



TEST REPORT

Report Reference No. : CHTEW19110026R1 Report verification: 
Project No. : SHT2301044201EW
FCC ID : 2ATTZ-SUNBEAM-F1
Applicant's name : Basic, Inc.
Address : 17688 County Road 558, Memphis, Missouri, 63555, United States
Test item description : Basic Feature Phone
Trade Mark : Sunbeam
Model/Type reference : F1
Listed Model(s) : -
Standard : FCC CFR Title 47 Part 15 Subpart E Section 15.407
Date of receipt of test sample : Jan. 30, 2023
Date of testing : Jan. 31, 2023- Feb. 09, 2023
Date of issue : Feb. 10, 2023
Result : PASS

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The test report merely correspond to the test sample.

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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

1.2. Report Version

Revision No.	Date of issue	Description
N/A	2019-11-05	Original
R1	2023-02-10	Updated address,battery, PCB board, updated USB port, antenna shape and adapter changed,make difference test on Conducted Emissions, Restricted band (radiated) and Radiated Spurious Emission, based on report No. CHTEW19110026

2. TEST DESCRIPTION

Test Item	FCC Rule	Result	Test Engineer
Antenna Requirement	15.203	PASS	Kang Yang
Line Conducted Emissions (AC Main)	15.207	PASS	Kang Yang
Maximum Conducted Output Power	15.407(a)	PASS	JiongSheng.Feng
Maximum Power Spectral Density	15.407(a)	PASS	JiongSheng.Feng
26dB Bandwidth and 99% Occupancy bandwidth	15.407(a)	PASS	JiongSheng.Feng
6dB Bandwidth	15.407(a)	PASS	JiongSheng.Feng
Band edge	15.407(b)	PASS	JiongSheng.Feng
Radiated Spurious Emissions	15.209	PASS	Quanhai Deng
Frequency Stability	15.407(g)	PASS	Quanhai Deng

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

3. SUMMARY

3.1. Client Information

Applicant:	Basic,Inc.
Address:	17688 County Road 558,Memphis, Missouri, 63555,United States
Manufacturer:	Basic,Inc.
Address:	17688 County Road 558,Memphis, Missouri, 63555,United States

3.2. Product Description

Name of EUT	Basic Feature Phone		
Trade Mark:	Sunbeam		
Model No.:	F1		
Listed Model(s):	-		
Power supply:	DC 3.8V		
Adapter information :	Model:EE-0501500 Input: 100-240Va.c., 50/60Hz, 0.5A Output: 5.0Vd.c.,1.5A		
Hardware version:	QS3912_MAINPCB_V1.0		
Software version:	Sunbeam_F1V_V1.0		
5G WIFI			
Supported type:	☒ 802.11a	☒ 802.11n(HT20)	☒ 802.11n(HT40)
Function:	☐ Outdoor AP ☒ Client	☐ Indoor AP	☐ Fixed P2P
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:	802.11n, 802.11a	
	40MHz:	802.11n	
Antenna type:	FPC Antenna		
Antenna gain:	-0.98dBi		

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	
		Channel	Frequency (MHz)	Channel	Frequency (MHz)
I	CH _L	36	5180	38	5190
	CH _M	44	5220	-	-
	CH _H	48	5240	46	5230
II	CH _L	52	5260	54	5270
	CH _M	56	5280	-	-
	CH _H	64	5320	62	5310
III	CH _L	100	5500	102	5510
	CH _M	120	5600	118	5590
	CH _H	140	5700	134	5670
IV	CH _L	149	5745	151	5755
	CH _M	157	5785	-	-
	CH _H	165	5825	159	5795

➤ 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)	MCS0
802.11n(HT40)	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. Modifications

No modifications were implemented to meet testing criteria.

4. TEST ENVIRONMENT

4.1. Testing Laboratory Information

Laboratory Name	Shenzhen Huatongwei International Inspection Co., Ltd.	
Laboratory Location	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China	
Connect information:	Tel: 86-755-26715499 E-mail: cs@szhtw.com.cn http://www.szhtw.com.cn	
Qualifications	Type	Accreditation Number
	FCC	762235

4.2. 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

4.3. 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	0.51 dB	(1)
Conducted spurious emissions 9kHz~40GHz	0.51 dB	(1)
Conducted Disturbance 150kHz~30MHz	3.02 dB	(1)
Radiated Emissions below 1GHz	4.54dB for 30MHz-1GHz	(1)
Radiated Emissions above 1GHz	5.10dB for above 1GHz	(1)
Occupied Bandwidth	70 Hz	(1)
Frequency error	70 Hz	(1)

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

4.4. Equipments Used during the Test

● Conducted Emission

Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Shielded Room	Albatross projects	HTWE0114	N/A	N/A	2018/09/28	2023/09/27
●	EMI Test Receiver	R&S	HTWE0111	ESCI	101247	2019/10/26	2020/10/25
●	Artificial Mains	SCHWARZBECK	HTWE0113	NNLK 8121	573	2019/10/23	2020/10/22
●	Pulse Limiter	R&S	HTWE0033	ESH3-Z2	100499	2019/10/23	2020/10/22
●	RF Connection Cable	HUBER+SUHNER	HTWE0113-02	ENVIROFLEX_142	EF-NM-BNCM-2M	2019/10/23	2020/10/22
●	Test Software	R&S	N/A	ES-K1	N/A	N/A	N/A

● Radiated emission-6th test site

Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0127	SAC-3m-02	C11121	2018/09/30	2023/09/29
●	EMI Test Receiver	R&S	HTWE0099	ESCI	100900	2022/08/30	2023/08/29
●	Loop Antenna	R&S	HTWE0546	HFH2-Z2E	101073	2021/05/25	2024/05/24
●	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0547	VULB9163	945	2022/05/23	2025/05/22
●	Pre-Amplifier	SCHWARZBECK	HTWE0295	BBV 9742	N/A	2022/11/04	2023/11/03
●	RF Connection Cable	HUBER+SUHNER	HTWE0062-01	N/A	N/A	2022/02/25	2023/02/24
●	RF Connection Cable	HUBER+SUHNER	HTWE0062-02	SUCOFLEX104	501184/4	2022/02/25	2023/02/24
●	Test Software	R&S	N/A	ES-K1	N/A	N/A	N/A

● Radiated emission-7th test site

Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0122	SAC-3m-01	C11121	2018/09/27	2023/09/26
●	Spectrum Analyzer	R&S	HTWE0098	FSP40	100597	2022/08/25	2023/08/24
●	Horn Antenna	ETS	HTWE0548	3117	240120	2022/05/20	2025/05/19
●	Horn Antenna	STEATITE	HTWE0549	QMS-00880	25661	2022/05/20	2025/05/19
●	Pre-amplifier	CD	HTWE0071	PAP-0102	12004	2022/11/04	2023/11/03
●	Broadband Pre-amplifier	SCHWARZBECK	HTWE0201	BBV 9718	9718-248	2022/02/28	2023/02/27
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-01	6m 18GHz S Serisa	N/A	2022/02/25	2023/02/24
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-02	6m 3GHz RG Serisa	N/A	2022/02/25	2023/02/24
●	RF Connection Cable	HUBER+SUHNER	HTWE0119-05	6m 3GHz RG Serisa	N/A	2022/02/25	2023/02/24
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-04	6m 3GHz RG Serisa	N/A	2022/02/25	2023/02/24
●	Test Software	Audix	N/A	E3	N/A	N/A	N/A

● RF Conducted Method						
Used	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Signal and spectrum Analyzer	R&S	FSV40	100048	2019/10/26	2020/10/25
●	Spectrum Analyzer	Agilent	N9020A	MY50510187	2019/10/26	2020/10/25
●	Test software	Tonscend	JS1120-2(WIFI)	N/A	N/A	N/A

5. TEST CONDITIONS AND RESULTS

5.1. Antenna requirement

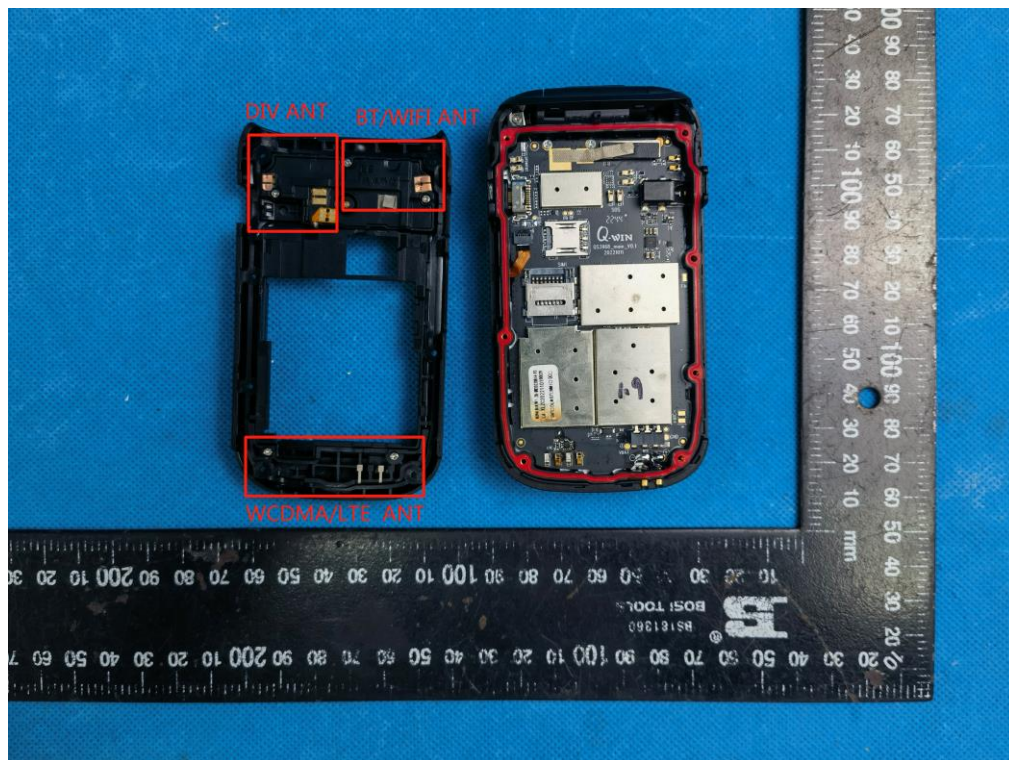
Requirement

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 an antenna 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 directional gain of the antenna less than 6 dBi, please refer to the below antenna photo.



5.2. Conducted Emissions (AC Main)

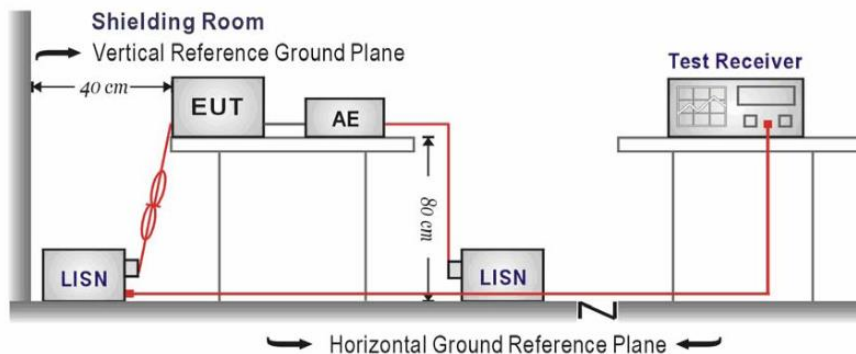
LIMIT

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

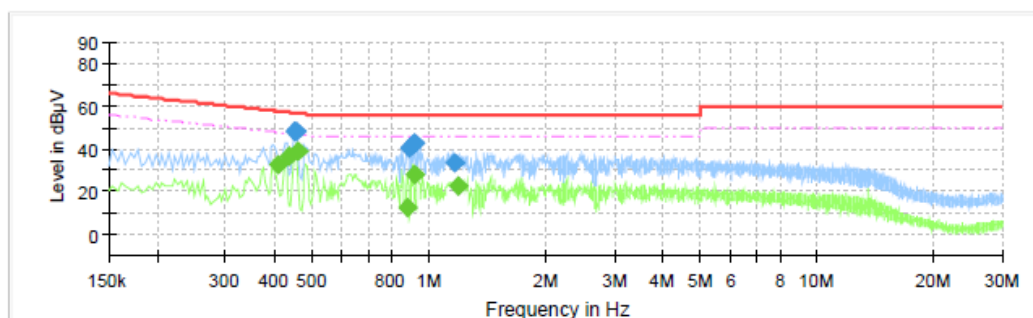
☒ Passed ☐ Not Applicable

Note:

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

Test Line:

L

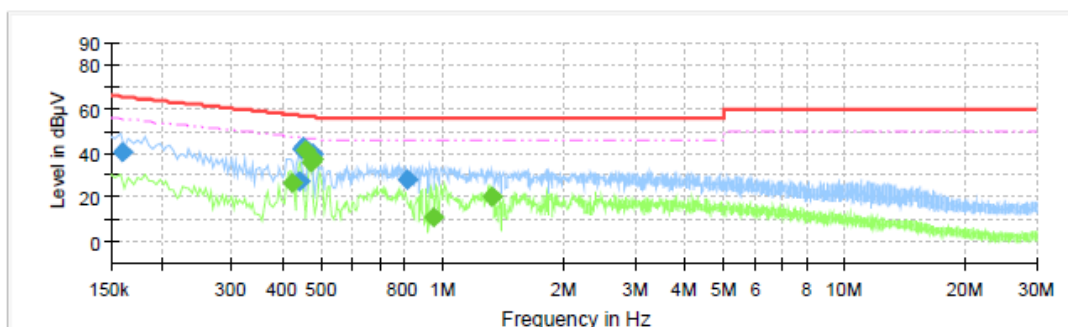


Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.407500	---	32.36	47.70	15.34	L1	10.2
0.435500	---	36.54	47.15	10.61	L1	10.2
0.452500	48.51	---	56.83	8.32	L1	10.2
0.455500	48.47	---	56.77	8.30	L1	10.2
0.459500	---	38.90	46.70	7.80	L1	10.2
0.876500	---	12.42	46.00	33.58	L1	10.3
0.891500	40.71	---	56.00	15.29	L1	10.3
0.911500	41.75	---	56.00	14.25	L1	10.3
0.915500	42.57	---	56.00	13.43	L1	10.3
0.919500	---	27.88	46.00	18.12	L1	10.3
1.159500	33.35	---	56.00	22.65	L1	10.3
1.187500	---	22.32	46.00	23.68	L1	10.3

Test Line:

N



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.159500	40.09	---	65.49	25.40	N	10.2
0.423500	---	26.27	47.38	21.11	N	10.2
0.440500	27.26	---	57.05	29.79	N	10.2
0.447500	42.05	---	56.92	14.87	N	10.2
0.451500	42.73	---	56.85	14.11	N	10.2
0.455500	---	41.05	46.77	5.72	N	10.2
0.471500	---	35.37	46.49	11.11	N	10.2
0.475500	39.94	---	56.42	16.47	N	10.2
0.475500	---	37.19	46.42	9.23	N	10.2
0.815500	28.30	---	56.00	27.70	N	10.2
0.947500	---	11.25	46.00	34.75	N	10.3
1.323500	---	20.59	46.00	25.41	N	10.3

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

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 bandwidth in MHz.
if $G_{TX} > 6\text{dBi}$, then $P_{out} = 24 - (G_{TX} - 6)$.

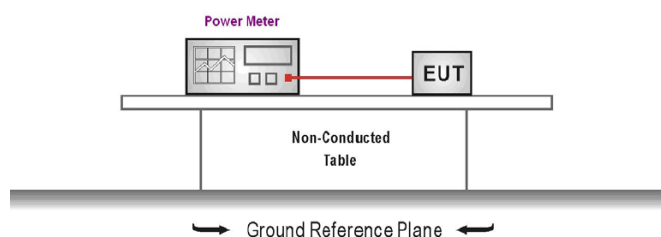
For the 5.47~5.725GHz band:

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 bandwidth in MHz.
if $G_{TX} > 6\text{dBi}$, 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 $G_{TX} > 6\text{dBi}$, 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 RESULTS

☒ Passed
 ☐ Not Applicable

Band	Bandwidth (MHz)	Type	Channel	Conducted Output Power (dBm)	Limit (dBm)	Result
I	20	802.11n	CH _L	12.78	24.00	Pass
			CH _M	13.95		
			CH _H	14.19		
		802.11a	CH _L	13.78	24.00	Pass
			CH _M	13.86		
			CH _H	13.87		
	40	802.11n	CH _L	12.24	24.00	Pass
			CH _H	13.01		
II	20	802.11n	CH _L	15.03	24.00	Pass
			CH _M	14.91		
			CH _H	15.86		
		802.11a	CH _L	14.46	24.00	Pass
			CH _M	14.81		
			CH _H	15.95		
	40	802.11n	CH _L	14.37	24.00	Pass
			CH _H	14.54		

Band	Bandwidth (MHz)	Type	Channel	Conducted Output Power (dBm)	Limit (dBm)	Result
III	20	802.11n	CH _L	13.08	24.00	Pass
			CH _M	12.93		
			CH _H	11.39		
		802.11a	CH _L	14.34	24.00	Pass
			CH _M	12.88		
			CH _H	12.58		
	40	802.11n	CH _L	12.69	24.00	Pass
			CH _M	12.62		
			CH _H	11.36		
IV	20	802.11n	CH _L	12.92	30.00	Pass
			CH _M	12.37		
			CH _H	12.77		
		802.11a	CH _L	12.50	30.00	Pass
			CH _M	12.35		
			CH _H	12.77		
	40	802.11n	CH _L	12.90	30.00	Pass
			CH _H	13.09		

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

For the 5.25~5.35GHz band:

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

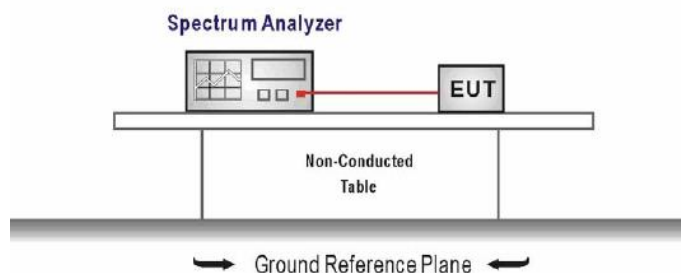
For the 5.47~5.725GHz band:

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

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 $G_{TX} > 6\text{dBi}$, then $\text{PSD} = 30 - (G_{TX} - 6)$.
- 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

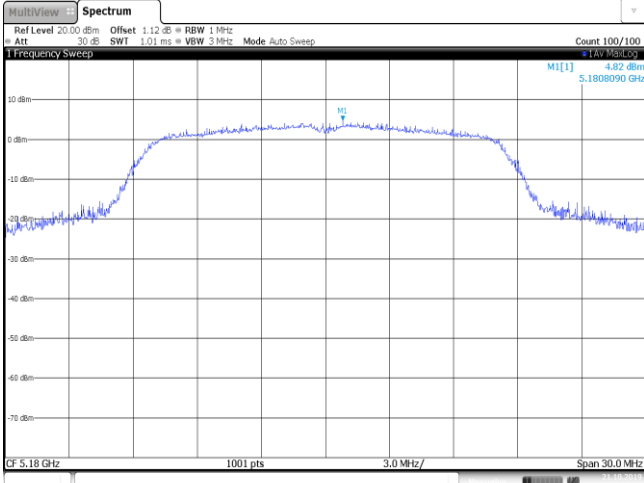
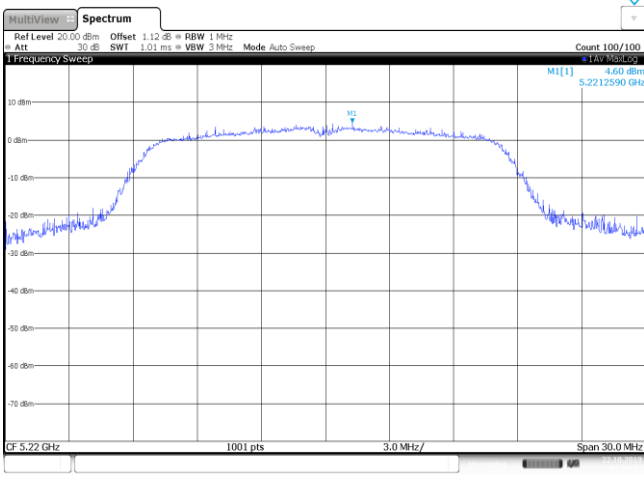
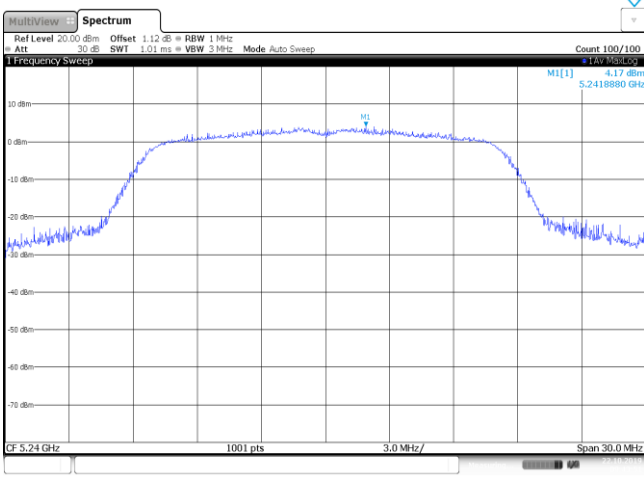
TEST RESULTS
☒ Passed
 ☐ Not Applicable

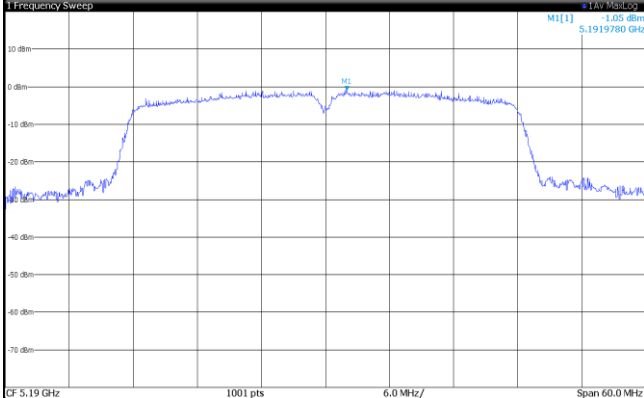
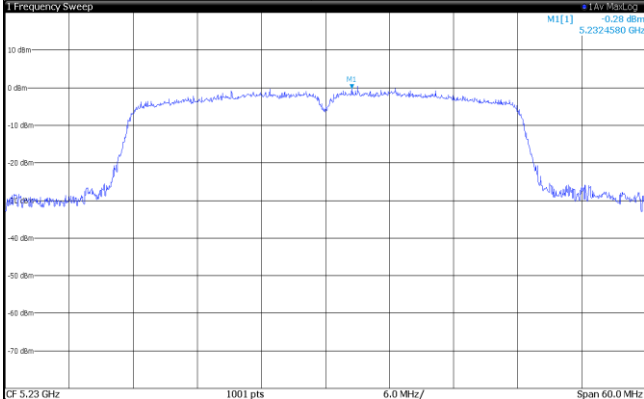
Band	Bandwidth (MHz)	Type	Channel	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Result
I	20	802.11n	CH _L	2.63	11.00	Pass
			CH _M	4.09		
			CH _H	4.94		
		802.11a	CH _L	4.82	11.00	Pass
			CH _M	4.60		
			CH _H	4.17		
II	40	802.11n	CH _L	-1.05	11.00	Pass
			CH _H	-0.28		
			CH _M	-0.28		
		802.11a	CH _L	5.44	11.00	Pass
			CH _M	5.50		
			CH _H	5.90		
III	20	802.11n	CH _L	5.41	11.00	Pass
			CH _M	5.28		
			CH _H	6.59		
	40	802.11n	CH _L	1.61	11.00	Pass
			CH _M	1.32		
			CH _H	1.32		

Band	Bandwidth (MHz)	Type	Channel	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Result
I	20	802.11n	CH _L	3.82	11.00	Pass
			CH _M	3.53		
			CH _H	1.33		
		802.11a	CH _L	5.23	11.00	Pass
			CH _M	3.72		
			CH _H	2.68		
II	40	802.11n	CH _L	0.05	11.00	Pass
			CH _M	-0.50		
			CH _H	-2.44		
	20	802.11a	CH _L	1.89	30.00	Pass
			CH _M	0.34		
			CH _H	1.00		
III	20	802.11n	CH _L	1.53	30.00	Pass
			CH _M	0.72		
			CH _H	1.23		
	40	802.11n	CH _L	-1.78	30.00	Pass
			CH _M	-2.28		
			CH _H	-2.28		

Test plot as follows:

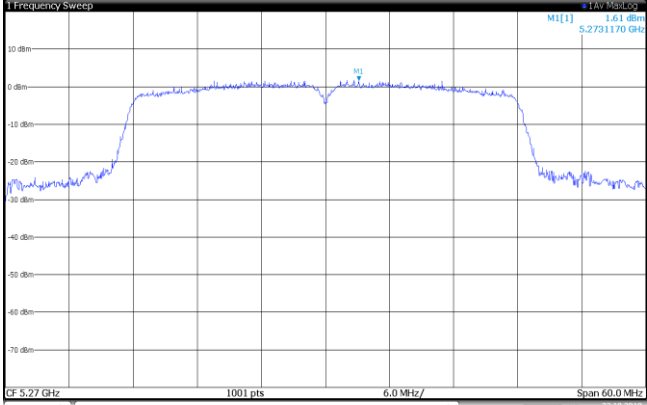
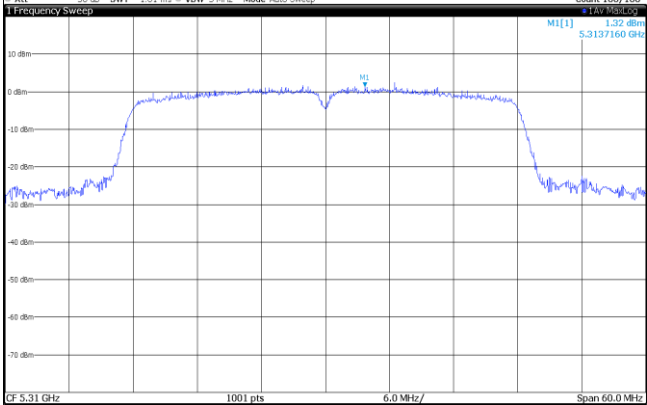
Band I		802.11n (HT20)
CH _L	MultiView Spectrum Ref Level 20.00 dBm Offset 1.12 dB RBW 1 MHz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 Frequency Sweep M1[1] 2.63 dBm 5.1813190 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm -80 dBm -90 dBm -100 dBm CF 5.18 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.OCT.2019 10:02:33	
CH _M	MultiView Spectrum Ref Level 20.00 dBm Offset 1.12 dB RBW 1 MHz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 Frequency Sweep M1[1] 4.07 dBm 5.2208990 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm -80 dBm -90 dBm -100 dBm CF 5.22 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.OCT.2019 10:06:11	
CH _H	MultiView Spectrum Ref Level 20.00 dBm Offset 1.12 dB RBW 1 MHz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 Frequency Sweep M1[1] 4.94 dBm 5.2386210 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm -80 dBm -90 dBm -100 dBm CF 5.24 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.OCT.2019 10:06:38	

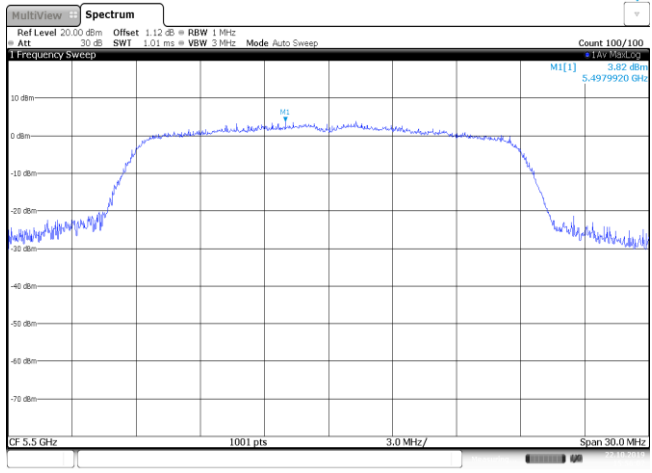
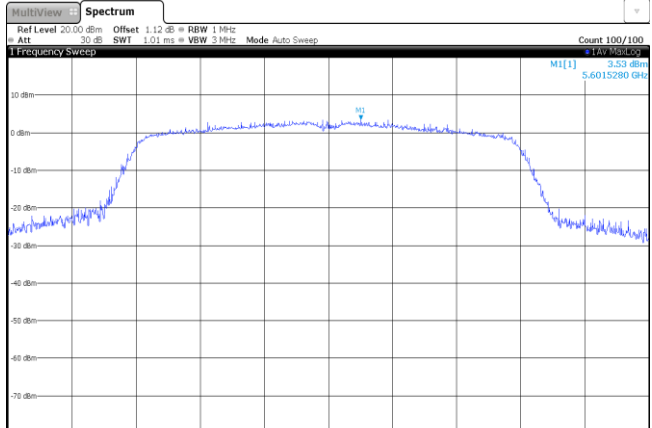
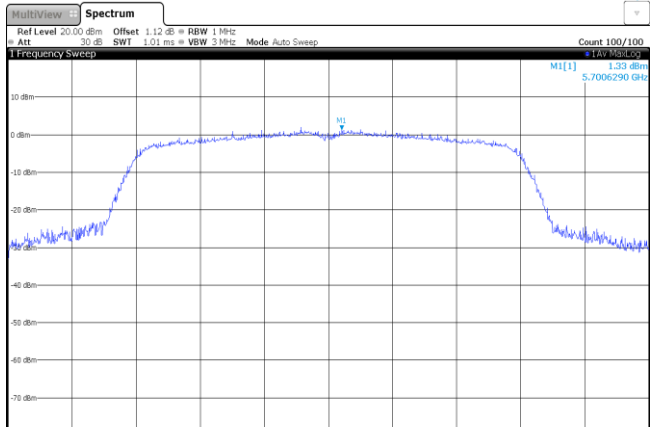
Band I	802.11a
CH _L	 Ref Level 20.00 dBm Offset 1.12 dB RBW 1 MHz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 4.82 dBm 5.1808090 GHz Date: 21.OCT.2019 22:13:08
CH _M	 Ref Level 20.00 dBm Offset 1.12 dB RBW 1 MHz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 4.60 dBm 5.2212590 GHz Date: 22.OCT.2019 09:33:45
CH _H	 Ref Level 20.00 dBm Offset 1.12 dB RBW 1 MHz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 4.17 dBm 5.2418880 GHz Date: 22.OCT.2019 09:43:51

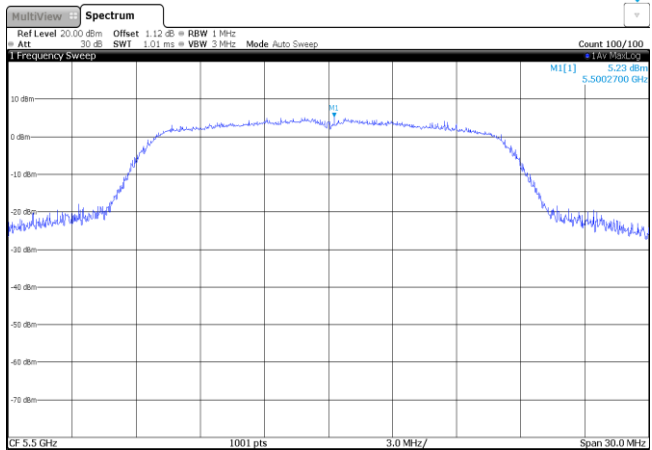
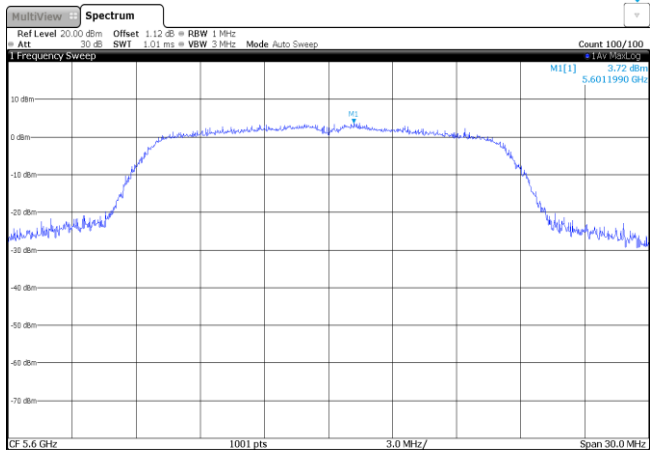
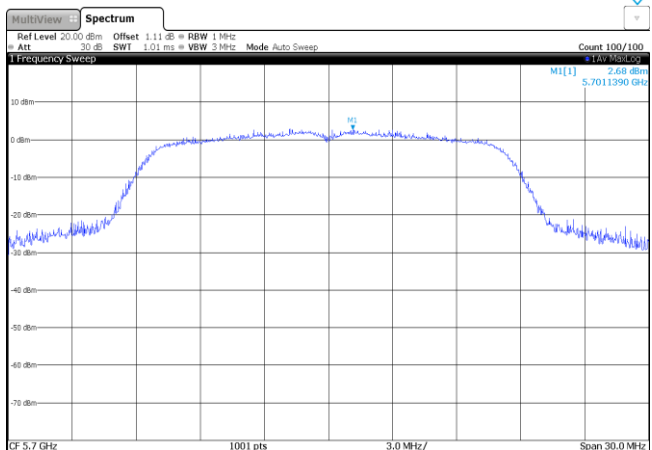
Band I		802.11n (HT40)
CH _L	MultiView Spectrum Ref Level 20.00 dBm Offset 1.23 dB RBW 1 MHz Att -30 dB SWI 1.01 ms VIEW 3 MHz Mode Auto Sweep Count 100/100 5.1919780 GHz Frequency Sweep  CF 5.19 GHz 1001 pts 6.0 MHz/ Span 60.0 MHz Date: 22.OCT.2019 10:52:53	
CH _H	MultiView Spectrum Ref Level 20.00 dBm Offset 1.23 dB RBW 1 MHz Att -30 dB SWI 1.01 ms VIEW 3 MHz Mode Auto Sweep Count 100/100 5.2324580 GHz Frequency Sweep  CF 5.23 GHz 1001 pts 6.0 MHz/ Span 60.0 MHz Date: 22.OCT.2019 10:56:11	

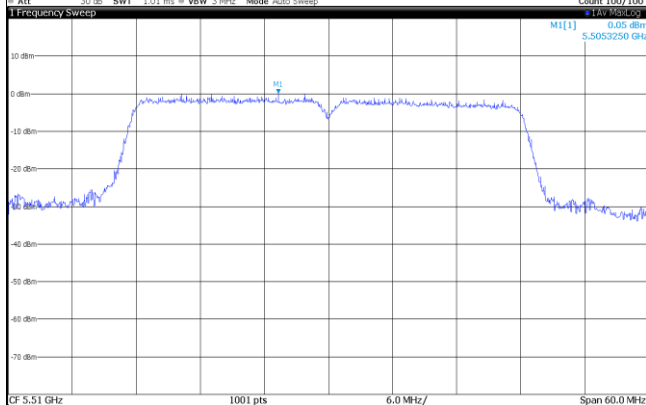
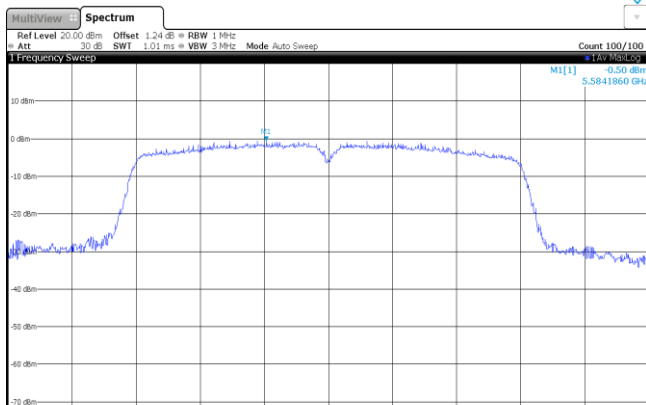
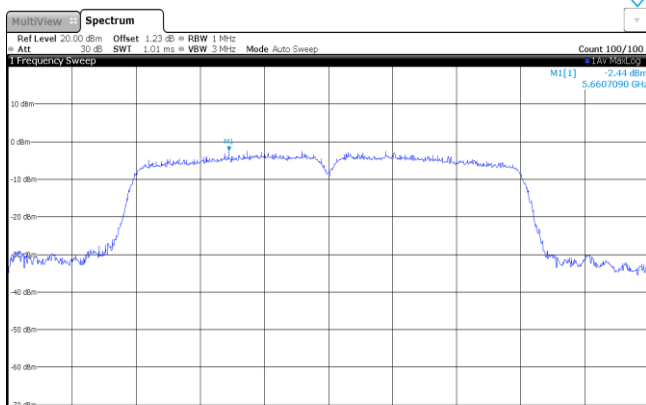
Band II		802.11n (HT20)
CH _L	MultViewSpectrum Ref Level 20.00 dBm Offset 1.12 dB RBW 1 MHz Att 30 dB SWI 1.01 ms VIEW 3 MHz Mode Auto Sweep Count 100/100 117.4302452 5.44 dBm 5.2614390 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 5.26 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.OCT.2019 11:24:12	
CH _M	MultViewSpectrum Ref Level 20.00 dBm Offset 1.12 dB RBW 1 MHz Att 30 dB SWI 1.01 ms VIEW 3 MHz Mode Auto Sweep Count 100/100 117.4302452 5.50 dBm 5.2812590 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 5.28 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.OCT.2019 11:27:24	
CH _H	MultViewSpectrum Ref Level 20.00 dBm Offset 1.12 dB RBW 1 MHz Att 30 dB SWI 1.01 ms VIEW 3 MHz Mode Auto Sweep Count 100/100 117.4302452 5.50 dBm 5.3214990 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 5.32 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.OCT.2019 11:32:48	

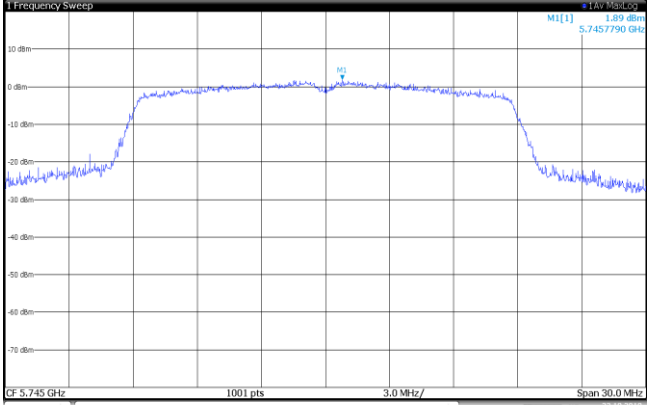
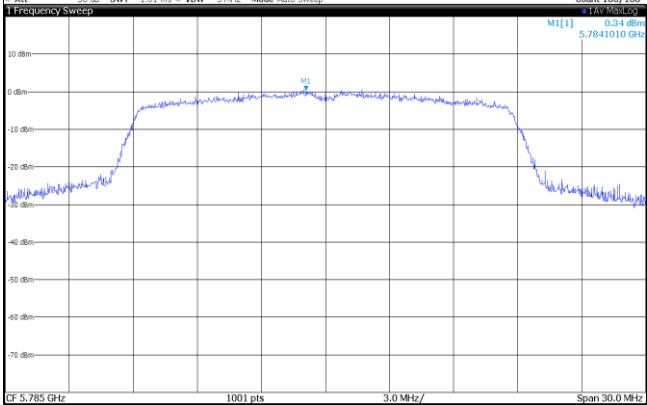
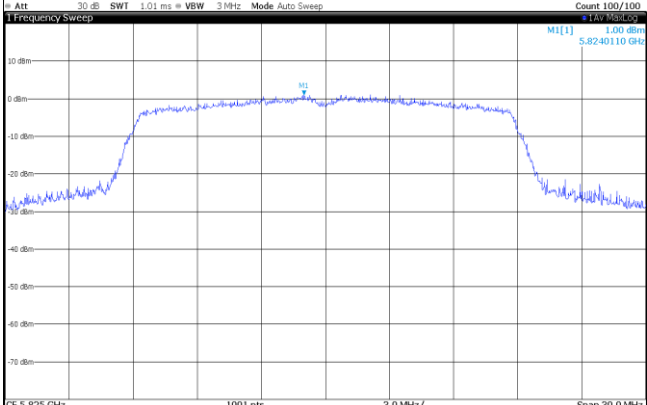
Band II		802.11a
CH _L	<	

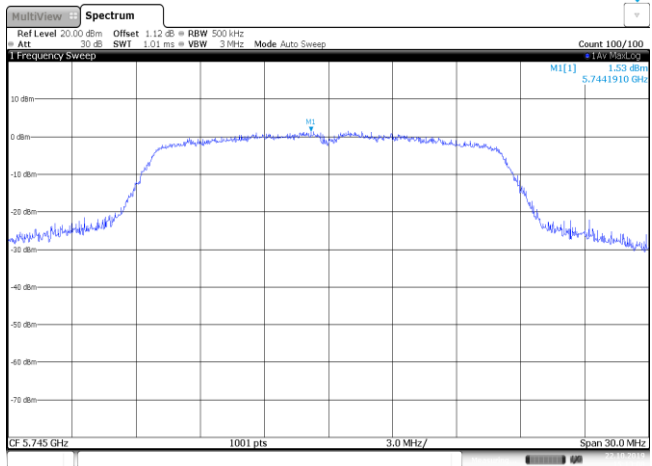
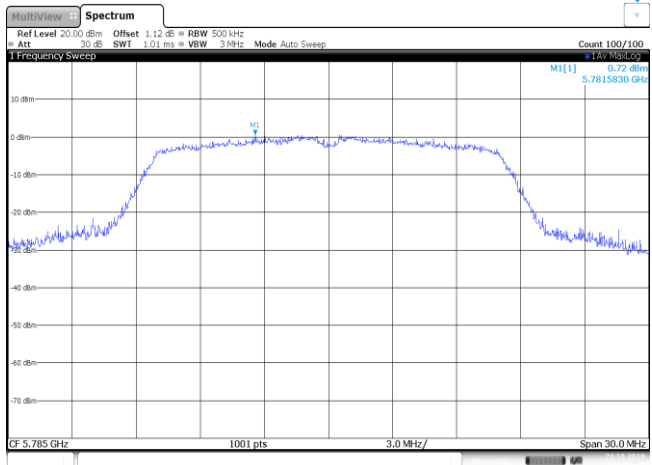
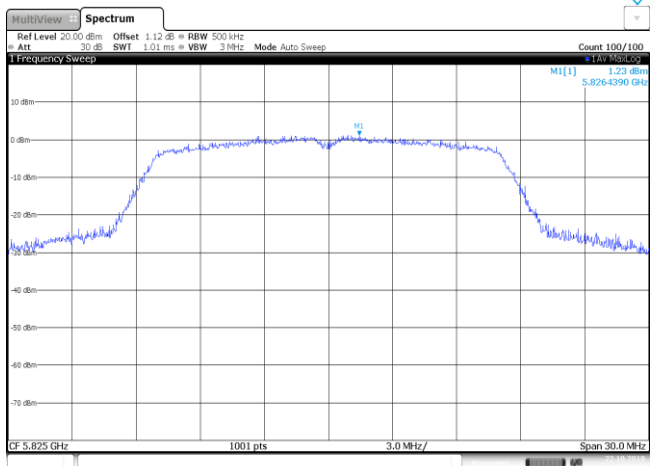
Band II		802.11n (HT40)
CH _L	MultiView Spectrum Ref Level 20.00 dBm Offset 1.23 dB RBW 1 MHz Att -30 dB SWT 1.01 ms VIEW 3 MHz Mode Auto Sweep Count 100/100 11.73001452 Frequency Sweep  GF 5.27 GHz 1001 pts 6.0 MHz/ Span 60.0 MHz Date: 22.OCT.2019 13:57:09	
CH _H	MultiView Spectrum Ref Level 20.00 dBm Offset 1.24 dB RBW 1 MHz Att -30 dB SWI 1.01 ms VIEW 3 MHz Mode Auto Sweep Count 100/100 11.73001452 Frequency Sweep  GF 5.31 GHz 1001 pts 6.0 MHz/ Span 60.0 MHz Date: 22.OCT.2019 13:55:51	

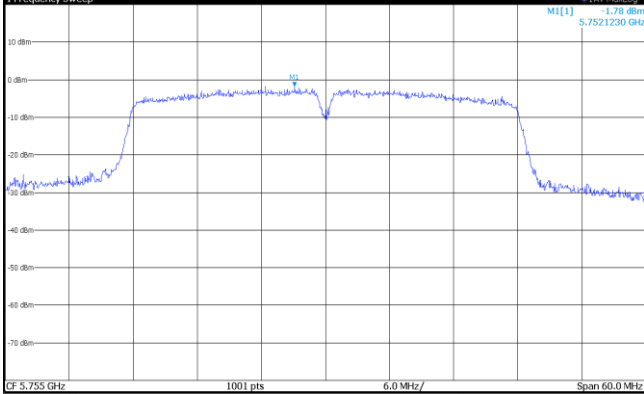
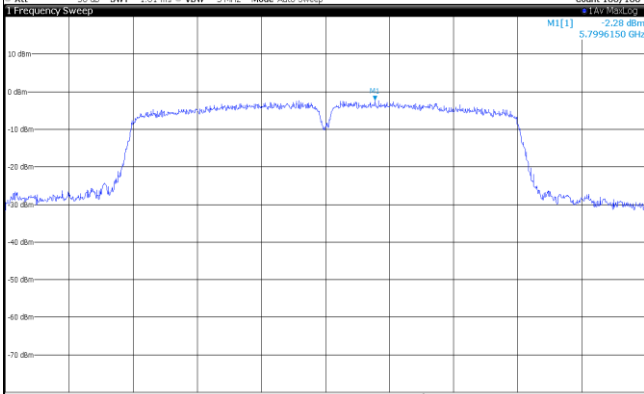
Band III	802.11n (HT20)
CH _L	 MultiView Spectrum Ref Level 20.00 dBm Offset 1.12 dB BW 1 MHz Att 30 dB SWI 1.01 ms VIEW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 3.82 dBm 5.4979920 GHz Frequency Sweep CF 5.5 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.OCT.2019 15:56:02
CH _M	 MultiView Spectrum Ref Level 20.00 dBm Offset 1.12 dB BW 1 MHz Att 30 dB SWI 1.01 ms VIEW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 3.53 dBm 5.6015280 GHz Frequency Sweep CF 5.6 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.OCT.2019 15:04:08
CH _H	 MultiView Spectrum Ref Level 20.00 dBm Offset 1.12 dB BW 1 MHz Att 30 dB SWI 1.01 ms VIEW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 1.33 dBm 5.7006290 GHz Frequency Sweep CF 5.7 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.OCT.2019 14:41:59

Band III	802.11a
CH _L	 MultiView Spectrum Ref Level 20.00 dBm Offset 1.12 dB = RBW 1 MHz Att -30 dB SWI 1.01 ms = VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 5.5002700 GHz -11.10 dBm CF 5.5 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.OCT.2019 14:15:15
CH _M	 MultiView Spectrum Ref Level 20.00 dBm Offset 1.12 dB = RBW 1 MHz Att -30 dB SWI 1.01 ms = VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 5.6011990 GHz -11.10 dBm CF 5.6 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.OCT.2019 15:02:20
CH _H	 MultiView Spectrum Ref Level 20.00 dBm Offset 1.11 dB = RBW 1 MHz Att -30 dB SWI 1.01 ms = VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 5.7011390 GHz -11.10 dBm CF 5.7 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.OCT.2019 14:25:51

Band III		802.11n (HT40)
CH _L	MultiView Spectrum Ref Level 20.00 dBm Offset 1.23 dB RBW 1 MHz Att -30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 11.0305450 Frequency Sweep  CF 5.51 GHz1001 pts6.0 MHz/Span 60.0 MHz Date: 22.OCT.2019 14:53:06	
CH _M	MultiView Spectrum Ref Level 20.00 dBm Offset 1.24 dB RBW 1 MHz Att -30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 11.0305450 Frequency Sweep  CF 5.59 GHz1001 pts6.0 MHz/Span 60.0 MHz Date: 22.OCT.2019 15:05:45	
CH _H	MultiView Spectrum Ref Level 20.00 dBm Offset 1.23 dB RBW 1 MHz Att -30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 11.0305450 Frequency Sweep  CF 5.67 GHz1001 pts6.0 MHz/Span 60.0 MHz Date: 22.OCT.2019 14:51:47	

Band IV		802.11n (HT20)
CH _L	MultiView Spectrum Ref Level 20.00 dBm Offset 1.12 dB RBW 500 kHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 117.900 dBm Frequency Sweep  CF 5.745 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.OCT.2019 15:18:33	
CH _M	MultiView Spectrum Ref Level 20.00 dBm Offset 1.12 dB RBW 500 kHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 117.900 dBm Frequency Sweep  CF 5.785 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.OCT.2019 15:22:24	
CH _H	MultiView Spectrum Ref Level 20.00 dBm Offset 1.12 dB RBW 500 kHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 117.900 dBm Frequency Sweep  CF 5.825 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.OCT.2019 15:24:55	

Band IV	802.11a
CH _L	 MultiView Spectrum Ref Level 20.00 dBm Offset 1.12 dB BW 500 kHz Att -30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Frequency Sweep Count 100/100 M1[1] 1.23 dBm 5.7441910 GHz 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm -80 dBm CF 5.745 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.OCT.2019 15:13:08
CH _M	 MultiView Spectrum Ref Level 20.00 dBm Offset 1.12 dB BW 500 kHz Att -30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Frequency Sweep Count 100/100 M1[1] 0.72 dBm 5.7815830 GHz 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm -80 dBm CF 5.785 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.OCT.2019 15:16:10
CH _H	 MultiView Spectrum Ref Level 20.00 dBm Offset 1.12 dB BW 500 kHz Att -30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Frequency Sweep Count 100/100 M1[1] 1.23 dBm 5.8264390 GHz 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm -80 dBm CF 5.825 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 22.OCT.2019 15:17:19

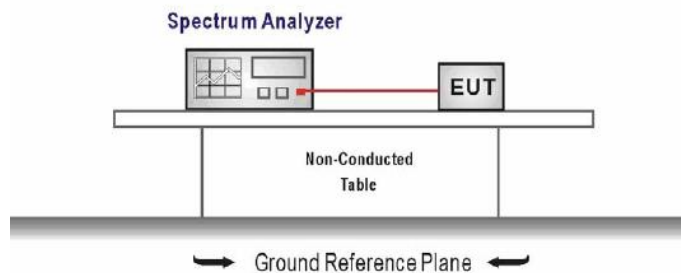
Band IV		802.11n (HT40)
CH _L	MultiView Spectrum Ref Level 20.00 dBm Att 30 dB Offset 1.23 dB RBW 500 kHz SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 11.93001450 Frequency Sweep  CF 5.755 GHz 1001 pts 6.0 MHz/ Span 60.0 MHz Date: 22.OCT.2019 15:26:28	
CH _H	MultiView Spectrum Ref Level 20.00 dBm Att 30 dB Offset 1.23 dB RBW 500 kHz SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 11.93001450 Frequency Sweep  CF 5.795 GHz 1001 pts 6.0 MHz/ Span 60.0 MHz Date: 22.OCT.2019 15:27:51	

5.5. 26dB bandwidth and 99% Occupancy 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

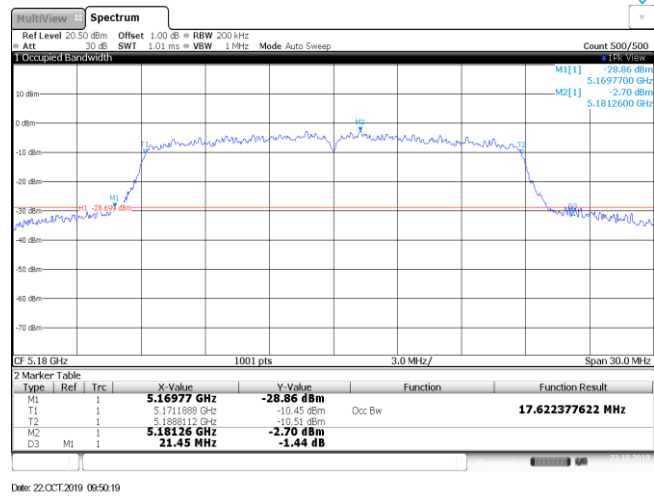
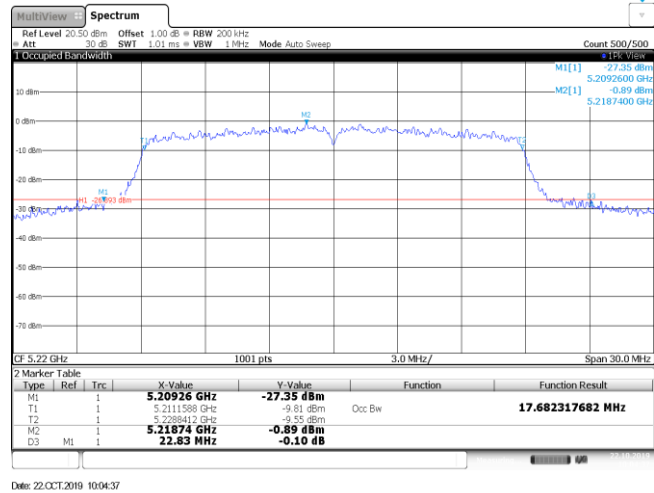
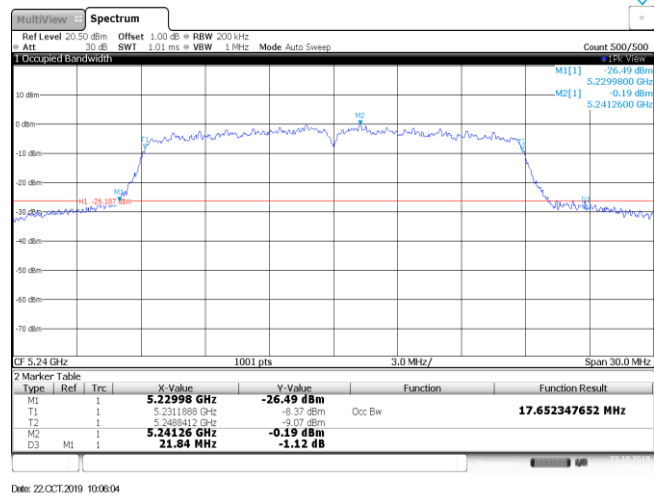
☒ Passed ☐ Not Applicable

Band	Bandwidth (MHz)	Type	Channel	99% Occupy bandwidth (MHz)	26dB bandwidth (MHz)	Result
I	20	802.11n	CH _L	17.62	21.45	Pass
			CH _M	17.68	22.83	
			CH _H	17.65	21.84	
		802.11a	CH _L	16.57	19.98	Pass
			CH _M	16.63	22.23	
			CH _H	16.57	21.09	
	40	802.11n	CH _L	36.20	48.30	Pass
			CH _H	36.14	45.66	
II	20	802.11n	CH _L	17.68	22.62	Pass
			CH _M	17.65	23.28	
			CH _H	17.62	24.60	
		802.11a	CH _L	16.57	20.37	Pass
			CH _M	16.60	22.38	
			CH _H	16.63	22.98	
	40	802.11n	CH _L	36.20	49.08	Pass
			CH _H	36.20	47.16	

Band	Bandwidth (MHz)	Type	Channel	99% Occupy bandwidth (MHz)	26dB bandwidth (MHz)	Result
III	20	802.11n	CH _L	17.56	19.95	Pass
			CH _M	17.62	19.98	
			CH _H	17.56	19.92	
		802.11a	CH _L	16.60	20.31	Pass
			CH _M	16.60	20.04	
			CH _H	16.57	20.43	
	40	802.11n	CH _L	36.38	40.92	Pass
			CH _M	36.08	41.10	
			CH _H	36.14	41.04	

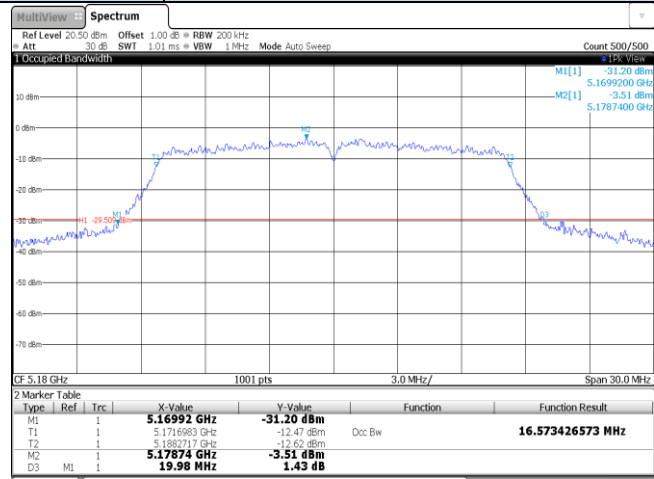
Band I

802.11n (HT20)

CH_LCH_MCH_H

Band I

802.11a

CH_L

Date: 21.OCT.2019 22:15:49

CH_M

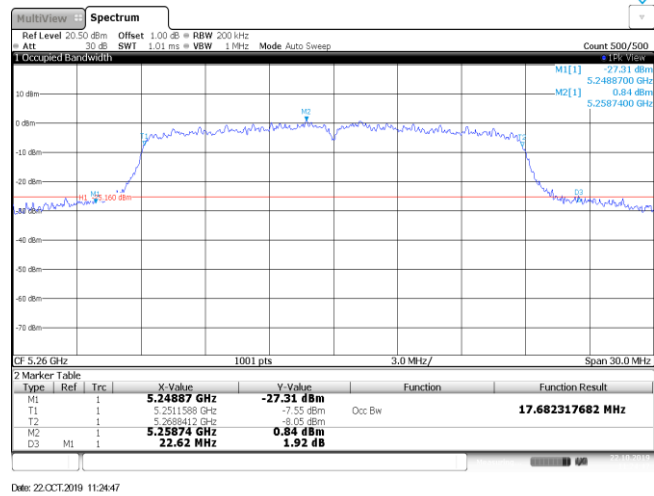
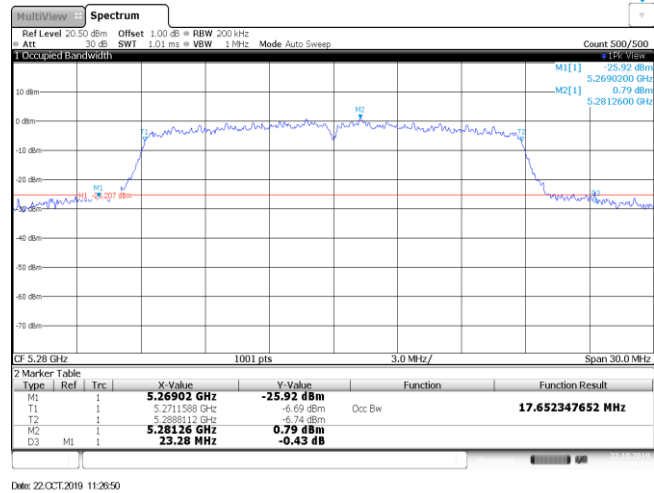
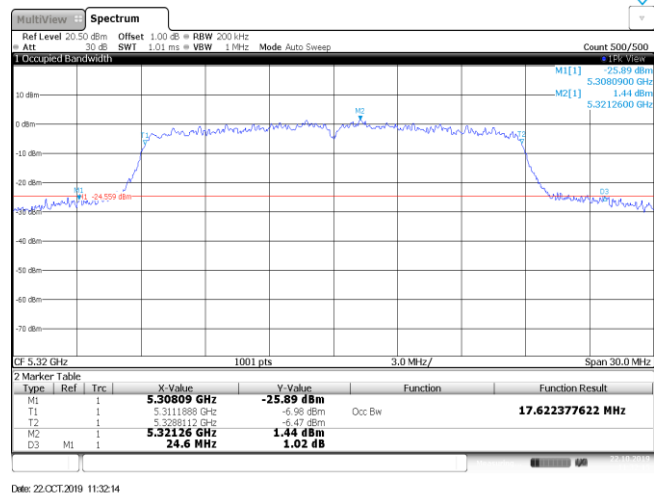
Date: 22.OCT.2019 09:33:11

CH_H

Date: 22.OCT.2019 09:43:20

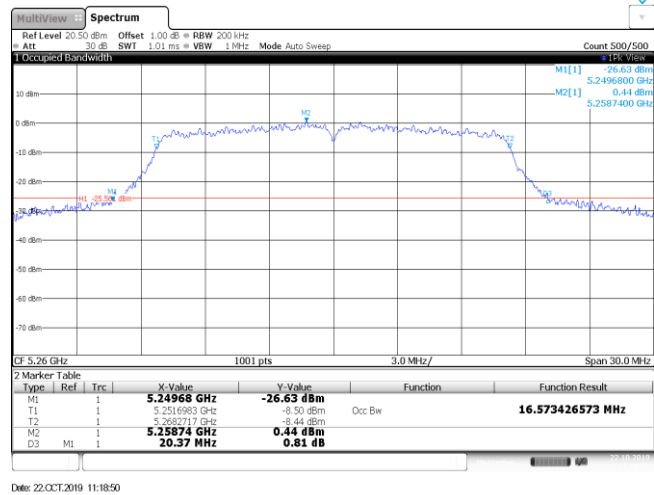
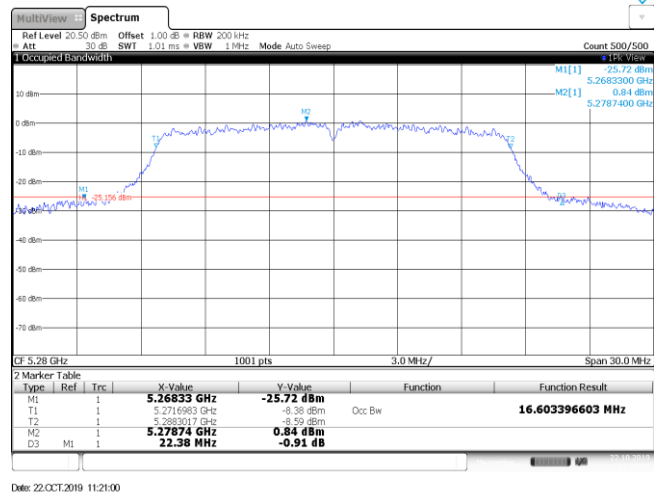
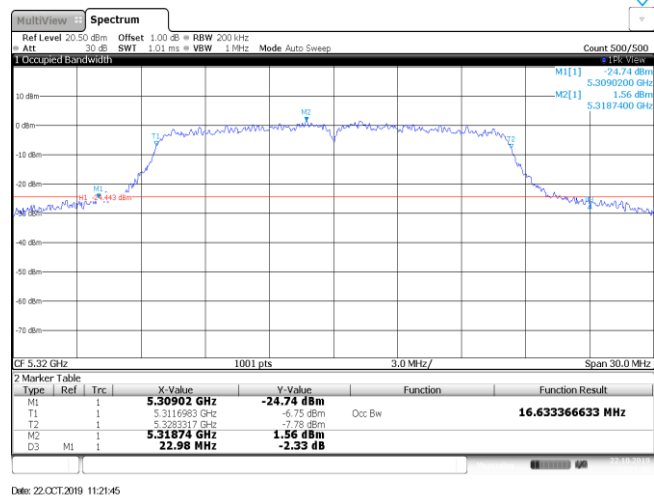
Band II

802.11n (HT20)

CH_LCH_MCH_H

Band II

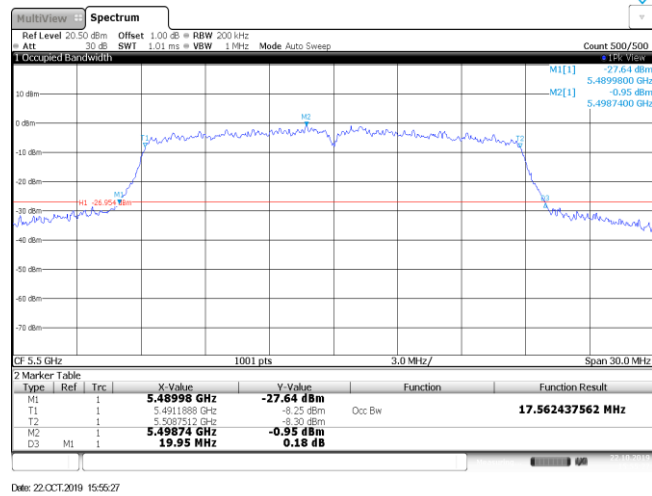
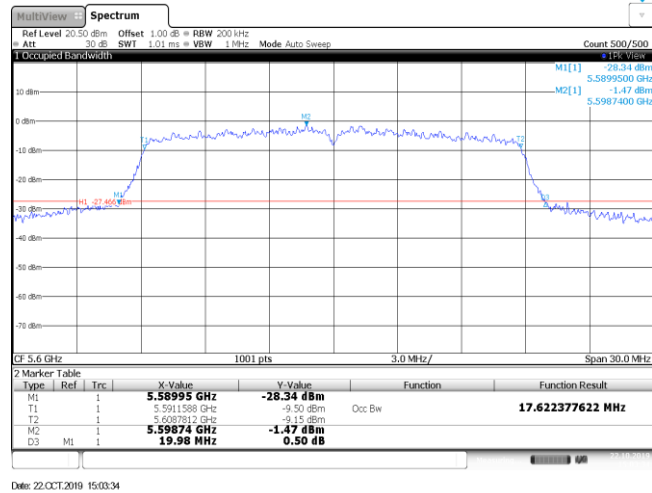
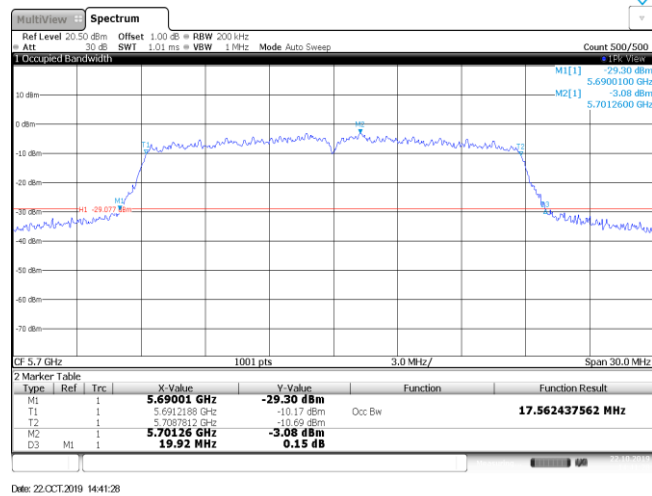
802.11a

CH_LCH_MCH_H

Band II		802.11n (HT40)																																									
CH _L	MultView Spectrum Ref Level 20.50 dBm Att 30 dB Offset 1.00 dB RBW 500 kHz SWT 1.01 ms VBW 2 MHz Mode Auto Sweep Count 500/500 1.15 dBm Occupied Bandwidth 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm M1 -25.90 dBm M2 -27.37 dBm M3 0.20 dBm M4 5.2670600 GHz CF 5.27 GHz 1001 pts 6.0 MHz/ Span 60.0 MHz 2 Marker Table <table><tr><th>Type</th><th>Ref</th><th>Trc</th><th>X-Value</th><th>Y-Value</th><th>Function</th><th>Function Result</th></tr><tr><td>M1</td><td>1</td><td></td><td>5.24576 GHz</td><td>-27.37 dBm</td><td></td><td></td></tr><tr><td>T1</td><td>1</td><td></td><td>5.2518981 GHz</td><td>-6.03 dBm</td><td>Occ Bw</td><td>36.203796204 MHz</td></tr><tr><td>T2</td><td>1</td><td></td><td>5.2881019 GHz</td><td>-5.62 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>5.26706 GHz</td><td>0.20 dBm</td><td></td><td></td></tr><tr><td>D3</td><td>M1</td><td>1</td><td>49.08 MHz</td><td>1.43 dB</td><td></td><td></td></tr></table> Date: 22.OCT.2019 13:56:35	Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.24576 GHz	-27.37 dBm			T1	1		5.2518981 GHz	-6.03 dBm	Occ Bw	36.203796204 MHz	T2	1		5.2881019 GHz	-5.62 dBm			M2	1		5.26706 GHz	0.20 dBm			D3	M1	1	49.08 MHz	1.43 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																					
M1	1		5.24576 GHz	-27.37 dBm																																							
T1	1		5.2518981 GHz	-6.03 dBm	Occ Bw	36.203796204 MHz																																					
T2	1		5.2881019 GHz	-5.62 dBm																																							
M2	1		5.26706 GHz	0.20 dBm																																							
D3	M1	1	49.08 MHz	1.43 dB																																							
CH _H	MultView Spectrum Ref Level 20.50 dBm Att 30 dB Offset 1.00 dB RBW 500 kHz SWT 1.01 ms VBW 2 MHz Mode Auto Sweep Count 500/500 1.15 dBm Occupied Bandwidth 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm M1 -25.90 dBm M2 -27.37 dBm M3 0.18 dBm M4 5.3155800 GHz CF 5.31 GHz 1001 pts 6.0 MHz/ Span 60.0 MHz 2 Marker Table <table><tr><th>Type</th><th>Ref</th><th>Trc</th><th>X-Value</th><th>Y-Value</th><th>Function</th><th>Function Result</th></tr><tr><td>M1</td><td>1</td><td></td><td>5.28762 GHz</td><td>-25.90 dBm</td><td></td><td></td></tr><tr><td>T1</td><td>1</td><td></td><td>5.2918981 GHz</td><td>-6.11 dBm</td><td>Occ Bw</td><td>36.203796204 MHz</td></tr><tr><td>T2</td><td>1</td><td></td><td>5.3281019 GHz</td><td>-7.06 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>5.31558 GHz</td><td>0.18 dBm</td><td></td><td></td></tr><tr><td>D3</td><td>M1</td><td>1</td><td>47.16 MHz</td><td>-1.55 dB</td><td></td><td></td></tr></table> Date: 22.OCT.2019 13:56:17	Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.28762 GHz	-25.90 dBm			T1	1		5.2918981 GHz	-6.11 dBm	Occ Bw	36.203796204 MHz	T2	1		5.3281019 GHz	-7.06 dBm			M2	1		5.31558 GHz	0.18 dBm			D3	M1	1	47.16 MHz	-1.55 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																					
M1	1		5.28762 GHz	-25.90 dBm																																							
T1	1		5.2918981 GHz	-6.11 dBm	Occ Bw	36.203796204 MHz																																					
T2	1		5.3281019 GHz	-7.06 dBm																																							
M2	1		5.31558 GHz	0.18 dBm																																							
D3	M1	1	47.16 MHz	-1.55 dB																																							

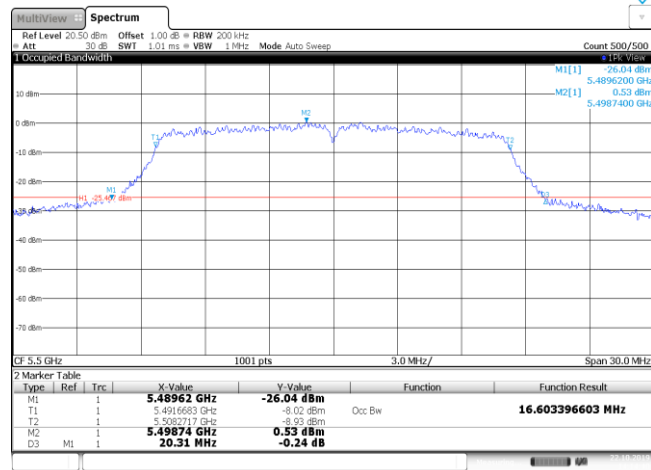
Band III

802.11n (HT20)

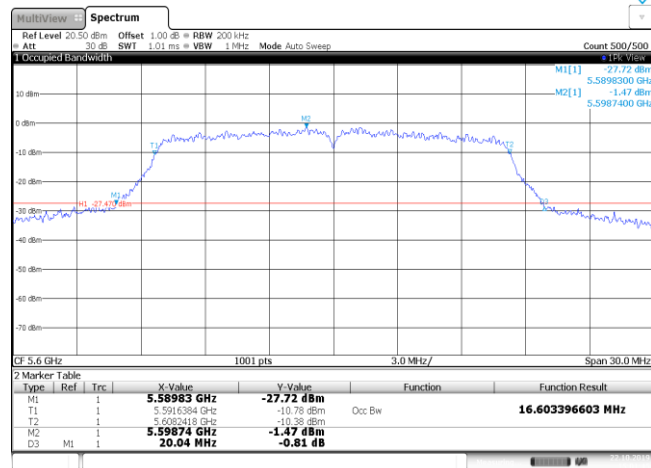
CH_LCH_MCH_H

Band III

802.11a

CH_L

Date: 22.OCT.2019 14:14:40

CH_M

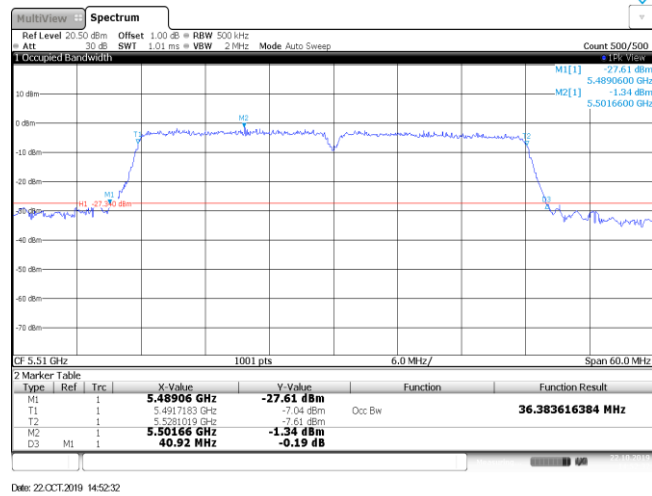
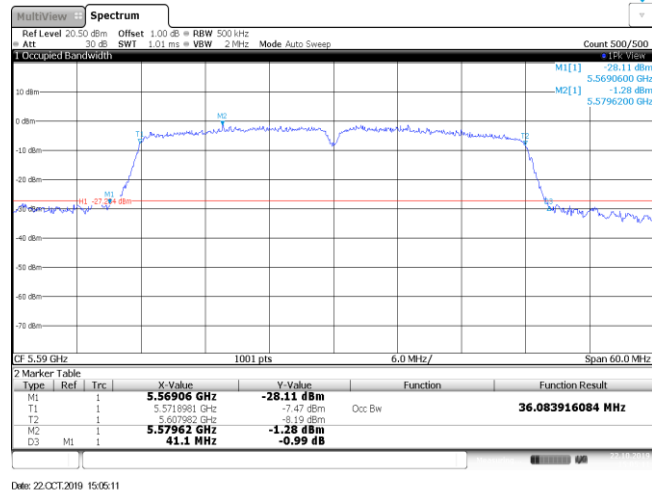
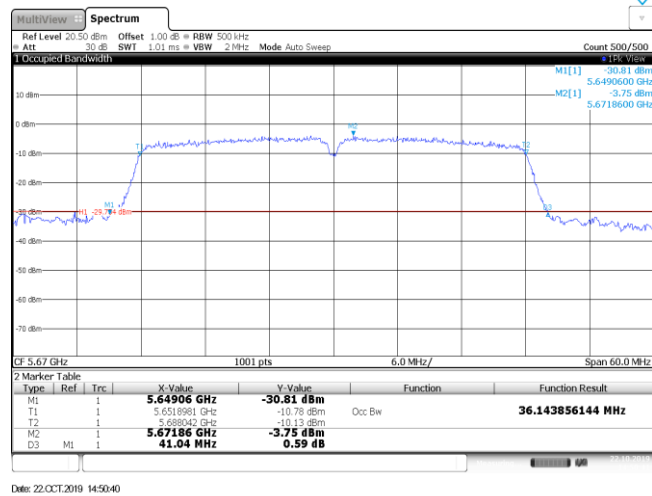
Date: 22.OCT.2019 15:01:45

CH_H

Date: 22.OCT.2019 14:25:16

Band III

802.11n (HT40)

CH_LCH_MCH_H

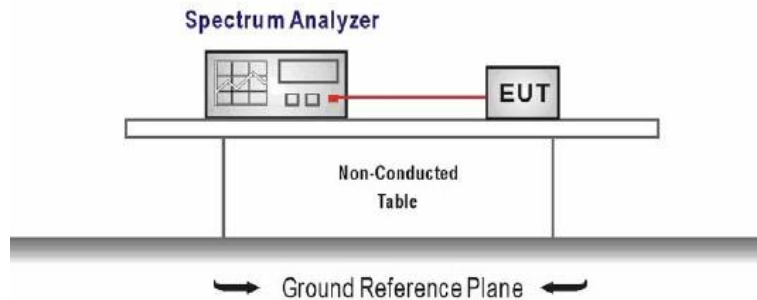
5.6. 6dB Bandwidth

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 $\geq 3 \times$ 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

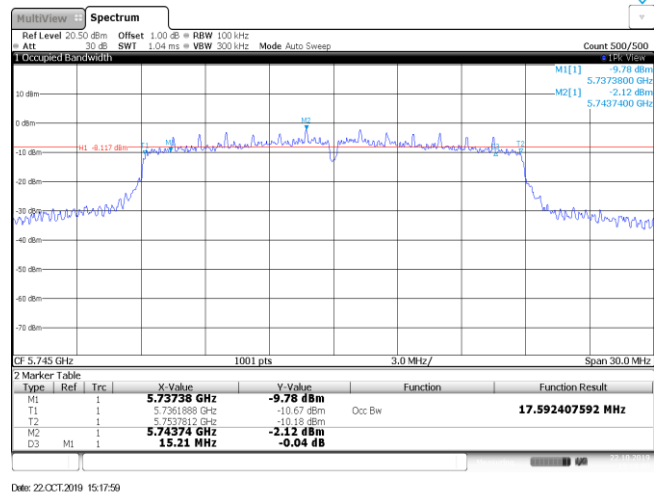
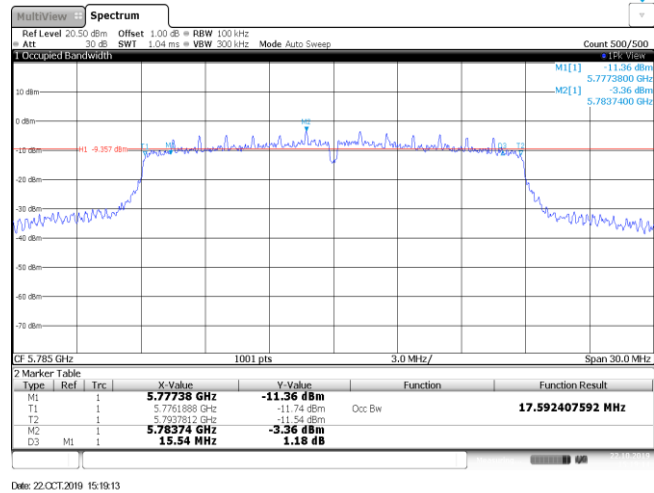
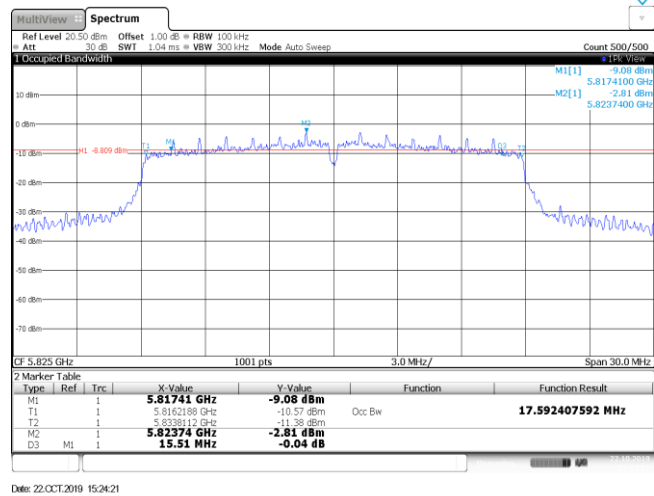
TEST RESULTS

☒ Passed ☐ Not Applicable

Band	Bandwidth (MHz)	Type	Channel	6dB bandwith (MHz)	99% Occupy bandwith (MHz)	Result
IV	20	802.11n	CH _L	15.21	17.59	Pass
			CH _M	15.54	17.59	
			CH _H	15.51	17.59	
		802.11a	CH _L	15.18	16.45	Pass
			CH _M	15.21	16.45	
			CH _H	15.18	16.42	
	40	802.11n	CH _L	35.39	35.95	Pass
			CH _H	35.30	35.95	

Band IV

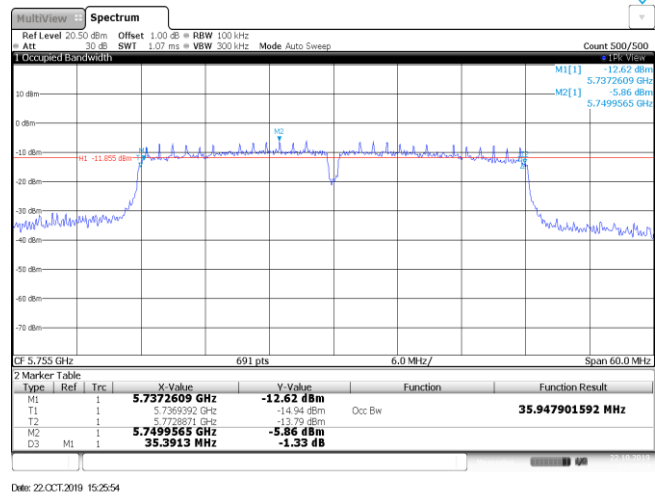
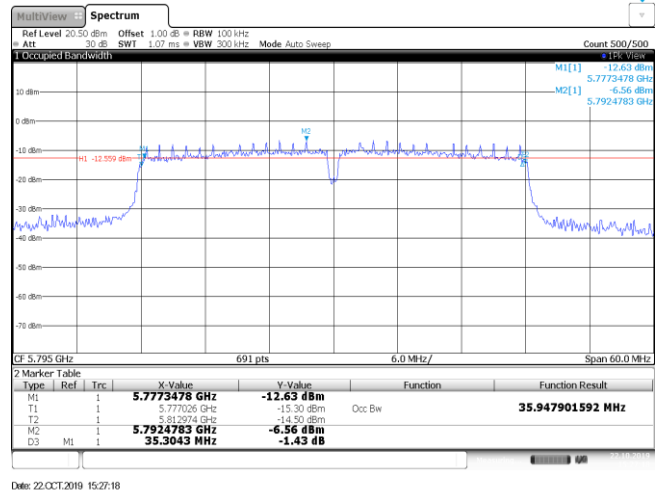
802.11n (HT20)

CH_LCH_MCH_H

Band IV		802.11a																																									
CH _L	MultiView Spectrum Ref Level 20.50 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWT 1.04 ms VSW 300 kHz Mode Auto Sweep Count 500/500 1 Occupied Bandwidth M1[1] 10.05 dBm M2[1] -2.70 dBm 5.7373800 GHz 5.7437400 GHz 5.745 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz 2 Marker Table <table><tr><th>Type</th><th>Ref</th><th>Trc</th><th>X-Value</th><th>Y-Value</th><th>Function</th><th>Function Result</th></tr><tr><td>M1</td><td>1</td><td></td><td>5.73738 GHz</td><td>-10.05 dBm</td><td></td><td></td></tr><tr><td>T1</td><td>1</td><td></td><td>5.7367582 GHz</td><td>-11.80 dBm</td><td></td><td></td></tr><tr><td>T2</td><td>1</td><td></td><td>5.7332118 GHz</td><td>-12.79 dBm</td><td>Occ Bw</td><td>16.453546454 MHz</td></tr><tr><td>M2</td><td>1</td><td></td><td>5.74374 GHz</td><td>-2.70 dBm</td><td></td><td></td></tr><tr><td>D3</td><td>M1</td><td>1</td><td>15.18 MHz</td><td>1.02 dB</td><td></td><td></td></tr></table> Date: 22.OCT.2019 15:12:33	Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.73738 GHz	-10.05 dBm			T1	1		5.7367582 GHz	-11.80 dBm			T2	1		5.7332118 GHz	-12.79 dBm	Occ Bw	16.453546454 MHz	M2	1		5.74374 GHz	-2.70 dBm			D3	M1	1	15.18 MHz	1.02 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																					
M1	1		5.73738 GHz	-10.05 dBm																																							
T1	1		5.7367582 GHz	-11.80 dBm																																							
T2	1		5.7332118 GHz	-12.79 dBm	Occ Bw	16.453546454 MHz																																					
M2	1		5.74374 GHz	-2.70 dBm																																							
D3	M1	1	15.18 MHz	1.02 dB																																							
CH _M	MultiView Spectrum Ref Level 20.50 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWT 1.04 ms VSW 300 kHz Mode Auto Sweep Count 500/500 1 Occupied Bandwidth M1[1] 11.08 dBm M2[1] -3.53 dBm 5.7773800 GHz 5.7837400 GHz 5.785 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz 2 Marker Table <table><tr><th>Type</th><th>Ref</th><th>Trc</th><th>X-Value</th><th>Y-Value</th><th>Function</th><th>Function Result</th></tr><tr><td>M1</td><td>1</td><td></td><td>5.77738 GHz</td><td>-11.08 dBm</td><td></td><td></td></tr><tr><td>T1</td><td>1</td><td></td><td>5.7767582 GHz</td><td>-12.83 dBm</td><td></td><td></td></tr><tr><td>T2</td><td>1</td><td></td><td>5.7932118 GHz</td><td>-13.07 dBm</td><td>Occ Bw</td><td>16.453546454 MHz</td></tr><tr><td>M2</td><td>1</td><td></td><td>5.78374 GHz</td><td>-3.53 dBm</td><td></td><td></td></tr><tr><td>D3</td><td>M1</td><td>1</td><td>15.21 MHz</td><td>0.32 dB</td><td></td><td></td></tr></table> Date: 22.OCT.2019 15:15:36	Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.77738 GHz	-11.08 dBm			T1	1		5.7767582 GHz	-12.83 dBm			T2	1		5.7932118 GHz	-13.07 dBm	Occ Bw	16.453546454 MHz	M2	1		5.78374 GHz	-3.53 dBm			D3	M1	1	15.21 MHz	0.32 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																					
M1	1		5.77738 GHz	-11.08 dBm																																							
T1	1		5.7767582 GHz	-12.83 dBm																																							
T2	1		5.7932118 GHz	-13.07 dBm	Occ Bw	16.453546454 MHz																																					
M2	1		5.78374 GHz	-3.53 dBm																																							
D3	M1	1	15.21 MHz	0.32 dB																																							
CH _H	MultiView Spectrum Ref Level 20.50 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWT 1.04 ms VSW 300 kHz Mode Auto Sweep Count 500/500 1 Occupied Bandwidth M1[1] -9.04 dBm M2[1] -2.76 dBm 5.8174100 GHz 5.8262600 GHz 5.825 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz 2 Marker Table <table><tr><th>Type</th><th>Ref</th><th>Trc</th><th>X-Value</th><th>Y-Value</th><th>Function</th><th>Function Result</th></tr><tr><td>M1</td><td>1</td><td></td><td>5.81741 GHz</td><td>-9.04 dBm</td><td></td><td></td></tr><tr><td>T1</td><td>1</td><td></td><td>5.8167882 GHz</td><td>-12.69 dBm</td><td></td><td></td></tr><tr><td>T2</td><td>1</td><td></td><td>5.8332118 GHz</td><td>-12.37 dBm</td><td>Occ Bw</td><td>16.423576424 MHz</td></tr><tr><td>M2</td><td>1</td><td></td><td>5.82626 GHz</td><td>-2.76 dBm</td><td></td><td></td></tr><tr><td>D3</td><td>M1</td><td>1</td><td>15.18 MHz</td><td>-0.74 dB</td><td></td><td></td></tr></table> Date: 22.OCT.2019 15:16:45	Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.81741 GHz	-9.04 dBm			T1	1		5.8167882 GHz	-12.69 dBm			T2	1		5.8332118 GHz	-12.37 dBm	Occ Bw	16.423576424 MHz	M2	1		5.82626 GHz	-2.76 dBm			D3	M1	1	15.18 MHz	-0.74 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																					
M1	1		5.81741 GHz	-9.04 dBm																																							
T1	1		5.8167882 GHz	-12.69 dBm																																							
T2	1		5.8332118 GHz	-12.37 dBm	Occ Bw	16.423576424 MHz																																					
M2	1		5.82626 GHz	-2.76 dBm																																							
D3	M1	1	15.18 MHz	-0.74 dB																																							

Band IV

802.11n (HT40)

CH_LCH_H

5.7. Band edge

LIMIT

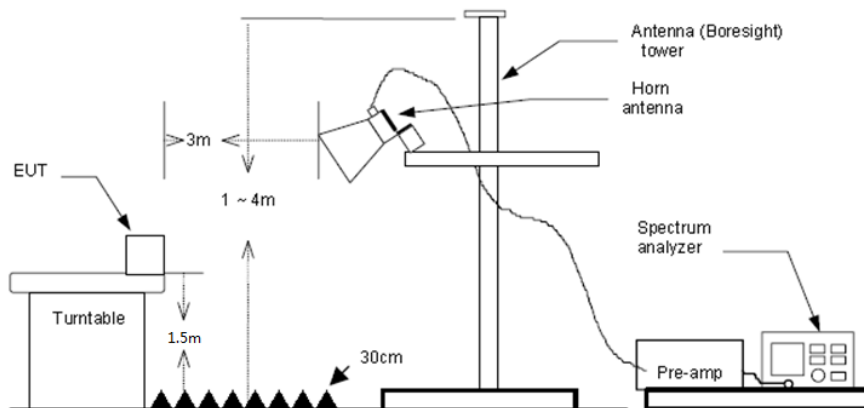
FCC CFR Title 47 Part 15 Subpart E Section 15.407(b)

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 to 110.8* 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 linearity 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. $E[dB\mu V/m] = EIRP[dBm] + 95.2$, for $d = 3$ meters.

TEST CONFIGURATION



TEST PROCEDURE

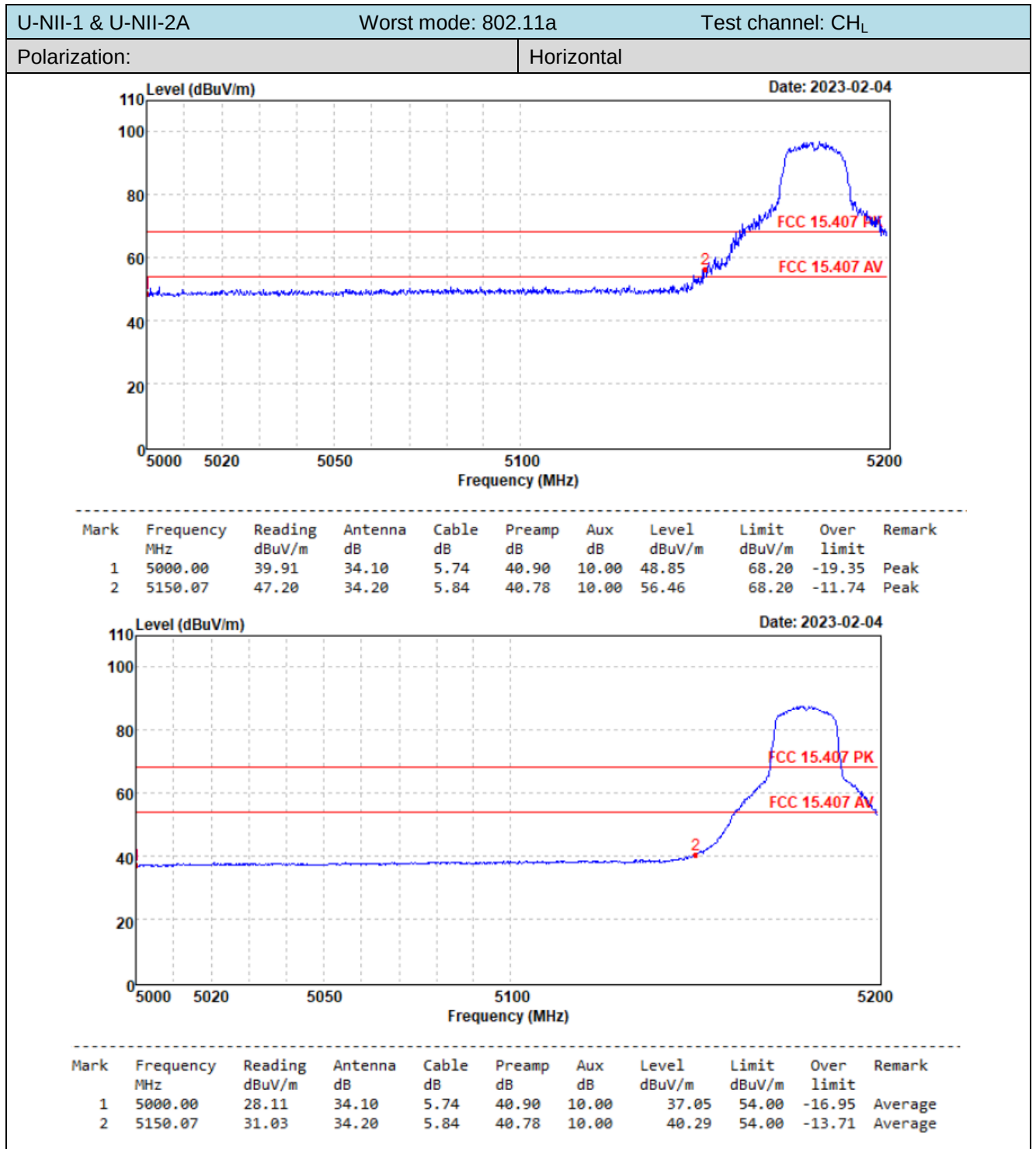
1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum 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:

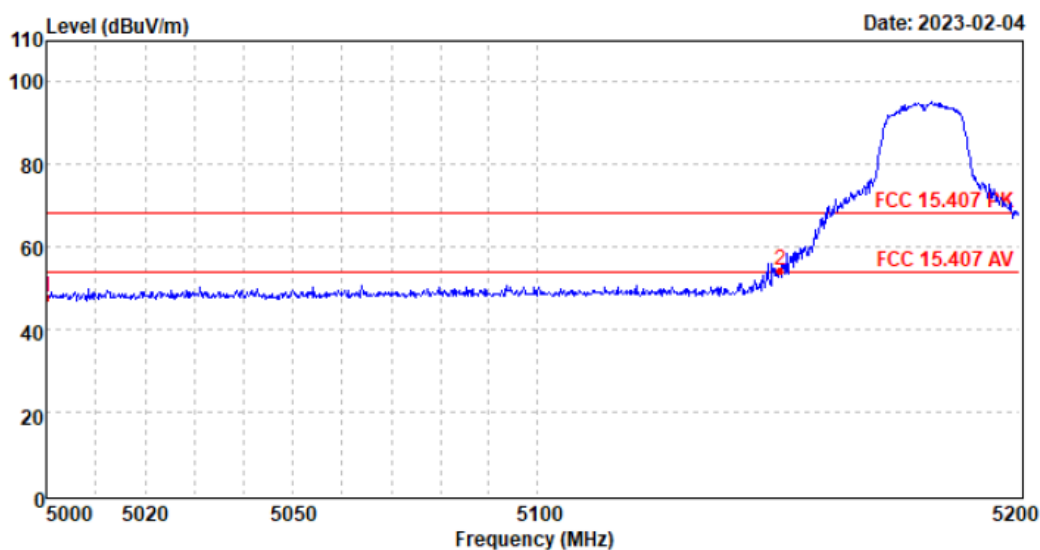
Please refer to the clause 3.3

TEST RESULTS

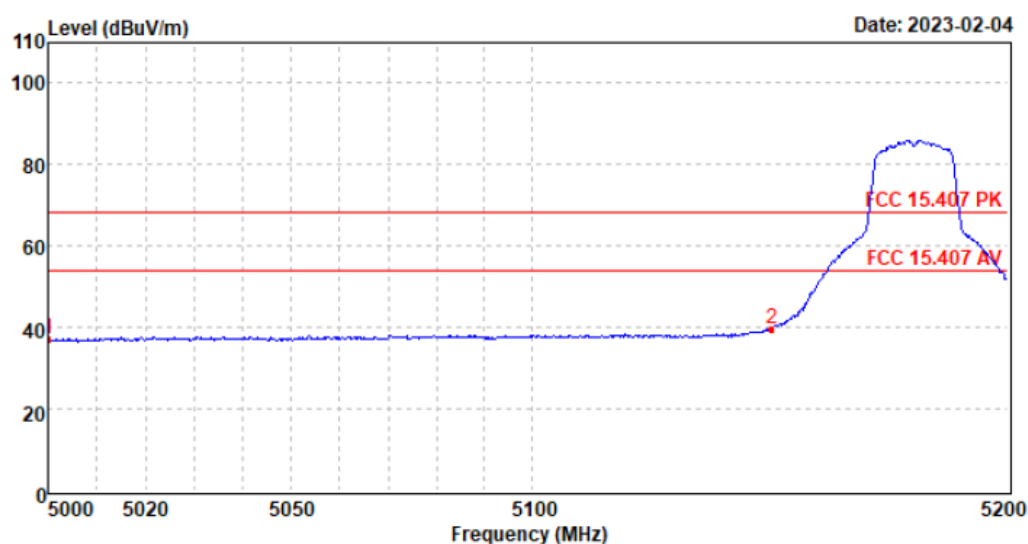
☒ **Passed** ☐ **Not Applicable**



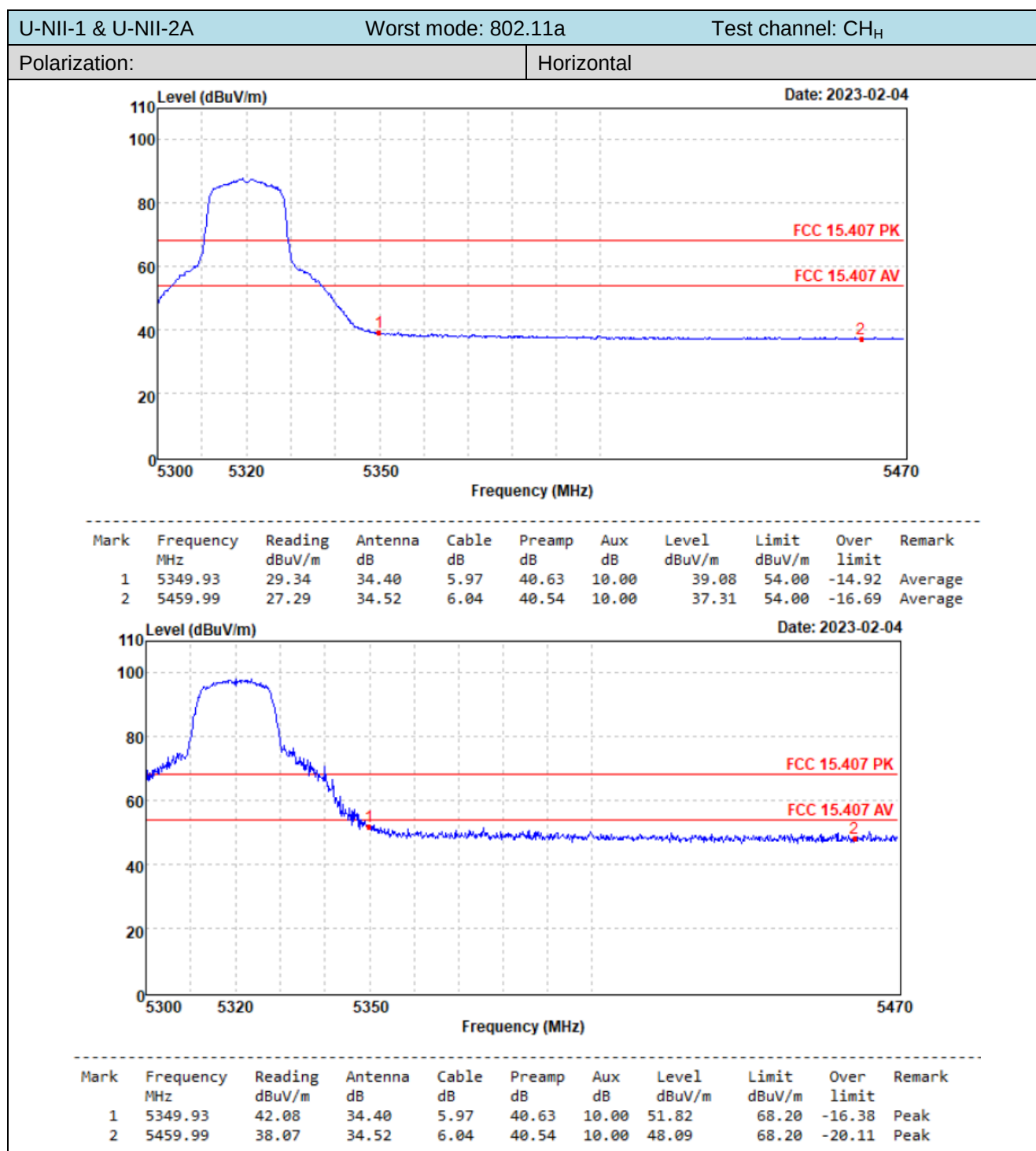
Polarization: Vertical



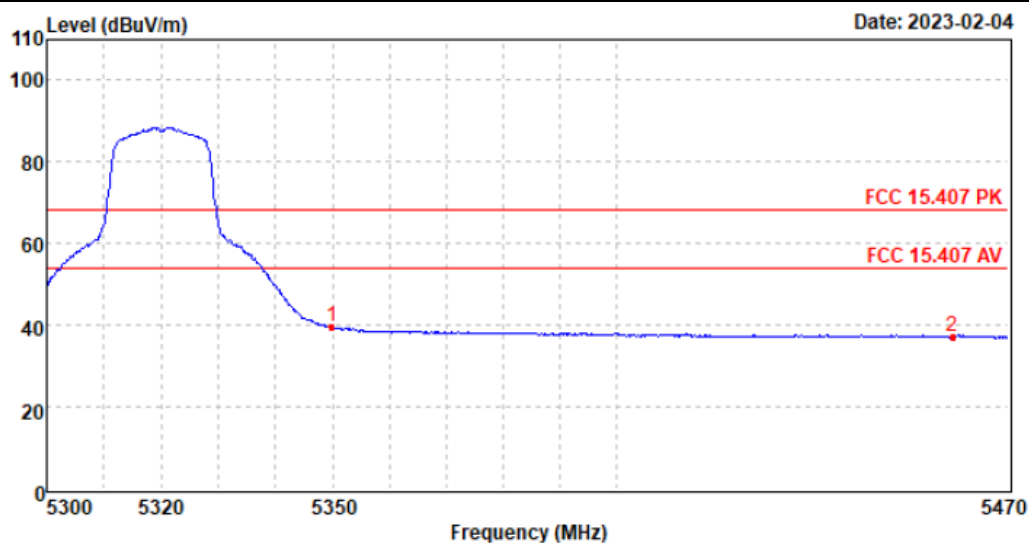
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamplifier dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	5000.00	38.95	34.10	5.74	40.90	10.00	47.89	68.20	-20.31	Peak
2	5150.07	44.93	34.20	5.84	40.78	10.00	54.19	68.20	-14.01	Peak



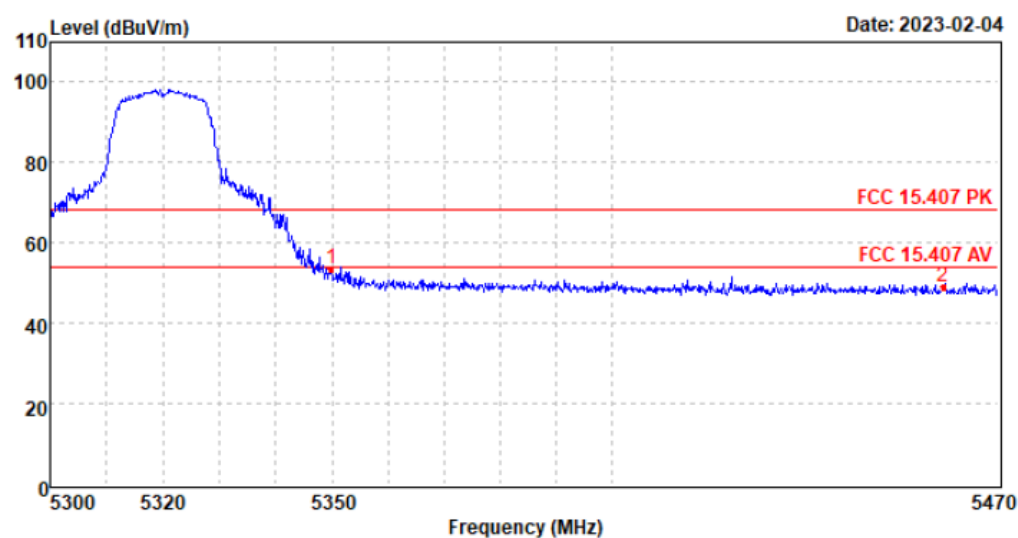
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamplifier dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	5000.00	28.14	34.10	5.74	40.90	10.00	37.08	54.00	-16.92	Average
2	5150.07	30.42	34.20	5.84	40.78	10.00	39.68	54.00	-14.32	Average



Polarization: Vertical



Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	5349.93	29.82	34.40	5.97	40.63	10.00	39.56	54.00	-14.44	Average
2	5459.99	27.15	34.52	6.04	40.54	10.00	37.17	54.00	-16.83	Average



Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	5349.93	43.88	34.40	5.97	40.63	10.00	53.62	68.20	-14.58	Peak
2	5459.99	38.86	34.52	6.04	40.54	10.00	48.88	68.20	-19.32	Peak

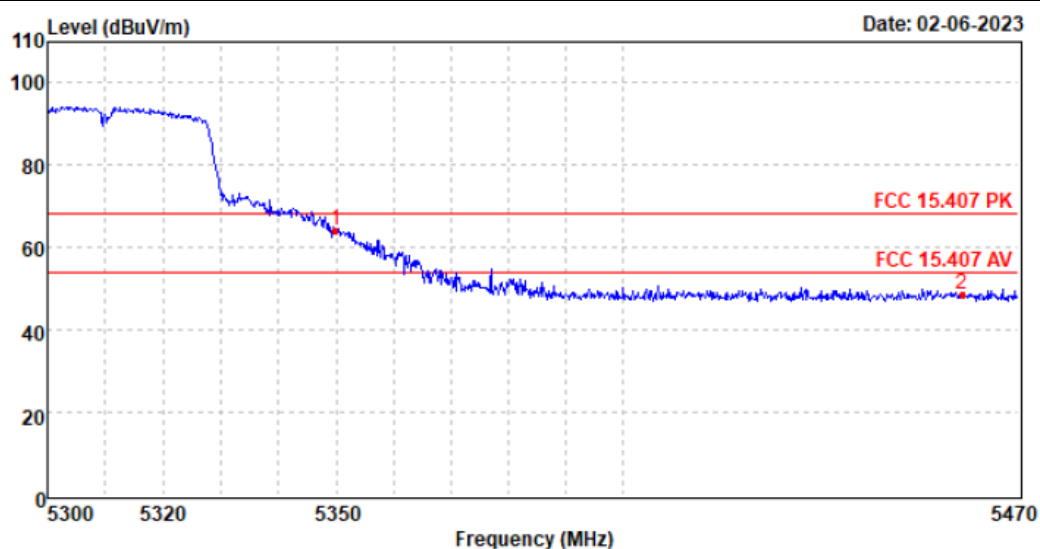
U-NII-1 & U-NII-2A

Worst mode: 802.11n(HT40)

Test channel: CH_L

Polarization:

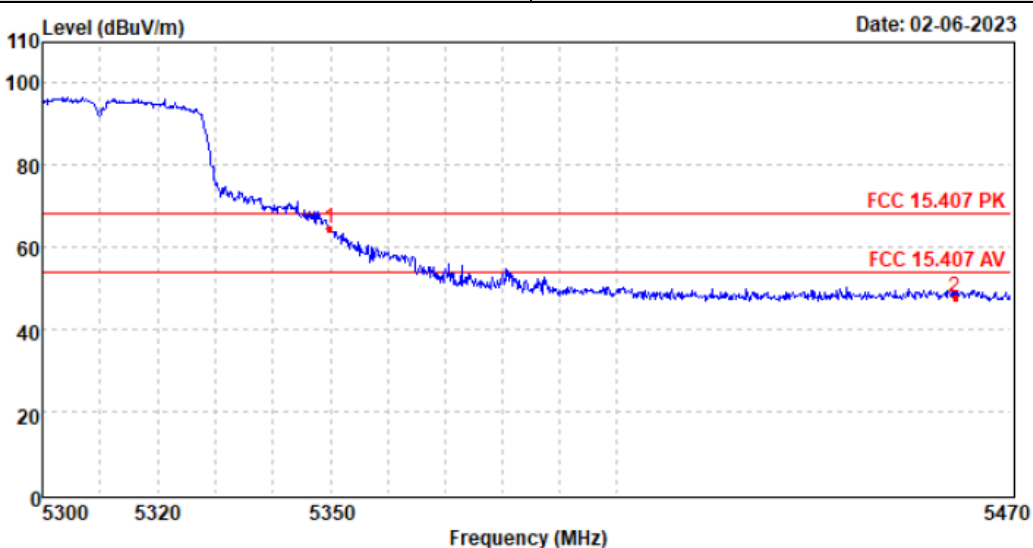
Horizontal



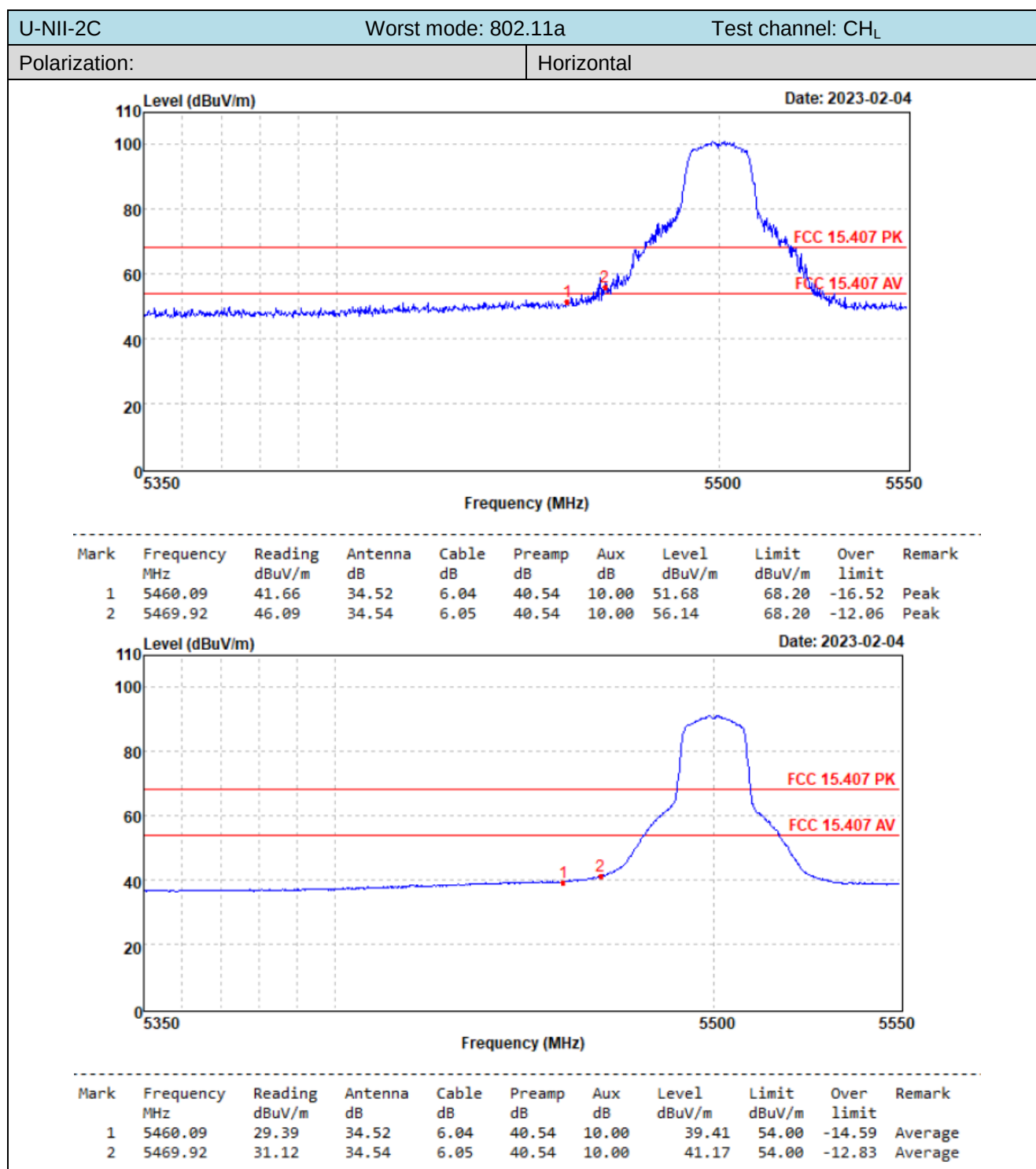
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	5349.93	54.50	34.40	5.97	40.63	10.00	64.24	68.20	-3.96	Peak
2	5459.99	38.65	34.52	6.04	40.54	10.00	48.67	68.20	-19.53	Peak

Polarization:

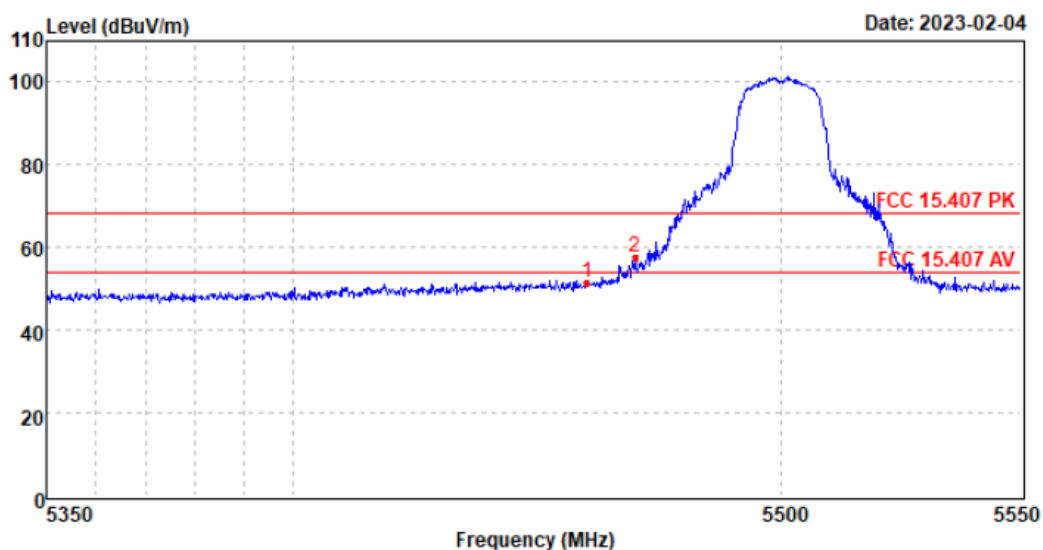
Vertical



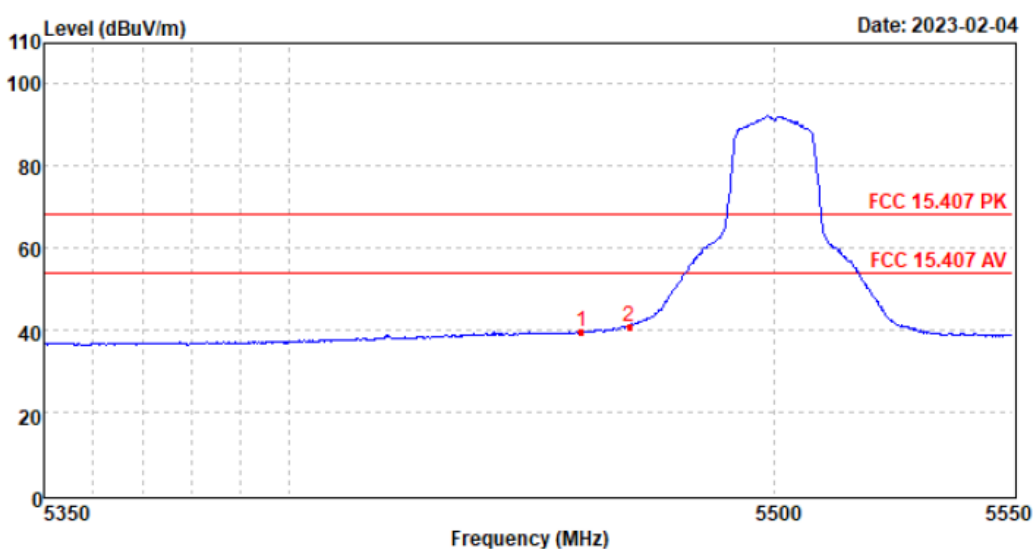
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	5349.93	54.75	34.40	5.97	40.63	10.00	64.49	68.20	-3.71	Peak
2	5459.99	37.73	34.52	6.04	40.54	10.00	47.75	68.20	-20.45	Peak



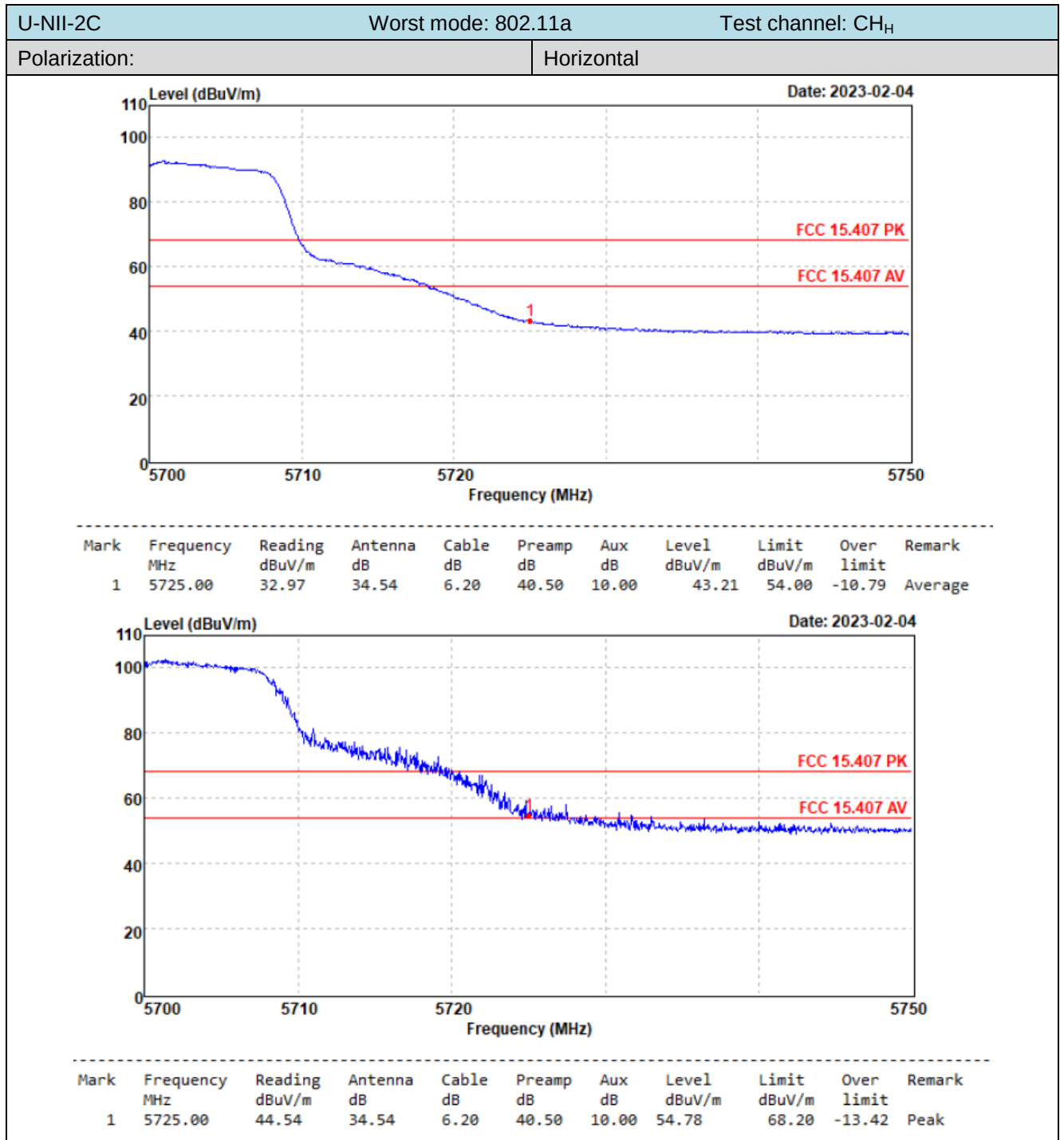
Polarization: Vertical



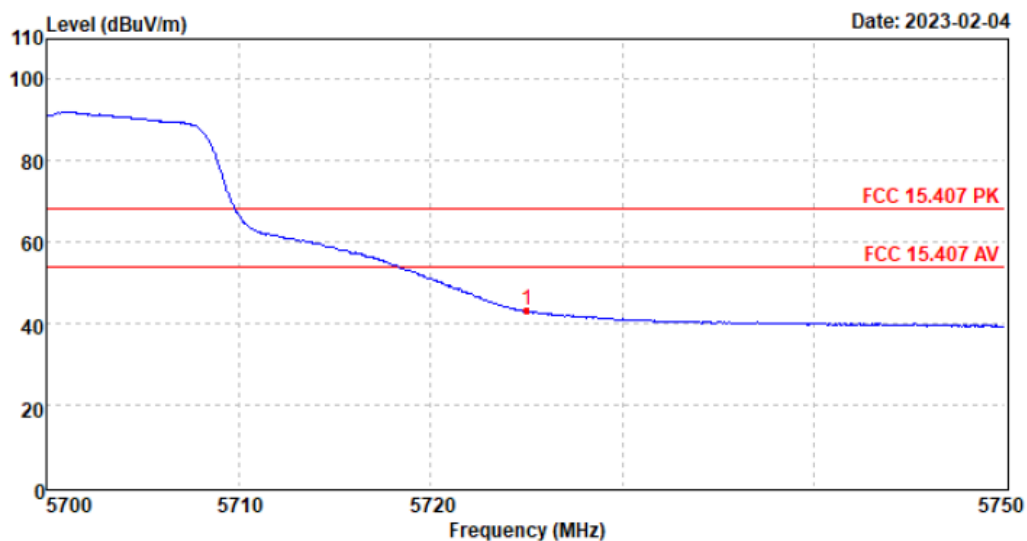
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	5460.09	41.45	34.52	6.04	40.54	10.00	51.47	68.20	-16.73	Peak
2	5469.92	47.41	34.54	6.05	40.54	10.00	57.46	68.20	-10.74	Peak



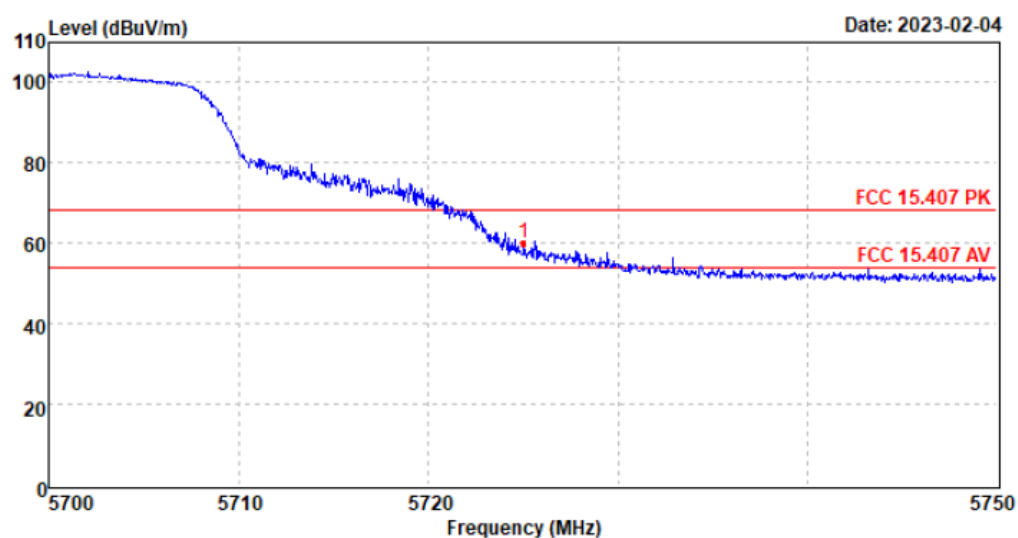
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	5460.09	29.58	34.52	6.04	40.54	10.00	39.60	54.00	-14.40	Average
2	5469.92	30.99	34.54	6.05	40.54	10.00	41.04	54.00	-12.96	Average



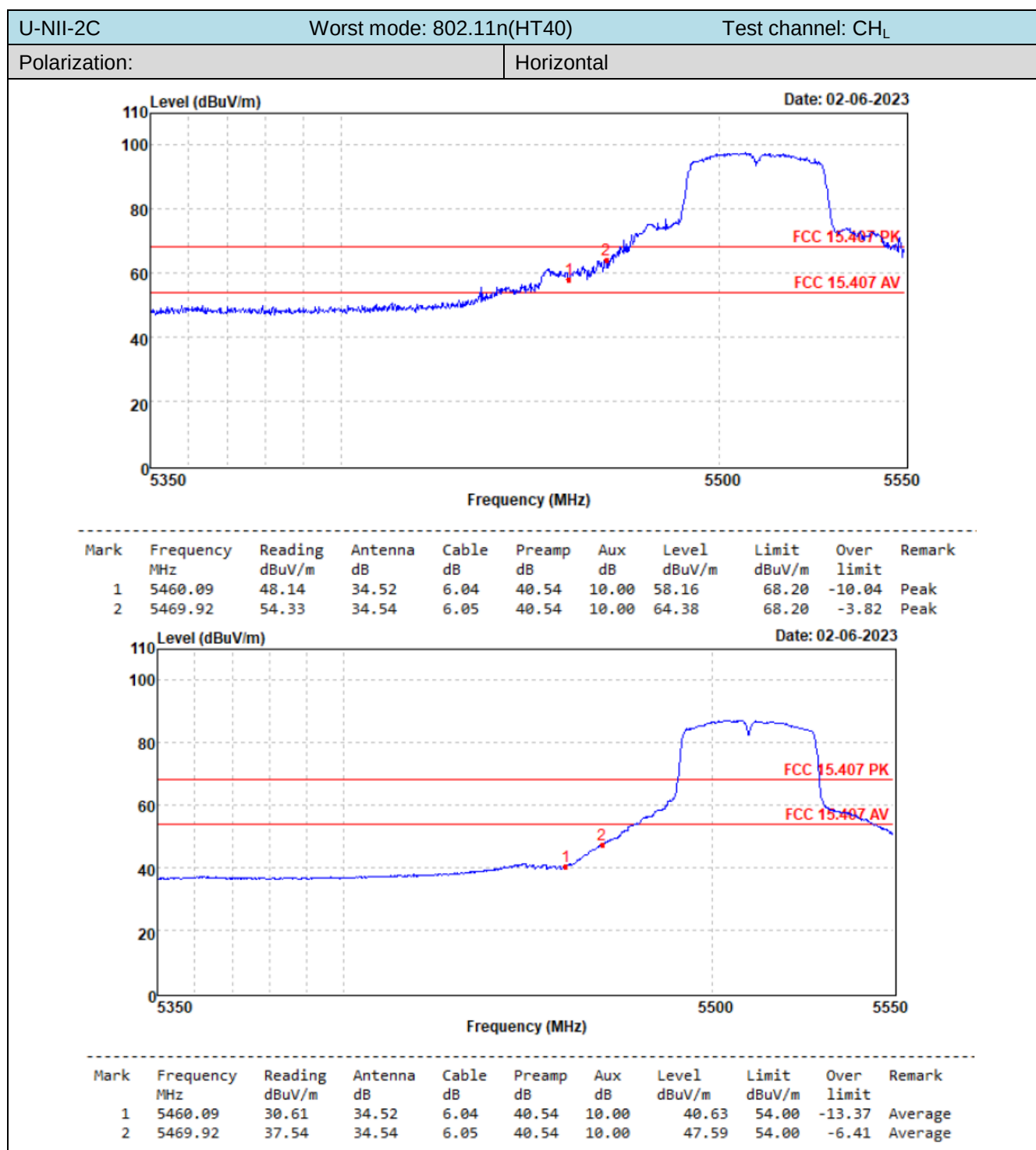
Polarization: Vertical



Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	5725.00	32.91	34.54	6.20	40.50	10.00	43.15	54.00	-10.85	Average

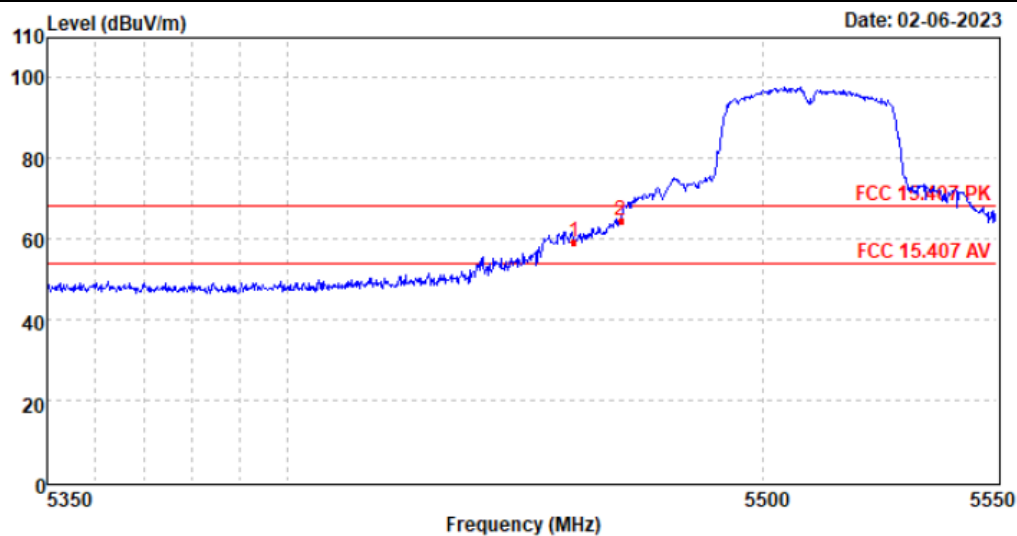


Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	5725.00	49.76	34.54	6.20	40.50	10.00	60.00	68.20	-8.20	Peak

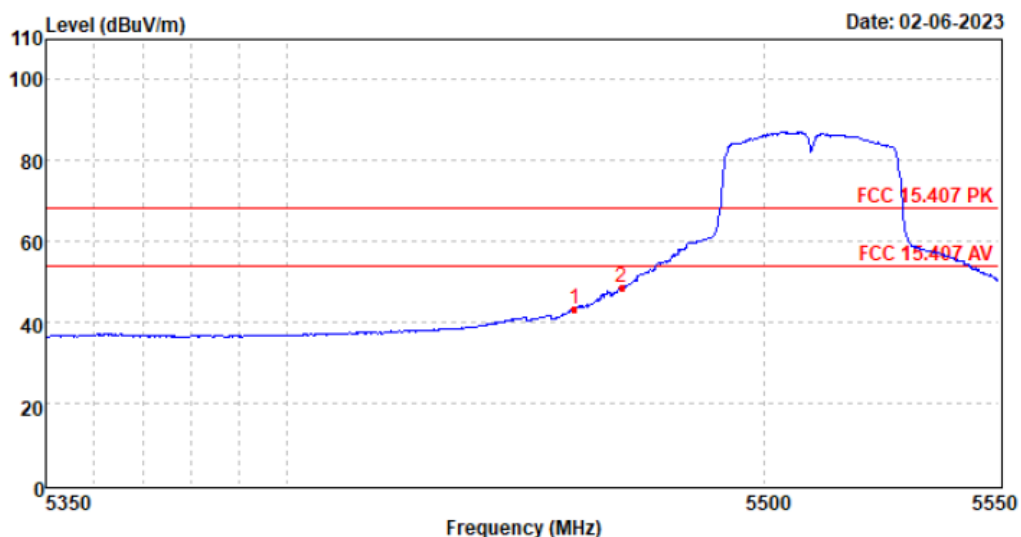


Polarization:

Vertical



Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	5460.09	49.46	34.52	6.04	40.54	10.00	59.48	68.20	-8.72	Peak
2	5469.92	54.71	34.54	6.05	40.54	10.00	64.76	68.20	-3.44	Peak



Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	5460.09	33.20	34.52	6.04	40.54	10.00	43.22	54.00	-10.78	Average
2	5469.92	38.43	34.54	6.05	40.54	10.00	48.48	54.00	-5.52	Average

U-NII-3		Worst mode: 802.11a					Test channel: CH _L																																															
Polarization:							Horizontal																																															
Level (dBuV/m) Date: 2023-02-04 Frequency (MHz) <table><tr><th>Mark</th><th>Frequency MHz</th><th>Reading dBuV/m</th><th>Antenna dB</th><th>Cable dB</th><th>Preamp dB</th><th>Aux dB</th><th>Level dBuV/m</th><th>Limit dBuV/m</th><th>Over limit</th><th>Remark</th></tr><tr><td>1</td><td>5650.00</td><td>38.27</td><td>34.50</td><td>6.16</td><td>40.50</td><td>10.00</td><td>48.43</td><td>68.20</td><td>-19.77</td><td>Peak</td></tr><tr><td>2</td><td>5700.01</td><td>40.22</td><td>34.50</td><td>6.19</td><td>40.50</td><td>10.00</td><td>50.41</td><td>68.20</td><td>-17.79</td><td>Peak</td></tr><tr><td>3</td><td>5720.05</td><td>49.08</td><td>34.53</td><td>6.20</td><td>40.50</td><td>10.00</td><td>59.31</td><td>68.20</td><td>-8.89</td><td>Peak</td></tr></table>											Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark	1	5650.00	38.27	34.50	6.16	40.50	10.00	48.43	68.20	-19.77	Peak	2	5700.01	40.22	34.50	6.19	40.50	10.00	50.41	68.20	-17.79	Peak	3	5720.05	49.08	34.53	6.20	40.50	10.00	59.31	68.20	-8.89	Peak
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark																																												
1	5650.00	38.27	34.50	6.16	40.50	10.00	48.43	68.20	-19.77	Peak																																												
2	5700.01	40.22	34.50	6.19	40.50	10.00	50.41	68.20	-17.79	Peak																																												
3	5720.05	49.08	34.53	6.20	40.50	10.00	59.31	68.20	-8.89	Peak																																												
Polarization:							Vertical																																															
Level (dBuV/m) Date: 2023-02-04 Frequency (MHz) <table><tr><th>Mark</th><th>Frequency MHz</th><th>Reading dBuV/m</th><th>Antenna dB</th><th>Cable dB</th><th>Preamp dB</th><th>Aux dB</th><th>Level dBuV/m</th><th>Limit dBuV/m</th><th>Over limit</th><th>Remark</th></tr><tr><td>1</td><td>5650.00</td><td>37.57</td><td>34.50</td><td>6.16</td><td>40.50</td><td>10.00</td><td>47.73</td><td>68.20</td><td>-20.47</td><td>Peak</td></tr><tr><td>2</td><td>5700.01</td><td>40.58</td><td>34.50</td><td>6.19</td><td>40.50</td><td>10.00</td><td>50.77</td><td>68.20</td><td>-17.43</td><td>Peak</td></tr><tr><td>3</td><td>5720.05</td><td>48.57</td><td>34.53</td><td>6.20</td><td>40.50</td><td>10.00</td><td>58.80</td><td>68.20</td><td>-9.40</td><td>Peak</td></tr></table>											Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark	1	5650.00	37.57	34.50	6.16	40.50	10.00	47.73	68.20	-20.47	Peak	2	5700.01	40.58	34.50	6.19	40.50	10.00	50.77	68.20	-17.43	Peak	3	5720.05	48.57	34.53	6.20	40.50	10.00	58.80	68.20	-9.40	Peak
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark																																												
1	5650.00	37.57	34.50	6.16	40.50	10.00	47.73	68.20	-20.47	Peak																																												
2	5700.01	40.58	34.50	6.19	40.50	10.00	50.77	68.20	-17.43	Peak																																												
3	5720.05	48.57	34.53	6.20	40.50	10.00	58.80	68.20	-9.40	Peak																																												