FCC Radio Test Report

FCC ID: 2AFPV-M1

Original Grant

Report No.	:	TB-FCC145046
Applicant	:	Shenzhen Yuan Co., Ltd.
Equipment Under Test (EUT)		
EUT Name	:	DLP LED Projector
Model No.	:	M1
Series Model No.	:	M1BK, M1BL, M1R, M1Y, M1W, M1S+, M1MAX
Brand Name	:	ZECO
Receipt Date	:	2015-08-10
Test Date	:	2015-08-10 to 2015-08-24
Issue Date	:	2015-08-25
Standards	:	FCC Part 15: 2014, Subpart C(15.247)
Test Method	:	ANSI C63.10:2013
Conclusions	:	**PASS**

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

Test/Witness Engineer	:	IVAN SU
Approved& Authorized	:	Roy Lu

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

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Contents

1. General Information about EUT

1.1 Client Information

Applicant	:	Shenzhen Yuan Co., Ltd.
Address	:	2308 Floor 23.Zhantao Technology Building, Minzhi Road, Minzhi Street ,Baoan District, Shenzhen City, China
Manufacturer	:	Shenzhen Yuan Co., Ltd.
Address	:	2308 Floor 23.Zhantao Technology Building, Minzhi Road, Minzhi Street ,Baoan District, Shenzhen City, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	DLP LED Projector	
Models No.	:	M1, M1BK, M1BL, M1R, M1Y, M1W, M1S+, M1MAX	
Model Difference	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is model name for commercial.	
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: 9.21dBm 802.11g: 9.12dBm 802.11n (HT20): 9.02dBm 802.11n (HT40): 8.98dBm
		Antenna Gain:	2.5 dBi Embedded Antenna
		Modulation Type:	802.11b:DSSS(CCK, DQPSK, DBPSK) 802.11g/n:OFDM(BPSK, QPSK,16QAM, 64QAM.)
		Bit Rate of Transmitter:	802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6 Mbps 802.11n:up to 150Mbps
Power Supply	:	DC Voltage supplied from Host System by USB cable. DC power supplied by AC/DC Adapter. DC power by Li-ion Battery	
Power Rating	:	DC 5.0V by USB cable. DC 3.7V Li-ion Battery. AC/DC Adapter: Input:100~240V, 0.4A, 50/60Hz Output:5V, 2A	
Connecting I/O Port(S)	:	Please refer to the User's Manual	

Note:

(1) This Test Report is FCC Part 15.247 for 802.11b/g/n, the test procedure follows the FCC KDB 558074 D01 DTS Meas Guidance v03r03.

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

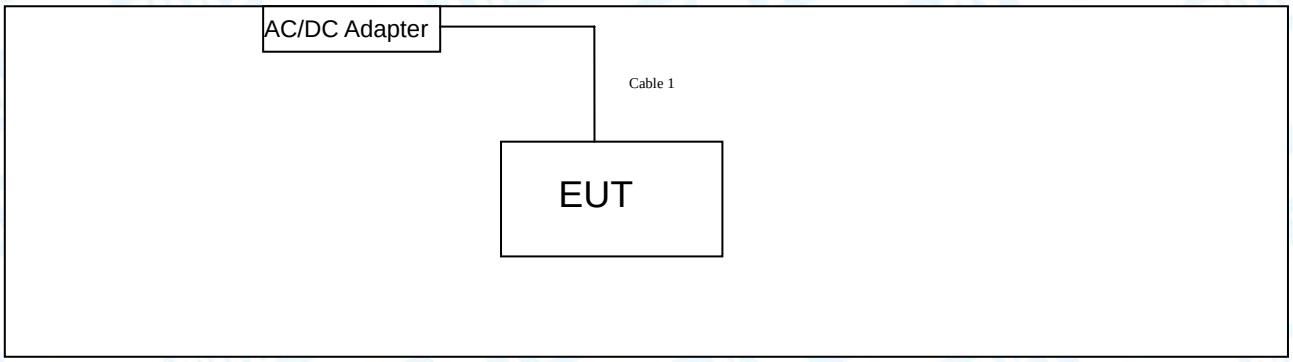
(3) Antenna information provided by the applicant.

(4) Channel List:

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		
Note:CH 01~CH 11 for 802.11b/g/n(HT20) **CH 03~CH 09 for 802.11n(HT40)**					

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	1.0M	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 03/06/09

Note:

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

According to ANSI C63.10 standards, the measurements are performed at the highest, Midle, 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	WLAN Test Tool Version 1.0.4		
Channel	**CH 01**	**CH 06**	**CH 11**
IEEE 802.11b DSSS	27	27	27
IEEE 802.11g OFDM	27	27	26
IEEE 802.11n (HT20)	27	27	26
Channel	**CH 03**	**CH 06**	**CH 09**
IEEE 802.11n (HT40)	27	27	27

1.7 Measurement Uncertainty

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

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

1.8 Test Facility

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

CNAS (L5813)

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

FCC List No.: (811562)

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

IC Registration No.: (11950A-1)

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

May 22, 2014 certificated by TUV Rheinland(China) Co., Ltd. with TUV certificate No.: UA 50282953 0001 and report No.: 17026822 002. The certificate is valid until the next scheduled audit or up to 18 months, at the discretion of TUV Rhineland.

2. Test Summary

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

3. Test Equipment

Conducted Emission Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Aug. 07, 2015	Aug. 06, 2016
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Aug. 07, 2015	Aug. 06, 2016
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Aug. 07, 2015	Aug. 06, 2016
LISN	Rohde & Schwarz	ENV216	101131	Aug. 07, 2015	Aug. 06, 2016
Radiation Emission Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
Spectrum Analyzer	Agilent	E4407B	MY45106456	Sep. 01, 2014	Aug. 31, 2015
EMI Test Receiver	Rohde & Schwarz	ESCI	100010/007	Aug. 07, 2015	Aug. 06, 2016
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar. 28, 2015	Mar. 27, 2016
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Mar. 28, 2015	Mar. 27, 2016
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar. 28, 2015	Mar. 27, 2016
Horn Antenna	ETS-LINDGREN	3117	00143209	Mar. 28, 2015	Mar. 27, 2016
Pre-amplifier	Sonoma	310N	185903	Mar. 28, 2015	Mar. 27, 2016
Pre-amplifier	HP	8447B	3008A00849	Mar. 28, 2015	Mar. 27, 2016
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar. 28, 2015	Mar. 27, 2016
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A

4. Conducted Emission Test

4.1 Test Standard and Limit

4.1.1Test Standard

FCC Part 15.207

4.1.2 Test Limit

Conducted Emission Test Limit

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

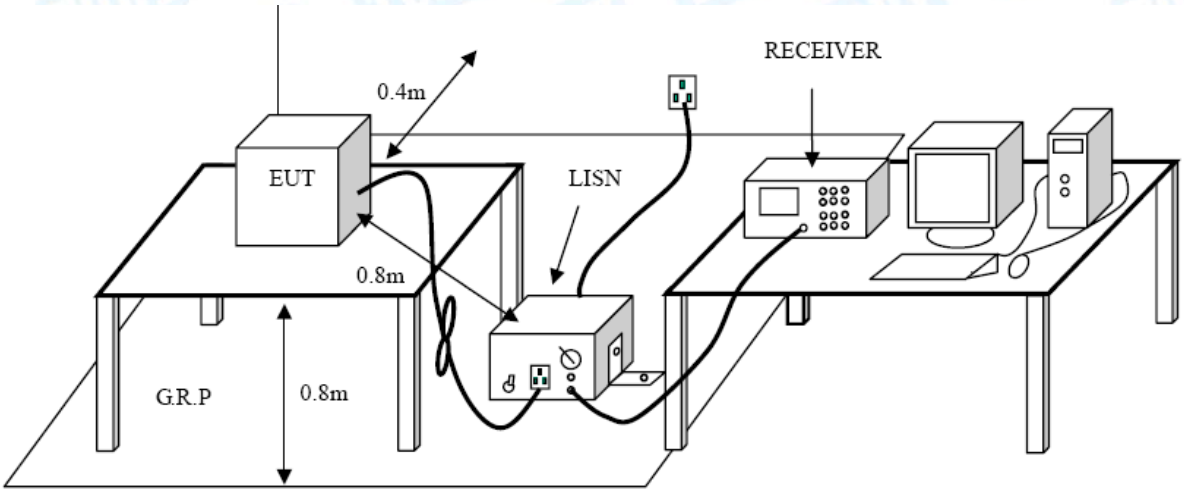
Notes:

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

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

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

4.2 Test Setup



4.3 Test Procedure

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

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

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

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

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

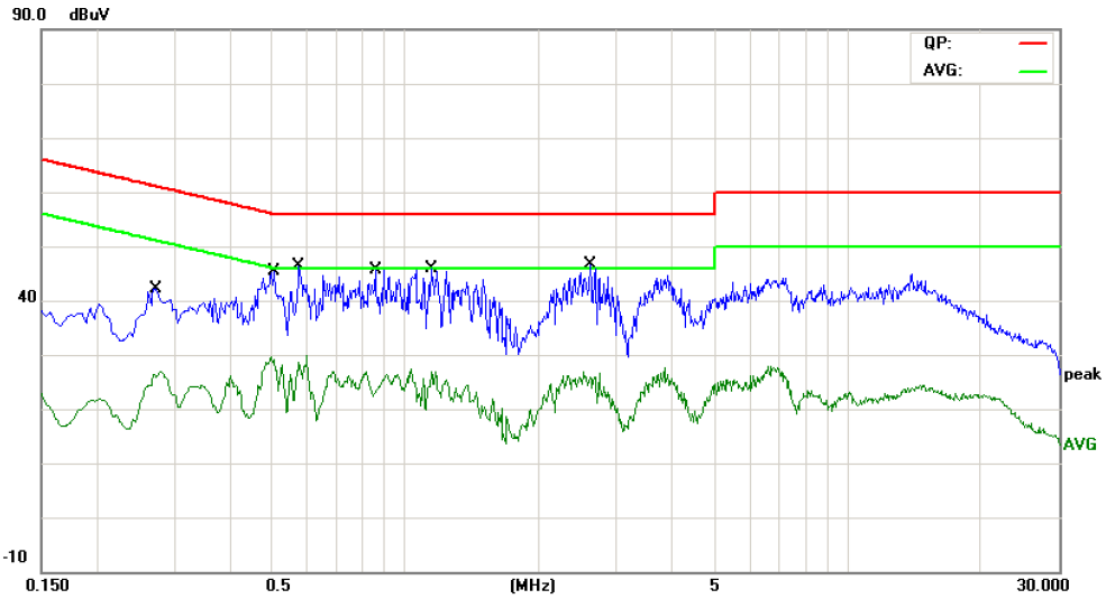
4.4 EUT Operating Mode

Please refer to the description of test mode.

4.5 Test Data

Please see the next page

EUT:	DLP LED Projector	Model Name :	M1
Temperature:	25 ℃	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		

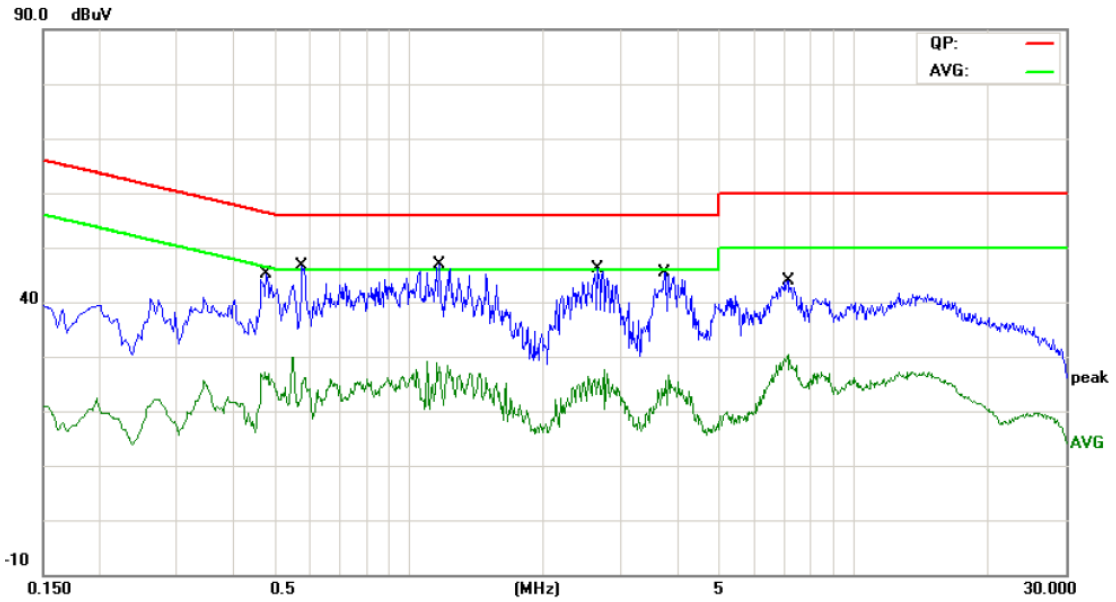


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.2740	27.35	10.02	37.37	60.99	-23.62	QP
2		0.2740	15.76	10.02	25.78	50.99	-25.21	AVG
3		0.5060	28.81	10.02	38.83	56.00	-17.17	QP
4		0.5060	16.82	10.02	26.84	46.00	-19.16	AVG
5	*	0.5740	31.95	10.06	42.01	56.00	-13.99	QP
6		0.5740	18.04	10.06	28.10	46.00	-17.90	AVG
7		0.8540	26.88	10.09	36.97	56.00	-19.03	QP
8		0.8540	12.64	10.09	22.73	46.00	-23.27	AVG
9		1.1460	28.48	10.06	38.54	56.00	-17.46	QP
10		1.1460	15.49	10.06	25.55	46.00	-20.45	AVG
11		2.6220	26.30	10.04	36.34	56.00	-19.66	QP
12		2.6220	14.26	10.04	24.30	46.00	-21.70	AVG

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

Emission Level= Read Level+ Correct Factor

EUT:	DLP LED Projector	Model Name :	M1
Temperature:	25 ℃	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		

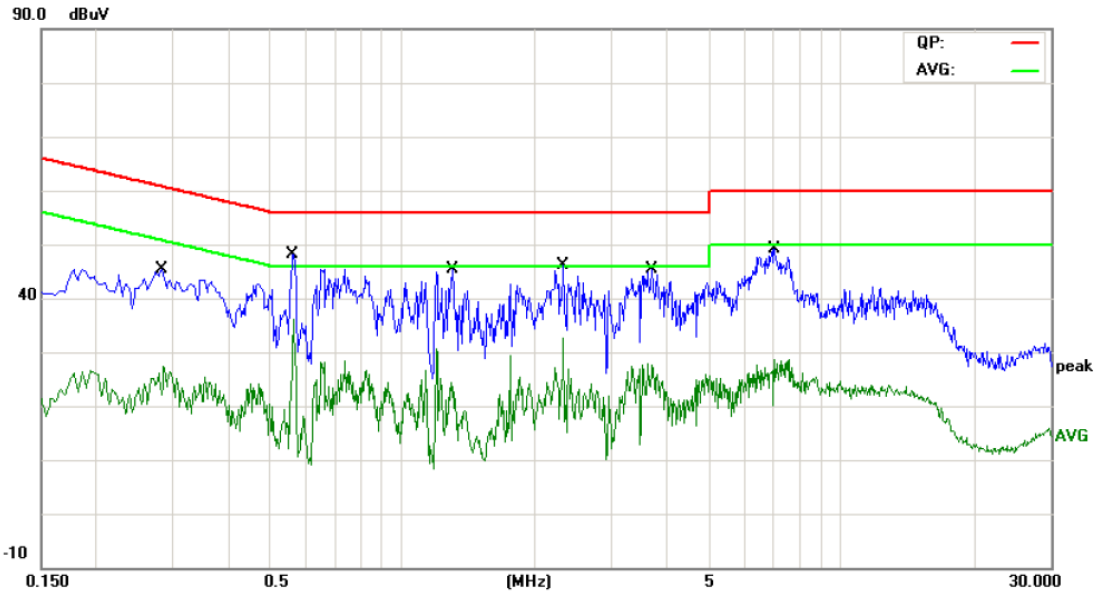


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.4780	28.02	10.03	38.05	56.37	-18.32	QP
2		0.4780	16.17	10.03	26.20	46.37	-20.17	AVG
3	*	0.5740	31.16	10.02	41.18	56.00	-14.82	QP
4		0.5740	14.67	10.02	24.69	46.00	-21.31	AVG
5		1.1660	28.69	10.14	38.83	56.00	-17.17	QP
6		1.1660	14.66	10.14	24.80	46.00	-21.20	AVG
7		2.6619	23.82	10.06	33.88	56.00	-22.12	QP
8		2.6619	11.94	10.06	22.00	46.00	-24.00	AVG
9		3.7540	23.99	10.06	34.05	56.00	-21.95	QP
10		3.7540	11.08	10.06	21.14	46.00	-24.86	AVG
11		7.1300	28.40	10.06	38.46	60.00	-21.54	QP
12		7.1300	17.58	10.06	27.64	50.00	-22.36	AVG

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

Emission Level= Read Level+ Correct Factor

EUT:	DLP LED Projector	Model Name :	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 240V/60 Hz		
Terminal:	Line		
Test Mode:	AC Charging with TX B Mode		
Remark:	Only worse case is reported		

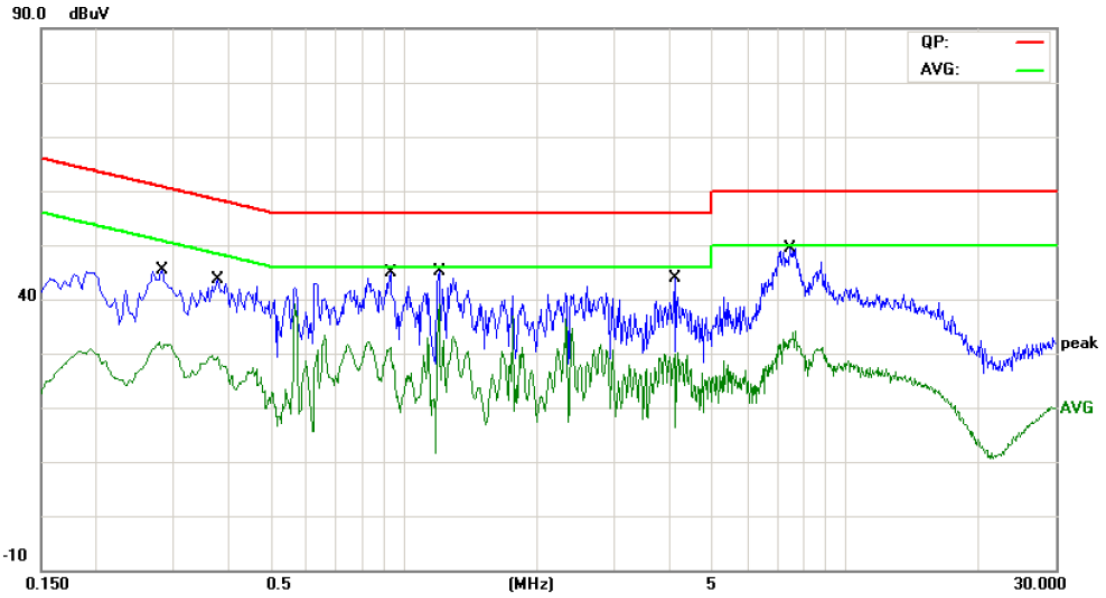


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.2819	30.54	10.09	40.63	60.76	-20.13	QP
2		0.2819	13.97	10.09	24.06	50.76	-26.70	AVG
3	*	0.5620	36.11	10.02	46.13	56.00	-9.87	QP
4		0.5620	23.34	10.02	33.36	46.00	-12.64	AVG
5		1.2980	25.27	10.13	35.40	56.00	-20.60	QP
6		1.2980	11.52	10.13	21.65	46.00	-24.35	AVG
7		2.3260	32.87	10.06	42.93	56.00	-13.07	QP
8		2.3260	18.67	10.06	28.73	46.00	-17.27	AVG
9		3.6980	27.11	10.06	37.17	56.00	-18.83	QP
10		3.6980	14.09	10.06	24.15	46.00	-21.85	AVG
11		7.0460	31.88	10.06	41.94	60.00	-18.06	QP
12		7.0460	12.52	10.06	22.58	50.00	-27.42	AVG

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

Emission Level= Read Level+ Correct Factor

EUT:	DLP LED Projector	Model Name :	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 240V/60 Hz		
Terminal:	Neutral		
Test Mode:	AC Charging with TX B Mode		
Remark:	Only worse case is reported		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.2819	28.89	10.09	38.98	60.76	-21.78	QP
2		0.2819	20.15	10.09	30.24	50.76	-20.52	AVG
3		0.3780	27.81	10.06	37.87	58.32	-20.45	QP
4		0.3780	17.95	10.06	28.01	48.32	-20.31	AVG
5		0.9300	28.59	10.13	38.72	56.00	-17.28	QP
6		0.9300	19.72	10.13	29.85	46.00	-16.15	AVG
7		1.1980	31.14	10.14	41.28	56.00	-14.72	QP
8	*	1.1980	26.46	10.14	36.60	46.00	-9.40	AVG
9		4.1020	16.21	10.06	26.27	56.00	-29.73	QP
10		4.1020	5.73	10.06	15.79	46.00	-30.21	AVG
11		7.5220	31.59	10.08	41.67	60.00	-18.33	QP
12		7.5220	22.07	10.08	32.15	50.00	-17.85	AVG

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

Emission Level= Read Level+ Correct Factor

5. Radiated Emission Test

5.1 Test Standard and Limit

5.1.1 Test Standard

FCC Part 15.209

5.1.2 Test Limit

Radiated Emission Limits (9kHz~1000MHz)

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

Radiated Emission Limit (Above 1000MHz)

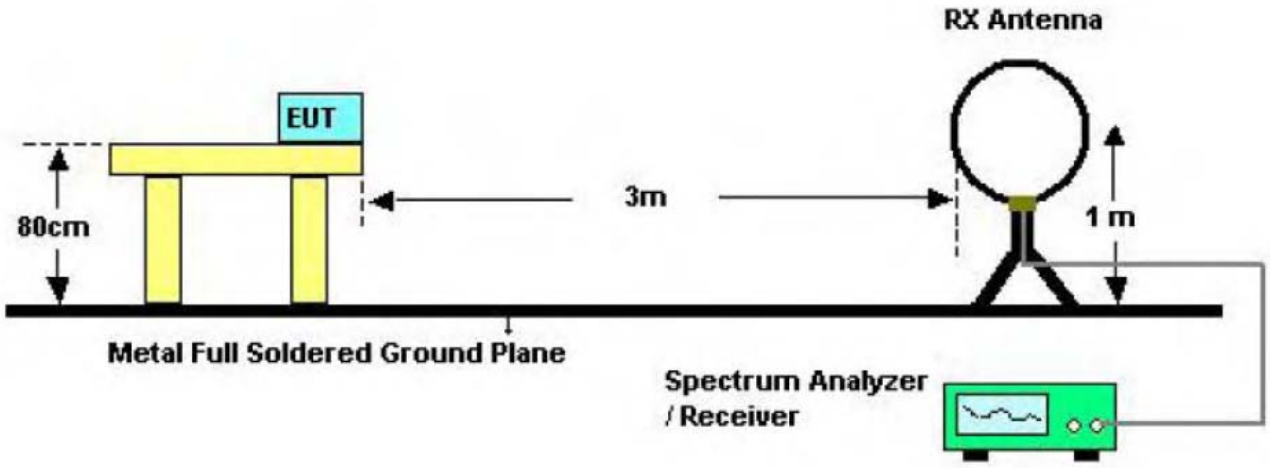
Frequency (MHz)	Class A (dBuV/m)(at 3 M)		Class B (dBuV/m)(at 3 M)	
	Peak	Average	Peak	Average
Above 1000	80	60	74	54

Note:

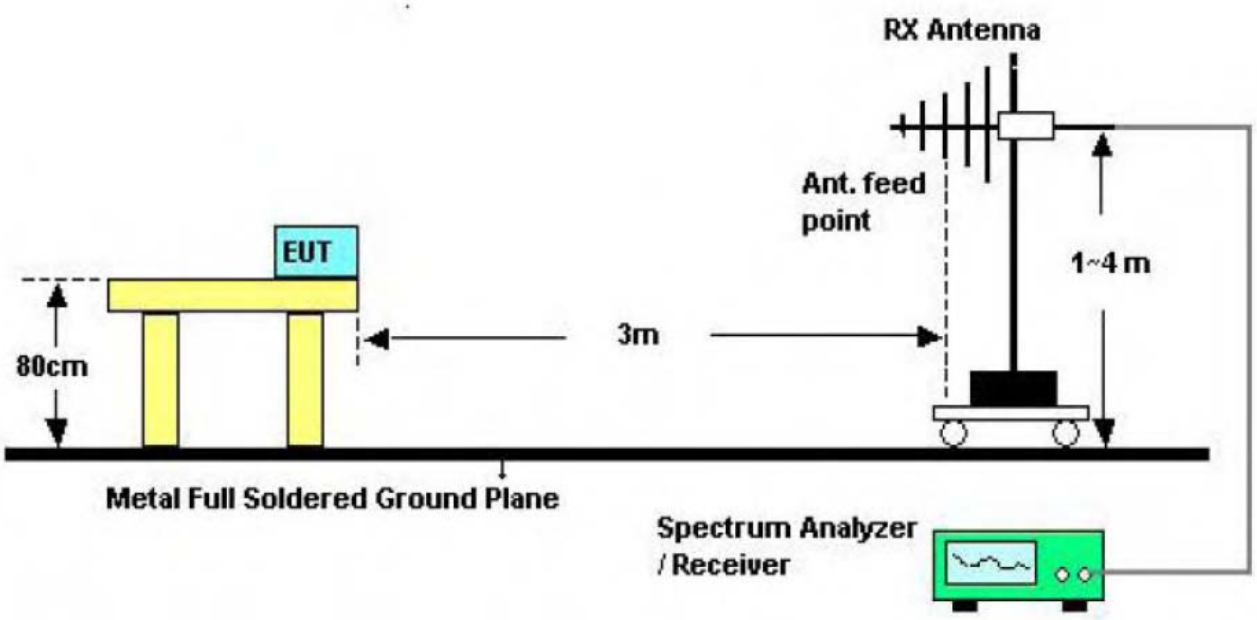
(1) The tighter limit applies at the band edges.

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

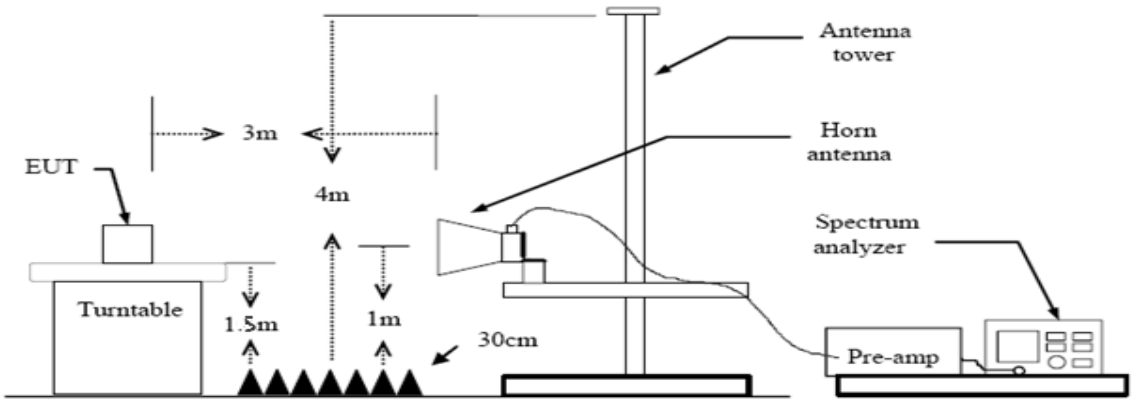
5.2 Test Setup



Below 30MHz Test Setup



Below 1000MHz Test Setup



Above 1GHz Test Setup

5.3 Test Procedure

(1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz. 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) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.

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

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

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

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

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

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

5.4 EUT Operating Condition

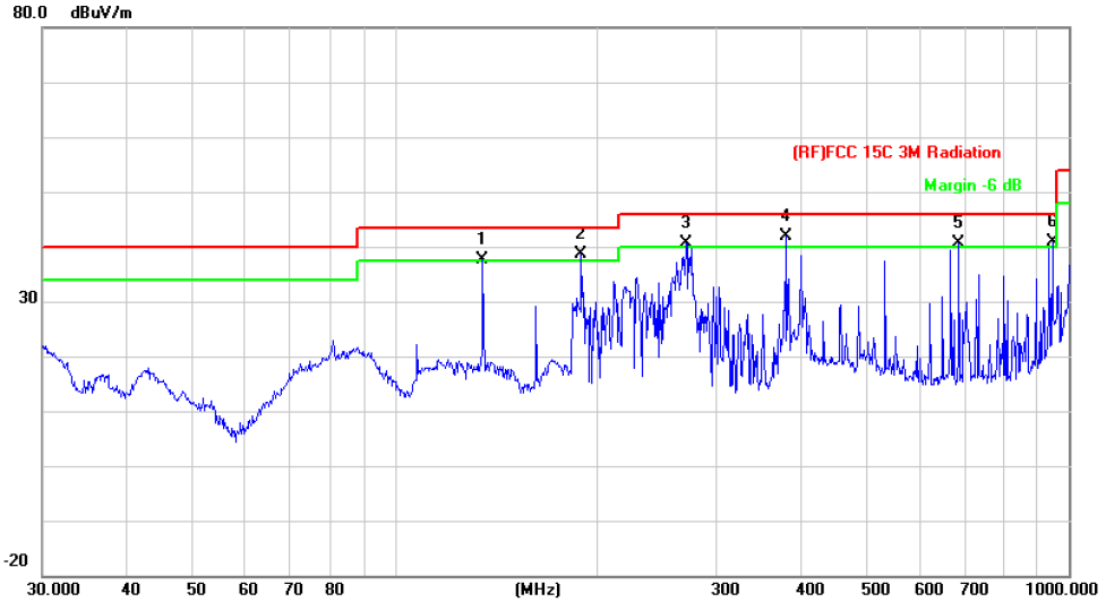
The Equipment Under Test was set to Continual Transmitting in maximum power.

5.5 Test Data

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

Test data please refer the following pages.

EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz		
Remark:	Only worse case is reported		

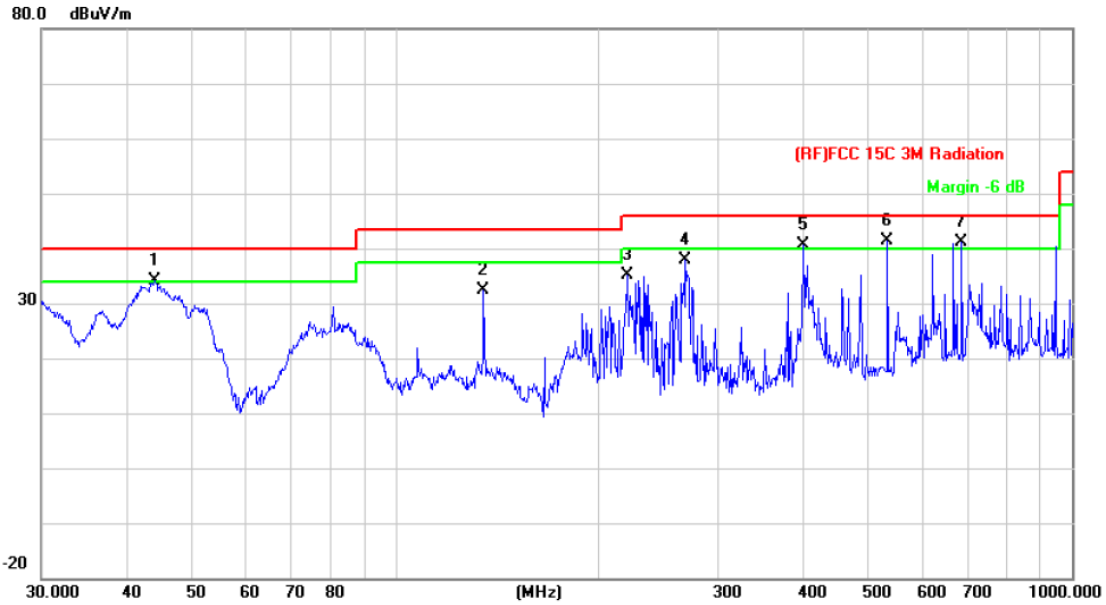


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	!	135.0319	59.66	-22.08	37.58	43.50	-5.92	peak
2	!	189.0740	59.61	-20.88	38.73	43.50	-4.77	peak
3	!	270.3747	58.30	-17.68	40.62	46.00	-5.38	peak
4	*	381.2485	55.93	-14.05	41.88	46.00	-4.12	peak
5	!	687.1507	47.87	-7.22	40.65	46.00	-5.35	peak
6	!	945.4397	45.59	-4.83	40.76	46.00	-5.24	peak

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

Emission Level= Read Level+ Correct Factor

EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz		
Remark:	Only worse case is reported		

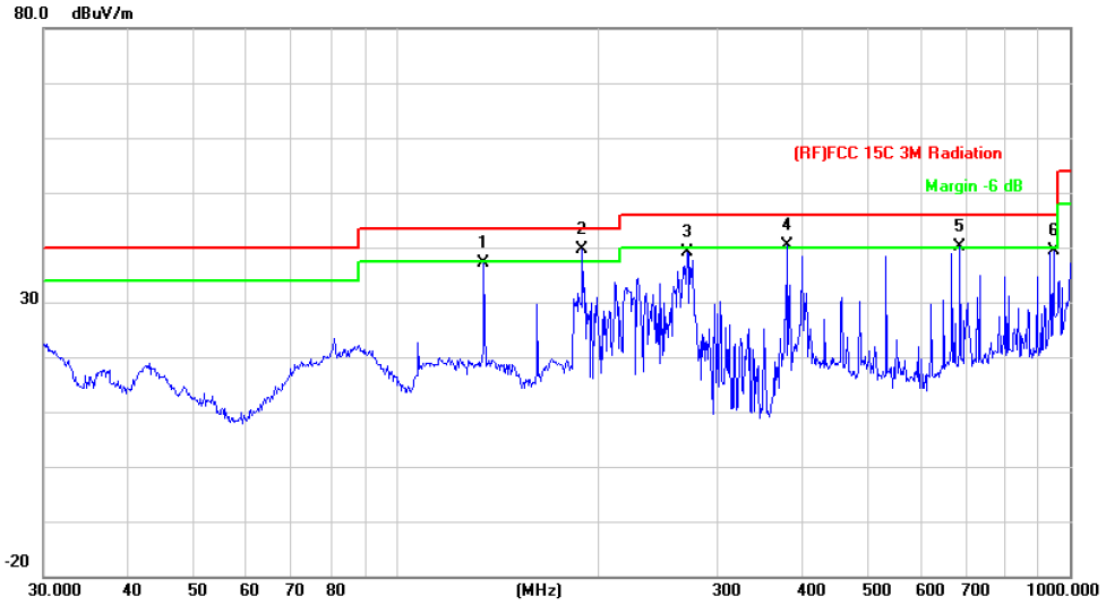


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	!	44.1200	55.95	-21.90	34.05	40.00	-5.95	peak
2		135.0319	54.48	-22.08	32.40	43.50	-11.10	peak
3		220.6168	54.62	-19.50	35.12	46.00	-10.88	peak
4		268.4852	55.54	-17.71	37.83	46.00	-8.17	peak
5	!	400.4318	53.53	-12.80	40.73	46.00	-5.27	peak
6	*	533.8318	51.43	-10.14	41.29	46.00	-4.71	peak
7	!	687.1507	48.27	-7.22	41.05	46.00	-4.95	peak

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

Emission Level= Read Level+ Correct Factor

EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2437MHz		
Remark:	Only worse case is reported		

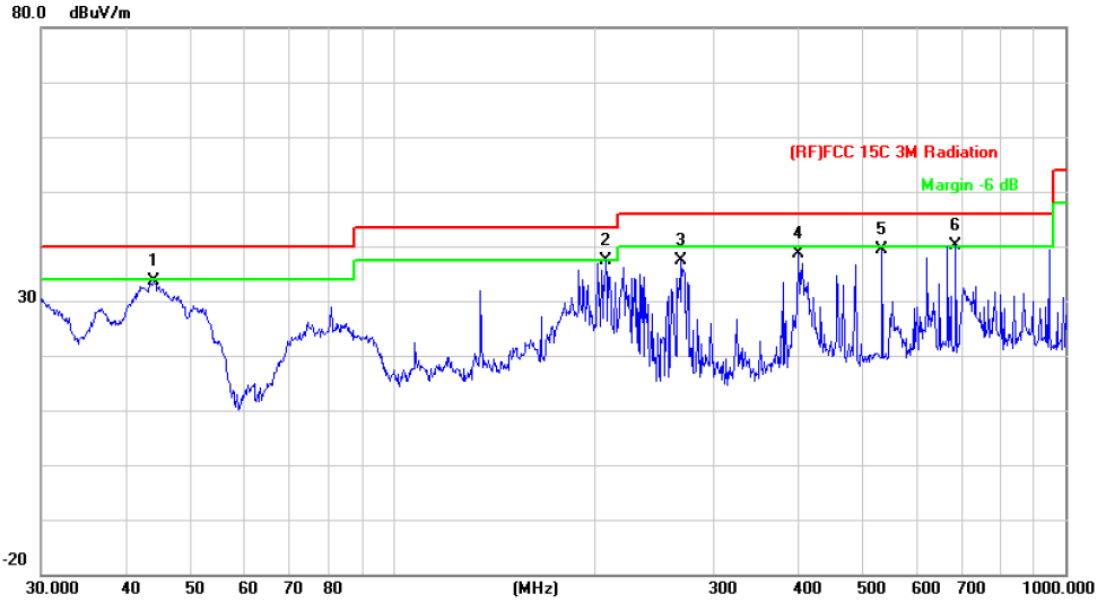


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		135.0319	59.16	-22.08	37.08	43.50	-6.42	peak
2	*	189.0740	60.61	-20.88	39.73	43.50	-3.77	peak
3		270.3747	56.80	-17.68	39.12	46.00	-6.88	peak
4	!	381.2485	54.43	-14.05	40.38	46.00	-5.62	peak
5	!	687.1507	47.37	-7.22	40.15	46.00	-5.85	peak
6		945.4397	44.09	-4.83	39.26	46.00	-6.74	peak

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

Emission Level= Read Level+ Correct Factor

EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2437MHz		
Remark:	Only worse case is reported		

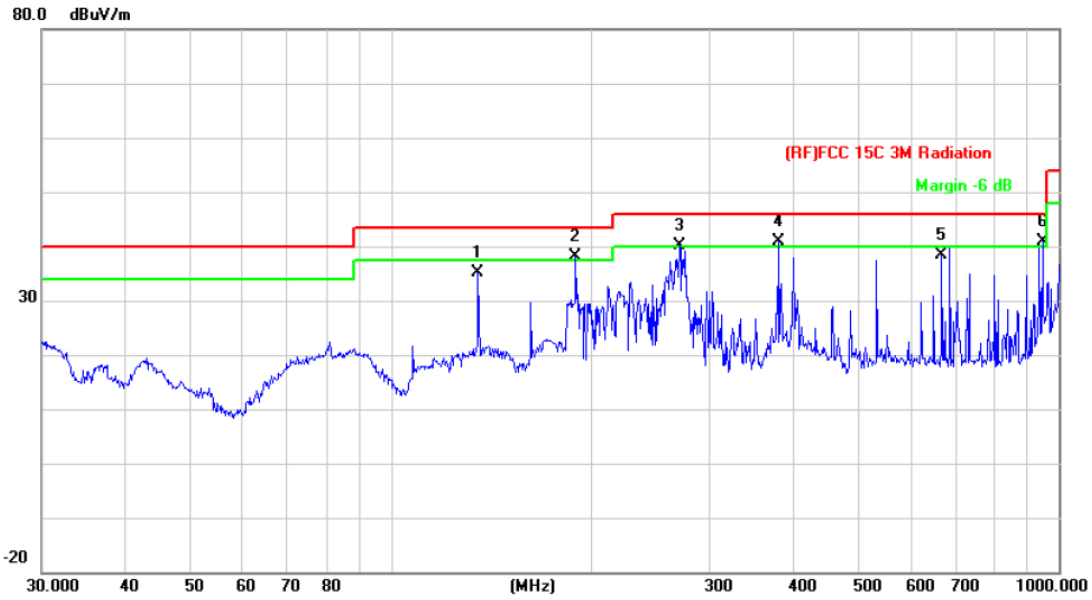


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		44.1200	55.45	-21.90	33.55	40.00	-6.45	peak
2		207.1226	57.52	-20.09	37.43	43.50	-6.07	peak
3		268.4852	55.04	-17.71	37.33	46.00	-8.67	peak
4		400.4318	51.53	-12.80	38.73	46.00	-7.27	peak
5		533.8318	49.43	-10.14	39.29	46.00	-6.71	peak
6	*	687.1507	47.27	-7.22	40.05	46.00	-5.95	peak

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

Emission Level= Read Level+ Correct Factor

EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2462MHz		
Remark:	Only worse case is reported		

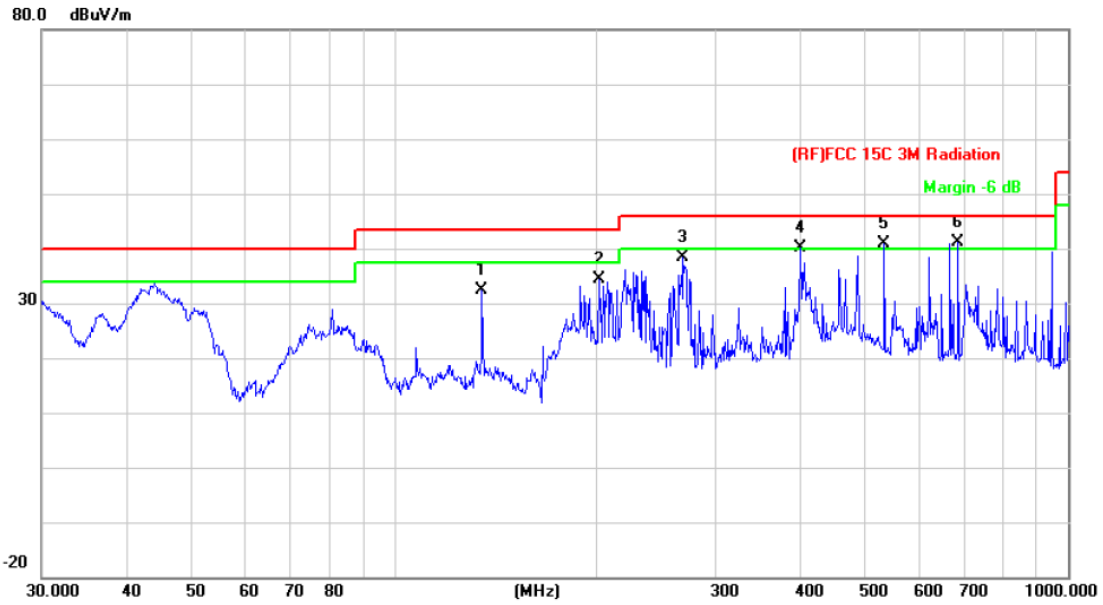


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		135.0319	57.16	-22.08	35.08	43.50	-8.42	peak
2	!	189.0740	59.11	-20.88	38.23	43.50	-5.27	peak
3	!	270.3747	57.80	-17.68	40.12	46.00	-5.88	peak
4	*	381.2485	54.93	-14.05	40.88	46.00	-5.12	peak
5		668.1422	46.22	-7.87	38.35	46.00	-7.65	peak
6	!	945.4397	45.59	-4.83	40.76	46.00	-5.24	peak

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

Emission Level= Read Level+ Correct Factor

EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2462MHz		
Remark:	Only worse case is reported		

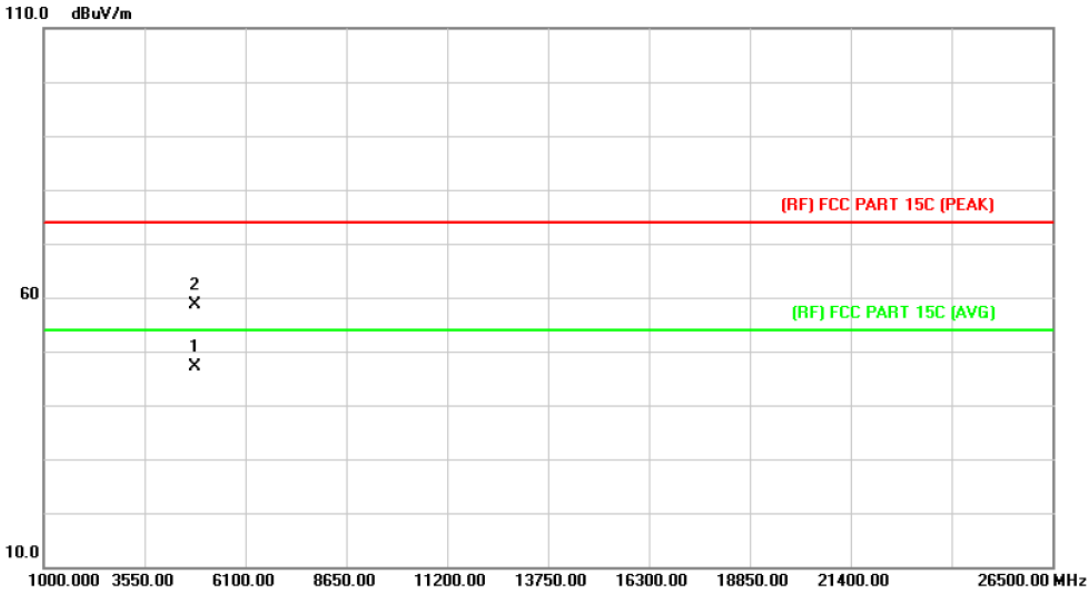


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		135.0319	54.48	-22.08	32.40	43.50	-11.10	peak
2		201.3930	54.81	-20.32	34.49	43.50	-9.01	peak
3		268.4852	56.04	-17.71	38.33	46.00	-7.67	peak
4	!	400.4318	53.03	-12.80	40.23	46.00	-5.77	peak
5	!	533.8318	50.93	-10.14	40.79	46.00	-5.21	peak
6	*	687.1507	48.27	-7.22	41.05	46.00	-4.95	peak

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

Emission Level= Read Level+ Correct Factor

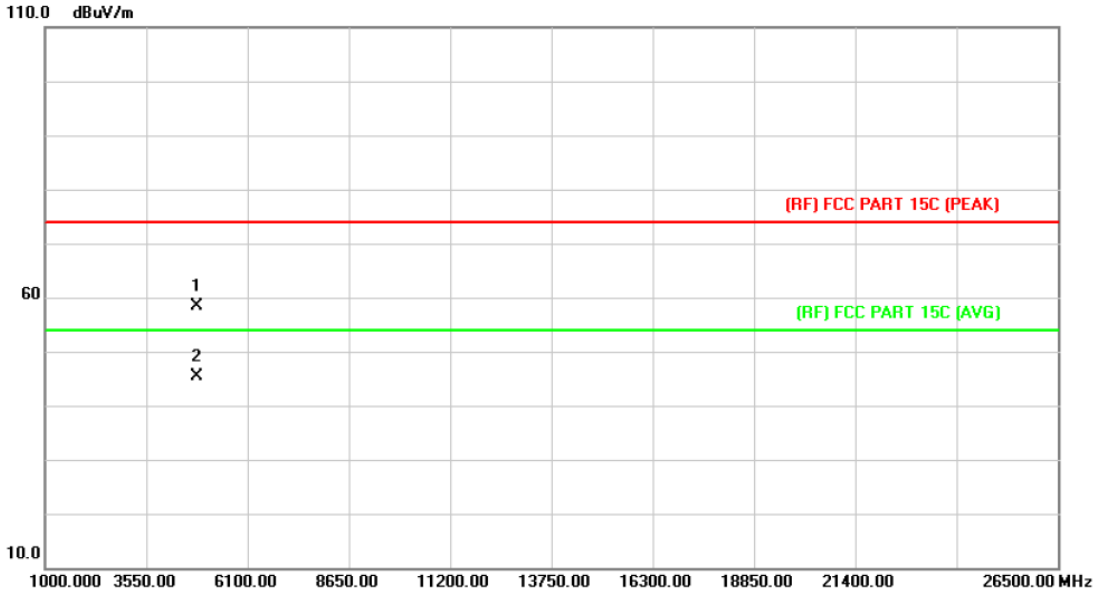
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4823.988	33.67	13.56	47.23	54.00	-6.77	AVG
2		4824.267	44.98	13.56	58.54	74.00	-15.46	peak

Emission Level= Read Level+ Correct Factor

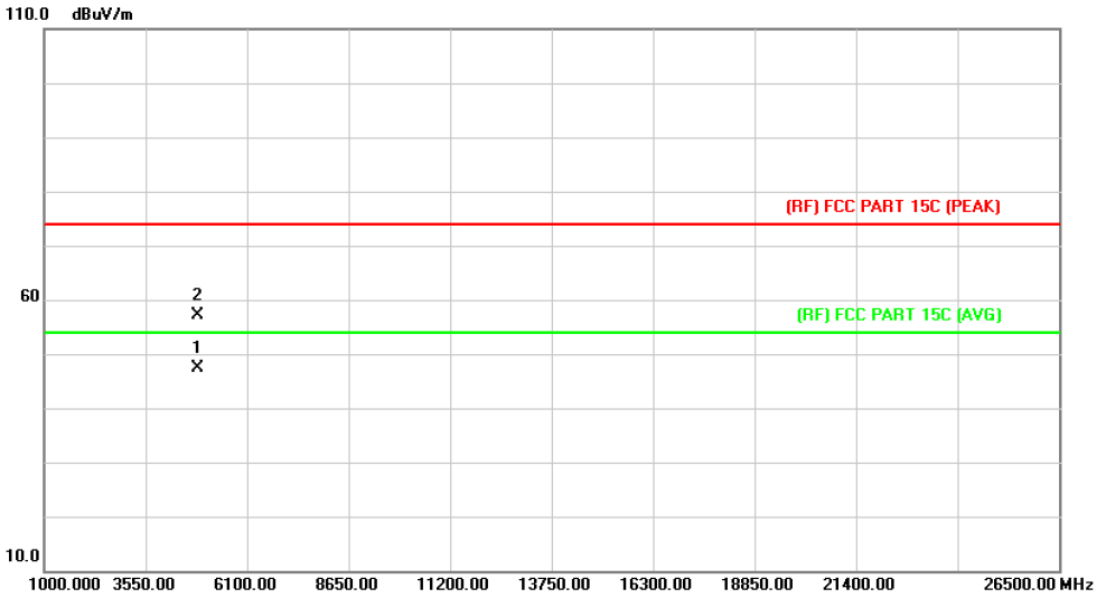
EUT:	DLP LED Projector	**Model:**	M1
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4823.670	44.94	13.56	58.50	74.00	-15.50	peak
2	*	4823.991	31.87	13.56	45.43	54.00	-8.57	AVG

Emission Level= Read Level+ Correct Factor

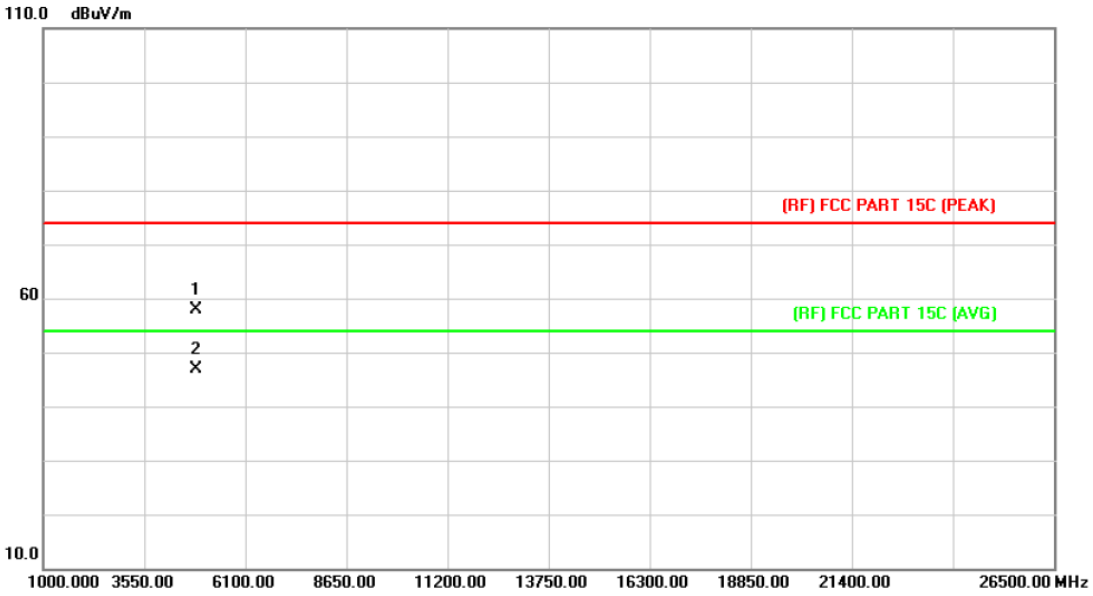
EUT:	DLP LED Projector	**Model:**	M1
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4874.058	33.48	13.86	47.34	54.00	-6.66	AVG
2		4874.447	43.32	13.86	57.18	74.00	-16.82	peak

Emission Level= Read Level+ Correct Factor

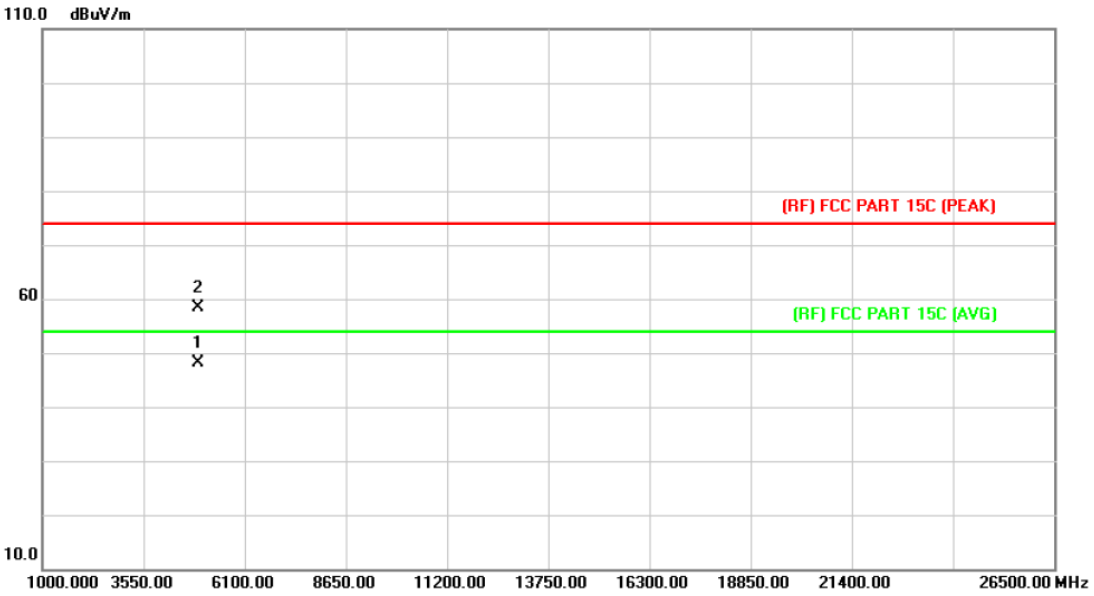
EUT:	DLP LED Projector	**Model:**	M1
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4874.152	44.04	13.86	57.90	74.00	-16.10	peak
2	*	4874.194	32.98	13.86	46.84	54.00	-7.16	AVG

Emission Level= Read Level+ Correct Factor

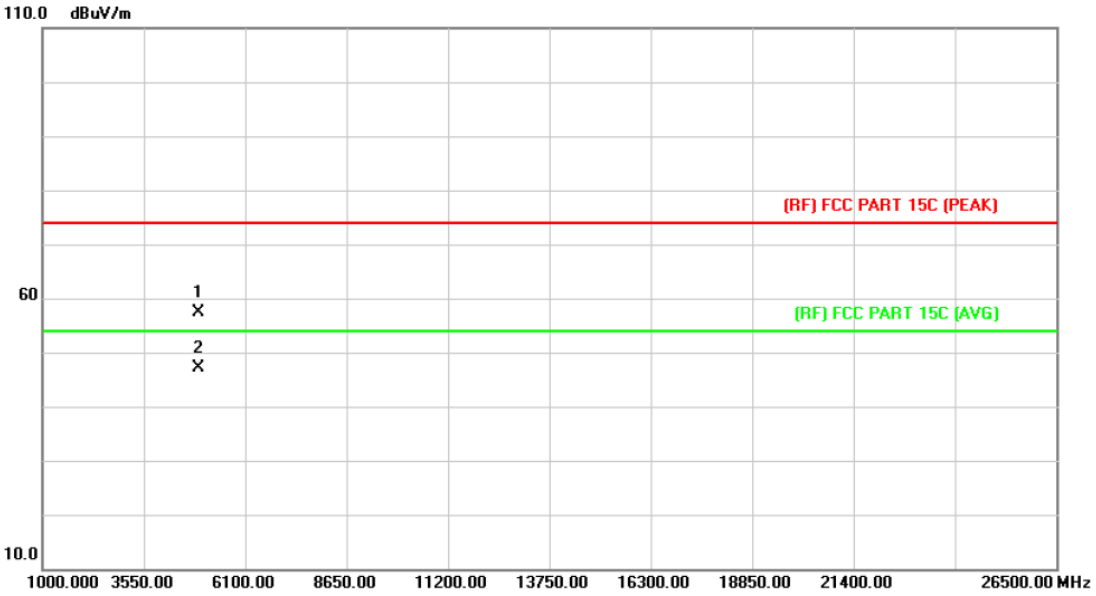
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4924.016	34.02	14.15	48.17	54.00	-5.83	AVG
2		4924.458	44.26	14.15	58.41	74.00	-15.59	peak

Emission Level= Read Level+ Correct Factor

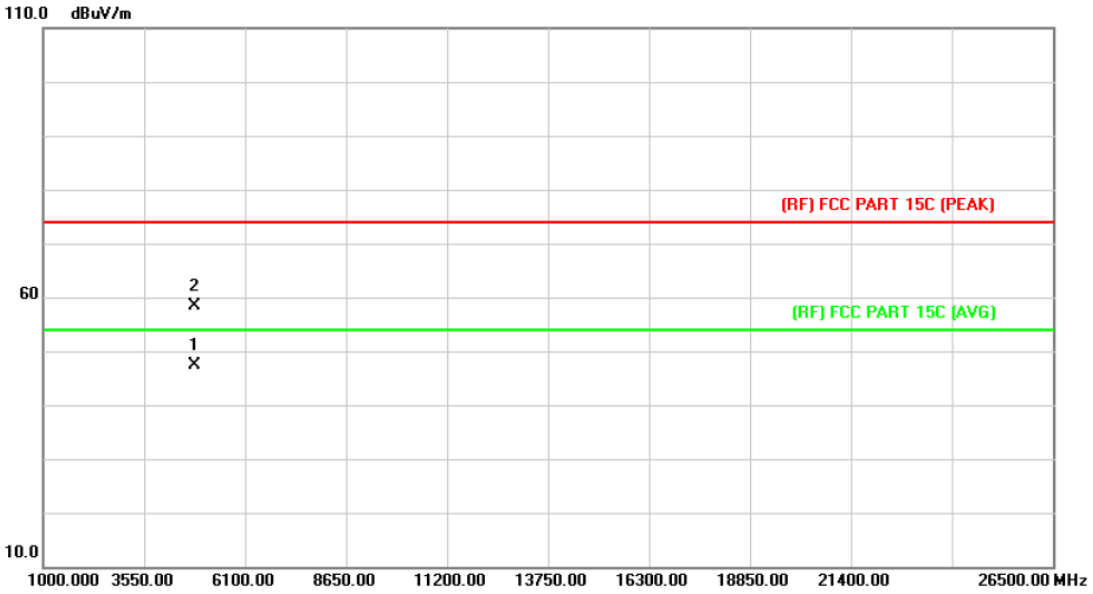
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4924.007	43.29	14.15	57.44	74.00	-16.56	peak
2	*	4924.219	33.06	14.15	47.21	54.00	-6.79	AVG

Emission Level= Read Level+ Correct Factor

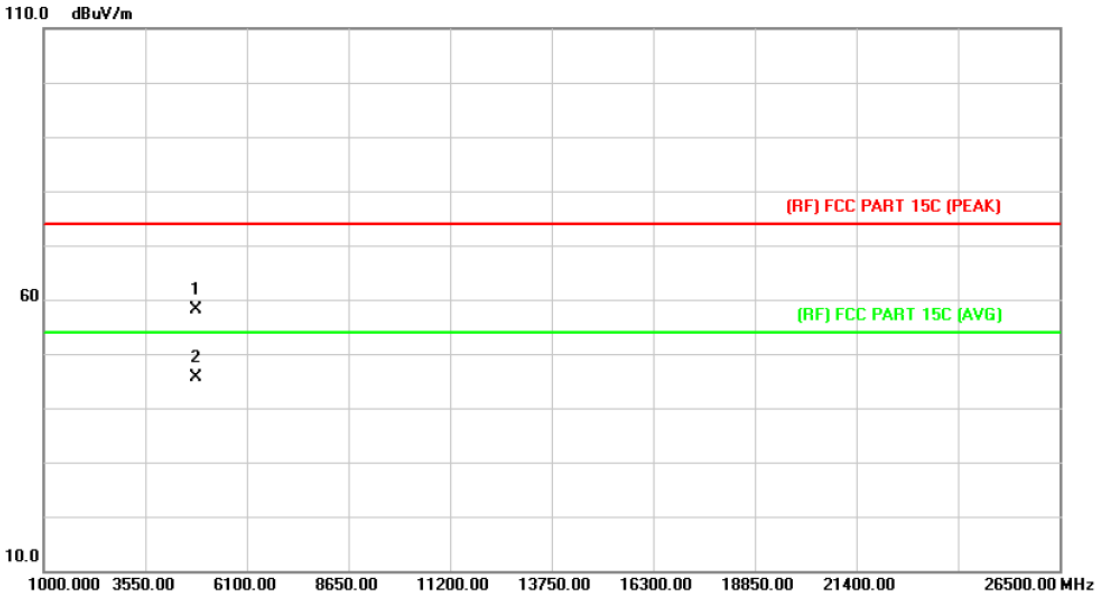
EUT:	DLP LED Projector	**Model:**	M1
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4823.426	33.76	13.56	47.32	54.00	-6.68	AVG
2		4824.276	44.89	13.56	58.45	74.00	-15.55	peak

Emission Level= Read Level+ Correct Factor

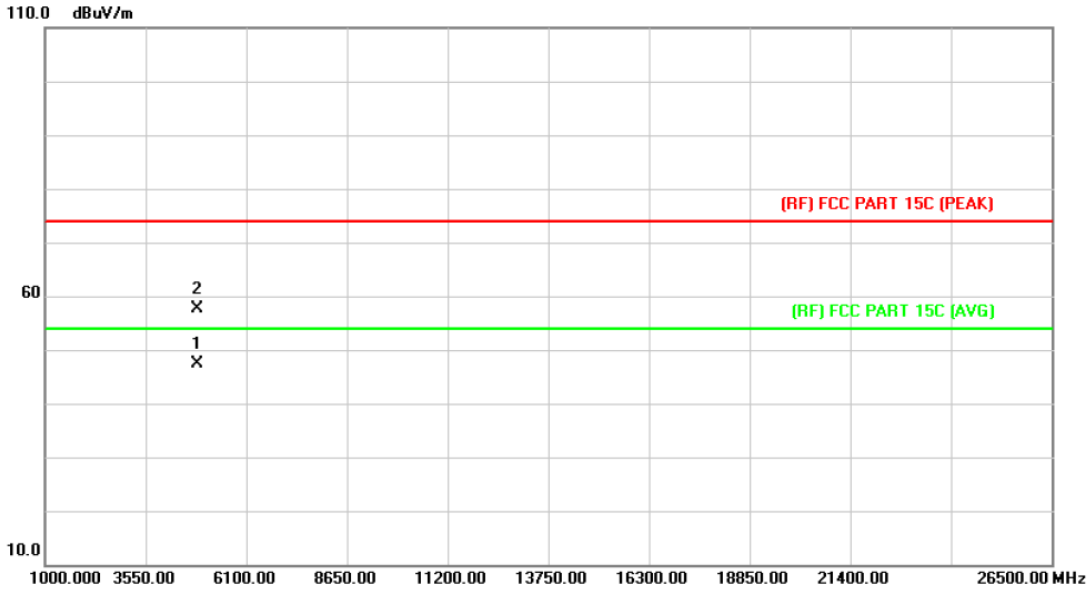
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4823.677	44.59	13.56	58.15	74.00	-15.85	peak
2	*	4823.978	32.19	13.56	45.75	54.00	-8.25	AVG

Emission Level= Read Level+ Correct Factor

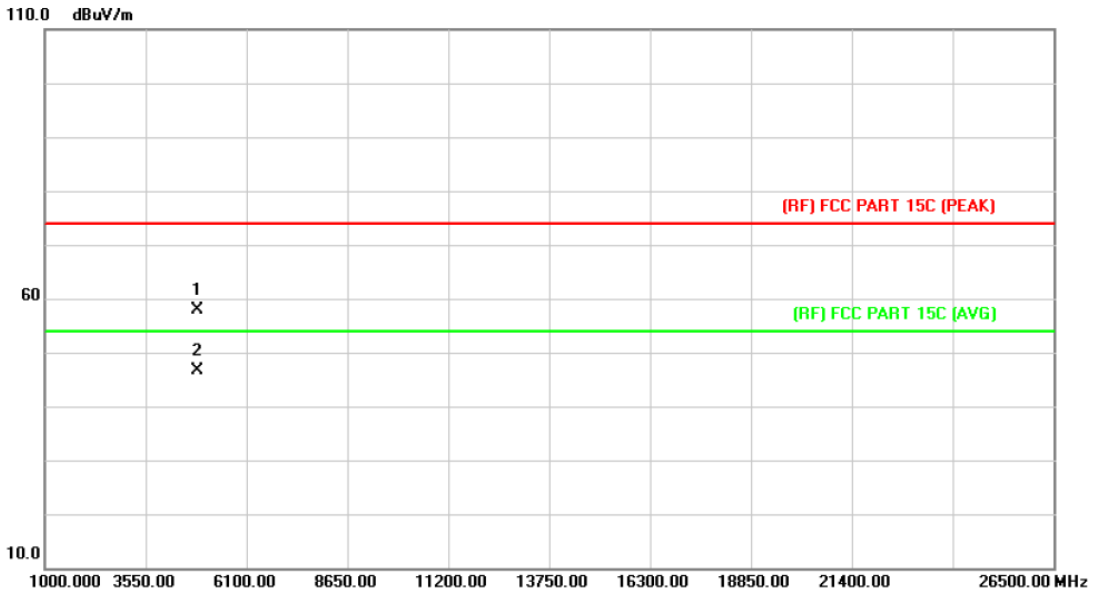
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4874.085	33.57	13.86	47.43	54.00	-6.57	AVG
2		4874.474	43.76	13.86	57.62	74.00	-16.38	peak

Emission Level= Read Level+ Correct Factor

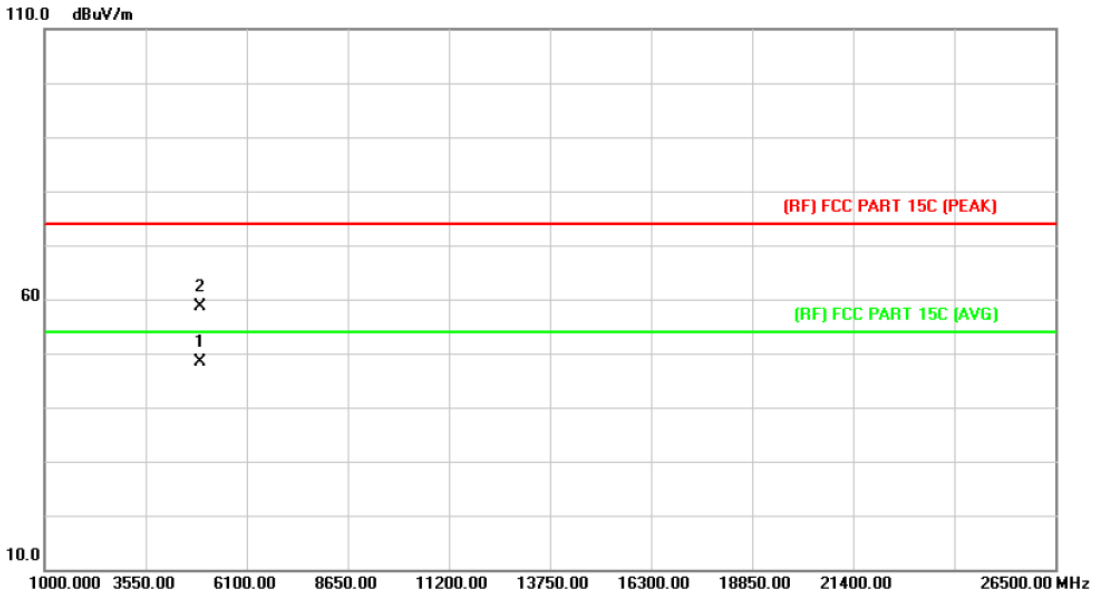
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4874.215	43.98	13.86	57.84	74.00	-16.16	peak
2	*	4874.419	32.67	13.86	46.53	54.00	-7.47	AVG

Emission Level= Read Level+ Correct Factor

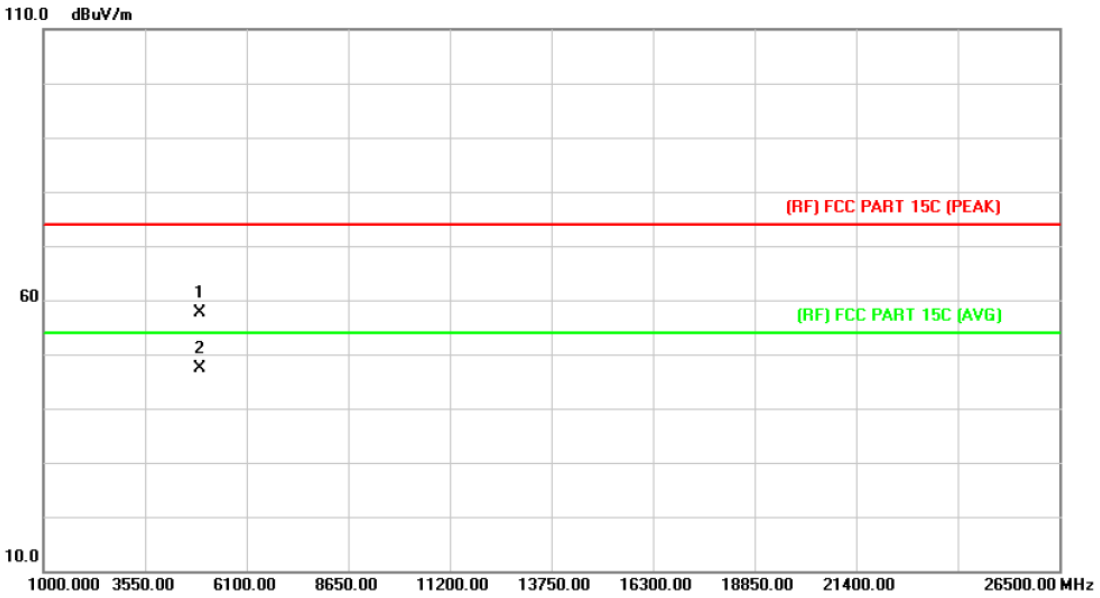
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4924.143	34.22	14.15	48.37	54.00	-5.63	AVG
2		4924.459	44.52	14.15	58.67	74.00	-15.33	peak

Emission Level= Read Level+ Correct Factor

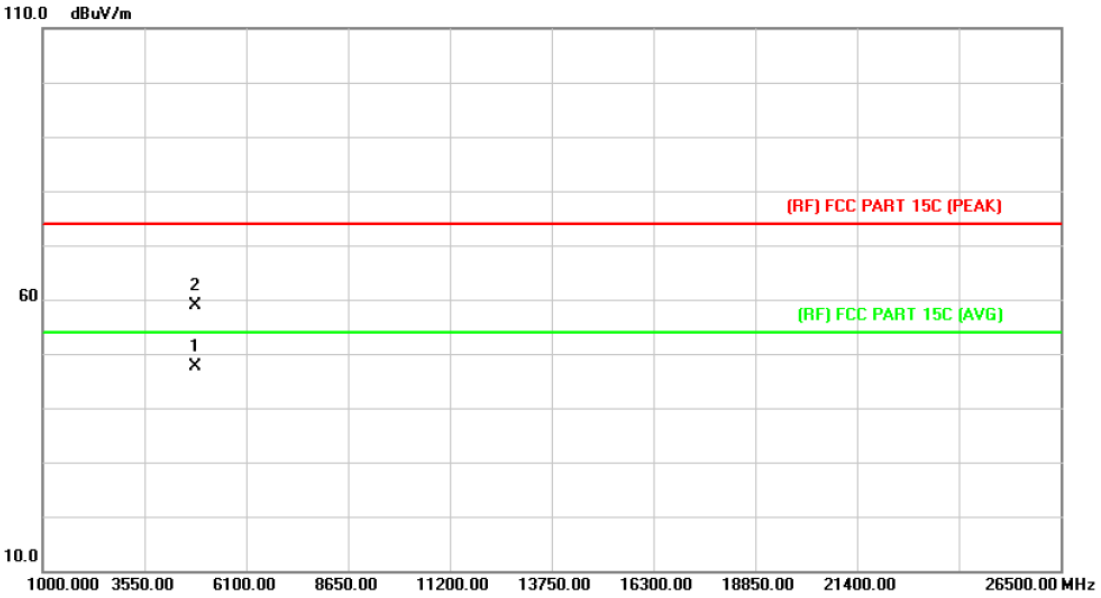
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4924.075	43.56	14.15	57.71	74.00	-16.29	peak
2	*	4924.263	33.14	14.15	47.29	54.00	-6.71	AVG

Emission Level= Read Level+ Correct Factor

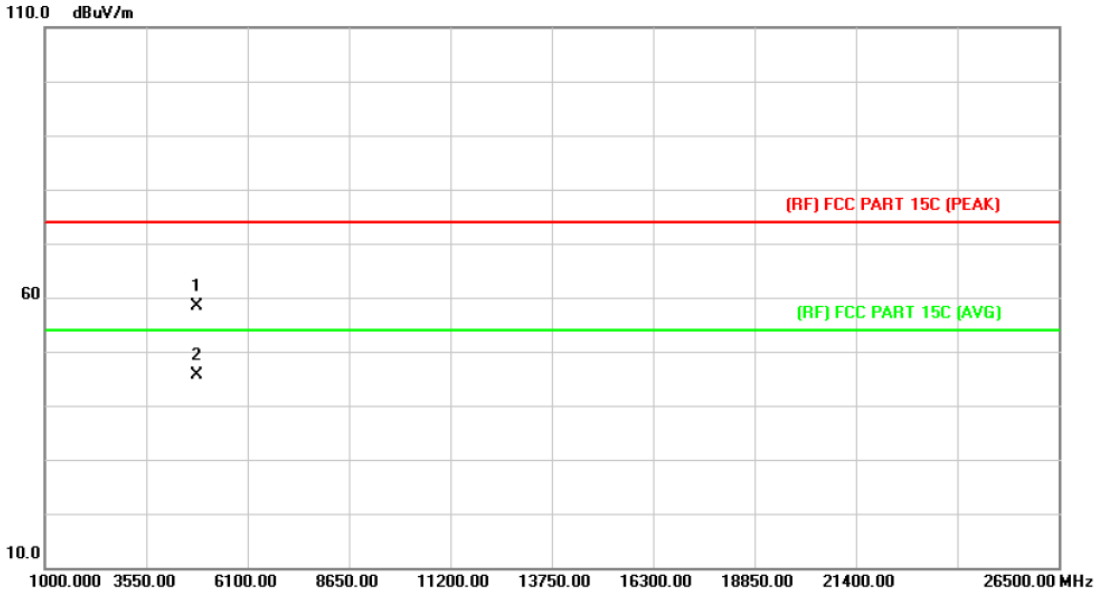
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4823.745	34.18	13.56	47.74	54.00	-6.26	AVG
2		4824.632	45.42	13.56	58.98	74.00	-15.02	peak

Emission Level= Read Level+ Correct Factor

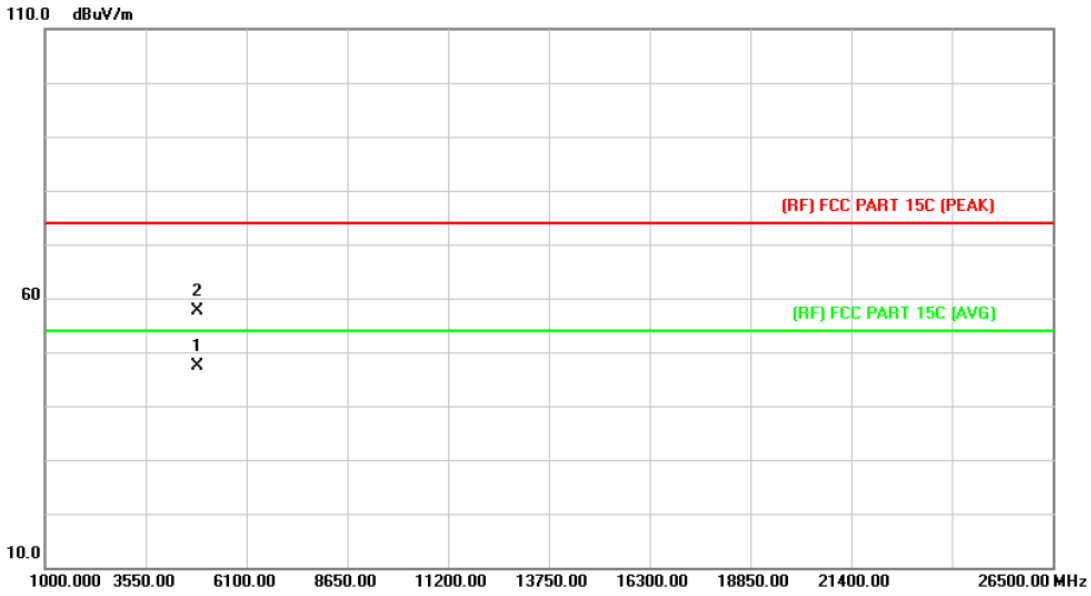
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4823.645	44.75	13.56	58.31	74.00	-15.69	peak
2	*	4823.946	32.15	13.56	45.71	54.00	-8.29	AVG

Emission Level= Read Level+ Correct Factor

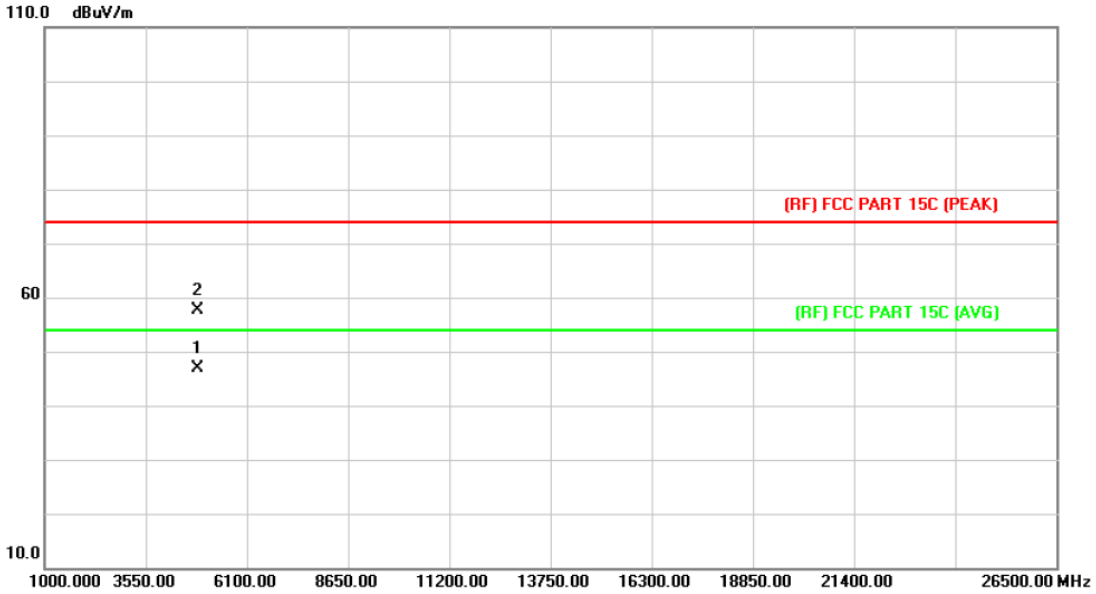
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4874.041	33.41	13.86	47.27	54.00	-6.73	AVG
2		4874.753	43.82	13.86	57.68	74.00	-16.32	peak

Emission Level= Read Level+ Correct Factor

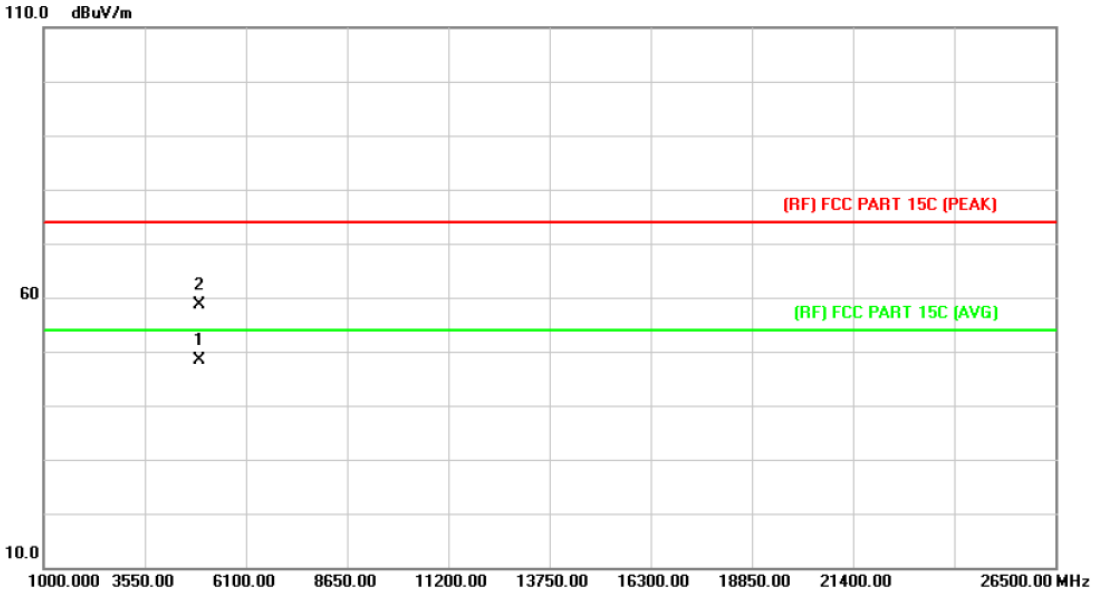
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4874.247	33.10	13.86	46.96	54.00	-7.04	AVG
2		4874.453	43.89	13.86	57.75	74.00	-16.25	peak

Emission Level= Read Level+ Correct Factor

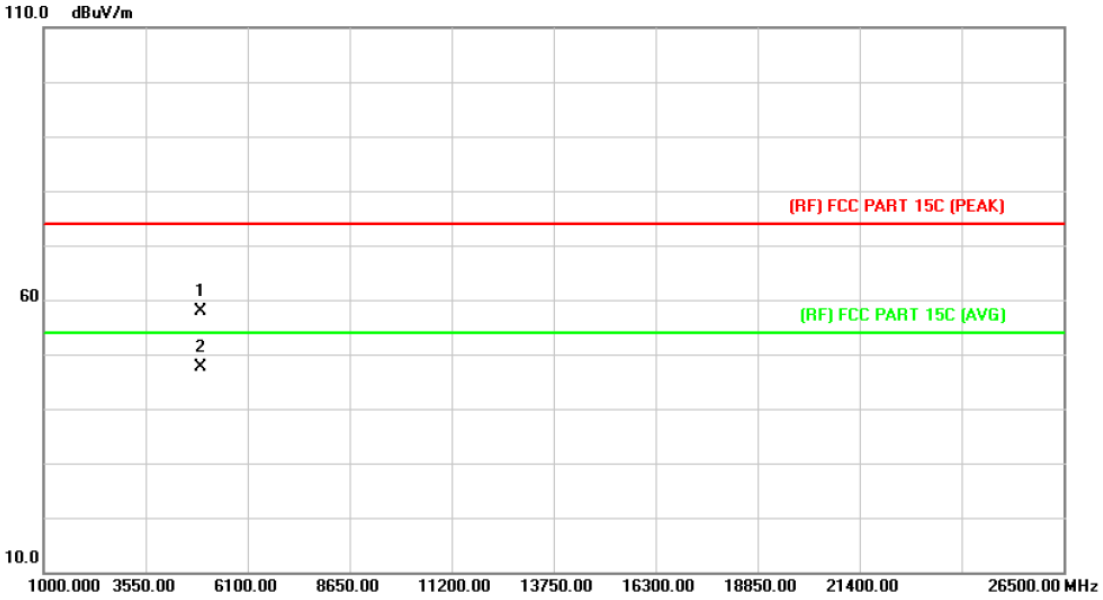
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4924.354	34.17	14.15	48.32	54.00	-5.68	AVG
2		4924.715	44.49	14.15	58.64	74.00	-15.36	peak

Emission Level= Read Level+ Correct Factor

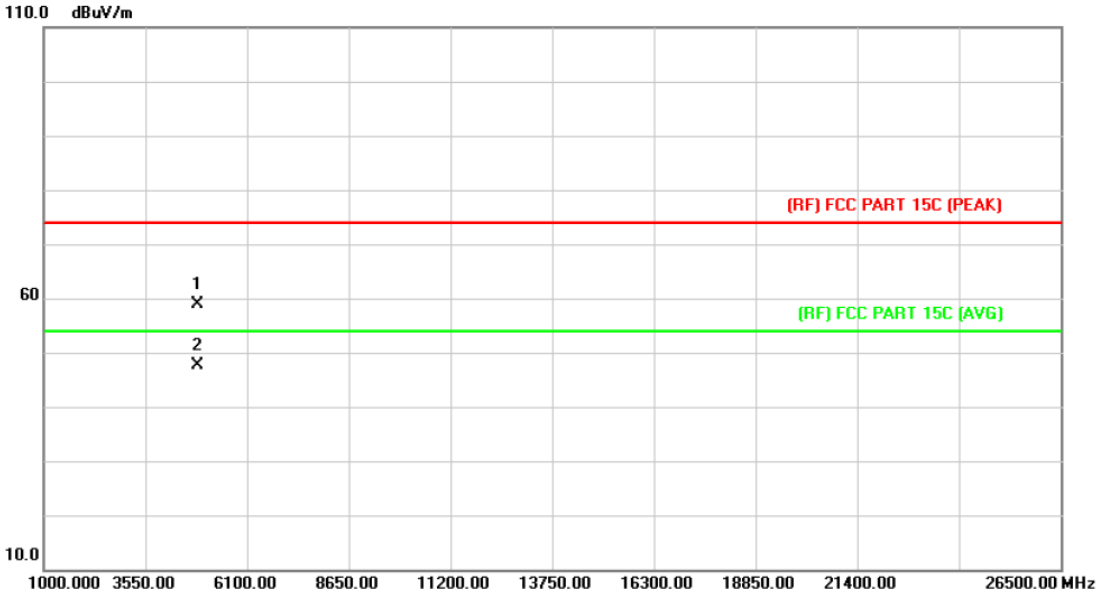
EUT:	DLP LED Projector	**Model:**	M1
Temperature:	25 ℃	**Relative Humidity:**	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4924.236	43.69	14.15	57.84	74.00	-16.16	peak
2	*	4924.745	33.47	14.15	47.62	54.00	-6.38	AVG

Emission Level= Read Level+ Correct Factor

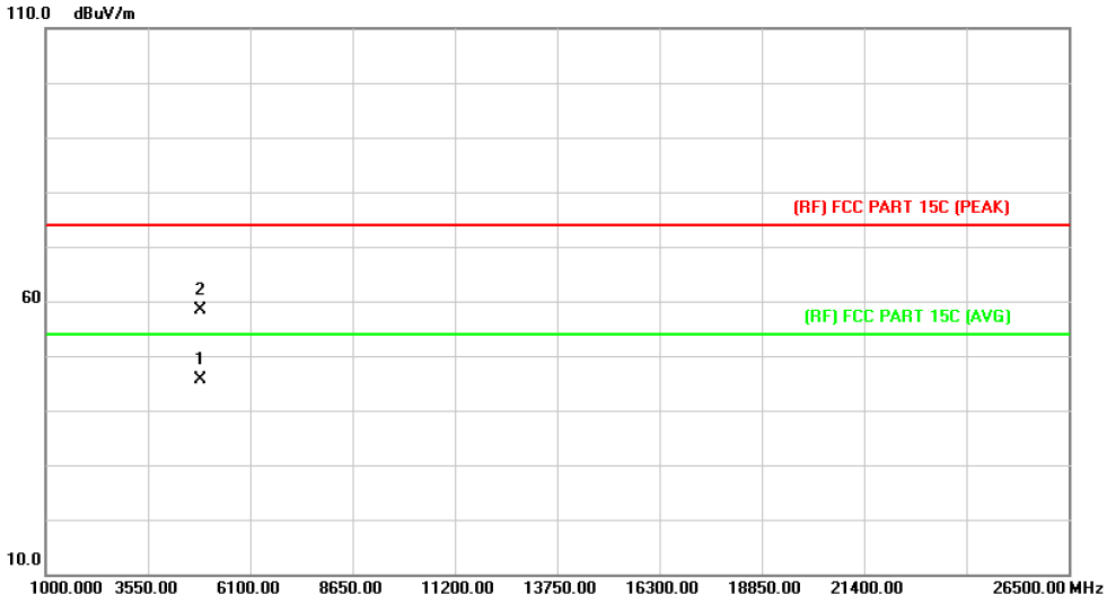
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2422MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4844.394	45.25	13.68	58.93	74.00	-15.07	peak
2	*	4844.846	33.89	13.68	47.57	54.00	-6.43	AVG

Emission Level= Read Level+ Correct Factor

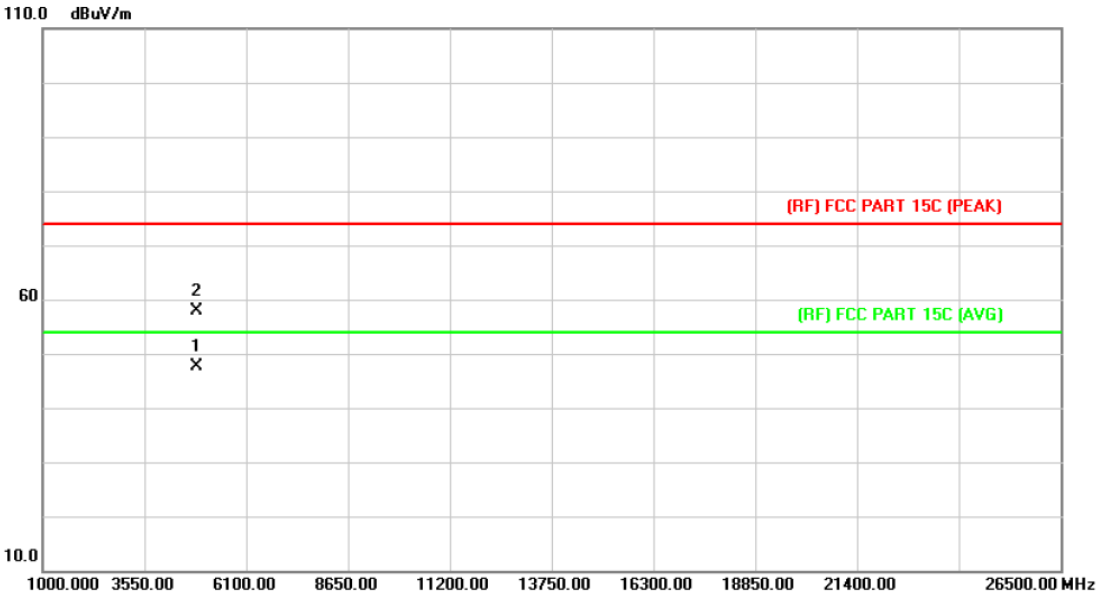
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT40) Mode 2422MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4844.395	31.99	13.68	45.67	54.00	-8.33	AVG
2		4844.756	44.66	13.68	58.34	74.00	-15.66	peak

Emission Level= Read Level+ Correct Factor

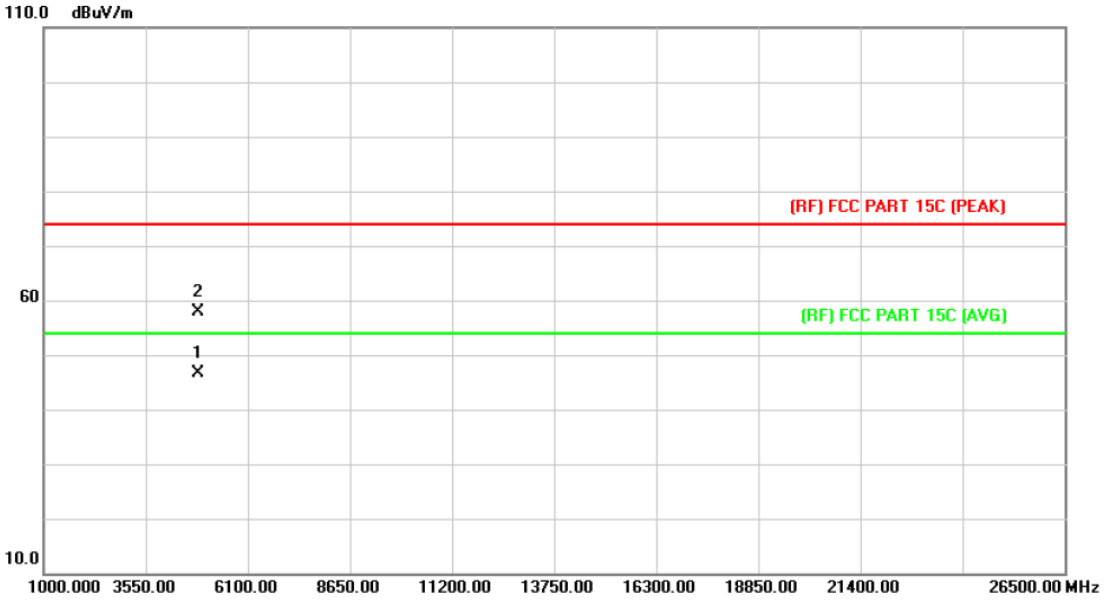
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4874.024	33.78	13.86	47.64	54.00	-6.36	AVG
2		4874.735	43.93	13.86	57.79	74.00	-16.21	peak

Emission Level= Read Level+ Correct Factor

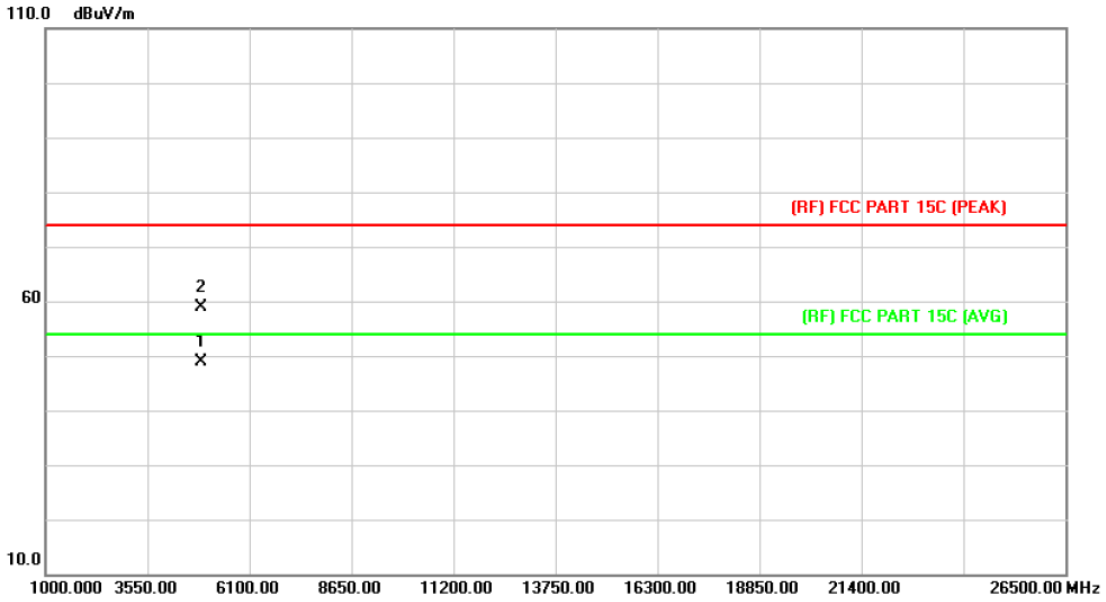
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT40) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4874.624	32.76	13.86	46.62	54.00	-7.38	AVG
2		4874.795	44.08	13.86	57.94	74.00	-16.06	peak

Emission Level= Read Level+ Correct Factor

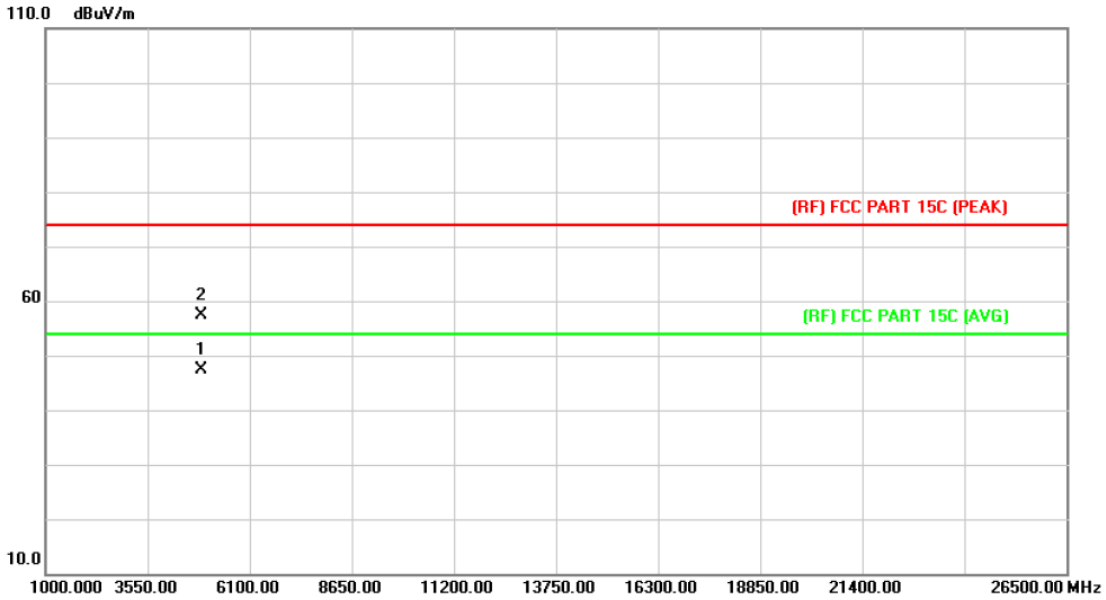
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2452MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4904.143	34.73	14.03	48.76	54.00	-5.24	AVG
2		4904.459	44.80	14.03	58.83	74.00	-15.17	peak

Emission Level= Read Level+ Correct Factor

EUT:	DLP LED Projector	**Model:**	M1
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	*	4904.374	33.38	14.03	47.41	54.00	-6.59	AVG
2		4904.662	43.34	14.03	57.37	74.00	-16.63	peak

Emission Level= Read Level+ Correct Factor

6. Restricted Bands Requirement

6.1 Test Standard and Limit

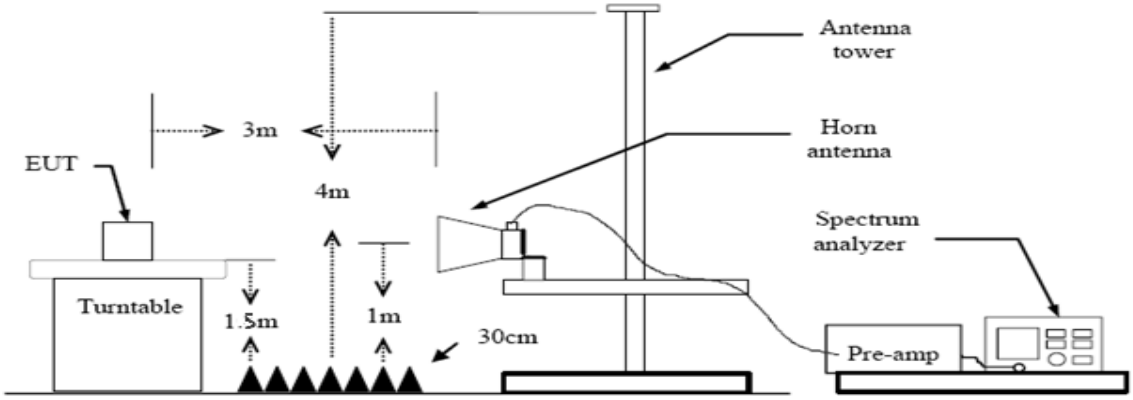
5.1.1 Test Standard

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

6.2 Test Setup



6.3 Test Procedure

(1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz. 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) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.

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

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

(5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit

Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.

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

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

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

6.4 EUT Operating Condition

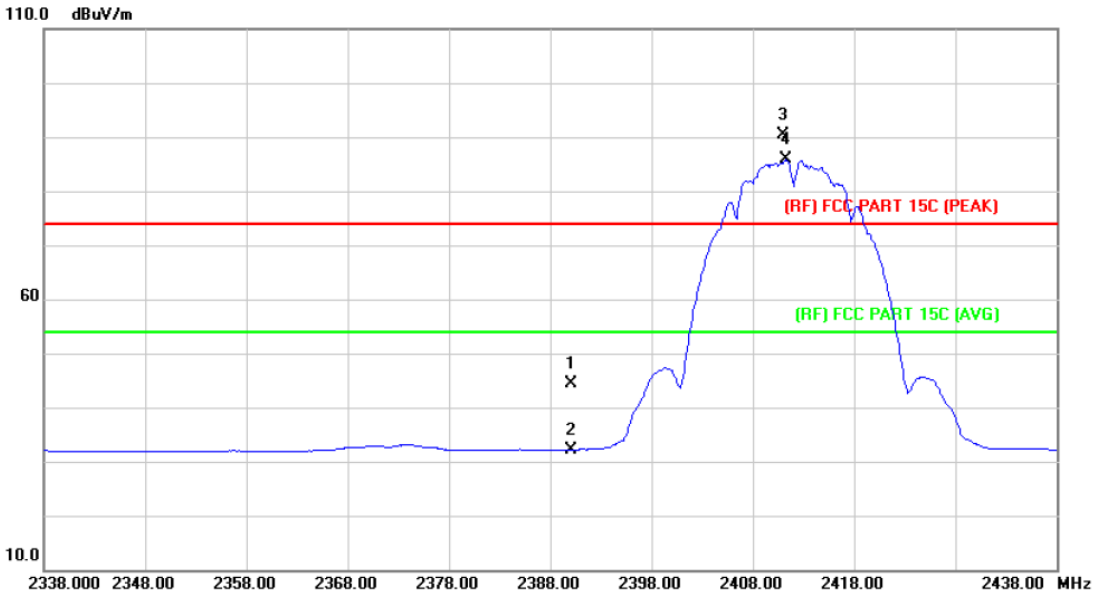
The Equipment Under Test was set to Continual Transmitting in maximum power.

6.5 Test Data

Please see the next page.

(1) Radiation Test

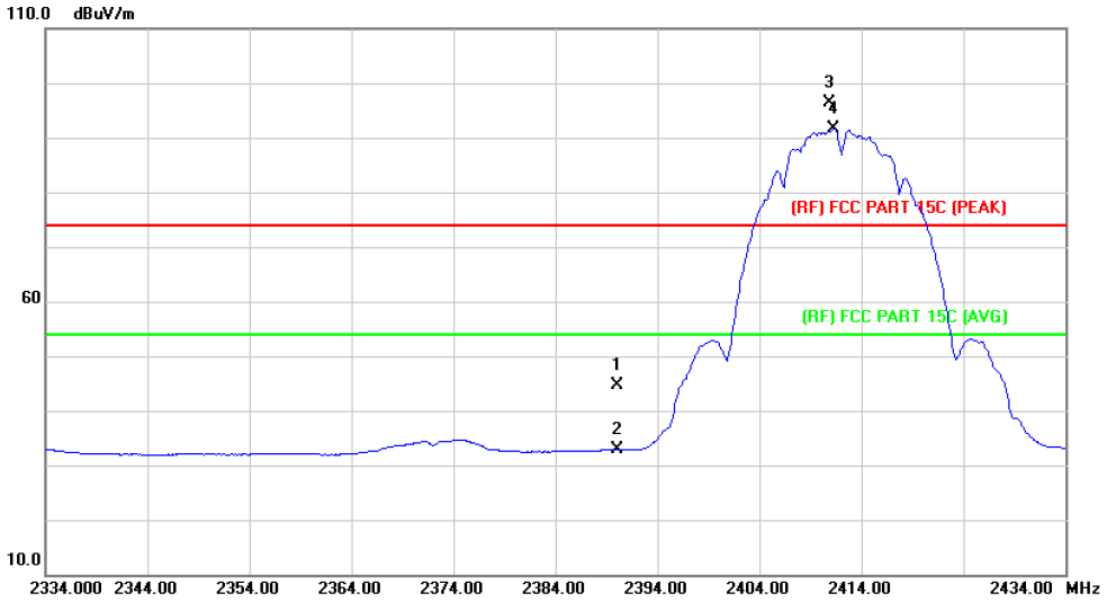
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	43.68	0.77	44.45	74.00	-29.55	peak
2		2390.000	31.38	0.77	32.15	54.00	-21.85	AVG
3	X	2411.000	89.53	0.86	90.39	Fundamental Frequency		peak
4	*	2411.300	84.90	0.86	85.76	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

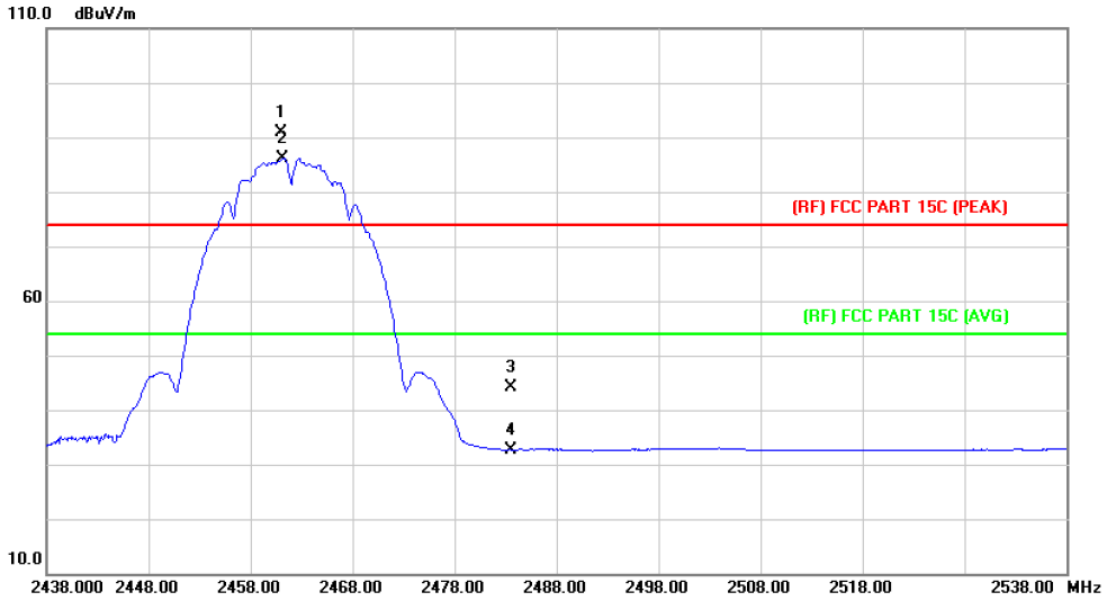
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	43.74	0.77	44.51	74.00	-29.49	peak
2		2390.000	32.07	0.77	32.84	54.00	-21.16	AVG
3	X	2410.900	95.44	0.86	96.30	Fundamental Frequency		peak
4	*	2411.300	90.81	0.86	91.67	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

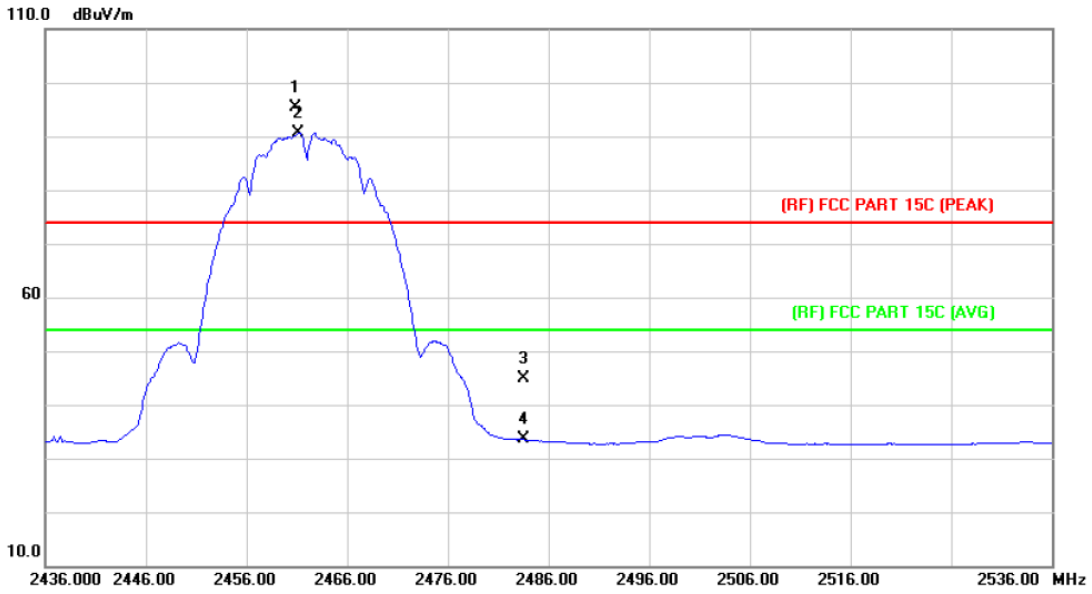
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2461.000	89.70	1.06	90.76	Fundamental Frequency		peak
2	*	2461.200	85.15	1.07	86.22	Fundamental Frequency		AVG
3		2483.500	43.02	1.17	44.19	74.00	-29.81	peak
4		2483.500	31.56	1.17	32.73	54.00	-21.27	AVG

Emission Level= Read Level+ Correct Factor

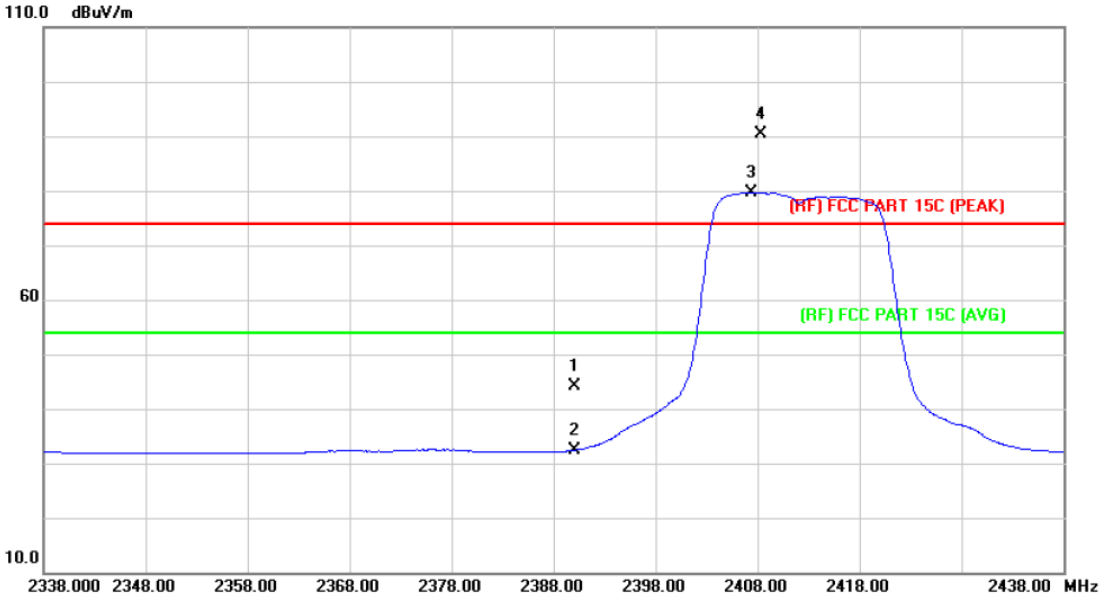
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2460.900	94.23	1.06	95.29	Fundamental Frequency		peak
2	*	2461.200	89.61	1.07	90.68	Fundamental Frequency		AVG
3		2483.500	43.77	1.17	44.94	74.00	-29.06	peak
4		2483.500	32.35	1.17	33.52	54.00	-20.48	AVG

Emission Level= Read Level+ Correct Factor

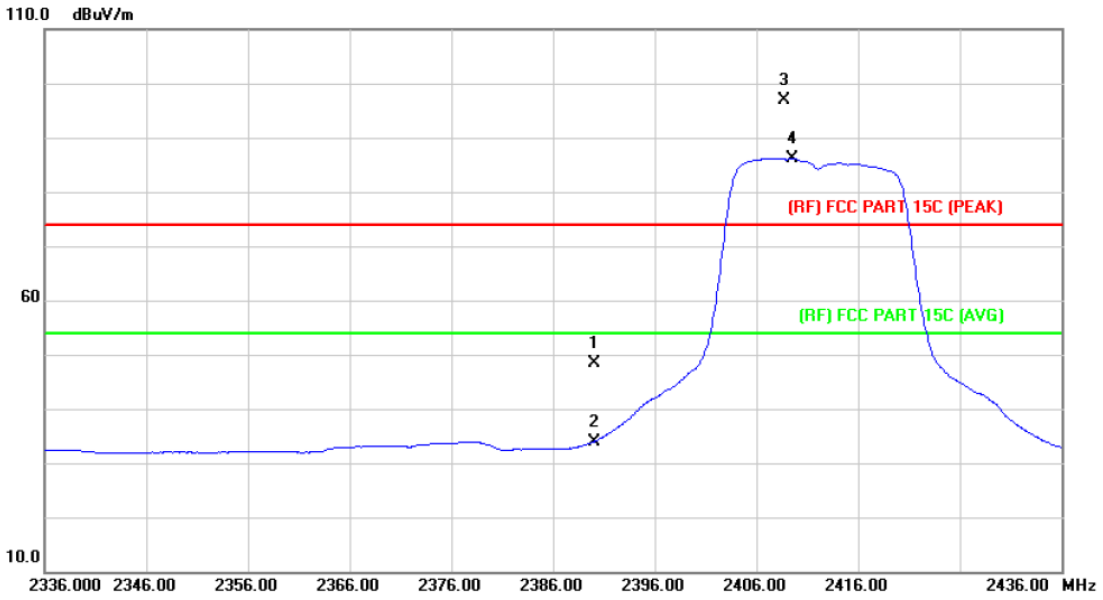
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	43.32	0.77	44.09	74.00	-29.91	peak
2		2390.000	31.71	0.77	32.48	54.00	-21.52	AVG
3	*	2407.400	78.79	0.85	79.64	Fundamental Frequency		AVG
4	X	2408.300	89.48	0.85	90.33	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

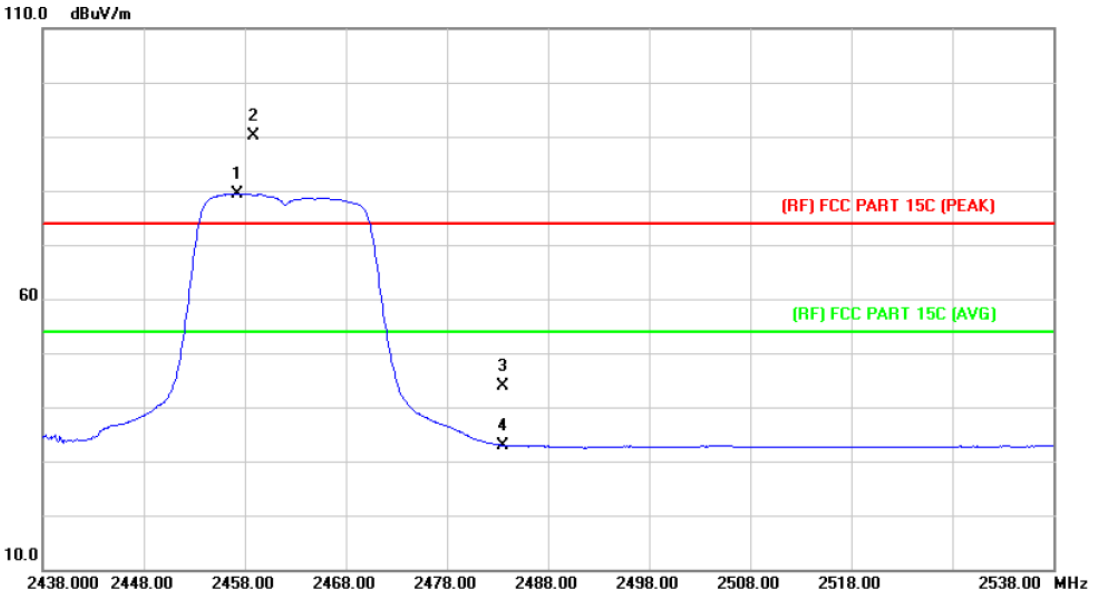
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	47.66	0.77	48.43	74.00	-25.57	peak
2		2390.000	33.21	0.77	33.98	54.00	-20.02	AVG
3	X	2408.700	96.01	0.85	96.86	Fundamental Frequency		peak
4	*	2409.500	85.31	0.85	86.16	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

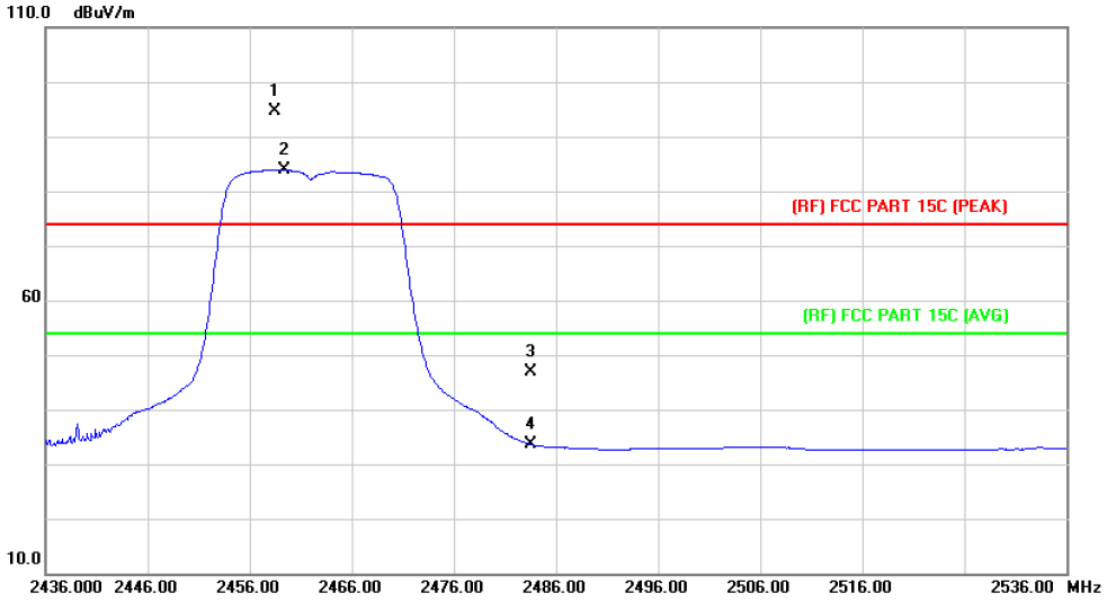
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2457.300	78.29	1.05	79.34	Fundamental Frequency		AVG
2	X	2458.800	88.97	1.06	90.03	Fundamental Frequency		peak
3		2483.500	42.79	1.17	43.96	74.00	-30.04	peak
4		2483.500	31.82	1.17	32.99	54.00	-21.01	AVG

Emission Level= Read Level+ Correct Factor

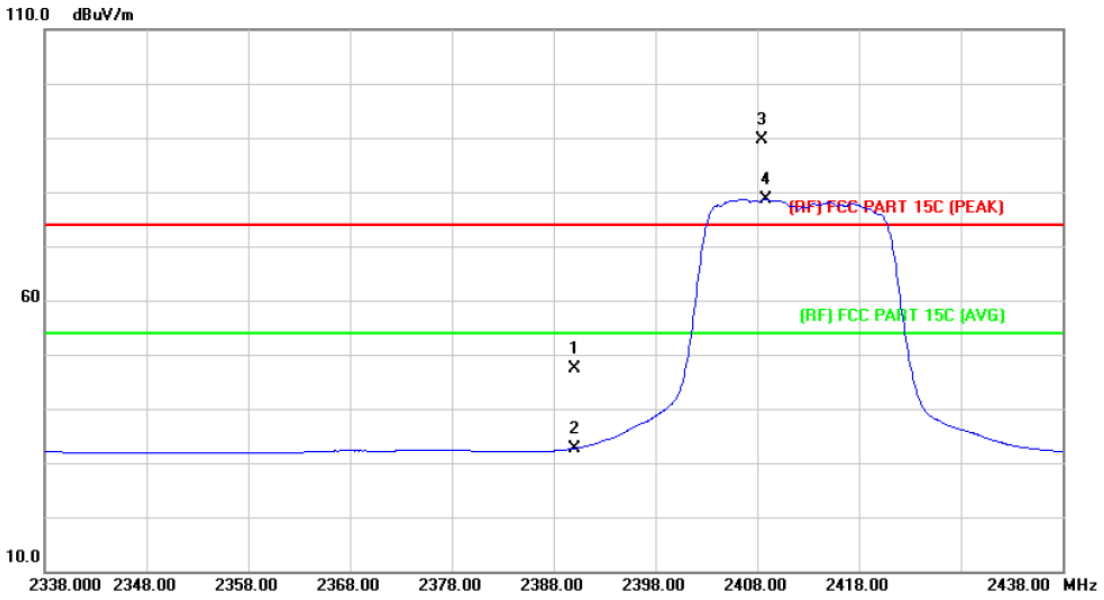
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2458.500	93.57	1.06	94.63	Fundamental Frequency		peak
2	*	2459.400	82.89	1.06	83.95	Fundamental Frequency		AVG
3		2483.500	45.60	1.17	46.77	74.00	-27.23	peak
4		2483.500	32.49	1.17	33.66	54.00	-20.34	AVG

Emission Level= Read Level+ Correct Factor

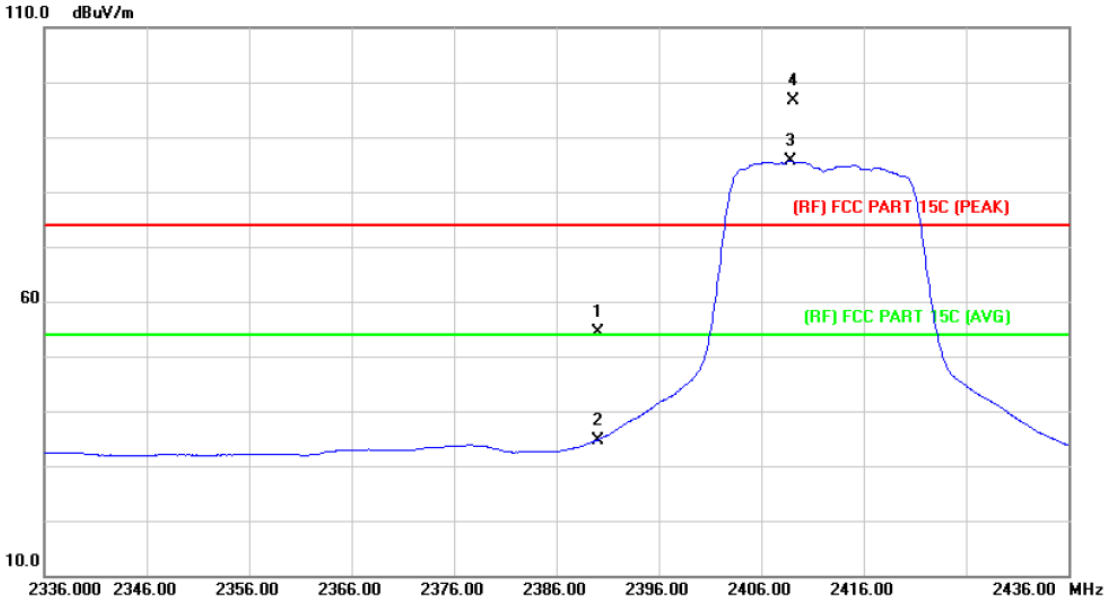
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	46.61	0.77	47.38	74.00	-26.62	peak
2		2390.000	31.91	0.77	32.68	54.00	-21.32	AVG
3	X	2408.400	88.69	0.85	89.54	Fundamental Frequency		peak
4	*	2408.800	77.79	0.85	78.64	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

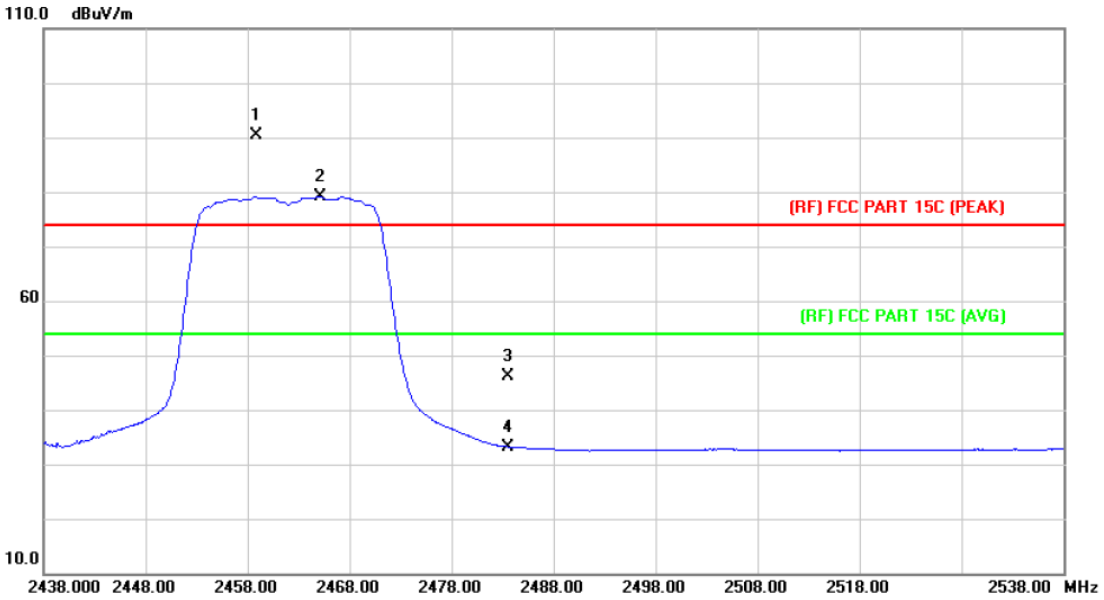
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	53.62	0.77	54.39	74.00	-19.61	peak
2		2390.000	33.97	0.77	34.74	54.00	-19.26	AVG
3	*	2408.800	84.73	0.85	85.58	Fundamental Frequency		AVG
4	X	2409.100	95.79	0.85	96.64	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

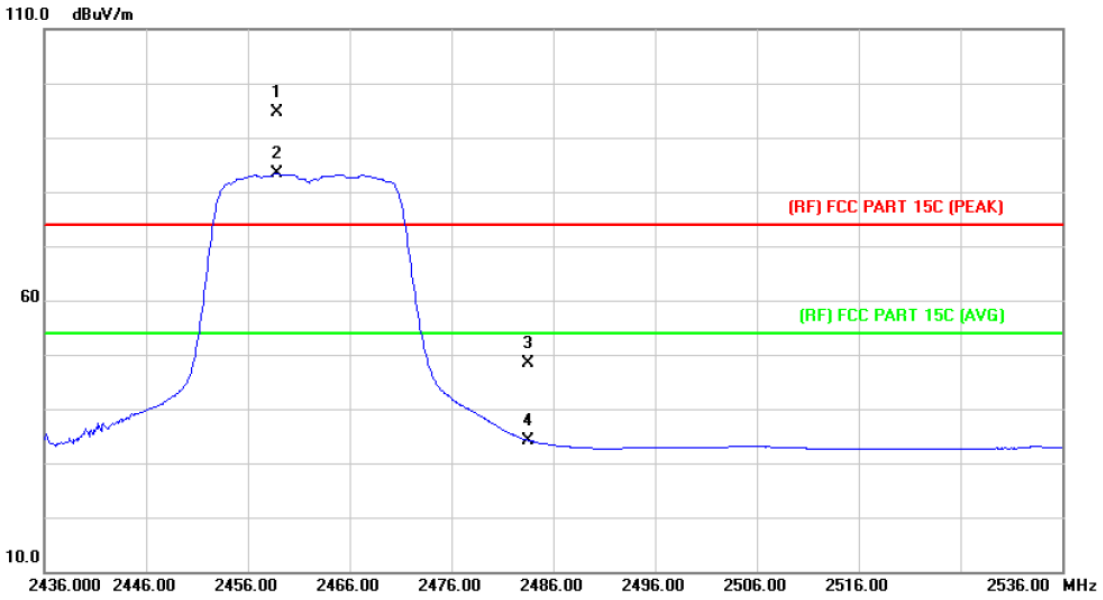
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2458.800	89.39	1.06	90.45	Fundamental Frequency		peak
2	*	2465.200	78.01	1.09	79.10	Fundamental Frequency		AVG
3		2483.500	44.93	1.17	46.10	74.00	-27.90	peak
4		2483.500	32.06	1.17	33.23	54.00	-20.77	AVG

Emission Level= Read Level+ Correct Factor

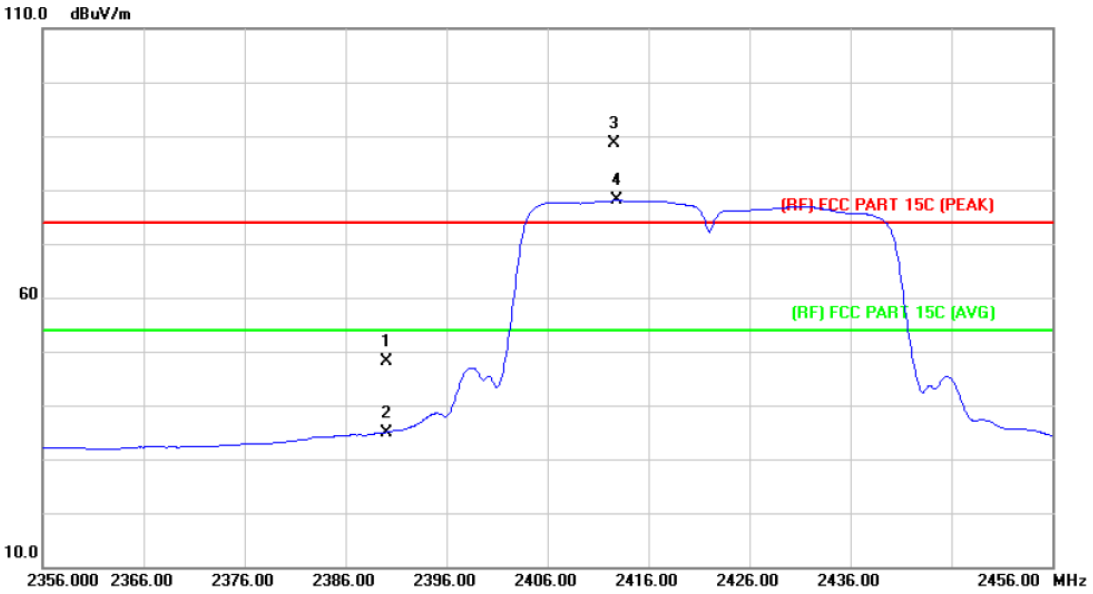
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2458.800	93.64	1.06	94.70	Fundamental Frequency		peak
2	*	2458.800	82.32	1.06	83.38	Fundamental Frequency		AVG
3		2483.500	47.31	1.17	48.48	74.00	-25.52	peak
4		2483.500	33.02	1.17	34.19	54.00	-19.81	AVG

Emission Level= Read Level+ Correct Factor

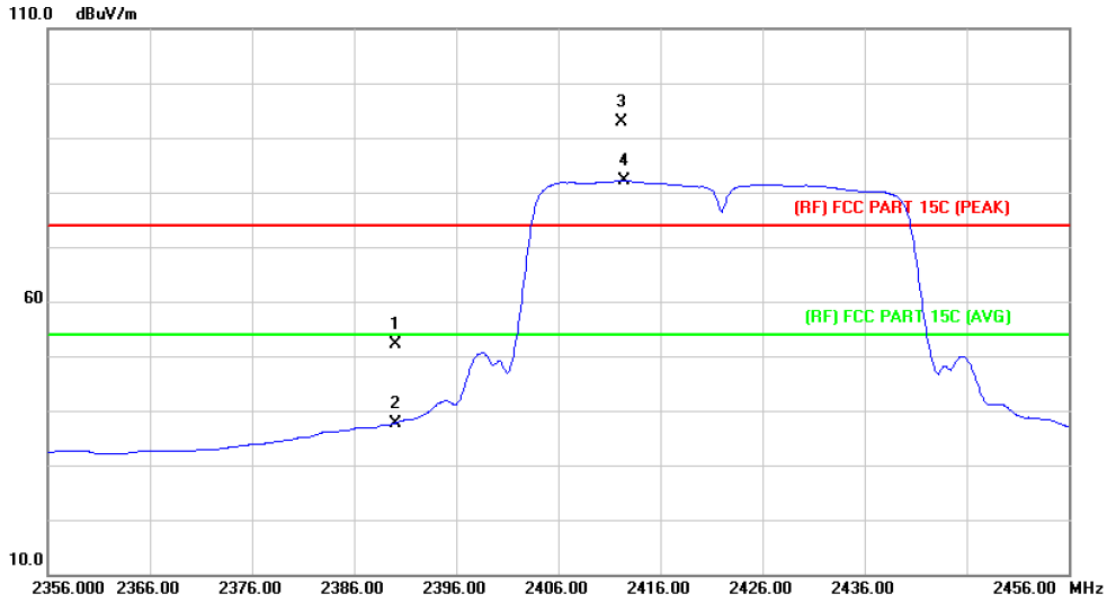
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2422MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	47.35	0.77	48.12	74.00	-25.88	peak
2		2390.000	34.23	0.77	35.00	54.00	-19.00	AVG
3	X	2412.600	87.88	0.86	88.74	Fundamental Frequency		peak
4	*	2412.800	77.16	0.86	78.02	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

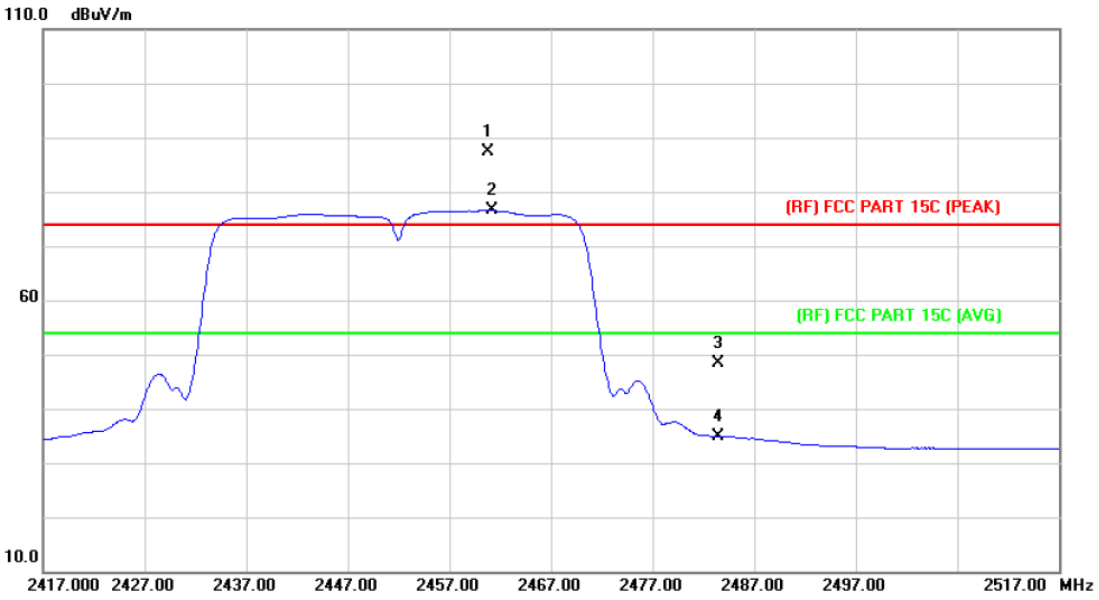
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT40) Mode 2422MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	51.35	0.77	52.12	74.00	-21.88	peak
2		2390.000	36.96	0.77	37.73	54.00	-16.27	AVG
3	X	2412.200	91.99	0.86	92.85	Fundamental Frequency		peak
4	*	2412.400	81.20	0.86	82.06	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

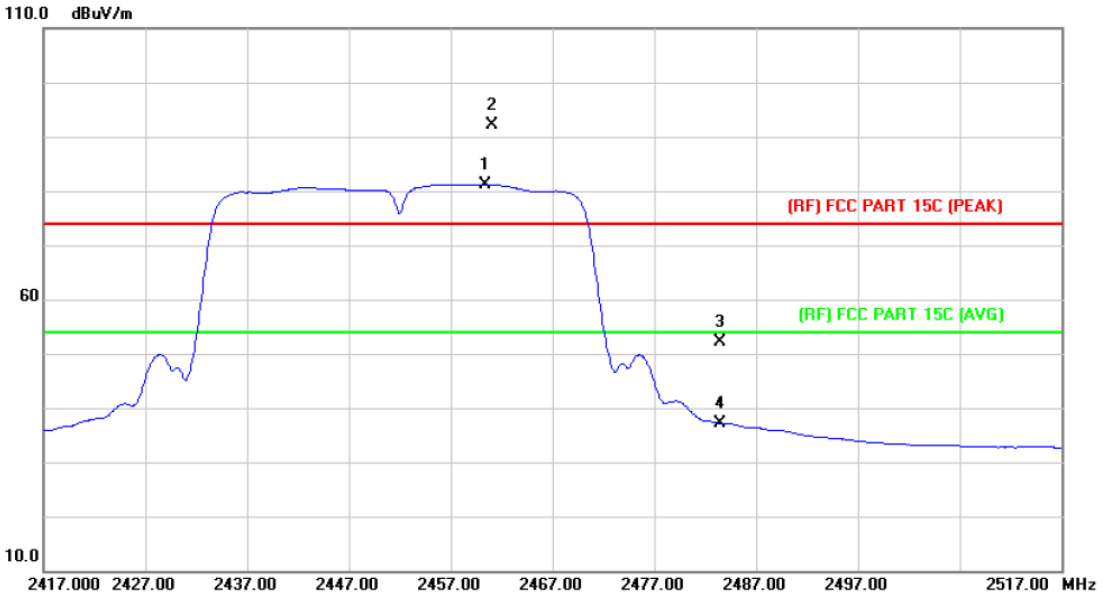
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2452MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2460.800	86.40	1.06	87.46	Fundamental Frequency		peak
2	*	2461.200	75.54	1.07	76.61	Fundamental Frequency		AVG
3		2483.500	47.27	1.17	48.44	74.00	-25.56	peak
4		2483.500	33.77	1.17	34.94	54.00	-19.06	AVG

Emission Level= Read Level+ Correct Factor

EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT40) Mode 2452MHz		
Remark:	N/A		

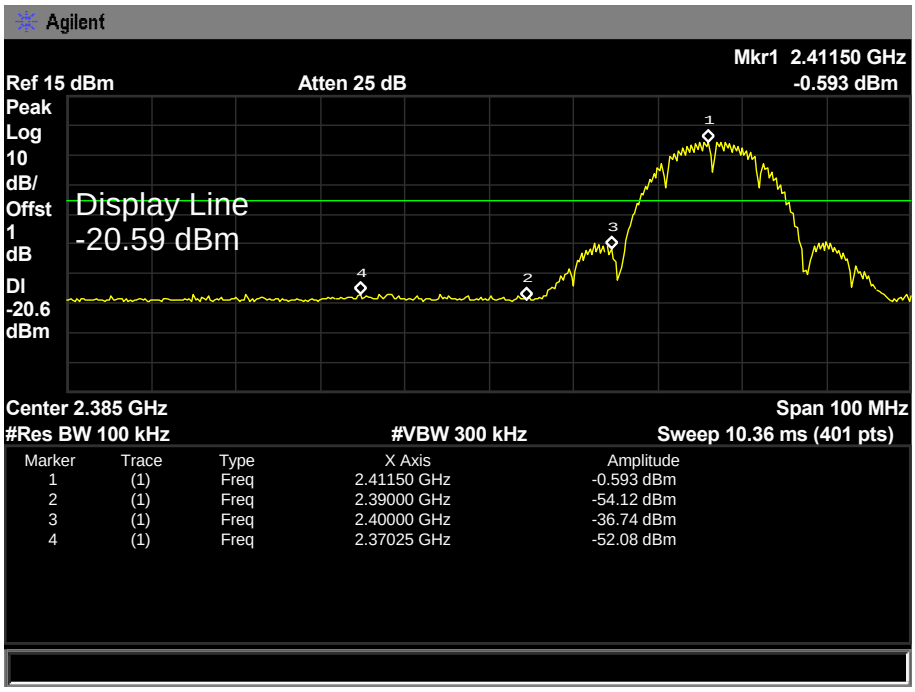


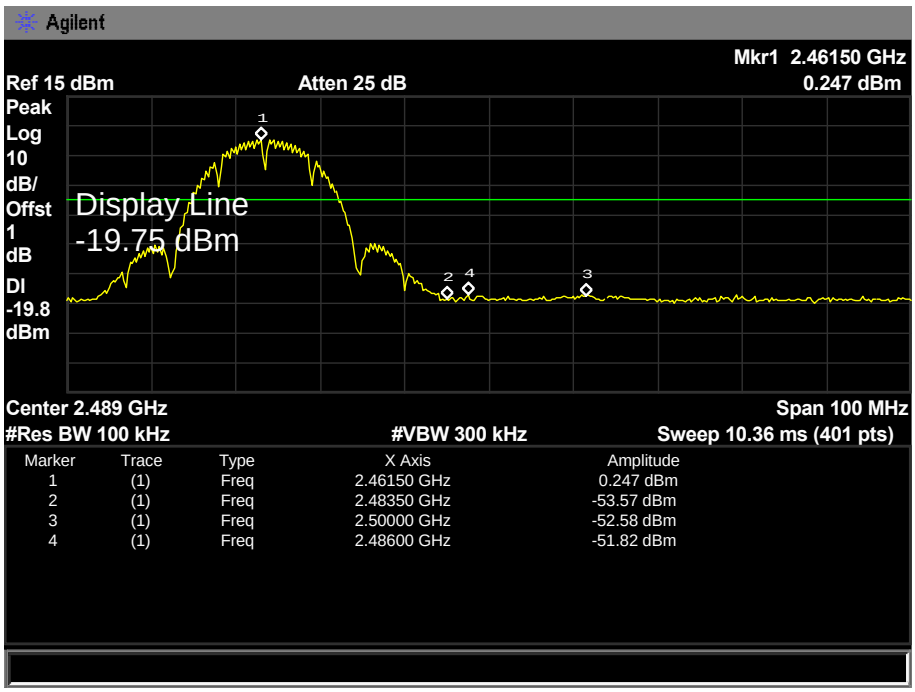
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2460.400	80.18	1.06	81.24	Fundamental Frequency		AVG
2	X	2461.000	91.09	1.06	92.15	Fundamental Frequency		peak
3		2483.500	50.95	1.17	52.12	74.00	-21.88	peak
4		2483.500	36.07	1.17	37.24	54.00	-16.76	AVG

Emission Level= Read Level+ Correct Factor

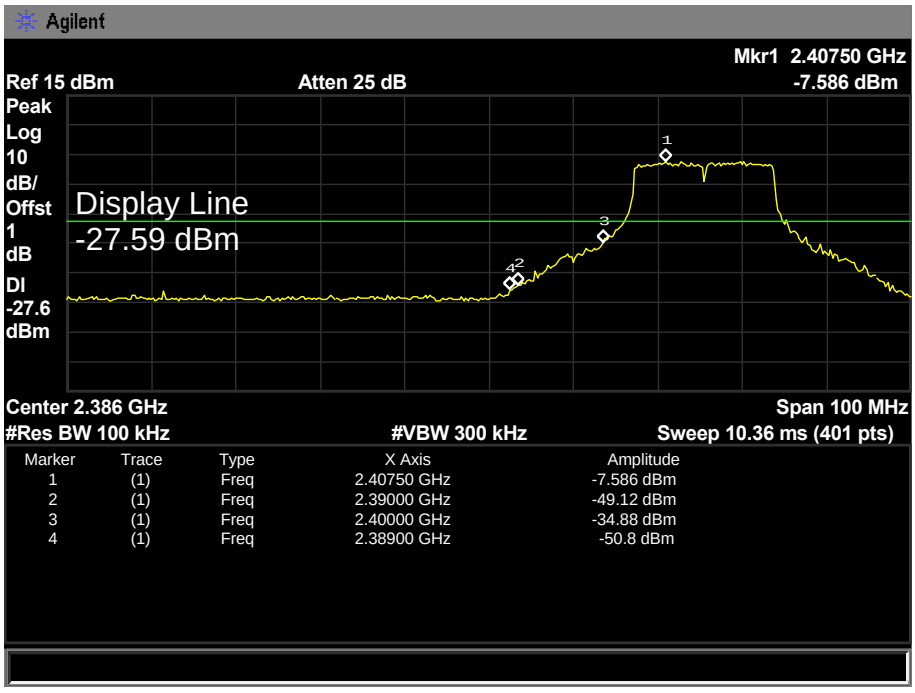
(2) Conducted Test

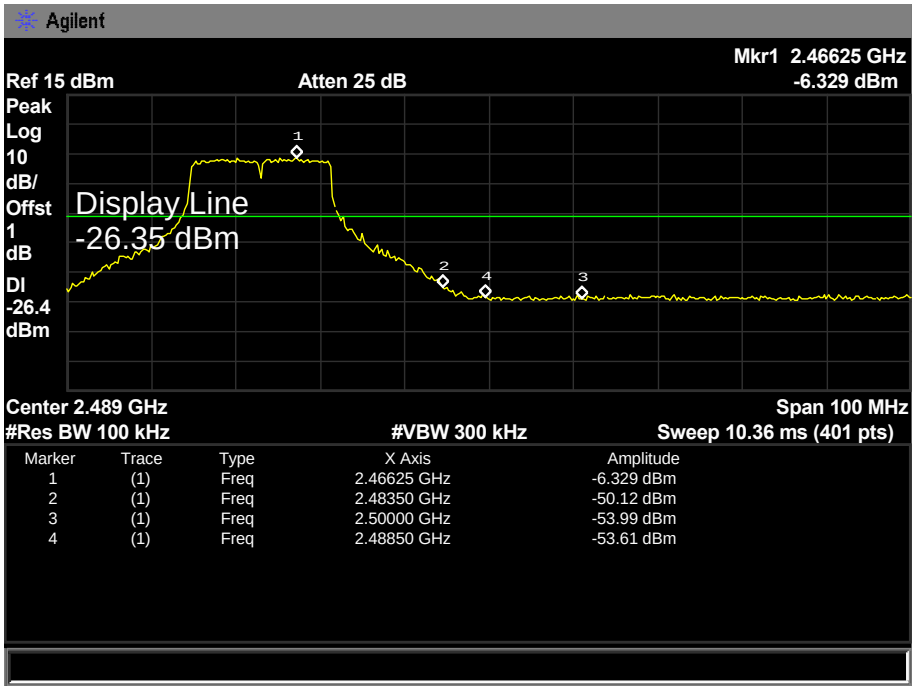
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX B Mode 2412MHz / TX B Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		



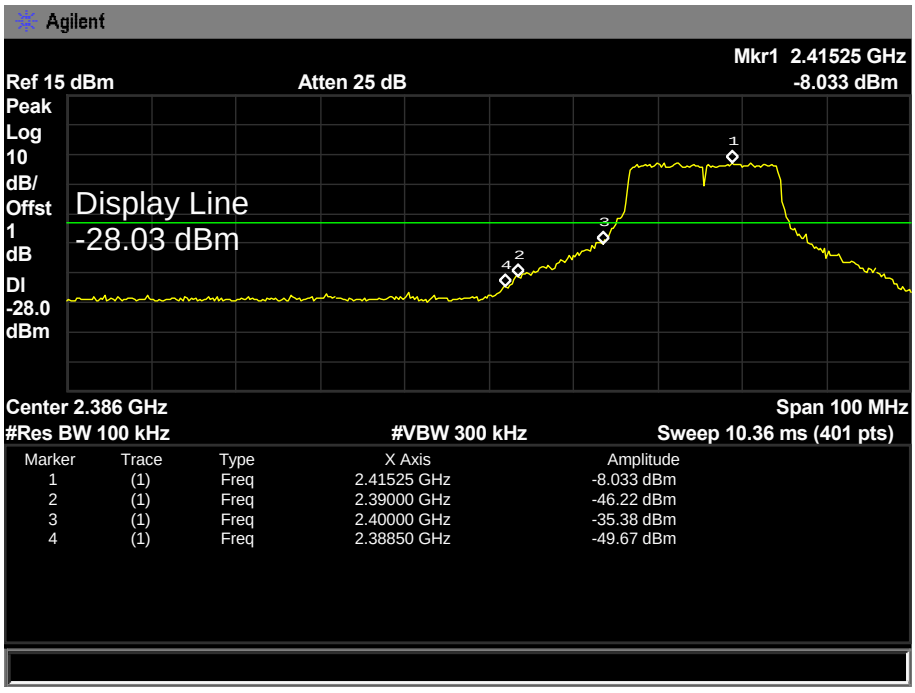


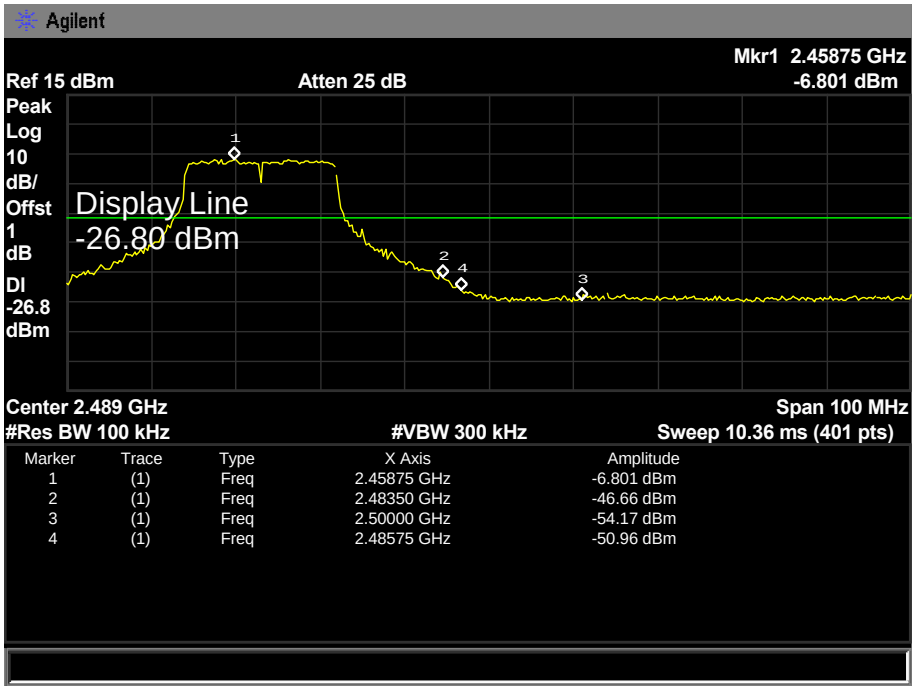
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX G Mode 2412MHz / TX G Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		



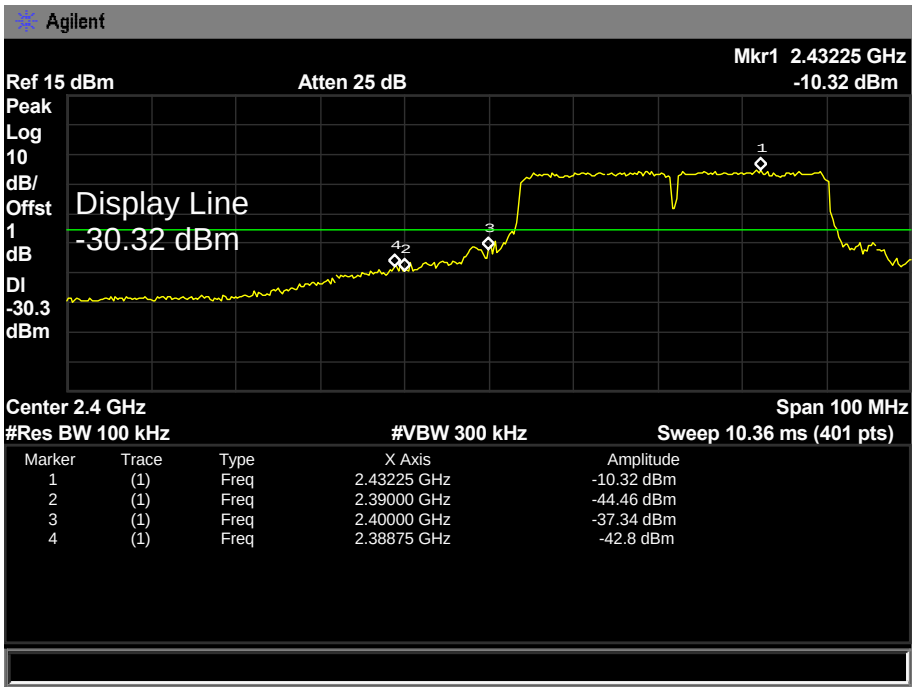


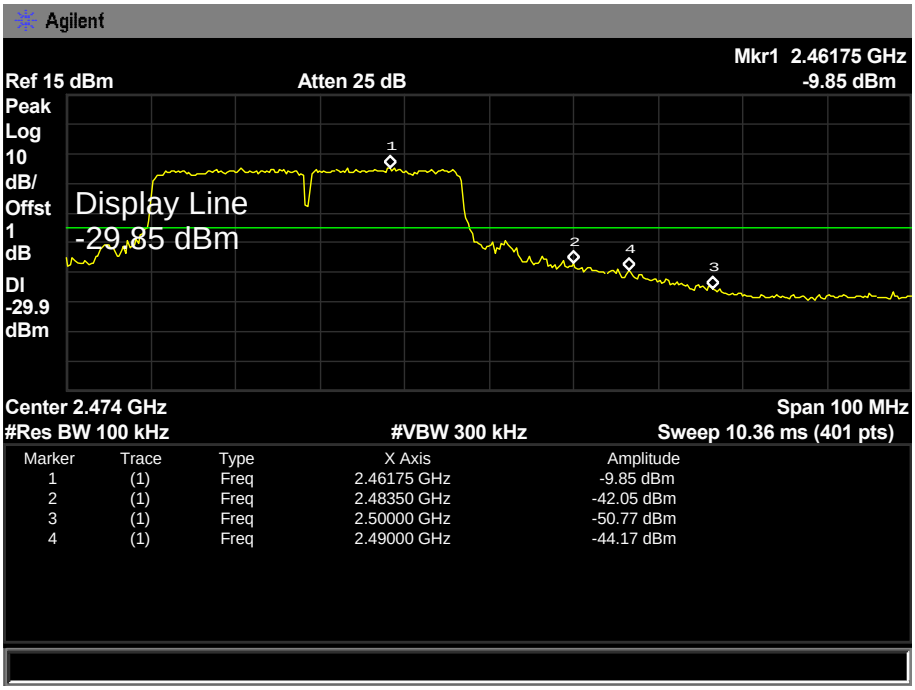
EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX N(HT20) Mode 2412MHz / TX N(HT20) Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		





EUT:	DLP LED Projector	Model:	M1
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		





7. Bandwidth Test

7.1 Test Standard and Limit

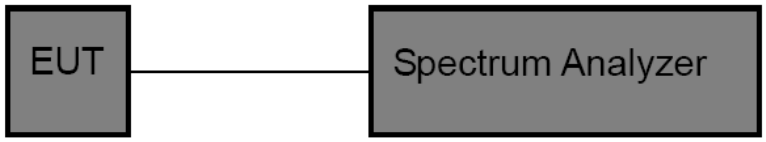
7.1.1 Test Standard

FCC Part 15.247 (a)(2)

7.1.2 Test Limit

FCC Part 15 Subpart C(15.247)/ RSS 247 Issue 1		
Test Item	**Limit**	**Frequency Range(MHz)**
Bandwidth	>=500 KHz (6dB bandwidth)	2400~2483.5

7.2 Test Setup



7.3 Test Procedure

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

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

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

7.4 EUT Operating Condition

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

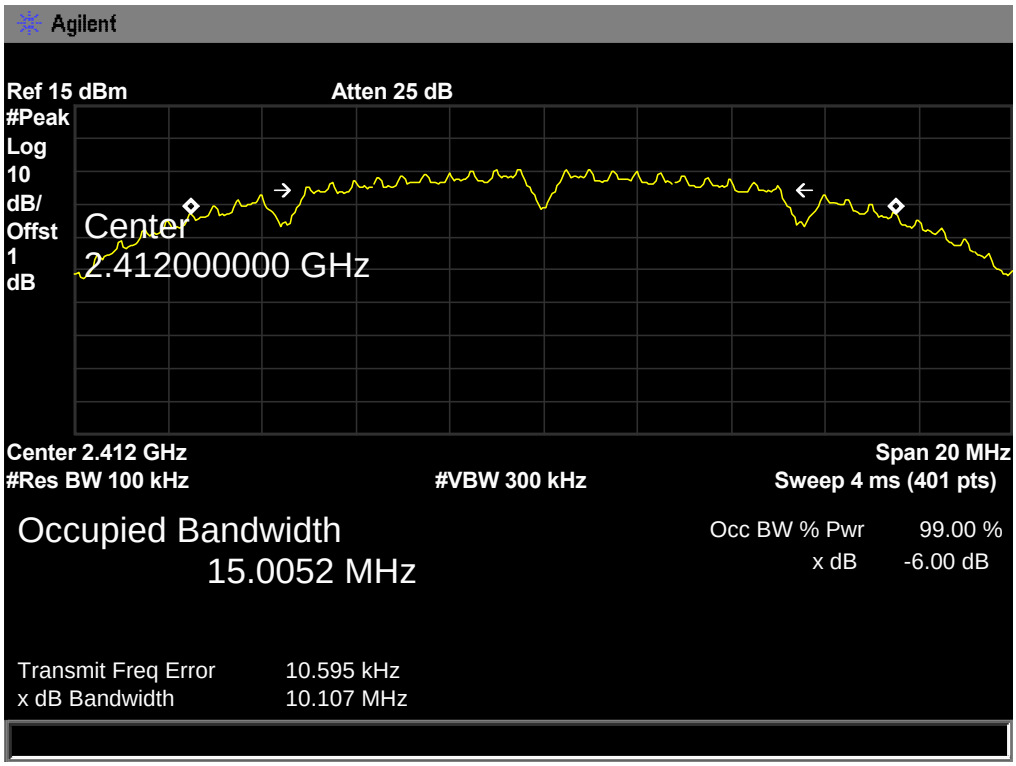
7.5 Test Data

EUT:	DLP LED Projector	Model:	M1
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	10.107	15.0052	>=0.5
2437	10.101	14.9980	
2462	10.098	14.9868	

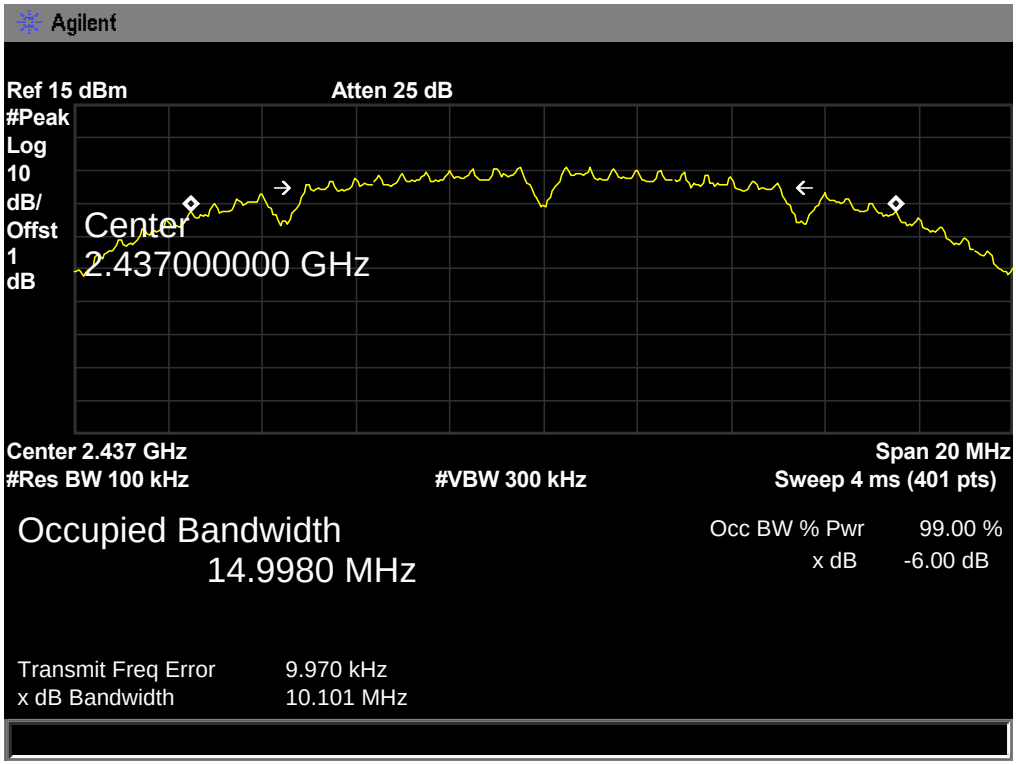
802.11B Mode

2412 MHz



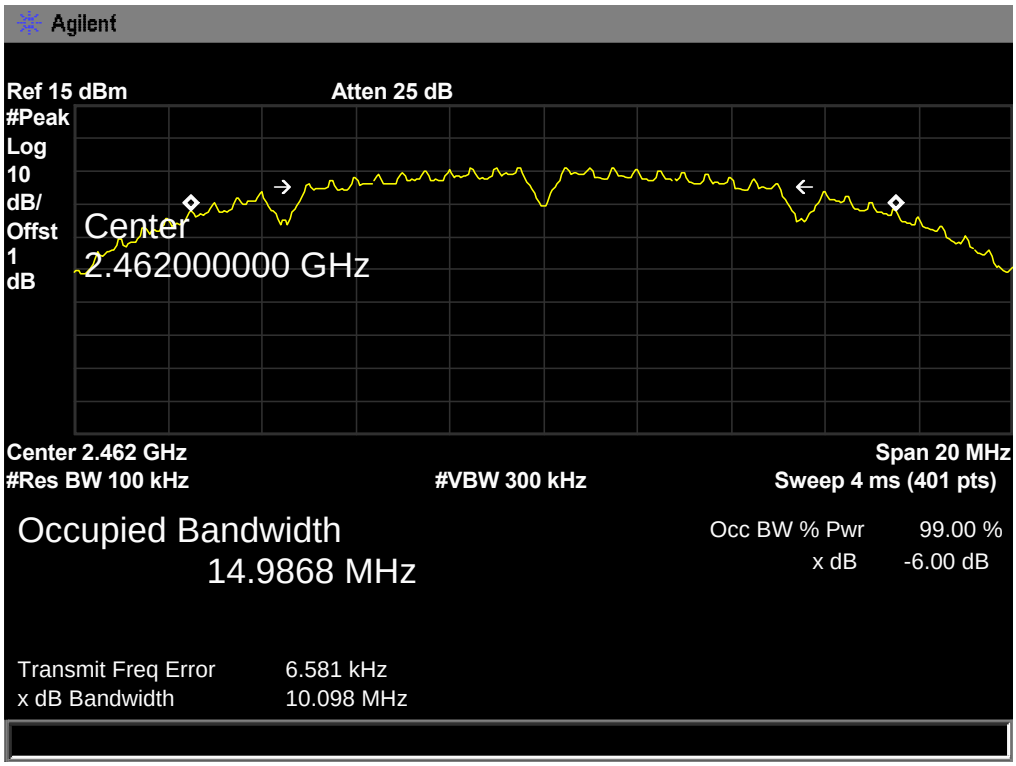
802.11B Mode

2437 MHz



802.11B Mode

2462 MHz

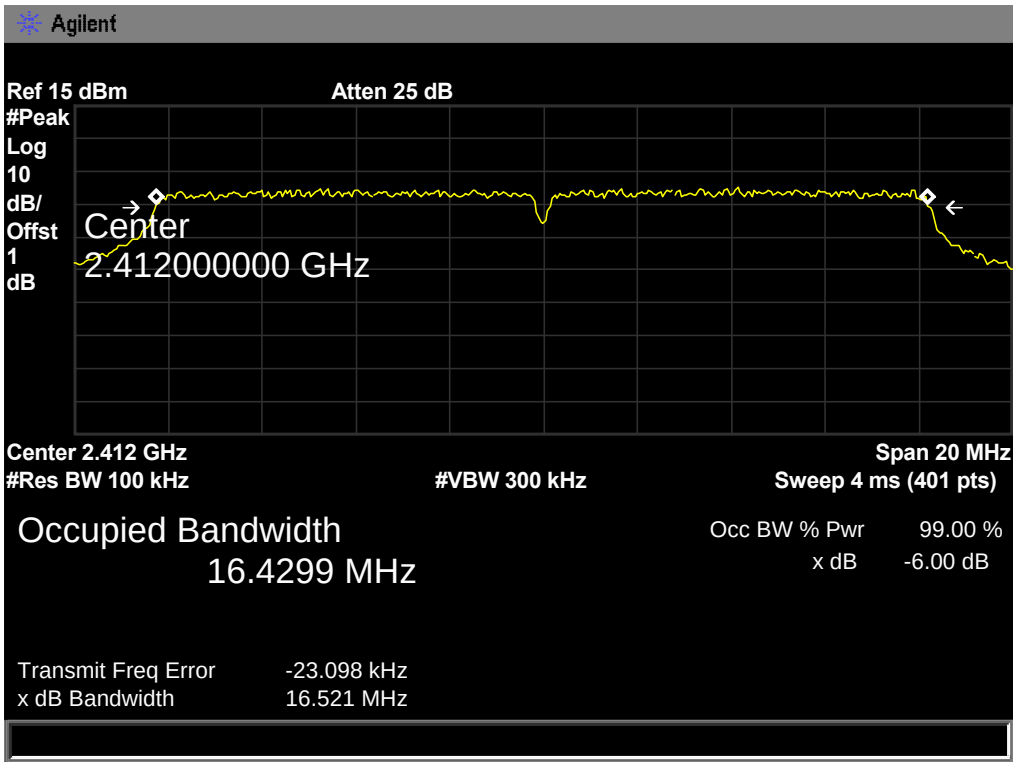


EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX 802.11G Mode		

Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	16.521	16.4299	>=0.5
2437	16.526	16.4325	
2462	16.558	16.4396	

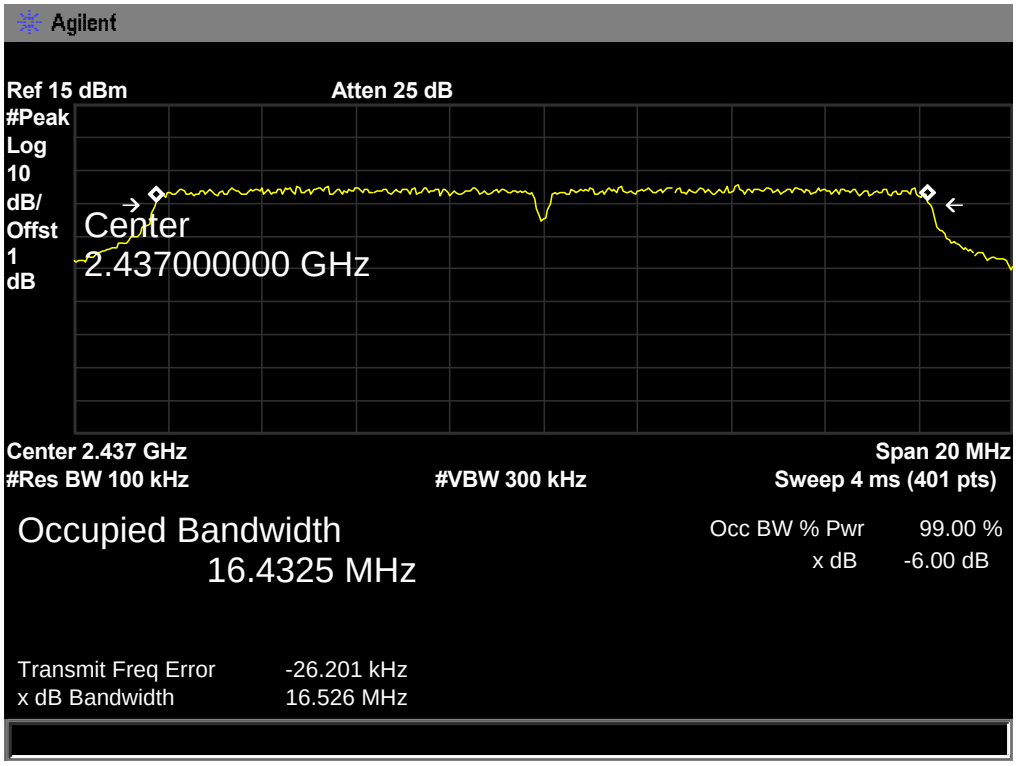
802.11G Mode

2412 MHz



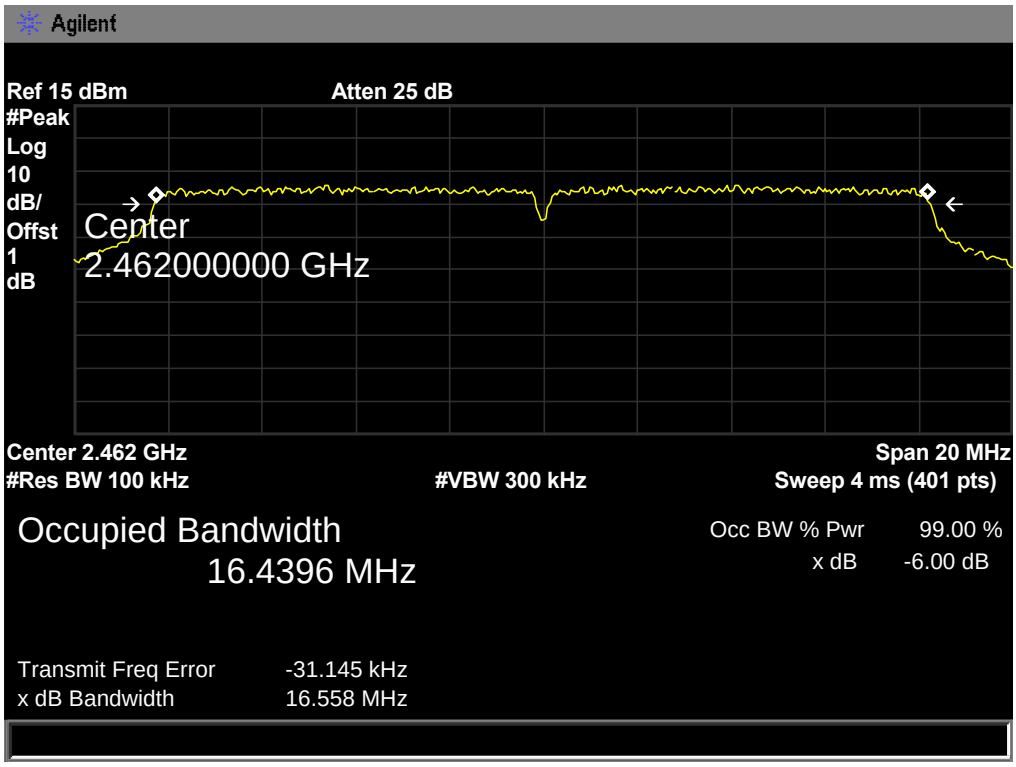
802.11G Mode

2437 MHz



802.11G Mode

2462 MHz

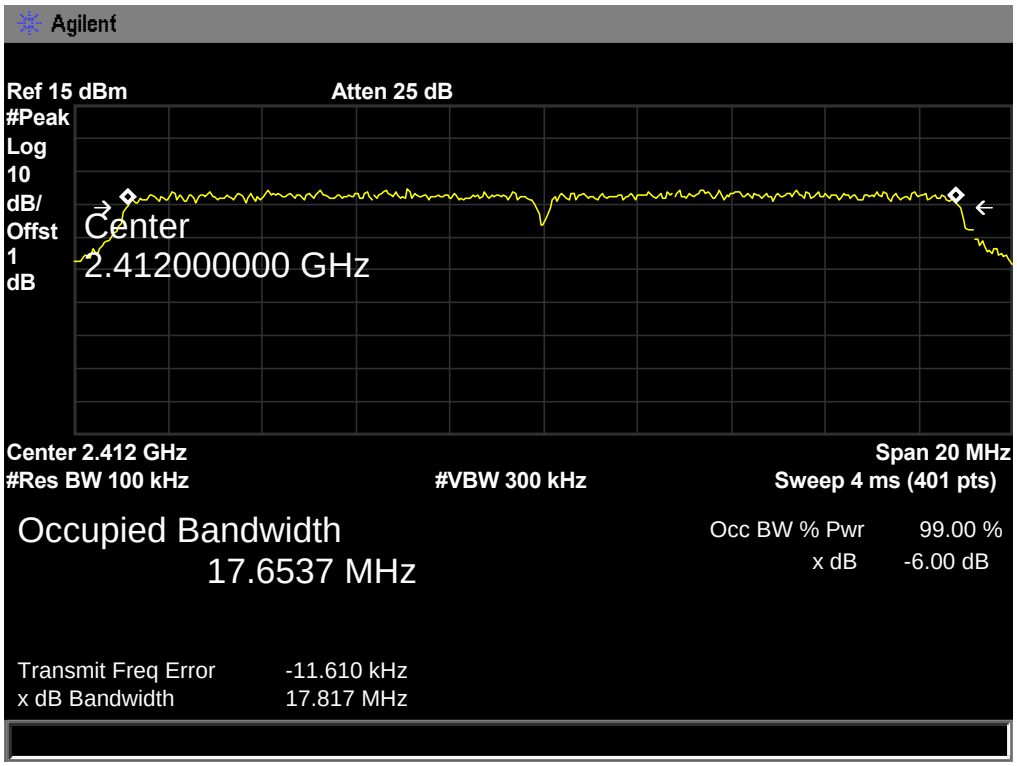


EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX 802.11N(HT20) Mode		

Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	17.817	17.6537	>=0.5
2437	17.825	17.6383	
2462	17.812	17.6446	

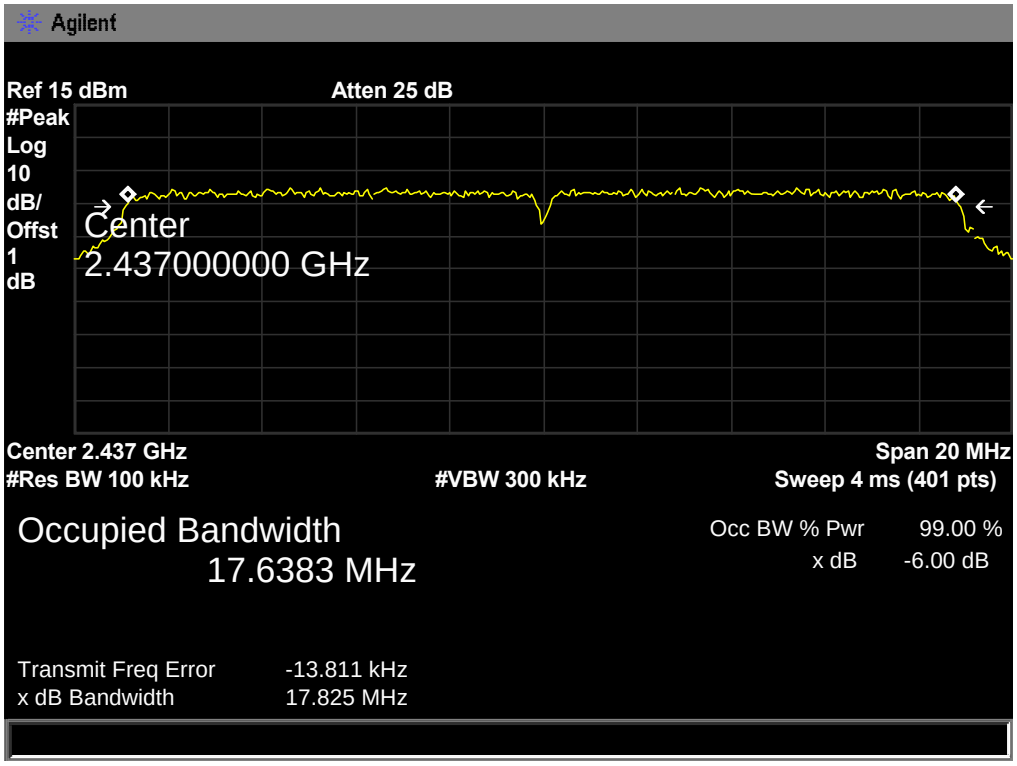
802.11N(HT20) Mode

2412 MHz



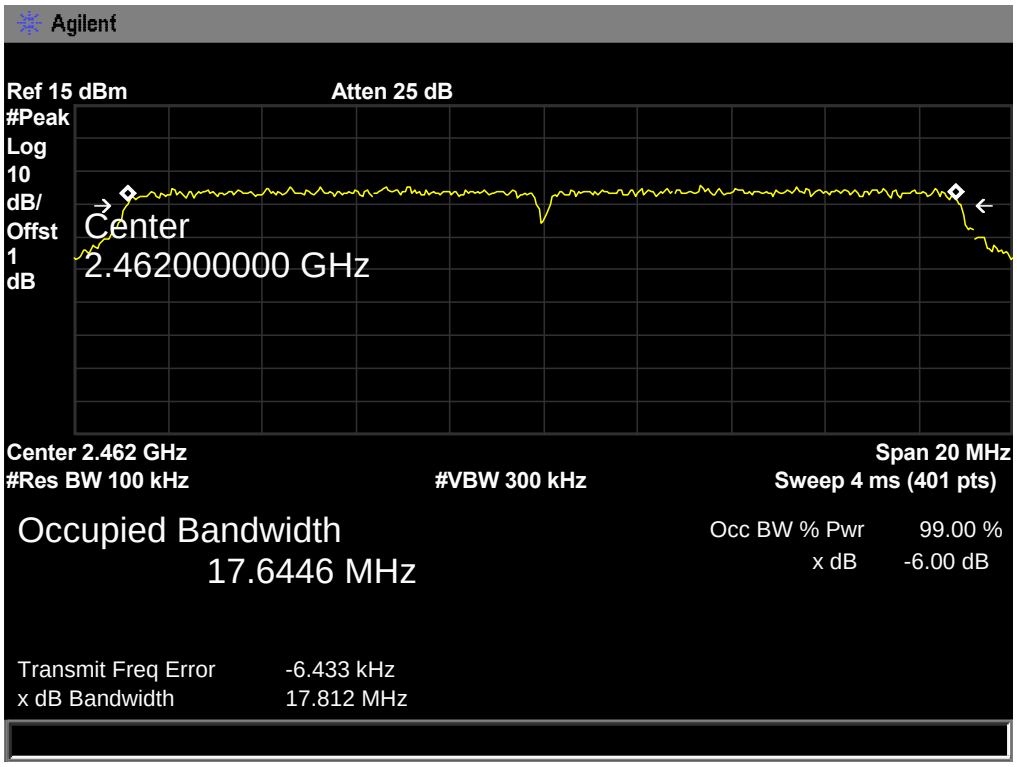
802.11N(HT20) Mode

2437 MHz



802.11N(HT20) Mode

2462 MHz

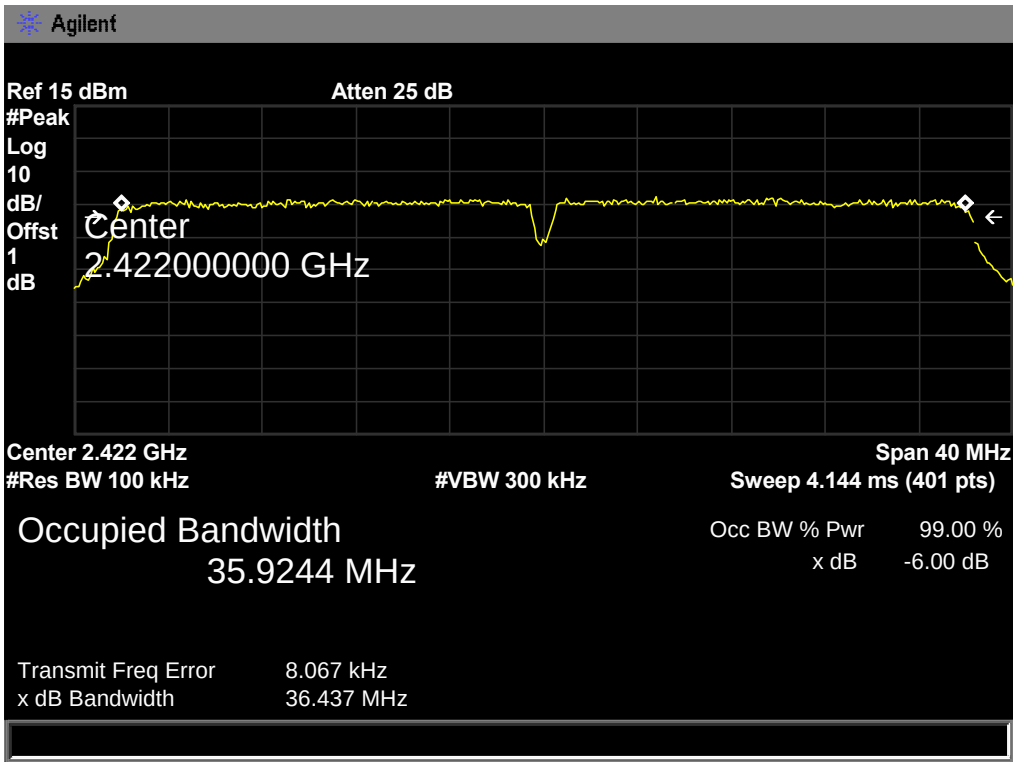


EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX 802.11N(HT40) Mode		

Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2422	36.437	35.9244	>=0.5
2437	36.400	35.9092	
2452	36.482	35.9615	

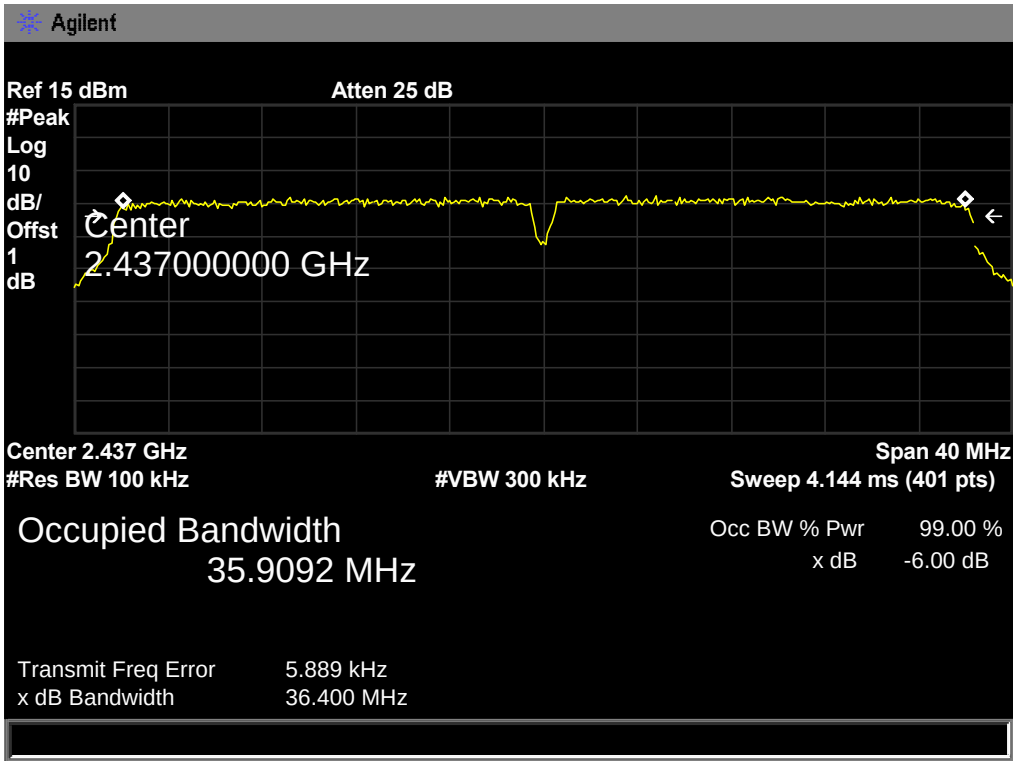
802.11N(HT40) Mode

2422 MHz



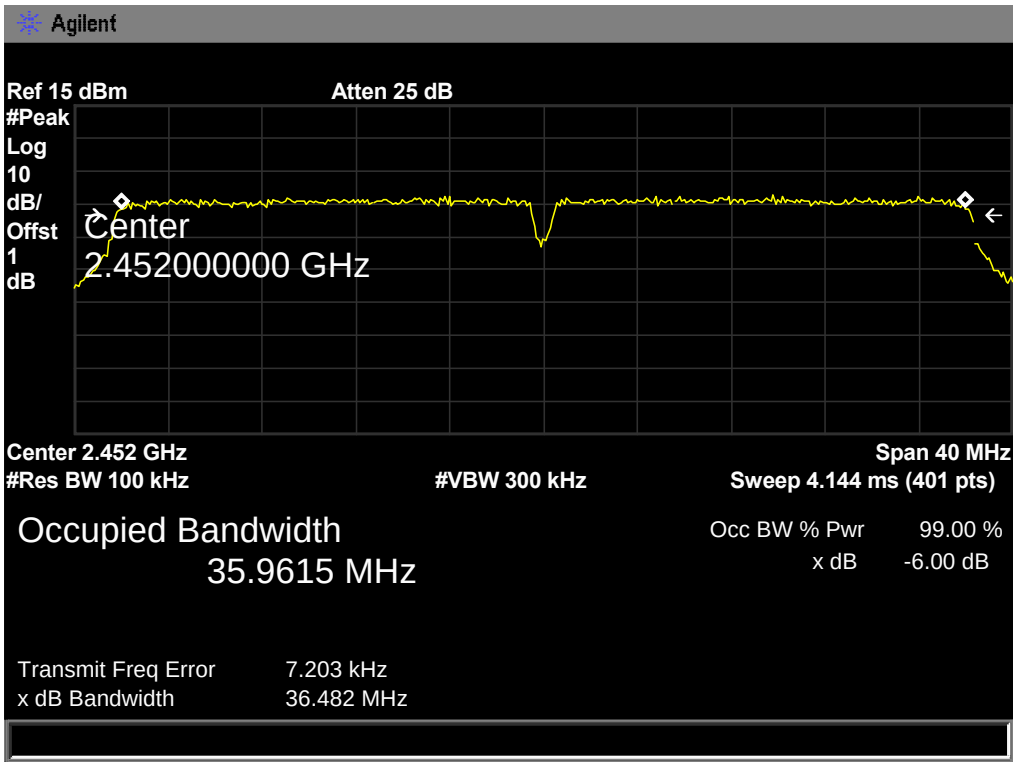
802.11N(HT40) Mode

2437 MHz



802.11N(HT40) Mode

2452 MHz



8. Peak Output Power Test

8.1 Test Standard and Limit

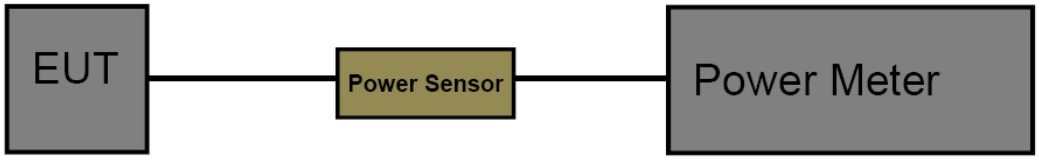
8.1.1 Test Standard

FCC Part 15.247 (b)

8.1.2 Test Limit

FCC Part 15 Subpart C(15.247)/ RSS 247 Issue 1		
Test Item	**Limit**	**Frequency Range(MHz)**
Peak Output Power	1 Watt or 30 dBm	2400~2483.5

8.2 Test Setup



8.3 Test Procedure

The measurement is according to section 9.1.2 of KDB 558074 D01 DTS Meas Guidance v03r03.
The EUT was connected to RF power meter via a broadband power sensor as show the block above. The power sensor video bandwidth is greater than or equal to the DTS bandwidth of the equipment.

8.4 EUT Operating Condition

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

8.5 Test Data

EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		

Mode	Channel frequency (MHz)	Test Result (dBm)	Limit (dBm)
802.11b	2412	9.21	30
	2437	9.18	
	2462	9.16	
802.11g	2412	9.05	
	2437	9.11	
	2462	9.12	
802.11n (HT20)	2412	8.96	
	2437	8.97	
	2462	9.02	
802.11n (HT40)	2422	8.98	
	2437	8.94	
	2452	8.95	

9. Power Spectral Density Test

9.1 Test Standard and Limit

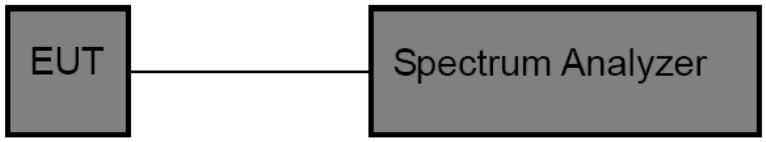
9.1.1 Test Standard

FCC Part 15.247 (e)

9.1.2 Test Limit

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

9.2 Test Setup



9.3 Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v03r03.

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

9.4 EUT Operating Condition

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

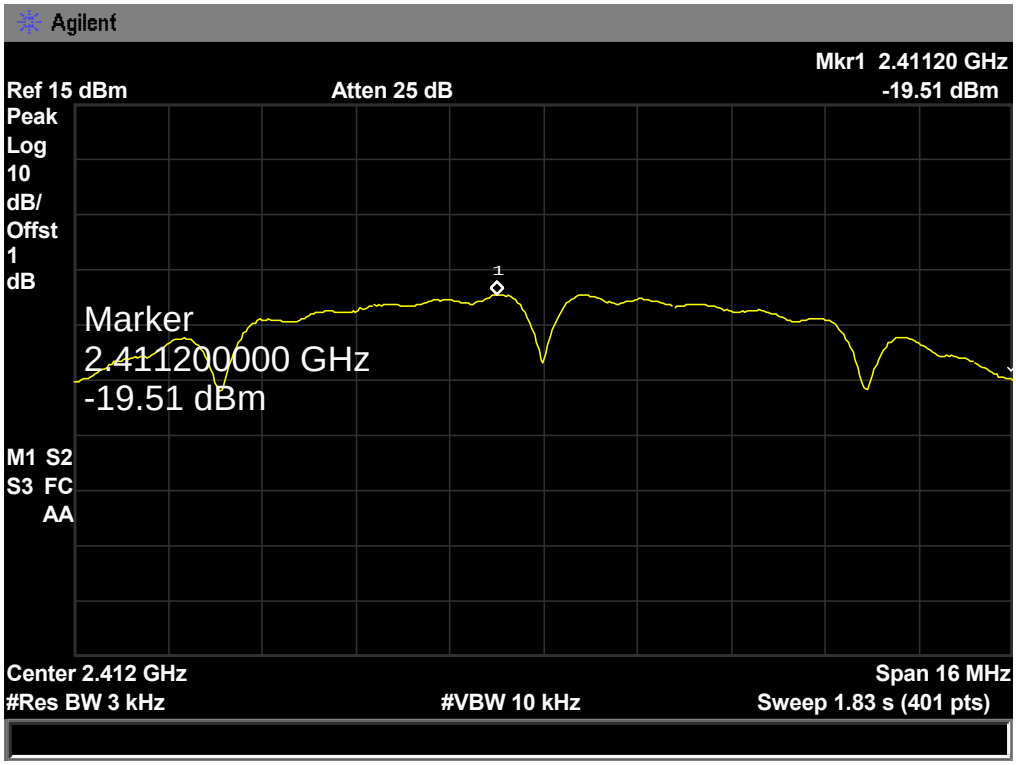
9.5 Test Data

EUT:	DLP LED Projector	Model:	M1
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	-19.51	8
2437	-19.12	
2462	-18.63	

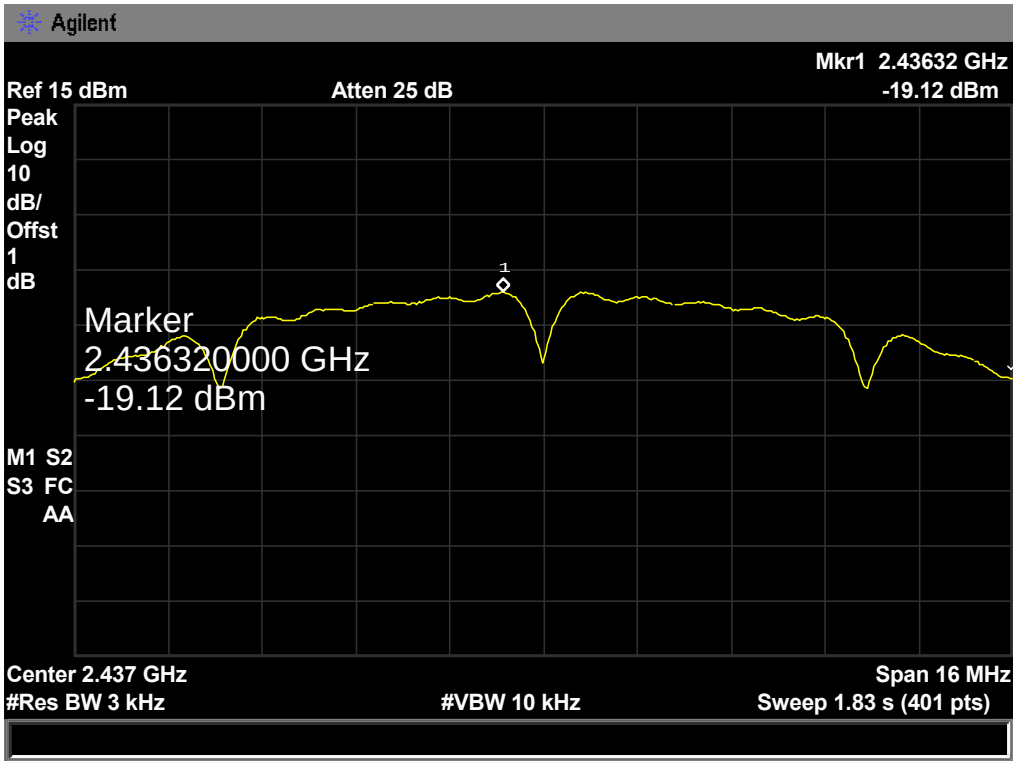
802.11B Mode

2412 MHz



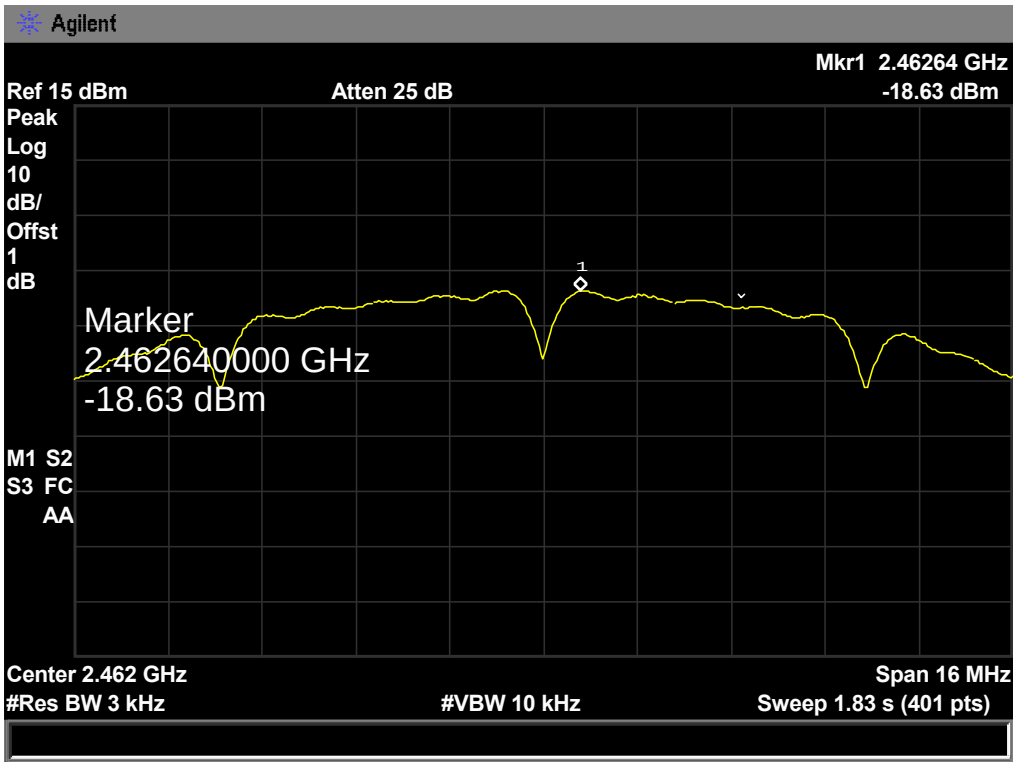
802.11B Mode

2437 MHz



802.11B Mode

2462 MHz

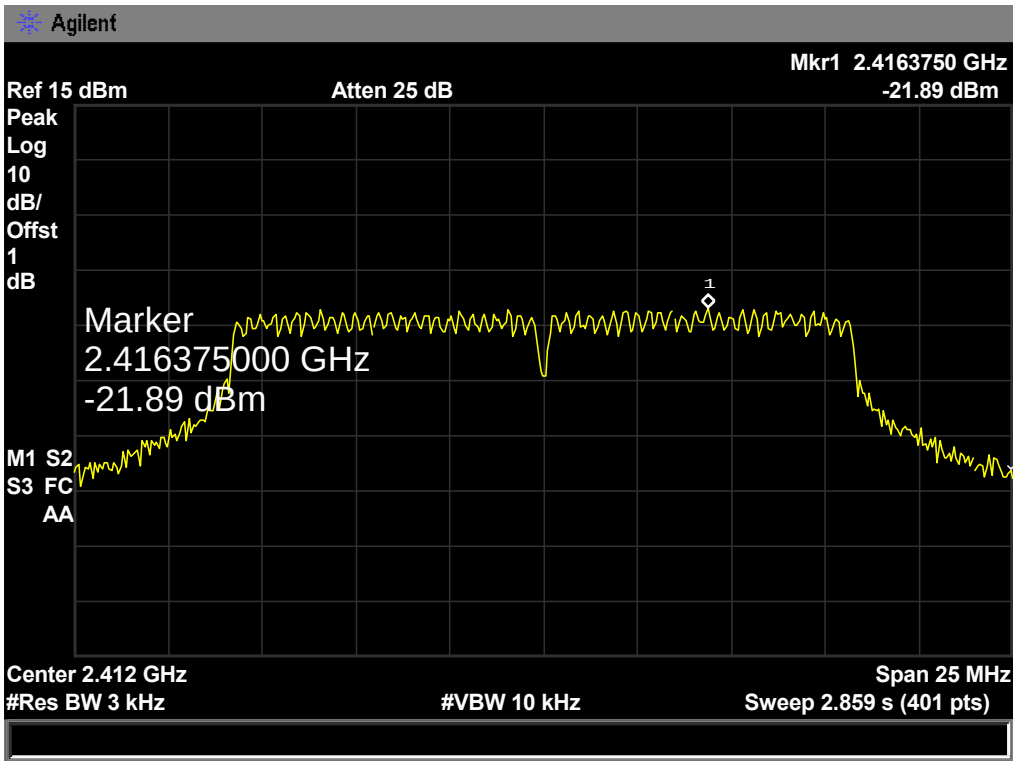


EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX 802.11G Mode		

Channel Frequency (MHz)	Power Density (3 kHz/dBm)	Limit (dBm)
2412	-21.89	8
2437	-21.61	
2462	-20.84	

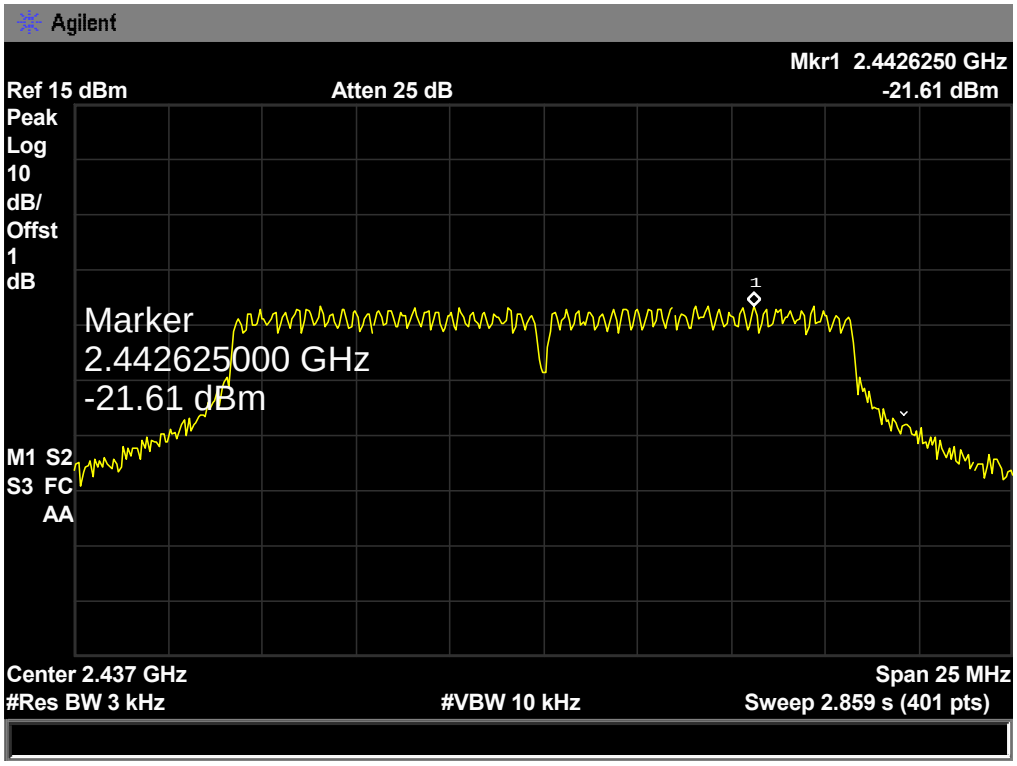
802.11G Mode

2412 MHz



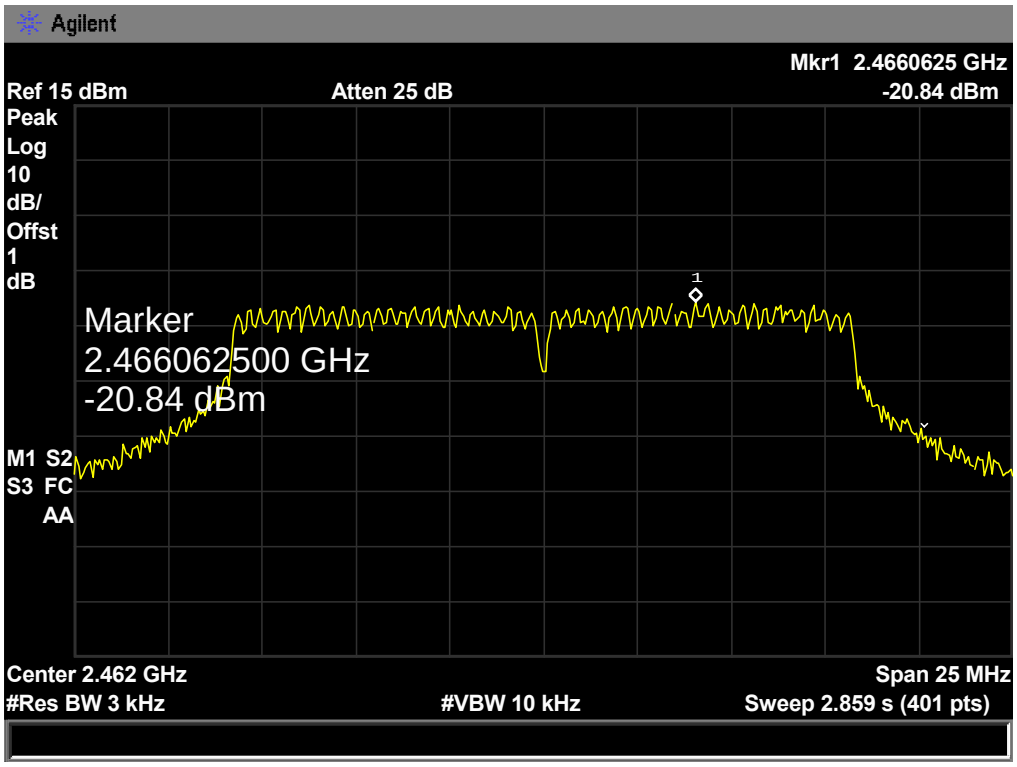
802.11G Mode

2437 MHz



802.11G Mode

2462 MHz

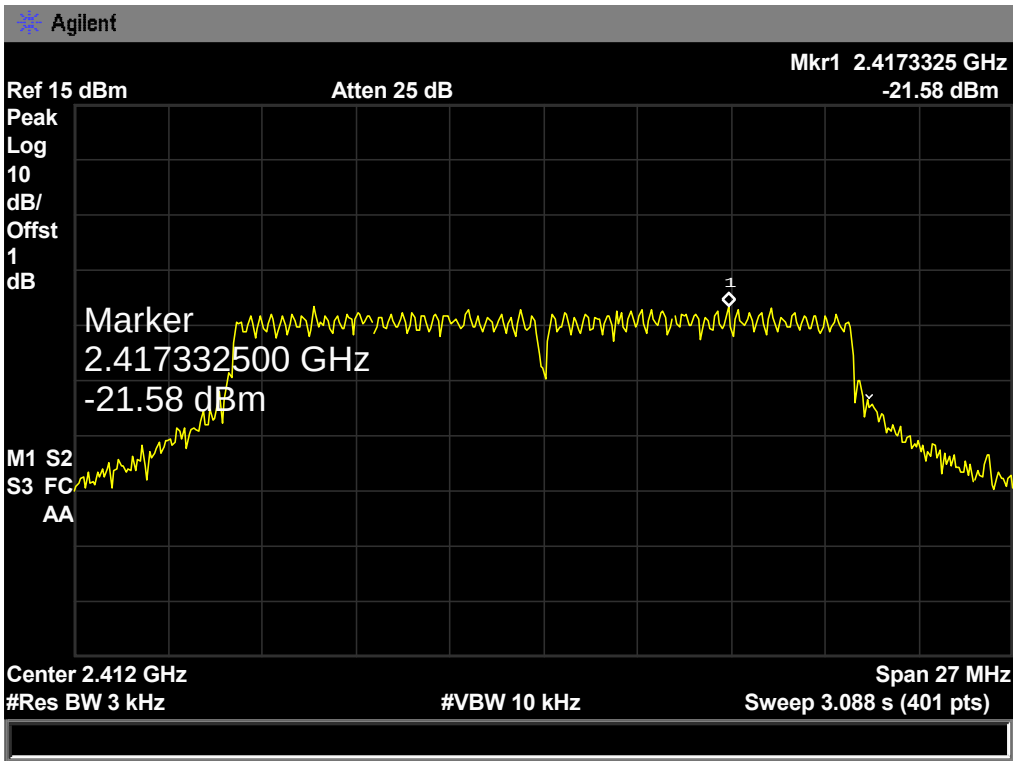


EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX 802.11N(HT20) Mode		

Channel Frequency (MHz)	Power Density (3 kHz/dBm)	Limit (dBm)
2412	-21.58	8
2437	-21.43	
2462	-20.32	

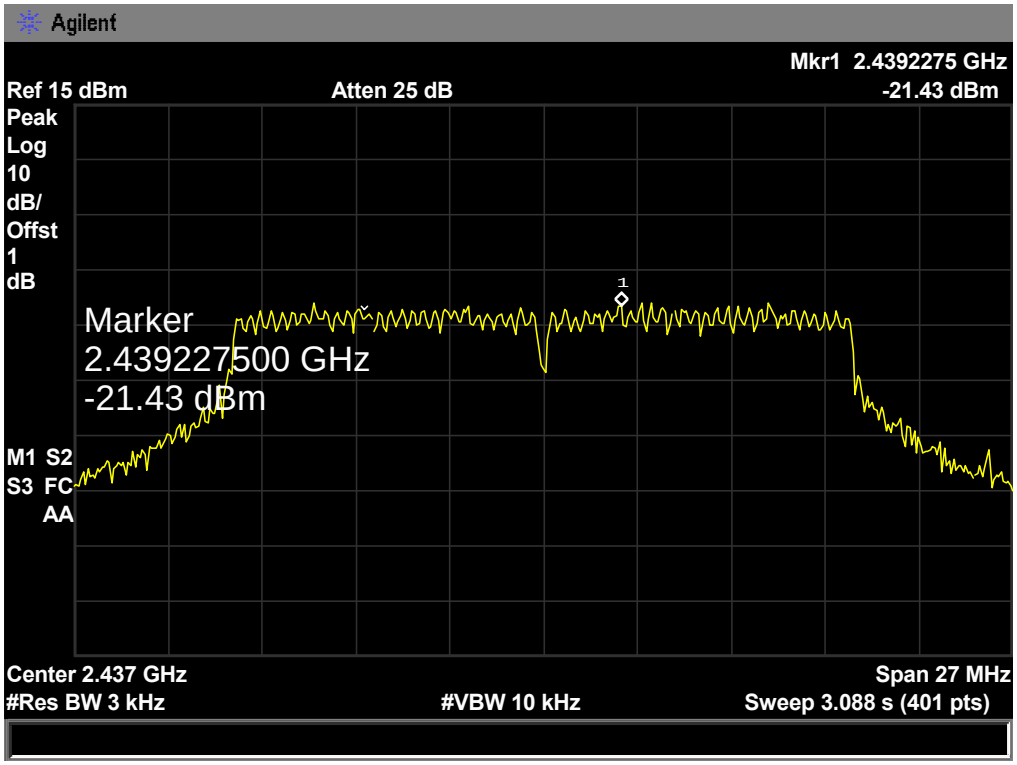
802.11N(HT20) Mode

2412 MHz



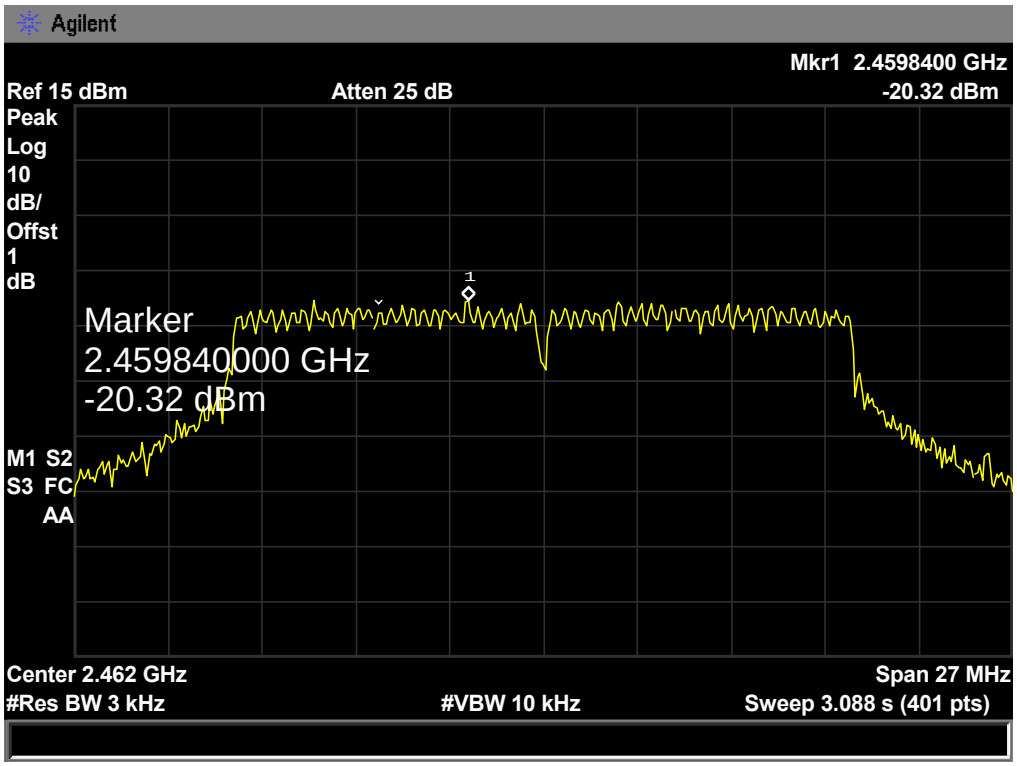
802.11N(HT20) Mode

2437 MHz



802.11N(HT20) Mode

2462 MHz

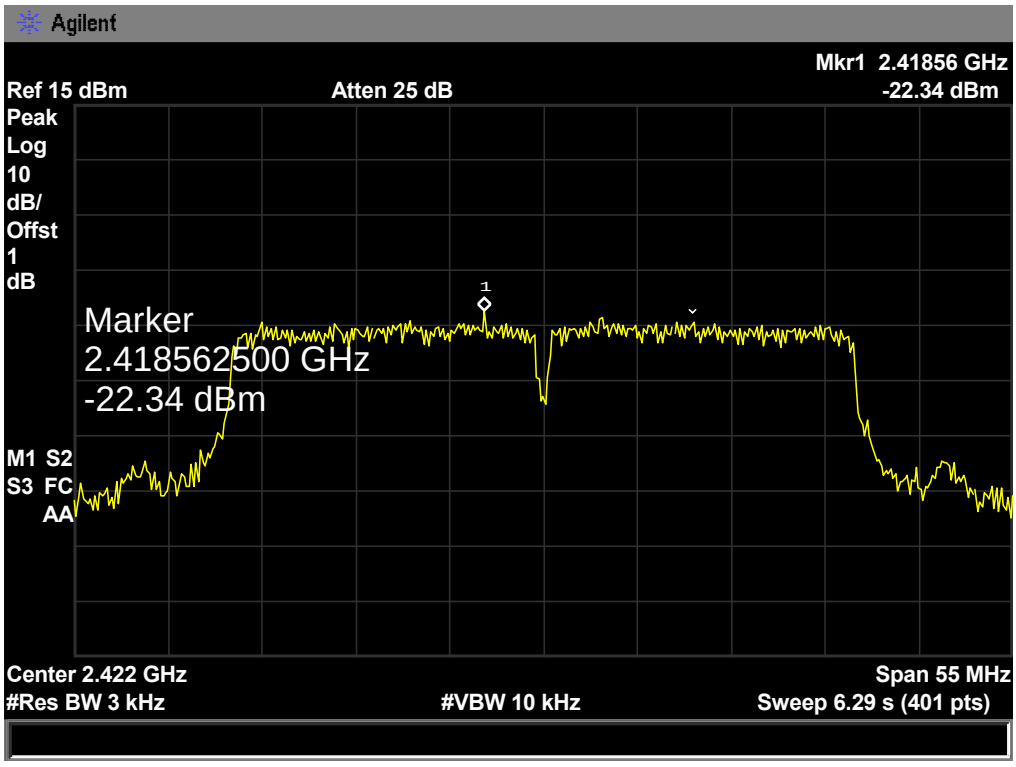


EUT:	DLP LED Projector	Model:	M1
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX 802.11N(HT40) Mode		

Channel Frequency (MHz)	Power Density (3 kHz/dBm)	Limit (dBm)
2422	-22.34	8
2437	-22.30	
2452	-20.96	

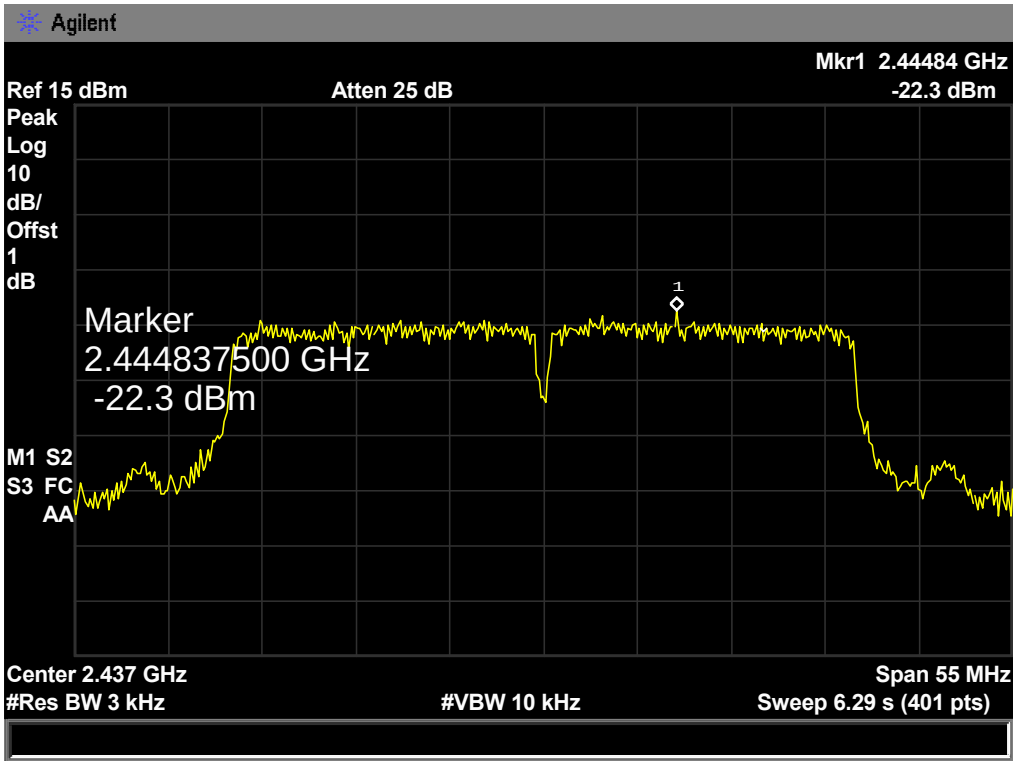
802.11N(HT40) Mode

2422 MHz



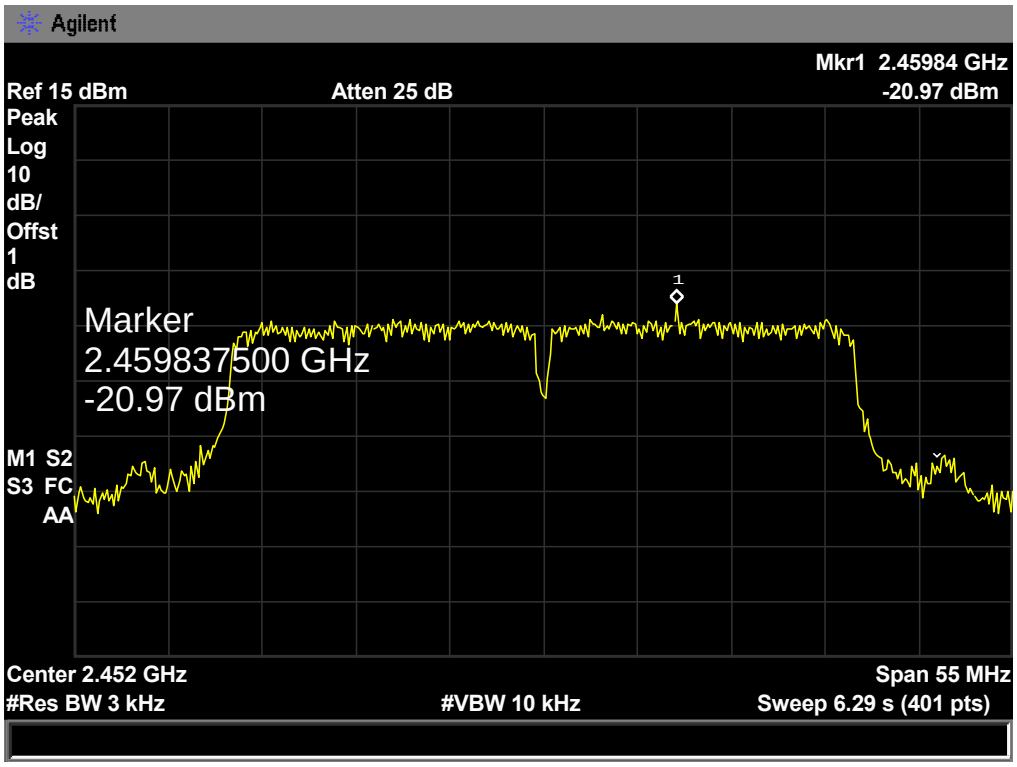
802.11N(HT40) Mode

2437 MHz



802.11N(HT40) Mode

2452 MHz



10. Antenna Requirement

10.1 Standard Requirement

10.1.1 Standard

FCC Part 15.203

10.1.2 Requirement

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

10.2 Antenna Connected Construction

The directional gains of the antenna used for transmitting is 2.5 dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

Result

The EUT antenna is an Embedded Antenna. It complies with the standard requirement.

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