TEST REPORT
On behalf of

TRISPORT AG

Product Name:	HOI CROSS PRO	HOI TOUR+
Model No.:	CT1063-400US, CT1063-900US	EM1060-400US, EM1060-900US

FCC ID: 2BB2MCT1063-400US

Prepared For: TRISPORT AG
Boesch 67 CH-6331 Huenenberg

Prepared By: Audix Technology (Shanghai) Co., Ltd.
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TESTING
NVLAP LAB CODE 200371-0

Report No. : ACI-F24097
Date of Test : 2024.01.09-09.03
Date of Report : 2024.09.04

The statement is based on a single evaluation of one sample of the above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab logo.
The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

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TEST REPORT

Applicant	:	TRISPORT AG
EUT Description	:	HOI CROSS PRO, HOI TOUR+
		(A) Model No. : Refer to Sec.2.1
		(B) Power Supply : AC 120V/60Hz
		(C) Test Voltage : AC 120V/60Hz

Test Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART C
AND ANSI C63.10-2013

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report also shows that the EUT (M/N: Refer to Sec2.1), which was tested is technically compliance with the FCC limits.

This report applies to above tested Sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.

The test results for EUT's BLE/BREDR/WIFI (5G)/DFS function are contained in No.ACI-F24095, ACI-F24096, ACI-F24098, ACI-F24099 report.

Date of Test : 2024.01.09-09.03 Date of Report : 2024.09.04

Producer : Jarey Lu
JAREY LU / Deputy Assistant Manager

Review : Lvy lv
LVY LV / Deputy Assistant Manager

AUDIX® For and on behalf of
Audix Technology (Shanghai) Co., Ltd.

Signatory : Kamp. Chen.
Authorized Signature(s) KAMP CHEN / Manager

1 SUMMARY OF STANDARDS AND RESULTS

1.1 Description of Standards and Results

The result is determined according to the decision rules of customer selection in the ASC-403 application service form.
1. According to IEC GUIDE 115 Procedure 2 and ILAC-G8, the uncertainties value is not used in determining the PASS/FAIL results.
2. If the required specification or standard already contains the decision rules, it will be carried out in accordance with the regulations or standard documents or the requirements of the competent units. If the required specification or standard does not contain a decision rule, the same paragraph 1.
3. If your company has a required decision rule, it will be implemented in accordance with the requirements and ISO/IEC Guide 98-4 specifications.

The EUT have been tested according to the applicable standards as referenced below:

Description / Test Item	Test Standard	Results	Meets Limit
EMISSION			
Conducted Emission	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.207
Radiated Emission	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.209(a) 15.205(a)(c)
6 dB Bandwidth Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.247(a)(2)
Maximum Output Power Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.247(b)(3)
Emission Limitations Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.247(d)
Band Edge Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.247(d)
Power Spectral Density Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.247(e)
Antenna Requirement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.203
N/A is an abbreviation for Not Applicable.			

2 GENERAL INFORMATION

2.1 Description of Equipment Under Test

Type of EUT : ☑ Production ☐ Pre-product ☐ Pro-type

Product Name	HOI CROSS PRO	HOI TOUR+
Model Number	CT1063-400US, CT1063-900US	EM1060-400US, EM1060-900US

Note#1 : The difference between Models as below:

Model	CT1063-400US	CT1063-900US
Difference	Just the color is different.	

Model	EM1060-400US	EM1060-900US
Difference	Just the color is different.	

Model	CT1063-400US, CT1063-900US	EM1060-400US, EM1060-900US
Difference	The electronic part are all the same except the mechanical structures were different	

Note#2 : Acording the differece as above, we selected Model CT1063-400US for main test and model EM1060-400US, for differential test in current report.

Test Model : CT1063-400US, EM1060-400US

Note#3 : The EUT shipped with RF module that listed ad below:

Module	Radio Technology	Condition	Modular or not
WLT5283M	BLE	In use	N/A
ICT-M	BLE	In use	Single Modular
	Wifi2.4G	In use	
SKI.WB668BS.3	BLE	No use	N/A
	BREDR	In use	
	WIFI2.4G	In use	
	WIFI5G	In use	
GEM3NFC	NFC	In use	Single Modular
Note: The EUT shipped with two Single Modular. The first one is “ICT-M”, which the FCC ID is “2AC7Z-ESPS3WROOM1”. And the second one is “GEM3NFC”, which the FCC ID is “XRH-NPE109”.			

Note#4 : According to the information as above, we test module “WLT5283M” and “SKI.WB668BS.3” to report.

Radio Tech. in current report : Listed as below:

Item	SKI.WB668BS.3
Radio Technology	WIFI2.4G
Chanel Frequency	802.11b/g/n20: 2412MHz-2462MHz; 802.11n40: 2422MHz-2452MHz.
Modulation	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK); IEEE 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK);

Antenna Info. in current report : The Module "SKI.WB668BS.3" shipped with three ANT port, the usage details listed as below:

ANT port:	CNF1	CNF2	CNF3
Connector:	IPEX	IPEX	IPEX
Condition:	In used for Bluetooth	In used for WIFI	In used for WIFI
Transmit Type:	SISO	For 802.11b/g: SISO For 802.11n: MIMO	
Antenna Type:	PIFA	PIFA	PIFA
Antenna Gain:	3 dBi	3 dBi	3 dBi

Applicant : TRISPORT AG
Boesch 67 CH-6331 Huenenberg

Manufacturer : Same as Applicant.

2.2 EUT Specifications Assessed in Current Report

Mode	Modulation	Data Rate(Mbps)
802.11b	DS (DQPSK, DBPSK, CCK)	Up to 11
802.11g	OFDM (64-QAM, 16-QAM, QPSK, BPSK)	Up to 54
802.11n20	OFDM (64-QAM, 16-QAM, QPSK, BPSK)	Up to 72.2
802.11n40	OFDM (64-QAM, 16-QAM, QPSK, BPSK)	Up to 150

Channel List			
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437		

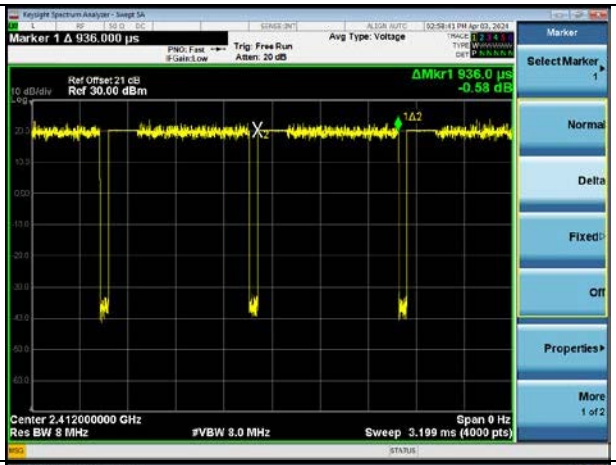
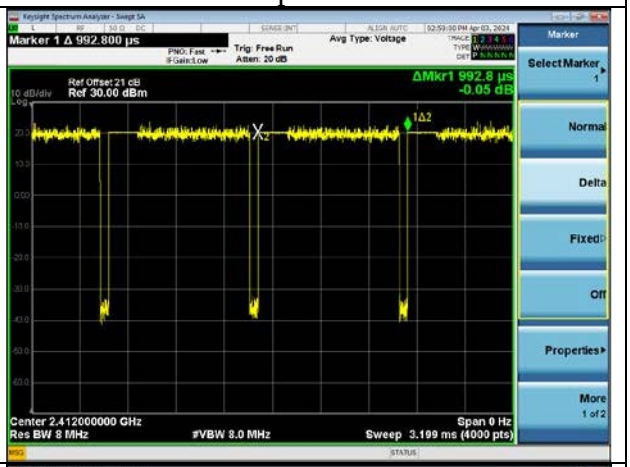
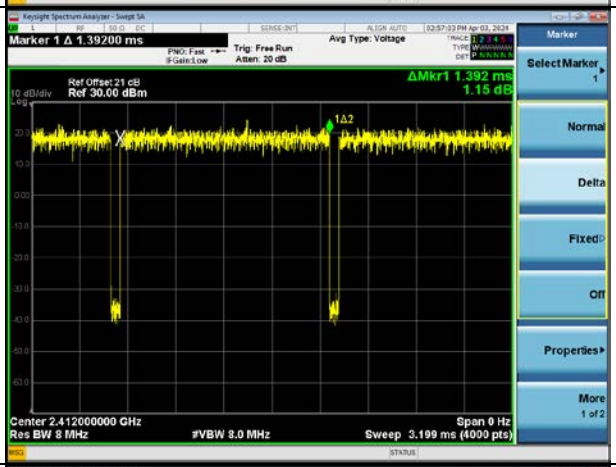
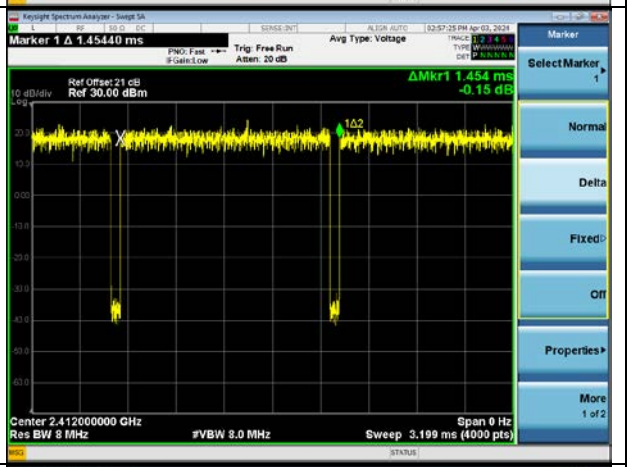
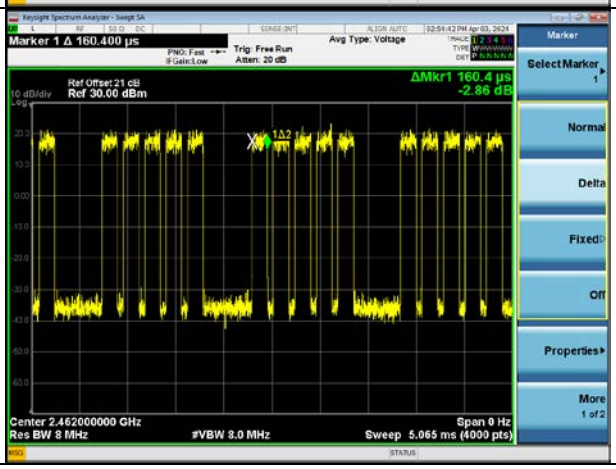
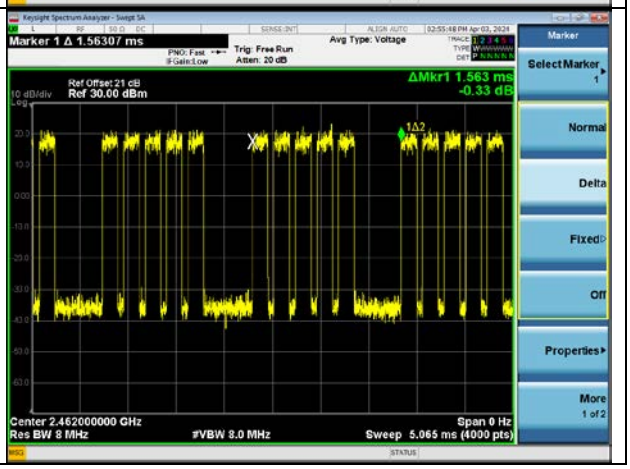
2.3 Test Information

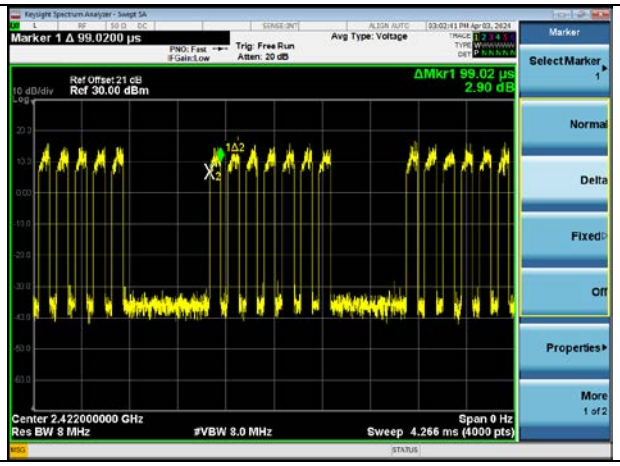
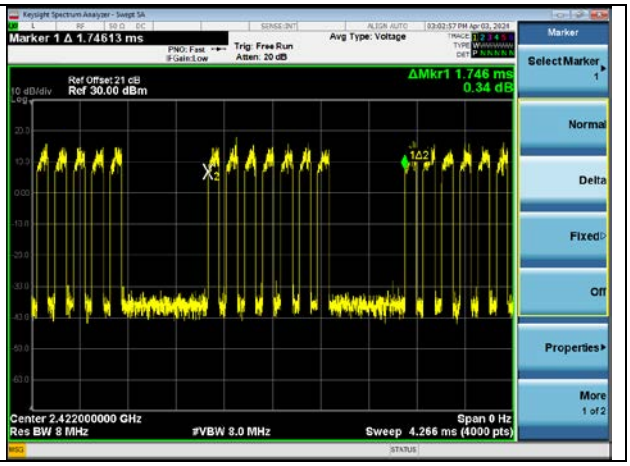
The test software " sscom5.13.1.exe" was used to control EUT work in TX mode, Power Setting and select test channel.

Mode	data rate (Mbps)	Power Setting	Test Channel		Frequency (MHz)
802.11b	11	Default	Low:	1	2412
		Default	Middle:	6	2437
		Default	High:	11	2462
802.11g	6	Default	Low:	1	2412
		Default	Middle:	6	2437
		Default	High:	11	2462
802.11n20	MCS0	13	Low:	1	2412
		13	Middle:	6	2437
		13	High:	11	2462
802.11n40	MCS0	Default	Low:	3	2422
		Default	Middle:	6	2437
		Default	High:	9	2452
For 802.11b/g modes, the EUT can transmit at both CNF2 and CNF3 output port individually, but not simultaneously. For 802.11n20/n40 modes, the EUT can the EUT can transmit at both CNF2 and CNF3 output port individually, and also simultaneously.					

2.4 Duty Cycle Check

Mode	Transmission Burst Duration (ms)	Number of Burst per Period	Transmission Period (ms)	Duty Cycle (%)	Duty Cycle Correct Factor
11b	0.936	1	0.9928	94.28	0.26
11g	1.392	1	1.454	95.74	0.19
11n20	0.1604	5	1.563	51.31	2.9
11n40	0.09902	7	1.746	39.7	4.01

Mode	Tburst	Tperiod
11b		
11g		
11n20		

11n40	 Marker 1 Δ 99.0200 µs Avg Type: Voltage Trig: Free Run Atten: 20 dB Ref Offset 21 dB 10 dB/div Ref 30.00 dBm ΔMkr1 99.02 µs 2.90 dB Center 2.422000000 GHz Res BW 8 MHz #VBW 8.0 MHz Span 0 Hz Sweep 4.266 ms (4000 pts) Marker Select Marker Normal Delta Fixed Off Properties More 1 of 2	 Marker 1 Δ 1.74613 ms Avg Type: Voltage Trig: Free Run Atten: 20 dB Ref Offset 21 dB 10 dB/div Ref 30.00 dBm ΔMkr1 1.746 ms 0.34 dB Center 2.422000000 GHz Res BW 8 MHz #VBW 8.0 MHz Span 0 Hz Sweep 4.266 ms (4000 pts) Marker Select Marker Normal Delta Fixed Off Properties More 1 of 2

2.5 Sample Description

Test Item	Model Number	Sample Number	Date of receipted
Conducted Emission	CT1063-400US	E20231017179-03/03	2023.10.17
	EM1060-400US	E20231017180-01/01	2023.10.17
Radiated Emission	CT1063-400US	E20231017179-03/03	2023.10.17
	EM1060-400US	E20231017180-01/01	2023.10.17
Conducted RF Test	CT1063-400US	E20231017179a-03/03	2023.10.17

2.6 Supported equipment

Brand : Acer
Product Name: : Notebook PC
Model Name : TravelMate P238 series
Model Number : N15W8

Product Name : Test Fixture
Product Function : USB to TTL

2.7 Description of Test Facility

Name of Firm : Audix Technology (Shanghai) Co., Ltd.

Site Location : 3F, Building 34, No. 680 Guiping Rd., Caohejing, Hi-Tech Park, Shanghai 200233, China

Accredited by NVLAP, Lab Code : 200371-0

FCC Designation Number : CN5027

Test Firm Registration Number : 954668

3 CONDUCTED EMISSION TEST

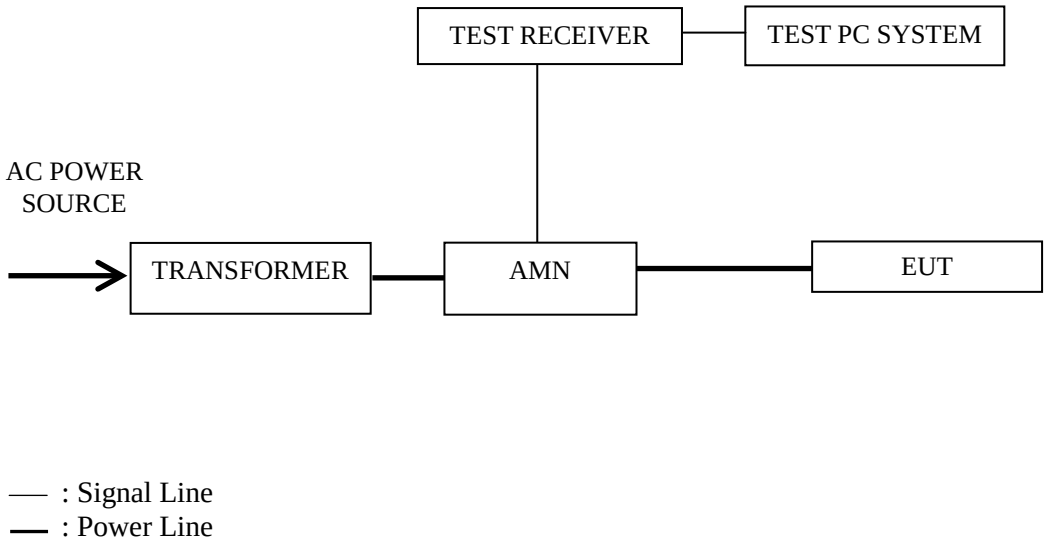
3.1 Test Equipment

The following test equipments are used during the conducted emission test in a shielded room:

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Test Receiver	R&S	ESCI	101302	2024.02.22	1 Year
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	2024.02.22	1 Year
3.	Fixed Attenuator	SHYL	TTS-1	001	2024.02.22	1 Year
4.	50Ω Coaxial Switch	ANRITSU	MP59B	6200655086	2024.02.22	1 Year
5.	Coaxial Cable	HANWEI	RG223/U	KJ09052	2024.02.22	1 Year
6.	Software	Audix	e3	210616	--	--

3.2 Block Diagram of Test Setup

3.2.1 Conducted Disturbance Test Setup



3.3 Conducted Emission Limits (§15.207)

Frequency Range (MHz)	Limits dB(μV)	
	Quasi-peak	Average
0.15 ~ 0.5	66~56	56~46
0.5 ~ 5	56	46
5 ~ 30	60	50

NOTE 1 – The lower limit shall apply at the transition frequencies.

NOTE 2 – The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz~0.50 MHz

3.4 Test Configuration

The EUT (listed in Sec.2.1) was installed as shown on Sec.3.2 to meet FCC requirement and operating in a manner which tends to maximize its emission level in a normal application.

3.5 Operating Condition of EUT

3.5.1 Setup the EUT as shown in Sec. 3.2.

3.5.2 Turn on the power of all equipment.

3.5.3 Turn the EUT on the test mode, and then test.

3.6 Test Procedures

The EUT was placed upon a insulating support, which is 0.1 m above the horizontal conducting ground plane and 0.4 m from a vertical reference plane. The EUT was connected to the power mains through an Artificial Mains Network (AMN) to provide a 50 Ω coupling impedance for the measuring equipment. Both sides of AC line (Line & Neutral) were checked to find out the maximum conducted emission according to FCC Part 15 Subpart C and ANSI C63.10: 2013 requirements during conducted disturbance test.

The I.F. bandwidth of Test Receiver ESCI was set at 9 kHz.

The frequency range from 150 kHz to 30 MHz was checked.

Test with a dummy load in lieu of the antenna to determine compliance with Section 15.207 limits within the transmitter's fundamental emission band. (According to KDB 174176 D01 Line Conducted FAQ)

The test modes were done on conducted disturbance test and all the test results are listed in Sec. 3.7

3.7 Test Results

< PASS >

The frequency and amplitude of the highest conducted emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

Worst case emission:
(Test Model: CT1063-400US)

No.	Operation	Mode	Channel	Frequency	Data Page
1.	Transmitting	802.11b	1	2412MHz	P15-16

(Test Model: EM1060-400US)

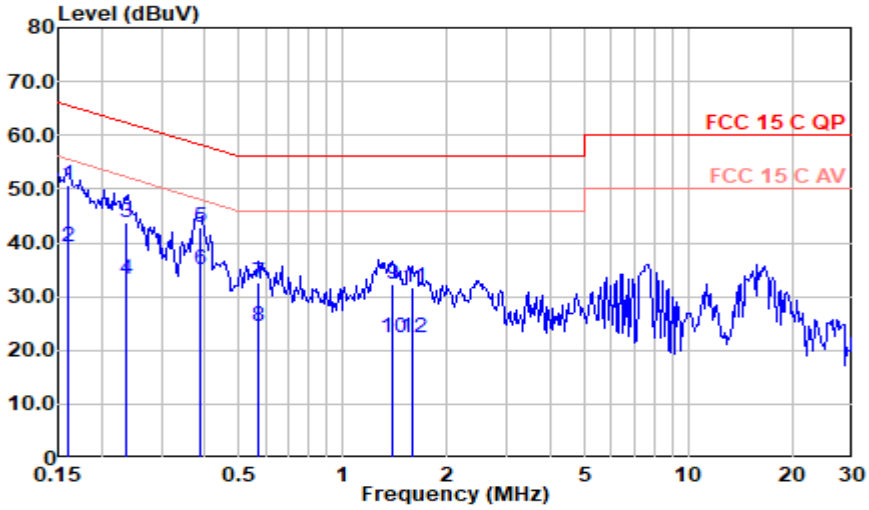
No.	Operation	Mode	Channel	Frequency	Data Page
1.	Transmitting	802.11b	1	2412MHz	P17-18

NOTE 1 – Emission Level = Read Level + AMN Factor +Aux Factor + Cable Loss
Margin = Limits - Emission Level
NOTE 2 – “QP” means “Quasi-Peak” values
NOTE 3 – The emission levels which not reported are too low against the official limit.

Worst case emission

Test Date:	2024.09.03	Temp./Hum.:	22°C/51%RH	Test By:	Jarey

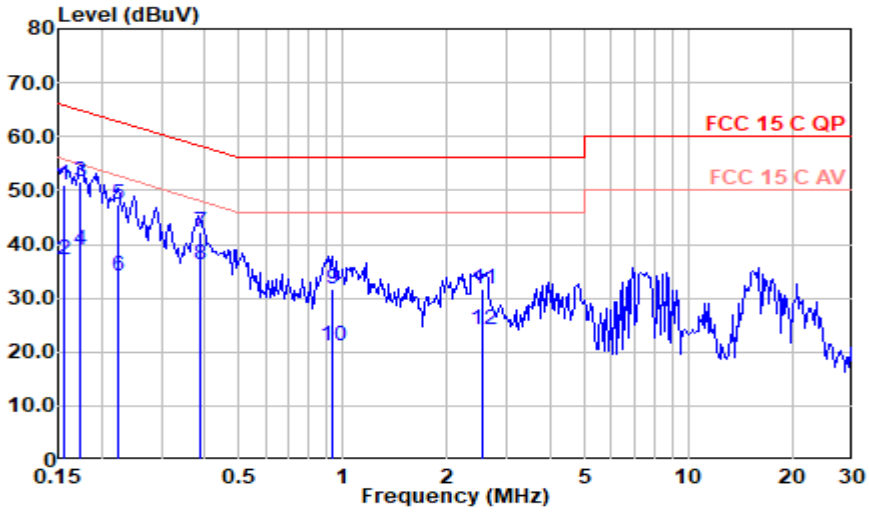
Mode: 802.11b CH2412MHz **Model: CT1063-400US**



Polarization at Line

Frequency (MHz)	Meter Reading dB (μV)	AMN Factor (dB)	Aux Factor (dB)	Cable Loss (dB)	Emission Level dB (μV)	Limits dB (μV)	Margin (dB)	Remark
0.161	41.08	0.20	9.49	0.00	50.77	65.42	14.65	QP
0.161	29.41	0.20	9.49	0.00	39.10	55.42	16.32	Average
0.237	34.01	0.20	9.49	0.00	43.70	62.20	18.51	QP
0.237	23.43	0.20	9.49	0.00	33.12	52.20	19.08	Average
0.386	33.12	0.20	9.49	0.00	42.81	58.16	15.35	QP
0.386	25.41	0.20	9.49	0.00	35.10	48.16	13.05	Average
0.568	22.90	0.20	9.49	0.02	32.61	56.00	23.39	QP
0.568	14.69	0.20	9.49	0.02	24.40	46.00	21.60	Average
1.390	22.56	0.30	9.49	0.10	32.45	56.00	23.55	QP
1.390	12.36	0.30	9.49	0.10	22.25	46.00	23.75	Average
1.598	21.70	0.30	9.49	0.10	31.59	56.00	24.41	QP
1.598	12.37	0.30	9.49	0.10	22.26	46.00	23.74	Average

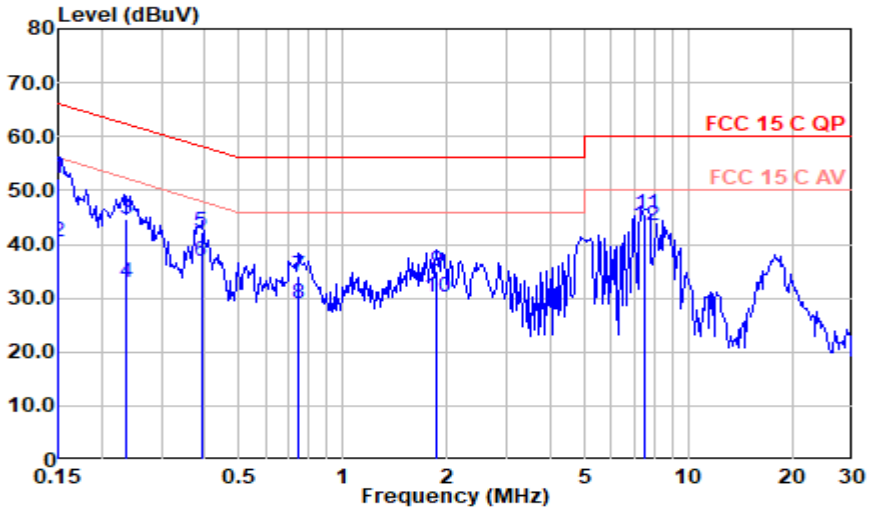
Mode: 802.11b CH2412MHz **Model: CT1063-400US**



Polarization at Neutral

Frequency (MHz)	Meter Reading dB (μV)	AMN Factor (dB)	Aux Factor (dB)	Cable Loss (dB)	Emission Level dB (μV)	Limits dB (μV)	Margin (dB)	Remark
0.156	41.26	0.20	9.49	0.00	50.95	65.67	14.72	QP
0.156	27.43	0.20	9.49	0.00	37.12	55.67	18.55	Average
0.174	42.07	0.20	9.49	0.00	51.76	64.76	13.00	QP
0.174	29.31	0.20	9.49	0.00	39.00	54.76	15.76	Average
0.223	37.67	0.20	9.49	0.00	47.36	62.70	15.33	QP
0.223	24.37	0.20	9.49	0.00	34.06	52.70	18.64	Average
0.386	32.44	0.20	9.49	0.00	42.13	58.16	16.02	QP
0.386	26.54	0.20	9.49	0.00	36.23	48.16	11.92	Average
0.934	21.88	0.20	9.49	0.09	31.66	56.00	24.34	QP
0.934	11.49	0.20	9.49	0.09	21.27	46.00	24.73	Average
2.550	21.76	0.20	9.49	0.10	31.55	56.00	24.45	QP
2.550	14.38	0.20	9.49	0.10	24.17	46.00	21.83	Average

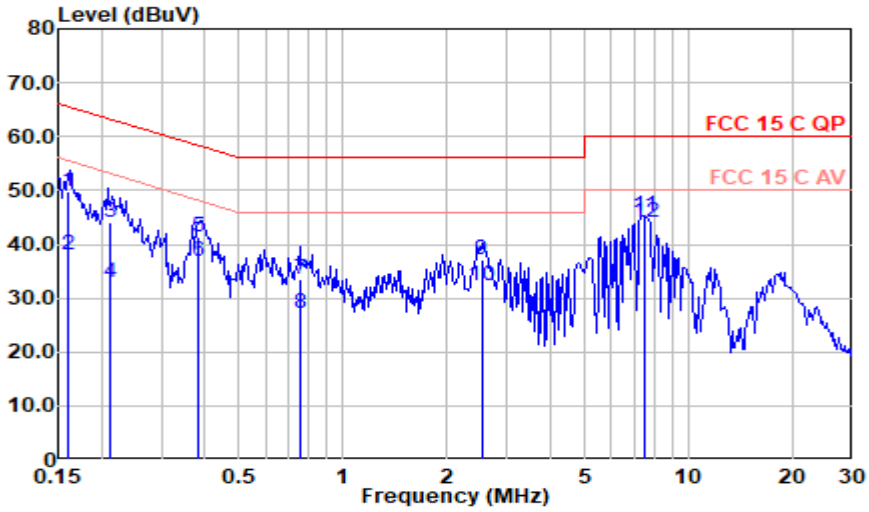
Mode: 802.11b CH2412MHz **Model: EM1060-400US**



Polarization at Line

Frequency (MHz)	Meter Reading dB (μV)	AMN Factor (dB)	Aux Factor (dB)	Cable Loss (dB)	Emission Level dB (μV)	Limits dB (μV)	Margin (dB)	Remark
0.150	42.46	0.20	9.49	0.00	52.15	66.00	13.85	QP
0.150	30.65	0.20	9.49	0.00	40.34	56.00	15.66	Average
0.237	35.11	0.20	9.49	0.00	44.80	62.20	17.40	QP
0.237	23.31	0.20	9.49	0.00	33.00	52.20	19.20	Average
0.390	32.62	0.20	9.49	0.00	42.31	58.07	15.76	QP
0.390	27.26	0.20	9.49	0.00	36.95	48.07	11.12	Average
0.743	24.50	0.20	9.49	0.06	34.24	56.00	21.76	QP
0.743	19.15	0.20	9.49	0.06	28.90	46.00	17.10	Average
1.873	25.08	0.30	9.49	0.10	34.97	56.00	21.03	QP
1.873	20.41	0.30	9.49	0.10	30.30	46.00	15.70	Average
7.534	35.77	0.20	9.49	0.16	45.62	60.00	14.38	QP
7.534	33.57	0.20	9.49	0.16	43.42	50.00	6.58	Average

Mode: 802.11b CH2412MHz **Model: EM1060-400US**



Polarization at Neutral

Frequency (MHz)	Meter Reading dB (μV)	AMN Factor (dB)	Aux Factor (dB)	Cable Loss (dB)	Emission Level dB (μV)	Limits dB (μV)	Margin (dB)	Remark
0.161	40.27	0.20	9.49	0.00	49.96	65.42	15.46	QP
0.161	28.33	0.20	9.49	0.00	38.02	55.42	17.41	Average
0.212	34.42	0.20	9.49	0.00	44.11	63.11	19.00	QP
0.212	23.14	0.20	9.49	0.00	32.83	53.11	20.28	Average
0.382	31.53	0.20	9.49	0.00	41.22	58.24	17.02	QP
0.382	27.25	0.20	9.49	0.00	36.94	48.24	11.30	Average
0.751	23.75	0.20	9.49	0.06	33.50	56.00	22.50	QP
0.751	17.48	0.20	9.49	0.06	27.22	46.00	18.78	Average
2.524	27.28	0.20	9.49	0.10	37.07	56.00	18.93	QP
2.524	22.53	0.20	9.49	0.10	32.32	46.00	13.68	Average
7.460	35.50	0.20	9.49	0.16	45.35	60.00	14.65	QP
7.460	34.25	0.20	9.49	0.16	44.10	50.00	5.90	Average

4 RADIATED EMISSION TEST

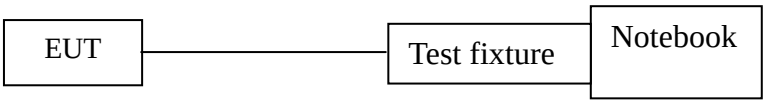
4.1 Test Equipment

The following test equipment are used during the radiated emission test in a semi-anechoic chamber:

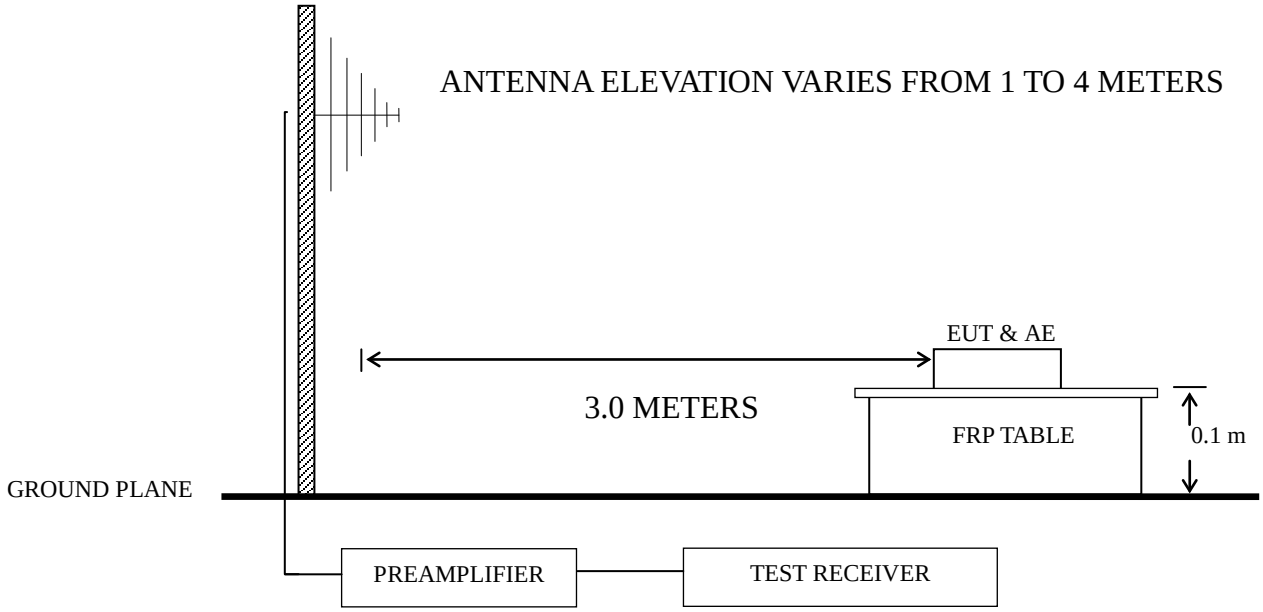
Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Preamplifier	Agilent	8447D	2944A10548	2024.02.22	1 Year
2.	Preamplifier	HP	8449B	3008A00864	2024.02.22	1 Year
3.	EXA Signal Analyzer	Agilent	N9010A	MY52221182	2023.08.09	1 Year
4.	Test Receiver	R&S	ESCI	101303	2024.02.22	1 Year
5.	Bilog Antenna+6dB Attenuator	Schwarzbeck	VULB 9168+EMCI-N-6-06	707+AT-N0637	2023.08.09	1 Year
6.	Horn Antenna	EMCO	3115	96074878	2023.08.02	1 Year
7.	Horn Antenna	EMCO	3116	00062643	2023.01.30	2 Year
8.	Cavity Band Rejection Filter	Microwave	WT-A3882-R 10	WT200312-1-1	2024.02.22	1 Year
9.	Coaxial Switch	Anritsu	MP59B	6200655086	2024.02.22	1 Year
10.	Coaxial Cable	SCHAFFNER	RG 212U-MIL C 17+N1K50-EW0630-N1K50-15m-1	RE-10m-001/ RE-15m-002	2024.02.22	1 Year
11.	Software	Audix	e3	v9.210616	--	--

4.2 Block Diagram of Test Setup

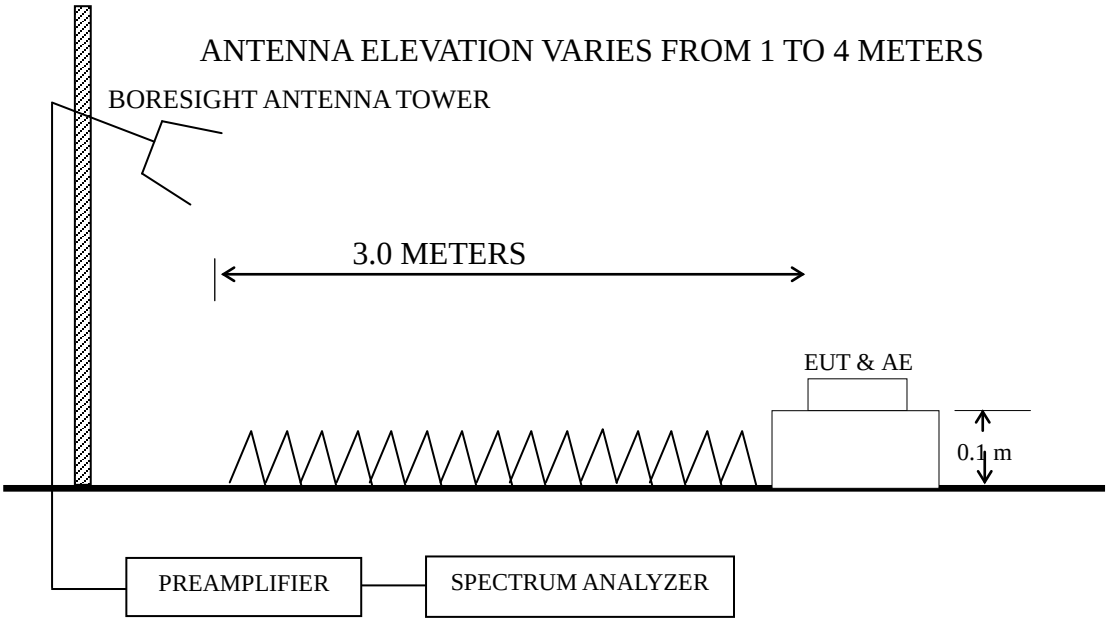
4.2.1 EUT & Peripherals



4.2.2 Below 1GHz



4.2.3 Above 1GHz



4.3 Radiated Emission Limit (§15.209)

Frequency (MHz)	Distance (m)	Field strength limits (μV/m)	
		(μV/m)	dB(μV/m)
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0

NOTE 1 - Emission Level dB (μV/m) = 20 log Emission Level (μV/m)
NOTE 2 - The tighter limit applies at the band edges.
NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
NOTE 4 - The limits shown are based on Quasi-peak value detector below or equal to 1GHz and Average value detector above 1GHz.
NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT

4.4 Test Configuration

The EUT (listed in Sec.2.1) and the simulators (listed in Sec.2.2) were installed as shown on Sec.4.2 to meet FCC requirements and operating in a manner that tends to maximize its emission level in a normal application.

4.5 Operating Condition of EUT

4.5.1 Setup the EUT as shown in Sec. 3.2.

4.5.2 Turn the EUT on.

4.5.3 Connect the EUT and the TTL terminal of Test Fixture through three HCI cables of EUT, as follows (VCC to DC3V3, TX to RXD, RX to TXD, GND to GND). Plug the USB terminal of Test Fixture to the USB port of Notebook PC.

4.5.4 Use the software as section 2.3 to select the test mode, and then test.

4.5.5 Repeat step 3.5.3 and 3.5.4, until the test of all modes finished.

4.6 Test Procedures

Radiated emission test applies to harmonics/spurs that fall in the restricted bands listed in Section 15.205. The maximum permitted average field strength is listed in Section 15.209. A pre-amp is necessary for this measurement. For measurement above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.

The EUT was placed on a 0.1m high insulating support on a turntable. The turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (Calibrated Bilog Antenna) or Horn antenna was used as receiving antenna. Both horizontal and vertical polarizations of the antenna

were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.10: 2013 requirements during radiated emission test.

The bandwidth of Test Receiver R&S ESCI was set at 120 kHz from 30MHz to 1000MHz.

The bandwidth of Agilent N9010A was set at 1MHz for above 1GHz.

The frequency range from 30 MHz to 25 GHz (Up to 10th harmonics from fundamental frequency) was checked.

All the test results are listed in Sec.3.7.

4.7 Test Results

<PASS>

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

Frequency range: below 1GHz (Worst case emission):
(Test Model: CT1063-400US)

No.	Operation	Mode	Channel	Frequency	Data Page
1.	Transmitting	802.11b	1	2412 MHz	P25-26

(Test Model: EM1060-400US)

No.	Operation	Mode	Channel	Frequency	Data Page
1.	Transmitting	802.11b	1	2412 MHz	P27-28

Frequency range: above 1GHz (Worst case emission):
(Test Model: CT1063-400US)

No.	Operation	Mode	Channel	Frequency	Data Page
1.	Transmitting	802.11b	1	2412 MHz	P29-30
2.			6	2437 MHz	P31-32
3.			11	2462 MHz	P33-34
4.		802.11g	11	2462 MHz	P35-36
5.		802.11n20	11	2462 MHz	P37-38
6.		802.11n40	9	2452 MHz	P39-40

(Test Model: EM1060-400US)

No.	Operation	Mode	Channel	Frequency	Data Page
1.	Transmitting	802.11b	11	2462 MHz	P41-42

Band-Edge and Restricted bands:
(Test Model: CT1063-400US)

No.	Operation	Mode	Channel	Frequency	Data Page
1.	Transmitting	802.11b	1	2412 MHz	P43-44
2.			11	2462 MHz	P45-46
3.		802.11g	1	2412 MHz	P47-48
4.			11	2462 MHz	P49-50
5.		802.11n20	1	2412 MHz	P51-52
6.			11	2462 MHz	P53-54
5.		802.11n40	3	2422 MHz	P55-56
6.			9	2452 MHz	P57-58

NOTE 1 – Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin = Limits - Emission Level.
NOTE 2 – “QP” means “Quasi-Peak” values.
NOTE 3 – 0°was the table front facing the antenna. Degree is calculated from 0°clockwise facing the antenna.
NOTE 4 – The emission levels which not reported are too low against the official limit.
NOTE 5 – The emission levels recorded below is data of EUT configured in

Standing direction, for this direction was the maximum emission direction during the test. The Side & Lying direction are not a normal use and too low against the official limit to be reported.

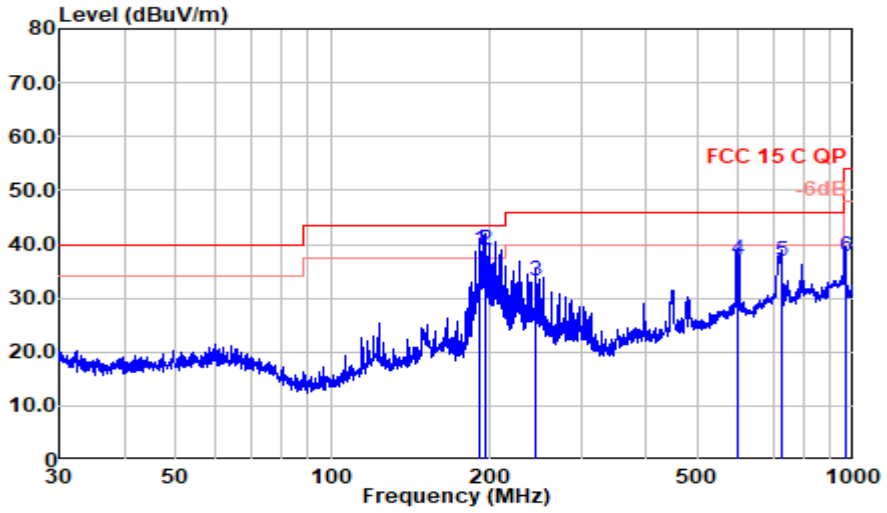
NOTE 6 – All reading are Quasi-Peak values below or equal to 1GHz, Peak and Average values above 1GHz.
For above 1GHz test, if the peak measured value complies with the average limit, it is unnecessary to perform an average measurement.

NOTE 7 – The frequency range 2310-2390MHz & 2483.5-2500MHz were tested for Restricted bands.

Radiated emission < 1GHz

Test Date:	2024.03.03	Temp./Hum.:	22℃/51%RH	Test By:	Jarey

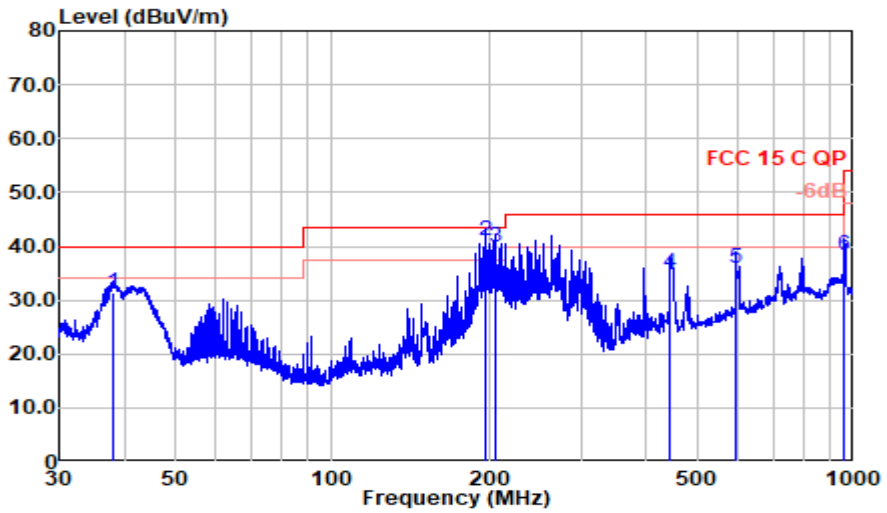
Mode: 802.11b CH2412MHz **Model: CT1063-400US**



Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
191.409	49.99	16.66	1.56	29.30	38.91	43.50	4.59	QP
197.200	50.58	16.20	1.59	29.30	39.07	43.50	4.43	QP
245.951	43.16	17.54	1.72	29.17	33.25	46.00	12.75	QP
601.427	37.69	25.59	2.83	28.99	37.11	46.00	8.89	QP
725.532	35.33	26.93	2.96	28.40	36.82	46.00	9.18	QP
962.162	32.09	29.54	3.37	27.33	37.68	54.00	16.32	QP

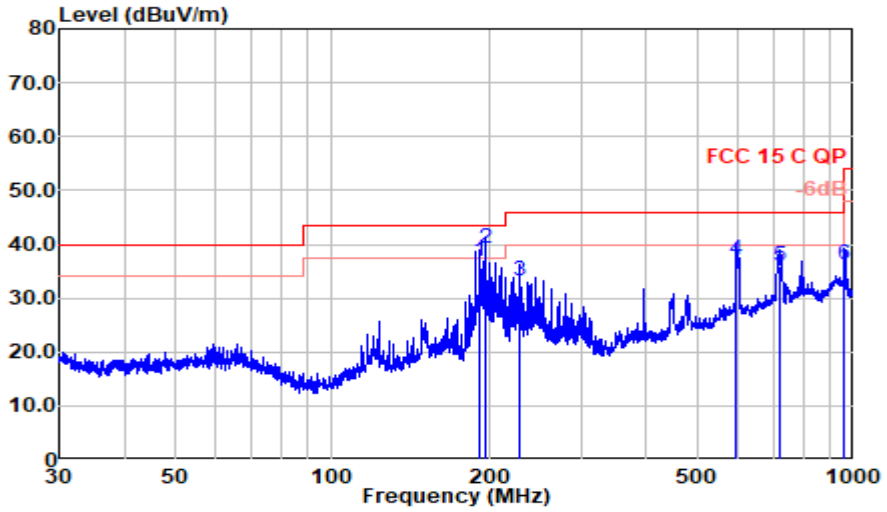
Mode: 802.11b CH2412MHz **Model: CT1063-400US**



Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
38.212	41.35	19.40	0.68	29.90	31.53	40.00	8.47	QP
197.546	52.62	16.20	1.59	29.30	41.10	43.50	2.40	QP
205.675	51.64	15.90	1.61	29.27	39.87	43.50	3.63	QP
445.632	39.05	22.81	2.33	29.28	34.90	46.00	11.10	QP
595.133	36.70	25.31	2.81	29.02	35.80	46.00	10.20	QP
960.477	32.79	29.51	3.37	27.34	38.33	54.00	15.67	QP

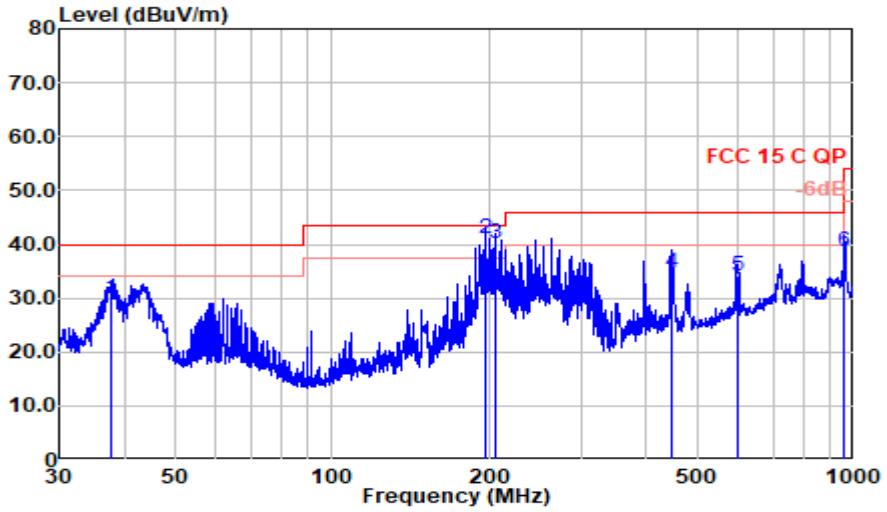
Mode: 802.11b CH2412MHz **Model: EM1060-400US**



Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
191.409	47.88	16.66	1.56	29.30	36.80	43.50	6.70	QP
197.200	50.74	16.20	1.59	29.30	39.22	43.50	4.28	QP
228.891	44.75	16.03	1.67	29.20	33.25	46.00	12.75	QP
595.133	38.05	25.31	2.81	29.02	37.15	46.00	8.85	QP
721.726	34.38	26.90	2.95	28.41	35.82	46.00	10.18	QP
960.477	30.63	29.51	3.37	27.34	36.17	54.00	17.83	QP

Mode: 802.11b CH2412MHz **Model: EM1060-400US**



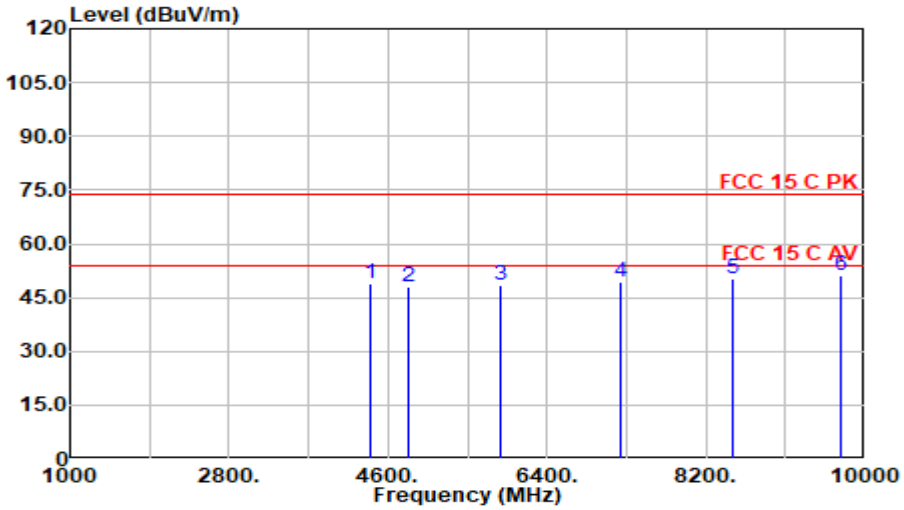
Polarization at Vertical

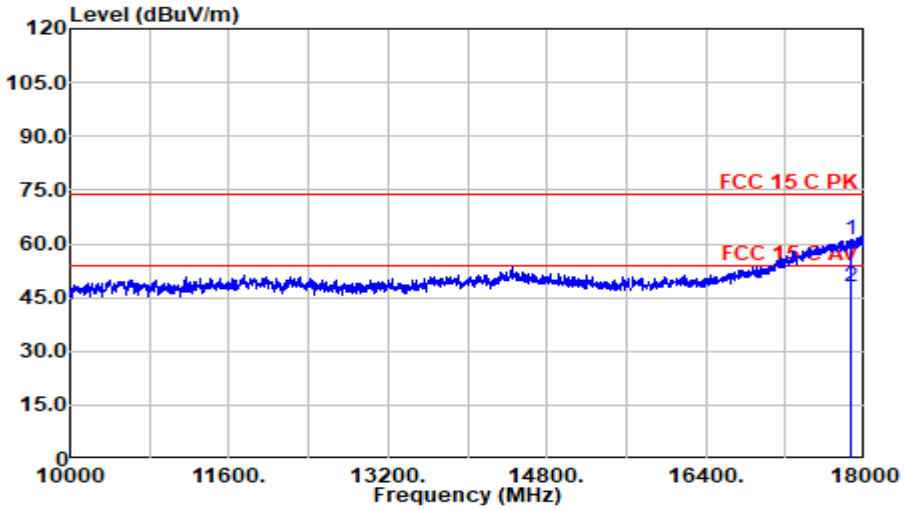
Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
37.746	39.89	19.22	0.67	29.90	29.88	40.00	10.12	QP
197.200	52.49	16.20	1.59	29.30	40.97	43.50	2.53	QP
206.036	51.86	15.90	1.61	29.27	40.10	43.50	3.40	QP
446.414	38.96	22.83	2.33	29.29	34.83	46.00	11.17	QP
599.321	34.83	25.47	2.83	29.00	34.13	46.00	11.87	QP
960.477	33.20	29.51	3.37	27.34	38.74	54.00	15.26	QP

Radiated Emission > 1GHz

Test Date:	2024.03.03-17	Temp./Hum.:	22℃/51%RH	Test By:	Jarey

Mode: 802.11b CH2412MHz **Model: CT1063-400US**

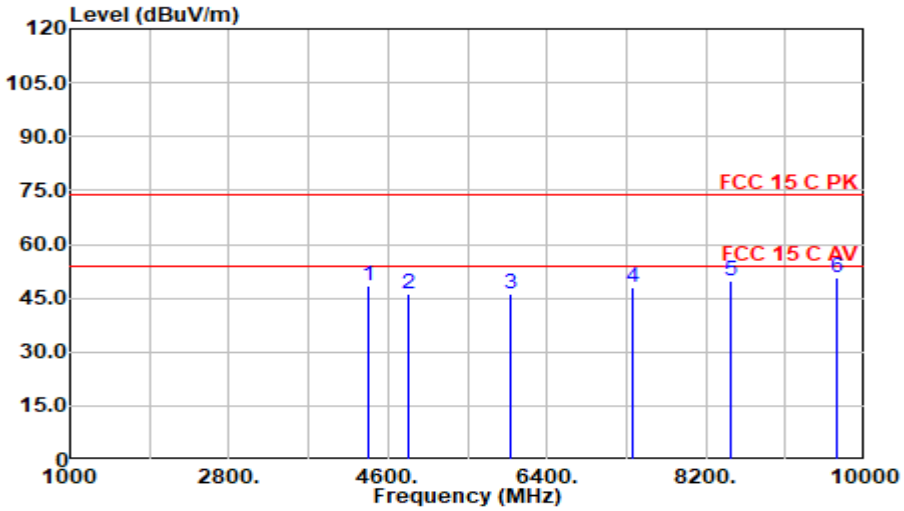


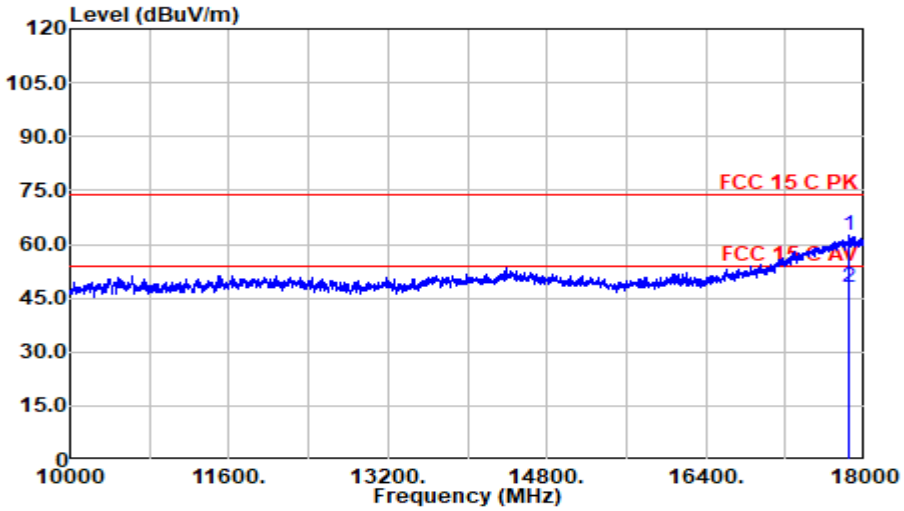


Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
4393.000	44.34	32.39	7.20	34.83	49.09	74.00	24.91	Peak
4825.000	41.96	33.05	7.64	34.66	47.98	74.00	26.02	Peak
5864.500	40.71	33.89	8.34	34.60	48.34	74.00	25.66	Peak
7237.000	37.88	36.47	9.51	34.67	49.19	74.00	24.81	Peak
8506.000	36.44	38.20	10.48	34.80	50.32	74.00	23.68	Peak
9721.000	36.26	38.10	11.23	34.63	50.96	74.00	23.04	Peak
17860.000	30.23	47.16	16.09	32.24	61.24	74.00	12.76	Peak
17860.000	16.92	47.16	16.09	32.24	47.93	54.00	6.07	Average

Mode: 802.11b CH2412MHz **Model: CT1063-400US**

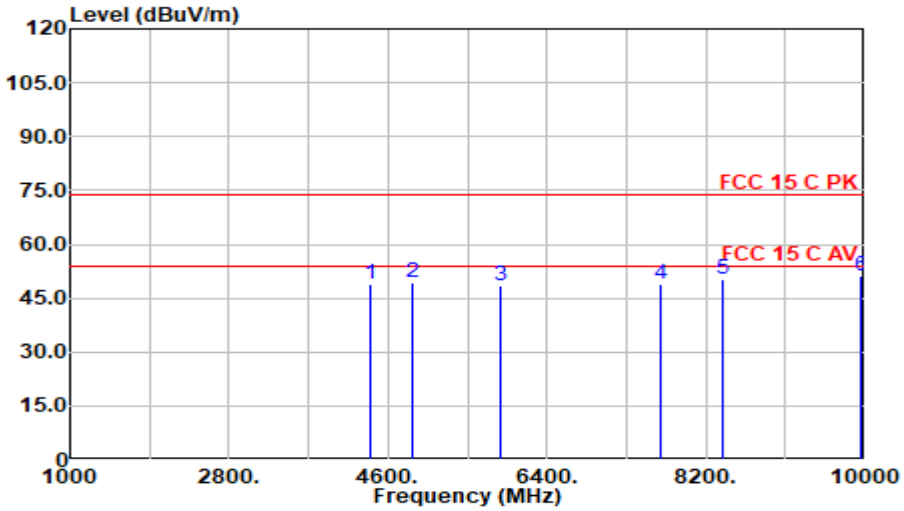


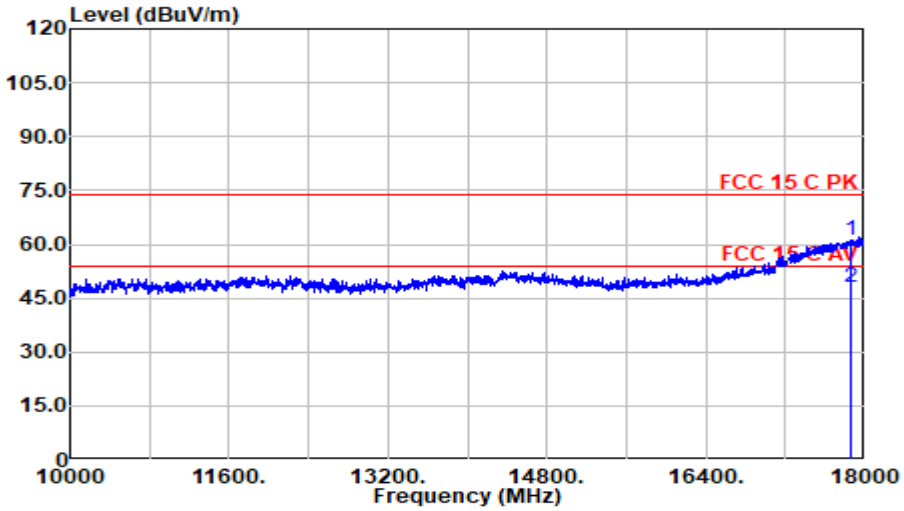


Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
4388.500	43.52	32.38	7.19	34.83	48.26	74.00	25.74	Peak
4825.000	40.16	33.05	7.64	34.66	46.19	74.00	27.81	Peak
5990.500	38.03	34.18	8.41	34.60	46.03	74.00	27.97	Peak
7367.500	36.14	36.90	9.66	34.71	47.98	74.00	26.02	Peak
8488.000	35.89	38.20	10.47	34.80	49.76	74.00	24.24	Peak
9680.500	36.18	38.14	11.20	34.63	50.88	74.00	23.12	Peak
17848.000	31.54	47.15	16.07	32.24	62.51	74.00	11.49	Peak
17848.000	17.15	47.15	16.07	32.24	48.12	54.00	5.88	Average

Mode: 802.11b CH2437MHz **Model: CT1063-400US**

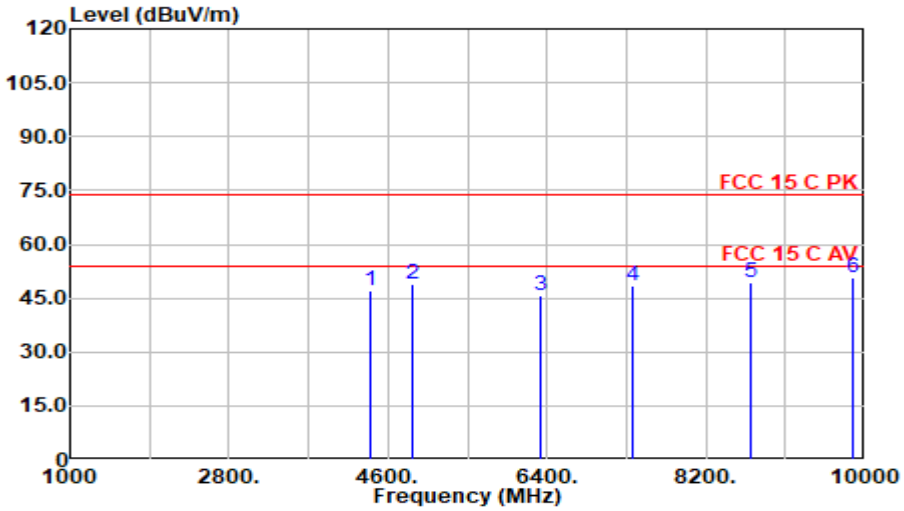


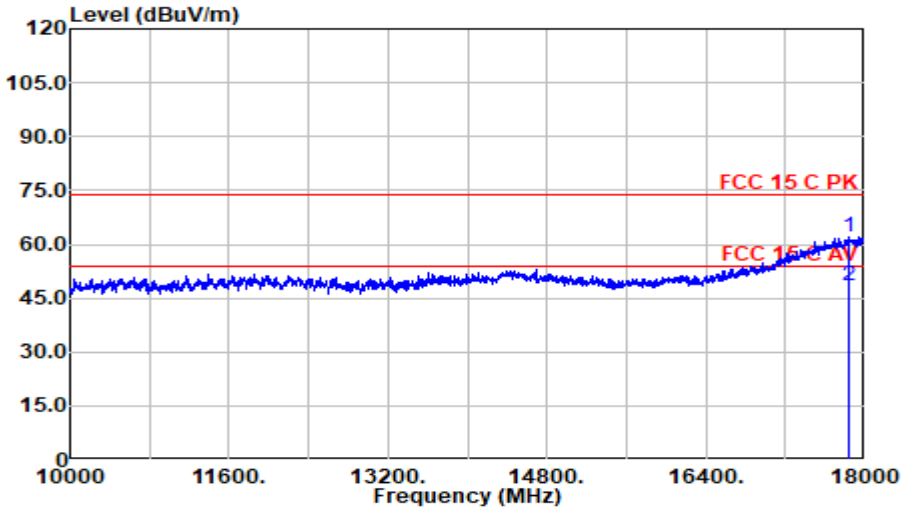


Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
4397.500	44.32	32.40	7.20	34.83	49.08	74.00	24.92	Peak
4874.500	42.84	33.35	7.69	34.65	49.23	74.00	24.77	Peak
5864.500	40.98	33.89	8.34	34.60	48.61	74.00	25.39	Peak
7687.000	36.75	36.80	9.99	34.81	48.73	74.00	25.27	Peak
8398.000	36.55	38.10	10.44	34.82	50.28	74.00	23.72	Peak
9955.000	36.12	38.39	11.41	34.60	51.32	74.00	22.68	Peak
17856.000	30.29	47.16	16.08	32.24	61.28	74.00	12.72	Peak
17856.000	17.03	47.16	16.08	32.24	48.02	54.00	5.98	Average

Mode: 802.11b CH2437MHz **Model: CT1063-400US**

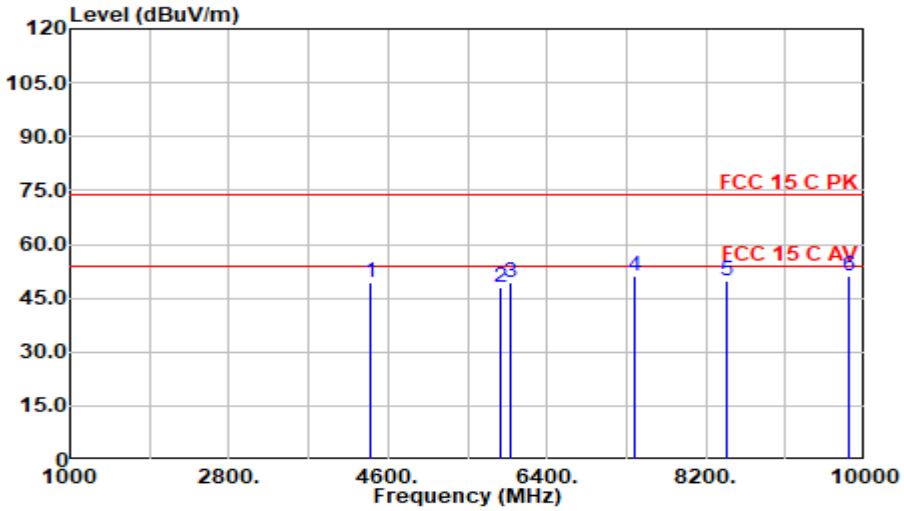


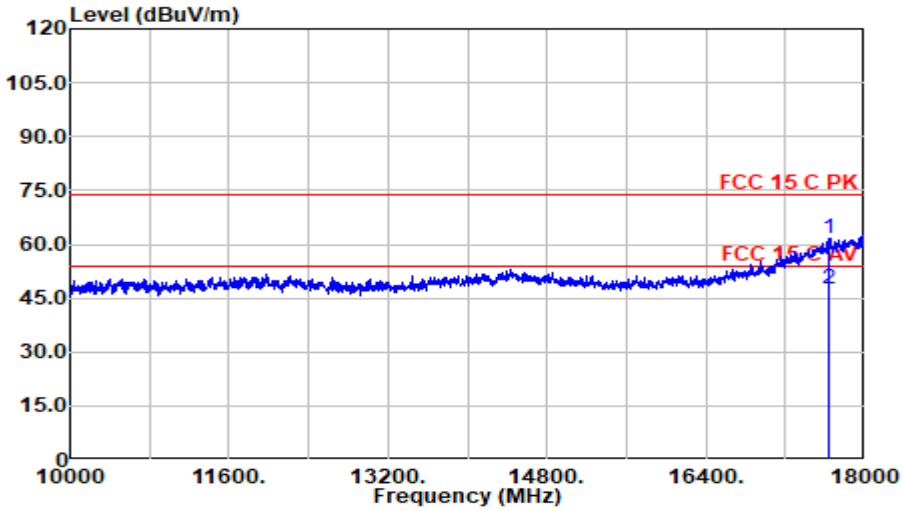


Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
4397.500	42.13	32.40	7.20	34.83	46.90	74.00	27.10	Peak
4874.500	42.50	33.35	7.69	34.65	48.89	74.00	25.11	Peak
6328.000	37.03	34.70	8.71	34.60	45.84	74.00	28.16	Peak
7363.000	36.41	36.90	9.65	34.71	48.25	74.00	25.75	Peak
8717.500	35.81	37.90	10.54	34.75	49.50	74.00	24.50	Peak
9865.000	35.64	38.26	11.34	34.61	50.63	74.00	23.37	Peak
17832.000	30.95	47.13	16.04	32.25	61.88	74.00	12.12	Peak
17832.000	17.40	47.13	16.04	32.25	48.32	54.00	5.68	Average

Mode: 802.11b CH2462MHz **Model: CT1063-400US**

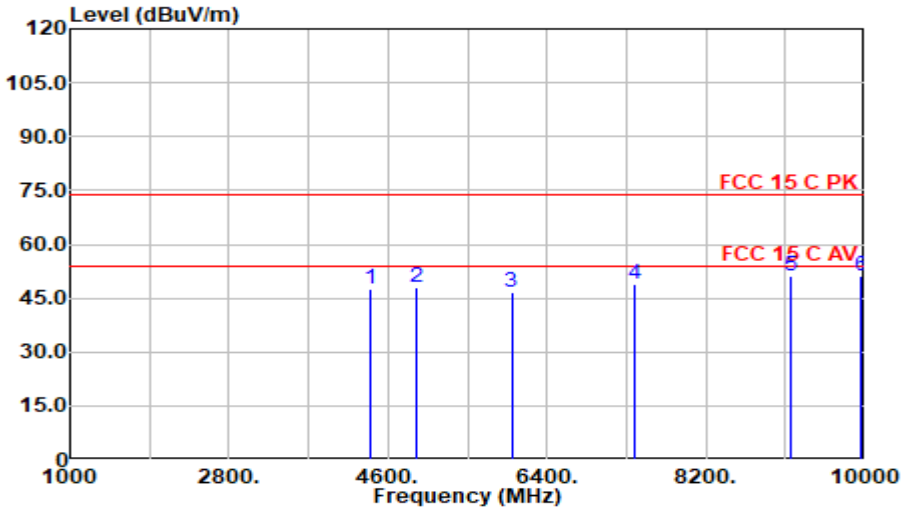


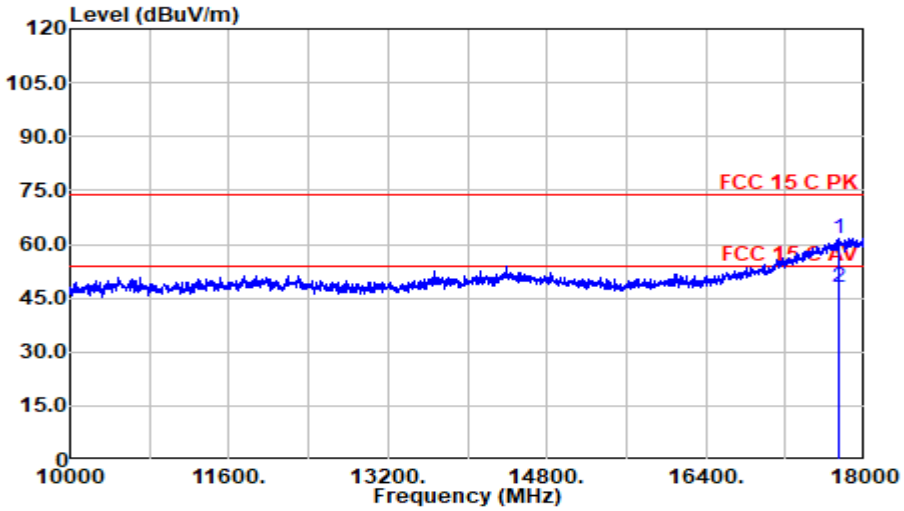


Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
4397.500	44.59	32.40	7.20	34.83	49.35	74.00	24.65	Peak
5864.500	40.56	33.89	8.34	34.60	48.19	74.00	25.81	Peak
5990.500	41.55	34.18	8.41	34.60	49.54	74.00	24.46	Peak
7385.500	39.40	36.90	9.68	34.72	51.26	74.00	22.74	Peak
8438.500	36.19	38.18	10.45	34.81	50.01	74.00	23.99	Peak
9815.500	36.18	38.13	11.31	34.62	51.00	74.00	23.00	Peak
17640.000	31.70	46.54	15.76	32.31	61.69	74.00	12.31	Peak
17640.000	17.77	46.54	15.76	32.31	47.76	54.00	6.24	Average

Mode: 802.11b CH2462MHz **Model: CT1063-400US**

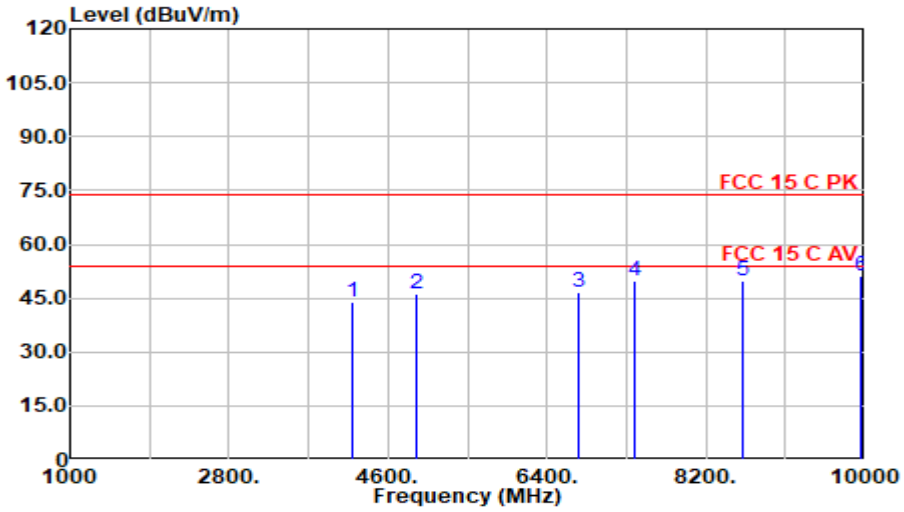


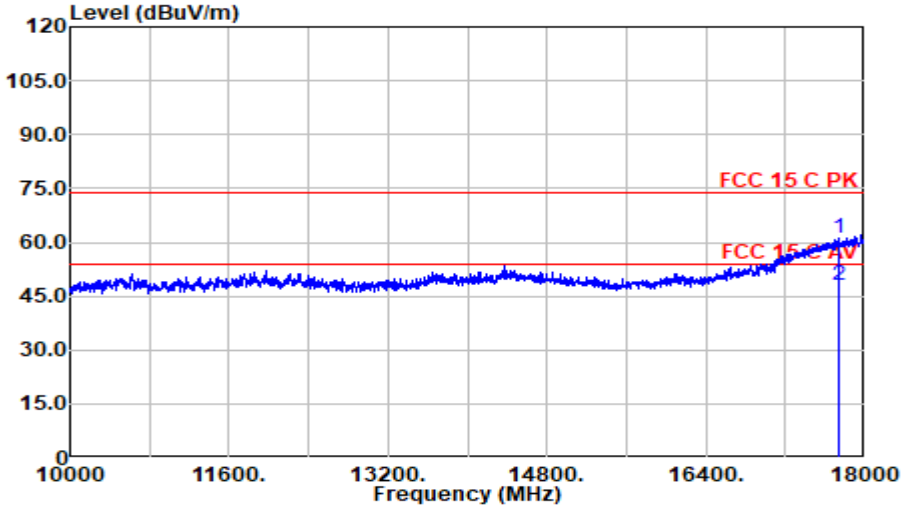


Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
4397.500	42.91	32.40	7.20	34.83	47.68	74.00	26.32	Peak
4924.000	41.67	33.36	7.74	34.63	48.13	74.00	25.87	Peak
5999.500	38.76	34.20	8.42	34.60	46.78	74.00	27.22	Peak
7385.500	37.00	36.90	9.68	34.72	48.85	74.00	25.15	Peak
9172.000	36.92	38.24	10.78	34.68	51.26	74.00	22.74	Peak
9959.500	35.82	38.38	11.42	34.60	51.02	74.00	22.98	Peak
17744.000	30.86	46.99	15.91	32.28	61.49	74.00	12.51	Peak
17744.000	17.39	46.99	15.91	32.28	48.01	54.00	5.99	Average

Mode: 802.11g CH2462MHz **Model: CT1063-400US**

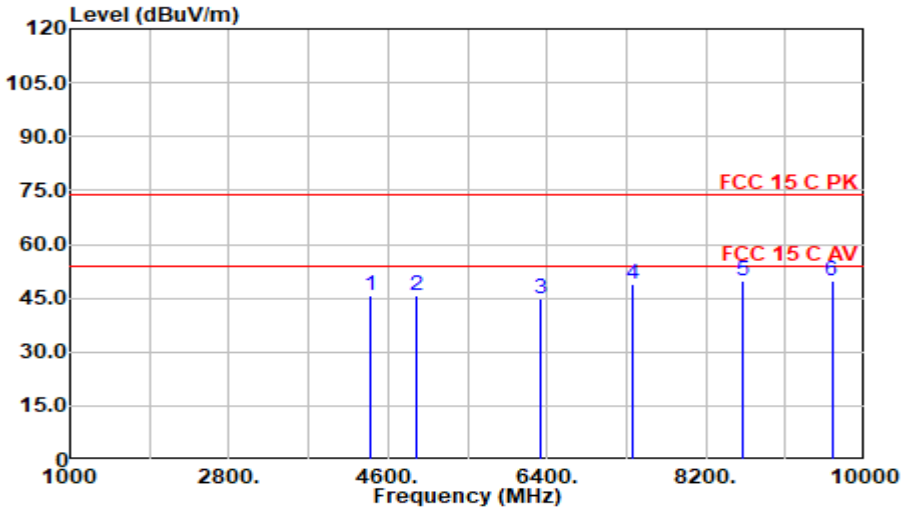


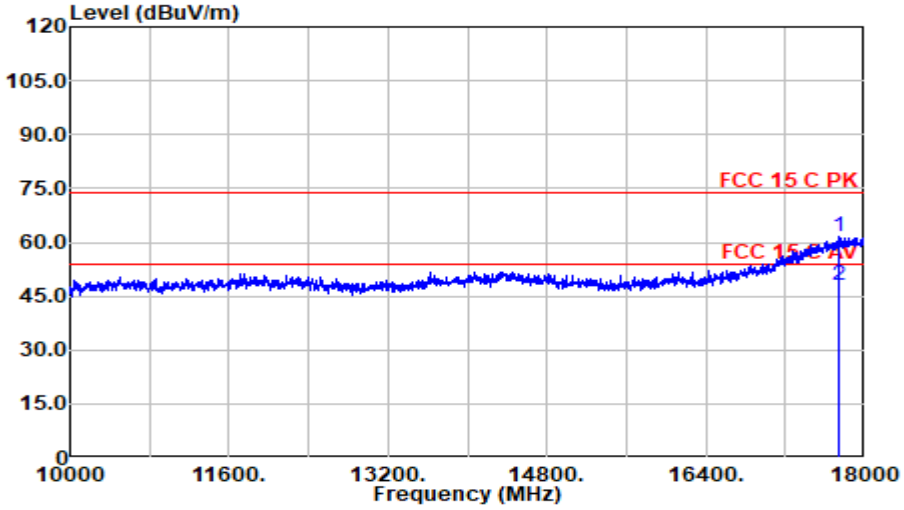


Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
4195.000	39.45	32.40	6.98	34.91	43.91	74.00	30.09	Peak
4924.000	39.89	33.36	7.74	34.63	46.36	74.00	27.64	Peak
6764.500	36.78	35.37	9.07	34.60	46.62	74.00	27.38	Peak
7385.500	37.94	36.90	9.68	34.72	49.80	74.00	24.20	Peak
8614.000	36.17	38.10	10.51	34.77	50.00	74.00	24.00	Peak
9950.500	35.88	38.40	11.41	34.60	51.09	74.00	22.91	Peak
17740.000	30.56	46.98	15.91	32.28	61.17	74.00	12.83	Peak
17740.000	17.26	46.98	15.91	32.28	47.87	54.00	6.13	Average

Mode: 802.11g CH2462MHz **Model: CT1063-400US**

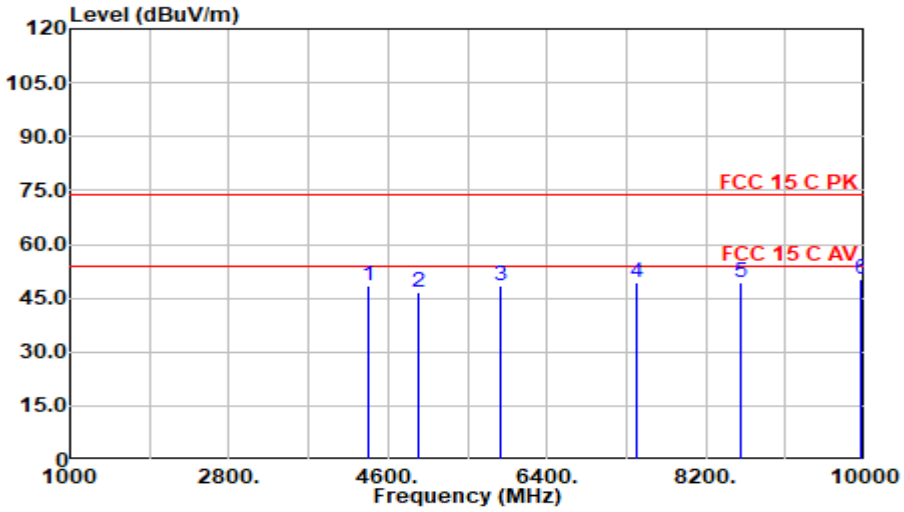


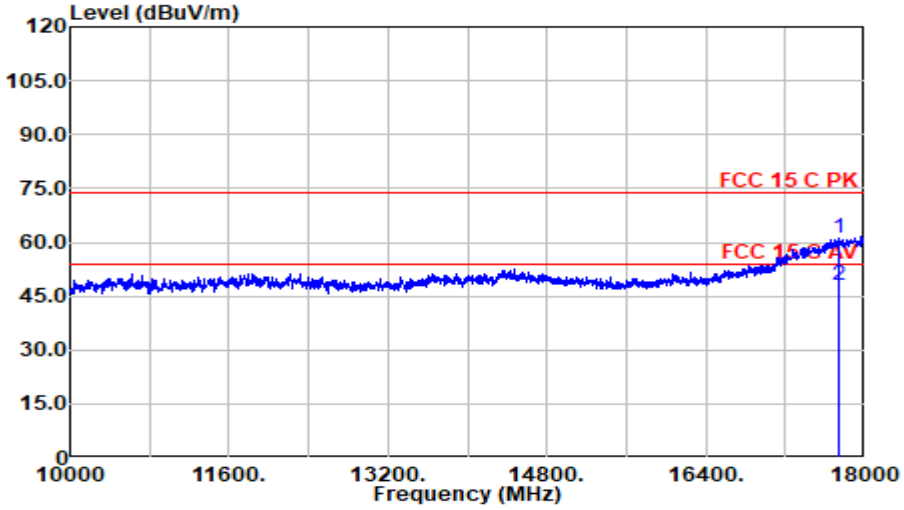


Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
4393.000	41.17	32.39	7.20	34.83	45.92	74.00	28.08	Peak
4924.000	39.24	33.36	7.74	34.63	45.70	74.00	28.30	Peak
6337.000	36.03	34.70	8.71	34.60	44.84	74.00	29.16	Peak
7372.000	37.20	36.90	9.66	34.72	49.05	74.00	24.95	Peak
8627.500	35.87	38.10	10.52	34.77	49.71	74.00	24.29	Peak
9626.500	34.91	38.20	11.15	34.64	49.62	74.00	24.38	Peak
17748.000	30.77	47.00	15.92	32.27	61.41	74.00	12.59	Peak
17748.000	17.48	47.00	15.92	32.27	48.12	54.00	5.88	Average

Mode: 802.11n20 CH2462MHz **Model: CT1063-400US**

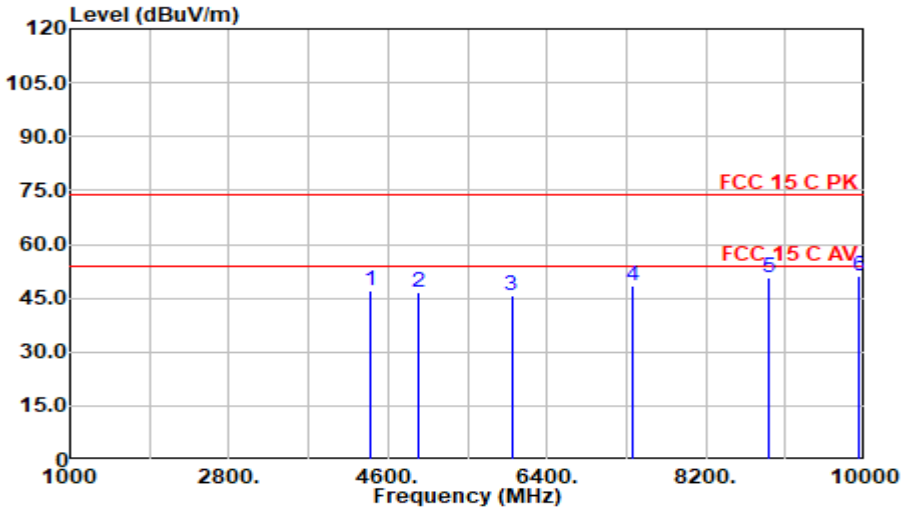


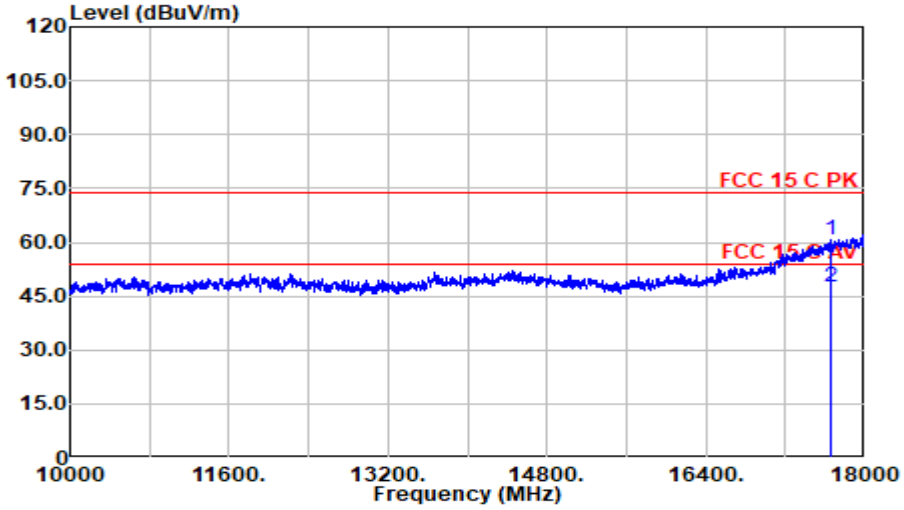


Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
4388.500	43.81	32.38	7.19	34.83	48.54	74.00	25.46	Peak
4942.000	40.46	33.25	7.75	34.62	46.84	74.00	27.16	Peak
5864.500	40.70	33.89	8.34	34.60	48.33	74.00	25.67	Peak
7417.000	37.45	36.90	9.71	34.73	49.33	74.00	24.67	Peak
8600.500	35.72	38.10	10.51	34.78	49.55	74.00	24.45	Peak
9950.500	35.13	38.40	11.41	34.60	50.34	74.00	23.66	Peak
17748.000	30.60	47.00	15.92	32.27	61.24	74.00	12.76	Peak
17748.000	17.26	47.00	15.92	32.27	47.90	54.00	6.10	Average

Mode: 802.11n20 CH2462MHz **Model: CT1063-400US**

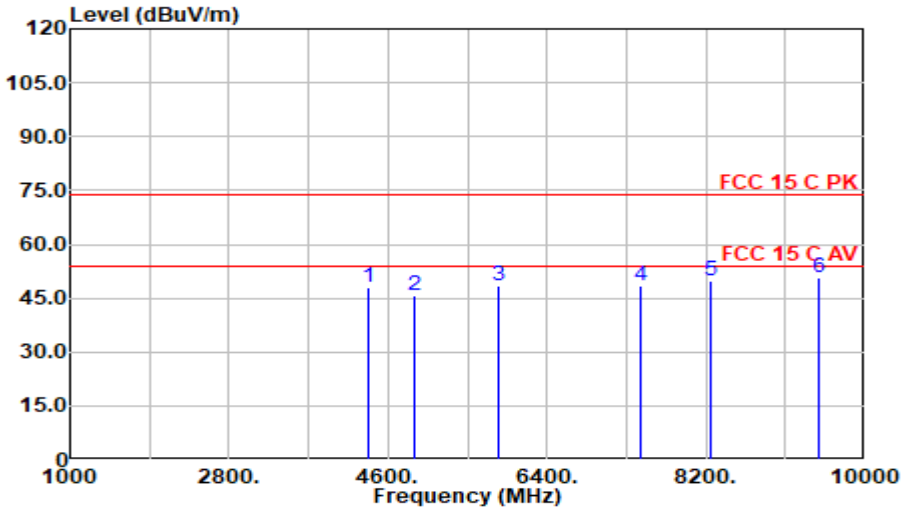


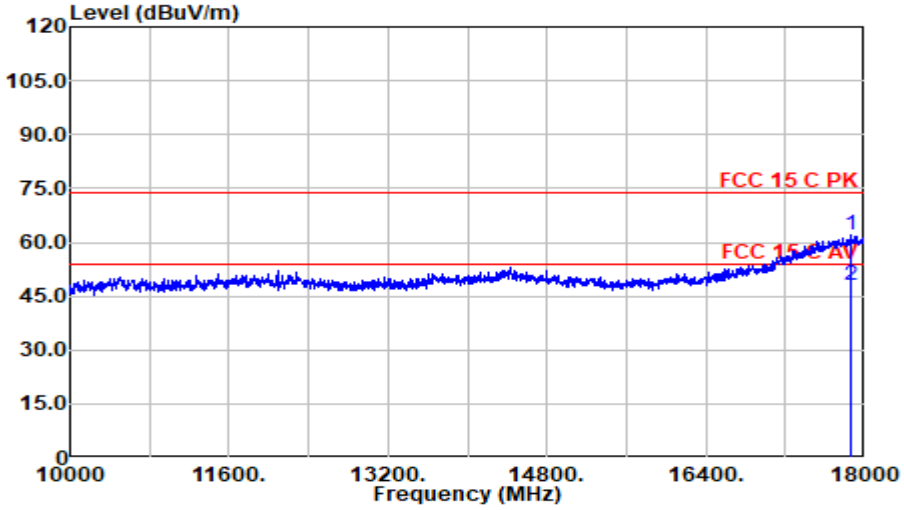


Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
4397.500	42.21	32.40	7.20	34.83	46.97	74.00	27.03	Peak
4946.500	40.13	33.22	7.76	34.62	46.49	74.00	27.51	Peak
5999.500	37.54	34.20	8.42	34.60	45.56	74.00	28.44	Peak
7363.000	36.51	36.90	9.65	34.71	48.35	74.00	25.65	Peak
8920.000	36.57	38.06	10.61	34.72	50.52	74.00	23.48	Peak
9932.500	35.81	38.40	11.40	34.61	51.00	74.00	23.00	Peak
17664.000	30.66	46.68	15.80	32.30	60.84	74.00	13.16	Peak
17664.000	17.47	46.68	15.80	32.30	47.65	54.00	6.35	Average

Mode: 802.11n40 CH2452MHz **Model: CT1063-400US**

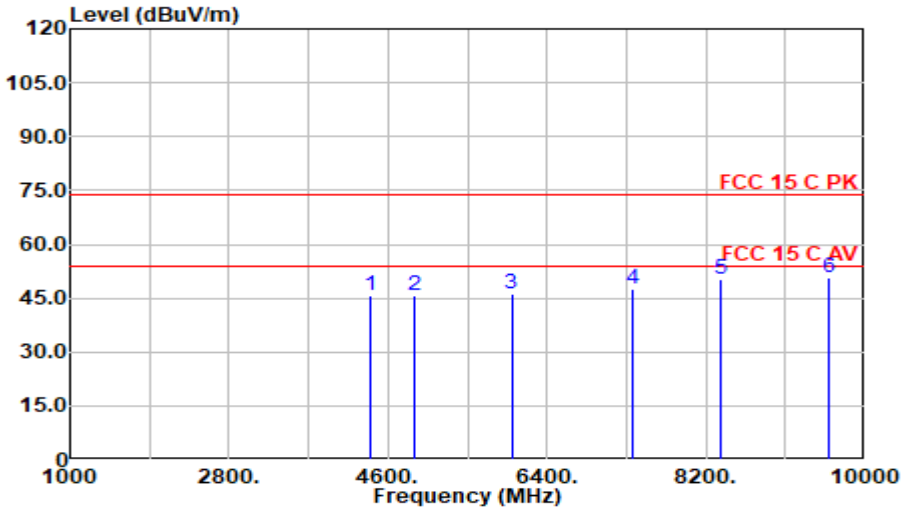


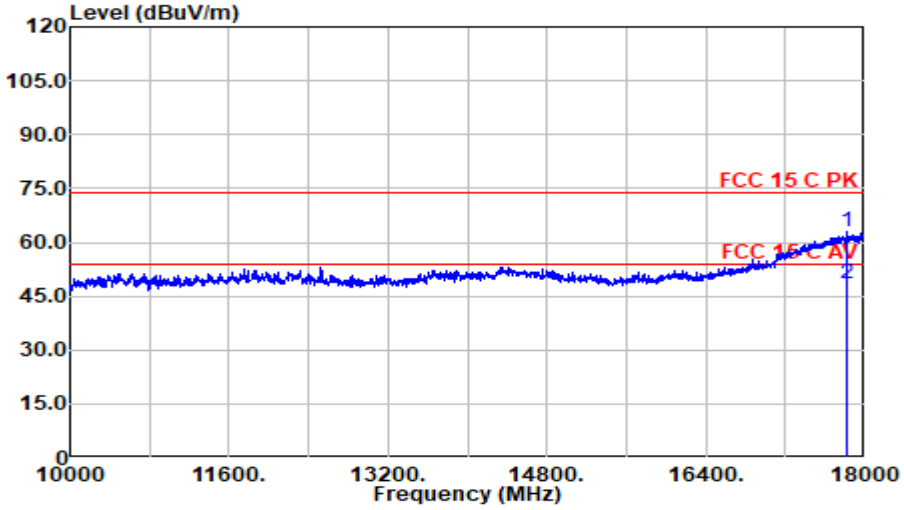


Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
4388.500	43.23	32.38	7.19	34.83	47.96	74.00	26.04	Peak
4906.000	39.21	33.46	7.72	34.63	45.76	74.00	28.24	Peak
5860.000	40.74	33.86	8.34	34.60	48.34	74.00	25.66	Peak
7453.000	36.64	36.89	9.75	34.74	48.54	74.00	25.46	Peak
8254.000	36.60	37.81	10.39	34.85	49.95	74.00	24.05	Peak
9473.500	36.14	38.29	11.03	34.65	50.82	74.00	23.18	Peak
17856.000	30.89	47.16	16.08	32.24	61.88	74.00	12.12	Peak
17856.000	17.23	47.16	16.08	32.24	48.22	54.00	5.78	Average

Mode: 802.11n40 CH2452MHz **Model: CT1063-400US**

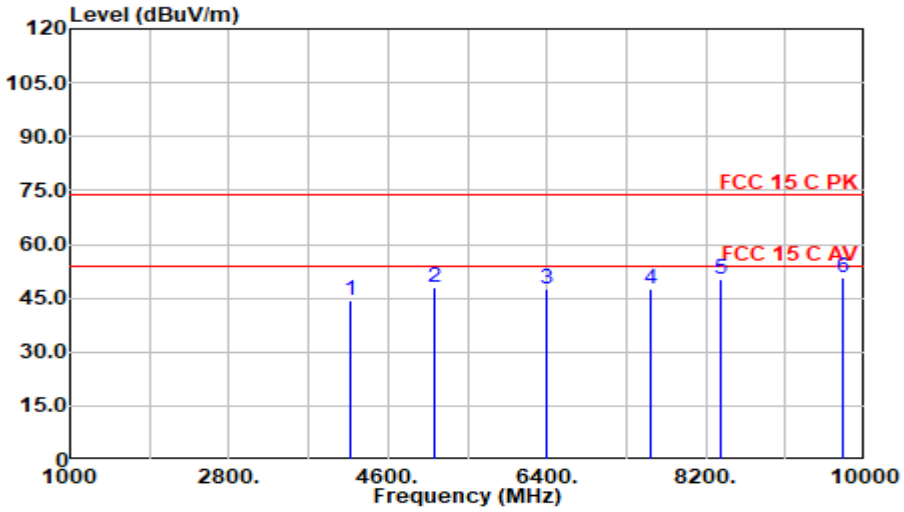


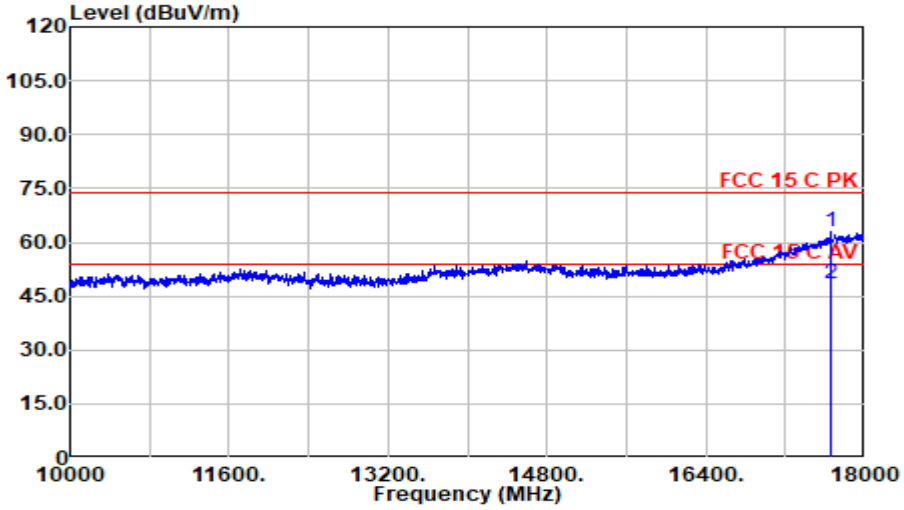


Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
4397.500	40.91	32.40	7.20	34.83	45.67	74.00	28.33	Peak
4901.500	39.15	33.49	7.72	34.64	45.72	74.00	28.28	Peak
5999.500	38.36	34.20	8.42	34.60	46.38	74.00	27.62	Peak
7363.000	35.78	36.90	9.65	34.71	47.61	74.00	26.39	Peak
8371.000	36.56	38.10	10.43	34.82	50.27	74.00	23.73	Peak
9590.500	36.12	38.20	11.12	34.64	50.81	74.00	23.19	Peak
17816.000	31.92	47.12	16.02	32.25	62.80	74.00	11.20	Peak
17816.000	17.49	47.12	16.02	32.25	48.37	54.00	5.63	Average

Mode: 802.11b CH2462MHz **Model: EM1060-400US**

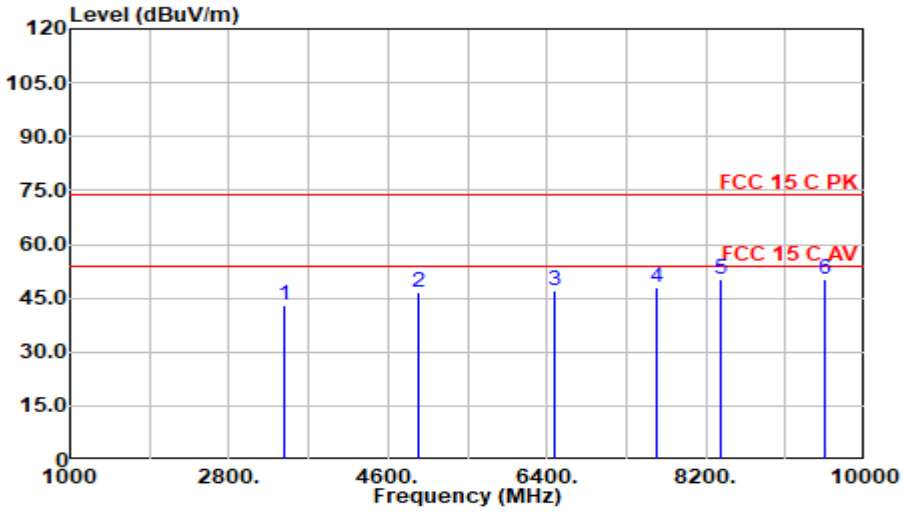


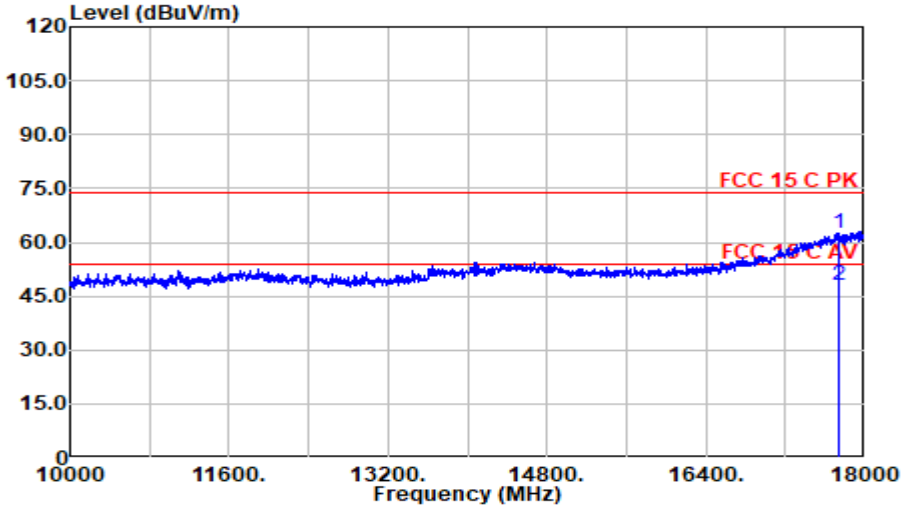


Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
4166.250	39.84	32.40	6.94	34.93	44.26	74.00	29.74	Peak
5135.250	40.96	33.88	7.90	34.60	48.15	74.00	25.85	Peak
6406.000	39.01	34.50	8.77	34.60	47.69	74.00	26.31	Peak
7566.250	35.95	36.70	9.87	34.77	47.74	74.00	26.26	Peak
8378.000	36.52	38.10	10.44	34.82	50.24	74.00	23.76	Peak
9750.750	35.86	38.10	11.25	34.62	50.59	74.00	23.41	Peak
17660.000	32.62	46.66	15.79	32.30	62.77	74.00	11.23	Peak
17660.000	18.26	46.66	15.79	32.30	48.41	54.00	5.59	Average

Mode: 802.11b CH2462MHz **Model: EM1060-400US**





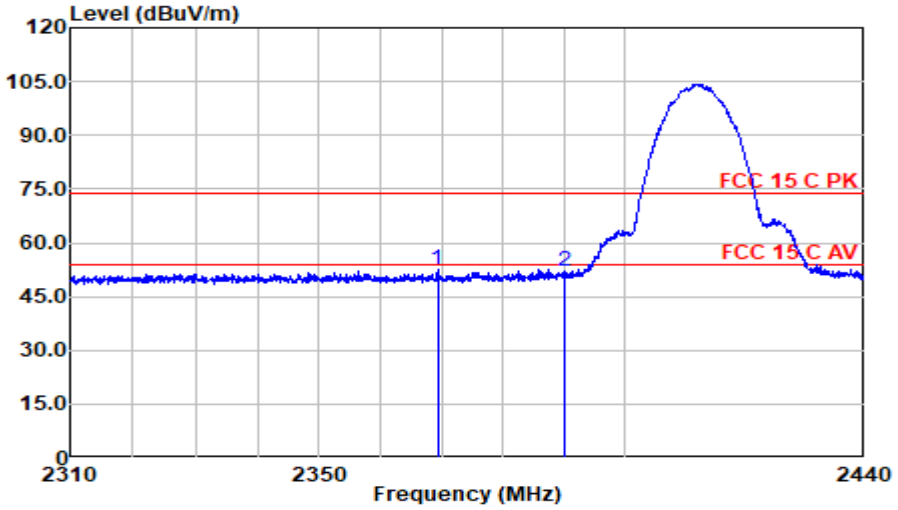
Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
3435.250	40.69	31.47	6.28	35.21	43.23	74.00	30.77	Peak
4952.500	40.30	33.21	7.76	34.62	46.66	74.00	27.34	Peak
6486.750	38.14	34.65	8.84	34.60	47.03	74.00	26.97	Peak
7634.250	36.31	36.77	9.94	34.79	48.22	74.00	25.78	Peak
8369.500	36.37	38.10	10.43	34.82	50.08	74.00	23.92	Peak
9538.250	35.77	38.25	11.08	34.64	50.46	74.00	23.54	Peak
17740.750	32.00	46.98	15.91	32.28	62.61	74.00	11.39	Peak
17740.750	17.25	46.98	15.91	32.28	47.86	54.00	6.14	Average

Band-Edge and Restricted bands:

Test Date:	2024.03.03-17	Temp./Hum.:	22°C/51%RH	Test By:	Jarey

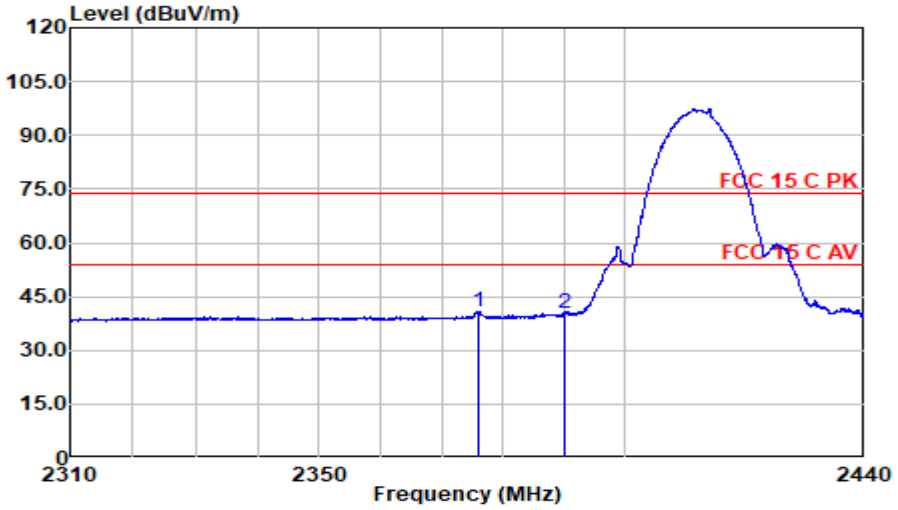
Mode: 802.11b CH2412MHz



Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2369.215	54.54	28.48	5.37	36.04	52.34	74.00	21.66	Peak
2390.000	54.03	28.56	5.39	36.02	51.96	74.00	22.04	Peak

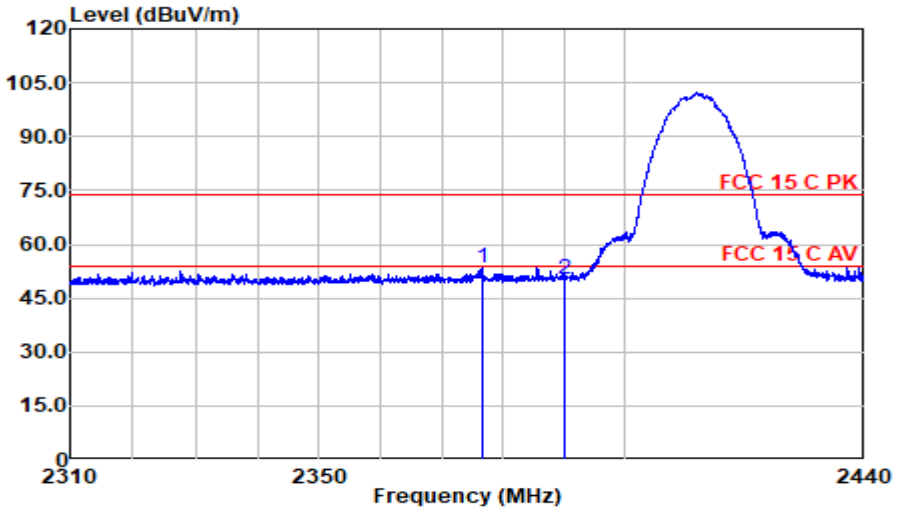
Mode: 802.11b CH2412MHz



Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2376.040	42.89	28.50	5.38	36.03	40.74	54.00	13.26	Average
2390.000	42.32	28.56	5.39	36.02	40.25	54.00	13.75	Average

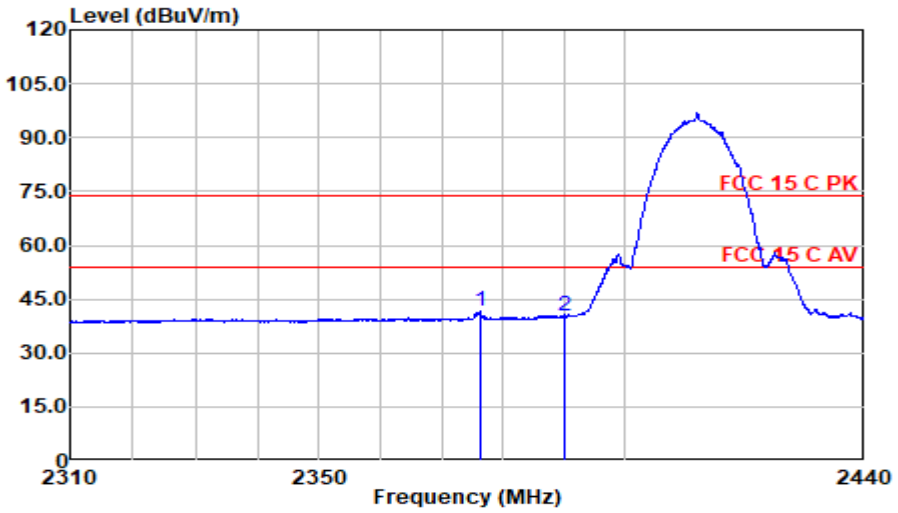
Mode: 802.11b CH2412MHz



Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2376.625	55.48	28.51	5.38	36.03	53.33	74.00	20.67	Peak
2390.000	52.14	28.56	5.39	36.02	50.07	74.00	23.93	Peak

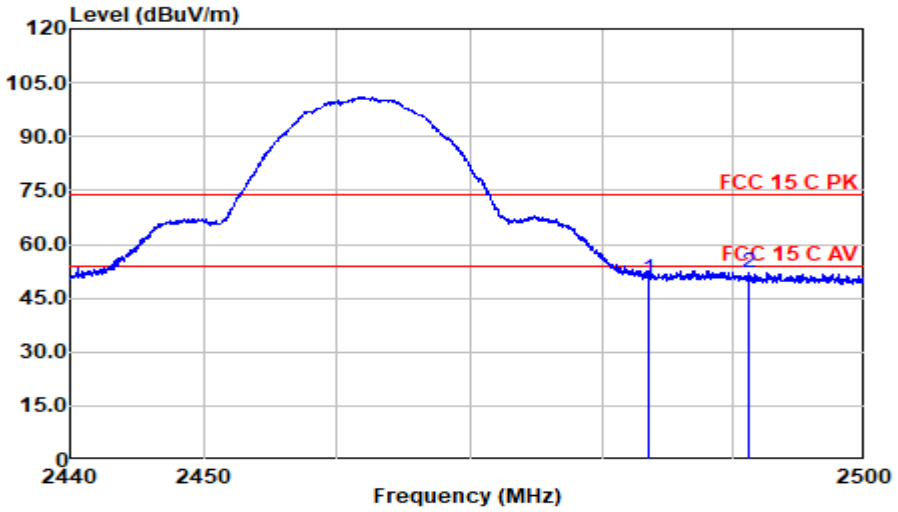
Mode: 802.11b CH2412MHz



Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2376.235	43.59	28.51	5.38	36.03	41.43	54.00	12.57	Average
2390.000	42.28	28.56	5.39	36.02	40.22	54.00	13.78	Average

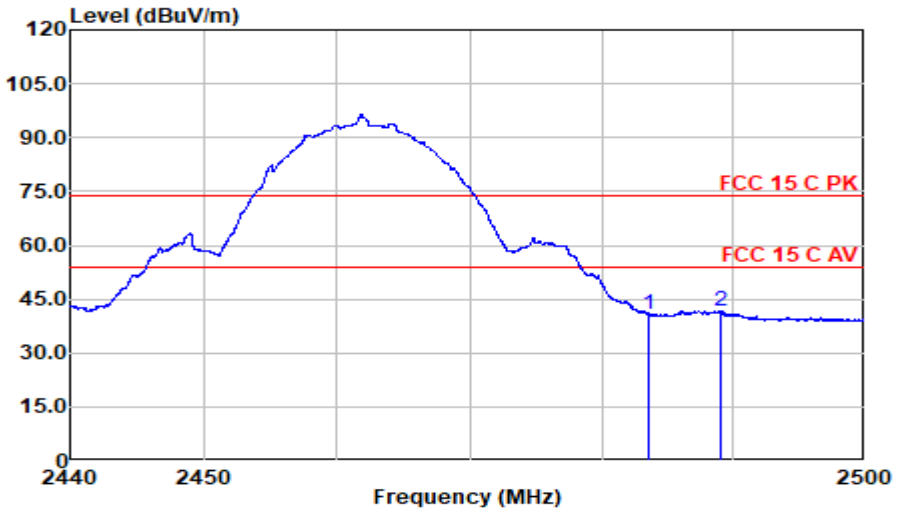
Mode: 802.11b CH2462MHz



Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	52.30	28.63	5.47	35.91	50.49	74.00	23.51	Peak
2491.150	54.02	28.66	5.48	35.90	52.26	74.00	21.74	Peak

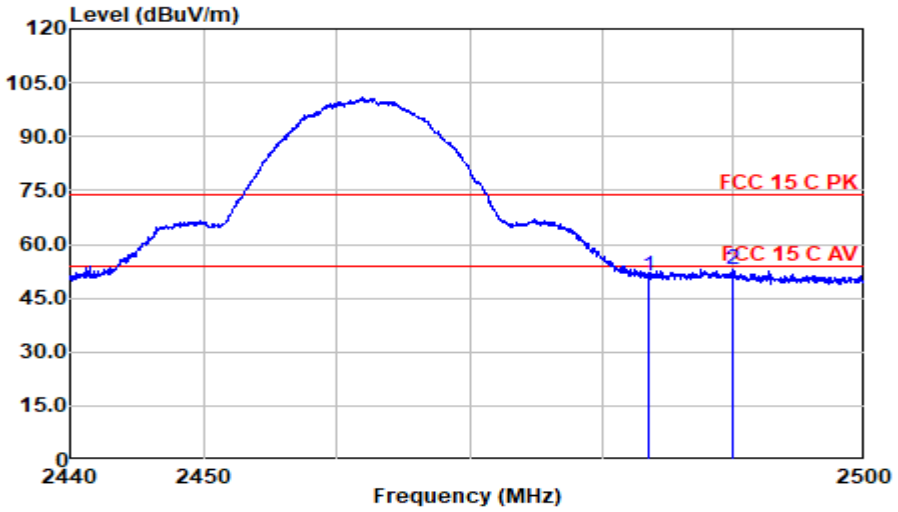
Mode: 802.11b CH2462MHz



Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	42.61	28.63	5.47	35.91	40.80	54.00	13.20	Average
2489.080	43.45	28.66	5.47	35.91	41.67	54.00	12.33	Average

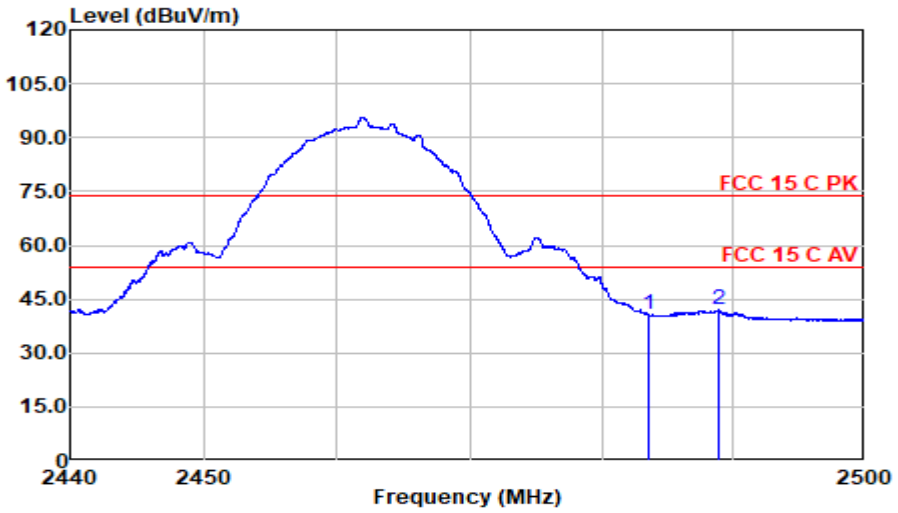
Mode: 802.11b CH2462MHz



Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	52.90	28.63	5.47	35.91	51.09	74.00	22.91	Peak
2489.980	54.62	28.66	5.47	35.91	52.85	74.00	21.15	Peak

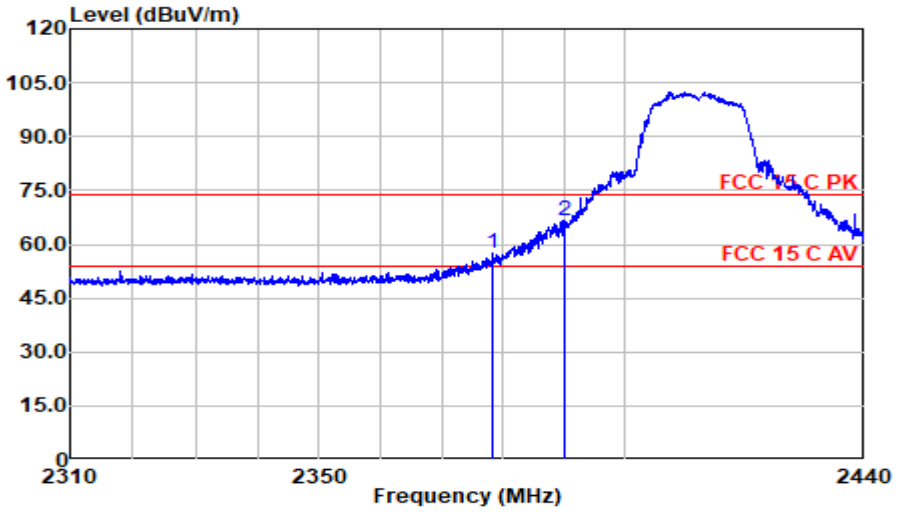
Mode: 802.11b CH2462MHz



Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	42.40	28.63	5.47	35.91	40.59	54.00	13.41	Average
2488.810	43.67	28.66	5.47	35.91	41.89	54.00	12.11	Average

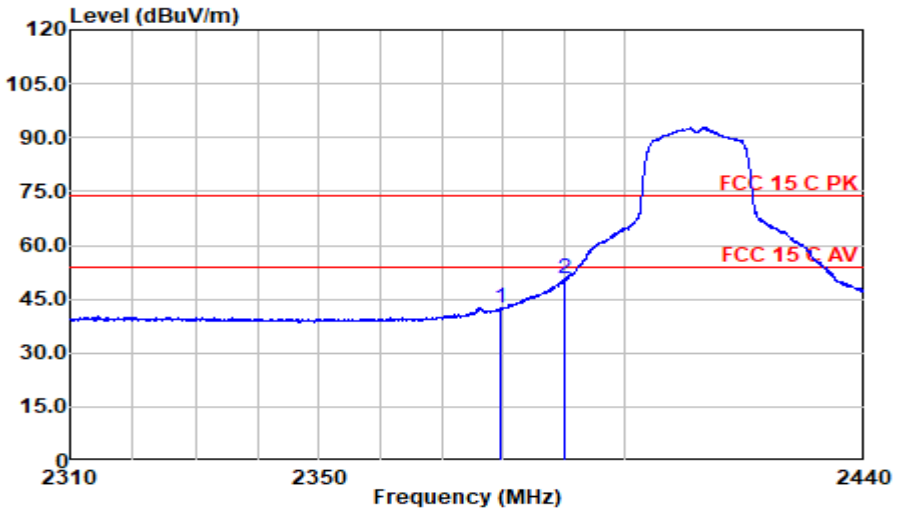
Mode: 802.11g CH2412MHz



Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2378.120	59.65	28.51	5.38	36.03	57.51	74.00	16.49	Peak
2390.000	68.78	28.56	5.39	36.02	66.71	74.00	7.29	Peak

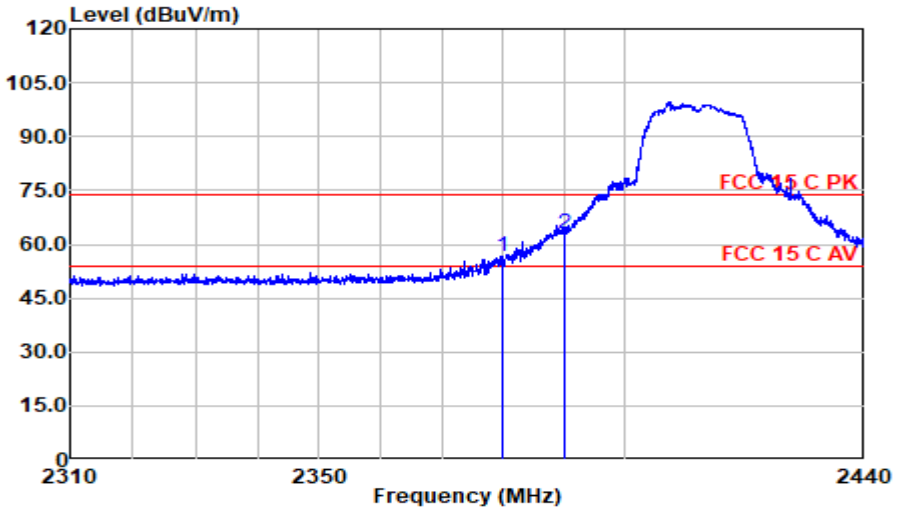
Mode: 802.11g CH2412MHz



Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2379.420	44.74	28.52	5.38	36.03	42.61	54.00	11.39	Average
2390.000	52.56	28.56	5.39	36.02	50.50	54.00	3.50	Average

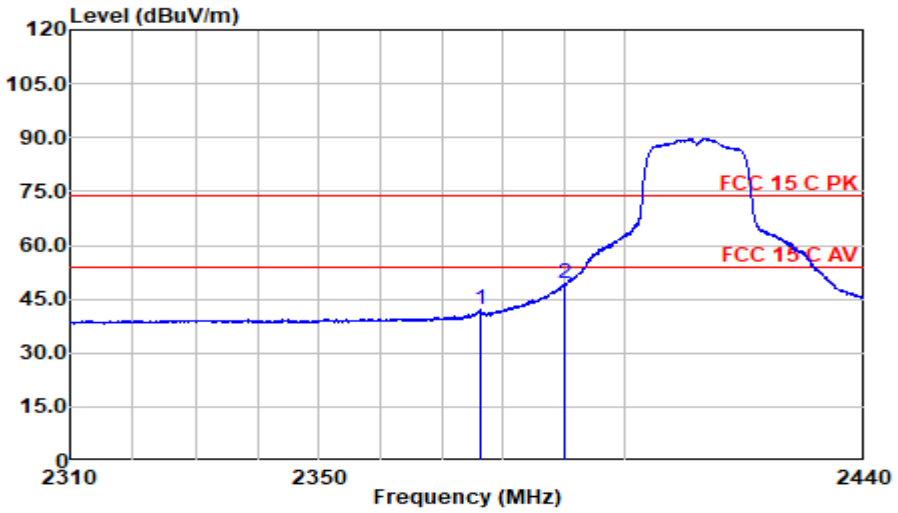
Mode: 802.11g CH2412MHz



Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2379.745	58.84	28.52	5.38	36.03	56.71	74.00	17.29	Peak
2390.000	64.81	28.56	5.39	36.02	62.75	74.00	11.25	Peak

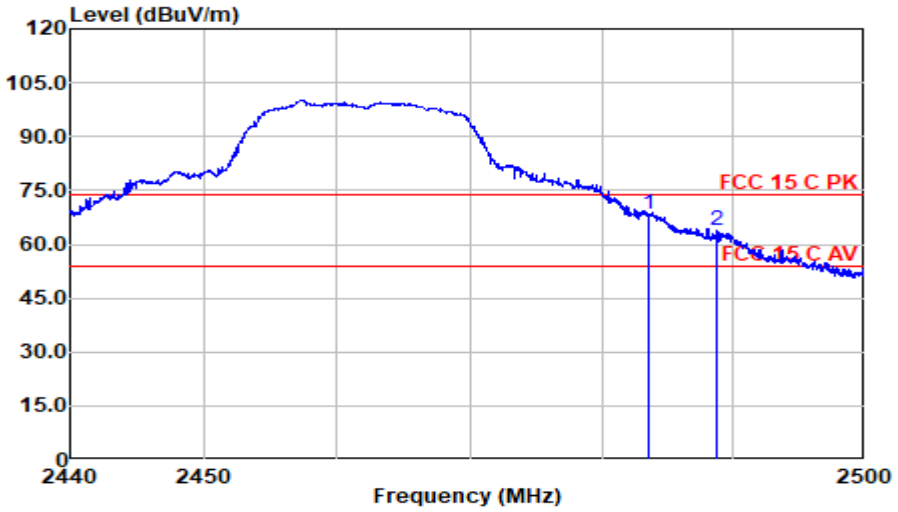
Mode: 802.11g CH2412MHz



Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2376.170	44.12	28.51	5.38	36.03	41.97	54.00	12.03	Average
2390.000	51.53	28.56	5.39	36.02	49.46	54.00	4.54	Average

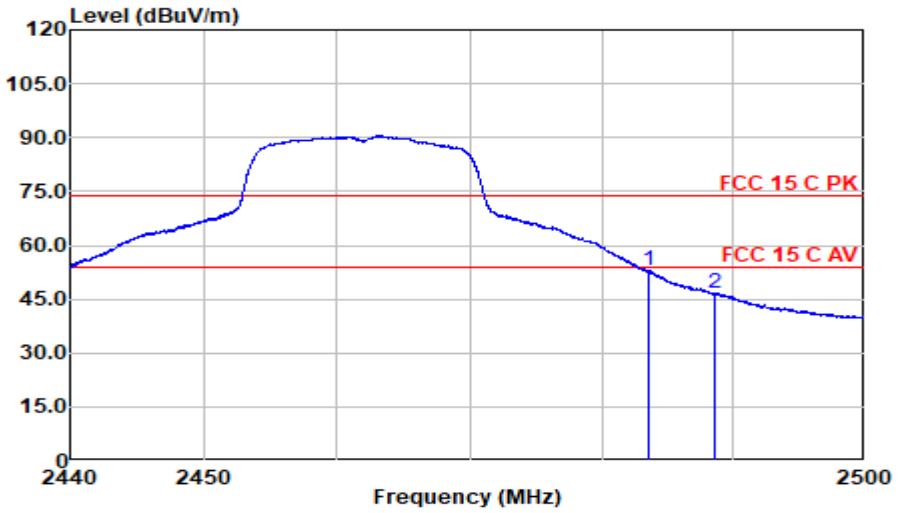
Mode: 802.11g CH2462MHz



Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	70.28	28.63	5.47	35.91	68.47	74.00	5.53	Peak
2488.720	65.48	28.66	5.47	35.91	63.70	74.00	10.30	Peak

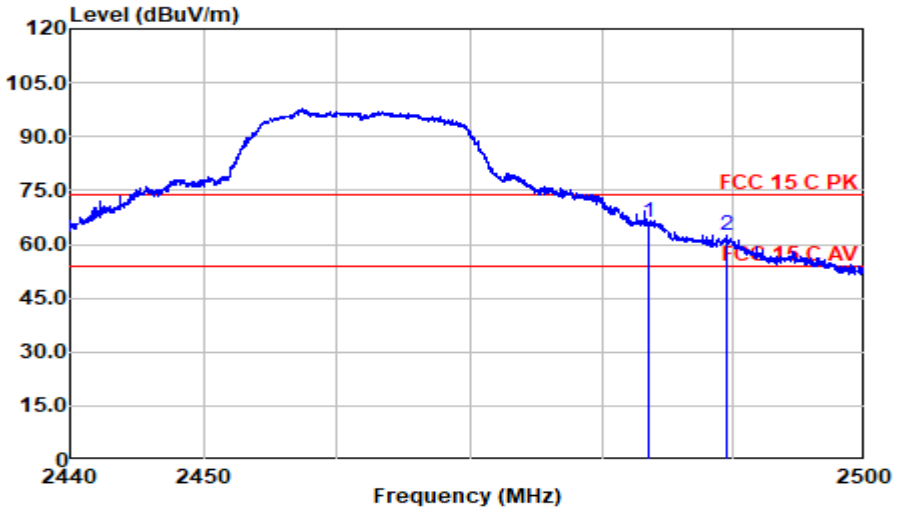
Mode: 802.11g CH2462MHz



Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	54.58	28.63	5.47	35.91	52.78	54.00	1.22	Average
2488.570	48.41	28.65	5.47	35.91	46.63	54.00	7.37	Average

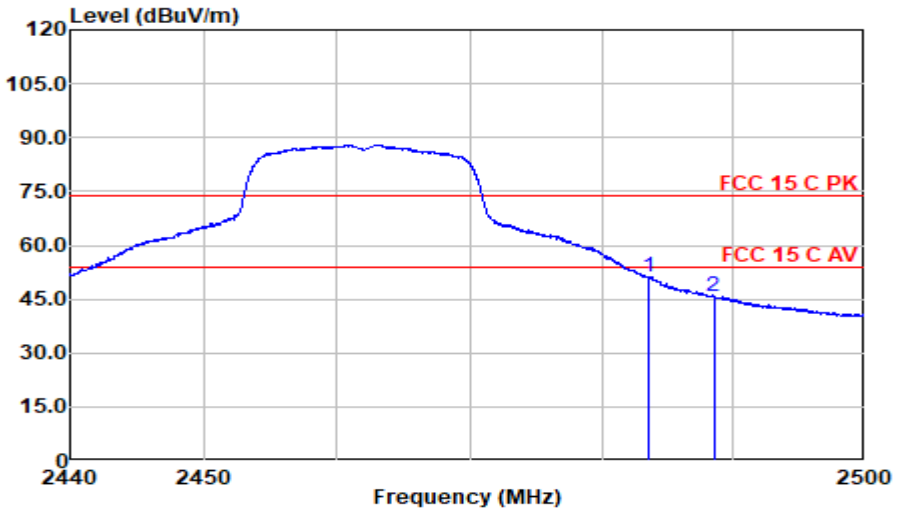
Mode: 802.11g CH2462MHz



Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	67.95	28.63	5.47	35.91	66.14	74.00	7.86	Peak
2489.530	64.20	28.66	5.47	35.91	62.43	74.00	11.57	Peak

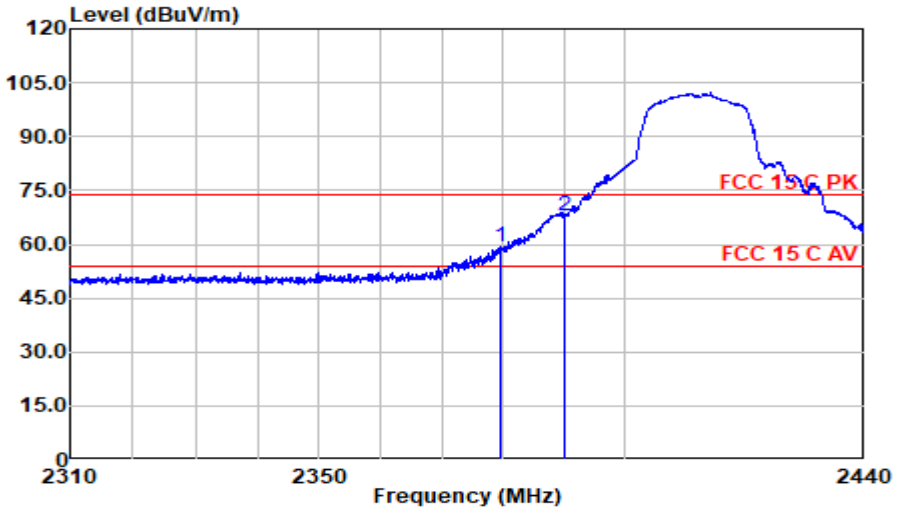
Mode: 802.11g CH2462MHz



Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	52.86	28.63	5.47	35.91	51.05	54.00	2.95	Average
2488.480	47.62	28.65	5.47	35.91	45.84	54.00	8.16	Average

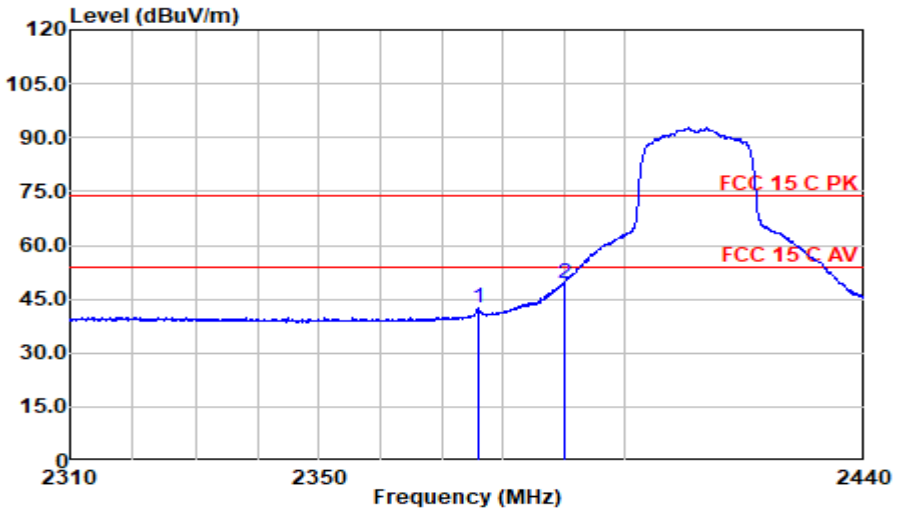
Mode: 802.11N20 CH2412MHz



Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2379.680	61.32	28.52	5.38	36.03	59.19	74.00	14.81	Peak
2390.000	69.98	28.56	5.39	36.02	67.92	74.00	6.08	Peak

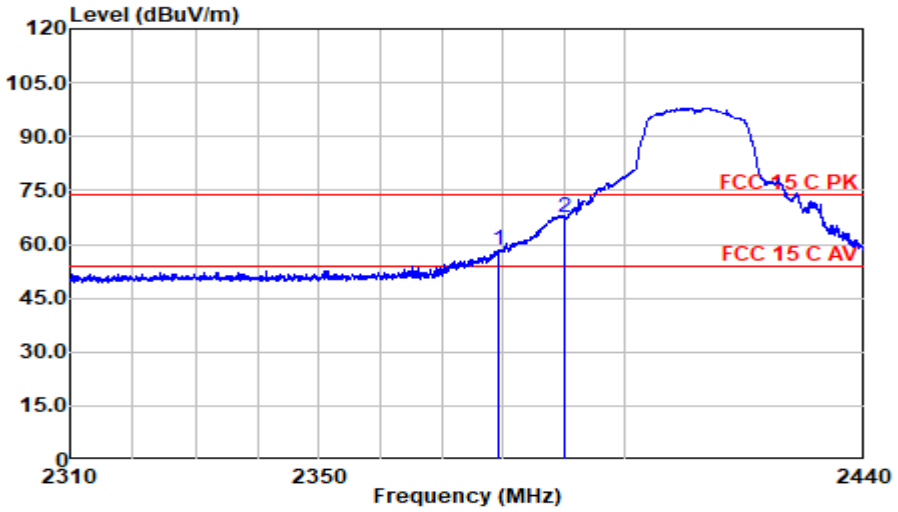
Mode: 802.11N20 CH2412MHz



Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2375.780	44.51	28.50	5.38	36.03	42.35	54.00	11.65	Average
2390.000	51.57	28.56	5.39	36.02	49.50	54.00	4.50	Average

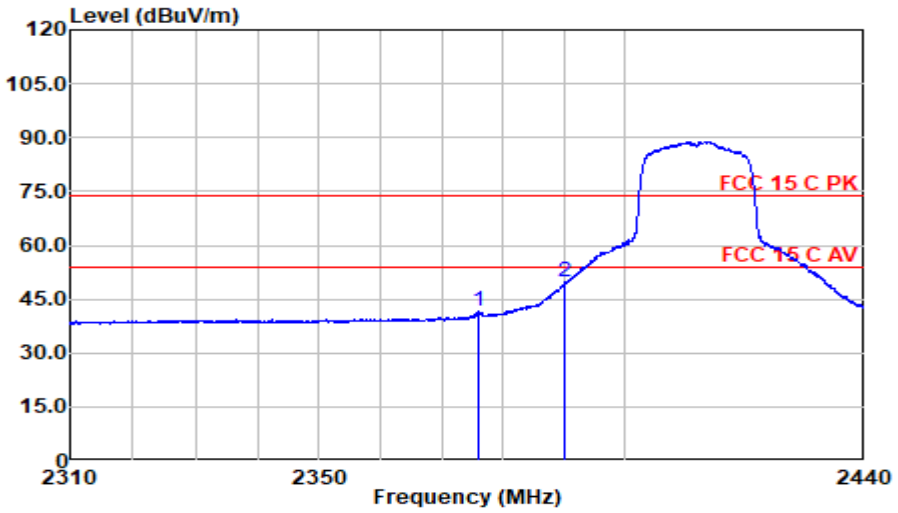
Mode: 802.11N20 CH2412MHz



Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2379.095	60.60	28.52	5.38	36.03	58.46	74.00	15.54	Peak
2390.000	69.38	28.56	5.39	36.02	67.31	74.00	6.69	Peak

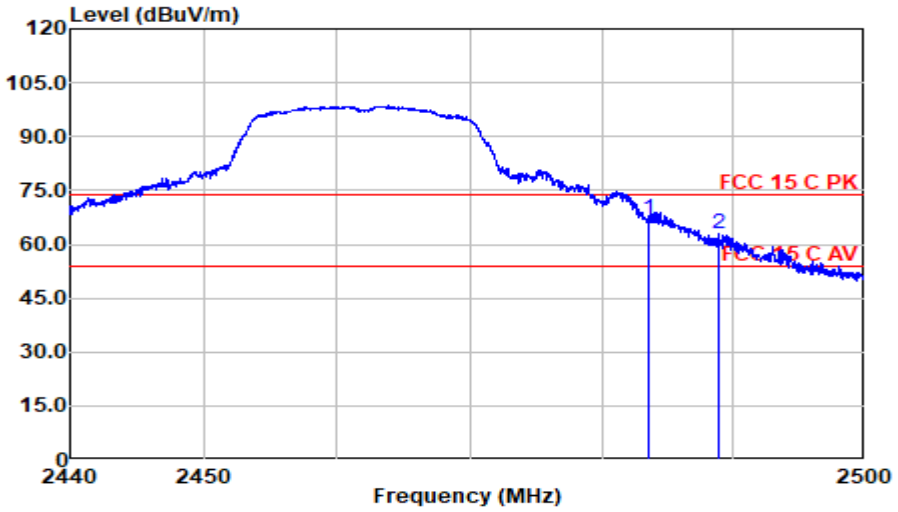
Mode: 802.11N20 CH2412MHz



Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2375.910	43.61	28.50	5.38	36.03	41.46	54.00	12.54	Average
2390.000	52.00	28.56	5.39	36.02	49.93	54.00	4.07	Average

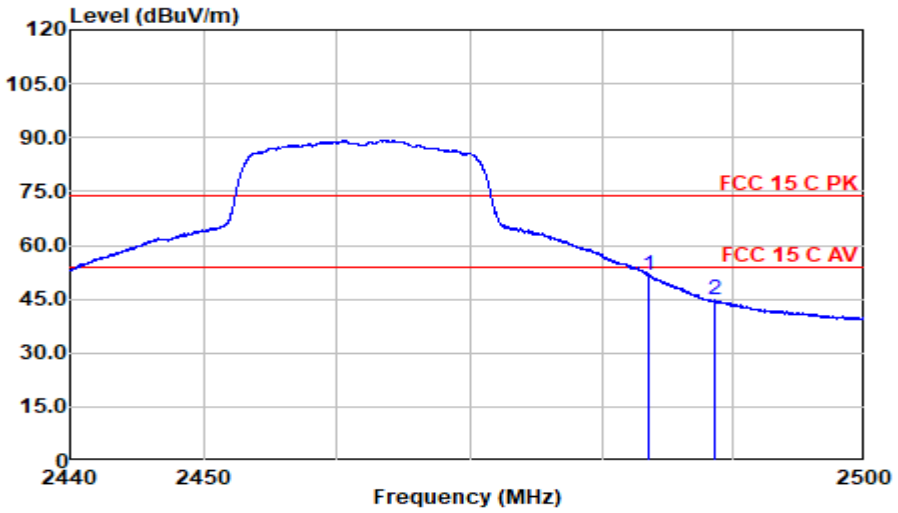
Mode: 802.11N20 CH2462MHz



Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	69.03	28.63	5.47	35.91	67.22	74.00	6.78	Peak
2488.870	64.64	28.66	5.47	35.91	62.86	74.00	11.14	Peak

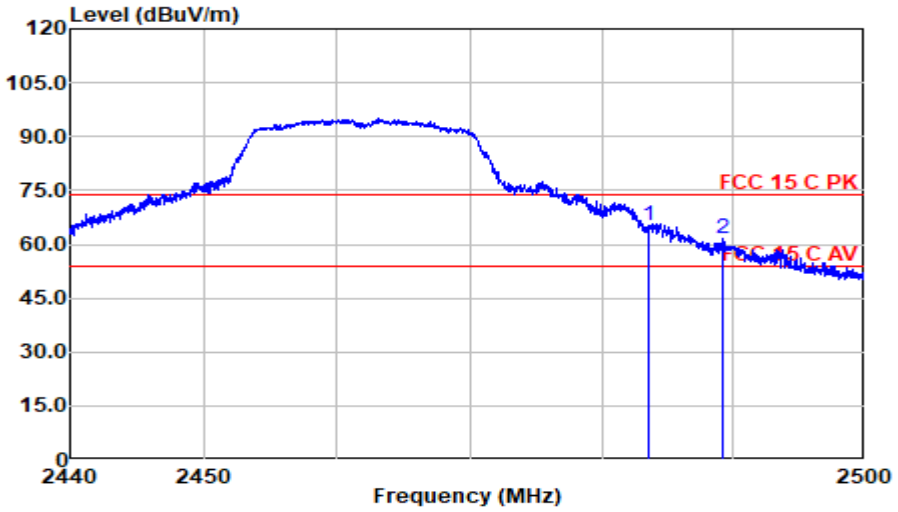
Mode: 802.11N20 CH2462MHz



Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	53.64	28.63	5.47	35.91	51.83	54.00	2.17	Average
2488.600	46.54	28.65	5.47	35.91	44.76	54.00	9.24	Average

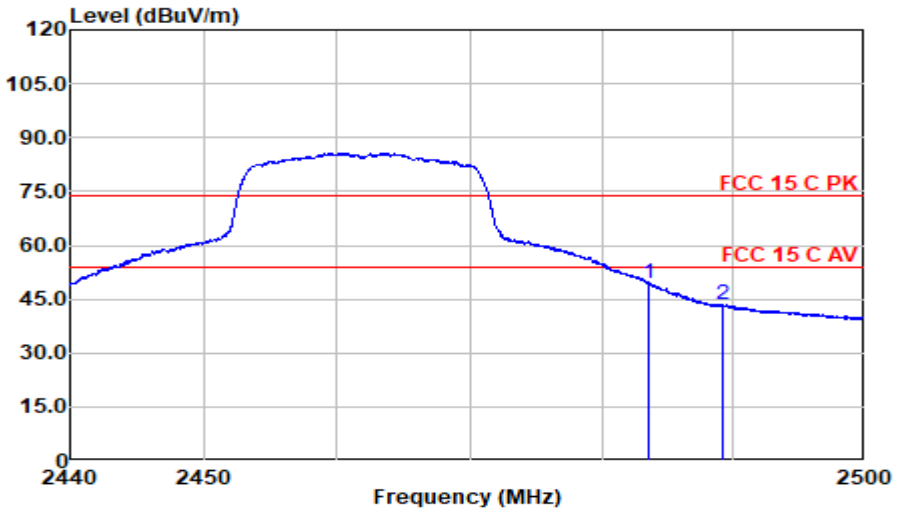
Mode: 802.11N20 CH2462MHz



Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	66.92	28.63	5.47	35.91	65.11	74.00	8.89	Peak
2489.170	63.31	28.66	5.47	35.91	61.53	74.00	12.47	Peak

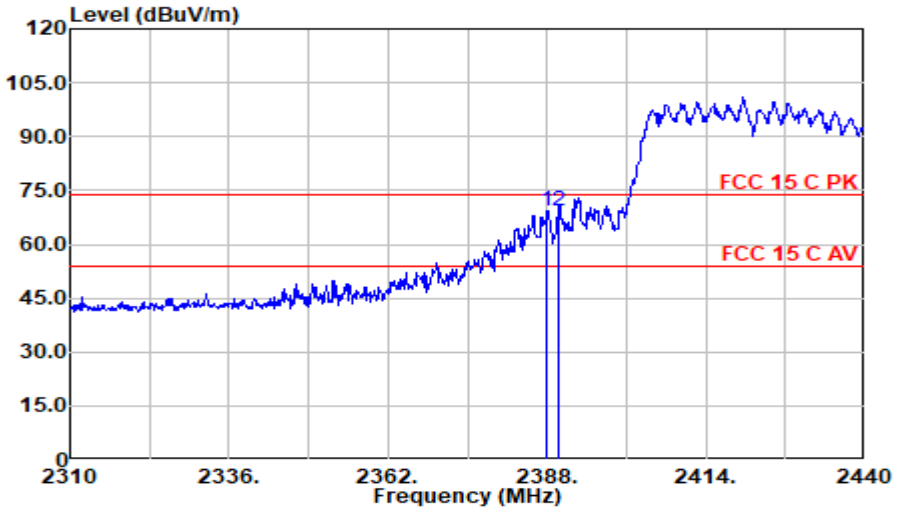
Mode: 802.11N20 CH2462MHz



Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	51.08	28.63	5.47	35.91	49.27	54.00	4.73	Average
2489.140	45.34	28.66	5.47	35.91	43.57	54.00	10.43	Average

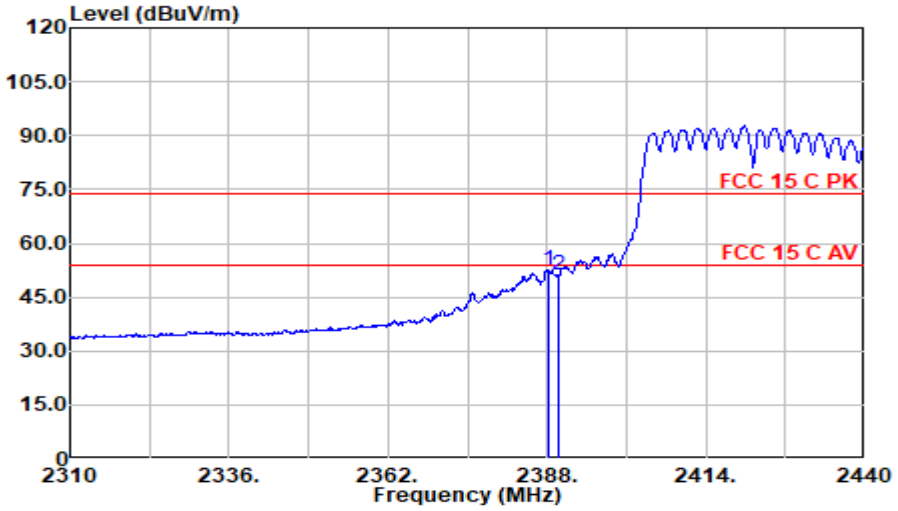
Mode: 802.11n40 CH2422MHz



Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2388.000	71.56	28.55	5.39	36.02	69.48	74.00	4.52	Peak
2390.000	71.35	28.56	5.39	36.02	69.28	74.00	4.72	Peak

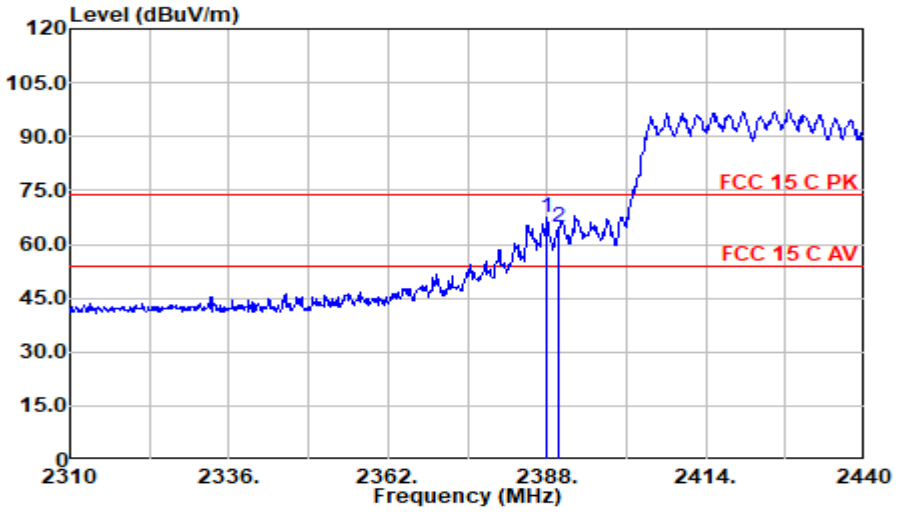
Mode: 802.11n40 CH2422MHz



Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2388.130	54.79	28.55	5.39	36.02	52.71	54.00	1.29	Average
2390.000	53.43	28.56	5.39	36.02	51.36	54.00	2.64	Average

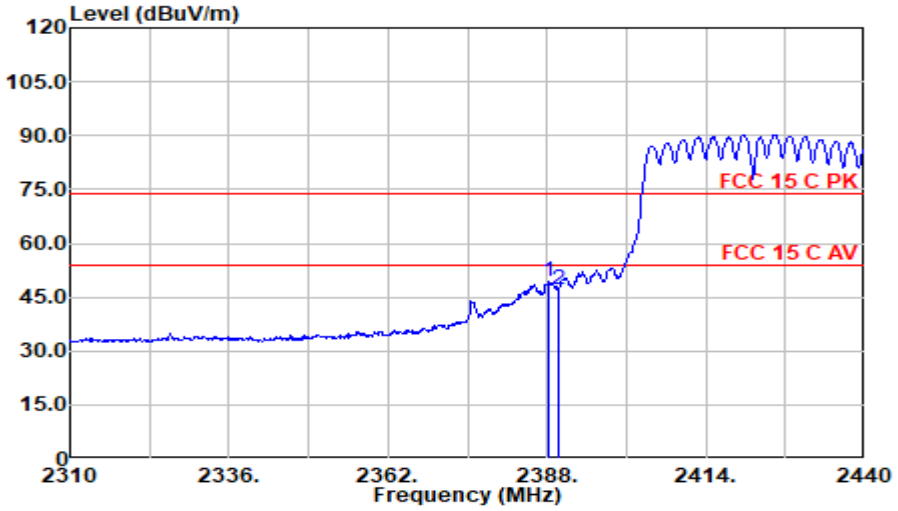
Mode: 802.11n40 CH2422MHz



Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2388.000	69.34	28.55	5.39	36.02	67.26	74.00	6.74	Peak
2390.000	66.85	28.56	5.39	36.02	64.78	74.00	9.22	Peak

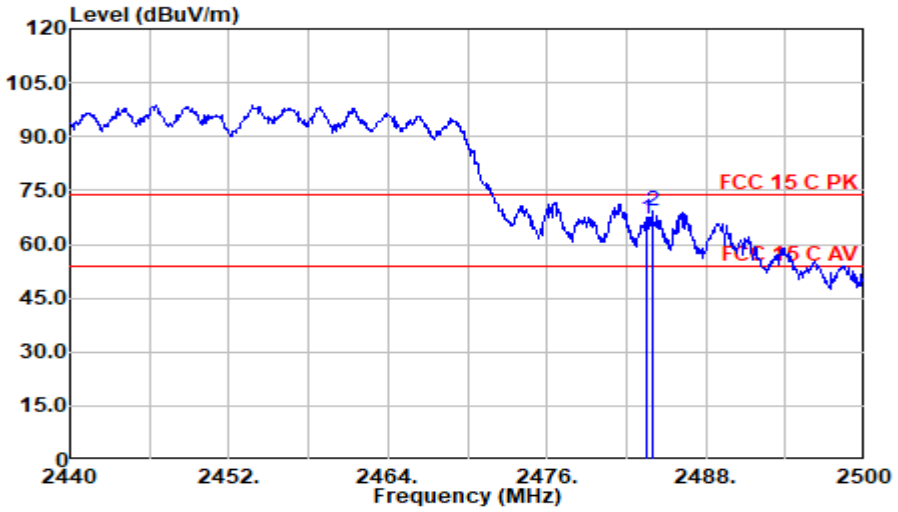
Mode: 802.11n40 CH2422MHz



Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2388.260	51.25	28.55	5.39	36.02	49.17	54.00	4.83	Average
2390.000	49.32	28.56	5.39	36.02	47.25	54.00	6.75	Average

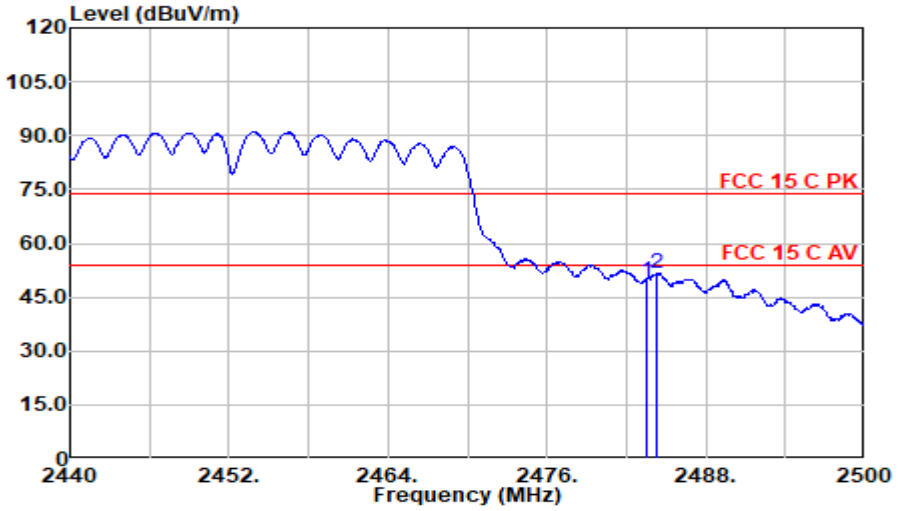
Mode: 802.11n40 CH2452MHz



Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	68.74	28.63	5.47	35.91	66.93	74.00	7.07	Peak
2483.980	71.30	28.64	5.47	35.91	69.50	74.00	4.50	Peak

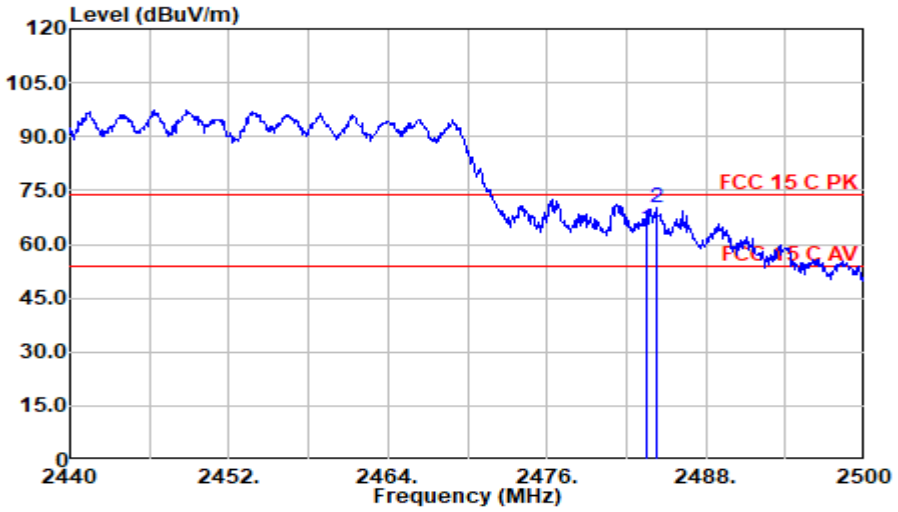
Mode: 802.11n40 CH2452MHz



Polarization at Horizontal

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	51.35	28.63	5.47	35.91	49.54	54.00	4.46	Average
2484.340	53.40	28.64	5.47	35.91	51.60	54.00	2.40	Average

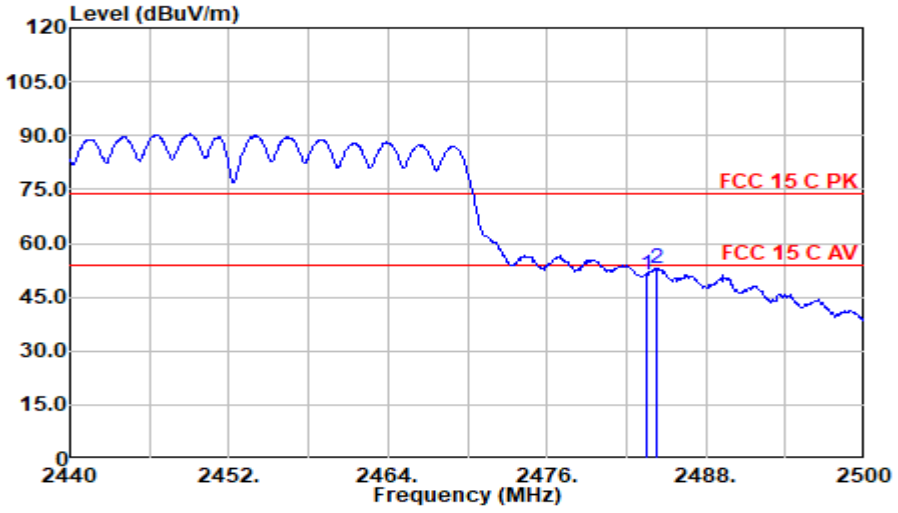
Mode: 802.11n40 CH2452MHz



Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	66.24	28.63	5.47	35.91	64.43	74.00	9.57	Peak
2484.280	71.78	28.64	5.47	35.91	69.98	74.00	4.02	Peak

Mode: 802.11n40 CH2452MHz



Polarization at Vertical

Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
2483.500	53.13	28.63	5.47	35.91	51.32	54.00	2.68	Average
2484.220	54.71	28.64	5.47	35.91	52.91	54.00	1.09	Average

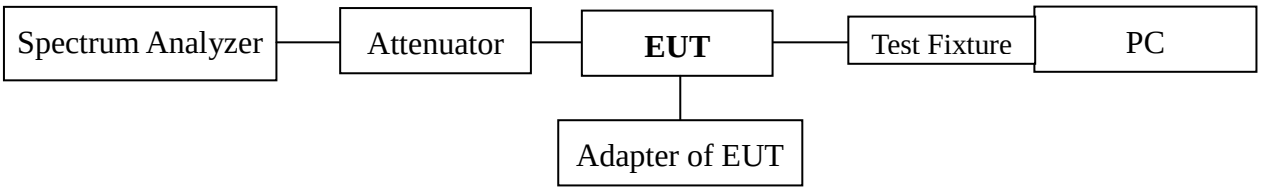
5 99% OCCUPIED BANDWIDTH MEASUREMENT

5.1 Test Equipment

The following test equipment was used during the Emission Bandwidth measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	2023.08.09	1 Year
2.	RF Cable	Mini-Circuits	FLC-3FT-SM SM+	22022838	2023.08.09	1 Year
3.	20 dB Attenuator	Mini-Circuits	BW-S20W2+	001	2023.09.21	1 Year

5.2 Block Diagram of Test Setup



5.3 Operating Condition of EUT

The software as section 2.3 was used to enable the EUT to change the test mode one by one.

5.4 Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of 99% power bandwidth was measure by spectrum analyzer with settings: Span = between 1.5 times and 5.0 times of the OBW, RBW = 1% to 5% of the OBW, VBW ≥ 3 × RBW, Detector = Peak, Trace = Max Hold.
Use the 99% power bandwidth function of the instrument and report the measured bandwidth.

The test procedure is defined in ANSI C63.10-2013 (the 6.9.3 Measurement Procedure “Occupied bandwidth—power bandwidth (99%) measurement procedure” was used).

The Antenna Port “CNF2” used to measure the Occupied bandwidth.

5.5 Test Results

PASSED.

All the test results are listed below.

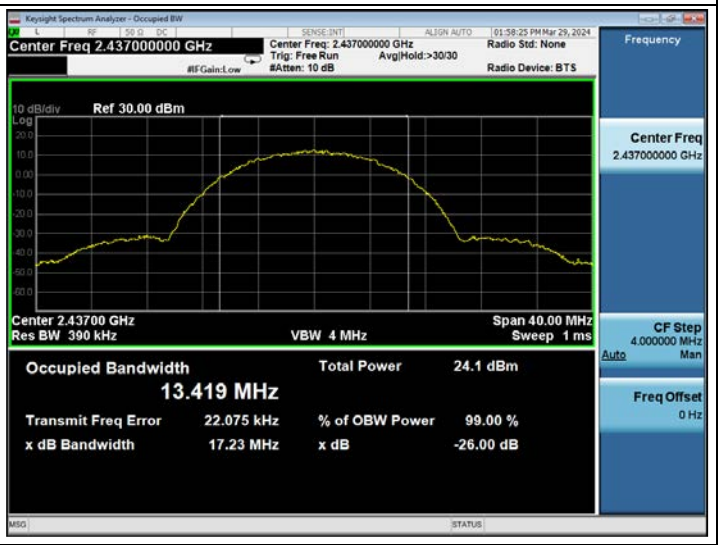
(Test Date: 2024.03.29-04.03 Temperature: 23℃ Humidity: 51 %)

Mode	Channel	Frequency (MHz)	**99% Bandwidth (MHz)**
802.11b	1	2412	**13.332**
	6	2437	**13.419**
	11	2462	**13.42**
802.11g	1	2412	**16.644**
	6	2437	**16.644**
	11	2462	**16.653**
802.11n20	1	2412	**17.64**
	6	2437	**17.644**
	11	2462	**17.663**
802.11n40	3	2422	**36.27**
	6	2437	**36.273**
	9	2452	**36.292**

802.11b

CH2412

CH2437

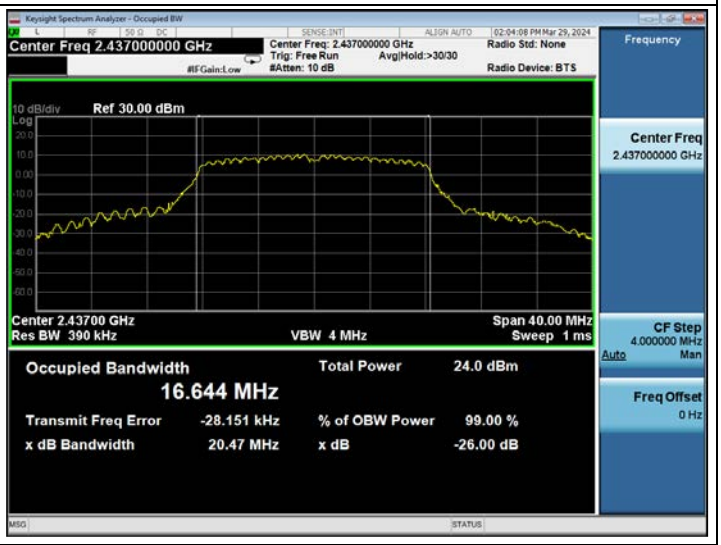


CH2462

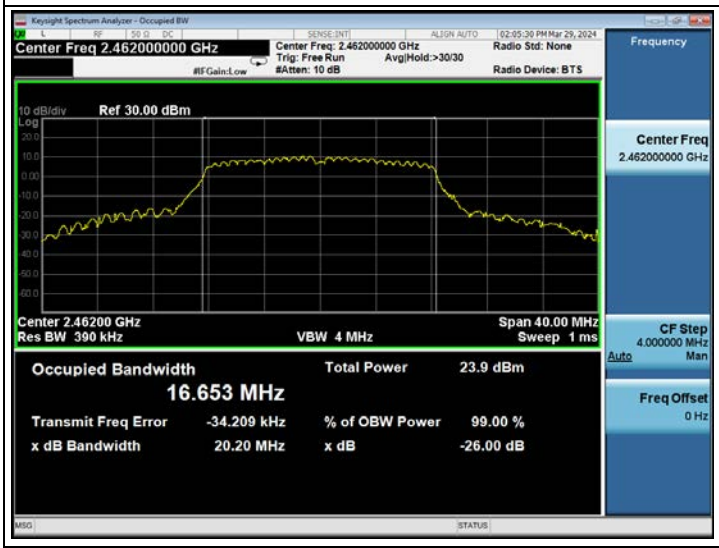
802.11g

CH2412

CH2437



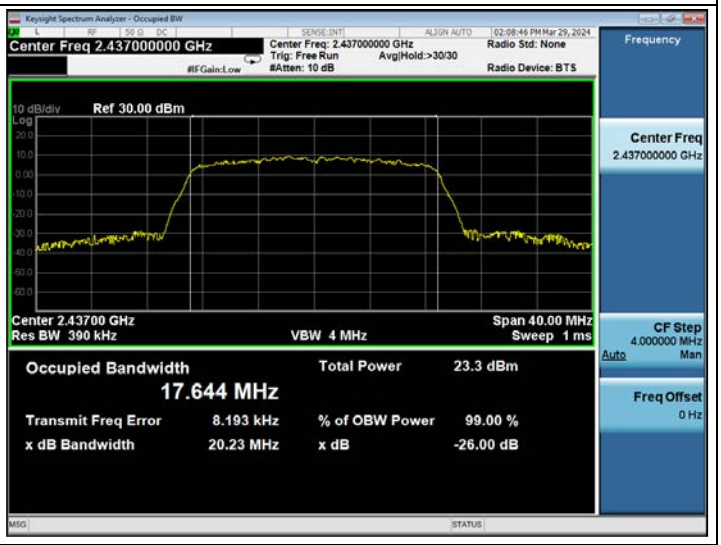
CH2462



802.11n20

CH2412

CH2437

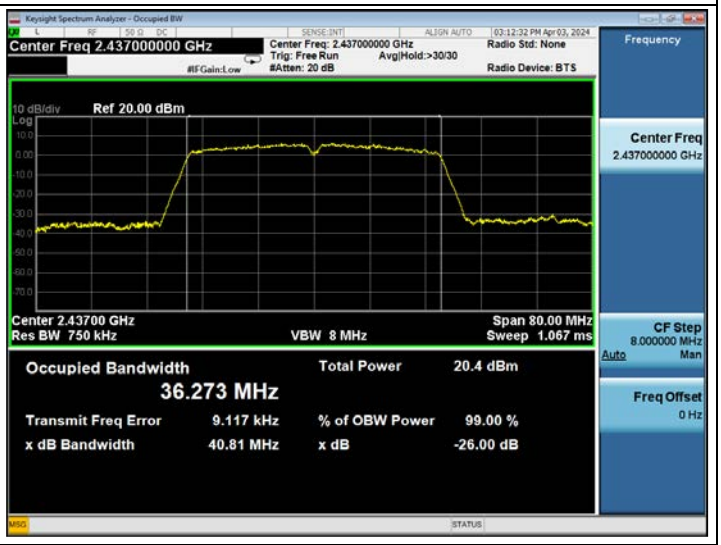


CH2462

802.11n40

CH2422

CH2437



CH2452

6 6 dB BANDWIDTH MEASUREMENT

6.1 Test Equipment

The following test equipment was used during the Emission Bandwidth measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	2023.08.09	1 Year
2.	RF Cable	Mini-Circuits	FLC-3FT-SM SM+	22022838	2023.08.09	1 Year
3.	20 dB Attenuator	Mini-Circuits	BW-S20W2+	001	2023.09.21	1 Year

6.2 Block Diagram of Test Setup

The Same as Section. 5.2.

6.3 Specification Limits (§15.247(a)(2))

The minimum 6 dB bandwidth shall be at least 500 kHz.

6.4 Operating Condition of EUT

The software as section 2.3 was used to enable the EUT to change the test mode one by one.

6.5 Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with settings: RBW = 100kHz, VBW ≥ 3 × RBW.

The 6 dB bandwidth is defined as the total spectrum the power of which is lower than peak power minus 6 dB .

The test procedure is defined in ANSI C63.10-2013 (the 11.8.2 Measurement Procedure “Option 2” was used).

The Antenna Port “CNF2” used to measure the 6 dB bandwidth.

6.6 Test Results

PASSED.

All the test results are listed below.

(Test Date: 2024.04.03 Temperature: 23℃ Humidity: 51 %)

Mode	Channel	Frequency (MHz)	**6dB Bandwidth (MHz)**	Limit (kHz)
802.11b	1	2412	**8.317**	500
	6	2437	**8.317**	500
	11	2462	**8.319**	500
802.11g	1	2412	**15.14**	500
	6	2437	**15.14**	500
	11	2462	**15.14**	500
802.11n20	1	2412	**16.06**	500
	6	2437	**16.08**	500
	11	2462	**15.72**	500
802.11n40	3	2422	**35.85**	500
	6	2437	**35.74**	500
	9	2452	**35.73**	500

802.11b

CH2412

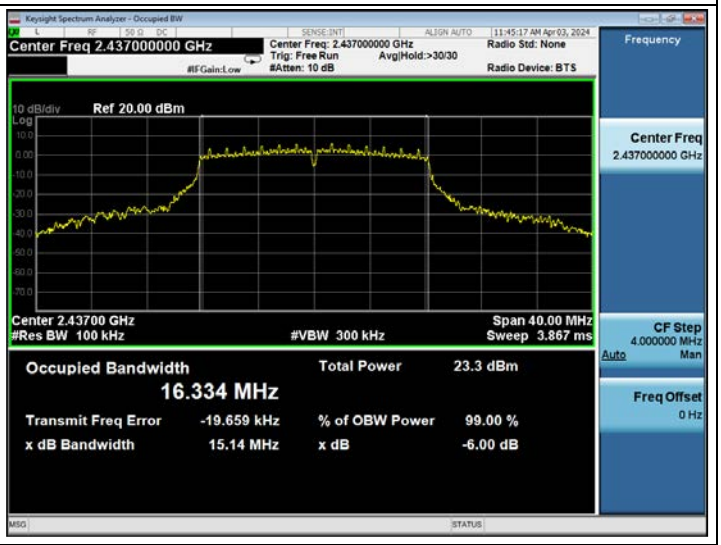
CH2437

CH2462

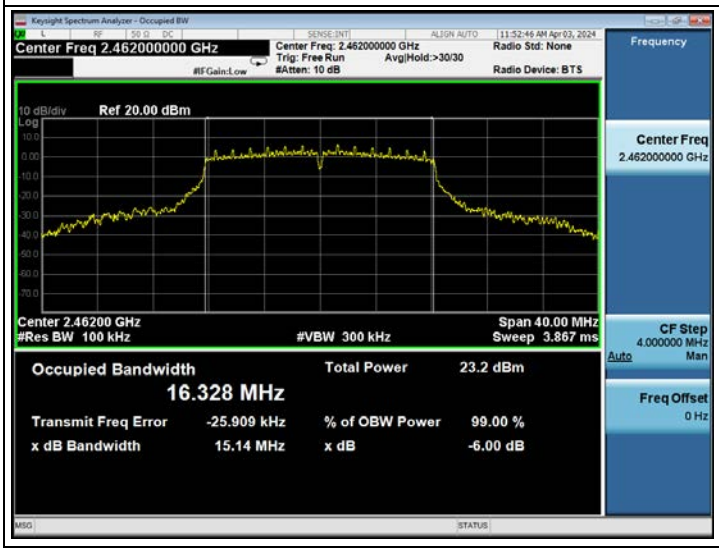
802.11g

CH2412

CH2437



CH2462

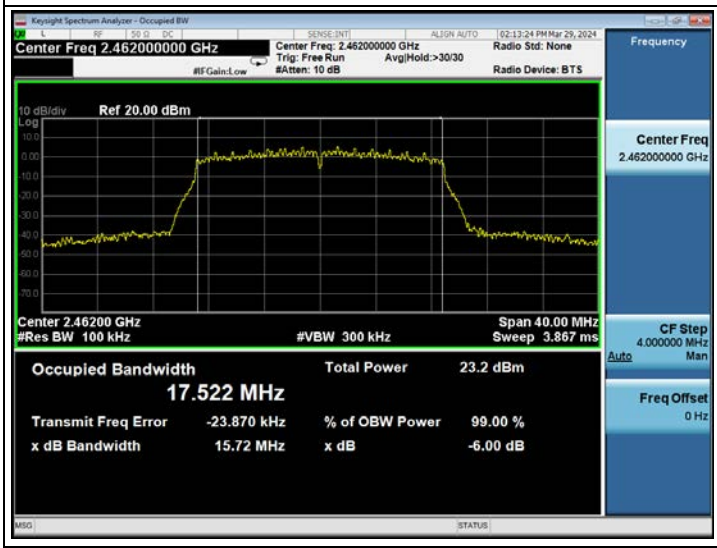


802.11n20

CH2412

CH2437

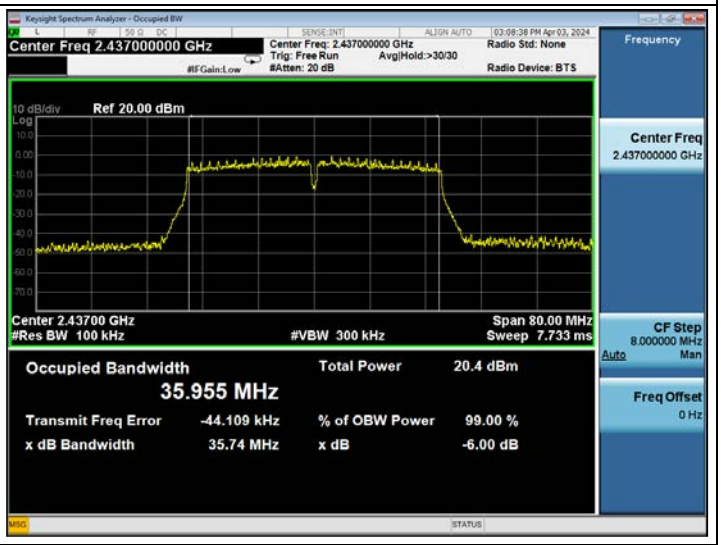
CH2462



802.11n40

CH2422

CH2437



CH2452

7 MAXIMUM OUTPUT POWER MEASUREMENT

7.1 Test Equipment

The following test equipment was used during the maximum peak output power measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	2023.08.09	1 Year
2.	RF Cable	Mini-Circuits	FLC-3FT-SM SM+	22022838	2023.08.09	1 Year
3.	20 dB Attenuator	Mini-Circuits	BW-S20W2+	001	2023.09.21	1 Year

7.2 Block Diagram of Test Setup

The Same as Section. 5.2.

7.3 Specification Limits ((§15.247(b)(3))

The Limits of maximum Peak Output Power for digital modulation in 2400-2483.5 MHz is: 1 Watt. (30 dBm)

7.4 Operating Condition of EUT

The software as section 2.3 was used to enable the EUT to change the test mode one by one.

7.5 Test Procedure

The transmitter output was connected to the spectrum analyzer.

Method AVGSA-2 uses trace averaging across ON and OFF times of the EUT transmissions, followed by duty cycle correction.
The procedure for this method is as follows:
a) Measure the duty cycle D of the transmitter output signal.
b) Set span to at least 1.5 times the OBW.
c) Set RBW = 1% to 5% of the OBW, not to exceed 1 MHz.
d) Set VBW ≥ [3 × RBW].
e) Number of points in sweep ≥ [2 × span / RBW]. (This gives bin-to-bin spacing ≤ RBW / 2, so that narrowband signals are not lost between frequency bins.)
f) Sweep time = auto.
g) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
h) Do not use sweep triggering. Allow the sweep to “free run.”
i) Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed such that the average accurately represents the true average over the ON and OFF periods of the transmitter.
j) Compute power by integrating the spectrum across the OBW of the signal using the instrument’s band power measurement function with band limits set equal to the OBW band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

k) Add [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times (because the measurement represents an average over both the ON and OFF times of the transmission). For example, add [10 log (1/0.25)] = 6 dB if the duty cycle is 25%.

The test procedure is defined in ANSI C63.10-2013 (11.9.2.2.4 Measurement Procedure " Method AVGSA-2" was used).

For Emissions Testing of Transmitters with Multiple Outputs in the Same Band: Per KDB 662911 D01 Multiple Transmitter Output v02r01, section E).1), The measure-and sum technique shall be used for measuring in-band transmit power of a device. Total power is the sum of the conducted power levels measured at the various output ports.

7.6 Test Results

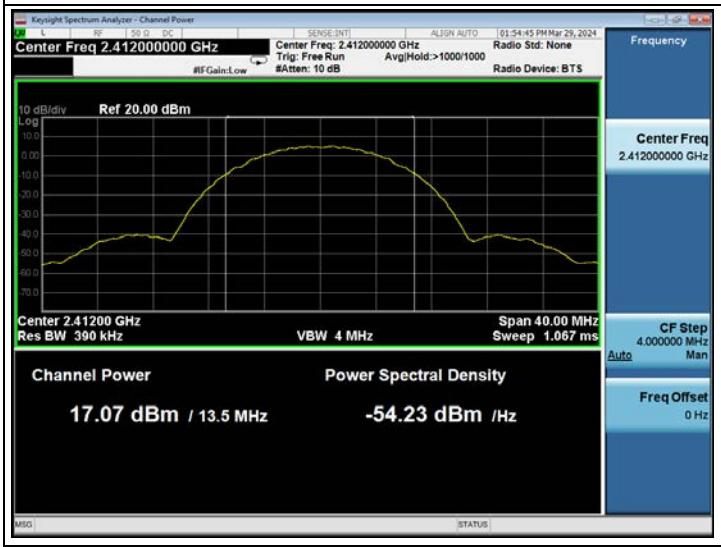
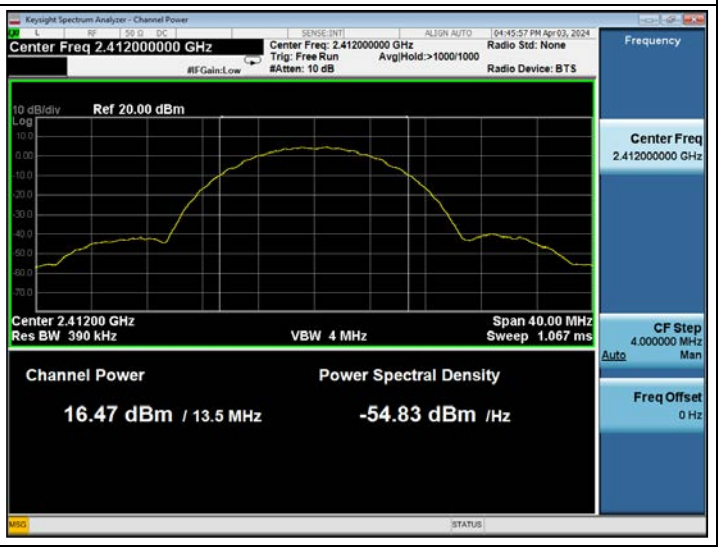
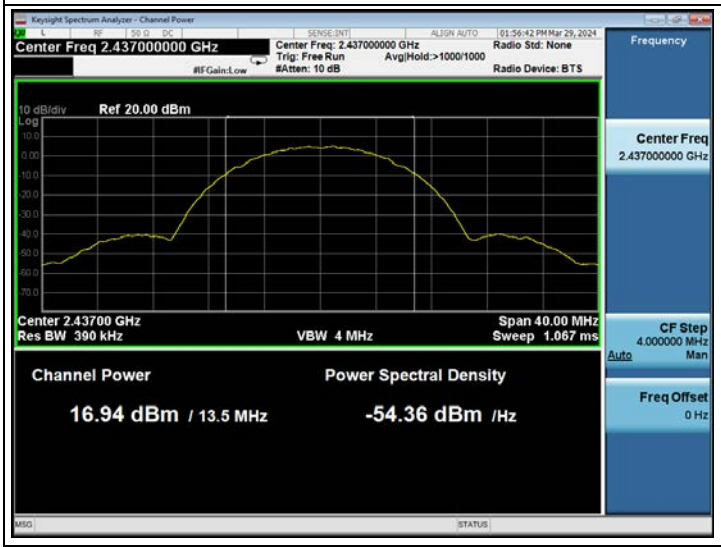
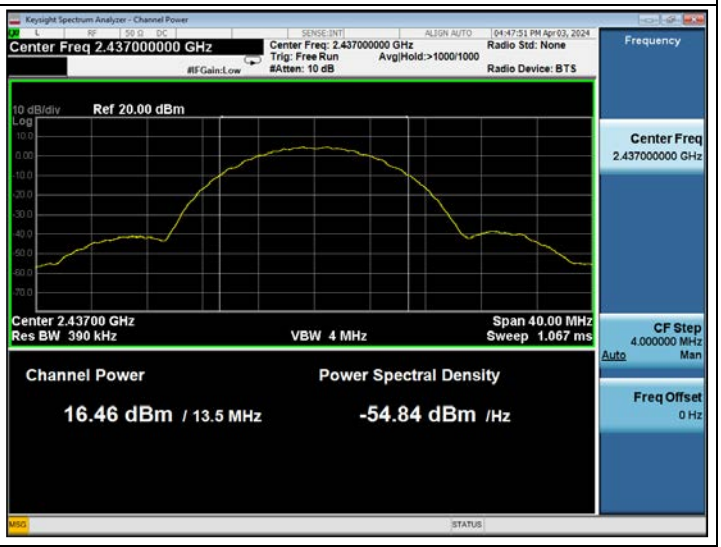
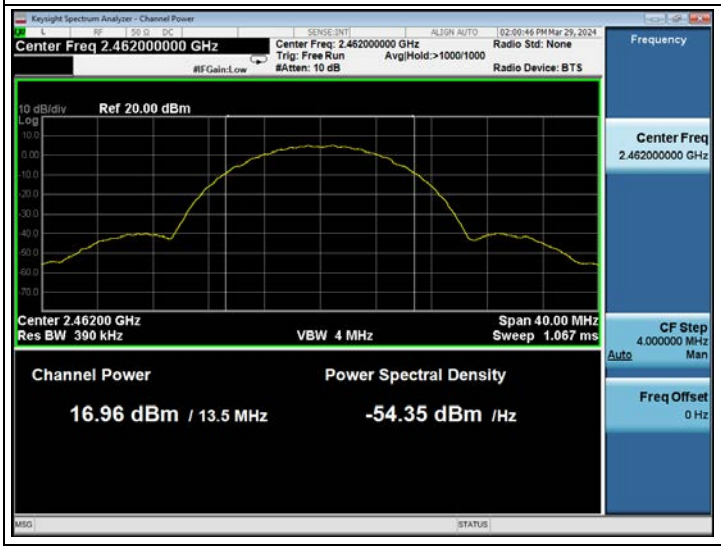
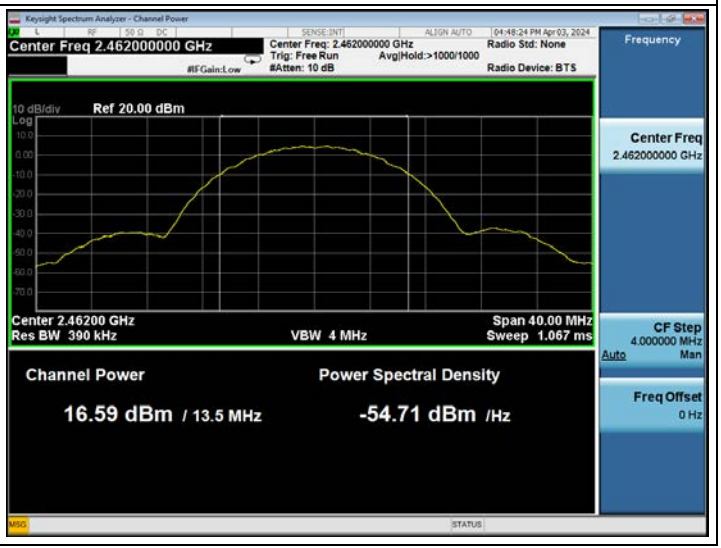
PASSED.

Note1: [Maximum conducted (average) Output Power] = Maximum of [Average conducted (average) Output Power] + [DCCF].
Note2: The [DCCF(Duty Cycle Correct Factor)] shows on section 2.4.

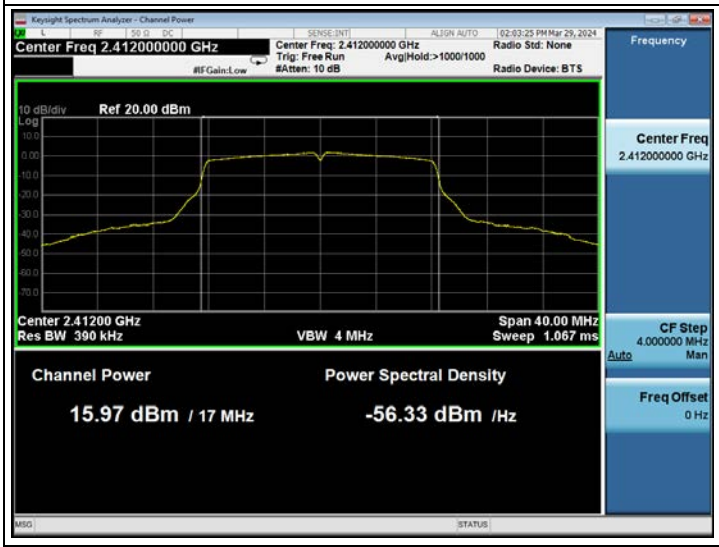
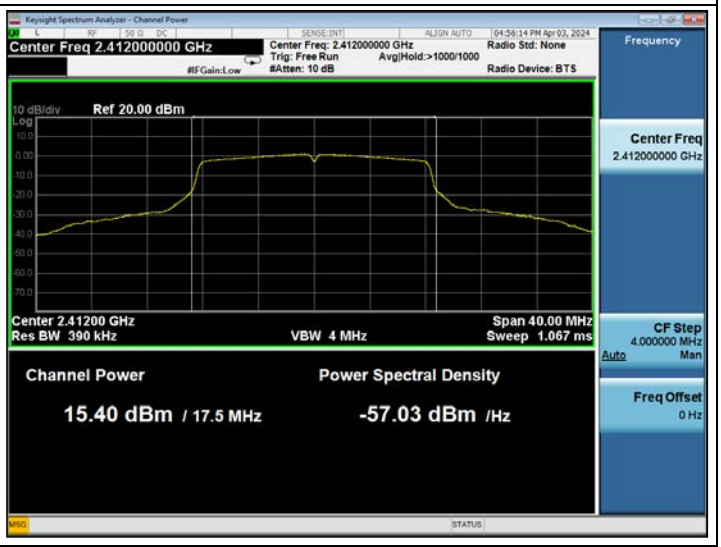
All the test results are listed below.

(Test Date: 2024.04.12-14 Temperature: 23℃ Humidity: 51 %)

Mode	Channel	Frequency (MHz)	**Average conducted (average) Output Power (dBm)**			**Maximum conducted (average) Output Power (dBm)**	Limit (dBm)
			SISO CNF2	**SISO CNF3**	**MIMO (CNF2 + CNF3)**		
802.11b	1	2412	**17.07**	**16.47**	**-**	**17.33**	30
	6	2437	**16.94**	**16.46**	**-**	**17.20**	30
	11	2462	**16.96**	**16.59**	**-**	**17.22**	30
802.11g	1	2412	**15.97**	**15.4**	**-**	**16.16**	30
	6	2437	**16.13**	**15.35**	**-**	**16.32**	30
	11	2462	**16.03**	**15.52**	**-**	**16.22**	30
802.11n20	1	2412	**15.03**	**14.2**	**17.65**	**20.55**	30
	6	2437	**15.07**	**14.28**	**17.70**	**20.60**	30
	11	2462	**15.18**	**14.39**	**17.81**	**20.71**	30
802.11n40	3	2422	**12.55**	**11.79**	**15.20**	**19.21**	30
	6	2437	**12.63**	**11.91**	**15.30**	**19.31**	30
	9	2452	**12.62**	**11.86**	**15.27**	**19.28**	30

802.11b	
CNF2	**CNF3**
CH2412	CH2412
	
CH2437	CH2437
	
CH2462	CH2462
	

802.11g

CNF2	**CNF3**
CH2412	CH2412
	
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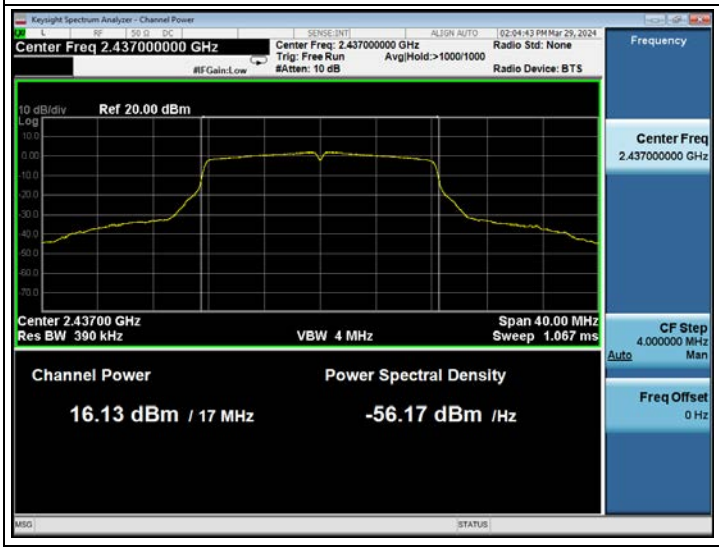	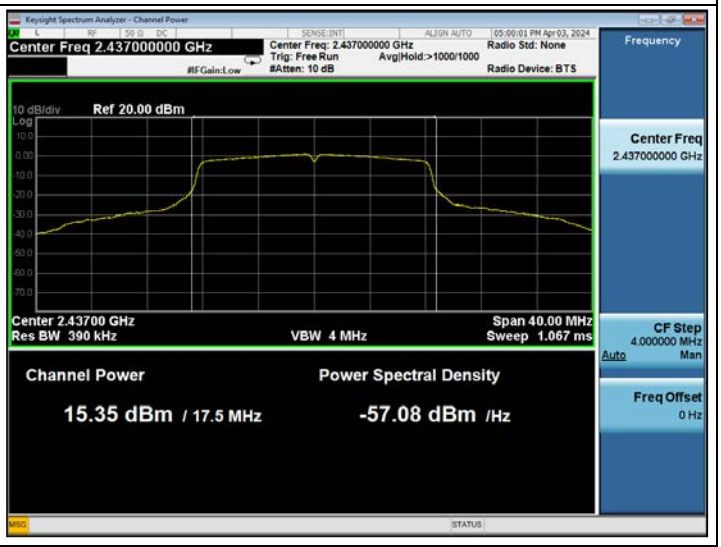
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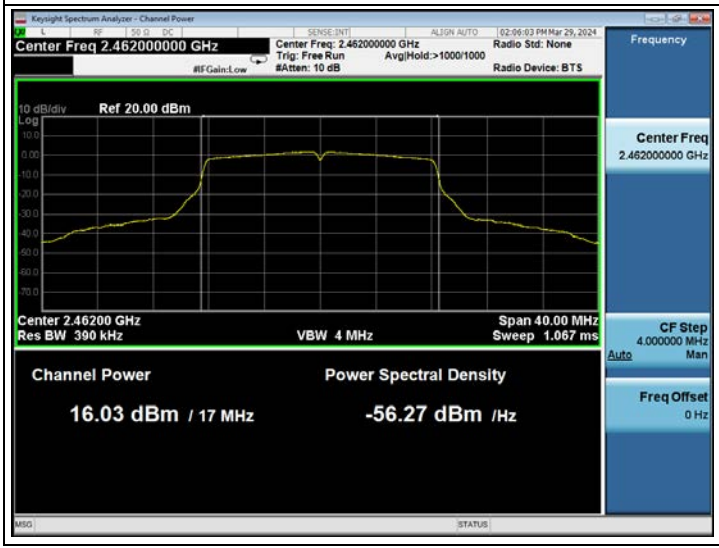	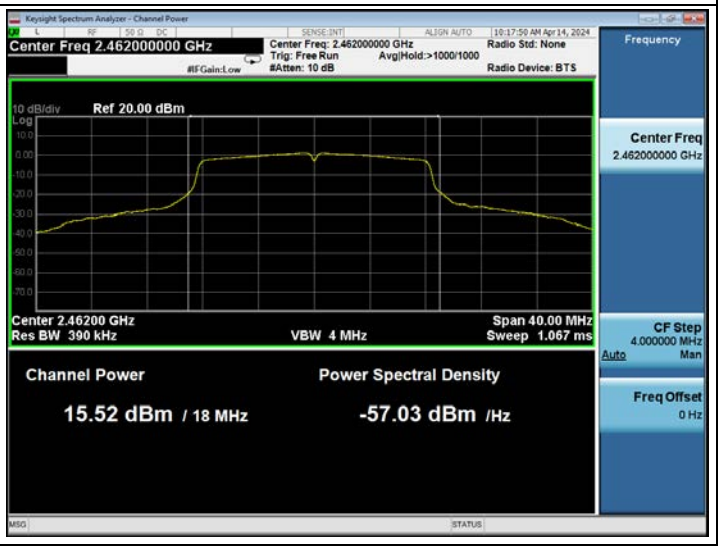

802.11n20

CNF2	**CNF3**
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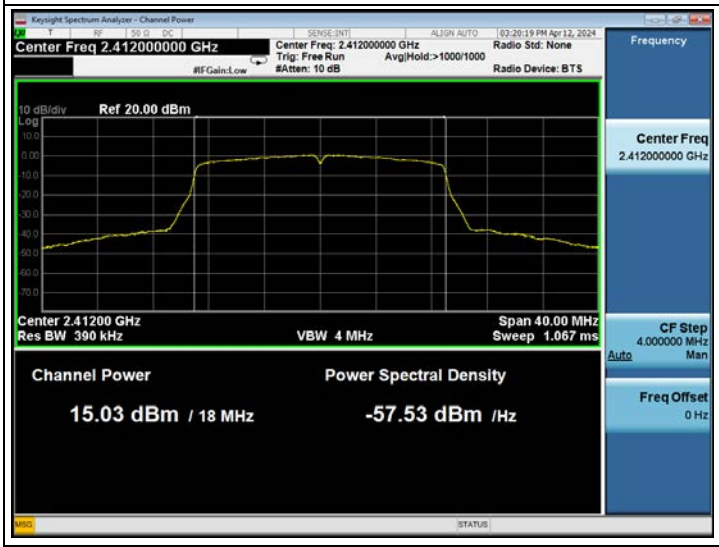	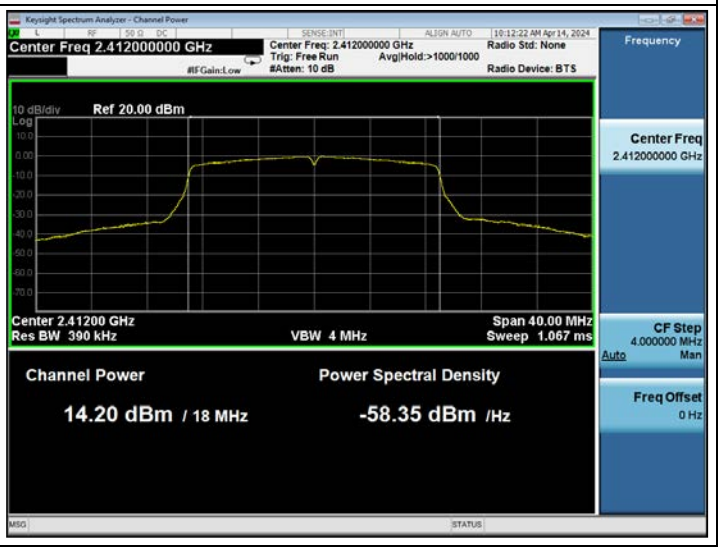
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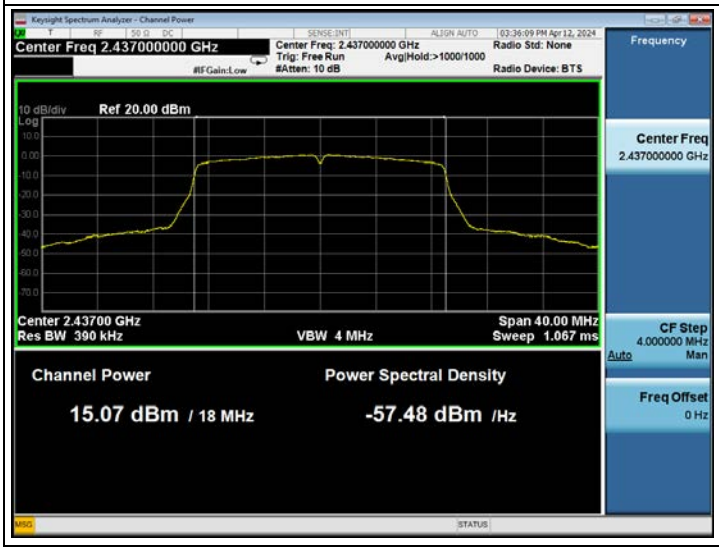
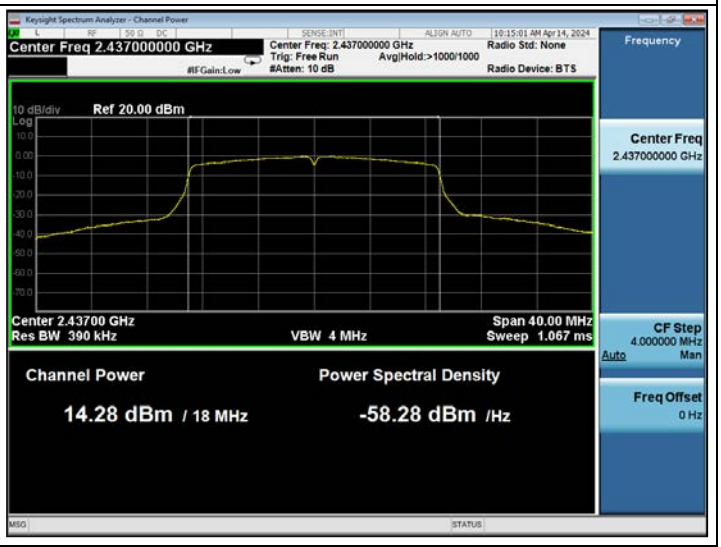
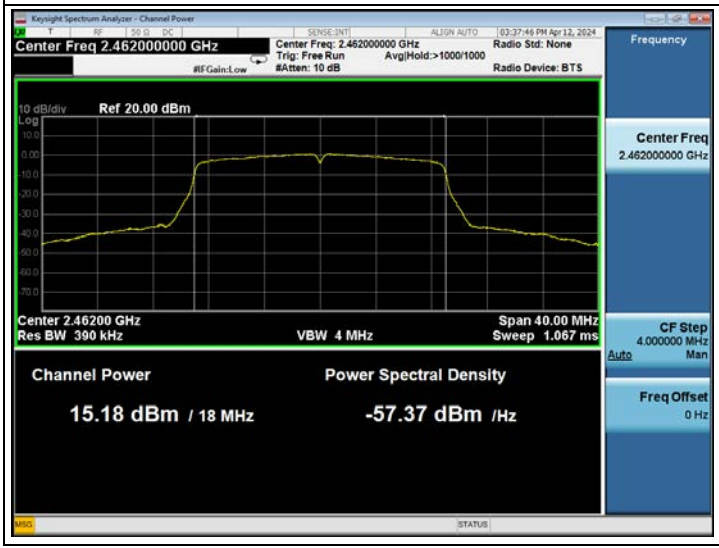
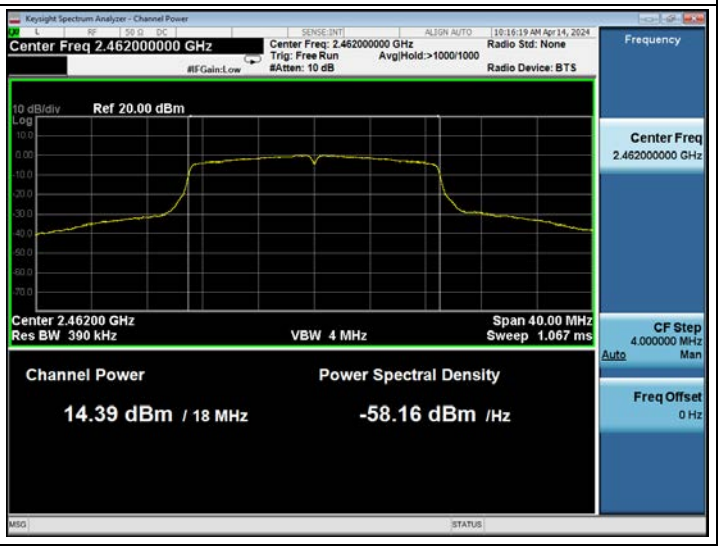
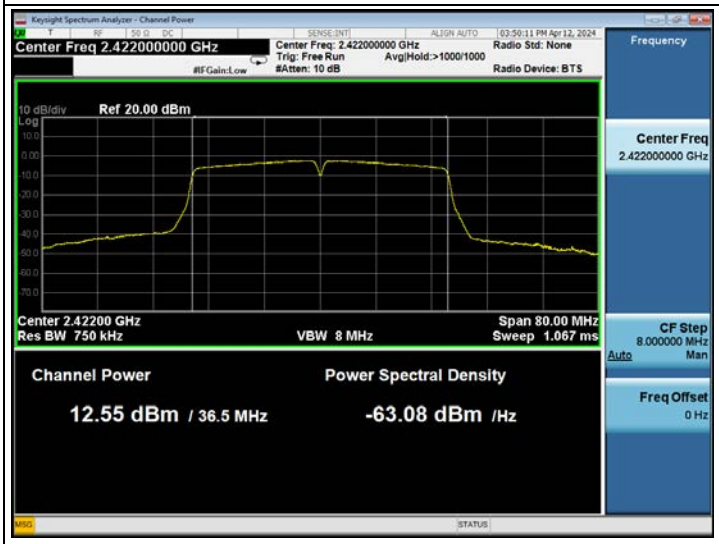
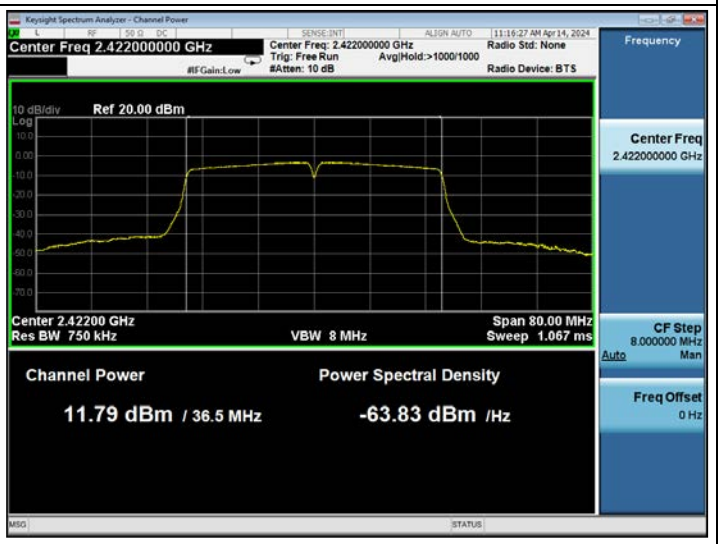
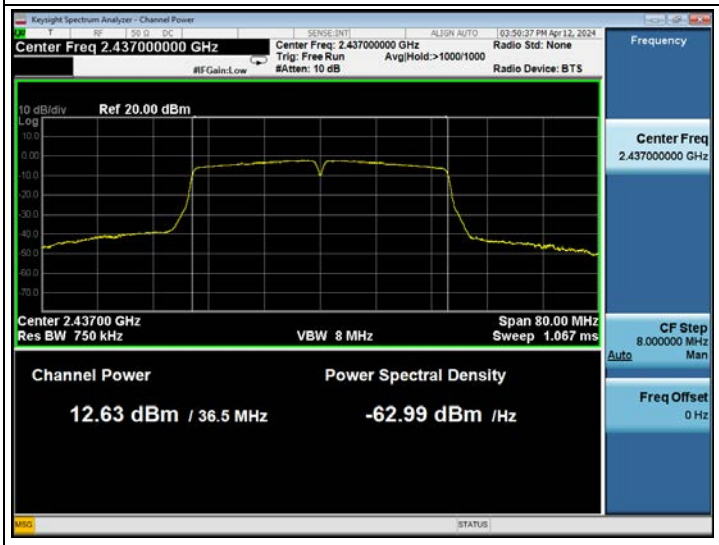
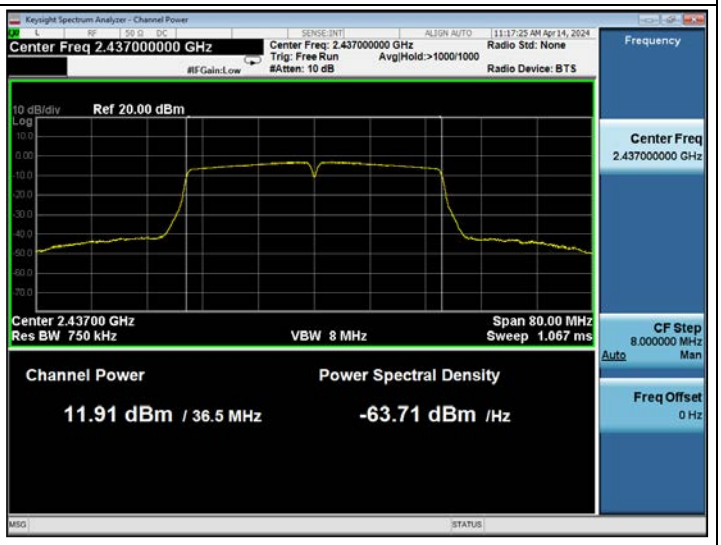
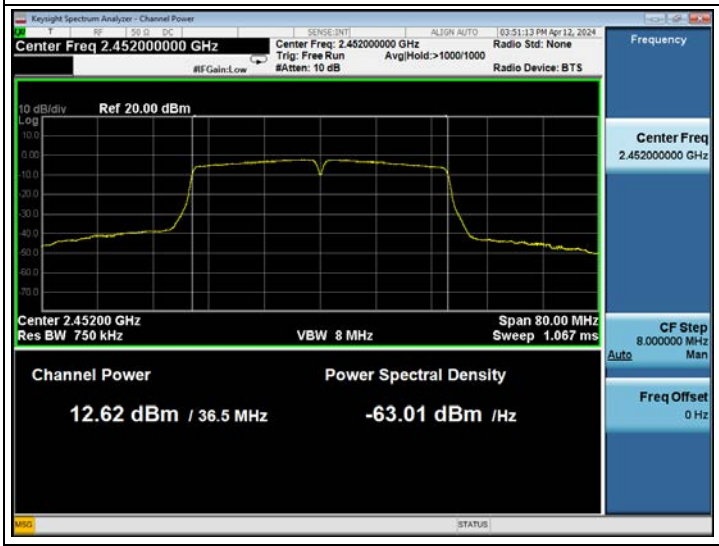
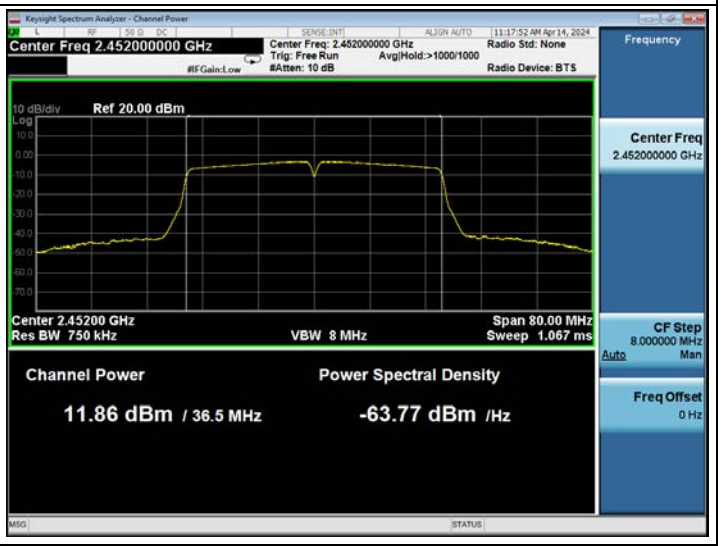
	
CH2462	CH2462
	

802.11n40	
CNF2	**CNF3**
CH2422	CH2422
	
CH2437	CH2437
	
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