

FCC Radio Test Report

FCC ID: XMF-MID8001

Original Grant

Report No. : TB-FCC143144
Applicant : Lightcomm Technology Co., Ltd.
Equipment Under Test (EUT)
EUT Name : MID
Model No. : MID8001-IB
Series Model No. : DL801W
Brand Name : N/A
Receipt Date : 2015-01-20
Test Date : 2015-01-20 to 2015-01-26
Issue Date : 2015-01-27
Standards : FCC Part 15, Subpart C (15.247:2014)
Test Method : ANSI C63.4:2003
Conclusions : **PASS**

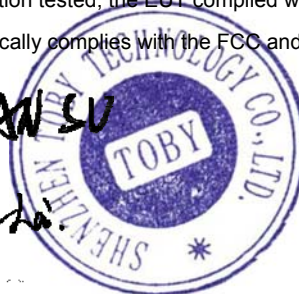
In the configuration tested, the EUT complied with the standards specified above,
The EUT technically complies with the FCC and IC requirements

Test/Witness Engineer :

IVAN SU

Approved & Authorized :

Ray



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.

Contents

CONTENTS	2
1. GENERAL INFORMATION ABOUT EUT	4
1.1 Client Information.....	4
1.2 General Description of EUT (Equipment Under Test)	4
1.3 Block Diagram Showing the Configuration of System Tested.....	5
1.4 Description of Support Units	5
1.5 Description of Test Mode.....	6
1.6 Description of Test Software Setting	6
1.7 Test Facility.....	7
2. TEST SUMMARY	8
3. CONDUCTED EMISSION TEST	9
3.1 Test Standard and Limit.....	9
3.2 Test Setup.....	9
3.3 Test Procedure.....	9
3.4 Test Equipment Used.....	10
3.5 EUT Operating Mode	10
3.6 Test Data.....	10
4. RADIATED EMISSION TEST	13
4.1 Test Standard and Limit.....	13
4.2 Test Setup.....	14
4.3 Test Procedure.....	15
4.4 EUT Operating Condition	15
4.5 Test Equipment	16
4.6 Test Data.....	16
5. RESTRICTED BANDS REQUIREMENT	43
5.1 Test Standard and Limit.....	43
5.2 Test Setup.....	43
5.3 Test Procedure.....	43
5.5 Test Equipment	44
5.6 Test Data.....	44
6. BANDWIDTH TEST	65
6.1 Test Standard and Limit.....	65
6.2 Test Setup.....	65
6.3 Test Procedure.....	65
6.4 EUT Operating Condition	65
6.5 Test Equipment	65
6.6 Test Data.....	66
7. PEAK OUTPUT POWER TEST	74
7.1 Test Standard and Limit.....	74

7.2 Test Setup.....	74
7.3 Test Procedure.....	74
7.4 EUT Operating Condition	74
7.5 Test Equipment	74
7.6 Test Data.....	75
8. POWER SPECTRAL DENSITY TEST	76
8.1 Test Standard and Limit.....	76
8.2 Test Setup.....	76
8.3 Test Procedure.....	76
8.4 EUT Operating Condition	76
8.5 Test Equipment	77
8.6 Test Data.....	78
9. ANTENNA REQUIREMENT.....	86
9.1 Standard Requirement.....	86
9.2 Antenna Connected Construction	86
9.3 Result.....	86

1. General Information about EUT

1.1 Client Information

Applicant : Lightcomm Technology Co., Ltd.
Address : RM 1708-10, 17/F, PROSPERITY CENTRE, 25 CHONG YIP STREET, KWUN TONG, KOWLOON, HONG KONG
Manufacturer : Huizhou Hengdu Electronics Co.,Ltd.
Address : DIP South Area, Huiao Highway, Huizhou, Guangdong, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	MID
Models No.	:	MID8001-IB, DL801W
Model Difference	:	All models are identical in the same PCB layout, interior structure and electrical circuit, The only difference is model name for commercial purpose.
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: 9.09 dBm 802.11g: 8.95dBm 802.11n (HT20): 8.89dBm 802.11n (HT40): 8.97dBm
	Antenna Gain:	0 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	:
Power Rating	:	Input: AC 100~240V 50/60Hz 0.35A Max Output: 5V 2A DC 3.7V from Li-ion battery
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.

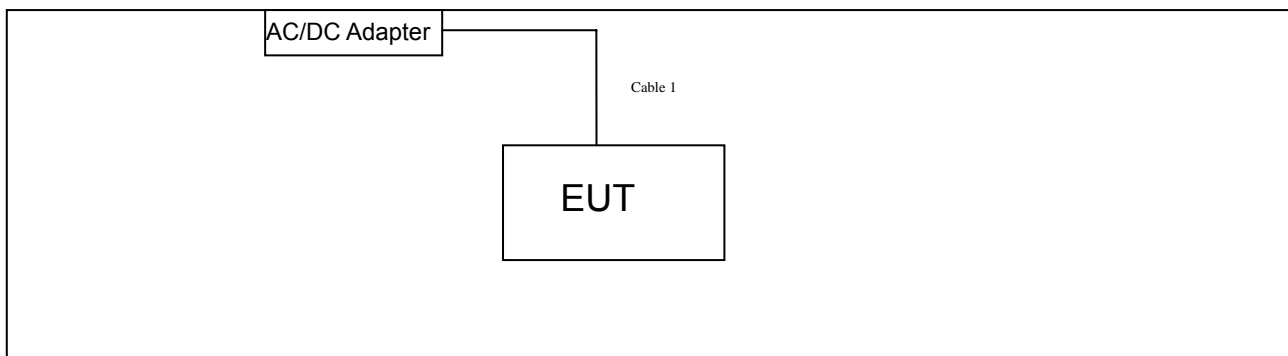
Note:

- (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 802.11n(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	YES	NO	1.1M	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 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 C63.4 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	Realtek 11n 8723B SDIO WLAN MP Diagnostic Program 31.06.20140627		
	CH 01	CH 06	CH 11
IEEE 802.11b DSSS	29	28	23
IEEE 802.11g OFDM	36	35	34
IEEE 802.11n (HT20)	36	35	33
Channel	CH 03	CH 06	CH 09
IEEE 802.11n (HT40)	38	37	36

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

3.1.1 Test Standard

FCC Part 15.207

3.1.2 Test Limit

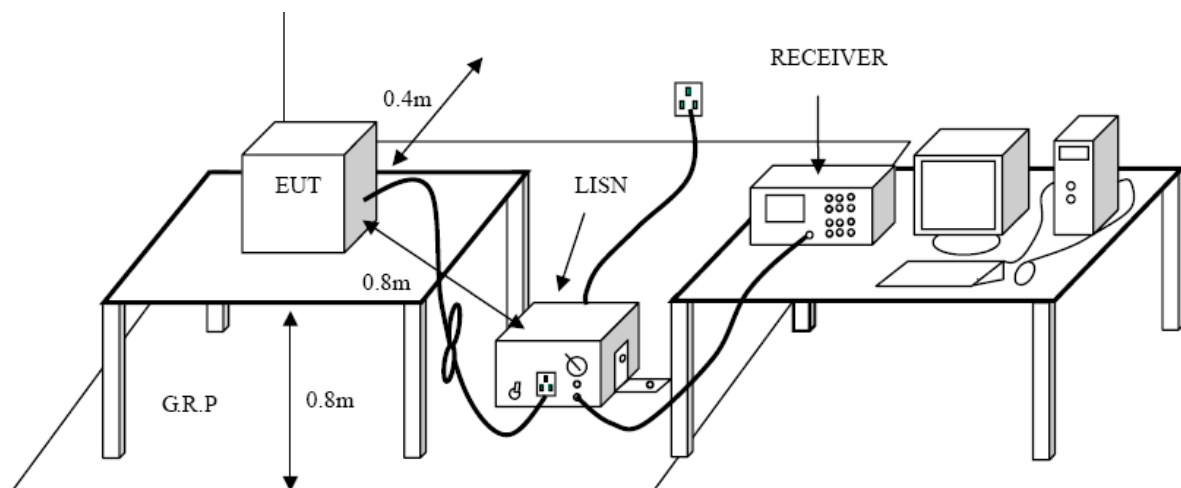
Conducted Emission Test Limit

Frequency	Maximum RF Line Voltage (dB μ V)	
	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

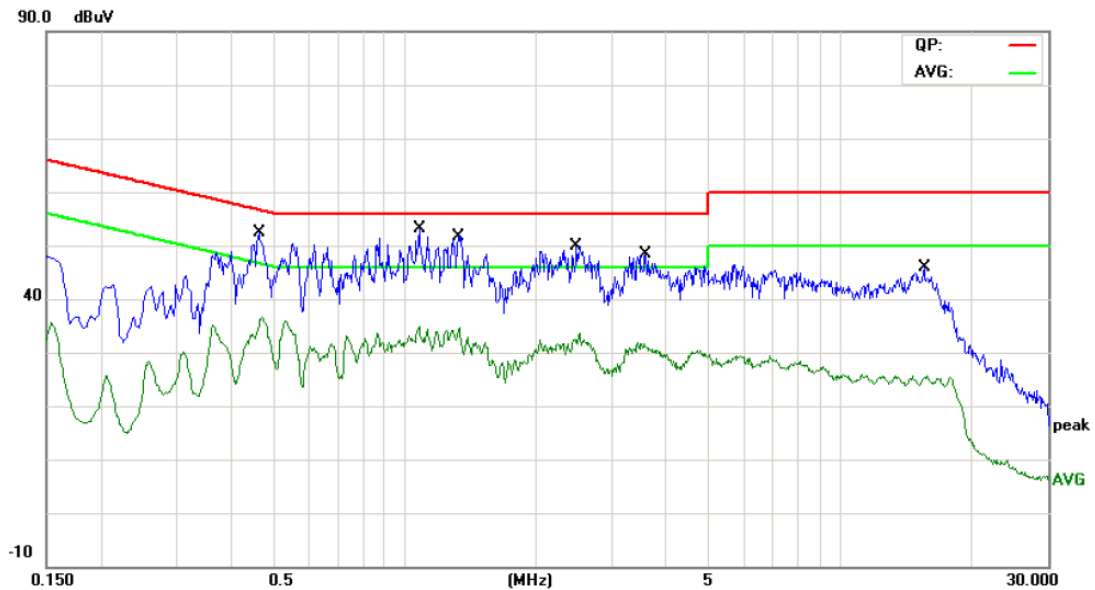
3.5 EUT Operating Mode

Please refer to the description of test mode.

3.6 Test Data

Please see the next page.

EUT:	MID	Model Name :	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Terminal:	Line		
Test Mode:	AC Charging with TX B Mode		
Remark:	Only worse case is reported		

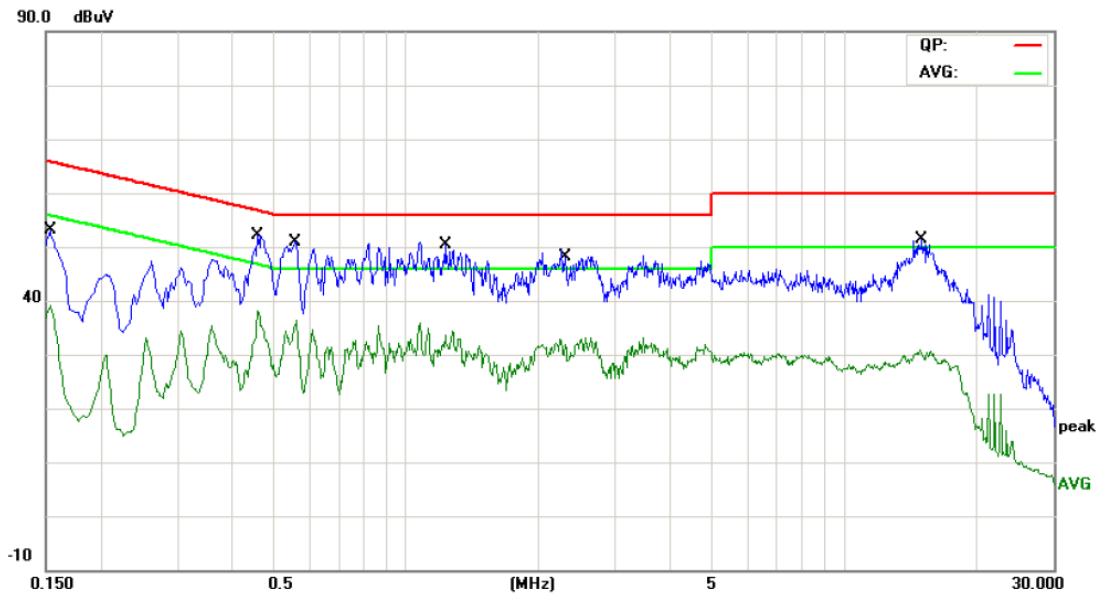


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.4620	31.10	10.02	41.12	56.66	-15.54	QP
2		0.4620	22.58	10.02	32.60	46.66	-14.06	AVG
3	*	1.0780	34.72	10.06	44.78	56.00	-11.22	QP
4		1.0780	23.33	10.06	33.39	46.00	-12.61	AVG
5		1.3300	30.27	10.06	40.33	56.00	-15.67	QP
6		1.3300	22.05	10.06	32.11	46.00	-13.89	AVG
7		2.4820	30.06	10.04	40.10	56.00	-15.90	QP
8		2.4820	21.08	10.04	31.12	46.00	-14.88	AVG
9		3.5700	27.93	10.01	37.94	56.00	-18.06	QP
10		3.5700	19.91	10.01	29.92	46.00	-16.08	AVG
11		15.5700	24.80	10.25	35.05	60.00	-24.95	QP
12		15.5700	13.41	10.25	23.66	50.00	-26.34	AVG

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

Emission Level= Read Level+ Correct Factor

EUT:	MID	Model Name :	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Terminal:	Neutral		
Test Mode:	AC Charging with TX B Mode		
Remark:	Only worse case is reported		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1539	37.47	9.93	47.40	65.78	-18.38	QP
2		0.1539	26.57	9.93	36.50	55.78	-19.28	AVG
3		0.4580	34.56	10.02	44.58	56.73	-12.15	QP
4		0.4580	22.75	10.02	32.77	46.73	-13.96	AVG
5	*	0.5580	34.85	10.05	44.90	56.00	-11.10	QP
6		0.5580	21.99	10.05	32.04	46.00	-13.96	AVG
7		1.2260	31.42	10.06	41.48	56.00	-14.52	QP
8		1.2260	20.19	10.06	30.25	46.00	-15.75	AVG
9		2.2980	29.58	10.05	39.63	56.00	-16.37	QP
10		2.2980	18.65	10.05	28.70	46.00	-17.30	AVG
11		14.9900	26.01	10.26	36.27	60.00	-23.73	QP
12		14.9900	14.09	10.26	24.35	50.00	-25.65	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

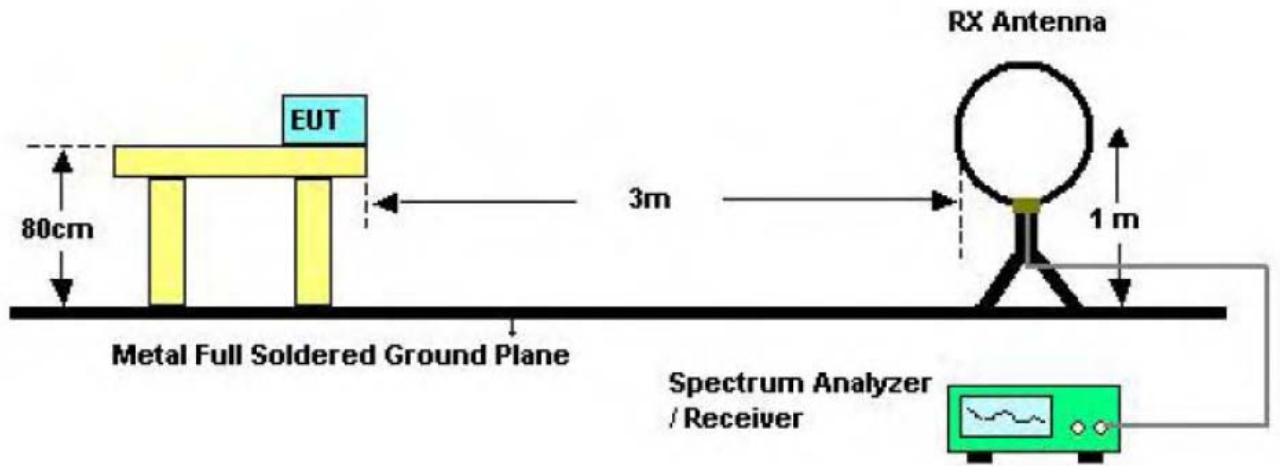
Radiated Emission Limit (Above 1000MHz)

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

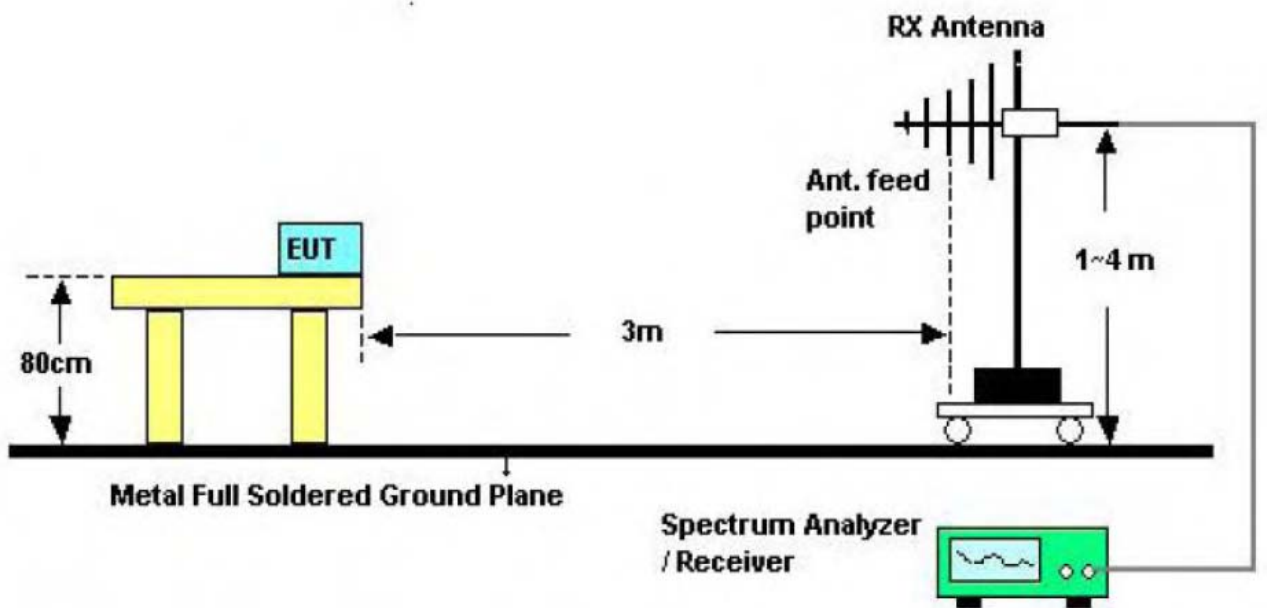
Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission Level(dBuV/m)=20log Emission Level(uV/m)

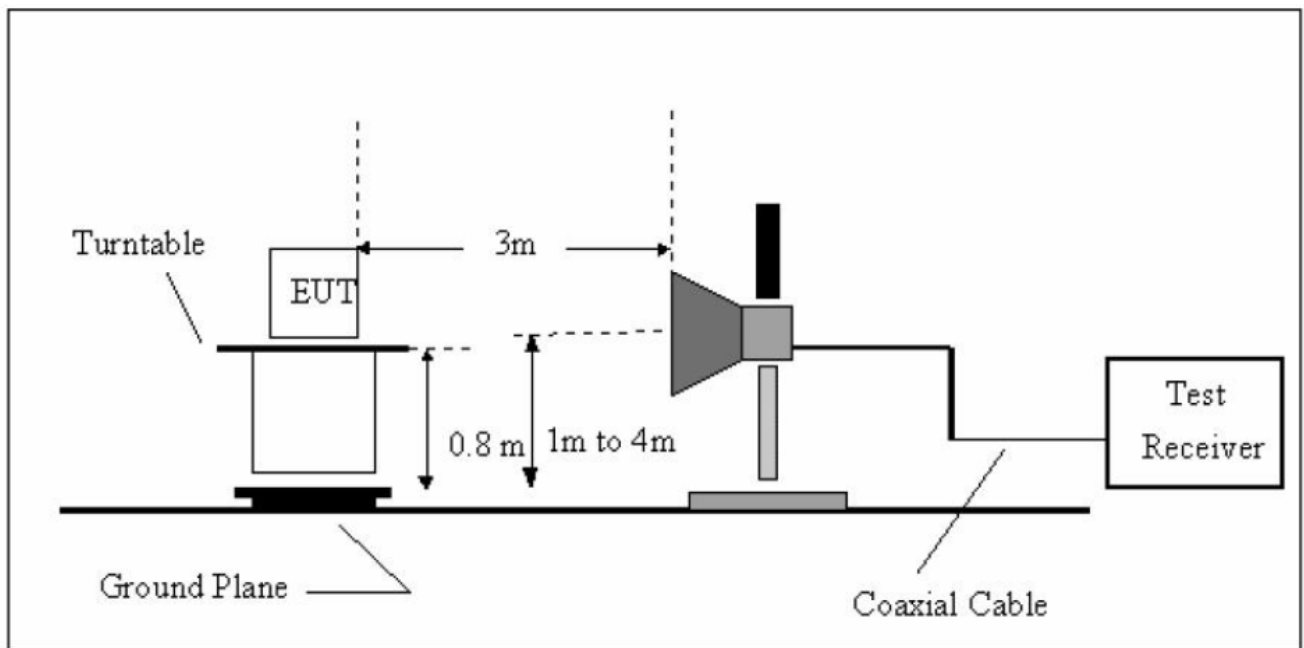
4.2 Test Setup



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

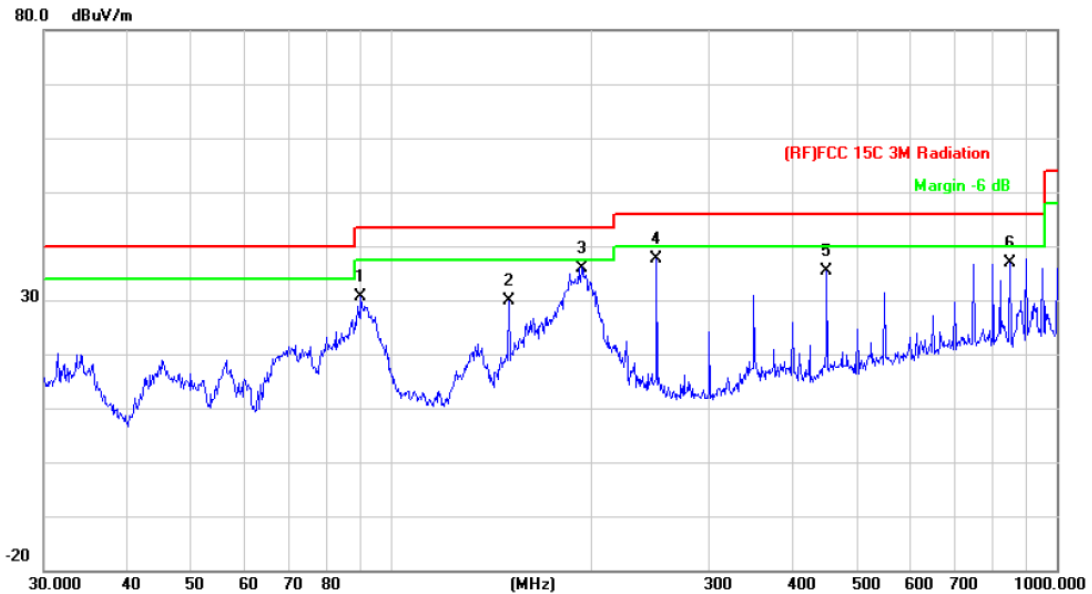
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Mar. 20, 2014	Mar. 19, 2015
Spectrum Analyzer	Rohde & Schwarz	FSP30	DE25181	Aug. 08, 2014	Aug. 07, 2015
EMI Test Receiver	Rohde & Schwarz	ESCI	101165	Aug. 08, 2014	Aug. 07, 2015
Bilog Antenna	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:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz		
Remark:	Only worse case is reported		

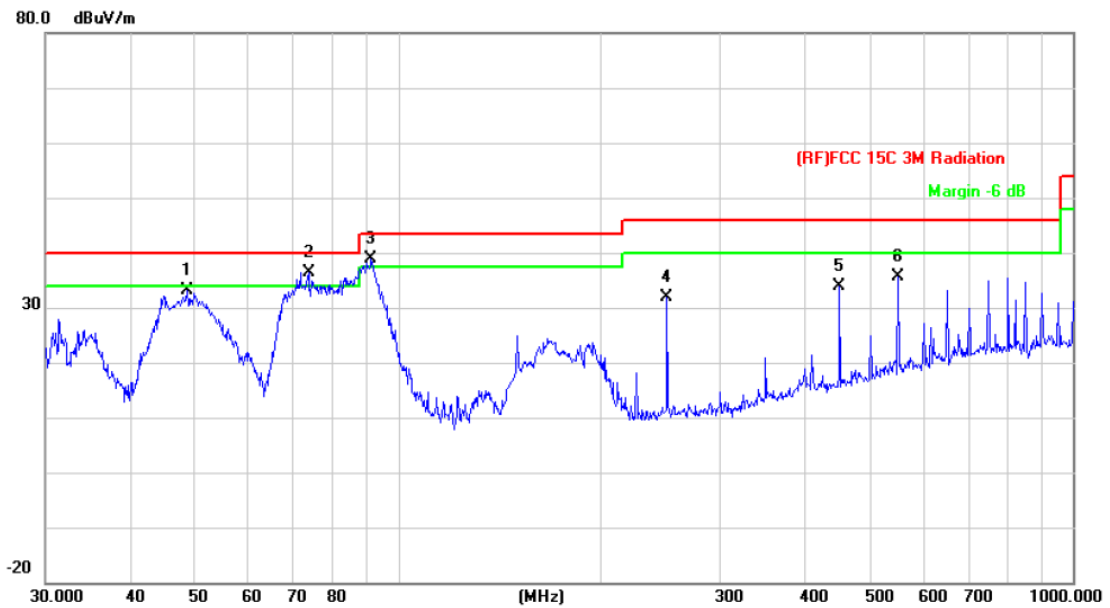


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		89.9047	53.27	-22.69	30.58	43.50	-12.92	peak
2		150.0108	51.06	-21.17	29.89	43.50	-13.61	peak
3	*	193.0945	56.75	-20.75	36.00	43.50	-7.50	peak
4		250.3012	55.79	-18.11	37.68	46.00	-8.32	peak
5		451.1350	47.70	-12.41	35.29	46.00	-10.71	peak
6		851.0353	43.50	-6.65	36.85	46.00	-9.15	peak

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

Emission Level= Read Level+ Correct Factor

EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz		
Remark:	Only worse case is reported		

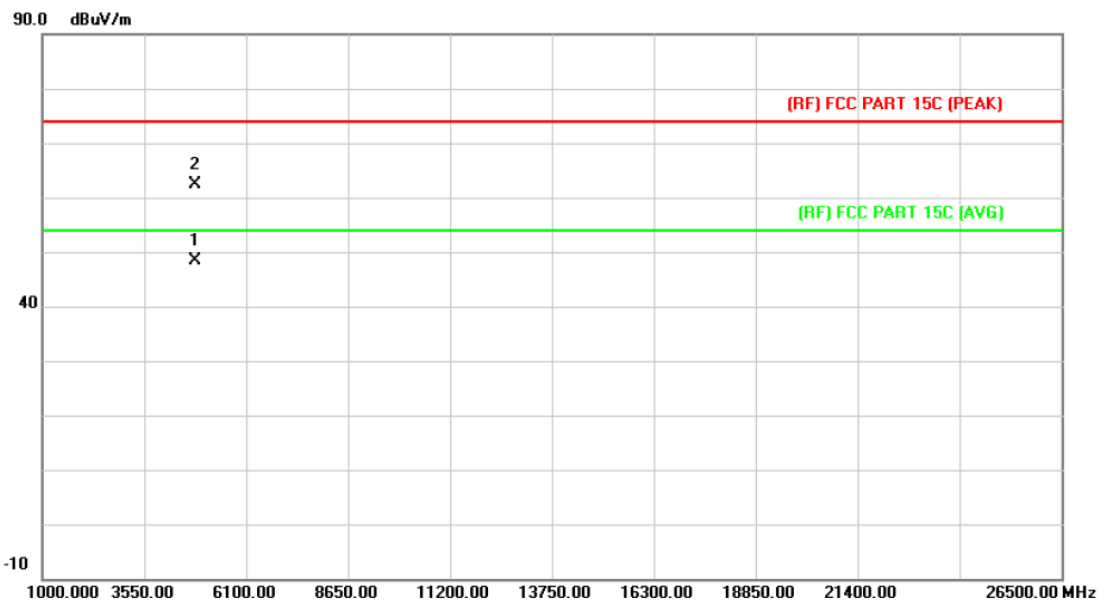


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		48.6719	56.87	-23.84	33.03	40.00	-6.97	peak
2	*	73.6170	59.95	-23.49	36.46	40.00	-3.54	peak
3	!	91.1746	61.36	-22.59	38.77	43.50	-4.73	peak
4		250.3012	49.93	-18.11	31.82	46.00	-14.18	peak
5		451.1350	46.27	-12.41	33.86	46.00	-12.14	peak
6		550.9480	45.80	-10.12	35.68	46.00	-10.32	peak

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

Emission Level= Read Level+ Correct Factor

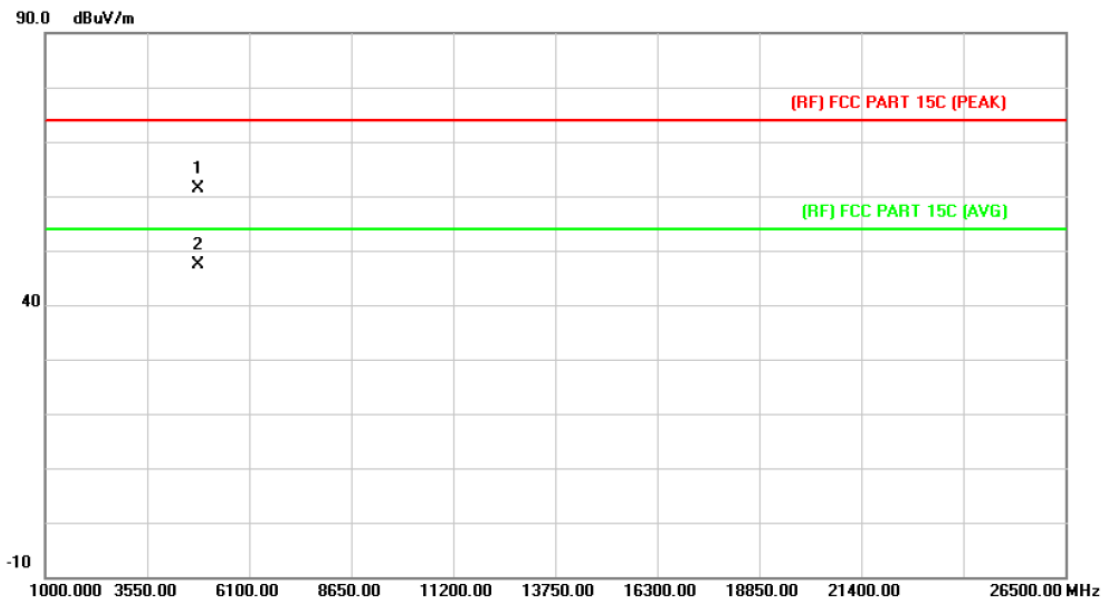
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	4823.931	34.79	13.56	48.35	54.00	-5.65	AVG
2		4824.279	48.78	13.56	62.34	74.00	-11.66	peak

Emission Level= Read Level+ Correct Factor

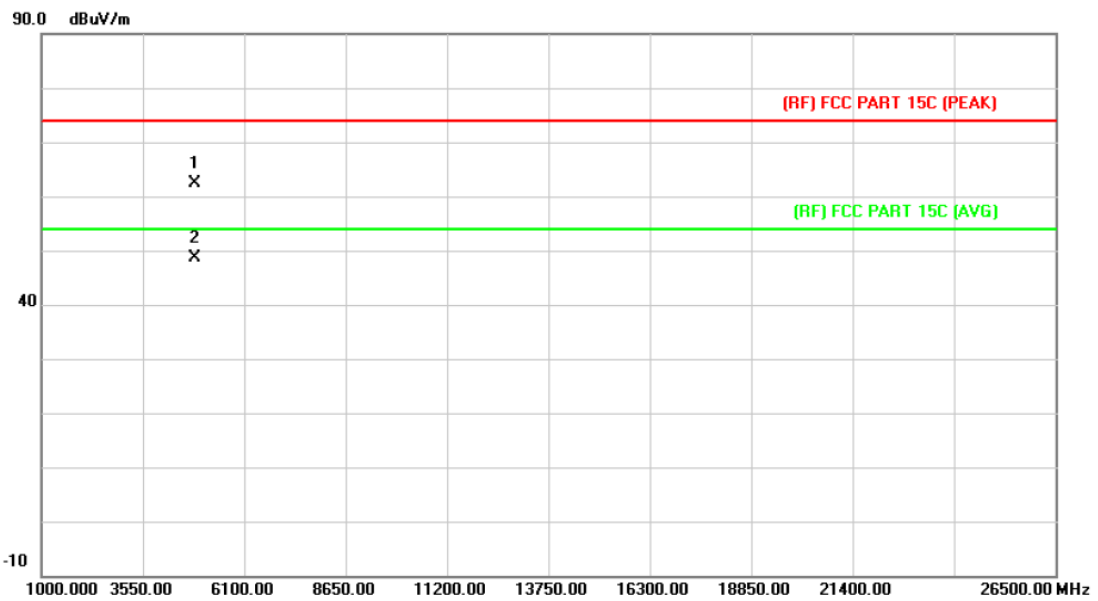
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1		4823.838	47.91	13.56	61.47	74.00	-12.53	peak
2	*	4823.949	33.94	13.56	47.50	54.00	-6.50	AVG

Emission Level= Read Level+ Correct Factor

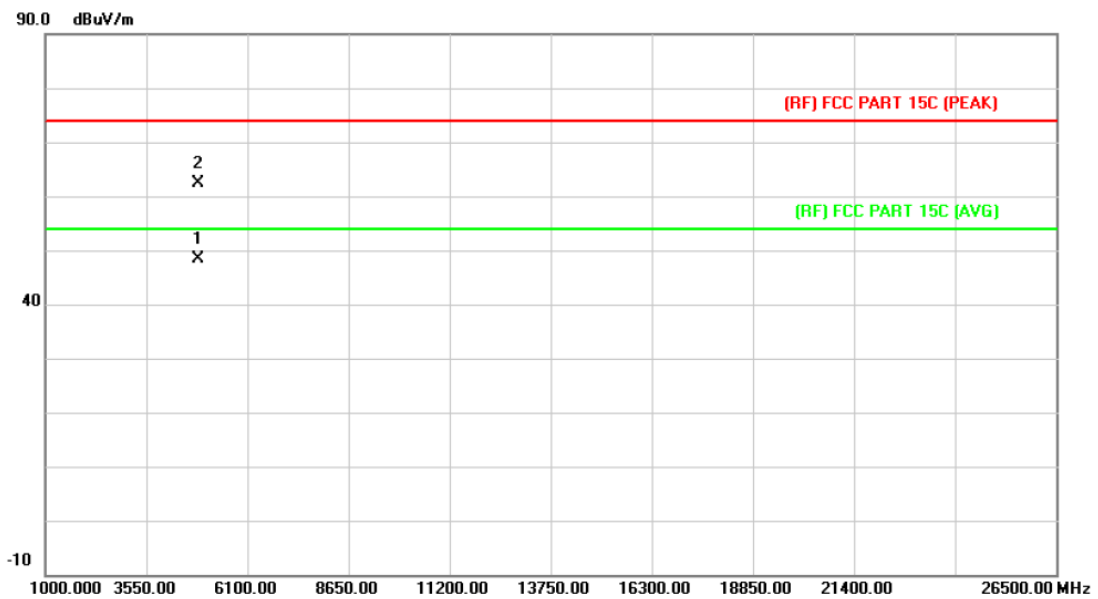
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1		4873.727	48.60	13.86	62.46	74.00	-11.54	peak
2	*	4873.928	34.72	13.86	48.58	54.00	-5.42	AVG

Emission Level= Read Level+ Correct Factor

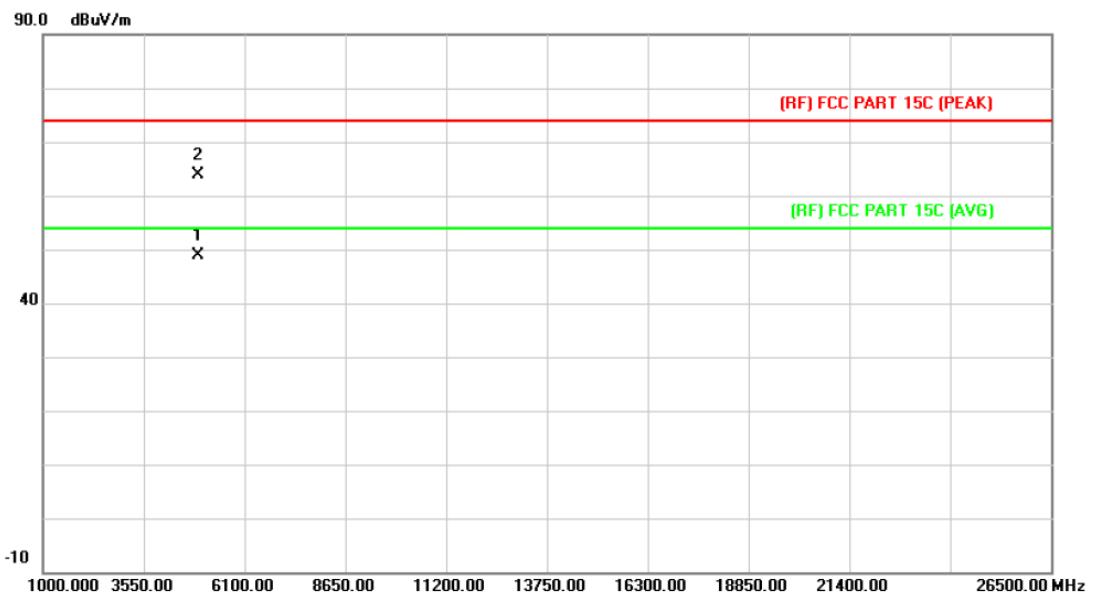
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4874.027	34.46	13.86	48.32	54.00	-5.68	AVG
2		4874.357	48.59	13.86	62.45	74.00	-11.55	peak

Emission Level= Read Level+ Correct Factor

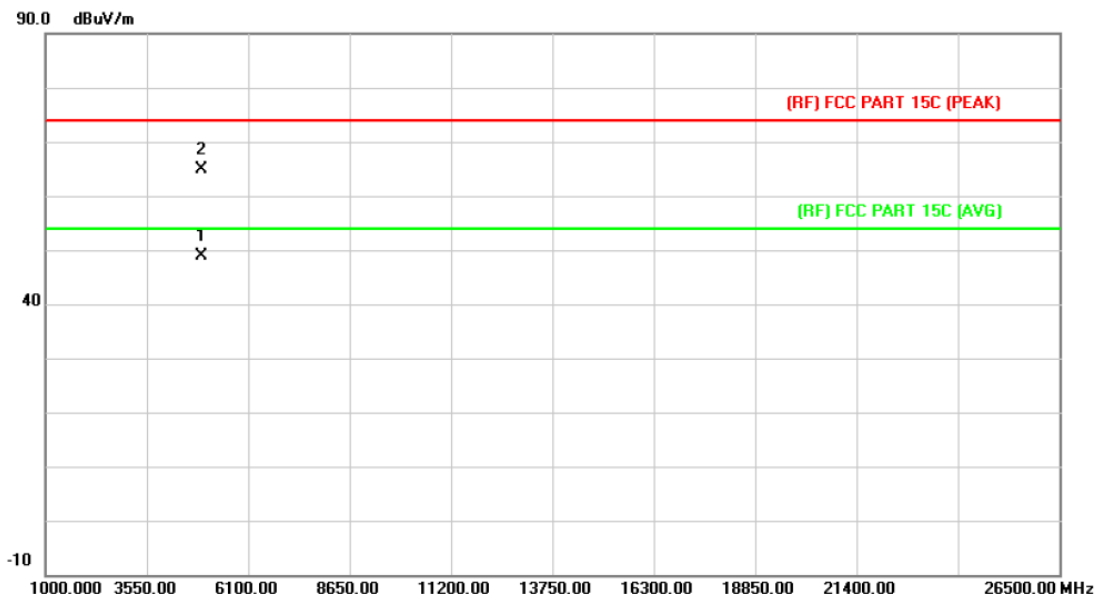
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4924.090	34.80	14.15	48.95	54.00	-5.05	AVG
2		4924.186	49.78	14.15	63.93	74.00	-10.07	peak

Emission Level= Read Level+ Correct Factor

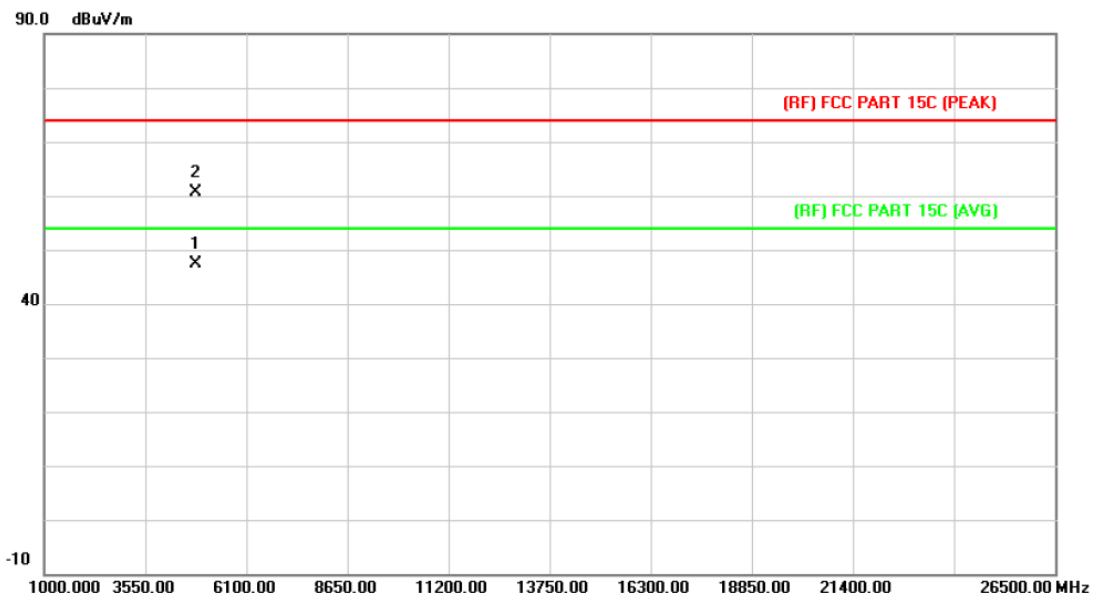
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	4924.030	34.79	14.15	48.94	54.00	-5.06	AVG
2		4924.900	50.73	14.15	64.88	74.00	-9.12	peak

Emission Level= Read Level+ Correct Factor

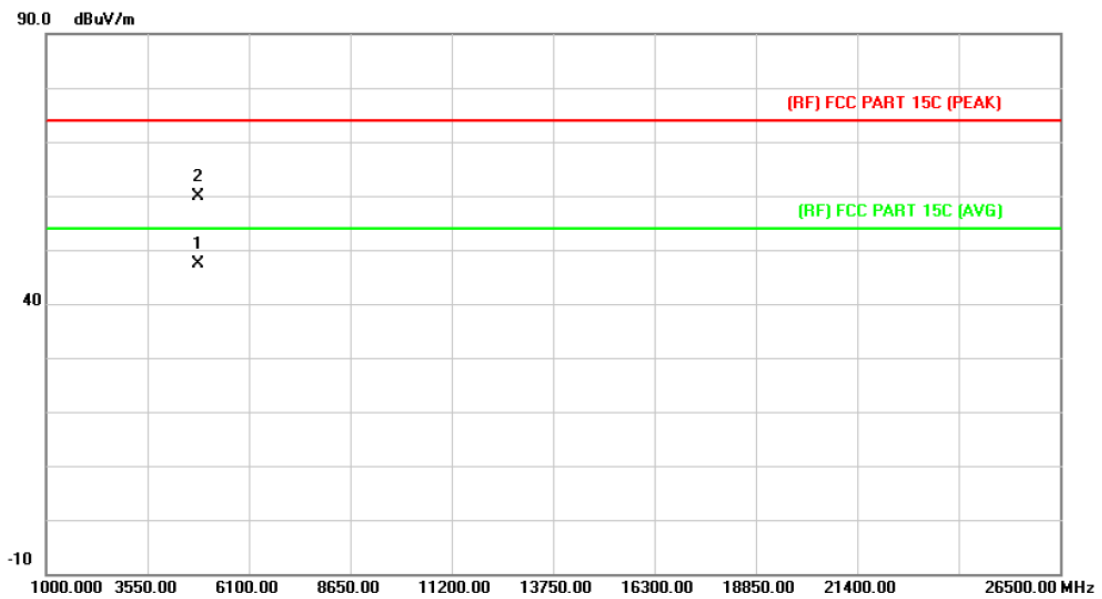
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4823.970	33.73	13.56	47.29	54.00	-6.71	AVG
2		4824.063	47.04	13.56	60.60	74.00	-13.40	peak

Emission Level= Read Level+ Correct Factor

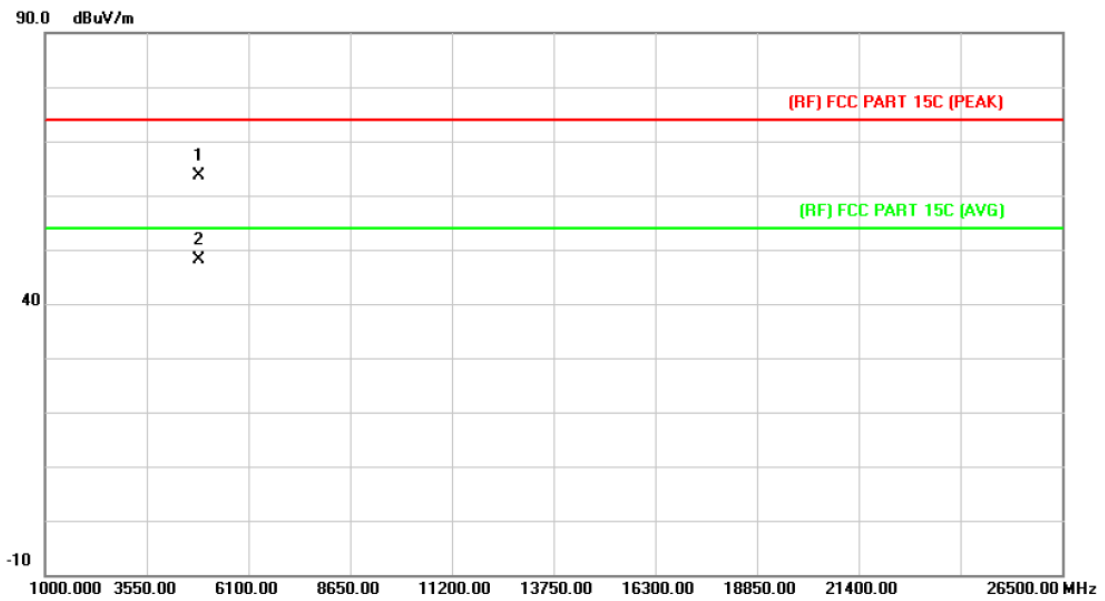
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4824.051	33.71	13.56	47.27	54.00	-6.73	AVG
2		4824.057	46.40	13.56	59.96	74.00	-14.04	peak

Emission Level= Read Level+ Correct Factor

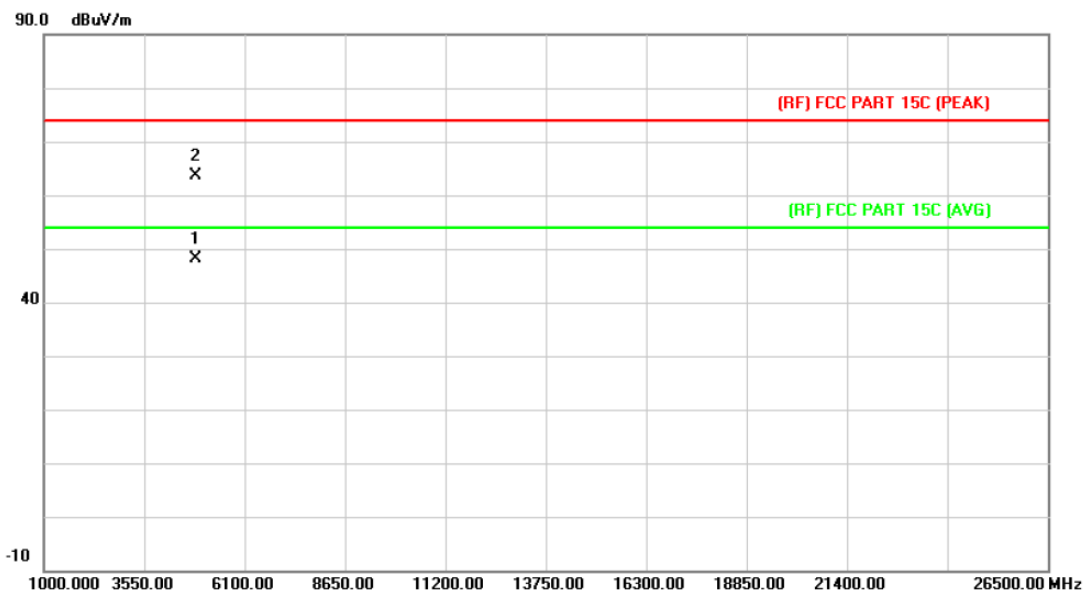
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		4873.637	49.66	13.86	63.52	74.00	-10.48	peak
2	*	4873.910	34.31	13.86	48.17	54.00	-5.83	AVG

Emission Level= Read Level+ Correct Factor

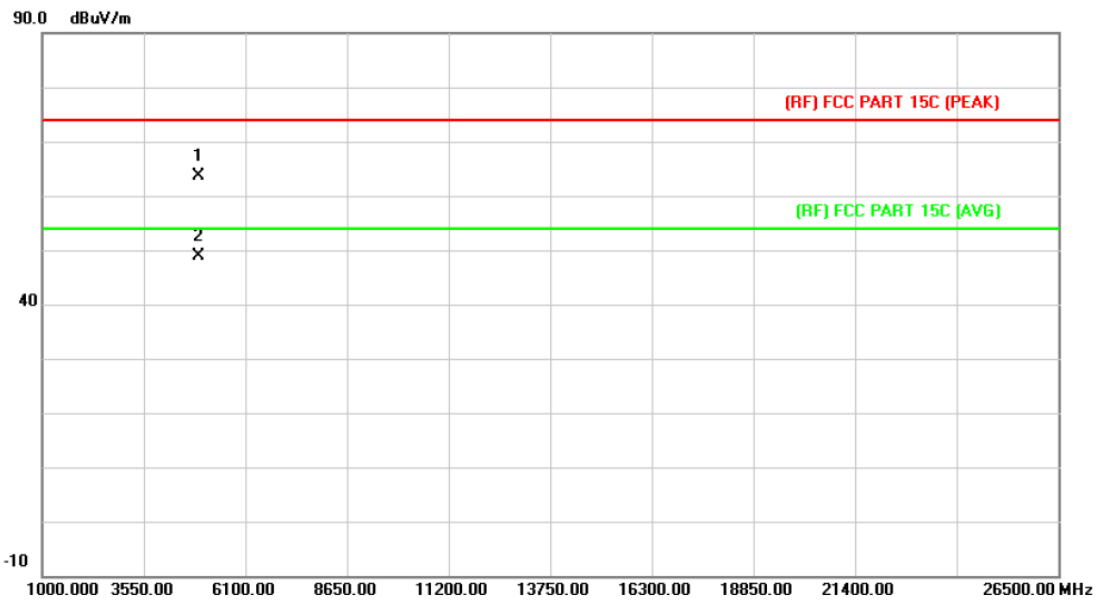
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4873.076	34.31	13.86	48.17	54.00	-5.83	AVG
2		4875.014	49.66	13.87	63.53	74.00	-10.47	peak

Emission Level= Read Level+ Correct Factor

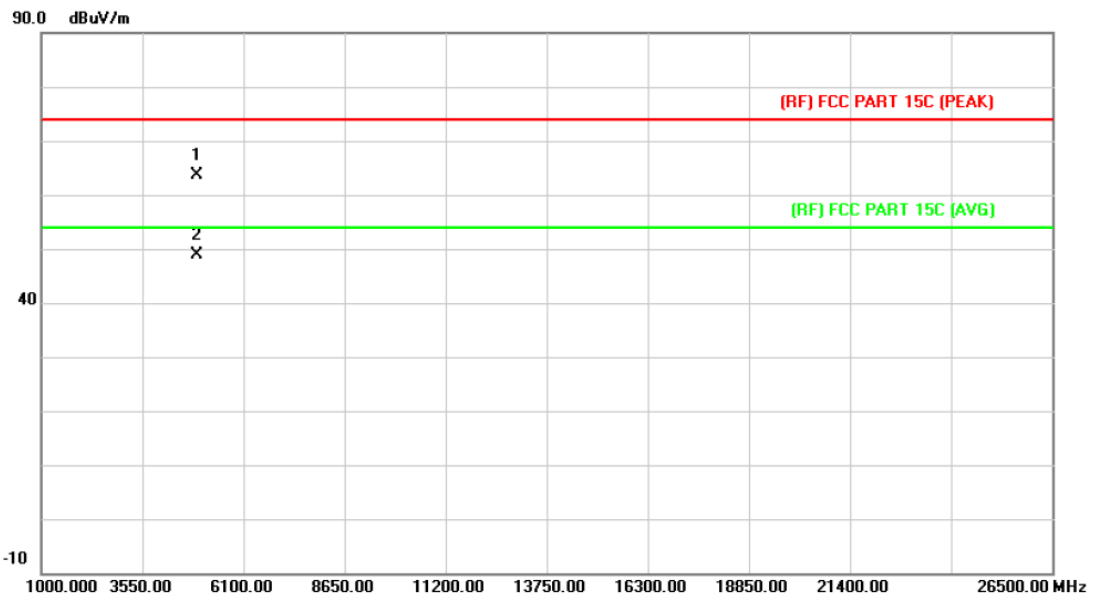
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1		4923.737	49.54	14.15	63.69	74.00	-10.31	peak
2	*	4924.348	34.63	14.15	48.78	54.00	-5.22	AVG

Emission Level= Read Level+ Correct Factor

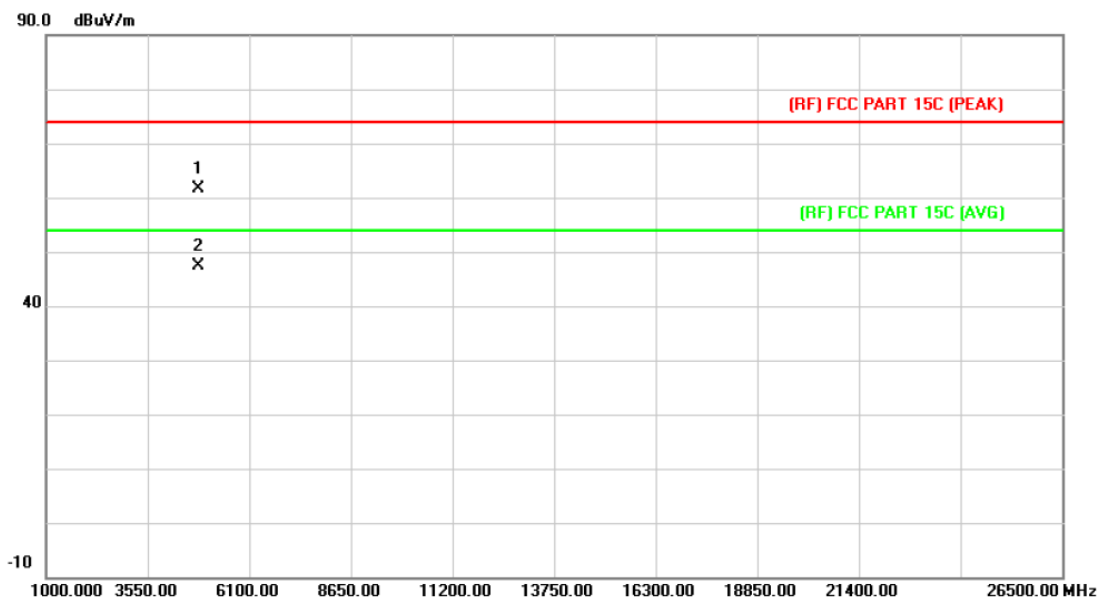
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		4925.338	49.52	14.16	63.68	74.00	-10.32	peak
2	*	4925.419	34.62	14.16	48.78	54.00	-5.22	AVG

Emission Level= Read Level+ Correct Factor

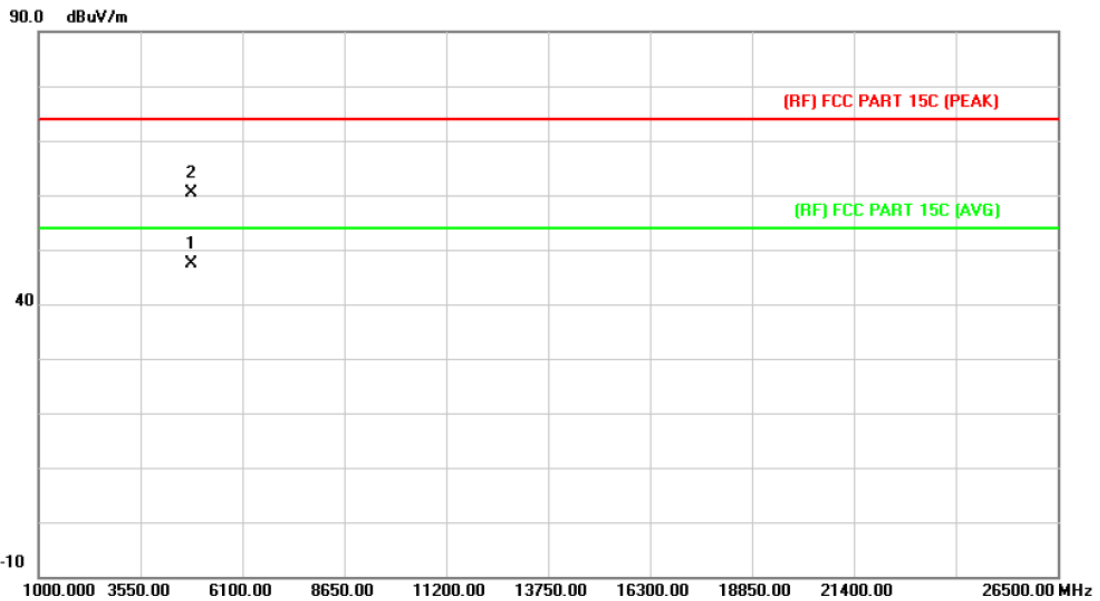
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1		4824.018	48.19	13.56	61.75	74.00	-12.25	peak
2	*	4824.030	33.73	13.56	47.29	54.00	-6.71	AVG

Emission Level= Read Level+ Correct Factor

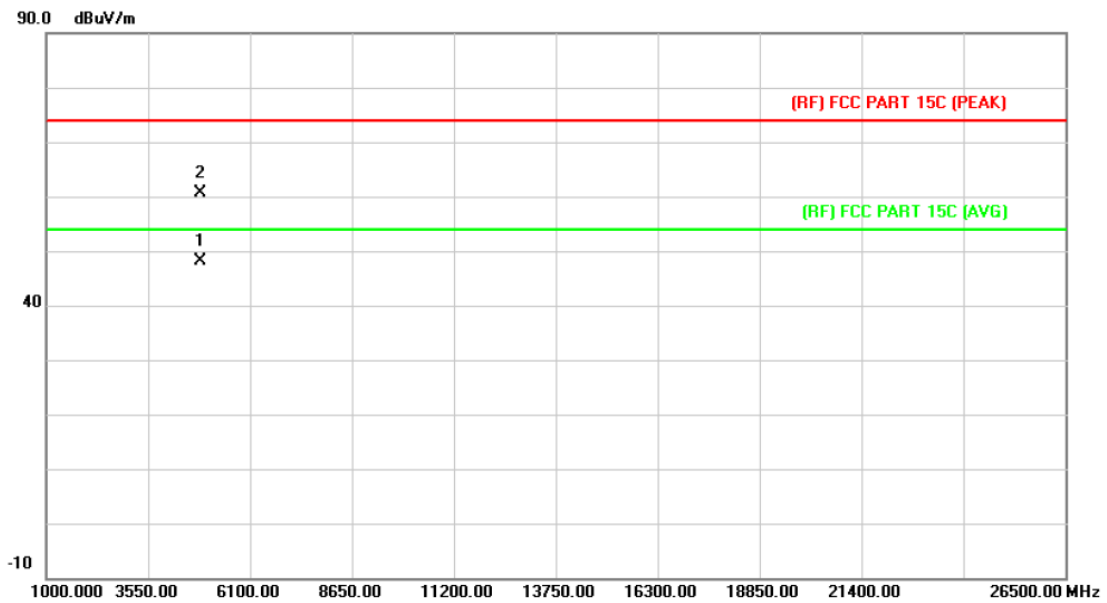
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	4823.985	33.75	13.56	47.31	54.00	-6.69	AVG
2		4823.994	46.76	13.56	60.32	74.00	-13.68	peak

Emission Level= Read Level+ Correct Factor

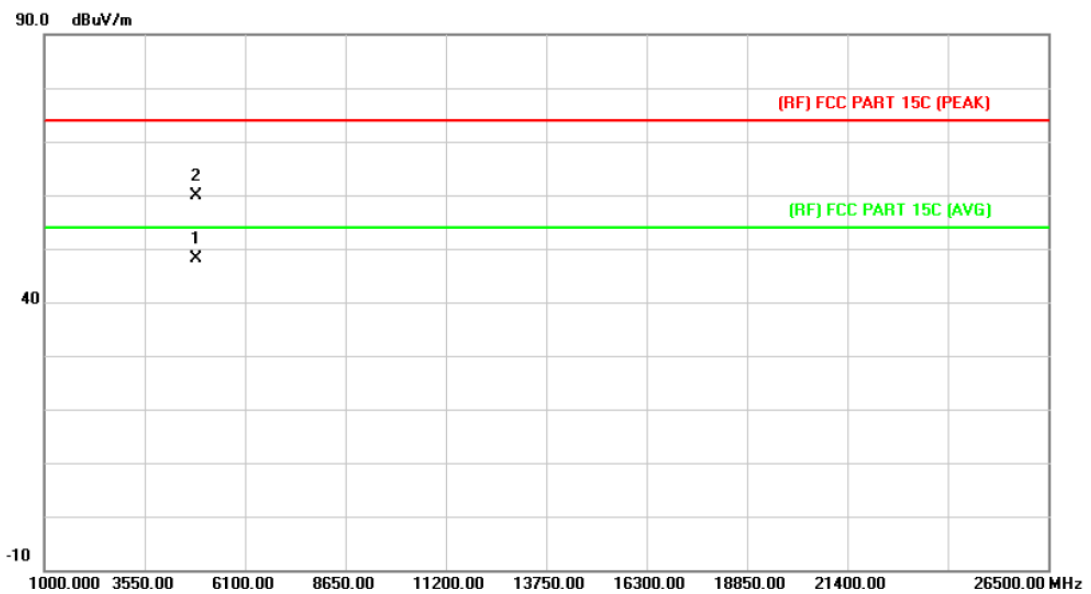
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4874.015	34.24	13.86	48.10	54.00	-5.90	AVG
2		4874.027	46.84	13.86	60.70	74.00	-13.30	peak

Emission Level= Read Level+ Correct Factor

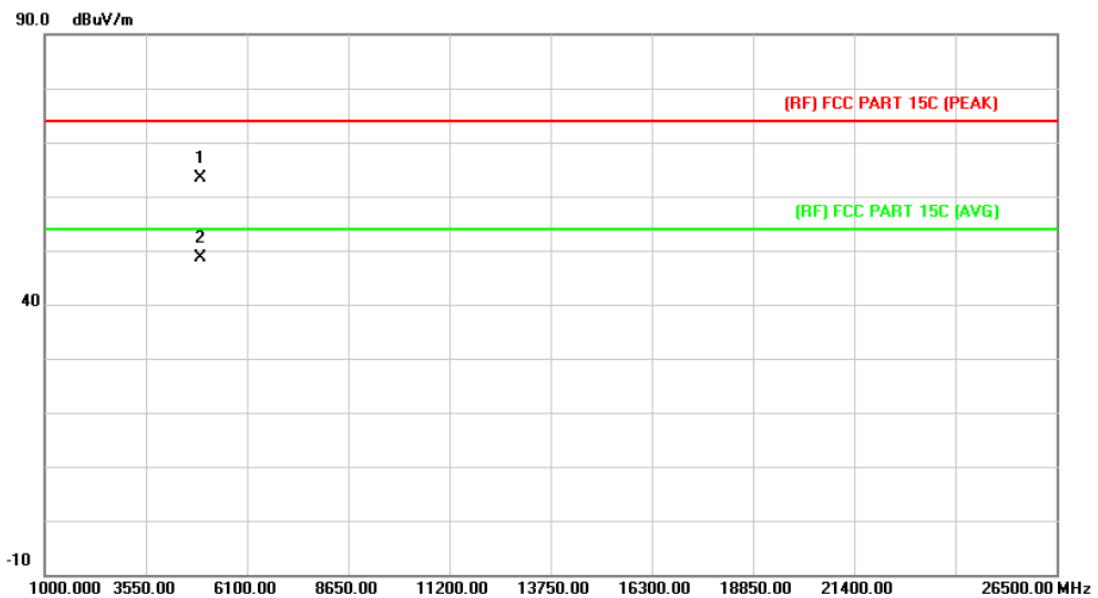
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4874.045	34.23	13.86	48.09	54.00	-5.91	AVG
2		4874.057	45.98	13.86	59.84	74.00	-14.16	peak

Emission Level= Read Level+ Correct Factor

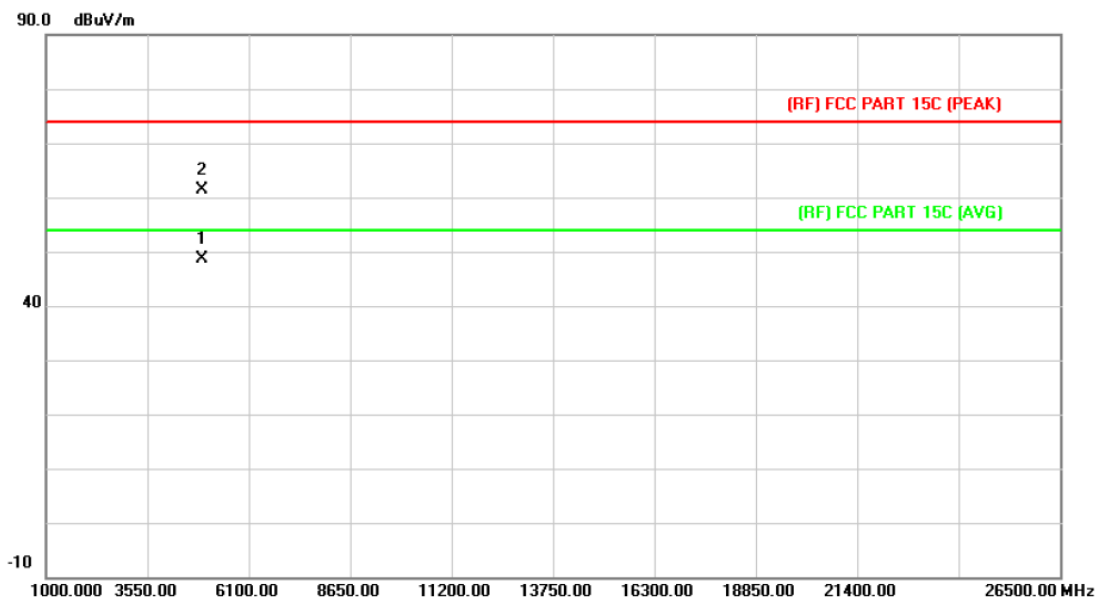
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		4924.006	49.19	14.15	63.34	74.00	-10.66	peak
2	*	4924.273	34.53	14.15	48.68	54.00	-5.32	AVG

Emission Level= Read Level+ Correct Factor

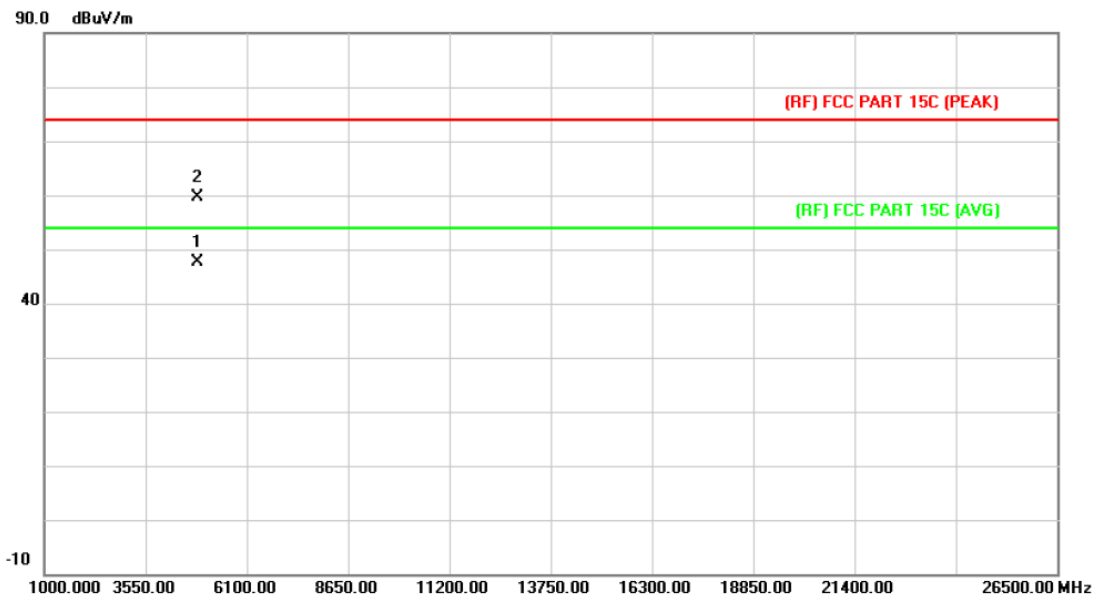
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	4924.045	34.53	14.15	48.68	54.00	-5.32	AVG
2		4924.069	47.35	14.15	61.50	74.00	-12.50	peak

Emission Level= Read Level+ Correct Factor

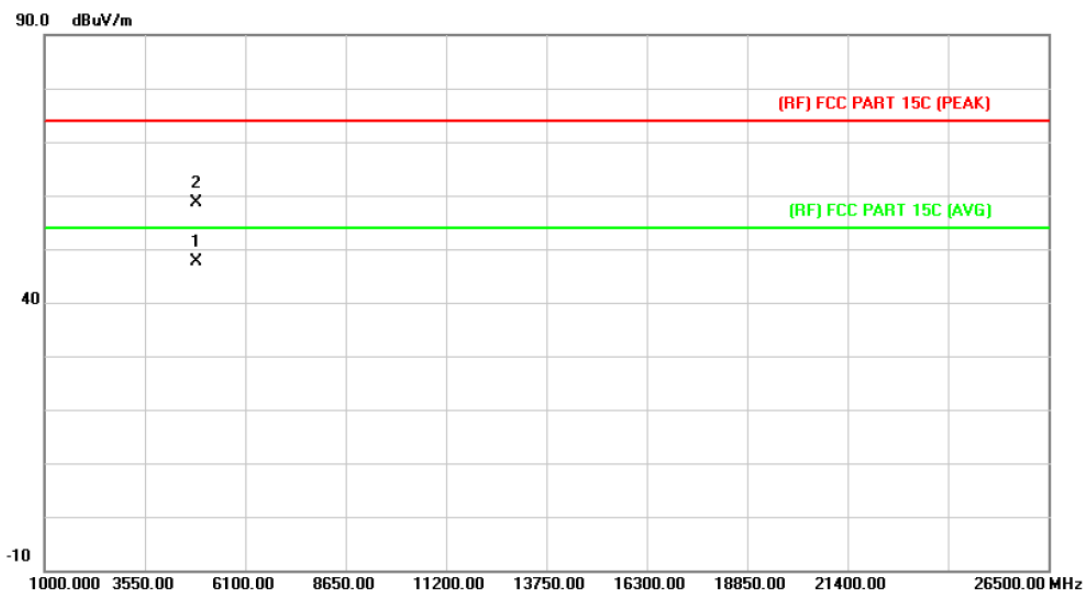
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2422MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4843.961	33.99	13.68	47.67	54.00	-6.33	AVG
2		4844.012	46.05	13.68	59.73	74.00	-14.27	peak

Emission Level= Read Level+ Correct Factor

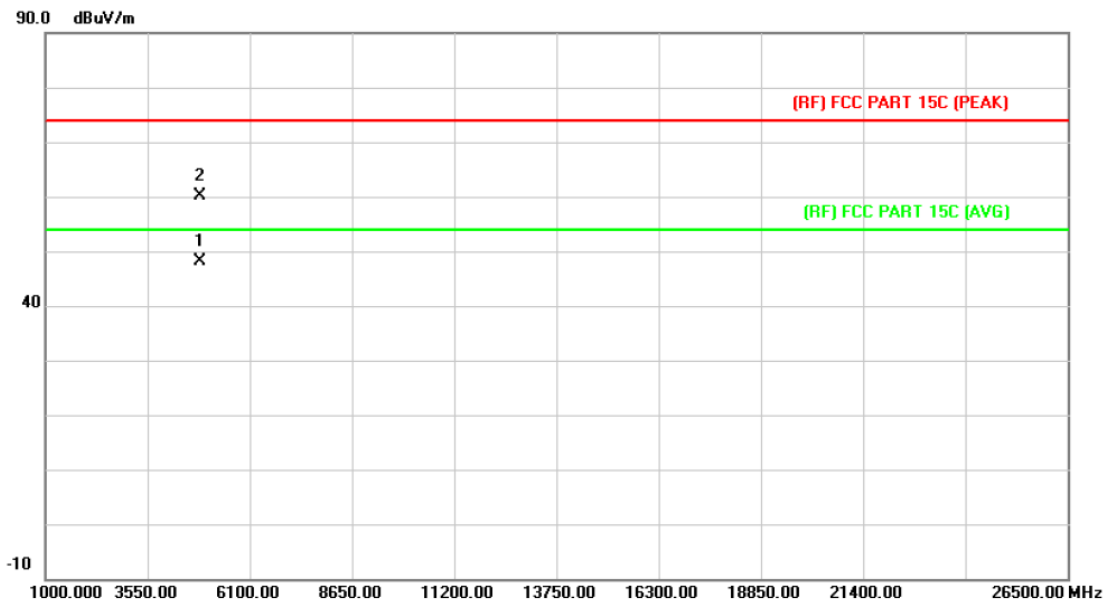
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT40) Mode 2422MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4844.024	33.96	13.68	47.64	54.00	-6.36	AVG
2		4844.030	45.06	13.68	58.74	74.00	-15.26	peak

Emission Level= Read Level+ Correct Factor

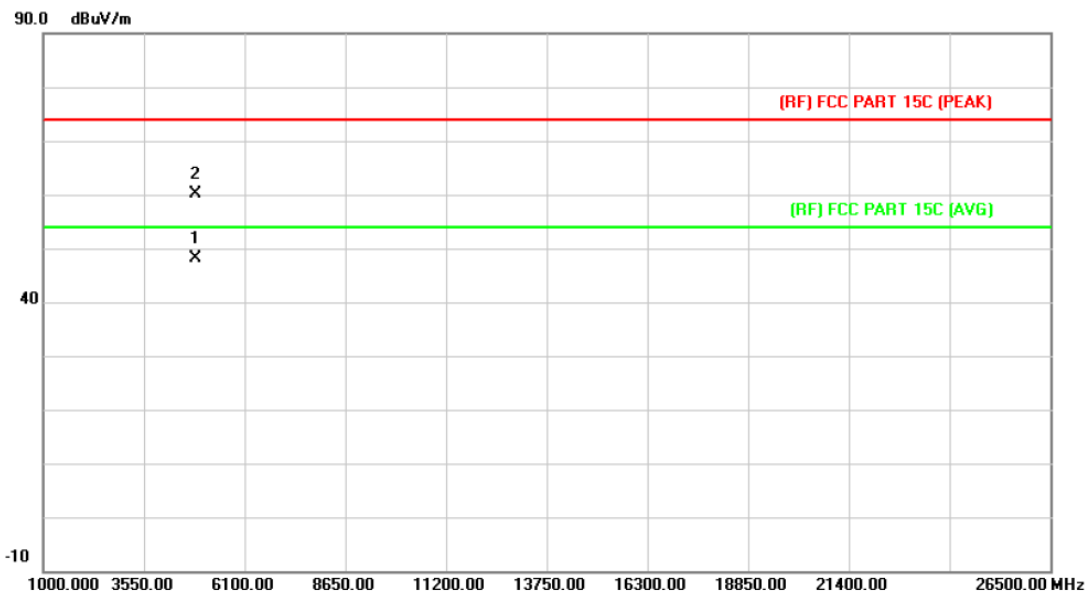
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4874.033	34.26	13.86	48.12	54.00	-5.88	AVG
2		4874.045	46.24	13.86	60.10	74.00	-13.90	peak

Emission Level= Read Level+ Correct Factor

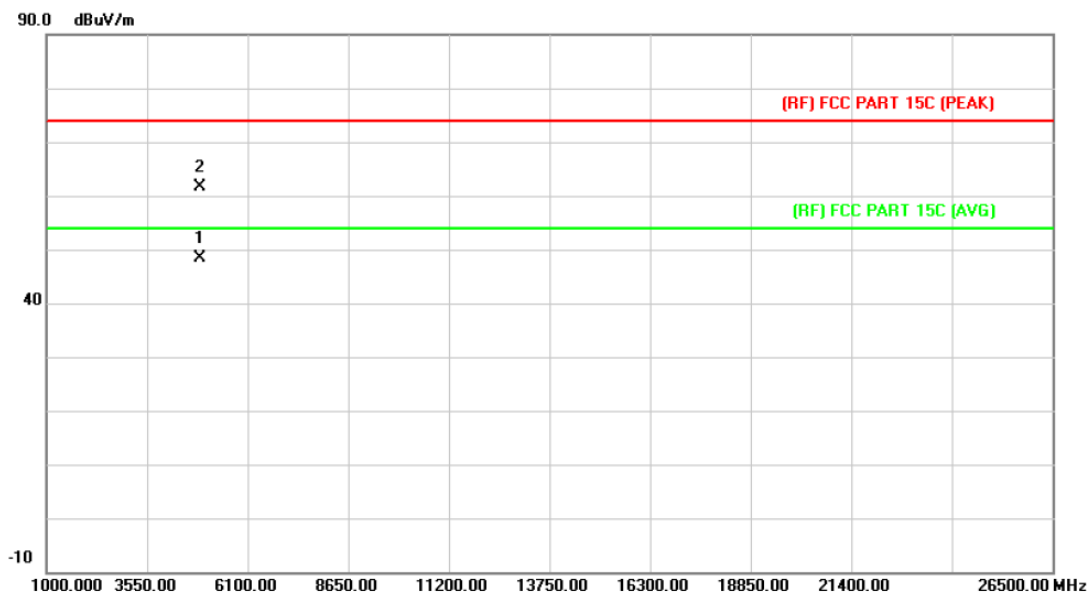
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT40) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	4873.985	34.23	13.86	48.09	54.00	-5.91	AVG
2		4873.991	46.28	13.86	60.14	74.00	-13.86	peak

Emission Level= Read Level+ Correct Factor

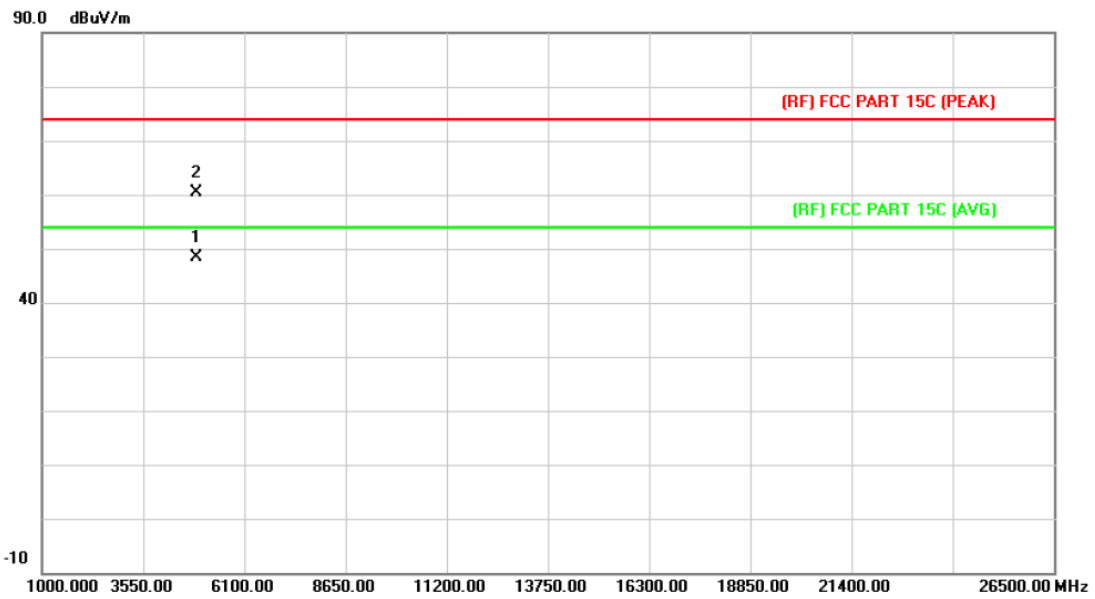
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2452MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	4903.991	34.41	14.03	48.44	54.00	-5.56	AVG
2		4904.024	47.51	14.03	61.54	74.00	-12.46	peak

Emission Level= Read Level+ Correct Factor

EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	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. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	4904.042	34.44	14.03	48.47	54.00	-5.53	AVG
2		4904.048	46.25	14.03	60.28	74.00	-13.72	peak

Emission Level= Read Level+ Correct Factor

5. Restricted Bands Requirement

5.1 Test Standard and Limit

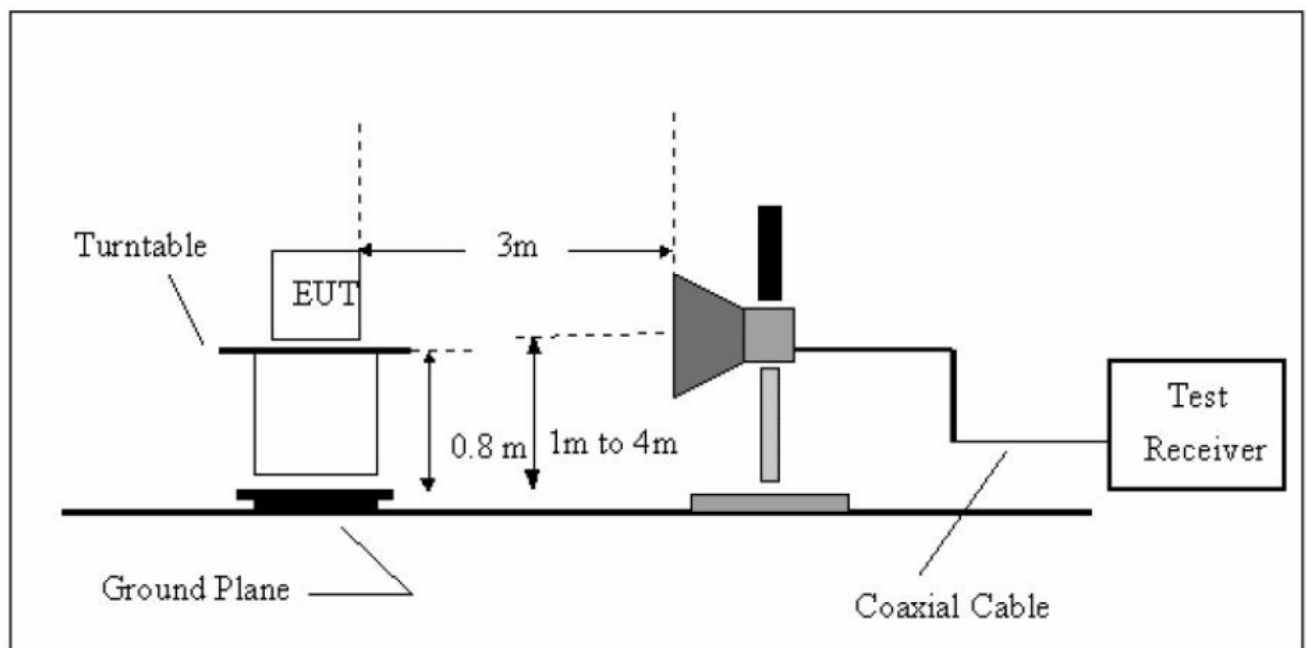
5.1.1 Test Standard

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

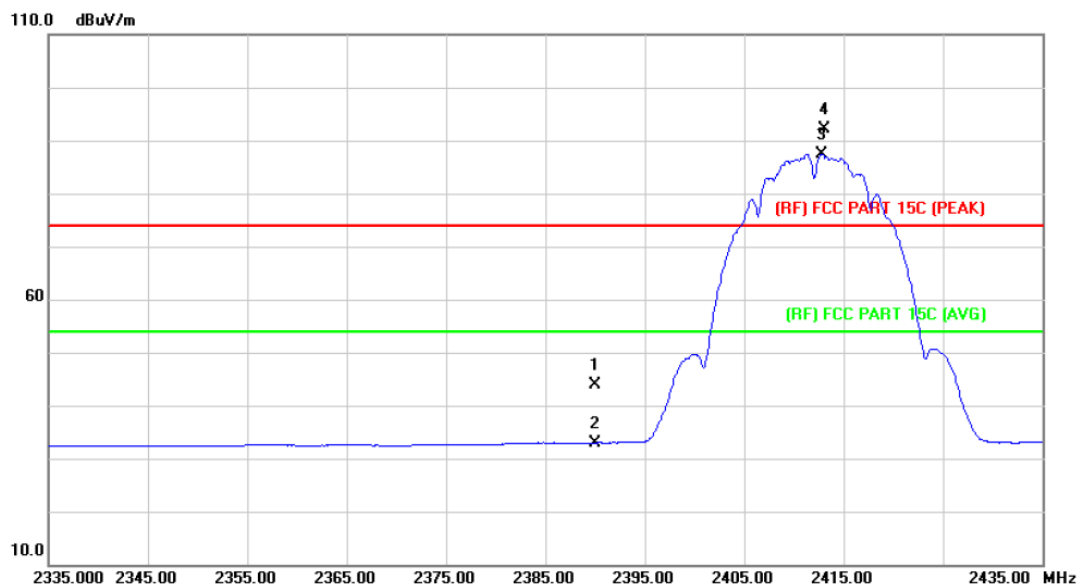
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Mar. 20, 2014	Mar. 19, 2015
Spectrum Analyzer	Rohde & Schwarz	FSP30	DE25181	Aug. 08, 2014	Aug. 07, 2015
EMI Test Receiver	Rohde & Schwarz	ESCI	101165	Aug. 08, 2014	Aug. 07, 2015
Bilog Antenna	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

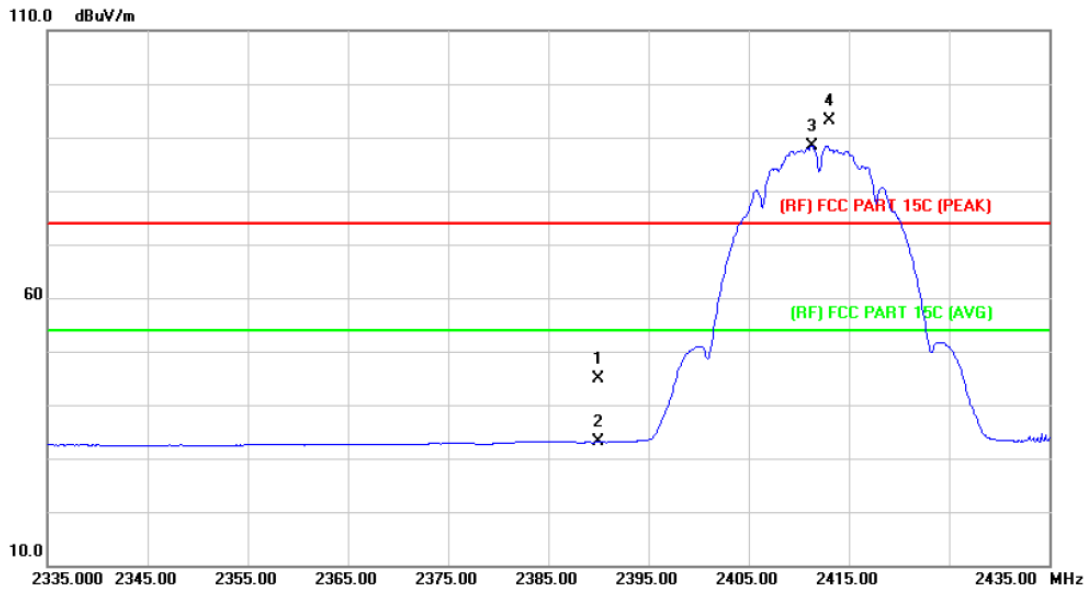
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	43.11	0.77	43.88	74.00	-30.12	peak
2		2390.000	32.17	0.77	32.94	54.00	-21.06	AVG
3	*	2412.800	86.56	0.86	87.42	Fundamental Frequency		AVG
4	X	2413.100	91.29	0.86	92.15	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

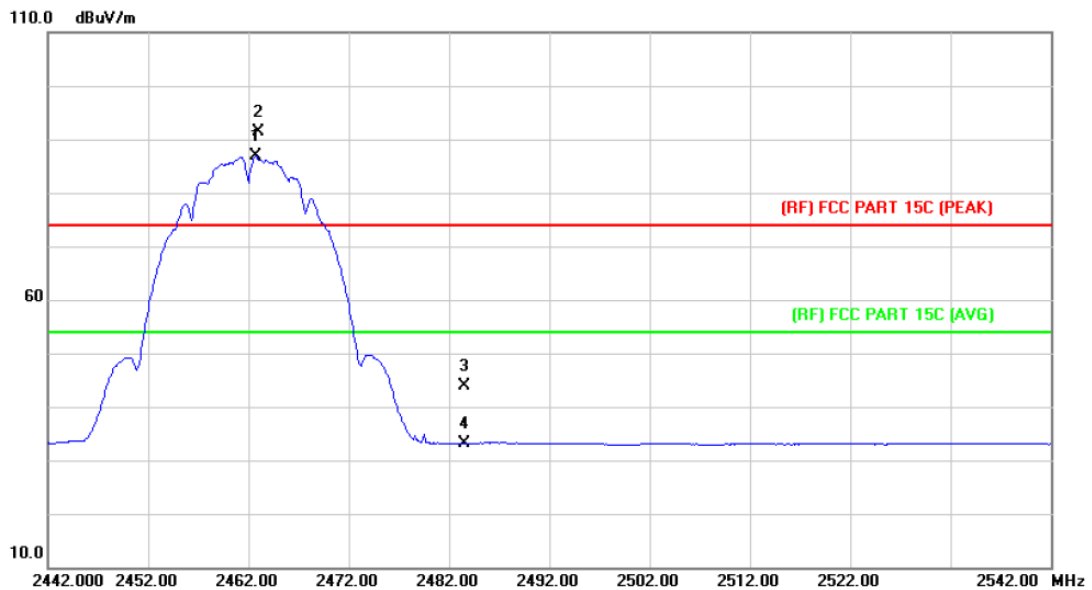
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		2390.000	44.00	0.77	44.77	74.00	-29.23	peak
2		2390.000	32.30	0.77	33.07	54.00	-20.93	AVG
3	*	2411.300	87.54	0.86	88.40	Fundamental Frequency		AVG
4	X	2413.100	92.19	0.86	93.05	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

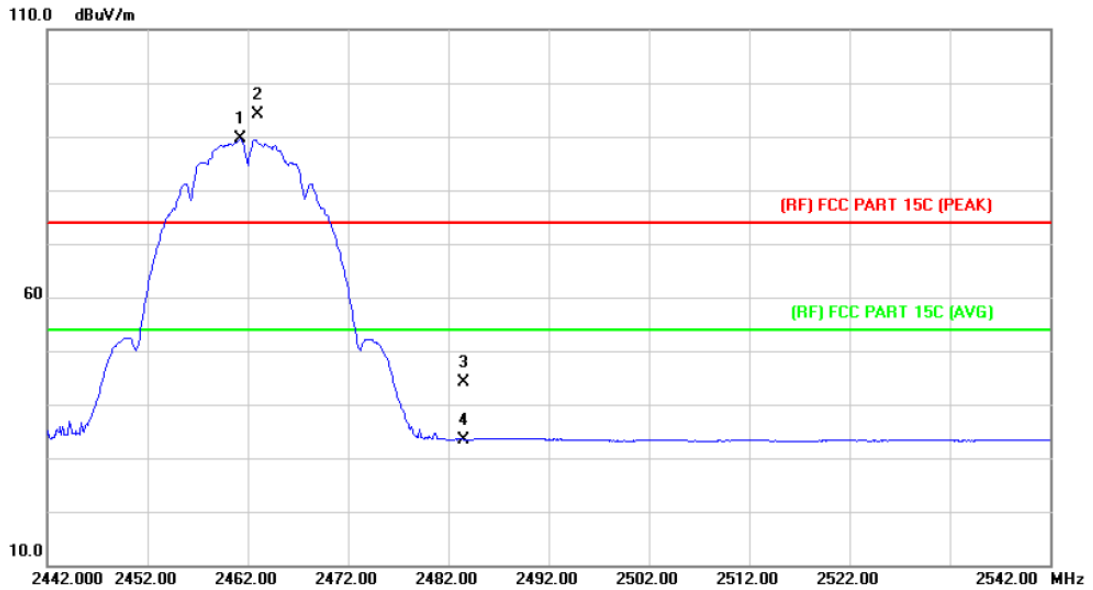
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	2462.700	85.73	1.08	86.81	Fundamental Frequency		AVG
2	X	2463.000	90.37	1.08	91.45	Fundamental Frequency		peak
3		2483.500	42.70	1.17	43.87	74.00	-30.13	peak
4		2483.500	31.94	1.17	33.11	54.00	-20.89	AVG

Emission Level= Read Level+ Correct Factor

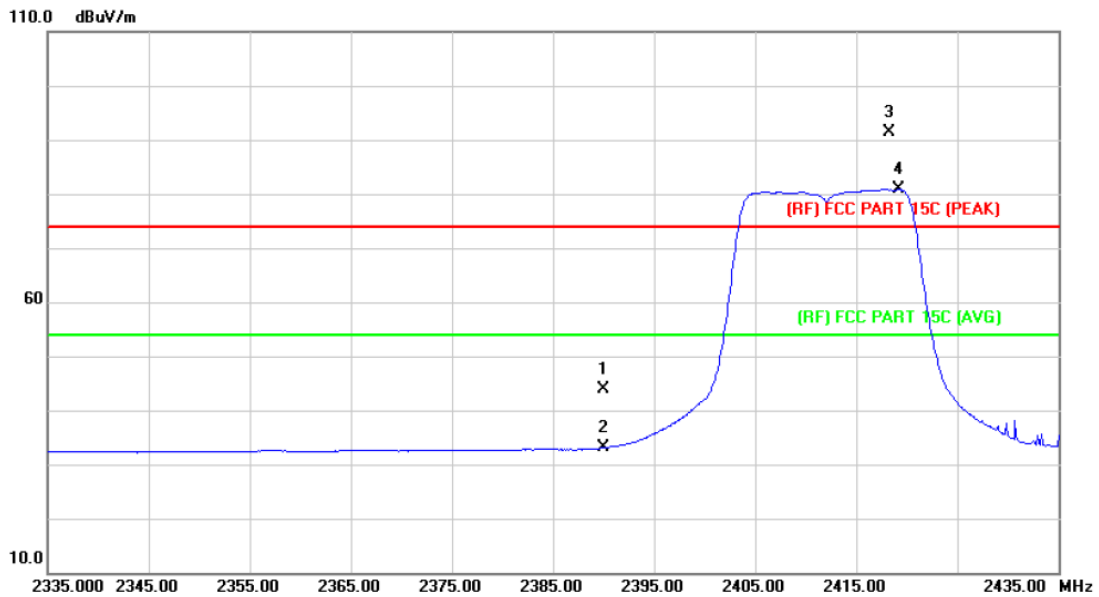
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	2461.300	88.44	1.07	89.51	Fundamental Frequency		AVG
2	X	2463.000	93.08	1.08	94.16	Fundamental Frequency		peak
3		2483.500	43.03	1.17	44.20	74.00	-29.80	peak
4		2483.500	32.26	1.17	33.43	54.00	-20.57	AVG

Emission Level= Read Level+ Correct Factor

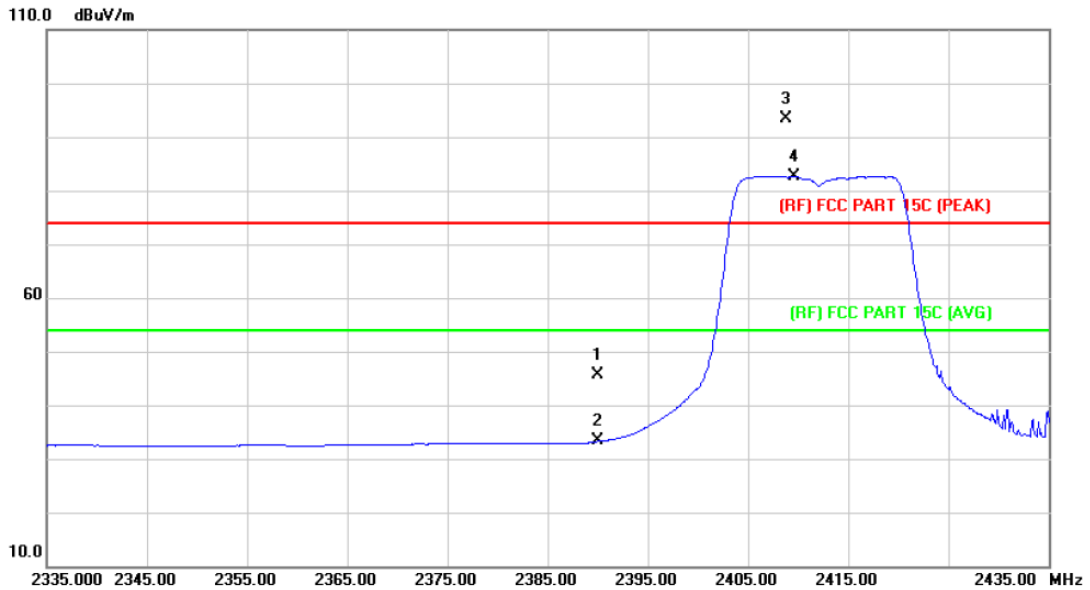
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1		2390.000	43.12	0.77	43.89	74.00	-30.11	peak
2		2390.000	32.34	0.77	33.11	54.00	-20.89	AVG
3	X	2418.300	90.44	0.89	91.33	Fundamental Frequency		peak
4	*	2419.200	79.90	0.89	80.79	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

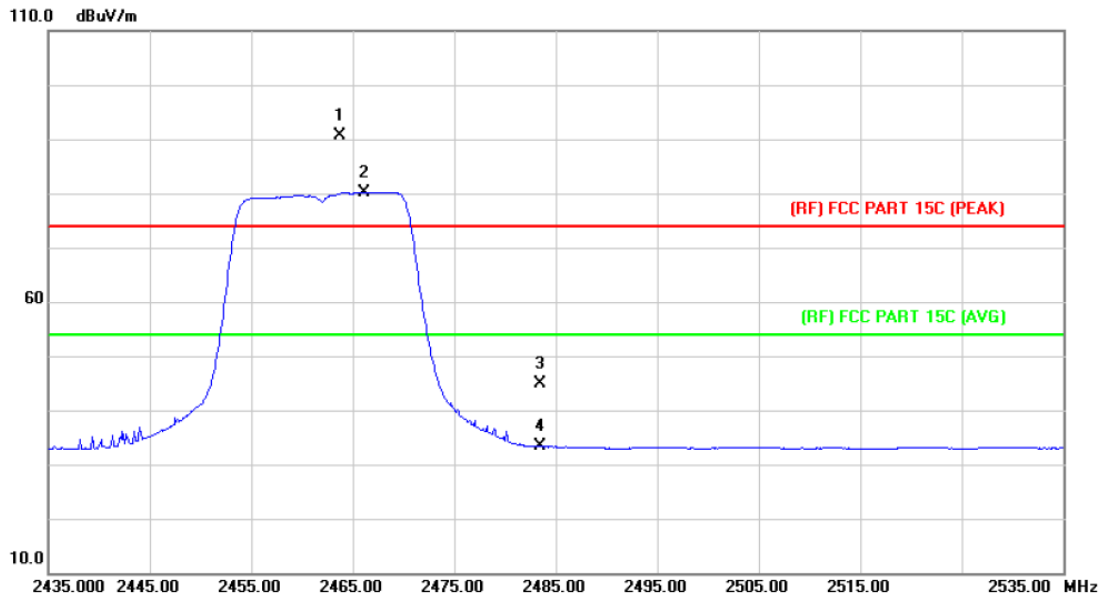
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		2390.000	44.93	0.77	45.70	74.00	-28.30	peak
2		2390.000	32.50	0.77	33.27	54.00	-20.73	AVG
3	X	2408.800	92.52	0.85	93.37	Fundamental Frequency		peak
4	*	2409.600	81.83	0.85	82.68	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

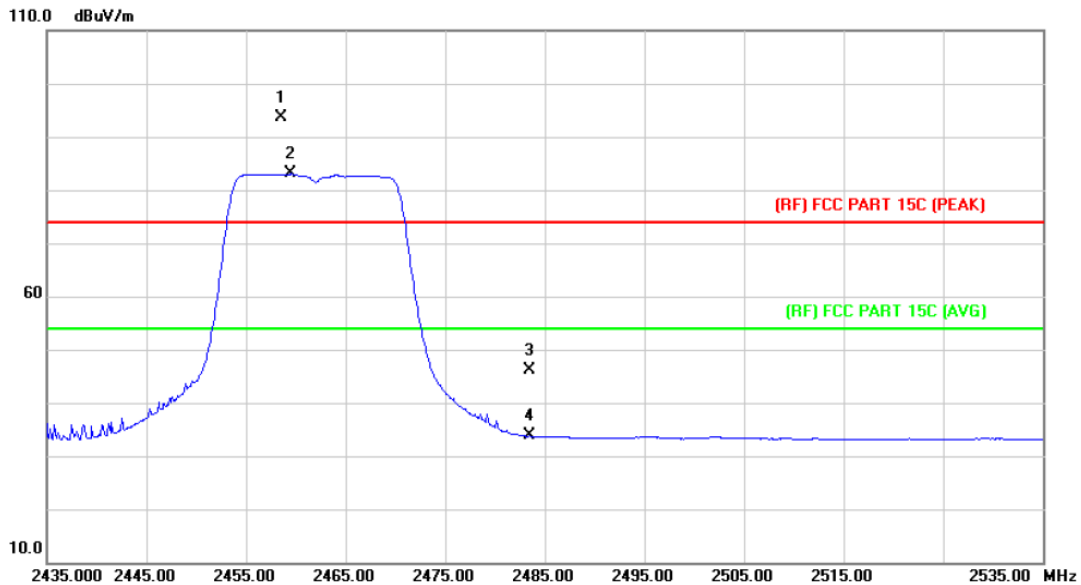
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	X	2463.700	89.57	1.08	90.65	Fundamental Frequency		peak
2	*	2466.100	79.13	1.09	80.22	Fundamental Frequency		AVG
3		2483.500	43.79	1.17	44.96	74.00	-29.04	peak
4		2483.500	32.10	1.17	33.27	54.00	-20.73	AVG

Emission Level= Read Level+ Correct Factor

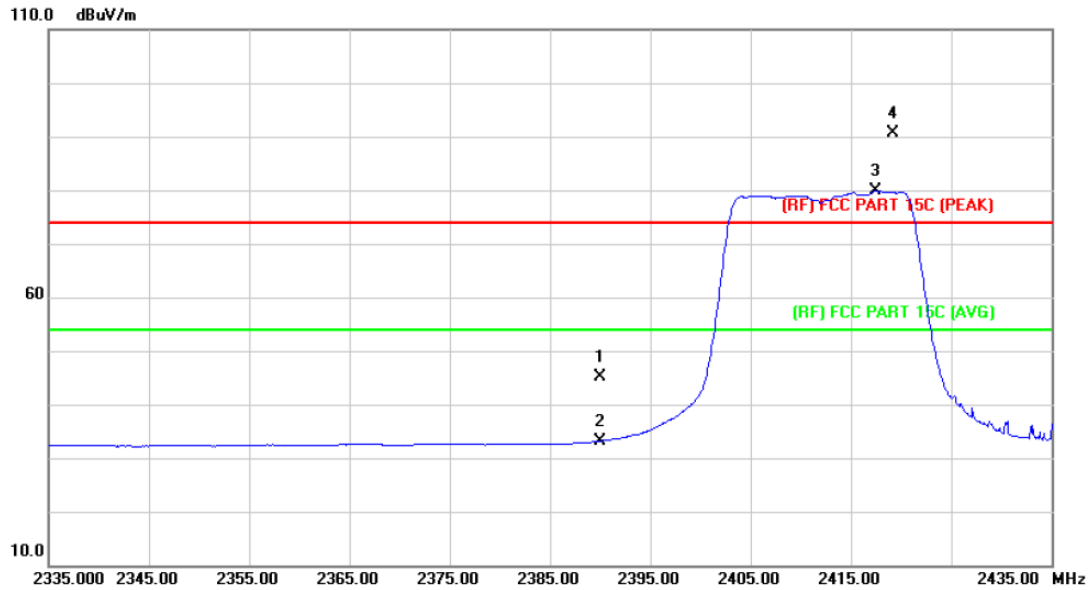
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	X	2458.600	92.55	1.06	93.61	Fundamental Frequency		peak
2	*	2459.500	81.95	1.06	83.01	Fundamental Frequency		AVG
3		2483.500	45.02	1.17	46.19	74.00	-27.81	peak
4		2483.500	32.60	1.17	33.77	54.00	-20.23	AVG

Emission Level= Read Level+ Correct Factor

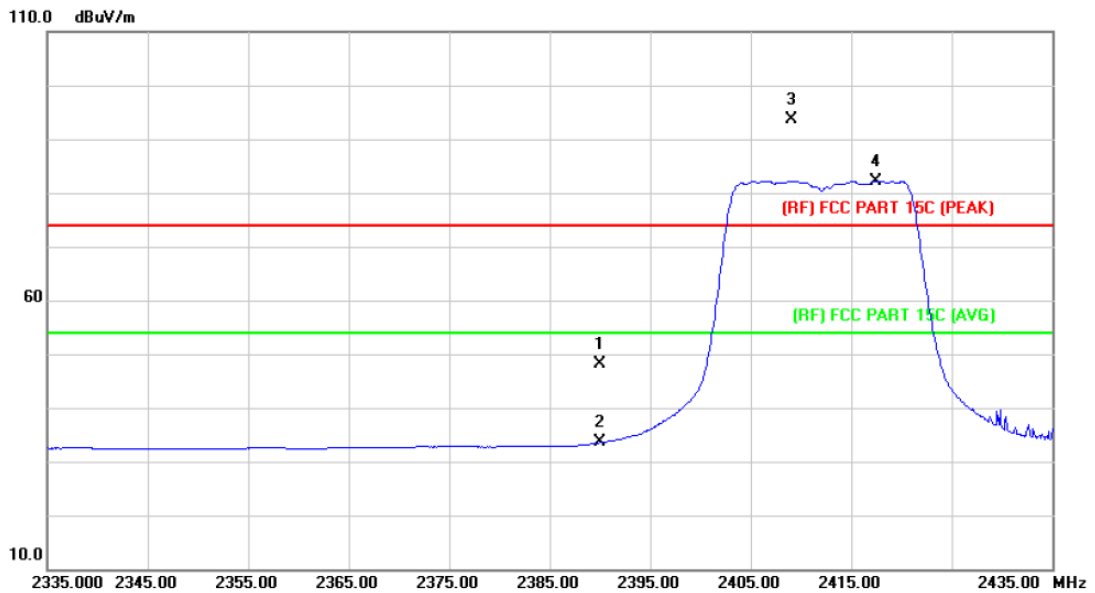
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		2390.000	44.47	0.77	45.24	74.00	-28.76	peak
2		2390.000	32.42	0.77	33.19	54.00	-20.81	AVG
3	*	2417.400	78.89	0.89	79.78	Fundamental Frequency		AVG
4	X	2419.200	89.72	0.89	90.61	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

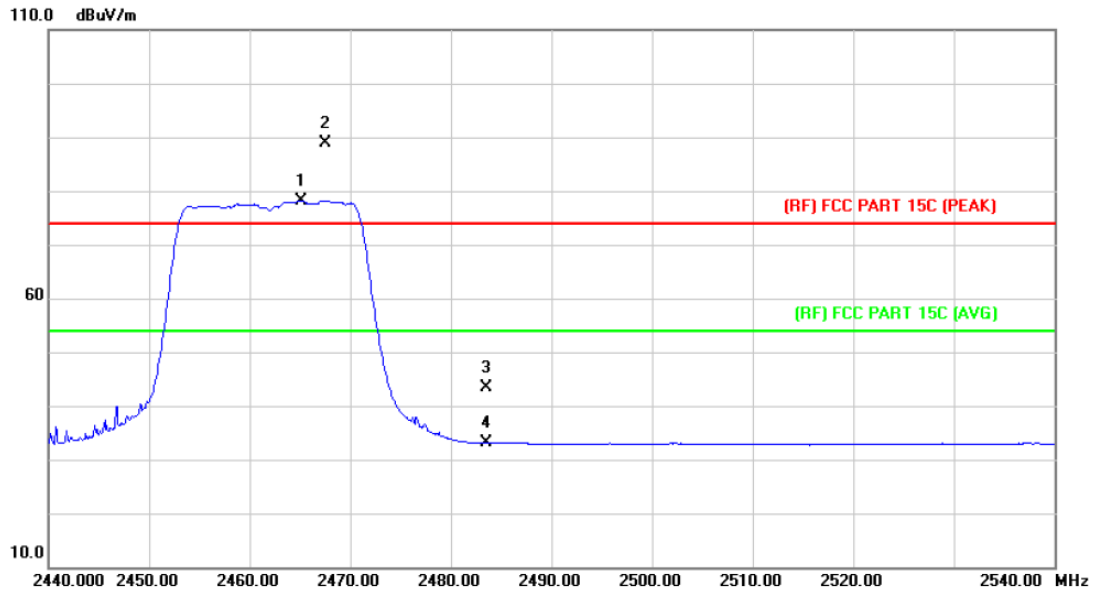
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1		2390.000	47.47	0.77	48.24	74.00	-25.76	peak
2		2390.000	32.75	0.77	33.52	54.00	-20.48	AVG
3	X	2409.000	92.72	0.85	93.57	Fundamental Frequency		peak
4	*	2417.400	81.33	0.89	82.22	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

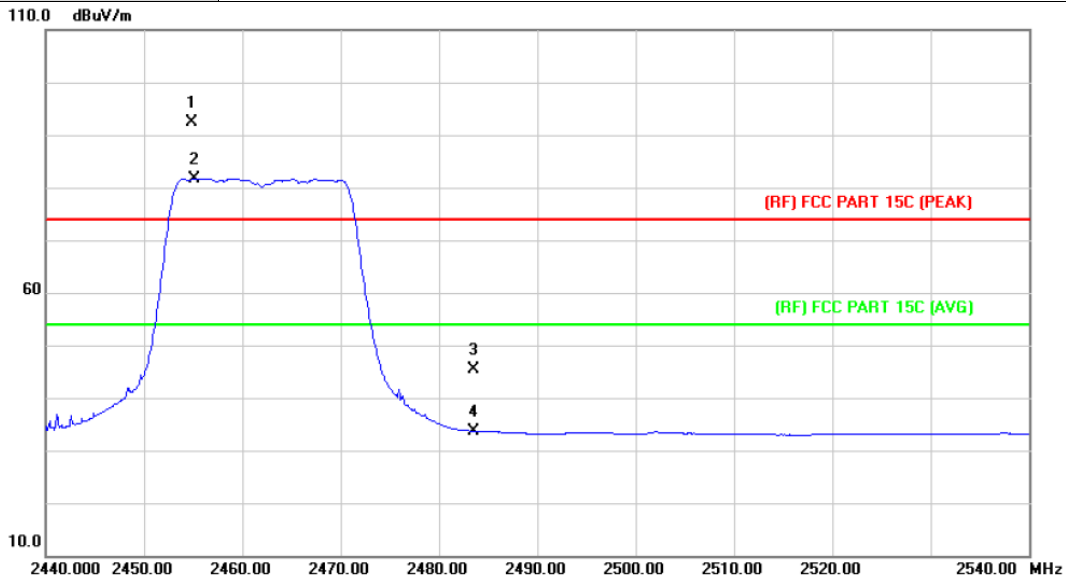
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	2465.100	77.05	1.09	78.14	Fundamental Frequency		AVG
2	X	2467.600	87.70	1.10	88.80	Fundamental Frequency		peak
3		2483.500	42.25	1.17	43.42	74.00	-30.58	peak
4		2483.500	31.93	1.17	33.10	54.00	-20.90	AVG

Emission Level= Read Level+ Correct Factor

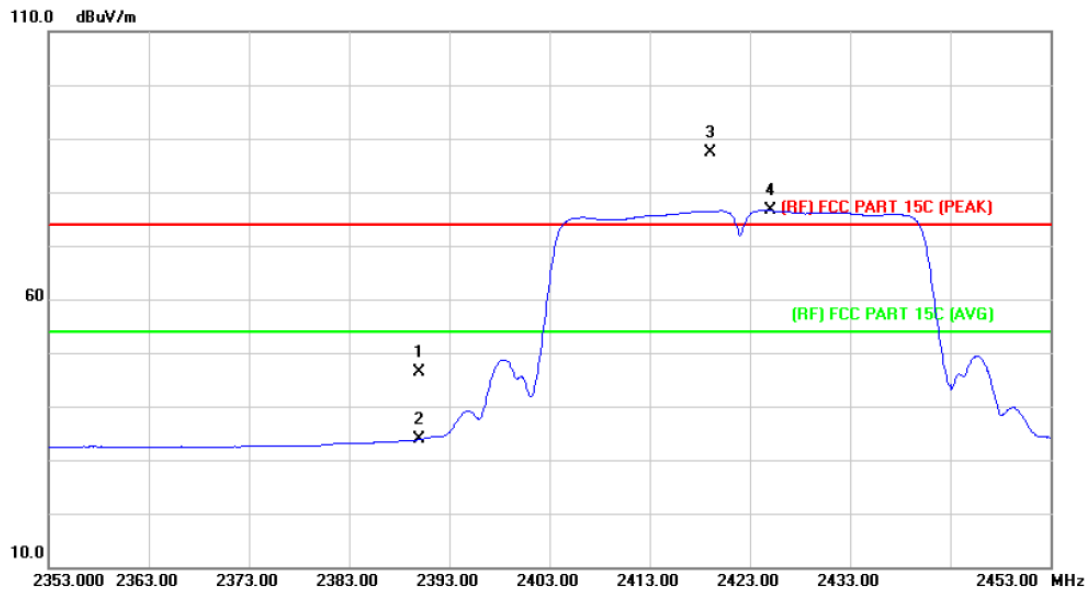
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	X	2454.800	91.44	1.05	92.49	Fundamental Frequency		peak
2	*	2455.100	80.65	1.05	81.70	Fundamental Frequency		AVG
3		2483.500	44.29	1.17	45.46	74.00	-28.54	peak
4		2483.500	32.48	1.17	33.65	54.00	-20.35	AVG

Emission Level= Read Level+ Correct Factor

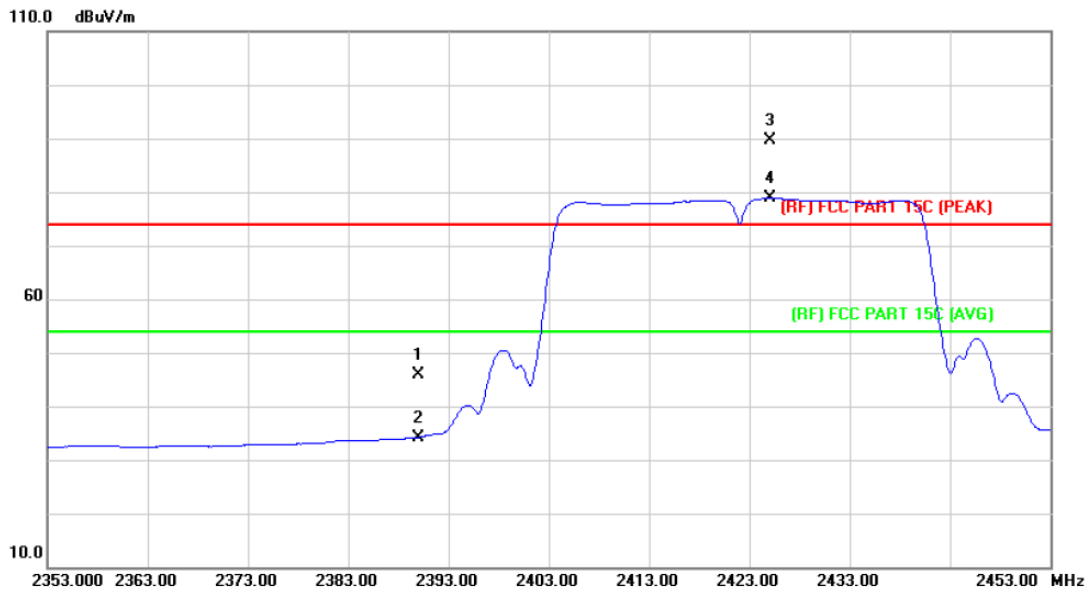
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2422MHz		
Remark:	N/A		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		2390.000	45.53	0.77	46.30	74.00	-27.70	peak
2		2390.000	33.04	0.77	33.81	54.00	-20.19	AVG
3	X	2419.000	86.43	0.89	87.32	Fundamental Frequency		peak
4	*	2425.000	75.60	0.93	76.53	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

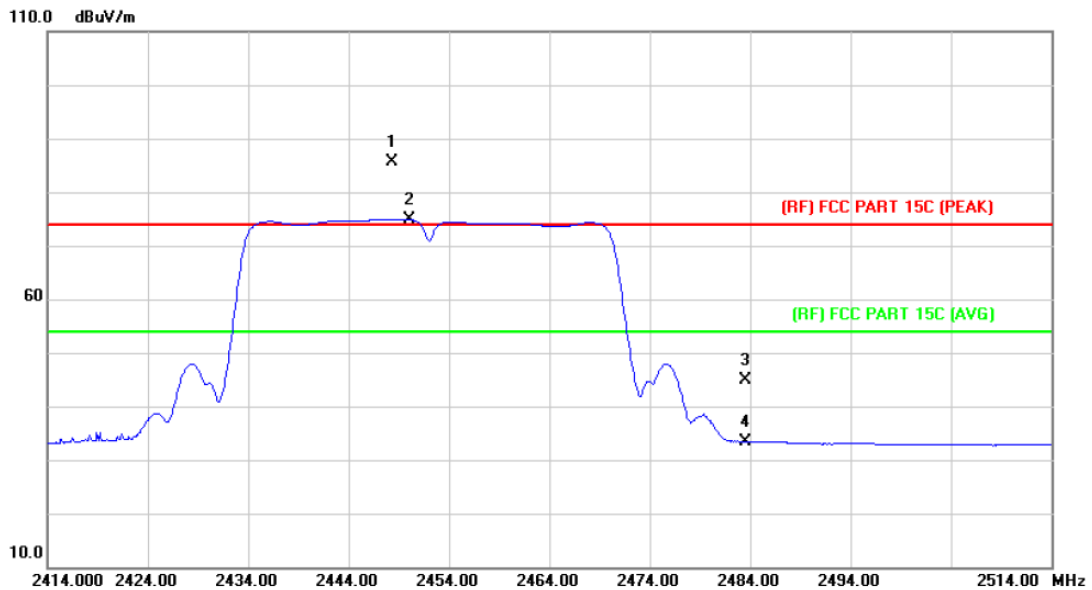
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT40) Mode 2422MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1		2390.000	45.22	0.77	45.99	74.00	-28.01	peak
2		2390.000	33.44	0.77	34.21	54.00	-19.79	AVG
3	X	2425.000	88.78	0.93	89.71	Fundamental Frequency		peak
4	*	2425.000	77.92	0.93	78.85	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

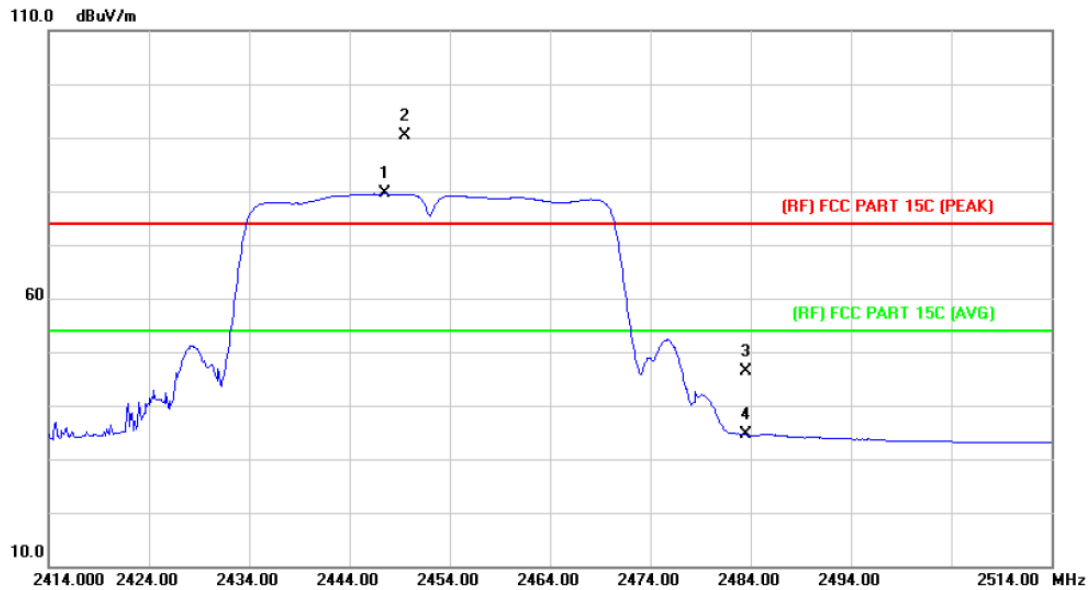
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2452MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	X	2448.300	84.71	1.02	85.73	Fundamental Frequency		peak
2	*	2450.000	73.86	1.02	74.88	Fundamental Frequency		AVG
3		2483.500	43.77	1.17	44.94	74.00	-29.06	peak
4		2483.500	32.24	1.17	33.41	54.00	-20.59	AVG

Emission Level= Read Level+ Correct Factor

EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT40) Mode 2452MHz		
Remark:	N/A		

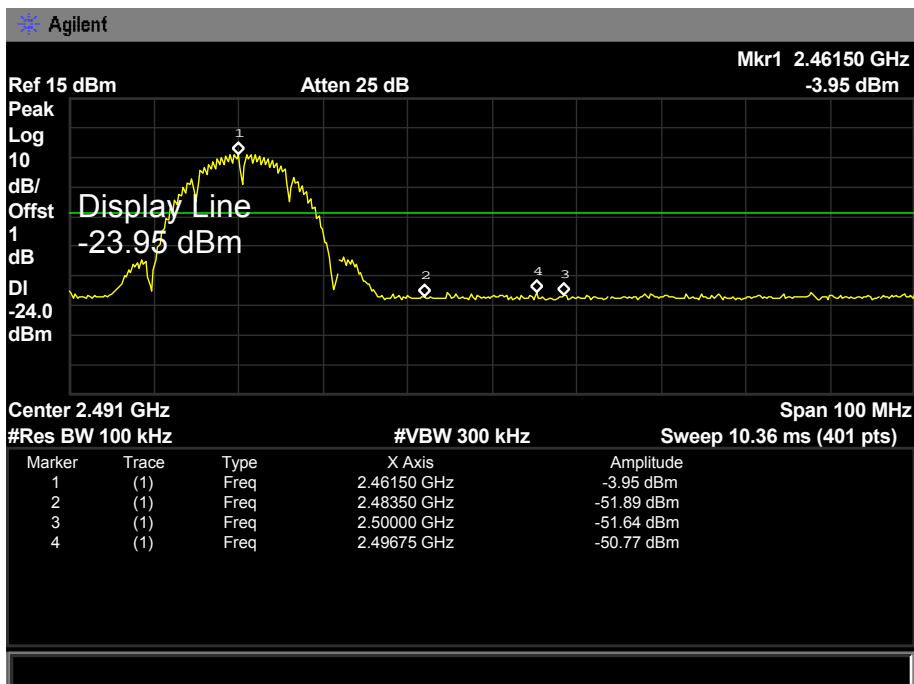
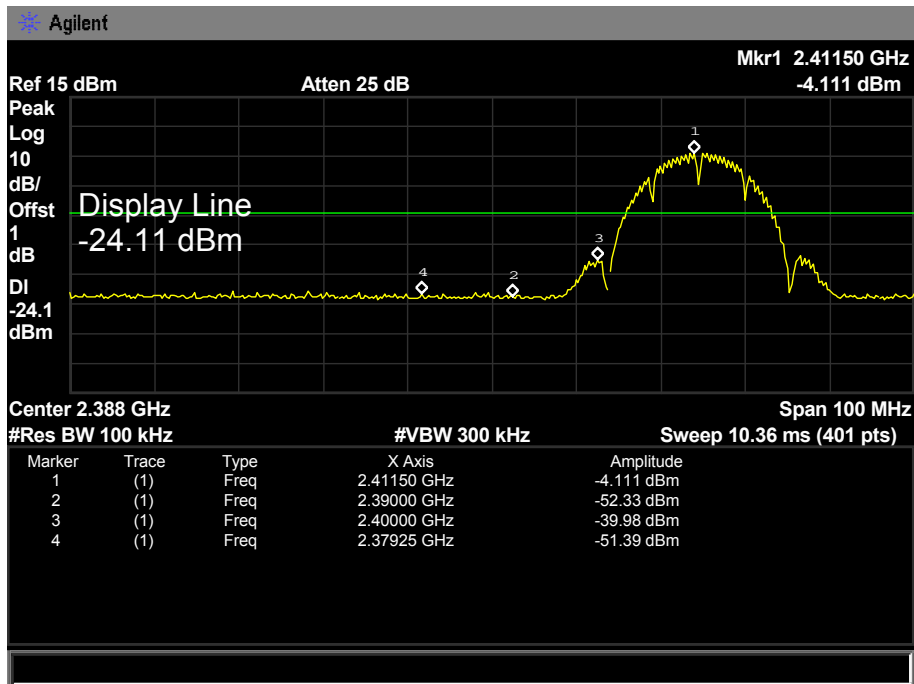


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	*	2447.500	78.51	1.01	79.52	Fundamental Frequency		AVG
2	X	2449.600	89.44	1.02	90.46	Fundamental Frequency		peak
3		2483.500	45.26	1.17	46.43	74.00	-27.57	peak
4		2483.500	33.37	1.17	34.54	54.00	-19.46	AVG

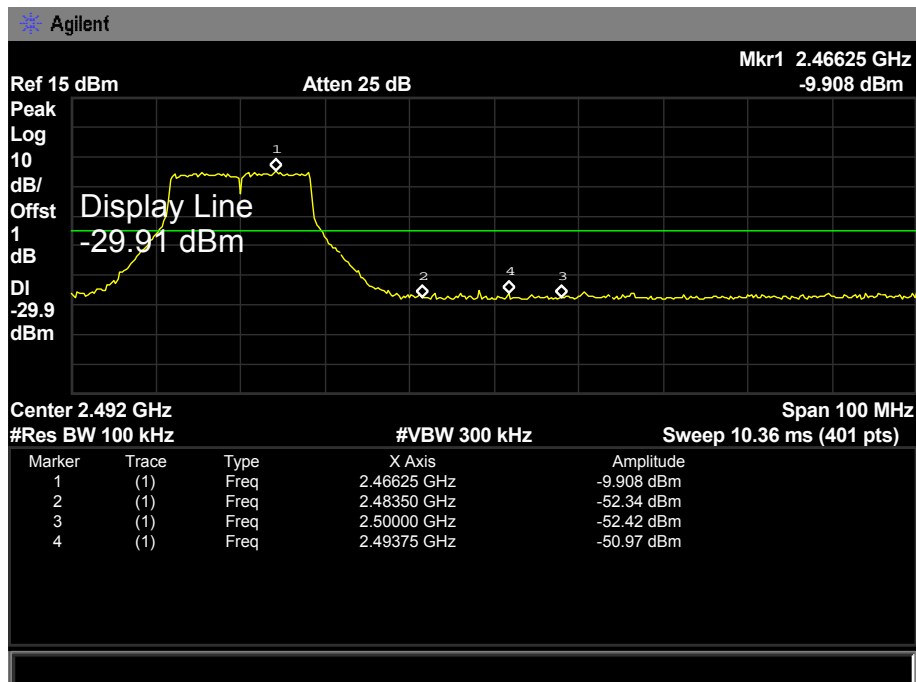
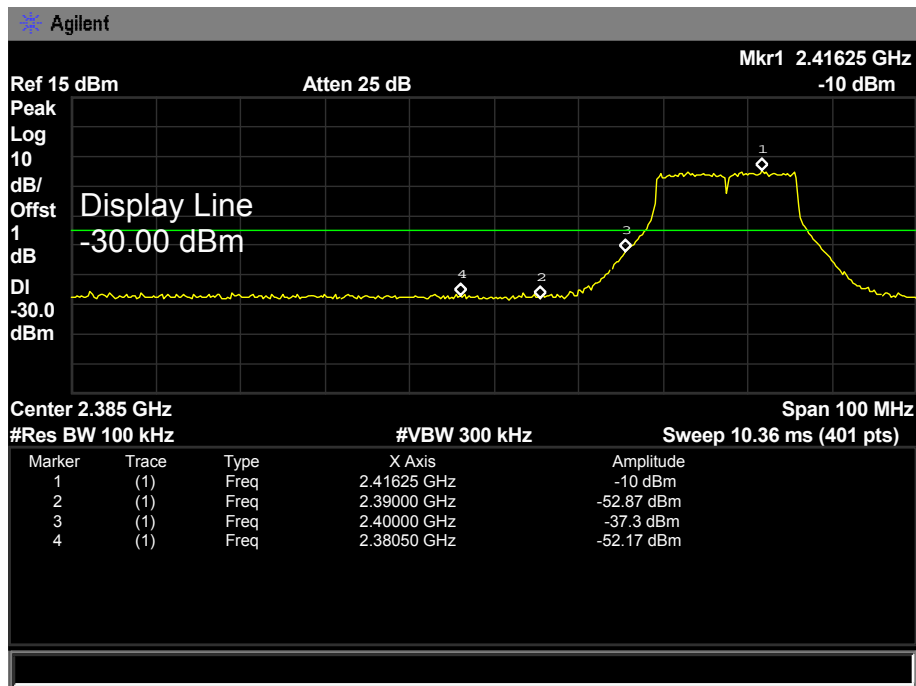
Emission Level= Read Level+ Correct Factor

(2) Conducted Test

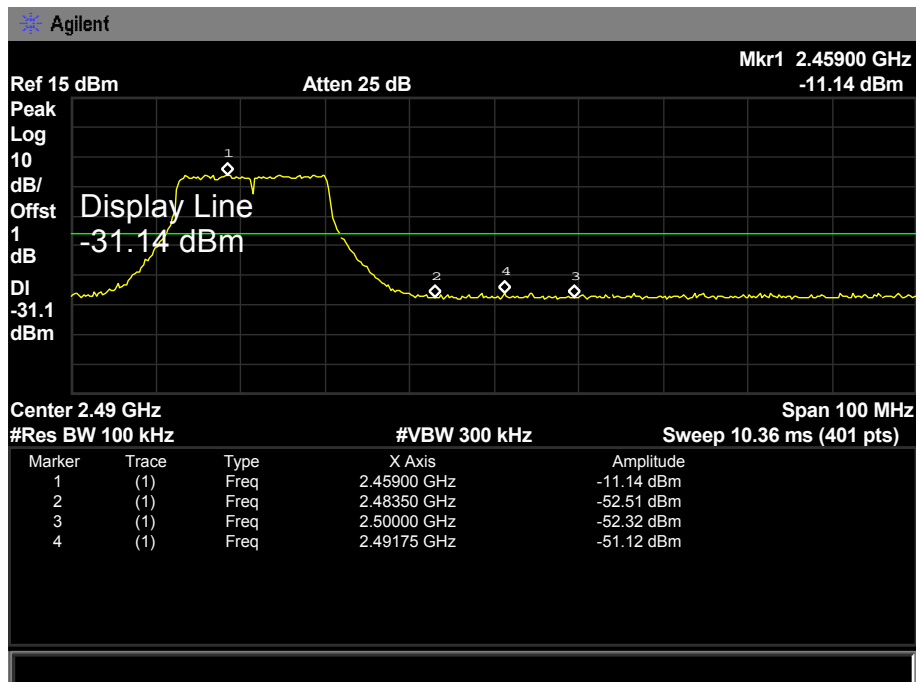
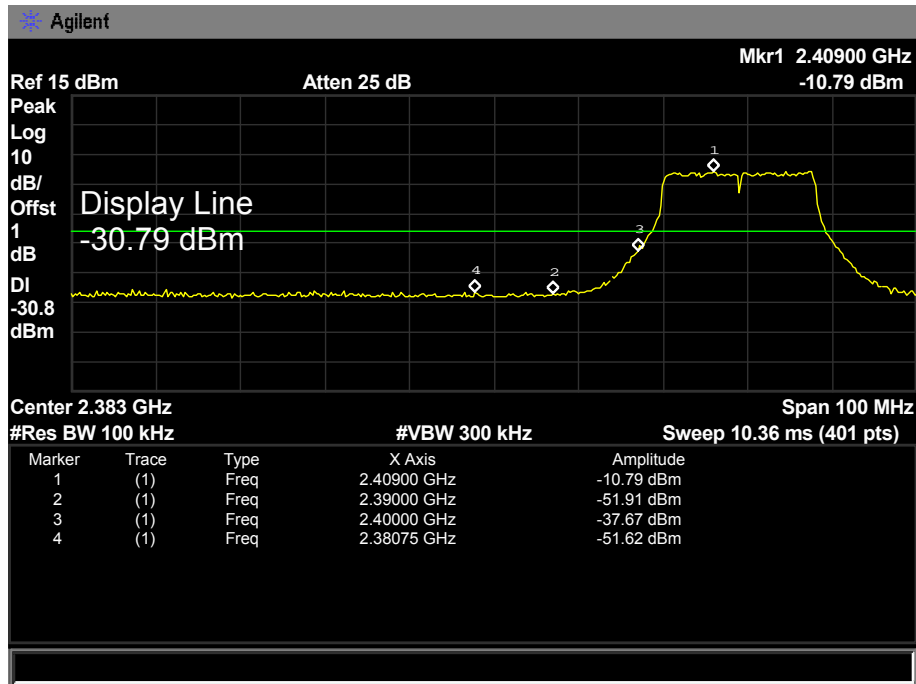
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX B Mode 2412MHz / TX B Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		



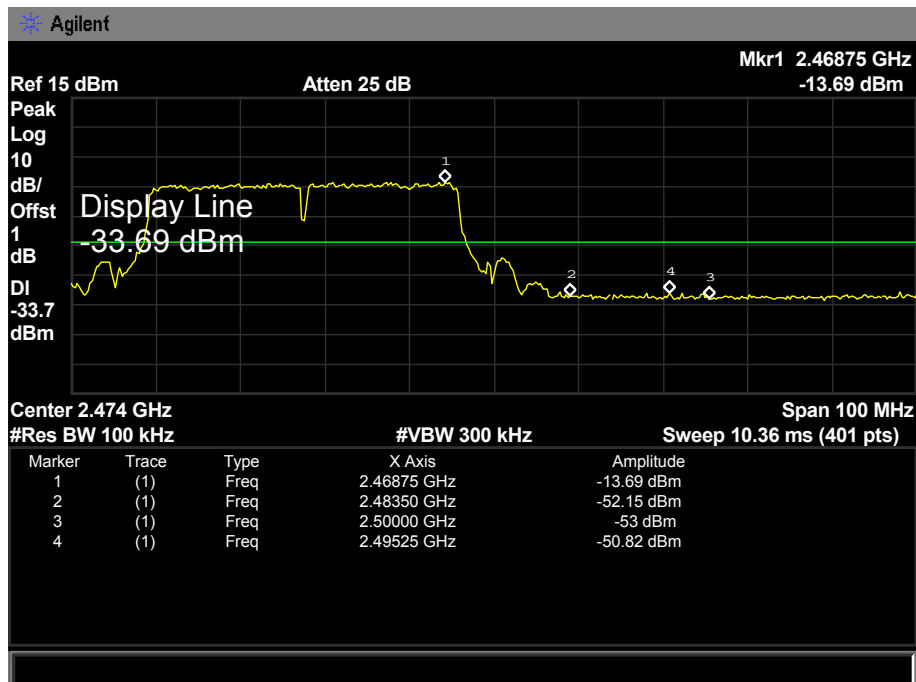
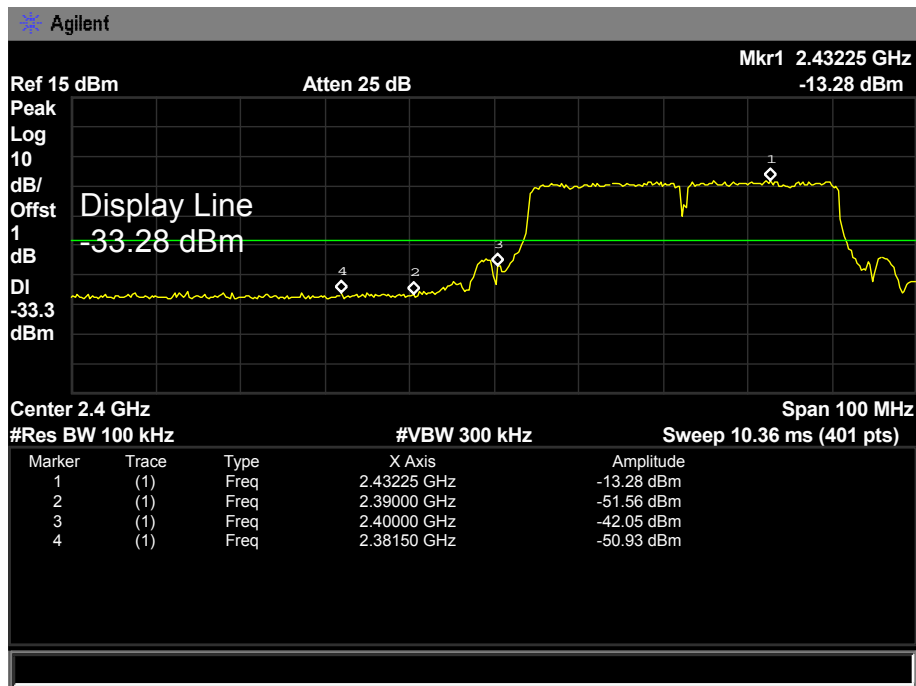
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX G Mode 2412MHz / TX G Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		



EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	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:	MID	Model:	MID8001-IB
Temperature:	25 °C	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		



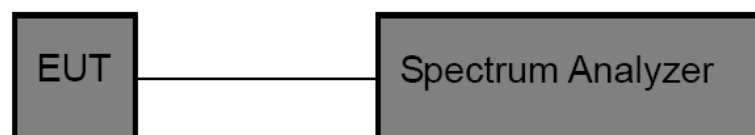
6. Bandwidth Test

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

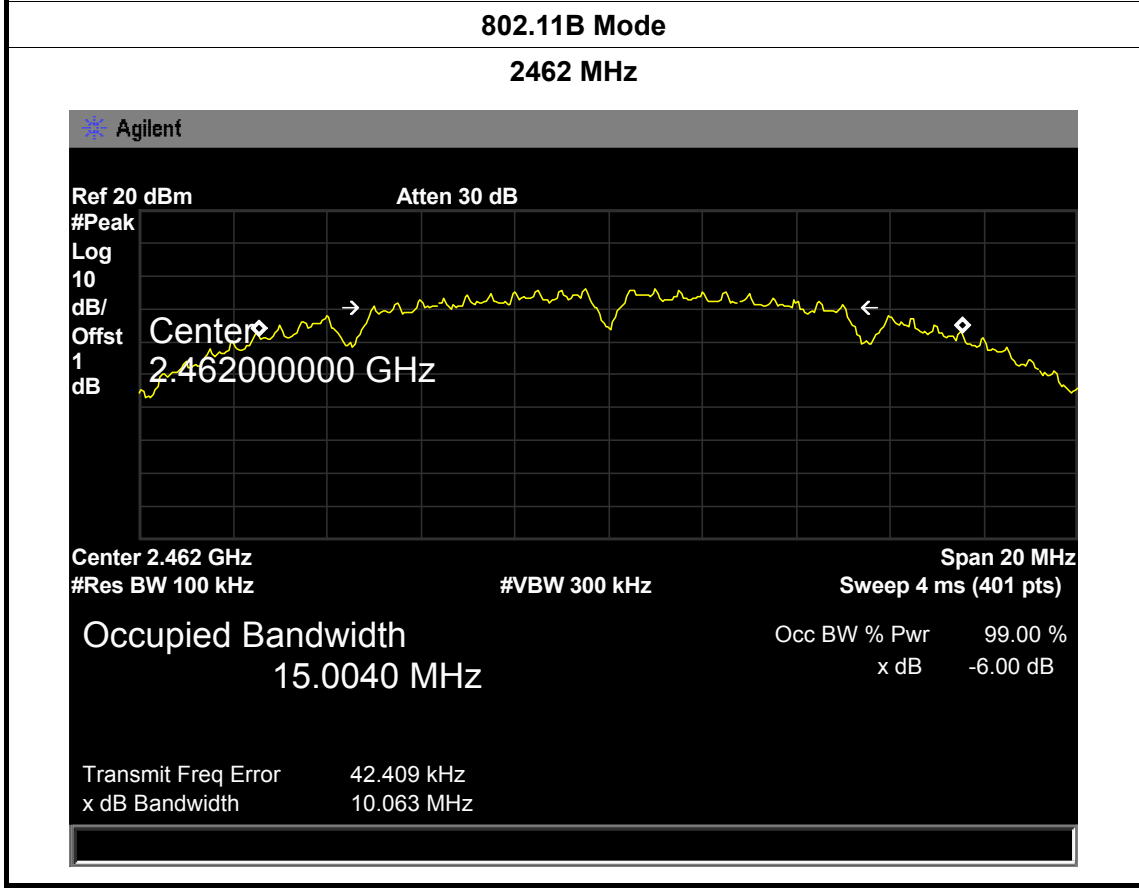
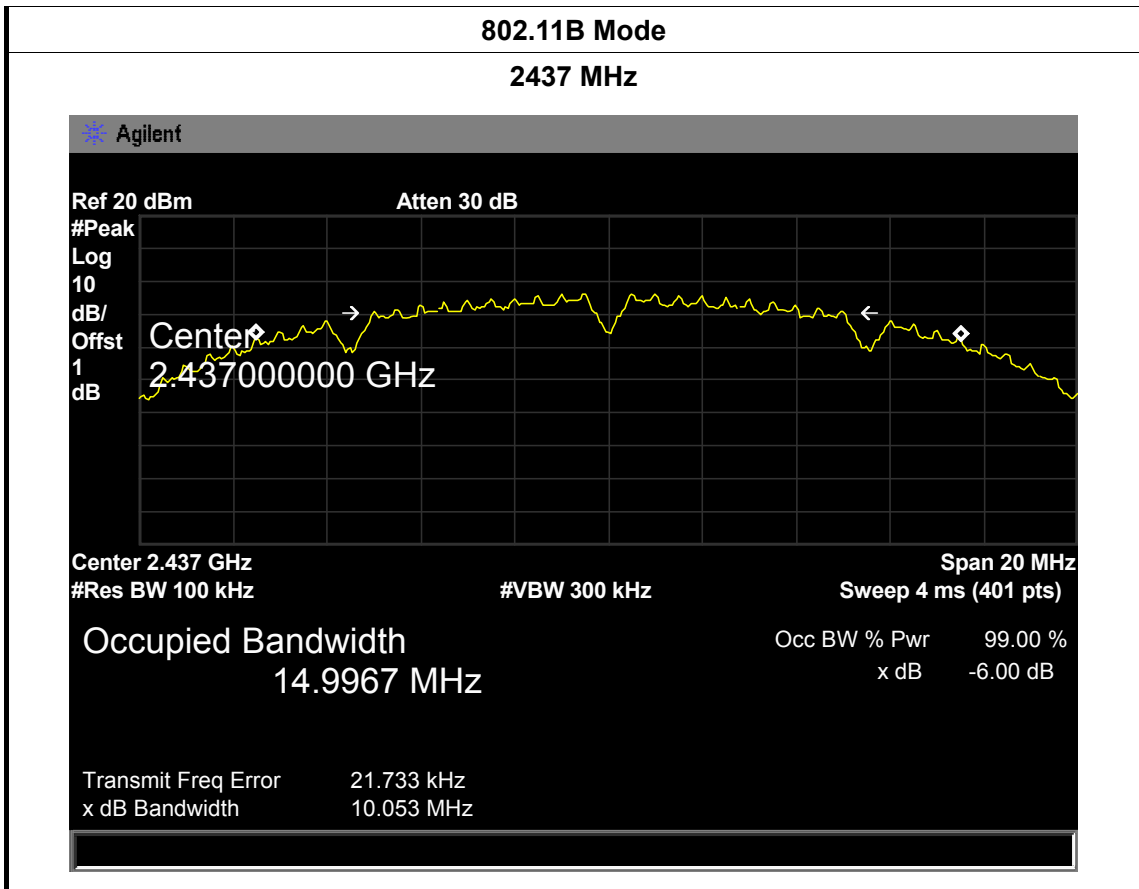
The EUT was set to continuously transmitting in each mode and low, MIDdle and high channel for the test.

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

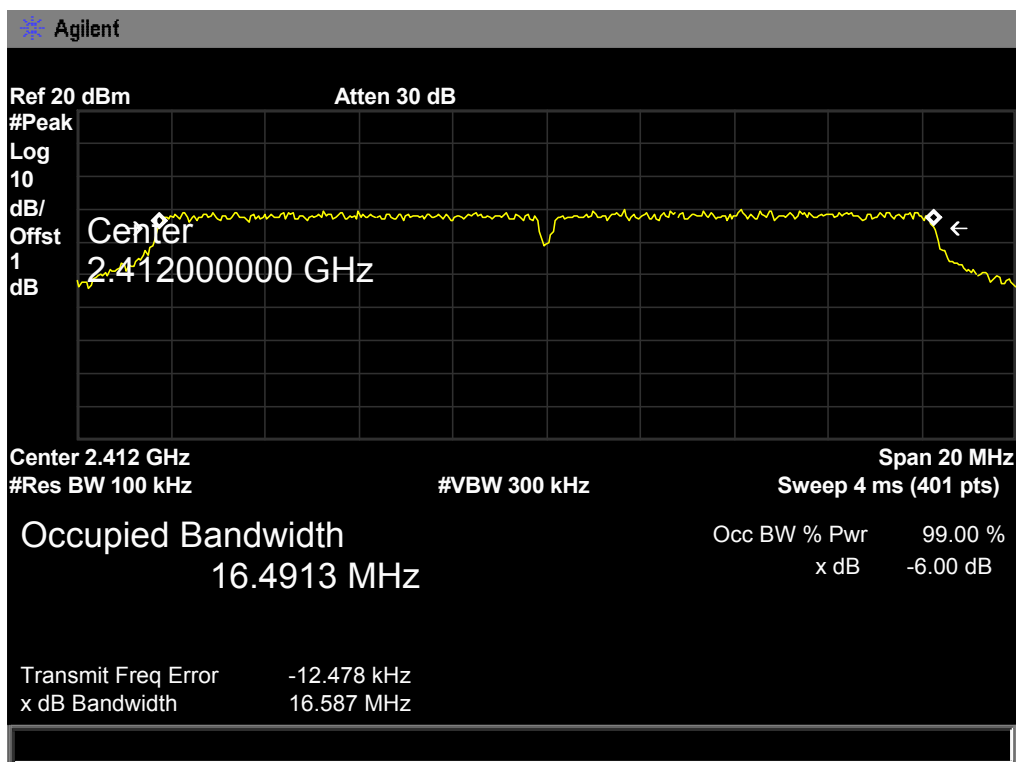
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX 802.11B Mode		
Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	10.098	15.0125	≥0.5
2437	10.053	14.9967	
2462	10.063	15.0040	
802.11B Mode			
2412 MHz			

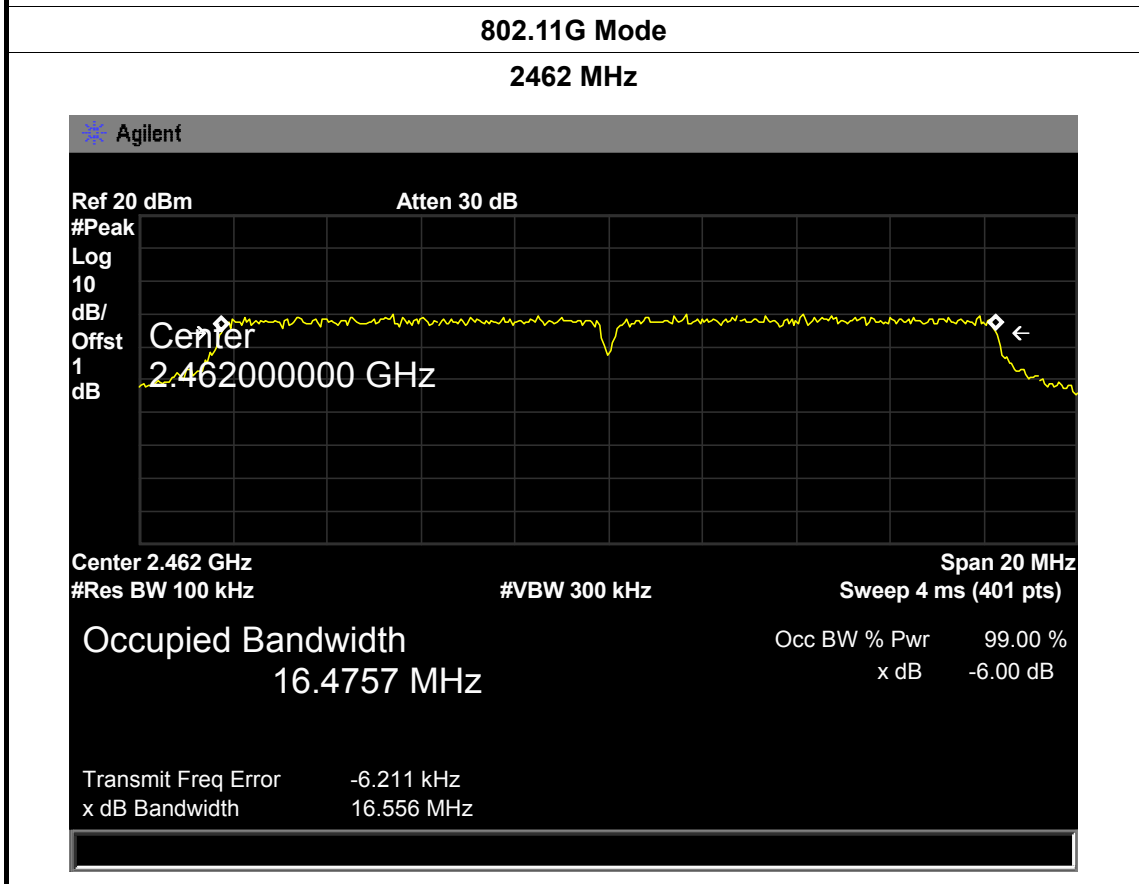
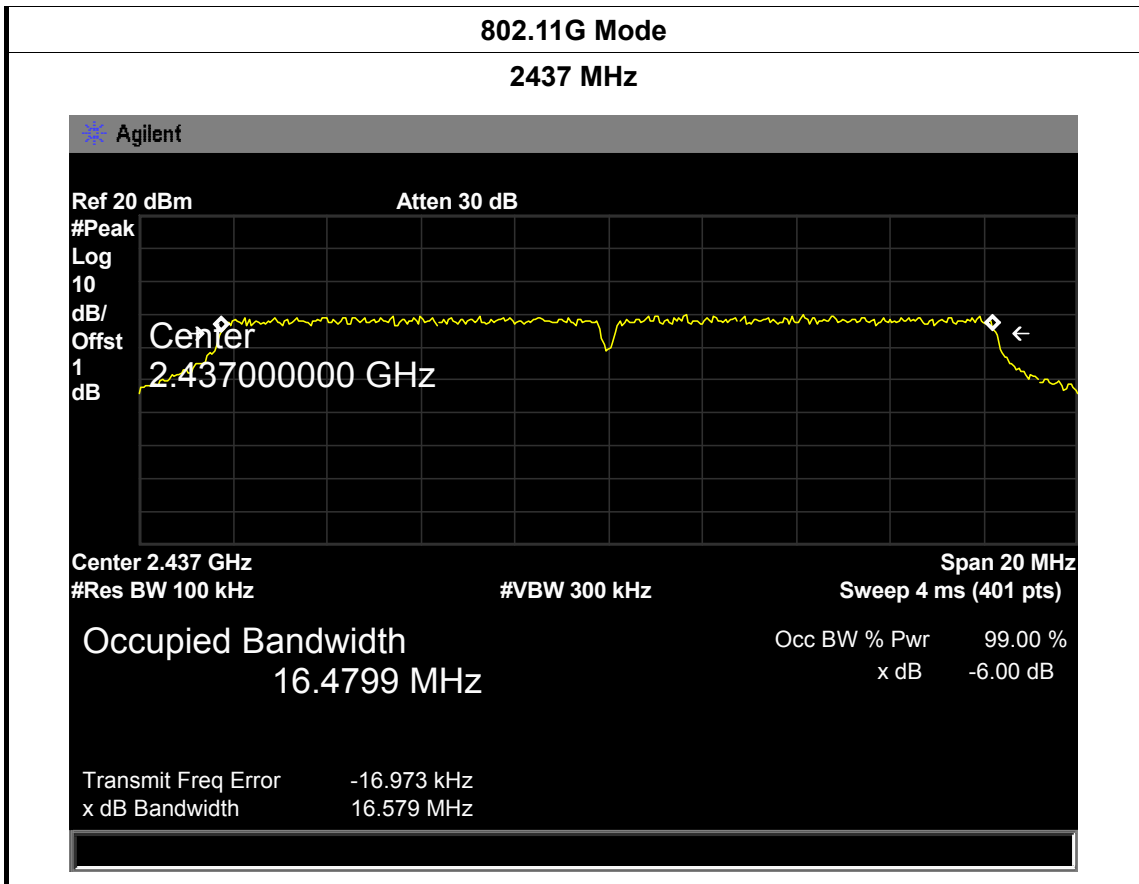


EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX 802.11G Mode		
Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	16.587	16.4913	>=0.5
2437	16.559	16.4799	
2462	16.556	16.4757	

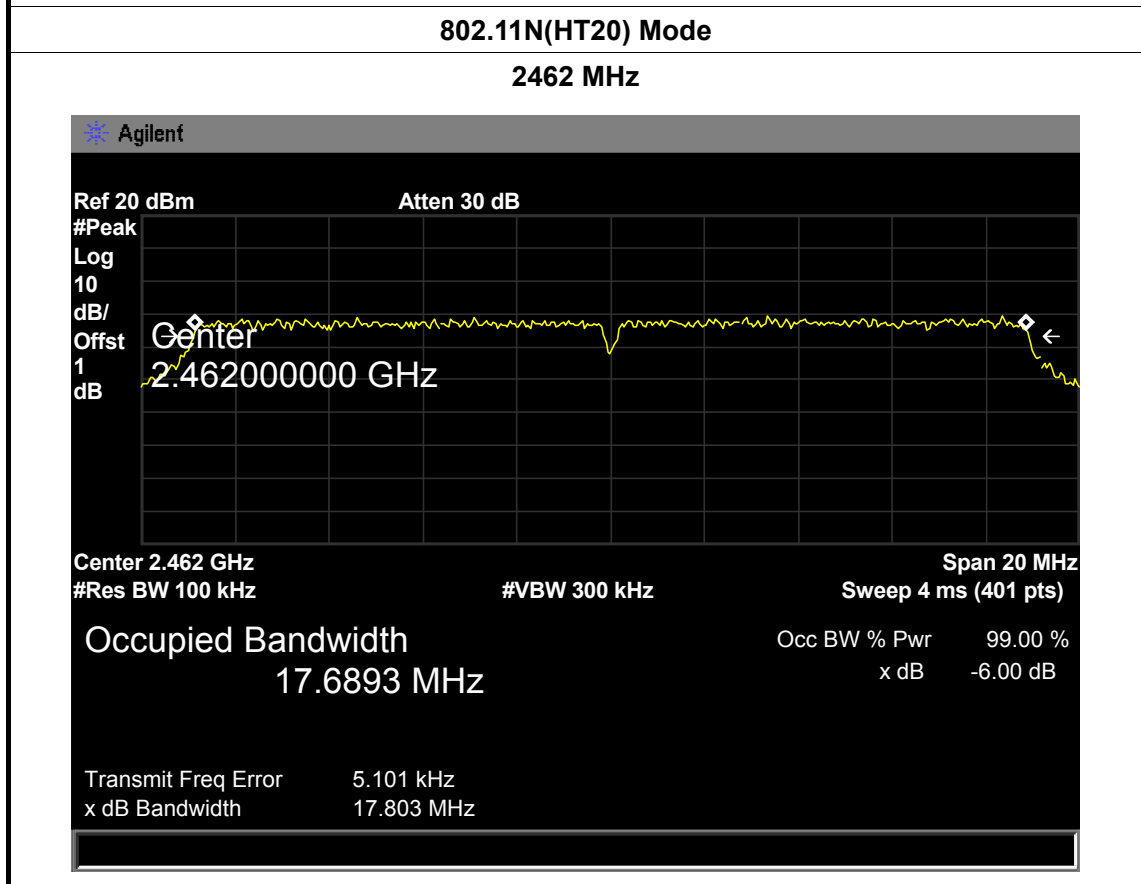
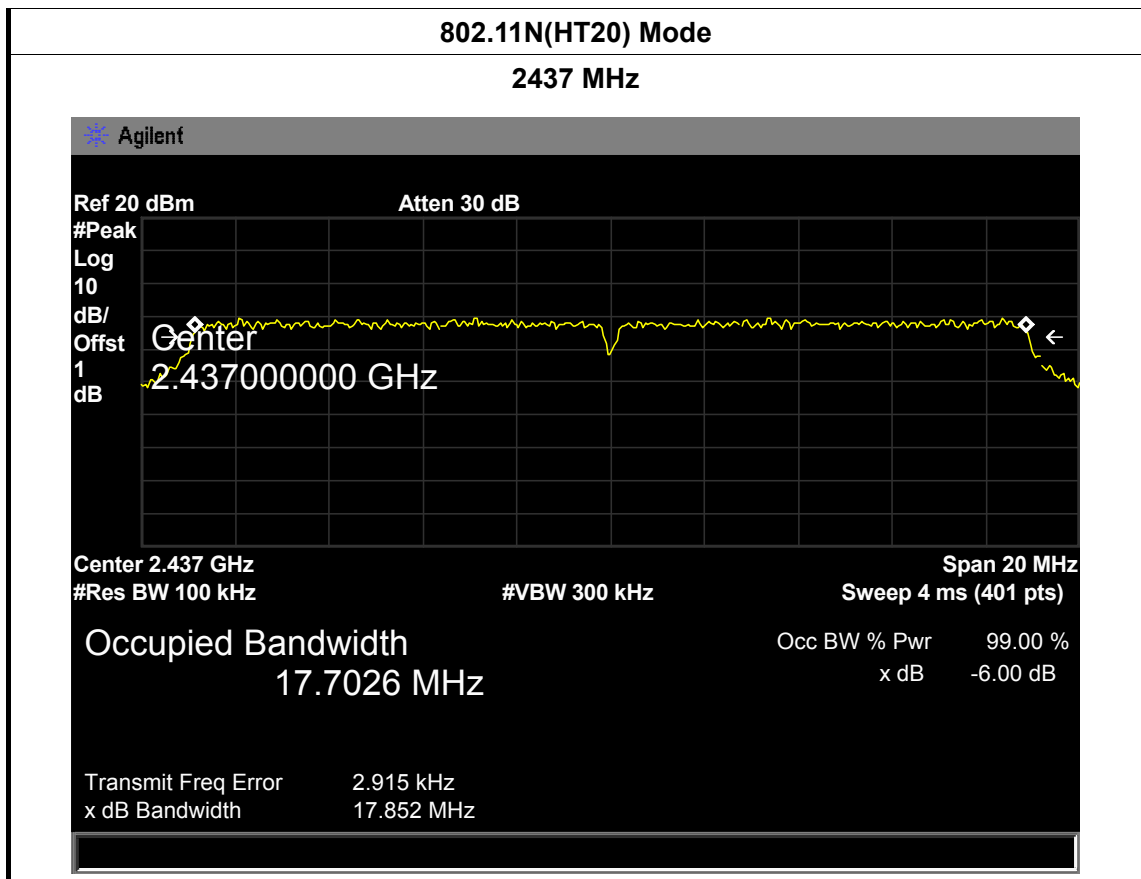
802.11G Mode

2412 MHz





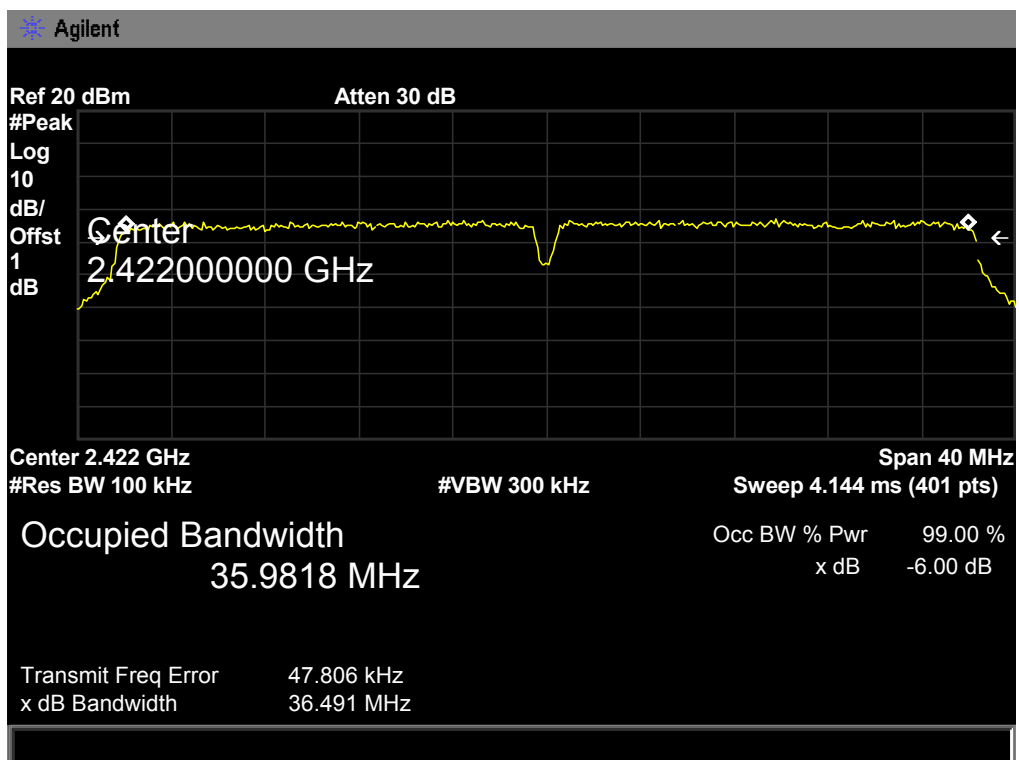
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX 802.11N(HT20) Mode		
Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	17.844	17.7081	>=0.5
2437	17.852	17.7026	
2462	17.803	17.6893	
802.11N(HT20) Mode			
2412 MHz			
<p>The screenshot shows an Agilent spectrum analyzer interface. The main display area shows a signal trace centered at 2.412 GHz. The y-axis is labeled 'dB' and the x-axis is 'GHz'. The signal level is approximately -6 dBm. The occupied bandwidth is measured as 17.7081 MHz. The reference level is 20 dBm and the attenuation is 30 dB. The resolution bandwidth is 100 kHz and the video bandwidth is 300 kHz. The sweep time is 4 ms. The transmit frequency error is 8.023 kHz.</p>			

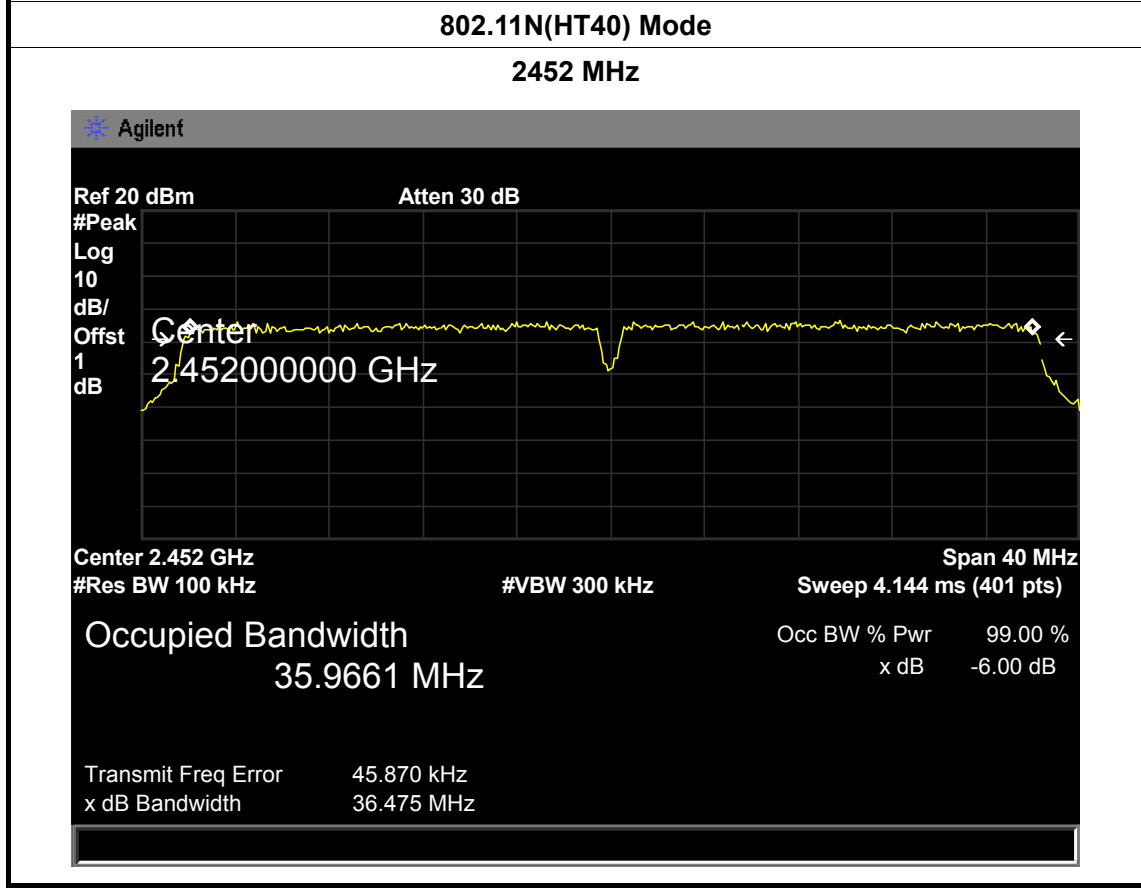
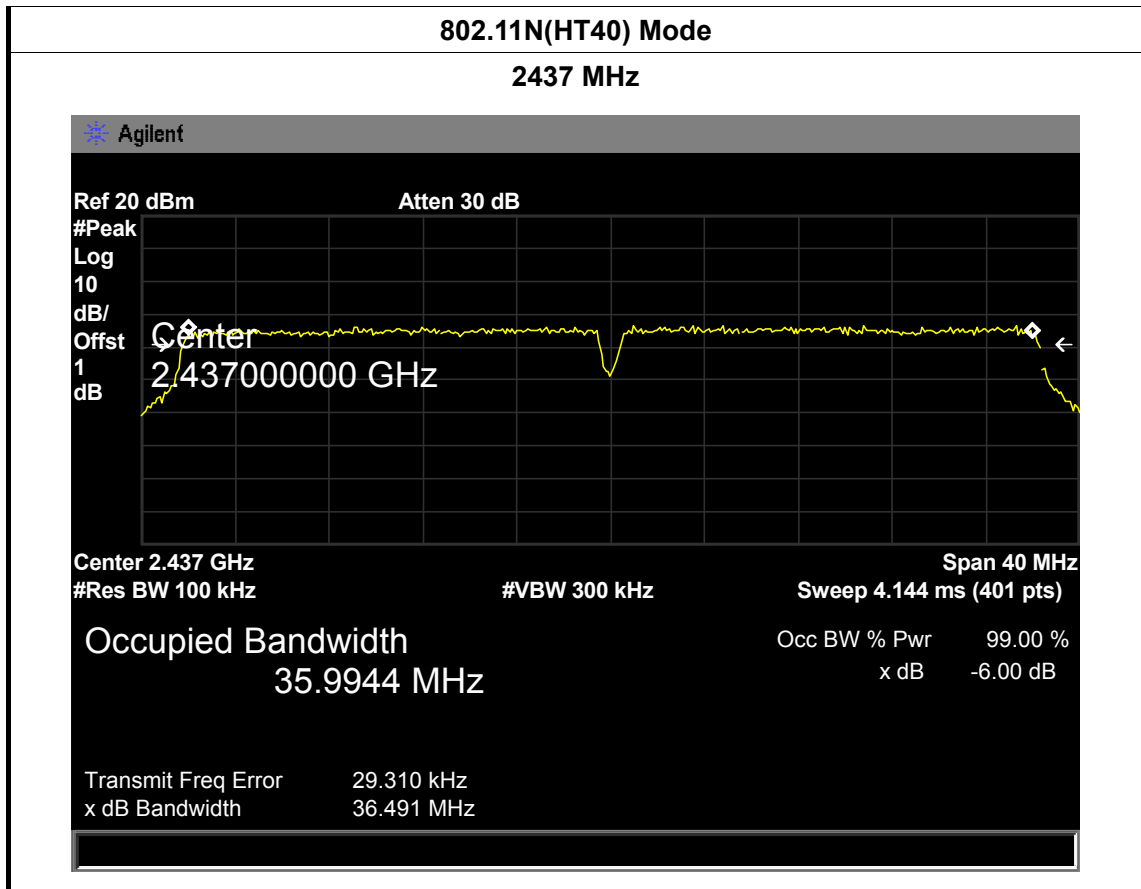


EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX 802.11N(HT40) Mode		
Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2422	36.491	35.9818	>=0.5
2437	36.491	35.9944	
2452	36.475	35.9661	

802.11N(HT40) Mode

2422 MHz





7. Peak Output Power Test

7.1 Test Standard and Limit

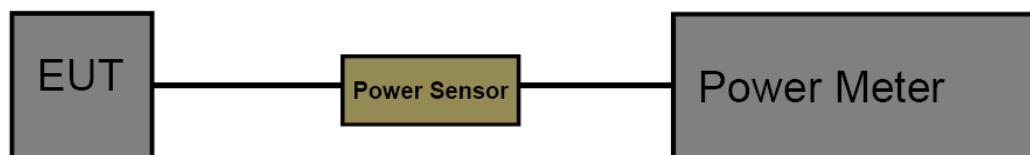
7.1.1 Test Standard

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	Aug. 08, 2014	Aug. 07, 2015
Power Sensor	Anritsu	ML2411B	25406005	Aug. 08, 2014	Aug. 07, 2015

7.6 Test Data

EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Mode	Channel frequency (MHz)	Test Result (dBm)	Limit (dBm)
802.11b	2412	9.03	30
	2437	9.02	
	2462	9.09	
802.11g	2412	8.94	
	2437	8.73	
	2462	8.95	
802.11n (HT20)	2412	8.89	
	2437	8.73	
	2462	8.88	
802.11n (HT40)	2422	8.97	
	2437	8.79	
	2452	8.55	

8. Power Spectral Density Test

8.1 Test Standard and Limit

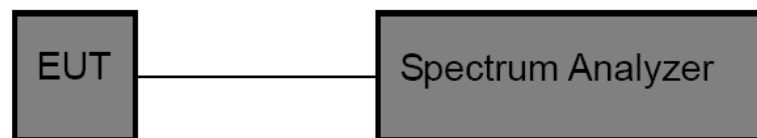
8.1.1 Test Standard

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

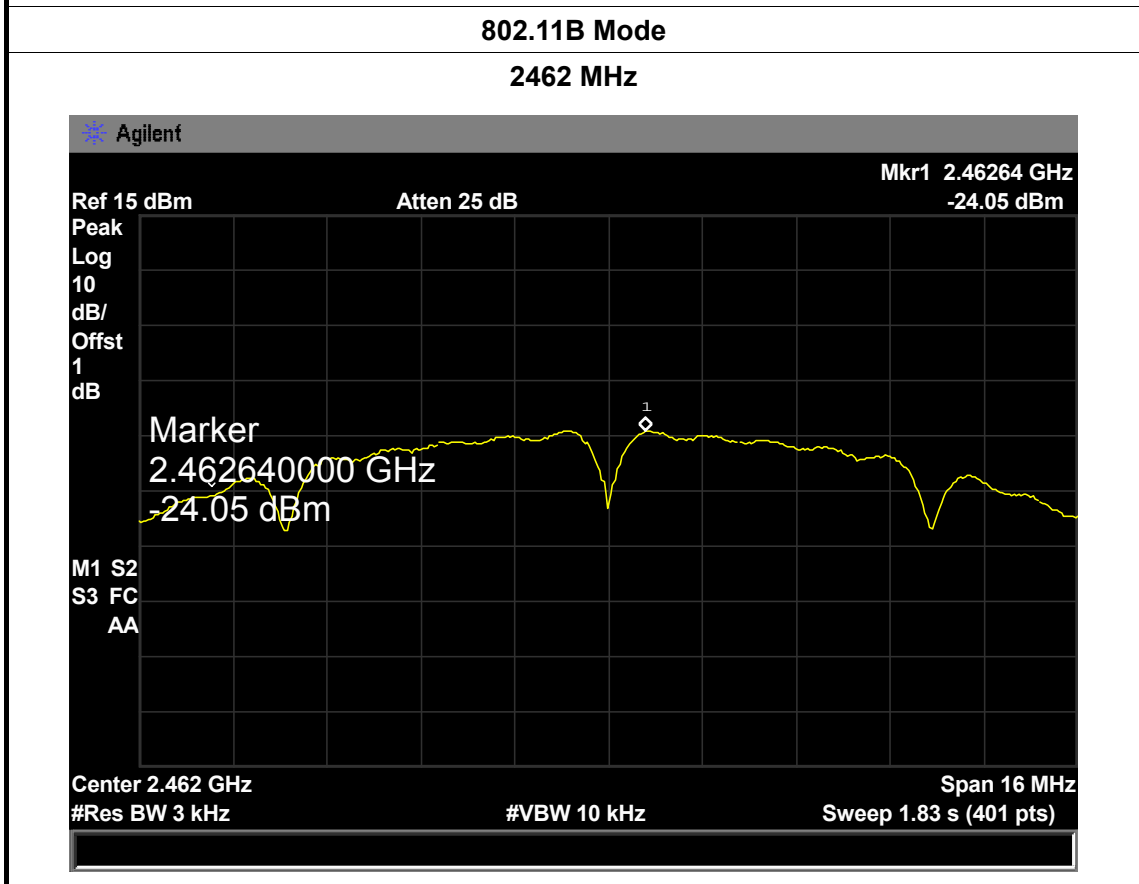
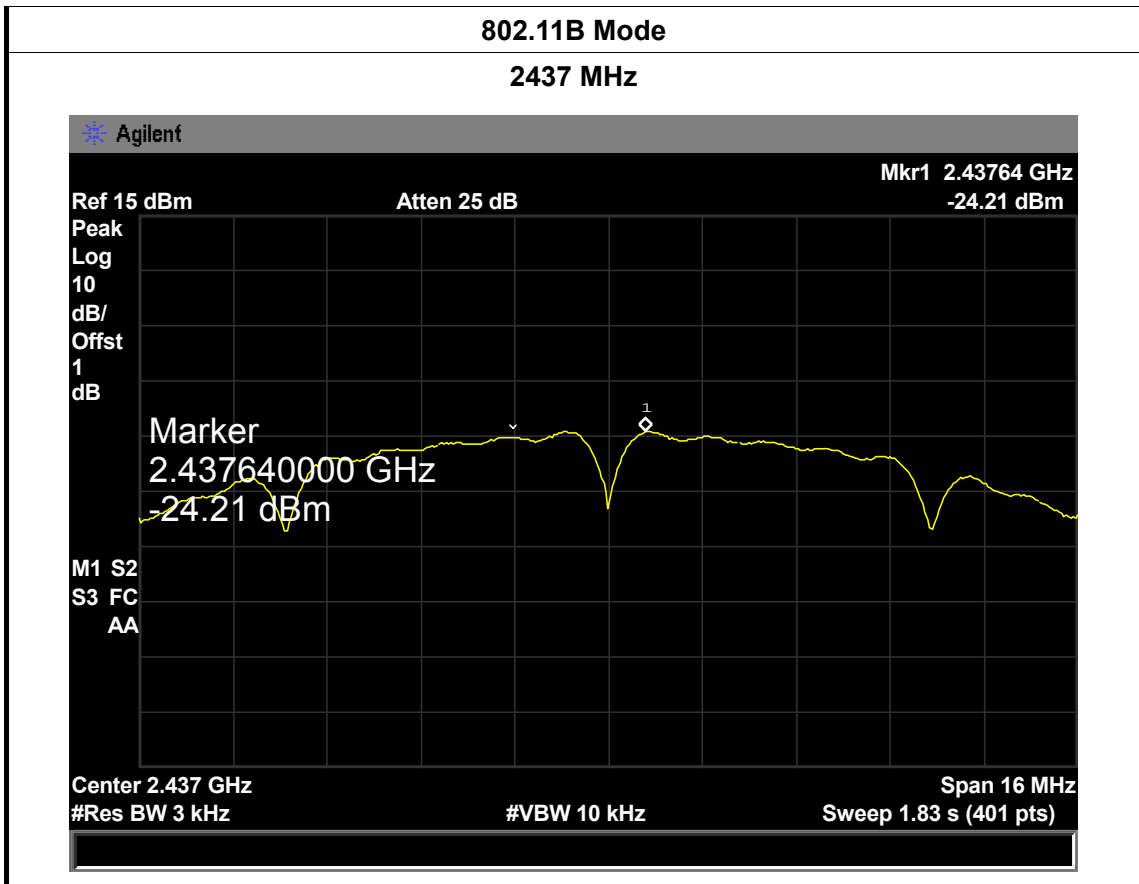
The EUT was set to continuously transmitting in each mode and low, MIDdle and high channel for the test.

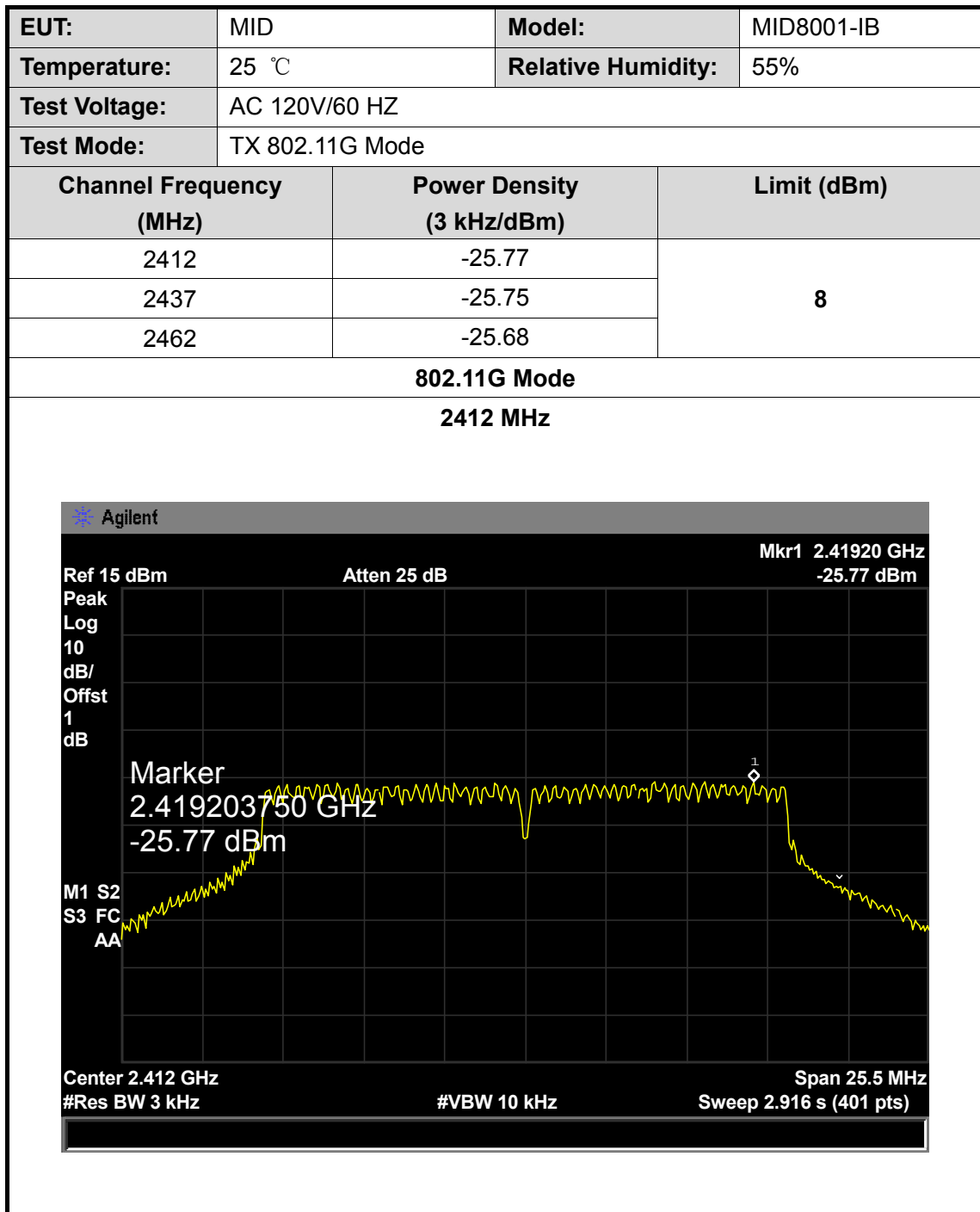
8.5 Test Equipment

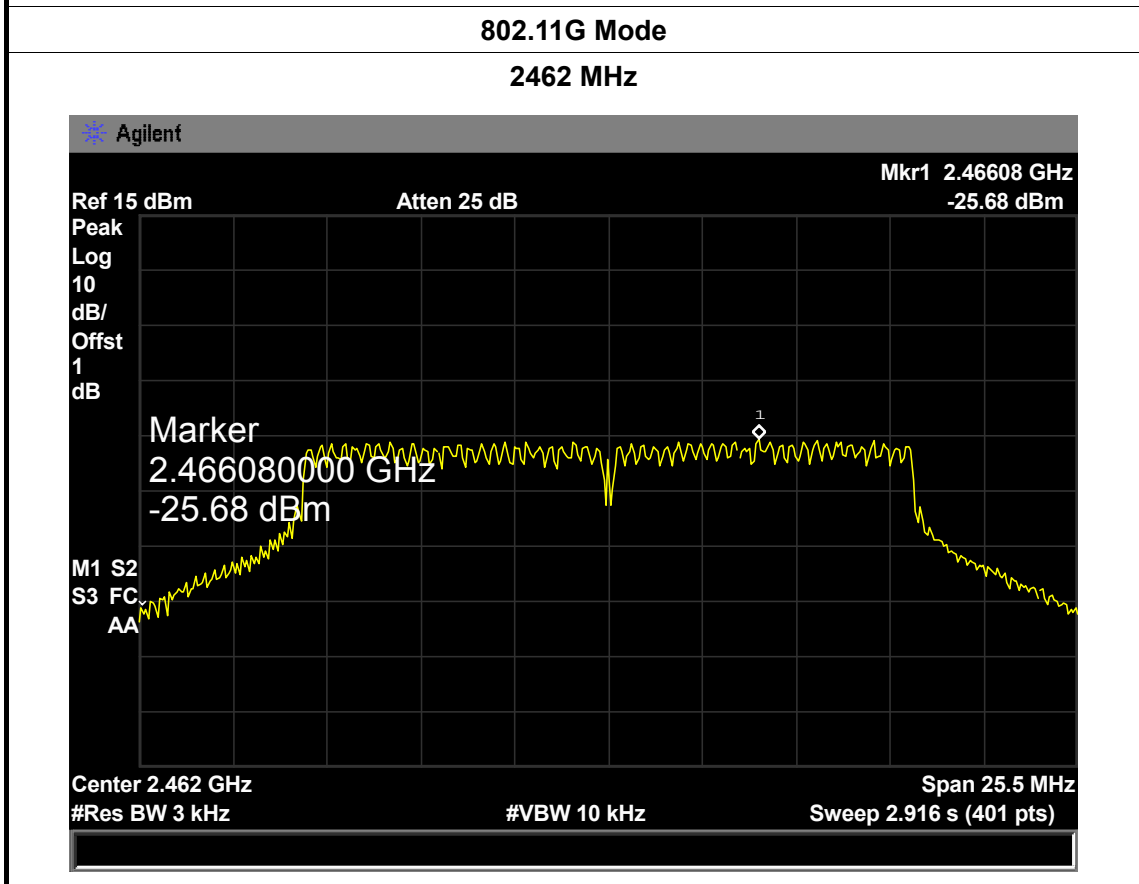
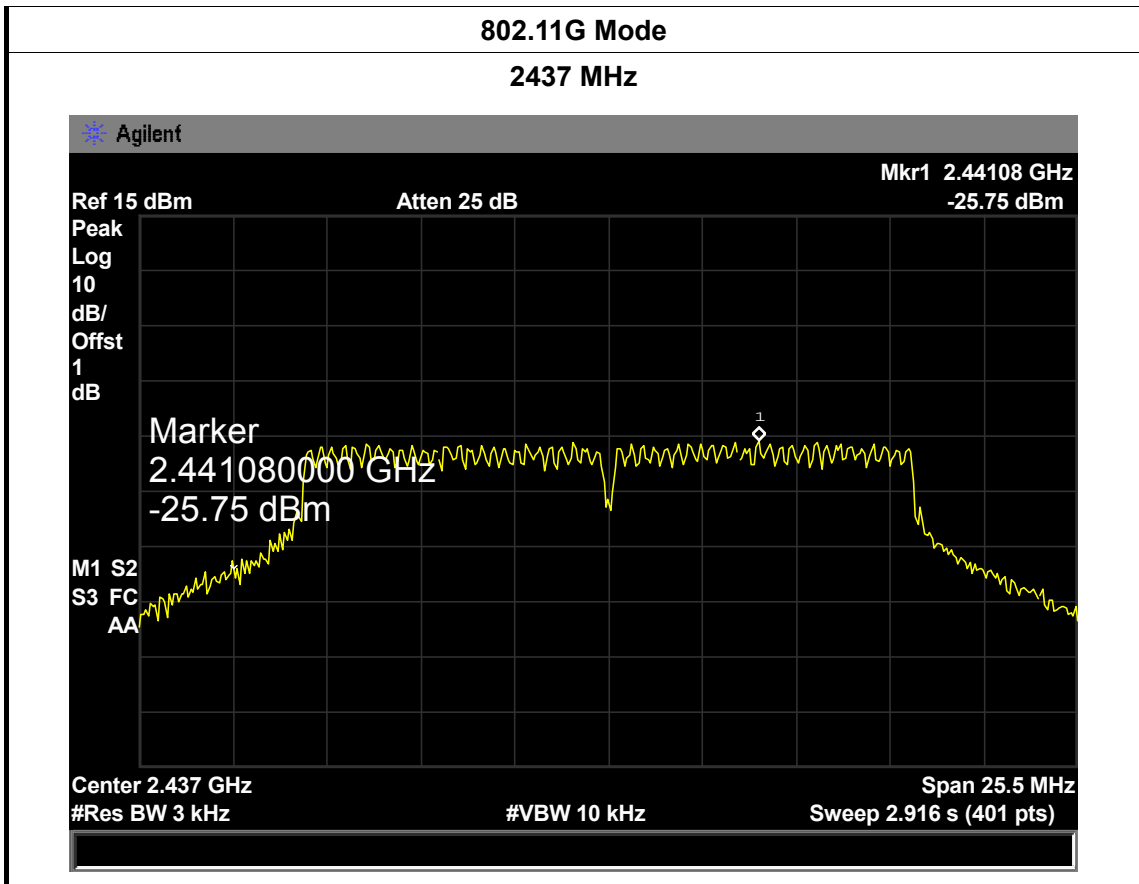
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Mar. 20, 2014	Mar. 19, 2015

8.6 Test Data

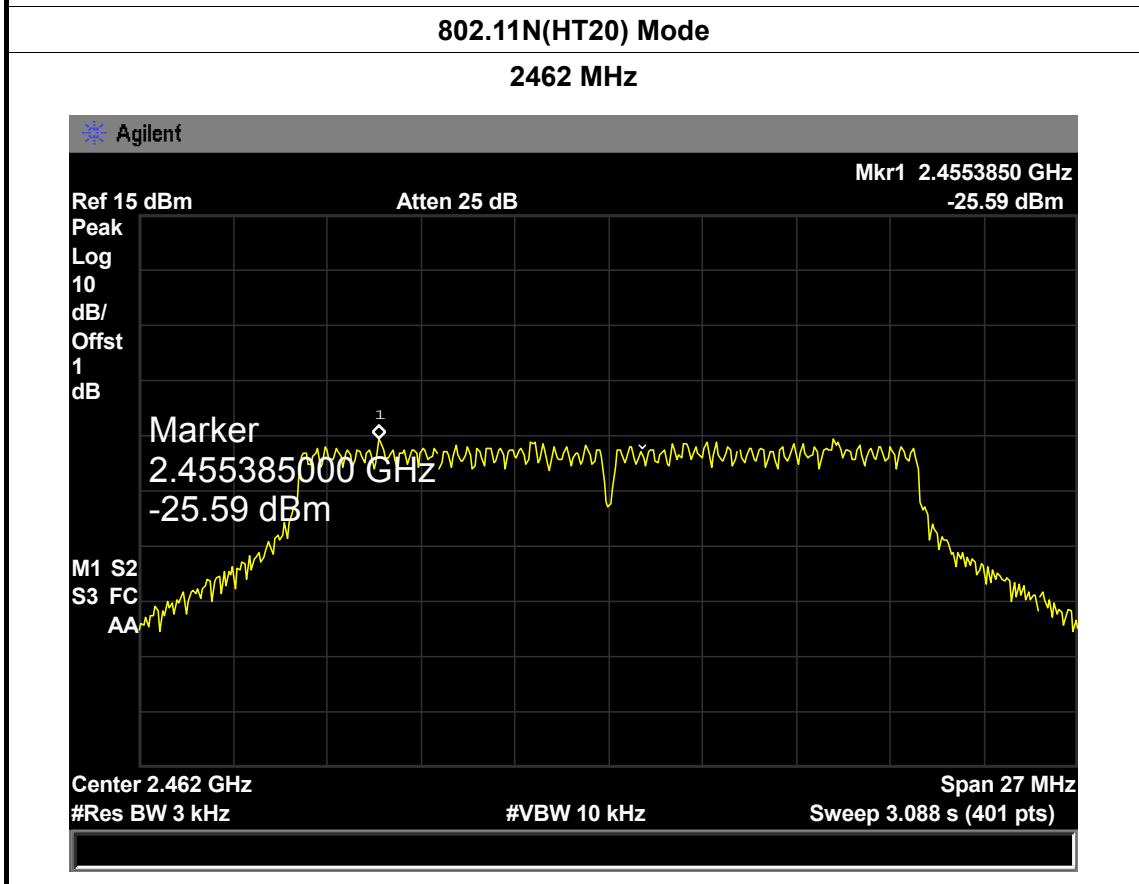
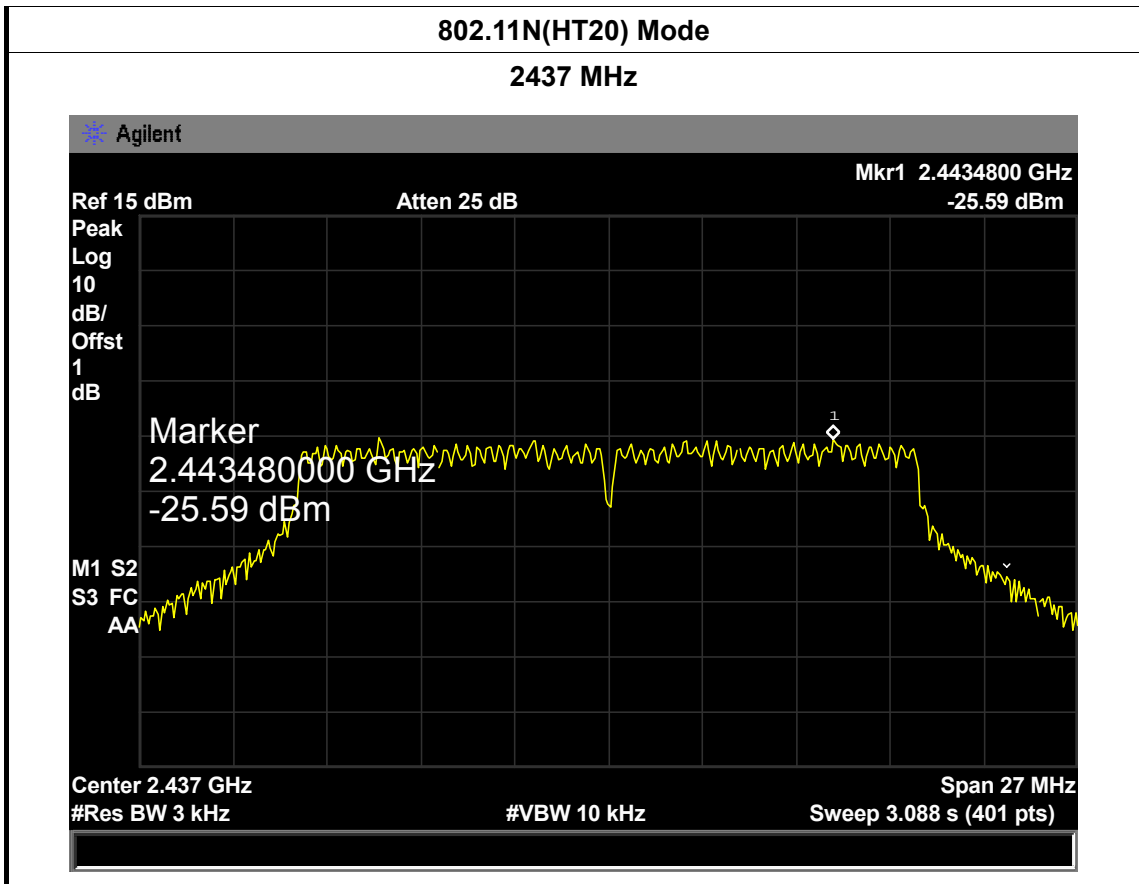
EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 HZ		
Test Mode:	TX 802.11B Mode		
Channel Frequency (MHz)	Power Density (3 kHz/dBm)	Limit (dBm)	
2412	-24.29	8	
2437	-24.21		
2462	-24.05		
802.11B Mode			
2412 MHz			
<p>The screenshot shows a spectrum analyzer display with a yellow trace. A marker is placed at 2.41264 GHz with a value of -24.29 dBm. The display includes the following text: Agilent, Ref 15 dBm, Atten 25 dB, Mkr1 2.41264 GHz -24.29 dBm, Peak, Log, 10 dB/Offst, 1 dB, Marker 2.412640000 GHz -24.29 dBm, M1 S2, S3 FC, AA, Center 2.412 GHz, Span 16 MHz, #Res BW 3 kHz, #VBW 10 kHz, Sweep 1.83 s (401 pts).</p>			



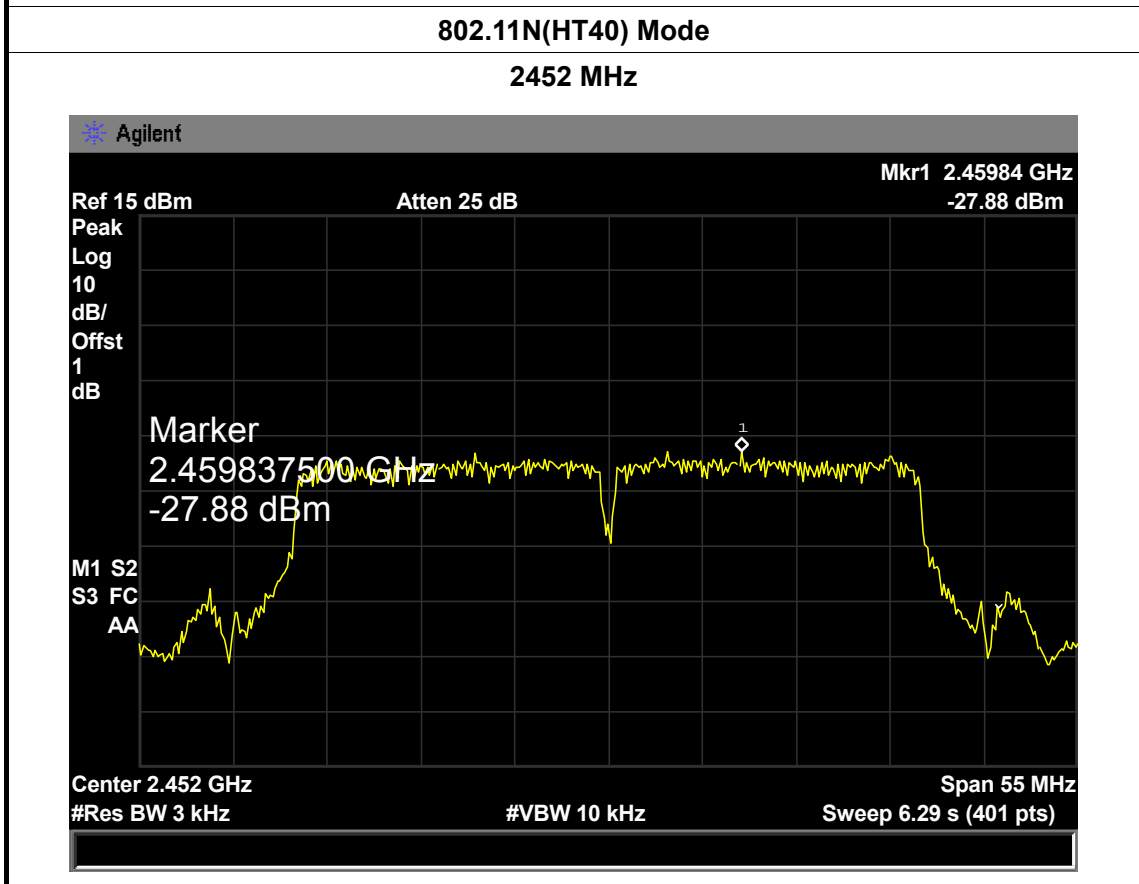
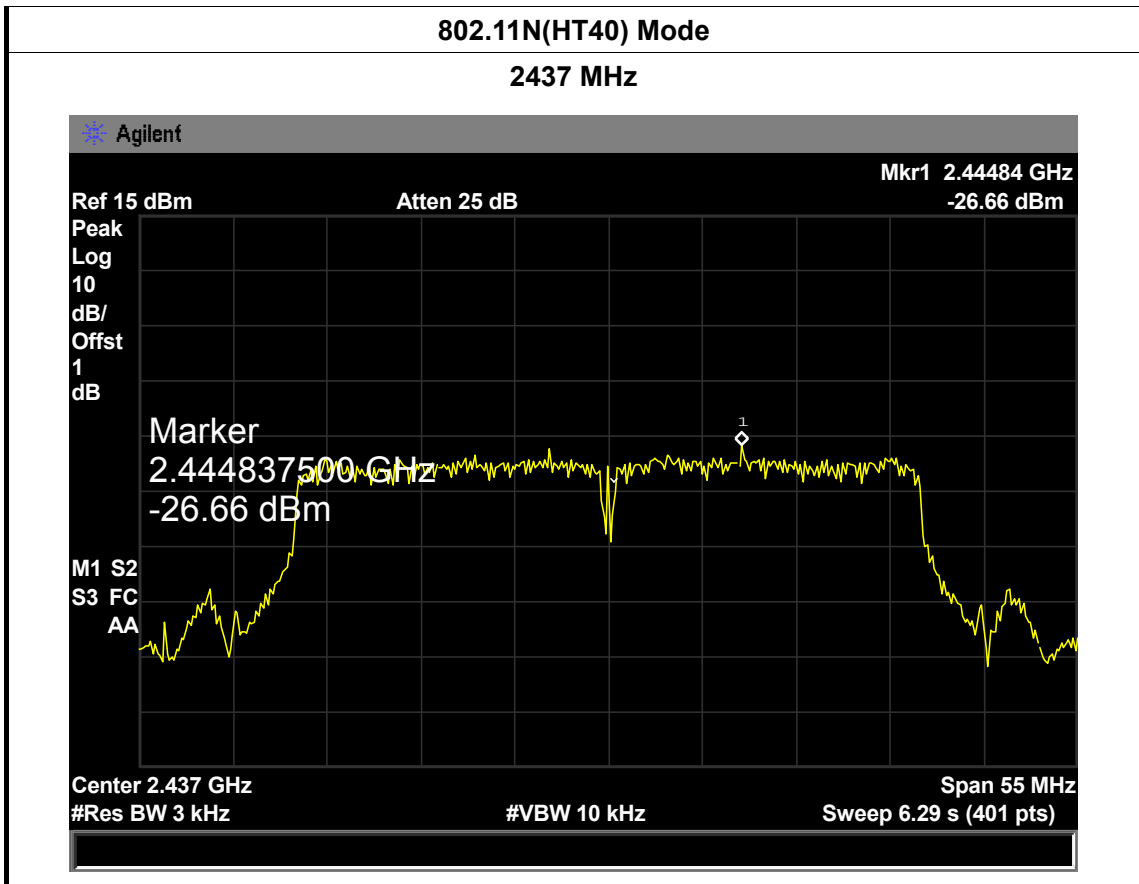




EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 HZ		
Test Mode:	TX 802.11N(HT20) Mode		
Channel Frequency (MHz)	Power Density (3 kHz/dBm)	Limit (dBm)	
2412	-25.99	8	
2437	-25.59		
2462	-25.59		
802.11N(HT20) Mode			
2412 MHz			
<p>Agilent</p> <p>Ref 15 dBm Atten 25 dB Mkr1 2.4173325 GHz -25.99 dBm</p> <p>Peak Log 10 dB/ Offst 1 dB</p> <p>Marker 2.417332500 GHz -25.99 dBm</p> <p>M1 S2 S3 FC AA</p> <p>Center 2.412 GHz Span 27 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 3.088 s (401 pts)</p>			



EUT:	MID	Model:	MID8001-IB
Temperature:	25 °C	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	-26.54	8	
2437	-26.66		
2452	-27.88		
802.11N(HT40) Mode			
2422 MHz			
<p>The screenshot shows a spectrum analyzer display with a yellow signal trace. A marker is placed at 2.42200000 GHz with a value of -26.54 dBm. The display includes the Agilent logo, 'Ref 15 dBm', 'Atten 25 dB', 'Mkr1 2.42200 GHz -26.54 dBm', 'Peak', 'Log', '10 dB/Offst', '1 dB', 'Marker 2.42200000 GHz -26.54 dBm', 'M1 S2 S3 FC AA', 'Center 2.422 GHz', '#Res BW 3 kHz', '#VBW 10 kHz', 'Span 55 MHz', and 'Sweep 6.29 s (401 pts)'.</p>			



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 0dBi, 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.

Antenna Type
<input checked="" type="checkbox"/> Permanent attached antenna
<input type="checkbox"/> Unique connector antenna
<input type="checkbox"/> Professional installation antenna