TEST REPORT

Applicant:	RN Chidakashi Technologies Private Limited
Address of Applicant:	Flat No - 4, StambhTirth Building, Plot No 82, R.A. Kidwai Road, Wadala, Mumbai 400 031, India
Manufacturer:	Pacific Industries (Zhongshan) Limited
Address of Manufacturer:	XINCUN FACTORY AREA, BAISHAWAN INDUSTRIAL PARK, EASTERN DISTRICT,ZHONGSHAN, GUANGDONG, P.R. CHINA
Product name:	MIKO3 Automatic Data Processing Unit
Model(s):	EMK301
Rating(s):	DC 5V, 3A
Trademark:	MIKO
Standards:	FCC CFR Title 47 Part 15 Subpart E Section 15.407
FCC ID:	2AS3S-EMK301
Data of Receipt:	2021-10-27
Date of Test:	2021-10-27~2021-11-17
Date of Issue:	2021-11-17
Test Result	**Pass***

* In the configuration tested, the test item complied with the standards specified above.

Authorized for issue by:

Test by:

Nov.17, 2021 Chivas Tsang Chivas
Project Engineer
Date *Name/Position* *Signature*

Reviewed by:

Nov.17, 2021 Victor Meng Victor
Project Manager
Date *Name/Position* *Signature*

Testing Laboratory information:	
Testing Laboratory Name ..... :	ITL Co., Ltd
Address ..... :	No. 8 Jinqianling Street 5, Huangjiang Town, Dongguan, Guangdong, 523757 P.R.C.
Testing location ..... :	Same as above
Tel ..... :	0086-769-39001678
Fax ..... :	0086-20-62824387
E-mail ..... :	itl@i-testlab.com

Possible test case verdicts:

- test case does not apply to the test object.. : N/A
- test object does meet the requirement..... : P (Pass)
- test object does not meet the requirement . : F (Fail)

General remarks:

The test results presented in this report relate only to the object tested.

The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

This report would be invalid test report without all the signatures of testing technician and approver.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

General product information:

/

Contents

1. TEST STANDARDS AND REPORT VERSION

1.1. Test Standards

The tests were performed according to following standards:
FCC Rules Part 15.407: General technical requirements.

ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices

KDB789033 D02 v02r01: GUIDELINES FOR COMPLIANCE TESTING OF UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII) DEVICES PART 15, SUBPART E

KDB662911 D01 v02r01: Multiple Transmitter Output

1.2. Report Version

Revision No.	Date of issue	Description
N/A	2021-11-17	Original

2. TEST DESCRIPTION

Test Item	FCC Rule	Result
Antenna Requirement	15.203	PASS
Line Conducted Emissions (AC Main)	15.207	PASS
Maximum Conducted Output Power	15.407(a)	PASS
Maximum Power Spectral Density	15.407(a)	PASS
26dB Bandwidth and 99% Ocuppy bandwith	15.407(a)	PASS
6dB Bandwidth	15.407(a)	PASS
Band edge	15.407(b)	PASS
Radiated Spurious Emissions	15.209	PASS
Frequency Stability	15.407(g)	PASS
Dynamic Frequency Selection(DFS)	15.407(h)	PASS

Remark: The measurement uncertainty is not included in the test result.

3. SUMMARY

3.1. Client Information

Applicant:	RN Chidakashi Technologies Private Limited
Address:	Flat No - 4, StambhTirth Building, Plot No 82, R.A. Kidwai Road, Wadala, Mumbai 400 031, India
Manufacturer:	Pacific Industries (Zhongshan) Limited
Address:	XINCUN FACTORY AREA, BAISHAWAN INDUSTRIAL PARK, EASTERN DISTRICT,ZHONGSHAN, GUANGDONG, P.R. CHINA

3.2. Product Description

Name of EUT	MIKO3 Automatic Data Processing Unit		
Trade Mark:	MIKO		
Model No.:	EMK301		
Listed Model(s):	-		
Power supply:	DC 5V, 3A		
Adapter information :	/		
5G WIFI			
Supported type:	☒ 802.11a	☒ 802.11n(HT20)	☒ 802.11n(HT40)
	☒ 802.11ac(HT20)	☒ 802.11ac(HT40)	☒ 802.11ac(HT80)
Function:	☐ Outdoor AP	☐ Indoor AP	☐ Fixed P2P
	☒ Client		
DFS type:	☐ master devices	☐ Slave devices with radar detection	☒ Slave devices without radar detection
Modulation:	BPSK, QPSK, 16QAM, 64QAM		
Operation frequency:	☒ Band I:	5150MHz~5250MHz	
	☒ Band II:	5250MHz~5350MHz	
	☒ Band III:	5470MHz~5725MHz	
	☒ Band IV:	5725MHz~5850MHz	
Supported Bandwidth	20MHz:	802.11ac, 802.11n, 802.11a	
	40MHz:	802.11ac, 802.11n	
	80MHz:	802.11ac	
Antenna information			
Antenna delivery:	/		
Antenna technology:	/		
Antenna type:	FPC Antenna		
Antenna gain:	2.24 dBi		

3.3. Operation state

➢ **Frequency list**

According to section 15.31(m), regards to the operating frequency range over 10 MHz, must select three channel which were tested. the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, please see the above gray bottom.

Band	Test Channel	20MHz		40MHz		80MHz	
		Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
I	CH_L	36	5180	38	5190	-	-
	CH_M	40	5200	-	-	42	5210
	CH_H	48	5240	46	5230	-	-
II	CH_L	52	5260	54	5270	-	-
	CH_M	56	5280	-	-	58	5290
	CH_H	64	5320	62	5310	-	-
III	CH_L	100	5500	102	5510	106	5530
	CH_M	120	5600	118	5590	-	-
	CH_H	140	5700	134	5670	122	5610
IV	CH_L	149	5745	151	5755	-	-
	CH_M	157	5785	-	-	155	5775
	CH_H	165	5825	159	5795	-	-

BLE and WiFi can transmit simultaneously and the report covers simultaneous transmission mode. Only the worst case test results are provided in this test report.

➢ **Data Rated**

Preliminary tests were performed in different data rate, and found which the below bit rate is worst case mode, so only show data which it is a worst case mode.

Mode	Data rate (worst mode)
802.11a	6Mbps
802.11n(HT20)/ 802.11ac(HT20)	MCS0
802.11n(HT40)/ 802.11ac(HT40)	MCS0
802.11ac(HT80)	MCS0

➢ **Test mode**

For RF test items
The engineering test program was provided and enabled to make EUT continuous transmit (duty cycle>98%).
For AC power line conducted emissions:
The EUT was set to connect with the WLAN AP under large package sizes transmission.
For Radiated suprious emissions test item:
The engineering test program was provided and enabled to make EUT continuous transmit(duty cycle>98%). The EUT in each of three orthogonal axis emissions had been tested ,but only the worst case (X axis) data Recorded in the report.

3.4. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- ● - supplied by the manufacturer
- ○ - supplied by the lab

○	N/A	Manufacturer :	N/A
		Model No. :	N/A
○	N/A	Manufacturer :	N/A
		Model No. :	N/A

3.5. Discontinue Transmitting with absence of Data or operational failure states

According to section 15.407 (c):

"The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met."

Data transmission is always initiated by software, which is then passed down through the MAC, through the digital and analog baseband, and finally to the RF chip.

Several special packets (ACKs, CTS, PSPoll, etc...) are initiated by the MAC. These are the only ways the digital baseband portion will turn on the RF transmitter, which it then turns off at the end of the packet. Therefore, the transmitter will be on only while one of the aforementioned packets is being transmitted.

4. TEST ENVIRONMENT

4.1. Address of the test laboratory

All tests were performed at:

ITL Co., Ltd

No. 8 Jinqianling Street 5, Huangjiang Town, Dongguan, Guangdong, 523757 P.R.C.

0086-769-39001678

itl@i-testlab.com

No tests were sub-contracted.

4.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS Lab code:L9342**
- **FCC Designation No.:CN5035**
- **IC Registration NO.: 12593A**
- **NVLAP LAB CODE: 600199-0**

4.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35°C
Relative Humidity:	30~60 %
Air Pressure:	950~1050mba

4.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors in calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report according to TR-100028-01 “Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1” and TR-100028-02 “Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2” and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd. quality system according to ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Here after the best measurement capability for Shenzhen Huatongwei International Inspection Co., Ltd. is reported:

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Conducted spurious emissions 9kHz~40GHz	1.60 dB	(1)
Radiated spurious emissions 9kHz~40GHz	2.20 dB	(1)
Conducted Emissions 9kHz~30MHz	3.39 dB	(1)
Radiated Emissions 30~1000MHz	4.24 dB	(1)
Radiated Emissions 1~18GHz	5.16 dB	(1)
Radiated Emissions 18~40GHz	5.54 dB	(1)
Occupied Bandwidth	---------	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

4.5. Equipments Used during the Test

No.	Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
ITL-114	Spectrum Analyzer	Agilent	N9010A	MY51250936	2021/01/20	2022/01/19
ITL-154	EMI test receiver 9kHz to 26.5GHz	R&S	ESR26	101257	2021/01/20	2022/01/19
ITL-116	Pre Amplifier	HP	8447F	3113A05905	2021/01/20	2022/01/19
ITL-117	Wideband Amplifier Super Ultra	Mini-circuits	ZVA-183-S+	469101134	2021/01/20	2022/01/19
ITL-164	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-0844	2020/06/19	2022/06/18
ITL-110	Horn Antenna	A-INFOMW	JXTXLB-10180-N	J2031090612133	2020/06/19	2022/06/18
ITL-103	Two-line v-network	R&S	ENV216	100120	2021/08/10	2022/08/09
ITL-115	50Ω Coaxial Cable	Mini-circu ts	CBL	C001	2020/06/19	2022/06/18
ITL-100	Semi-Anechoic chamber	ETS•Lindgren	FACT3 2.0	CT09015	2019/10/16	2022/10/15
ITL-145	Loop Antenna	ZHINAN	Z 30900 A	00 89	2020/06/19	2022/06/18
ITL-146	Horn Antenna	Schwarzb ck	BBHA 9170	B09806543	2020/06/19	2022/06/18
ITL-101	Shielded Room	ETS•Lindgren	8*4*3	CT09010	2021/01/22	2022/01/21
ITL-166	Power Sensor	Agilent	U2021XA	MY5365004	2021/01/20	2022/01/19

5. TEST CONDITIONS AND RESULTS

5.1. Antenna requirement

Requirement

FCC CFR Title 47 Part 15 Subpart C Section 15.203:

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 anantenna that uses a unique coupling to the intentional radiator, 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.

Test Result:

The antenna is an Internal Antenna and no consideration of replacement. The best case gain of the antenna is 2.24 dBi.

5.2. Conducted Emissions (AC Main)

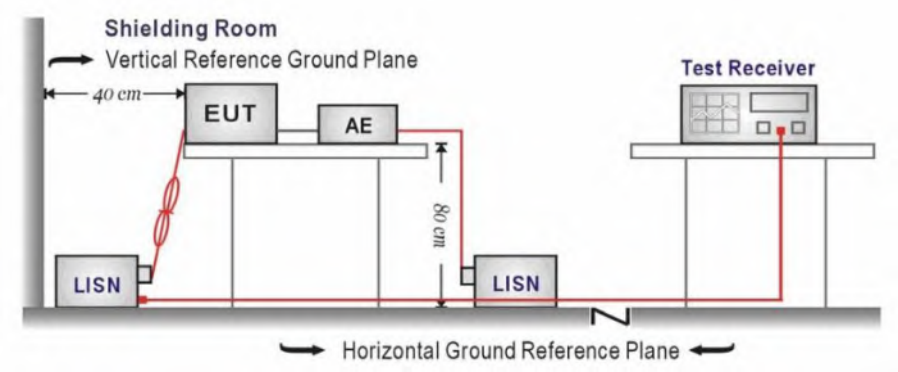
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207:

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was setup according to ANSI C63.10:2013 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor,was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted Emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

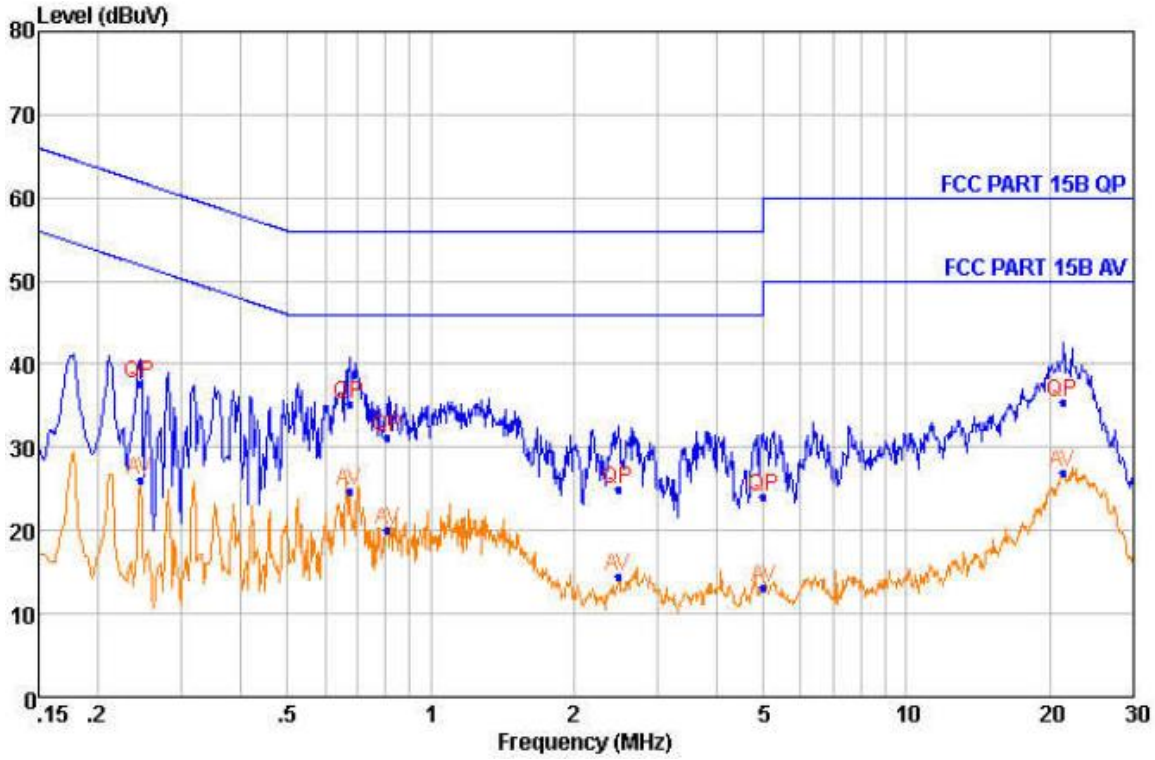
☒ **Passed** ☐ **Not Applicable**

Note:

1) Transd=Cable lose+ Pulse Limiter Factor + Artificial Mains Factor
2) Margin= Limit -Level

Test Line:	

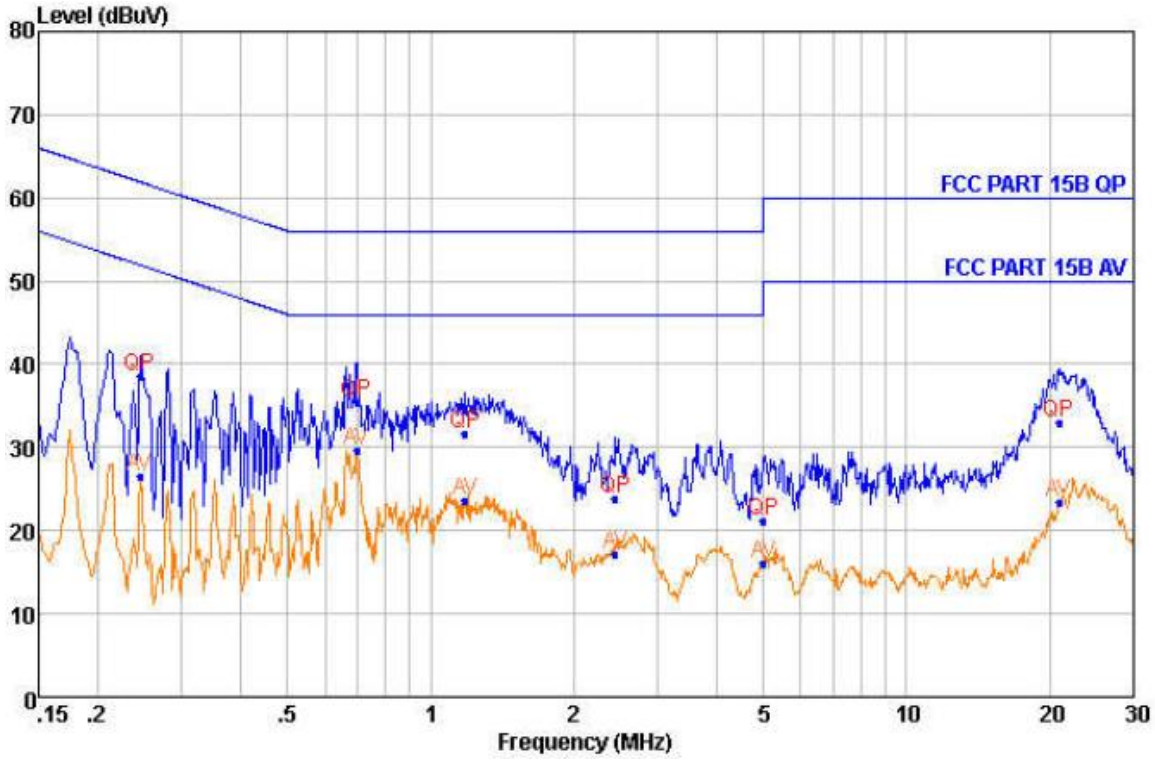
Live line



NO.	Freq MHz	Level dBuV	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuV	Over Limit dB
1	0.245	37.58	QP	9.67	0.23	61.92	-24.34
2	0.246	26.09	Average	9.67	0.23	51.91	-25.82
3	0.674	35.11	QP	9.70	0.29	56.00	-20.89
4	0.674	24.77	Average	9.70	0.29	46.00	-21.23
5	0.811	31.12	QP	9.69	0.30	56.00	-24.88
6	0.811	20.16	Average	9.69	0.30	46.00	-25.84
7	2.481	24.93	QP	9.64	0.36	56.00	-31.07
8	2.481	14.48	Average	9.64	0.36	46.00	-31.52
9	5.000	23.97	QP	9.60	0.40	56.00	-32.03
10	5.000	13.10	Average	9.60	0.40	46.00	-32.90
11	21.316	35.39	QP	9.68	0.48	60.00	-24.61
12	21.316	27.07	Average	9.68	0.48	50.00	-22.93

Test Line:	

Neutral Line



NO.	Freq MHz	Level dBuV	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuV	Over Limit dB
1	0.245	38.45	QP	9.64	0.23	61.92	-23.47
2	0.246	26.44	Average	9.64	0.23	51.91	-25.47
3	0.699	35.41	QP	9.62	0.29	56.00	-20.59
4	0.699	29.61	Average	9.62	0.29	46.00	-16.39
5	1.182	31.60	QP	9.63	0.32	56.00	-24.40
6	1.182	23.60	Average	9.63	0.32	46.00	-22.40
7	2.442	23.92	QP	9.62	0.36	56.00	-32.08
8	2.442	17.21	Average	9.62	0.36	46.00	-28.79
9	5.000	21.23	QP	9.62	0.40	56.00	-34.77
10	5.000	16.02	Average	9.62	0.40	46.00	-29.98
11	20.878	32.91	QP	9.62	0.48	60.00	-27.09
12	20.878	23.29	Average	9.62	0.48	50.00	-26.71

5.3. Maximum Conducted Output Power

LIMIT

FCC CFR Title 47 Part 15 Subpart E Section 15.407(a):

For the 5.15~5.25GHz band:

- Outdoor AP
  The maximum conducted output power (P_{out}) shall not exceed the lesser of 1W (30dBm).
  if G_{Tx}>6dBi, then P_{out} =30-(G_{Tx}-6). e.i.r.p. at any elevation angle above 30 degrees≤125mW (21dBm)
- Indoor AP
  The maximum conducted output power (P_{out}) shall not exceed the lesser of 1W (30dBm).
  if G_{Tx}>6dBi, then Pout =30-(G_{Tx}-6).
- Point-to-point AP
  The maximum conducted output power (P_{out}) shall not exceed the lesser of 1W (30dBm).
  if G_{Tx}>23dBi, then Pout =30-(G_{Tx}-23).
- Client devices
  The maximum conducted output power (P_{out}) shall not exceed the lesser of 250W (24dBm).
  if G_{Tx}>6dBi, then Pout =24-(G_{Tx}-6).

For the 5.25~5.35GHz band:

The maximum conducted output power (P_{out}) shall not exceed the lesser of 250mW (24dBm) or 11dBm+10 log B, where B is the 26dB emission bandwith in MHz.
if G_{Tx}>6dBi, then P_{out} =24-(G_{Tx}-6).

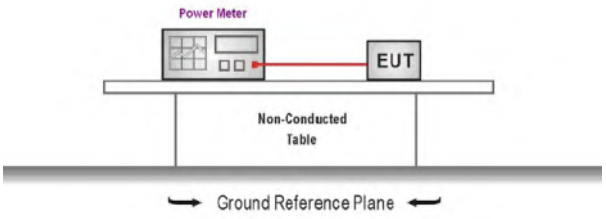
For the 5.47~5.725GHz band:

The maximum conducted output power (P_{out}) shall not exceed the lesser of 250mW (24dBm) or 11dBm+10 log B, where B is the 26dB emission bandwith in MHz.
if G_{Tx}>6dBi, then P_{out} =24-(G_{Tx}-6).

For the 5.725~5.85GHz band:

- Point-to-multipoint systems (P2M)
  The maximum conducted output power (P_{out}) shall not exceed the lesser of 1W (30dBm).
  if G_{Tx}>6dBi, then P_{out} =30-(G_{Tx}-6).
- Point-to-point systems (P2P)
  The maximum conducted output power (P_{out}) shall not exceed the lesser of 1W (30dBm).

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was tested according to KDB789033 Section E-3-b)
2. The maximum conducted output power may be measured using a broadband AVG RF power meter.
3. Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor.
4. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.
5. Record the measurement data.

TEST MODE:

Please refer to the clause 3.3

TEST RESULT ☒ **Passed** ☐ **Not Applicable**

Band	Type	Frequency (MHz)	Conducted Output Power (dBm)	Limit (dBm)	Result
I	802.11a	5180	7.925	24	Pass
		5200	7.750		
		5240	7.908		
	802.11n-HT20	5180	6.583	24	Pass
		5200	6.308		
		5240	5.481		
	802.11n-HT40	5190	12.100	24	Pass
		5230	12.135		
	802.11ac VH80	5210	8.800	24	Pass
II	802.11a	5260	7.145	24	Pass
		5280	8.222		
		5320	8.296		
	802.11n-HT20	5260	5.674	24	Pass
		5280	6.663		
		5320	6.348		
	802.11n-HT40	5270	11.989	24	Pass
		5310	12.631		
	802.11ac VH80	5290	9.942	24	Pass

Band	Type	Frequency (MHz)	Conducted Output Power (dBm)	Limit (dBm)	Result
III	802.11a	5500	8.419	24	Pass
		5600	7.612		
		5700	8.857		
	802.11n-HT20	5500	5.979	24	Pass
		5600	5.162		
		5700	6.498		
	802.11n-HT40	5510	12.416	24	Pass
		5590	12.342		
		5670	12.312		
	802.11ac VH80	5530	10.379	24	Pass
		5610	9.672		
IV	802.11a	5745	8.209	30	Pass
		5785	9.444		
		5825	9.722		
	802.11n-HT20	5745	6.341	30	Pass
		5785	7.258		
		5825	7.844		
	802.11n-HT40	5755	12.801	30	Pass
		5795	12.635		
	802.11ac VH80	5775	10.721	30	Pass

5.4. Maximum Power Spectral Density

LIMIT

FCC CFR Title 47 Part 15 Subpart E Section 15.407(a):

For the 5.15~5.25GHz band:

- Outdoor AP
  The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz.
  if G_{Tx}>6dBi, then PSD =17-(G_{Tx}-6).
- Indoor AP
  The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz.
  if G_{Tx}>6dBi, then PSD =17-(G_{Tx}-6).
- Point-to-point AP
  The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz.
  if G_{Tx}>23dBi, then PSD =17-(G_{Tx}-23).
- Client devices
  The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz.
  if G_{Tx}>6dBi, then PSD =11-(G_{Tx}-6).

For the 5.25~5.35GHz band:

The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz.
if G_{Tx}>6dBi, then PSD =11-(G_{Tx}-6).

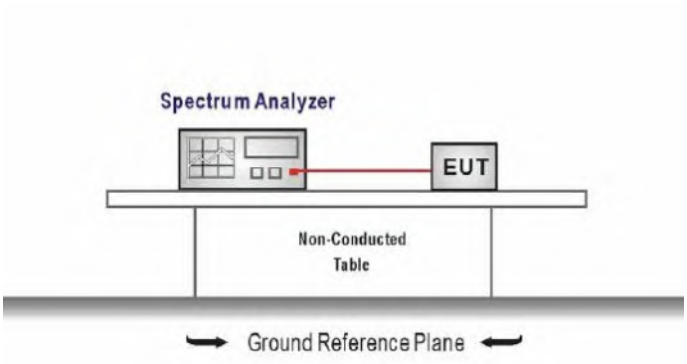
For the 5.47~5.725GHz band:

The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz.
if G_{Tx}>6dBi, then PSD =11-(G_{Tx}-6).

For the 5.725~5.85GHz band:

- Point-to-multipoint systems (P2M)
  The peak power spectral density (PSD) shall not exceed the lesser of 30dBm/500kHz.
  if G_{Tx}>6dBi, then PSD =30-(G_{Tx}-6).
- Point-to-point systems (P2P)
  The peak power spectral density (PSD) shall not exceed the lesser of 30dBm/500kHz.

TEST CONFIGURATION



TEST PROCEDURE

1. According KDB 789033 D02 – Section F
2. Analyzer was setting as follow:
   Center frequency: test channel
   Span was set to encompass the entire emission bandwidth of the signal
   RBW=1MHz for devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz
   RBW=500kHz for devices operating in the band 5.725-5.85 GHz
   VBW ≥ 3 RBW
   Number of sweep points > 2 x (span/RBW)
   Sweep time = auto
   Detector = Peak
   Trigger was set to free run for all modes, trace was averaged over 100 sweeps
3. The peak search function of the spectrum analyzer was used to find the peak of the spectrum.

TEST MODE:

Please refer to the clause 3.3

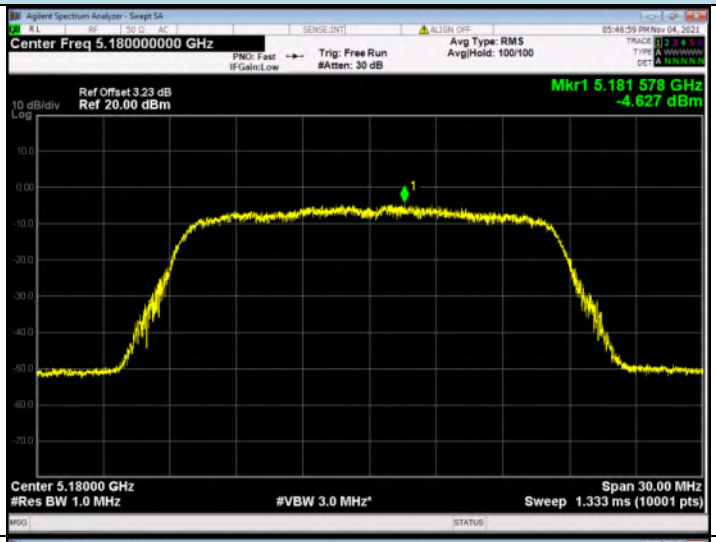
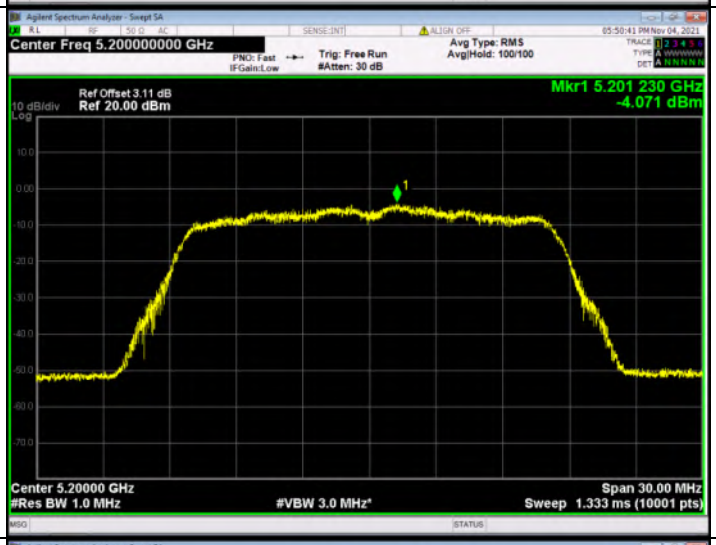
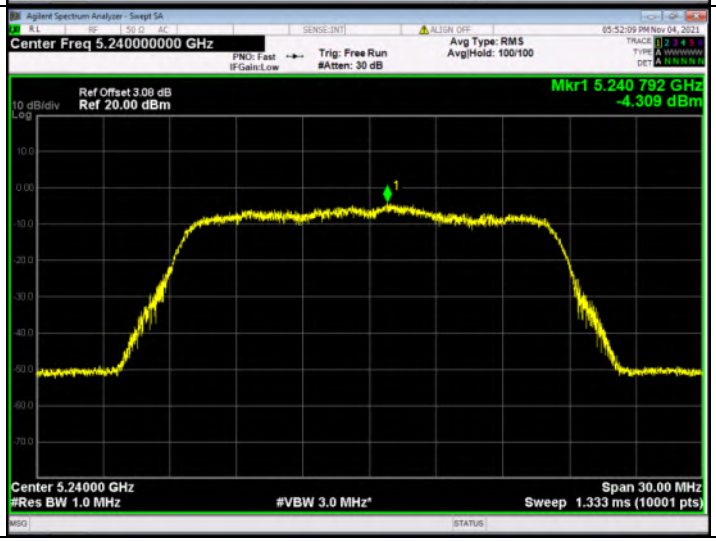
TEST RESULTS

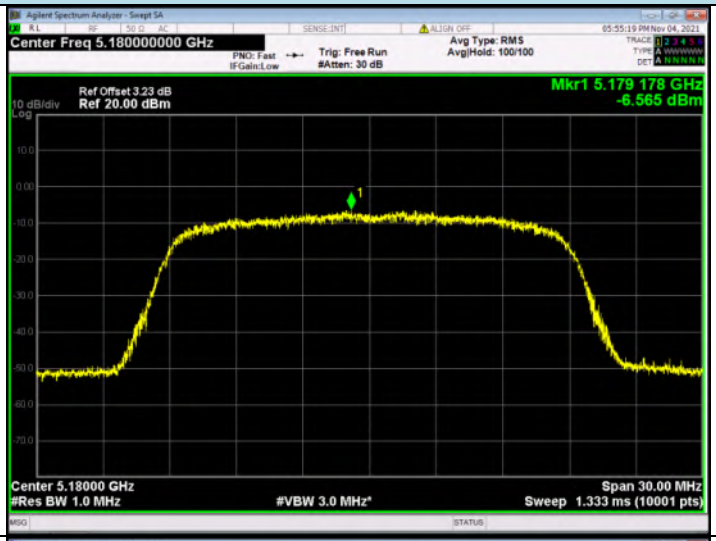
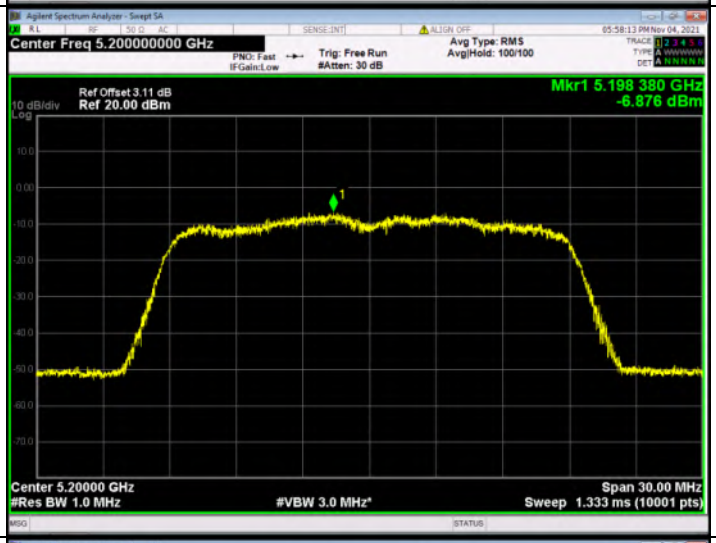
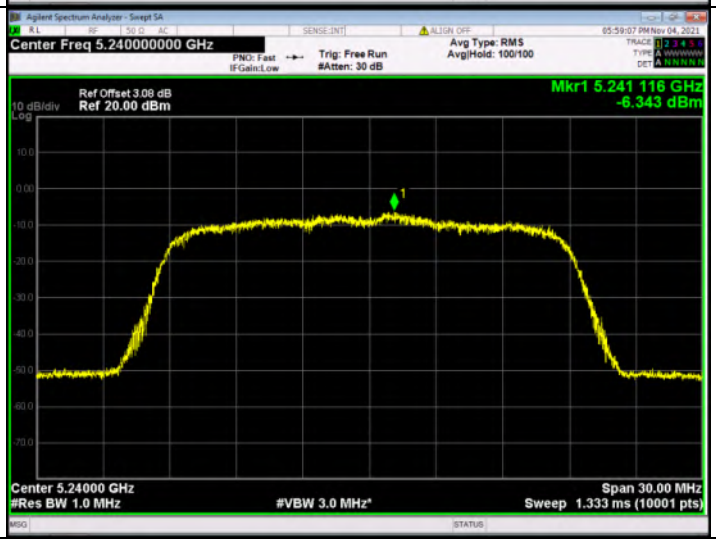
☒ **Passed** ☐ **Not Applicable**

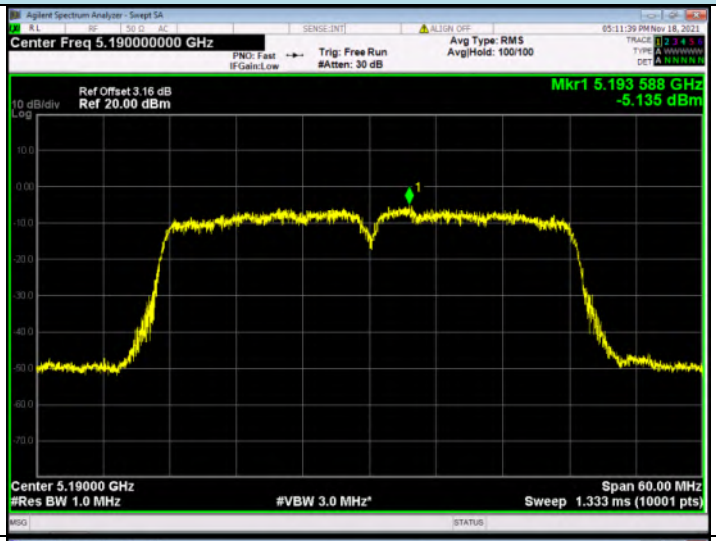
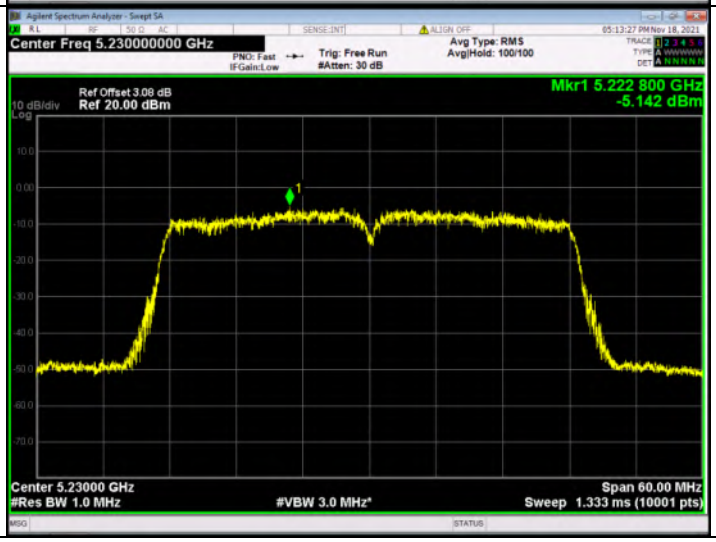
Band	Type	Frequency (MHz)	Power Spectral Density (dBm/MHz))	Limit (dBm/MHz)	Result
I	802.11a	5180	-4.627	11	Pass
		5200	-4.071		
		5240	-4.309		
	802.11n-HT20	5180	-6.565	11	Pass
		5200	-6.876		
		5240	-6.343		
	802.11n-HT40	5190	-5.135	11	Pass
		5230	-5.142		
	802.11ac VH80	5210	-12.902	11	Pass
II	802.11a	5260	-4.973	11	Pass
		5280	-3.755		
		5320	-4.038		
	802.11n-HT20	5260	-7.063	11	Pass
		5280	-6.075		
		5320	-5.815		
	802.11n-HT40	5270	-5.082	11	Pass
		5310	-4.243		
	802.11ac VH80	5290	-12.017	11	Pass

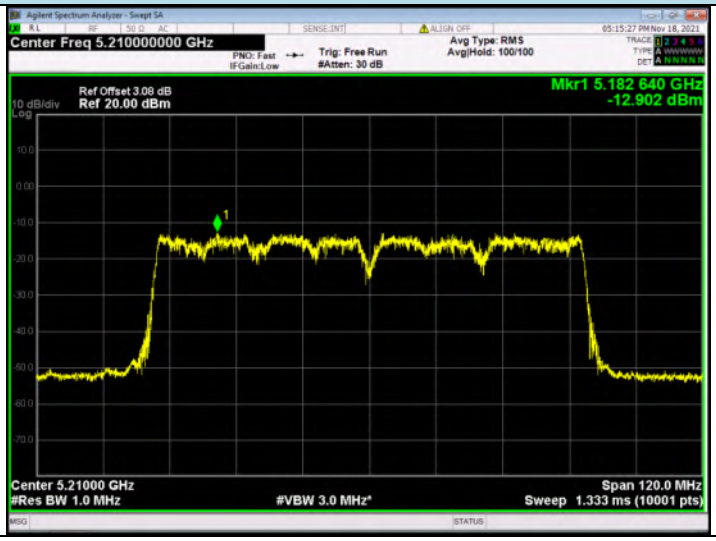
Band	Type	Frequency (MHz)	Power Spectral Density (dBm/MHz))	Limit (dBm/MHz)	Result
III	802.11a	5500	-4.092	11	Pass
		5600	-4.822		
		5700	-3.445		
	802.11n-HT20	5500	-5.795	11	Pass
		5600	-6.816		
		5700	-6.045		
	802.11n-HT40	5510	-4.621	11	Pass
		5590	-5.371		
		5670	-5.737		
	802.11ac VH80	5530	-12.209	11	Pass
		5610	-11.977		
IV	802.11a	5745	-6.067	30	Pass
		5785	-5.451		
		5825	-4.906		
	802.11n-HT20	5745	-8.882	30	Pass
		5785	-8.021		
		5825	-7.325		
	802.11n-HT40	5755	-6.918	30	Pass
		5795	-7.281		
	802.11ac VH80	5775	-14.052	30	Pass

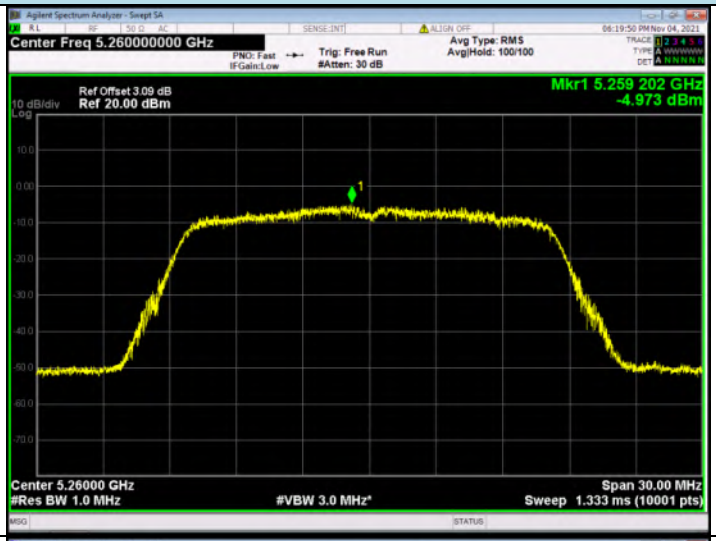
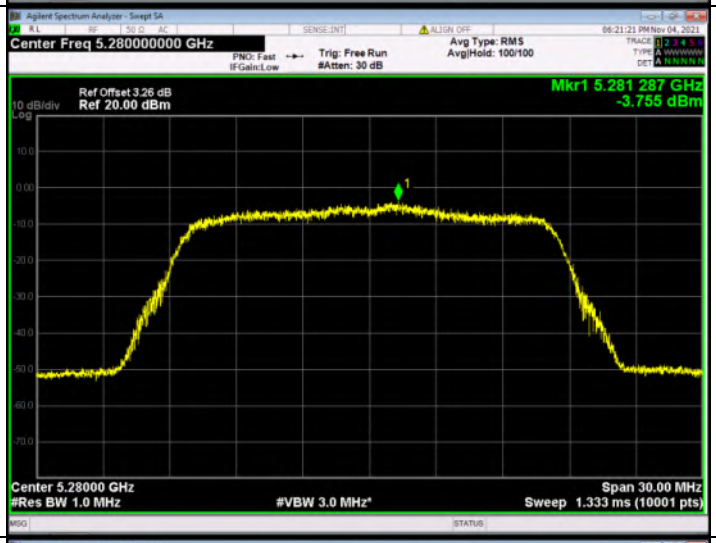
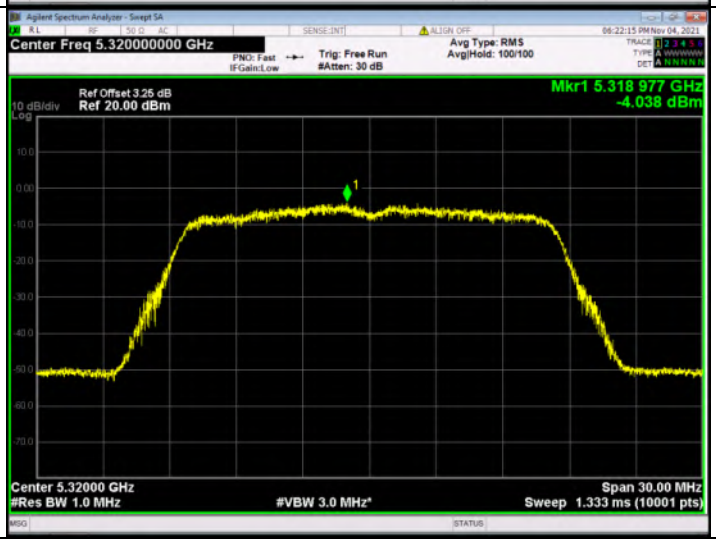
Test plot as follows:

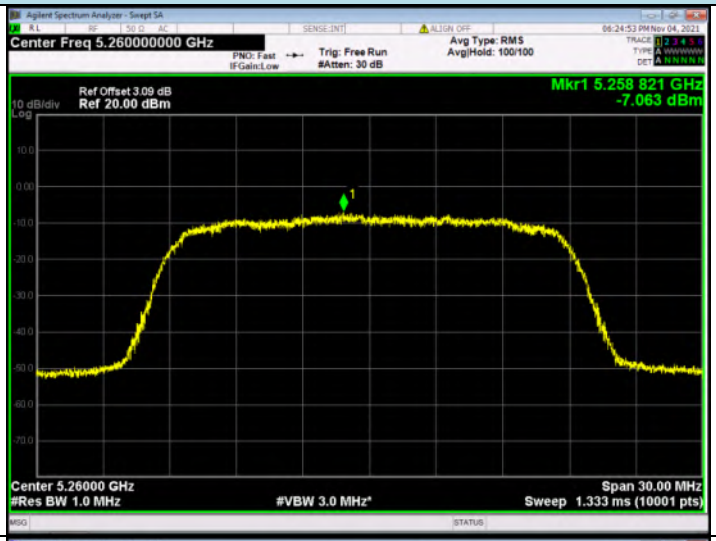
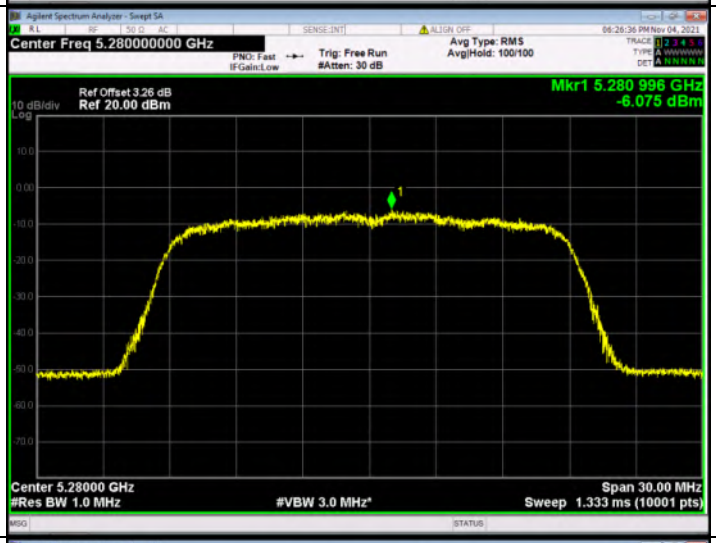
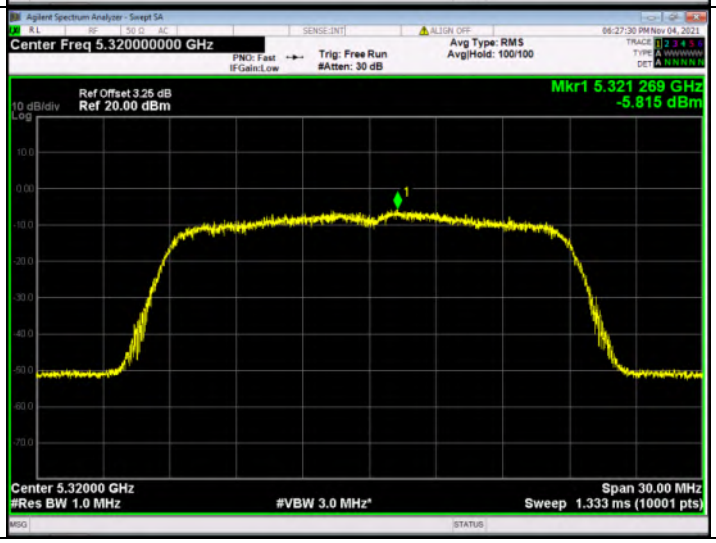
Band I		
Frequency	**802.11a**	
5180MHz		
5200MHz		
5240MHz		

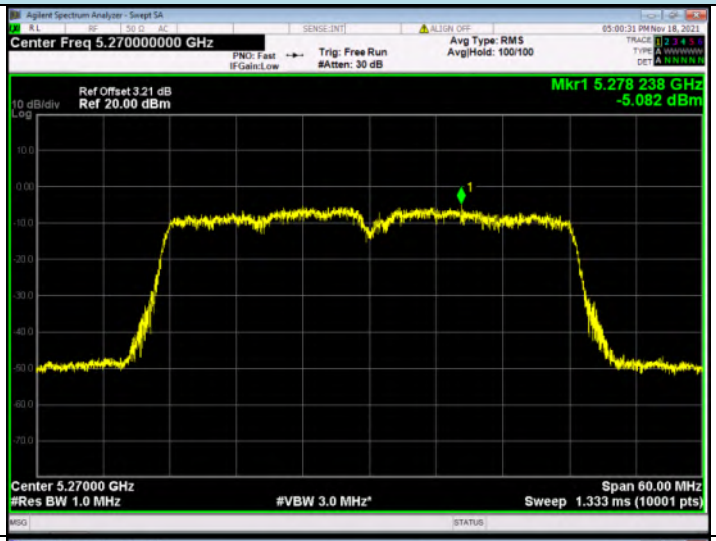
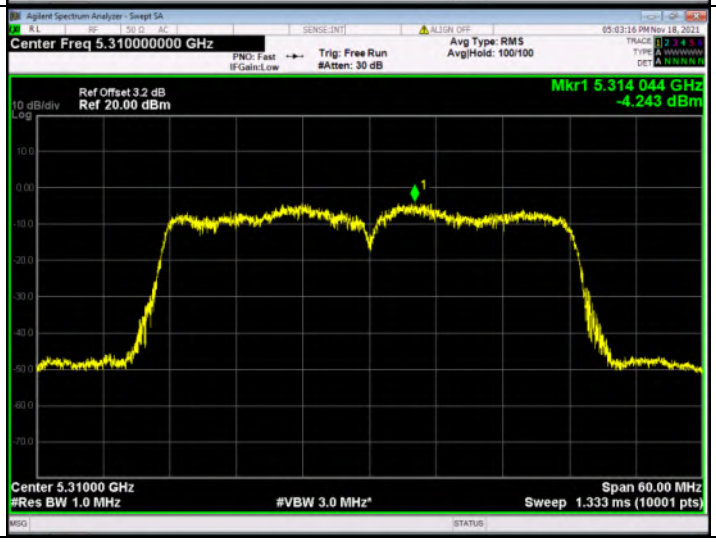
Frequency	**802.11n (HT20)**	
5180MHz		
5200MHz		
5240MHz		

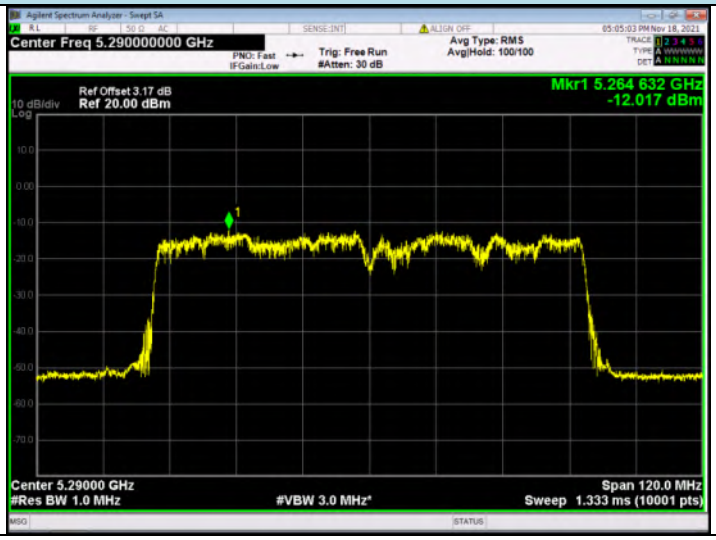
Frequency	**802.11n (HT40)**
5190MHz	
5230MHz	

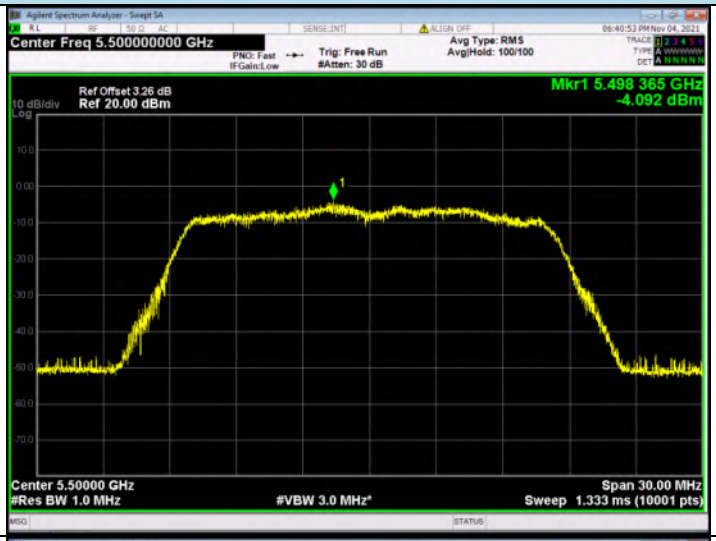
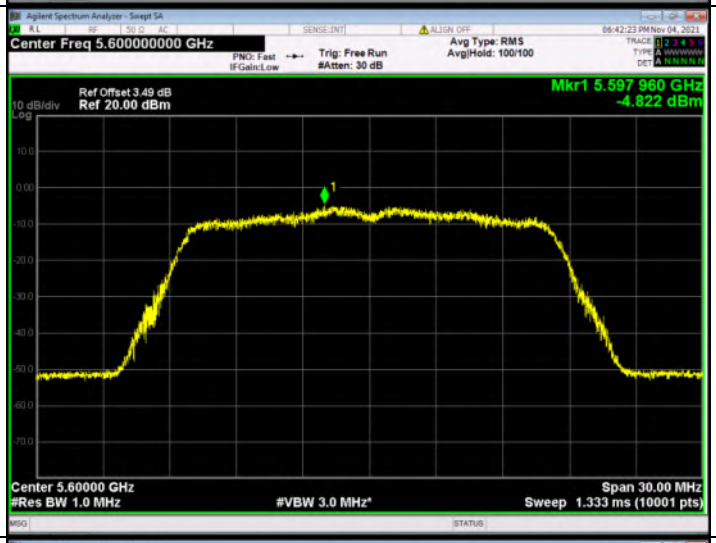
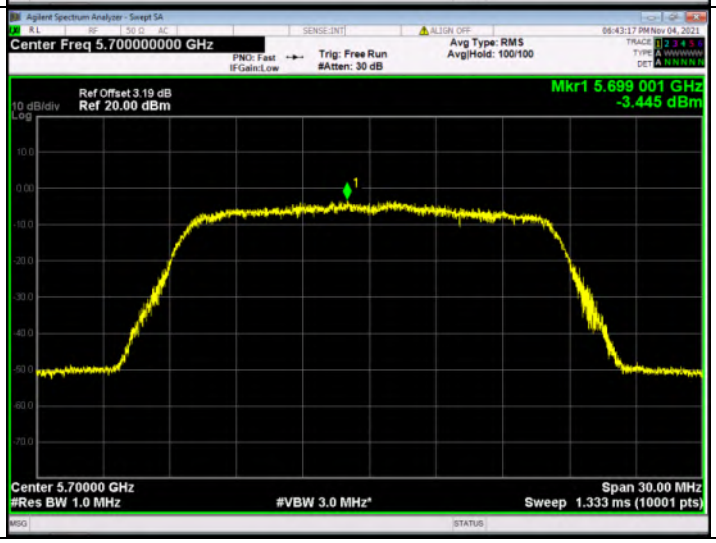
Frequency	**802.11ac VH80**
5210MHz	

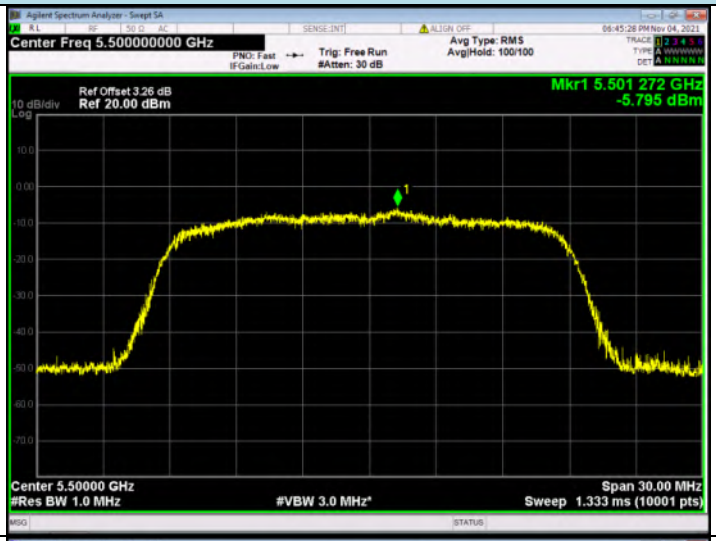
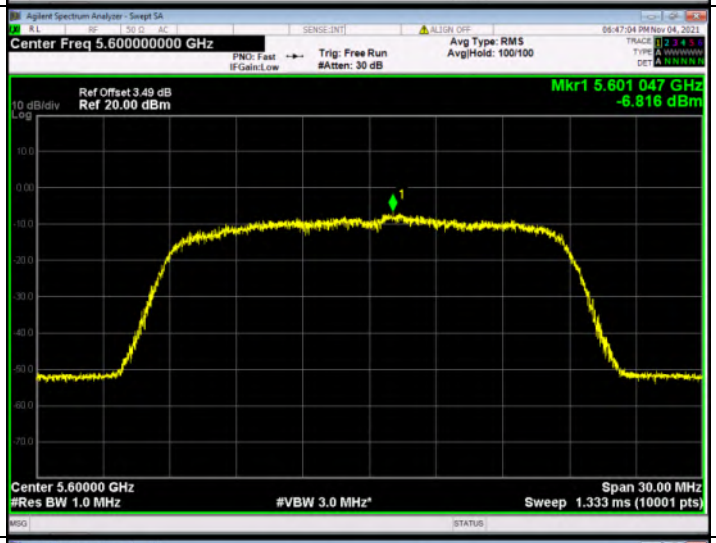
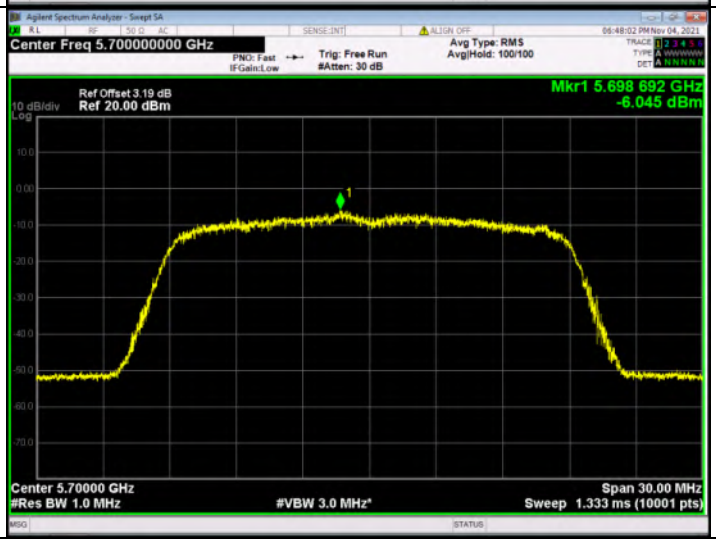
Band II			
Frequency	**802.11a**		
5260MHz			
5280MHz			
5320MHz			

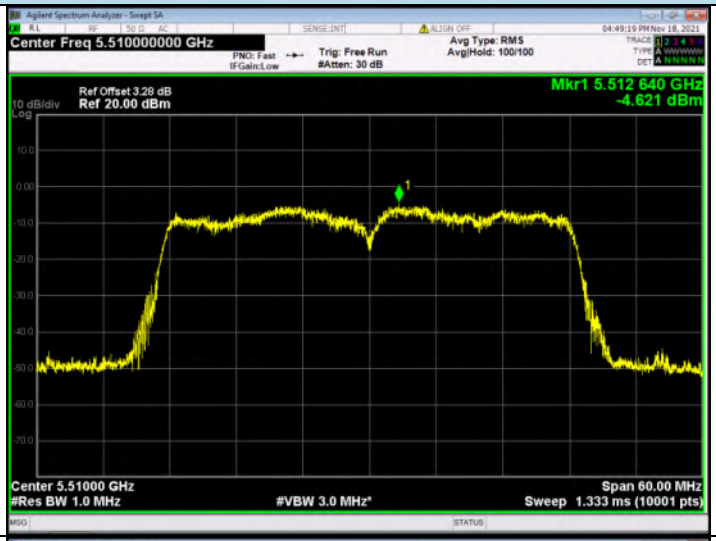
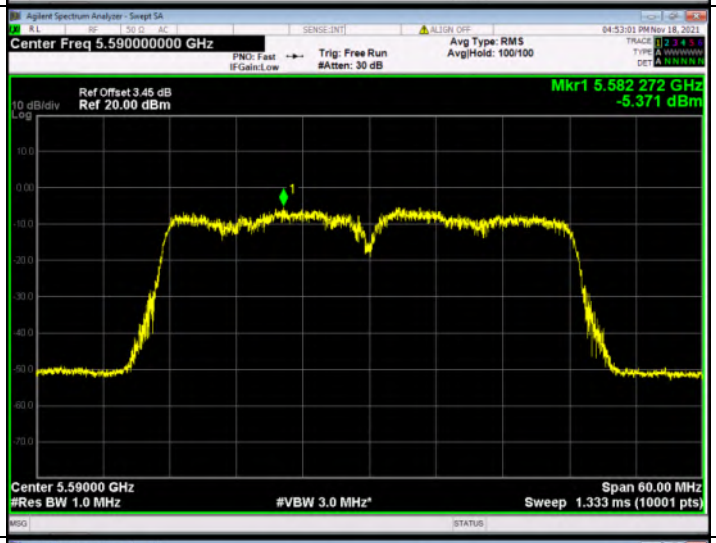
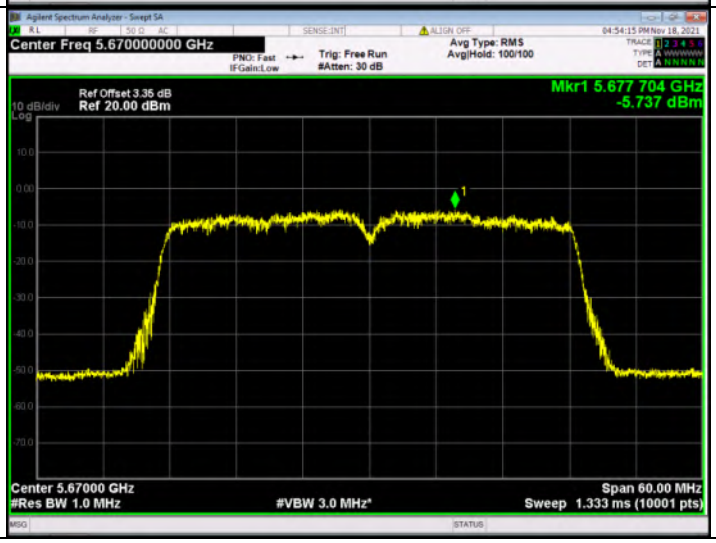
Frequency	**802.11n (HT20)**	
5260		
5280MHz		
5320		

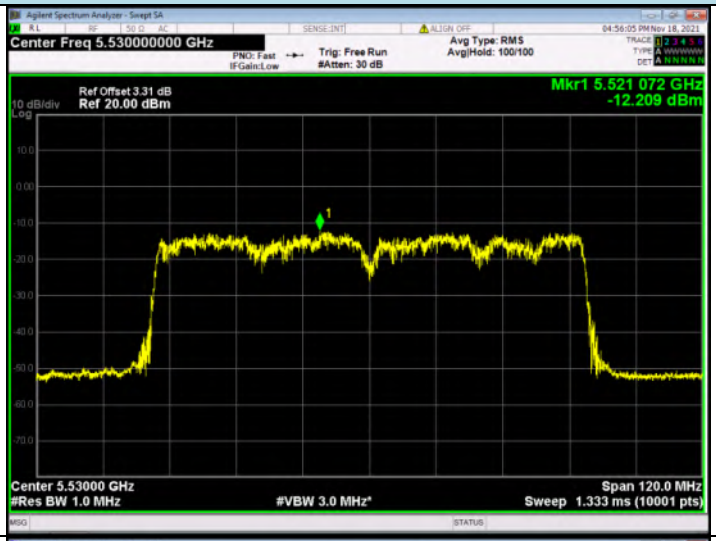
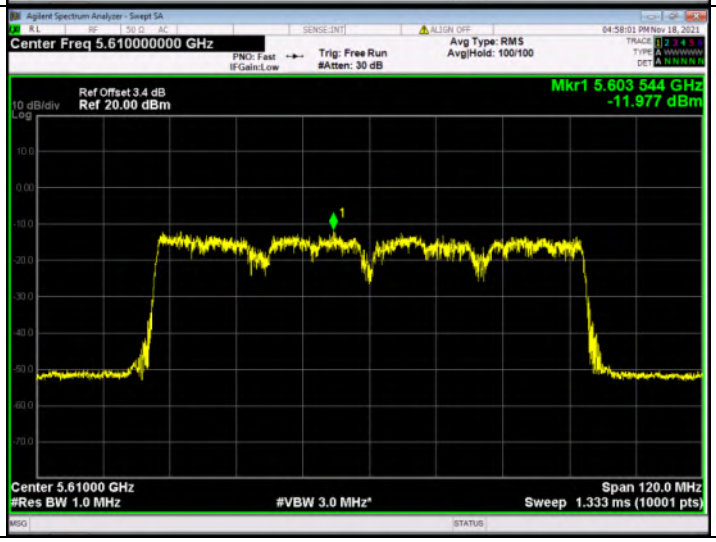
Frequency	**802.11n (HT40)**
5270MHz	
5310MHz	

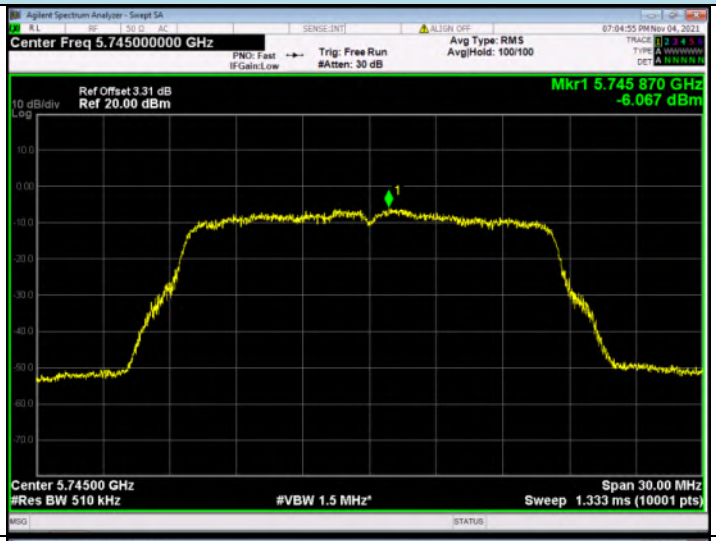
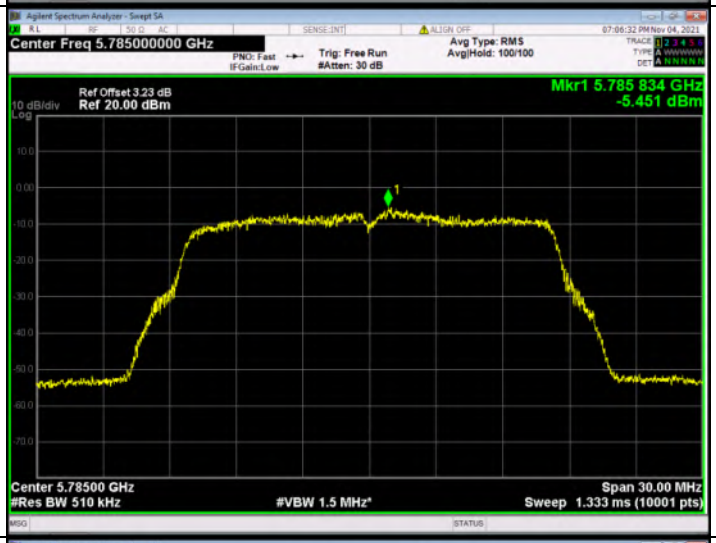
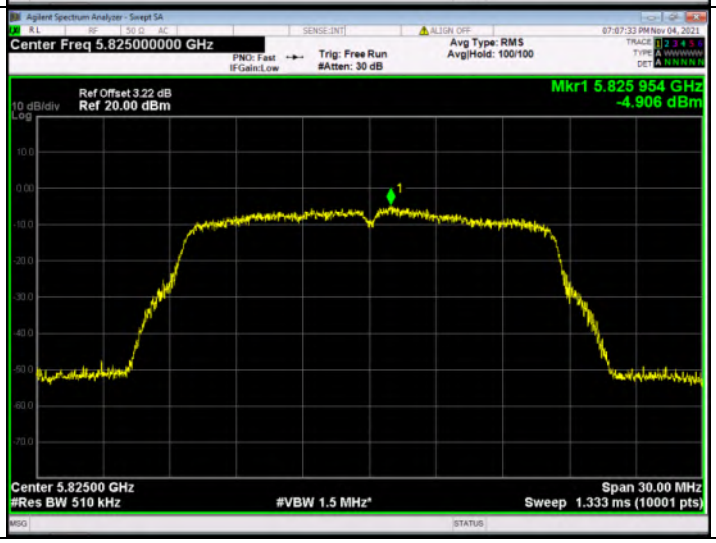
Frequency	**802.11ac VH80**
5290	

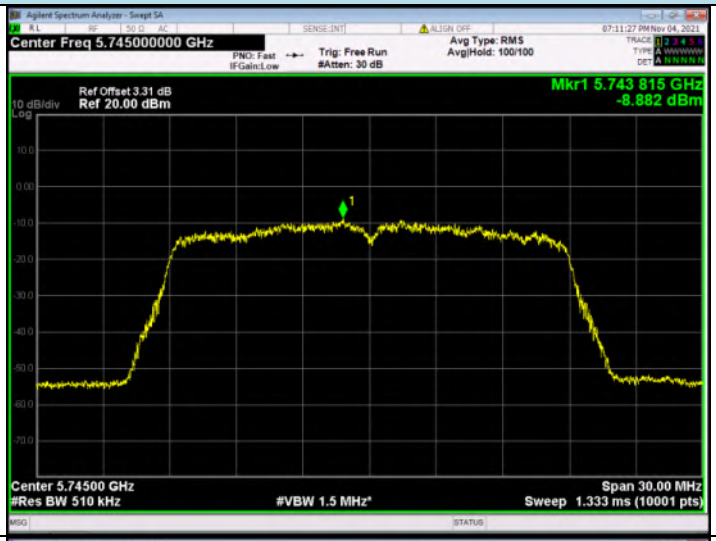
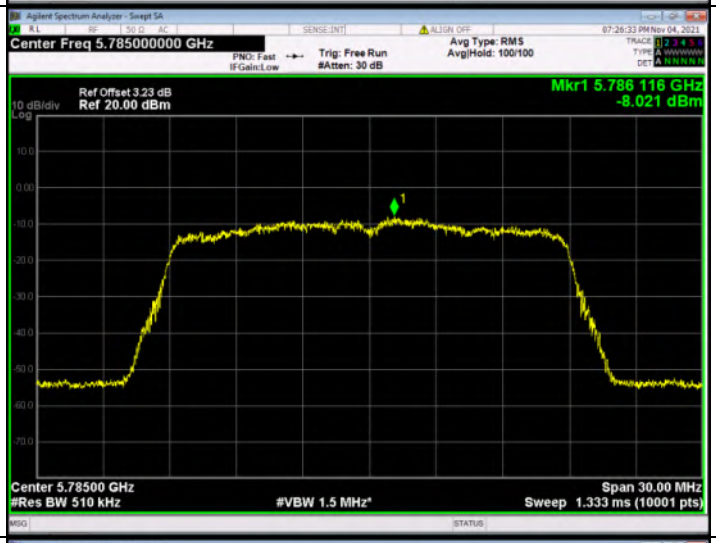
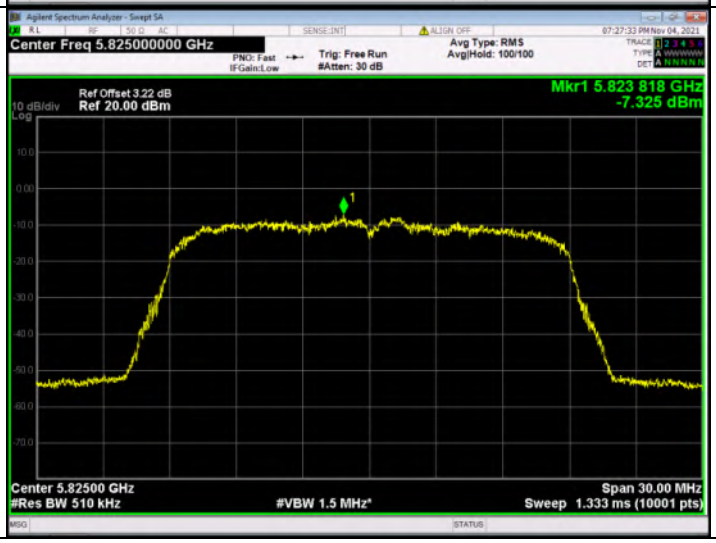
Band III			
Frequency	**802.11a**		
5500MHz			
5600MHz			
5700MHz			

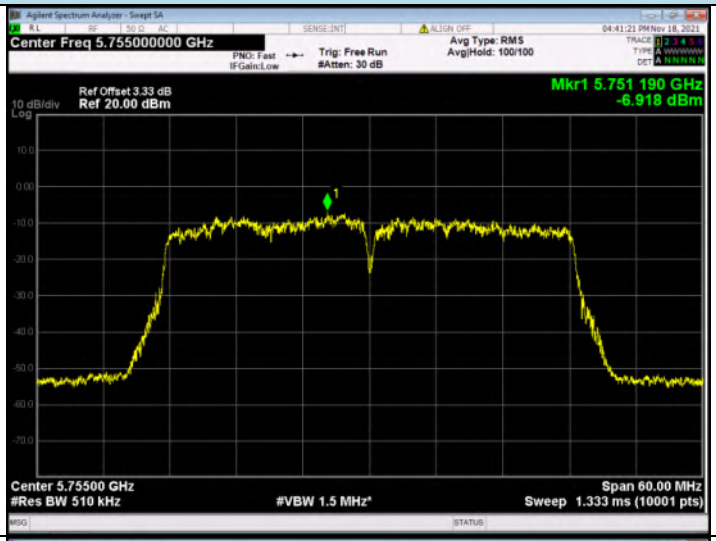
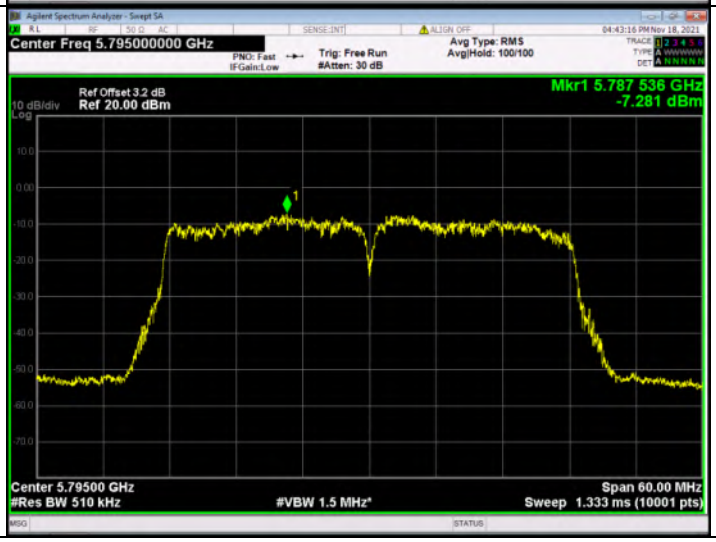
Frequency	**802.11n (HT20)**	
5500MHz		
5600MHz		
5700MHz		

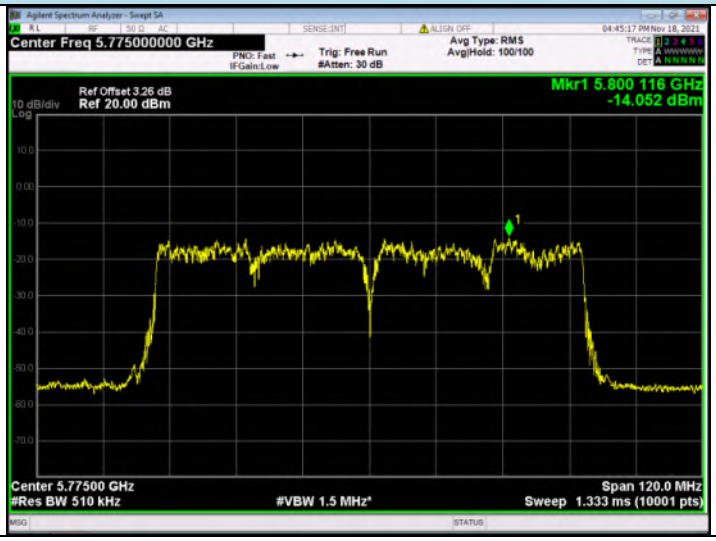
Frequency	**802.11n (HT40)**	
5510MHz		
5590MHz		
5670MHz		

Frequency	**802.11ac VH80**	
5530MHz		
5610MHz		

Band IV		
Frequency	802.11a	
5745MHz		
5785MHz		
5825MHz		

Frequency	**802.11n (HT20)**	
5745MHz		
5785MHz		
5825MHz		

Frequency	**802.11n (HT40)**	
5755MHz		
5795MHz		

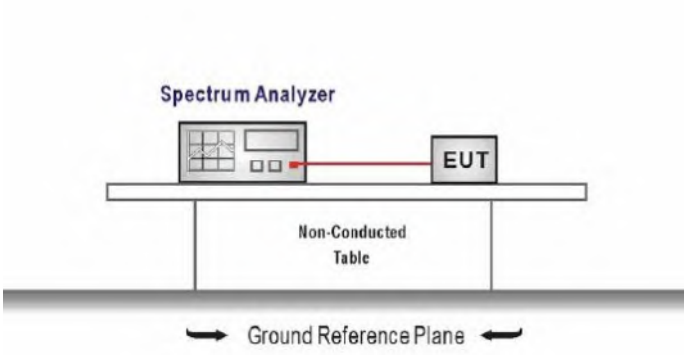
Frequency	**802.11ac VH80**	
5775MHz		

5.5. 26dB bandwidth and 99% Occupy bandwidth

LIMIT

The bandwidth at 26dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in KDB 789033 D02 , and at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26dB bandwidth.

TEST CONFIGURATION



TEST PROCEDURE

1. According KDB 789033 D02 – Section C
2. Connect the antenna port(s) to the spectrum analyzer input.
3. Configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).
   Center Frequency =Channel center frequency
   Span=2 x emission bandwidth
   RBW = 1% to 5% of the emission bandwidth
   VBW>3 x RBW
   Sweep time= auto couple
   Detector = Peak
   Trace mode = max hold
4. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter wave form on the spectrum analyzer.
5. Measure the maximum width of the emission that is 26 dB down from the maximum of the emission, and use the 99 % power bandwidth function of the instrument

TEST MODE:

Please refer to the clause 3.3

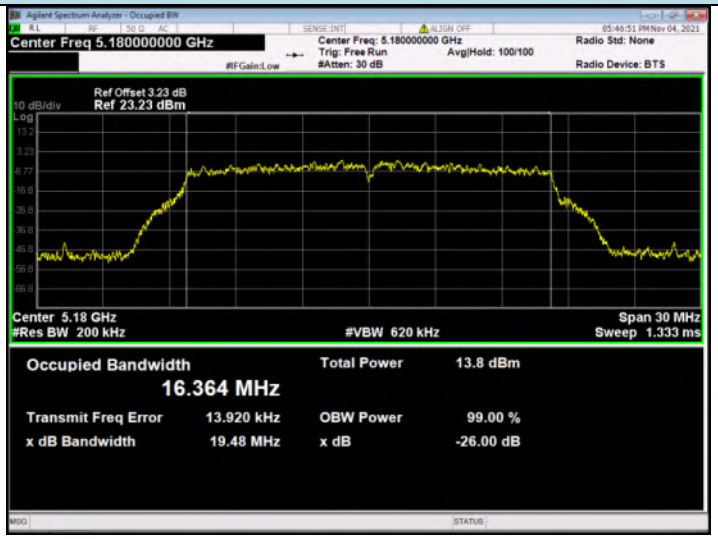
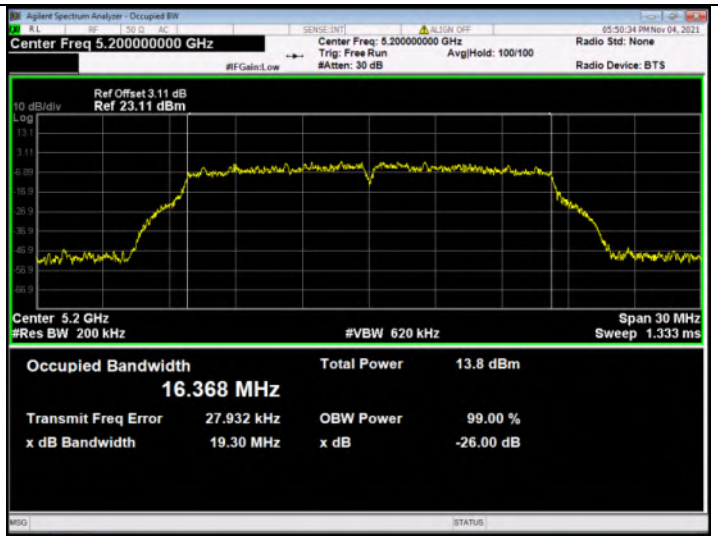
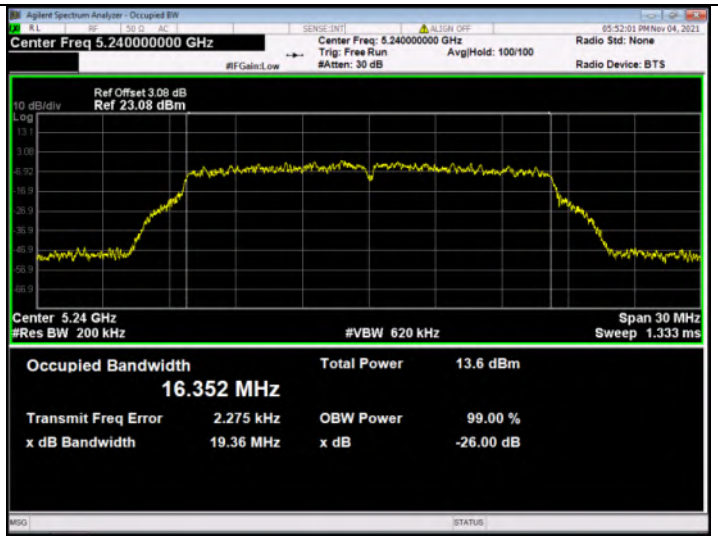
TEST RESULTS

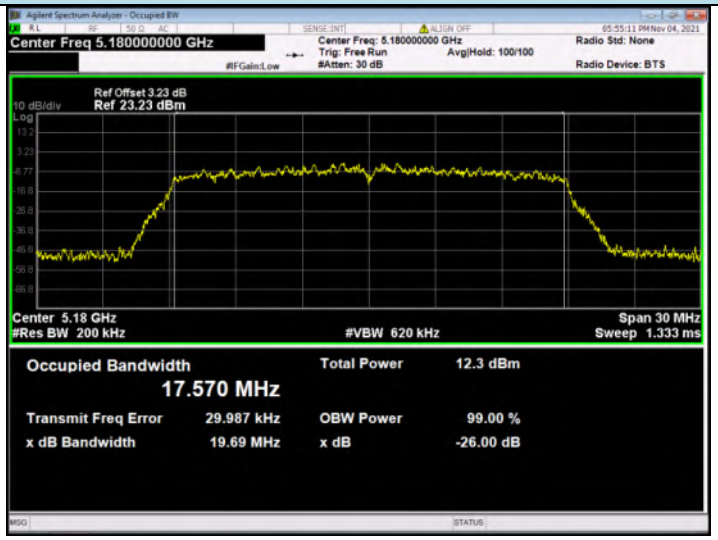
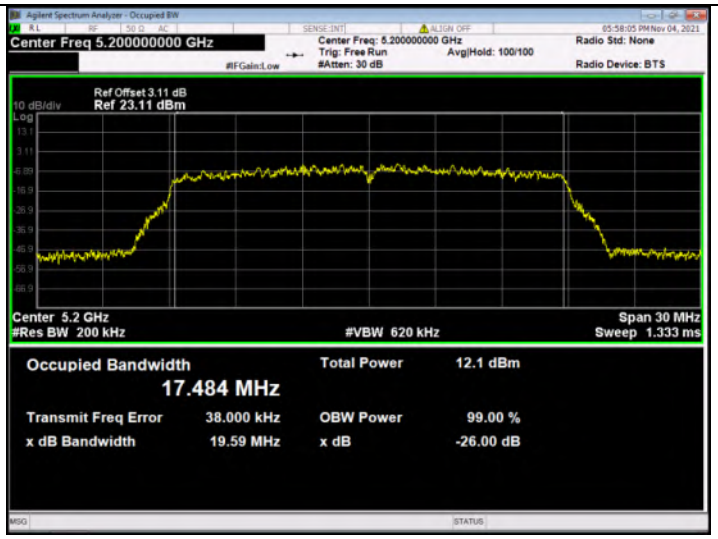
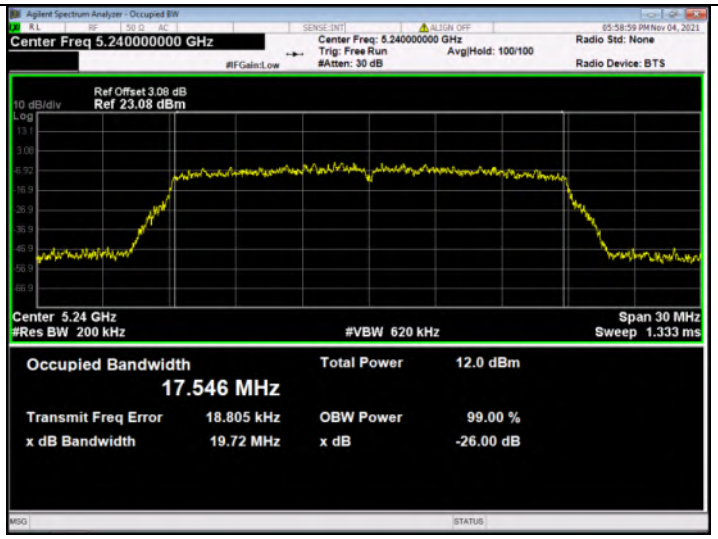
☒ **Passed** ☐ **Not Applicable**

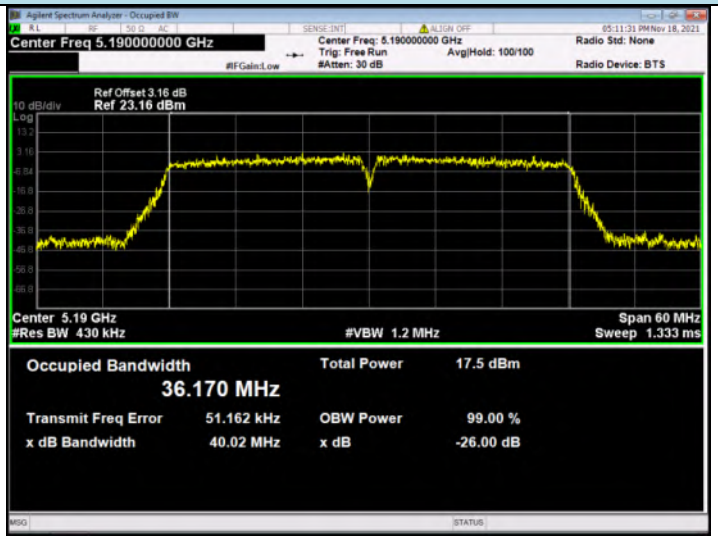
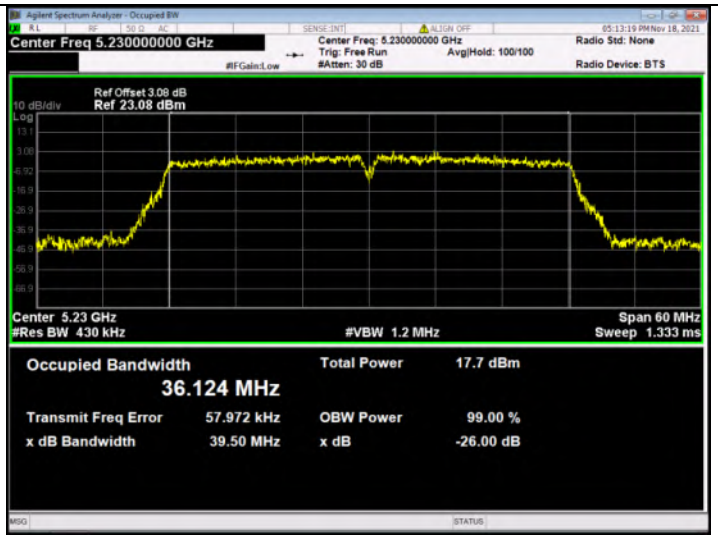
Band	Type	Channel	99% Occupy bandwith (MHz)	26dB bandwidth (MHz)	Result
I	802.11a	5180	16.364	19.48	Pass
		5200	16.368	19.30	
		5240	16.352	19.36	
	802.11n-HT20	5180	17.570	19.69	Pass
		5200	17.484	19.59	
		5240	17.546	19.72	
	802.11n-HT40	5190	36.170	40.02	Pass
		5230	36.124	39.50	
	802.11ac VH80	5210	76.060	80.79	Pass

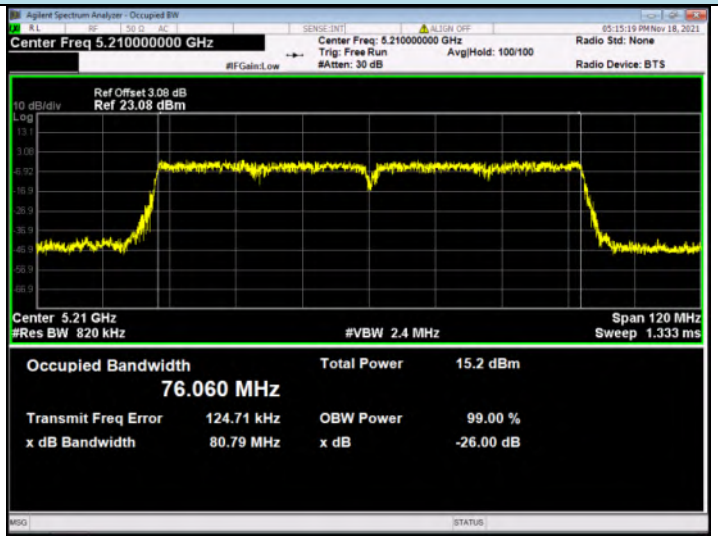
Band	Type	Channel	99% Occupy bandwith (MHz)	26dB bandwidth (MHz)	Result
II	802.11a	5260	16.416	19.37	Pass
		5280	16.279	19.25	
		5320	16.351	19.52	
	802.11n-HT20	5260	17.548	19.75	Pass
		5280	17.529	19.52	
		5320	17.565	19.62	
	802.11n-HT40	5270	36.095	39.81	Pass
		5310	36.162	39.86	
	802.11ac VH80	5290	75.939	81.26	Pass

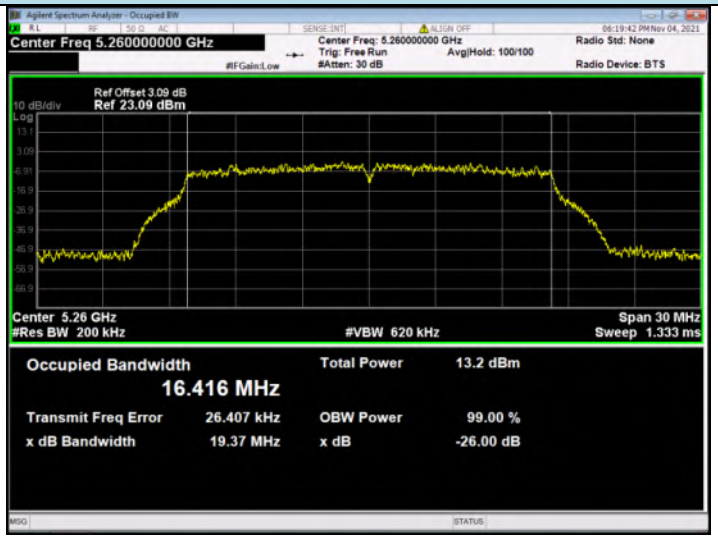
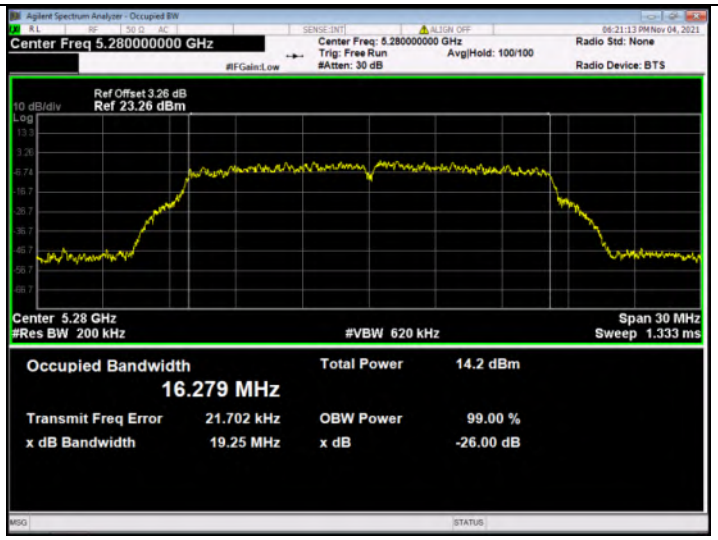
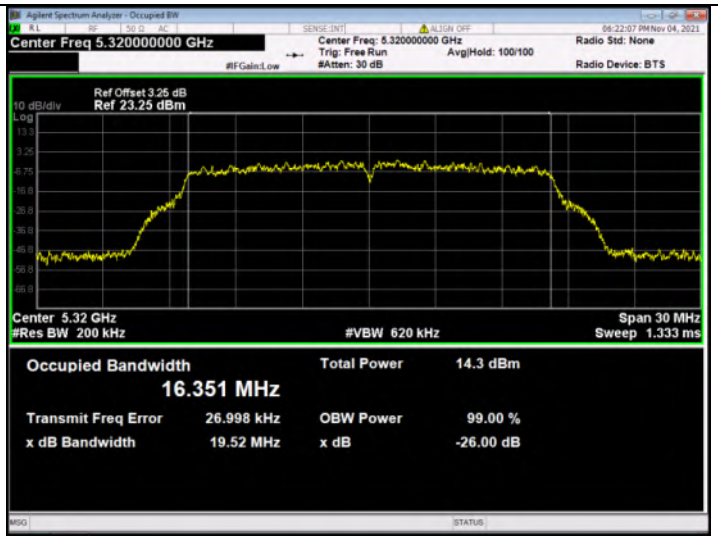
Band	Type	Channel	99% Occupy bandwith (MHz)	26dB bandwidth (MHz)	Result
III	802.11a	5500	16.356	19.26	Pass
		5600	16.393	19.07	
		5700	16.382	19.30	
	802.11n-HT20	5500	17.543	19.52	Pass
		5600	17.537	19.72	
		5700	17.528	19.62	
	802.11n-HT40	5510	36.090	39.36	Pass
		5590	36.094	39.95	
		5670	36.083	39.99	
	802.11ac VH80	5530	76.044	81.08	Pass
		5610	76.076	81.55	

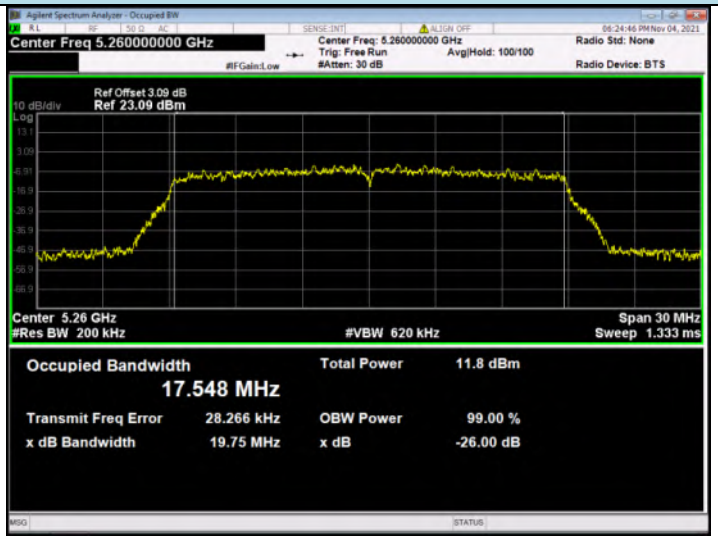
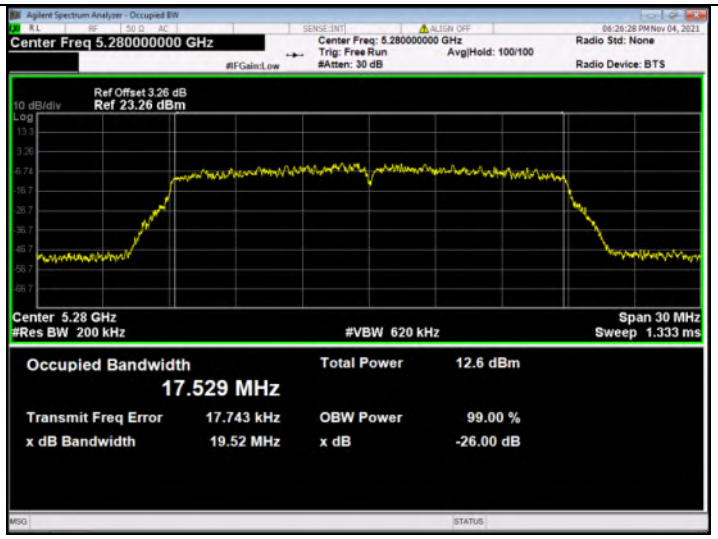
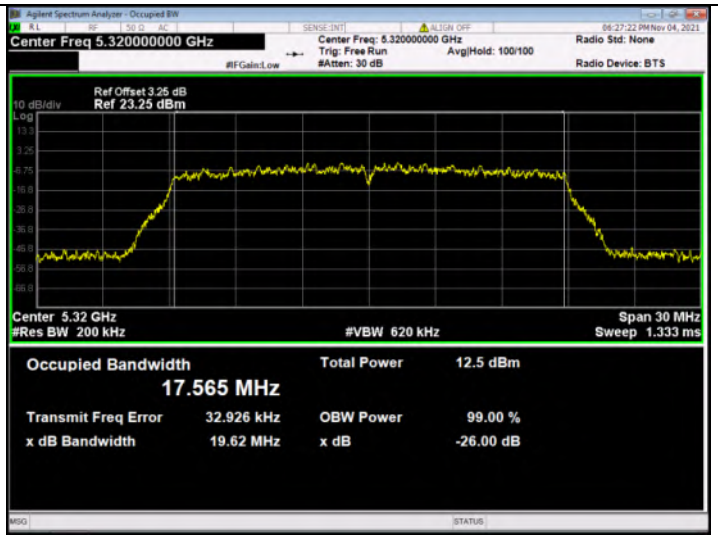
Band I	
Frequency	**802.11a**
5180MHz	
5200MHz	
5240MHz	

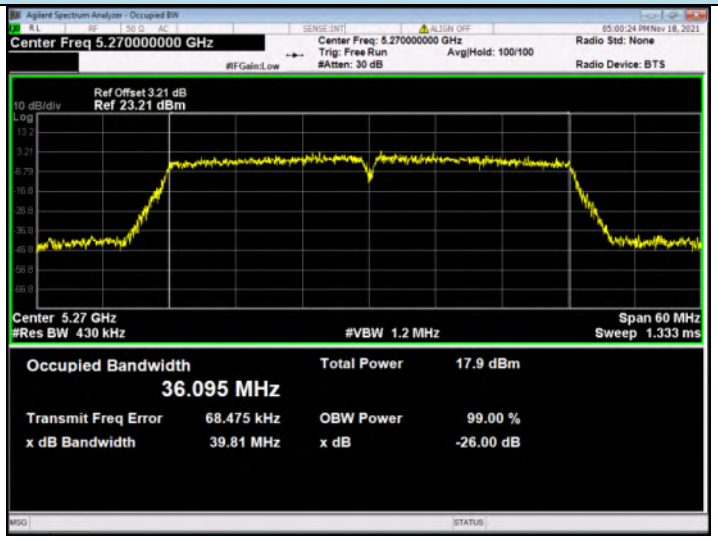
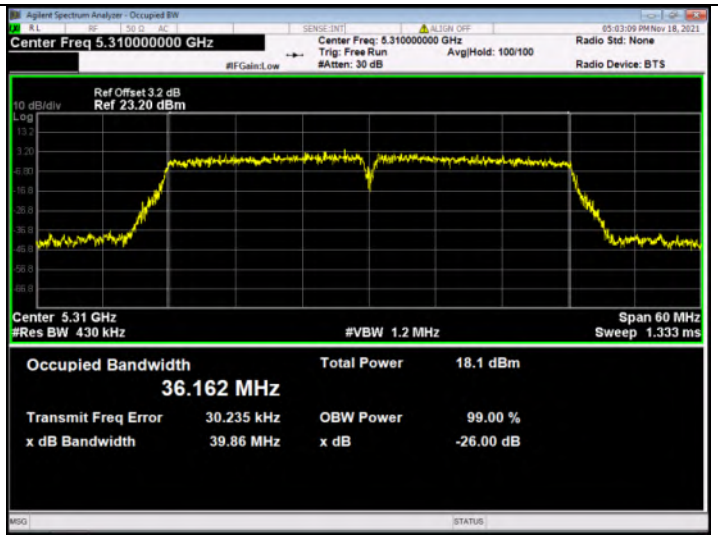
Frequency	**802.11n (HT20)**
5180MHz	
5200MHz	
5240MHz	

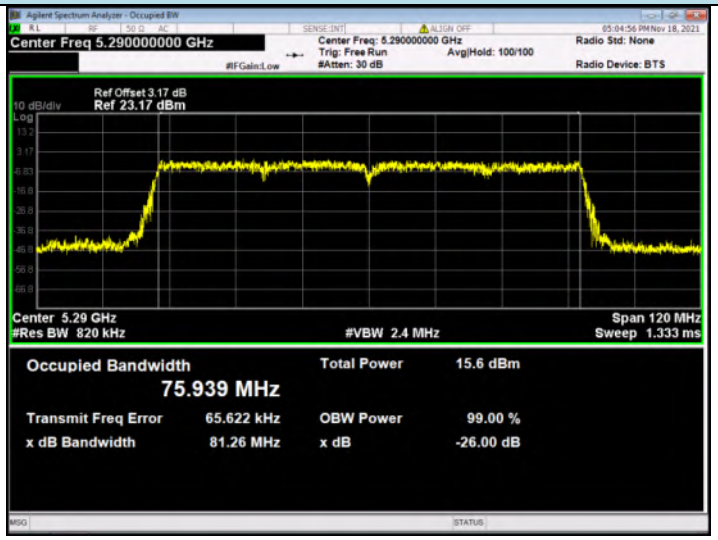
Frequency	802.11n (HT40)
5190MHz	
5230MHz	

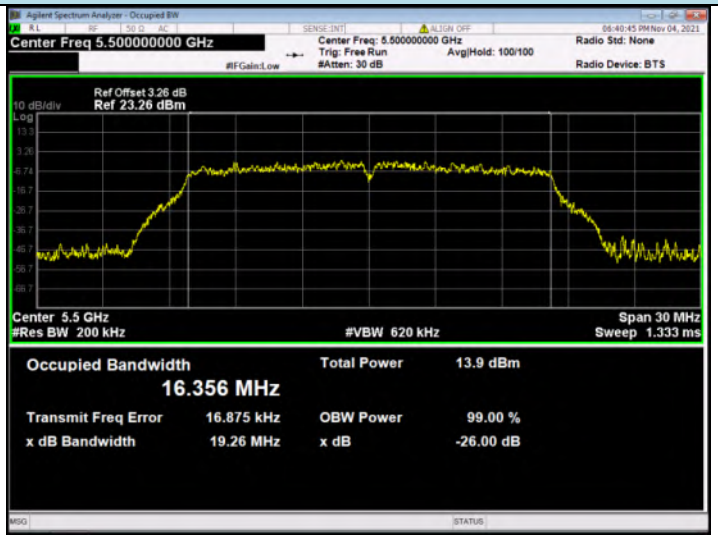
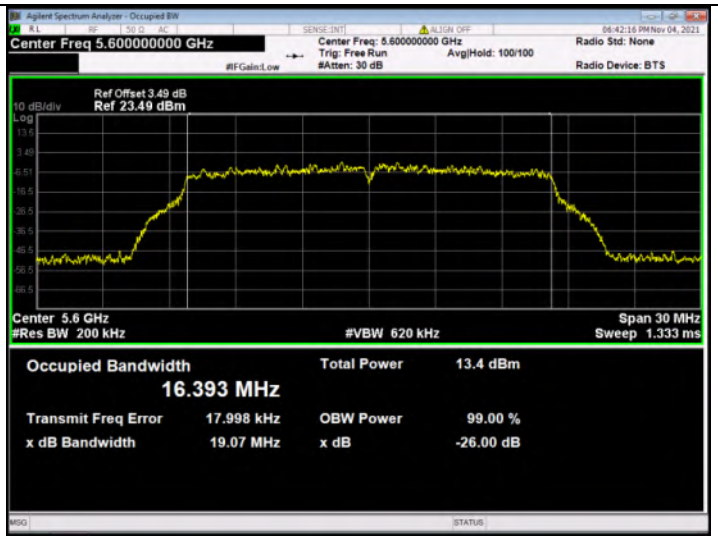
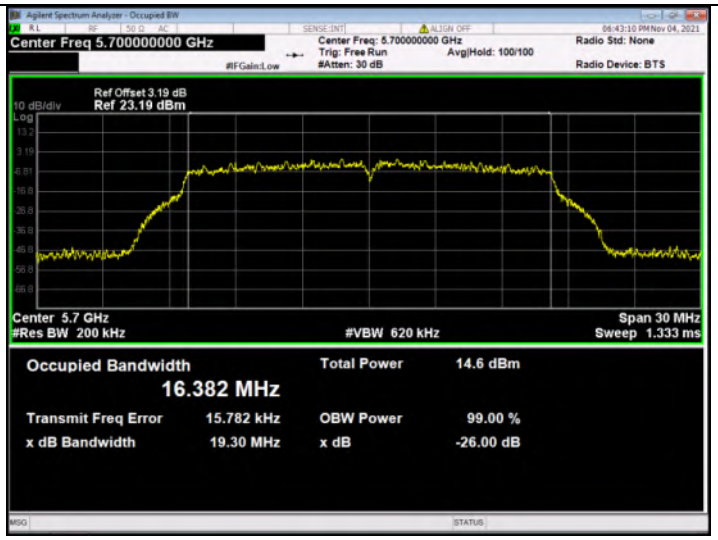
Frequency	802.11ac VH80
5210MHz	

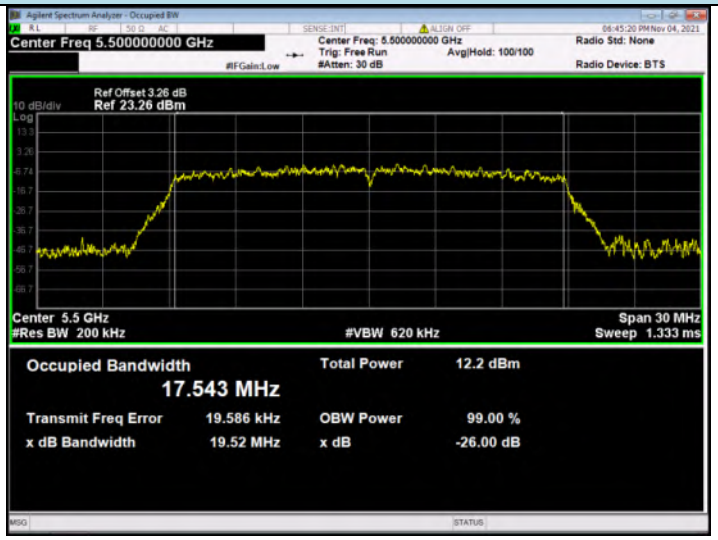
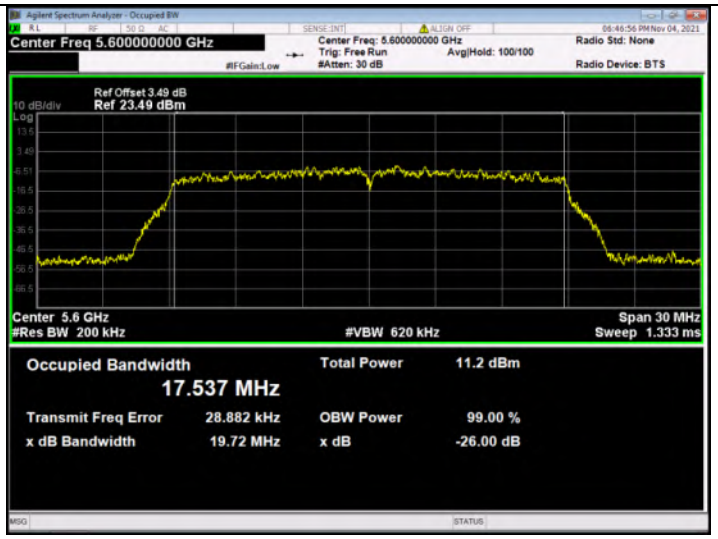
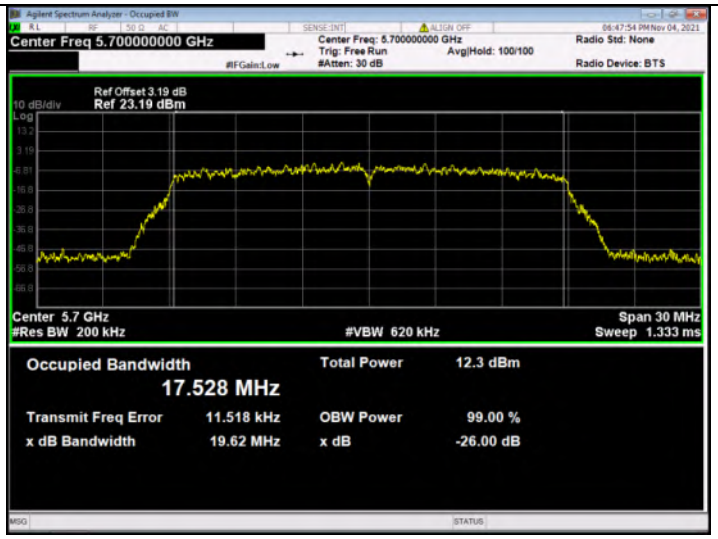
Band II	
Frequency	802.11a
5260MHz	
5280MHz	
5320MHz	

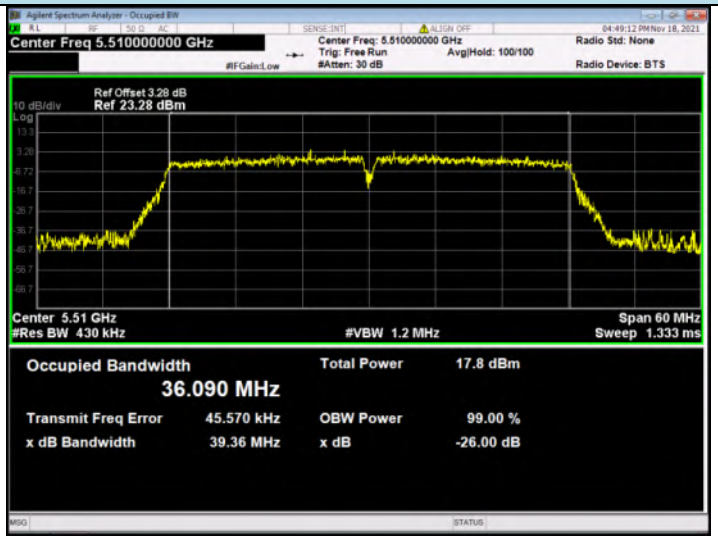
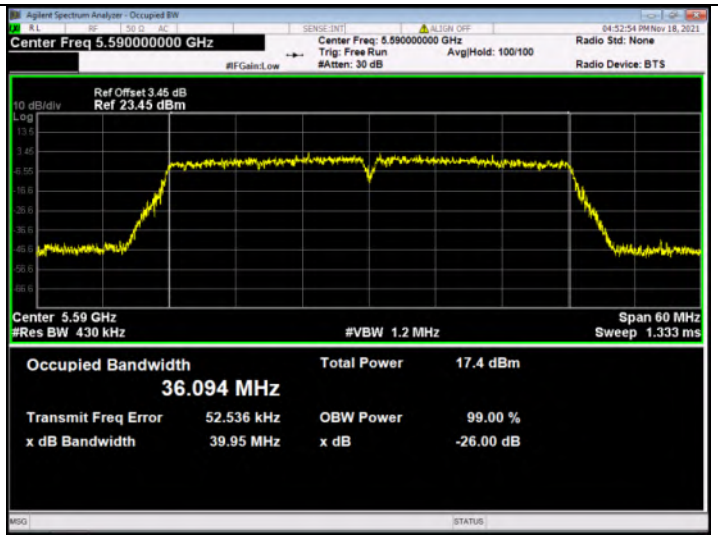
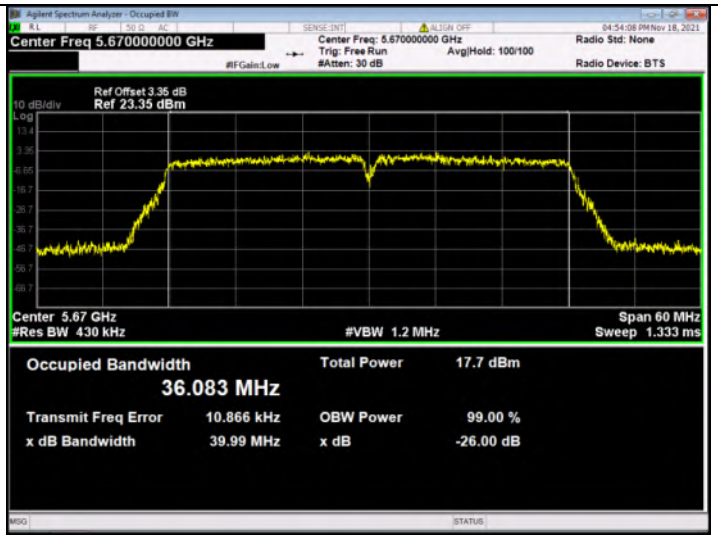
Frequency	**802.11n (HT20)**
5260MHz	
5280MHz	
5320MHz	

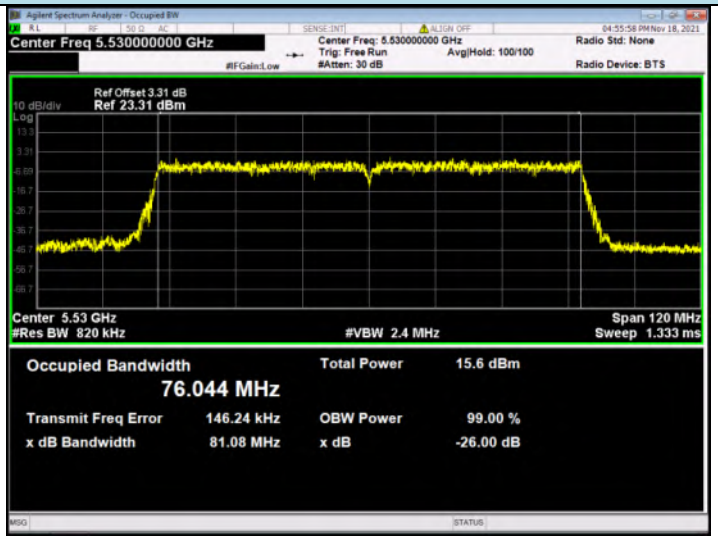
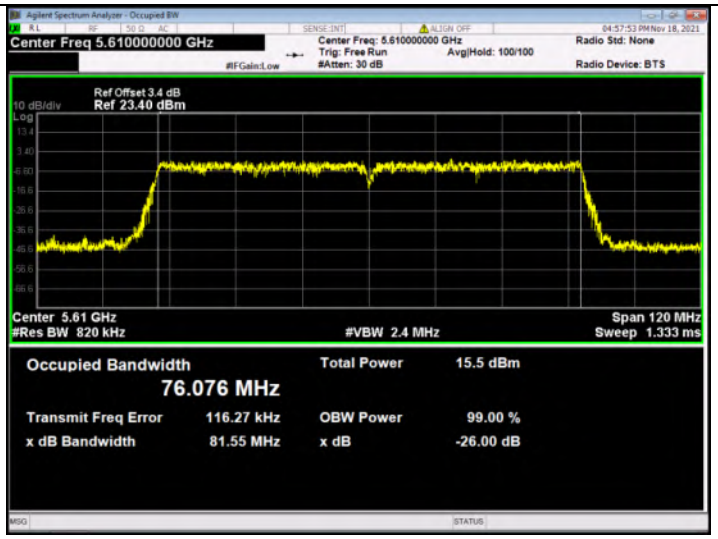
Frequency	802.11n (HT40)
5270MHz	
5310MHz	

Frequency	802.11ac VH80
5290MHz	

Band III	
Frequency	**802.11a**
5500MHz	
5600MHz	
5700MHz	

Frequency	**802.11n (HT20)**
5500MHz	
5600MHz	
5700MHz	

Frequency	**802.11n (HT40)**
5510MHz	
5590MHz	
5670MHz	

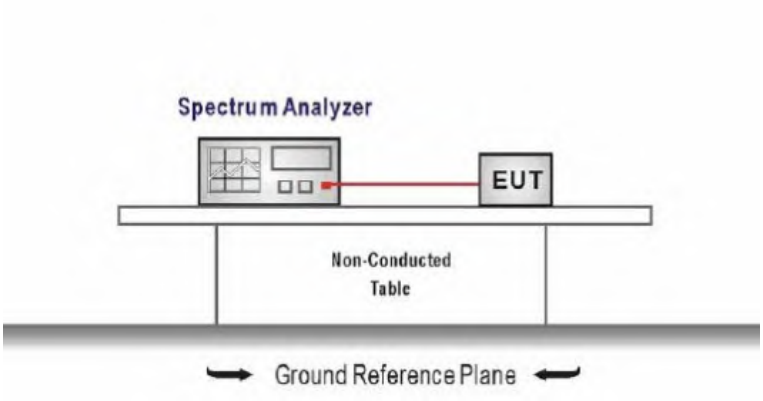
Frequency	**802.11ac VH80**
5530MHz	
5610MHz	

5.6. 6dB Bandwidth

LIMIT

FCC CFR Title 47 Part 15 Subpart E Section 15.407(e)
Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz

TEST CONFIGURATION



TEST PROCEDURE

1. Connect the antenna port(s) to the spectrum analyzer input.
2. Configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).
   Center Frequency =test channel center frequency
   Span=2 x emission bandwidth
   RBW = 100 kHz, VBW ≥ 3 × RBW
   Sweep time= auto couple
   Detector = Peak
   Trace mode = max hold
3. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter wave form on the spectrum analyzer.
4. 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, and record the pertinent measurements.

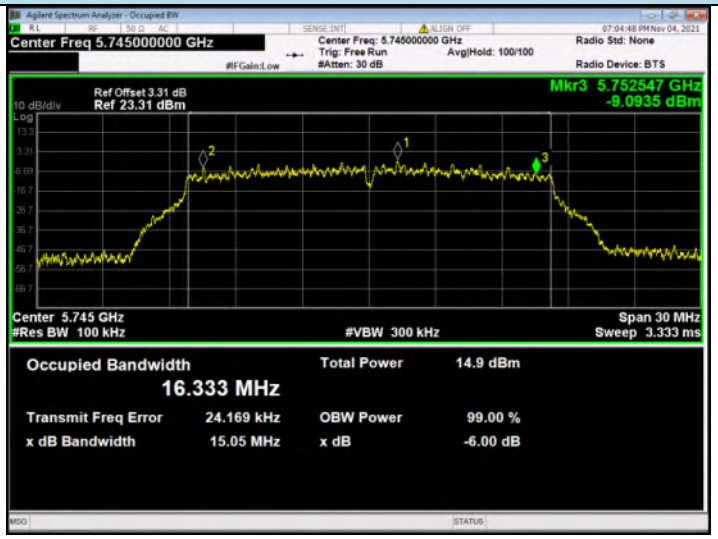
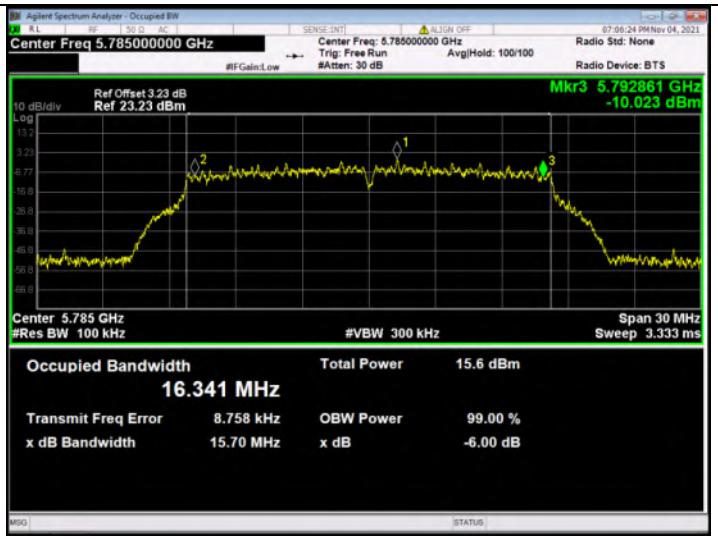
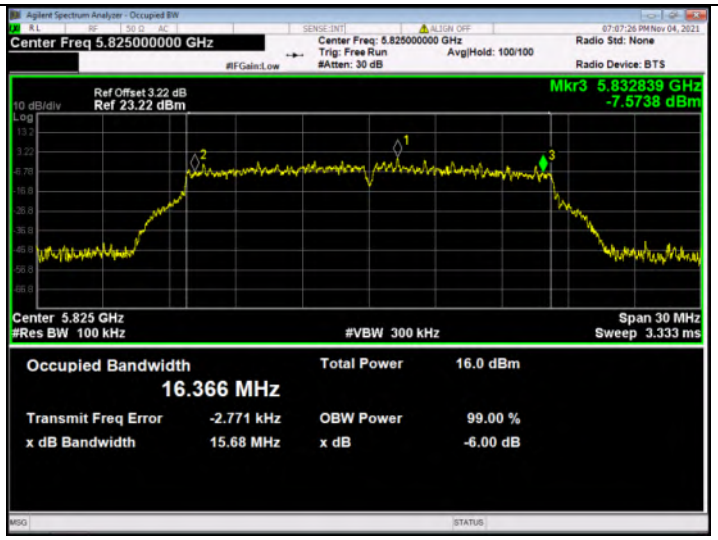
TEST MODE:

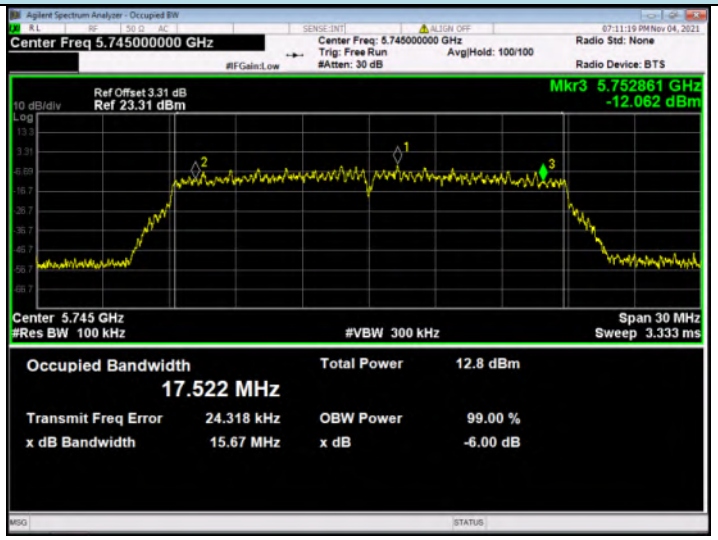
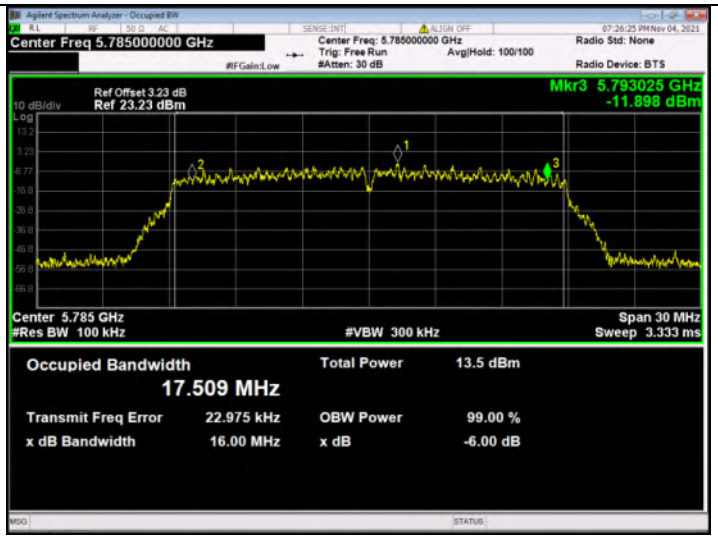
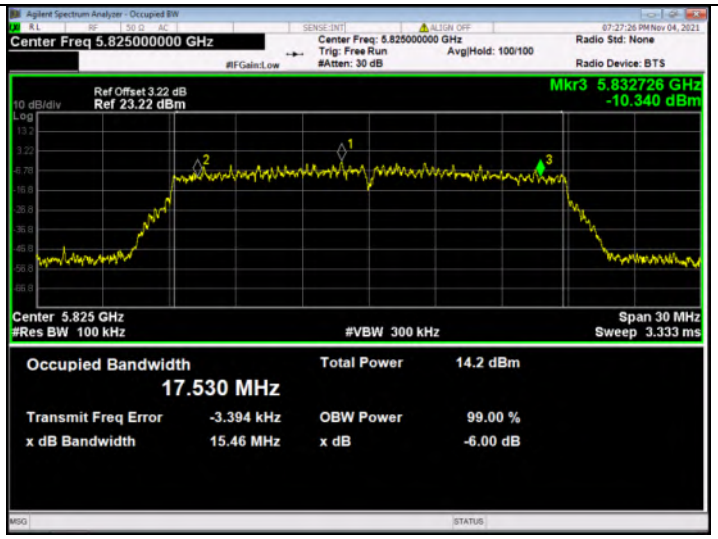
Please refer to the clause 3.3

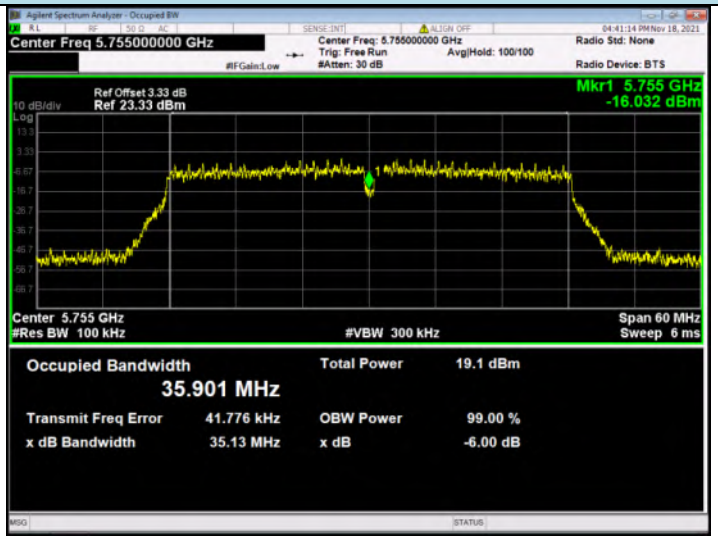
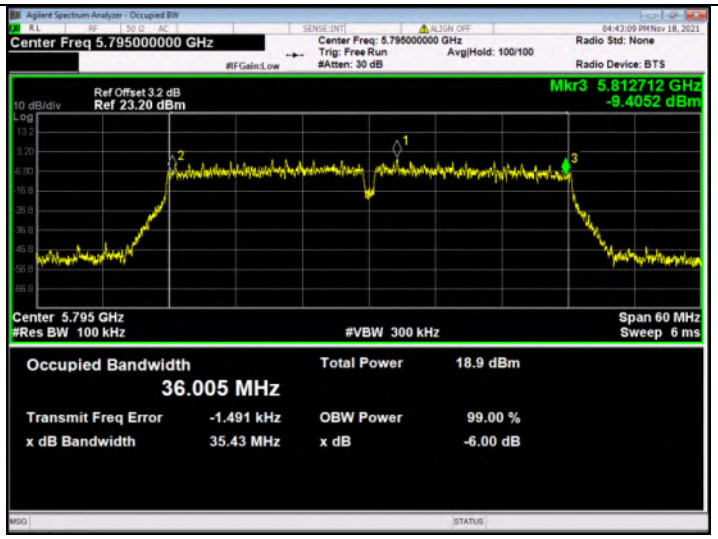
TEST RESULTS

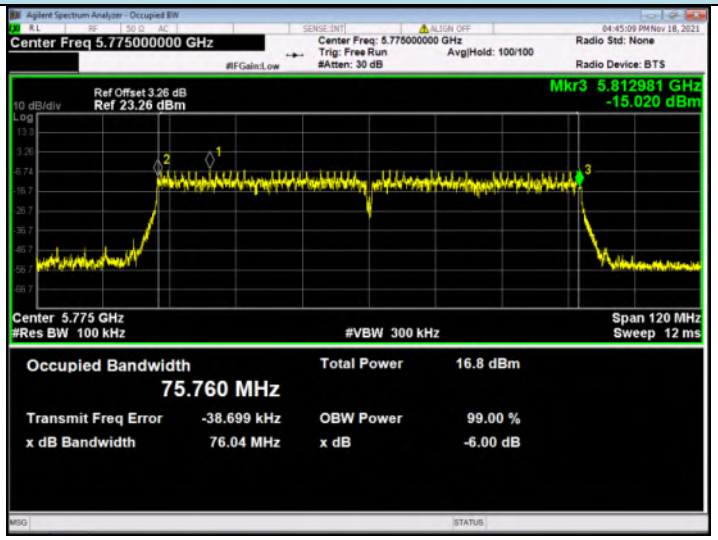
☒ **Passed** ☐ **Not Applicable**

Band	Type	Channel	99% Occupy bandwith (MHz)	6dB bandwith (MHz)	Result
IV	802.11a	5745	16.333	15.05	Pass
		5785	16.341	15.70	
		5825	16.366	15.68	
	802.11n-HT20	5745	17.522	15.67	Pass
		5785	17.509	16.00	
		5825	17.530	15.46	
	802.11n-HT40	5755	35.901	35.13	Pass
		5795	36.005	35.43	
	802.11ac VH80	5775	75.760	76.04	Pass

Band IV	
Frequency	802.11a
5745MHz	
5785MHz	
5825MHz	

Frequency	**802.11n (HT20)**
5745MHz	
5785MHz	
5825MHz	

Frequency	**802.11n (HT40)**
5755MHz	
5795MHz	

Frequency	**802.11ac VH80**
5775MHz	

5.7. Band edge

LIMIT

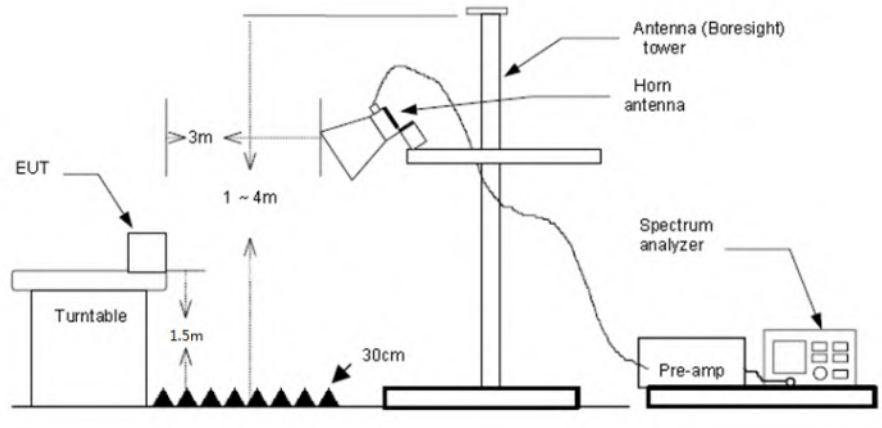
FCC CFR Title 47 Part 15 Subpart E Section 15.407(b)

Un-restricted band emissions above 1GHz			
Operating Band	Frequency	EIRP Limit	Value
5150-5250MHz	Above 1GHz	-27dBm/MHz (68.2dBuV/m@3m)	Peak
5250-5350MHz	Above 1GHz	-27dBm/MHz (68.2dBuV/m@3m)	Peak
5470-5725MHz	Above 1GHz	-27dBm/MHz (68.2dBuV/m@3m)	Peak
5725-5850 MHz	1GHz-5.65GHz	-27dBm/MHz (68.2dBuV/m@3m)	Peak
	5.65GHz-5.7GHz	-27*dBm/MHz to 10dBm/MHz (68.2* dBuV/m to 105.6dBuV/m@3m)	Peak
	5.7GHz-5.72GHz	10*dBm/MHz to 15.6dBm/MHz (105.6*dBuV/m to 110.8dBuV/m@3m)	Peak
	5.72GHz-5.725GHz	15.6*dBm/MHz to 27dBm/MHz (110.8dBuV/m to* 122.2dBuV/m@3m)	Peak
	5.85GHz-5.855GHz	27dBm/MHz to 15.6*dBm/MHz (122.2dBuV/m to110.8* dBuV/m@3m)	Peak
	5.855GHz-5.875GHz	15.6dBm/MHz to 10*dBm/MHz (110.8dBuV/m to 105.6* dBuV/m@3m)	Peak
	5.875GHz-5.925GHz	10dBm/MHz to -27*dBm/MHz (105.6dBuV/m to 68.2* dBuV/m@3m)	Peak
	Above 5.925GHz	-27dBm/MHz (68.2dBuV/m@3m)	Peak

* Increase/Decreases with the linearly of the frequency.

For emission above 1GHz and in restricted band, according to FCC KDB 789033 D02 General UNII Test Procedure, all emission that complies with both the average and peak limits of Section 15.209 is not required to satisfy the -27 dBm/MHz peak emission limit. E[dBμV/m] = EIRP[dBm] + 95.2, for d = 3 meters.

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT waspositioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. Thisis repeated for both horizontal and vertical polarization of the antenna. In order to find themaximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
5. The receiver set as follow:
   RBW=1MHz, VBW=3MHz PEAK detector for Peak value.
   RBW=1MHz, VBW=3MHz RMS detector for Average value.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Band: I&II			Worst mode: 802.11a			Test channel: CH_L			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
5150	16.09	31.40	10.05	0.00	57.54	74.00	-16.46	Vertical	Peak
5150	15.54	31.70	9.79	0.00	57.03	74.00	-16.97	Horizontal	Peak
5150	6.76	31.70	9.79	0.00	48.25	54.00	-5.75	Vertical	Average
5150	6.95	31.70	9.79	0.00	48.44	54.00	-5.56	Horizontal	Average

Band: I&II			Worst mode: 802.11a			Test channel: CH_H			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
5350	18.65	31.40	10.05	0.00	60.10	74.00	-13.90	Vertical	Peak
5350	17.33	31.40	10.05	0.00	58.78	74.00	-15.22	Horizontal	Peak
5350	5.38	31.40	10.05	0.00	46.83	54.00	-7.17	Vertical	Average
5350	4.53	31.40	10.05	0.00	45.98	54.00	-8.02	Horizontal	Average

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *Test 802.11a, 802.11n, 802.11ac mode,all modulations and antennas have been tested,only worst case is reported*

Band: III				Worst mode: 802.11a			Test channel: CH_L		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
5460	9.79	31.82	10.19	0.00	51.80	74.00	-22.20	Vertical	Peak
5460	9.45	31.82	10.19	0.00	51.46	74.00	-22.54	Horizontal	Peak
5460	4.62	31.82	10.19	0.00	46.63	54.00	-7.37	Vertical	Average
5460	6.35	31.82	10.19	0.00	48.36	54.00	-5.64	Horizontal	Average

Band: III				Worst mode: 802.11a			Test channel: CH_H		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
5725	8.60	31.73	10.47	0.00	50.80	74.00	-23.20	Vertical	Peak
5725	10.65	31.73	10.47	0.00	52.85	74.00	-21.15	Horizontal	Peak
5725	5.97	31.73	10.47	0.00	48.17	54.00	-5.83	Vertical	Average
5725	3.73	31.73	10.47	0.00	45.93	54.00	-8.07	Horizontal	Average

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *Test 802.11a, 802.11n, 802.11ac mode,all modulations and antennas have been tested,only worst case is reported*

Band: IV				Worst mode: 802.11a			Test channel: CH_L		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
5725	10.44	31.73	10.47	0.00	52.64	74.00	-21.36	Vertical	Peak
5725	12.07	31.73	10.47	0.00	54.27	74.00	-19.73	Horizontal	Peak
5725	1.23	31.73	10.47	0.00	43.43	54.00	-10.57	Vertical	Average
5725	3.86	31.73	10.47	0.00	46.06	54.00	-7.94	Horizontal	Average

Band: IV				Worst mode: 802.11a			Test channel: CH_H		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
5850	10.21	32.20	10.61	0.00	53.02	74.00	-20.98	Vertical	Peak
5850	8.74	32.20	10.61	0.00	51.55	74.00	-22.45	Horizontal	Peak
5850	5.94	32.20	10.61	0.00	48.75	54.00	-5.25	Vertical	Average
5850	4.15	32.20	10.61	0.00	46.96	54.00	-7.04	Horizontal	Average

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *Test 802.11a, 802.11n, 802.11ac mode,all modulations and antennas have been tested,only worst case is reported*

5.8. Radiated Spurious Emissions

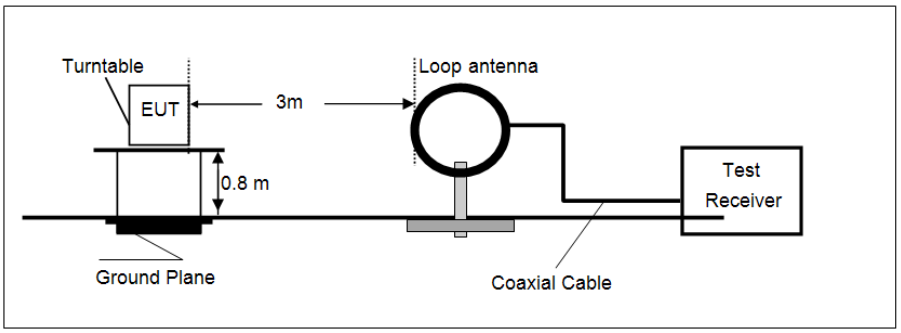
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.209 and Part 15 Subpart E Section 15.407

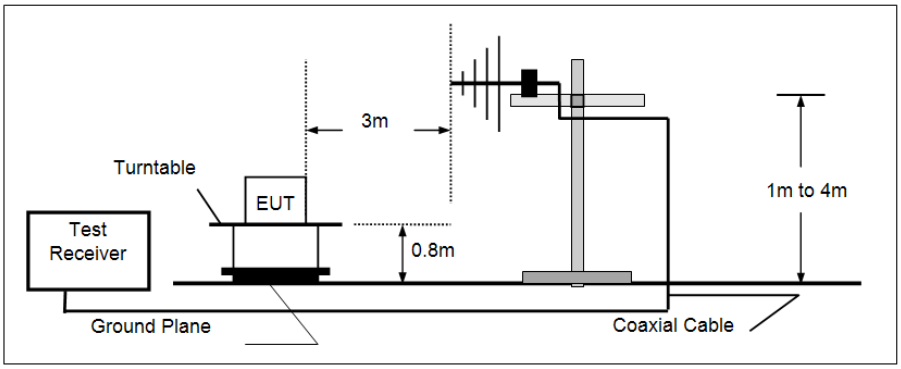
Unwanted emissions below 1GHz and Restricted band emissions above 1GHz		
Frequency	Limit (dBuV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

TEST CONFIGURATION

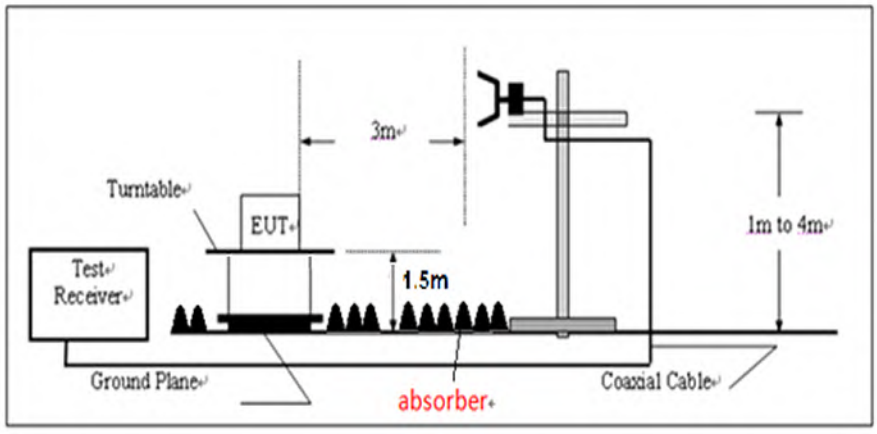
- 9KHz ~30MHz



- 30MHz ~ 1GHz



- Above 1GHz



TEST PROCEDURE

1. The EUT was setup and tested according to ANSI C63.10:2013
2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Use the following spectrum analyzer settings

   (1) Span shall wide enough to fully capture the emission being measured;

   (2) Below 1 GHz:

   RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;
   If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

   (3) From 1 GHz to 10th harmonic:

   RBW=1MHz, VBW=3MHz Peak detector for Peak value.
   RBW=1MHz, VBW=3MHz RMS detector for Average value.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

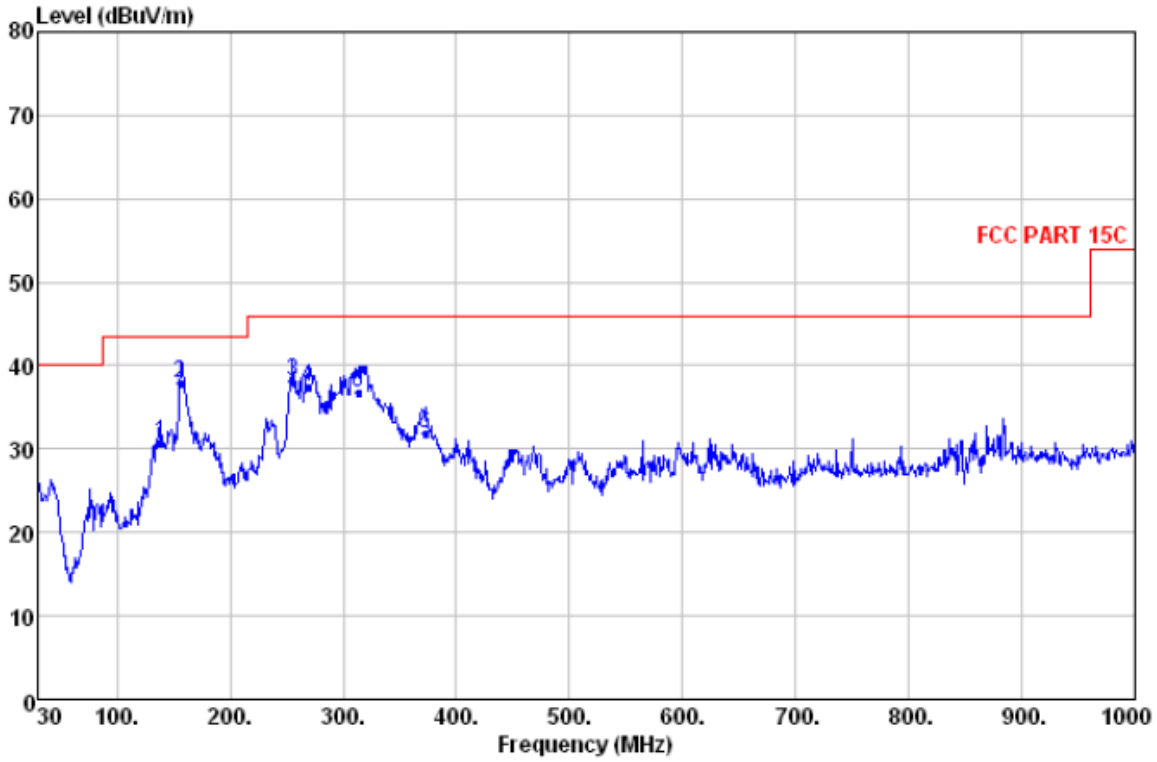
Measurement data:

■ **9kHz ~ 30MHz**

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

■ **30MHz ~ 1GHz Spurious Emissions .Quasi-Peak Measurement**

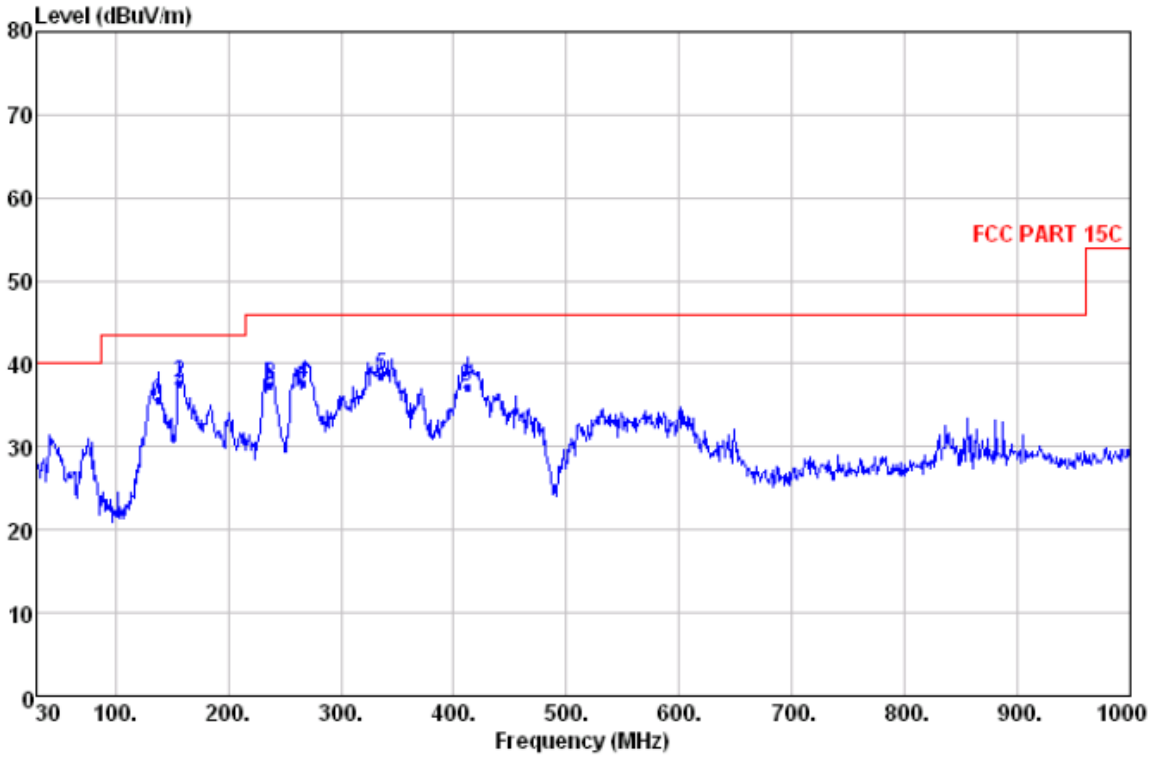
Horizontal:



No.	Freq MHz	Read Level dBuV	Antenna Factor dB	Cable Loss dB	Preamp Factor dB	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Pol/ Phase	Remark
1	138.640	45.33	12.15	1.40	28.23	30.65	43.50	-12.85	HORIZONTAL	QP
2	156.100	53.11	11.48	1.49	28.29	37.79	43.50	-5.71	HORIZONTAL	QP
3	255.040	47.62	15.88	1.95	27.45	38.00	46.00	-8.00	HORIZONTAL	QP
4	269.590	47.23	15.50	2.01	27.22	37.52	46.00	-8.48	HORIZONTAL	QP
5	313.240	46.00	16.25	2.17	27.55	36.87	46.00	-9.13	HORIZONTAL	QP
6	372.410	40.46	17.46	2.35	28.29	31.98	46.00	-14.02	HORIZONTAL	QP

Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

Vertical:



No.	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/ Phase	Remark
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB		
1	138.640	50.27	12.15	1.40	28.23	35.59	43.50	-7.91	VERTICAL	QP
2	157.070	52.93	11.52	1.50	28.24	37.71	43.50	-5.79	VERTICAL	QP
3	237.580	47.28	15.52	1.87	27.27	37.40	46.00	-8.60	VERTICAL	QP
4	266.680	47.49	15.56	1.99	27.33	37.71	46.00	-8.29	VERTICAL	QP
5	335.550	46.91	16.76	2.24	27.41	38.50	46.00	-7.50	VERTICAL	QP
6	412.180	44.65	18.27	2.49	28.15	37.26	46.00	-8.74	VERTICAL	QP

Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

■ **Above 1GHz**

Band: I				Worst mode: 802.11a			Test channel: CH_L		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1732	38.81	25.31	5.87	37.36	32.63	74.00	-41.37	Vertical	Peak
3121	37.99	28.80	7.66	37.44	37.01	74.00	-36.99	Vertical	Peak
4124	38.89	29.96	8.91	36.60	41.16	74.00	-32.84	Vertical	Peak
7323	32.92	36.30	11.99	33.32	47.89	74.00	-26.11	Vertical	Peak
1222	37.79	26.27	4.71	37.21	31.56	74.00	-42.44	Horizontal	Peak
2234	36.33	28.06	6.59	37.59	33.39	74.00	-40.61	Horizontal	Peak
3003	37.35	28.61	7.48	37.58	35.86	74.00	-38.14	Horizontal	Peak
8012	31.89	37.06	12.40	33.06	48.29	74.00	-25.71	Horizontal	Peak

Band: I				Worst mode: 802.11a			Test channel: CH_M		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1235	39.02	26.26	4.72	37.20	32.80	74.00	-41.20	Vertical	Peak
1742	38.81	25.31	5.87	37.36	32.63	74.00	-41.37	Vertical	Peak
3142	37.99	28.80	7.66	37.44	37.01	74.00	-36.99	Vertical	Peak
6521	33.14	34.09	11.26	33.64	44.85	74.00	-29.15	Vertical	Peak
1245	37.79	26.27	4.71	37.21	31.56	74.00	-42.44	Horizontal	Peak
2223	36.33	28.06	6.59	37.59	33.39	74.00	-40.61	Horizontal	Peak
3003	37.35	28.61	7.48	37.58	35.86	74.00	-38.14	Horizontal	Peak
4615	34.12	31.13	9.49	35.96	38.78	74.00	-35.22	Horizontal	Peak

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *Measuring frequencies from 1 GHz to 40GHz.*
4. *Test 802.11a, 802.11n, 802.11ac mode,all modulations and antennas have been tested,only worst case is reported*

Band: I					Worst mode: 802.11a		Test channel: CH_H		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1242	39.02	26.26	4.72	37.20	32.80	74.00	-41.20	Vertical	Peak
1723	38.81	25.31	5.87	37.36	32.63	74.00	-41.37	Vertical	Peak
2232	37.44	28.02	6.58	37.59	34.45	74.00	-39.55	Vertical	Peak
7321	32.92	36.30	11.99	33.32	47.89	74.00	-26.11	Vertical	Peak
2625	36.22	27.91	7.00	37.59	33.54	74.00	-40.46	Horizontal	Peak
3003	37.35	28.61	7.48	37.58	35.86	74.00	-38.14	Horizontal	Peak
6223	32.94	33.03	11.00	33.86	43.11	74.00	-30.89	Horizontal	Peak
8653	31.33	37.52	12.93	32.94	48.84	74.00	-25.16	Horizontal	Peak

Band: II					Worst mode: 802.11a		Test channel: CH_L		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1723	38.81	25.31	5.87	37.36	32.63	74.00	-41.37	Vertical	Peak
3123	37.99	28.80	7.66	37.44	37.01	74.00	-36.99	Vertical	Peak
4252	38.89	29.96	8.91	36.60	41.16	74.00	-32.84	Vertical	Peak
7323	32.92	36.30	11.99	33.32	47.89	74.00	-26.11	Vertical	Peak
1222	37.79	26.27	4.71	37.21	31.56	74.00	-42.44	Horizontal	Peak
3003	37.35	28.61	7.48	37.58	35.86	74.00	-38.14	Horizontal	Peak
3862	35.07	29.63	8.55	36.88	36.37	74.00	-37.63	Horizontal	Peak
6612	32.25	34.20	11.39	33.69	44.15	74.00	-29.85	Horizontal	Peak

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *Measuring frequencies from 1 GHz to 40GHz.*
4. *Test 802.11a, 802.11n, 802.11ac mode,all modulations and antennas have been tested,only worst case is reported*

Band: II				Worst mode: 802.11a			Test channel: CH_M		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1652	36.52	25.03	5.65	37.24	29.96	74.00	-44.04	Vertical	Peak
3102	36.91	28.80	7.61	37.48	35.84	74.00	-38.16	Vertical	Peak
4222	36.53	30.05	8.96	36.54	39.00	74.00	-35.00	Vertical	Peak
7753	29.83	36.10	13.00	33.04	45.89	74.00	-28.11	Vertical	Peak
2311	34.44	28.05	6.62	37.59	31.52	74.00	-42.48	Horizontal	Peak
2752	33.59	28.10	7.18	37.59	31.28	74.00	-42.72	Horizontal	Peak
3435	34.10	28.36	7.99	37.21	33.24	74.00	-40.76	Horizontal	Peak
7223	29.83	36.23	11.89	33.48	44.47	74.00	-29.53	Horizontal	Peak

Band: II				Worst mode: 802.11a			Test channel: CH_H		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1623	37.00	24.97	5.61	37.21	30.37	74.00	-43.63	Vertical	Peak
3153	37.99	28.80	7.66	37.44	37.01	74.00	-36.99	Vertical	Peak
5766	32.62	32.06	10.58	34.26	41.00	74.00	-33.00	Vertical	Peak
8123	30.18	36.86	12.64	33.02	46.66	74.00	-27.34	Vertical	Peak
1474	34.61	25.83	5.19	37.09	28.54	74.00	-45.46	Horizontal	Peak
2533	35.99	27.55	6.88	37.59	32.83	74.00	-41.17	Horizontal	Peak
3641	34.37	29.30	8.34	37.01	35.00	74.00	-39.00	Horizontal	Peak
6722	31.24	34.04	11.58	33.77	43.09	74.00	-30.91	Horizontal	Peak

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *Measuring frequencies from 1 GHz to 40GHz.*
4. *Test 802.11a, 802.11n, 802.11ac mode,all modulations and antennas have been tested,only worst case is reported*

Band: III				Worst mode: 802.11a			Test channel: CH_L		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1252	38.06	26.27	4.71	37.21	31.83	74.00	-42.17	Vertical	Peak
2835	35.41	28.43	7.42	37.58	33.68	74.00	-40.32	Vertical	Peak
4467	33.60	30.52	9.15	36.37	36.90	74.00	-37.10	Vertical	Peak
8744	30.20	37.89	13.00	32.96	48.13	74.00	-25.87	Vertical	Peak
1529	35.06	25.53	5.37	37.11	28.85	74.00	-45.15	Horizontal	Peak
2225	35.34	27.68	6.49	37.60	31.91	74.00	-42.09	Horizontal	Peak
3454	34.11	28.64	8.04	37.18	33.61	74.00	-40.39	Horizontal	Peak
6379	30.49	33.26	10.99	33.74	41.00	74.00	-33.00	Horizontal	Peak

Band: III				Worst mode: 802.11a			Test channel: CH_M		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
2835	38.12	28.32	7.40	37.58	36.26	74.00	-37.74	Vertical	Peak
3934	37.55	29.70	8.73	36.79	39.19	74.00	-34.81	Vertical	Peak
6903	35.02	34.72	11.73	33.83	47.64	74.00	-26.36	Vertical	Peak
8637	32.91	37.52	12.93	32.94	50.42	74.00	-23.58	Vertical	Peak
2292	36.33	28.06	6.59	37.59	33.39	74.00	-40.61	Horizontal	Peak
3834	35.07	29.63	8.55	36.88	36.37	74.00	-37.63	Horizontal	Peak
5821	33.23	32.14	10.60	34.24	41.73	74.00	-32.27	Horizontal	Peak
7376	31.33	36.30	12.04	33.23	46.44	74.00	-27.56	Horizontal	Peak

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *Measuring frequencies from 1 GHz to 40GHz.*
4. *Test 802.11a, 802.11n, 802.11ac mode,all modulations and antennas have been tested,only worst case is reported*

Band: III					Worst mode: 802.11a				Test channel: CH_H
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1664	37.21	25.11	5.70	37.27	30.75	74.00	-43.25	Vertical	Peak
2982	35.12	28.59	7.47	37.58	33.60	74.00	-40.40	Vertical	Peak
3692	36.58	29.30	8.37	36.99	37.26	74.00	-36.74	Vertical	Peak
4721	33.46	31.30	9.51	35.87	38.40	74.00	-35.60	Vertical	Peak
2887	35.55	28.43	7.42	37.58	33.82	74.00	-40.18	Horizontal	Peak
4184	33.08	29.98	8.92	36.58	35.40	74.00	-38.60	Horizontal	Peak
5772	32.28	31.99	10.55	34.27	40.55	74.00	-33.45	Horizontal	Peak
8276	30.39	36.49	12.80	32.98	46.70	74.00	-27.30	Horizontal	Peak

Band: IV					Worst mode: 802.11a				Test channel: CH_L
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1635	36.50	24.99	5.63	37.22	29.90	74.00	-44.10	Vertical	Peak
3142	36.45	28.80	7.65	37.45	35.45	74.00	-38.55	Vertical	Peak
5797	32.62	32.06	10.58	34.26	41.00	74.00	-33.00	Vertical	Peak
8103	29.97	36.99	12.55	33.04	46.47	74.00	-27.53	Vertical	Peak
2261	36.32	27.89	6.55	37.59	33.17	74.00	-40.83	Horizontal	Peak
2946	36.64	28.54	7.45	37.58	35.05	74.00	-38.95	Horizontal	Peak
3891	33.48	29.69	8.63	36.84	34.96	74.00	-39.04	Horizontal	Peak
7224	29.83	36.23	11.89	33.48	44.47	74.00	-29.53	Horizontal	Peak

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *Measuring frequencies from 1 GHz to 40GHz.*
4. *Test 802.11a, 802.11n, 802.11ac mode,all modulations and antennas have been tested,only worst case is reported*

Band: IV				Worst mode: 802.11a			Test channel: CH_M		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1355	35.89	25.92	4.99	37.12	29.68	74.00	-44.32	Vertical	Peak
2903	35.28	28.51	7.43	37.58	33.64	74.00	-40.36	Vertical	Peak
5765	32.62	32.06	10.58	34.26	41.00	74.00	-33.00	Vertical	Peak
7932	31.11	36.87	12.58	33.06	47.50	74.00	-26.50	Vertical	Peak
1334	36.50	26.13	4.87	37.16	30.34	74.00	-43.66	Horizontal	Peak
2176	35.59	26.90	6.38	37.60	31.27	74.00	-42.73	Horizontal	Peak
2943	34.83	28.51	7.43	37.58	33.19	74.00	-40.81	Horizontal	Peak
6754	31.24	34.04	11.58	33.77	43.09	74.00	-30.91	Horizontal	Peak

Band: IV				Worst mode: 802.11a			Test channel: CH_H		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1665	37.84	25.12	5.71	37.27	31.40	74.00	-42.60	Vertical	Peak
3203	35.66	28.80	7.72	37.40	34.78	74.00	-39.22	Vertical	Peak
7026	31.78	35.38	11.85	33.83	45.18	74.00	-28.82	Vertical	Peak
9634	30.73	39.10	13.70	33.98	49.55	74.00	-24.45	Vertical	Peak
1542	34.77	25.42	5.40	37.12	28.47	74.00	-45.53	Horizontal	Peak
2274	36.13	27.96	6.56	37.59	33.06	74.00	-40.94	Horizontal	Peak
3224	35.02	28.65	7.75	37.37	34.05	74.00	-39.95	Horizontal	Peak
6097	32.14	32.50	10.83	34.05	41.42	74.00	-32.58	Horizontal	Peak

Remark:

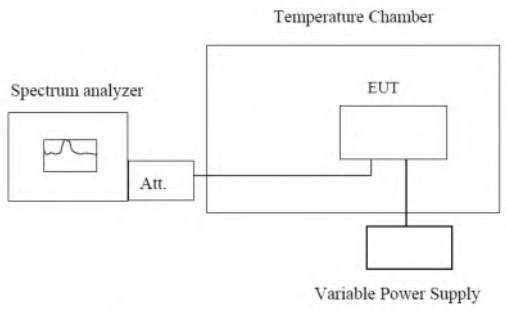
1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *Measuring frequencies from 1 GHz to 40GHz.*
4. *Test 802.11a, 802.11n, 802.11ac mode,all modulations and antennas have been tested,only worst case is reported*

5.9. Frequency stability

LIMIT

Within Operation Band

TEST CONFIGURATION



Note : Measurement setup for testing on Antenna connector

TEST PROCEDURE

1. The equipment under test was connected to an external power supply.
2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators.
3. The EUT was placed inside the temperature chamber.
4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25℃ operating frequency as reference frequency.
5. Turn EUT off and set the chamber temperature to –20℃. After the temperature stabilized for approximately 30 minutes recorded the frequency.
6. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.

TEST MODE:

Transmitting with unmodulation

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Note:We tested all antennas, and recoeded the worst data for this item.

Voltage VS Frequency stability

Band: I			Test Frequency: 5180.00MHz	
Temperature (℃)	Voltage (V)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
25	5	2000	3.86	Pass
25	5	2000	3.86	Pass
25	5	2000	3.86	Pass

Band: II			Test Frequency: 5260.00MHz	
Temperature (℃)	Voltage (V)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
25	5	2000	3.80	Pass
25	5	2000	3.80	Pass
25	5	2000	3.80	Pass

Band: III			Test Frequency: 5500.00MHz	
Temperature (℃)	Voltage (V)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
25	5	4000	7.27	Pass
25	5	4000	7.27	Pass
25	5	4000	7.27	Pass

Band: IV			Test Frequency: 5745.00MHz	
Temperature (℃)	Voltage (V)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
25	5	2700	4.70	Pass
25	5	2700	4.70	Pass
25	5	2700	4.70	Pass

Temperature VS Frequency stability

Band: I			Test Frequency: 5180.00MHz	
Voltage (V)	Temperature (℃)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
5	-20	2000	3.86	Pass
5	-10	2000	3.86	Pass
5	0	2000	3.86	Pass
5	10	2000	3.86	Pass
5	20	2000	3.86	Pass
5	30	2000	3.86	Pass
5	40	2500	4.83	Pass
5	50	2600	5.02	Pass

Band: II			Test Frequency: 5260.00MHz	
Voltage (V)	Temperature (℃)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
5	-20	2000	3.80	Pass
5	-10	2000	3.80	Pass
5	0	2000	3.80	Pass
5	10	2000	3.80	Pass
5	20	2000	3.80	Pass
5	30	2000	3.80	Pass
5	40	2100	3.99	Pass
5	50	2100	3.99	Pass

Band: III			Test Frequency: 5500.00MHz	
Voltage (V)	Temperature (℃)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
5	-20	4000	7.27	Pass
5	-10	4000	7.27	Pass
5	0	4000	7.27	Pass
5	10	4000	7.27	Pass
5	20	4000	7.27	Pass
5	30	4000	7.27	Pass
5	40	4100	7.45	Pass
5	50	4100	7.45	Pass

Band: IV			Test Frequency: 5745.00MHz	
Voltage (V)	Temperature (℃)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
5	-20	2700	4.70	Pass
5	-10	2700	4.70	Pass
5	0	2700	4.70	Pass
5	10	2700	4.70	Pass
5	20	2700	4.70	Pass
5	30	2800	4.87	Pass
5	40	2800	4.87	Pass
5	50	2800	4.87	Pass

5.10. Dynamic Frequency Selection(DFS)

Requirement

Table 1: Applicability of DFS Requirements Prior to Use of a Channel

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode	
	Master Device or Client with Radar Detection	Client Without Radar Detection
DFS Detection Threshold	Yes	Not required
Channel Closing Transmission Time	Yes	Yes
Channel Move Time	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar Detection	Client Without Radar Detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required
Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.		

LIMIT

1. DFS Detection Thresholds

Table 3: DFS Detection Thresholds for Master Devices and Client Devices With Radar Detection

Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP ≥ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna. Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response. Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.	

2. DFS Response Requirements

Table 4: DFS Response Requirement Values

Paramenter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required facilitating a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

RADAR TEST WAVEFORMS

This section provides the parameters for required test waveforms, minimum percentage of successful detections, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

Table 5 Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a	$\text{Roundup}\left\{\left(\frac{1}{360}\right)\cdot\left(\frac{19\cdot 10^6}{\text{PRI}_{\mu\text{sec}}}\right)\right\}$	60%	30
		Test B: 15 unique PRI values randomly selected within the range of 518-3066 µsec, with a minimum increment of 1 µsec, excluding PRI values selected in Test A			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30

Aggregate (Radar Types 1-4)	80%	120
Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.		

A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. If more than 30 waveforms are used for Short Pulse Radar Type 1, then each additional waveform is generated with Test B and must also be unique and not repeated from the previous waveforms in Tests A or B.

For example if in Short Pulse Radar Type 1 Test B a PRI of 3066 μsec is selected, the number of pulses would be Round up $\left\{\left(\frac{1}{360}\right)\cdot\left(\frac{19\cdot10^6}{3066}\right)\right\}$ = Round up {17.2} = 18.

Table 5a - Pulse Repetition Intervals Values for Test A

Pulse Repetition Frequency Number	Pulse Repetition Frequency (Pulses Per Second)	Pulse Repetition Interval (Microseconds)
1	1930.5	518
2	1858.7	538
3	1792.1	558
4	1730.1	578
5	1672.2	598
6	1618.1	618
7	1567.4	638
8	1519.8	658
9	1474.9	678
10	1432.7	698
11	1392.8	718
12	1355	738
13	1319.3	758
14	1285.3	778
15	1253.1	798
16	1222.5	818
17	1193.3	838
18	1165.6	858
19	1139	878
20	1113.6	898
21	1089.3	918
22	1066.1	938
23	326.2	3066

Table 6 – Long Pulse Radar Test Waveform

Radar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Number of Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

The parameters for this waveforms are randomly chosen. Thirty unique waveforms are required for the Long Pulse Radar Type waveforms. If more than 30 waveforms are used for the Long Pulse Radar Type wave forms, then each additional waveform must also be unique and not repeated from the previous waveforms.

Table 7 – Frequency Hopping Radar Test Waveform

Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

For the Frequency Hopping Radar Type, the same Burst parameters are used for each wave form. The hopping sequence is different for each wave form and a 100-length segment is selected from the hopping sequence defined by the following algorithm:

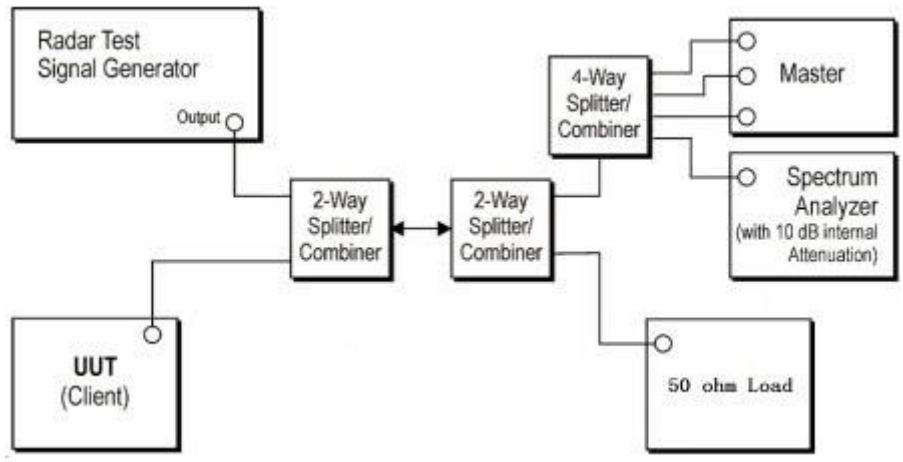
The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250–5724MHz.Next,the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues until all 475 frequencies are chosen for the set. For selection of a random frequency, the frequencies remaining within the group are always treated as equally likely.

Calibration of Radar Waveform

Radar Waveform Calibration Procedure

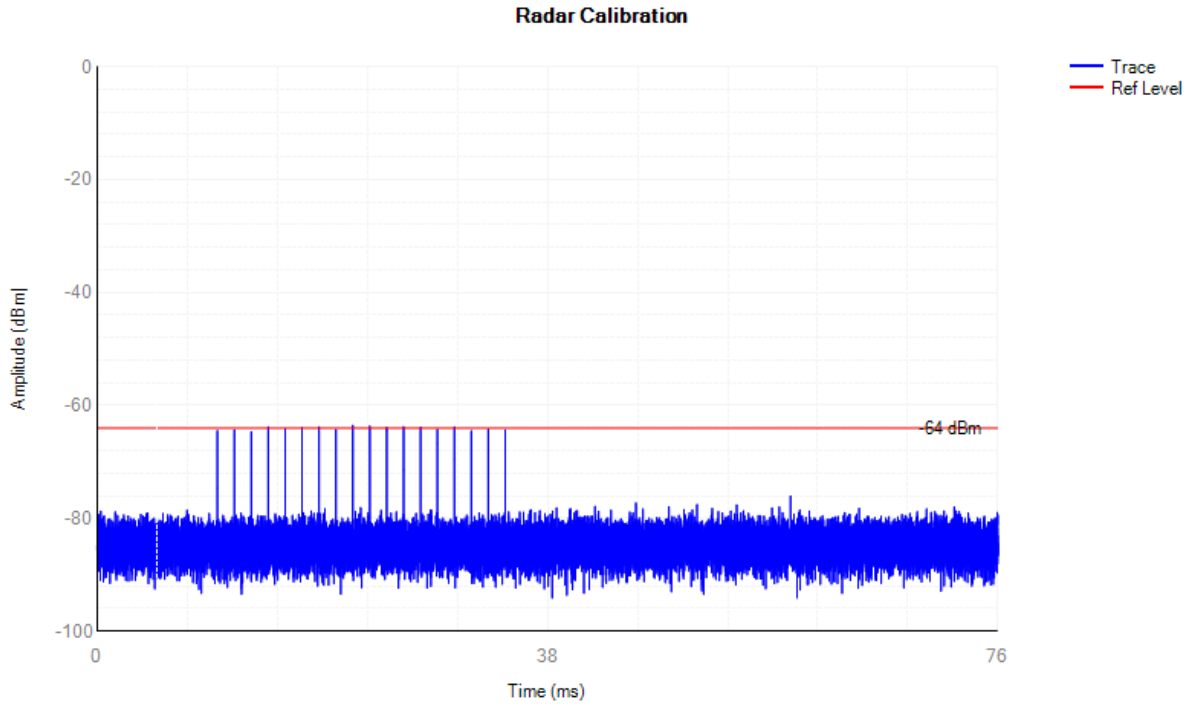
1) A 50 ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to place of the master
2) The interference Radar Detection Threshold Level is -62dBm + 0dBi +1dB = -61dBm that had been taken into account the output power range and antenna gain.
3) The following equipment setup was used to calibrate the conducted radar waveform. A vector signal generator was utilized to establish the test signal level for radar type 0. During this process there were no transmissions by either the master or client device. The spectrum analyzer was switched to the zero spans (time domain) at the frequency of the radar waveform generator. Peak detection was used. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3
   MHz. The spectrum analyzer had offset -1.0dB to compensate RF cable loss 1.0dB.
4) The vector signal generator amplitude was set so that the power level measured at the spectrum analyzer was - -62dBm + 0dBi +1dB = -61dBm. Capture the spectrum analyzer plots on short pulse radar waveform.

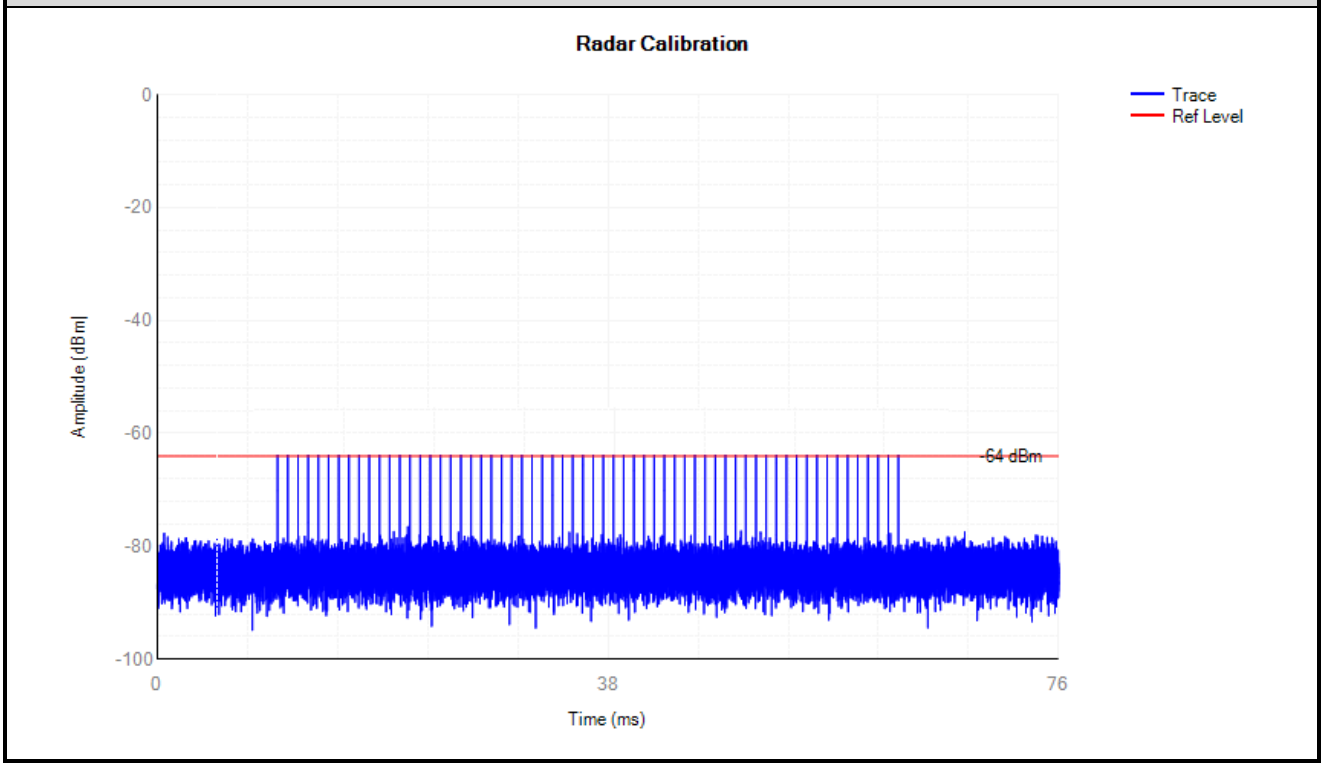
Conducted Calibration Setup

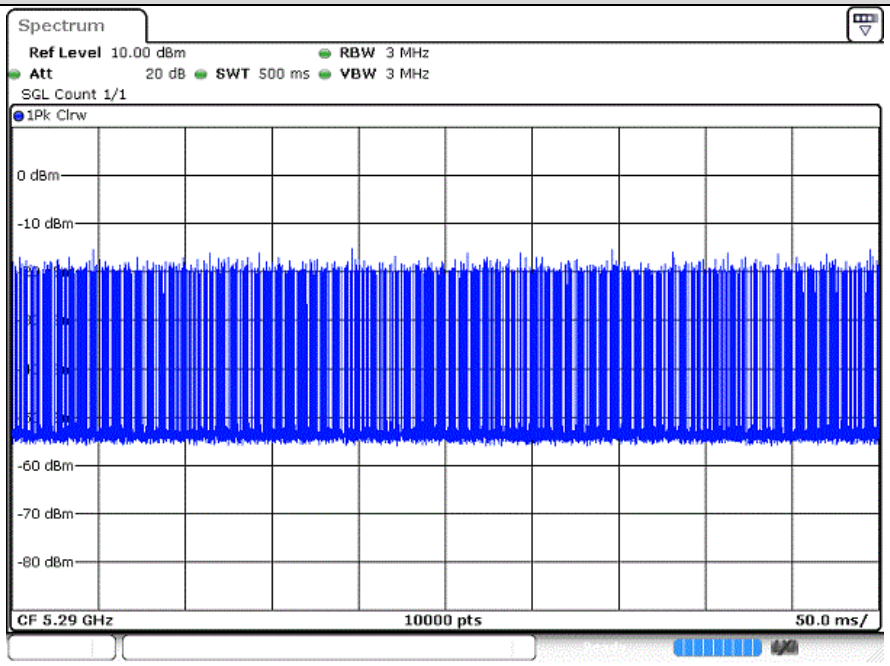


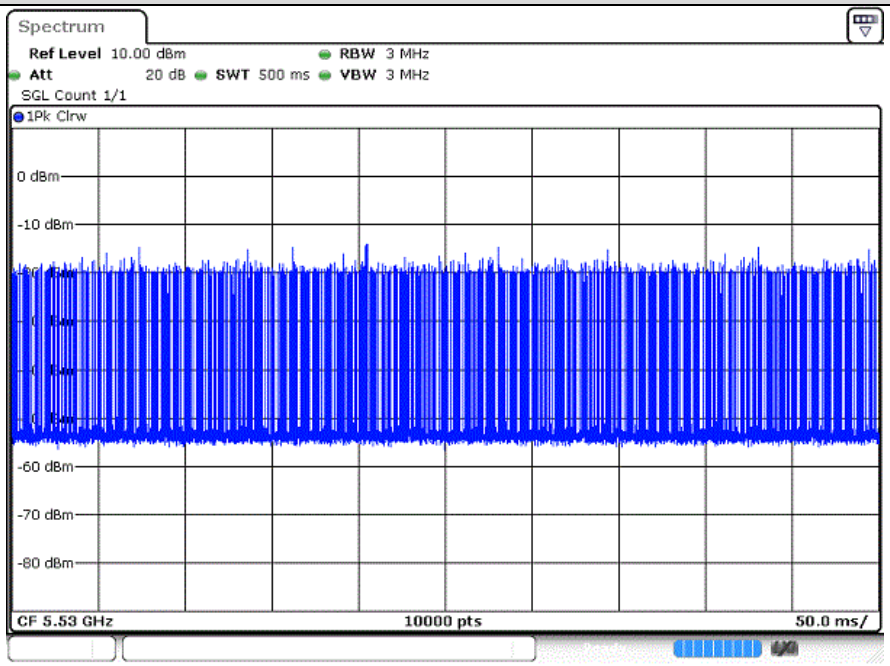
Radar Waveform Calibration Result

Reference DFS test signal
5290MHz



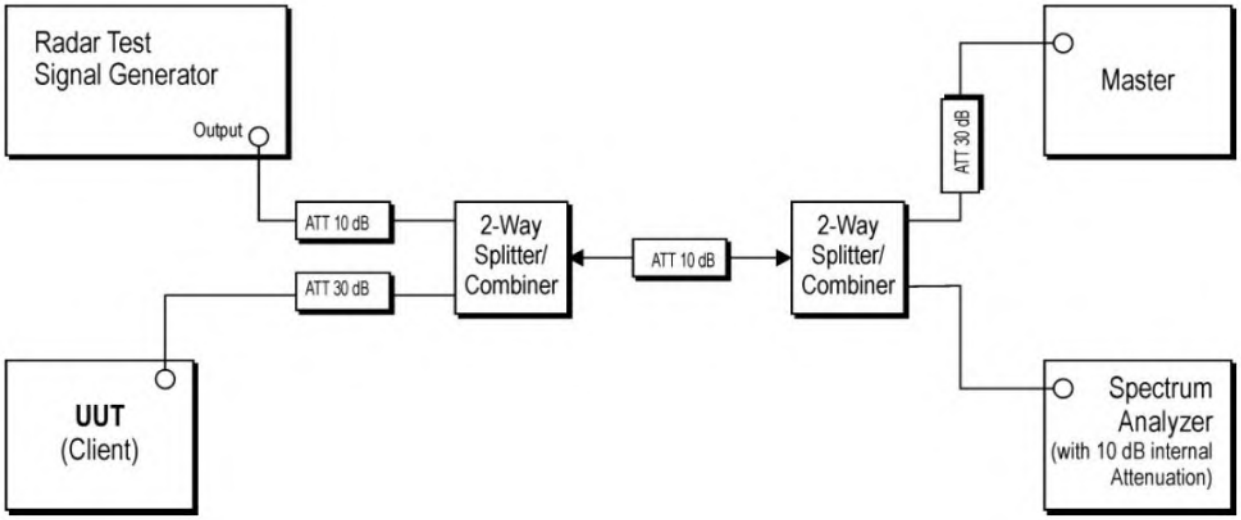
Reference DFS test signal
5530 MHz


EUT data traffic (Slave)
5290MHz


EUT data traffic (Slave)
5530MHz


TEST CONFIGURATION

Setup for Client with injection at the Master



TEST PROCEDURE

1. The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.
2. The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device
3. A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.
4. EUT will associate with the master at channel. The file “iperf.exe” specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.
5. When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.
6. Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type
7. Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.3ms) =S (12000ms) / B (4000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the

aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C (ms)= N X Dwell (0.3ms); where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.

8. Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

TEST MODE:

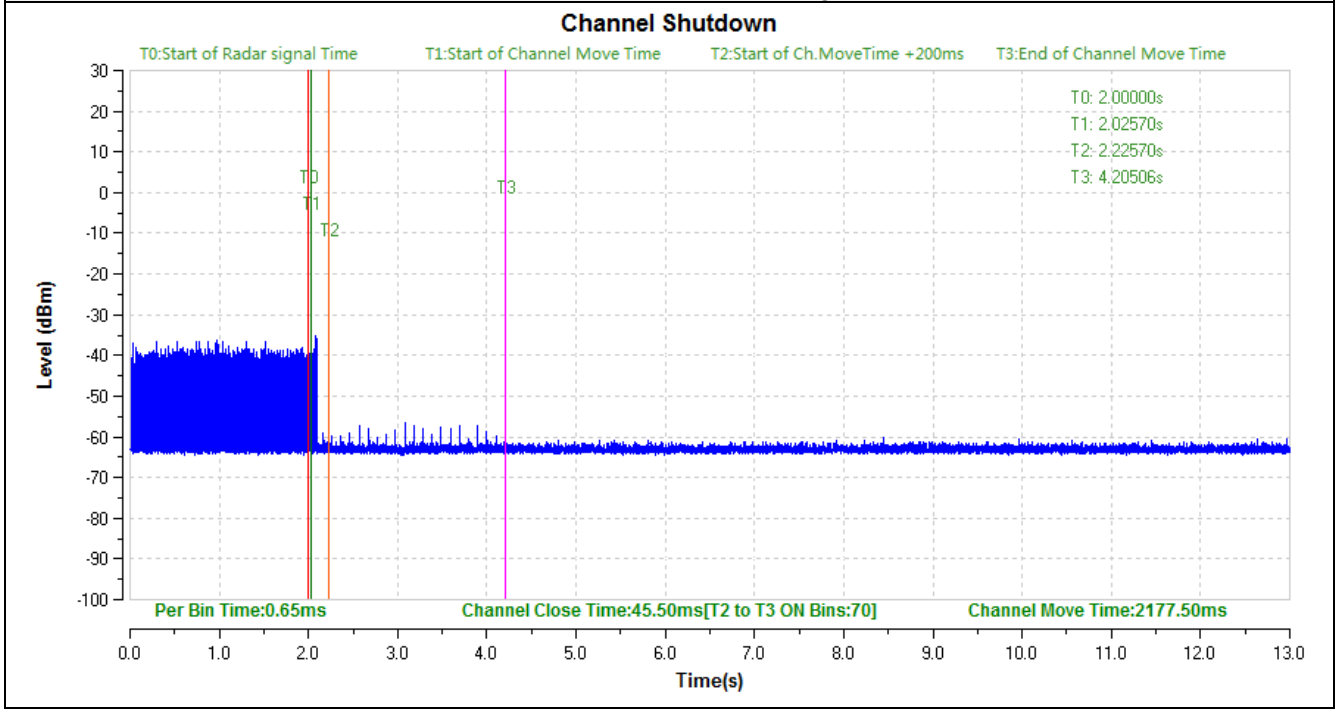
Please refer to the clause 3.3

TEST RESULTS

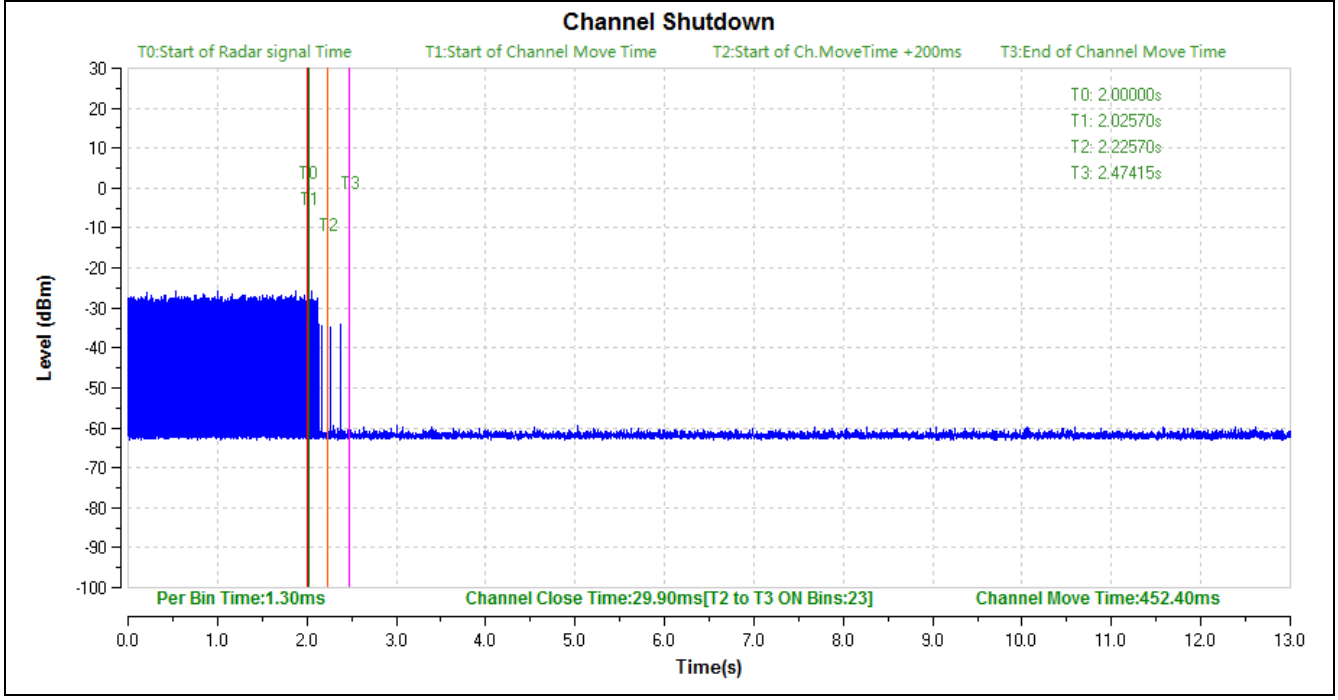
☒ **Passed** ☐ **Not Applicable**

BW/ Channel	Maximum EIRP Power(dBm)	Test Item	Test Result	Limit	Result
80MHz/ 5290MHz	18.76	Channel Move Time	0.476s	＜10s	Pass
		Channel Closing Transmission Time	17.2ms	＜60ms	Pass
80MHz/ 5530MHz	17.47	Channel Move Time	0.452s	＜10s	Pass
		Channel Closing Transmission Time	29.90ms	＜60ms	Pass

80MHz/5290MHz
Band II Channel Move Time& Channel Closing Transmission Time



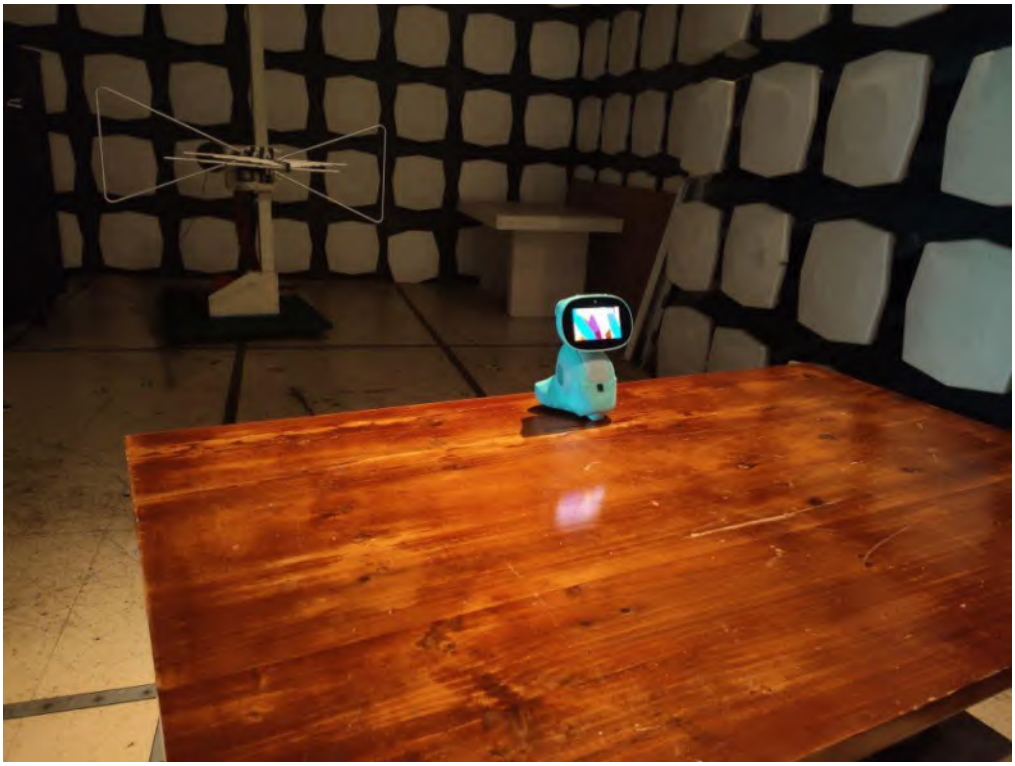
80MHz/5530MHz
Band III Channel Move Time& Channel Closing Transmission Time

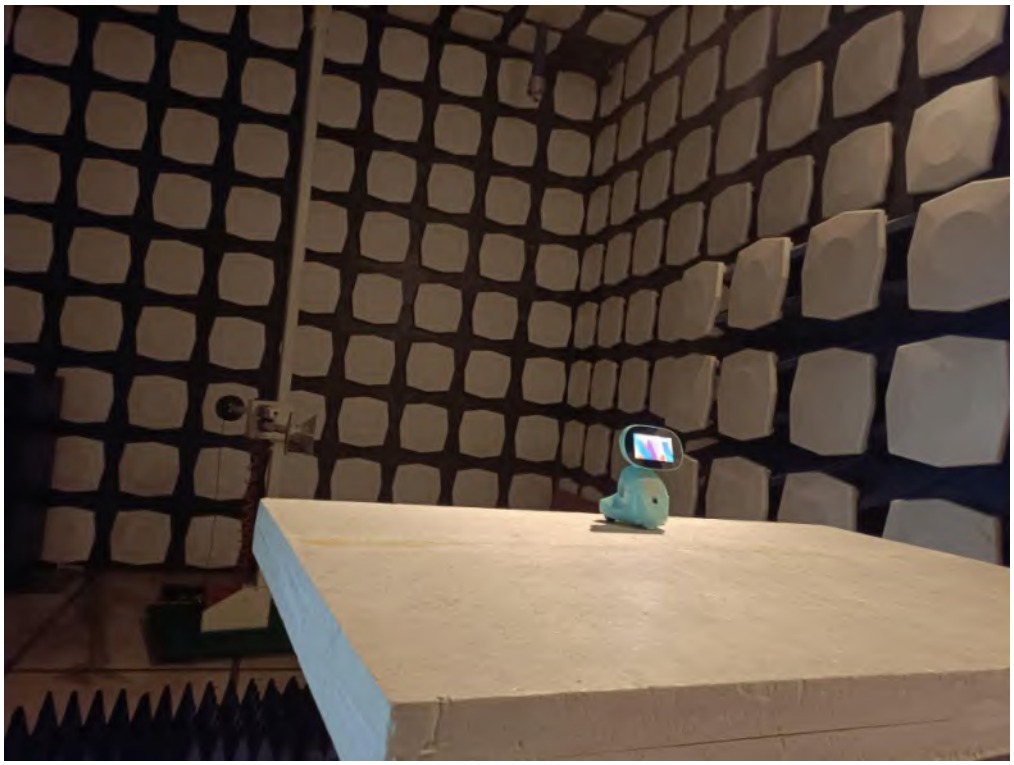


6. Test Setup Photos of the EUT

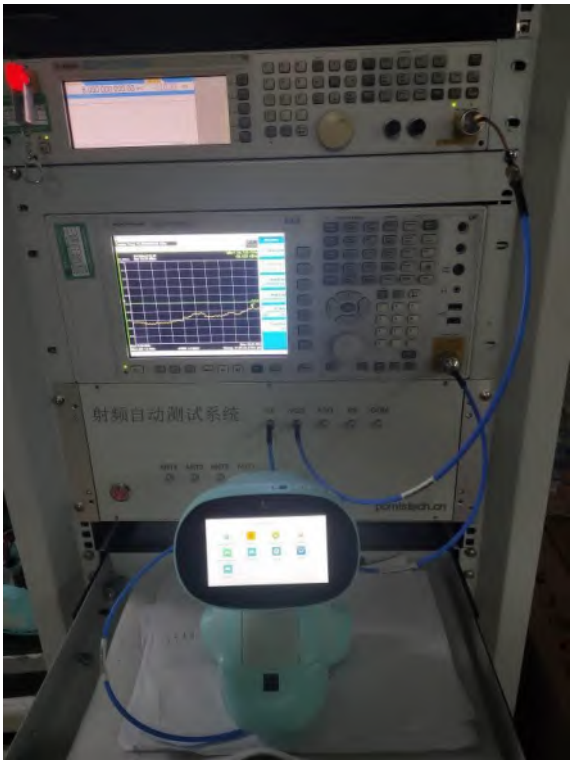
Conducted Emissions (AC Mains)

Radiated Emissions



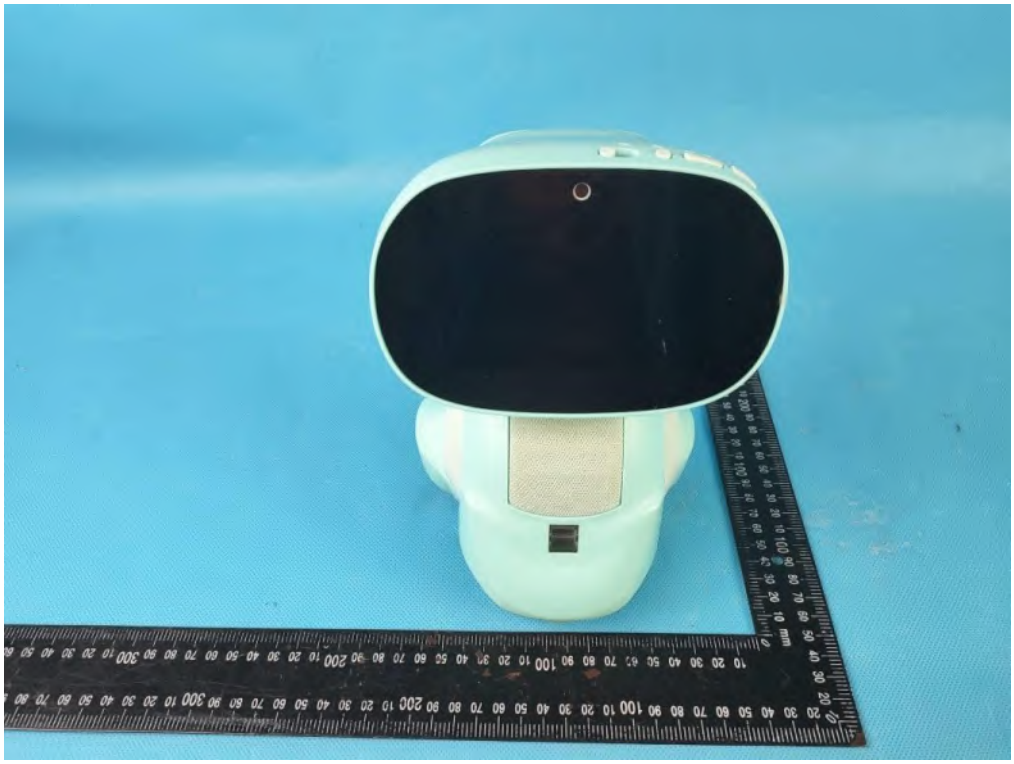


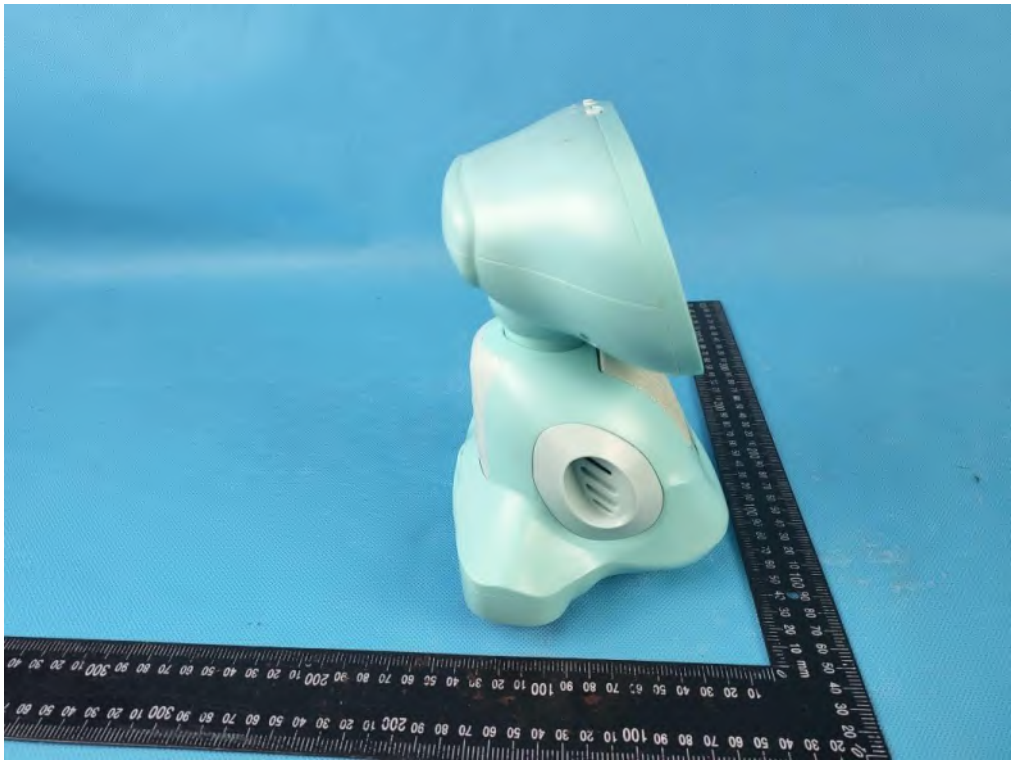
DFS:



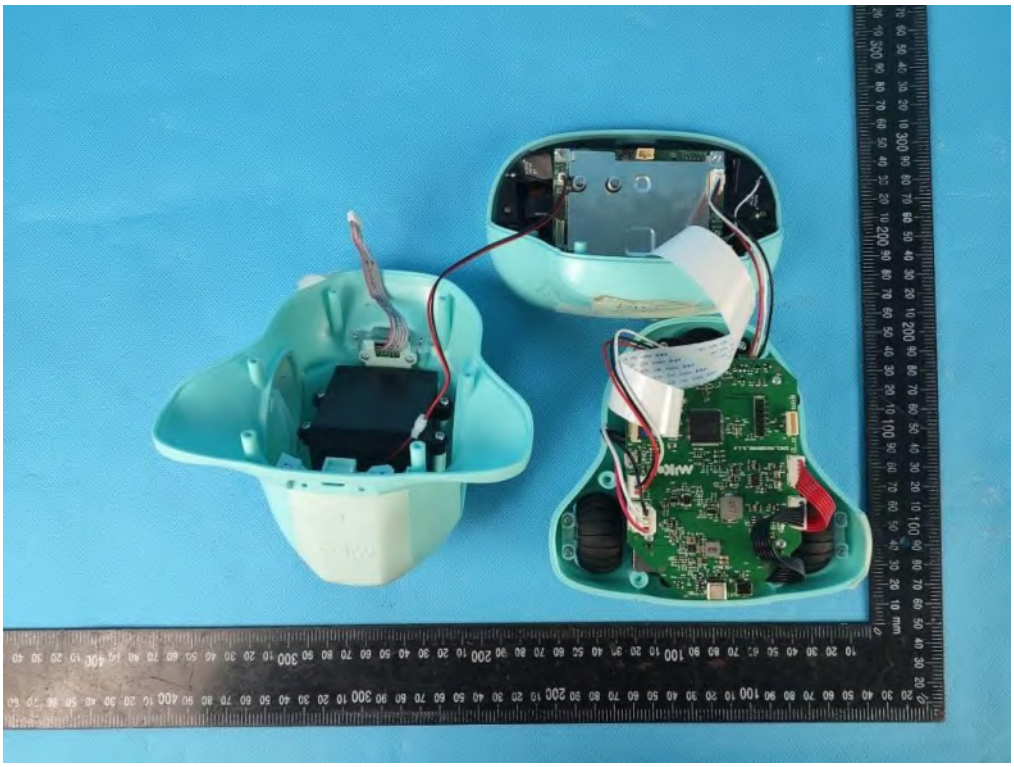
7. External and Internal Photos of the EUT

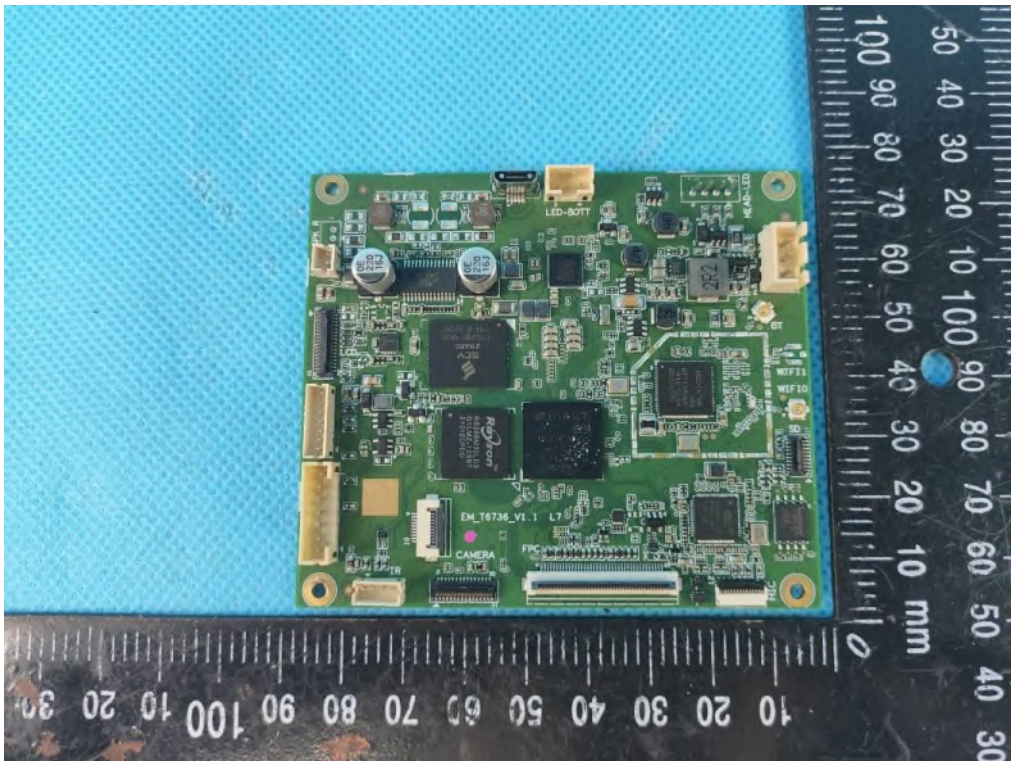
External Photo

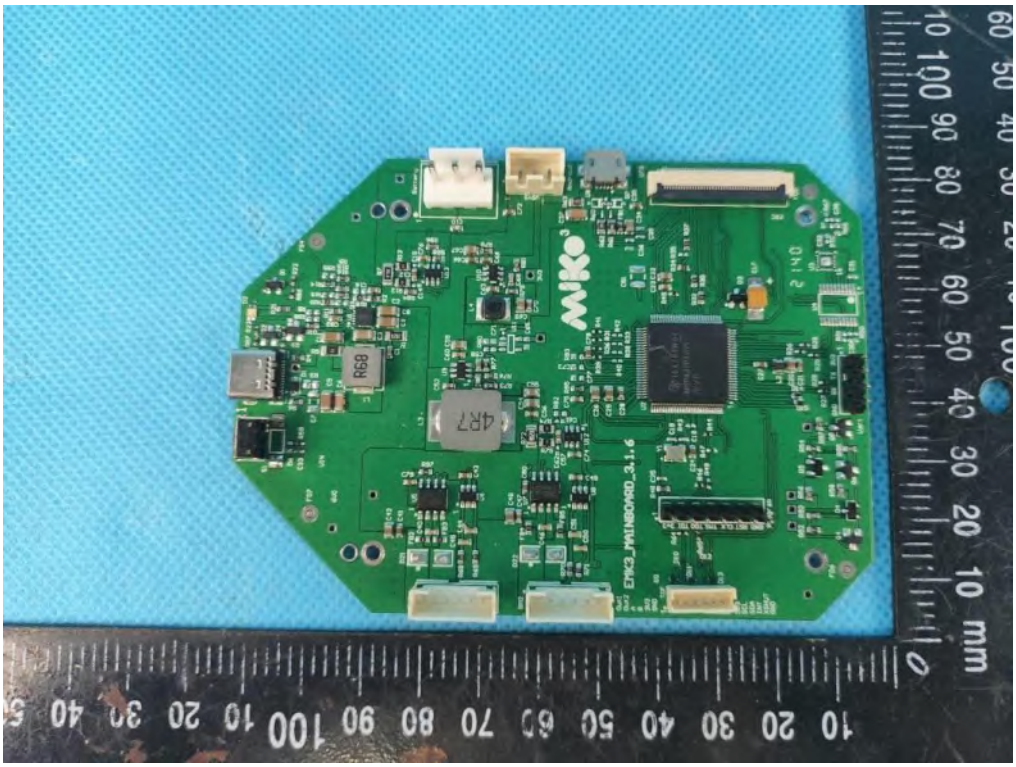


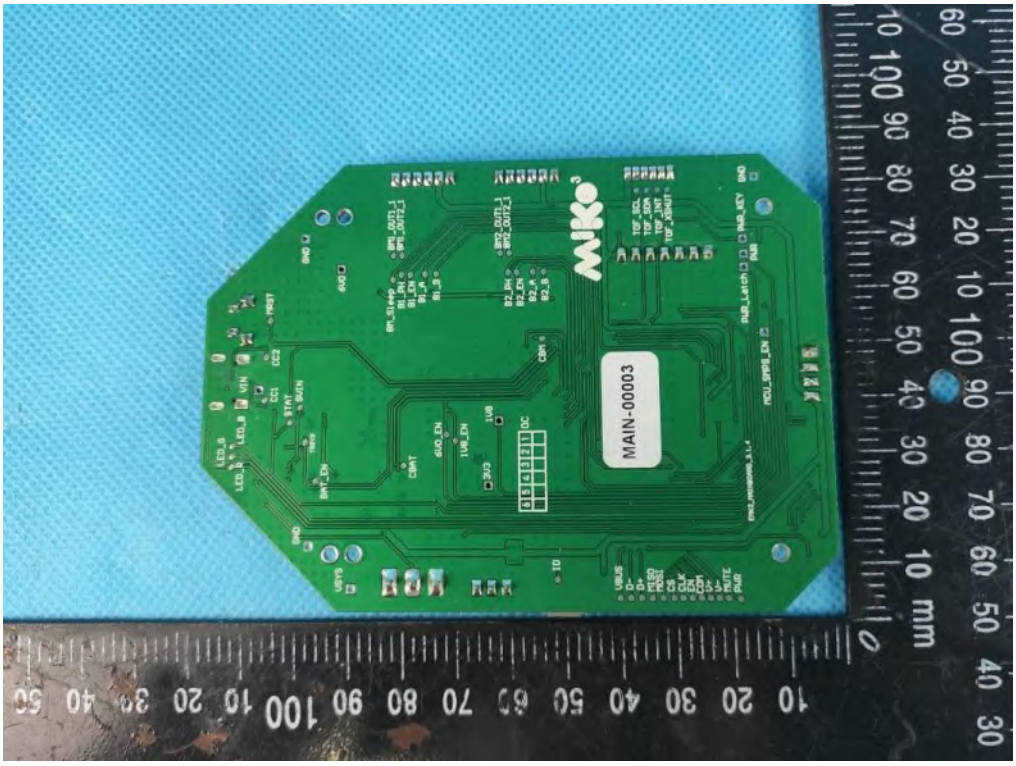


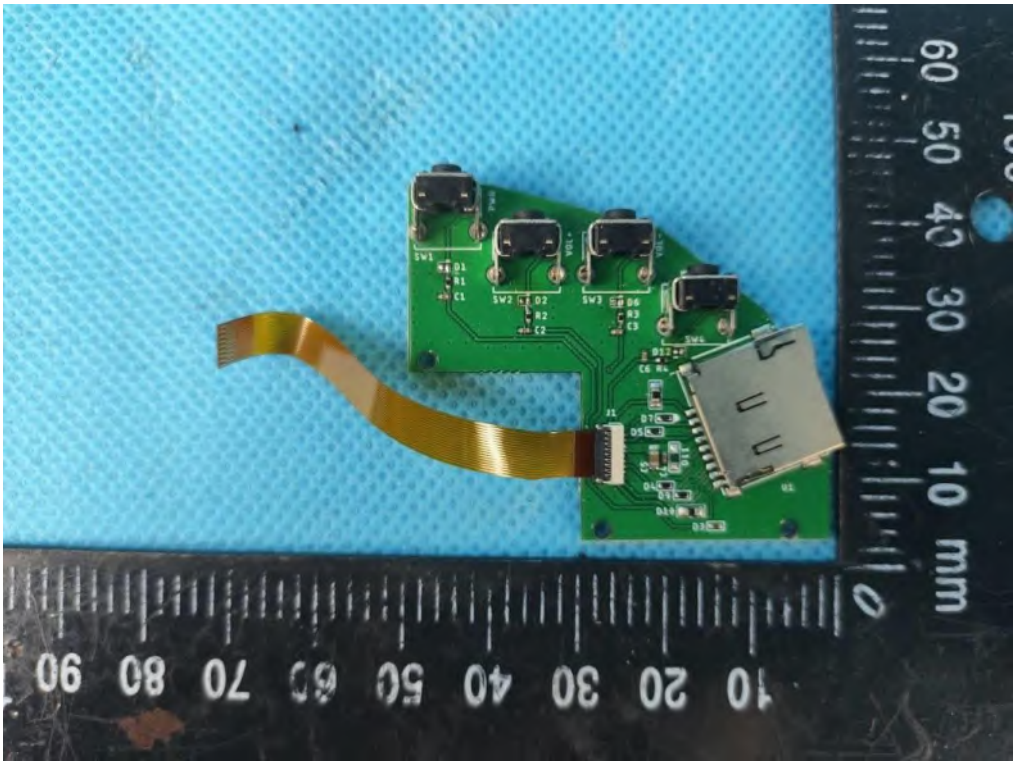
Internal Photo

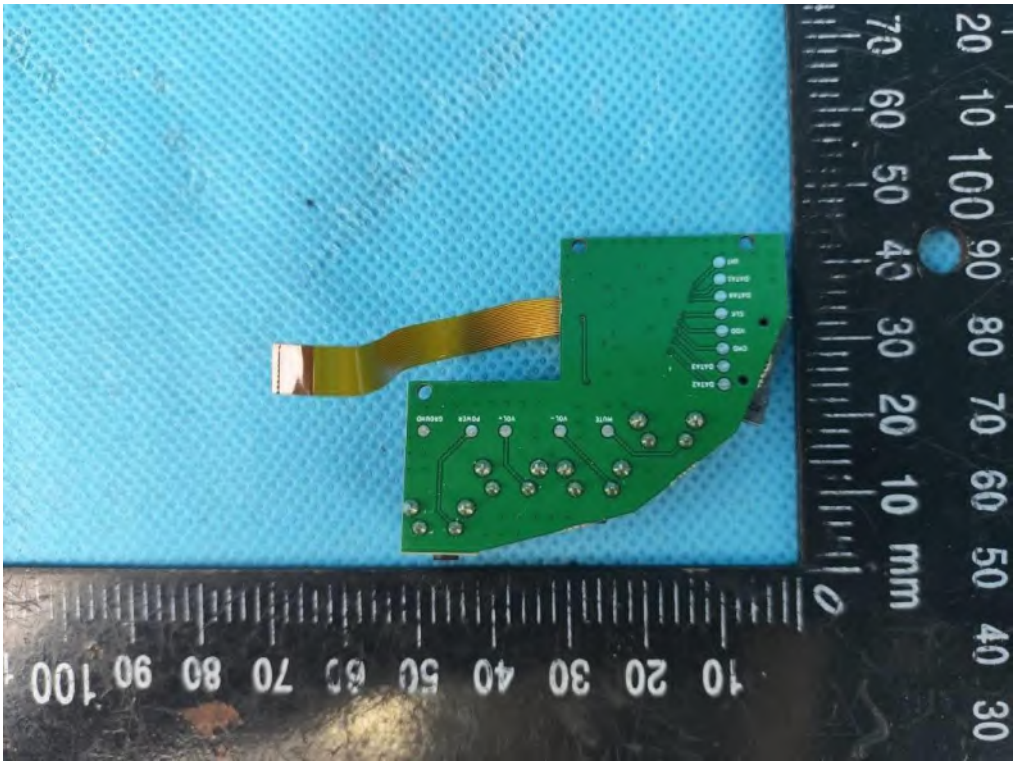







MAIN-00003





----------End of Report----------