FCC Radio Test Report

FCC ID: 2AIWD-HX9100

Original Grant

Report No.	:	TB-FCC148433
Applicant	:	Hanchang Corporation
Equipment Under Test (EUT)		
EUT Name	:	802.11N Wireless Adapter(USB Wi-Fi dongle)
Model No.	:	HX9100
Series No.	:	N/A
Brand Name	:	N/A
Receipt Date	:	2016-06-03
Test Date	:	2016-06-04 to 2016-06-24
Issue Date	:	2016-06-25
Standards	:	FCC Part 15, Subpart C (15.247:2015)
Test Method	:	ANSI C63.10: 2013
Conclusions	:	**PASS**

In the configuration tested, the EUT complied with the standards specified above,

The EUT technically complies with the FCC and IC requirements

Test/Witness Engineer : WAN SU

Approved& Authorized :

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

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1. General Information about EUT

1.1 Client Information

Applicant	:	Hanchang Corporation
Address	:	B-702, Woolim Lion's Valley 371-28 Gasan-Dong, Geumchun-Gu, Seoul 153-786, Korea
Manufacturer	:	Hanchang Corporation
Address	:	B-702, Woolim Lion's Valley 371-28 Gasan-Dong, Geumchun-Gu, Seoul 153-786, Korea

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	802.11N Wireless Adapter(USB Wi-Fi dongle)	
Models No.	:	HX9100	
Model Difference	:	N/A	
Product Description	:	Operation Frequency: 802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz	
		Number of Channel:	802.11b/g/n(HT20):11 channels **see note(3)** 802.11n(HT40): 7 channels **see note(3)**
		RF Output Power:	802.11b: 9.24 dBm 802.11g: 9.18 dBm 802.11n (HT20): 9.10 dBm 802.11n (HT40): 9.04 dBm
		Antenna Gain:	2 dBi Dipole Antenna
		Modulation Type:	802.11b: DSSS(CCK, QPSK, DBPSK) 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
		Bit Rate of Transmitter:	802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6 Mbps 802.11n:up to 150Mbps
Power Supply	:	DC Voltage supplied from Host System by USB Port.	
Power Rating	:	DC 5.0V by USB Port.	
Connecting I/O Port(S)	:	Please refer to the User's Manual	

Note:

(1) This Test Report is FCC Part 15.247 for 802.11b/g/n, the test procedure follows the FCC KDB 558074 D01 DTS Meas Guidance v03r05.

(2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

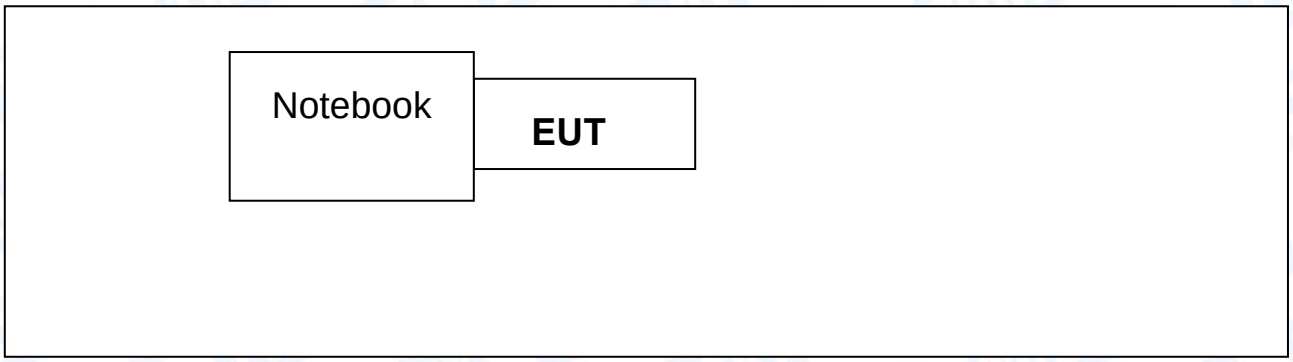
(3) Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	**2412**	05	2432	09	2452
02	2417	**06**	**2437**	10	2457
03	2422	07	2442	**11**	**2462**
04	2427	08	2447		

(4) The Antenna information about the equipment is provided by the applicant.

1.3 Block Diagram Showing the Configuration of System Tested

TX Mode



1.4 Description of Support Units

Equipment Information				
Name	**Model**	**FCC ID/DOC**	**Manufacturer**	**Used "√"**
Netbook	T60P	DOC	Thinkpad	√
----	----	----	----	
Cable Information				
Number	**Shielded Type**	**Ferrite Core**	**Length**	**Note**
Cable 1	YES	YES	0.6M	
----	----	----	----	

1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

For Conducted Test	
Final Test Mode	**Description**
Mode 1	TX B Mode

For Radiated Test	
Final Test Mode	**Description**
Mode 2	TX Mode B Mode Channel 01/06/11
Mode 3	TX Mode G Mode Channel 01/06/11
Mode 4	TX Mode N(HT20) Mode Channel 01/06/11
Mode 5	TX Mode N(HT40) Mode Channel 03/06/09

Note:

(1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.

According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels, and the worst case data rate as follows:

802.11b Mode: CCK (1 Mbps)
802.11g Mode: OFDM (6 Mbps)
802.11n (HT20) Mode: MCS 0 (6.5 Mbps)
802.11n (HT40) Mode: MCS 0 (13 Mbps)

(2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.

(3) The EUT is considered a mobile unit; in normal use it was positioned on X-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.

1.6 Description of Test Software Setting

During testing channel& Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of WLAN.

Test Software Version	REALTEK 11n Single Chip 92C USB WLAN MP		
Channel	**CH 01**	**CH 06**	**CH 11**
IEEE 802.11b DSSS	22	21	21
IEEE 802.11g OFDM	27	26	26
IEEE 802.11n (HT20)	27	26	26
	CH 03	**CH 06**	**CH 09**
IEEE 802.11n (HT40)	26	26	26

1.7 Measurement Uncertainty

The reported uncertainty of measurement y ± U，where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2，providing a level of confidence of approximately 95 %.

Test Item	Parameters	Expanded Uncertainty (U_{Lab})
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	 ±3.42 dB ±3.42 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	±4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	±4.40 dB
Radiated Emission	Level Accuracy: Above 1000MHz	±4.20 dB

1.7 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

FCC List No.: (811562)

The Laboratory is listed in the United States of American Federal Communications Commission (FCC), and the registration number is 811562.

IC Registration No.: (11950A-1)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A-1.

2. Test Summary

FCC Part 15 Subpart C(15.247)/ RSS 247 Issue 1				
Standard Section		Test Item	Judgment	Remark
FCC	IC			
15.203	/	Antenna Requirement	PASS	N/A
15.207	RSS-GEN 7.2.4	Conducted Emission	PASS	N/A
15.205	RSS-GEN 7.2.2	Restricted Bands	PASS	N/A
15.247(a)(2)	RSS 247 5.2 (1)	6dB Bandwidth	PASS	N/A
15.247(b)	RSS 247 5.4 (4)	Peak Output Power	PASS	N/A
15.247(e)	RSS 247 5.2 (2)	Power Spectral Density	PASS	N/A
15.247(d)	RSS 247 5.5	Transmitter Radiated Spurious Emission	PASS	N/A
Note: "/" for no requirement for this test item. N/A is an abbreviation for Not Applicable.				

3. Test Equipment

Conducted Emission Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Aug. 07, 2015	Aug. 06, 2016
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Aug. 07, 2015	Aug. 06, 2016
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Aug. 07, 2015	Aug. 06, 2016
LISN	Rohde & Schwarz	ENV216	101131	Aug. 08, 2015	Aug. 07, 2016
Radiation Emission Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
Spectrum Analyzer	Agilent	E4407B	MY45106456	Aug. 07, 2015	Aug. 06, 2016
EMI Test Receiver	Rohde & Schwarz	ESCI	100010/007	Aug. 07, 2015	Aug. 06, 2016
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar. 26, 2016	Mar. 25, 2017
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Mar. 26, 2016	Mar. 25, 2017
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar. 26, 2016	Mar. 25, 2017
Horn Antenna	ETS-LINDGREN	3117	00143209	Mar. 26, 2016	Mar. 25, 2017
Pre-amplifier	Sonoma	310N	185903	Mar. 26, 2016	Mar. 25, 2017
Pre-amplifier	HP	8447B	3008A00849	Mar. 26, 2016	Mar. 25, 2017
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar. 26, 2016	Mar. 25, 2017
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Antenna Conducted Emission					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
Spectrum Analyzer	Agilent	E4407B	MY45106456	Aug. 07, 2015	Aug. 06, 2016
EMI Test Receiver	Rohde & Schwarz	ESCI	100010/007	Aug. 07, 2015	Aug. 06, 2016
Power Meter	Anritsu	ML2495A	25406005	Aug.07, 2015	Aug.06, 2016
Power Sensor	Anritsu	ML2411B	25406005	Aug.07, 2015	Aug.06, 2016

4. Conducted Emission Test

4.1 Test Standard and Limit

4.1.1Test Standard

FCC Part 15.207

4.1.2 Test Limit

Conducted Emission Test Limit

Frequency	Maximum RF Line Voltage (dBμV)	
	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

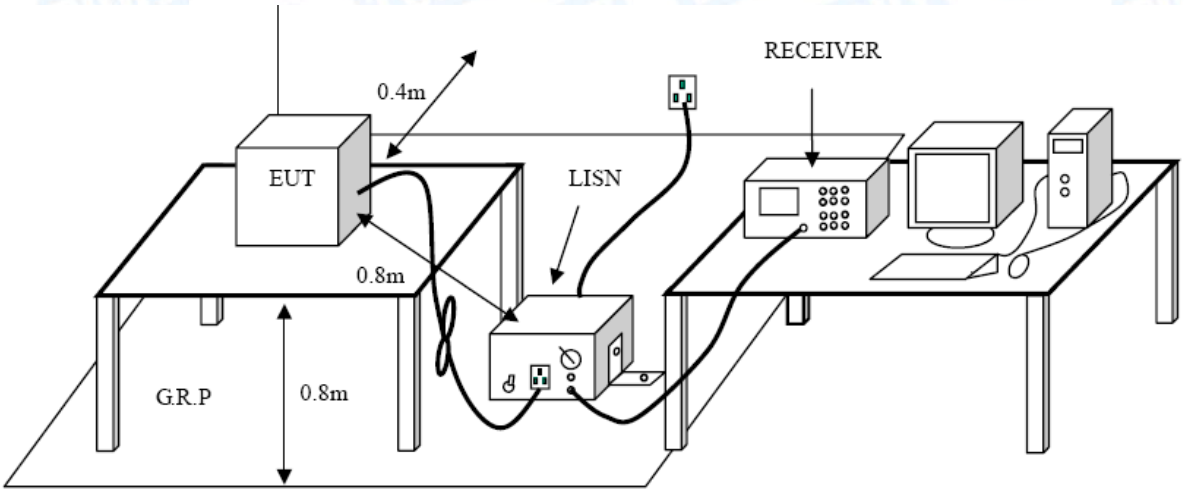
Notes:

(1) *Decreasing linearly with logarithm of the frequency.

(2) The lower limit shall apply at the transition frequencies.

(3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2 Test Setup



4.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

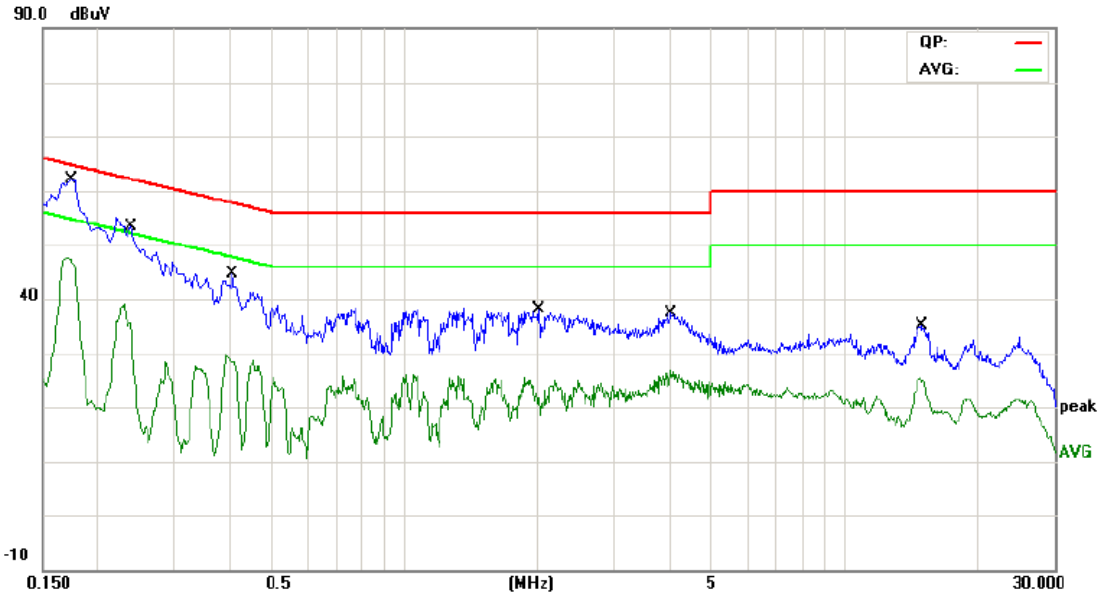
4.4 EUT Operating Mode

Please refer to the description of test mode.

4.5 Test Data

Please see the next page.

EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model Name :	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Terminal:	Line		
Test Mode:	TX B Mode		
Remark:	Only worse case is reported		

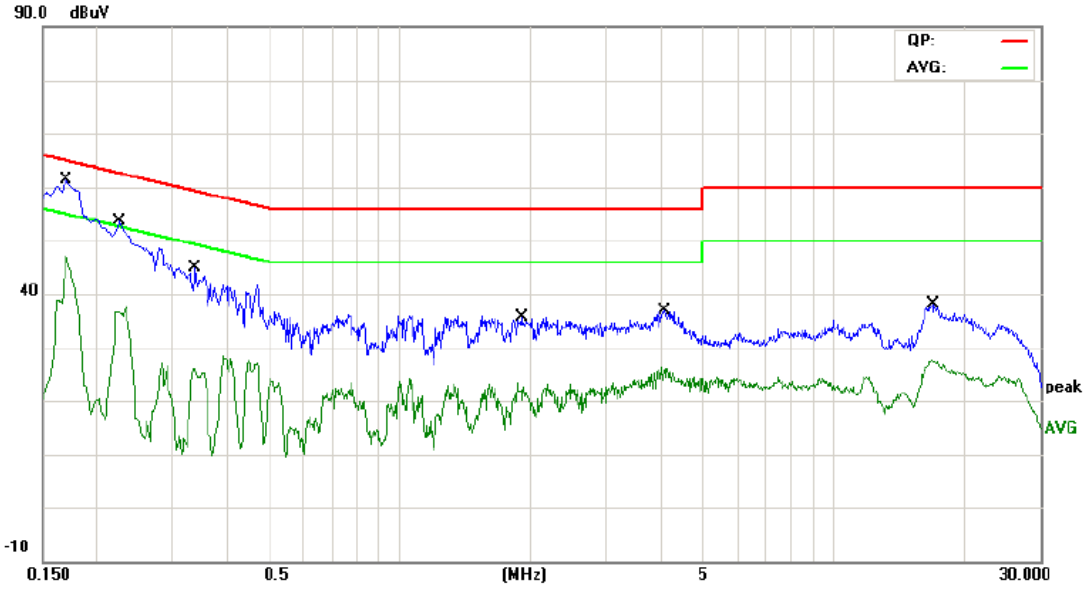


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.1740	47.66	9.97	57.63	64.76	-7.13	QP
2		0.1740	34.91	9.97	44.88	54.76	-9.88	AVG
3		0.2380	37.45	10.02	47.47	62.16	-14.69	QP
4		0.2380	21.64	10.02	31.66	52.16	-20.50	AVG
5		0.4060	27.88	10.02	37.90	57.73	-19.83	QP
6		0.4060	17.74	10.02	27.76	47.73	-19.97	AVG
7		2.0140	22.14	10.06	32.20	56.00	-23.80	QP
8		2.0140	9.50	10.06	19.56	46.00	-26.44	AVG
9		4.0300	21.26	9.99	31.25	56.00	-24.75	QP
10		4.0300	15.48	9.99	25.47	46.00	-20.53	AVG
11		14.9660	15.72	10.26	25.98	60.00	-34.02	QP
12		14.9660	9.67	10.26	19.93	50.00	-30.07	AVG

*:Maximum data x:Over limit !:over margin

Emission Level= Read Level+ Correct Factor

EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	**Model Name :**	HX9100
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60Hz		
Terminal:	Neutral		
Test Mode:	TX B Mode		
Remark:	Only worse case is reported		

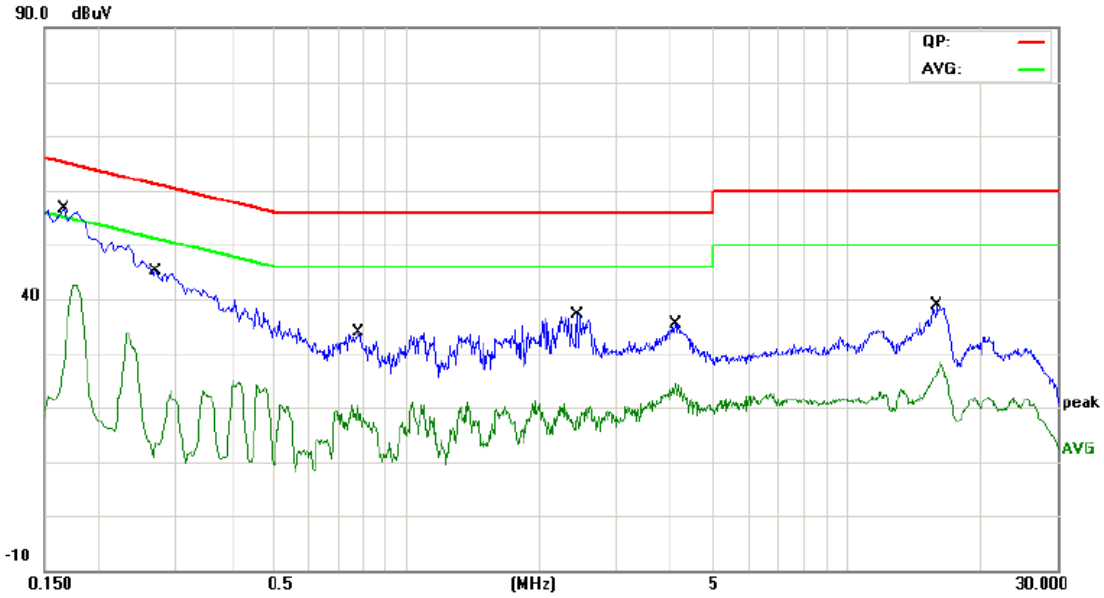


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.1700	45.74	10.12	55.86	64.96	-9.10	QP
2		0.1700	34.32	10.12	44.44	54.96	-10.52	AVG
3		0.2260	37.74	10.11	47.85	62.59	-14.74	QP
4		0.2260	26.20	10.11	36.31	52.59	-16.28	AVG
5		0.3379	27.50	10.07	37.57	59.25	-21.68	QP
6		0.3379	15.11	10.07	25.18	49.25	-24.07	AVG
7		1.9140	21.20	10.07	31.27	56.00	-24.73	QP
8		1.9140	9.62	10.07	19.69	46.00	-26.31	AVG
9		4.0820	22.13	10.06	32.19	56.00	-23.81	QP
10		4.0820	15.59	10.06	25.65	46.00	-20.35	AVG
11		16.9580	20.32	10.06	30.38	60.00	-29.62	QP
12		16.9580	14.46	10.06	24.52	50.00	-25.48	AVG

*:Maximum data x:Over limit !:over margin

Emission Level= Read Level+ Correct Factor

EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	**Model Name :**	HX9100
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 240V/60Hz		
Terminal:	Line		
Test Mode:	TX B Mode		
Remark:	Only worse case is reported		

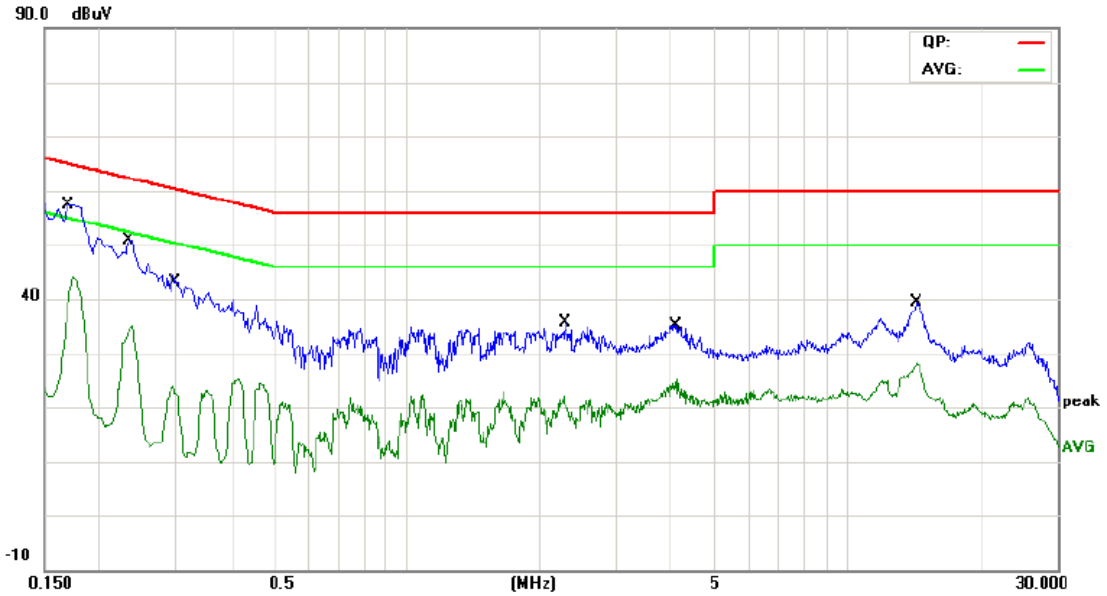


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.1660	37.22	9.95	47.17	65.15	-17.98	QP
2		0.1660	19.20	9.95	29.15	55.15	-26.00	AVG
3		0.2700	27.55	10.02	37.57	61.12	-23.55	QP
4		0.2700	1.43	10.02	11.45	51.12	-39.67	AVG
5		0.7780	18.67	10.10	28.77	56.00	-27.23	QP
6		0.7780	7.50	10.10	17.60	46.00	-28.40	AVG
7		2.4420	16.30	10.05	26.35	56.00	-29.65	QP
8		2.4420	6.08	10.05	16.13	46.00	-29.87	AVG
9		4.0860	20.99	9.99	30.98	56.00	-25.02	QP
10		4.0860	14.07	9.99	24.06	46.00	-21.94	AVG
11		16.0419	21.04	10.24	31.28	60.00	-28.72	QP
12		16.0419	14.09	10.24	24.33	50.00	-25.67	AVG

*:Maximum data x:Over limit !:over margin

Emission Level= Read Level+ Correct Factor

EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	**Model Name :**	HX9100
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 240V/60Hz		
Terminal:	Neutral		
Test Mode:	TX B Mode		
Remark:	Only worse case is reported		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.1700	43.30	10.12	53.42	64.96	-11.54	QP
2		0.1700	28.07	10.12	38.19	54.96	-16.77	AVG
3		0.2340	34.73	10.11	44.84	62.30	-17.46	QP
4		0.2340	23.13	10.11	33.24	52.30	-19.06	AVG
5		0.3003	25.82	10.09	35.91	60.23	-24.32	QP
6		0.3003	9.65	10.09	19.74	50.23	-30.49	AVG
7		2.2900	17.84	10.06	27.90	56.00	-28.10	QP
8		2.2900	8.49	10.06	18.55	46.00	-27.45	AVG
9		4.0820	20.96	10.06	31.02	56.00	-24.98	QP
10		4.0820	14.08	10.06	24.14	46.00	-21.86	AVG
11		14.4060	20.35	10.07	30.42	60.00	-29.58	QP
12		14.4060	14.03	10.07	24.10	50.00	-25.90	AVG

*:Maximum data x:Over limit !:over margin

Emission Level= Read Level+ Correct Factor

5. Radiated Emission Test

5.1 Test Standard and Limit

5.1.1 Test Standard

FCC Part 15.209

5.1.2 Test Limit

Radiated Emission Limits (9kHz~1000MHz)

Frequency (MHz	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Radiated Emission Limit (Above 1000MHz)

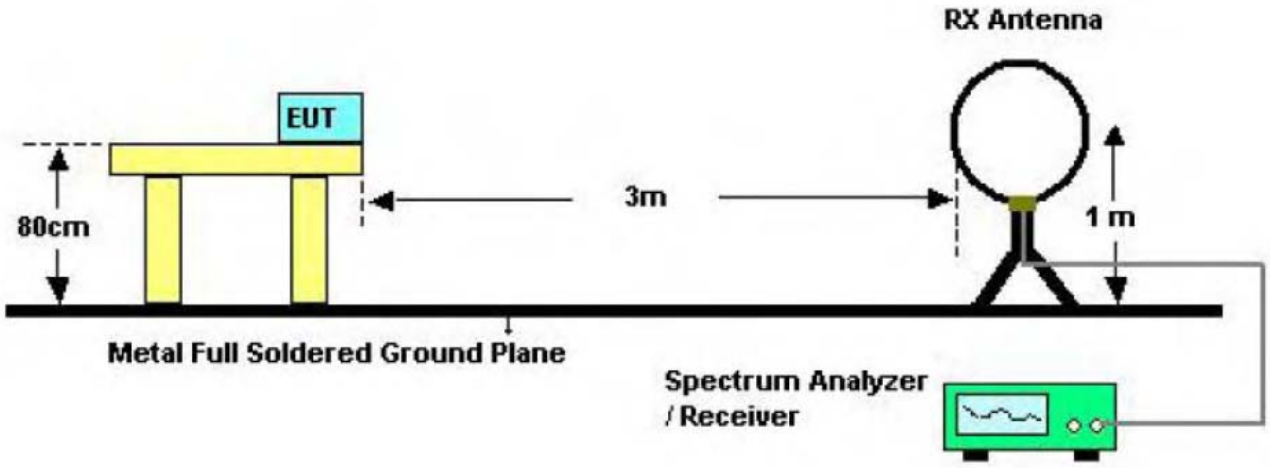
Frequency (MHz)	Class A (dBuV/m)(at 3 M)		Class B (dBuV/m)(at 3 M)	
	Peak	Average	Peak	Average
Above 1000	80	60	74	54

Note:

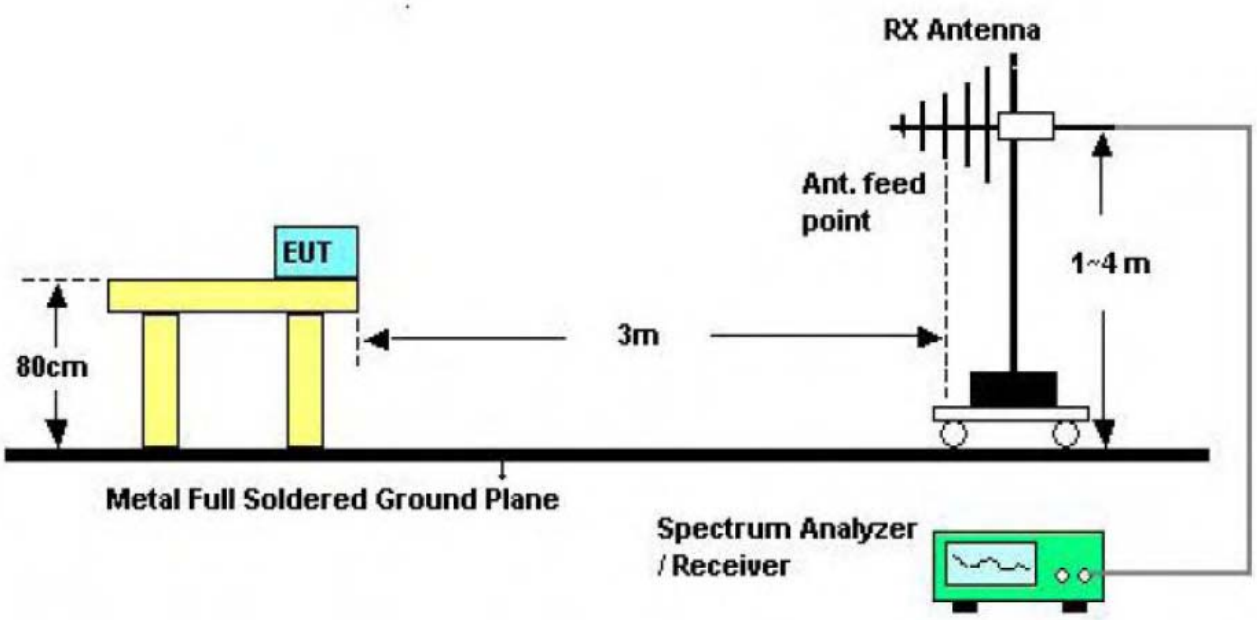
(1) The tighter limit applies at the band edges.

(2) Emission Level(dBuV/m)=20log Emission Level(uV/m)

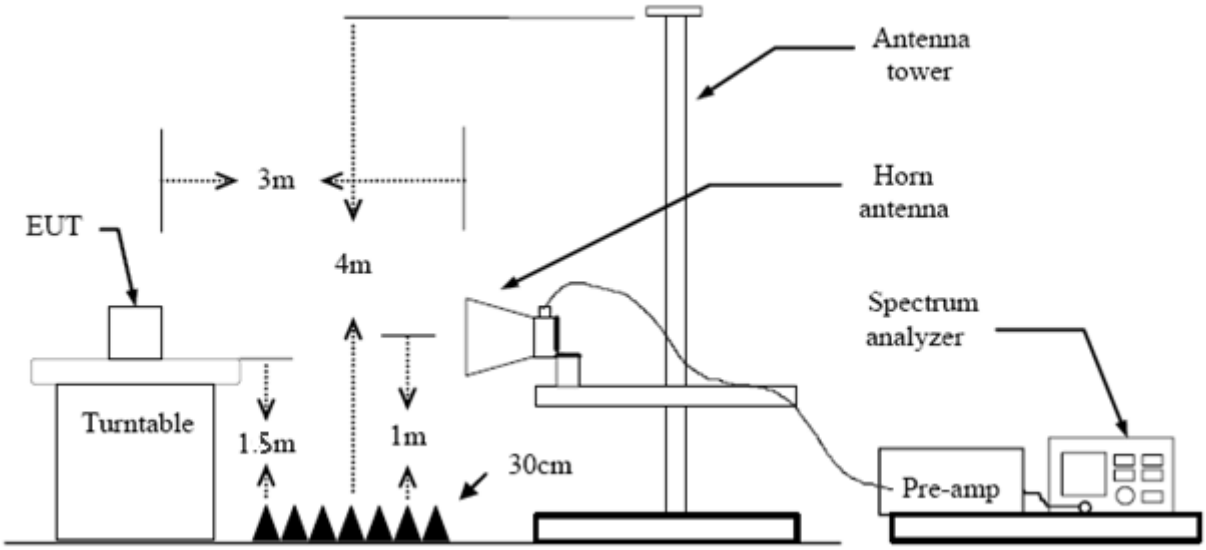
5.2 Test Setup



Below 30MHz Test Setup



Below 1000MHz Test Setup



Above 1GHz Test Setup

5.3 Test Procedure

(1) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.

(2) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.

(3) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

(4) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.

(5) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.

(6) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

(7) For the actual test configuration, please see the test setup photo.

5.4 EUT Operating Condition

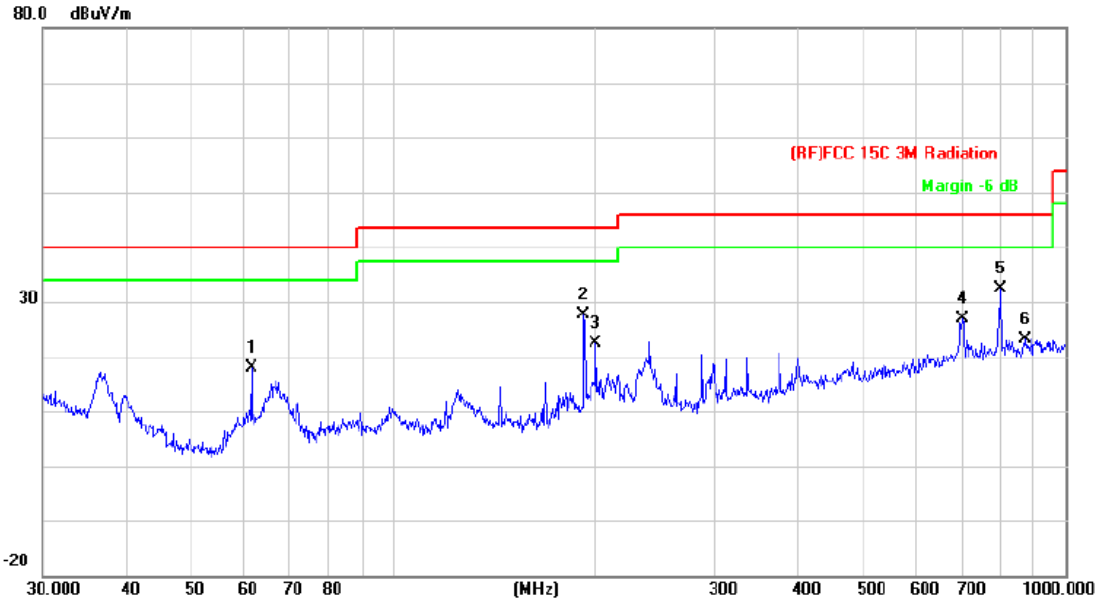
The Equipment Under Test was set to Continual Transmitting in maximum power.

5.5 Test Data

Remark: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

Test data please refer the following pages.

EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5V		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz		
Remark:	Only worse case is reported		

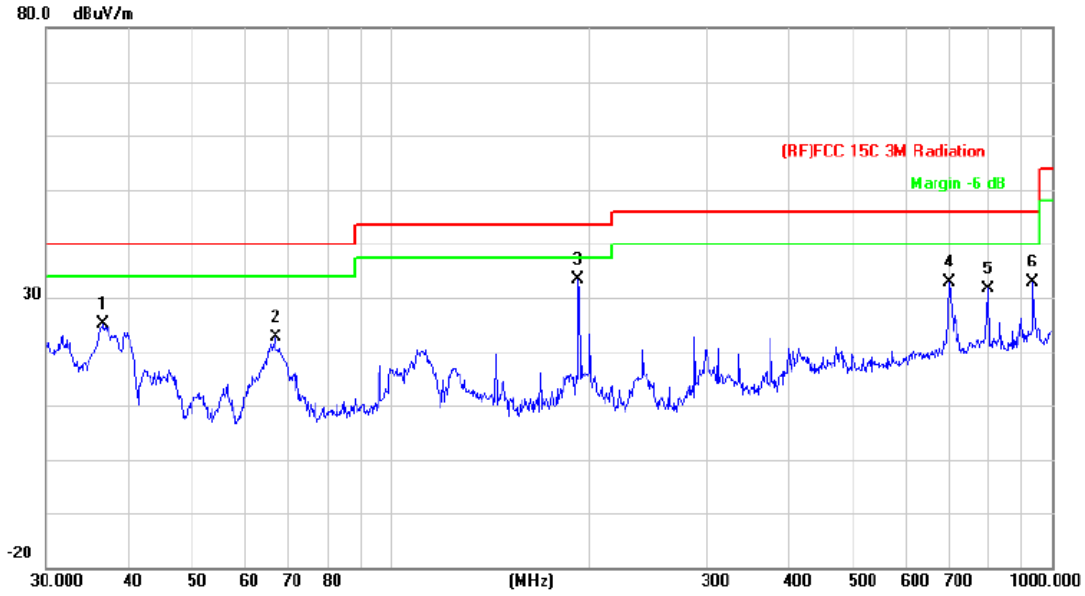


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		61.3463	42.22	-24.40	17.82	40.00	-22.18	peak
2		191.7450	48.50	-20.81	27.69	43.50	-15.81	peak
3		199.9856	42.85	-20.39	22.46	43.50	-21.04	peak
4		701.7610	33.85	-6.88	26.97	46.00	-19.03	peak
5	*	801.7863	38.89	-6.49	32.40	46.00	-13.60	peak
6		872.1832	29.31	-6.10	23.21	46.00	-22.79	peak

*:Maximum data x:Over limit !:over margin

Emission Level= Read Level+ Correct Factor

EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	**Model:**	HX9100
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	DC 5V		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz		
Remark:	Only worse case is reported		

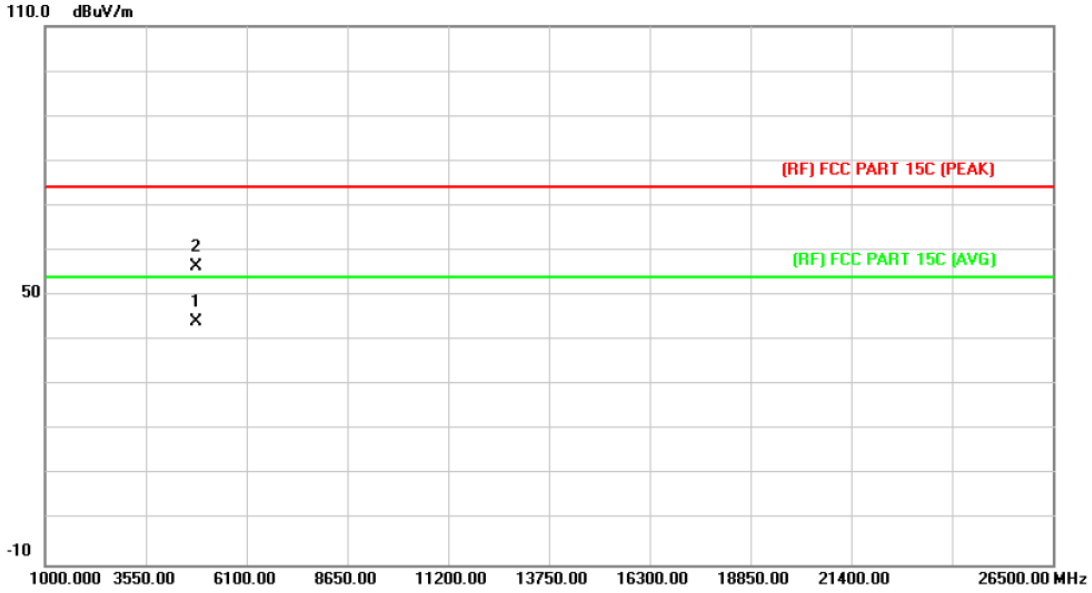


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		36.6375	43.08	-18.07	25.01	40.00	-14.99	peak
2		66.7325	46.52	-23.91	22.61	40.00	-17.39	peak
3	*	191.7450	54.12	-20.81	33.31	43.50	-10.19	peak
4		699.3046	39.70	-6.89	32.81	46.00	-13.19	peak
5		801.7863	38.03	-6.49	31.54	46.00	-14.46	peak
6		935.5463	37.70	-4.82	32.88	46.00	-13.12	peak

*:Maximum data x:Over limit !:over margin

Emission Level= Read Level+ Correct Factor

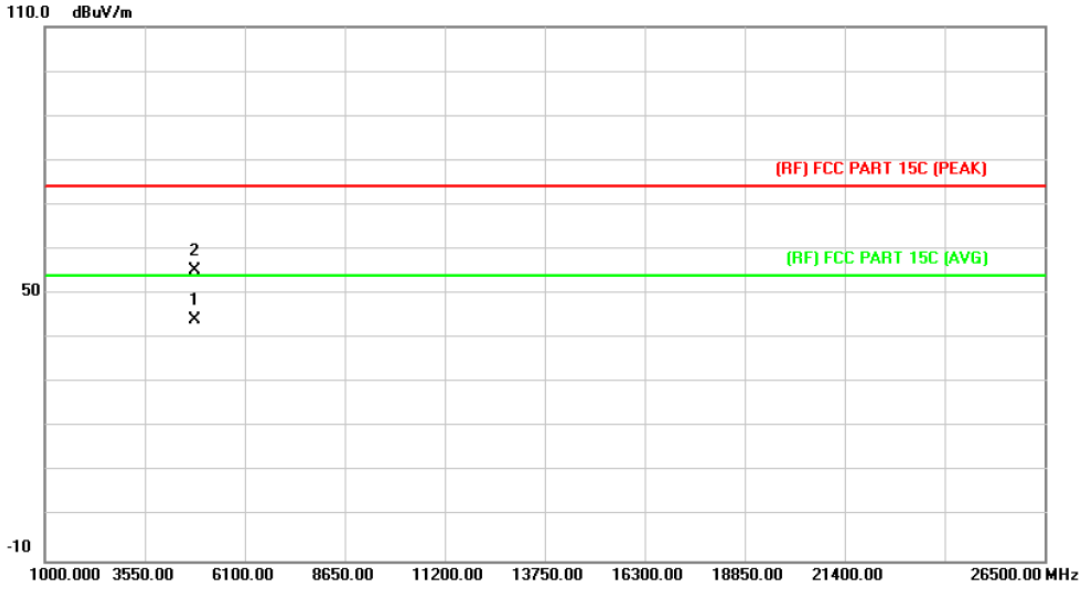
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	**Model:**	HX9100
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4824.435	30.69	13.50	44.19	54.00	-9.81	AVG
2		4824.507	42.88	13.50	56.38	74.00	-17.62	peak

Emission Level= Read Level+ Correct Factor

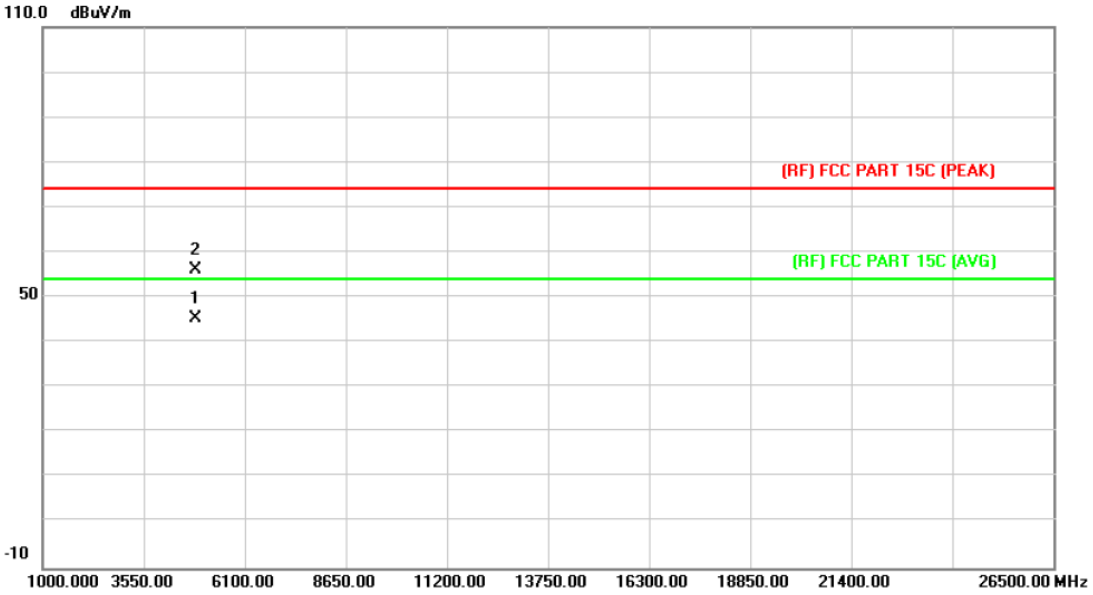
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	**Model:**	HX9100
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4823.010	30.66	13.50	44.16	54.00	-9.84	AVG
2		4824.528	41.81	13.50	55.31	74.00	-18.69	peak

Emission Level= Read Level+ Correct Factor

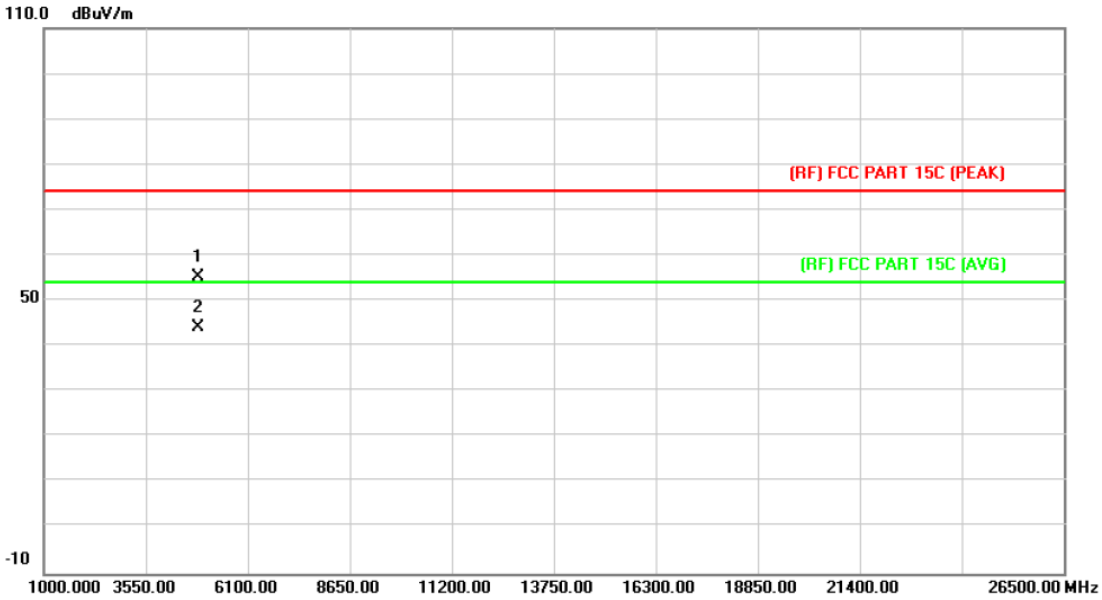
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	**Model:**	HX9100
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4873.454	31.45	13.86	45.31	54.00	-8.69	AVG
2		4873.688	42.26	13.86	56.12	74.00	-17.88	peak

Emission Level= Read Level+ Correct Factor

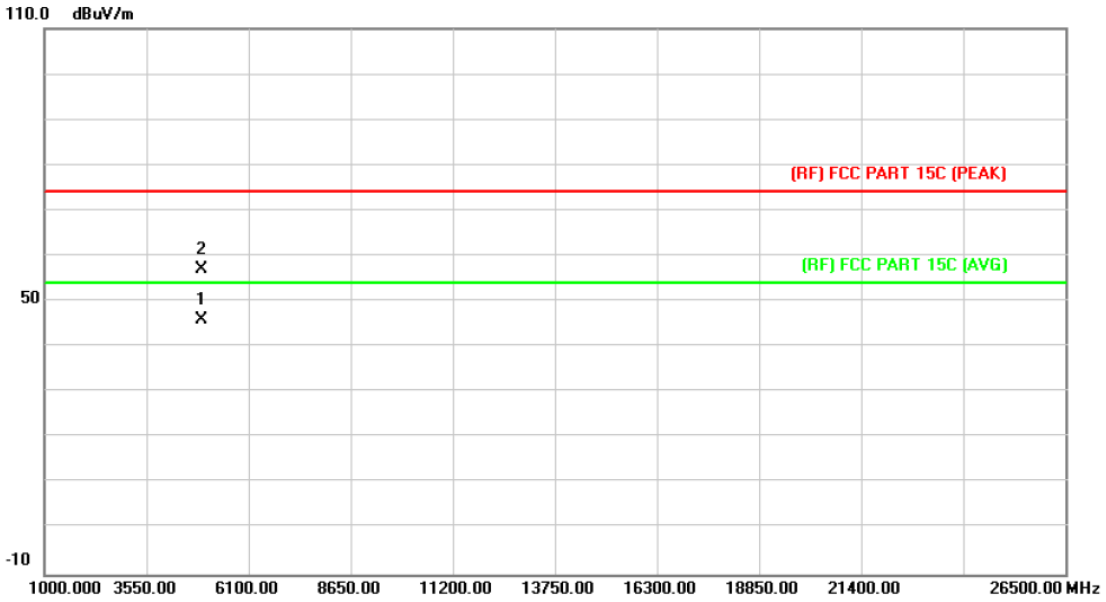
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	**Model:**	HX9100
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4874.072	41.45	13.86	55.31	74.00	-18.69	peak
2	*	4875.047	30.25	13.87	44.12	54.00	-9.88	AVG

Emission Level= Read Level+ Correct Factor

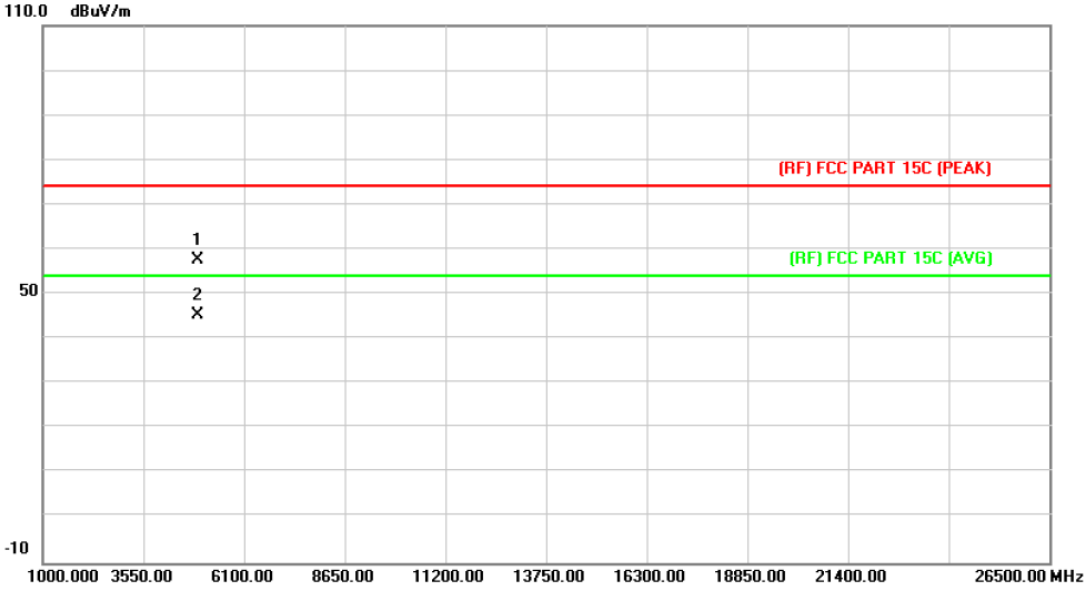
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	**Model:**	HX9100
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4923.526	31.76	14.15	45.91	54.00	-8.09	AVG
2		4924.732	42.97	14.15	57.12	74.00	-16.88	peak

Emission Level= Read Level+ Correct Factor

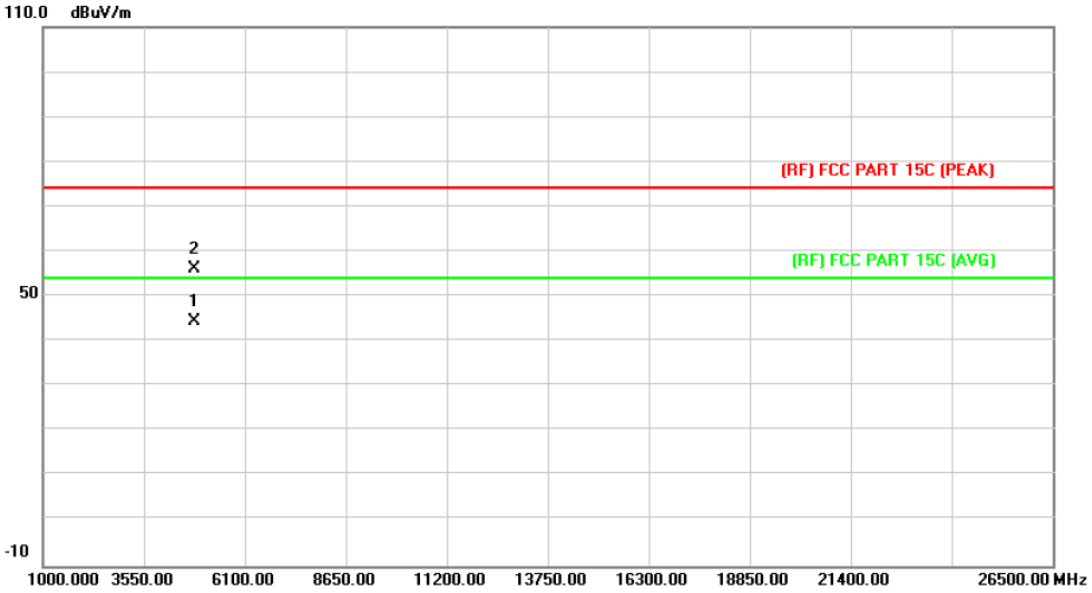
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4924.081	43.48	14.15	57.63	74.00	-16.37	peak
2	*	4924.240	31.23	14.15	45.38	54.00	-8.62	AVG

Emission Level= Read Level+ Correct Factor

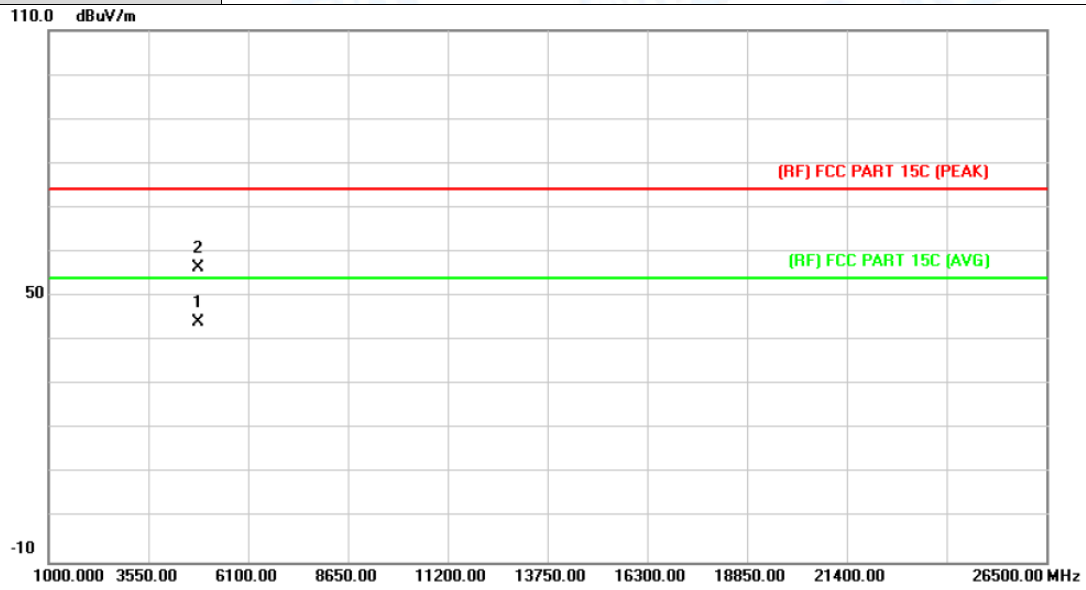
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	**Model:**	HX9100
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4824.387	30.78	13.56	44.34	54.00	-9.66	AVG
2		4825.194	42.57	13.57	56.14	74.00	-17.86	peak

Emission Level= Read Level+ Correct Factor

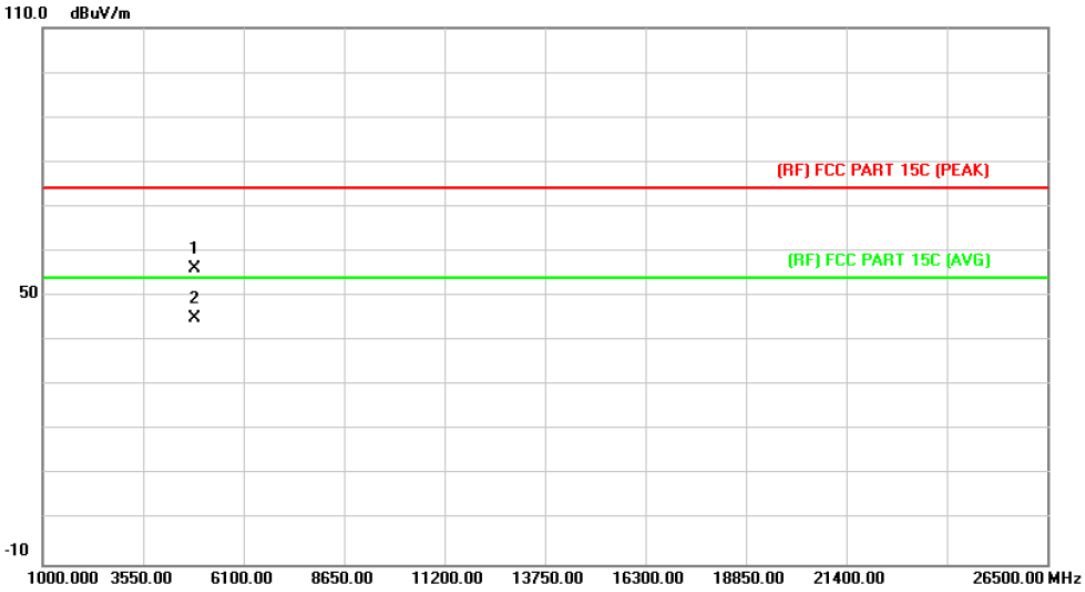
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4824.435	30.69	13.50	44.19	54.00	-9.81	AVG
2		4824.507	42.88	13.50	56.38	74.00	-17.62	peak

Emission Level= Read Level+ Correct Factor

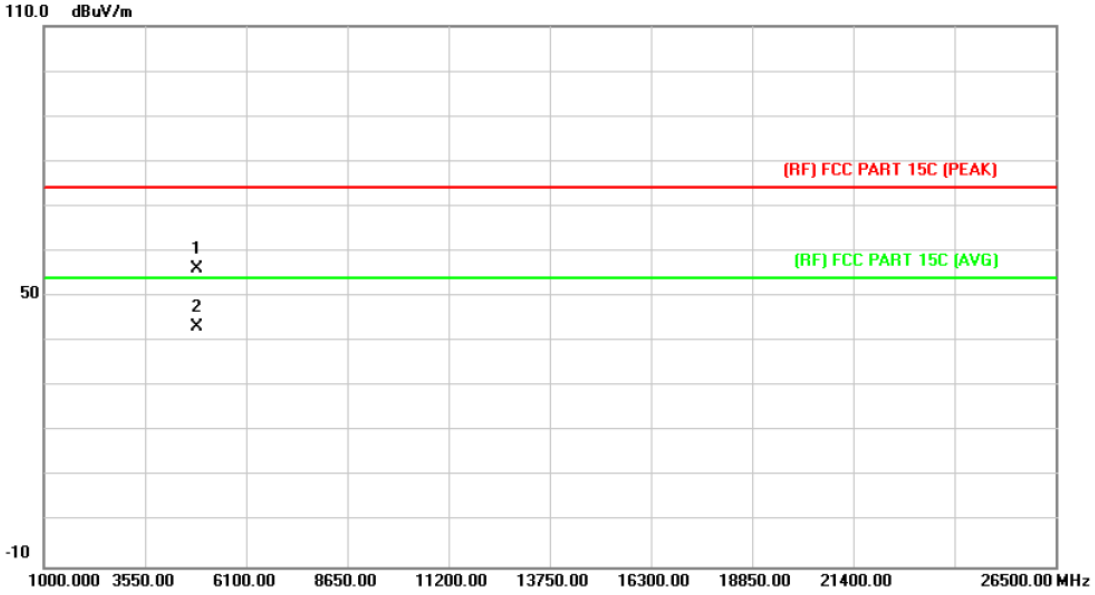
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4874.318	42.28	13.86	56.14	74.00	-17.86	peak
2	*	4875.029	31.23	13.87	45.10	54.00	-8.90	AVG

Emission Level= Read Level+ Correct Factor

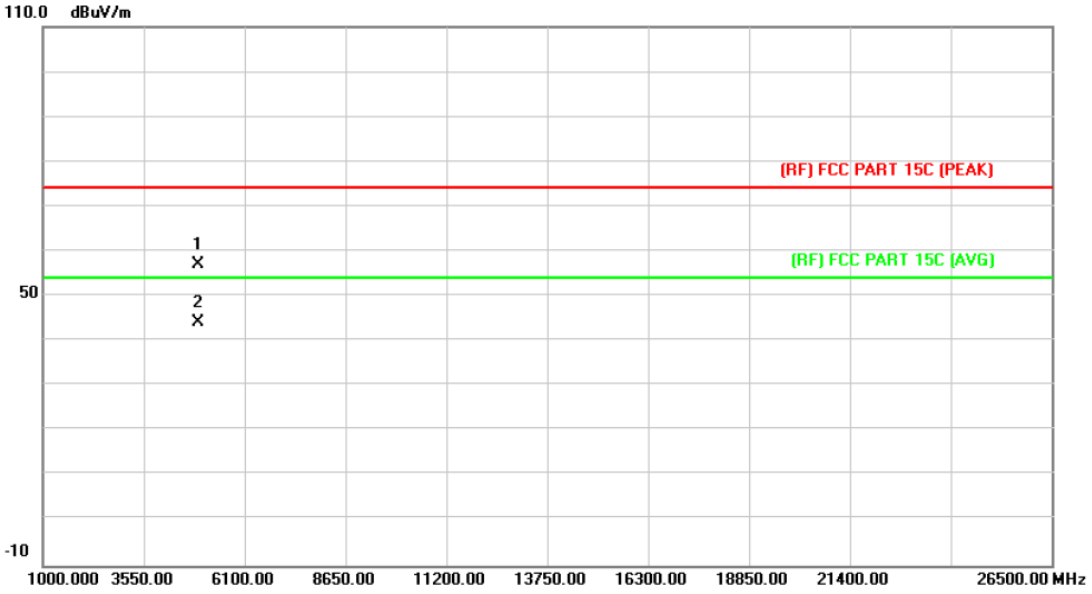
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	**Model:**	HX9100
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4872.539	42.25	13.85	56.10	74.00	-17.90	peak
2	*	4874.942	29.35	13.86	43.21	54.00	-10.79	AVG

Emission Level= Read Level+ Correct Factor

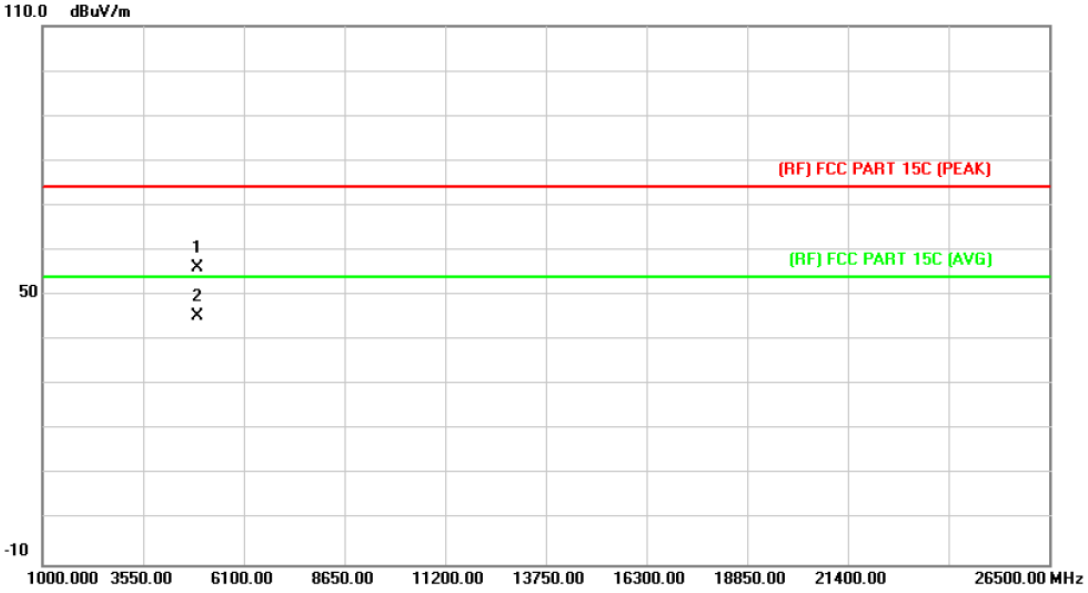
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4923.667	42.95	14.15	57.10	74.00	-16.90	peak
2	*	4925.494	30.05	14.16	44.21	54.00	-9.79	AVG

Emission Level= Read Level+ Correct Factor

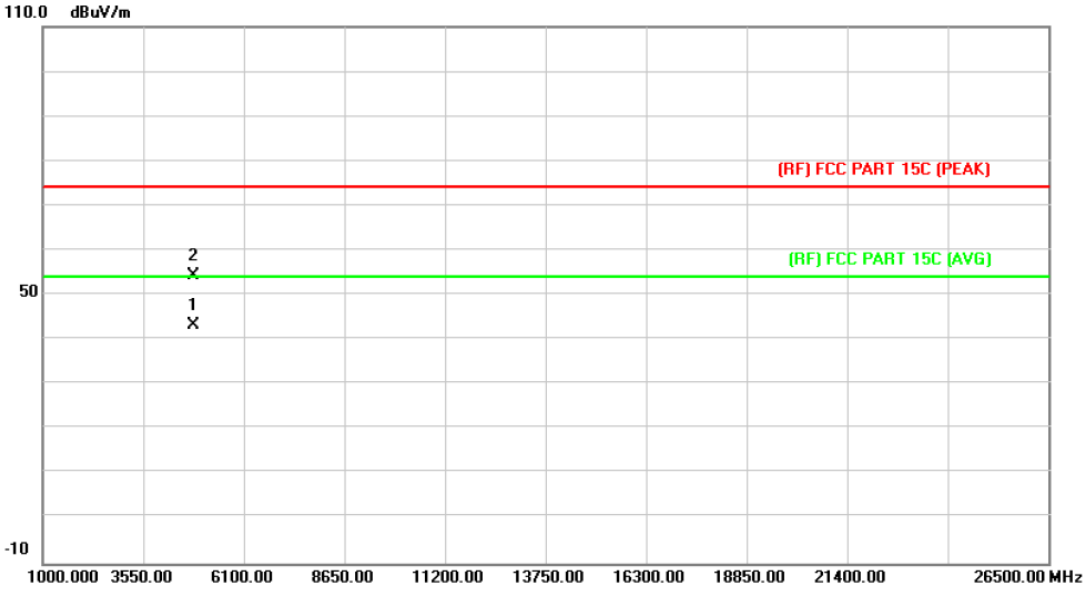
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4923.274	41.97	14.15	56.12	74.00	-17.88	peak
2	*	4923.892	31.16	14.15	45.31	54.00	-8.69	AVG

Emission Level= Read Level+ Correct Factor

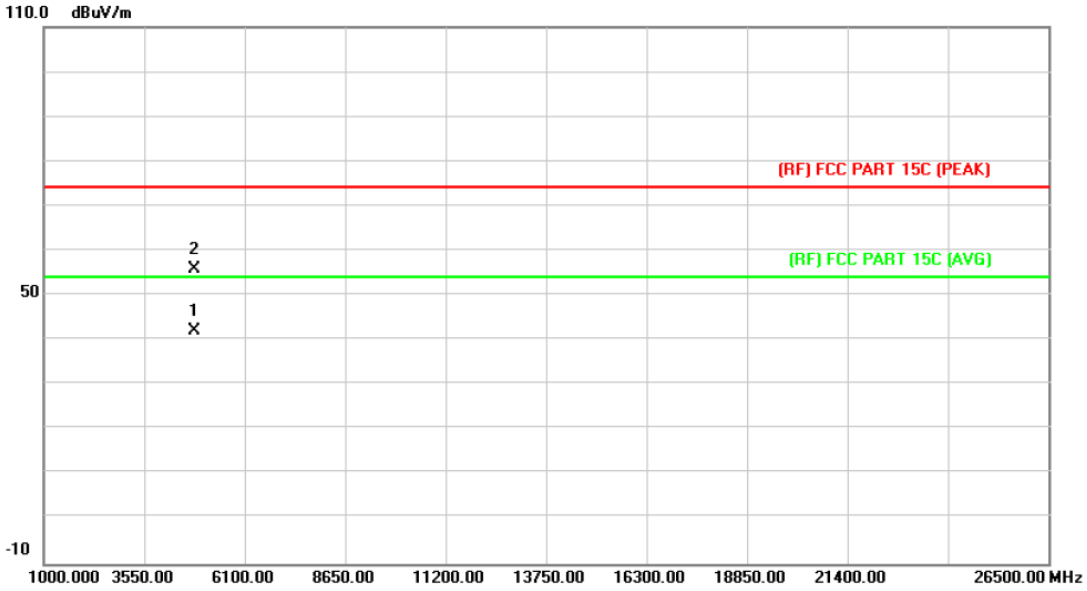
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4824.342	29.65	13.56	43.21	54.00	-10.79	AVG
2		4824.588	40.75	13.56	54.31	74.00	-19.69	peak

Emission Level= Read Level+ Correct Factor

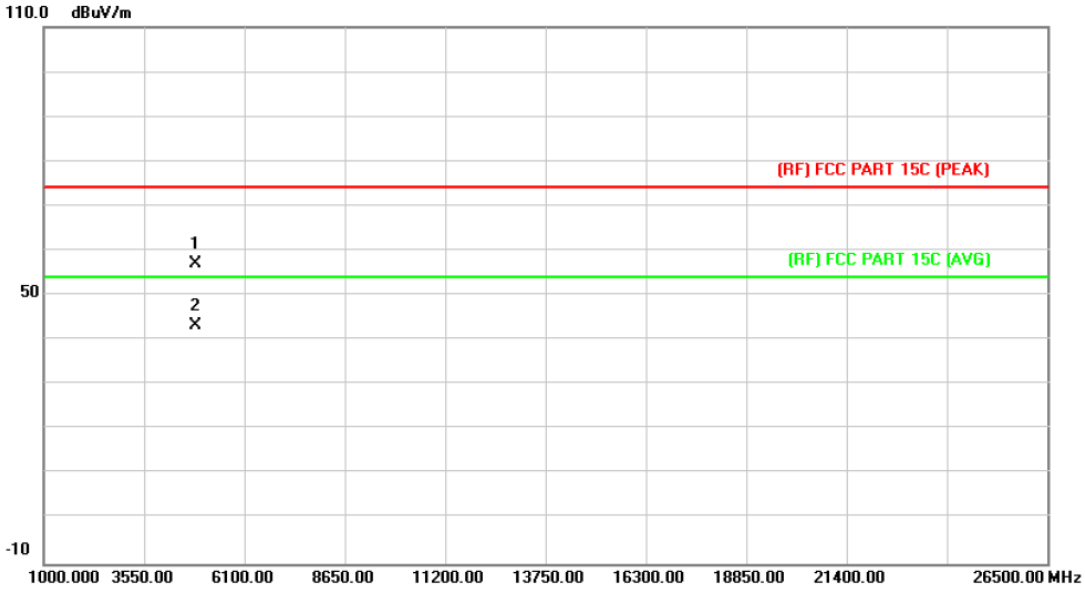
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	**Model:**	HX9100
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4823.016	28.45	13.56	42.01	54.00	-11.99	AVG
2		4824.027	42.42	13.56	55.98	74.00	-18.02	peak

Emission Level= Read Level+ Correct Factor

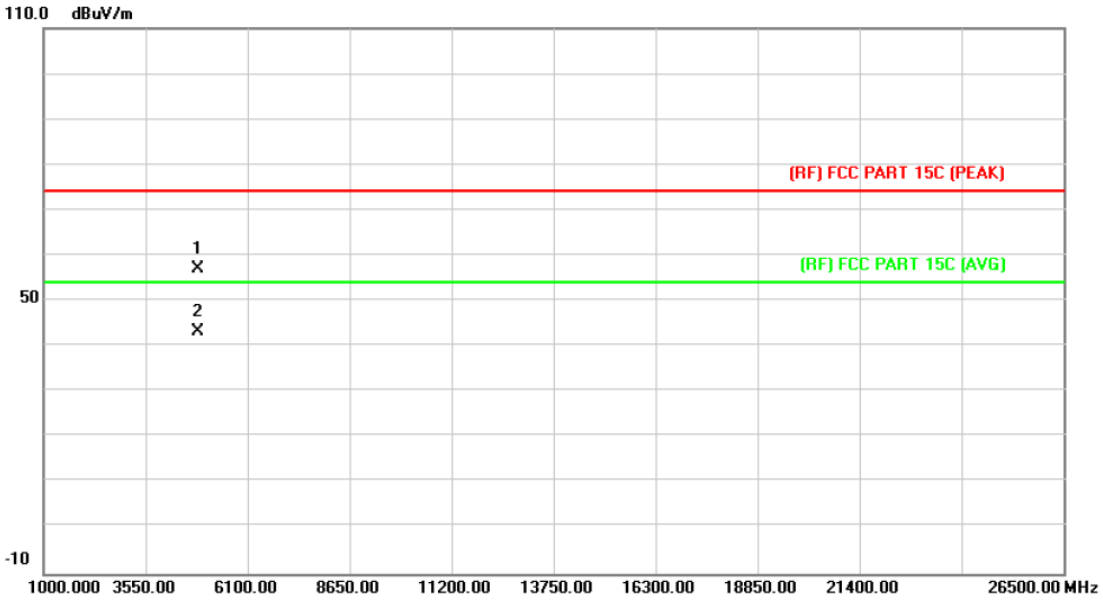
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4874.726	43.12	13.86	56.98	74.00	-17.02	peak
2	*	4874.882	29.33	13.86	43.19	54.00	-10.81	AVG

Emission Level= Read Level+ Correct Factor

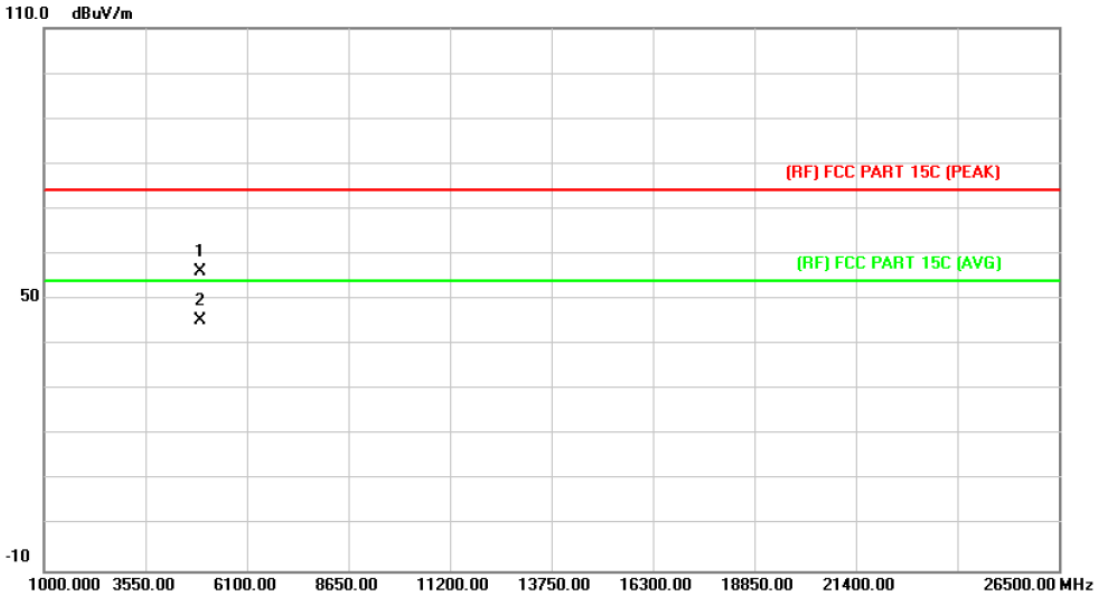
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	**Model:**	HX9100
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4872.503	43.06	13.85	56.91	74.00	-17.09	peak
2	*	4872.503	29.34	13.85	43.19	54.00	-10.81	AVG

Emission Level= Read Level+ Correct Factor

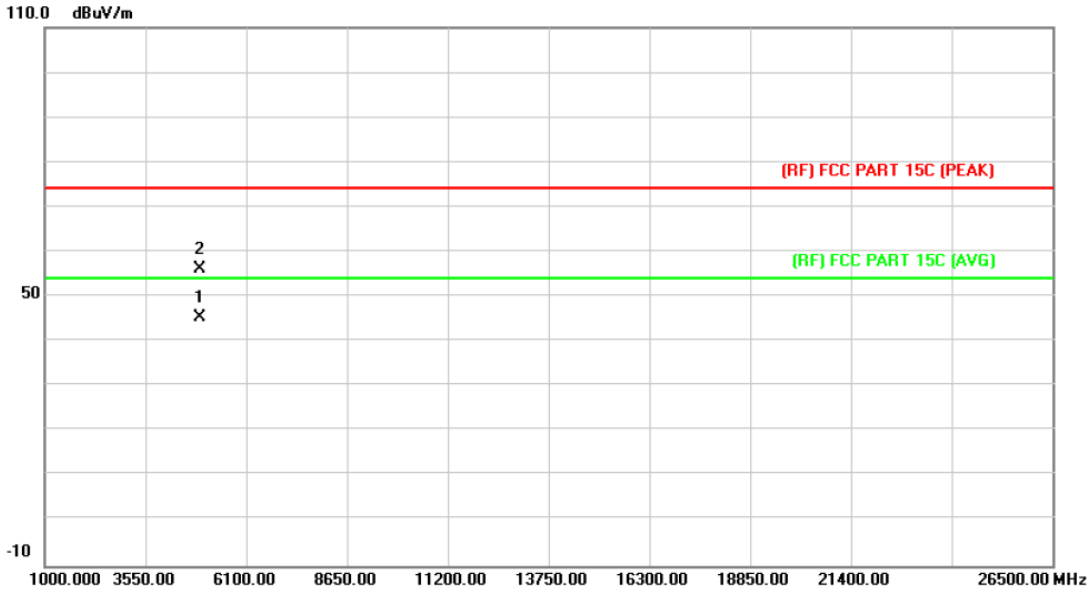
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4922.905	42.15	14.14	56.29	74.00	-17.71	peak
2	*	4924.201	31.21	14.15	45.36	54.00	-8.64	AVG

Emission Level= Read Level+ Correct Factor

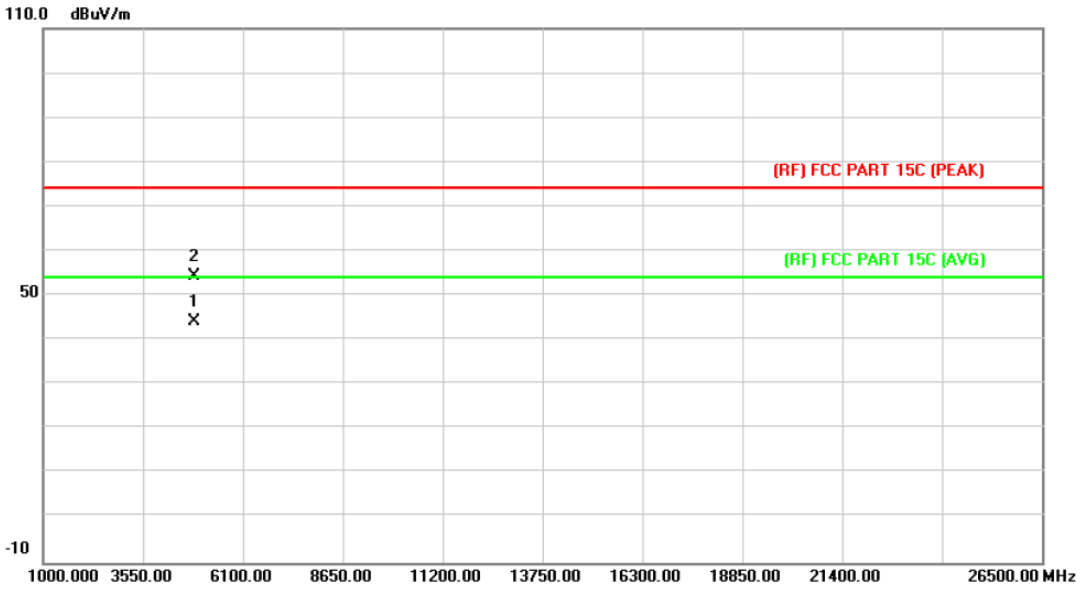
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	**Model:**	HX9100
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4922.746	31.23	14.14	45.37	54.00	-8.63	AVG
2		4923.274	42.04	14.15	56.19	74.00	-17.81	peak

Emission Level= Read Level+ Correct Factor

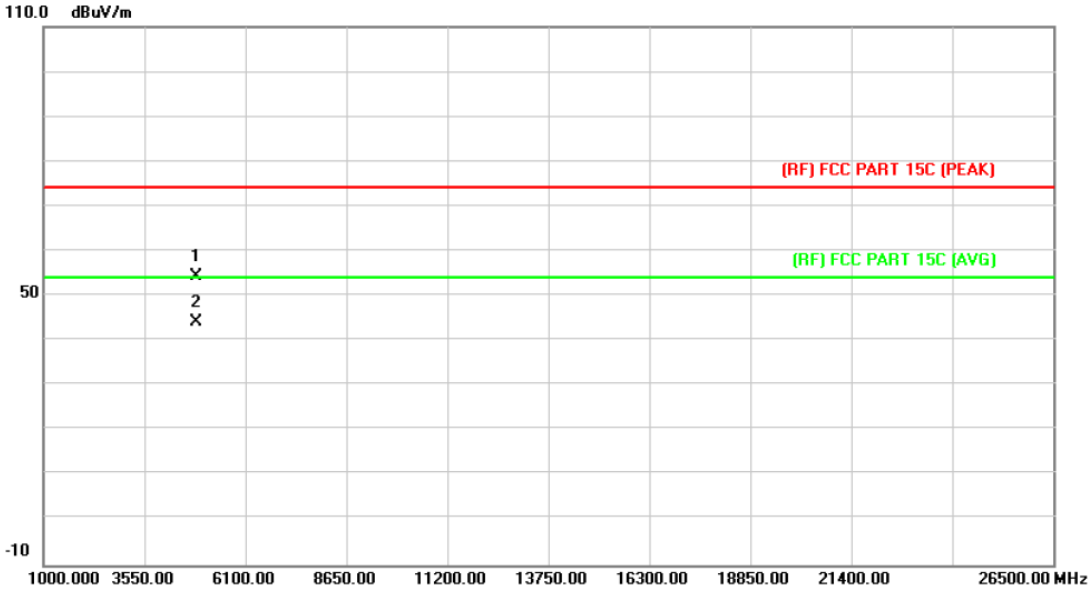
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	**Model:**	HX9100
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2422MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4842.629	30.46	13.67	44.13	54.00	-9.87	AVG
2		4843.889	40.63	13.68	54.31	74.00	-19.69	peak

Emission Level= Read Level+ Correct Factor

EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	**Model:**	HX9100
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT40) Mode 2422MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		

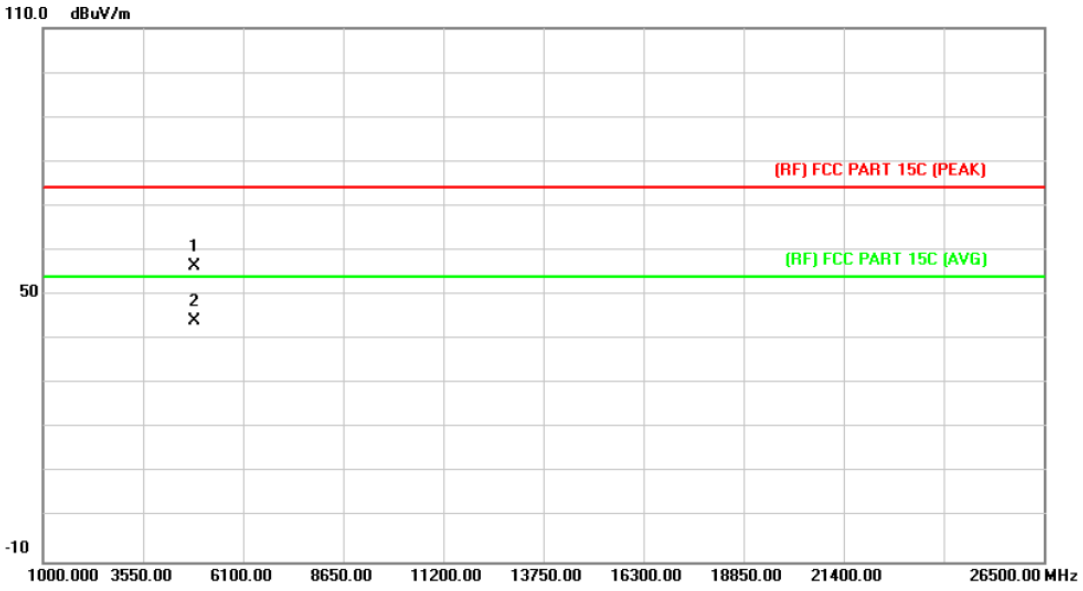


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4844.012	40.63	13.68	54.31	74.00	-19.69	peak
2	*	4844.990	30.45	13.68	44.13	54.00	-9.87	AVG

Emission Level= Read Level+ Correct Factor

Emission Level= Read Level+ Correct Factor

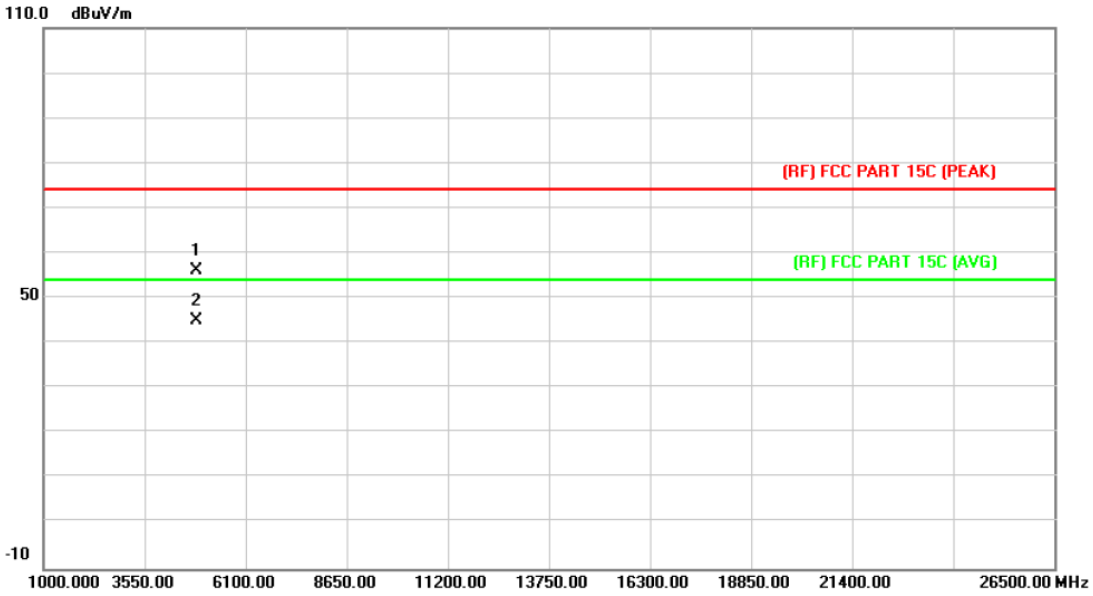
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4873.898	42.45	13.86	56.31	74.00	-17.69	peak
2	*	4874.150	30.26	13.86	44.12	54.00	-9.88	AVG

Emission Level= Read Level+ Correct Factor

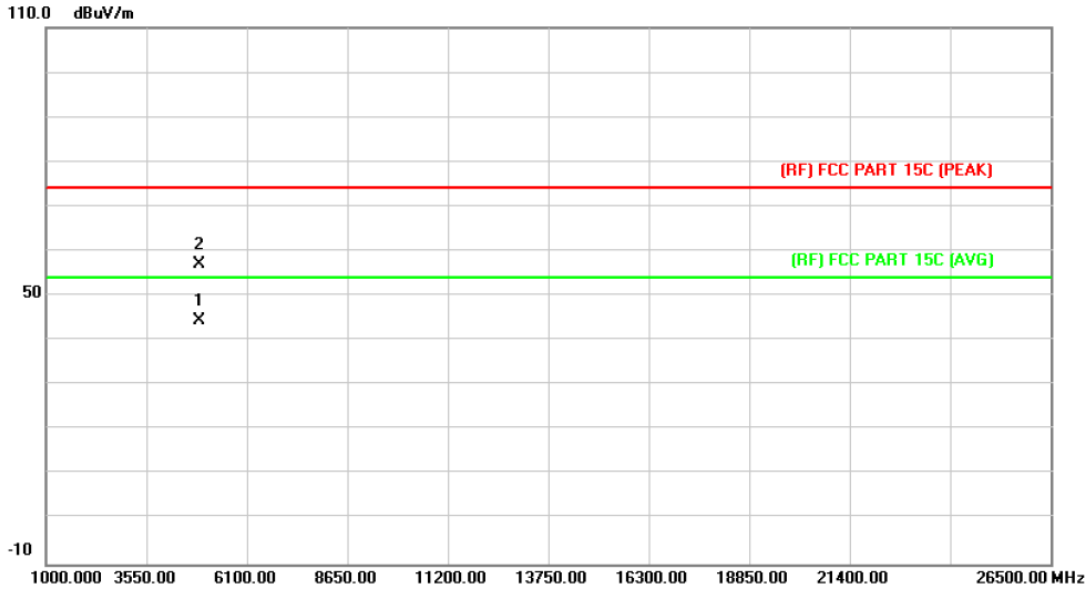
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT40) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4873.493	42.32	13.86	56.18	74.00	-17.82	peak
2	*	4874.024	31.05	13.86	44.91	54.00	-9.09	AVG

Emission Level= Read Level+ Correct Factor

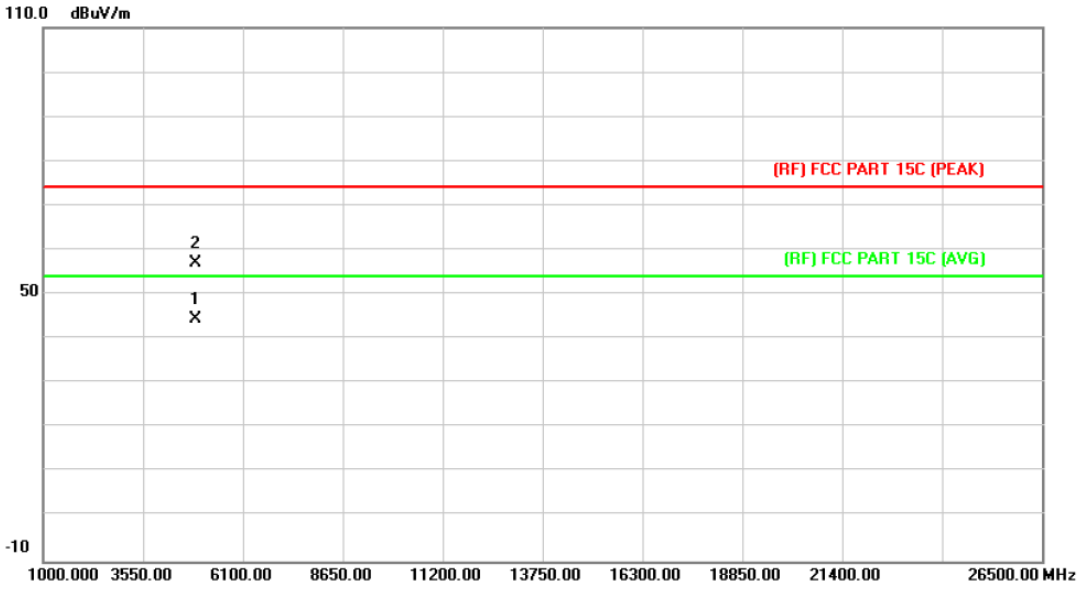
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2452MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4904.483	30.33	14.03	44.36	54.00	-9.64	AVG
2		4905.029	42.94	14.04	56.98	74.00	-17.02	peak

Emission Level= Read Level+ Correct Factor

EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT40) Mode 2452MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4902.500	30.29	14.02	44.31	54.00	-9.69	AVG
2		4904.465	42.95	14.03	56.98	74.00	-17.02	peak

Emission Level= Read Level+ Correct Factor

6. Restricted Bands Requirement

6.1 Test Standard and Limit

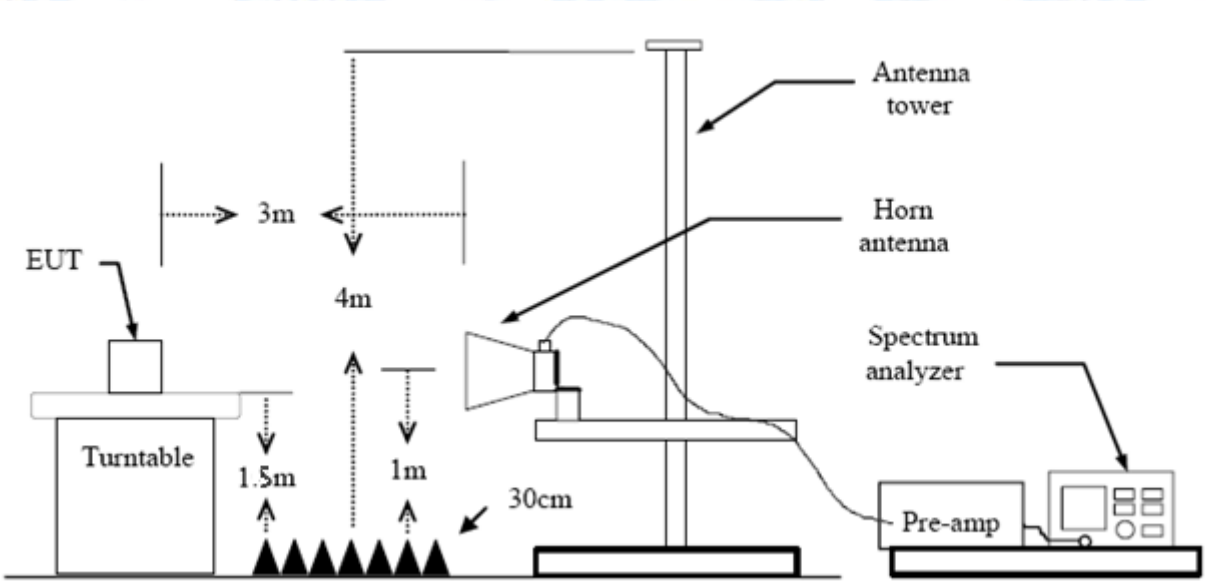
6.1.1 Test Standard

FCC Part 15.209 FCC Part 15.205

6.1.2 Test Limit

Restricted Frequency Band (MHz)	Class B (dBuV/m)(at 3 M)	
	Peak	Average
2310 ~2390	74	54
2483.5 ~2500	74	54

6.2 Test Setup



6.3 Test Procedure

(1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.

(2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.

(3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.

(4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
(5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
(6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
(7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
(8) For the actual test configuration, please see the test setup photo.

6.4 EUT Operating Condition

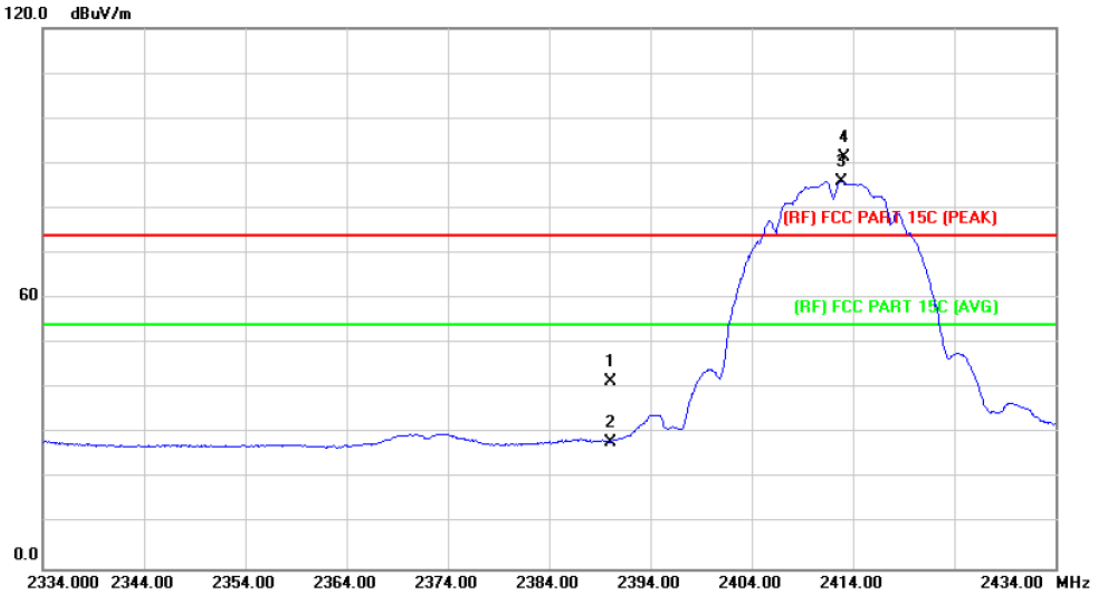
The Equipment Under Test was set to Continual Transmitting in maximum power.

6.5 Test Data

Please see the next page.

(1) Radiation Test

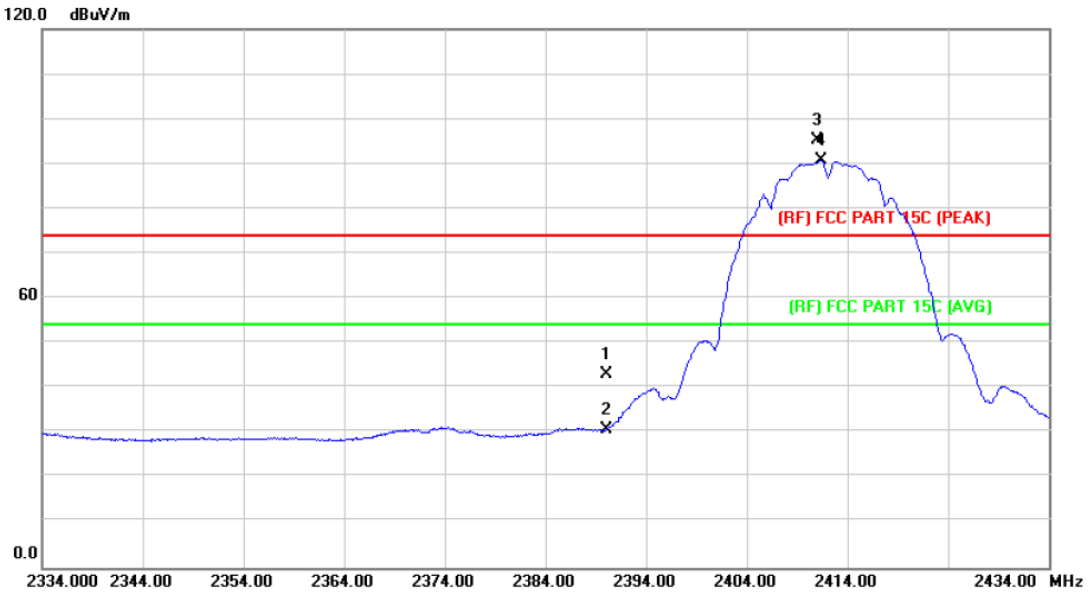
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	**Model:**	HX9100
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	40.92	0.77	41.69	74.00	-32.31	peak
2		2390.000	27.37	0.77	28.14	54.00	-25.86	AVG
3	*	2412.800	85.18	0.86	86.04	Fundamental Frequency		AVG
4	X	2413.100	90.36	0.86	91.22	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

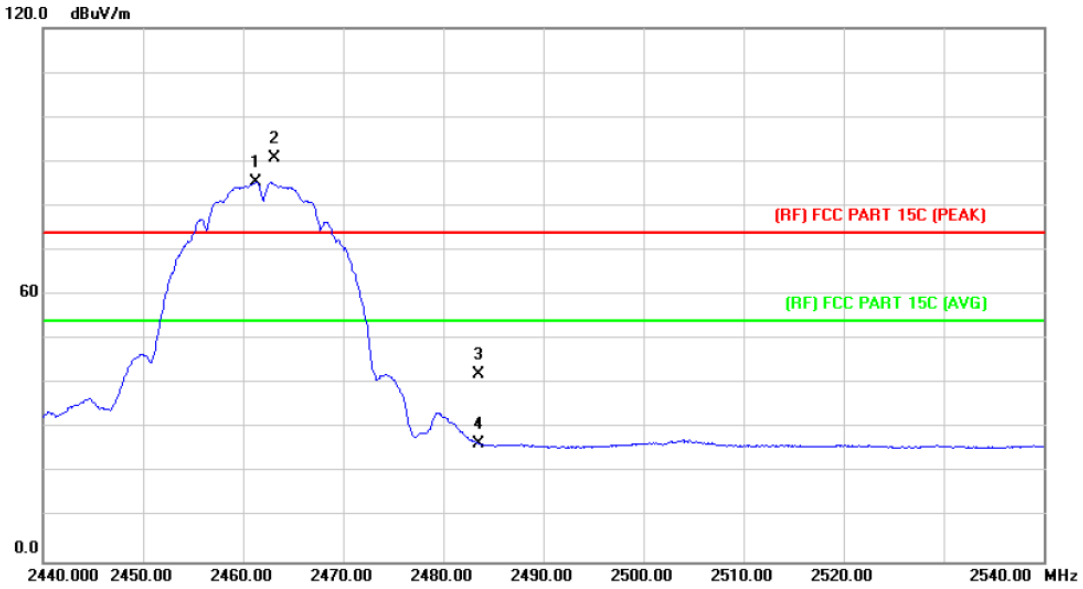
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	42.35	0.77	43.12	74.00	-30.88	peak
2		2390.000	30.03	0.77	30.80	54.00	-23.20	AVG
3	X	2411.000	94.50	0.86	95.36	Fundamental Frequency		peak
4	*	2411.400	89.95	0.86	90.81	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

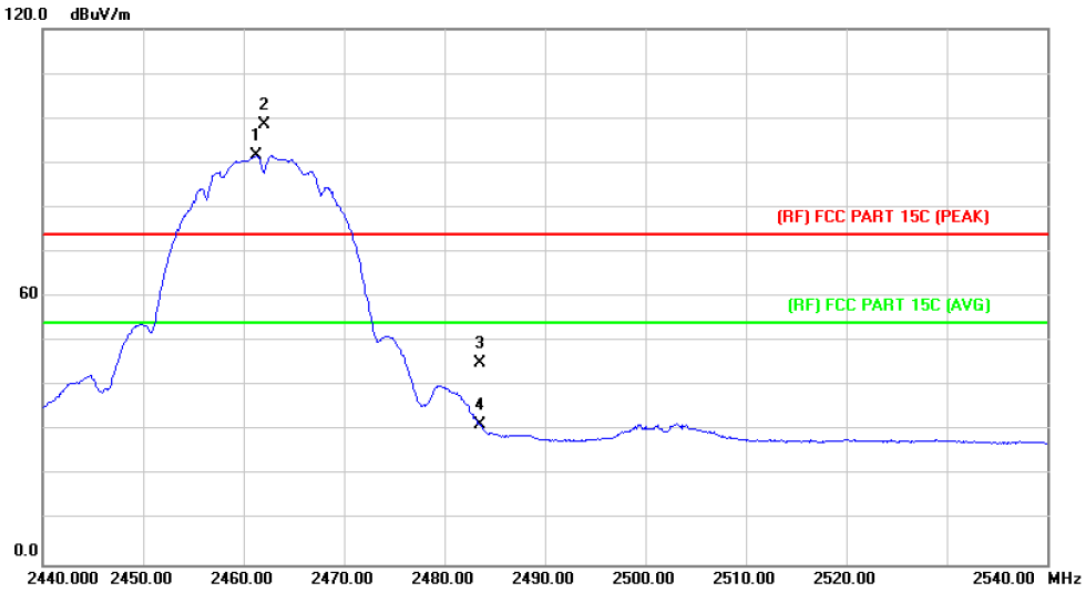
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2461.300	84.27	1.07	85.34	Fundamental Frequency		AVG
2	X	2463.100	89.60	1.08	90.68	Fundamental Frequency		peak
3		2483.500	40.84	1.17	42.01	74.00	-31.99	peak
4		2483.500	25.46	1.17	26.63	54.00	-27.37	AVG

Emission Level= Read Level+ Correct Factor

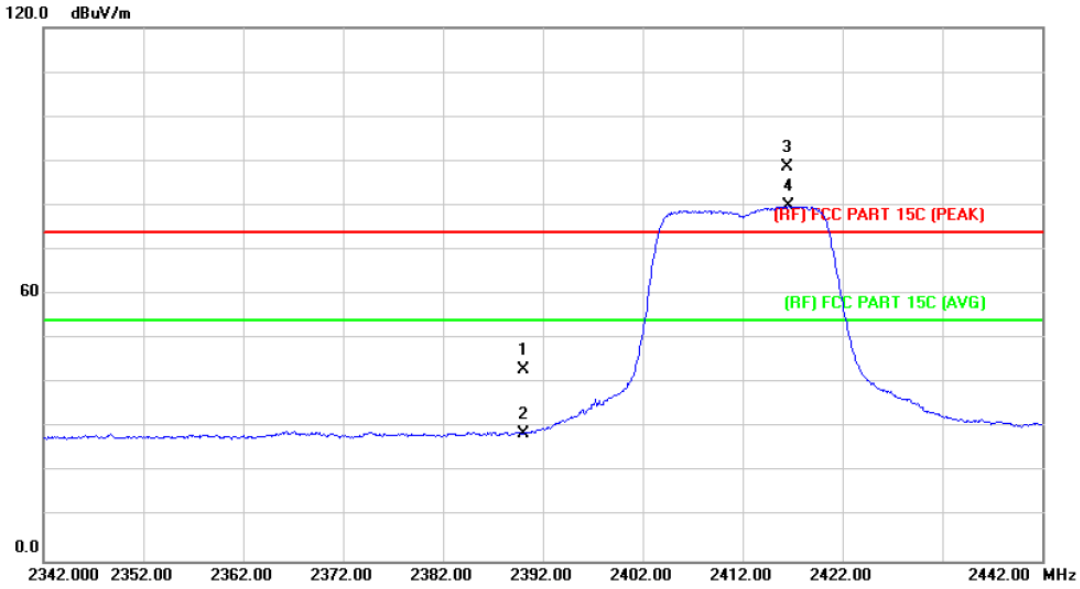
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2461.300	90.55	1.07	91.62	Fundamental Frequency		AVG
2	X	2462.000	97.55	1.08	98.63	Fundamental Frequency		peak
3		2483.500	43.93	1.17	45.10	74.00	-28.90	peak
4		2483.500	30.14	1.17	31.31	54.00	-22.69	AVG

Emission Level= Read Level+ Correct Factor

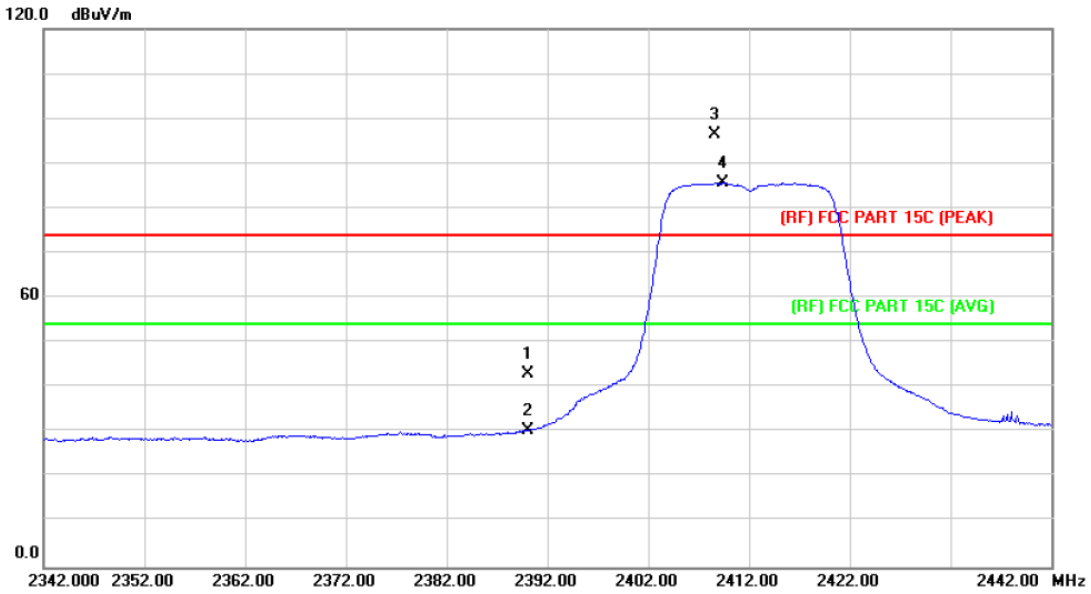
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	42.42	0.77	43.19	74.00	-30.81	peak
2		2390.000	27.94	0.77	28.71	54.00	-25.29	AVG
3	X	2416.500	87.81	0.88	88.69	Fundamental Frequency		peak
4	*	2416.600	78.94	0.88	79.82	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

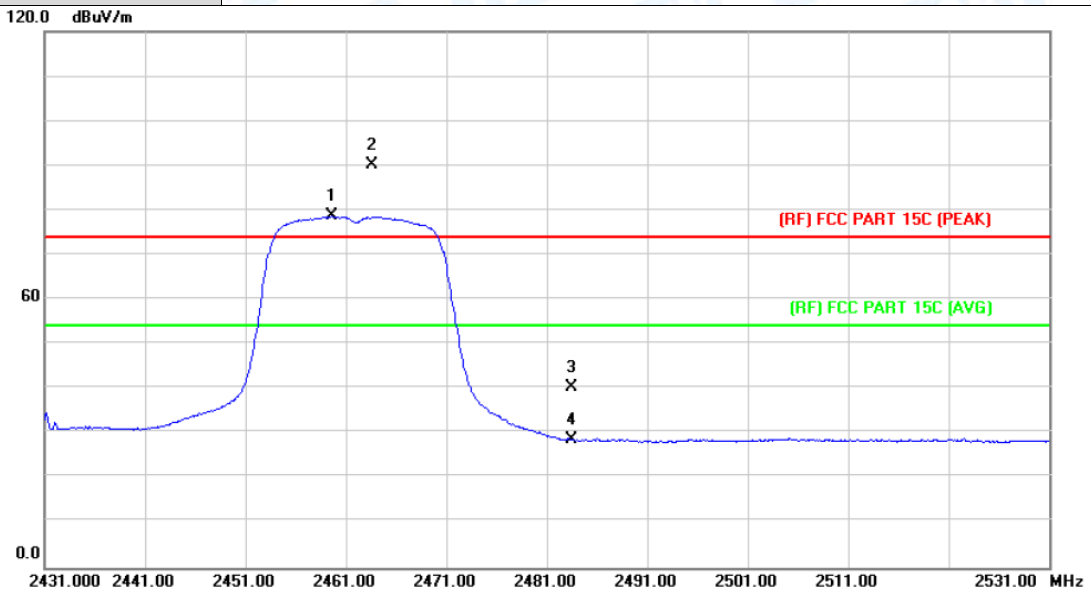
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	42.35	0.77	43.12	74.00	-30.88	peak
2		2390.000	29.66	0.77	30.43	54.00	-23.57	AVG
3	X	2408.600	95.47	0.85	96.32	Fundamental Frequency		peak
4	*	2409.400	84.77	0.85	85.62	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

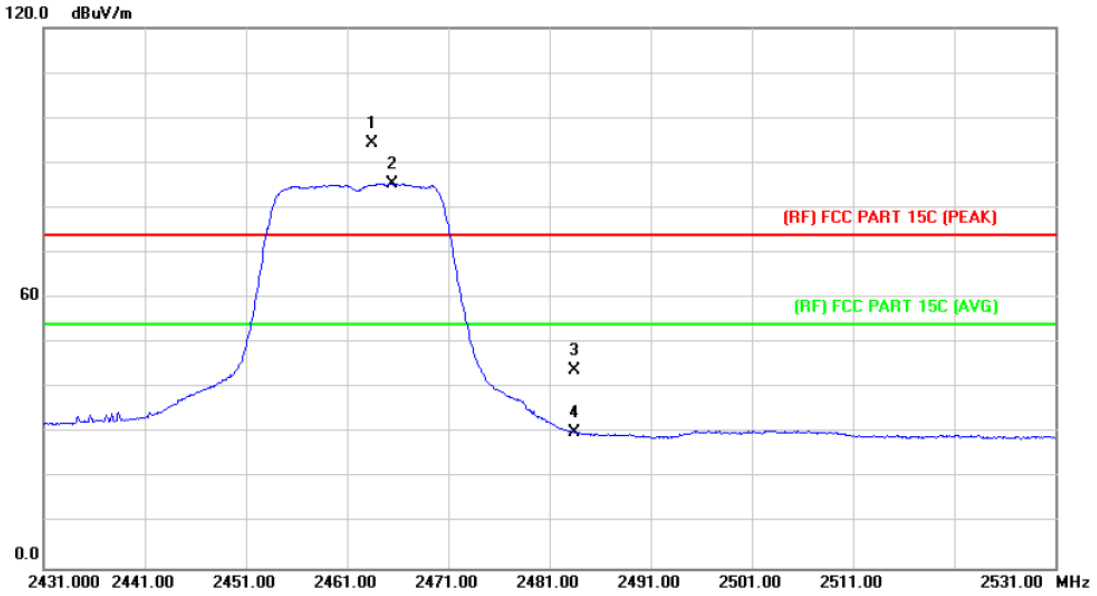
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2459.600	77.55	1.06	78.61	Fundamental Frequency		AVG
2	X	2463.600	88.98	1.08	90.06	Fundamental Frequency		peak
3		2483.500	39.19	1.17	40.36	74.00	-33.64	peak
4		2483.500	27.36	1.17	28.53	54.00	-25.47	AVG

Emission Level= Read Level+ Correct Factor

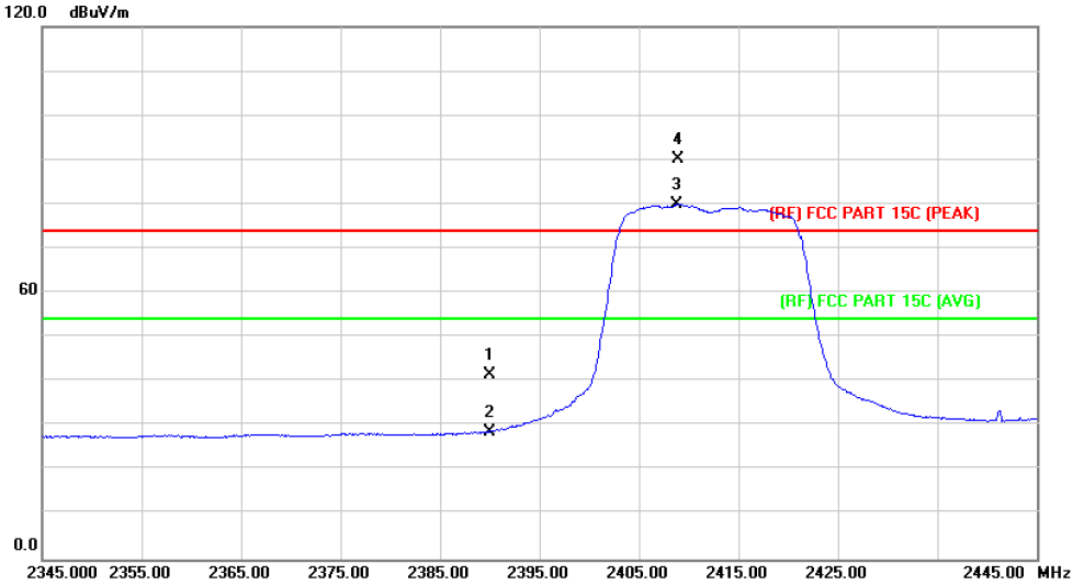
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	**Model:**	HX9100
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2463.500	93.28	1.08	94.36	Fundamental Frequency		peak
2	*	2465.400	84.28	1.09	85.37	Fundamental Frequency		AVG
3		2483.500	42.93	1.17	44.10	74.00	-29.90	peak
4		2483.500	29.01	1.17	30.18	54.00	-23.82	AVG

Emission Level= Read Level+ Correct Factor

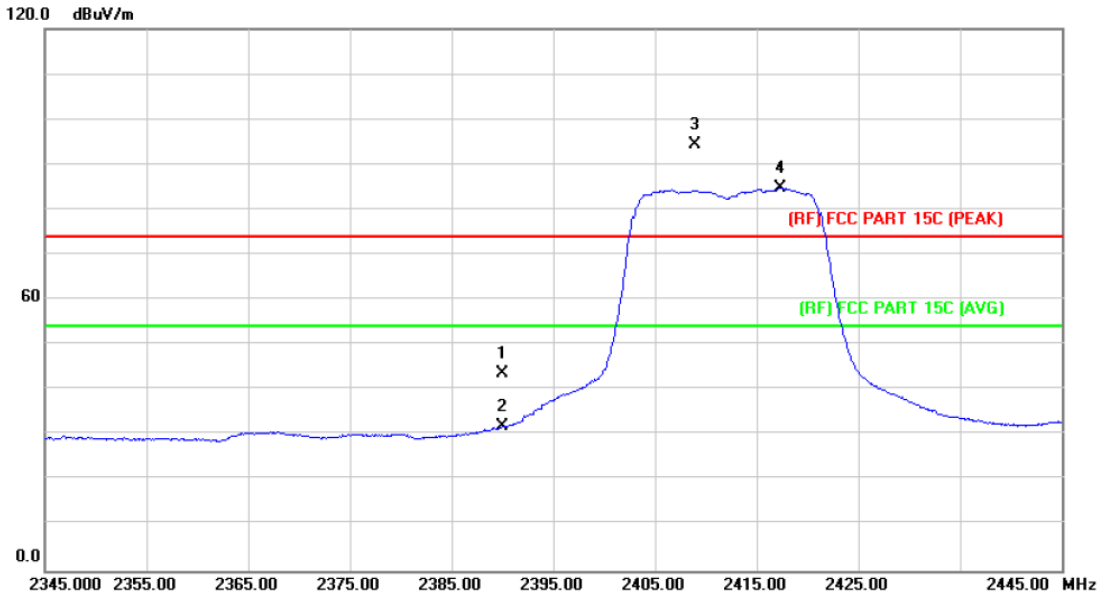
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	40.92	0.77	41.69	74.00	-32.31	peak
2		2390.000	28.02	0.77	28.79	54.00	-25.21	AVG
3	*	2408.800	79.05	0.85	79.90	Fundamental Frequency		AVG
4	X	2408.900	89.25	0.85	90.10	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

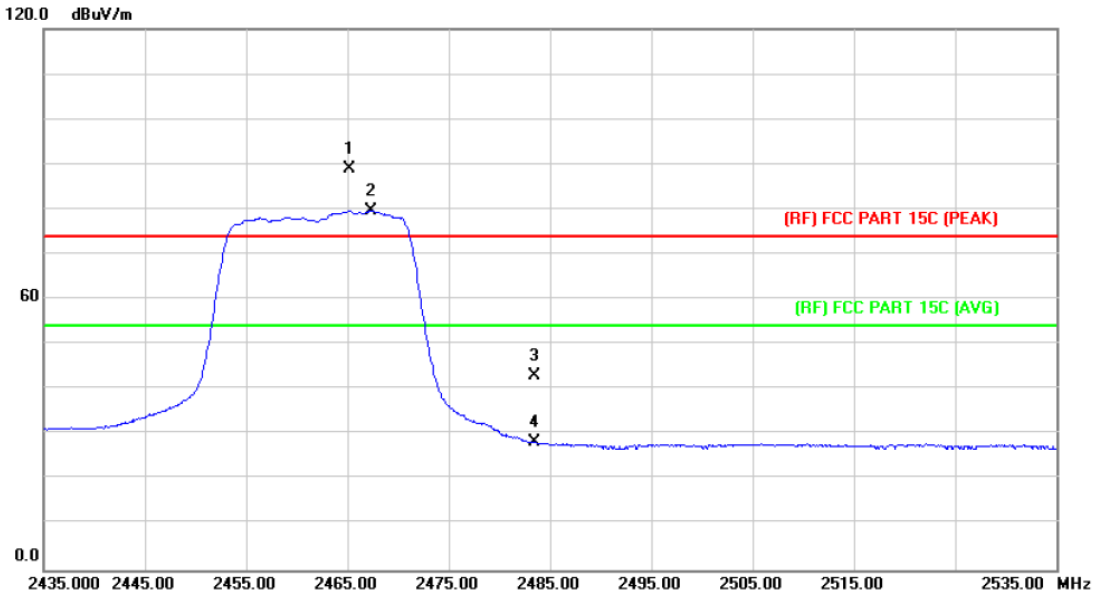
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	42.91	0.77	43.68	74.00	-30.32	peak
2		2390.000	31.13	0.77	31.90	54.00	-22.10	AVG
3	X	2408.900	93.47	0.85	94.32	Fundamental Frequency		peak
4	*	2417.300	83.90	0.89	84.79	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

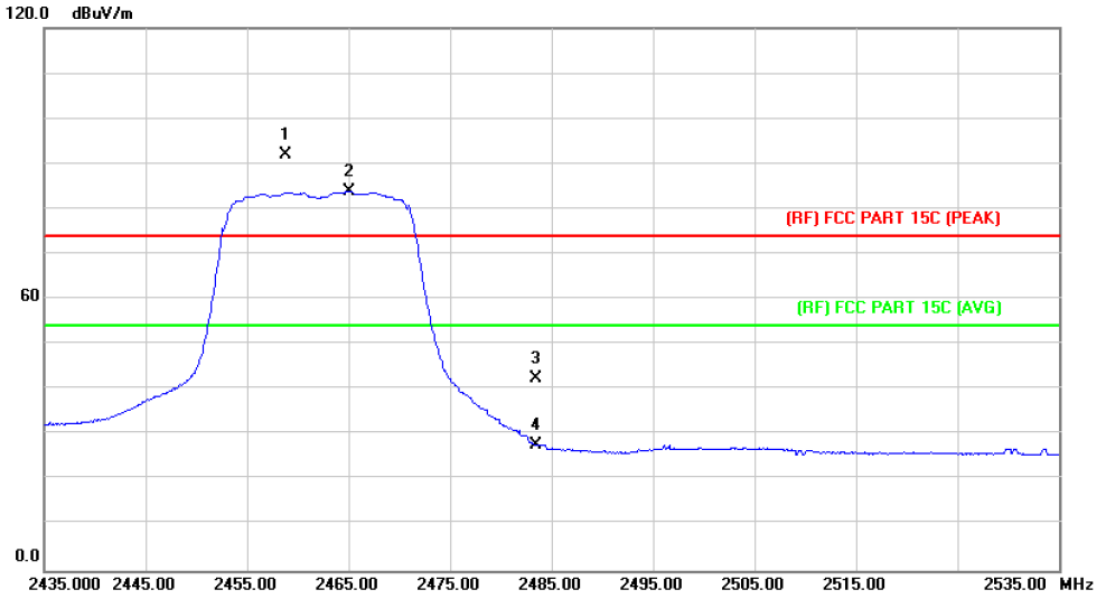
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2465.200	87.91	1.09	89.00	Fundamental Frequency		peak
2	*	2467.300	78.58	1.10	79.68	Fundamental Frequency		AVG
3		2483.500	41.93	1.17	43.10	74.00	-30.90	peak
4		2483.500	27.06	1.17	28.23	54.00	-25.77	AVG

Emission Level= Read Level+ Correct Factor

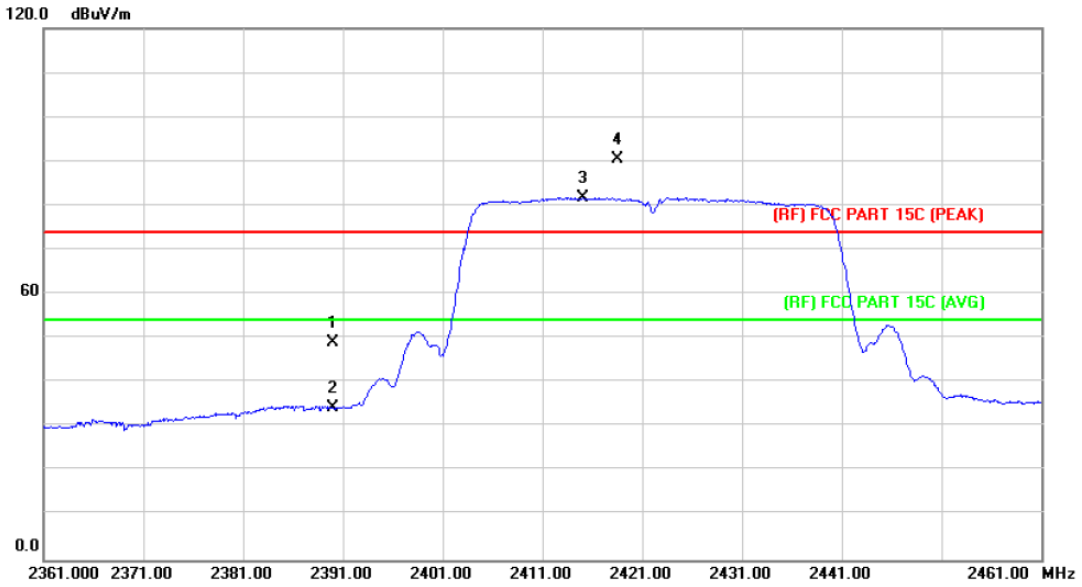
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2458.800	90.98	1.06	92.04	Fundamental Frequency		peak
2	*	2465.000	82.79	1.09	83.88	Fundamental Frequency		AVG
3		2483.500	41.19	1.17	42.36	74.00	-31.64	peak
4		2483.500	26.60	1.17	27.77	54.00	-26.23	AVG

Emission Level= Read Level+ Correct Factor

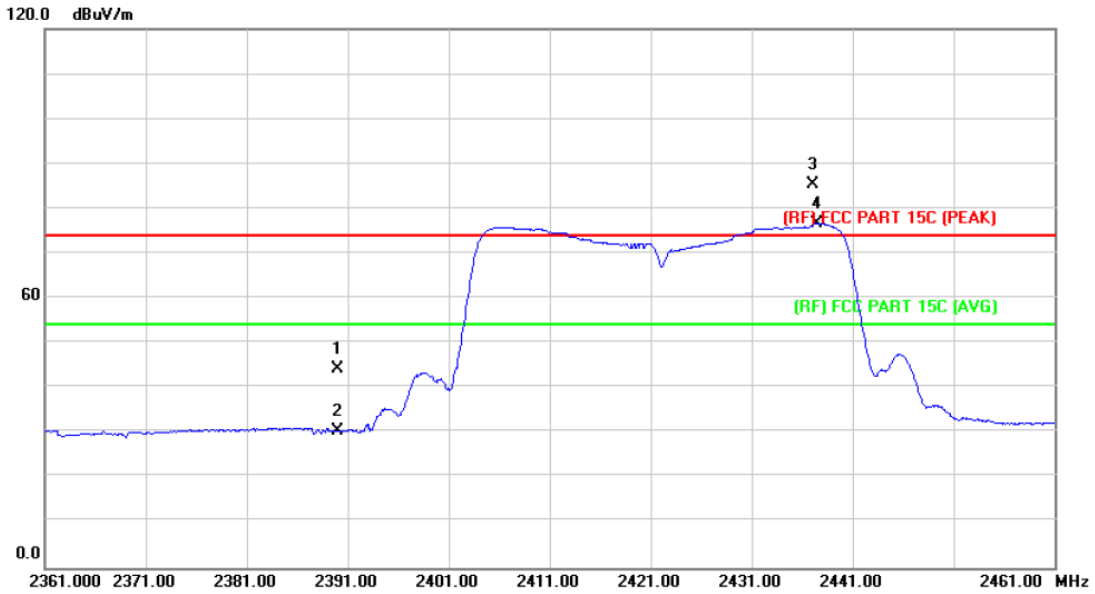
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2422MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	48.15	0.77	48.92	74.00	-25.08	peak
2		2390.000	33.46	0.77	34.23	54.00	-19.77	AVG
3	*	2415.000	80.87	0.88	81.75	Fundamental Frequency		AVG
4	X	2418.500	89.47	0.89	90.36	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

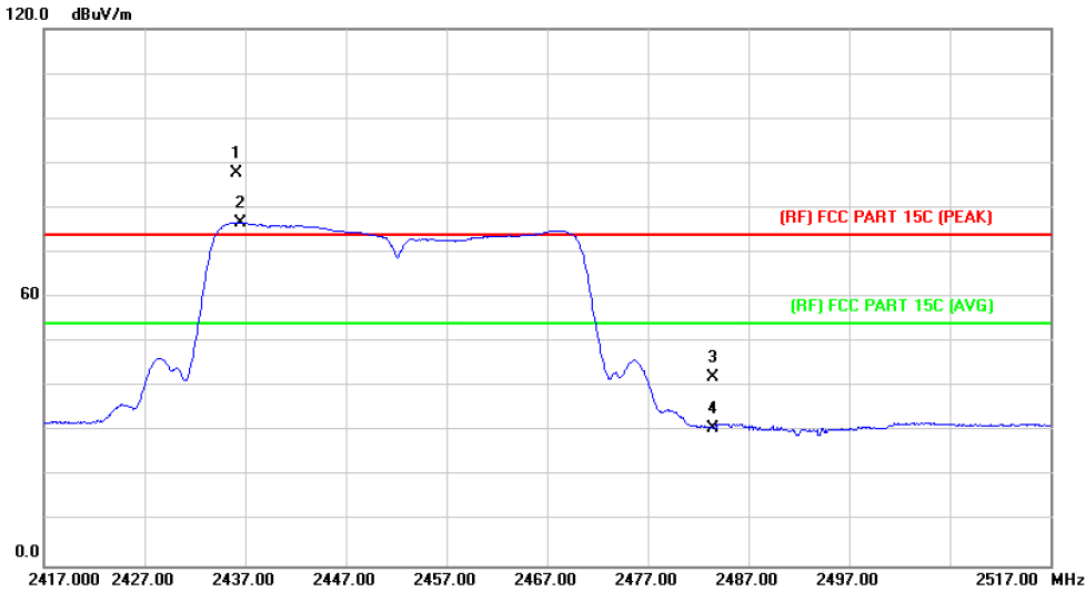
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT40) Mode 2422MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	43.47	0.77	44.24	Fundamental Frequency		peak
2		2390.000	29.66	0.77	30.43	Fundamental Frequency		AVG
3	X	2437.100	84.39	0.97	85.36	74.00	11.36	peak
4	*	2437.400	75.65	0.97	76.62	54.00	22.62	AVG

Emission Level= Read Level+ Correct Factor

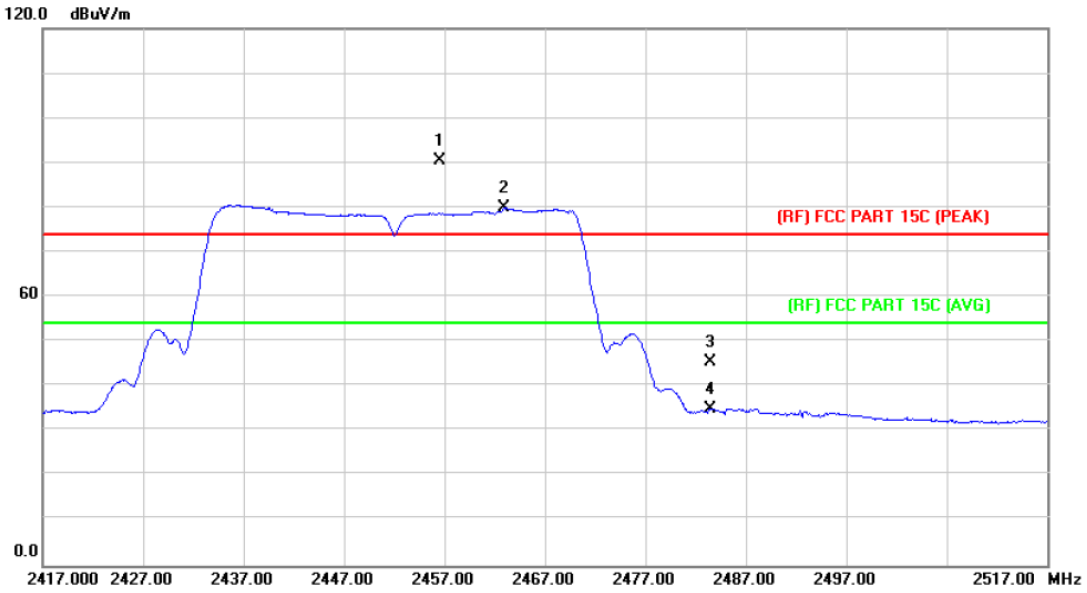
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2452MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2436.100	86.81	0.97	87.78	Fundamental Frequency		peak
2	*	2436.500	75.74	0.97	76.71	Fundamental Frequency		AVG
3		2483.500	40.84	1.17	42.01	74.00	-31.99	peak
4		2483.500	29.72	1.17	30.89	54.00	-23.11	AVG

Emission Level= Read Level+ Correct Factor

EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT40) Mode 2452MHz		
Remark:	N/A		

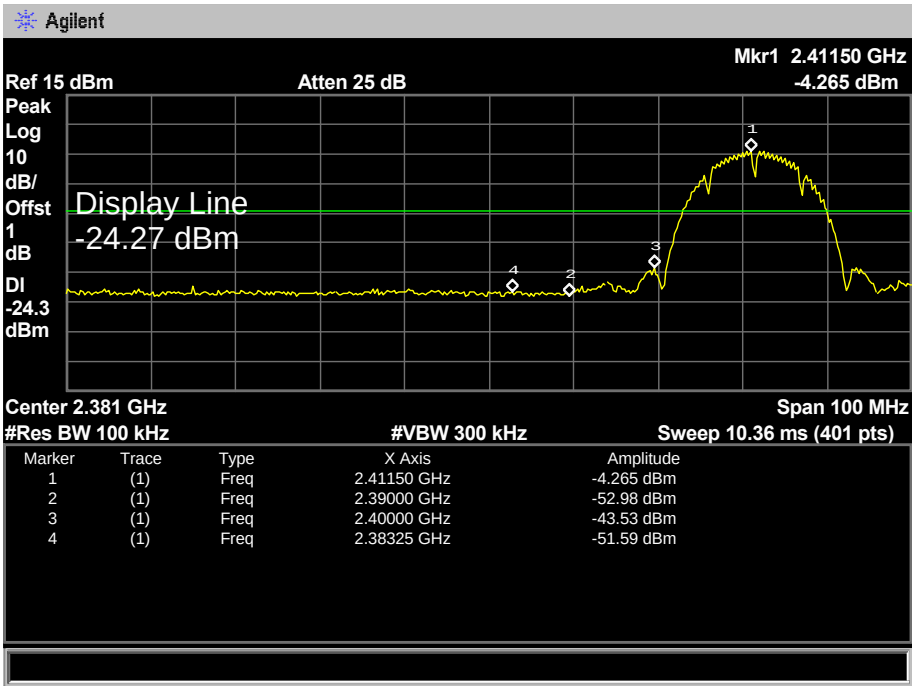


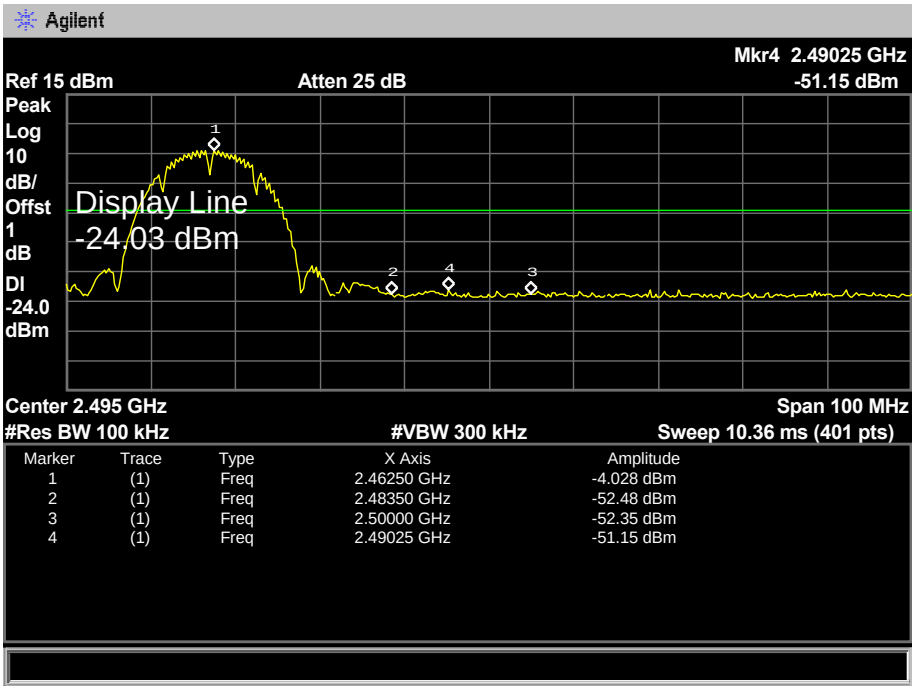
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2456.500	89.26	1.05	90.31	Fundamental Frequency		peak
2	*	2462.900	78.79	1.08	79.87	Fundamental Frequency		AVG
3		2483.500	44.14	1.17	45.31	74.00	-28.69	peak
4		2483.500	33.69	1.17	34.86	54.00	-19.14	AVG

Emission Level= Read Level+ Correct Factor

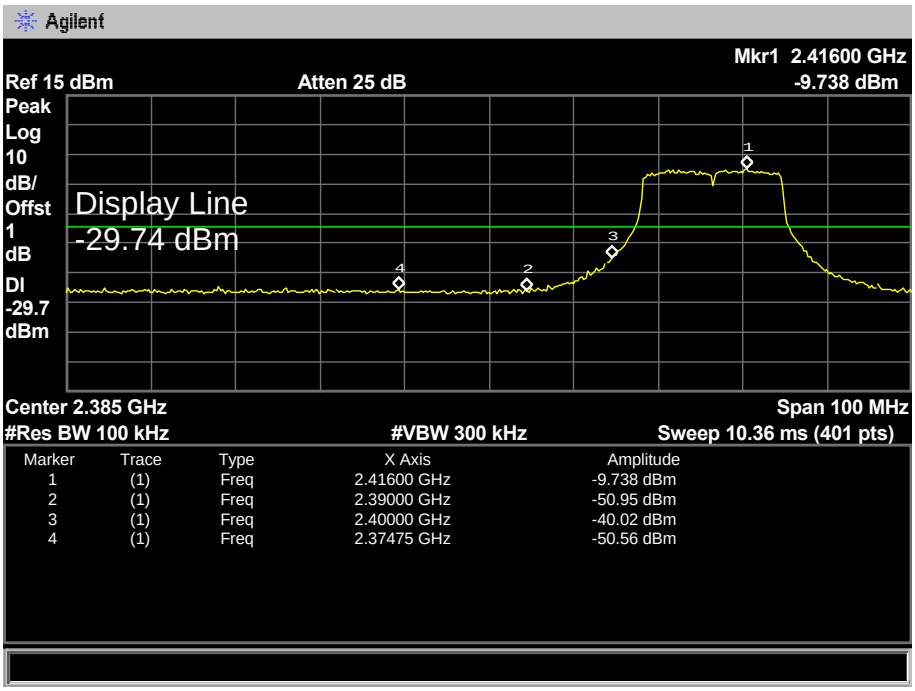
(2) Conducted Test

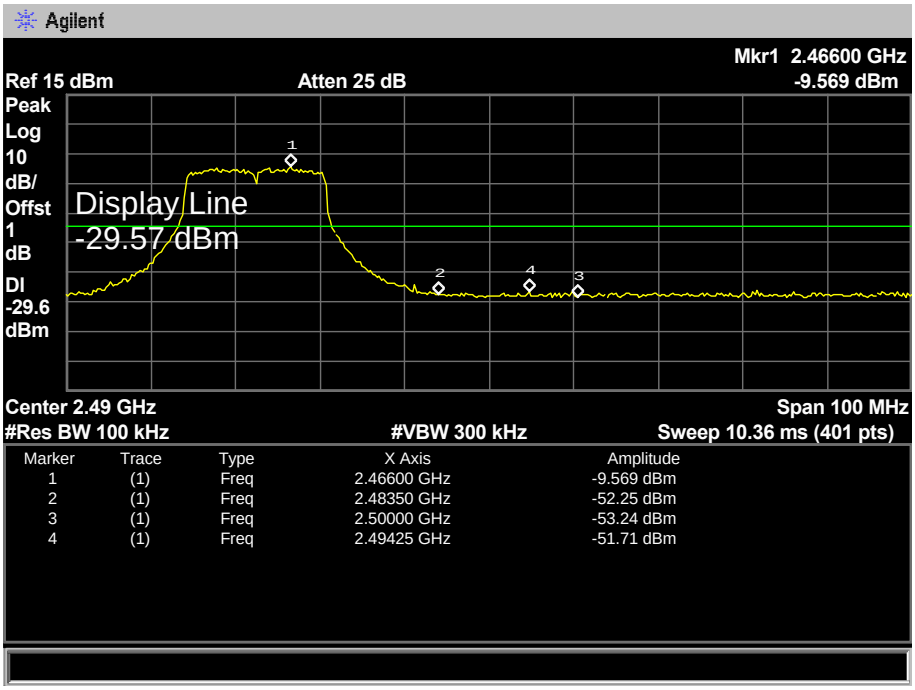
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Test Mode:	TX B Mode 2412MHz / TX B Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		



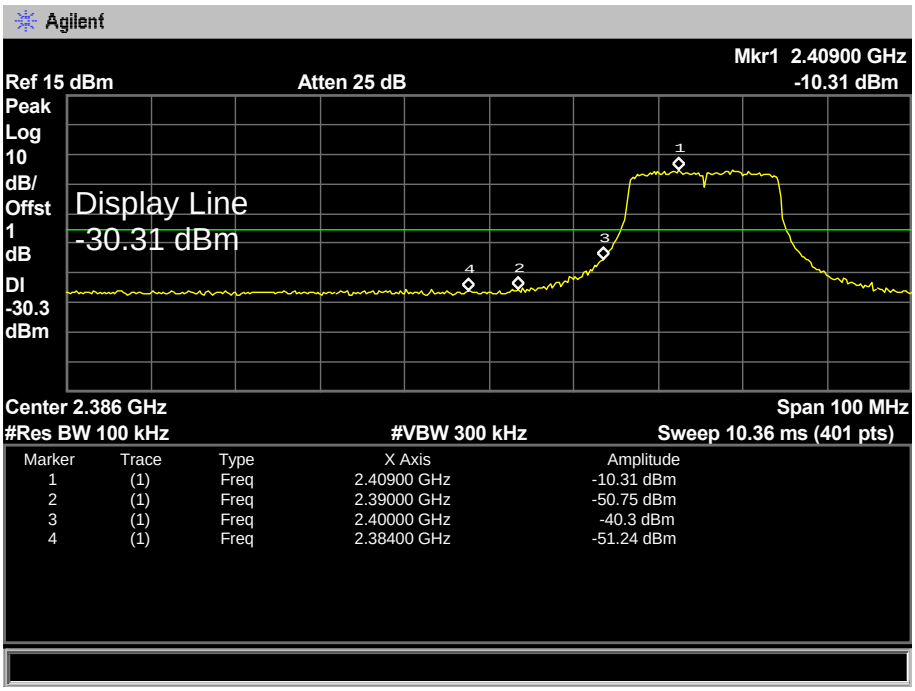


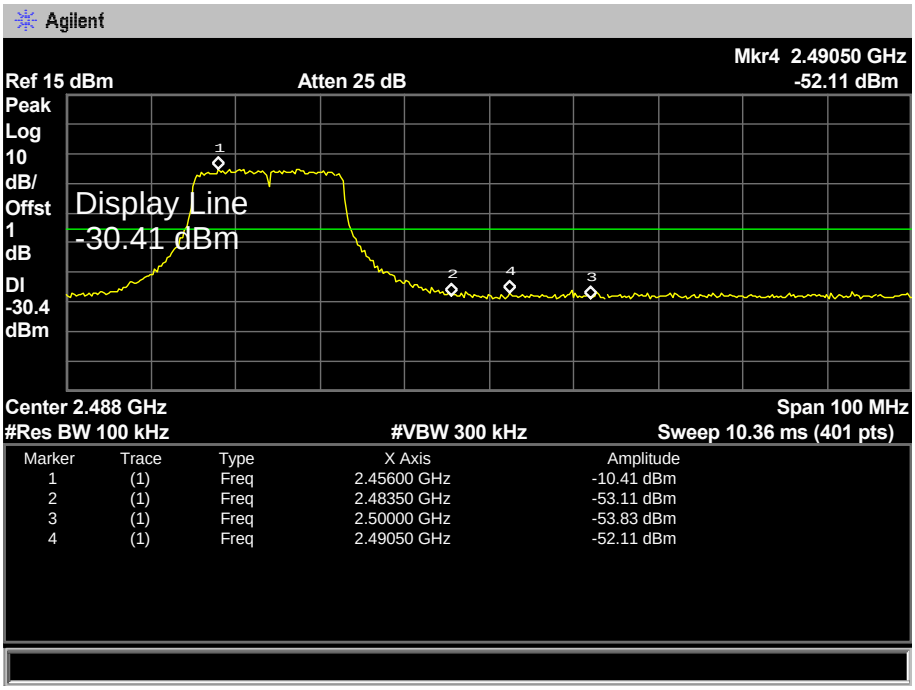
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Test Mode:	TX G Mode 2412MHz / TX G Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		



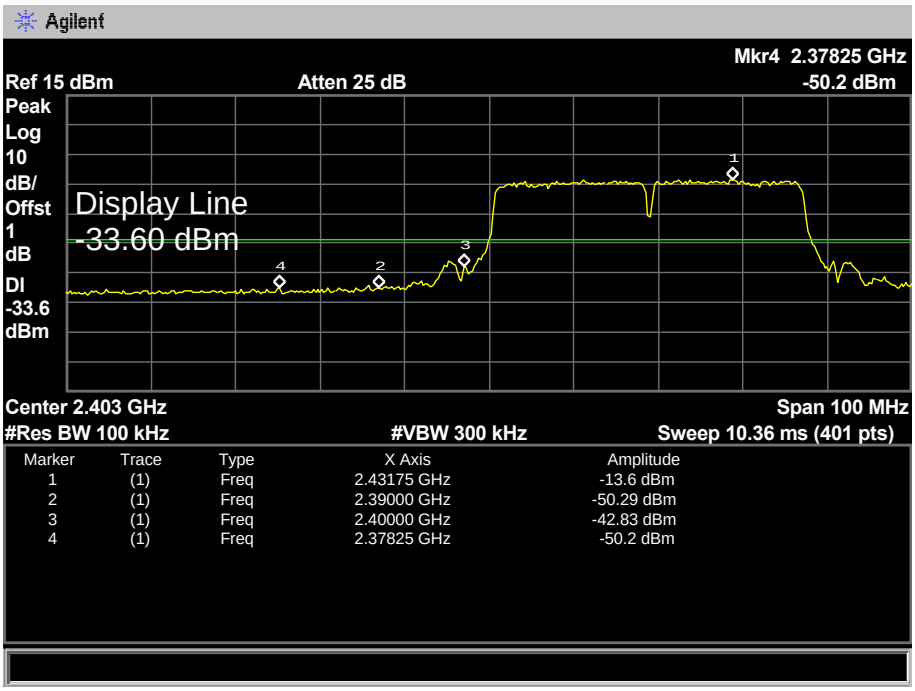


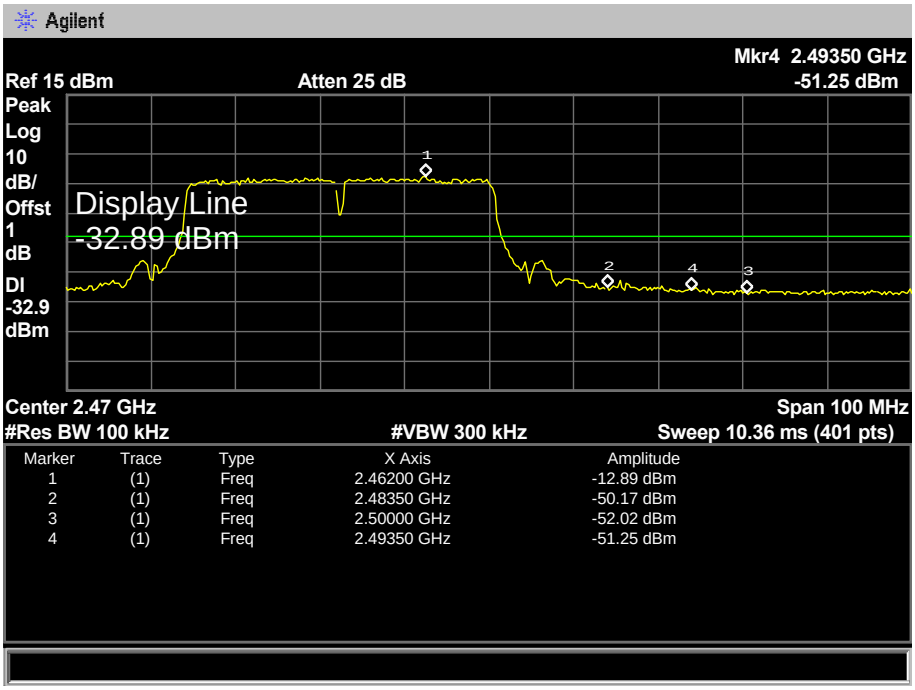
EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	**Model:**	HX9100
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	DC 5.0V		
Test Mode:	TX N(HT20) Mode 2412MHz / TX N(HT20) Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		





EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	**Model:**	HX9100
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	DC 5.0V		
Test Mode:	TX N(HT40) Mode 2422MHz / TX N(HT40) Mode 2452MHz		
Remark:	The EUT is programed in continuously transmitting mode		





7. Bandwidth Test

7.1 Test Standard and Limit

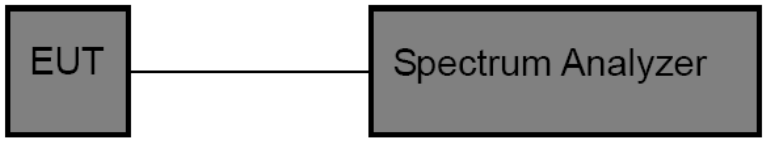
7.1.1 Test Standard

FCC Part 15.247 (a)(2)

7.1.2 Test Limit

FCC Part 15 Subpart C(15.247)/RSS-210		
Test Item	**Limit**	**Frequency Range(MHz)**
Bandwidth	>=500 KHz (6dB bandwidth)	2400~2483.5

7.2 Test Setup



7.3 Test Procedure

(1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.

(2) The bandwidth is measured at an amplitude level reduced 6dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst –case (i.e the widest) bandwidth.

(3)Measure the channel separation the spectrum analyzer was set to Resolution Bandwidth:100 kHz, and Video Bandwidth:300 kHz, Detector: Peak, Sweep Time set auto.

7.4 EUT Operating Condition

The EUT was set to continuously transmitting in each mode and low, middle and high channel for the test.

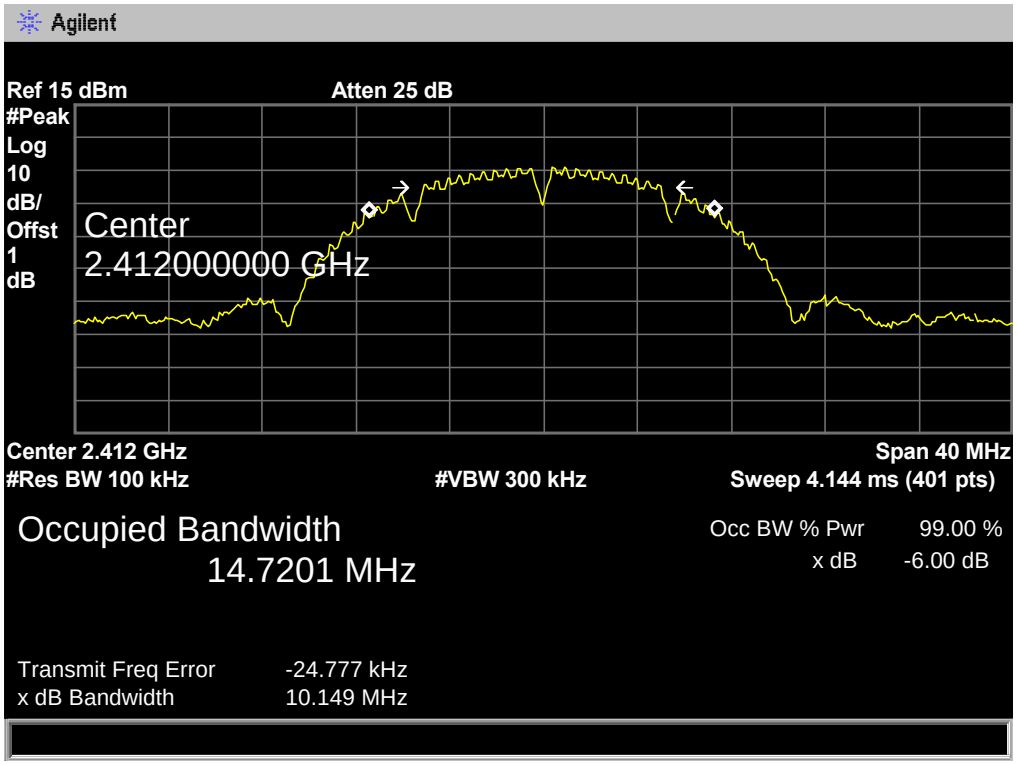
7.5 Test Data

EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Test Mode:	TX 802.11B Mode		

Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	10.149	14.7201	>=0.5
2437	10.143	14.7270	
2462	10.129	14.6659	

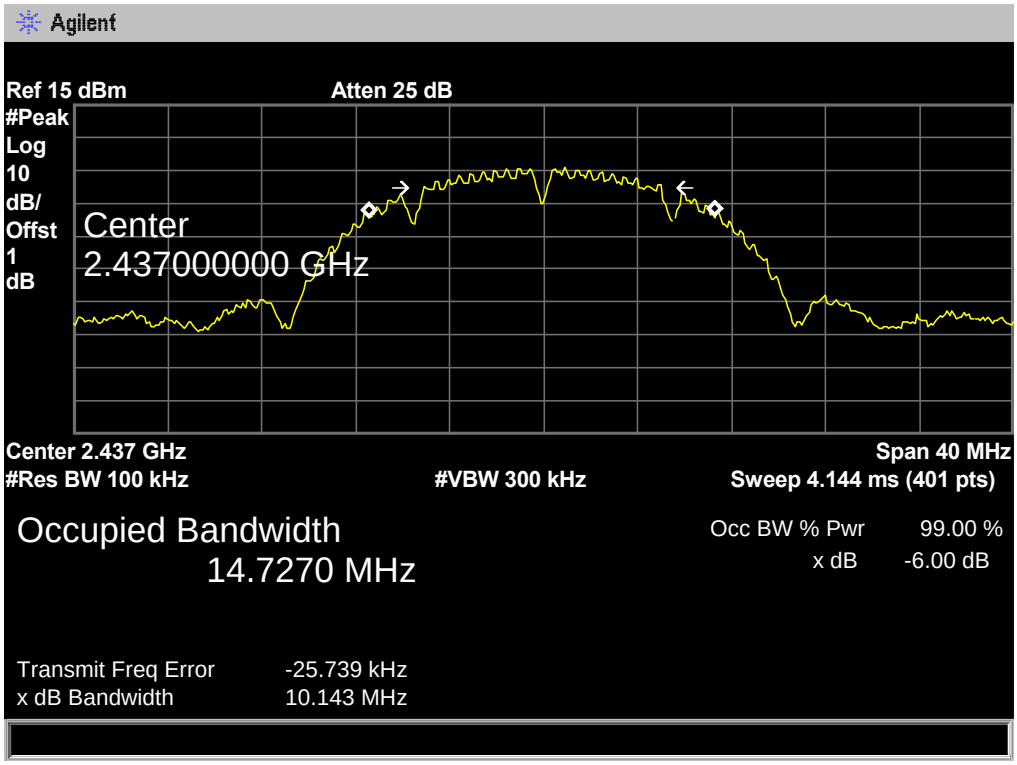
802.11B Mode

2412 MHz



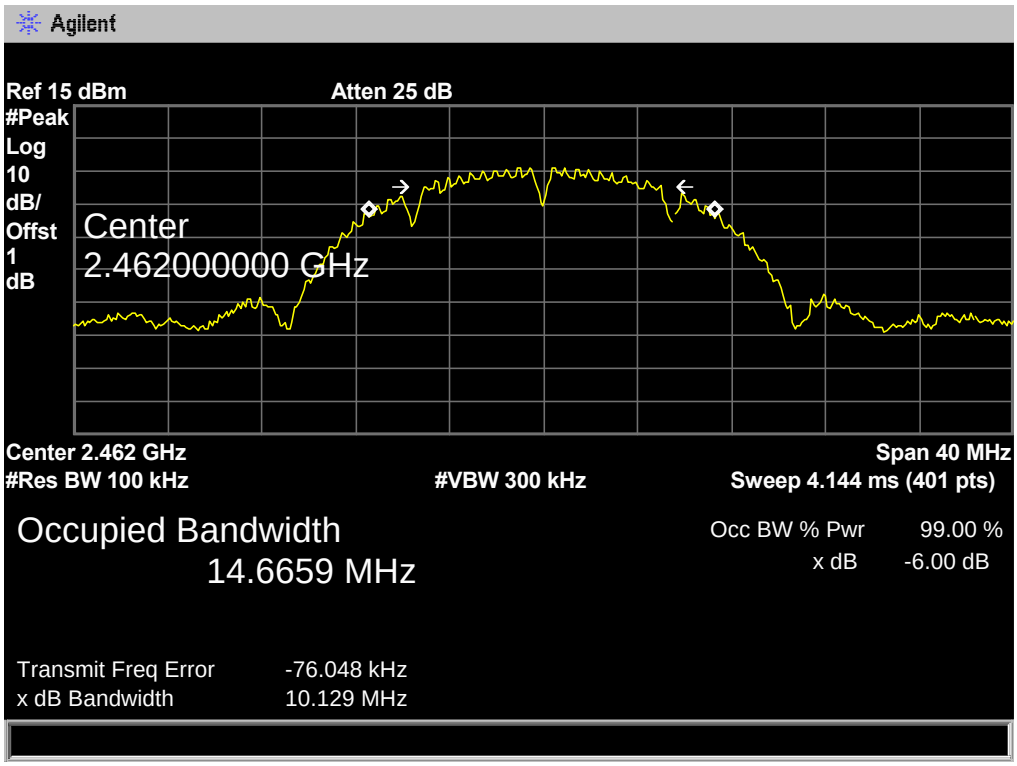
802.11B Mode

2437 MHz



802.11B Mode

2462 MHz

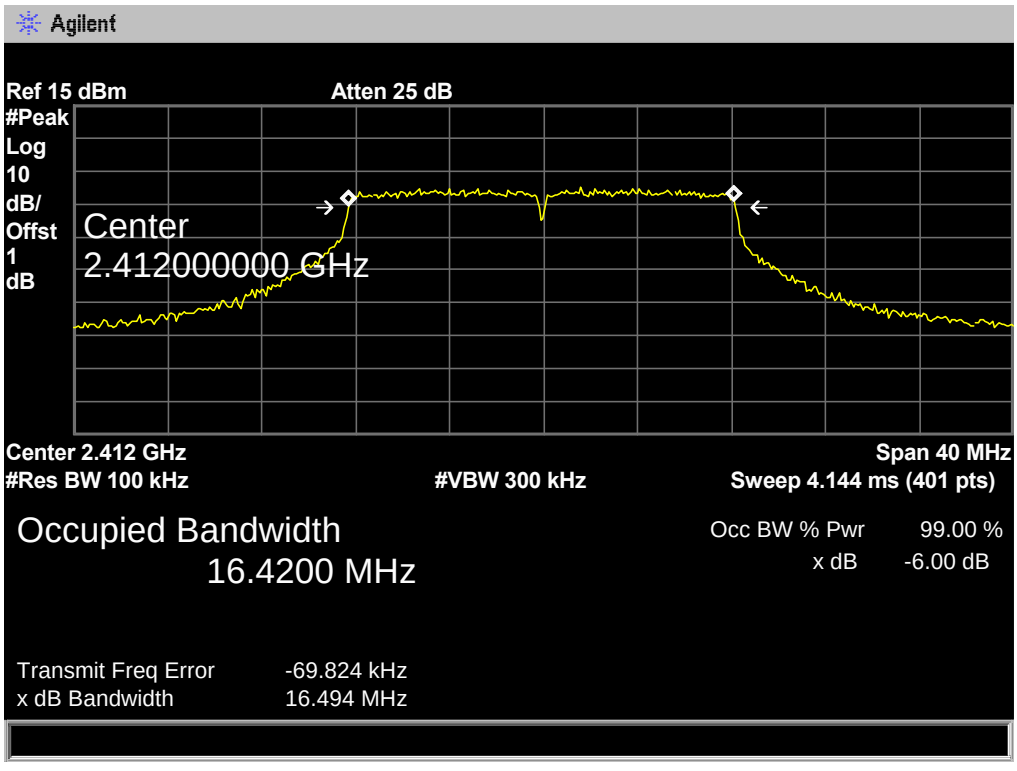


EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Test Mode:	TX 802.11G Mode		

Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	16.494	16.4200	>=0.5
2437	16.492	16.4088	
2462	16.500	16.4215	

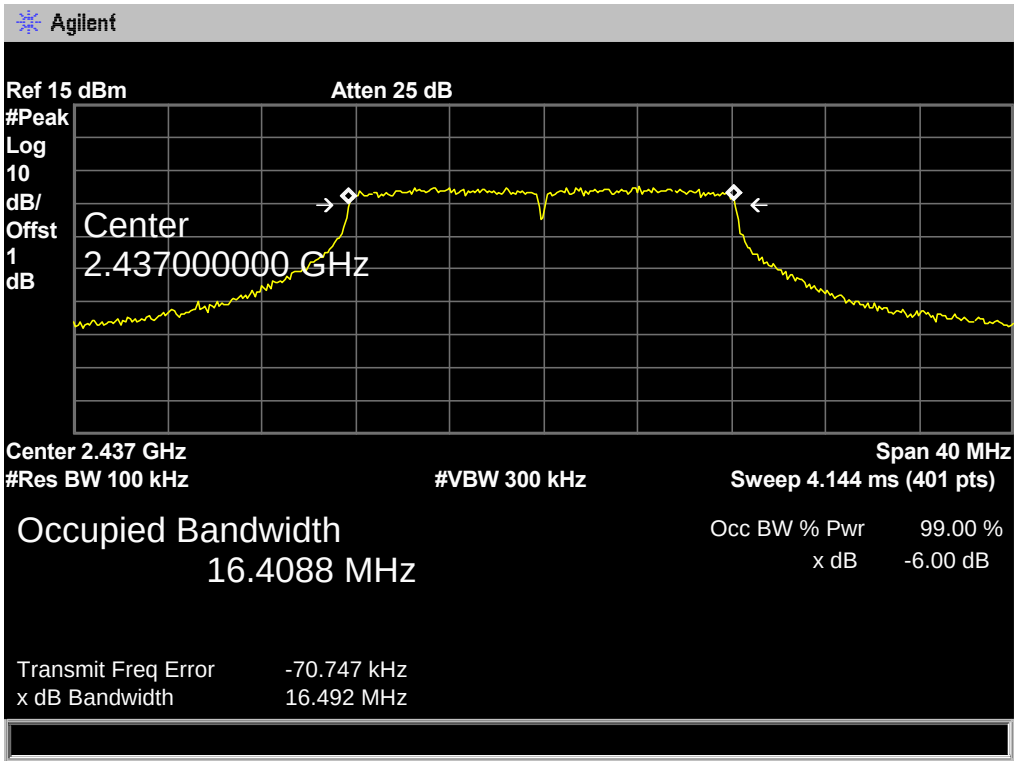
802.11G Mode

2412 MHz



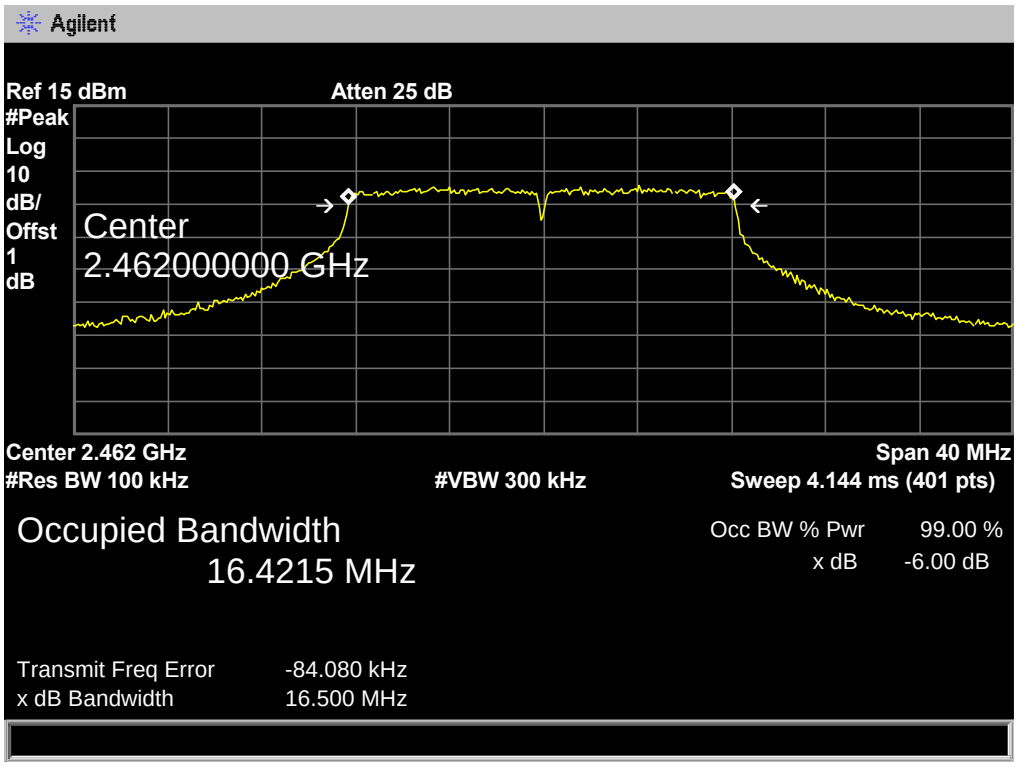
802.11G Mode

2437 MHz



802.11G Mode

2462 MHz

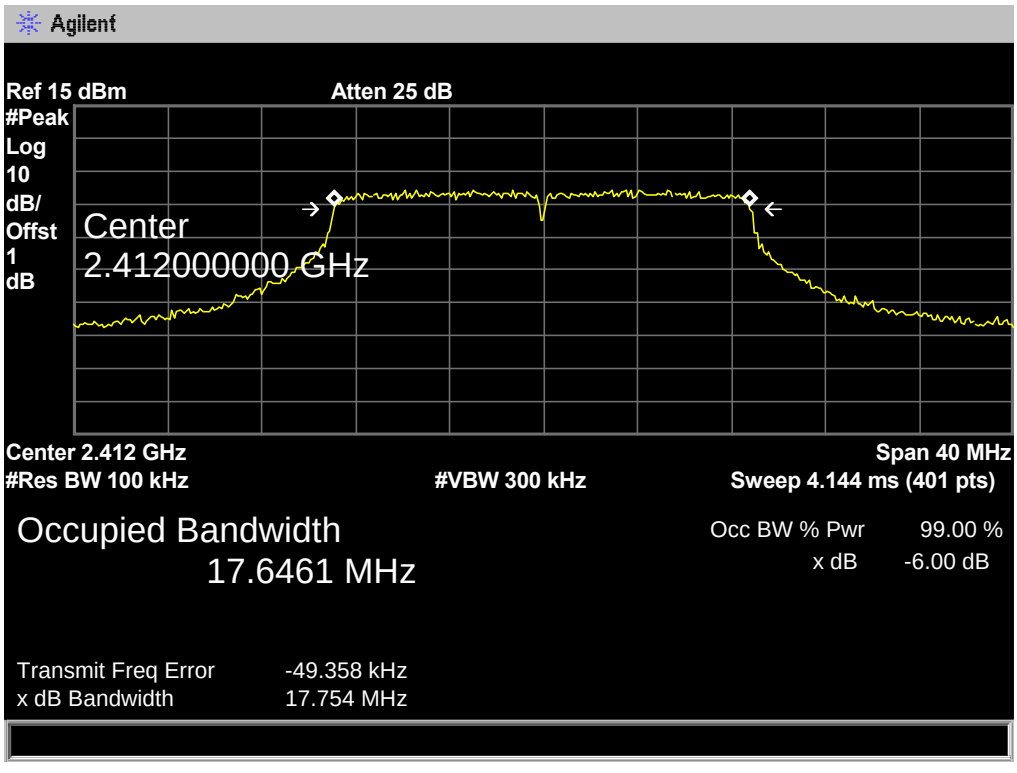


EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Test Mode:	TX 802.11N(HT20) Mode		

Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	17.754	17.6461	>=0.5
2437	17.744	17.6215	
2462	17.693	17.6228	

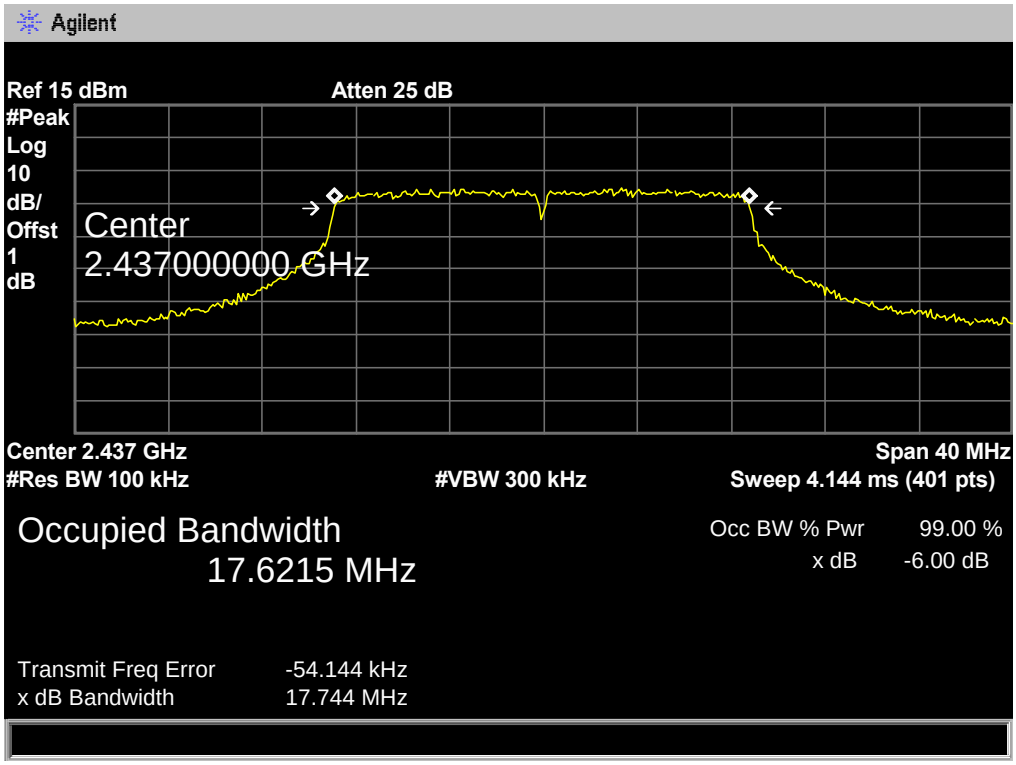
802.11N(HT20) Mode

2412 MHz



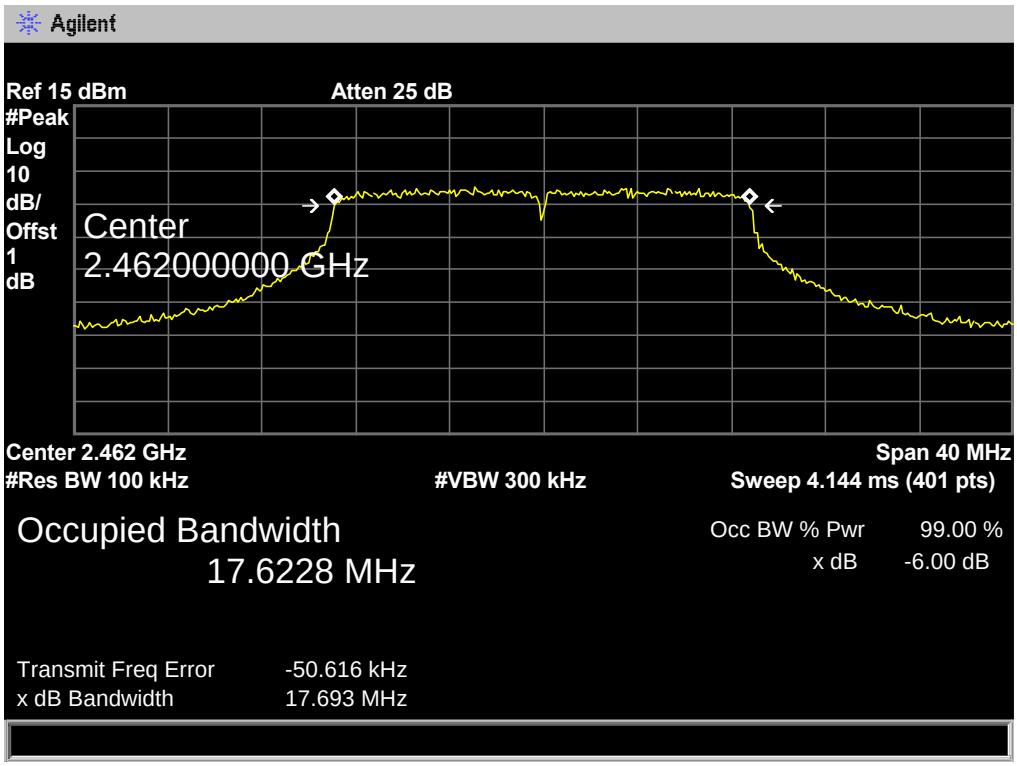
802.11N(HT20) Mode

2437 MHz



802.11N(HT20) Mode

2462 MHz

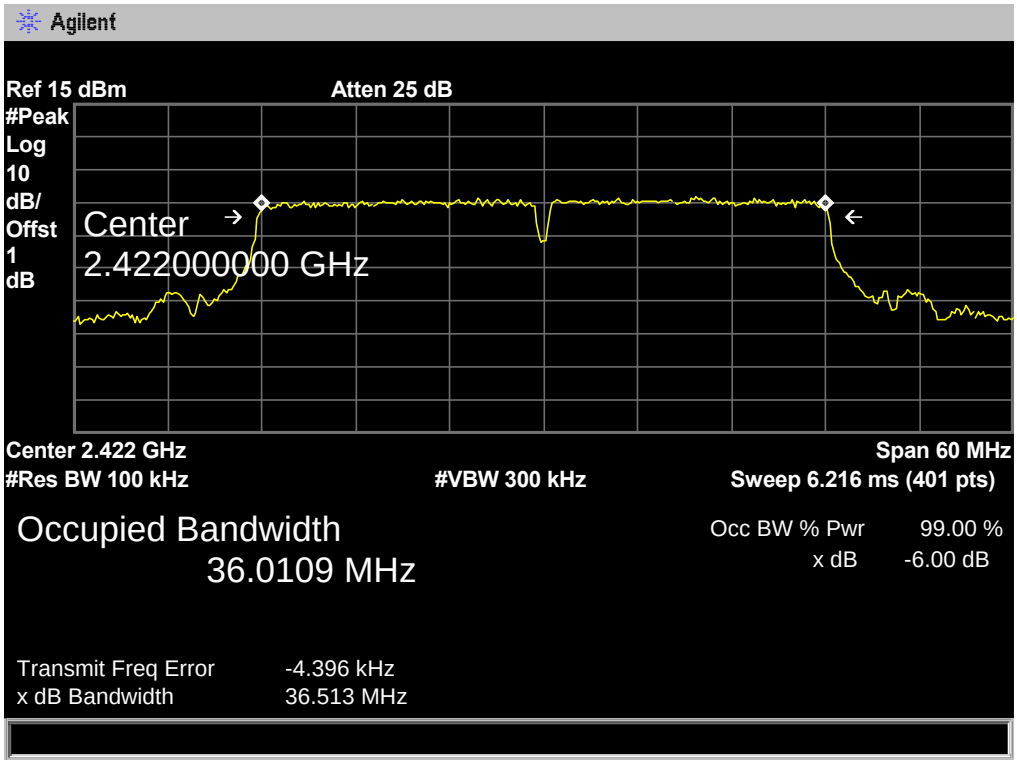


EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Test Mode:	TX 802.11N(HT40) Mode		

Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2422	36.513	36.0109	>=0.5
2437	36.457	35.9600	
2452	36.458	35.9570	

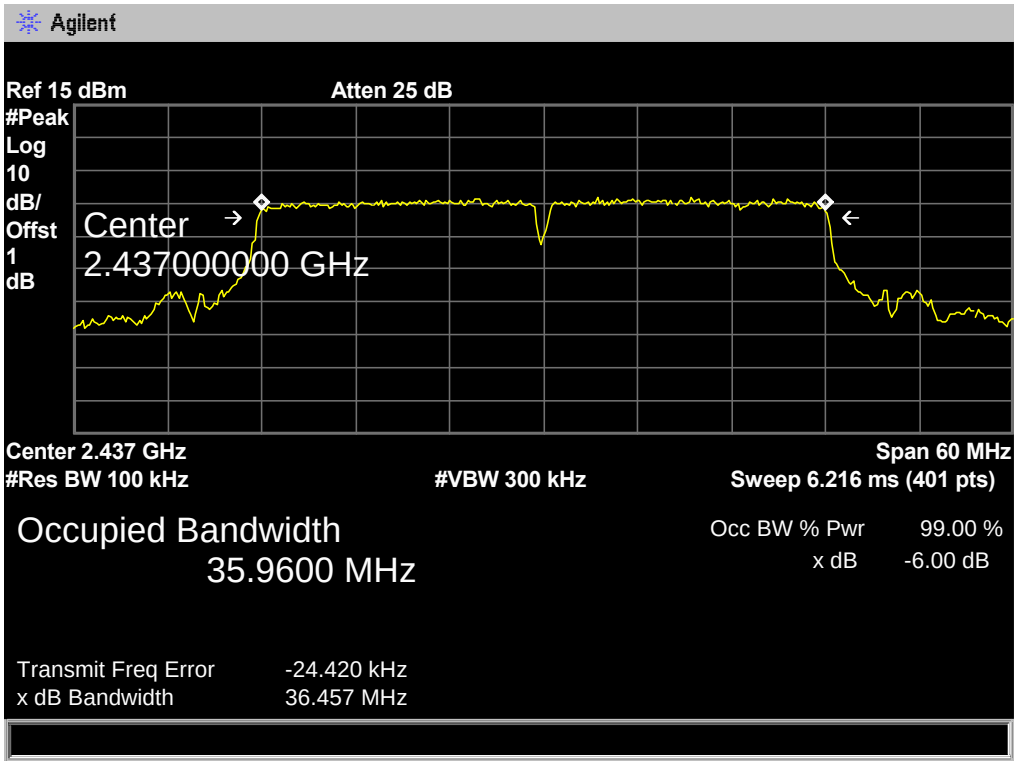
802.11N(HT40) Mode

2422 MHz



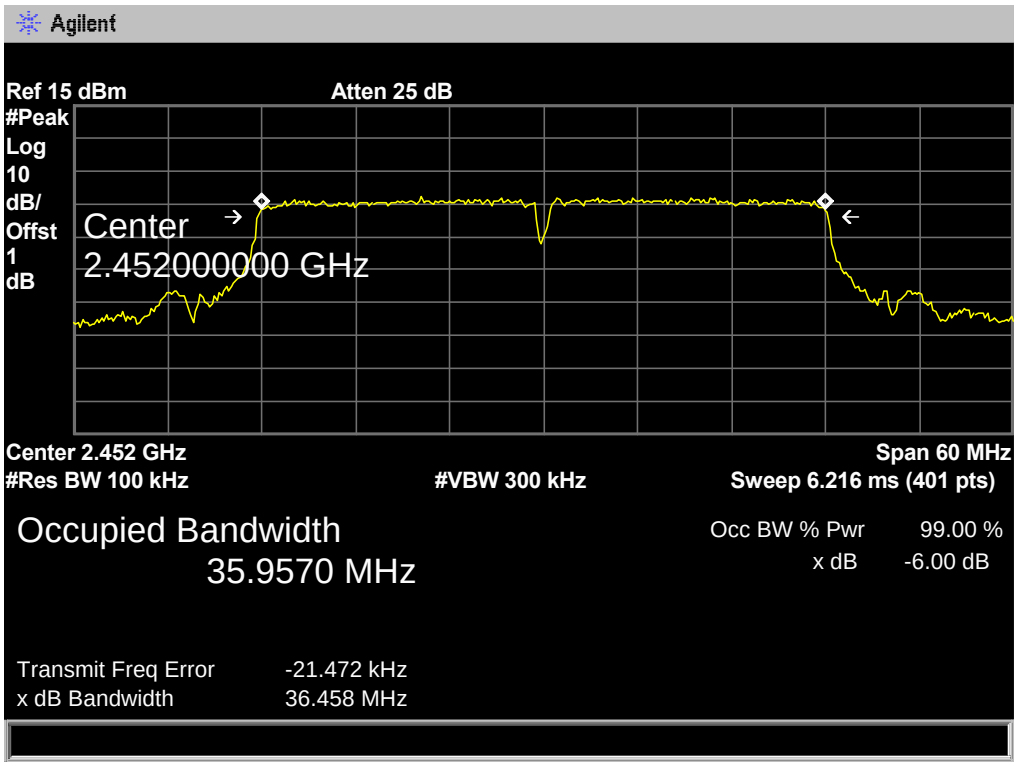
802.11N(HT40) Mode

2437 MHz



802.11N(HT40) Mode

2452 MHz



8. Peak Output Power Test

8.1 Test Standard and Limit

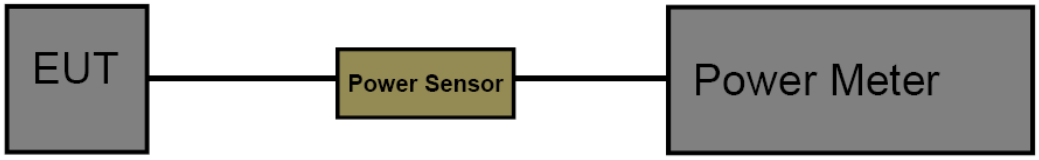
8.1.1 Test Standard

FCC Part 15.247 (b)

8.1.2 Test Limit

FCC Part 15 Subpart C(15.247)/RSS-210		
Test Item	**Limit**	**Frequency Range(MHz)**
Peak Output Power	1 Watt or 30 dBm	2400~2483.5

8.2 Test Setup



8.3 Test Procedure

The measurement is according to section 9.1.2 of KDB 558074 D01 DTS Meas Guidance v03r05.
The EUT was connected to RF power meter via a broadband power sensor as show the block above. The power sensor video bandwidth is greater than or equal to the DTS bandwidth of the equipment.

8.4 EUT Operating Condition

The EUT was set to continuously transmitting in the max power during the test.

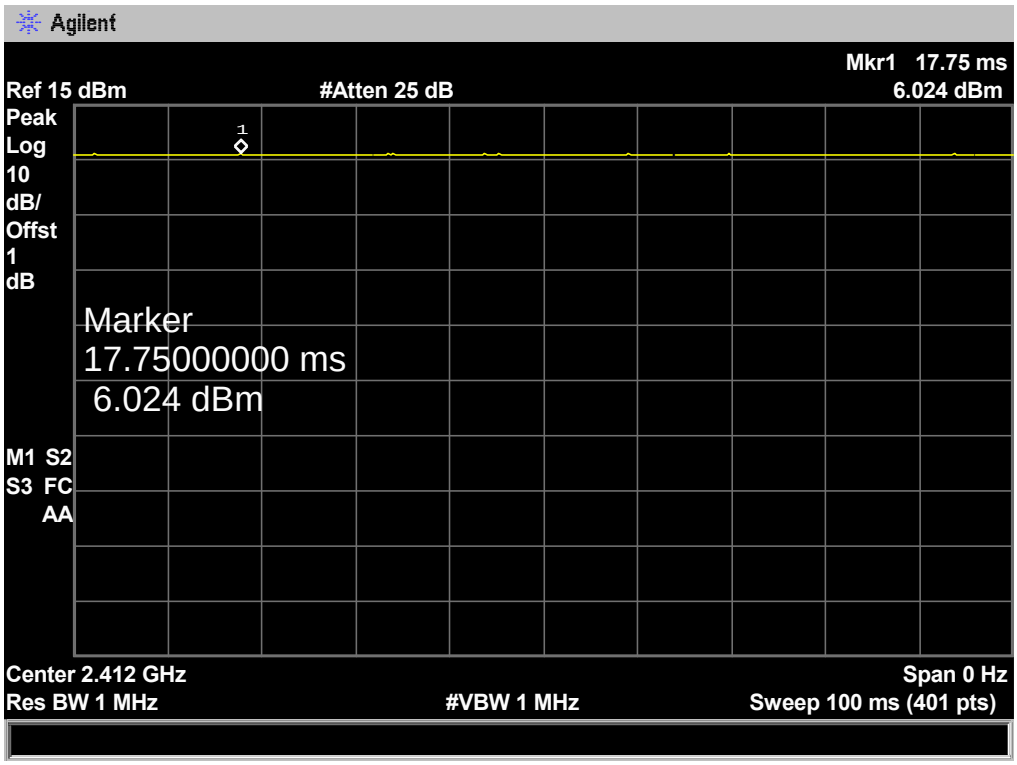
8.5 Test Data

EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		

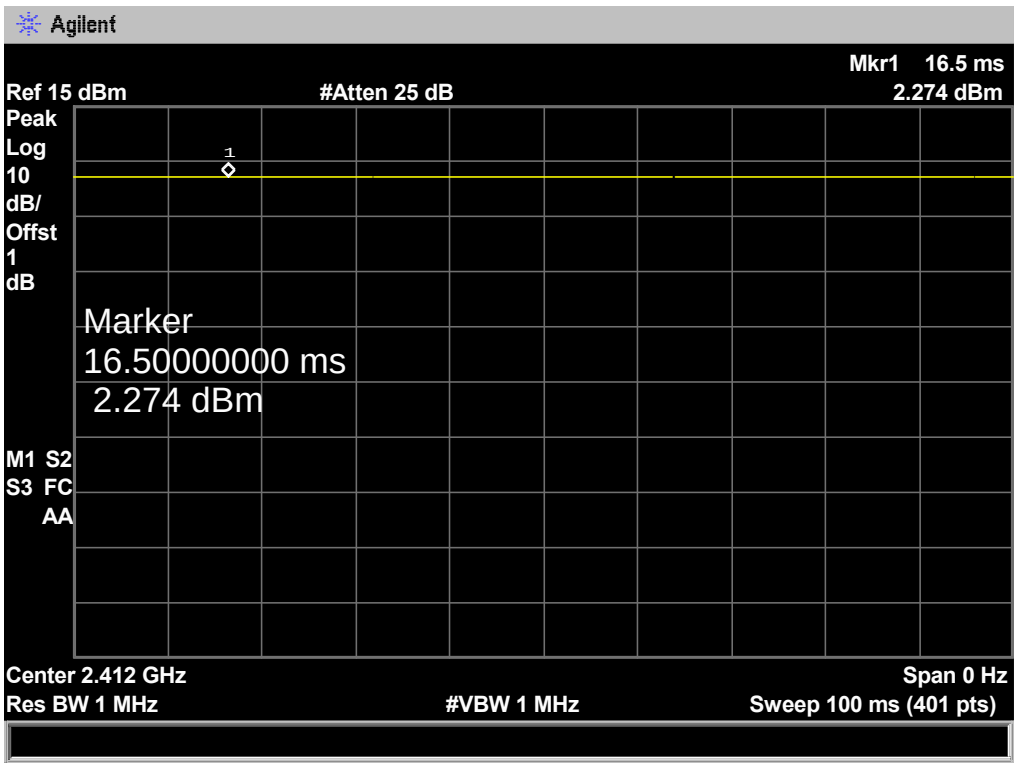
Mode	Channel frequency (MHz)	Test Result (dBm)	Limit (dBm)
802.11b	2412	9.23	30
	2437	**9.24**	
	2462	9.19	
802.11g	2412	9.13	
	2437	**9.18**	
	2462	9.14	
802.11n (HT20)	2412	9.08	
	2437	9.07	
	2462	**9.10**	
802.11n (HT40)	2422	9.02	
	2437	9.00	
	2452	**9.04**	
Result: PASS			

Duty Cycle		
Mode	Channel frequency (MHz)	Test Result
802.11b	2412	>98%
	2437	
	2462	
802.11g	2412	
	2437	
	2462	
802.11n (HT20)	2412	
	2437	
	2462	
802.11n (HT40)	2422	
	2437	
	2452	
Please see below plots		

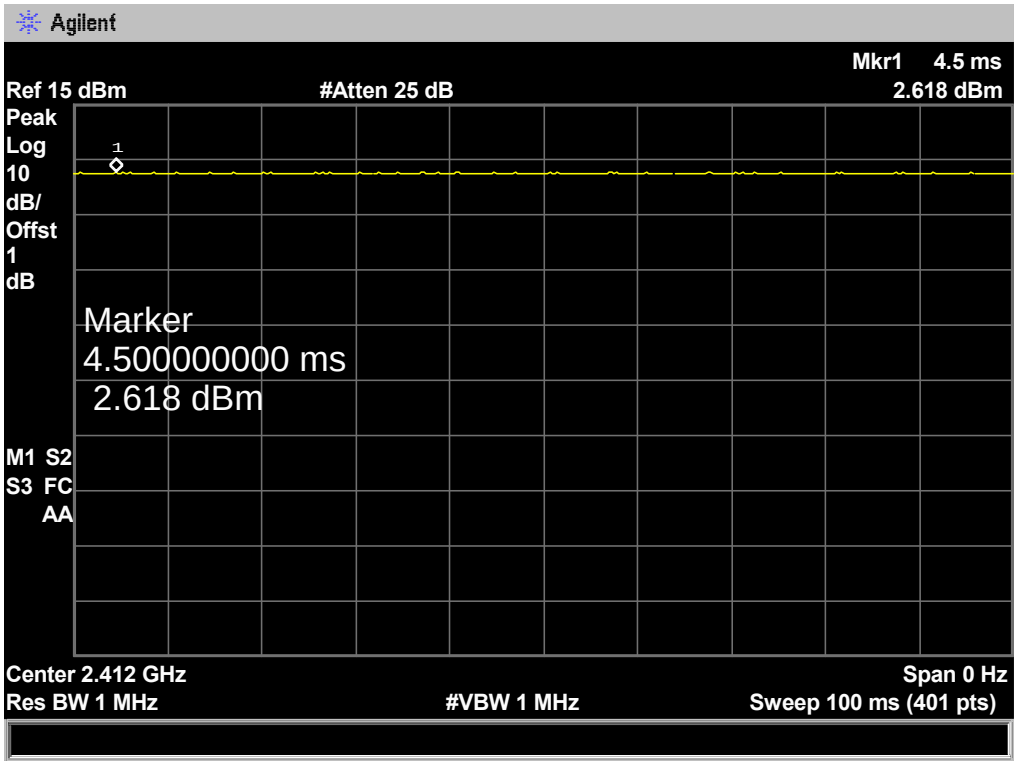
802.11 B Mode 2412 MHz



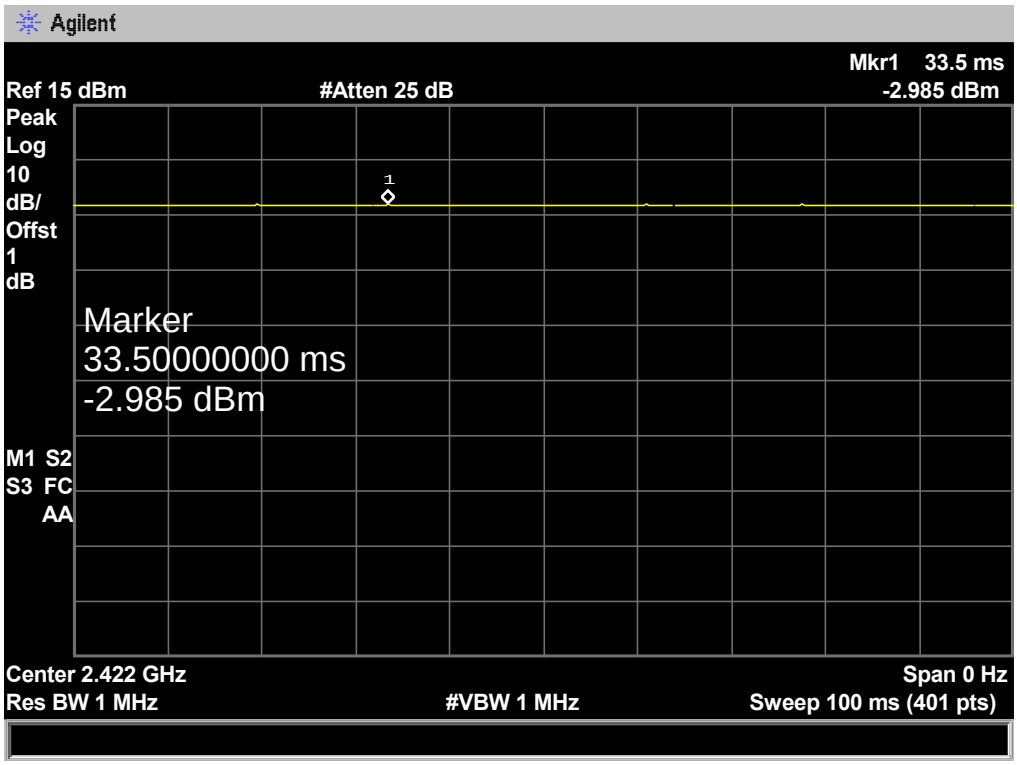
802.11 G Mode 2412 MHz



802.11 N(HT20) Mode 2412 MHz



802.11 N(HT40) Mode 2422 MHz



9. Power Spectral Density Test

9.1 Test Standard and Limit

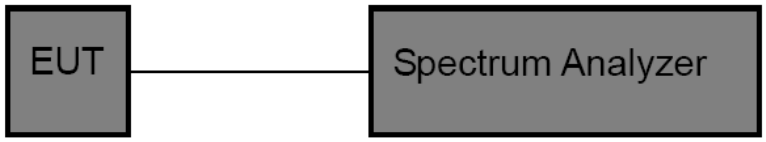
9.1.1 Test Standard

FCC Part 15.247 (e)

9.1.2 Test Limit

FCC Part 15 Subpart C(15.247)		
Test Item	**Limit**	**Frequency Range(MHz)**
Power Spectral Density	8dBm(in any 3 kHz)	2400~2483.5

9.2 Test Setup



9.3 Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v03r05.

(1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
(2) Set analyser center frequency to DTS channel center frequency.
(3) Set the span to 1.5 times the DTS bandwidth.
(4) Set the RBW to: 3 kHz
(5) Set the VBW to: 10 kHz
(6) Detector: peak
(7) Sweep time: auto
(8) Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

9.4 EUT Operating Condition

The EUT was set to continuously transmitting in each mode and low, middle and high channel for the test.

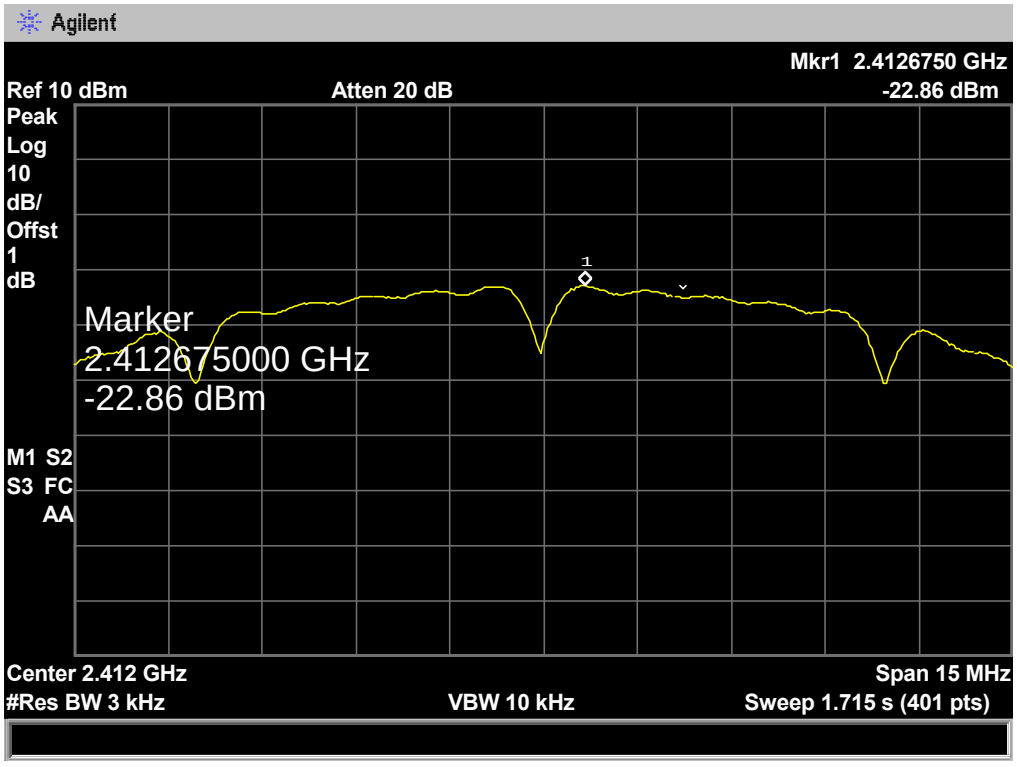
9.5 Test Data

EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5.0V		
Test Mode:	TX 802.11B Mode		

Channel Frequency (MHz)	Power Density (3 kHz/dBm)	Limit (dBm)
2412	-22.86	8
2437	-23.02	
2462	-23.27	

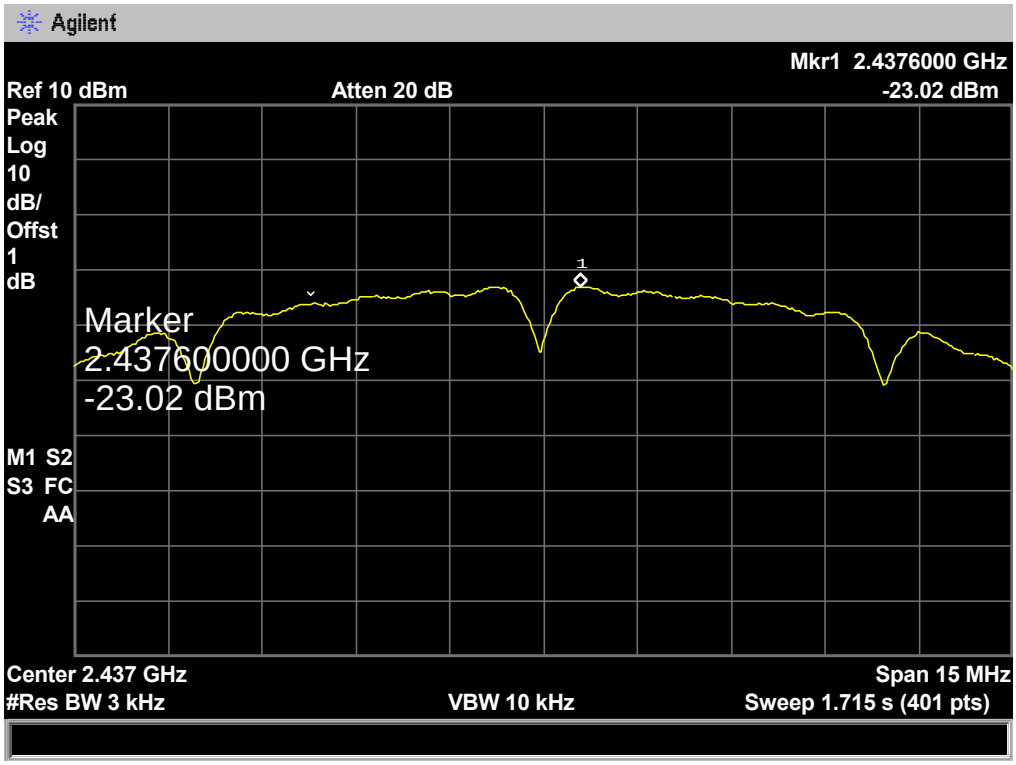
802.11B Mode

2412 MHz



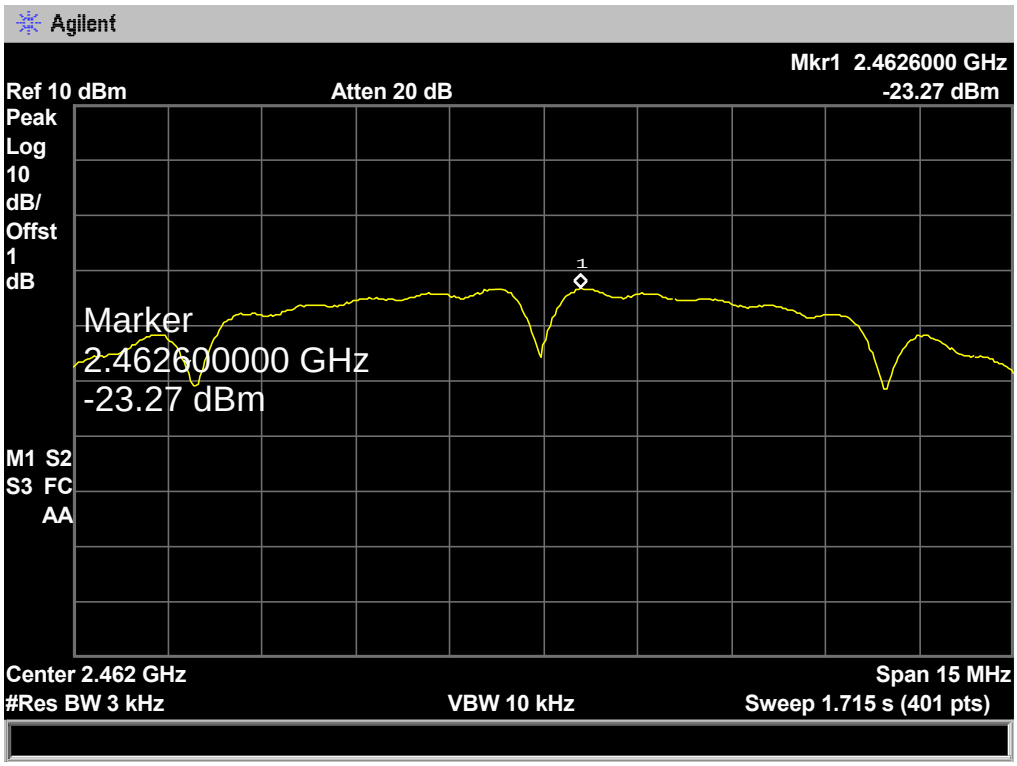
802.11B Mode

2437 MHz



802.11B Mode

2462 MHz

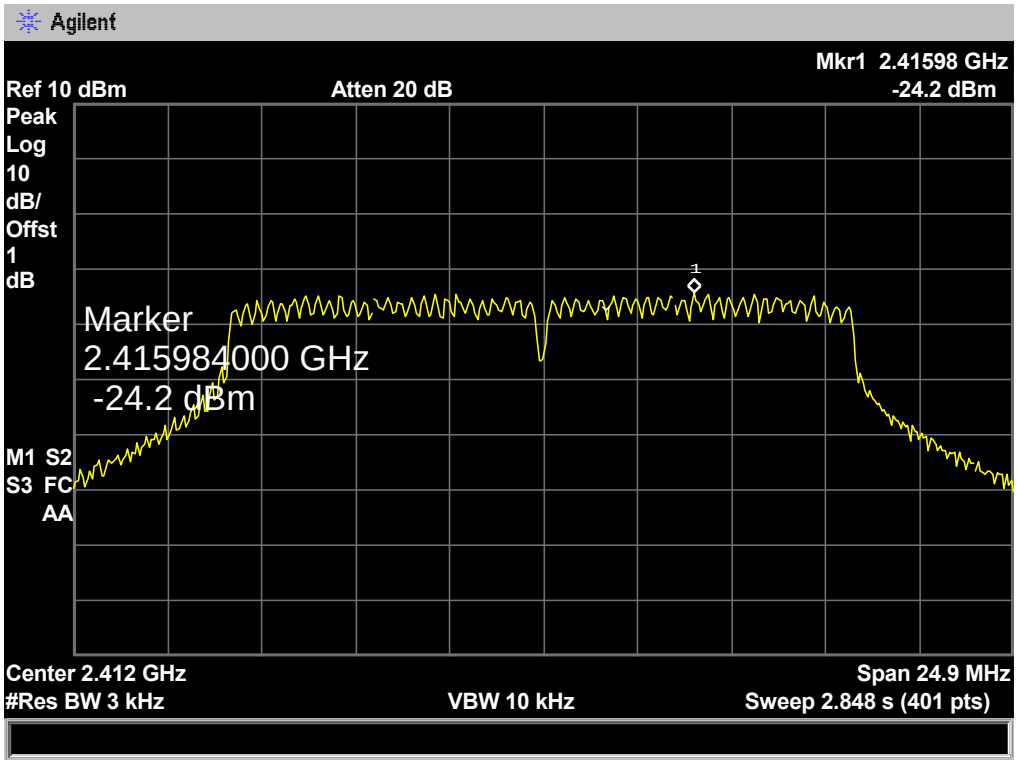


EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Temperature:	25 ℃
Test Voltage:	DC 5.0V		
Test Mode:	TX 802.11G Mode		

Channel Frequency (MHz)	Power Density (3 kHz/dBm)	Limit (dBm)
2412	-24.20	8
2437	-24.05	
2462	-24.75	

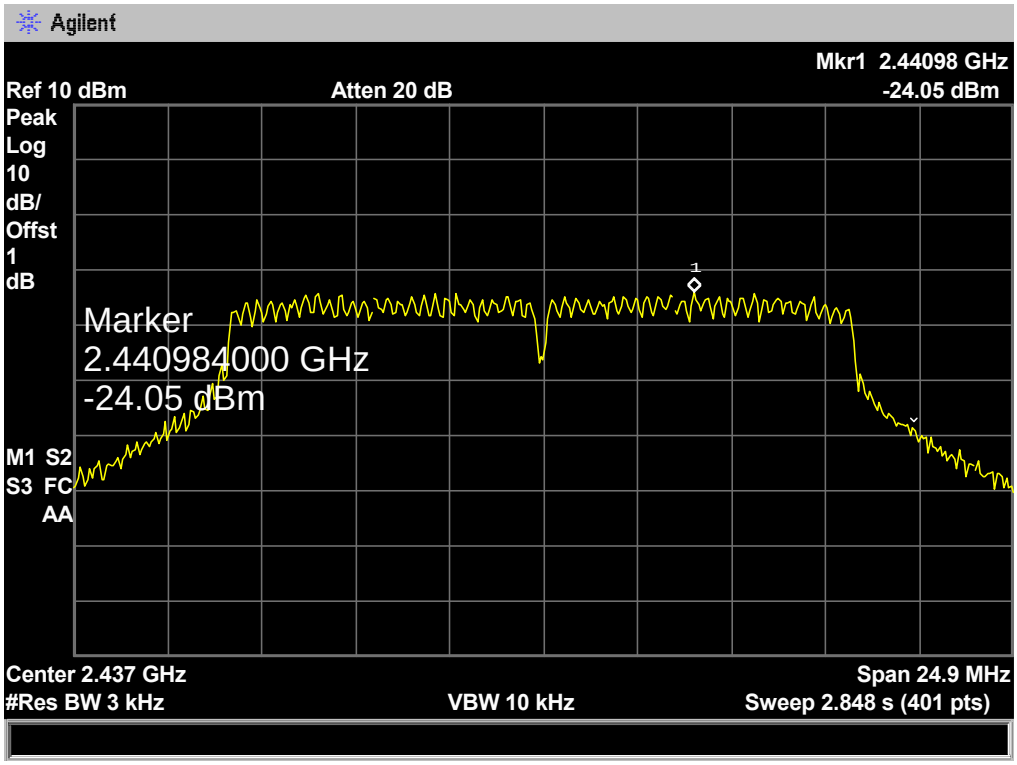
802.11G Mode

2412 MHz



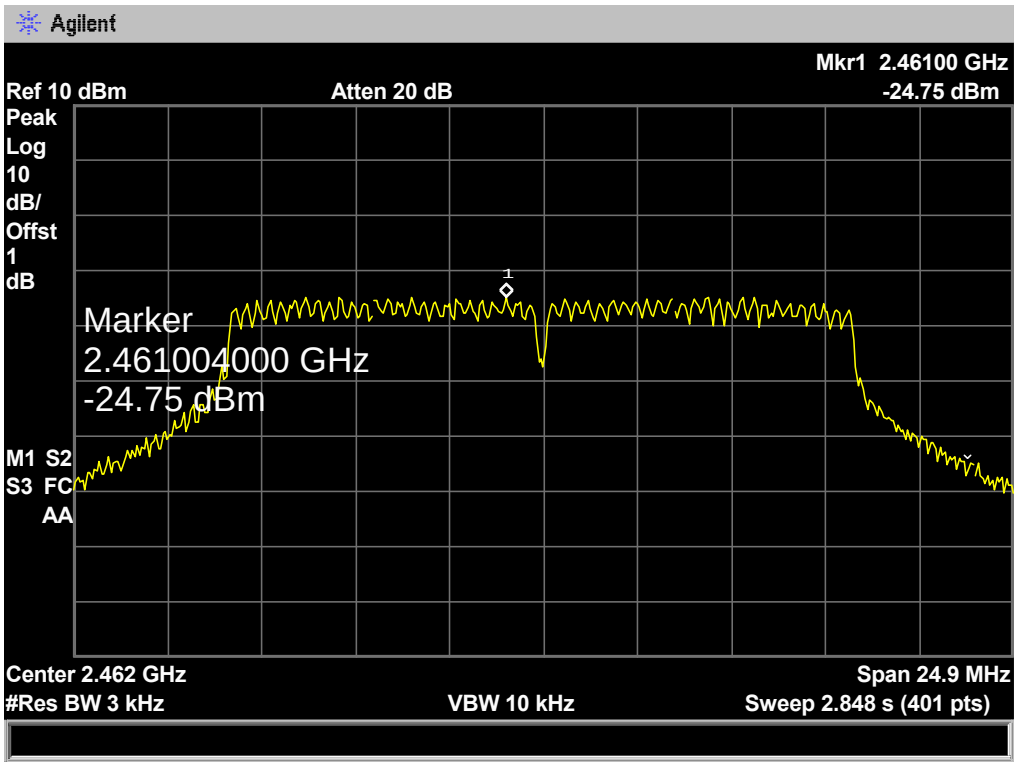
802.11G Mode

2437 MHz



802.11G Mode

2462 MHz

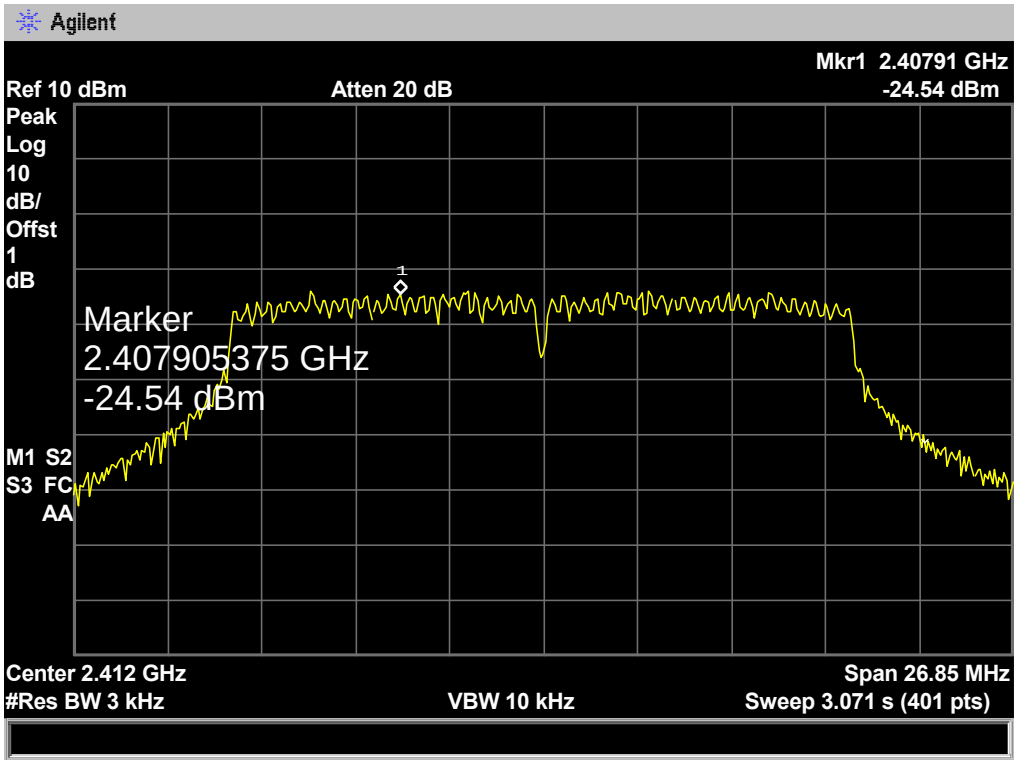


EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Temperature:	25 ℃
Test Voltage:	DC 5.0V		
Test Mode:	TX 802.11N(HT20) Mode		

Channel Frequency (MHz)	Power Density (3 kHz/dBm)	Limit (dBm)
2412	-24.54	8
2437	-23.52	
2462	-24.08	

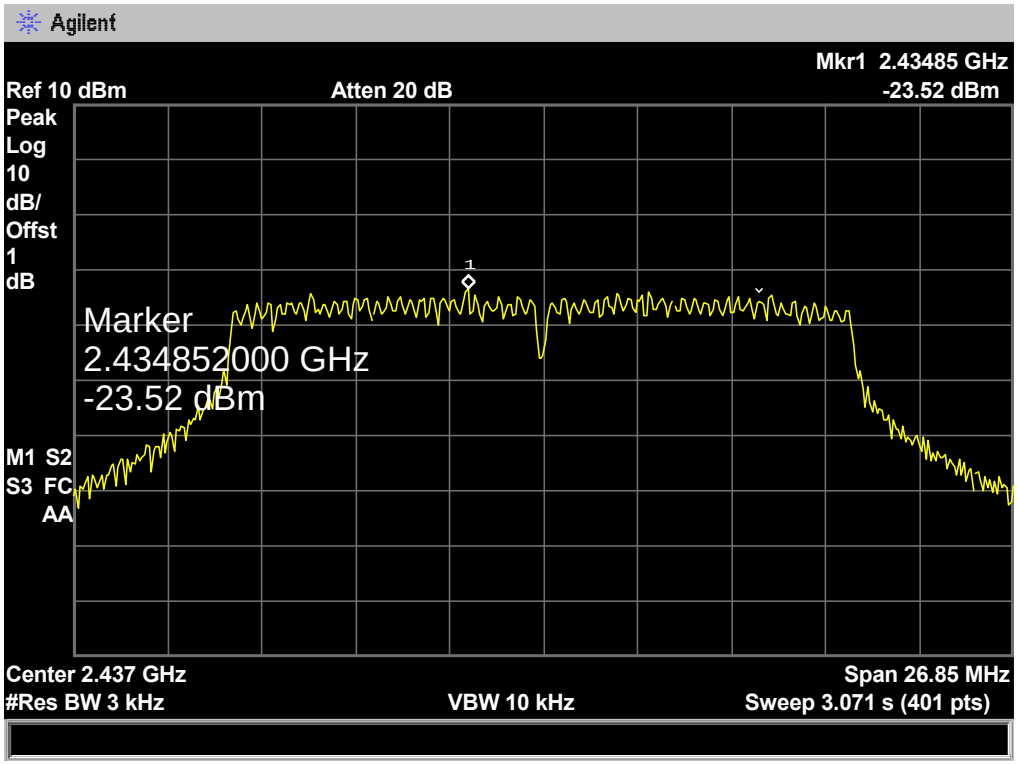
802.11N(HT20) Mode

2412 MHz



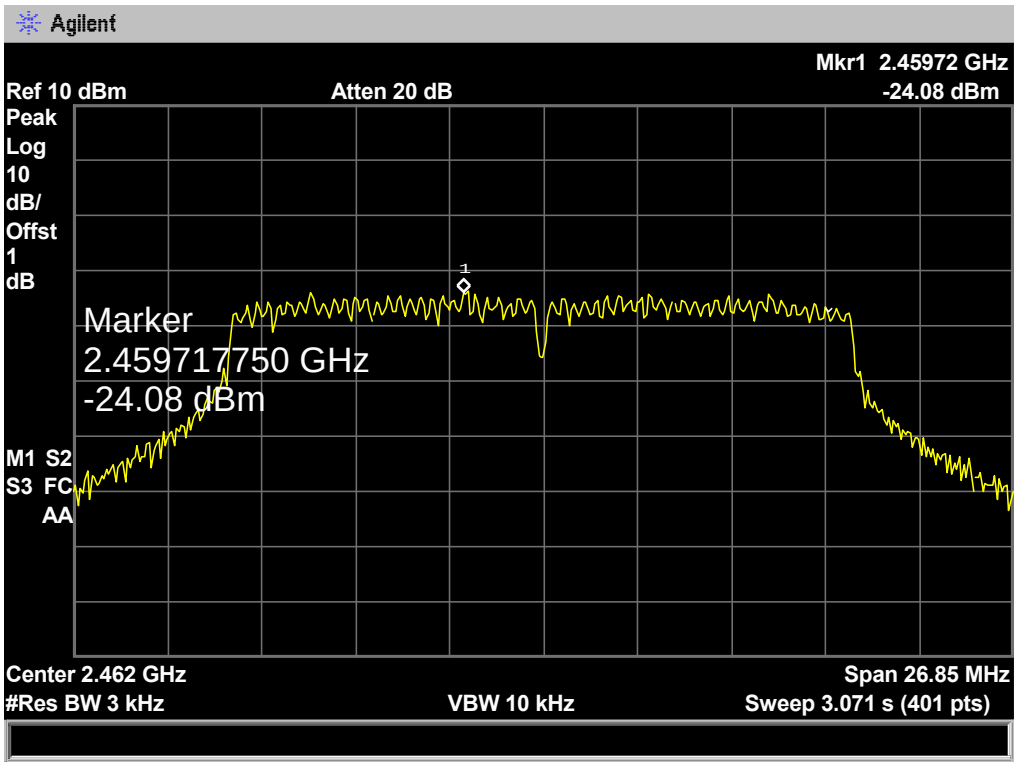
802.11N(HT20) Mode

2437 MHz



802.11N(HT20) Mode

2462 MHz

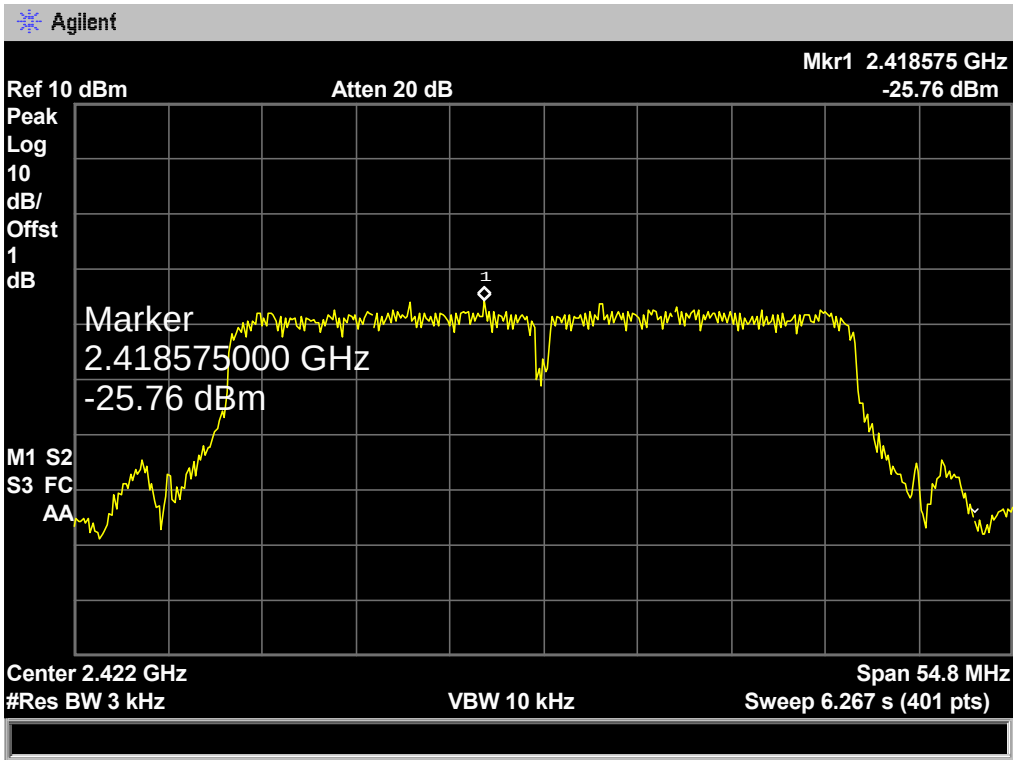


EUT:	802.11N Wireless Adapter (USB Wi-Fi dongle)	Model:	HX9100
Temperature:	25 ℃	Temperature:	25 ℃
Test Voltage:	DC 5.0V		
Test Mode:	TX 802.11N(HT40) Mode		

Channel Frequency (MHz)	Power Density (3 kHz/dBm)	Limit (dBm)
2422	-25.76	8
2437	-26.61	
2452	-23.95	

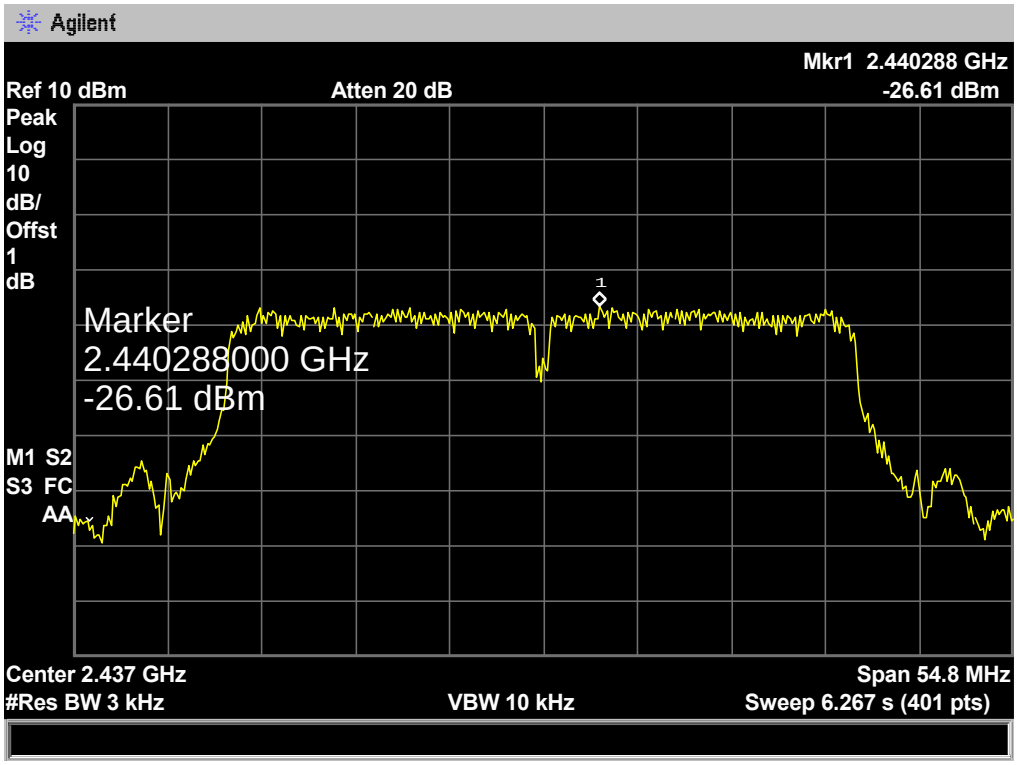
802.11N(HT40) Mode

2422 MHz



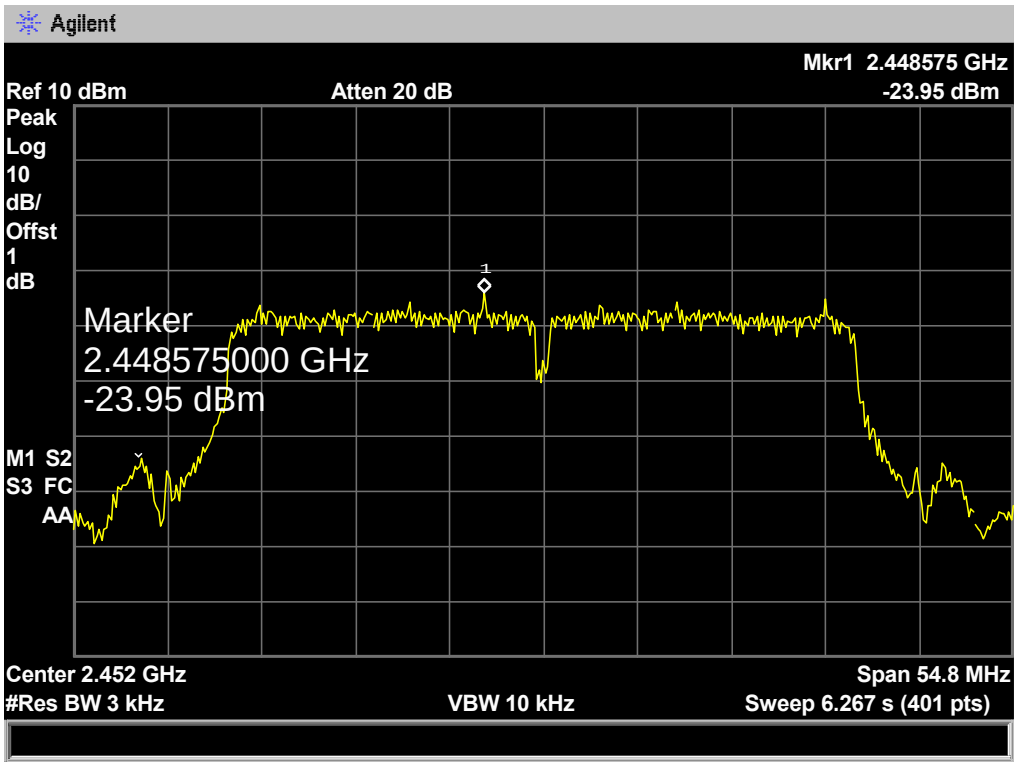
802.11N(HT40) Mode

2437 MHz



802.11N(HT40) Mode

2452 MHz



10. Antenna Requirement

10.1 Standard Requirement

10.1.1 Standard

FCC Part 15.203

10.1.2 Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

10.2 Antenna Connected Construction

The directional gains of the antenna used for transmitting is 2 dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

Result

The EUT antenna is a Dipole Antenna. It complies with the standard requirement.

Antenna Type
☐ Permanent attached antenna
☑ Unique connector antenna
☐ Professional installation antenna

------End of report------