

RF TEST REPORT

For

FIBRAIN sp. z o.o.

Product Name: HGU

Test Model(s): HL-4BX3V-F

Report Reference No. : DACE240305009RL001

FCC ID : 2AWIZHL4BX3VF

Applicant's Name : FIBRAIN sp. z o.o.

Address : Poland, Zaczernie 190F, 36-062

Testing Laboratory : Shenzhen DACE Testing Technology Co., Ltd.

Address : 101-102 Building H5 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyao, Bao'an District, Shenzhen, Guangdong, China

Test Specification Standard : **47 CFR Part 15.247**
ANSI C63.10-2013 & KDB 558074 D01 15.247 Meas Guidance v05r02

Date of Receipt : March 11, 2024

Date of Test : March 11, 2024 to March 20, 2024

Data of Issue : March 20, 2024

Result : **Pass**

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Revision History Of Report

Version	Description	REPORT No.	Issue Date
V1.0	Original	DACE240305009RL001	March 20, 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.

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1 TEST SUMMARY

1.1 Test Standards

The tests were performed according to following standards:

47 CFR Part 15.247: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

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 15.207(a)	Pass
Occupied Bandwidth	ANSI C63.10-2013, section 11.8 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(a)(2)	Pass
Maximum Conducted Output Power	ANSI C63.10-2013, section 11.9.1 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(b)(3)	Pass
Power Spectral Density	ANSI C63.10-2013, section 11.10 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(e)	Pass
Emissions in non-restricted frequency bands	ANSI C63.10-2013 section 11.11 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(d), 15.209, 15.205	Pass
Band edge emissions (Radiated)	ANSI C63.10-2013 section 6.10 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(d), 15.209, 15.205	Pass
Emissions in frequency bands (below 1GHz)	ANSI C63.10-2013 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(d), 15.209, 15.205	Pass
Emissions in frequency bands (above 1GHz)	ANSI C63.10-2013 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(d), 15.209, 15.205	Pass

Note: 1.N/A -this device(EUT) is not applicable to this testing item

2. RF-conducted test results including cable loss.

2 GENERAL INFORMATION

2.1 Client Information

Applicant's Name : FIBRAIN sp. z o.o.
Address : Poland, Zaczernie 190F, 36-062

Manufacturer : FIBRAIN sp. z o.o.
Address : Poland, Zaczernie 190F, 36-062

2.2 Description of Device (EUT)

Product Name:	HGU
Sample No.:	Q240301024-1
Model/Type reference:	HL-4BX3V-F
Series Model:	HLE-4BX3V-F
Trade Mark:	HALNY
Product Description:	HGU
Power Supply:	DC12.0V-1.5A from adapter
Operation Frequency:	802.11b/g/n(HT20)/ax(HE20): 2412MHz to 2462MHz; 802.11n(HT40)/a(HE40): 2422MHz to 2452MHz
Number of Channels:	802.11b/g/n(HT20)ax(HE20): 11 Channels; 802.11n(HT40)/ax(HE40):: 7 Channels
Modulation Type:	802.11b: DSSS(CCK, DQPSK, DBPSK); 802.11g: OFDM(BPSK, QPSK, 16QAM, 64QAM); 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ax: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
Antenna Type:	FPC ANTENNA
Antenna Gain:	ANT1: 3.53dBi ; ANT2: 3.9dBi MIMO: 3.72dBi
Hardware Version:	94V-0
Software Version:	SecureCRT

Note: According to KDB662911 D01 Multiple Transmitter Output v02r01, the MIMO antenna is increased to Direct gain= $10 \log [(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10}) / N_{ANT}]$ dBi=3.72dBi< 6dBi.

Operation Frequency each of channel

Channel	Frequency	Channel	Frequency
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz	/	/

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:

802.11b/g/n(HT20)	
Test channel	Frequency (MHz)
Lowest channel	2412MHz
Middle channel	2437MHz
Highest channel	2462MHz

802.11n(HT40)	
Test channel	Frequency (MHz)
Lowest channel	2422MHz
Middle channel	2437MHz
Highest channel	2452MHz

2.3 Description of Test Modes

No	Title	Description
TM1	802.11b mode	Keep the EUT in continuously transmitting mode with 802.11b modulation type. All bandwidth and data rates has been tested and found the data rate @ 11Mbps is the worst case. Only the data of worst case is recorded in the report.
TM2	802.11g mode	Keep the EUT in continuously transmitting mode with 802.11g modulation type. All bandwidth and 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.
TM3	802.11n(HT20) mode	Keep the EUT in continuously transmitting mode with 802.11 n(HT20) 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.
TM4	802.11n(HT40) mode	Keep the EUT in continuously transmitting mode with 802.11 n(H40) 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.
TM5	802.11ax(HE20) mode	Keep the EUT in continuously transmitting mode with 802.11 ax(HE20) modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS11 is the worst case. Only the data of worst case is recorded in the report.
TM6	802.11ax(HE40) mode	Keep the EUT in continuously transmitting mode with 802.11 ax(HE40) modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS11 is the worst case. Only the data of worst case is recorded in the report.

Description

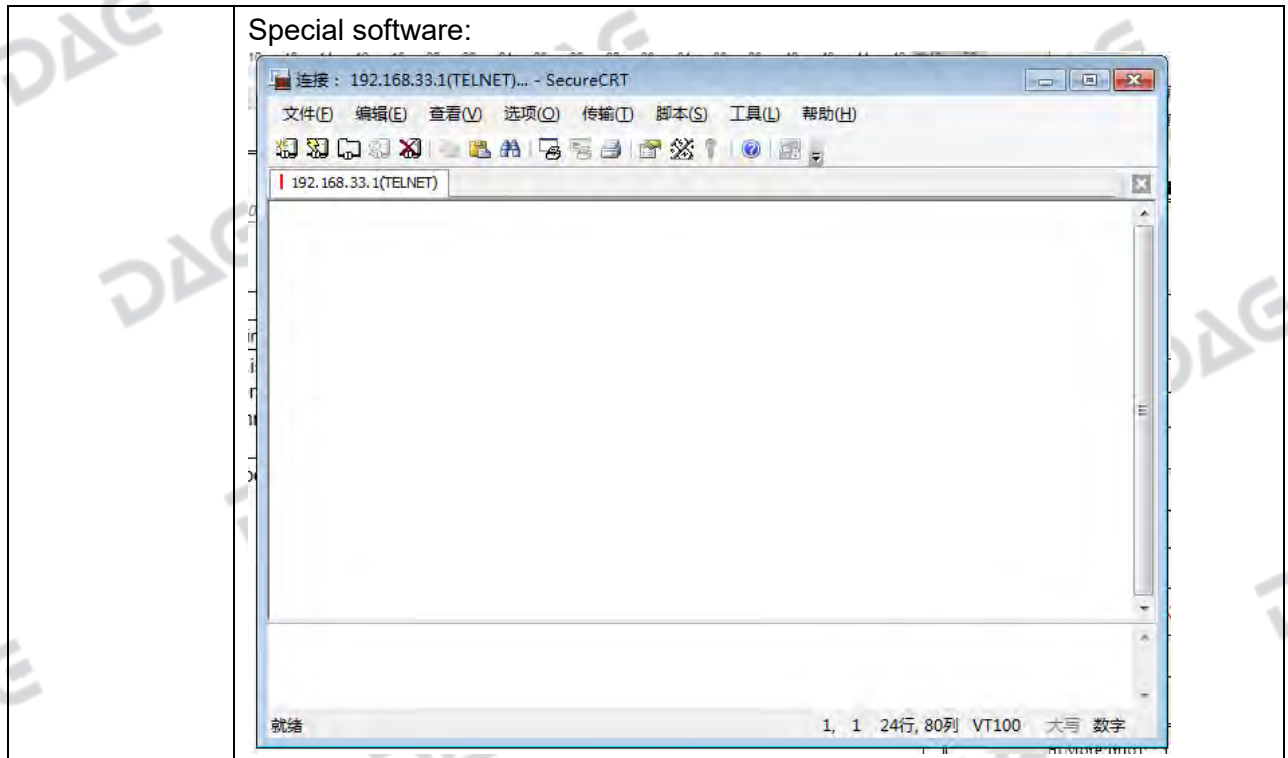
Eut uses the maximum duty cycle (>98%) for continuous emission

Special software is used.

Through engineering command into the engineering mode.

engineering command: `***#3646633#**#`

Other method:



2.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Description	Manufacturer	Model No.	Remark	Certification
1	ADAPTER	SHENZHEN OROSUN TECHNOLOGY CO.,LTD	GS-P120150E664	Provide by client	SDOC
2	PC	Lenovo	Air 14 Plus	Provide by lab	SDOC

2.5 Equipments Used During The Test

Conducted Emission at AC power line					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Electric Network	SCHWARZ BECK	CAT5 8158	CAT5 8158#207	/	/
Cable	SCHWARZ BECK	/	/	2023-12-27	2024-12-26
Pulse Limiter	SCHWARZ BECK	VTSD 9561-F Pulse limiter 10dB Ateennator	561-G071	2023-12-12	2024-12-11
50ΩCoaxial Switch	Anritsu	MP59B	M20531	/	/
Test Receiver	Rohde & Schwarz	ESPI TEST RECEIVER	ID:1164.6607K0 3-102109-MH	2023-06-13	2024-06-12
L.I.S.N	R&S	ESH3-Z5	831.5518.52	2023-12-12	2024-12-11

Occupied Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in non-restricted frequency bands					
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	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

Band edge emissions (Radiated) Emissions in frequency bands (below 1GHz) Emissions in frequency bands (above 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	2024-02-19	2025-02-18
Cable(HF)#1	Schwarzbeck	SYV-50-3-1	/	2024-02-19	2025-02-18
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
Occupied Bandwidth	±3.63%
RF conducted power	±0.733dB
RF power density	±0.234%
Conducted Spurious emissions	±1.98dB
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 Authorizations

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

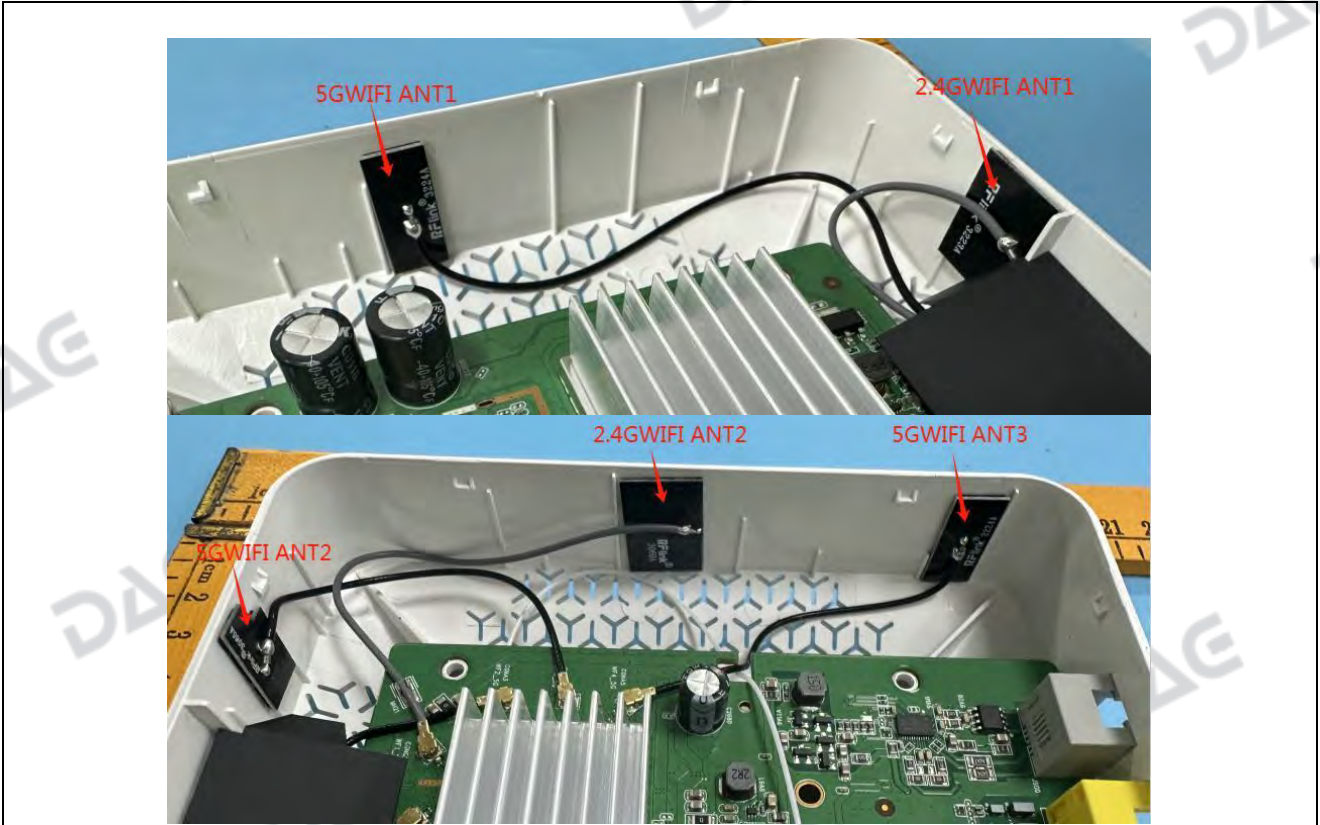
- (1) The test report reference to the report template version v0.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) 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

<p>Test Requirement:</p>	<p>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.</p>
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3.1.1 Conclusion:



4 Radio Spectrum Matter Test Results (RF)

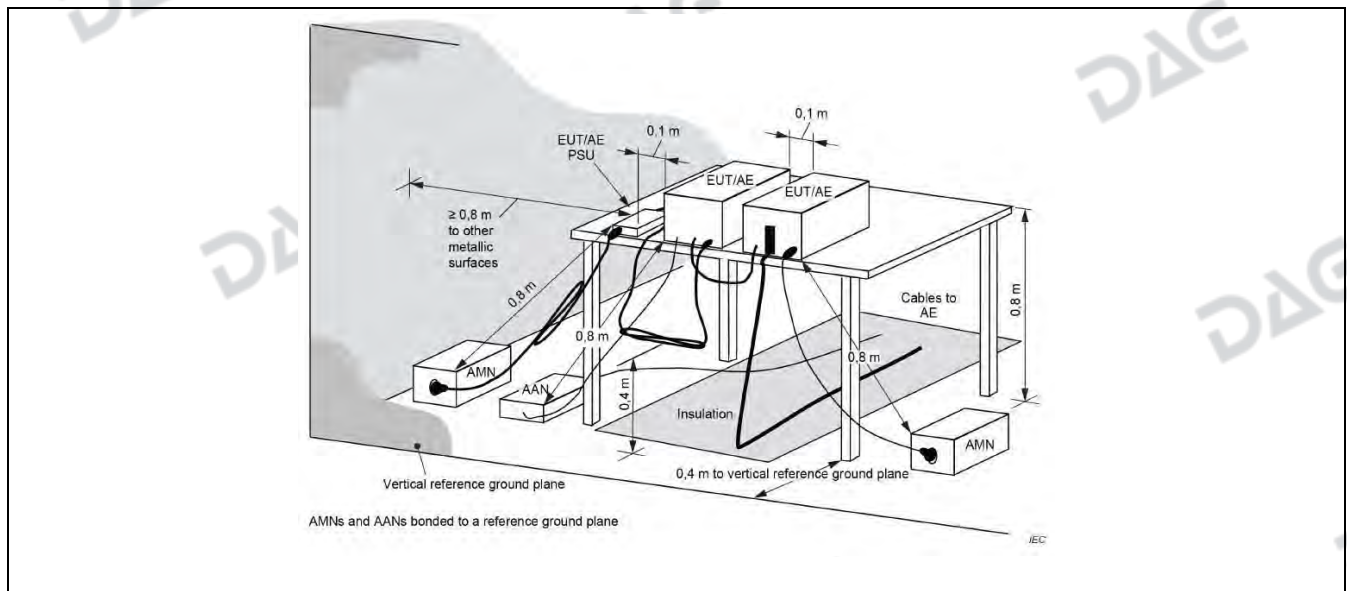
4.1 Conducted Emission at AC power line

Test Requirement:	Refer to 47 CFR 15.207(a), Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).		
Test Limit:	Frequency of emission (MHz)	Conducted limit (dB μ V)	
		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		
Procedure:	Refer to ANSI C63.10-2013 section 6.2, standard test method for ac power-line conducted emissions from unlicensed wireless devices		

4.1.1 E.U.T. Operation:

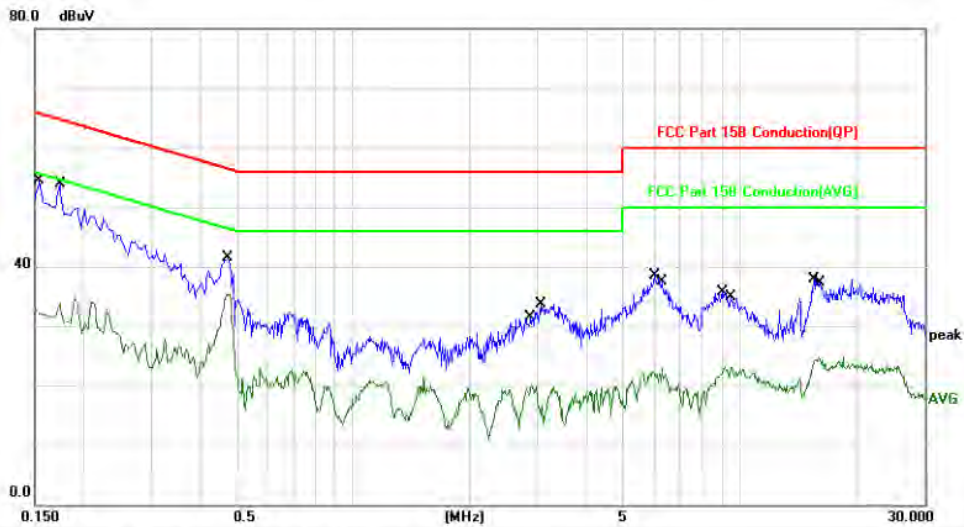
Operating Environment:					
Temperature:	23.9 °C	Humidity:	52.1 %	Atmospheric Pressure:	102 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.1.2 Test Setup Diagram:



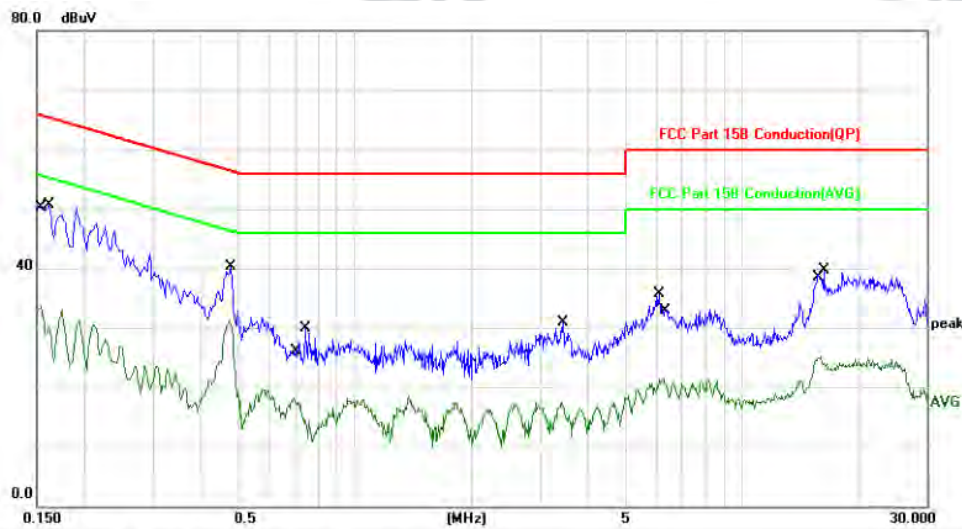
4.1.3 Test Data:

TM1 / Line: Line / Band: 2400-2483.5 MHz / BW: 20 / CH: L



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1539	44.40	10.05	54.45	65.78	-11.33	QP	
2		0.1740	23.85	10.03	33.88	54.76	-20.88	AVG	
3		0.4740	31.45	9.98	41.43	56.44	-15.01	QP	
4	*	0.4780	25.42	9.98	35.40	46.37	-10.97	AVG	
5		2.8940	10.09	10.03	20.12	46.00	-25.88	AVG	
6		3.0660	23.75	10.04	33.79	56.00	-22.21	QP	
7		6.0020	28.24	10.19	38.43	60.00	-21.57	QP	
8		6.2540	12.61	10.21	22.82	50.00	-27.18	AVG	
9		9.0060	25.36	10.36	35.72	60.00	-24.28	QP	
10		9.4980	12.64	10.39	23.03	50.00	-26.97	AVG	
11		15.5500	27.40	10.46	37.86	60.00	-22.14	QP	
12		15.9780	14.33	10.46	24.79	50.00	-25.21	AVG	

TM1 / Line: Neutral / Band: 2400-2483.5 MHz / BW: 20 / CH: L



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1539	23.63	10.05	33.68	55.78	-22.10	AVG	
2	*	0.1620	40.72	10.03	50.75	65.36	-14.61	QP	
3		0.4740	21.27	9.98	31.25	46.44	-15.19	AVG	
4		0.4780	30.28	9.98	40.26	56.37	-16.11	QP	
5		0.6940	8.42	9.96	18.38	46.00	-27.62	AVG	
6		0.7460	19.95	9.96	29.91	56.00	-26.09	QP	
7		3.4220	7.51	10.05	17.56	46.00	-28.44	AVG	
8		3.4380	20.87	10.05	30.92	56.00	-25.08	QP	
9		6.0900	25.58	10.19	35.77	60.00	-24.23	QP	
10		6.2700	11.20	10.21	21.41	50.00	-28.59	AVG	
11		16.0459	14.54	10.46	25.00	50.00	-25.00	AVG	
12		16.2700	29.20	10.46	39.66	60.00	-20.34	QP	

NOTE:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Measurement Level = Reading level + Correct Factor, Over = Measurement - Limit
4. The test results only show the worst mode or worst channel.

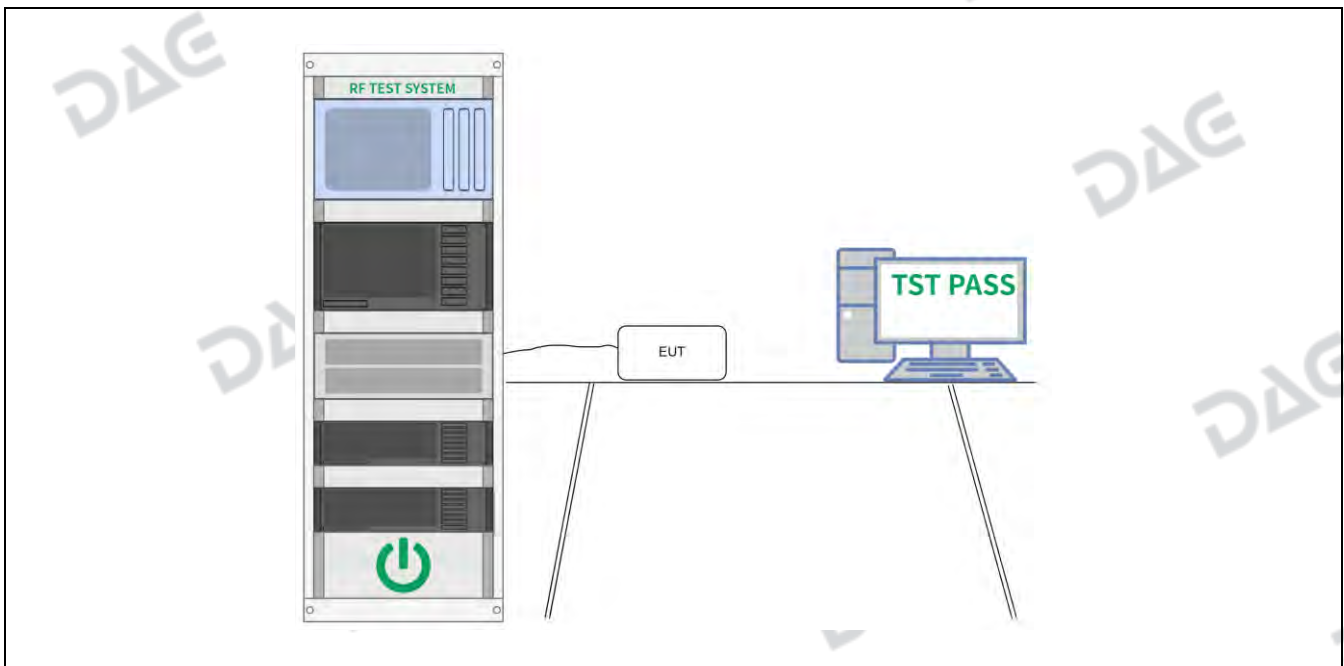
4.2 Occupied Bandwidth

Test Requirement:	47 CFR 15.247(a)(2)
Test Limit:	Refer to 47 CFR 15.247(a)(2), Systems using digital modulation techniques may operate in the 902-928 MHz, and 2400-2483.5 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.
Test Method:	ANSI C63.10-2013, section 11.8 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	<ul style="list-style-type: none"> a) Set RBW = 100 kHz. b) Set the VBW \geq [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.

4.2.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.9 °C	Humidity:	52.1 %	Atmospheric Pressure:	102 kPa
Pretest mode:	TM1, TM2, TM3, TM4, TM5, TM6				
Final test mode:	TM1, TM2, TM3, TM4, TM5, TM6				

4.2.2 Test Setup Diagram:



4.2.3 Test Data:

Please Refer to Appendix for Details.

4.3 Maximum Conducted Output Power

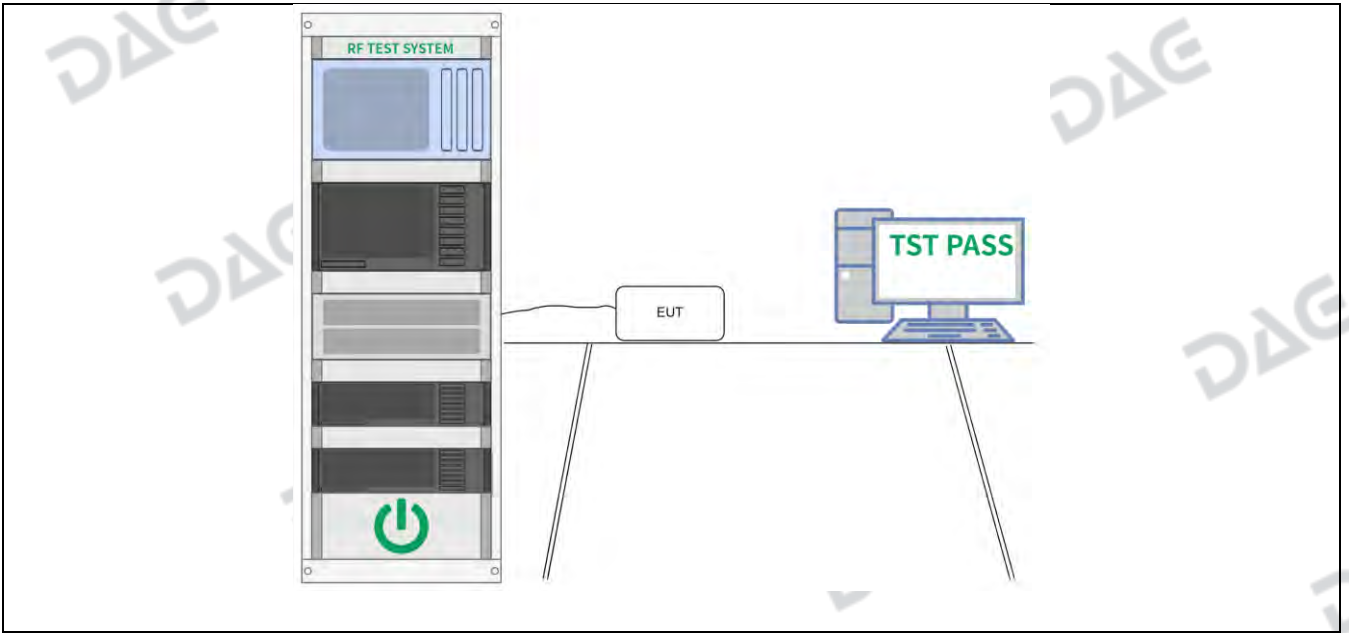
Test Requirement:	47 CFR 15.247(b)(3)
Test Limit:	Refer to 47 CFR 15.247(b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.
Test Method:	ANSI C63.10-2013, section 11.9.1 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2013, section 11.9.1 Maximum peak conducted output power Note: Per ANSI C63.10-2013, if there are two or more antnnas, the conducted powers at Core 0, Core 1,..., Core i were first measured separately, as shown in the section above(this product oly have one antenna). The measured values were then summed in linear power units then converted back to dBm. Per ANSI C63.10-2013 Section 14.4.3.2.3, the directional gain is calculated using the following formula, where GN is the gain of the nth antenna and NANT, the total number of antennas used. For correlated unequal antenna gain Directional gain = $10 \cdot \log[(10G1/20 + 10G2/20 + \dots + 10GN/20)^2 / NANT]$ dBi For completely uncorrelated unequal antenna gain Directional gain = $10 \cdot \log[(10G1/10 + 10G2/10 + \dots + 10GN/10) / NANT]$ dBi Sample Multiple antennas Calculation: Core 0 + Core 1 +...Core i. = MIMO/CDD (i is the number of antennas) (#VALUE! mW + mW) = #VALUE! mW = dBm Sample e.i.r.p. Calculation: e.i.r.p. (dBm) = Conducted Power (dBm) + Ant gain (dBi)

4.3.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.9 °C	Humidity:	52.1 %	Atmospheric Pressure:	102 kPa
Pretest mode:	TM1, TM2, TM3, TM4, TM5, TM6				
Final test mode:	TM1, TM2, TM3, TM4, TM5, TM6				

4.3.2 Test Setup Diagram:

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4.3.3 Test Data:

Please Refer to Appendix for Details.

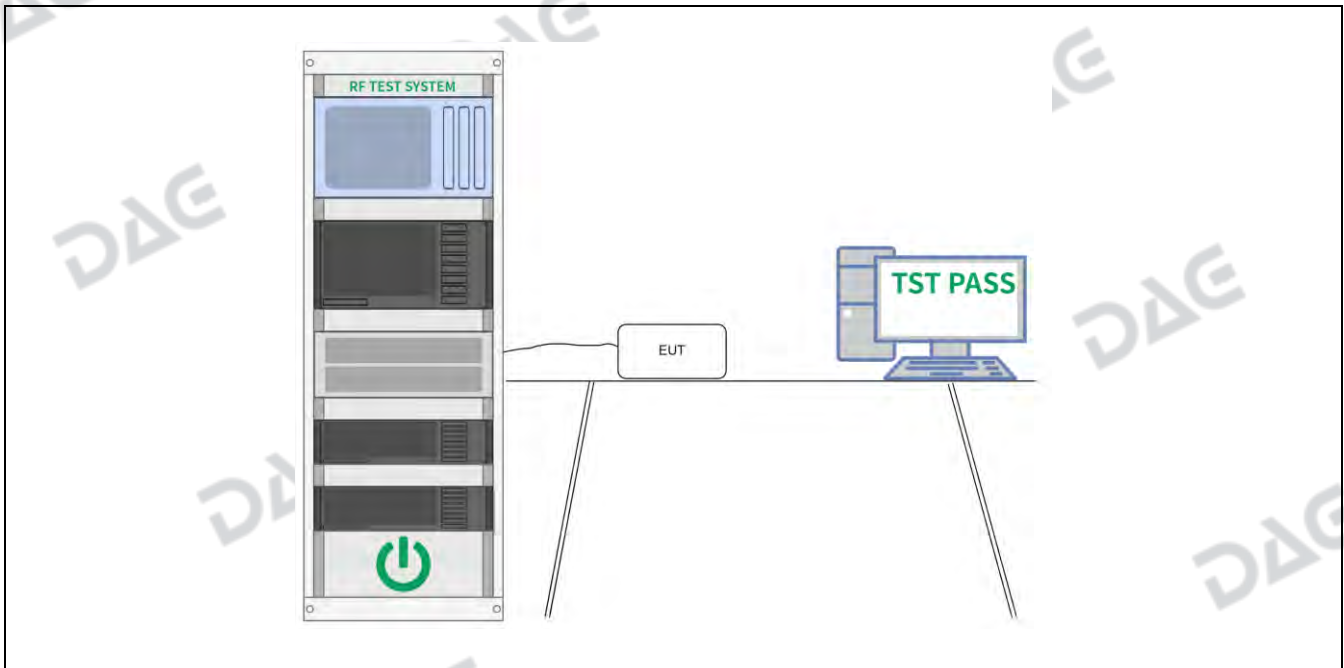
4.4 Power Spectral Density

Test Requirement:	47 CFR 15.247(e)
Test Limit:	Refer to 47 CFR 15.247(e), For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.
Test Method:	ANSI C63.10-2013, section 11.10 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2013, section 11.10, Maximum power spectral density level in the fundamental emission

4.4.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.9 °C	Humidity:	52.1 %	Atmospheric Pressure:	102 kPa
Pretest mode:	TM1, TM2, TM3, TM4, TM5, TM6				
Final test mode:	TM1, TM2, TM3, TM4, TM5, TM6				

4.4.2 Test Setup Diagram:



4.4.3 Test Data:

Please Refer to Appendix for Details.

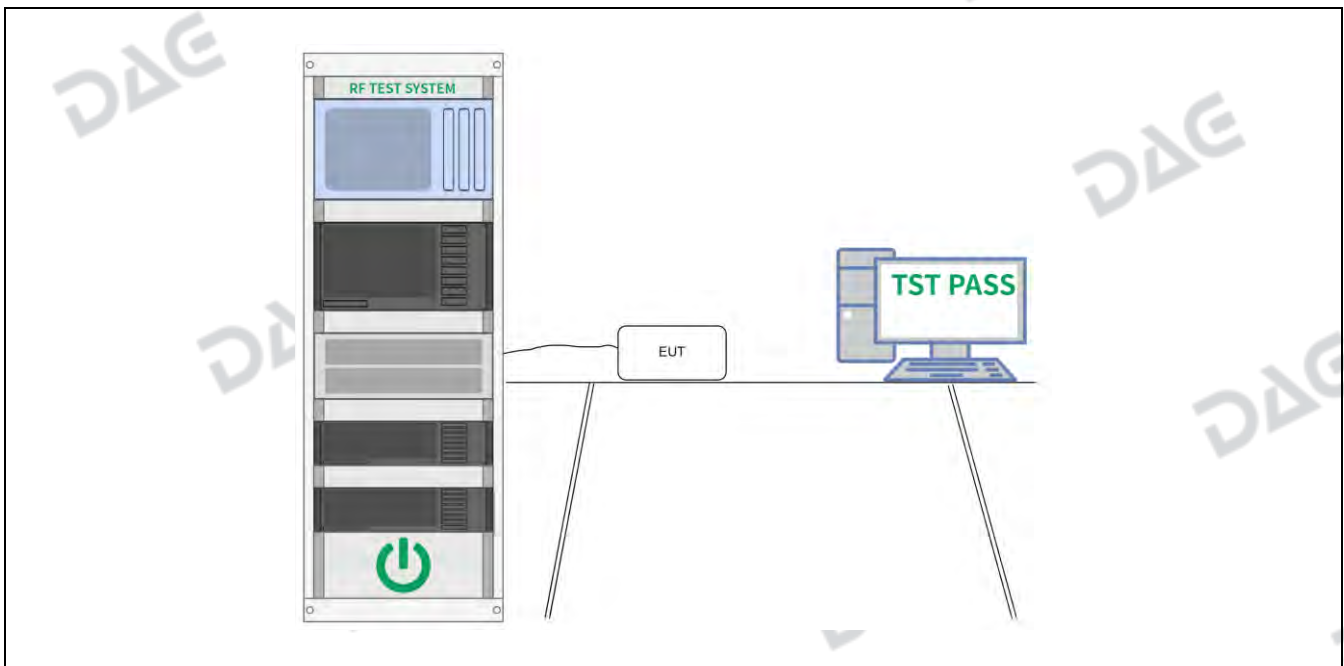
4.5 Emissions in non-restricted frequency bands

Test Requirement:	47 CFR 15.247(d), 15.209, 15.205
Test Limit:	Refer to 47 CFR 15.247(d), In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required.
Test Method:	ANSI C63.10-2013 section 11.11 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2013 Section 11.11.1, Section 11.11.2, Section 11.11.3

4.5.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.9 °C	Humidity:	52.1 %	Atmospheric Pressure:	102 kPa
Pretest mode:	TM1, TM2, TM3, TM4, TM5, TM6				
Final test mode:	TM1, TM2, TM3, TM4, TM5, TM6				

4.5.2 Test Setup Diagram:



4.5.3 Test Data:

Please Refer to Appendix for Details.

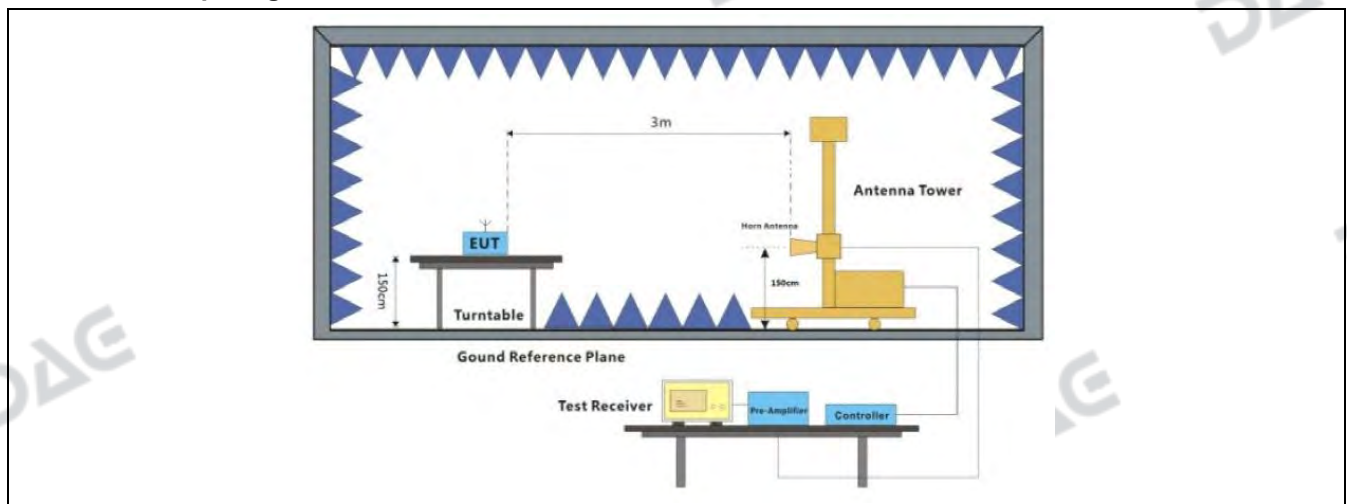
4.6 Band edge emissions (Radiated)

Test Requirement:	Refer to 47 CFR 15.247(d), In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).		
Test Limit:	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
<p>** 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.</p> <p>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.</p>			
Test Method:	ANSI C63.10-2013 section 6.10 KDB 558074 D01 15.247 Meas Guidance v05r02		
Procedure:	ANSI C63.10-2013 section 6.10.5.2		

4.6.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.9 °C	Humidity:	52.1 %	Atmospheric Pressure:	102 kPa
Pretest mode:	TM1, TM2, TM3, TM4, TM5, TM6				
Final test mode:	TM1, TM3, TM4, TM6(worse case)				

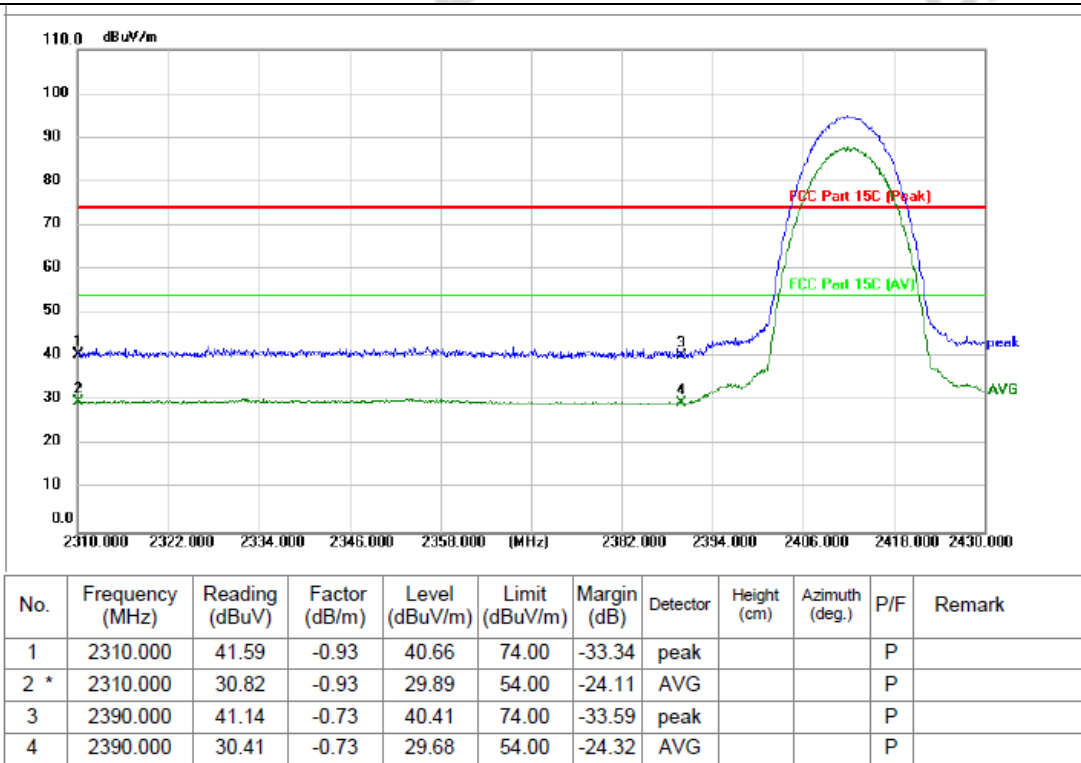
4.6.2 Test Setup Diagram:



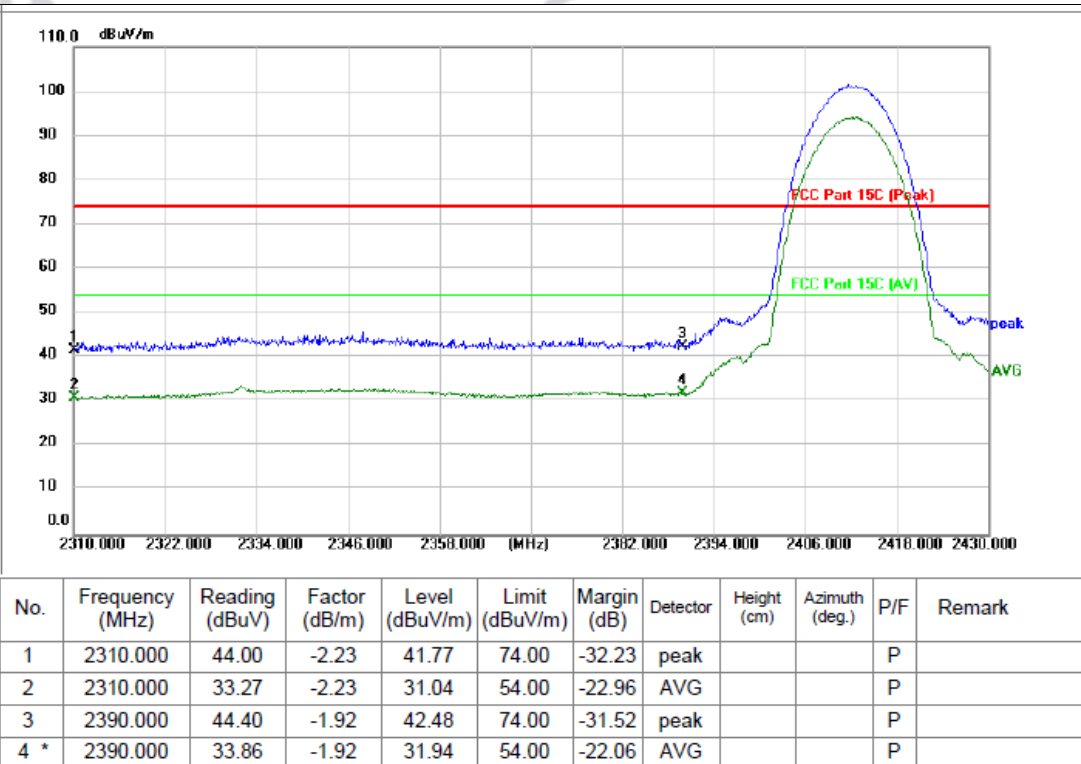
4.6.3 Test Data:

ANT1

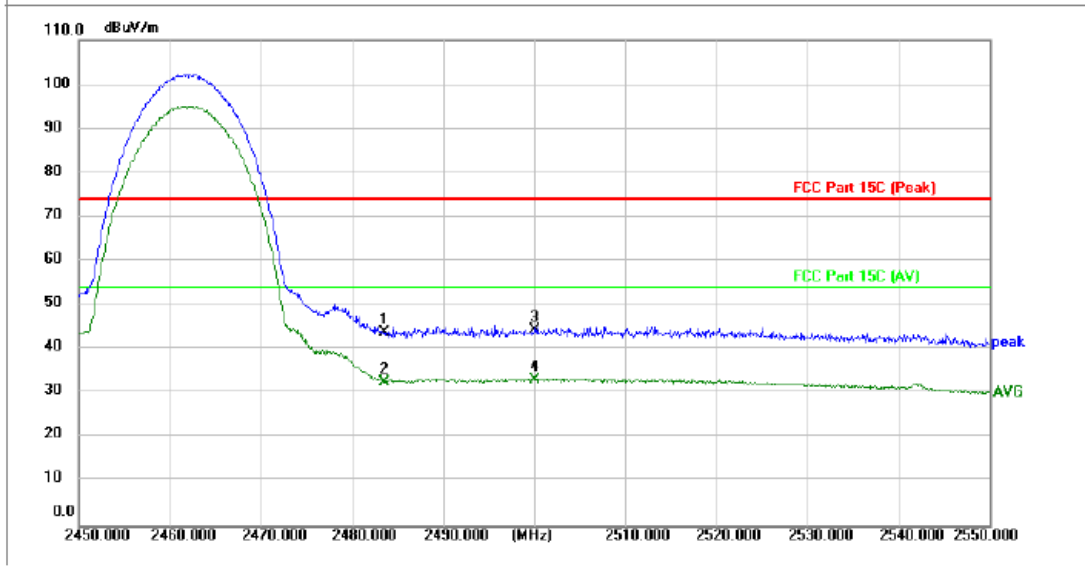
TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: L



TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: L

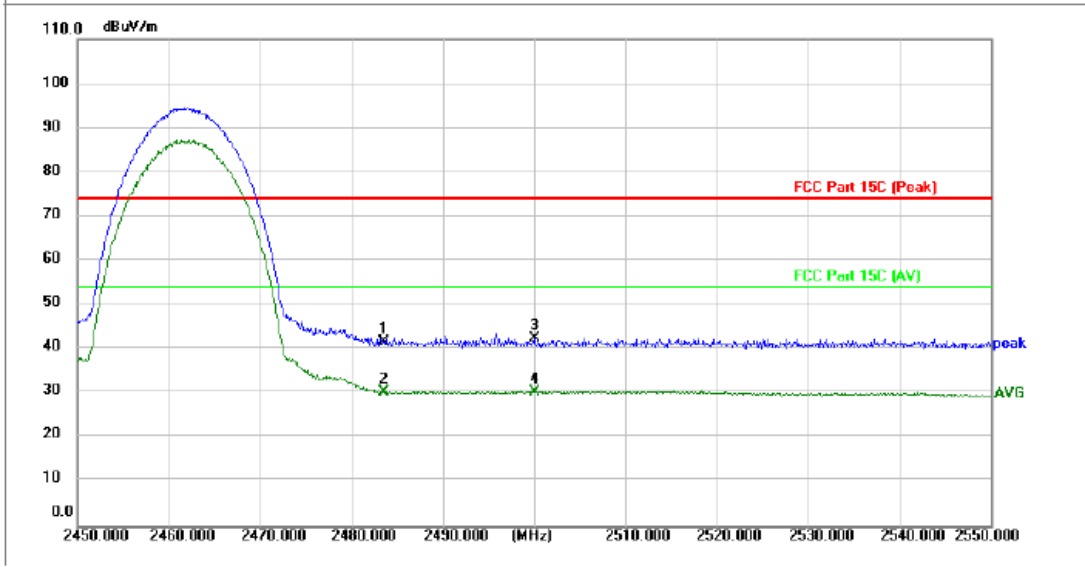


TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: H



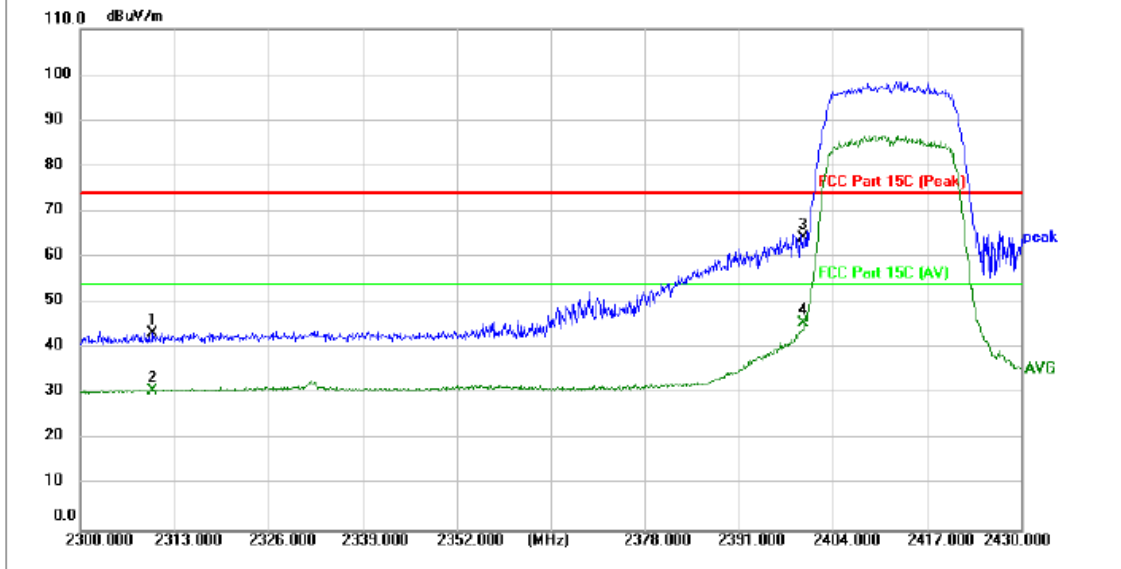
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	45.51	-1.56	43.95	74.00	-30.05	peak			P	
2	2483.500	34.24	-1.56	32.68	54.00	-21.32	AVG			P	
3	2500.000	45.89	-1.50	44.39	74.00	-29.61	peak			P	
4 *	2500.000	34.55	-1.50	33.05	54.00	-20.95	AVG			P	

M1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: H



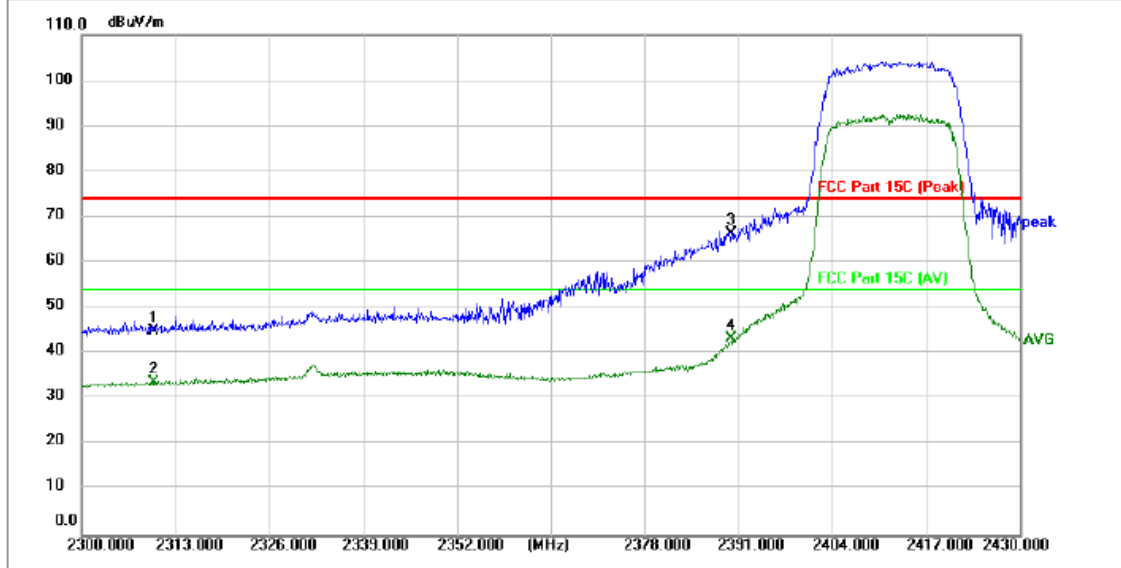
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	42.08	-0.49	41.59	74.00	-32.41	peak			P	
2 *	2483.500	30.88	-0.49	30.39	54.00	-23.61	AVG			P	
3	2500.000	42.93	-0.45	42.48	74.00	-31.52	peak			P	
4	2500.000	30.79	-0.45	30.34	54.00	-23.66	AVG			P	

TM3 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: L



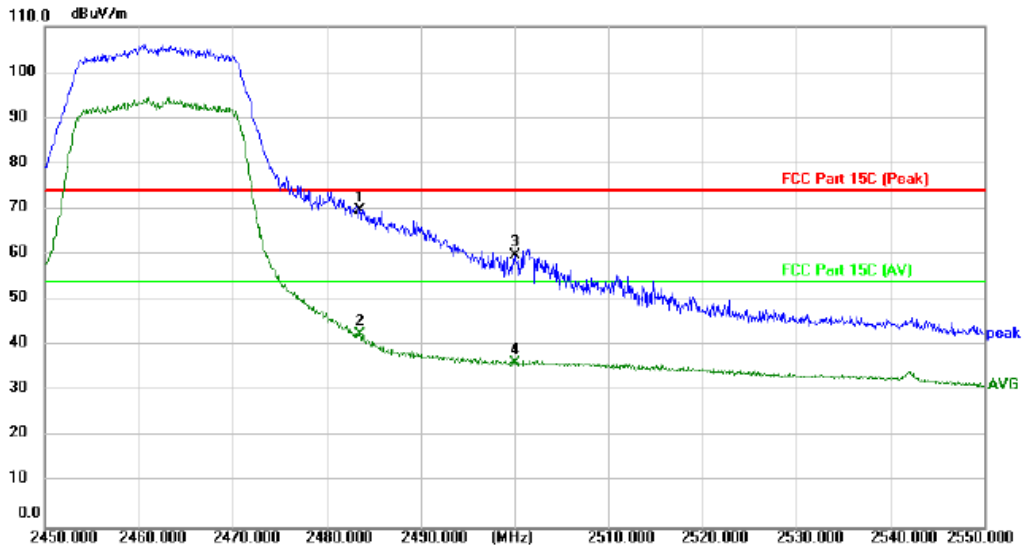
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	44.15	-0.93	43.22	74.00	-30.78	peak			P	
2	2310.000	31.71	-0.93	30.78	54.00	-23.22	AVG			P	
3	2400.000	64.93	-0.70	64.23	74.00	-9.77	peak			P	
4 *	2400.000	46.35	-0.70	45.65	54.00	-8.35	AVG			P	

TM3 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: L



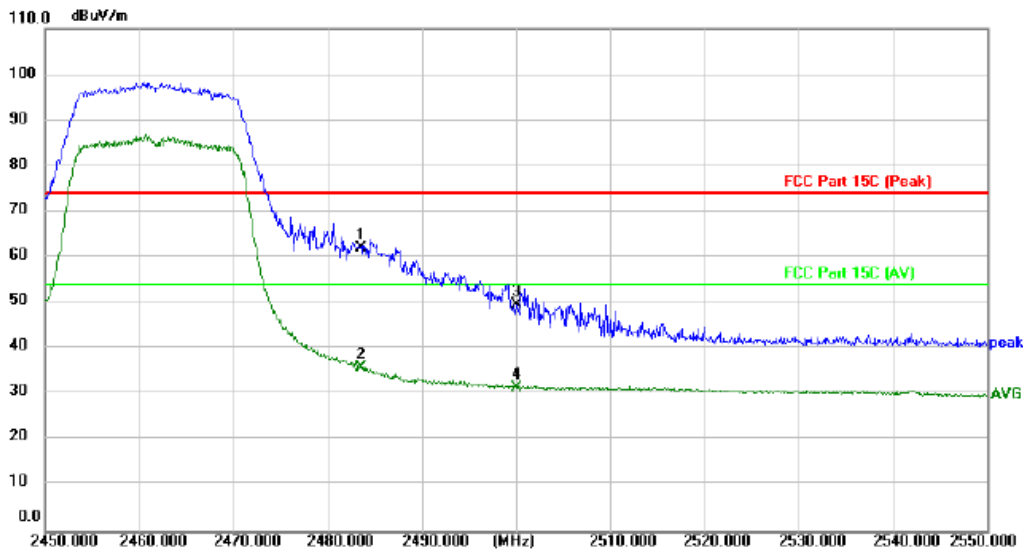
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	47.32	-2.23	45.09	74.00	-28.91	peak			P	
2	2310.000	35.80	-2.23	33.57	54.00	-20.43	AVG			P	
3 *	2390.000	68.46	-1.92	66.54	74.00	-7.46	peak			P	
4	2390.000	45.35	-1.92	43.43	54.00	-10.57	AVG			P	

TM3 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: H



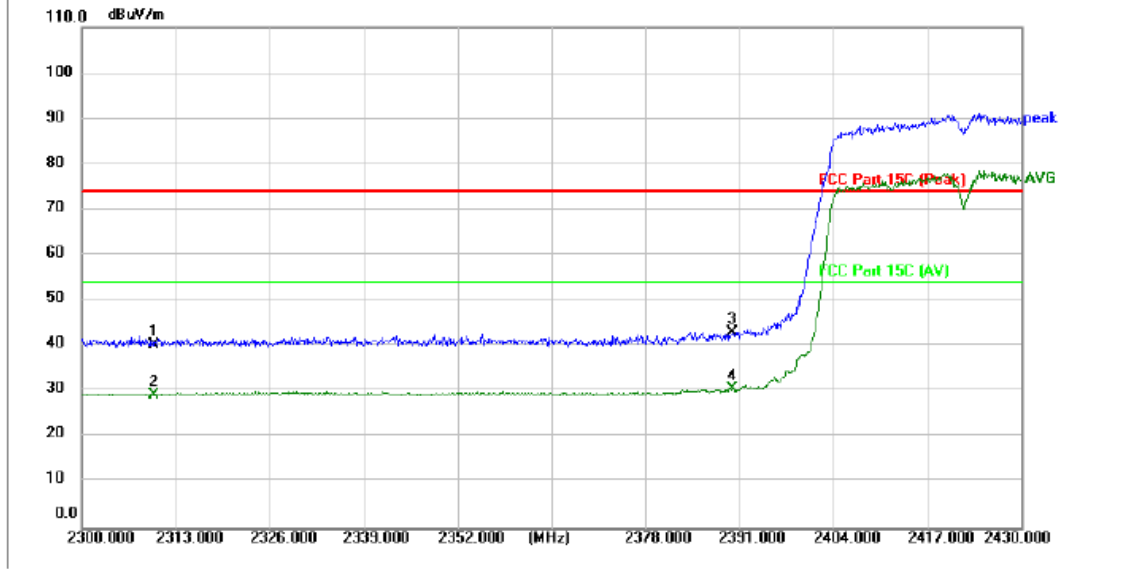
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	2483.500	71.24	-1.56	69.68	74.00	-4.32	peak			P	
2	2483.500	44.06	-1.56	42.50	54.00	-11.50	AVG			P	
3	2500.000	61.23	-1.50	59.73	74.00	-14.27	peak			P	
4	2500.000	37.71	-1.50	36.21	54.00	-17.79	AVG			P	

TM3 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: H



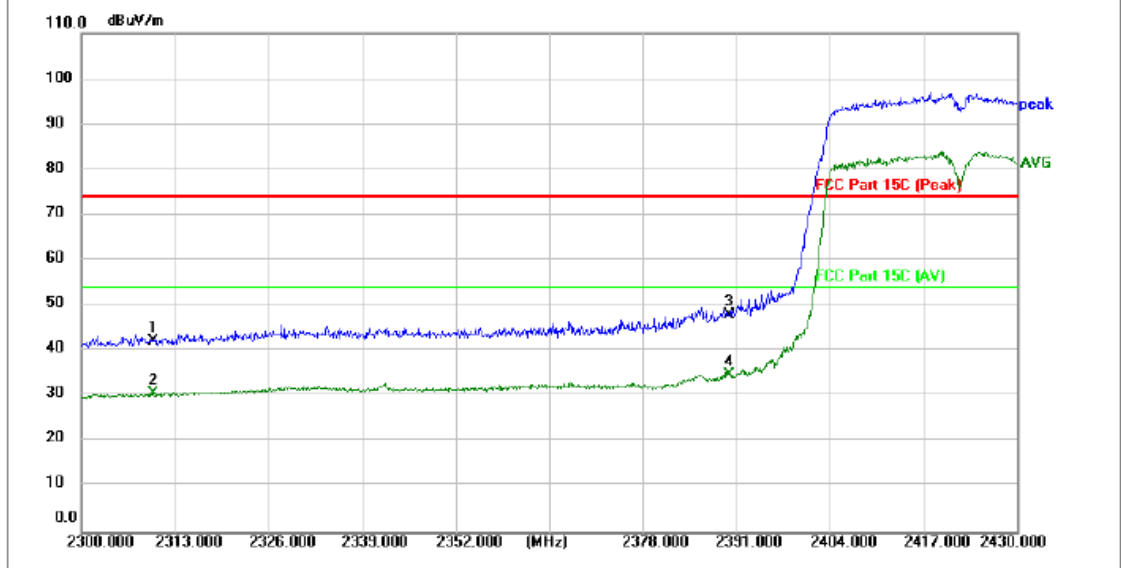
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	2483.500	62.44	-0.49	61.95	74.00	-12.05	peak			P	
2	2483.500	36.38	-0.49	35.89	54.00	-18.11	AVG			P	
3	2500.000	50.10	-0.45	49.65	74.00	-24.35	peak			P	
4	2500.000	32.05	-0.45	31.60	54.00	-22.40	AVG			P	

TM4 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / CH: L



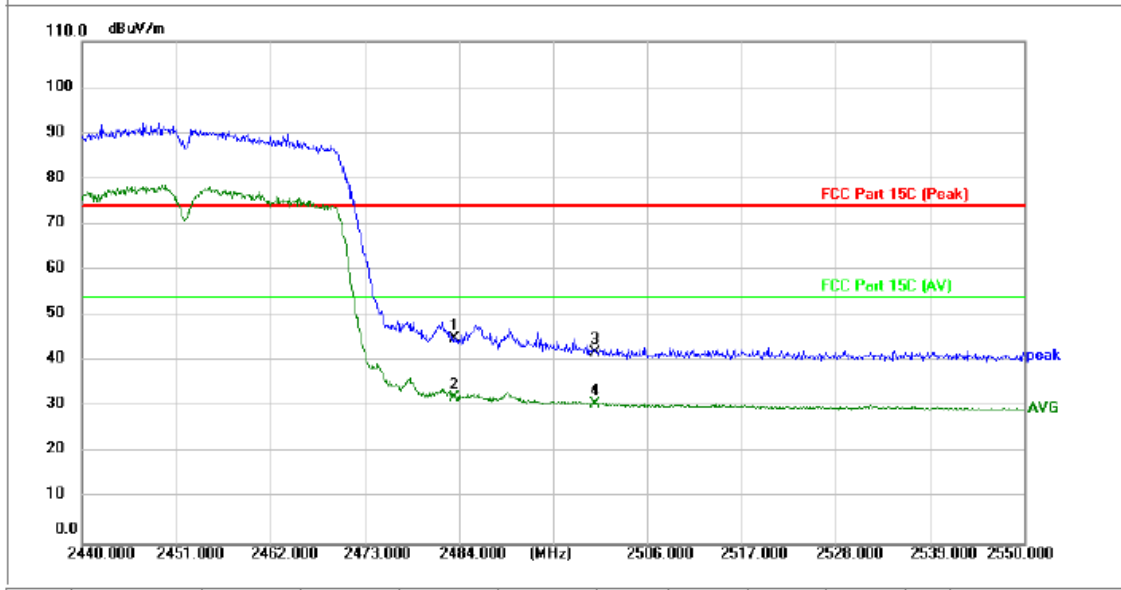
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	41.30	-0.93	40.37	74.00	-33.63	peak			P	
2	2310.000	30.33	-0.93	29.40	54.00	-24.60	AVG			P	
3	2390.000	43.82	-0.73	43.09	74.00	-30.91	peak			P	
4 *	2390.000	31.28	-0.73	30.55	54.00	-23.45	AVG			P	

TM4 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / CH: L



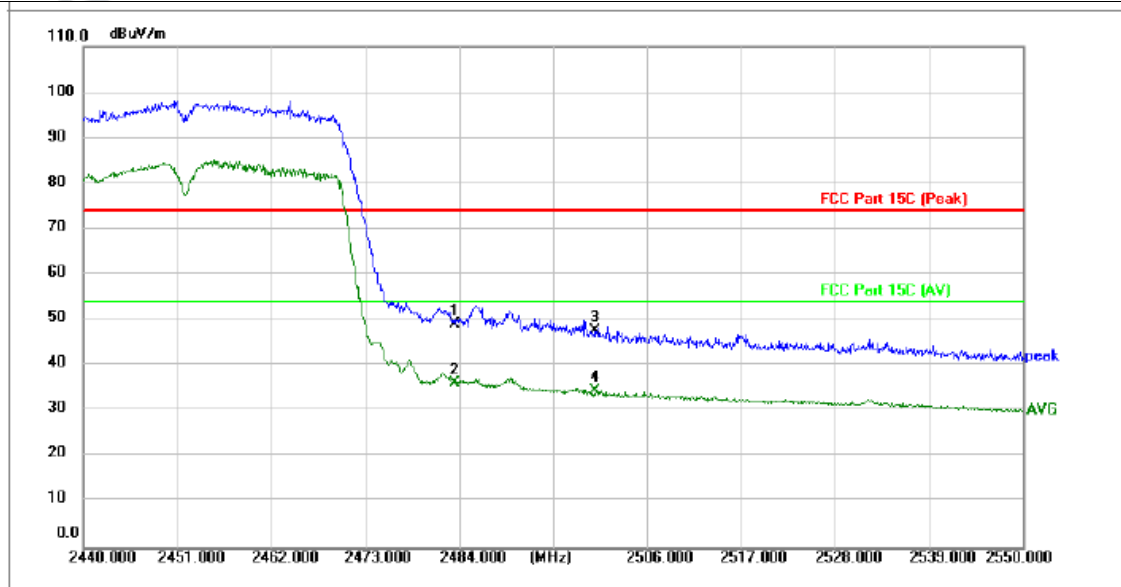
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	44.50	-2.23	42.27	74.00	-31.73	peak			P	
2	2310.000	32.82	-2.23	30.59	54.00	-23.41	AVG			P	
3	2390.000	49.89	-1.92	47.97	74.00	-26.03	peak			P	
4 *	2390.000	36.73	-1.92	34.81	54.00	-19.19	AVG			P	

TM4 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / CH: H



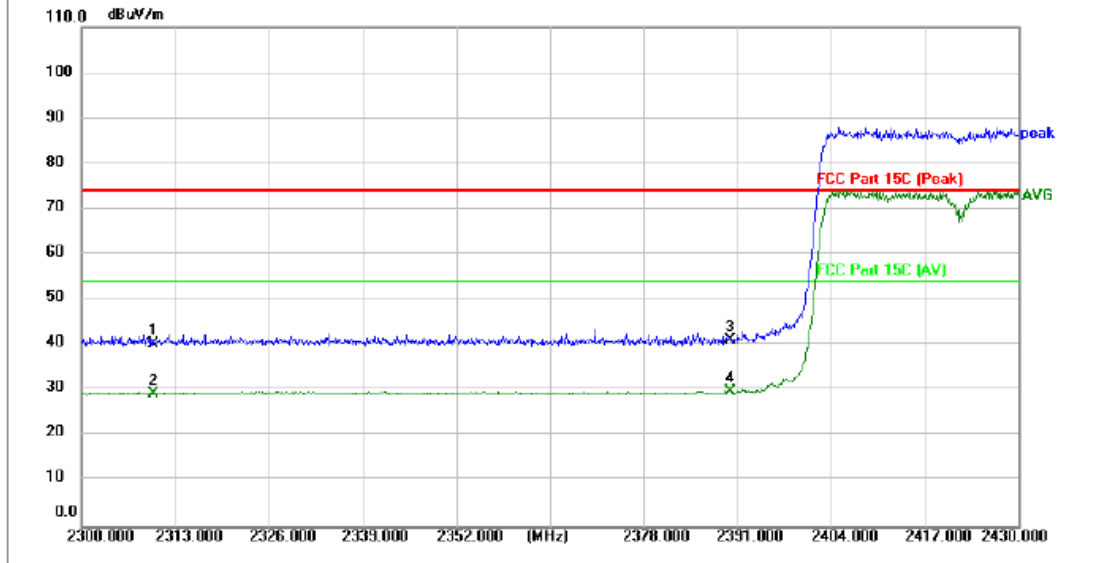
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	45.56	-0.49	45.07	74.00	-28.93	peak			P	
2 *	2483.500	32.44	-0.49	31.95	54.00	-22.05	AVG			P	
3	2500.000	42.29	-0.45	41.84	74.00	-32.16	peak			P	
4	2500.000	31.04	-0.45	30.59	54.00	-23.41	AVG			P	

TM4 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / CH: H



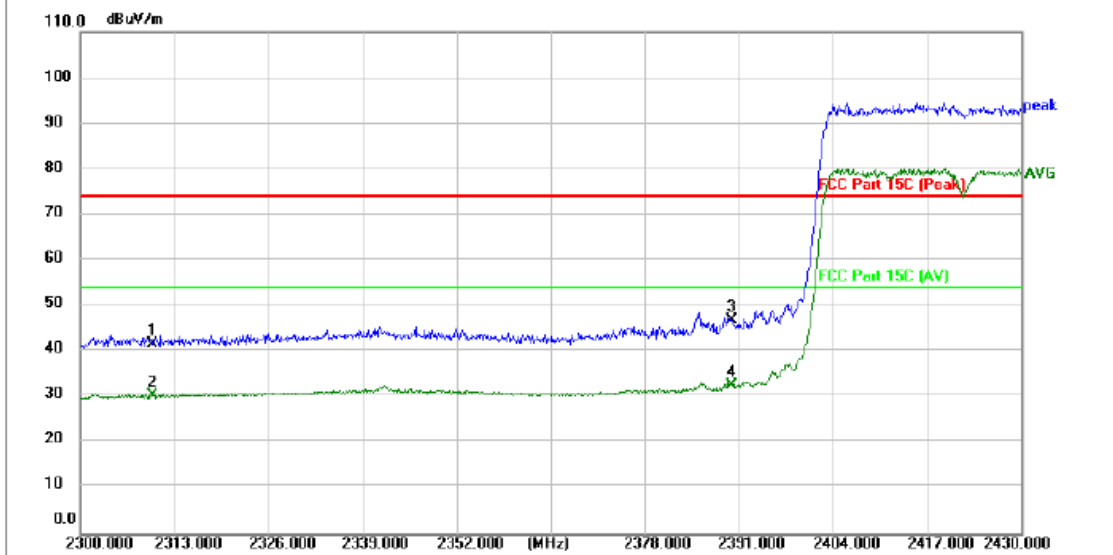
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	50.65	-1.56	49.09	74.00	-24.91	peak			P	
2 *	2483.500	37.75	-1.56	36.19	54.00	-17.81	AVG			P	
3	2500.000	49.20	-1.50	47.70	74.00	-26.30	peak			P	
4	2500.000	35.96	-1.50	34.46	54.00	-19.54	AVG			P	

TM6 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / CH: L



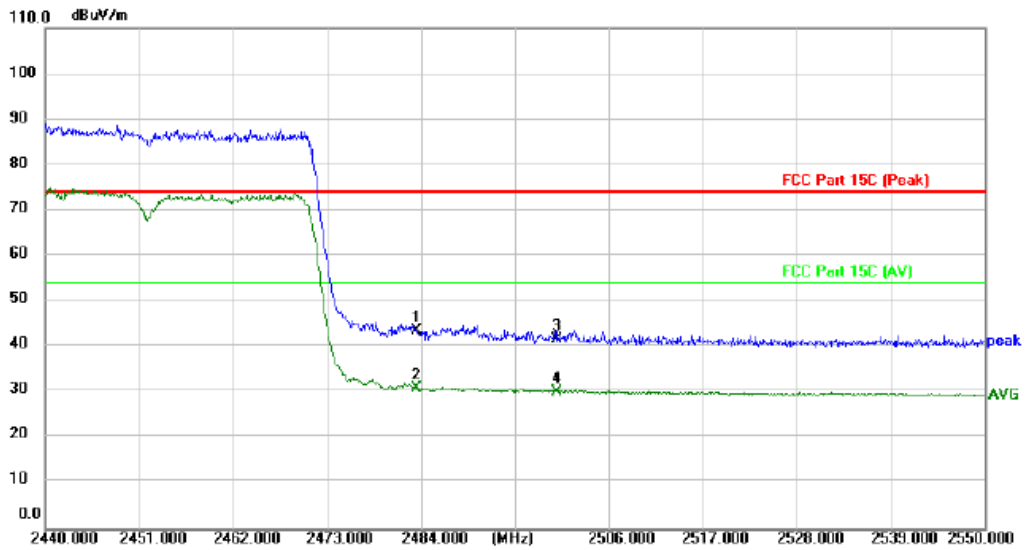
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	41.32	-0.93	40.39	74.00	-33.61	peak			P	
2	2310.000	30.23	-0.93	29.30	54.00	-24.70	AVG			P	
3	2390.000	41.73	-0.73	41.00	74.00	-33.00	peak			P	
4 *	2390.000	30.59	-0.73	29.86	54.00	-24.14	AVG			P	

TM6 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / CH: L



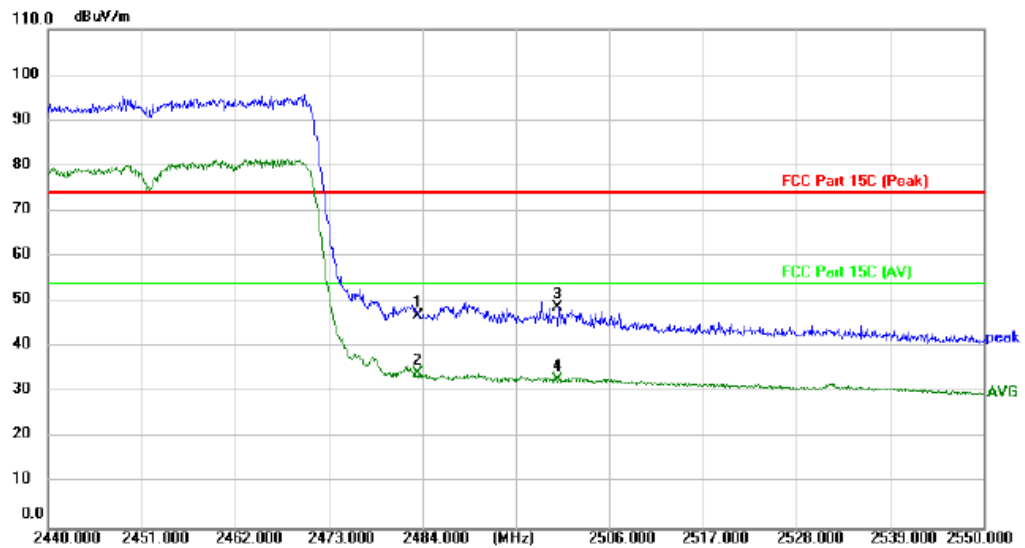
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	43.90	-2.23	41.67	74.00	-32.33	peak			P	
2	2310.000	32.65	-2.23	30.42	54.00	-23.58	AVG			P	
3	2390.000	48.90	-1.92	46.98	74.00	-27.02	peak			P	
4 *	2390.000	34.64	-1.92	32.72	54.00	-21.28	AVG			P	

TM6 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / 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	2483.500	43.96	-0.49	43.47	74.00	-30.53	peak			P	
2 *	2483.500	31.51	-0.49	31.02	54.00	-22.98	AVG			P	
3	2500.000	41.98	-0.45	41.53	74.00	-32.47	peak			P	
4	2500.000	30.68	-0.45	30.23	54.00	-23.77	AVG			P	

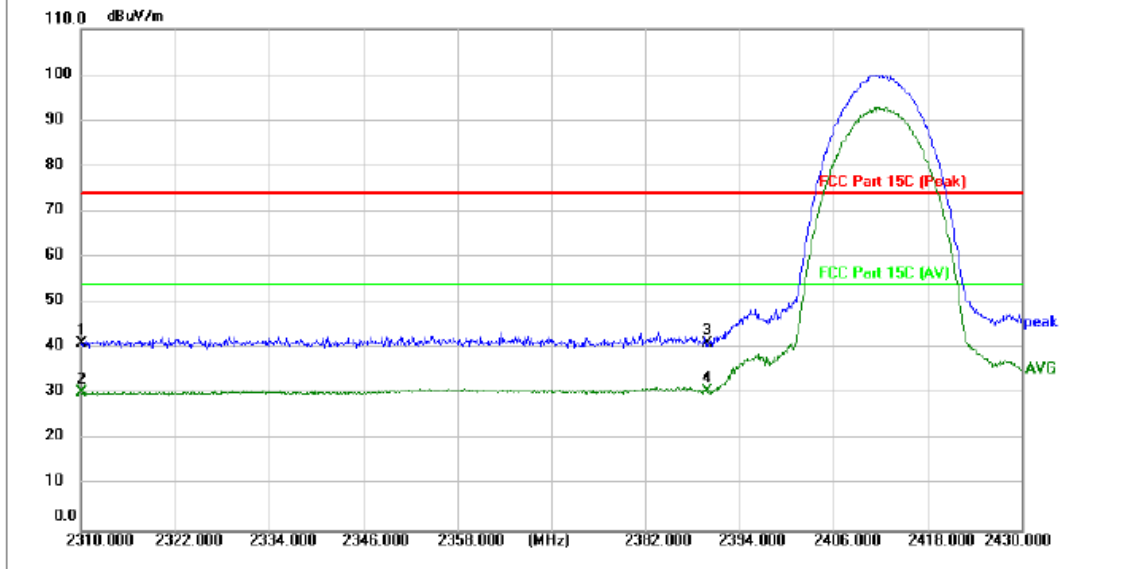
TM6 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / CH: H



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	2483.500	48.56	-1.56	47.00	74.00	-27.00	peak			P	
2 *	2483.500	35.76	-1.56	34.20	54.00	-19.80	AVG			P	
3	2500.000	50.41	-1.50	48.91	74.00	-25.09	peak			P	
4	2500.000	34.48	-1.50	32.98	54.00	-21.02	AVG			P	

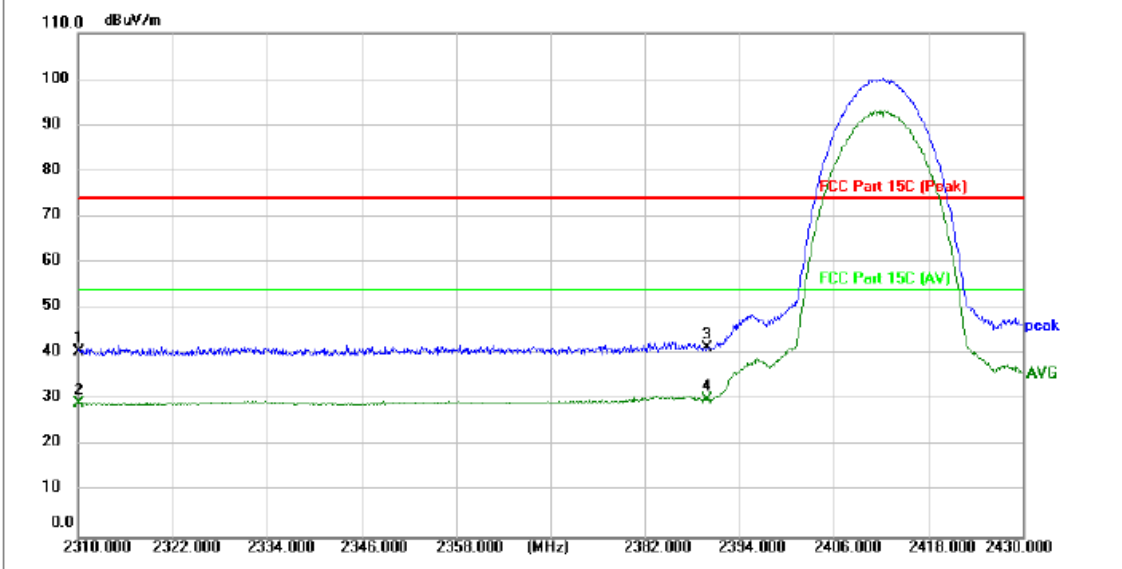
ANT2

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: L



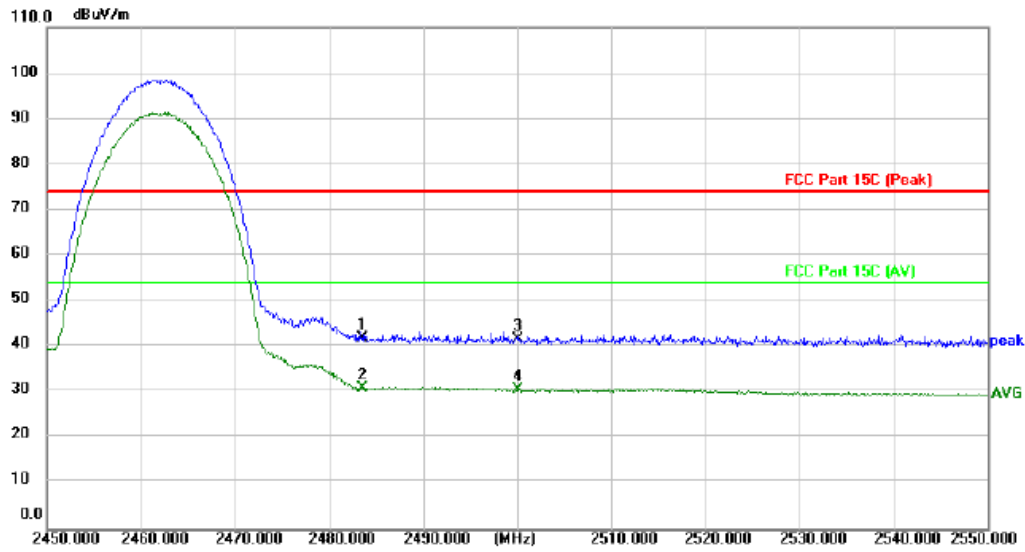
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	42.18	-0.93	41.25	74.00	-32.75	peak			P	
2	2310.000	31.39	-0.93	30.46	54.00	-23.54	AVG			P	
3	2390.000	41.95	-0.73	41.22	74.00	-32.78	peak			P	
4 *	2390.000	31.42	-0.73	30.69	54.00	-23.31	AVG			P	

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: L



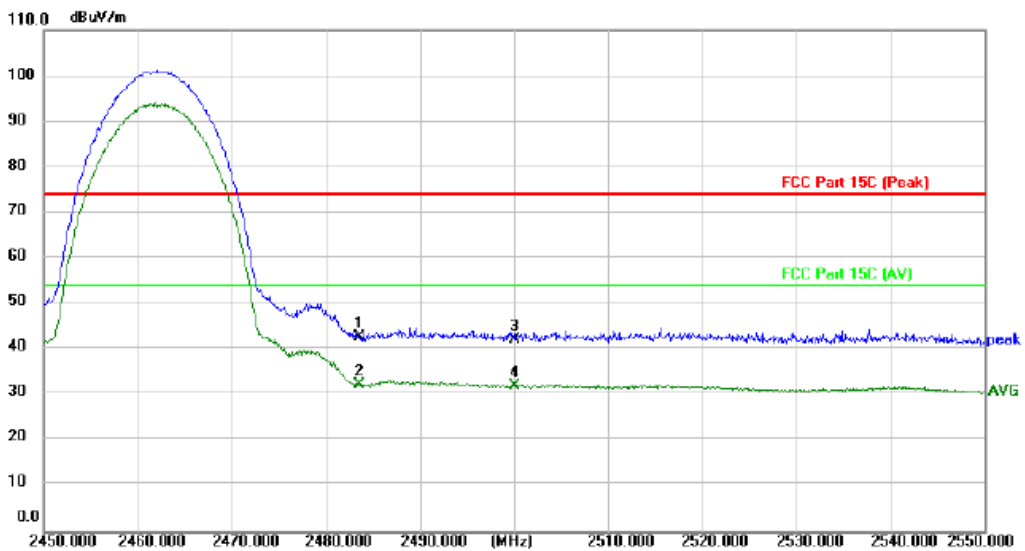
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	42.88	-2.23	40.65	74.00	-33.35	peak			P	
2	2310.000	31.63	-2.23	29.40	54.00	-24.60	AVG			P	
3	2390.000	43.18	-1.92	41.26	74.00	-32.74	peak			P	
4 *	2390.000	32.09	-1.92	30.17	54.00	-23.83	AVG			P	

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: H



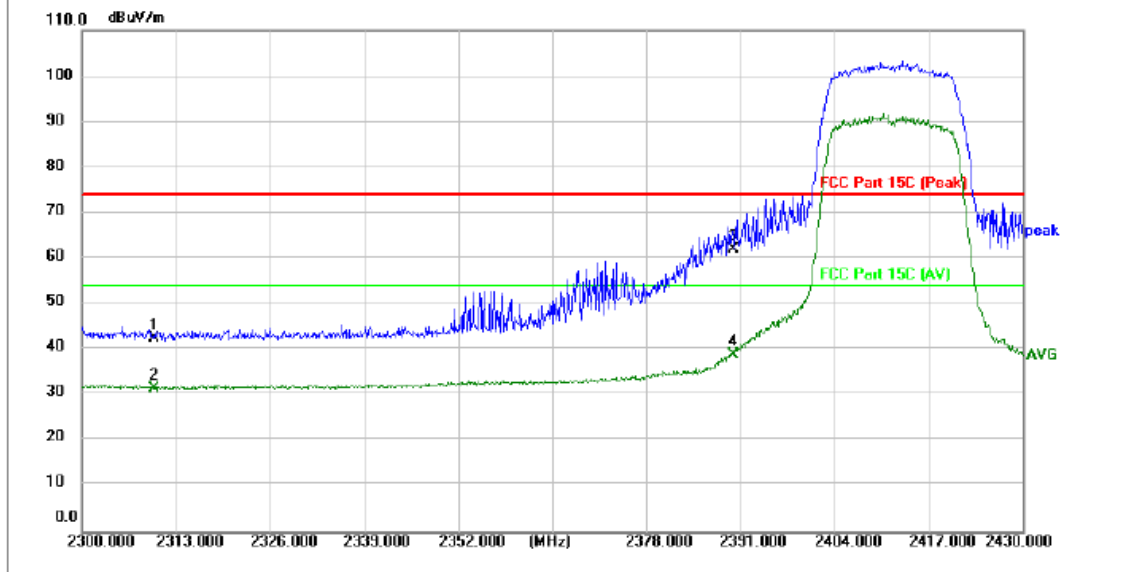
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	42.56	-0.49	42.07	74.00	-31.93	peak			P	
2 *	2483.500	31.34	-0.49	30.85	54.00	-23.15	AVG			P	
3	2500.000	42.09	-0.45	41.64	74.00	-32.36	peak			P	
4	2500.000	31.00	-0.45	30.55	54.00	-23.45	AVG			P	

M1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: H



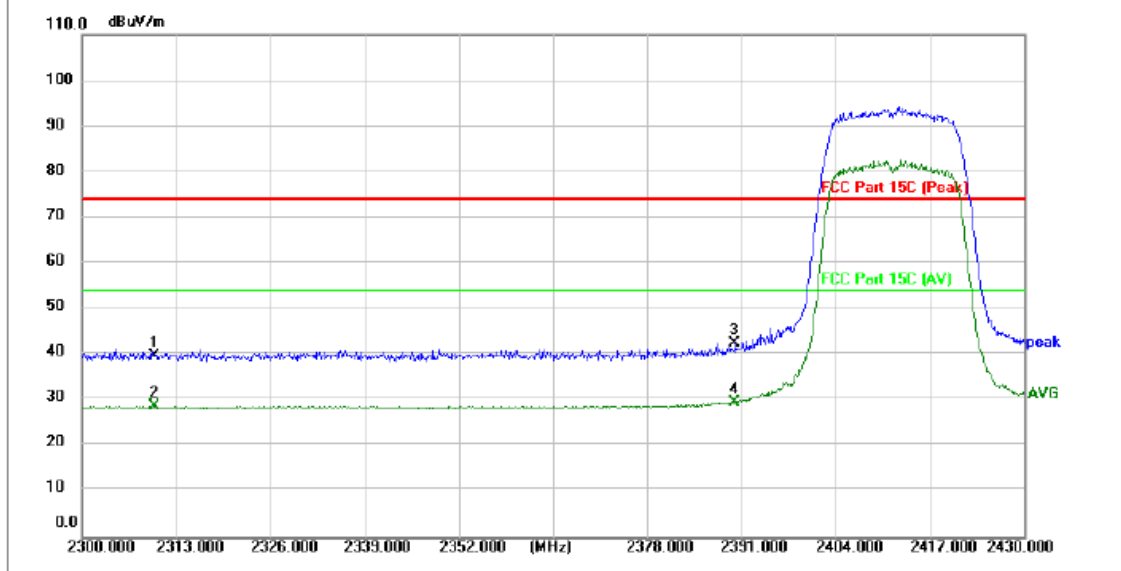
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	44.32	-1.56	42.76	74.00	-31.24	peak			P	
2 *	2483.500	33.86	-1.56	32.30	54.00	-21.70	AVG			P	
3	2500.000	43.73	-1.50	42.23	74.00	-31.77	peak			P	
4	2500.000	33.59	-1.50	32.09	54.00	-21.91	AVG			P	

TM3 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: L



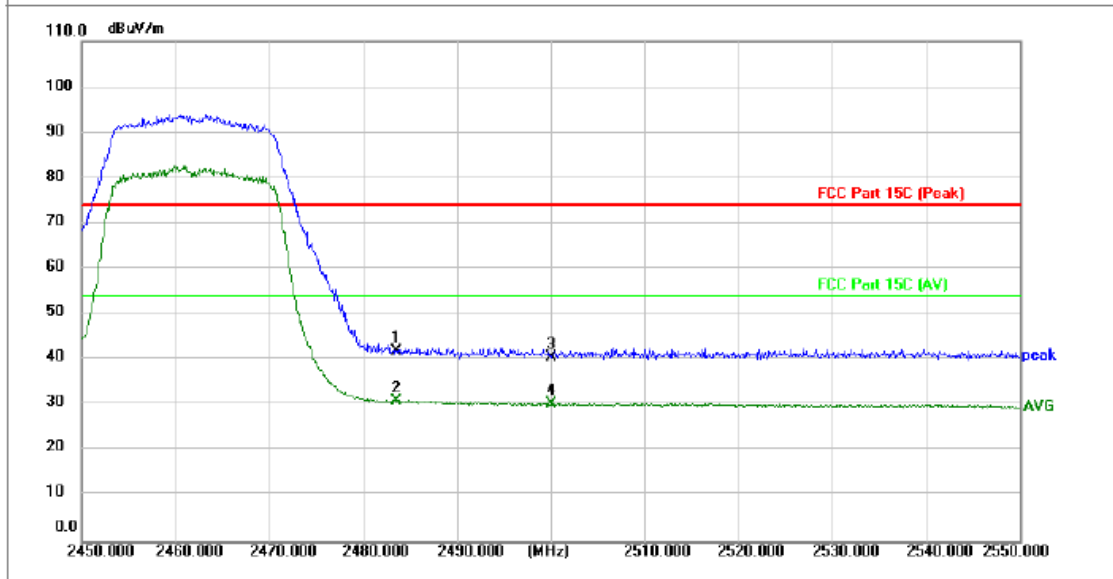
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	43.51	-0.93	42.58	74.00	-31.42	peak			P	
2	2310.000	32.52	-0.93	31.59	54.00	-22.41	AVG			P	
3 *	2390.000	62.86	-0.73	62.13	74.00	-11.87	peak			P	
4	2390.000	39.78	-0.73	39.05	54.00	-14.95	AVG			P	

TM3 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: L



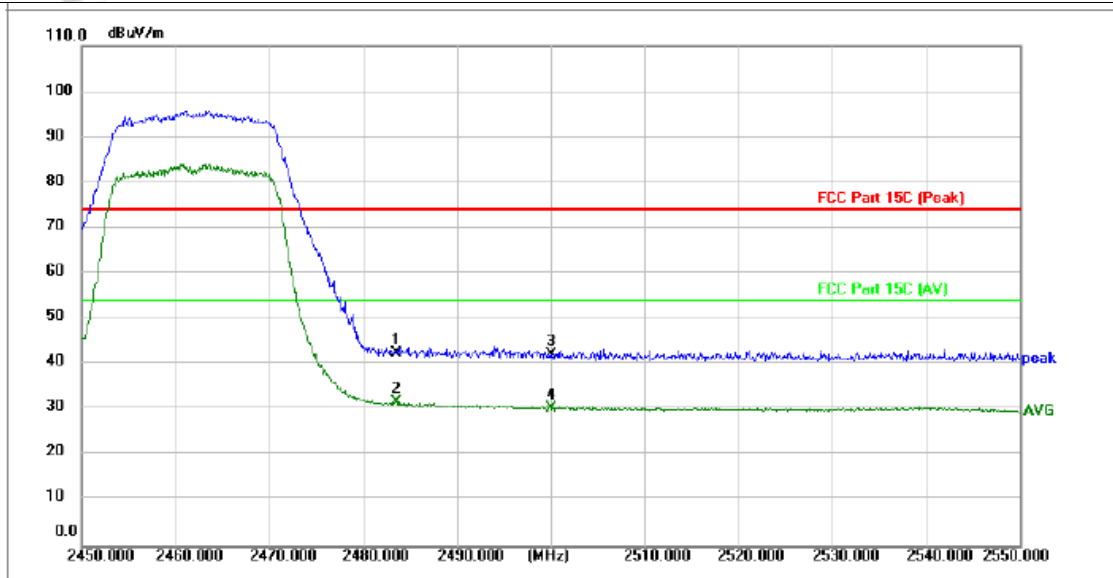
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	41.86	-2.23	39.63	74.00	-34.37	peak			P	
2	2310.000	30.97	-2.23	28.74	54.00	-25.26	AVG			P	
3	2390.000	44.34	-1.92	42.42	74.00	-31.58	peak			P	
4 *	2390.000	31.41	-1.92	29.49	54.00	-24.51	AVG			P	

TM3 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: H



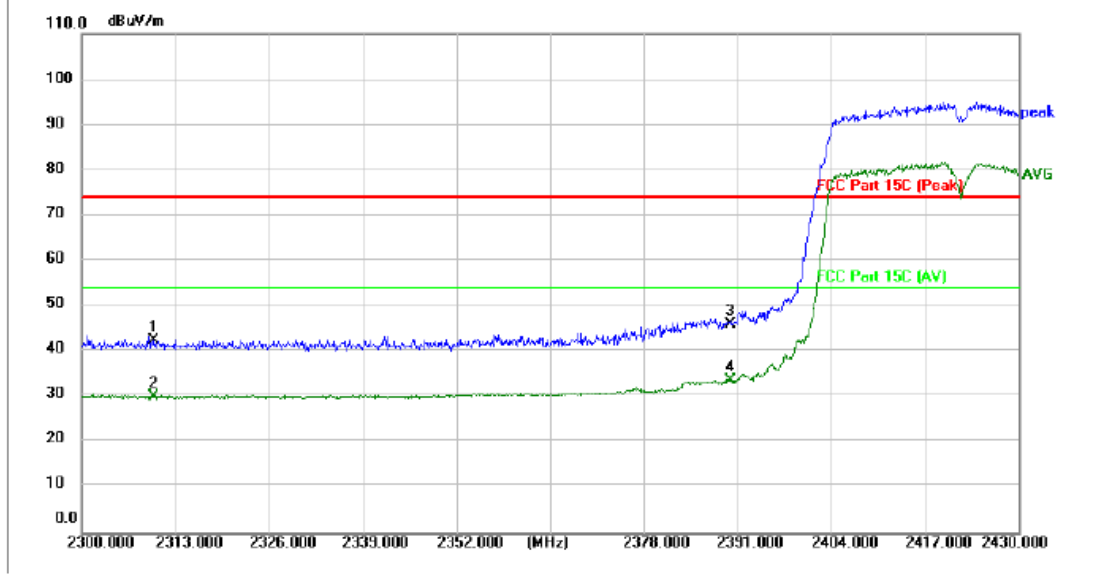
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	42.30	-0.49	41.81	74.00	-32.19	peak			P	
2 *	2483.500	31.41	-0.49	30.92	54.00	-23.08	AVG			P	
3	2500.000	41.13	-0.45	40.68	74.00	-33.32	peak			P	
4	2500.000	30.76	-0.45	30.31	54.00	-23.69	AVG			P	

TM3 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: H



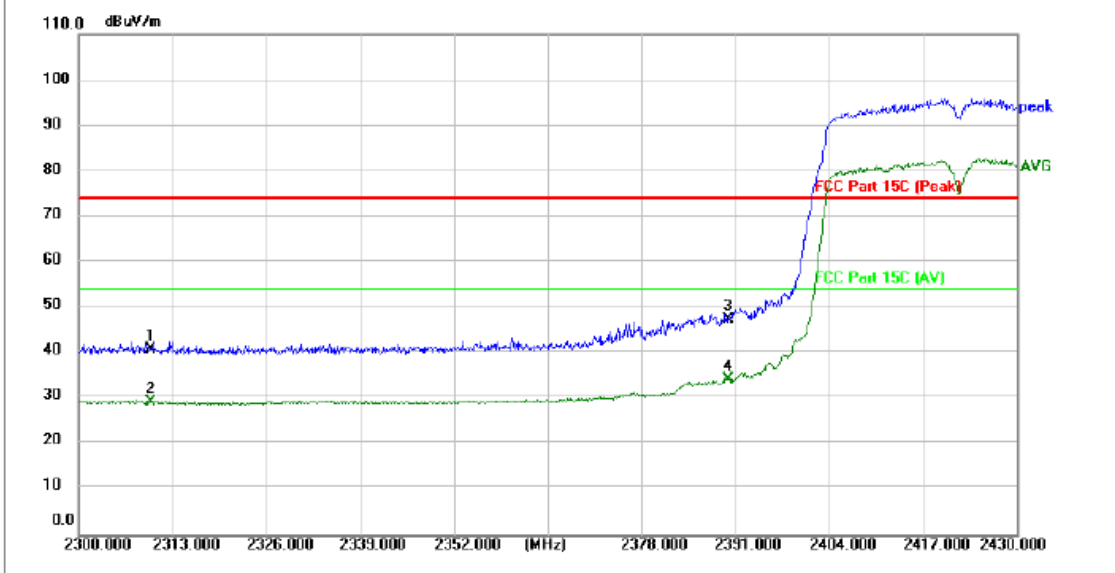
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	44.08	-1.56	42.52	74.00	-31.48	peak			P	
2 *	2483.500	33.28	-1.56	31.72	54.00	-22.28	AVG			P	
3	2500.000	43.60	-1.50	42.10	74.00	-31.90	peak			P	
4	2500.000	31.85	-1.50	30.35	54.00	-23.65	AVG			P	

TM4 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / CH: L



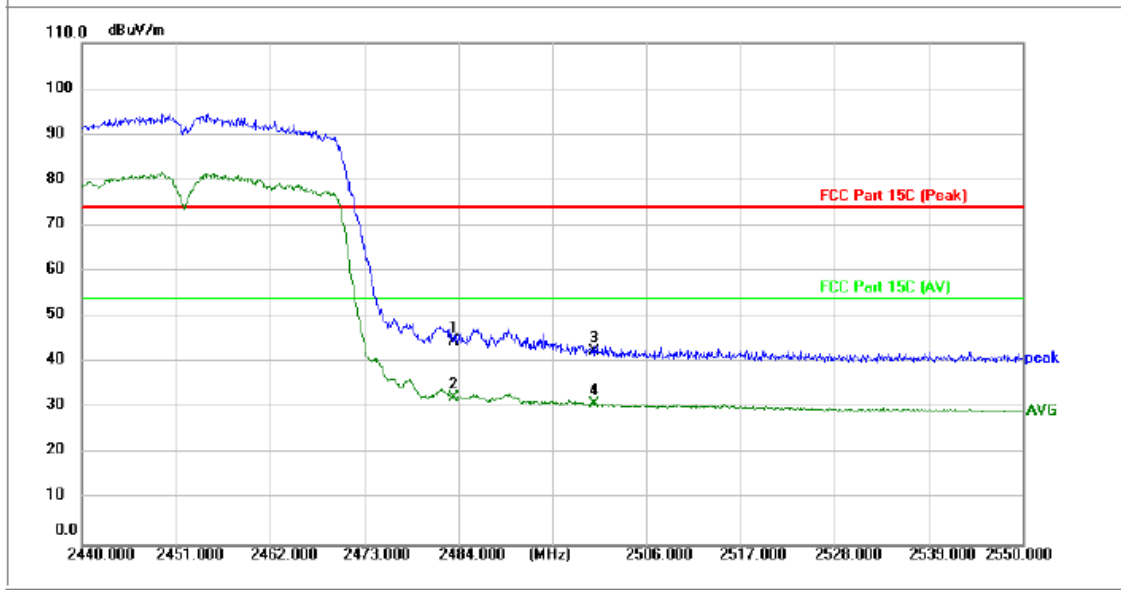
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	43.51	-0.93	42.58	74.00	-31.42	peak			P	
2	2310.000	31.12	-0.93	30.19	54.00	-23.81	AVG			P	
3	2390.000	46.87	-0.73	46.14	74.00	-27.86	peak			P	
4 *	2390.000	34.46	-0.73	33.73	54.00	-20.27	AVG			P	

TM4 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / CH: L



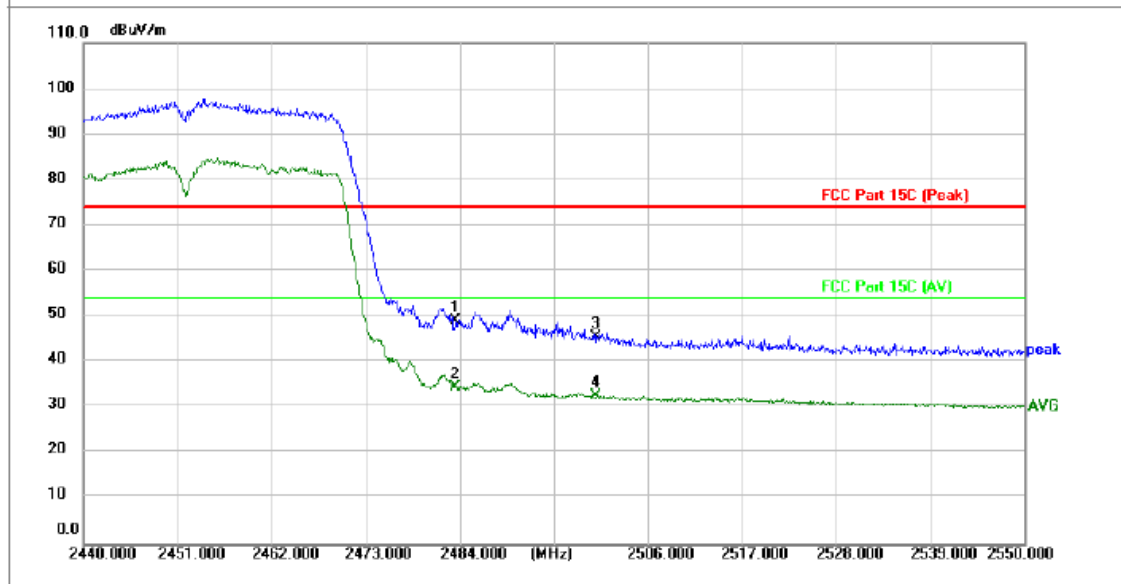
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	43.10	-2.23	40.87	74.00	-33.13	peak			P	
2	2310.000	31.41	-2.23	29.18	54.00	-24.82	AVG			P	
3	2390.000	49.28	-1.92	47.36	74.00	-26.64	peak			P	
4 *	2390.000	36.12	-1.92	34.20	54.00	-19.80	AVG			P	

TM4 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / CH: H



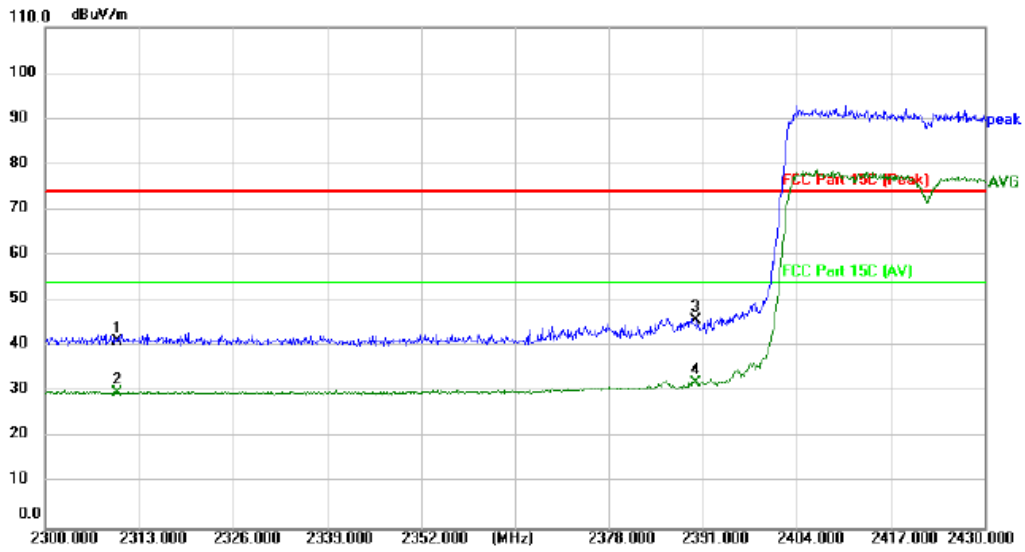
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	45.15	-0.49	44.66	74.00	-29.34	peak			P	
2 *	2483.500	32.70	-0.49	32.21	54.00	-21.79	AVG			P	
3	2500.000	43.04	-0.45	42.59	74.00	-31.41	peak			P	
4	2500.000	31.26	-0.45	30.81	54.00	-23.19	AVG			P	

TM4 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / CH: H



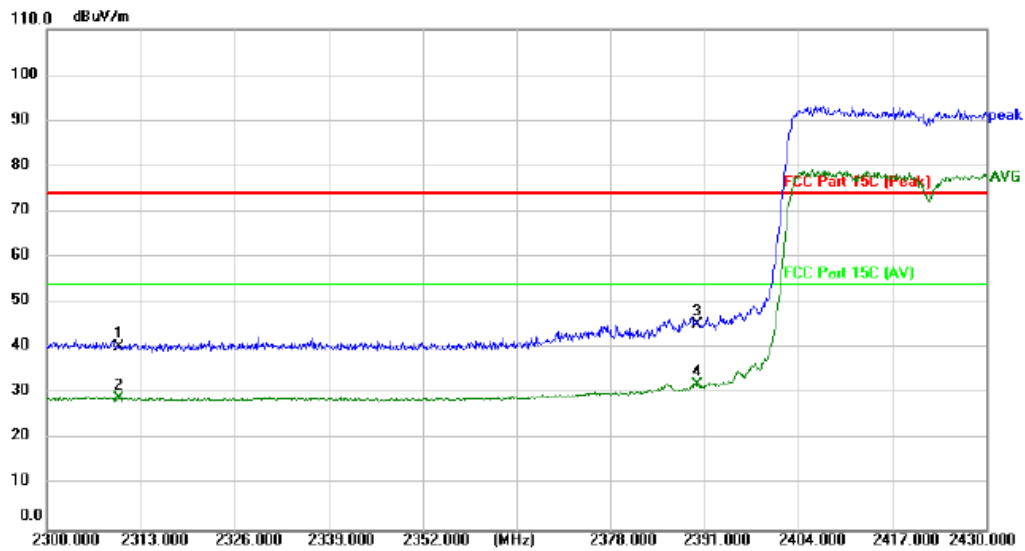
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	50.74	-1.56	49.18	74.00	-24.82	peak			P	
2 *	2483.500	36.03	-1.56	34.47	54.00	-19.53	AVG			P	
3	2500.000	46.91	-1.50	45.41	74.00	-28.59	peak			P	
4	2500.000	34.22	-1.50	32.72	54.00	-21.28	AVG			P	

TM6 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / CH: L



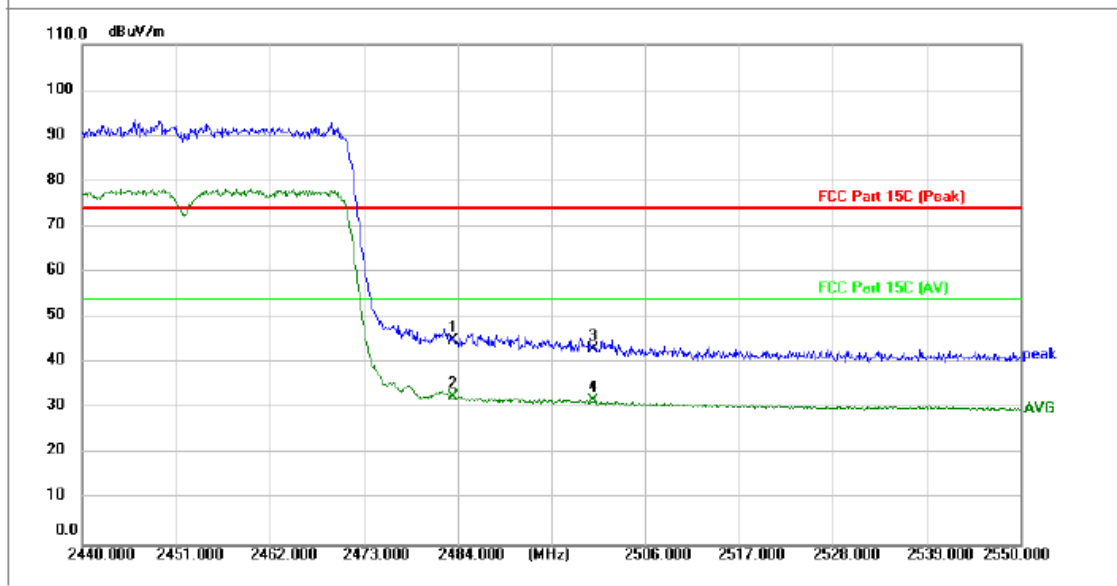
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	42.13	-0.93	41.20	74.00	-32.80	peak			P	
2	2310.000	30.81	-0.93	29.88	54.00	-24.12	AVG			P	
3	2390.000	46.41	-0.73	45.68	74.00	-28.32	peak			P	
4 *	2390.000	32.67	-0.73	31.94	54.00	-22.06	AVG			P	

TM6 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / CH: L



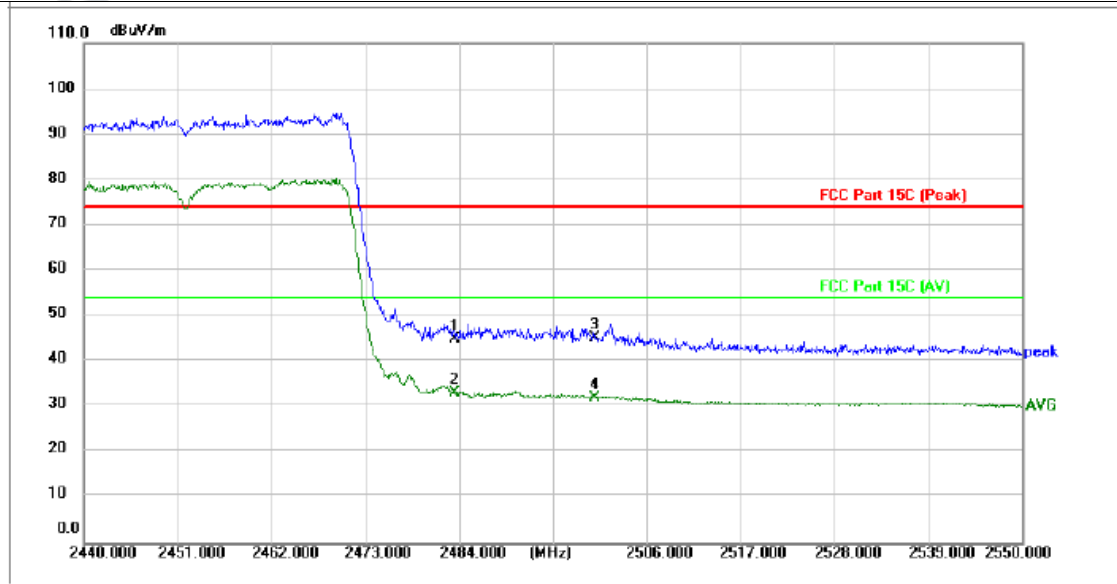
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	42.64	-2.23	40.41	74.00	-33.59	peak			P	
2	2310.000	31.34	-2.23	29.11	54.00	-24.89	AVG			P	
3	2390.000	47.15	-1.92	45.23	74.00	-28.77	peak			P	
4 *	2390.000	33.95	-1.92	32.03	54.00	-21.97	AVG			P	

TM6 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / 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	2483.500	45.49	-0.49	45.00	74.00	-29.00	peak			P	
2 *	2483.500	33.02	-0.49	32.53	54.00	-21.47	AVG			P	
3	2500.000	43.54	-0.45	43.09	74.00	-30.91	peak			P	
4	2500.000	32.14	-0.45	31.69	54.00	-22.31	AVG			P	

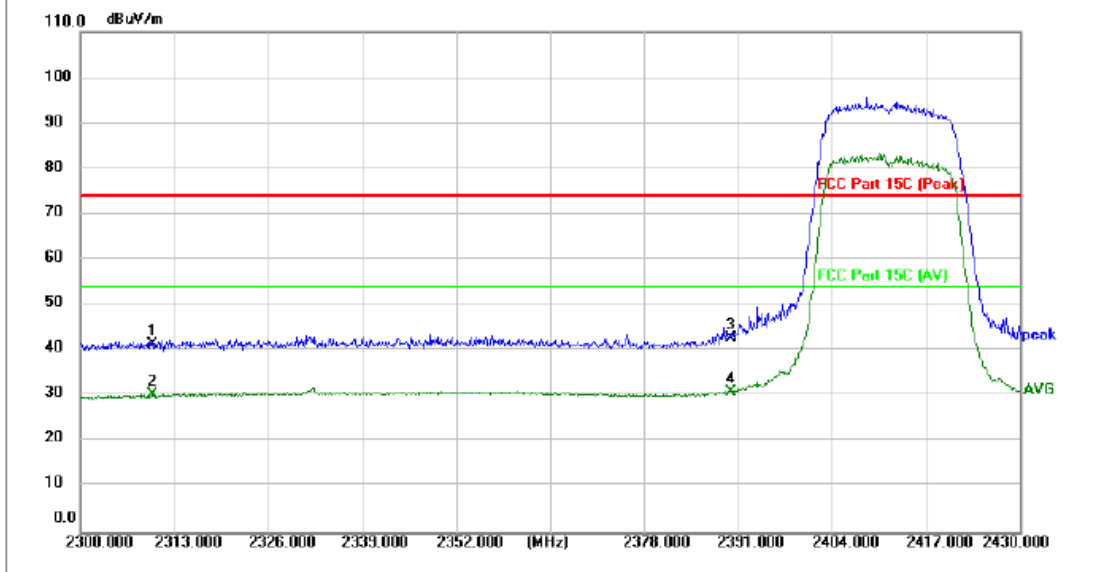
TM6 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / CH: H



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	2483.500	46.65	-1.56	45.09	74.00	-28.91	peak			P	
2 *	2483.500	34.75	-1.56	33.19	54.00	-20.81	AVG			P	
3	2500.000	46.64	-1.50	45.14	74.00	-28.86	peak			P	
4	2500.000	33.59	-1.50	32.09	54.00	-21.91	AVG			P	

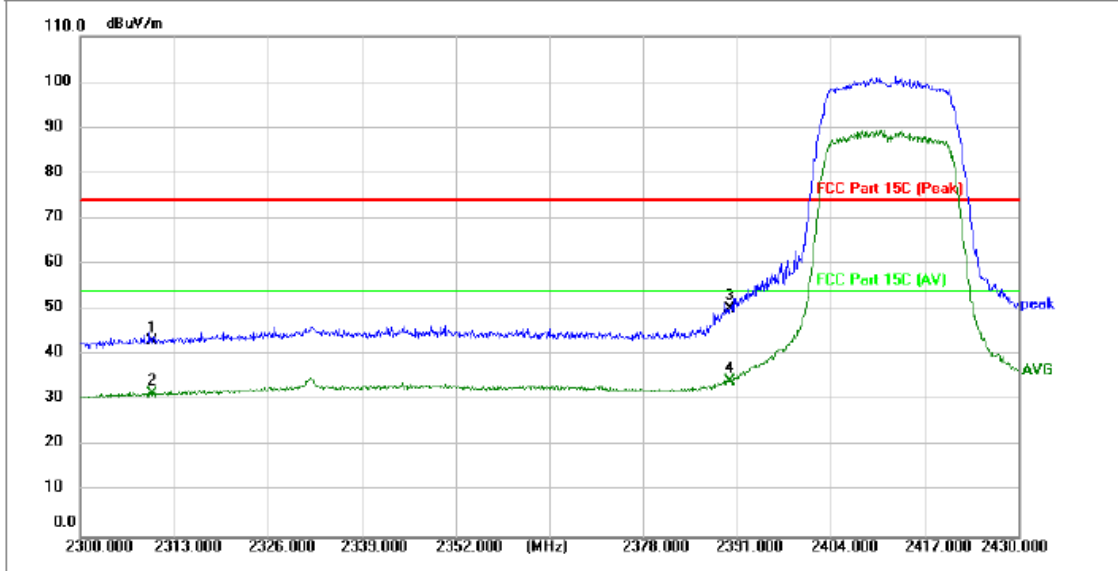
MIMO

TM3 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: L



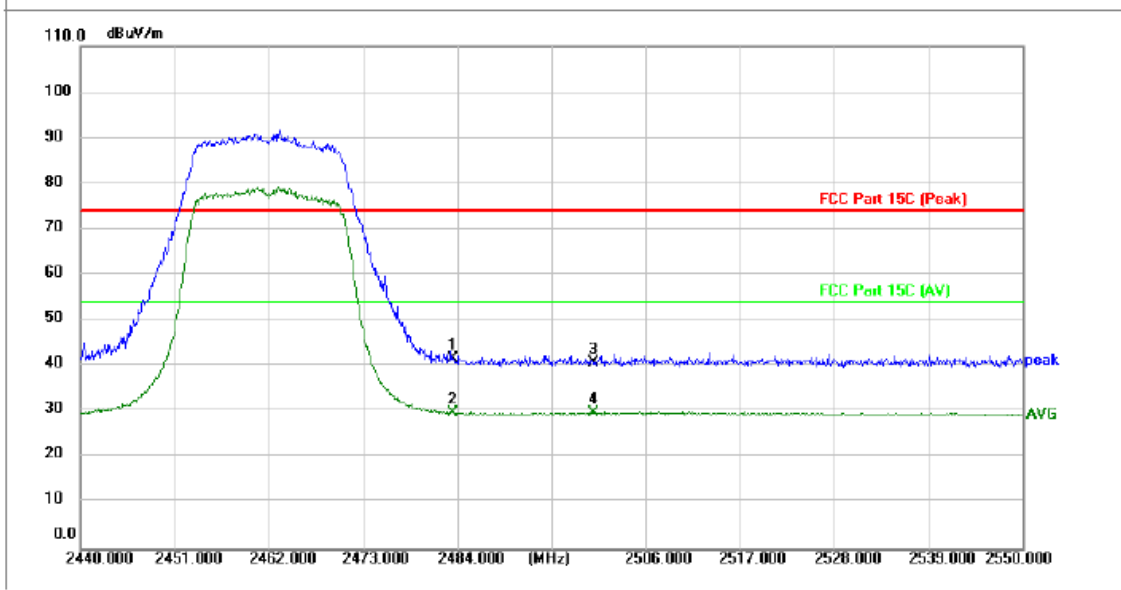
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	42.45	-0.93	41.52	74.00	-32.48	peak			P	
2	2310.000	31.25	-0.93	30.32	54.00	-23.68	AVG			P	
3	2390.000	43.55	-0.73	42.82	74.00	-31.18	peak			P	
4 *	2390.000	31.76	-0.73	31.03	54.00	-22.97	AVG			P	

TM3 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: L



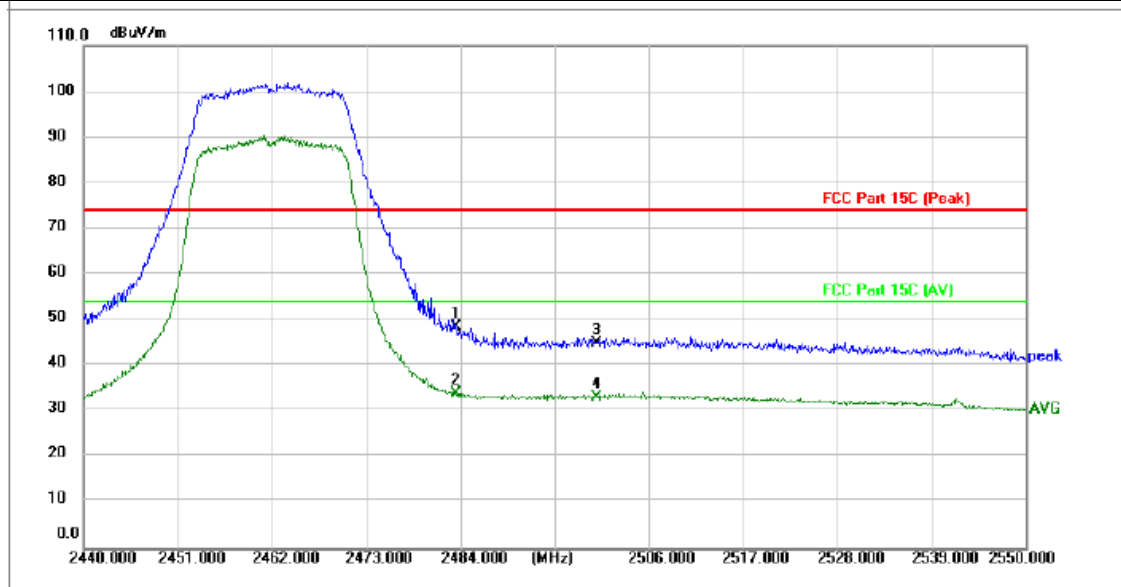
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	45.26	-2.23	43.03	74.00	-30.97	peak			P	
2	2310.000	33.79	-2.23	31.56	54.00	-22.44	AVG			P	
3	2390.000	52.22	-1.92	50.30	74.00	-23.70	peak			P	
4 *	2390.000	36.27	-1.92	34.35	54.00	-19.65	AVG			P	

TM3 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: H



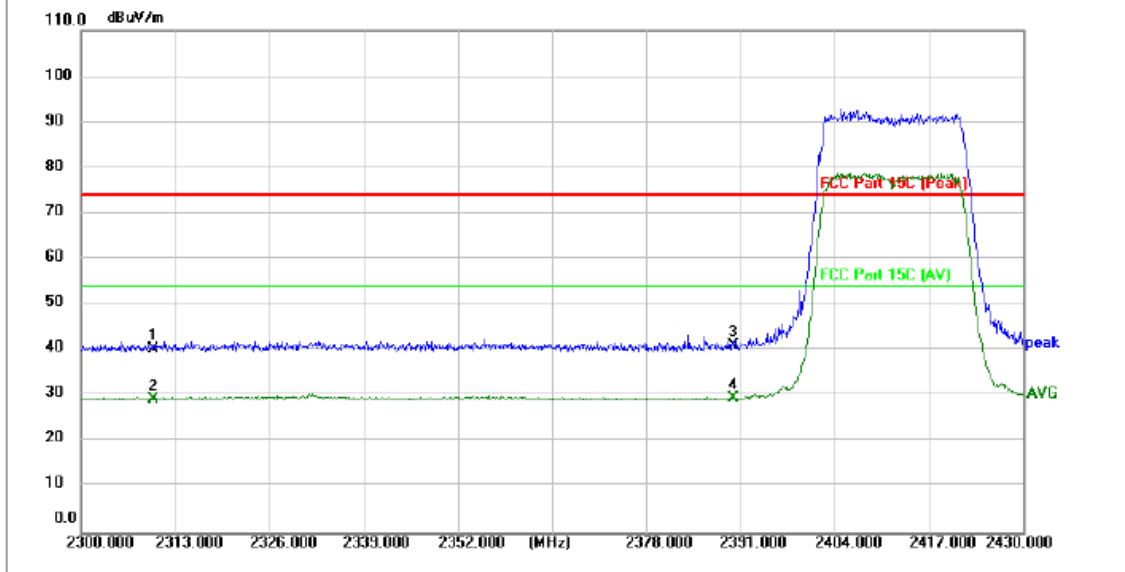
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	42.09	-0.49	41.60	74.00	-32.40	peak			P	
2 *	2483.500	30.45	-0.49	29.96	54.00	-24.04	AVG			P	
3	2500.000	41.37	-0.45	40.92	74.00	-33.08	peak			P	
4	2500.000	30.20	-0.45	29.75	54.00	-24.25	AVG			P	

TM3 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: H



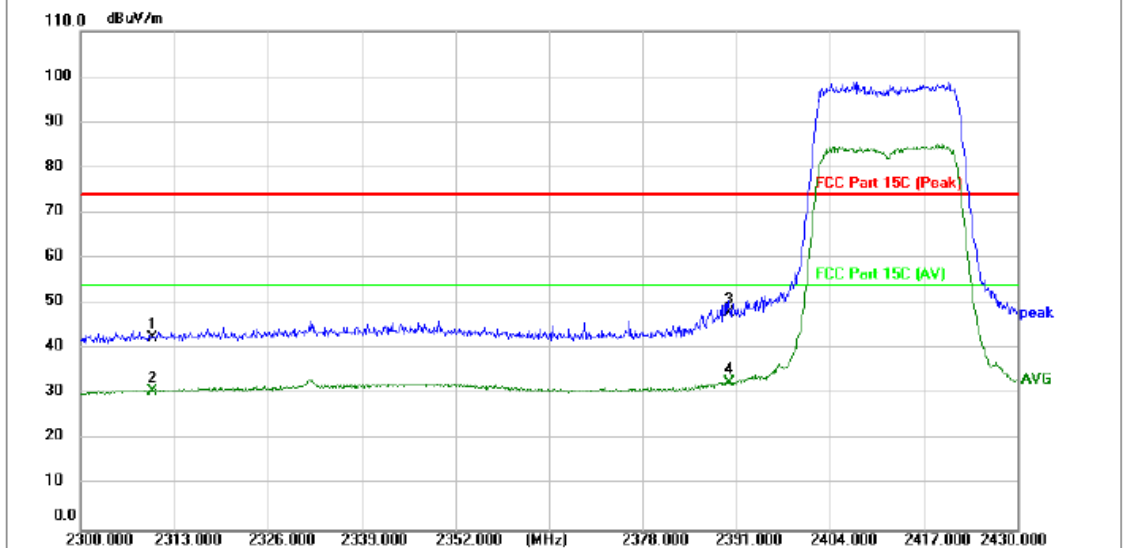
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	49.98	-1.56	48.42	74.00	-25.58	peak			P	
2 *	2483.500	35.58	-1.56	34.02	54.00	-19.98	AVG			P	
3	2500.000	46.46	-1.50	44.96	74.00	-29.04	peak			P	
4	2500.000	34.58	-1.50	33.08	54.00	-20.92	AVG			P	

TM4 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / CH: L



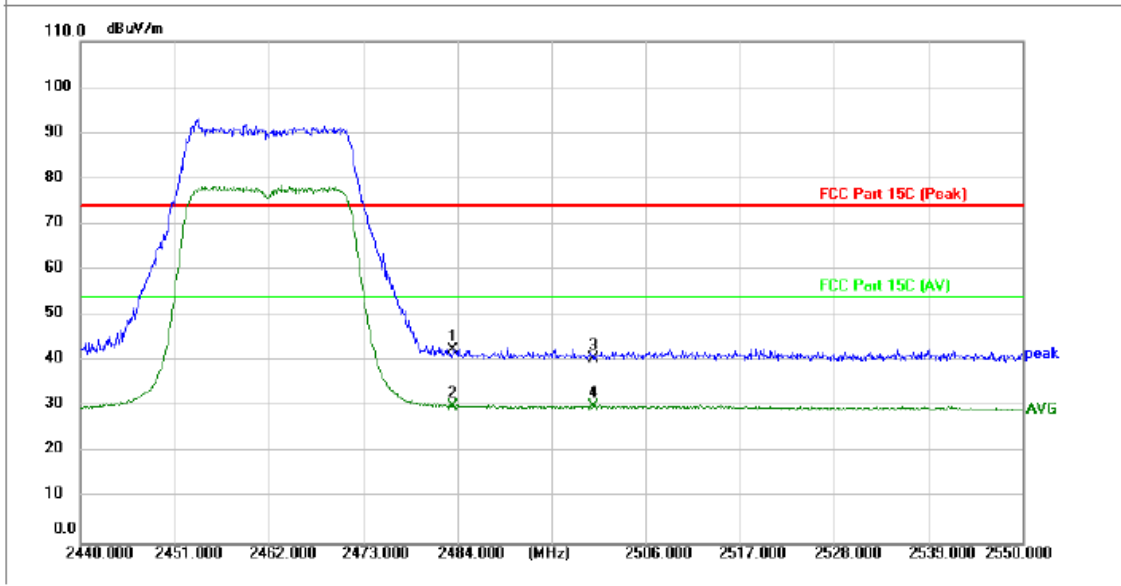
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	41.23	-0.93	40.30	74.00	-33.70	peak			P	
2	2310.000	30.34	-0.93	29.41	54.00	-24.59	AVG			P	
3	2390.000	41.90	-0.73	41.17	74.00	-32.83	peak			P	
4 *	2390.000	30.35	-0.73	29.62	54.00	-24.38	AVG			P	

TM4 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / CH: L



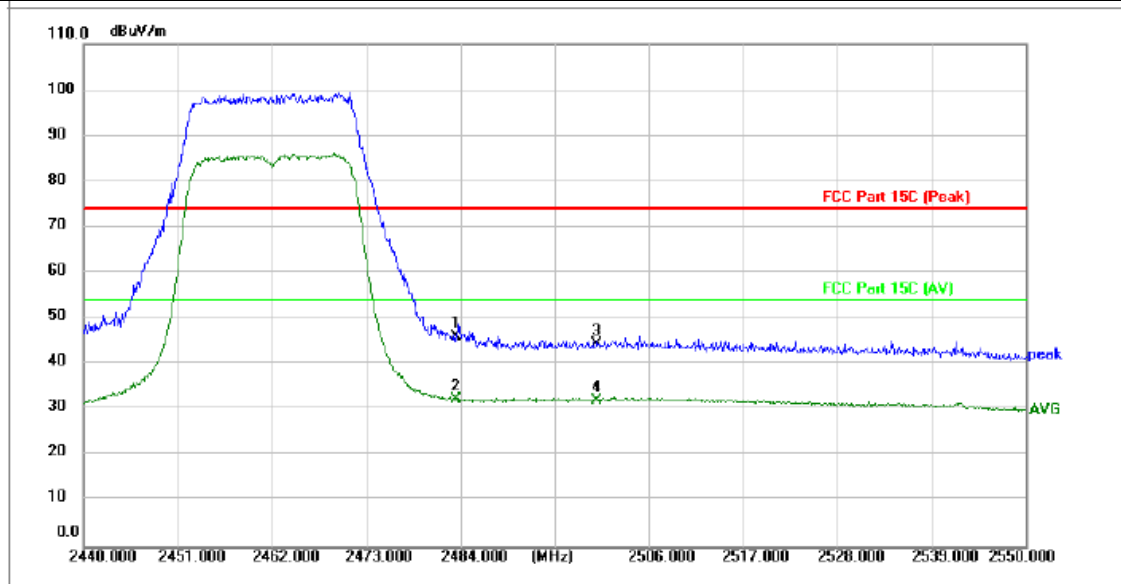
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	44.73	-2.23	42.50	74.00	-31.50	peak			P	
2	2310.000	32.93	-2.23	30.70	54.00	-23.30	AVG			P	
3	2390.000	50.04	-1.92	48.12	74.00	-25.88	peak			P	
4 *	2390.000	34.39	-1.92	32.47	54.00	-21.53	AVG			P	

TM4 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / CH: H



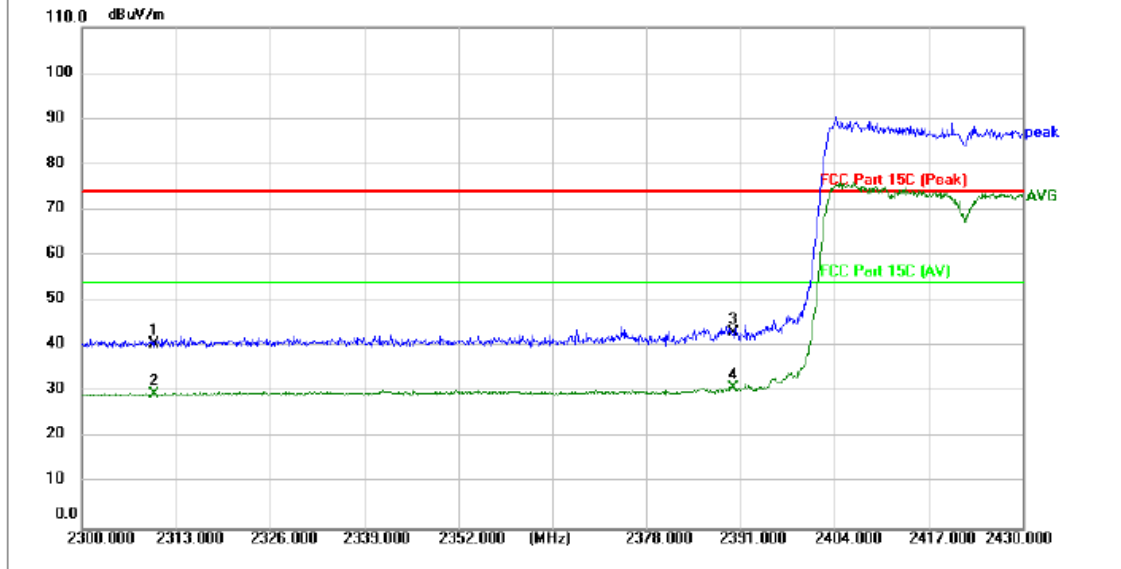
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	43.03	-0.49	42.54	74.00	-31.46	peak			P	
2 *	2483.500	30.74	-0.49	30.25	54.00	-23.75	AVG			P	
3	2500.000	40.98	-0.45	40.53	74.00	-33.47	peak			P	
4	2500.000	30.43	-0.45	29.98	54.00	-24.02	AVG			P	

TM4 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / CH: H



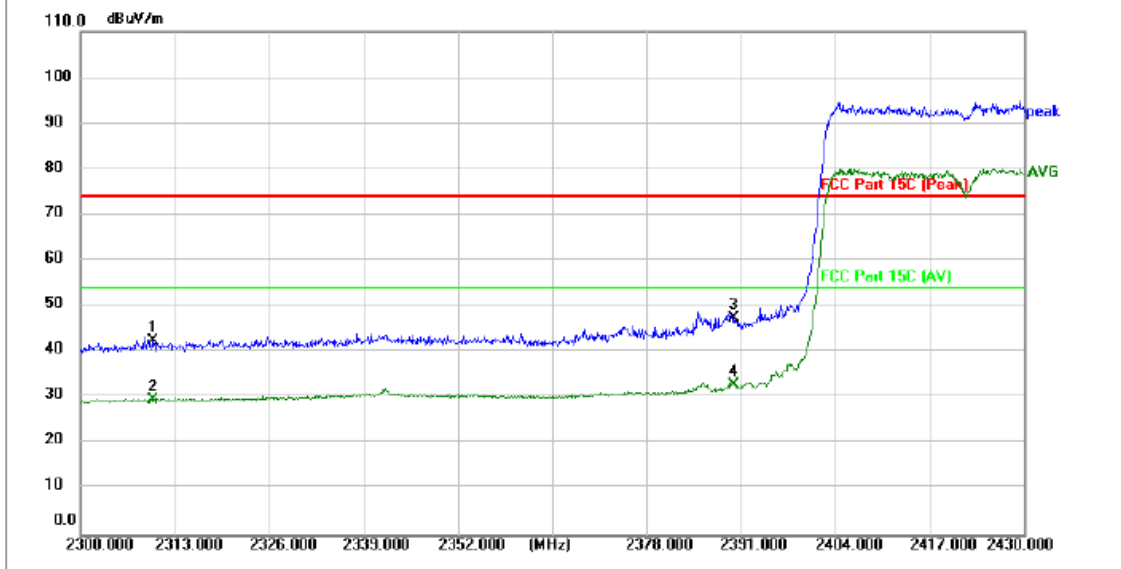
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	47.62	-1.56	46.06	74.00	-27.94	peak			P	
2 *	2483.500	33.83	-1.56	32.27	54.00	-21.73	AVG			P	
3	2500.000	45.78	-1.50	44.28	74.00	-29.72	peak			P	
4	2500.000	33.57	-1.50	32.07	54.00	-21.93	AVG			P	

TM6 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / CH: L



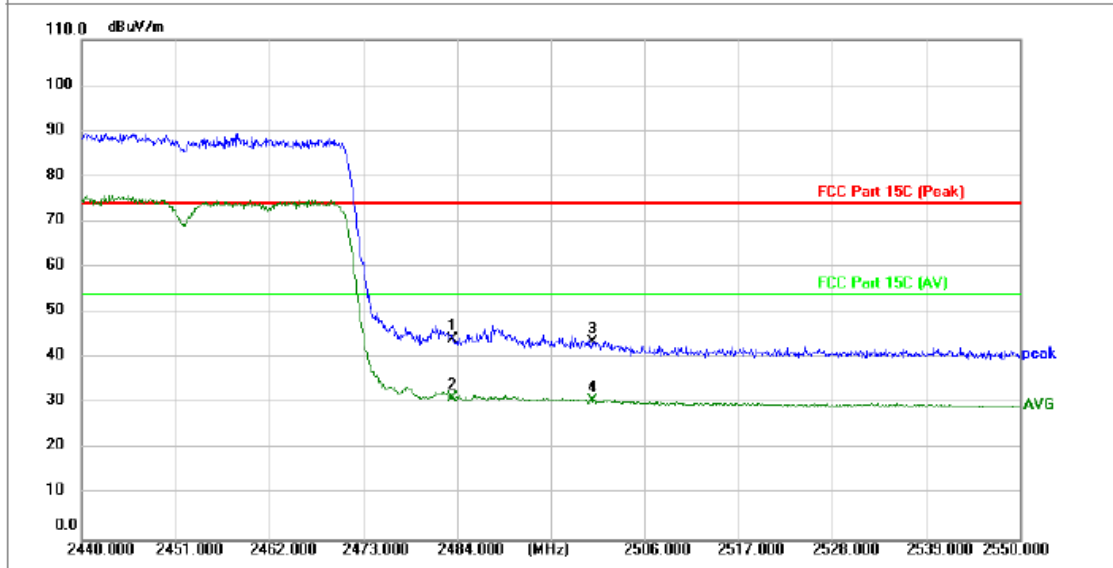
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	41.39	-0.93	40.46	74.00	-33.54	peak			P	
2	2310.000	30.57	-0.93	29.64	54.00	-24.36	AVG			P	
3	2390.000	43.72	-0.73	42.99	74.00	-31.01	peak			P	
4 *	2390.000	31.57	-0.73	30.84	54.00	-23.16	AVG			P	

TM6 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / CH: L



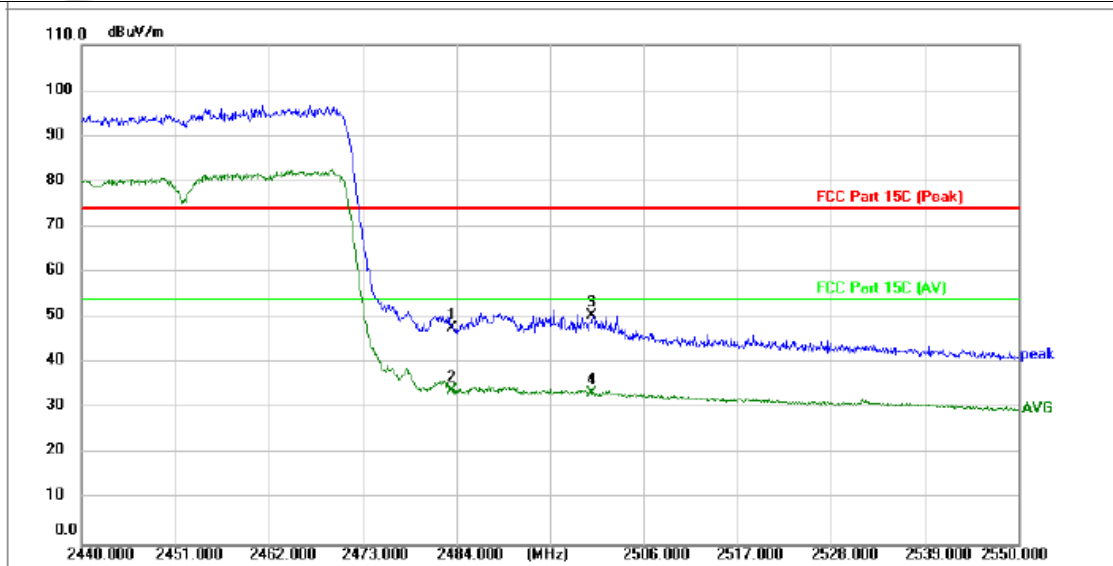
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	44.69	-2.23	42.46	74.00	-31.54	peak			P	
2	2310.000	31.90	-2.23	29.67	54.00	-24.33	AVG			P	
3	2390.000	49.24	-1.92	47.32	74.00	-26.68	peak			P	
4 *	2390.000	34.88	-1.92	32.96	54.00	-21.04	AVG			P	

TM6 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / 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	2483.500	44.66	-0.49	44.17	74.00	-29.83	peak			P	
2 *	2483.500	31.83	-0.49	31.34	54.00	-22.66	AVG			P	
3	2500.000	43.96	-0.45	43.51	74.00	-30.49	peak			P	
4	2500.000	31.05	-0.45	30.60	54.00	-23.40	AVG			P	

TM6 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / 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	2483.500	49.33	-1.56	47.77	74.00	-26.23	peak			P	
2 *	2483.500	35.48	-1.56	33.92	54.00	-20.08	AVG			P	
3	2500.000	51.87	-1.50	50.37	74.00	-23.63	peak			P	
4	2500.000	34.94	-1.50	33.44	54.00	-20.56	AVG			P	

Measurement Level = Reading level + Correct Factor, Margin= Measurement level - Limit

4.7 Emissions in frequency bands (below 1GHz)

Test Requirement:	Refer to 47 CFR 15.247(d), In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).		
Test Limit:	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
	<p>** 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.</p> <p>In the emission table above, the tighter limit applies at the band edges.</p> <p>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.</p>		
Test Method:	ANSI C63.10-2013 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02		
Procedure:	<p>a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>b. 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.</p> <p>c. 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.</p> <p>d. 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.</p> <p>e. 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.</p> <p>f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>g. 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, quasi-peak or average method as specified and then reported in a data sheet.</p> <p>h. Test the EUT in the lowest channel, the middle channel, the Highest channel.</p> <p>i. 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.</p> <p>j. Repeat above procedures until all frequencies measured was complete.</p> <p>Remark:</p> <p>1) For emission below 1GHz, through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.</p>		

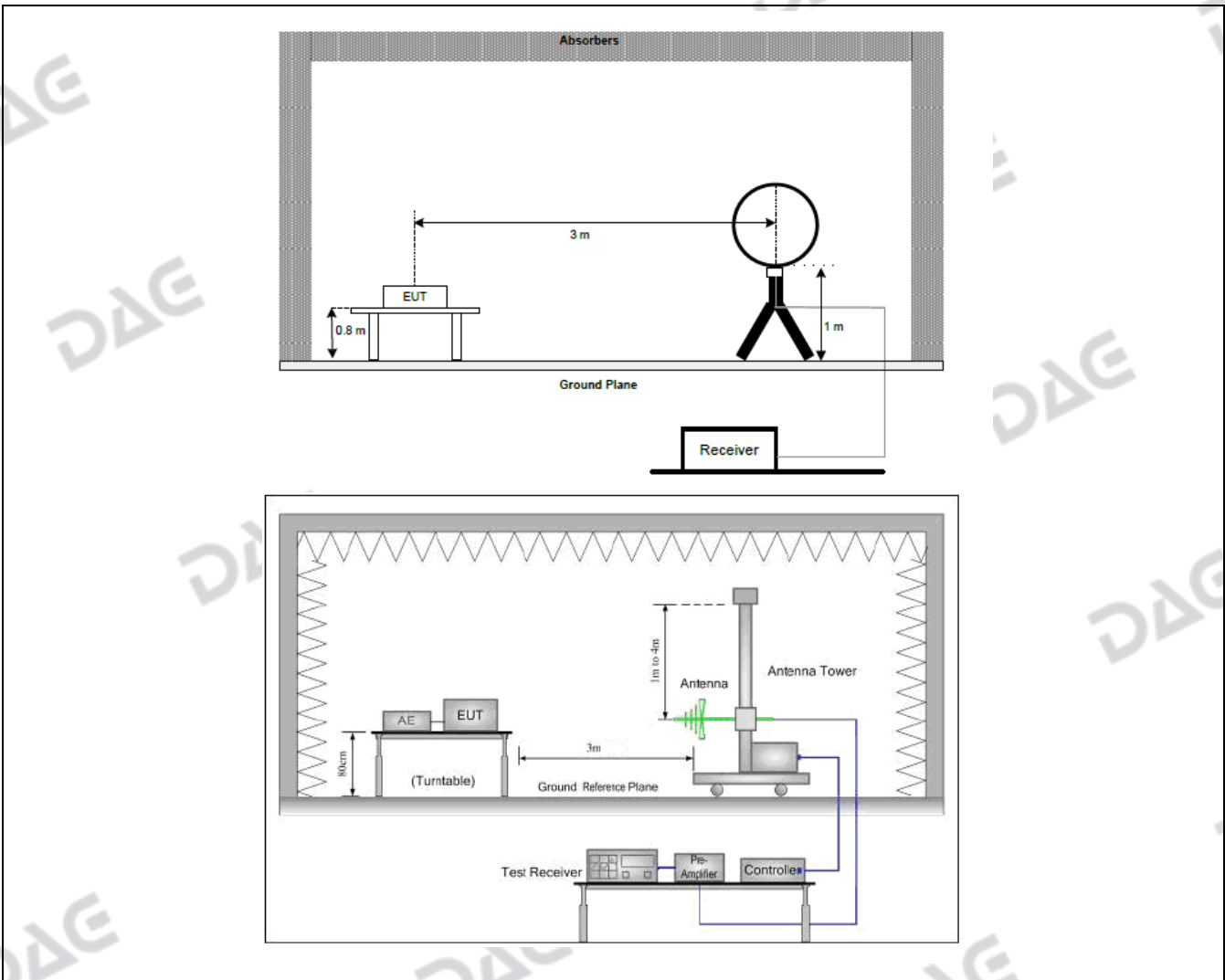
2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
 Final Test Level = Receiver Reading + Antenna Factor + Cable Factor + Preamplifier Factor

3) Scan from 9kHz to 25GHz, the disturbance above 12.75GHz and below 30MHz 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. Fundamental frequency is blocked by filter, and only spurious emission is shown.

4.7.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.9 °C	Humidity:	52.1 %	Atmospheric Pressure:	102 kPa
Pretest mode:	TM1, TM2, TM3, TM4, TM5, TM6				
Final test mode:	TM1(worse case)				

4.7.2 Test Setup Diagram:



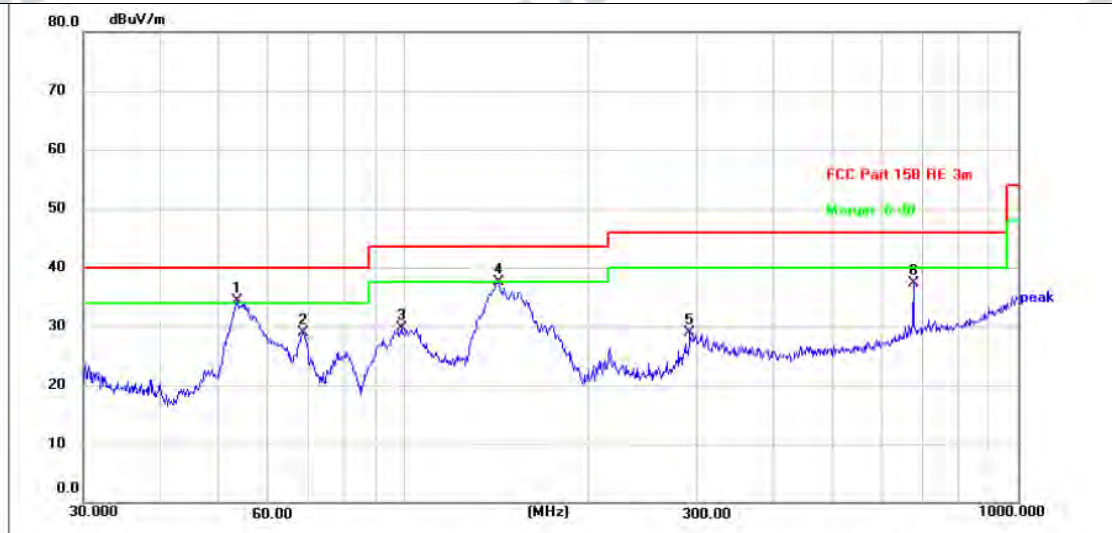
4.7.3 Test Data:

TM1 / Polarization: Horizontal / Band: 2400-2483.5 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	52.9453	31.64	-9.61	22.03	40.00	-17.97	QP	100		P	
2	142.3243	34.31	-4.03	30.28	43.50	-13.22	QP	100		P	
3	250.3012	30.53	-2.10	28.43	46.00	-17.57	QP	100		P	
4	325.5958	28.63	1.23	29.86	46.00	-16.14	QP	100		P	
5	501.1790	27.20	1.91	29.11	46.00	-16.89	QP	100		P	
6 *	958.7943	23.96	9.34	33.30	46.00	-12.70	QP	100		P	

TM1 / Polarization: Vertical / Band: 2400-2483.5 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 *	53.5052	43.94	-9.57	34.37	40.00	-5.63	QP	100		P	
2	68.3908	37.51	-8.65	28.86	40.00	-11.14	QP	100		P	
3	98.8326	35.35	-5.59	29.76	43.50	-13.74	QP	100		P	
4 !	142.3243	41.58	-4.03	37.55	43.50	-5.95	QP	100		P	
5	292.0583	29.32	-0.43	28.89	46.00	-17.11	QP	100		P	
6	675.2080	32.84	4.40	37.24	46.00	-8.76	QP	100		P	

Note: Peak and Average measurement were performed at the frequencies with maximized peak emission.
 Measurement Level = Reading level + Correct Factor, Margin= Mesurement level - Limit

4.8 Emissions in frequency bands (above 1GHz)

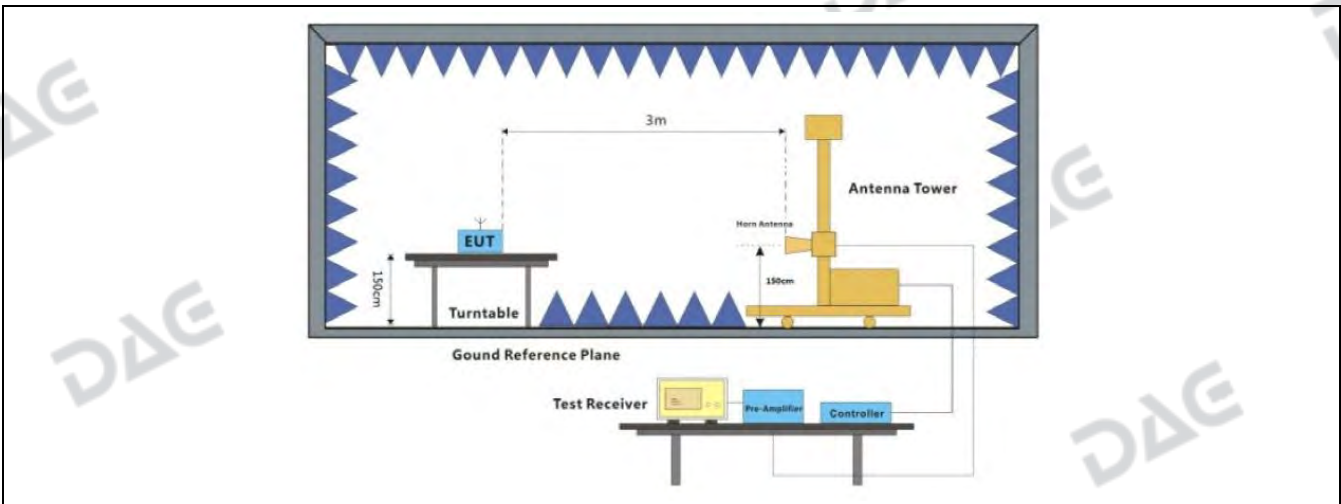
Test Requirement:	In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).`		
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	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
	<p>** 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.</p> <p>In the emission table above, the tighter limit applies at the band edges.</p> <p>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.</p>		
Test Method:	ANSI C63.10-2013 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02		
Procedure:	<p>a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>b. 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.</p> <p>c. 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.</p> <p>d. 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.</p> <p>e. 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.</p> <p>f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>g. 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, quasi-peak or average method as specified and then reported in a data sheet.</p> <p>h. Test the EUT in the lowest channel, the middle channel, the Highest channel.</p> <p>i. 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.</p> <p>j. Repeat above procedures until all frequencies measured was complete.</p> <p>Remark:</p> <p>1) For emission below 1GHz, through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.</p>		

2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
 Final Test Level = Receiver Reading + Antenna Factor + Cable Factor + Preamplifier Factor
 3) Scan from 9kHz to 25GHz, the disturbance above 12.75GHz and below 30MHz 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. Fundamental frequency is blocked by filter, and only spurious emission is shown.

4.8.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.9 °C	Humidity:	52.1 %	Atmospheric Pressure:	102 kPa
Pretest mode:	TM1, TM2, TM3, TM4, TM5, TM6				
Final test mode:	TM1, TM3, TM4, TM6(worse case)				

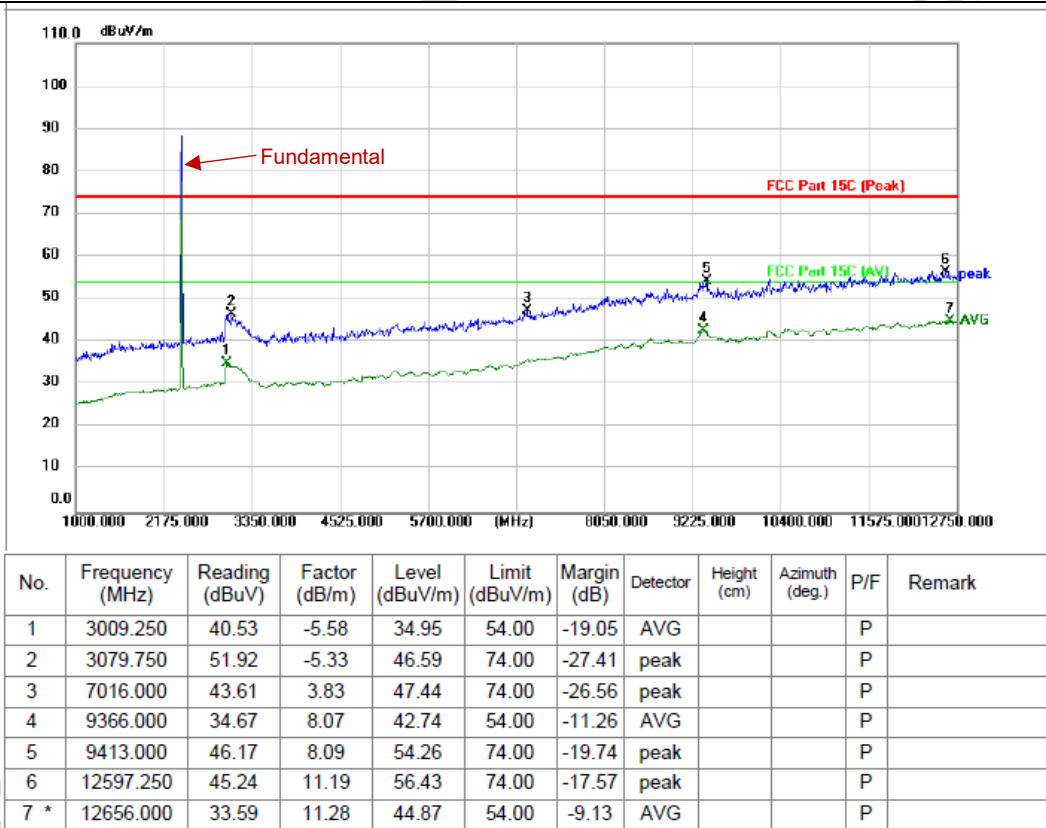
4.8.2 Test Setup Diagram:



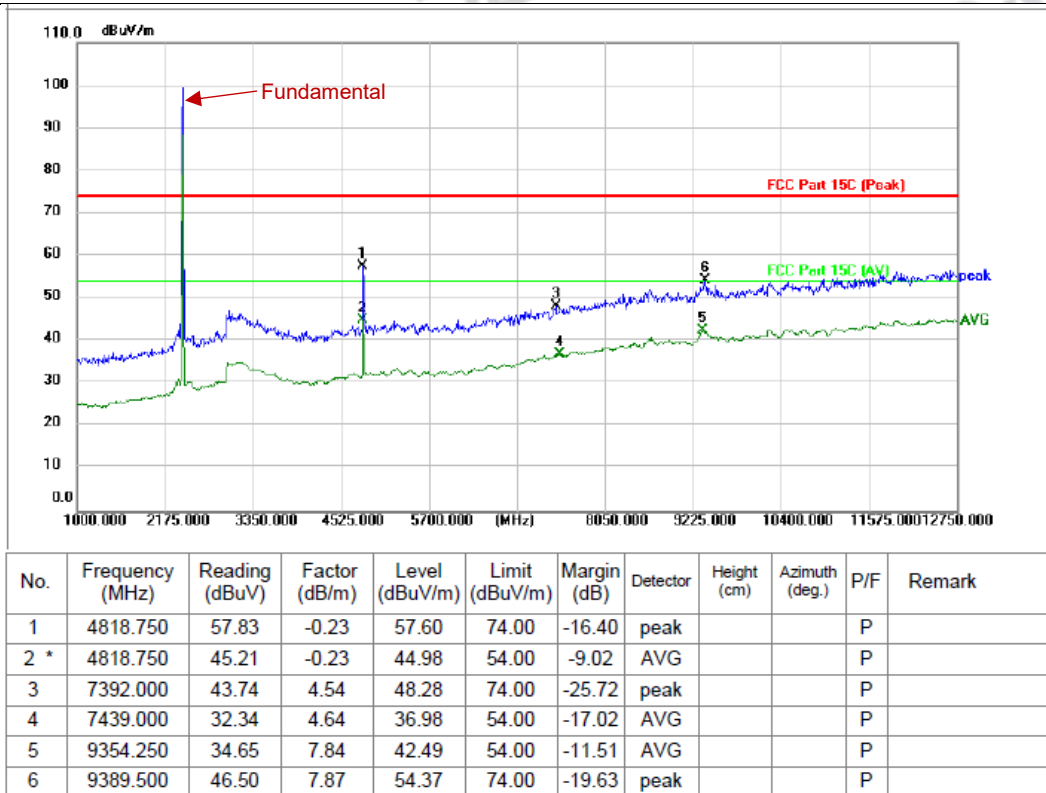
4.8.3 Test Data:

ANT1

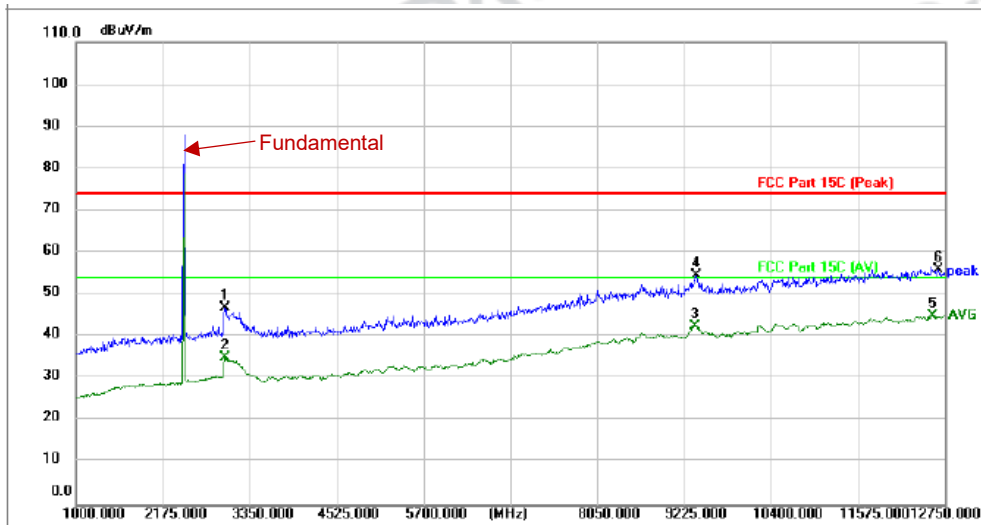
TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: L



TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: L

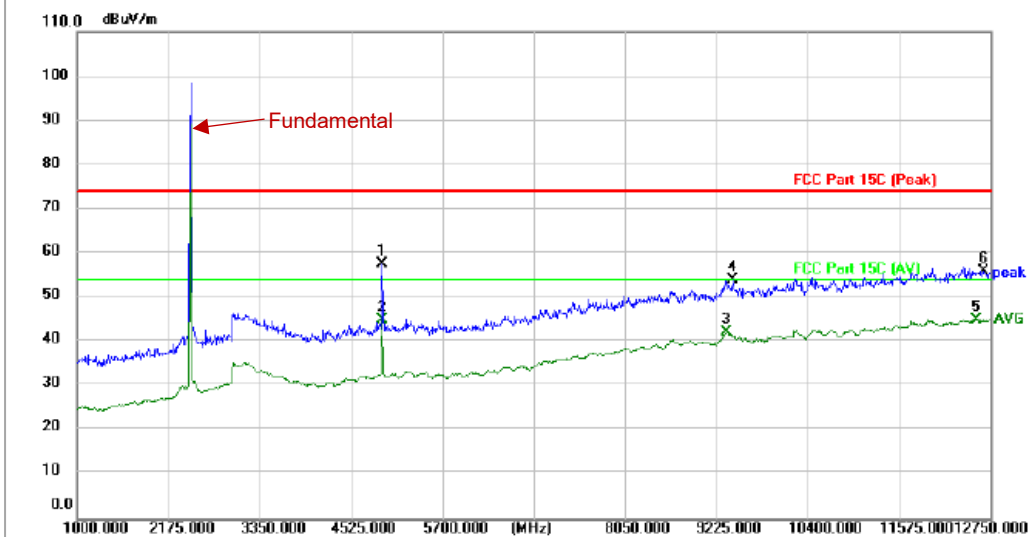


TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: H



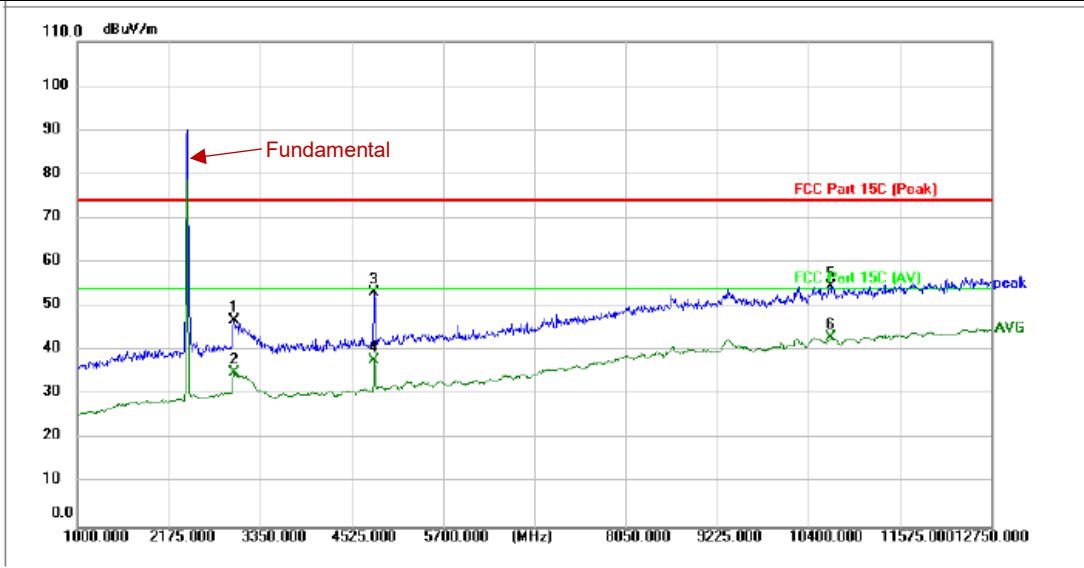
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	3009.250	52.36	-5.58	46.78	74.00	-27.22	peak			P	
2	3009.250	40.61	-5.58	35.03	54.00	-18.97	AVG			P	
3	9366.000	34.53	8.07	42.60	54.00	-11.40	AVG			P	
4	9389.500	46.49	8.08	54.57	74.00	-19.43	peak			P	
5 *	12585.500	33.69	11.16	44.85	54.00	-9.15	AVG			P	
6	12667.750	44.78	11.30	56.08	74.00	-17.92	peak			P	

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: H



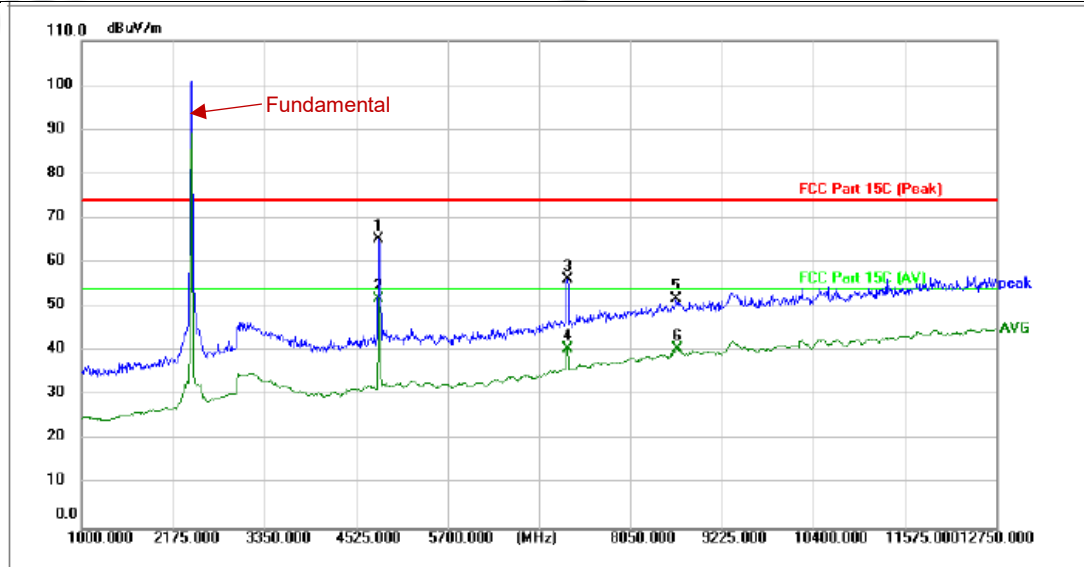
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	4924.500	57.45	0.11	57.56	74.00	-16.44	peak			P	
2 *	4924.500	44.85	0.11	44.96	54.00	-9.04	AVG			P	
3	9354.250	34.47	7.84	42.31	54.00	-11.69	AVG			P	
4	9436.500	46.22	7.90	54.12	74.00	-19.88	peak			P	
5	12573.750	33.64	11.31	44.95	54.00	-9.05	AVG			P	
6	12667.750	44.57	11.46	56.03	74.00	-17.97	peak			P	

TM3 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: L



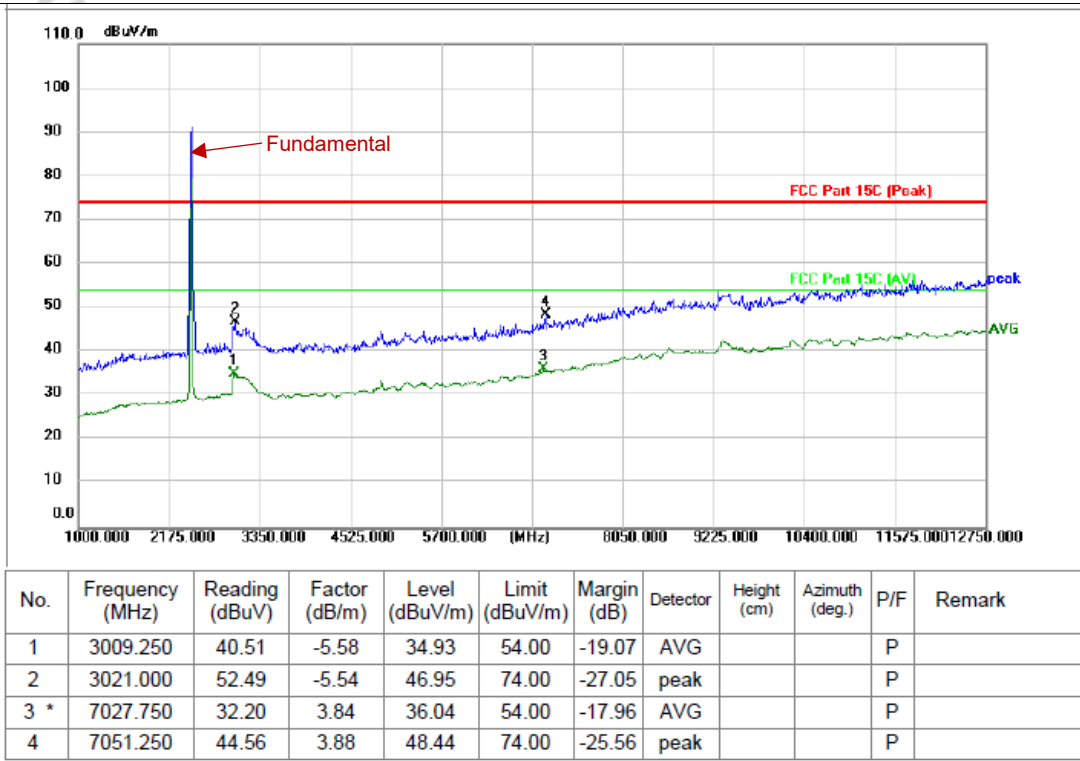
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	3009.250	52.41	-5.58	46.83	74.00	-27.17	peak			P	
2	3009.250	40.67	-5.58	35.09	54.00	-18.91	AVG			P	
3	4818.750	54.12	-0.85	53.27	74.00	-20.73	peak			P	
4	4818.750	38.58	-0.85	37.73	54.00	-16.27	AVG			P	
5	10682.000	45.40	9.13	54.53	74.00	-19.47	peak			P	
6 *	10693.750	33.78	9.15	42.93	54.00	-11.07	AVG			P	

TM3 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: L

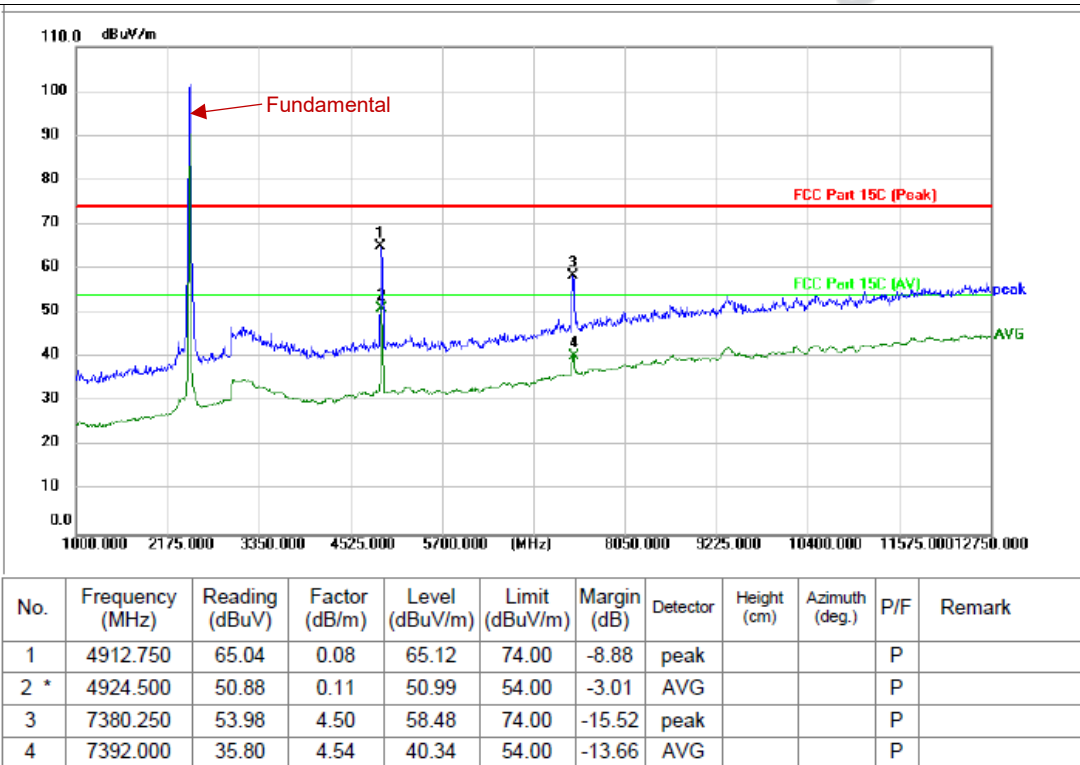


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	4818.750	65.46	-0.23	65.23	74.00	-8.77	peak			P	
2 *	4818.750	52.20	-0.23	51.97	54.00	-2.03	AVG			P	
3	7239.250	51.98	4.16	56.14	74.00	-17.86	peak			P	
4	7239.250	36.50	4.16	40.66	54.00	-13.34	AVG			P	
5	8637.500	44.88	7.02	51.90	74.00	-22.10	peak			P	
6	8649.250	33.58	7.03	40.61	54.00	-13.39	AVG			P	

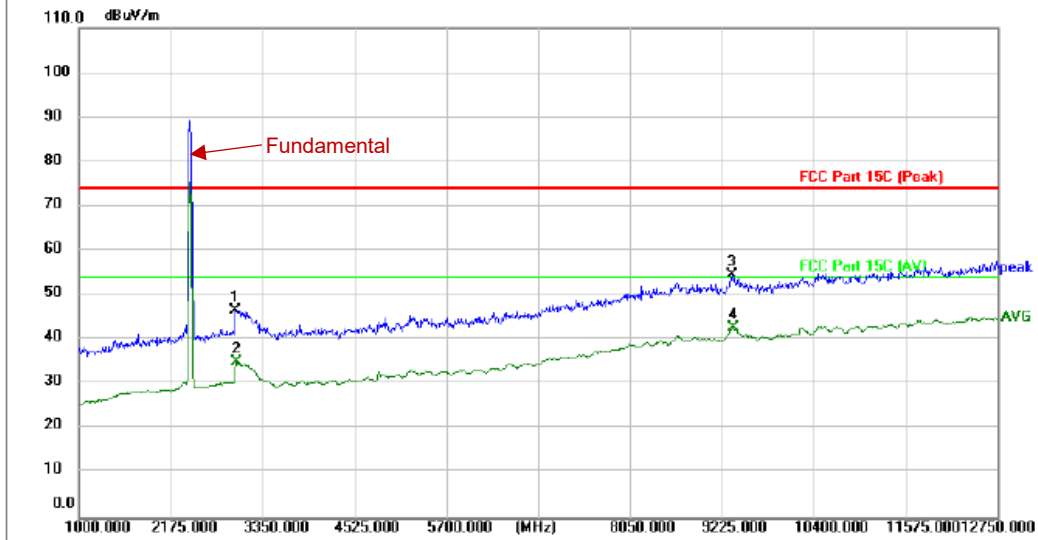
TM3 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: H



TM3 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: H

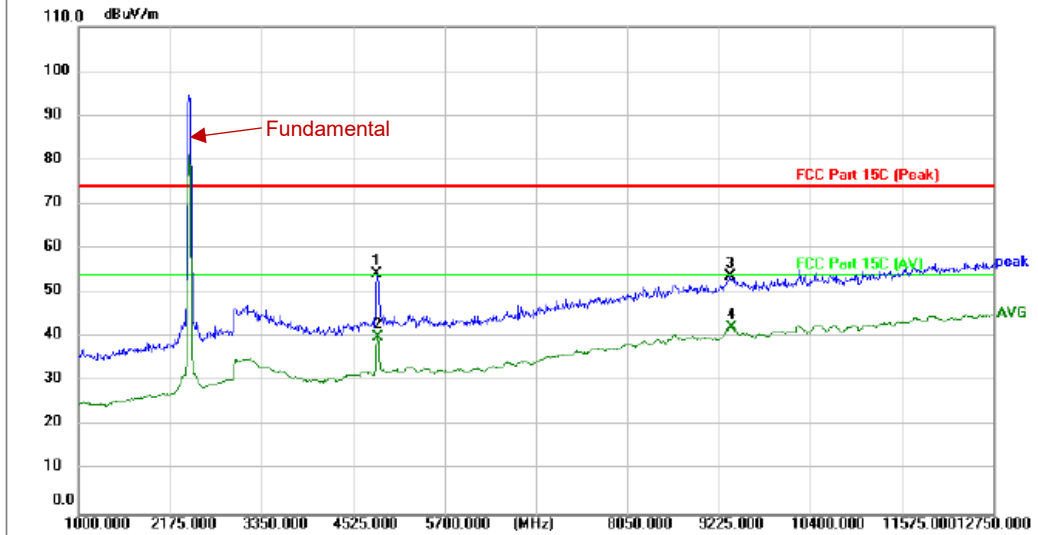


TM4 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / CH: L



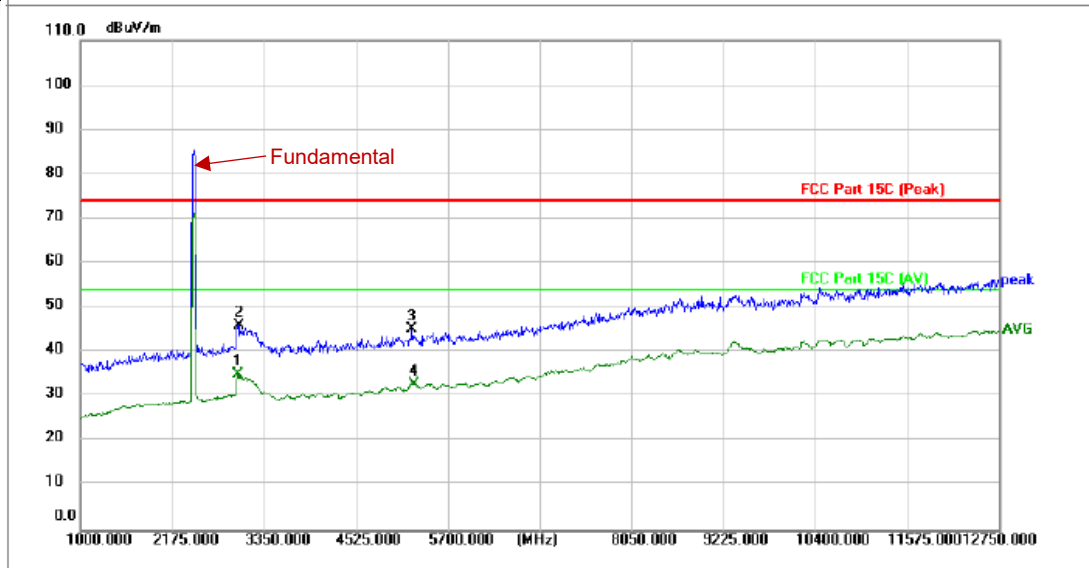
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2997.500	46.06	0.65	46.71	74.00	-27.29	peak			P	
2	3009.250	40.58	-5.58	35.00	54.00	-19.00	AVG			P	
3	9354.250	46.44	8.06	54.50	74.00	-19.50	peak			P	
4 *	9366.000	34.60	8.07	42.67	54.00	-11.33	AVG			P	

TM4 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / CH: L



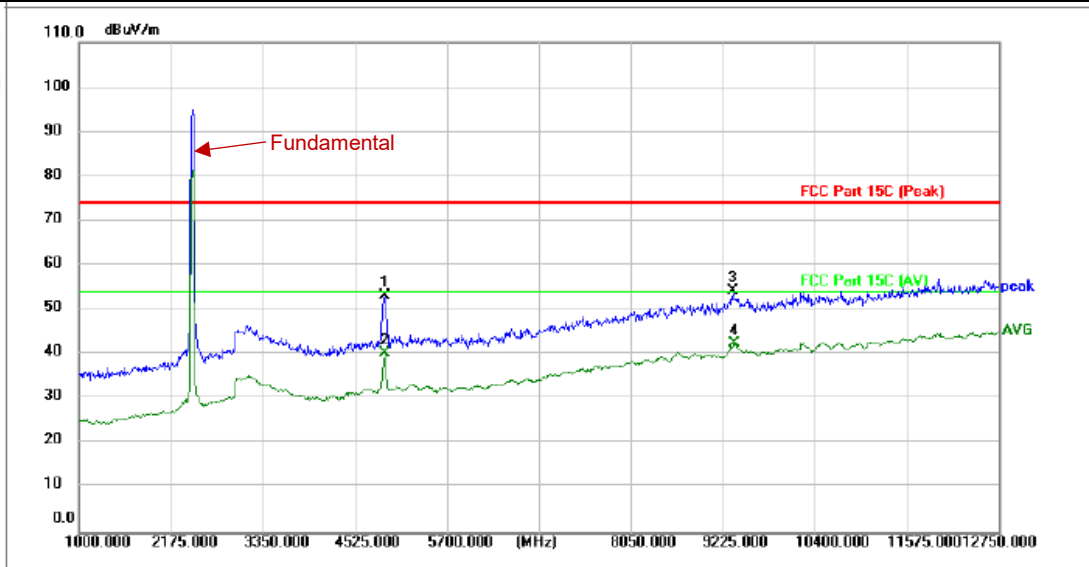
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	4830.500	54.41	-0.19	54.22	74.00	-19.78	peak			P	
2	4842.250	40.10	-0.16	39.94	54.00	-14.06	AVG			P	
3	9366.000	45.97	7.85	53.82	74.00	-20.18	peak			P	
4 *	9389.500	34.44	7.87	42.31	54.00	-11.69	AVG			P	

TM4 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / CH: H



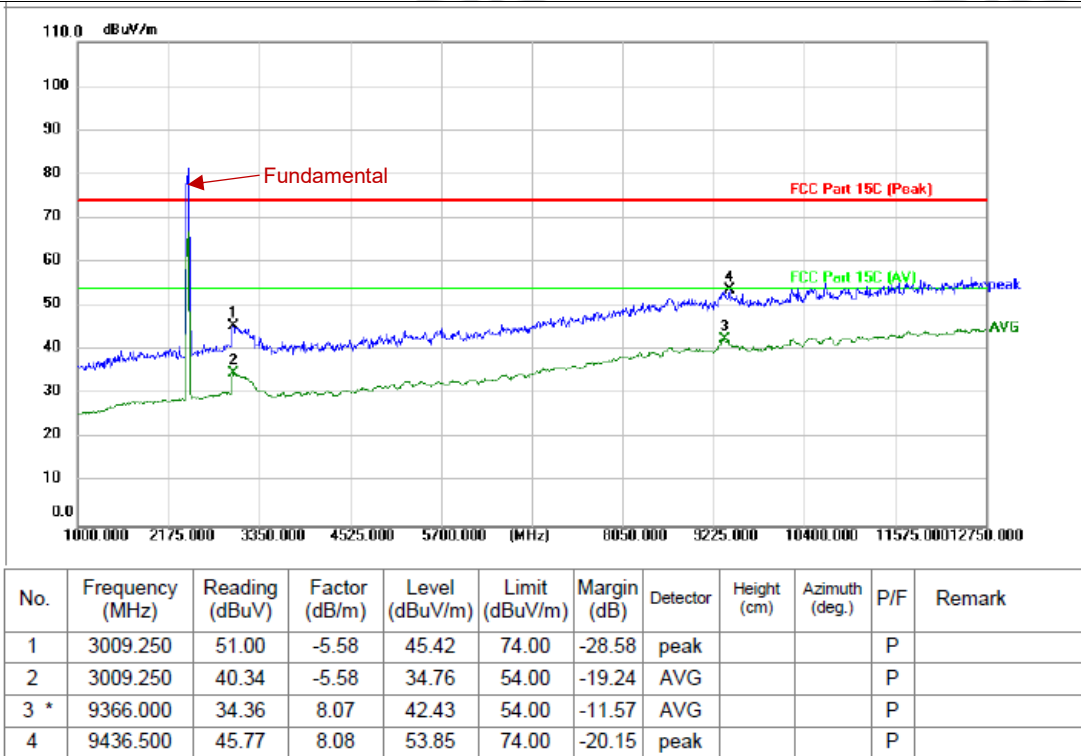
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	3009.250	40.60	-5.58	35.02	54.00	-18.98	AVG			P	
2	3021.000	51.59	-5.54	46.05	74.00	-27.95	peak			P	
3	5241.750	45.11	0.23	45.34	74.00	-28.66	peak			P	
4	5265.250	32.61	0.28	32.89	54.00	-21.11	AVG			P	

TM4 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / CH: H

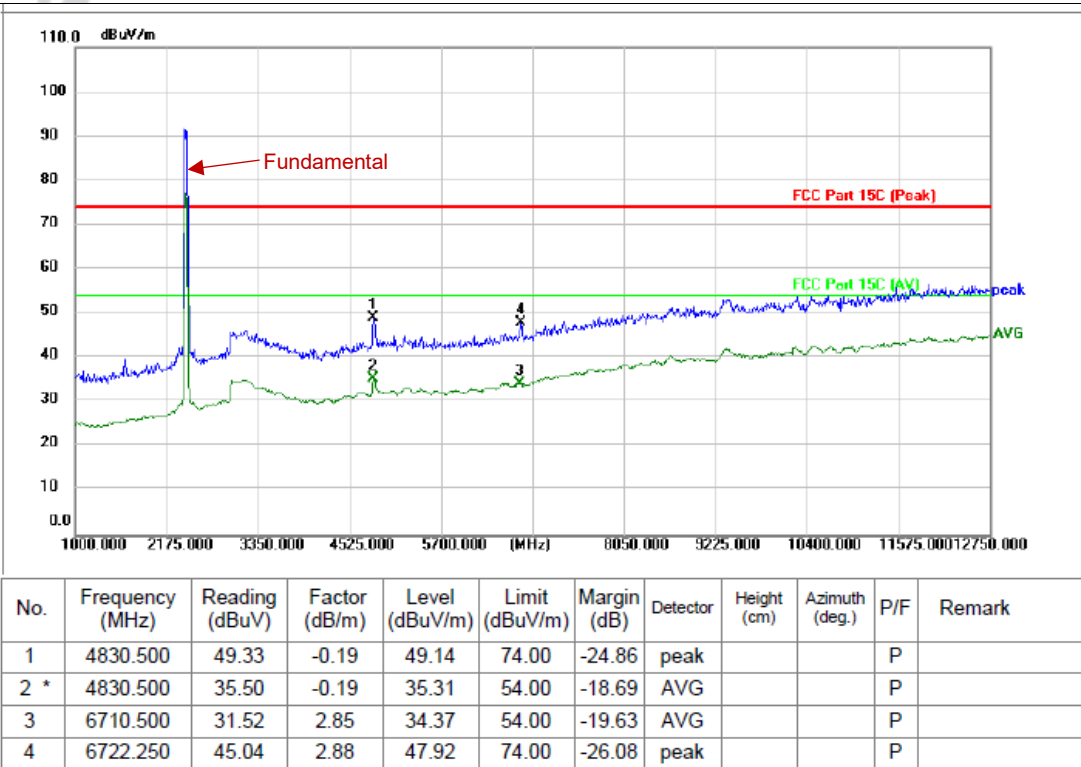


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	4901.000	53.19	0.04	53.23	74.00	-20.77	peak			P	
2	4901.000	40.36	0.04	40.40	54.00	-13.60	AVG			P	
3	9354.250	46.42	7.84	54.26	74.00	-19.74	peak			P	
4 *	9366.000	34.58	7.85	42.43	54.00	-11.57	AVG			P	

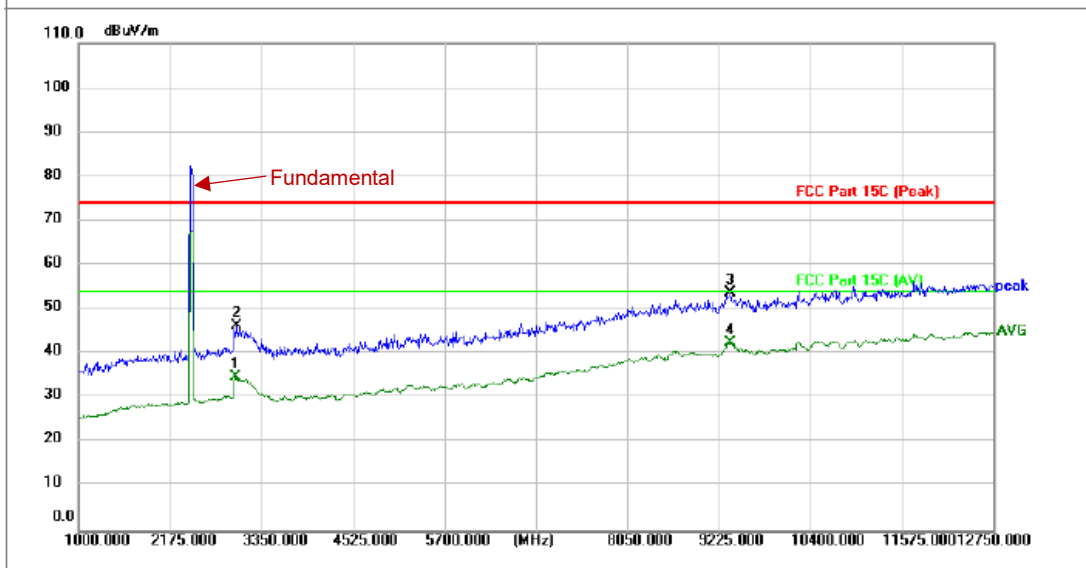
TM6 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / CH: L



TM6 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / CH: L

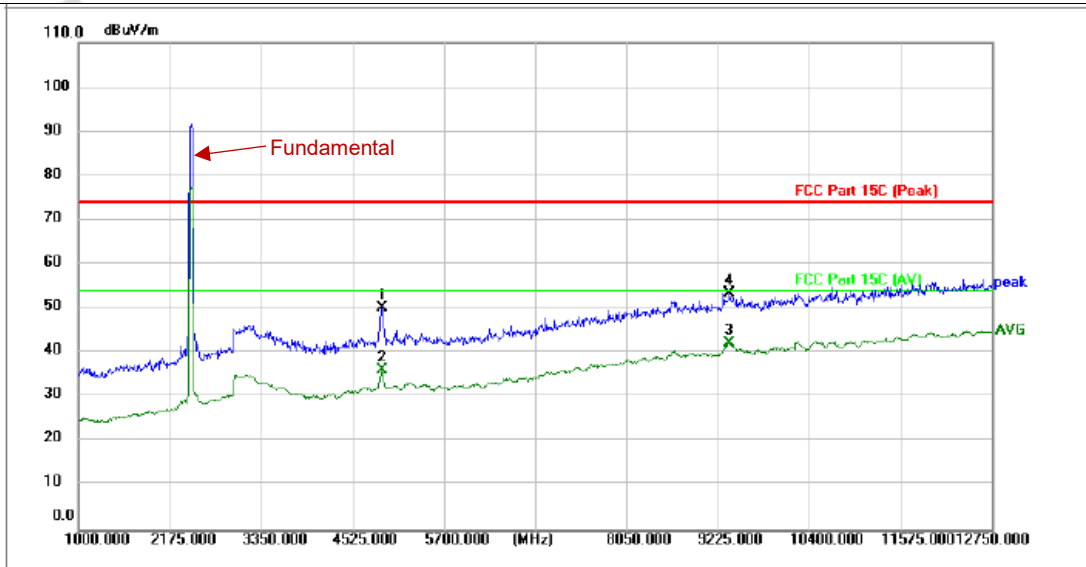


TM6 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / CH: H



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	3009.250	40.50	-5.58	34.92	54.00	-19.08	AVG			P	
2	3021.000	51.91	-5.54	46.37	74.00	-27.63	peak			P	
3	9377.750	45.71	8.07	53.78	74.00	-20.22	peak			P	
4 *	9377.750	34.54	8.07	42.61	54.00	-11.39	AVG			P	

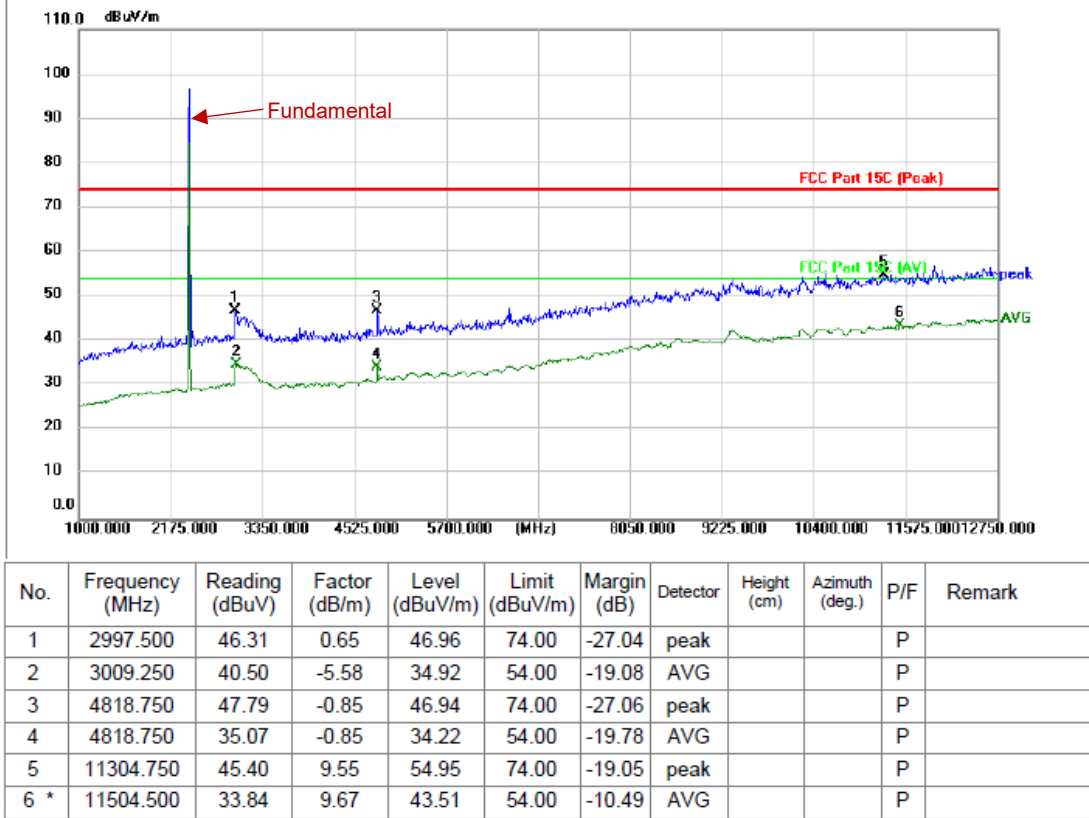
TM6 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / CH: H



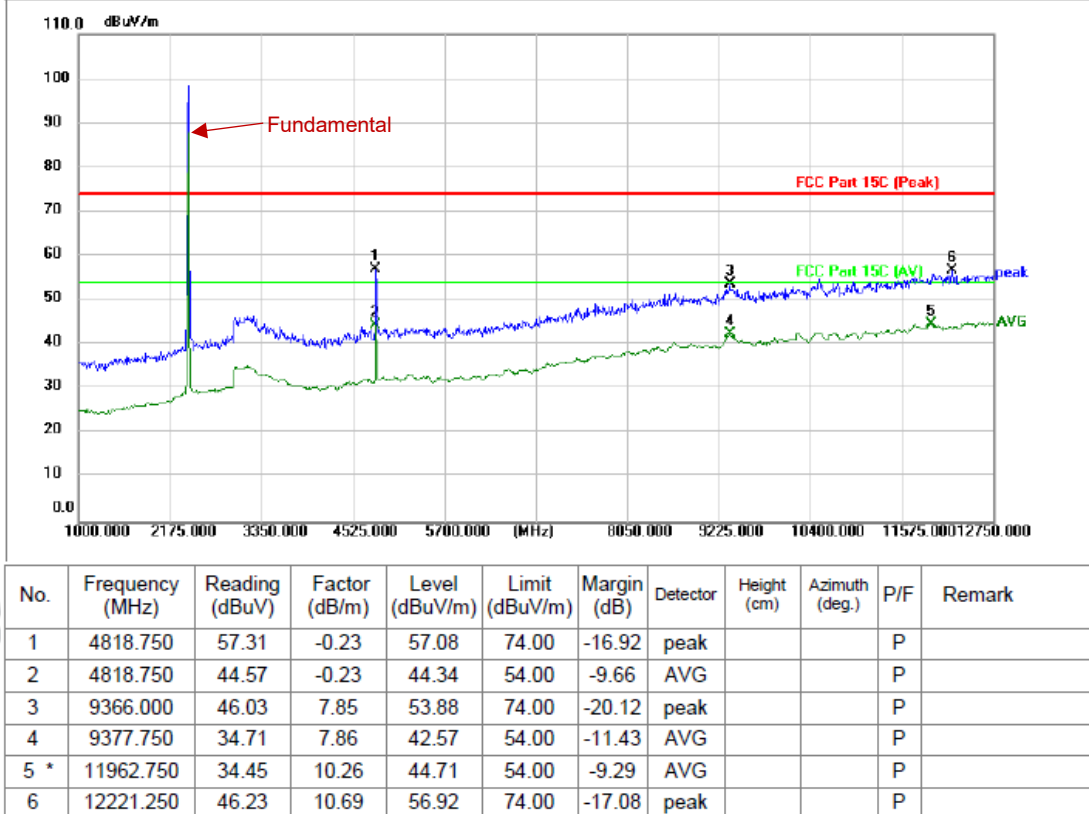
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	4901.000	50.27	0.04	50.31	74.00	-23.69	peak			P	
2	4901.000	36.14	0.04	36.18	54.00	-17.82	AVG			P	
3 *	9366.000	34.33	7.85	42.18	54.00	-11.82	AVG			P	
4	9377.750	45.66	7.86	53.52	74.00	-20.48	peak			P	

ANT2

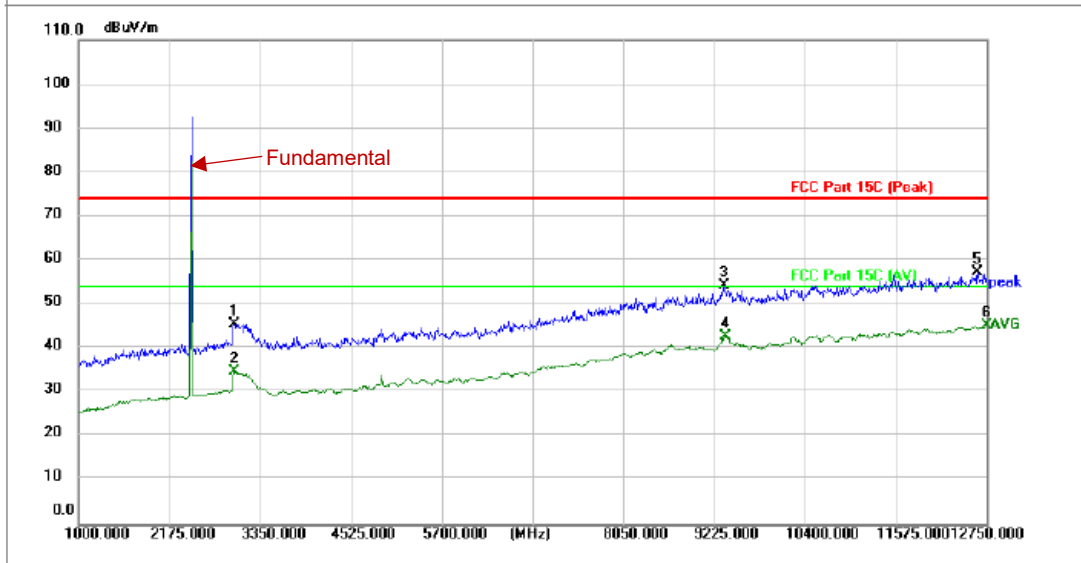
TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: L



TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: L

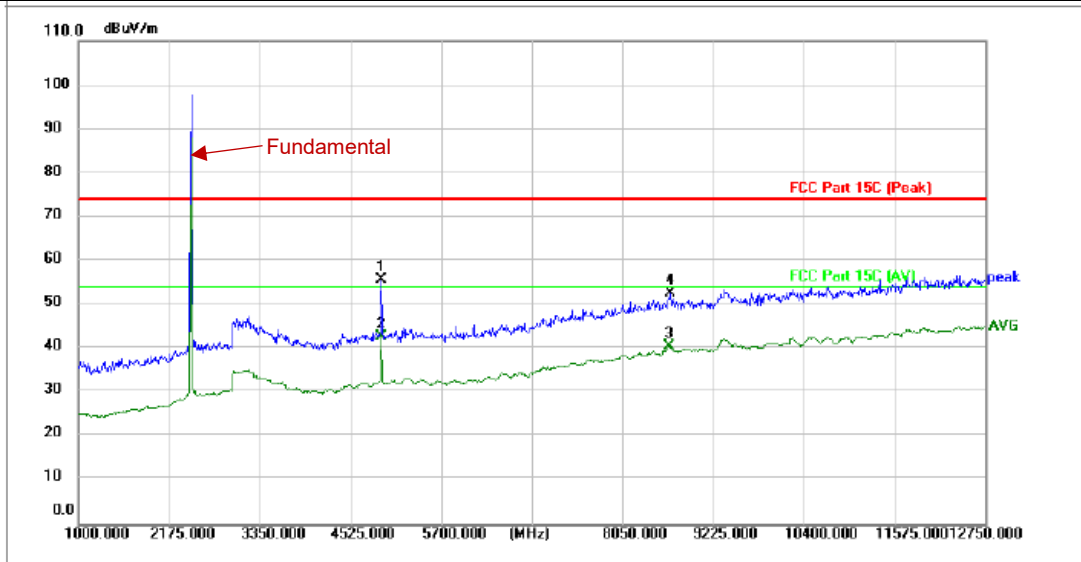


TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: H



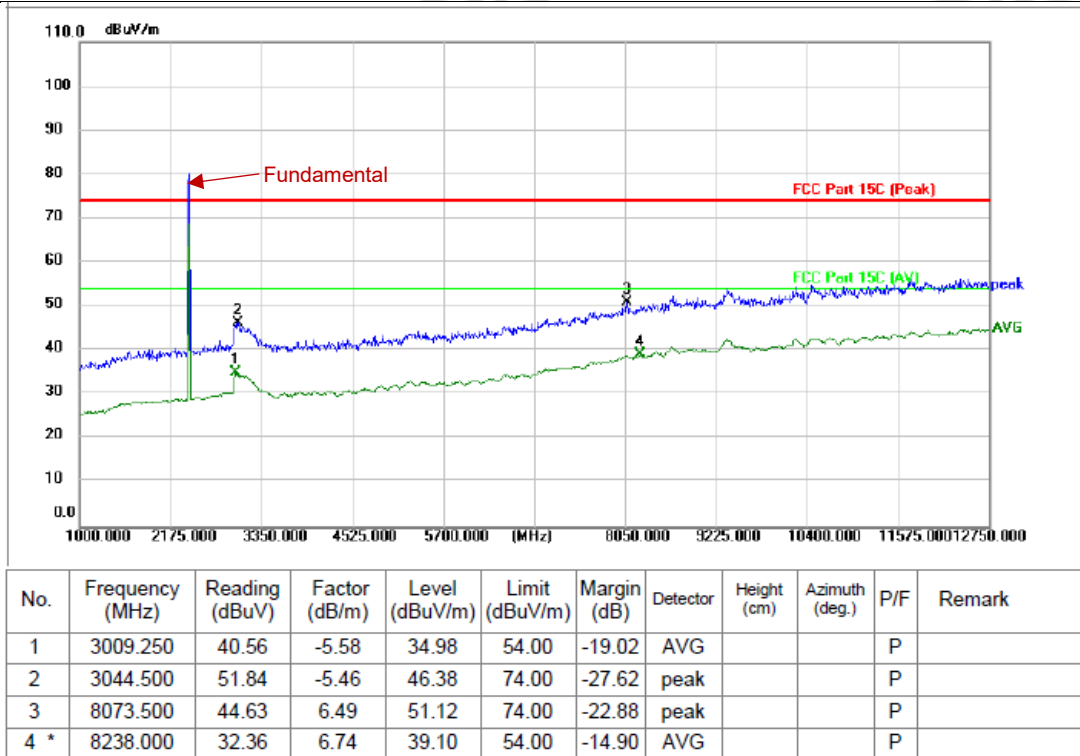
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	3009.250	51.13	-5.58	45.55	74.00	-28.45	peak			P	
2	3009.250	40.42	-5.58	34.84	54.00	-19.16	AVG			P	
3	9354.250	46.19	8.06	54.25	74.00	-19.75	peak			P	
4	9377.750	34.63	8.07	42.70	54.00	-11.30	AVG			P	
5	12632.500	46.23	11.24	57.47	74.00	-16.53	peak			P	
6 *	12750.000	33.72	11.44	45.16	54.00	-8.84	AVG			P	

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: H

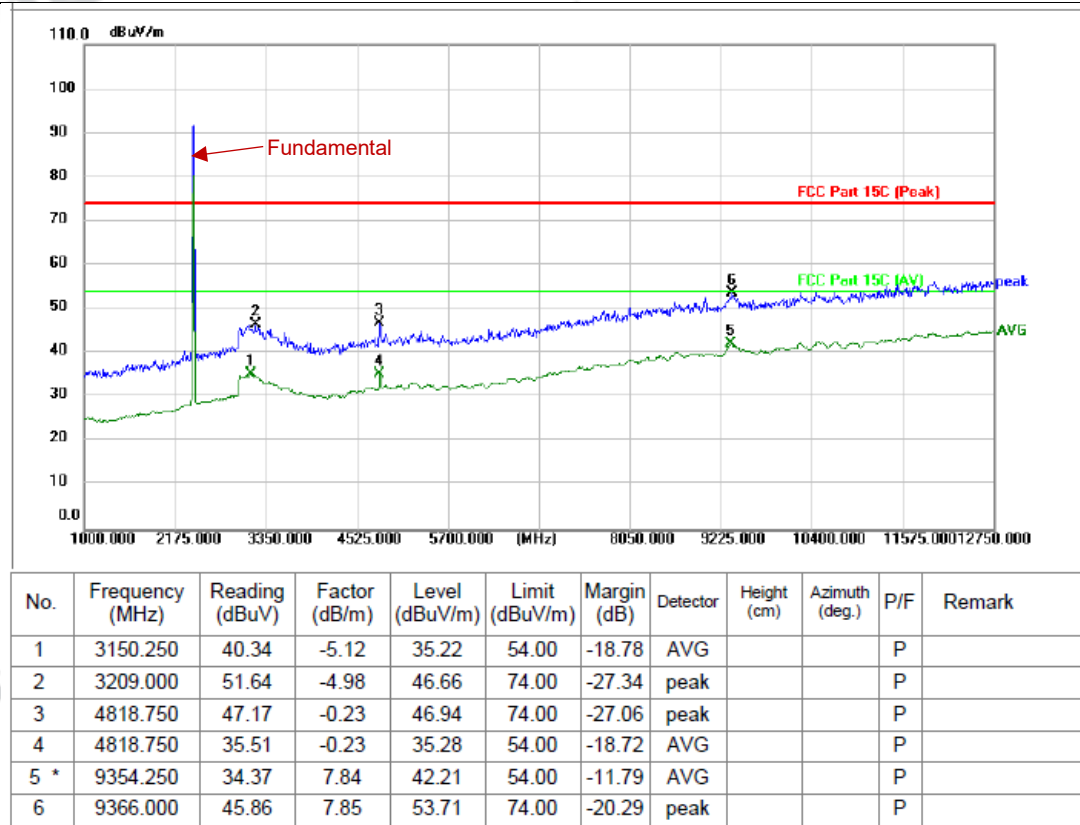


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	4924.500	55.56	0.11	55.67	74.00	-18.33	peak			P	
2 *	4924.500	42.58	0.11	42.69	54.00	-11.31	AVG			P	
3	8649.250	33.45	7.03	40.48	54.00	-13.52	AVG			P	
4	8672.750	45.69	7.07	52.76	74.00	-21.24	peak			P	

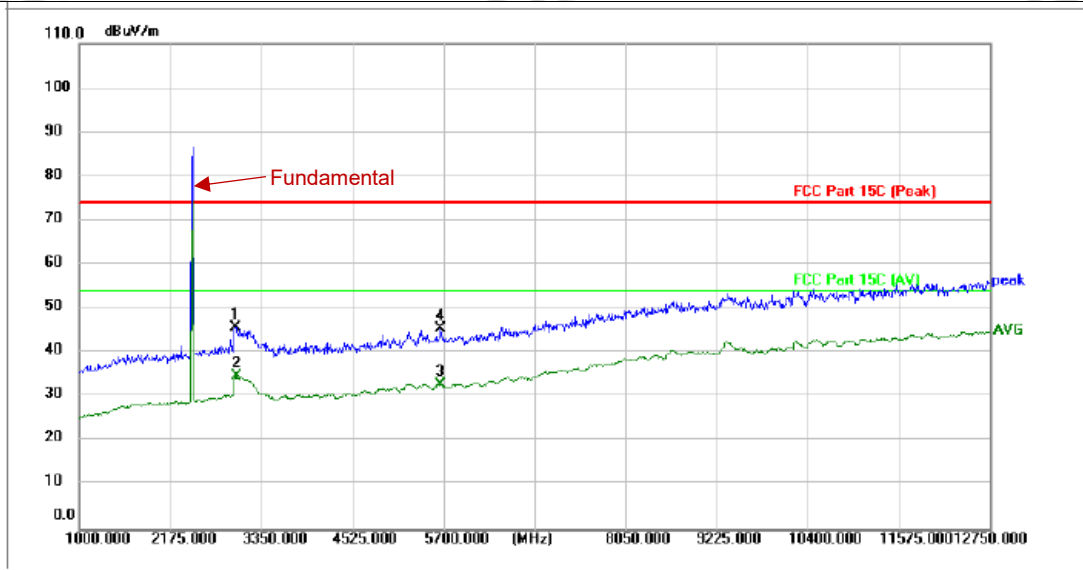
TM3 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: L



TM3 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: L

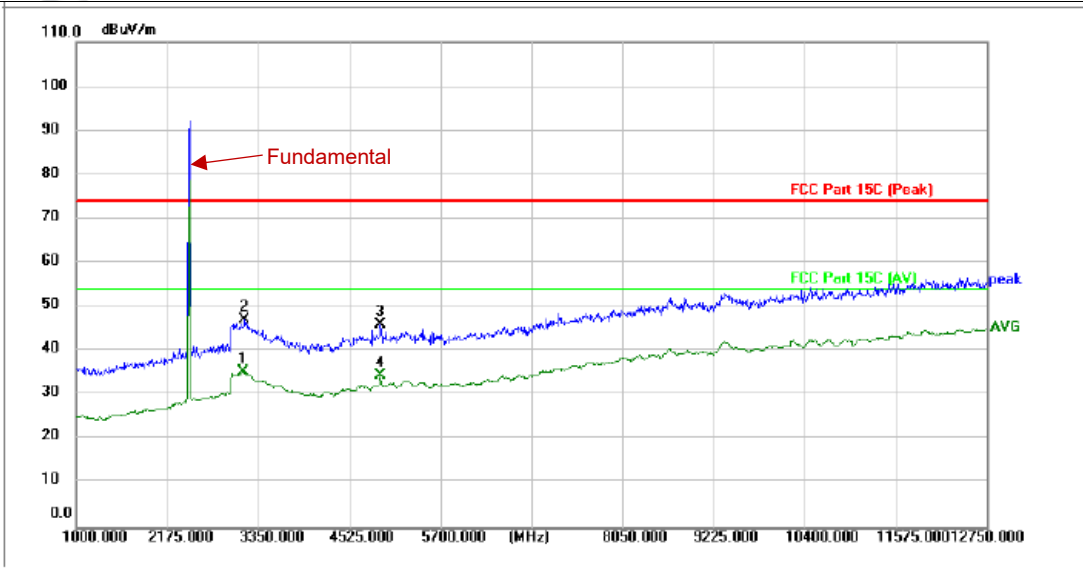


TM3 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: H



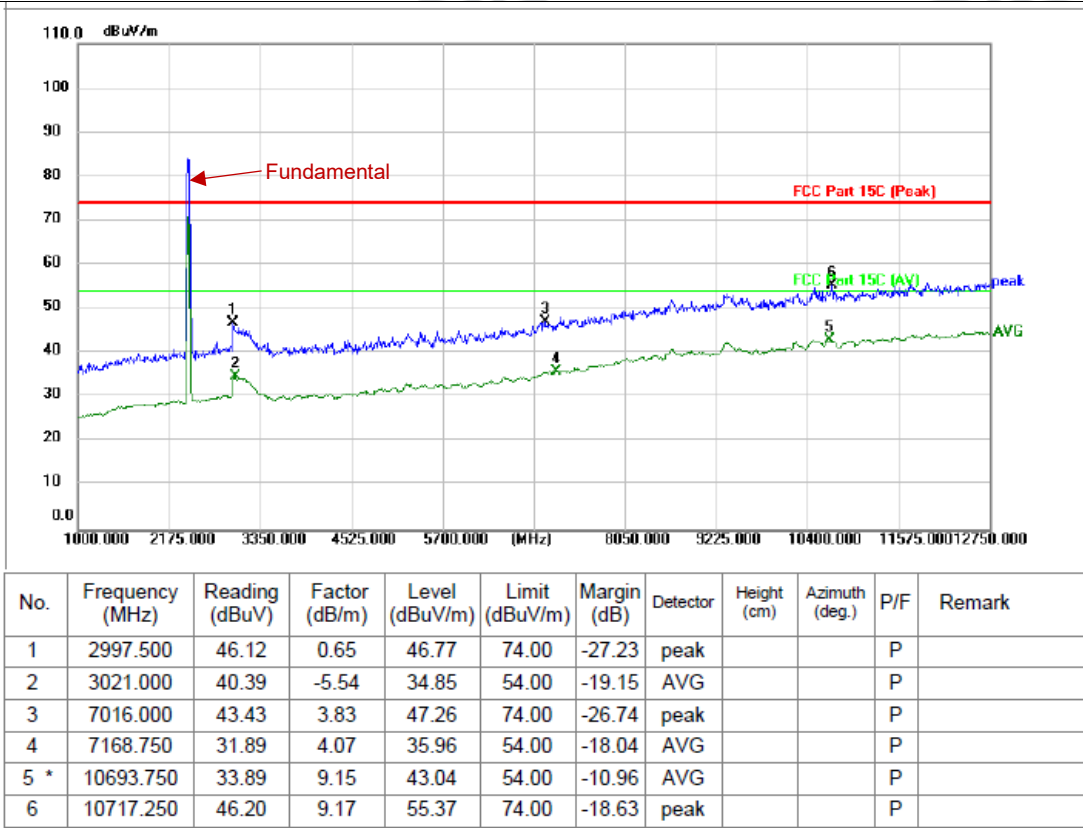
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	3009.250	51.32	-5.58	45.74	74.00	-28.26	peak			P	
2 *	3021.000	40.34	-5.54	34.80	54.00	-19.20	AVG			P	
3	5653.000	32.10	0.89	32.99	54.00	-21.01	AVG			P	
4	5664.750	44.72	0.91	45.63	74.00	-28.37	peak			P	

TM3 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: H

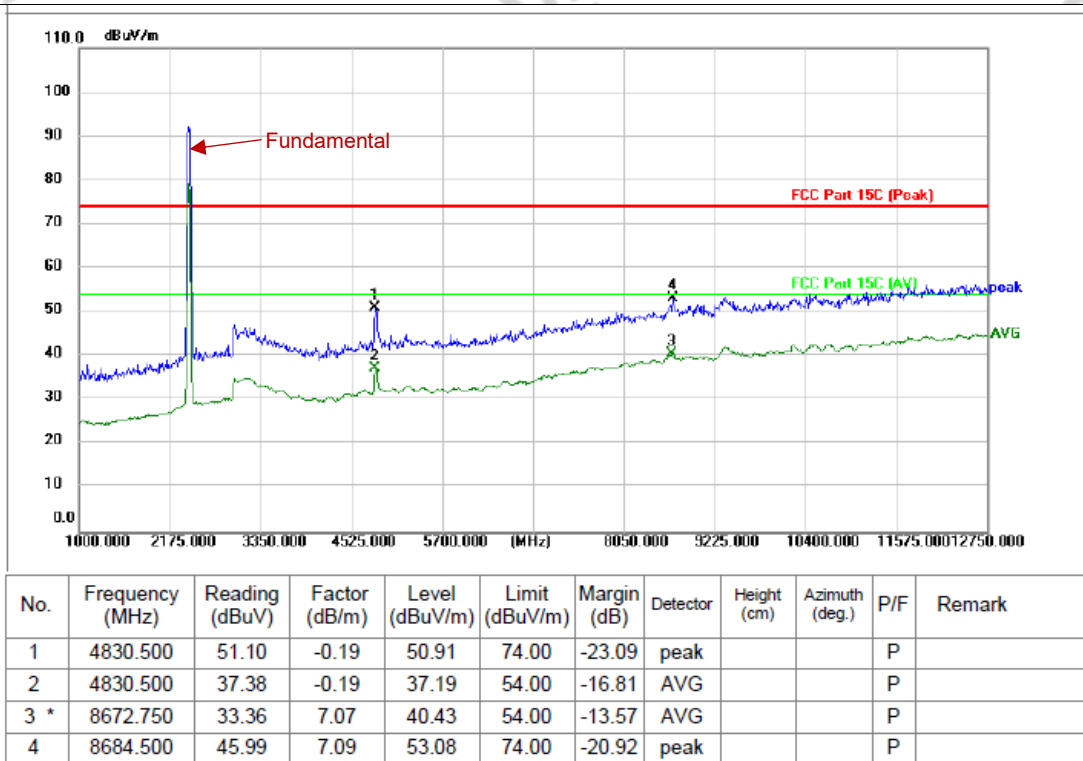


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	3150.250	40.33	-5.12	35.21	54.00	-18.79	AVG			P	
2	3173.750	52.13	-5.06	47.07	74.00	-26.93	peak			P	
3	4924.500	46.02	0.11	46.13	74.00	-27.87	peak			P	
4	4924.500	34.42	0.11	34.53	54.00	-19.47	AVG			P	

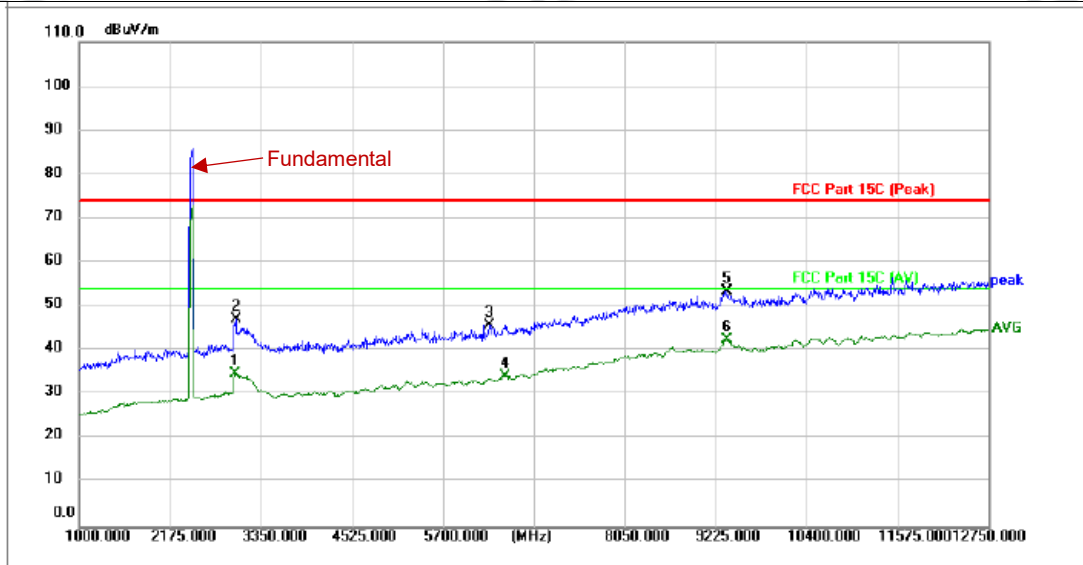
TM4 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / CH: L



TM4 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / CH: L

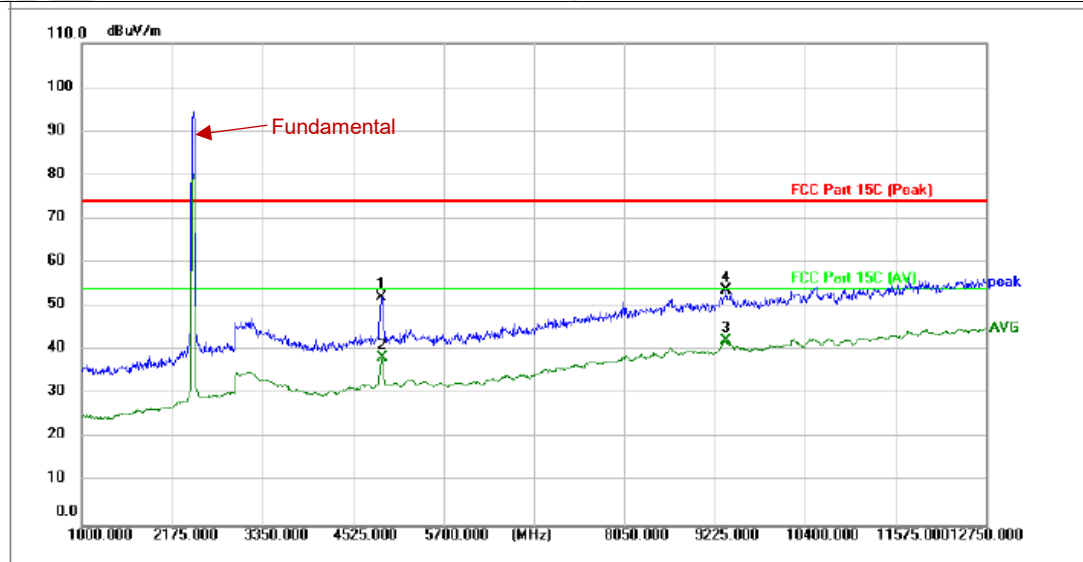


TM4 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / CH: H



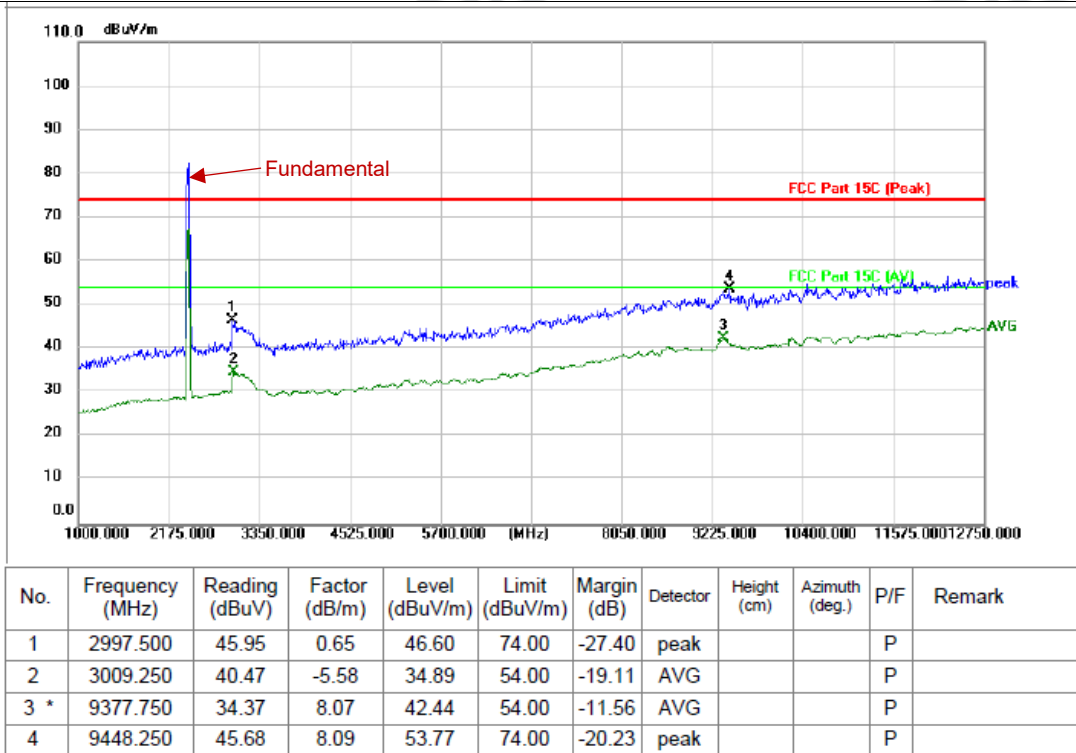
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	3009.250	40.44	-5.58	34.86	54.00	-19.14	AVG			P	
2	3021.000	52.61	-5.54	47.07	74.00	-26.93	peak			P	
3	6299.250	43.85	1.95	45.80	74.00	-28.20	peak			P	
4	6499.000	31.92	2.39	34.31	54.00	-19.69	AVG			P	
5	9366.000	45.54	8.07	53.61	74.00	-20.39	peak			P	
6 *	9366.000	34.43	8.07	42.50	54.00	-11.50	AVG			P	

TM4 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / CH: H

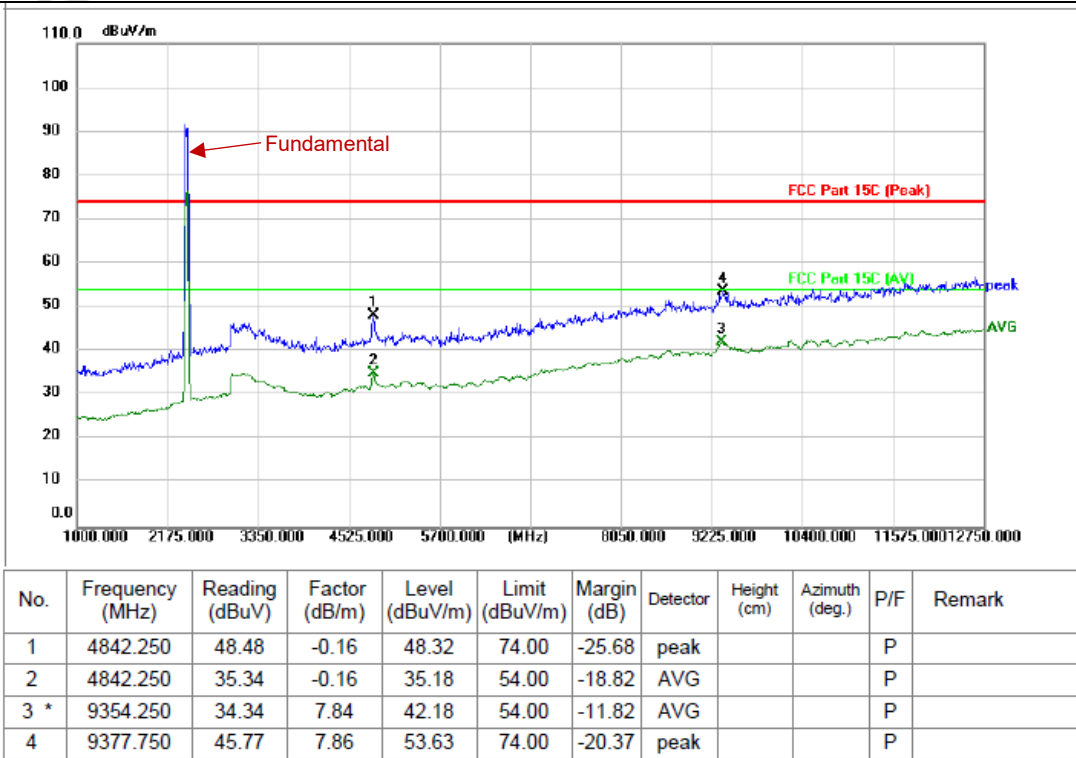


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	4889.250	52.23	0.00	52.23	74.00	-21.77	peak			P	
2	4901.000	38.39	0.04	38.43	54.00	-15.57	AVG			P	
3 *	9366.000	34.25	7.85	42.10	54.00	-11.90	AVG			P	
4	9377.750	45.79	7.86	53.65	74.00	-20.35	peak			P	

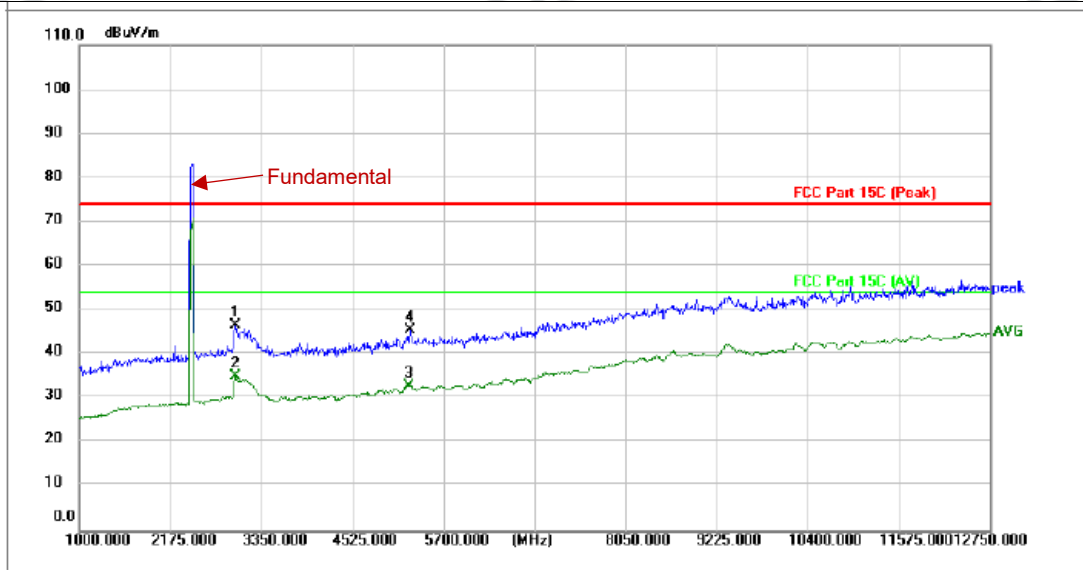
TM6 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / CH: L



TM6 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / CH: L

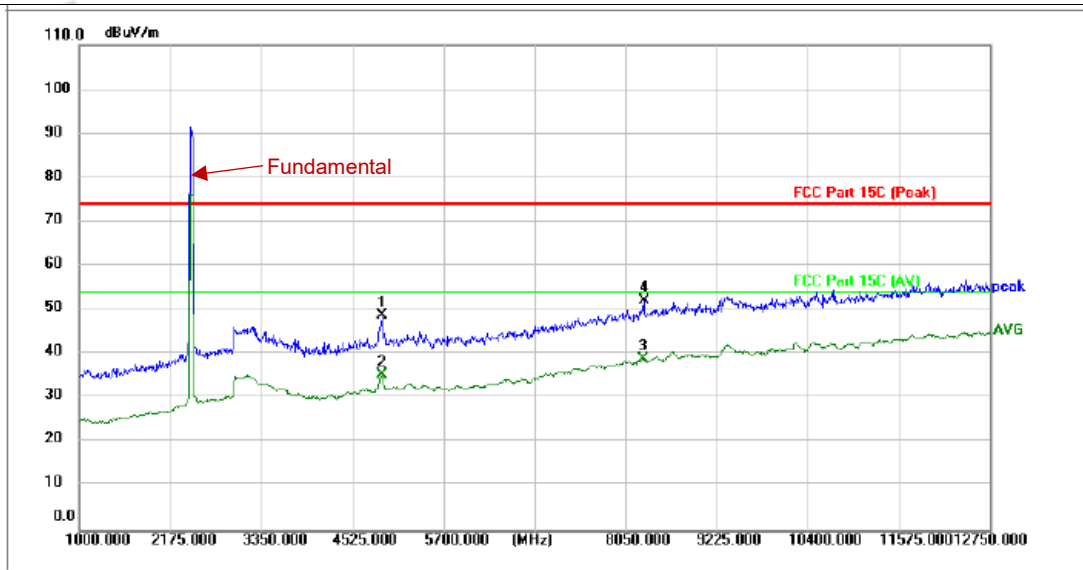


TM6 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / CH: H



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	3009.250	52.14	-5.58	46.56	74.00	-27.44	peak			P	
2 *	3009.250	40.55	-5.58	34.97	54.00	-19.03	AVG			P	
3	5253.500	32.69	0.26	32.95	54.00	-21.05	AVG			P	
4	5265.250	45.23	0.28	45.51	74.00	-28.49	peak			P	

TM6 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / 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	4901.000	48.75	0.04	48.79	74.00	-25.21	peak			P	
2	4901.000	35.26	0.04	35.30	54.00	-18.70	AVG			P	
3 *	8273.250	32.58	6.42	39.00	54.00	-15.00	AVG			P	
4	8285.000	45.77	6.44	52.21	74.00	-21.79	peak			P	

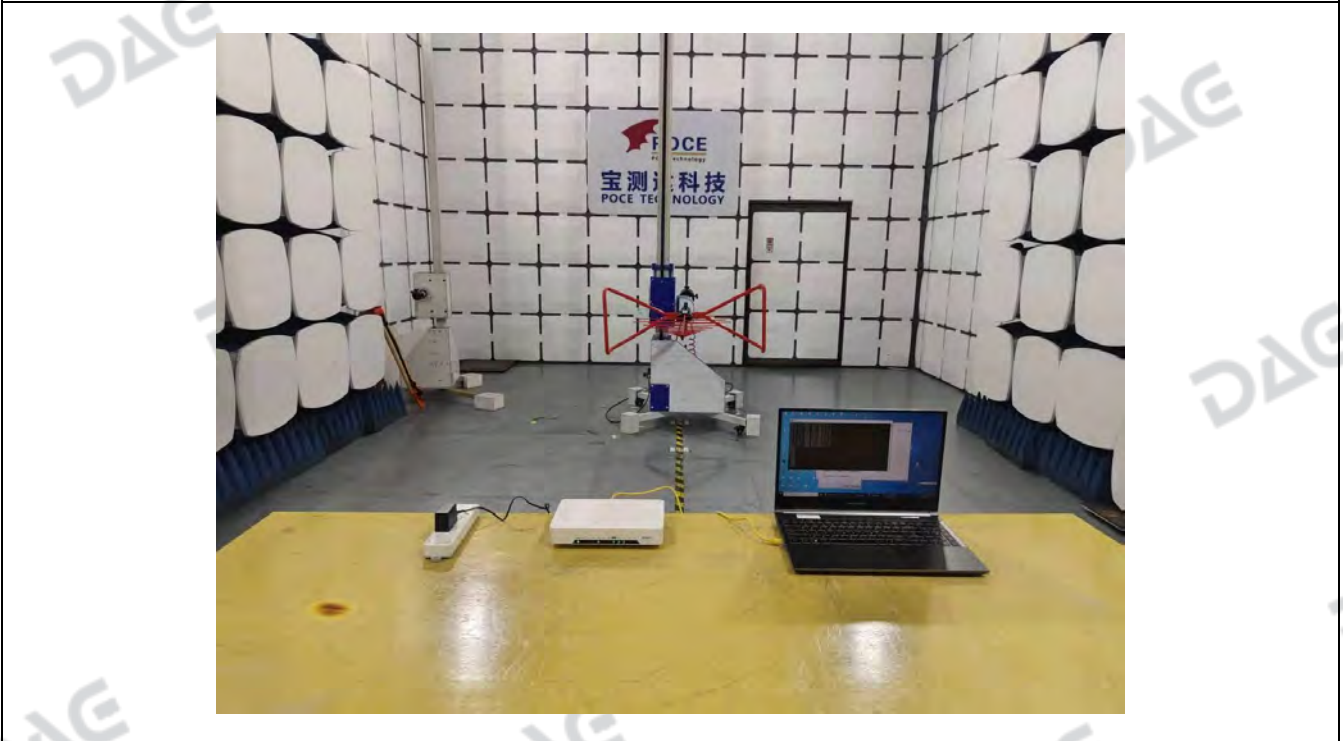
Remark: Margin= Measurement level - Limit
 Correction Factor= Antenna Factor + Cable loss – Pre-amplifier
 Level=Test receiver reading + correction factor

5 TEST SETUP PHOTOS

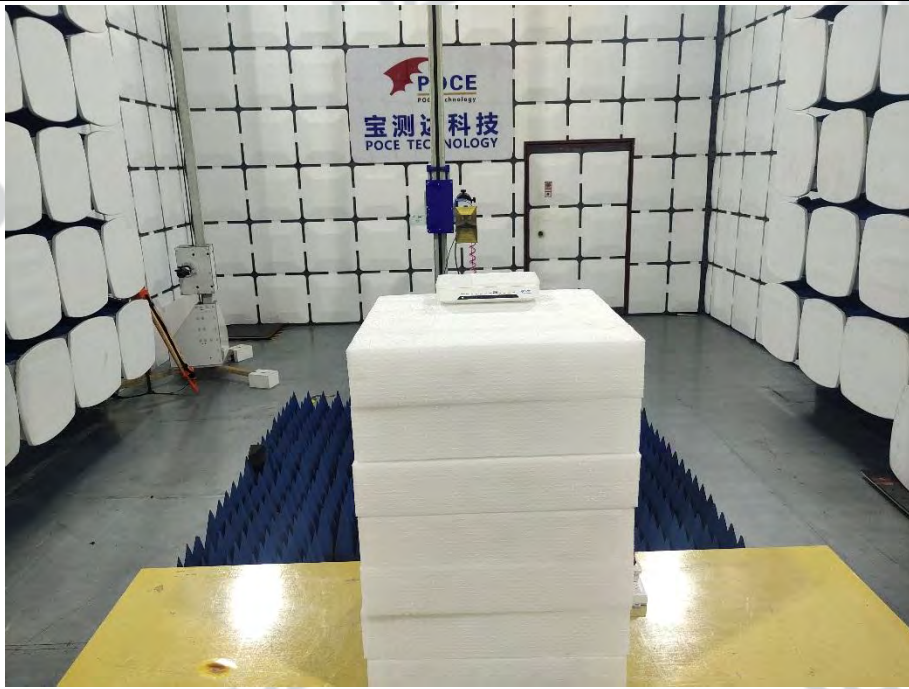
Conducted Emission at AC power line



Emissions in frequency bands (below 1GHz)

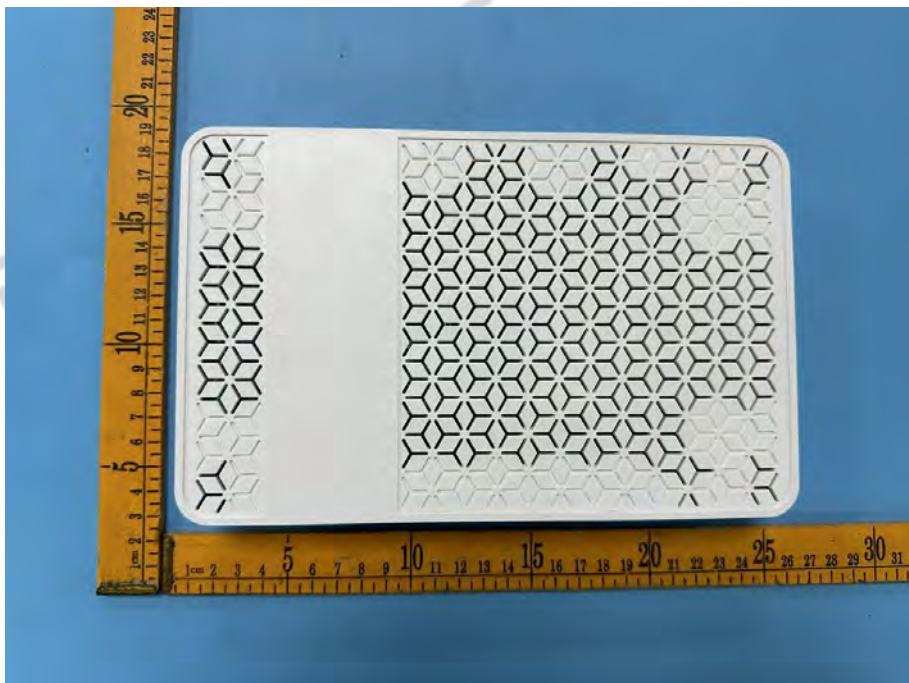


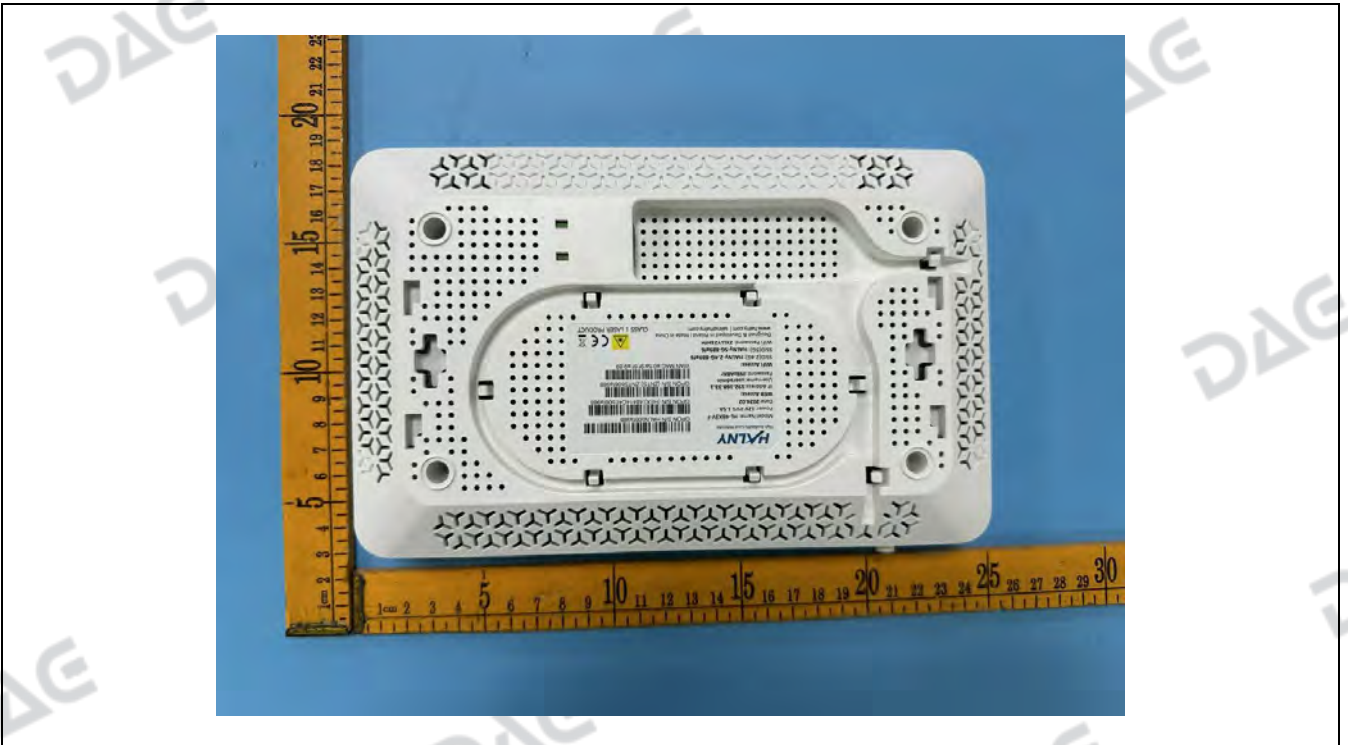
**Emissions in frequency bands (above 1GHz)
Band edge emissions (Radiated)**

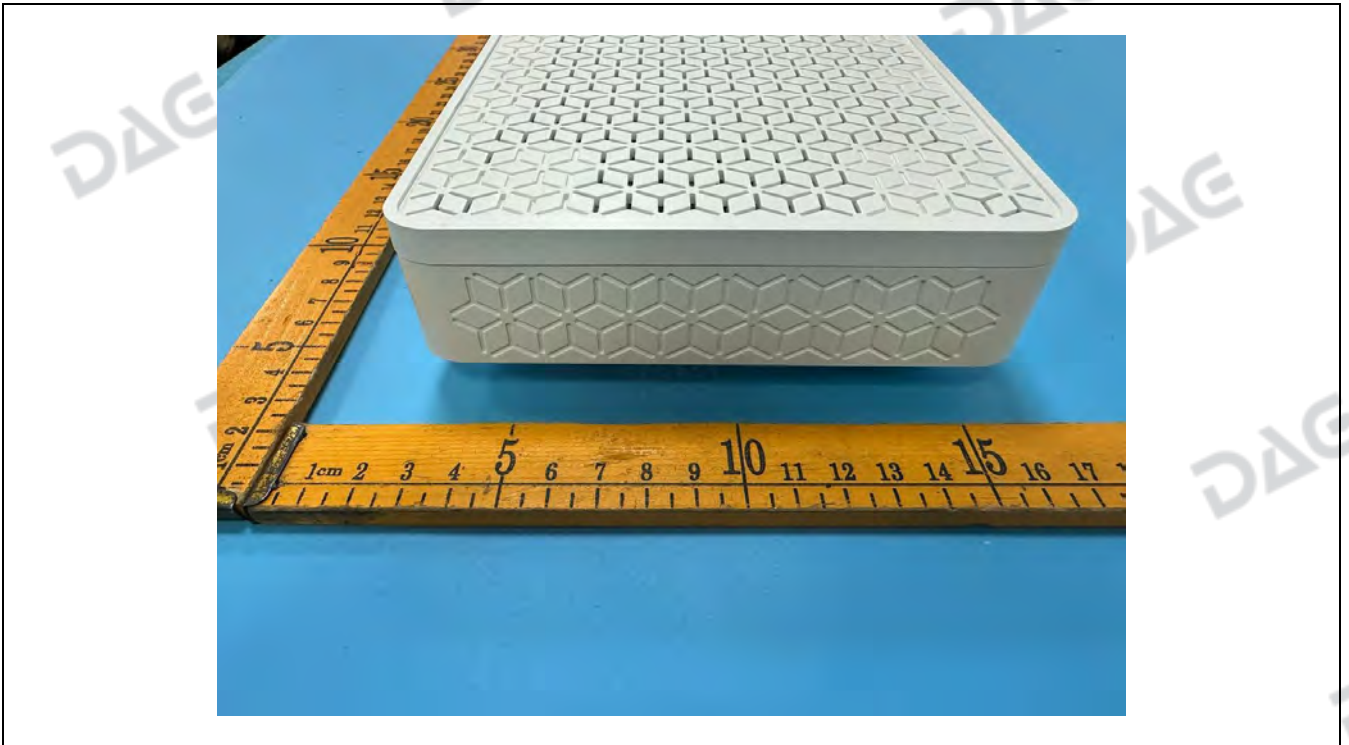


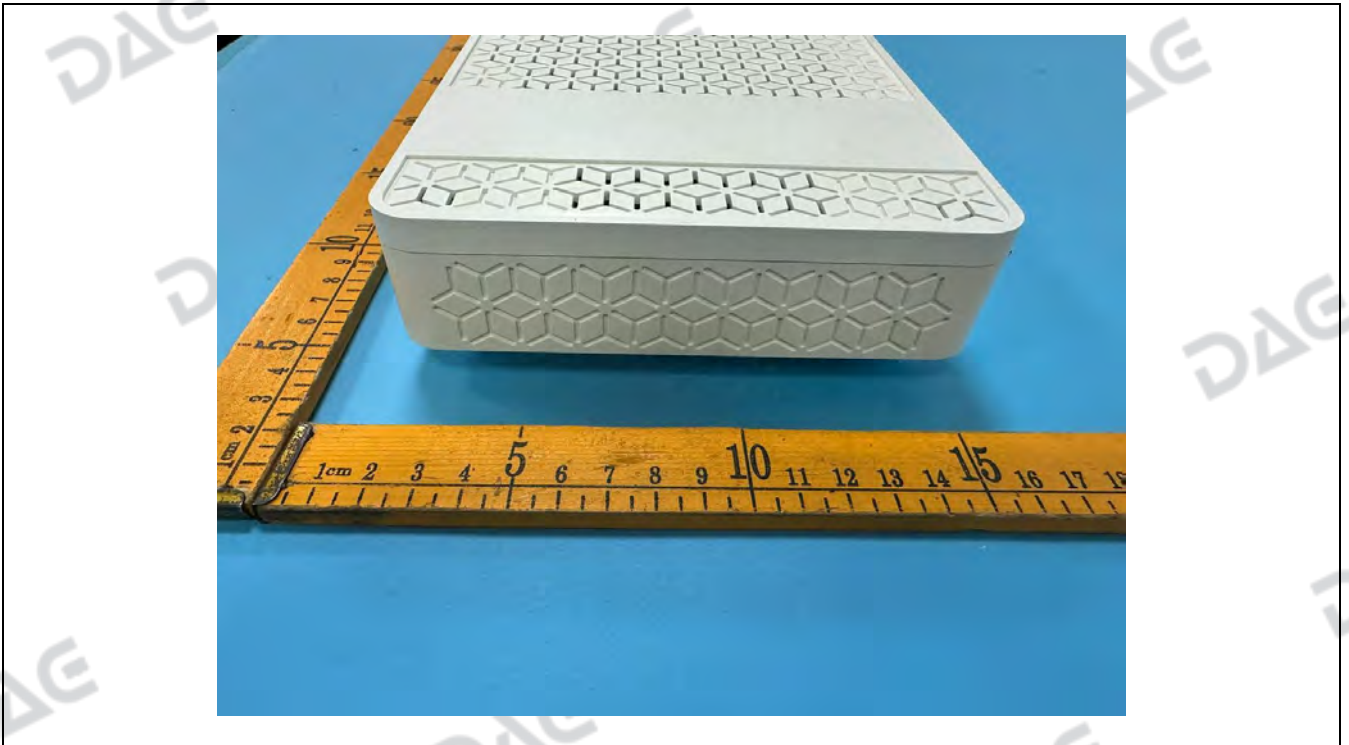
6 PHOTOS OF THE EUT

External

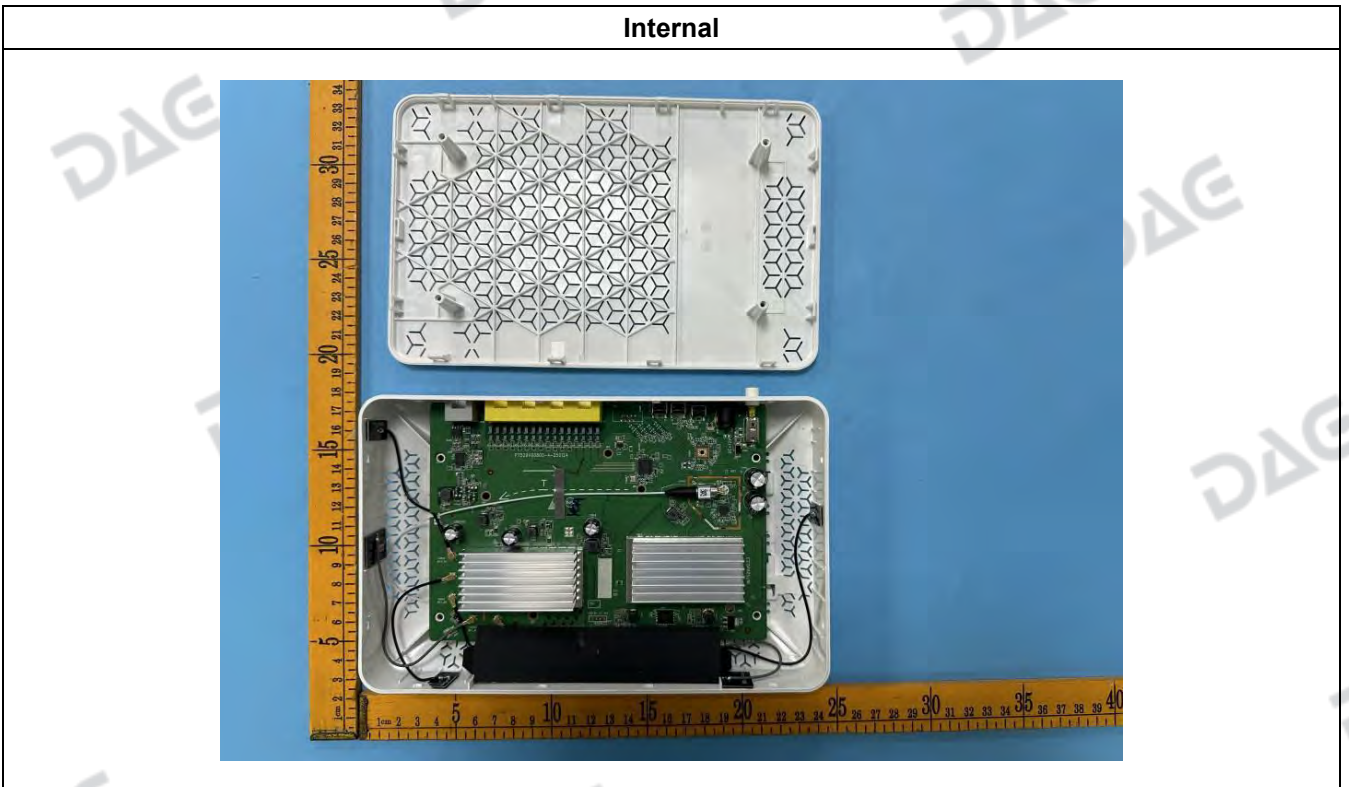


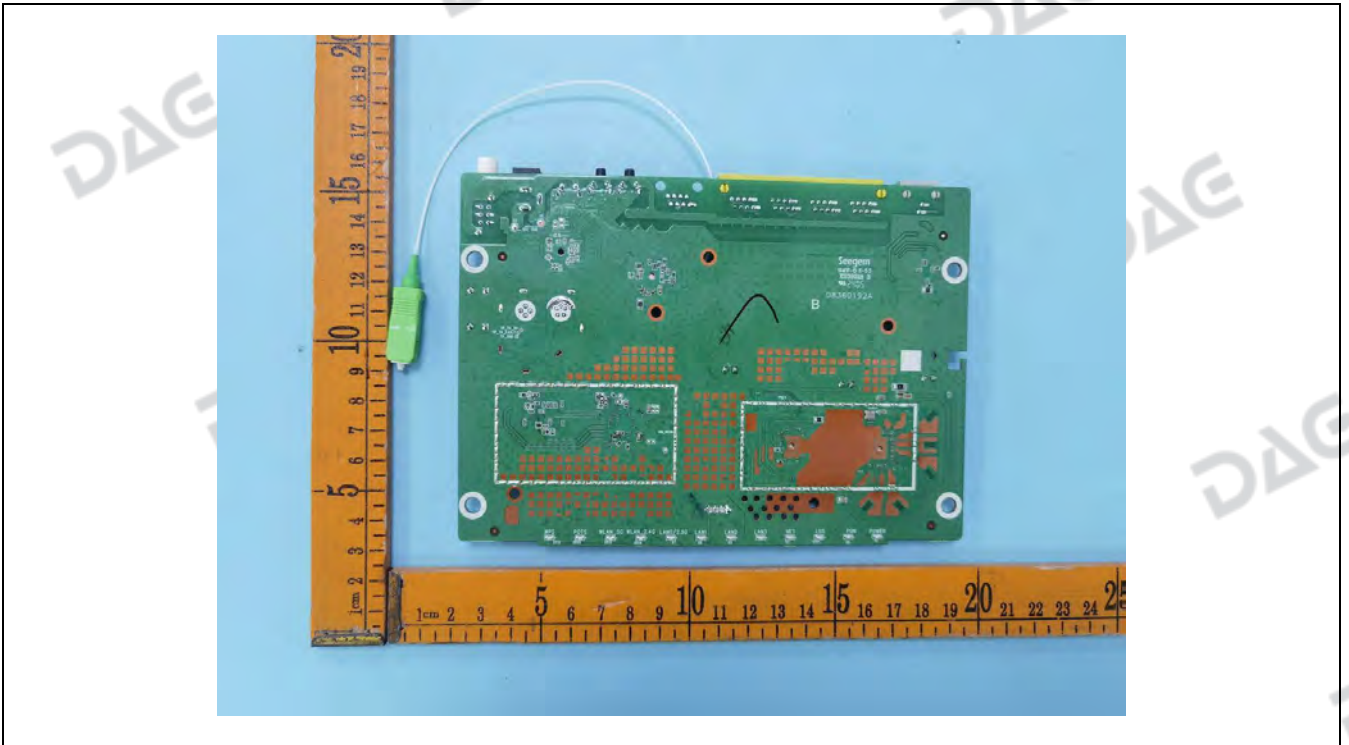
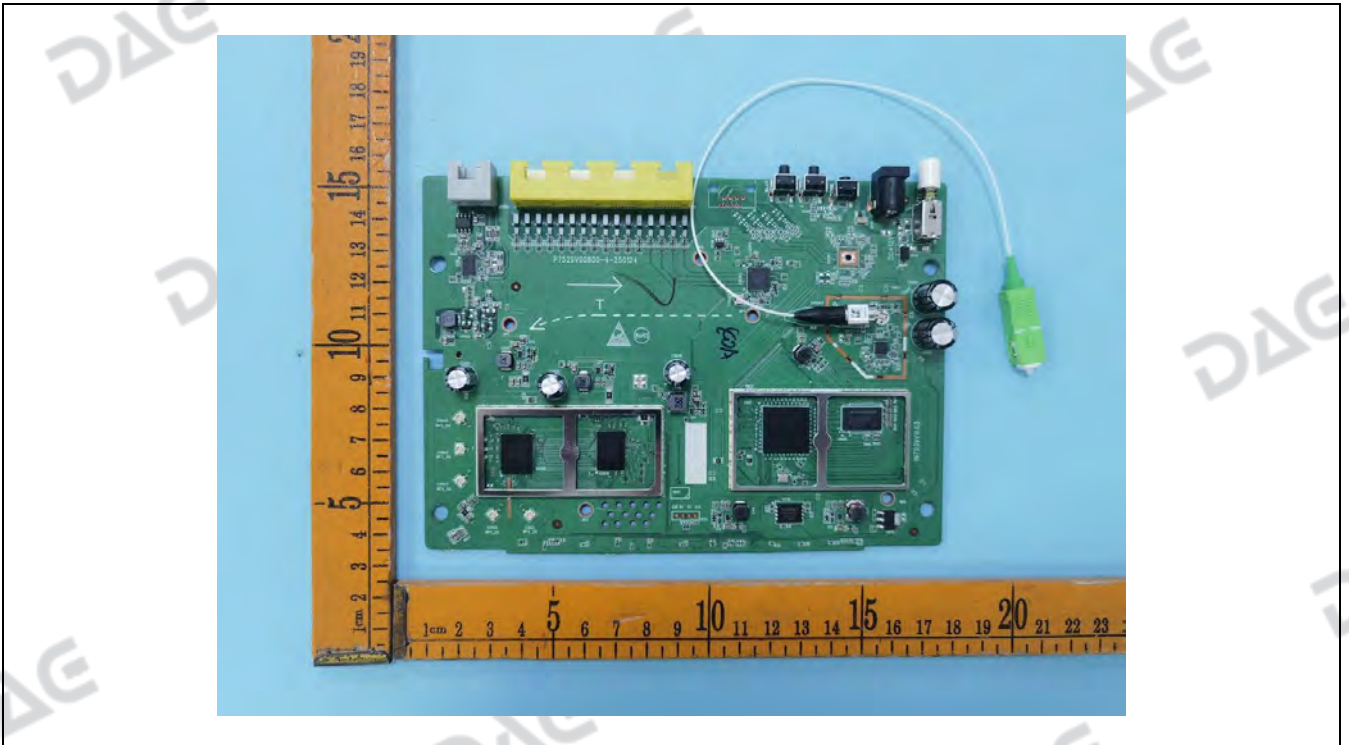


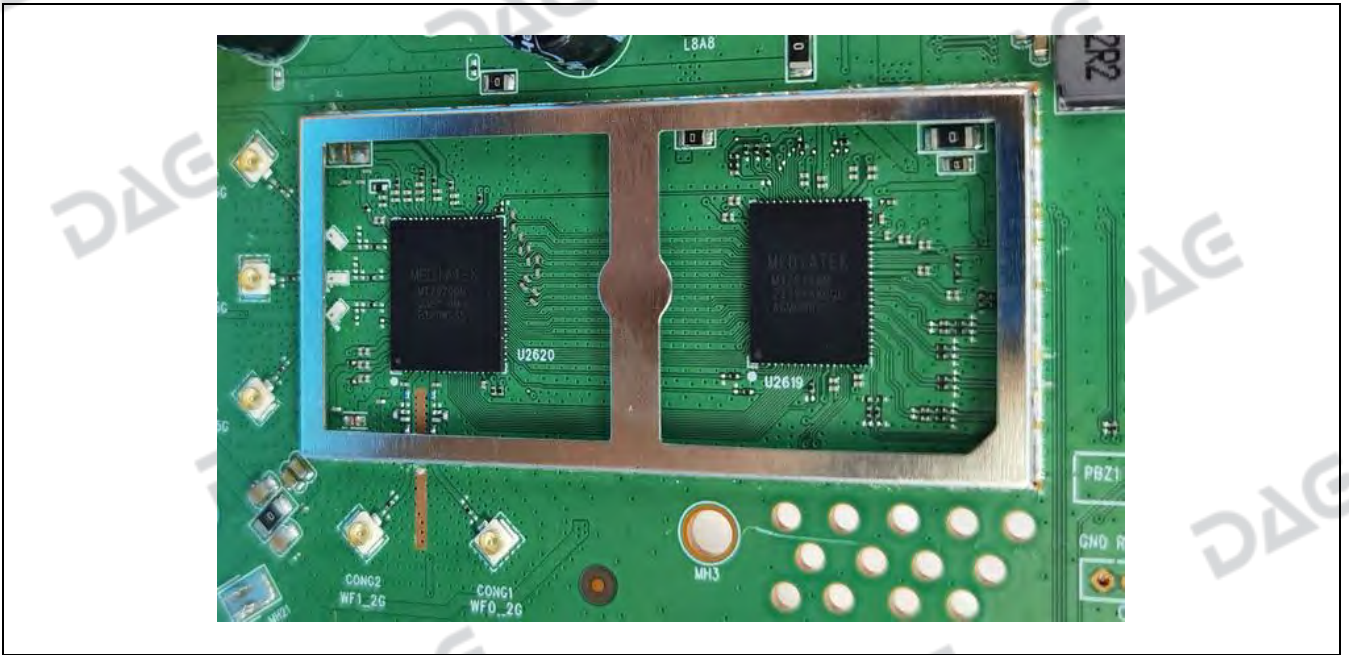


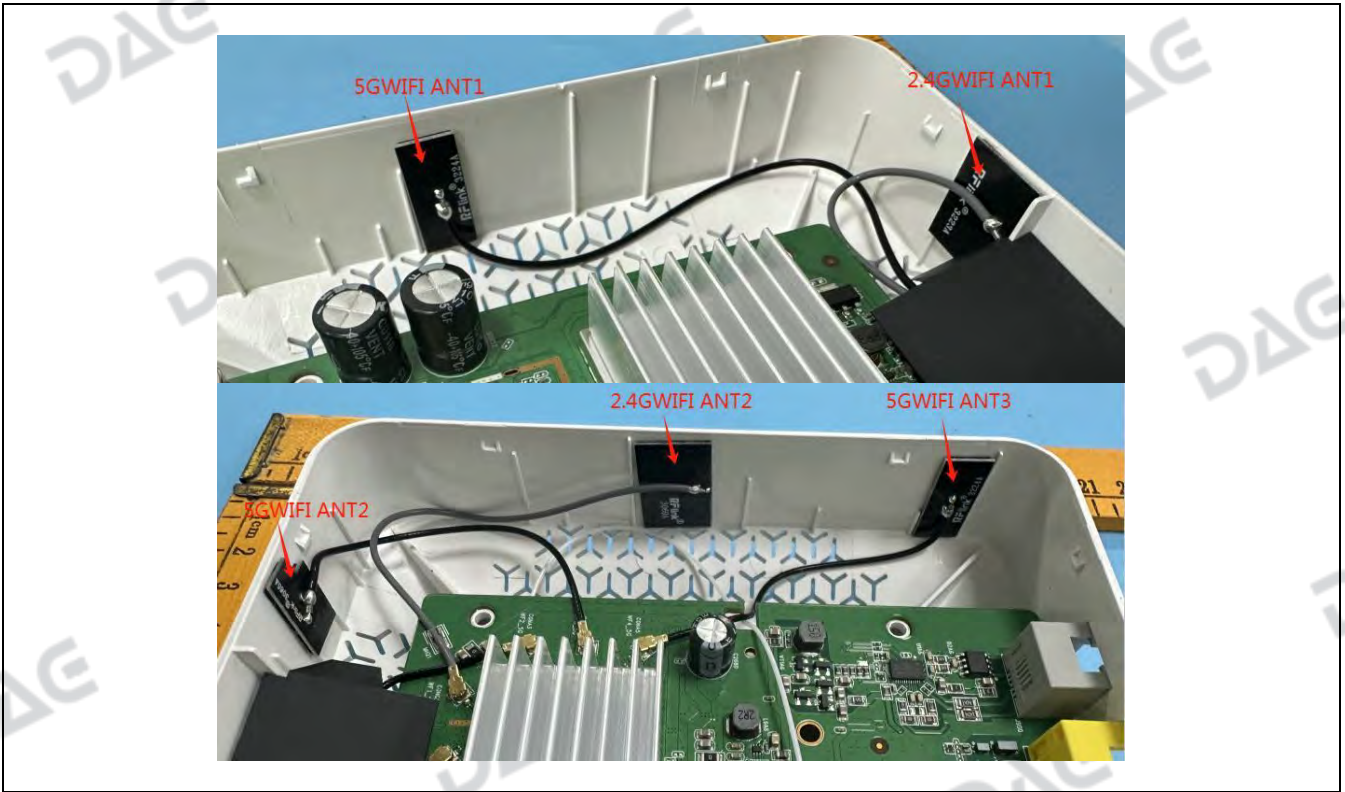


Internal







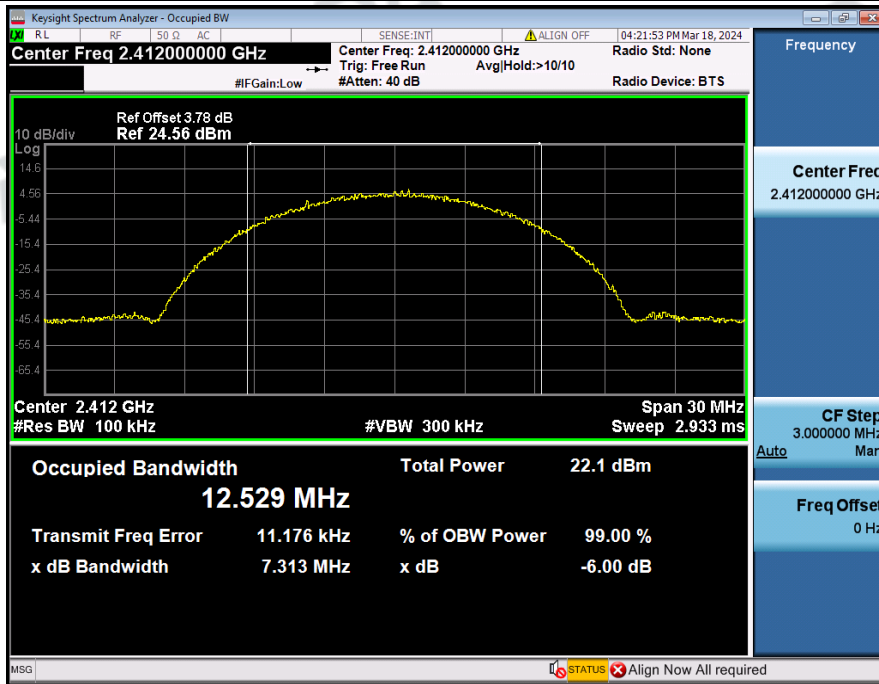


Appendix

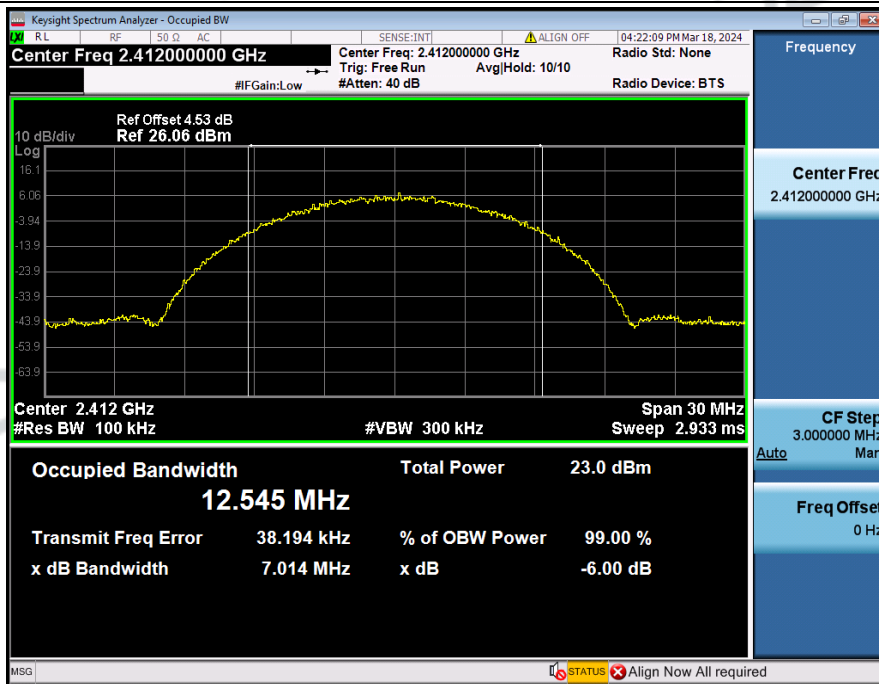
1. -6dB Bandwidth

Condition	Antenna	Modulation	Frequency (MHz)	-6dB BW(MHz)	limit(kHz)	Result
NVNT	ANT1	802.11b	2412.00	7.31	500	Pass
NVNT	ANT2	802.11b	2412.00	7.01	500	Pass
NVNT	ANT1	802.11b	2437.00	7.94	500	Pass
NVNT	ANT2	802.11b	2437.00	7.99	500	Pass
NVNT	ANT1	802.11b	2462.00	8.39	500	Pass
NVNT	ANT2	802.11b	2462.00	7.53	500	Pass
NVNT	ANT1	802.11g	2412.00	16.45	500	Pass
NVNT	ANT2	802.11g	2412.00	16.42	500	Pass
NVNT	ANT1	802.11g	2437.00	16.42	500	Pass
NVNT	ANT2	802.11g	2437.00	16.39	500	Pass
NVNT	ANT1	802.11g	2462.00	16.43	500	Pass
NVNT	ANT2	802.11g	2462.00	16.41	500	Pass
NVNT	ANT1	802.11n(HT20)	2412.00	17.68	500	Pass
NVNT	ANT2	802.11n(HT20)	2412.00	17.60	500	Pass
NVNT	ANT1	802.11n(HT20)	2437.00	17.63	500	Pass
NVNT	ANT2	802.11n(HT20)	2437.00	17.59	500	Pass
NVNT	ANT1	802.11n(HT20)	2462.00	17.59	500	Pass
NVNT	ANT2	802.11n(HT20)	2462.00	17.66	500	Pass
NVNT	ANT1	802.11ax(HE20)	2412.00	19.14	500	Pass
NVNT	ANT2	802.11ax(HE20)	2412.00	19.12	500	Pass
NVNT	ANT1	802.11ax(HE20)	2437.00	19.10	500	Pass
NVNT	ANT2	802.11ax(HE20)	2437.00	19.10	500	Pass
NVNT	ANT1	802.11ax(HE20)	2462.00	19.12	500	Pass
NVNT	ANT2	802.11ax(HE20)	2462.00	19.12	500	Pass
NVNT	ANT1	802.11n(HT40)	2422.00	35.62	500	Pass
NVNT	ANT2	802.11n(HT40)	2422.00	35.37	500	Pass
NVNT	ANT1	802.11n(HT40)	2437.00	35.75	500	Pass
NVNT	ANT2	802.11n(HT40)	2437.00	36.22	500	Pass
NVNT	ANT1	802.11n(HT40)	2452.00	35.66	500	Pass
NVNT	ANT2	802.11n(HT40)	2452.00	35.42	500	Pass
NVNT	ANT1	802.11ax(HE40)	2422.00	38.19	500	Pass
NVNT	ANT2	802.11ax(HE40)	2422.00	38.19	500	Pass
NVNT	ANT1	802.11ax(HE40)	2437.00	38.19	500	Pass
NVNT	ANT2	802.11ax(HE40)	2437.00	38.15	500	Pass
NVNT	ANT1	802.11ax(HE40)	2452.00	38.18	500	Pass
NVNT	ANT2	802.11ax(HE40)	2452.00	38.17	500	Pass

-6dB_Bandwidth_NVNT_ANT1_802_11b_2412



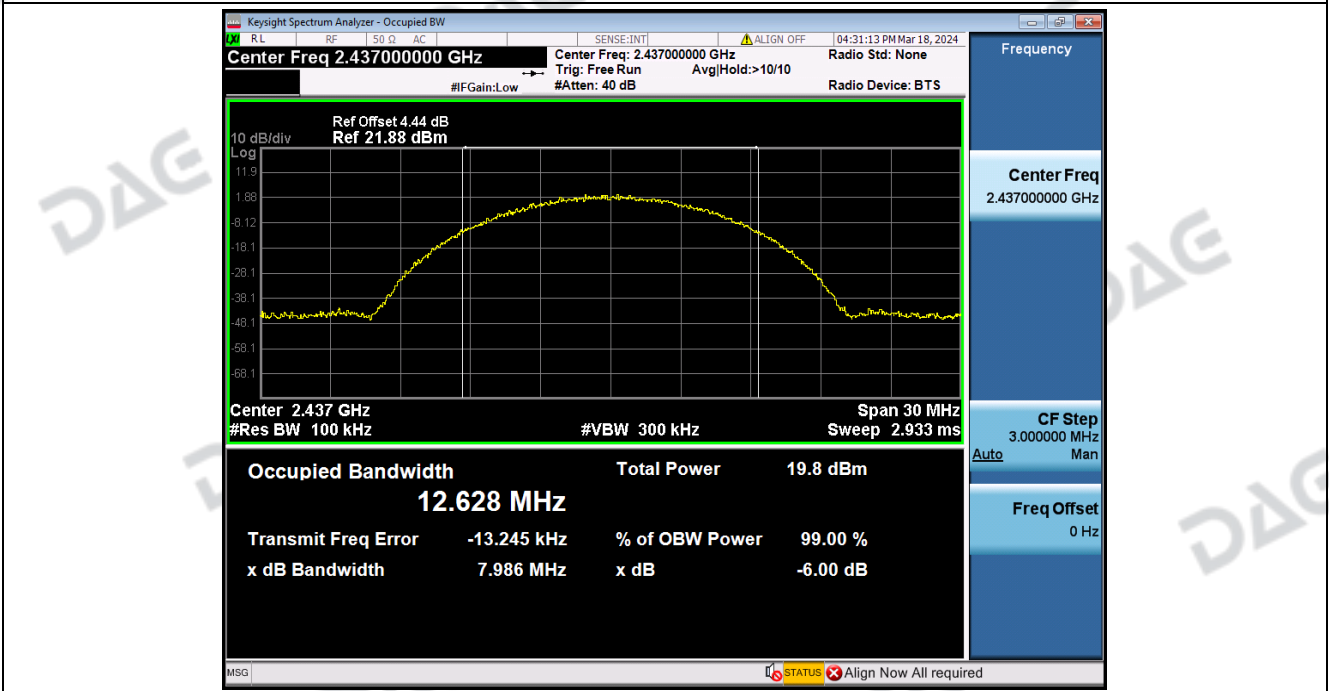
-6dB_Bandwidth_NVNT_ANT2_802_11b_2412



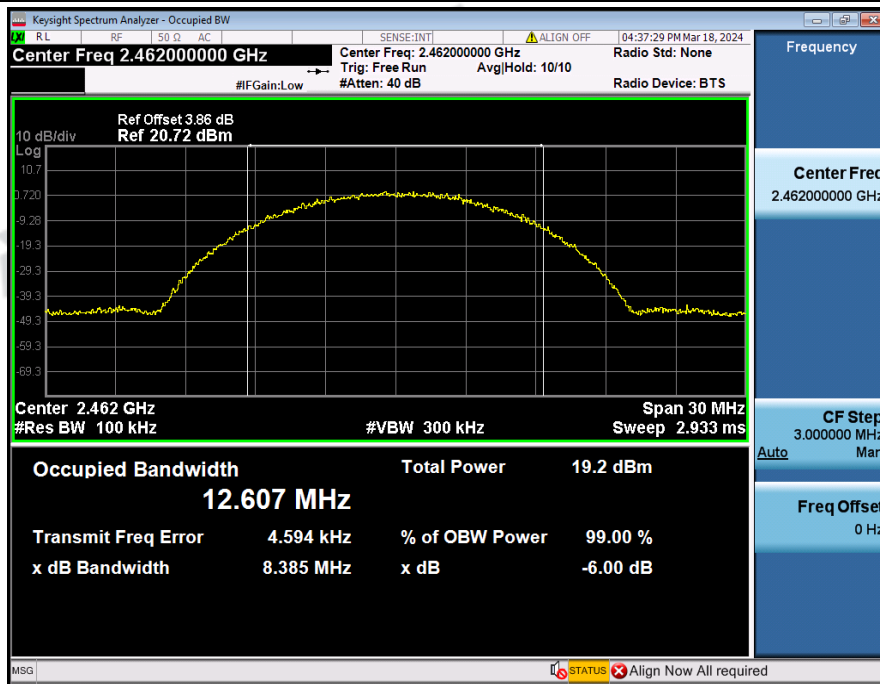
-6dB_Bandwidth_NVNT_ANT1_802_11b_2437



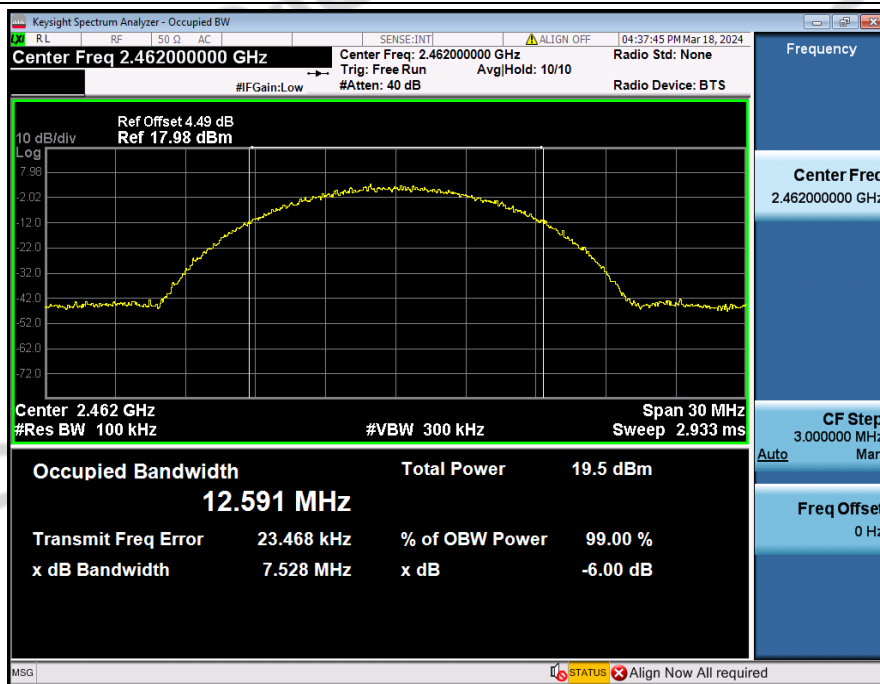
-6dB_Bandwidth_NVNT_ANT2_802_11b_2437



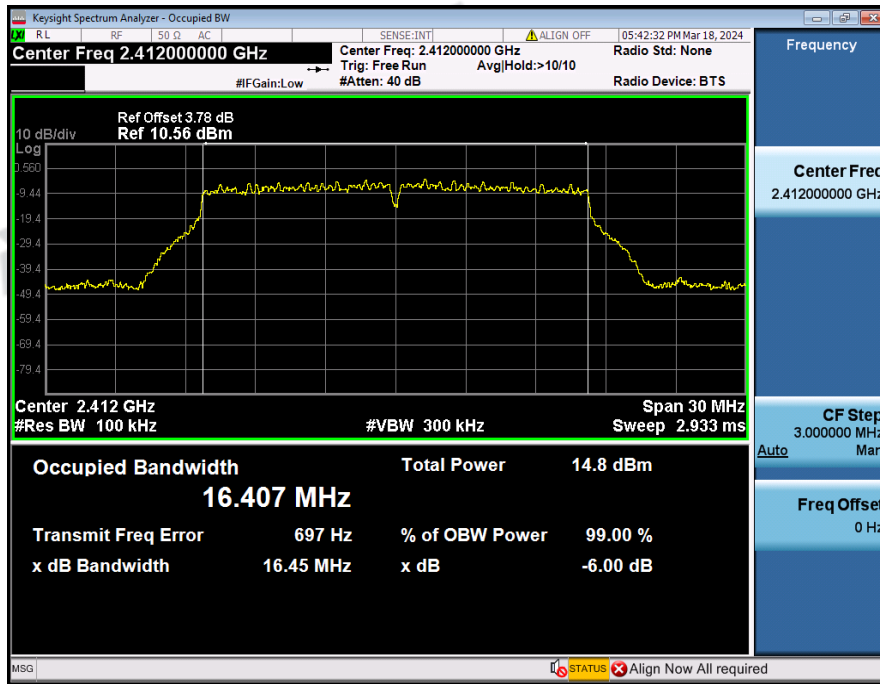
-6dB_Bandwidth_NVNT_ANT1_802_11b_2462



-6dB_Bandwidth_NVNT_ANT2_802_11b_2462



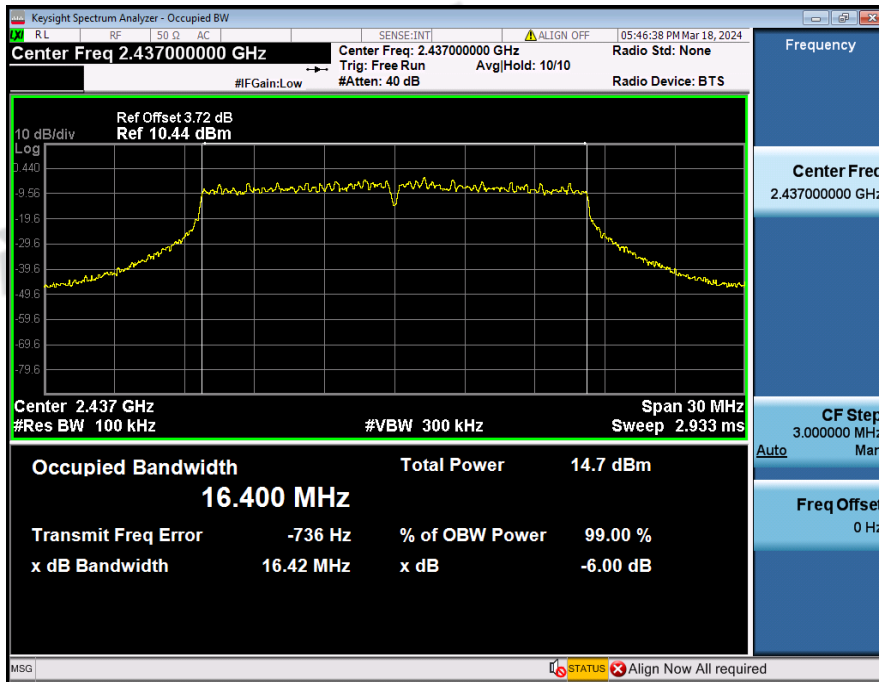
-6dB_Bandwidth_NVNT_ANT1_802_11g_2412



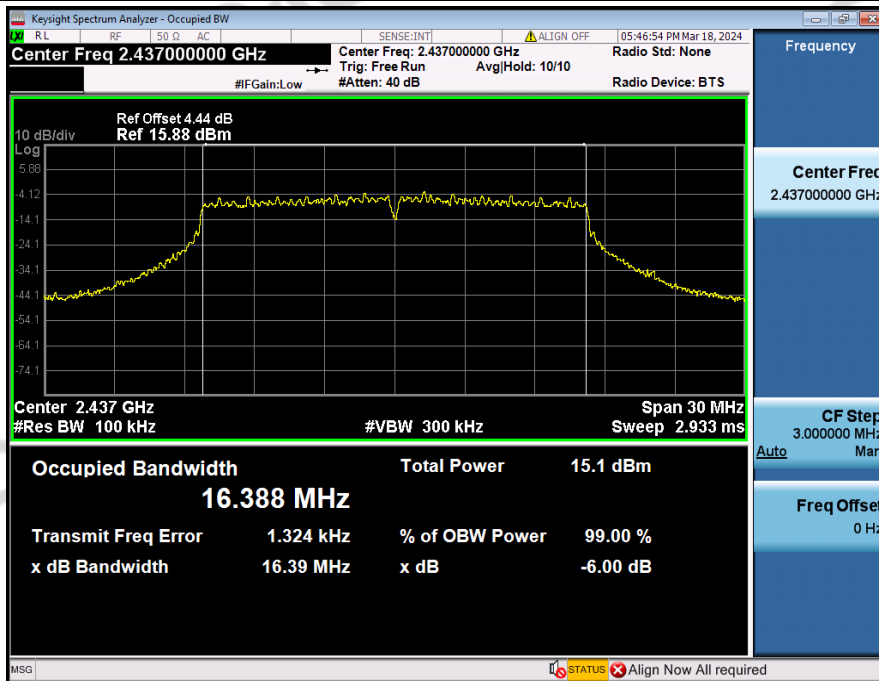
-6dB_Bandwidth_NVNT_ANT2_802_11g_2412



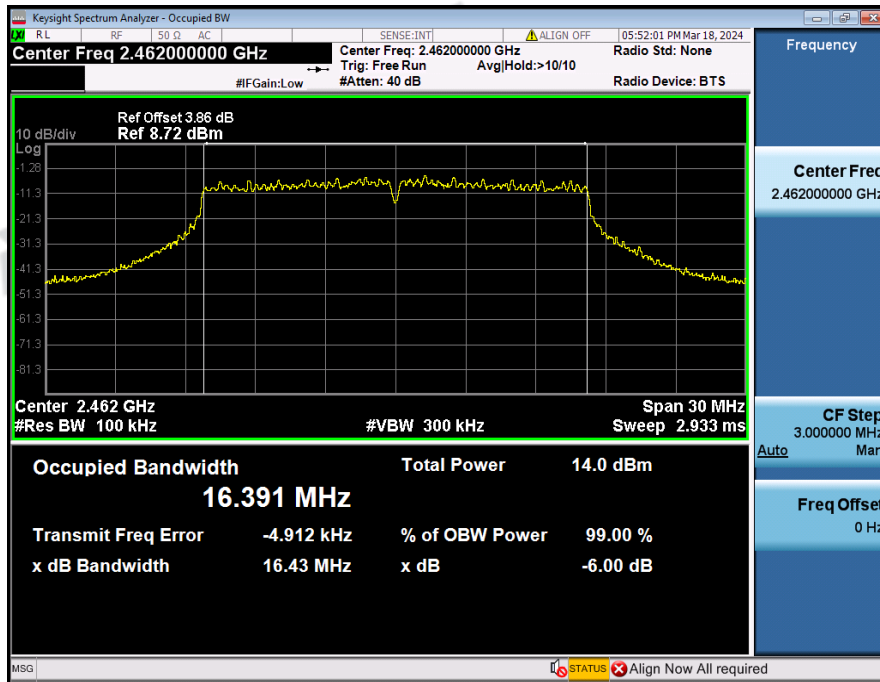
-6dB_Bandwidth_NVNT_ANT1_802_11g_2437



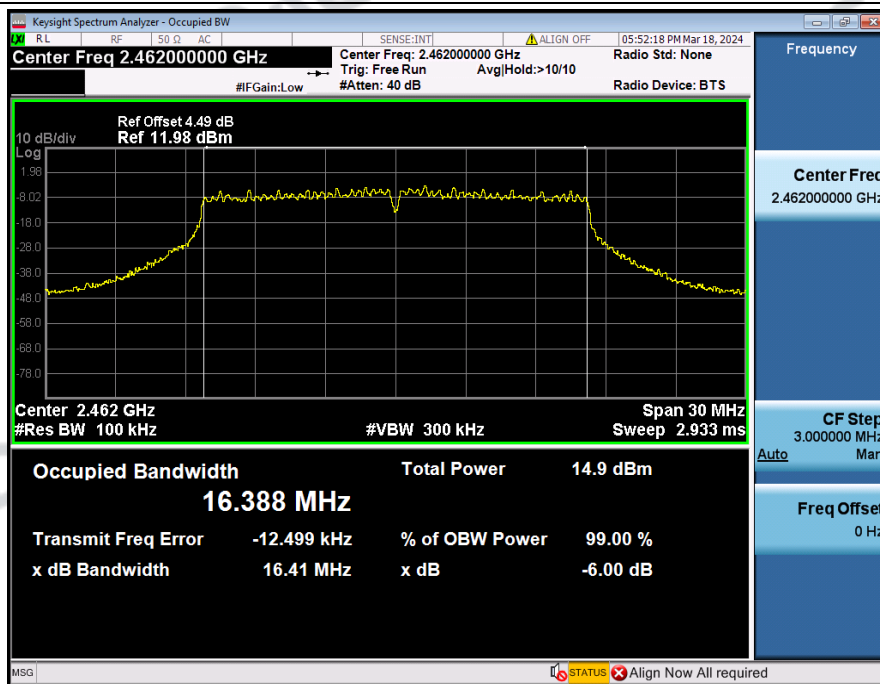
-6dB_Bandwidth_NVNT_ANT2_802_11g_2437



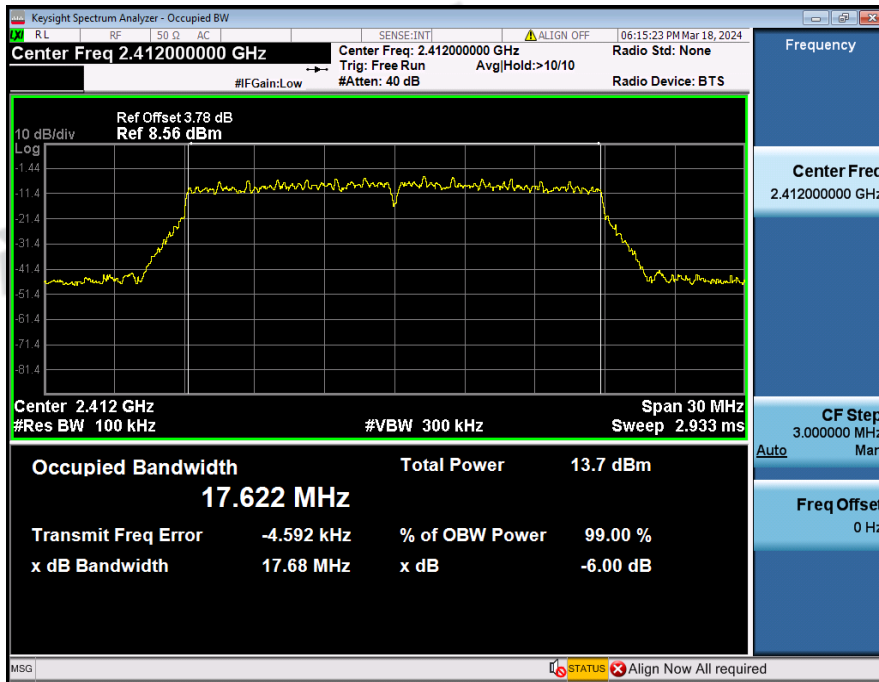
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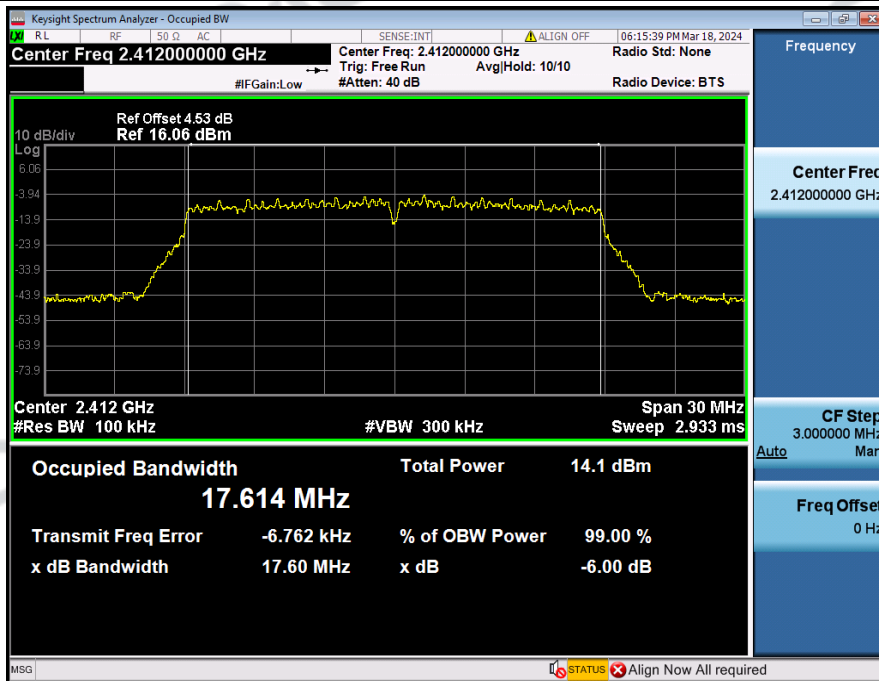
-6dB_Bandwidth_NVNT_ANT2_802_11g_2462



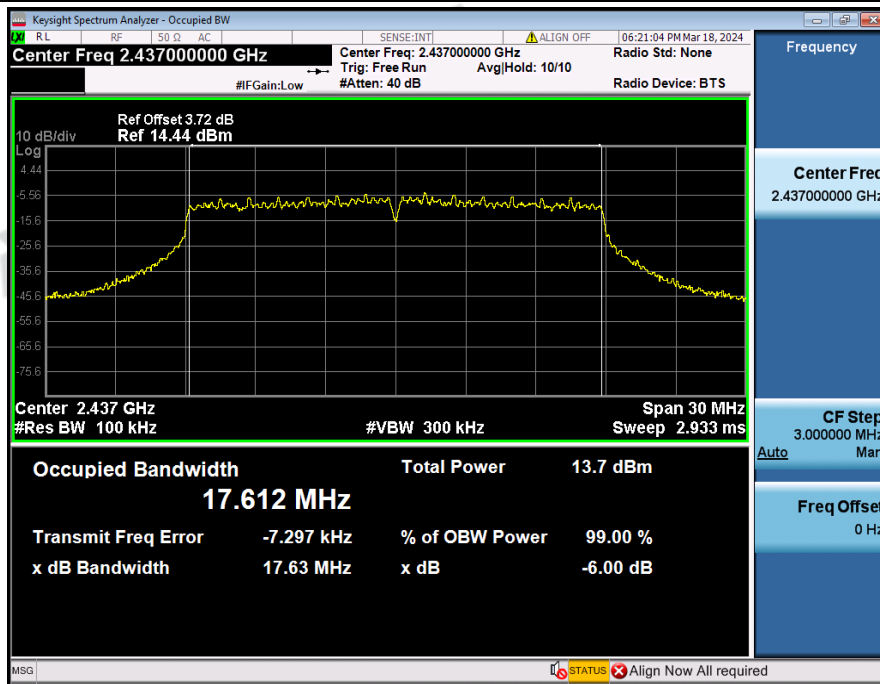
-6dB_Bandwidth_NVNT_ANT1_802_11n(HT20)_2412



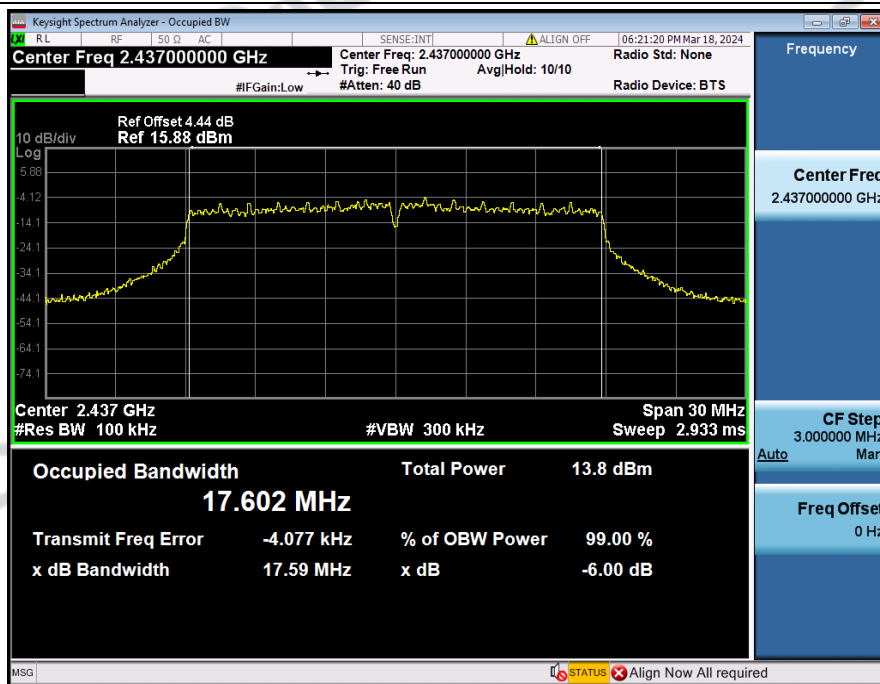
-6dB_Bandwidth_NVNT_ANT2_802_11n(HT20)_2412



-6dB_Bandwidth_NVNT_ANT1_802_11n(HT20)_2437



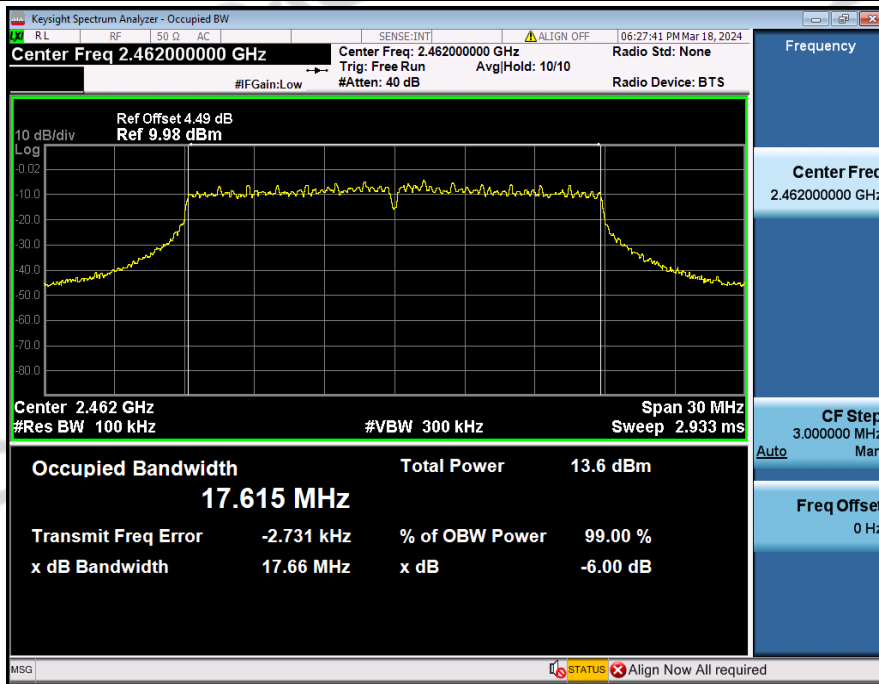
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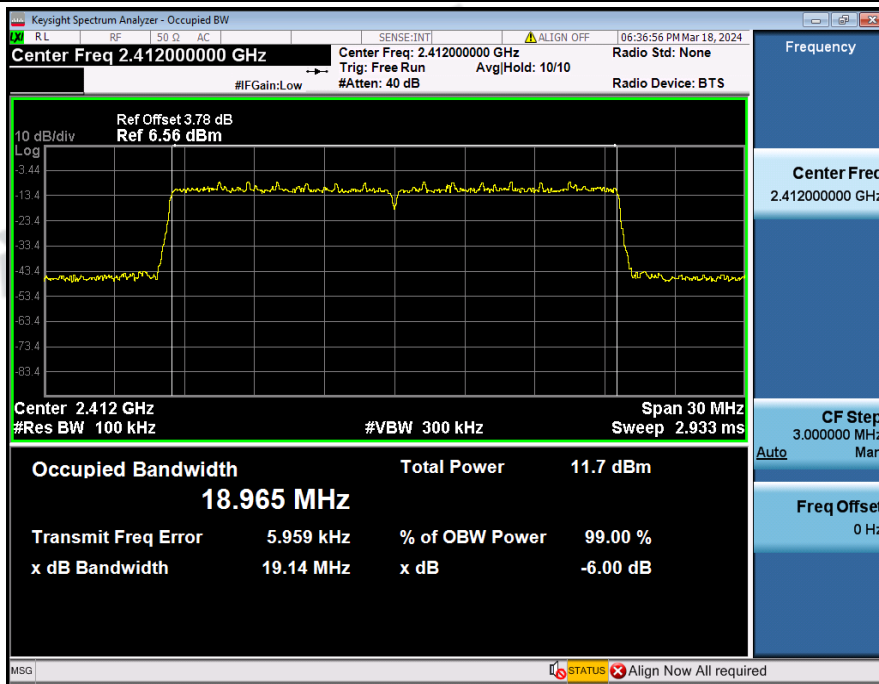
-6dB_Bandwidth_NVNT_ANT1_802_11n(HT20)_2462



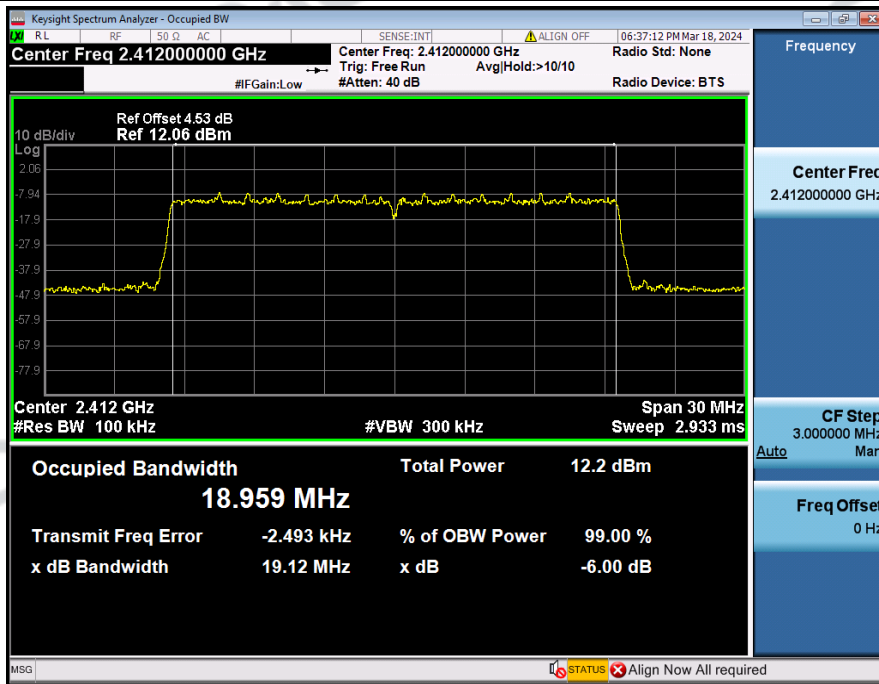
-6dB_Bandwidth_NVNT_ANT2_802_11n(HT20)_2462



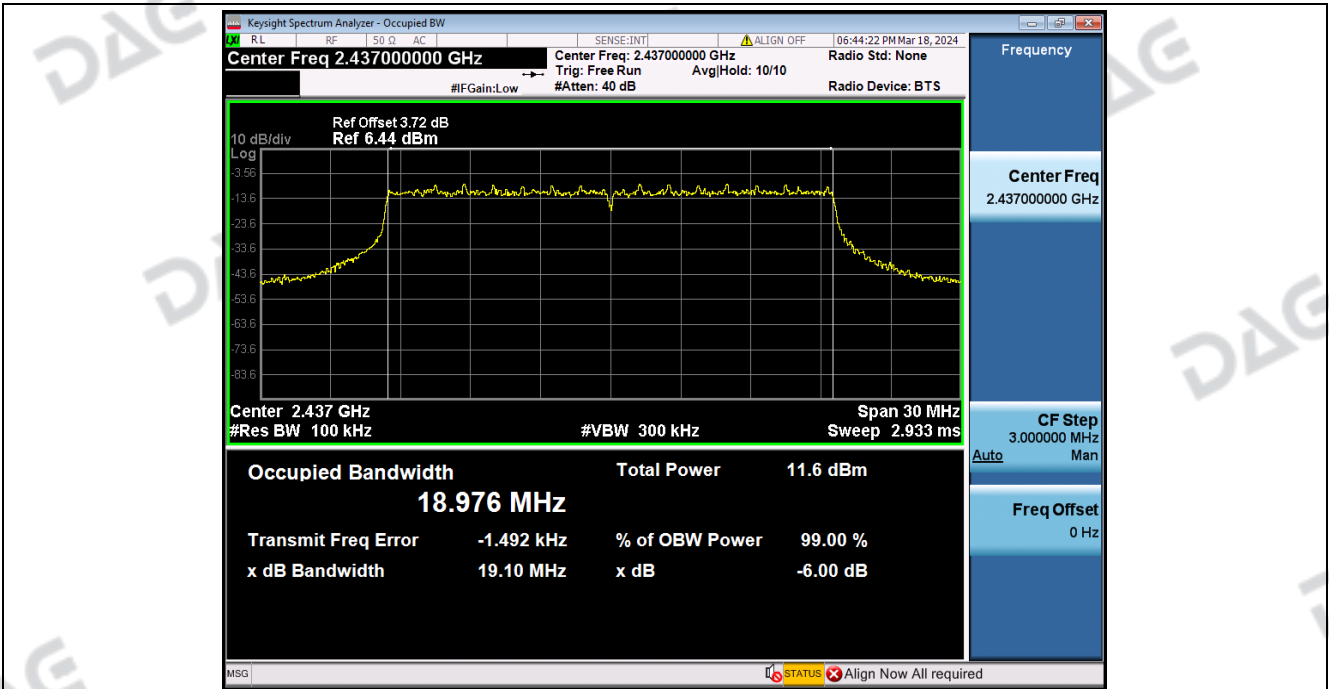
-6dB_Bandwidth_NVNT_ANT1_802_11ax(HE20)_2412



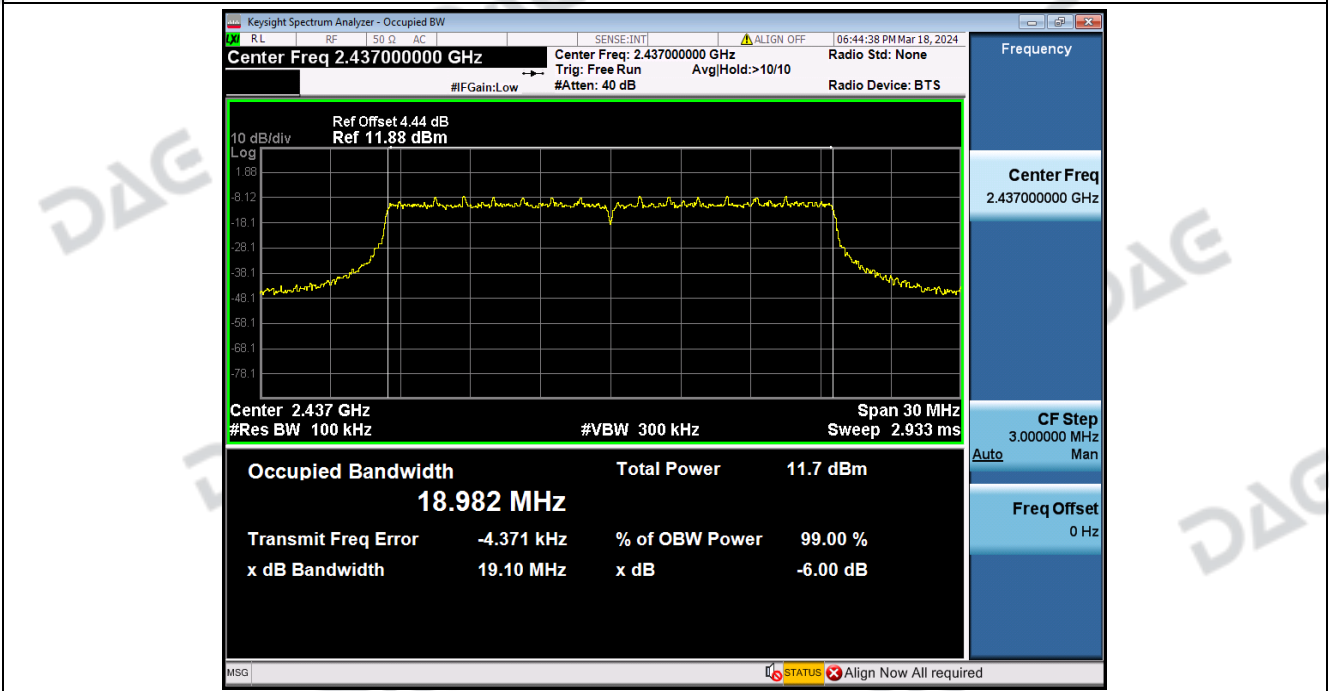
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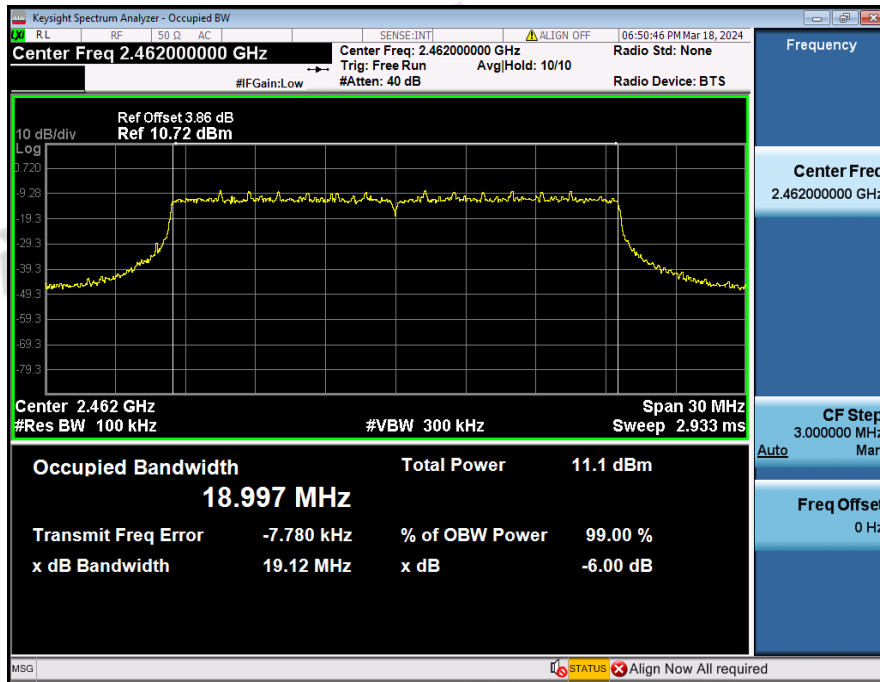
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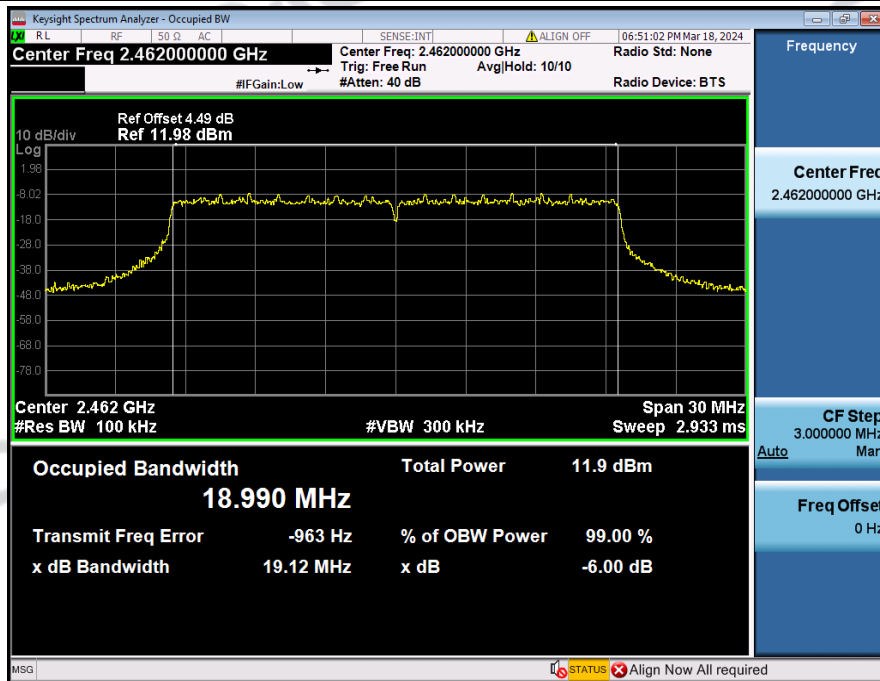
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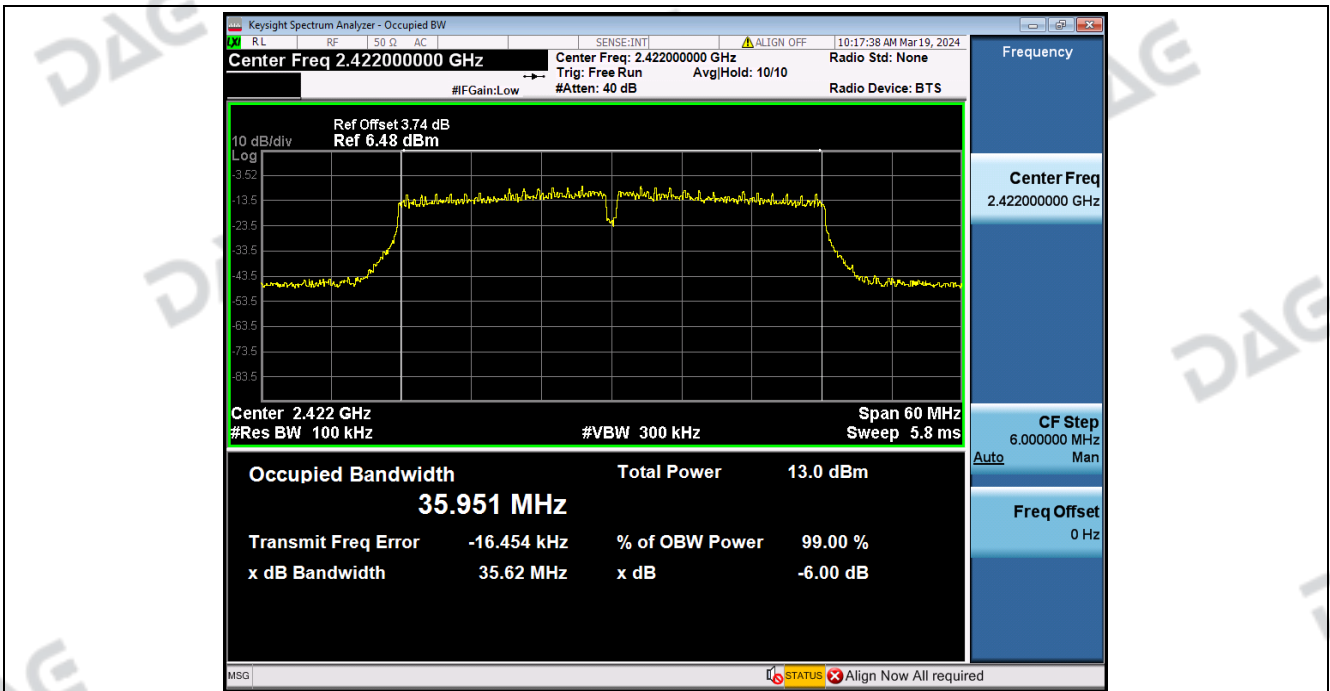
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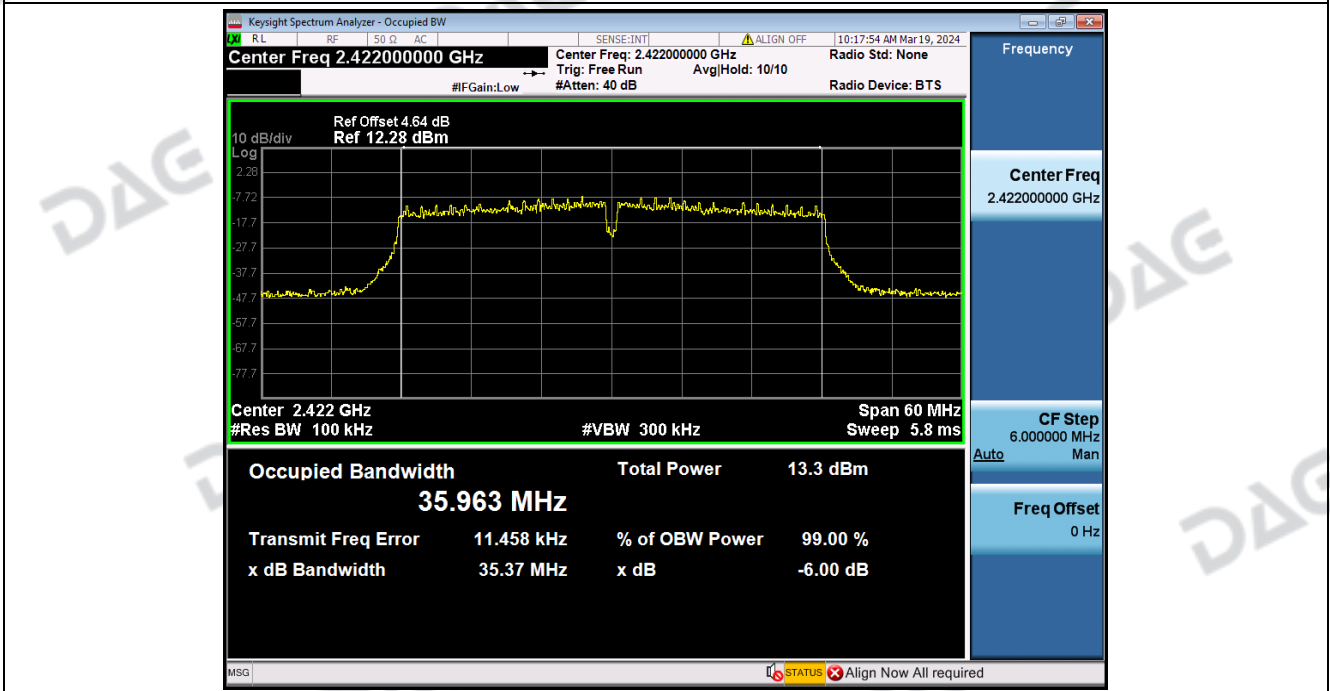
-6dB_Bandwidth_NVNT_ANT2_802_11ax(HE20)_2462



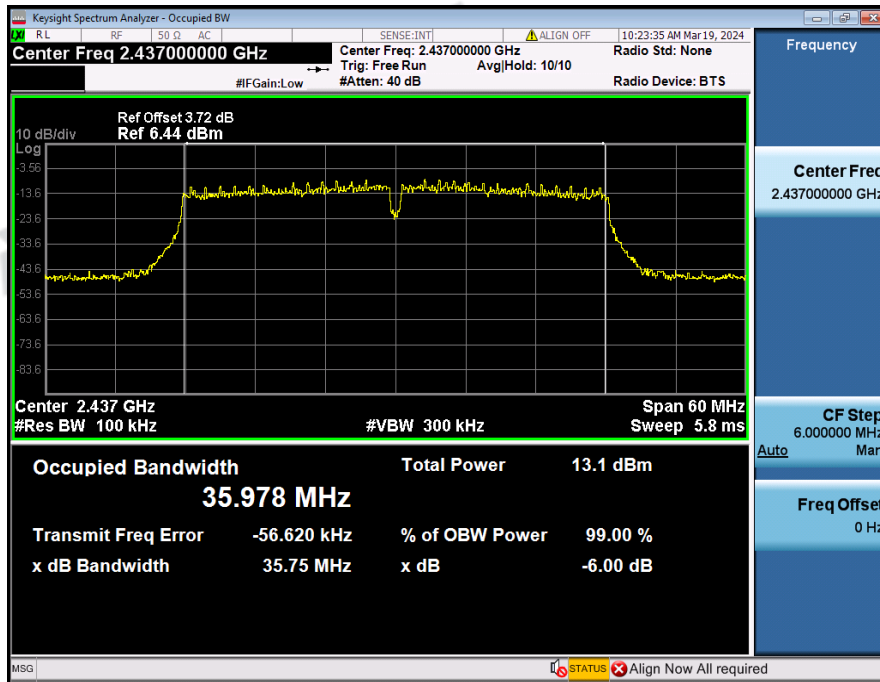
-6dB_Bandwidth_NVNT_ANT1_802_11n(HT40)_2422



-6dB_Bandwidth_NVNT_ANT2_802_11n(HT40)_2422



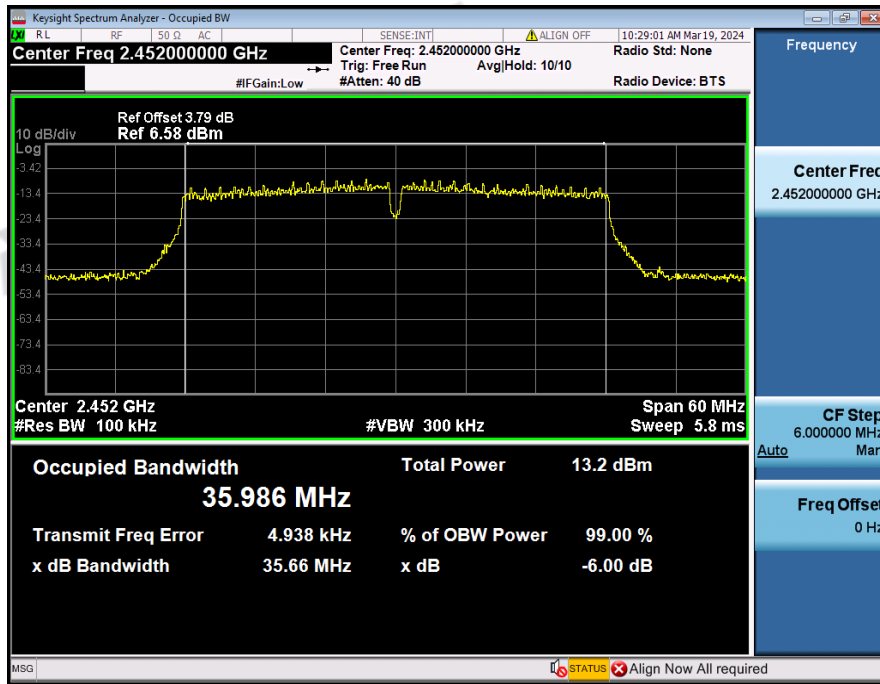
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-6dB_Bandwidth_NVNT_ANT2_802_11n(HT40)_2437



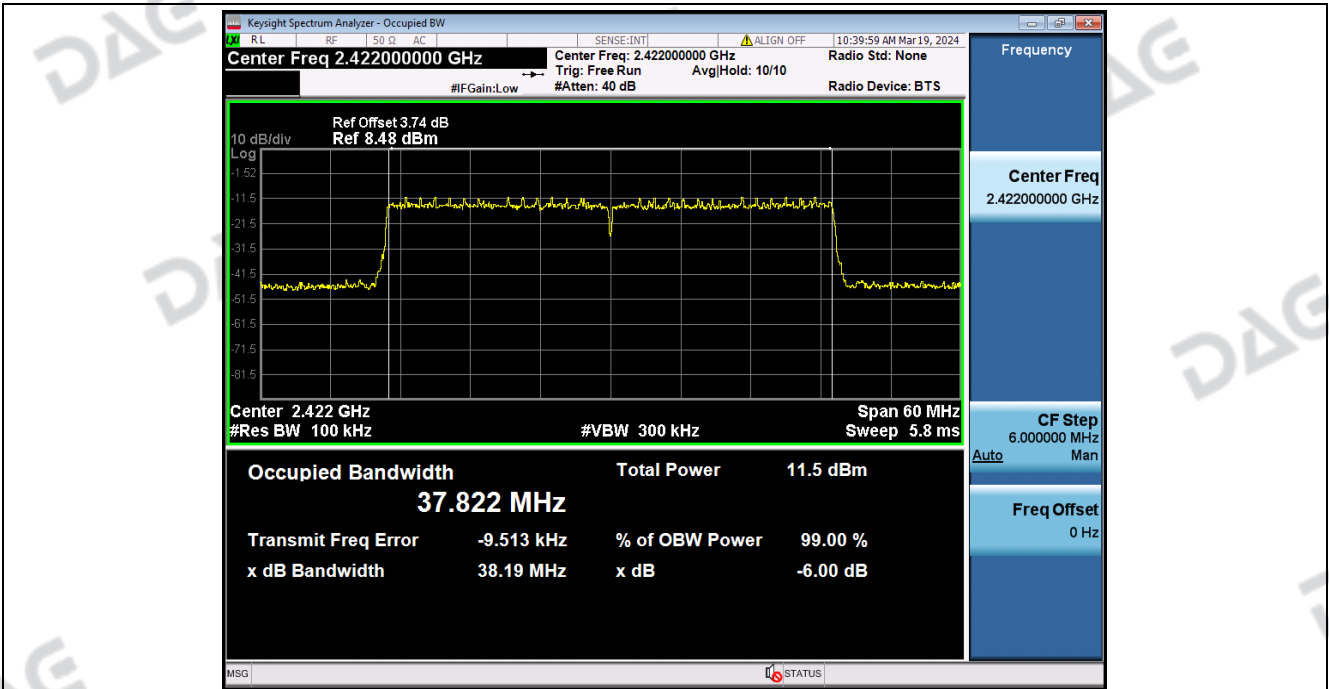
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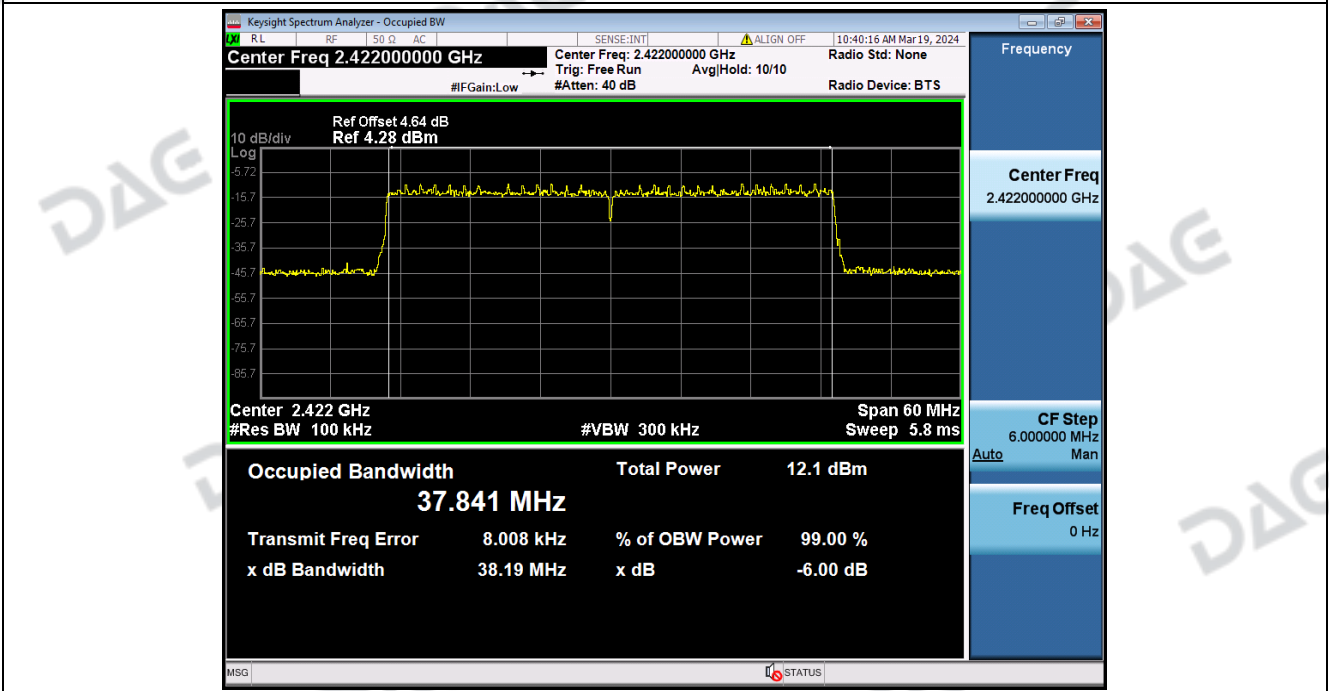
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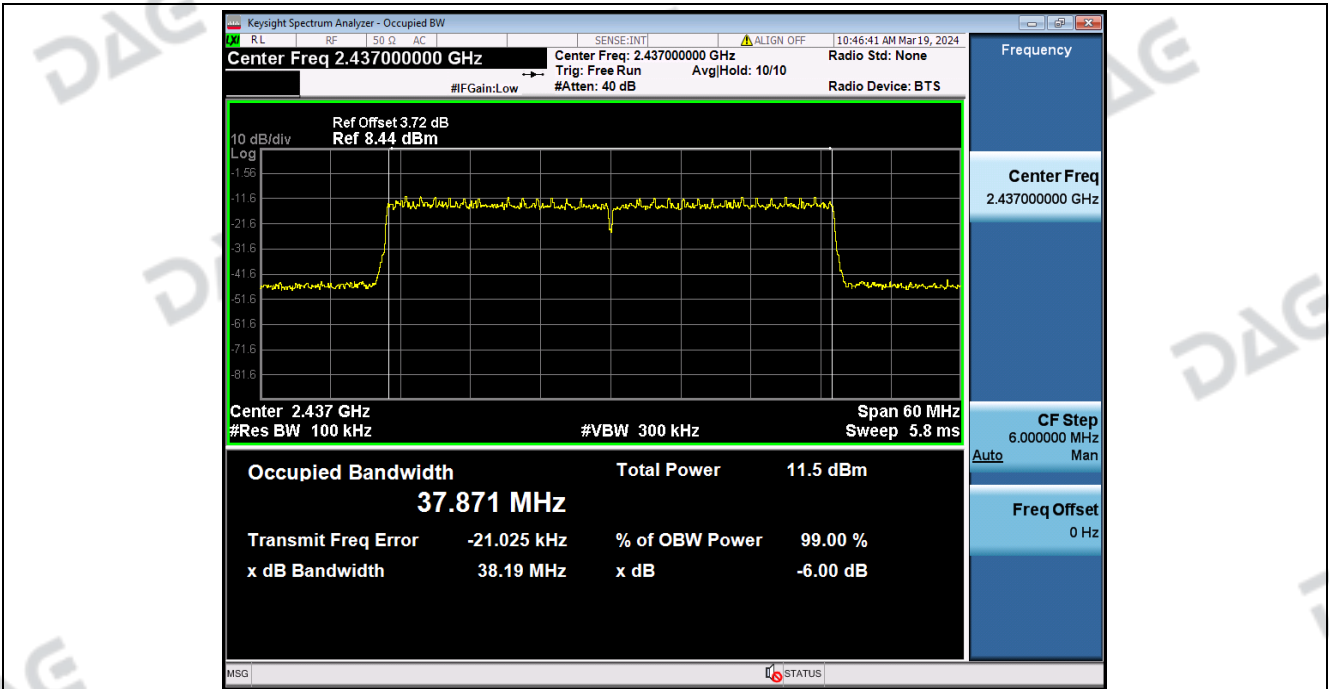
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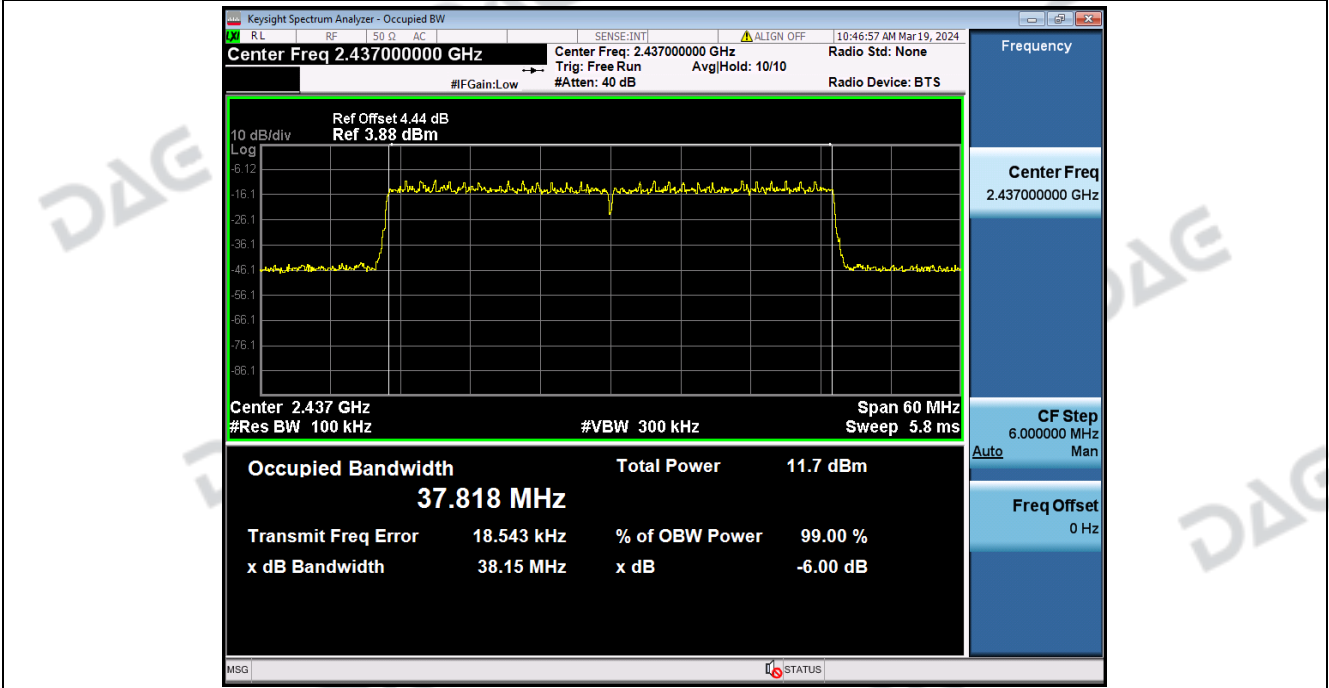
-6dB_Bandwidth_NVNT_ANT2_802_11ax(HE40)_2422



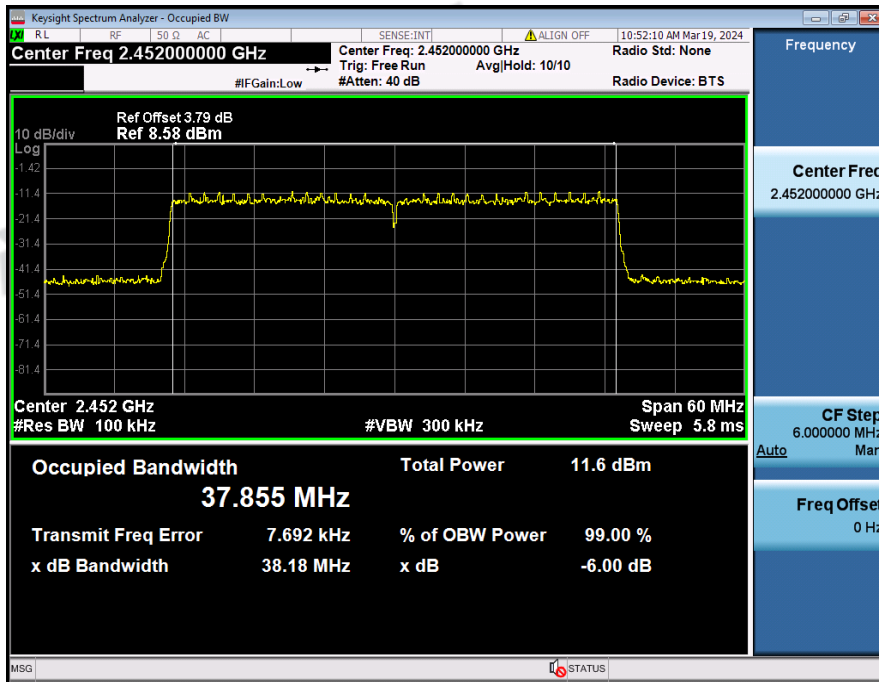
-6dB_Bandwidth_NVNT_ANT1_802_11ax(HE40)_2437



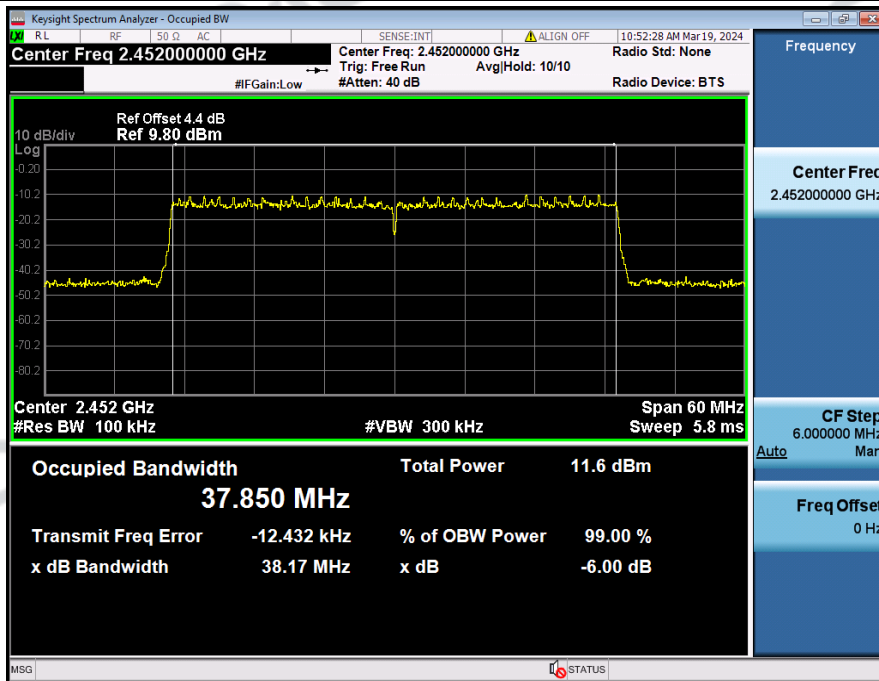
-6dB_Bandwidth_NVNT_ANT2_802_11ax(HE40)_2437



-6dB_Bandwidth_NVNT_ANT1_802_11ax(HE40)_2452



-6dB_Bandwidth_NVNT_ANT2_802_11ax(HE40)_2452



2. 99% Occupied Bandwidth

Condition	Antenna	Modulation	Frequency (MHz)	99% BW (MHz)
NVNT	ANT1	802.11b	2412.00	12.591
NVNT	ANT2	802.11b	2412.00	12.591
NVNT	ANT1	802.11b	2437.00	12.623
NVNT	ANT2	802.11b	2437.00	12.607
NVNT	ANT1	802.11b	2462.00	12.634
NVNT	ANT2	802.11b	2462.00	12.626
NVNT	ANT1	802.11g	2412.00	16.949
NVNT	ANT2	802.11g	2412.00	16.918
NVNT	ANT1	802.11g	2437.00	16.858
NVNT	ANT2	802.11g	2437.00	16.872
NVNT	ANT1	802.11g	2462.00	16.867
NVNT	ANT2	802.11g	2462.00	16.876
NVNT	ANT1	802.11n(HT20)	2412.00	18.019
NVNT	ANT2	802.11n(HT20)	2412.00	18.028
NVNT	ANT1	802.11n(HT20)	2437.00	18.095
NVNT	ANT2	802.11n(HT20)	2437.00	18.161
NVNT	ANT1	802.11n(HT20)	2462.00	18.045
NVNT	ANT2	802.11n(HT20)	2462.00	18.079
NVNT	ANT1	802.11ax(HE20)	2412.00	19.101
NVNT	ANT2	802.11ax(HE20)	2412.00	19.104
NVNT	ANT1	802.11ax(HE20)	2437.00	19.287
NVNT	ANT2	802.11ax(HE20)	2437.00	19.310
NVNT	ANT1	802.11ax(HE20)	2462.00	19.299
NVNT	ANT2	802.11ax(HE20)	2462.00	19.275
NVNT	ANT1	802.11n(HT40)	2422.00	36.495
NVNT	ANT2	802.11n(HT40)	2422.00	36.436
NVNT	ANT1	802.11n(HT40)	2437.00	36.479
NVNT	ANT2	802.11n(HT40)	2437.00	36.470
NVNT	ANT1	802.11n(HT40)	2452.00	36.367
NVNT	ANT2	802.11n(HT40)	2452.00	36.506
NVNT	ANT1	802.11ax(HE40)	2422.00	38.181
NVNT	ANT2	802.11ax(HE40)	2422.00	38.125
NVNT	ANT1	802.11ax(HE40)	2437.00	38.109
NVNT	ANT2	802.11ax(HE40)	2437.00	38.091
NVNT	ANT1	802.11ax(HE40)	2452.00	38.088
NVNT	ANT2	802.11ax(HE40)	2452.00	38.162

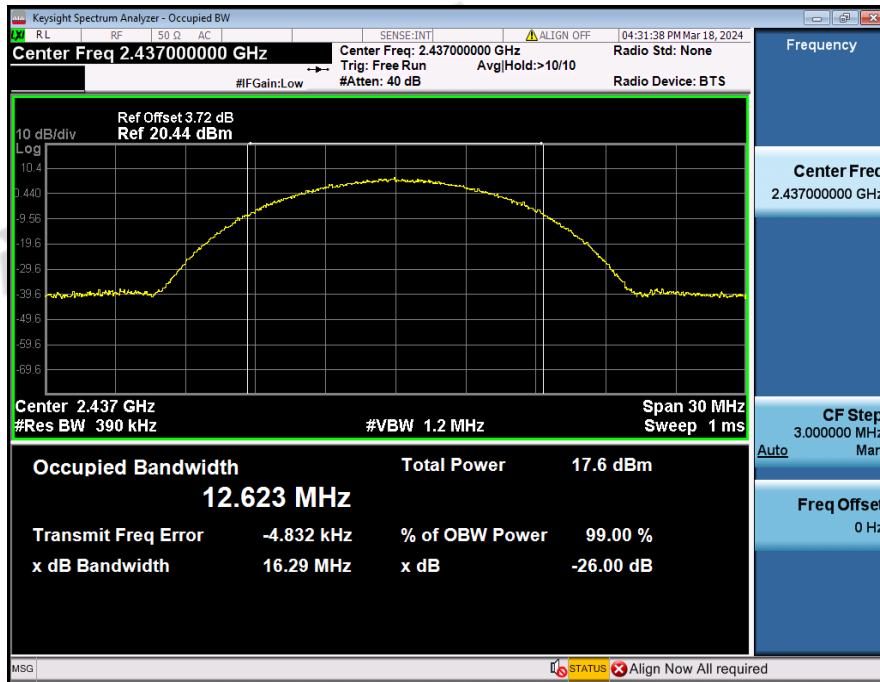
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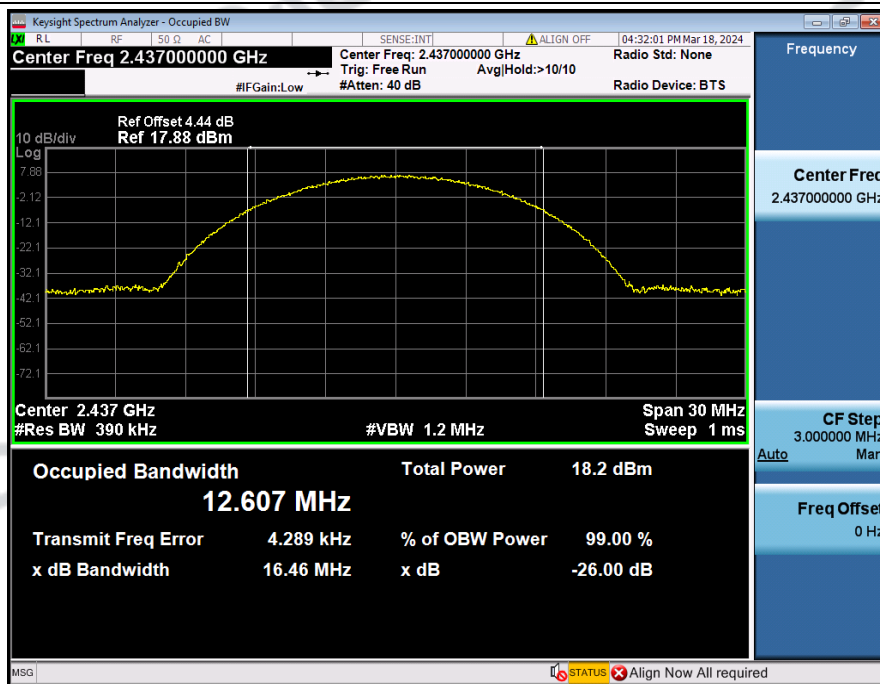
99%_Occupied_Bandwidth_NVNT_ANT2_802_11b_2412



99%_Occupied_Bandwidth_NVNT_ANT1_802_11b_2437



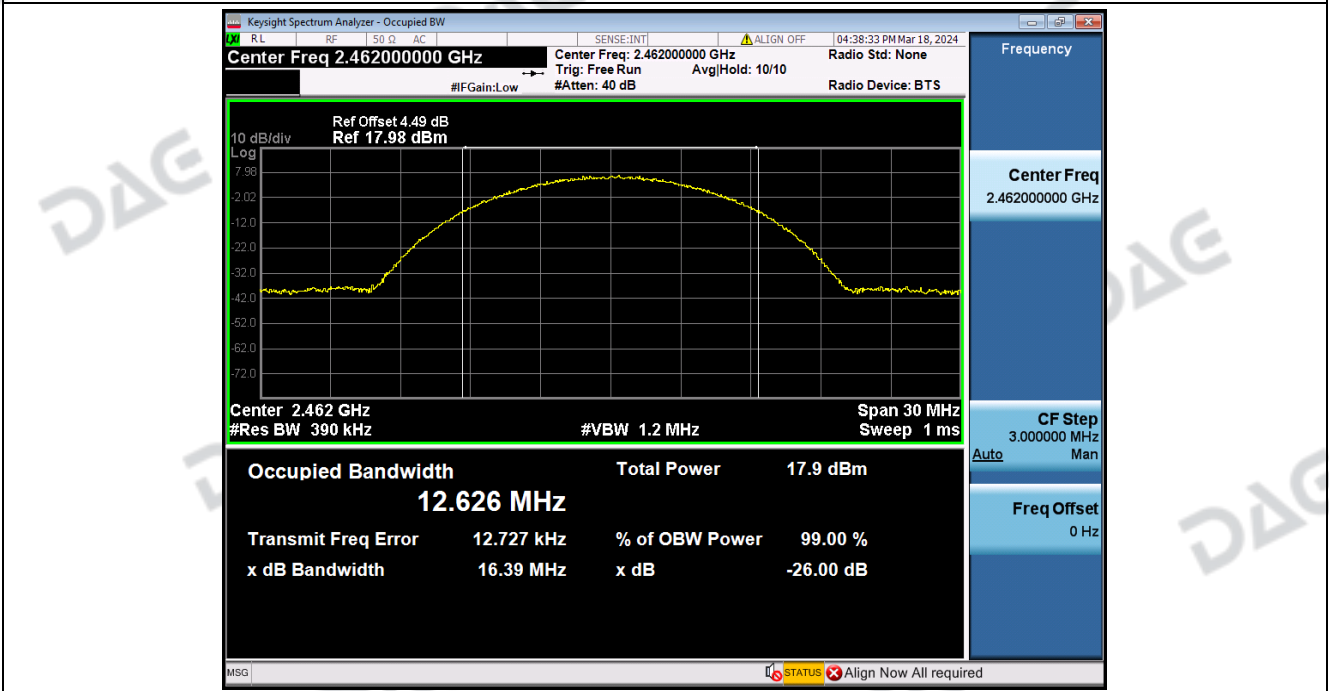
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99%_Occupied_Bandwidth_NVNT_ANT1_802_11b_2462



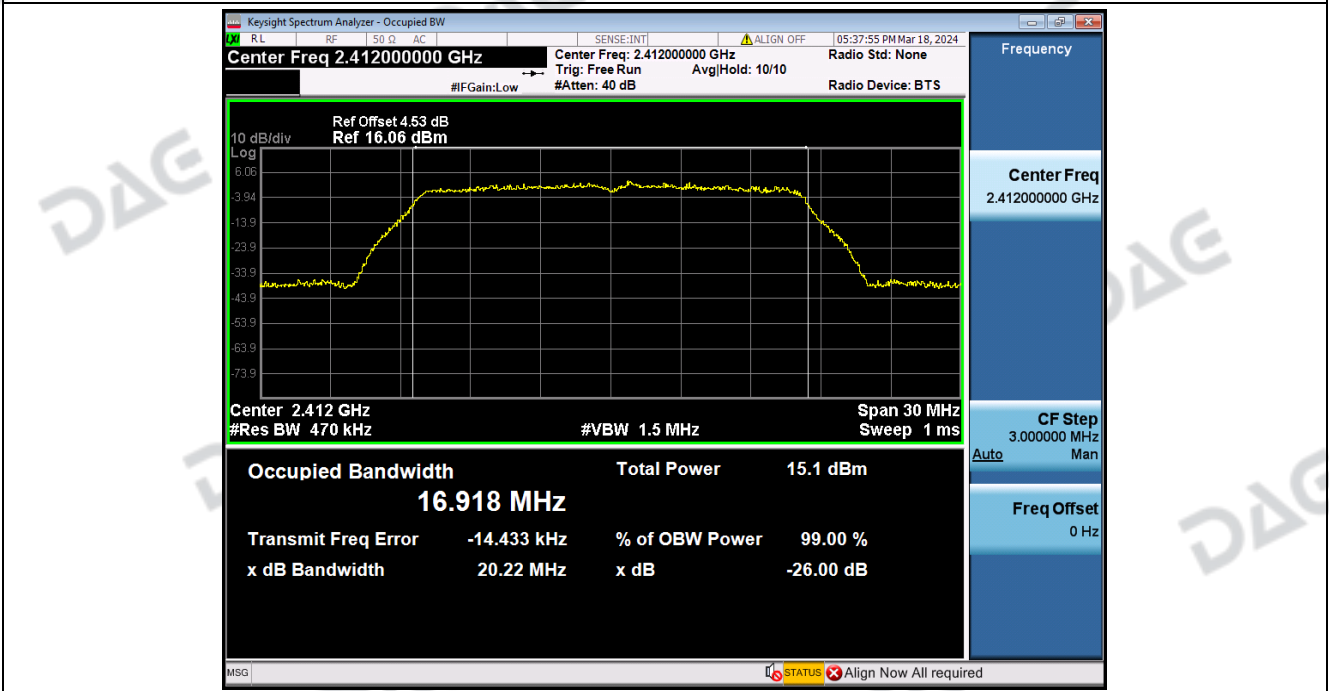
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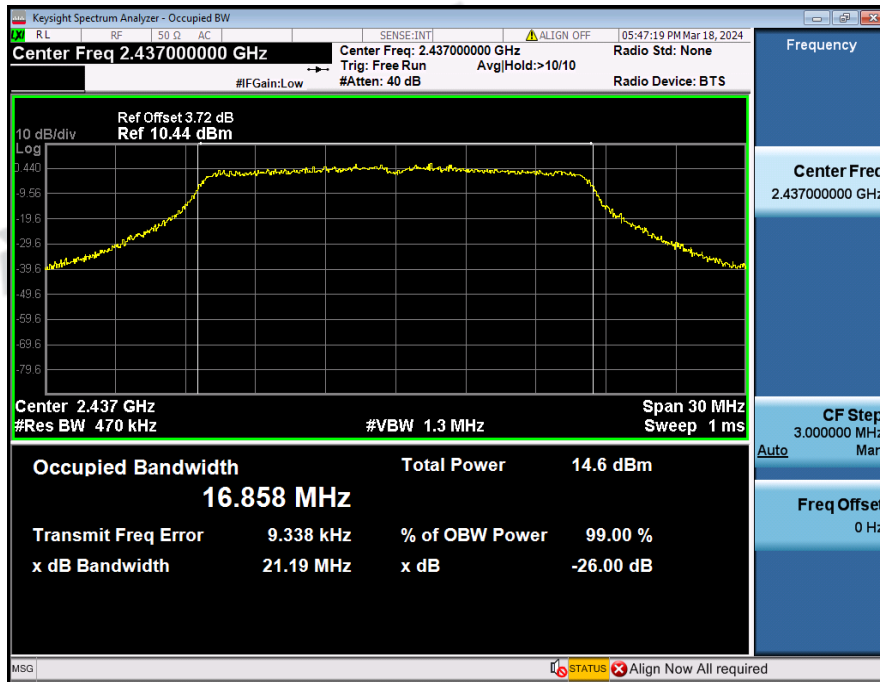
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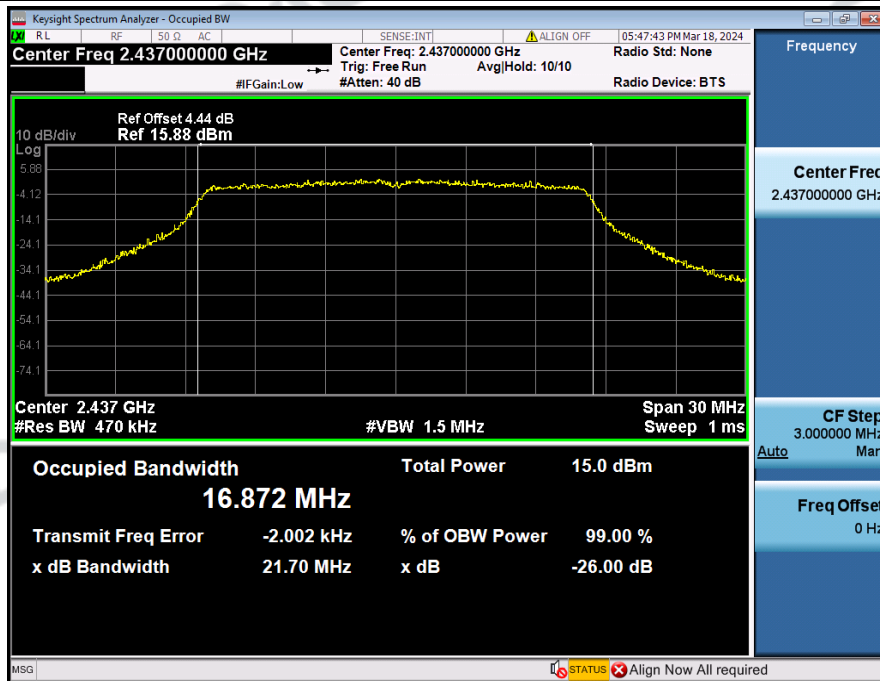
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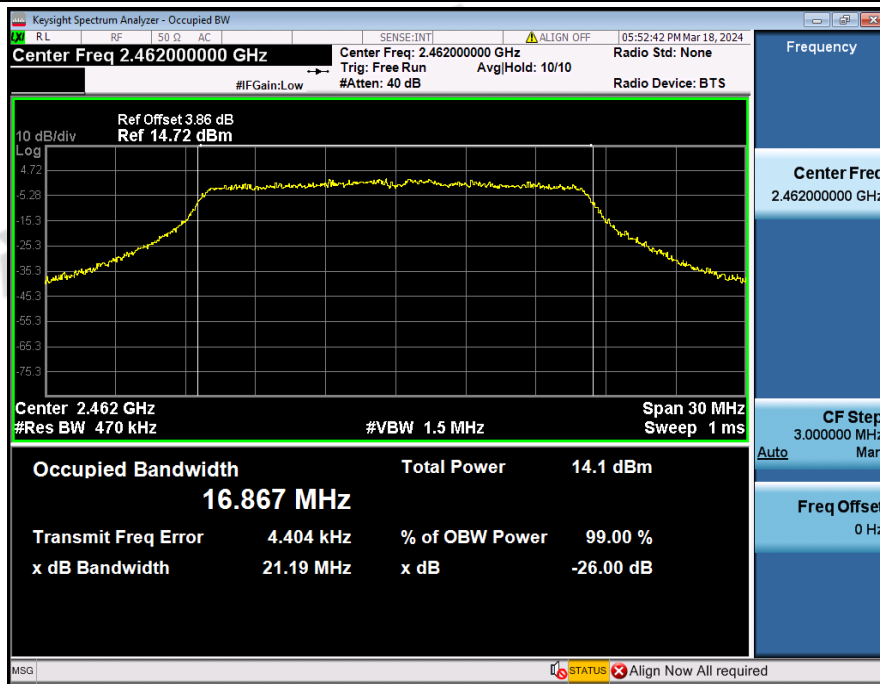
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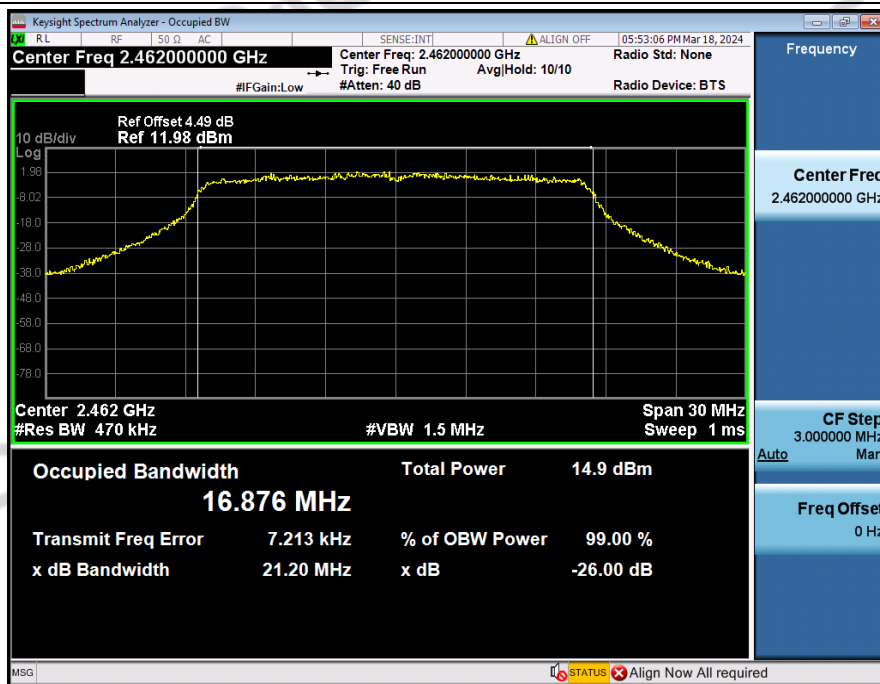
99%_Occupied_Bandwidth_NVNT_ANT2_802_11g_2437



99%_Occupied_Bandwidth_NVNT_ANT1_802_11g_2462



99%_Occupied_Bandwidth_NVNT_ANT2_802_11g_2462



99%_Occupied_Bandwidth_NVNT_ANT1_802_11n(HT20)_2412