FCC Radio Test Report

FCC ID: 2ADHQHR103-W

Original Grant

Report No.	:	TB-FCC142376
Applicant	:	Macro Plus
Equipment Under Test (EUT)		
EUT Name	:	IP Fusion Curve
Model No.	:	HR103-W
Brand Name	:	HDX
Receipt Date	:	2014-10-29
Test Date	:	2014-10-29 to 2014-11-11
Issue Date	:	2014-11-12
Standards	:	FCC Part 15, Subpart C (15.247:2014)
Test Method	:	ANSI C63.4:2003
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 : IVAN 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.

1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, China
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Contents

1. General Information about EUT

1.1 Client Information

Applicant	:	Macro Plus
Address	:	109 Dabutou, Songyuan Village, Guanlan Town, Baoan District, Shenzhen, China
Manufacturer	:	Macro Plus
Address	:	109 Dabutou, Songyuan Village, Guanlan Town, Baoan District, Shenzhen, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	IP Fusion Curve	
Models No.	:	HR103-W	
Model Difference	:	N/A	
Product Description	:	Operation Frequency: 802.11b/g/n(HT20): 2412MHz~2462MHz 802.11b/g/n(HT40): 2422MHz~2452MHz	
		Number of Channel:	802.11b/g/n(HT20):11 channels **see note(3)** 802.11b/g/n(HT40): 7 channels **see note(3)**
		RF Output Power:	802.11b: 15.41 dBm 802.11g: 15.20 dBm 802.11n (HT20): 15.44 dBm 802.11n (HT40): 15.54 dBm
		Antenna Gain:	2 dBi (FPC Antenna)
		Modulation Type:	802.11b: DSSS (CCK, QPSK, BPSK) 802.11g: OFDM 802.11n: OFDM
		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 power supplied by AC/DC Adapter	
Power Rating	:	AC/DC Adapter: Input: AC 100~240V 50/60Hz 0.15A Output: DC 5V 1A	
Connecting I/O Port(S)	:	Please refer to the User's Manual	
Note: More detailed features description, please refer to the manufacturer's specifications or 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 v03r02.

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

(3) Antenna information provided by the applicant.

(4) Channel List:

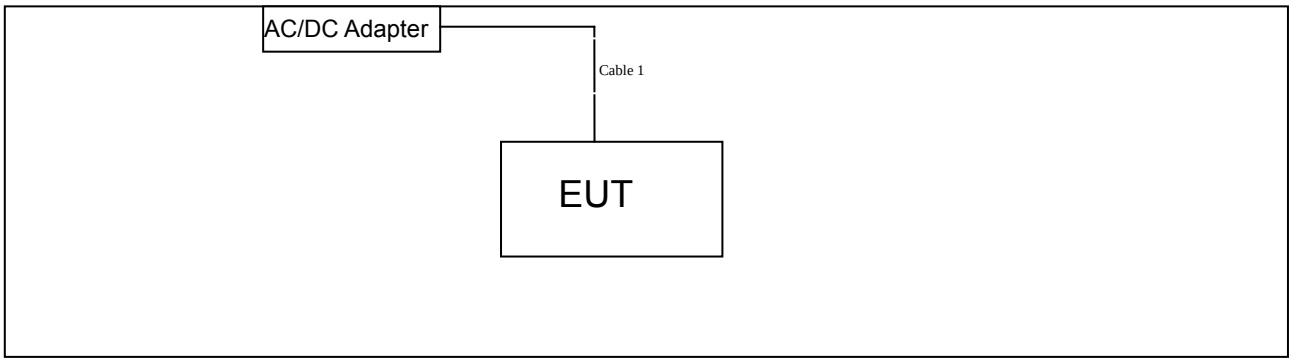
CH 01~CH 11 for 802.11b/g/n(HT20)

CH 03~CH 09 for 802.11b/g/n(HT40)

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		

1.3 Block Diagram Showing the Configuration of System Tested

TX Mode



1.4 Description of Support Units

Equipment Information				
Name	**Model**	**S/N**	**Manufacturer**	**Used "√"**
/	/	/	/	/
Cable Information				
Number	**Shielded Type**	**Ferrite Core**	**Length**	**Note**
Cable 1	NO	NO	1.0M	Accessories

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	AC Charging with TX B Mode

For Radiated Test	
Final Test Mode	**Description**
Mode 3	TX Mode B Mode Channel 01/06/11
Mode 4	TX Mode G Mode Channel 01/06/11
Mode 5	TX Mode N(HT20) Mode Channel 01/06/11
Mode 6	TX Mode N(HT40) Mode Channel 01/06/11

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 C63.4 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	WiFi Test USB V1.0.4.0		
Channel	**CH 01**	**CH 06**	**CH 11**
IEEE 802.11b DSSS	DEF	DEF	DEF
IEEE 802.11g OFDM	DEF	DEF	DEF
IEEE 802.11n (HT20)	DEF	DEF	DEF
Channel	**CH 03**	**CH 06**	**CH 09**
IEEE 802.11n (HT40)	DEF	DEF	DEF

1.7 Test Facility

The testing was 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-210: 2010				
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-210 A.8.2(a)	6dB Bandwidth	PASS	N/A
15.247(b)	RSS-210 A.8.4(4)	Peak Output Power	PASS	N/A
15.247(e)	RSS-210 A.8.2(b)	Power Spectral Density	PASS	N/A
15.247(d)	RSS-210 Annex 8 (A8.5)	Transmitter Radiated Spurious Emission	PASS	N/A
15.247(d)	RSS-210 Annex 8 (A8.5)	Antenna Conducted Spurious Emission	PASS	N/A
Note: "/" for no requirement for this test item. N/A is an abbreviation for Not Applicable.				

3. Conducted Emission Test

3.1 Test Standard and Limit

3.1.1Test Standard

FCC Part 15.207

3.1.2 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

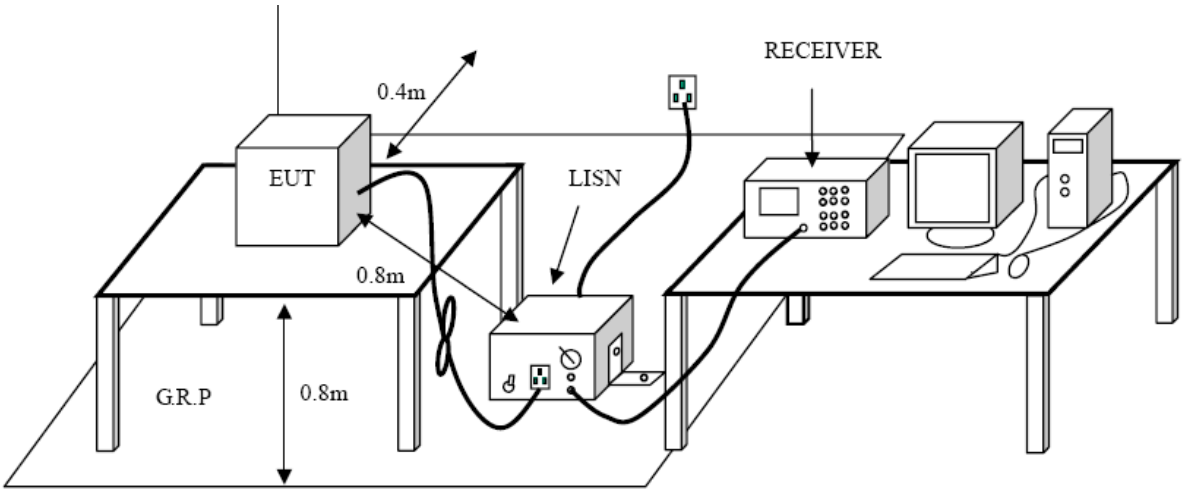
Notes:

(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.

3.2 Test Setup



3.3 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.

3.4 Test Equipment Used

Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	ROHDE& SCHWARZ	ESCI	100321	Aug. 08, 2014	Aug. 07, 2015
50ΩCoaxial Switch	Anritsu	MP59B	X10321	Aug. 08, 2014	Aug. 07, 2015
L.I.S.N	Rohde & Schwarz	ENV216	101131	Aug. 08, 2014	Aug. 07, 2015
L.I.S.N	SCHWARZBECK	NNBL 8226-2	8226-2/164	Aug. 08, 2014	Aug. 07, 2015

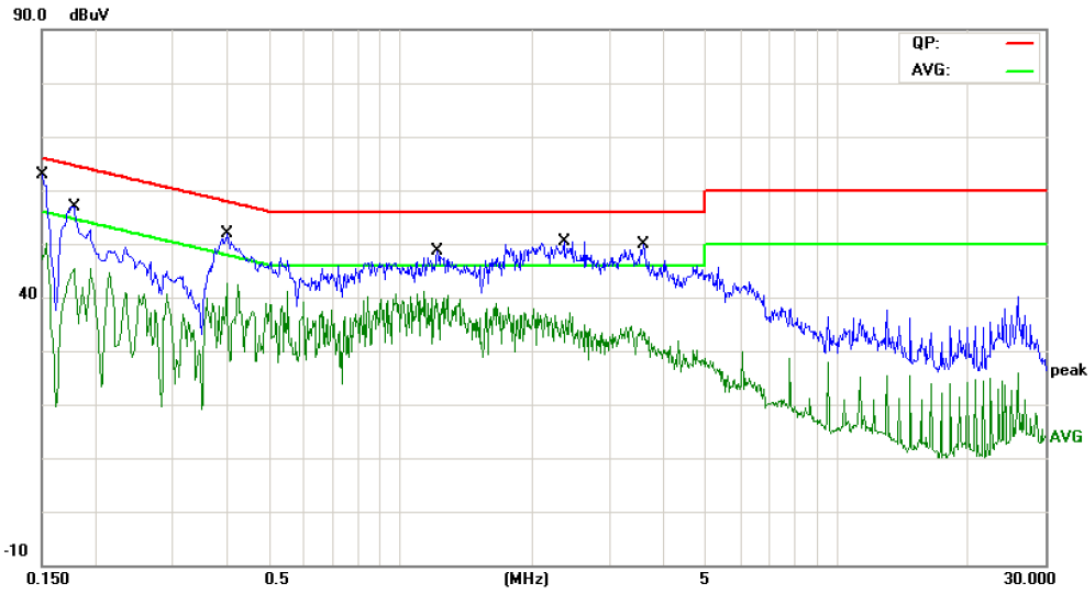
3.5 EUT Operating Mode

Please refer to the description of test mode.

3.6 Test Data

Please see the next page.

EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Terminal:	Line		
Test Mode:	AC Charging with TX B Mode		
Remark:	Only worst case is reported		

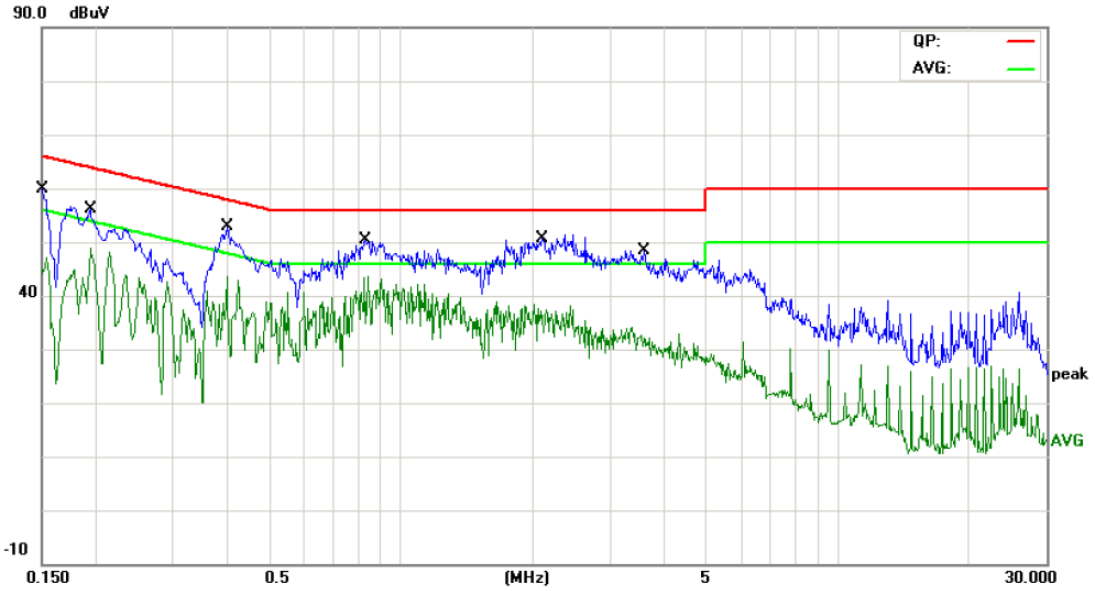


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.1507	52.63	10.12	62.75	65.96	-3.21	QP
2		0.1507	39.96	10.12	50.08	55.96	-5.88	AVG
3		0.1785	46.71	10.12	56.83	64.55	-7.72	QP
4		0.1785	33.55	10.12	43.67	54.55	-10.88	AVG
5		0.3980	41.75	10.05	51.80	57.89	-6.09	QP
6		0.3980	27.48	10.05	37.53	47.89	-10.36	AVG
7		1.2139	38.47	10.14	48.61	56.00	-7.39	QP
8		1.2139	28.56	10.14	38.70	46.00	-7.30	AVG
9		2.3620	40.29	10.06	50.35	56.00	-5.65	QP
10		2.3620	21.56	10.06	31.62	46.00	-14.38	AVG
11		3.5900	39.91	10.06	49.97	56.00	-6.03	QP
12		3.5900	23.65	10.06	33.71	46.00	-12.29	AVG

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

Emission Level= Read Level+ Correct Factor

EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Terminal:	Neutral		
Test Mode:	AC Charging with TX B Mode		
Remark:	Only worst case is reported		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1507	49.63	10.12	59.75	65.96	-6.21	QP
2		0.1507	33.98	10.12	44.10	55.96	-11.86	AVG
3		0.1940	46.01	10.12	56.13	63.86	-7.73	QP
4		0.1940	37.91	10.12	48.03	53.86	-5.83	AVG
5	*	0.3980	42.75	10.05	52.80	57.89	-5.09	QP
6		0.3980	28.48	10.05	38.53	47.89	-9.36	AVG
7		0.8300	40.41	10.08	50.49	56.00	-5.51	QP
8		0.8300	24.83	10.08	34.91	46.00	-11.09	AVG
9		2.1020	40.52	10.06	50.58	56.00	-5.42	QP
10		2.1020	26.14	10.06	36.20	46.00	-9.80	AVG
11		3.5900	38.41	10.06	48.47	56.00	-7.53	QP
12		3.5900	22.15	10.06	32.21	46.00	-13.79	AVG

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

Emission Level= Read Level+ Correct Factor

4. Radiated Emission Test

4.1 Test Standard and Limit

4.1.1 Test Standard

FCC Part 15.209

4.1.2 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)

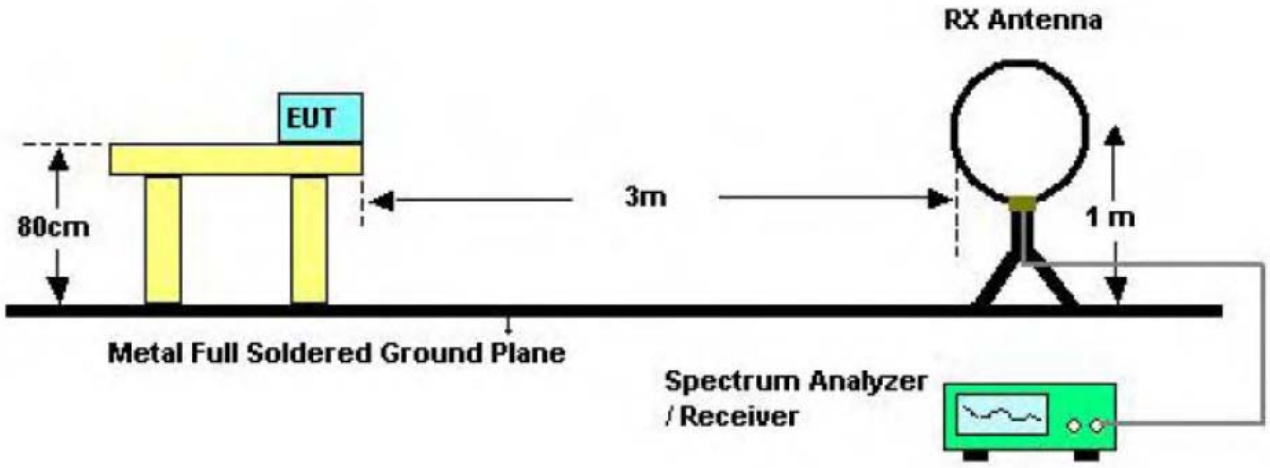
Frequency (MHz)	Class A (dBuV/m)(at 3 M)		Class B (dBuV/m)(at 3 M)	
	Peak	Average	Peak	Average
Above 1000	80	60	74	54

Note:

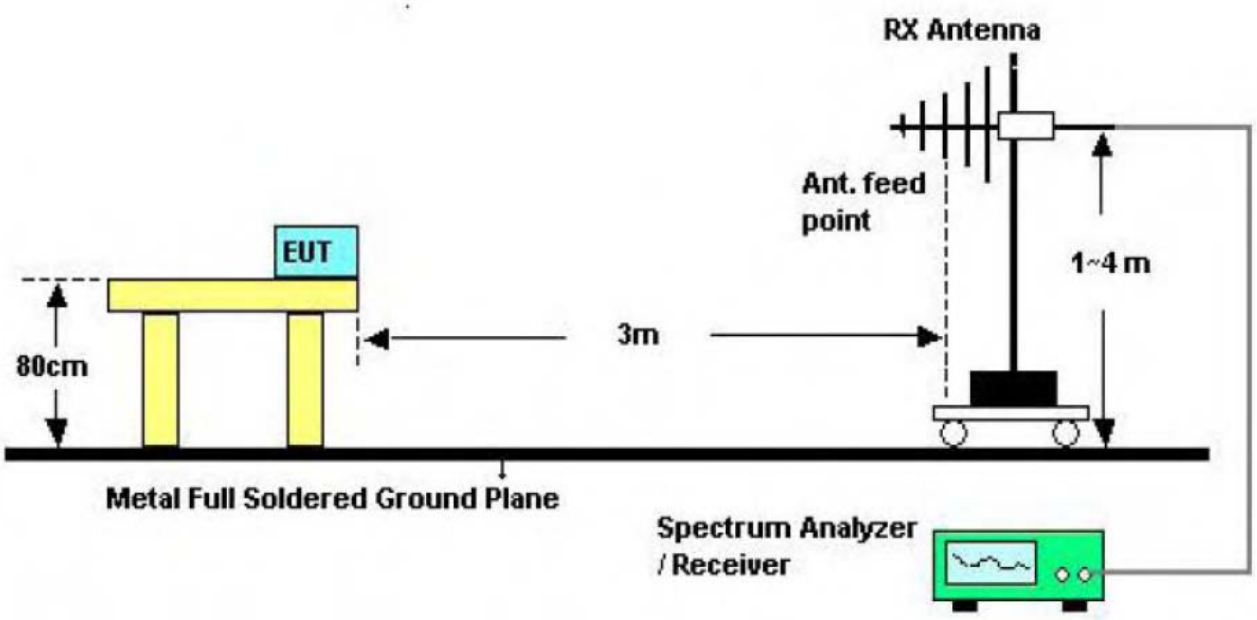
(1) The tighter limit applies at the band edges.

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

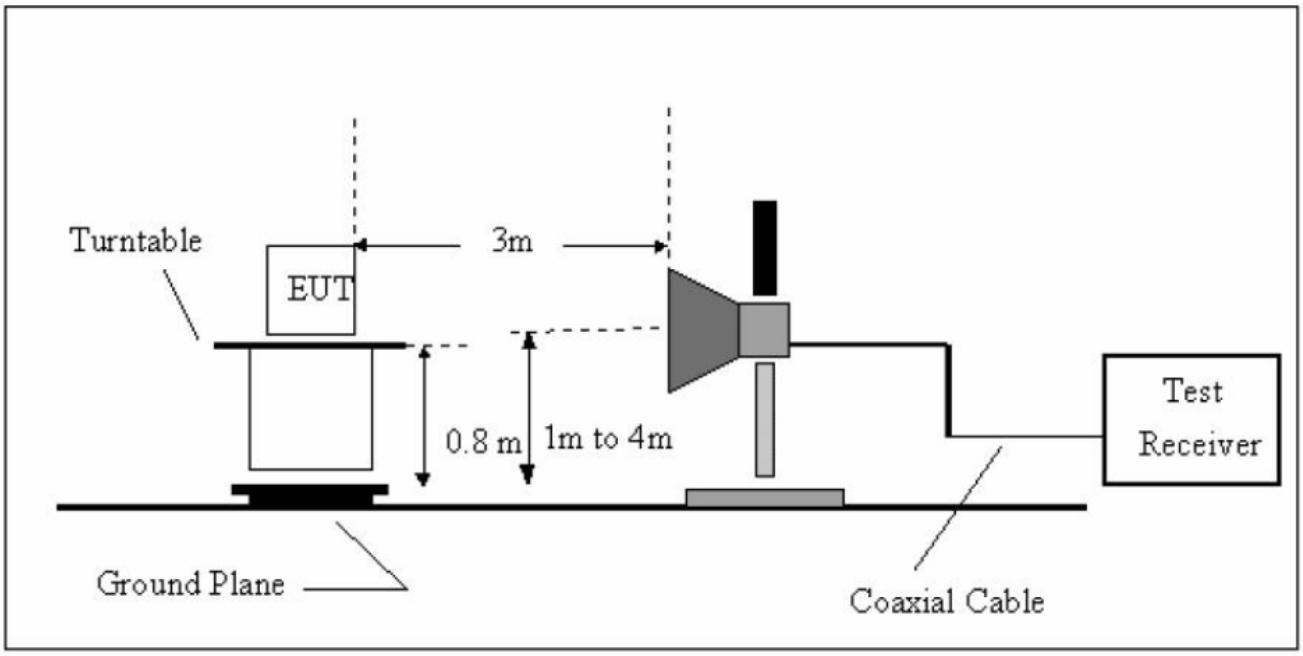
4.2 Test Setup



Below 30MHz Test Setup



Below 1000MHz Test Setup



Above 1GHz Test Setup

4.3 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 the ground, 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.

4.4 EUT Operating Condition

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

4.5 Test Equipment

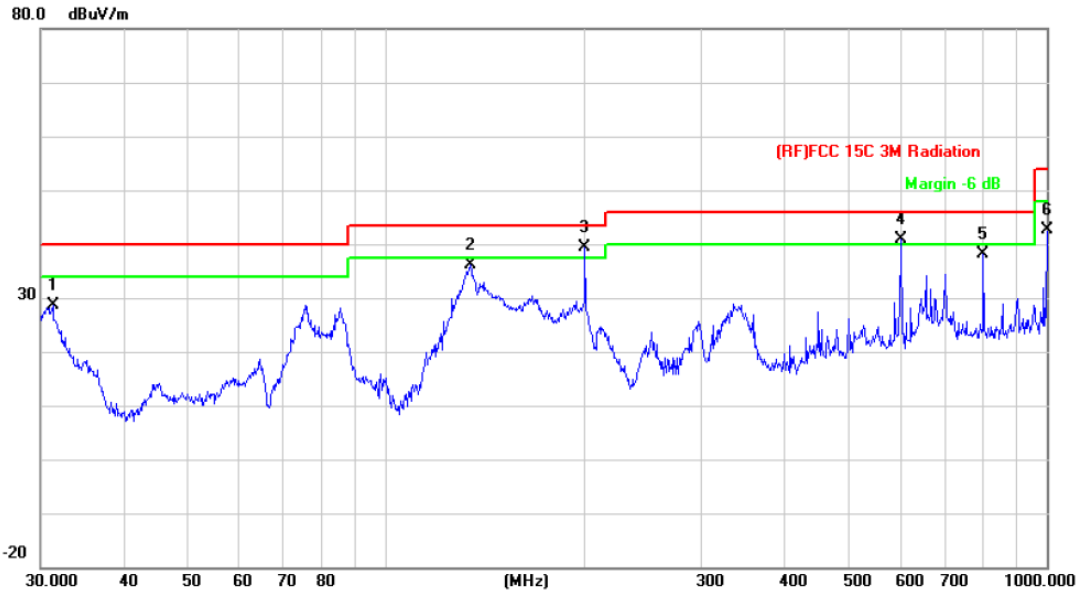
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Mar. 20, 2014	Mar. 19, 2015
Spectrum Analyzer	Rohde & Schwarz	FSP30	DE25181	Aug. 08, 2014	Aug. 07, 2015
EMI Test Receiver	Rohde & Schwarz	ESCI	101165	Aug. 08, 2014	Aug. 07, 2015
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar. 07, 2014	Mar.06, 2015
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Mar. 07, 2014	Mar.06, 2015
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar. 07, 2014	Mar.06, 2015
Horn Antenna	ETS-LINDGREN	3117	00143209	Mar. 07, 2014	Mar.06, 2015
Pre-amplifier	HP	11909A	185903	Mar. 07, 2014	Mar.06, 2015
Pre-amplifier	HP	8447B	3008A00849	Mar. 07, 2014	Mar.06, 2015
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar. 07, 2014	Mar.06, 2015
Signal Generator	Rohde & Schwarz	SML03	IKW682-054	Feb. 11, 2014	Feb.10, 2015
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A

4.6 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:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz		
Remark:	Only worst case is reported		

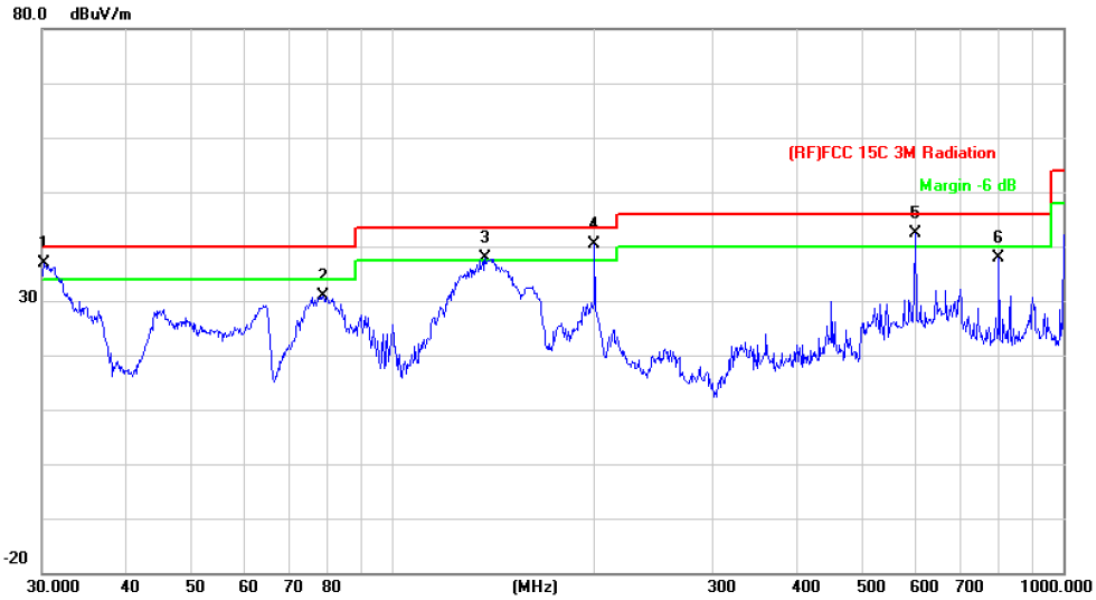


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		31.2893	43.39	-14.76	28.63	40.00	-11.37	peak
2		134.0882	58.10	-22.09	36.01	43.50	-7.49	peak
3	*	199.9856	59.70	-20.39	39.31	43.50	-4.19	peak
4	!	601.4265	50.32	-9.41	40.91	46.00	-5.09	peak
5		801.7862	44.55	-6.49	38.06	46.00	-7.94	peak
6		1000.0000	46.91	-4.33	42.58	54.00	-11.42	peak

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

Emission Level= Read Level+ Correct Factor

EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz		
Remark:	Only worst case is reported		

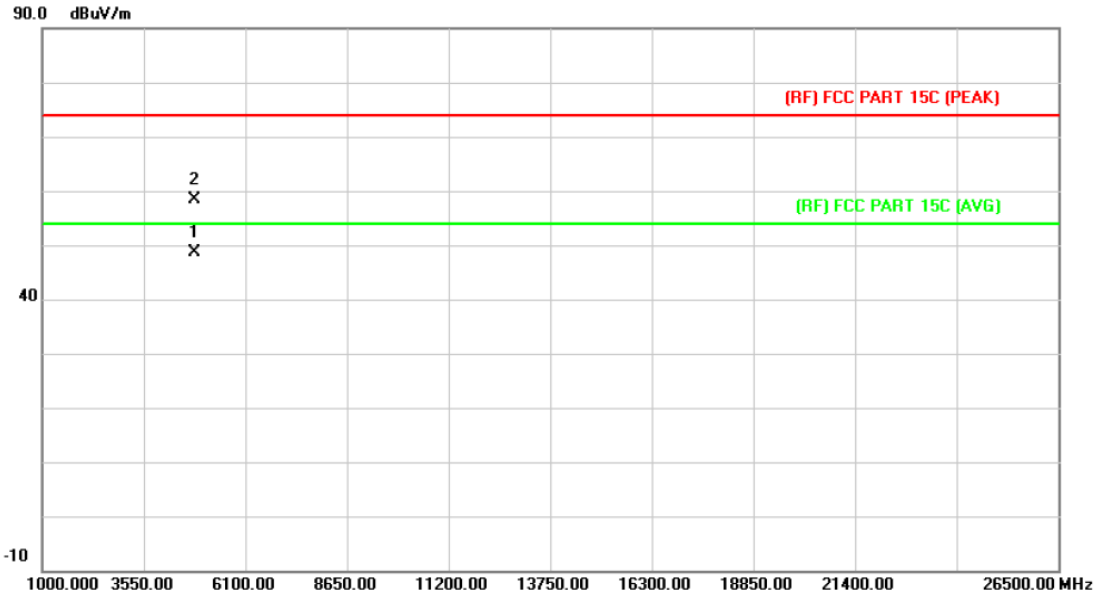


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	!	30.2110	50.90	-14.09	36.81	40.00	-3.19	peak
2		78.6888	54.09	-23.32	30.77	40.00	-9.23	peak
3	!	137.4201	59.90	-22.03	37.87	43.50	-5.63	peak
4	*	199.9856	60.77	-20.39	40.38	43.50	-3.12	peak
5	!	601.4265	51.83	-9.41	42.42	46.00	-3.58	peak
6		801.7862	44.27	-6.49	37.78	46.00	-8.22	peak

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

Emission Level= Read Level+ Correct Factor

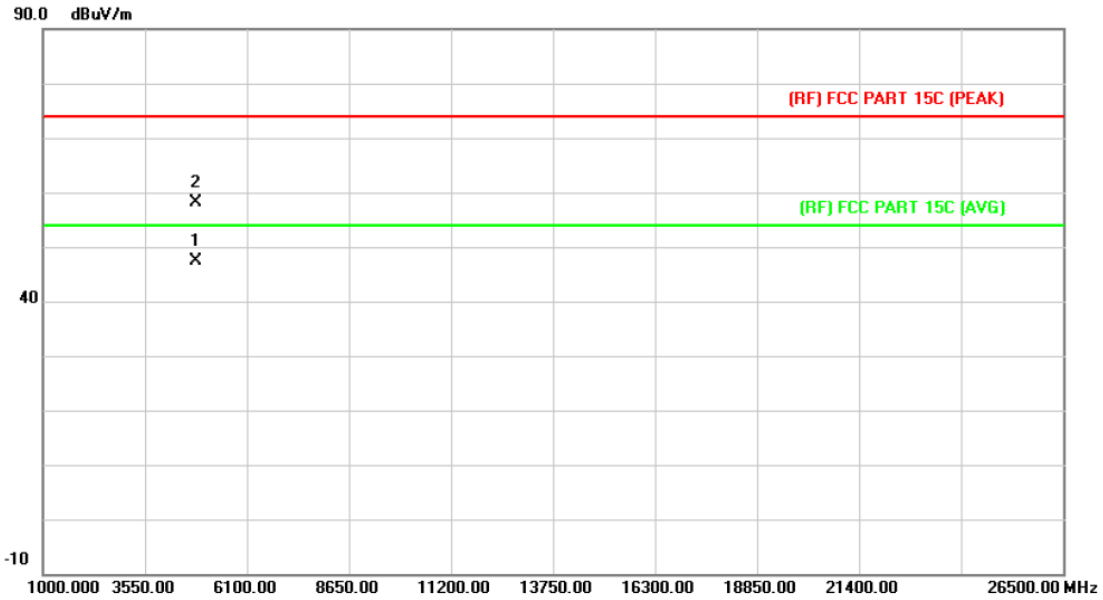
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4824.009	35.11	13.56	48.67	54.00	-5.33	AVG
2		4824.189	44.75	13.56	58.31	74.00	-15.69	peak

Emission Level= Read Level+ Correct Factor

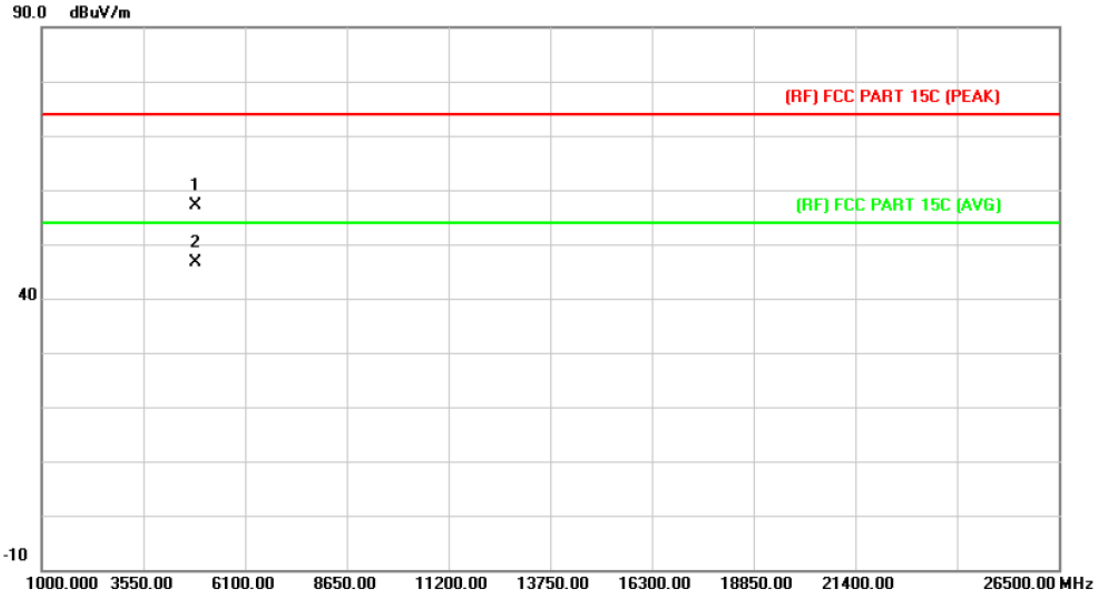
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4824.012	33.78	13.56	47.34	54.00	-6.66	AVG
2		4824.054	44.58	13.56	58.14	74.00	-15.86	peak

Emission Level= Read Level+ Correct Factor

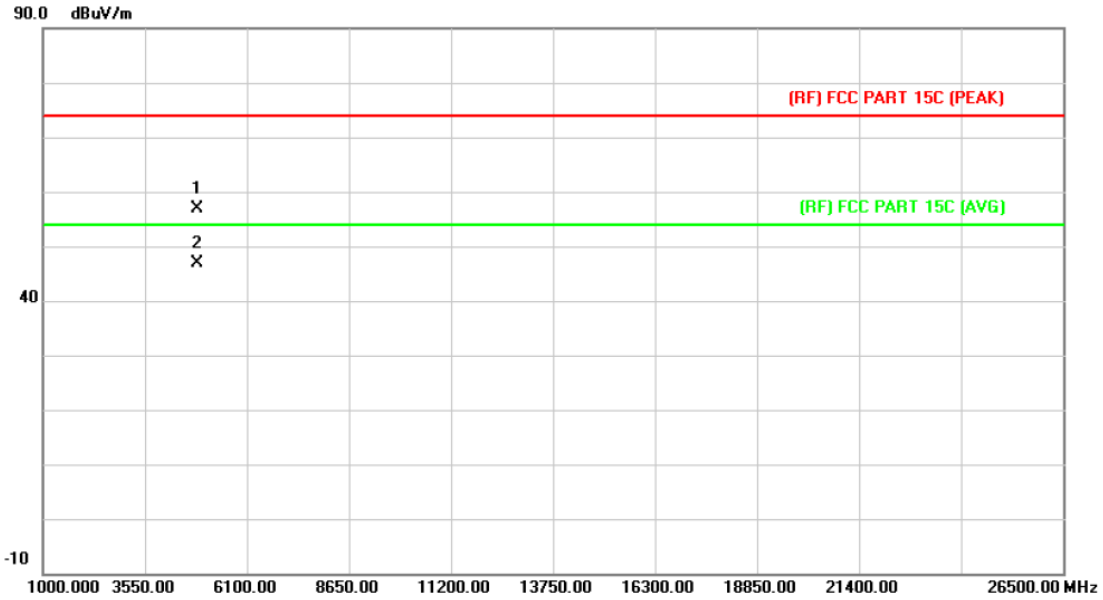
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4874.003	43.38	13.86	57.24	74.00	-16.76	peak
2	*	4874.003	32.65	13.86	46.51	54.00	-7.49	AVG

Emission Level= Read Level+ Correct Factor

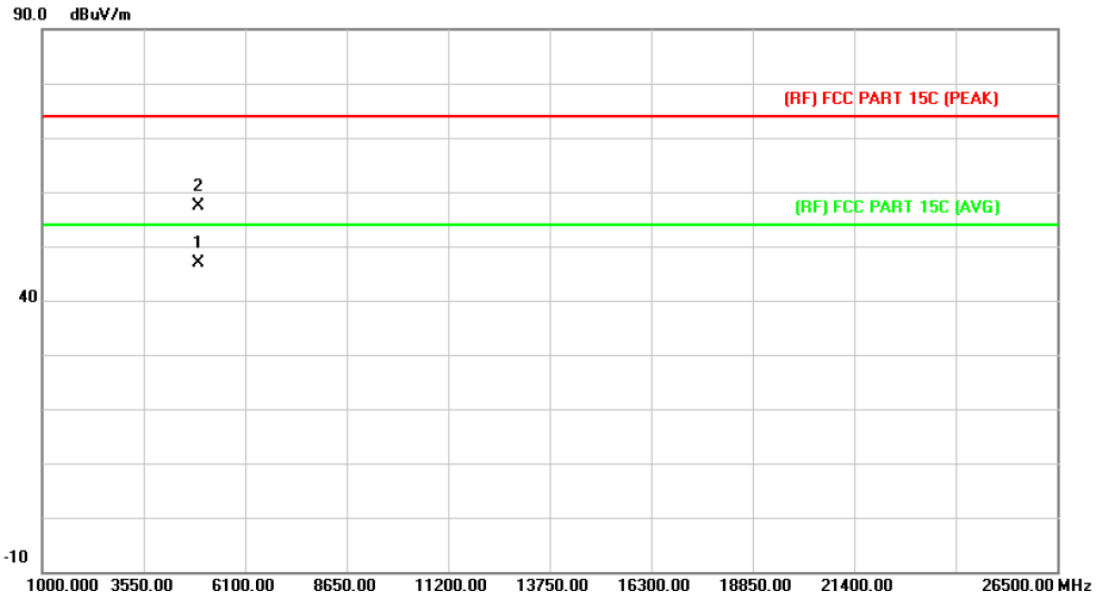
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4873.775	43.03	13.86	56.89	74.00	-17.11	peak
2	*	4873.991	33.01	13.86	46.87	54.00	-7.13	AVG

Emission Level= Read Level+ Correct Factor

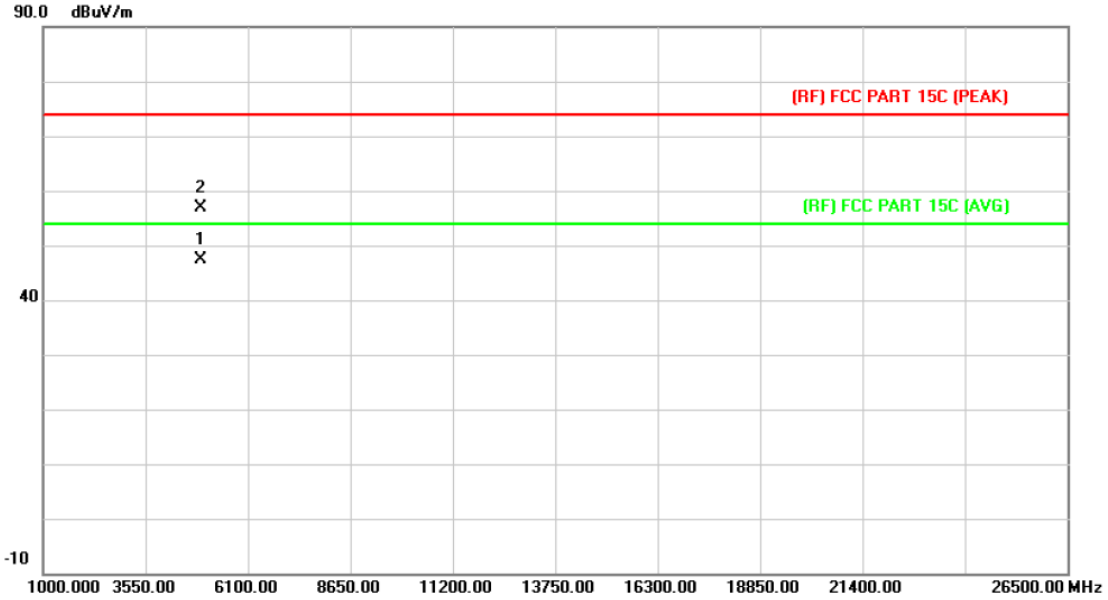
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4923.952	32.68	14.15	46.83	54.00	-7.17	AVG
2		4924.000	43.19	14.15	57.34	74.00	-16.66	peak

Emission Level= Read Level+ Correct Factor

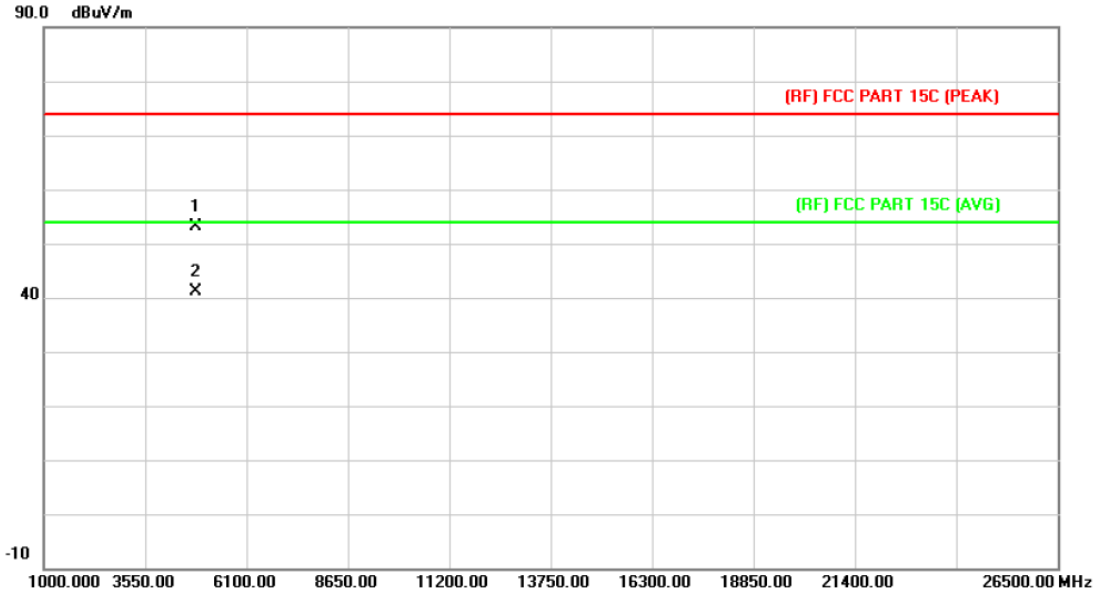
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4923.970	33.22	14.15	47.37	54.00	-6.63	AVG
2		4924.081	42.68	14.15	56.83	74.00	-17.17	peak

Emission Level= Read Level+ Correct Factor

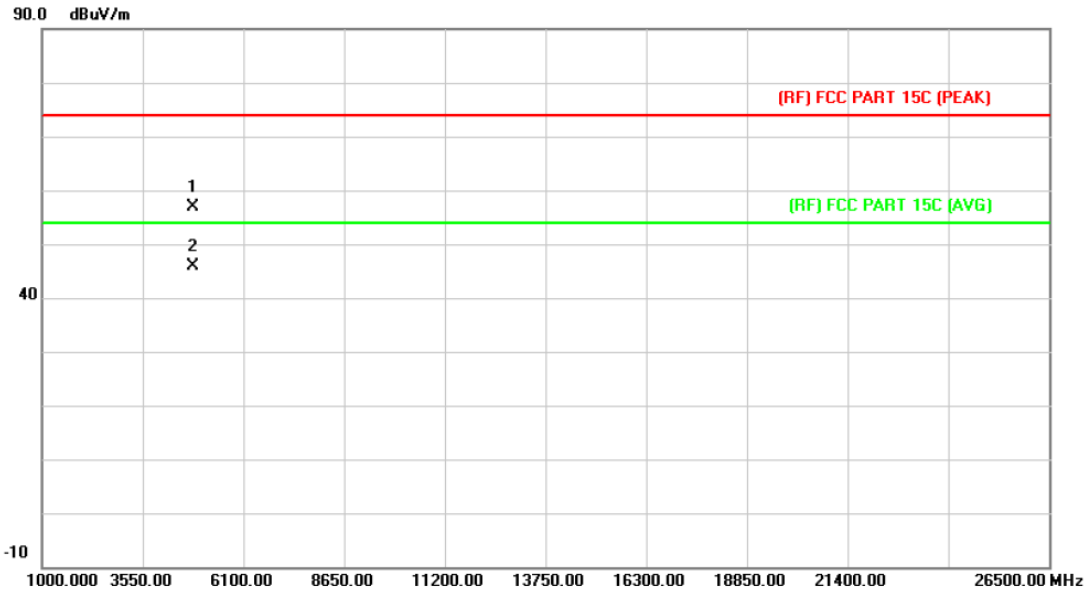
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4823.271	39.52	13.56	53.08	74.00	-20.92	peak
2	*	4823.612	27.46	13.56	41.02	54.00	-12.98	AVG

Emission Level= Read Level+ Correct Factor

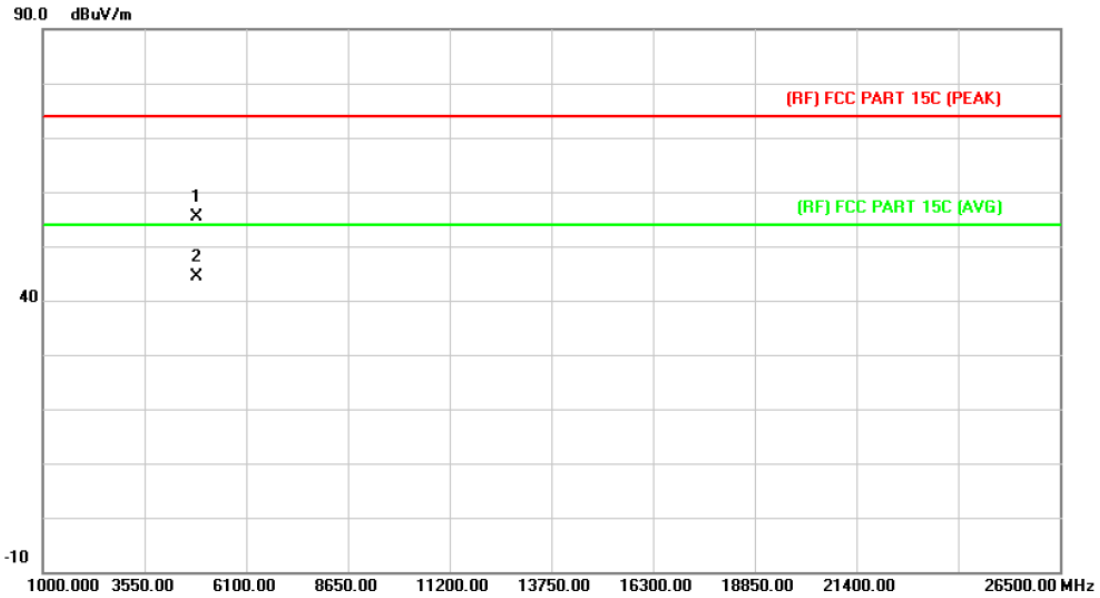
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4824.600	43.33	13.56	56.89	74.00	-17.11	peak
2	*	4825.455	32.24	13.57	45.81	54.00	-8.19	AVG

Emission Level= Read Level+ Correct Factor

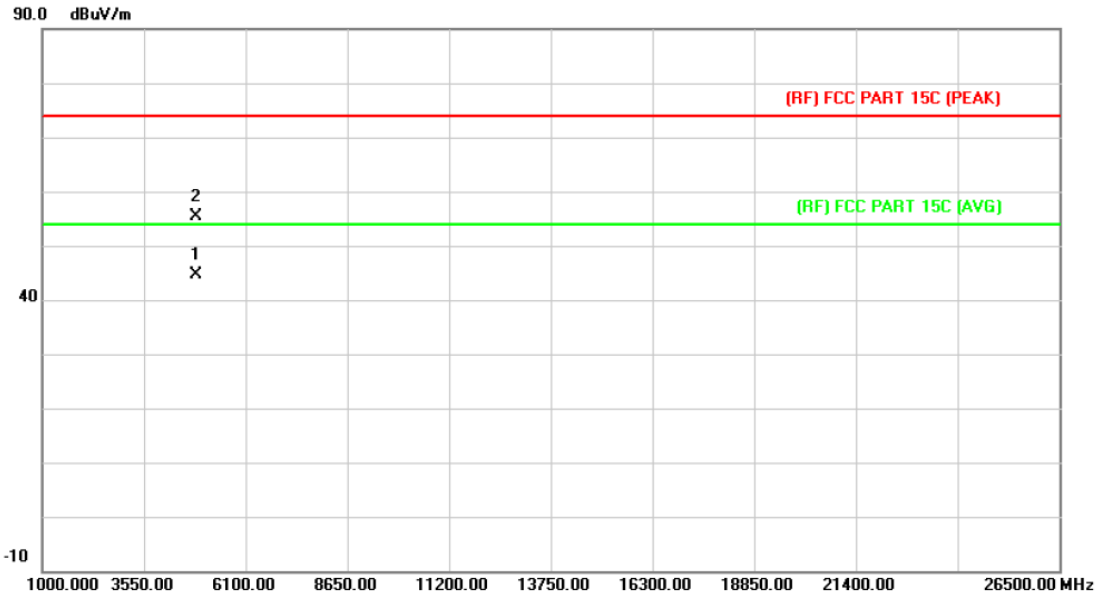
EUT:	IP Fusion Curve	**Model Name :**	HR103-W
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4874.230	41.48	13.86	55.34	74.00	-18.66	peak
2	*	4874.420	30.43	13.86	44.29	54.00	-9.71	AVG

Emission Level= Read Level+ Correct Factor

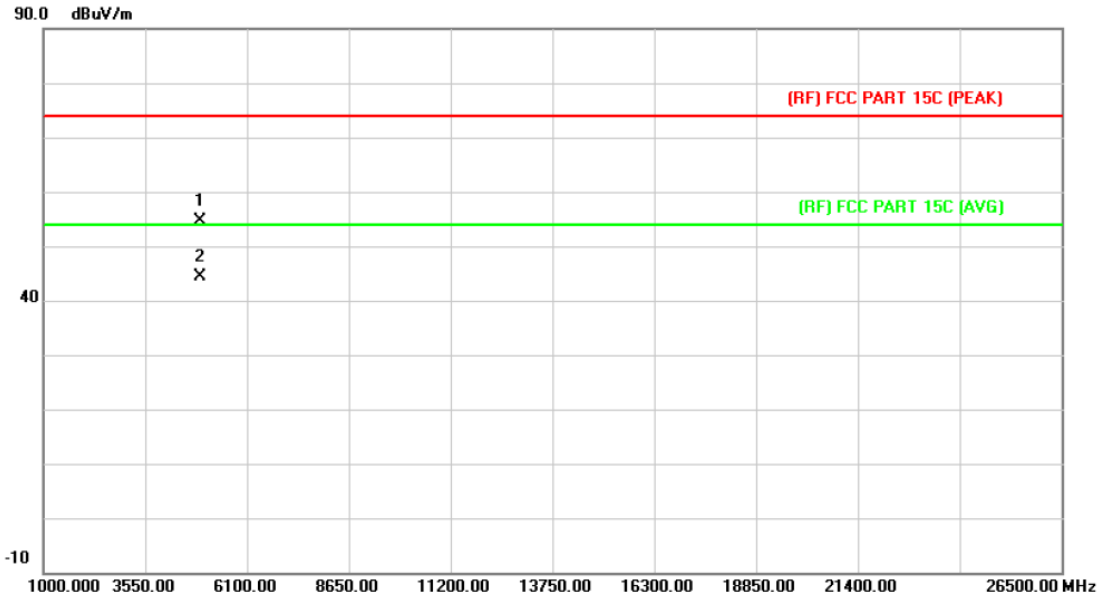
EUT:	IP Fusion Curve	**Model Name :**	HR103-W
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4873.340	30.70	13.86	44.56	54.00	-9.44	AVG
2		4873.635	41.51	13.86	55.37	74.00	-18.63	peak

Emission Level= Read Level+ Correct Factor

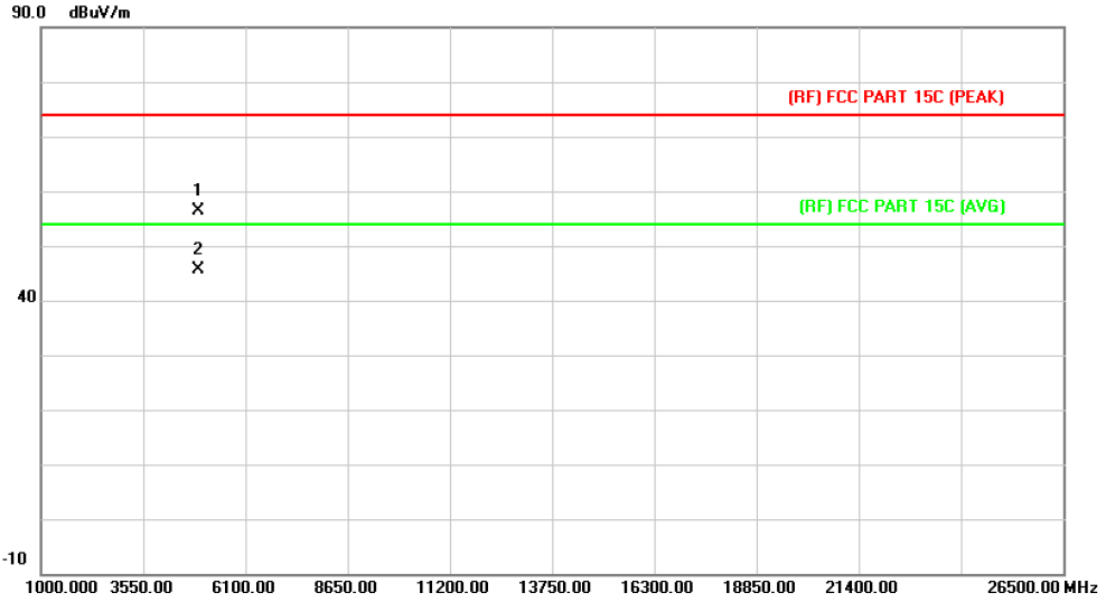
EUT:	IP Fusion Curve	**Model Name :**	HR103-W
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4924.320	40.52	14.15	54.67	74.00	-19.33	peak
2	*	4924.340	30.17	14.15	44.32	54.00	-9.68	AVG

Emission Level= Read Level+ Correct Factor

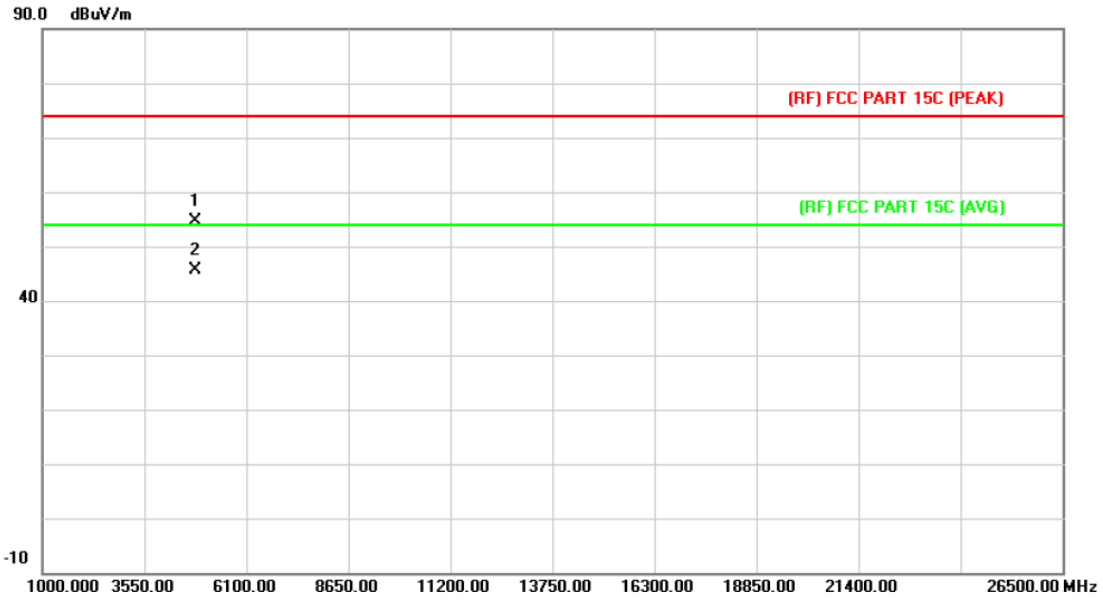
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4924.145	42.23	14.15	56.38	74.00	-17.62	peak
2	*	4924.145	31.42	14.15	45.57	54.00	-8.43	AVG

Emission Level= Read Level+ Correct Factor

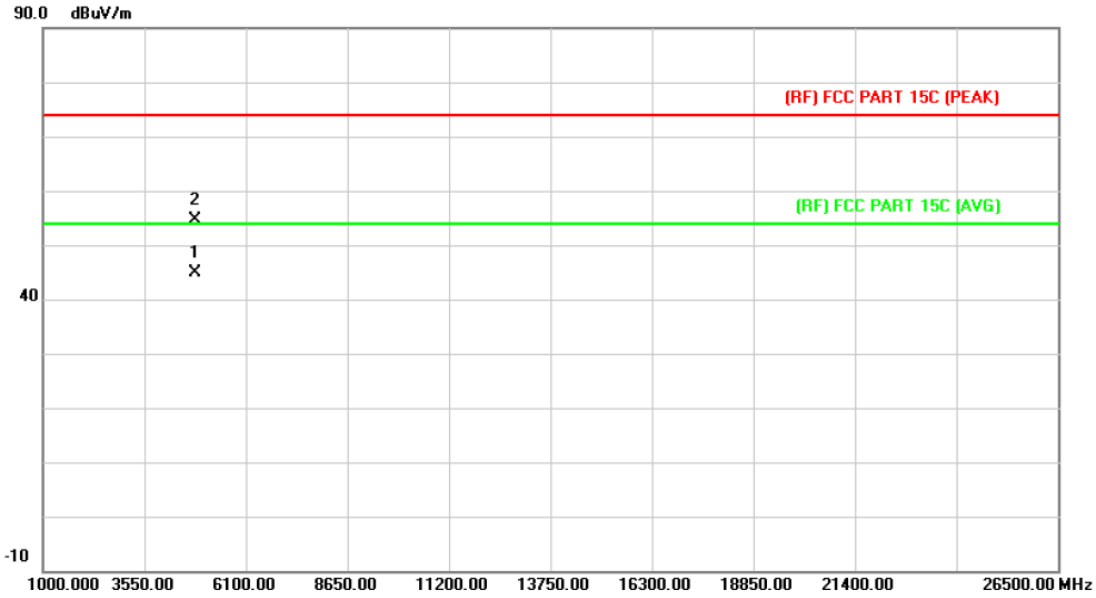
EUT:	IP Fusion Curve	**Model Name :**	HR103-W
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4824.085	41.07	13.56	54.63	74.00	-19.37	peak
2	*	4824.130	32.07	13.56	45.63	54.00	-8.37	AVG

Emission Level= Read Level+ Correct Factor

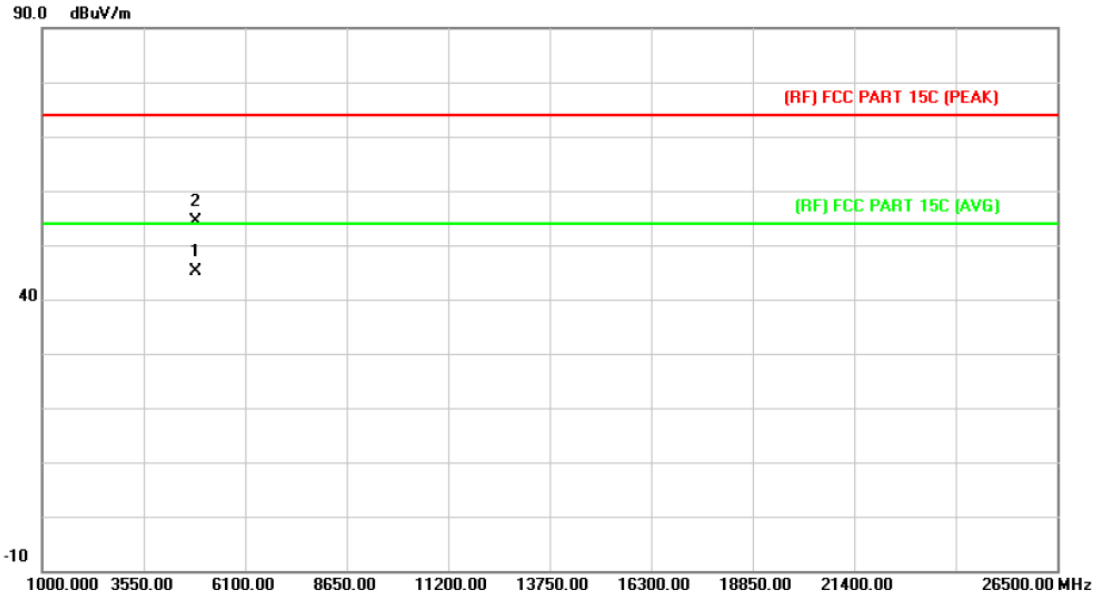
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4824.660	31.42	13.56	44.98	54.00	-9.02	AVG
2		4824.670	41.17	13.56	54.73	74.00	-19.27	peak

Emission Level= Read Level+ Correct Factor

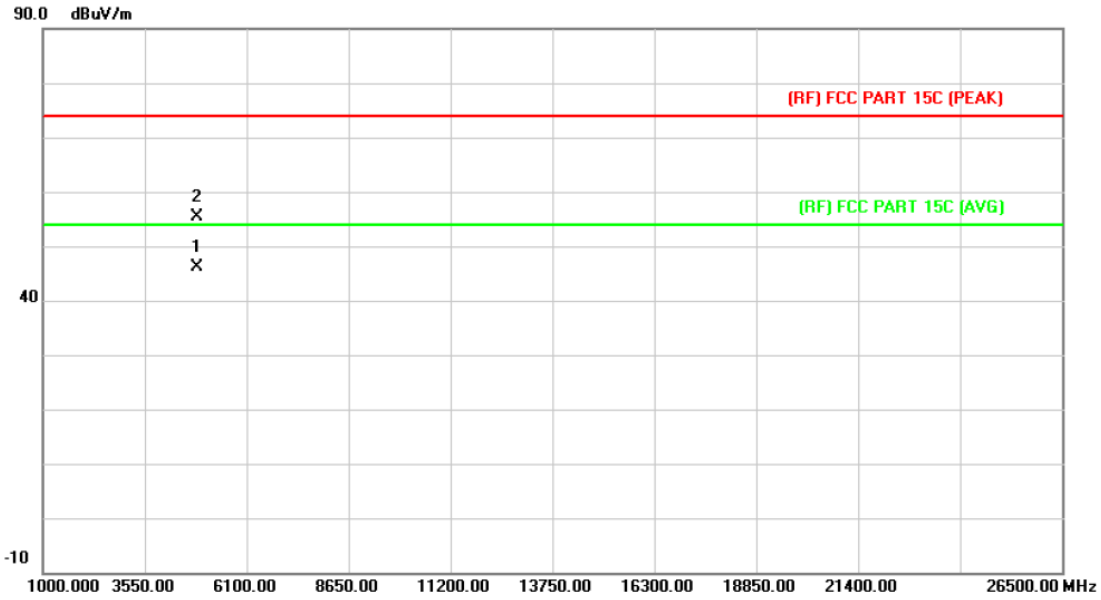
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4875.055	31.25	13.87	45.12	54.00	-8.88	AVG
2		4875.075	40.45	13.87	54.32	74.00	-19.68	peak

Emission Level= Read Level+ Correct Factor

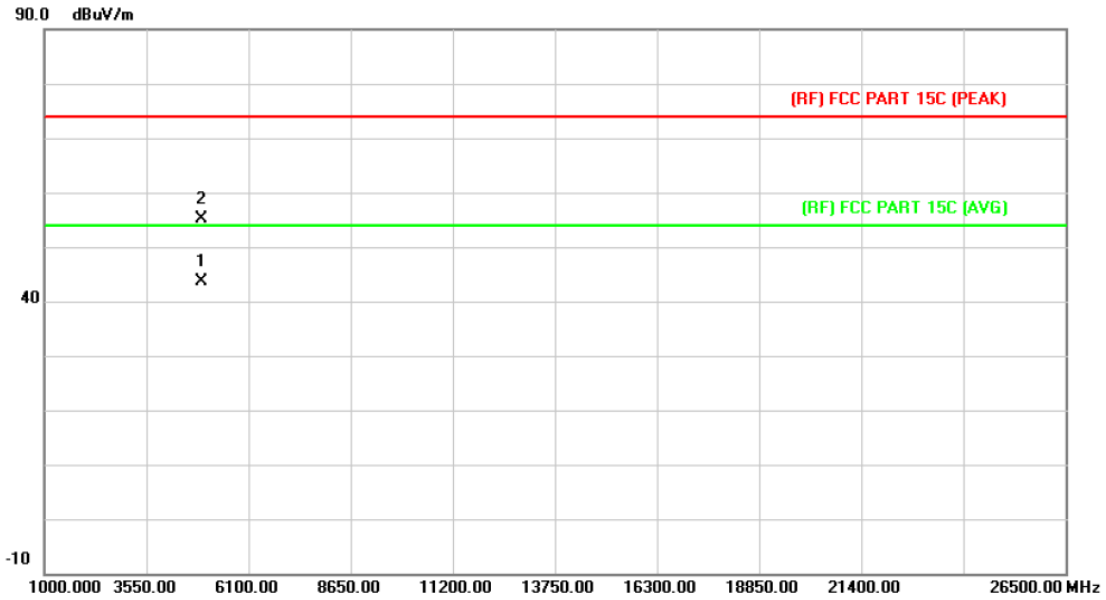
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4874.280	32.16	13.86	46.02	54.00	-7.98	AVG
2		4874.290	41.58	13.86	55.44	74.00	-18.56	peak

Emission Level= Read Level+ Correct Factor

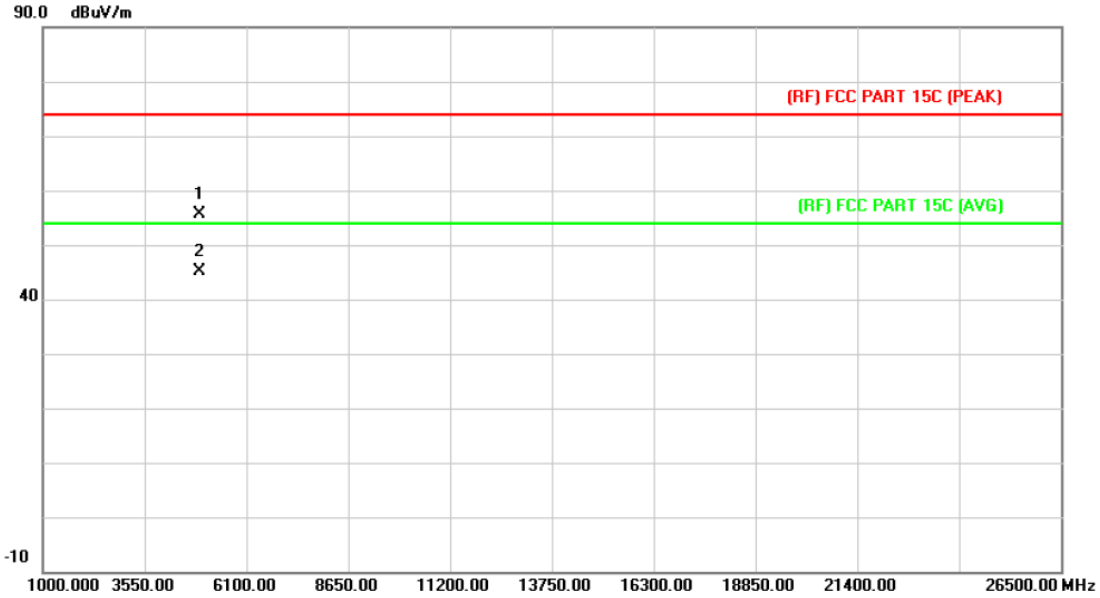
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4924.285	29.38	14.15	43.53	54.00	-10.47	AVG
2		4924.295	41.03	14.15	55.18	74.00	-18.82	peak

Emission Level= Read Level+ Correct Factor

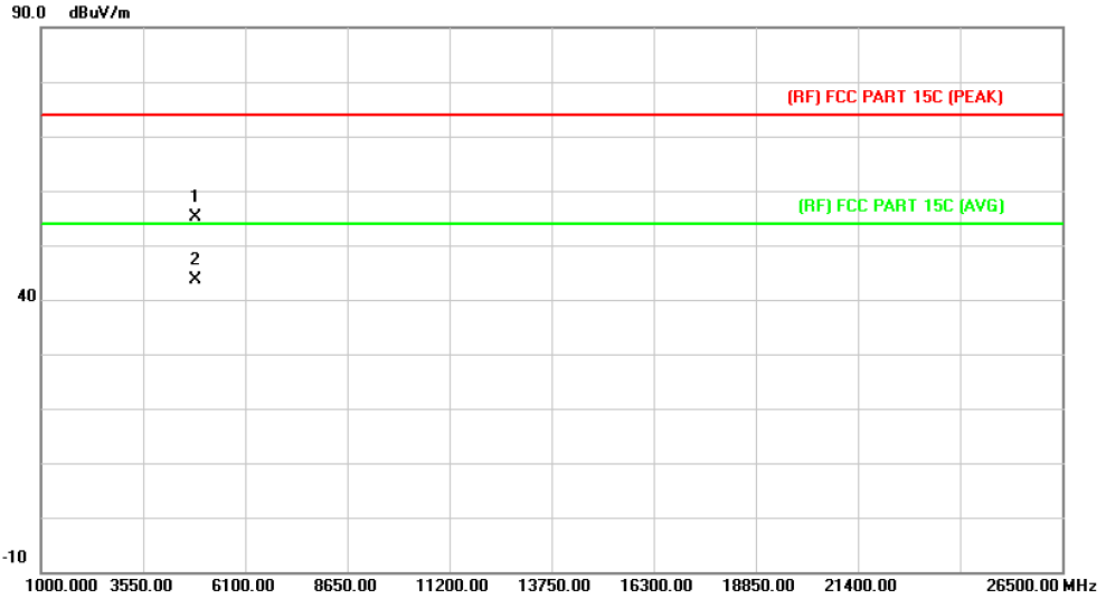
EUT:	IP Fusion Curve	**Model Name :**	HR103-W
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4924.255	41.52	14.15	55.67	74.00	-18.33	peak
2	*	4924.285	31.06	14.15	45.21	54.00	-8.79	AVG

Emission Level= Read Level+ Correct Factor

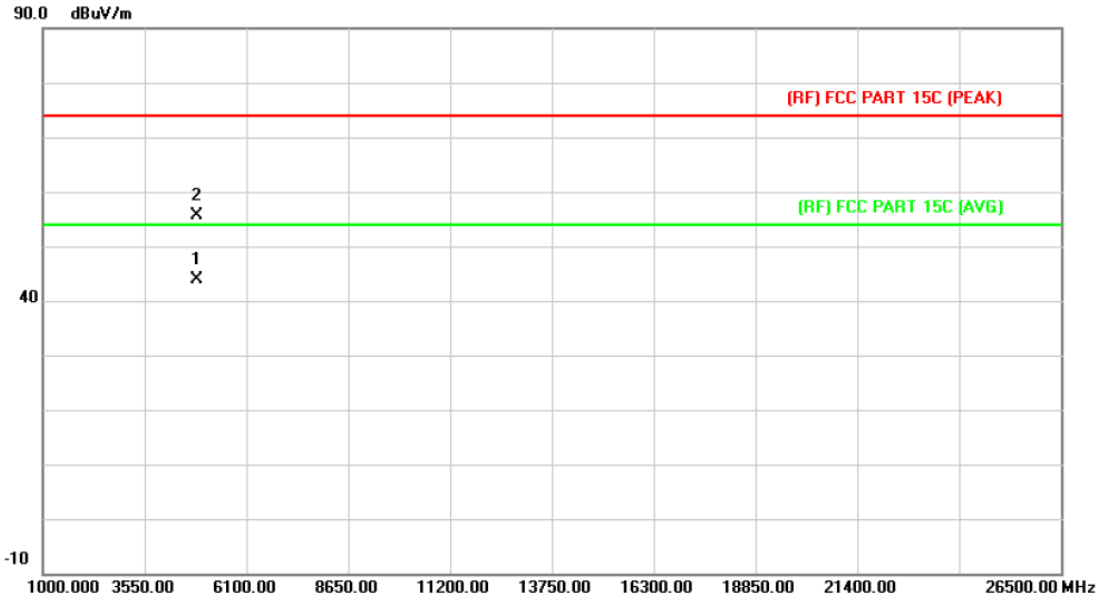
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2422MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4843.830	41.37	13.68	55.05	74.00	-18.95	peak
2	*	4843.840	29.96	13.68	43.64	54.00	-10.36	AVG

Emission Level= Read Level+ Correct Factor

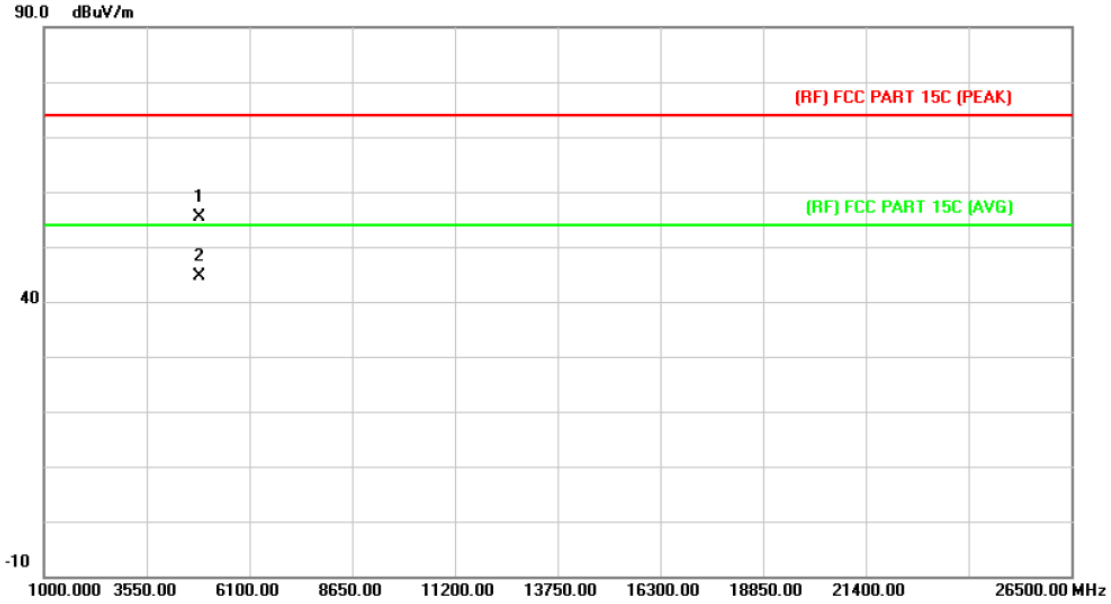
EUT:	IP Fusion Curve	**Model Name :**	HR103-W
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT40) Mode 2422MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4844.415	30.21	13.68	43.89	54.00	-10.11	AVG
2		4844.435	41.84	13.68	55.52	74.00	-18.48	peak

Emission Level= Read Level+ Correct Factor

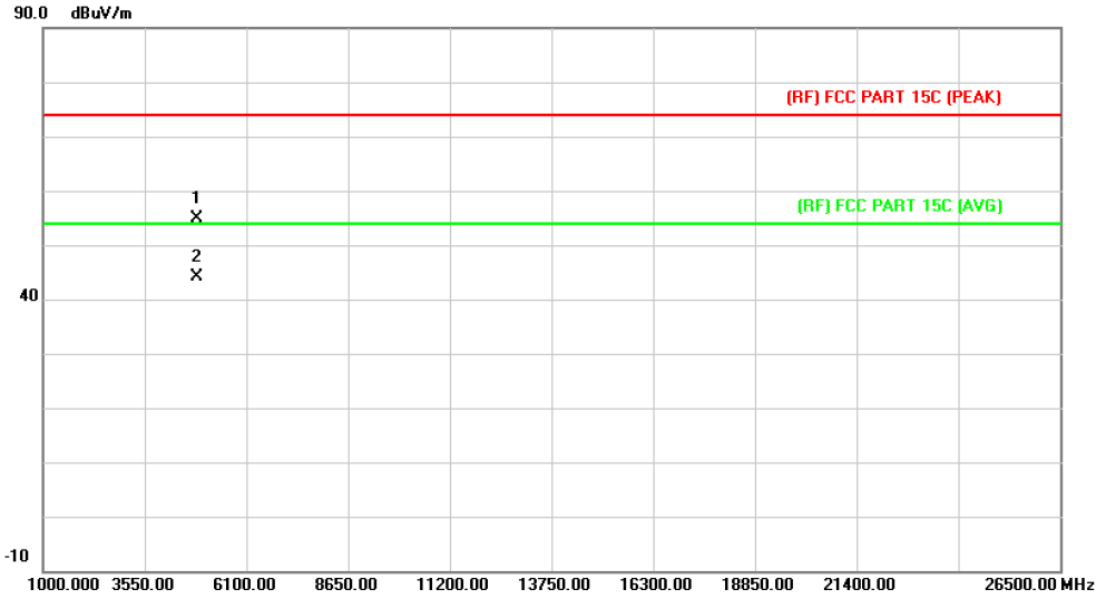
EUT:	IP Fusion Curve	**Model Name :**	HR103-W
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4873.540	41.45	13.86	55.31	74.00	-18.69	peak
2	*	4873.620	30.70	13.86	44.56	54.00	-9.44	AVG

Emission Level= Read Level+ Correct Factor

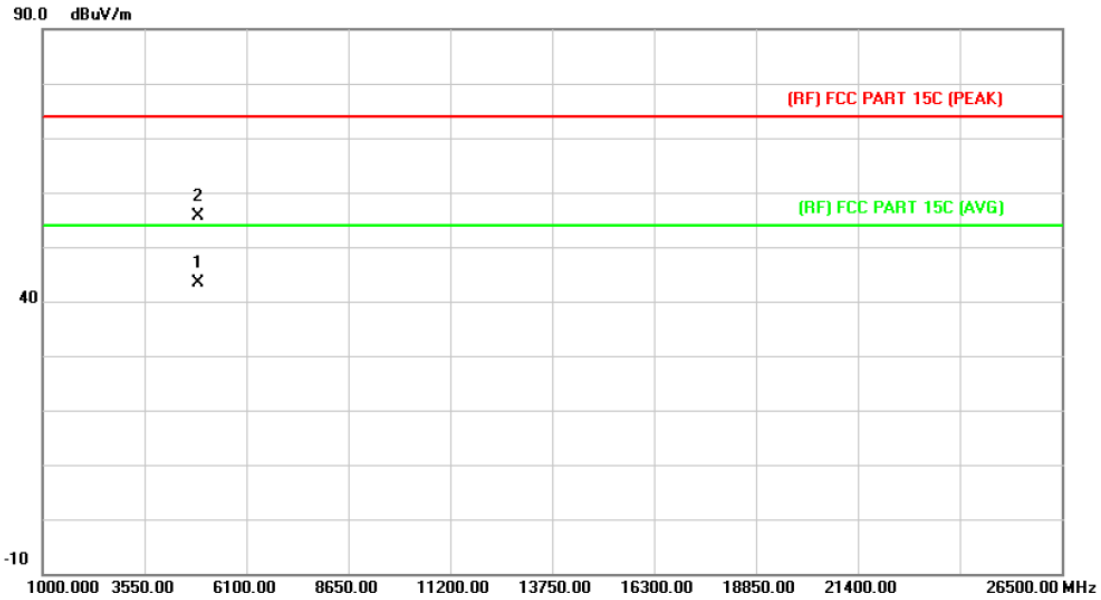
EUT:	IP Fusion Curve	**Model Name :**	HR103-W
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT40) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4873.710	41.01	13.86	54.87	74.00	-19.13	peak
2	*	4873.750	30.25	13.86	44.11	54.00	-9.89	AVG

Emission Level= Read Level+ Correct Factor

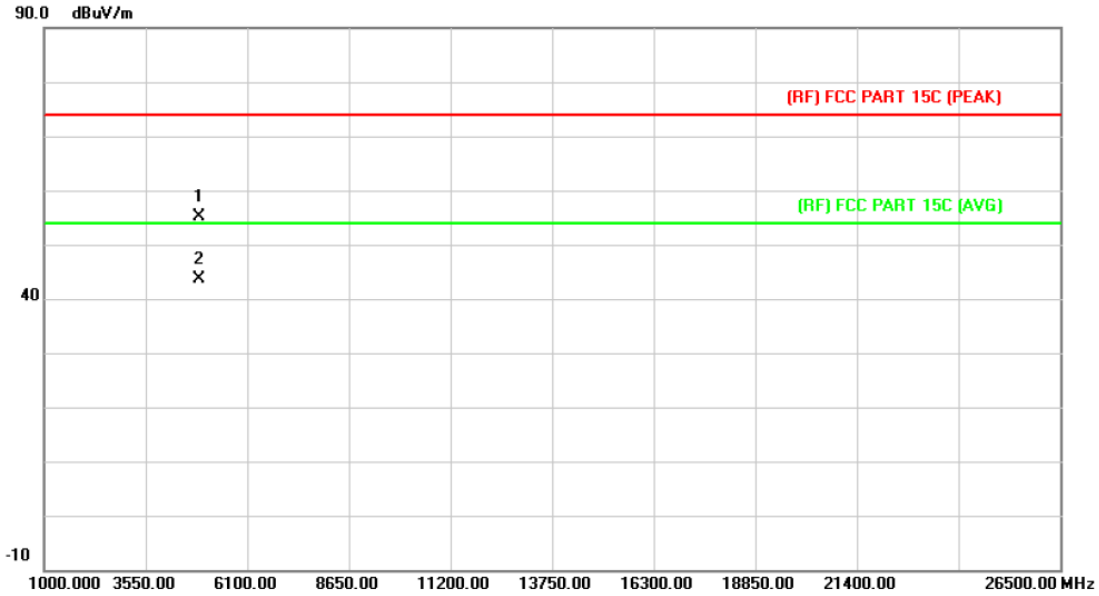
EUT:	IP Fusion Curve	**Model Name :**	HR103-W
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2452MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4904.205	29.27	14.03	43.30	54.00	-10.70	AVG
2		4904.235	41.59	14.03	55.62	74.00	-18.38	peak

Emission Level= Read Level+ Correct Factor

EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
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		4903.635	40.99	14.03	55.02	74.00	-18.98	peak
2	*	4903.655	29.56	14.03	43.59	54.00	-10.41	AVG

Emission Level= Read Level+ Correct Factor

5. Restricted Bands Requirement

5.1 Test Standard and Limit

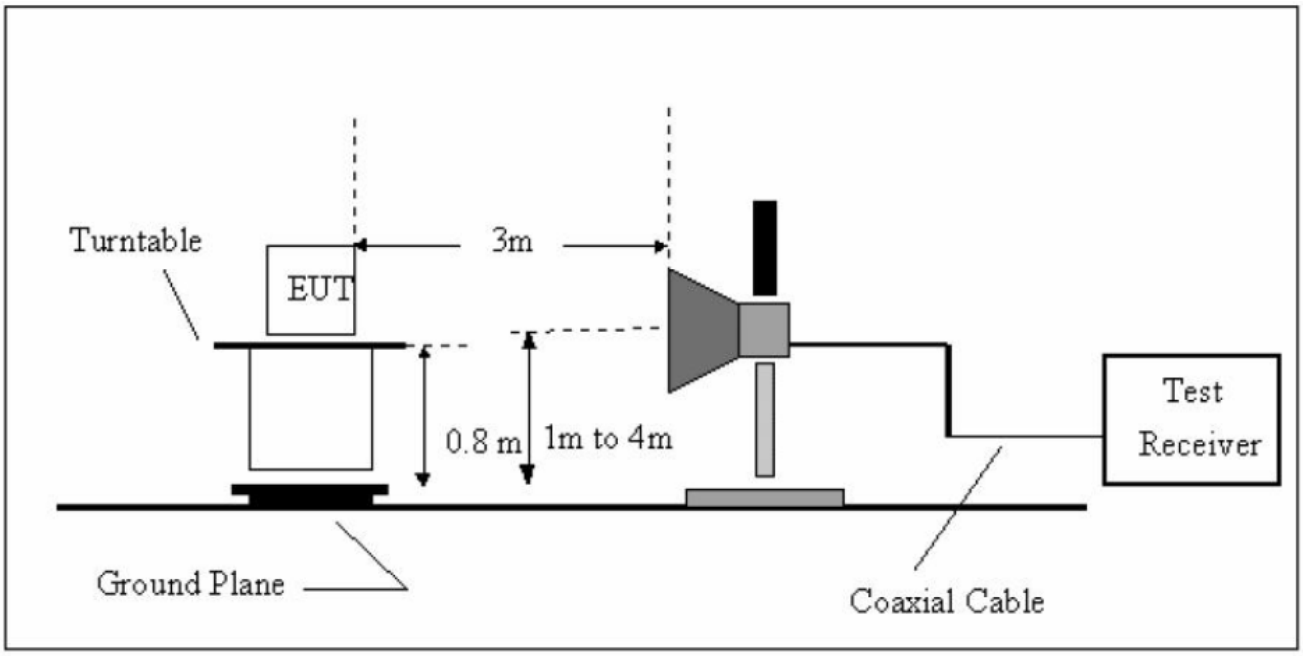
5.1.1 Test Standard

FCC Part 15.209 FCC Part 15.205

5.1.2 Test Limit

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

5.2 Test Setup



5.3 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) 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) (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 Equipment

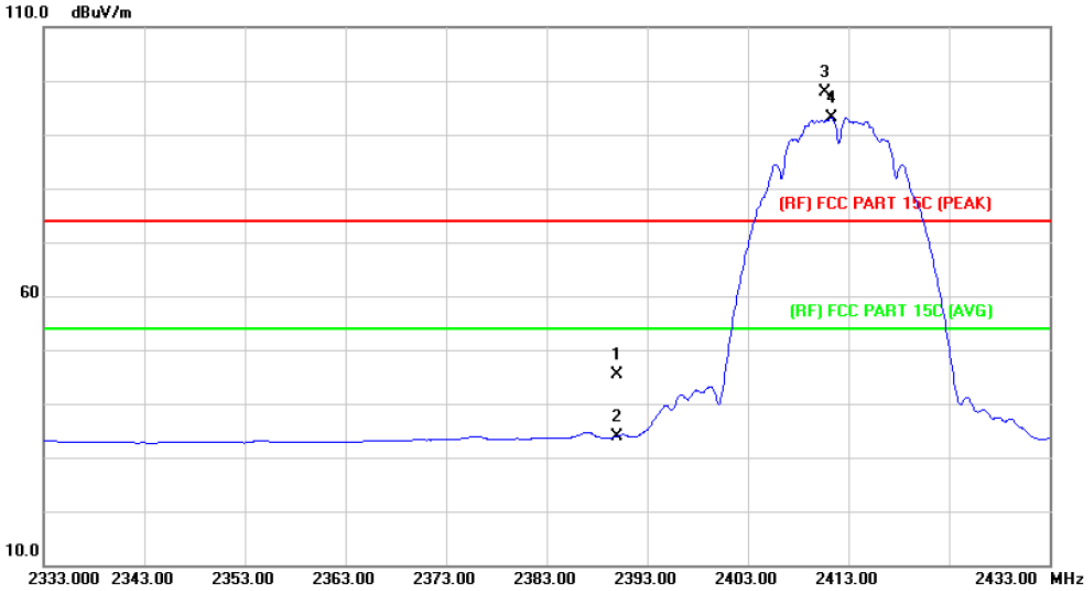
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Mar. 20, 2014	Mar. 19, 2015
Spectrum Analyzer	Rohde & Schwarz	FSP30	DE25181	Aug. 08, 2014	Aug. 07, 2015
EMI Test Receiver	Rohde & Schwarz	ESCI	101165	Aug. 08, 2014	Aug. 07, 2015
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar. 07, 2014	Mar.06, 2015
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Mar. 07, 2014	Mar.06, 2015
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar. 07, 2014	Mar.06, 2015
Horn Antenna	ETS-LINDGREN	3117	00143209	Mar. 07, 2014	Mar.06, 2015
Pre-amplifier	HP	11909A	185903	Mar. 07, 2014	Mar.06, 2015
Pre-amplifier	HP	8447B	3008A00849	Mar. 07, 2014	Mar.06, 2015
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar. 07, 2014	Mar.06, 2015
Signal Generator	Rohde & Schwarz	SML03	IKW682-054	Feb. 11, 2014	Feb.10, 2015
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A

5.6 Test Data

Please see the next page.

(1) Radiation Test

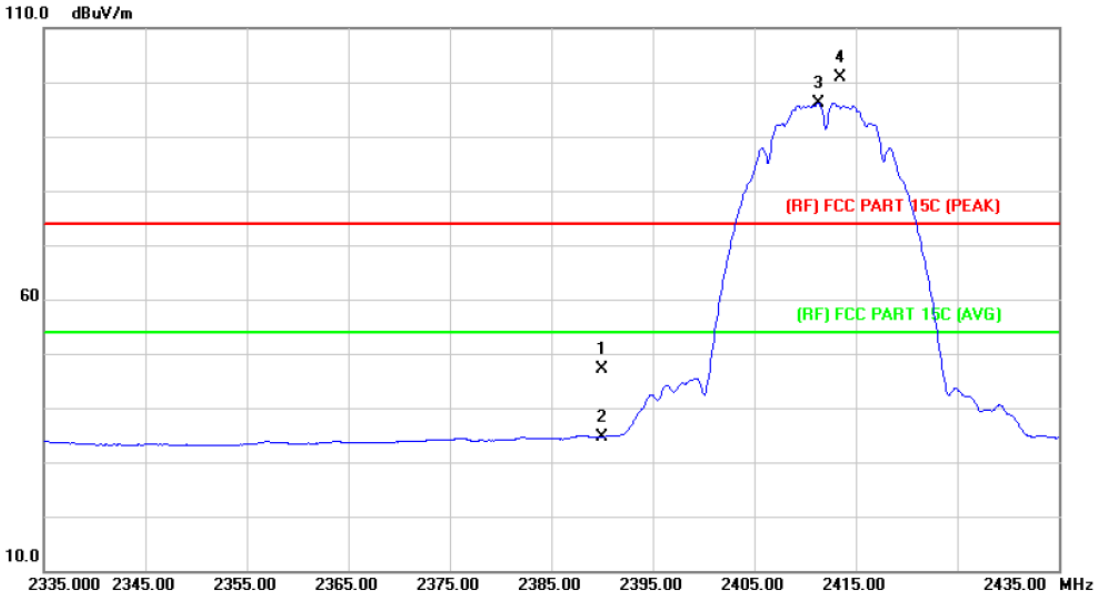
EUT:	IP Fusion Curve	**Model Name :**	HR103-W
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	44.65	0.77	45.42	74.00	-28.58	peak
2		2390.000	33.18	0.77	33.95	54.00	-20.05	AVG
3	X	2410.700	96.92	0.86	97.78	Fundamental Frequency		peak
4	*	2411.300	92.25	0.86	93.11	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

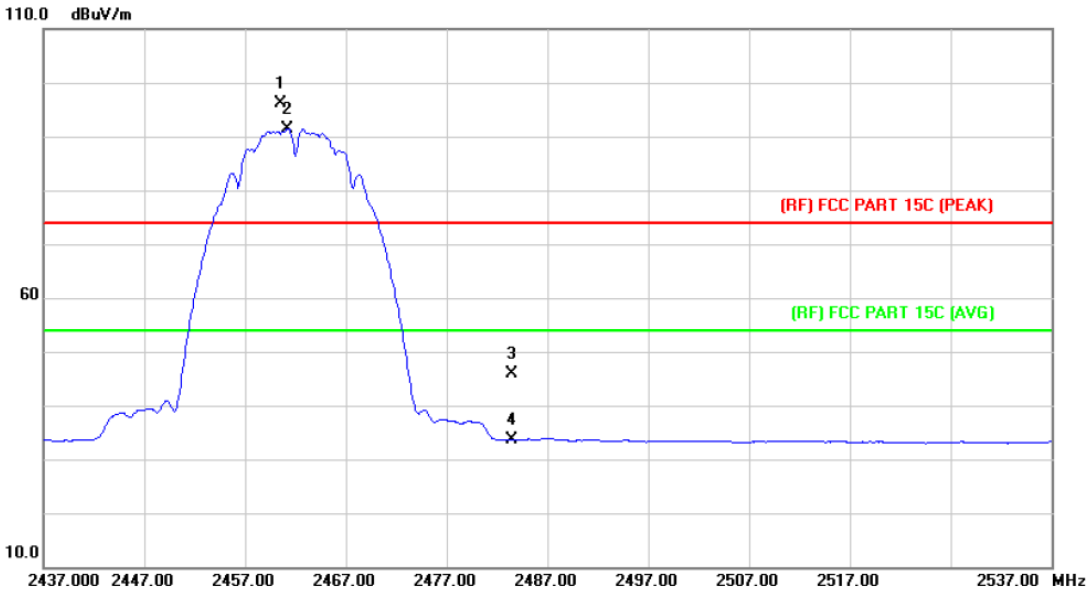
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	46.32	0.77	47.09	74.00	-26.91	peak
2		2390.000	33.89	0.77	34.66	54.00	-19.34	AVG
3	*	2411.300	95.29	0.86	96.15	Fundamental Frequency		AVG
4	X	2413.500	99.99	0.86	100.85	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

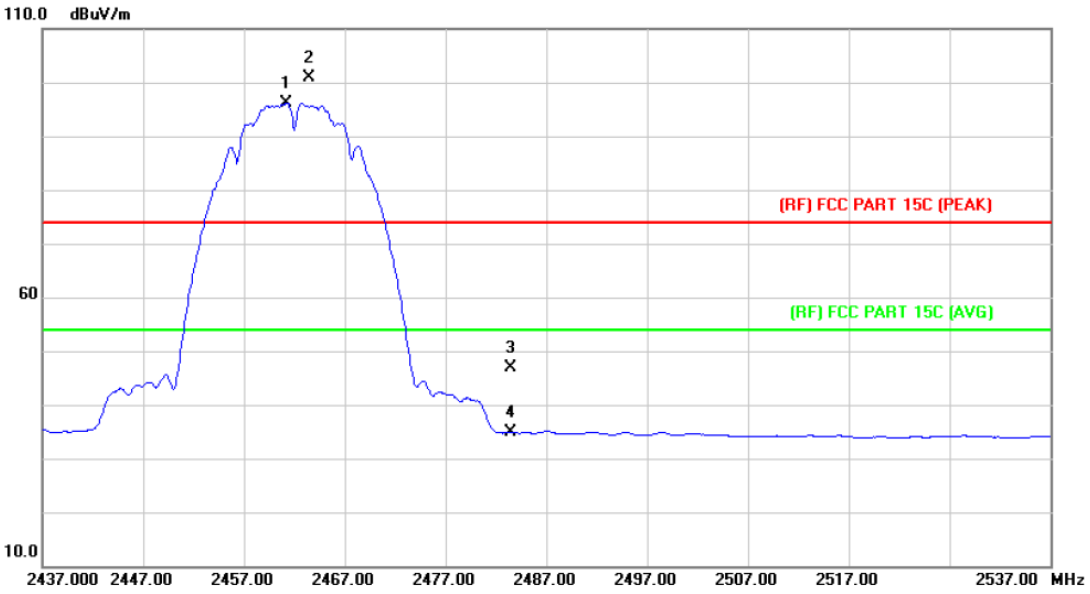
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2460.500	95.02	1.06	96.08	Fundamental Frequency		peak
2	*	2461.200	90.34	1.07	91.41	Fundamental Frequency		AVG
3		2483.500	44.76	1.17	45.93	74.00	-28.07	peak
4		2483.500	32.51	1.17	33.68	54.00	-20.32	AVG

Emission Level= Read Level+ Correct Factor

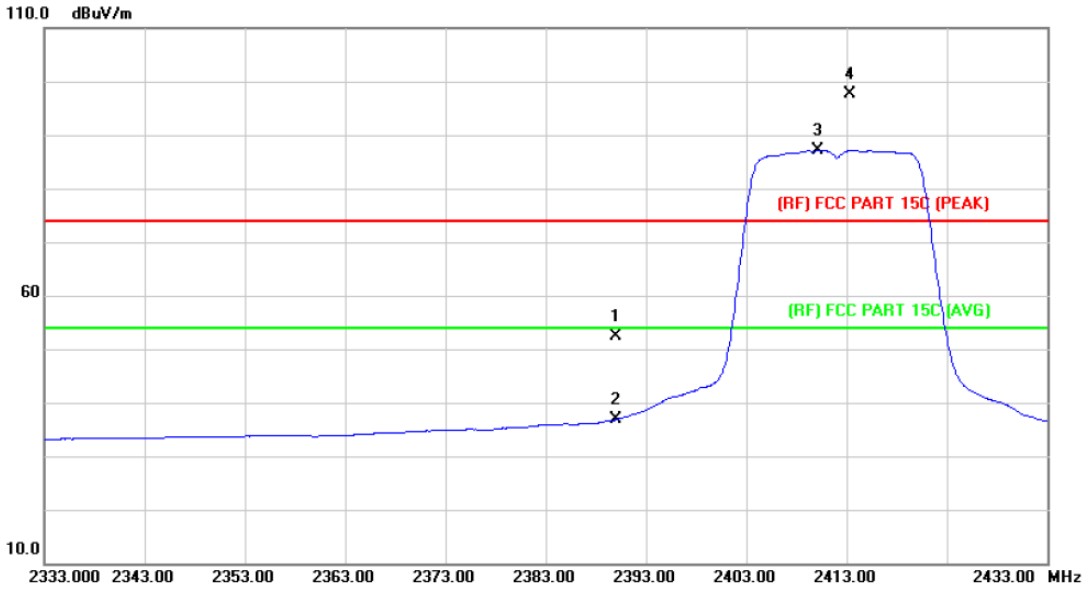
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2461.200	95.15	1.07	96.22	Fundamental Frequency		AVG
2	X	2463.400	99.79	1.08	100.87	Fundamental Frequency		peak
3		2483.500	45.64	1.17	46.81	74.00	-27.19	peak
4		2483.500	33.74	1.17	34.91	54.00	-19.09	AVG

Emission Level= Read Level+ Correct Factor

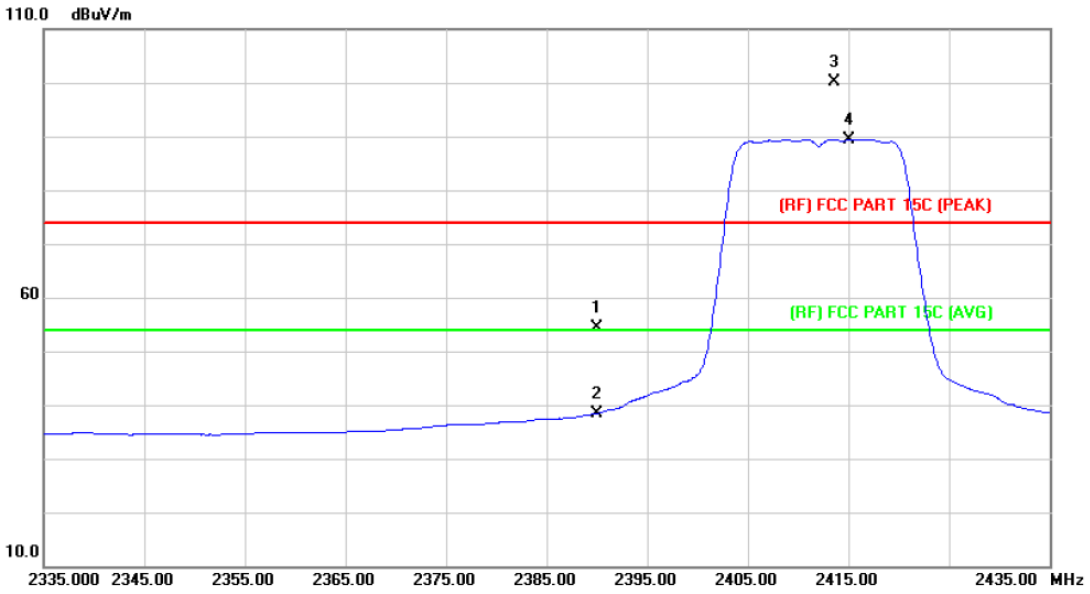
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	51.66	0.77	52.43	74.00	-21.57	peak
2		2390.000	36.09	0.77	36.86	54.00	-17.14	AVG
3	*	2410.200	86.30	0.85	87.15	Fundamental Frequency		AVG
4	X	2413.300	96.89	0.86	97.75	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

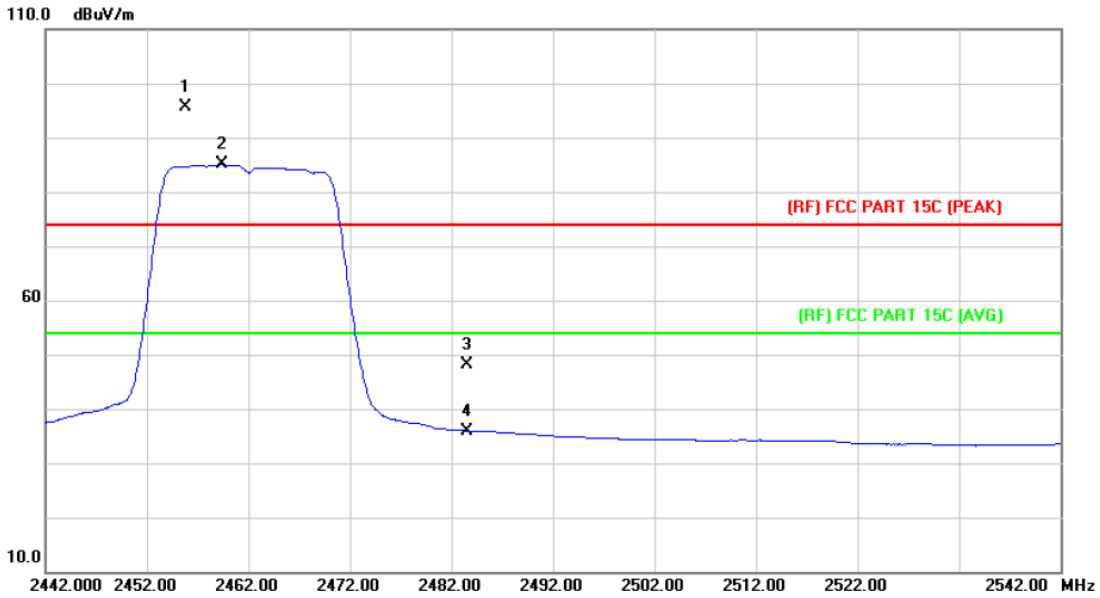
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	53.56	0.77	54.33	74.00	-19.67	peak
2		2390.000	37.67	0.77	38.44	54.00	-15.56	AVG
3	X	2413.600	99.37	0.86	100.23	Fundamental Frequency		peak
4	*	2415.100	88.55	0.88	89.43	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

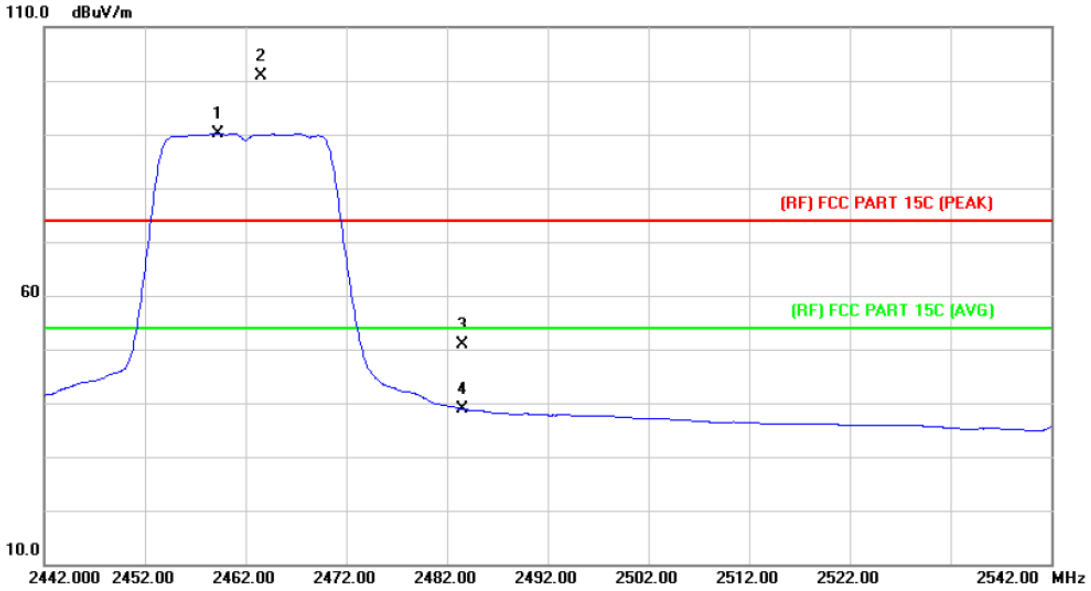
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2455.800	94.46	1.05	95.51	Fundamental Frequency		peak
2	*	2459.400	83.96	1.06	85.02	Fundamental Frequency		AVG
3		2483.500	46.94	1.17	48.11	74.00	-25.89	peak
4		2483.500	34.77	1.17	35.94	54.00	-18.06	AVG

Emission Level= Read Level+ Correct Factor

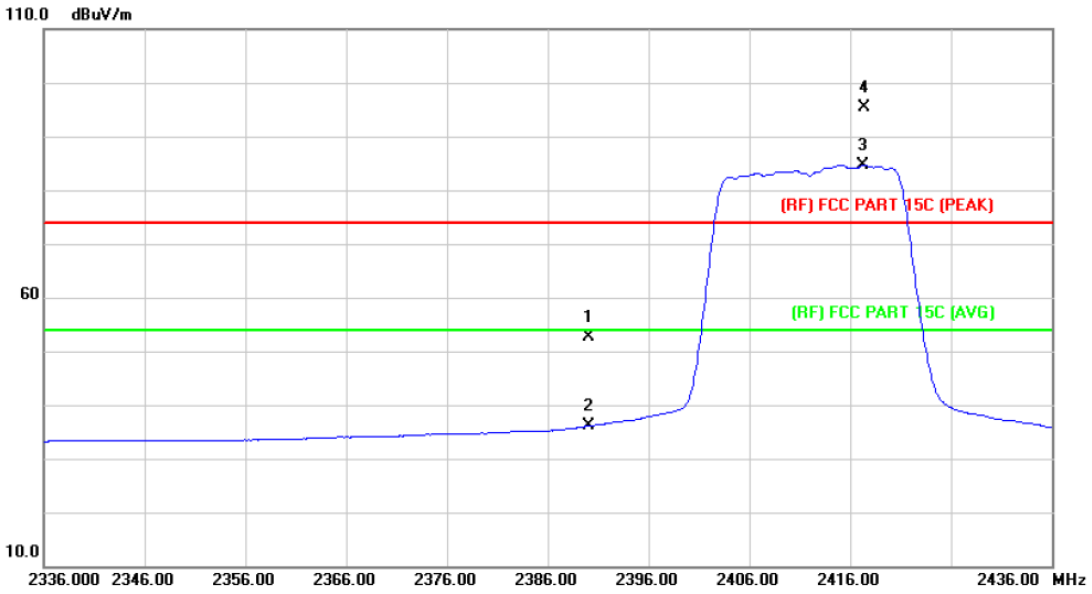
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2459.300	89.11	1.06	90.17	Fundamental Frequency		AVG
2	X	2463.600	99.70	1.08	100.78	Fundamental Frequency		peak
3		2483.500	49.67	1.17	50.84	74.00	-23.16	peak
4		2483.500	37.68	1.17	38.85	54.00	-15.15	AVG

Emission Level= Read Level+ Correct Factor

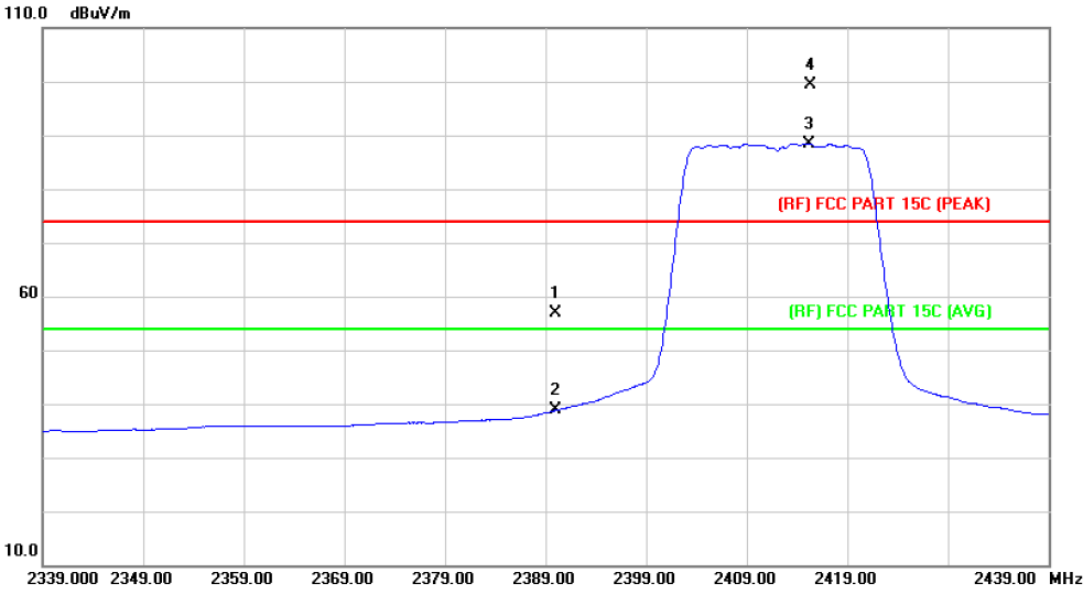
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	51.97	0.77	52.74	74.00	-21.26	peak
2		2390.000	35.34	0.77	36.11	54.00	-17.89	AVG
3	*	2417.300	83.78	0.89	84.67	Fundamental Frequency		AVG
4	X	2417.400	94.39	0.89	95.28	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

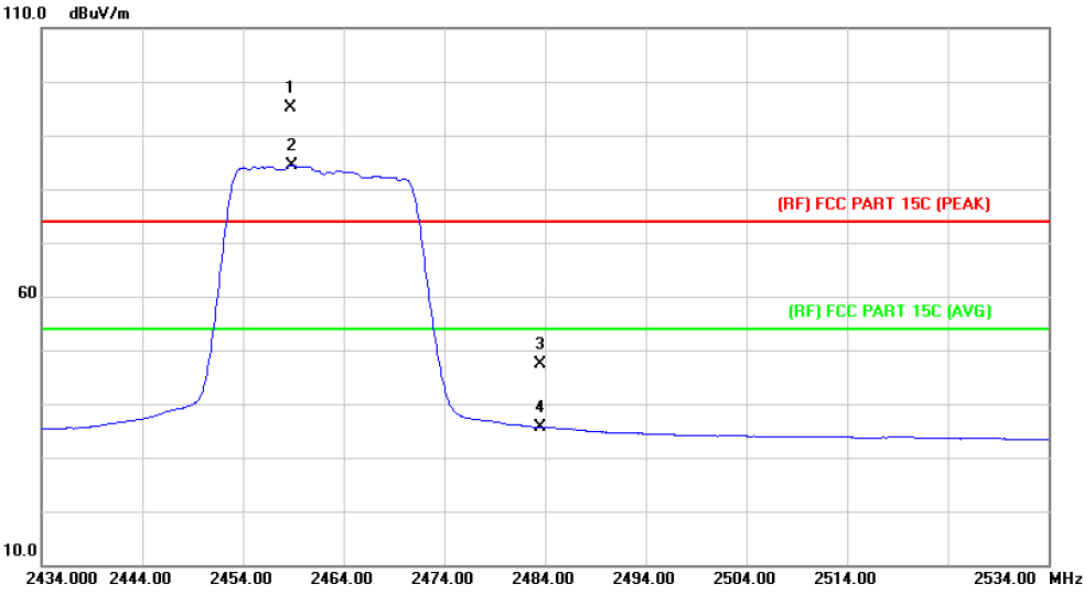
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	56.13	0.77	56.90	74.00	-17.10	peak
2		2390.000	38.04	0.77	38.81	54.00	-15.19	AVG
3	*	2415.200	87.59	0.88	88.47	Fundamental Frequency		AVG
4	X	2415.300	98.55	0.88	99.43	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

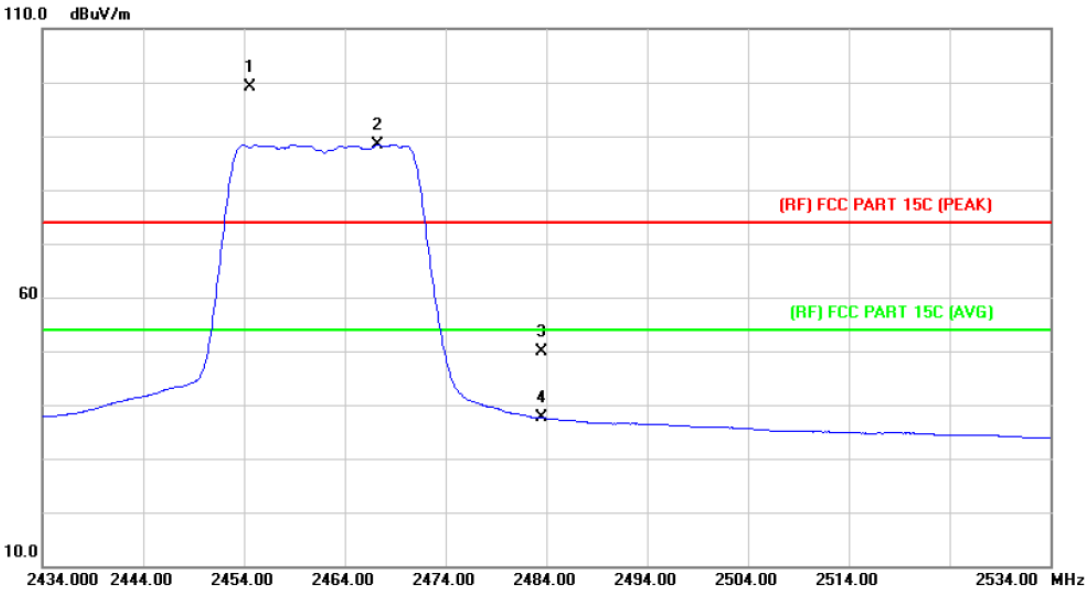
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2458.700	94.08	1.06	95.14	Fundamental Frequency		peak
2	*	2458.900	83.32	1.06	84.38	Fundamental Frequency		AVG
3		2483.500	46.22	1.17	47.39	74.00	-26.61	peak
4		2483.500	34.51	1.17	35.68	54.00	-18.32	AVG

Emission Level= Read Level+ Correct Factor

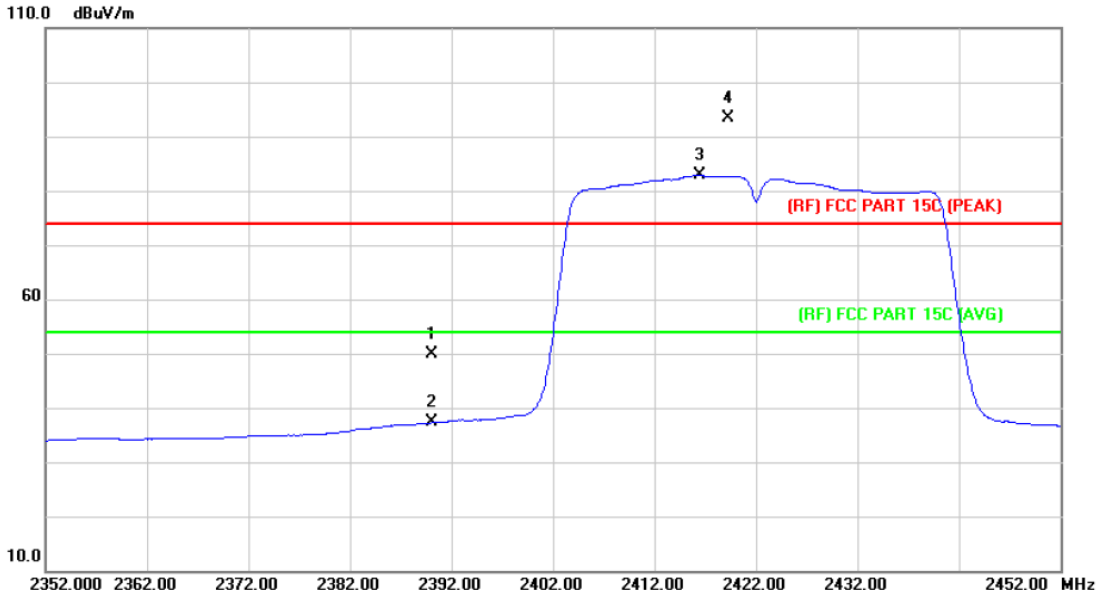
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2454.600	98.12	1.05	99.17	Fundamental Frequency		peak
2	*	2467.300	87.29	1.10	88.39	Fundamental Frequency		AVG
3		2483.500	48.71	1.17	49.88	74.00	-24.12	peak
4		2483.500	36.41	1.17	37.58	54.00	-16.42	AVG

Emission Level= Read Level+ Correct Factor

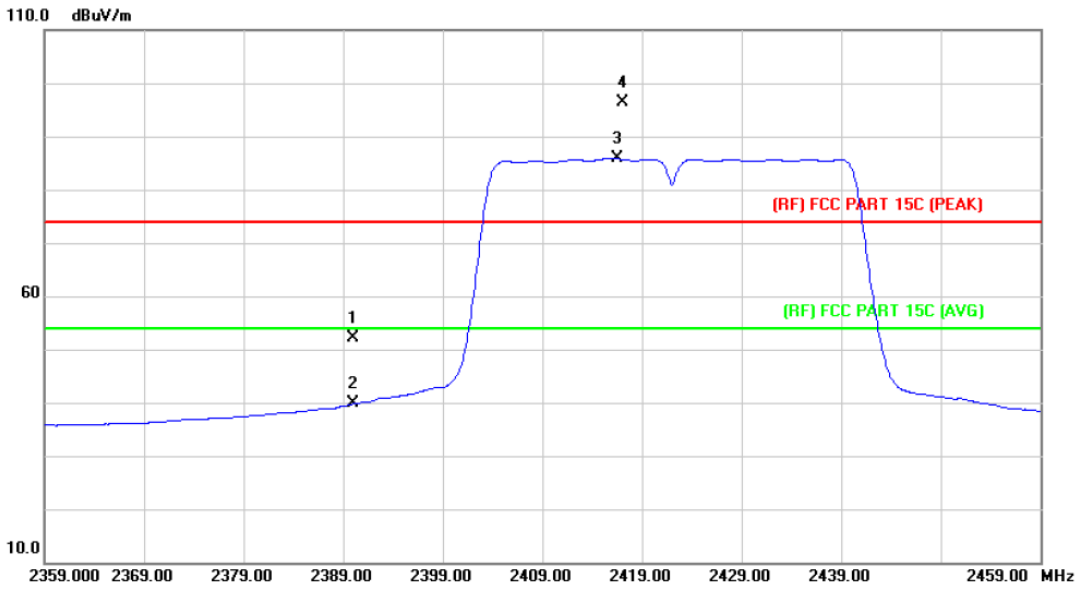
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2422MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	49.02	0.77	49.79	74.00	-24.21	peak
2		2390.000	36.49	0.77	37.26	54.00	-16.74	AVG
3	*	2416.500	82.01	0.88	82.89	Fundamental Frequency		AVG
4	X	2419.300	92.61	0.89	93.50	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

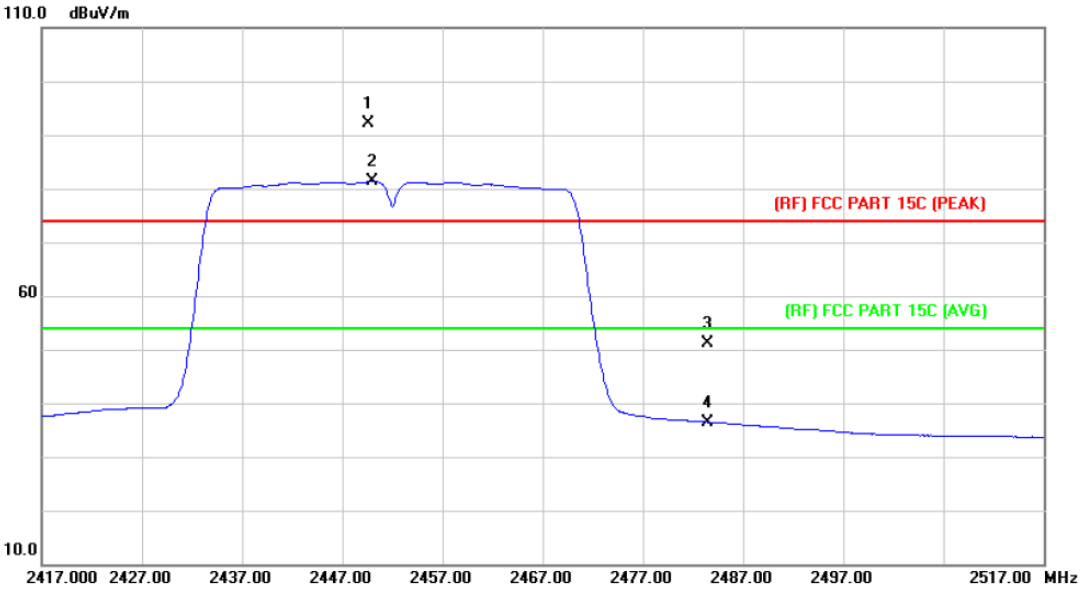
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT40) Mode 2422MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	51.45	0.77	52.22	74.00	-21.78	peak
2		2390.000	39.03	0.77	39.80	54.00	-14.20	AVG
3	*	2416.500	85.00	0.88	85.88	Fundamental Frequency		AVG
4	X	2417.000	95.59	0.88	96.47	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

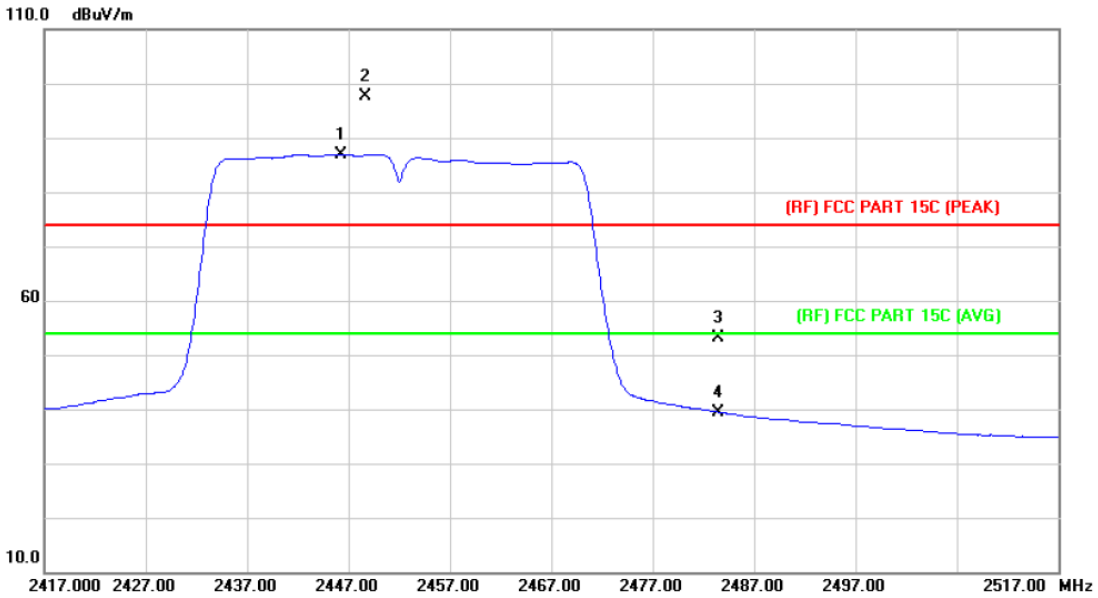
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2452MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2449.600	91.08	1.02	92.10	Fundamental Frequency		peak
2	*	2450.000	80.37	1.02	81.39	Fundamental Frequency		AVG
3		2483.500	49.85	1.17	51.02	74.00	-22.98	peak
4		2483.500	35.31	1.17	36.48	54.00	-17.52	AVG

Emission Level= Read Level+ Correct Factor

EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT40) Mode 2452MHz		
Remark:	N/A		

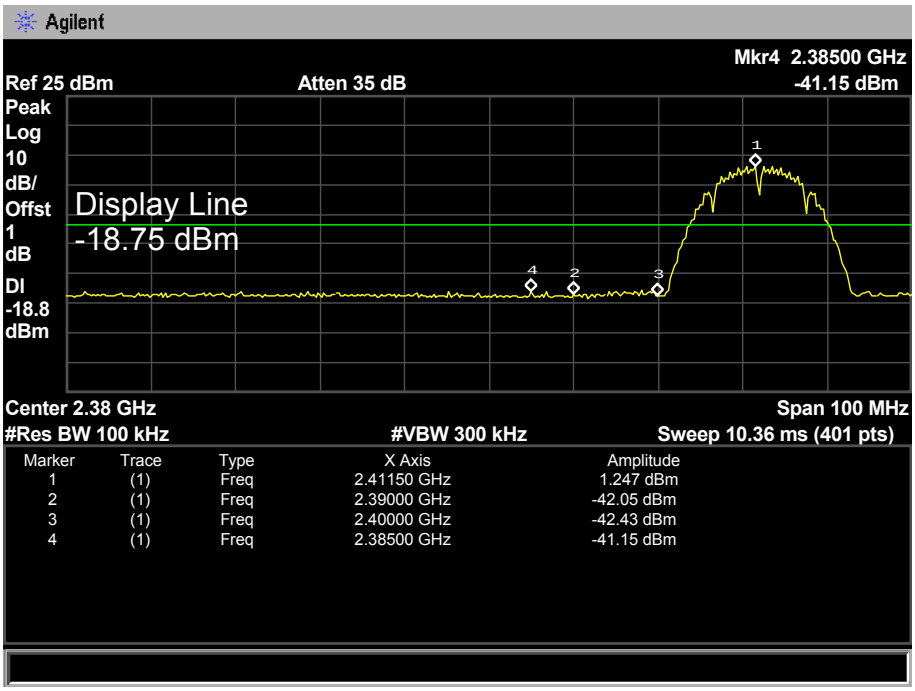


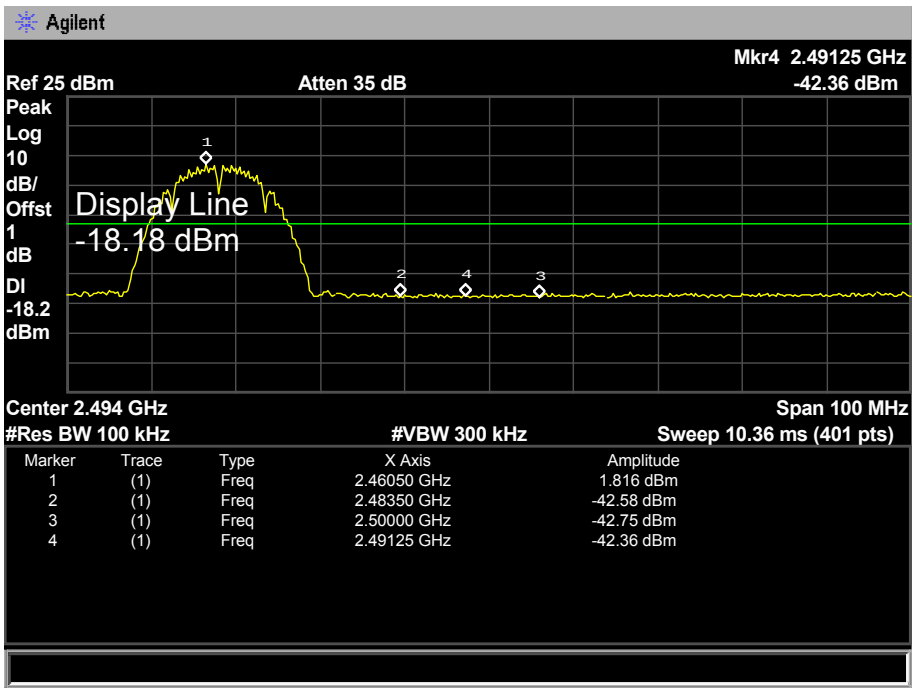
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2446.300	85.99	1.01	87.00	Fundamental Frequency		AVG
2	X	2448.700	96.65	1.02	97.67	Fundamental Frequency		peak
3		2483.500	51.86	1.17	53.03	74.00	-20.97	peak
4		2483.500	38.28	1.17	39.45	54.00	-14.55	AVG

Emission Level= Read Level+ Correct Factor

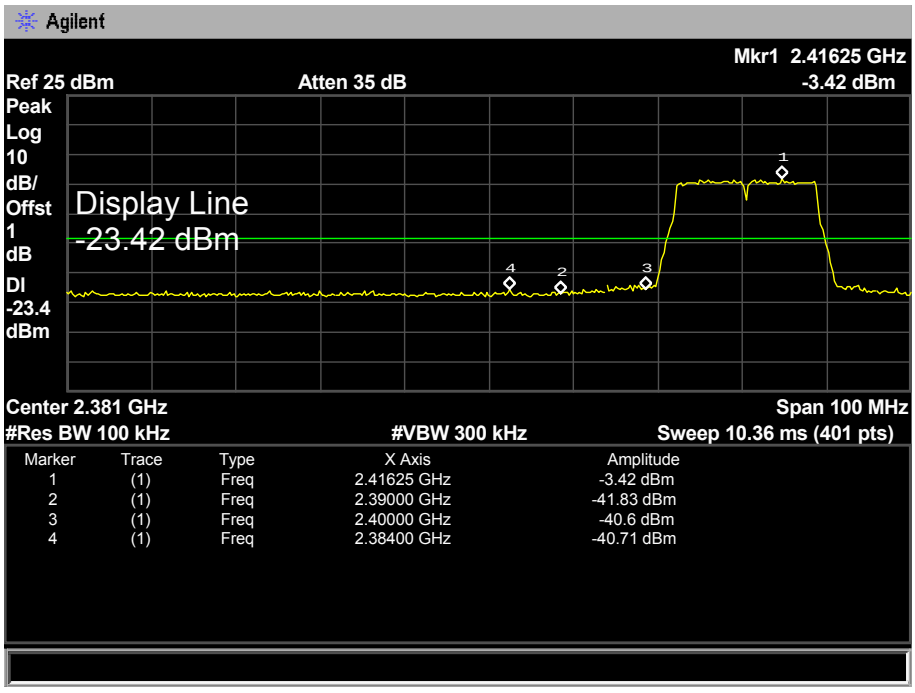
(2) Conducted Test

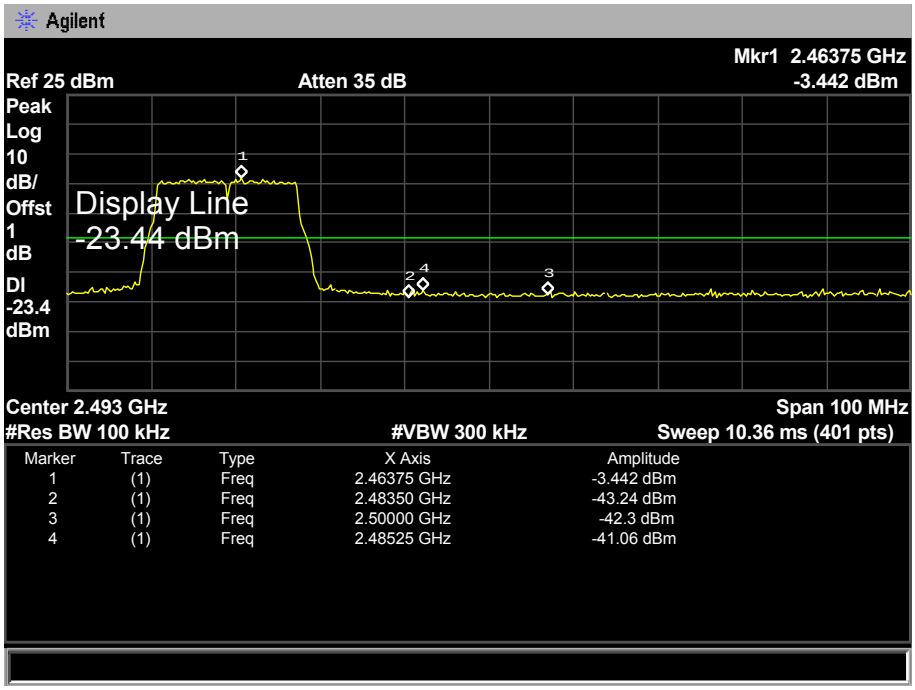
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX B Mode 2412MHz / TX B Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		



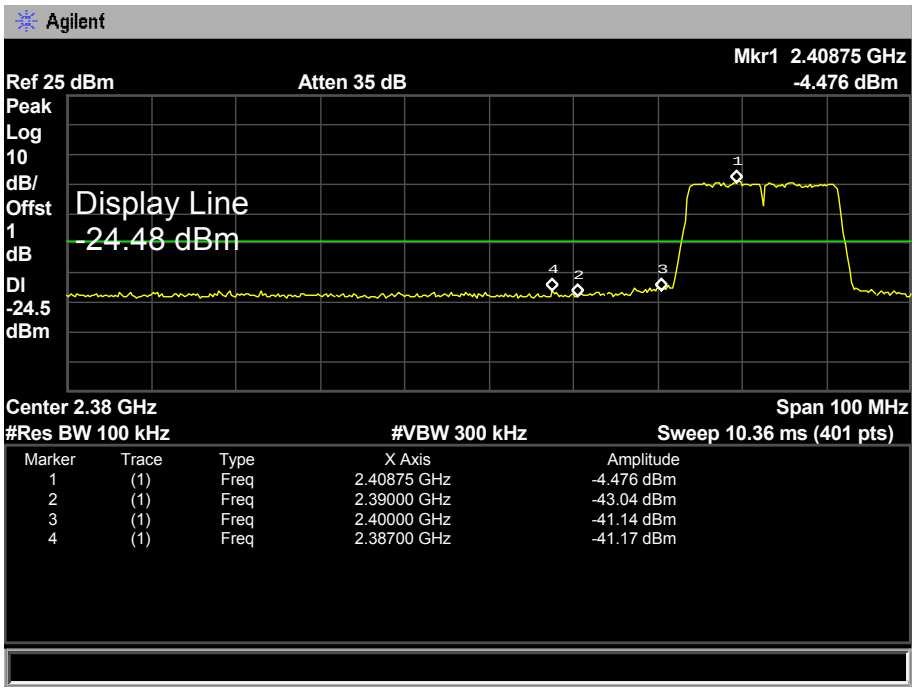


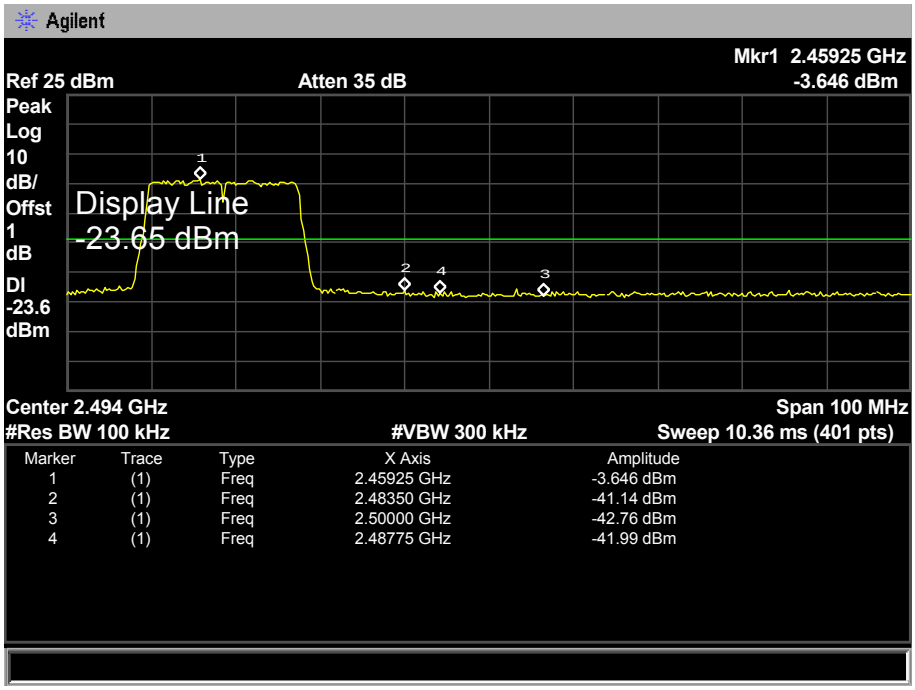
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX G Mode 2412MHz / TX G Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		



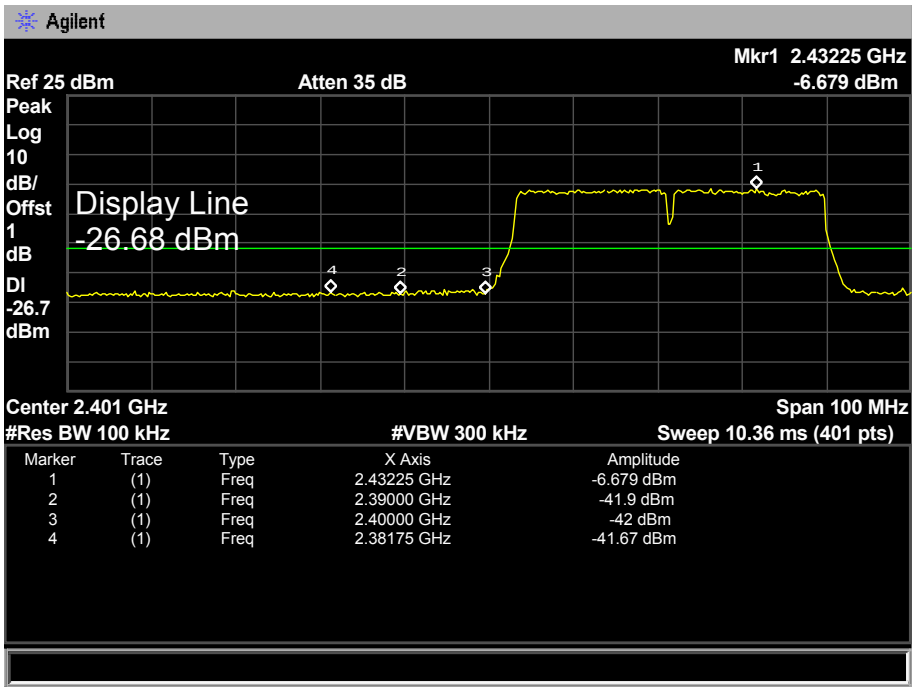


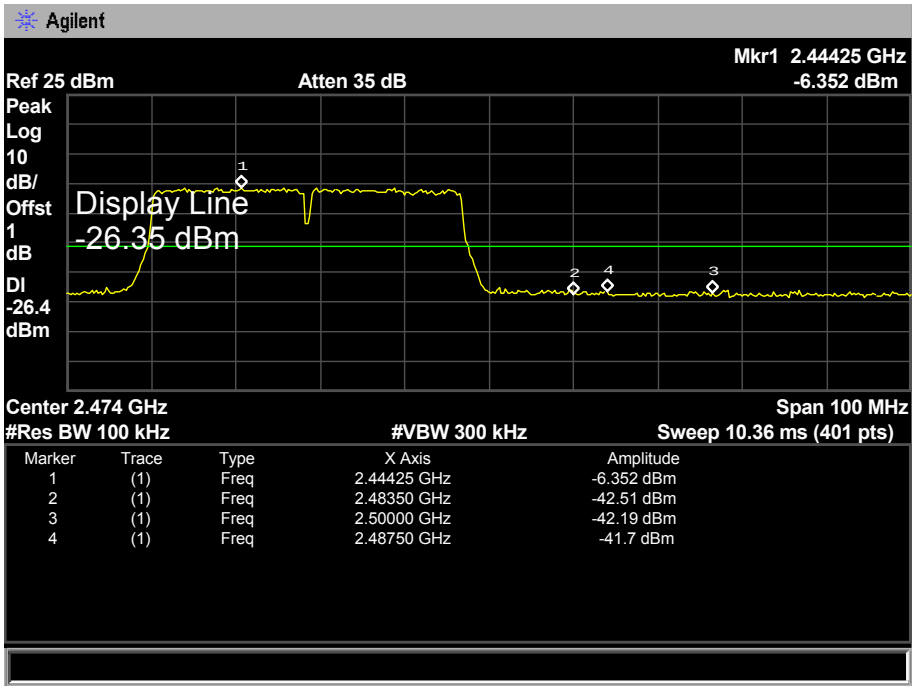
EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX N(HT20) Mode 2412MHz / TX N(HT20) Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		





EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX N(HT40) Mode 2422MHz / TX N(HT40) Mode 2452MHz		
Remark:	The EUT is programed in continuously transmitting mode		





6. Bandwidth Test

6.1 Test Standard and Limit

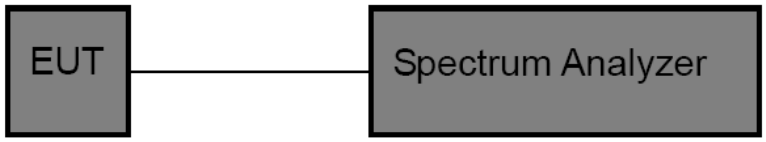
6.1.1 Test Standard

FCC Part 15.247 (a)(2)

6.1.2 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

6.2 Test Setup



6.3 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.

6.4 EUT Operating Condition

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

6.5 Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Mar. 20, 2014	Mar. 19, 2015

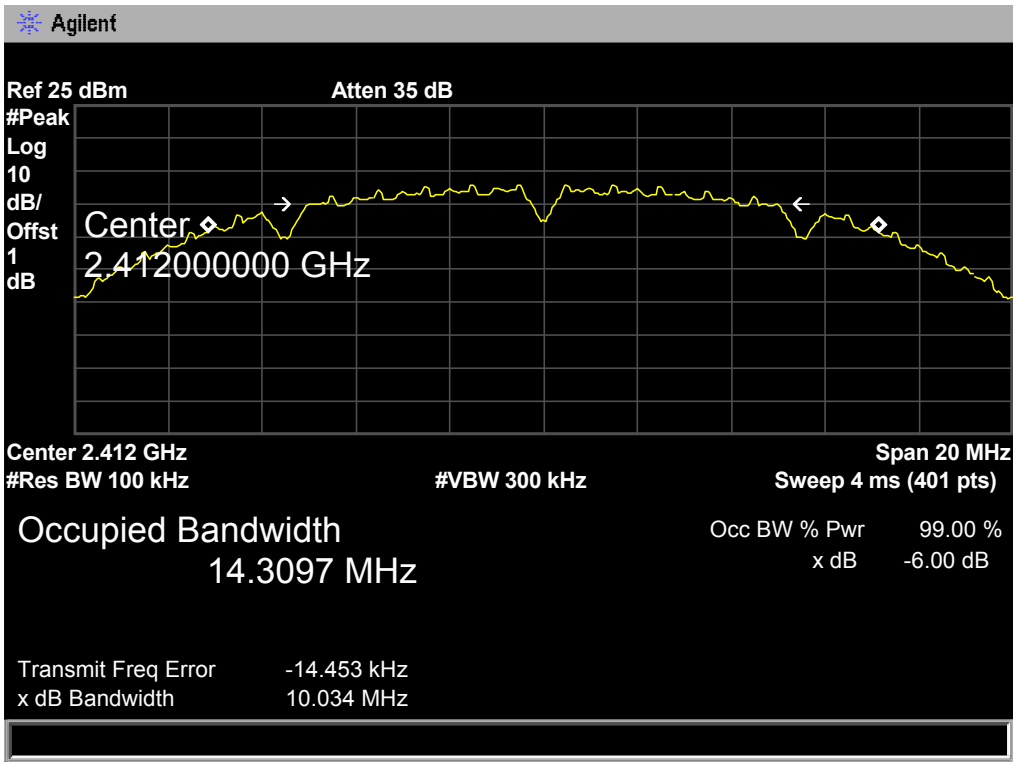
6.6 Test Data

EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX 802.11B Mode		

Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	10.034	14.3097	>=0.5
2437	10.030	14.3203	
2462	10.029	14.3306	

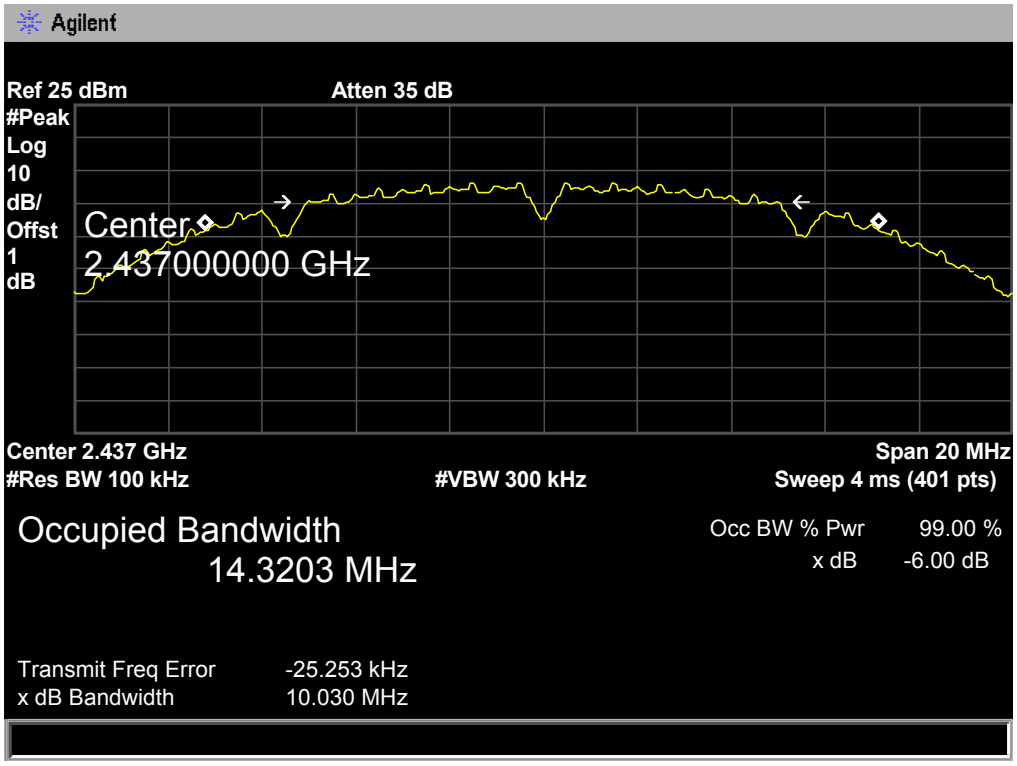
802.11B Mode

2412 MHz



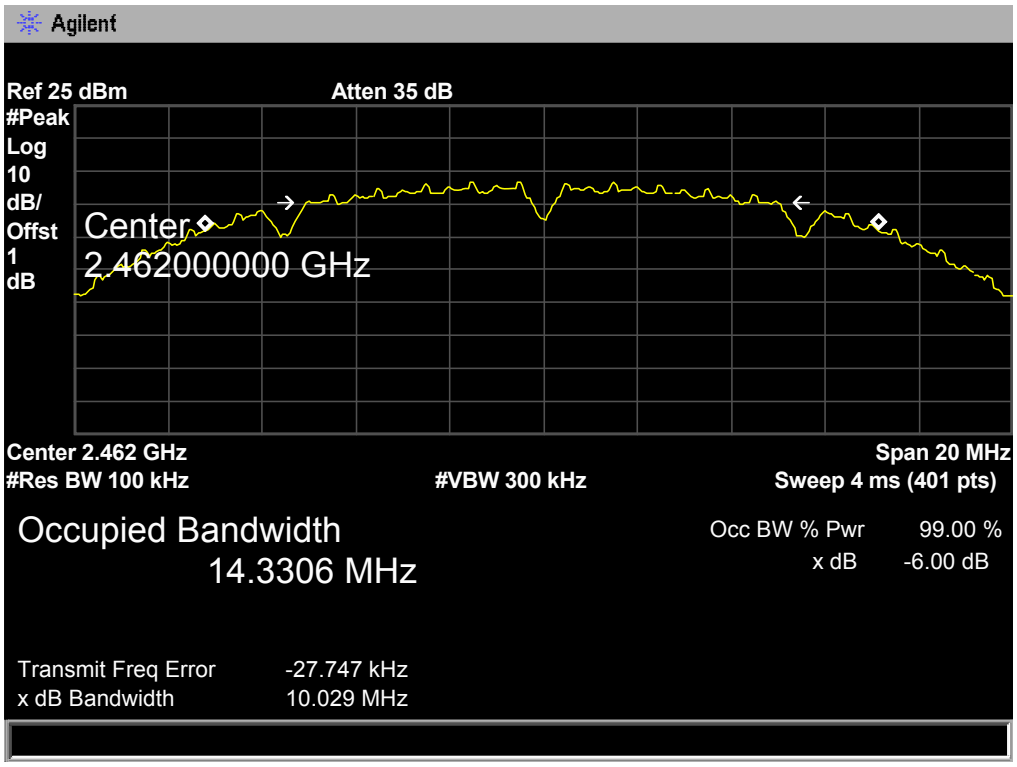
802.11B Mode

2437 MHz



802.11B Mode

2462 MHz

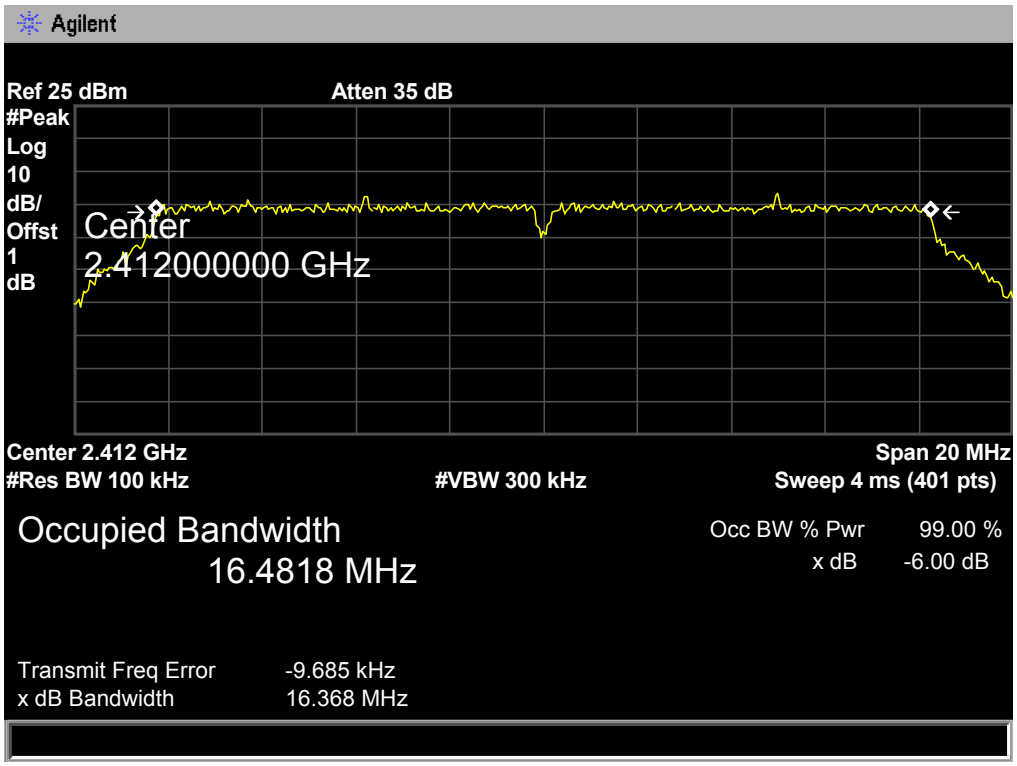


EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX 802.11G Mode		

Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	16.368	16.4818	>=0.5
2437	16.598	16.5386	
2462	16.590	16.4793	

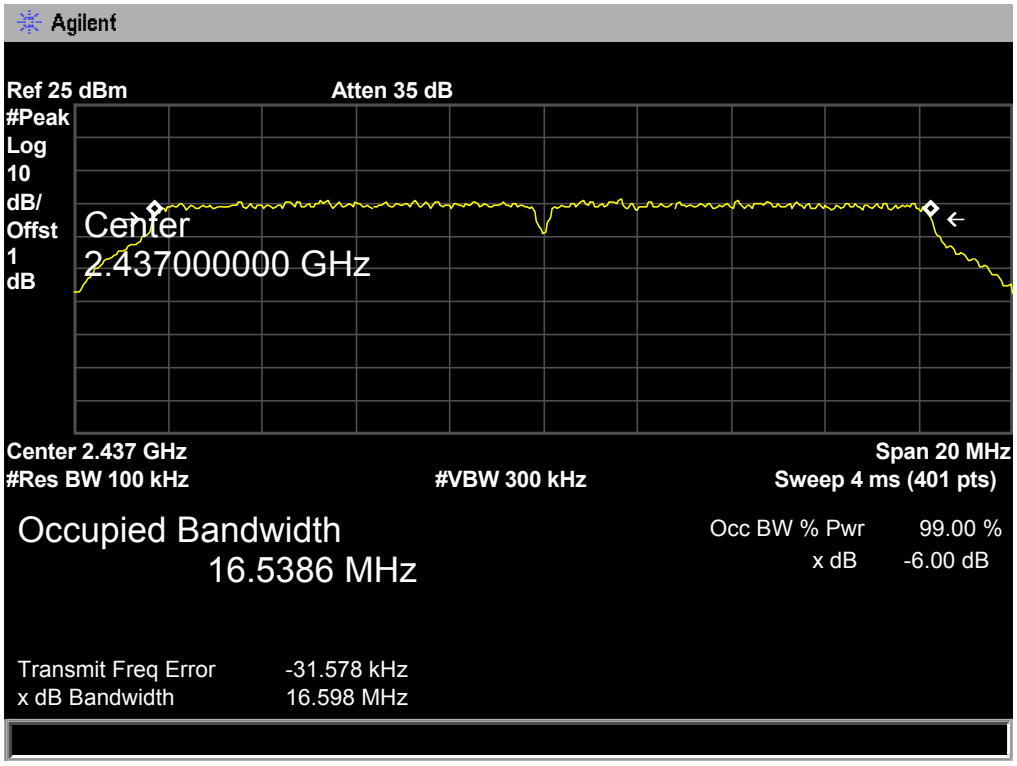
802.11G Mode

2412 MHz



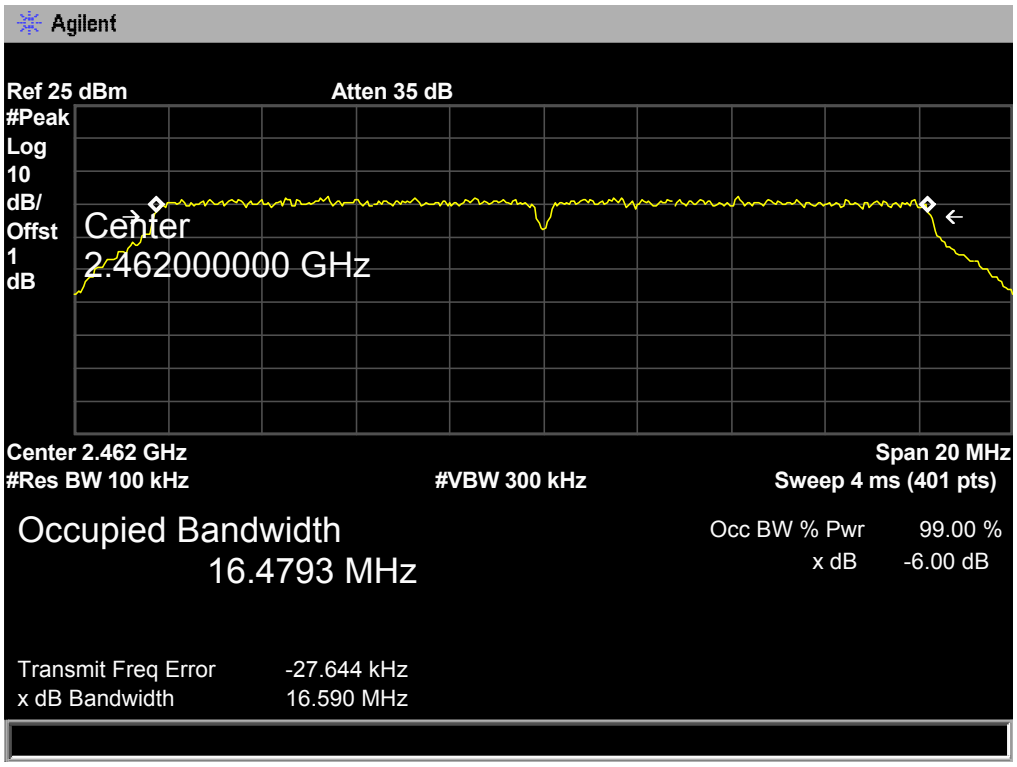
802.11G Mode

2437 MHz



802.11G Mode

2462 MHz

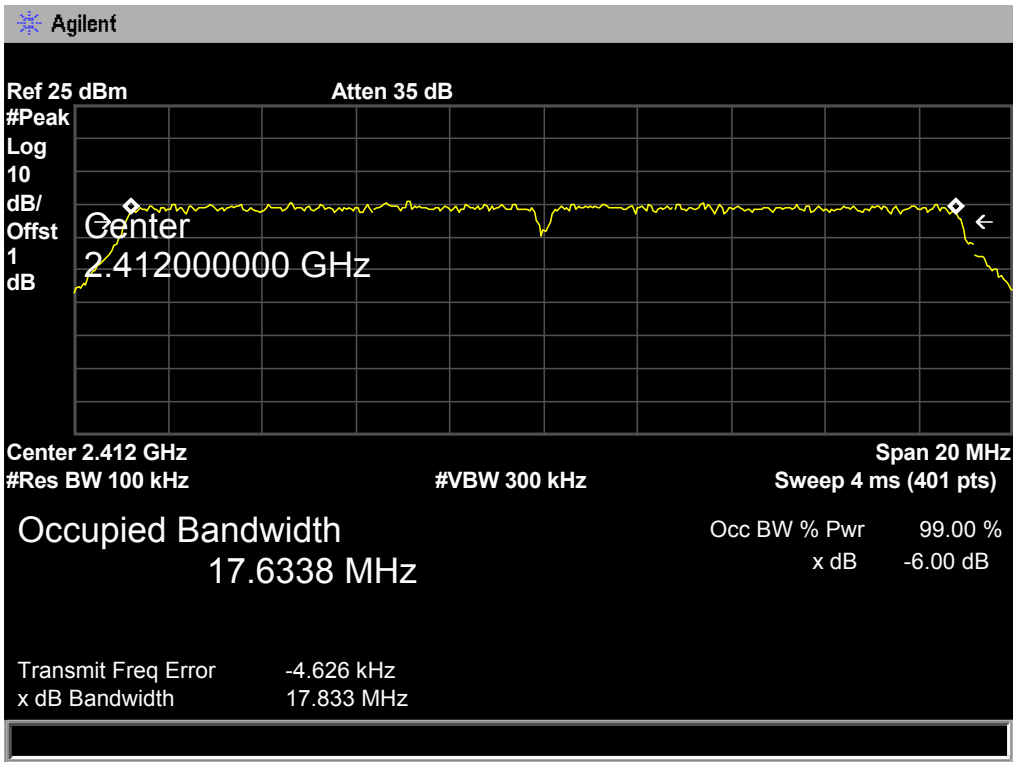


EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX 802.11N(HT20) Mode		

Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	17.833	17.6338	>=0.5
2437	17.834	17.6306	
2462	17.822	17.6347	

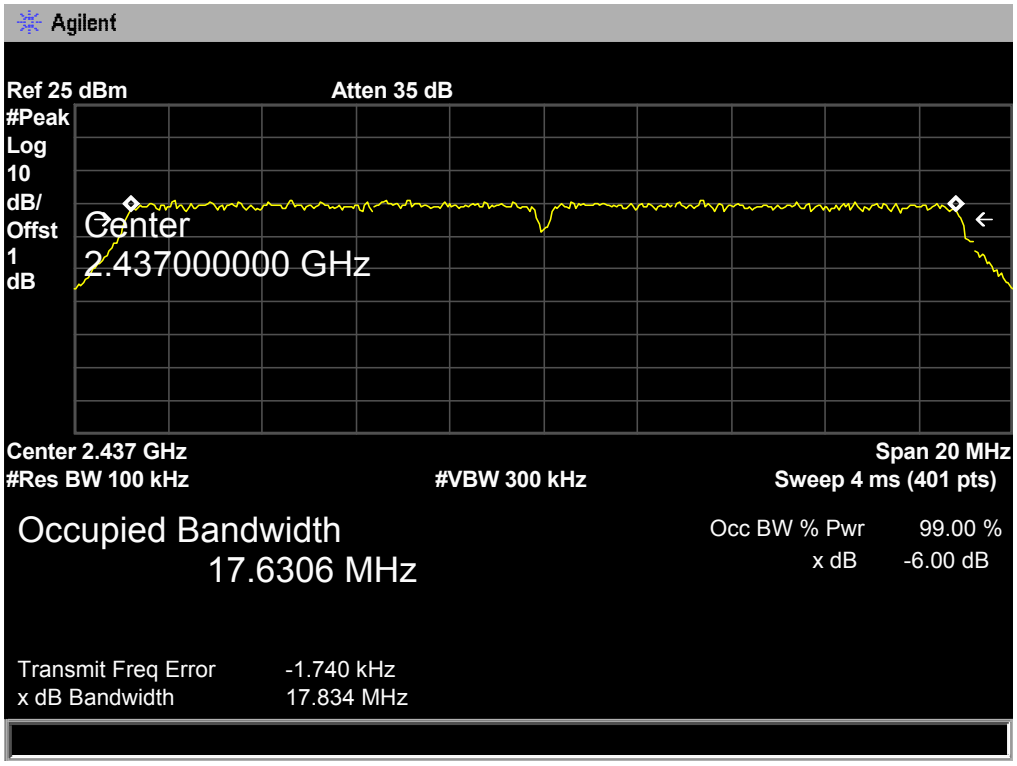
802.11N(HT20) Mode

2412 MHz



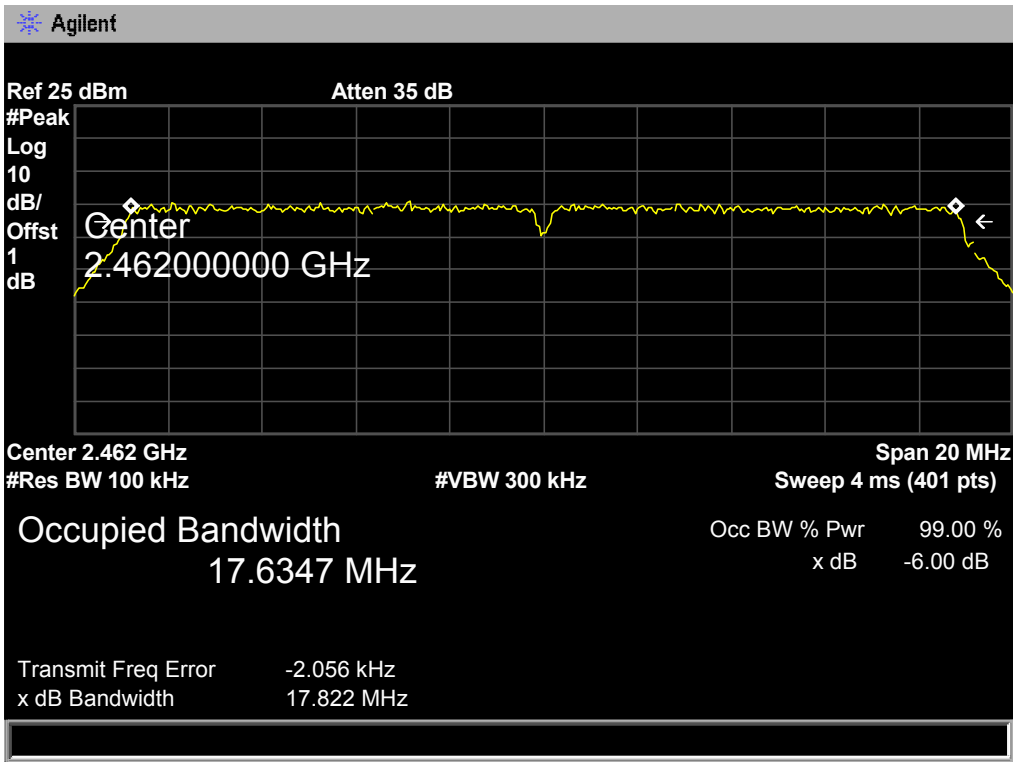
802.11N(HT20) Mode

2437 MHz



802.11N(HT20) Mode

2462 MHz

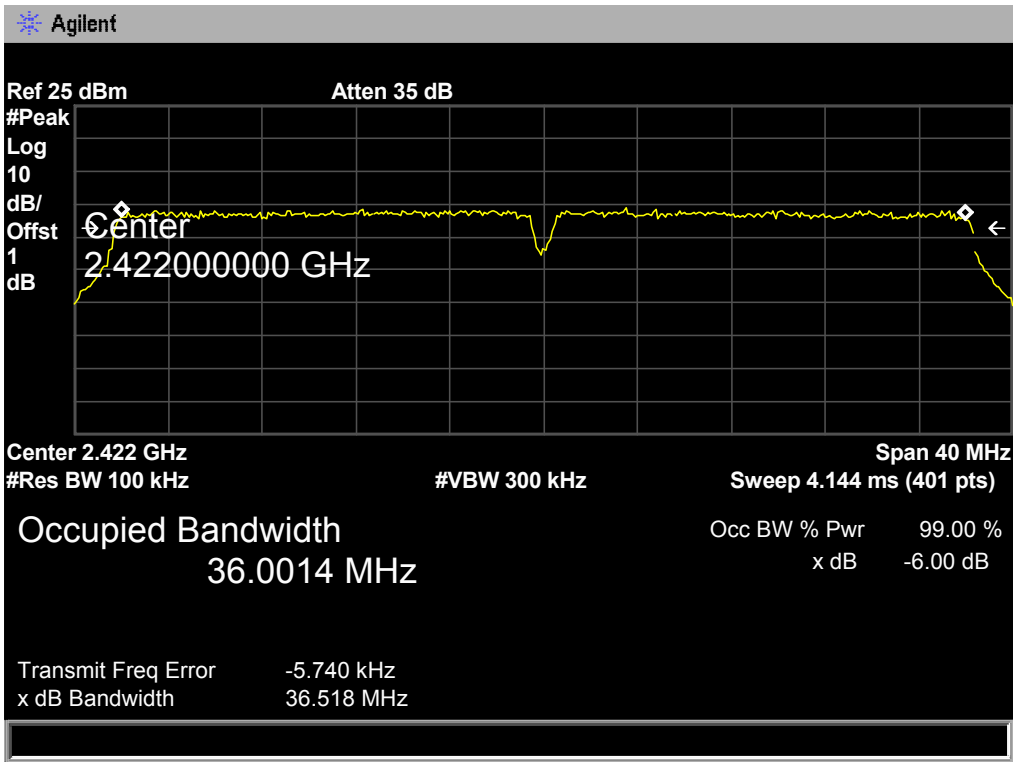


EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX 802.11N(HT40) Mode		

Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2422	36.518	36.0014	>=0.5
2437	36.538	36.0137	
2452	36.526	36.0317	

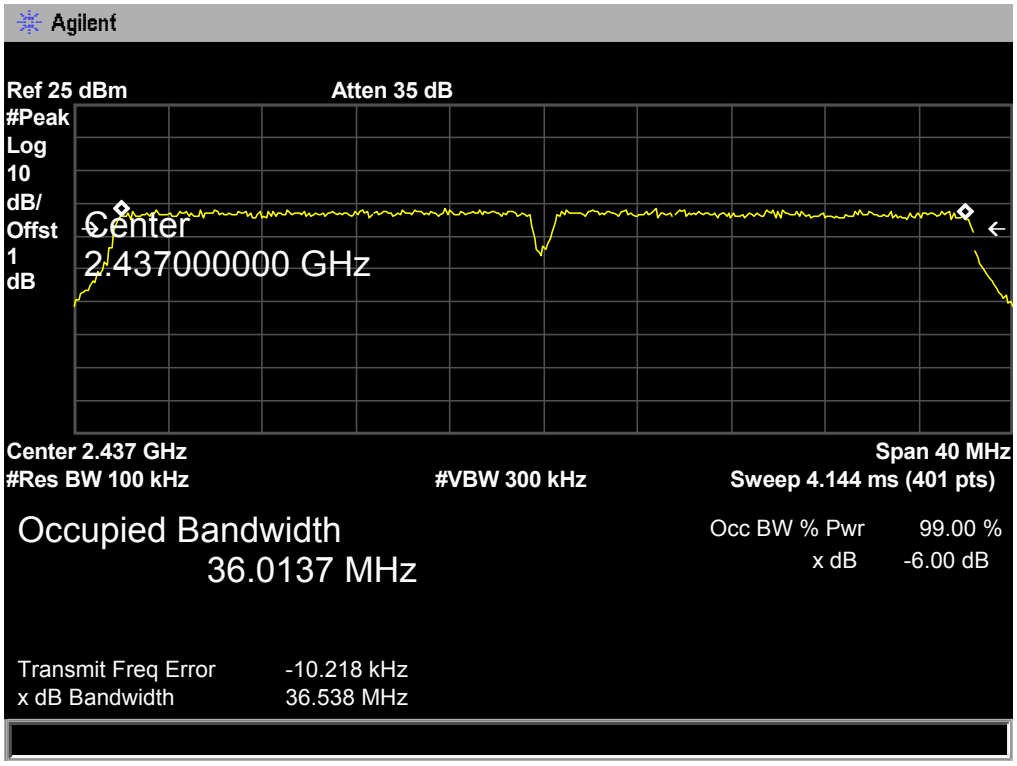
802.11N(HT40) Mode

2422 MHz



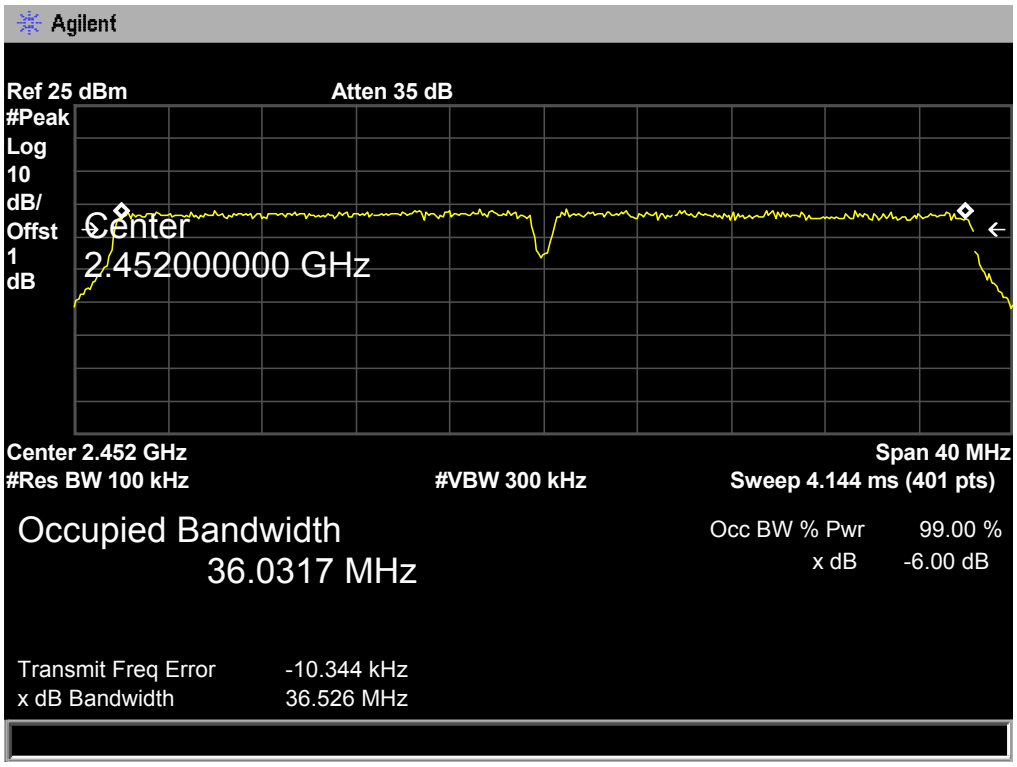
802.11N(HT40) Mode

2437 MHz



802.11N(HT40) Mode

2452 MHz



7. Peak Output Power Test

7.1 Test Standard and Limit

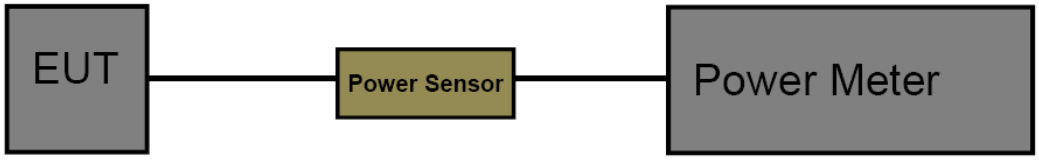
7.1.1 Test Standard

FCC Part 15.247 (b)

7.1.2 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

7.2 Test Setup



7.3 Test Procedure

The measurement is according to section 9.1.2 of KDB 558074 D01 DTS Meas Guidance v03r02.
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.

7.4 EUT Operating Condition

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

7.5 Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Power Meter	Anritsu	ML2495A	25406005	Dec. 20, 2013	Dec. 19, 2014
Power Sensor	Anritsu	ML2411B	25406005	Dec. 20, 2013	Dec. 19, 2014

7.6 Test Data

EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 HZ		

Mode	Channel frequency (MHz)	Test Result (dBm)	Limit (dBm)
802.11b	2412	15.04	30
	2437	15.41	
	2462	15.00	
802.11g	2412	15.01	
	2437	15.15	
	2462	15.20	
802.11n (HT20)	2412	14.97	
	2437	15.29	
	2462	15.44	
802.11n (HT40)	2422	15.26	
	2437	15.54	
	2452	15.45	

8. Power Spectral Density Test

8.1 Test Standard and Limit

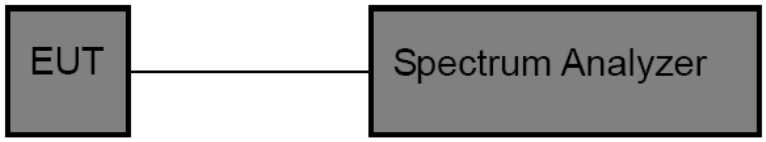
8.1.1 Test Standard

FCC Part 15.247 (e)

8.1.2 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

8.2 Test Setup



8.3 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 v03r02.

(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.

8.4 EUT Operating Condition

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

8.5 Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Mar. 20, 2014	Mar. 19, 2015

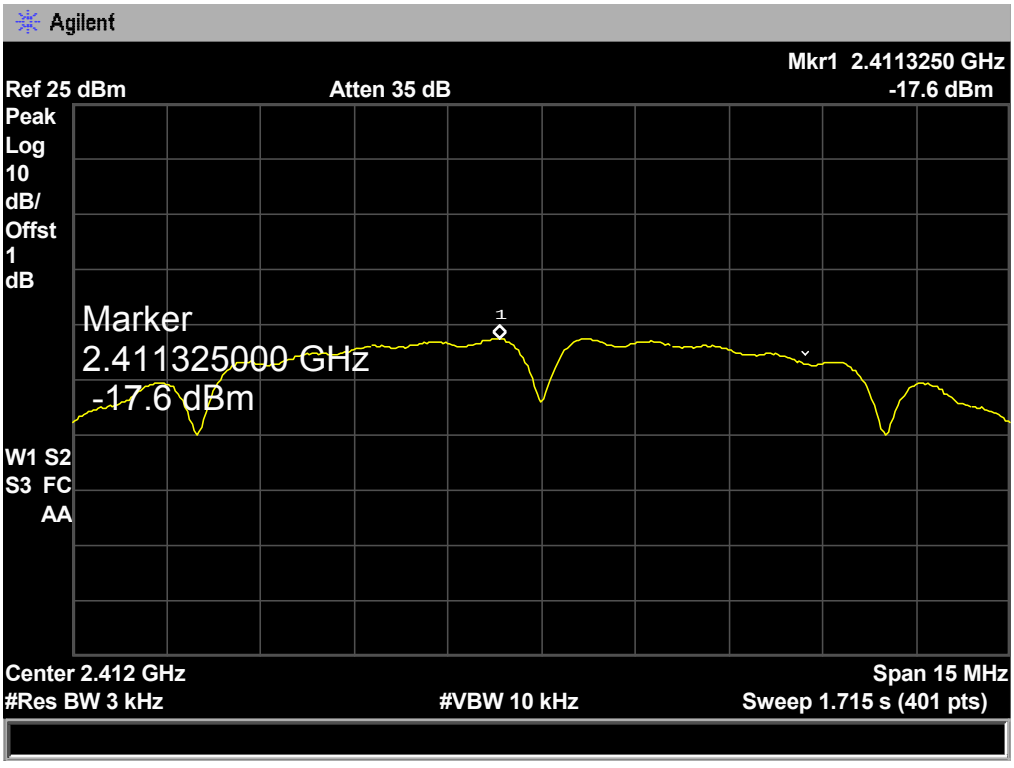
8.6 Test Data

EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 HZ		
Test Mode:	TX 802.11B Mode		

Channel Frequency (MHz)	Power Density (3 kHz/dBm)	Limit (dBm)
2412	-17.60	8
2437	-17.10	
2462	-16.81	

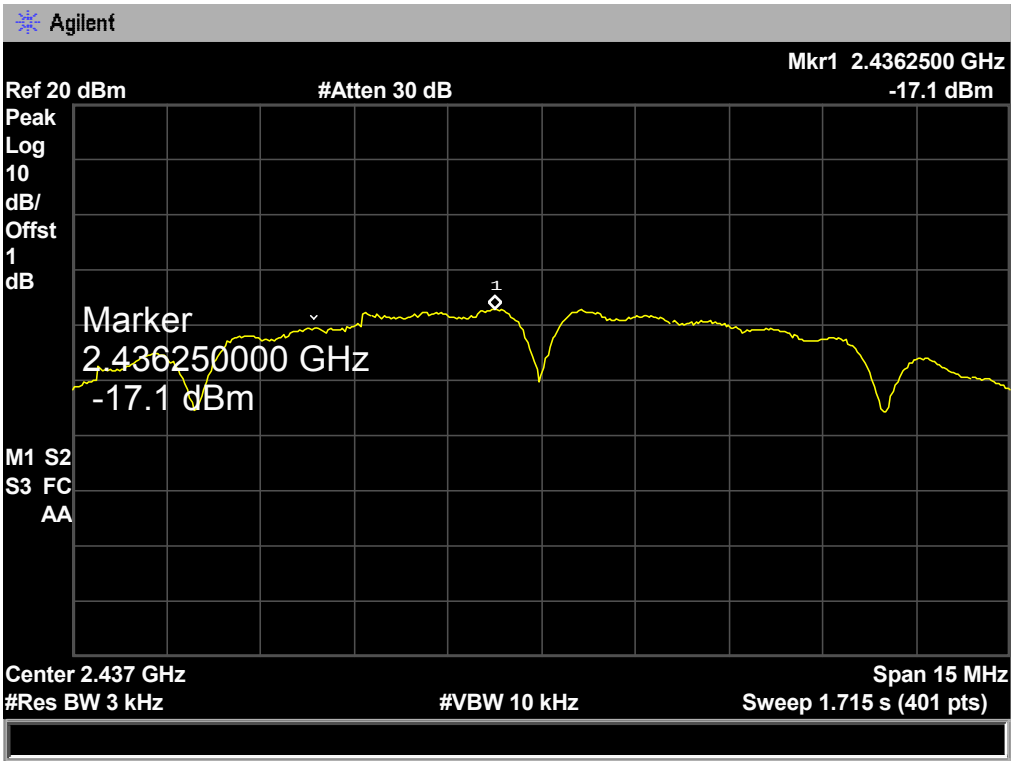
802.11B Mode

2412 MHz



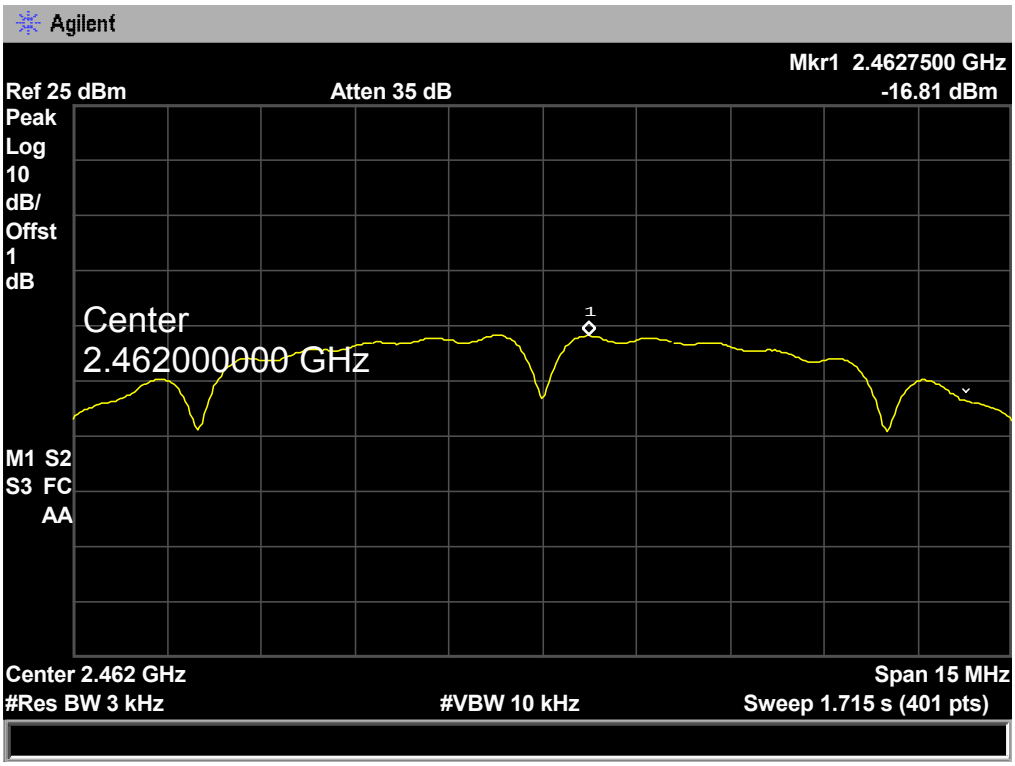
802.11B Mode

2437 MHz



802.11B Mode

2462 MHz

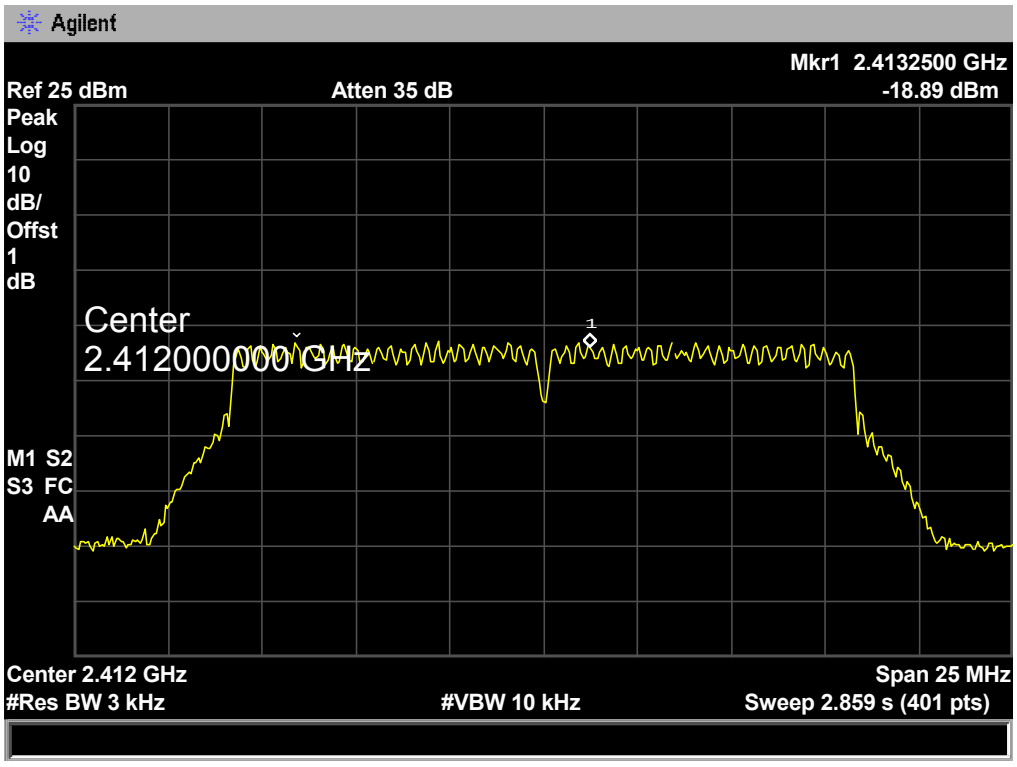


EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 HZ		
Test Mode:	TX 802.11G Mode		

Channel Frequency (MHz)	Power Density (3 kHz/dBm)	Limit (dBm)
2412	-18.89	8
2437	-14.03	
2462	-16.21	

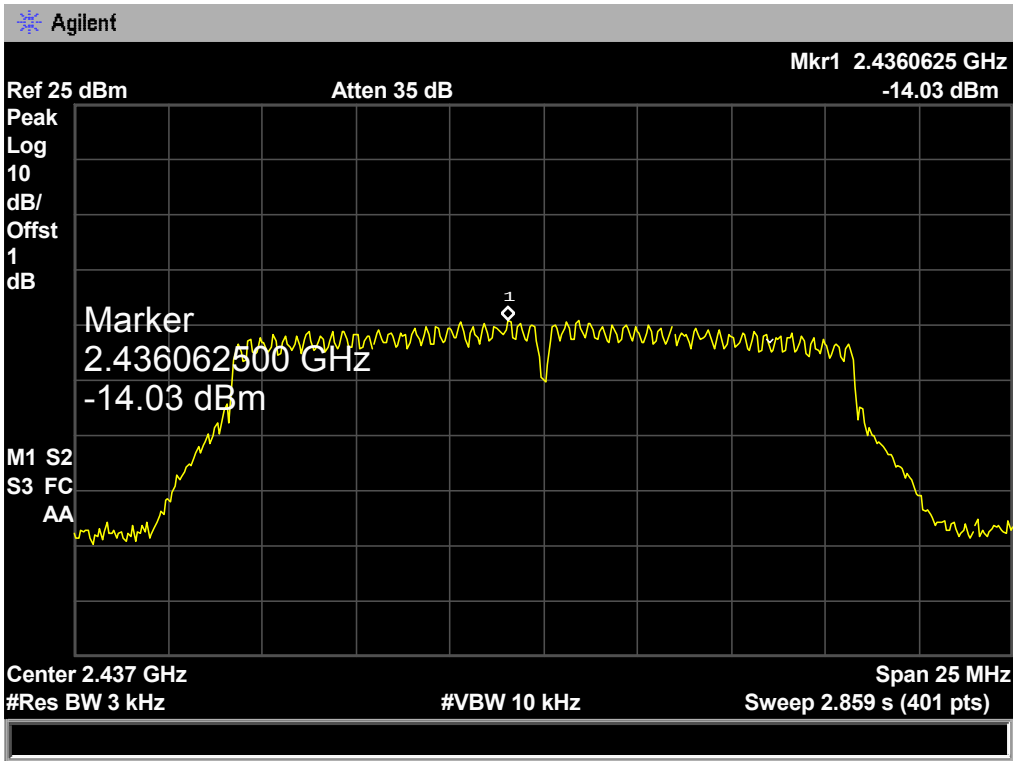
802.11G Mode

2412 MHz



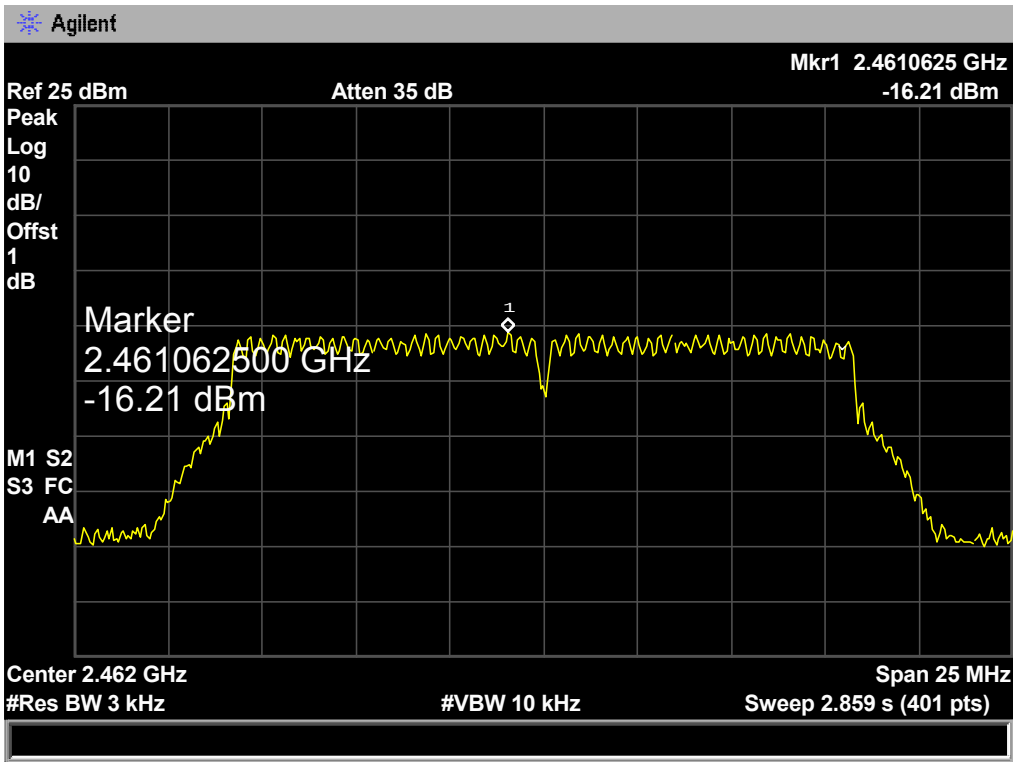
802.11G Mode

2437 MHz



802.11G Mode

2462 MHz

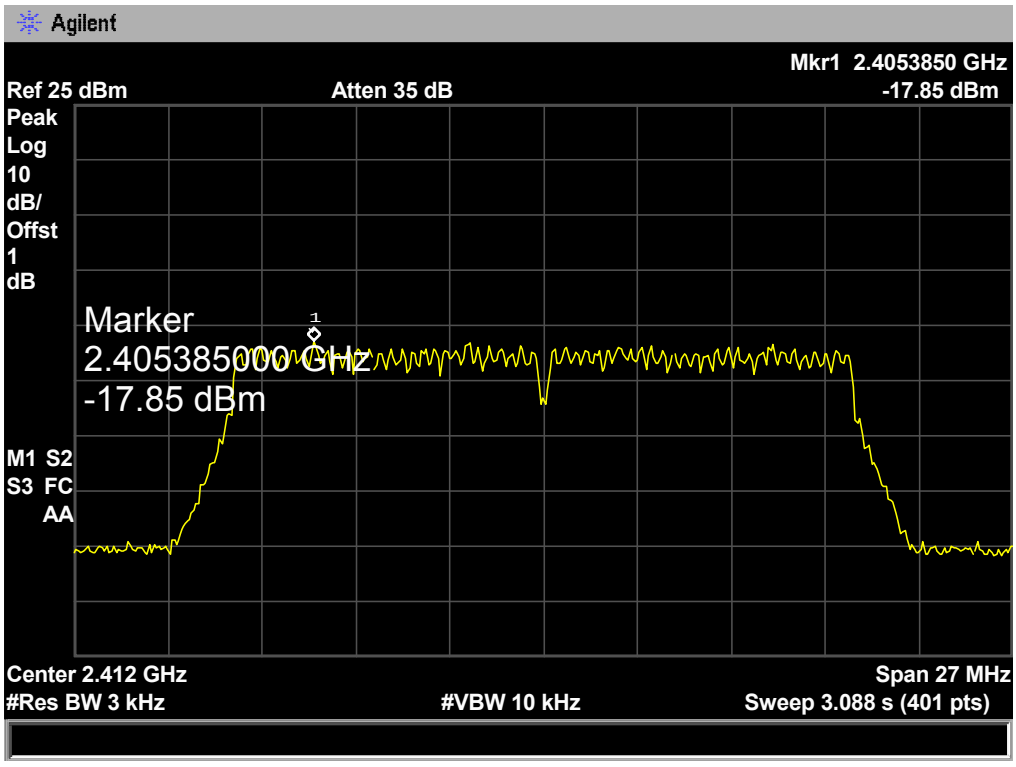


EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 HZ		
Test Mode:	TX 802.11N(HT20) Mode		

Channel Frequency (MHz)	Power Density (3 kHz/dBm)	Limit (dBm)
2412	-17.85	8
2437	-17.75	
2462	-17.63	

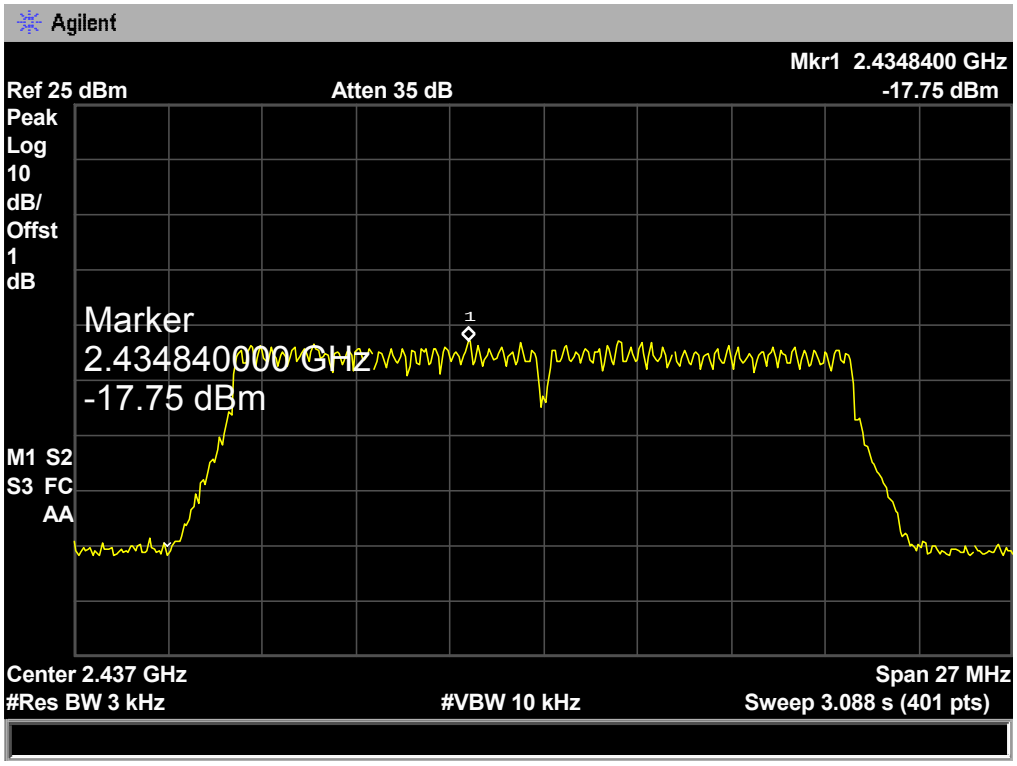
802.11N(HT20) Mode

2412 MHz



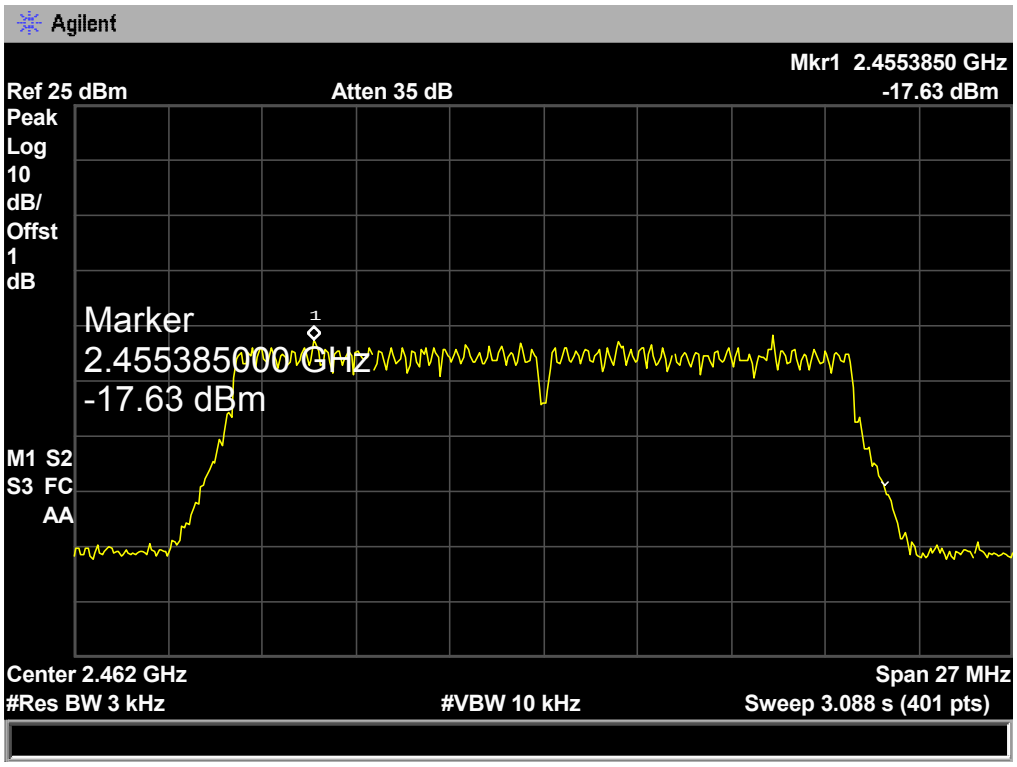
802.11N(HT20) Mode

2437 MHz



802.11N(HT20) Mode

2462 MHz

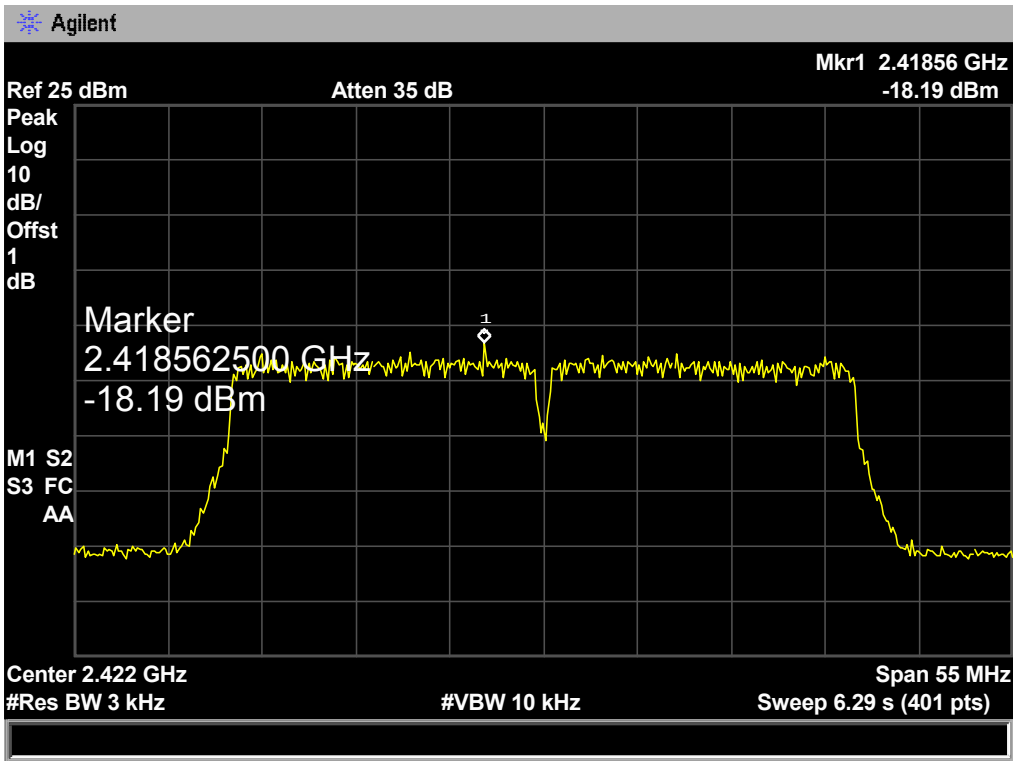


EUT:	IP Fusion Curve	Model Name :	HR103-W
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 HZ		
Test Mode:	TX 802.11N(HT40) Mode		

Channel Frequency (MHz)	Power Density (3 kHz/dBm)	Limit (dBm)
2422	-18.19	8
2437	-18.48	
2452	-22.57	

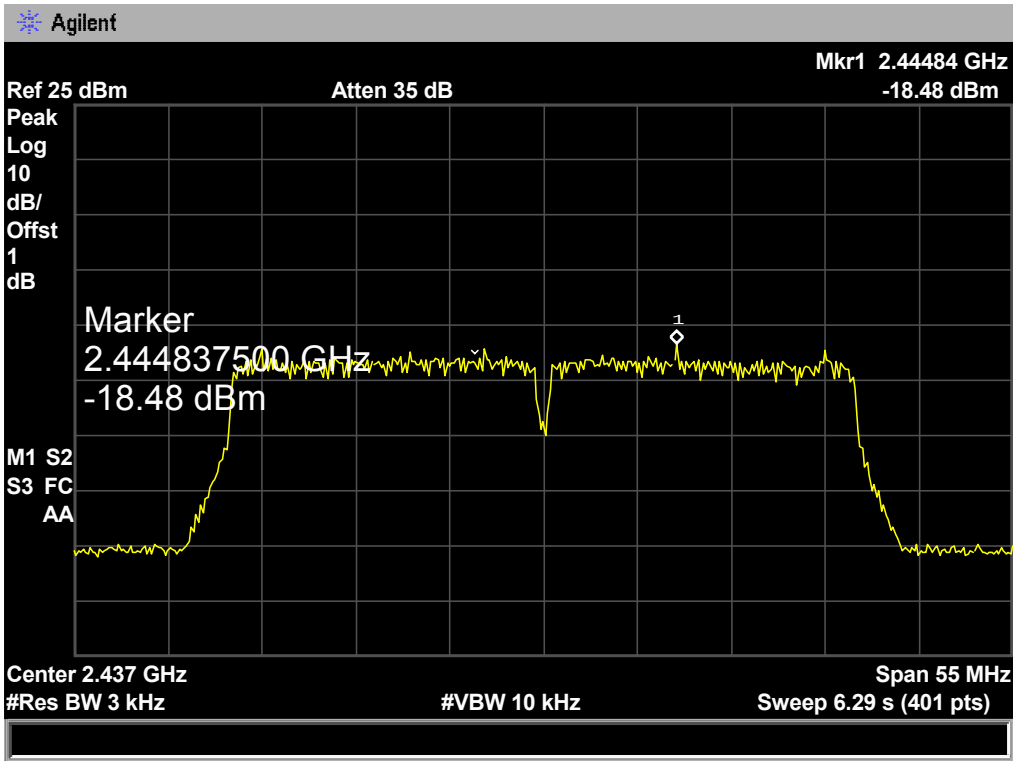
802.11N(HT40) Mode

2422 MHz



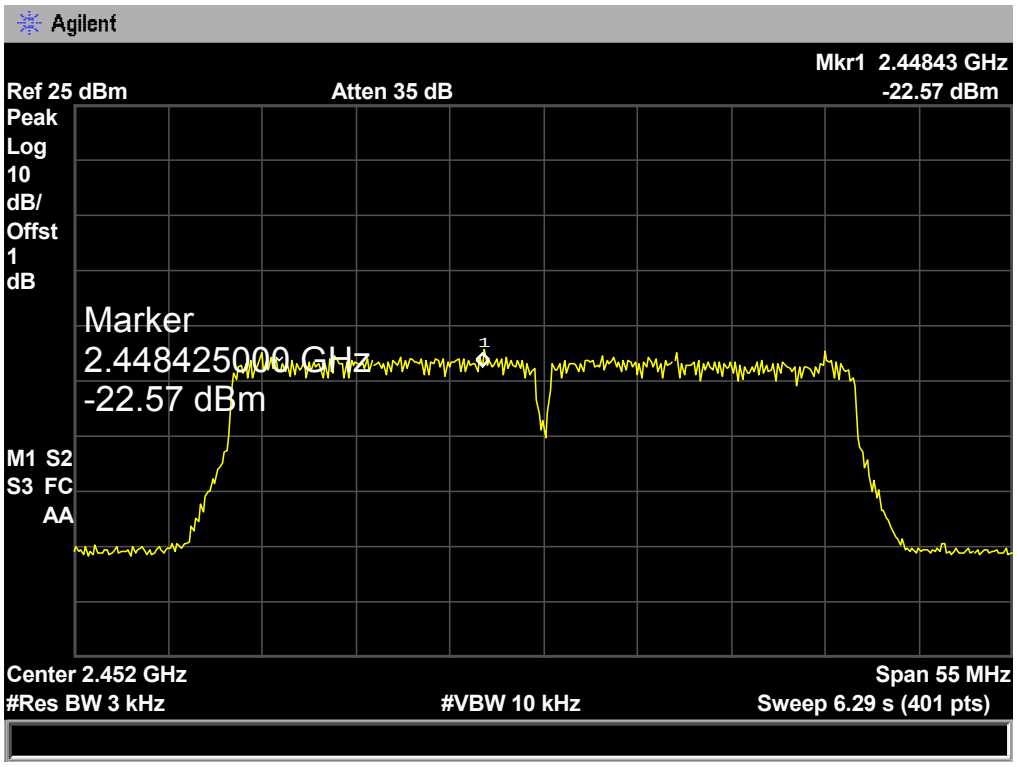
802.11N(HT40) Mode

2437 MHz



802.11N(HT40) Mode

2452 MHz



9. Antenna Requirement

9.1 Standard Requirement

9.1.1 Standard

FCC Part 15.203

9.1.2 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.

9.2 Antenna Connected Construction

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

9.3 Result

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