Testing Laboratory
1163

FCC COMPLIANCE TEST REPORT

Technical Statement of Conformity
in accordance with 47 CFR Part 15 Subpart C

The product

Equipment Under Test	:	Portable Laser Projector
Model Number	:	MP-01
Product Series	:	N/A
Report Number	:	HA170555-RA
Issue Date	:	26-SEP-2017
Test Result	:	Compliance

is produced by
ALPITH Co.
2F, No. 139, Jian 1st Road, Zhunghe District, New Taipei City, Taiwan 23585

HongAn TECHNOLOGY CO., LTD.
HongAn TECHNOLOGY EMC Laboratory

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BSMI Registration No.: SL2-IN-E-0023, SL2-A1-E-0023, SL2-IS-E-0023, SL2-R1-E-0023, SL2-R2-E-0023, SL2-L1-E-0023

FCC Designation No.：TW1071, TW1163
TAF Accreditation No.：1163
VCCI Registration No.：R-2156,C-2329,T-219, G-696

Contents

Test Result Certification

Applicant	: ALPITH Co.
Address of Applicant	: 2F, No. 139, Jian 1st Road, Zhunghe District, New Taipei City, Taiwan 23585
Manufacturer	: Shinex Electronic Industries Inc.
Address of Manufacturer	: 2F, No. 139, Jian 1st Road, Zhunghe District, New Taipei City, Taiwan 23585
Trade Name	: MEEMO
Equipment Under Test	: Portable Laser Projector
Model Number	: MP-01
Product Series	: N/A
FCC ID	: 2AJPLMP01
Filing Type	: Certification
Sample Received Date	: 25-MAY-2017
Test Standard	:

☒ FCC Part 15 Subpart C §15.247

Deviations from standard test methods & any other specifications : NONE

Remark:

1. This report details the results of the test carried out on one sample.
2. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.
3. This report applies to the above sample only and shall not be reproduced in part without written approval of HongAn Technology Co., Ltd..

Mei Cheng

Documented by: _____ **Date:** 26-SEP-2017

Mei Cheng / ADM. Dept. Staff

Andrew Lin

Tested by: _____ **Date:** 11-AUG-2017

Andrew Lin / ENG. Dept. Staff

Adam Yang

Approved by: _____ **Date:** 26-SEP-2017

Adam Yang / SEC. Manager

Summary of Test Result

	Test Item	Applicable Standard	Test Result
1	Conducted limits	FCC part 15 subpart C §207	Compliance
2	Radiated emission limits	FCC part 15 subpart C §209	Compliance
3	6dB Bandwidth	FCC part 15 subpart C §247(a)(2)	Compliance
4	Maximum Conducted Output Power	FCC part 15 subpart C §247(b)(3)	Compliance
5	Out of Band Emission	FCC part 15 subpart C §247(d)	Compliance
6	Power Spectral Density	FCC part 15 subpart C §247(e)	Compliance
7	Antenna Requirement	FCC part 15 subpart C §203	Compliance

1 General Description

1.1 Description of EUT

<table>
<tr><td>Equipment Under Test</td><td>:</td><td>Portable Laser Projector</td></tr>
<tr><td>Model Number of EUT</td><td>:</td><td>MP-01</td></tr>
<tr><td>Product Series</td><td>:</td><td>N/A</td></tr>
<tr><td>Power Supply</td><td>:</td><td>Switching Adapter
Manufacturer: AQUIL STAR PRECISION INDUSTRIAL (SHENZHEN) CO., LTD.
Model No.: ASSA75w2-050480
EMC Approval: CE
Input: 100~240Vac, 50/60Hz, 1.2A
Output: 5Vdc, 4.8A</td></tr>
<tr><td>Frequency Range</td><td>:</td><td>802.11 b/ g/ n : 2412~2462 MHz</td></tr>
<tr><td>Number of Channels</td><td>:</td><td>11 Channels</td></tr>
<tr><td>Carrier Frequency of Each Channel</td><td>:</td><td>
<table>
<tr><td>Ch.</td><td>Fre. (MHz)</td><td>Ch.</td><td>Fre. (MHz)</td><td>Ch.</td><td>Fre. (MHz)</td><td>Ch.</td><td>Fre. (MHz)</td><td>Ch.</td><td>Fre. (MHz)</td></tr>
<tr><td>01</td><td>2412</td><td>02</td><td>2417</td><td>03</td><td>2422</td><td>04</td><td>2427</td><td>05</td><td>2432</td></tr>
<tr><td>06</td><td>2437</td><td>07</td><td>2442</td><td>08</td><td>2447</td><td>09</td><td>2452</td><td>10</td><td>2457</td></tr>
<tr><td>11</td><td>2462</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>Antenna Specification</td><td>:</td><td>PIFA Antenna / -4.3 dBi</td></tr>
<tr><td>Modulation Technique</td><td>:</td><td>802.11b : DSSS (Type: CCK, DQPSK, DBPSK)
802.11g : OFDM (Type: 64QAM, 16QAM, QPSK, BPSK)
802.11n : OFDM (Type: 64QAM, 16QAM, QPSK, BPSK)</td></tr>
<tr><td>Transmit Data Rate</td><td>:</td><td>802.11b : 11 Mbps
802.11g : 54 Mbps
802.11n : 65Mbps</td></tr>
<tr><td>Specification</td><td>:</td><td>Dimensions： 14.5 cm (L) X 7.5 cm (W) X 1.5 cm (H)
Function：The EUT is a Portable Laser Projector.
※For more detail specification, please refer to the User Manual.</td></tr>
</table>

1.2 Test Instruments

Instrument Name	Manufacture	Model Number	Serial Number	Last Cal. Date	Next Cal. Date
LISN	EMCO	3810/2NM	9702-1819	07-Jul-2017	06-Jul-2018
LISN	Rolf Heine Hochfrequenztechnik	NNB-4/32T	00001	08-Mar-2017	07-Mar-2018
Preamplifier	CHASE	CPA 9231A	0405	24-Aug-2016	23-Aug-2017
Preamplifier	HD	HD17187	004	22-May-2017	21-May-2018
Micorwave Preamplifier	Com-Power	PAM-840	461269	24-May-2017	23-May-2018
Bilog Antenna	TESEQ	CBL6111D	25769	13-Feb-2017	12-Feb-2018
Bilog Antenna	TESEQ	CBL6111D	38521	18-Oct-2016	17-Oct-2017
Double-Ridged Waveguide Horn	EMCO	3115	9912-5992	22-May-2017	21-May-2018
Horn Antenna	Com-Power	AH-840	101042	25-May-2017	24-May-2018
EMI Receiver	R&S	ESR	101970	12-Oct-2016	11-Oct-2017
Spectrum Analyzer	R&S	FSV	101629	27-JAN-2017	26-JAN-2018
Temp. & Humidity Chamber	Giant Force	GTH-150-20-SP-AR	MMA0907-012	14-JUL-2017	13-JUL-2018
Wideband Power Sensor	R&S	NRP-Z11	121519	06-Oct-2016	05-Oct-2017
WIDEBAND RADIO COMMUNICATION TESTER	ROHDE&SCHWARZ	CMW-500	141958	05-NOV-2016	04-NOV-2017

※ The test equipments used are calibrated and can be traced to National ITRI and International Standards.

1.3 Auxiliary Equipments

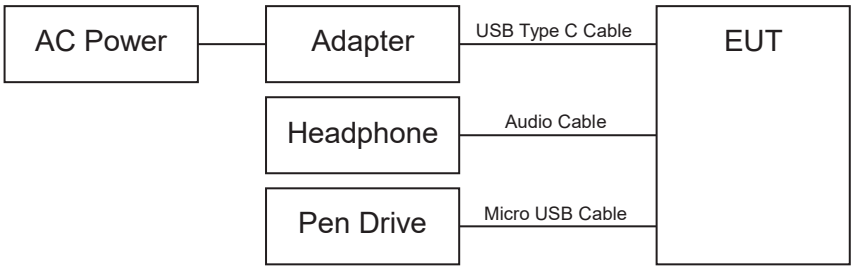
1.3.1. Provided by HongAn Technology Co., Ltd. for Emission Test.

No.	Equipment	Model No.	Serial No.	EMC Approved	Brand	Description	
						Data Cable	Power Cable
01	Headphone	YE-106S	N/A	CE Mark, FCC DoC, CCC	SUNBENBO	N/A	N/A
02	Pen Drive	16G-USB3.0	N/A	CE Mark, FCC DoC, BSMI ID D33724	SanDisk	N/A	N/A

1.3.2. Provided by the Manufacturer

N/A

1.4 EUT SETUP



1.5 Identifying the Final Test Mode

1. Mode 1: TX WIFI mode (802.11b) CH 01.
2. Mode 2: TX WIFI mode (802.11b) CH 06.
3. Mode 3: TX WIFI mode (802.11b) CH 11.
4. Mode 4: TX WIFI mode (802.11g) CH 01.
5. Mode 5: TX WIFI mode (802.11g) CH 06.
6. Mode 6: TX WIFI mode (802.11g) CH 11.
7. Mode 7: TX WIFI mode (802.11n) CH 01.
8. Mode 8: TX WIFI mode (802.11n) CH 06.
9. Mode 9: TX WIFI mode (802.11n) CH 11.

Note:

1. After pre-test, we identified that the TX Vertical Position was most likely to cause maximum disturbance and most likely to be susceptible to disturbance. Therefore, the Final Assessment was performed for the worst case. All pre-test data show at appendix.
2. The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.
3. Channel Low (2412MHz), Mid (2437MHz) and High (2462MHz) with highest data rate were chosen for full testing.
4. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

1.6 Final Test Mode

Conducted Emission: Mode 9.
Radiated Emission (30~1000 MHz): Mode 9.
Radiated Emission (1~26.5GHz): All Mode.

1.7 Condition of Power Supply

AC 120V；60Hz

1.8 EUT Configuration

1. Setup the EUT as shown in Sec.1.4 Block Diagram.
2. Turn on the power of all equipments.
3. Activate the selected Final Test Mode.

1.9 Test Methodology

The tests documented in this report were performed in accordance with ANSI C63.10 (2013) and FCC CFR 47 15.203, 15.207, 15.209 and 15.247.

1.10 General Test Procedures

Conducted Emissions

The EUT is set according to the requirements in Section 6.2 of ANSI C63.10 (2013).

Radiated Emissions

The EUT is set according to the requirements in Section 6.2 of ANSI C63.10 (2013).

1.11 Modification

The EUT has the following modifications:

Item	Location	Manufacturer	Model Number / Specification
External photo on page 6	USB to HDMI cable near HDMI port add a core	EROCORE ENTERPRISE CO., LTD.	FH0650B / 32.5 (L)*17.5(W)*6.5(ID)mm
External photo on page 7	USB type C port add a core	EROCORE ENTERPRISE CO., LTD.	FH0500B-1 / 25 (L)*12.7(W)*5(ID)mm
External photo on page 7	Micro USB port add a core	EROCORE ENTERPRISE CO., LTD.	FH0650B / 32.5 (L)*17.5(W)*6.5(ID)mm
Internal photo on page 2	Upper and lower shell conductive paint	MOXIE	B Series / 14.5cm*7.5cm
Internal photo on page 8	HDMI Connector add a EMI gasket	TennRich	CAP0102 / 0.5cm*1cm

1.12 FCC Part 15.205 restricted bands of operations

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37635-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

[2] Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

1.13 Qualification of Test Facility

BSMI Certificate No. : SL2-IS-E-0023, SL2-IN-E-0023, SL2-R1-E-0023, SL2-R2-E-0023, SL2-A1-E-0023, SL2-L1-E-0023.

FCC Designation No. : TW1071, TW1163

TAF Accreditation No. : 1163

VCCI Certificate No. : R-2156, C-2329, T-219, G-696

2 Power line Conducted Emission Measurement

2.1 Test Instruments

Refer to Sec. 1.2 Test Instruments.

2.2 Test Arrangement and Procedure

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

2.3 Limit (§ 15.207)

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency (MHz)	Limits (dBuV)	
	Q.P. (Quasi-Peak)	A.V. (Average)
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5.0	56	46
5.0 to 30	60	50

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

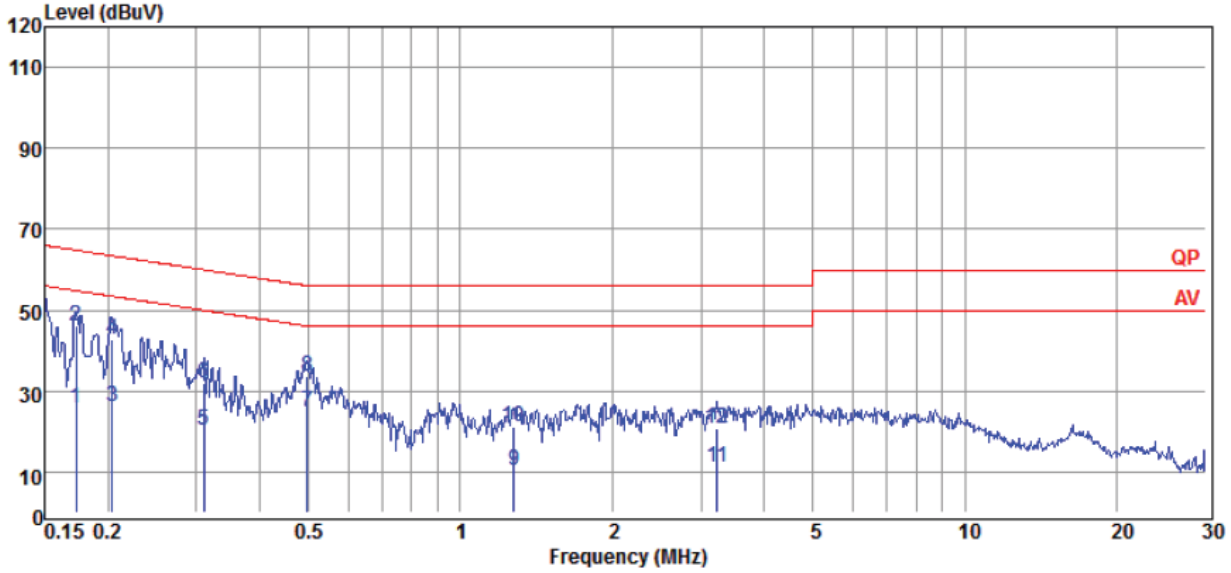
2.4 Test Result

Compliance

The final test data are shown on the following page(s).

Power Line Conducted Test Data

Test Date	:	09-AUG-2017	Power Line	:	Line
Temperature	:	27℃	Humidity	:	50%

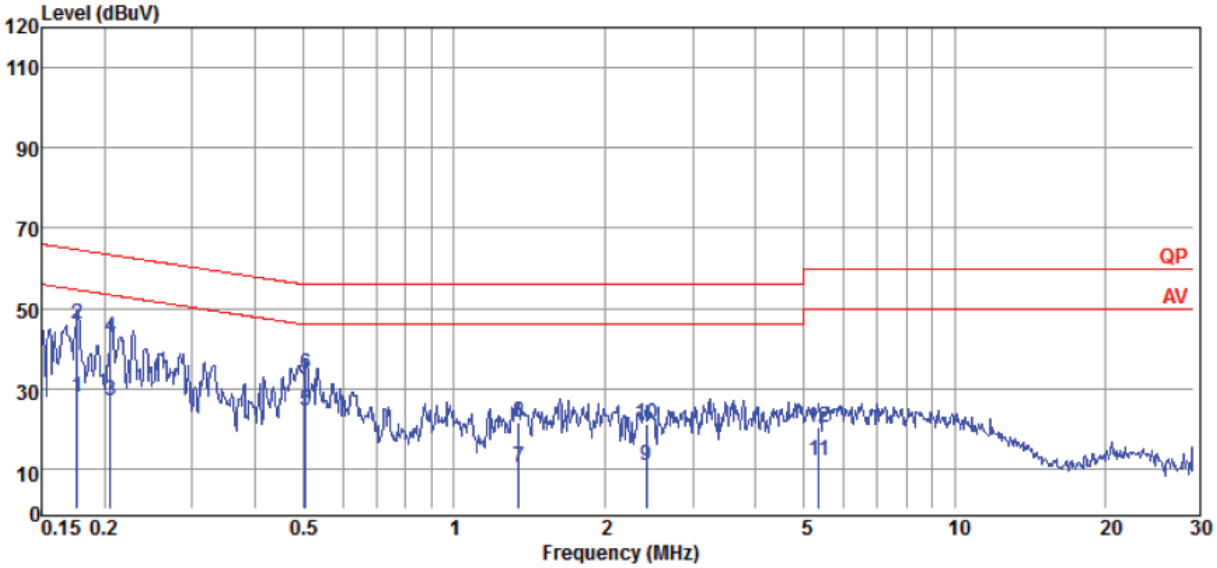


No.	Freq MHz	Reading dBμV	C.F dB	Result dBμV	Limit dBμV	Margin dB	Power Line	Remark
1	0.1731	25.75	0.13	25.88	54.81	-28.93	LINE	Average
2	0.1731	46.15	0.13	46.28	64.81	-18.53	LINE	QP
3	0.2040	26.06	0.14	26.20	53.45	-27.25	LINE	Average
4	0.2040	42.65	0.14	42.79	63.45	-20.66	LINE	QP
5	0.3100	20.37	0.15	20.52	49.97	-29.45	LINE	Average
6	0.3100	31.79	0.15	31.94	59.97	-28.03	LINE	QP
7	0.4967	24.72	0.17	24.89	46.05	-21.16	LINE	Average
8	0.4967	33.67	0.17	33.84	56.05	-22.21	LINE	QP
9	1.2760	10.11	0.23	10.34	46.00	-35.66	LINE	Average
10	1.2760	20.80	0.23	21.03	56.00	-34.97	LINE	QP
11	3.2240	10.92	0.34	11.26	46.00	-34.74	LINE	Average
12	3.2240	20.43	0.34	20.77	56.00	-35.23	LINE	QP

Remark：All readings are Quasi-Peak and Average values.

Power Line Conducted Test Data

Test Date	:	09-AUG-2017	Power Line	:	Neutral
Temperature	:	27℃	Humidity	:	50%



No.	Freq MHz	Reading dBµV	C.F dB	Result dBµV	Limit dBµV	Margin dB	Power Line	Remark
1	0.1768	27.57	0.12	27.69	54.64	-26.95	NEUTRAL	Average
2	0.1768	45.93	0.12	46.05	64.64	-18.59	NEUTRAL	QP
3	0.2061	26.92	0.12	27.04	53.36	-26.32	NEUTRAL	Average
4	0.2061	42.83	0.12	42.95	63.36	-20.41	NEUTRAL	QP
5	0.5047	24.18	0.15	24.33	46.00	-21.67	NEUTRAL	Average
6	0.5047	33.53	0.15	33.68	56.00	-22.32	NEUTRAL	QP
7	1.3450	9.98	0.22	10.20	46.00	-35.80	NEUTRAL	Average
8	1.3450	21.25	0.22	21.47	56.00	-34.53	NEUTRAL	QP
9	2.4220	10.73	0.27	11.00	46.00	-35.00	NEUTRAL	Average
10	2.4220	20.76	0.27	21.03	56.00	-34.97	NEUTRAL	QP
11	5.3620	11.75	0.44	12.19	50.00	-37.81	NEUTRAL	Average
12	5.3620	19.88	0.44	20.32	60.00	-39.68	NEUTRAL	QP

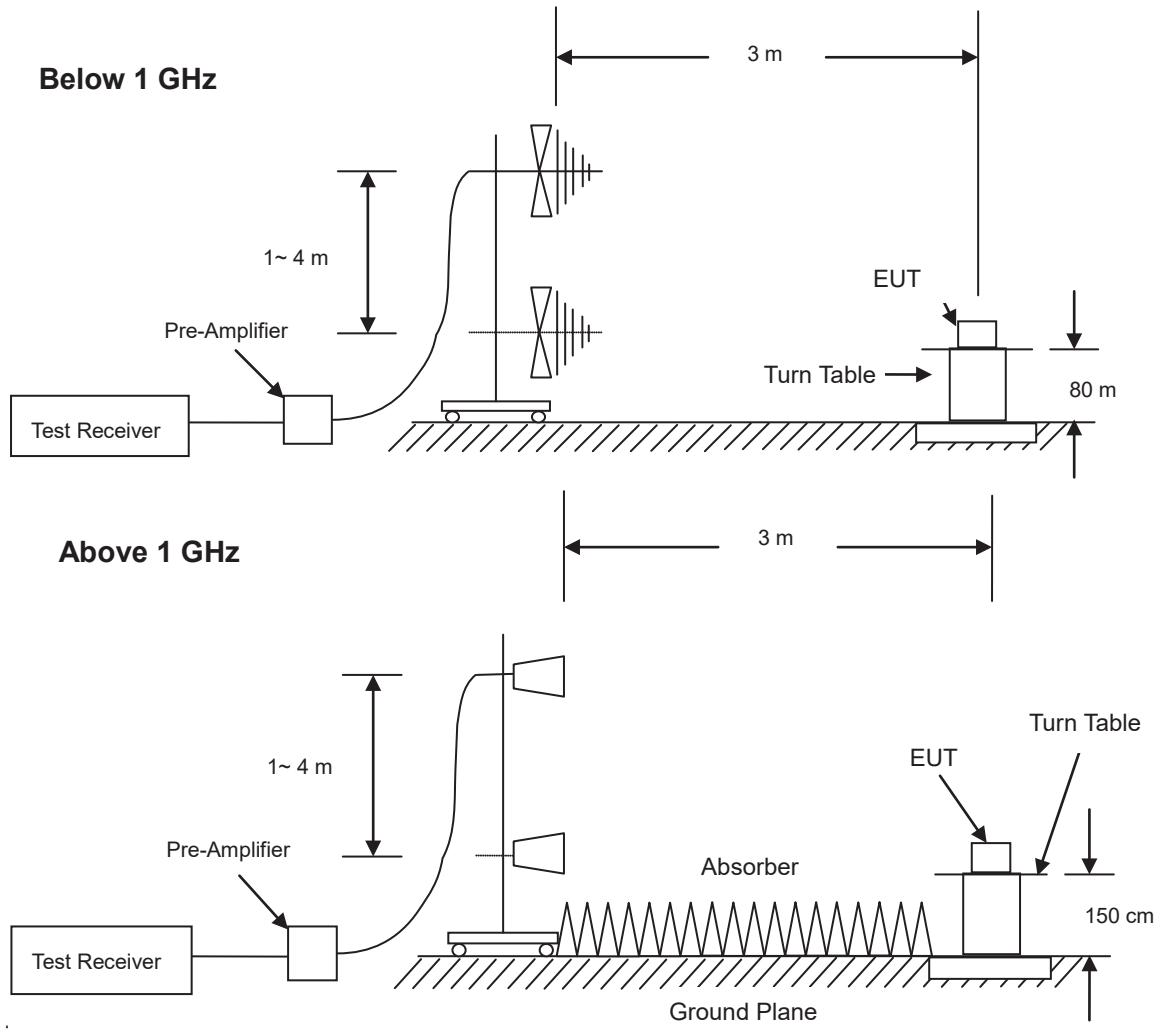
Remark：All readings are Quasi-Peak and Average values.

3 Radiated Emission Test

3.1 Test Instruments

Refer to Sec. 1.2 Test Instruments.

3.2 Test Arrangement and Procedure



1. The EUT is placed on a turntable, which is 0.8 m (below 1GHz) and 1.5m (above 1GHz) above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
4. Maxium procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:
   (a) Below 1 GHz: RBW =100 kHz/ VBW = 1 MHz/ Sweep = AUTO.
   (b) Above 1 GHz: Peak: RBW = VBW = 1MHz/ Sweep = AUTO.
7. Repeat above procedures until the meausreemnts for all frequencies are complete.

3.3 Limit of Spurious Emission (§ 15.209)

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is lesser attenuation.

Frequency (MHz)	Field strength (microvolts/ 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

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g.§§ 15.231 and 15.241.

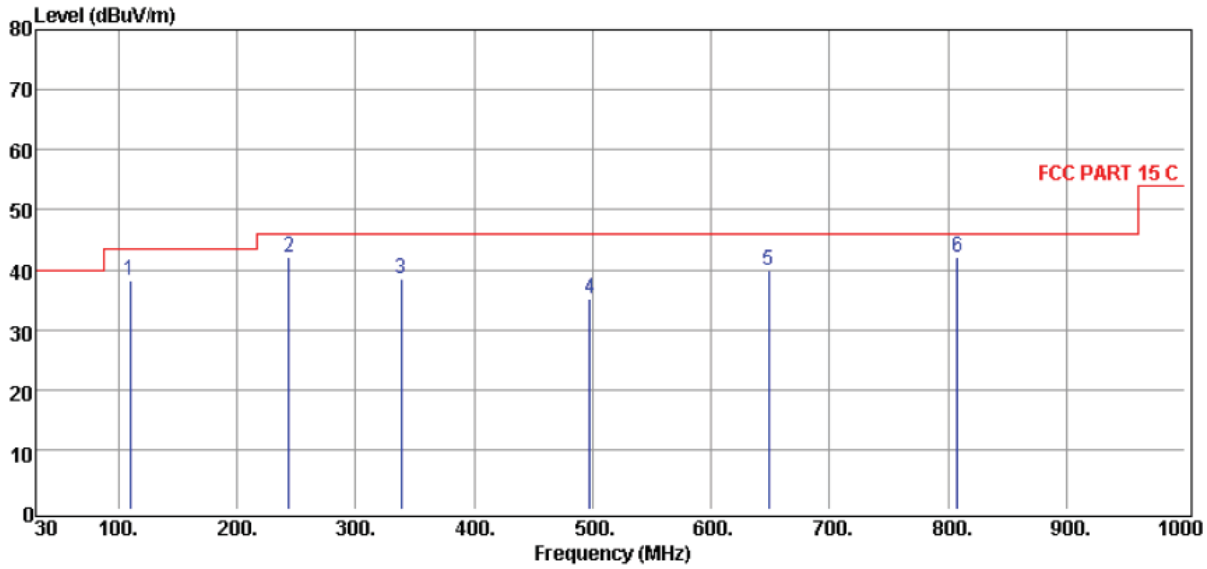
3.4 Test Result

Compliance

The final test data are shown on the following page(s).

Radiated Emission Test Data (Below 1 GHz)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Polarization	:	Vertical	Channel	:	CH01 (2412MHz)
Test Mode	:	Mode 2			



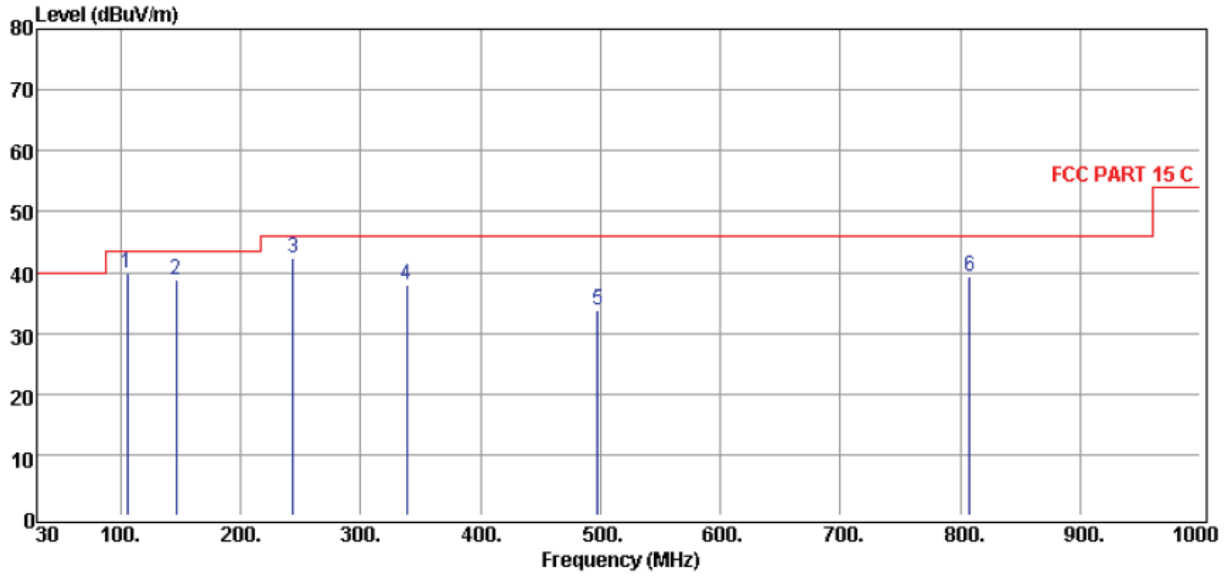
No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	109.54	49.85	-11.53	38.32	43.50	-5.18	HORIZONTAL	Peak
2	243.40	52.47	-10.26	42.21	46.00	-3.79	HORIZONTAL	Peak
3	338.46	45.73	-7.27	38.46	46.00	-7.54	HORIZONTAL	Peak
4	497.54	38.72	-3.44	35.28	46.00	-10.72	HORIZONTAL	Peak
5	648.86	40.54	-0.72	39.82	46.00	-6.18	HORIZONTAL	Peak
6	807.94	39.36	2.59	41.95	46.00	-4.05	HORIZONTAL	Peak

Remark：

1. Tests with frequencies below 30 MHz are not reported because the data is very low.
2. Measuring frequencies from 30 MHz to 1 GHz.
3. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode.
4. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
5. All readings are Peak values. None of the peak value reading exceeds the Q.P. limit. Hence, Q.P. reading was not measured.
6. The IF bandwidth of SPA between 30 MHz to 1 GHz was 100 kHz.

Radiated Emission Test Data (Below 1 GHz)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Polarization	:	Horizontal	Channel	:	CH01 (2412MHz)
Test Mode	:	Mode 2			



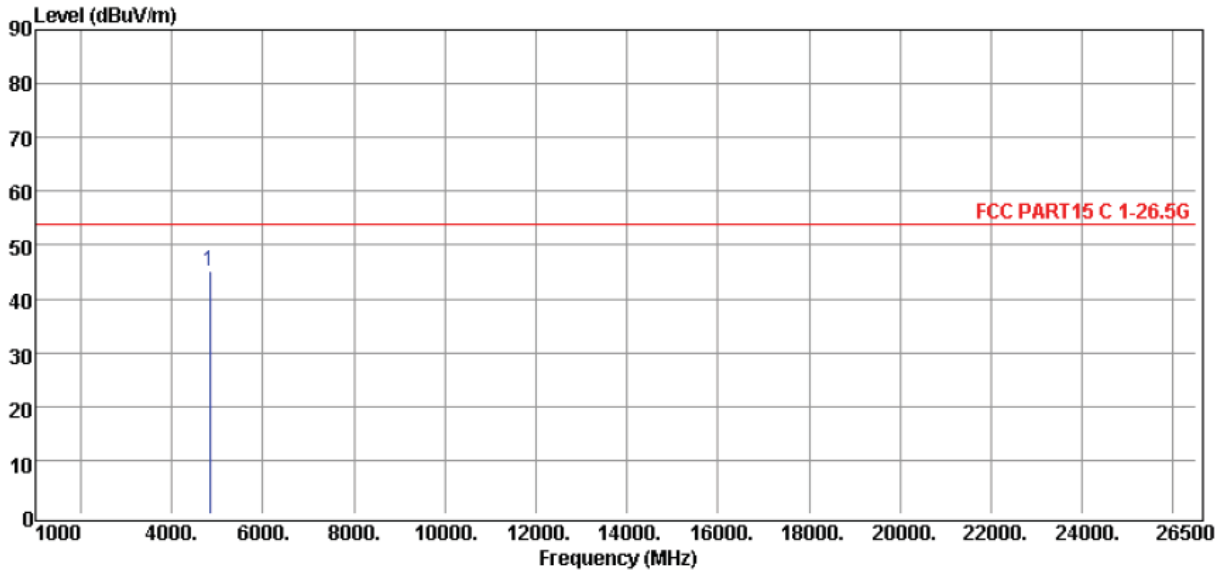
No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBμV	dB	dBμV/m	dBμV/m	dB	Pol.	
1	105.66	51.73	-11.94	39.79	43.50	-3.71	VERTICAL	Peak
2	146.40	49.82	-10.94	38.88	43.50	-4.62	VERTICAL	Peak
3	243.40	52.50	-10.26	42.24	46.00	-3.76	VERTICAL	Peak
4	338.46	45.31	-7.27	38.04	46.00	-7.96	VERTICAL	Peak
5	497.54	37.27	-3.44	33.83	46.00	-12.17	VERTICAL	Peak
6	807.94	36.85	2.59	39.44	46.00	-6.56	VERTICAL	Peak

Remark：

1. Tests with frequencies below 30 MHz are not reported because the data is very low.
2. Measuring frequencies from 30 MHz to 1 GHz.
3. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode.
4. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
5. All readings are Peak values. None of the peak value reading exceeds the Q.P. limit. Hence, Q.P. reading was not measured.
6. The IF bandwidth of SPA between 30 MHz to 1 GHz was 100 kHz.

Radiated Emission Test Data (Above and Field Strength to 10th Harmonic)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Polarization	:	Horizontal	Channel	:	CH01 (2412MHz)
Test Mode	:	Mode 1			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	4824.00	42.41	2.81	45.22	54.00	-8.78	HORIZONTAL	Peak

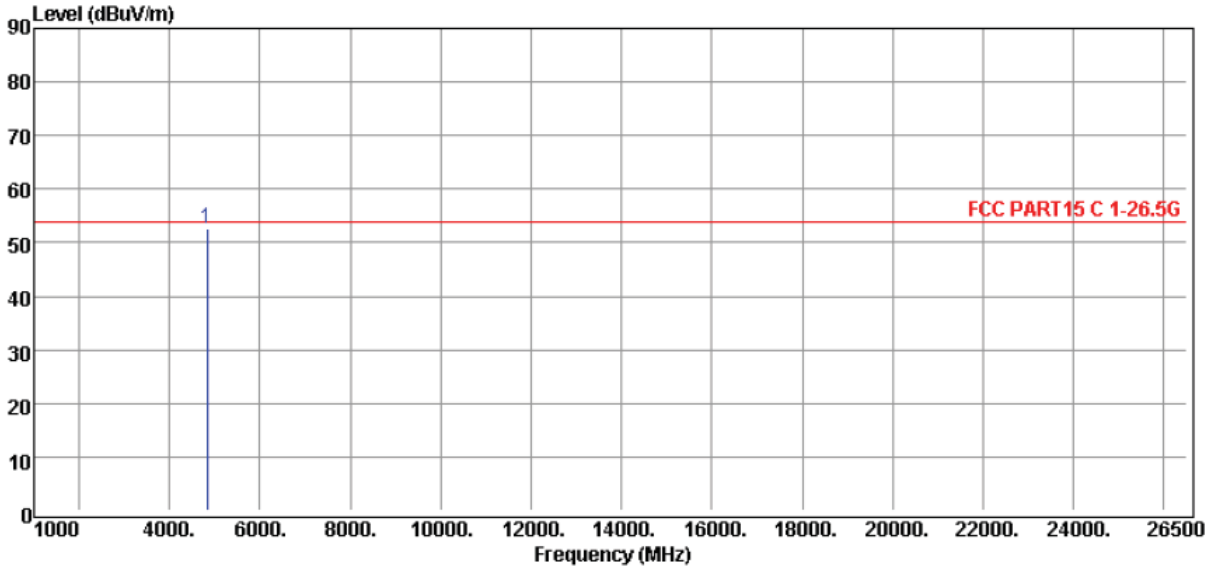
Remark：

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:

   Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above and Field Strength to 10th Harmonic)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Polarization	:	Vertical	Channel	:	CH01 (2412MHz)
Test Mode	:	Mode 1			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	4824.00	49.76	2.81	52.57	54.00	-1.43	VERTICAL	Peak

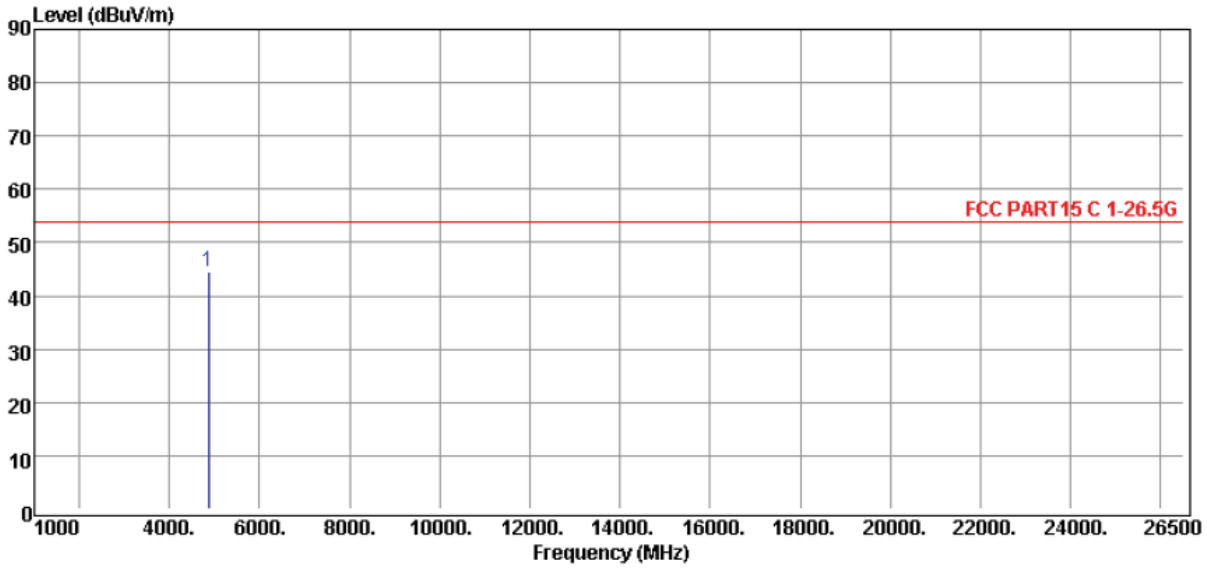
Remark：

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:

   Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above and Field Strength to 10th Harmonic)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Polarization	:	Horizontal	Channel	:	CH06 (2437 MHz)
Test Mode	:	Mode 2			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	4874.00	41.70	2.94	44.64	54.00	-9.36	HORIZONTAL	Peak

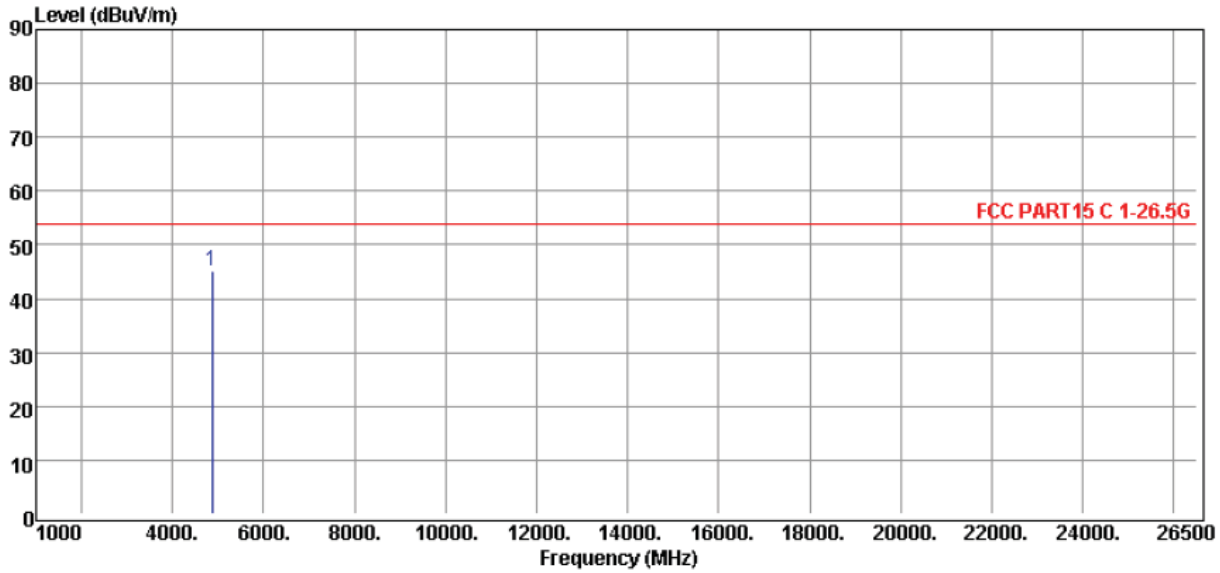
Remark：

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:

   Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above and Field Strength to 10th Harmonic)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Polarization	:	Vertical	Channel	:	CH06 (2437 MHz)
Test Mode	:	Mode 2			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	4874.00	42.24	2.94	45.18	54.00	-8.82	VERTICAL	Peak

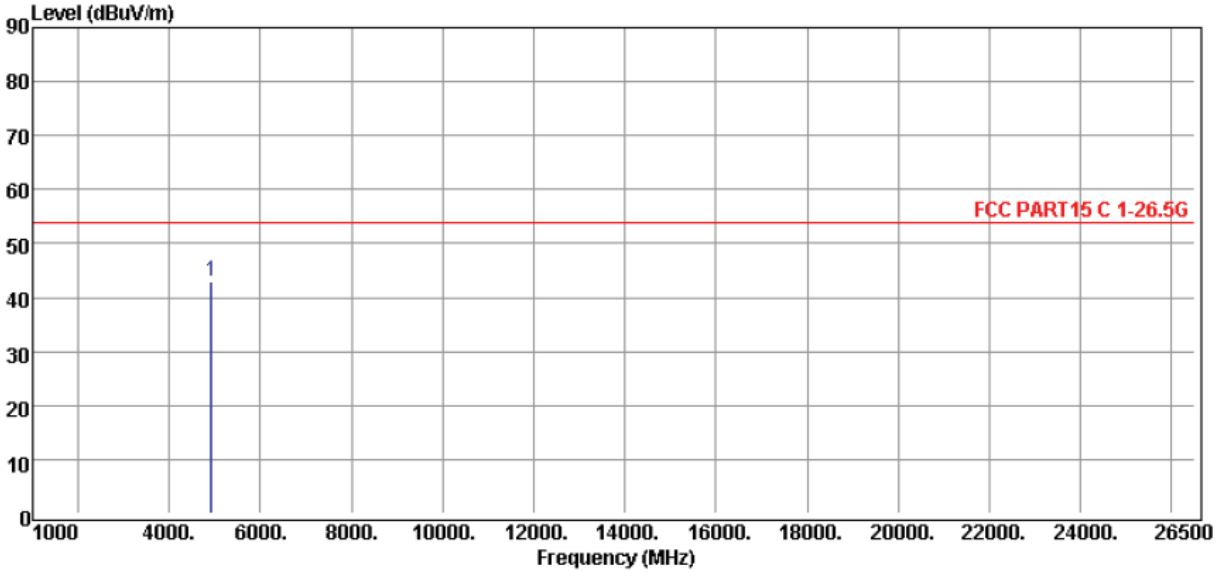
Remark：

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:

   Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above and Field Strength to 10th Harmonic)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Polarization	:	Horizontal	Channel	:	CH11 (2462 MHz)
Test Mode	:	Mode 3			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	4924.00	39.95	3.07	43.02	54.00	-10.98	HORIZONTAL	Peak

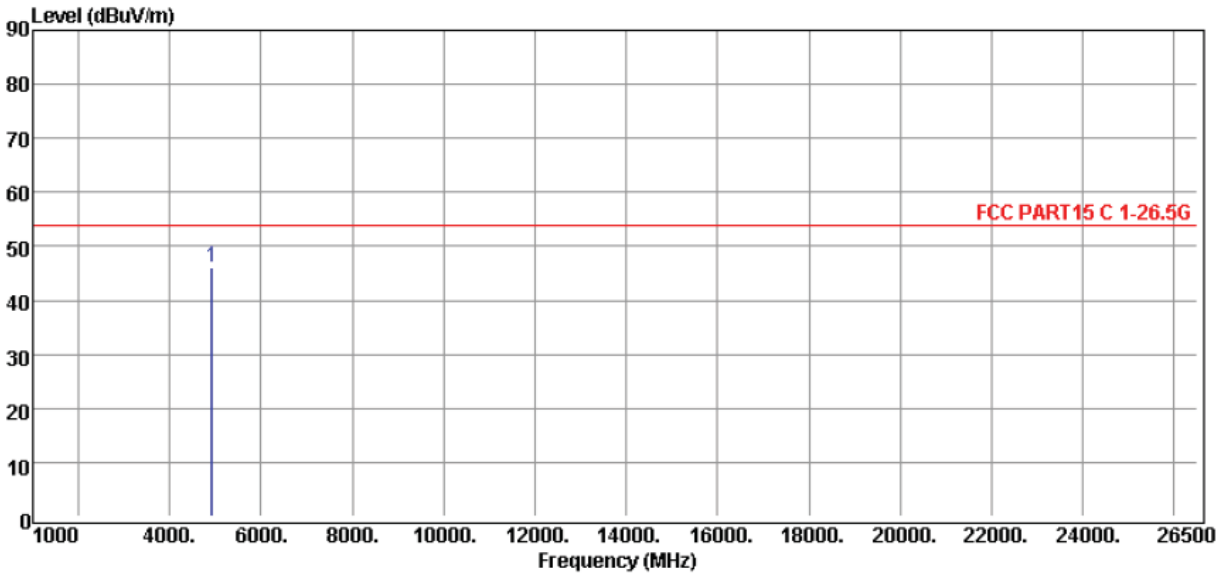
Remark：

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:

   Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above and Field Strength to 10th Harmonic)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Polarization	:	Vertical	Channel	:	CH11 (2462 MHz)
Test Mode	:	Mode 3			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	4924.00	43.03	3.07	46.10	54.00	-7.90	VERTICAL	Peak

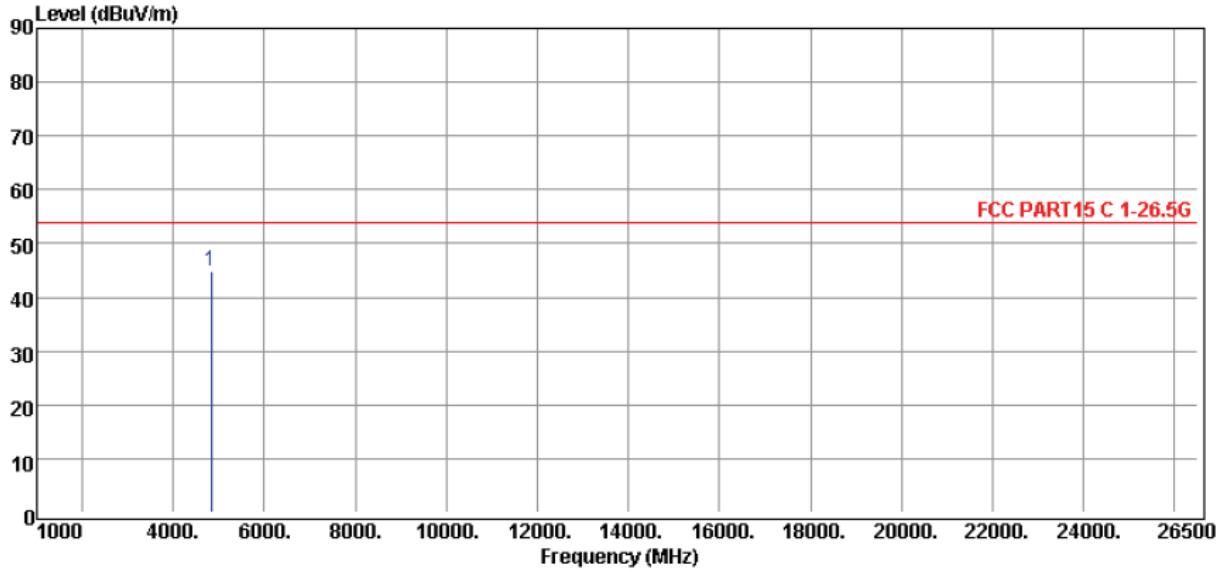
Remark：

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:

   Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above and Field Strength to 10th Harmonic)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Polarization	:	Horizontal	Channel	:	CH01 (2412MHz)
Test Mode	:	Mode 4			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	4824.00	42.06	2.81	44.87	54.00	-9.13	HORIZONTAL	Peak

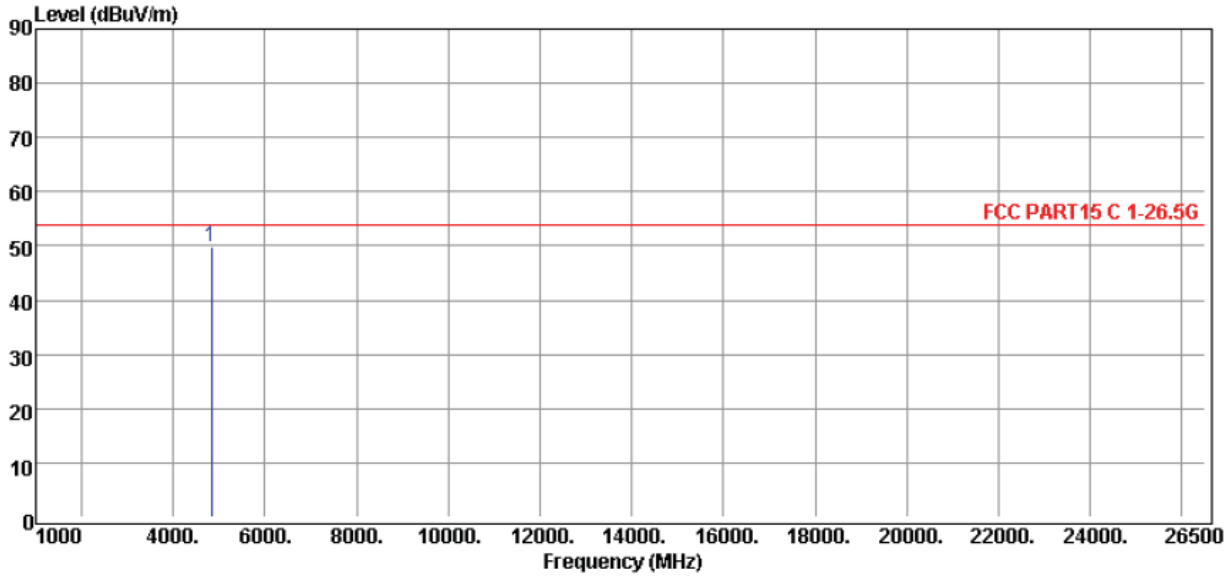
Remark：

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:

   Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above and Field Strength to 10th Harmonic)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Polarization	:	Vertical	Channel	:	CH01 (2412MHz)
Test Mode	:	Mode 4			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBμV	dB	dBμV/m	dBμV/m	dB	Pol.	
1	4824.00	47.13	2.81	49.94	54.00	-4.06	VERTICAL	Peak

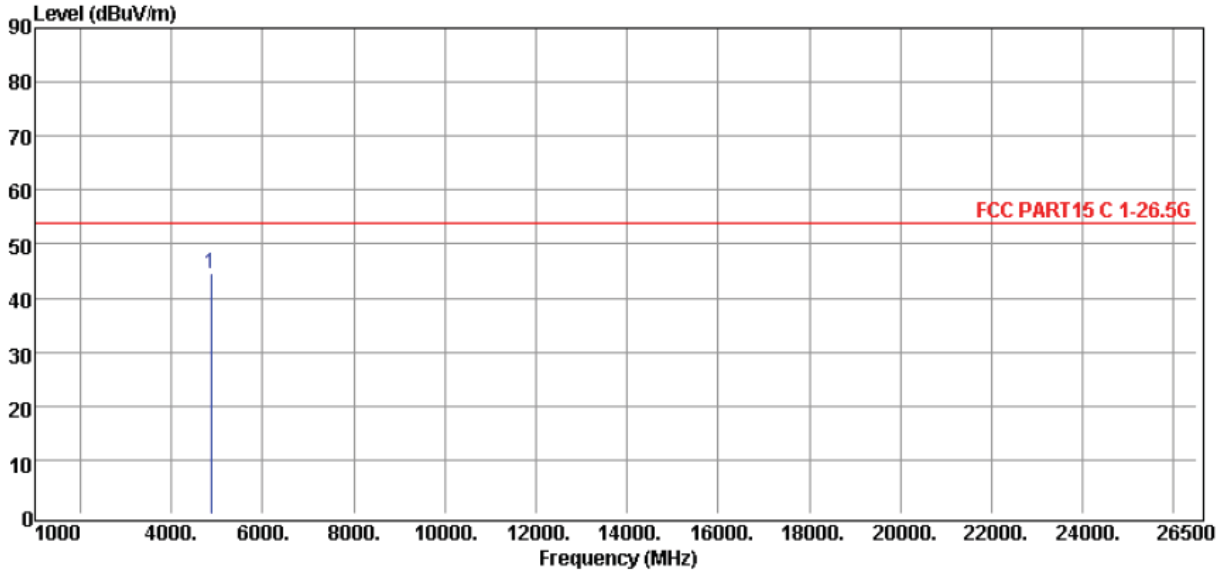
Remark：

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:

   Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above and Field Strength to 10th Harmonic)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Polarization	:	Horizontal	Channel	:	CH06 (2437 MHz)
Test Mode	:	Mode 5			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	4874.00	41.70	2.94	44.64	54.00	-9.36	HORIZONTAL	Peak

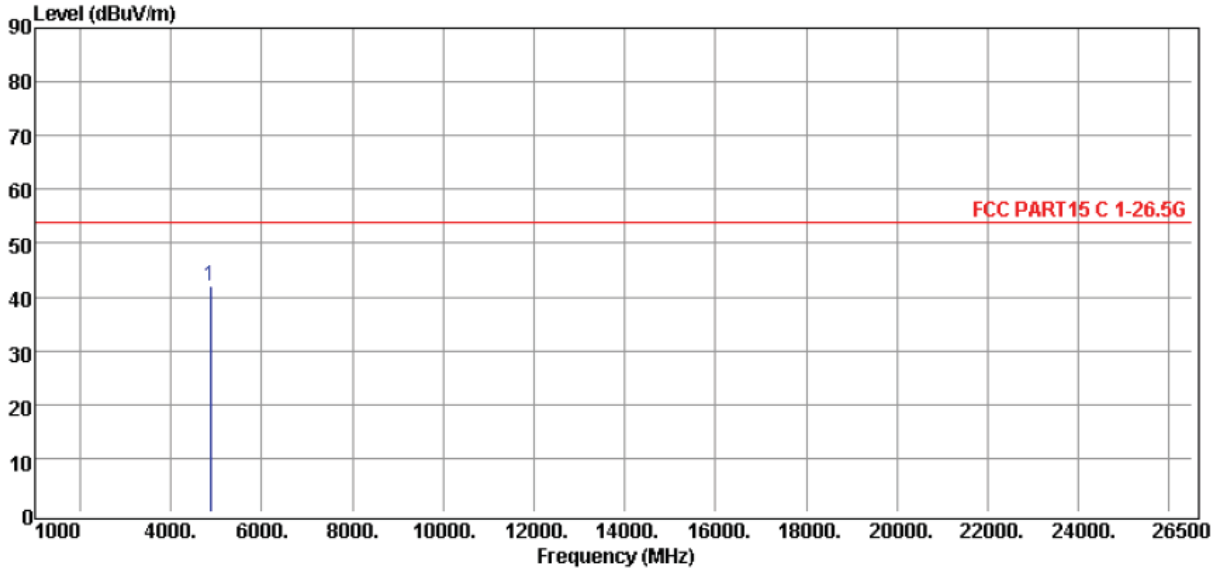
Remark：

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:

   Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above and Field Strength to 10th Harmonic)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Polarization	:	Vertical	Channel	:	CH06 (2437 MHz)
Test Mode	:	Mode 5			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBμV	dB	dBμV/m	dBμV/m	dB	Pol.	
1	4874.00	39.11	2.94	42.05	54.00	-11.95	VERTICAL	Peak

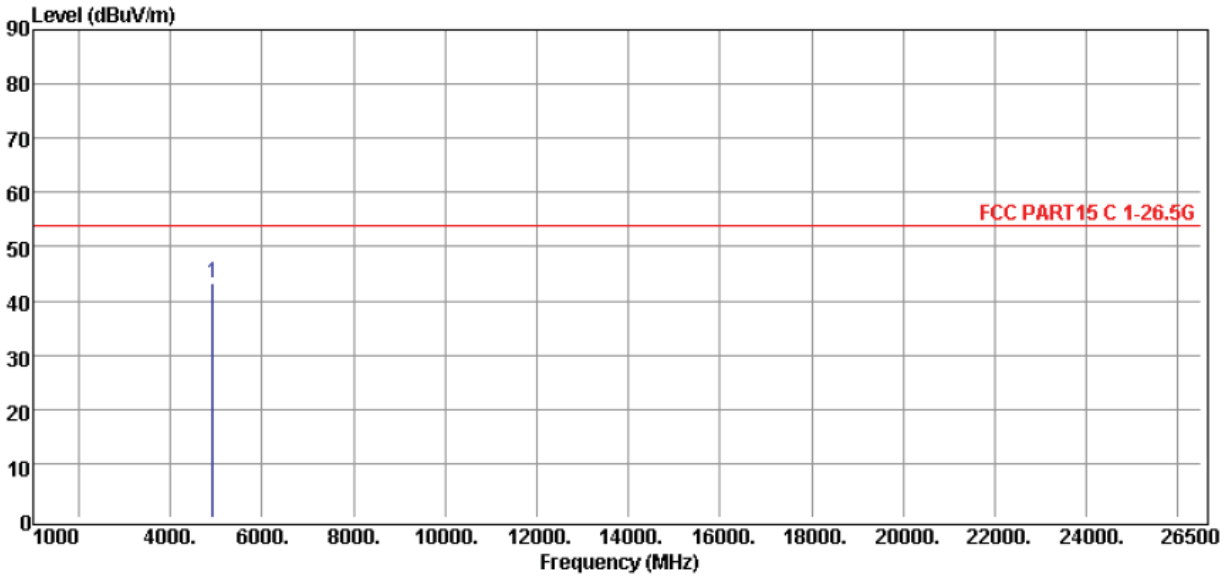
Remark：

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:

   Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above and Field Strength to 10th Harmonic)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Polarization	:	Horizontal	Channel	:	CH11 (2462 MHz)
Test Mode	:	Mode 6			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	4924.00	40.15	3.07	43.22	54.00	-10.78	HORIZONTAL	Peak

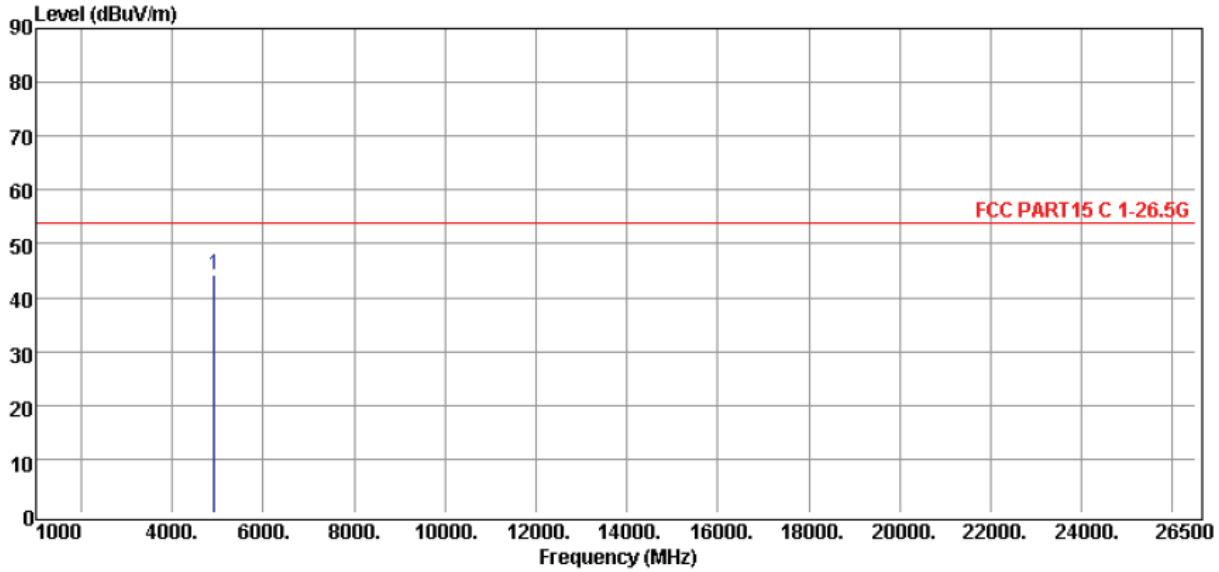
Remark：

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:

   Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above and Field Strength to 10th Harmonic)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Polarization	:	Vertical	Channel	:	CH11 (2462 MHz)
Test Mode	:	Mode 6			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	4924.00	41.27	3.07	44.34	54.00	-9.66	VERTICAL	Peak

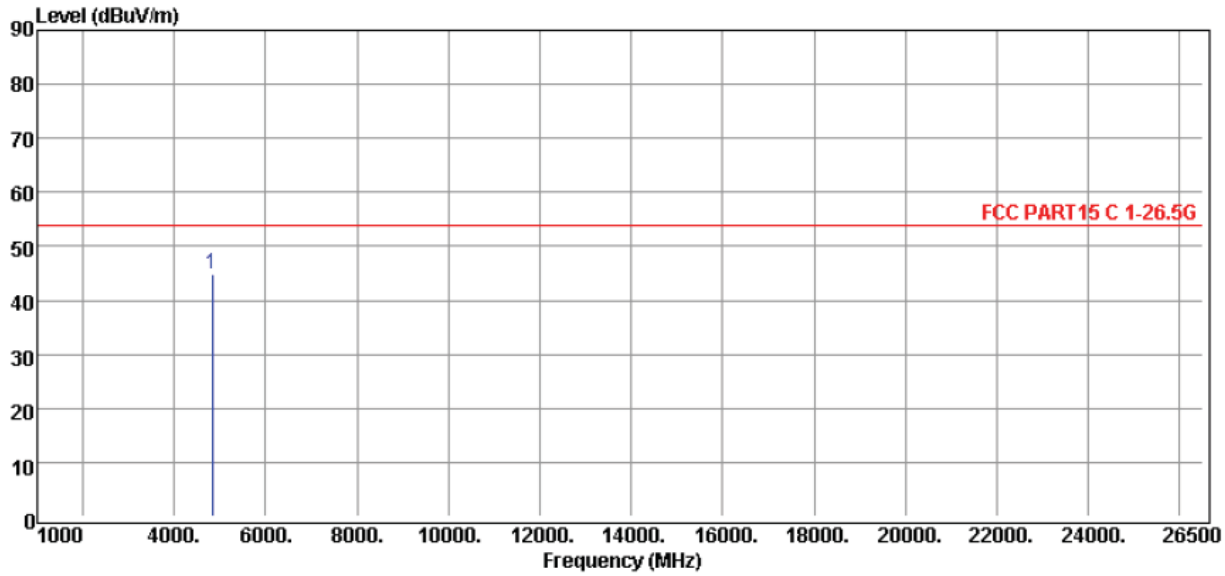
Remark：

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:

   Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above and Field Strength to 10th Harmonic)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Polarization	:	Horizontal	Channel	:	CH01 (2412MHz)
Test Mode	:	Mode 7			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	4824.00	42.06	2.81	44.87	54.00	-9.13	HORIZONTAL	Peak

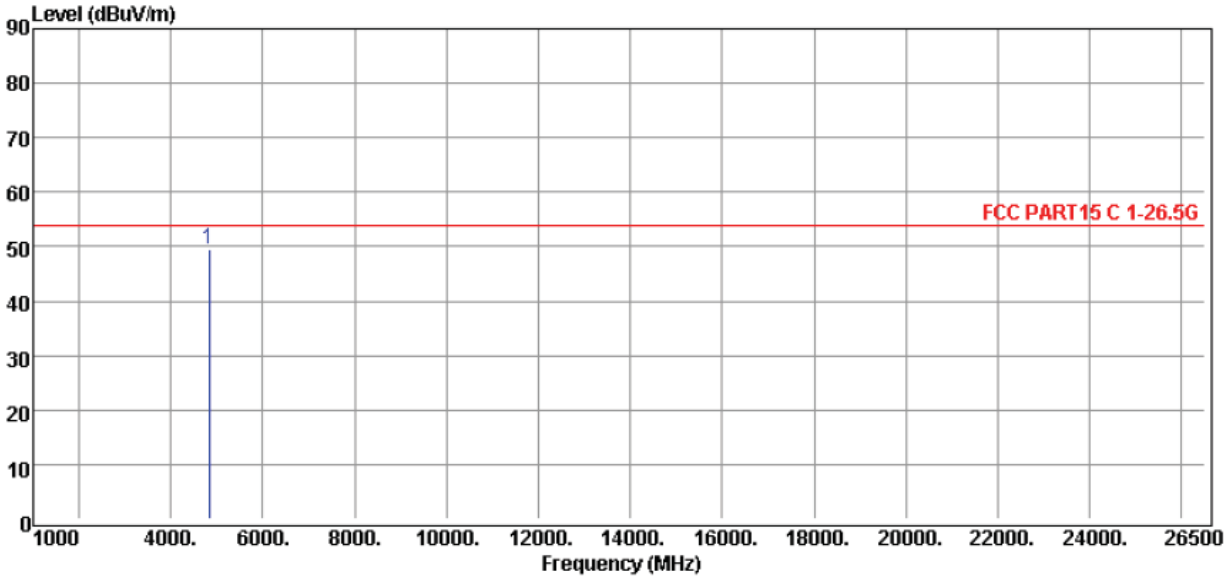
Remark：

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:

   Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above and Field Strength to 10th Harmonic)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Polarization	:	Vertical	Channel	:	CH01 (2412MHz)
Test Mode	:	Mode 7			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBμV	dB	dBμV/m	dBμV/m	dB	Pol.	
1	4824.00	46.70	2.81	49.51	54.00	-4.49	VERTICAL	Peak

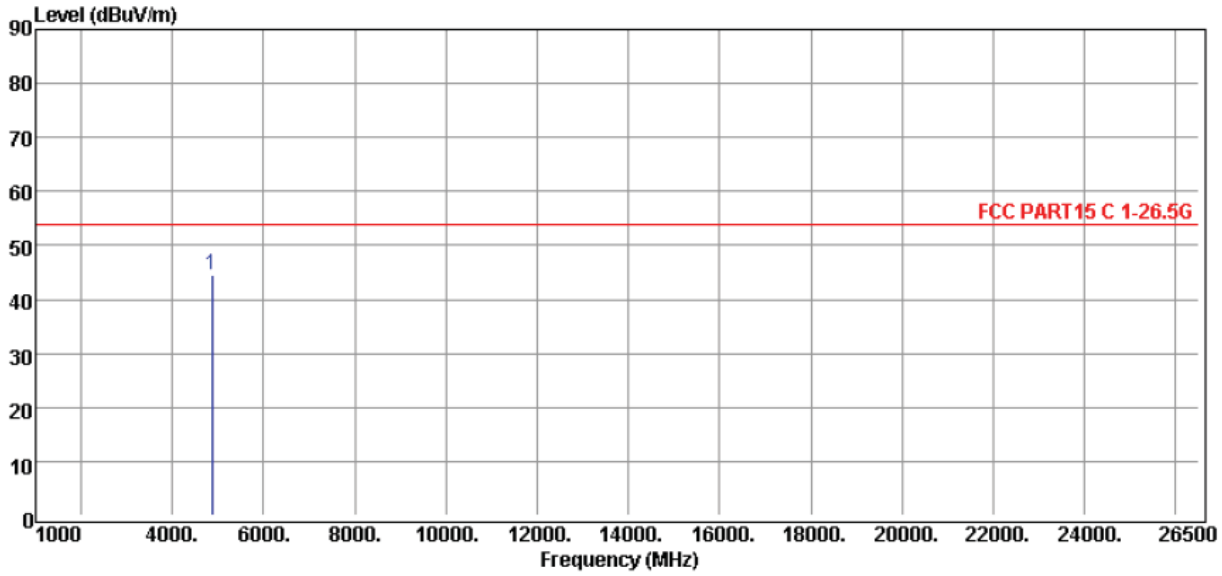
Remark：

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:

   Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above and Field Strength to 10th Harmonic)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Polarization	:	Horizontal	Channel	:	CH06 (2437 MHz)
Test Mode	:	Mode 8			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	4874.00	41.70	2.94	44.64	54.00	-9.36	HORIZONTAL	Peak

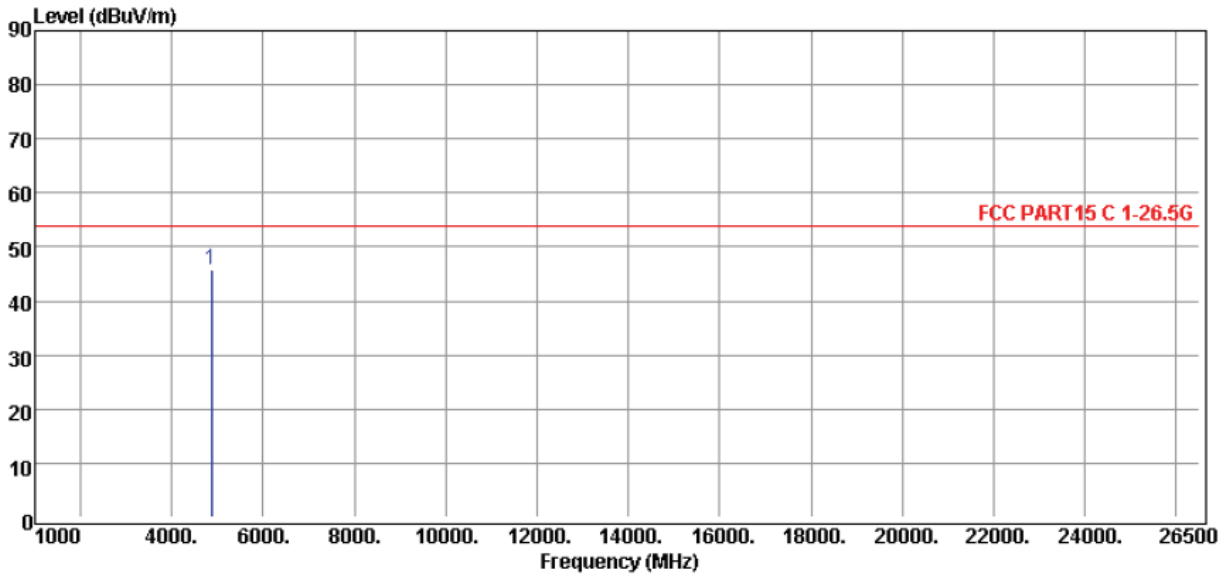
Remark：

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:

   Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above and Field Strength to 10th Harmonic)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Polarization	:	Vertical	Channel	:	CH06 (2437 MHz)
Test Mode	:	Mode 8			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBμV	dB	dBμV/m	dBμV/m	dB	Pol.	
1	4874.00	42.70	2.94	45.64	54.00	-8.36	VERTICAL	Peak

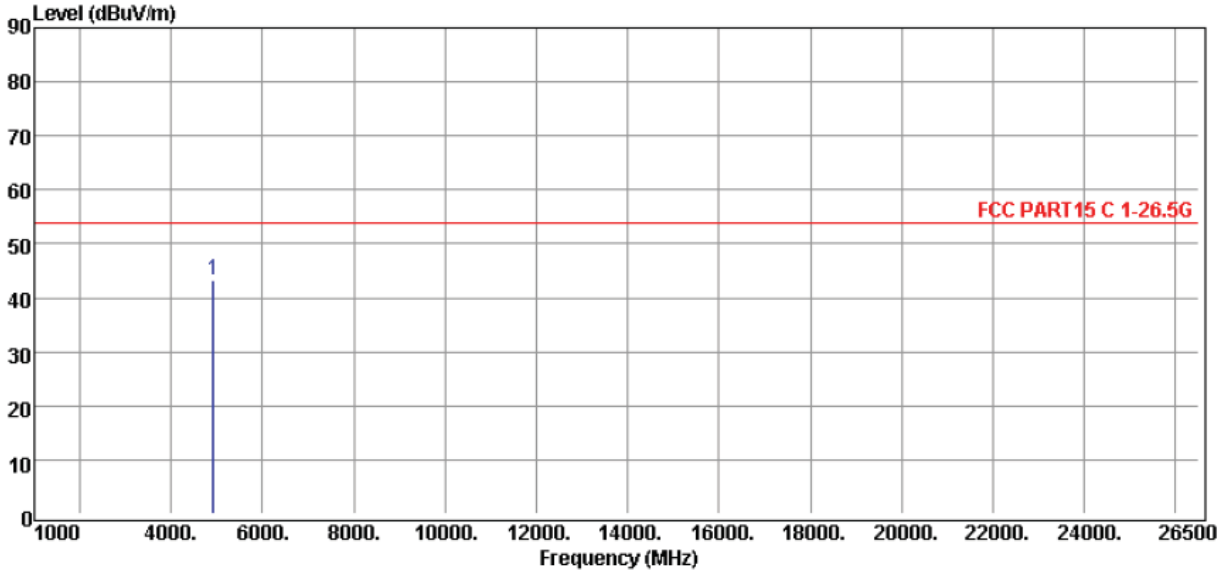
Remark：

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:

   Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above and Field Strength to 10th Harmonic)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Polarization	:	Horizontal	Channel	:	CH11 (2462 MHz)
Test Mode	:	Mode 9			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	4924.00	40.15	3.07	43.22	54.00	-10.78	HORIZONTAL	Peak

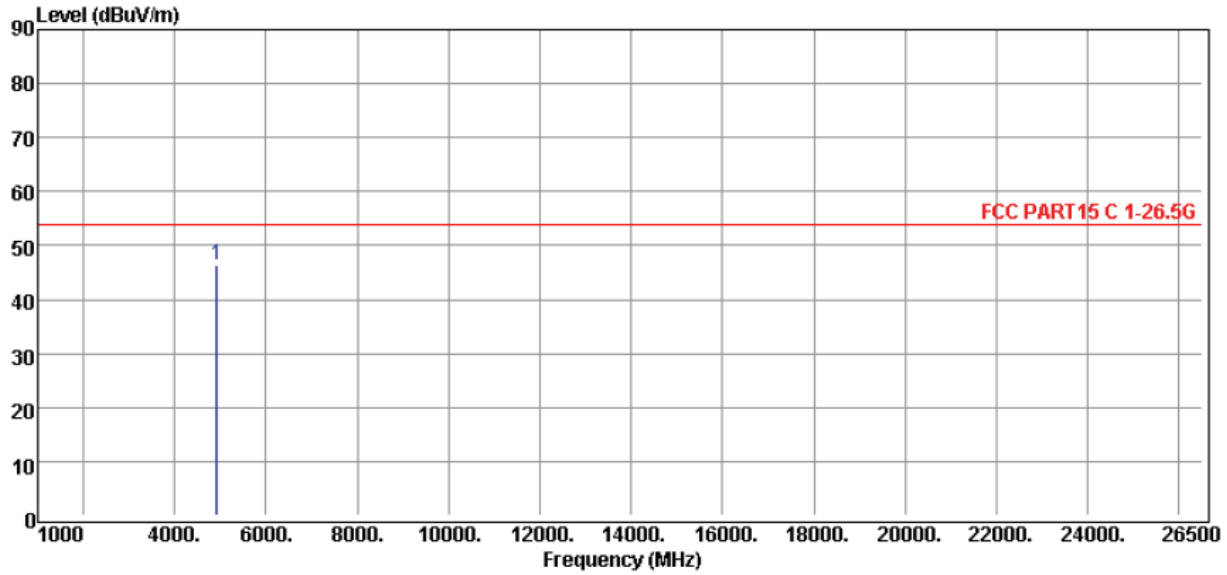
Remark：

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:

   Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above and Field Strength to 10th Harmonic)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Polarization	:	Vertical	Channel	:	CH11 (2462 MHz)
Test Mode	:	Mode 9			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	4924.00	43.43	3.07	46.50	54.00	-7.50	VERTICAL	Peak

Remark：

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:

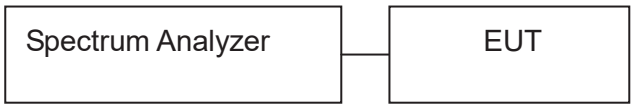
   Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

4 6 dB Bandwidth of the Emission

4.1 Test Instruments

Refer to Sec. 1.2 Test Instruments.

4.2 Test Arrangement



4.3 Test Procedure

1. Connect the EUT to spectrum analyzer through appropriate attenuator.
2. Spectrum setting; RMB = 100 kHz; VBW ≥ 300 kHz. Detector = Peak. Sweep = Auto.
3. Trace = Max Hold.

4.4 Limit (§ 15.247(a)(2))

Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

4.5 Test Result

Compliance

The final test data are shown on the following page(s).

Temperature : 27℃ Humidity : 50%

Test Date : 09-AUG-2017 Tested by : Andrew Lin

Test Mode : 802.11 b

Test Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
01	2412	7.066	≥0.5
06	2437	7.106	≥0.5
11	2462	7.984	≥0.5

Test Mode : 802.11 g

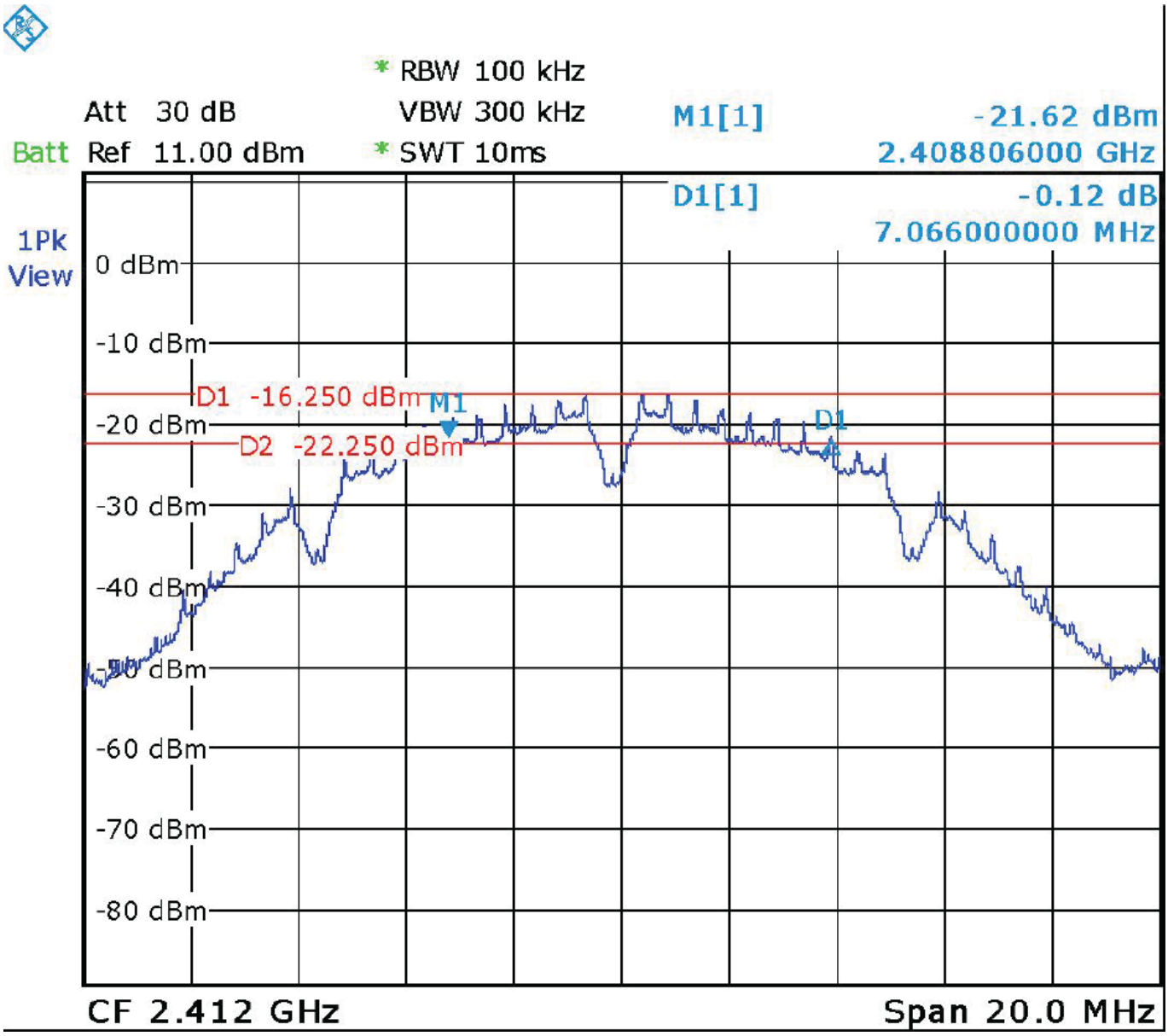
Test Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
01	2412	15.090	≥0.5
06	2437	15.050	≥0.5
11	2462	13.812	≥0.5

Test Mode : 802.11 n

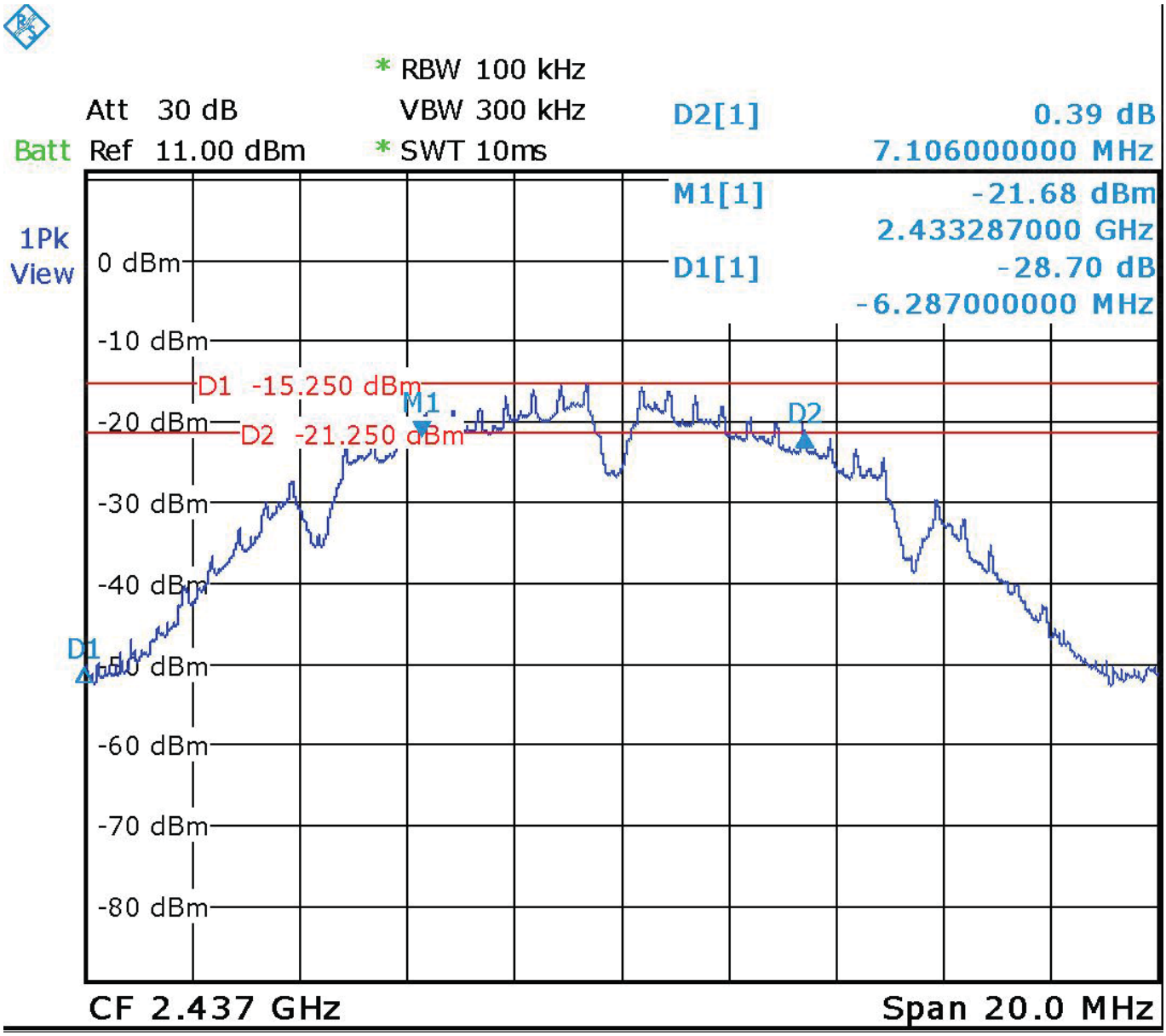
Test Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
01	2412	15.449	≥0.5
06	2437	15.968	≥0.5
11	2462	14.810	≥0.5

The final test data are shown on the following page(s).

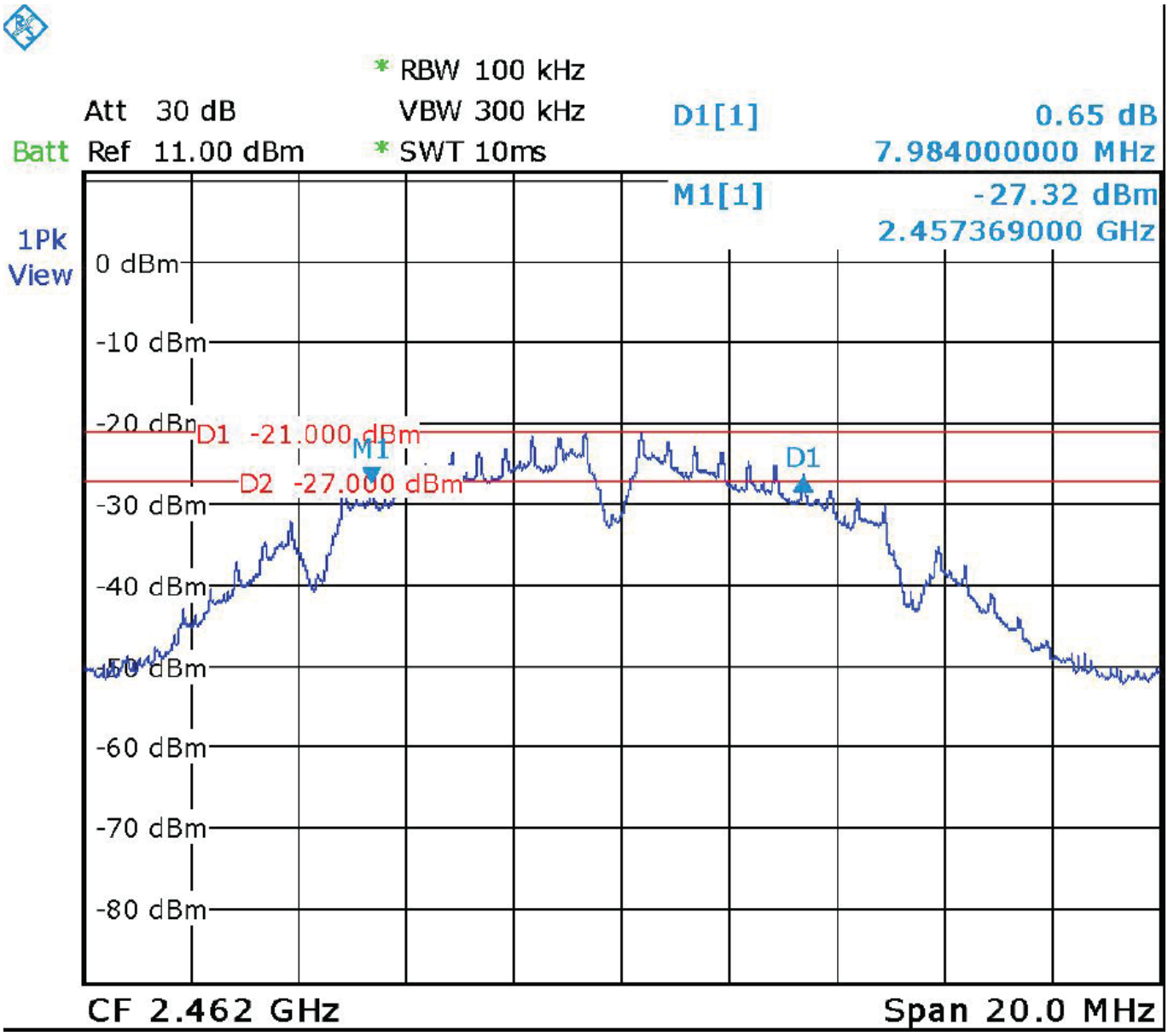
Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	802.11b	Channel	:	CH01 (2412MHz)



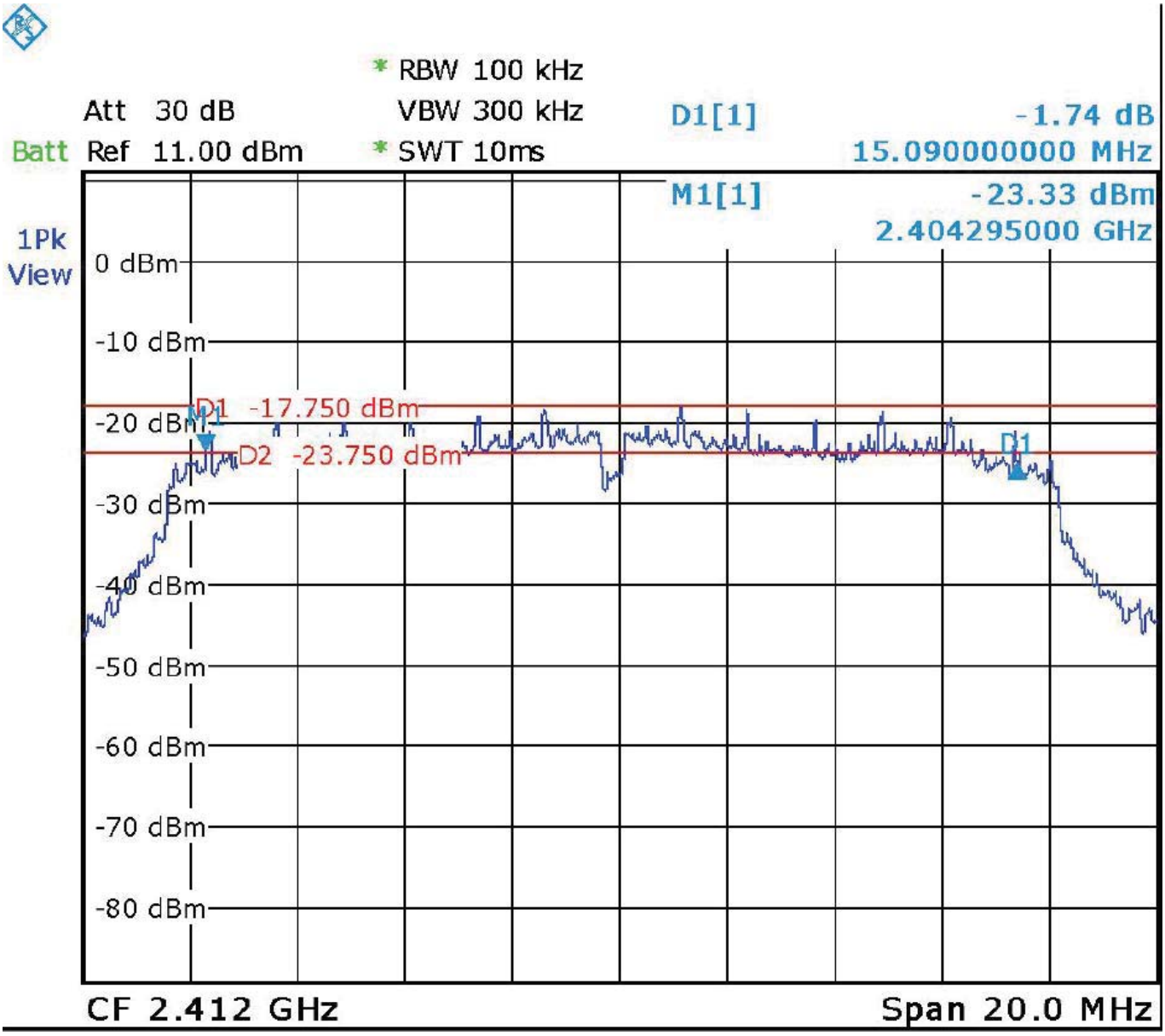
Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	802.11b	Channel	:	CH06 (2437MHz)



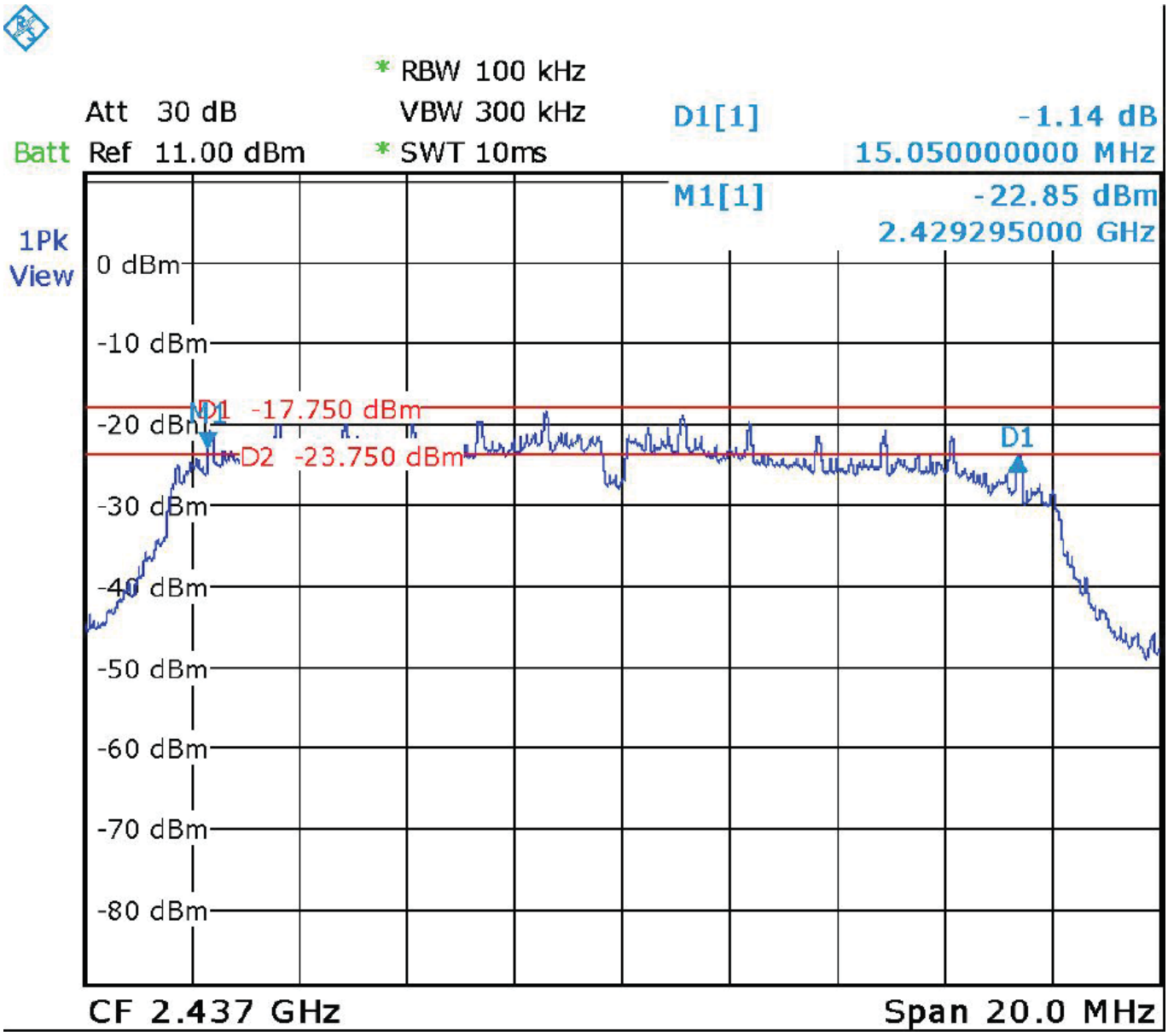
Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	802.11b	Channel	:	CH11 (2462MHz)



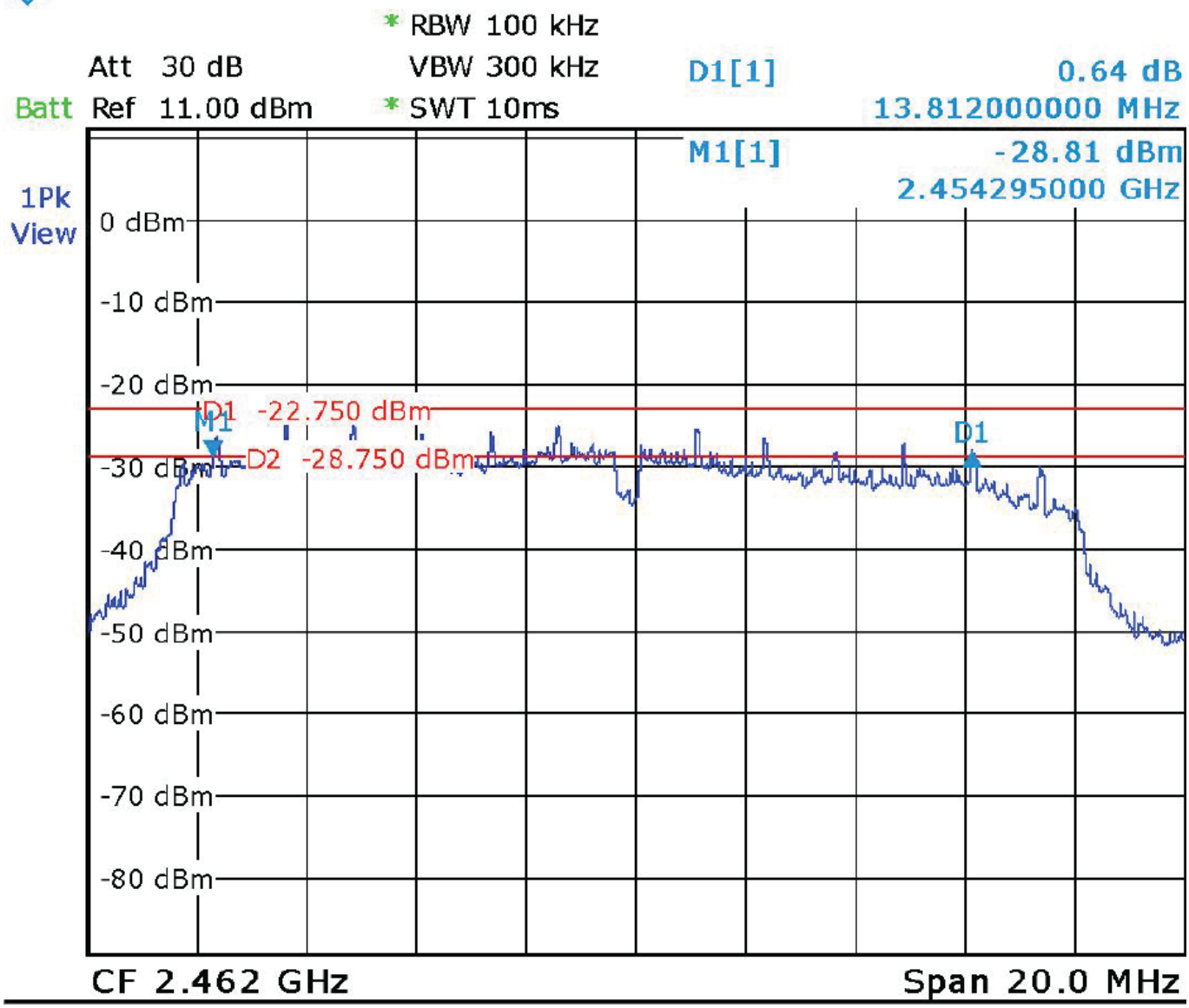
Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	802.11g	Channel	:	CH01 (2412MHz)



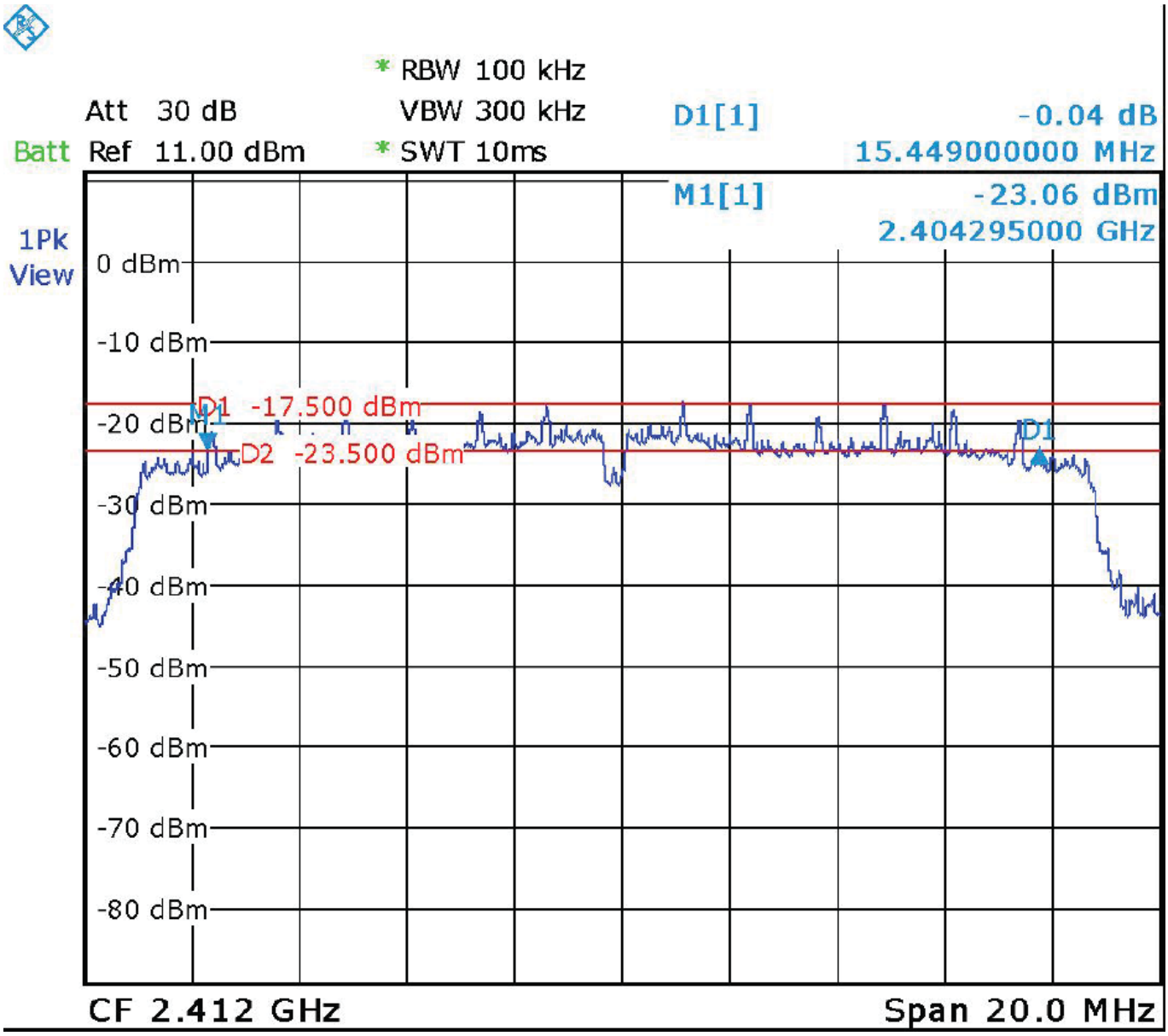
Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	802.11g	Channel	:	CH06 (2437MHz)



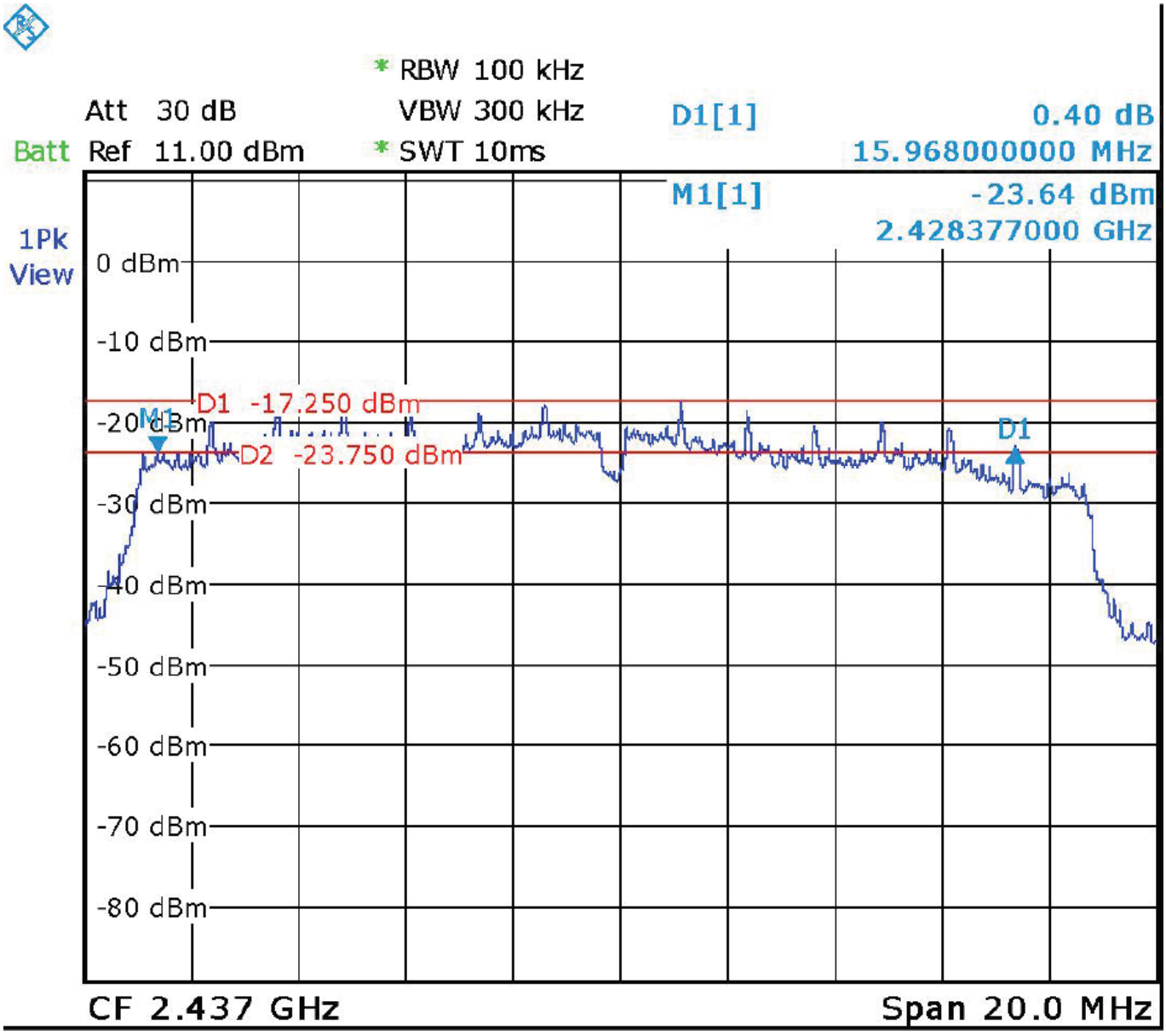
Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	802.11g	Channel	:	CH11 (2462MHz)



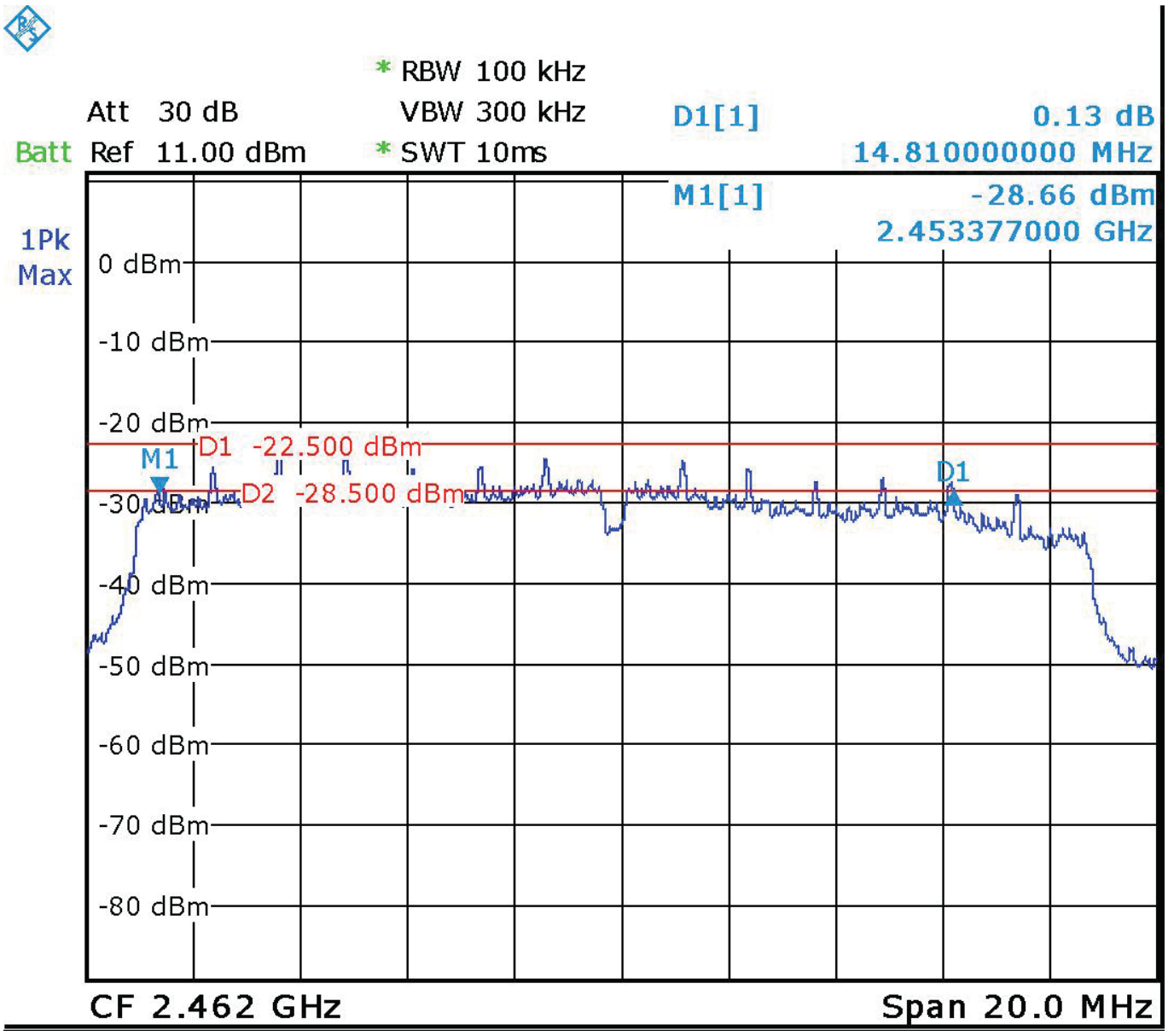
Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	802.11n	Channel	:	CH01 (2412MHz)



Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	802.11n	Channel	:	CH06 (2437MHz)



Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	802.11n	Channel	:	CH11 (2462MHz)

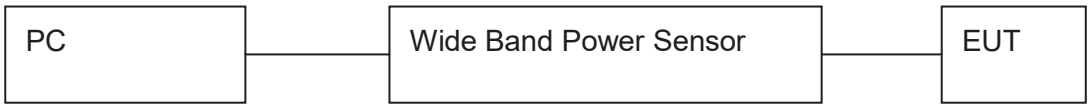


5 Maximum Conducted Output Power

5.1 Test Instruments

Refer to Sec. 1.2 Test Instruments.

5.2 Test Arrangement



5.3 Test Procedure

1. To perform the measurement of maximum conducted (Average) output power, firstly, connect the EUT to Wide Band Power Sensor.
2. Then, configure the EUT to transmit continuously (i.e., with a duty cycle of greater than or equal to 98%) and to transmit at its maximum power level.
3. Finally, capture the Maximum reading from PC.
4. Test method in Section 11.9.2.3 of ANSI C63.10 (2013) was used to measure the output power.

5.4 Limit (§ 15.247(b)(3))

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt.

5.5 Test Result

Compliance

The final test data are shown on the following page(s).

Temperature : 27℃ Humidity : 50%

Test Date : 09-AUG-2017 Tested by : Andrew Lin

Test Mode : 802.11 b

Test Channel	Frequency (MHz)	Test Result		Limit	
		(dBm)	(W)	(dBm)	(W)
01	2412	6.35	0.004315	30	1
06	2437	5.83	0.003828	30	1
11	2462	5.42	0.003483	30	1

Test Mode : 802.11 g

Test Channel	Frequency (MHz)	Test Result		Limit	
		(dBm)	(W)	(dBm)	(W)
01	2412	5.22	0.003326	30	1
06	2437	4.72	0.002964	30	1
11	2462	4.43	0.002773	30	1

Test Mode : 802.11 n

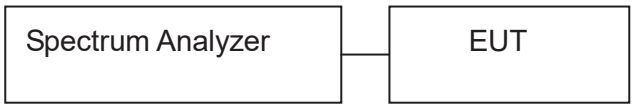
Test Channel	Frequency (MHz)	Test Result		Limit	
		(dBm)	(W)	(dBm)	(W)
01	2412	4.91	0.003097	30	1
06	2437	4.52	0.002831	30	1
11	2462	4.26	0.002666	30	1

6 Out of Band Emission Test

6.1 Test Instruments

Refer to Sec. 1.2 Test Instruments.

6.2 Test Arrangement



6.3 Test Procedure

1. Connect the EUT to spectrum analyzer through appropriate attenuator.
2. Spectrum setting; RMB = 100 kHz; VBW = 300 kHz.
3. Span ≥ 1.5 time DTS BW.
4. Detector = Peak.
5. Trace = Max Hold.

6.4 Limit (§ 15.247(d))

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

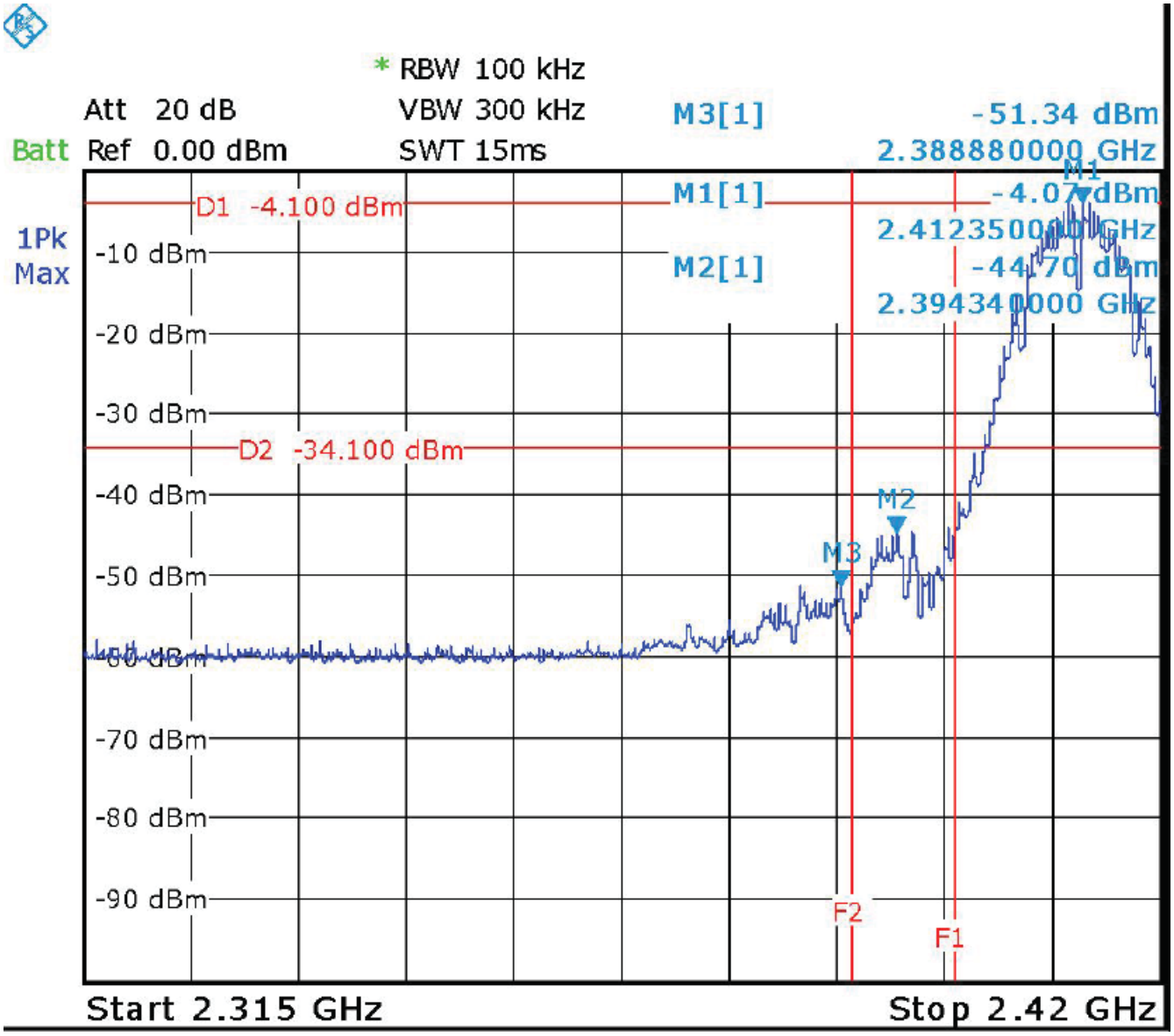
6.5 Test Result

Compliance

The final test data are shown on the following page(s).

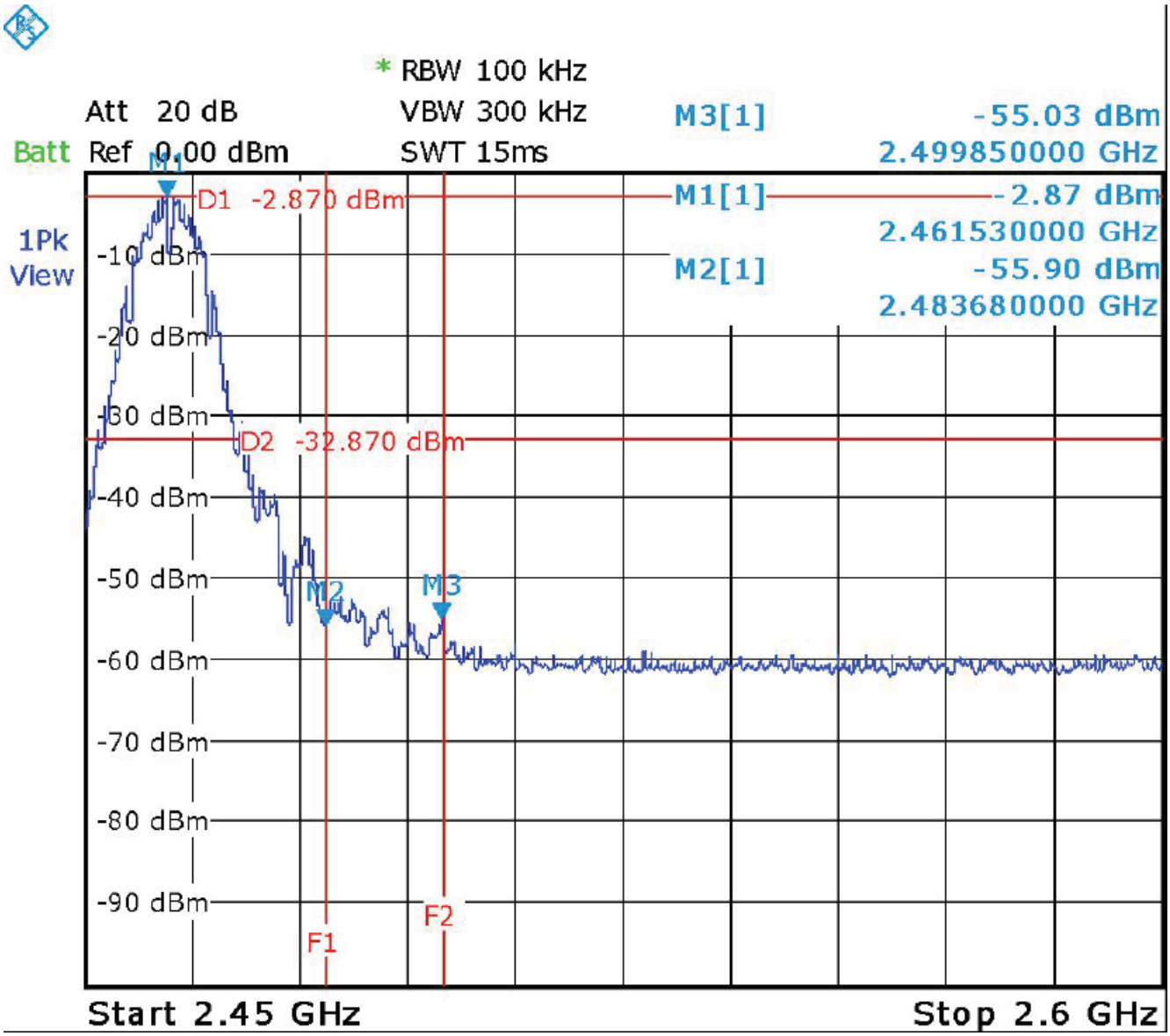
Band-Edge Test Data (Lower Edge)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	26-SEP-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 1 (802.11b)	Channel	:	CH01 (2412 MHz)



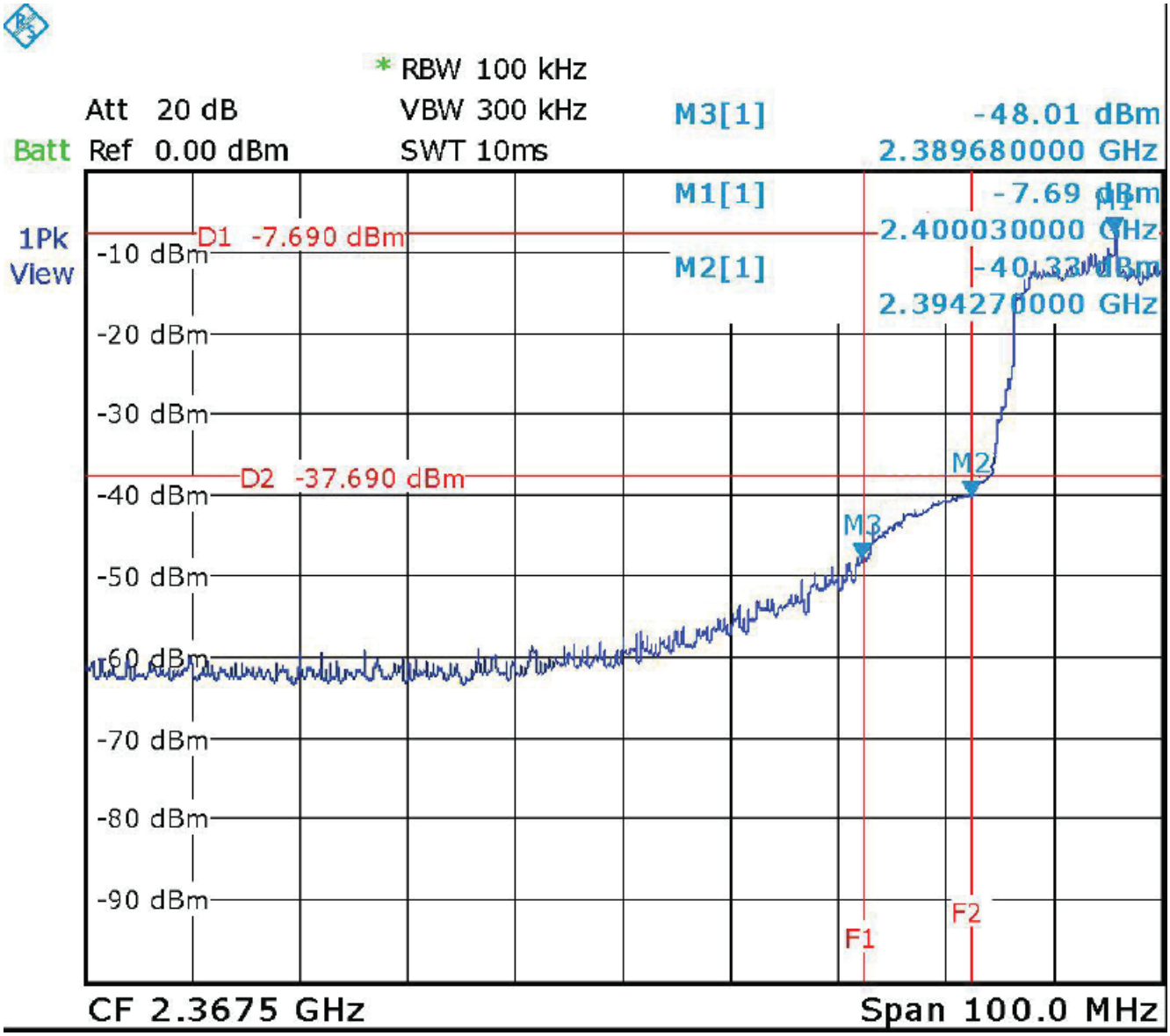
Band-Edge Test Data (Upper Edge)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	26-SEP-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 3 (802.11b)	Channel	:	CH11 (2462 MHz)



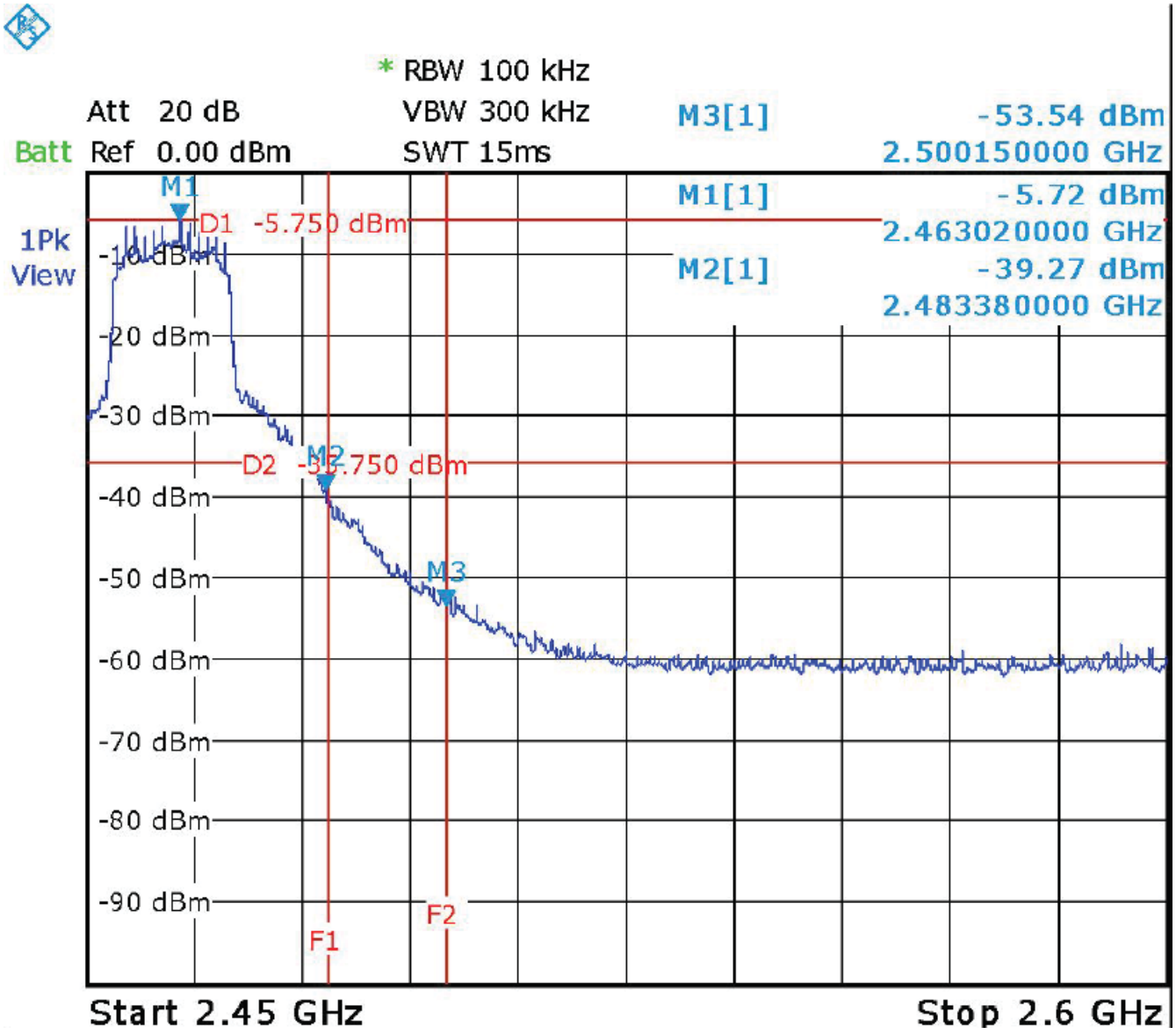
Band-Edge Test Data (Lower Edge)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	26-SEP-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 4 (802.11g)	Channel	:	CH01 (2412 MHz)



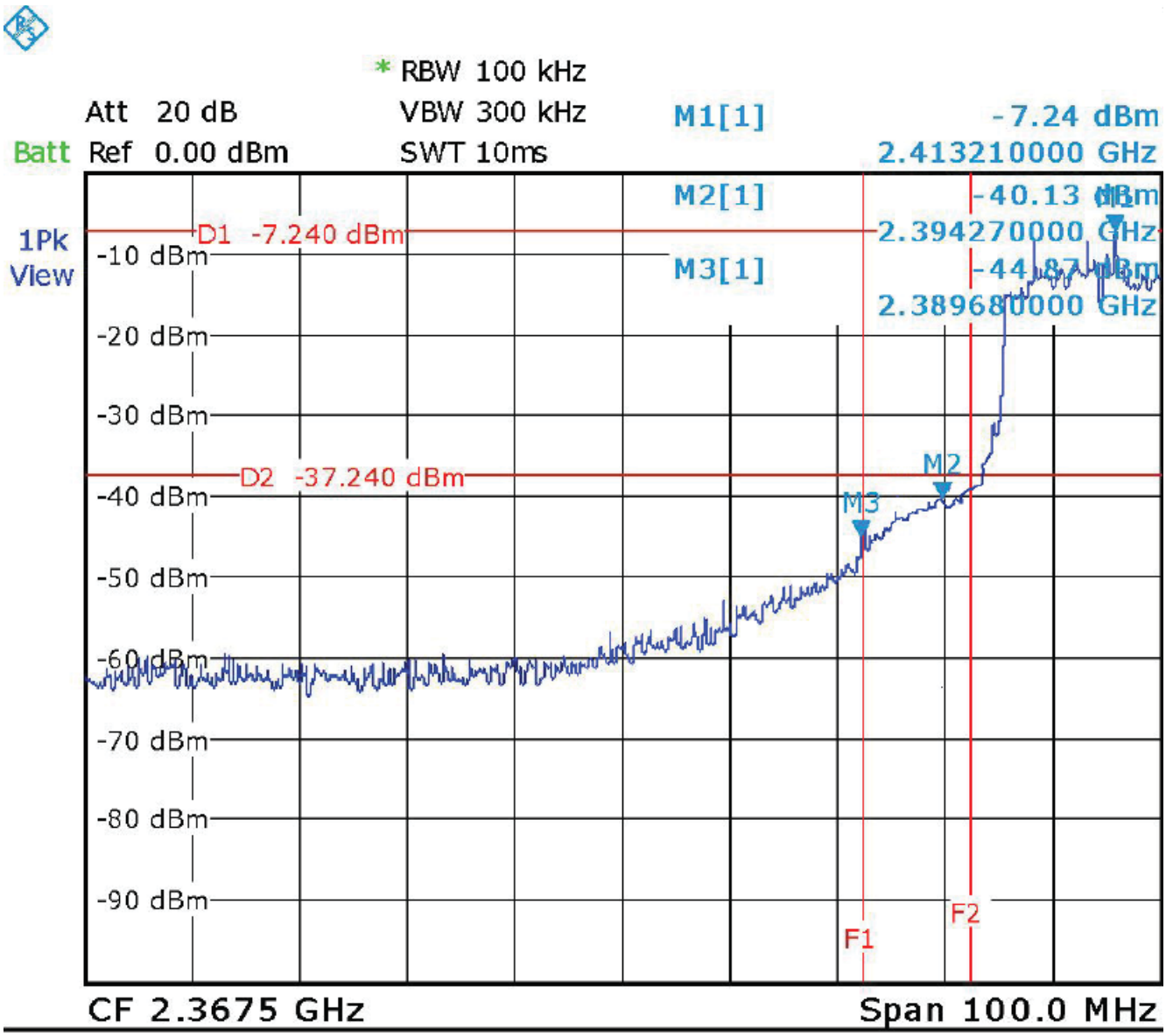
Band-Edge Test Data (Upper Edge)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	26-SEP-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 6 (802.11g)	Channel	:	CH11 (2462 MHz)



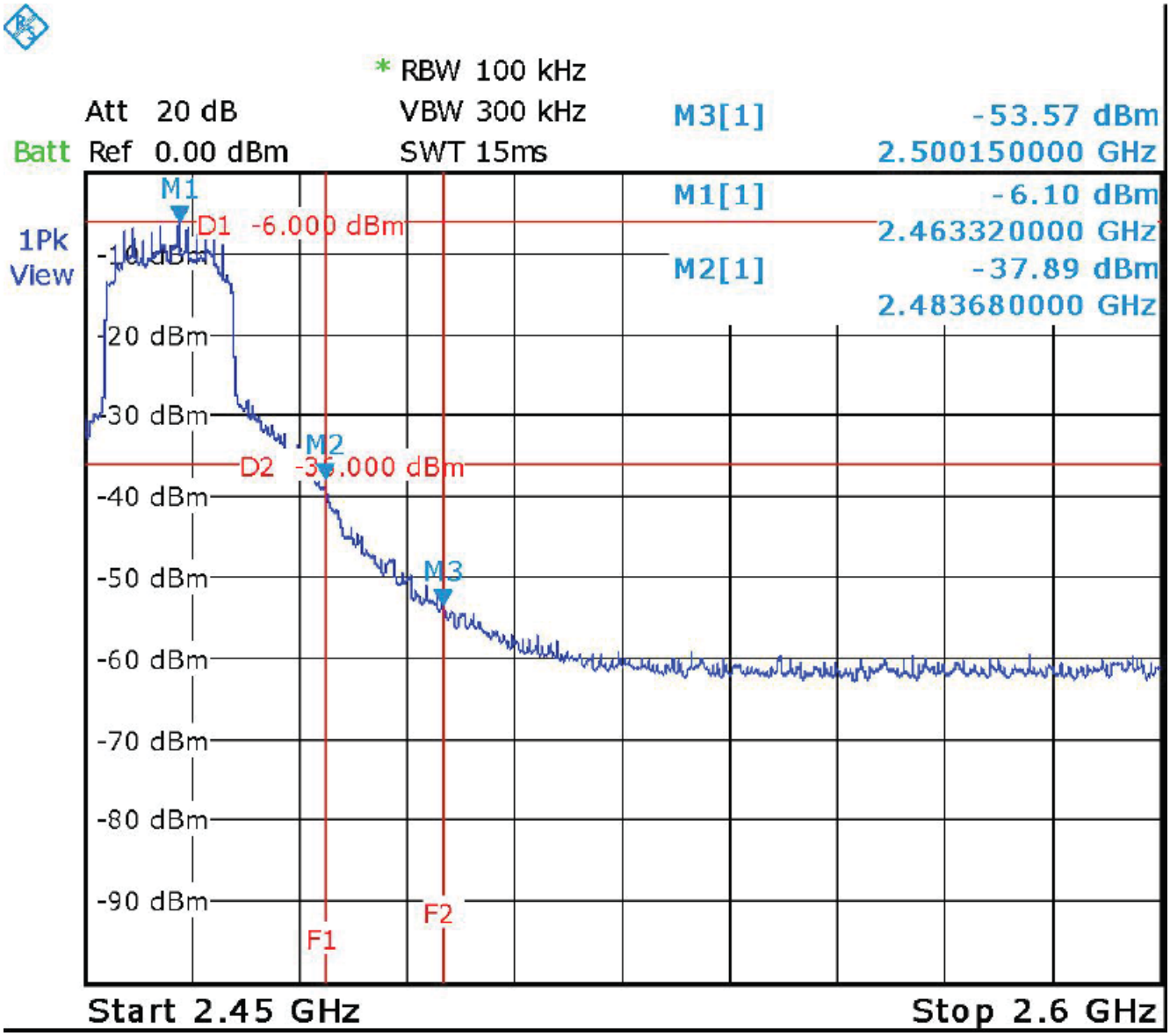
Band-Edge Test Data (Lower Edge)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	26-SEP-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 7 (802.11n)	Channel	:	CH01 (2412 MHz)



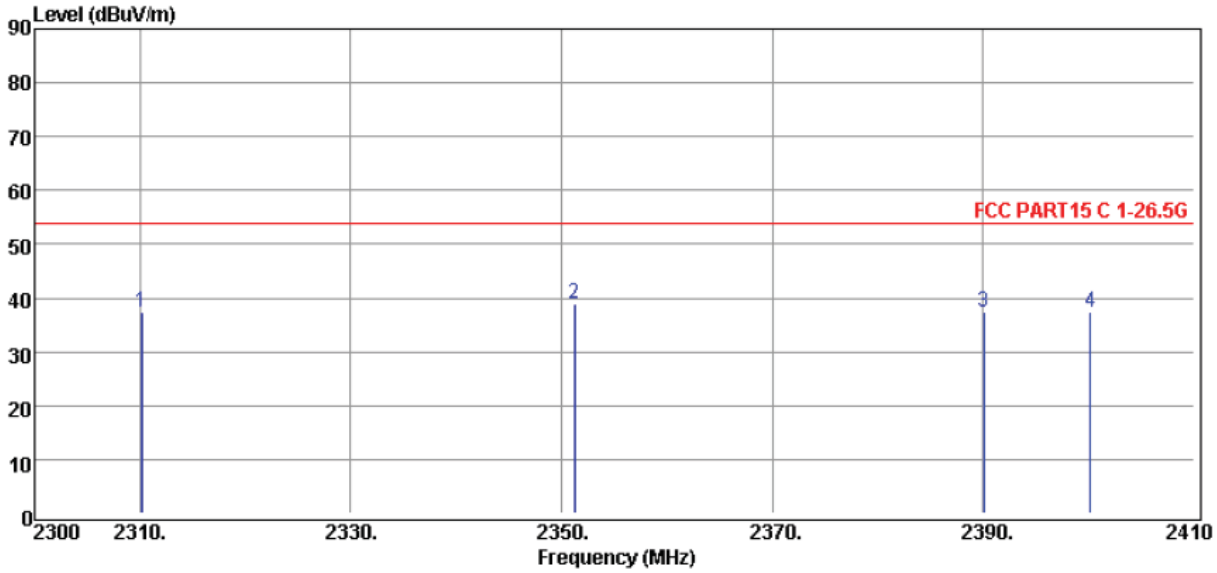
Band-Edge Test Data (Upper Edge)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	26-SEP-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 9 (802.11n)	Channel	:	CH11 (2462 MHz)



Radiated Emission in the Restricted Band Test Data (Lower Edge)

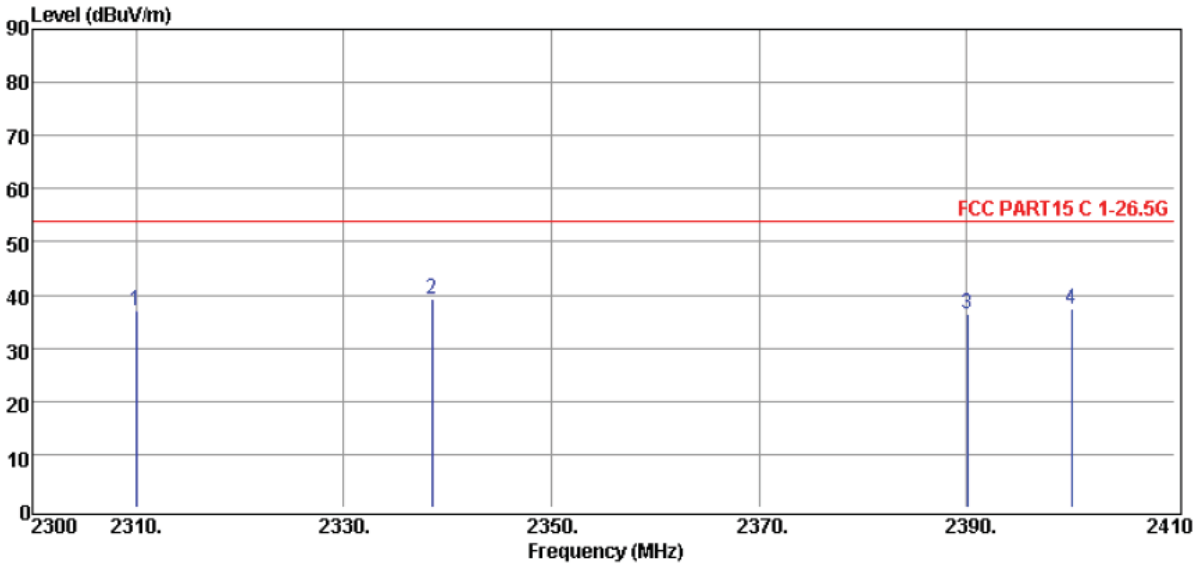
Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 1 (802.11b)	Channel	:	CH01 (2412 MHz)
Polarization	:	Horizontal			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	2310.12	43.52	-6.13	37.39	54.00	-16.61	HORIZONTAL	Peak
2	2351.20	44.85	-6.02	38.83	54.00	-15.17	HORIZONTAL	Peak
3	2390.09	43.15	-5.85	37.30	54.00	-16.70	HORIZONTAL	Peak
4	2400.20	43.23	-5.85	37.38	54.00	-16.62	HORIZONTAL	Peak

Radiated Emission in the Restricted Band Test Data (Lower Edge)

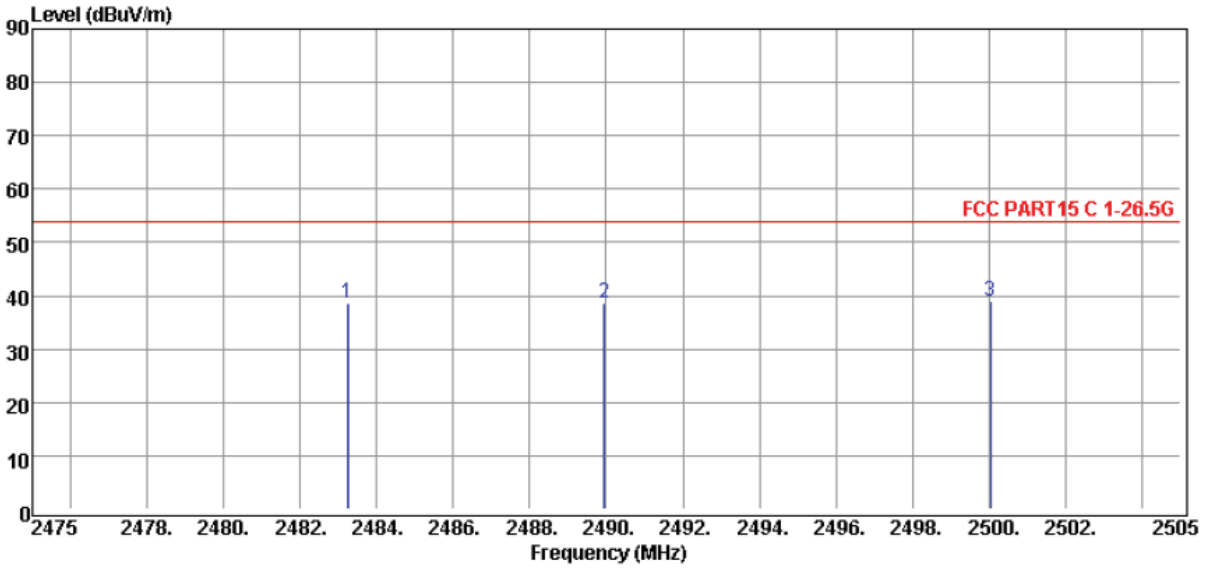
Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 1 (802.11b)	Channel	:	CH01 (2412 MHz)
Polarization	:	Vertical			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	2310.01	43.23	-6.13	37.10	54.00	-16.90	VERTICAL	Peak
2	2338.50	45.12	-6.02	39.10	54.00	-14.90	VERTICAL	Peak
3	2390.10	42.35	-5.85	36.50	54.00	-17.50	VERTICAL	Peak
4	2400.10	43.15	-5.85	37.30	54.00	-16.70	VERTICAL	Peak

Radiated Emission in the Restricted Band Test Data (Upper Edge)

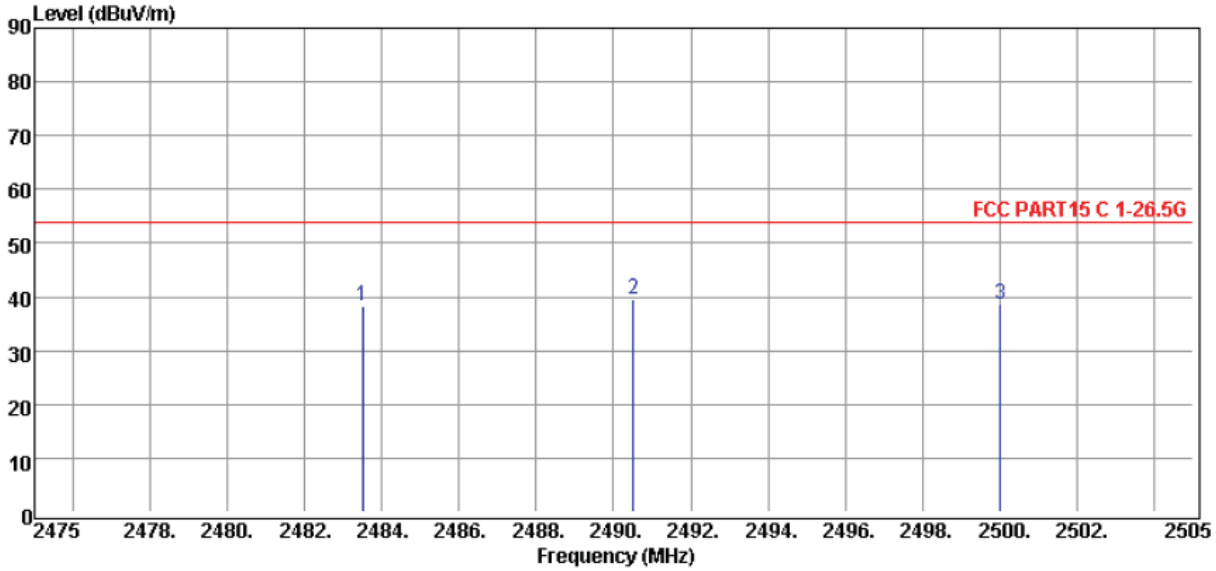
Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 3 (802.11b)	Channel	:	CH11 (2462 MHz)
Polarization	:	Horizontal			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	2483.23	44.25	-5.58	38.67	54.00	-15.33	HORIZONTAL	Peak
2	2489.95	44.28	-5.53	38.75	54.00	-15.25	HORIZONTAL	Peak
3	2500.05	44.55	-5.53	39.02	54.00	-14.98	HORIZONTAL	Peak

Radiated Emission in the Restricted Band Test Data (Upper Edge)

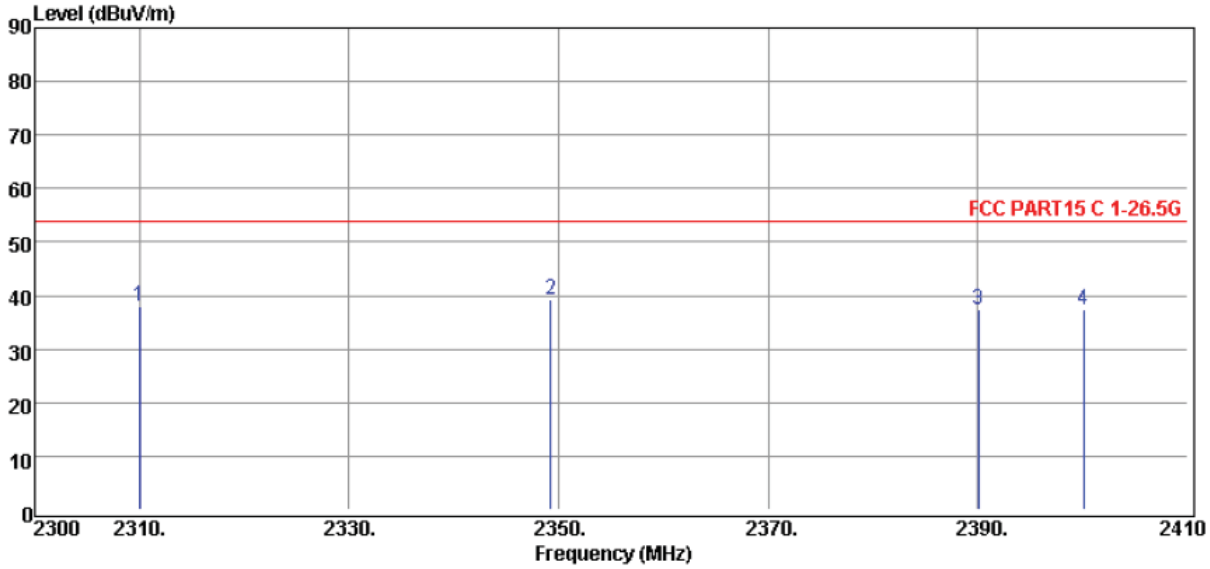
Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 3 (802.11b)	Channel	:	CH11 (2462 MHz)
Polarization	:	Vertical			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	2483.49	43.85	-5.58	38.27	54.00	-15.73	VERTICAL	Peak
2	2490.50	45.10	-5.53	39.57	54.00	-14.43	VERTICAL	Peak
3	2500.02	44.19	-5.53	38.66	54.00	-15.34	VERTICAL	Peak

Radiated Emission in the Restricted Band Test Data (Lower Edge)

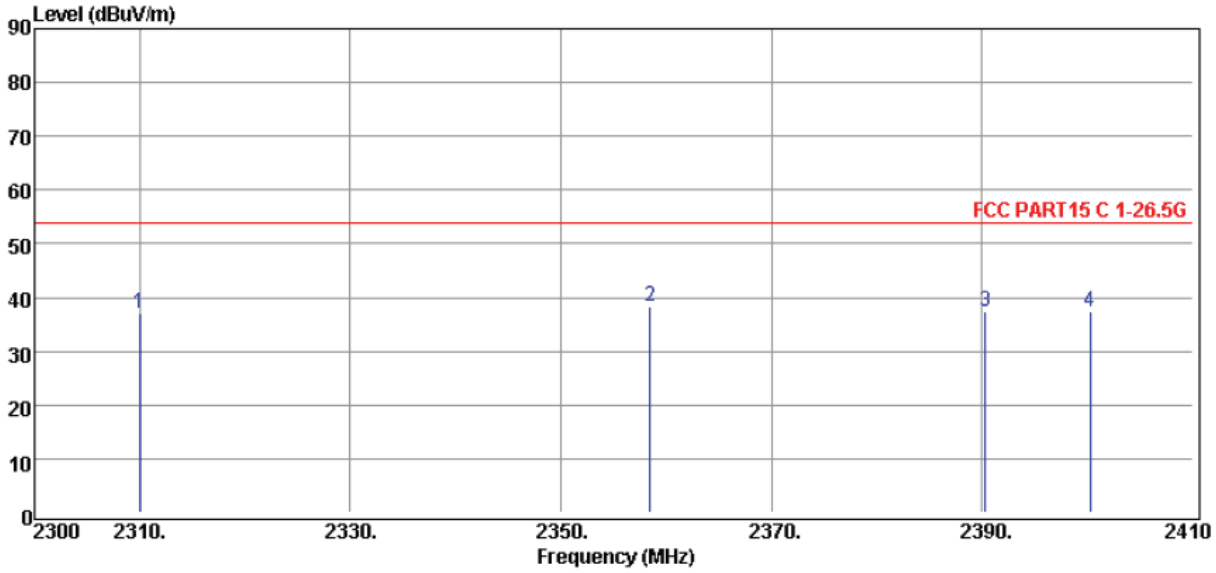
Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 4 (802.11g)	Channel	:	CH01 (2412 MHz)
Polarization	:	Horizontal			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	2310.01	44.25	-6.13	38.12	54.00	-15.88	HORIZONTAL	Peak
2	2349.25	45.16	-6.02	39.14	54.00	-14.86	HORIZONTAL	Peak
3	2390.09	43.22	-5.85	37.37	54.00	-16.63	HORIZONTAL	Peak
4	2400.10	43.17	-5.85	37.32	54.00	-16.68	HORIZONTAL	Peak

Radiated Emission in the Restricted Band Test Data (Lower Edge)

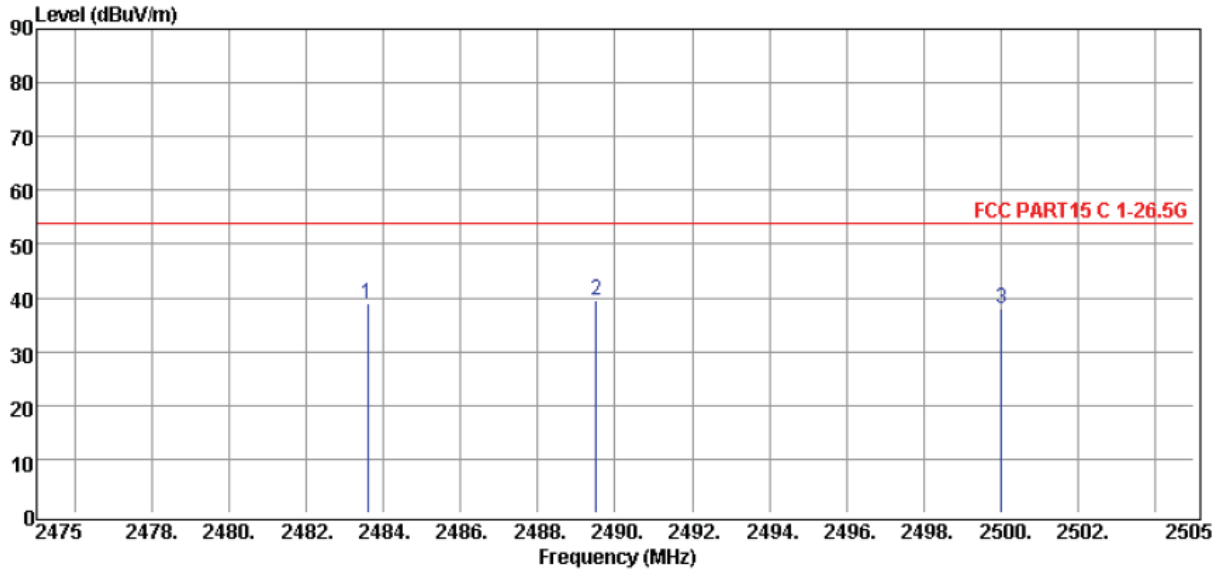
Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 4 (802.11g)	Channel	:	CH01 (2412 MHz)
Polarization	:	Vertical			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	2310.01	43.12	-6.13	36.99	54.00	-17.01	VERTICAL	Peak
2	2358.50	44.22	-5.96	38.26	54.00	-15.74	VERTICAL	Peak
3	2390.31	43.26	-5.85	37.41	54.00	-16.59	VERTICAL	Peak
4	2400.21	43.11	-5.85	37.26	54.00	-16.74	VERTICAL	Peak

Radiated Emission in the Restricted Band Test Data (Upper Edge)

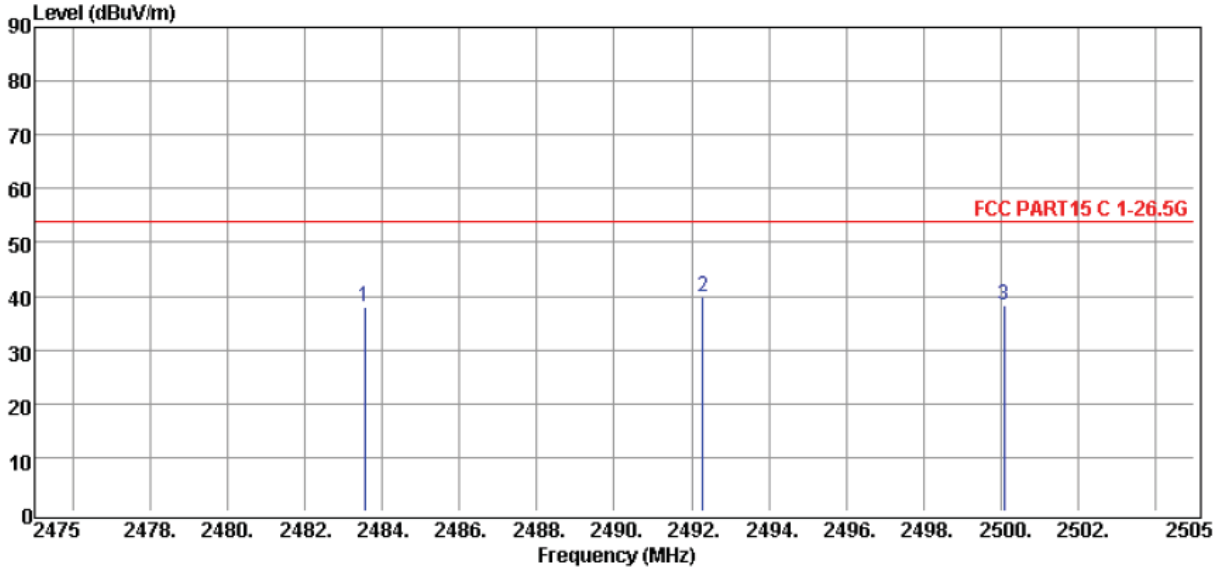
Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 6 (802.11g)	Channel	:	CH11 (2462 MHz)
Polarization	:	Horizontal			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	2483.58	44.62	-5.58	39.04	54.00	-14.96	HORIZONTAL	Peak
2	2489.52	45.21	-5.53	39.68	54.00	-14.32	HORIZONTAL	Peak
3	2500.02	43.52	-5.53	37.99	54.00	-16.01	HORIZONTAL	Peak

Radiated Emission in the Restricted Band Test Data (Upper Edge)

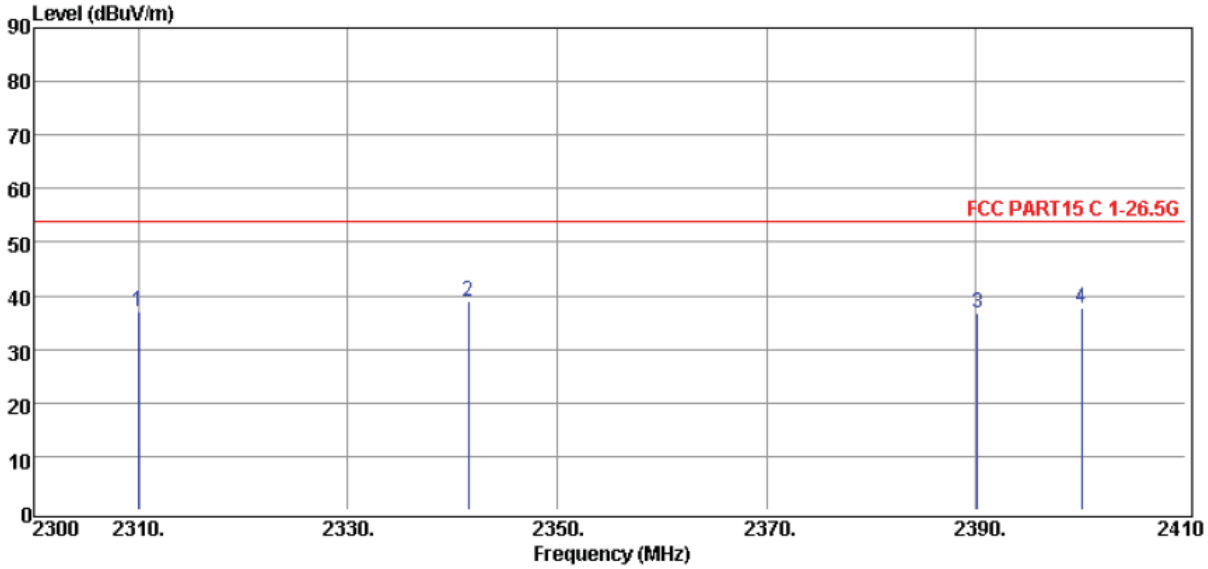
Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 6 (802.11g)	Channel	:	CH11 (2462 MHz)
Polarization	:	Vertical			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	2483.55	43.52	-5.58	37.94	54.00	-16.06	VERTICAL	Peak
2	2492.30	45.32	-5.53	39.79	54.00	-14.21	VERTICAL	Peak
3	2500.08	43.68	-5.53	38.15	54.00	-15.85	VERTICAL	Peak

Radiated Emission in the Restricted Band Test Data (Lower Edge)

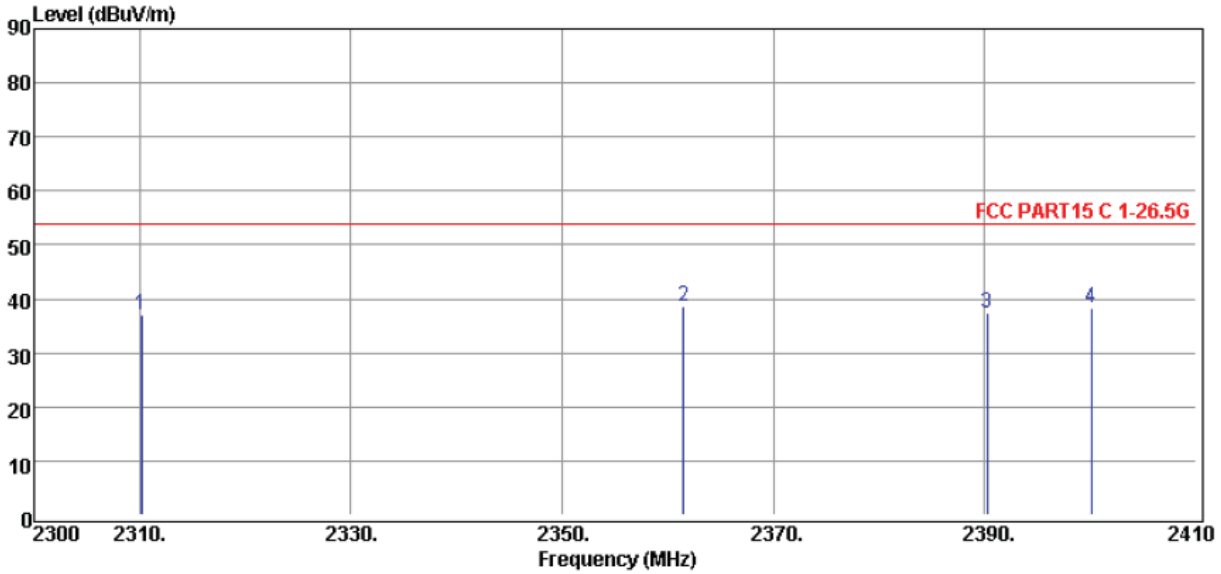
Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 7 (802.11n)	Channel	:	CH01 (2412 MHz)
Polarization	:	Horizontal			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	2310.01	43.25	-6.13	37.12	54.00	-16.88	HORIZONTAL	Peak
2	2341.52	44.85	-6.02	38.83	54.00	-15.17	HORIZONTAL	Peak
3	2390.13	42.69	-5.85	36.84	54.00	-17.16	HORIZONTAL	Peak
4	2400.10	43.58	-5.85	37.73	54.00	-16.27	HORIZONTAL	Peak

Radiated Emission in the Restricted Band Test Data (Lower Edge)

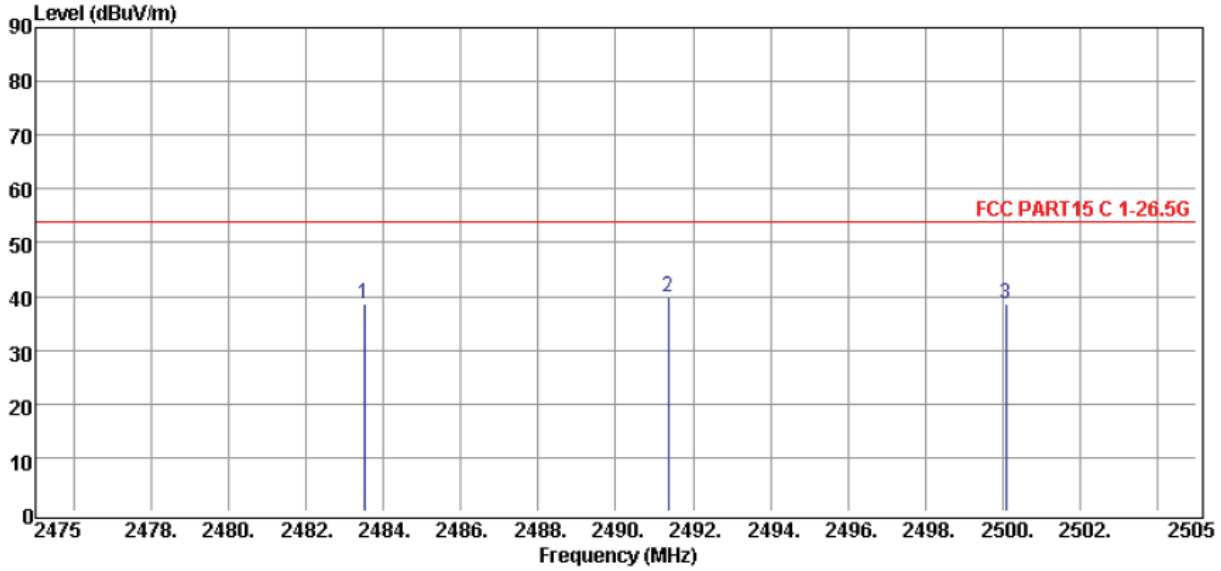
Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 7 (802.11n)	Channel	:	CH01 (2412 MHz)
Polarization	:	Vertical			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	2310.12	43.23	-6.13	37.10	54.00	-16.90	VERTICAL	Peak
2	2361.50	44.52	-5.96	38.56	54.00	-15.44	VERTICAL	Peak
3	2390.25	43.25	-5.85	37.40	54.00	-16.60	VERTICAL	Peak
4	2400.11	44.11	-5.85	38.26	54.00	-15.74	VERTICAL	Peak

Radiated Emission in the Restricted Band Test Data (Upper Edge)

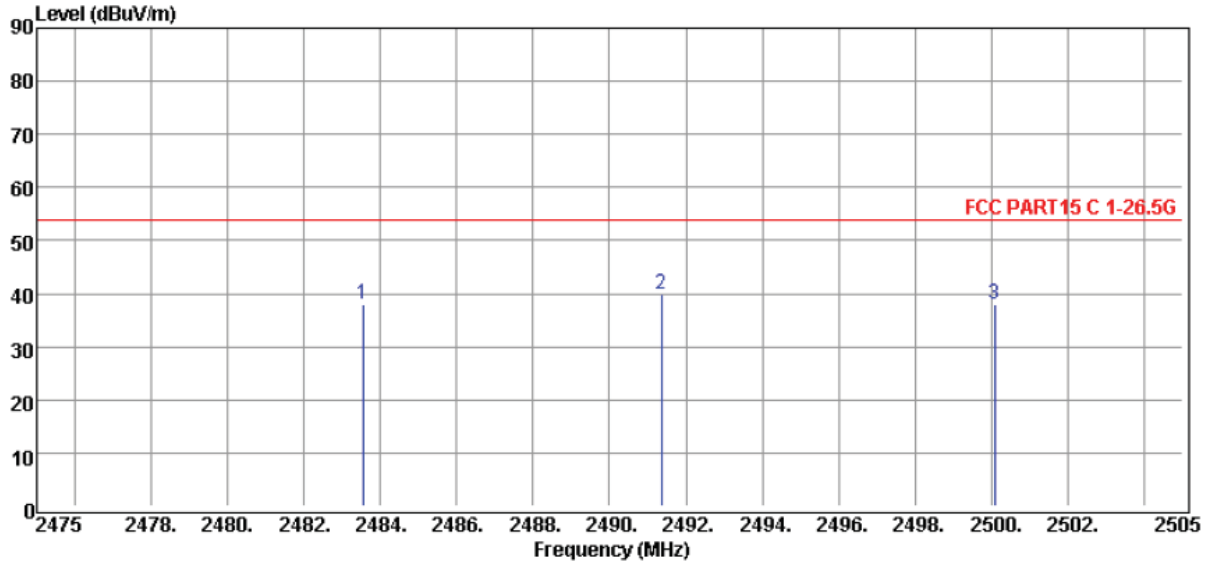
Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 9 (802.11n)	Channel	:	CH11 (2462 MHz)
Polarization	:	Horizontal			



No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	2483.50	44.26	-5.58	38.68	54.00	-15.32	HORIZONTAL	Peak
2	2491.35	45.35	-5.53	39.82	54.00	-14.18	HORIZONTAL	Peak
3	2500.08	44.19	-5.53	38.66	54.00	-15.34	HORIZONTAL	Peak

Radiated Emission in the Restricted Band Test Data (Upper Edge)

Temperature	:	27℃	Humidity	:	50%
Test Date	:	09-AUG-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 9 (802.11n)	Channel	:	CH11 (2462 MHz)
Polarization	:	Vertical			



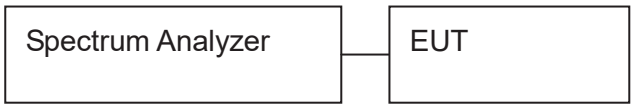
No.	Freq	Reading	C.F	Result	Limit	Margin	Antenna	Remark
	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Pol.	
1	2483.55	43.52	-5.58	37.94	54.00	-16.06	VERTICAL	Peak
2	2491.35	45.35	-5.53	39.82	54.00	-14.18	VERTICAL	Peak
3	2500.08	43.63	-5.53	38.10	54.00	-15.90	VERTICAL	Peak

7 Power Spectral Density

7.1 Test Instruments

Refer to Sec. 1.2 Test Instruments.

7.2 Test Arrangement



7.3 Test Procedure

1. Connect the EUT to spectrum analyzer through appropriate attenuator.
2. Spectrum setting; RMB = 3 kHz; VBW = 10 kHz; Span = 1.5 times DTS bandwidth; Sweep Time = Auto.
3. Trace = Max Hold.
4. Test method in Section 11.10.2 of ANSI C63.10 (2013) was used to measure the power spectral density.

7.4 Limit (§ 15.247(e))

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

7.5 Test Result

Compliance

The final test data are shown on the following page(s).

Test Mode : 802.11b

Test Channel	Frequency (MHz)	Reading (dBm)	Limit (dBm/ 3kHz)
1	2412	-12.45	8
6	2437	-12.42	8
11	2462	-11.39	8

Test Mode : 802.11g

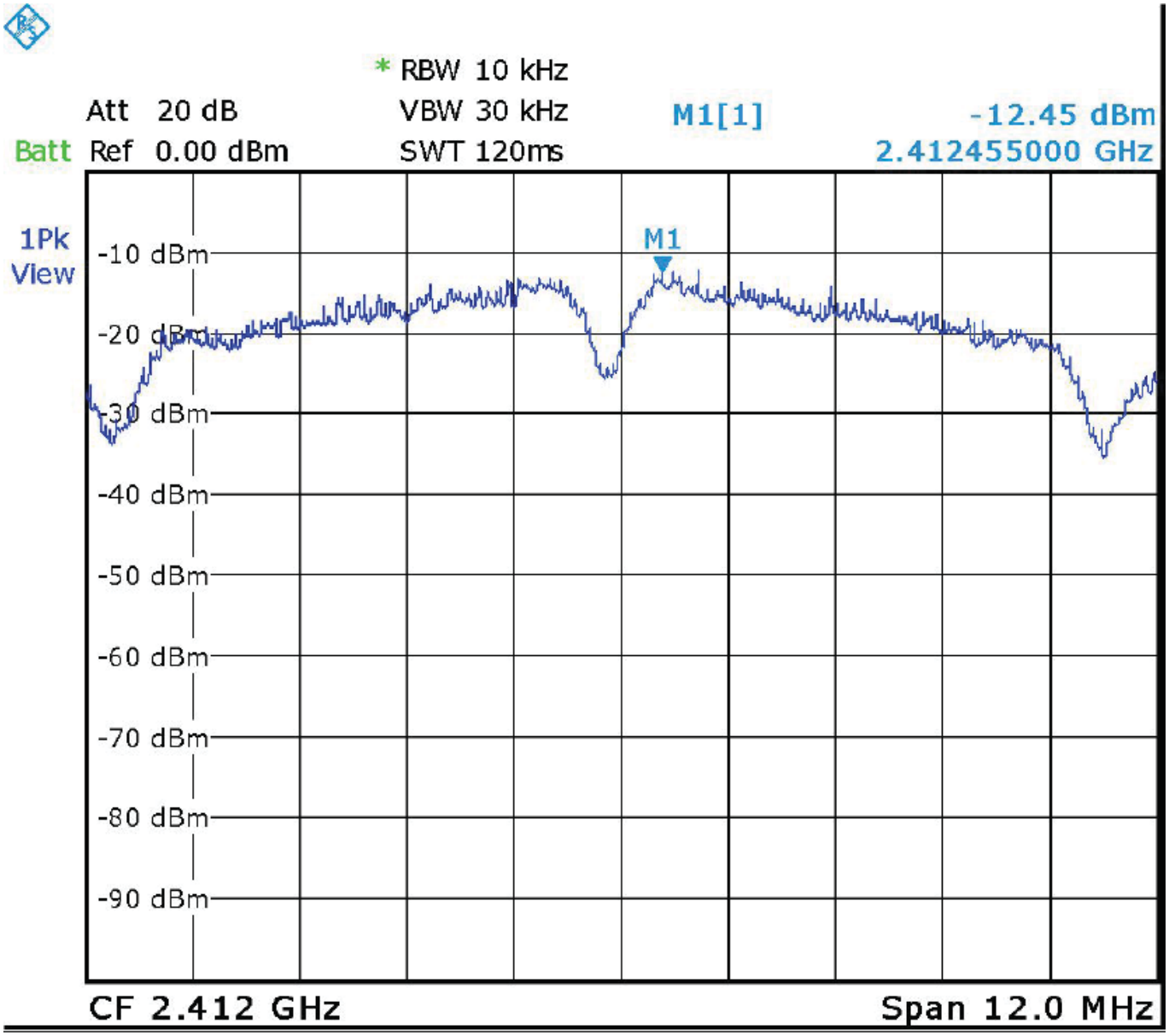
Test Channel	Frequency (MHz)	Reading (dBm)	Limit (dBm/ 3kHz)
1	2412	-15.14	8
6	2437	-15.45	8
11	2462	-14.85	8

Test Mode : 802.11n

Test Channel	Frequency (MHz)	Reading (dBm)	Limit (dBm/ 3kHz)
1	2412	-15.59	8
6	2437	-16.04	8
11	2462	-14.78	8

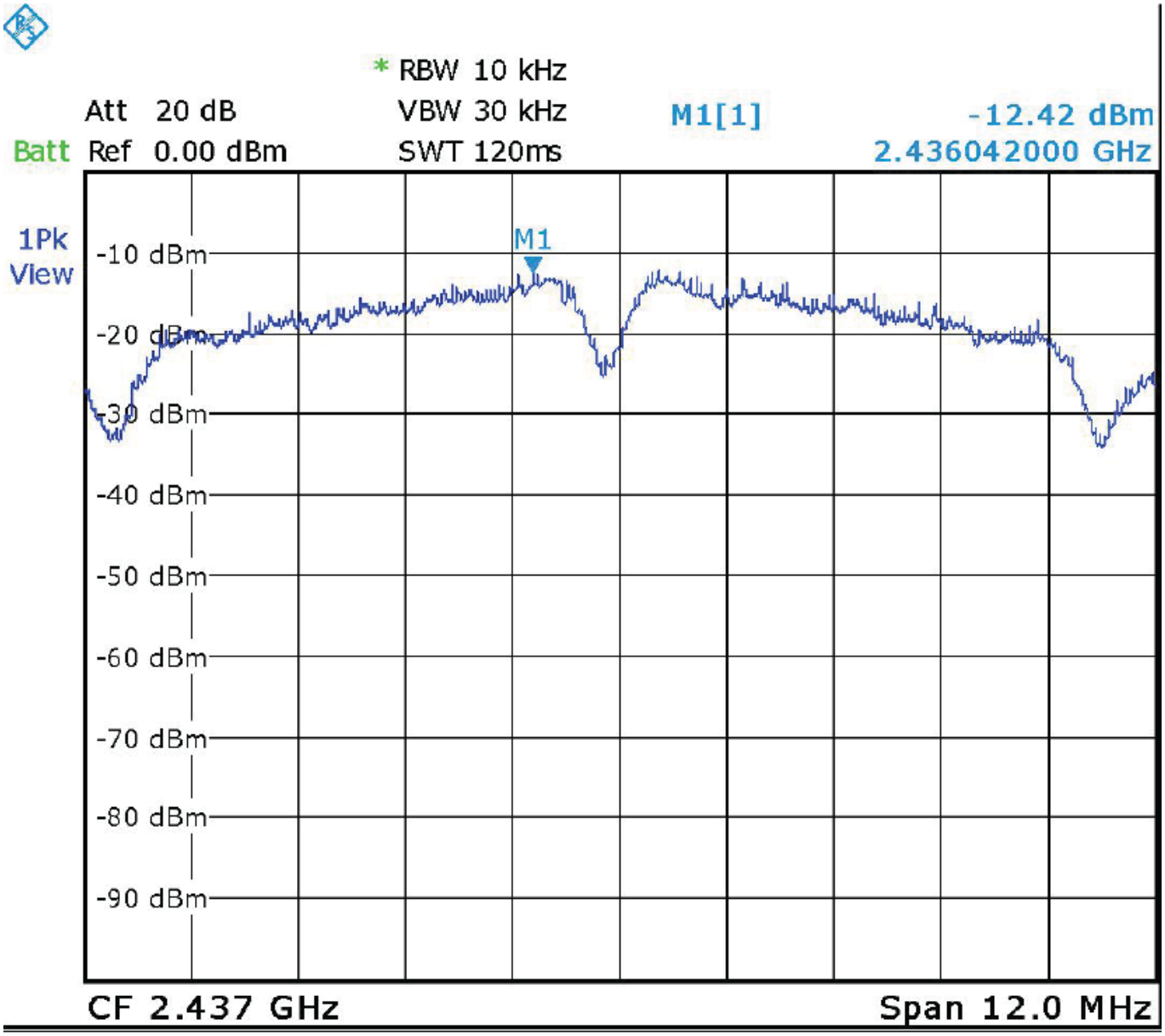
Power Spectral Density Test Data

Temperature	:	27℃	Humidity	:	50%
Test Date	:	26-SEP-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 1	Channel	:	CH01 (2412 MHz)



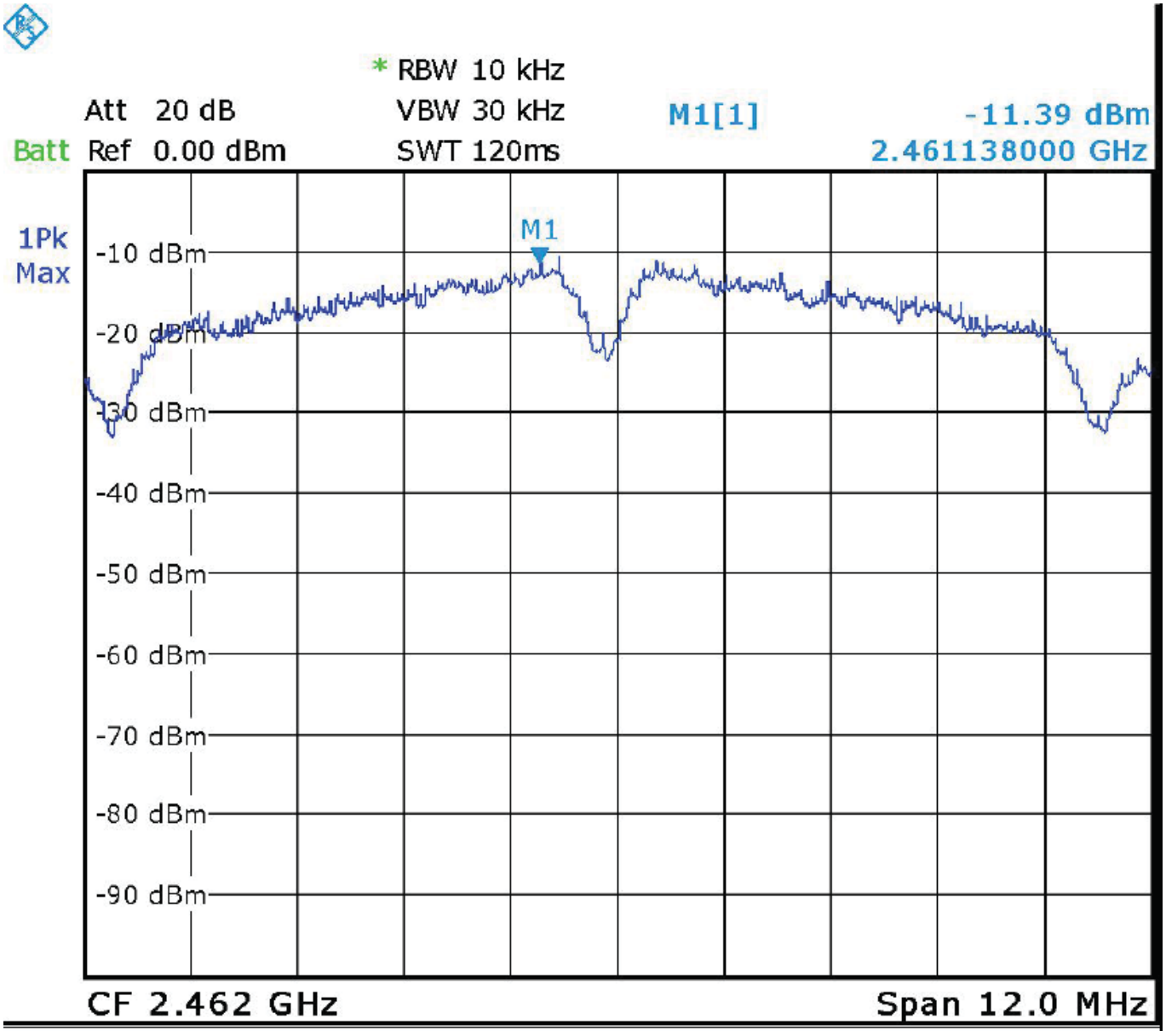
Power Spectral Density Test Data

Temperature	:	27℃	Humidity	:	50%
Test Date	:	26-SEP-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 2	Channel	:	CH06 (2437 MHz)



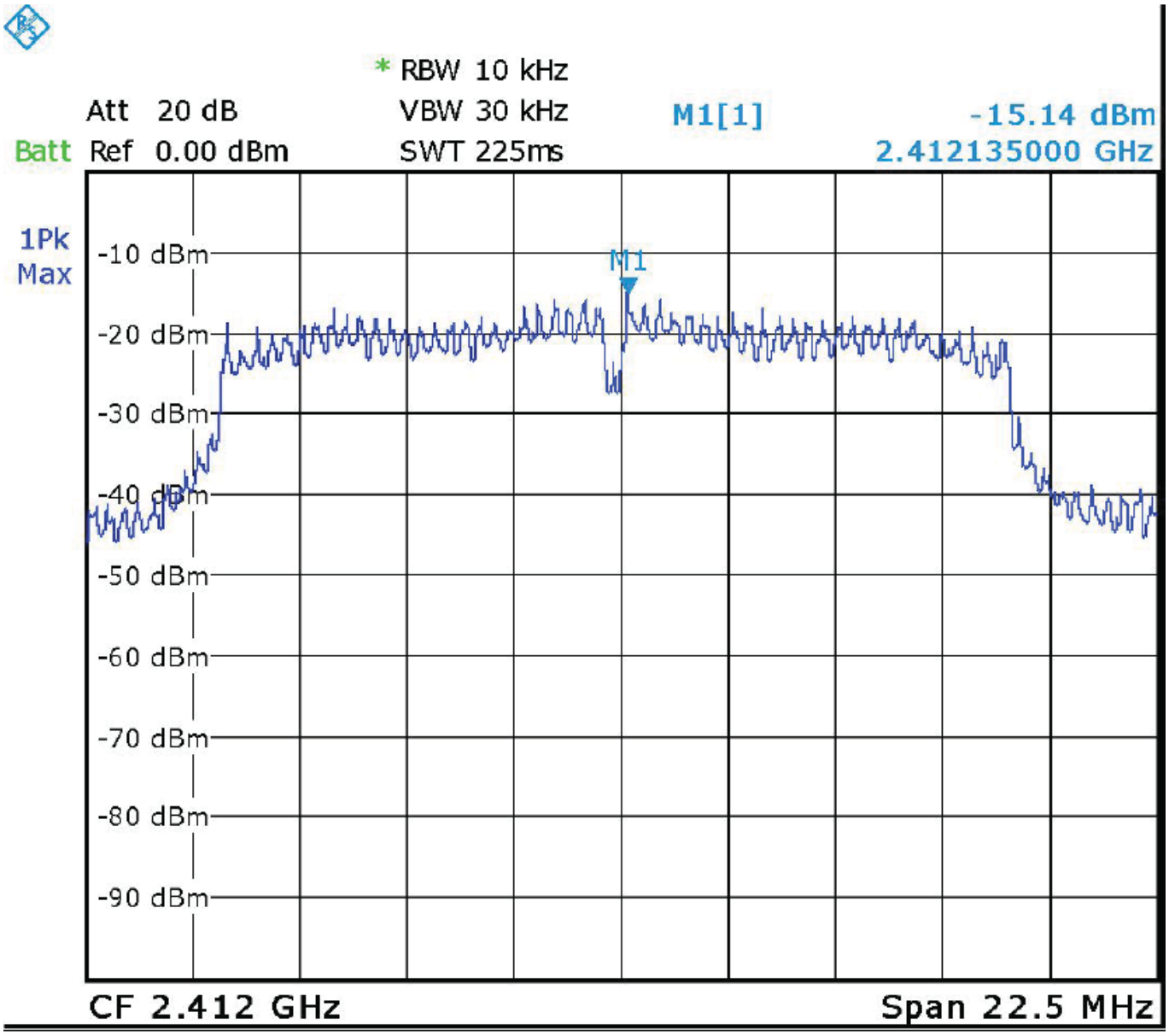
Power Spectral Density Test Data

Temperature	:	27℃	Humidity	:	50%
Test Date	:	26-SEP-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 3	Channel	:	CH11 (2462 MHz)



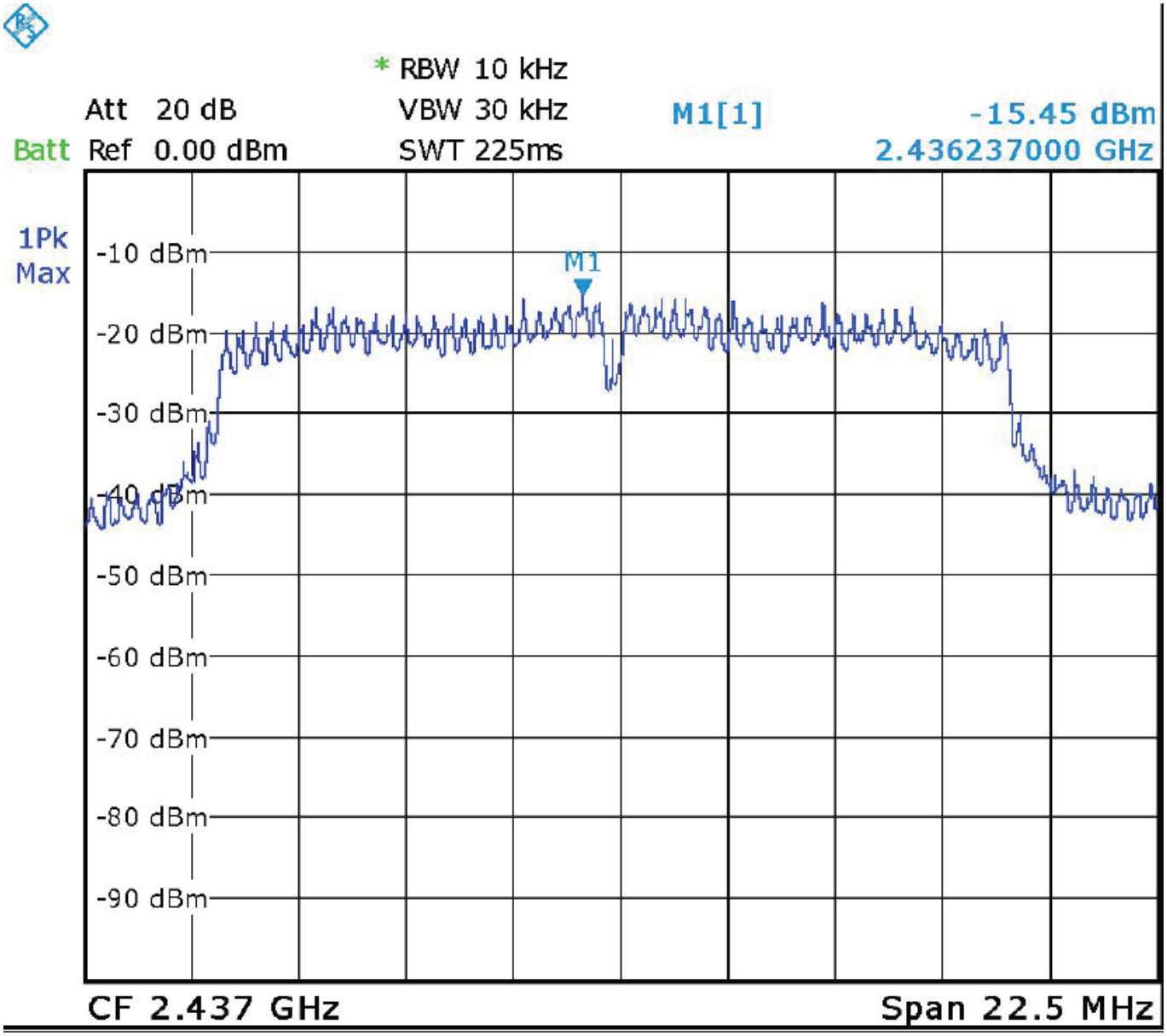
Power Spectral Density Test Data

Temperature	:	27℃	Humidity	:	50%
Test Date	:	26-SEP-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 4	Channel	:	CH01 (2412 MHz)



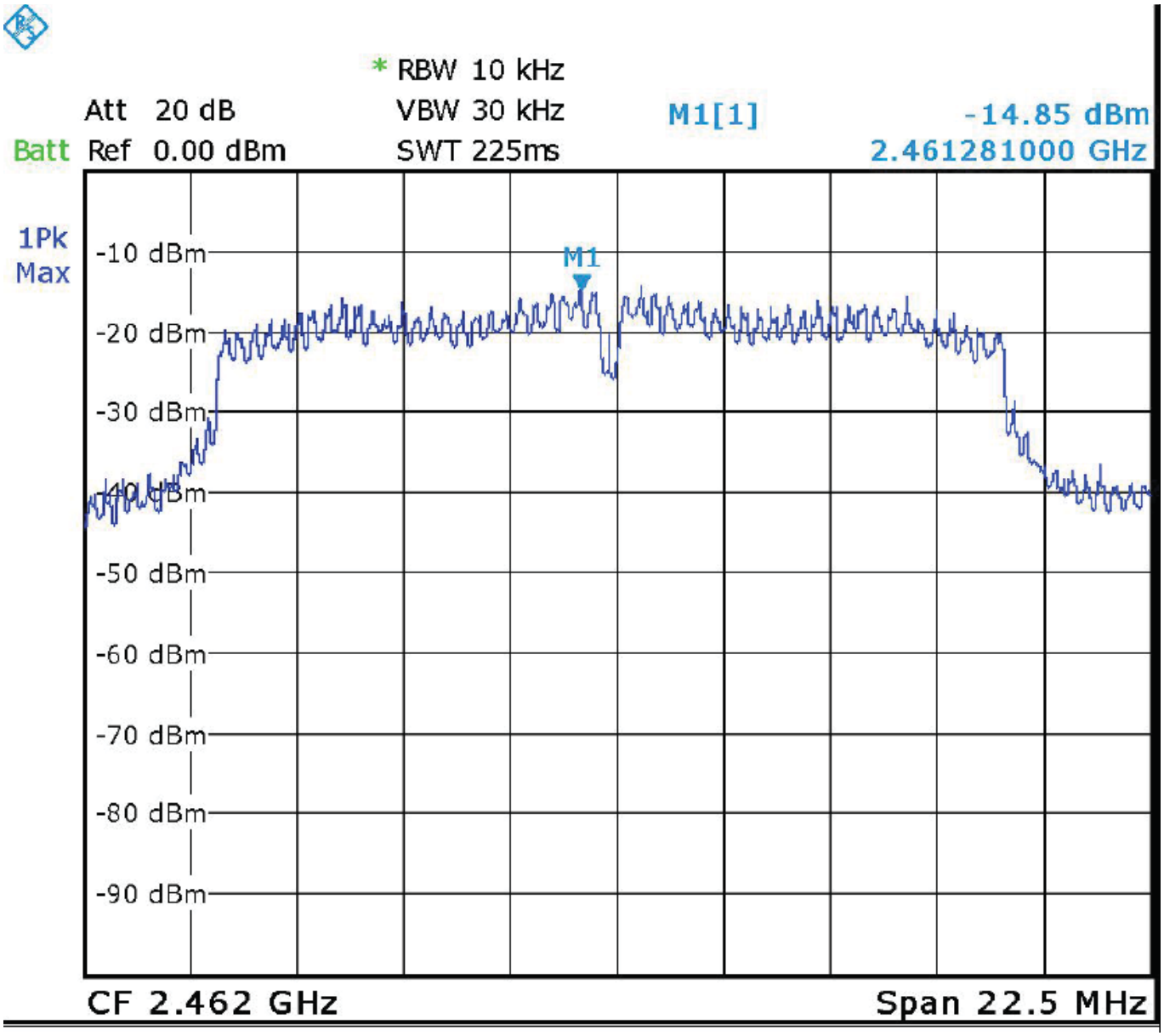
Power Spectral Density Test Data

Temperature	:	27℃	Humidity	:	50%
Test Date	:	26-SEP-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 5	Channel	:	CH06 (2437 MHz)



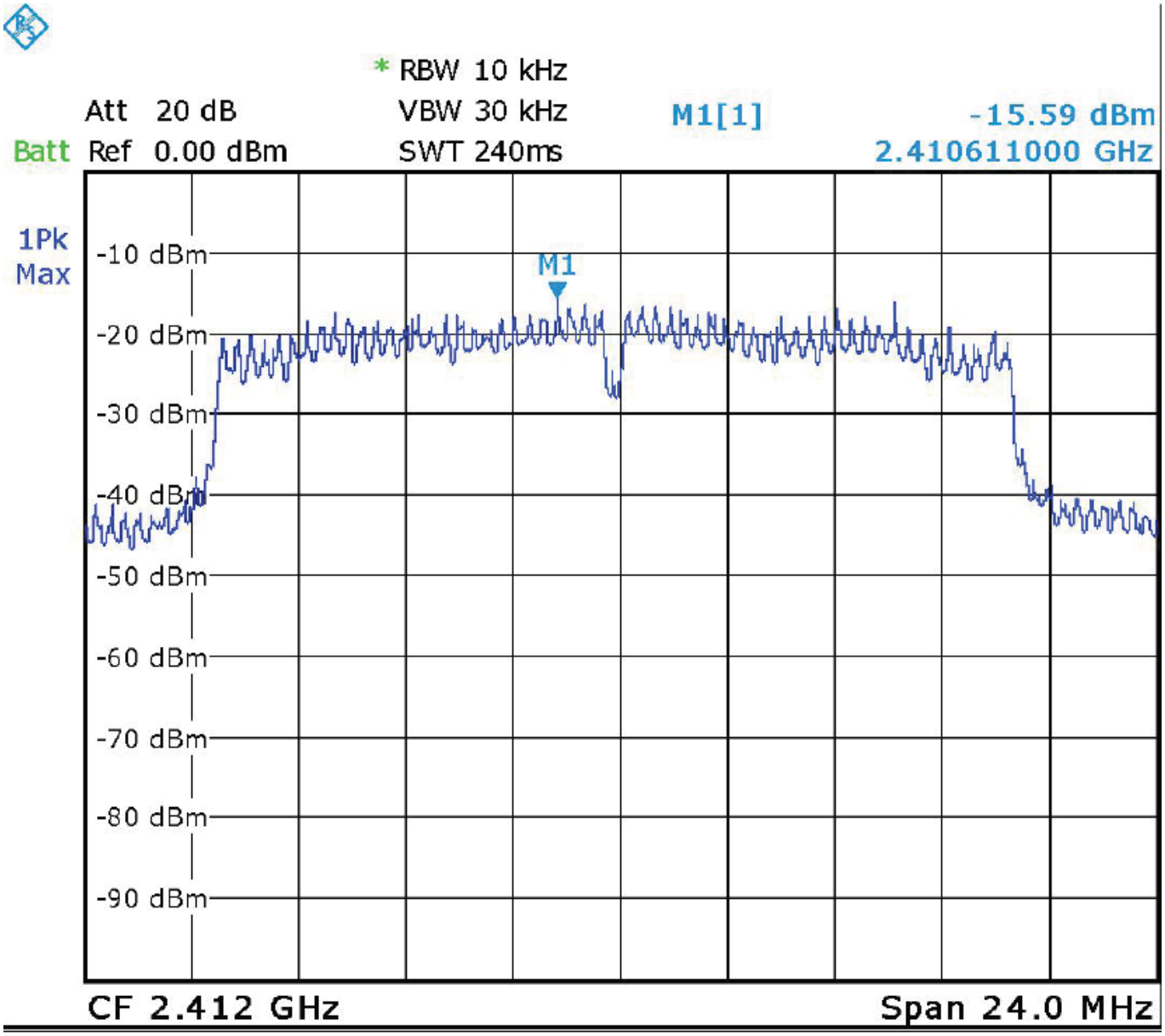
Power Spectral Density Test Data

Temperature	:	27℃	Humidity	:	50%
Test Date	:	26-SEP-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 6	Channel	:	CH11 (2462 MHz)



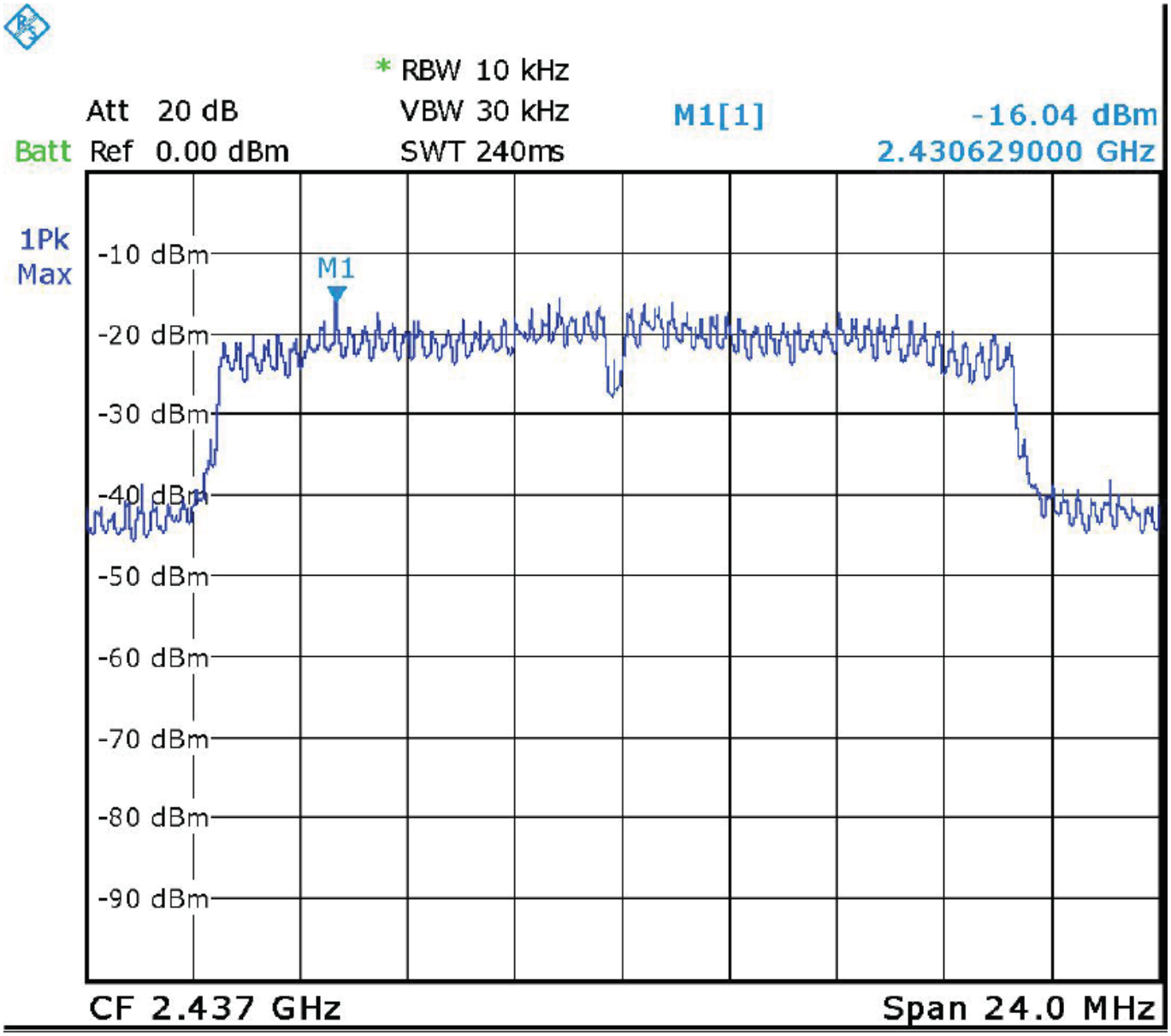
Power Spectral Density Test Data

Temperature	:	27℃	Humidity	:	50%
Test Date	:	26-SEP-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 7	Channel	:	CH01 (2412 MHz)



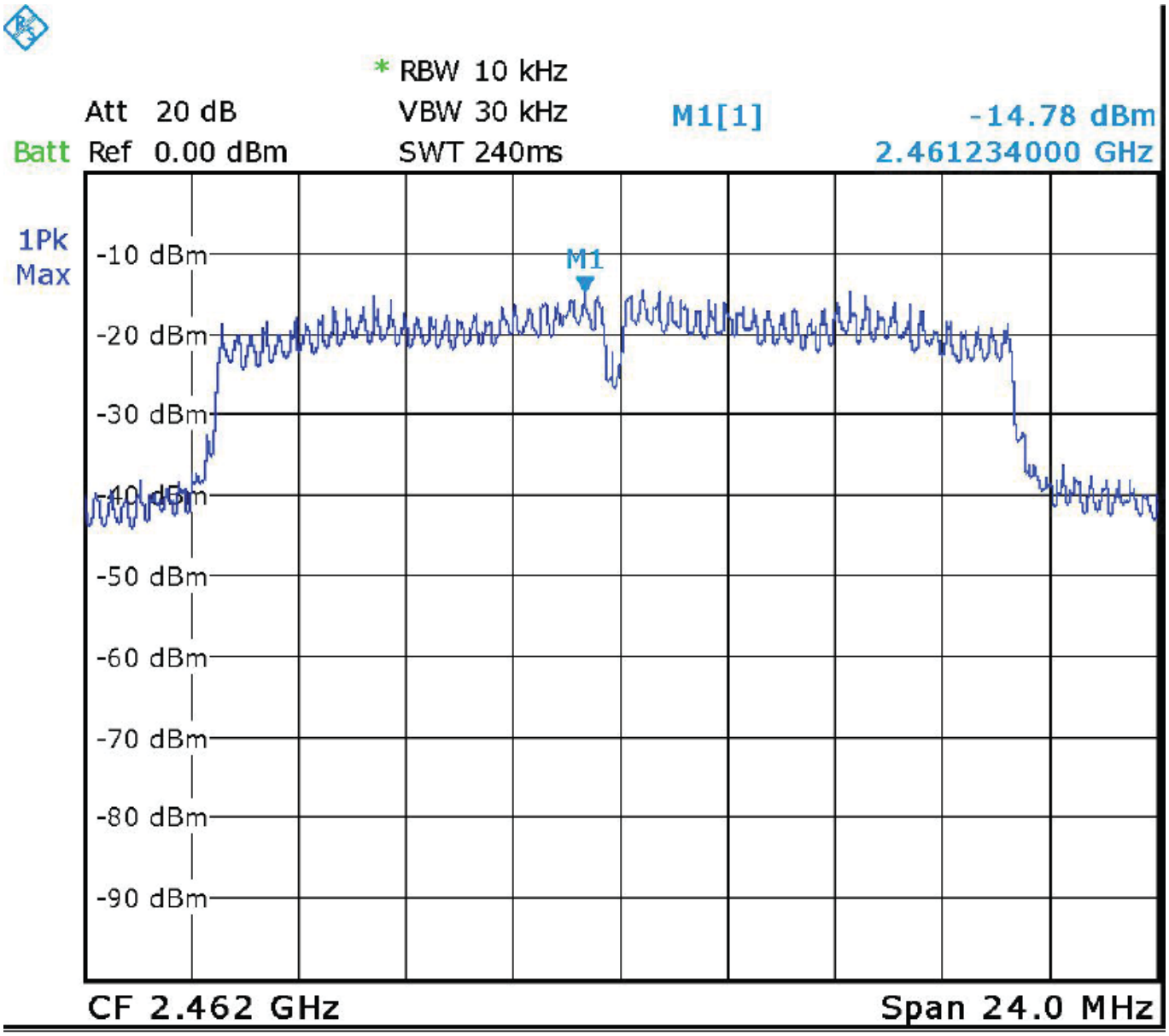
Power Spectral Density Test Data

Temperature	:	27℃	Humidity	:	50%
Test Date	:	26-SEP-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 8	Channel	:	CH06 (2437 MHz)



Power Spectral Density Test Data

Temperature	:	27℃	Humidity	:	50%
Test Date	:	26-SEP-2017	Tested by	:	Andrew Lin
Test Mode	:	Mode 9	Channel	:	CH11 (2462 MHz)



8 Antenna requirement

8.1 Limit (§ 15.203)

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. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

8.2 Test Result

Compliance.

PIFA antenna has been applied.

--------- The End of Test Report----------