RF TEST REPORT

For

SensoScientific, Inc.
Product Name: WiFi Node
Test Model(s).: B80-500-OTA

Report Reference No.	:	**DACE240415001RL002**
FCC ID	:	**2BAJL-BXX500OTA**
Applicant's Name	:	SensoScientific, Inc.
Address	:	685 COCHRAN ST STE 200 SIMI VALLEY CA 93065
Testing Laboratory	:	Shenzhen DACE Testing Technology Co., Ltd.
Address	:	101-102 Building H5 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China
Test Specification Standard	:	**47 CFR Part 15E** **ANSI C63.10-2013 & KDB789033 D02 General U-NII Test Procedures New Rules v02r01**
Date of Receipt	:	April 15, 2024
Date of Test	:	April 15, 2024 to May 16, 2024
Data of Issue	:	May 16, 2024
Result	:	**Pass**

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Revision History Of Report

Version	Description	REPORT No.	Issue Date
V1.0	Original	DACE240415001RL002	May 16, 2024

NOTE1:

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

Compiled by:	Supervised by:	Approved by:
Keren Huang	Stone Yin	Tom Chen
Keren Huang / Test Engineer	Stone Yin / Project Engineer	Tom Chen / Manager

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1 TEST SUMMARY

1.1 Test Standards

The tests were performed according to following standards:

47 CFR Part 15E: Unlicensed National Information Infrastructure Devices

1.2 Summary of Test Result

Item	Method	Requirement	Result
Antenna requirement	/	47 CFR 15.203	Pass
Conducted Emission at AC power line	ANSI C63.10-2013 section 6.2	47 CFR Part 15.207(a)	N/A
Maximum conducted output power	ANSI C63.10-2013, section 12.3	47 CFR Part 15.407(a)(1)(iv) 47 CFR Part 15.407(a)(3)(i)	Pass
Power spectral density	ANSI C63.10-2013, section 12.5	47 CFR Part 15.407(a)(1)(iv) 47 CFR Part 15.407(a)(3)(i)	Pass
Emission bandwidth and occupied bandwidth	ANSI C63.10-2013, section 6.9 & 12.4 KDB 789033 D02, Clause C.2	U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use. 47 CFR Part 15.407(e)	Pass
Band edge emissions (Radiated)	ANSI C63.10-2013, section 12.7.4, 12.7.6, 12.7.7	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)	Pass
Undesirable emission limits (below 1GHz)	ANSI C63.10-2013, section 12.7.4, 12.7.5	47 CFR Part 15.407(b)(9)	Pass
Undesirable emission limits (above 1GHz)	ANSI C63.10-2013, section 12.7.4, 12.7.6, 12.7.7	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)	Pass

Note:1. N/A-- Not applicable to the this test clause.
2. The results of all conduction method tests include cable loss.

2 GENERAL INFORMATION

2.1 Client Information

Applicant's Name : SensoScientific, Inc.
Address : 685 COCHRAN ST STE 200 SIMI VALLEY CA 93065

Manufacturer : Vietnam IBE Laser Co.,ltd
Address : Lot CN-34 and CN-39, Thuan Thanh II Industrial Park, An Binh Ward and, Mao Dien Commune, Thuan Thanh Town, Bac Ninh Province, Vietnam

2.2 Description of Device (EUT)

Product Name:	WiFi Node
Model/Type reference:	B80-500-OTA
Series Model:	B26-500-OTA,B23-500-OTA,B22-500-OTA, B21-500-OTA,B20-500-OTA,B19-500-OTA,B18-500-OTA,B17-500-OTA,B16-500-OTA, B15-500-OTA,B14-500-OTA,B13-500-OTA,B11-500-OTA,B10-500-OTA
Model Difference:	The internal motherboard circuits, WiFi modules, antennas, and PCB layout of all models are the same, but customers may burn different software according to their needs, resulting in inconsistent versions, which is why there are so many models. But these differences will not affect the EMC and WiFi performance of the product.
Trade Mark:	SENSOSCIENTIFIC
Product Description:	WiFi Node
Power Supply:	DC3.0V from AA/2 battery
Operation Frequency:	802.11a/n(HT20): U-NII Band 1: 5180MHz to 5240MHz; U-NII Band 3: 5745MHz to 5825MHz;
Number of Channels:	802.11a/n(HT20): U-NII Band 1: 4; U-NII Band 3: 5;
Modulation Type:	802.11a: OFDM(BPSK, QPSK, 16QAM, 64QAM); 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM);
Antenna Type:	External Panel-Mount WiFi/WLAN Antenna
Antenna Gain:	5.2G: 3.0dBi; 5.8G: 6.8dBi
Hardware Version:	94V-0
Software Version:	CC3xxxRadioTool-1.0.3.19

Operation Frequency each of channel

Channel	Frequency (20MHz)	Channel	Frequency (40MHz)	Channel	Frequency (80MHz)
36	5180	/	/	/	/
40	5200	/	/	/	/
44	5220	/	/	/	/
48	5240	/	/	/	/
149	5745	/	/	/	/
153	5765	/	/	/	/
157	5785	/	/	/	/

161	5805	/	/	/	/
168	5825	/	/	/	/

Note: In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	Frequency (MHz)		
	20MHz-BW	40MHz-BW	80MHz-BW
Lowest channel	5180MHz/5745MHz	/	
Middle channel	5200MHz/5785MHz	/	
Highest channel	5240MHz/5825MHz	/	

2.3 Description of Test Modes

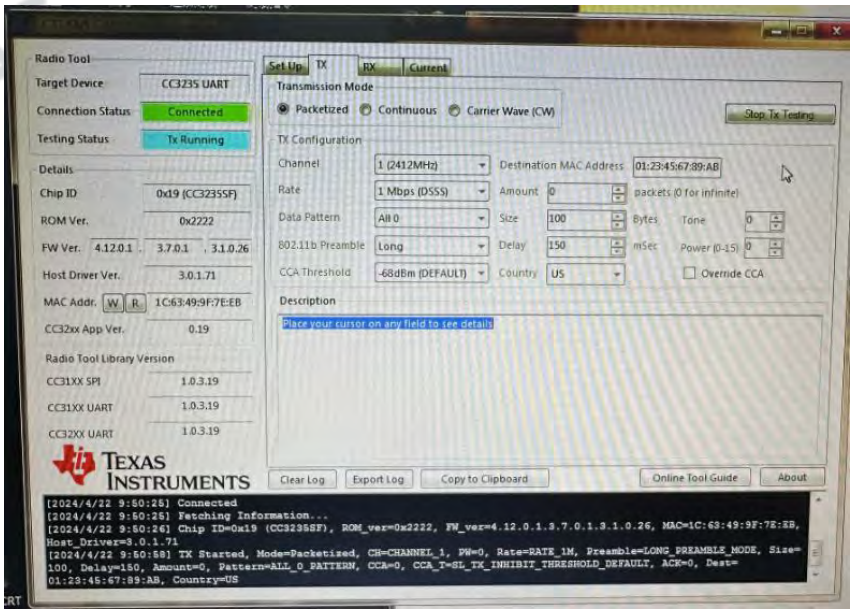
No	Title	Description
TM1	802.11a mode	Keep the EUT in continuously transmitting mode with 802.11a modulation type. All data rates has been tested and found the data rate @ 54Mbps is the worst case. Only the data of worst case is recorded in the report.
TM2	802.11n mode	Keep the EUT in continuously transmitting mode with 802.11n modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS7 is the worst case. Only the data of worst case is recorded in the report.

Description

Eut uses the maximum duty cycle (>98%) for continuous emission

☒Special software is used.
☐Through engineering command into the engineering mode.
engineering command: *#*#3646633#*#*
☐Other method:

Special software:



Duty cycle	Use the maximum possible duty cycle (100%) during testing.

2.4 Description of Support Units

Title	Manufacturer	Model No.	Serial No.
/	/	/	/

2.5 Equipments Used During The Test

Duty Cycle
Maximum conducted output power
Power spectral density
Emission bandwidth and occupied bandwidth

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
RF Test Software	TACHOY	RTS-01	V2.0.0.0	/	/
RF Sensor Unit	Tachoy Information	TR1029-2	000001	2023-11-09	2024-11-08
Vector signal generator	Keysight	N5181A	MY48180415	2023-11-09	2024-11-08
Signal generator	Keysight	N5182A	MY50143455	2023-11-09	2024-11-08
Spectrum Analyzer	Keysight	N9020A	MY53420323	2023-12-12	2024-12-11

Undesirable emission limits (above 1GHz)
Band edge emissions (Radiated)
Undesirable emission limits (below 1GHz)

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test software	Farad	EZ -EMC	V1.1.42	/	/
Positioning Controller	/	MF-7802	/	/	/
Amplifier(18-40G)	COM-POWER	AH-1840	10100008-1	2022-04-05	2025-04-04
Horn antenna	COM-POWER	AH-1840 (18-40G)	10100008	2023-04-05	2025-04-04
Loop antenna	ZHINAN	ZN30900C	ZN30900C	2021-07-05	2024-07-04
Cable(LF)#2	Schwarzbeck	/	/	2024-02-19	2025-02-18
Cable(LF)#1	Schwarzbeck	/	/	2024-02-19	2025-02-18
Cable(HF)#2	Schwarzbeck	AK9515E	96250	2024-03-20	2025-03-19
Cable(HF)#1	Schwarzbeck	SYV-50-3-1	/	2024-03-20	2025-03-19
Power amplifier(LF)	Schwarzbeck	BBV9743	9743-151	2023-06-13	2024-06-12
Power amplifier(HF)	Schwarzbeck	BBV9718	9718-282	2023-06-13	2024-06-12
Spectrum Analyzer	R&S	FSP30	1321.3008K40 -101729-jR	2023-06-14	2024-06-13
Horn Antenna	Sunol Sciences	DRH-118	A091114	2023-05-13	2025-05-12
Broadband Antenna	Sunol Sciences	JB6 Antenna	A090414	2023-05-21	2025-05-20
Test Receiver	R&S	ESCI	102109	2023-06-13	2024-06-12

2.6 Statement Of The Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Disturbance (0.15~30MHz)	±3.41dB
Duty cycle	±3.1%
RF conducted power	±0.733dB
RF power density	±0.234%
Occupied Bandwidth	±3.63%
Radiated Emission (Above 1GHz)	±5.46dB
Radiated Emission (Below 1GHz)	±5.79dB
Note: (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

2.7 Identification of Testing Laboratory

Company Name:	Shenzhen DACE Testing Technology Co., Ltd.
Address:	101-102 Building H5 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China
Phone Number:	+86-13267178997
Fax Number:	86-755-29113252

Identification of the Responsible Testing Location

Company Name:	Shenzhen DACE Testing Technology Co., Ltd.
Address:	101-102 Building H5 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China
Phone Number:	+86-13267178997
Fax Number:	86-755-29113252
FCC Registration Number:	0032847402
Designation Number:	CN1342
Test Firm Registration No.:	778666
A2LA Certificate Number:	6270.01

2.8 Announcement

(1) The test report reference to the report template version v0.

(2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.

(3) The test report is invalid if there is any evidence and/or falsification.

(4) This document may not be altered or revised in any way unless done so by DACE and all revisions are duly noted in the revisions section.

(5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

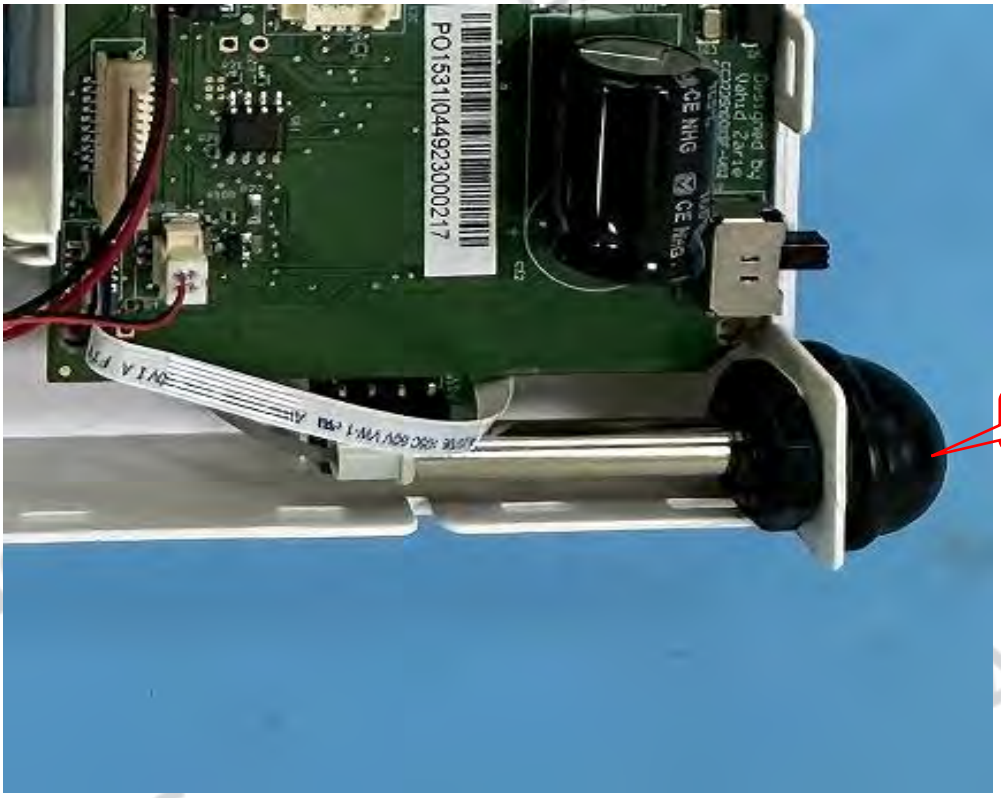
(6) We hereby declare that the laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant. the laboratory is not responsible for the accuracy of the information provided by the client. When the information provided by the customer may affect the effectiveness of the results, the responsibility lies with the customer, and the laboratory does not assume any responsibility.

3 Evaluation Results (Evaluation)

3.1 Antenna requirement

Test Requirement:	Refer to 47 CFR Part 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 shall be considered sufficient to comply with the provisions of this section.

3.1.1 Conclusion:



4 Radio Spectrum Matter Test Results (RF)

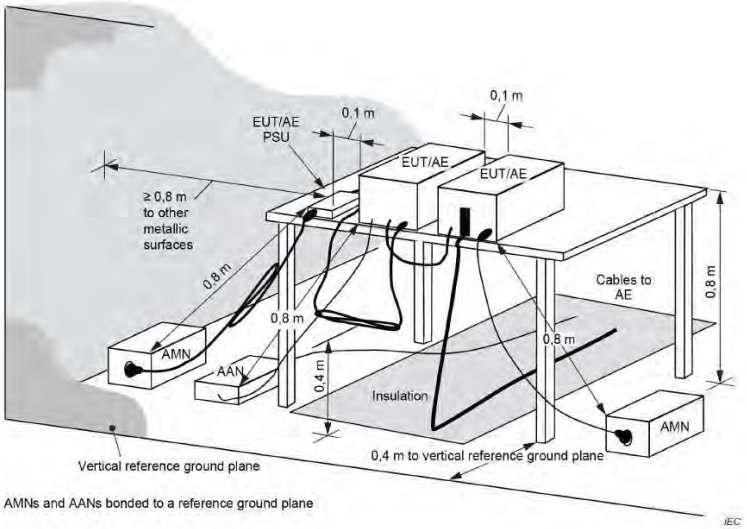
4.1 Conducted Emission at AC power line

Test Requirement:	47 CFR Part 15.207(a)		
Test Limit:	Frequency of emission (MHz)	Conducted limit (dBμV)	
		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 Method:	ANSI C63.10-2013 section 6.2		

4.1.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.3 °C	Humidity:	51.4 %	Atmospheric Pressure:	102 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.1.2 Test Setup Diagram:



4.1.3 Test Data:

N/A

(The device is powered by AA batteries, and the USB port is only used for data transmission without charging)

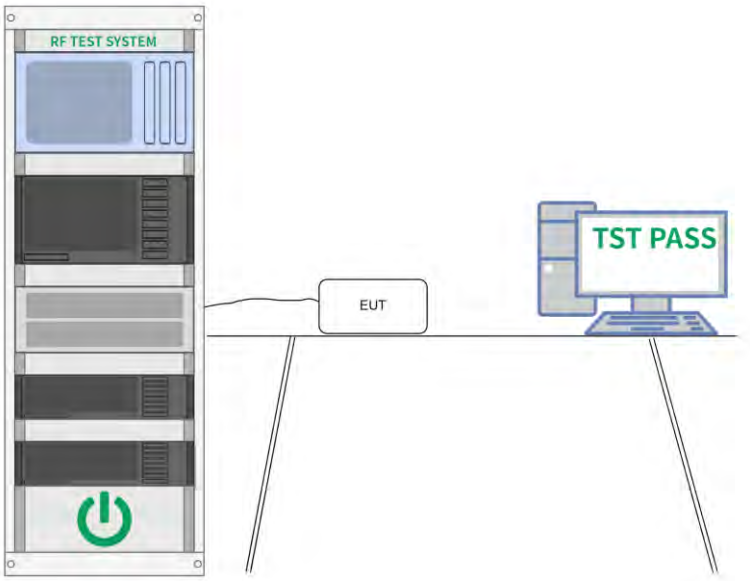
4.2 Maximum conducted output power

Test Requirement:	47 CFR Part 15.407(a)(1)(iv) 47 CFR Part 15.407(a)(3)(i)
Test Limit:	For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
Test Method:	ANSI C63.10-2013, section 12.3
Procedure:	Refer to ANSI C63.10-2013 section 12.3

4.2.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.3 °C	Humidity:	51.4 %	Atmospheric Pressure:	102 kPa
Pretest mode:	TM1, TM2				
Final test mode:	TM1, TM2				

4.2.2 Test Setup Diagram:



4.2.3 Test Data:

Please Refer to Appendix for Details.

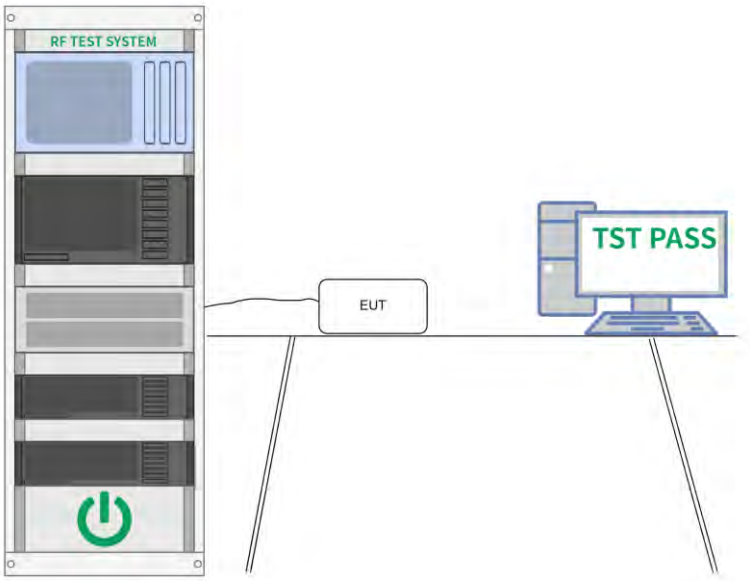
4.3 Power spectral density

Test Requirement:	47 CFR Part 15.407(a)(1)(iv) 47 CFR Part 15.407(a)(3)(i)
Test Limit:	For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. For the band 5.725-5.850 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
Test Method:	ANSI C63.10-2013, section 12.5
Procedure:	Refer to ANSI C63.10-2013, section 12.5

4.3.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.3 °C	Humidity:	51.4 %	Atmospheric Pressure:	102 kPa
Pretest mode:	TM1, TM2				
Final test mode:	TM1, TM2				

4.3.2 Test Setup Diagram:



4.3.3 Test Data:

Please Refer to Appendix for Details.

4.4 Emission bandwidth and occupied bandwidth

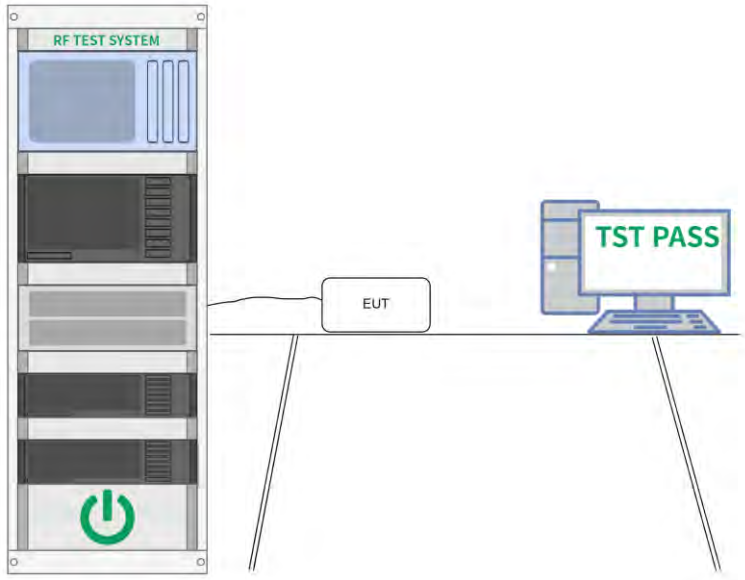
Test Requirement:	U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use. U-NII 3, U-NII 4: 47 CFR Part 15.407(e)
Test Limit:	U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use. U-NII 3, U-NII 4: Within the 5.725-5.850 GHz and 5.850-5.895 GHz bands, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.
Test Method:	ANSI C63.10-2013, section 6.9 & 12.4 KDB 789033 D02, Clause C.2
Procedure:	Emission bandwidth: a) Set RBW = approximately 1% of the emission bandwidth. b) Set the VBW > RBW. c) Detector = peak. d) Trace mode = max hold. e) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the instrument. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%. Occupied bandwidth: a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW. b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement. c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2. d) Step a) through step c) might require iteration to adjust within the specified range. e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used. f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth. g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies. h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s). 6 dB emission bandwidth: a) Set RBW = 100 kHz. b) Set the video bandwidth (VBW) ≥ 3 >= RBW. c) Detector = Peak. d) Trace mode = max hold. e) Sweep = auto couple. f) Allow the trace to stabilize. g) Measure the maximum width of the emission that is constrained by the

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

4.4.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.3 °C	Humidity:	51.4 %	Atmospheric Pressure:	102 kPa
Pretest mode:	TM1, TM2				
Final test mode:	TM1, TM2				

4.4.2 Test Setup Diagram:



4.4.3 Test Data:

Please Refer to Appendix for Details.

4.5 Band edge emissions (Radiated)

Test Requirement:	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)
Test Limit:	For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz. For transmitters operating solely in the 5.725-5.850 GHz band: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

[1]Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2]Above 38.6

The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in § 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in § 15.209shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in § 15.209shall be demonstrated based on the average value of the measured emissions. The provisions in § 15.35apply to these measurements.

Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100 **	3
88-216	150 **	3
216-960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.
In the emission table above, the tighter limit applies at the band edges.
The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Test Method: ANSI C63.10-2013, section 12.7.4, 12.7.6, 12.7.7

Procedure:

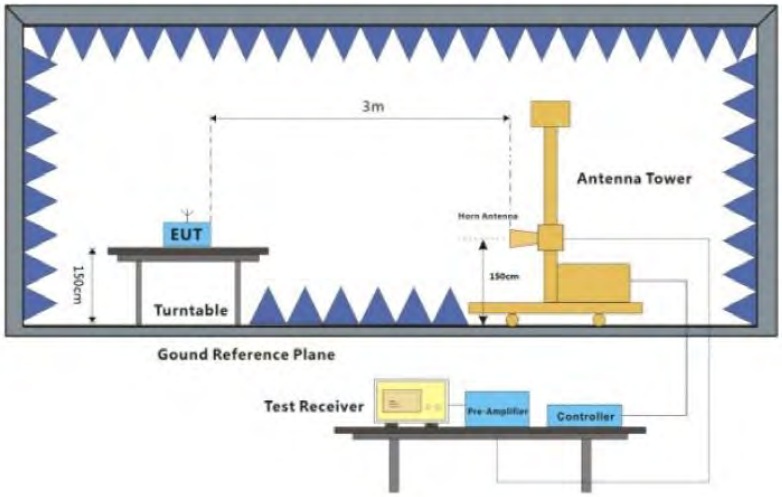
Above 1GHz:
a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.
g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
i. Repeat above procedures until all frequencies measured was complete.
Remark:
1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower

	than the average limit, only the peak measurement is shown in the report. 4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. Mesurement Level = Reading level + Correct Factor, Margin= Mesurement Level - Limit

4.5.1 E.U.T. Operation:

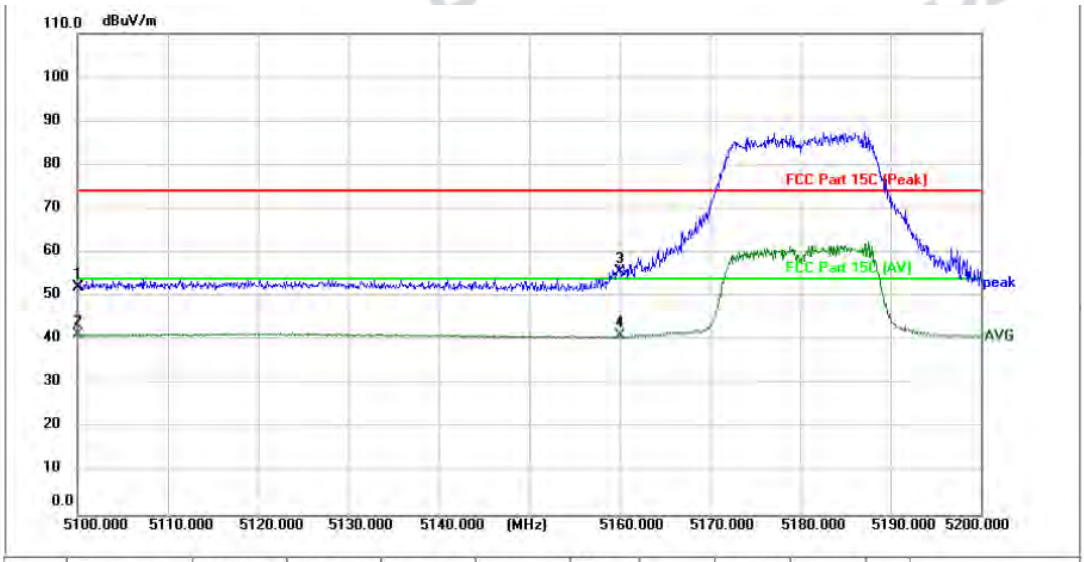
Operating Environment:					
Temperature:	23.3 °C	Humidity:	51.4 %	Atmospheric Pressure:	102 kPa
Pretest mode:	TM1, TM2				
Final test mode:	TM1, TM2				

4.5.2 Test Setup Diagram:



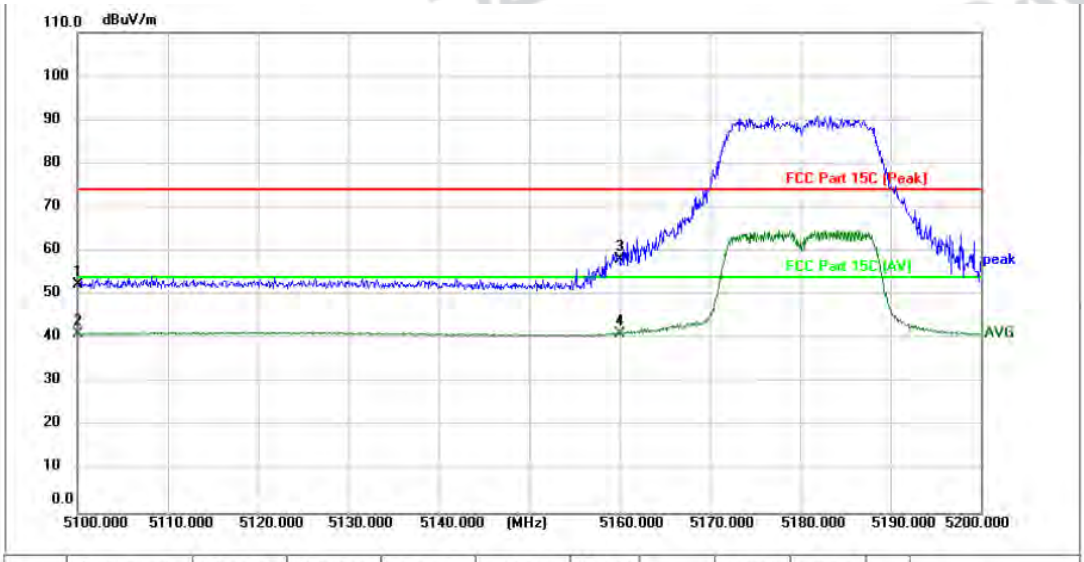
4.5.3 Test Data:

TM1 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 20 / CH: L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	5100.000	52.17	-0.04	52.13	74.00	-21.87	peak			P	
2 *	5100.000	41.33	-0.04	41.29	54.00	-12.71	AVG			P	
3	5160.000	55.59	0.07	55.66	74.00	-18.34	peak			P	
4	5160.000	40.95	0.07	41.02	54.00	-12.98	AVG			P	

TM1 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 20 / CH: L

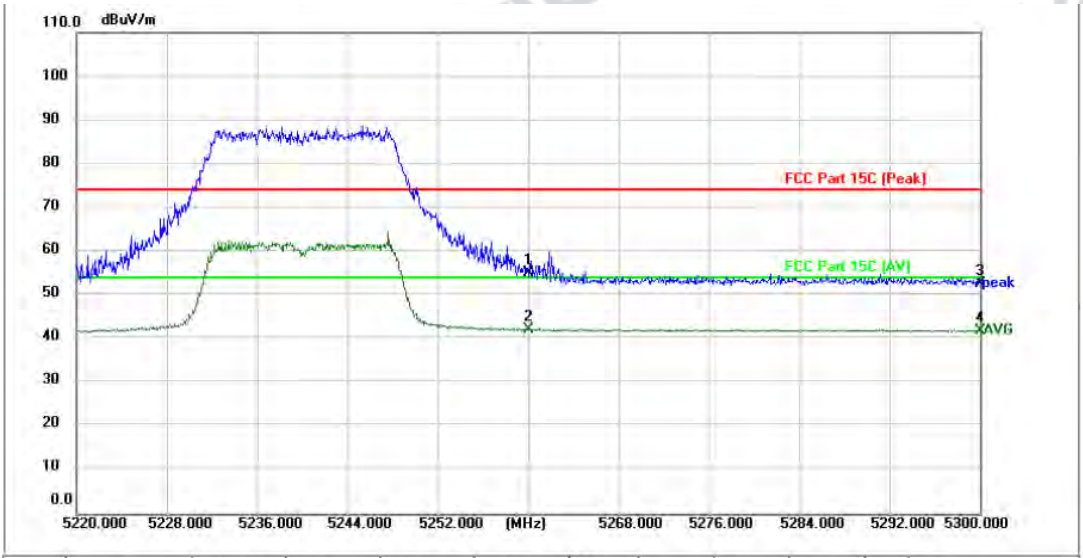


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	5100.000	52.07	0.43	52.50	74.00	-21.50	peak			P	
2	5100.000	40.77	0.43	41.20	54.00	-12.80	AVG			P	
3	5160.000	57.83	0.46	58.29	74.00	-15.71	peak			P	
4 *	5160.000	40.75	0.46	41.21	54.00	-12.79	AVG			P	

TM1 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 20 / CH: H

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	5260.000	61.82	0.27	62.09	74.00	-11.91	peak			P	
2 *	5260.000	42.18	0.27	42.45	54.00	-11.55	AVG			P	
3	5300.000	52.35	0.35	52.70	74.00	-21.30	peak			P	
4	5300.000	41.64	0.35	41.99	54.00	-12.01	AVG			P	

TM1 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 20 / CH: H

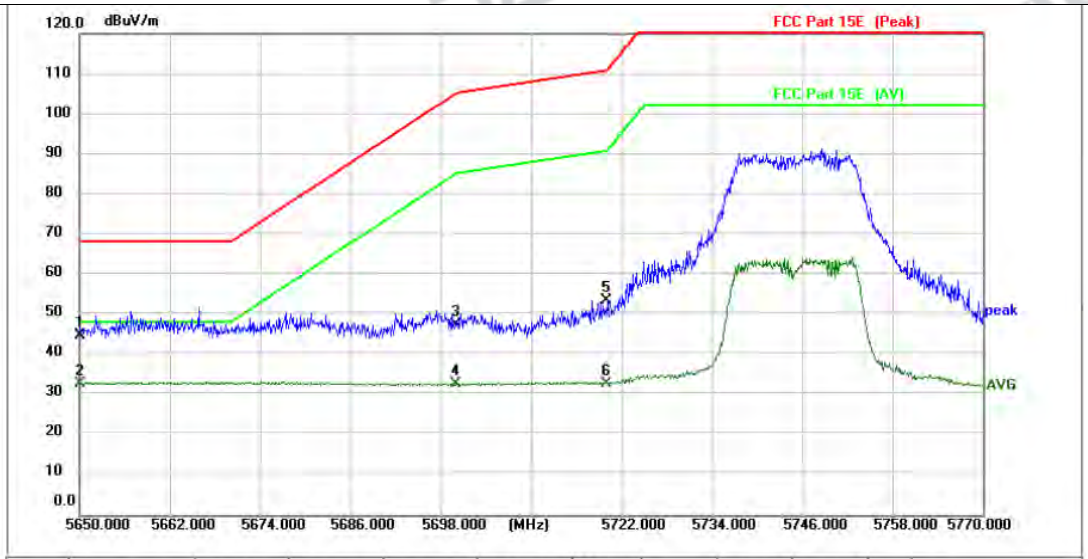


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	5260.000	54.71	0.53	55.24	74.00	-18.76	peak			P	
2 *	5260.000	41.67	0.53	42.20	54.00	-11.80	AVG			P	
3	5300.000	52.11	0.56	52.67	74.00	-21.33	peak			P	
4	5300.000	41.41	0.56	41.97	54.00	-12.03	AVG			P	

TM1 / Polarization: Horizontal / Band: 5725-5850 MHz / BW: 20 / CH: L

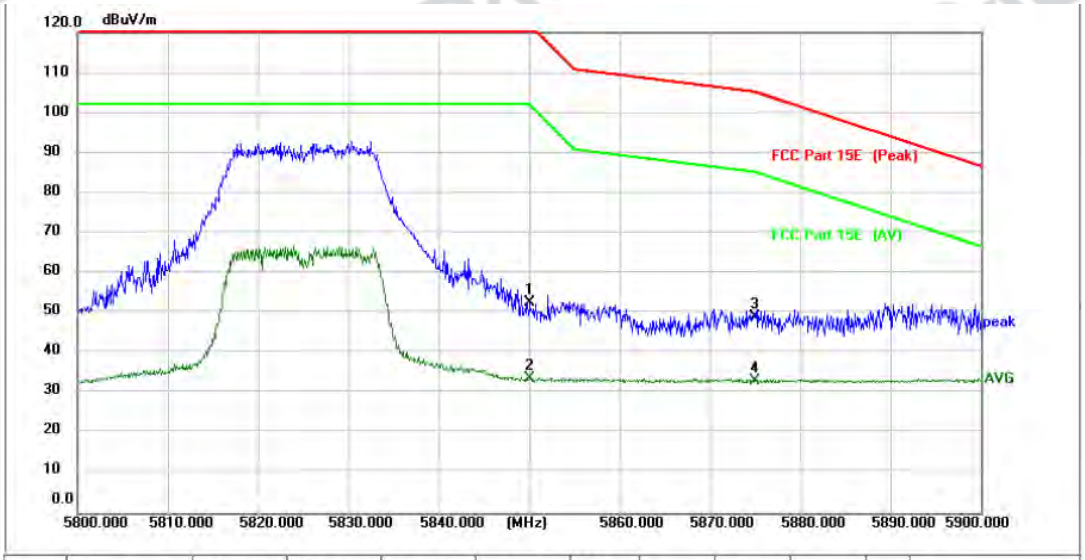
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	5650.000	46.27	0.89	47.16	68.20	-21.04	peak	149		P	
2 *	5650.000	32.09	0.89	32.98	48.20	-15.22	AVG	149		P	
3	5700.000	49.49	0.95	50.44	105.20	-54.76	peak	149		P	
4	5700.000	31.87	0.95	32.82	85.20	-52.38	AVG	149		P	
5	5720.000	52.70	0.97	53.67	110.80	-57.13	peak	149		P	
6	5720.000	32.58	0.97	33.55	90.80	-57.25	AVG	149		P	

TM1 / Polarization: Vertical / Band: 5725-5850 MHz / BW: 20 / CH: L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	5650.000	43.93	0.77	44.70	68.20	-23.50	peak	149		P	
2 *	5650.000	32.15	0.77	32.92	48.20	-15.28	AVG	149		P	
3	5700.000	46.62	0.80	47.42	105.20	-57.78	peak	149		P	
4	5700.000	32.03	0.80	32.83	85.20	-52.37	AVG	149		P	
5	5720.000	52.67	0.81	53.48	110.80	-57.32	peak	149		P	
6	5720.000	32.15	0.81	32.96	90.80	-57.84	AVG	149		P	

TM1 / Polarization: Horizontal / Band: 5725-5850 MHz / BW: 20 / CH: H

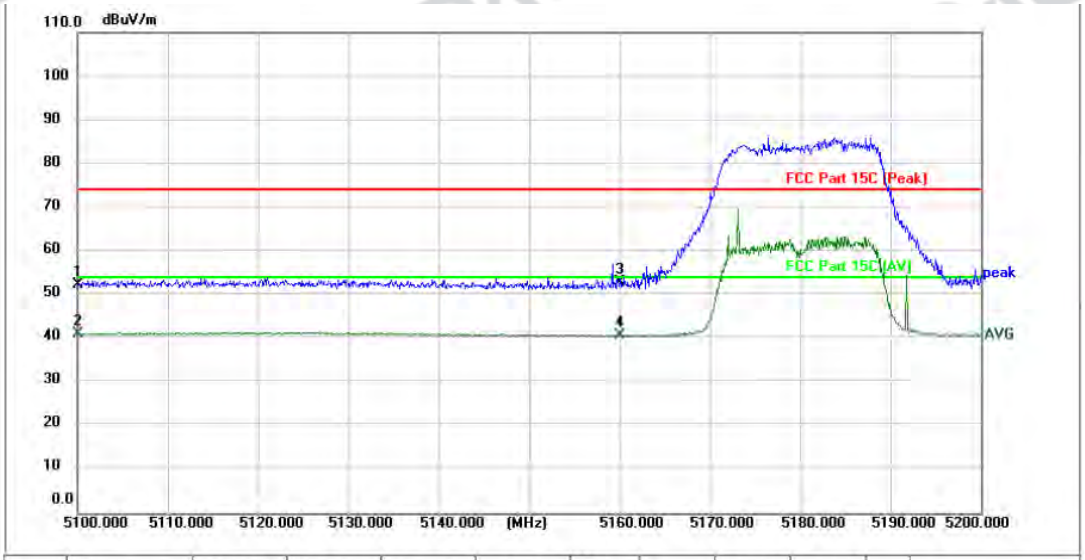


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	5850.000	51.61	1.13	52.74	122.20	-69.46	peak	149		P	
2	5850.000	32.53	1.13	33.66	102.20	-68.54	AVG	149		P	
3	5875.000	47.95	1.15	49.10	105.20	-56.10	peak	149		P	
4 *	5875.000	32.11	1.15	33.26	85.20	-51.94	AVG	149		P	

TM1 / Polarization: Vertical / Band: 5725-5850 MHz / BW: 20 / CH: H

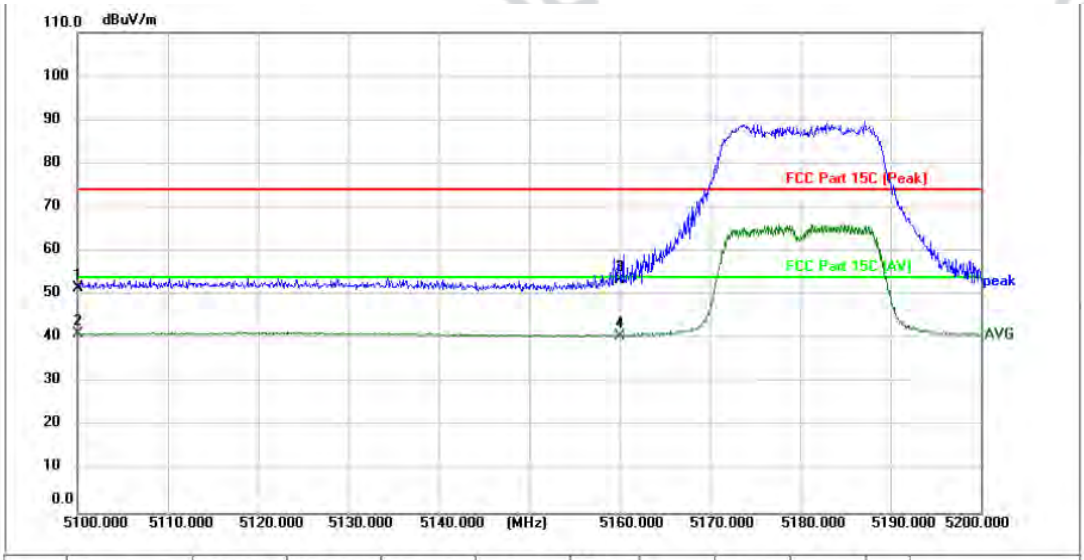
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	5850.000	46.59	0.91	47.50	122.20	-74.70	peak	149		P	
2	5850.000	32.05	0.91	32.96	102.20	-69.24	AVG	149		P	
3	5875.000	44.39	0.92	45.31	105.20	-59.89	peak	149		P	
4 *	5875.000	32.06	0.92	32.98	85.20	-52.22	AVG	149		P	

TM2 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 20 / CH: L



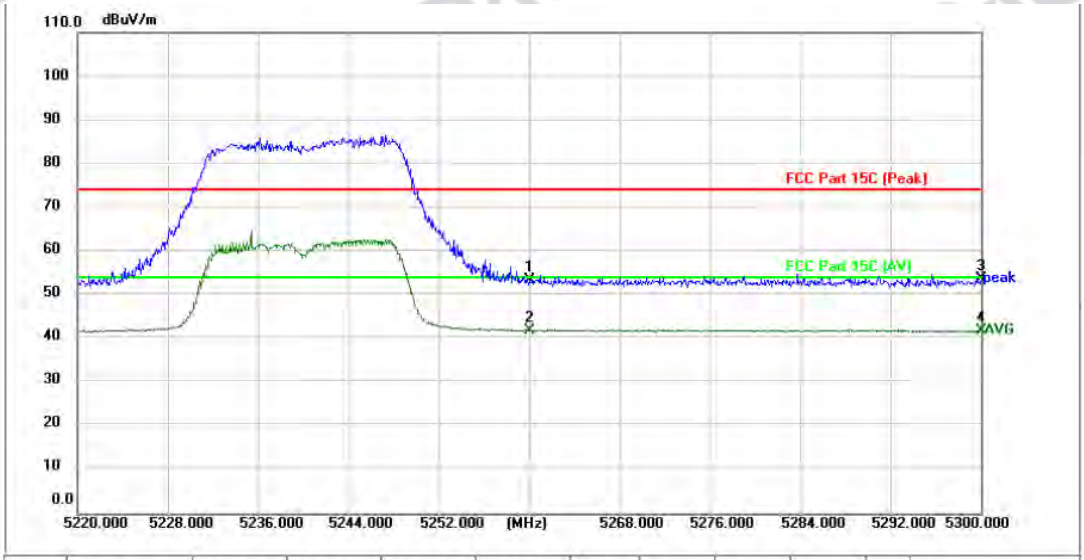
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	5100.000	52.41	-0.04	52.37	74.00	-21.63	peak	149		P	
2 *	5100.000	41.29	-0.04	41.25	54.00	-12.75	AVG	149		P	
3	5160.000	52.77	0.07	52.84	74.00	-21.16	peak	149		P	
4	5160.000	40.69	0.07	40.76	54.00	-13.24	AVG	149		P	

TM2 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 20 / CH: L



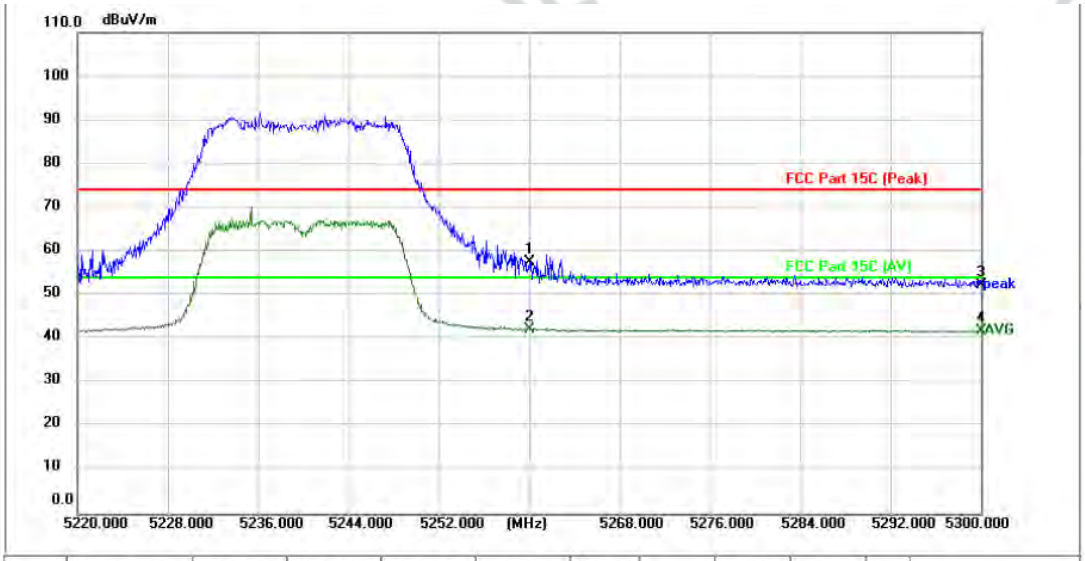
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	5100.000	51.20	0.43	51.63	74.00	-22.37	peak	149		P	
2 *	5100.000	40.55	0.43	40.98	54.00	-13.02	AVG	149		P	
3	5160.000	52.99	0.46	53.45	74.00	-20.55	peak	149		P	
4	5160.000	40.24	0.46	40.70	54.00	-13.30	AVG	149		P	

TM2 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 20 / CH: H



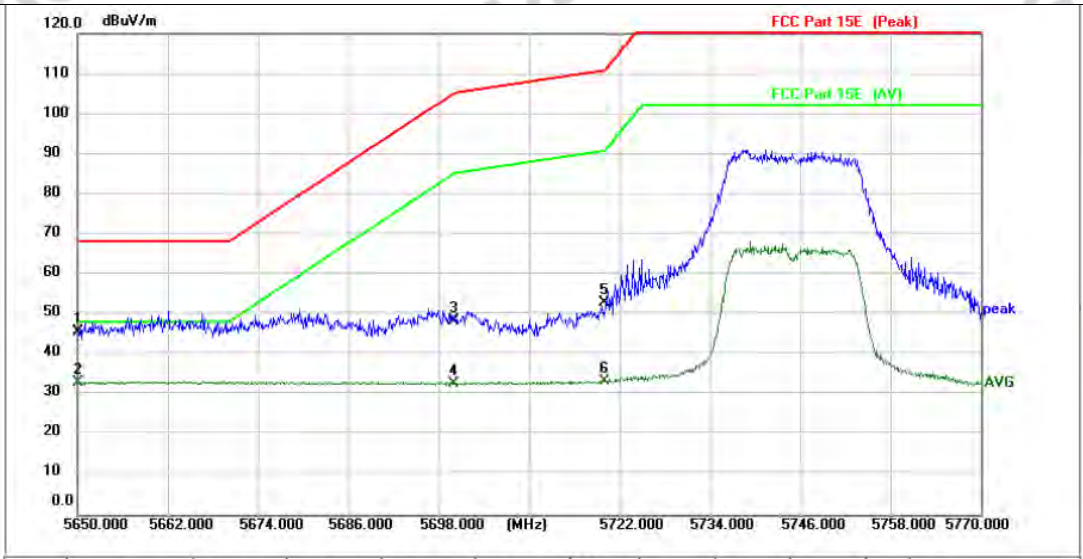
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	5260.000	53.18	0.27	53.45	74.00	-20.55	peak			P	
2 *	5260.000	41.70	0.27	41.97	54.00	-12.03	AVG			P	
3	5300.000	53.39	0.35	53.74	74.00	-20.26	peak			P	
4	5300.000	41.58	0.35	41.93	54.00	-12.07	AVG			P	

TM2 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 20 / CH: H



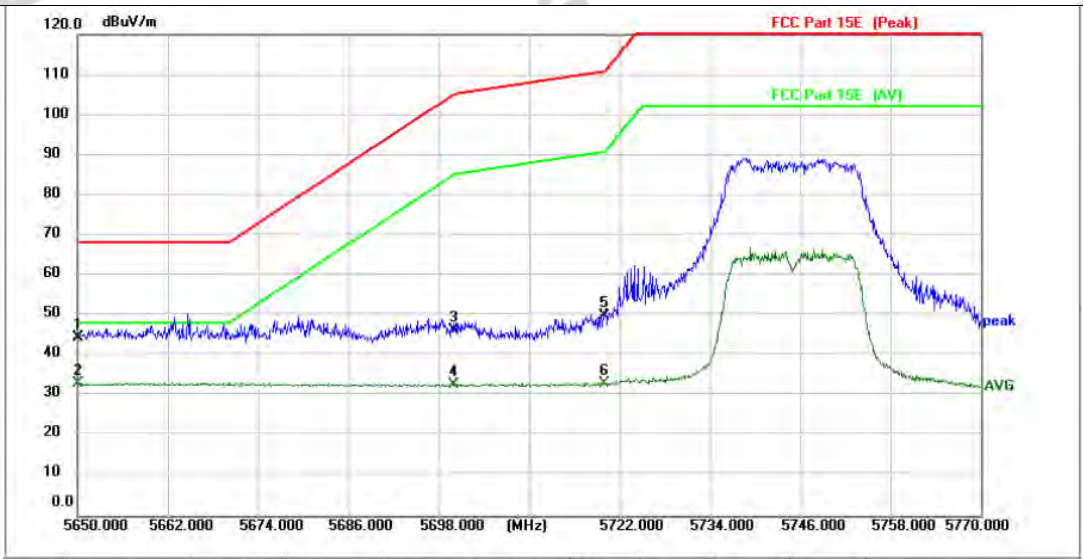
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	5260.000	57.20	0.53	57.73	74.00	-16.27	peak			P	
2 *	5260.000	41.56	0.53	42.09	54.00	-11.91	AVG			P	
3	5300.000	51.82	0.56	52.38	74.00	-21.62	peak			P	
4	5300.000	41.28	0.56	41.84	54.00	-12.16	AVG			P	

TM2 / Polarization: Horizontal / Band: 5725-5850 MHz / BW: 20 / CH: L



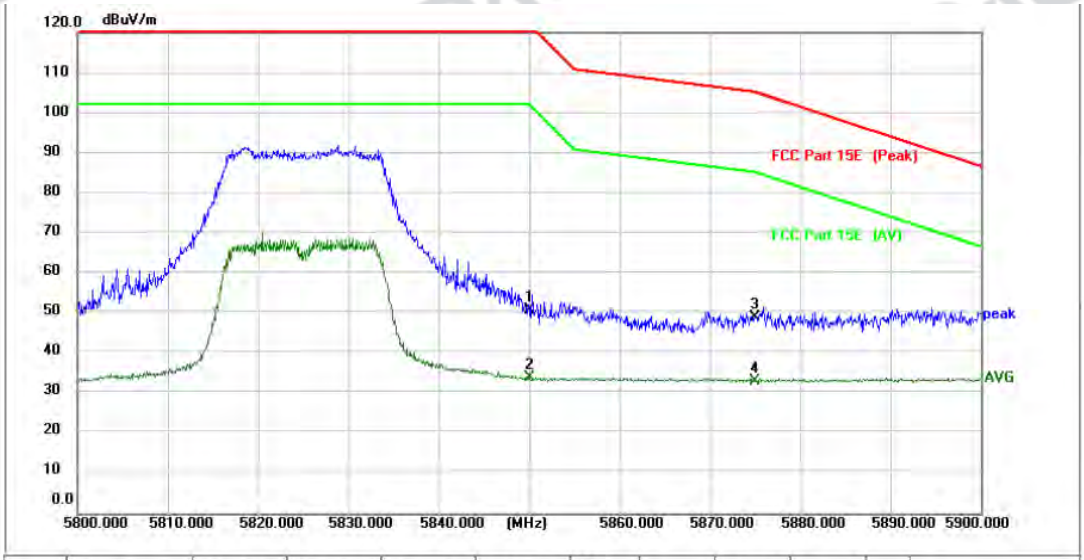
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	5650.000	44.81	0.89	45.70	68.20	-22.50	peak	149		P	
2 *	5650.000	32.34	0.89	33.23	48.20	-14.97	AVG	149		P	
3	5700.000	47.53	0.95	48.48	105.20	-56.72	peak	149		P	
4	5700.000	31.89	0.95	32.84	85.20	-52.36	AVG	149		P	
5	5720.000	52.02	0.97	52.99	110.80	-57.81	peak	149		P	
6	5720.000	32.40	0.97	33.37	90.80	-57.43	AVG	149		P	

TM2 / Polarization: Vertical / Band: 5725-5850 MHz / BW: 20 / CH: L



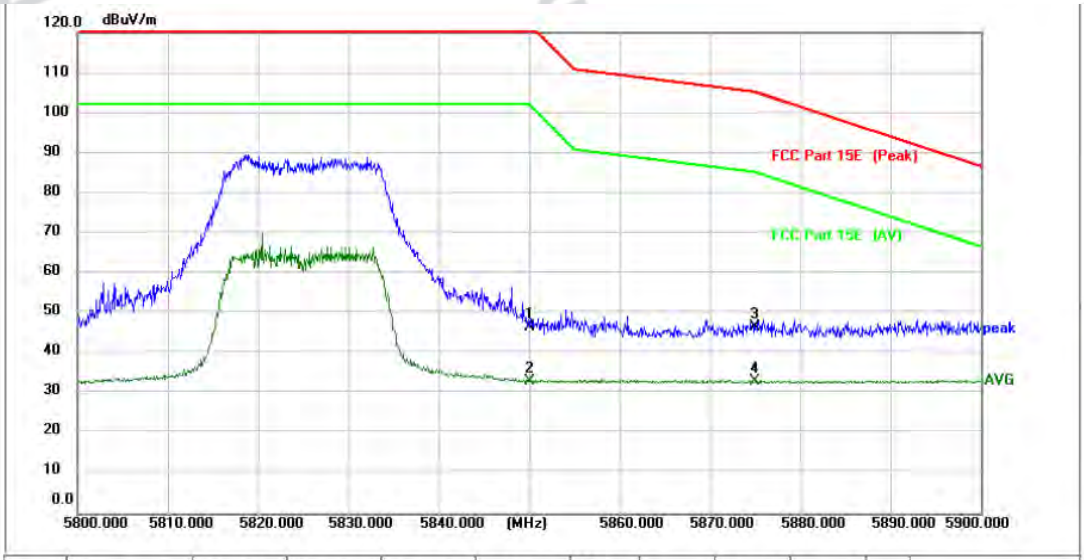
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	5650.000	43.71	0.77	44.48	68.20	-23.72	peak	149		P	
2 *	5650.000	32.40	0.77	33.17	48.20	-15.03	AVG	149		P	
3	5700.000	45.45	0.80	46.25	105.20	-58.95	peak	149		P	
4	5700.000	31.99	0.80	32.79	85.20	-52.41	AVG	149		P	
5	5720.000	49.00	0.81	49.81	110.80	-60.99	peak	149		P	
6	5720.000	32.45	0.81	33.26	90.80	-57.54	AVG	149		P	

TM2 / Polarization: Horizontal / Band: 5725-5850 MHz / BW: 20 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	5850.000	49.68	1.13	50.81	122.20	-71.39	peak	149		P	
2	5850.000	32.84	1.13	33.97	102.20	-68.23	AVG	149		P	
3	5875.000	47.96	1.15	49.11	105.20	-56.09	peak	149		P	
4 *	5875.000	32.08	1.15	33.23	85.20	-51.97	AVG	149		P	

TM2 / Polarization: Vertical / Band: 5725-5850 MHz / BW: 20 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	5850.000	45.75	0.91	46.66	122.20	-75.54	peak	149		P	
2	5850.000	32.33	0.91	33.24	102.20	-68.96	AVG	149		P	
3	5875.000	45.70	0.92	46.62	105.20	-58.58	peak	149		P	
4 *	5875.000	32.16	0.92	33.08	85.20	-52.12	AVG	149		P	

1. Margin = Measurement Level - Limit ; Measurement Level=Test receiver reading + correction factor

2.The test software will only record the worst test angle and height, and only the worst case will be recorded in the test report.

4.6 Undesirable emission limits (below 1GHz)

<table>
<tr><td>Test Requirement:</td><td>47 CFR Part 15.407(b)(9)</td></tr>
<tr><td>Test Limit:</td><td>Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209.

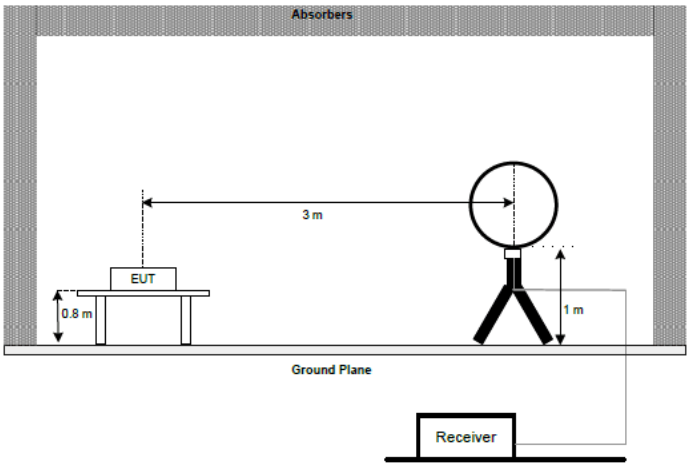
Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:
<table>
<tr><td>Frequency (MHz)</td><td>Field strength (microvolts/meter)</td><td>Measurement distance (meters)</td></tr>
<tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr>
<tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr>
<tr><td>1.705-30.0</td><td>30</td><td>30</td></tr>
<tr><td>30-88</td><td>100 **</td><td>3</td></tr>
<tr><td>88-216</td><td>150 **</td><td>3</td></tr>
<tr><td>216-960</td><td>200 **</td><td>3</td></tr>
<tr><td>Above 960</td><td>500</td><td>3</td></tr>
</table>
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.
In the emission table above, the tighter limit applies at the band edges.
The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10-2013, section 12.7.4, 12.7.5</td></tr>
<tr><td>Procedure:</td><td>Below 1GHz:
a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet.
g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
i. Repeat above procedures until all frequencies measured was complete.
Remark:
1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The</td></tr>
</table>

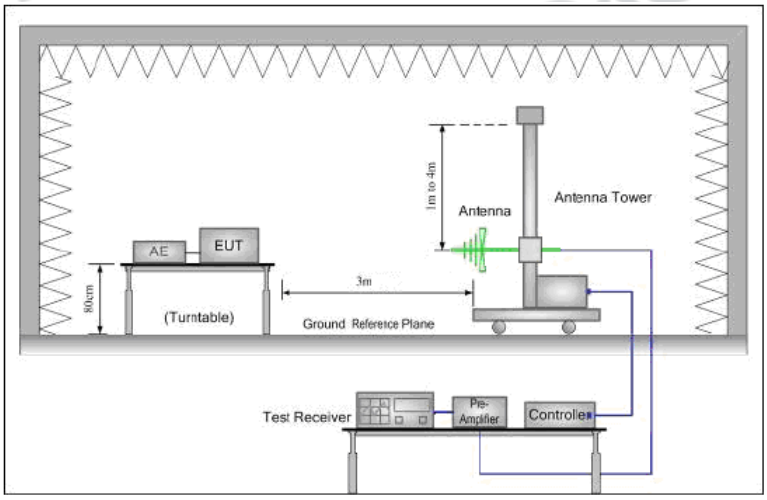
	points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported. 3. The disturbance below 1GHz was very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. Above 1GHz: a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet. g. Test the EUT in the lowest channel, the middle channel, the Highest channel. h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case. i. Repeat above procedures until all frequencies measured was complete. Remark: 1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor 2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported. 3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report. 4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. Margin= Mesurement Level- Limit Measurement Level=Test receiver reading + correction factor Correction Factor= Antenna Factor + Cable loss – Pre-amplifier

4.6.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.3 °C	Humidity:	51.4 %	Atmospheric Pressure:	102 kPa
Pretest mode:	TM1, TM2				
Final test mode:	TM1(worse case)				

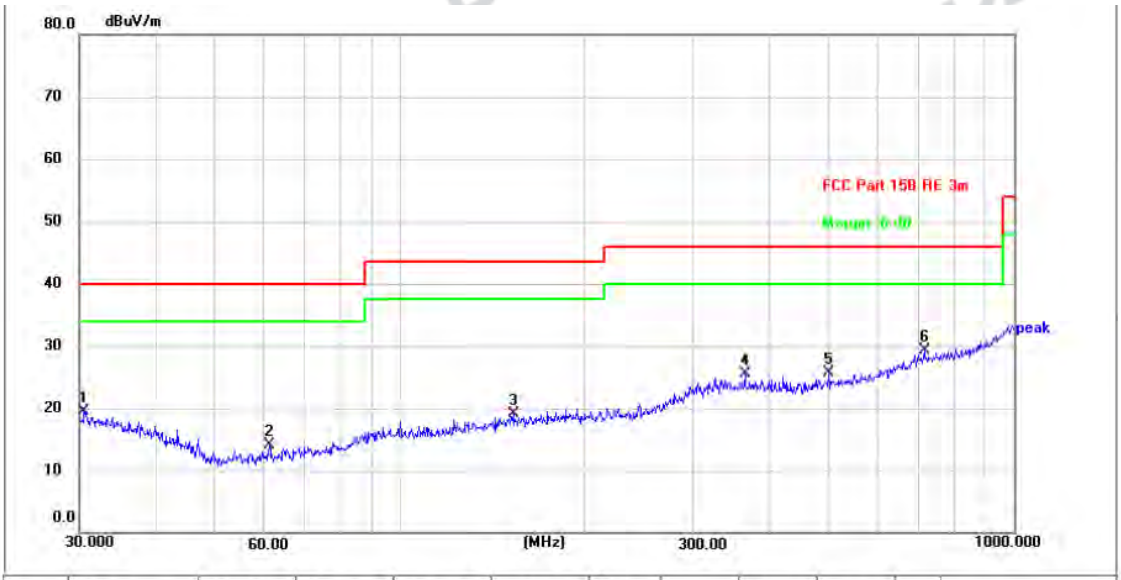
4.6.2 Test Setup Diagram:





4.6.3 Test Data:

TM1 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 20 / CH: H



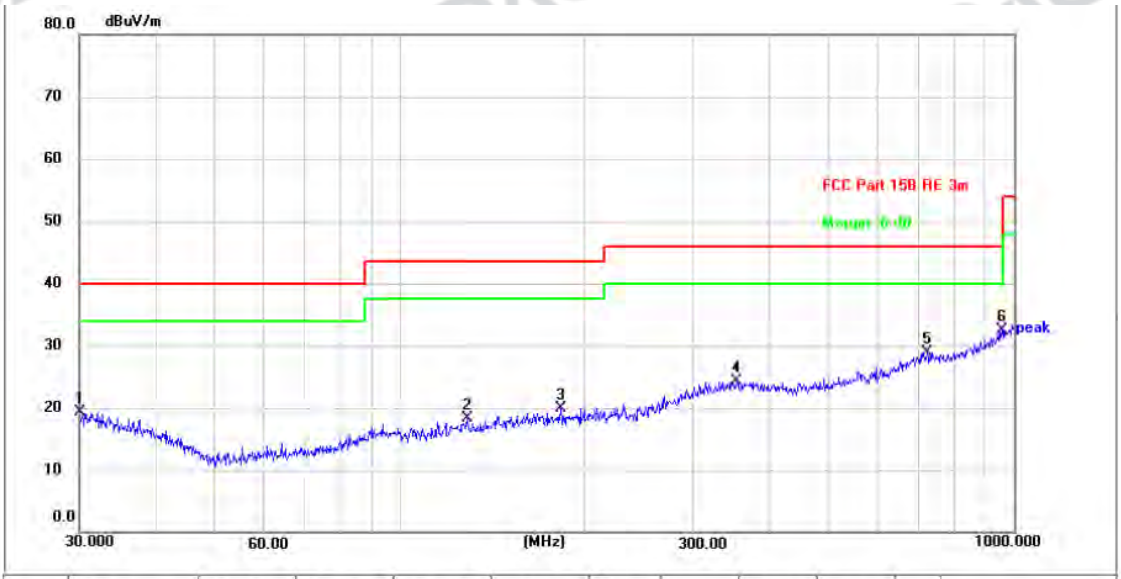
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	30.5306	22.44	-3.00	19.44	40.00	-20.56	QP	100		P	
2	61.1316	23.04	-8.97	14.07	40.00	-25.93	QP	100		P	
3	152.6641	22.74	-3.68	19.06	43.50	-24.44	QP	100		P	
4	364.2595	23.80	1.65	25.45	46.00	-20.55	QP	100		P	
5	499.4247	23.76	1.88	25.64	46.00	-20.36	QP	100		P	
6 *	714.1734	23.56	5.69	29.25	46.00	-16.75	QP	100		P	

Remark:

1.Margin= Mesurement Level- Limit; Measurement Level=Test receiver reading + correction factor

2.The EMC test software will only record the worst test angle and height, and only the worst case will be record edin the test report.

TM1 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 20 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	30.0000	22.20	-2.86	19.34	40.00	-20.66	QP	100		P	
2	128.5630	22.79	-4.54	18.25	43.50	-25.25	QP	100		P	
3	182.5592	23.06	-3.10	19.96	43.50	-23.54	QP	100		P	
4	352.9433	23.47	0.81	24.28	46.00	-21.72	QP	100		P	
5	721.7259	23.91	5.05	28.96	46.00	-17.04	QP	100		P	
6 *	955.4381	23.38	9.21	32.59	46.00	-13.41	QP	100		P	

4.7 Undesirable emission limits (above 1GHz)

Test Requirement:	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)
Test Limit:	For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz. For transmitters operating solely in the 5.725-5.850 GHz band: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

[1]Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2]Above 38.6

The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in § 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in § 15.209shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in § 15.209shall be demonstrated based on the average value of the measured emissions. The provisions in § 15.35apply to these measurements.

Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100 **	3
88-216	150 **	3
216-960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.
In the emission table above, the tighter limit applies at the band edges.
The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Test Method: ANSI C63.10-2013, section 12.7.4, 12.7.6, 12.7.7

Procedure:

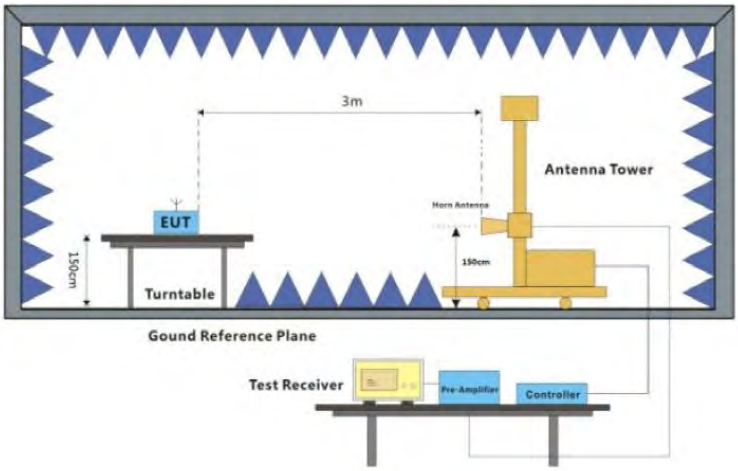
Above 1GHz:
a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.
g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
i. Repeat above procedures until all frequencies measured was complete.
Remark:
1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB

	under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report. 4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. Margin= Mesurement Level- Limit Measurement Level=Test receiver reading + correction factor Correction Factor= Antenna Factor + Cable loss – Pre-amplifier

4.7.1 E.U.T. Operation:

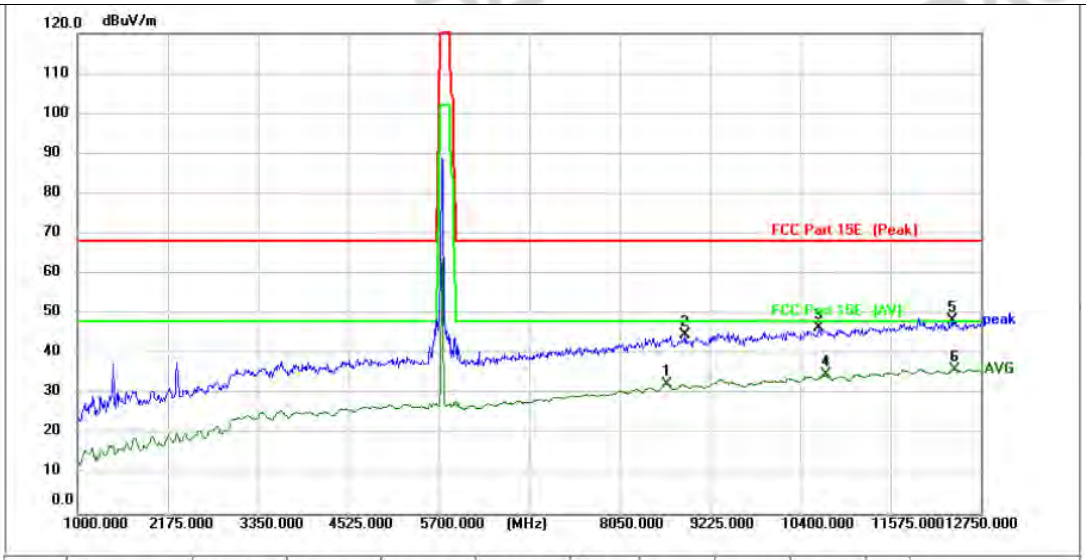
Operating Environment:					
Temperature:	23.3 °C	Humidity:	51.4 %	Atmospheric Pressure:	102 kPa
Pretest mode:	TM1, TM2				
Final test mode:	TM1, TM2(Record only the worst channel)				

4.7.2 Test Setup Diagram:



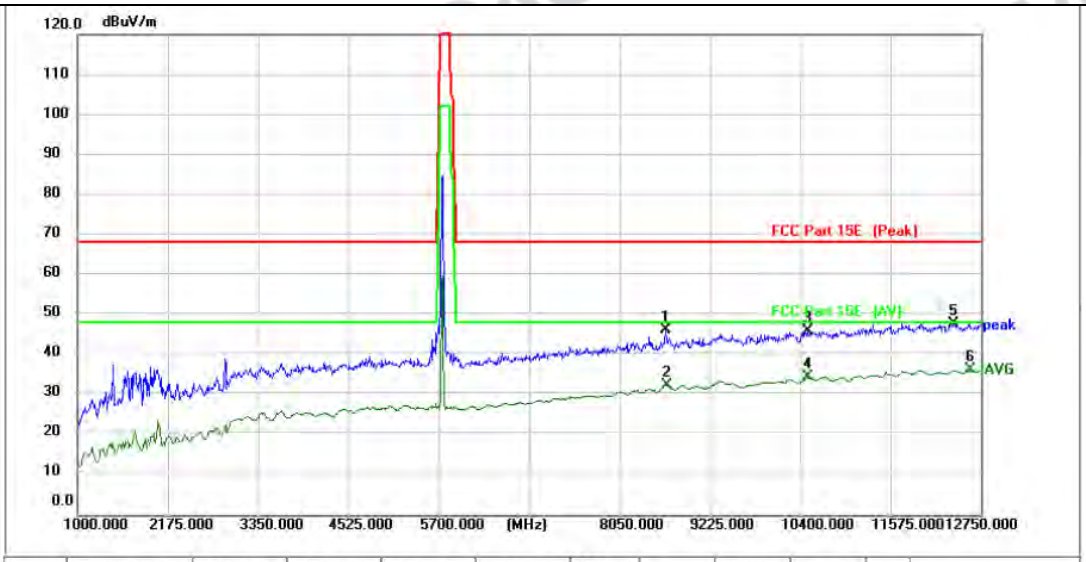
4.7.3 Test Data:

TM1 / Polarization: Horizontal / Band: 5725-5850 MHz / BW: 20 / CH: L



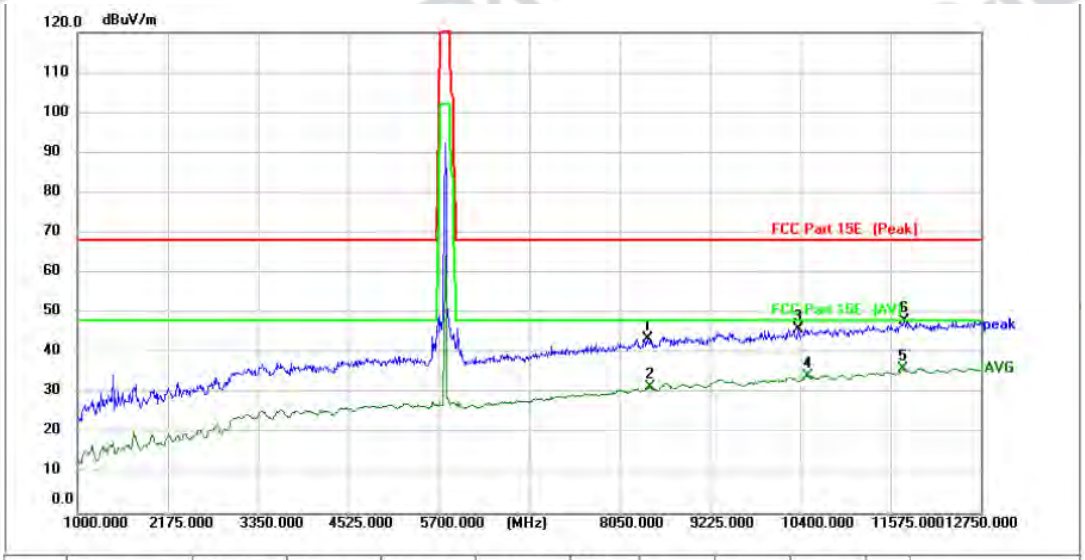
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	8661.000	25.27	7.42	32.69	48.20	-15.51	AVG	149		P	
2	8907.750	37.06	7.85	44.91	68.20	-23.29	peak	149		P	
3	10635.000	37.66	9.10	46.76	68.20	-21.44	peak	149		P	
4	10740.750	25.65	9.18	34.83	48.20	-13.37	AVG	149		P	
5	12374.000	37.65	10.77	48.42	68.20	-19.78	peak	149		P	
6 *	12409.250	25.41	10.84	36.25	48.20	-11.95	AVG	149		P	

TM1 / Polarization: Vertical / Band: 5725-5850 MHz / BW: 20 / CH: L



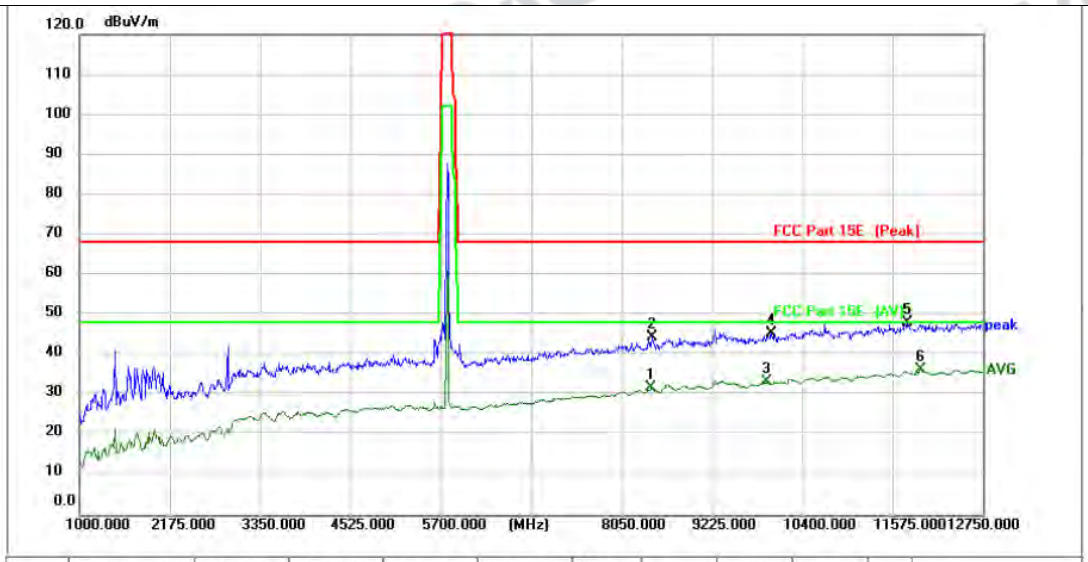
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	8649.250	39.47	7.03	46.50	68.20	-21.70	peak	149		P	
2	8661.000	25.58	7.05	32.63	48.20	-15.57	AVG	149		P	
3	10494.000	37.46	8.65	46.11	68.20	-22.09	peak	149		P	
4	10494.000	25.99	8.65	34.64	48.20	-13.56	AVG	149		P	
5	12397.500	36.72	11.00	47.72	68.20	-20.48	peak	149		P	
6 *	12609.000	25.05	11.35	36.40	48.20	-11.80	AVG	149		P	

TM1 / Polarization: Horizontal / Band: 5725-5850 MHz / BW: 20 / CH: M



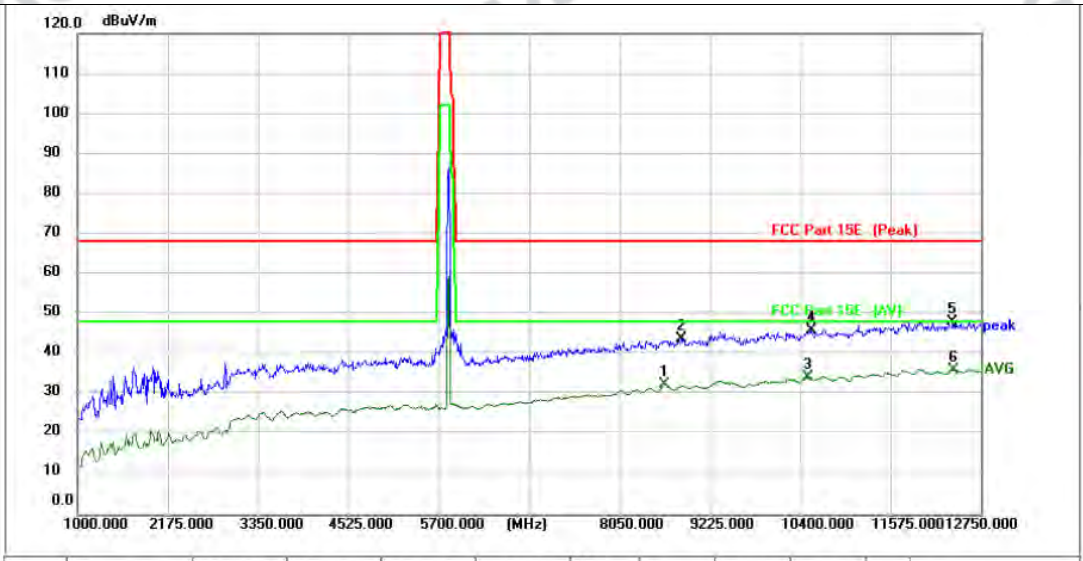
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	8414.250	36.55	7.01	43.56	68.20	-24.64	peak	149		P	
2	8449.500	24.63	7.06	31.69	48.20	-16.51	AVG	149		P	
3	10376.500	37.38	8.78	46.16	68.20	-22.04	peak	149		P	
4	10494.000	25.39	8.99	34.38	48.20	-13.82	AVG	149		P	
5 *	11739.500	26.29	9.84	36.13	48.20	-12.07	AVG	149		P	
6	11751.250	38.39	9.83	48.22	68.20	-19.98	peak	149		P	

TM1 / Polarization: Vertical / Band: 5725-5850 MHz / BW: 20 / CH: M



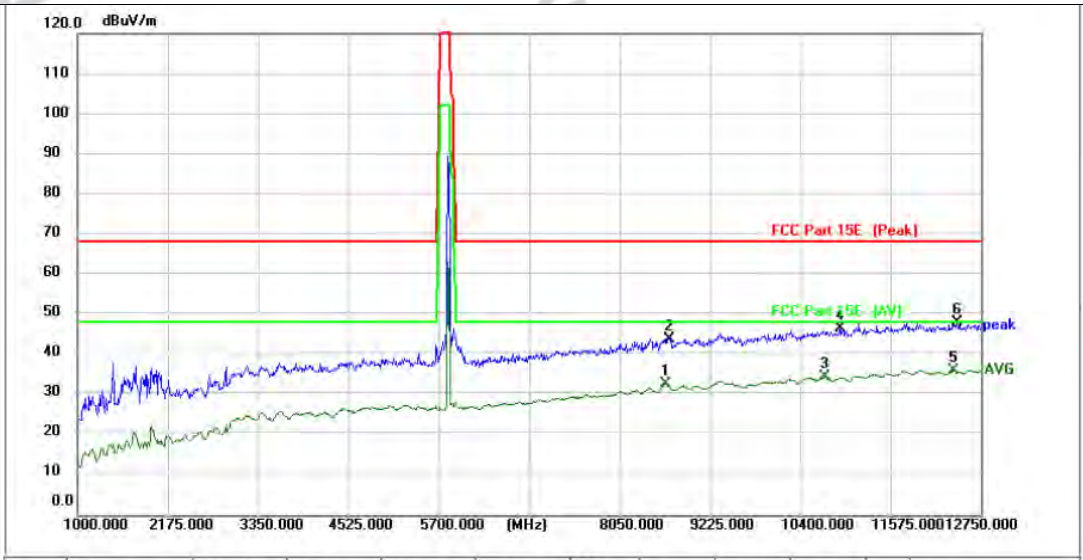
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	8437.750	25.27	6.69	31.96	48.20	-16.24	AVG	149		P	
2	8449.500	37.73	6.70	44.43	68.20	-23.77	peak	149		P	
3	9930.000	25.16	8.24	33.40	48.20	-14.80	AVG	149		P	
4	10000.500	37.17	8.29	45.46	68.20	-22.74	peak	149		P	
5	11763.000	38.05	10.00	48.05	68.20	-20.15	peak	149		P	
6 *	11939.250	26.17	10.23	36.40	48.20	-11.80	AVG	149		P	

TM1 / Polarization: Horizontal / Band: 5725-5850 MHz / BW: 20 / CH: H



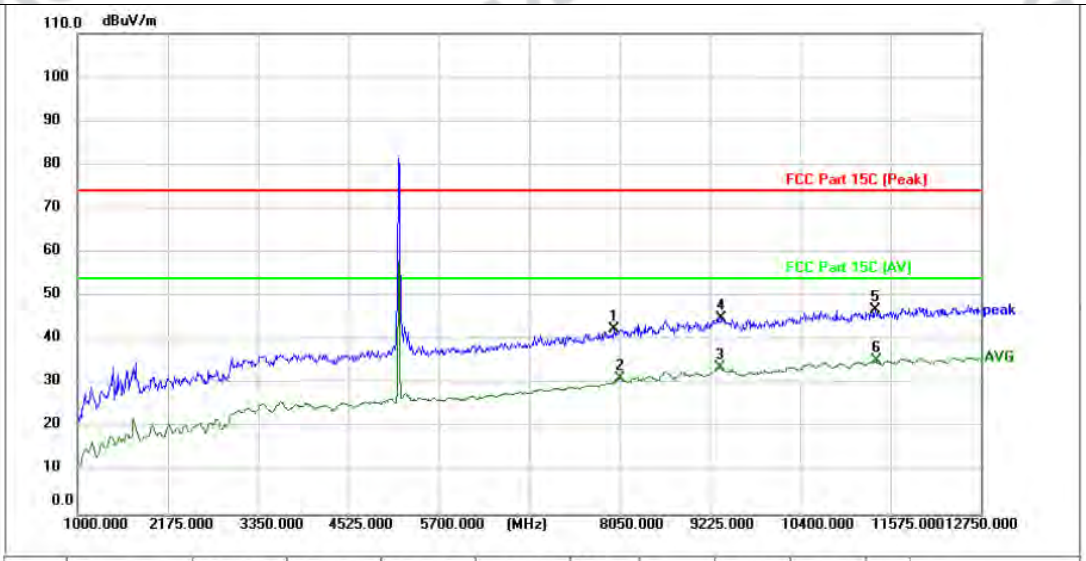
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	8637.500	25.55	7.02	32.57	48.20	-15.63	AVG	149		P	
2	8860.750	36.49	7.37	43.86	68.20	-24.34	peak	149		P	
3	10494.000	25.83	8.65	34.48	48.20	-13.72	AVG	149		P	
4	10541.000	37.41	8.69	46.10	68.20	-22.10	peak	149		P	
5	12385.750	37.16	10.97	48.13	68.20	-20.07	peak	149		P	
6 *	12397.500	25.29	11.00	36.29	48.20	-11.91	AVG	149		P	

TM1 / Polarization: Vertical / Band: 5725-5850 MHz / BW: 20 / CH: H



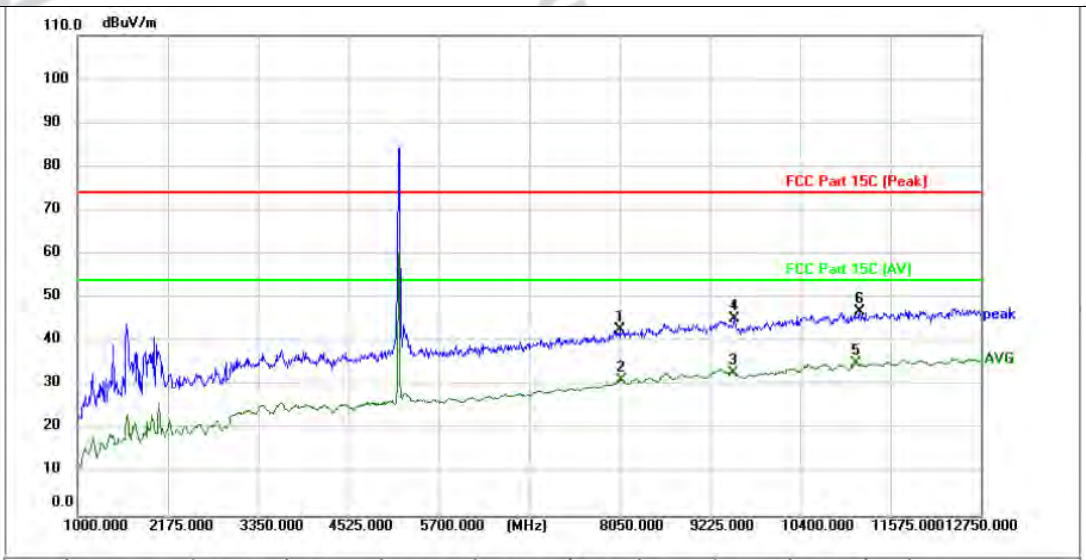
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	8649.250	25.72	7.03	32.75	48.20	-15.45	AVG	149		P	
2	8696.250	36.98	7.11	44.09	68.20	-24.11	peak	149		P	
3	10717.250	25.83	8.82	34.65	48.20	-13.55	AVG	149		P	
4	10917.000	37.59	8.97	46.56	68.20	-21.64	peak	149		P	
5 *	12397.500	25.28	11.00	36.28	48.20	-11.92	AVG	149		P	
6	12444.500	37.03	11.07	48.10	68.20	-20.10	peak	149		P	

TM2 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 20 / CH: L



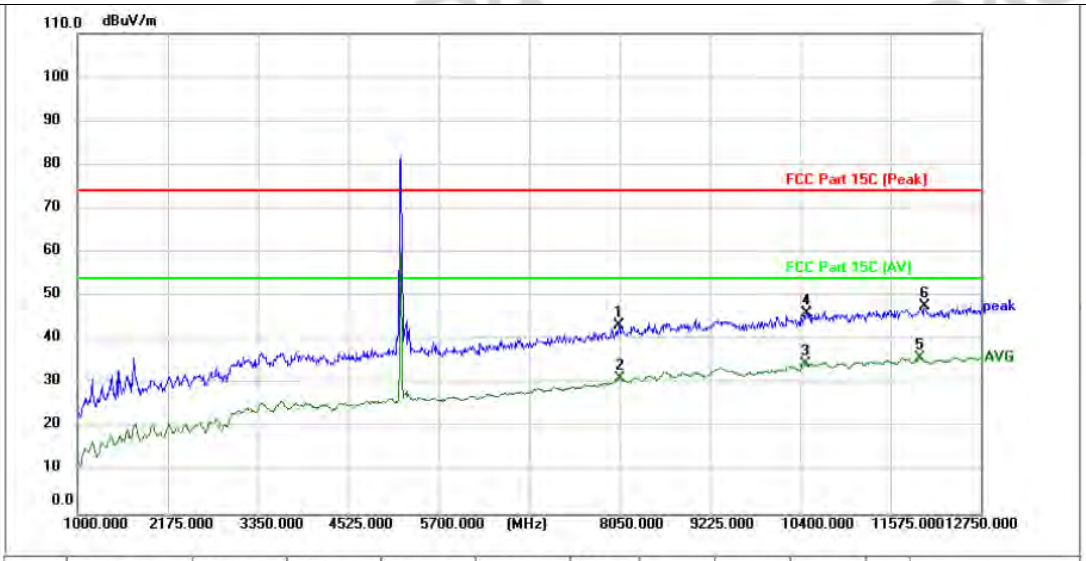
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	7979.500	36.19	6.30	42.49	74.00	-31.51	peak	149		P	
2	8061.750	24.77	6.48	31.25	54.00	-22.75	AVG	149		P	
3	9354.250	25.68	8.06	33.74	54.00	-20.26	AVG	149		P	
4	9377.750	36.82	8.07	44.89	74.00	-29.11	peak	149		P	
5	11375.250	37.28	9.59	46.87	74.00	-27.13	peak	149		P	
6 *	11387.000	25.63	9.60	35.23	54.00	-18.77	AVG	149		P	

TM2 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 20 / CH: L



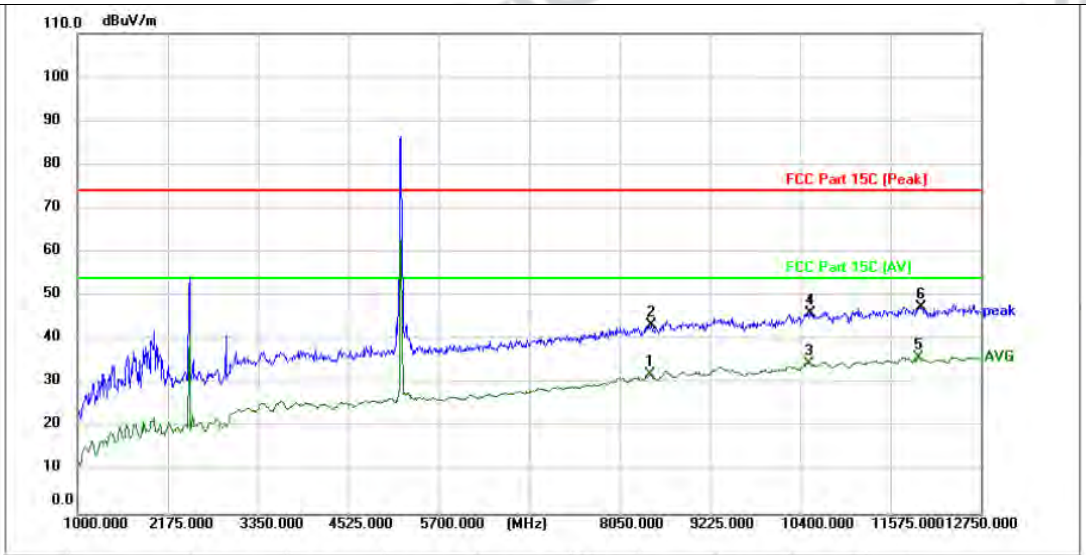
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	8050.000	36.77	6.06	42.83	74.00	-31.17	peak	149		P	
2	8073.500	25.19	6.10	31.29	54.00	-22.71	AVG	149		P	
3	9530.500	24.97	7.97	32.94	54.00	-21.06	AVG	149		P	
4	9542.250	37.27	7.98	45.25	74.00	-28.75	peak	149		P	
5 *	11128.500	25.76	9.19	34.95	54.00	-19.05	AVG	149		P	
6	11175.500	37.59	9.25	46.84	74.00	-27.16	peak	149		P	

TM2 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 20 / CH: M



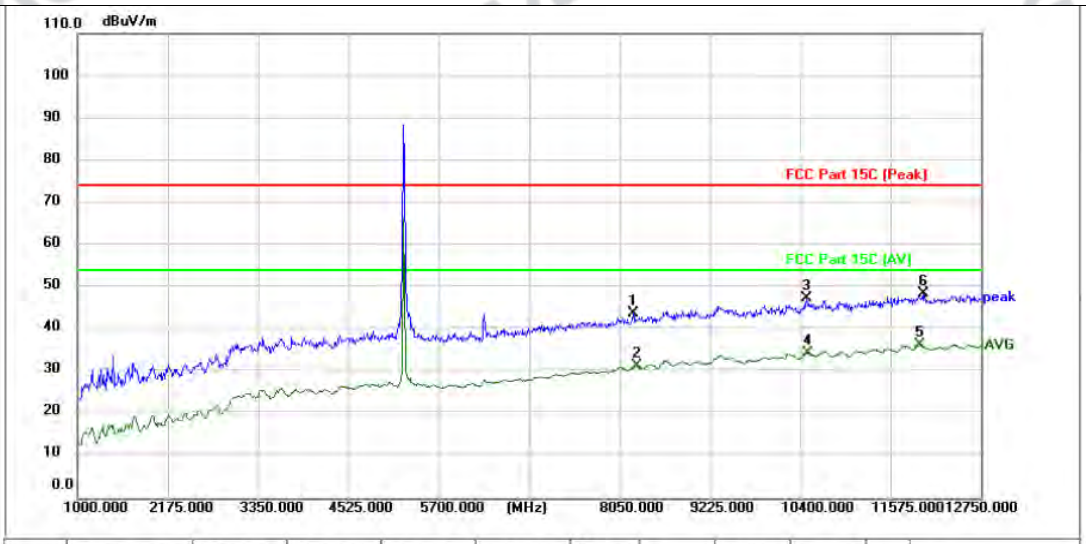
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	8038.250	36.87	6.43	43.30	74.00	-30.70	peak	149		P	
2	8061.750	24.71	6.48	31.19	54.00	-22.81	AVG	149		P	
3	10470.500	25.65	8.95	34.60	54.00	-19.40	AVG	149		P	
4	10482.250	37.08	8.97	46.05	74.00	-27.95	peak	149		P	
5 *	11951.000	25.97	9.97	35.94	54.00	-18.06	AVG	149		P	
6	12021.500	37.62	10.06	47.68	74.00	-26.32	peak	149		P	

TM2 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 20 / CH: M



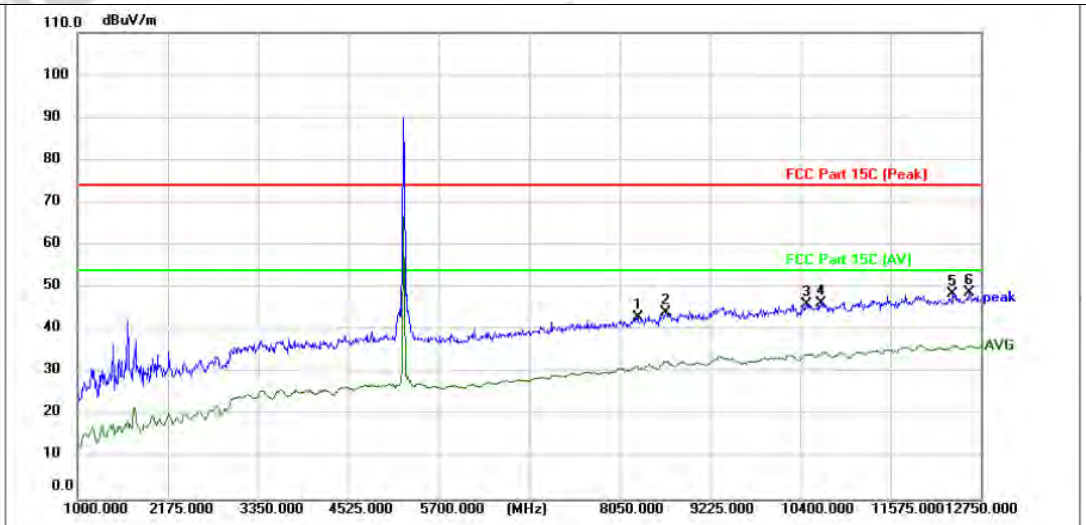
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	8449.500	25.27	6.70	31.97	54.00	-22.03	AVG	149		P	
2	8461.250	36.70	6.73	43.43	74.00	-30.57	peak	149		P	
3	10517.500	25.95	8.68	34.63	54.00	-19.37	AVG	149		P	
4	10529.250	37.51	8.68	46.19	74.00	-27.81	peak	149		P	
5 *	11939.250	25.71	10.23	35.94	54.00	-18.06	AVG	149		P	
6	11974.500	37.07	10.27	47.34	74.00	-26.66	peak	149		P	

TM2 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 20 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	8226.250	37.13	6.73	43.86	74.00	-30.14	peak	149		P	
2	8273.250	24.69	6.79	31.48	54.00	-22.52	AVG	149		P	
3	10482.250	38.53	8.97	47.50	74.00	-26.50	peak	149		P	
4	10494.000	25.56	8.99	34.55	54.00	-19.45	AVG	149		P	
5 *	11951.000	26.42	9.97	36.39	54.00	-17.61	AVG	149		P	
6	12009.750	38.45	10.03	48.48	74.00	-25.52	peak	149		P	

TM2 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 20 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	8285.000	36.73	6.44	43.17	74.00	-30.83	peak	149		P	
2	8649.250	37.09	7.03	44.12	74.00	-29.88	peak	149		P	
3	10482.250	37.53	8.63	46.16	74.00	-27.84	peak	149		P	
4	10670.250	37.67	8.78	46.45	74.00	-27.55	peak	149		P	
5	12385.750	37.60	10.97	48.57	74.00	-25.43	peak	149		P	
6 *	12597.250	37.36	11.35	48.71	74.00	-25.29	peak	149		P	

Remark: 1.Margin= Level – Limit; Level=Test receiver reading + correction factor

2.The test software will only record the worst test angle and height, and only the worst case will be recorded in the test report.

5 TEST SETUP PHOTOS

Please Refer to test setup file for Details.

6 PHOTOS OF THE EUT

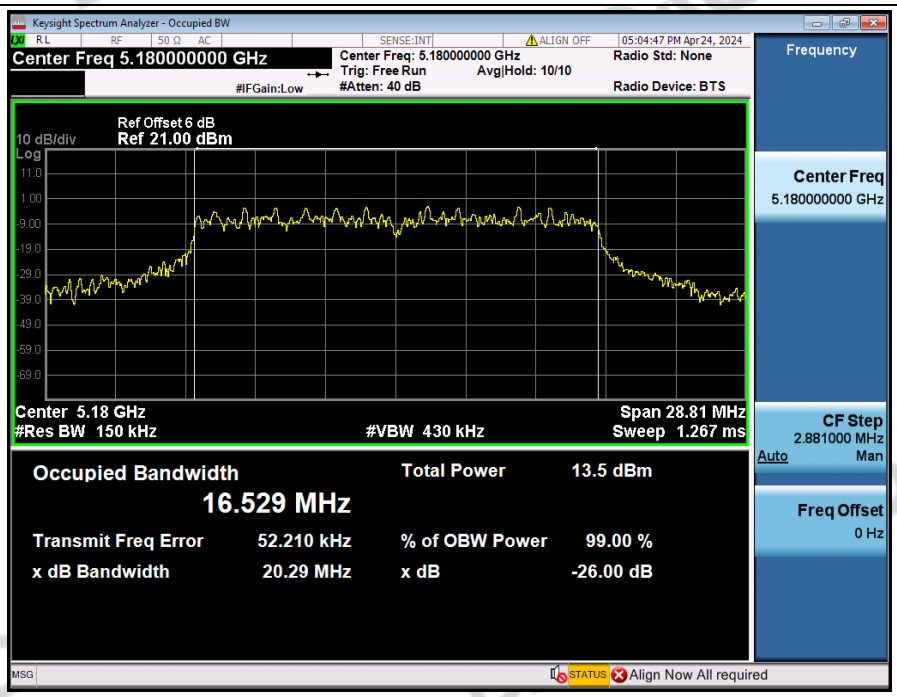
Please Refer to external photos file and internal photos for Details.

Appendix-5.2GWIFI

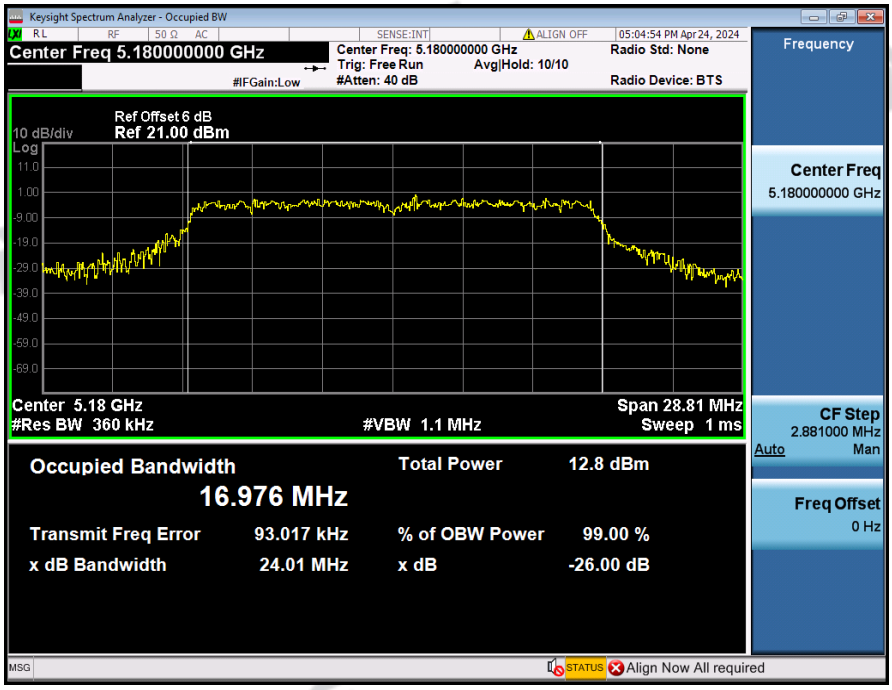
1. -26dB and 99% Emission Bandwidth

Condition	Antenna	Modulation	Frequency(MHz)	-26dB_Emission_Bandwidth(MHz)	Occupied Bandwidth(MHz)
NVNT	ANT1	802.11a	5180.00	24.01	16.53
NVNT	ANT1	802.11a	5200.00	24.01	16.46
NVNT	ANT1	802.11a	5240.00	24.16	16.49
NVNT	ANT1	802.11n(HT20)	5180.00	24.65	17.65
NVNT	ANT1	802.11n(HT20)	5200.00	24.20	17.70
NVNT	ANT1	802.11n(HT20)	5240.00	23.68	17.64

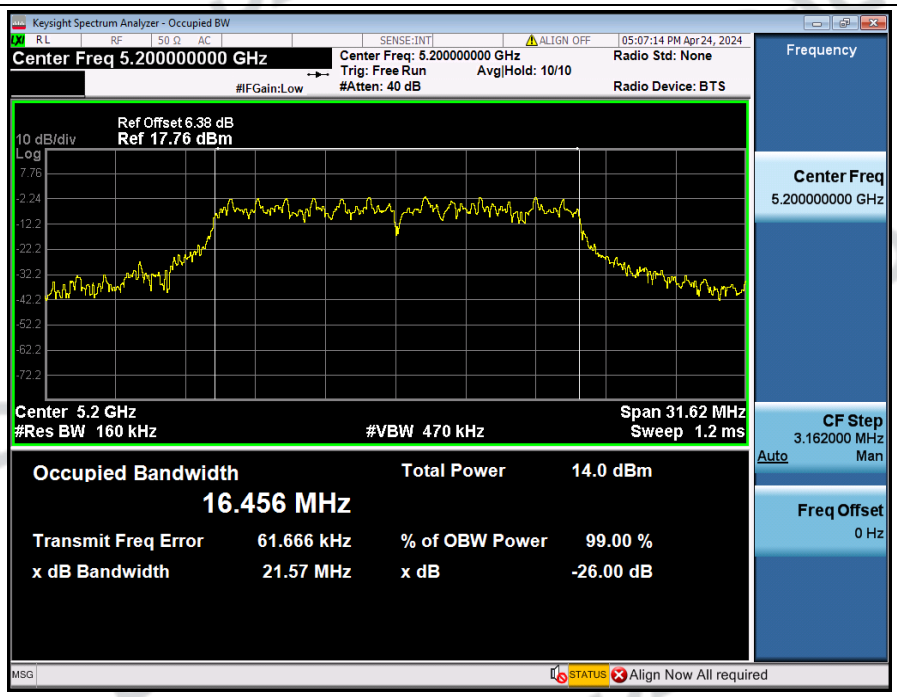
99%_OCB_NVNT_ANT1_802_11a_5180



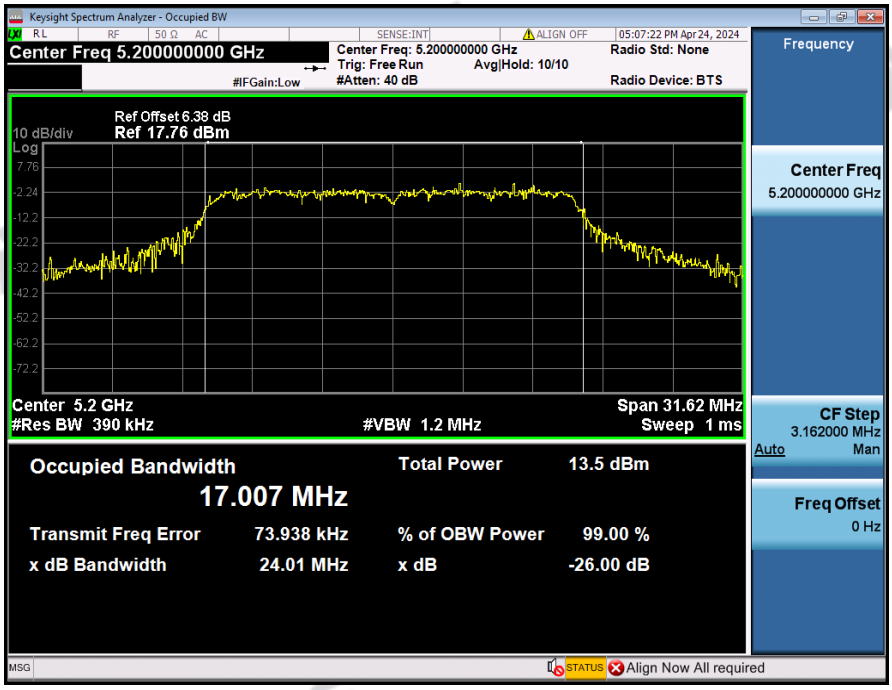
-26BW_NVNT_ANT1_802_11a_5180



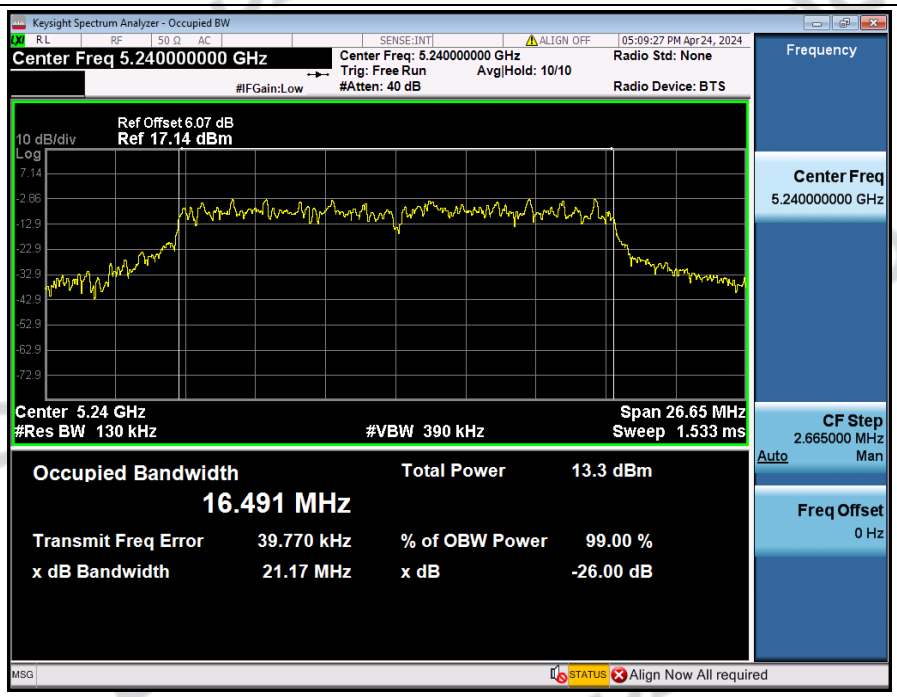
99%_OCB_NVNT_ANT1_802_11a_5200



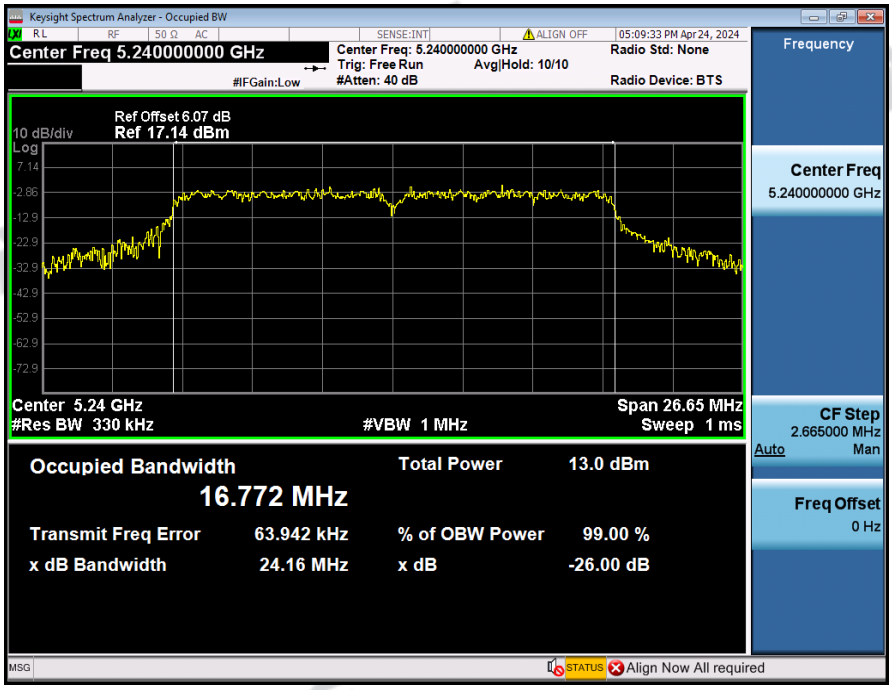
-26BW_NVNT_ANT1_802_11a_5200



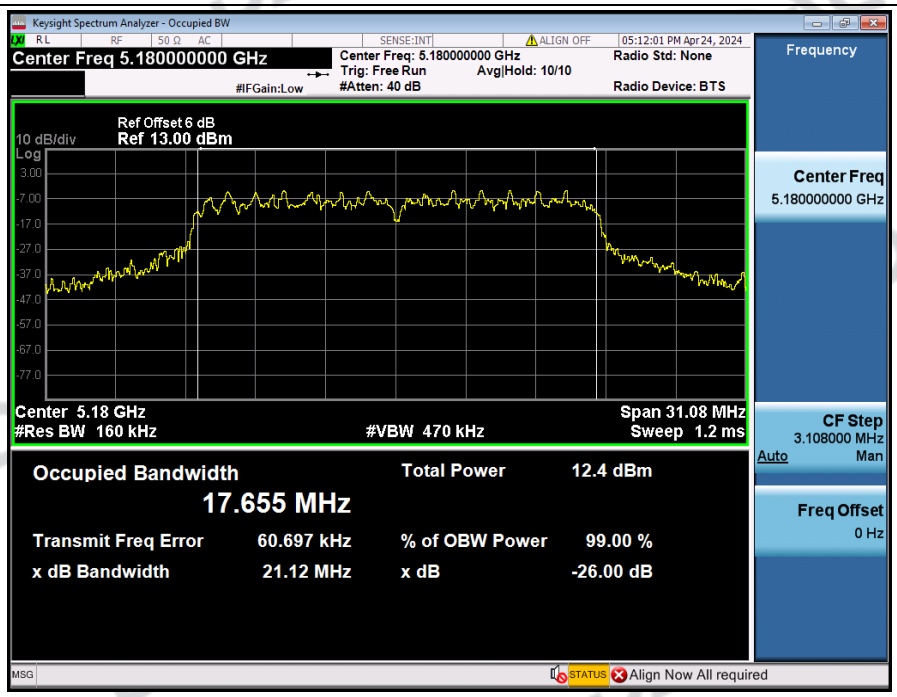
99%_OCB_NVNT_ANT1_802_11a_5240



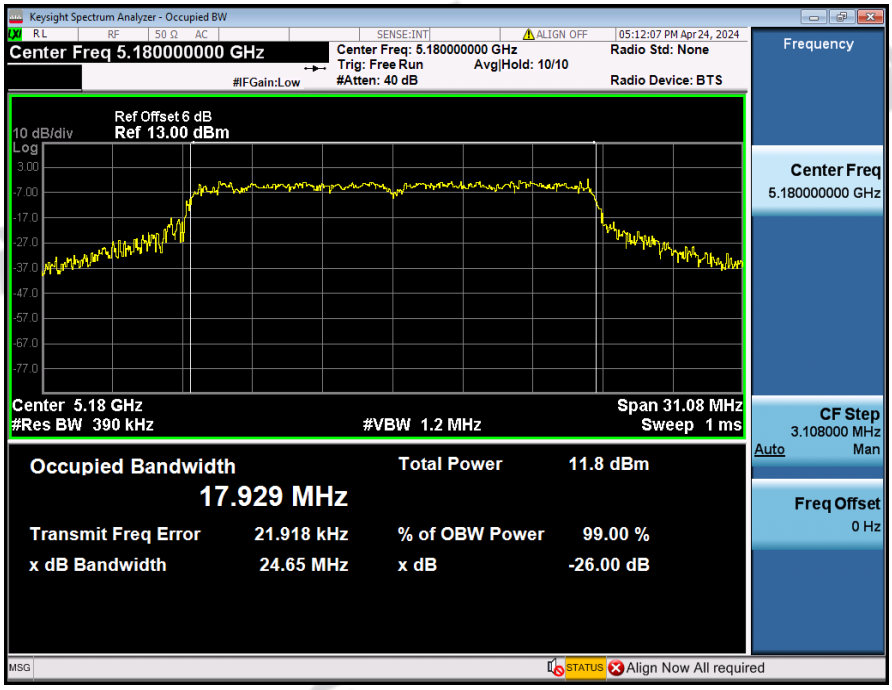
-26BW_NVNT_ANT1_802_11a_5240



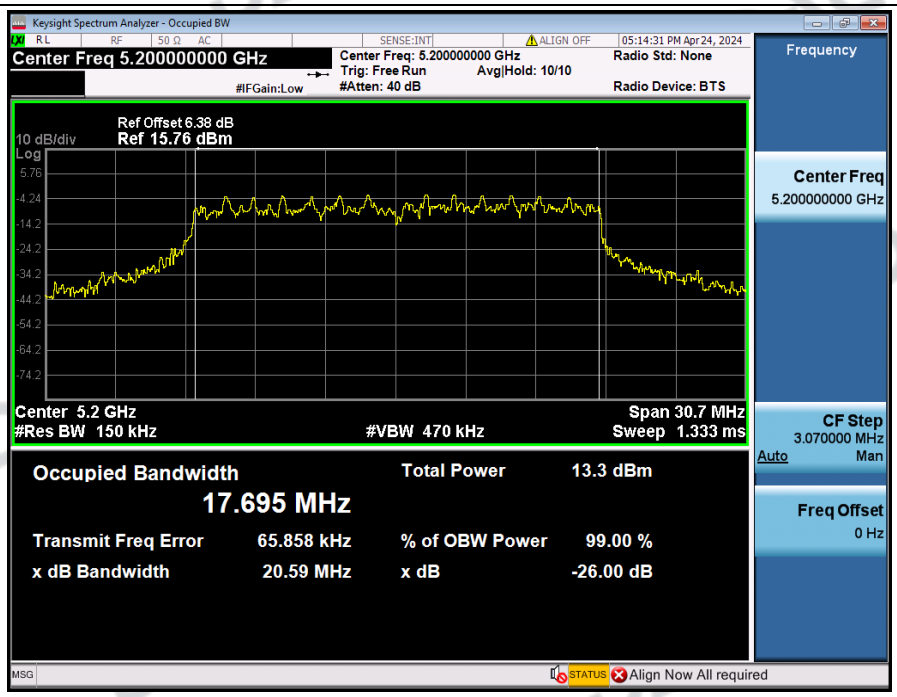
99%_OCB_NVNT_ANT1_802_11n(HT20)_5180



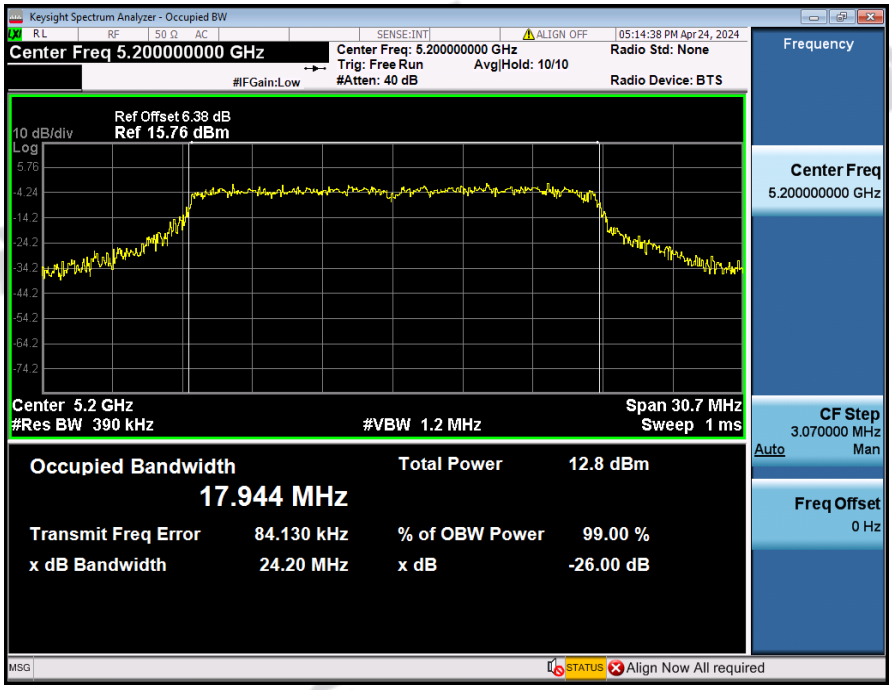
-26BW_NVNT_ANT1_802_11n(HT20)_5180



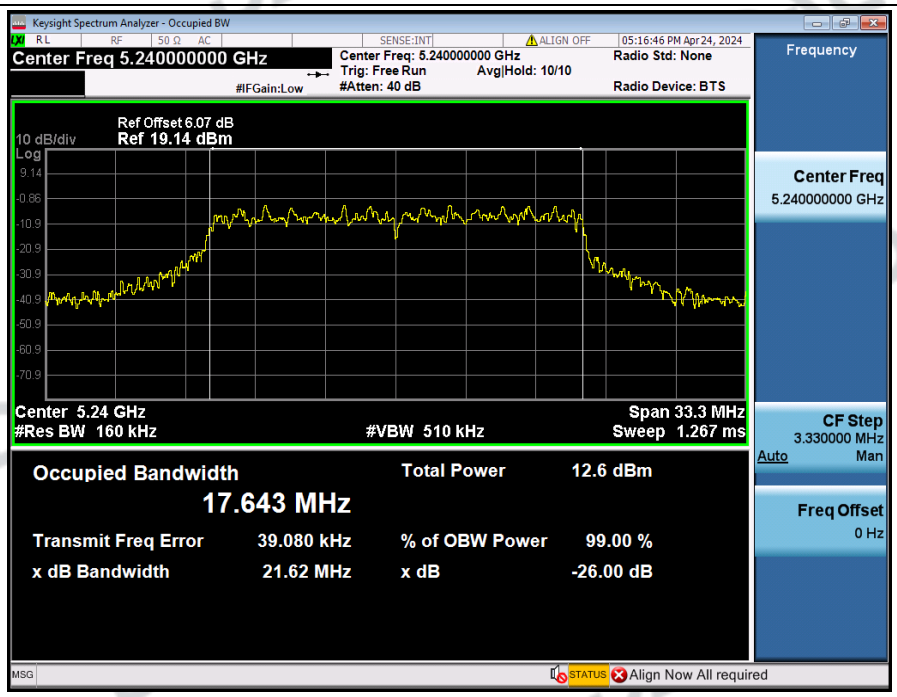
99%_OCB_NVNT_ANT1_802_11n(HT20)_5200



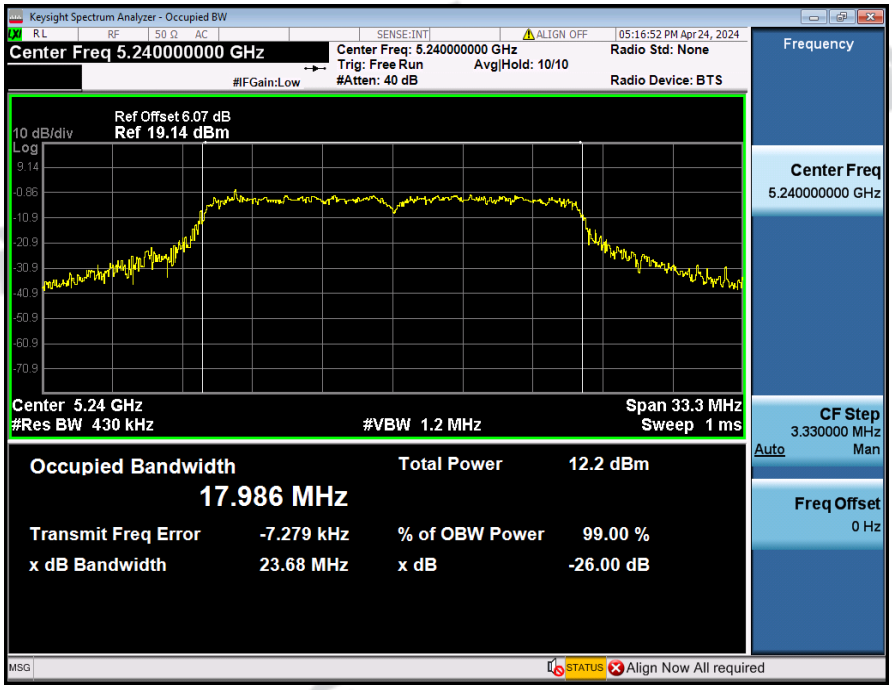
-26BW_NVNT_ANT1_802_11n(HT20)_5200



99%_OCB_NVNT_ANT1_802_11n(HT20)_5240



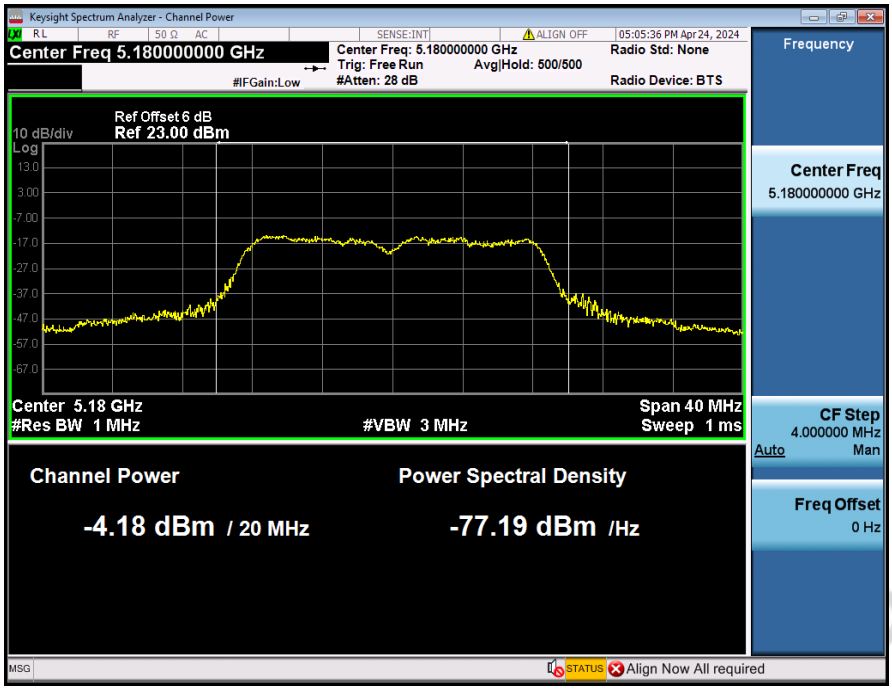
-26BW_NVNT_ANT1_802_11n(HT20)_5240


Keysight Spectrum Analyzer - Occupied BW
Center Freq 5.240000000 GHz
Center Freq: 5.240000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#Atten: 40 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
05:16:52 PM Apr 24, 2024
Ref Offset 6.07 dB
10 dB/div
Ref 19.14 dBm
Log
Center 5.24 GHz
#Res BW 430 kHz
#VBW 1.2 MHz
Span 33.3 MHz
Sweep 1 ms
Occupied Bandwidth
17.986 MHz
Total Power 12.2 dBm
Transmit Freq Error -7.279 kHz
% of OBW Power 99.00 %
x dB Bandwidth 23.68 MHz
x dB -26.00 dB
Frequency
Center Freq
5.240000000 GHz
CF Step
3.330000 MHz
Auto Man
Freq Offset
0 Hz
Align Now All required

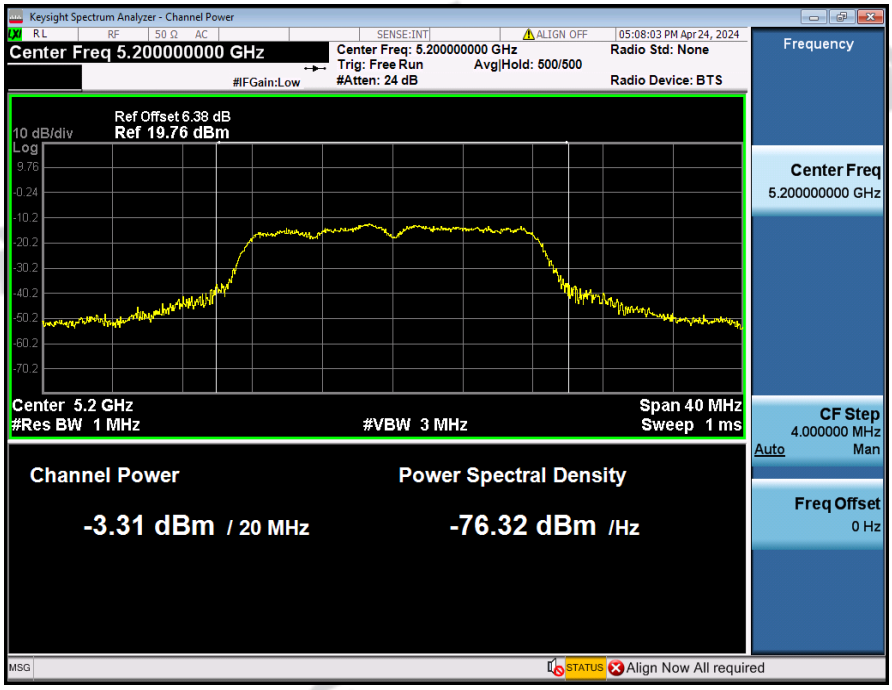
2. Maximum Conducted Output Power

Condition	Antenna	Modulation	Frequency (MHz)	Conducted PK Power(dBm)	limit(dBm)	Result
NVNT	ANT1	802.11a	5180.00	-4.18	24	Pass
NVNT	ANT1	802.11a	5200.00	-3.31	24	Pass
NVNT	ANT1	802.11a	5240.00	-3.79	24	Pass
NVNT	ANT1	802.11n(HT20)	5180.00	-4.30	24	Pass
NVNT	ANT1	802.11n(HT20)	5200.00	-3.21	24	Pass
NVNT	ANT1	802.11n(HT20)	5240.00	-3.63	24	Pass

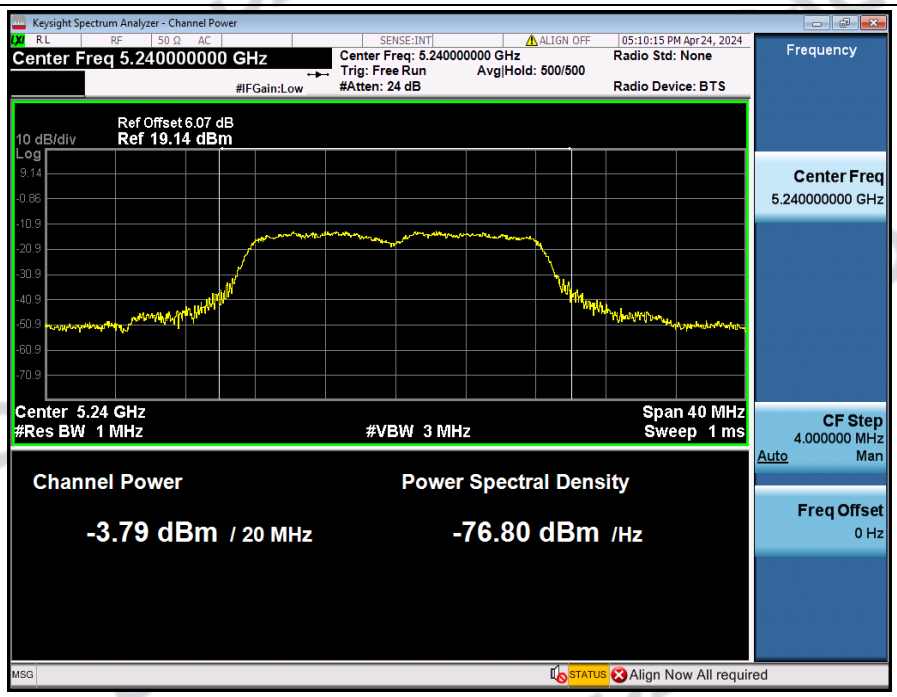
Maximum_Conducted_Output_Power_NVNT_ANT1_802_11a_5180_20M



Maximum_Conducted_Output_Power_NVNT_ANT1_802_11a_5200_20M

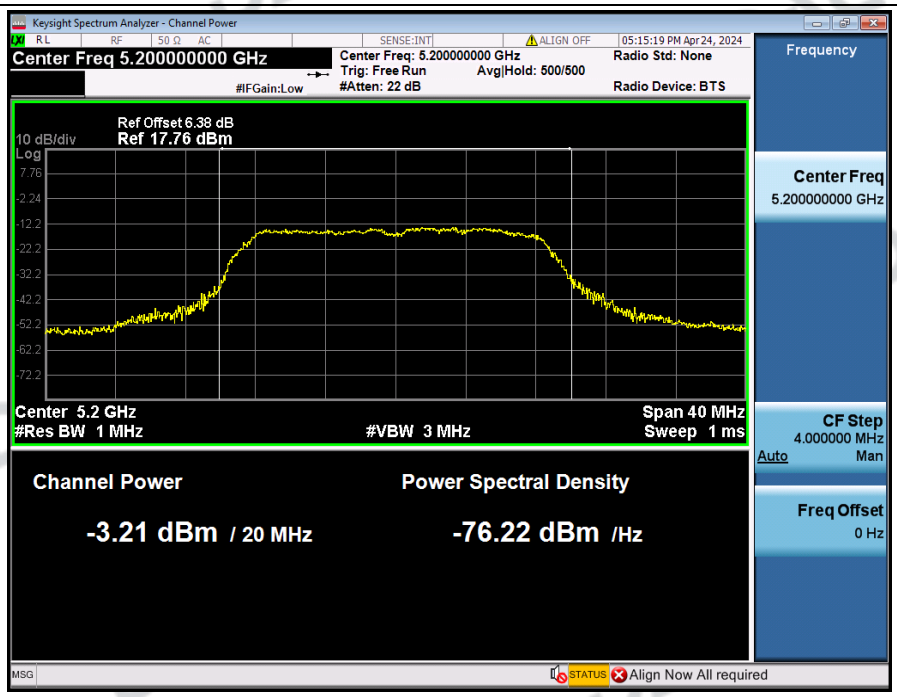


Maximum_Conducted_Output_Power_NVNT_ANT1_802_11a_5240_20M

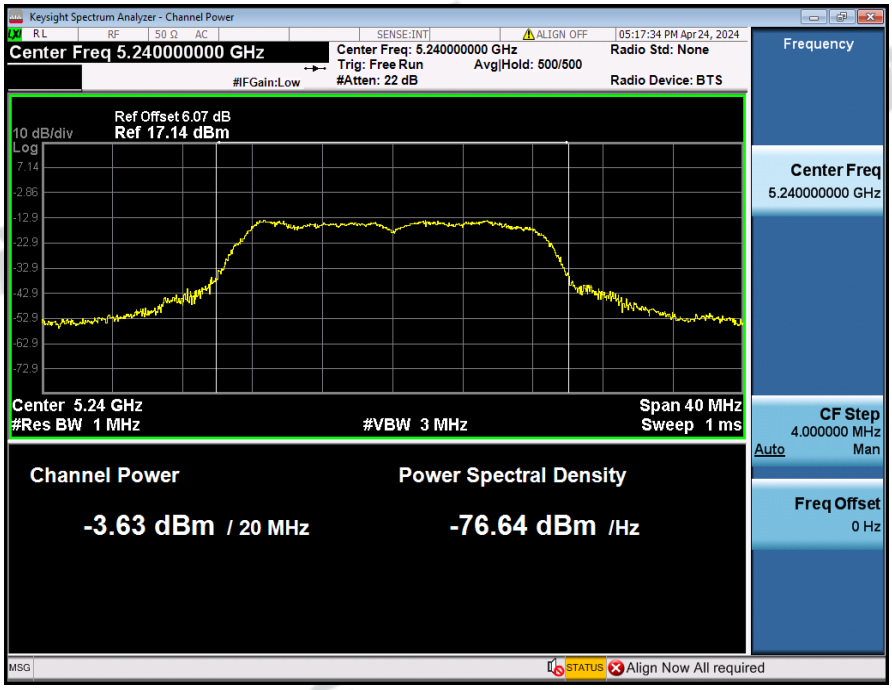


Maximum_Conducted_Output_Power_NVNT_ANT1_802_11n(HT20)_5180_20M

Maximum_Conducted_Output_Power_NVNT_ANT1_802_11n(HT20)_5200_20M



Maximum_Conducted_Output_Power_NVNT_ANT1_802_11n(HT20)_5240_20M

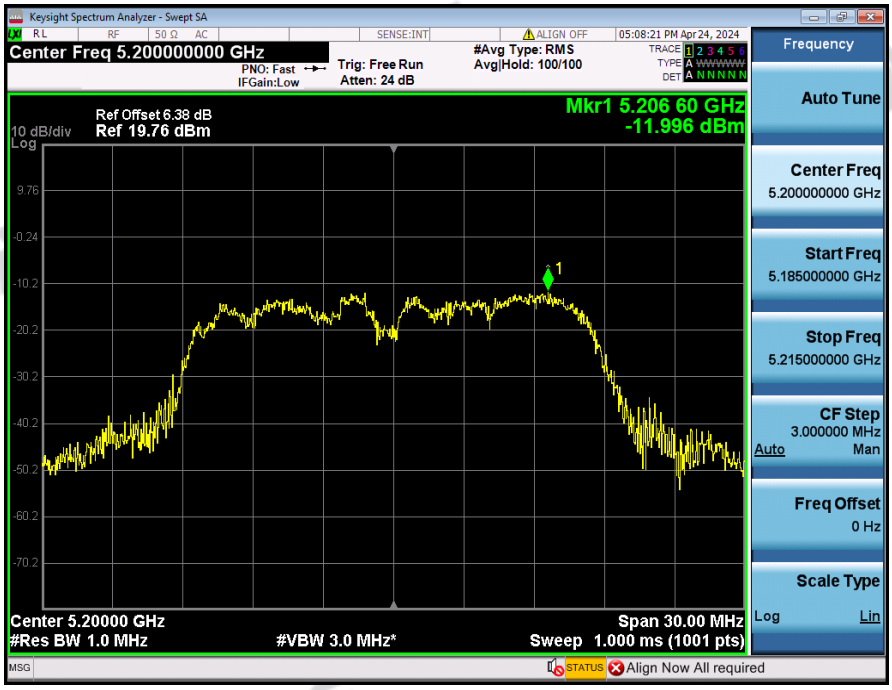

Keysight Spectrum Analyzer - Channel Power
Center Freq 5.240000000 GHz
Center Freq: 5.240000000 GHz
Trig: Free Run
Avg|Hold: 500/500
#Atten: 22 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
05:17:34 PM Apr 24, 2024
Frequency
Ref Offset 6.07 dB
10 dB/div
Ref 17.14 dBm
Log
Center Freq
5.240000000 GHz
Center 5.24 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 40 MHz
Sweep 1 ms
CF Step
4.000000 MHz
Auto
Man
Channel Power
-3.63 dBm / 20 MHz
Power Spectral Density
-76.64 dBm /Hz
Freq Offset
0 Hz
Align Now All required

3. Power Spectral Density

Condition	Antenna	Modulation	Frequency (MHz)	PSD(dBm/MHz)	limit(dBm)	Result
NVNT	ANT1	802.11a	5180.00	-13.03	11	Pass
NVNT	ANT1	802.11a	5200.00	-12.00	11	Pass
NVNT	ANT1	802.11a	5240.00	-12.37	11	Pass
NVNT	ANT1	802.11n(HT20)	5180.00	-12.82	11	Pass
NVNT	ANT1	802.11n(HT20)	5200.00	-12.35	11	Pass
NVNT	ANT1	802.11n(HT20)	5240.00	-12.63	11	Pass

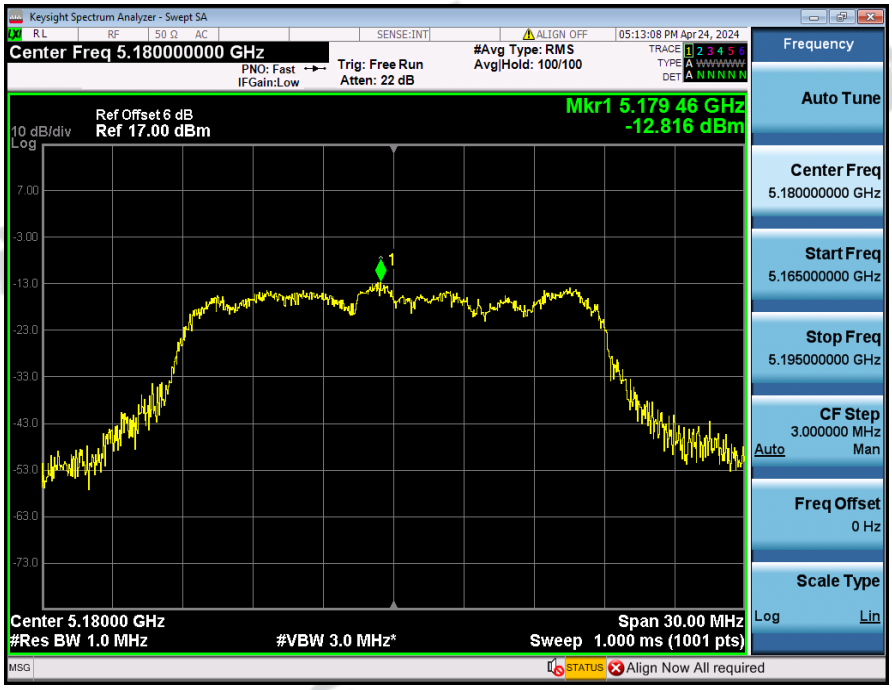
Power_Spectral_Density_NVNT_ANT1_802_11a_5180

Power_Spectral_Density_NVNT_ANT1_802_11a_5200

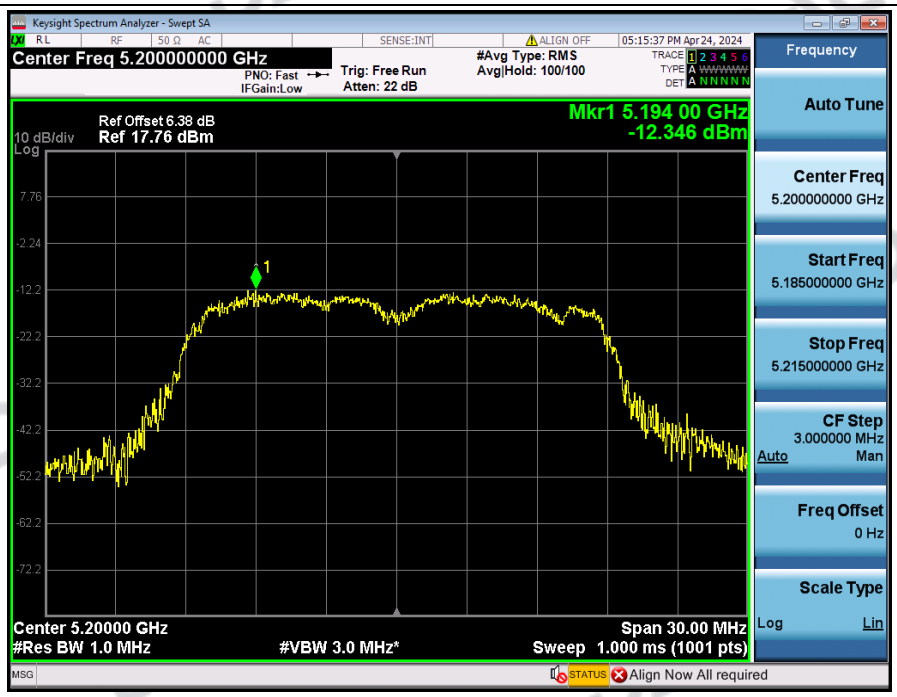


Power_Spectral_Density_NVNT_ANT1_802_11a_5240

Power_Spectral_Density_NVNT_ANT1_802_11n(HT20)_5180



Power_Spectral_Density_NVNT_ANT1_802_11n(HT20)_5200



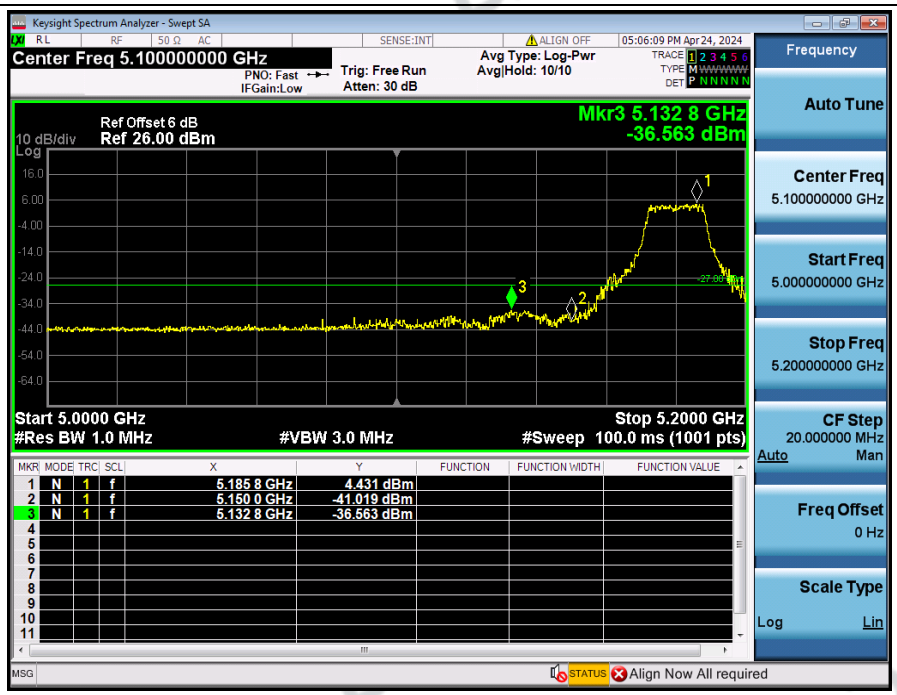
Power_Spectral_Density_NVNT_ANT1_802_11n(HT20)_5240

Keysight Spectrum Analyzer - Swept SA
Center Freq 5.240000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 28 dB
#Avg Type: RMS
Avg|Hold: 100/100
05:17:53 PM Apr 24, 2024
Ref Offset 6.07 dB
10 dB/div
Ref 23.14 dBm
Log
Mkr1 5.238 53 GHz
-12.625 dBm
Center 5.24000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Span 30.00 MHz
Sweep 1.000 ms (1001 pts)
Frequency
Auto Tune
Center Freq
5.240000000 GHz
Start Freq
5.225000000 GHz
Stop Freq
5.255000000 GHz
CF Step
3.000000 MHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin
Align Now All required

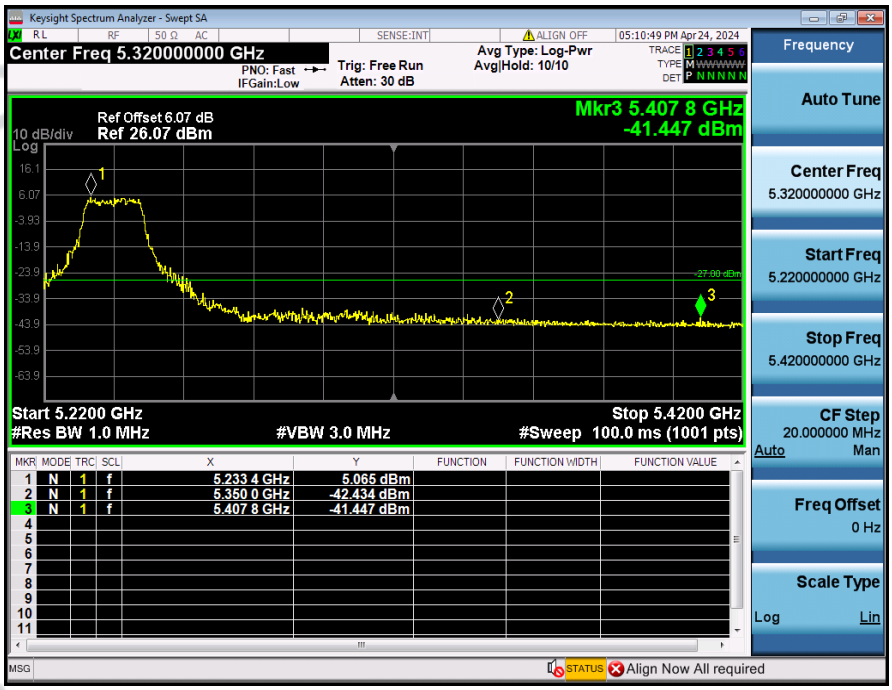
4. Bandedge

Condition	Antenna	Modulation	TX_Frequency (MHz)	Max. Mark Frequency(MHz)	Spurious level(dBm)	limit(dBm)	Result
NVNT	ANT1	802.11a	5180.00	5132.80	-36.56	-27	Pass
NVNT	ANT1	802.11a	5240.00	5407.80	-41.45	-27	Pass
NVNT	ANT1	802.11n(HT20)	5180.00	5132.60	-37.61	-27	Pass
NVNT	ANT1	802.11n(HT20)	5240.00	5356.20	-41.26	-27	Pass

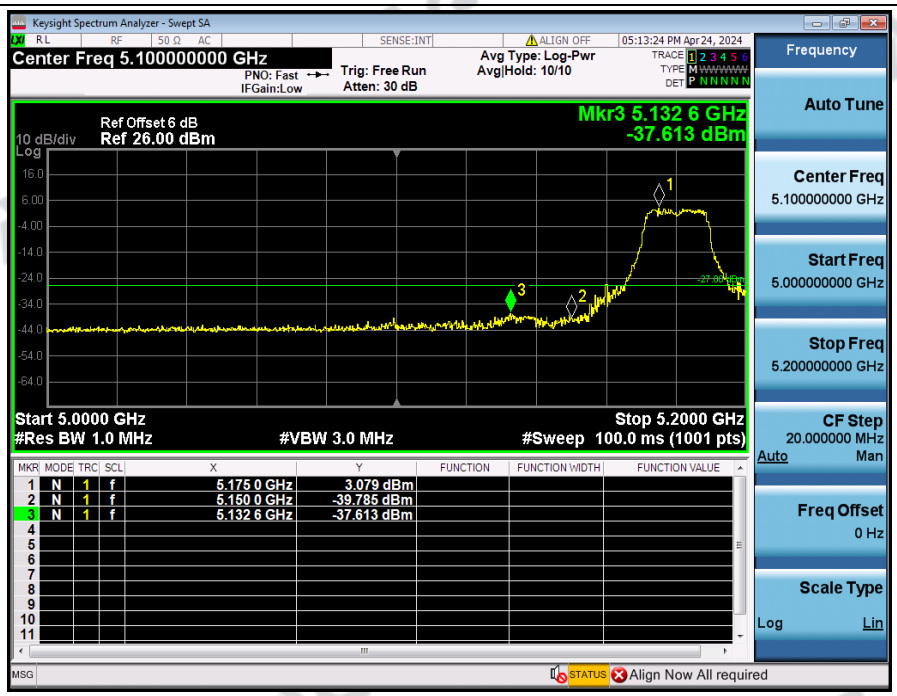
Bandedge_NVNT_ANT1_802_11a_5180



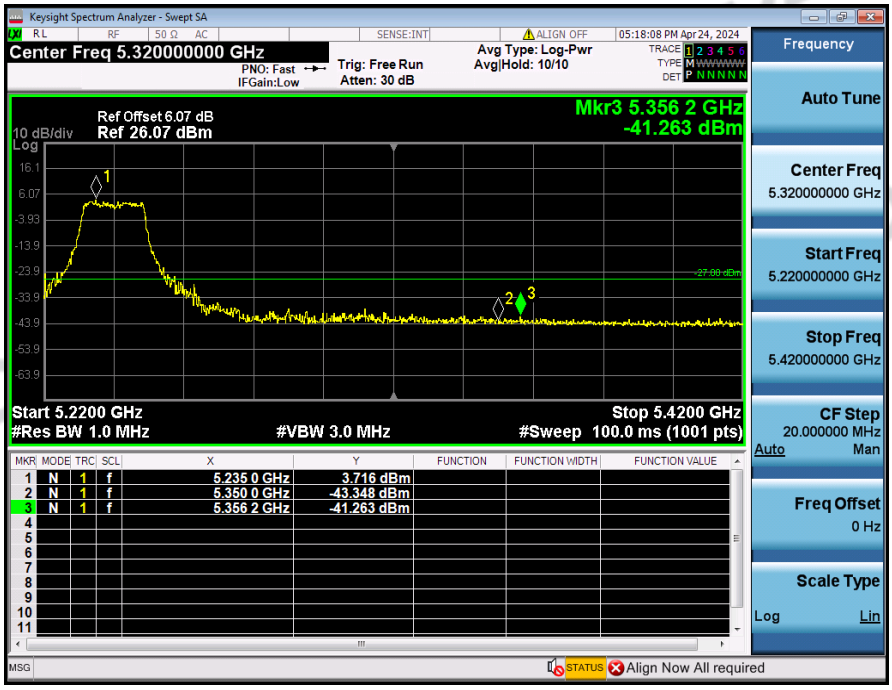
Bandedge_NVNT_ANT1_802_11a_5240



Bandedge_NVNT_ANT1_802_11n(HT20)_5180



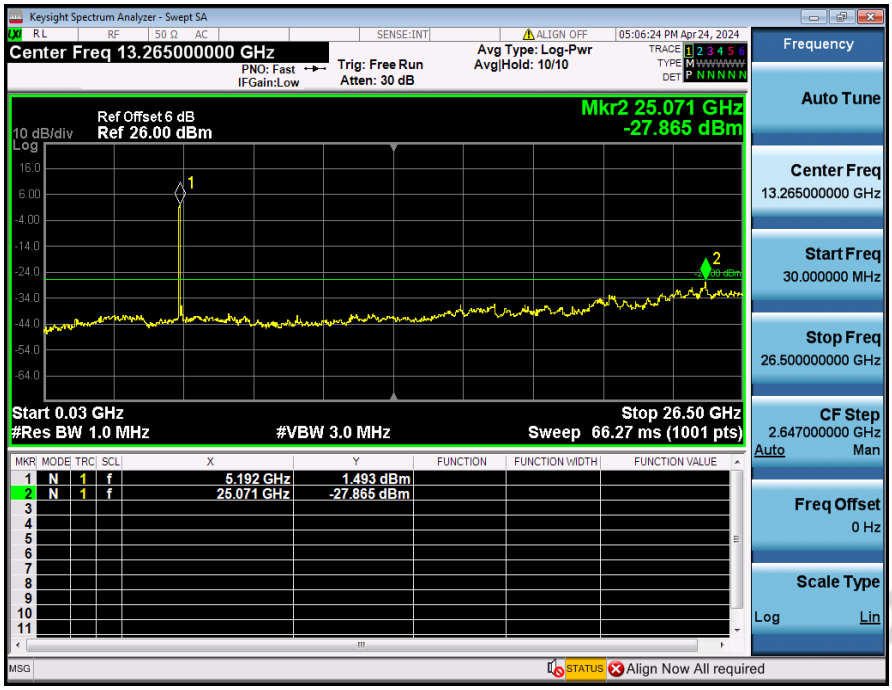
Bandedge_NVNT_ANT1_802_11n(HT20)_5240



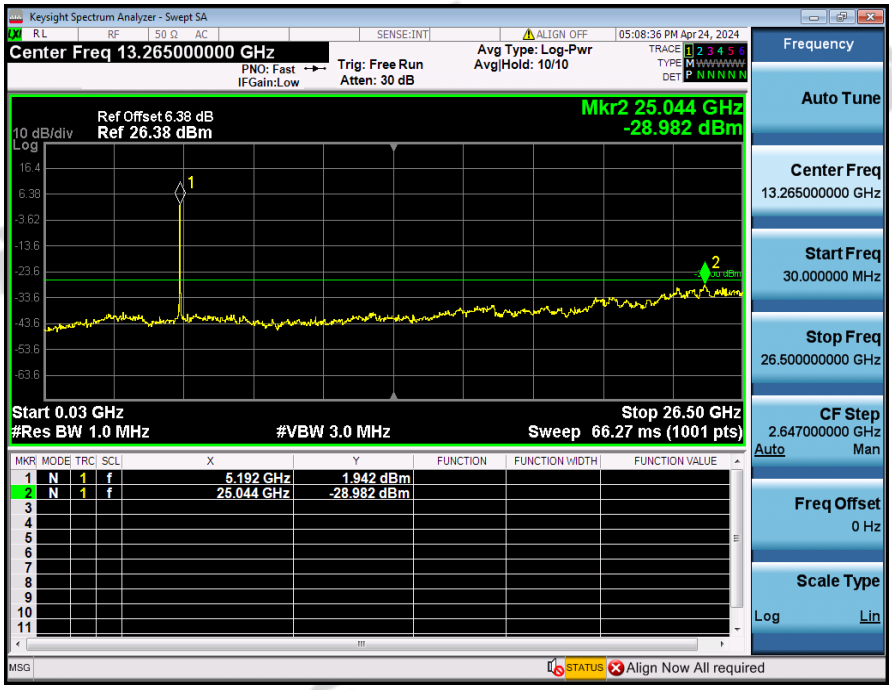
5. Spurious Emission

Condition	Antenna	Modulation	TX_Frequency (MHz)	Max. Mark Frequency(MHz)	Spurious level(dBm)	limit(dBm)	Result
NVNT	ANT1	802.11a	5180.00	25070.62	-27.87	-27	Pass
NVNT	ANT1	802.11a	5200.00	25044.15	-28.98	-27	Pass
NVNT	ANT1	802.11a	5240.00	25044.15	-29.78	-27	Pass
NVNT	ANT1	802.11n(HT20)	5180.00	25044.15	-29.47	-27	Pass
NVNT	ANT1	802.11n(HT20)	5200.00	25070.62	-28.87	-27	Pass
NVNT	ANT1	802.11n(HT20)	5240.00	25097.09	-29.55	-27	Pass

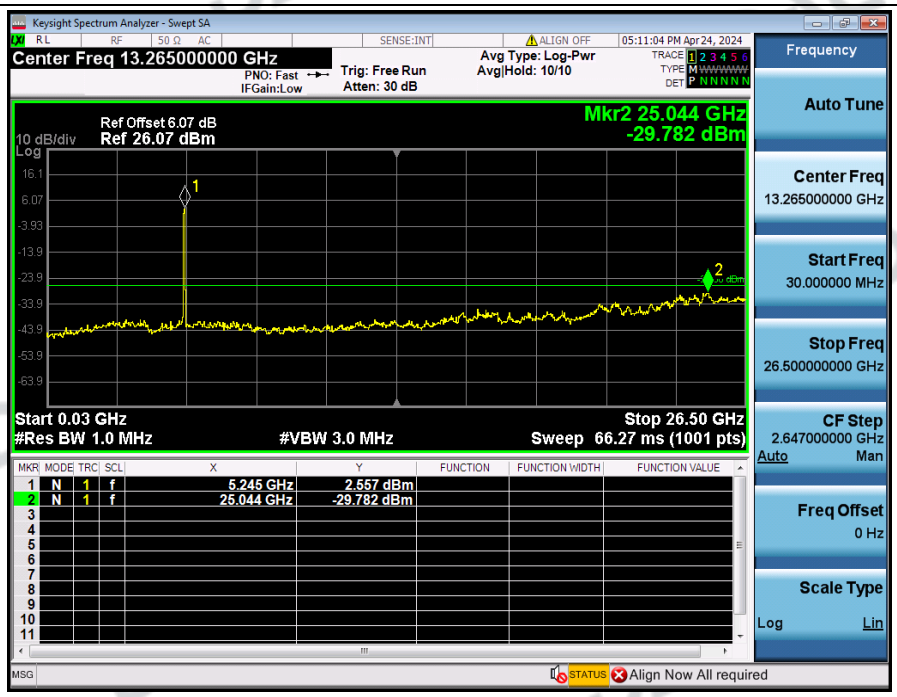
Spurious_Emission_NVNT_ANT1_802_11a_5180_20M



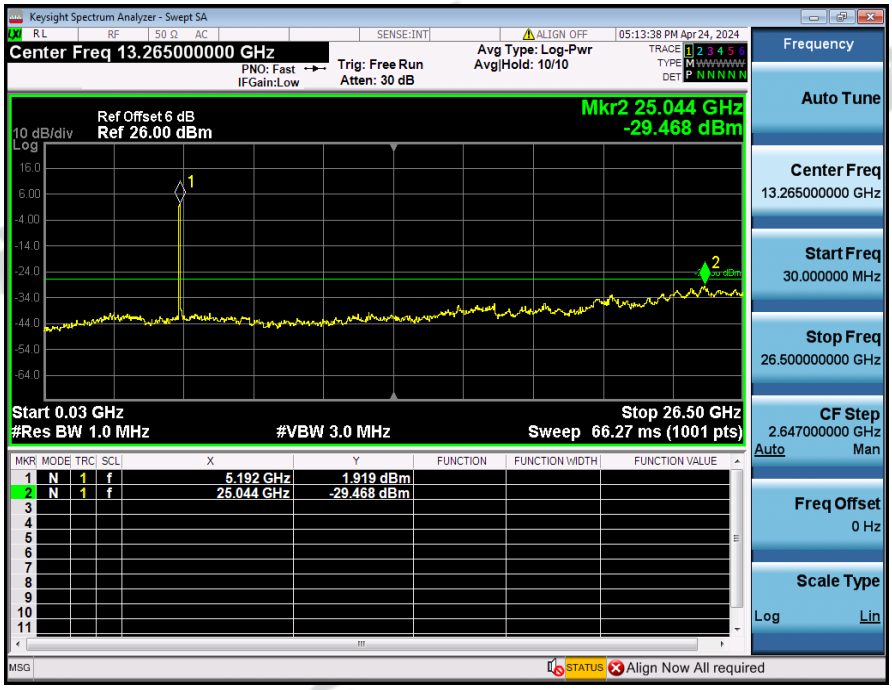
Spurious_Emission_NVNT_ANT1_802_11a_5200_20M



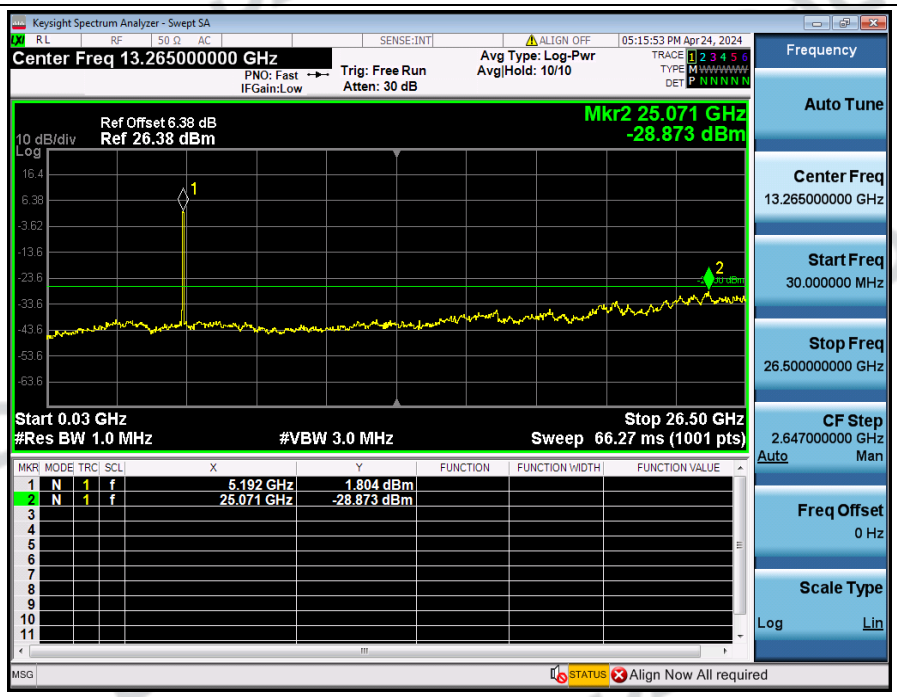
Spurious_Emission_NVNT_ANT1_802_11a_5240_20M



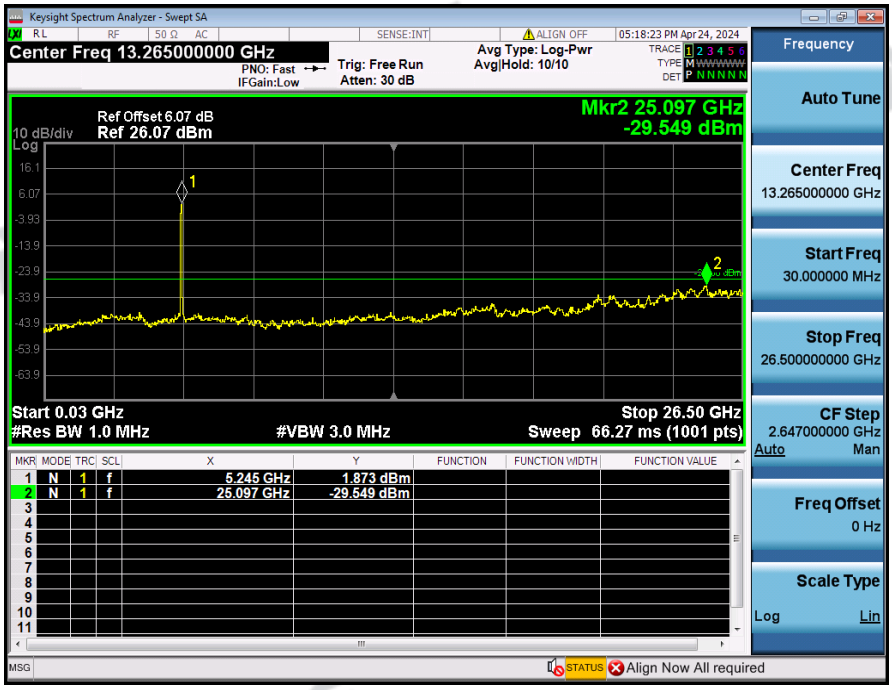
Spurious_Emission_NVNT_ANT1_802_11n(HT20)_5180_20M



Spurious_Emission_NVNT_ANT1_802_11n(HT20)_5200_20M



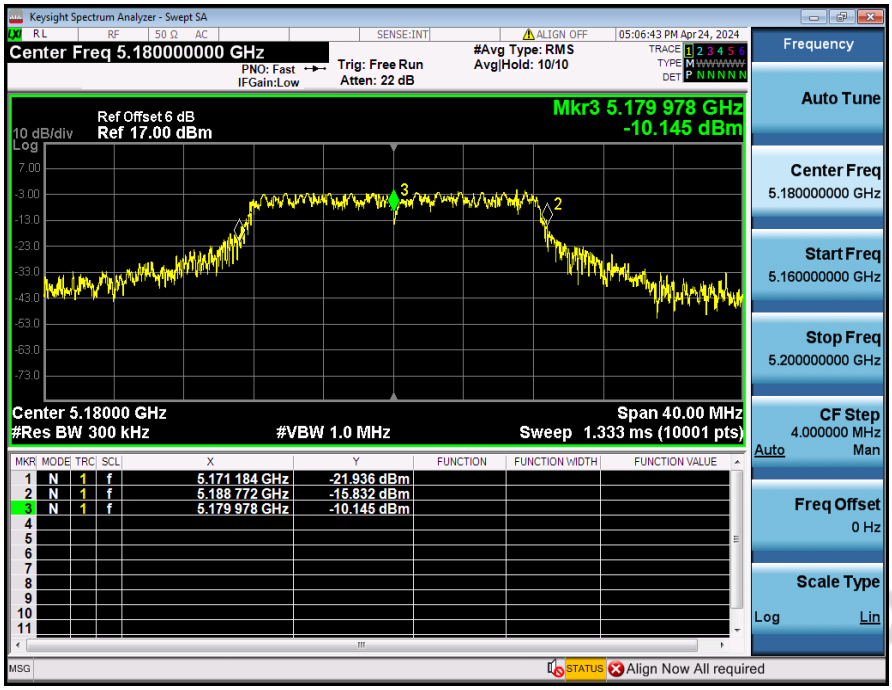
Spurious_Emission_NVNT_ANT1_802_11n(HT20)_5240_20M


Keysight Spectrum Analyzer - Swept SA
Center Freq 13.265000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
05:18:23 PM Apr 24, 2024
Ref Offset 6.07 dB
10 dB/div
Ref 26.07 dBm
Log
Mkr2 25.097 GHz
-29.549 dBm
Start 0.03 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 26.50 GHz
Sweep 66.27 ms (1001 pts)
1 N 1 f 5.245 GHz 1.873 dBm
2 N 1 f 25.097 GHz -29.549 dBm
Frequency
Auto Tune
Center Freq
13.265000000 GHz
Start Freq
30.000000 MHz
Stop Freq
26.500000000 GHz
CF Step
2.647000000 GHz
Auto Man
Freq Offset
0 Hz
Scale Type
Log Lin
Align Now All required

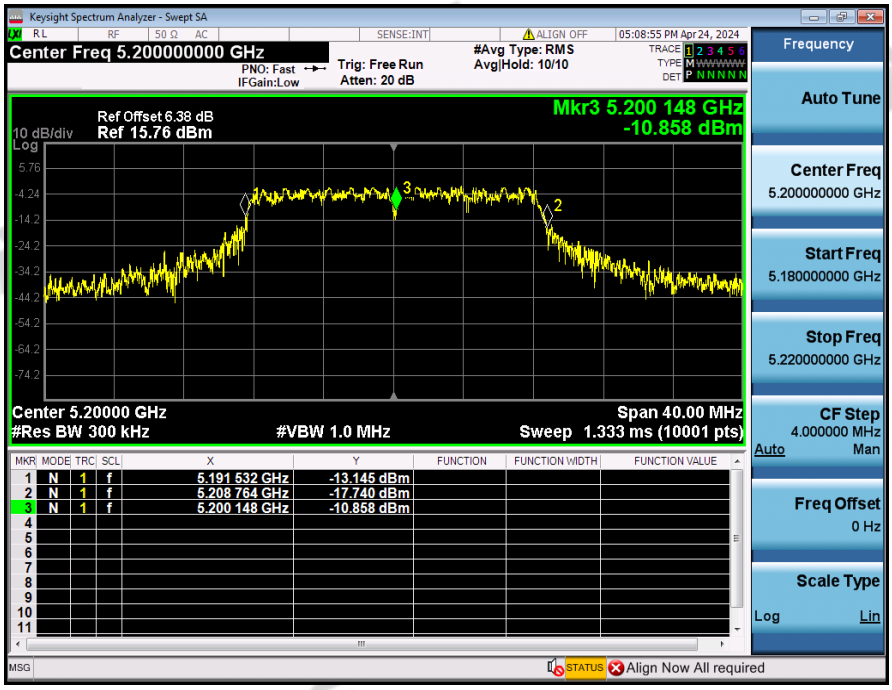
6. Frequency Stability

Condition	Antenna	Modulation	Frequency (MHz)	Fc(MHz)	Fl(MHz)	Fh(MHz)	Limit(MHz)	Result
NVNT	ANT1	802.11a	5180.00	5179.978	5171.184	5188.772	5150~5250	Pass
NVNT	ANT1	802.11a	5200.00	5200.148	5191.532	5208.764	5150~5250	Pass
NVNT	ANT1	802.11a	5240.00	5240.114	5231.476	5248.752	5150~5250	Pass
NVNT	ANT1	802.11n(HT20)	5180.00	5180.048	5170.920	5189.176	5150~5250	Pass
NVNT	ANT1	802.11n(HT20)	5200.00	5200.014	5191.004	5209.024	5150~5250	Pass
NVNT	ANT1	802.11n(HT20)	5240.00	5240.008	5230.944	5249.072	5150~5250	Pass

Frequency_Stability_NVNT_ANT1_802_11a_5180

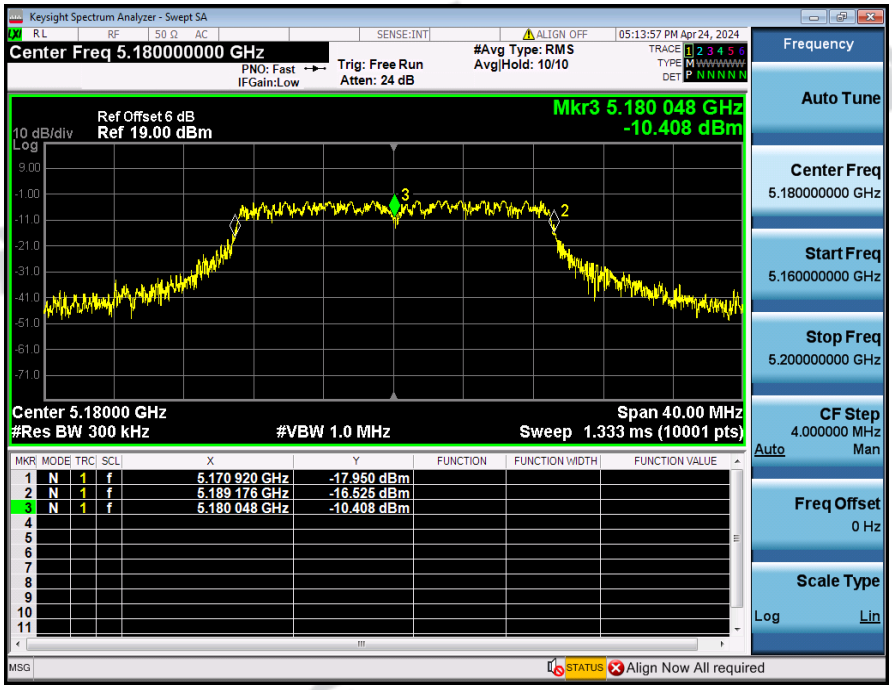


Frequency_Stability_NVNT_ANT1_802_11a_5200

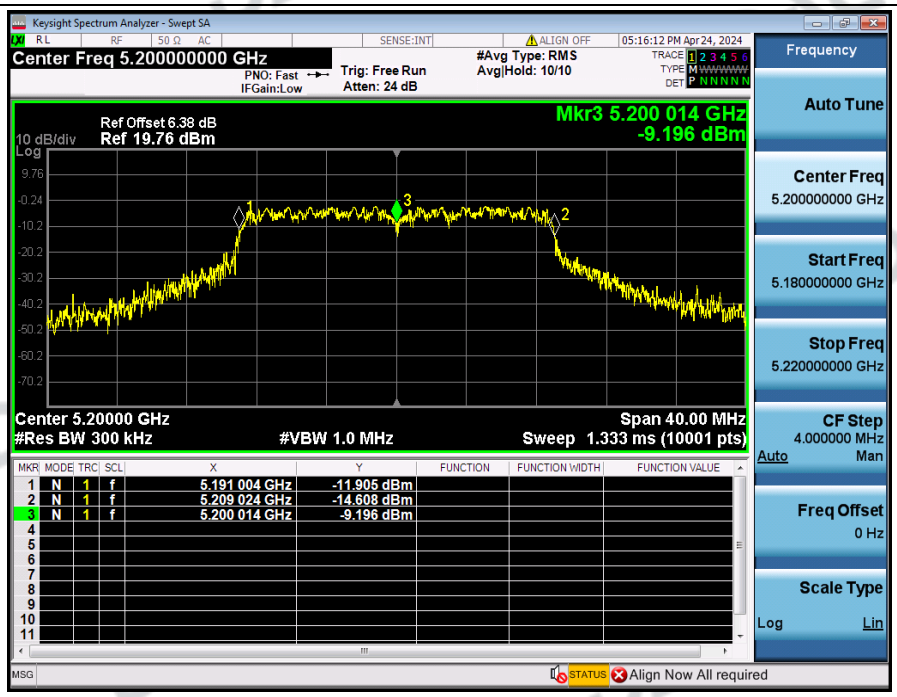


Frequency_Stability_NVNT_ANT1_802_11a_5240

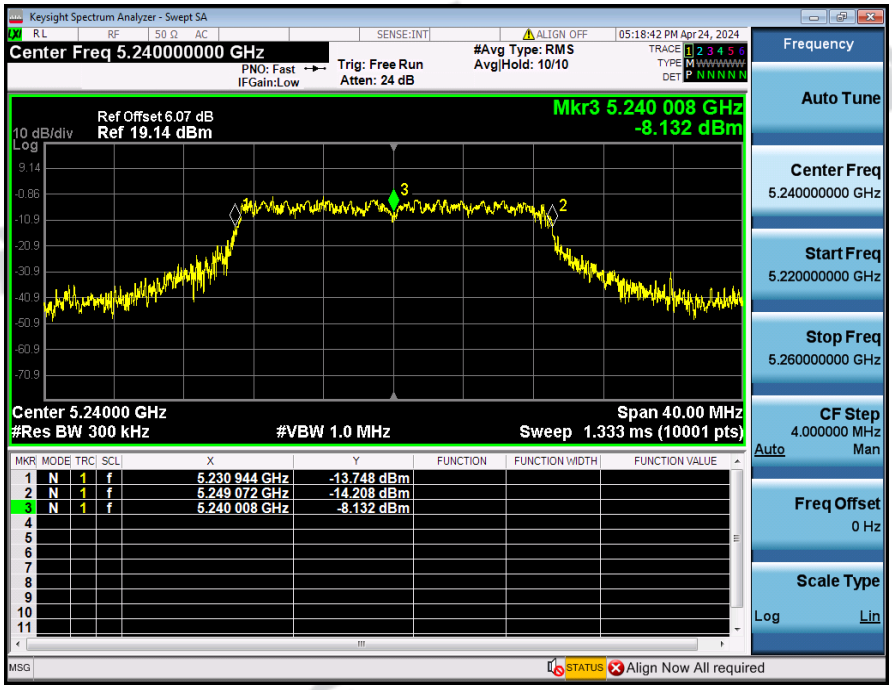
Frequency_Stability_NVNT_ANT1_802_11n(HT20)_5180



Frequency_Stability_NVNT_ANT1_802_11n(HT20)_5200



Frequency_Stability_NVNT_ANT1_802_11n(HT20)_5240


Keysight Spectrum Analyzer - Swept SA
Center Freq 5.240000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 24 dB
#Avg Type: RMS
Avg|Hold: 10/10
05:18:42 PM Apr 24, 2024
Ref Offset 6.07 dB
10 dB/div
Ref 19.14 dBm
Log
Mkr3 5.240 008 GHz
-8.132 dBm
Center 5.24000 GHz
#Res BW 300 kHz
#VBW 1.0 MHz
Span 40.00 MHz
Sweep 1.333 ms (10001 pts)
1 N 1 f 5.230 944 GHz -13.748 dBm
2 N 1 f 5.249 072 GHz -14.208 dBm
3 N 1 f 5.240 008 GHz -8.132 dBm
Frequency
Auto Tune
Center Freq
5.240000000 GHz
Start Freq
5.220000000 GHz
Stop Freq
5.260000000 GHz
CF Step
4.000000 MHz
Auto Man
Freq Offset
0 Hz
Scale Type
Log Lin
Align Now All required