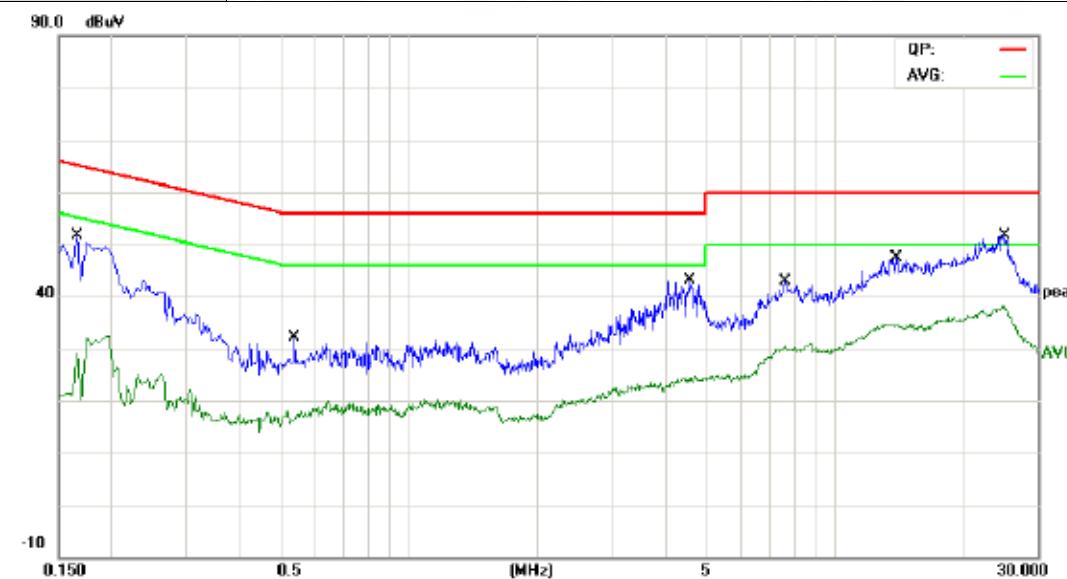
11.3 Result

The EUT antenna is a Dipole Antenna. It complies with the standard requirement.

Antenna Type
<input type="checkbox"/> Permanent attached antenna
<input checked="" type="checkbox"/> Unique connector antenna
<input type="checkbox"/> Professional installation antenna

Attachment A-- Conducted Emission Test Data

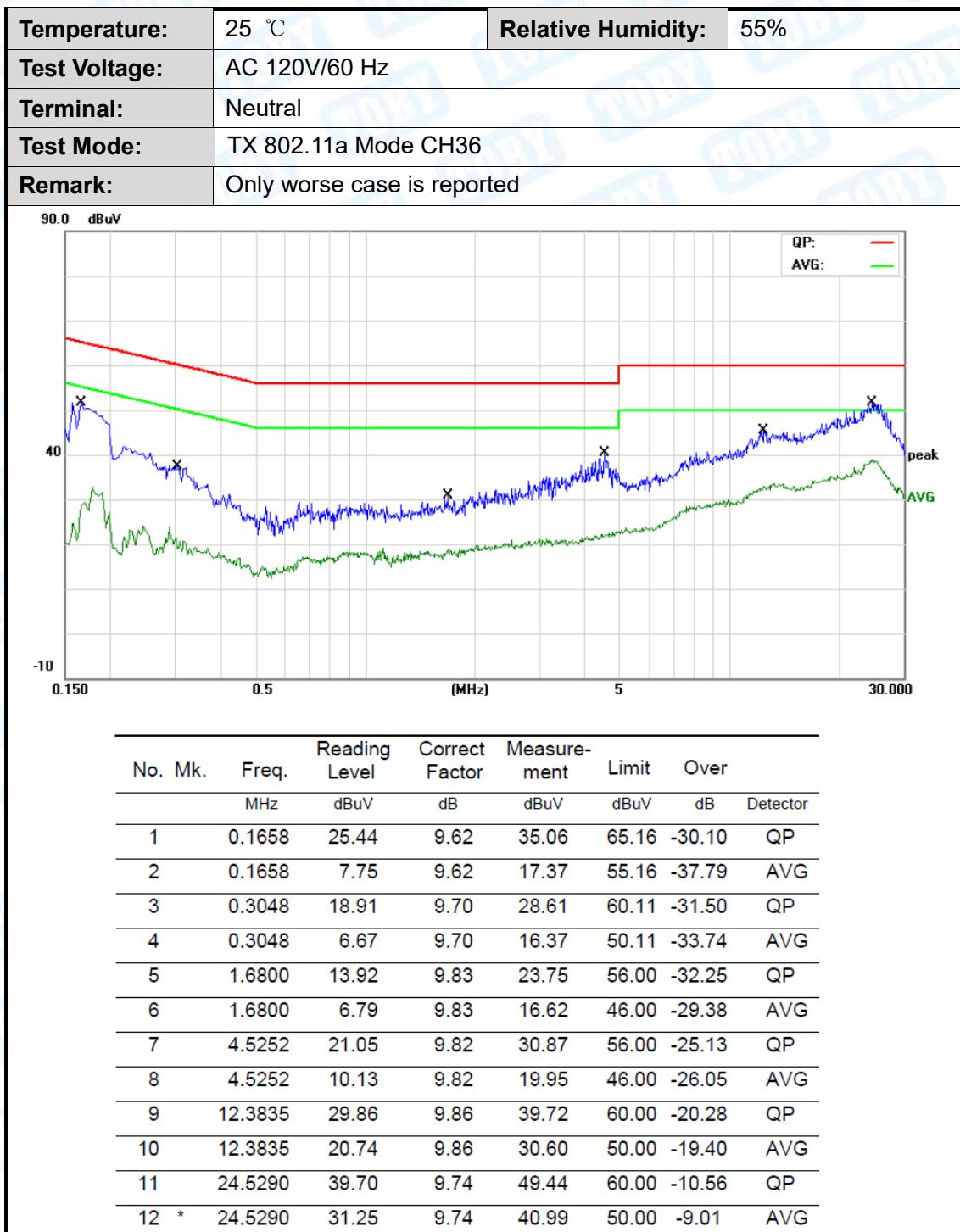
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Terminal:	Line		
Test Mode:	TX 802.11a Mode CH36		
Remark:	Only worse case is reported		



No.	Mk.	Freq. MHz	Reading Level	Correct Factor	Measure- ment	Limit	Over
			dBuV	dB	dBuV	dB	Detector
1	0.1658	25.42	9.62	35.04	65.16	-30.12	QP
2	0.1658	7.69	9.62	17.31	55.16	-37.85	AVG
3	0.5378	16.65	9.78	26.43	56.00	-29.57	QP
4	0.5378	7.49	9.78	17.27	46.00	-28.73	AVG
5	4.5734	20.38	9.82	30.20	56.00	-25.80	QP
6	4.5734	10.01	9.82	19.83	46.00	-26.17	AVG
7	7.6463	23.89	9.86	33.75	60.00	-26.25	QP
8	7.6463	14.67	9.86	24.53	50.00	-25.47	AVG
9	13.9146	29.56	9.86	39.42	60.00	-20.58	QP
10	13.9146	21.87	9.86	31.73	50.00	-18.27	AVG
11	25.0545	38.80	9.75	48.55	60.00	-11.45	QP
12 *	25.0545	30.29	9.75	40.04	50.00	-9.96	AVG

*:Maximum data x:Over limit !:over margin

Emission Level= Read Level+ Correct Factor



*:Maximum data x:Over limit !:over margin

Emission Level= Read Level+ Correct Factor

Remark: All modes and channels have been tested and only listed WiFi link mode that is worst data

Attachment B-- Radiated Emission Test Data

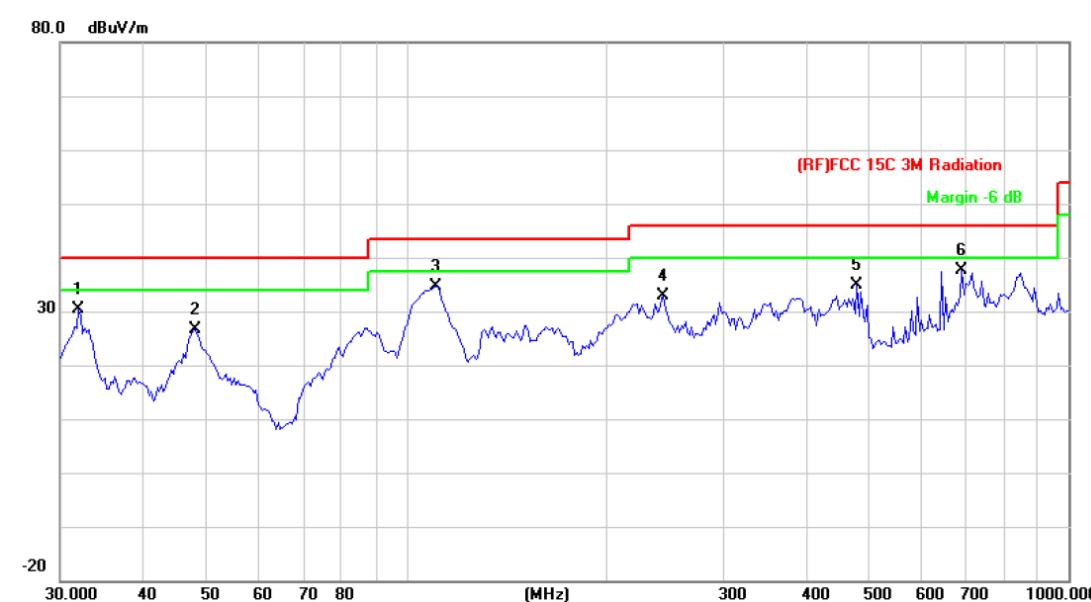
9 KHz~30 MHz

From 9 KHz to 30 MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

30MHz~1GHz

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 802.11a Mode 5180MHz (U-NII-1)		
Remark:	Only worse case is reported		

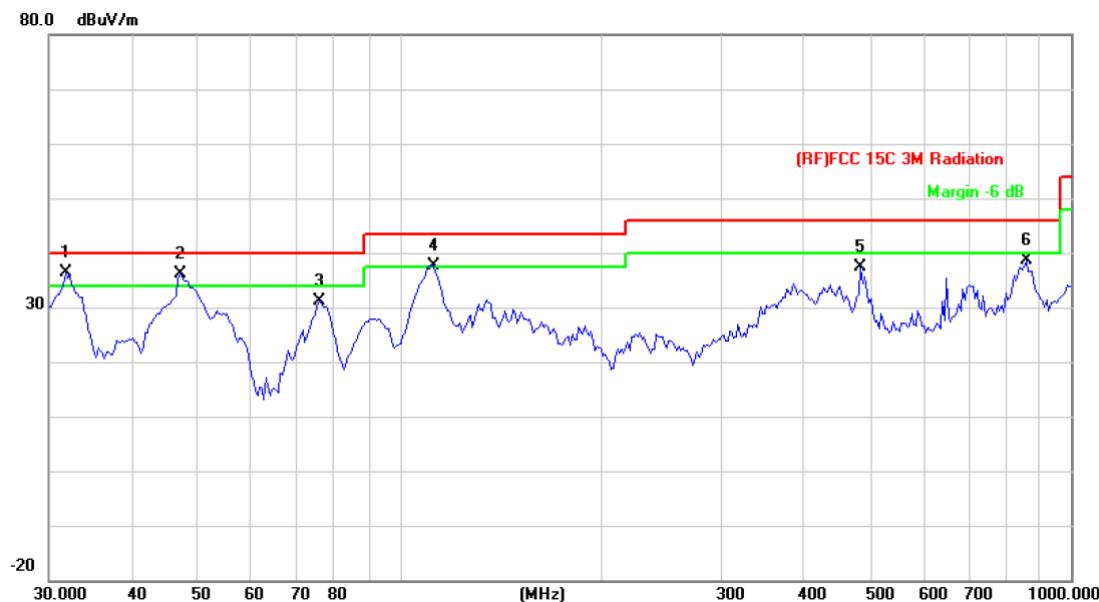


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dB	Over Detector
1		31.9546	44.85	-14.48	30.37	40.00	-9.63 QP
2		47.9940	49.41	-22.67	26.74	40.00	-13.26 QP
3		110.5687	57.16	-22.46	34.70	43.50	-8.80 QP
4		244.2321	50.18	-17.37	32.81	46.00	-13.19 QP
5		478.8456	45.82	-10.97	34.85	46.00	-11.15 QP
6	*	689.5644	44.54	-6.85	37.69	46.00	-8.31 QP

*:Maximum data x:Over limit !:over margin

Emission Level= Read Level+ Correct Factor

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 802.11a Mode 5180MHz (U-NII-1)		
Remark:	Only worse case is reported		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Over Detector
1	*	31.7313	50.72	-14.32	36.40	40.00	-3.60	QP
2	!	46.9948	58.55	-22.33	36.22	40.00	-3.78	QP
3		75.7114	54.13	-22.99	31.14	40.00	-8.86	QP
4	!	112.1305	60.15	-22.44	37.71	43.50	-5.79	QP
5		485.6093	48.21	-10.77	37.44	46.00	-8.56	QP
6		857.0247	43.75	-5.18	38.57	46.00	-7.43	QP

*:Maximum data x:Over limit !:over margin

Emission Level= Read Level+ Correct Factor

5180MHz-5250MHz(U-NII-1)

Temperature:	25 °C		Relative Humidity:	55%			
Test Voltage:	AC 120V/60Hz						
Ant. Pol.	Horizontal						
Test Mode:	TX 802.11a Mode 5180MHz (U-NII-1) Antenna A						
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported.						
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBuV	dB/m	dBuV/m	dB	Detector
1	*	10360.434	45.54	15.59	61.13	68.30	-7.17 peak
2	*	10360.444	31.93	15.59	47.52	54.00	-6.48 AVG

Emission Level= Read Level+ Correct Factor

Temperature:	25 °C	Relative Humidity:	55%				
Test Voltage:	AC 120V/60Hz						
Ant. Pol.	Vertical						
Test Mode:	TX 802.11a Mode 5180MHz (U-NII-1) Antenna A						
Remark:	No report for the emission which more than 10 dB below the prescribed limit. Only worse case is reported.						
<hr/> <hr/> <hr/>							
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBuV	dB/m	dBuV/m	dB	Detector
1	*	10360.414	31.93	15.59	47.52	54.00	-6.48 AVG
2		10360.434	44.55	15.59	60.14	68.30	-8.16 peak

Emission Level= Read Level+ Correct Factor

Temperature:	25 °C		Relative Humidity:	55%							
Test Voltage:	AC 120V/60Hz										
Ant. Pol.	Horizontal										
Test Mode:	TX 802.11a Mode 5200MHz (U-NII-1) Antenna A										
Remark:	No report for the emission which more than 10 dB below the prescribed limit.										
<hr/>											
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dB	Over Detector				
1		10400.432	45.45	15.66	61.11	68.30	-7.19 peak				
2	*	10400.432	31.49	15.66	47.15	54.00	-6.85 AVG				
<hr/>											
Emission Level= Read Level+ Correct Factor											

Temperature:	25 °C	Relative Humidity:	55%				
Test Voltage:	AC 120V/60Hz						
Ant. Pol.	Vertical						
Test Mode:	TX 802.11a Mode 5200MHz (U-NII-1) Antenna A						
Remark:	No report for the emission which more than 10 dB below the prescribed limit.						
<hr/> <hr/> <hr/> <hr/> <hr/> <hr/>							
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBuV	dB/m	dBuV/m	dB	Detector
1	*	10400.343	31.47	15.66	47.13	54.00	-6.87 AVG
2		10400.431	44.48	15.66	60.14	68.30	-8.16 peak

Emission Level= Read Level+ Correct Factor

Temperature:	25 °C		Relative Humidity:	55%					
Test Voltage:	AC 120V/60Hz								
Ant. Pol.	Horizontal								
Test Mode:	TX 802.11a Mode 5240MHz (U-NII-1) Antenna A								
Remark:	No report for the emission which more than 10 dB below the prescribed limit.								
<hr/>									
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dB	Detector		
1		10477.344	44.35	15.79	60.14	68.30	-8.16 peak		
2	*	10479.434	31.64	15.79	47.43	54.00	-6.57 AVG		
<hr/>									
Emission Level= Read Level+ Correct Factor									

Temperature:	25 °C		Relative Humidity:	55%							
Test Voltage:	AC 120V/60Hz										
Ant. Pol.	Vertical										
Test Mode:	TX 802.11a Mode 5240MHz (U-NII-1) Antenna A										
Remark:	No report for the emission which more than 10 dB below the prescribed limit.										
<hr/>											
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over				
		MHz	dBuV	dB/m	dBuV/m	dB	Detector				
1	*	10480.344	44.65	15.79	60.44	68.30	-7.86 peak				
2	*	10480.434	31.62	15.79	47.41	54.00	-6.59 AVG				
<hr/>											
Emission Level= Read Level+ Correct Factor											

Temperature:	25 °C		Relative Humidity:	55%					
Test Voltage:	AC 120V/60Hz								
Ant. Pol.	Horizontal								
Test Mode:	TX 802.11n(HT20) Mode 5180MHz (U-NII-1) Antenna A+B								
Remark:	No report for the emission which more than 10 dB below the prescribed limit.								
<hr/>									
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dB	Detector		
1	*	10360.434	31.54	15.59	47.13	54.00	-6.87 AVG		
2		10360.444	44.75	15.59	60.34	68.30	-7.96 peak		
<hr/>									
Emission Level= Read Level+ Correct Factor									

Temperature:	25 °C	Relative Humidity:	55%				
Test Voltage:	AC 120V/60Hz						
Ant. Pol.	Vertical						
Test Mode:	TX 802.11n(HT20) Mode 5180MHz (U-NII-1) Antenna A+B						
Remark:	No report for the emission which more than 10 dB below the prescribed limit.						
<hr/> <hr/> <hr/> <hr/> <hr/> <hr/>							
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBuV	dB/m	dBuV/m	dB	Detector
1	*	10360.434	31.66	15.59	47.25	54.00	-6.75 AVG
2		10360.444	44.55	15.59	60.14	68.30	-8.16 peak
<hr/> <hr/> <hr/> <hr/> <hr/> <hr/>							
Emission Level= Read Level+ Correct Factor							

Temperature:	25 °C		Relative Humidity:	55%					
Test Voltage:	AC 120V/60Hz								
Ant. Pol.	Horizontal								
Test Mode:	TX 802.11n(HT20) Mode 5200MHz (U-NII-1) Antenna A+B								
Remark:	No report for the emission which more than 10 dB below the prescribed limit.								
<hr/>									
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dB	Detector		
1		10400.434	44.48	15.66	60.14	68.30	-8.16 peak		
2	*	10400.434	31.77	15.66	47.43	54.00	-6.57 AVG		
<hr/>									
Emission Level= Read Level+ Correct Factor									

Temperature:	25 °C		Relative Humidity:	55%							
Test Voltage:	AC 120V/60Hz										
Ant. Pol.	Vertical										
Test Mode:	TX 802.11n(HT20) Mode 5200MHz (U-NII-1) Antenna A+B										
Remark:	No report for the emission which more than 10 dB below the prescribed limit.										
<hr/>											
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over				
		MHz	dBuV	dB/m	dBuV/m	dB	Detector				
1		10400.430	45.45	15.66	61.11	68.30	-7.19 peak				
2	*	10400.434	31.48	15.66	47.14	54.00	-6.86 AVG				
<hr/>											
Emission Level= Read Level+ Correct Factor											

Temperature:	25 °C	Relative Humidity:	55%				
Test Voltage:	AC 120V/60Hz						
Ant. Pol.	Horizontal						
Test Mode:	TX 802.11n(HT20) Mode 5240MHz (U-NII-1) Antenna A+B						
Remark:	No report for the emission which more than 10 dB below the prescribed limit.						
<hr/>							
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dB	Over Detector
1		10480.244	44.65	15.79	60.44	68.30	-7.86 peak
2	*	10480.440	31.79	15.79	47.58	54.00	-6.42 AVG
<hr/>							
Emission Level= Read Level+ Correct Factor							

Temperature:	25 °C		Relative Humidity:	55%					
Test Voltage:	AC 120V/60Hz								
Ant. Pol.	Vertical								
Test Mode:	TX 802.11n(HT20) Mode 5240MHz (U-NII-1) Antenna A+B								
Remark:	No report for the emission which more than 10 dB below the prescribed limit.								
<hr/>									
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dB	Detector		
1		10480.274	45.65	15.79	61.44	68.30	-6.86 peak		
2	*	10480.434	33.65	15.79	49.44	54.00	-4.56 AVG		
<hr/>									
Emission Level= Read Level+ Correct Factor									

Temperature:	25 °C	Relative Humidity:	55%				
Test Voltage:	AC 120V/60Hz						
Ant. Pol.	Horizontal						
Test Mode:	TX 802.11ac(VHT20) Mode 5180MHz (U-NII-1) Antenna A+B						
Remark:	No report for the emission which more than 10 dB below the prescribed limit.						
<hr/>							
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBuV	dB/m	dBuV/m	dB	Detector
1	*	10360.434	33.86	15.59	49.45	54.00	-4.55 AVG
2		10360.435	46.55	15.59	62.14	68.30	-6.16 peak
<hr/>							
Emission Level= Read Level+ Correct Factor							

Temperature:	25 °C		Relative Humidity:	55%					
Test Voltage:	AC 120V/60Hz								
Ant. Pol.	Vertical								
Test Mode:	TX 802.11ac(VHT20) Mode 5180MHz (U-NII-1) Antenna A+B								
Remark:	No report for the emission which more than 10 dB below the prescribed limit.								
<hr/>									
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dB	Over Detector		
1		10360.442	45.86	15.59	61.45	68.30	-6.85 peak		
2	*	10360.444	33.96	15.59	49.55	54.00	-4.45 AVG		
<hr/>									
Emission Level= Read Level+ Correct Factor									

Temperature:	25 °C	Relative Humidity:	55%				
Test Voltage:	AC 120V/60Hz						
Ant. Pol.	Horizontal						
Test Mode:	TX 802.11ac(VHT20) Mode 5200MHz (U-NII-1) Antenna A+B						
Remark:	No report for the emission which more than 10 dB below the prescribed limit.						
<hr/>							
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBuV	dB/m	dBuV/m	dB	Detector
1	*	10400.344	33.86	15.66	49.52	54.00	-4.48 AVG
2		10400.434	47.48	15.66	63.14	68.30	-5.16 peak
<hr/>							
Emission Level= Read Level+ Correct Factor							

Temperature:	25 °C		Relative Humidity:	55%					
Test Voltage:	AC 120V/60Hz								
Ant. Pol.	Vertical								
Test Mode:	TX 802.11ac(VHT20) Mode 5200MHz (U-NII-1) Antenna A+B								
Remark:	No report for the emission which more than 10 dB below the prescribed limit.								
<hr/>									
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dB	Detector		
1	*	10400.342	33.77	15.66	49.43	54.00	-4.57 AVG		
2		10400.344	46.68	15.66	62.34	68.30	-5.96 peak		
<hr/>									
Emission Level= Read Level+ Correct Factor									

Temperature:	25 °C	Relative Humidity:	55%				
Test Voltage:	AC 120V/60Hz						
Ant. Pol.	Horizontal						
Test Mode:	TX 802.11ac(VHT20) Mode 5240MHz (U-NII-1) Antenna A+B						
Remark:	No report for the emission which more than 10 dB below the prescribed limit.						
<hr/>							
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBuV	dB/m	dBuV/m	dB	Detector
1	*	10480.341	33.64	15.79	49.43	54.00	-4.57 AVG
2		10480.344	45.64	15.79	61.43	68.30	-6.87 peak
<hr/>							
Emission Level= Read Level+ Correct Factor							

Temperature:	25 °C		Relative Humidity:	55%					
Test Voltage:	AC 120V/60Hz								
Ant. Pol.	Vertical								
Test Mode:	TX 802.11ac(VHT20) Mode 5240MHz (U-NII-1) Antenna A+B								
Remark:	No report for the emission which more than 10 dB below the prescribed limit.								
<hr/>									
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1		10480.044	46.35	15.79	62.14	68.30	-6.16		
2	*	10480.433	33.64	15.79	49.43	54.00	-4.57		
							peak		
							AVG		
<hr/>									
Emission Level= Read Level+ Correct Factor									

Temperature:	25 °C	Relative Humidity:	55%				
Test Voltage:	AC 120V/60Hz						
Ant. Pol.	Horizontal						
Test Mode:	TX 802.11n(HT40) Mode 5190MHz (U-NII-1) Antenna A+B						
Remark:	No report for the emission which more than 10 dB below the prescribed limit.						
<hr/>							
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBuV	dB/m	dBuV/m	dB	Detector
1	*	10380.434	33.82	15.62	49.44	54.00	-4.56 AVG
2		10381.344	47.49	15.62	63.11	68.30	-5.19 peak
<hr/>							
Emission Level= Read Level+ Correct Factor							

Temperature:	25 °C		Relative Humidity:	55%					
Test Voltage:	AC 120V/60Hz								
Ant. Pol.	Vertical								
Test Mode:	TX 802.11n(HT40) Mode 5190MHz (U-NII-1) Antenna A+B								
Remark:	No report for the emission which more than 10 dB below the prescribed limit.								
<hr/>									
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dB	Detector		
1	*	10380.344	33.81	15.62	49.43	54.00	-4.57 AVG		
2		10380.442	44.92	15.62	60.54	68.30	-7.76 peak		
<hr/>									
Emission Level= Read Level+ Correct Factor									

Temperature:	25 °C	Relative Humidity:	55%				
Test Voltage:	AC 120V/60Hz						
Ant. Pol.	Horizontal						
Test Mode:	TX 802.11n(HT40) Mode 5230MHz (U-NII-1) Antenna A+B						
Remark:	No report for the emission which more than 10 dB below the prescribed limit.						
<hr/> <hr/> <hr/> <hr/> <hr/> <hr/>							
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBuV	dB/m	dBuV/m	dB	Detector
1	*	10460.343	33.85	15.76	49.61	54.00	-4.39 AVG
2		10460.746	45.38	15.76	61.14	68.30	-7.16 peak
<hr/> <hr/> <hr/> <hr/> <hr/> <hr/>							
Emission Level= Read Level+ Correct Factor							

Temperature:	25 °C		Relative Humidity:	55%					
Test Voltage:	AC 120V/60Hz								
Ant. Pol.	Vertical								
Test Mode:	TX 802.11n(HT40) Mode 5230MHz (U-NII-1) Antenna A+B								
Remark:	No report for the emission which more than 10 dB below the prescribed limit.								
<hr/>									
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dB	Over Detector		
1		10460.311	47.37	15.76	63.13	68.30	-5.17 peak		
2	*	10460.342	33.67	15.76	49.43	54.00	-4.57 AVG		
<hr/>									
Emission Level= Read Level+ Correct Factor									

Temperature:	25 °C		Relative Humidity:	55%							
Test Voltage:	AC 120V/60Hz										
Ant. Pol.	Horizontal										
Test Mode:	TX 802.11ac(VHT40) Mode 5190MHz (U-NII-1) Antenna A+B										
Remark:	No report for the emission which more than 10 dB below the prescribed limit.										
<hr/>											
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over				
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB				
1		10380.433	45.81	15.62	61.43	68.30	-6.87				
2	*	10380.441	33.79	15.62	49.41	54.00	-4.59				
							Detector				
							AVG				
<hr/>											
Emission Level= Read Level+ Correct Factor											

Temperature:	25 °C		Relative Humidity:	55%							
Test Voltage:	AC 120V/60Hz										
Ant. Pol.	Vertical										
Test Mode:	TX 802.11ac(VHT40) Mode 5190MHz (U-NII-1)										
Remark:	No report for the emission which more than 10 dB below the prescribed limit.										
<hr/>											
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over				
		MHz	dBuV	dB/m	dBuV/m	dB	Detector				
1		10380.433	46.82	15.62	62.44	68.30	-5.86 peak				
2	*	10381.433	33.81	15.62	49.43	54.00	-4.57 AVG				
<hr/>											
Emission Level= Read Level+ Correct Factor											

Temperature:	25 °C		Relative Humidity:	55%					
Test Voltage:	AC 120V/60Hz								
Ant. Pol.	Horizontal								
Test Mode:	TX 802.11ac(VHT40) Mode 5230MHz (U-NII-1) Antenna A+B								
Remark:	No report for the emission which more than 10 dB below the prescribed limit.								
<hr/>									
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dB	Detector		
1		10460.145	46.68	15.76	62.44	68.30	-5.86 peak		
2	*	10460.344	33.81	15.76	49.57	54.00	-4.43 AVG		
<hr/>									
Emission Level= Read Level+ Correct Factor									

Temperature:	25 °C		Relative Humidity:	55%							
Test Voltage:	AC 120V/60Hz										
Ant. Pol.	Vertical										
Test Mode:	TX 802.11ac(VHT40) Mode 5230MHz (U-NII-1) Antenna A+B										
Remark:	No report for the emission which more than 10 dB below the prescribed limit.										
<hr/> <hr/> <hr/> <hr/> <hr/> <hr/>											
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over				
		MHz	dBuV	dB/m	dBuV/m	dB	Detector				
1		10460.344	46.68	15.76	62.44	68.30	-5.86 peak				
2	*	10460.434	33.78	15.76	49.54	54.00	-4.46 AVG				
<hr/> <hr/> <hr/> <hr/> <hr/> <hr/>											
Emission Level= Read Level+ Correct Factor											

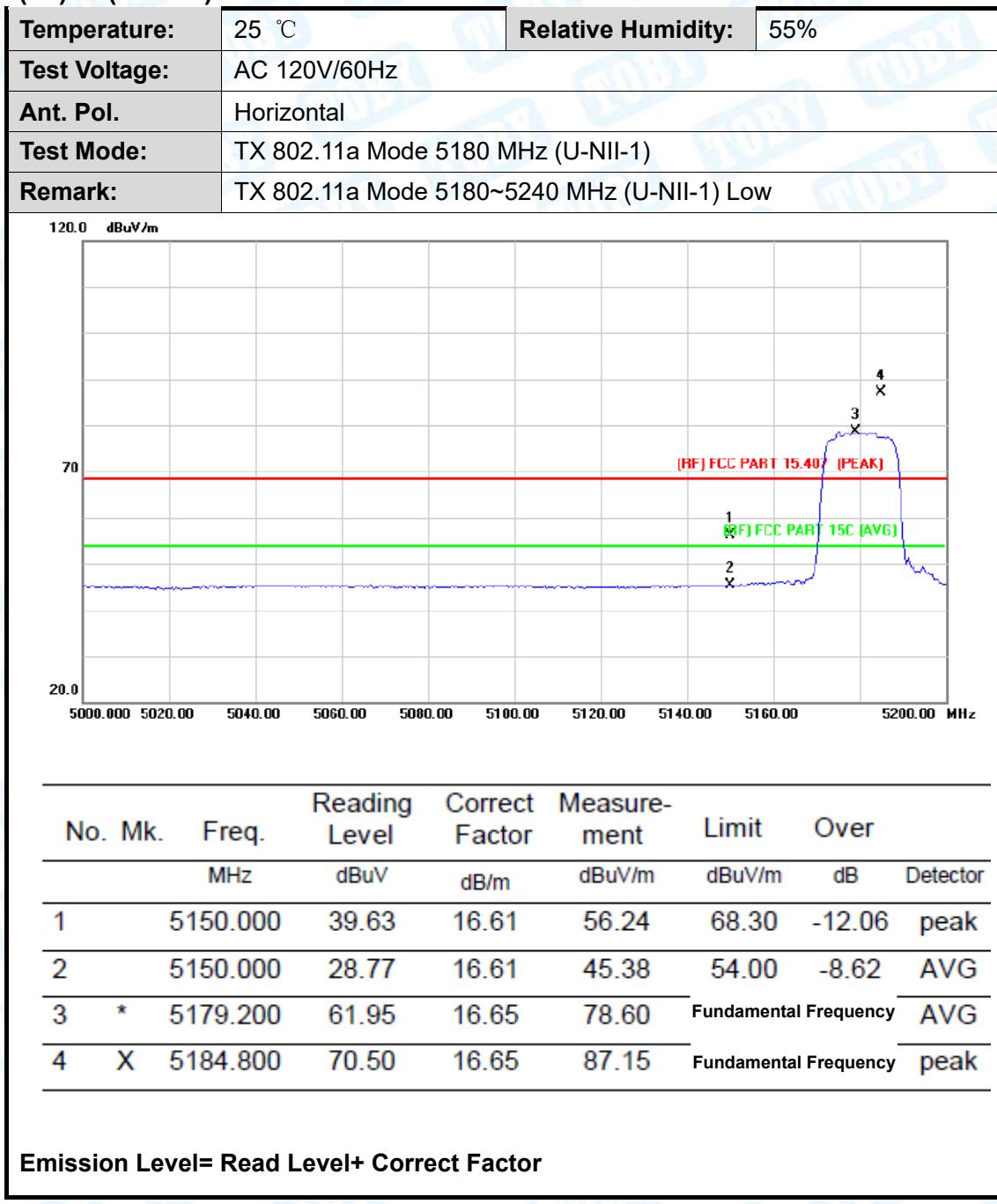
Temperature:	25 °C	Relative Humidity:	55%				
Test Voltage:	AC 120V/60Hz						
Ant. Pol.	Horizontal						
Test Mode:	TX 802.11ac(VHT80) Mode 5210MHz (U-NII-1) Antenna A+B						
Remark:	No report for the emission which more than 10 dB below the prescribed limit.						
<hr/>							
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBuV	dB/m	dBuV/m	dB	Detector
1	*	10420.224	33.41	15.69	49.10	54.00	-4.90 AVG
2		10420.344	47.41	15.69	63.10	68.30	-5.20 peak
<hr/>							
Emission Level= Read Level+ Correct Factor							

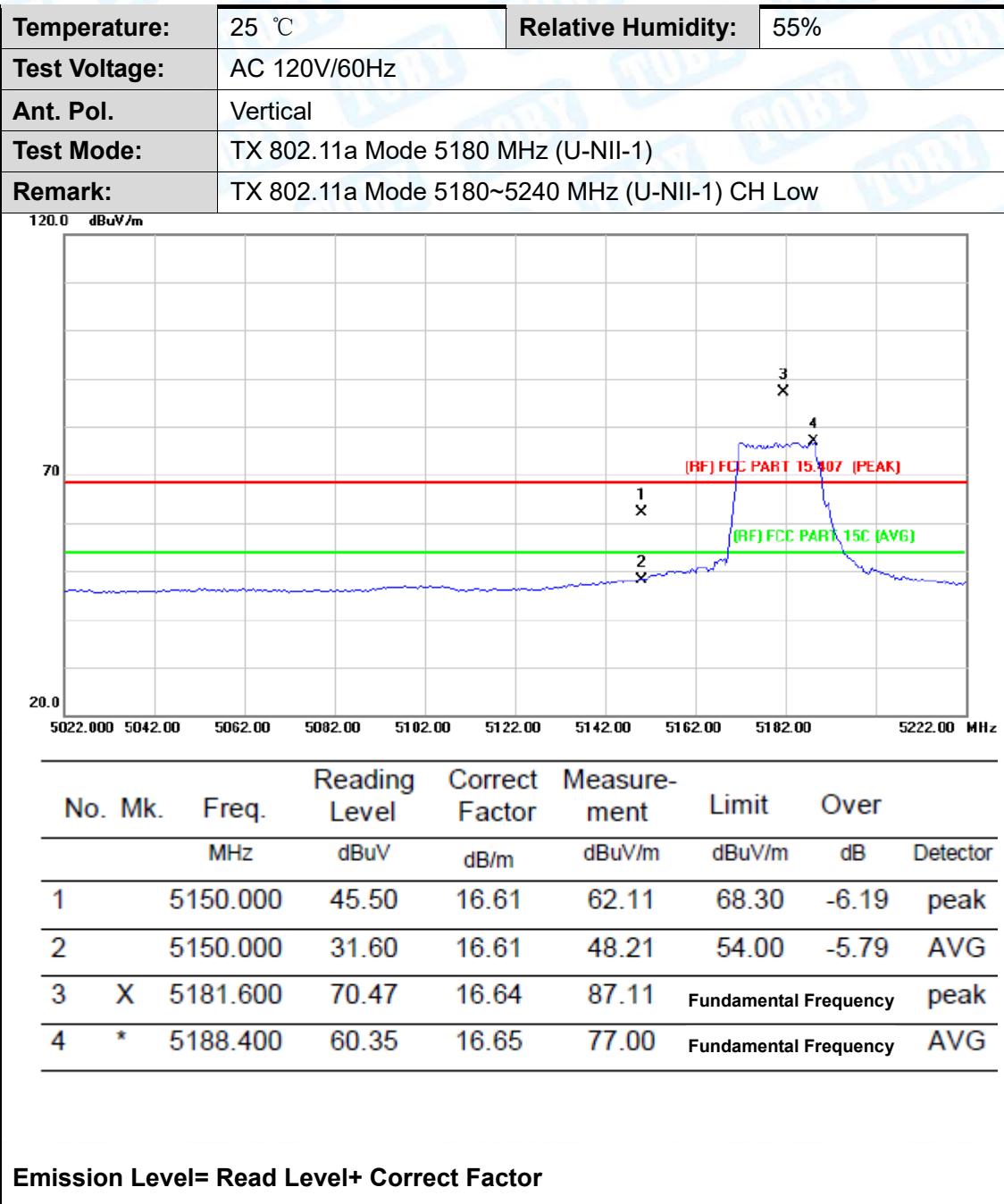
Temperature:	25 °C		Relative Humidity:	55%					
Test Voltage:	AC 120V/60Hz								
Ant. Pol.	Vertical								
Test Mode:	TX 802.11ac(VHT80) Mode 5210MHz (U-NII-1) Antenna A+B								
Remark:	No report for the emission which more than 10 dB below the prescribed limit.								
<hr/>									
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dB	Detector		
1	*	10420.133	33.72	15.69	49.41	54.00	-4.59 AVG		
2		10420.434	47.44	15.69	63.13	68.30	-5.17 peak		
<hr/>									
Emission Level= Read Level+ Correct Factor									

Attachment C-- Band Edge Emissions Test Data

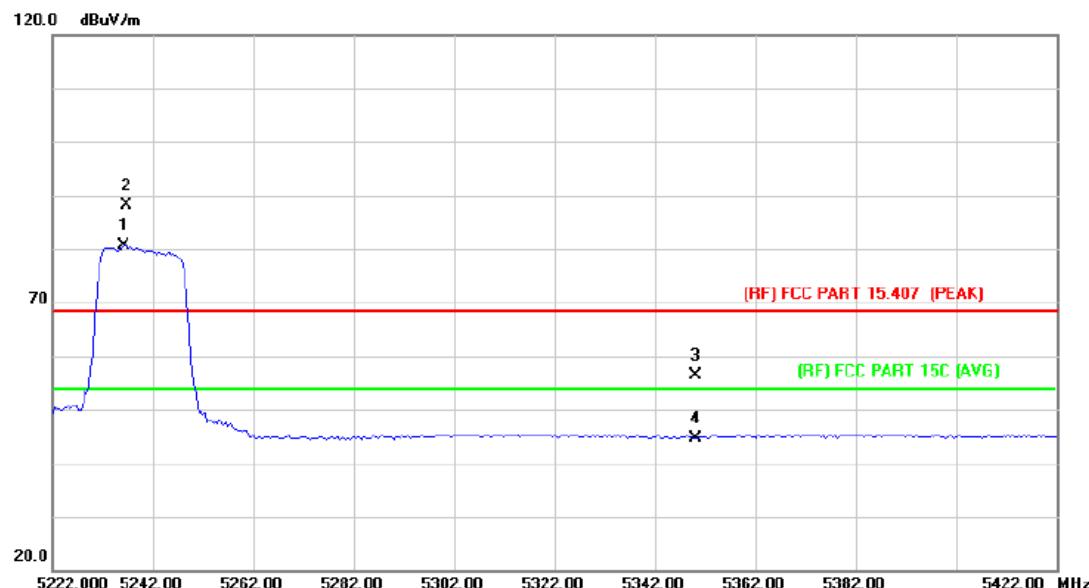
(1) Radiation Test

a/n(20)/ac(VHT20)



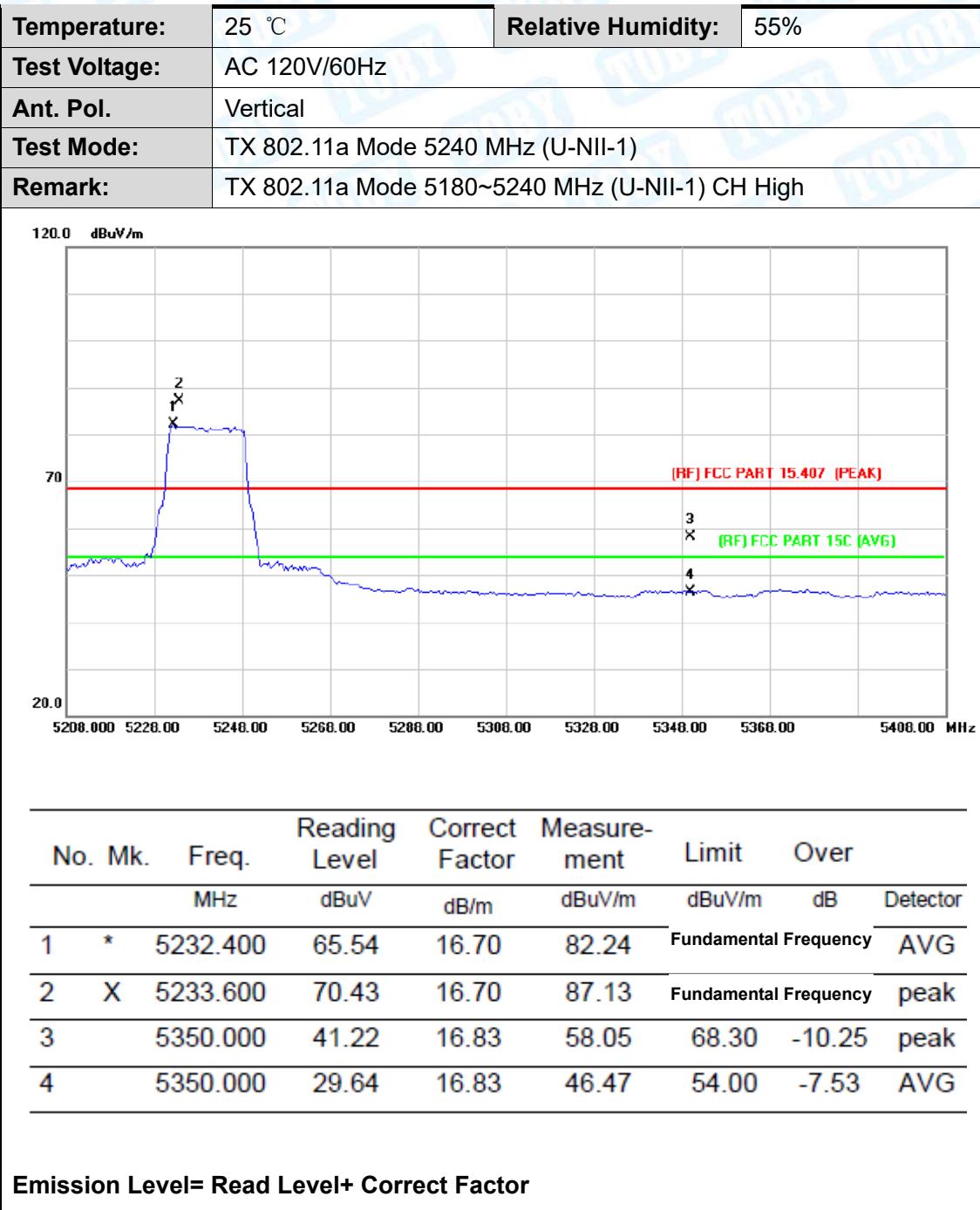


Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 802.11a Mode 5240 MHz (U-NII-1)		
Remark:	TX 802.11a Mode 5180~5240 MHz (U-NII-1) High		

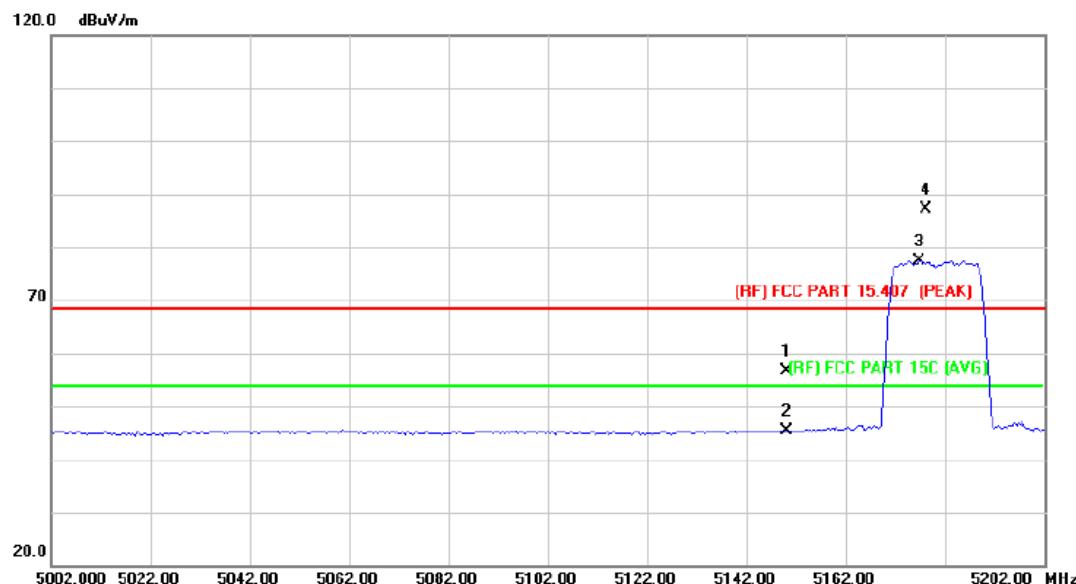


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dB	Over Detector
1	*	5236.400	63.85	16.70	80.55	Fundamental Frequency	AVG
2	X	5236.800	71.55	16.70	88.25	Fundamental Frequency	peak
3		5350.000	39.55	16.83	56.38	68.30	-11.92 peak
4		5350.000	27.89	16.83	44.72	54.00	-9.28 AVG

Emission Level= Read Level+ Correct Factor



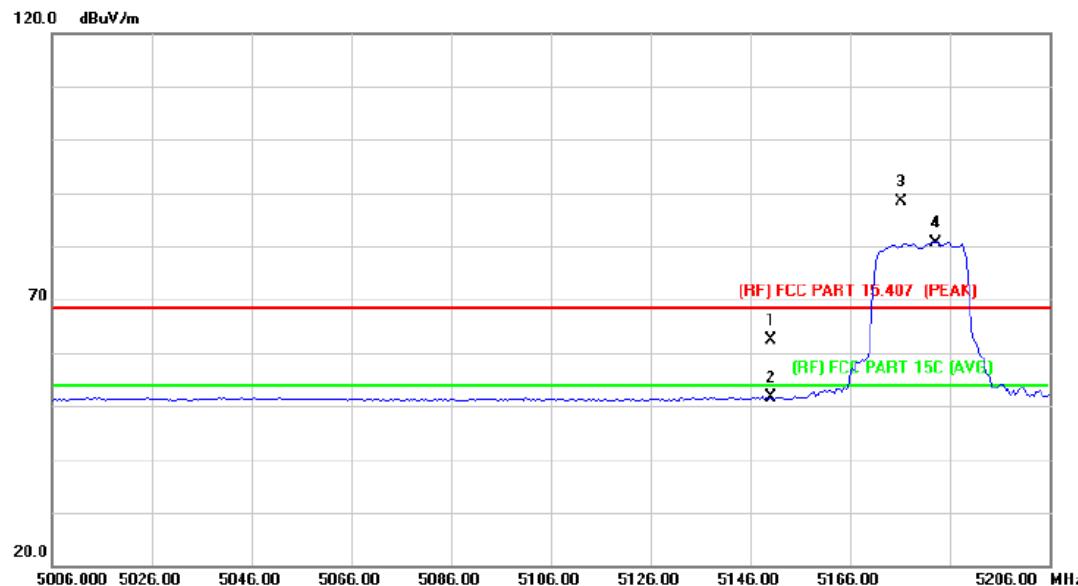
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 802.11n(20) Mode 5180 MHz (U-NII-1)		
Remark:	TX 802.11 n(20) Mode 5180~5240 MHz (U-NII-1) CH Low		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		5150.000	39.94	16.61	56.55	68.30	-11.75	peak
2		5150.000	28.70	16.61	45.31	54.00	-8.69	AVG
3	*	5176.800	60.72	16.64	77.36	Fundamental Frequency	3	AVG
4	X	5178.000	70.56	16.65	87.21	Fundamental Frequency	1	peak

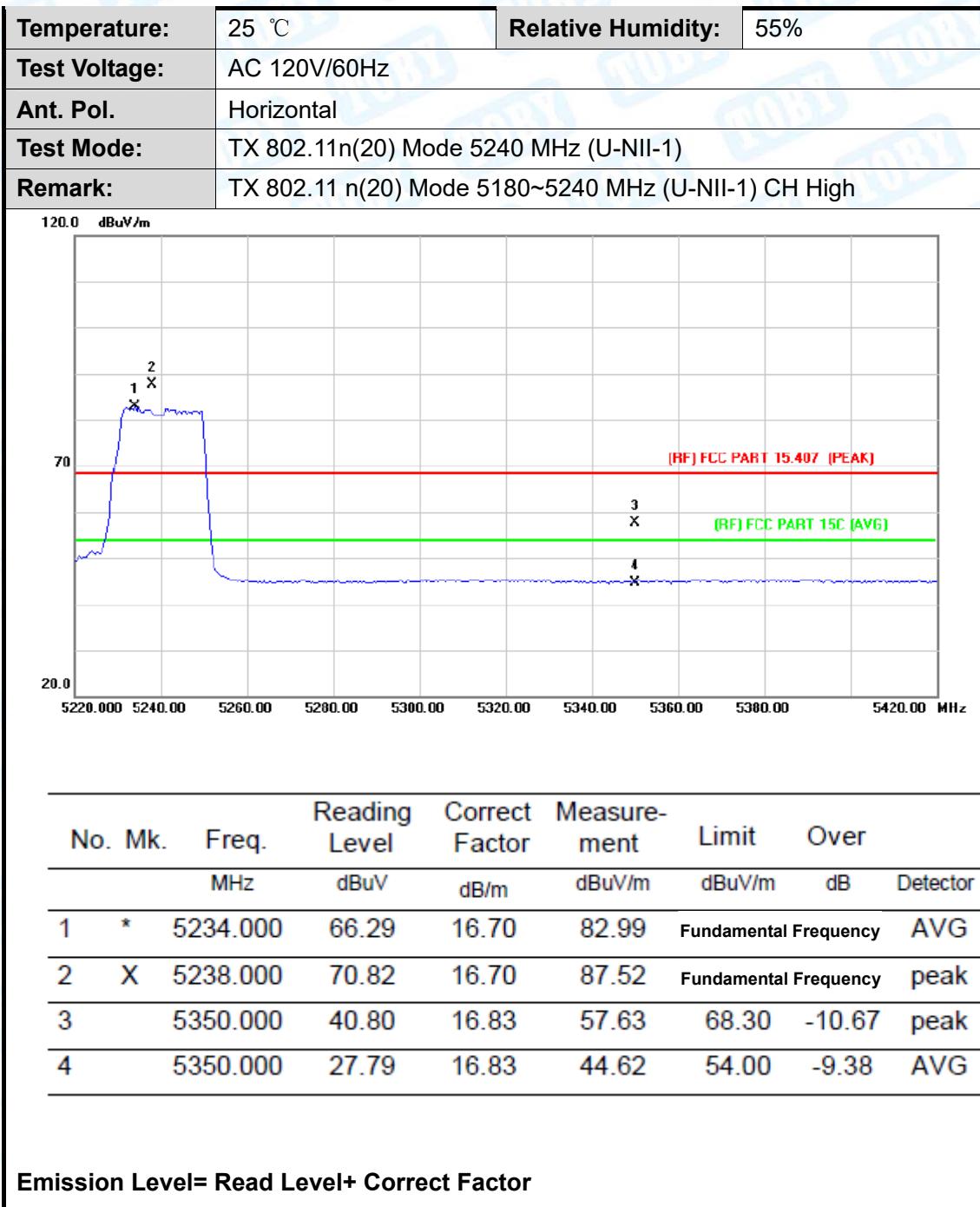
Emission Level= Read Level+ Correct Factor

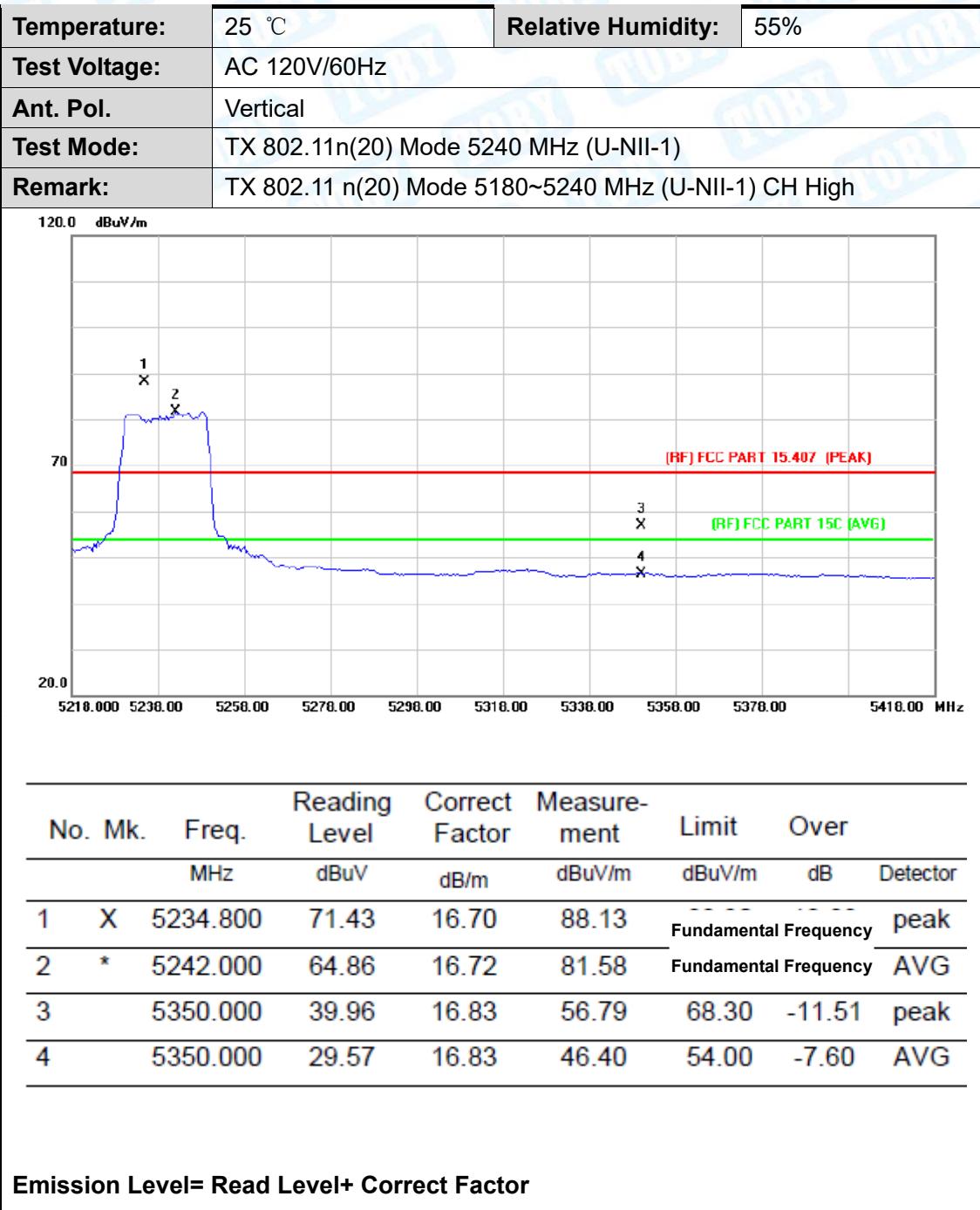
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 802.11n(20) Mode 5180 MHz (U-NII-1)		
Remark:	TX 802.11 n(20) Mode 5180~5240 MHz (U-NII-1) CH Low		

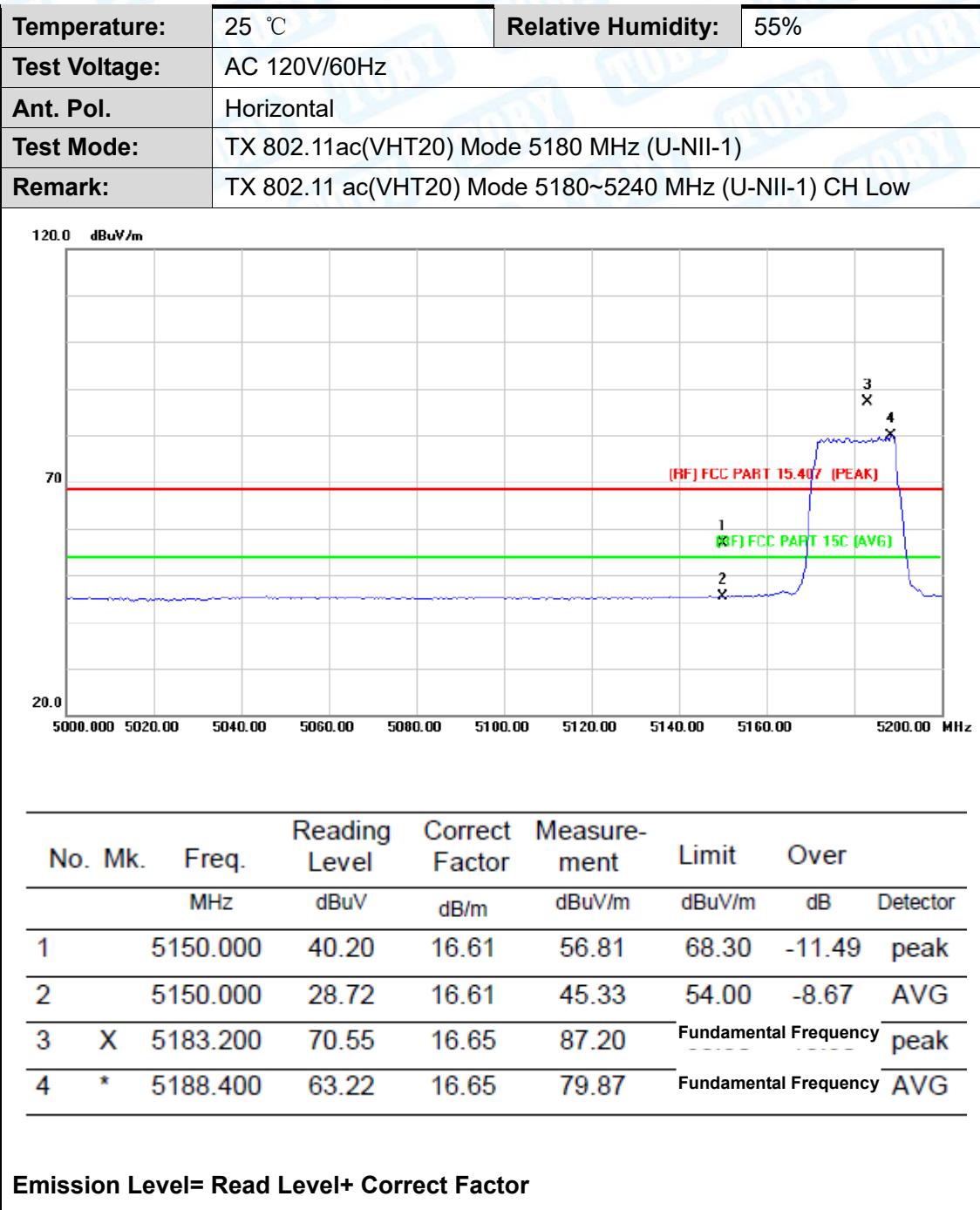


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over
		MHz	dBuV	dB/m	dBuV/m	dB	Detector
1		5150.000	45.84	16.61	62.45	68.30	-5.85 peak
2		5150.000	34.94	16.61	51.55	54.00	-2.45 AVG
3	X	5176.400	71.68	16.64	88.32	Fundamental Frequency	peak
4	*	5183.200	63.98	16.65	80.63	Fundamental Frequency	AVG

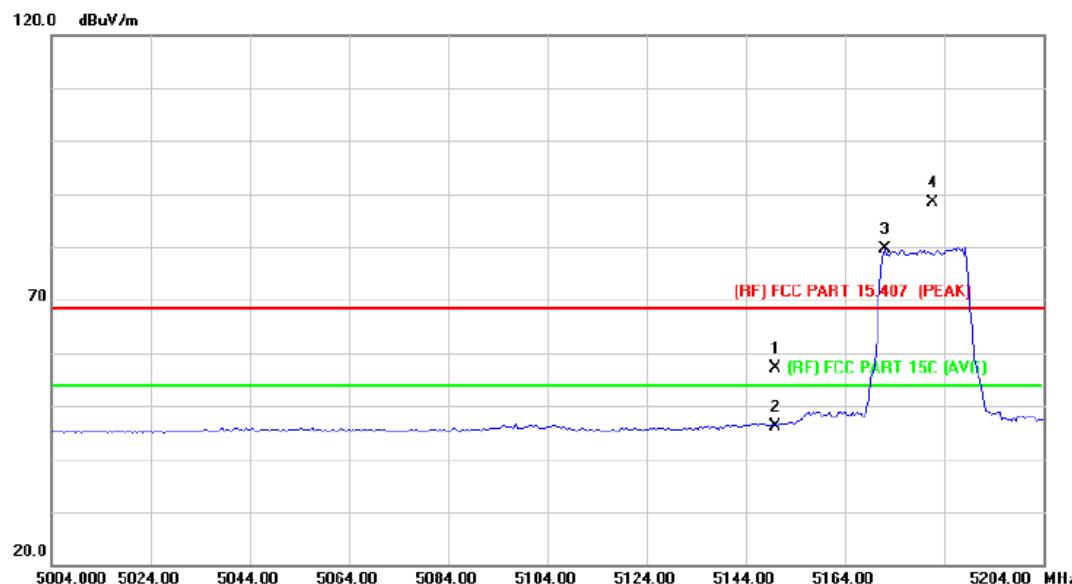
Emission Level= Read Level+ Correct Factor





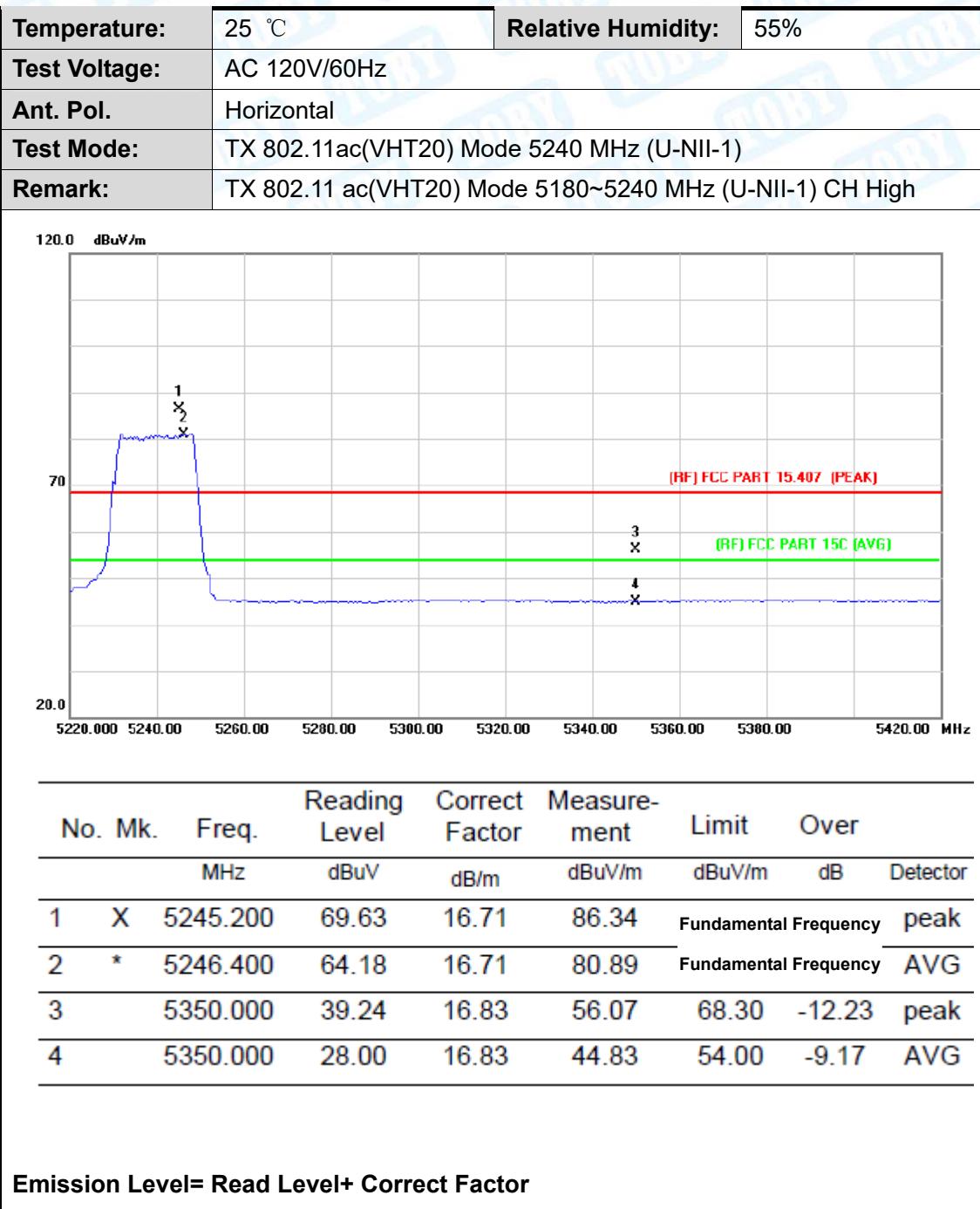


Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 802.11ac(VHT20) Mode 5180 MHz (U-NII-1)		
Remark:	TX 802.11 ac(VHT20) Mode 5180~5240 MHz (U-NII-1) CH Low		

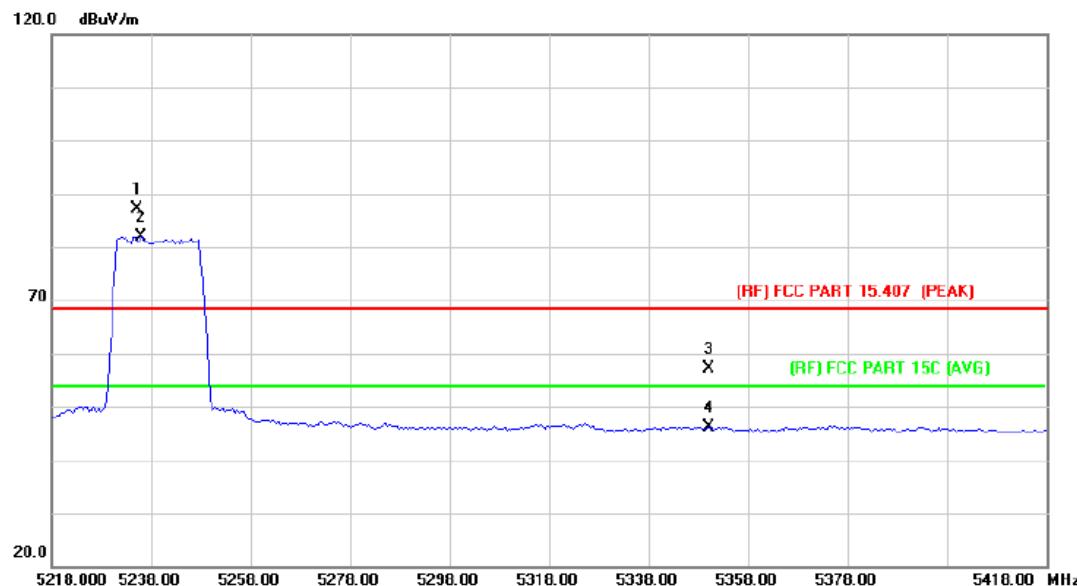


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		5150.000	40.52	16.61	57.13	68.30	-11.17	peak
2		5150.000	29.51	16.61	46.12	54.00	-7.88	AVG
3	*	5172.000	62.90	16.63	79.53	Fundamental Frequency		AVG
4	X	5181.600	71.80	16.64	88.44	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

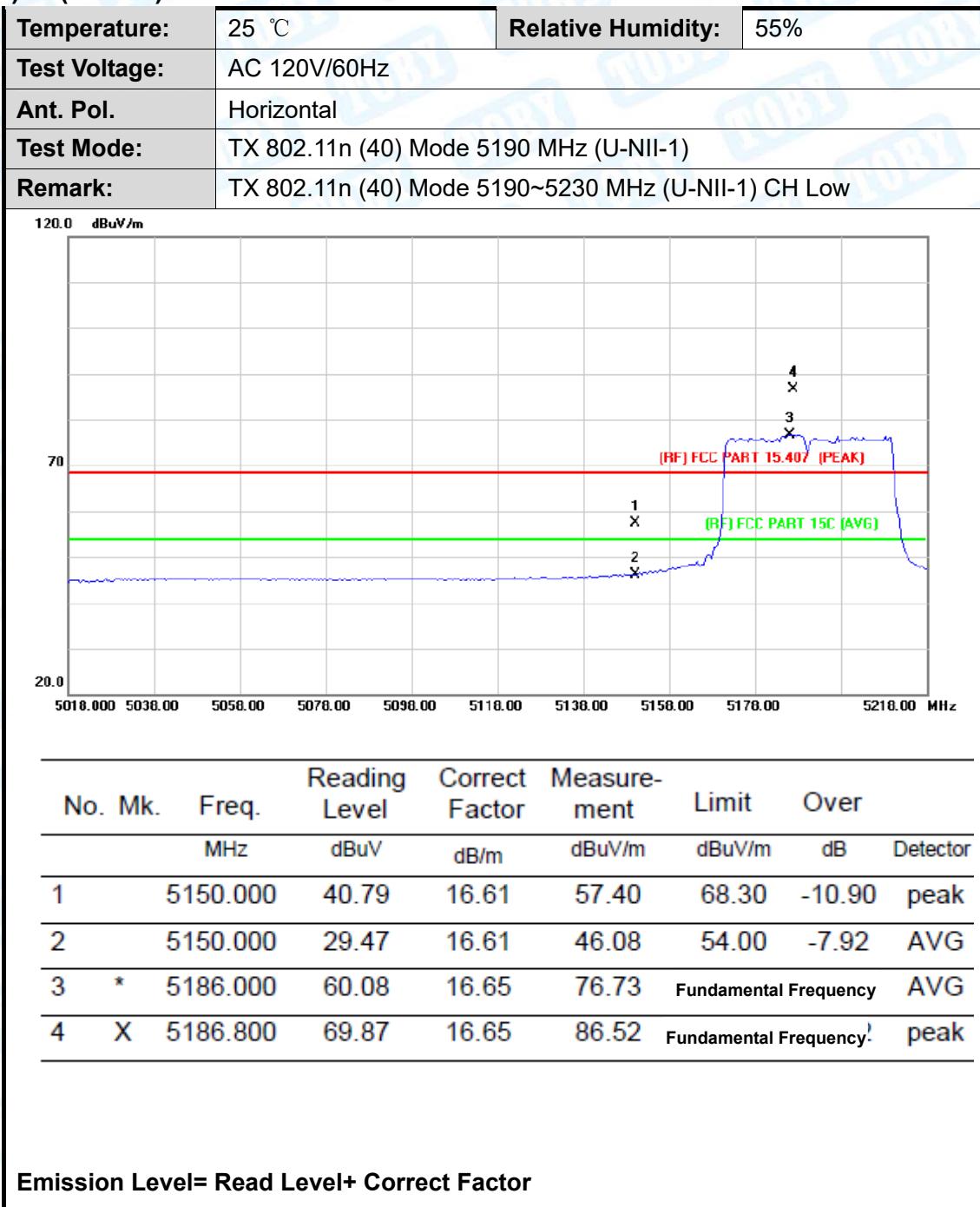


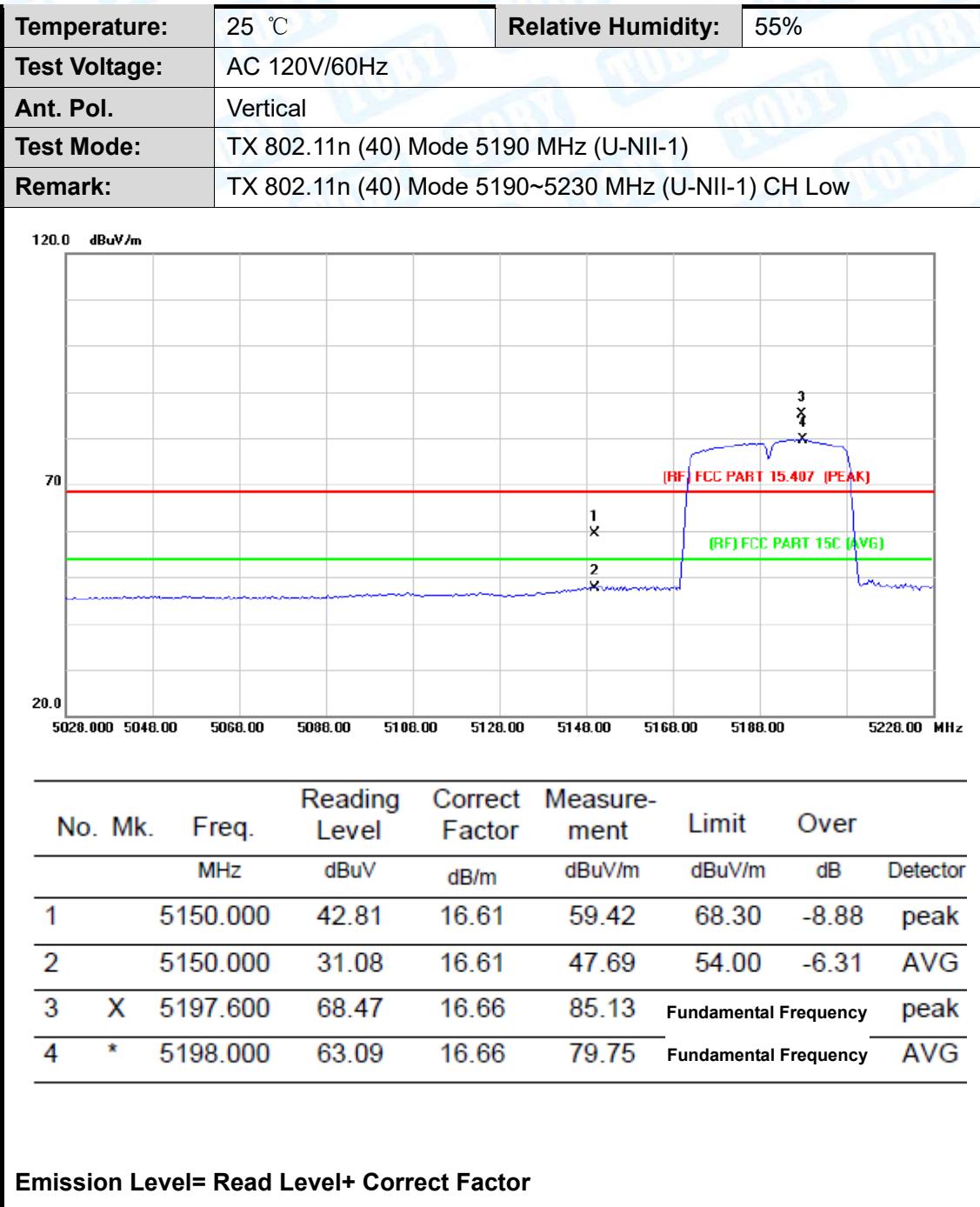
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 802.11ac(VHT20) Mode 5240 MHz (U-NII-1)		
Remark:	TX 802.11 ac(VHT20) Mode 5180~5240 MHz (U-NII-1) CH High		

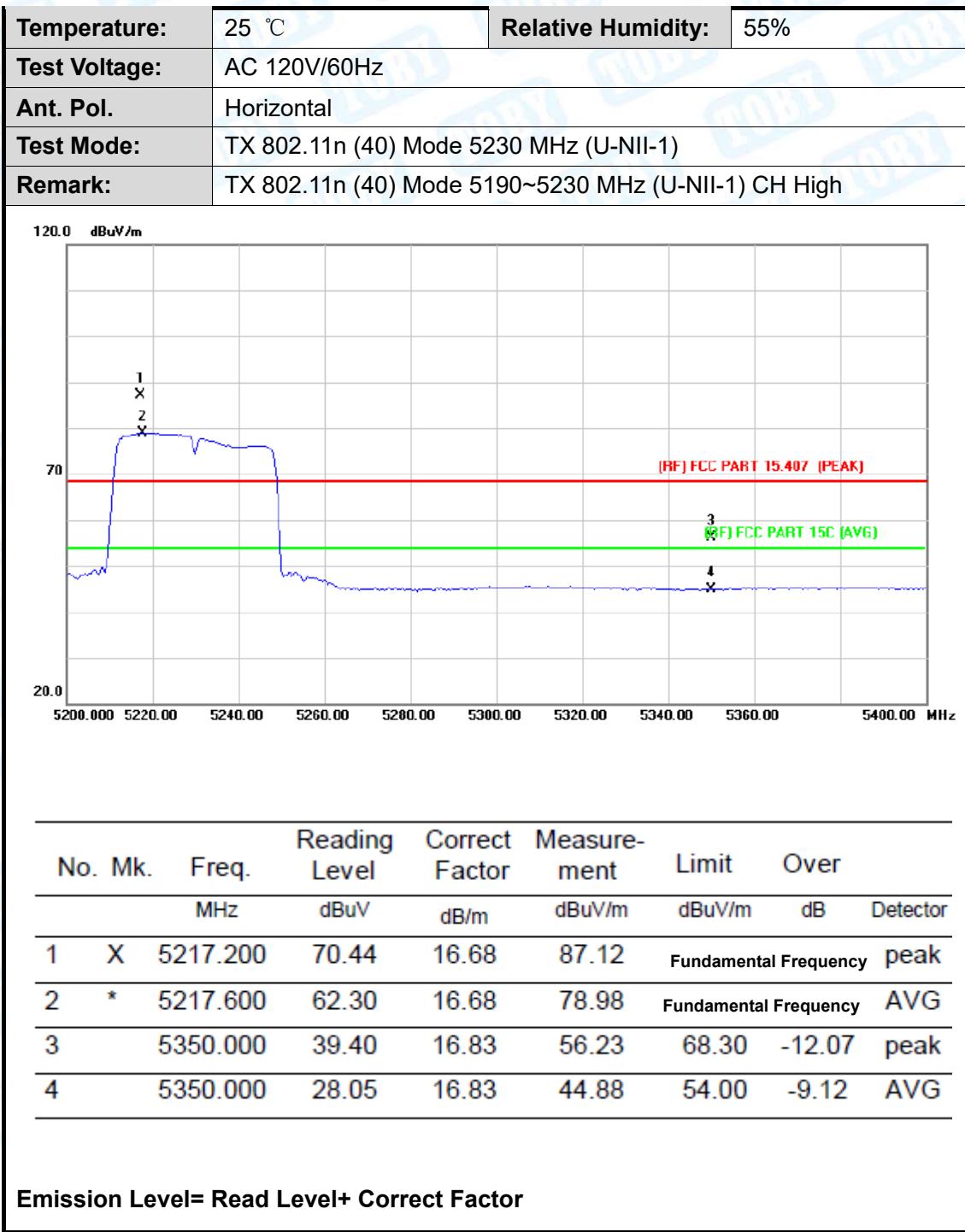


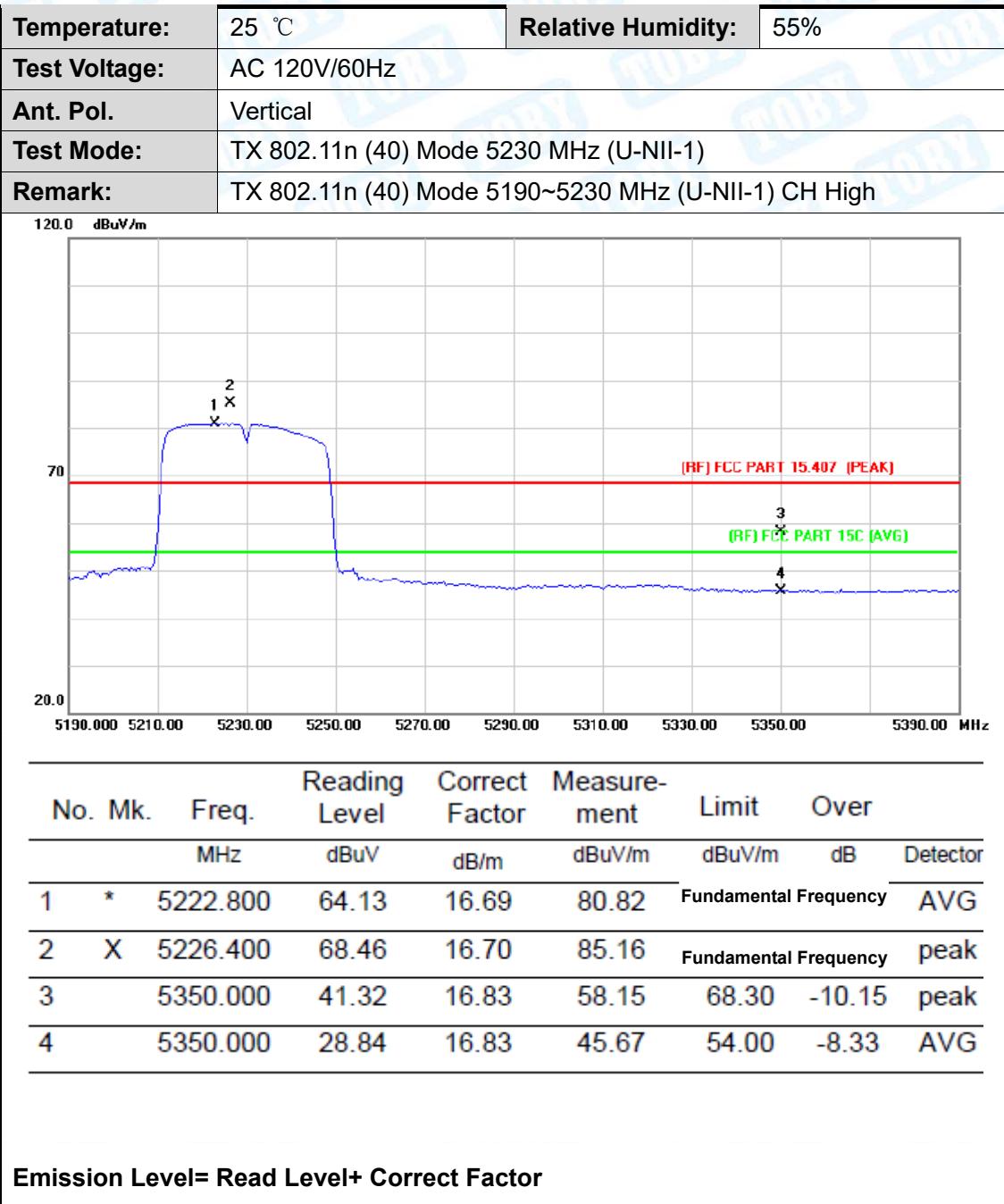
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	5235.200	70.43	16.70	87.13	Fundamental Frequency	peak
2	*	5236.000	65.27	16.70	81.97	Fundamental Frequency	AVG
3		5350.000	40.22	16.83	57.05	68.30	-11.25	peak
4		5350.000	29.20	16.83	46.03	54.00	-7.97	AVG

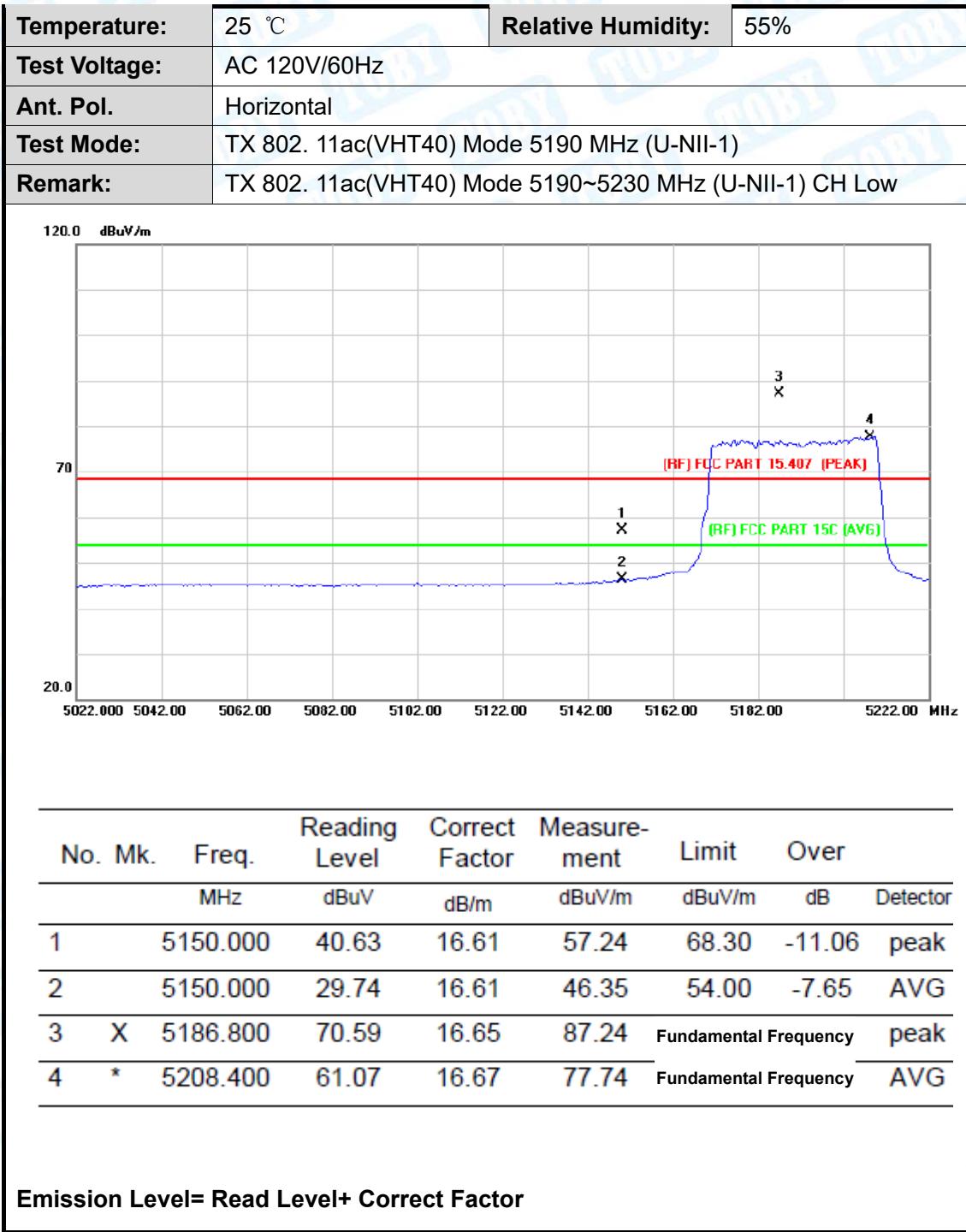
Emission Level= Read Level+ Correct Factor

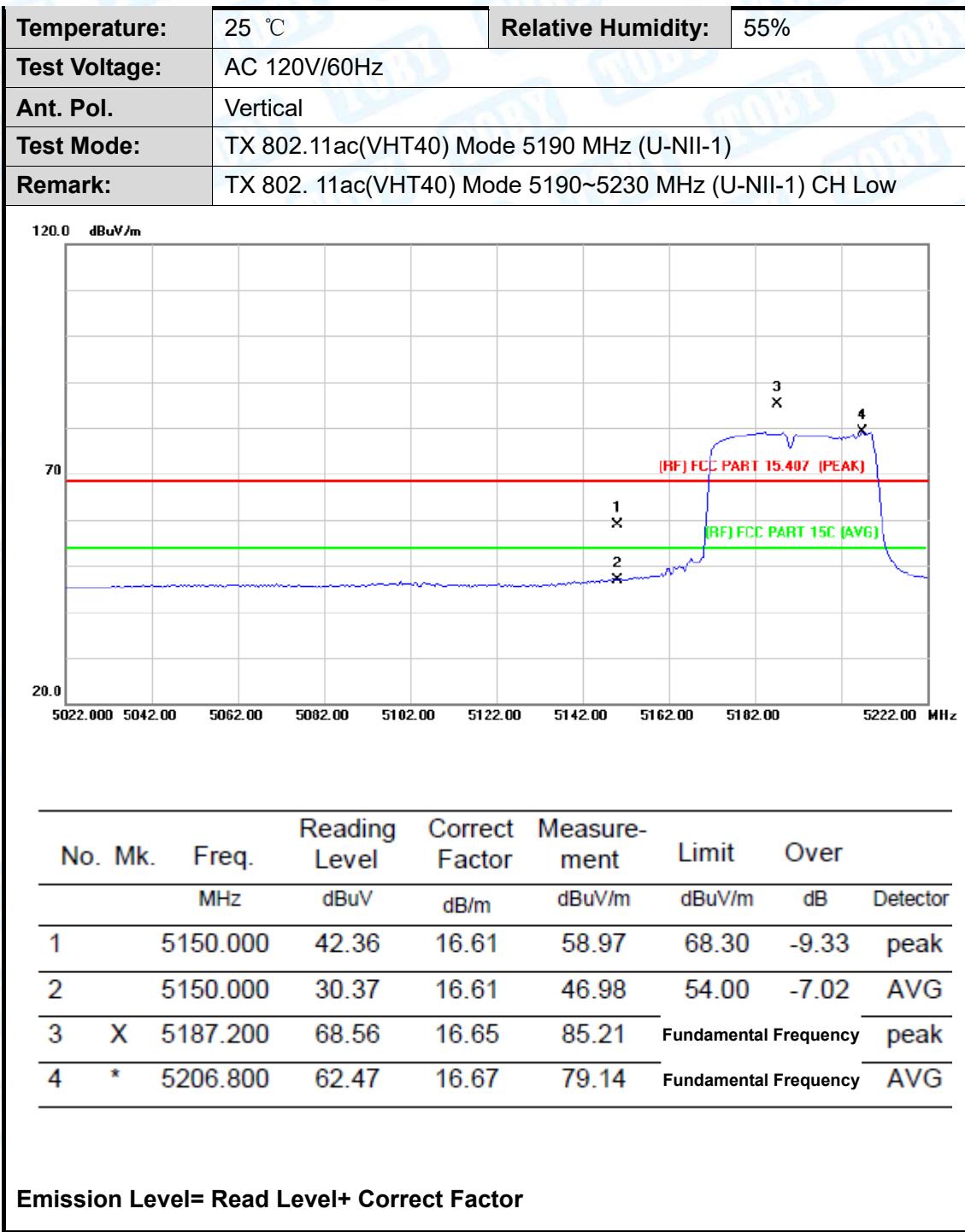
n(40)/ac(VHT40)



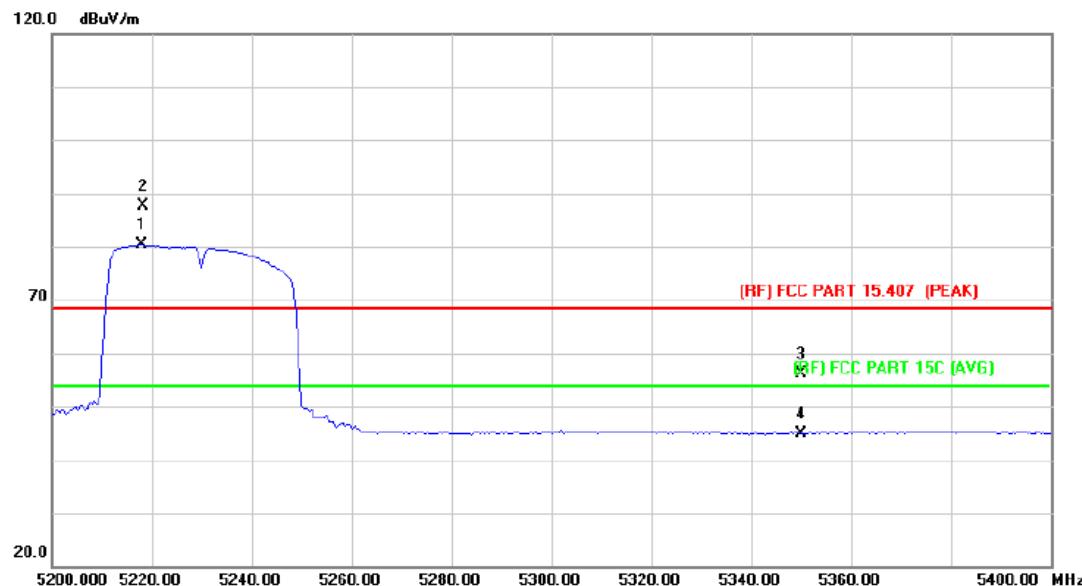








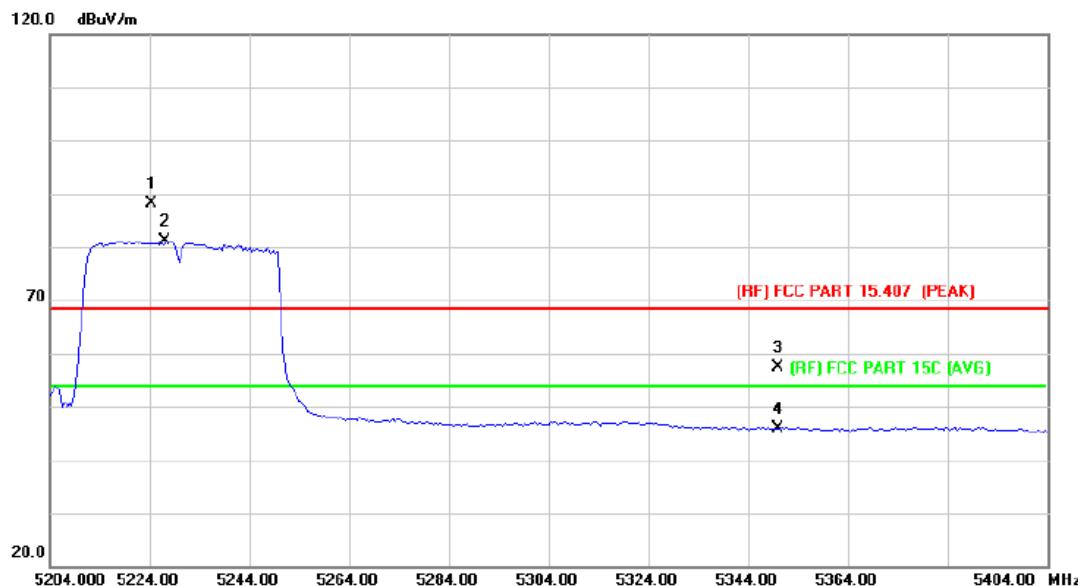
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 802.11ac(VHT40) Mode 5230 MHz (U-NII-1)		
Remark:	TX 802.11ac(VHT40) Mode 5190~5230 MHz (U-NII-1) CH High		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	5218.000	63.59	16.69	80.28	Fundamental Frequency		AVG
2	X	5218.400	70.84	16.69	87.53	Fundamental Frequency	peak	
3		5350.000	39.29	16.83	56.12	68.30	-12.18	peak
4		5350.000	27.96	16.83	44.79	54.00	-9.21	AVG

Emission Level= Read Level+ Correct Factor

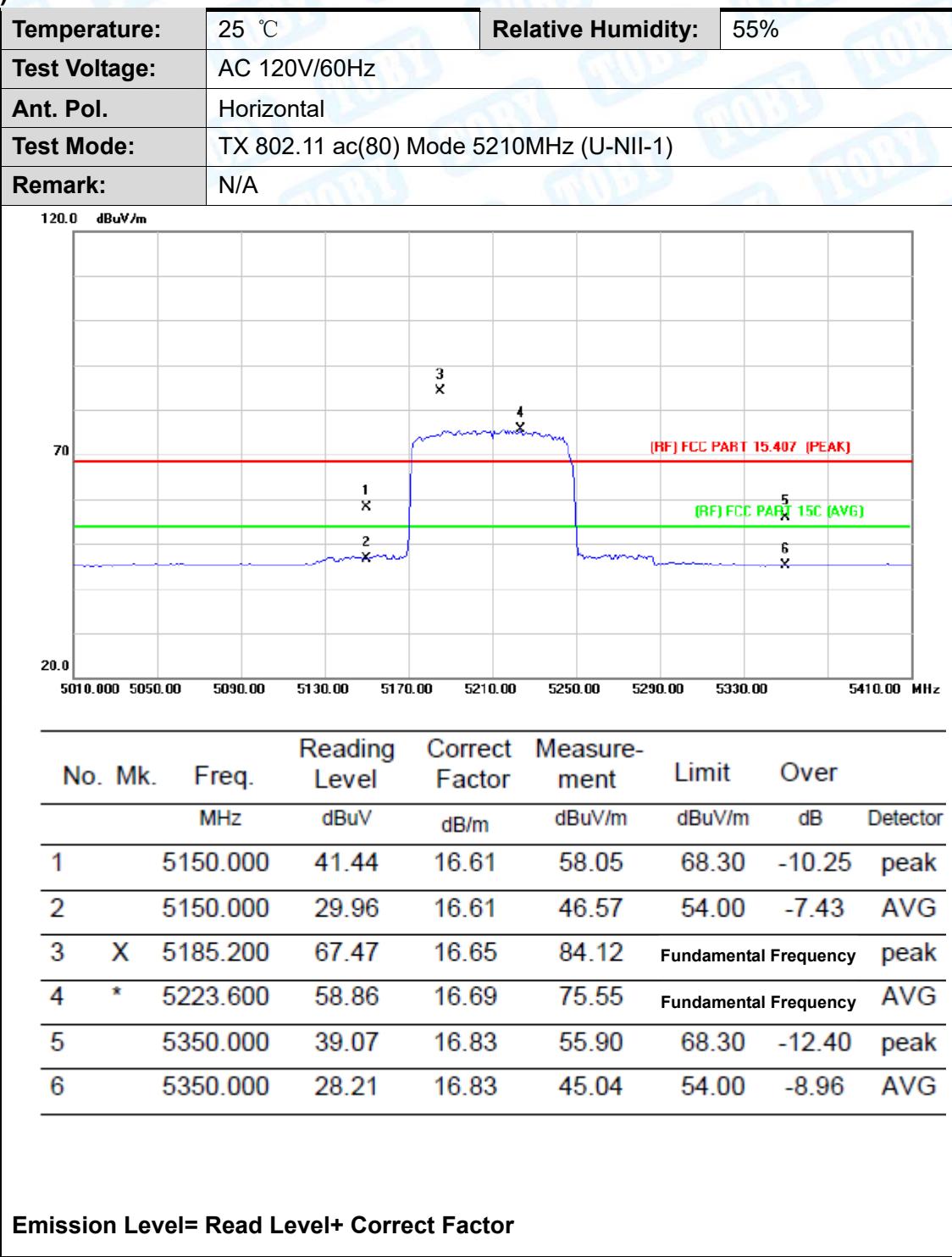
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 802.11ac(VHT40) Mode 5230 MHz (U-NII-1)		
Remark:	TX 802.11ac(VHT40) Mode 5190~5230 MHz (U-NII-1) CH High		



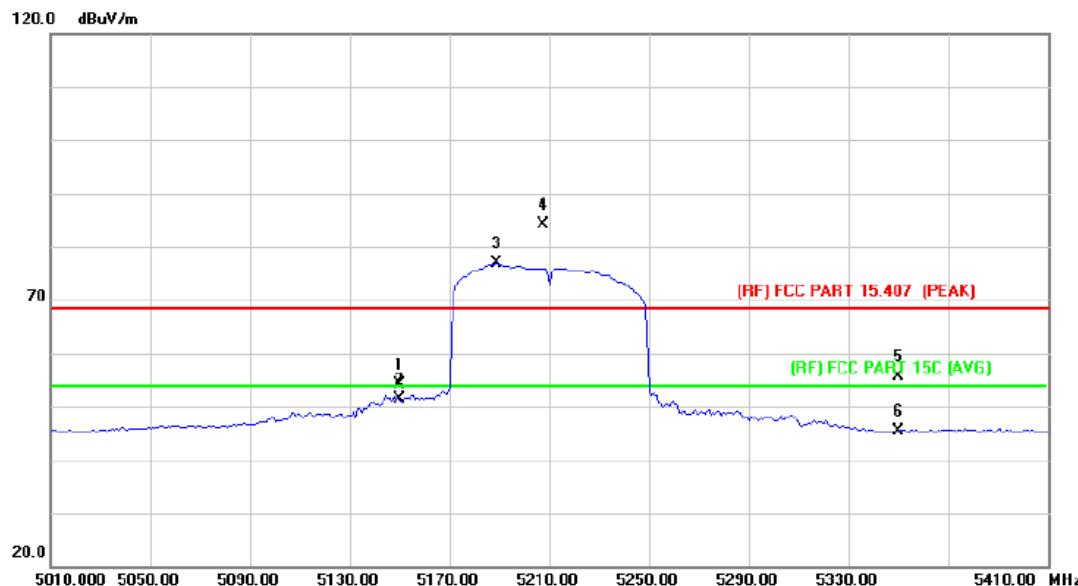
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dB	Over Detector
1	X	5224.400	71.43	16.69	88.12	68.30	19.82 peak
2	*	5227.200	64.32	16.70	81.02	Fundamental Frequency	AVG
3		5350.000	40.65	16.83	57.48	Fundamental Frequency	peak
4		5350.000	29.13	16.83	45.96	54.00	-8.04 AVG

Emission Level= Read Level+ Correct Factor

ac(80)



Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 802.11 ac(80) Mode 5210MHz (U-NII-1)		
Remark:	N/A		

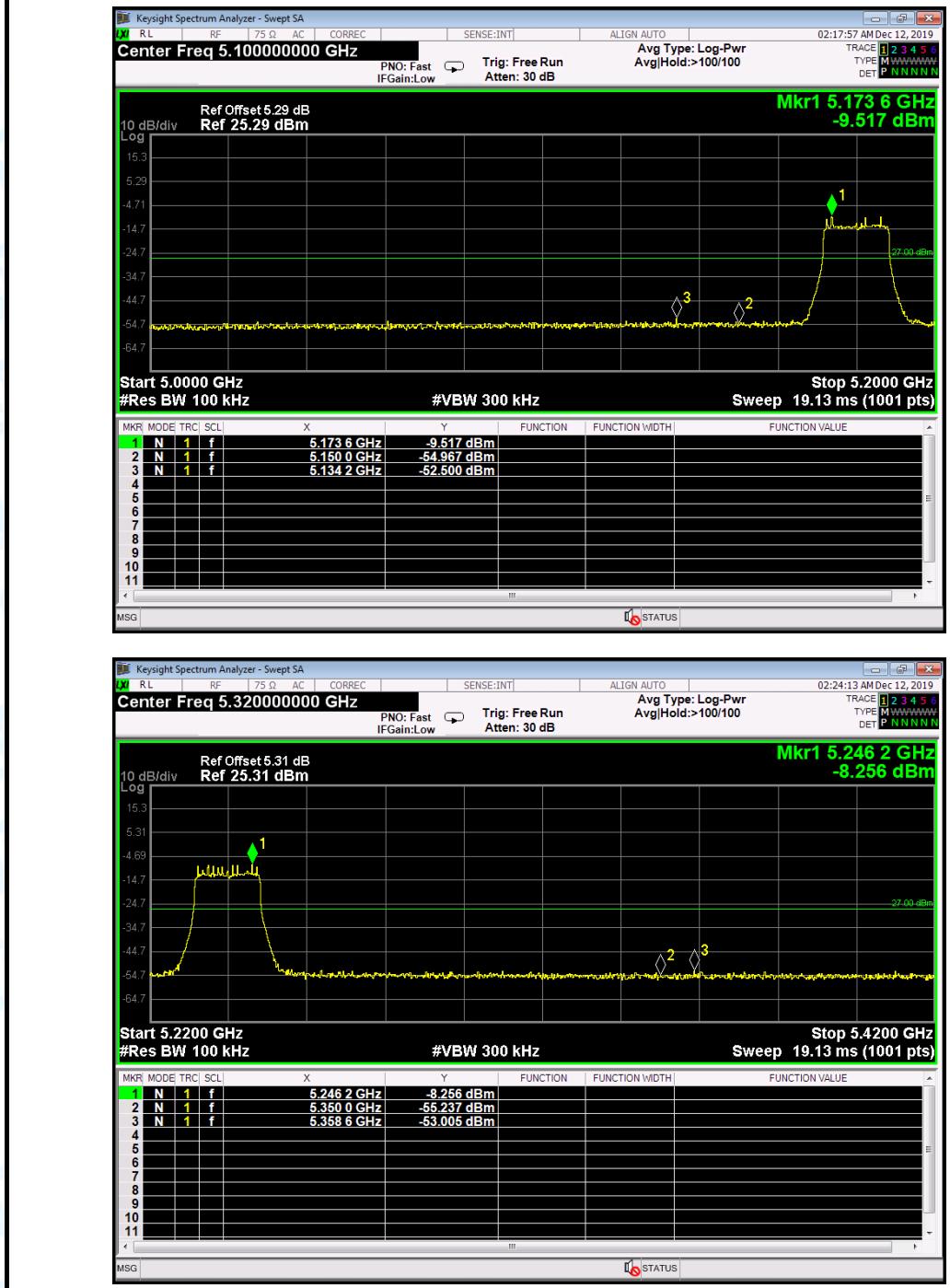


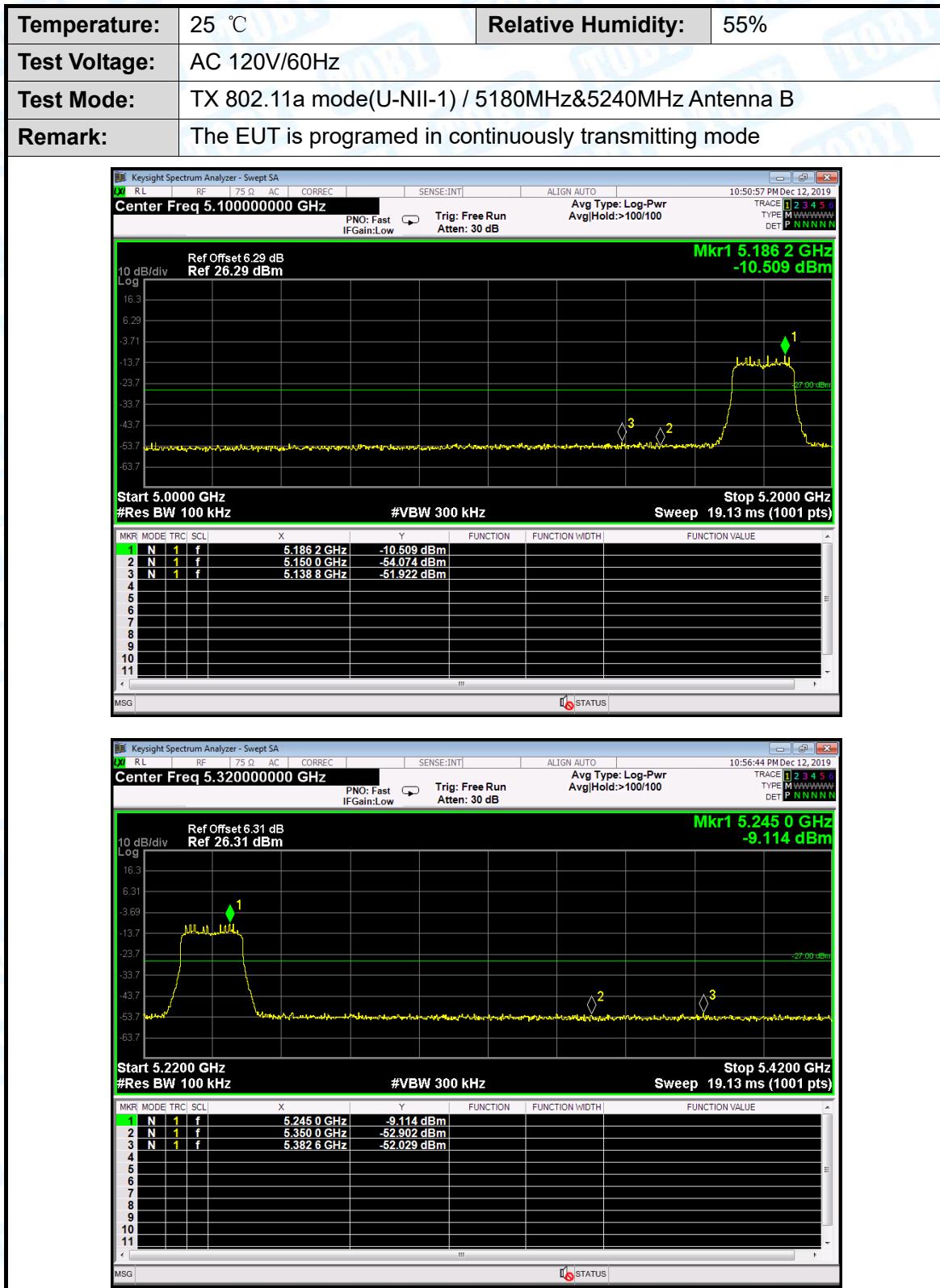
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dB	Over Detector
1		5150.000	37.52	16.61	54.13	68.30	-14.17 peak
2		5150.000	34.65	16.61	51.26	54.00	-2.74 AVG
3	*	5189.200	60.23	16.65	76.88	Fundamental Frequency	AVG
4	X	5207.600	67.54	16.67	84.21	Fundamental Frequency	peak
5		5350.000	38.88	16.83	55.71	68.30	-12.59 peak
6		5350.000	28.47	16.83	45.30	54.00	-8.70 AVG

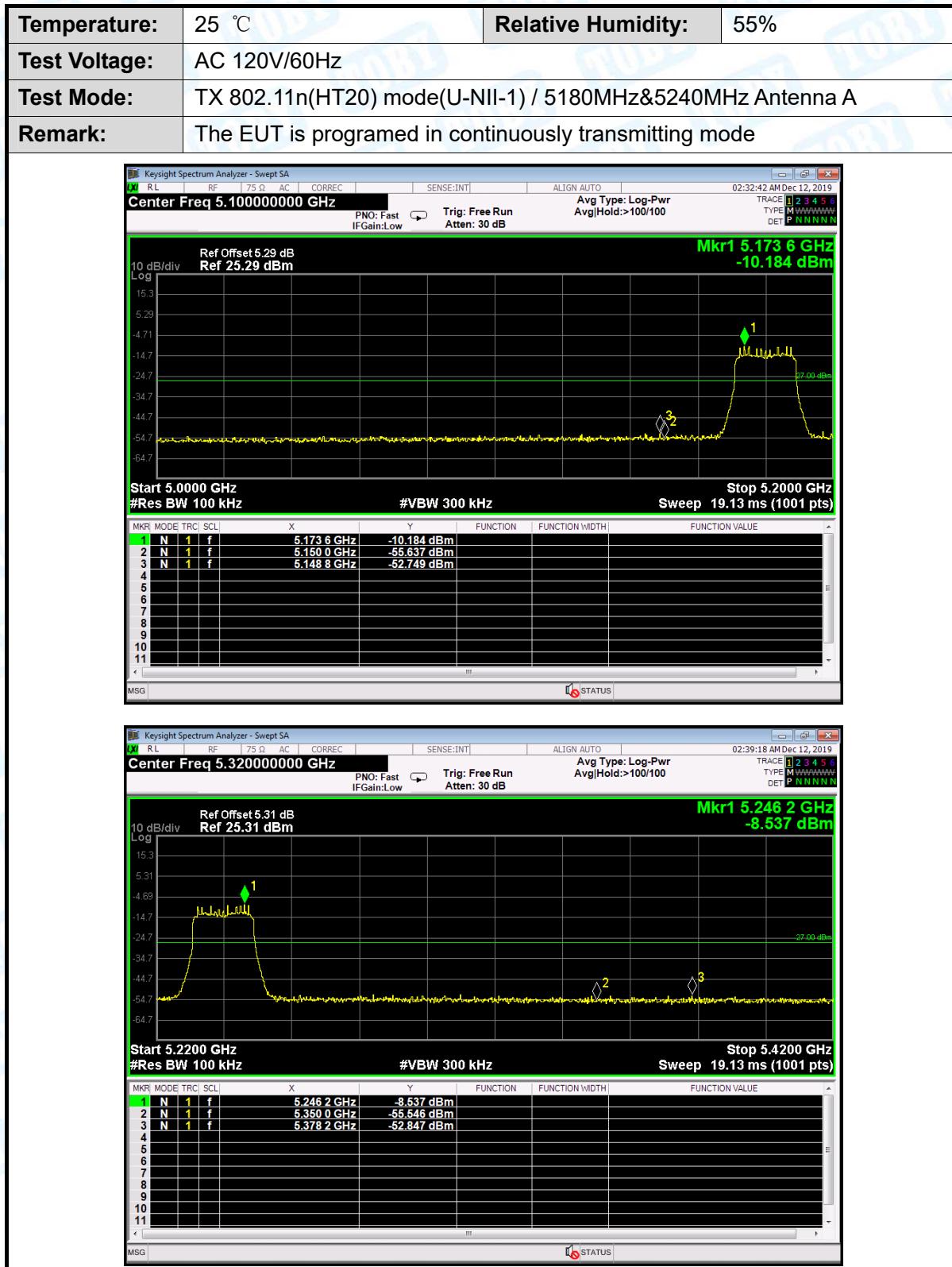
Emission Level= Read Level+ Correct Factor

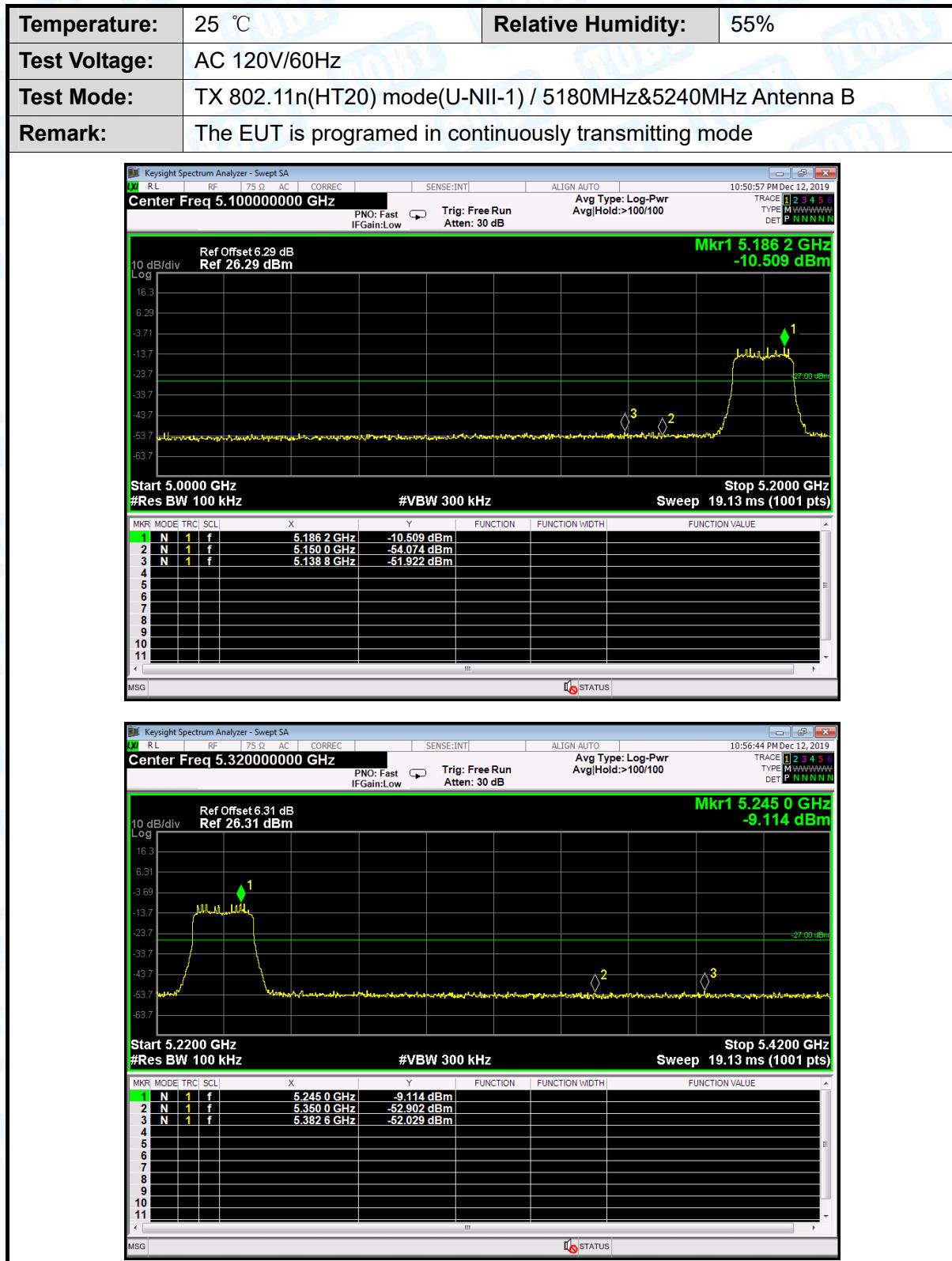
(1) Conducted Test

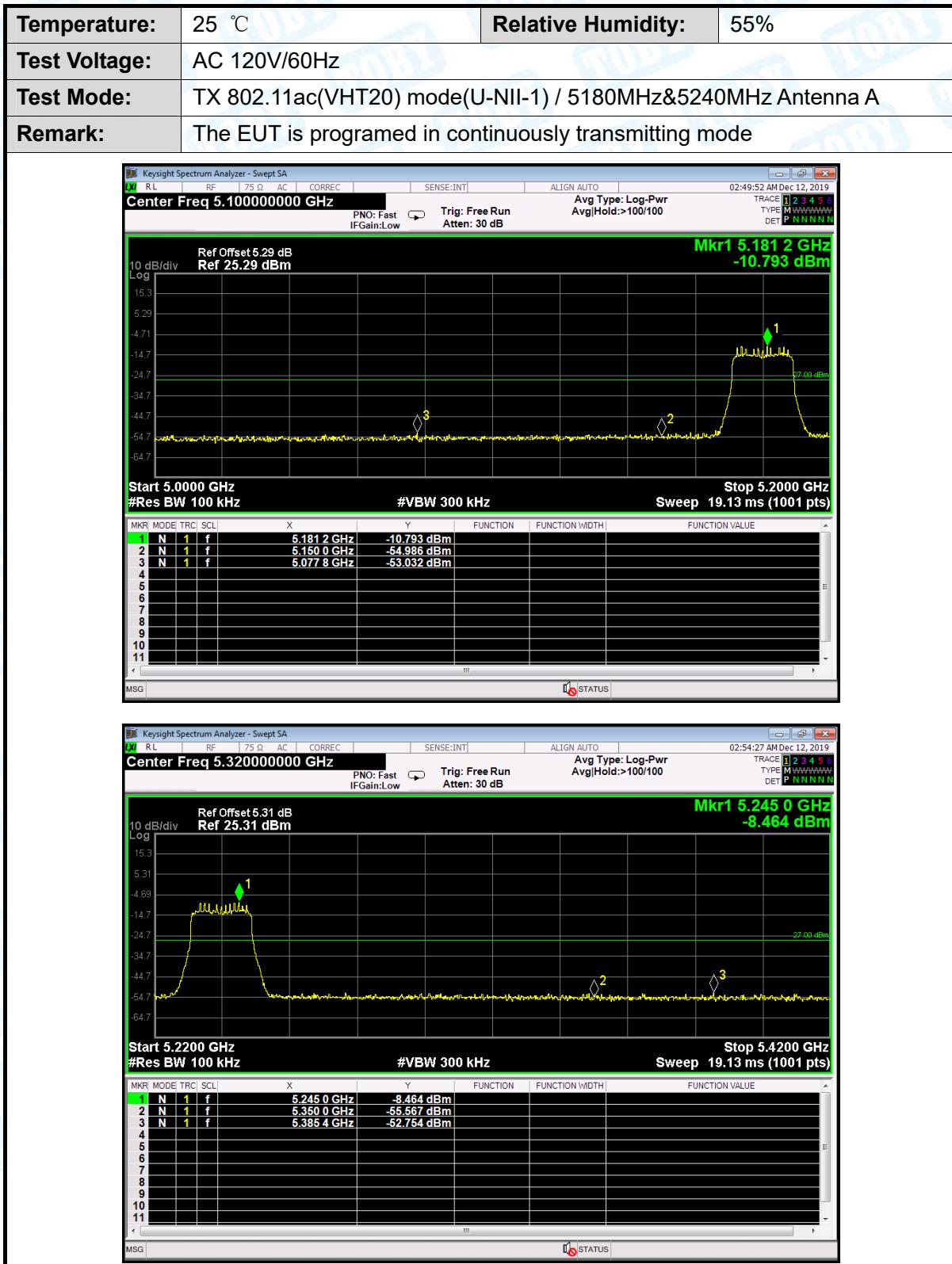
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Test Mode:	TX 802.11a mode(U-NII-1) / 5180MHz&5240MHz Antenna A		
Remark:	The EUT is programed in continuously transmitting mode		

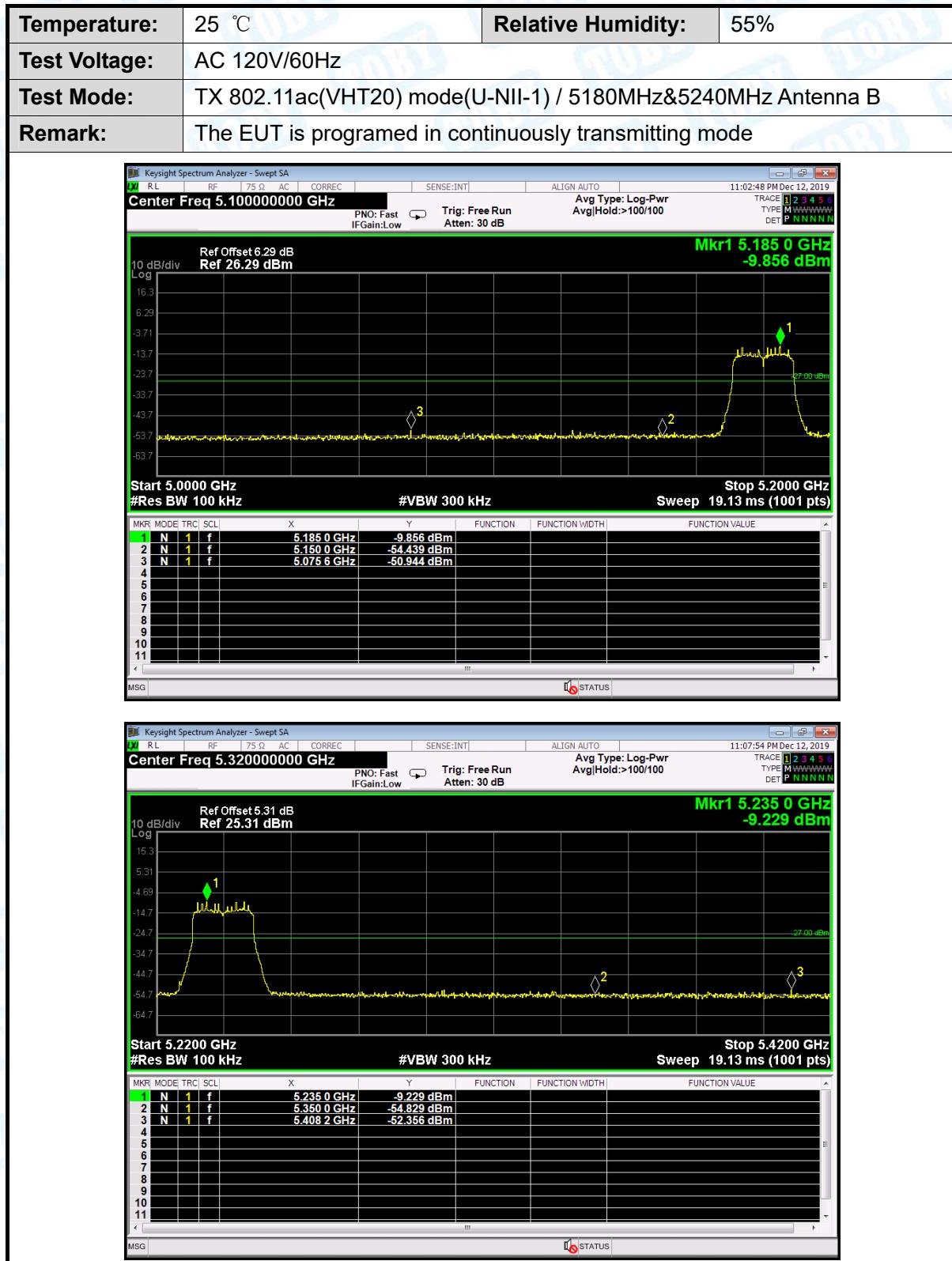


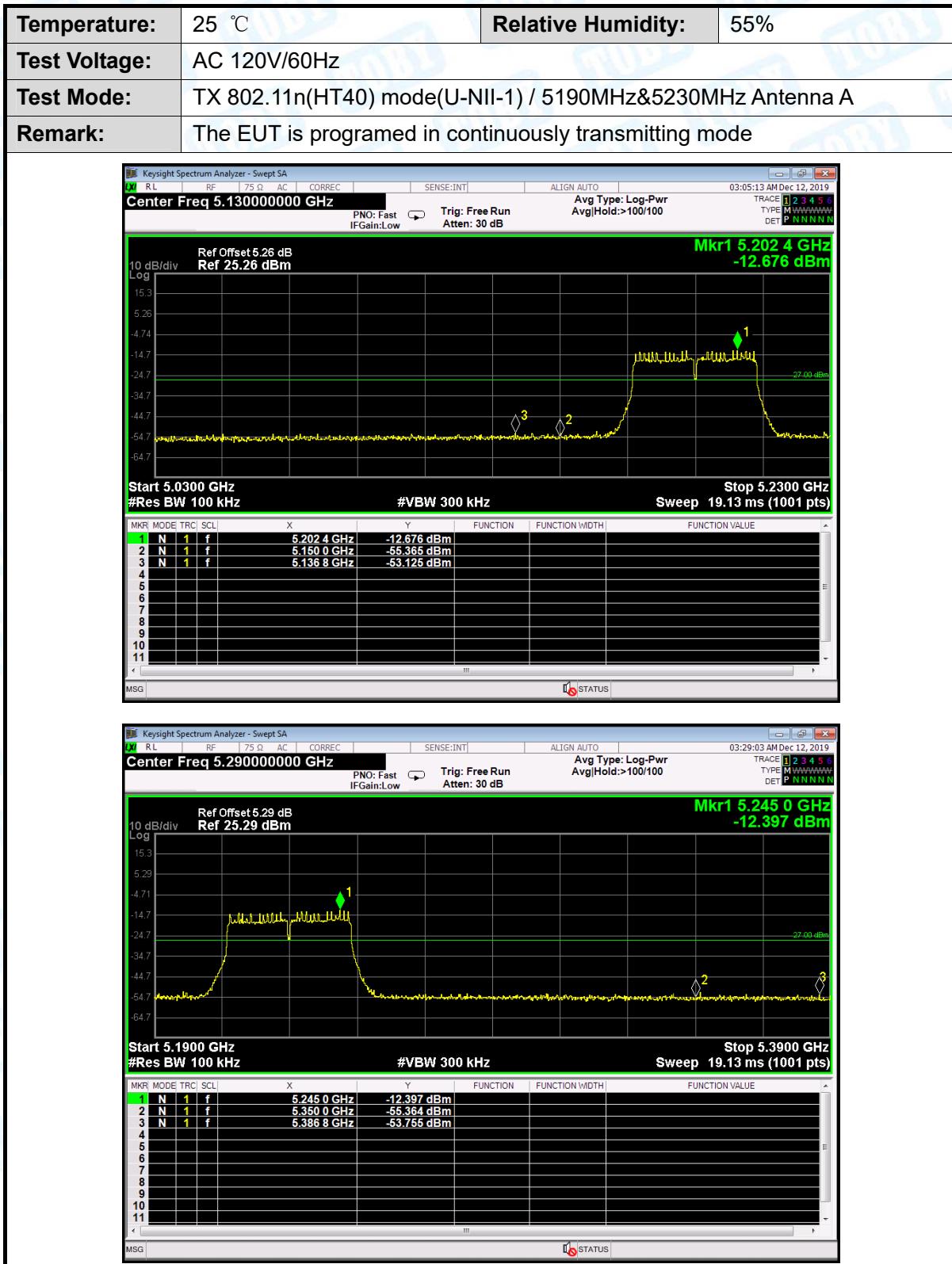


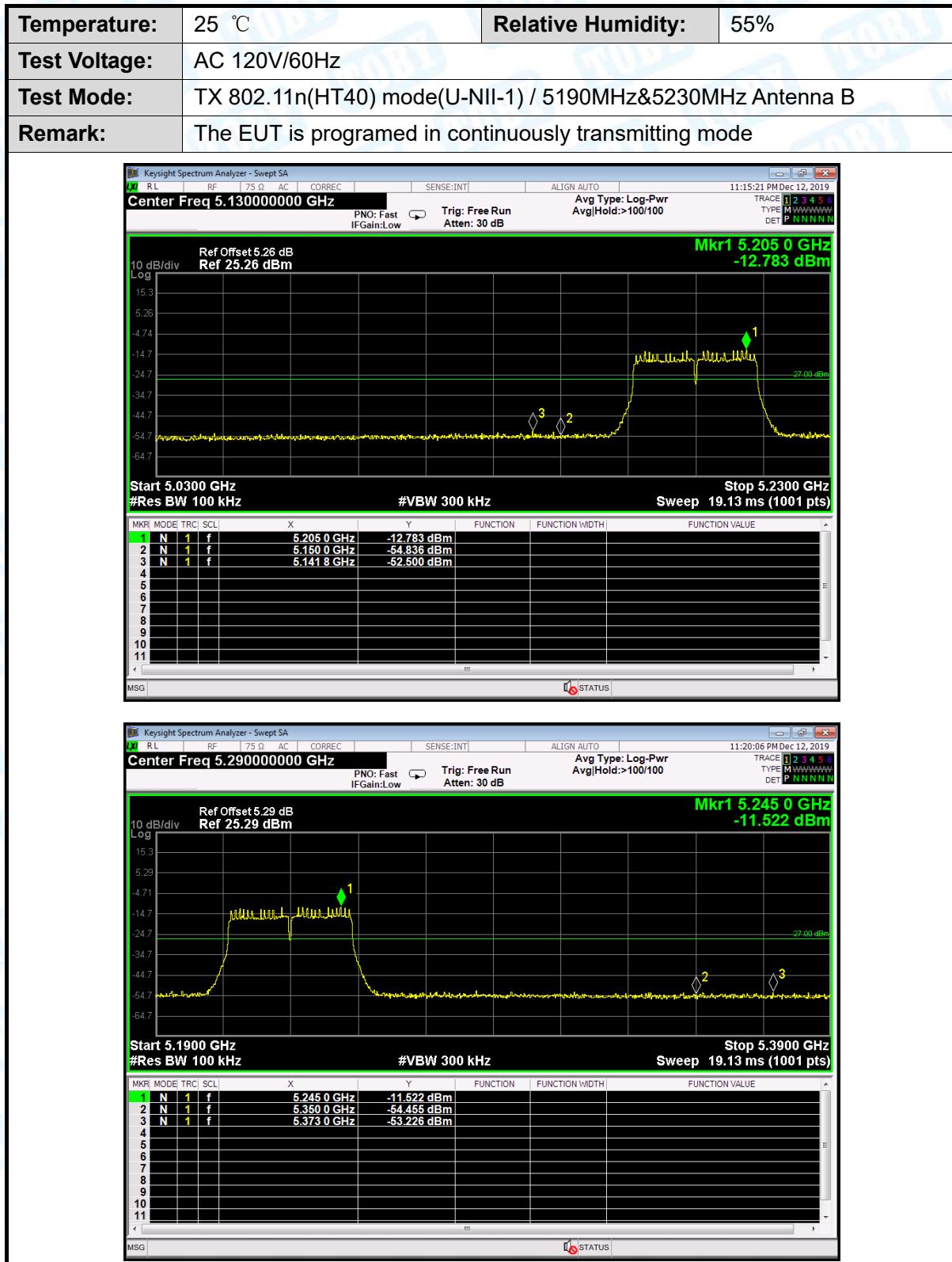


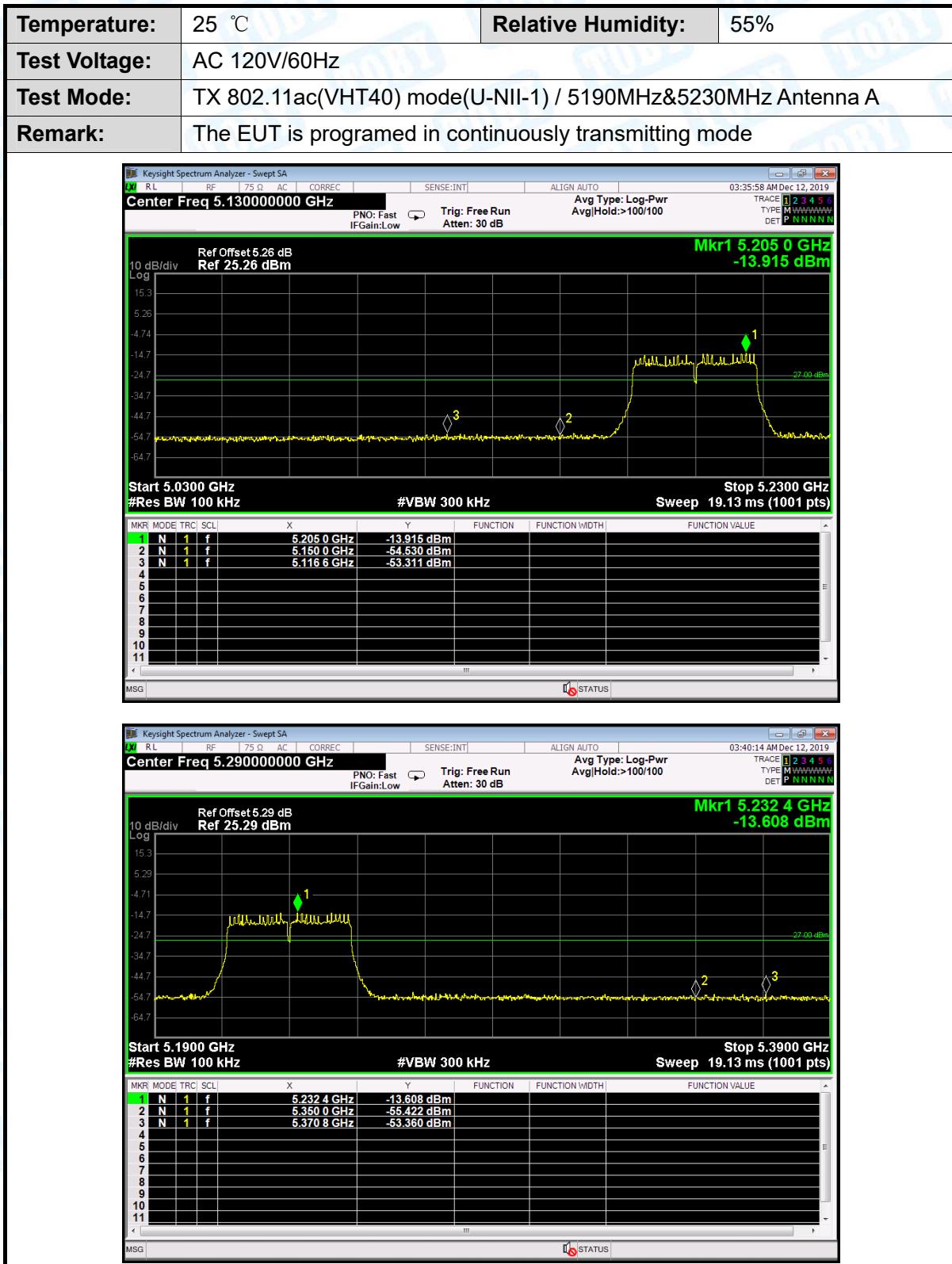


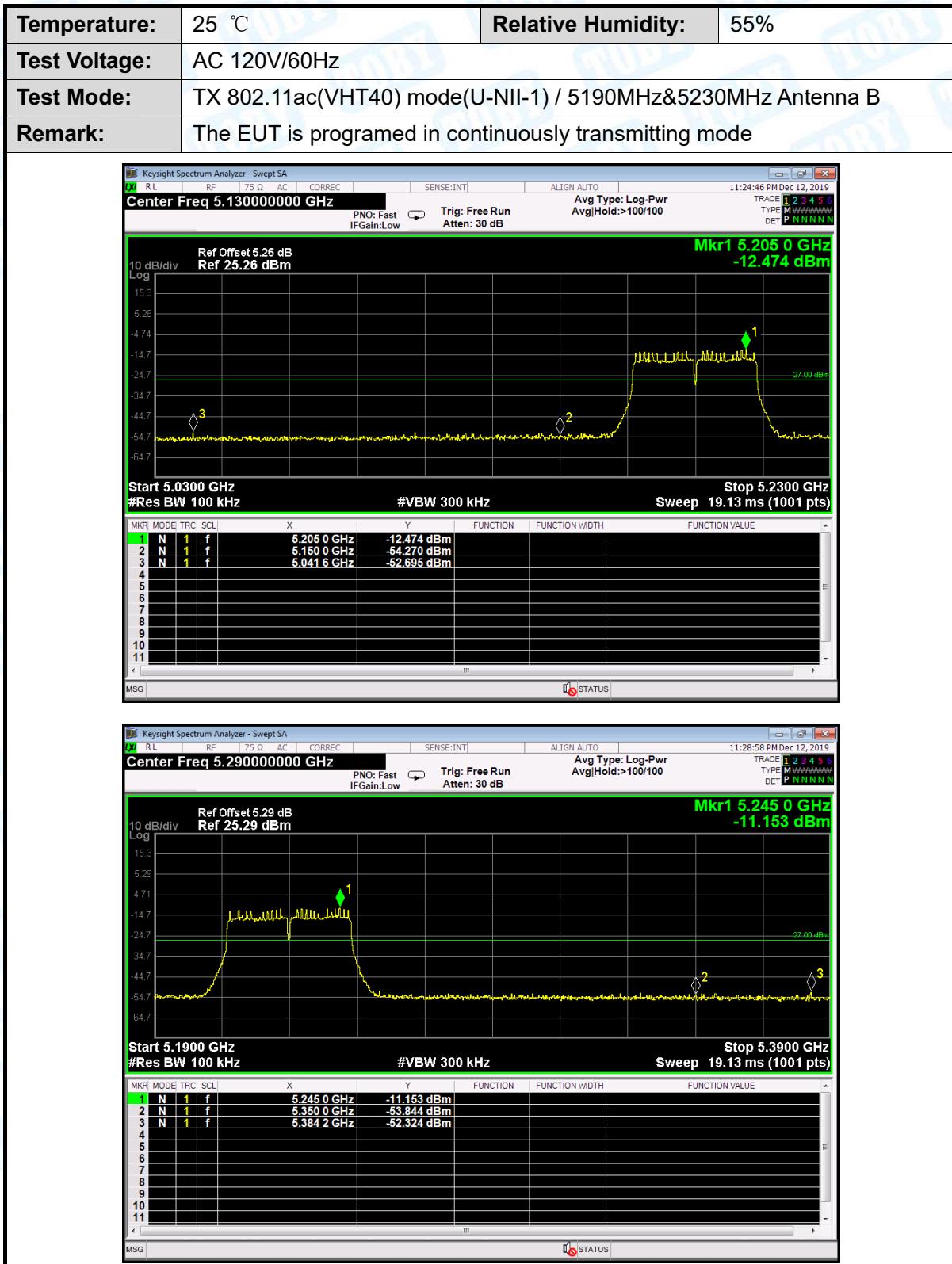


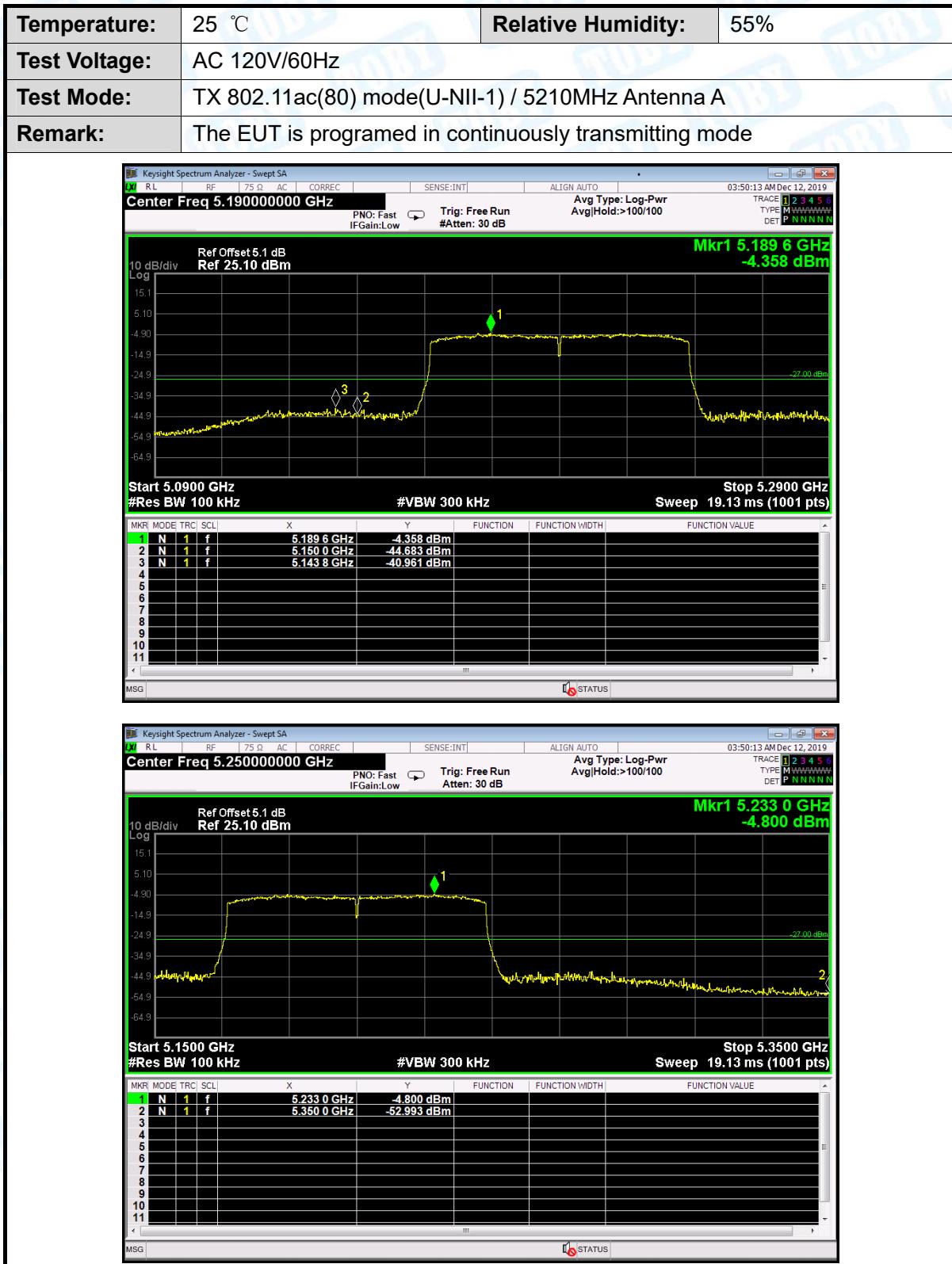


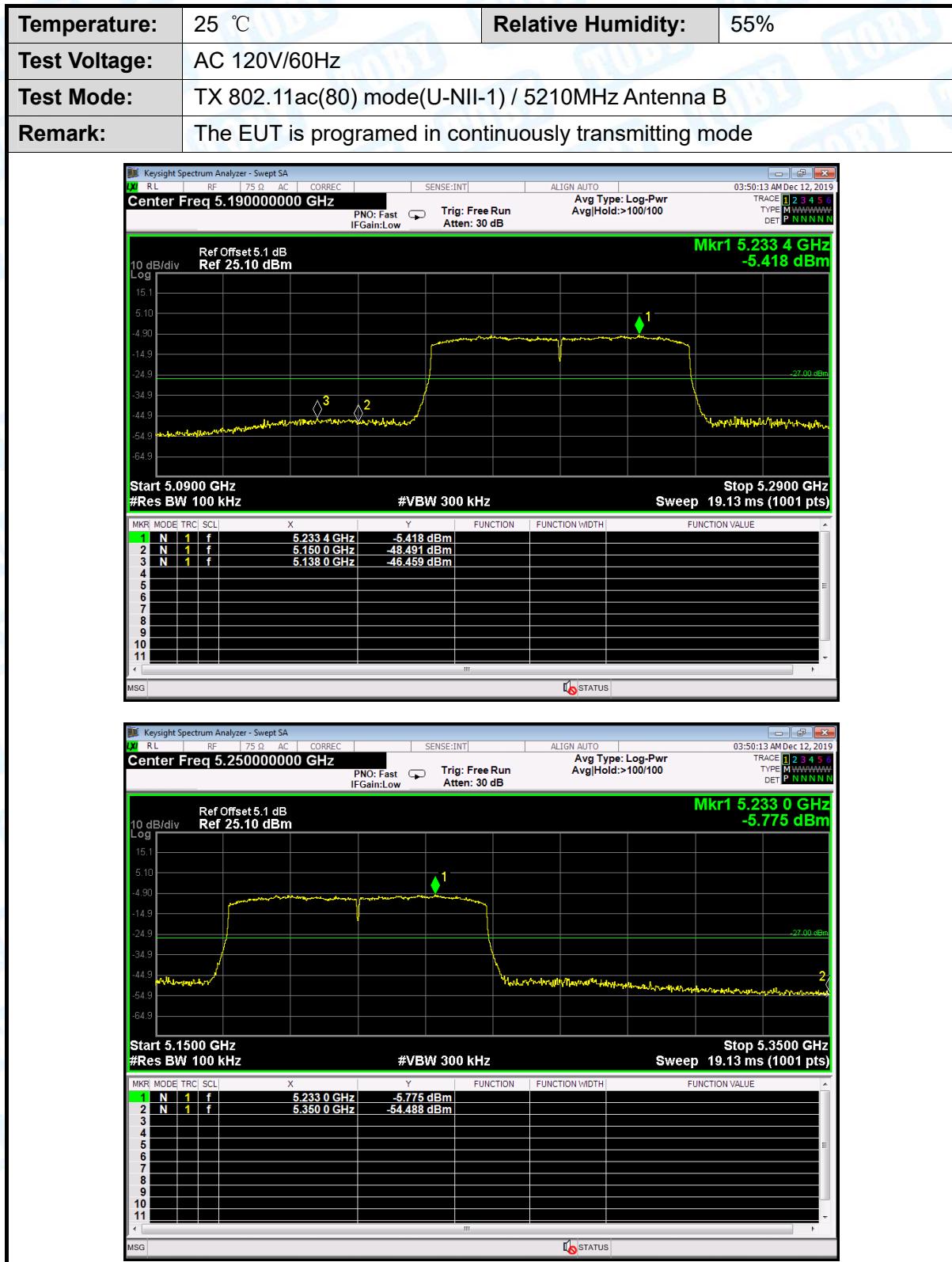




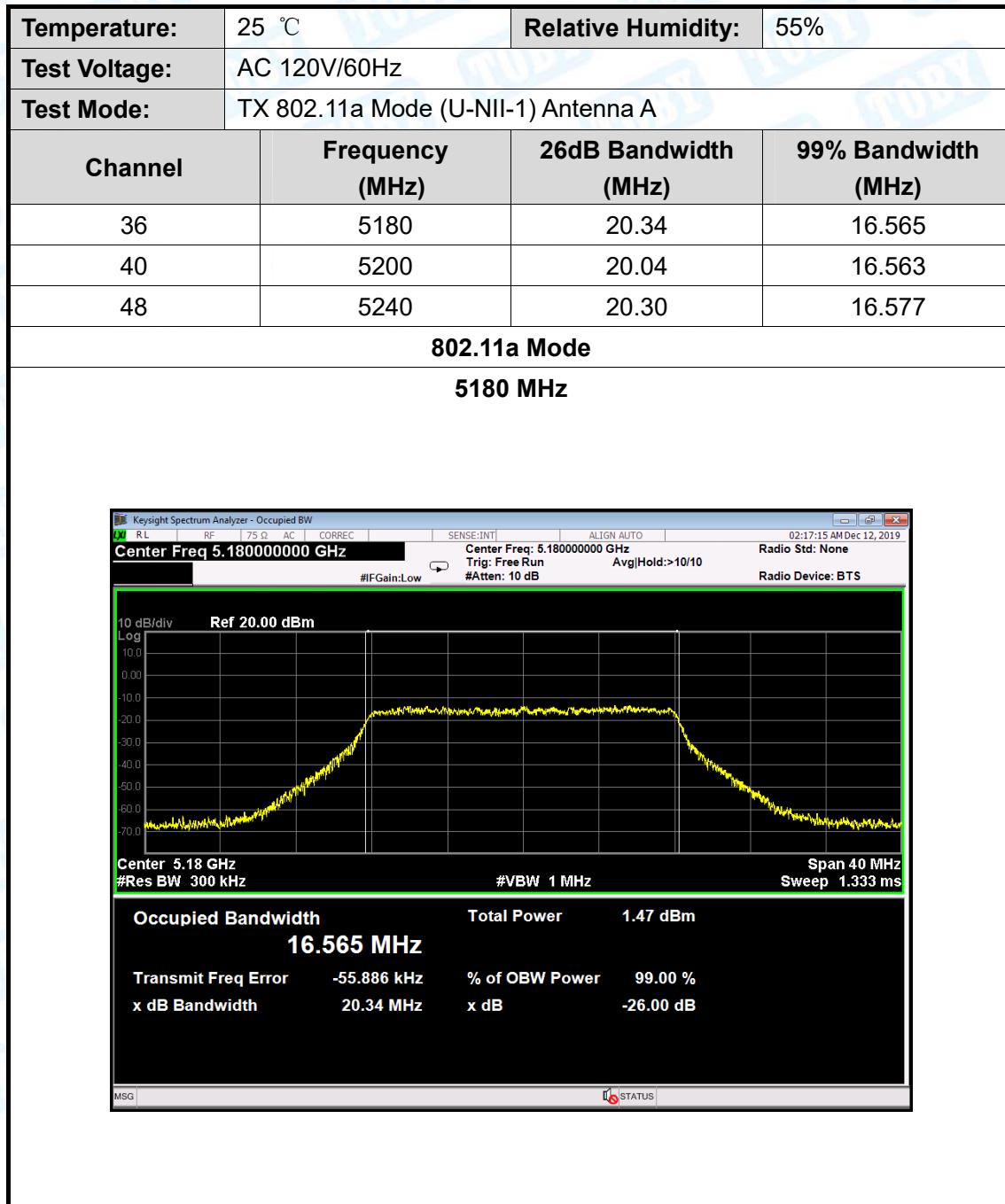


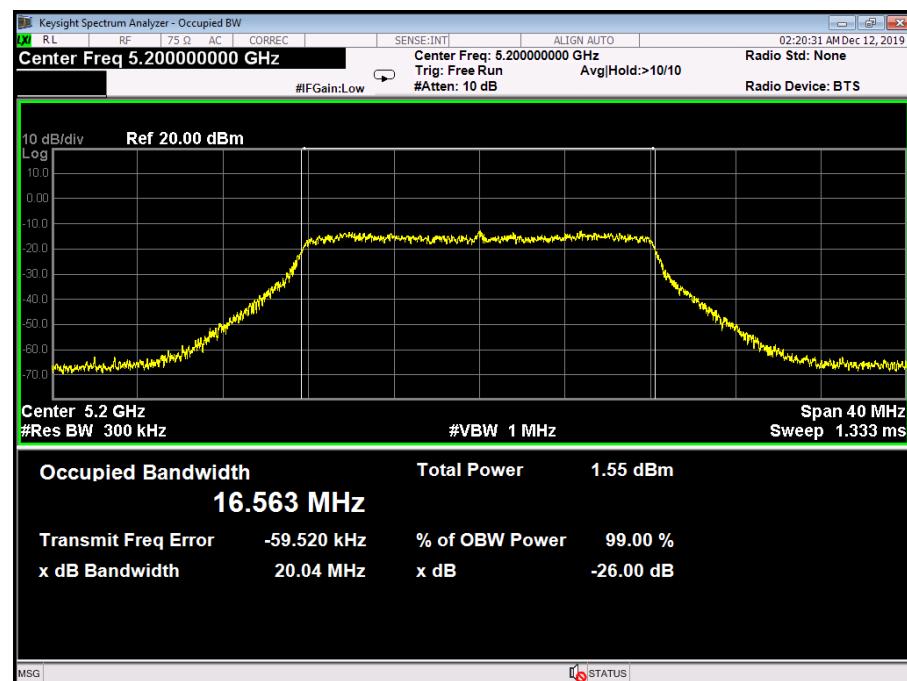
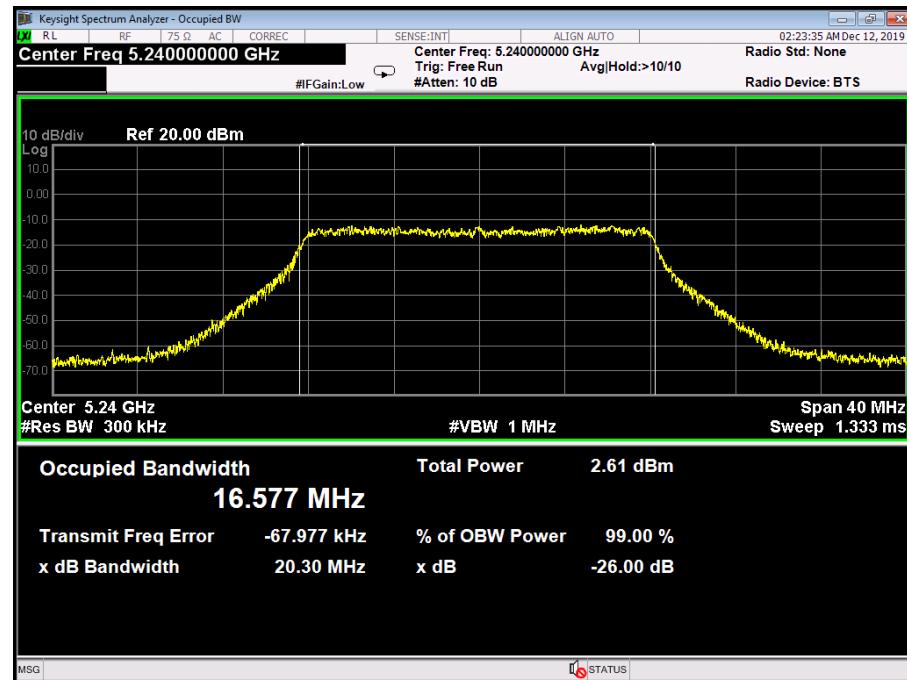


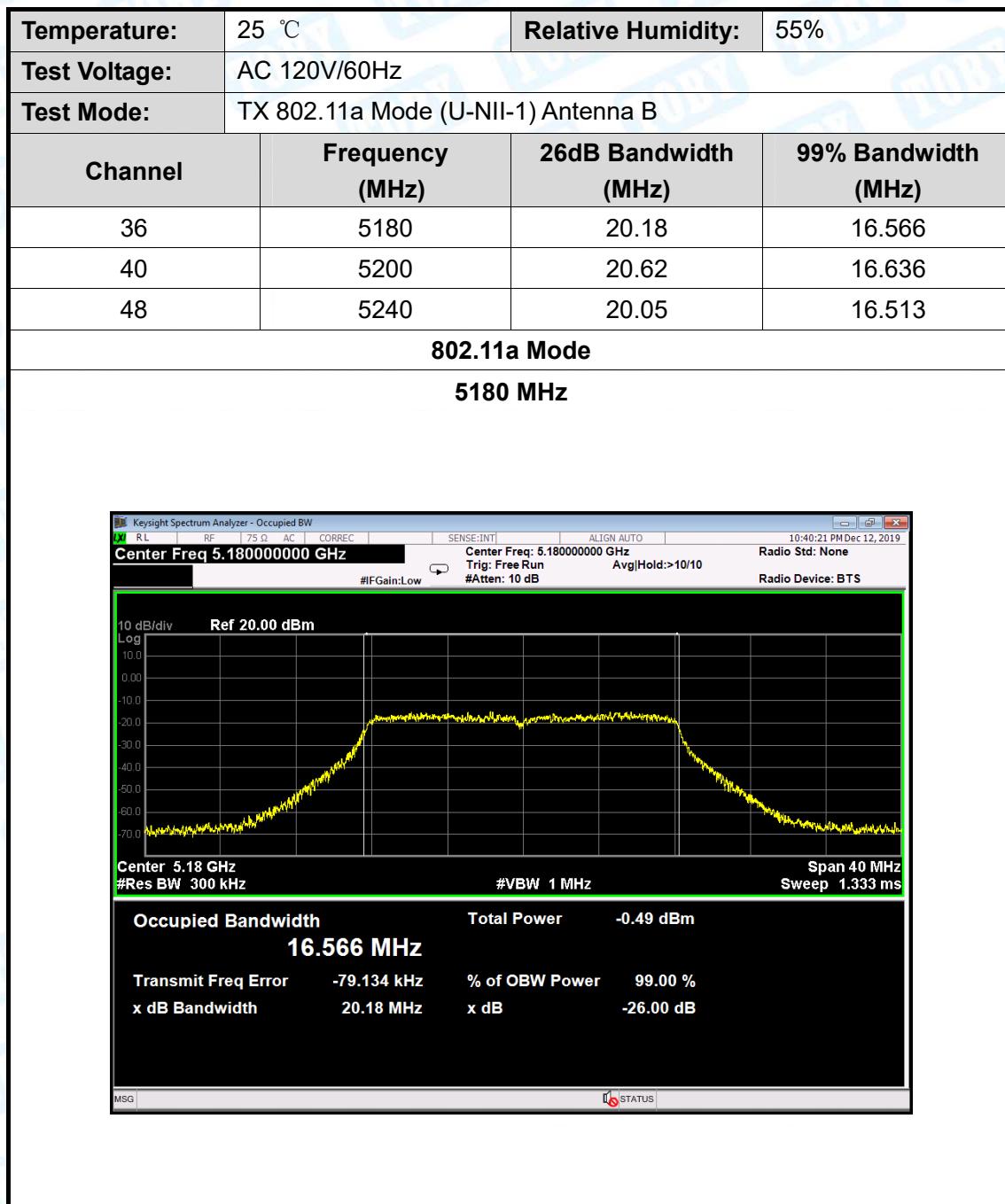


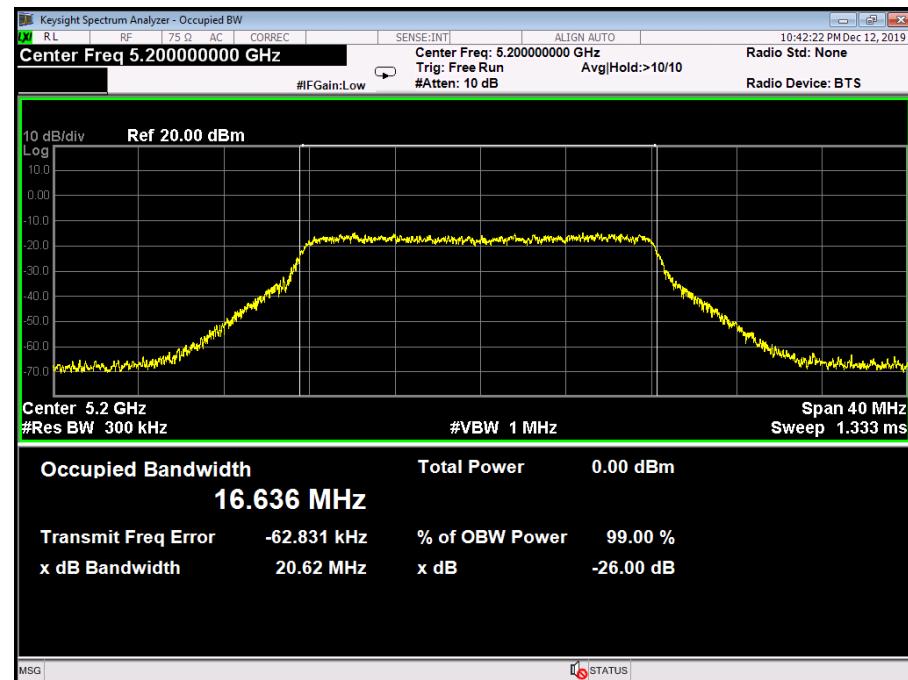
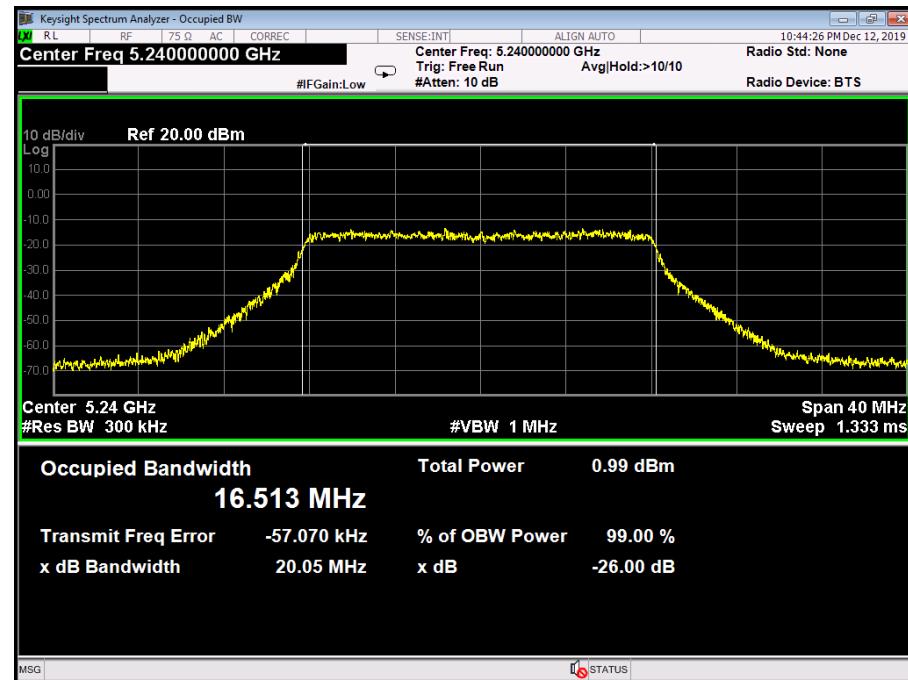


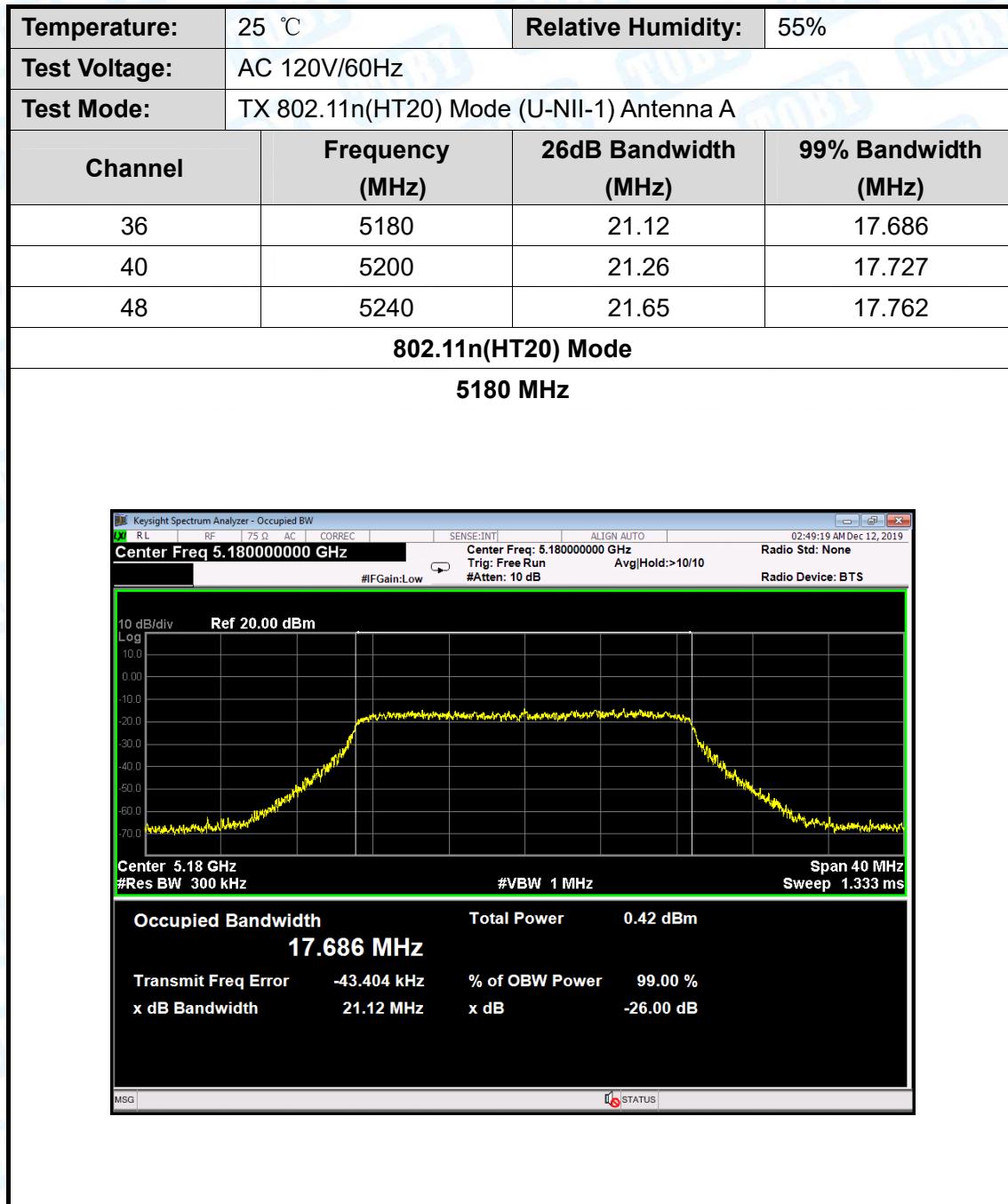
Attachment D-- Bandwidth Test Data

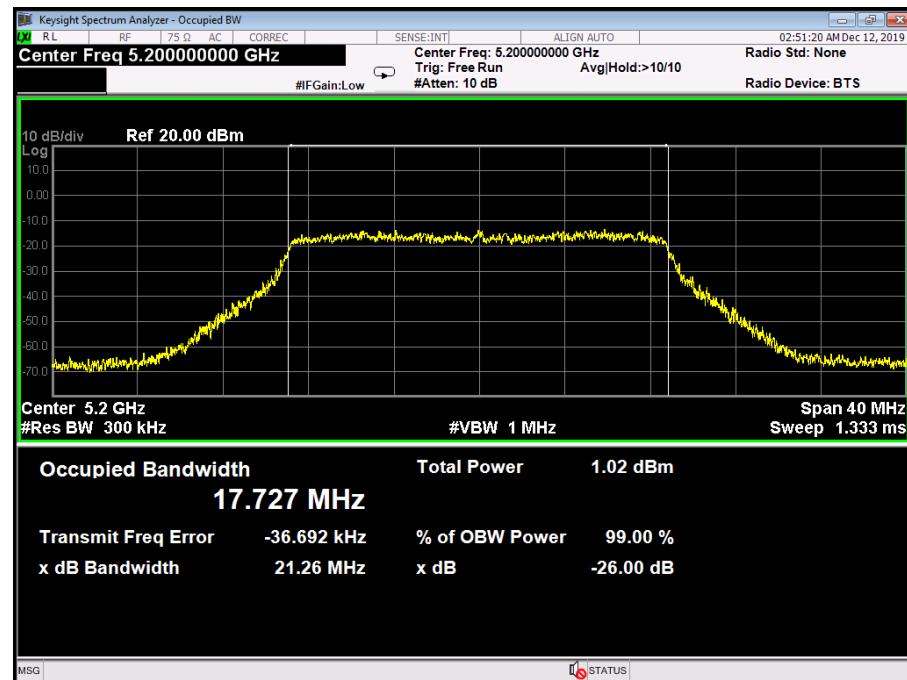
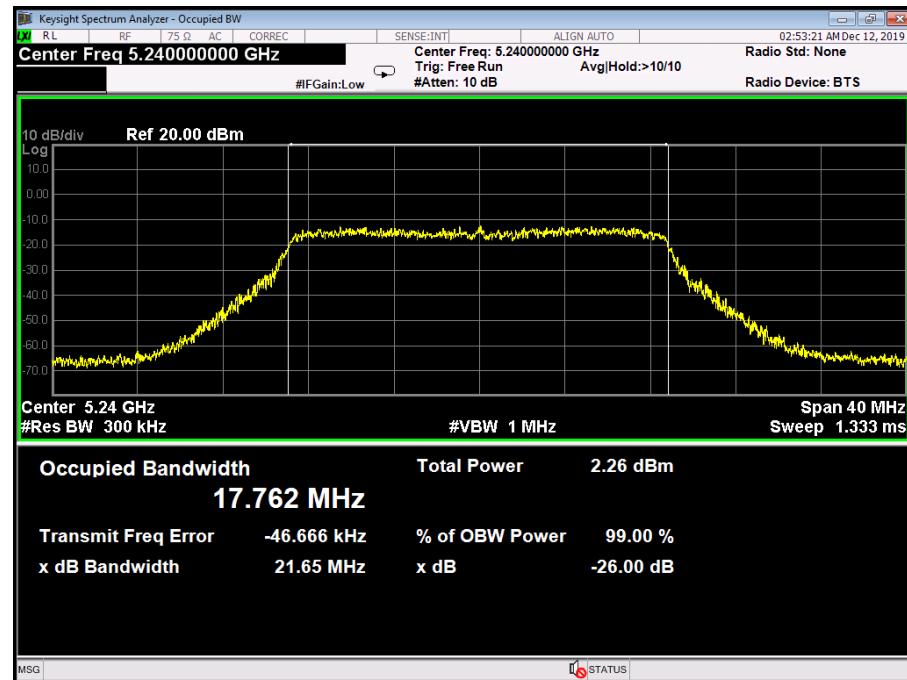


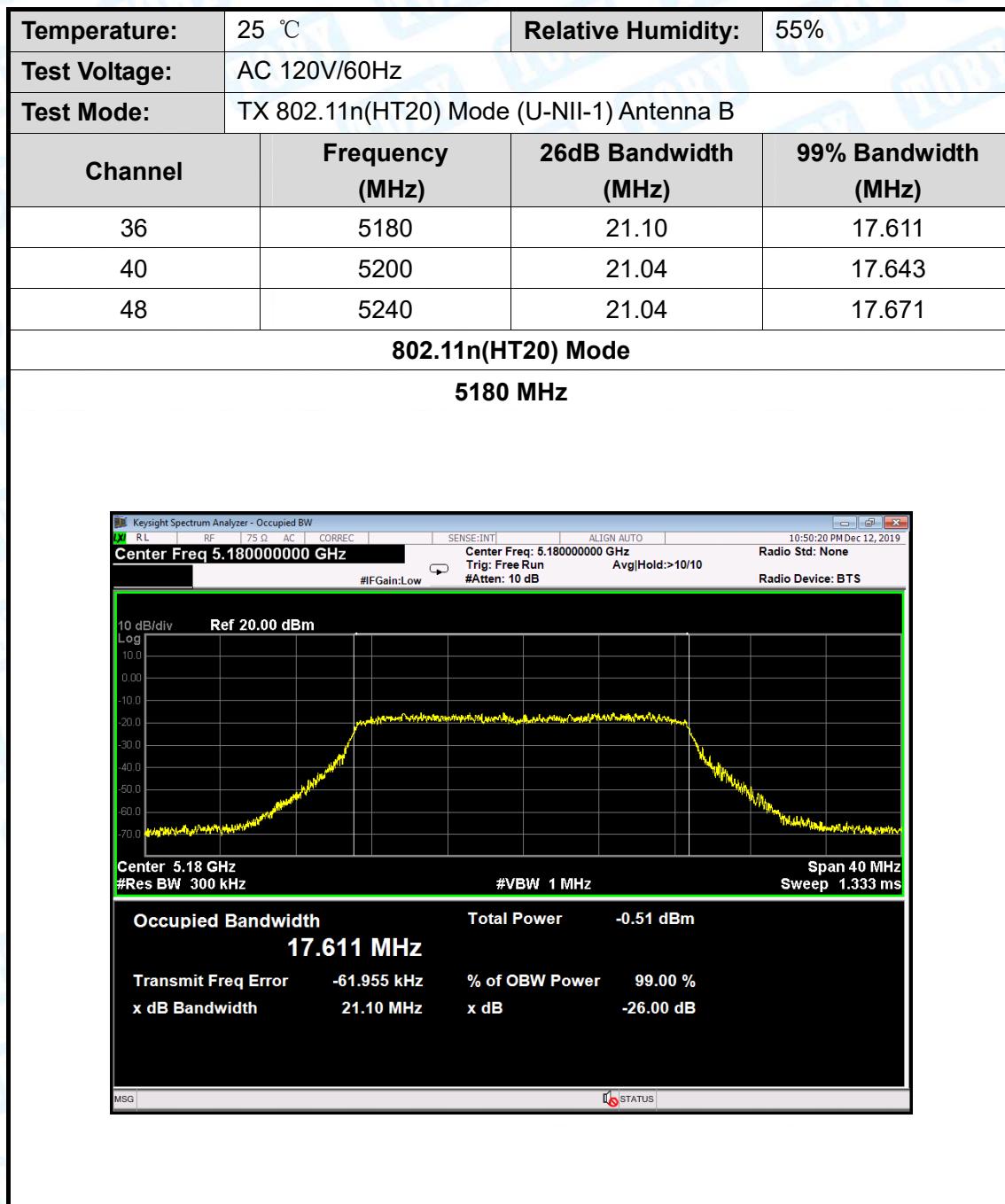
802.11a Mode**5200 MHz****802.11a Mode****5240 MHz**

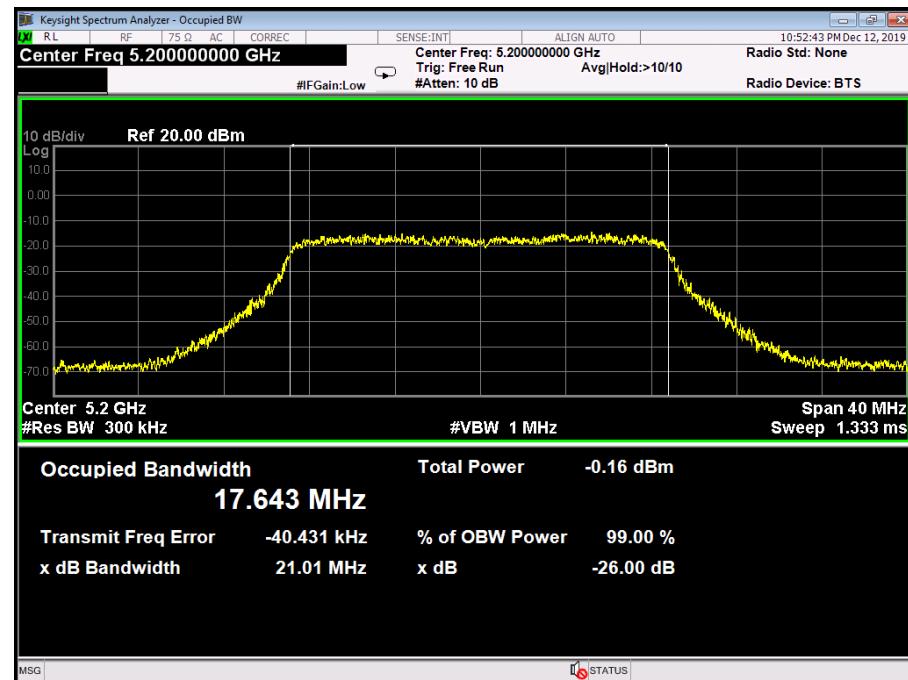
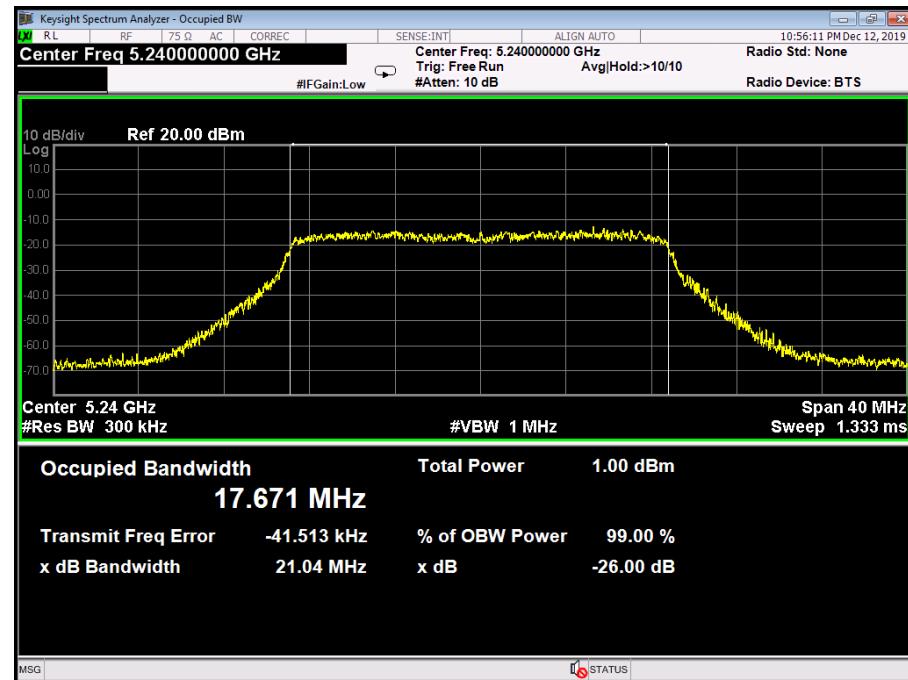


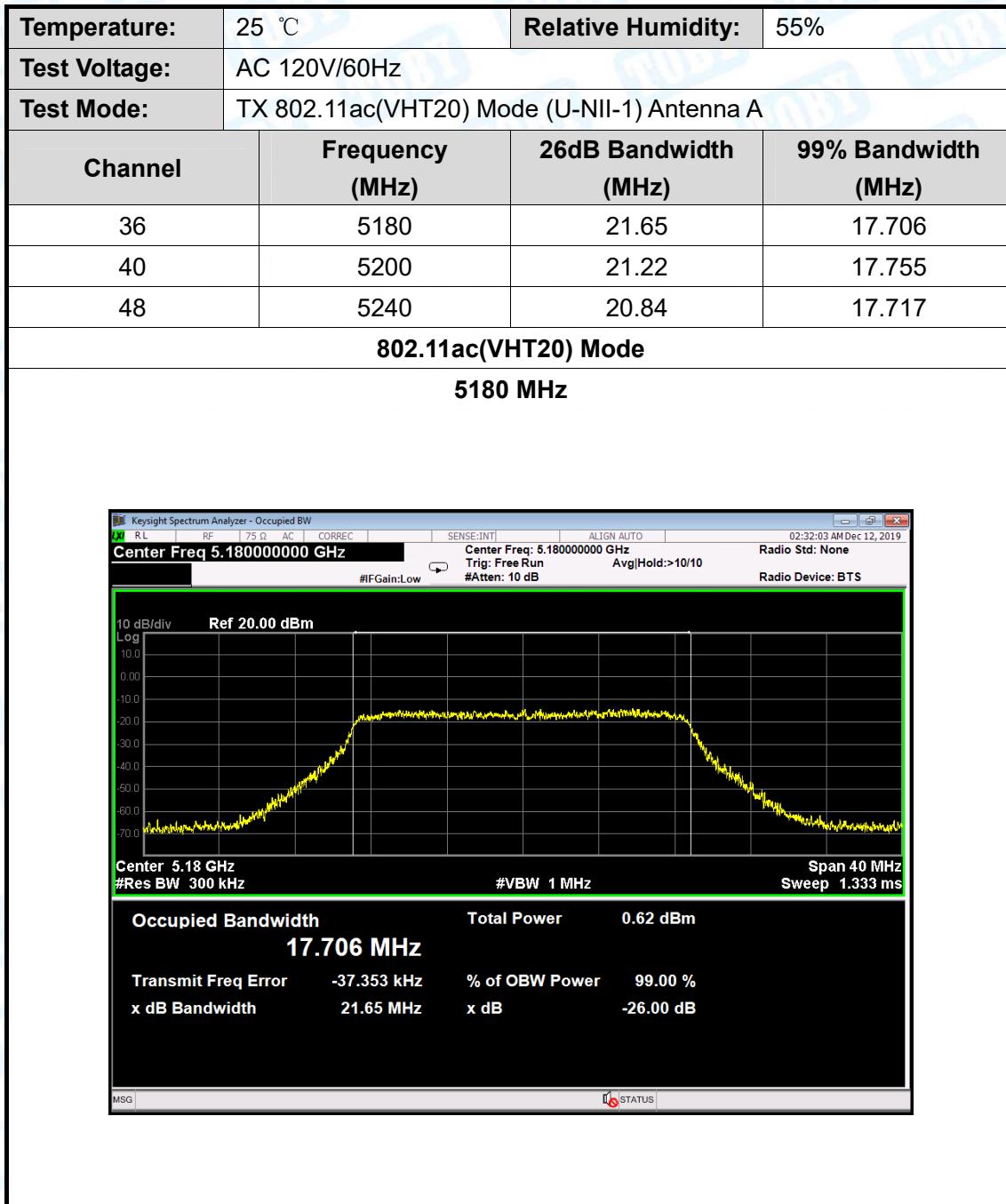
802.11a Mode**5200 MHz****802.11a Mode****5240 MHz**

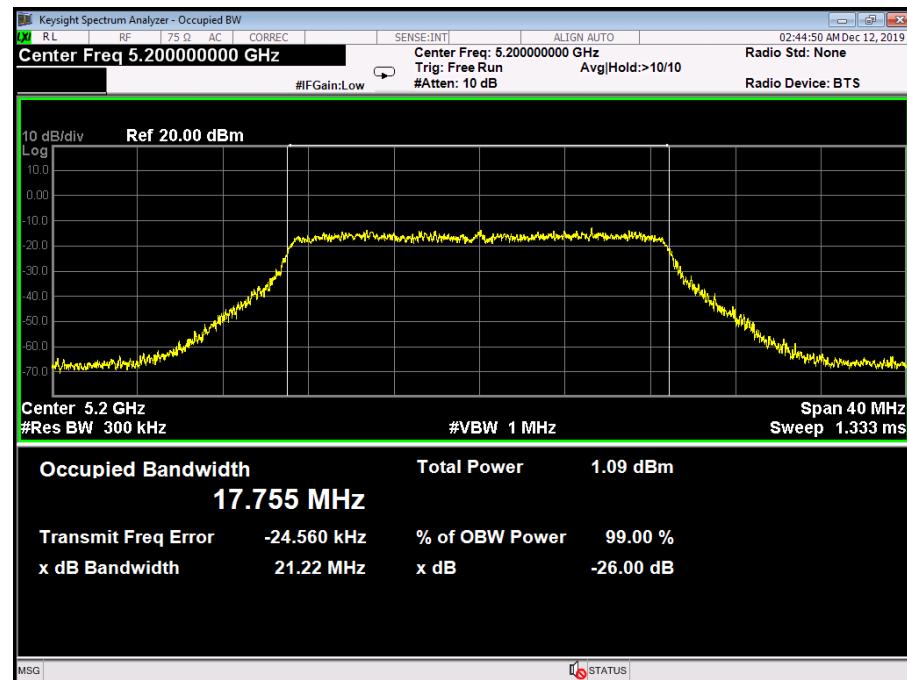
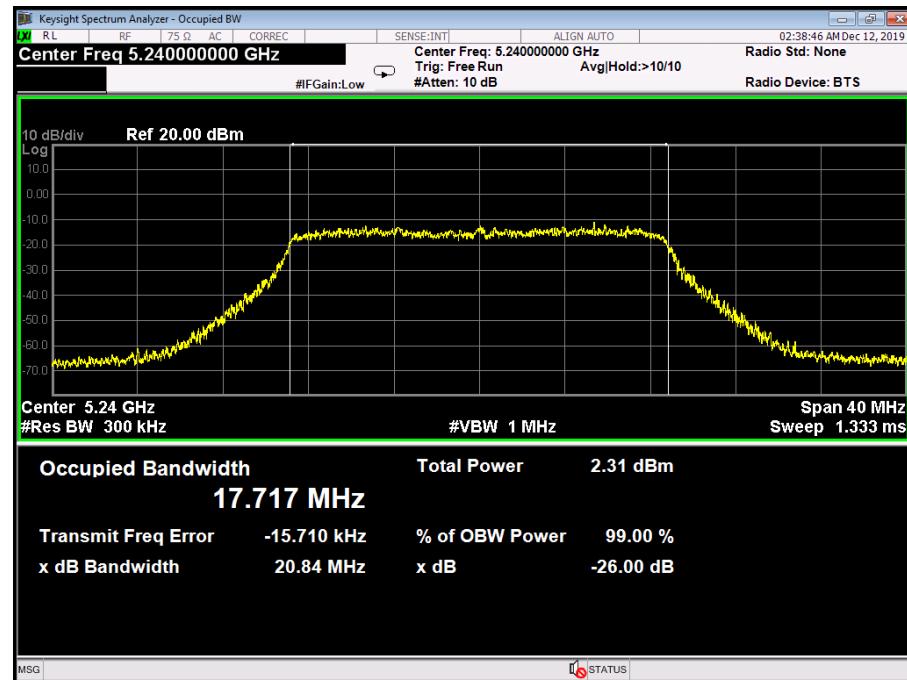


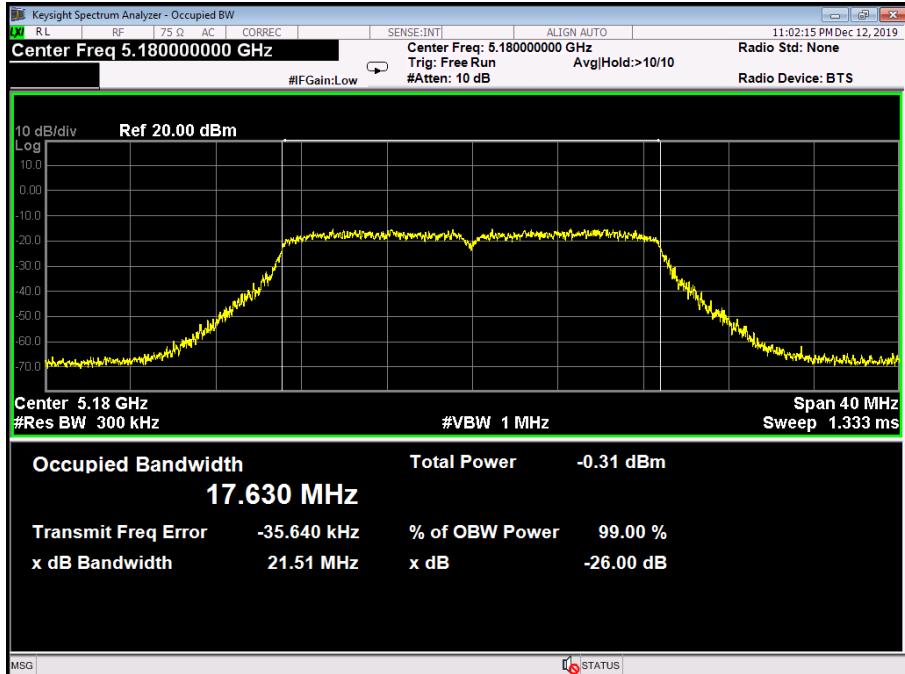
802.11n(HT20) Mode**5200 MHz****802.11n(HT20) Mode****5240 MHz**

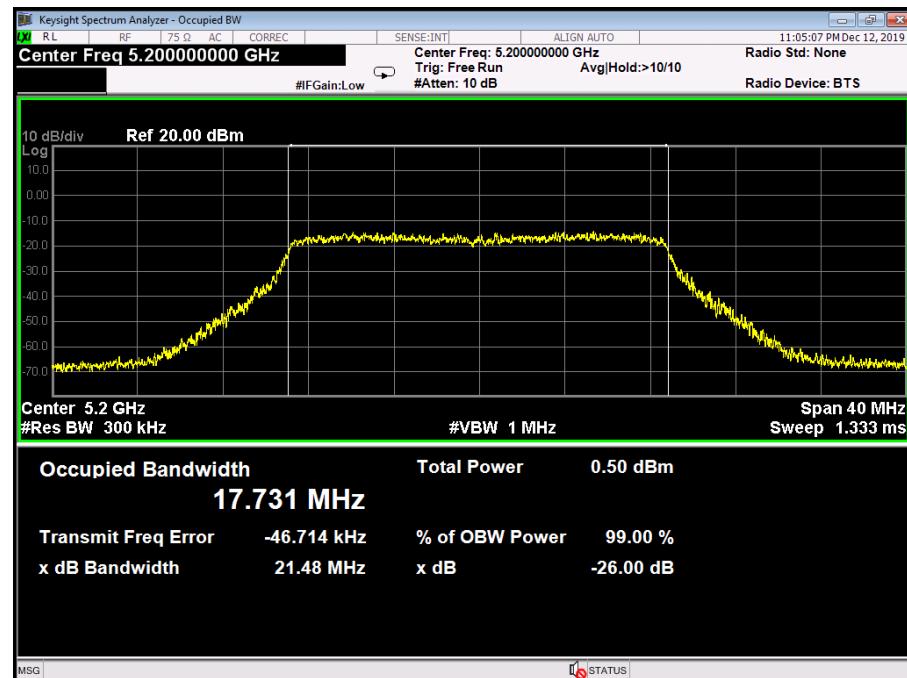
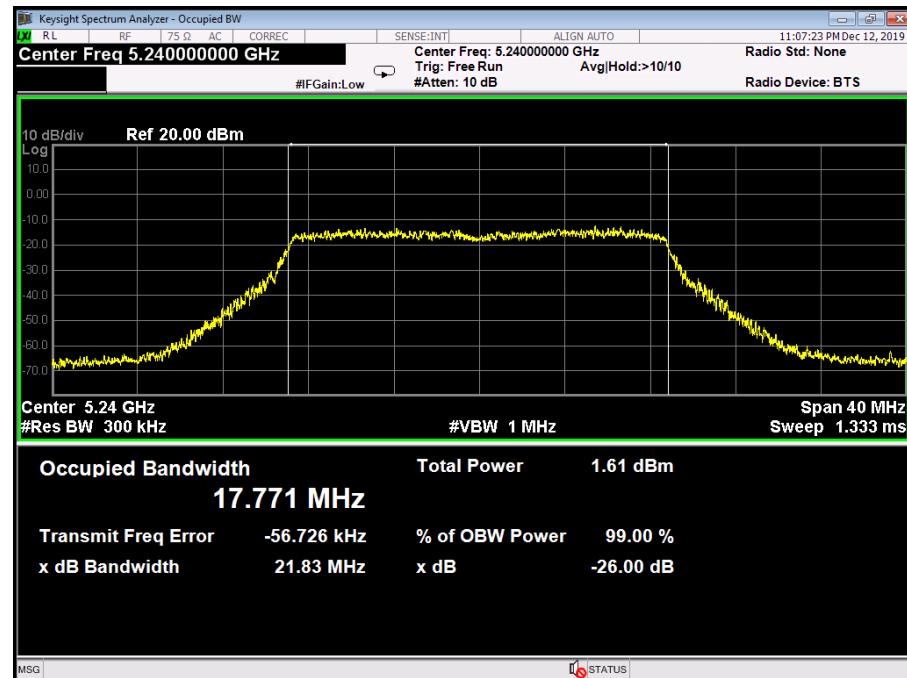


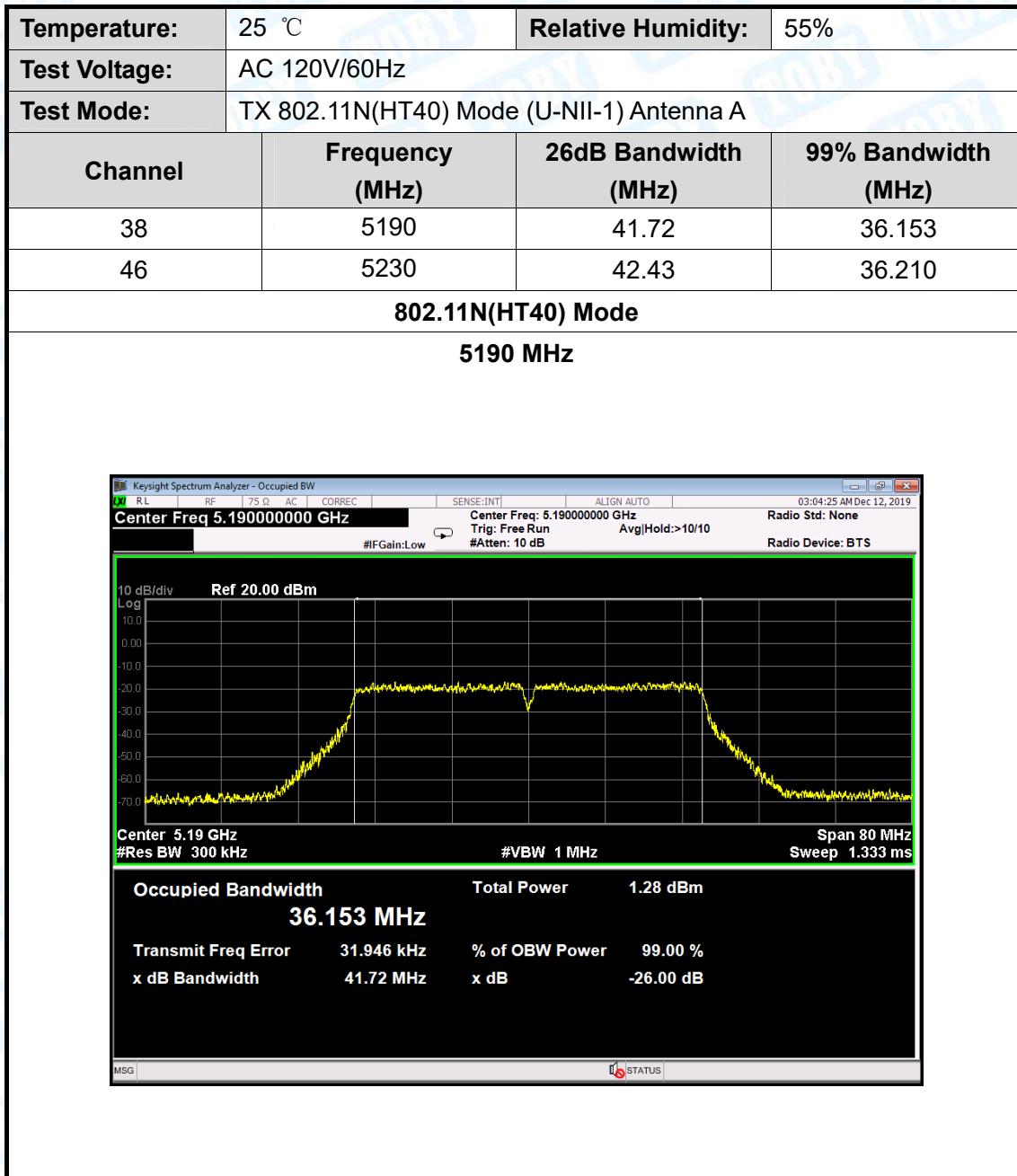
802.11n(HT20) Mode**5200 MHz****802.11n(HT20) Mode****5240 MHz**

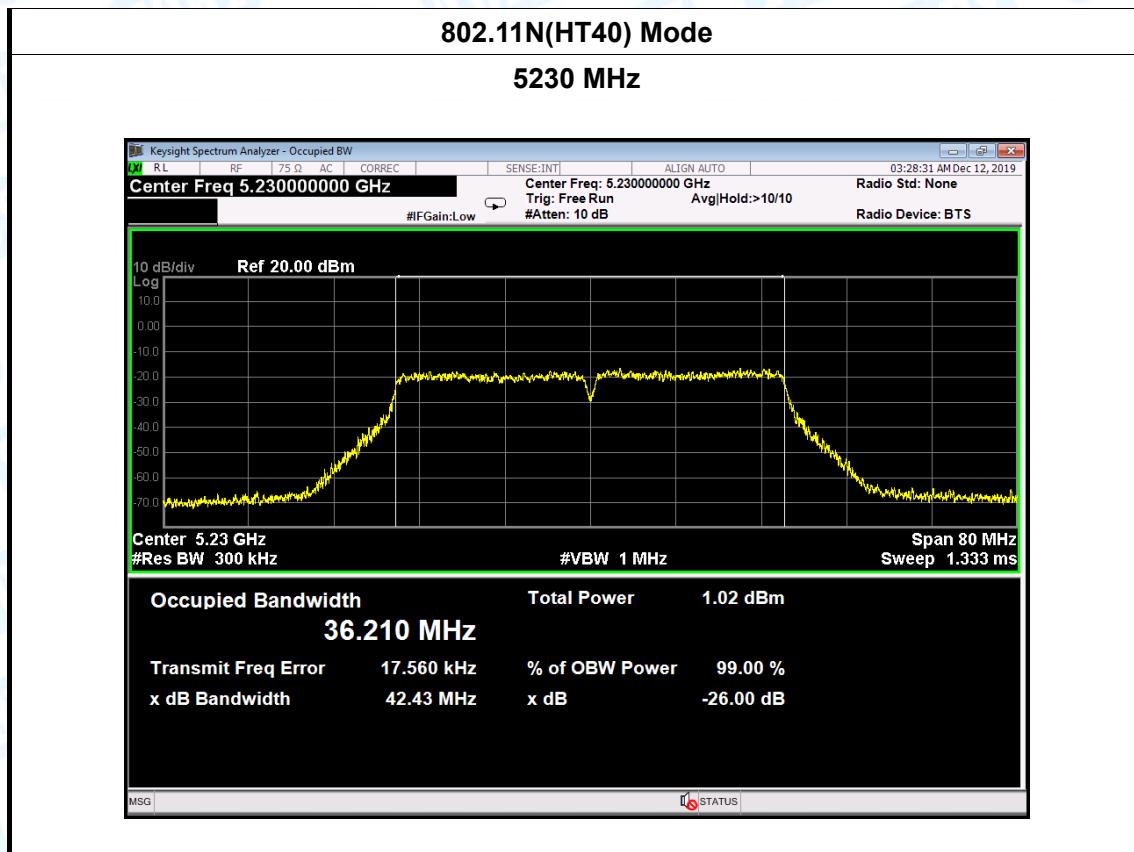


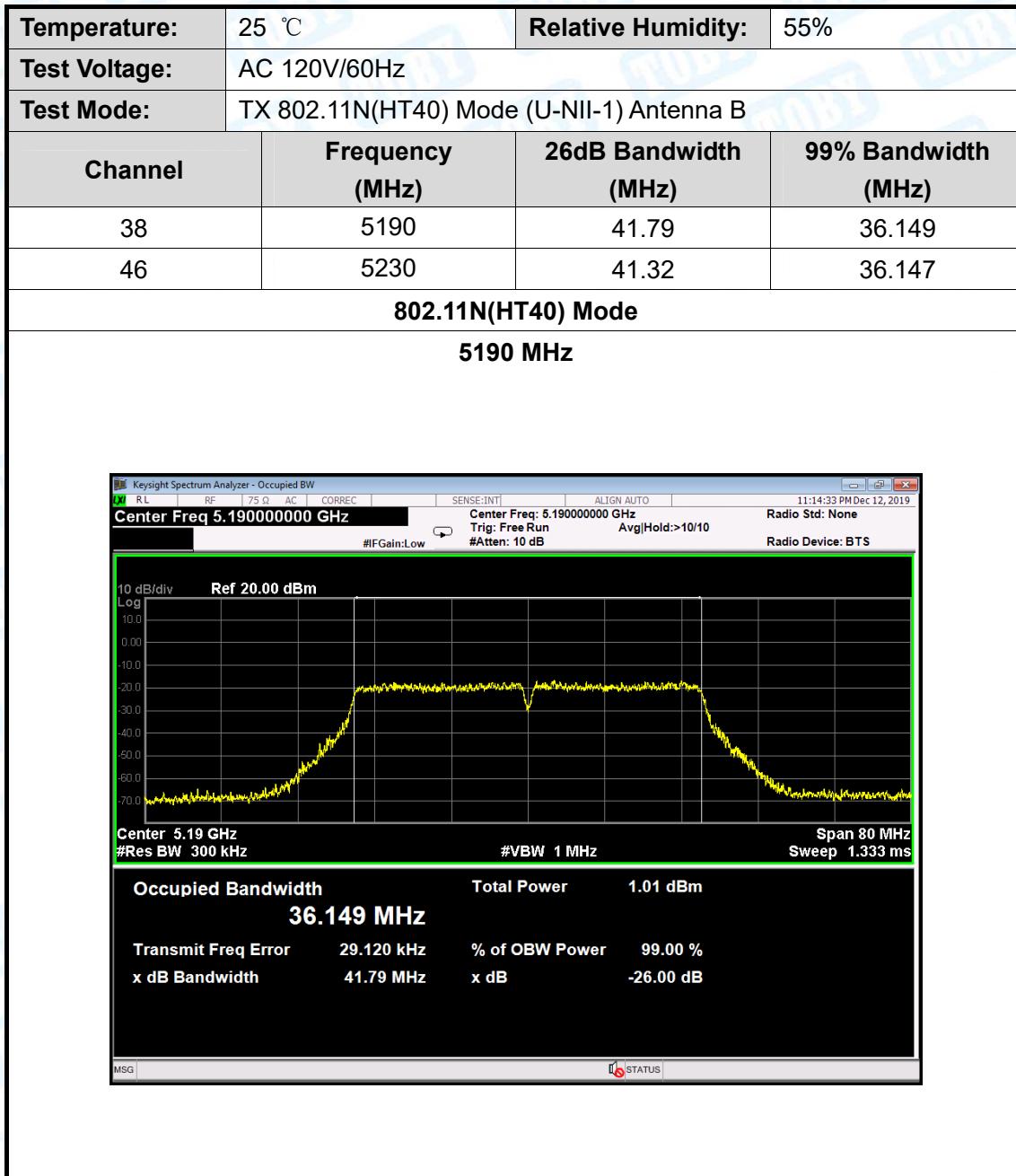
802.11ac(VHT20) Mode**5200 MHz****802.11ac(VHT20) Mode****5240 MHz**

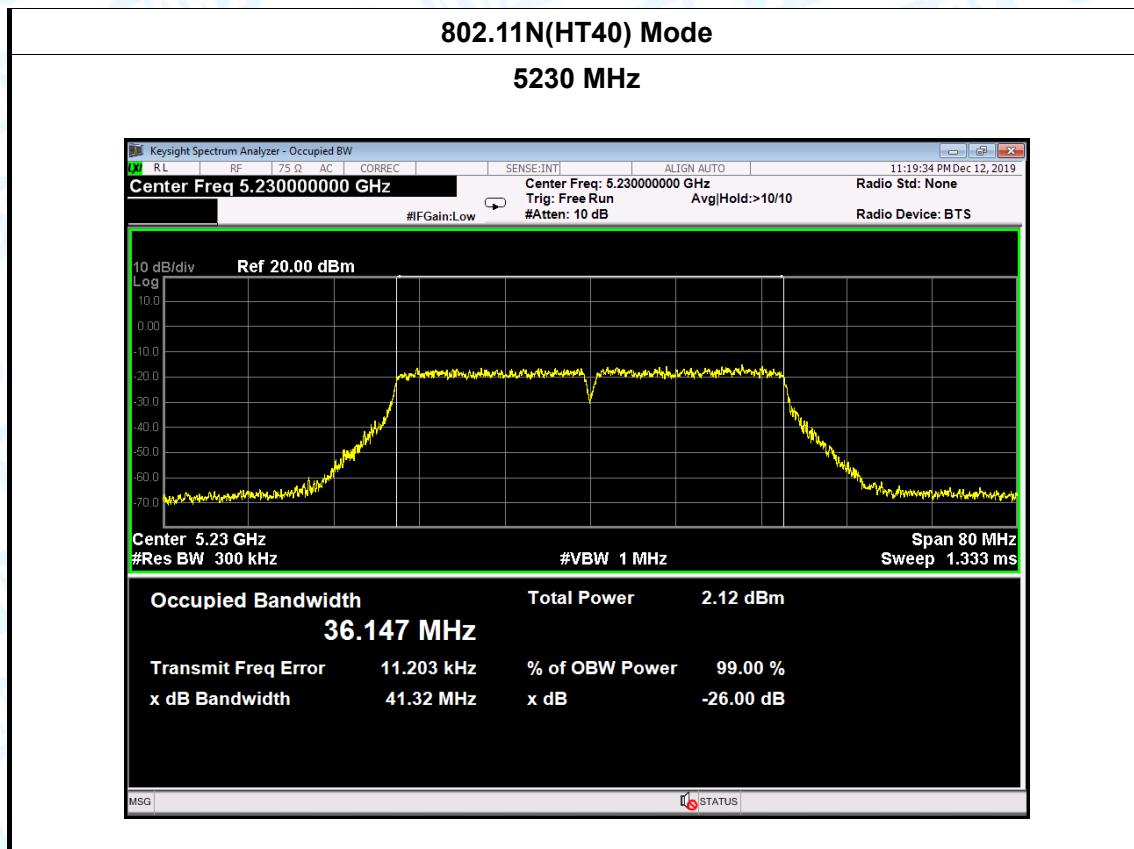
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Test Mode:	TX 802.11ac(VHT20) Mode (U-NII-1) Antenna B		
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
36	5180	21.51	17.630
40	5200	21.48	17.731
48	5240	21.83	17.771
802.11ac(VHT20) Mode			
5180 MHz			
			

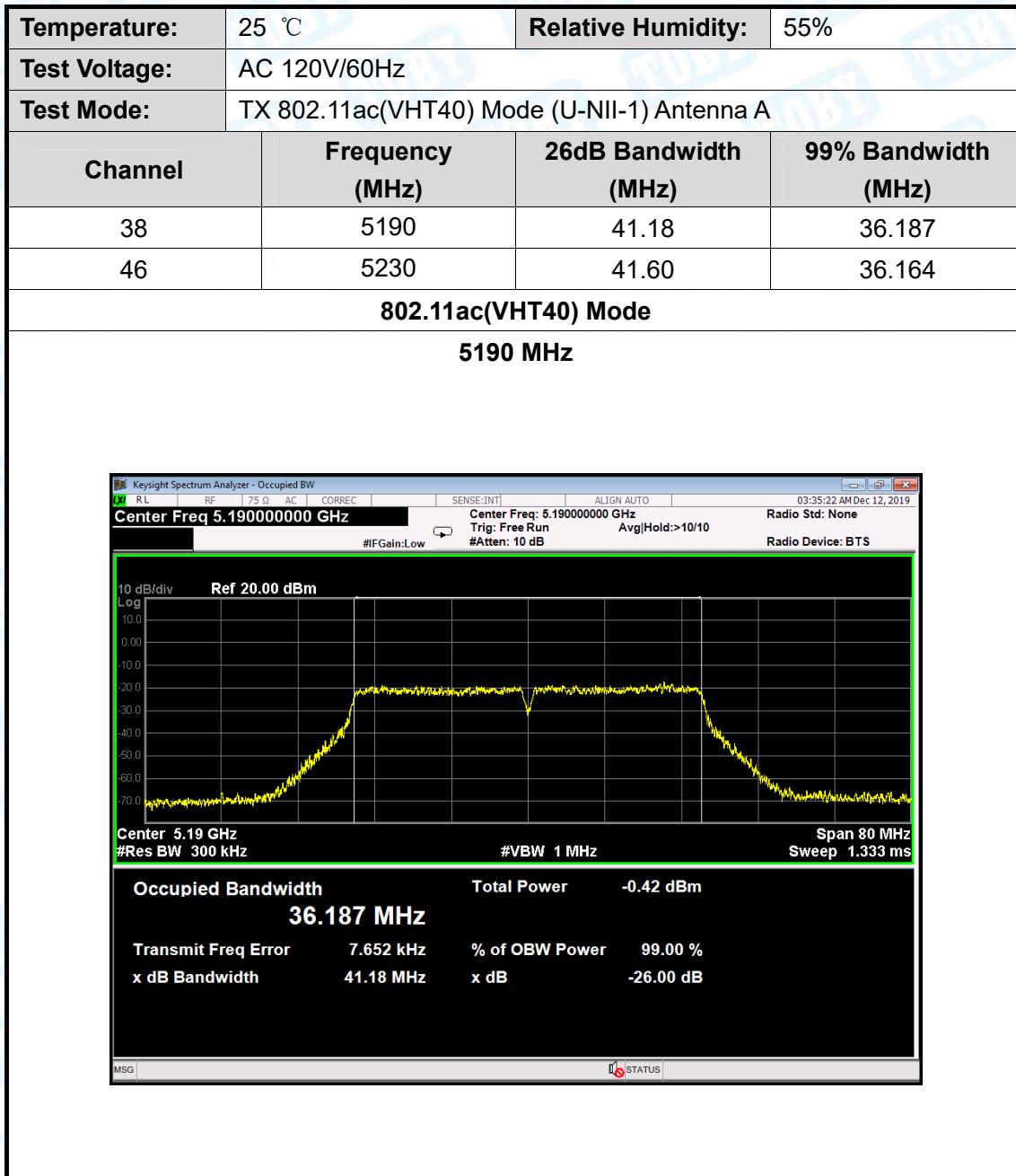
802.11ac(VHT20) Mode**5200 MHz****802.11ac(VHT20) Mode****5240 MHz**

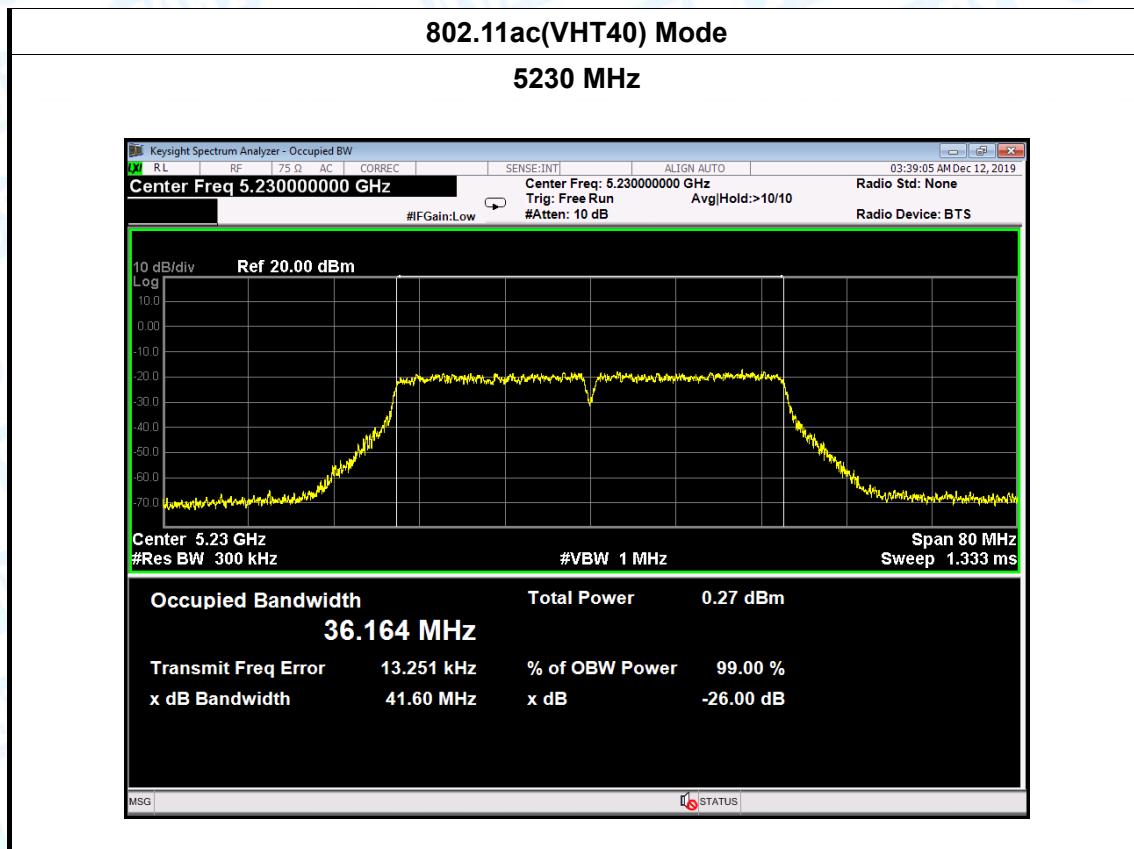


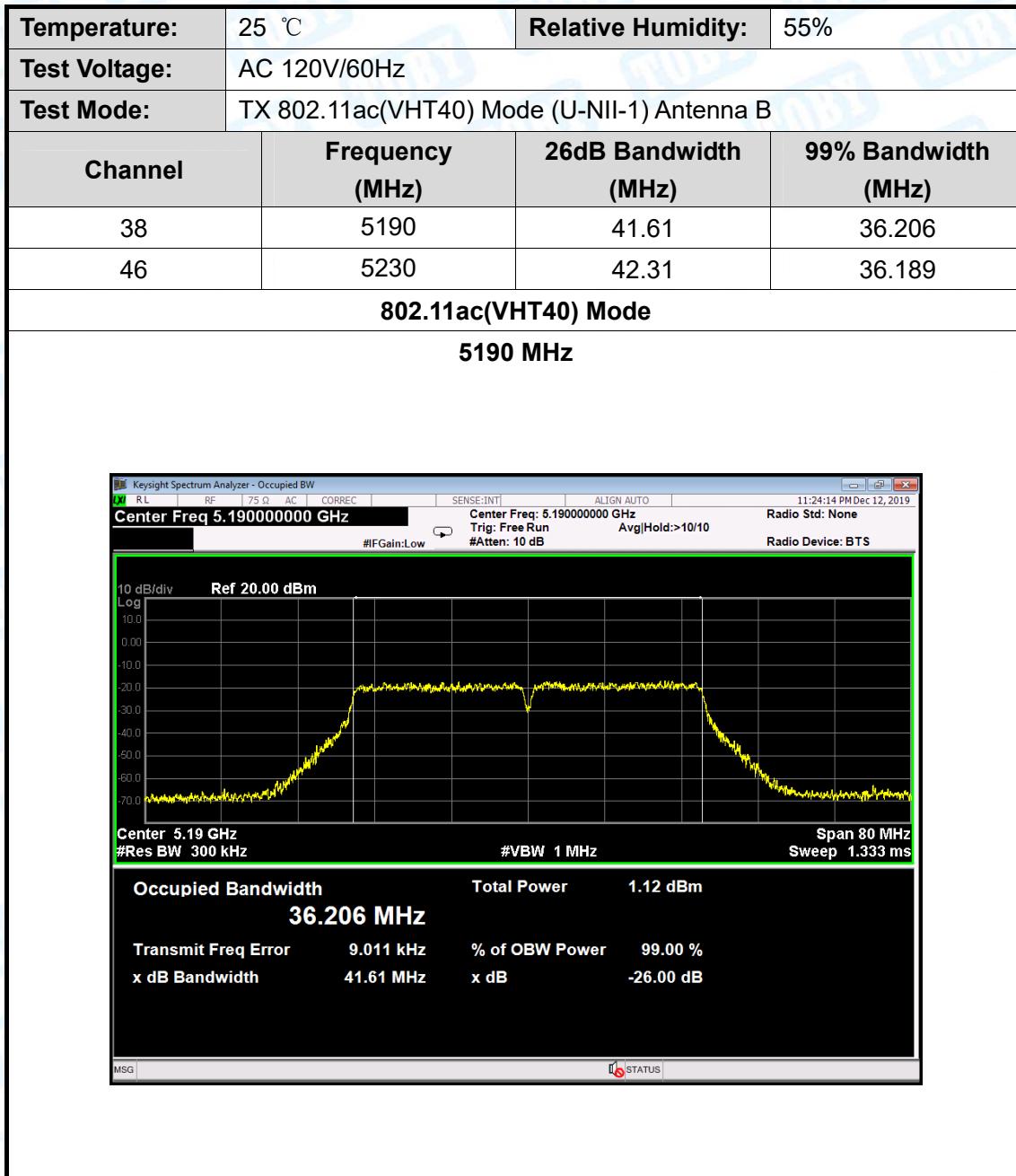


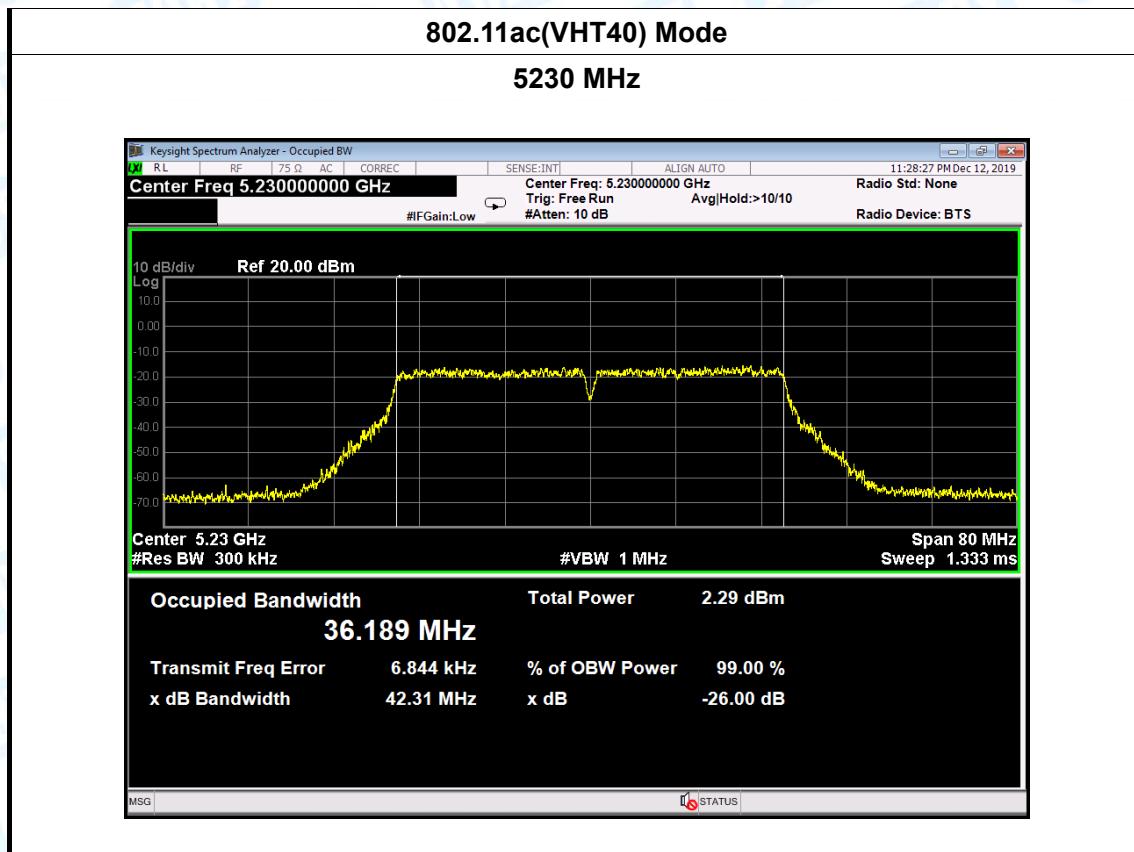


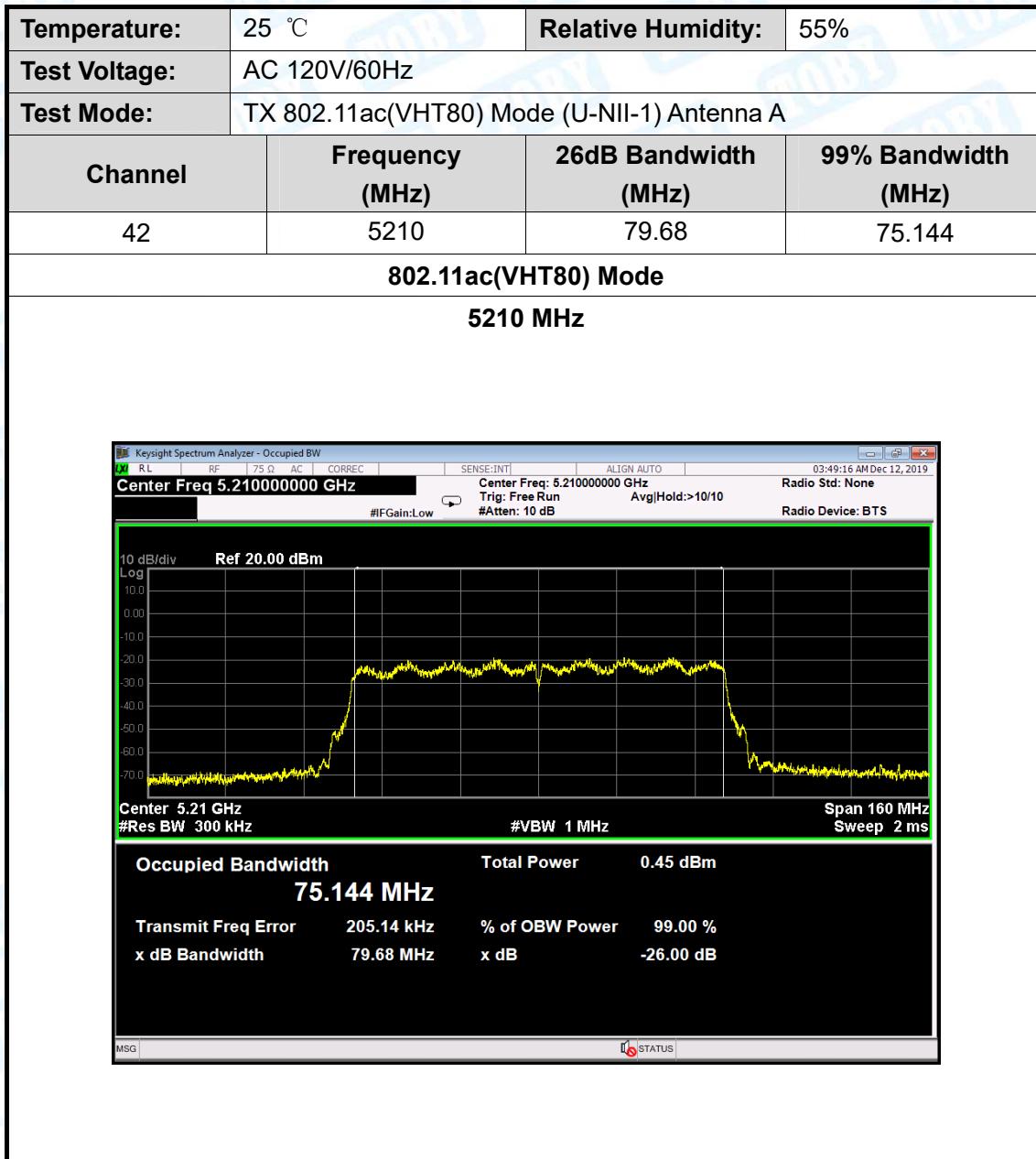


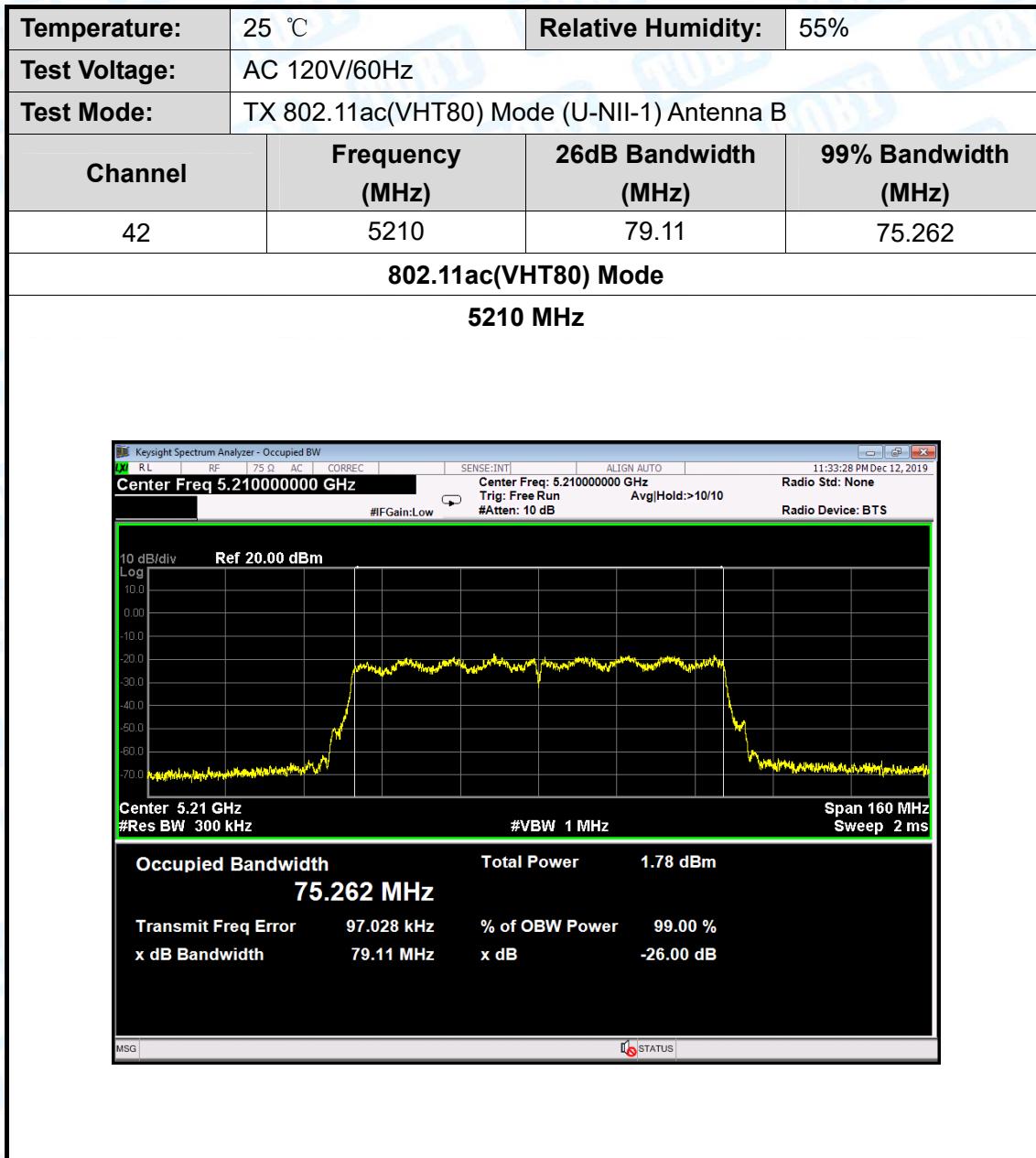








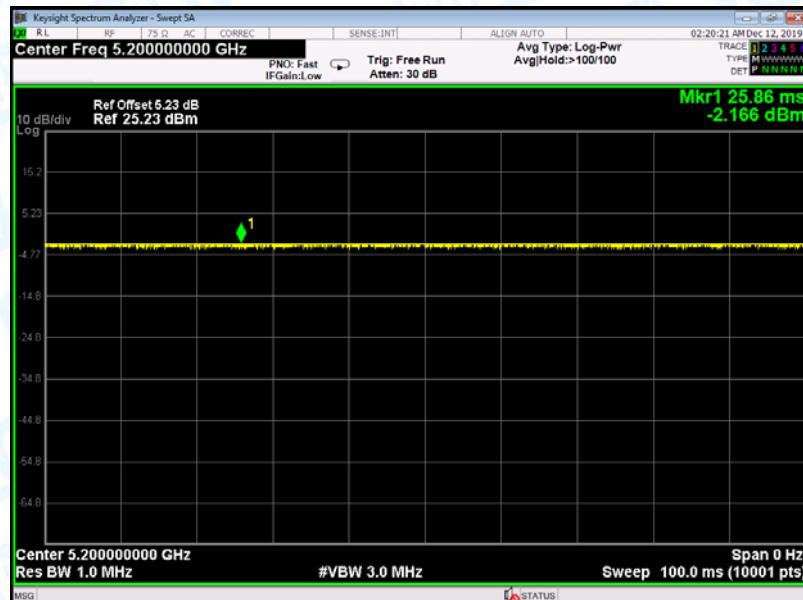


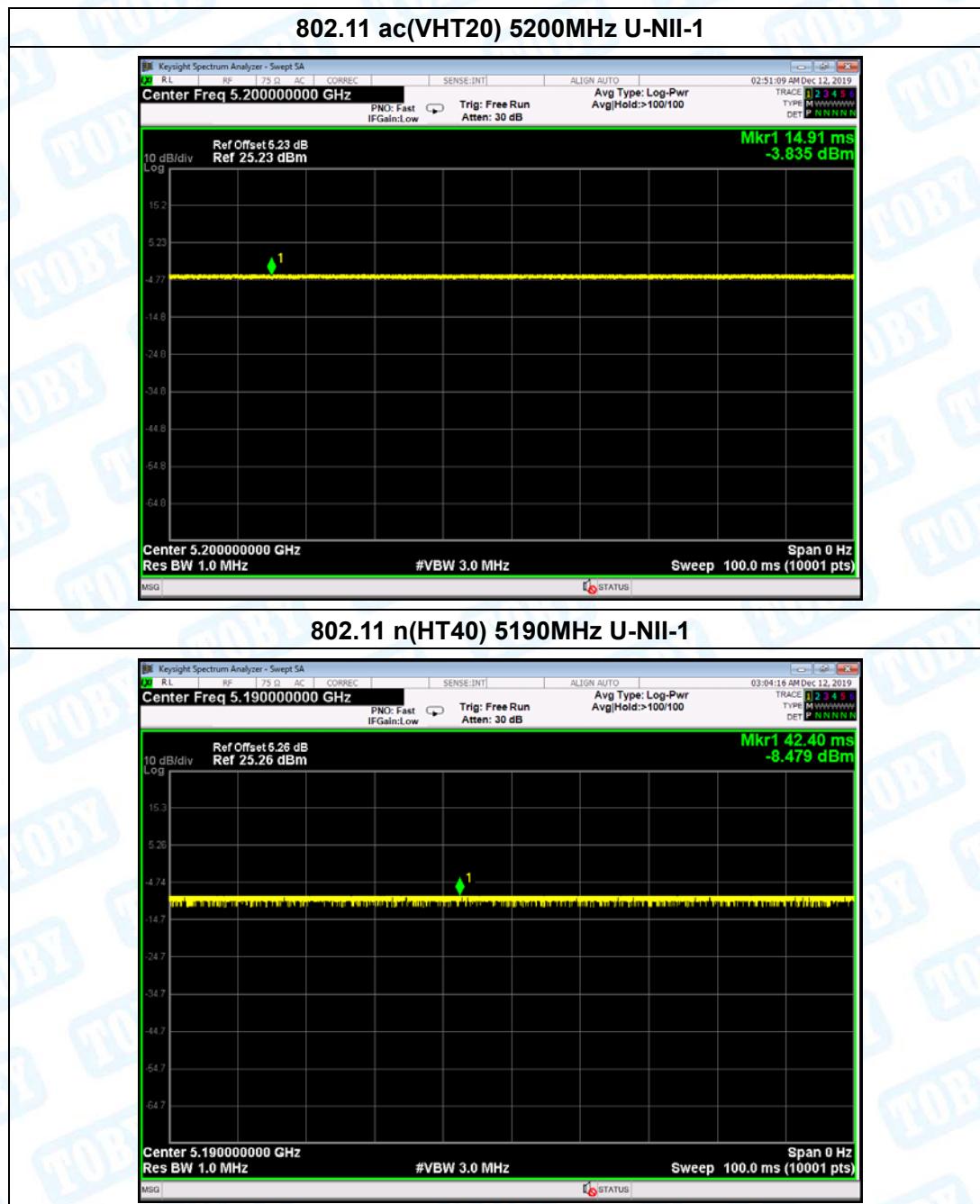


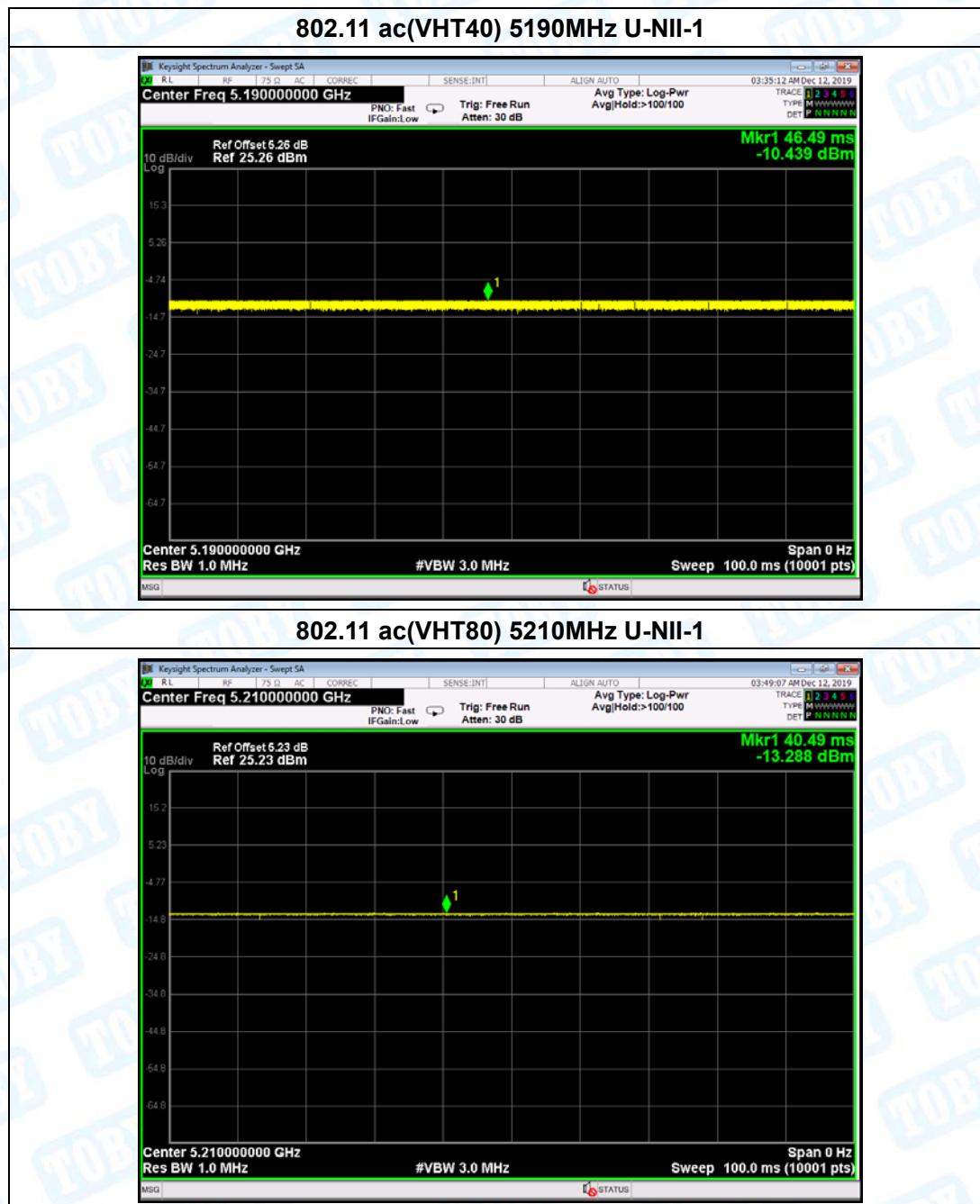
Attachment E-- Output Power Test Data

Temperature:	25 °C	Relative Humidity:	55%		
Test Voltage:	AC 120V/60Hz				
U-NII-1					
Test Mode	Frequency (MHz)	Test Data			Limit (dBm)
		Conducted Power (dBm)		Duty Factor (dB)	
		Ant. A	Ant. B		
802.11a	5180	6.44	6.23	0	---
	5200	6.34	6.31	0	---
	5240	6.25	6.35	0	---
802.11n (HT20)	5180	3.10	3.20	0	6.16
	5200	3.13	3.00	0	6.07
	5240	3.39	3.23	0	6.32
802.11ac (VHT20)	5180	3.21	3.23	0	6.23
	5200	3.18	3.18	0	6.19
	5240	3.19	3.17	0	6.19
802.11n (HT40)	5190	2.27	2.27	0	5.28
	5230	2.27	2.25	0	5.27
802.11 ac(VHT40)	5190	2.23	2.28	0	5.26
	5230	2.26	2.24	0	5.26
802.11 ac(VHT80)	5210	1.27	1.29	0	4.29
Result: PASS					

Test Mode		Duty cycle
U-NII-1	802.11 a	>98%
	802.11 n(HT20)	
	802.11 ac(VHT20)	
	802.11 n(HT40)	
	802.11 ac(VHT40)	
	802.11 ac(VHT80)	

802.11 a 5200MHz U-NII-1**802.11 n(HT20) 5200MHz U-NII-1**



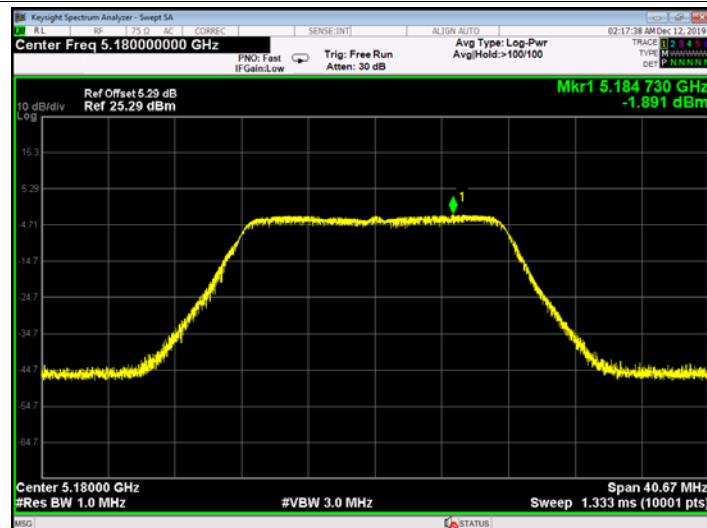


Attachment F-- Power Spectral Density Test Data

Temperature:	25 °C		Relative Humidity:	55%			
Test Voltage:	AC 120V/60Hz						
U-NII-1							
Test Mode	Frequency (MHz)	Test Data					
		Main ANT. (dBm/MHz)	AUX ANT. (dBm/MHz)	Duty Factor (dB)	Total Power (dBm/MHz)		
802.11a	5180	-1.891	-2.808	0			
	5200	-1.881	-2.494	0	---		
	5240	-0.833	-1.462	0	---		
802.11n (HT20)	5180	-2.909	-2.941	0	0.085		
	5200	-2.490	-2.599	0	0.466		
	5240	-1.216	-1.438	0	1.685		
802.11ac (VHT20)	5180	-3.165	-2.570	0	0.153		
	5200	-2.612	-2.735	0	0.337		
	5240	-1.280	-1.770	0	1.492		
802.11n (HT40)	5190	-4.576	-5.066	0	-1.804		
	5230	-5.062	-3.885	0	-1.423		
802.11 ac(VHT40)	5190	-6.292	-4.874	0	-2.515		
	5230	-5.884	-3.643	0	-1.610		
802.11 ac(VHT80)	5210	-7.254	-6.269	0	-3.723		
Result: PASS							

Antenna A

802.11 a 5180 MHz

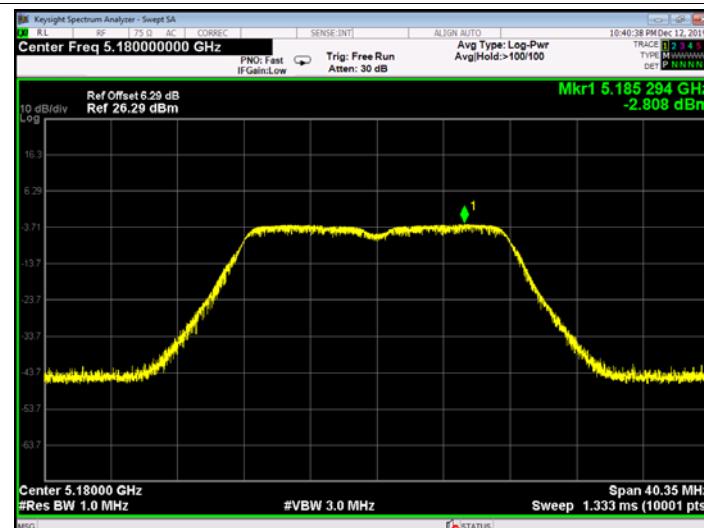
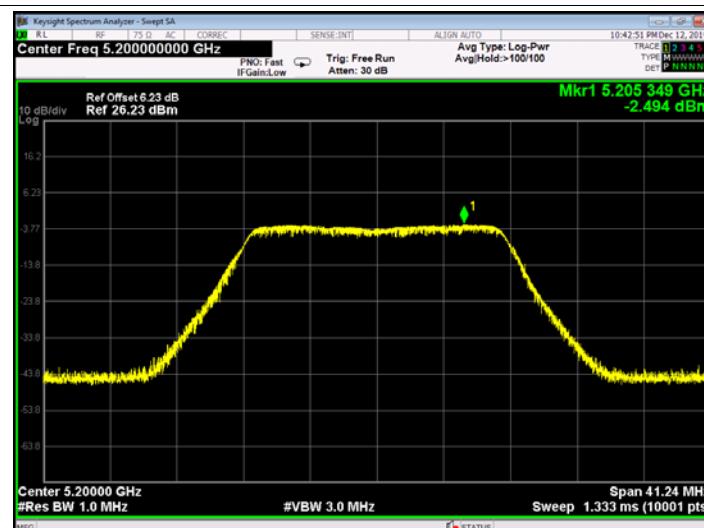
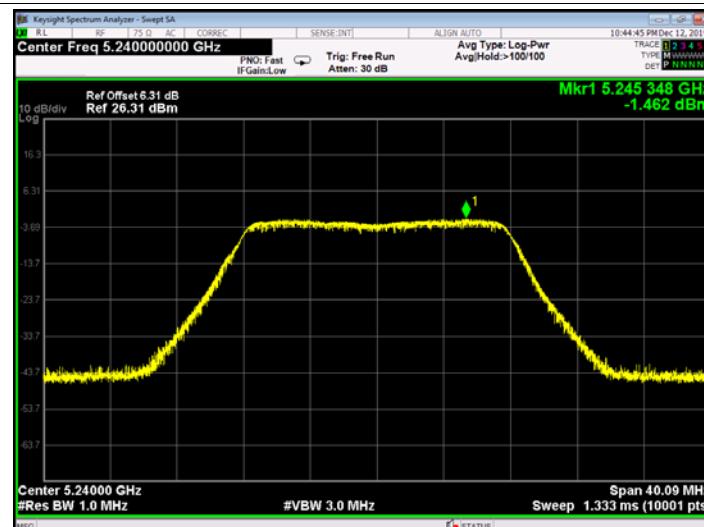


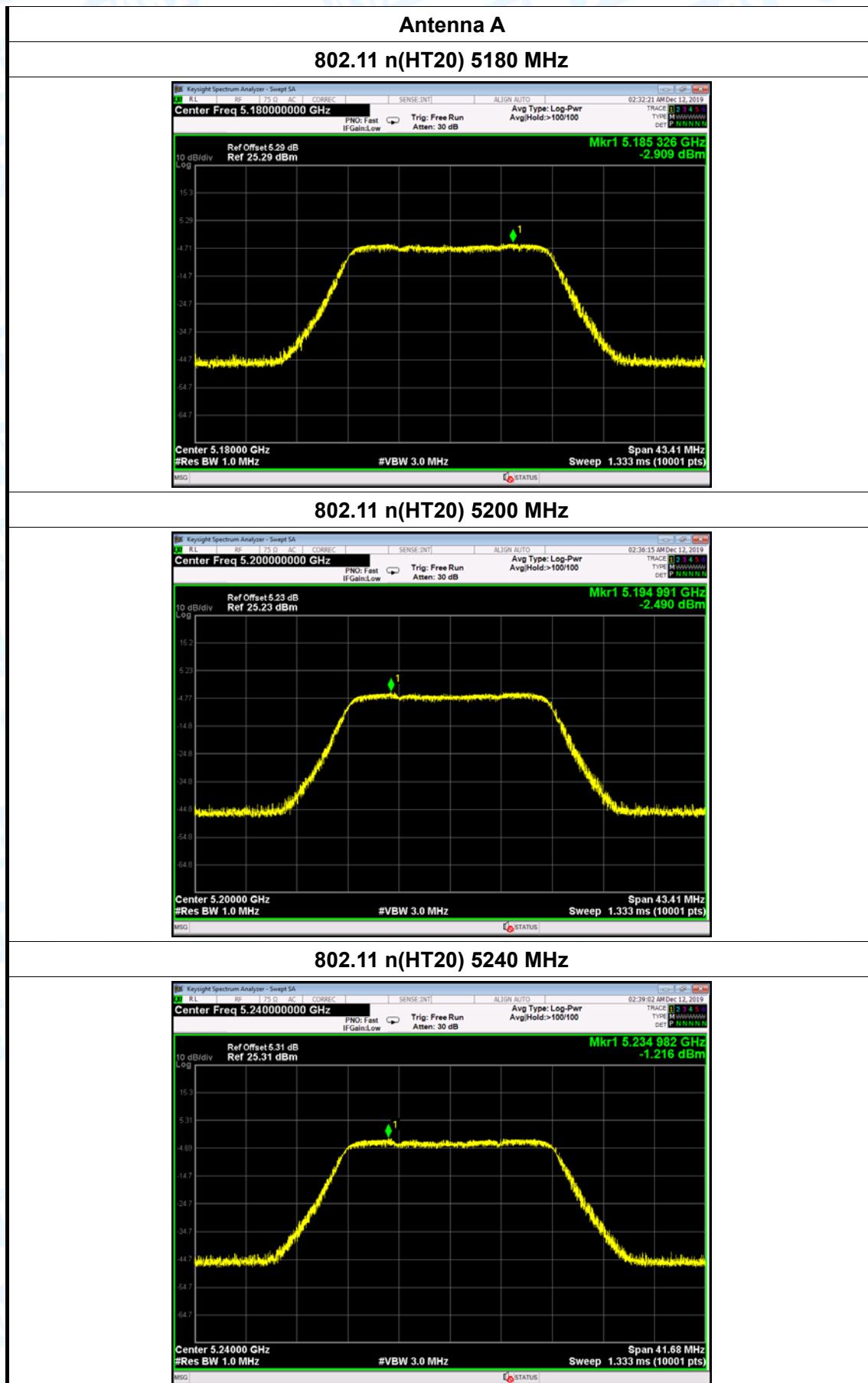
802.11 a 5200 MHz

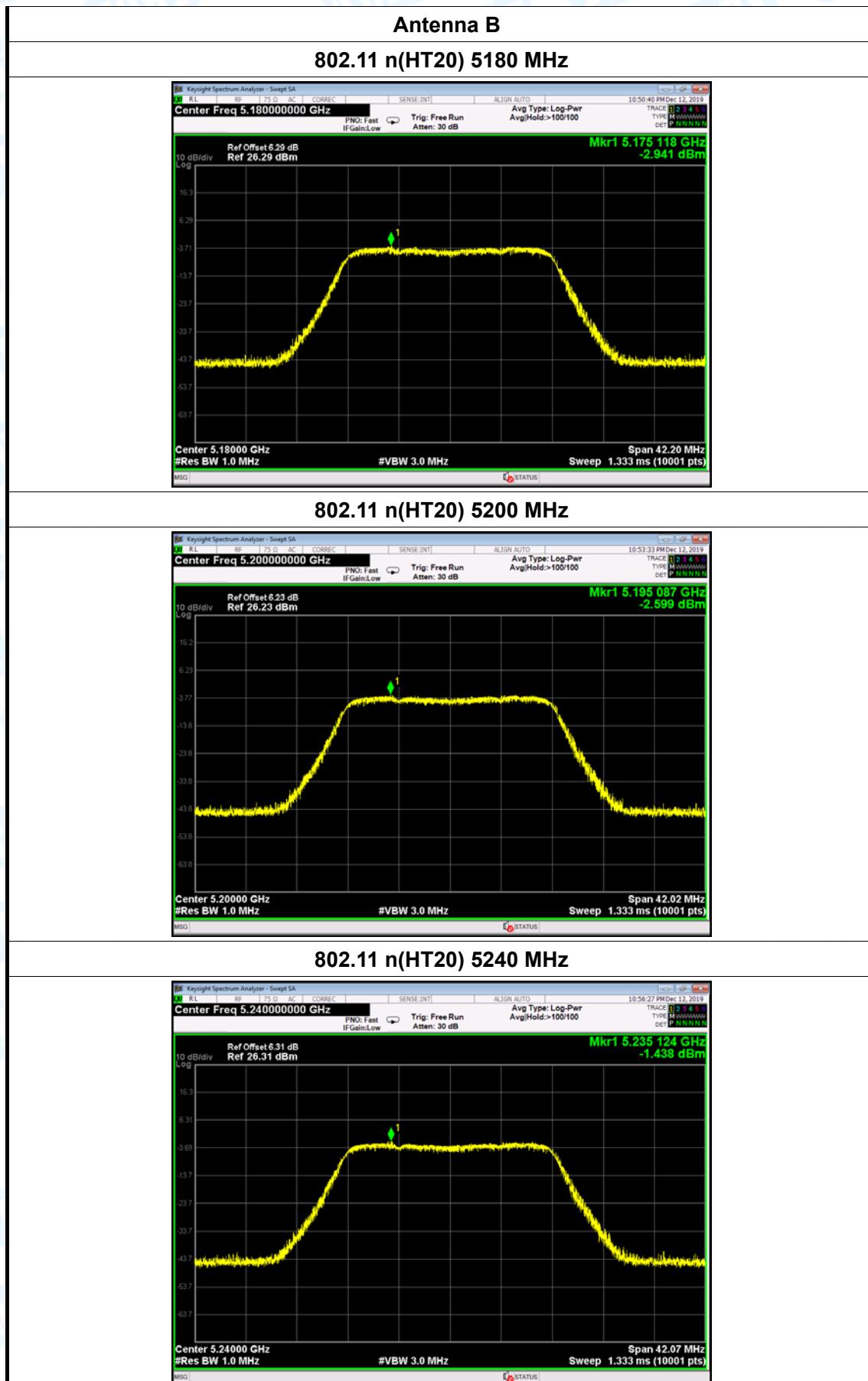


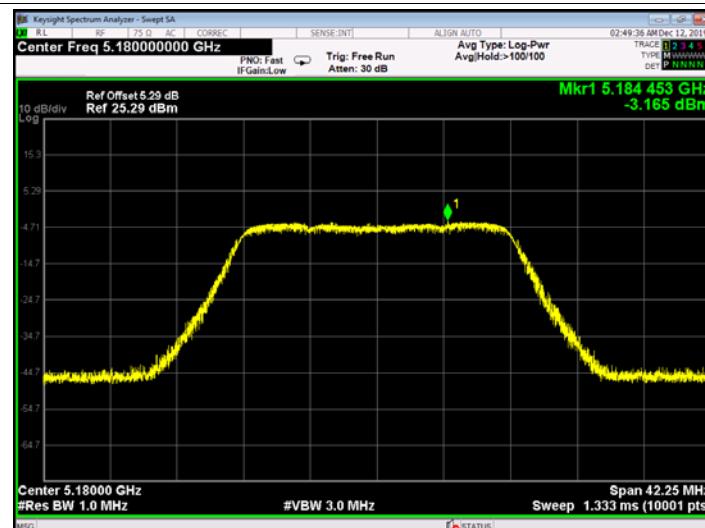
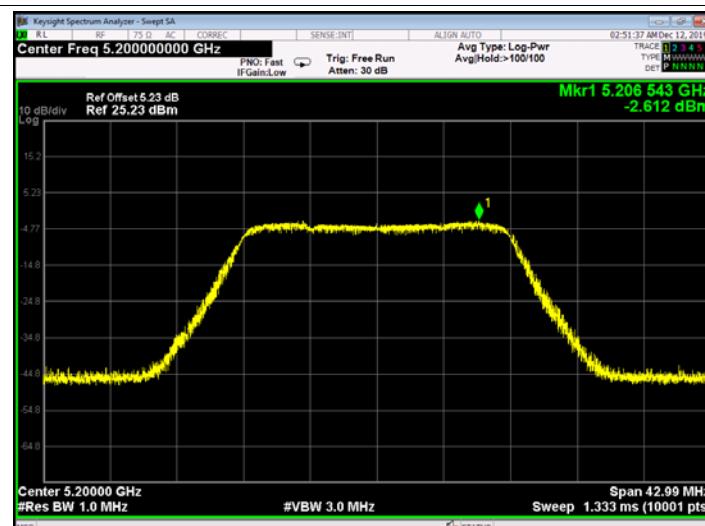
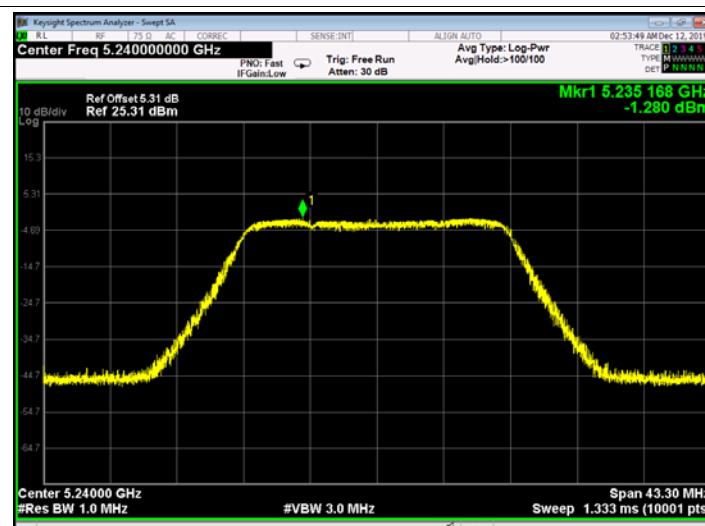
802.11 a 5240 MHz

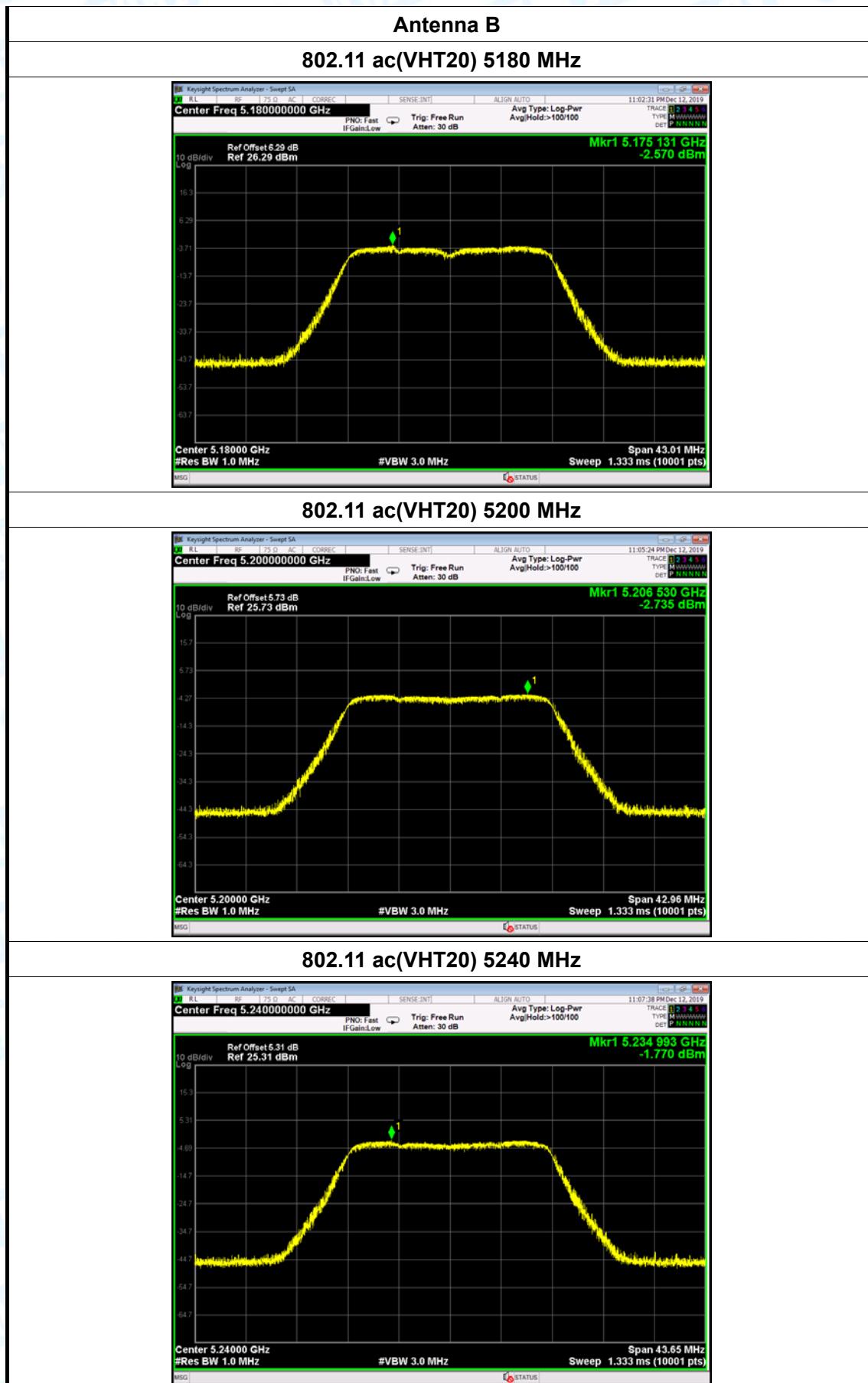


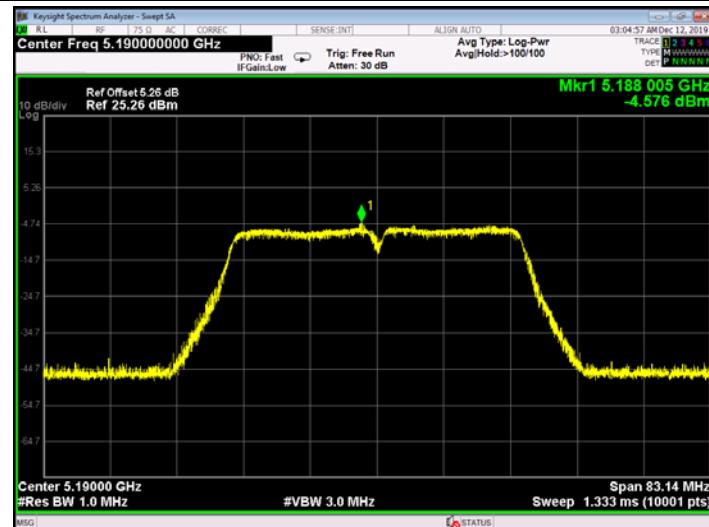
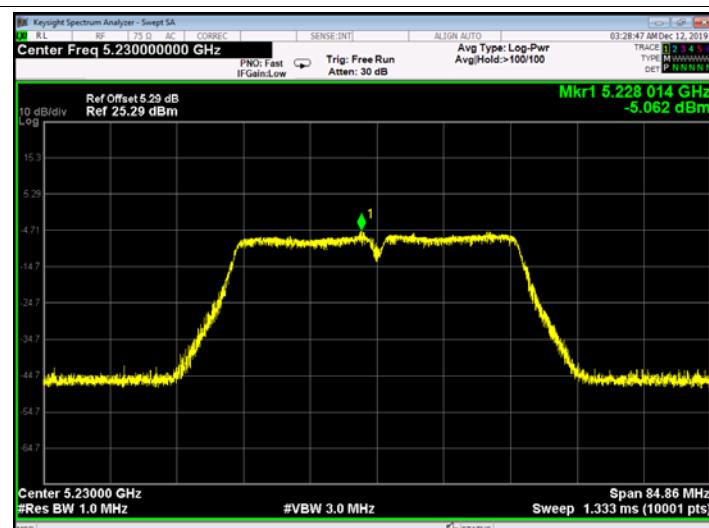
Antenna B**802.11 a 5180 MHz****802.11 a 5200 MHz****802.11 a 5240 MHz**

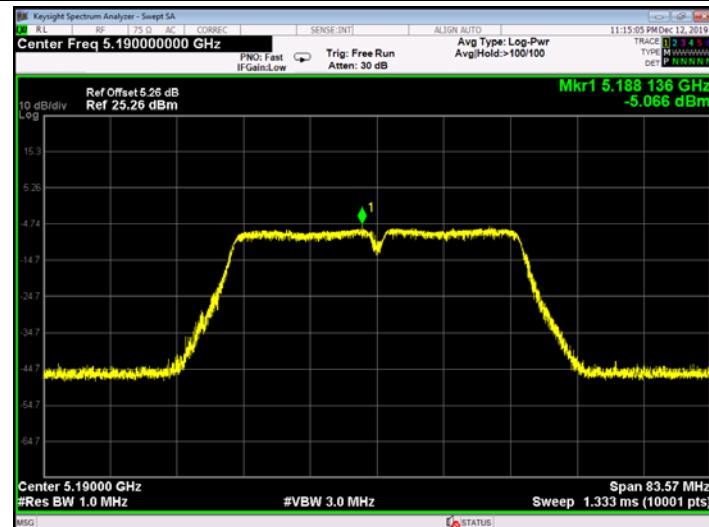
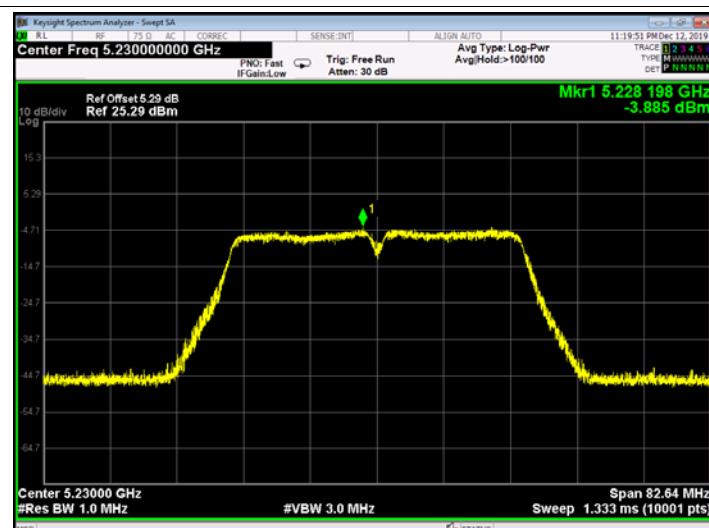


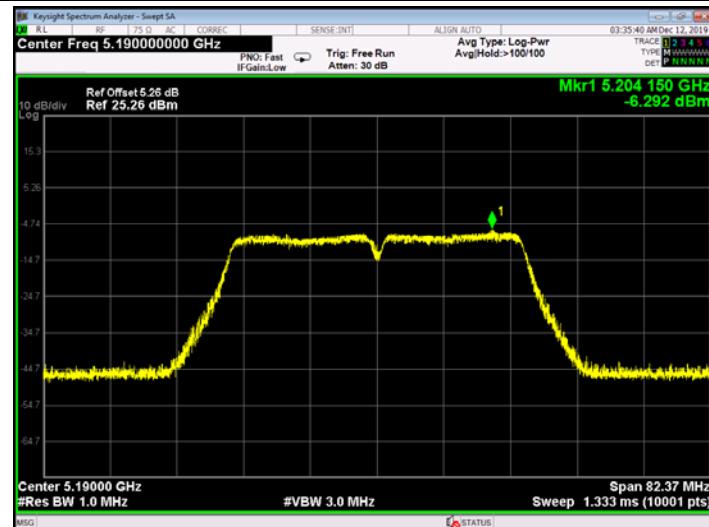
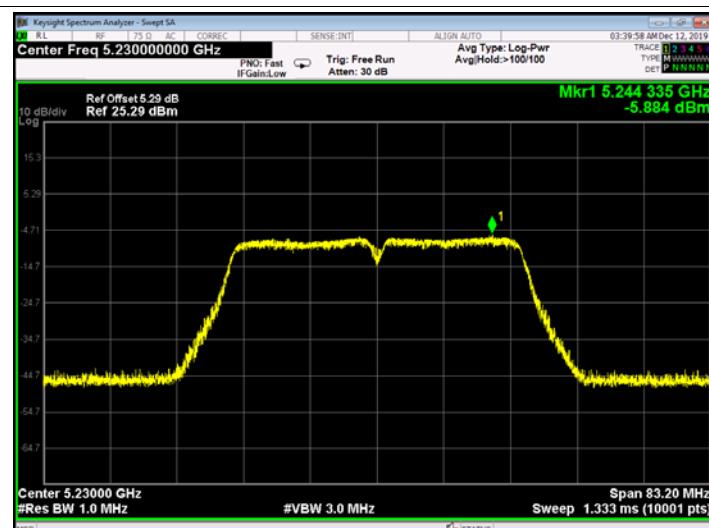


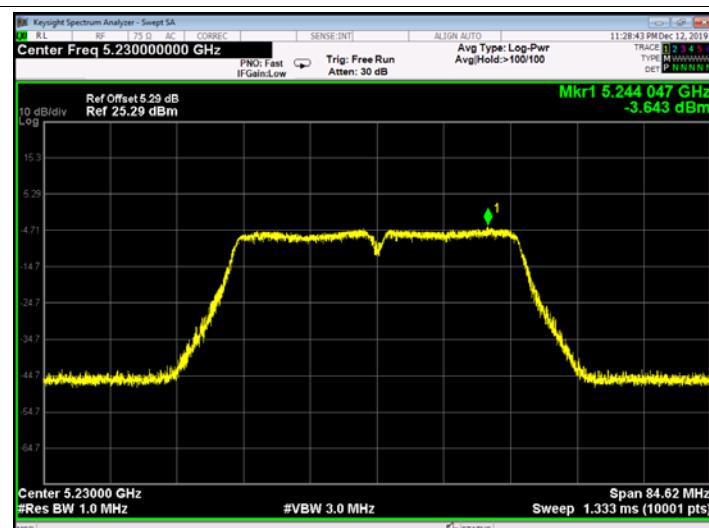
Antenna A**802.11 ac(VHT20) 5180 MHz****802.11 ac(VHT20) 5200 MHz****802.11 ac(VHT20) 5240 MHz**

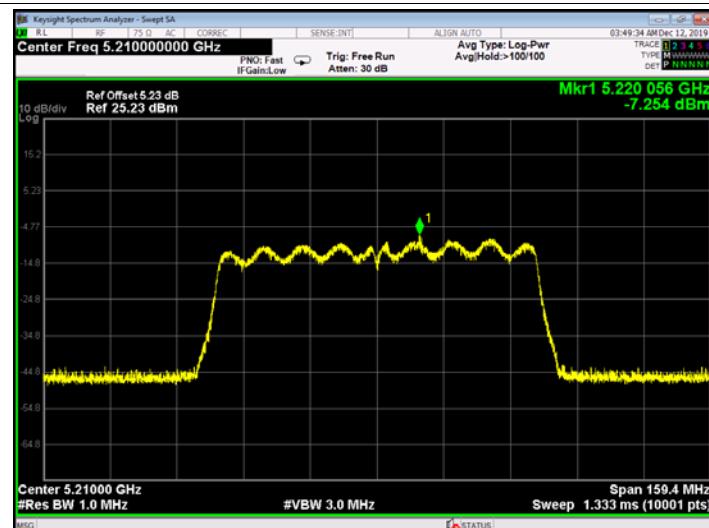
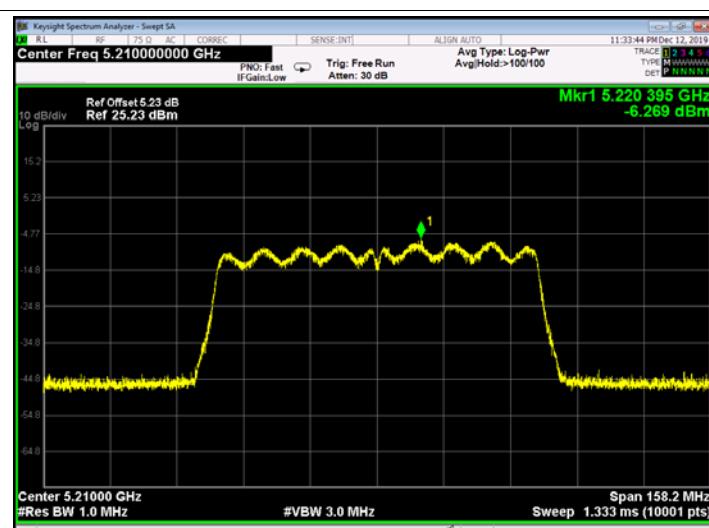


Antenna A**802.11 n(HT40) 5190 MHz****802.11 n(HT40) 5230 MHz**

Antenna B**802.11 n(HT40) 5190 MHz****802.11 n(HT40) 5230 MHz**

Antenna A**802.11 ac(VHT40) 5190 MHz****802.11 ac(VHT40) 5230 MHz**

Antenna B**802.11 ac(VHT40) 5190 MHz****802.11 ac(VHT40) 5230 MHz**

Antenna A**802.11 ac(VHT80) 5210 MHz****Antenna B****802.11 ac(VHT80) 5210 MHz**

Attachment G-- Frequency Stability Measurement Test Data

801.11a U-NII-1: 5180 MHz	
Voltage vs. Frequency Stability	
Voltage (V)	Measurement Frequency (MHz)
240	5179.9900
120	5179.9300
100	5179.9400
Max. Deviation (MHz)	0.06
Max. Deviation (ppm)	13.52
Temperature vs. Frequency Stability	
Temperature (°C)	Measurement Frequency (MHz)
0	5179.9800
10	5179.9600
20	5179.9400
30	5179.9300
40	5179.9500
50	5179.9400
Max. Deviation (MHz)	0.06
Max. Deviation (ppm)	13.52
Limit (ppm)	20
Result	Pass

Remark: Worst case at 802.11a U-NII-1 low channel

-----END OF REPORT-----