

FCC Radio Test Report

FCC ID: 2ADVS-ML131

Original Grant

Report No. : TB-FCC141598
Applicant : Mego Optoelectronics (Tianjin) Co., Ltd.
Equipment Under Test (EUT)
EUT Name : LED Pico Projector
Model No. : ML131
Series Model No. : Please see the page of 4
Brand Name : MEGO/MEGAPOWER
Receipt Date : 2014-08-05
Test Date : 2014-08-06 to 2015-01-05
Issue Date : 2015-01-07
Standards : FCC Part 15, Subpart C (15.247:2014)
Test Method : ANSI C63.4:2003
Conclusions : **PASS**

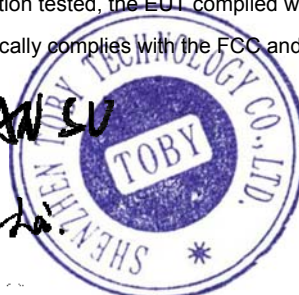
In the configuration tested, the EUT complied with the standards specified above,
The EUT technically complies with the FCC and IC requirements

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.

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1. General Information about EUT

1.1 Client Information

Applicant : Mego Optoelectronics (Tianjin) Co., Ltd.

Address : 202-1Unit, BuildingD, Hi-Tech Haitai innovation Base, Tianjin, China

Manufacturer : Tianjin Greatstrongind Opticalelectric Industrial Co., Ltd.

Address : 7H, Hua Chuang Building, No.8 JinPing Road, Nankai District, Tianjin, China

1.2 General Description of EUT (Equipment Under Test)

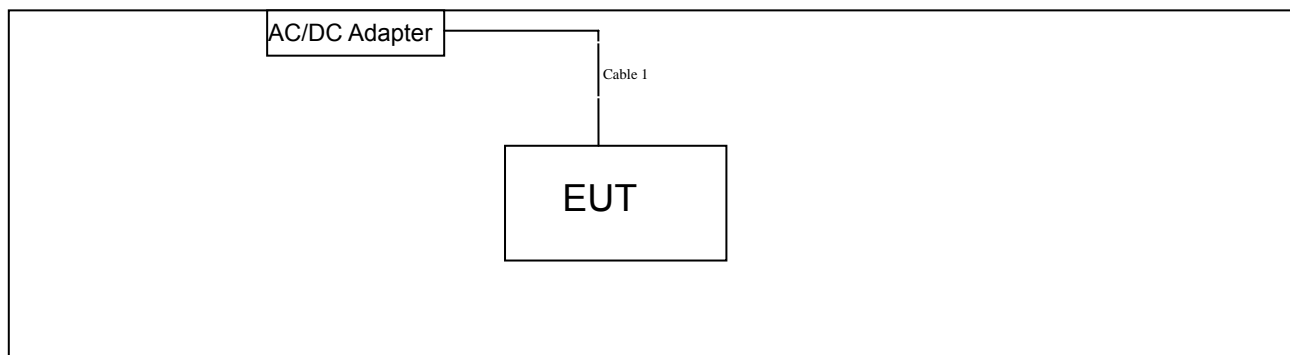
EUT Name	:	LED Pico Projector
Models No.	:	ML131, ML132, ML133, ML134, ML135 ,ML136, ML137, ML138, ML139, G2, G3, G4, G5, G6, G7, G8, G9, G10, G20, G30, G50, G80
Model Difference	:	All the other models are identical in the same PCB layout, interior structure and electrical circuits, The only difference 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: 9.03 dBm 802.11g: 9.04dBm 802.11n (HT20): 9.06 dBm 802.11n (HT40): 8.99 dBm
	:	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	:	DC power supplied by AC/DC Adapter DC Voltage supplied from Li-ion battery.
Power Rating	:	Input: AC 100~240V 50/60Hz 1.0A Max DC 7.4V 10Wh from Li-ion battery Output: DC 12V 2000mA
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	NO	NO	1.6M	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, LED Pico Projectordle, lowest available channels, and the worst case data rate as follows:
802.11b Mode: CCK (1 Mbps)
802.11g Mode: OFDM (6 Mbps)
802.11n (HT20) Mode: MCS 0 (6.5 Mbps)
802.11n (HT40) Mode: MCS 0 (13 Mbps)
- (2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.
- (3) The EUT is considered a mobile unit; in normal use it was positioned on X-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.

1.6 Description of Test Software Setting

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

Test Software Version	Realtek 11n Single Chip 92C USB WLAN MP Diagnostic Program		
Channel	CH 01	CH 06	CH 11
IEEE 802.11b DSSS	DEF	DEF	DEF
IEEE 802.11g OFDM	DEF	DEF	DEF
IEEE 802.11n (HT20)	DEF	DEF	DEF
Channel	CH 03	CH 06	CH 09
IEEE 802.11n (HT40)	DEF	DEF	DEF

1.7 Test Facility

The testing was performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at:

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

At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

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

FCC List No.: (811562)

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

IC Registration No.: (11950A-1)

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

2. Test Summary

FCC Part 15 Subpart C(15.247)/RSS-210: 2010				
Standard Section		Test Item	Judgment	Remark
FCC	IC			
15.203	/	Antenna Requirement	PASS	N/A
15.207	RSS-GEN 7.2.4	Conducted Emission	PASS	N/A
15.205	RSS-GEN 7.2.2	Restricted Bands	PASS	N/A
15.247(a)(2)	RSS-210 A.8.2(a)	6dB Bandwidth	PASS	N/A
15.247(b)	RSS-210 A.8.4(4)	Peak Output Power	PASS	N/A
15.247(e)	RSS-210 A.8.2(b)	Power Spectral Density	PASS	N/A
15.247(d)	RSS-210 Annex 8 (A8.5)	Transmitter Radiated Spurious Emission	PASS	N/A
15.247(d)	RSS-210 Annex 8 (A8.5)	Antenna Conducted Spurious Emission	PASS	N/A
Note: "/" for no requirement for this test item. N/A is an abbreviation for Not Applicable.				

3. Conducted Emission Test

3.1 Test Standard and Limit

3.1.1 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

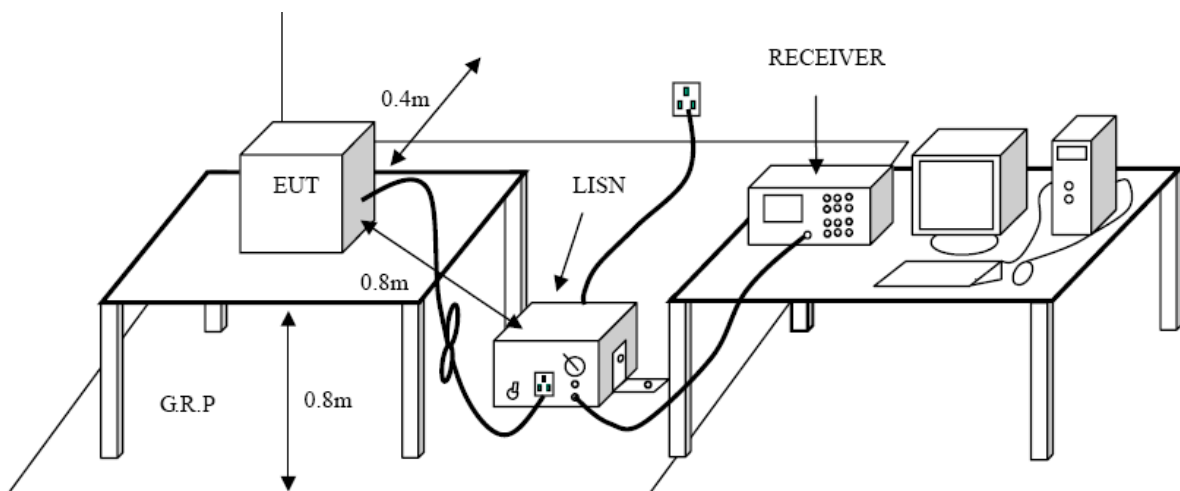
Notes:

(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

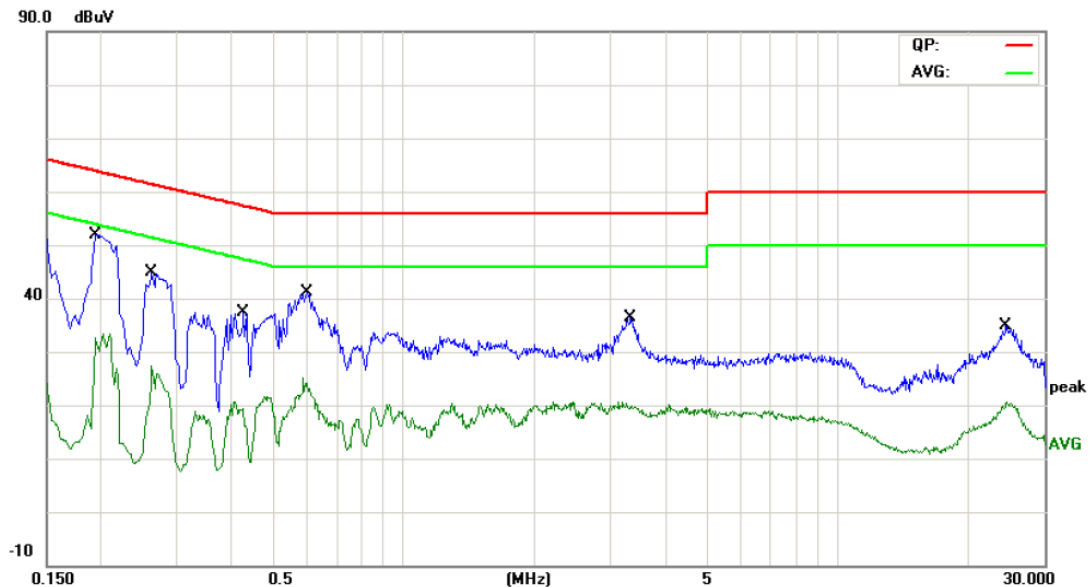
3.5 EUT Operating Mode

Please refer to the description of test mode.

3.6 Test Data

Please see the next page.

EUT:	LED Pico Projector	Model Name :	ML131
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		

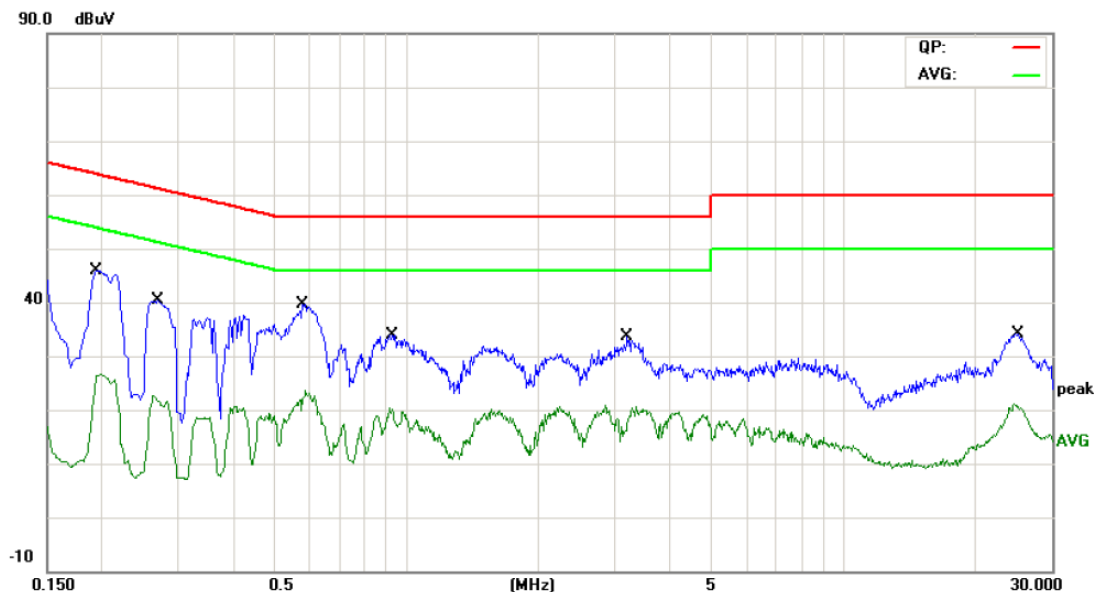


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1940	31.56	10.01	41.57	63.86	-22.29	QP
2		0.1940	12.90	10.01	22.91	53.86	-30.95	AVG
3		0.2620	25.43	10.02	35.45	61.36	-25.91	QP
4		0.2620	10.56	10.02	20.58	51.36	-30.78	AVG
5		0.4260	23.47	10.02	33.49	57.33	-23.84	QP
6		0.4260	8.68	10.02	18.70	47.33	-28.63	AVG
7	*	0.5980	26.48	10.07	36.55	56.00	-19.45	QP
8		0.5980	12.02	10.07	22.09	46.00	-23.91	AVG
9		3.3300	16.22	10.02	26.24	56.00	-29.76	QP
10		3.3300	8.94	10.02	18.96	46.00	-27.04	AVG
11		24.4020	16.11	10.16	26.27	60.00	-33.73	QP
12		24.4020	7.65	10.16	17.81	50.00	-32.19	AVG

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

Emission Level= Read Level+ Correct Factor

EUT:	LED Pico Projector	Model Name :	ML131
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.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1940	31.49	10.12	41.61	63.86	-22.25	QP
2		0.1940	11.80	10.12	21.92	53.86	-31.94	AVG
3		0.2700	25.41	10.10	35.51	61.12	-25.61	QP
4		0.2700	10.31	10.10	20.41	51.12	-30.71	AVG
5	*	0.5780	26.12	10.02	36.14	56.00	-19.86	QP
6		0.5780	11.18	10.02	21.20	46.00	-24.80	AVG
7		0.9260	21.12	10.13	31.25	56.00	-24.75	QP
8		0.9260	9.77	10.13	19.90	46.00	-26.10	AVG
9		3.1980	17.03	10.06	27.09	56.00	-28.91	QP
10		3.1980	5.70	10.06	15.76	46.00	-30.24	AVG
11		25.1820	18.21	10.06	28.27	60.00	-31.73	QP
12		25.1820	9.96	10.06	20.02	50.00	-29.98	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

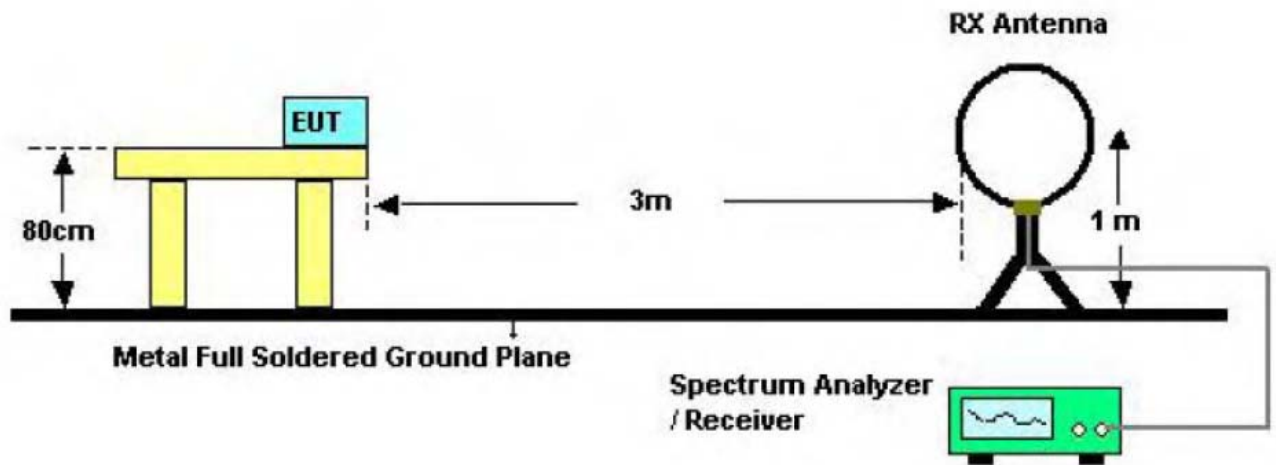
Radiated Emission Limit (Above 1000MHz)

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

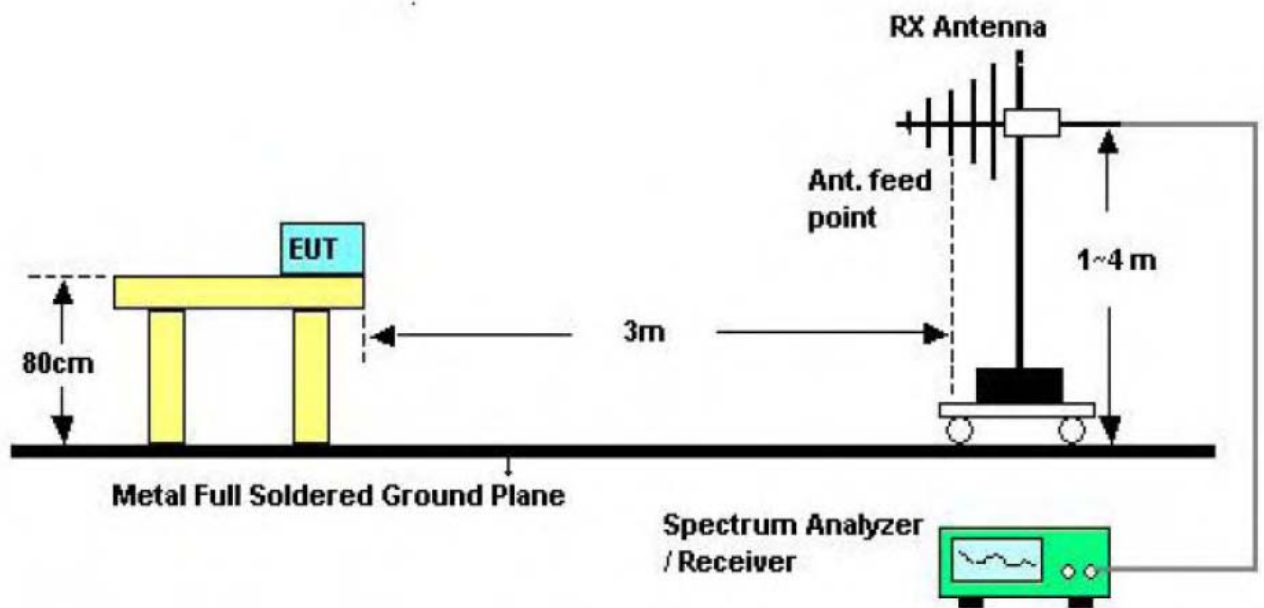
Note:

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

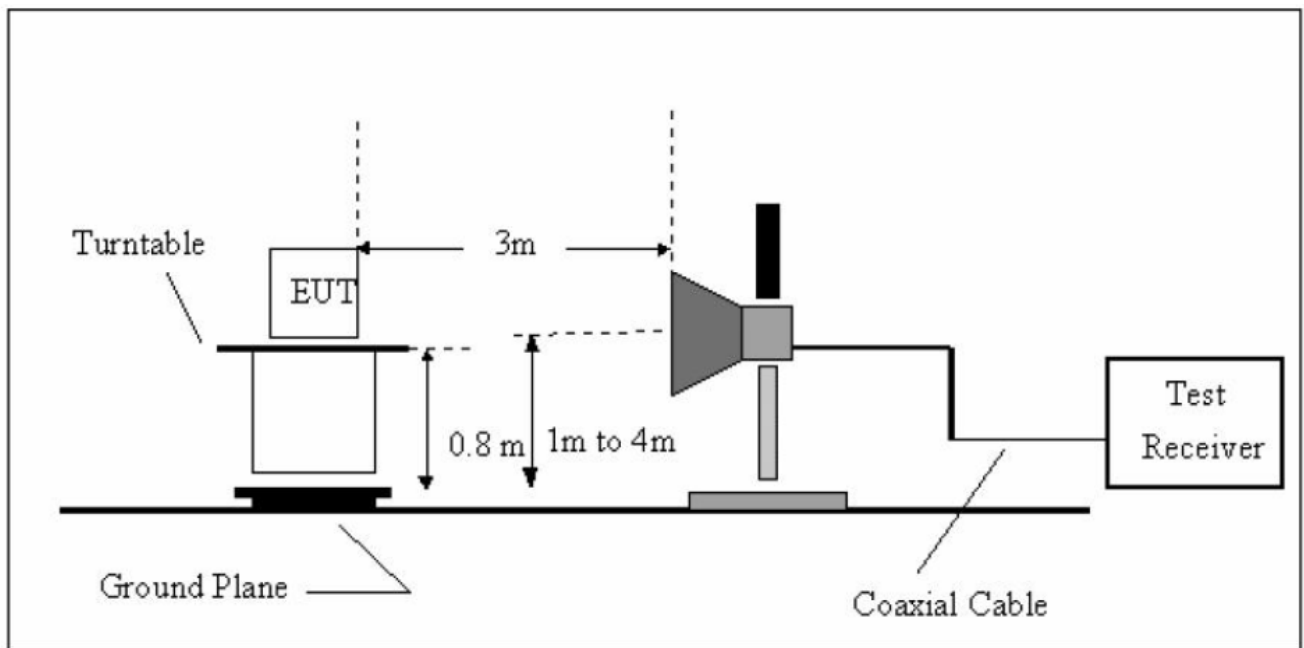
4.2 Test Setup



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

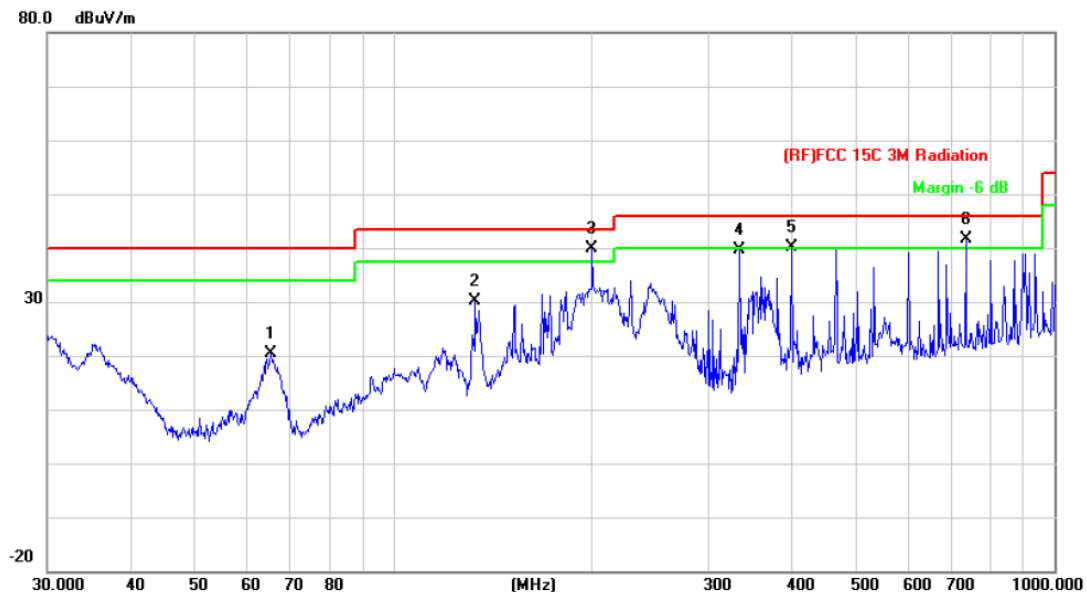
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Mar. 20, 2014	Mar. 19, 2015
Spectrum Analyzer	Rohde & Schwarz	FSP30	DE25181	Aug. 08, 2014	Aug. 07, 2015
EMI Test Receiver	Rohde & Schwarz	ESCI	101165	Aug. 08, 2014	Aug. 07, 2015
Bilog Antenna	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:	LED Pico Projector	Model:	ML131
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		

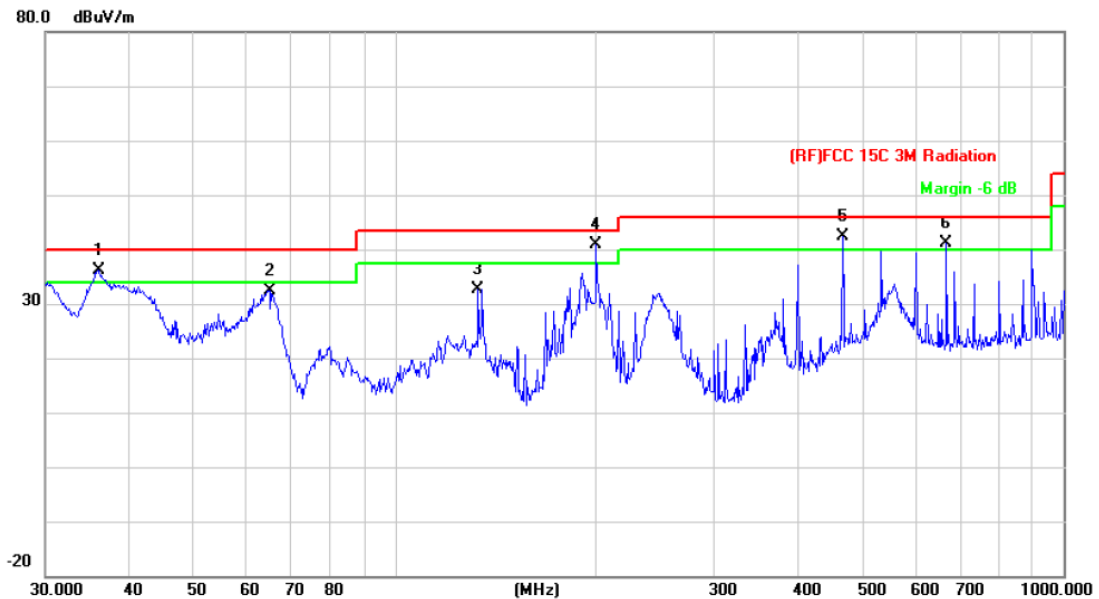


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		65.3431	44.37	-24.04	20.33	40.00	-19.67	peak
2		133.1511	52.35	-22.12	30.23	43.50	-13.27	peak
3	*	199.9856	60.23	-20.39	39.84	43.50	-3.66	peak
4		333.6865	55.20	-15.61	39.59	46.00	-6.41	peak
5	!	400.4318	52.83	-12.80	40.03	46.00	-5.97	peak
6	!	734.4913	48.65	-7.12	41.53	46.00	-4.47	peak

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

Emission Level= Read Level+ Correct Factor

EUT:	LED Pico Projector	Model:	ML131
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		

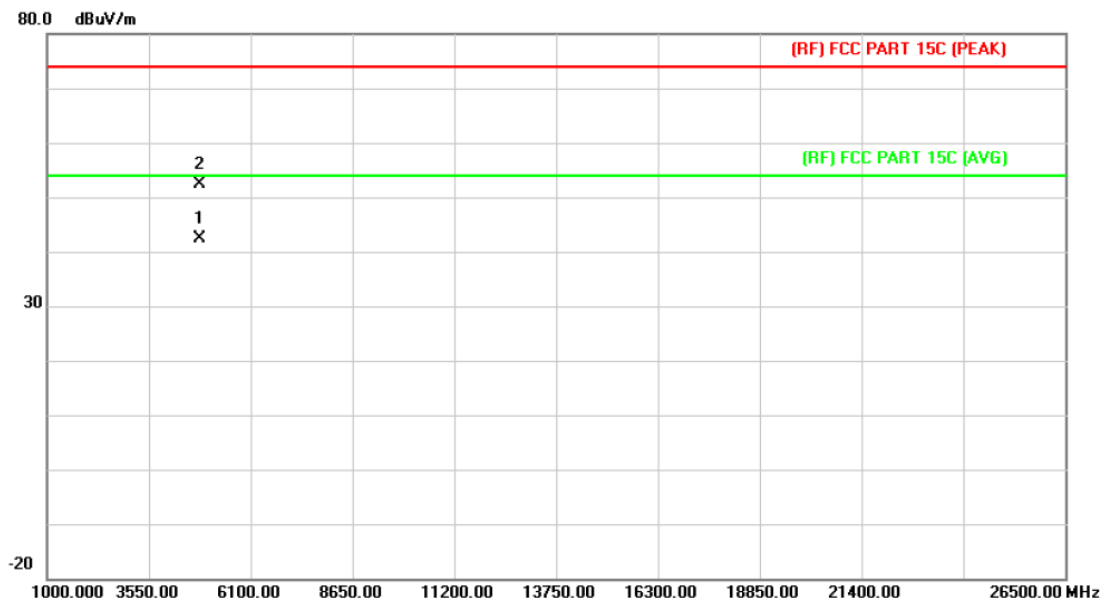


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	!	36.0007	53.80	-17.67	36.13	40.00	-3.87	peak
2		64.8863	56.49	-24.08	32.41	40.00	-7.59	peak
3		133.1511	54.80	-22.12	32.68	43.50	-10.82	peak
4	*	199.9856	61.38	-20.39	40.99	43.50	-2.51	peak
5	!	467.2348	54.28	-11.86	42.42	46.00	-3.58	peak
6	!	668.1422	48.97	-7.87	41.10	46.00	-4.90	peak

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

Emission Level= Read Level+ Correct Factor

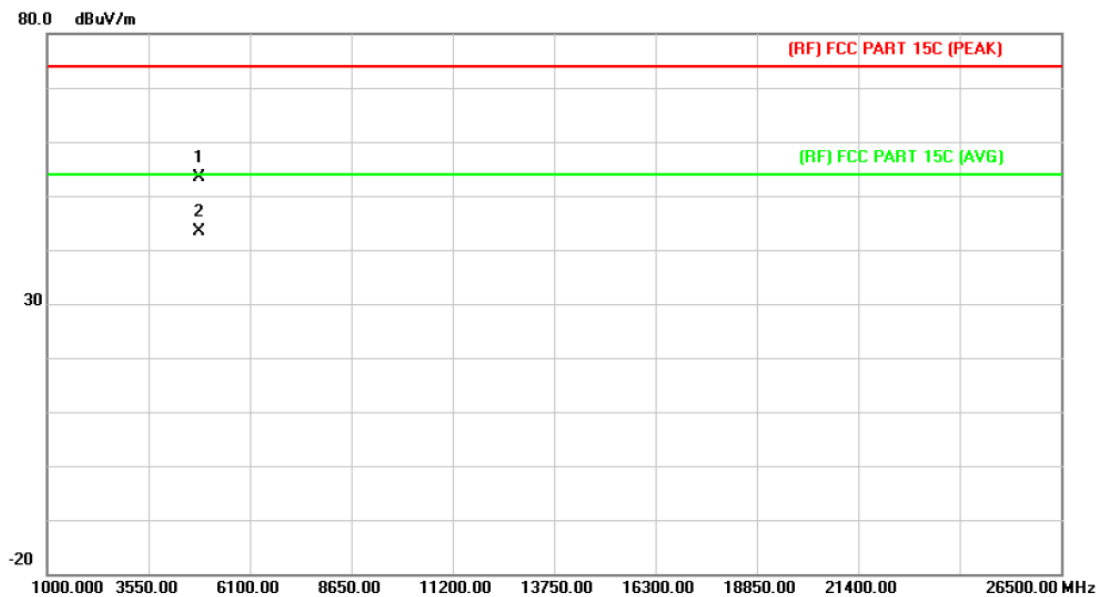
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4823.954	34.18	8.19	42.37	54.00	-11.63	AVG
2		4823.962	44.15	8.19	52.34	74.00	-21.66	peak

Emission Level= Read Level+ Correct Factor

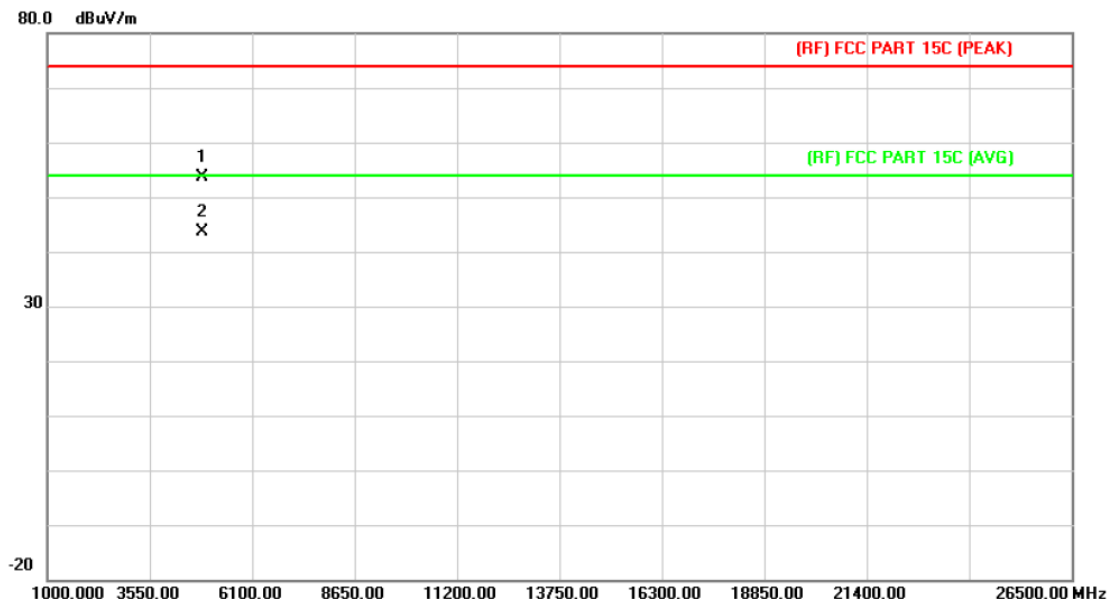
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4823.654	45.17	8.19	53.36	74.00	-20.64	peak
2	*	4823.703	35.16	8.19	43.35	54.00	-10.65	AVG

Emission Level= Read Level+ Correct Factor

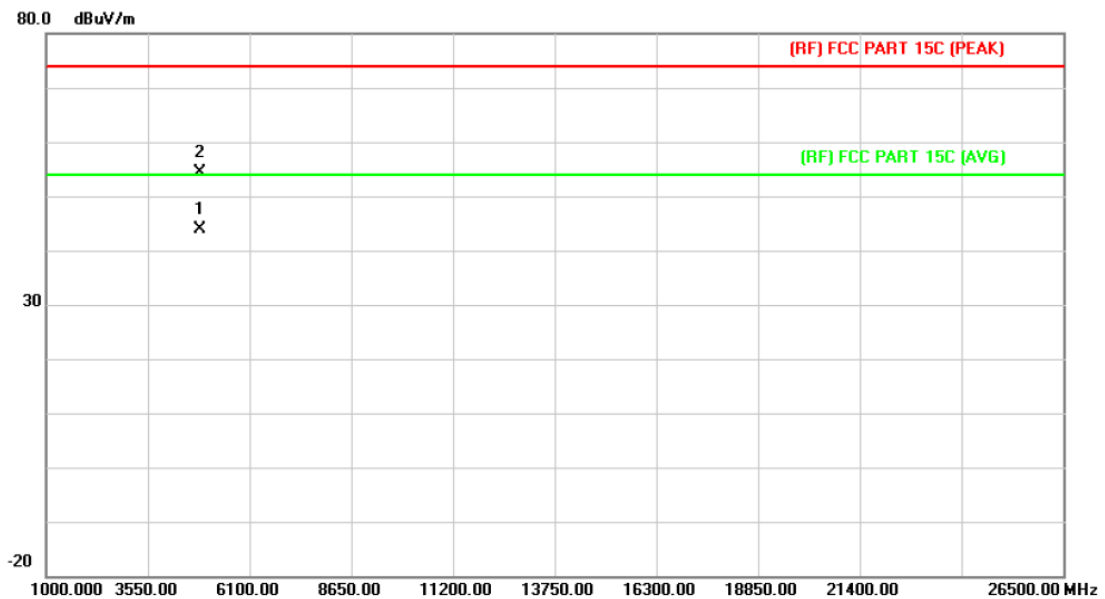
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4873.968	45.47	8.21	53.68	74.00	-20.32	peak
2	*	4873.976	35.48	8.21	43.69	54.00	-10.31	AVG

Emission Level= Read Level+ Correct Factor

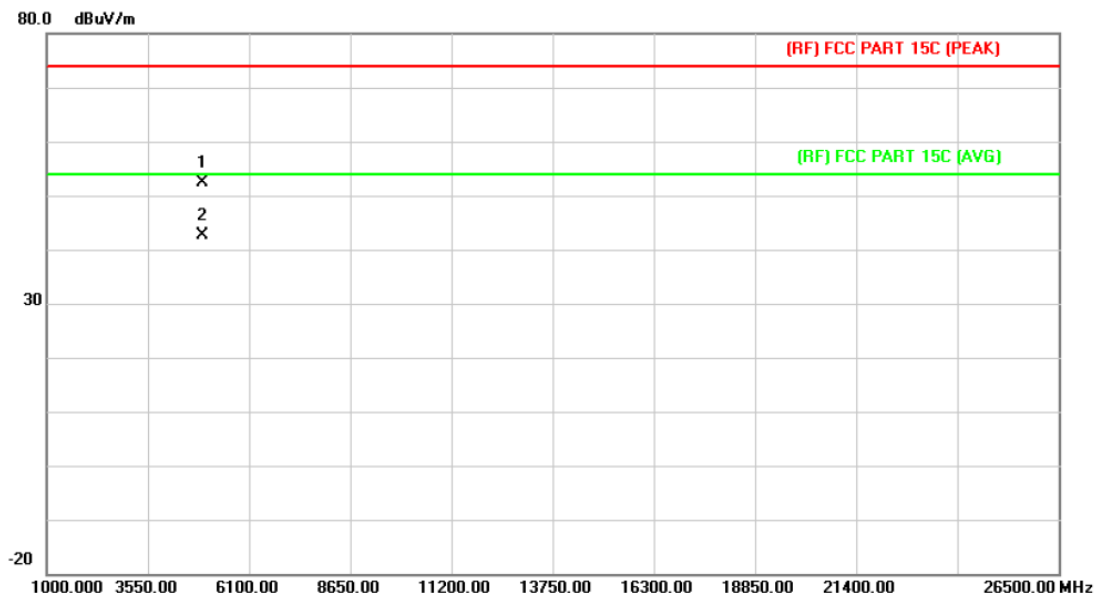
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4873.965	35.64	8.21	43.85	54.00	-10.15	AVG
2		4873.987	46.10	8.21	54.31	74.00	-19.69	peak

Emission Level= Read Level+ Correct Factor

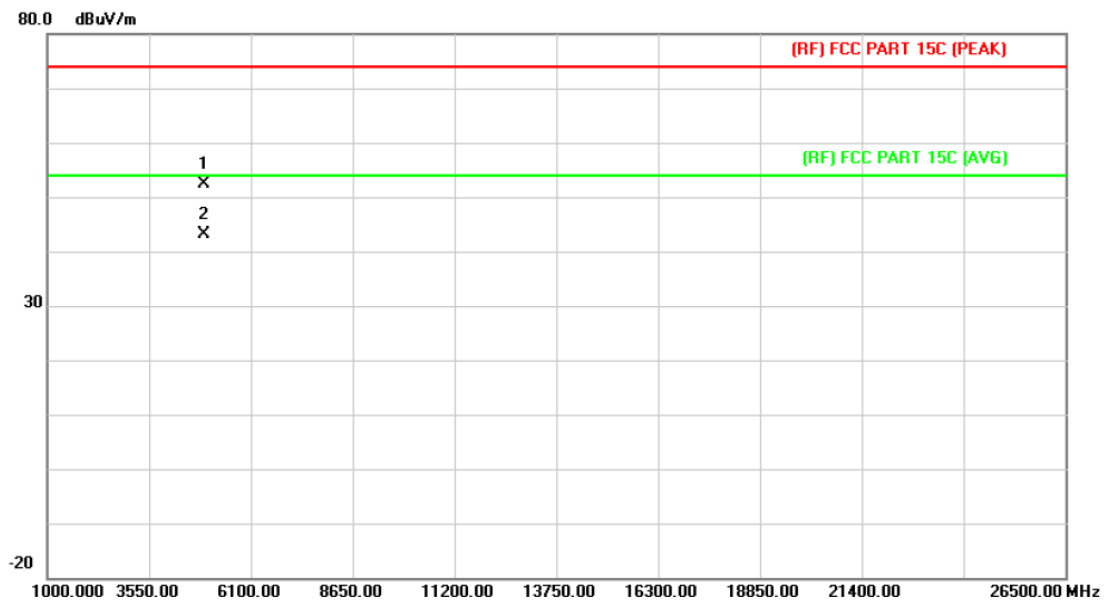
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4923.964	44.17	8.22	52.39	74.00	-21.61	peak
2	*	4923.964	34.31	8.22	42.53	54.00	-11.47	AVG

Emission Level= Read Level+ Correct Factor

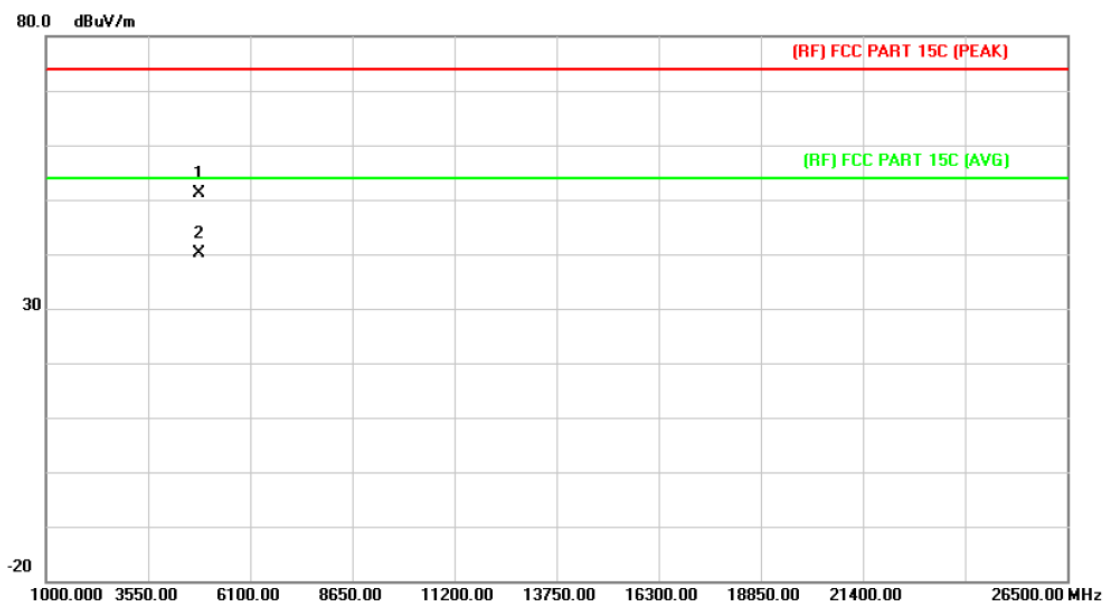
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4923.978	44.15	8.22	52.37	74.00	-21.63	peak
2	*	4923.978	34.91	8.22	43.13	54.00	-10.87	AVG

Emission Level= Read Level+ Correct Factor

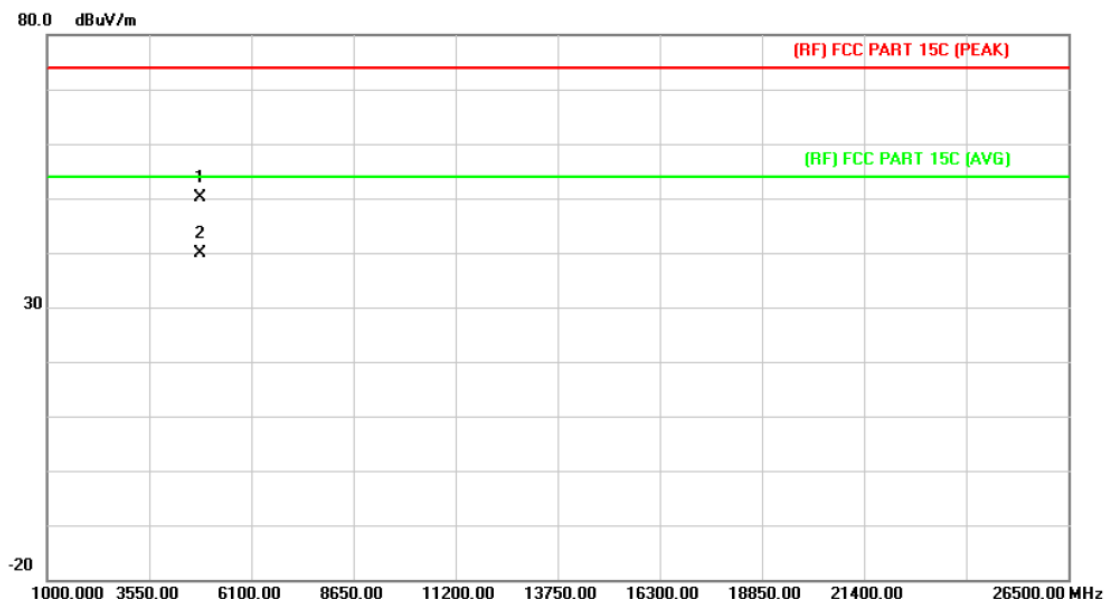
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4823.897	42.82	8.19	51.01	74.00	-22.99	peak
2	*	4823.897	31.92	8.19	40.11	54.00	-13.89	AVG

Emission Level= Read Level+ Correct Factor

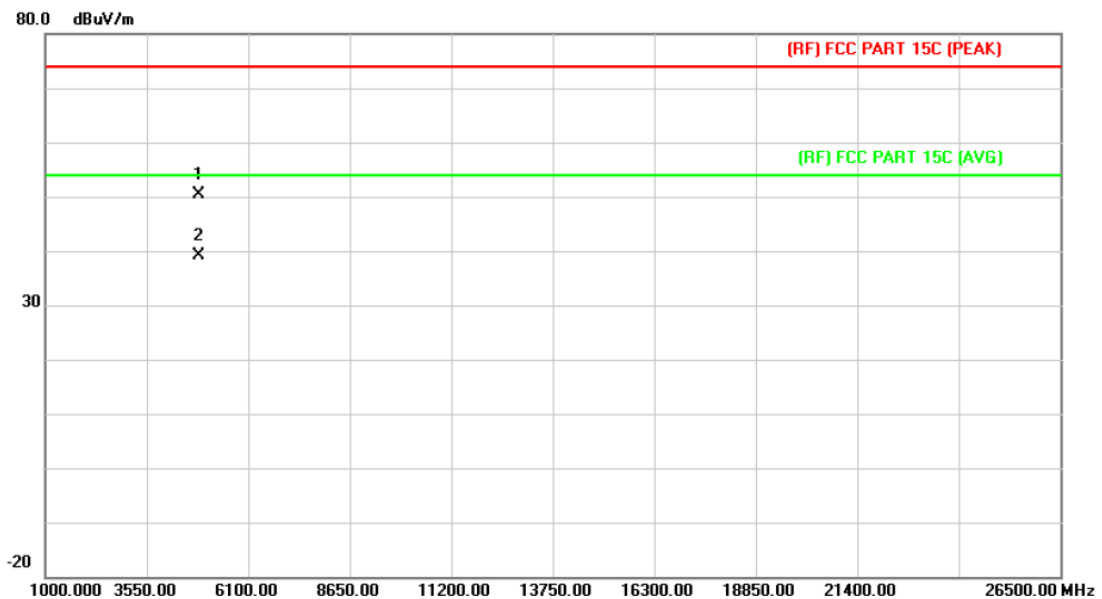
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4823.966	41.93	8.19	50.12	74.00	-23.88	peak
2	*	4823.966	31.79	8.19	39.98	54.00	-14.02	AVG

Emission Level= Read Level+ Correct Factor

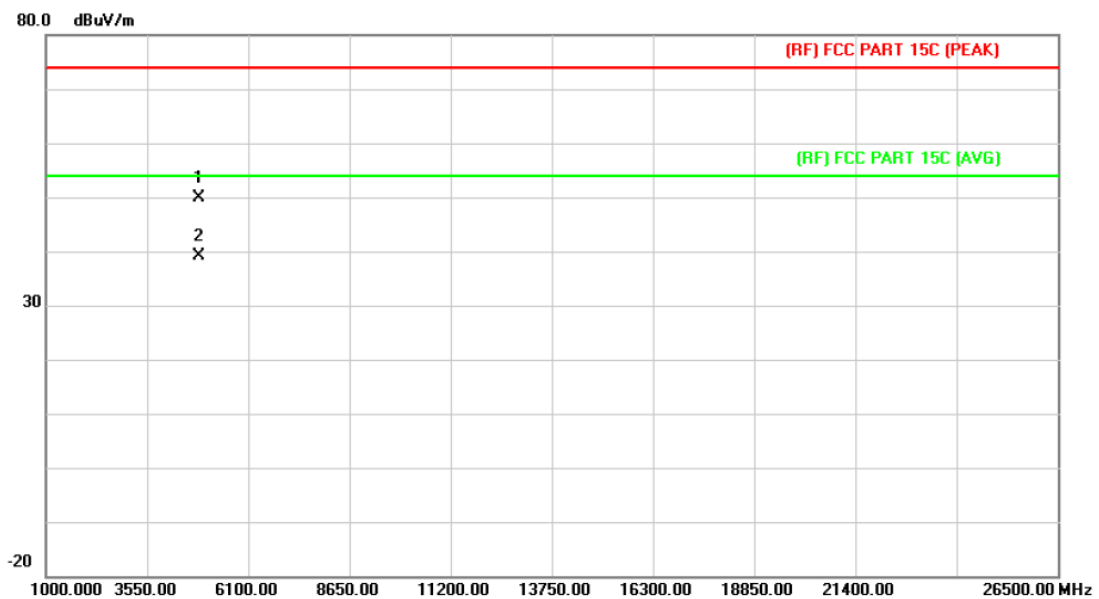
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4873.689	42.11	8.21	50.32	74.00	-23.68	peak
2	*	4873.689	30.94	8.21	39.15	54.00	-14.85	AVG

Emission Level= Read Level+ Correct Factor

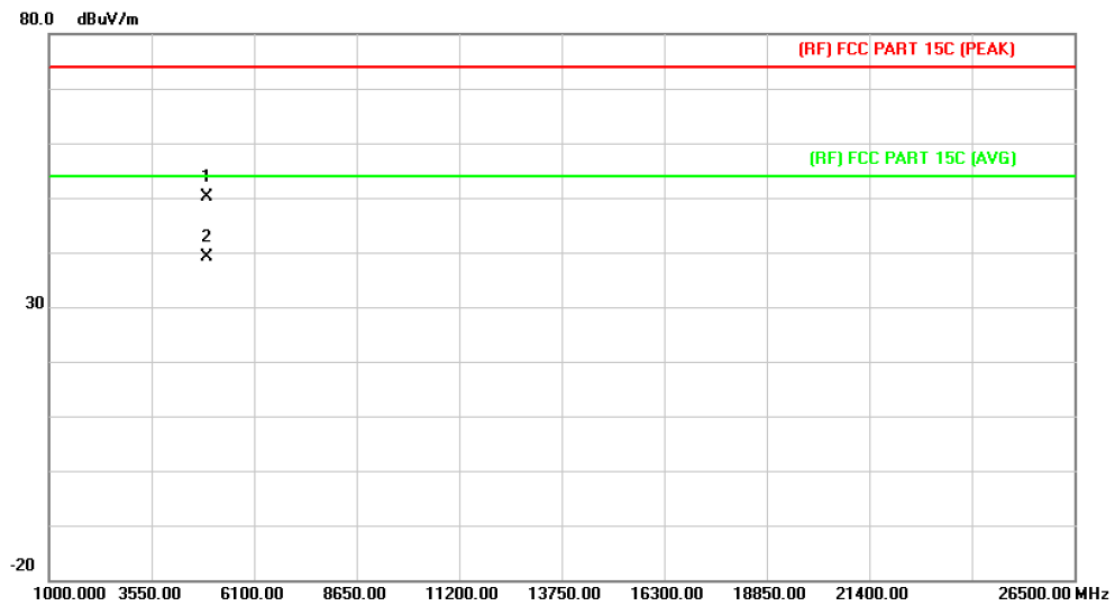
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4873.954	41.77	8.21	49.98	74.00	-24.02	peak
2	*	4873.954	30.92	8.21	39.13	54.00	-14.87	AVG

Emission Level= Read Level+ Correct Factor

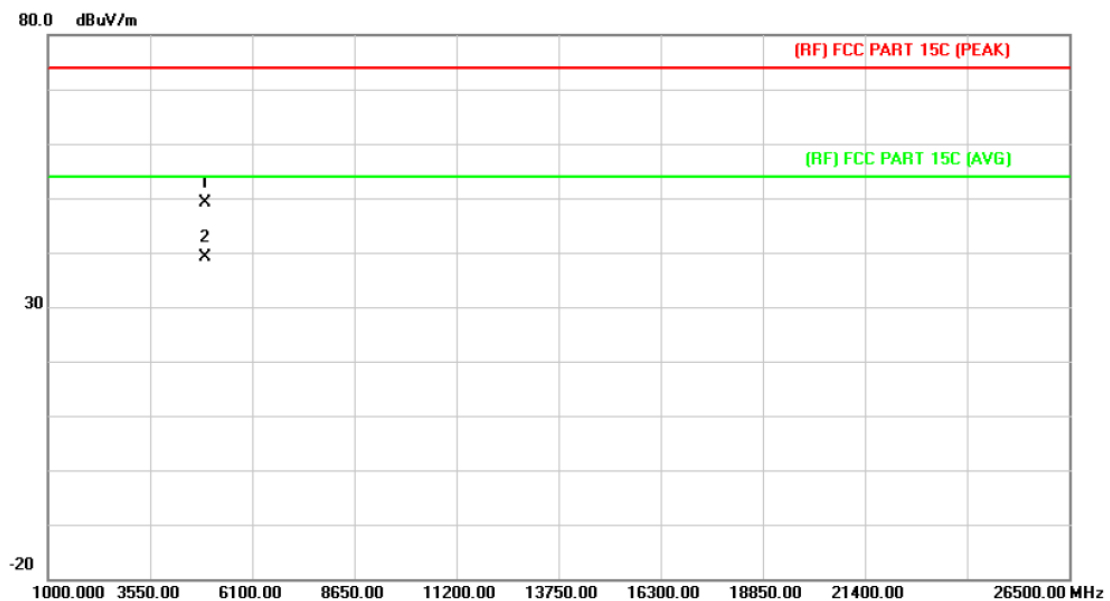
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4923.899	41.80	8.22	50.02	74.00	-23.98	peak
2	*	4923.899	30.88	8.22	39.10	54.00	-14.90	AVG

Emission Level= Read Level+ Correct Factor

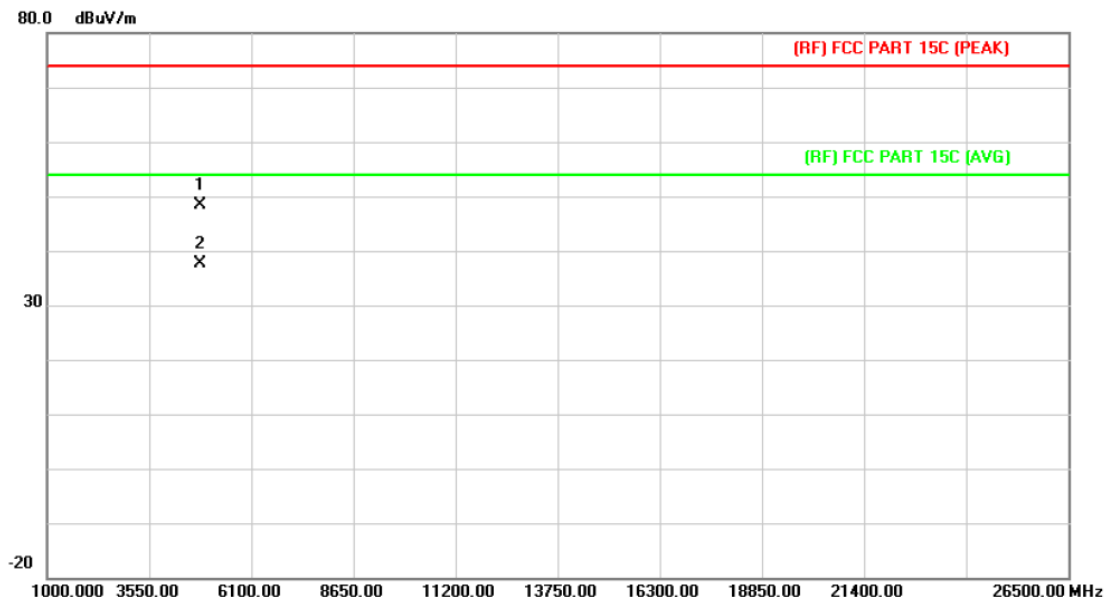
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4923.983	40.99	8.22	49.21	74.00	-24.79	peak
2	*	4923.983	30.93	8.22	39.15	54.00	-14.85	AVG

Emission Level= Read Level+ Correct Factor

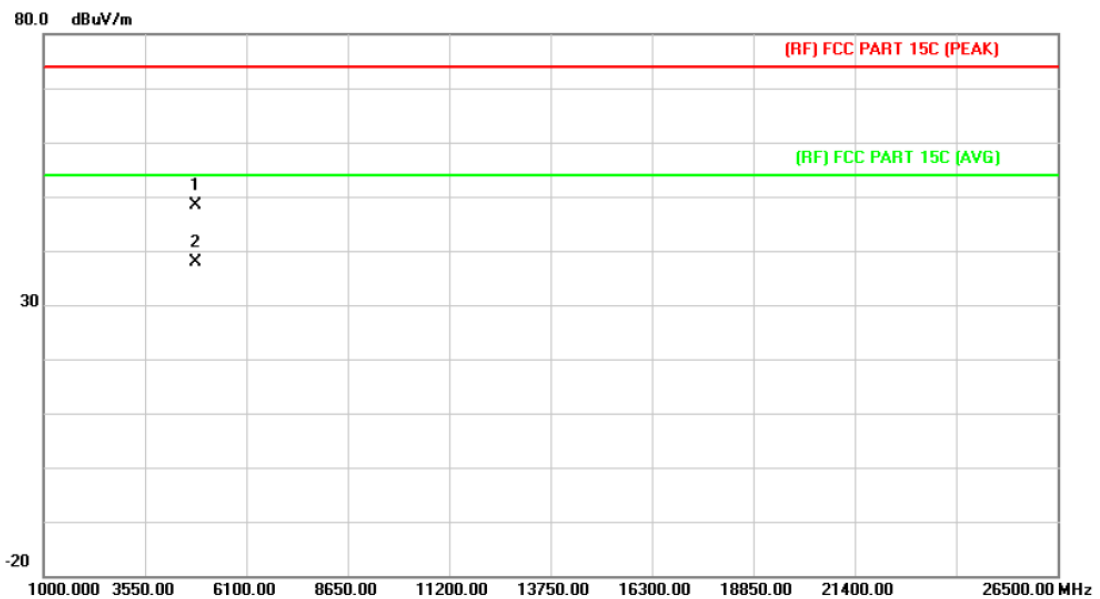
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4823.968	40.13	8.19	48.32	74.00	-25.68	peak
2	*	4823.968	29.49	8.19	37.68	54.00	-16.32	AVG

Emission Level= Read Level+ Correct Factor

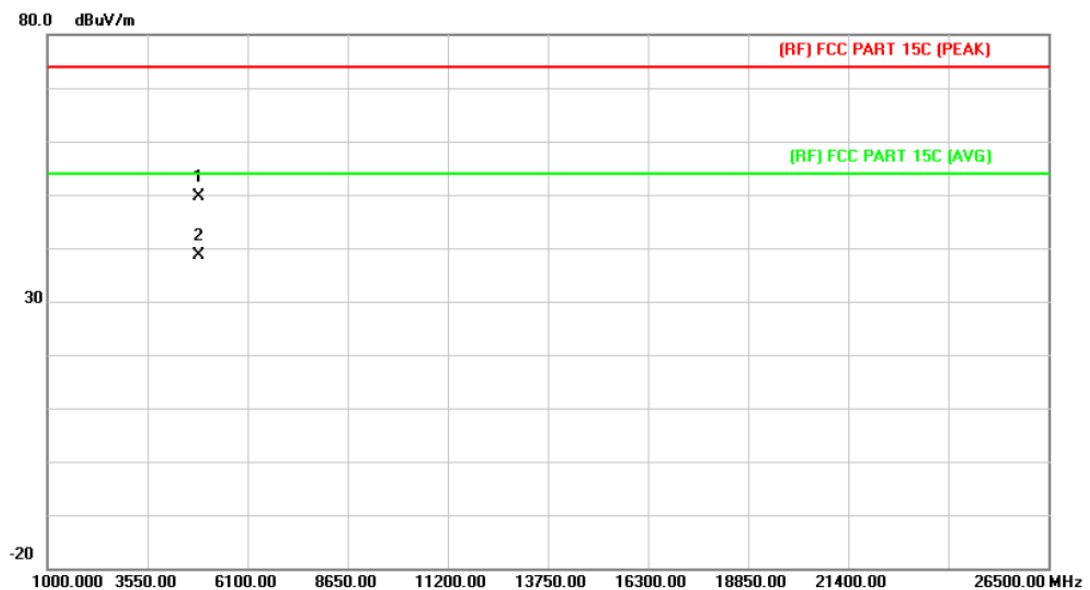
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4823.985	40.20	8.19	48.39	74.00	-25.61	peak
2	*	4823.985	29.69	8.19	37.88	54.00	-16.12	AVG

Emission Level= Read Level+ Correct Factor

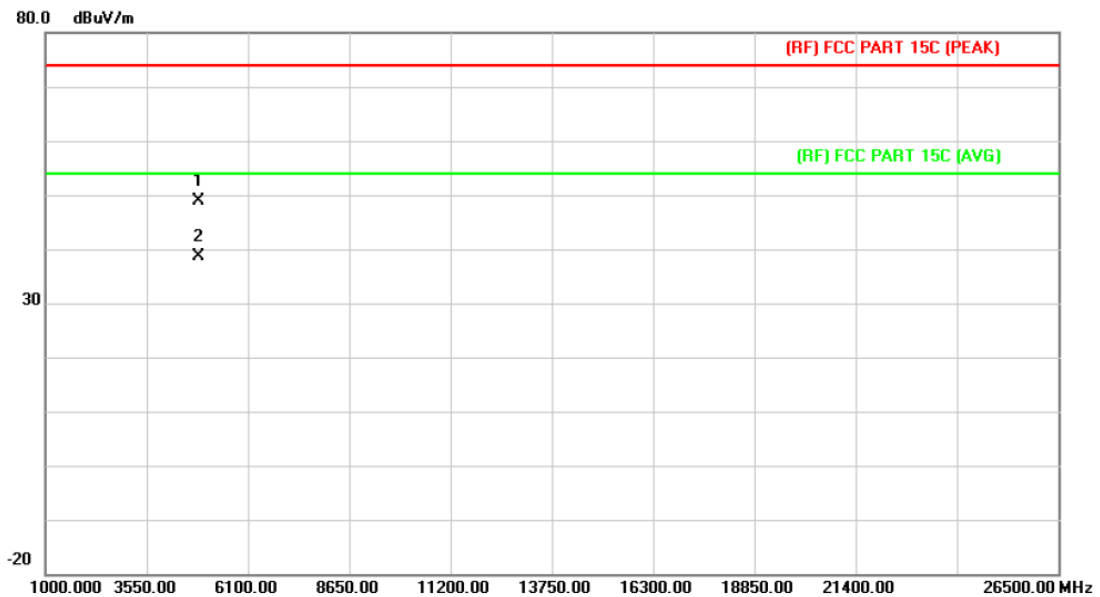
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4873.896	41.44	8.21	49.65	74.00	-24.35	peak
2	*	4873.896	30.41	8.21	38.62	54.00	-15.38	AVG

Emission Level= Read Level+ Correct Factor

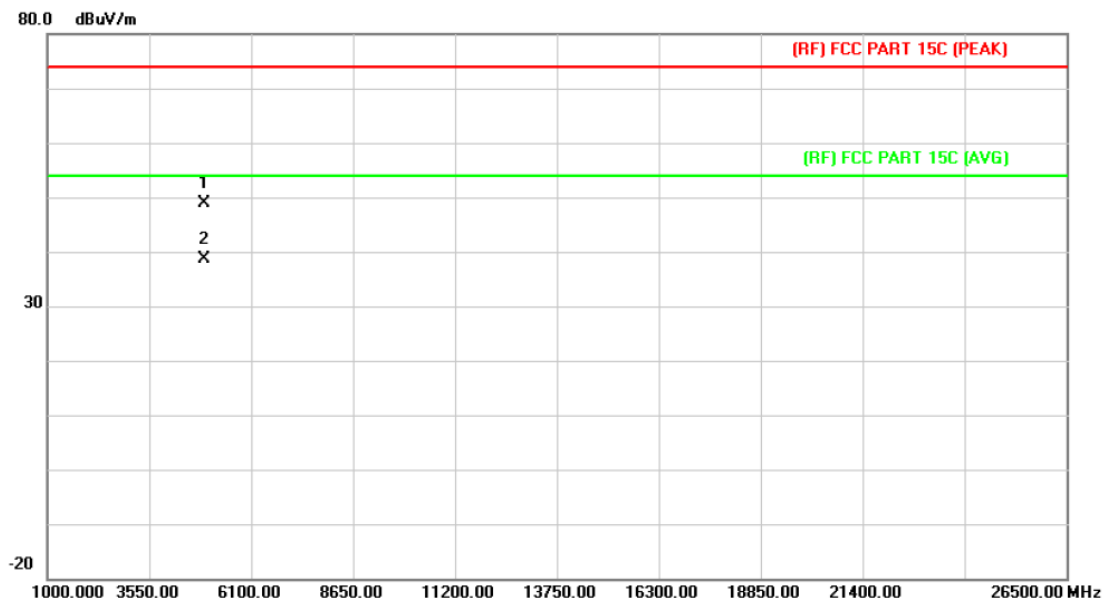
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4873.953	40.75	8.21	48.96	74.00	-25.04	peak
2	*	4873.953	30.46	8.21	38.67	54.00	-15.33	AVG

Emission Level= Read Level+ Correct Factor

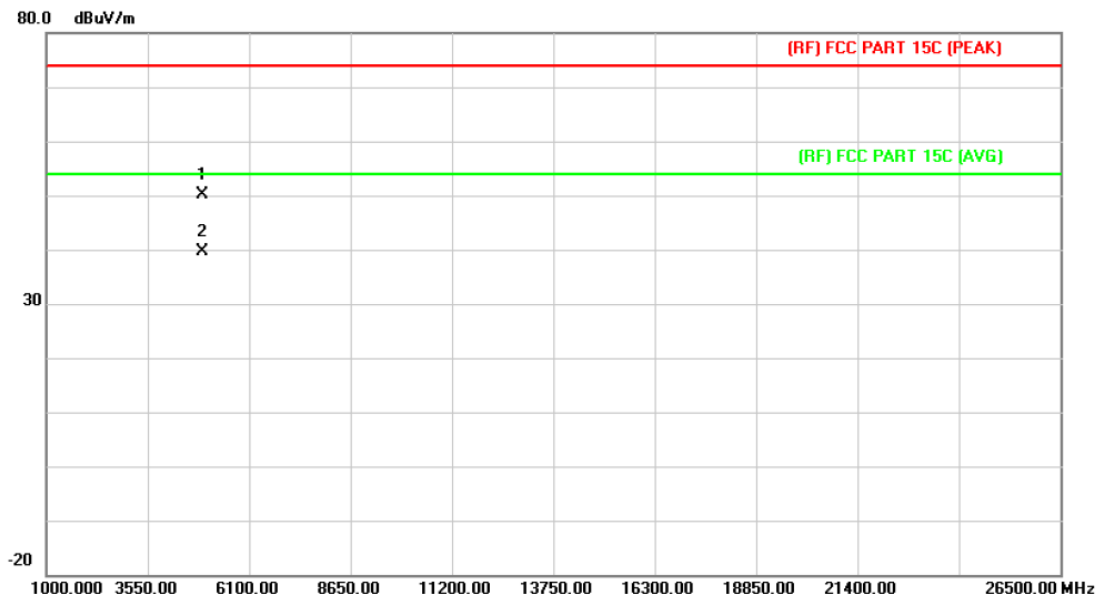
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4923.976	40.74	8.22	48.96	74.00	-25.04	peak
2	*	4923.976	30.35	8.22	38.57	54.00	-15.43	AVG

Emission Level= Read Level+ Correct Factor

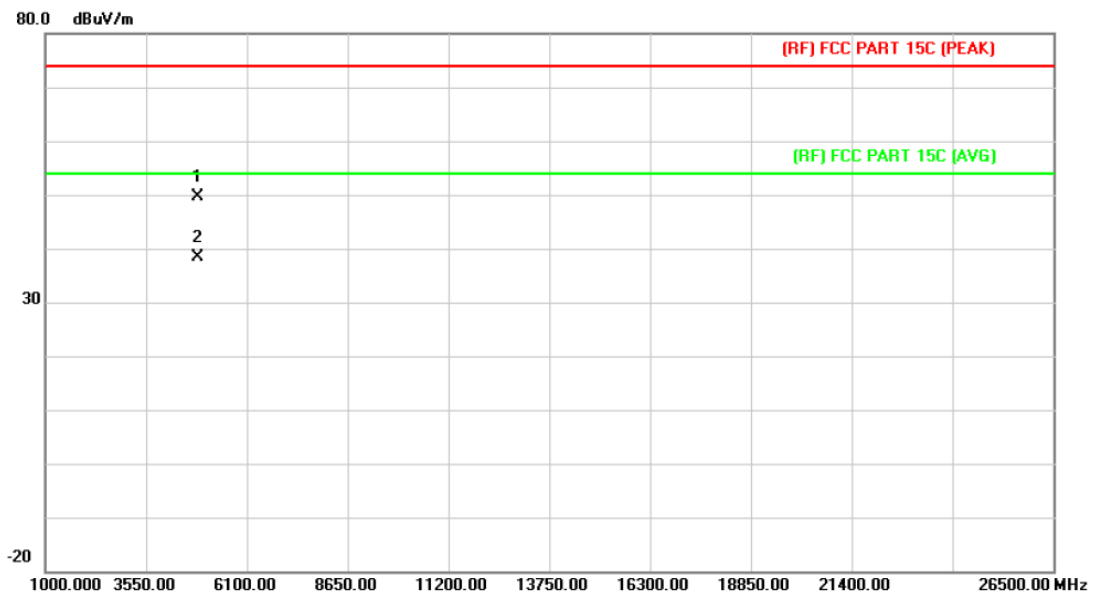
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1		4923.948	41.80	8.22	50.02	74.00	-23.98	peak
2	*	4923.948	31.29	8.22	39.51	54.00	-14.49	AVG

Emission Level= Read Level+ Correct Factor

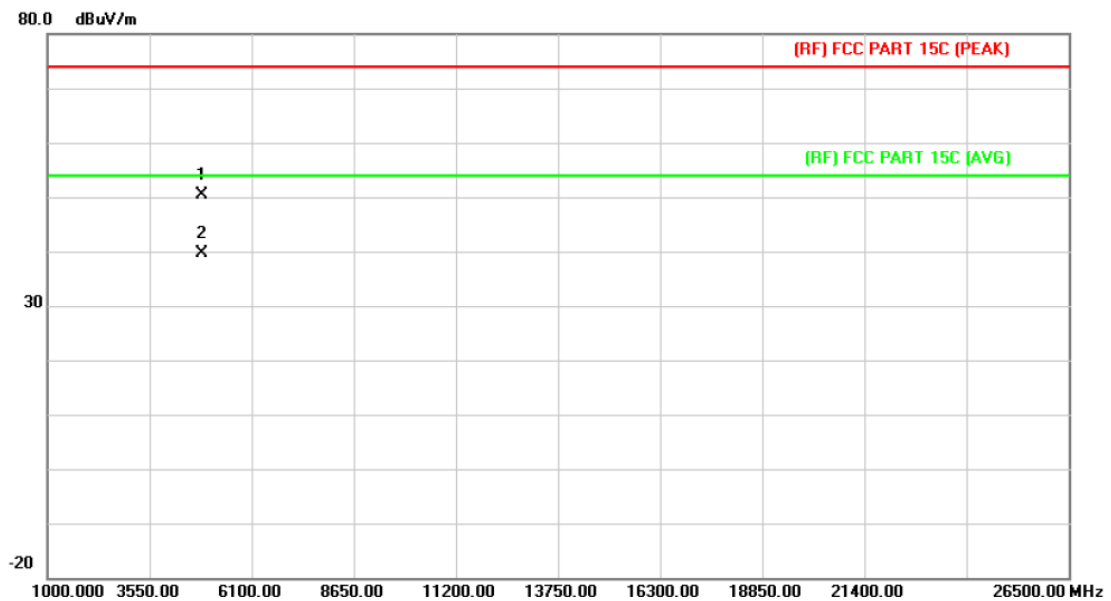
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2422MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4843.986	41.45	8.20	49.65	74.00	-24.35	peak
2	*	4843.986	30.14	8.20	38.34	54.00	-15.66	AVG

Emission Level= Read Level+ Correct Factor

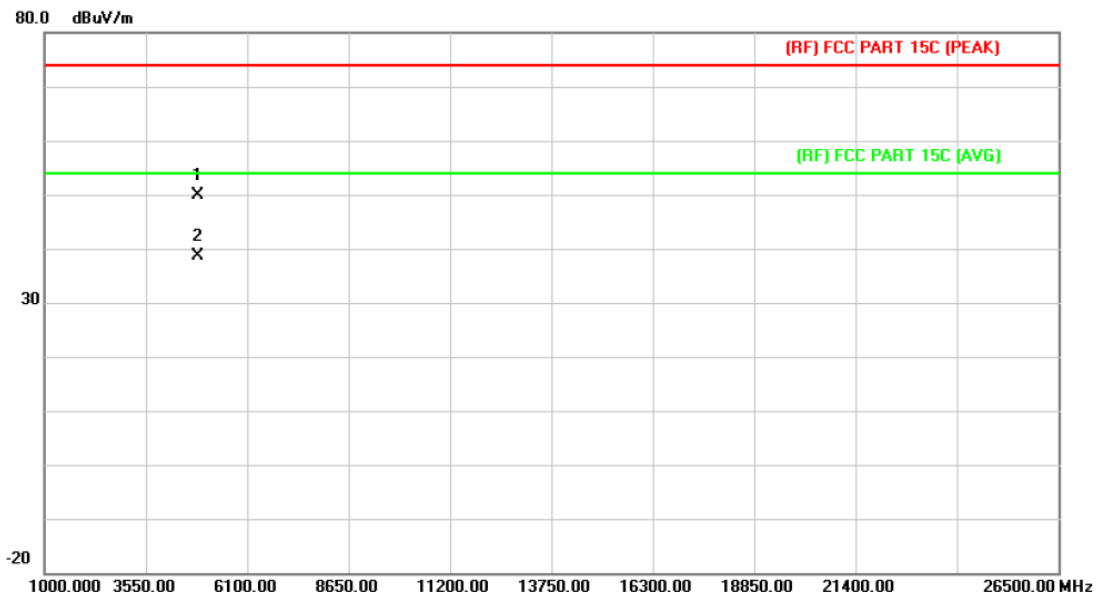
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT40) Mode 2422MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4843.969	42.16	8.20	50.36	74.00	-23.64	peak
2	*	4843.969	31.44	8.20	39.64	54.00	-14.36	AVG

Emission Level= Read Level+ Correct Factor

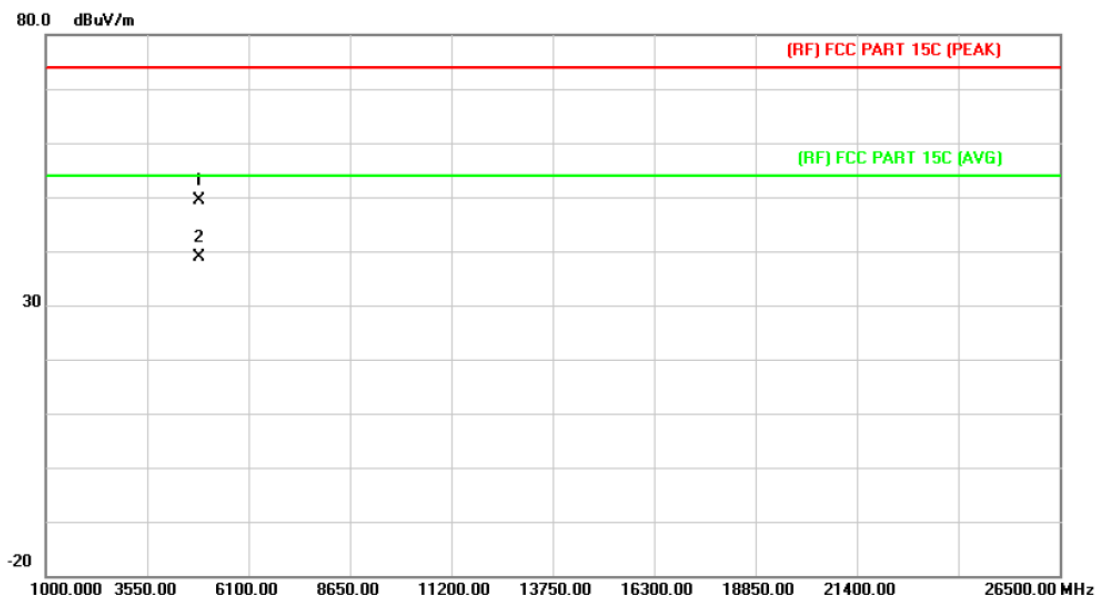
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4873.935	41.57	8.21	49.78	74.00	-24.22	peak
2	*	4873.935	30.43	8.21	38.64	54.00	-15.36	AVG

Emission Level= Read Level+ Correct Factor

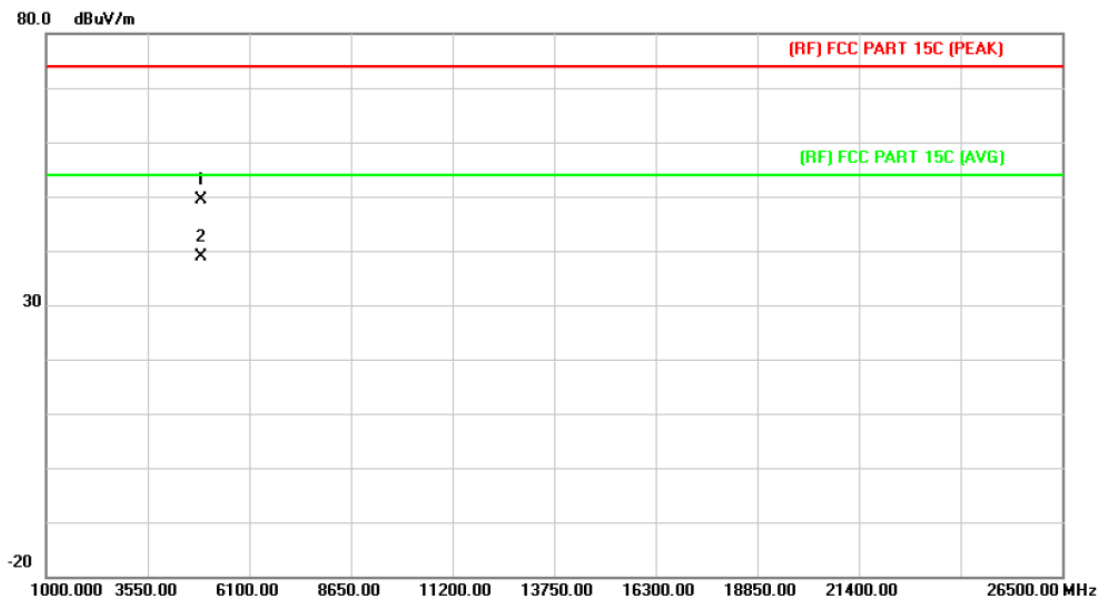
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT40) Mode 2437MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4873.887	41.14	8.21	49.35	74.00	-24.65	peak
2	*	4873.887	30.73	8.21	38.94	54.00	-15.06	AVG

Emission Level= Read Level+ Correct Factor

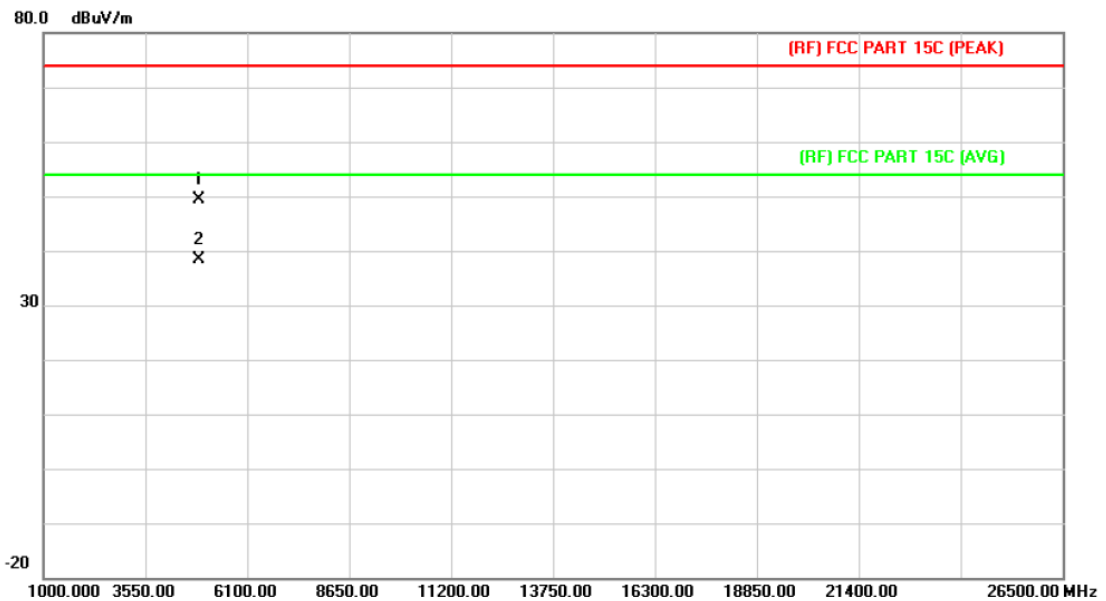
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2452MHz		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4903.965	41.12	8.21	49.33	74.00	-24.67	peak
2	*	4903.965	30.55	8.21	38.76	54.00	-15.24	AVG

Emission Level= Read Level+ Correct Factor

EUT:	LED Pico Projector	Model:	ML131
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.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4903.995	41.15	8.21	49.36	74.00	-24.64	peak
2	*	4903.995	30.11	8.21	38.32	54.00	-15.68	AVG

Emission Level= Read Level+ Correct Factor

5. Restricted Bands Requirement

5.1 Test Standard and Limit

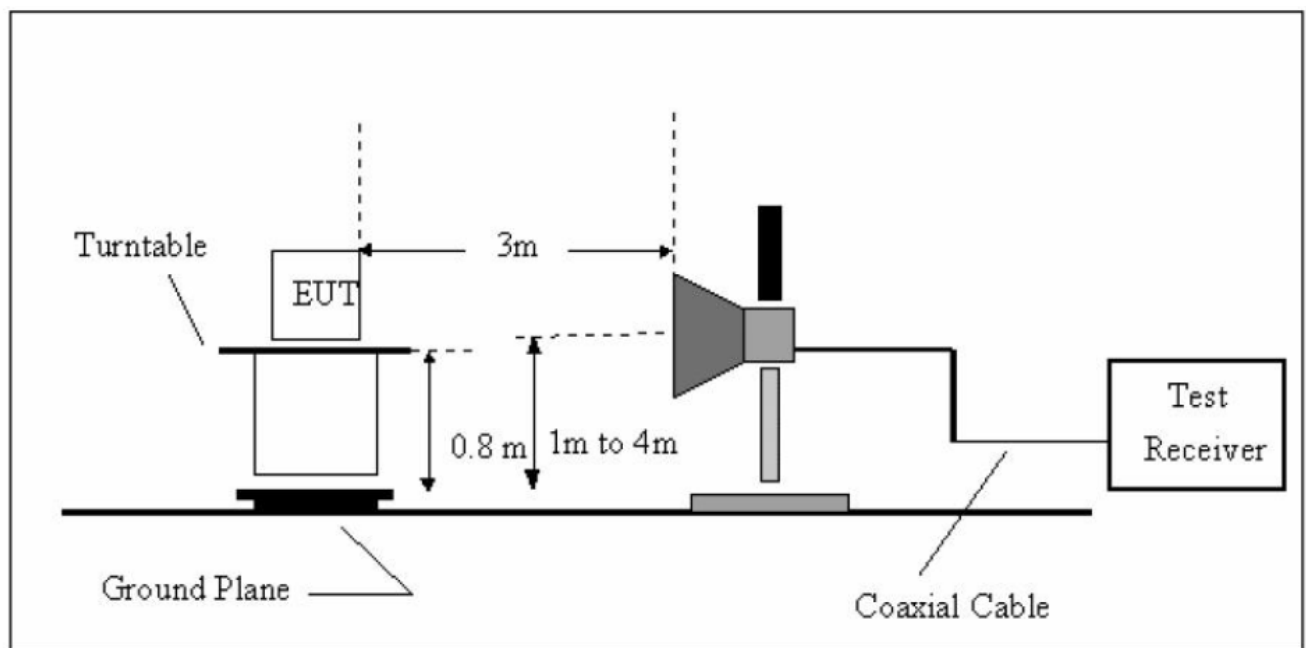
5.1.1 Test Standard

FCC Part 15.209 FCC Part 15.205

5.1.2 Test Limit

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

5.2 Test Setup



5.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (3) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (4) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit

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

- (5) (5) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (6) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (7) For the actual test configuration, please see the test setup photo.

5.4 EUT Operating Condition

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

5.5 Test Equipment

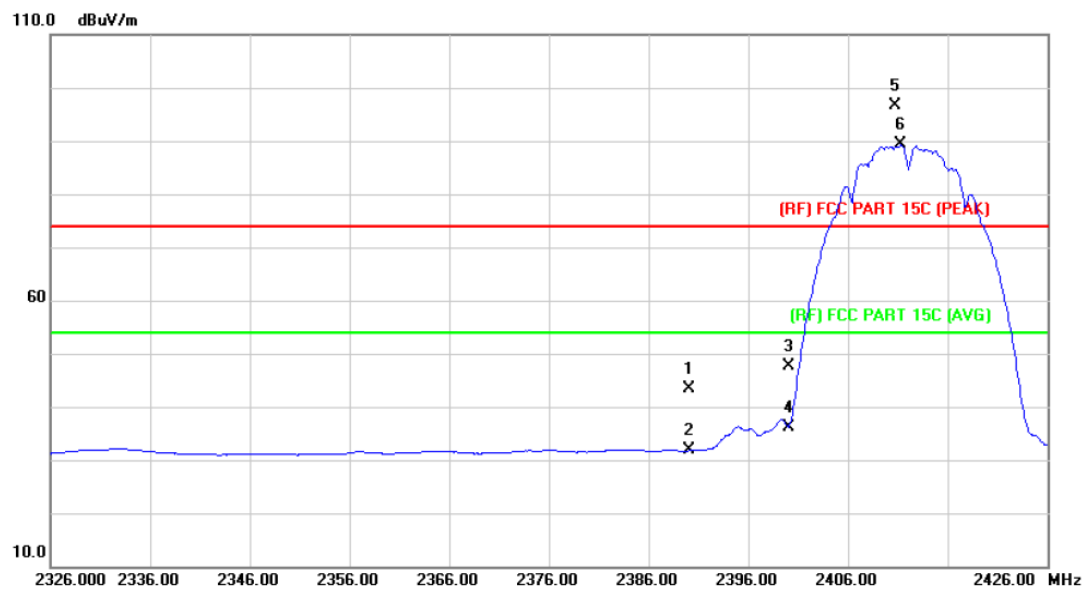
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Mar. 20, 2014	Mar. 19, 2015
Spectrum Analyzer	Rohde & Schwarz	FSP30	DE25181	Aug. 08, 2014	Aug. 07, 2015
EMI Test Receiver	Rohde & Schwarz	ESCI	101165	Aug. 08, 2014	Aug. 07, 2015
Bilog Antenna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

5.6 Test Data

Please see the next page.

(1) Radiation Test

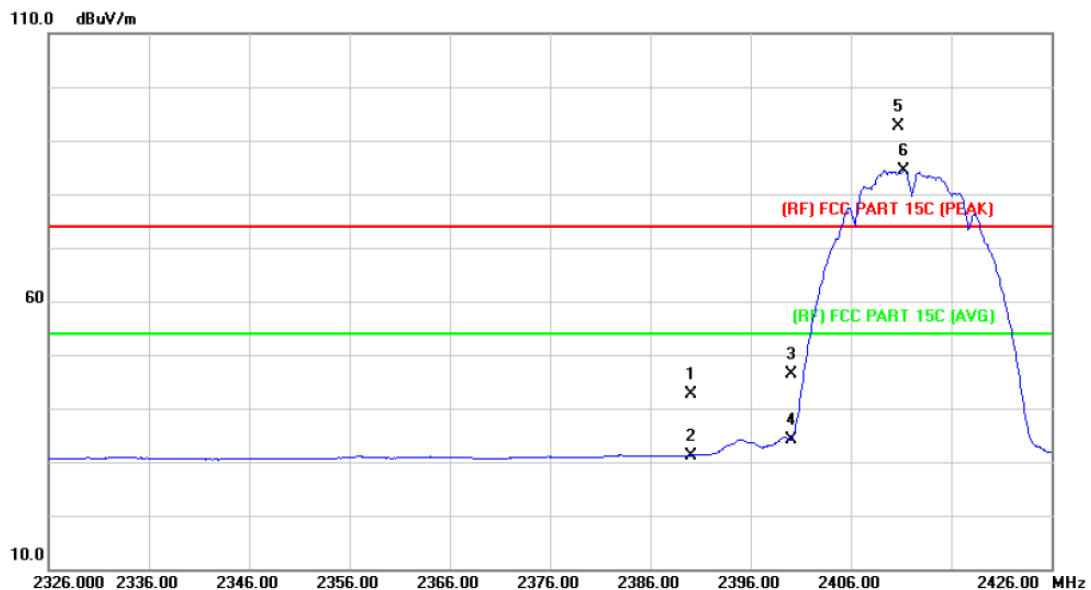
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	42.66	0.77	43.43	74.00	-30.57	peak
2		2390.000	30.99	0.77	31.76	54.00	-22.24	AVG
3		2400.000	46.72	0.81	47.53	74.00	-26.47	peak
4		2400.000	35.38	0.81	36.19	54.00	-17.81	AVG
5	X	2410.700	95.79	0.86	96.65	Fundamental Frequency		peak
6	*	2411.300	88.40	0.86	89.26	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

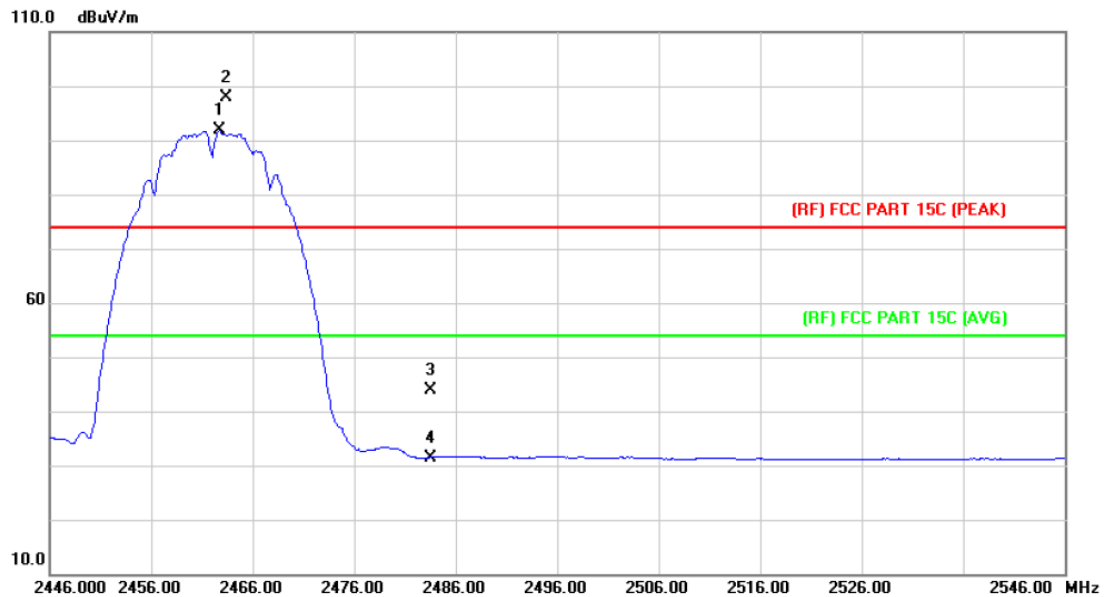
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB Detector
1		2390.000	41.92	0.77	42.69	74.00	-31.31 peak
2		2390.000	30.46	0.77	31.23	54.00	-22.77 AVG
3		2400.000	45.45	0.81	46.26	74.00	-27.74 peak
4		2400.000	33.28	0.81	34.09	54.00	-19.91 AVG
5	X	2410.700	91.78	0.86	92.64	Fundamental Frequency	peak
6	*	2411.300	83.50	0.86	84.36	Fundamental Frequency	AVG

Emission Level= Read Level+ Correct Factor

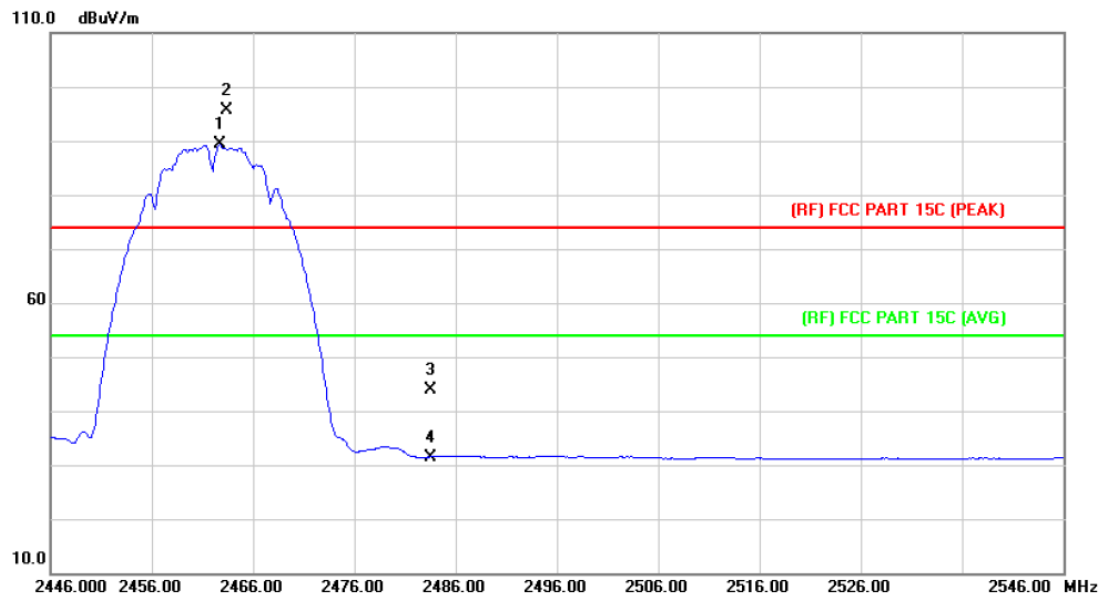
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	2462.700	90.68	1.08	91.76	Fundamental Frequency		AVG
2	X	2463.400	96.90	1.08	97.98	Fundamental Frequency		peak
3		2483.500	42.79	1.17	43.96	74.00	-30.04	peak
4		2483.500	30.33	1.17	31.50	54.00	-22.50	AVG

Emission Level= Read Level+ Correct Factor

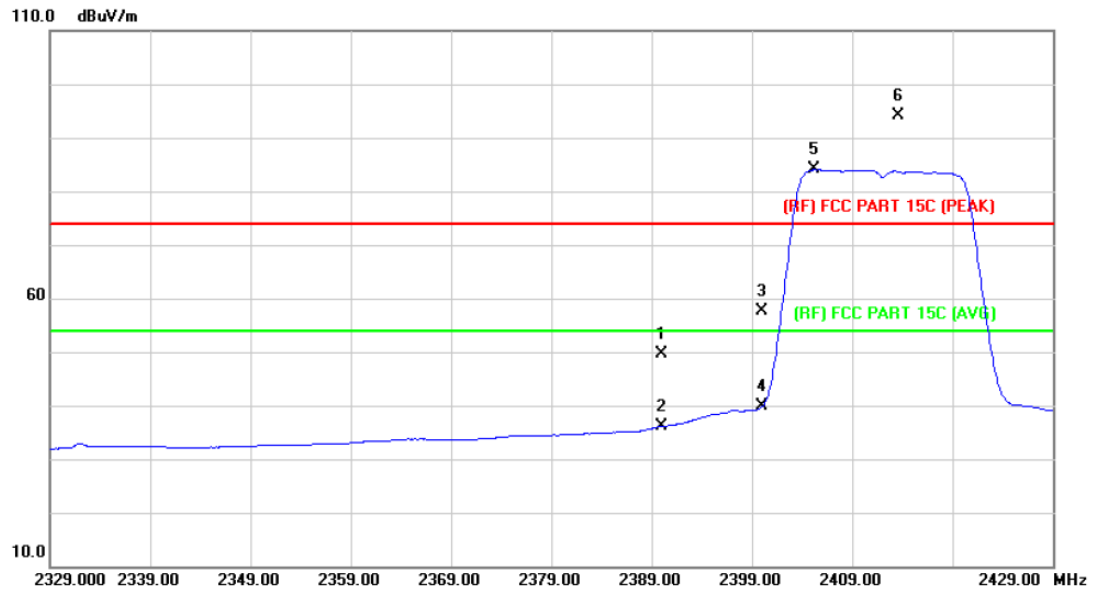
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	2462.700	88.18	1.08	89.26	Fundamental Frequency		AVG
2	X	2463.400	94.59	1.08	95.67	Fundamental Frequency		peak
3		2483.500	42.79	1.17	43.96	74.00	-30.04	peak
4		2483.500	30.33	1.17	31.50	54.00	-22.50	AVG

Emission Level= Read Level+ Correct Factor

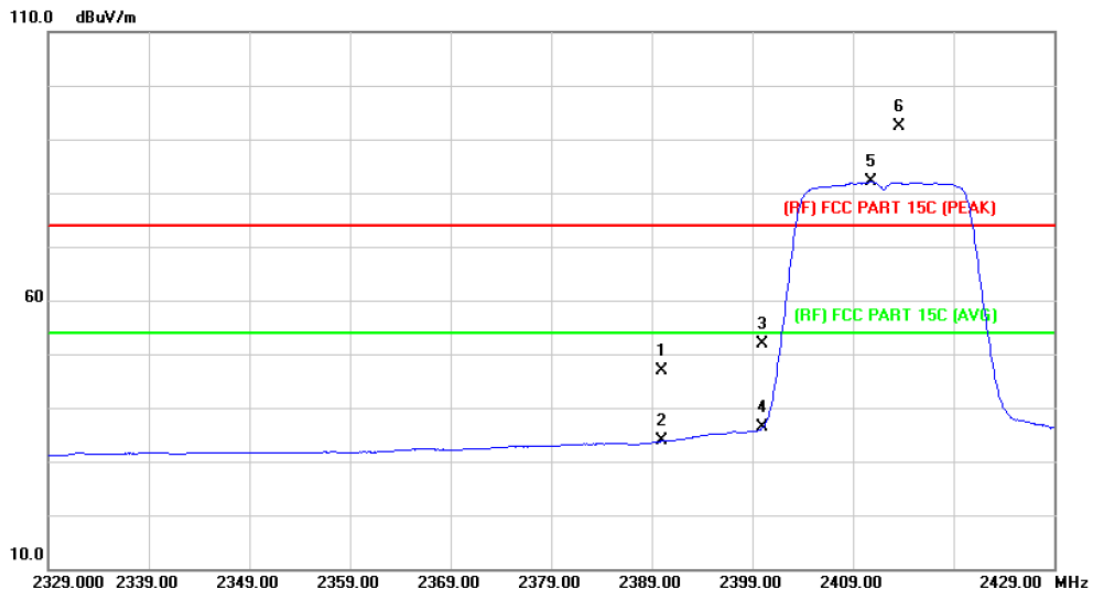
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		2390.000	48.88	0.77	49.65	74.00	-24.35	peak
2		2390.000	35.35	0.77	36.12	54.00	-17.88	AVG
3		2400.000	56.74	0.81	57.55	74.00	-16.45	peak
4		2400.000	38.96	0.81	39.77	54.00	-14.23	AVG
5	*	2405.200	83.17	0.84	84.01	Fundamental Frequency		AVG
6	X	2413.600	93.26	0.86	94.12	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

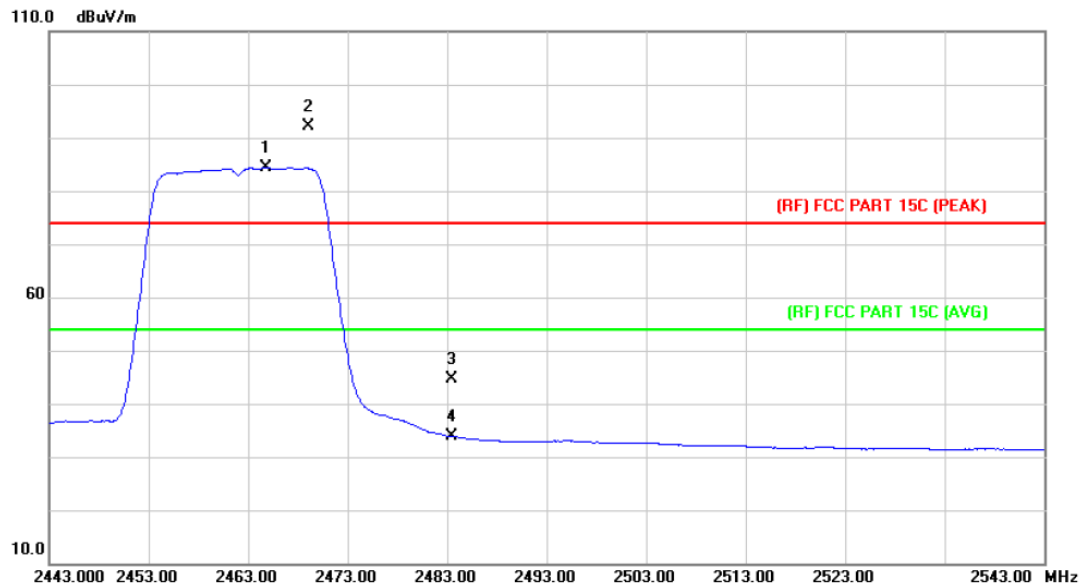
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	48.88	0.77	49.65	74.00	-24.35	peak
2		2390.000	35.35	0.77	36.12	54.00	-17.88	AVG
3		2400.000	56.74	0.81	57.55	74.00	-16.45	peak
4		2400.000	38.96	0.81	39.77	54.00	-14.23	AVG
5	*	2405.200	83.17	0.84	84.01	Fundamental Frequency		AVG
6	X	2413.600	93.26	0.86	94.12	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

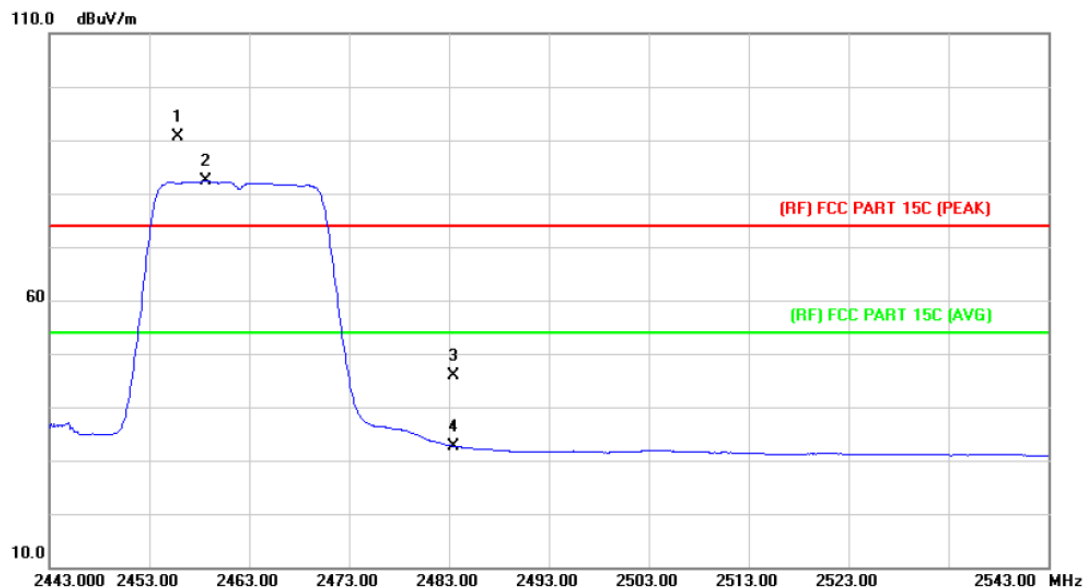
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	2464.800	83.32	1.09	84.41	Fundamental Frequency		AVG
2	X	2469.000	91.02	1.11	92.13	Fundamental Frequency		peak
3		2483.500	43.51	1.17	44.68	74.00	-29.32	peak
4		2483.500	32.69	1.17	33.86	54.00	-20.14	AVG

Emission Level= Read Level+ Correct Factor

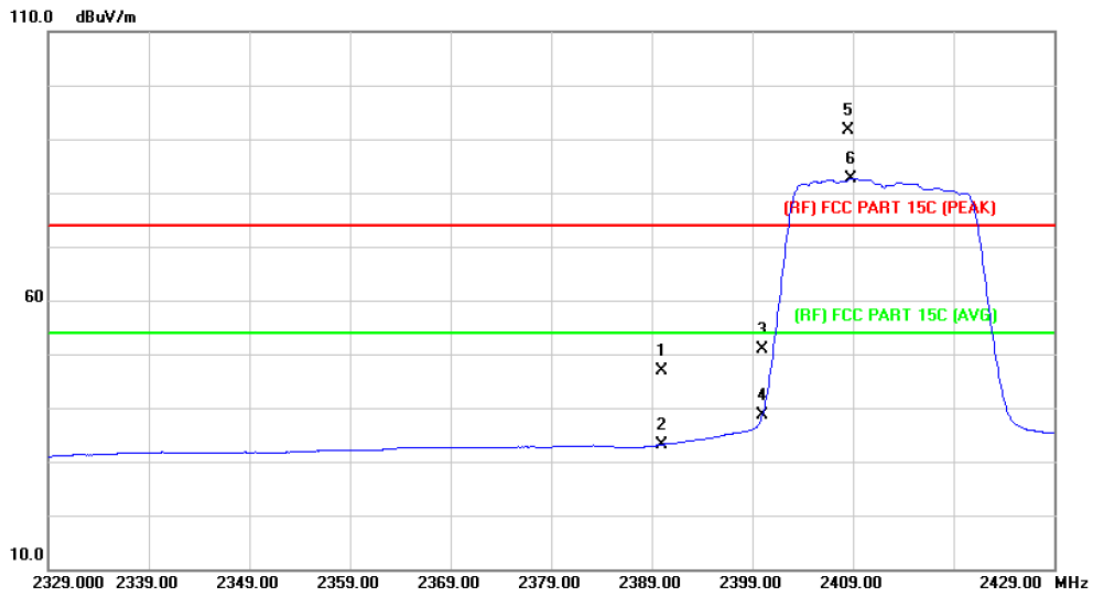
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX G Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	X	2455.800	89.62	1.05	90.67	Fundamental Frequency		peak
2	*	2458.700	81.29	1.06	82.35	Fundamental Frequency		AVG
3		2483.500	44.66	1.17	45.83	74.00	-28.17	peak
4		2483.500	31.52	1.17	32.69	54.00	-21.31	AVG

Emission Level= Read Level+ Correct Factor

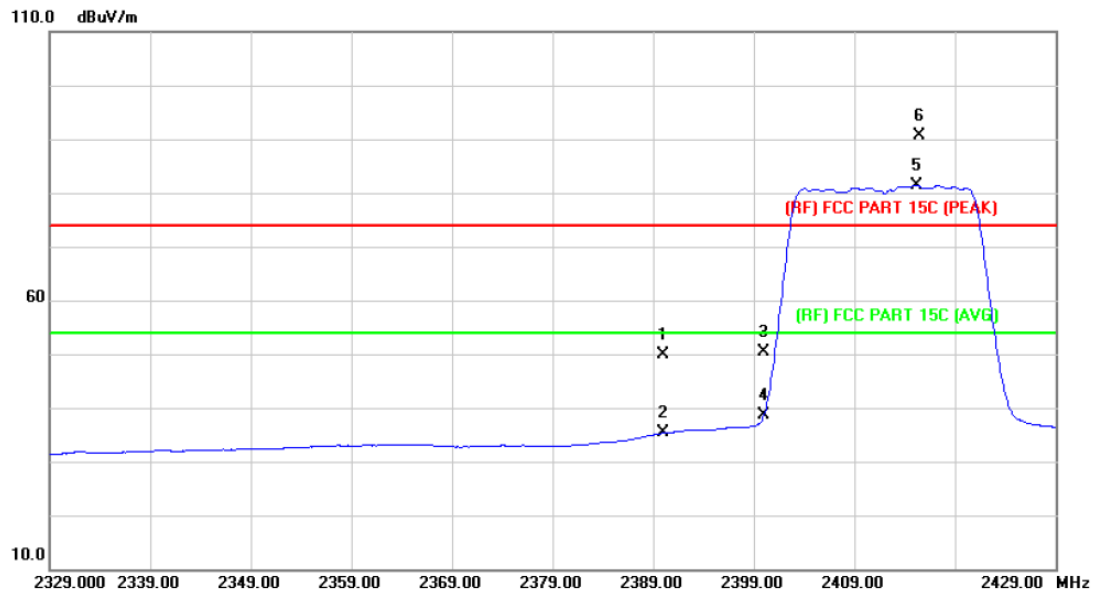
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	46.00	0.77	46.77	74.00	-27.23	peak
2		2390.000	32.38	0.77	33.15	54.00	-20.85	AVG
3		2400.000	50.05	0.81	50.86	74.00	-23.14	peak
4		2400.000	37.82	0.81	38.63	54.00	-15.37	AVG
5	X	2408.600	90.74	0.85	91.59	Fundamental Frequency		peak
6	*	2408.800	81.81	0.85	82.66	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

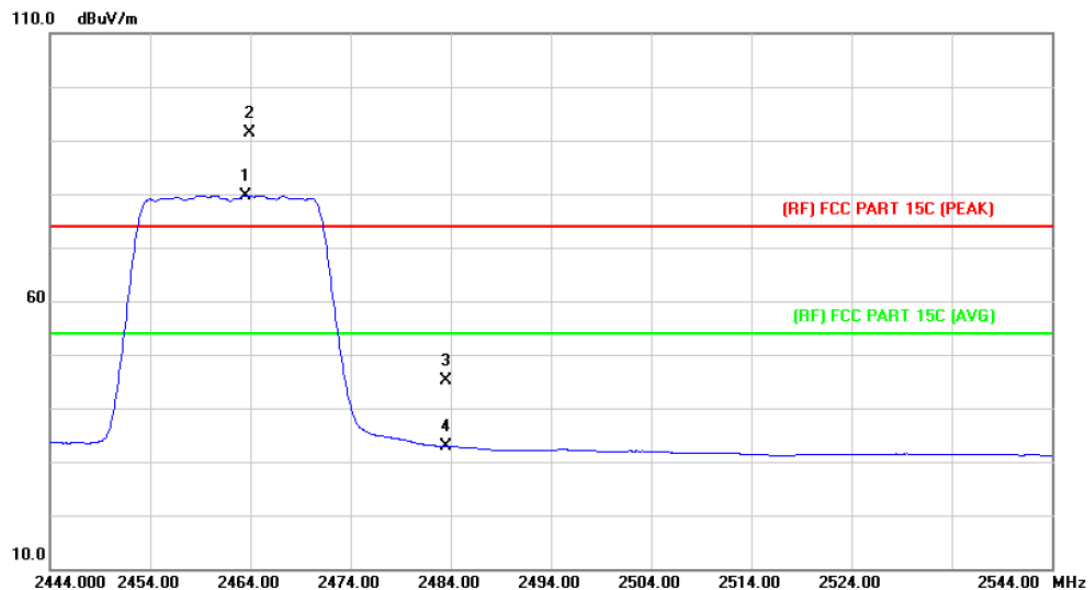
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2412MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB Detector
1		2390.000	48.99	0.77	49.76	74.00	-24.24 peak
2		2390.000	34.56	0.77	35.33	54.00	-18.67 AVG
3		2400.000	49.49	0.81	50.30	74.00	-23.70 peak
4		2400.000	37.73	0.81	38.54	54.00	-15.46 AVG
5	*	2415.200	80.52	0.88	81.40	Fundamental Frequency AVG	
6	X	2415.400	89.74	0.88	90.62	Fundamental Frequency peak	

Emission Level= Read Level+ Correct Factor

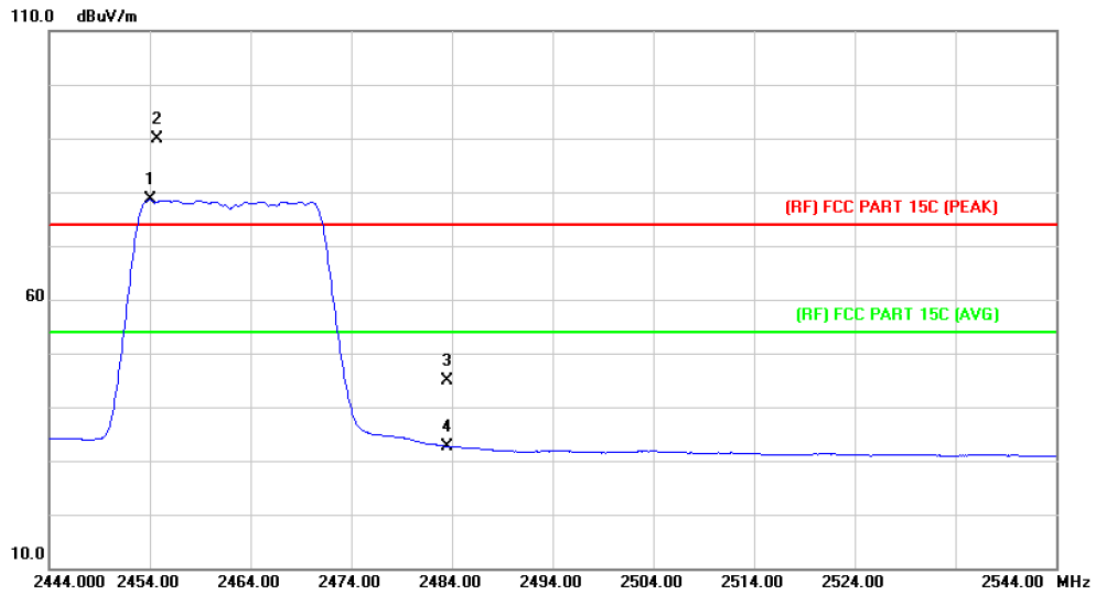
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB Detector
1	*	2463.500	78.62	1.08	79.70	Fundamental Frequency	AVG
2	X	2463.900	90.30	1.08	91.38	Fundamental Frequency	peak
3		2483.500	44.08	1.17	45.25	74.00	-28.75 peak
4		2483.500	31.64	1.17	32.81	54.00	-21.19 AVG

Emission Level= Read Level+ Correct Factor

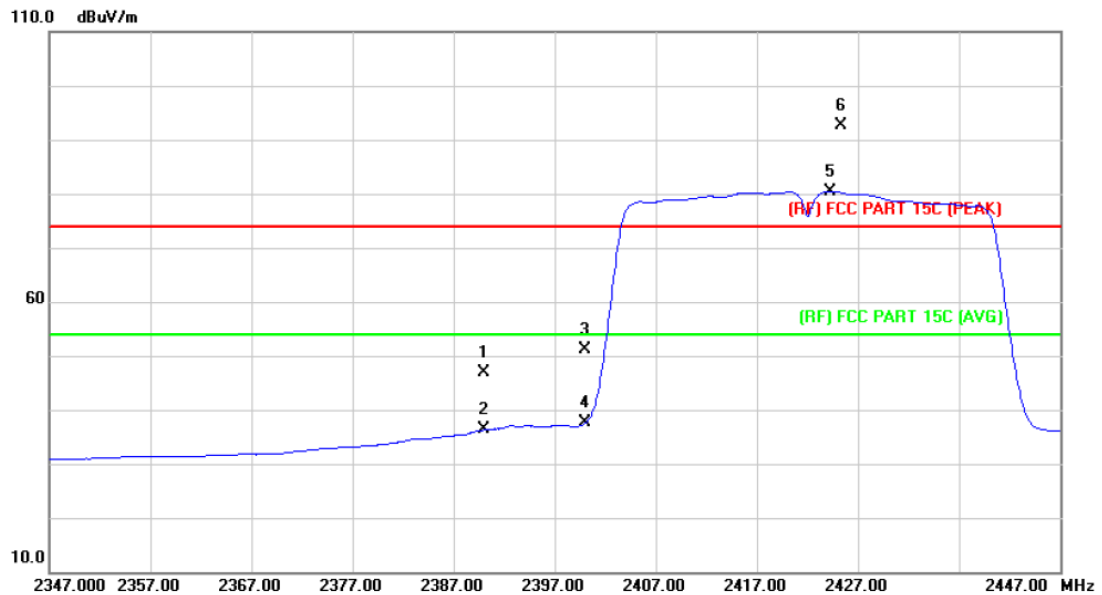
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2462MHz		
Remark:	N/A		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	2454.000	77.50	1.04	78.54	Fundamental Frequency		AVG
2	X	2454.700	88.93	1.05	89.98	Fundamental Frequency		peak
3		2483.500	43.67	1.17	44.84	74.00	-29.16	peak
4		2483.500	31.52	1.17	32.69	54.00	-21.31	AVG

Emission Level= Read Level+ Correct Factor

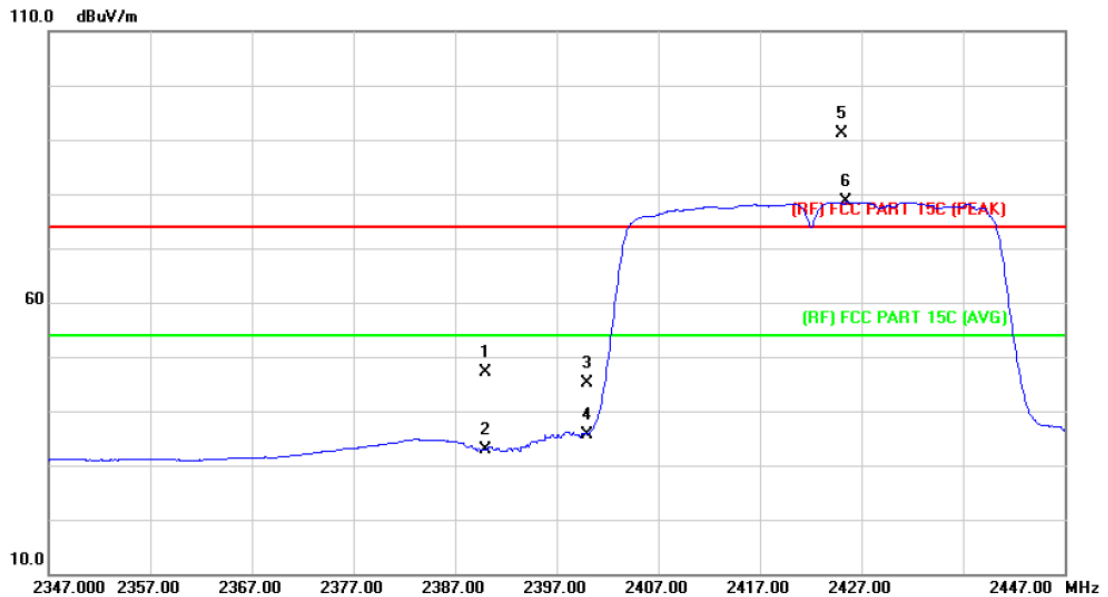
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2422MHz		
Remark:	N/A		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	46.18	0.77	46.95	74.00	-27.05	peak
2		2390.000	35.55	0.77	36.32	54.00	-17.68	AVG
3		2400.000	50.41	0.81	51.22	74.00	-22.78	peak
4		2400.000	36.80	0.81	37.61	54.00	-16.39	AVG
5	*	2424.300	79.47	0.93	80.40	Fundamental Frequency		AVG
6	X	2425.300	91.71	0.93	92.64	Fundamental Frequency		peak

Emission Level= Read Level+ Correct Factor

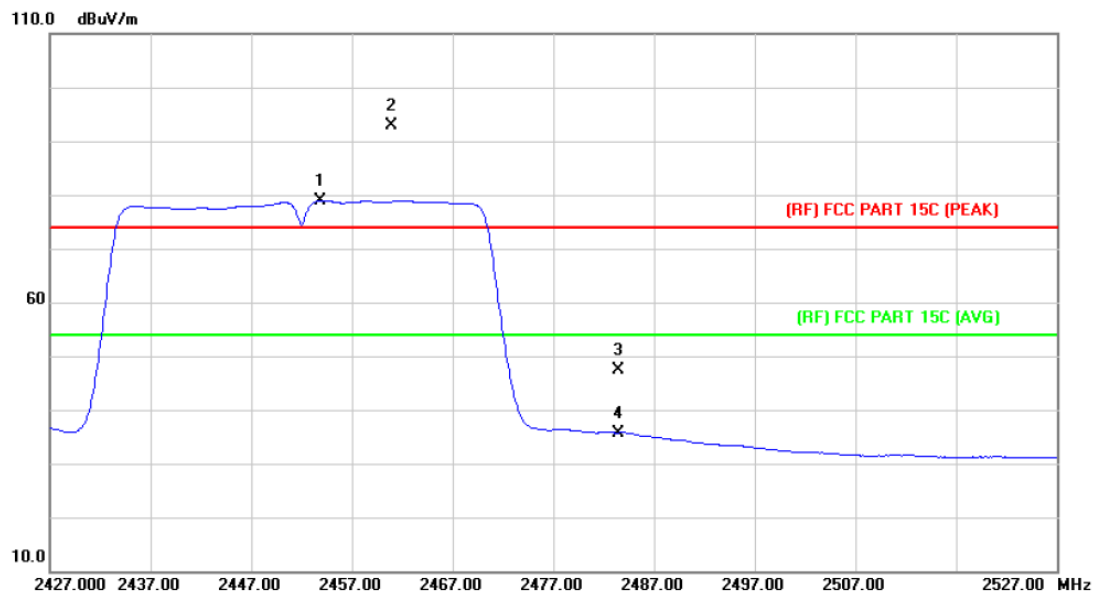
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Vertical		
Test Mode:	TX N(HT40) Mode 2422MHz		
Remark:	N/A		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		2390.000	46.26	0.77	47.03	74.00	-26.97	peak
2		2390.000	32.18	0.77	32.95	54.00	-21.05	AVG
3		2400.000	44.35	0.81	45.16	74.00	-28.84	peak
4		2400.000	34.87	0.81	35.68	54.00	-18.32	AVG
5	X	2425.100	90.32	0.93	91.25	Fundamental Frequency		peak
6	*	2425.500	77.66	0.93	78.59	Fundamental Frequency		AVG

Emission Level= Read Level+ Correct Factor

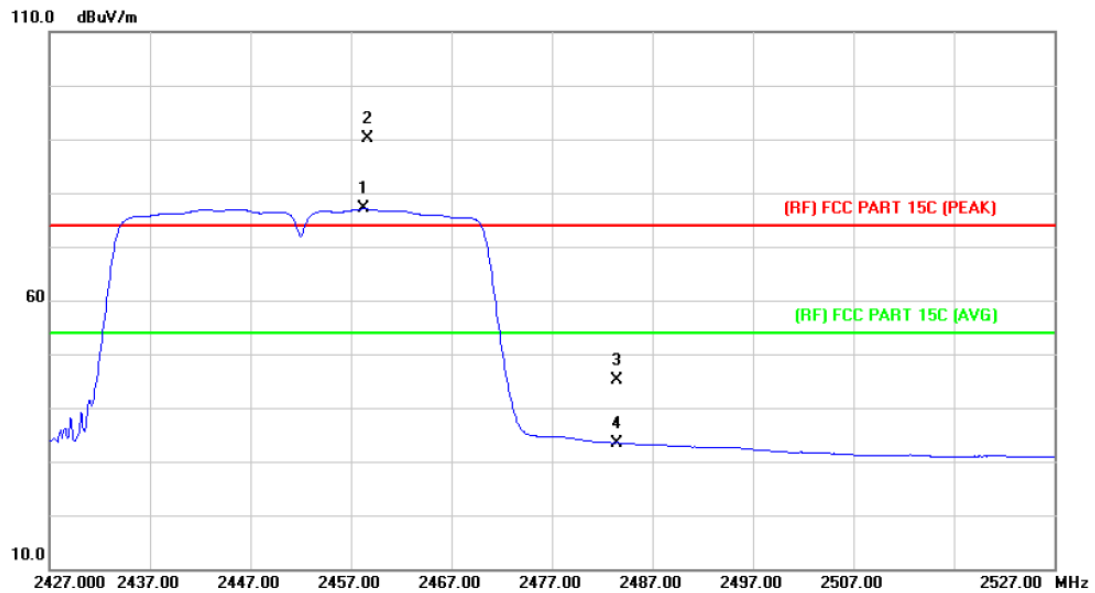
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT40) Mode 2452MHz		
Remark:	N/A		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	2453.900	77.93	1.04	78.97	Fundamental Frequency		AVG
2	X	2460.900	91.75	1.06	92.81	Fundamental Frequency		peak
3		2483.500	46.10	1.17	47.27	74.00	-26.73	peak
4		2483.500	34.57	1.17	35.74	54.00	-18.26	AVG

Emission Level= Read Level+ Correct Factor

EUT:	LED Pico Projector	Model:	ML131
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		

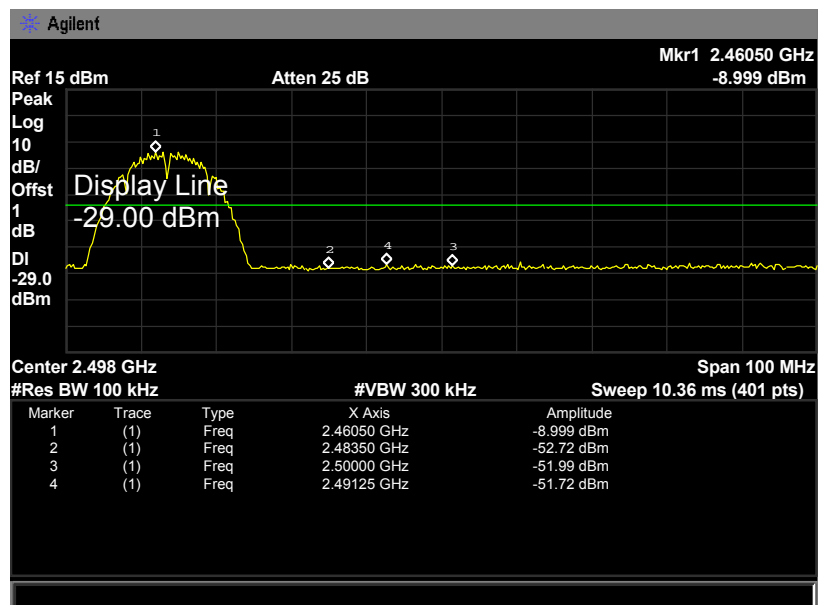
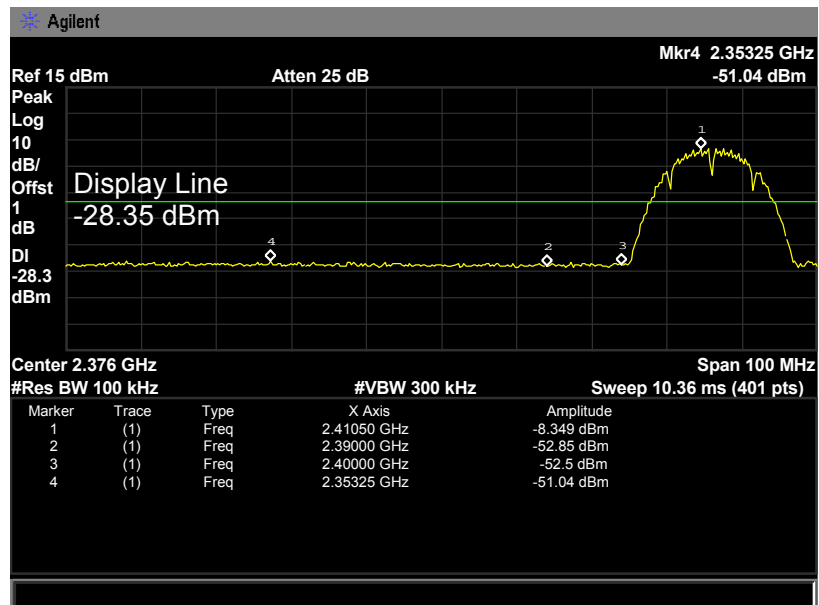


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	2458.300	75.96	1.06	77.02	Fundamental Frequency		AVG
2	X	2458.700	89.15	1.06	90.21	Fundamental Frequency		peak
3		2483.500	44.00	1.17	45.17	74.00	-28.83	peak
4		2483.500	32.33	1.17	33.50	54.00	-20.50	AVG

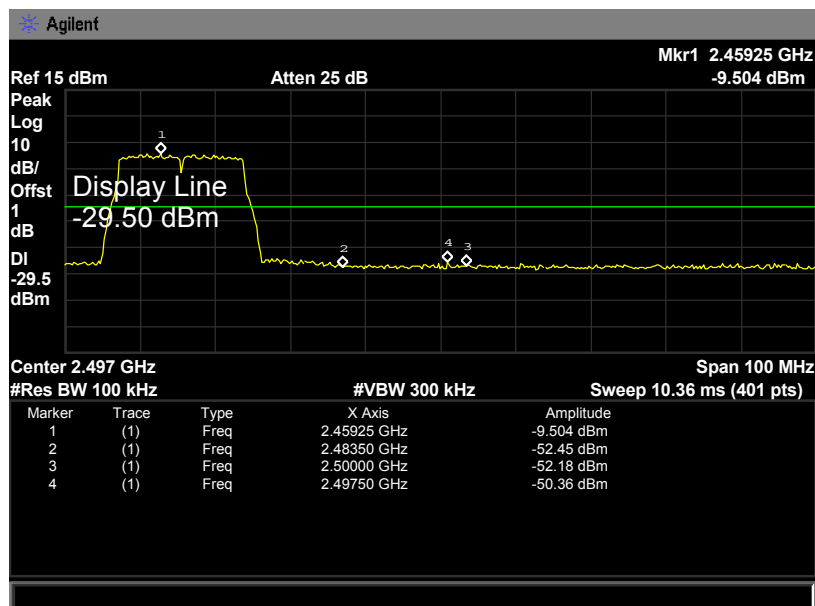
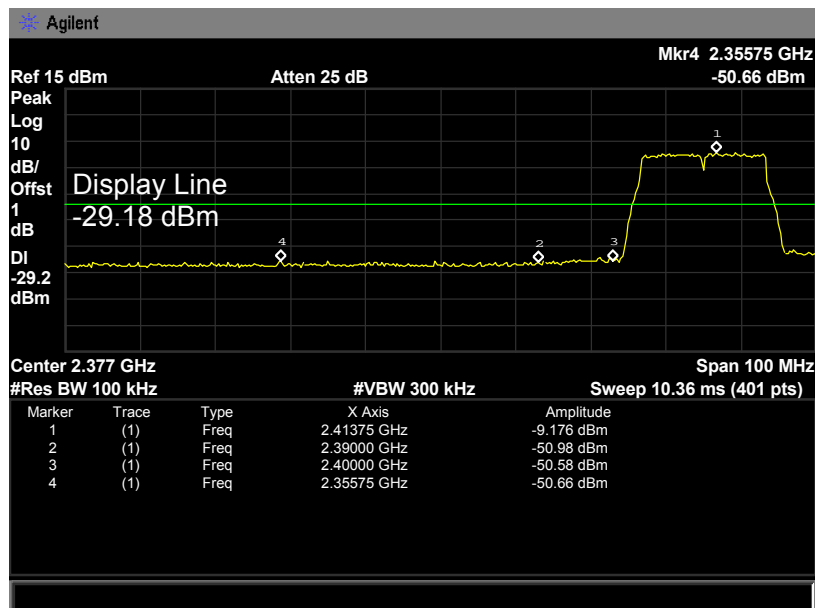
Emission Level= Read Level+ Correct Factor

(2) Conducted Test

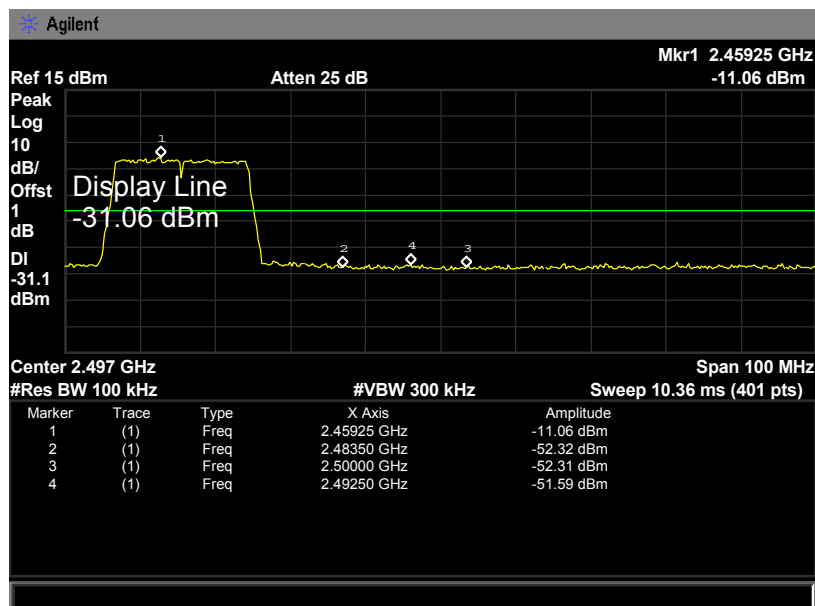
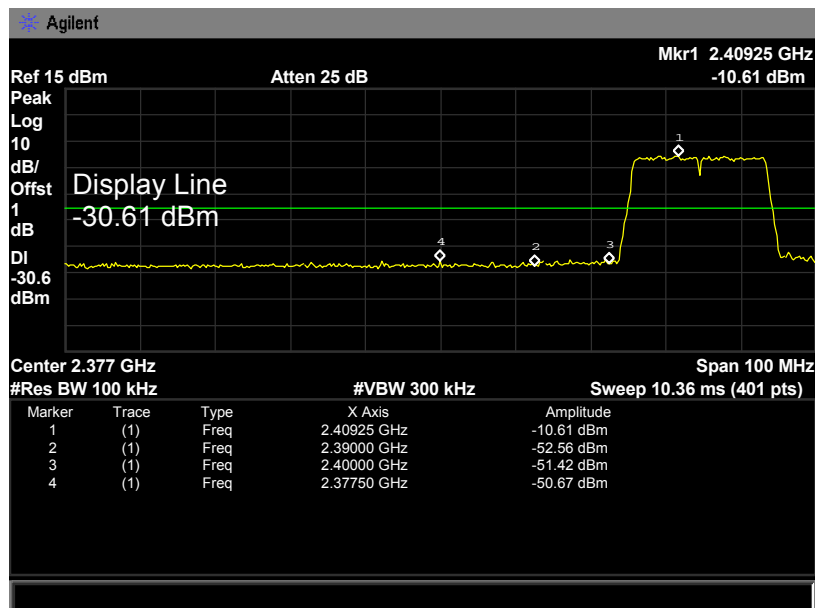
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX B Mode 2412MHz / TX B Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		



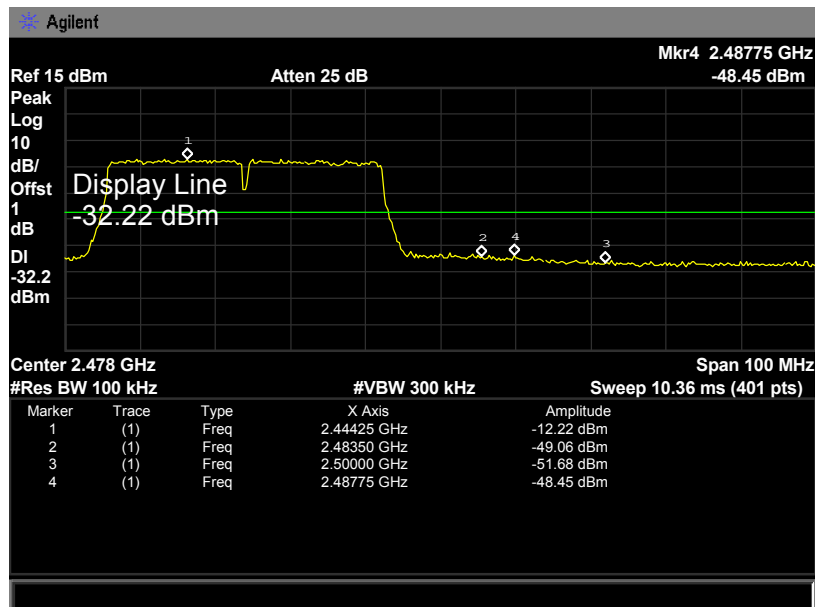
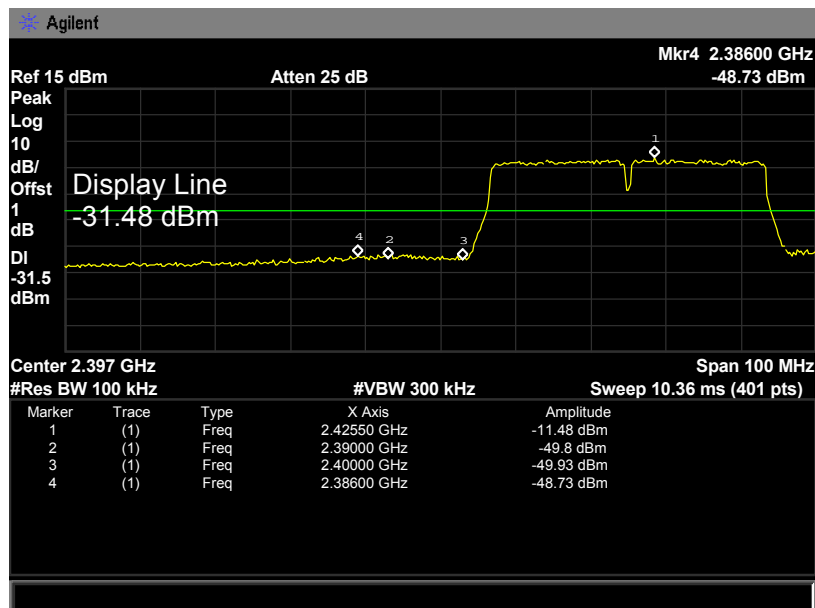
EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX G Mode 2412MHz / TX G Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		



EUT:	LED Pico Projector	Model:	ML131
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:	LED Pico Projector	Model:	ML131
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

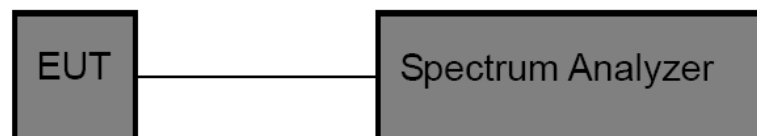
6.1.1 Test Standard

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, LED Pico Projectordle 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:	LED Pico Projector	Model:	ML131
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	10.069	14.4956	≥0.5
2437	10.062	14.4896	
2462	10.057	14.4835	

802.11B Mode

2412 MHz

Agilent

Ref 15 dBm

Atten 25 dB

#Peak

Log

10

dB/

Offst

1

dB

Center

2.412000000 GHz

→

←

Center 2.412 GHz

#Res BW 100 kHz

#VBW 300 kHz

Span 20 MHz

Sweep 4 ms (401 pts)

Occupied Bandwidth

14.4956 MHz

Occ BW % Pwr

99.00 %

x dB

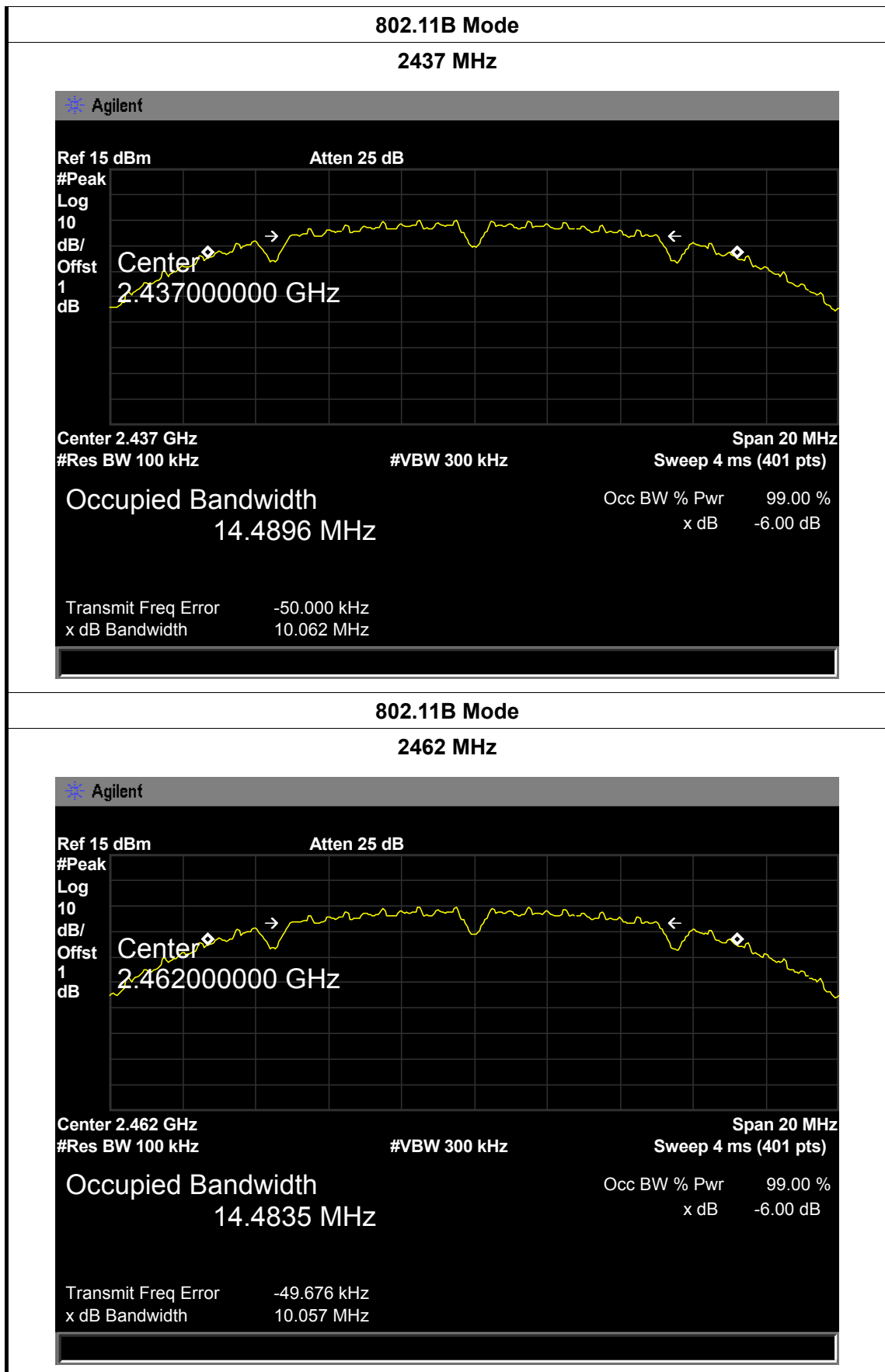
-6.00 dB

Transmit Freq Error

-19.634 kHz

x dB Bandwidth

10.069 MHz



EUT:	LED Pico Projector	Model:	ML131
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	16.604	16.4902	>=0.5
2437	16.569	16.4861	
2462	16.604	16.5428	

802.11G Mode

2412 MHz

Agilent

Ref 15 dBm

Atten 25 dB

#Peak

Log

10

dB/

Offst

1

dB

Center

2.41200000 GHz

Center 2.412 GHz

#Res BW 100 kHz

#VBW 300 kHz

Span 20 MHz

Sweep 4 ms (401 pts)

Occupied Bandwidth

16.4902 MHz

Occ BW % Pwr

99.00 %

x dB

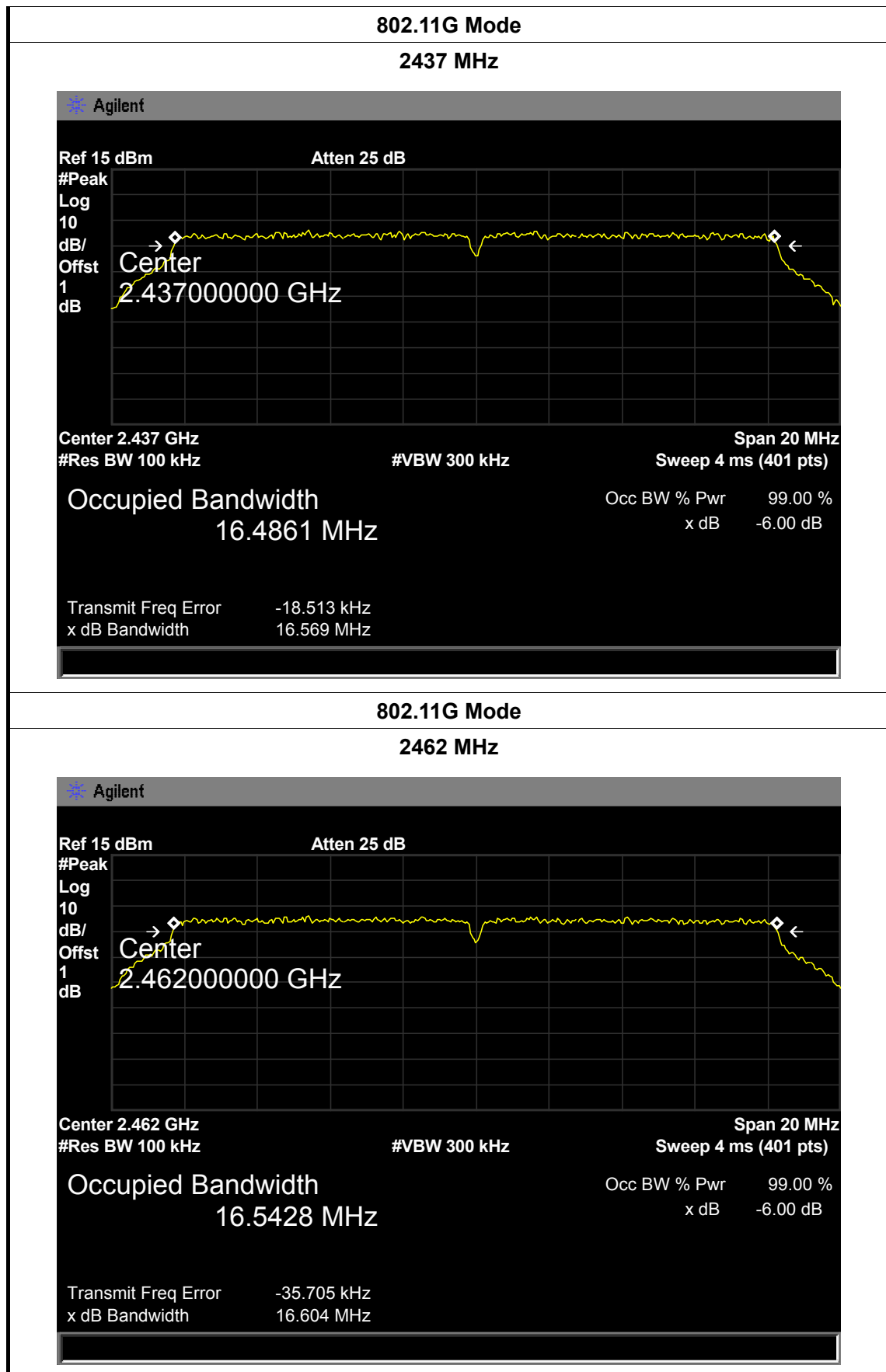
-6.00 dB

Transmit Freq Error

-12.956 kHz

x dB Bandwidth

16.604 MHz



EUT:	LED Pico Projector	Model:	ML131
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	17.830	17.6323	>=0.5
2437	17.823	17.6232	
2462	17.843	17.6304	

802.11N(HT20) Mode

2412 MHz

Agilent

Ref 15 dBm

Atten 25 dB

#Peak

Log

10

dB/

Offst

1

dB

Center

2.41200000 GHz

Center 2.412 GHz

#Res BW 100 kHz

#VBW 300 kHz

Span 20 MHz

Sweep 4 ms (401 pts)

Occupied Bandwidth

17.6323 MHz

Transmit Freq Error

7.493 kHz

x dB Bandwidth

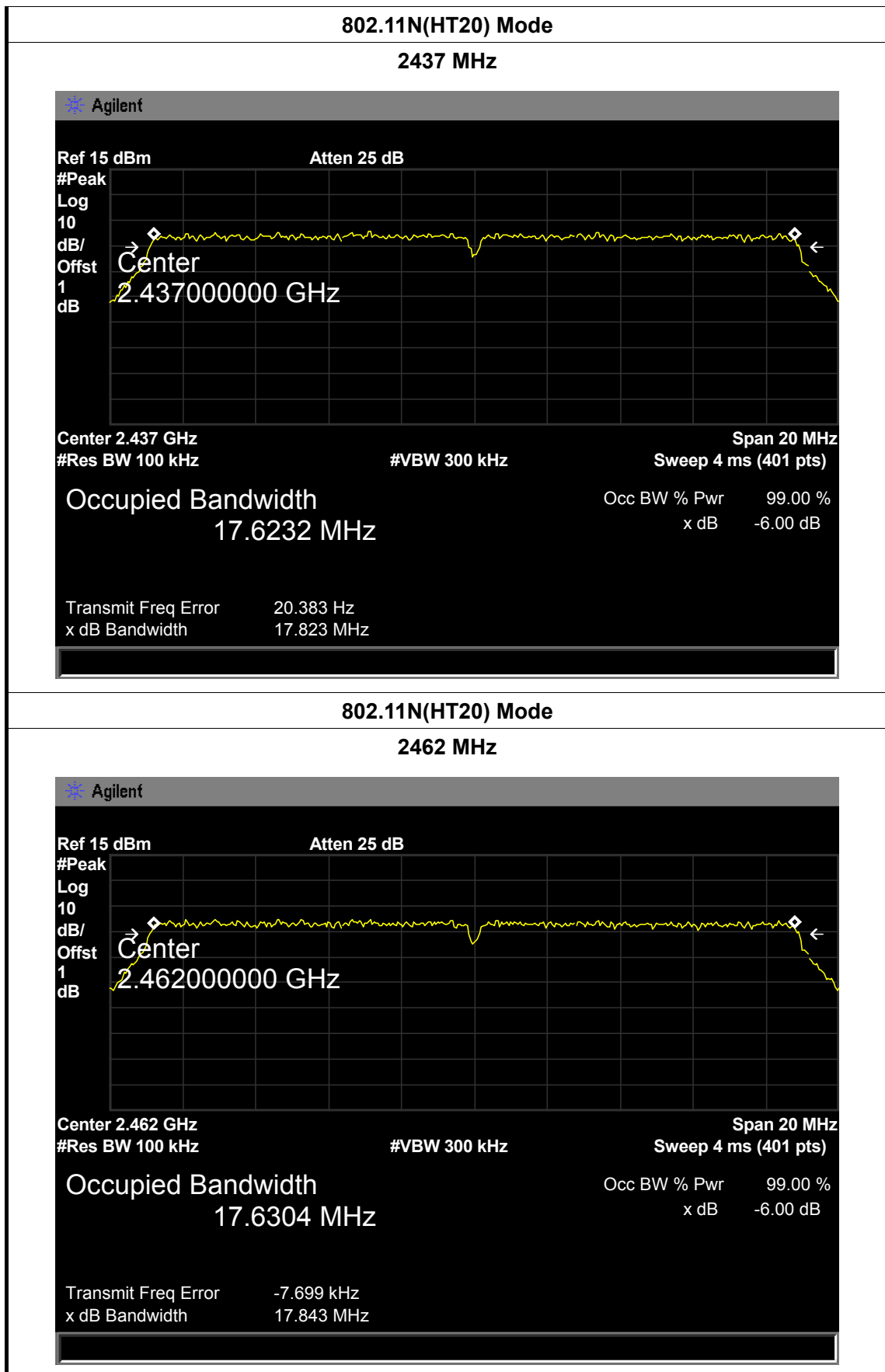
17.830 MHz

Occ BW % Pwr

99.00 %

x dB

-6.00 dB



EUT:	LED Pico Projector	Model:	ML131
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	36.530	36.0071	>=0.5
2437	36.525	36.0037	
2452	36.499	36.0071	

802.11N(HT40) Mode

2422 MHz

Agilent

Ref 15 dBm

Atten 25 dB

#Peak

Log

10

dB/

Offst

1

dB

Center

2.422000000 GHz

Center 2.422 GHz

#Res BW 100 kHz

Span 50 MHz

#VBW 300 kHz

Sweep 5.18 ms (401 pts)

Occupied Bandwidth

36.0071 MHz

Transmit Freq Error

10.061 kHz

x dB Bandwidth

36.530 MHz

Occ BW % Pwr

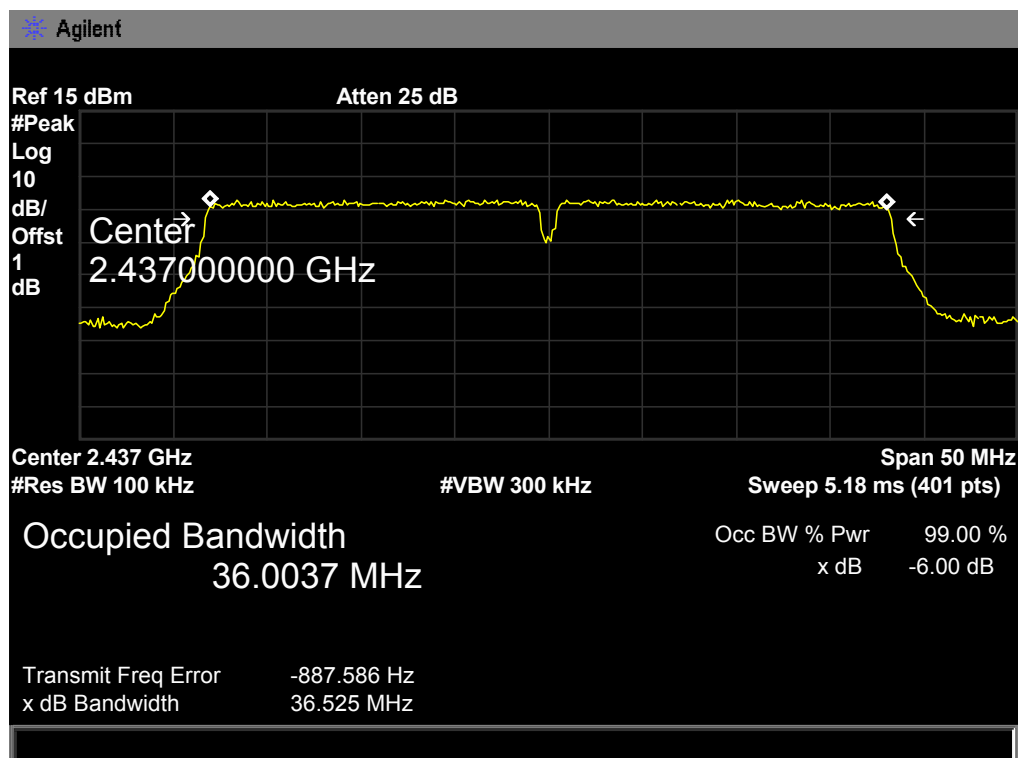
99.00 %

x dB

-6.00 dB

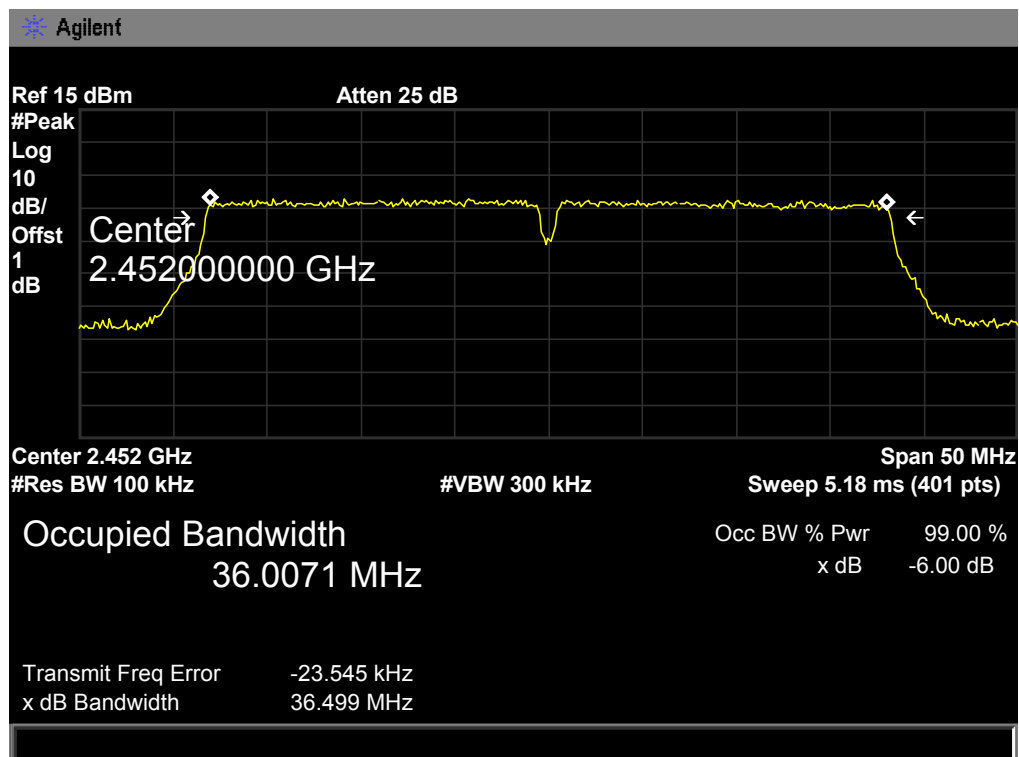
802.11N(HT40) Mode

2437 MHz



802.11N(HT40) Mode

2452 MHz



7. Peak Output Power Test

7.1 Test Standard and Limit

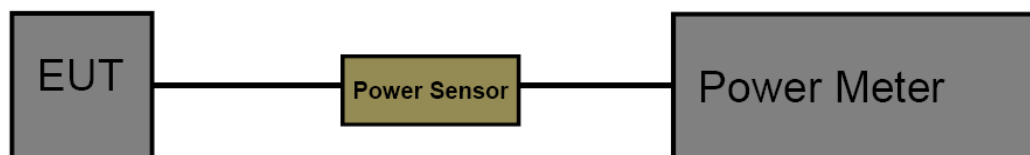
7.1.1 Test Standard

FCC Part 15.247 (b)

7.1.2 Test Limit

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

7.2 Test Setup



7.3 Test Procedure

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

The EUT was connected to RF power meter via a broadband power sensor as show the block above. The power sensor video bandwidth is greater than or equal to the DTS bandwidth of the equipment.

7.4 EUT Operating Condition

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

7.5 Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Power Meter	Anritsu	ML2495A	25406005	Aug. 08, 2014	Aug. 07, 2015
Power Sensor	Anritsu	ML2411B	25406005	Aug. 08, 2014	Aug. 07, 2015

7.6 Test Data

EUT:	LED Pico Projector	Model:	ML131
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	9.01	
	2462	8.96	
802.11g	2412	9.02	
	2437	9.04	
	2462	8.93	
802.11n (HT20)	2412	9.00	
	2437	9.05	
	2462	9.06	
802.11n (HT40)	2422	8.97	
	2437	8.99	
	2452	8.96	

8. Power Spectral Density Test

8.1 Test Standard and Limit

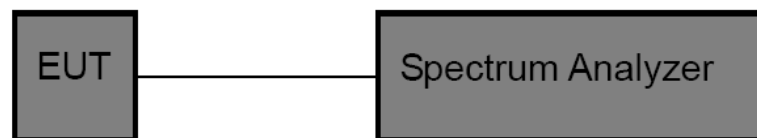
8.1.1 Test Standard

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, LED Pico Projectordle 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:	LED Pico Projector	Model:	ML131
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	-21.16	8	
2437	-21.88		
2462	-22.75		
802.11B Mode			
2412 MHz			

✱ Agilent

Ref 15 dBm

Atten 25 dB

Mkr1 2.41132 GHz
-21.16 dBm

Peak

Log

10

dB/

Offst

1

dB

Marker

2.411320000 GHz

-21.16 dBm

M1 S2

S3 FC

AA

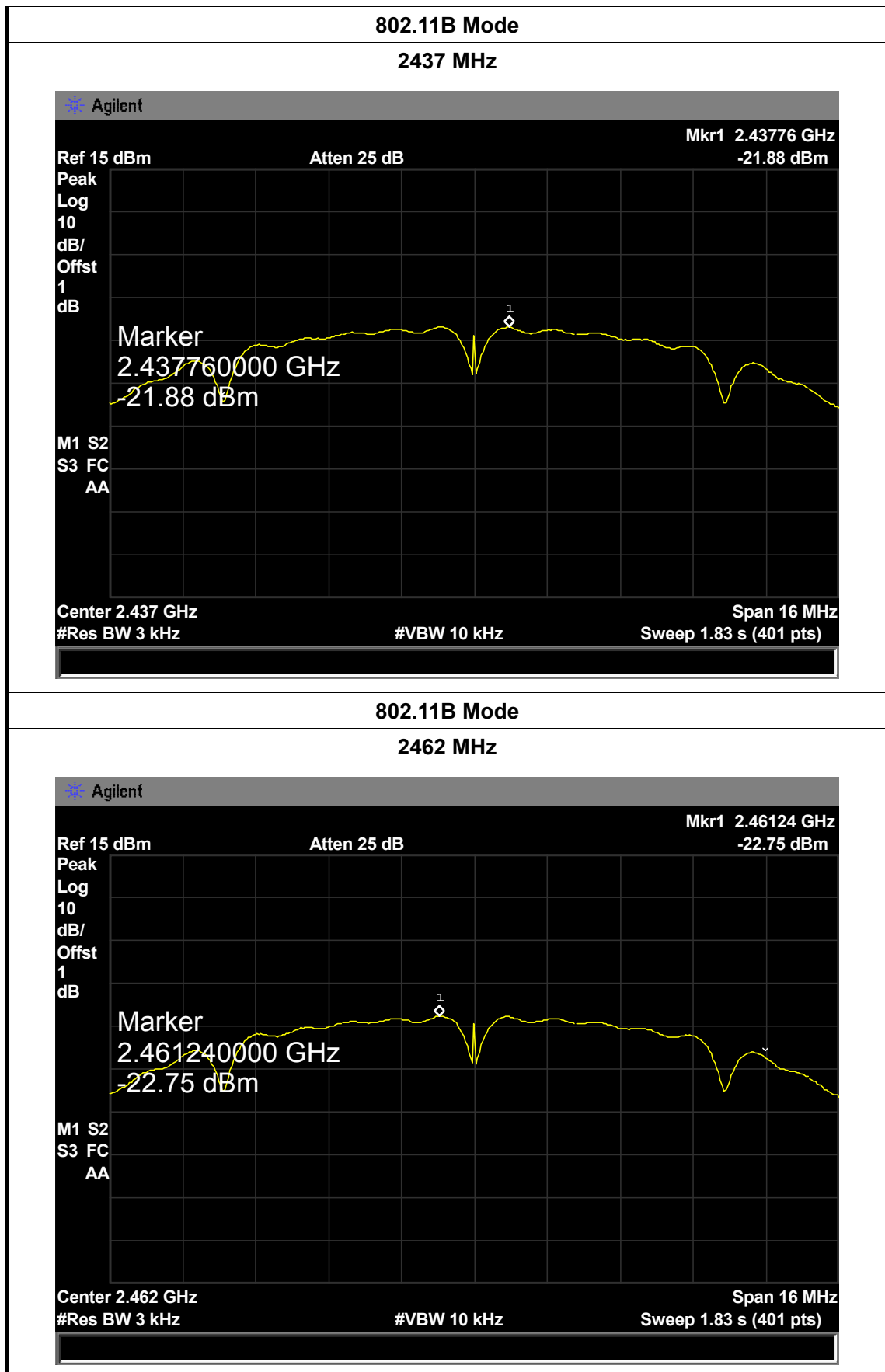
Center 2.412 GHz

#Res BW 3 kHz

#VBW 10 kHz

Span 16 MHz

Sweep 1.83 s (401 pts)



EUT:	LED Pico Projector	Model:	ML131
Temperature:	25 °C	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		-22.52	8
2437		-22.46	
2462		-23.23	
802.11G Mode			
2412 MHz			

Agilent

Ref 15 dBm

Atten 25 dB

Mkr1 2.4098125 GHz
-22.52 dBm

Peak
Log
10
dB/
Offst
1
dB

Marker
2.409812500 GHz
-22.52 dBm

M1 S2
S3 FC
AA

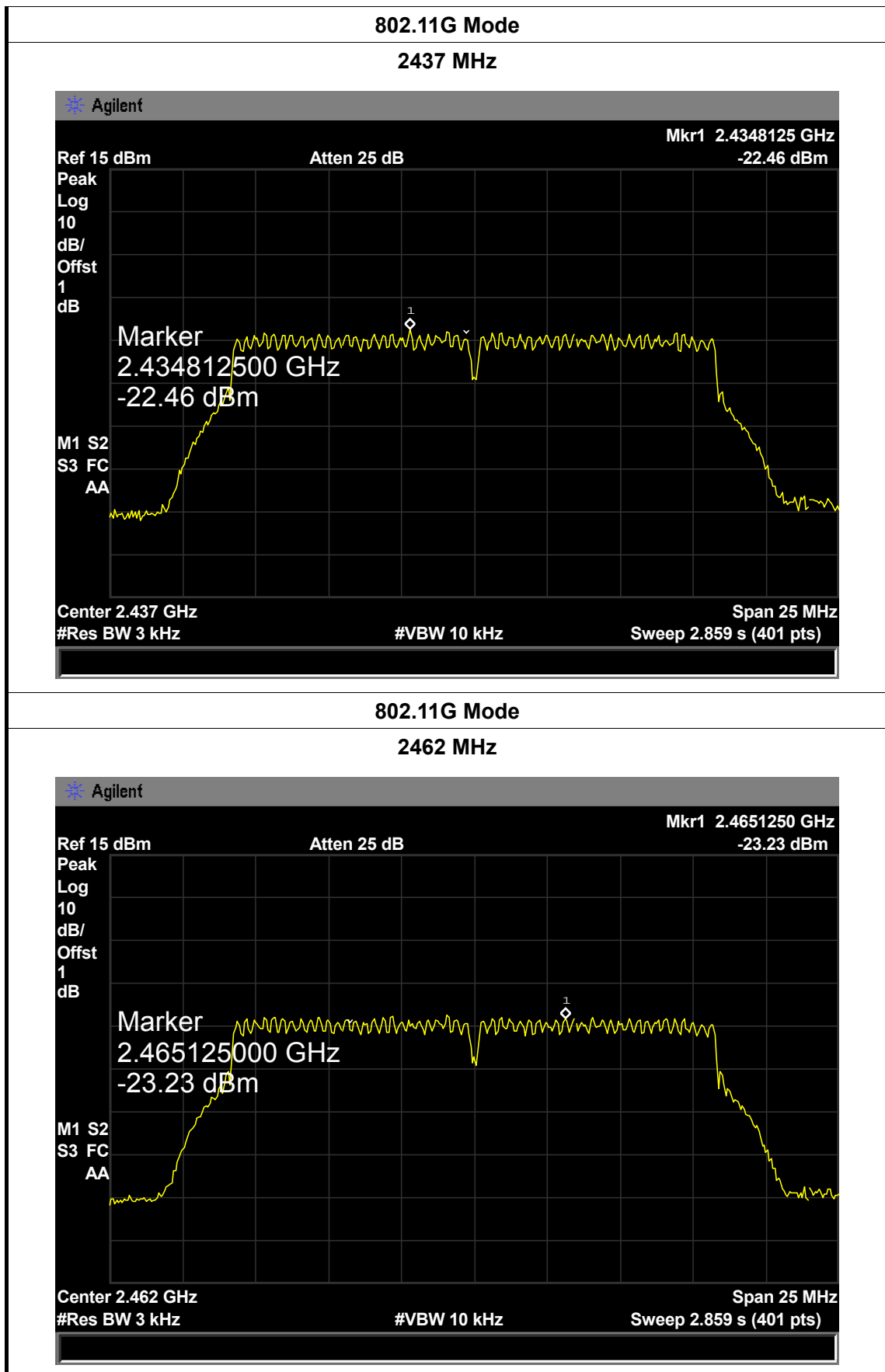
Center 2.412 GHz

Span 25 MHz

#Res BW 3 kHz

#VBW 10 kHz

Sweep 2.859 s (401 pts)



EUT:	LED Pico Projector	Model:	ML131
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	-23.15	8	
2437	-22.84		
2462	-23.10		
802.11N(HT20) Mode			
2412 MHz			

Agilent

Ref 15 dBm

Atten 25 dB

Mkr1 2.4185475 GHz
-23.15 dBm

Peak

Log

10

dB/

Offst

1

dB

Marker

2.418547500 GHz

-23.15 dBm

M1 S2

S3 FC

AA

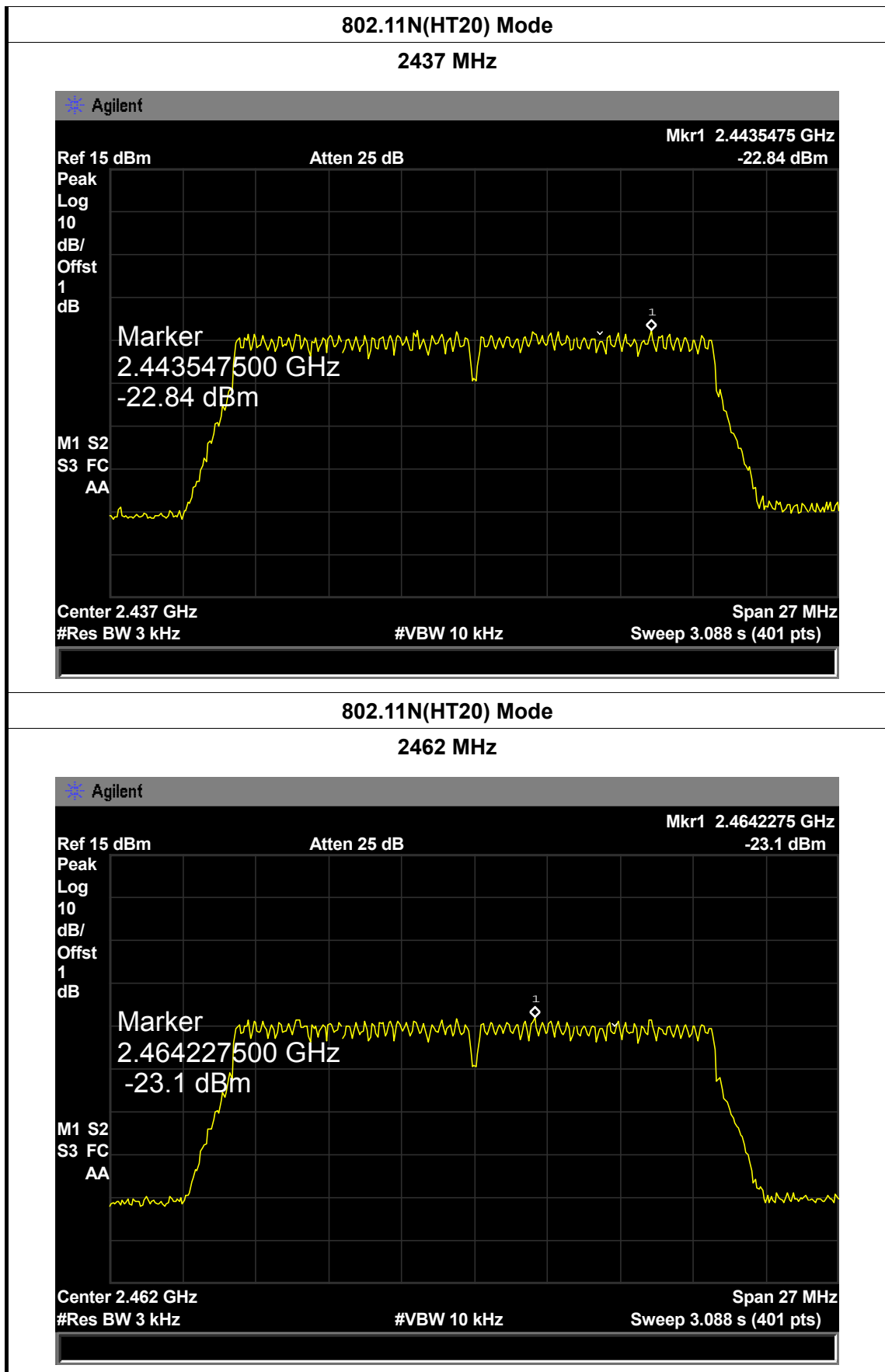
Center 2.412 GHz

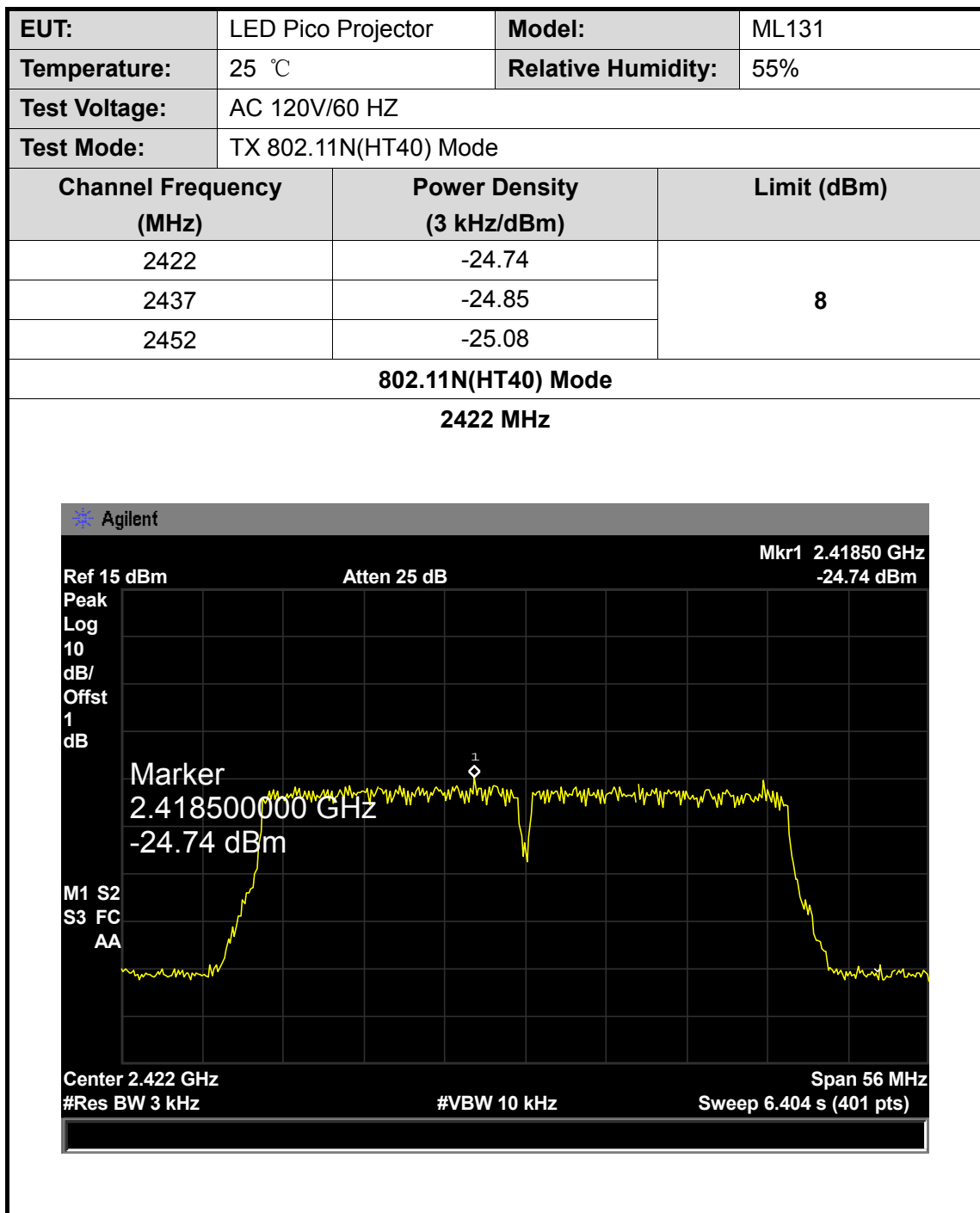
#Res BW 3 kHz

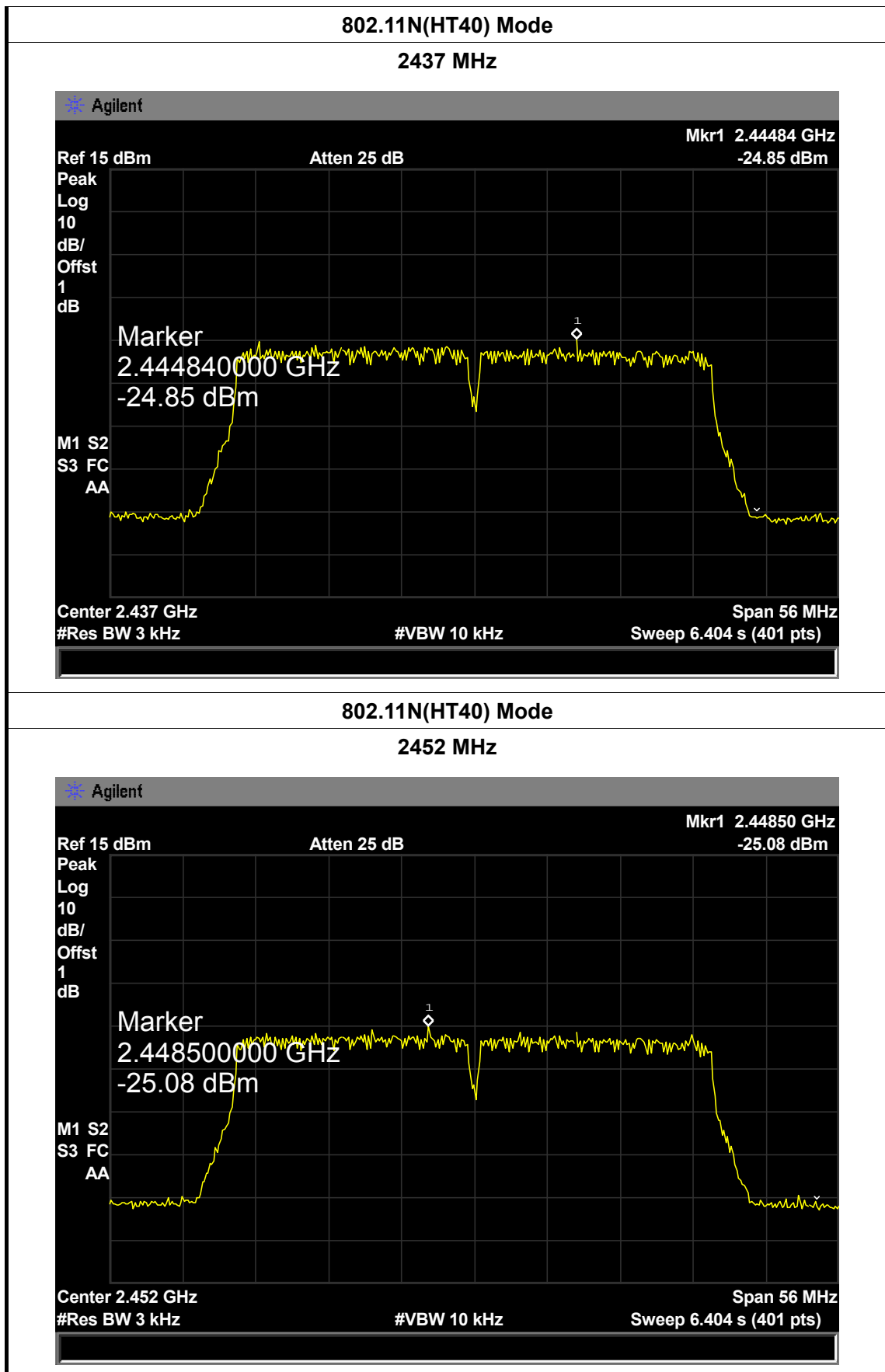
#VBW 10 kHz

Span 27 MHz

Sweep 3.088 s (401 pts)







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.