Tonal

TEST REPORT FOR

Apollo Board, Model: 500-0806
Trainer, Model: T2

Tested to The Following Standards:

FCC Part 15 Subpart C Section(s)

15.207 & 15.247
(DTS 2400-2483.5 MHz)

Report No.: 110285-28

Date of issue: November 27, 2024

This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of testing for CKC Laboratories, Inc.

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

Test Certificate # 803.01

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Administrative Information

Test Report Information

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Project Number: 110285

DATE OF EQUIPMENT RECEIPT: October 2, 2024
DATE(S) OF TESTING: October 2-4, 5, 7-10, 16-18, 22-25, 28-31, 2024
November 1 and 4-8, 2024

Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the equipment provided by the client, tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.

Steve Behm
Director of Quality Assurance & Engineering Services
CKC Laboratories, Inc.

Test Facility Information

Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):
CKC Laboratories, Inc.
1120 Fulton Pl,
Fremont, CA 94539

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.03.20

Site Registration & Accreditation Information

Location	*NIST CB #	FCC	Canada	Japan
Canyon Park, Bothell, WA	US0103	US1024	3082C	A-0136
Brea, CA	US0103	US1024	3082D	A-0136
Fremont, CA	US0103	US1024	3082B	A-0136
Mariposa, CA	US0103	US1024	3082A	A-0136

*CKC's list of NIST designated countries can be found at: https://standards.gov/cabs/designations.html

Summary of Results

Standard / Specification: FCC Part 15 Subpart C - 15.247 (DTS 2400-2483.5 MHz)

Test Procedure	Description	Modifications	Results
15.247(a)(2)	6dB Bandwidth	NA	PASS
15.247(b)(3)	Output Power	NA	PASS
15.247(d)	RF Conducted Emissions & Band Edge	NA	PASS
15.247(d)	Radiated Emissions & Band Edge	Mod. #1	PASS
15.247(e)	Power Spectral Density	NA	PASS
15.207	AC Conducted Emissions	Mod. #1	PASS

NA = Not Applicable

ISO/IEC 17025 Decision Rule
The equipment sample utilized for testing is selected by the manufacturer. The declaration of pass or fail herein is a binary statement for simple acceptance rule (ILAC G8) based upon assessment to the specification(s) listed above, without consideration of measurement uncertainties. For performance related tests, equipment was monitored for specified criteria identified in that section of testing.

Modifications During Testing

This list is a summary of the modifications made to the equipment during testing.

Summary of Conditions
Modification #1: Reduce RF output power to 12dBm in the software for 802.11n HT40 Chain 0. Added a ferrite (Wurth: 742 712 21) on lower resistor wire. Green Resistor.

Modifications listed above must be incorporated into all production units.

Conditions During Testing

This list is a summary of the conditions noted to the equipment during testing.

Summary of Conditions
Worst case tested: 802.11b 11 Mbits/s 802.11g 18 Mbit/s 802.11n HT20 MCS2 802.11n HT20 MCS0

Equipment Under Test (EUT)

During testing, numerous configurations may have been utilized. The configurations listed below support compliance to the standard(s) listed in the Summary of Results section.

Configuration A

Equipment Under Test **(* = EUT):**

Device Name	Manufacturer	Model #	S/N
Apollo Board	Tonal	500-0806	080600030001263

Support Devices:

Device Name	Manufacturer	Model #	S/N
MCB Board	Tonal	500-0131	500-0131_rev003_00001286_20240909_17
Laptop	Dell	XPS	22E00911
AC/DC Adapter for Laptop	Dell	DA130PM130	CN-06TTY6-48661-4CO-27M7-A00

Configuration 1

Equipment Under Test **(* = EUT):**

Device Name	Manufacturer	Model #	S/N
Trainer	Tonal	T2	4000055

Support Devices:

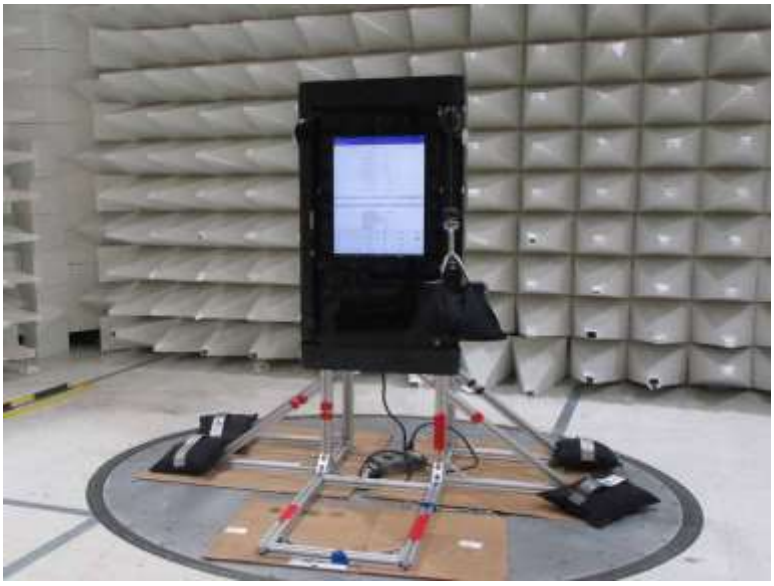
Device Name	Manufacturer	Model #	S/N
Laptop	Dell	XPS	22E00911
AC/DC Adapter for Laptop	Dell	DA130PM130	CN-06TTY6-48661-4CO-27M7-A00

General Product Information:

Description of EUT
Exercise Trainer

Product Information	Manufacturer-Provided Details
Operating Frequencies Tested:	2402-2480MHz
Equipment Type:	Stand-Alone Equipment
Type of Wideband System:	802.11
Maximum Duty Cycle:	100%
Modulation Type(s):	802,11b (DBPSK, DQPSK, QPSK) 802.11g (BPSK, QPSK, 16QAM, 64QAM) 802.11n HT20 (BPSK, QPSK, 16QAM, 64QAM) 802.11n HT40 (BPSK, QPSK, 16QAM, 64QAM)
Number of TX Chains:	2 Note: The manufacturer declared MIMO is not enabled, completely uncorrelated transmission.
Beamforming Type:	NA
Antenna Type(s) and Gain:	External 3.76dBi
Antenna Connection Type:	External Connector
Nominal Input Voltage:	12VDC
Firmware / Software Version(s):	QRCT (Qualcomm Radio Control Toolkit) Version 4.1
Firmware / Software Description:	Using C-Prompt and QRCT application to control all modulation types and frequencies to continuously transmit or receive as intended
Firmware / Software Setting(s):	NA
Tune-up or Adjustment(s):	NA
The validity of results is dependent on the stated product details, the accuracy of which the manufacturer assumes full responsibility.	

EUT and Accessory Photo(s)



EUT

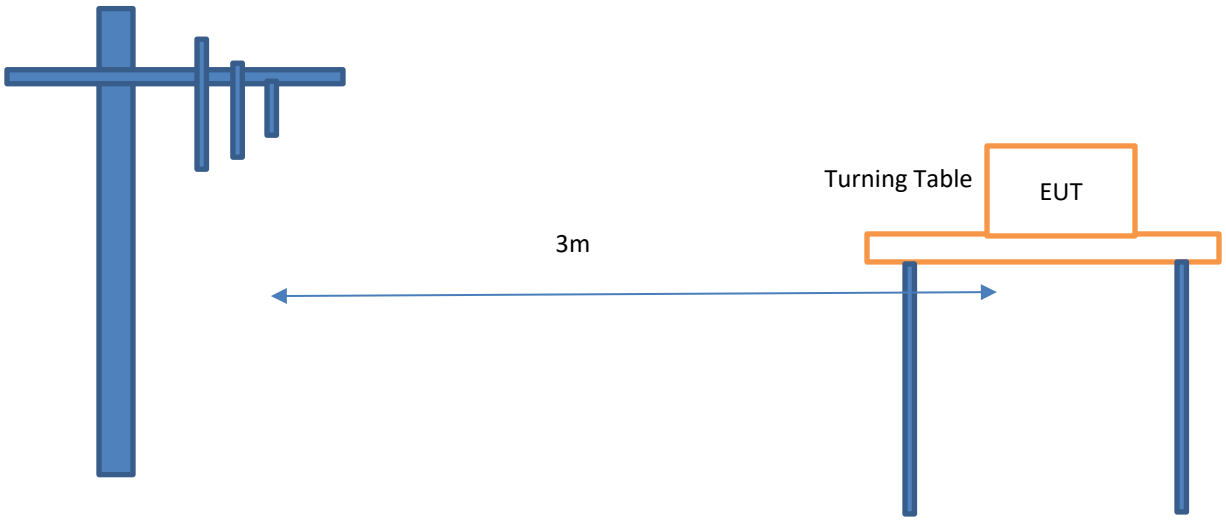
Support Equipment Photo(s)

Support Equipment - Laptop

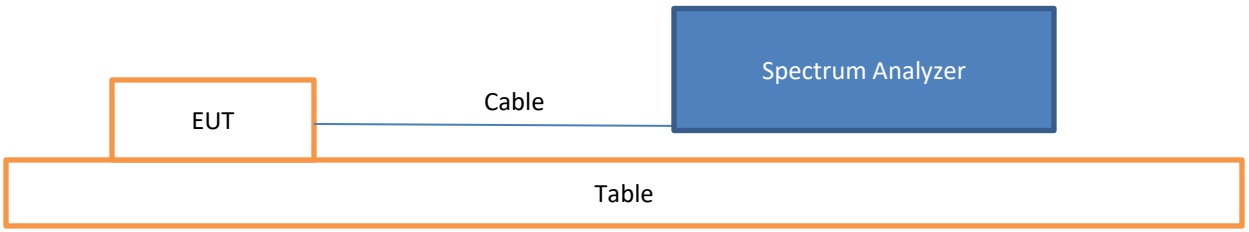
Block Diagram of Test Setup(s)

Config#	Setup Description of Block Diagram
A & 1	Radiated Measurement: the Antenna is set up at 3meter distance from the EUT according to ANSI C63.10 2020. The EUT is set up and operated as intended. Conducted Measurement: The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer.

Radiated Method Setup



Conducted Method Setup



FCC Part 15 Subpart C

15.247(a)(2) 6dB Bandwidth

Test Setup/Conditions			
Test Location:	Fremont Lab Bench	Test Engineer:	Hieu Song Nguyenpham
Test Method:	ANSI C63.10 (2020), KDB 558074	Test Date(s):	10/04/2024 and 10/07/2024
Configuration:	A		
Test Setup:	The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer.		

Environmental Conditions			
Temperature (ºC)	22.1-23.5	Relative Humidity (%):	42-48

Test Equipment					
Asset#	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
03013	Cable	Astrolab	32022-2-2909K-36TC	1/9/2024	1/9/2026
P07365	Attenuator	Weinschel	54A-10	5/26/2023	5/26/2025
03471	Spectrum Analyzer	Agilent	E4440A	2/23/2024	2/23/2026

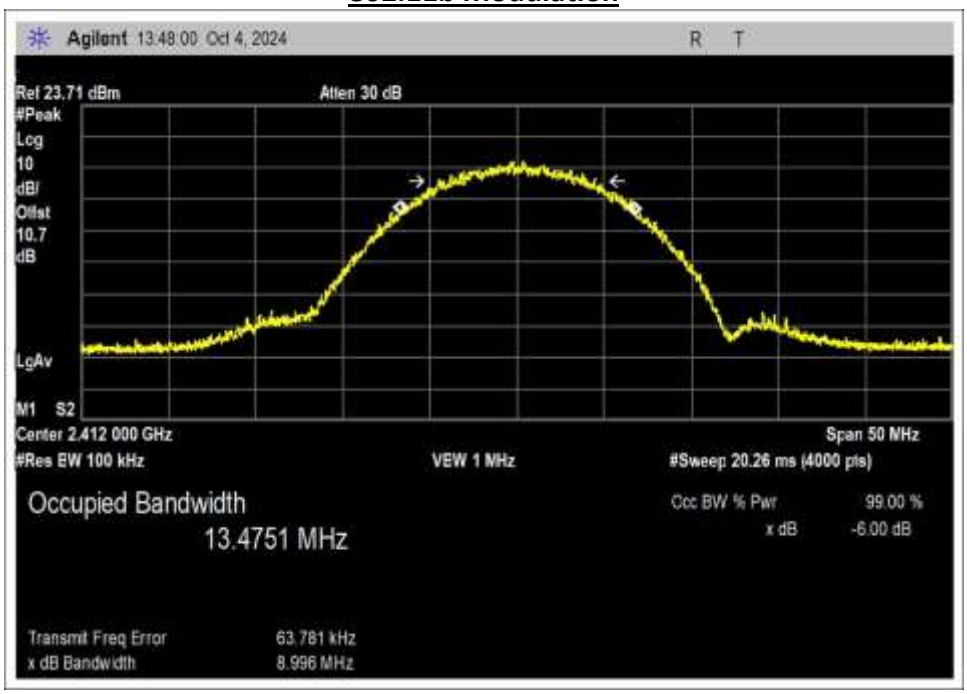
Test Data Summary					
Frequency (MHz)	**Antenna Port**	**Modulation**	**Measured (kHz)**	**Limit (kHz)**	**Results**
2412	0	802.11b	8996	≥500	Pass
2442	0	802.11b	9003	≥500	Pass
2462	0	802.11b	8990	≥500	Pass
2412	0	802.11g	15940	≥500	Pass
2442	0	802.11g	15982	≥500	Pass
2462	0	802.11g	15697	≥500	Pass
2412	0	802.11n HT20	16017	≥500	Pass
2442	0	802.11n HT20	16612	≥500	Pass
2462	0	802.11n HT20	16316	≥500	Pass
2422	0	802.11n HT40	35136	≥500	Pass
2442	0	802.11n HT40	35475	≥500	Pass
2452	0	802.11n HT40	35106	≥500	Pass

Test Data Summary					
Frequency (MHz)	**Antenna Port**	**Modulation**	**Measured (kHz)**	**Limit (kHz)**	**Results**
2412	1	802.11b	8994	≥500	Pass
2442	1	802.11b	8805	≥500	Pass
2462	1	802.11b	8975	≥500	Pass
2412	1	802.11g	15394	≥500	Pass
2442	1	802.11g	15997	≥500	Pass
2462	1	802.11g	15429	≥500	Pass
2412	1	802.11n HT20	15962	≥500	Pass
2442	1	802.11n HT20	17028	≥500	Pass
2462	1	802.11n HT20	16019	≥500	Pass
2422	1	802.11n HT40	35123	≥500	Pass
2442	1	802.11n HT40	36311	≥500	Pass
2452	1	802.11n HT40	35120	≥500	Pass

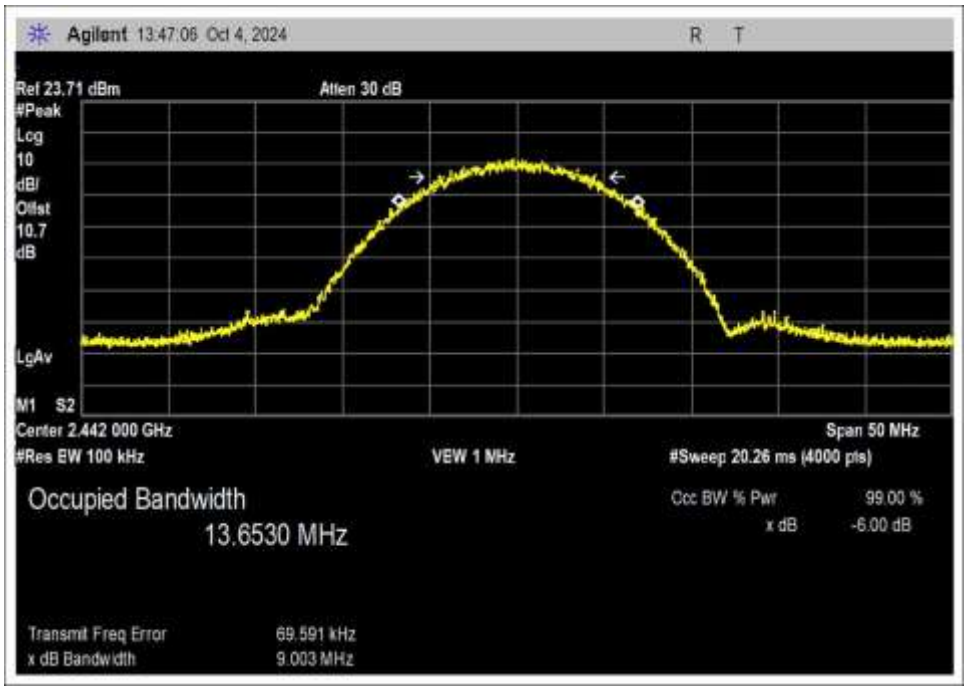
Plot(s)

CHAIN 0

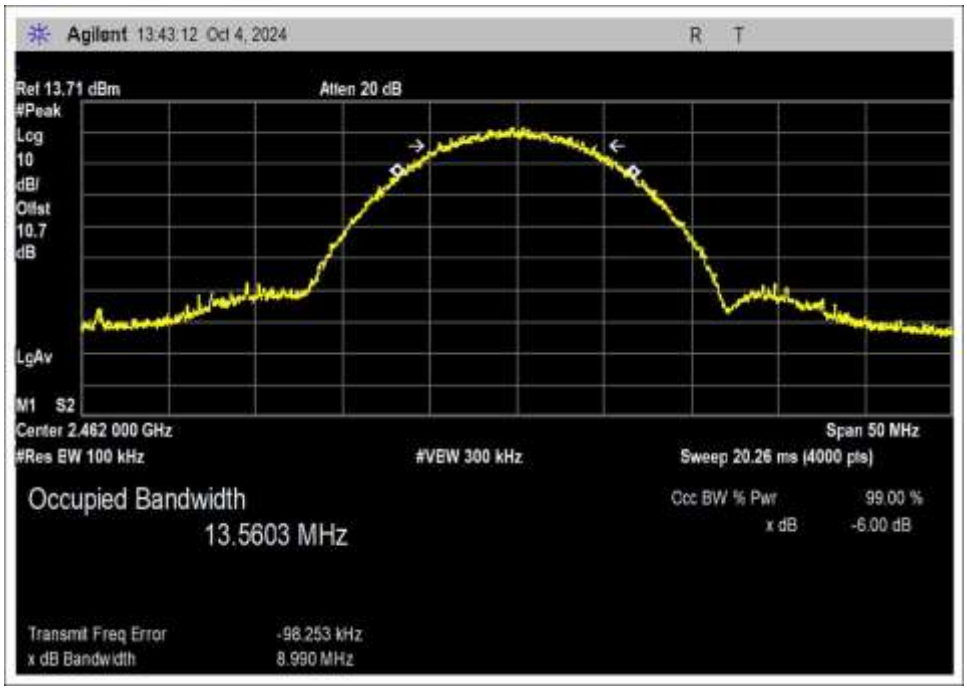
802.11b Modulation



Low Channel

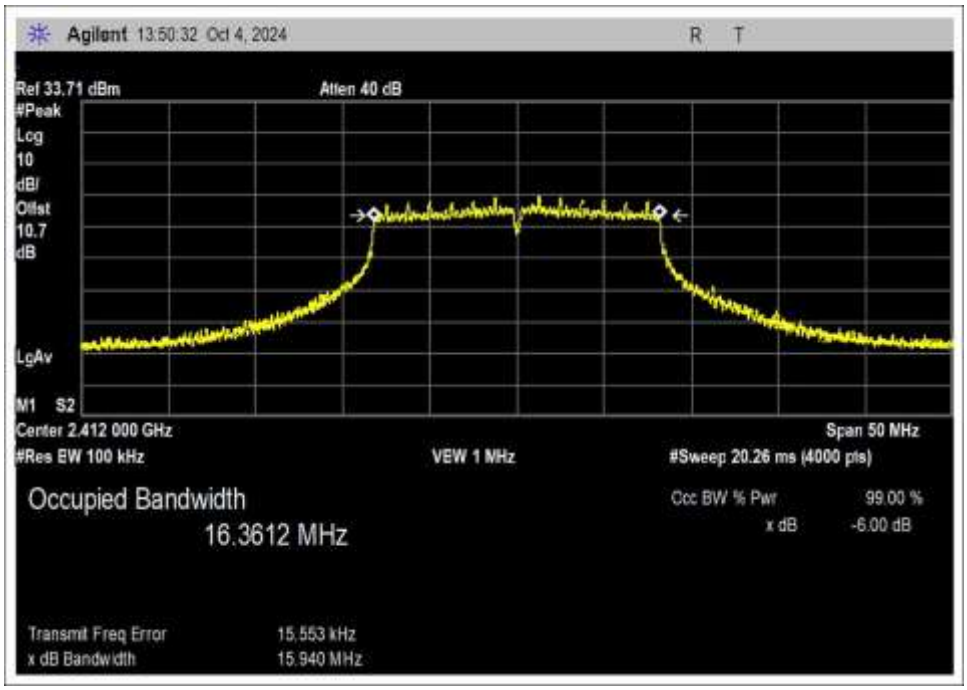


Middle Channel



High Channel

802.11g Modulation



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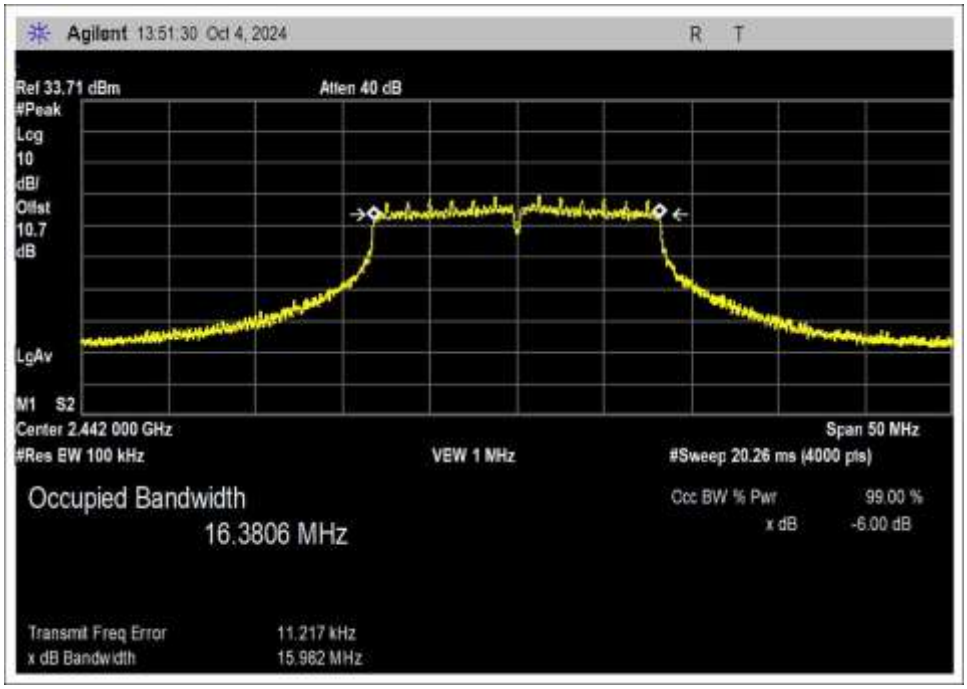

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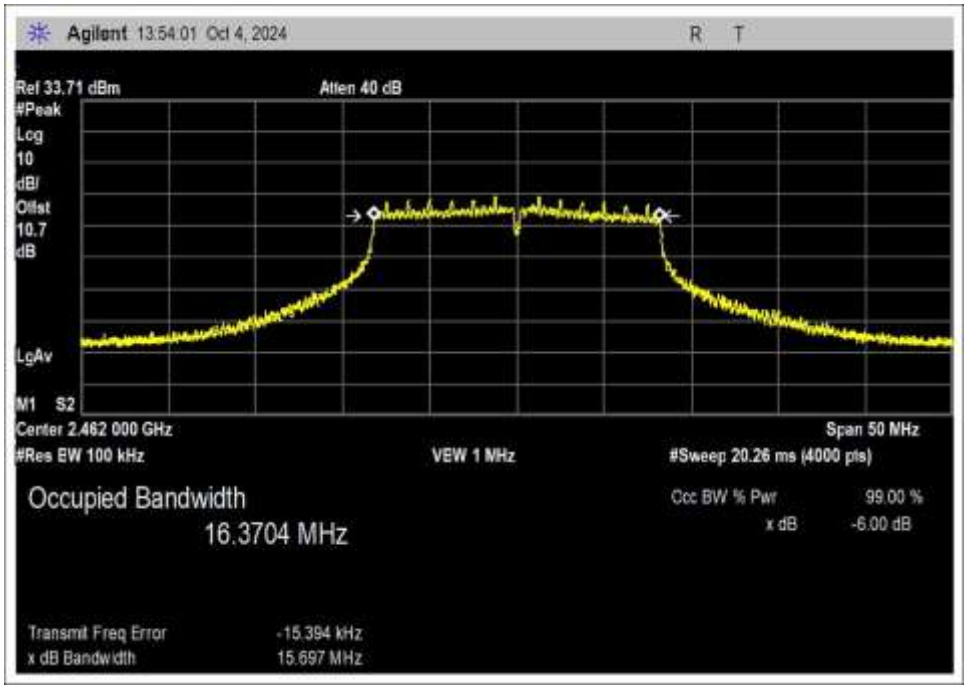
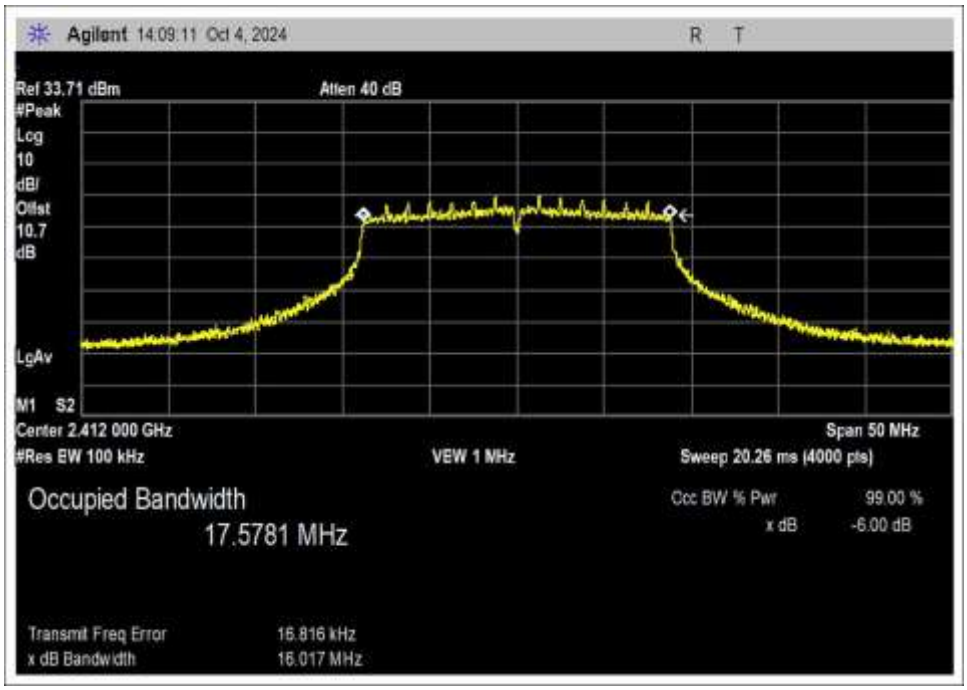


High Channel

802.11n HT20 Modulation



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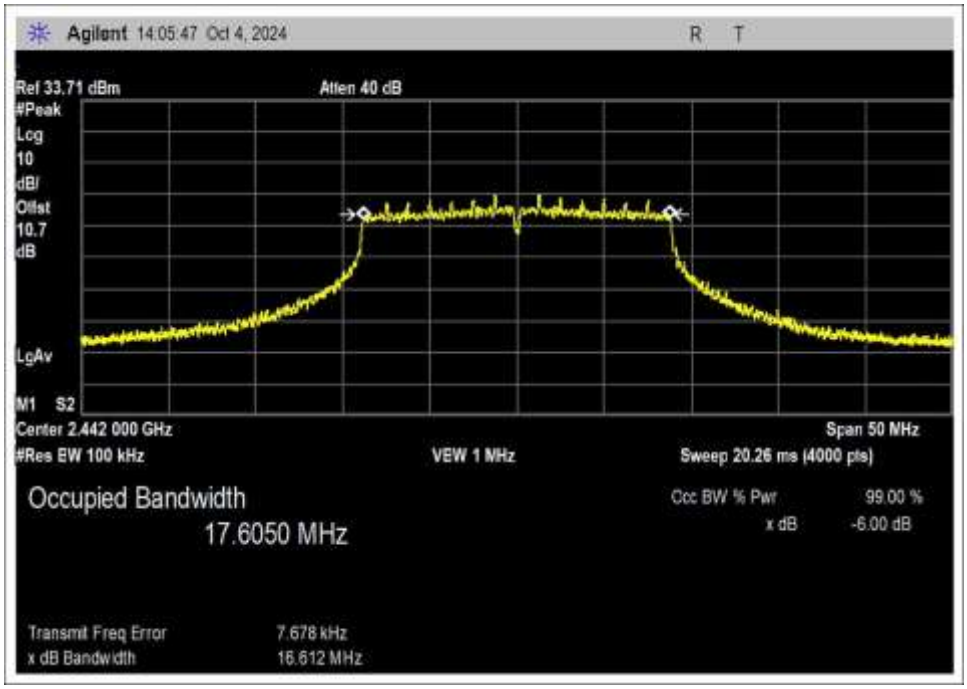

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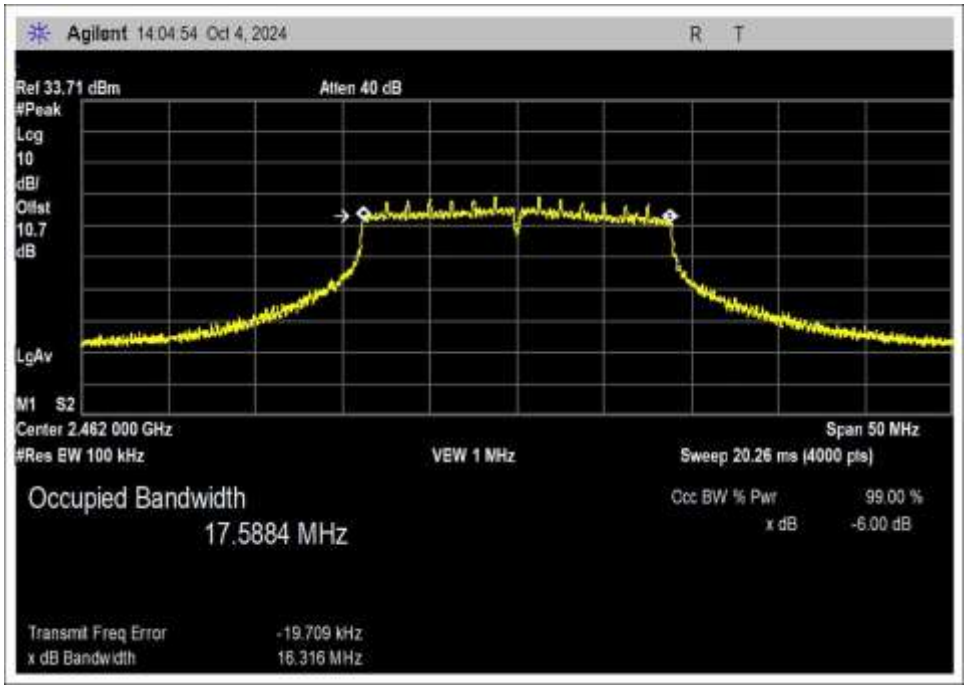
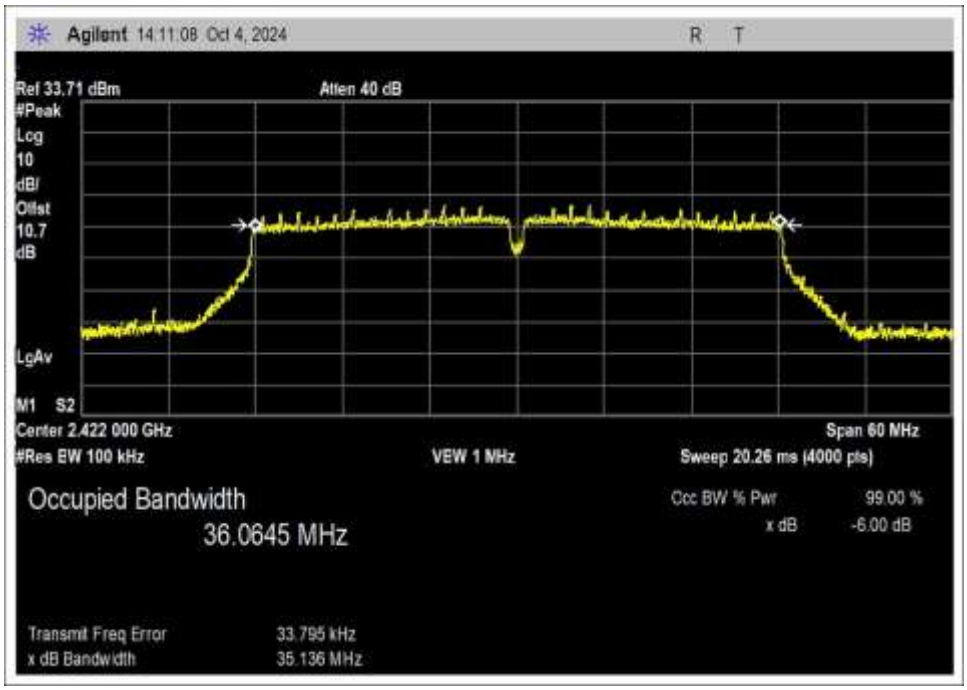
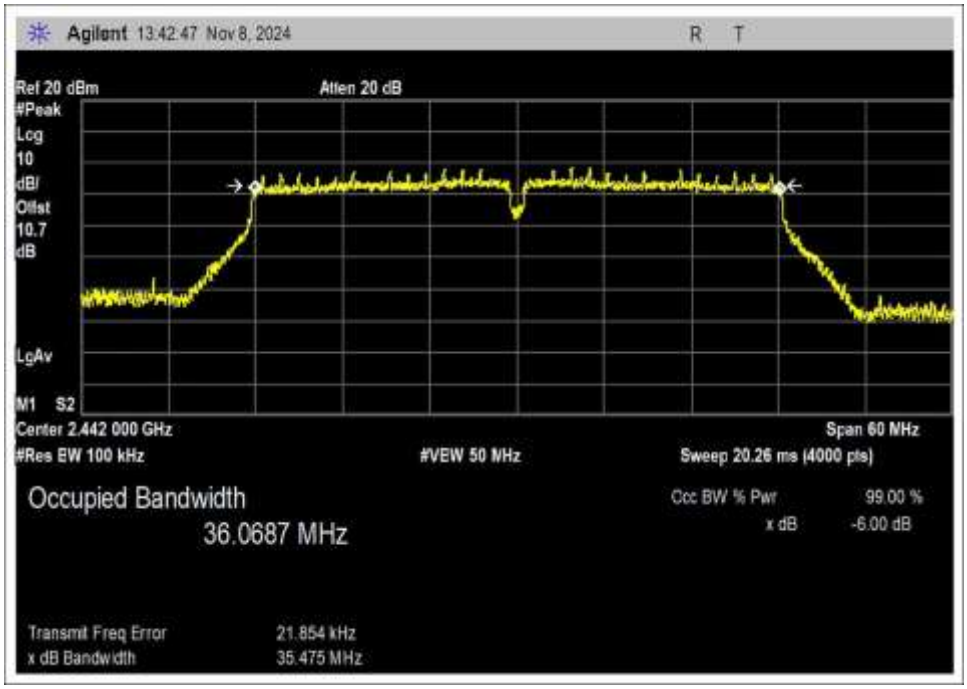


High Channel

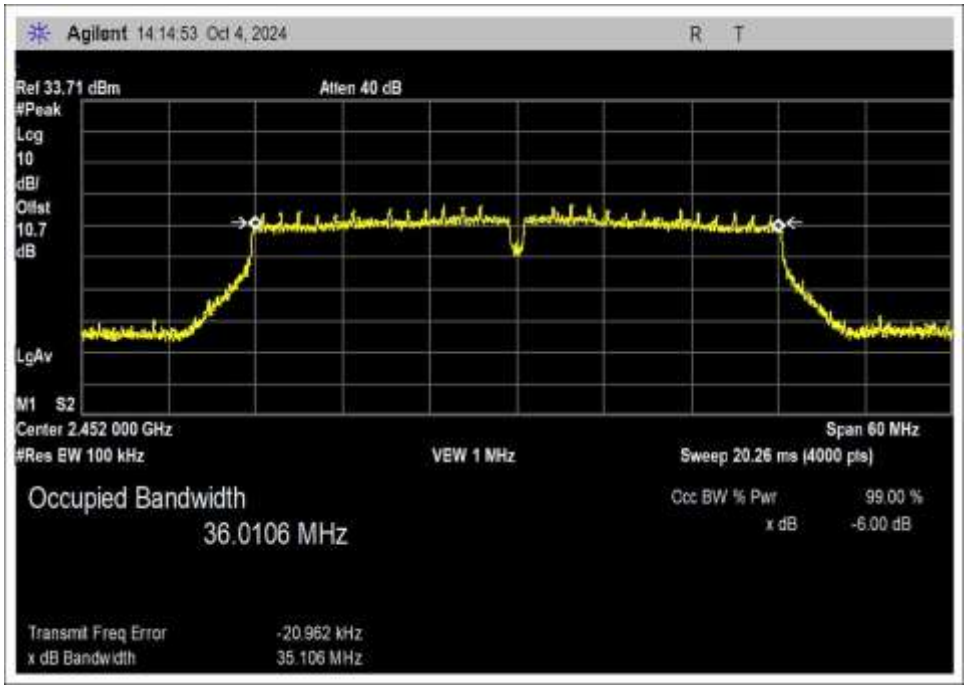
802.11n HT40 Modulation



Low Channel

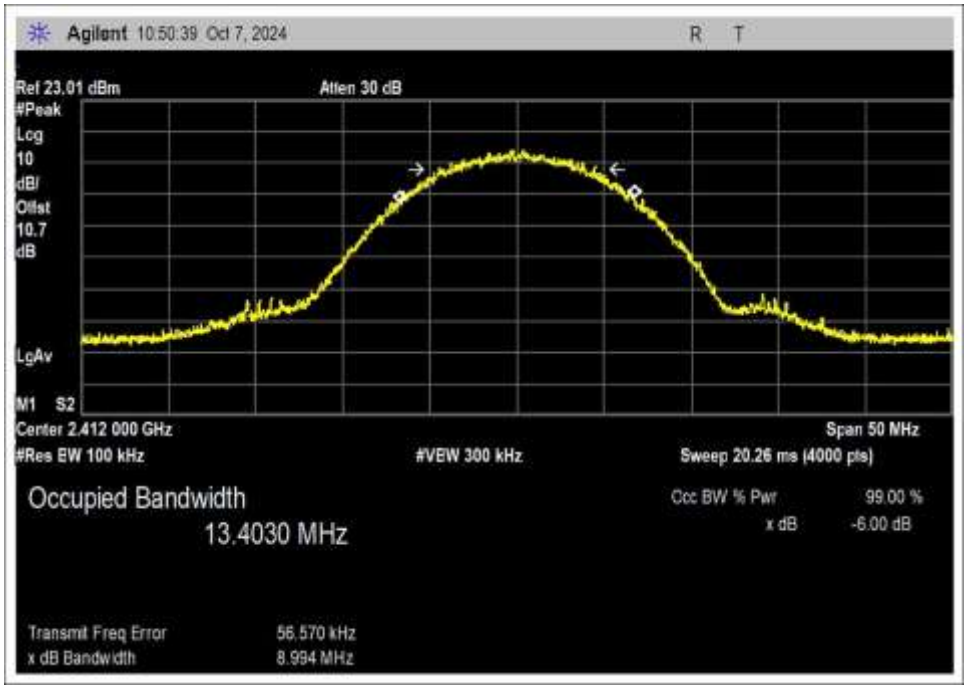


Middle Channel

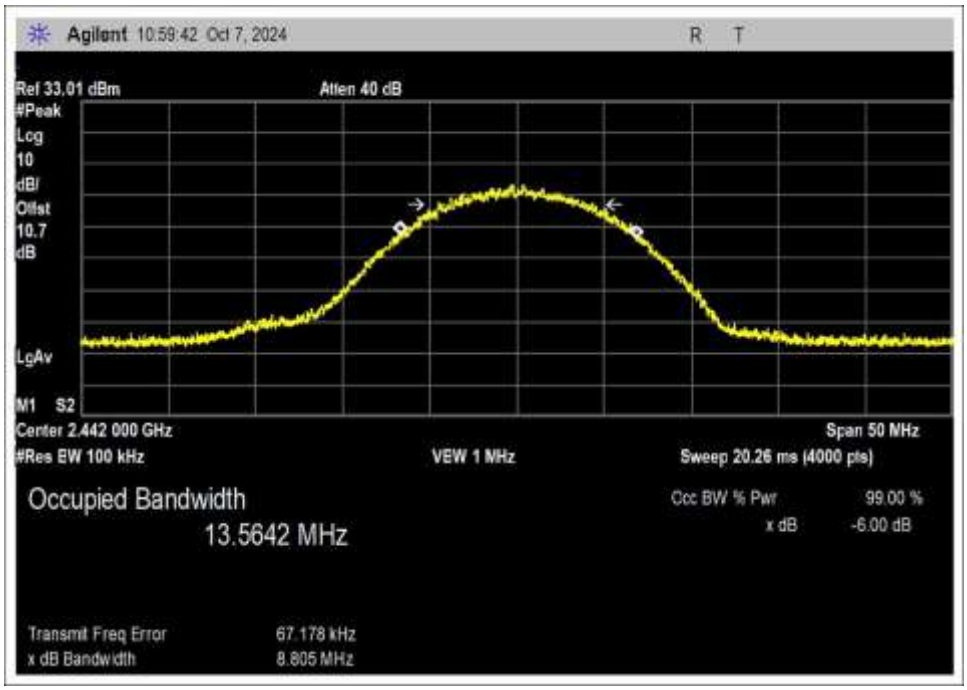


High Channel

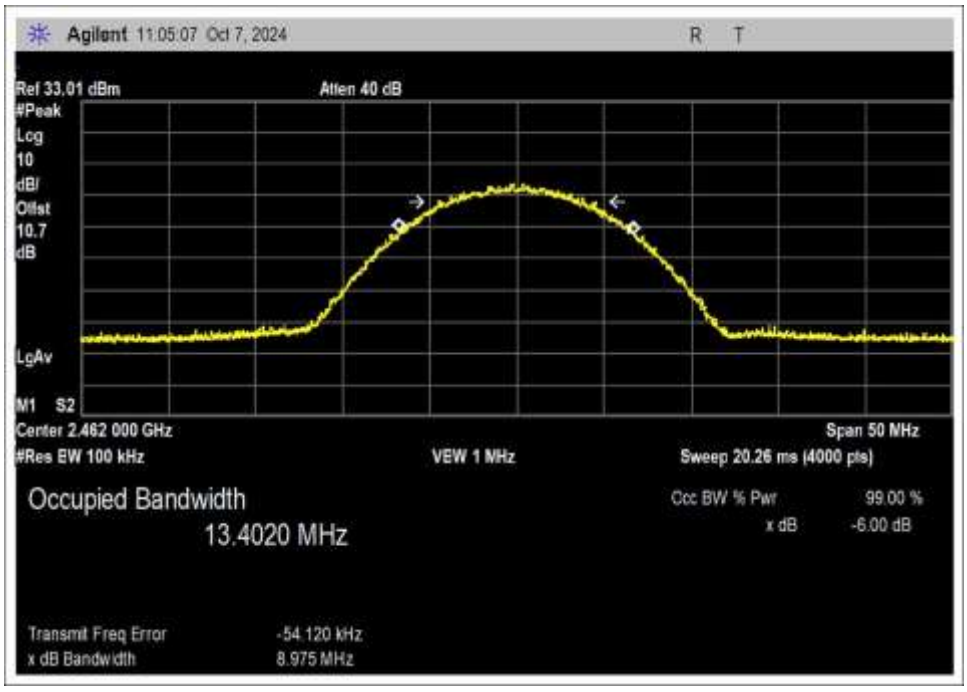
CHAIN 1
802.11b Modulation



Low Channel

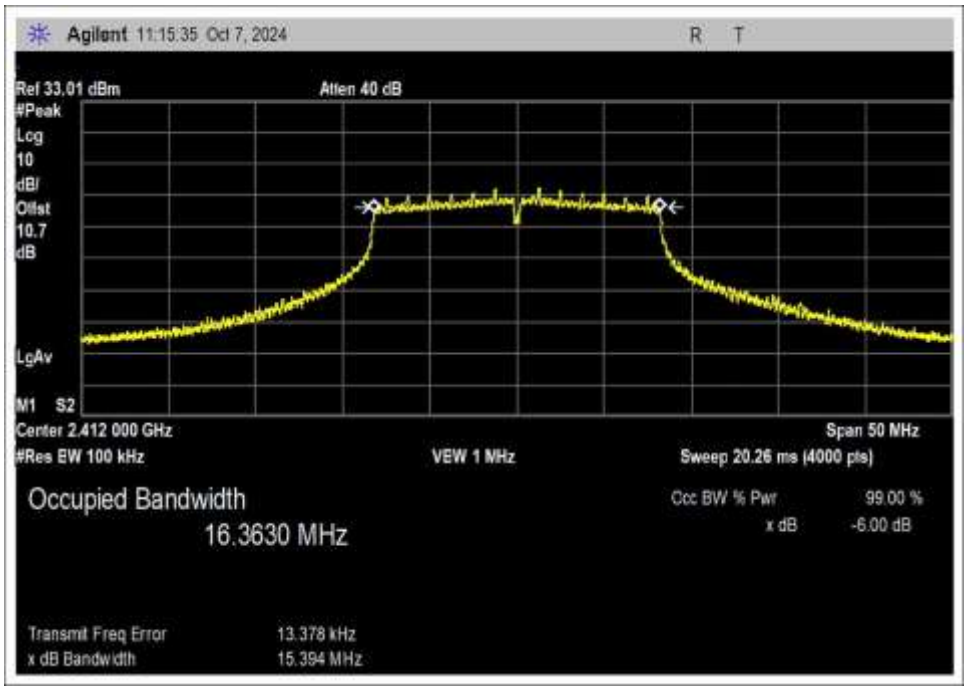


Middle Channel

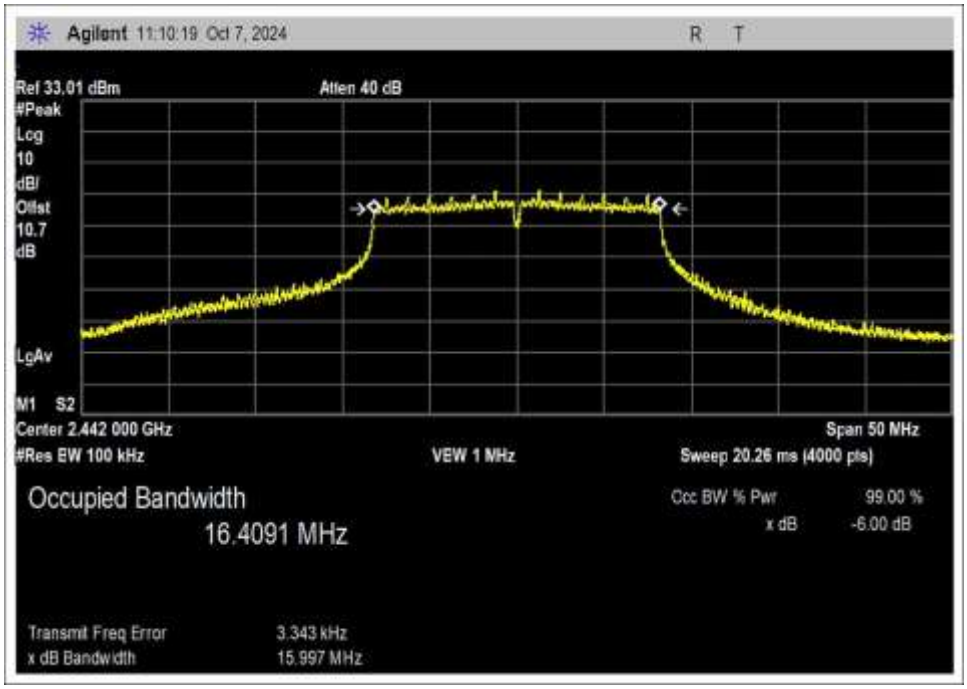


High Channel

802.11g Modulation



Low Channel



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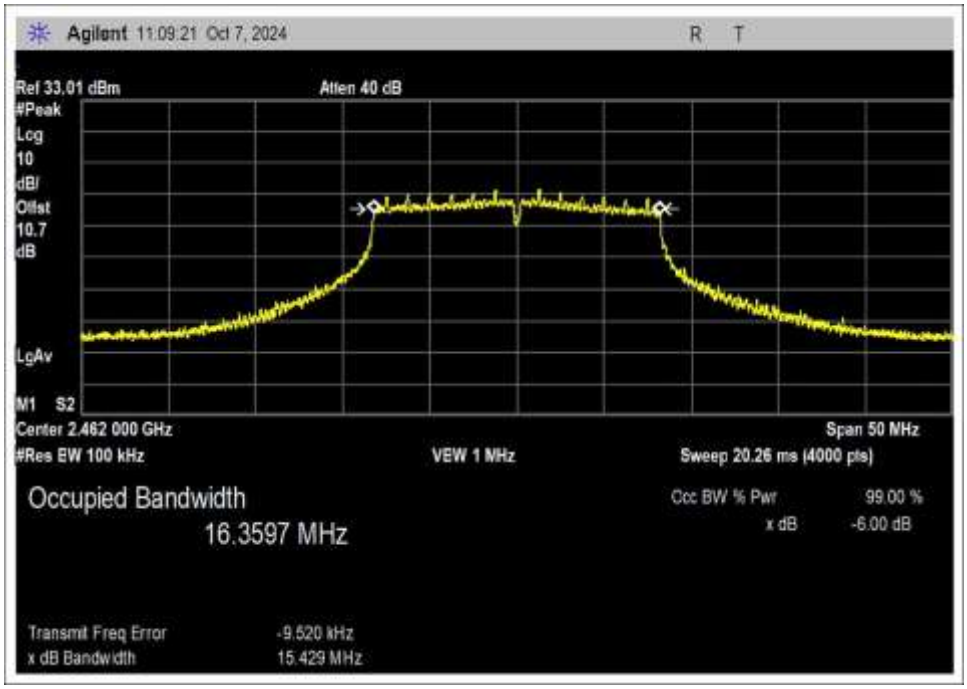
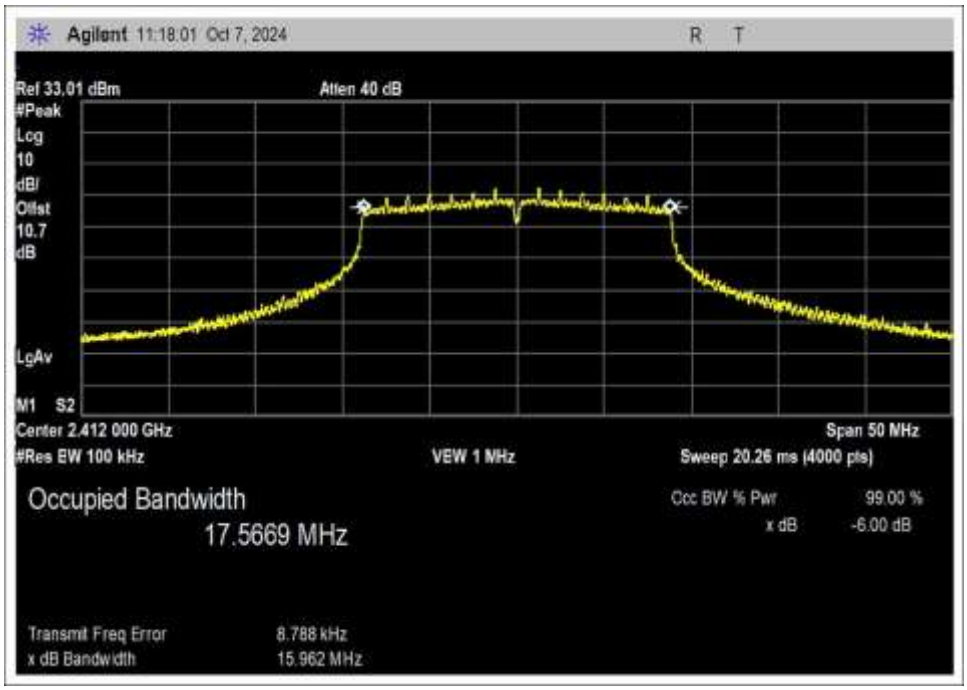
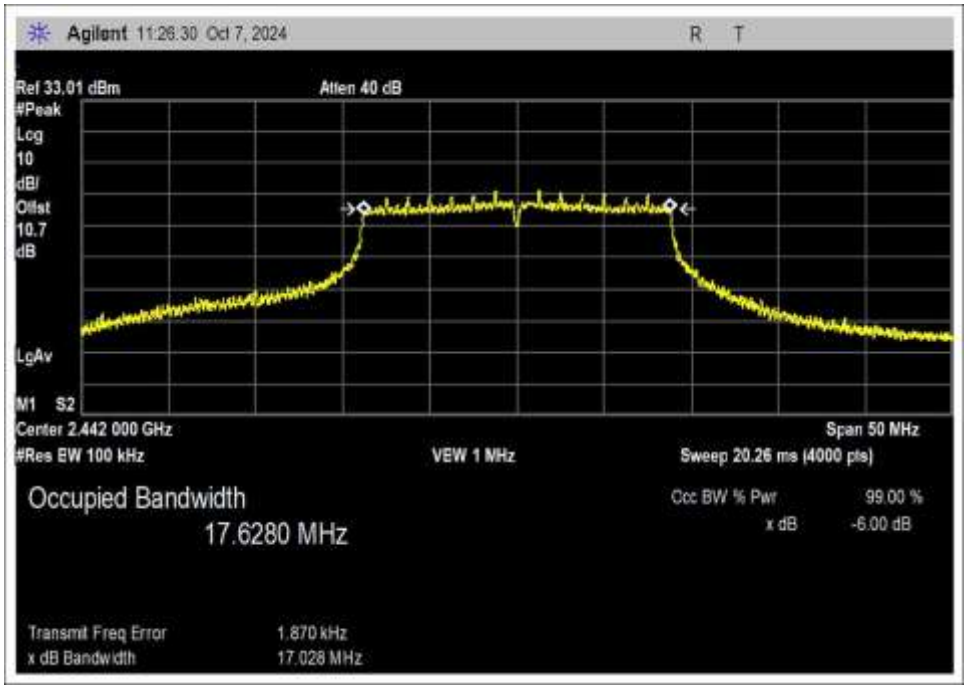


High Channel

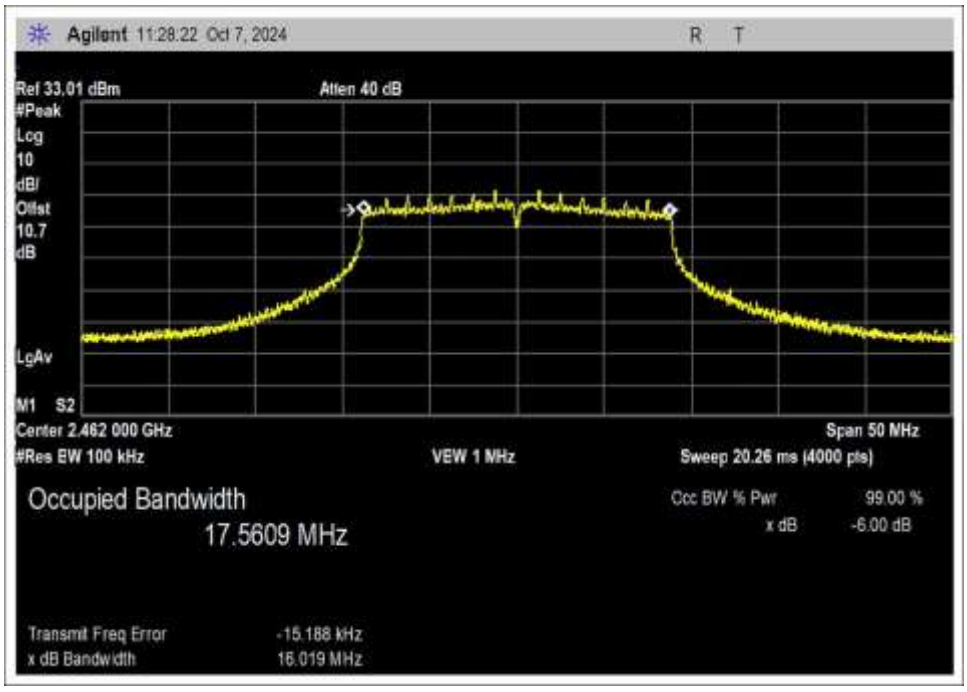
802.11n HT20 Modulation



Low Channel

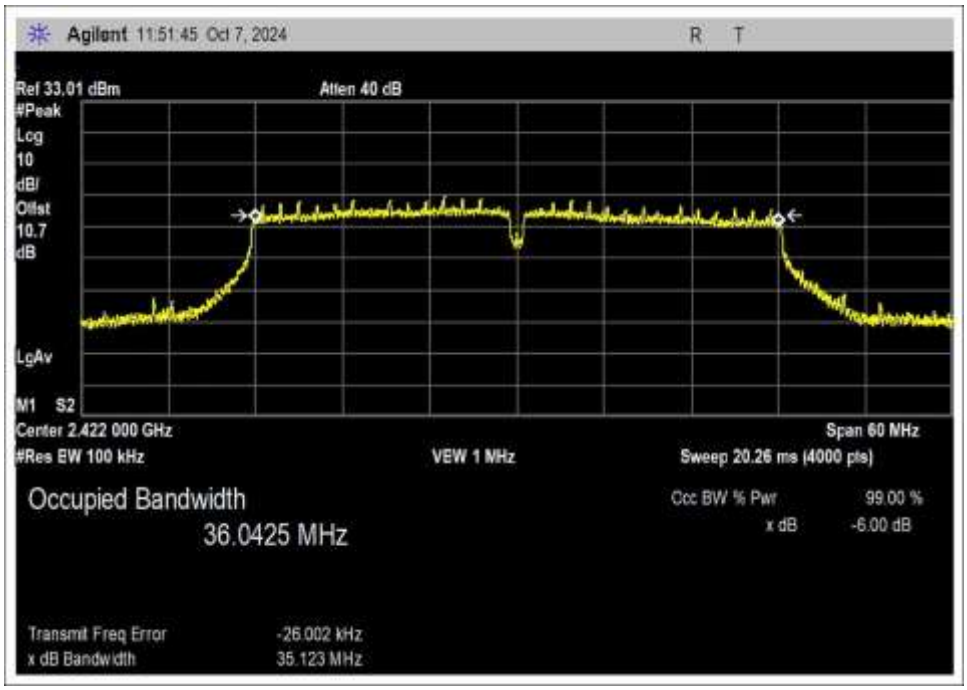


Middle Channel

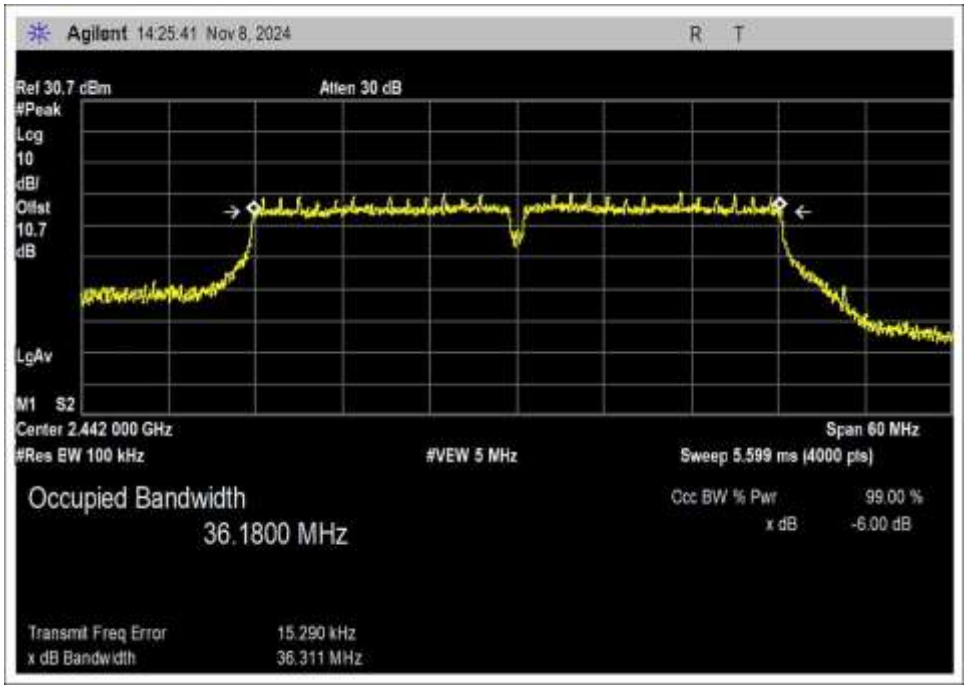


High Channel

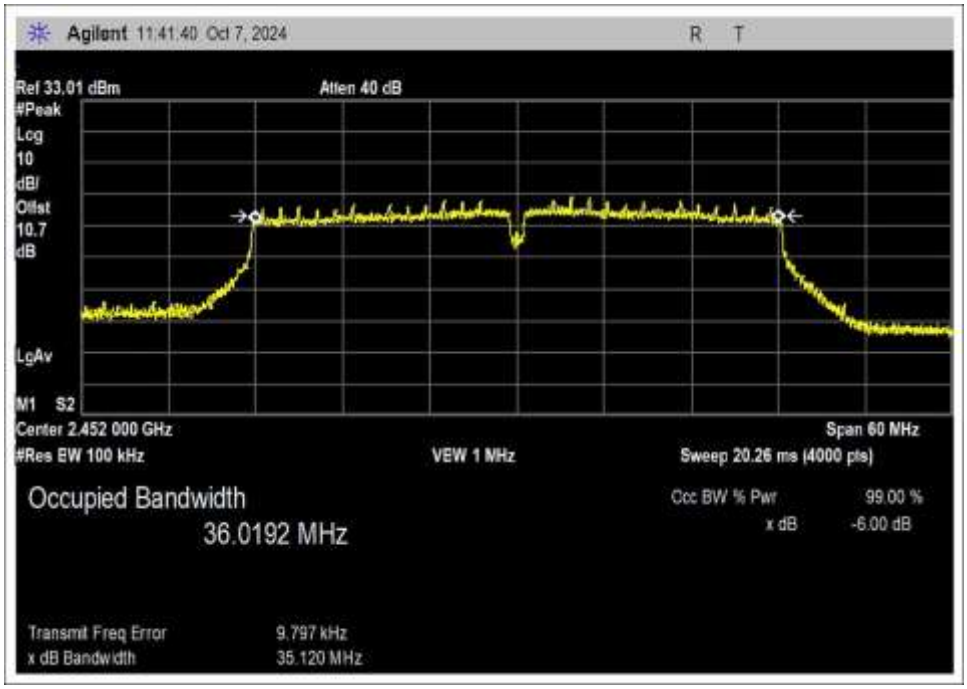
802.11n HT40 Modulation



Low Channel



Middle Channel



High Channel

Test Setup Photo(s)

Test Setup View

Test Setup, Closeup View

15.247(b)(3) Output Power

Test Setup / Conditions			
Test Location:	Bothell Lab Bench	Test Engineer:	Hieu Song Nguyenpham
Test Method:	ANSI C63.10 (2020), KDB 558074	Test Date(s):	11/08/2024
Configuration:	A		
Test Setup:	The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer.		

Environmental Conditions			
Temperature (ºC)	20.8	Relative Humidity (%):	37

Test Equipment					
Asset#	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
03013	Cable	Astrolab	32022-2-2909K-36TC	1/9/2024	1/9/2026
P07365	Attenuator	Weinschel	54A-10	5/26/2023	5/26/2025
03471	Spectrum Analyzer	Agilent	E4440A	2/23/2024	2/23/2026

Test Data Summary - Voltage Variations					
Frequency (MHz)	**Modulation / Ant Port**	**$V_{Minimum}$ (dBm)**	**$V_{Nominal}$ (dBm)**	**$V_{Maximum}$ (dBm)**	**Max Deviation from $V_{Nominal}$ (dB)**
2412	802.11g/1	15.29	15.28	15.28	0.01
2447	802.11g/1	14.61	14.61	14.61	0.00
2462	802.11g/1	14.42	14.42	14.43	0.01

Test performed using operational mode with the highest output power, representing worst case.

Parameter Definitions:

Measurements performed at input voltage Vnominal ± 15%.

Parameter	Value
$V_{Nominal}$:	12VDC
$V_{Minimum}$:	10.2VDC
$V_{Maximum}$:	13.8VDC

Test Data Summary - RF Conducted Measurement – CHAIN 0							
Measurement Option: AVGSA-1							
Frequency (MHz)	**Modulation**	**Ant. Type / Gain (dBi)**	**RF Conducted (dBm)**		**EIRP (dBm)**		**Results**
			Measured	**Limit**	**Calculated**	**Limit**	
2412	802.11b	External Connector /3.76	13.6	≤30	17.36	≤36	Pass
2447	802.11b	External Connector /3.76	13.45	≤30	17.21	≤36	Pass
2462	802.11b	External Connector /3.76	13.20	≤30	16.96	≤36	Pass
2412	802.11g	External Connector /3.76	13.79	≤30	17.55	≤36	Pass
2447	802.11g	External Connector /3.76	13.44	≤30	17.2	≤36	Pass
2462	802.11g	External Connector /3.76	13.40	≤30	17.16	≤36	Pass
2412	802.11n HT20	External Connector /3.76	13.22	≤30	16.98	≤36	Pass
2447	802.11n HT20	External Connector /3.76	13.39	≤30	17.15	≤36	Pass
2462	802.11n HT20	External Connector /3.76	13.29	≤30	17.05	≤36	Pass
2422	802.11n HT40	External Connector /3.76	11.01	≤30	16.76	≤36	Pass
2447	802.11n HT40	External Connector /3.76	11.29	≤30	14.77	≤36	Pass
2452	802.11n HT40	External Connector /3.76	11.43	≤30	15.05	≤36	Pass

Test Data Summary - RF Conducted Measurement – CHAIN 1							
Measurement Option: AVGSA-1							
Frequency (MHz)	**Modulation**	**Ant. Type / Gain (dBi)**	**RF Conducted (dBm)**		**EIRP (dBm)**		**Results**
			Measured	**Limit**	**Calculated**	**Limit**	
2412	802.11b	External Connector /3.76	14.56	≤30	18.32	≤36	Pass
2442	802.11b	External Connector /3.76	13.95	≤30	17.71	≤36	Pass
2462	802.11b	External Connector /3.76	14.21	≤30	17.97	≤36	Pass
2412	802.11g	External Connector /3.76	15.28	≤30	19.04	≤36	Pass
2442	802.11g	External Connector /3.76	14.61	≤30	18.37	≤36	Pass
2462	802.11g	External Connector /3.76	14.42	≤30	18.18	≤36	Pass
2412	802.11n HT20	External Connector /3.76	15.14	≤30	18.9	≤36	Pass
2442	802.11n HT20	External Connector /3.76	14.45	≤30	18.21	≤36	Pass
2462	802.11n HT20	External Connector /3.76	14.24	≤30	18	≤36	Pass
2422	802.11n HT40	External Connector /3.76	14.94	≤30	18.7	≤36	Pass
2442	802.11n HT40	External Connector /3.76	14.33	≤30	18.09	≤36	Pass
2452	802.11n HT40	External Connector /3.76	14.58	≤30	18.34	≤36	Pass

EIRP is calculated as RF conducted power (dBm) + antenna gain (dBi).

For fixed point-to-point antennas, the limit is calculated in accordance with 15.247(c)(1):

$$Limit = 30 - Roundup\left(\frac{G-6}{3}\right)$$

For all other antennas, the RF conducted power limit is calculated according to a maximum of 1W (30 dBm) conducted power with a maximum of 6dBi gain antenna in accordance with 15.247(b):

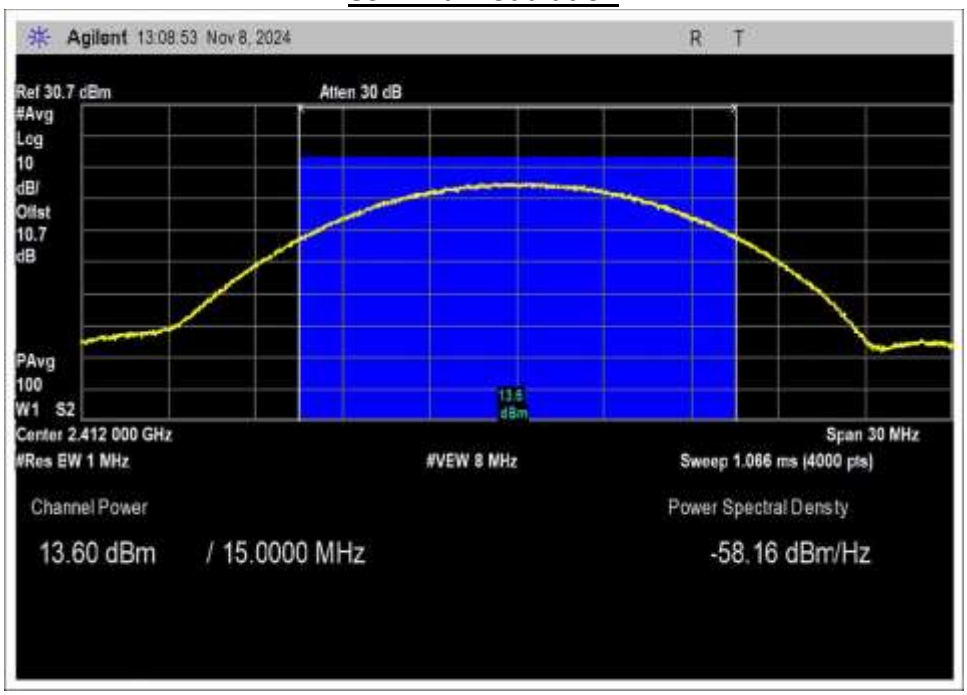
$$Limit = 30 - Roundup(G - 6)$$

For directional beamforming antennas, the limit is calculated in accordance with 15.247(c)(2) and KDB 662911.

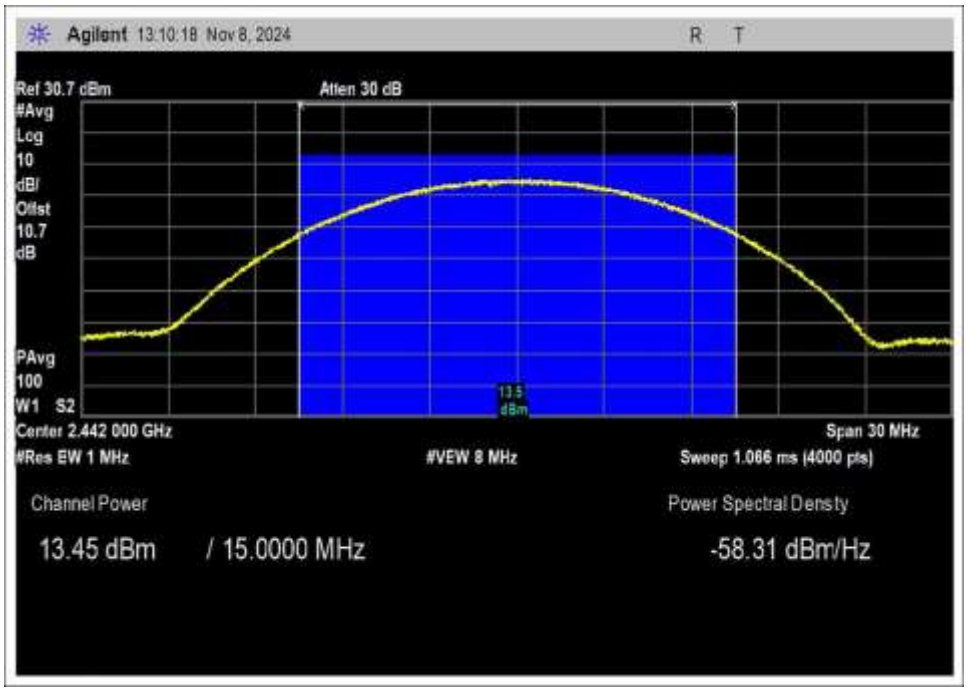
Plots

Chain 0

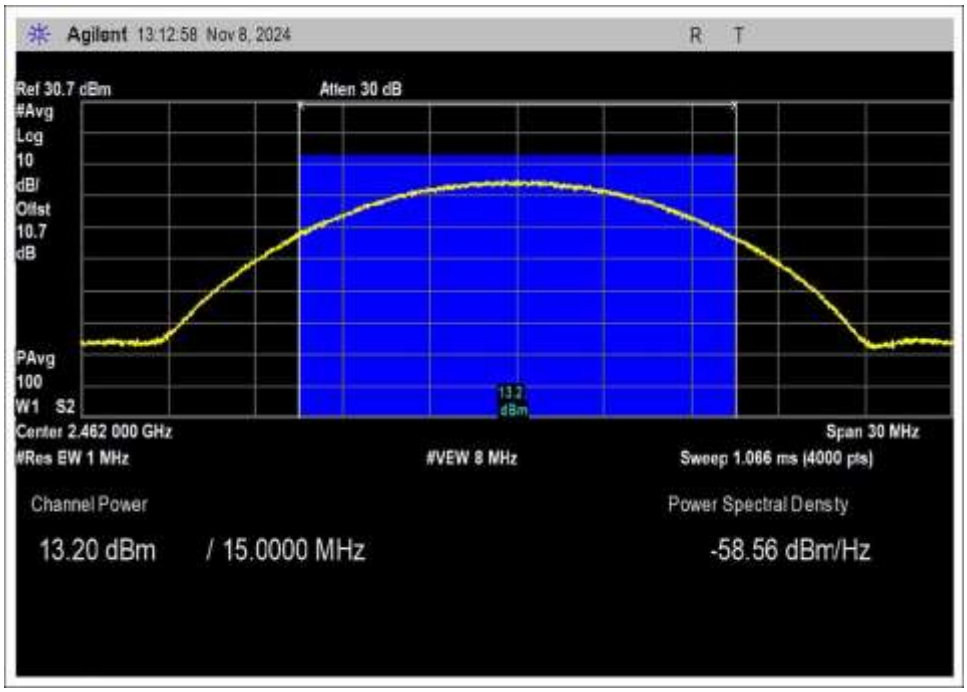
802.11b Modulation



Low Channel

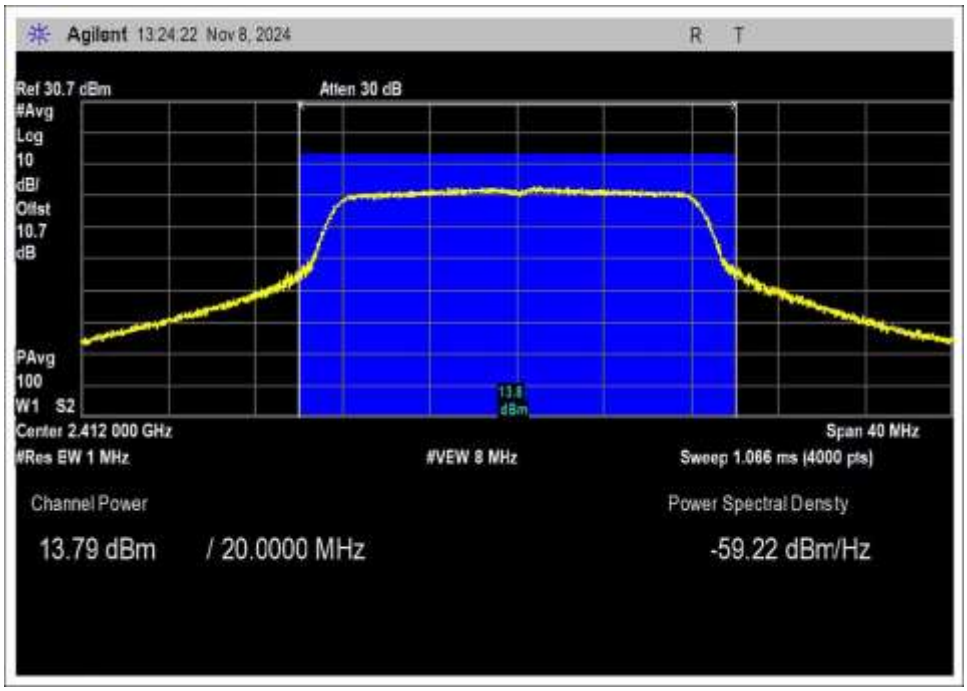


Middle Channel

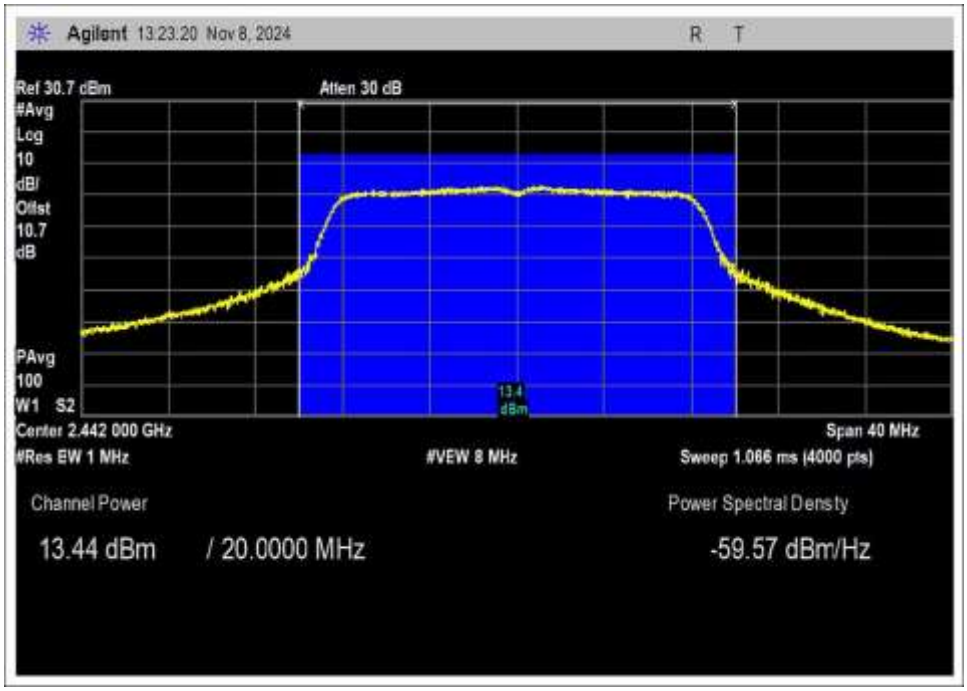


High Channel

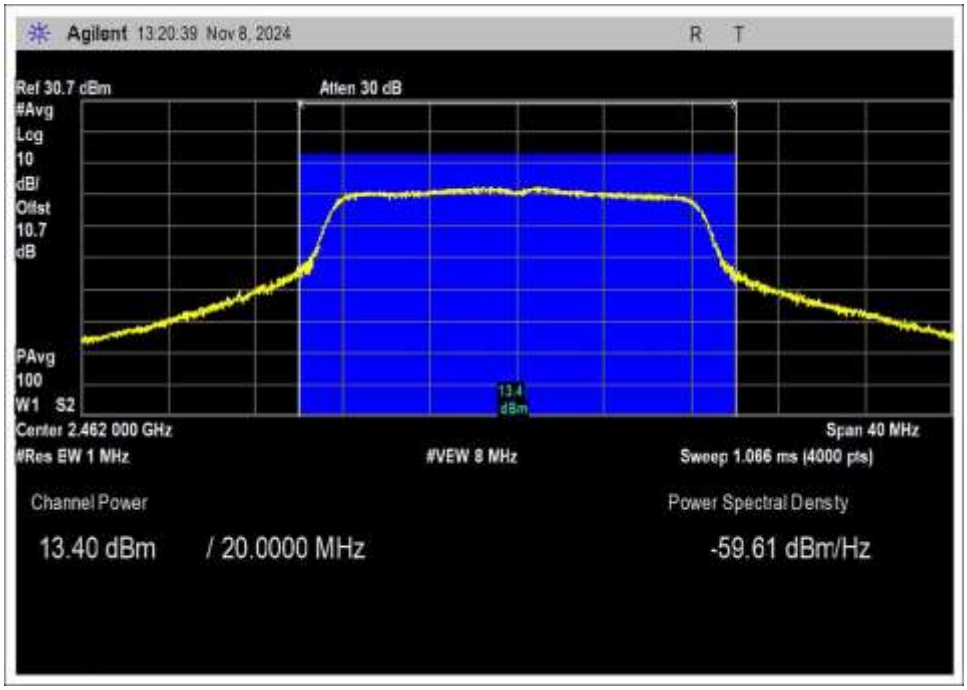
802.11g Modulation



Low Channel

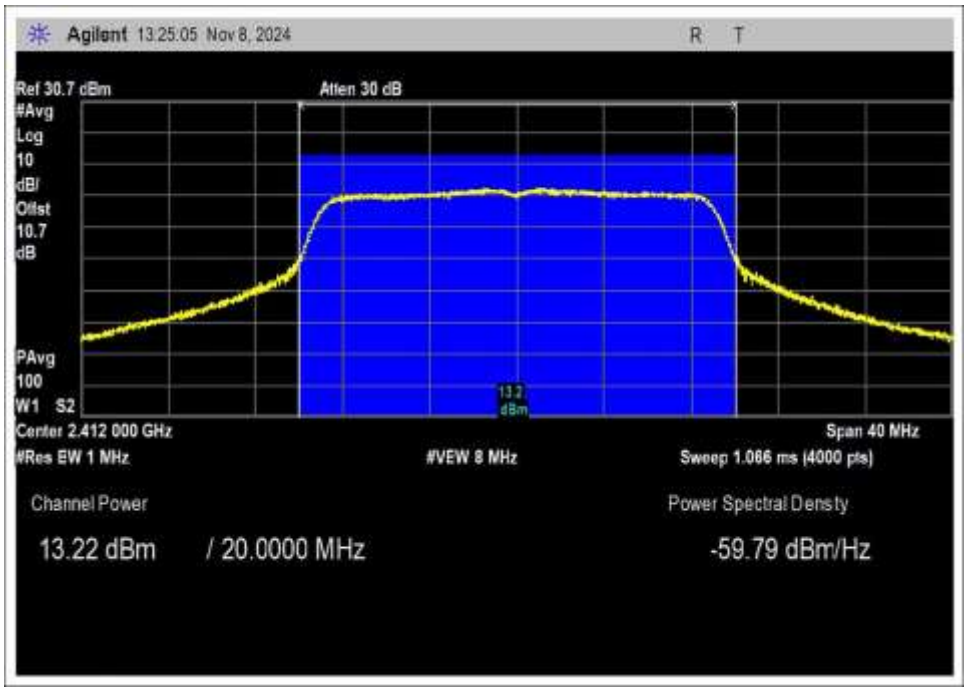


Middle Channel

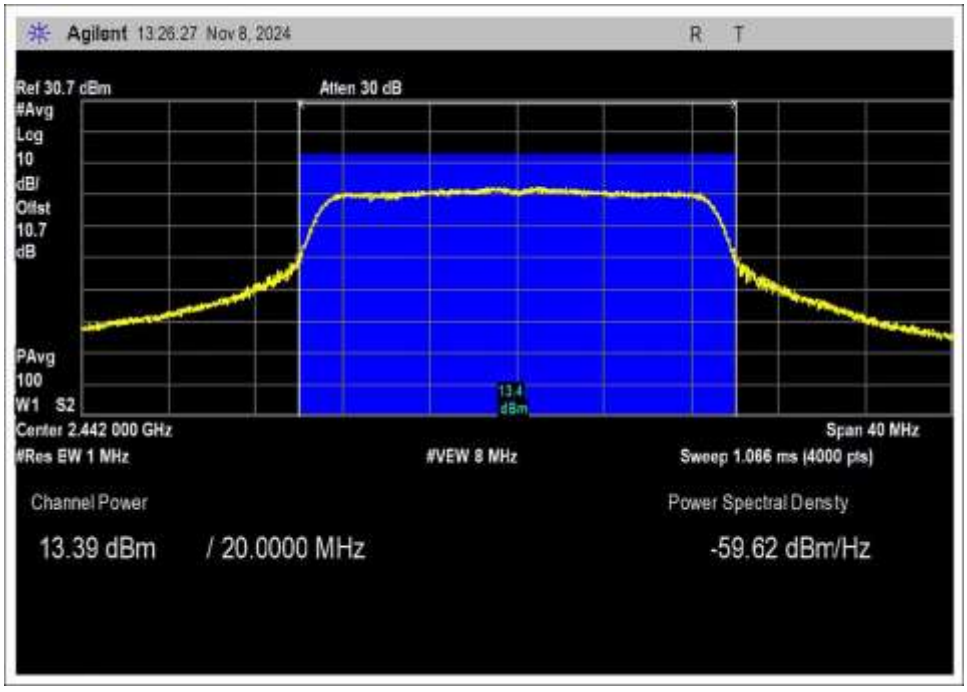


High Channel

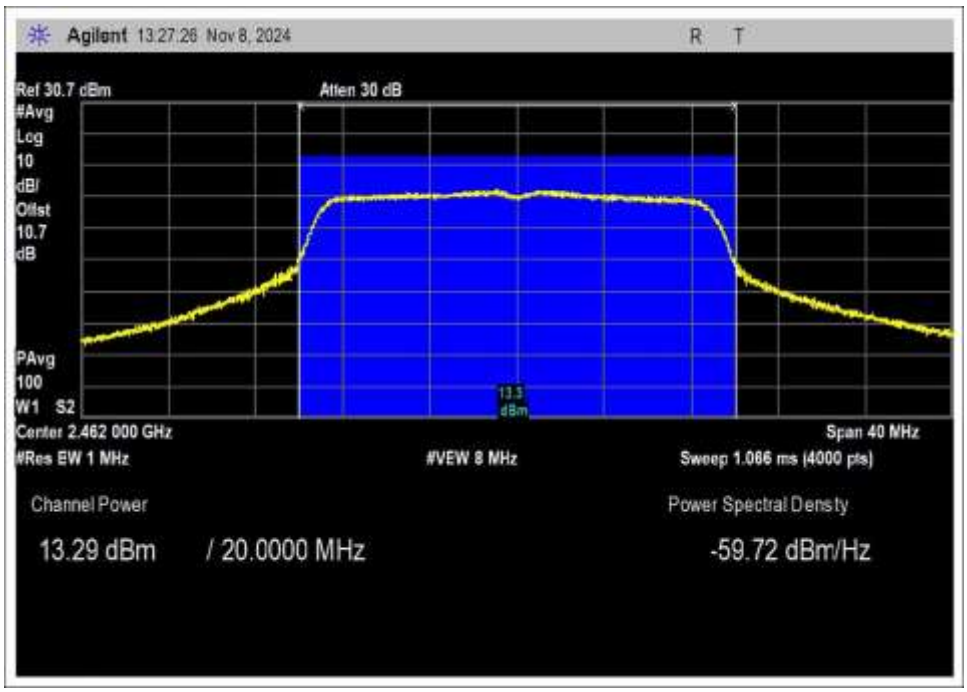
802.11n HT20 Modulation



Low Channel

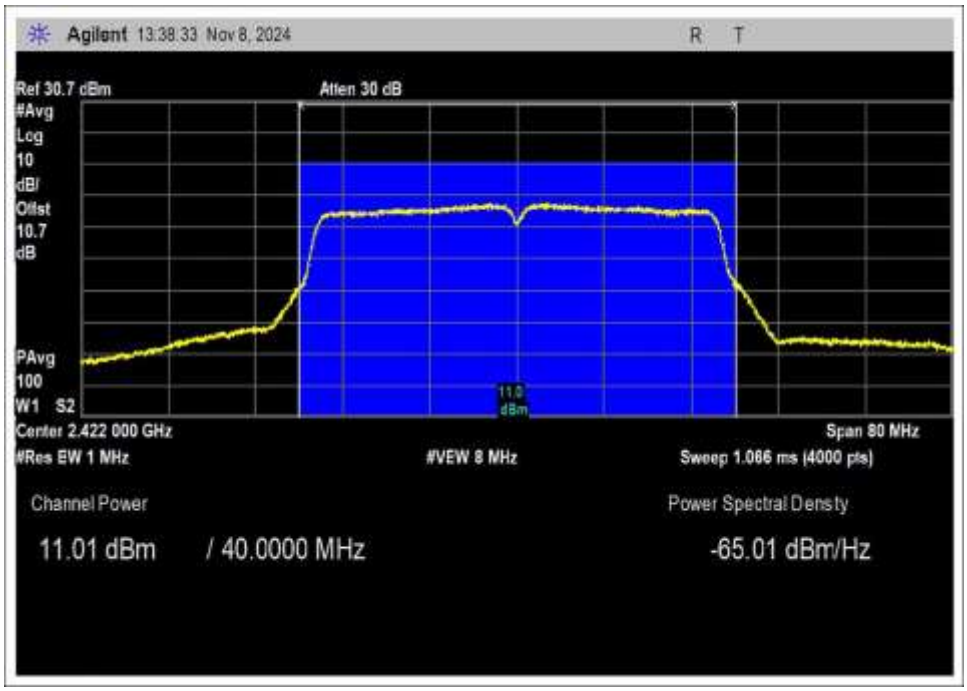


Middle Channel

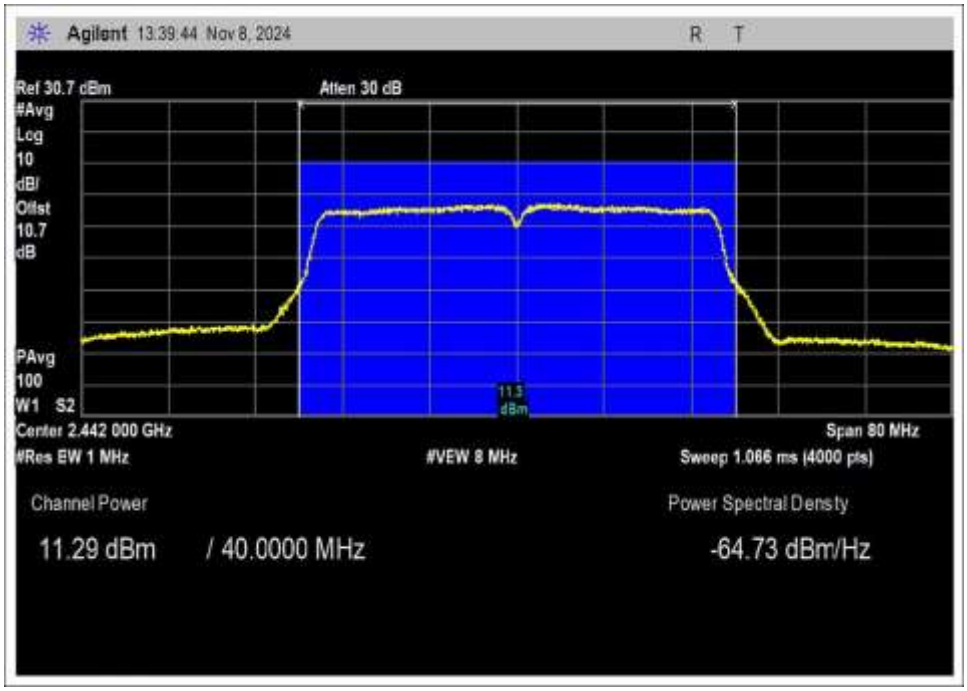


High Channel

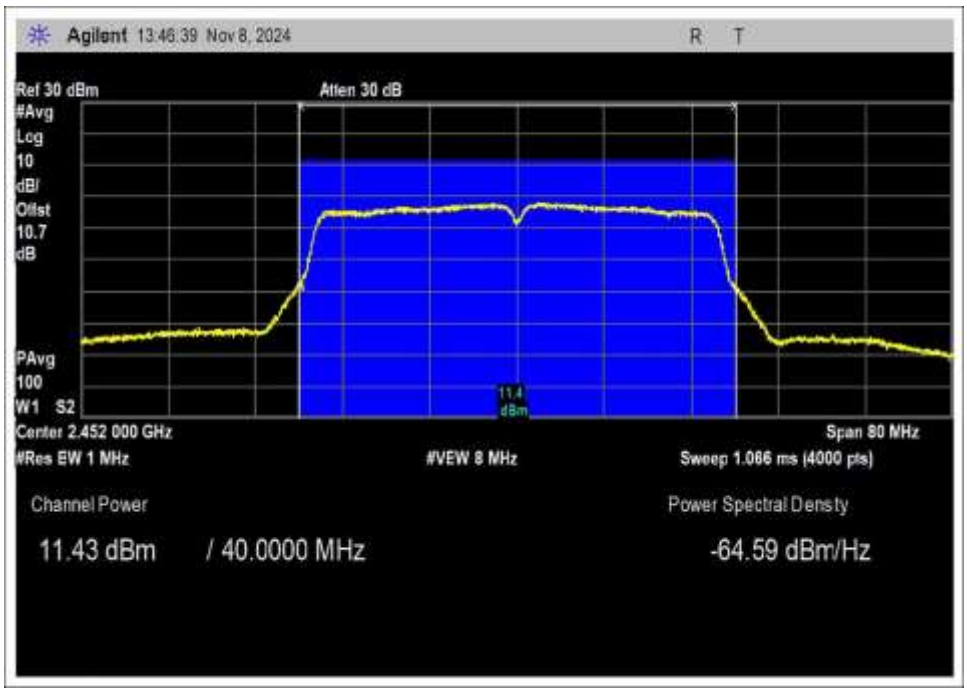
802.11n HT40 Modulation



Low Channel

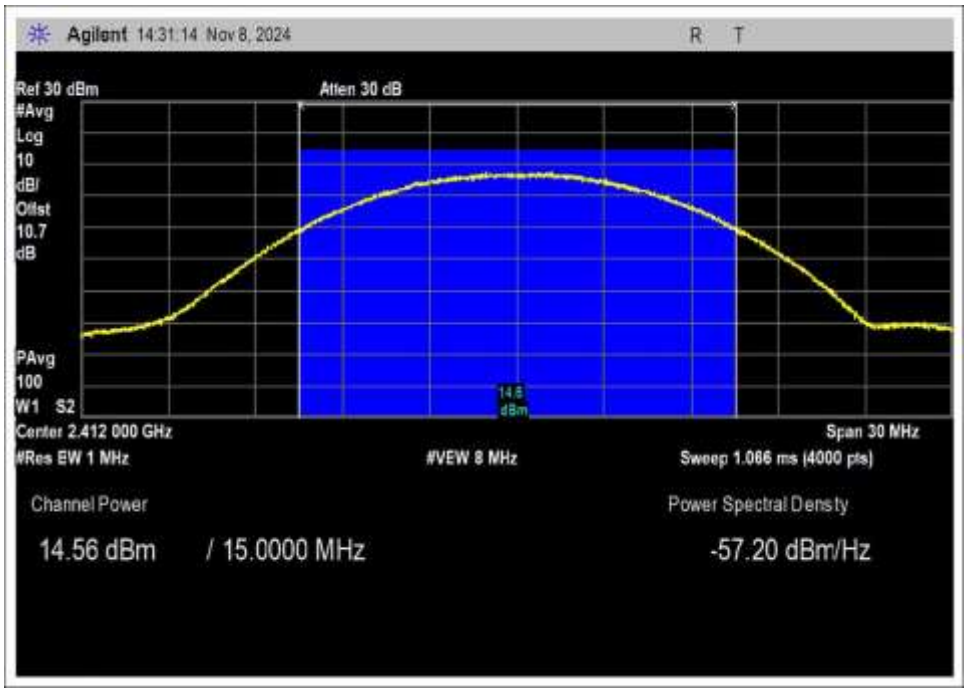


Middle Channel

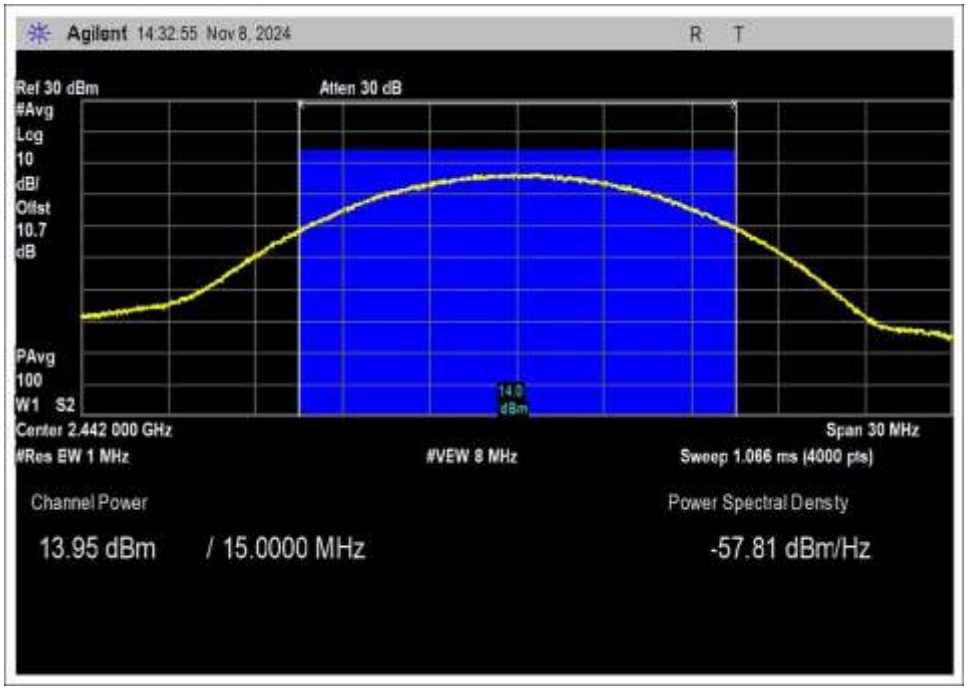


High Channel

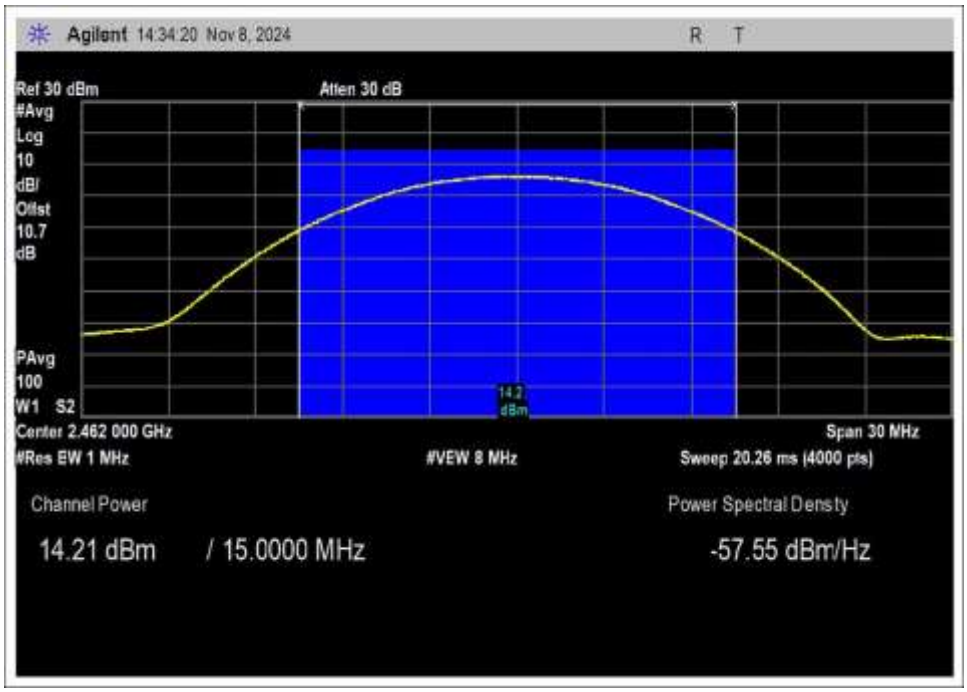
Chain 1
802.11b Modulation



Low Channel

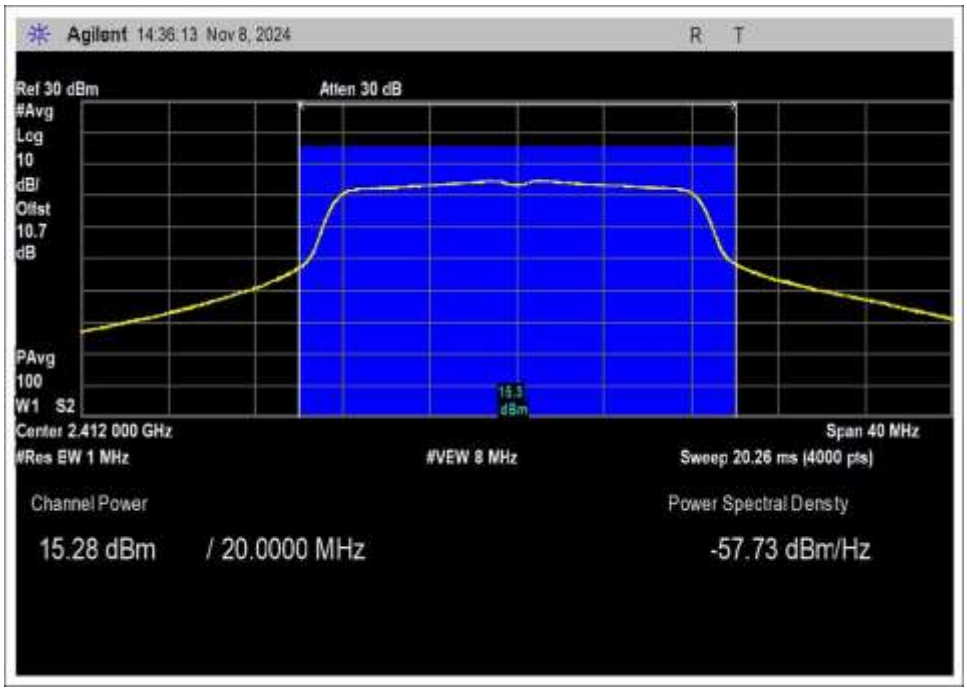


Middle Channel

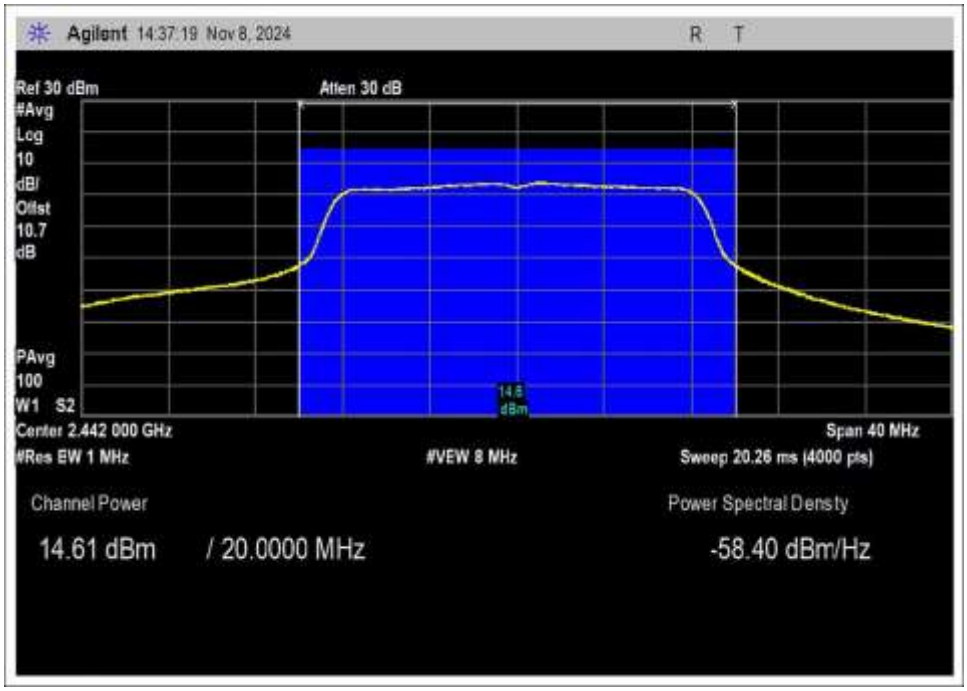


High Channel

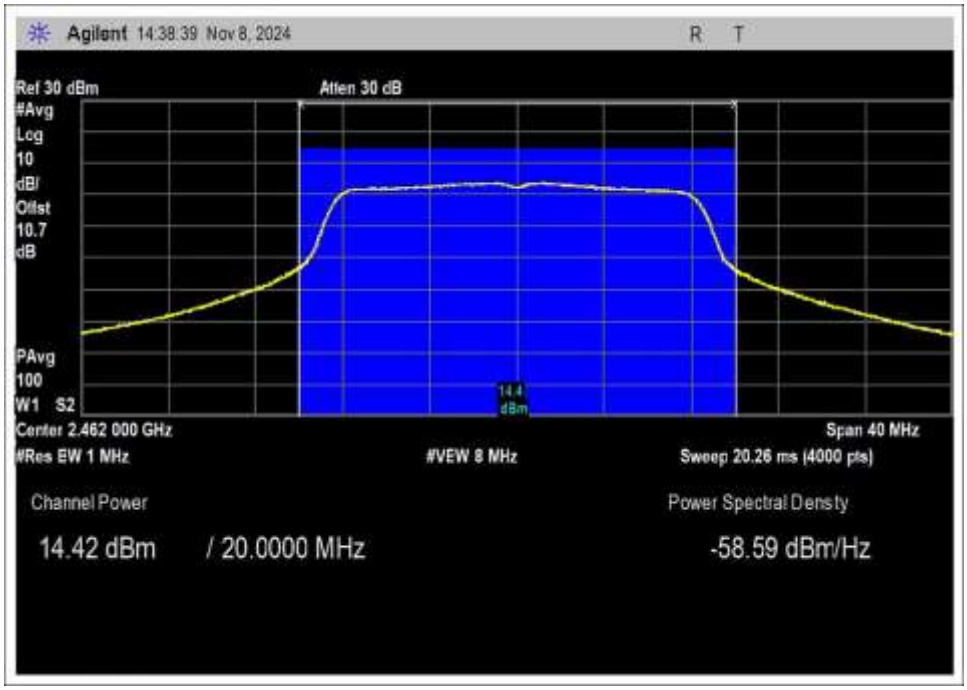
802.11g Modulation



Low Channel

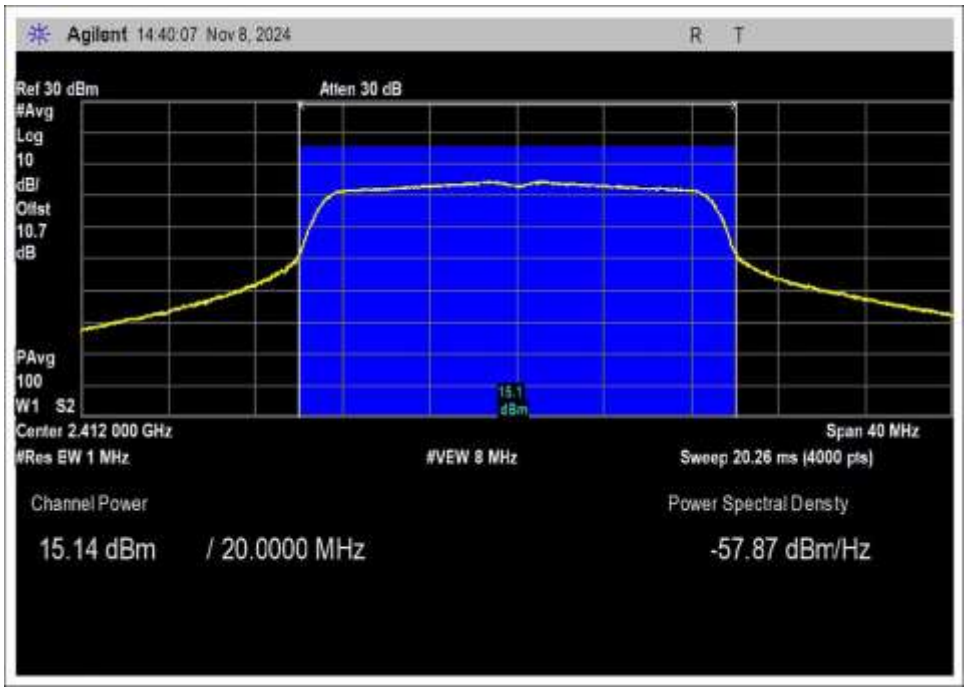


Middle Channel

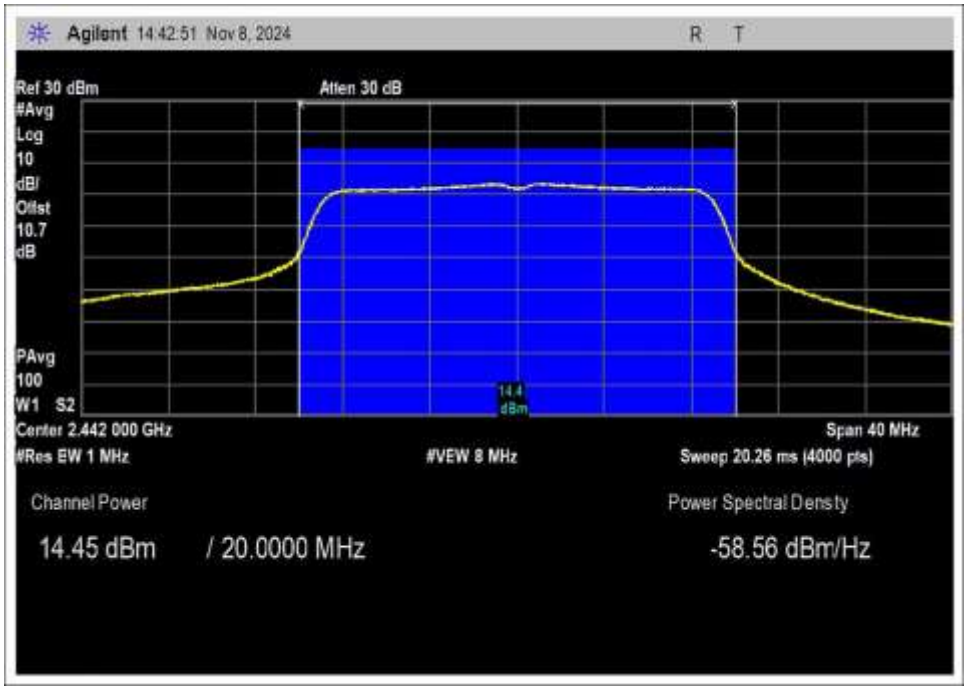


High Channel

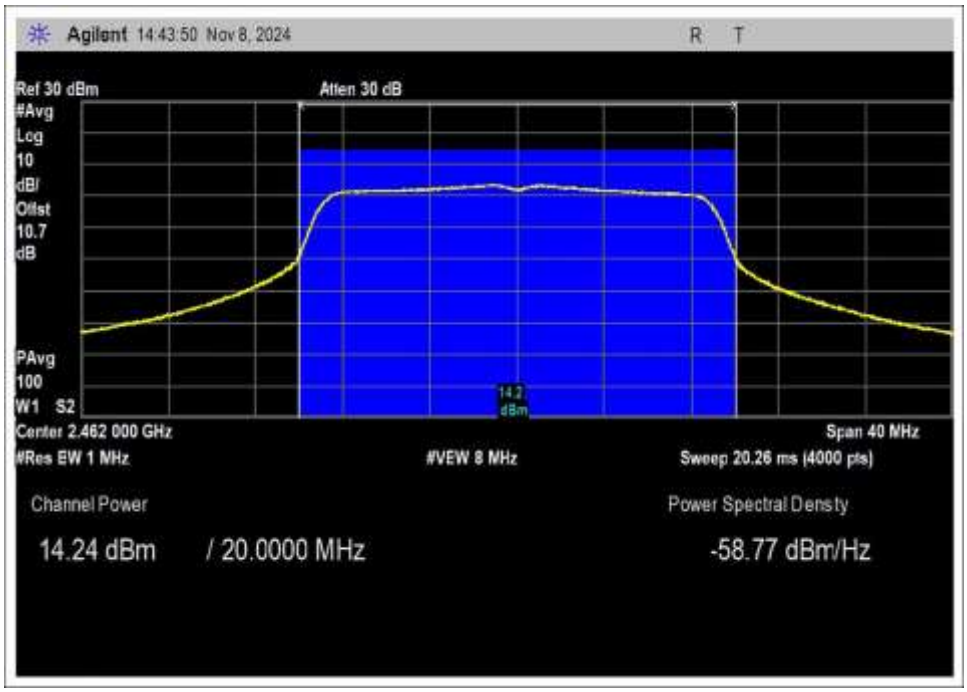
802.11n HT20 Modulation



Low Channel

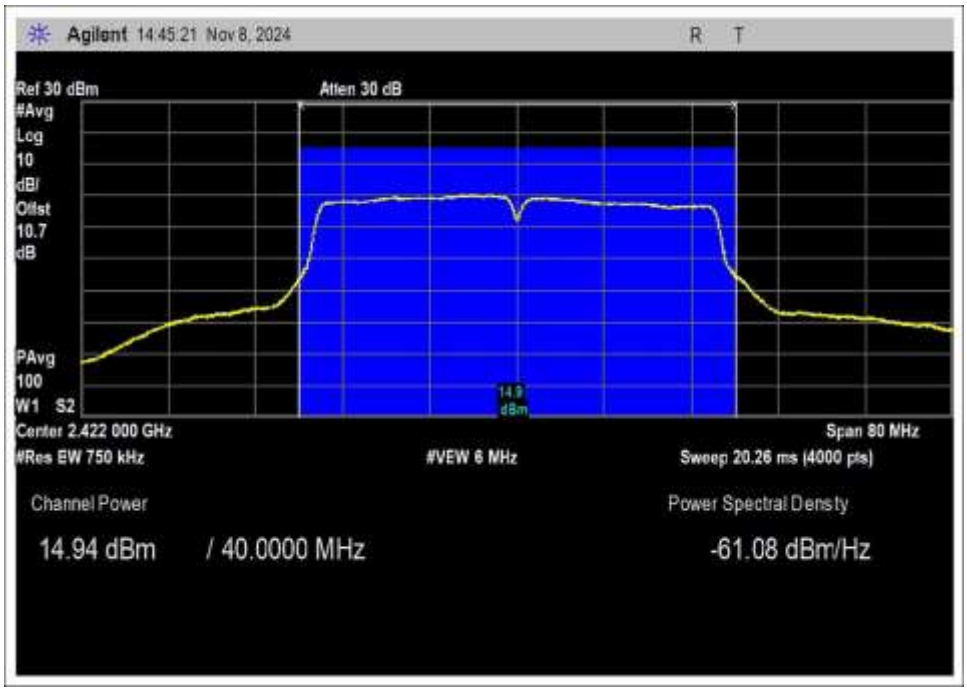


Middle Channel

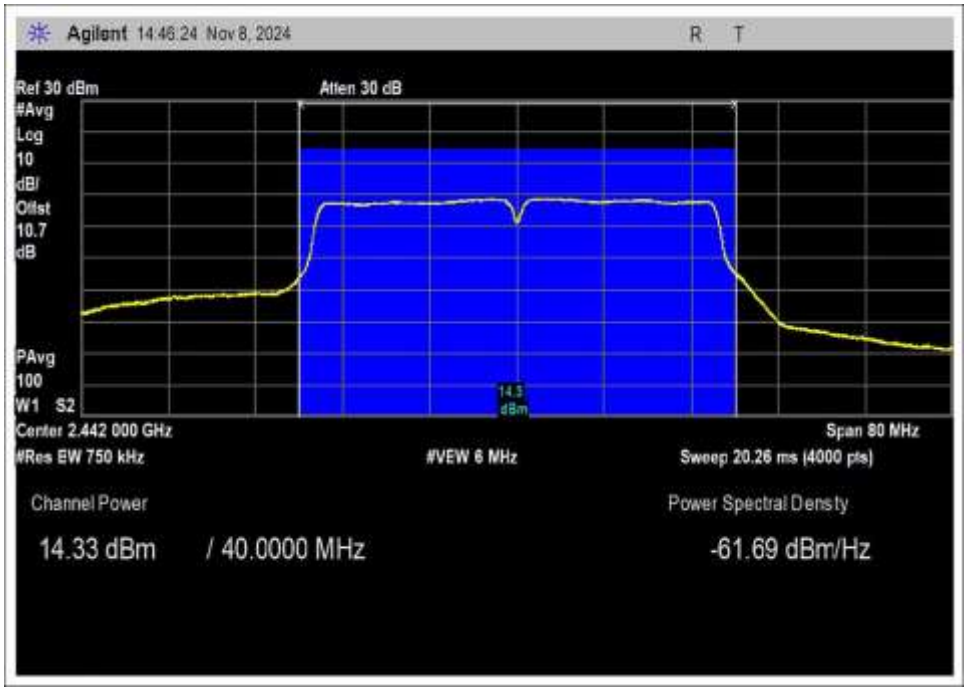


High Channel

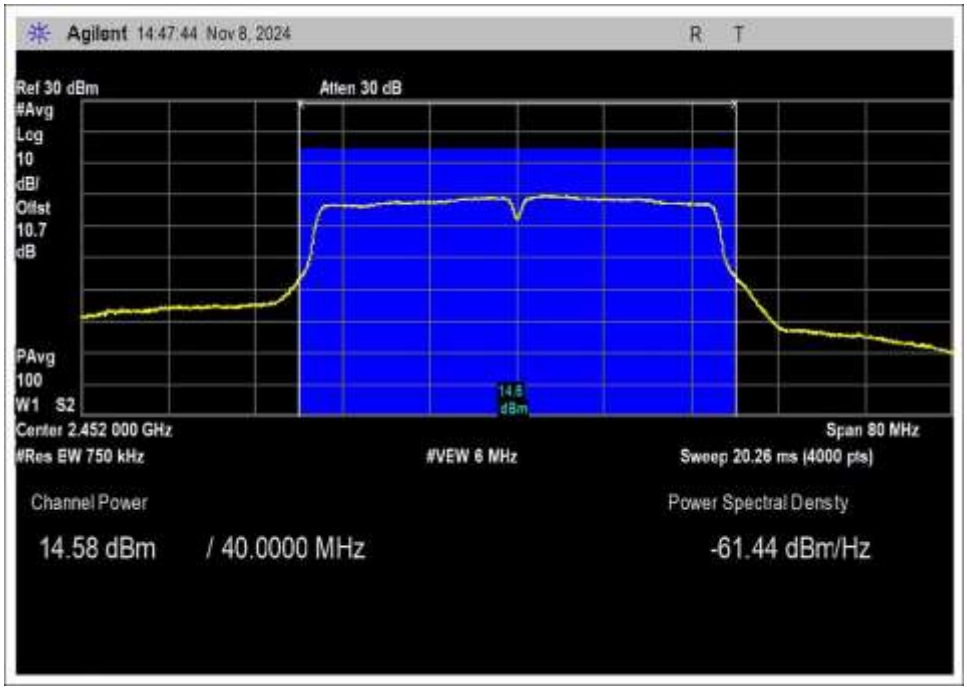
802.11n HT40 Modulation



Low Channel



Middle Channel



High Channel

Test Setup Photo(s)

Test Setup

Test Setup, Closeup View

15.247(d) RF Conducted Emissions & Band Edge

Test Setup/Conditions			
Test Location:	Fremont Lab Bench	Test Engineer:	Hieu Song Nguyenpham
Test Method:	ANSI C63.10 (2020), KDB 558074	Test Date(s):	11/08/2024 and 11/11/2024
Configuration:	A		
Set up	The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer.		
Note	Choose the lowest limit for all Conducted Spurious Emission for both Chain 0 and Chain 1		

Test Setup / Conditions / Data

Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170
Customer: **Tonal**
Specification: **15.247(d) Conducted Spurious Emissions**
Work Order #: **110285** Date: 11/11/2024
Test Type: **Conducted Emission on Antenna Port** Time: 3:57:00 PM
Tested By: Hieu Song Nguyenpham Sequence#: 20
Software: EMITest 5.03.20

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

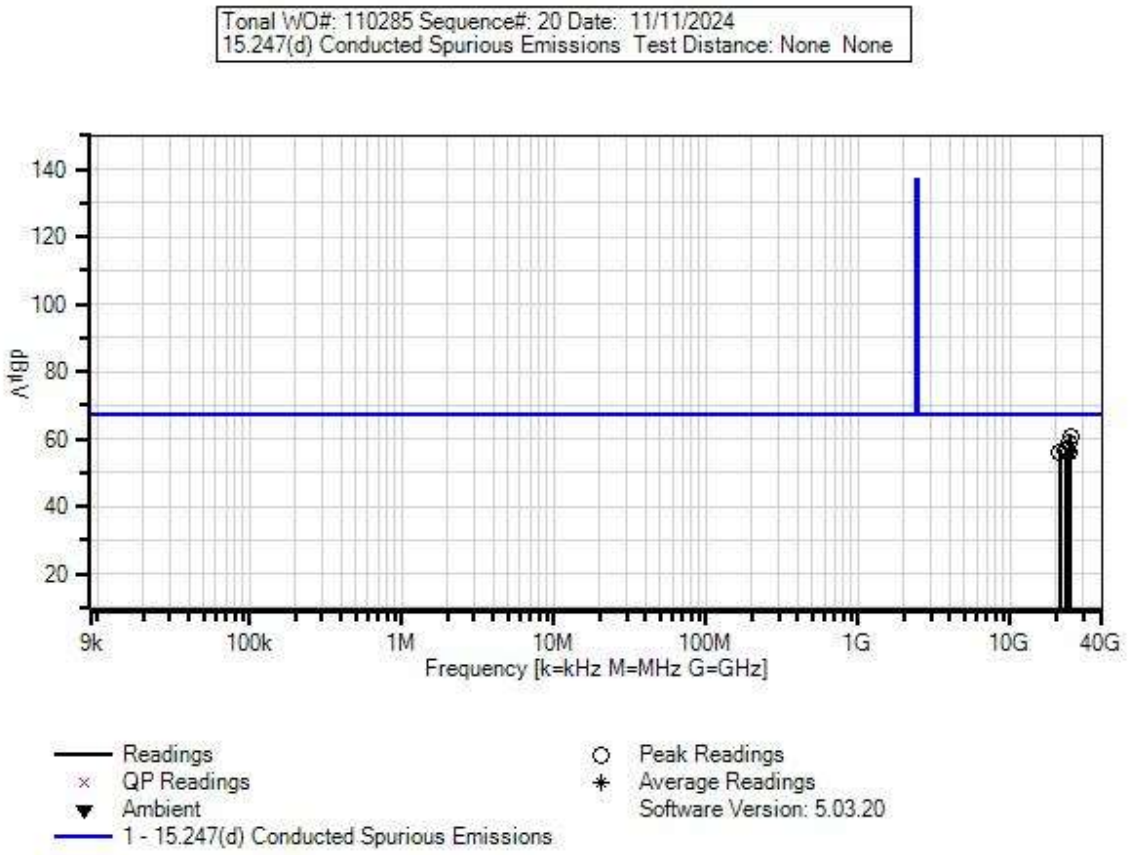
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
Low Channel-802.11b -Chain 0



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24699.665 M	47.9	+10.0	+2.8			+0.0	60.7	67.5	-6.8	None
2	24506.593 M	46.0	+10.1	+2.7			+0.0	58.8	67.5	-8.7	None
3	23863.019 M	44.5	+10.1	+2.7			+0.0	57.3	67.5	-10.2	None
4	23230.171 M	44.3	+10.1	+2.6			+0.0	57.0	67.5	-10.5	None
5	23112.182 M	44.1	+10.1	+2.6			+0.0	56.8	67.5	-10.7	None
6	23391.064 M	44.0	+10.0	+2.6			+0.0	56.6	67.5	-10.9	None
7	23026.372 M	43.6	+10.1	+2.6			+0.0	56.3	67.5	-11.2	None
8	21213.638 M	43.3	+10.1	+2.5			+0.0	55.9	67.5	-11.6	None
9	24141.901 M	43.1	+10.1	+2.7			+0.0	55.9	67.5	-11.6	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	4:02:21 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	21
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

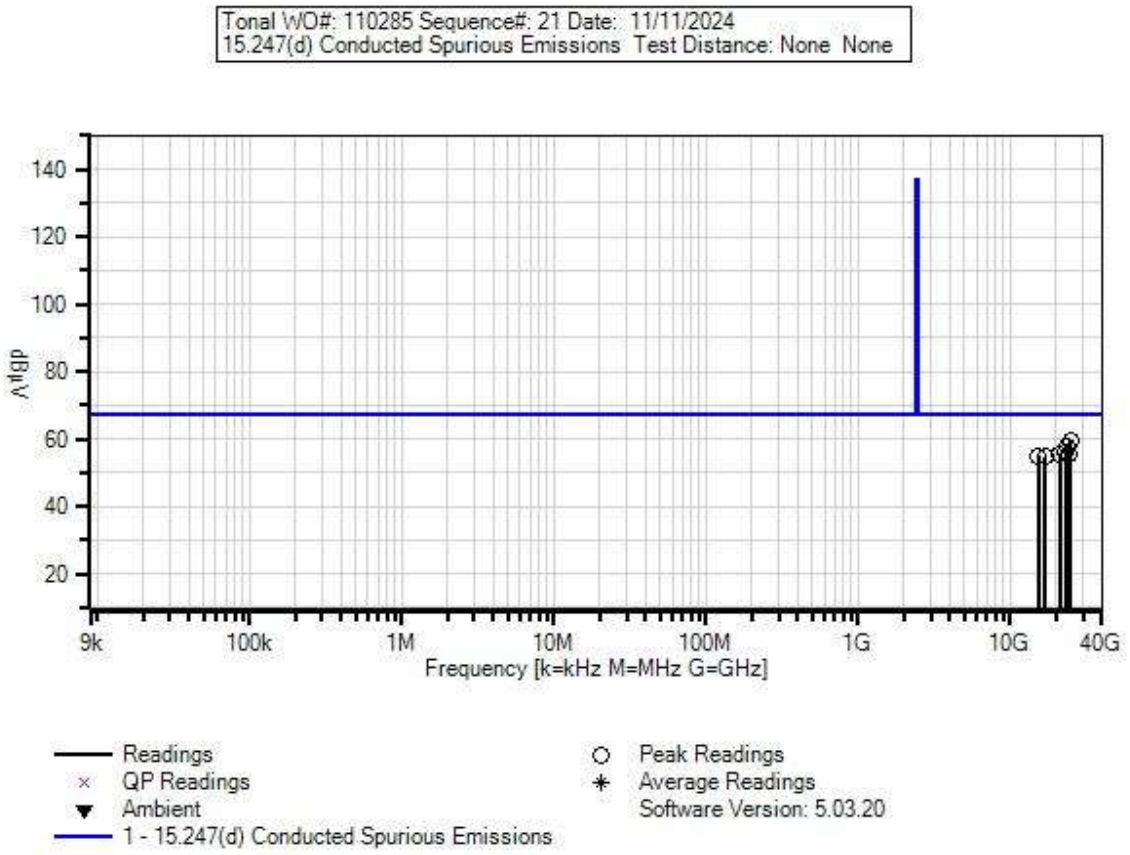
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
Middle Channel-802.11b -Chain 0



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24603.129 M	46.9	+10.0	+2.8			+0.0	59.7	67.5	-7.8	None
2	24742.570 M	46.7	+10.0	+2.8			+0.0	59.5	67.5	-8.0	None
3	23809.388 M	45.2	+10.1	+2.7			+0.0	58.0	67.5	-9.5	None
4	22962.015 M	43.5	+10.1	+2.6			+0.0	56.2	67.5	-11.3	None
5	23133.635 M	43.4	+10.1	+2.6			+0.0	56.1	67.5	-11.4	None
6	23080.003 M	43.3	+10.1	+2.6			+0.0	56.0	67.5	-11.5	None
7	21202.912 M	42.9	+10.1	+2.5			+0.0	55.5	67.5	-12.0	None
8	24174.080 M	42.6	+10.1	+2.7			+0.0	55.4	67.5	-12.1	None
9	15206.945 M	42.9	+10.0	+2.0			+0.0	54.9	67.5	-12.6	None
10	16987.500 M	42.6	+10.0	+2.1			+0.0	54.7	67.5	-12.8	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	4:08:13 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	22
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

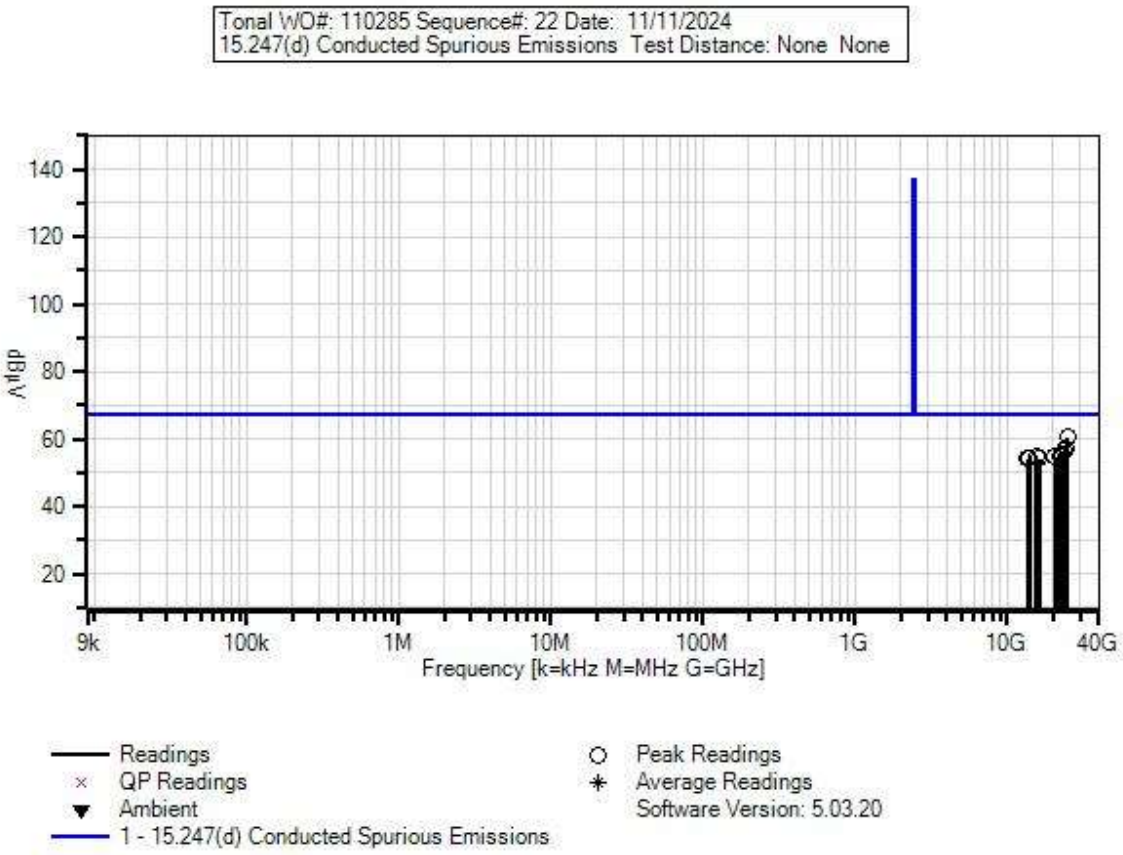
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
High Channel-802.11b -Chain 0



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24721.118 M	47.7	+10.0	+2.8			+0.0	60.5	67.5	-7.0	None
2	23884.471 M	44.4	+10.1	+2.7			+0.0	57.2	67.5	-10.3	None
3	23197.992 M	43.6	+10.1	+2.6			+0.0	56.3	67.5	-11.2	None
4	22908.384 M	42.8	+10.1	+2.6			+0.0	55.5	67.5	-12.0	None
5	15389.291 M	42.9	+10.0	+2.0			+0.0	54.9	67.5	-12.6	None
6	22007.380 M	42.0	+10.1	+2.6			+0.0	54.7	67.5	-12.8	None
7	20516.432 M	42.1	+10.0	+2.5			+0.0	54.6	67.5	-12.9	None
8	13600.105 M	42.2	+10.0	+1.9			+0.0	54.1	67.5	-13.4	None
9	13894.064 M	42.2	+10.0	+1.9			+0.0	54.1	67.5	-13.4	None
10	16204.485 M	42.0	+10.0	+2.1			+0.0	54.1	67.5	-13.4	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	4:13:14 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	26
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

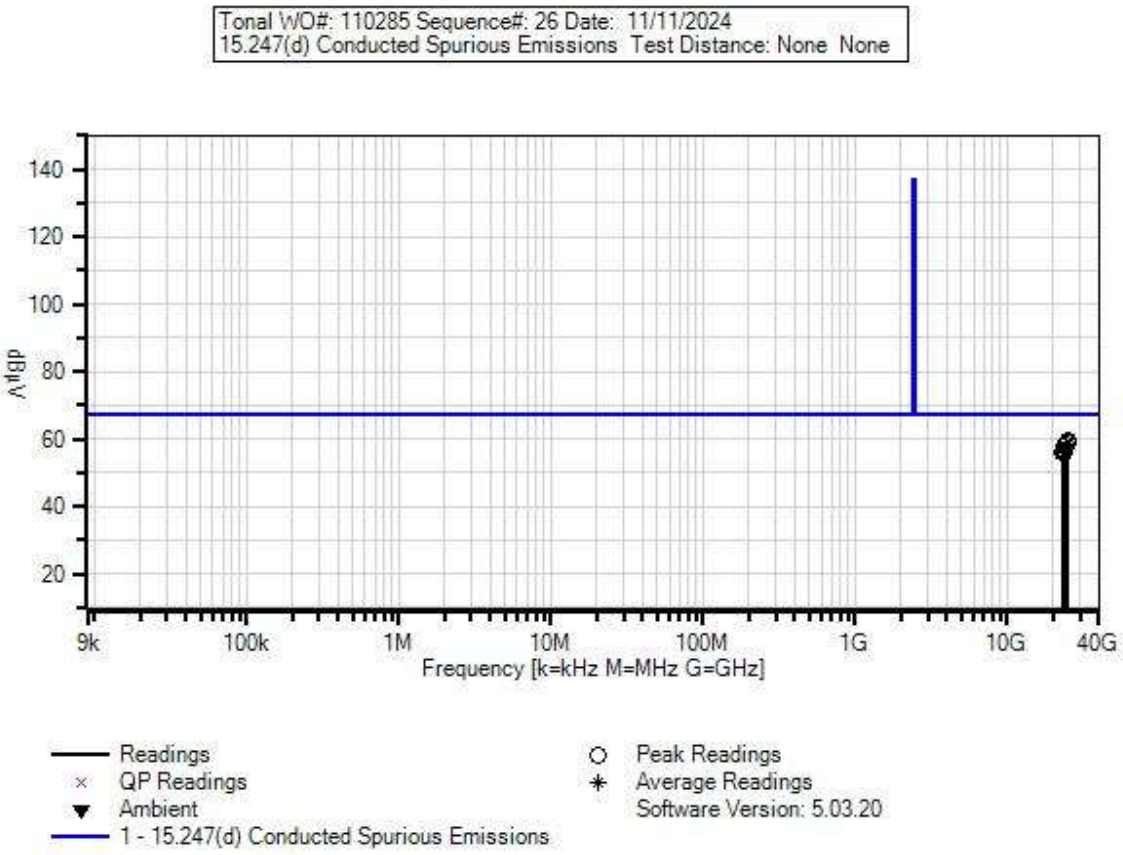
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
Low Channel-802.11g -Chain 0



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24710.392 M	46.7	+10.0	+2.8			+0.0	59.5	67.5	-8.0	None
2	24806.928 M	46.2	+10.0	+2.8			+0.0	59.0	67.5	-8.5	None
3	23895.197 M	45.4	+10.1	+2.7			+0.0	58.2	67.5	-9.3	None
4	23809.388 M	45.1	+10.1	+2.7			+0.0	57.9	67.5	-9.6	None
5	23616.315 M	44.2	+10.0	+2.6			+0.0	56.8	67.5	-10.7	None
6	23015.646 M	43.3	+10.1	+2.6			+0.0	56.0	67.5	-11.5	None
7	23702.125 M	43.3	+10.1	+2.6			+0.0	56.0	67.5	-11.5	None
8	22940.562 M	43.2	+10.1	+2.6			+0.0	55.9	67.5	-11.6	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	4:21:00 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	25
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

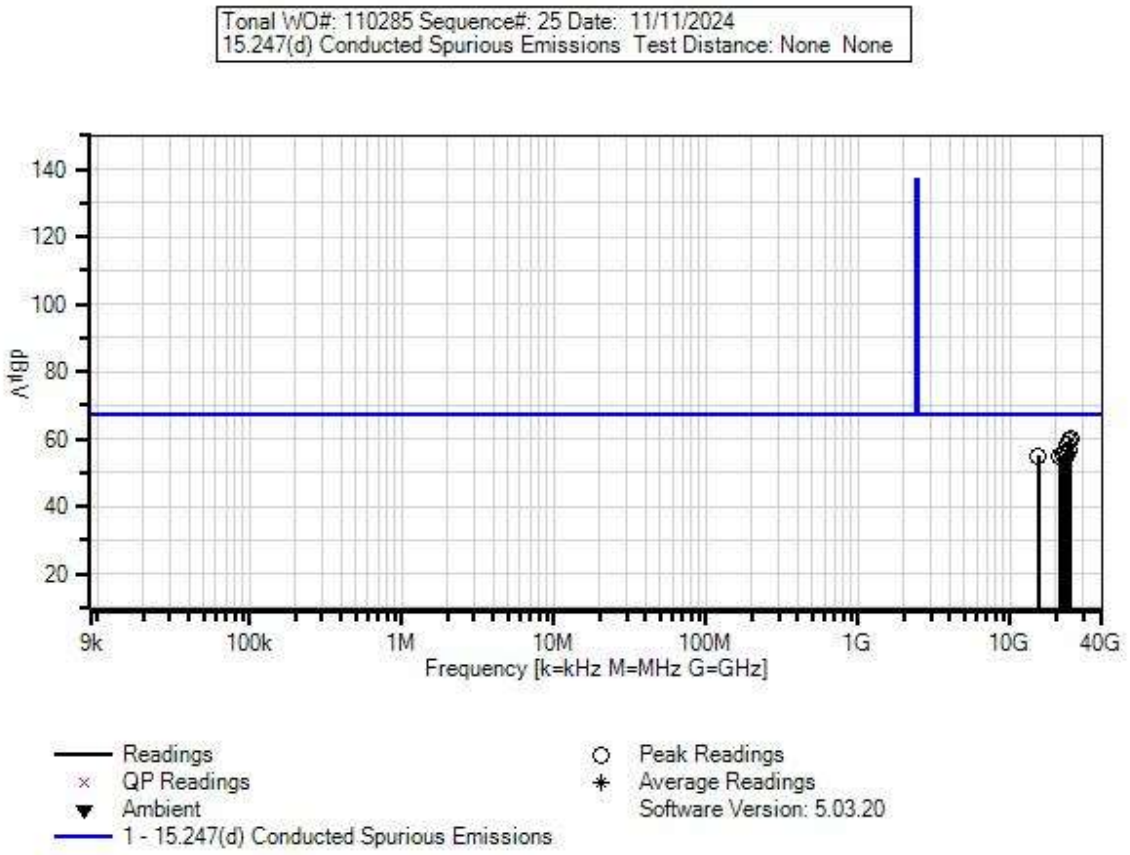
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
Middle Channel-802.11g -Chain 0



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24699.665 M	47.3	+10.0	+2.8			+0.0	60.1	67.5	-7.4	None
2	24538.772 M	46.7	+10.1	+2.7			+0.0	59.5	67.5	-8.0	None
3	23820.114 M	45.3	+10.1	+2.7			+0.0	58.1	67.5	-9.4	None
4	23938.102 M	44.0	+10.1	+2.7			+0.0	56.8	67.5	-10.7	None
5	23015.646 M	43.5	+10.1	+2.6			+0.0	56.2	67.5	-11.3	None
6	23637.768 M	43.0	+10.0	+2.6			+0.0	55.6	67.5	-11.9	None
7	22082.463 M	42.7	+10.1	+2.6			+0.0	55.4	67.5	-12.1	None
8	15260.576 M	43.1	+10.0	+2.0			+0.0	55.1	67.5	-12.4	None
9	21192.185 M	42.4	+10.1	+2.5			+0.0	55.0	67.5	-12.5	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	4:26:49 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	24
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

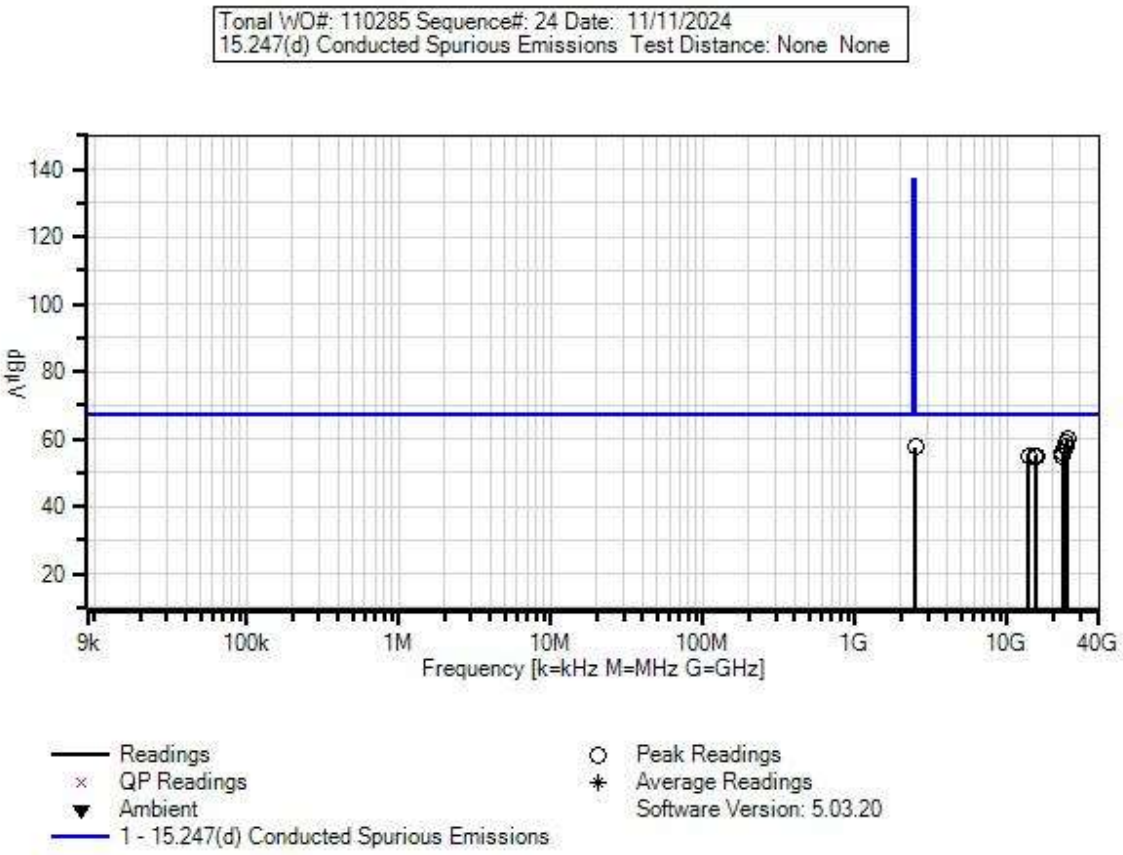
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
High Channel-802.11g -Chain 0



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24806.928 M	47.5	+10.0	+2.8			+0.0	60.3	67.5	-7.2	None
2	24420.783 M	46.2	+10.1	+2.7			+0.0	59.0	67.5	-8.5	None
3	23905.924 M	45.1	+10.1	+2.7			+0.0	57.9	67.5	-9.6	None
4	2484.532M	47.0	+9.9	+0.8			+0.0	57.7	67.5	-9.8	None
5	23112.182 M	43.5	+10.1	+2.6			+0.0	56.2	67.5	-11.3	None
6	15292.754 M	43.0	+10.0	+2.0			+0.0	55.0	67.5	-12.5	None
7	22919.110 M	42.3	+10.1	+2.6			+0.0	55.0	67.5	-12.5	None
8	13814.451 M	42.9	+10.0	+1.9			+0.0	54.8	67.5	-12.7	None
9	15378.564 M	42.8	+10.0	+2.0			+0.0	54.8	67.5	-12.7	None
10	22865.479 M	42.1	+10.1	+2.6			+0.0	54.8	67.5	-12.7	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	4:32:58 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	28
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

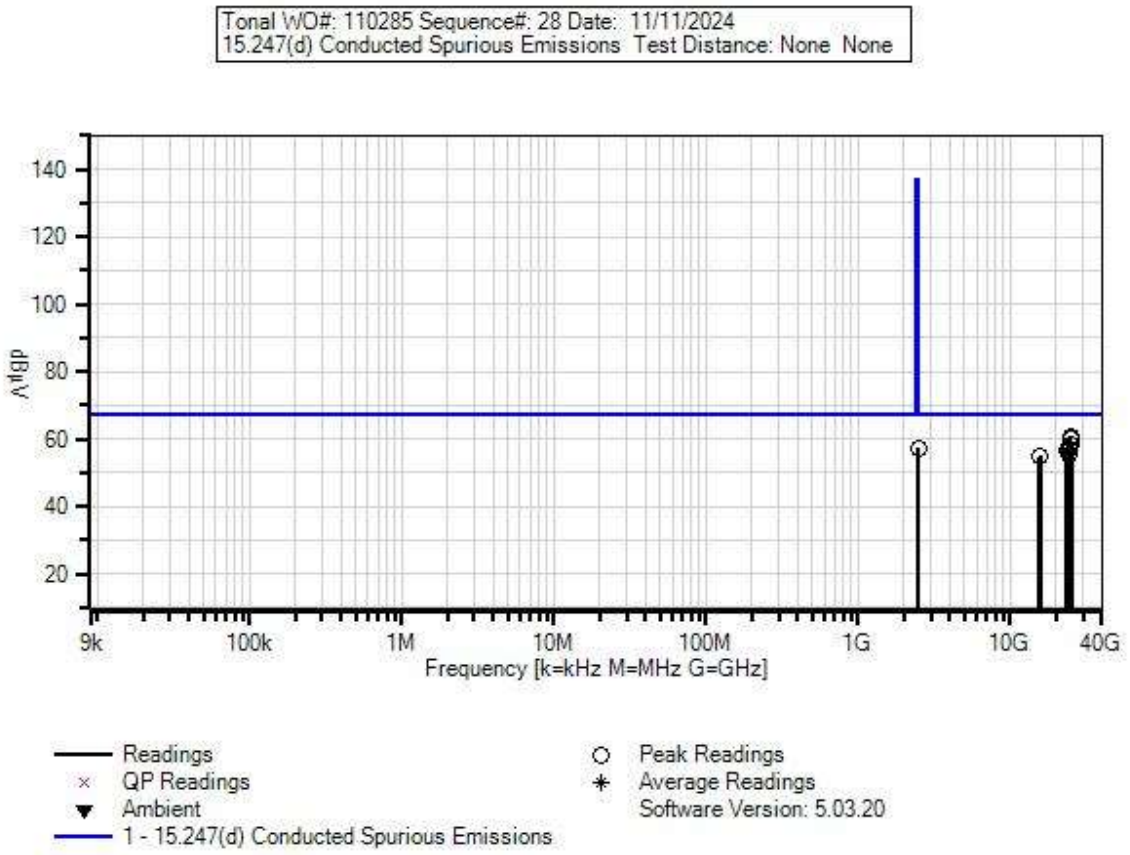
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
Low Channel-802.11n HT20 -Chain 0



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24688.939 M	48.0	+10.0	+2.8			+0.0	60.8	67.5	-6.7	None
2	24721.118 M	47.2	+10.0	+2.8			+0.0	60.0	67.5	-7.5	None
3	24978.548 M	45.5	+10.1	+2.8			+0.0	58.4	67.5	-9.1	None
4	23916.650 M	44.5	+10.1	+2.7			+0.0	57.3	67.5	-10.2	None
5	2484.532M	46.5	+9.9	+0.8			+0.0	57.2	67.5	-10.3	None
6	23187.266 M	44.0	+10.1	+2.6			+0.0	56.7	67.5	-10.8	None
7	24259.890 M	42.8	+10.1	+2.7			+0.0	55.6	67.5	-11.9	None
8	15593.089 M	42.8	+10.0	+2.1			+0.0	54.9	67.5	-12.6	None
9	15475.101 M	42.6	+10.0	+2.0			+0.0	54.6	67.5	-12.9	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	4:38:11 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	29
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

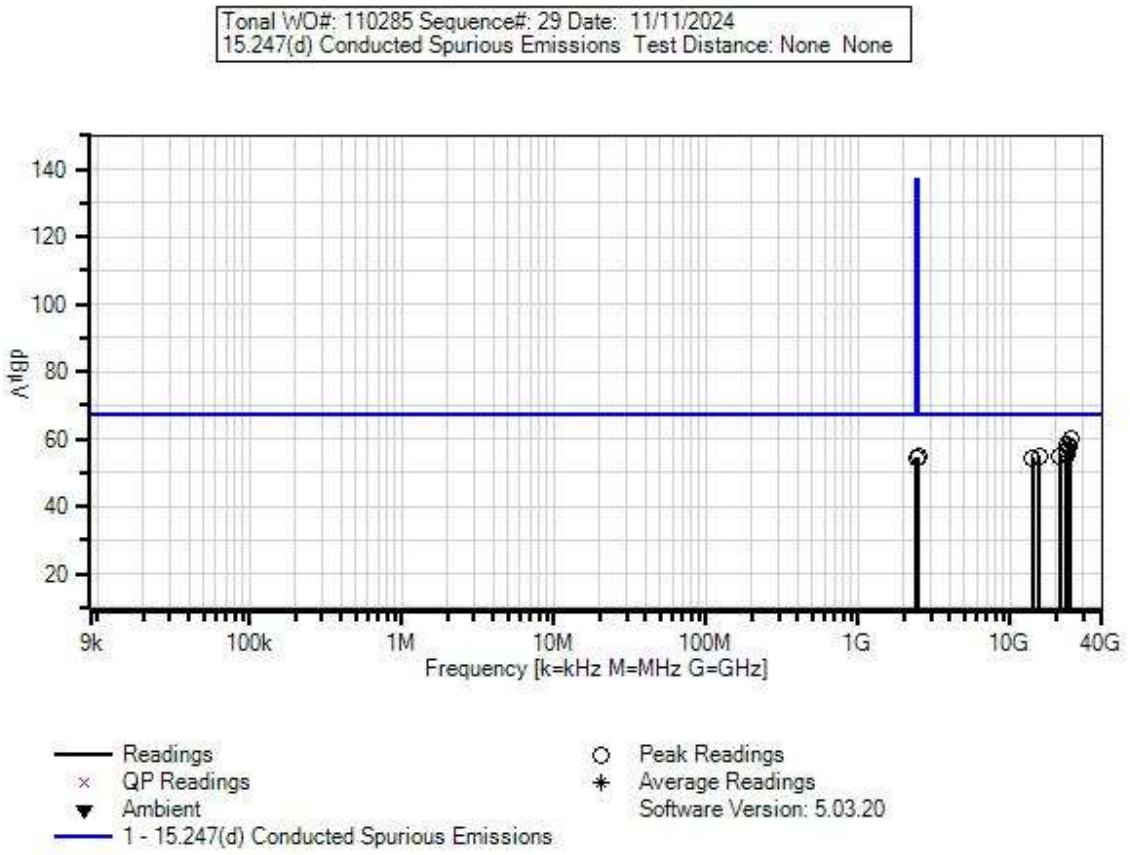
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
Middle Channel-802.11n HT20 -Chain 0



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24721.118 M	47.3	+10.0	+2.8			+0.0	60.1	67.5	-7.4	None
2	23820.114 M	45.3	+10.1	+2.7			+0.0	58.1	67.5	-9.4	None
3	24388.604 M	44.8	+10.1	+2.7			+0.0	57.6	67.5	-9.9	None
4	23230.171 M	43.7	+10.1	+2.6			+0.0	56.4	67.5	-11.1	None
5	23584.137 M	42.6	+10.0	+2.6			+0.0	55.2	67.5	-12.3	None
6	15528.732 M	42.9	+10.0	+2.1			+0.0	55.0	67.5	-12.5	None
7	21181.459 M	42.3	+10.1	+2.5			+0.0	54.9	67.5	-12.6	None
8	2490.231M	44.0	+9.9	+0.8			+0.0	54.7	67.5	-12.8	None
9	13857.320 M	42.6	+10.0	+1.9			+0.0	54.5	67.5	-13.0	None
10	2394.485M	43.7	+9.9	+0.8			+0.0	54.4	67.5	-13.1	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	4:43:11 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	30
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

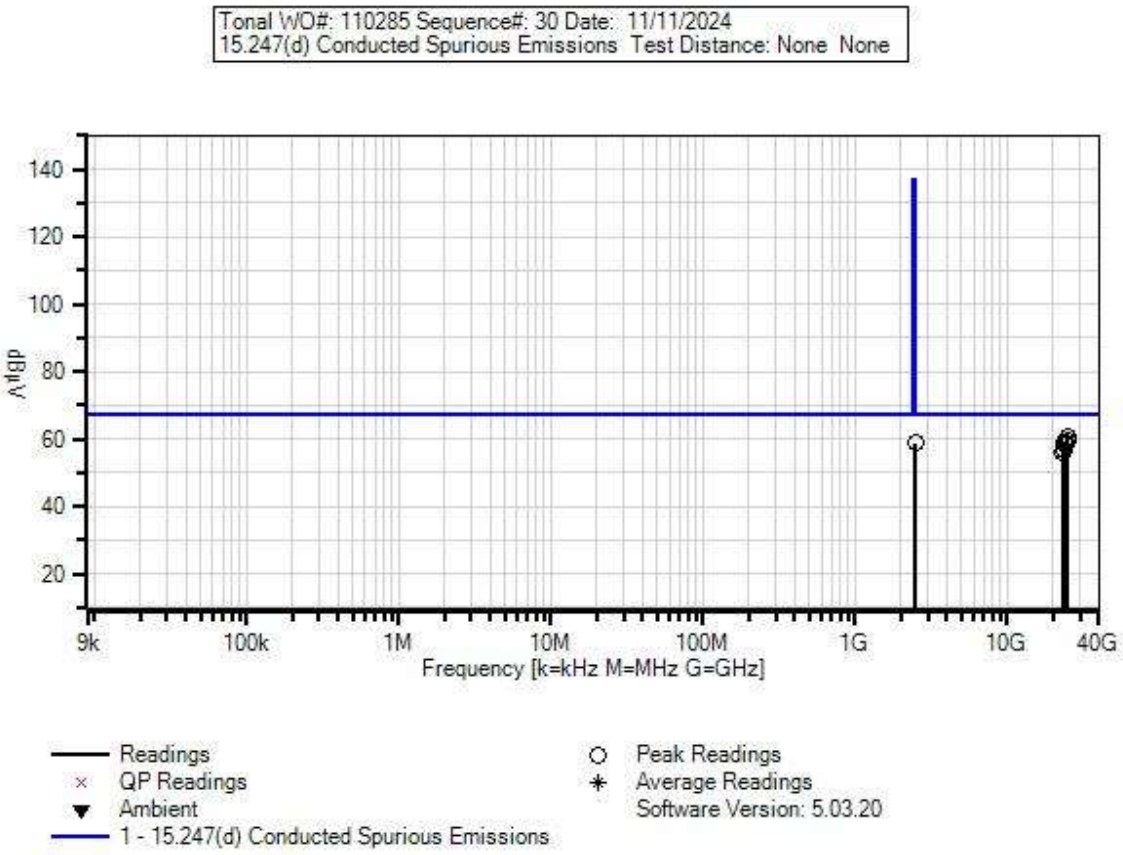
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
High Channel-802.11n HT20 -Chain 0



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24710.392 M	48.0	+10.0	+2.8			+0.0	60.8	67.5	-6.7	None
2	24635.308 M	47.9	+10.0	+2.8			+0.0	60.7	67.5	-6.8	None
3	24828.380 M	46.4	+10.0	+2.8			+0.0	59.2	67.5	-8.3	None
4	23809.388 M	46.1	+10.1	+2.7			+0.0	58.9	67.5	-8.6	None
5	24420.783 M	46.1	+10.1	+2.7			+0.0	58.9	67.5	-8.6	None
6	2484.532M	48.0	+9.9	+0.8			+0.0	58.7	67.5	-8.8	None
7	24495.867 M	45.7	+10.1	+2.7			+0.0	58.5	67.5	-9.0	None
8	23723.578 M	43.9	+10.1	+2.7			+0.0	56.7	67.5	-10.8	None
9	23273.076 M	43.7	+10.1	+2.6			+0.0	56.4	67.5	-11.1	None
10	23133.635 M	43.4	+10.1	+2.6			+0.0	56.1	67.5	-11.4	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	5:01:08 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	34
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

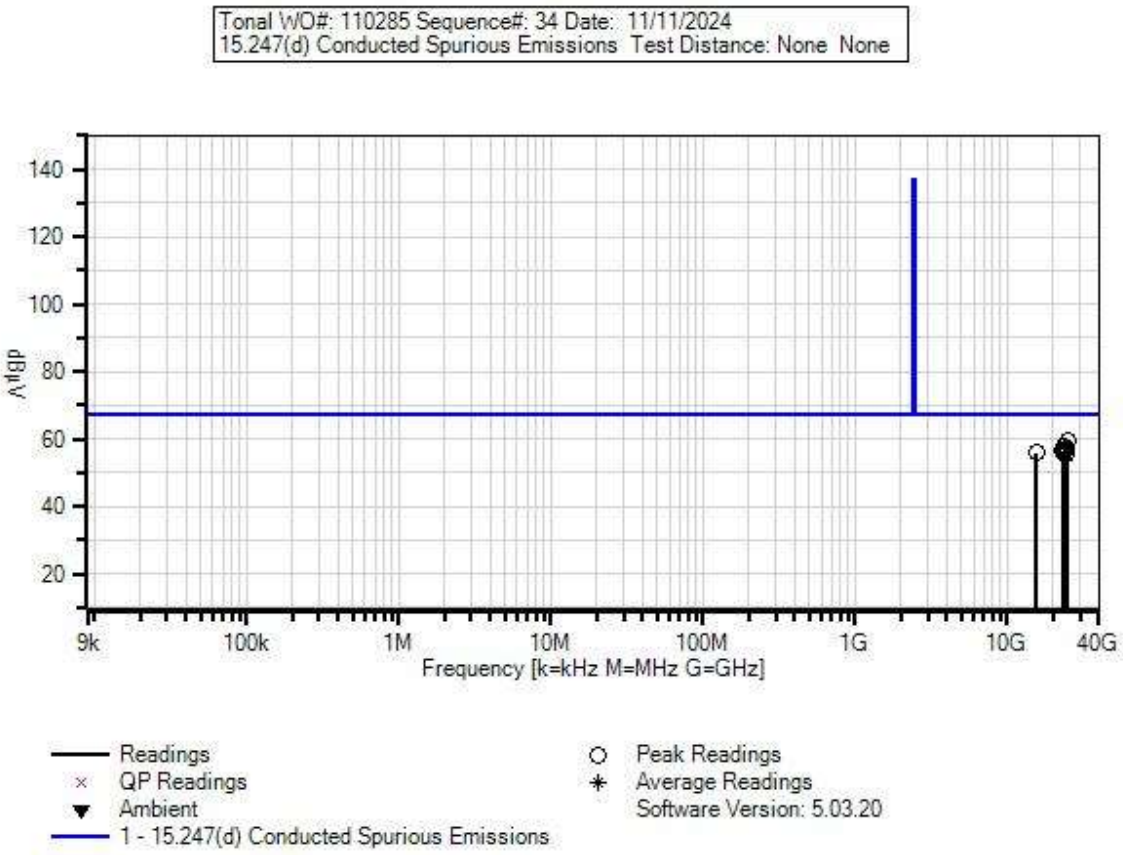
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
Low Channel-802.11n HT40 -Chain 0



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24721.118 M	46.5	+10.0	+2.8			+0.0	59.3	67.5	-8.2	None
2	23863.019 M	44.8	+10.1	+2.7			+0.0	57.6	67.5	-9.9	None
3	24377.878 M	44.4	+10.1	+2.7			+0.0	57.2	67.5	-10.3	None
4	23133.635 M	43.8	+10.1	+2.6			+0.0	56.5	67.5	-11.0	None
5	23219.444 M	43.7	+10.1	+2.6			+0.0	56.4	67.5	-11.1	None
6	23315.981 M	43.4	+10.1	+2.6			+0.0	56.1	67.5	-11.4	None
7	15453.648 M	43.9	+10.0	+2.0			+0.0	55.9	67.5	-11.6	None
8	24195.532 M	42.7	+10.1	+2.7			+0.0	55.5	67.5	-12.0	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	4:54:59 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	33
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

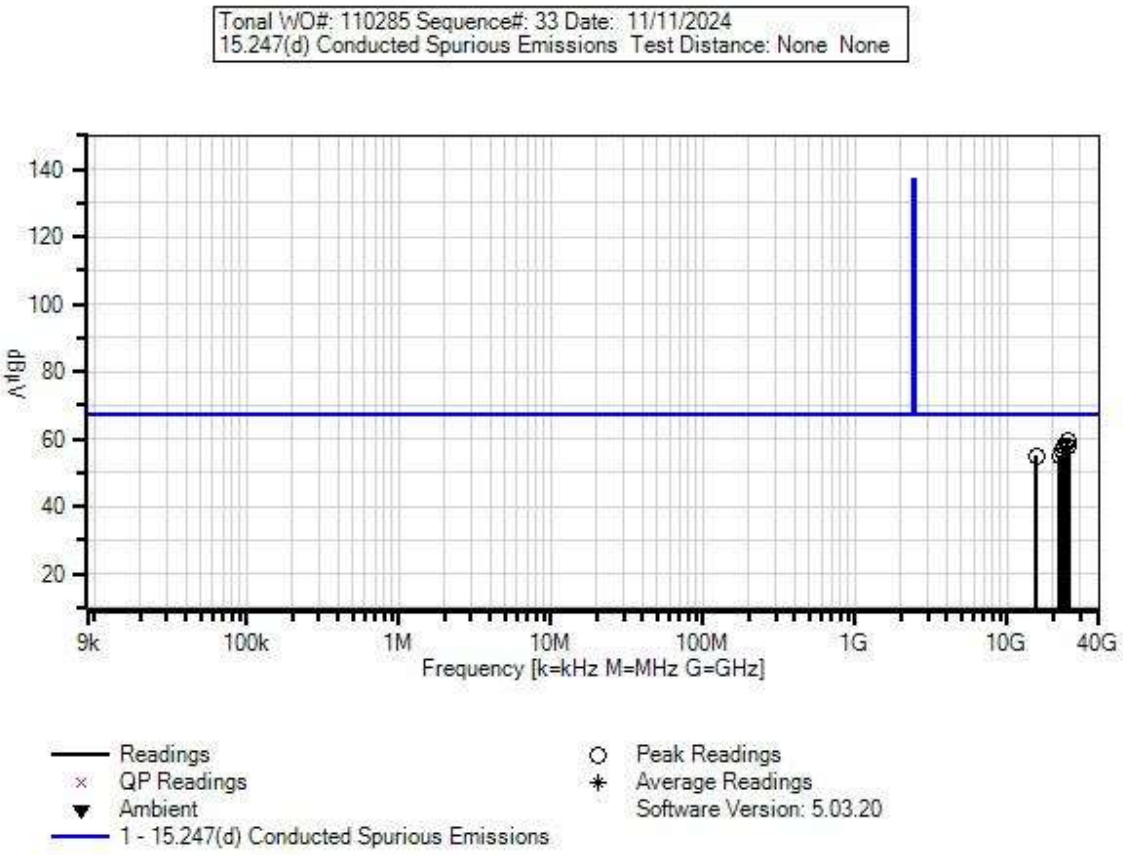
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
Middle Channel-802.11n HT40 -Chain 0



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24678.213 M	46.7	+10.0	+2.8			+0.0	59.5	67.5	-8.0	None
2	24924.916 M	45.1	+10.1	+2.8			+0.0	58.0	67.5	-9.5	None
3	24957.095 M	44.9	+10.1	+2.8			+0.0	57.8	67.5	-9.7	None
4	23809.388 M	44.7	+10.1	+2.7			+0.0	57.5	67.5	-10.0	None
5	23155.087 M	44.0	+10.1	+2.6			+0.0	56.7	67.5	-10.8	None
6	23058.551 M	43.9	+10.1	+2.6			+0.0	56.6	67.5	-10.9	None
7	15485.827 M	43.0	+10.0	+2.0			+0.0	55.0	67.5	-12.5	None
8	22146.821 M	42.2	+10.1	+2.6			+0.0	54.9	67.5	-12.6	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	4:48:43 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	32
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

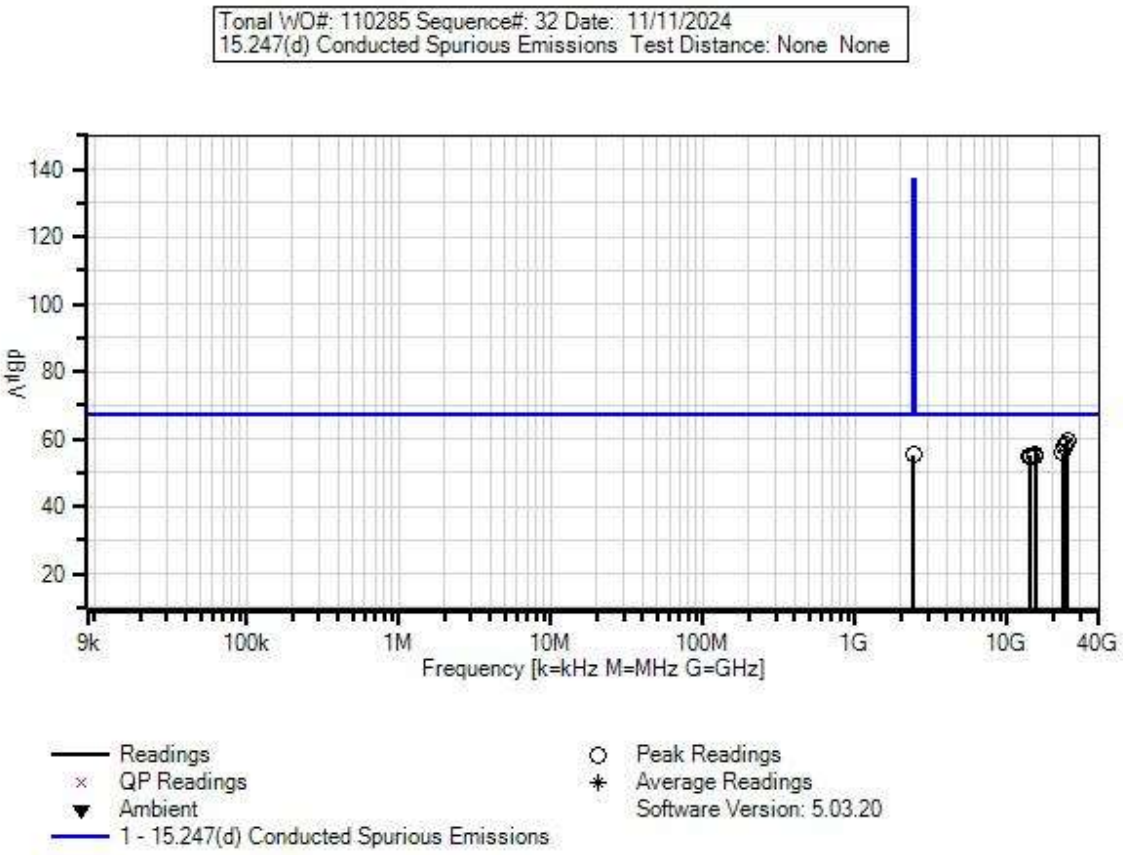
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
High Channel-802.11n HT40 -Chain 0



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24710.392 M	46.9	+10.0	+2.8			+0.0	59.7	67.5	-7.8	None
2	24420.783 M	45.6	+10.1	+2.7			+0.0	58.4	67.5	-9.1	None
3	23787.935 M	45.0	+10.1	+2.7			+0.0	57.8	67.5	-9.7	None
4	23155.087 M	43.2	+10.1	+2.6			+0.0	55.9	67.5	-11.6	None
5	15249.850 M	43.6	+10.0	+2.0			+0.0	55.6	67.5	-11.9	None
6	2394.485M	44.5	+9.9	+0.8			+0.0	55.2	67.5	-12.3	None
7	13894.064 M	43.2	+10.0	+1.9			+0.0	55.1	67.5	-12.4	None
8	14065.541 M	43.1	+10.0	+1.9			+0.0	55.0	67.5	-12.5	None
9	15314.207 M	42.8	+10.0	+2.0			+0.0	54.8	67.5	-12.7	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	2:14:59 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	36
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

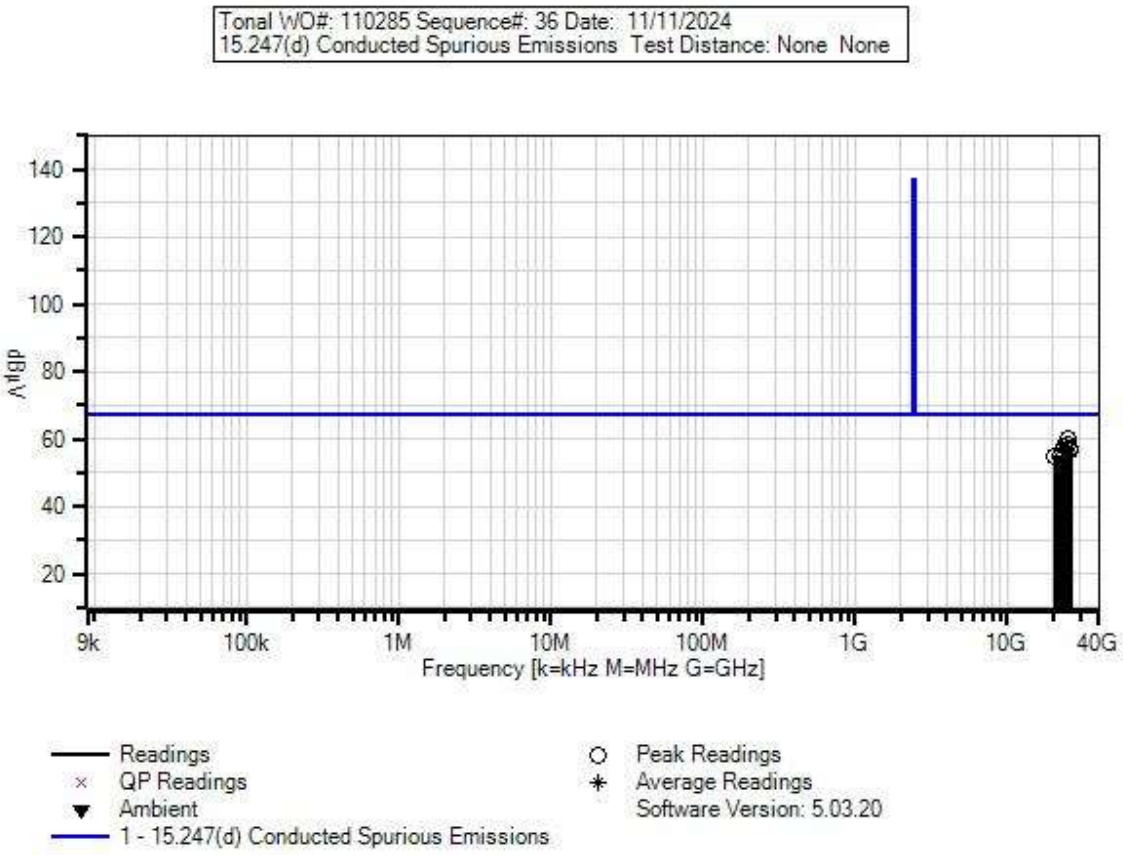
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
Low Channel-802.11b-Chain 1



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24700.368 M	47.2	+10.0	+2.8			+0.0	60.0	67.5	-7.5	None
2	24958.053 M	45.4	+10.1	+2.8			+0.0	58.3	67.5	-9.2	None
3	23837.681 M	44.9	+10.1	+2.7			+0.0	57.7	67.5	-9.8	None
4	25708.703 M	44.2	+10.1	+2.8			+0.0	57.1	67.5	-10.4	None
5	25473.425 M	43.8	+10.1	+2.8			+0.0	56.7	67.5	-10.8	None
6	23031.012 M	43.9	+10.1	+2.6			+0.0	56.6	67.5	-10.9	None
7	25540.647 M	43.4	+10.1	+2.8			+0.0	56.3	67.5	-11.2	None
8	20342.118 M	42.3	+10.1	+2.5			+0.0	54.9	67.5	-12.6	None
9	22123.511 M	42.2	+10.1	+2.6			+0.0	54.9	67.5	-12.6	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	2:34:27 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	37
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

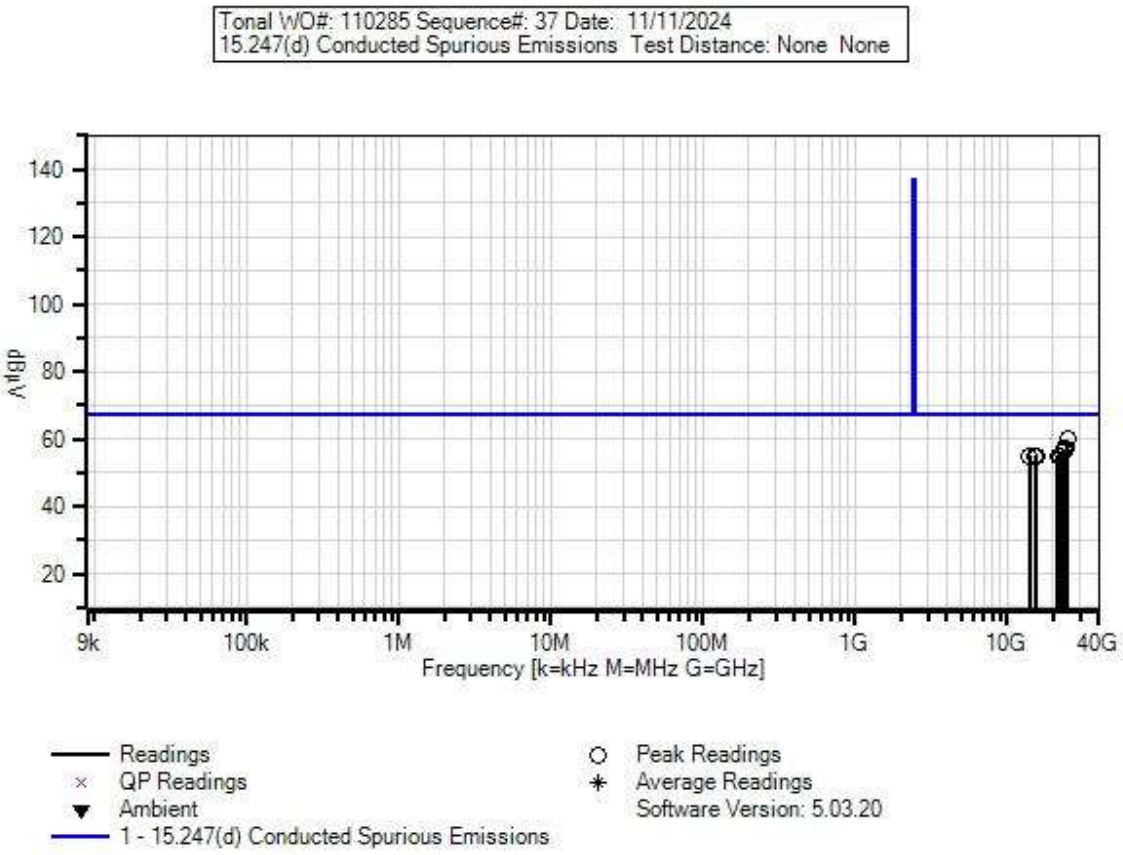
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
Middle Channel-802.11b-Chain 1



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24656.760 M	47.0	+10.0	+2.8			+0.0	59.8	67.5	-7.7	None
2	23723.578 M	44.1	+10.1	+2.7			+0.0	56.9	67.5	-10.6	None
3	23873.745 M	44.1	+10.1	+2.7			+0.0	56.9	67.5	-10.6	None
4	23197.992 M	43.7	+10.1	+2.6			+0.0	56.4	67.5	-11.1	None
5	22972.741 M	43.1	+10.1	+2.6			+0.0	55.8	67.5	-11.7	None
6	15271.302 M	43.1	+10.0	+2.0			+0.0	55.1	67.5	-12.4	None
7	13857.320 M	43.0	+10.0	+1.9			+0.0	54.9	67.5	-12.6	None
8	15367.838 M	42.9	+10.0	+2.0			+0.0	54.9	67.5	-12.6	None
9	22028.832 M	42.2	+10.1	+2.6			+0.0	54.9	67.5	-12.6	None
10	21235.090 M	42.1	+10.1	+2.5			+0.0	54.7	67.5	-12.8	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	2:53:16 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	38
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

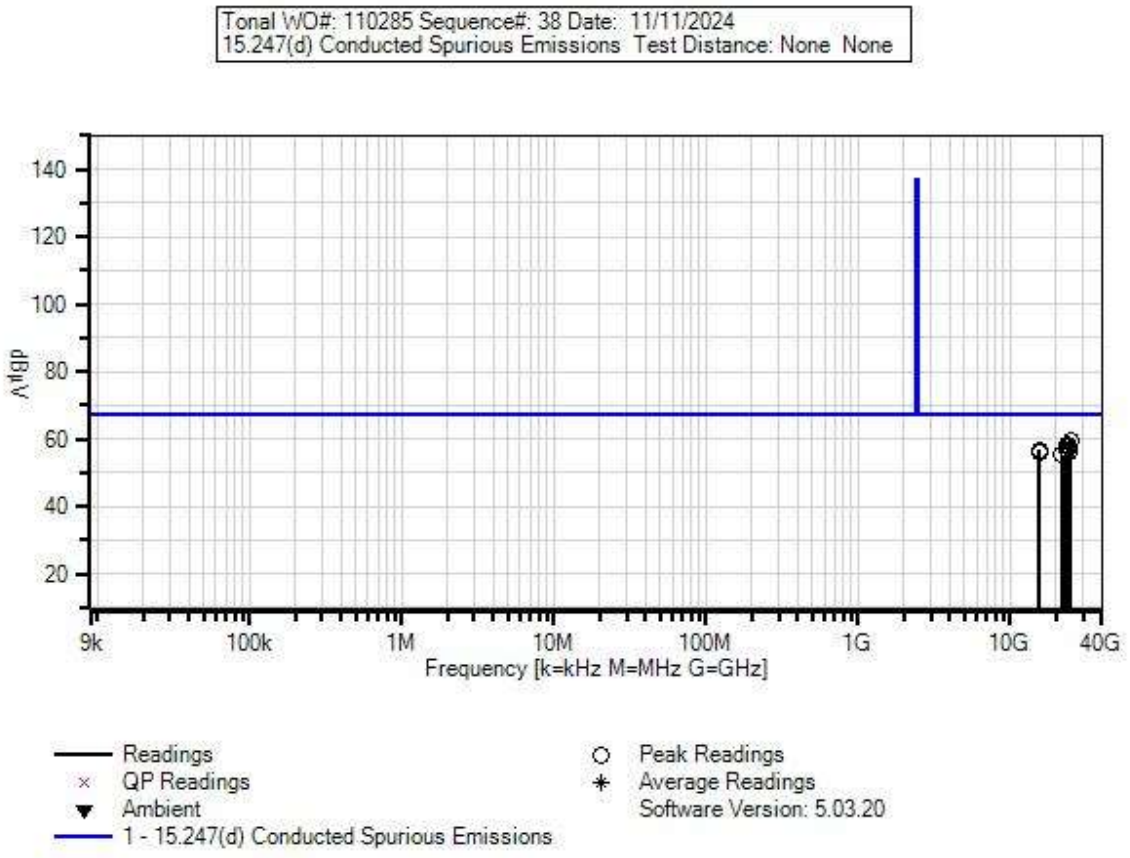
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
High Channel-802.11b-Chain 1



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24721.118 M	46.8	+10.0	+2.8			+0.0	59.6	67.5	-7.9	None
2	23777.209 M	45.5	+10.1	+2.7			+0.0	58.3	67.5	-9.2	None
3	23863.019 M	44.8	+10.1	+2.7			+0.0	57.6	67.5	-9.9	None
4	23895.197 M	44.8	+10.1	+2.7			+0.0	57.6	67.5	-9.9	None
5	15518.005 M	44.6	+10.0	+2.0			+0.0	56.6	67.5	-10.9	None
6	23723.578 M	43.6	+10.1	+2.7			+0.0	56.4	67.5	-11.1	None
7	23187.266 M	43.6	+10.1	+2.6			+0.0	56.3	67.5	-11.2	None
8	15400.017 M	44.1	+10.0	+2.0			+0.0	56.1	67.5	-11.4	None
9	24109.722 M	43.1	+10.1	+2.7			+0.0	55.9	67.5	-11.6	None
10	21782.129 M	42.6	+10.1	+2.5			+0.0	55.2	67.5	-12.3	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	2:58:19 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	39
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

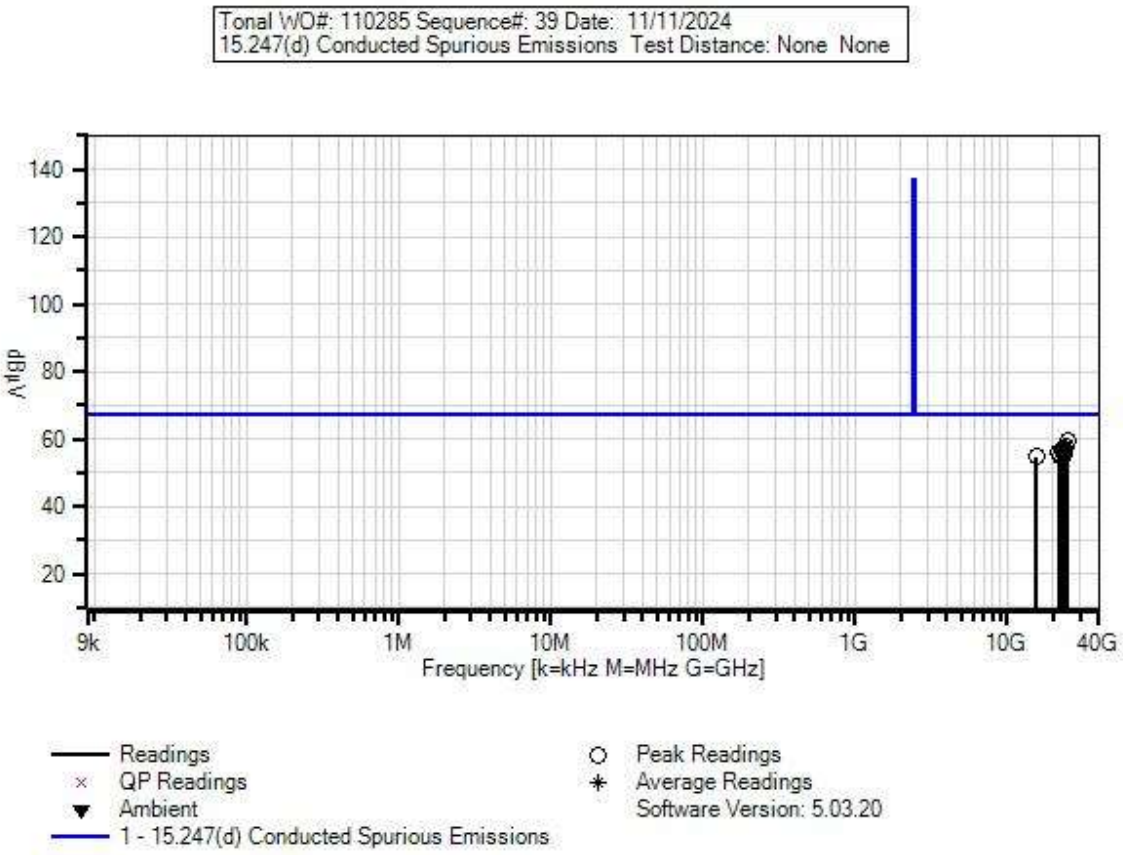
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
Low Channel-802.11g-Chain 1



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24710.392 M	46.6	+10.0	+2.8			+0.0	59.4	67.5	-8.1	None
2	23938.102 M	45.0	+10.1	+2.7			+0.0	57.8	67.5	-9.7	None
3	23745.030 M	44.5	+10.1	+2.7			+0.0	57.3	67.5	-10.2	None
4	23047.825 M	44.0	+10.1	+2.6			+0.0	56.7	67.5	-10.8	None
5	23369.612 M	43.3	+10.0	+2.6			+0.0	55.9	67.5	-11.6	None
6	21814.307 M	43.3	+10.1	+2.5			+0.0	55.9	67.5	-11.6	None
7	23605.589 M	42.7	+10.0	+2.6			+0.0	55.3	67.5	-12.2	None
8	15432.196 M	42.8	+10.0	+2.0			+0.0	54.8	67.5	-12.7	None
9	22050.285 M	42.1	+10.1	+2.6			+0.0	54.8	67.5	-12.7	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	3:03:29 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	40
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

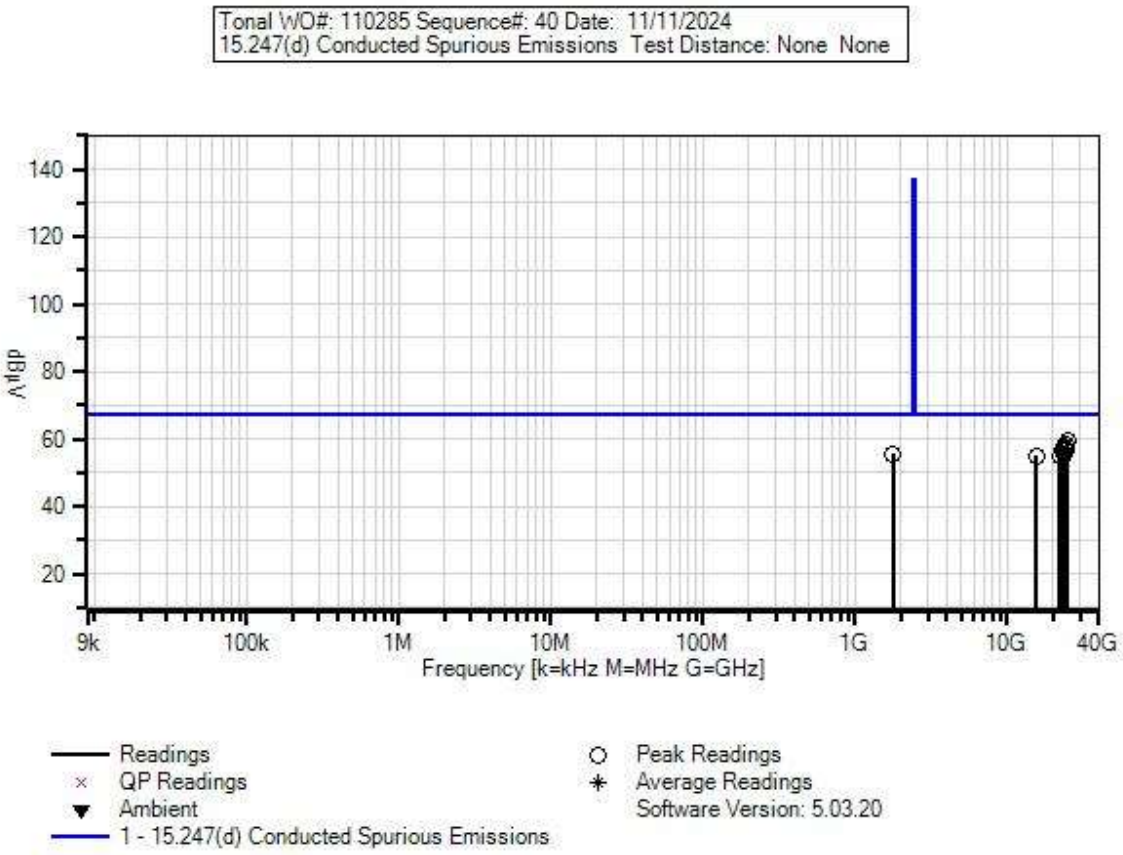
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
Middle Channel-802.11g-Chain 1



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24710.392 M	46.7	+10.0	+2.8			+0.0	59.5	67.5	-8.0	None
2	24420.783 M	45.5	+10.1	+2.7			+0.0	58.3	67.5	-9.2	None
3	23809.388 M	44.7	+10.1	+2.7			+0.0	57.5	67.5	-10.0	None
4	23262.349 M	44.2	+10.1	+2.6			+0.0	56.9	67.5	-10.6	None
5	24367.152 M	43.9	+10.1	+2.7			+0.0	56.7	67.5	-10.8	None
6	23069.277 M	43.6	+10.1	+2.6			+0.0	56.3	67.5	-11.2	None
7	1767.577M	45.2	+9.9	+0.6			+0.0	55.7	67.5	-11.8	None
8	23648.494 M	43.0	+10.0	+2.6			+0.0	55.6	67.5	-11.9	None
9	21943.022 M	42.5	+10.1	+2.5			+0.0	55.1	67.5	-12.4	None
10	15410.743 M	43.0	+10.0	+2.0			+0.0	55.0	67.5	-12.5	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	3:09:20 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	41
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

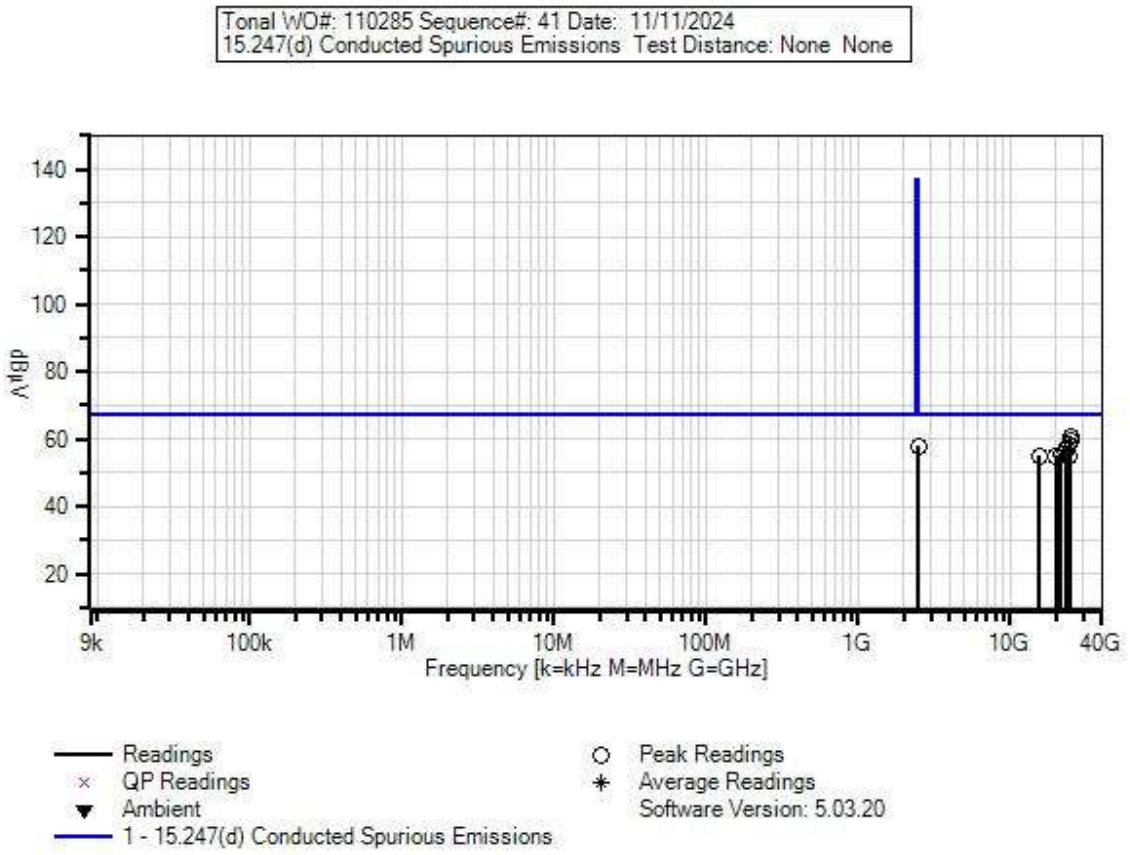
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
High Channel-802.11g-Chain 1



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24699.665 M	47.6	+10.0	+2.8			+0.0	60.4	67.5	-7.1	None
2	24774.749 M	46.6	+10.0	+2.8			+0.0	59.4	67.5	-8.1	None
3	24474.414 M	45.4	+10.1	+2.7			+0.0	58.2	67.5	-9.3	None
4	2484.532M	47.3	+9.9	+0.8			+0.0	58.0	67.5	-9.5	None
5	23863.019 M	44.4	+10.1	+2.7			+0.0	57.2	67.5	-10.3	None
6	23047.825 M	44.0	+10.1	+2.6			+0.0	56.7	67.5	-10.8	None
7	21256.543 M	42.6	+10.1	+2.5			+0.0	55.2	67.5	-12.3	None
8	15496.553 M	42.9	+10.0	+2.0			+0.0	54.9	67.5	-12.6	None
9	19872.858 M	42.3	+10.1	+2.5			+0.0	54.9	67.5	-12.6	None
10	24152.627 M	42.1	+10.1	+2.7			+0.0	54.9	67.5	-12.6	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	3:14:53 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	44
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

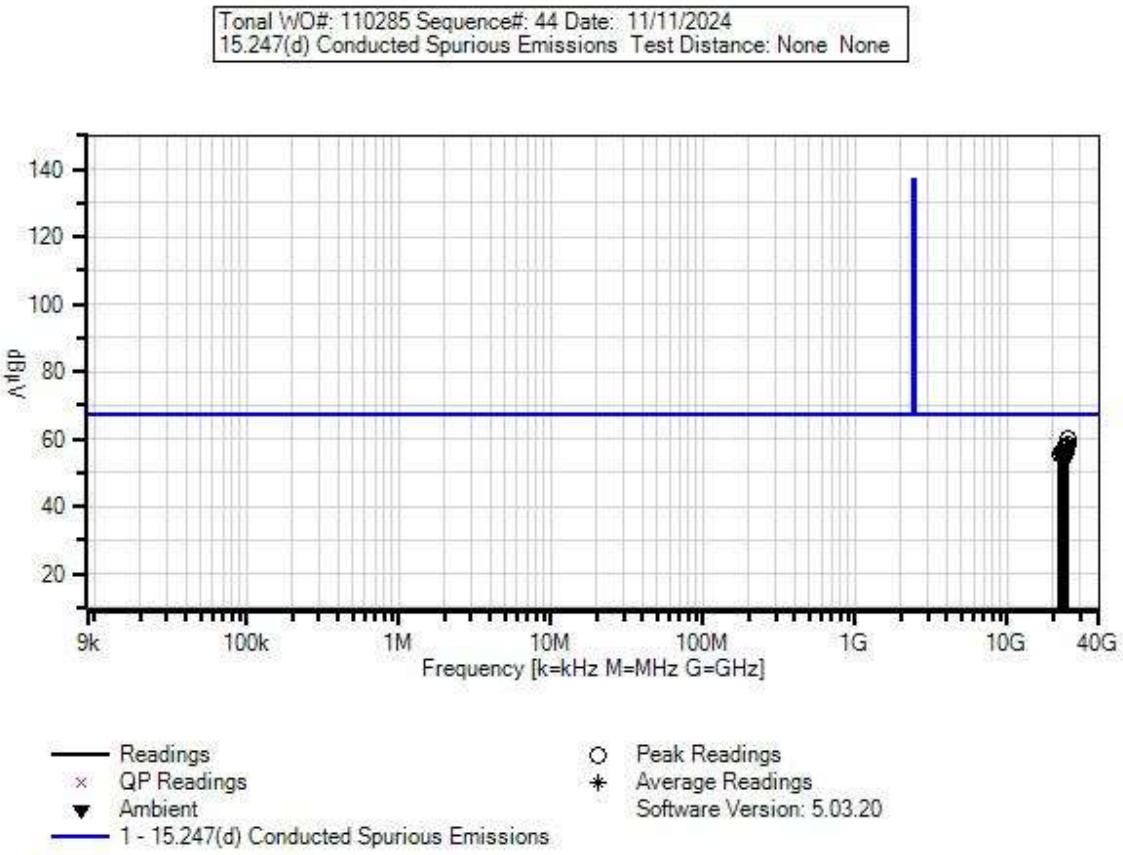
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
Low Channel-802.11n HT20-Chain 1



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24731.844 M	47.0	+10.0	+2.8			+0.0	59.8	67.5	-7.7	None
2	24914.190 M	45.4	+10.1	+2.8			+0.0	58.3	67.5	-9.2	None
3	23873.745 M	45.0	+10.1	+2.7			+0.0	57.8	67.5	-9.7	None
4	23787.935 M	44.6	+10.1	+2.7			+0.0	57.4	67.5	-10.1	None
5	23273.076 M	43.5	+10.1	+2.6			+0.0	56.2	67.5	-11.3	None
6	23026.372 M	43.4	+10.1	+2.6			+0.0	56.1	67.5	-11.4	None
7	24088.270 M	43.1	+10.1	+2.7			+0.0	55.9	67.5	-11.6	None
8	21910.843 M	43.0	+10.1	+2.5			+0.0	55.6	67.5	-11.9	None
9	23562.684 M	42.2	+10.0	+2.6			+0.0	54.8	67.5	-12.7	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	3:21:13 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	45
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

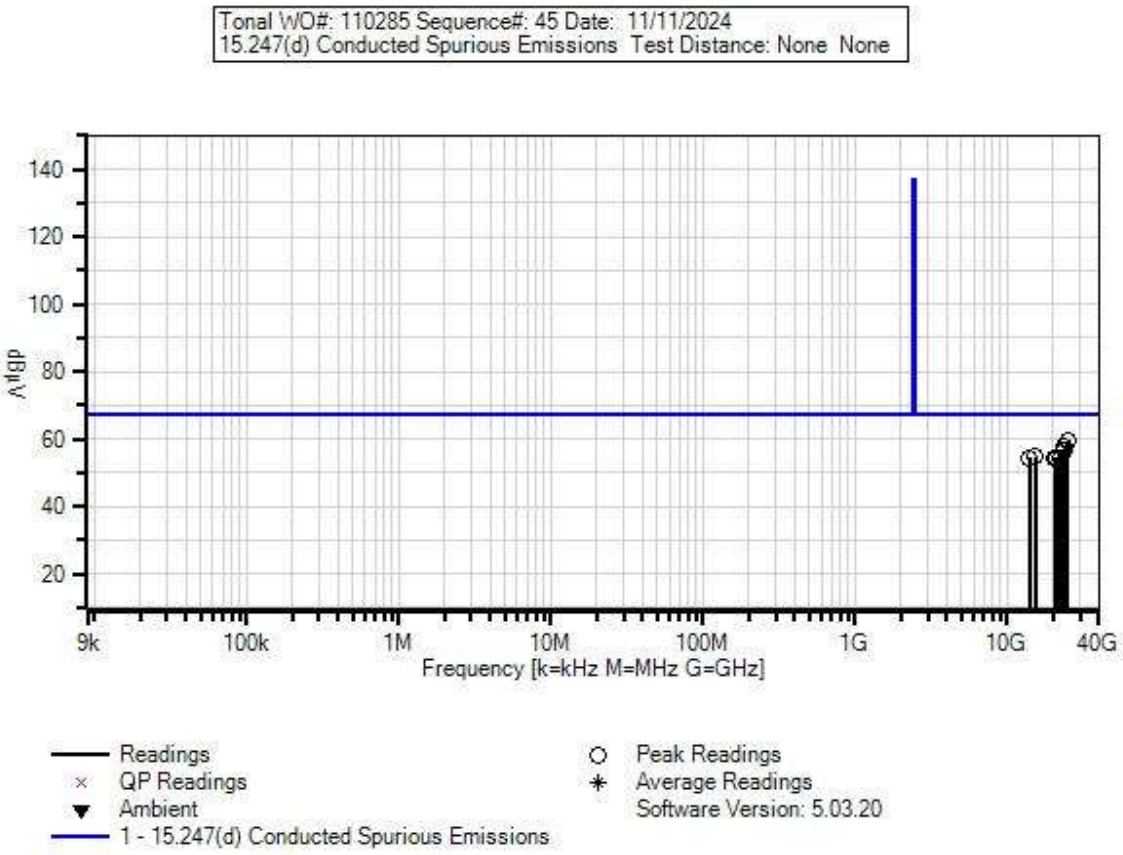
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
Middle Channel-802.11n HT20-Chain 1



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24678.213 M	46.4	+10.0	+2.8			+0.0	59.2	67.5	-8.3	None
2	23841.566 M	45.0	+10.1	+2.7			+0.0	57.8	67.5	-9.7	None
3	23240.897 M	43.9	+10.1	+2.6			+0.0	56.6	67.5	-10.9	None
4	15271.302 M	42.8	+10.0	+2.0			+0.0	54.8	67.5	-12.7	None
5	22018.106 M	41.8	+10.1	+2.6			+0.0	54.5	67.5	-13.0	None
6	21213.638 M	41.9	+10.1	+2.5			+0.0	54.5	67.5	-13.0	None
7	21943.022 M	41.9	+10.1	+2.5			+0.0	54.5	67.5	-13.0	None
8	13857.320 M	42.5	+10.0	+1.9			+0.0	54.4	67.5	-13.1	None
9	20559.337 M	41.9	+10.0	+2.5			+0.0	54.4	67.5	-13.1	None
10	20612.969 M	41.6	+10.0	+2.5			+0.0	54.1	67.5	-13.4	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	3:25:59 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	46
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

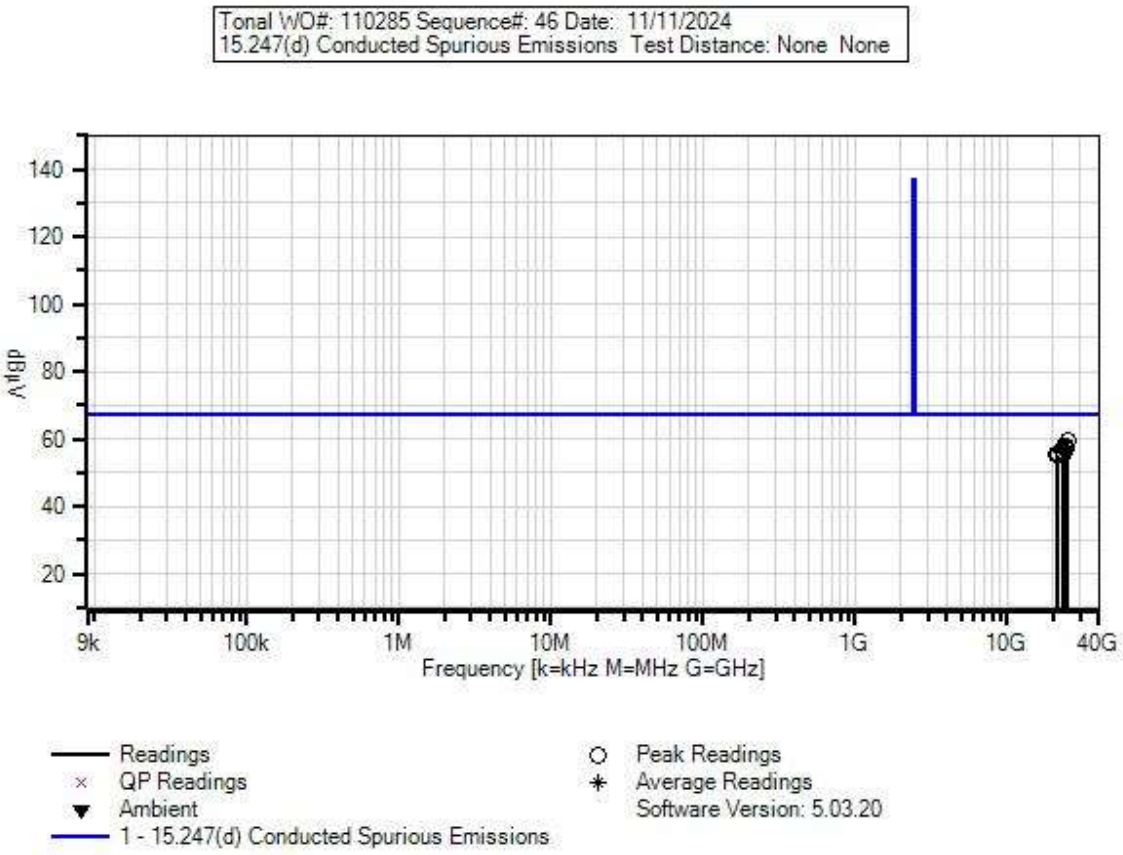
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
High Channel-802.11n HT20-Chain 1



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24753.297 M	46.9	+10.0	+2.8			+0.0	59.7	67.5	-7.8	None
2	24710.392 M	46.8	+10.0	+2.8			+0.0	59.6	67.5	-7.9	None
3	24388.604 M	45.0	+10.1	+2.7			+0.0	57.8	67.5	-9.7	None
4	23809.388 M	44.9	+10.1	+2.7			+0.0	57.7	67.5	-9.8	None
5	23884.471 M	44.4	+10.1	+2.7			+0.0	57.2	67.5	-10.3	None
6	23069.277 M	44.0	+10.1	+2.6			+0.0	56.7	67.5	-10.8	None
7	23691.399 M	43.2	+10.0	+2.6			+0.0	55.8	67.5	-11.7	None
8	21224.364 M	42.8	+10.1	+2.5			+0.0	55.4	67.5	-12.1	None
9	21170.733 M	42.7	+10.1	+2.5			+0.0	55.3	67.5	-12.2	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	3:31:41 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	50
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

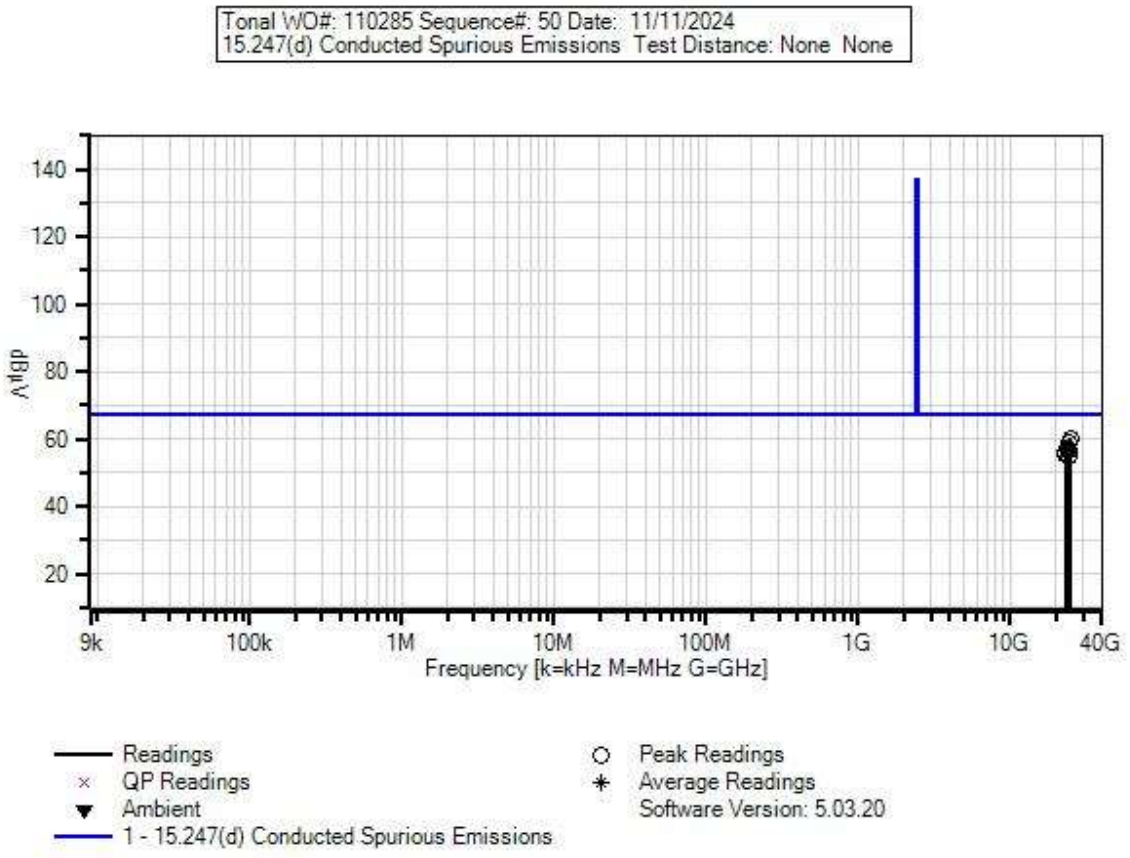
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
Low Channel-802.11n HT40-Chain 1



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24774.749 M	47.5	+10.0	+2.8			+0.0	60.3	67.5	-7.2	None
2	24528.046 M	46.0	+10.1	+2.7			+0.0	58.8	67.5	-8.7	None
3	23219.444 M	44.3	+10.1	+2.6			+0.0	57.0	67.5	-10.5	None
4	23787.935 M	44.1	+10.1	+2.7			+0.0	56.9	67.5	-10.6	None
5	23981.007 M	43.8	+10.1	+2.7			+0.0	56.6	67.5	-10.9	None
6	23069.277 M	43.5	+10.1	+2.6			+0.0	56.2	67.5	-11.3	None
7	22929.836 M	42.8	+10.1	+2.6			+0.0	55.5	67.5	-12.0	None
8	24281.342 M	42.1	+10.1	+2.7			+0.0	54.9	67.5	-12.6	None
9	24259.890 M	41.9	+10.1	+2.7			+0.0	54.7	67.5	-12.8	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	3:37:00 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	49
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

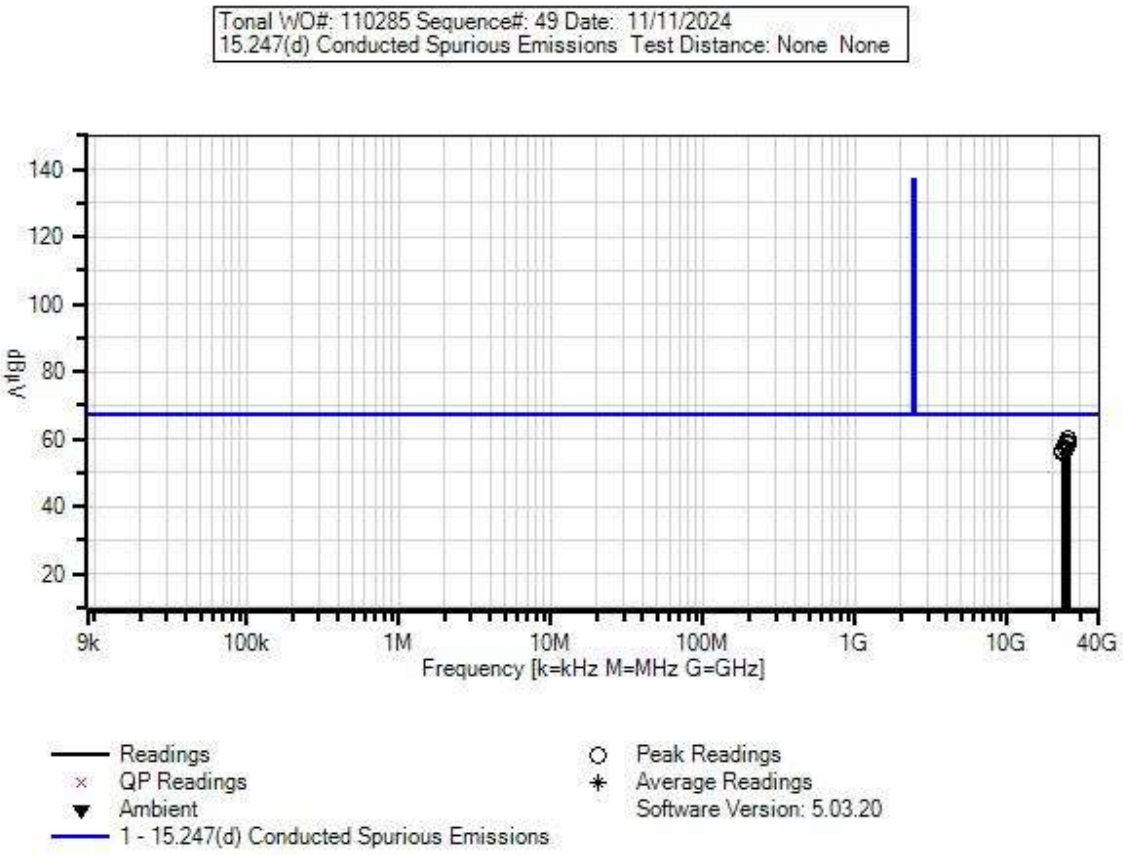
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
Middle Channel-802.11n HT40-Chain 1



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24635.308 M	47.1	+10.0	+2.8			+0.0	59.9	67.5	-7.6	None
2	24699.665 M	47.0	+10.0	+2.8			+0.0	59.8	67.5	-7.7	None
3	24603.129 M	46.3	+10.0	+2.8			+0.0	59.1	67.5	-8.4	None
4	24528.046 M	46.1	+10.1	+2.7			+0.0	58.9	67.5	-8.6	None
5	24978.548 M	45.5	+10.1	+2.8			+0.0	58.4	67.5	-9.1	None
6	23895.197 M	44.6	+10.1	+2.7			+0.0	57.4	67.5	-10.1	None
7	23090.730 M	44.0	+10.1	+2.6			+0.0	56.7	67.5	-10.8	None
8	23165.813 M	43.4	+10.1	+2.6			+0.0	56.1	67.5	-11.4	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**110285**	Date:	11/11/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	3:42:18 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	48
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range: 9kHz to 25GHz

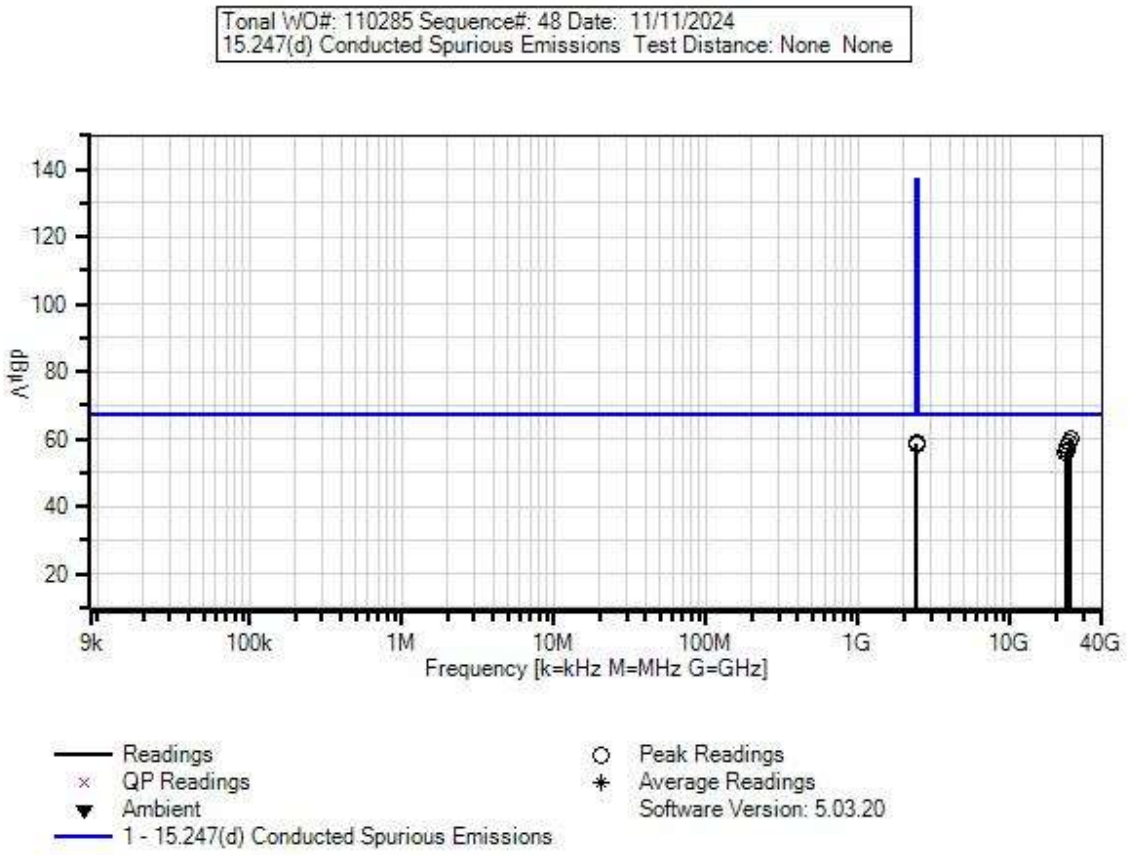
Test Environment Conditions:
Temperature: 25.4°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

No Emission from 9kHz to 30MHz has been found in the tolerant 20dB

Note:
High Channel-802.11n HT40-Chain 1



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
T2	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	24710.392 M	47.5	+10.0	+2.8			+0.0	60.3	67.5	-7.2	None
2	2399.044M	48.2	+9.9	+0.8			+0.0	58.9	67.5	-8.6	None
3	24528.046 M	46.1	+10.1	+2.7			+0.0	58.9	67.5	-8.6	None
4	2394.485M	47.6	+9.9	+0.8			+0.0	58.3	67.5	-9.2	None
5	23745.030 M	44.9	+10.1	+2.7			+0.0	57.7	67.5	-9.8	None
6	23187.266 M	43.8	+10.1	+2.6			+0.0	56.5	67.5	-11.0	None
7	23133.635 M	43.5	+10.1	+2.6			+0.0	56.2	67.5	-11.3	None
8	22940.562 M	43.4	+10.1	+2.6			+0.0	56.1	67.5	-11.4	None

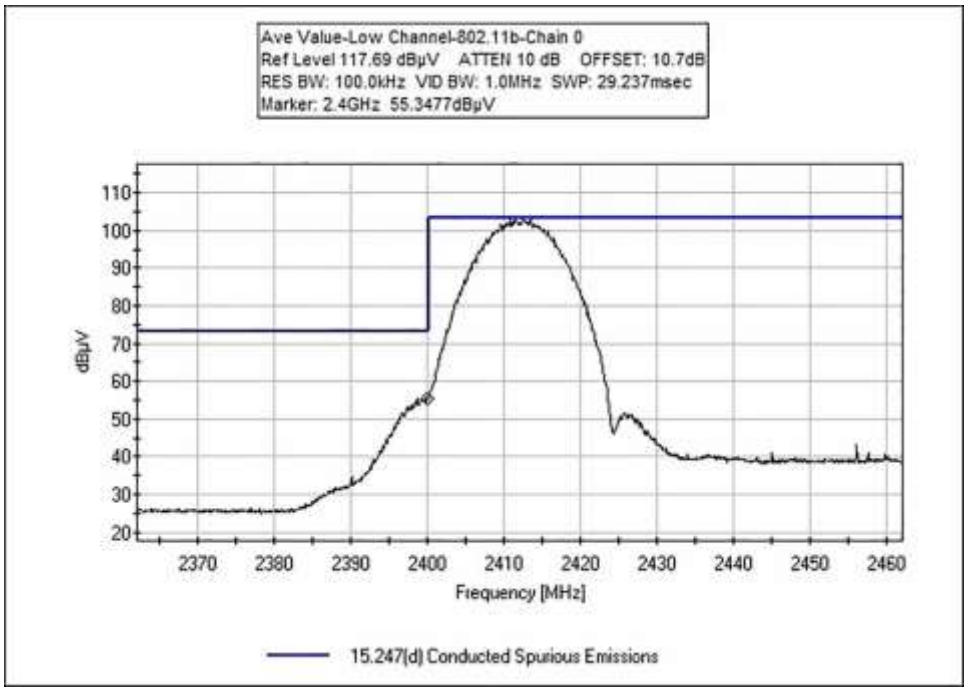
Band Edge

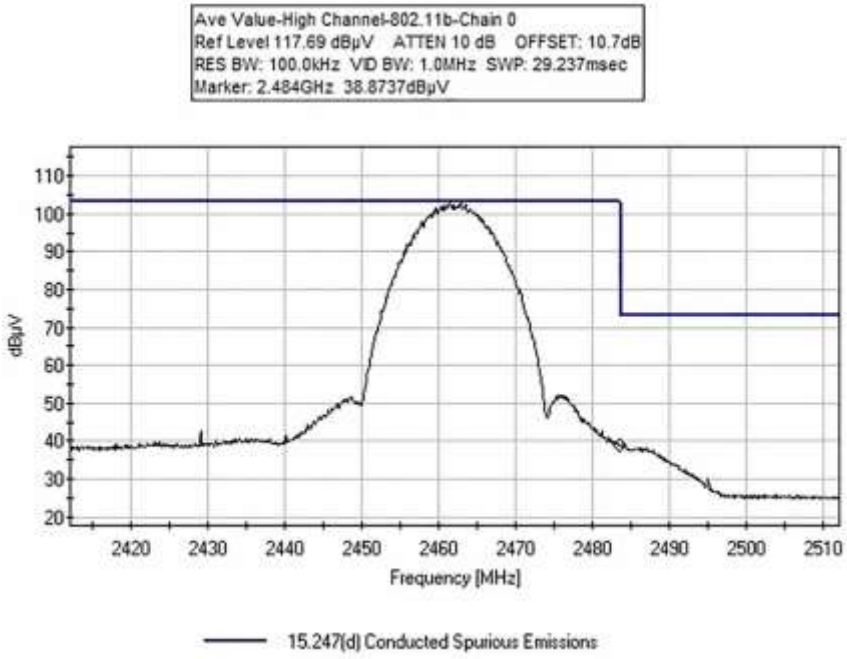
Band Edge Summary CHAIN 0				
Limit applied: Max Power/100kHz - 30dB (When average power limit is applied).				
Frequency (MHz)	**Modulation**	**Measured (dBm)**	**Limit (dBm)**	**Results**
2400	802.11b	55.3	<73.2	Pass
2483.5	802.11b	38.9	<73.2	Pass
2400	802.11g	65.9	<70.8	Pass
2483.5	802.11g	49.6	<70.8	Pass
2400	802.11n HT20	67.1	<70.8	Pass
2483.5	802.11n HT20	51.4	<70.8	Pass
2400	802.11 n HT40	60.2	<67.5	Pass
2483.5	802.11 n HT40	56.1	<67.5	Pass

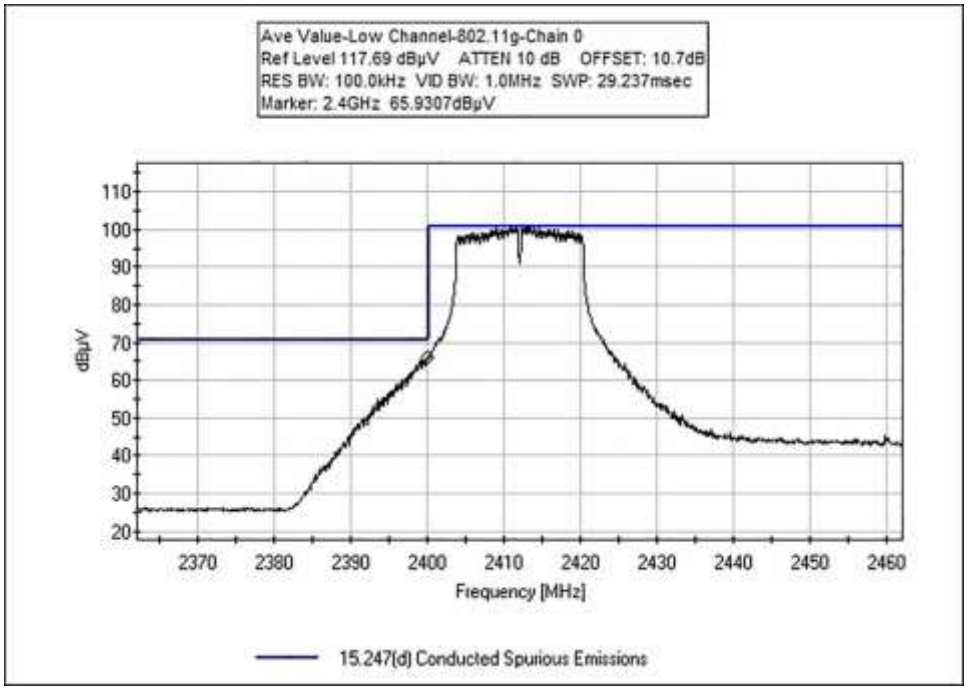
Band Edge Summary CHAIN 1				
Limit applied: Max Power/100kHz - 30dB (When average power limit is applied).				
Frequency (MHz)	**Modulation**	**Measured (dBm)**	**Limit (dBm)**	**Results**
2400	802.11b	57.4	<74.7	Pass
2483.5	802.11b	39.8	<74.7	Pass
2400	802.11g	67.8	<72.8	Pass
2483.5	802.11g	49.3	<72.0	Pass
2400	802.11n HT20	68.9	<72.0	Pass
2483.5	802.11n HT20	50.6	<72.0	Pass
2400	802.11 n HT40	62.9	<69.4	Pass
2483.5	802.11 n HT40	52.7	<68.8	Pass

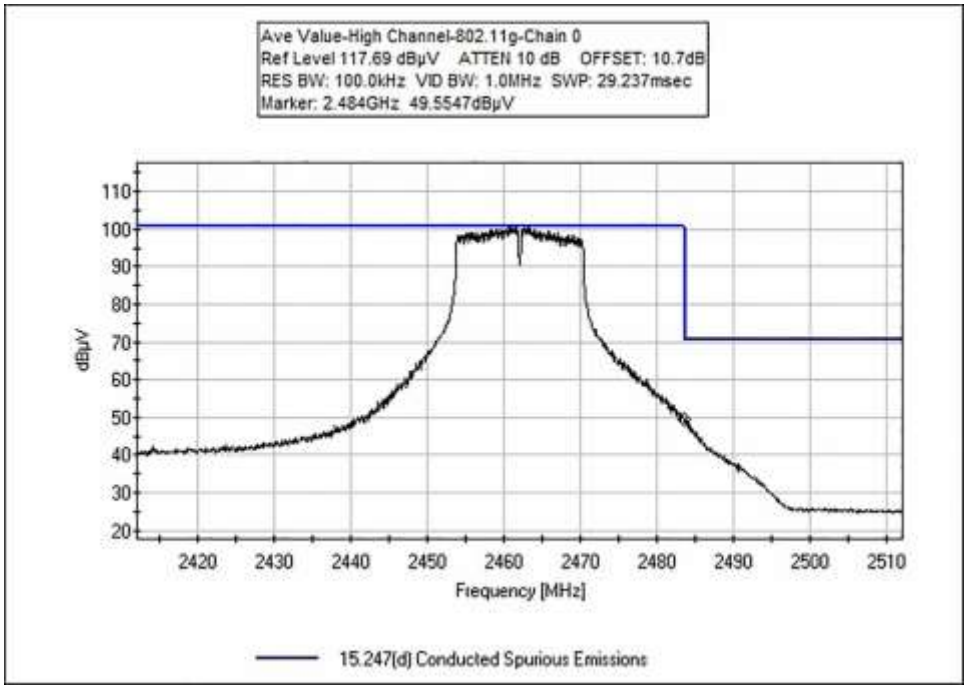
Band Edge Plots

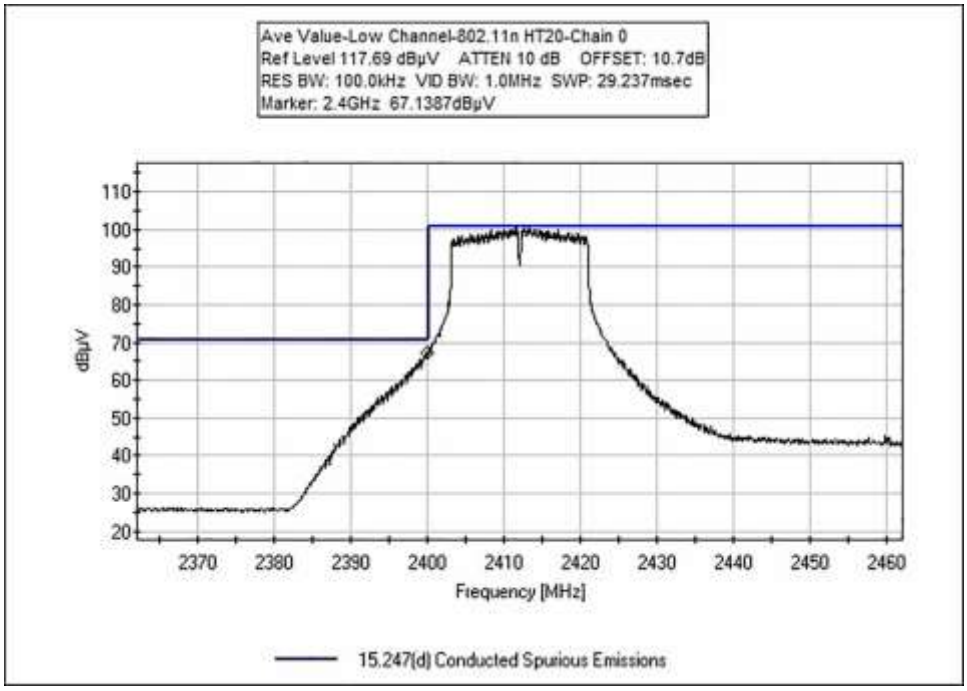
Chain 0

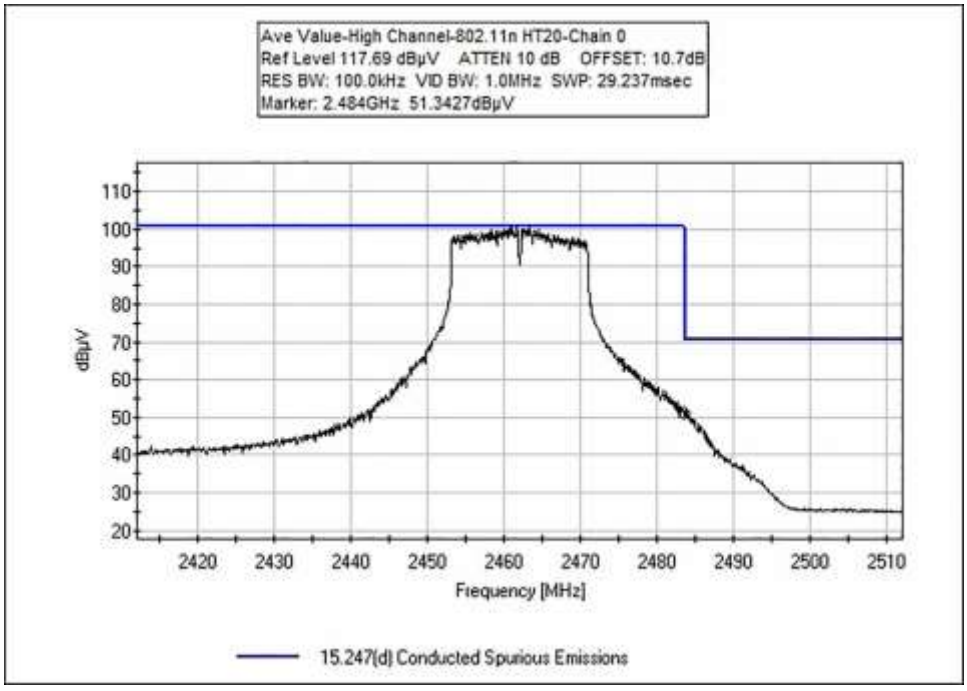


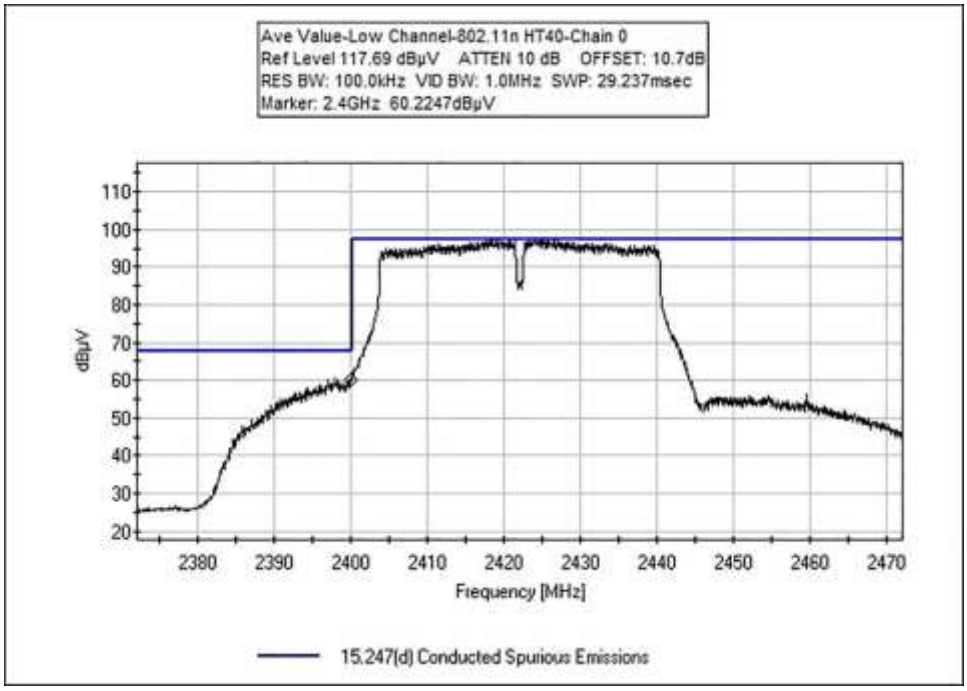


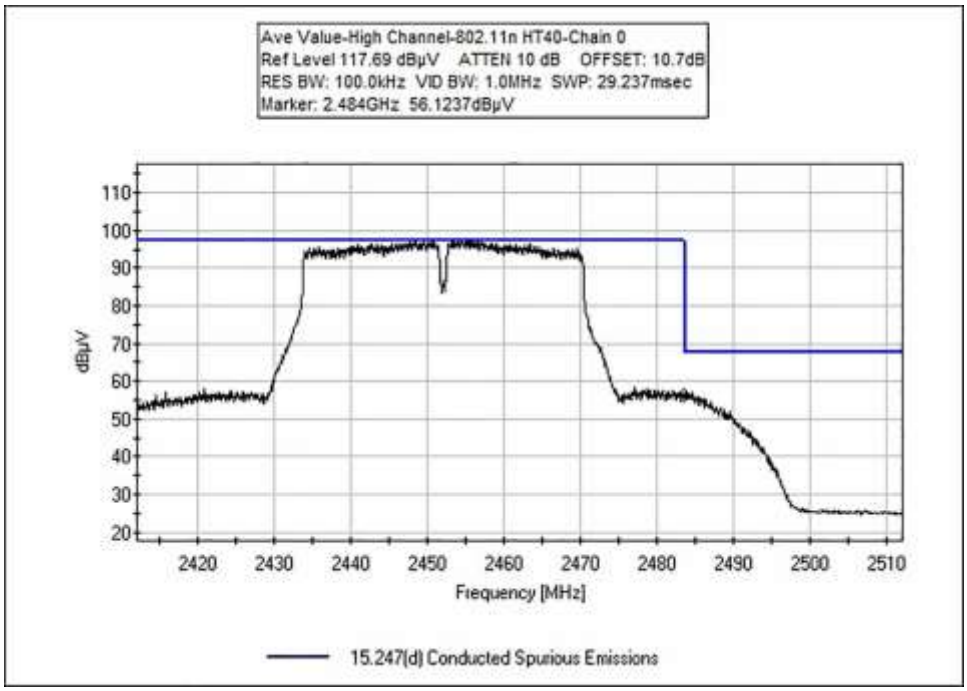

Ave Value-Low Channel-802.11g-Chain 0
Ref Level 117.69 dBµV ATTEN 10 dB OFFSET: 10.7dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 29.237msec
Marker: 2.4GHz 65.9307dBµV
dBµV
110
100
90
80
70
60
50
40
30
20
2370
2380
2390
2400
2410
2420
2430
2440
2450
2460
Frequency [MHz]
15.247(d) Conducted Spurious Emissions


Ave Value-High Channel-802.11g-Chain 0
Ref Level 117.69 dBµV ATTEN 10 dB OFFSET: 10.7dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 29.237msec
Marker: 2.484GHz 49.5547dBµV
dBµV
110
100
90
80
70
60
50
40
30
20
2420
2430
2440
2450
2460
2470
2480
2490
2500
2510
Frequency [MHz]
15.247(d) Conducted Spurious Emissions

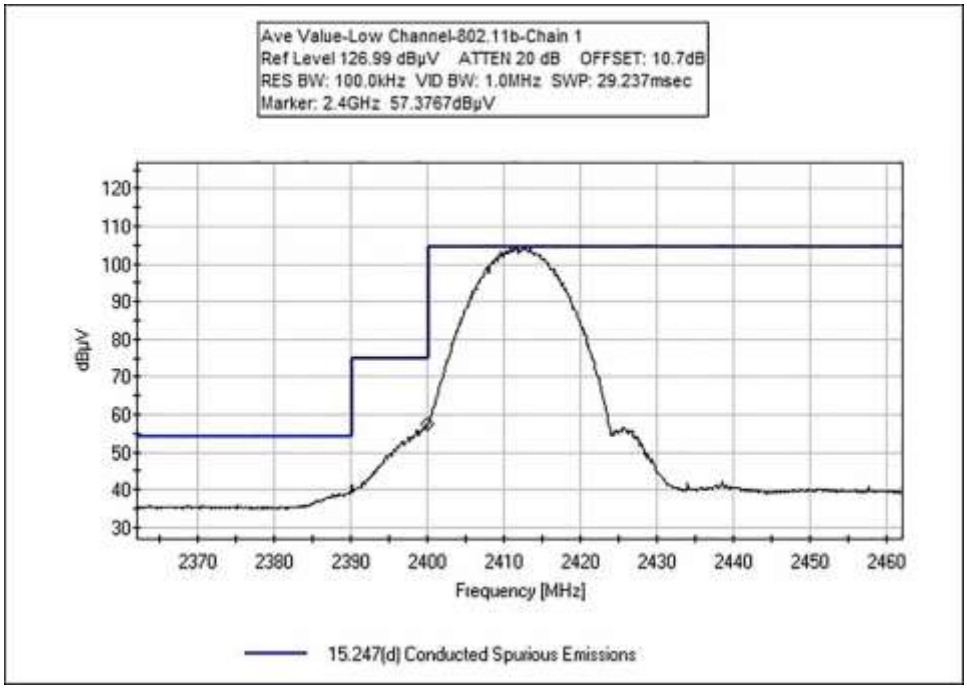

Ave Value-Low Channel-802.11n HT20-Chain 0
Ref Level 117.69 dBµV ATTEN 10 dB OFFSET: 10.7dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 29.237msec
Marker: 2.4GHz 67.1387dBµV
dBµV
110
100
90
80
70
60
50
40
30
20
2370
2380
2390
2400
2410
2420
2430
2440
2450
2460
Frequency [MHz]
15.247(d) Conducted Spurious Emissions

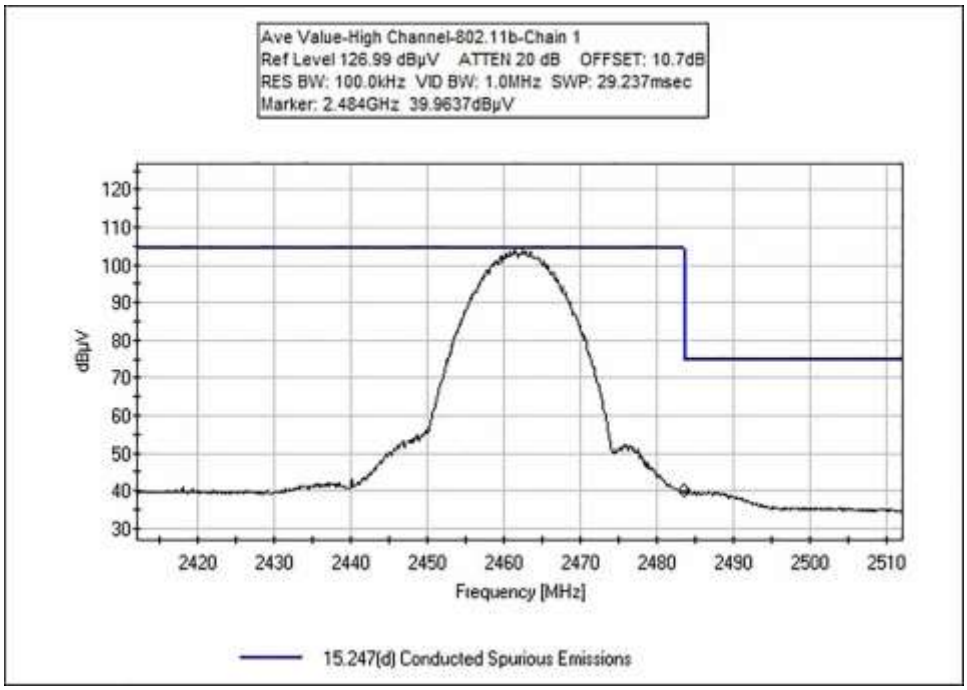

Ave Value-High Channel-802.11n HT20-Chain 0
Ref Level 117.69 dBµV ATTEN 10 dB OFFSET: 10.7dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 29.237msec
Marker: 2.484GHz 51.3427dBµV
dBµV
110
100
90
80
70
60
50
40
30
20
2420
2430
2440
2450
2460
2470
2480
2490
2500
2510
Frequency [MHz]
15.247(d) Conducted Spurious Emissions

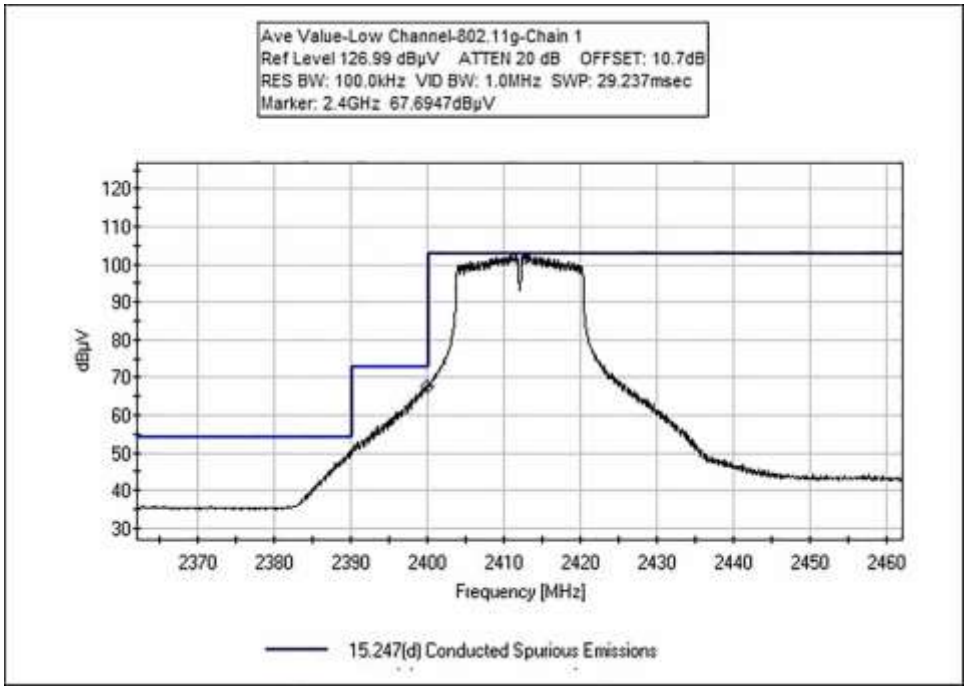

Ave Value-Low Channel-802.11n HT40-Chain 0
Ref Level 117.69 dBµV ATTEN 10 dB OFFSET: 10.7dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 29.237msec
Marker: 2.4GHz 60.2247dBµV
dBµV
110
100
90
80
70
60
50
40
30
20
2380
2390
2400
2410
2420
2430
2440
2450
2460
2470
Frequency [MHz]
15.247(d) Conducted Spurious Emissions

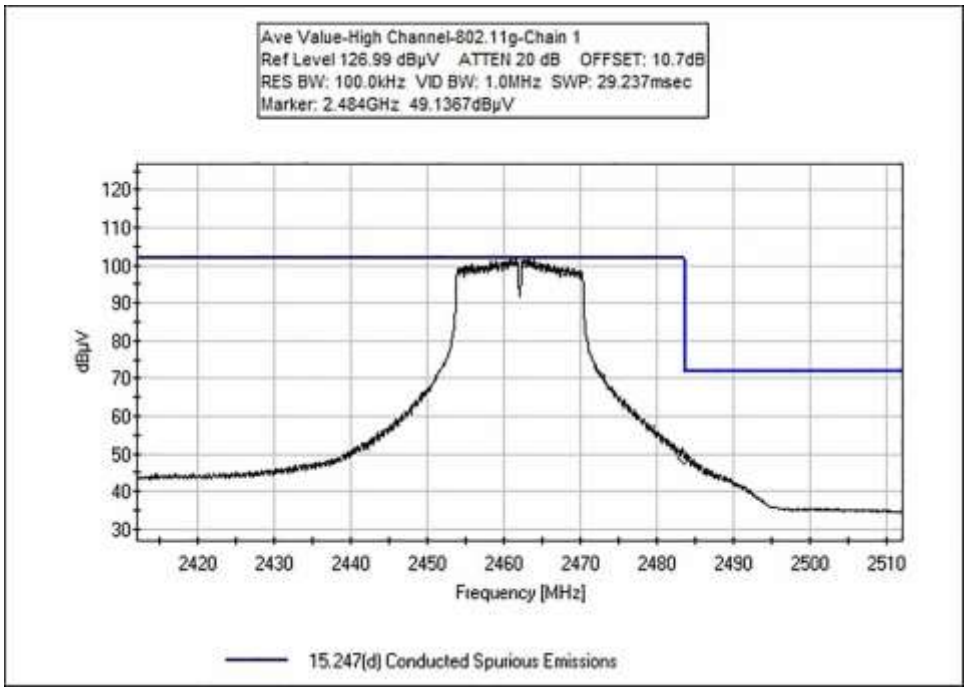

Ave Value-High Channel-802.11n HT40-Chain 0
Ref Level 117.69 dBµV ATTEN 10 dB OFFSET: 10.7dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 29.237msec
Marker: 2.484GHz 56.1237dBµV
dBµV
110
100
90
80
70
60
50
40
30
20
2420
2430
2440
2450
2460
2470
2480
2490
2500
2510
Frequency [MHz]
15.247(d) Conducted Spurious Emissions

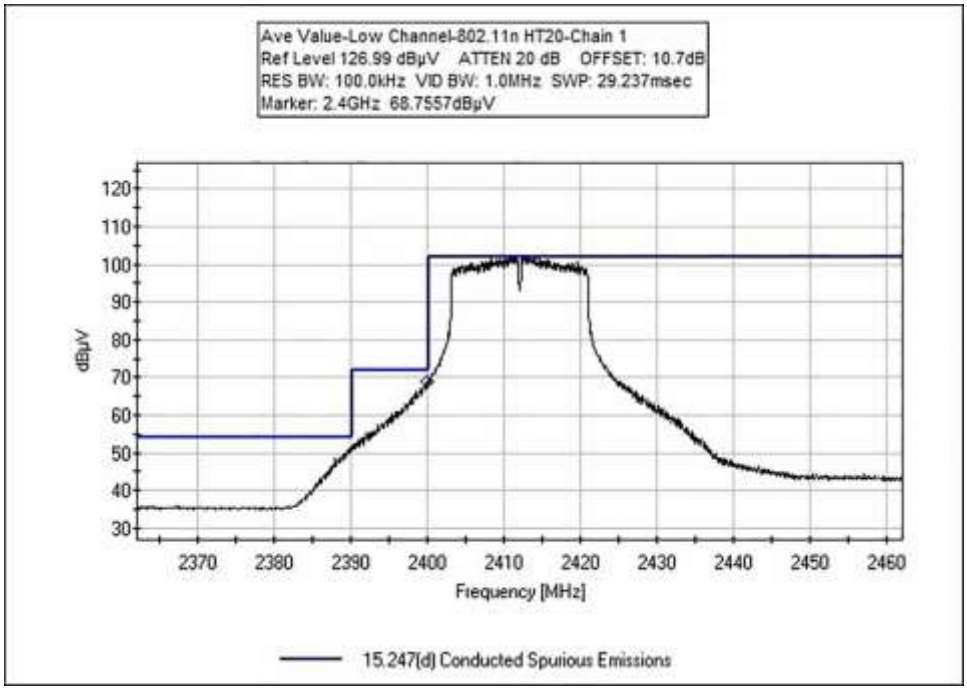
Chain 1

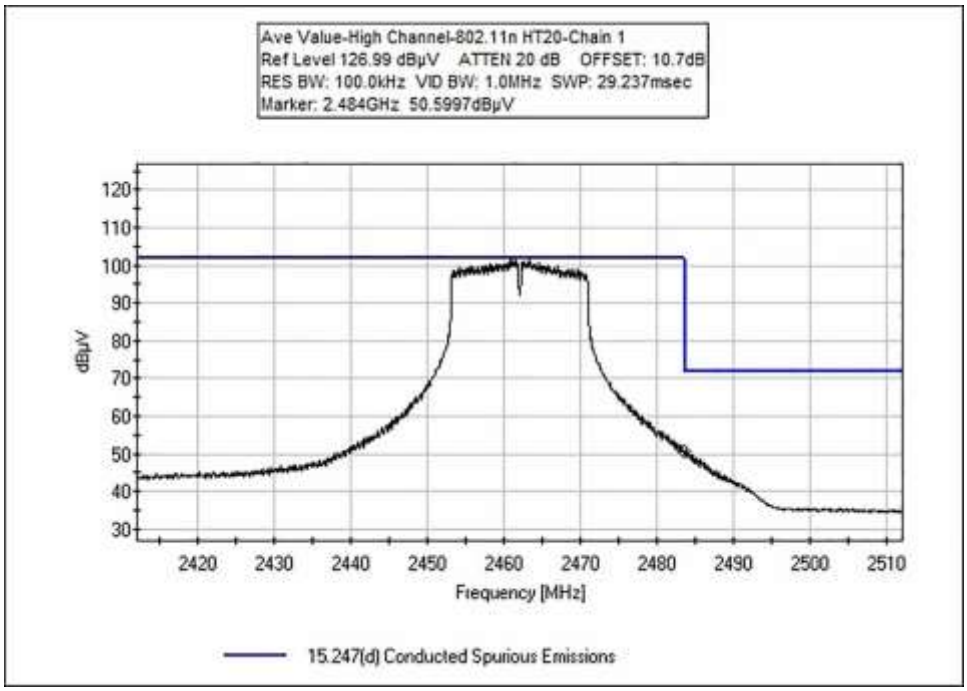

Ave Value-Low Channel-802.11b-Chain 1
Ref Level 126.99 dBµV ATTEN 20 dB OFFSET: 10.7dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 29.237msec
Marker: 2.4GHz 57.3767dBµV
dBµV
120
110
100
90
80
70
60
50
40
30
2370
2380
2390
2400
2410
2420
2430
2440
2450
2460
Frequency [MHz]
15.247(d) Conducted Spurious Emissions

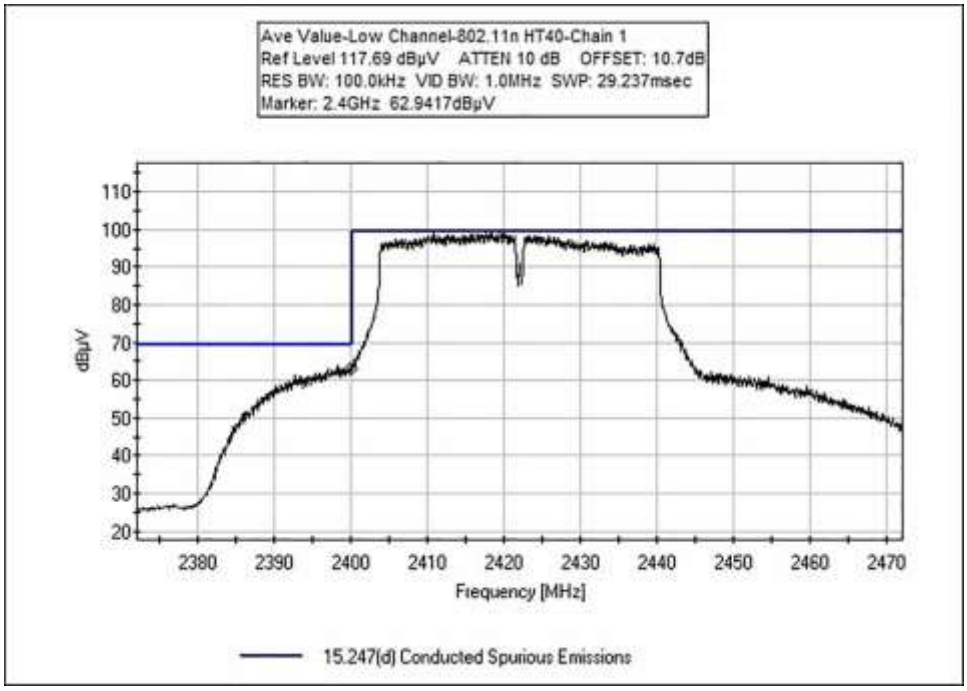

Ave Value-High Channel-802.11b-Chain 1
Ref Level 126.99 dBµV ATTEN 20 dB OFFSET: 10.7dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 29.237msec
Marker: 2.484GHz 39.9637dBµV
dBµV
120
110
100
90
80
70
60
50
40
30
2420
2430
2440
2450
2460
2470
2480
2490
2500
2510
Frequency [MHz]
15.247(d) Conducted Spurious Emissions

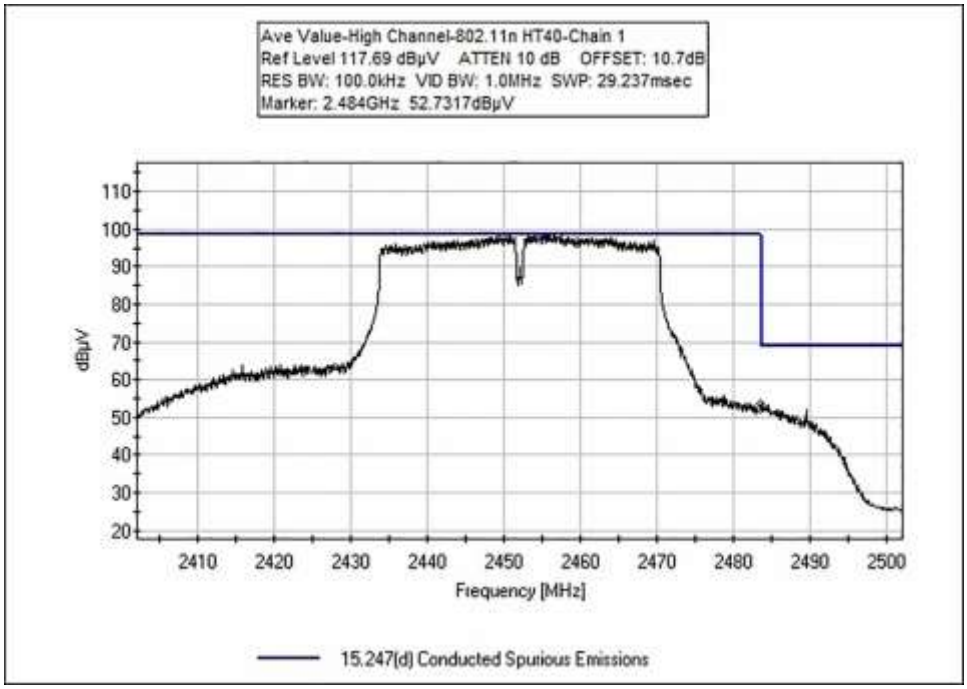

Ave Value-Low Channel-802.11g-Chain 1
Ref Level 126.99 dBµV ATTEN 20 dB OFFSET: 10.7dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 29.237msec
Marker: 2.4GHz 67.6947dBµV
dBµV
120
110
100
90
80
70
60
50
40
30
2370
2380
2390
2400
2410
2420
2430
2440
2450
2460
Frequency [MHz]
15.247(d) Conducted Spurious Emissions


Ave Value-High Channel-802.11g-Chain 1
Ref Level 126.99 dBµV ATTEN 20 dB OFFSET: 10.7dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 29.237msec
Marker: 2.484GHz 49.1367dBµV
dBµV
120
110
100
90
80
70
60
50
40
30
2420
2430
2440
2450
2460
2470
2480
2490
2500
2510
Frequency [MHz]
15.247(d) Conducted Spurious Emissions


Ave Value-Low Channel-802.11n HT20-Chain 1
Ref Level 126.99 dBµV ATTEN 20 dB OFFSET: 10.7dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 29.237msec
Marker: 2.4GHz 68.7557dBµV
dBµV
120
110
100
90
80
70
60
50
40
30
2370
2380
2390
2400
2410
2420
2430
2440
2450
2460
Frequency [MHz]
15.247(d) Conducted Spurious Emissions


Ave Value-High Channel-802.11n HT20-Chain 1
Ref Level 126.99 dBµV ATTEN 20 dB OFFSET: 10.7dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 29.237msec
Marker: 2.484GHz 50.5997dBµV
dBµV
120
110
100
90
80
70
60
50
40
30
2420
2430
2440
2450
2460
2470
2480
2490
2500
2510
Frequency [MHz]
15.247(d) Conducted Spurious Emissions


Ave Value-Low Channel-802.11n HT40-Chain 1
Ref Level 117.69 dBµV ATTEN 10 dB OFFSET: 10.7dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 29.237msec
Marker: 2.4GHz 62.9417dBµV
dBµV
110
100
90
80
70
60
50
40
30
20
2380
2390
2400
2410
2420
2430
2440
2450
2460
2470
Frequency [MHz]
15.247(d) Conducted Spurious Emissions


Ave Value-High Channel-802.11n HT40-Chain 1
Ref Level 117.69 dBµV ATTEN 10 dB OFFSET: 10.7dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 29.237msec
Marker: 2.484GHz 52.7317dBµV
dBµV
110
100
90
80
70
60
50
40
30
20
2410
2420
2430
2440
2450
2460
2470
2480
2490
2500
Frequency [MHz]
15.247(d) Conducted Spurious Emissions

Test Setup / Conditions / Data

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**Band Edge**		
Work Order #:	**110285**	Date:	11/8/2024
Test Type:	**Conducted Emission on Antenna Port**	Time:	16:36:48
Tested By:	Hieu Song Nguyenpham	Sequence#:	36
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Band Edge

Test Environment Conditions:
Temperature: 25°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa
Highest Generated Frequency: 2.48GHz
Method: ANSI C63.10 2020

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

Note
Chain 0

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN03471	Spectrum Analyzer	E4440A	2/23/2024	2/23/2026
	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026

Measurement Data: Reading listed by order taken. Test Distance: None

#	Freq MHz	Rdng dBµV	dB	dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	2400.000M Ave	55.3					+0.0	55.3	73.2 802.11b	-17.9	None
2	2483.500M Ave	38.9					+0.0	38.9	73.2 802.11b	-34.3	None
3	2483.500M Ave	49.6					+0.0	49.6	70.8 802.11g	-21.2	None
4	2400.000M Ave	65.9					+0.0	65.9	70.8 802.11g	-4.9	None
5	2400.000M Ave	67.1					+0.0	67.1	70.8 802.11n HT20	-3.7	None
6	2483.500M Ave	51.4					+0.0	51.4	70.8 802.11n HT20	-19.4	None
7	2483.500M Ave	56.1					+0.0	56.1	67.5 802.11n HT40	-11.4	None
8	2400.000M Ave	60.2					+0.0	60.2	67.5 802.11n HT40	-7.3	None

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**Band Edge**		
Work Order #:	**110285**	Date:	11/8/2024
Test Type:	**Conducted Scan**	Time:	16:04:53
Tested By:	Hieu Song Nguyenpham	Sequence#:	35
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration A			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration A			

Test Conditions / Notes:

Band Edge

Test Environment Conditions:
Temperature: 25°C
Humidity: 44%
Atmospheric Pressure: 100.9kPa
Highest Generated Frequency: 2.48GHz
Method: ANSI C63.10 2020

The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer. A laptop is used to send the command to the EUT.

Note
Chain 1

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN03471	Spectrum Analyzer	E4440A	2/23/2024	2/23/2026
	ANP07365	Attenuator	54A-10	5/26/2023	5/26/2025
	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026

Measurement Data: Reading listed by order taken. Test Distance: None

#	Freq MHz	Rdng dBµV	dB	dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	2400.000M Ave	57.4					+0.0	57.4	74.7 802.11g	-17.3	None
2	2483.500M Ave	39.8					+0.0	39.8	74.7 802.11b	-34.9	None
3	2400.000M Ave	67.8					+0.0	67.8	72.8 802.11g	-5.0	None
4	2483.500M Ave	49.3					+0.0	49.3	72.0 802.11g	-22.7	None
5	2483.500M Ave	50.6					+0.0	50.6	72.0 802.11n HT20	-21.4	None
6	2400.000M Ave	68.9					+0.0	68.9	72.0 802.11n HT20	-3.1	None
7	2400.000M Ave	62.9					+0.0	62.9	69.4 802.11n HT40	-6.5	None
8	2483.500M Ave	52.7					+0.0	52.7	68.8 802.11n HT40	-16.1	None

Test Setup Photo(s)

Test Setup

Test Setup, Closeup View

15.247(d) Radiated Emissions & Band Edge

Test Setup/Conditions			
Test Location:	Fremont Lab C3	Test Engineer:	Hieu Song Nguyenpham
Test Method:	ANSI C63.10 (2020), KDB 558074	Test Date(s):	10/23/204, 11/5/2024, and 11/6/2024
Configuration:	1		
Note	Perform Radiated Emission on the Chain 0 only since Chain 0 is the worst case based on the investigation on RF output power for the band edge before measuring Radiated Spurious Emission.		

Test Setup / Conditions / Data

Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170
Customer: **Tonal**
Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
Work Order #: **110285** Date: 11/6/2024
Test Type: **Radiated Scan** Time: 17:30:27
Tested By: Hieu Song Nguyenpham Sequence#: 158
Software: EMITest 5.03.20

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Radiated Emission
Frequency Range: 9kHz to 1GHz

Test Environment Conditions:
Temperature: 22.7°C
Humidity: 36%
Atmospheric Pressure: 101.8kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The unit is mounted to a floor standing rack as to simulate typical wall mounted setup. One weight line is extended to the floor. Camera is on.
WiFi transmitting continuously with modulation type as listed with pattern of 0s and 1s at power level 14 with duty cycle at 100%.

802.11g (18Mbps)-2442MHz-Middle Channel

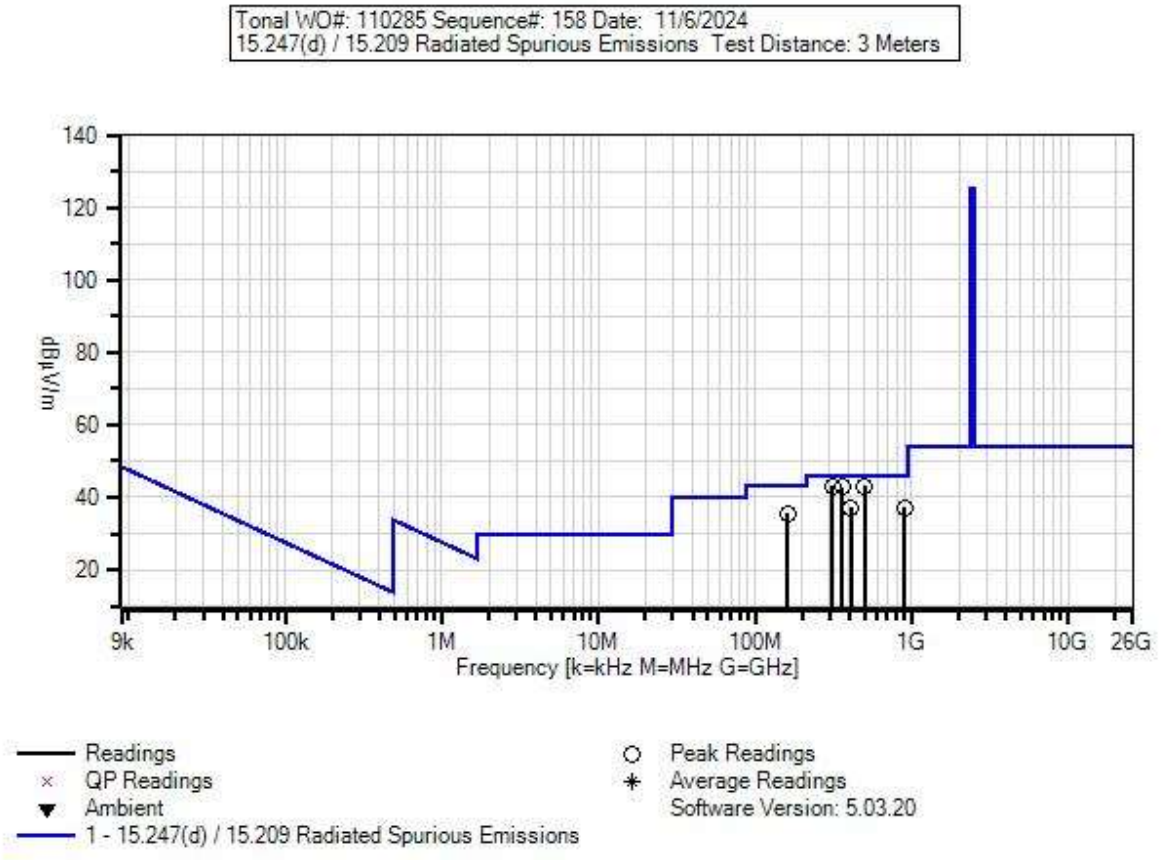
MIMO not enabled, manufacturer declares chain 0 and chain 1 transmit uncorrelated data.

Chain 0

Operational mode is representative of worst case.

Modification #1 was in place for testing.

No emissions from EUT has been found in 20dB tolerance in the frequency range 9kHz to 30MHz.



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07508	Preamp	310N	4/5/2024	4/5/2026
	AN00432	Loop Antenna	6502	7/10/2023	7/10/2025
T2	AN01995	Biconilog Antenna	CBL6111C	5/16/2024	5/16/2026
T3	ANP00880	Cable	RG214U	3/26/2024	3/26/2026
T4	ANP01187	Cable	CNT-195	7/3/2024	7/3/2026
T5	ANP06691	Cable	PE3062-180	3/20/2024	3/20/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	312.044M	52.8	-31.9 +0.6	+19.4	+1.8	+0.5	+0.0	43.2	46.0	-2.8	Horiz
2	503.996M	46.7	-32.0 +0.8	+24.5	+2.3	+0.7	+0.0	43.0	46.0	-3.0	Horiz
3	359.972M	50.9	-31.9 +0.7	+20.5	+1.9	+0.6	+0.0	42.7	46.0	-3.3	Horiz
4	162.014M	49.1	-32.0 +0.4	+16.5	+1.2	+0.3	+0.0	35.5	43.5	-8.0	Vert
5	408.020M	43.6	-31.9 +0.7	+22.2	+2.0	+0.7	+0.0	37.3	46.0	-8.7	Vert
6	896.308M	34.0	-31.5 +1.2	+29.1	+3.3	+1.0	+0.0	37.1	46.0	-8.9	Vert

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**110285**	Date:	11/5/2024
Test Type:	**Radiated Scan**	Time:	10:49:13
Tested By:	Hieu Song Nguyenpham	Sequence#:	127
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Radiated Emission
Frequency Range: 1GHz to 26GHz

Test Environment Conditions:
Temperature: 22.0°C
Humidity: 37%
Atmospheric Pressure: 101.5kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The unit is mounted to a floor standing rack as to simulate typical wall mounted setup. One weight line is extended to the floor. Camera is on.
WiFi transmitting continuously with modulation type as listed with pattern of 0s and 1s at power level 14

802.11g

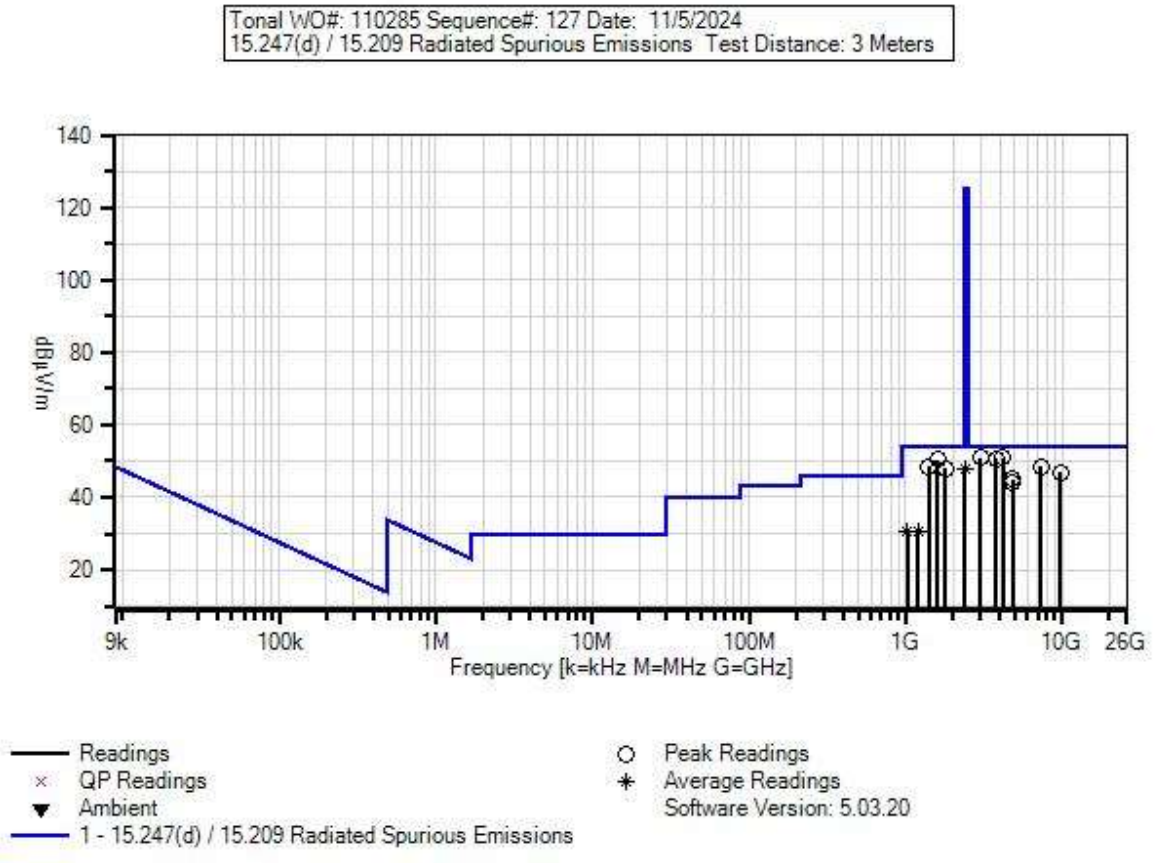
MIMO not enabled, manufacturer declares chain 0 and chain 1 transmit uncorrelated data.

Chain 0

Operational mode is representative of worst case.

Modification #1 was in place for testing.

Low Channel



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02157	Horn Antenna-ANSI C63.5	3115	1/11/2023	1/11/2025
T2	AN03302	Cable	32026-29094K-29094K-72TC	1/9/2024	1/9/2026
T3	ANP01210	Cable	FSJ1P-50A-4A	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024
T4	AN02810	Preamp	83051A	4/6/2023	4/6/2025
T5	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	ANP07701	Cable	32022-29094K-29094K-120TC	8/16/2024	8/16/2026
	AN02693	Active Horn Antenna	AMFW-5F-12001800-20-10P	1/9/2024	1/9/2026
	AN02694	Horn Antenna	AMFW-5F-18002650-20-10P	1/9/2024	1/9/2026
	ANP00928	Cable	various	1/26/2024	1/26/2026

	ANP00929	Cable	various	1/26/2024	1/26/2026
	ANP07698	Cable	32022-29094K-29094K-72TC	8/16/2024	8/16/2026
T6	AN03386	High Pass Filter	11SH10-3000/T10000-O/O	3/22/2024	3/22/2026
T7	AN03011	Cable	32022-2-2909K-24TC	3/23/2023	3/23/2025
T8	AN03209	Preamp	83051A	8/22/2023	8/22/2025

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3 T7	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	3000.000M	69.3	+30.1 +0.9	+1.5 +0.7	+2.8 +0.6	-26.7 -28.3	+0.0	50.9	54.0	-3.1	Vert
2	4181.751M	67.0	+32.4 +1.0	+1.8 +0.3	+3.4 +0.8	-26.5 -29.3	+0.0	50.9	54.0	-3.1	Vert
3	3794.047M	67.5	+32.0 +1.0	+1.7 +0.3	+3.2 +0.7	-26.6 -29.1	+0.0	50.7	54.0	-3.3	Vert
4	1597.700M	48.7	+26.1 +0.6	+1.1 +0.0	+2.0 +0.0	-28.0 +0.0	+0.0	50.5	54.0	-3.5	Horiz
5	7296.871M	55.1	+36.2 +1.5	+2.6 +0.2	+4.5 +1.5	-25.6 -27.4	+0.0	48.6	54.0	-5.4	Horiz
6	1400.320M	47.9	+25.3 +0.6	+1.0 +0.0	+1.9 +0.0	-28.2 +0.0	+0.0	48.5	54.0	-5.5	Vert
7	7296.550M	54.9	+36.2 +1.5	+2.6 +0.2	+4.5 +1.5	-25.6 -27.4	+0.0	48.4	54.0	-5.6	Vert
8	2390.000M Ave	42.2	+28.3 +0.8	+1.3 +0.0	+2.5 +0.0	-27.1 +0.0	+0.0	48.0	54.0	-6.0	Horiz
^	2390.000M	58.4	+28.3 +0.8	+1.3 +0.0	+2.5 +0.0	-27.1 +0.0	+0.0	64.2	54.0	+10.2	Horiz
10	1800.640M	44.3	+27.2 +0.7	+1.2 +0.0	+2.2 +0.0	-27.7 +0.0	+0.0	47.9	54.0	-6.1	Horiz
11	9738.951M	50.5	+39.4 +1.6	+3.0 +0.2	+5.9 +1.3	-28.4 -26.7	+0.0	46.8	54.0	-7.2	Horiz
12	4858.800M	59.0	+33.5 +1.1	+2.0 +0.3	+3.6 +0.9	-26.4 -28.9	+0.0	45.1	54.0	-8.9	Vert
13	4854.900M	58.2	+33.5 +1.1	+2.0 +0.3	+3.6 +0.9	-26.4 -28.9	+0.0	44.3	54.0	-9.7	Horiz
14	1026.410M Ave	32.0	+24.3 +0.6	+1.0 +0.0	+1.6 +0.0	-28.7 +0.0	+0.0	30.8	54.0	-23.2	Vert
^	1026.410M	58.3	+24.3 +0.6	+1.0 +0.0	+1.6 +0.0	-28.7 +0.0	+0.0	57.1	54.0	+3.1	Vert
16	1197.380M Ave	30.8	+24.8 +0.6	+0.9 +0.0	+1.7 +0.0	-28.5 +0.0	+0.0	30.3	54.0	-23.7	Vert
^	1197.380M	55.1	+24.8 +0.6	+0.9 +0.0	+1.7 +0.0	-28.5 +0.0	+0.0	54.6	54.0	+0.6	Vert

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**110285**	Date:	11/5/2024
Test Type:	**Radiated Scan**	Time:	11:37:59
Tested By:	Hieu Song Nguyenpham	Sequence#:	128
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Radiated Emission
Frequency Range: 1GHz to 26GHz

Test Environment Conditions:
Temperature: 22.0°C
Humidity: 37%
Atmospheric Pressure: 101.5kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The unit is mounted to a floor standing rack as to simulate typical wall mounted setup. One weight line is extended to the floor. Camera is on.
WiFi transmitting continuously with modulation type as listed with pattern of 0s and 1s at power level 14

802.11g

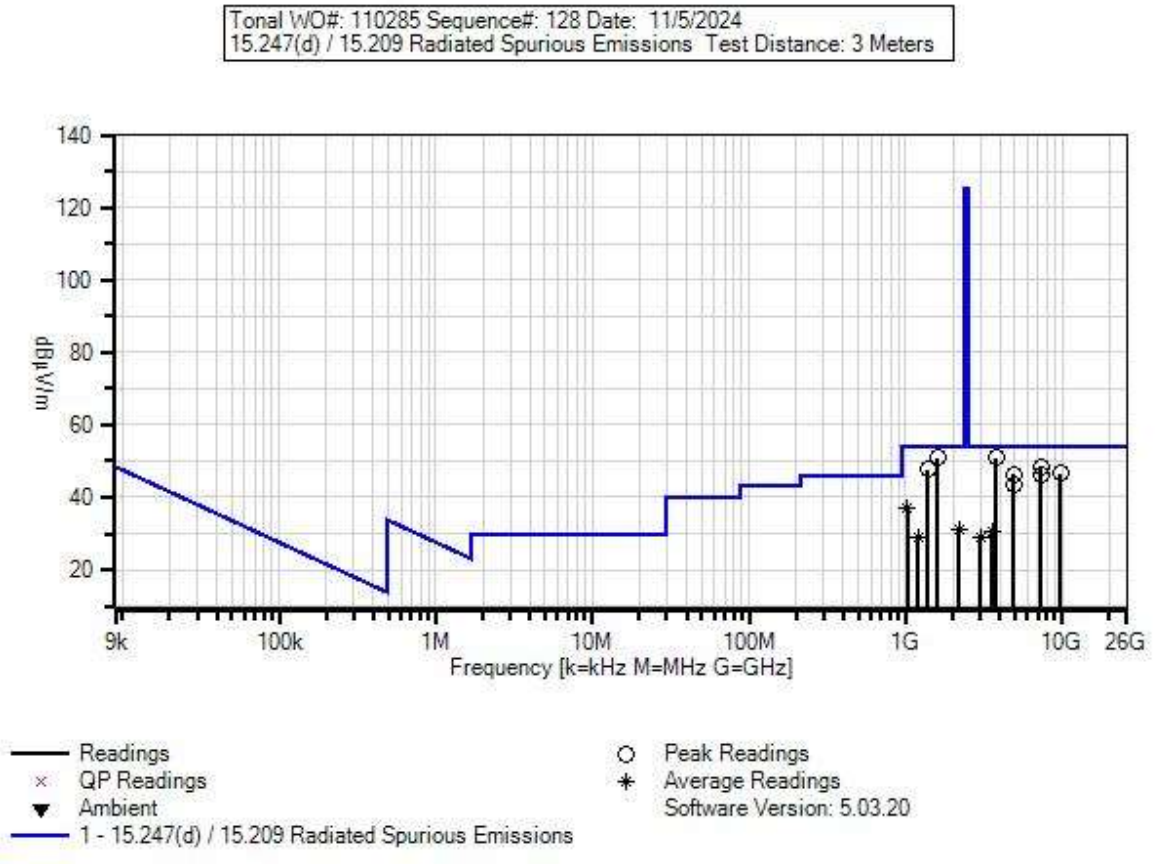
MIMO not enabled, manufacturer declares chain 0 and chain 1 transmit uncorrelated data.

Chain 0

Operational mode is representative of worst case.

Modification #1 was in place for testing.

Middle Channel



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02157	Horn Antenna-ANSI C63.5	3115	1/11/2023	1/11/2025
T2	AN03302	Cable	32026-29094K-29094K-72TC	1/9/2024	1/9/2026
T3	ANP01210	Cable	FSJ1P-50A-4A	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024
T4	AN02810	Preamp	83051A	4/6/2023	4/6/2025
T5	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	ANP07701	Cable	32022-29094K-29094K-120TC	8/16/2024	8/16/2026
	AN02693	Active Horn Antenna	AMFW-5F-12001800-20-10P	1/9/2024	1/9/2026
	AN02694	Horn Antenna	AMFW-5F-18002650-20-10P	1/9/2024	1/9/2026
	ANP00928	Cable	various	1/26/2024	1/26/2026
	ANP00929	Cable	various	1/26/2024	1/26/2026

	ANP07698	Cable	32022-29094K-29094K-72TC	8/16/2024	8/16/2026
T6	AN03386	High Pass Filter	11SH10-3000/T10000-O/O	3/22/2024	3/22/2026
T7	AN03011	Cable	32022-2-2909K-24TC	3/23/2023	3/23/2025
T8	AN03209	Preamp	83051A	8/22/2023	8/22/2025

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3 T7	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	1597.700M	49.2	+26.1 +0.6	+1.1 +0.0	+2.0 +0.0	-28.0 +0.0	+0.0	51.0	54.0	-3.0	Horiz
2	3789.077M	67.5	+32.0 +1.0	+1.7 +0.3	+3.2 +0.7	-26.6 -29.0	+0.0	50.8	54.0	-3.2	Vert
3	7325.800M	54.6	+36.3 +1.5	+2.6 +0.2	+4.6 +1.5	-25.6 -27.4	+0.0	48.3	54.0	-5.7	Horiz
4	1393.370M	47.1	+25.3 +0.6	+1.0 +0.0	+1.9 +0.0	-28.2 +0.0	+0.0	47.7	54.0	-6.3	Vert
5	9767.800M	50.3	+39.5 +1.6	+3.0 +0.2	+5.9 +1.3	-28.4 -26.8	+0.0	46.6	54.0	-7.4	Horiz
6	7325.800M	52.6	+36.3 +1.5	+2.6 +0.2	+4.6 +1.5	-25.6 -27.4	+0.0	46.3	54.0	-7.7	Vert
7	4882.100M	60.1	+33.6 +1.1	+2.0 +0.2	+3.6 +0.9	-26.4 -28.9	+0.0	46.2	54.0	-7.8	Horiz
8	4883.800M	57.2	+33.6 +1.1	+2.0 +0.2	+3.6 +0.9	-26.4 -28.9	+0.0	43.3	54.0	-10.7	Vert
9	1020.850M Ave	38.0	+24.3 +0.6	+1.0 +0.0	+1.6 +0.0	-28.7 +0.0	+0.0	36.8	54.0	-17.2	Vert
^	1020.850M	58.3	+24.3 +0.6	+1.0 +0.0	+1.6 +0.0	-28.7 +0.0	+0.0	57.1	54.0	+3.1	Vert
11	2196.790M Ave	25.7	+28.2 +0.8	+1.3 +0.0	+2.4 +0.0	-27.2 +0.0	+0.0	31.2	54.0	-22.8	Horiz
^	2196.790M	53.1	+28.2 +0.8	+1.3 +0.0	+2.4 +0.0	-27.2 +0.0	+0.0	58.6	54.0	+4.6	Horiz
13	3583.224M Ave	47.4	+31.7 +1.0	+1.7 +0.5	+3.2 +0.7	-26.8 -28.7	+0.0	30.7	54.0	-23.3	Vert
^	3583.224M	69.8	+31.7 +1.0	+1.7 +0.5	+3.2 +0.7	-26.8 -28.7	+0.0	53.1	54.0	-0.9	Vert
15	1195.990M Ave	29.7	+24.8 +0.6	+0.9 +0.0	+1.7 +0.0	-28.5 +0.0	+0.0	29.2	54.0	-24.8	Vert
^	1195.990M	54.3	+24.8 +0.6	+0.9 +0.0	+1.7 +0.0	-28.5 +0.0	+0.0	53.8	54.0	-0.2	Vert
17	3000.000M Ave	47.2	+30.1 +0.9	+1.5 +0.7	+2.8 +0.6	-26.7 -28.3	+0.0	28.8	54.0	-25.2	Vert
^	3000.000M	71.5	+30.1 +0.9	+1.5 +0.7	+2.8 +0.6	-26.7 -28.3	+0.0	53.1	54.0	-0.9	Vert

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**110285**	Date:	11/5/2024
Test Type:	**Radiated Scan**	Time:	11:42:20
Tested By:	Hieu Song Nguyenpham	Sequence#:	129
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Radiated Emission
Frequency Range: 1GHz to 26GHz

Test Environment Conditions:
Temperature: 22.7°C
Humidity: 36%
Atmospheric Pressure: 101.8kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The unit is mounted to a floor standing rack as to simulate typical wall mounted setup. One weight line is extended to the floor. Camera is on.
WiFi transmitting continuously with modulation type as listed with pattern of 0s and 1s at power level 14

802.11g

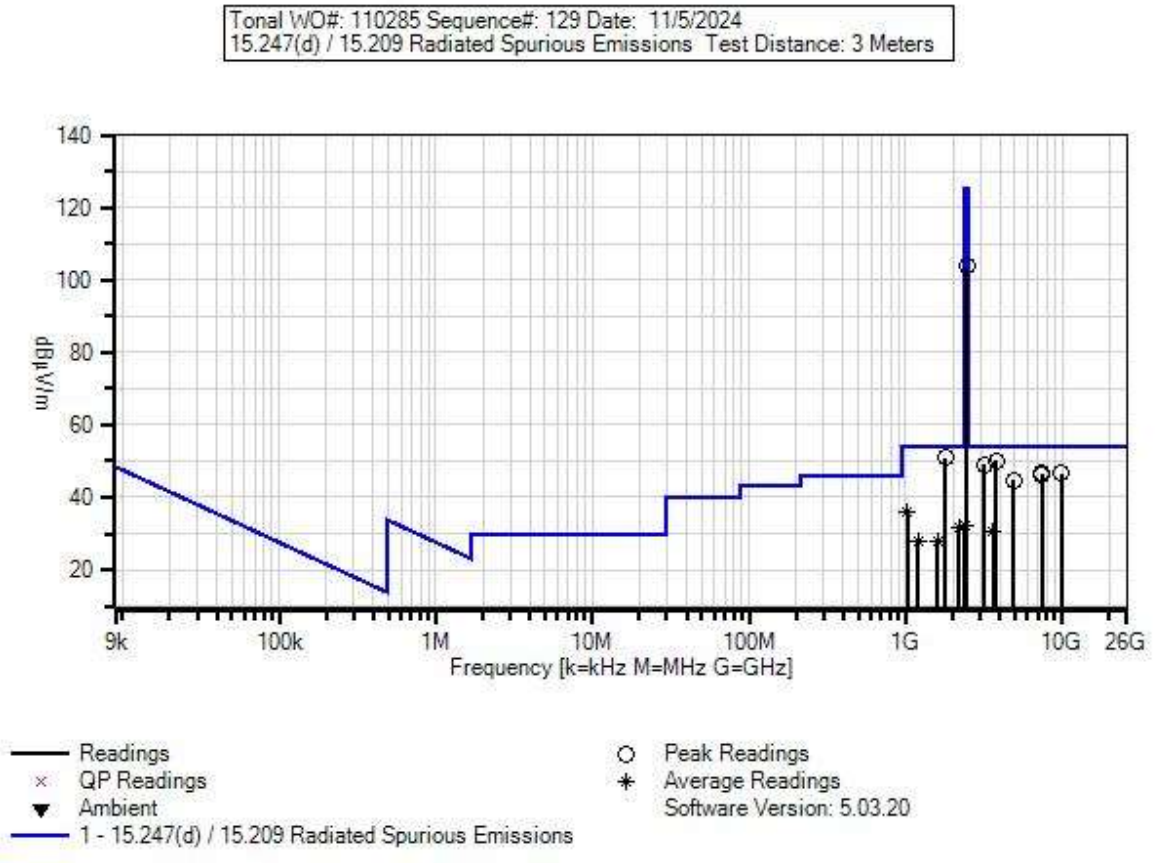
MIMO not enabled, manufacturer declares chain 0 and chain 1 transmit uncorrelated data.

Chain 0

Operational mode is representative of worst case.

Modification #1 was in place for testing.

High Channel



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02157	Horn Antenna-ANSI C63.5	3115	1/11/2023	1/11/2025
T2	AN03302	Cable	32026-29094K-29094K-72TC	1/9/2024	1/9/2026
T3	ANP01210	Cable	FSJ1P-50A-4A	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024
T4	AN02810	Preamp	83051A	4/6/2023	4/6/2025
T5	AN03013	Cable	32022-2-2909K-36TC	1/9/2024	1/9/2026
	ANP07701	Cable	32022-29094K-29094K-120TC	8/16/2024	8/16/2026
	AN02693	Active Horn Antenna	AMFW-5F-12001800-20-10P	1/9/2024	1/9/2026
	AN02694	Horn Antenna	AMFW-5F-18002650-20-10P	1/9/2024	1/9/2026

	ANP00928	Cable	various	1/26/2024	1/26/2026
	ANP00929	Cable	various	1/26/2024	1/26/2026
	ANP07698	Cable	32022-29094K-29094K-72TC	8/16/2024	8/16/2026
T6	AN03386	High Pass Filter	11SH10-3000/T10000-O/O	3/22/2024	3/22/2026
T7	AN03011	Cable	32022-2-2909K-24TC	3/23/2023	3/23/2025
T8	AN03209	Preamp	83051A	8/22/2023	8/22/2025

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3 T7	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	1795.700M	47.3	+27.2 +0.7	+1.2 +0.0	+2.1 +0.0	-27.7 +0.0	+0.0	50.8	54.0	-3.2	Horiz
2	3786.000M	66.9	+32.0 +1.0	+1.7 +0.3	+3.2 +0.7	-26.6 -29.0	+0.0	50.2	54.0	-3.8	Vert
3	3193.500M	66.8	+30.7 +0.9	+1.6 +0.6	+2.9 +0.6	-26.8 -28.4	+0.0	48.9	54.0	-5.1	Vert
4	9849.650M	50.2	+39.6 +1.7	+3.0 +0.2	+5.9 +1.3	-28.5 -26.8	+0.0	46.6	54.0	-7.4	Horiz
5	7389.800M	52.8	+36.4 +1.5	+2.6 +0.2	+4.6 +1.5	-25.7 -27.4	+0.0	46.5	54.0	-7.5	Vert
6	7387.650M	52.7	+36.4 +1.5	+2.6 +0.2	+4.6 +1.5	-25.7 -27.4	+0.0	46.4	54.0	-7.6	Horiz
7	4922.550M	58.5	+33.7 +1.2	+2.0 +0.2	+3.6 +0.9	-26.4 -28.9	+0.0	44.8	54.0	-9.2	Horiz
8	4925.650M	58.2	+33.7 +1.2	+2.0 +0.2	+3.6 +0.9	-26.4 -28.9	+0.0	44.5	54.0	-9.5	Vert
9	1025.200M Ave	37.3	+24.3 +0.6	+1.0 +0.0	+1.6 +0.0	-28.7 +0.0	+0.0	36.1	54.0	-17.9	Vert
^	1025.200M	58.2	+24.3 +0.6	+1.0 +0.0	+1.6 +0.0	-28.7 +0.0	+0.0	57.0	54.0	+3.0	Vert
11	2460.450M	91.0	+28.3 +0.8	+1.4 +33.9	+2.5 +0.6	-27.0 -27.8	+0.0	103.7	125.2	-21.5	Horiz
12	2388.800M Ave	26.6	+28.3 +0.8	+1.3 +0.0	+2.5 +0.0	-27.1 +0.0	+0.0	32.4	54.0	-21.6	Vert
^	2388.800M	56.1	+28.3 +0.8	+1.3 +0.0	+2.5 +0.0	-27.1 +0.0	+0.0	61.9	54.0	+7.9	Vert
14	2197.000M Ave	26.0	+28.2 +0.8	+1.3 +0.0	+2.4 +0.0	-27.2 +0.0	+0.0	31.5	54.0	-22.5	Horiz
^	2197.000M	53.9	+28.2 +0.8	+1.3 +0.0	+2.4 +0.0	-27.2 +0.0	+0.0	59.4	54.0	+5.4	Horiz
16	3598.500M Ave	47.4	+31.7 +1.0	+1.7 +0.5	+3.2 +0.7	-26.8 -28.7	+0.0	30.7	54.0	-23.3	Vert

^	3598.500M	69.0	+31.7	+1.7	+3.2	-26.8	+0.0	52.3	54.0	-1.7	Vert
			+1.0	+0.5	+0.7	-28.7					
18	1595.000M	26.0	+26.1	+1.1	+2.0	-28.0	+0.0	27.8	54.0	-26.2	Horiz
	Ave		+0.6	+0.0	+0.0	+0.0					
^	1595.000M	51.0	+26.1	+1.1	+2.0	-28.0	+0.0	52.8	54.0	-1.2	Horiz
			+0.6	+0.0	+0.0	+0.0					
20	1196.000M	28.2	+24.8	+0.9	+1.7	-28.5	+0.0	27.7	54.0	-26.3	Vert
	Ave		+0.6	+0.0	+0.0	+0.0					
^	1196.000M	53.6	+24.8	+0.9	+1.7	-28.5	+0.0	53.1	54.0	-0.9	Vert
			+0.6	+0.0	+0.0	+0.0					

Band Edge

Band Edge Summary-CHAIN 0

Limit applied at restricted bands: 15.209
Limit applied for other than restricted bands: Max Power/100kHz - 30dB (When average power limit is applied).

Frequency (MHz)	Modulation	Ant. Type / Gain (dBi)	Average (dBuV/m @3m)		Peak (dBuV/m @3m)		Results
			Measured	Limit	Measured	Limit	
2390.0	802.11b	External/3.76	45.2	≤54	57.7	≤74	Pass
2400.0	802.11b	External/3.76	57.9	≤74.6	NA3	NA3	Pass
2483.5	802.11b	External/3.76	46.1	≤54	57.9	≤74	Pass
2390.0	802.11g	External/3.76	48.3	≤54	61.9	≤74	Pass
2400.0	802.11g	External/3.76	69.7	≤73	NA3	NA3	Pass
2483.5	802.11g	External/3.76	49.9	≤54	63.8	≤74	Pass
2390.0	802.11n HT20	External/3.76	49.2	≤54	64.2	≤74	Pass
2400.0	802.11n HT20	External/3.76	71.9	≤73	NA3	NA3	Pass
2483.5	802.11n HT20	External/3.76	53.4	≤54	64.9	≤74	Pass
2390.0	802.11n HT40	External/3.76	50.9	≤54	62.6	≤74	Pass
2400.0	802.11n HT40	External/3.76	60.6	≤68.4	NA3	NA3	Pass
2483.5	802.11n HT40	External/3.76	50	≤54	60.6	≤74	Pass

Notes: NA3 = Peak Limit not applicable when applying 30dBc limit.

Band Edge Summary-CHAIN 1

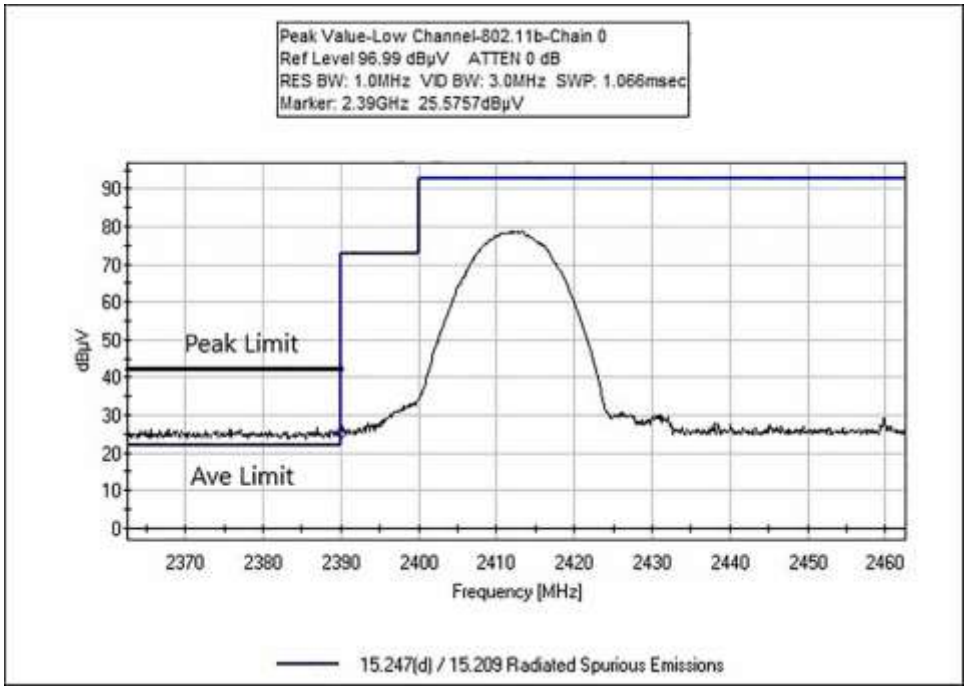
Limit applied at restricted bands: 15.209
Limit applied for other than restricted bands: Max Power/100kHz - 30dB (When average power limit is applied).

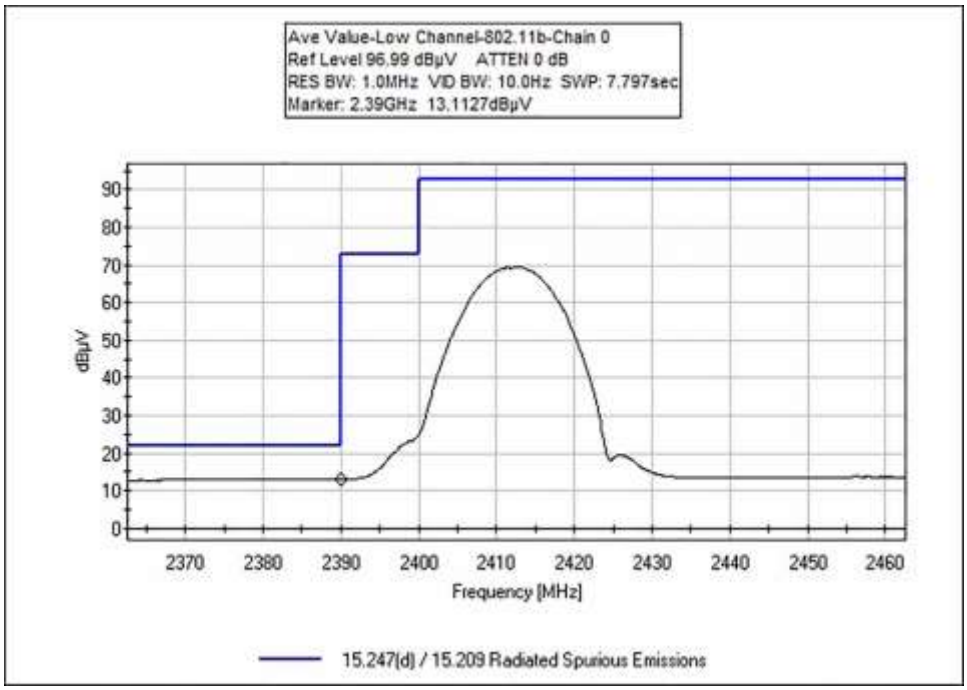
Frequency (MHz)	Modulation	Ant. Type / Gain (dBi)	Average (dBuV/m @3m)		Peak (dBuV/m @3m)		Results
			Measured	Limit	Measured	Limit	
2390.0	802.11b	External/3.76	45.1	≤54	57.8	≤74	Pass
2400.0	802.11b	External/3.76	58.3	≤68.1	NA3	NA3	Pass
2483.5	802.11b	External/3.76	45.2	≤54	58.4	≤74	Pass
2390.0	802.11g	External/3.76	49.2	≤54	68.2	≤74	Pass
2400.0	802.11g	External/3.76	68.2	≤71.8	NA3	NA3	Pass
2483.5	802.11g	External/3.76	47.6	≤54	61.6	≤74	Pass
2390.0	802.11n HT20	External/3.76	49.7	≤54	64.7	≤74	Pass
2400.0	802.11n HT20	External/3.76	68.7	≤71.8	NA3	NA3	Pass
2483.5	802.11n HT20	External/3.76	48.3	≤54	63.0	≤74	Pass
2390.0	802.11n HT40	External/3.76	51.1	≤54	64.7	≤74	Pass
2398.3	802.11n HT40	External/3.76	64.2	≤68.1	NA3	NA3	Pass
2483.5	802.11n HT40	External/3.76	50.4	≤54	64.0	≤74	Pass

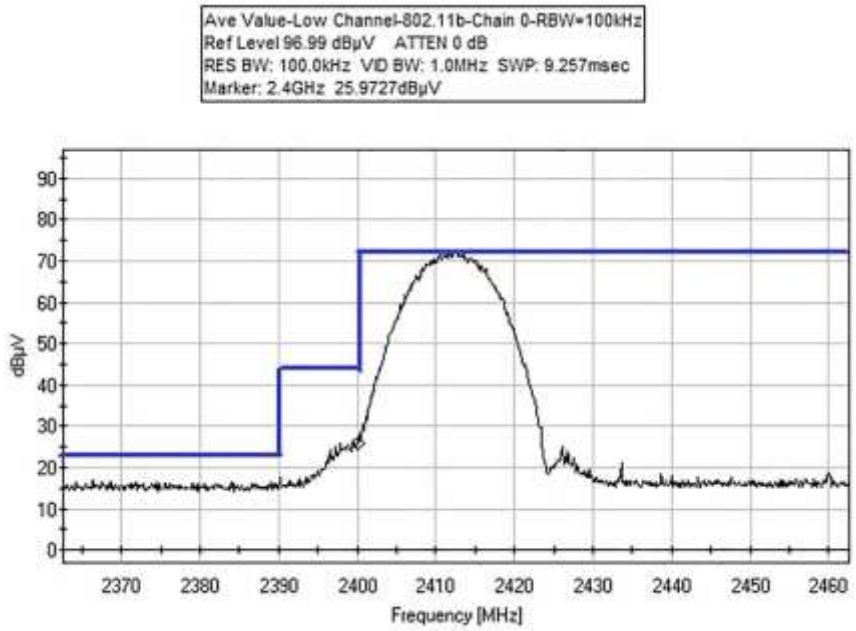
Notes: NA3 = Peak Limit not applicable when applying 30dBc limit.

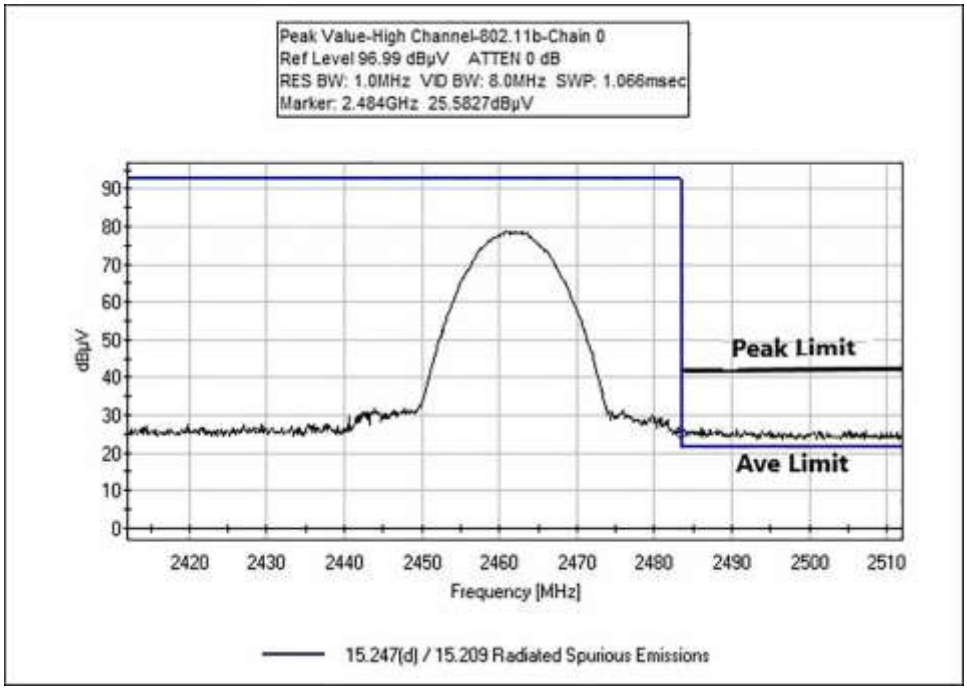
Band Edge Plots

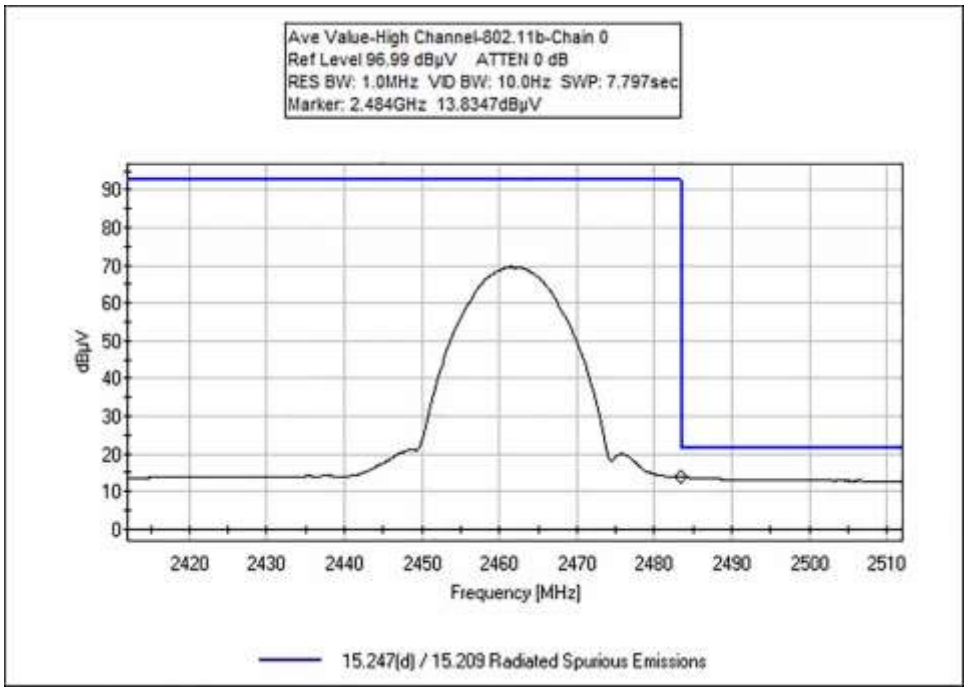
CHAIN 0

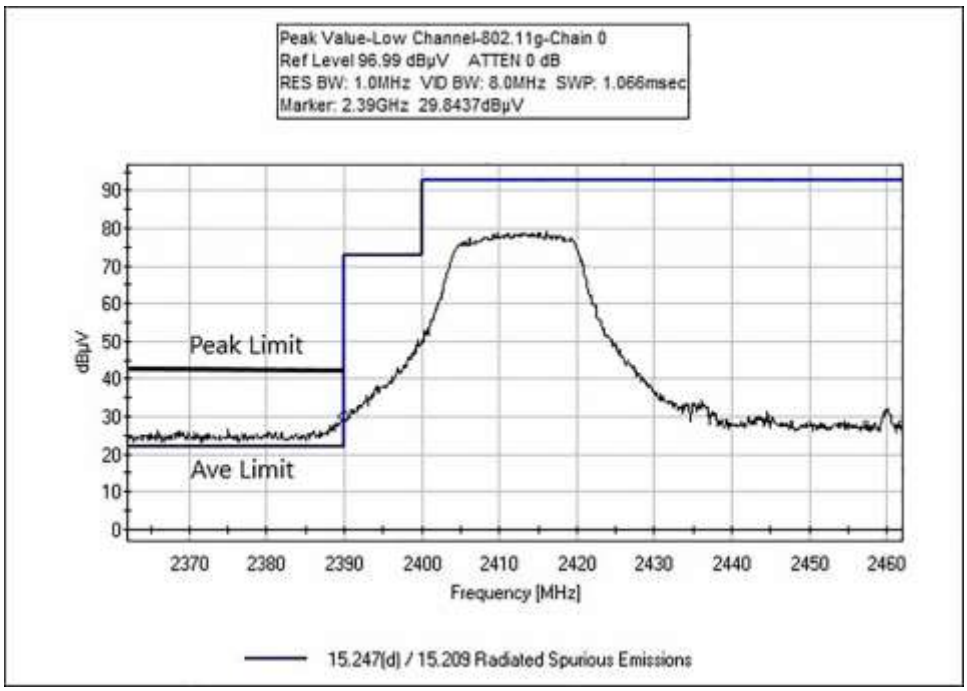


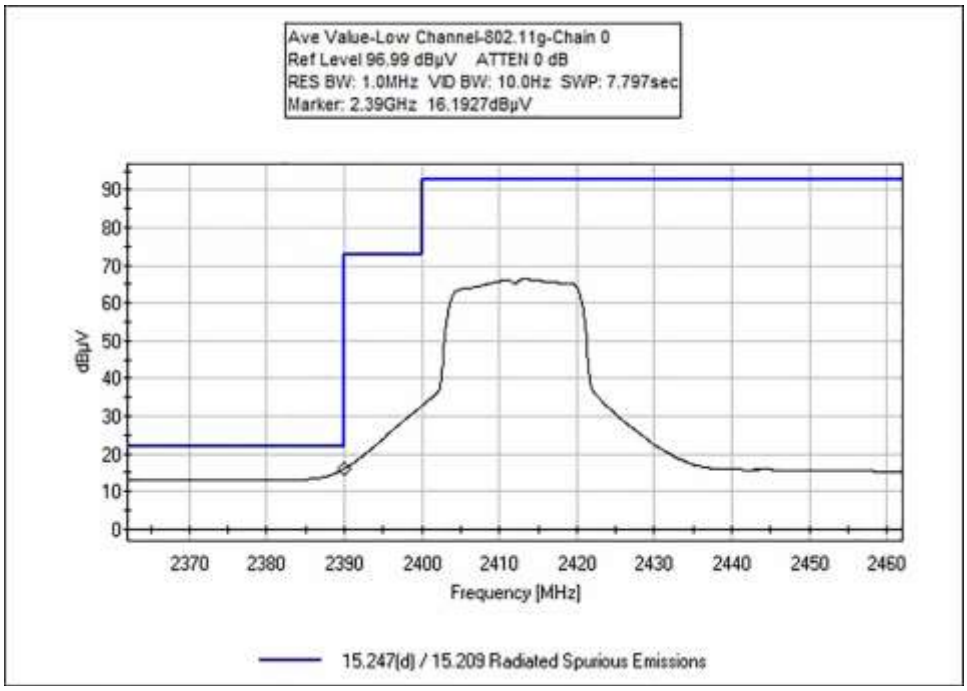


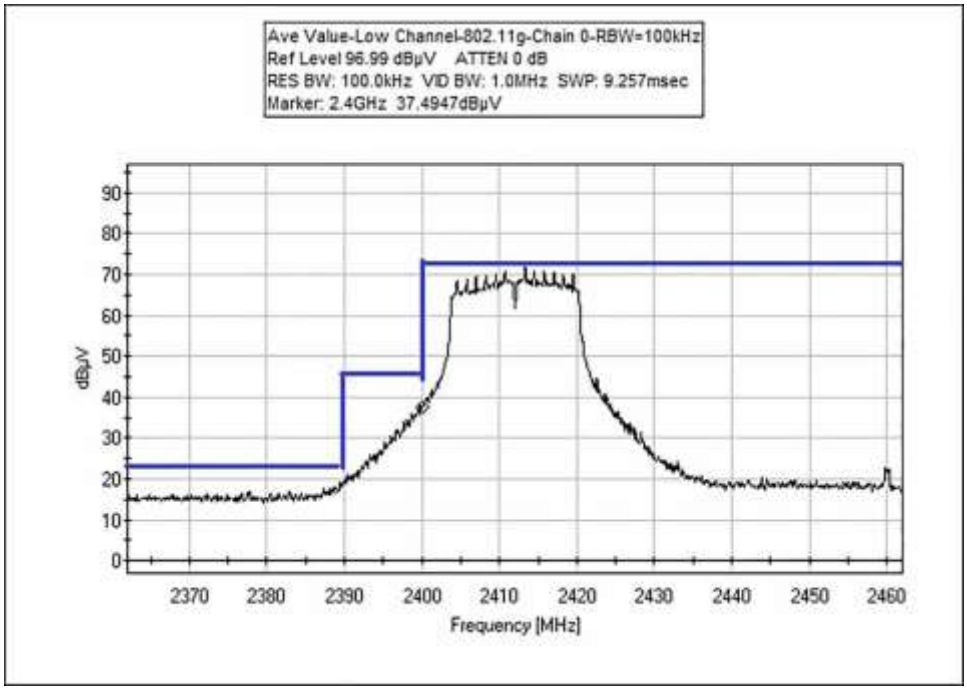

Ave Value-Low Channel-802.11b-Chain 0-RBW=100kHz
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 9.257msec
Marker: 2.4GHz 25.9727dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2370
2380
2390
2400
2410
2420
2430
2440
2450
2460
Frequency [MHz]

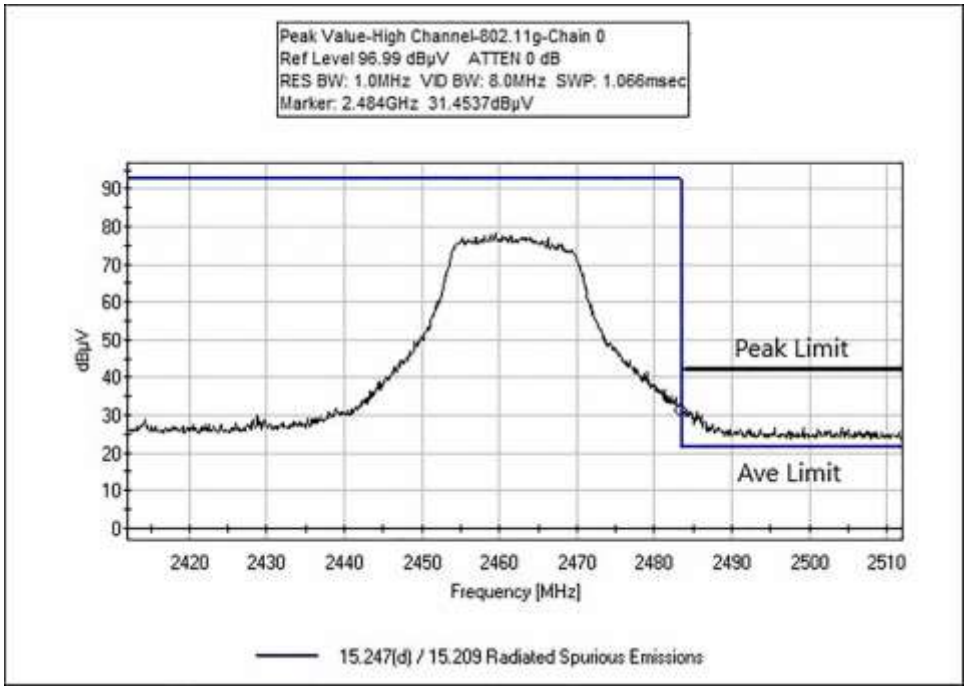

Peak Value-High Channel-802.11b-Chain 0
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 8.0MHz SWP: 1.066msec
Marker: 2.484GHz 25.5827dBµV
dBµV
Peak Limit
Ave Limit
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Ave Value-High Channel-802.11b-Chain 0
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 10.0Hz SWP: 7.797sec
Marker: 2.484GHz 13.8347dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Peak Value-Low Channel-802.11g-Chain 0
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 8.0MHz SWP: 1.066msec
Marker: 2.39GHz 29.8437dBµV
Peak Limit
Ave Limit
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Ave Value-Low Channel-802.11g-Chain 0
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 10.0Hz SWP: 7.797sec
Marker: 2.39GHz 16.1927dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Ave Value-Low Channel-802.11g-Chain 0-RBW=100kHz
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 9.257msec
Marker: 2.4GHz 37.4947dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2370
2380
2390
2400
2410
2420
2430
2440
2450
2460
Frequency [MHz]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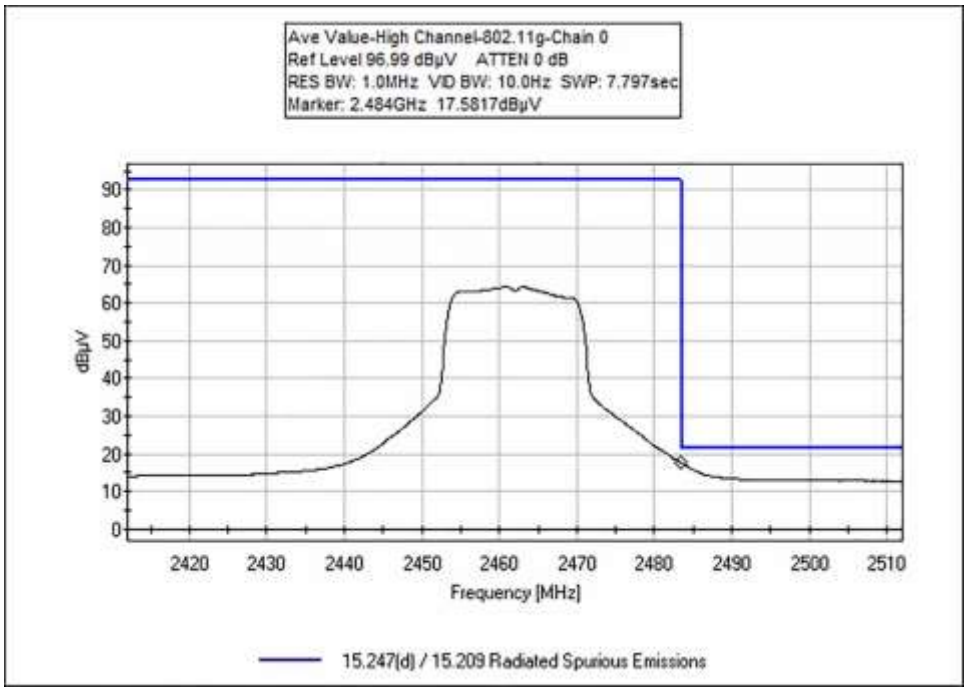
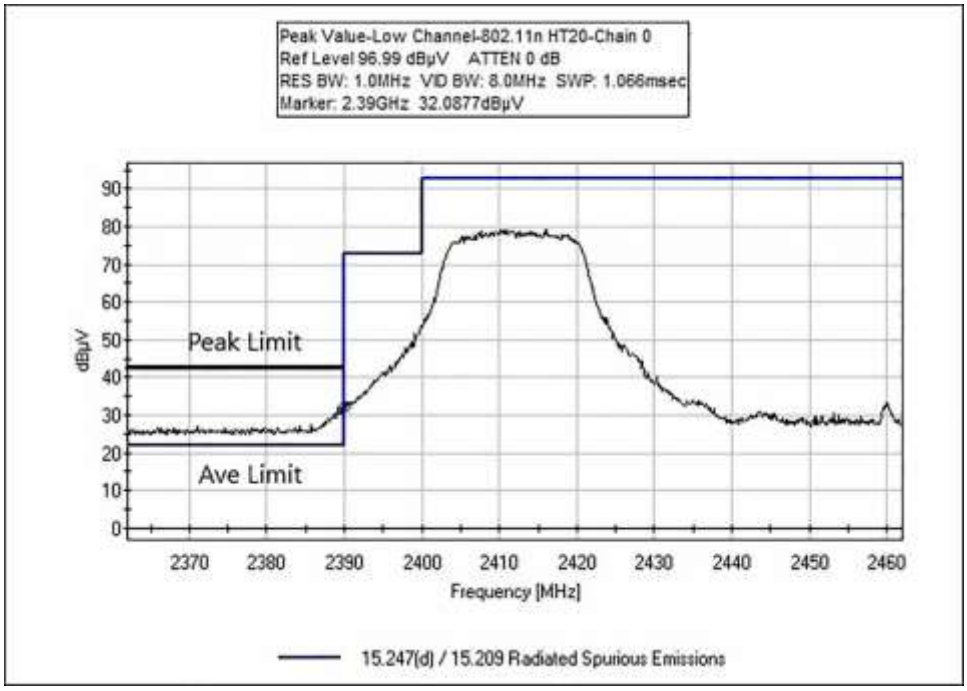
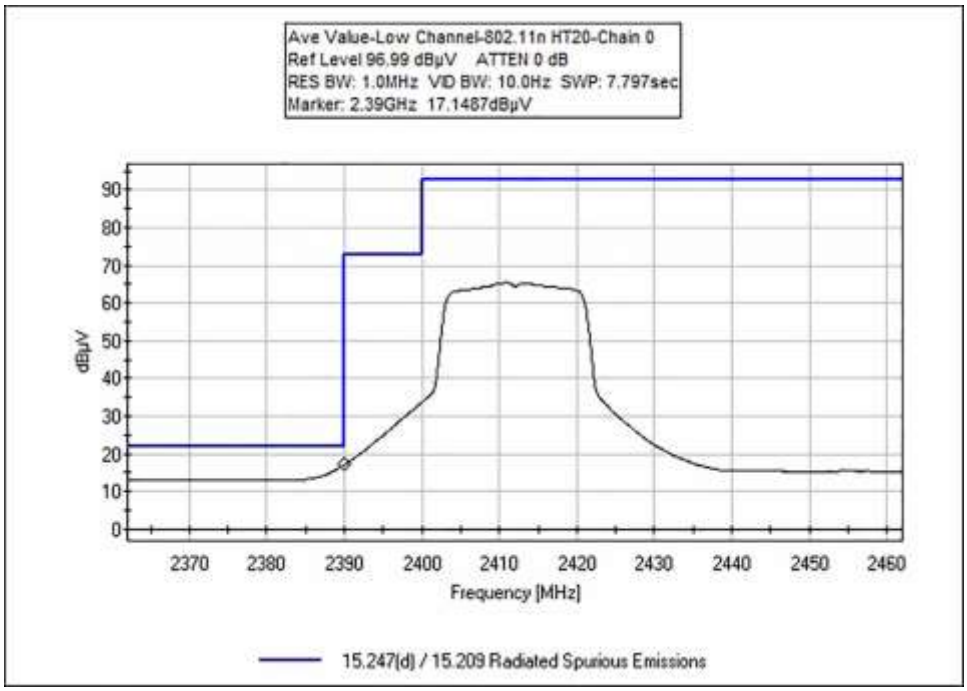
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 8.0MHz SWP: 1.066msec
Marker: 2.484GHz 31.4537dBµV
dBµV
Peak Limit
Ave Limit
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Ave Value-High Channel-802.11g-Chain 0
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 10.0Hz SWP: 7.797sec
Marker: 2.484GHz 17.5817dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Peak Value-Low Channel-802.11n HT20-Chain 0
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 8.0MHz SWP: 1.066msec
Marker: 2.39GHz 32.0877dBµV
dBµV
Peak Limit
Ave Limit
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions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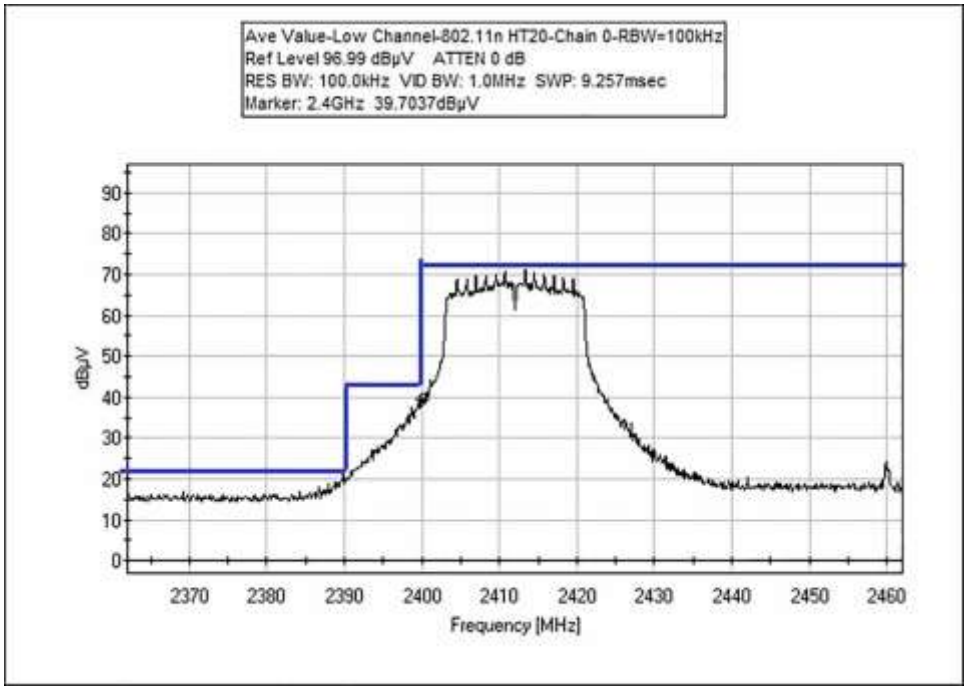
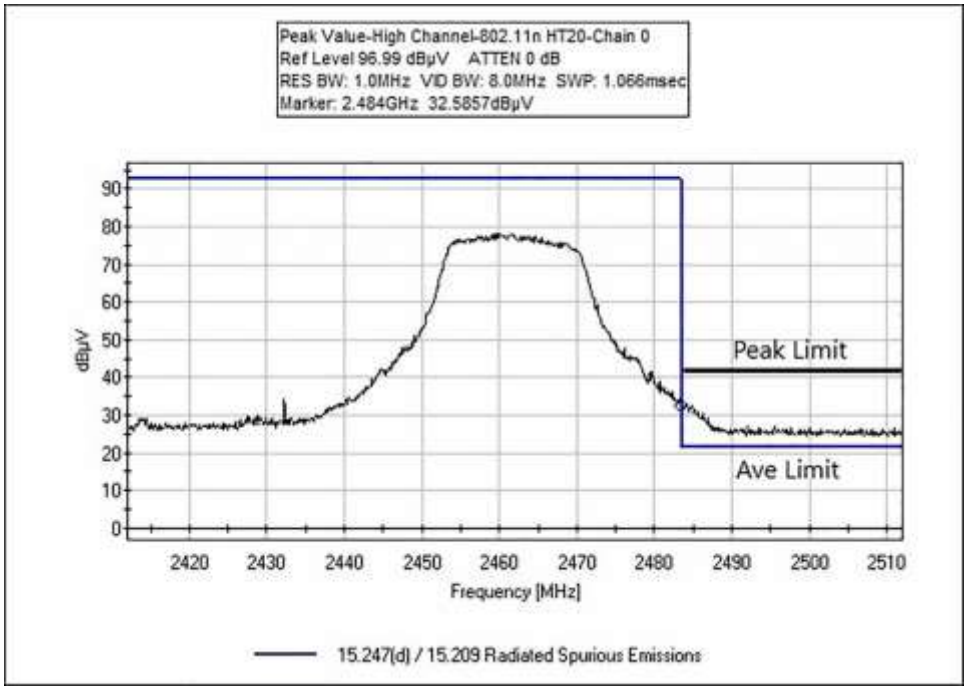
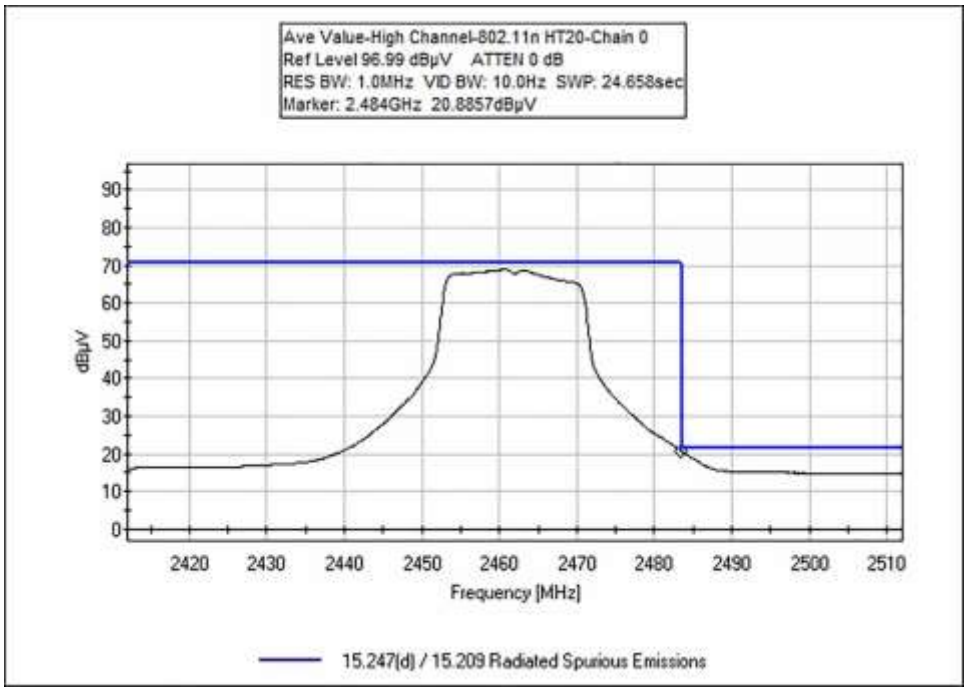
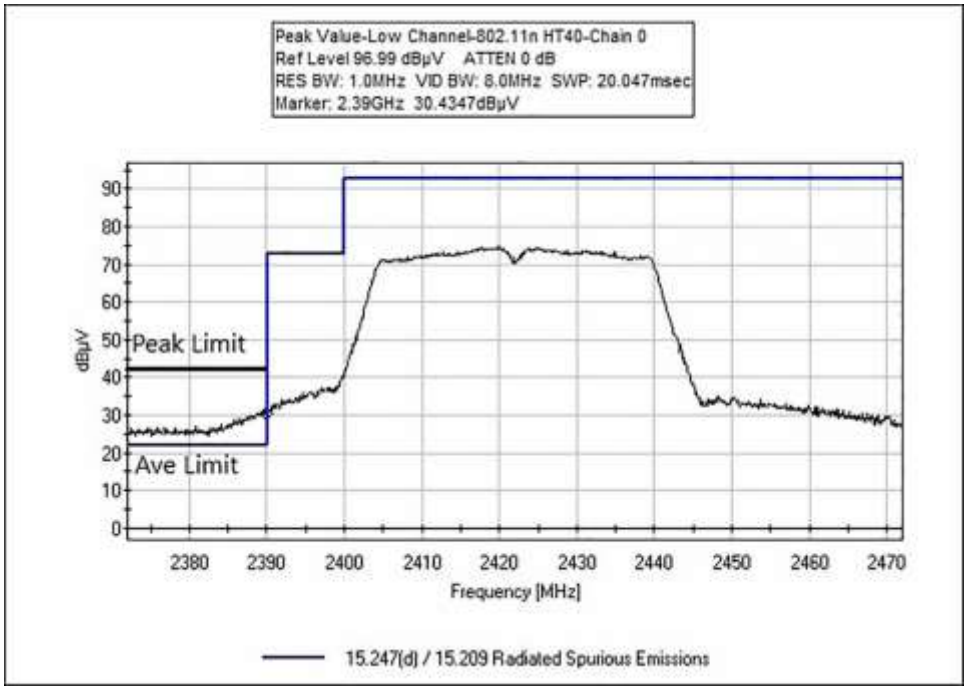
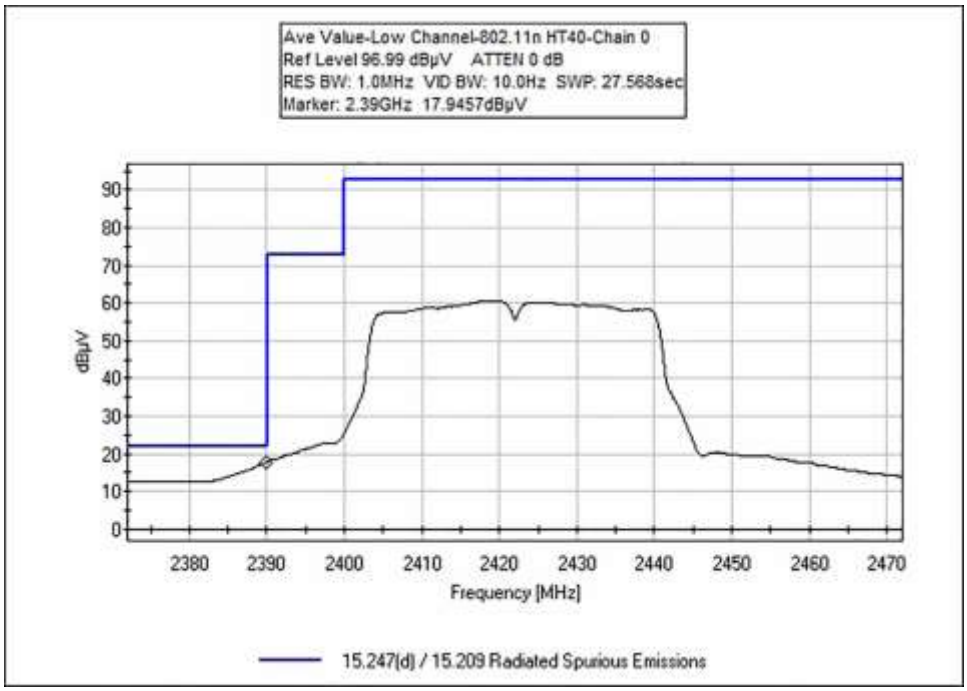
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 10.0Hz SWP: 7.797sec
Marker: 2.39GHz 17.1487dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

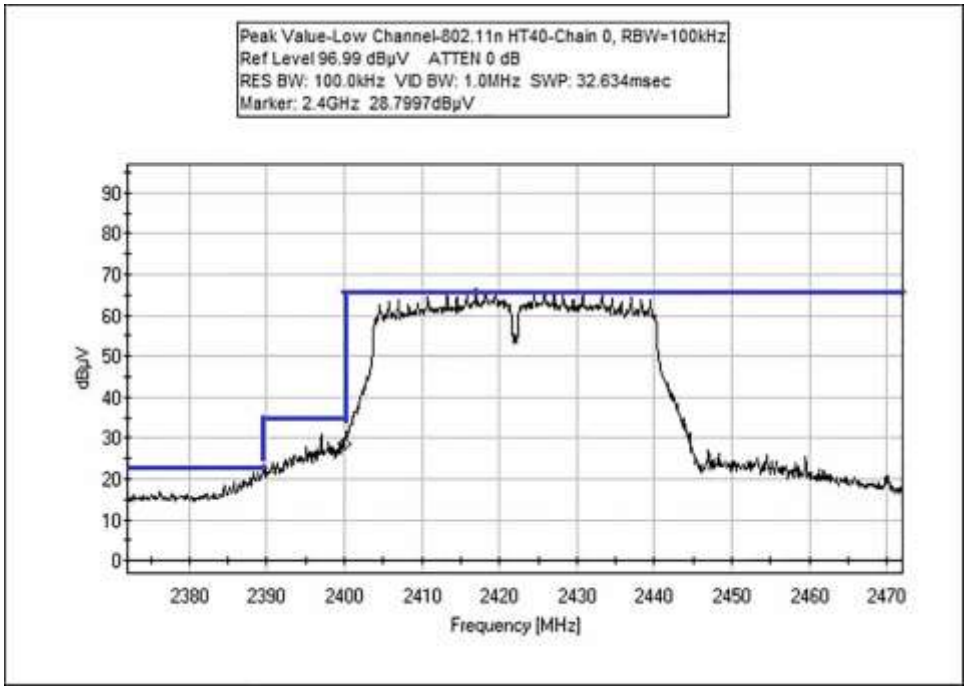

Ave Value-Low Channel-802.11n HT20-Chain 0-RBW=100kHz
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 9.257msec
Marker: 2.4GHz 39.7037dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2370
2380
2390
2400
2410
2420
2430
2440
2450
2460
Frequency [MHz]

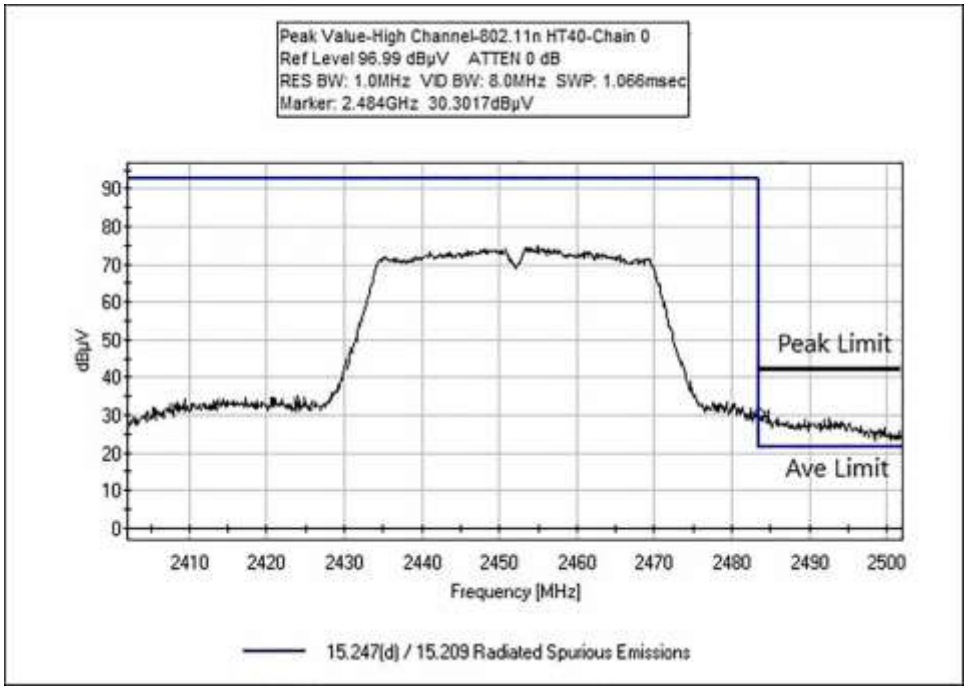

Peak Value-High Channel-802.11n HT20-Chain 0
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 8.0MHz SWP: 1.066msec
Marker: 2.484GHz 32.5857dBµV
dBµV
Peak Limit
Ave Limit
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

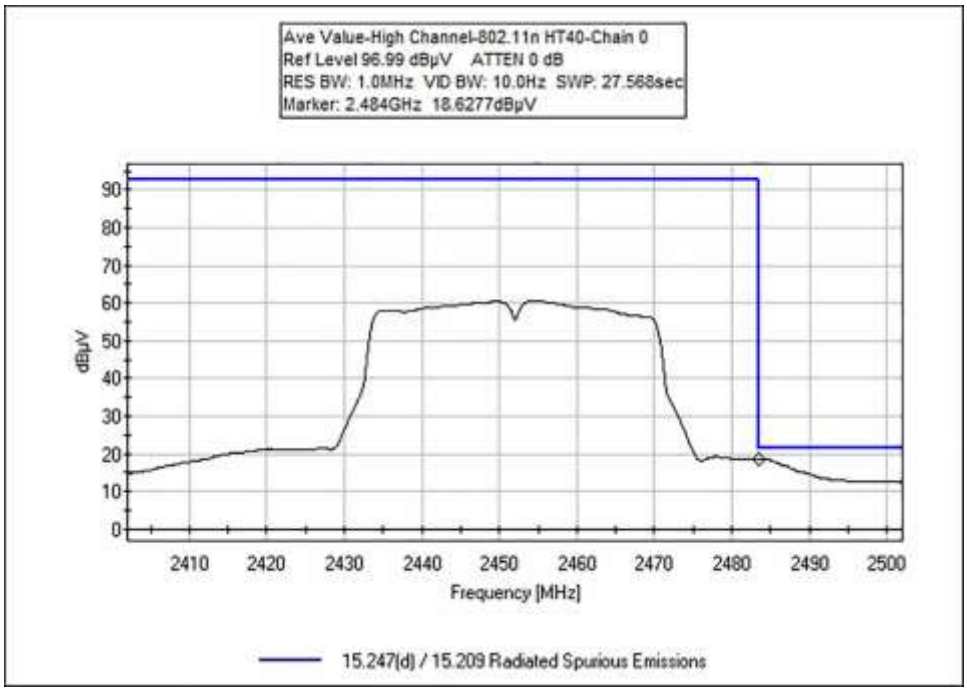

Ave Value-High Channel-802.11n HT20-Chain 0
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 10.0Hz SWP: 24.658sec
Marker: 2.484GHz 20.8857dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Peak Value-Low Channel-802.11n HT40-Chain 0
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 8.0MHz SWP: 20.047msec
Marker: 2.39GHz 30.4347dBµV
dBµV
Peak Limit
Ave Limit
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

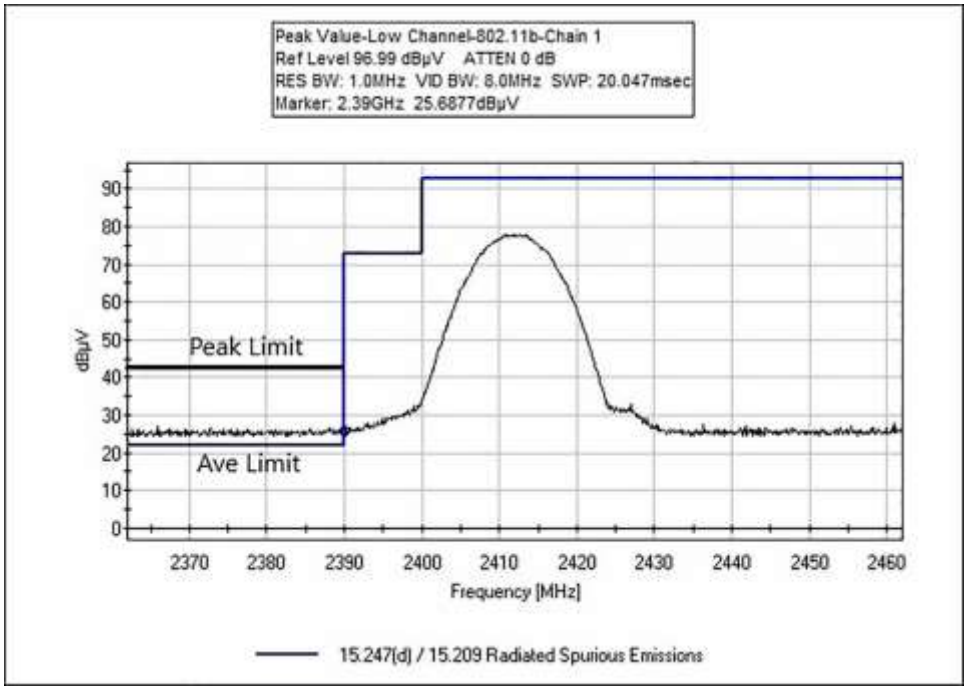

Ave Value-Low Channel-802.11n HT40-Chain 0
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 10.0Hz SWP: 27.568sec
Marker: 2.39GHz 17.9457dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

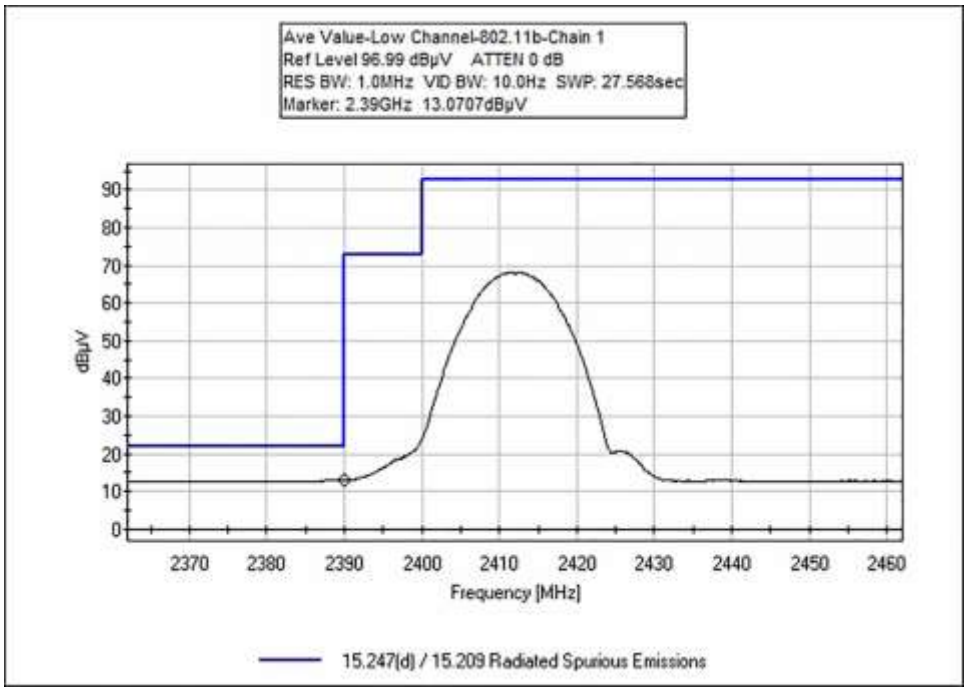

Peak Value-Low Channel-802.11n HT40-Chain 0, RBW=100kHz
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 32.634msec
Marker: 2.4GHz 28.7997dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2380
2390
2400
2410
2420
2430
2440
2450
2460
2470
Frequency [MHz]

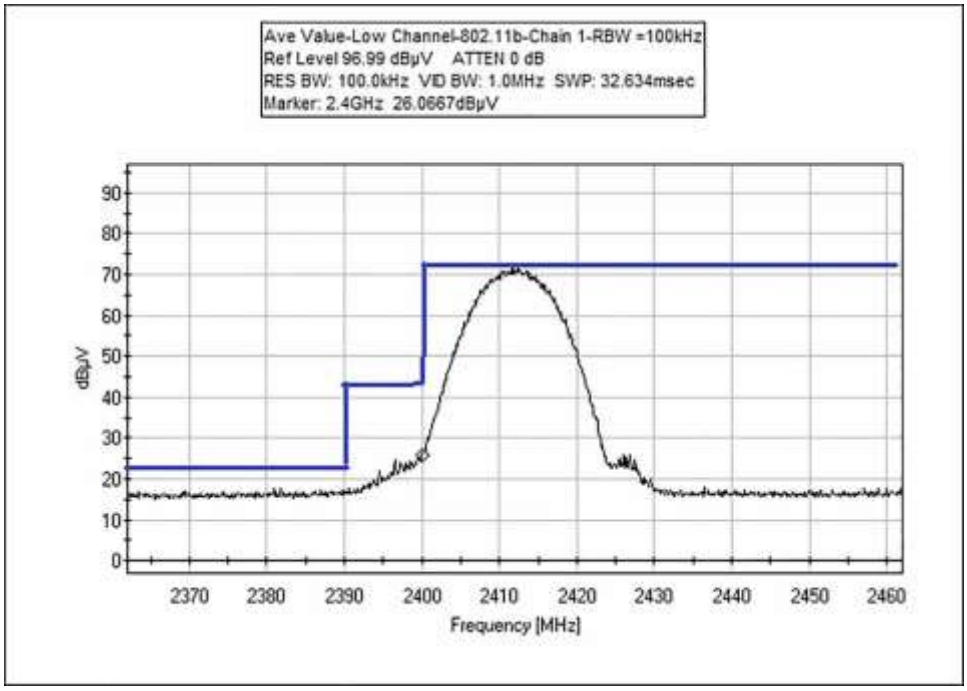

Peak Value-High Channel-802.11n HT40-Chain 0
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 8.0MHz SWP: 1.066msec
Marker: 2.484GHz 30.3017dBµV
dBµV
Peak Limit
Ave Limit
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

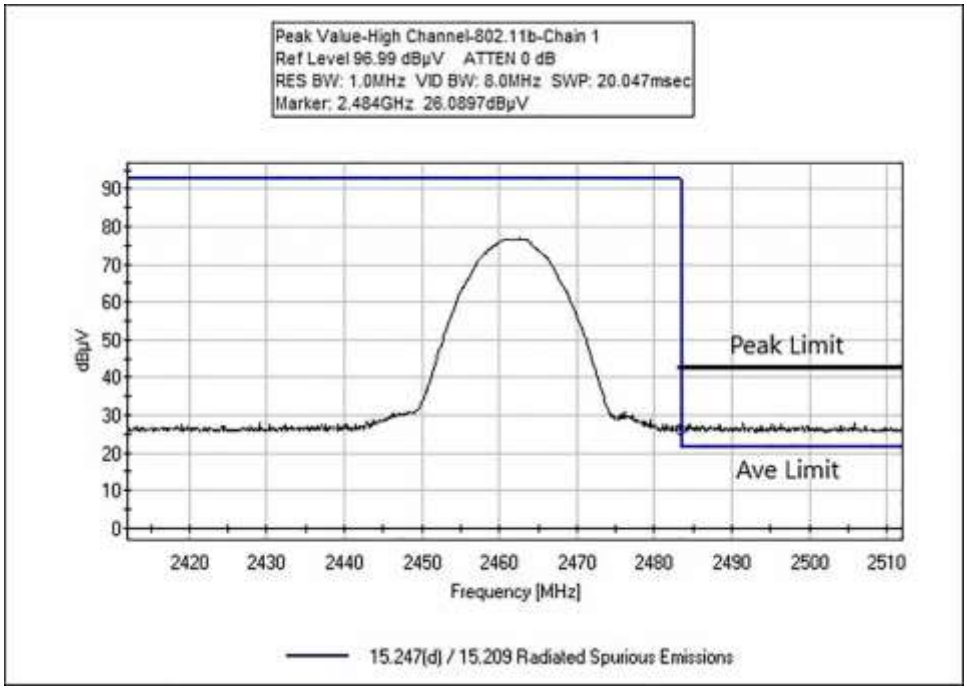

Ave Value-High Channel-802.11n HT40-Chain 0
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 10.0Hz SWP: 27.568sec
Marker: 2.484GHz 18.6277dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

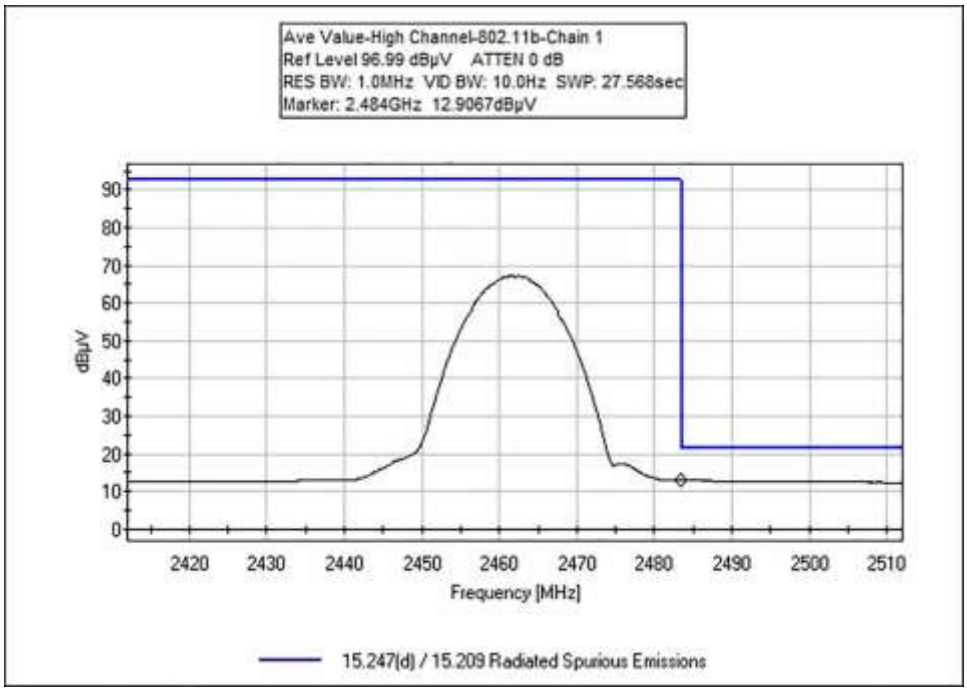
CHAIN 1

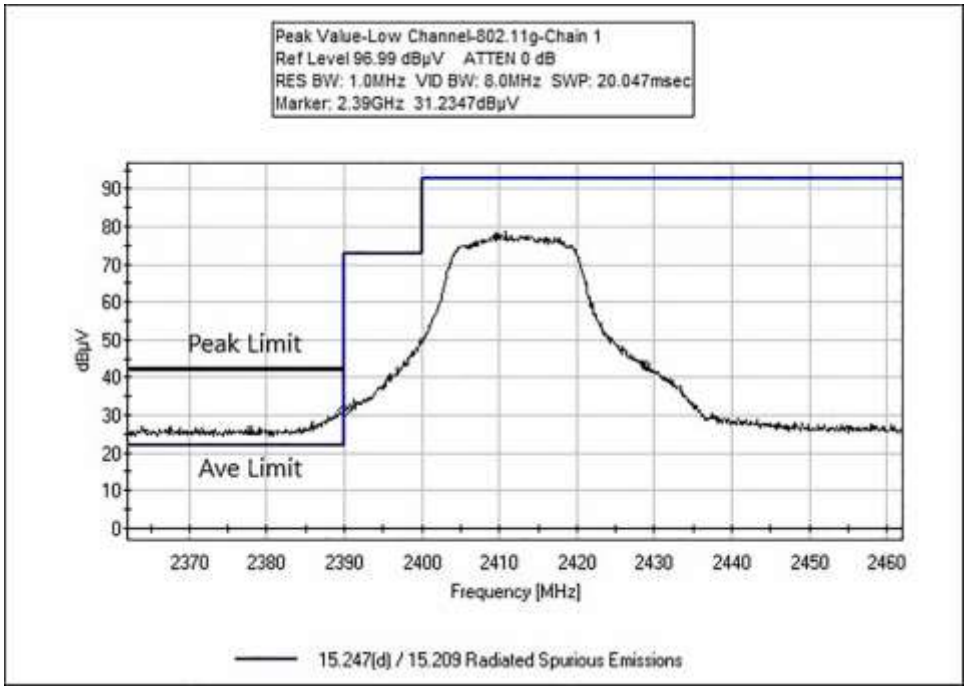

Peak Value-Low Channel-802.11b-Chain 1
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 8.0MHz SWP: 20.047msec
Marker: 2.39GHz 25.6877dBµV
dBµV
Peak Limit
Ave Limit
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

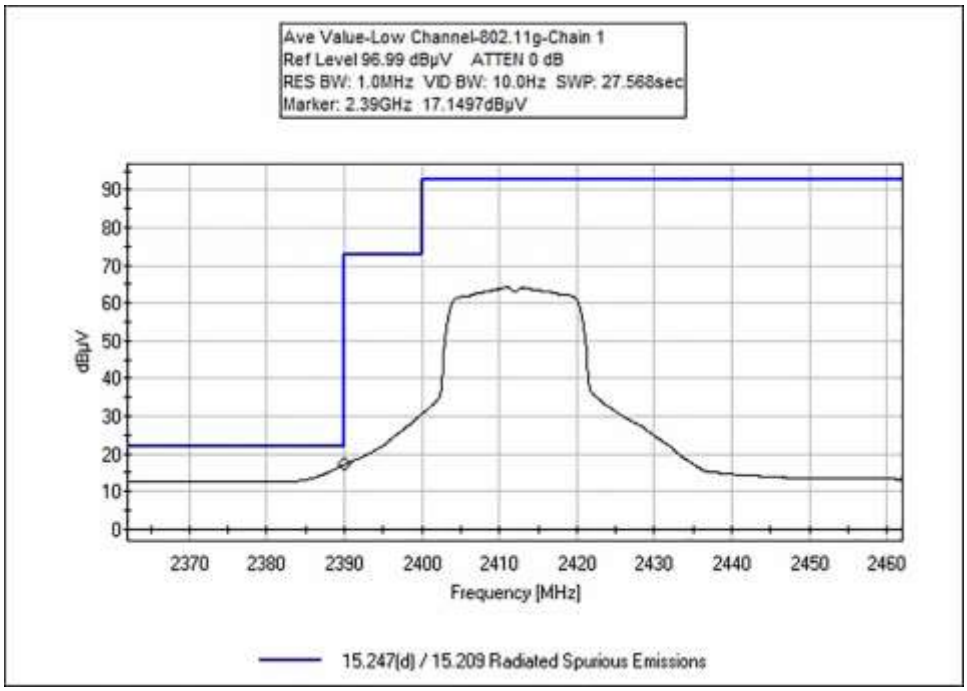

Ave Value-Low Channel-802.11b-Chain 1
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 10.0Hz SWP: 27.568sec
Marker: 2.39GHz 13.0707dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

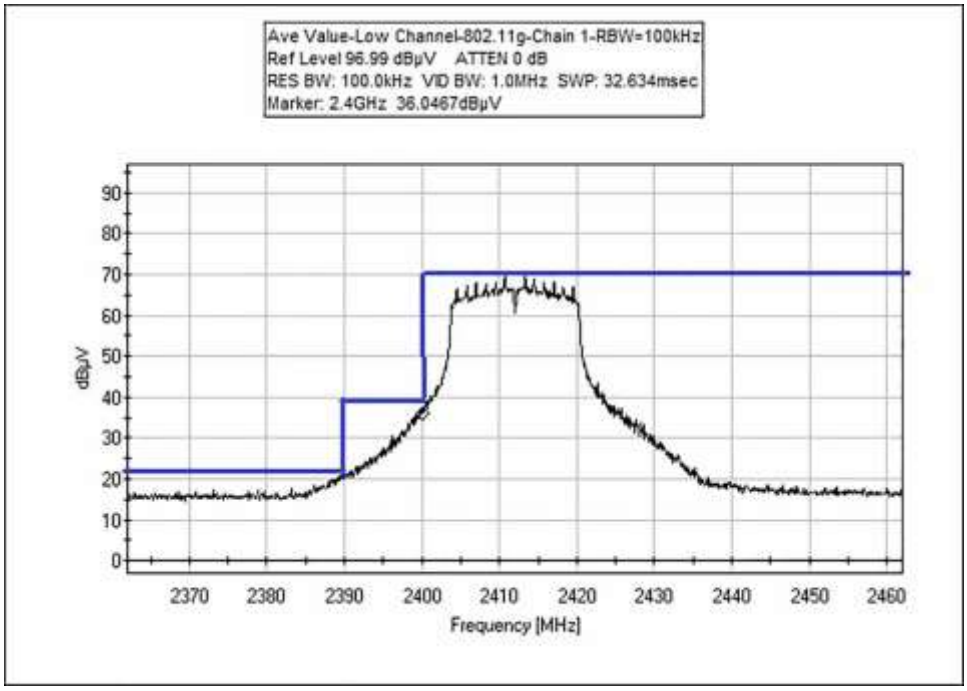

Ave Value-Low Channel-802.11b-Chain 1-RBW =100kHz
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 32.634msec
Marker: 2.4GHz 26.0667dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2370
2380
2390
2400
2410
2420
2430
2440
2450
2460
Frequency [MHz]

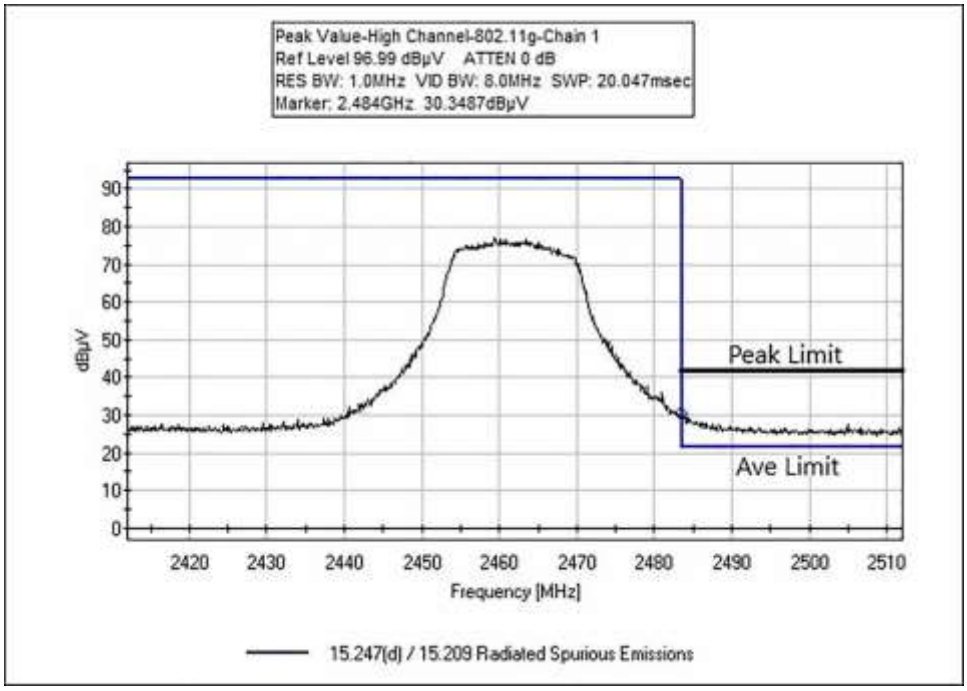

Peak Value-High Channel-802.11b-Chain 1
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 8.0MHz SWP: 20.047msec
Marker: 2.484GHz 26.0897dBµV
dBµV
Peak Limit
Ave Limit
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

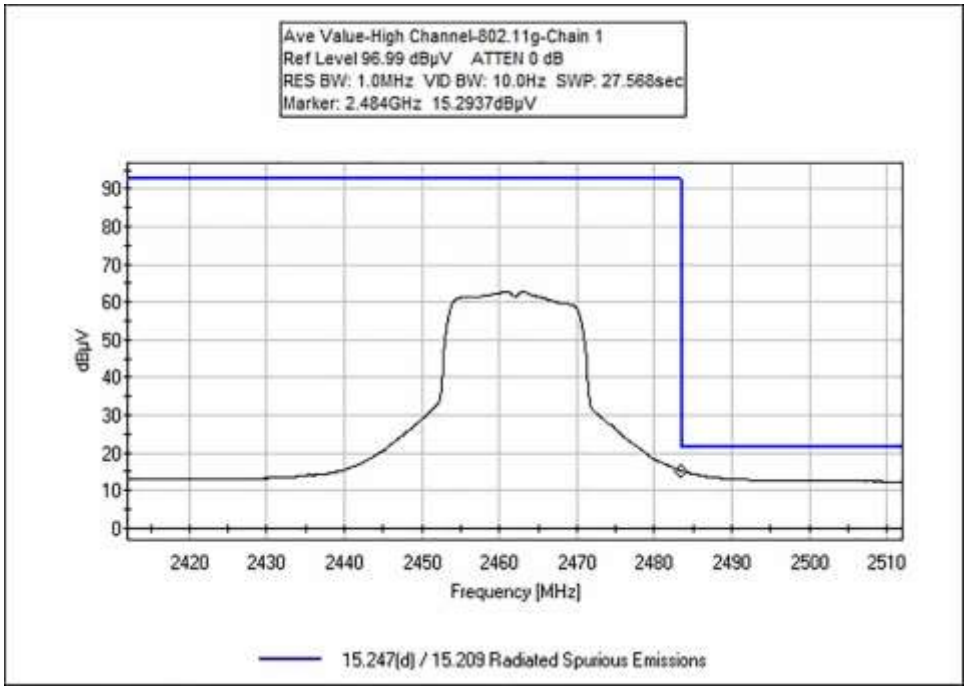

Ave Value-High Channel-802.11b-Chain 1
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 10.0Hz SWP: 27.568sec
Marker: 2.484GHz 12.9067dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

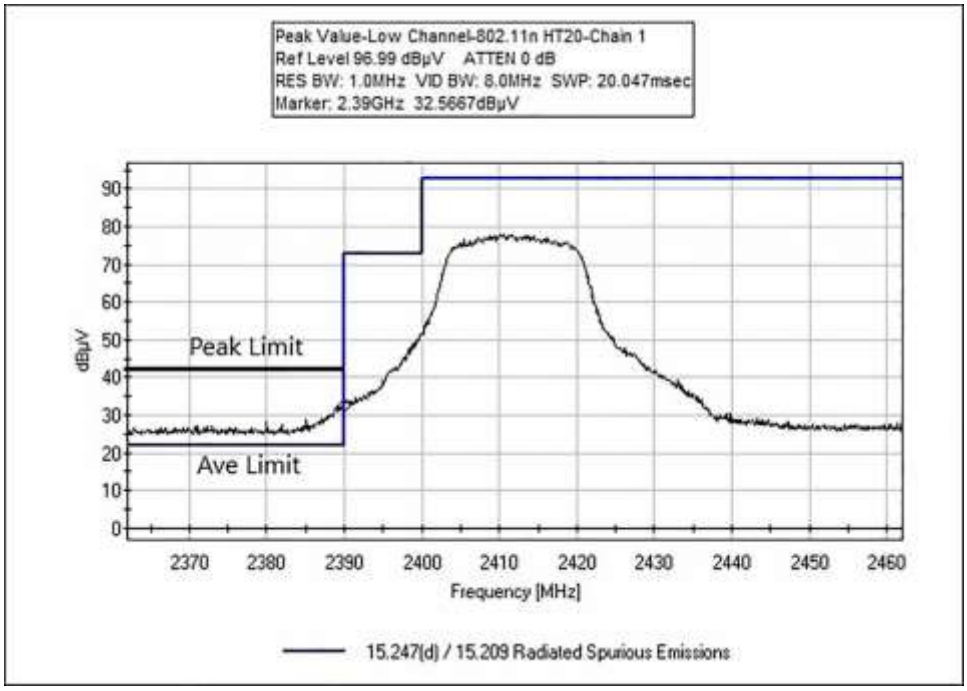

Peak Value-Low Channel-802.11g-Chain 1
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 8.0MHz SWP: 20.047msec
Marker: 2.39GHz 31.2347dBµV
Peak Limit
Ave Limit
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

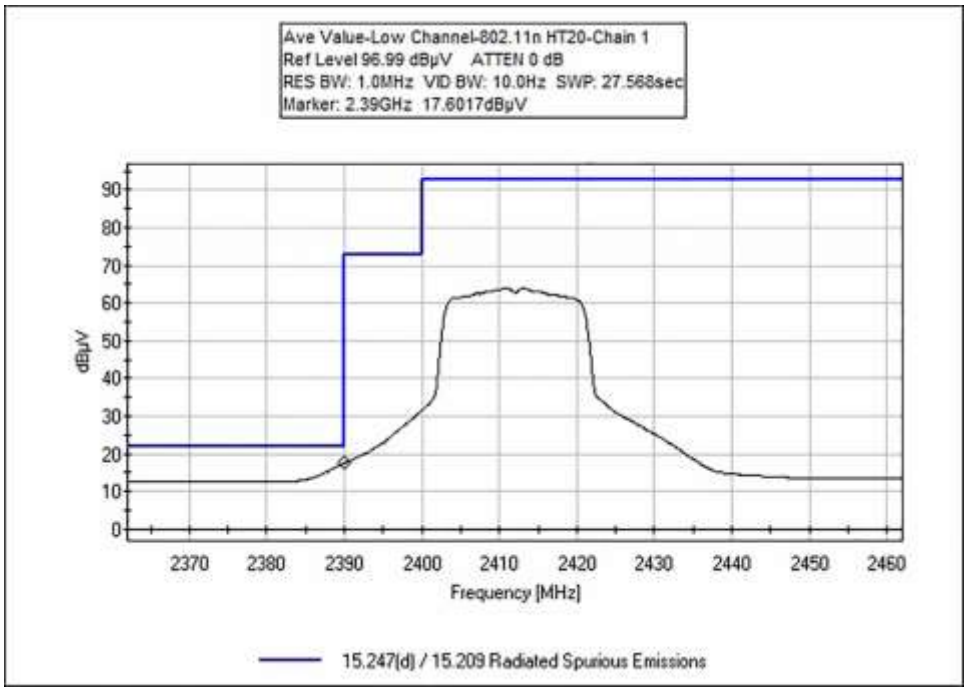

Ave Value-Low Channel-802.11g-Chain 1
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 10.0Hz SWP: 27.568sec
Marker: 2.39GHz 17.1497dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

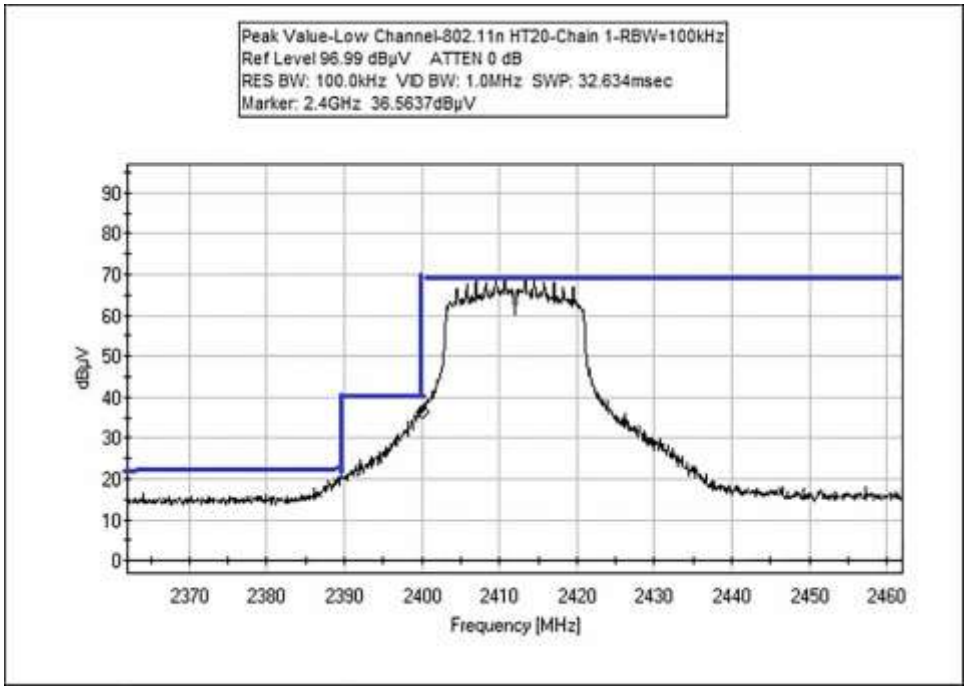

Ave Value-Low Channel-802.11g-Chain 1-RBW=100kHz
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 32.634msec
Marker: 2.4GHz 36.0467dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2370
2380
2390
2400
2410
2420
2430
2440
2450
2460
Frequency [MHz]

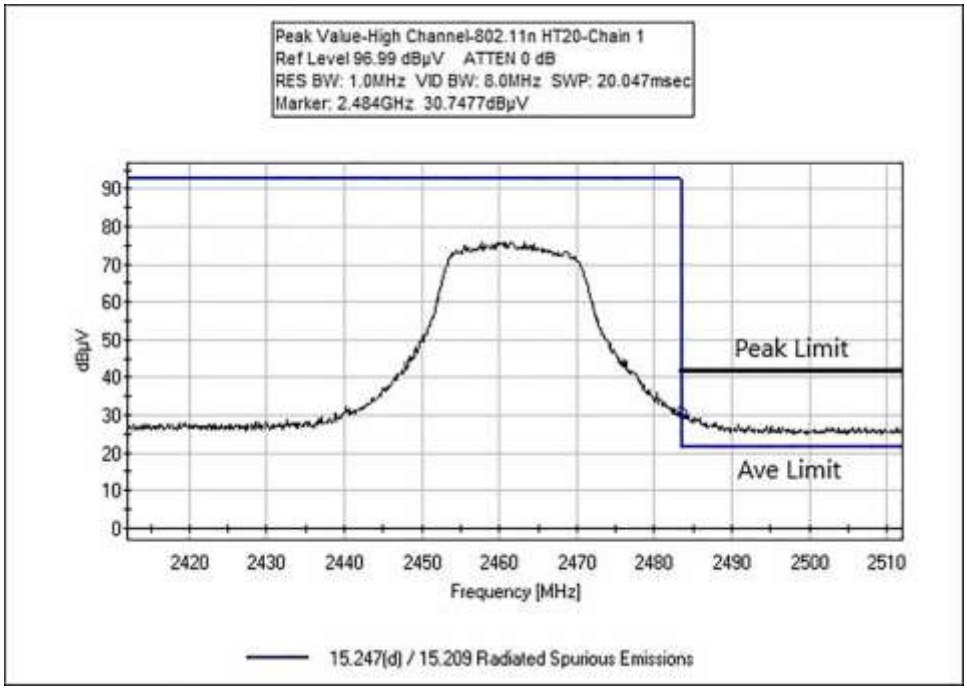

Peak Value-High Channel-802.11g-Chain 1
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 8.0MHz SWP: 20.047msec
Marker: 2.484GHz 30.3487dBµV
dBµV
Peak Limit
Ave Limit
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

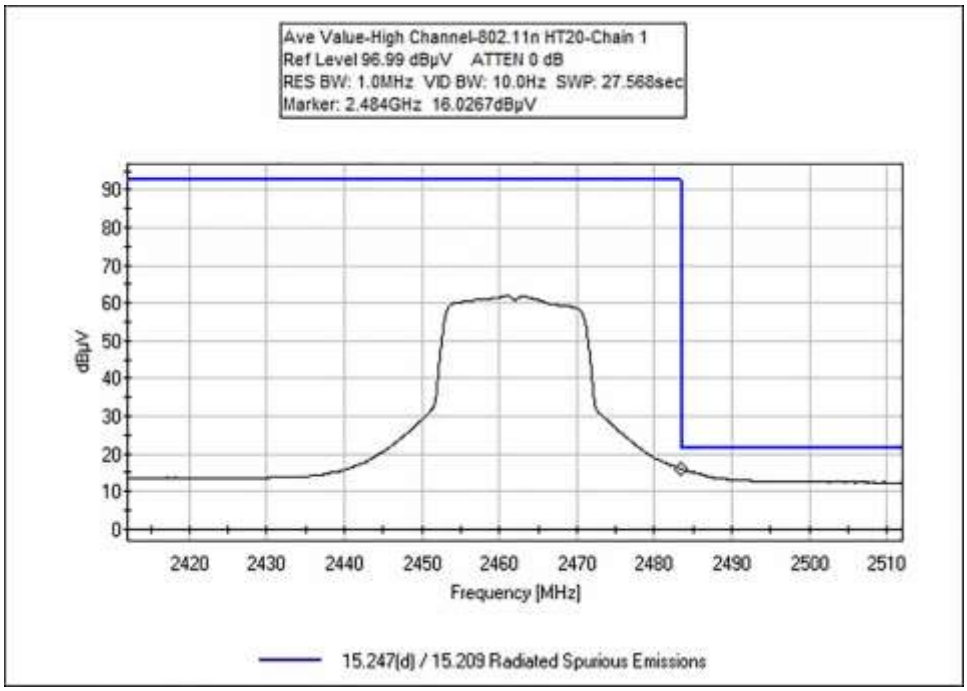

Ave Value-High Channel-802.11g-Chain 1
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 10.0Hz SWP: 27.568sec
Marker: 2.484GHz 15.2937dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

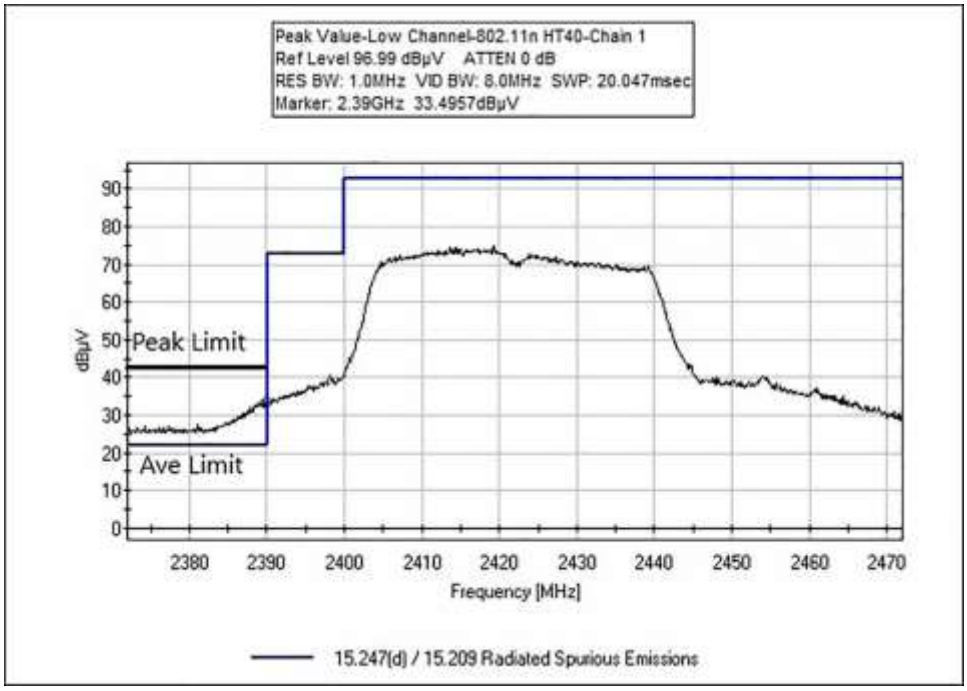

Peak Value-Low Channel-802.11n HT20-Chain 1
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 8.0MHz SWP: 20.047msec
Marker: 2.39GHz 32.5667dBµV
Peak Limit
Ave Limit
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

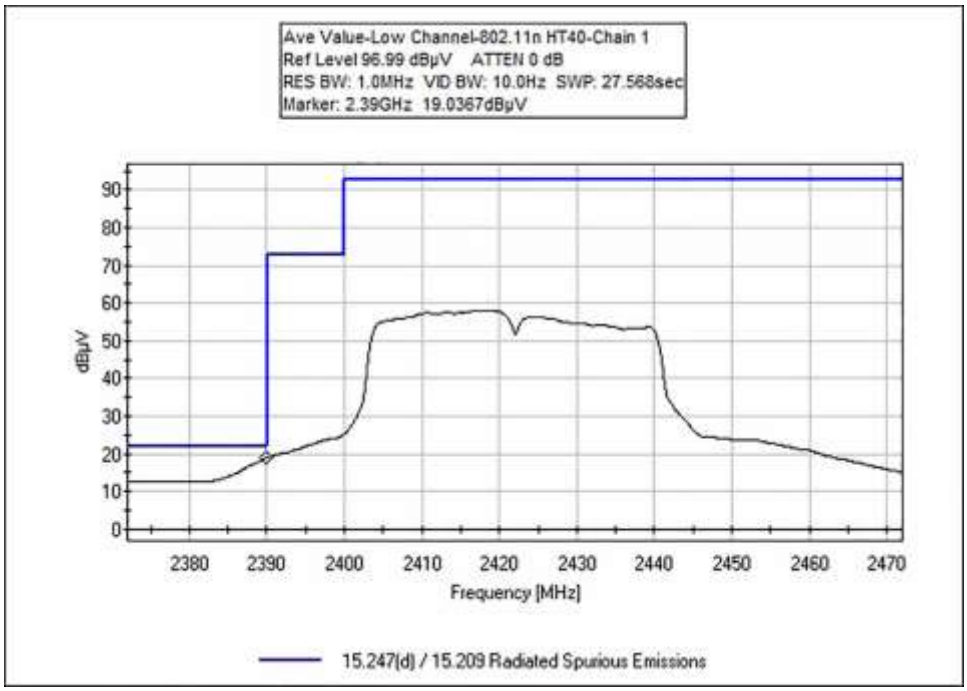

Ave Value-Low Channel-802.11n HT20-Chain 1
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 10.0Hz SWP: 27.568sec
Marker: 2.39GHz 17.6017dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

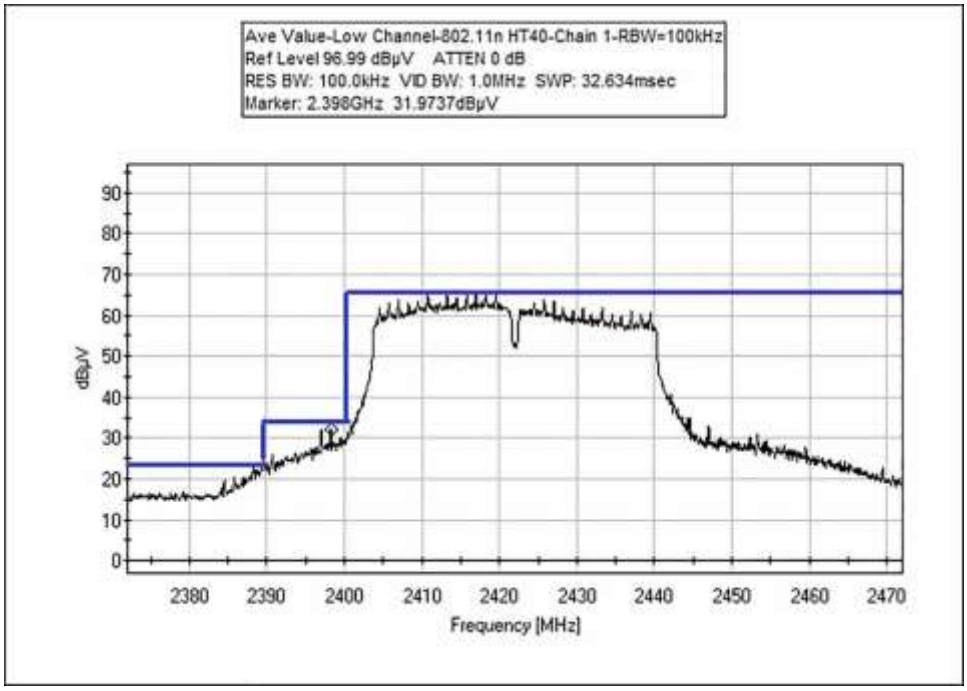

Peak Value-Low Channel-802.11n HT20-Chain 1-RBW=100kHz
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 32.634msec
Marker: 2.4GHz 36.5637dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2370
2380
2390
2400
2410
2420
2430
2440
2450
2460
Frequency [MHz]

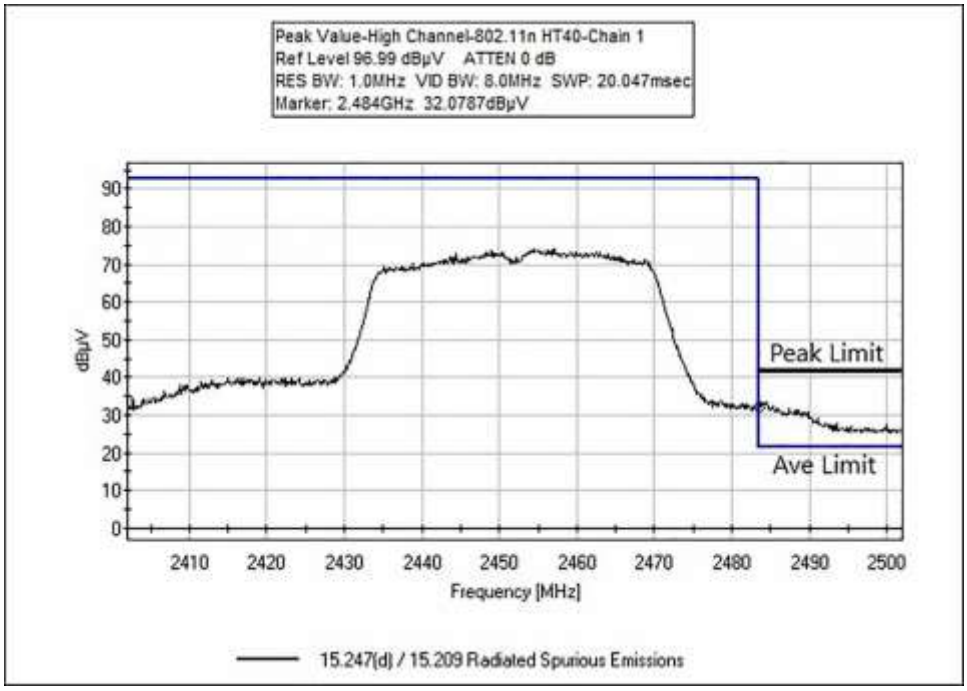

Peak Value-High Channel-802.11n HT20-Chain 1
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 8.0MHz SWP: 20.047msec
Marker: 2.484GHz 30.7477dBµV
dBµV
Peak Limit
Ave Limit
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

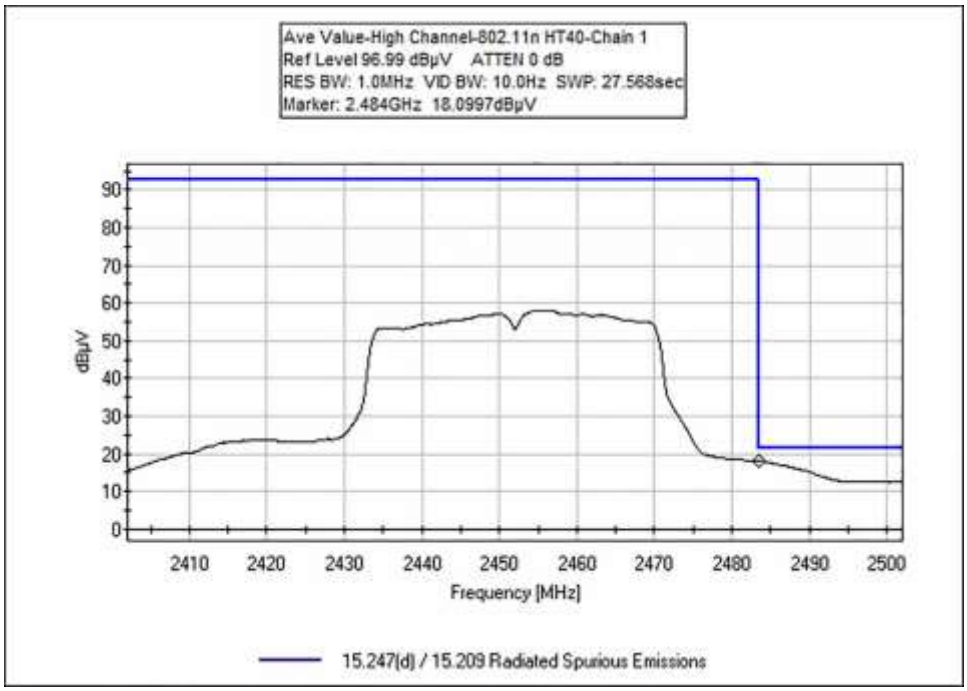

Ave Value-High Channel-802.11n HT20-Chain 1
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 10.0Hz SWP: 27.568sec
Marker: 2.484GHz 16.0267dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Peak Value-Low Channel-802.11n HT40-Chain 1
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 8.0MHz SWP: 20.047msec
Marker: 2.39GHz 33.4957dBµV
Peak Limit
Ave Limit
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Ave Value-Low Channel-802.11n HT40-Chain 1
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 10.0Hz SWP: 27.568sec
Marker: 2.39GHz 19.0367dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Ave Value-Low Channel-802.11n HT40-Chain 1-RBW=100kHz
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 1.0MHz SWP: 32.634msec
Marker: 2.398GHz 31.9737dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2380
2390
2400
2410
2420
2430
2440
2450
2460
2470
Frequency [MHz]


Peak Value-High Channel-802.11n HT40-Chain 1
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 8.0MHz SWP: 20.047msec
Marker: 2.484GHz 32.0787dBµV
dBµV
Peak Limit
Ave Limit
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Ave Value-High Channel-802.11n HT40-Chain 1
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 10.0Hz SWP: 27.568sec
Marker: 2.484GHz 18.0997dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

Test Setup / Conditions / Data

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**Band Edge**		
Work Order #:	**110285**	Date:	10/23/2024
Test Type:	**Radiated Scan**	Time:	12:11:22
Tested By:	Hieu Song Nguyenpham	Sequence#:	13
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Band Edge

Test Environment Conditions:
Temperature: 21.8°C
Humidity: 47%
Atmospheric Pressure: 101.5kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The unit is mounted to a floor standing rack as to simulate typical wall mounted setup. One weight line is extended to the floor. Camera is on.

Note
Chain 0

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02157	Horn Antenna-ANSI C63.5	3115	1/11/2023	1/11/2025
T2	AN03302	Cable	32026-29094K-29094K-72TC	1/9/2024	1/9/2026
T3	ANP01210	Cable	FSJ1P-50A-4A	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

Measurement Data: Reading listed by order taken. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	2390.000M	25.6	+28.3	+1.3	+2.5		+0.0	57.7	54.0 802.11b	+3.7	Horiz
2	2390.000M Ave	13.1	+28.3	+1.3	+2.5		+0.0	45.2	54.0 802.11b	-8.8	Horiz
3	2400.000M Ave	25.7	+28.3	+1.4	+2.5		+0.0	57.9	74.6 802.11b,RBW =100kHz	-16.7	Horiz
4	2483.500M	25.6	+28.3	+1.4	+2.6		+0.0	57.9	54.0 802.11b	+3.9	Horiz
5	2483.500M Ave	13.8	+28.3	+1.4	+2.6		+0.0	46.1	54.0 802.11b	-7.9	Horiz
6	2483.500M	31.5	+28.3	+1.4	+2.6		+0.0	63.8	54.0 802.11g	+9.8	Horiz
7	2483.500M	17.6	+28.3	+1.4	+2.6		+0.0	49.9	54.0 802.11g	-4.1	Horiz
8	2390.000M	29.8	+28.3	+1.3	+2.5		+0.0	61.9	54.0 802.11g	+7.9	Horiz
9	2390.000M Ave	16.2	+28.3	+1.3	+2.5		+0.0	48.3	54.0 802.11g	-5.7	Horiz
10	2400.000M Ave	37.5	+28.3	+1.4	+2.5		+0.0	69.7	73.0 802.11g,RBW =100kHz	-3.3	Horiz
11	2390.000M	32.1	+28.3	+1.3	+2.5		+0.0	64.2	54.0 802.11n HT20	+10.2	Horiz
12	2390.000M Ave	17.1	+28.3	+1.3	+2.5		+0.0	49.2	54.0 802.11n HT20	-4.8	Horiz
13	2400.000M Ave	39.7	+28.3	+1.4	+2.5		+0.0	71.9	73.0 802.11n HT20, , RBW=100kHz	-1.1	Horiz
14	2483.500M	32.6	+28.3	+1.4	+2.6		+0.0	64.9	54.0 802.11n HT20	+10.9	Horiz
15	2483.500M Ave	20.8	+28.3	+1.4	+2.6		+0.0	53.1	54.0 802.11n HT20	-0.9	Horiz
16	2483.500M	30.3	+28.3	+1.4	+2.6		+0.0	62.6	54.0 802.11n HT40	+8.6	Horiz
17	2483.500M Ave	18.6	+28.3	+1.4	+2.6		+0.0	50.9	54.0 802.11n HT40	-3.1	Horiz
18	2390.000M	30.4	+28.3	+1.3	+2.5		+0.0	62.5	54.0 802.11n HT40	+8.5	Horiz
19	2390.000M Ave	17.9	+28.3	+1.3	+2.5		+0.0	50.0	54.0 802.11n HT40	-4.0	Horiz
20	2400.000M Ave	28.4	+28.3	+1.4	+2.5		+0.0	60.6	68.4 802.11n HT40, RBW=100kHz	-7.8	Horiz

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**Band Edge**		
Work Order #:	**110285**	Date:	10/23/2024
Test Type:	**Radiated Scan**	Time:	15:59:19
Tested By:	Hieu Song Nguyenpham	Sequence#:	14
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Band Edge

Test Environment Conditions:
Temperature: 21.8°C
Humidity: 47%
Atmospheric Pressure: 101.5kPa

Highest Generated Frequency: 5.825GHz
Method: ANSI C63.10 (2020), KDB 558074

The unit is mounted to a floor standing rack as to simulate typical wall mounted setup. One weight line is extended to the floor. Camera is on.

Note
Chain 1

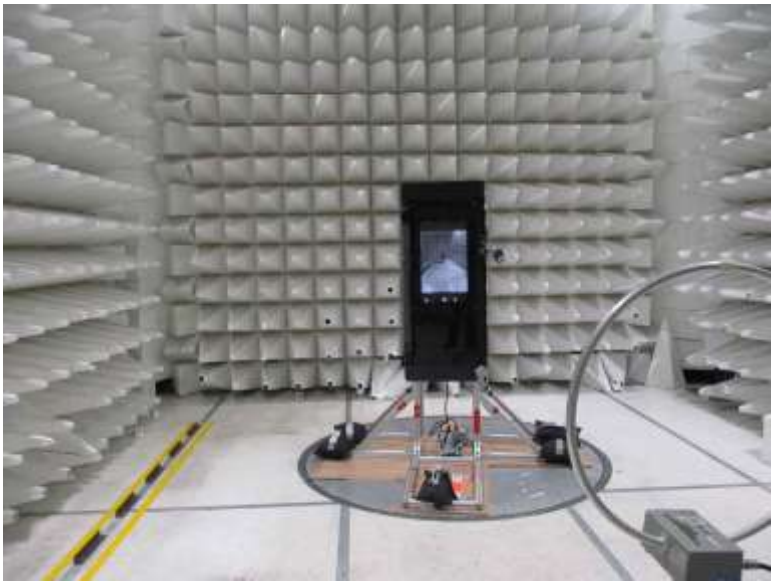
Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02157	Horn Antenna-ANSI C63.5	3115	1/11/2023	1/11/2025
T2	AN03302	Cable	32026-29094K-29094K-72TC	1/9/2024	1/9/2026
T3	ANP01210	Cable	FSJ1P-50A-4A	1/9/2024	1/9/2026
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024

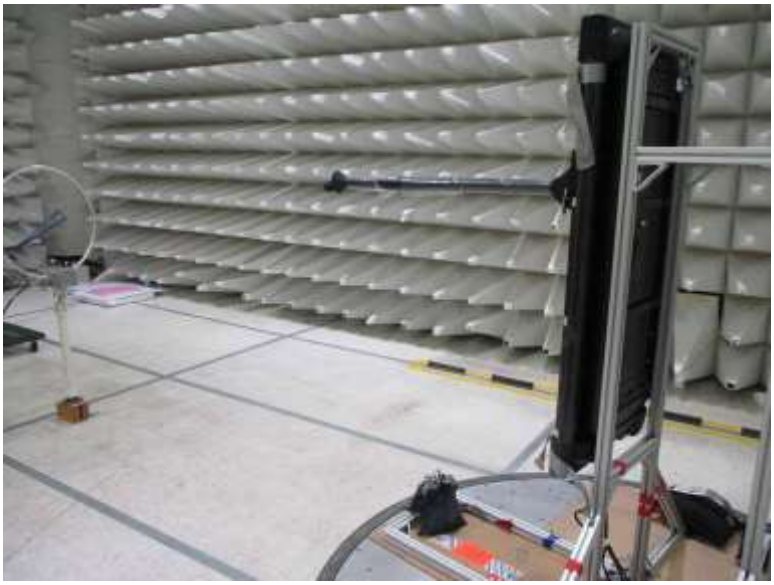
Measurement Data: Reading listed by order taken. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	2390.000M	25.7	+28.3	+1.3	+2.5		+0.0	57.8	54.0 802.11b	+3.8	Horiz
2	2390.000M Ave	13.0	+28.3	+1.3	+2.5		+0.0	45.1	54.0 802.11b	-8.9	Horiz
3	2400.000M Ave	26.1	+28.3	+1.4	+2.5		+0.0	58.3	68.1 802.11b, ,RBW=100kHz	-9.8	Horiz
4	2483.500M	26.1	+28.3	+1.4	+2.6		+0.0	58.4	54.0 802.11b	+4.4	Horiz
5	2483.500M Ave	12.9	+28.3	+1.4	+2.6		+0.0	45.2	54.0 802.11b	-8.8	Horiz
6	2483.500M	29.3	+28.3	+1.4	+2.6		+0.0	61.6	54.0 802.11g	+7.6	Horiz
7	2483.500M Ave	15.3	+28.3	+1.4	+2.6		+0.0	47.6	54.0 802.11g	-6.4	Horiz
8	2390.000M	30.7	+28.3	+1.3	+2.5		+0.0	62.8	54.0 802.11g	+8.8	Horiz
9	2390.000M Ave	17.1	+28.3	+1.3	+2.5		+0.0	49.2	54.0 802.11g	-4.8	Horiz
10	2400.000M Ave	36.0	+28.3	+1.4	+2.5		+0.0	68.2	71.8 802.11g,RBW=100 kHz	-3.6	Horiz
11	2390.000M	32.6	+28.3	+1.3	+2.5		+0.0	64.7	54.0 802.11n HT20	+10.7	Horiz
12	2390.000M Ave	17.6	+28.3	+1.3	+2.5		+0.0	49.7	54.0 802.11n HT20	-4.3	Horiz
13	2400.000M Ave	36.5	+28.3	+1.4	+2.5		+0.0	68.7	71.8 802.11n HT20, RBW=100kHz	-3.1	Horiz
14	2483.500M	30.7	+28.3	+1.4	+2.6		+0.0	63.0	54.0 802.11n HT20	+9.0	Horiz
15	2483.500M	16.0	+28.3	+1.4	+2.6		+0.0	48.3	54.0 802.11n HT20	-5.7	Horiz
16	2483.500M	31.7	+28.3	+1.4	+2.6		+0.0	64.0	54.0 802.11n HT40	+10.0	Horiz
17	2483.500M	18.1	+28.3	+1.4	+2.6		+0.0	50.4	54.0 802.11n HT40	-3.6	Horiz
18	2390.000M	32.6	+28.3	+1.3	+2.5		+0.0	64.7	54.0 802.11n HT40	+10.7	Horiz
19	2390.000M Ave	19.0	+28.3	+1.3	+2.5		+0.0	51.1	54.0 802.11n HT40	-2.9	Horiz
20	2398.300M Ave	32.0	+28.3	+1.4	+2.5		+0.0	64.2	68.1 802.11n HT40, RBW=100kHz	-3.9	Horiz

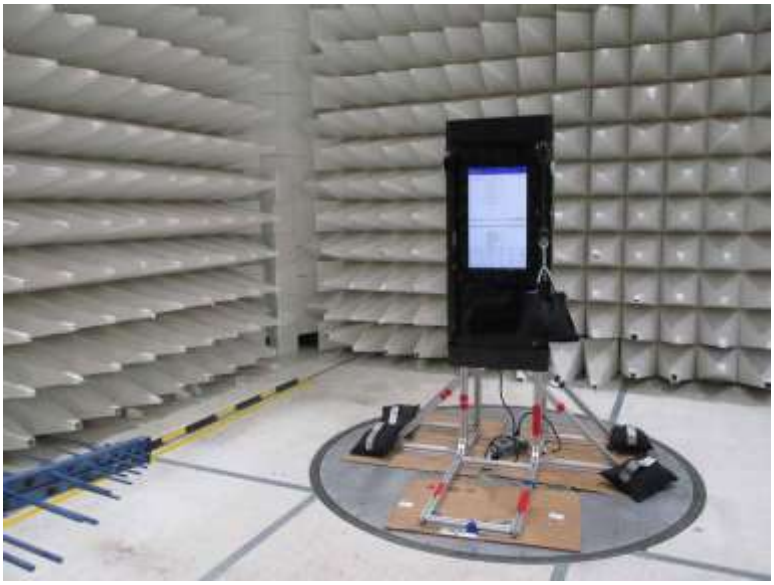
Test Setup Photo(s)



9kHz-1GHz Front View

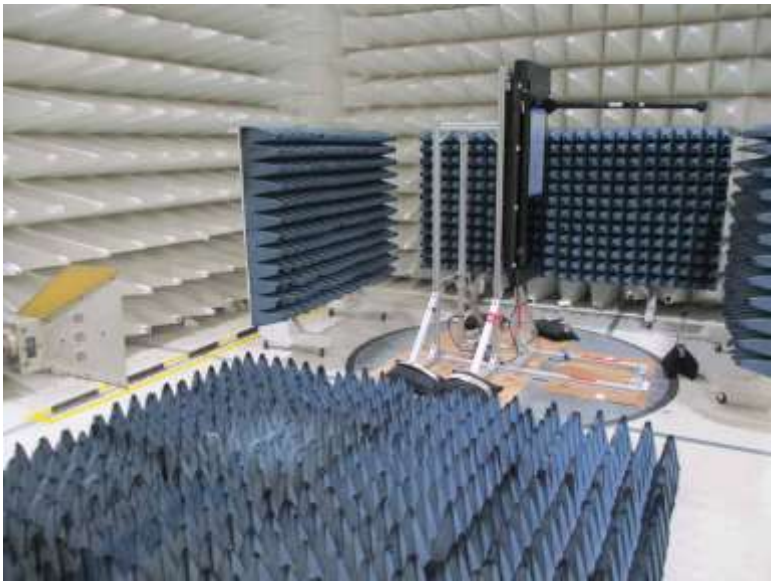


9kHz-1GHz Back View

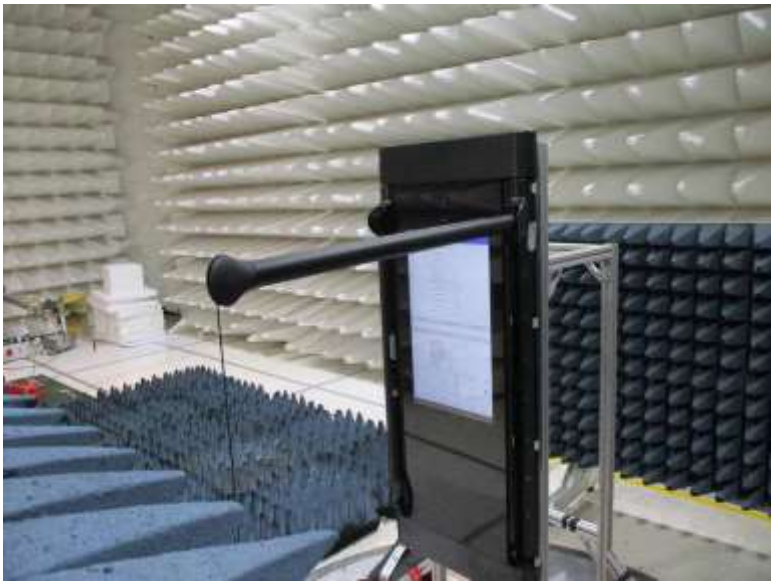


30MHz-1GHz Front View

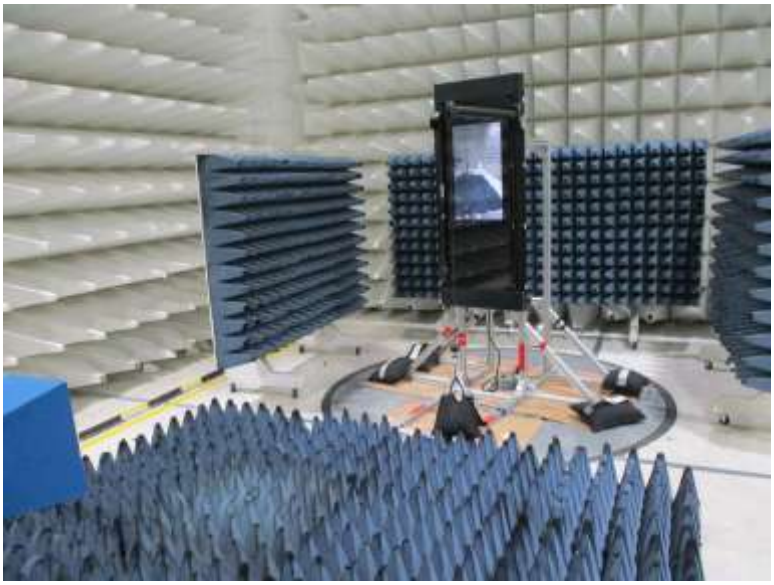
30MHz-1GHz Back View



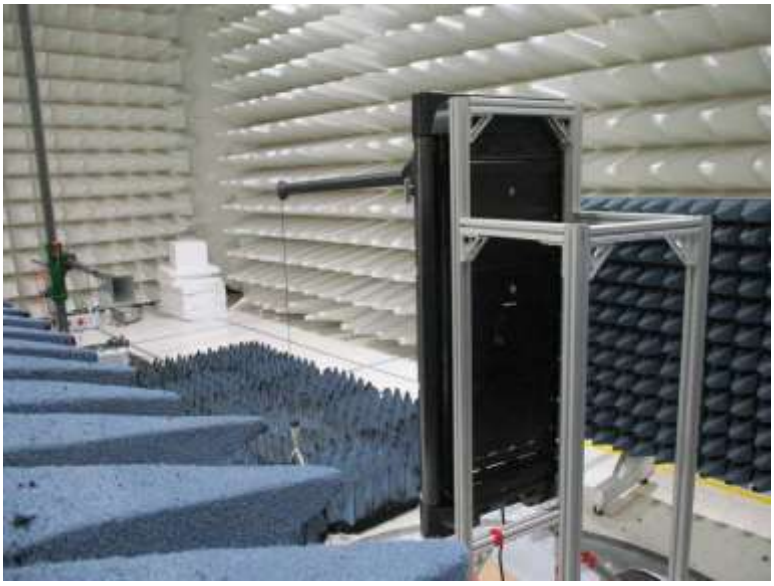
1-12GHz Front View



1-12GHz Back View



12-26GHz Front View



12-26GHz Back View

15.247(e) Power Spectral Density

Test Setup / Conditions / Data			
Test Location:	Fremont Lab C3	Test Engineer:	Hieu Song Nguyenpham
Test Method:	ANSI C63.10 (2020), KDB 558074	Test Date(s):	11/8/2024
Configuration:	A		
Test Setup:	The EUT is placed non-conducted table. It is operated as intended. It is connected straight to a Spectrum Analyzer.		

Environmental Conditions			
Temperature (ºC)	20.8	Relative Humidity (%):	37

Test Equipment					
Asset#	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
03013	Cable	Astrolab	32022-2-2909K-36TC	1/9/2024	1/9/2026
P07365	Attenuator	Weinschel	54A-10	5/26/2023	5/26/2025
03471	Spectrum Analyzer	Agilent	E4440A	2/23/2024	2/23/2026

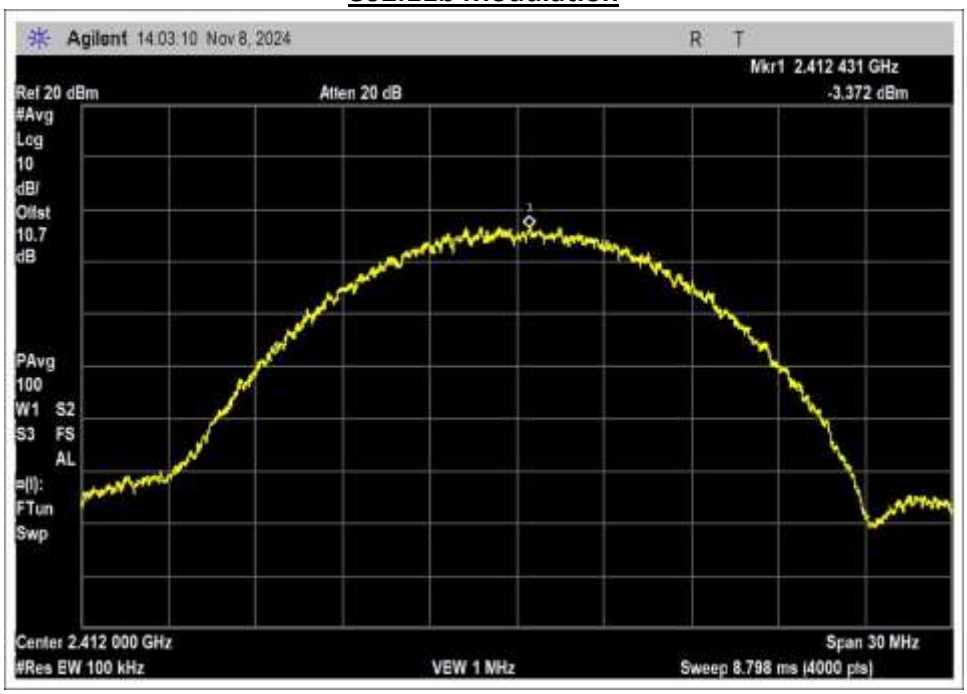
PSD Test Data Summary - RF Conducted Measurement – CHAIN 0				
Measurement Method: AVGPSD-1				
Frequency (MHz)	**Modulation**	**Measured (dBm/100kHz)**	**Limit (dBm/3kHz)**	**Results**
2412	802.11b	-3.372	≤8	Pass
2442	802.11b	-3.020	≤8	Pass
2462	802.11b	-3.073	≤8	Pass
2412	802.11g	-5.496	≤8	Pass
2442	802.11g	-5.103	≤8	Pass
2462	802.11g	-5.465	≤8	Pass
2412	802.11n HT20	-5.461	≤8	Pass
2442	802.11n HT20	-5.462	≤8	Pass
2462	802.11n HT20	-5.922	≤8	Pass
2422	802.11n HT40	-10.324	≤8	Pass
2442	802.11n HT40	-10.642	≤8	Pass
2452	802.11n HT40	-10.900	≤8	Pass

PSD Test Data Summary - RF Conducted Measurement – CHAIN 1				
Measurement Method: AVGPSD-1				
Frequency (MHz)	**Modulation**	**Measured (dBm/100kHz)**	**Limit (dBm/3kHz)**	**Results**
2412	802.11b	-1.869	≤8	Pass
2442	802.11b	-2.586	≤8	Pass
2462	802.11b	-2.131	≤8	Pass
2412	802.11g	-3.330	≤8	Pass
2442	802.11g	-4.598	≤8	Pass
2462	802.11g	-4.470	≤8	Pass
2412	802.11n HT20	-3.946	≤8	Pass
2442	802.11n HT20	-4.875	≤8	Pass
2462	802.11n HT20	-4.842	≤8	Pass
2422	802.11n HT40	-6.623	≤8	Pass
2442	802.11n HT40	-7.963	≤8	Pass
2452	802.11n HT40	-6.925	≤8	Pass

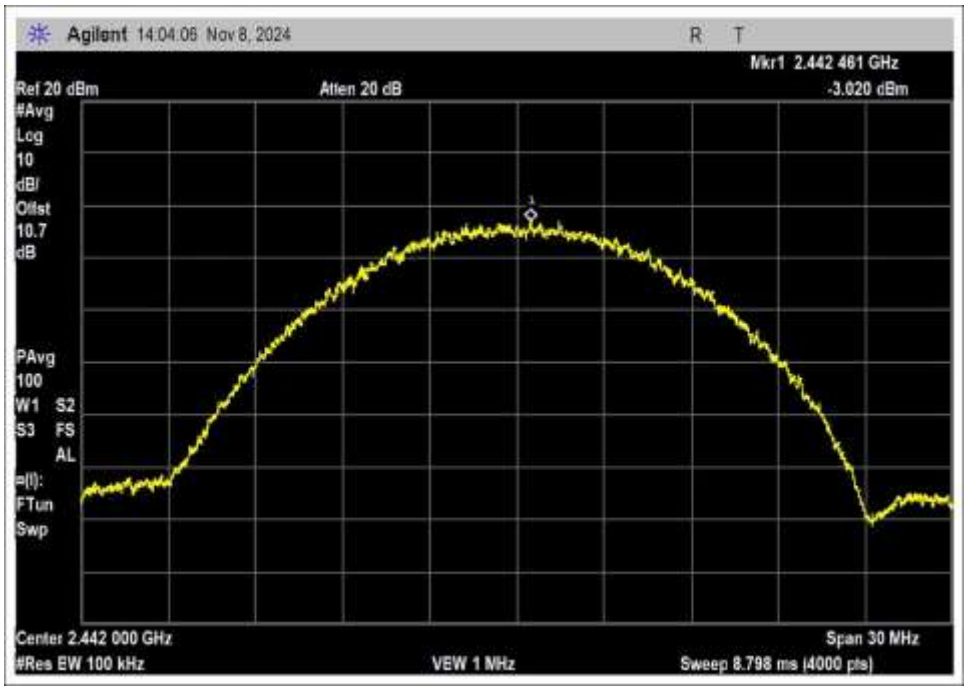
Plots

Chain 0

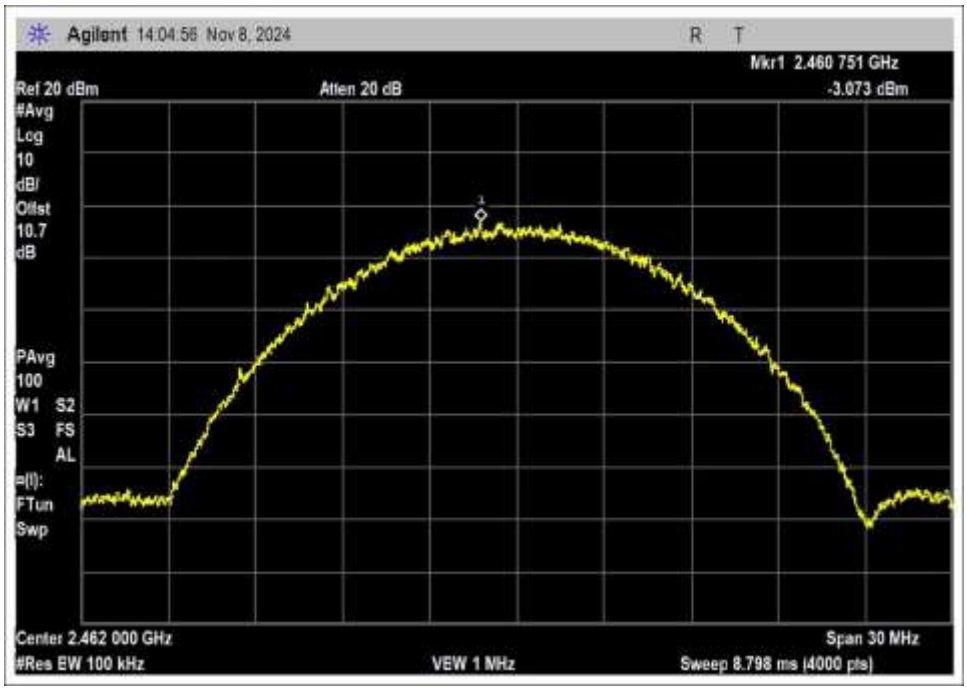
802.11b Modulation



Low Channel

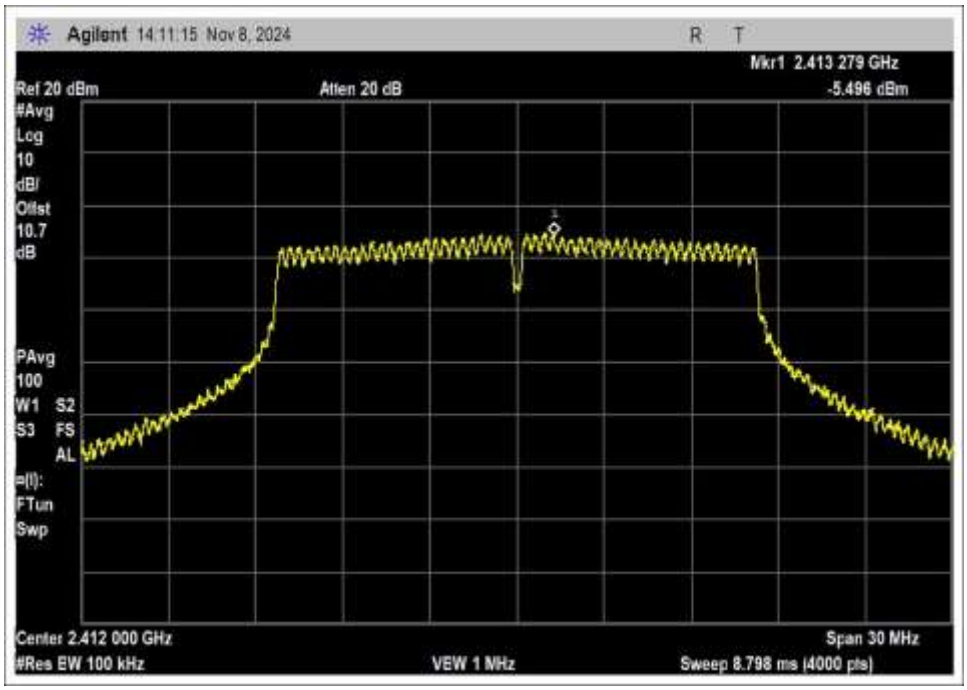


Middle Channel

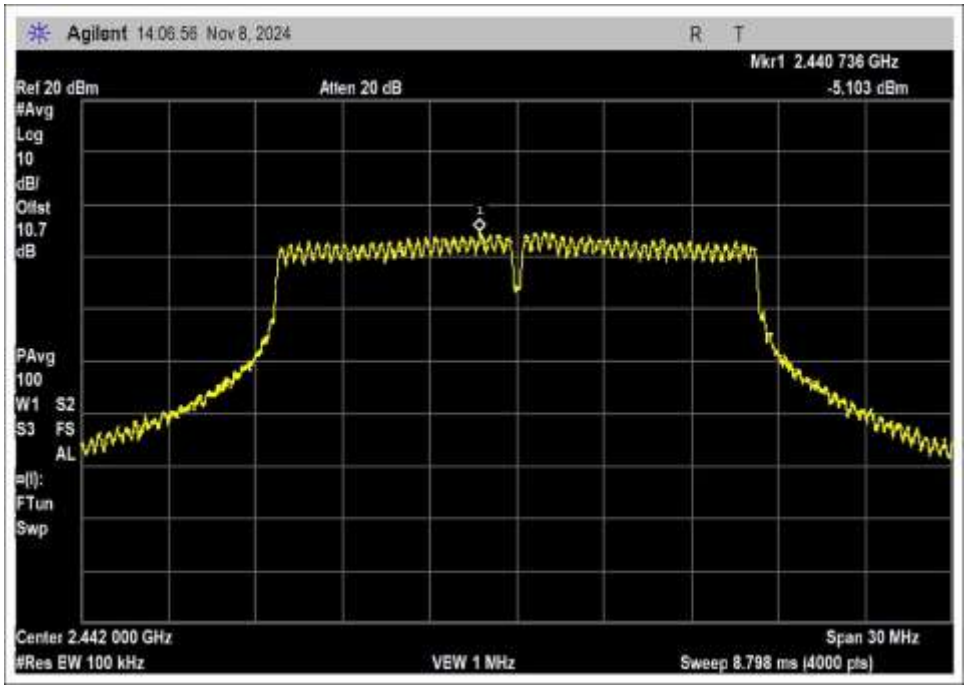


High Channel

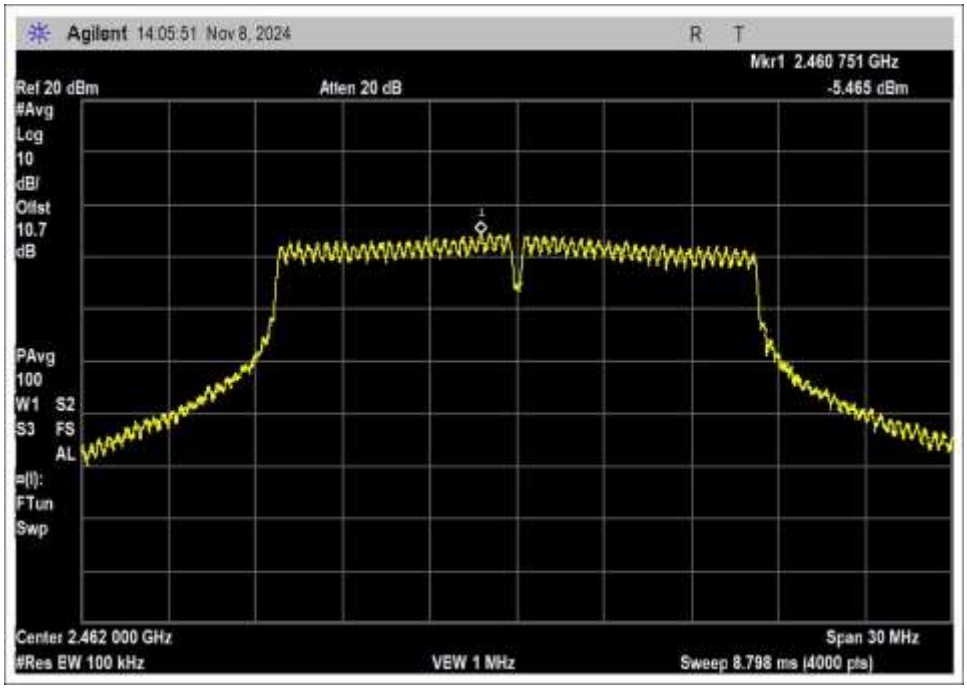
802.11g Modulation



Low Channel

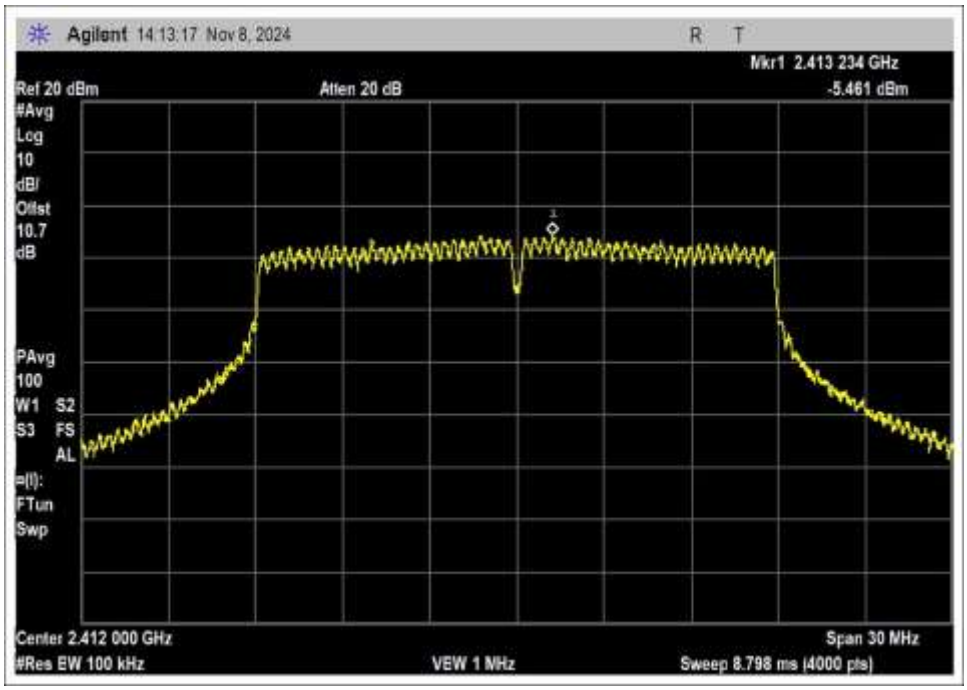


Middle Channel

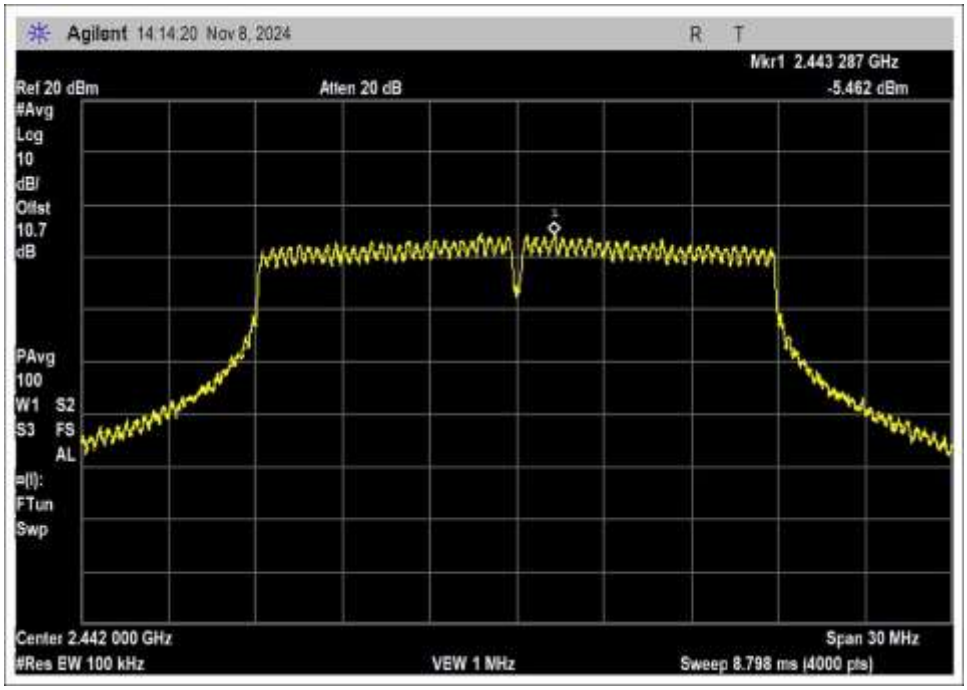


High Channel

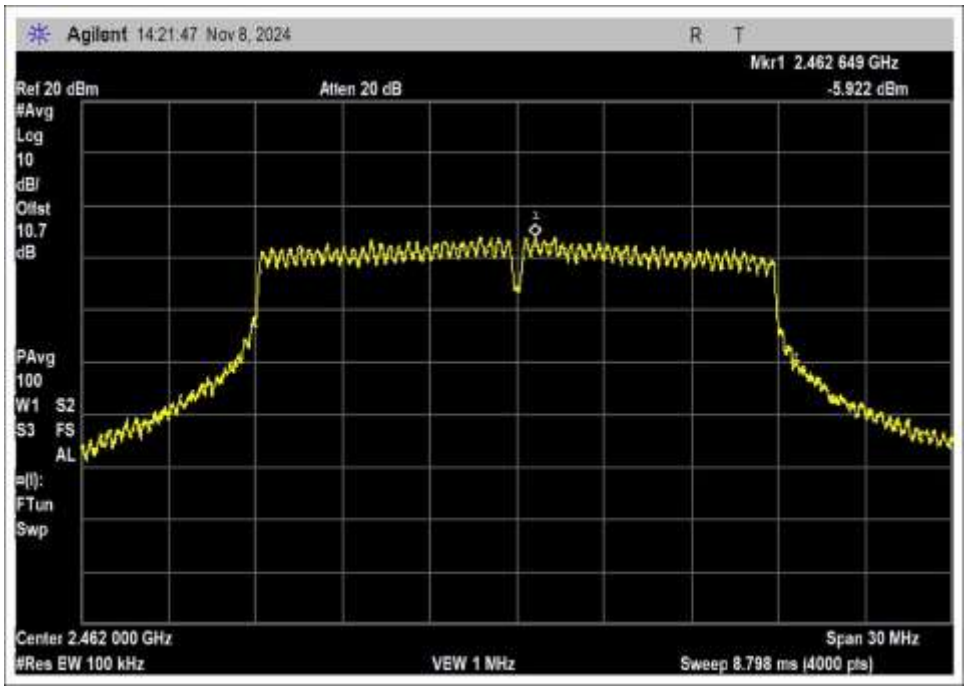
802.11n HT20 Modulation



Low Channel

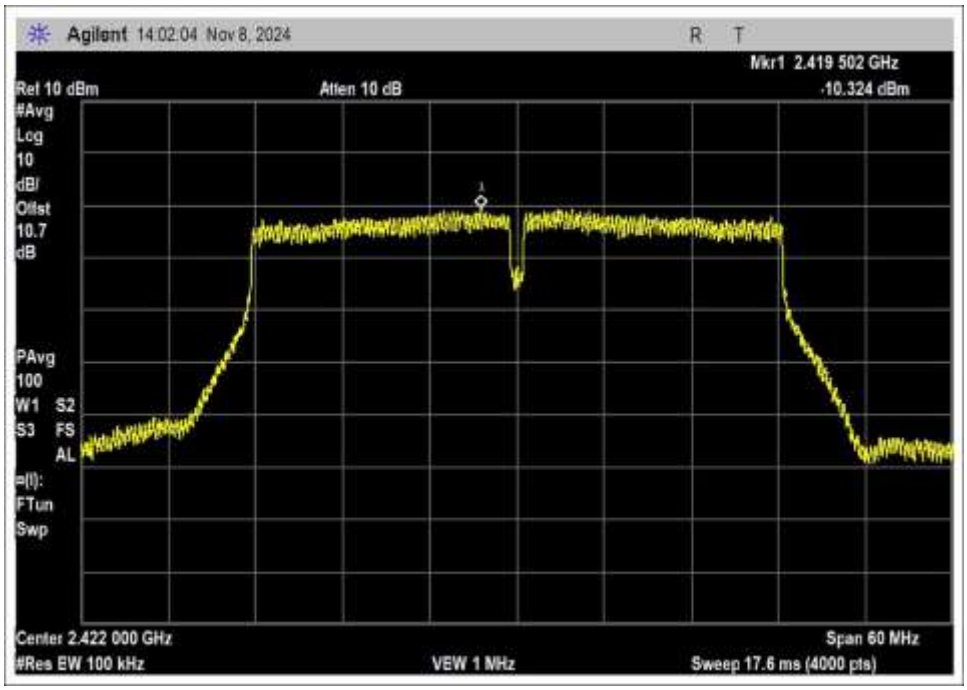


Middle Channel

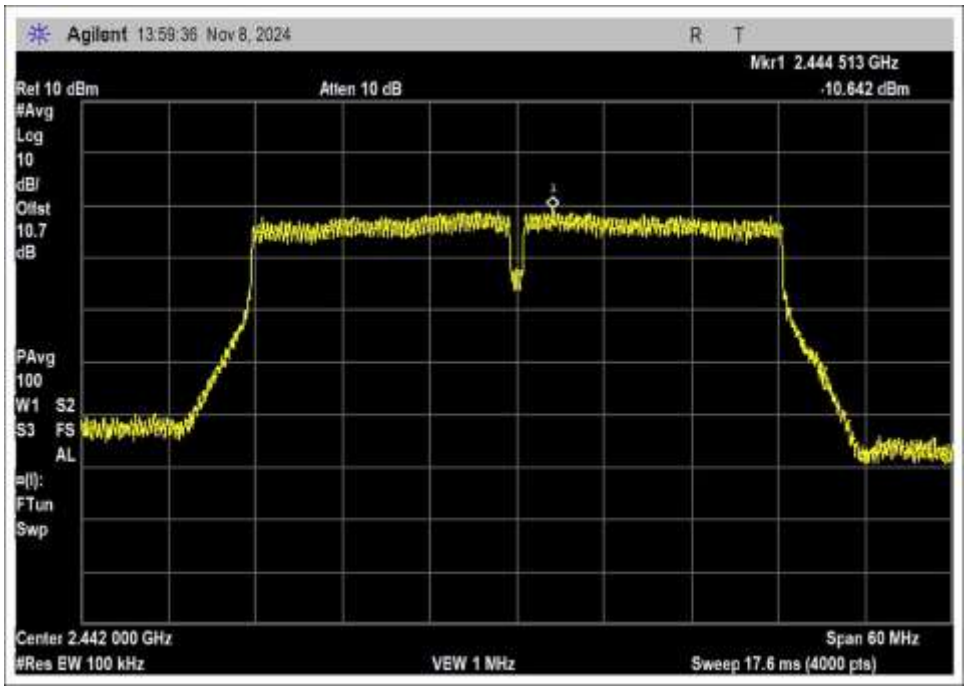


High Channel

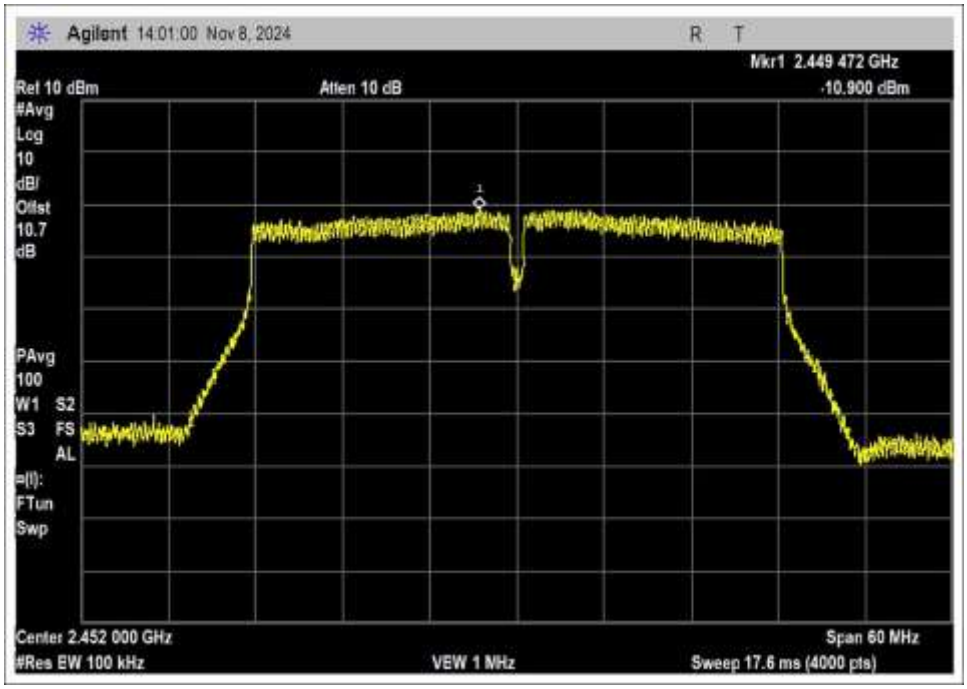
802.11n HT40 Modulation



Low Channel

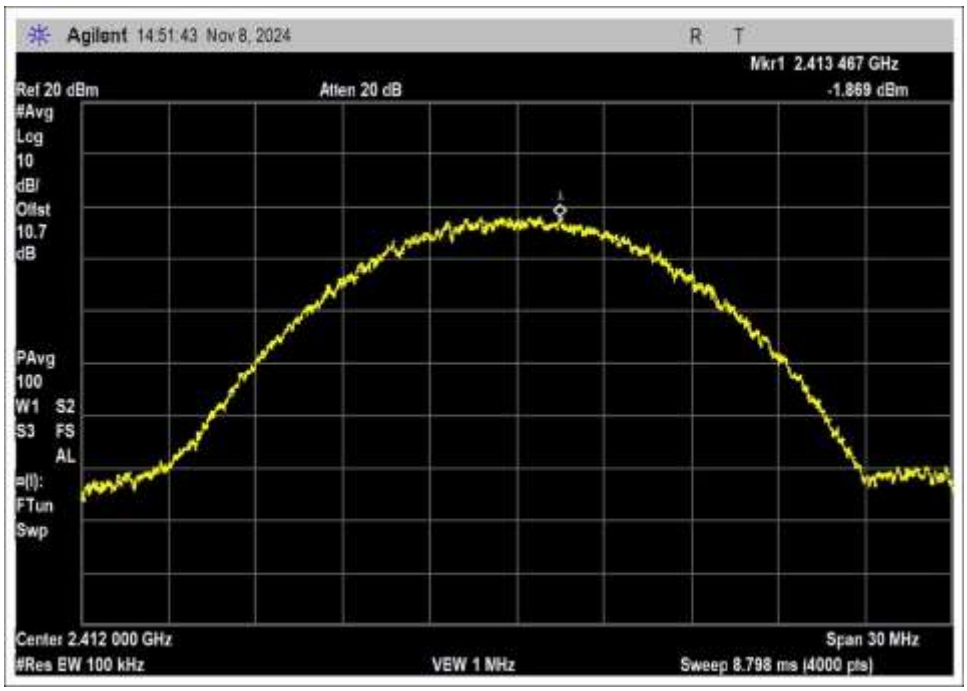


Middle Channel

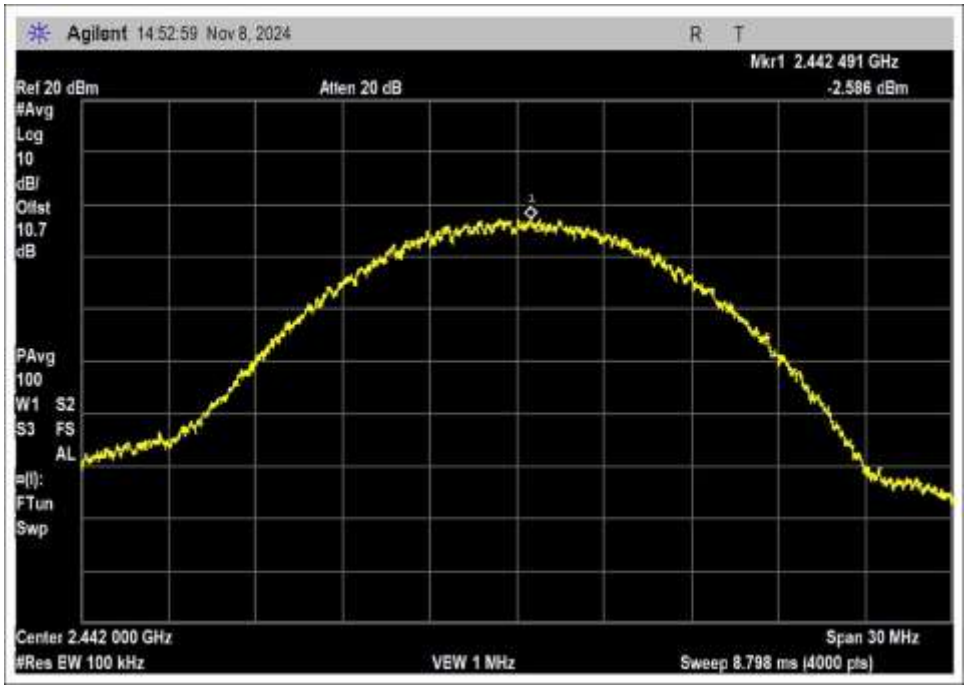


High Channel

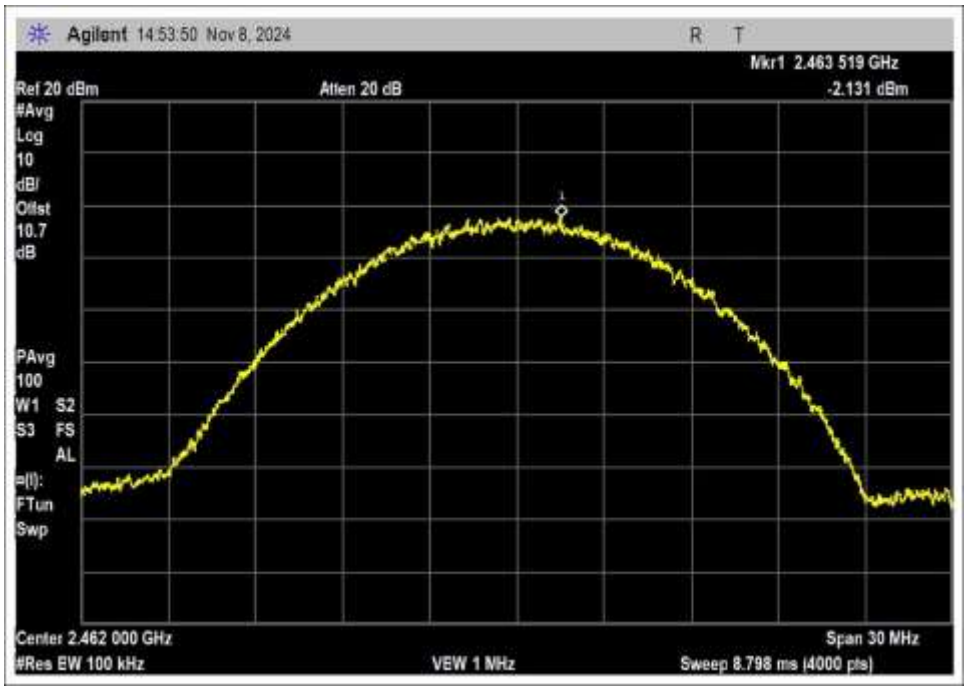
Chain 1
802.11b Modulation



Low Channel

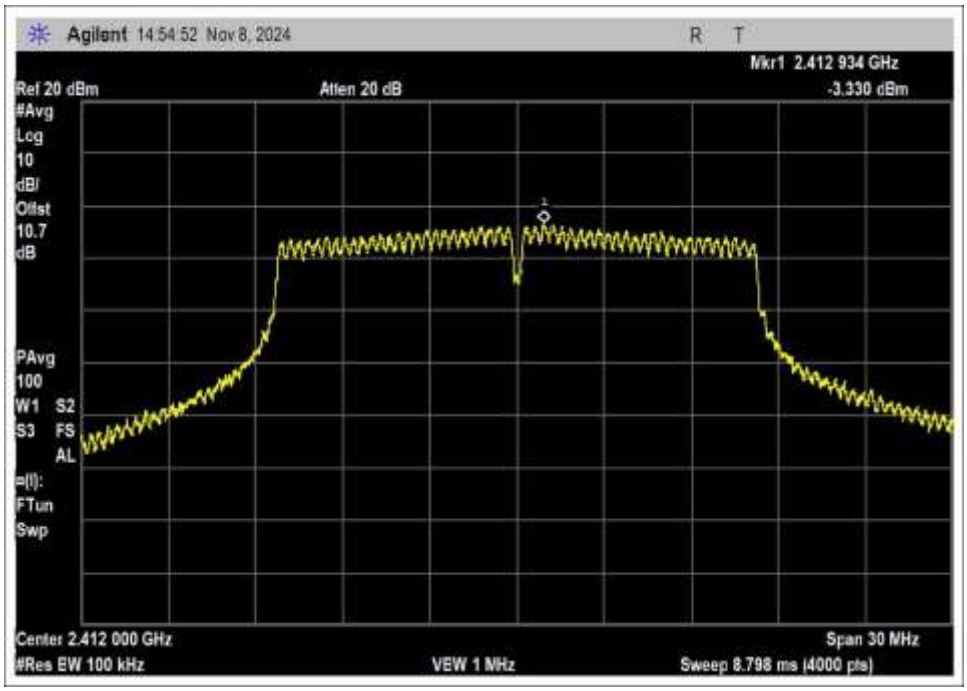


Middle Channel

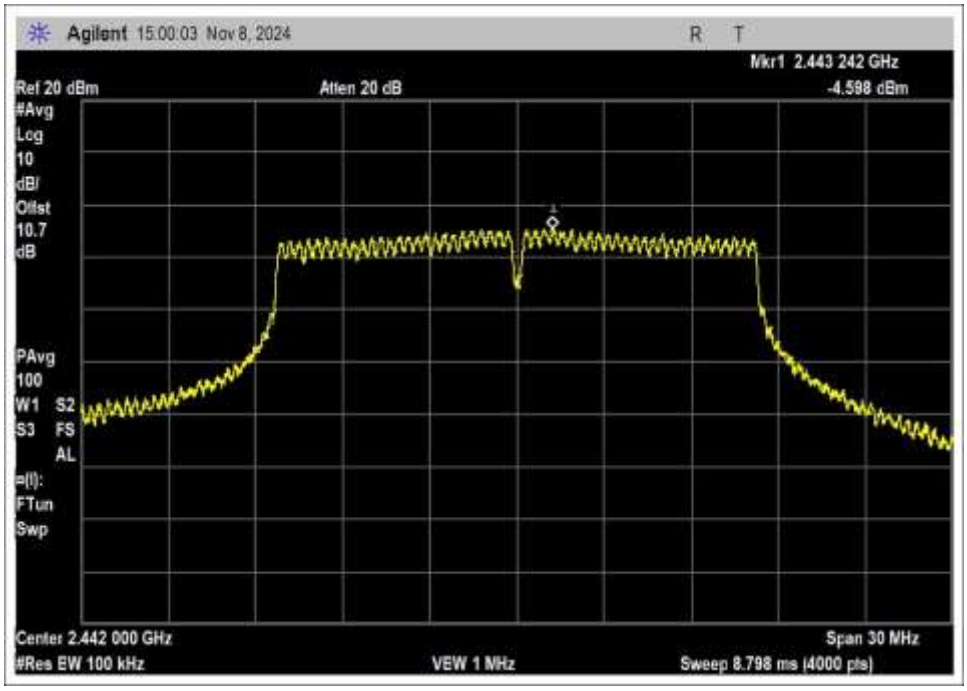


High Channel

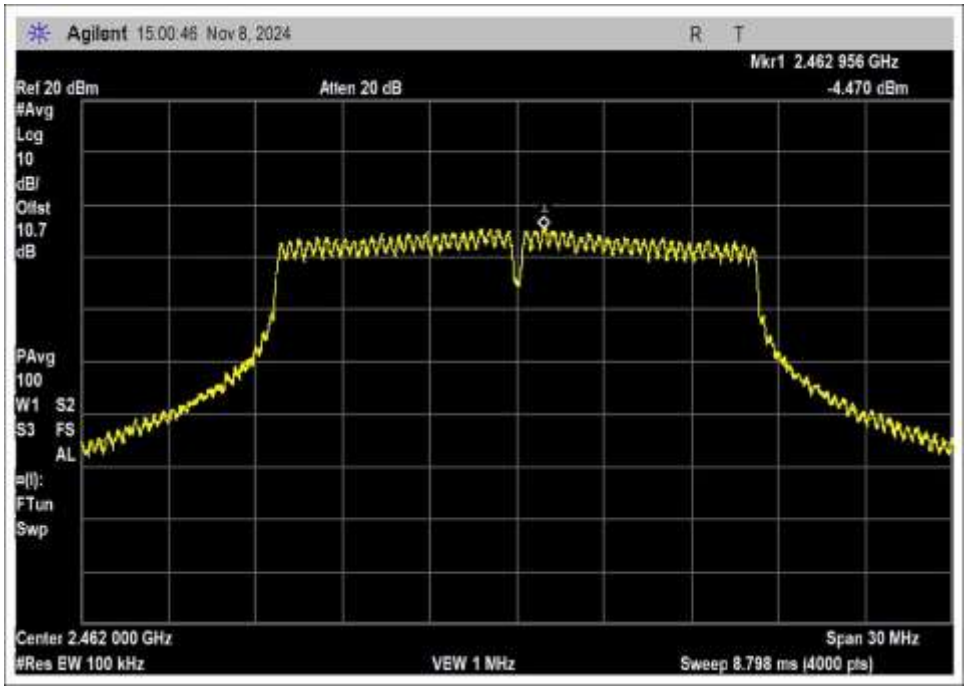
802.11g Modulation



Low Channel

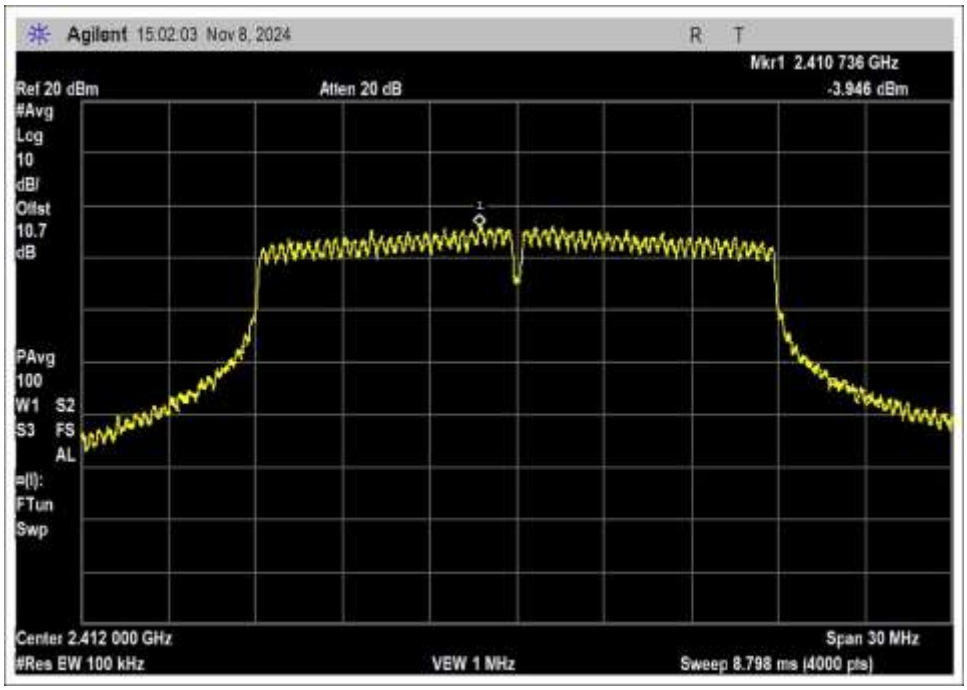


Middle Channel

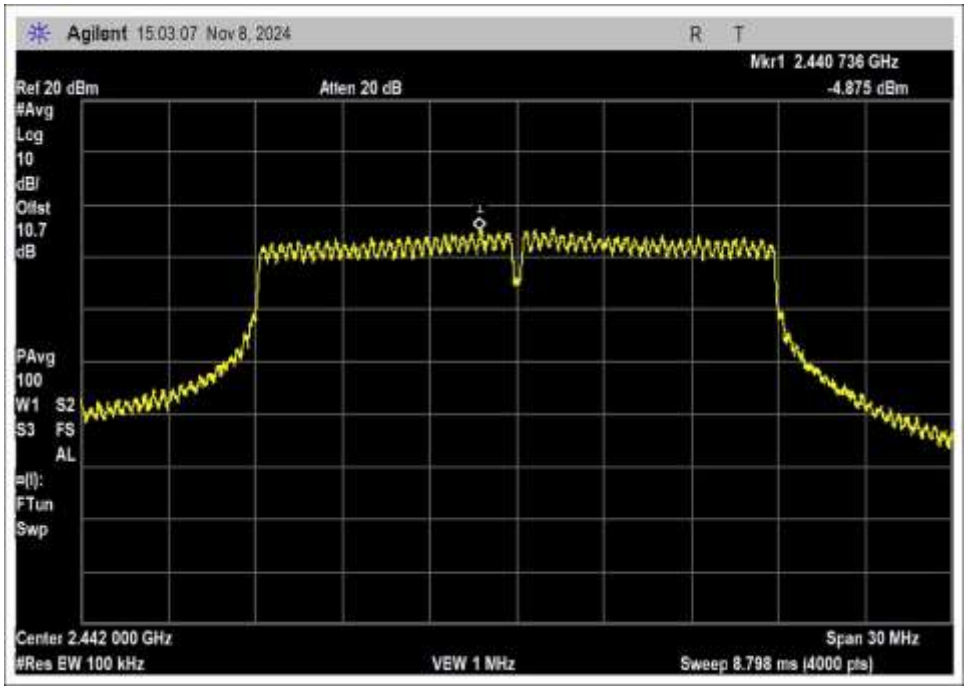


High Channel

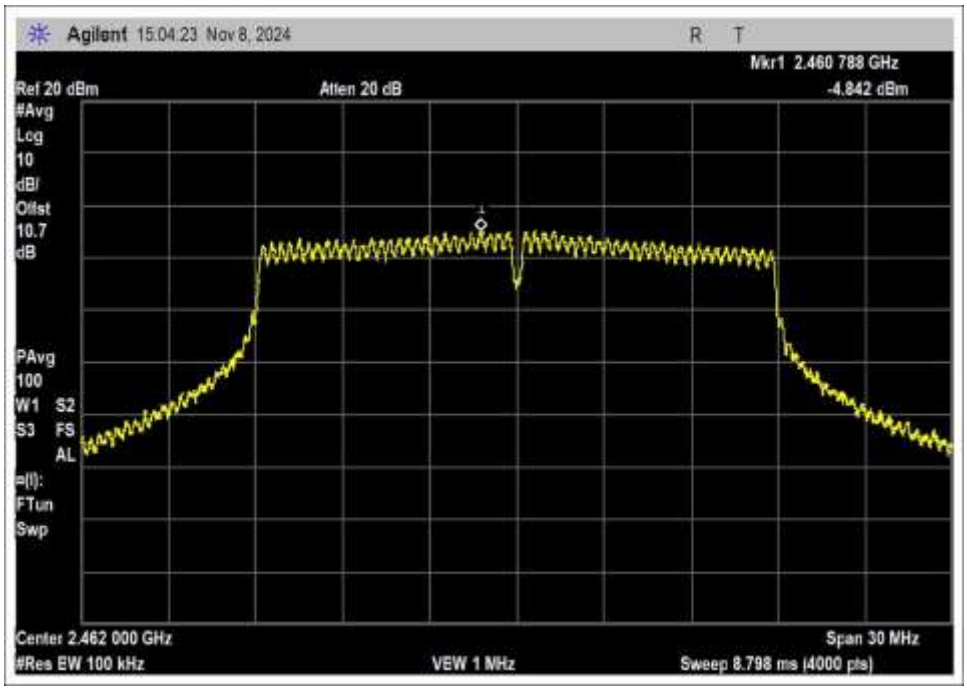
802.11n HT20 Modulation



Low Channel

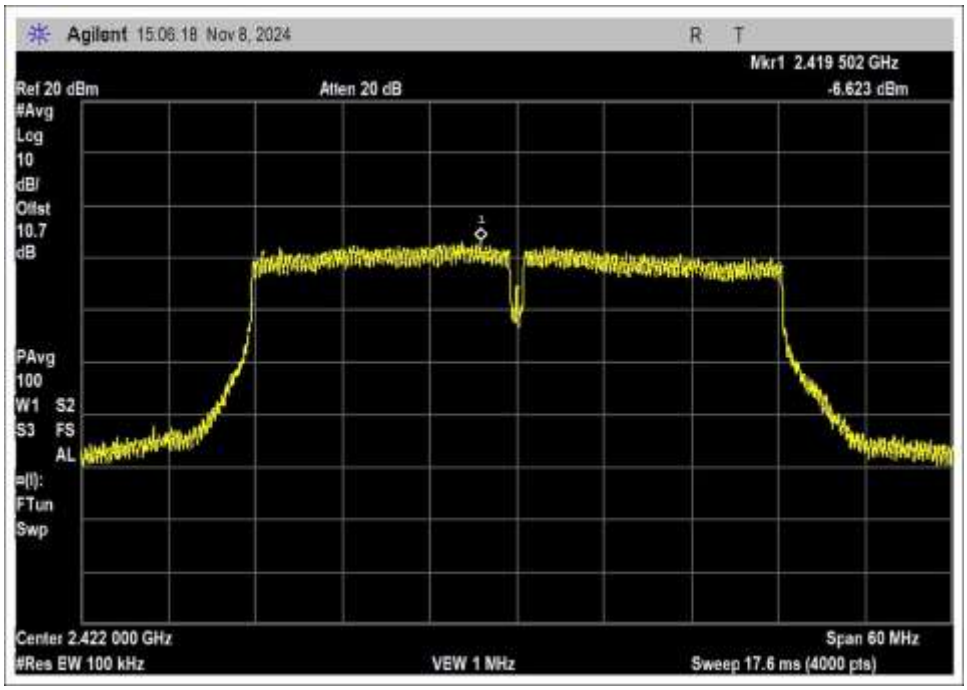


Middle Channel

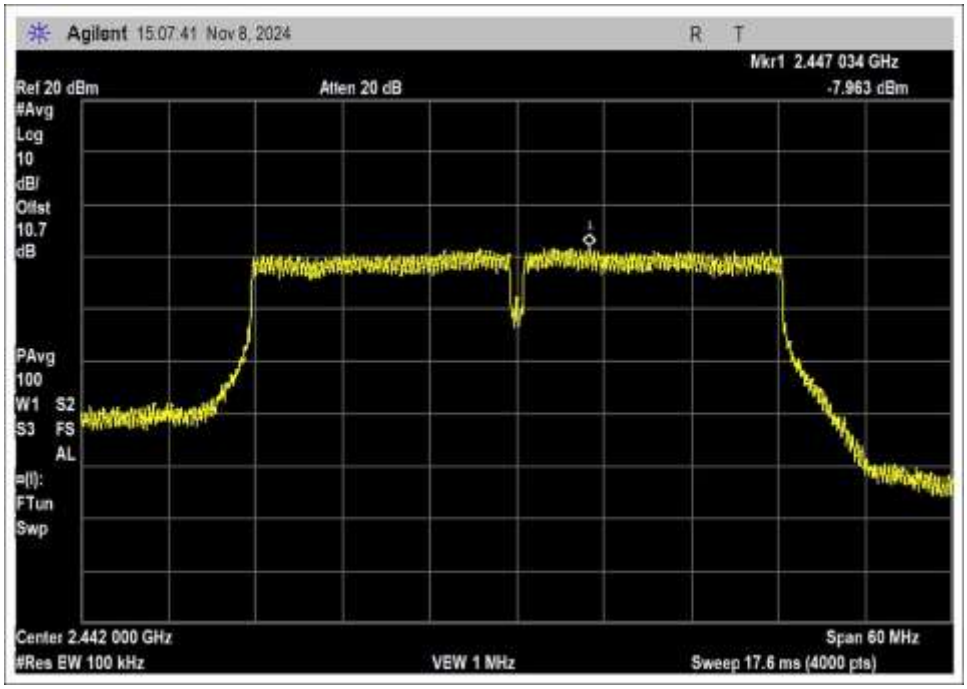


High Channel

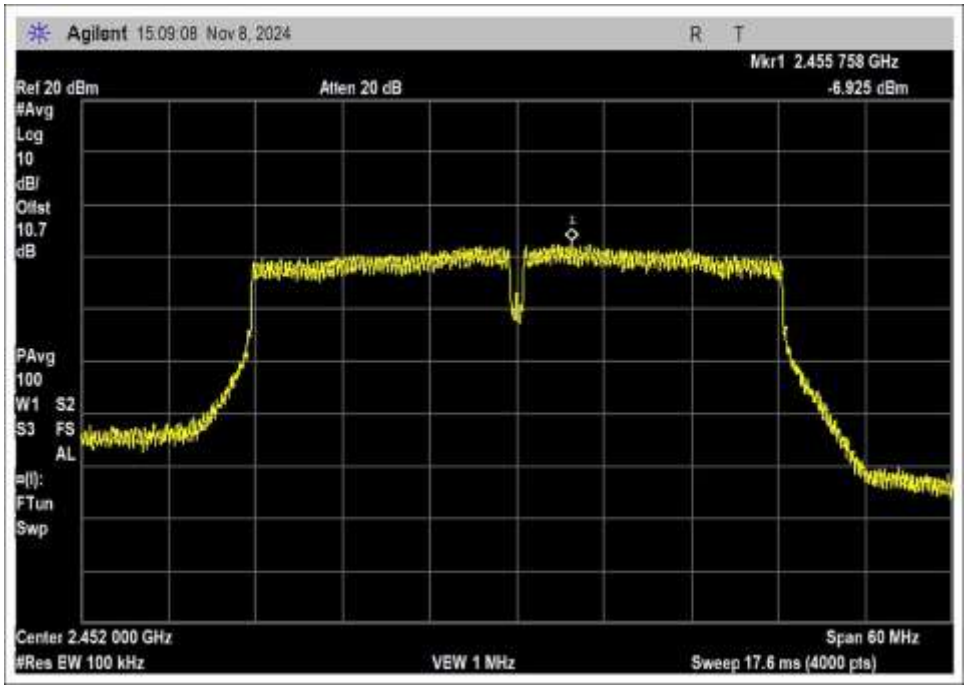
802.11n HT40 Modulation



Low Channel



Middle Channel



High Channel

Test Setup Photo(s)

Test Setup

Test Setup, Closeup View

15.207 AC Conducted Emissions

Test Setup / Conditions / Data

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**110285**	Date:	10/17/2024
Test Type:	**Conducted Emissions**	Time:	13:46:52
Tested By:	Hieu Song Nguyenpham	Sequence#:	170
Software:	EMITest 5.03.20		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

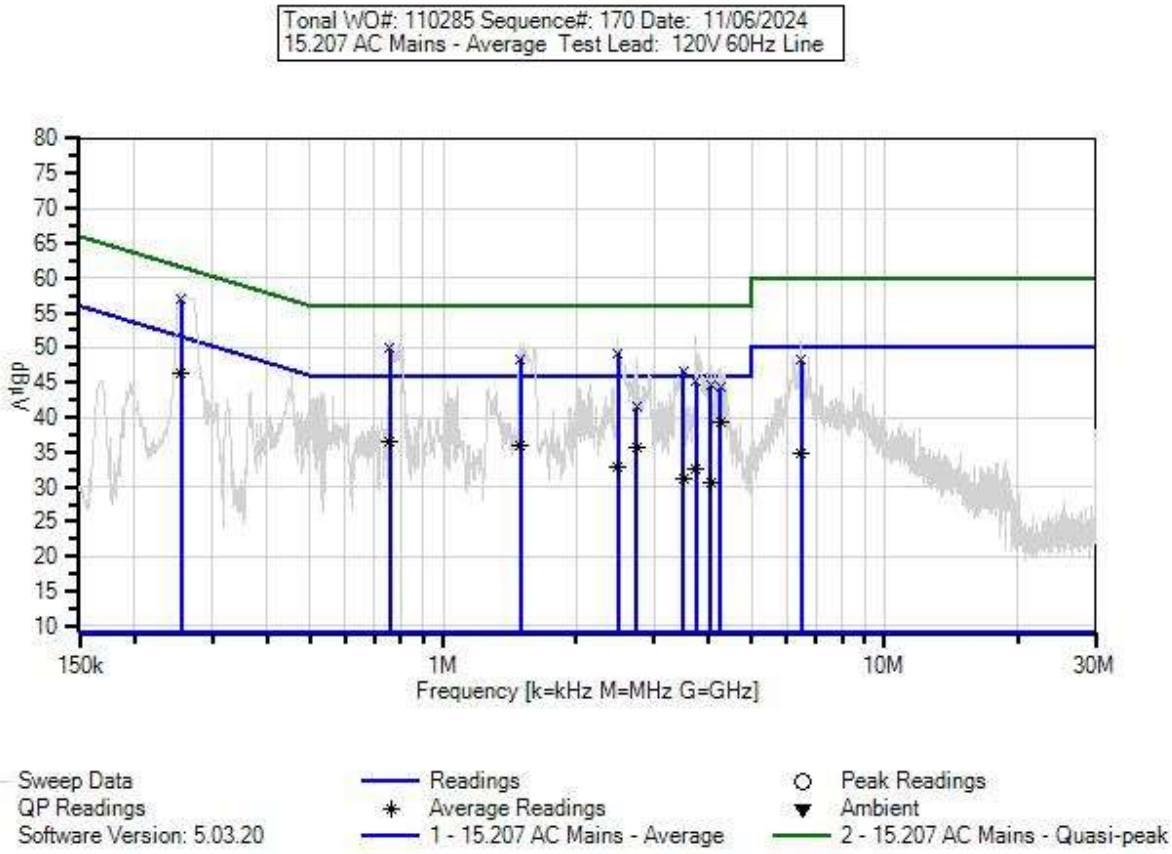
Conducted Emission
Frequency Range: 150kHz to 30MHz

Test Environment Conditions:
Temperature: 21.6°C
Humidity: 49%
Atmospheric Pressure: 101.4kPa

Highest Generation Frequency: 5.825GHz
Method: ANSI C63.10 (2020)

The unit is mounted to a floor standing rack as to simulate typical wall mounted setup. It is set in a testing mode, lifting a weight on a loop. Video and Camera are On
All WIFI and Bluetooth modules are on

Modification #1 was in place for testing.



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP01211	Attenuator	23-10-34	12/2/2022	12/2/2024
T2	ANP00880	Cable	RG214U	3/26/2024	3/26/2026
T3	ANP06691	Cable	PE3062-180	3/20/2024	3/20/2026
T4	AN03814	50uH LISN-1PH-Line (dB)	NSLK 8126	1/4/2023	1/4/2025
	AN03814	50uH LISN-1PH-Neutral (dB)	NSLK 8126	1/4/2023	1/4/2025
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024
T5	ANP05258	High Pass Filter	HE9615-150K-50-720B	5/6/2024	5/6/2026

Measurement Data: Reading listed by margin. Test Lead: Line

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	254.718k	46.8	+9.9 +0.1	+0.1	+0.0	+0.0	+0.0	56.9	61.6	-4.7	Line
	QP										
2	254.718k	36.2	+9.9 +0.1	+0.1	+0.0	+0.0	+0.0	46.3	51.6	-5.3	Line
	Ave										
^	254.718k	48.1	+9.9 +0.1	+0.1	+0.0	+0.0	+0.0	58.2	51.6	+6.6	Line
4	758.671k	39.7	+9.9 +0.2	+0.1	+0.0	+0.1	+0.0	50.0	56.0	-6.0	Line
	QP										
5	4.237M	29.0	+9.9 +0.1	+0.2	+0.1	+0.1	+0.0	39.4	46.0	-6.6	Line
	Ave										
6	2.485M	39.0	+9.9 +0.1	+0.1	+0.0	+0.1	+0.0	49.2	56.0	-6.8	Line
	QP										
7	1.494M	38.2	+9.9 +0.1	+0.1	+0.0	+0.1	+0.0	48.4	56.0	-7.6	Line
	QP										
8	3.501M	36.2	+9.9 +0.1	+0.2	+0.1	+0.1	+0.0	46.6	56.0	-9.4	Line
	QP										
9	758.671k	26.2	+9.9 +0.2	+0.1	+0.0	+0.1	+0.0	36.5	46.0	-9.5	Line
	Ave										
^	758.671k	41.9	+9.9 +0.2	+0.1	+0.0	+0.1	+0.0	52.2	46.0	+6.2	Line
11	1.494M	25.7	+9.9 +0.1	+0.1	+0.0	+0.1	+0.0	35.9	46.0	-10.1	Line
	Ave										
^	1.494M	41.0	+9.9 +0.1	+0.1	+0.0	+0.1	+0.0	51.2	46.0	+5.2	Line
13	2.744M	25.6	+9.9 +0.1	+0.1	+0.0	+0.1	+0.0	35.8	46.0	-10.2	Line
	Ave										
14	3.739M	34.7	+9.9 +0.1	+0.2	+0.1	+0.1	+0.0	45.1	56.0	-10.9	Line
	QP										
15	4.041M	34.1	+9.9 +0.1	+0.2	+0.1	+0.1	+0.0	44.5	56.0	-11.5	Line
	QP										
16	4.237M	33.9	+9.9 +0.1	+0.2	+0.1	+0.1	+0.0	44.3	56.0	-11.7	Line
	QP										
^	4.237M	41.2	+9.9 +0.1	+0.2	+0.1	+0.1	+0.0	51.6	46.0	+5.6	Line
18	6.463M	37.8	+9.9 +0.1	+0.2	+0.1	+0.1	+0.0	48.2	60.0	-11.8	Line
	QP										
19	2.485M	22.7	+9.9 +0.1	+0.1	+0.0	+0.1	+0.0	32.9	46.0	-13.1	Line
	Ave										
^	2.485M	41.1	+9.9 +0.1	+0.1	+0.0	+0.1	+0.0	51.3	46.0	+5.3	Line

21	3.739M Ave	22.2	+9.9 +0.1	+0.2	+0.1	+0.1	+0.0	32.6	46.0	-13.4	Line
^	3.739M	42.0	+9.9 +0.1	+0.2	+0.1	+0.1	+0.0	52.4	46.0	+6.4	Line
23	2.744M QP	31.3	+9.9 +0.1	+0.1	+0.0	+0.1	+0.0	41.5	56.0	-14.5	Line
^	2.744M	36.6	+9.9 +0.1	+0.1	+0.0	+0.1	+0.0	46.8	46.0	+0.8	Line
25	3.501M Ave	20.9	+9.9 +0.1	+0.2	+0.1	+0.1	+0.0	31.3	46.0	-14.7	Line
^	3.501M	39.8	+9.9 +0.1	+0.2	+0.1	+0.1	+0.0	50.2	46.0	+4.2	Line
27	6.463M Ave	24.3	+9.9 +0.1	+0.2	+0.1	+0.1	+0.0	34.7	50.0	-15.3	Line
^	6.463M	41.7	+9.9 +0.1	+0.2	+0.1	+0.1	+0.0	52.1	50.0	+2.1	Line
29	4.041M Ave	20.2	+9.9 +0.1	+0.2	+0.1	+0.1	+0.0	30.6	46.0	-15.4	Line
^	4.041M	39.1	+9.9 +0.1	+0.2	+0.1	+0.1	+0.0	49.5	46.0	+3.5	Line

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Pl • Fremont CA 94539 • 5102491170		
Customer:	**Tonal**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**110285**	Date:	10/17/2024
Test Type:	**Conducted Emissions**	Time:	14:16:33
Tested By:	Hieu Song Nguyenpham	Sequence#:	171
Software:	EMITest 5.03.20		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

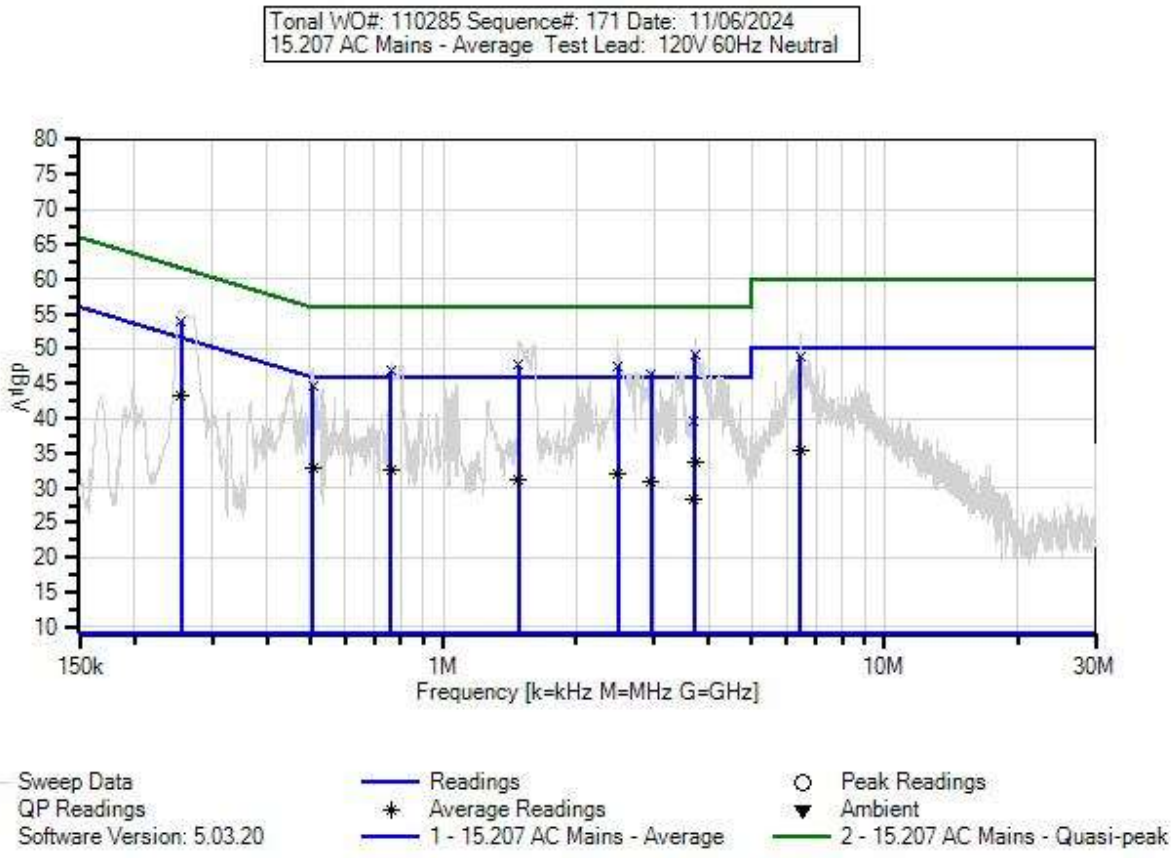
Conducted Emission
Frequency Range: 150kHz to 30MHz

Test Environment Conditions:
Temperature: 21.6°C
Humidity: 49%
Atmospheric Pressure: 101.4kPa

Highest Generation Frequency: 5.825GHz
Method: ANSI C63.10 (2020)

The unit is mounted to a floor standing rack as to simulate typical wall mounted setup. It is set in a testing mode, lifting a weight on a loop. Video and Camera are On
All WIFI and Bluetooth modules are on

Modification #1 was in place for testing.



Test Equipment:

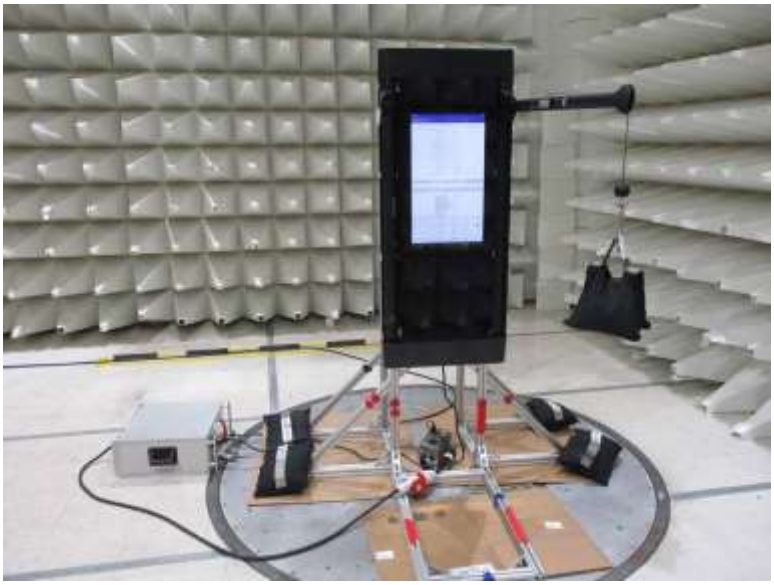
ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP01211	Attenuator	23-10-34	12/2/2022	12/2/2024
T2	ANP00880	Cable	RG214U	3/26/2024	3/26/2026
T3	ANP06691	Cable	PE3062-180	3/20/2024	3/20/2026
	AN03814	50uH LISN-1PH-Line (dB)	NSLK 8126	1/4/2023	1/4/2025
T4	AN03814	50uH LISN-1PH-Neutral (dB)	NSLK 8126	1/4/2023	1/4/2025
	AN02660	Spectrum Analyzer	E4446A	12/6/2022	12/6/2024
T5	ANP05258	High Pass Filter	HE9615-150K-50-720B	5/6/2024	5/6/2026

Measurement Data: Reading listed by margin. Test Lead: Neutral

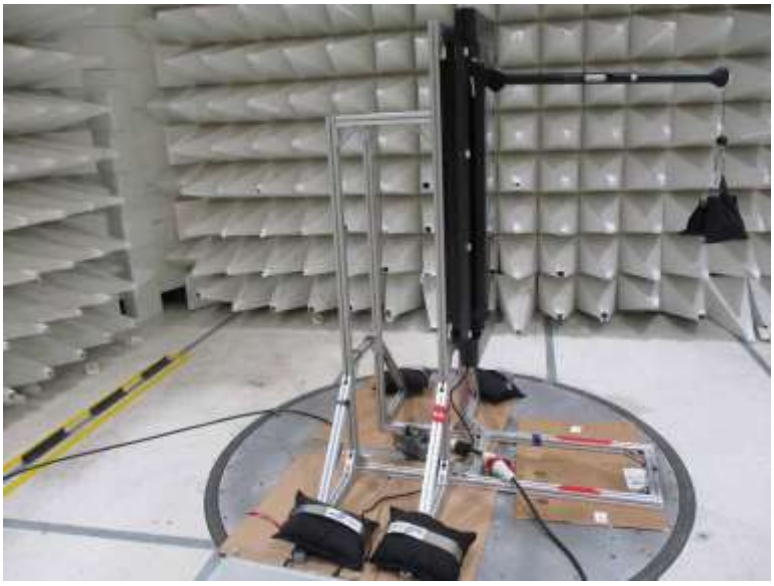
#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	3.722M	38.8	+9.9	+0.2	+0.1	+0.1	+0.0	49.2	56.0	-6.8	Neutr
	QP		+0.1								
2	255.445k	44.0	+9.8	+0.1	+0.0	+0.0	+0.0	54.0	61.6	-7.6	Neutr
	QP		+0.1								
3	255.445k	33.3	+9.8	+0.1	+0.0	+0.0	+0.0	43.3	51.6	-8.3	Neutr
	Ave		+0.1								
^	255.445k	44.9	+9.8	+0.1	+0.0	+0.0	+0.0	54.9	51.6	+3.3	Neutr
			+0.1								
5	1.485M	37.4	+9.9	+0.1	+0.0	+0.1	+0.0	47.6	56.0	-8.4	Neutr
	QP		+0.1								
6	2.489M	37.3	+9.9	+0.1	+0.0	+0.1	+0.0	47.5	56.0	-8.5	Neutr
	QP		+0.1								
7	761.580k	36.7	+9.9	+0.1	+0.0	+0.0	+0.0	46.9	56.0	-9.1	Neutr
	QP		+0.2								
8	2.961M	36.2	+9.9	+0.1	+0.0	+0.1	+0.0	46.4	56.0	-9.6	Neutr
	QP		+0.1								
9	6.449M	38.5	+9.9	+0.2	+0.1	+0.1	+0.0	48.9	60.0	-11.1	Neutr
	QP		+0.1								
10	506.032k	34.5	+9.9	+0.1	+0.0	+0.0	+0.0	44.7	56.0	-11.3	Neutr
	QP		+0.2								
11	3.722M	23.3	+9.9	+0.2	+0.1	+0.1	+0.0	33.7	46.0	-12.3	Neutr
	Ave		+0.1								
^	3.722M	42.2	+9.9	+0.2	+0.1	+0.1	+0.0	52.6	46.0	+6.6	Neutr
			+0.1								
13	506.032k	22.6	+9.9	+0.1	+0.0	+0.0	+0.0	32.8	46.0	-13.2	Neutr
	Ave		+0.2								
^	506.032k	38.9	+9.9	+0.1	+0.0	+0.0	+0.0	49.1	46.0	+3.1	Neutr
			+0.2								
15	761.580k	22.4	+9.9	+0.1	+0.0	+0.0	+0.0	32.6	46.0	-13.4	Neutr
	Ave		+0.2								
^	761.580k	39.4	+9.9	+0.1	+0.0	+0.0	+0.0	49.6	46.0	+3.6	Neutr
			+0.2								
17	2.489M	21.8	+9.9	+0.1	+0.0	+0.1	+0.0	32.0	46.0	-14.0	Neutr
	Ave		+0.1								
^	2.489M	41.5	+9.9	+0.1	+0.0	+0.1	+0.0	51.7	46.0	+5.7	Neutr
			+0.1								
19	6.449M	25.0	+9.9	+0.2	+0.1	+0.1	+0.0	35.4	50.0	-14.6	Neutr
	Ave		+0.1								
^	6.449M	42.2	+9.9	+0.2	+0.1	+0.1	+0.0	52.6	50.0	+2.6	Neutr
			+0.1								

21	1.485M Ave	21.0	+9.9 +0.1	+0.1	+0.0	+0.1	+0.0	31.2	46.0	-14.8	Neutr
^	1.485M	41.5	+9.9 +0.1	+0.1	+0.0	+0.1	+0.0	51.7	46.0	+5.7	Neutr
23	2.961M Ave	20.6	+9.9 +0.1	+0.1	+0.0	+0.1	+0.0	30.8	46.0	-15.2	Neutr
^	2.961M	38.9	+9.9 +0.1	+0.1	+0.0	+0.1	+0.0	49.1	46.0	+3.1	Neutr
25	3.705M QP	29.2	+9.9 +0.1	+0.2	+0.1	+0.1	+0.0	39.6	56.0	-16.4	Neutr
26	3.705M Ave	17.9	+9.9 +0.1	+0.2	+0.1	+0.1	+0.0	28.3	46.0	-17.7	Neutr
^	3.705M	39.7	+9.9 +0.1	+0.2	+0.1	+0.1	+0.0	50.1	46.0	+4.1	Neutr

Test Setup Photo(s)



Front View



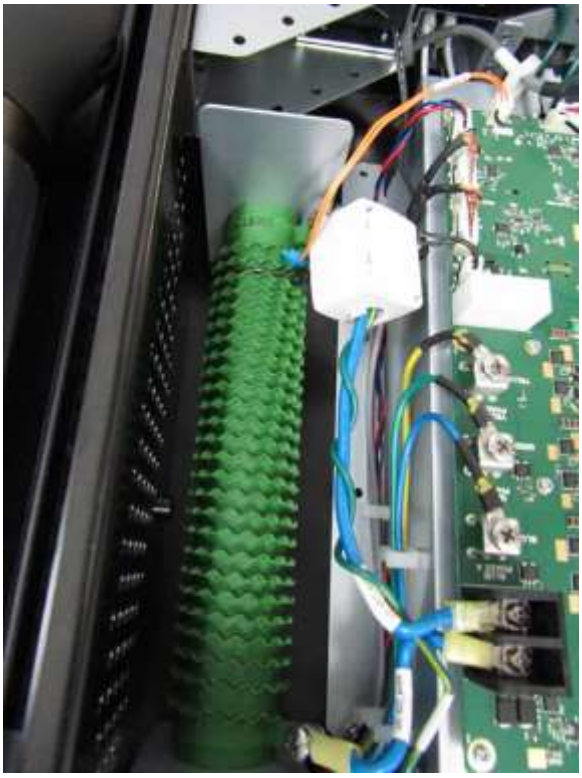
Side View

APPENDIX A: MODIFICATIONS MADE DURING TESTING

This list is a summary of the conditions noted for or modifications made to the equipment during testing.

Summary of Conditions
Modification #1 (Mod#1) = Reduce RF output power to 12dBm in the software for 802.11n HT40 Chain 0. Added a ferrite (Wurth: 742 712 21) on lower resistor wire. Green Resistor.

Modifications listed above must be incorporated into all production units.



Modification #1

Supplemental Information

Measurement Uncertainty

Uncertainty Value	Parameter
5.77 dB	Radiated Emissions
0.673 dB	RF Conducted Measurements
5.77×10^{-10}	Frequency Deviation
0.00005 s	Time Deviation
3.18 dB	Mains Conducted Emissions

Uncertainties reported are worst case for all CKC Laboratories' sites and represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Compliance is deemed to occur provided measurements are below the specified limits.

Emissions Test Details

TESTING PARAMETERS

Unless otherwise indicated, the following configuration parameters are used for equipment setup: The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit. Individual measurements were compared with the displayed limit value in the margin column. The margin was calculated based on subtracting the limit value from the corrected measurement value; a positive margin represents a measurement exceeding the limit, while a negative margin represents a measurement less than the limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB/m)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. Unless otherwise specified, the following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "positive peak" detector mode. Whenever a "quasi-peak" or "average" reading was recorded, the measurement was annotated with a "QP" or an "Ave" on the appropriate rows of the data sheets. In cases where quasi-peak or average limits were employed and data exists for multiple measurement types for the same frequency then the peak measurement was retained in the report for reference, however the numbering for the affected row was removed and an arrow or caret ("^") was placed in the far left-hand column indicating that the row above takes precedence for comparison to the limit. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer or receiver recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature called "peak hold," the measurement device had the ability to measure intermittent or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

Quasi-peak measurements were taken using the quasi-peak detector when the true peak values exceeded or were within 2 dB of a quasi-peak specification limit. Additional QP measurements may have been taken at the discretion of the operator.

Average

Average measurements were taken using the average detector when the true peak values exceeded or were within 2 dB of an average specification limit. Additional average measurements may have been taken at the discretion of the operator. If the specification or test procedure requires trace averaging, then the averaging was performed using 100 samples or as required by the specification. All other average measurements are performed using video bandwidth averaging. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point, the measuring device is set into the linear mode and the scan time is reduced.

End of Report