FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Product Name: Intelligent Biometric Identification Terminal
Brand Name: opzoon
Model No.: OFR-T1-S
Series Model.: N/A
FCC ID: 2AN4A-OPS1AA001
Test Report Number:
C171101R02-RPW

Issued for

Opzoon Technology Co., Ltd.
11th floor, Tower B, Yintai Center 2 Jianguomenwai St., Beijing, China 100022

Issued by

Compliance Certification Services Inc.
Kun shan Laboratory
No.10 Weiye Rd., Innovation park, Eco&Tec,
Development Zone, Kunshan City, Jiangsu, China
TEL: 86-512-57355888
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TESTING CERT #2541.01

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Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	December 4, 2017	C171101R02-RPW	ALL	N/A
01	January 12, 2018	C171101R02-RPW	ALL	Modify the header.
02	January 19, 2018	C171101R02-RPW	P27	Revise the Directional Gain

1. TEST RESULT CERTIFICATION

Product Name:	Intelligent Biometric Identification Terminal
Trade Name:	opzoon
Model Name.:	OFR-T1-S
Series Model:	N/A
Applicant Discrepancy:	Initial
Device Category:	mobile unit
Date of Test:	November 23, 2017~November30, 2017
Applicant:	**Opzoon Technology Co., Ltd.** 11th floor, Tower B, Yintai Center 2 Jianguomenwai St., Beijing, China 100022
Manufacturer:	**Opzoon Technology Co., Ltd.** 11th floor, Tower B, Yintai Center 2 Jianguomenwai St., Beijing, China 100022
Application Type:	Certification

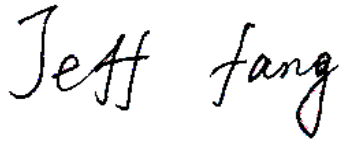
APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 15 Subpart C	No non-compliance noted

We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. 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.

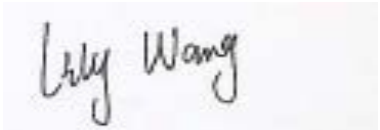
The test results of this report relate only to the tested sample EUT identified in this report.

Approved by:



Jeff.Fang
RF Manager
Compliance Certification Service Inc.

Tested by:



Lily.Wang
Test Engineer
Compliance Certification Service Inc.

2. EUT DESCRIPTION

Product Name:	Intelligent Biometric Identification Terminal			
Brand Name:	opzoon			
Model Name:	OFR-T1-S			
Series Model:	N/A			
Model Discrepancy:	N/A			
Power Adapter:	Power Adapter： Model :FSP050-DIBAN2 Input: 100-240V~,1.5A ,50-60Hz Output: 12.0V⎓4.16A MAX(50W MAX)			
Frequency Range:	IEEE 802.11b/g: 2412MHz to 2462 MHz IEEE 802.11n HT20: 2412MHz to 2462 MHz			
Transmit Power:	IEEE 802.11b mode: 22.24dBm IEEE 802.11g mode: 26.78dBm IEEE 802.11n HT20 mode: 26.63dBm			
Modulation Technique:	IEEE802.11b mode: DSSS (1,2,5.5 and 11 Mbps) IEEE802.11g mode: DSSS /OFDM (6,9,12,18,24,36,48 and 54 Mbps) IEEE802.11n HT20 mode: OFDM (MCS0~MCS15)			
Number of Channels:	IEEE 802.11b/g mode: 11 Channels IEEE 802.11n HT20 : 11 Channels			
Antenna Specification :	Slot Antenna			
Antenna Specification:		Gain(dBi)		
		2.4G	BandI	BandIV
	Antenna 1	2.04	3.96	3.40
	Antenna 2	2.04	3.96	3.40
Beamforming Function:	☐ With beamforming		☒ Without beamforming	

Remark:

1.The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.

2.This submittal(s) (test report) is intended for ***FCC ID: 2AN4A-OPS1AA001*** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.

3. TEST METHODOLOGY

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

3.1. EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2. EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

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.

3.3. GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.10 2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

Under 1GHz

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.10:2013.

Above 1GHz

The EUT is placed on a turn table, which is 1.5 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.10:2013.

3.4.FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

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
8.37625 - 8.38675	156.7 - 156.9	2655 - 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

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.

3.5.DESCRIPTION OF TEST MODES

The worst-case data rates:
IEEE802.11b mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

Channel High (2462MHz) with 1Mbps data rate was chosen for full testing.

IEEE802.11g mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

Channel High (2462MHz) with 6Mbps data rate was chosen for full testing.

IEEE 802.11n HT20 MHz Channel mode:

Channel Low (2412MHz)

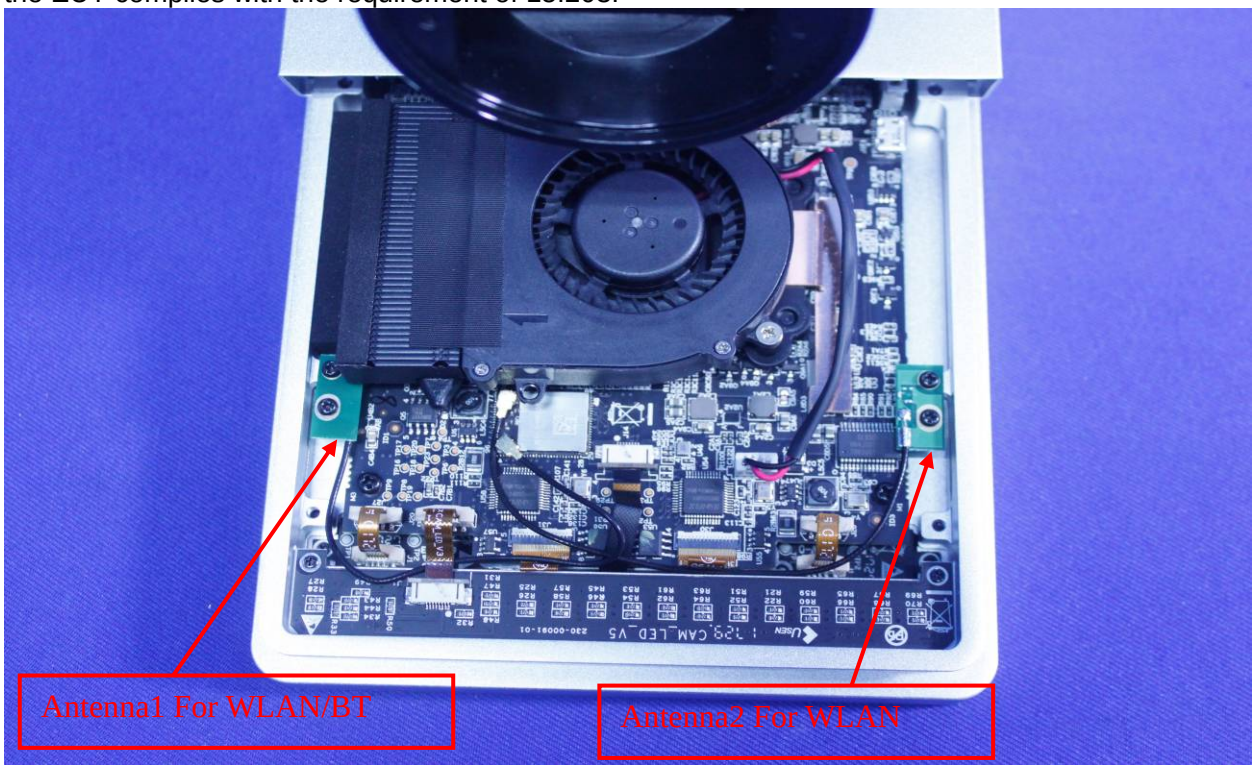
Channel Mid (2437MHz)

Channel High (2462MHz) with MCS0data rate was chosen for full testing.

3.6.ANTENNA DESCRIPTION

According to FCC 47 CFR 15.203

“an intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by
the responsible party can be used with the device. The use of a permanently attached or an antenna that
uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section”
As the photo below, the EUT use a unique coupling to the intentional radiator attached antenna, so the EUT complies with the requirement of 15.203.



4. INSTRUMENT CALIBRATION

4.1.MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

Equipment Used for Emissions Measurement

Conducted Emissions Test Site					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Data**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY44020154	2017-9-4	2018-9-3
Spectrum Analyzer	RS	FSU26	200789	2017-7-20	2018-7-19
Power meter	Anritsu	ML2495A	1445010	2017-4-26	2018-4-25
Power sensor	Anritsu	MA2411B	1339220	2017-4-26	2018-4-25
Power SPLITTER	Mini-Circuits	ZN2PD-9G	SF078500430	N.C.R	N.C.R
DC Power Supply	AGILENT	E3632A	MY50340053	N.C.R	N.C.R
Temp. / Humidity Gauge	Anymetre	TH603	CCS007	2017-10-24	2018-10-23
Test Software			EZ-EMC		

977 Chamber					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Data**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY44020154	2017-9-4	2018-9-3
Spectrum Analyzer	RS	FSU26	200789	2017-7-20	2018-7-19
EMI Test Receiver	R&S	ESCI	101378	2017-1-5	2018-1-4
Amplifier	COM-POWER	PAM-840A	461332	2017-8-30	2018-8-29
Amplifier	MITEQ	JS41-00101800-32-10P	1675713	2017-7-20	2018-7-19
Broad-Band Horn Antenna	SCHWARZBECK	BBHA 9170	9170-515	2017-3-6	2018-3-5
Bilog Antenna	Sunol	JB1	A062604	2017-5-27	2018-5-26
Bilog Antenna	Sunol	JB1	A110204-1	2017-5-27	2018-5-26
Loop Antenna	Hengweiyi	39501C	2014012	2017-1-5	2018-1-4
Horn-antenna	SCHWARZBECK	9120D	D:266	2017-2-28	2018-2-27
Horn-antenna	SCHWARZBECK	9120D	D:267	2017-11-5	2018-11-4
Turn Table	CT	CT123	4165	N.C.R	N.C.R
Antenna Tower	CT	CTERG23	3256	N.C.R	N.C.R
Controller	CT	CT1OO	95637	N.C.R	N.C.R
Test Software			EZ-EMC		

Conducted Emission					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Data**	**Calibration Due**
EMI TEST RECEIVER	R&S	ESCI	100781	2017-2-28	2018-2-27
V (V-LISN)	SCHWARZBECK	NNLK 8129	8129-143	2017-10-29	2018-10-28
TWO-LINE V-NETWORK	R&S	ENV216	101604	2017-10-29	2018-10-28
Pulse LIMITER	R&S	ESH3-Z2	100524	2017-1-5	2018-1-4
Test Software			EZ-EMC		

Remark: *The measurement uncertainty is less than +/- 2.81dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.*

Expanded Uncertainty (95% CONFIDENCE INTERVAL): K=2

4.2.MEASUREMENT UNCERTAINTY

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated in accordance with TR 100 028-1 [2] and shall correspond to an expansion factor (coverage factor) k = 1,96 or k = 2 (which provide confidence levels of respectively 95 % and 95,45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).
Table 6 is based on such expansion factors.

Table 6: Maximum measurement uncertainty

Parameter	Uncertainty
RF output power, conducted	±1.129dB
Unwanted Emissions, conducted	±2.406dB
RF Power density, conducted	±2.379dB
Conducted emissions	±2.582dB
All emissions, radiated (Below 1GHz)	±4.725dB
All emissions, radiated (Above 1GHz)	± 4.818dB
Temperature	±0.3dB
Supply voltages	±0.2%

5. FACILITIES AND ACCREDITATIONS

5.1.FACILITIES

All measurement facilities used to collect the measurement data are located at
CCS China Kunshan Lab at 10#Weiye Rd, Innovation Park Eco. & Tec. Development Zone

Kunshan city JiangSu, (215300), CHINA.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 2013 and CISPR Publication 22.

5.2.EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

5.3.LABORATORY ACCREDITATIONS AND LISTING

FCC –Designation Number: CN1172.

Compliance Certification Services Inc. Kun shan Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Designation Number: CN1172.

5.4.TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	47 CFR FCC Part 15/18 (using ANSI C63.10 :2013)；VCCI V3; CNS 13438; CNS 13439; CNS 13803; CISPR 11; EN 55011; CISPR 13; EN 55013; CISPR 22:2005; CISPR 22:1997 +A1 :2000+A2 :2002；EN 55022:2006; EN55022 :1998 +A1 :2001+A2 :2003；EN 61000-6-3 (excluding discontinuous interference); EN 61000-6-4; AS/NZS CISPR 22； CAN/CSA-CEI/IEC CISPR 22；EN 61000-3-2；EN 61000-3-3；EN550024； EN 61000-4-2； EN 61000-4-3；EN61000-4-4；EN 61000-4-5； EN 61000-4-6；IEC 61000-4-8；EN 61000-4-11； IEC61000-3-2；IEC61000-3-3；IEC 61000-4-2； IEC 61000-4-3；IEC 61000-4-4； IEC 61000-4-5；IEC 61000-4-6；IEC 61000-4-8；IEC 61000-4-11； EN 300 220-3; EN 300 328; EN 300 330-2; EN 300 440-1; EN 300-440-2; EN 300 893; EN 301 489-01; EN 301 489-3; EN 301 489-07; EN 301 489-17；47 CFR FCC Part 15, 22, 24	ACCREDITED TESTING CERT #2541.01
USA	FCC	3/10 meter Sites to perform FCC Part 15/18 measurements	CN1172
Japan	VCCI	3/10 meter Sites and conducted test sites to perform radiated/conducted measurements	VCCI R-1600 C-1707 G-216

** No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.*

6. SETUP OF EQUIPMENT UNDER TEST

6.1.SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

6.2.SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID
1.	Notebook	DELL	E5430	CN8YYW1	N/A

Remark:

2. *All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
3. *Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

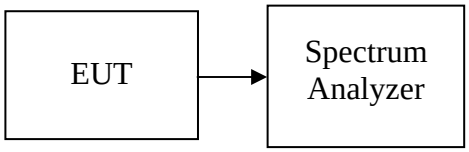
7. FCC PART 15.247 REQUIREMENTS

7.1.6DB BANDWIDTH

LIMIT

According to §15.247(a)(2), systems using digital modulation techniques may operate in the 902 - 928 MHz, and 2400 - 2483.5 MHz bands, and 5725 - 5850 MHz bands. The minimum 6dB bandwidth shall be at least 500kHz.

Test Configuration



TEST PROCEDURE

Set the spectrum analyzer as RBW = 100 kHz, VBW = 300 kHz, Sweep = auto couple.

TEST RESULTS

No non-compliance noted

Test Data

IEEE 802.11b mode /Chain 0

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	10.167	>500	PASS
Mid	2437	10.085		PASS
High	2462	10.149		PASS

IEEE 802.11b mode /Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	10.064	>500	PASS
Mid	2437	10.149		PASS
High	2462	10.149		PASS

IEEE 802.11g mode /Chain 0

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.505	>500	PASS
Mid	2437	16.569		PASS
High	2462	16.623		PASS

IEEE 802.11g mode /Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.603	>500	PASS
Mid	2437	16.538		PASS
High	2462	16.559		PASS

IEEE 802.11n HT20 mode / Chain 0

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	17.723	>500	PASS
Mid	2437	17.692		PASS
High	2462	17.692		PASS

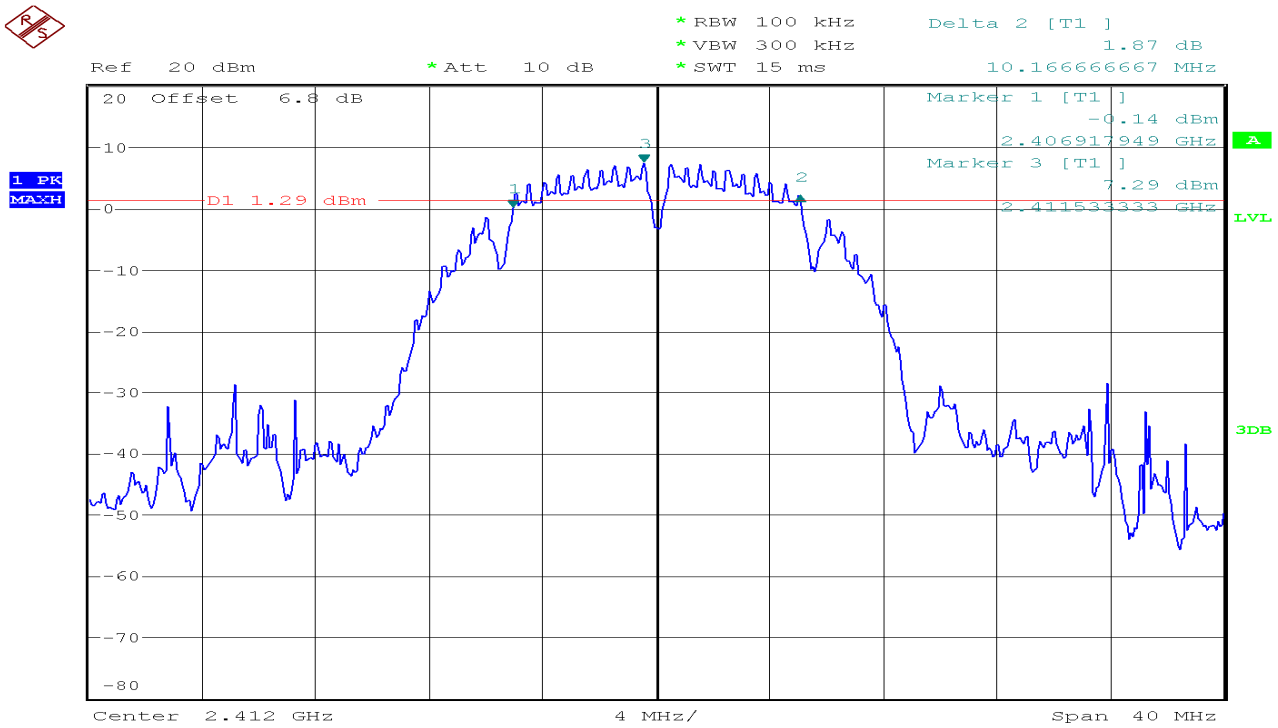
IEEE 802.11n HT20 mode / Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	17.821	>500	PASS
Mid	2437	17.736		PASS
High	2462	17.736		PASS

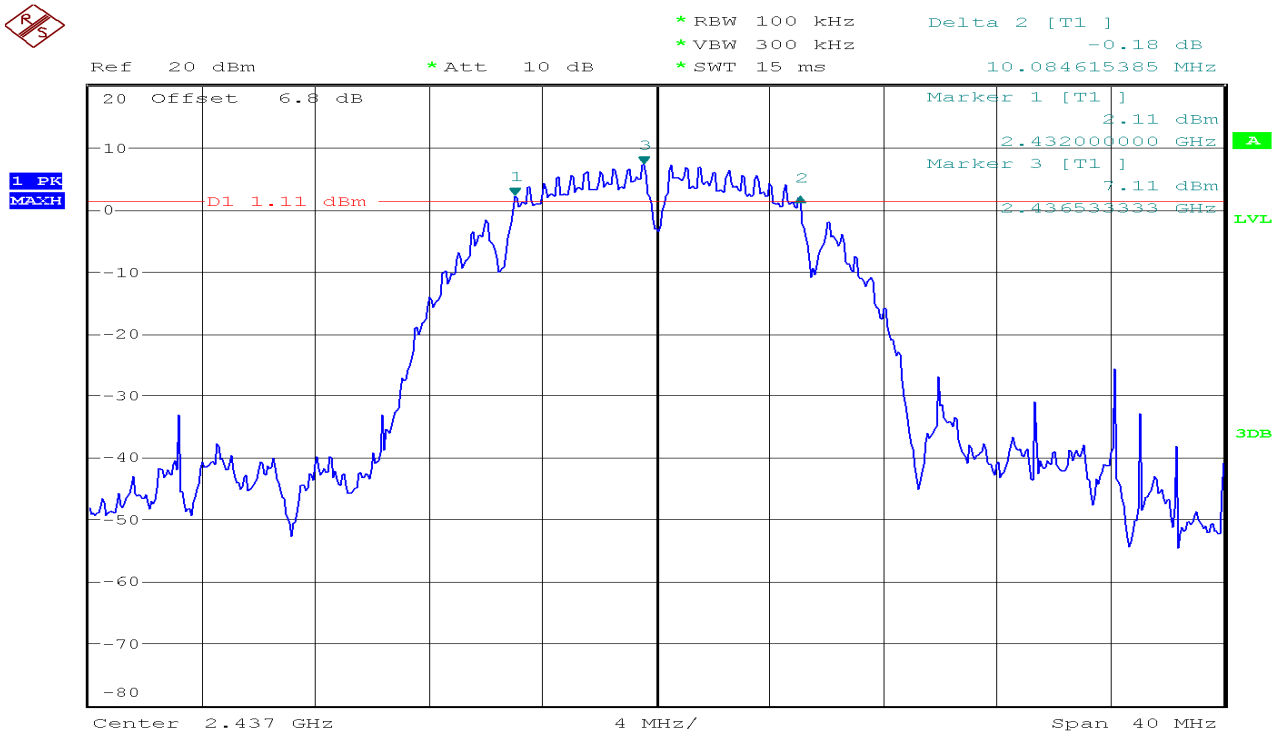
Test Plot

IEEE 802.11b MODE /Chain 0

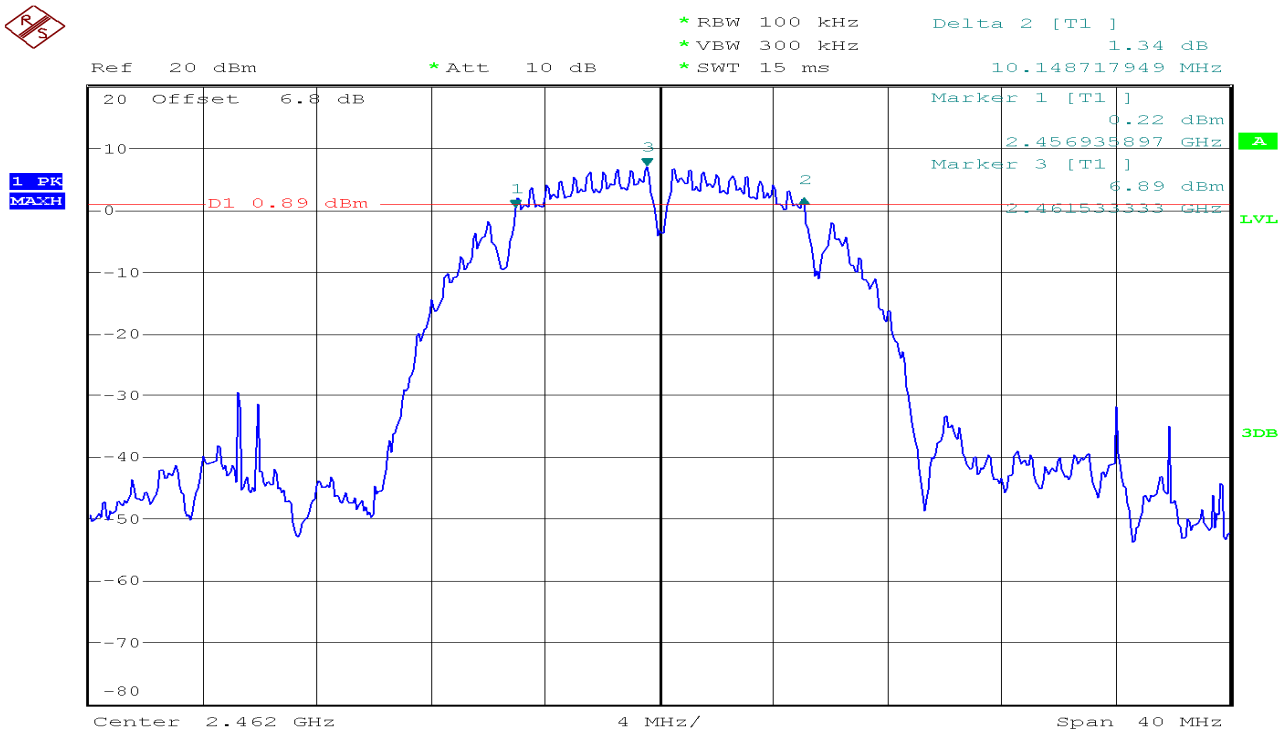
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

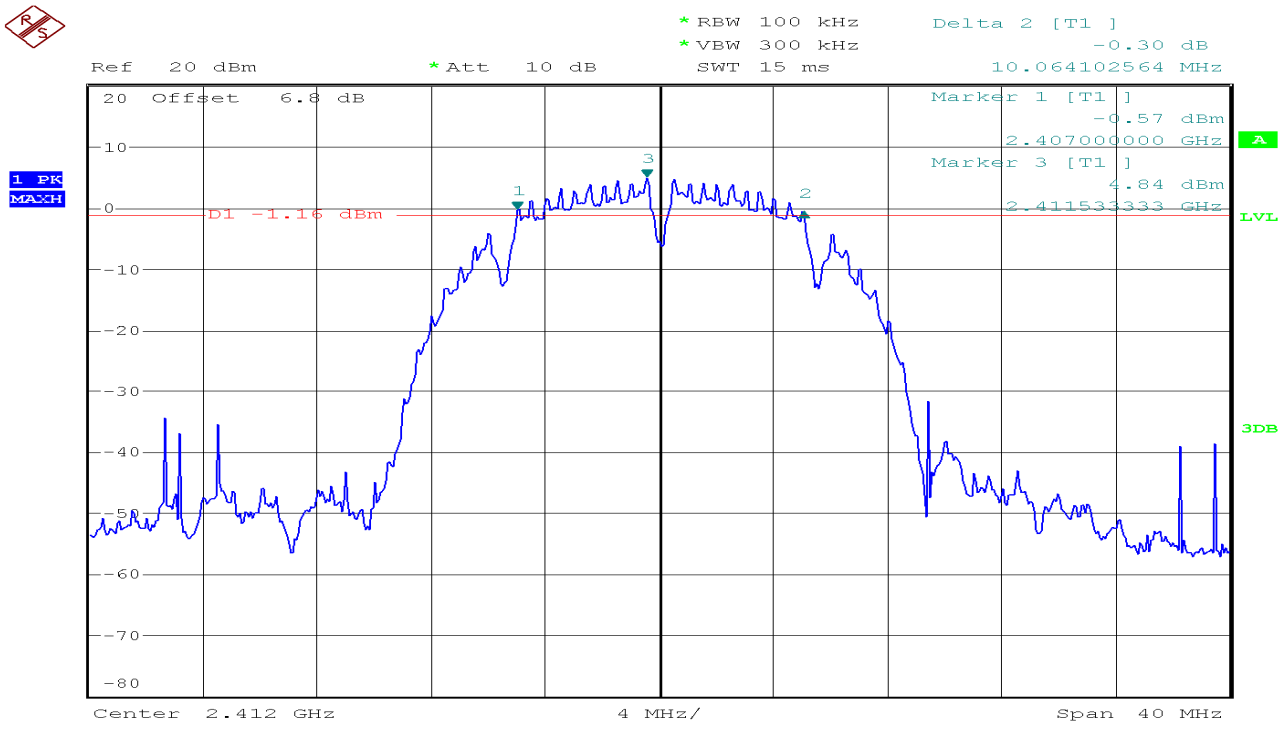


6dB Bandwidth (CH High)

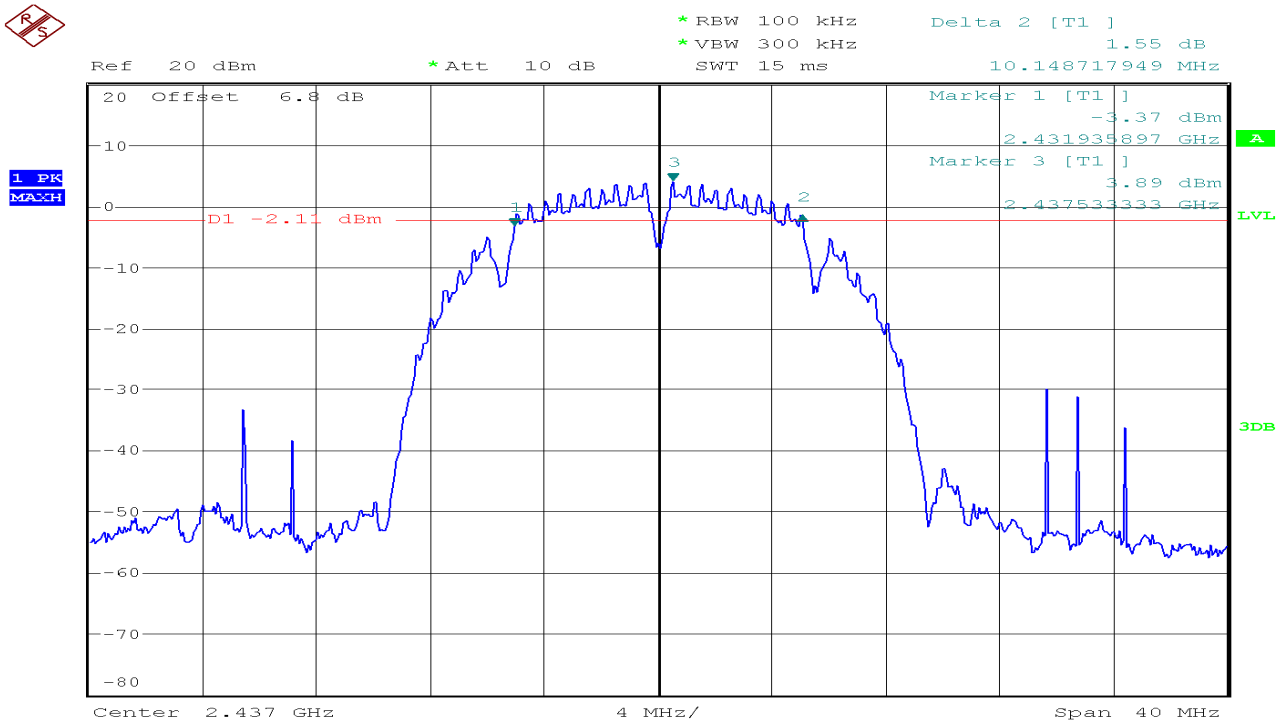


IEEE 802.11b MODE /Chain 1

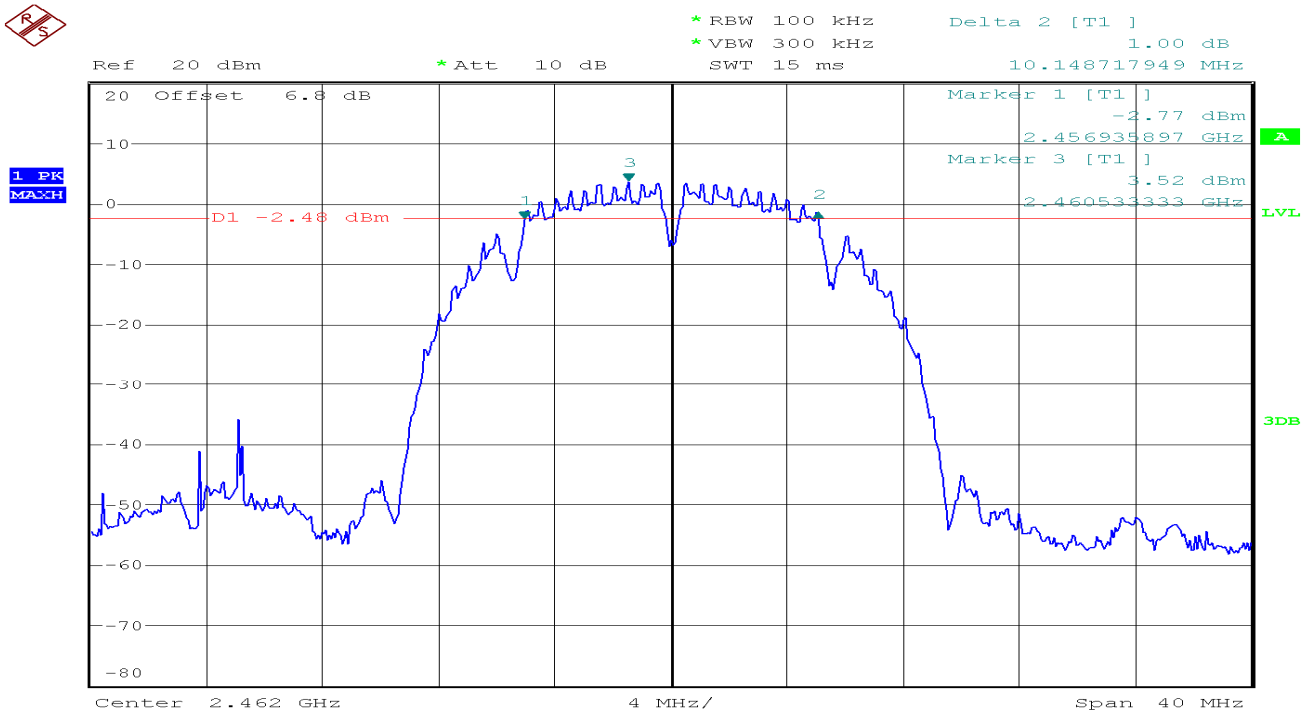
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

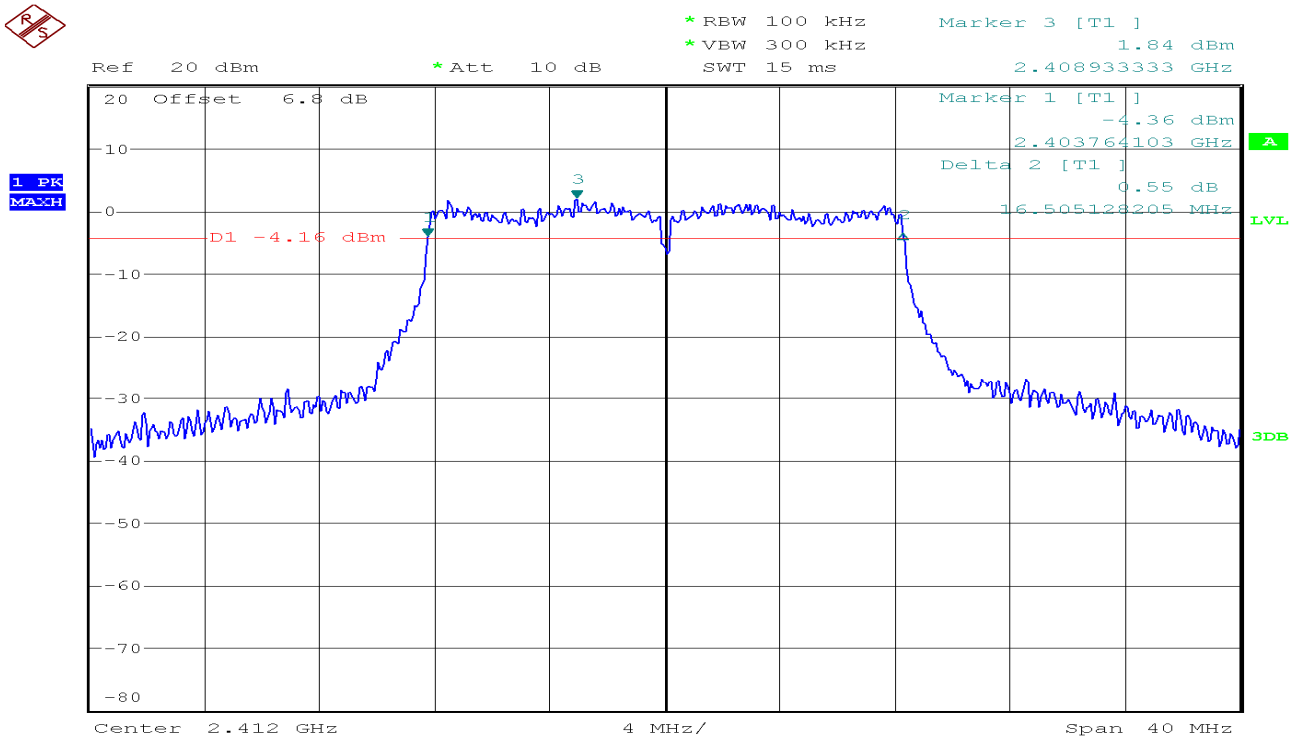


6dB Bandwidth (CH High)

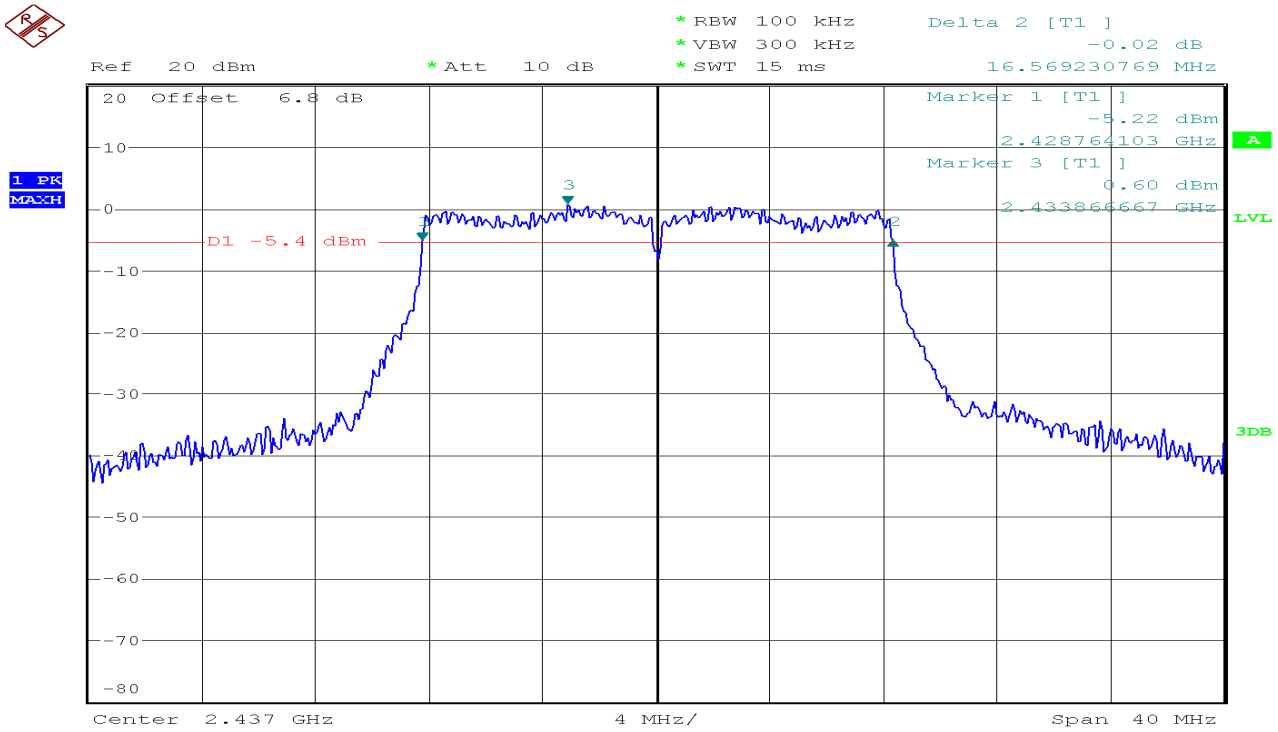


IEEE 802.11g MODE /Chain 0

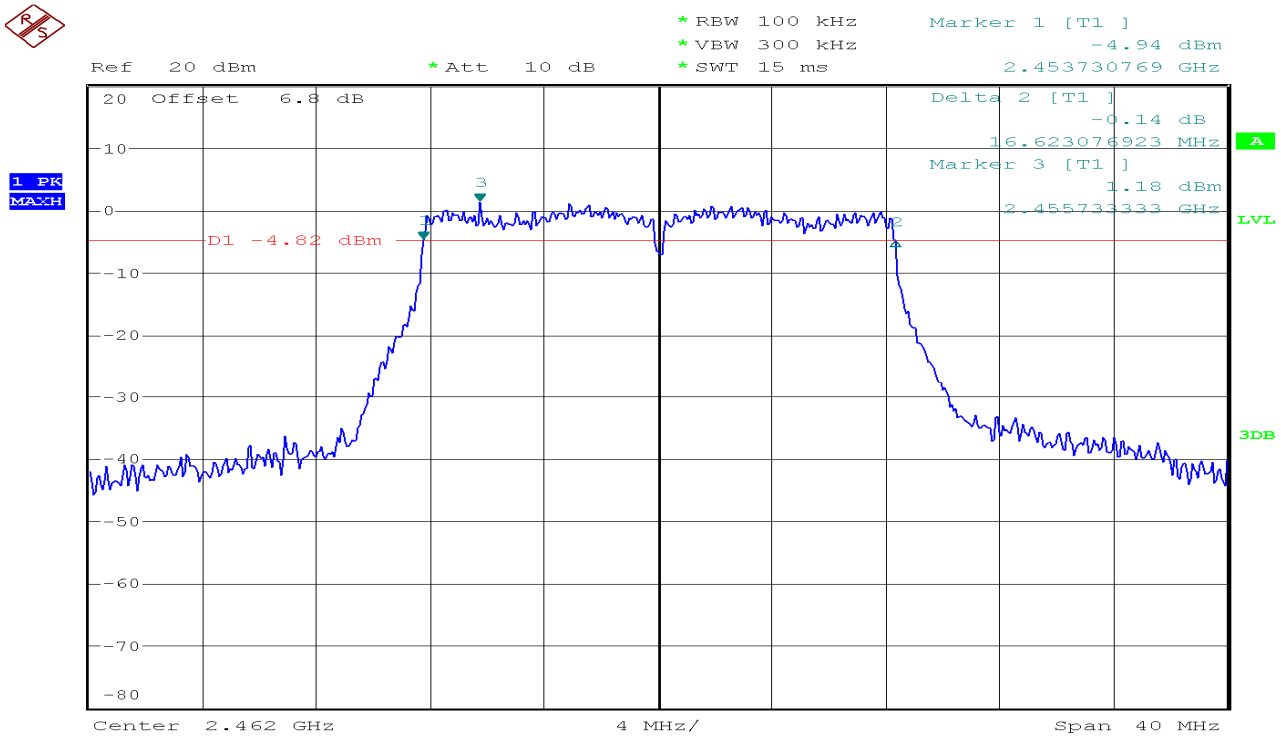
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

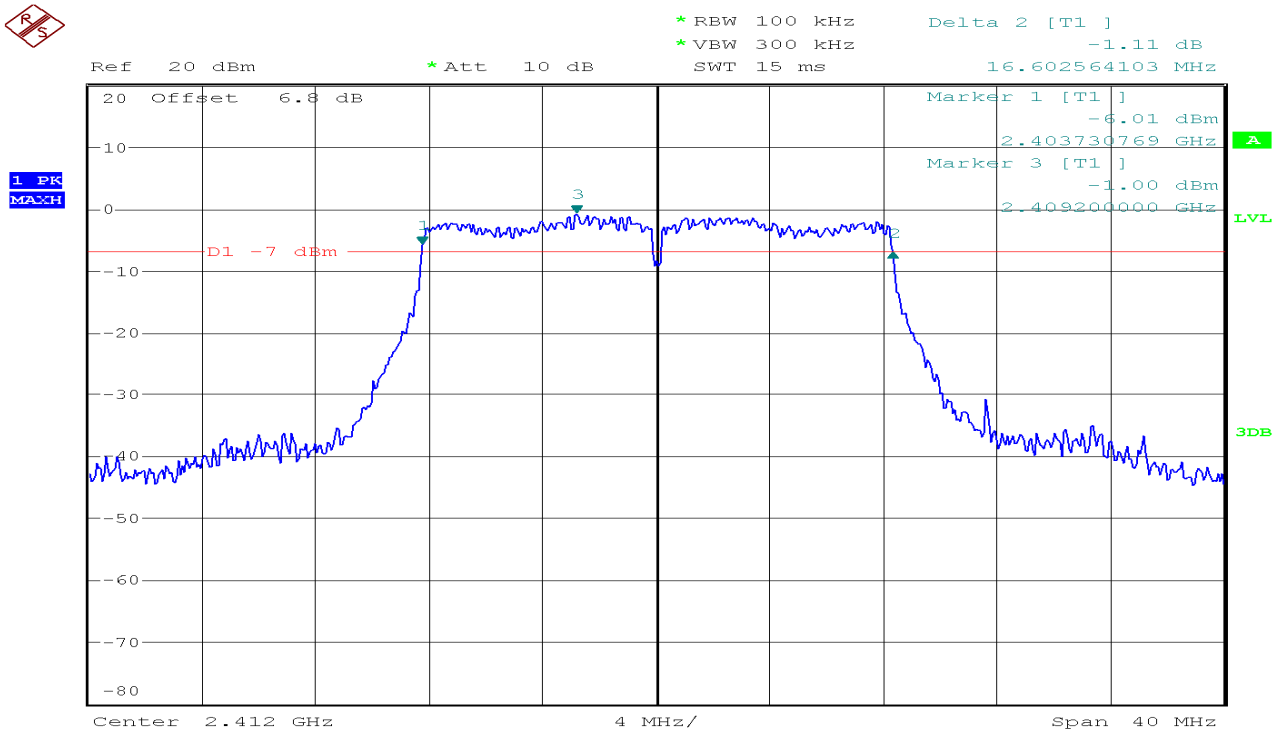


6dB Bandwidth (CH High)

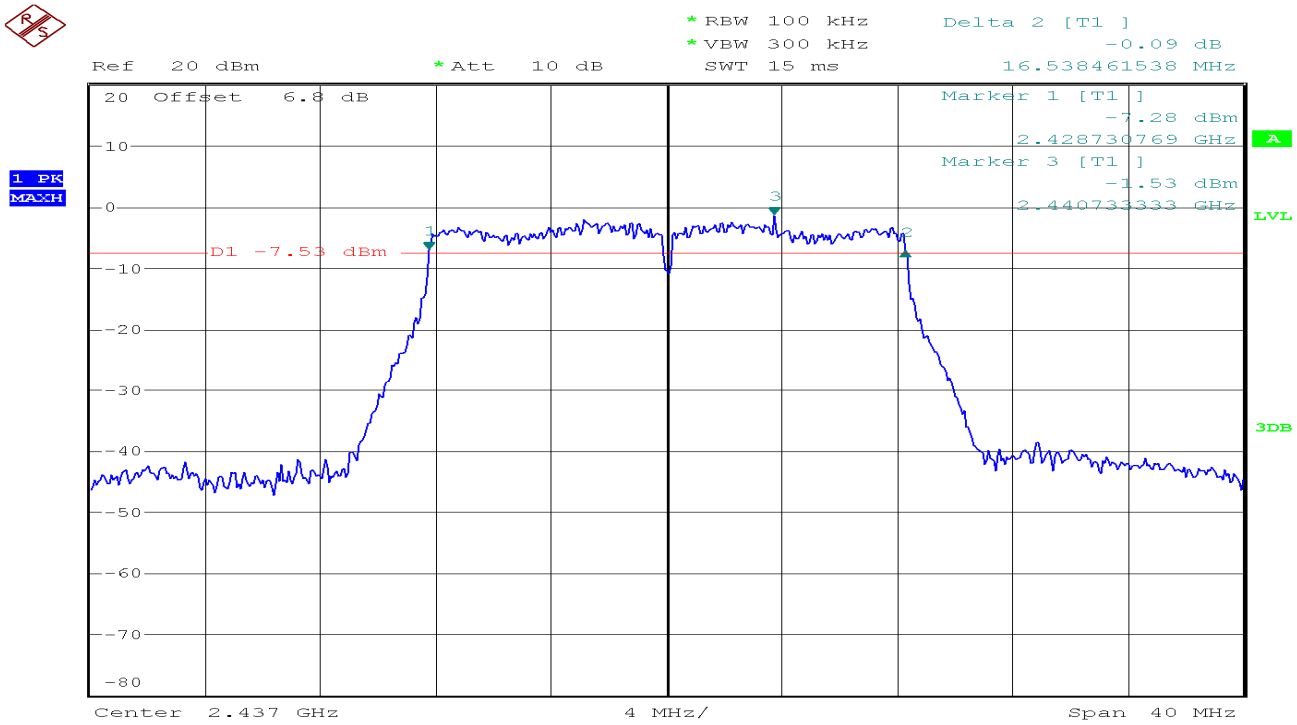


IEEE 802.11g MODE /Chain 1

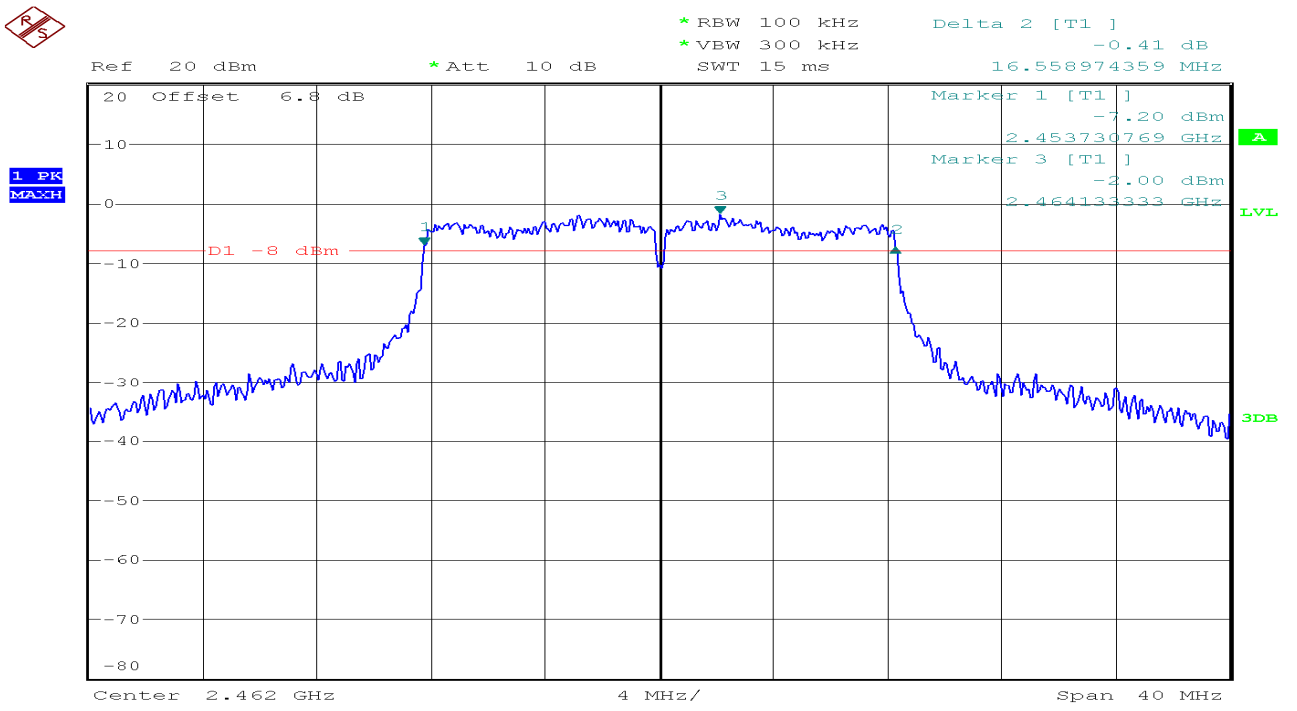
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

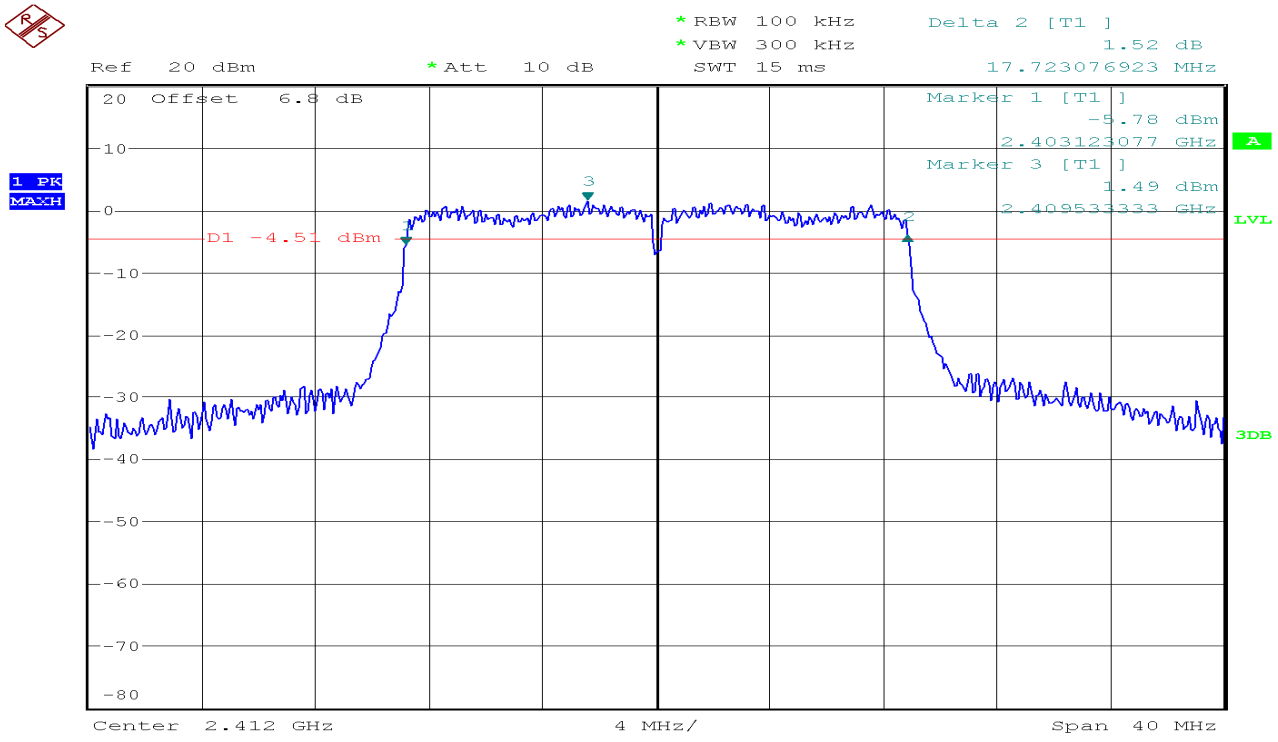


6dB Bandwidth (CH High)

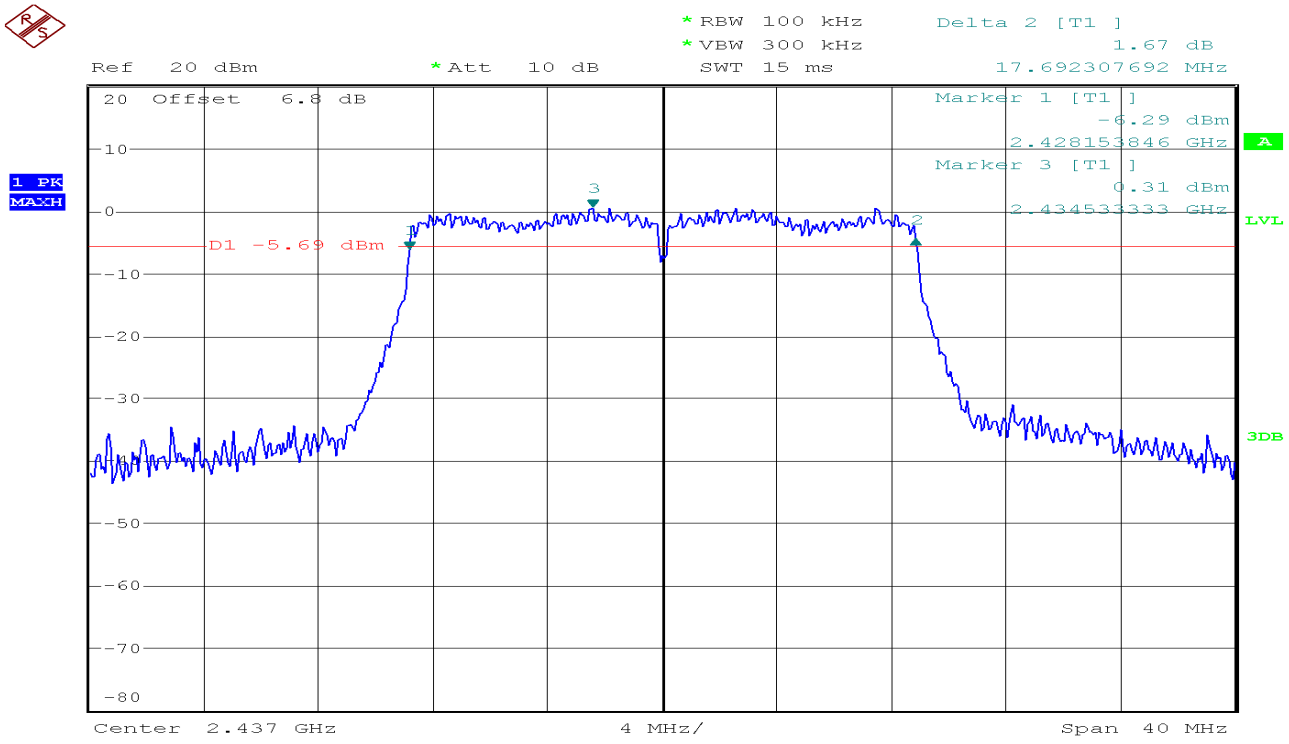


IEEE 802.11n HT20 mode / Chain 0

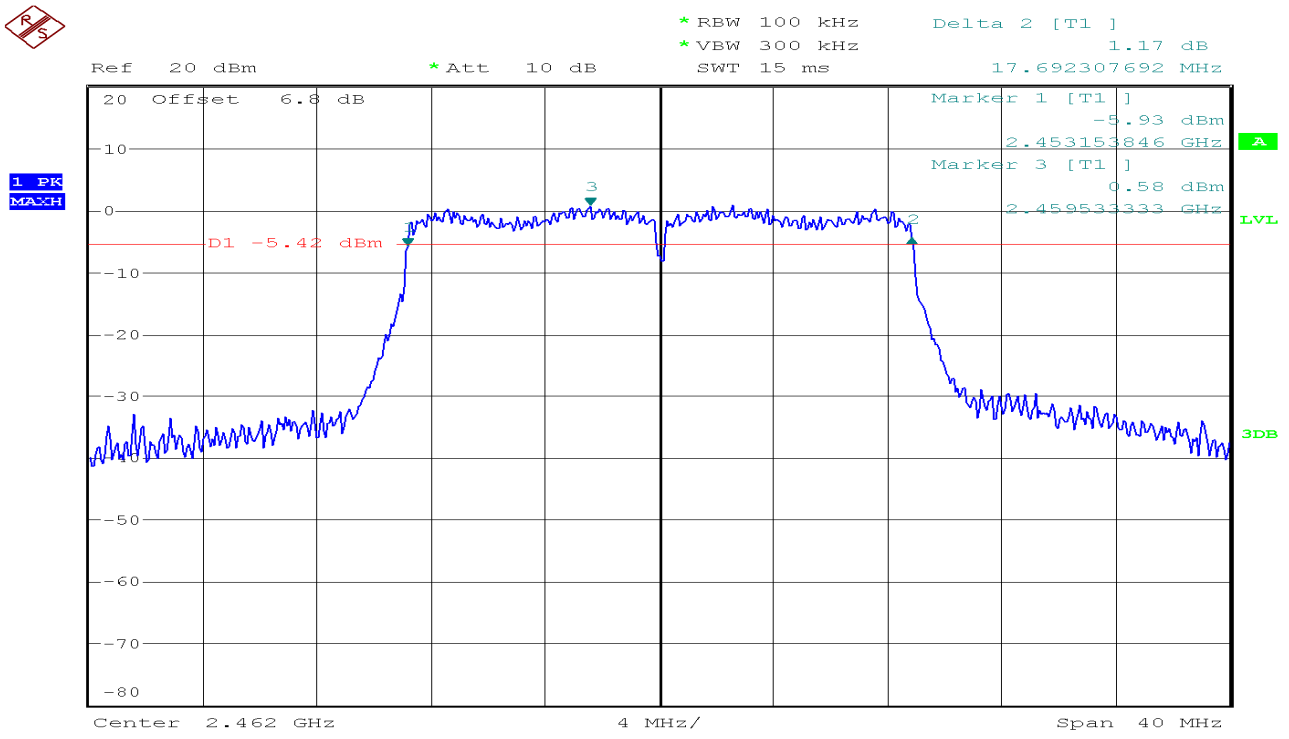
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

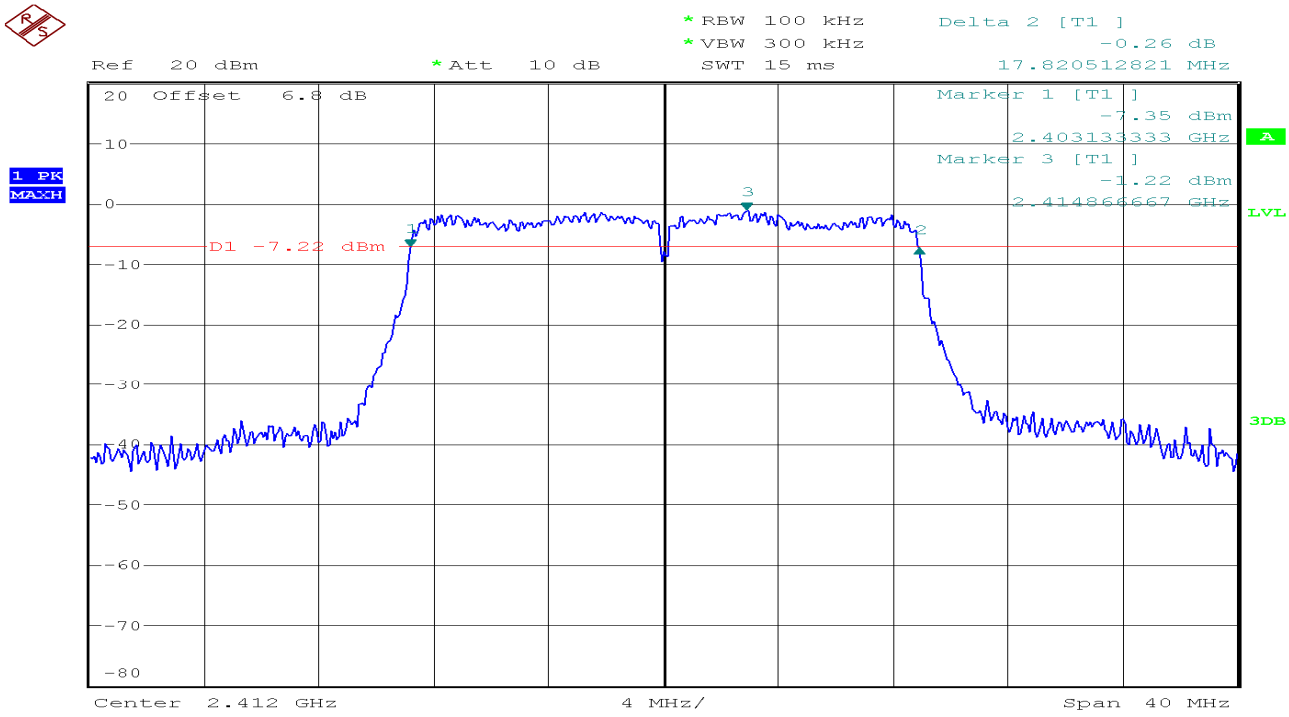


6dB Bandwidth (CH High)

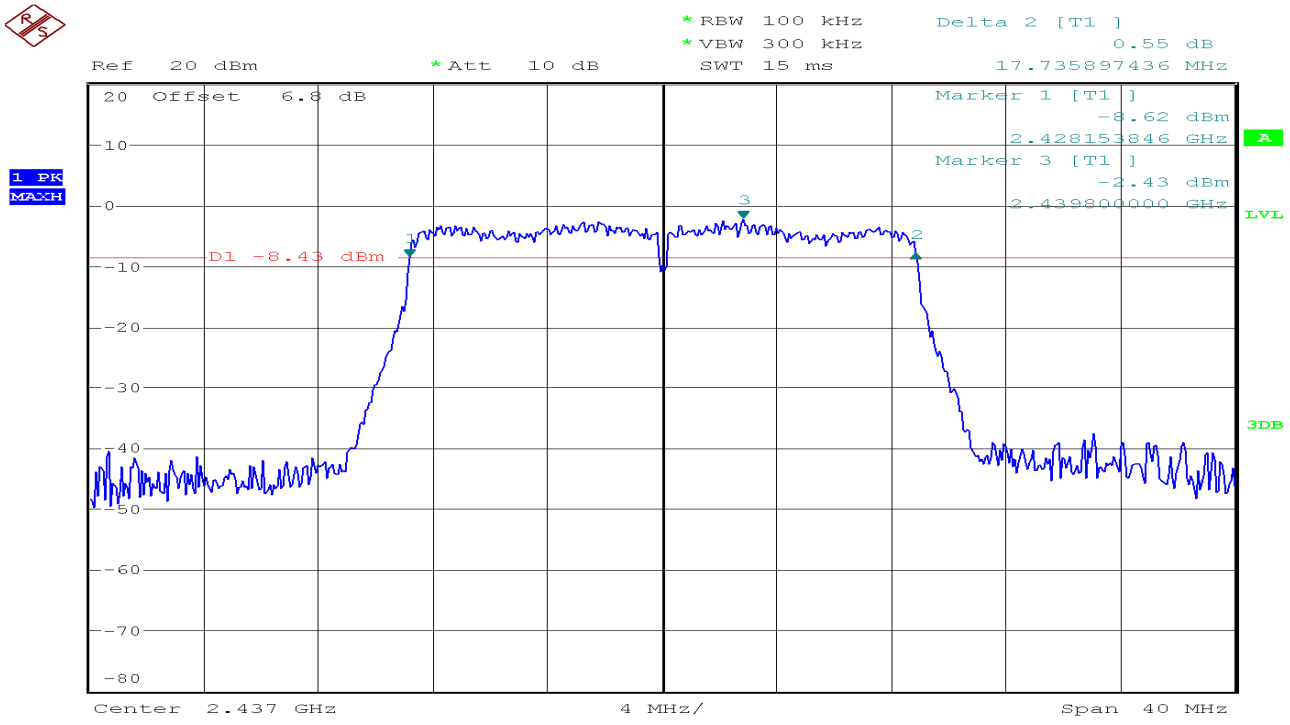


IEEE 802.11n HT20 mode / Chain 1

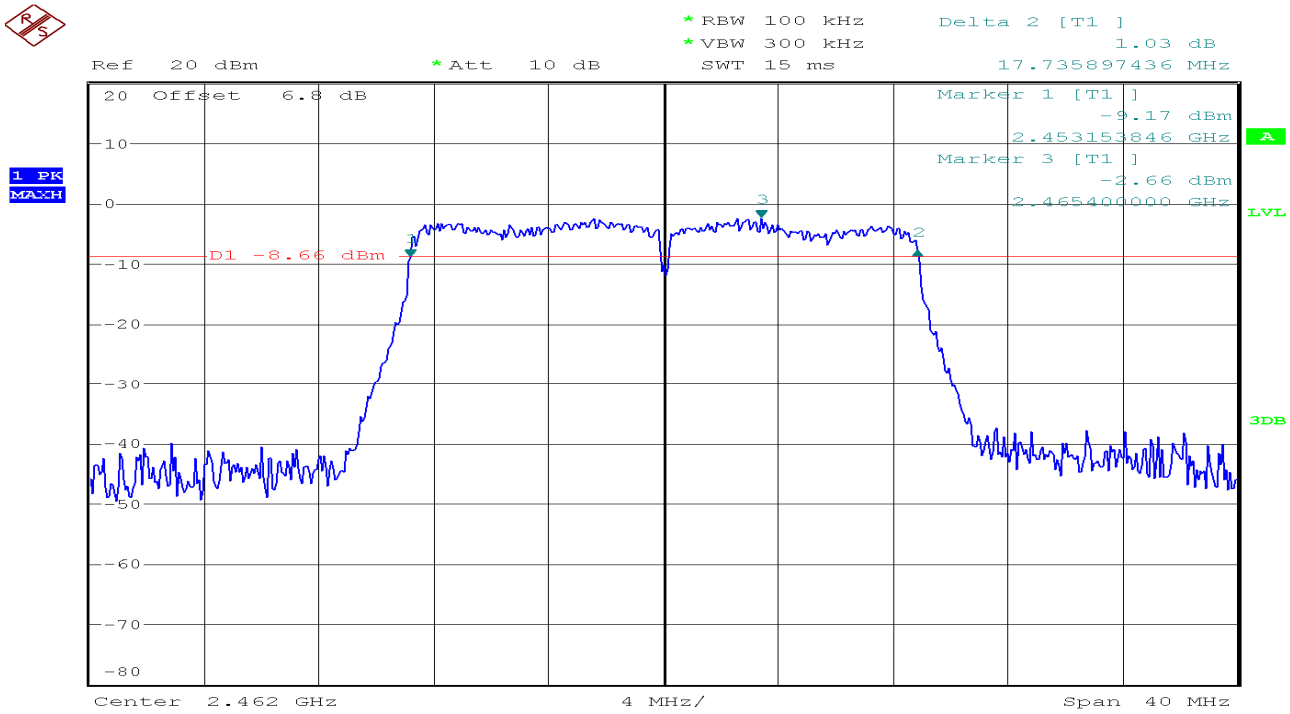
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)



6dB Bandwidth (CH High)



7.2.PEAK POWER

LIMIT

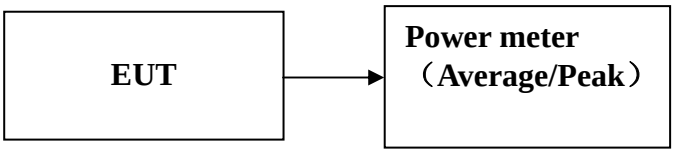
The maximum peak output power of the intentional radiator shall not exceed the following:

1.According to §15.247(b)(3), for systems using digital modulation in the bands of 902-928 MHz, and 2400-2483.5 MHz: 1 Watt.

2.According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Directional Gain=G_{ANT}=2.04dBi<6dBi

Test Configuration



TEST PROCEDURE

1. The EUT transmitter output is connected to the Power meter.
   The Power meter is set to the peak power detection.
2. The testing follows the Measurement Procedure FCC KDB No. 558074 D01 DTS Meas. Guidance v04. 9.1.3 PKPM1 Peak-reading power meter method.

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	2412	20.17	18.03	22.24	30
Mid	2437	20.03	17.36	21.91	30
High	2462	19.15	17.32	21.34	30

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	2412	24.23	23.26	26.78	30
Mid	2437	23.76	22.29	26.10	30
High	2462	23.9	21.76	25.97	30

Test mode: IEEE 802.11n HT20 mode

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	2412	24.18	22.98	26.63	30
Mid	2437	23.57	21.97	25.85	30
High	2462	23.64	21.94	25.88	30

***Remark**: 1.Total Output Power (dBm) = 10*LOG(10^(Chain 0 Output Power / 10)+10^(Chain 1 Output Power /10))*

7.3.PEAK POWER SPECTRAL DENSITY

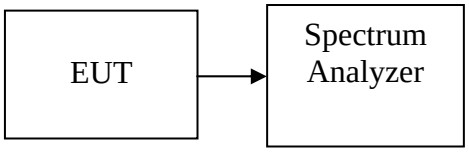
LIMIT

1.According to §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.

2.According to §15.247(f), the digital modulation operation of the hybrid system, with the frequency hopping turned off, shall comply with the power density requirements of paragraph (d) of this section.

Directional Gain=G_{ANT} + 10 log(N_{ANT}/N_{SS})=2.04+10 log(2/1)=5.05dBi < 6dBi

Test Configuration



TEST PROCEDURE

1.Place the EUT on the table and set it in transmitting mode.
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

2.Set the spectrum analyzer as RBW = 3 kHz, VBW = 10 kHz, Span = 1.5 times the DTS bandwidth, Sweep = auto

3.Record the max reading.

4.Repeat the above procedure until the measurements for all frequencies are completed.

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Result
Low	2412	-7.59	-8.55	-5.03	8.00	PASS
Mid	2437	-7.83	-10.05	-5.79	8.00	PASS
High	2462	-7.76	-9.51	-5.54	8.00	PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Result
Low	2412	-11.53	-13.10	-9.23	8.00	PASS
Mid	2437	-12.67	-14.14	-10.33	8.00	PASS
High	2462	-11.91	-14.14	-9.87	8.00	PASS

Test mode: IEEE 802.11n HT20 mode

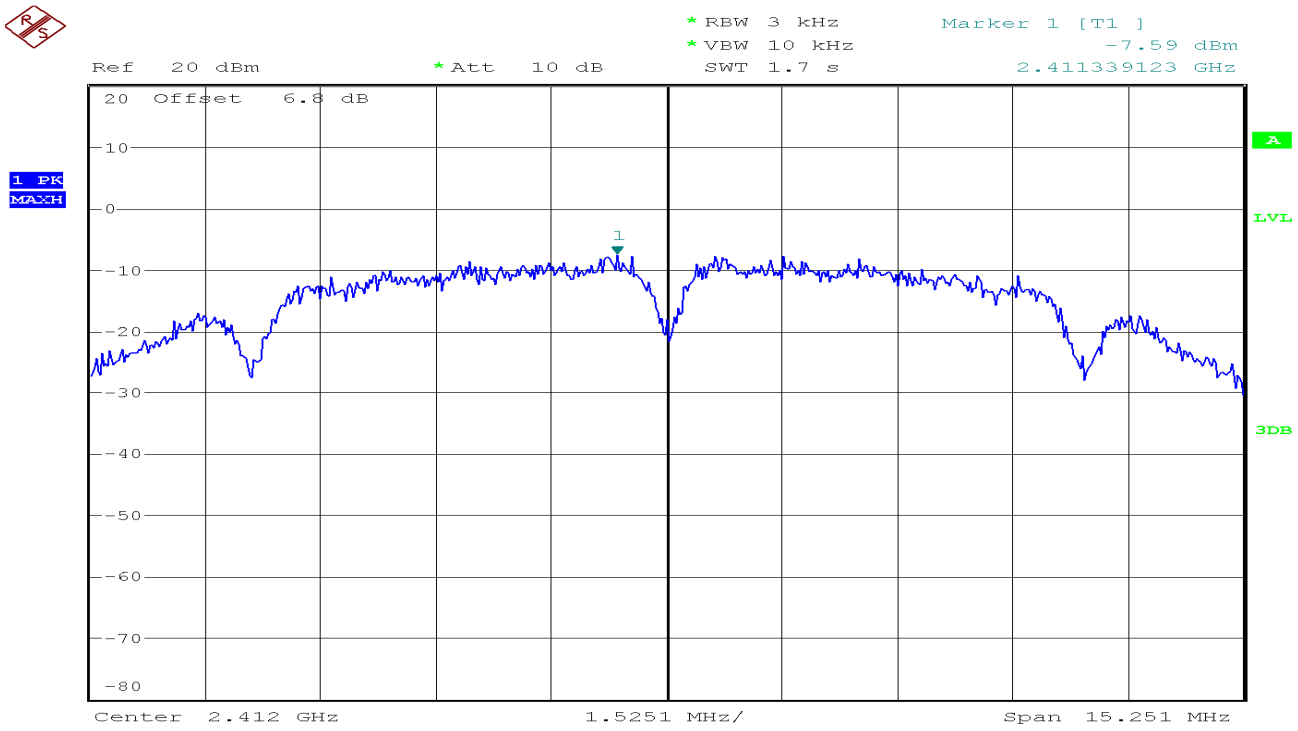
Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Result
Low	2412	-9.42	-12.30	-7.62	8.00	PASS
Mid	2437	-12.29	-13.82	-9.98	8.00	PASS
High	2462	-12.08	-13.00	-9.51	8.00	PASS

***Remark**:1.Total PPSD(dBm) = 10*LOG(10^(Chain 0 PPSD/ 10)+10^(Chain 1 PPSD/10))*

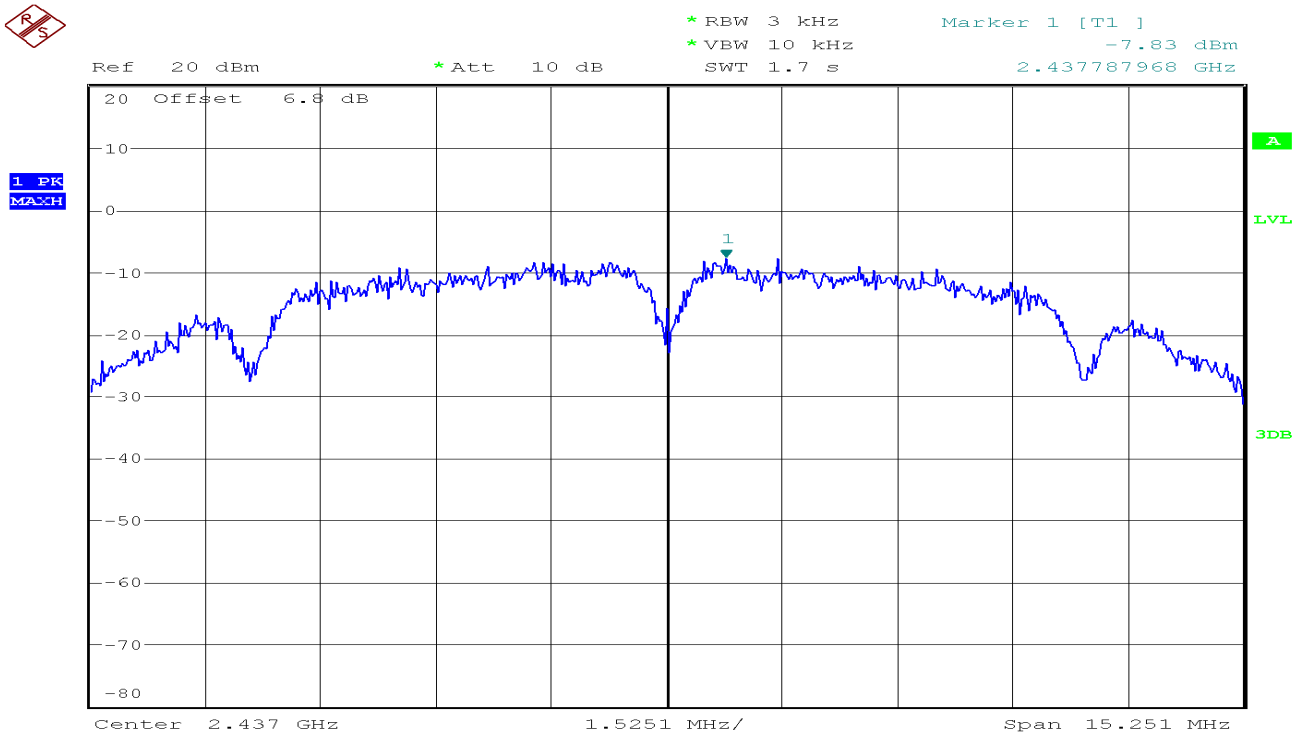
Test Plot

IEEE 802.11b mode/Chain 0

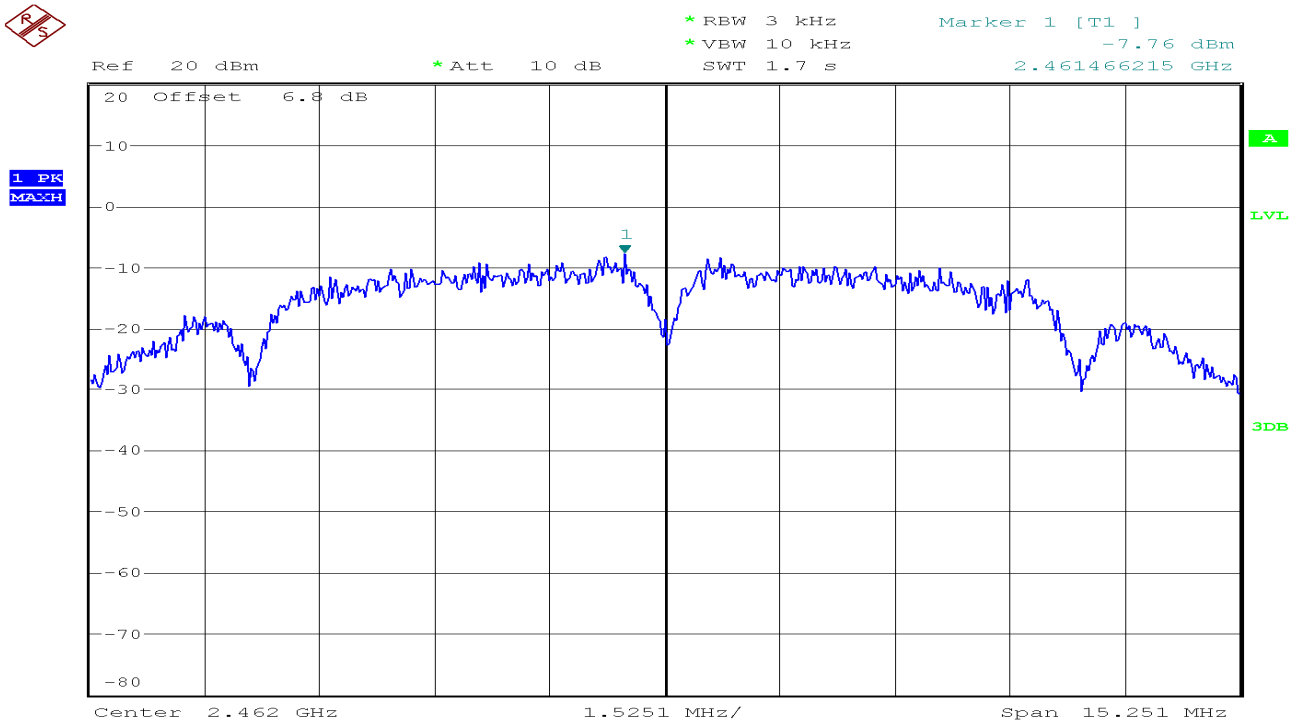
PPSD (CH Low)



PPSD(CH Mid)

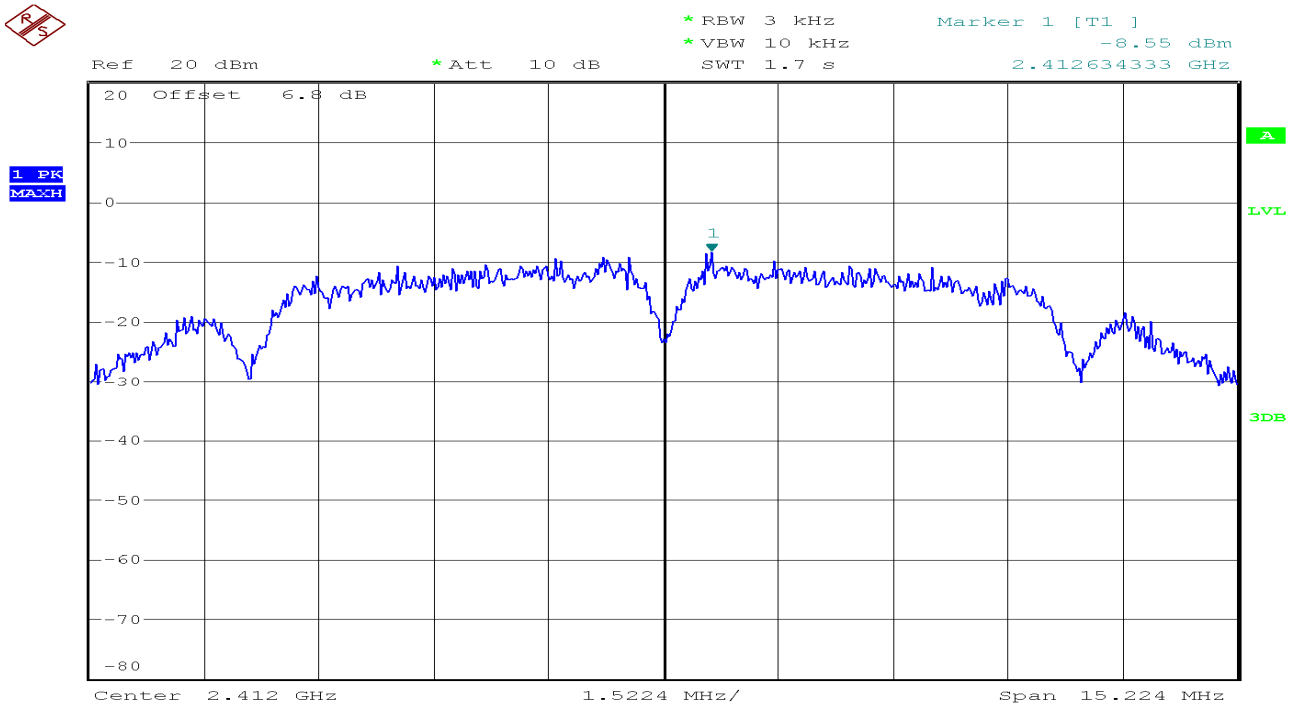


PPSD (CH High)

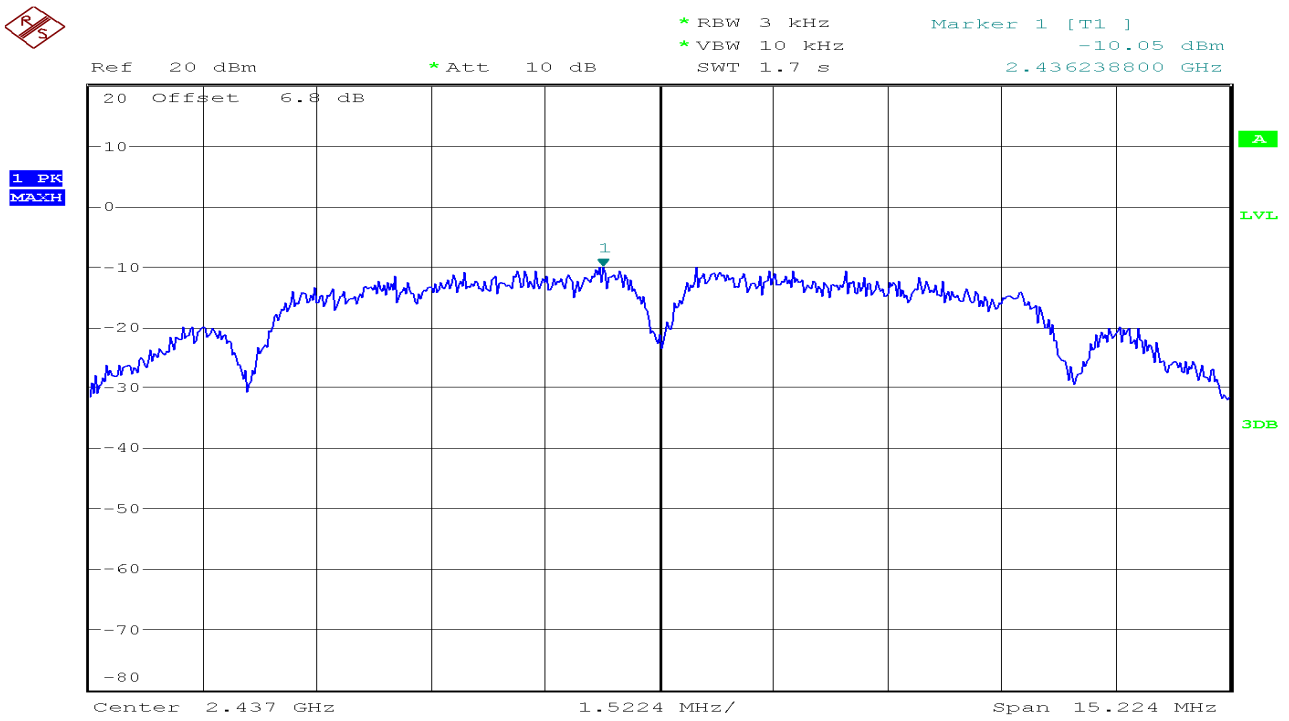


IEEE 802.11b mode/Chain 1

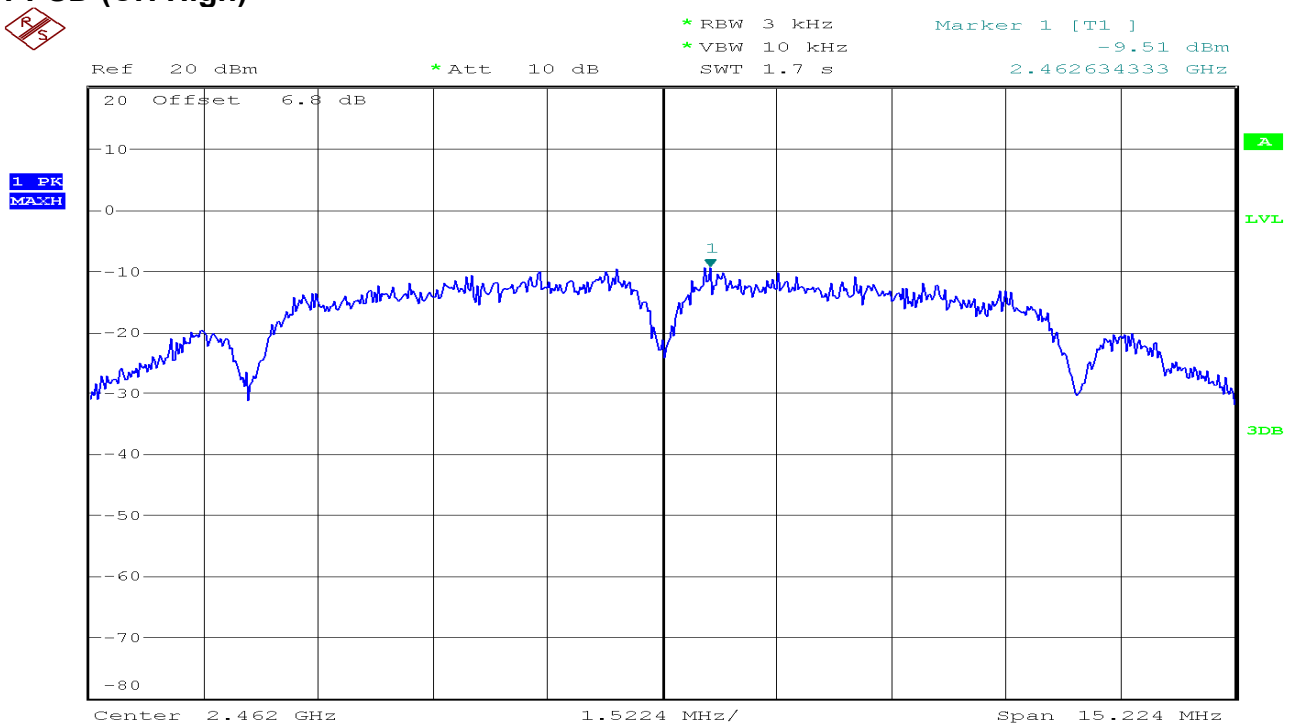
PPSD (CH Low)



PPSD(CH Mid)

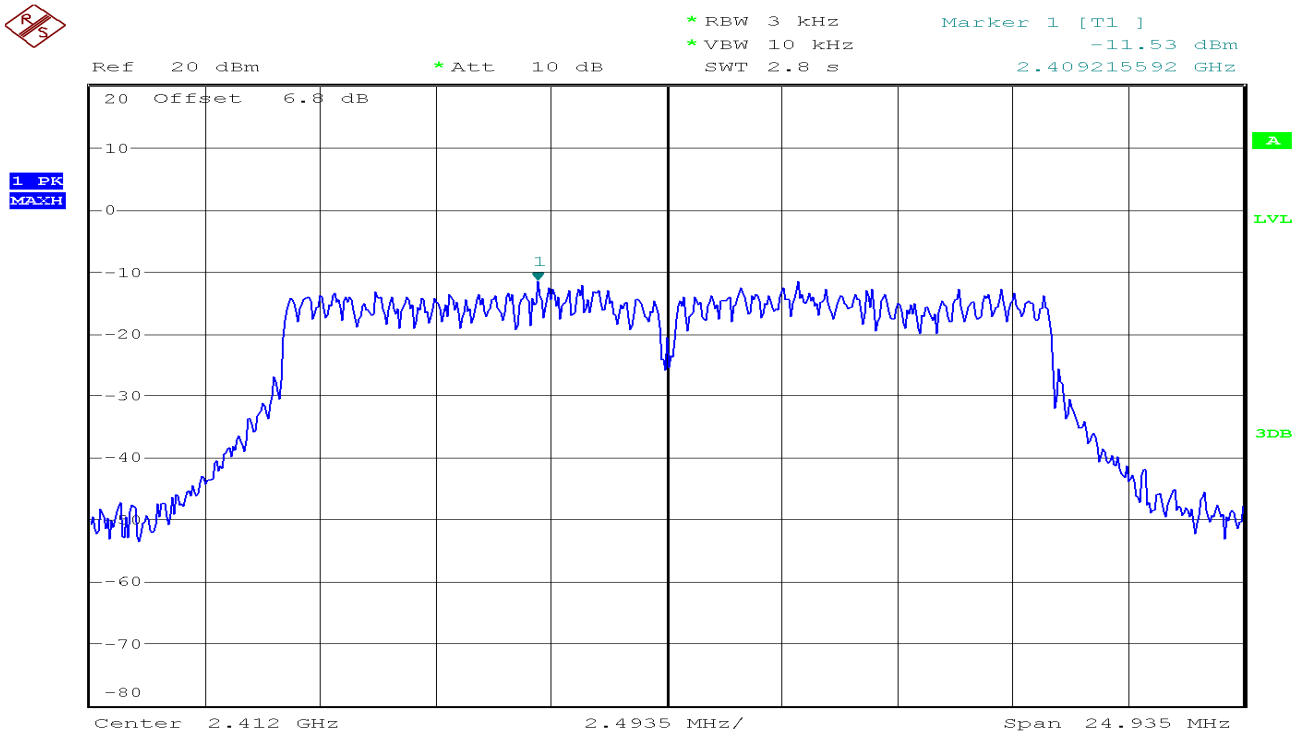


PPSD (CH High)

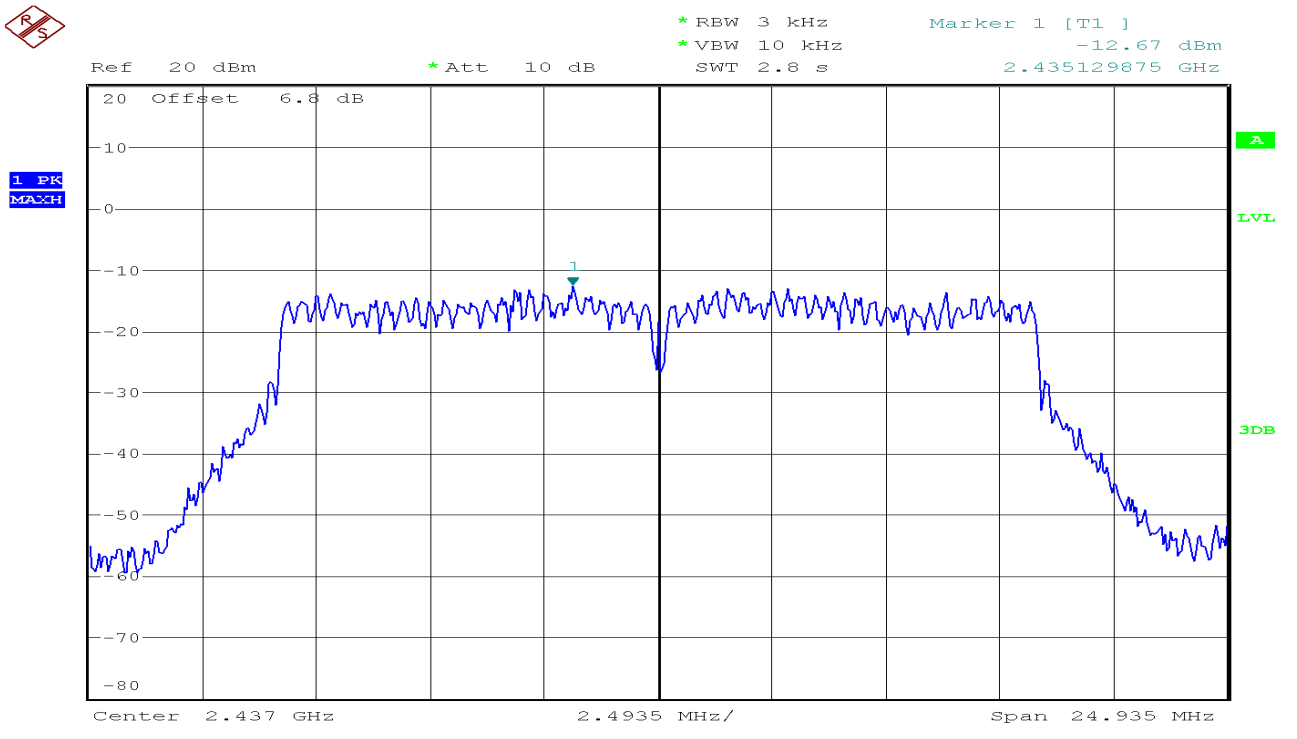


IEEE 802.11g mode/Chain 0

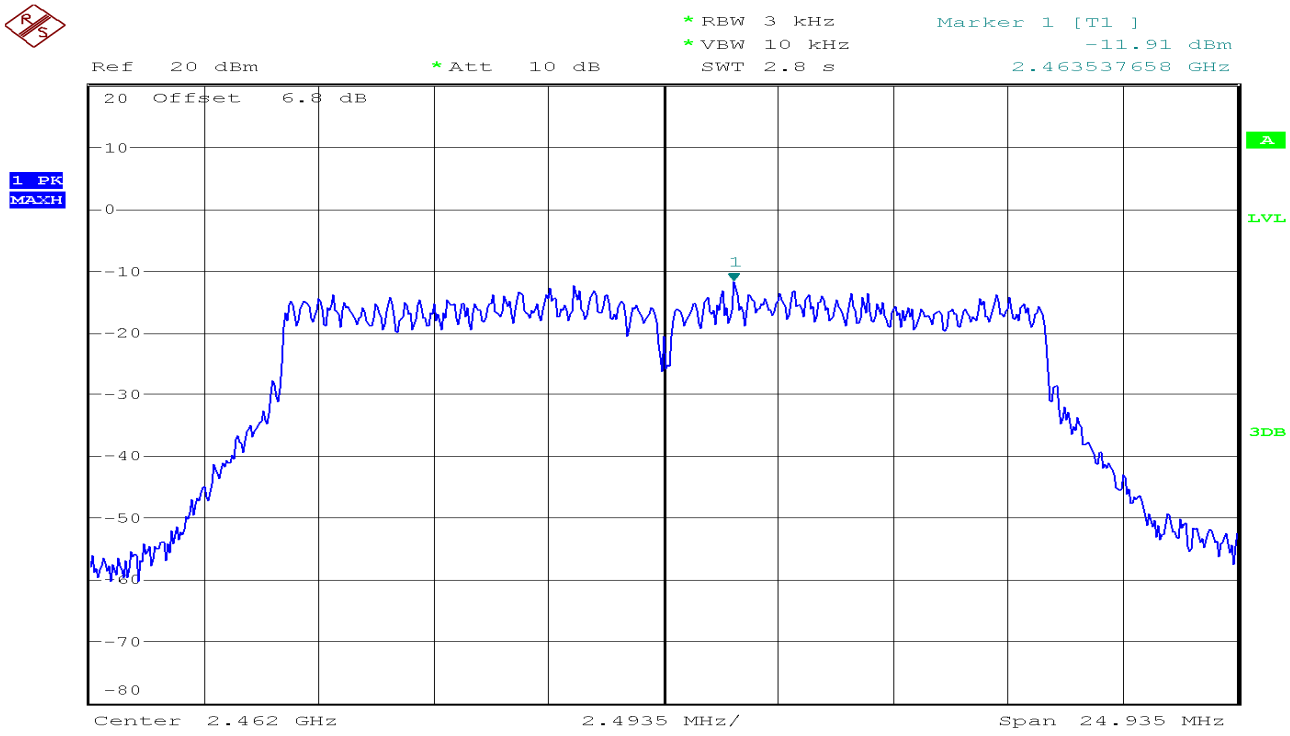
PPSD (CH Low)



PPSD (CH Mid)

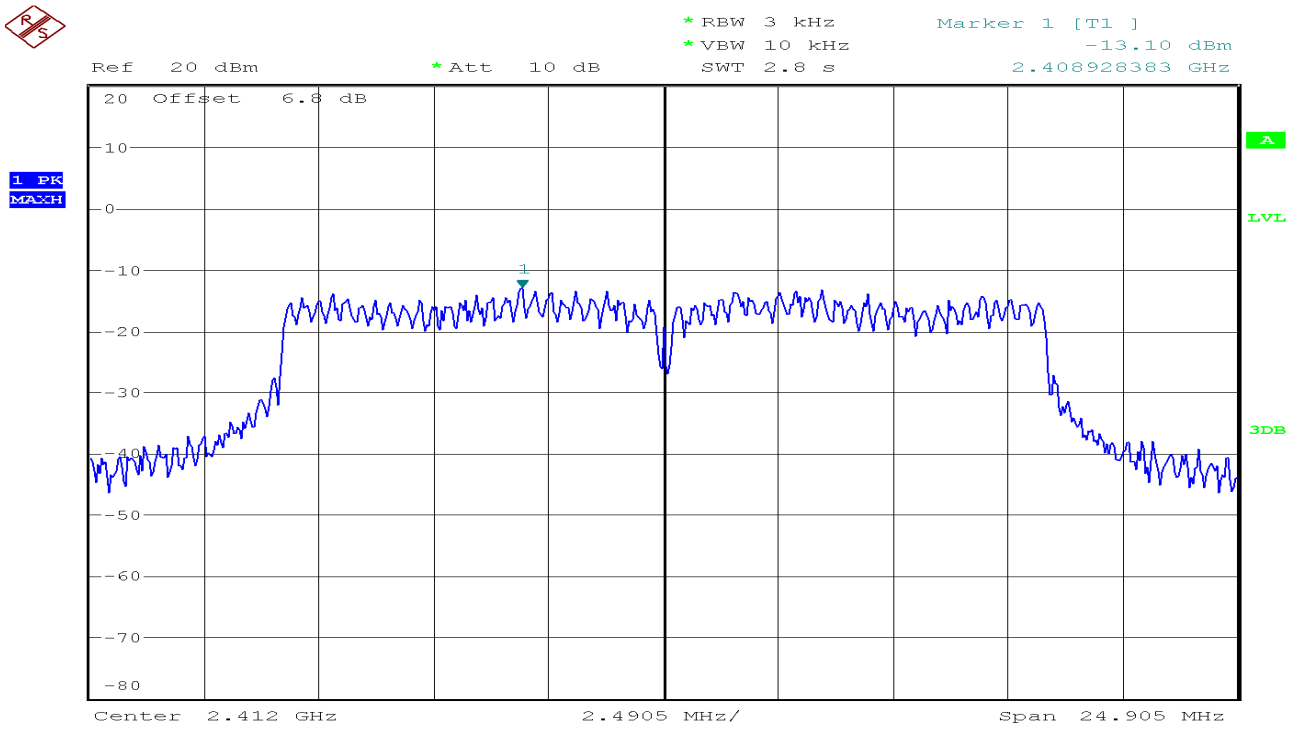


PPSD (CH High)

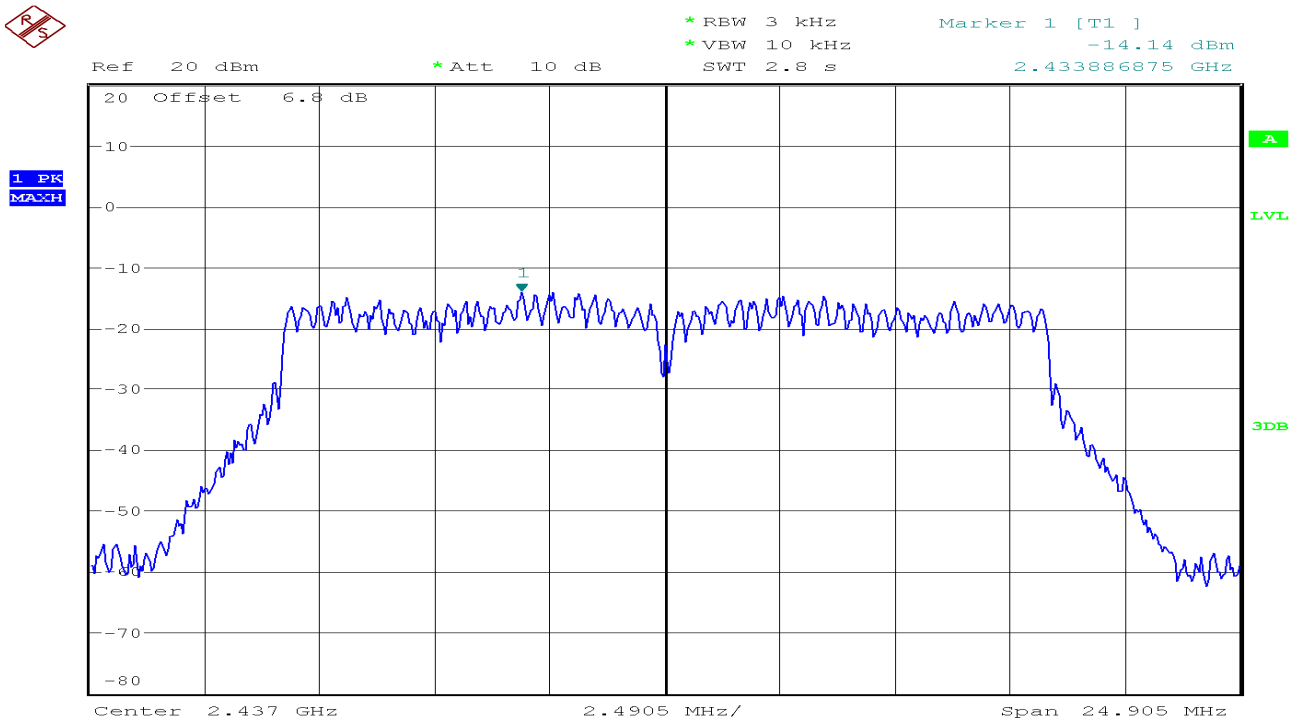


IEEE 802.11g mode/Chain 1

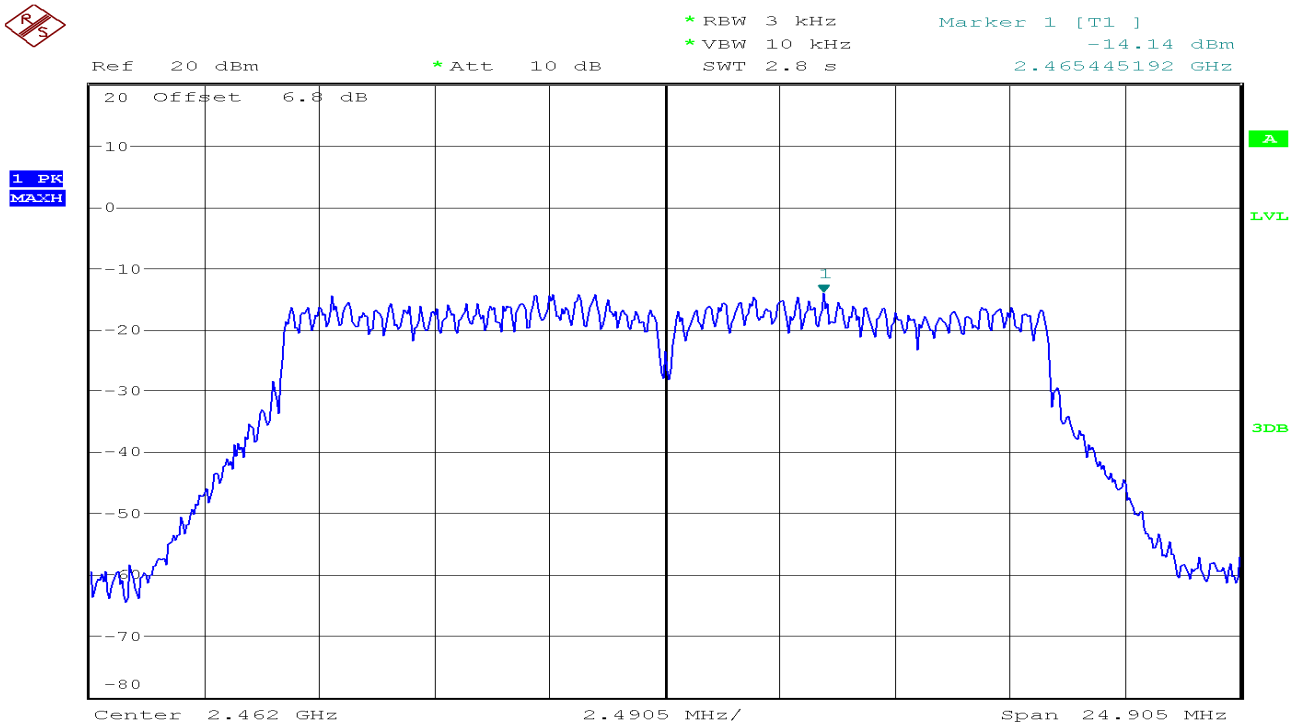
PPSD (CH Low)



PPSD (CH Mid)

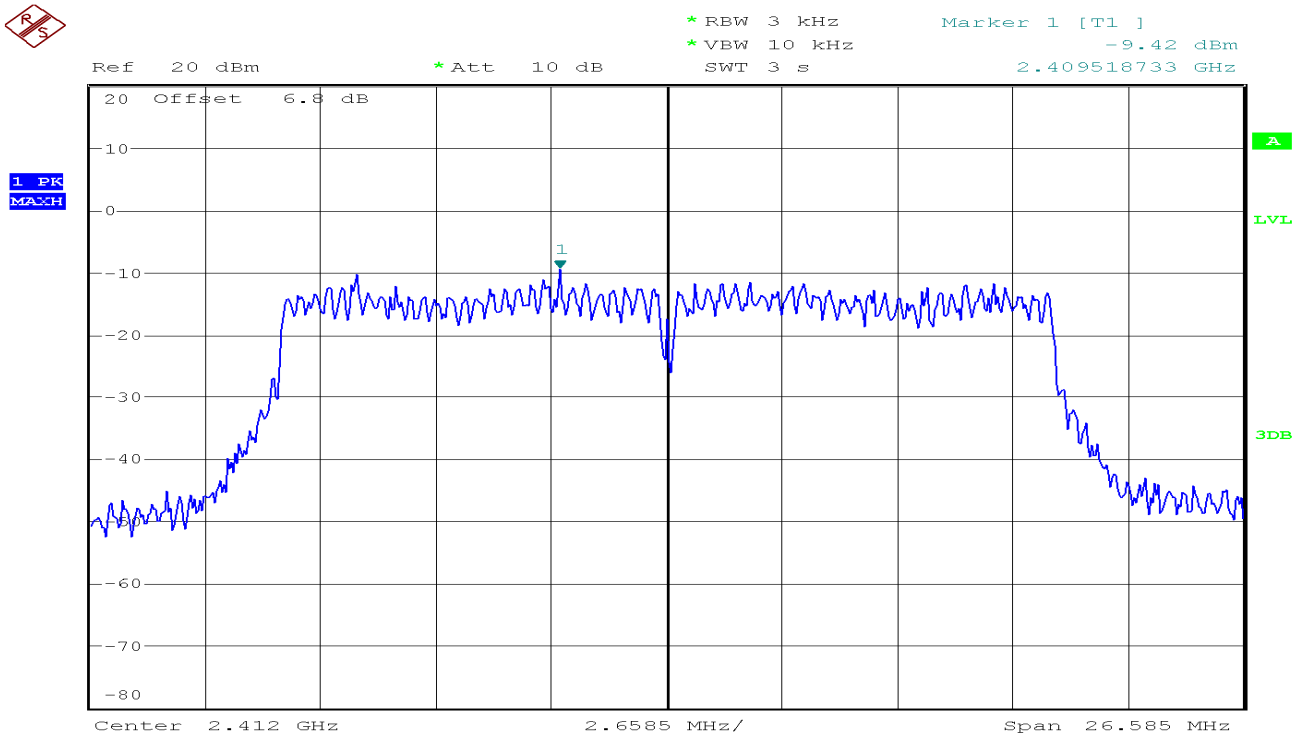


PPSD (CH High)

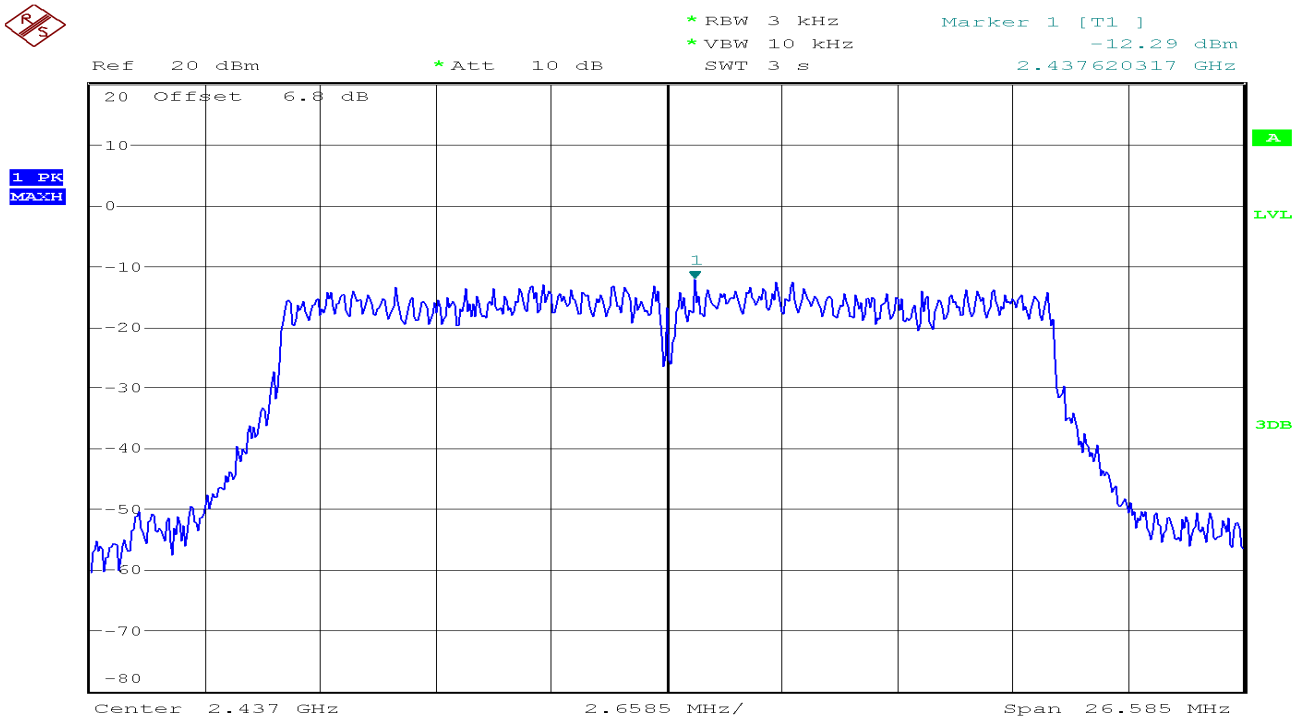


IEEE 802.11n HT20 mode/Chain 0

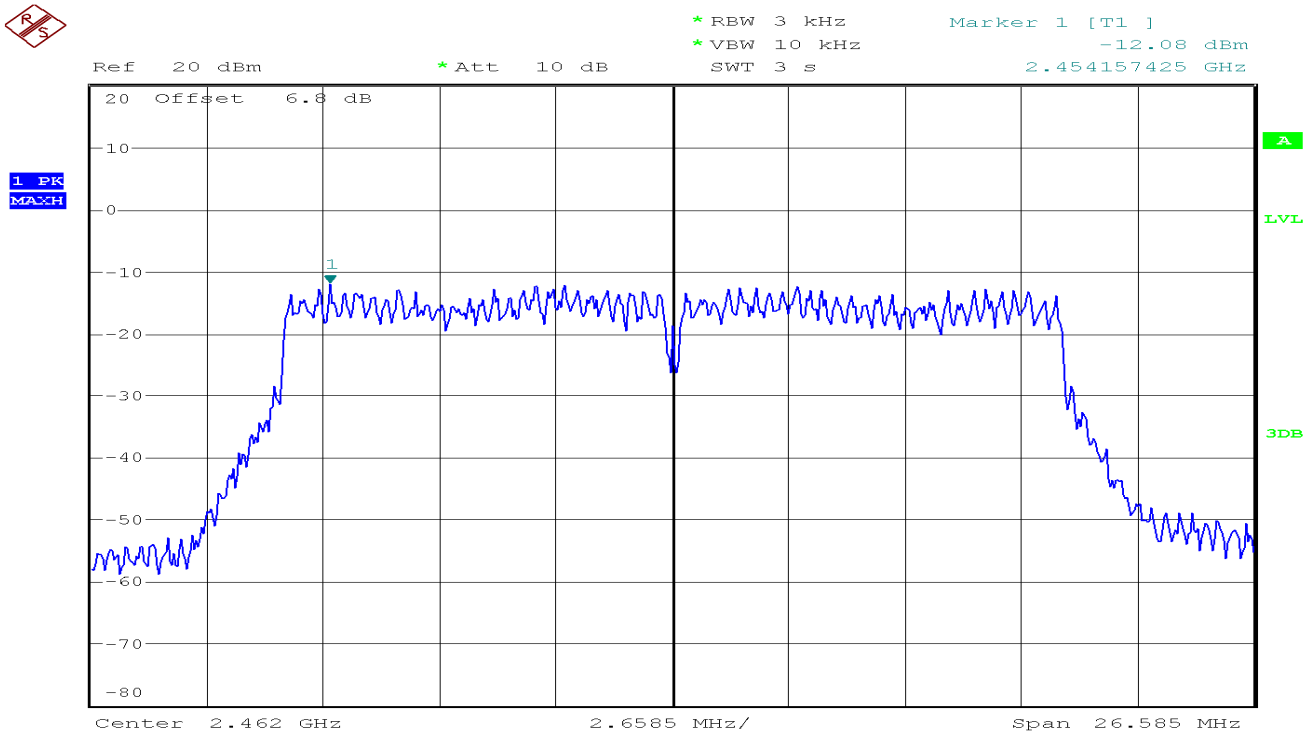
PPSD (CH Low)



PPSD (CH Mid)

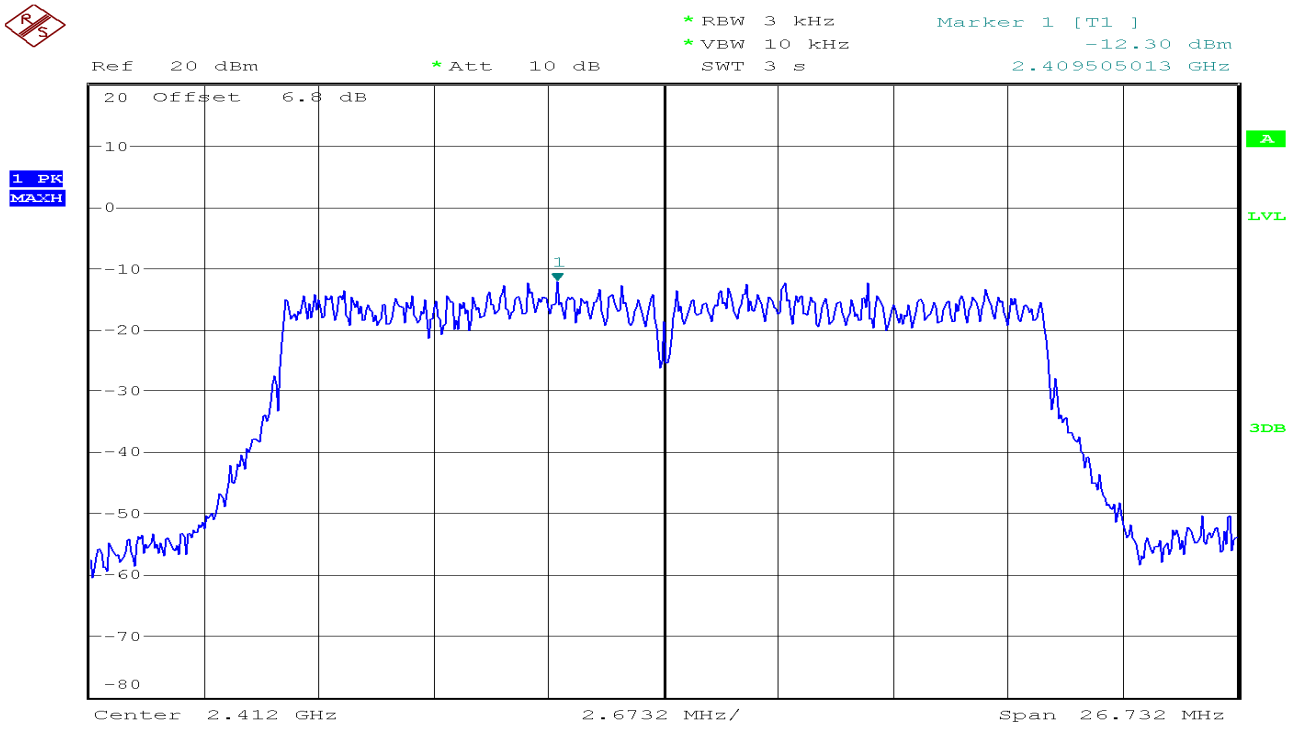


PPSD (CH High)

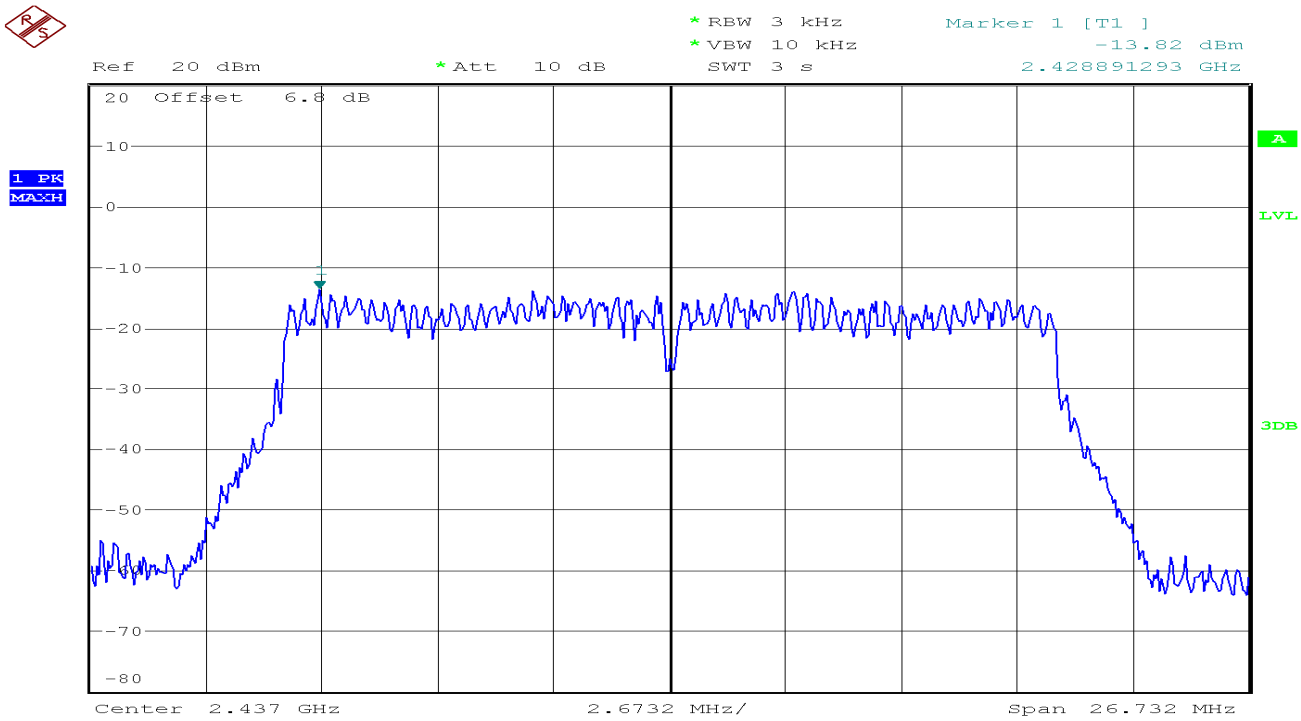


IEEE 802.11n HT20 mode/Chain 1

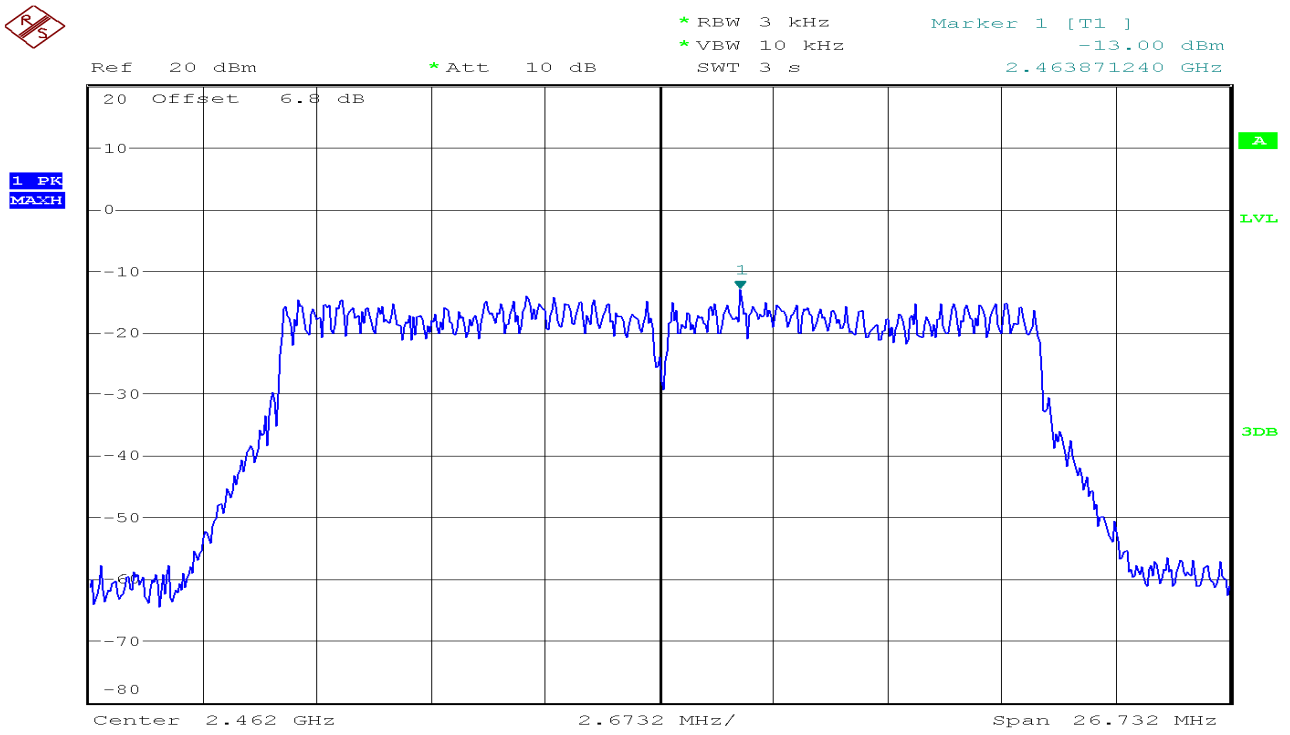
PPSD (CH Low)



PPSD (CH Mid)



PPSD (CH High)

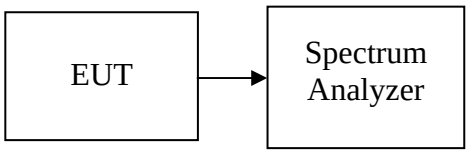


7.4.SPURIOUS EMISSIONS
Conducted Measurement

LIMIT

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in 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. 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 Section 15.205(c)).

Test Configuration



TEST PROCEDURE

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

Measurements are made over the 30MHz to 40GHz range with the transmitter set to the lowest, middle, and highest channels.

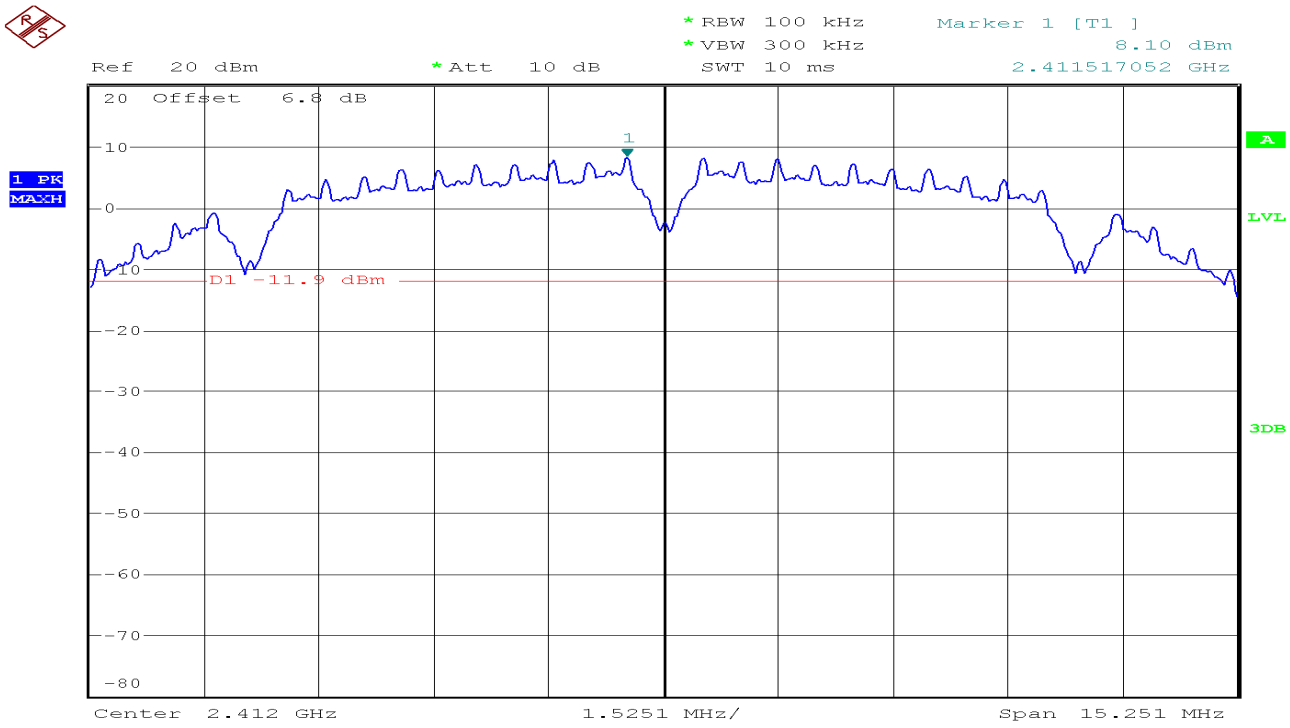
TEST RESULTS

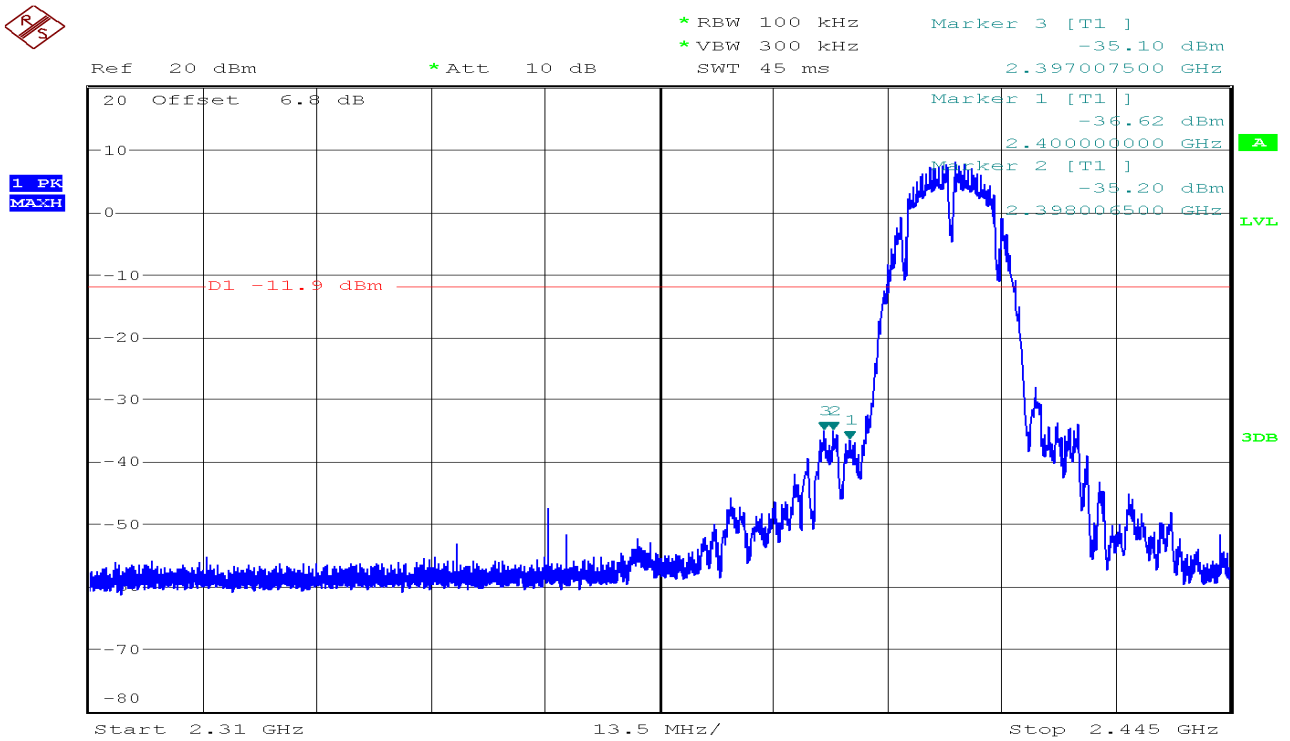
No non-compliance noted

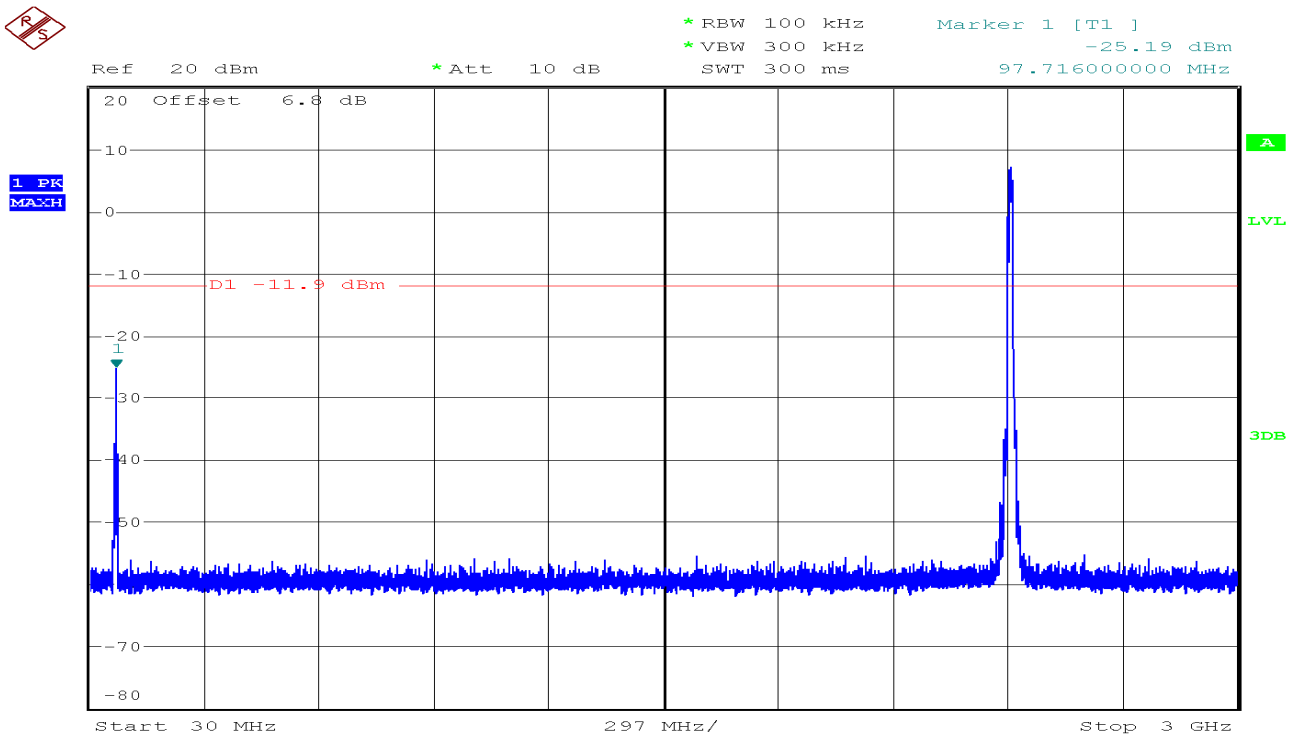
Test Plot
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

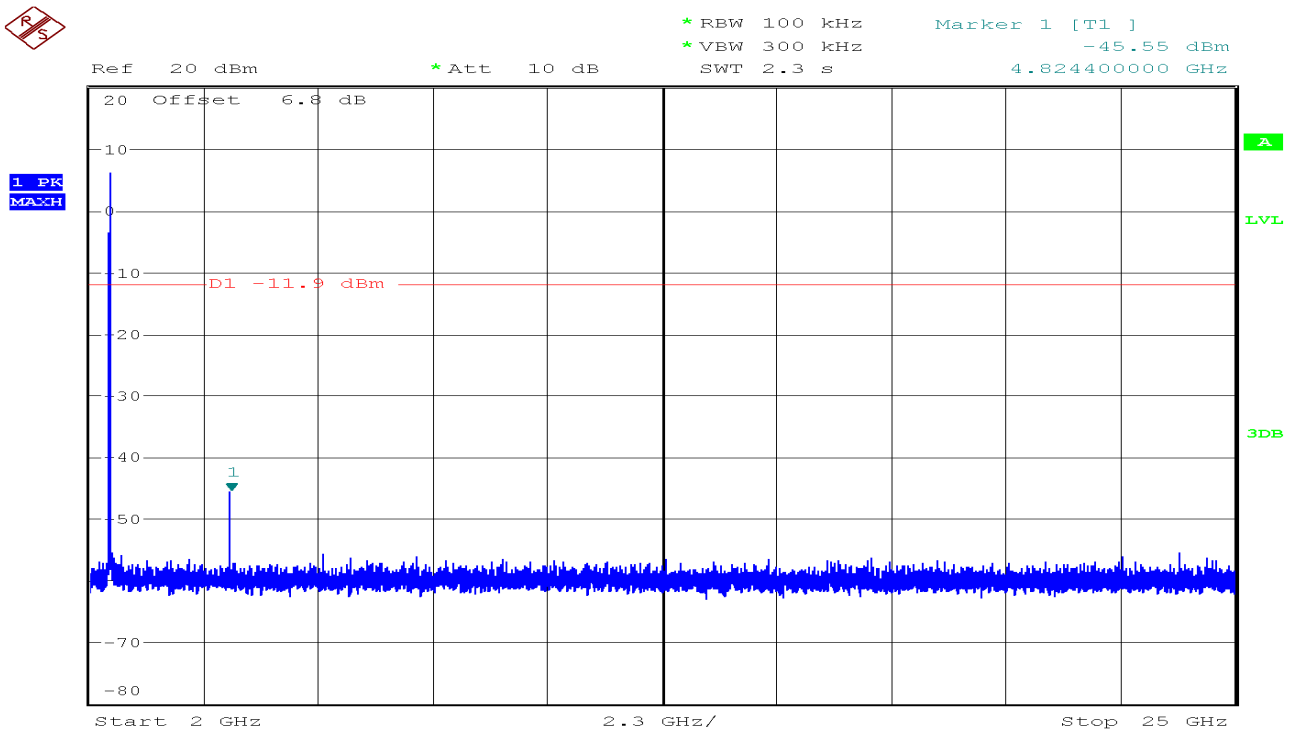
IEEE 802.11b mode/Chain 0

CH Low

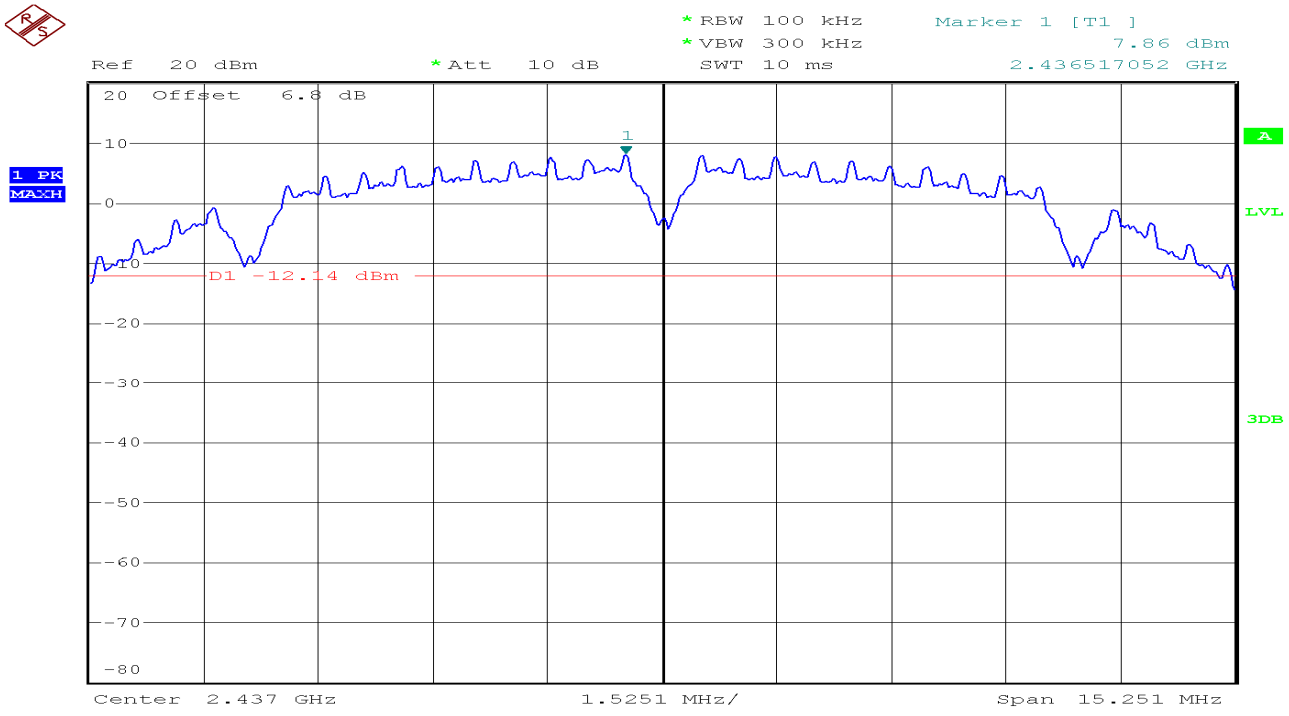


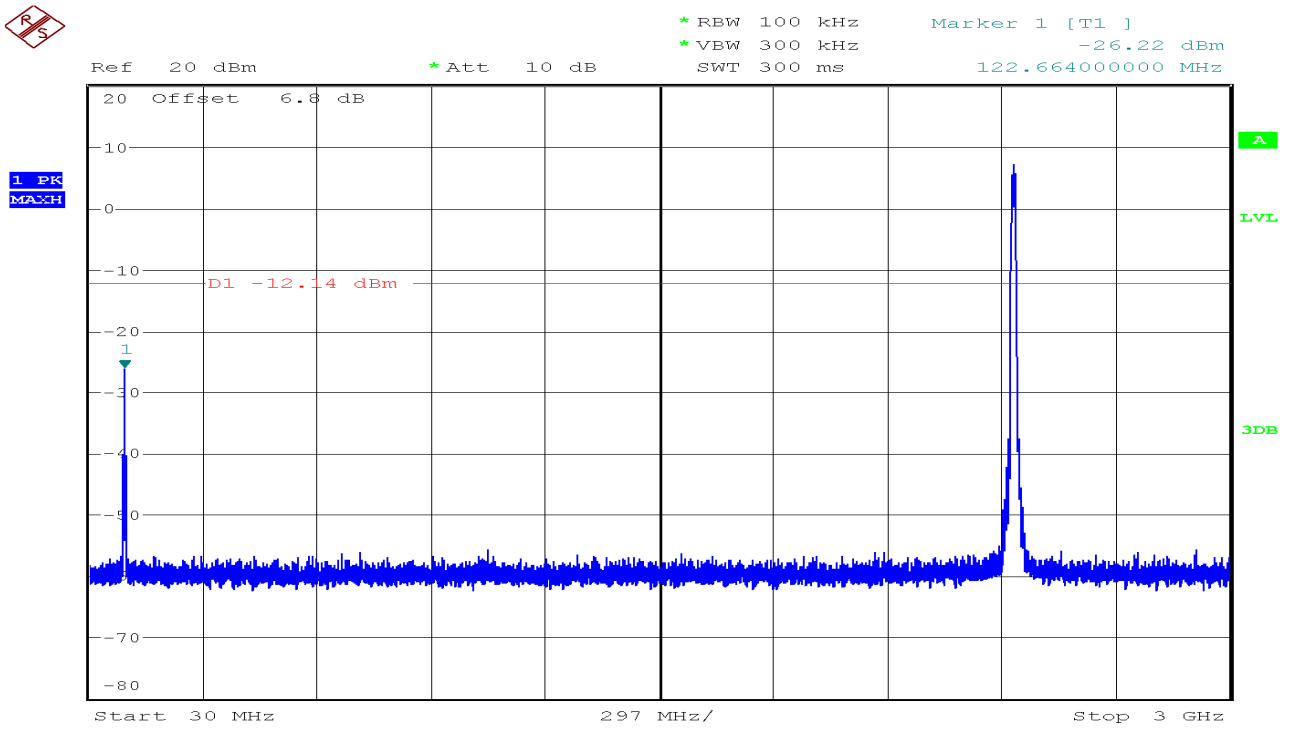


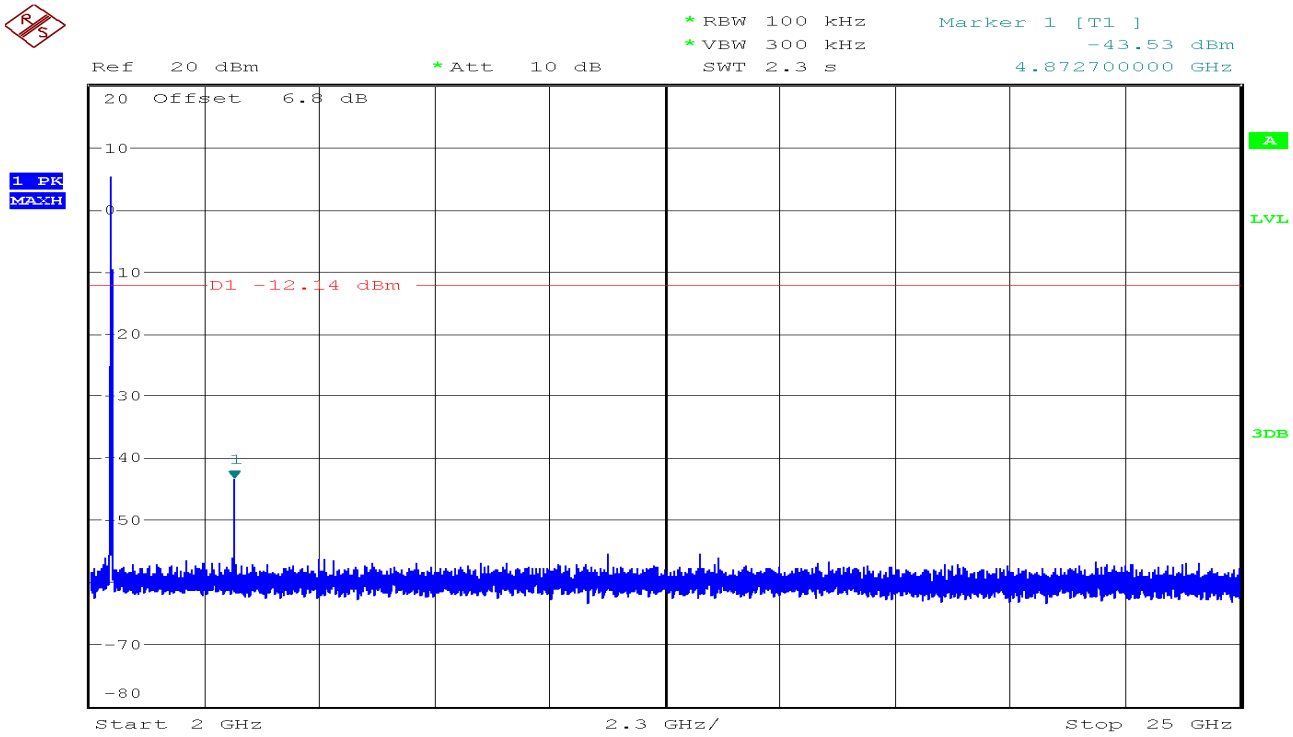

RBW 100 kHz
VBW 300 kHz
SWT 300 ms
Marker 1 [T1]
-25.19 dBm
97.716000000 MHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
A
LVL
3DB
D1 -11.9 dBm
Start 30 MHz
297 MHz/
Stop 3 GHz


RBW 100 kHz
VBW 300 kHz
SWT 2.3 s
Marker 1 [T1]
-45.55 dBm
4.824400000 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
A
LVL
3DB
D1 -11.9 dBm
Start 2 GHz
2.3 GHz/
Stop 25 GHz

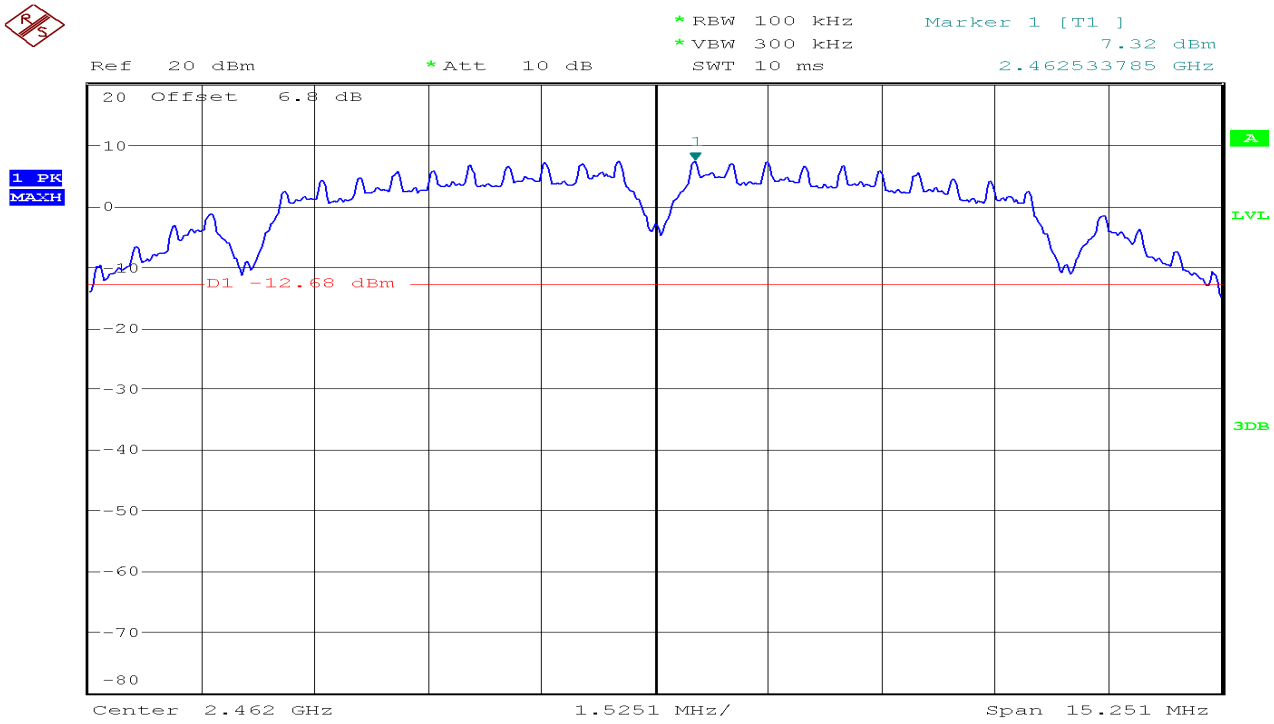
CH Mid

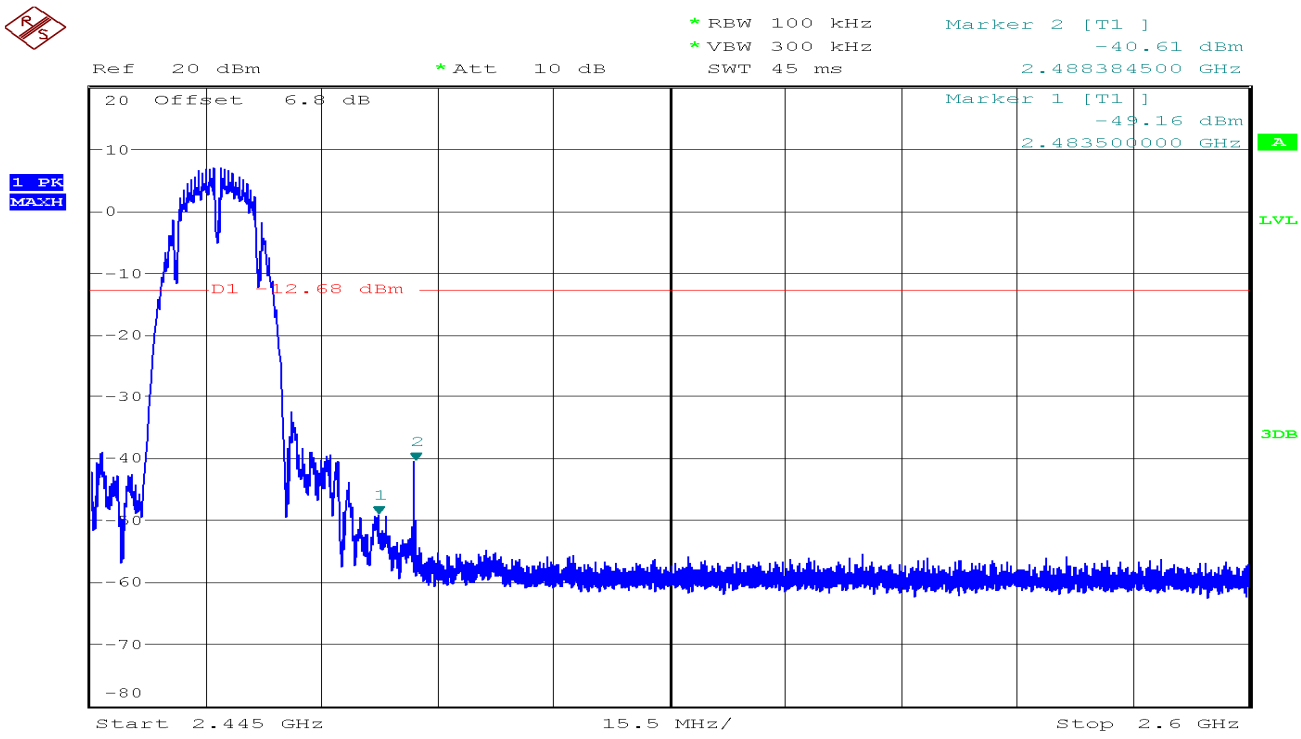

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
Marker 1 [T1]
7.86 dBm
2.436517052 GHz
Ref 20 dBm
Att 10 dB
Offset 6.8 dB
1 PK
MAXH
D1 -12.14 dBm
A
LVL
3DB
Center 2.437 GHz
1.5251 MHz/
Span 15.251 MHz

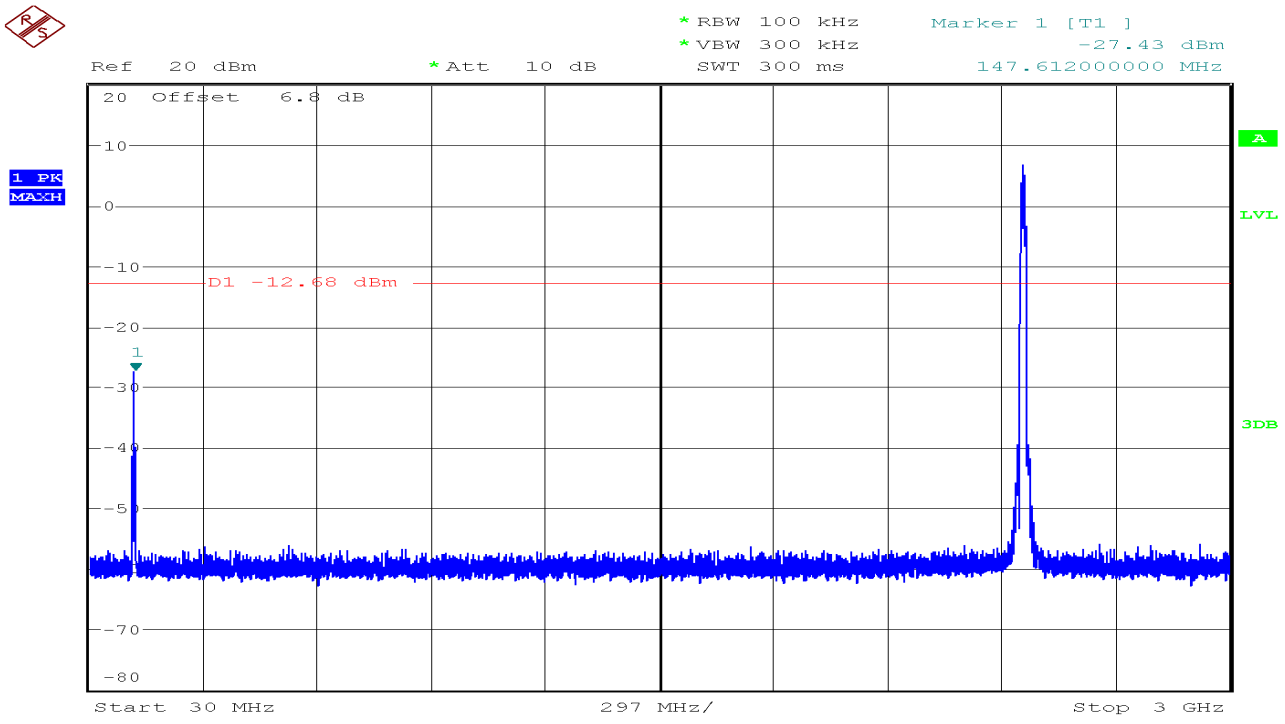

RBW 100 kHz
VBW 300 kHz
SWT 300 ms
Marker 1 [T1]
-26.22 dBm
122.664000000 MHz
Ref 20 dBm
Att 10 dB
Offset 6.8 dB
1 PK
MAXH
D1 -12.14 dBm
A
LVL
3DB
Start 30 MHz
297 MHz/
Stop 3 GHz

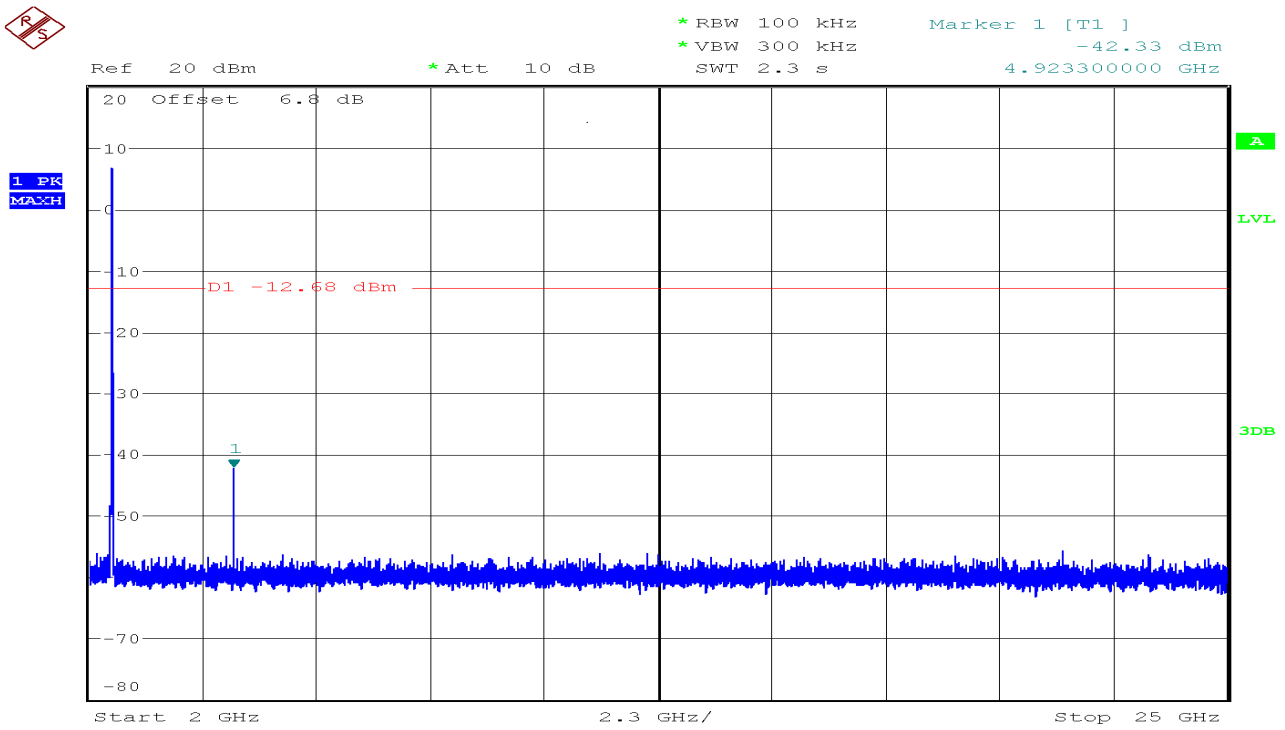

RBW 100 kHz
VBW 300 kHz
SWT 2.3 s
Marker 1 [T1]
-43.53 dBm
4.872700000 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -12.14 dBm
A
LVL
3DB
Start 2 GHz
2.3 GHz/
Stop 25 GHz

CH High


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
Marker 1 [T1]
7.32 dBm
2.462533785 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -12.68 dBm
A
LVL
3DB
Center 2.462 GHz
1.5251 MHz/
Span 15.251 MHz

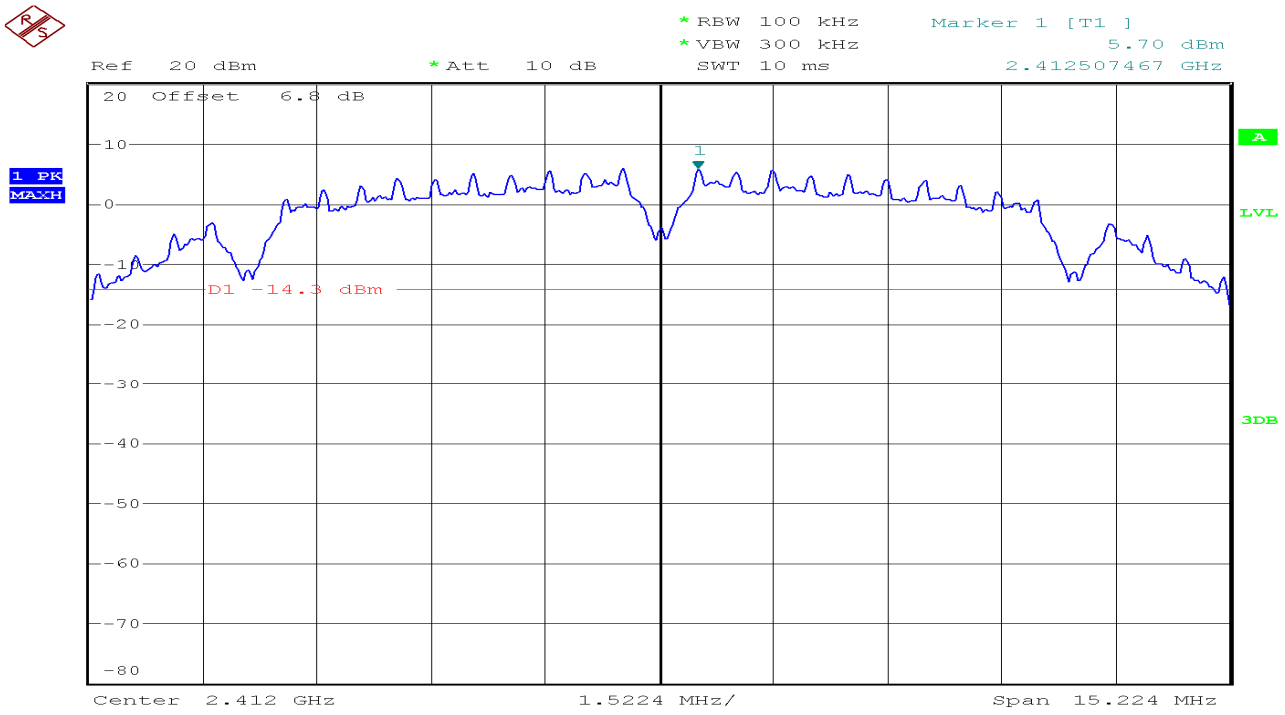

RBW 100 kHz
VBW 300 kHz
SWT 45 ms
Marker 2 [T1]
-40.61 dBm
2.488384500 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
Marker 1 [T1]
-49.16 dBm
2.483500000 GHz
1 PK
MAXH
A
LVL
3DB
D1 -12.68 dBm
Start 2.445 GHz
15.5 MHz/
Stop 2.6 GHz

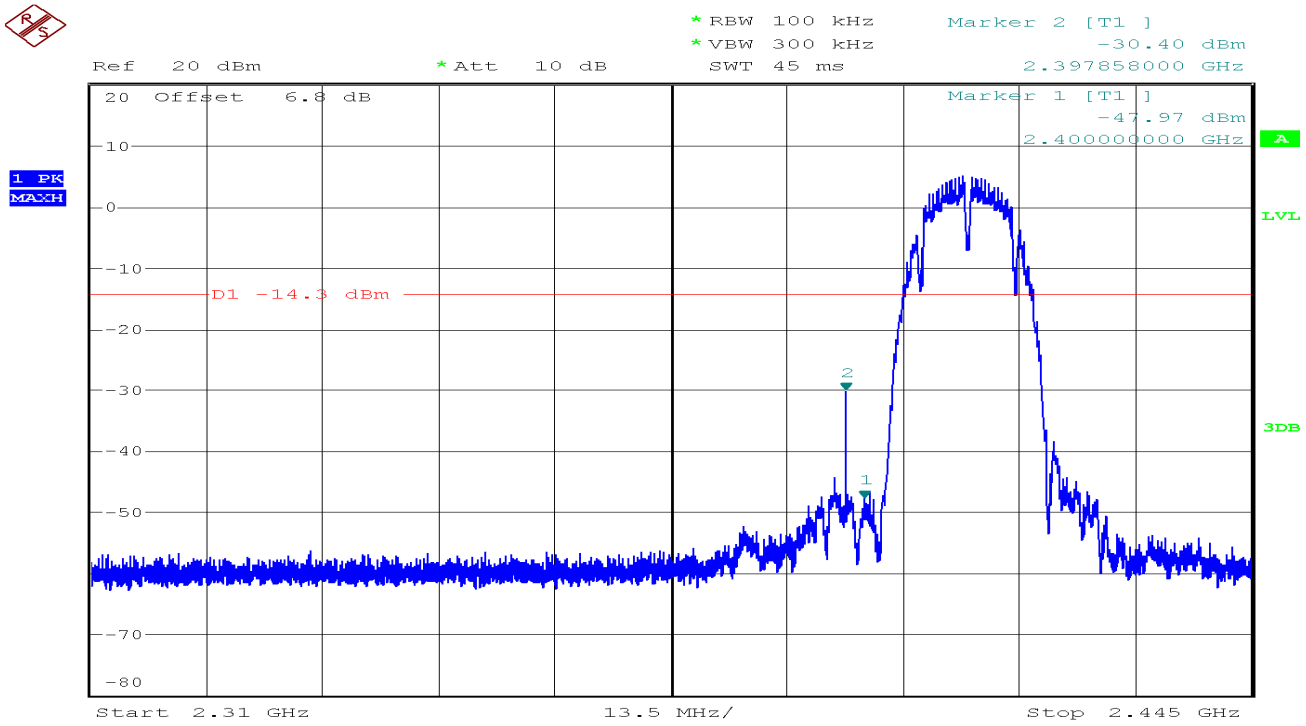

RBW 100 kHz
VBW 300 kHz
SWT 300 ms
Marker 1 [T1]
-27.43 dBm
147.612000000 MHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
A
LVL
3DB
D1 -12.68 dBm
Start 30 MHz
297 MHz/
Stop 3 GHz

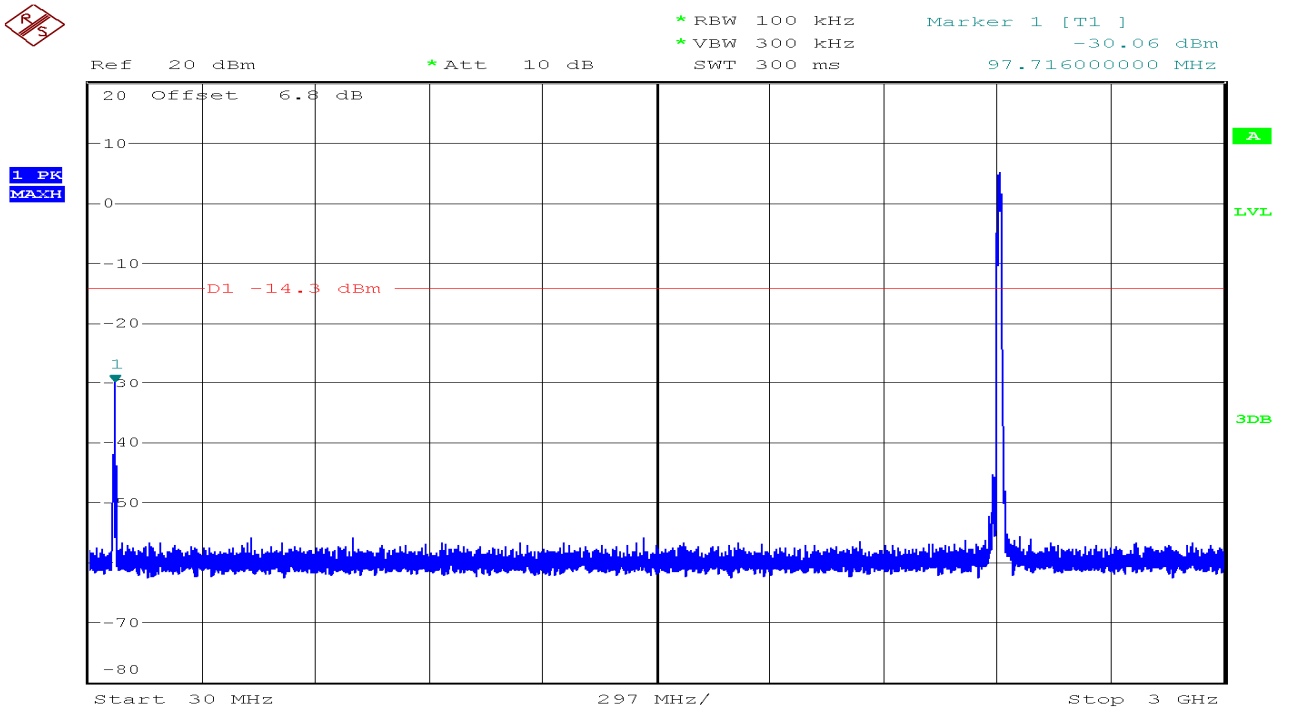


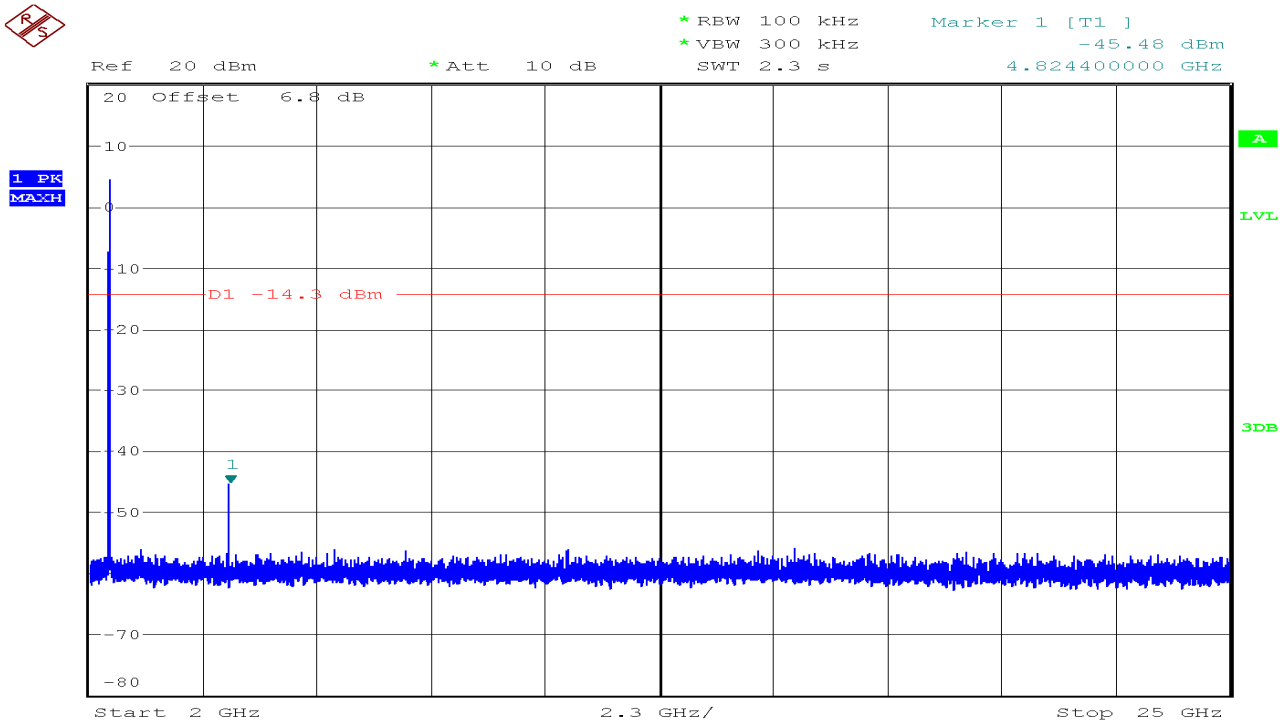
IEEE 802.11b mode/Chain 1

CH Low

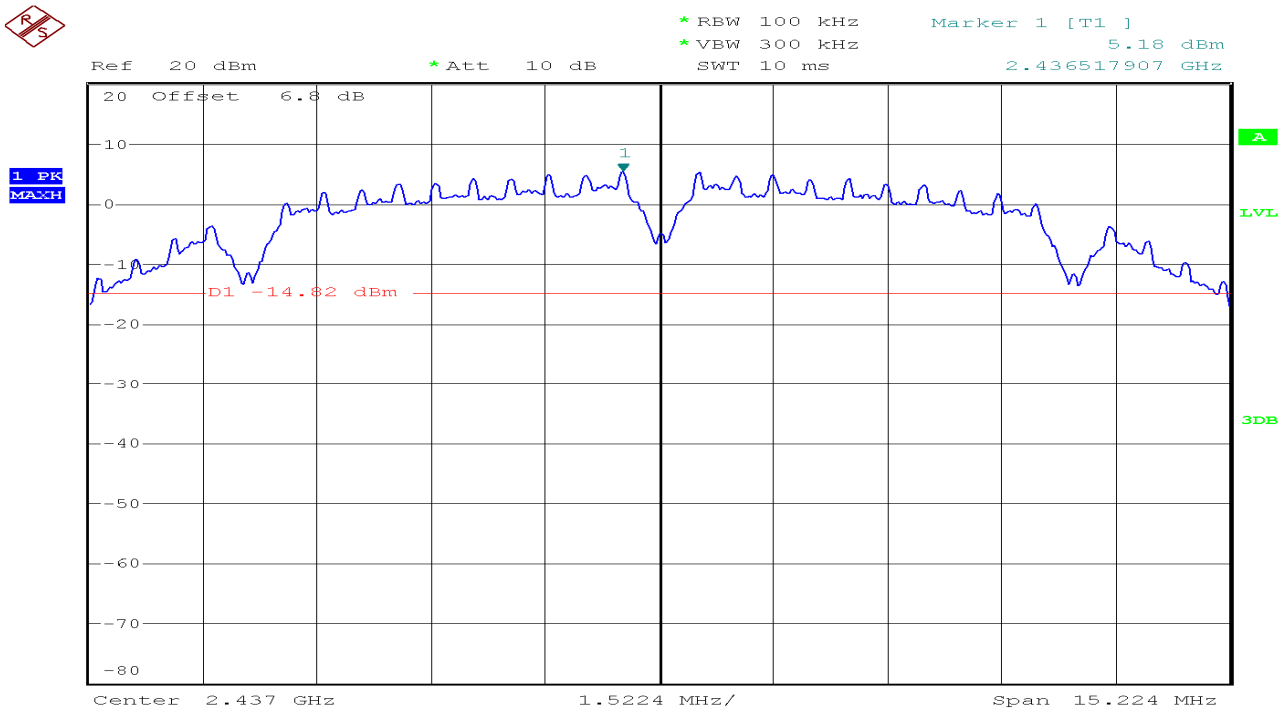


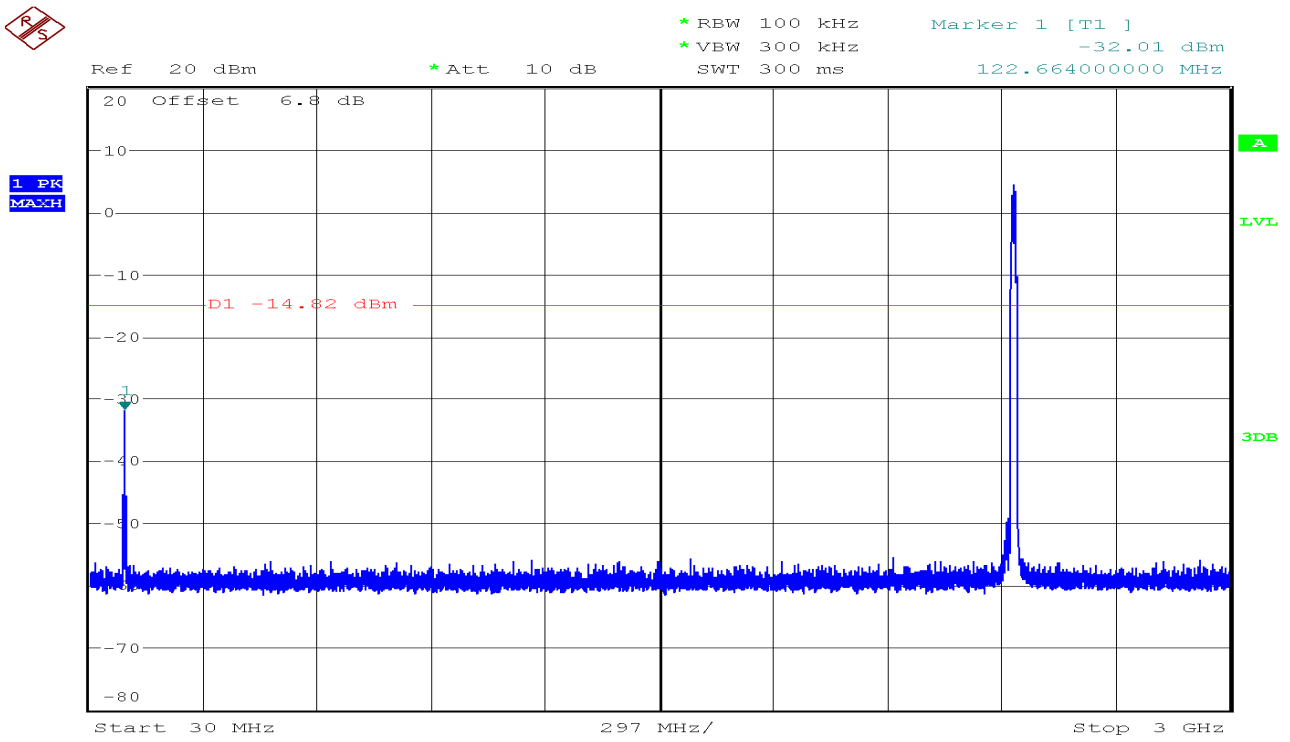

RBW 100 kHz
VBW 300 kHz
SWT 45 ms
Marker 2 [T1]
-30.40 dBm
2.397858000 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
Marker 1 [T1]
-47.97 dBm
2.400000000 GHz
1 PK
MAXH
A
LVL
3DB
D1 -14.3 dBm
Start 2.31 GHz
13.5 MHz/
Stop 2.445 GHz

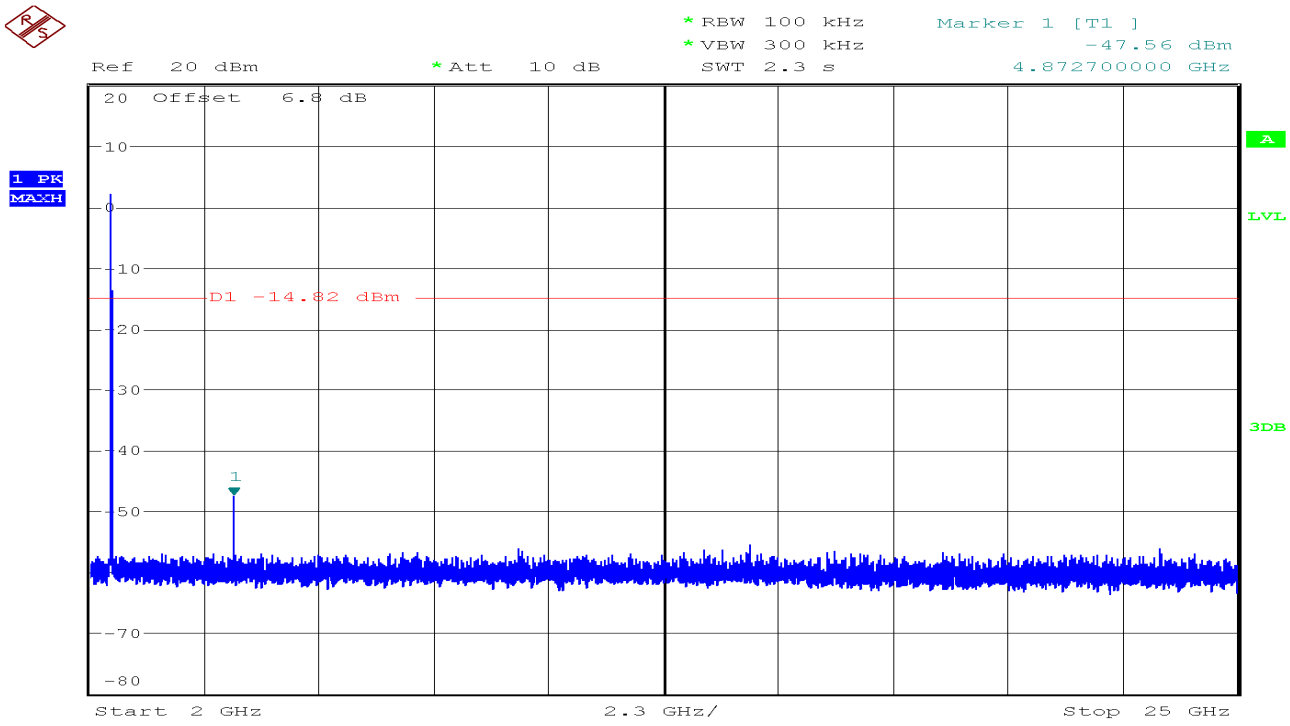

RBW 100 kHz
VBW 300 kHz
SWT 300 ms
Marker 1 [T1]
-30.06 dBm
97.716000000 MHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
A
LVL
3DB
D1 -14.3 dBm
Start 30 MHz
297 MHz/
Stop 3 GHz


RBW 100 kHz
VBW 300 kHz
SWT 2.3 s
Marker 1 [T1]
-45.48 dBm
4.824400000 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -14.3 dBm
A
LVL
3DB
Start 2 GHz
2.3 GHz/
Stop 25 GHz

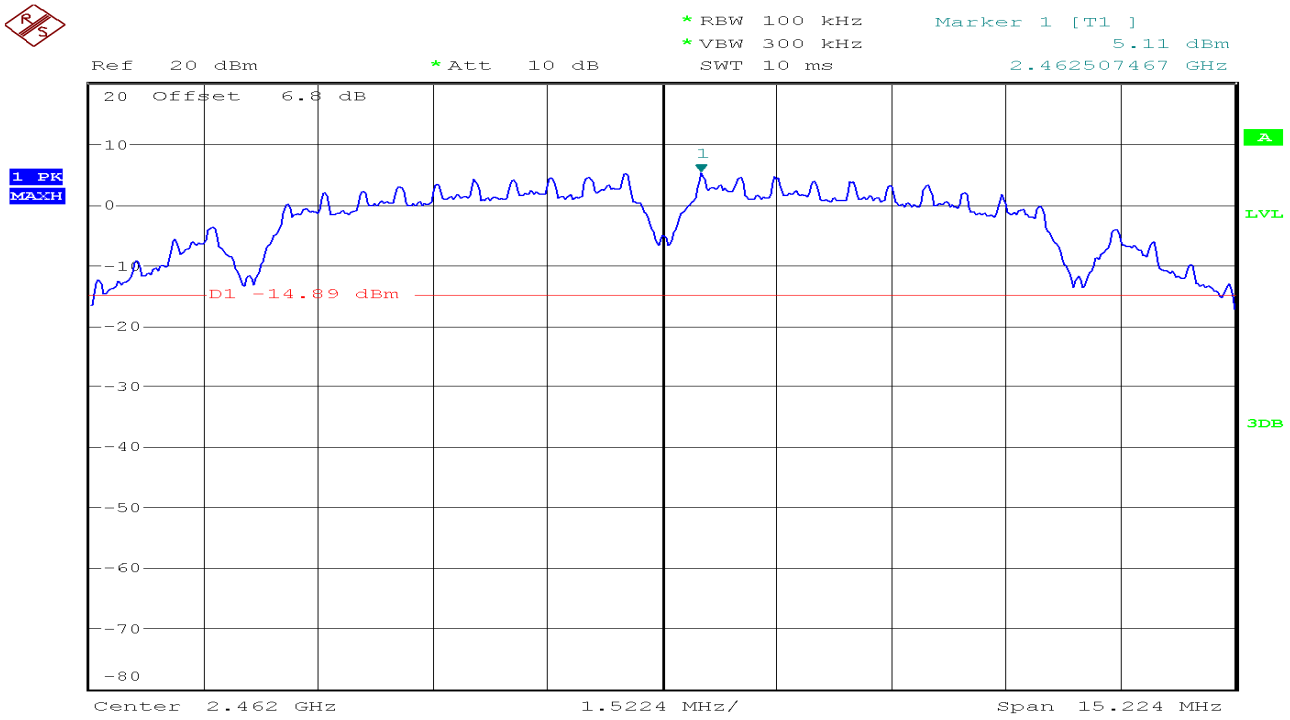
CH Mid

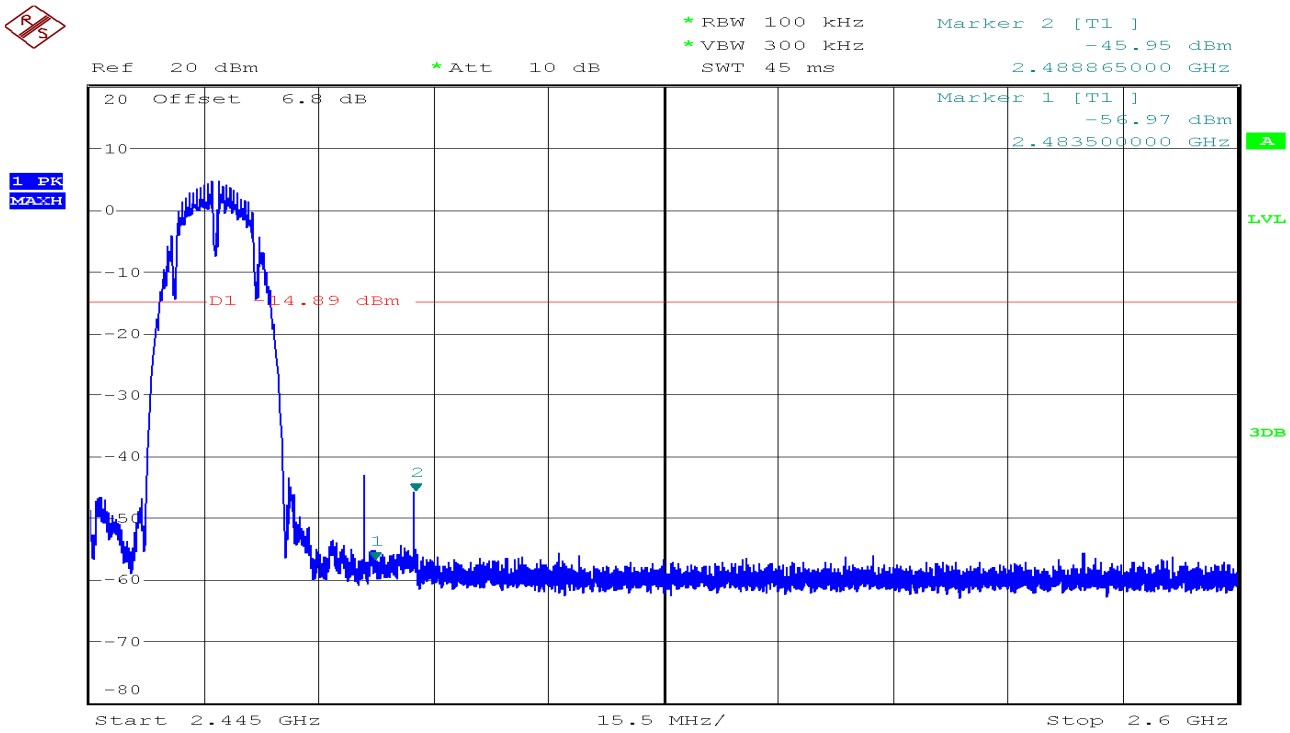

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
Marker 1 [T1]
5.18 dBm
2.436517907 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -14.82 dBm
A
LVL
3DB
Center 2.437 GHz
1.5224 MHz/
Span 15.224 MHz

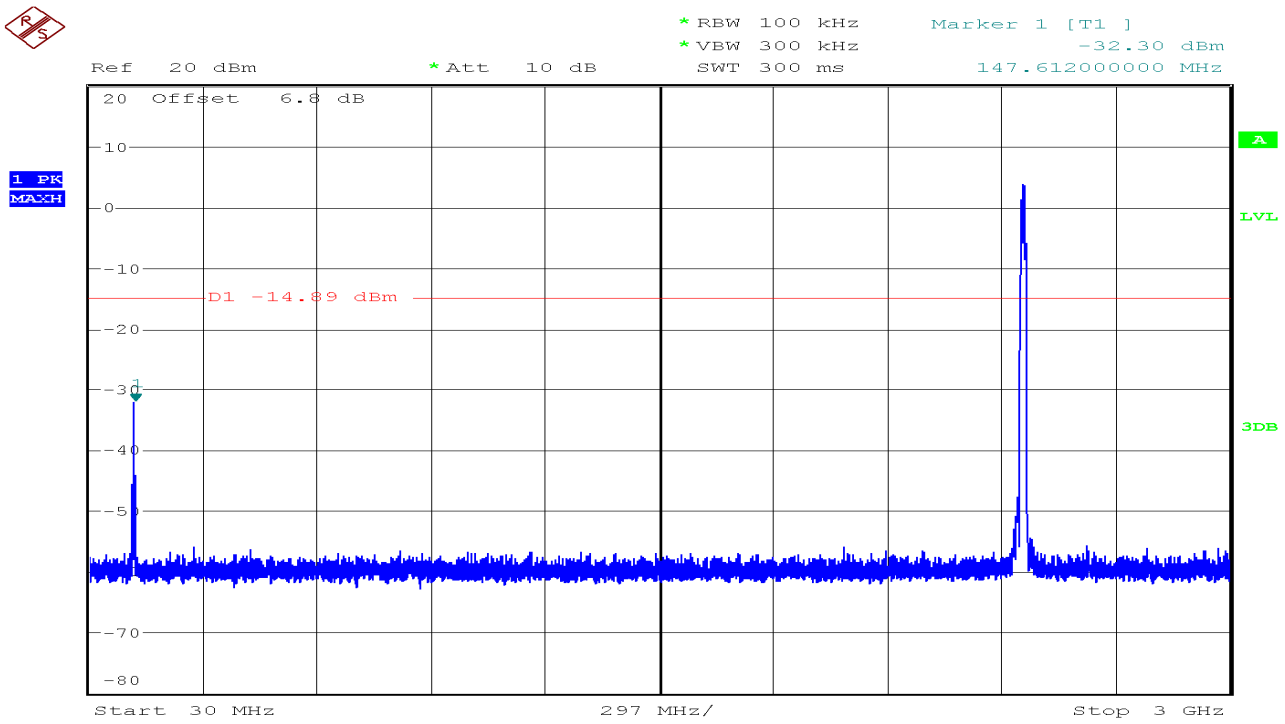

RBW 100 kHz
VBW 300 kHz
SWT 300 ms
Marker 1 [T1]
-32.01 dBm
122.664000000 MHz
Ref 20 dBm
Att 10 dB
Offset 6.8 dB
1 PK
MAXH
D1 -14.82 dBm
A
LVL
3DB
Start 30 MHz
297 MHz/
Stop 3 GHz

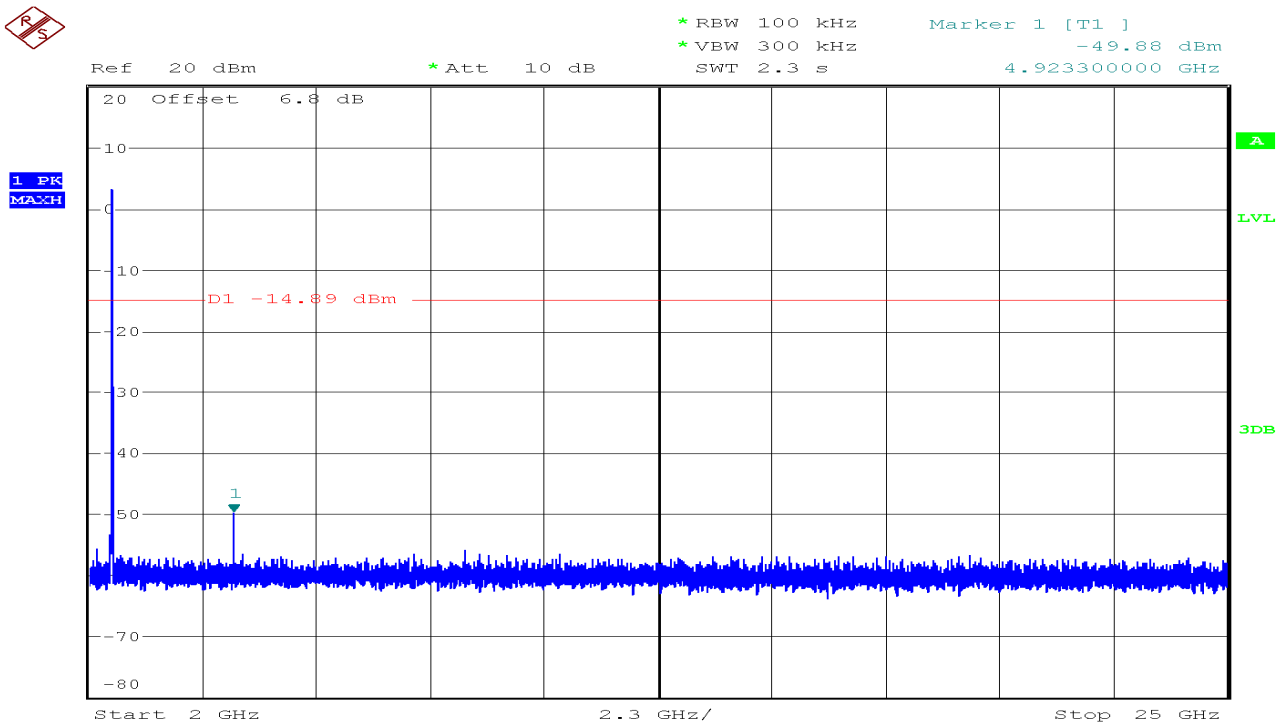

RBW 100 kHz
VBW 300 kHz
SWT 2.3 s
Marker 1 [T1]
-47.56 dBm
4.872700000 GHz
Ref 20 dBm
Att 10 dB
Offset 6.8 dB
1 PK
MAXH
D1 -14.82 dBm
A
LVL
3DB
Start 2 GHz
2.3 GHz/
Stop 25 GHz

CH High


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
Marker 1 [T1]
5.11 dBm
2.462507467 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -14.89 dBm
A
LVL
3DB
Center 2.462 GHz
1.5224 MHz/
Span 15.224 MHz

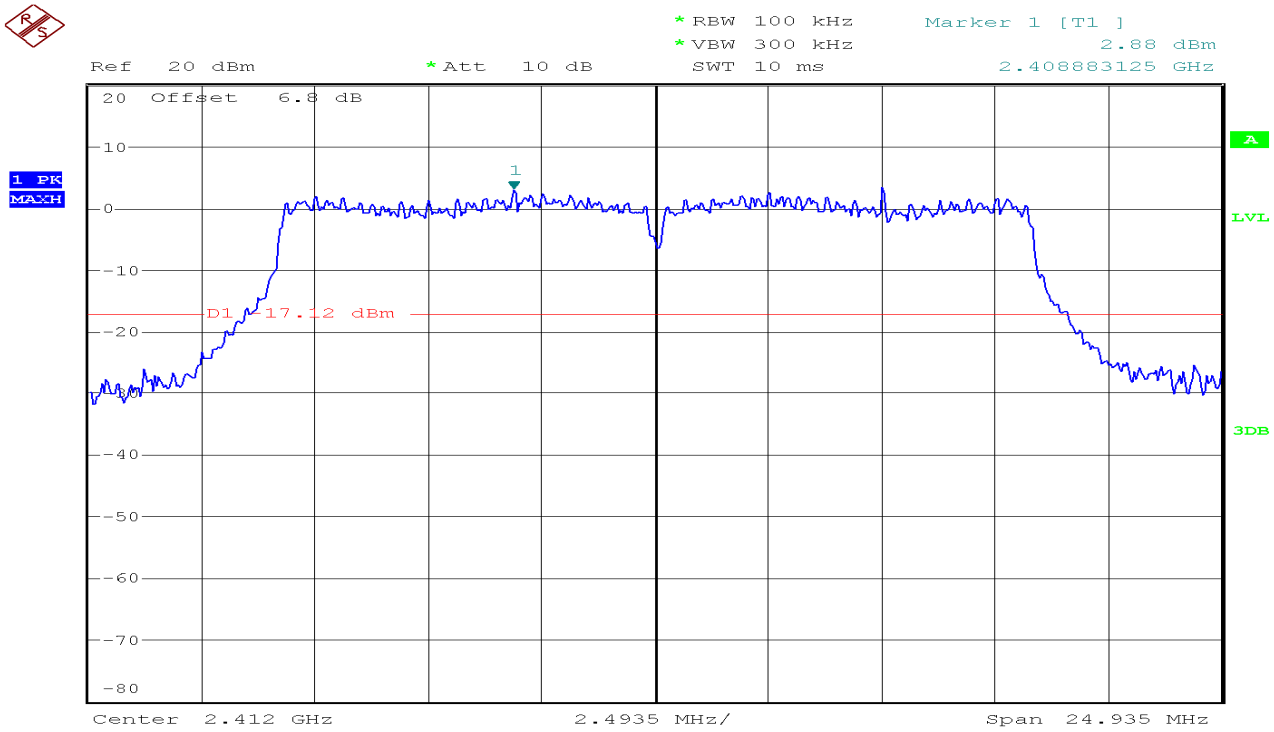

RBW 100 kHz
VBW 300 kHz
SWT 45 ms
Marker 2 [T1]
-45.95 dBm
2.488865000 GHz
Marker 1 [T1]
-56.97 dBm
2.483500000 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -14.89 dBm
A
LVL
3DB
Start 2.445 GHz
15.5 MHz/
Stop 2.6 GHz

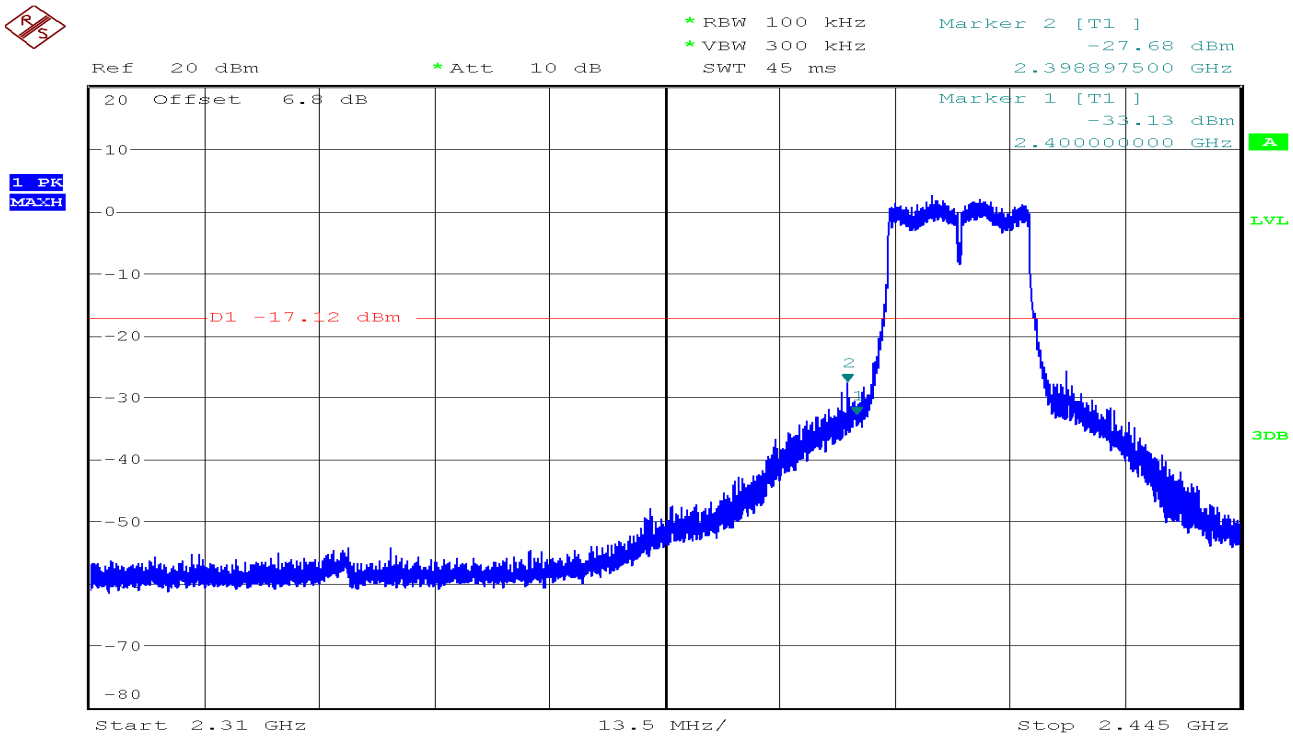

RBW 100 kHz
VBW 300 kHz
SWT 300 ms
Marker 1 [T1]
-32.30 dBm
147.612000000 MHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -14.89 dBm
A
LVL
3DB
Start 30 MHz
297 MHz/
Stop 3 GHz

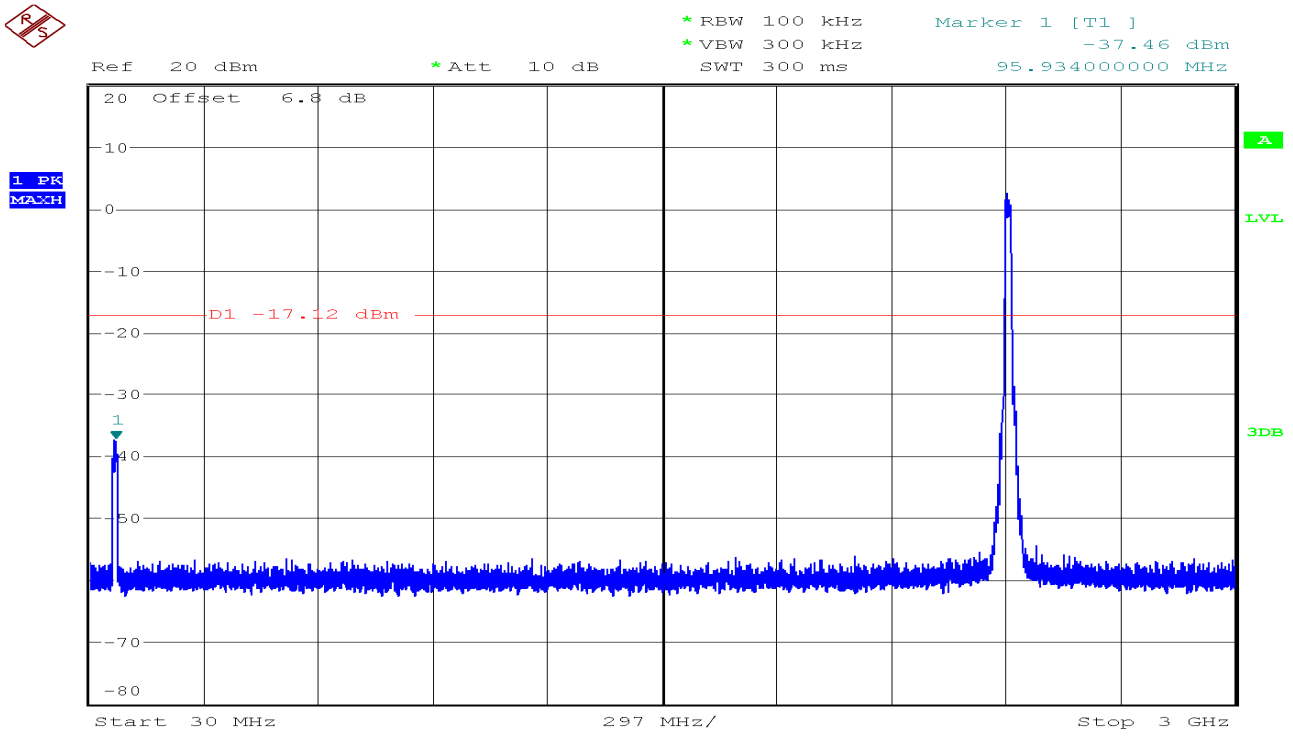

RBW 100 kHz
VBW 300 kHz
SWT 2.3 s
Marker 1 [T1]
-49.88 dBm
4.923300000 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -14.89 dBm
A
LVL
3DB
Start 2 GHz
2.3 GHz/
Stop 25 GHz

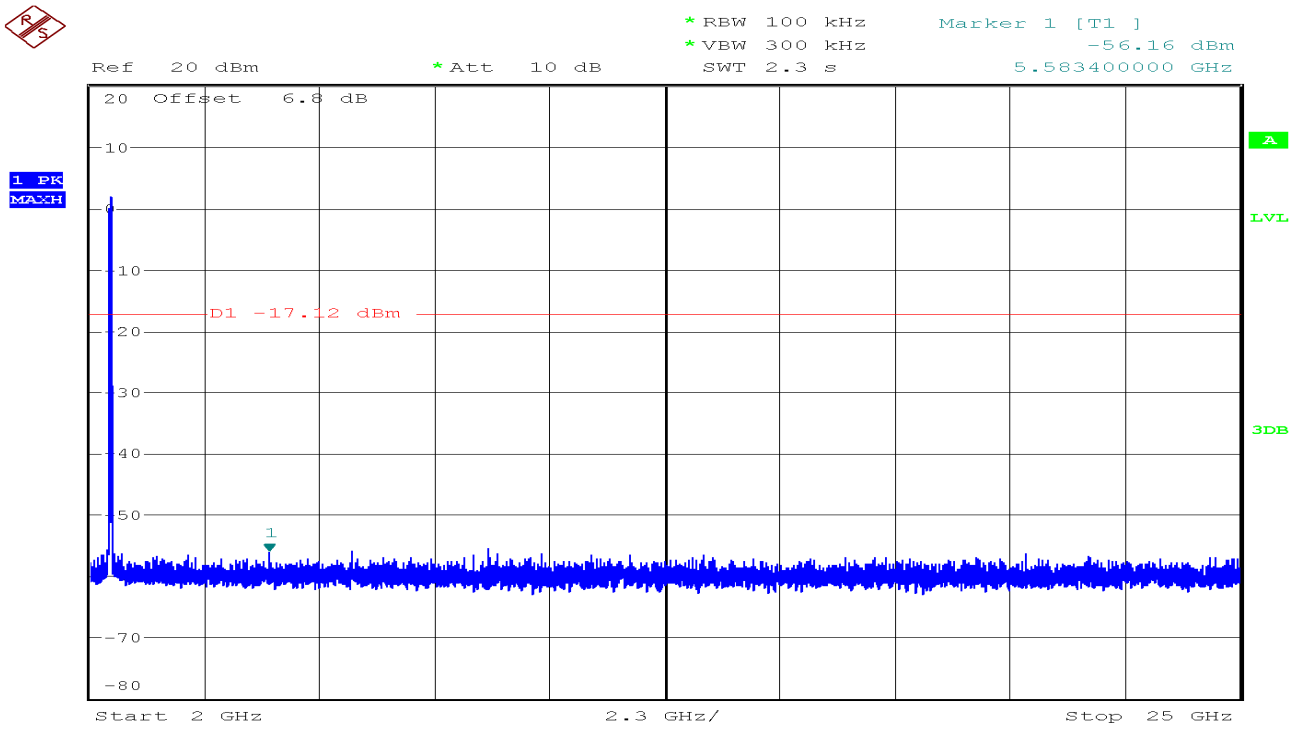
IEEE 802.11g mode/Chain 0

CH Low

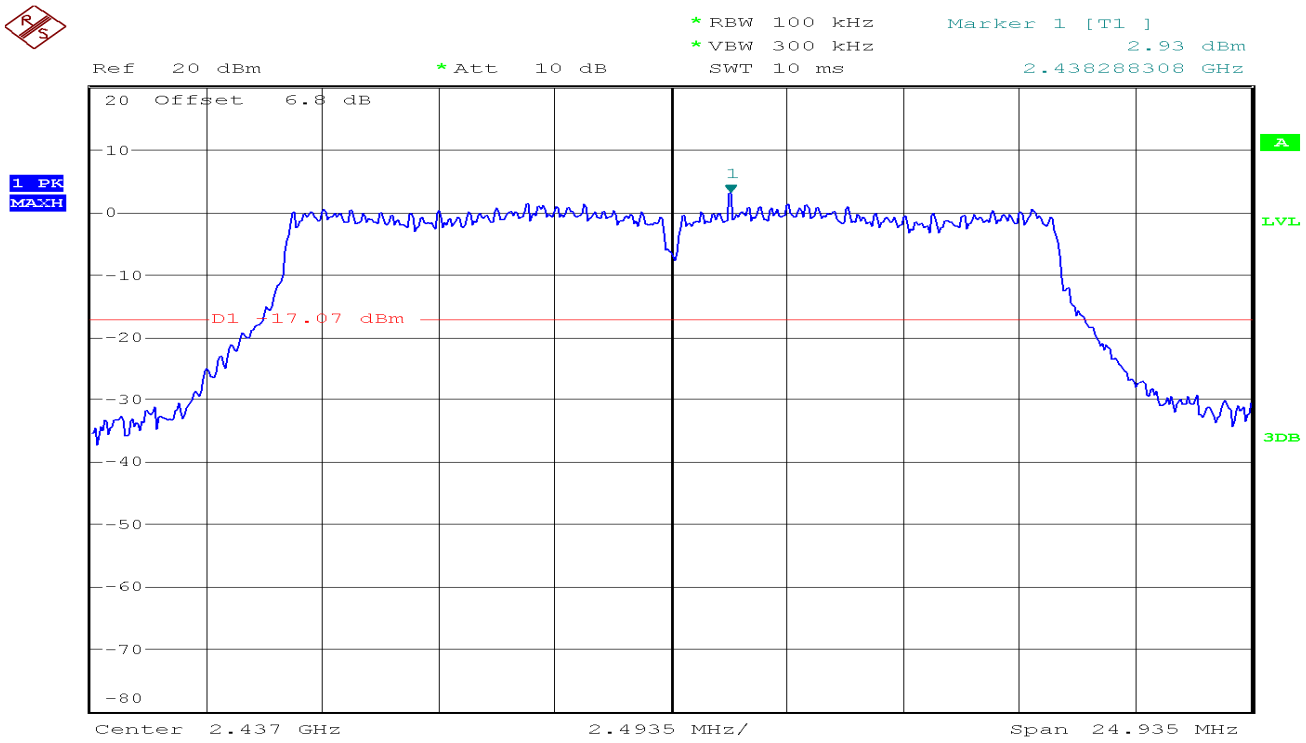


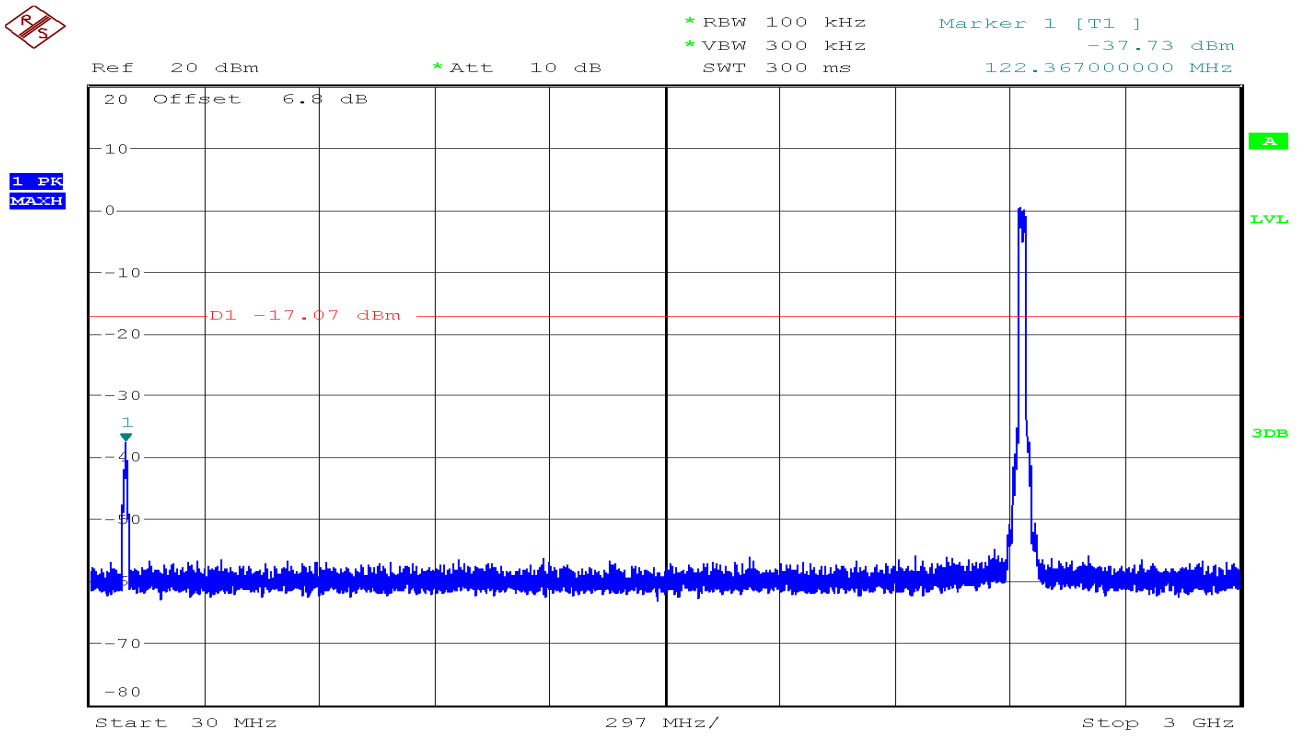


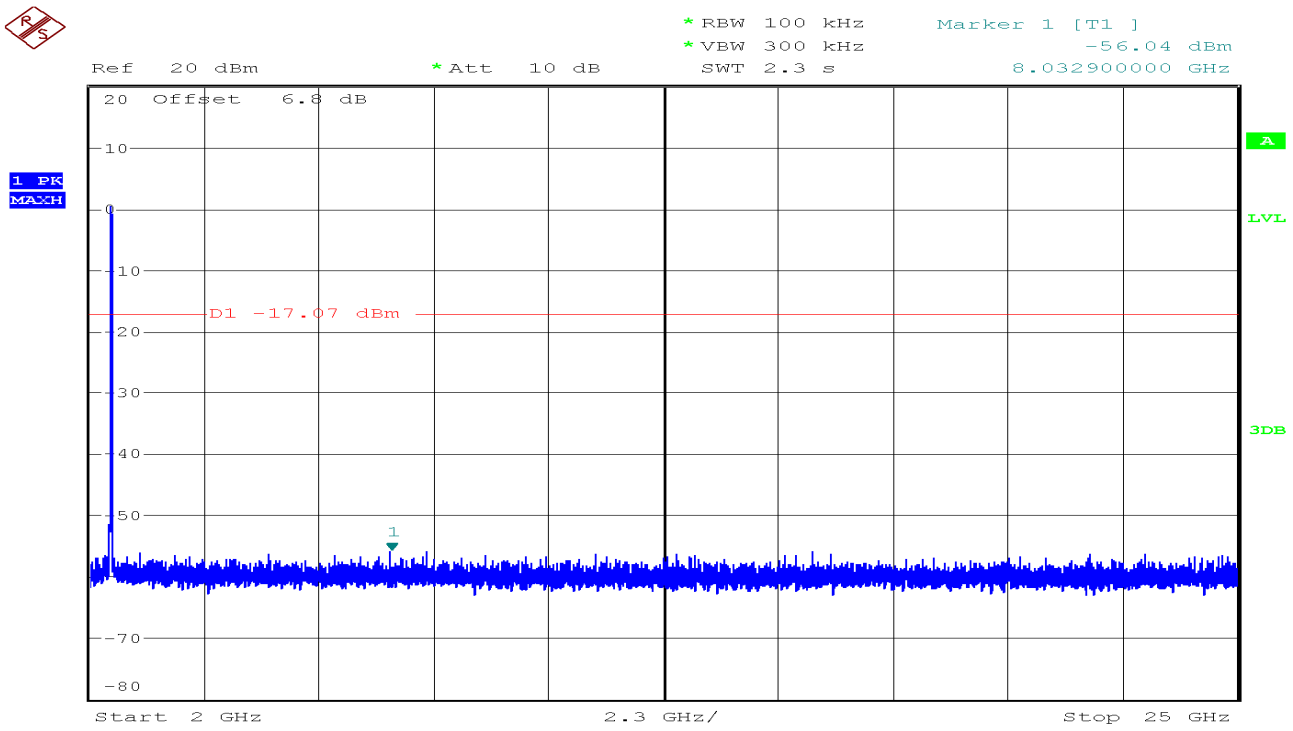

RBW 100 kHz
VBW 300 kHz
SWT 300 ms
Marker 1 [T1]
-37.46 dBm
95.934000000 MHz
Ref 20 dBm
Att 10 dB
Offset 6.8 dB
1 PK
MAXH
D1 -17.12 dBm
A
LVL
3DB
Start 30 MHz
297 MHz/
Stop 3 GHz


RBW 100 kHz
VBW 300 kHz
SWT 2.3 s
Marker 1 [T1]
-56.16 dBm
5.583400000 GHz
Ref 20 dBm
Att 10 dB
Offset 6.8 dB
1 PK
MAXH
D1 -17.12 dBm
A
LVL
3DB
Start 2 GHz
2.3 GHz/
Stop 25 GHz

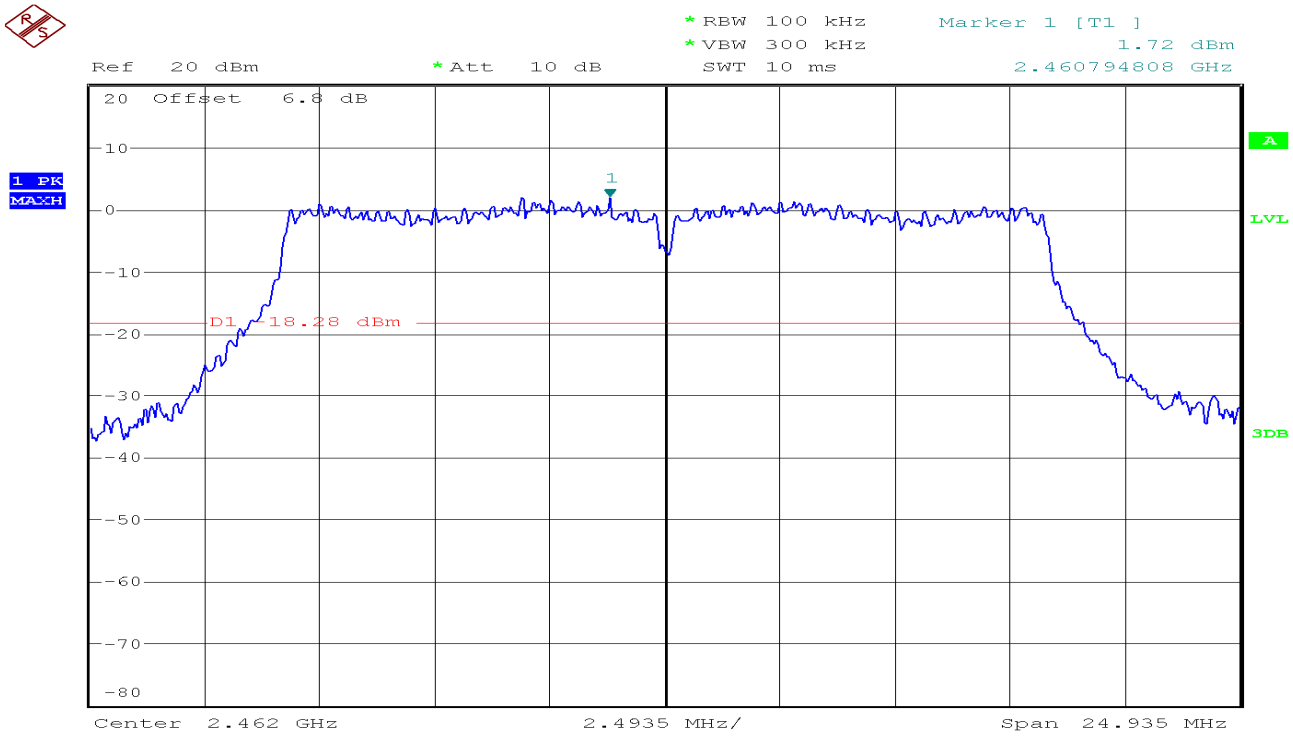
CH Mid

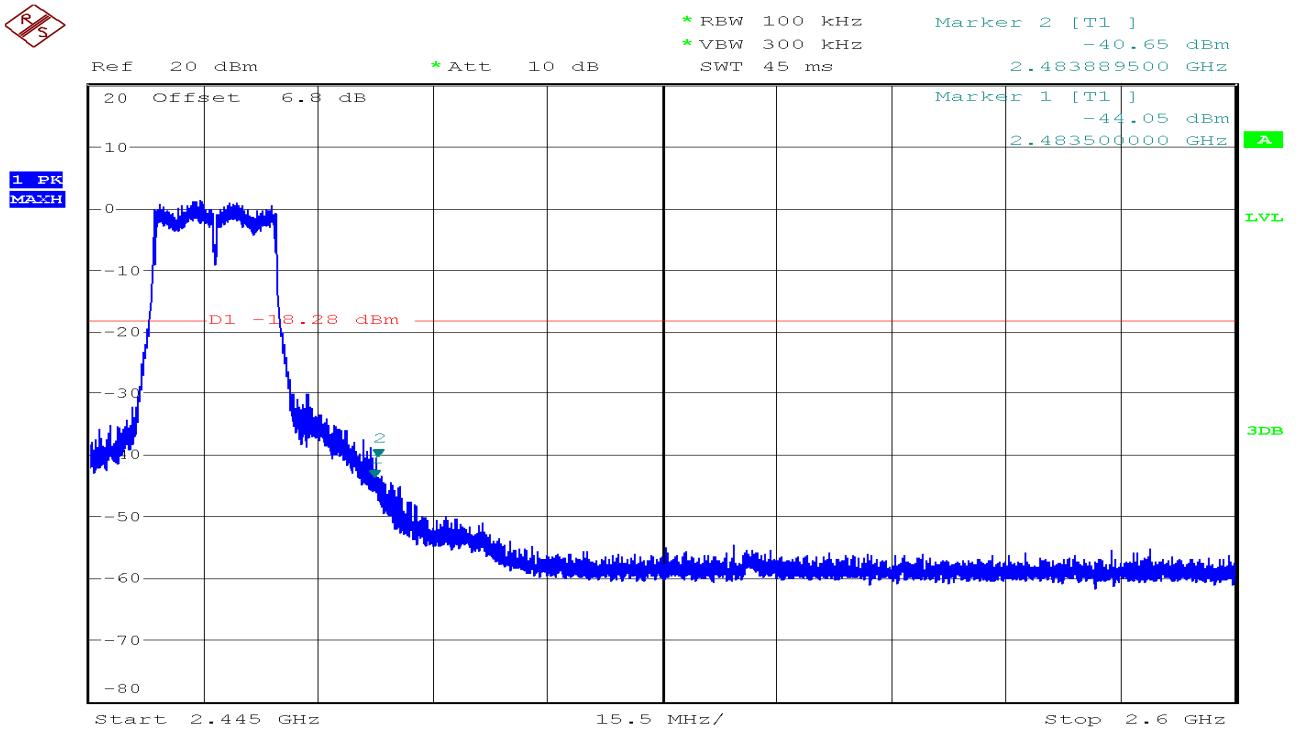

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
Marker 1 [T1]
2.93 dBm
2.438288308 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -17.07 dBm
A
LVL
3DB
Center 2.437 GHz
2.4935 MHz/
Span 24.935 MHz

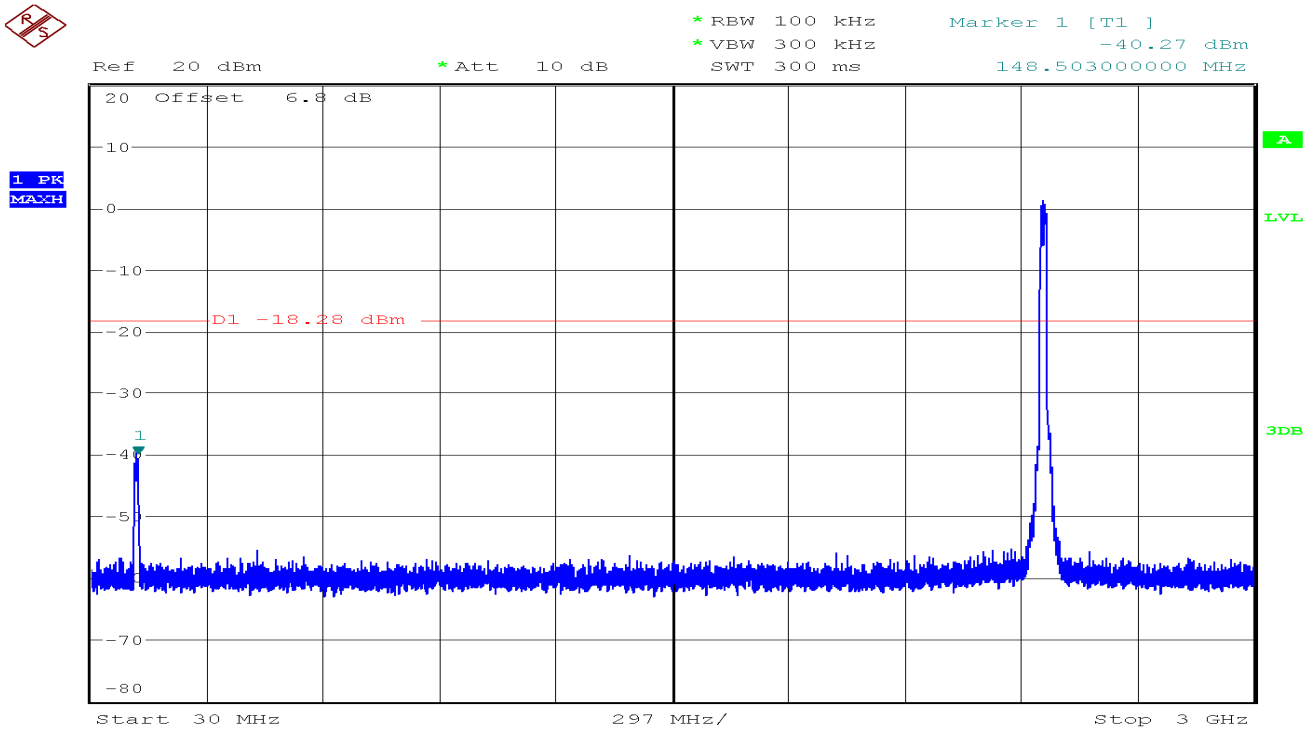

RBW 100 kHz
VBW 300 kHz
SWT 300 ms
Marker 1 [T1]
-37.73 dBm
122.367000000 MHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -17.07 dBm
A
LVL
3DB
Start 30 MHz
297 MHz/
Stop 3 GHz

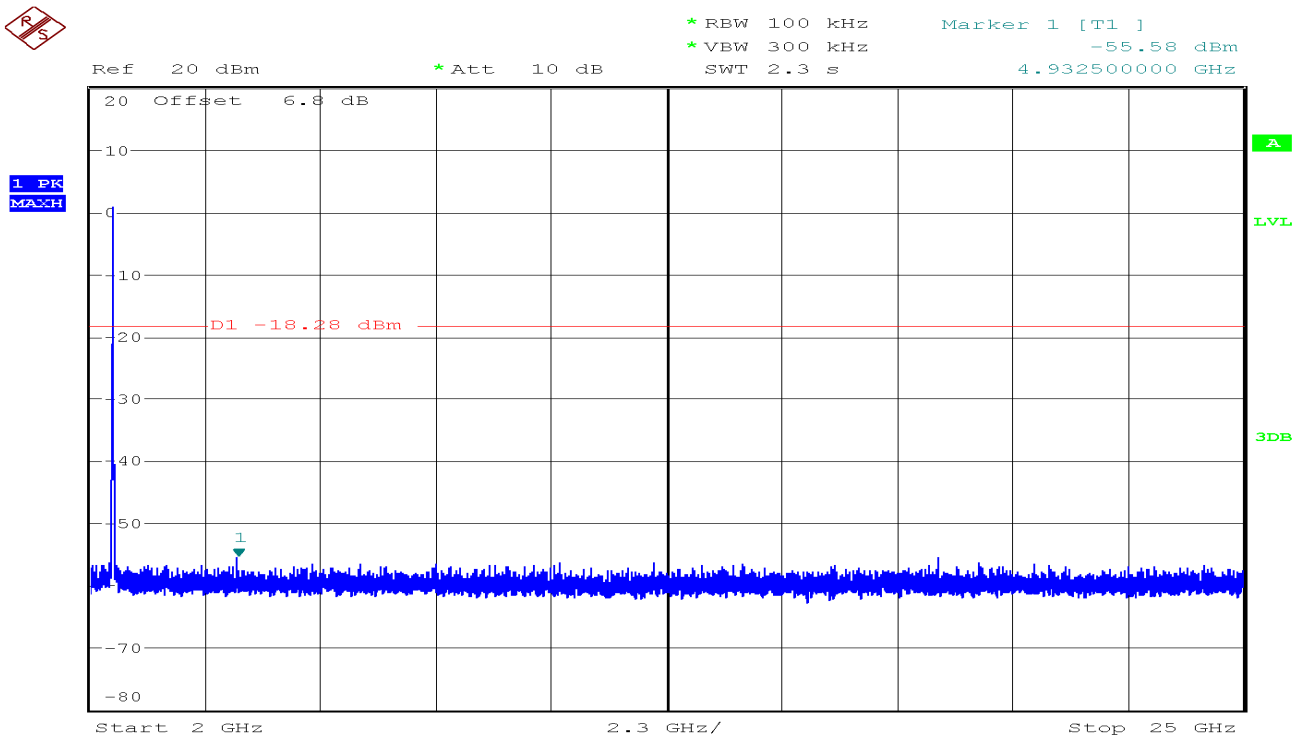

RBW 100 kHz
VBW 300 kHz
SWT 2.3 s
Marker 1 [T1]
-56.04 dBm
8.032900000 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -17.07 dBm
A
LVL
3DB
Start 2 GHz
2.3 GHz/
Stop 25 GHz

CH High


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
Marker 1 [T1]
1.72 dBm
2.460794808 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -18.28 dBm
A
LVL
3DB
Center 2.462 GHz
2.4935 MHz/
Span 24.935 MHz

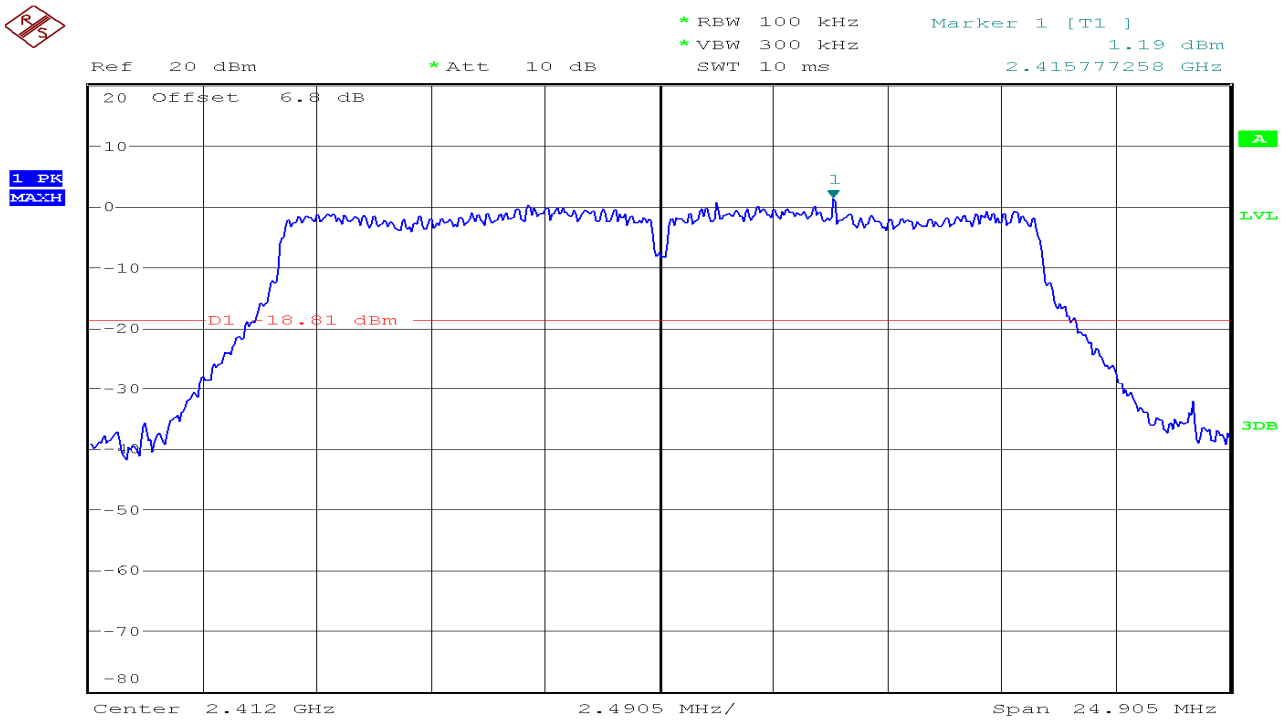

RBW 100 kHz
VBW 300 kHz
SWT 45 ms
Marker 2 [T1]
-40.65 dBm
2.483889500 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
Marker 1 [T1]
-44.05 dBm
2.483500000 GHz
1 PK
MAXH
A
LVL
3DB
D1 -18.28 dBm
Start 2.445 GHz
15.5 MHz/
Stop 2.6 GHz

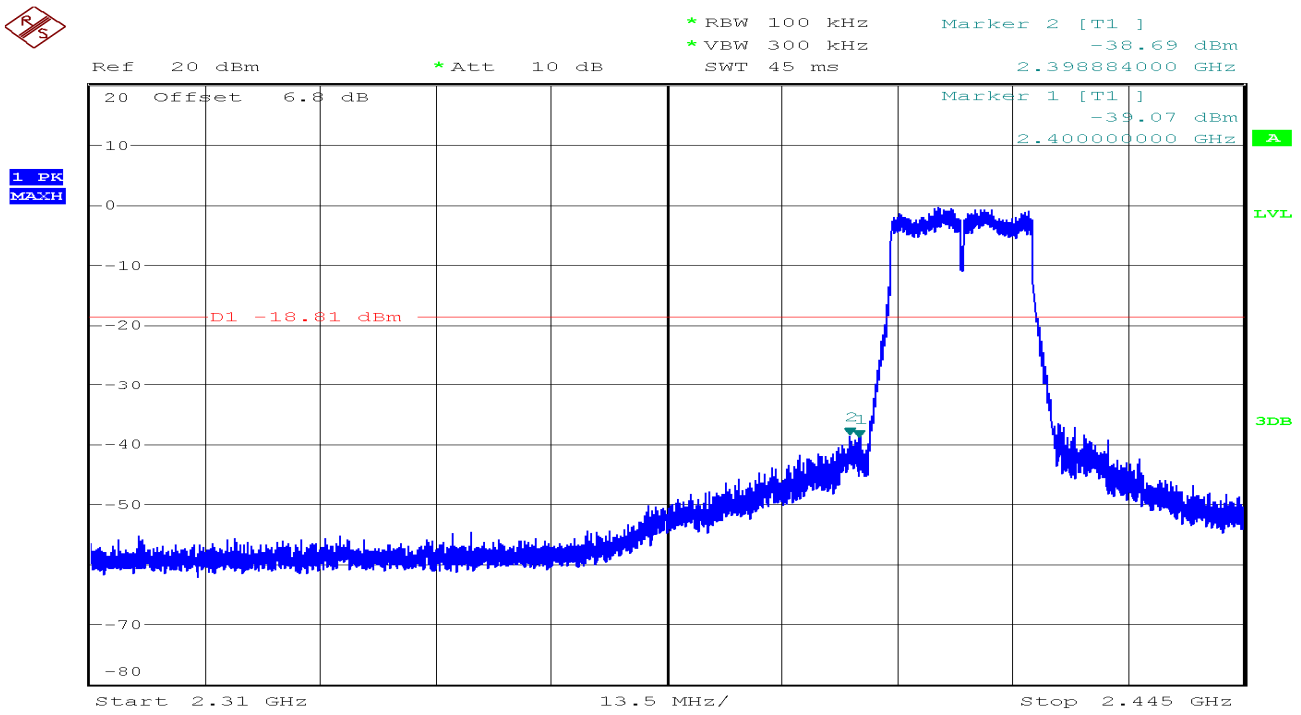

RBW 100 kHz
VBW 300 kHz
SWT 300 ms
Marker 1 [T1]
-40.27 dBm
148.503000000 MHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
A
LVL
3DB
D1 -18.28 dBm
Start 30 MHz
297 MHz/
Stop 3 GHz

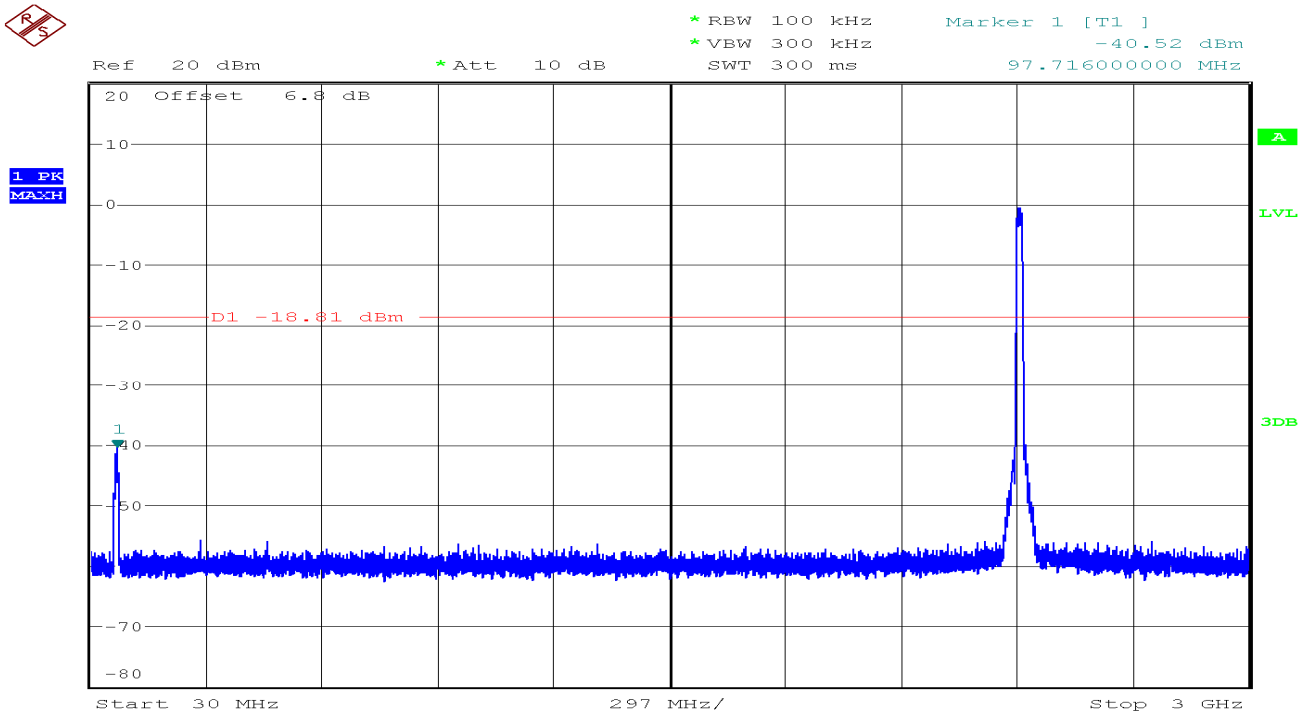


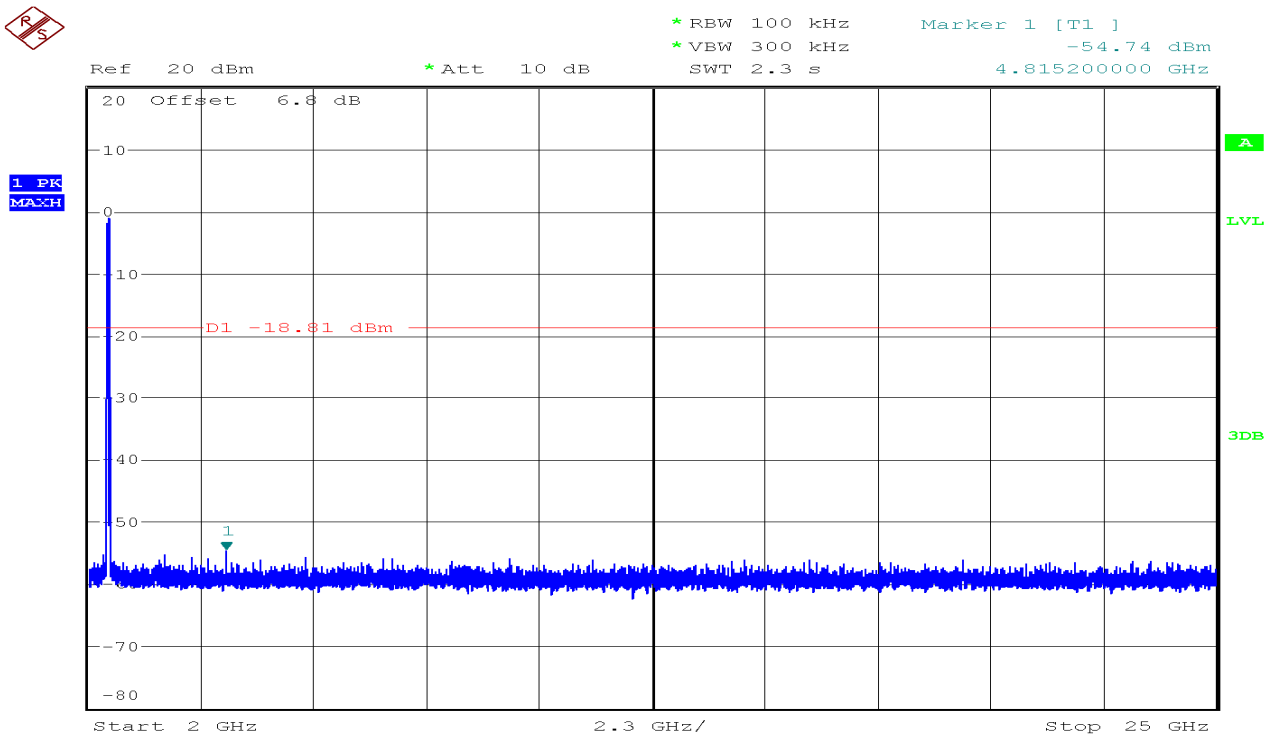
IEEE 802.11g mode/Chain 1

CH Low

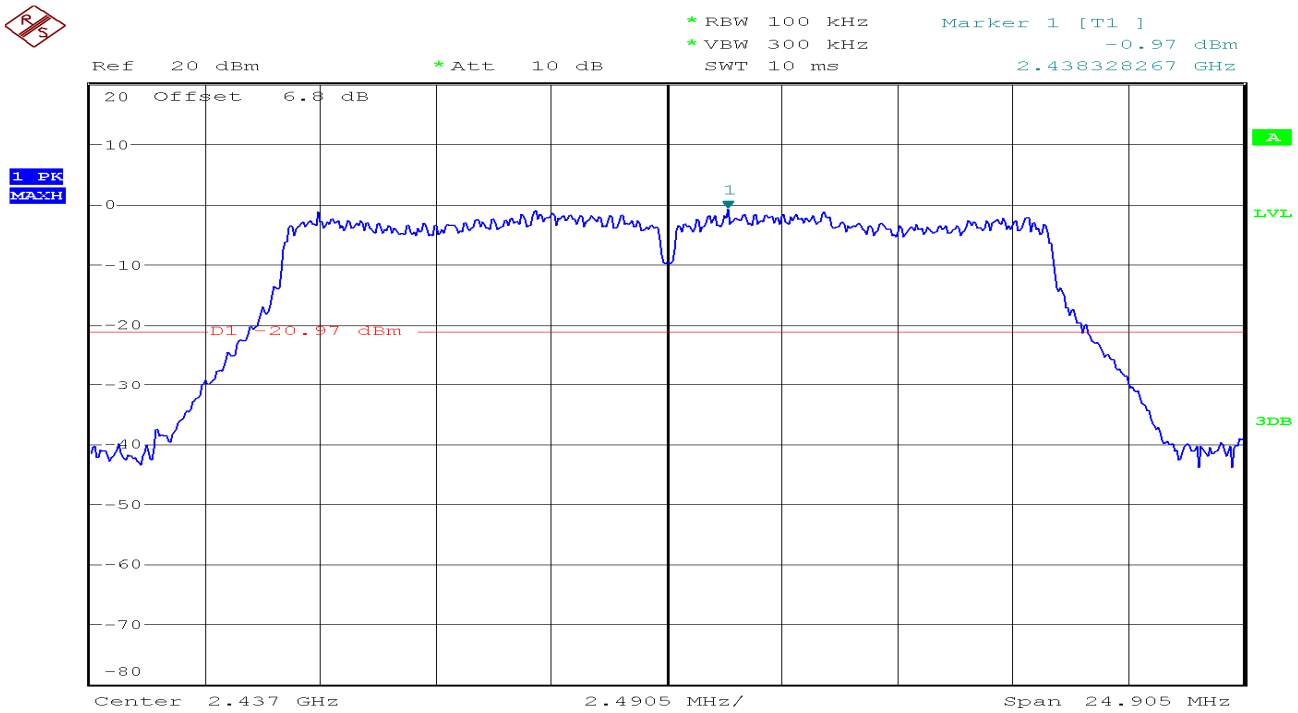


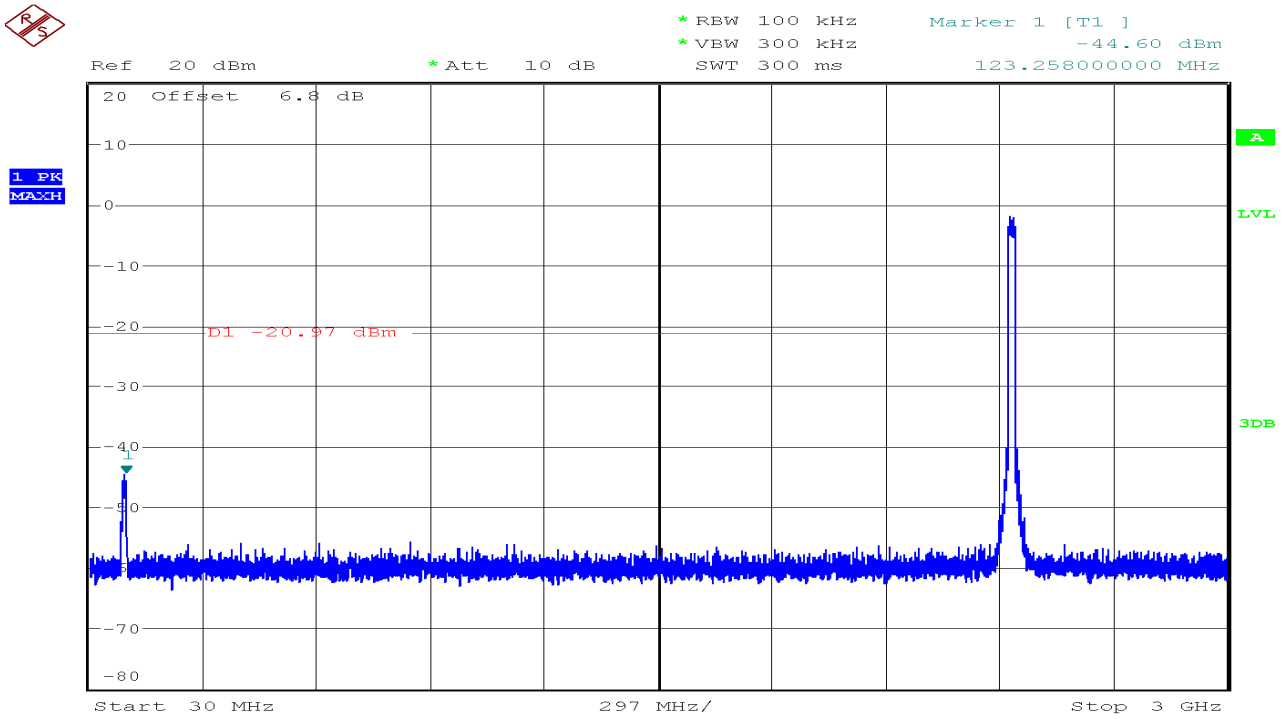

RBW 100 kHz
VBW 300 kHz
SWT 45 ms
Marker 2 [T1]
-38.69 dBm
2.398884000 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
Marker 1 [T1]
-39.07 dBm
2.400000000 GHz
1 PK
MAXH
A
LVL
3DB
D1 -18.81 dBm
Start 2.31 GHz
13.5 MHz/
Stop 2.445 GHz

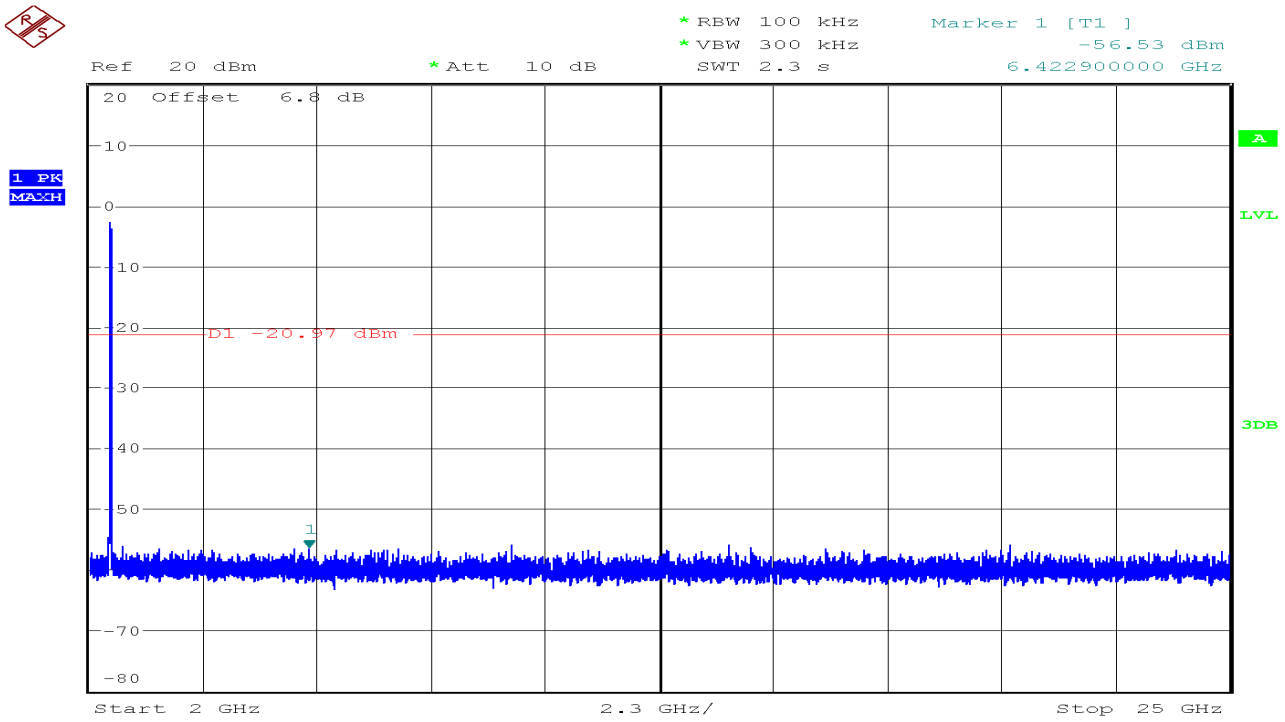

RBW 100 kHz
VBW 300 kHz
SWT 300 ms
Marker 1 [T1]
-40.52 dBm
97.716000000 MHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
A
LVL
3DB
D1 -18.81 dBm
Start 30 MHz
297 MHz/
Stop 3 GHz


RBW 100 kHz
VBW 300 kHz
SWT 2.3 s
Marker 1 [T1]
-54.74 dBm
4.815200000 GHz
Ref 20 dBm
Att 10 dB
Offset 6.8 dB
1 PK
MAXH
D1 -18.81 dBm
A
LVL
3DB
Start 2 GHz
2.3 GHz/
Stop 25 GHz

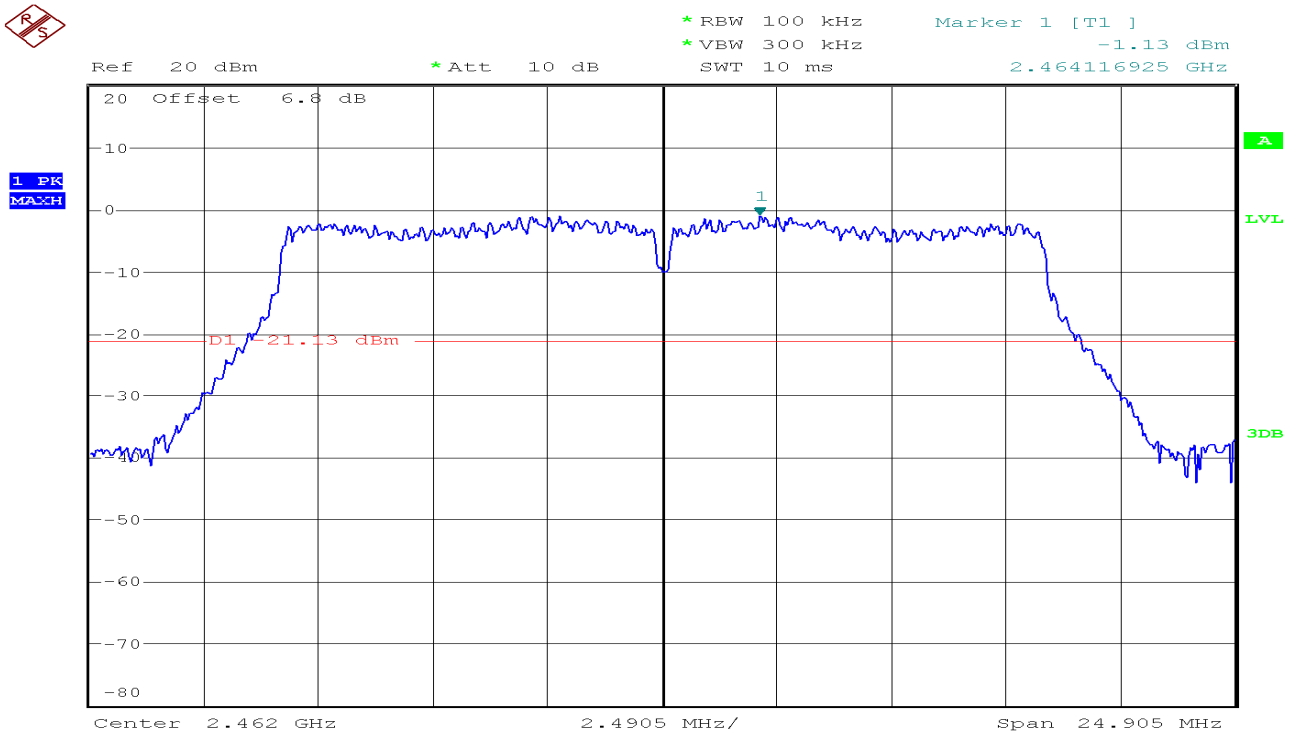
CH Mid

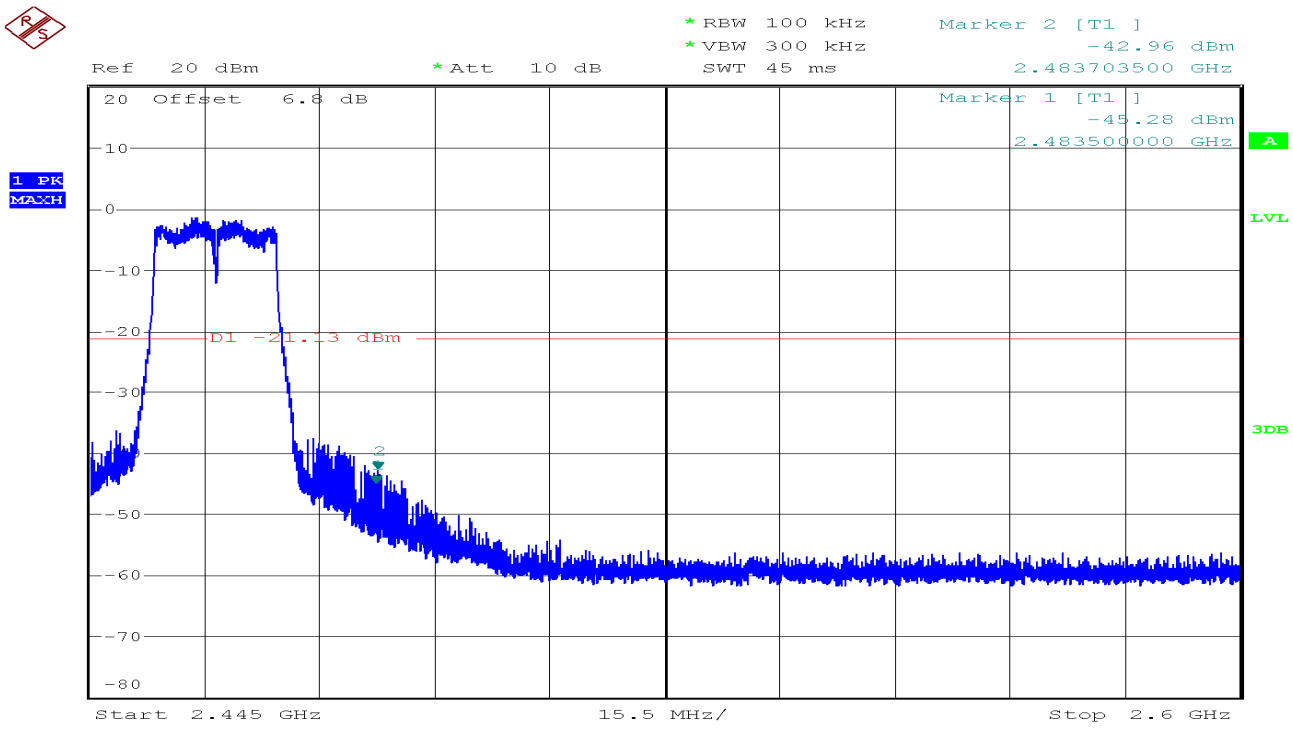

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
Marker 1 [T1]
-0.97 dBm
2.438328267 GHz
Ref 20 dBm
Att 10 dB
Offset 6.8 dB
1 PK
MAXH
D1 -20.97 dBm
A
LVL
3DB
Center 2.437 GHz
2.4905 MHz/
Span 24.905 MHz

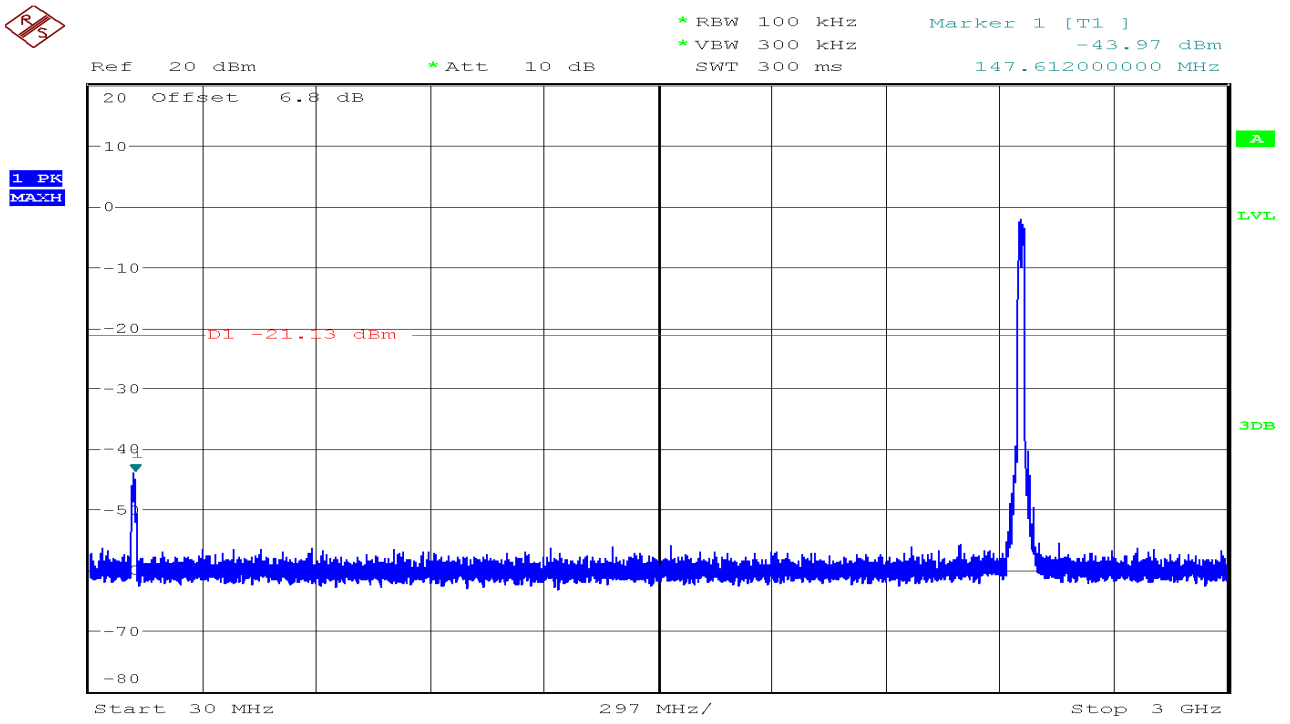

RBW 100 kHz
VBW 300 kHz
SWT 300 ms
Marker 1 [T1]
-44.60 dBm
123.258000000 MHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
A
LVL
3DB
D1 -20.97 dBm
Start 30 MHz
297 MHz/
Stop 3 GHz

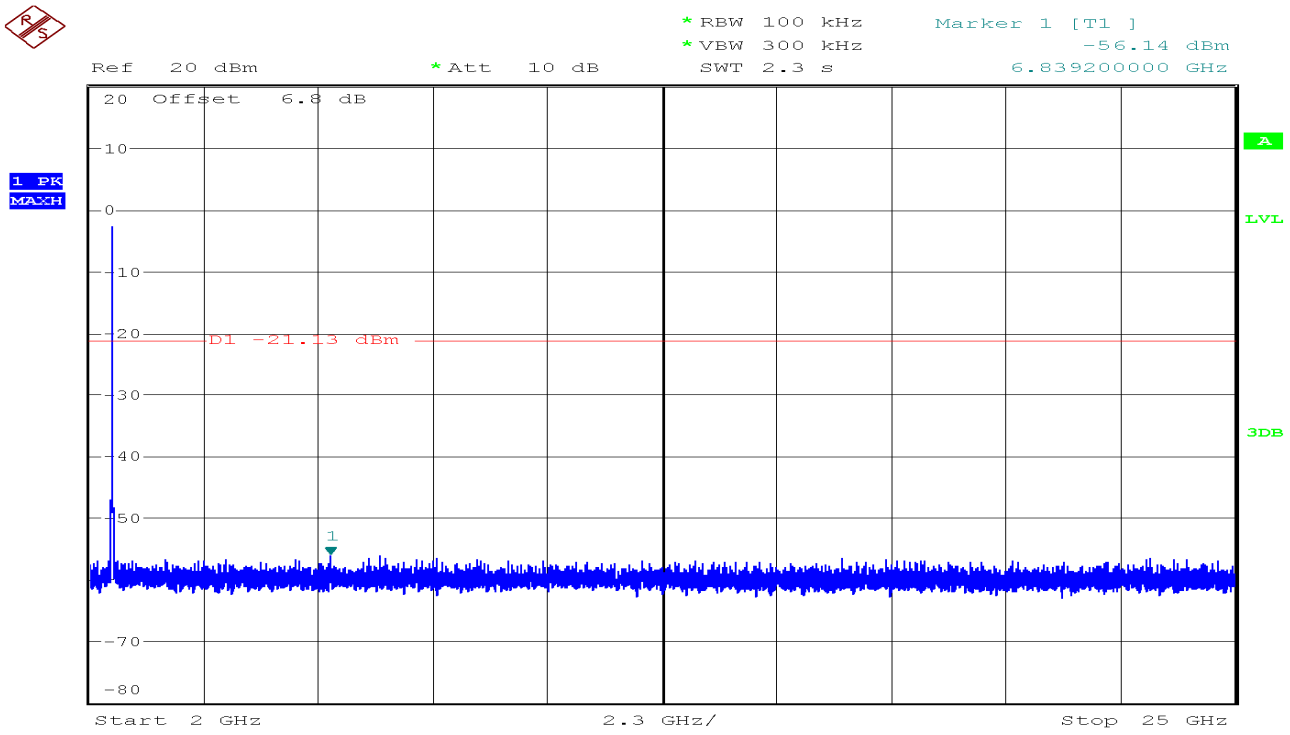

RBW 100 kHz
VBW 300 kHz
SWT 2.3 s
Marker 1 [T1]
-56.53 dBm
6.422900000 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
A
LVL
3DB
D1 -20.97 dBm
Start 2 GHz
2.3 GHz/
Stop 25 GHz

CH High


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
Marker 1 [T1]
-1.13 dBm
2.464116925 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -21.13 dBm
A
LVL
3DB
Center 2.462 GHz
2.4905 MHz/
Span 24.905 MHz

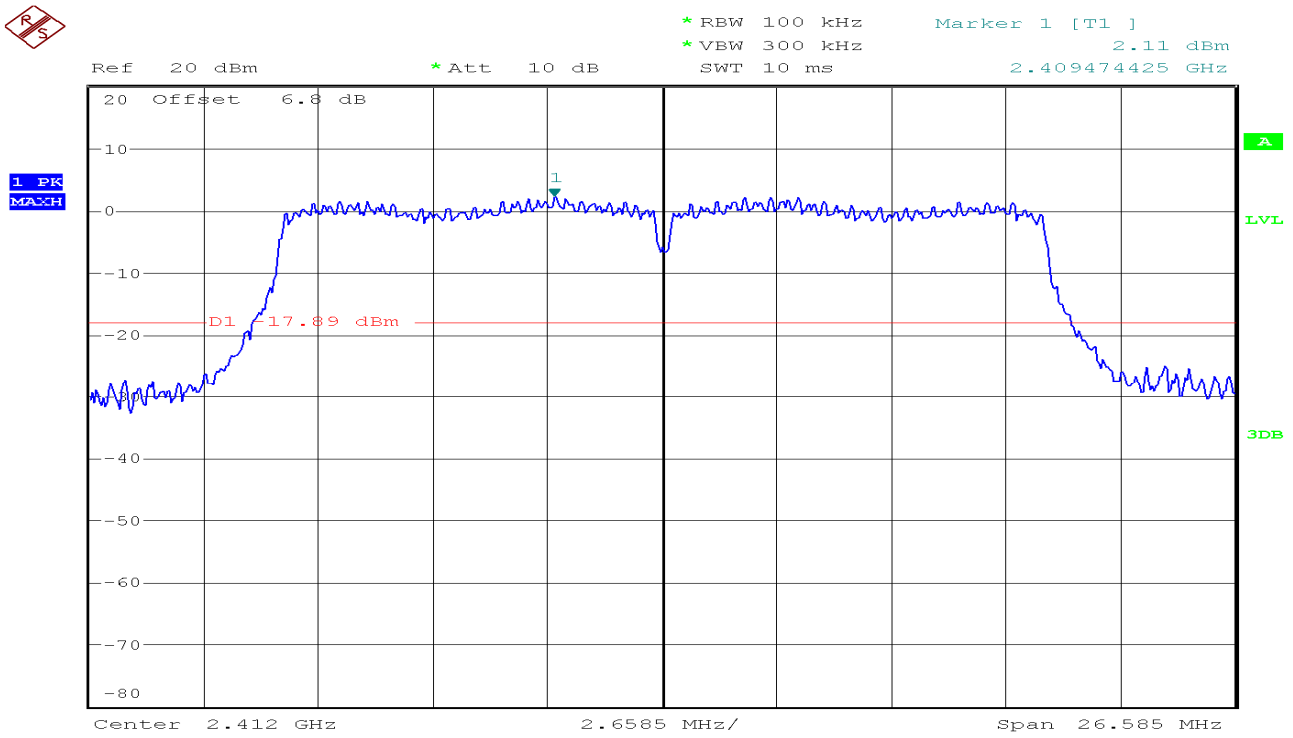

RBW 100 kHz
VBW 300 kHz
SWT 45 ms
Marker 2 [T1]
-42.96 dBm
2.483703500 GHz
Marker 1 [T1]
-45.28 dBm
2.483500000 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -21.13 dBm
A
LVL
3DB
Start 2.445 GHz
15.5 MHz/
Stop 2.6 GHz

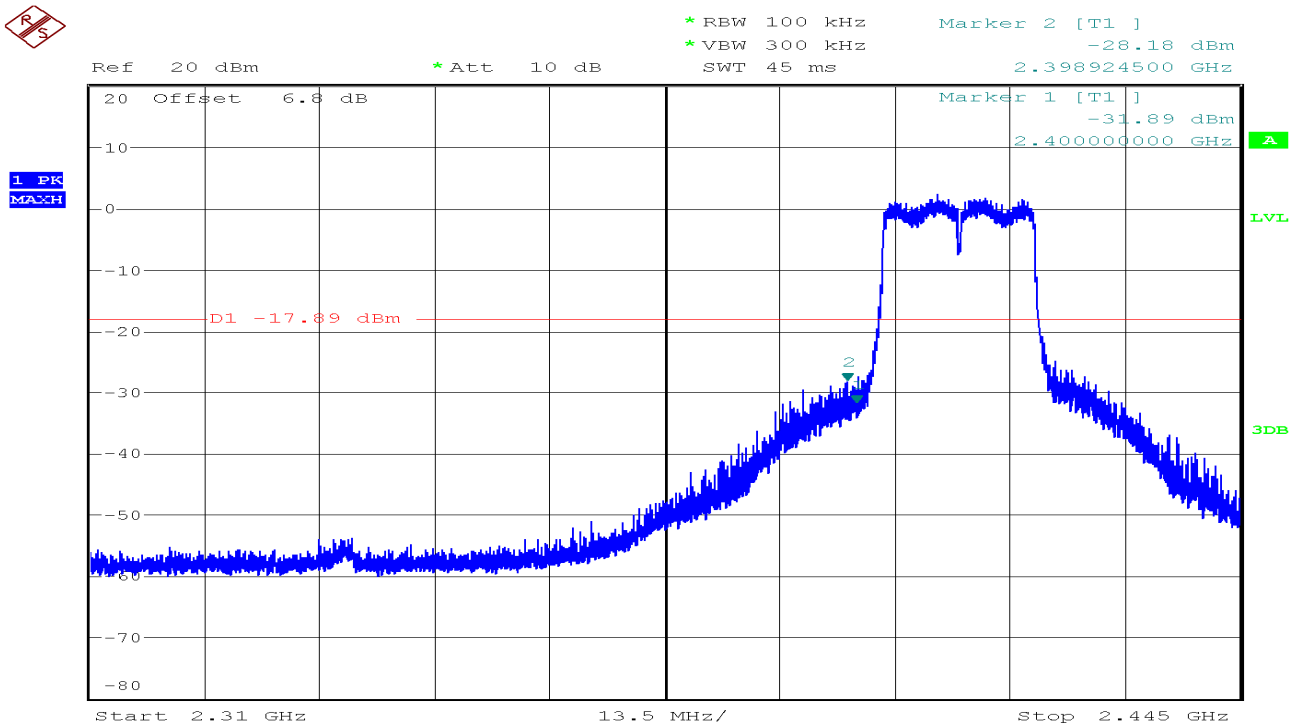

* RBW 100 kHz
* VBW 300 kHz
SWT 300 ms
Marker 1 [T1]
-43.97 dBm
147.612000000 MHz
Ref 20 dBm
* Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
A
LVL
3DB
D1 -21.13 dBm
Start 30 MHz
297 MHz/
Stop 3 GHz

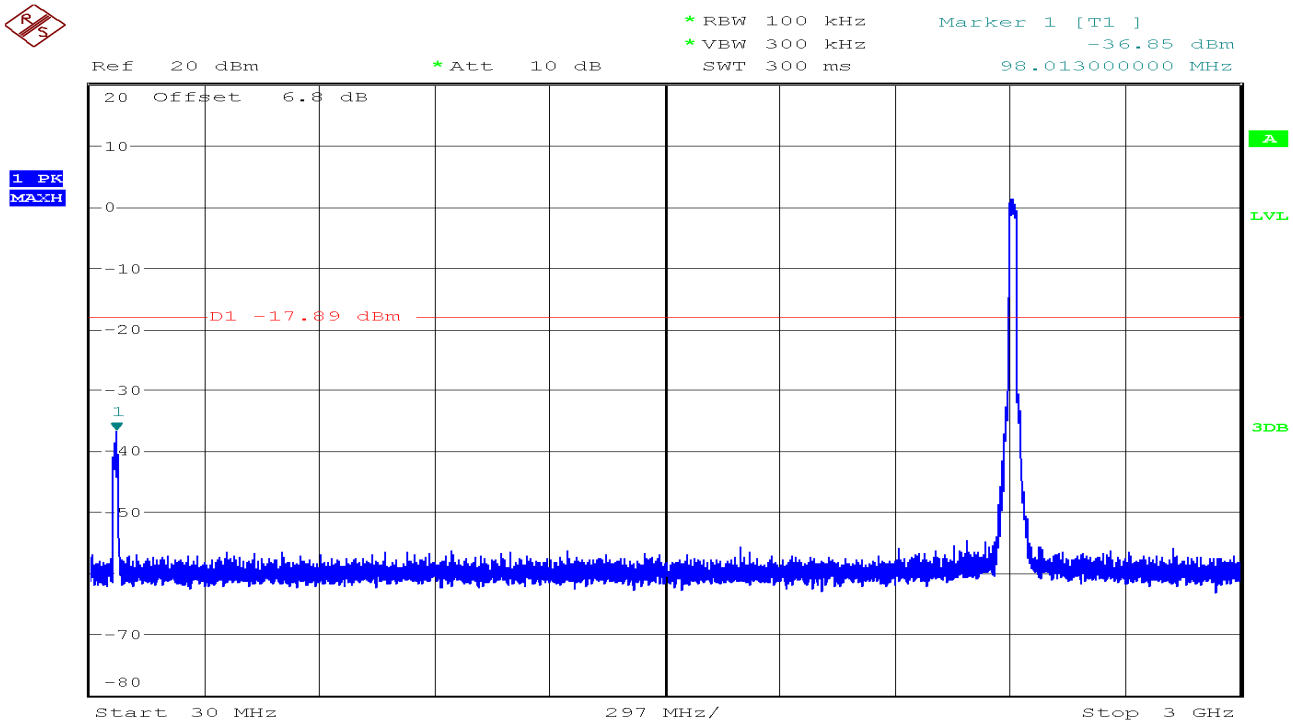

* RBW 100 kHz
* VBW 300 kHz
SWT 2.3 s
Marker 1 [T1]
-56.14 dBm
6.839200000 GHz
Ref 20 dBm
* Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
A
LVL
3DB
D1 -21.13 dBm
Start 2 GHz
2.3 GHz/
Stop 25 GHz

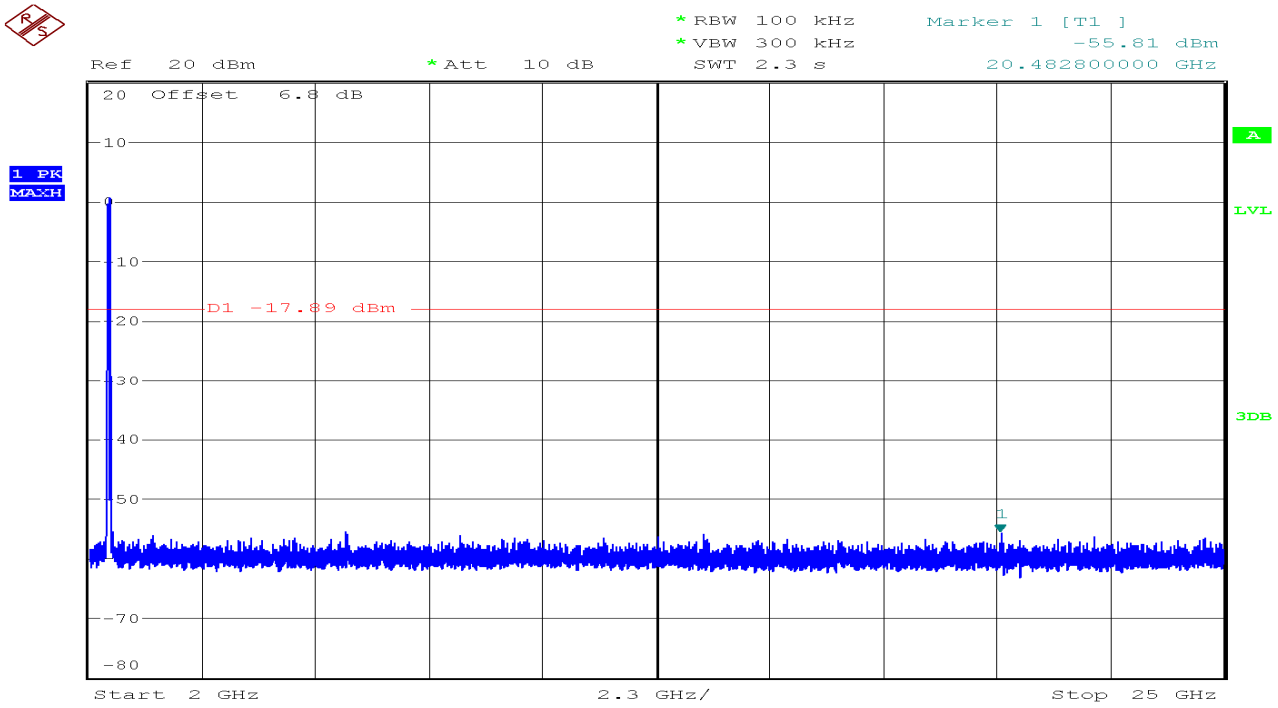
IEEE 802.11n HT20 mode/Chain 0

CH Low

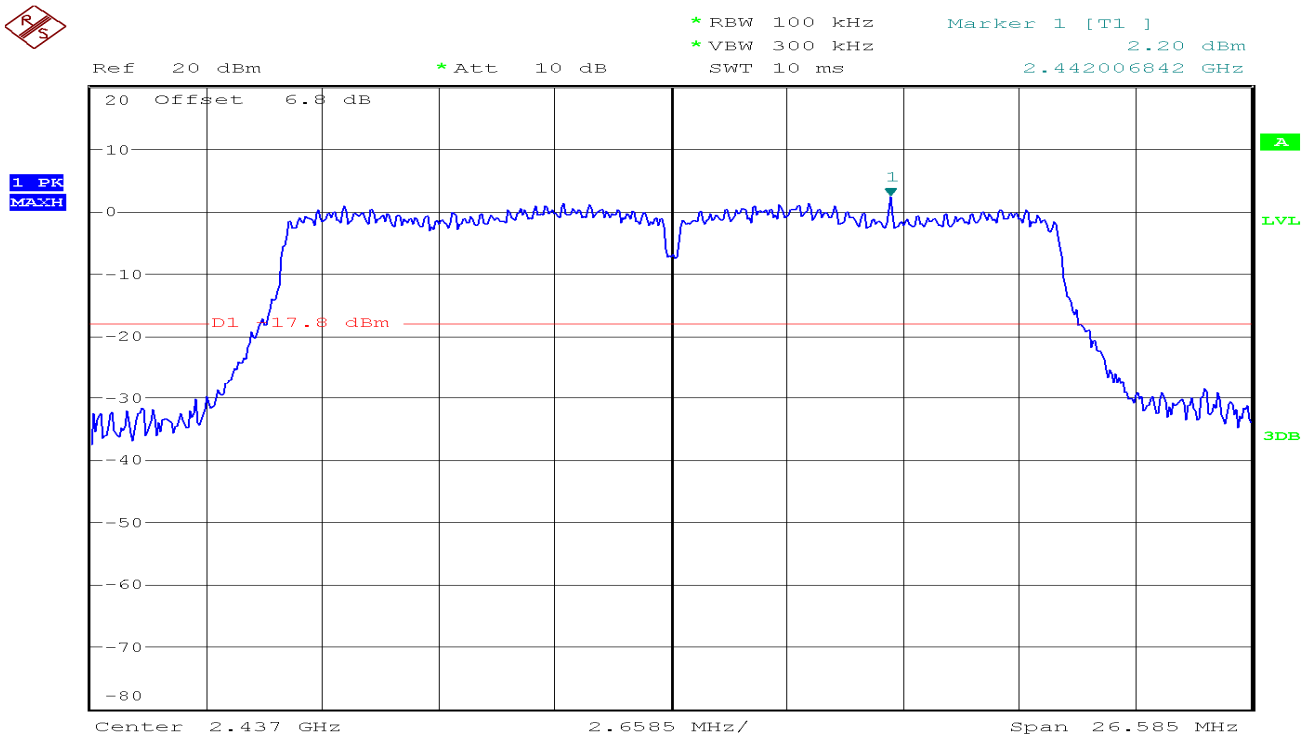


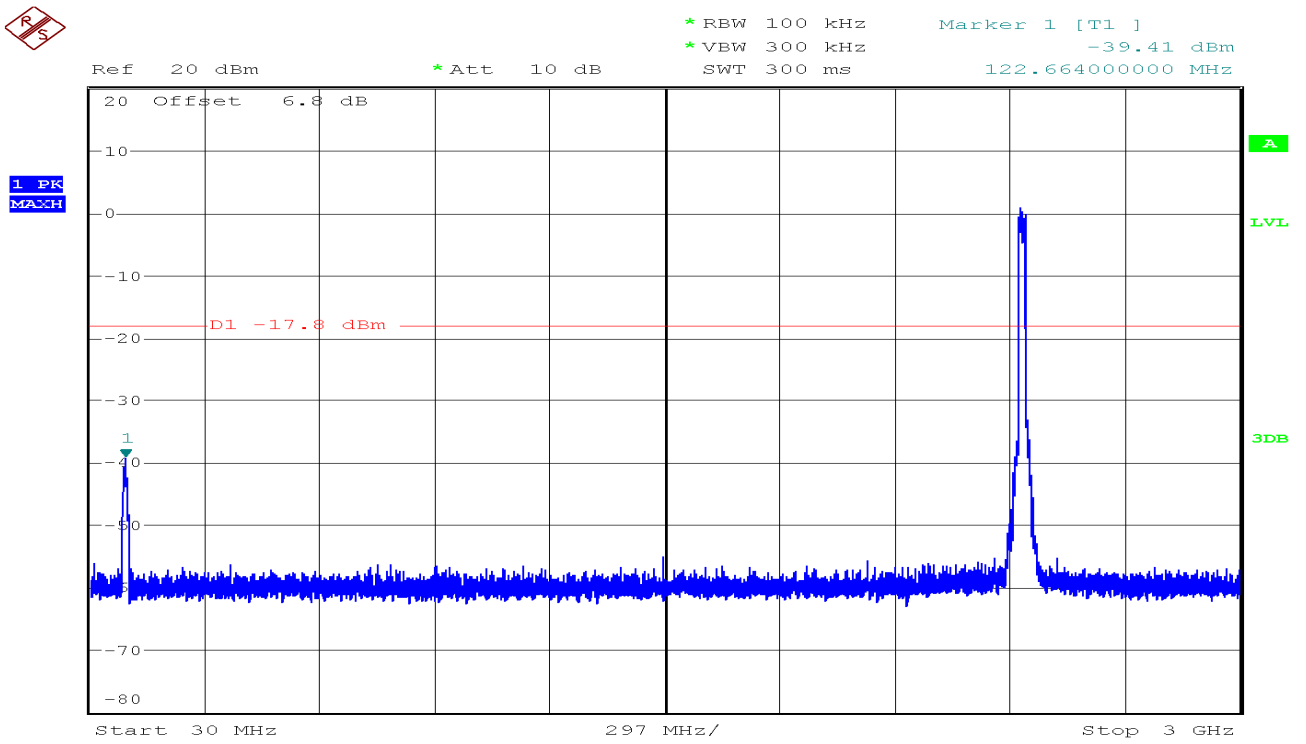


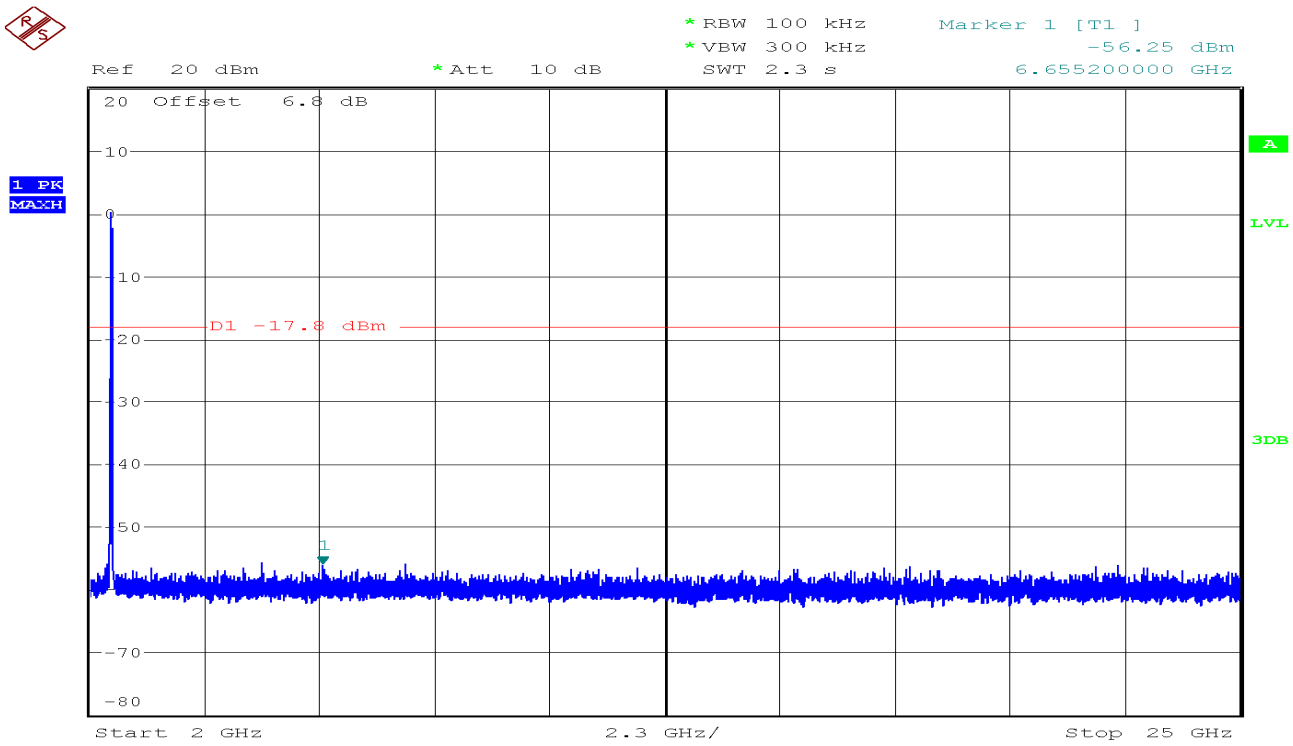

RBW 100 kHz
VBW 300 kHz
SWT 300 ms
Marker 1 [T1]
-36.85 dBm
98.013000000 MHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
A
LVL
3DB
D1 -17.89 dBm
Start 30 MHz
297 MHz/
Stop 3 GHz


RBW 100 kHz
VBW 300 kHz
SWT 2.3 s
Marker 1 [T1]
-55.81 dBm
20.482800000 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
A
LVL
3DB
D1 -17.89 dBm
Start 2 GHz
2.3 GHz/
Stop 25 GHz

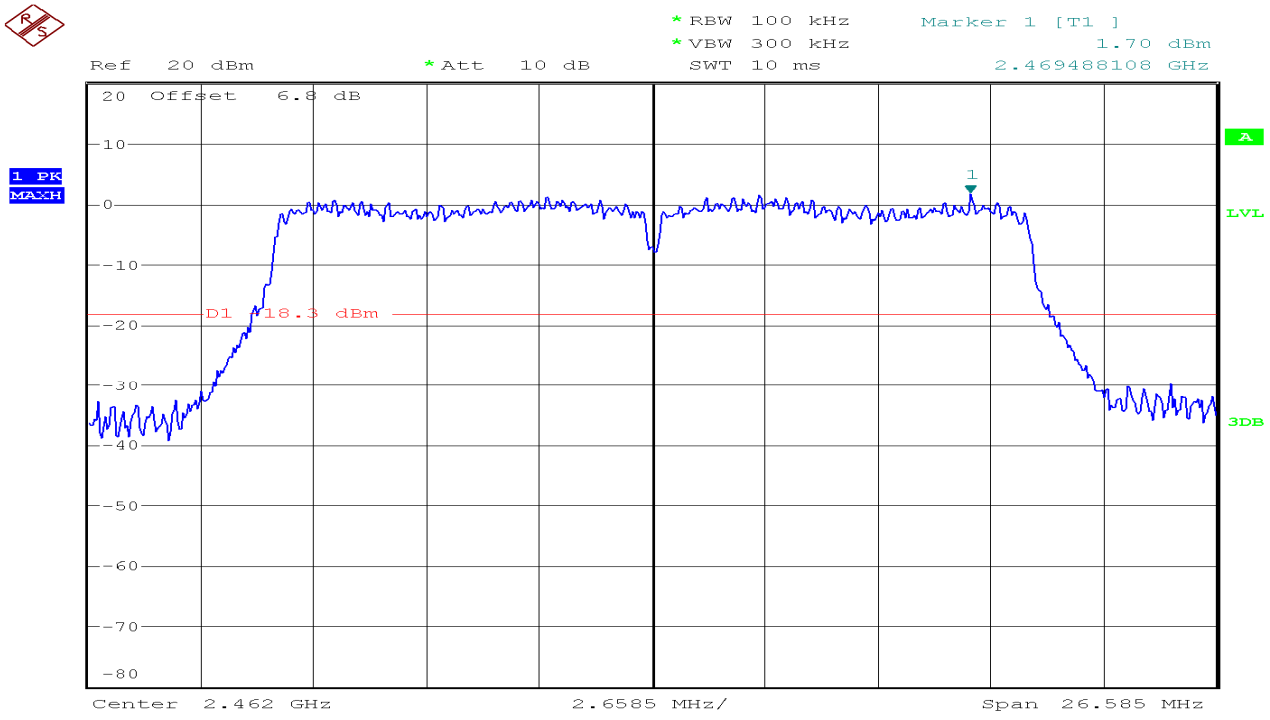
CH Mid

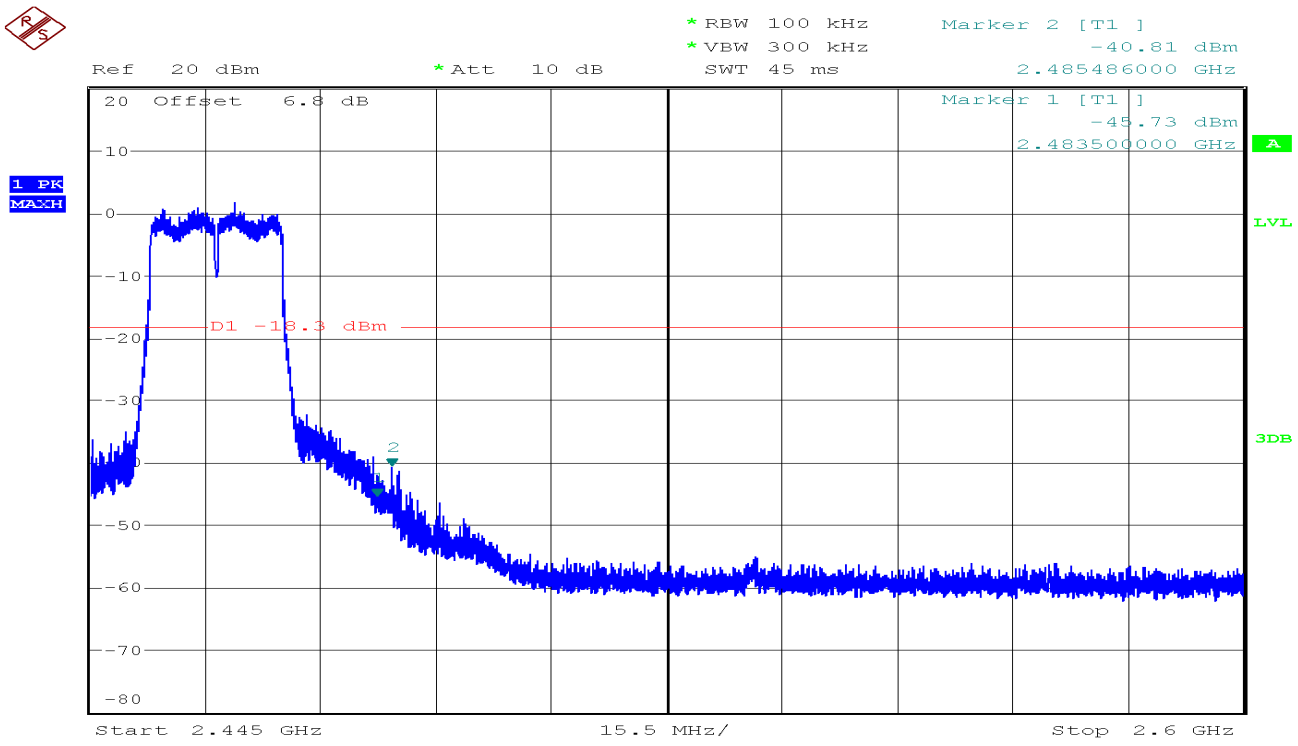

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
Marker 1 [T1]
2.20 dBm
2.442006842 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -17.8 dBm
A
LVL
3DB
Center 2.437 GHz
2.6585 MHz/
Span 26.585 MHz

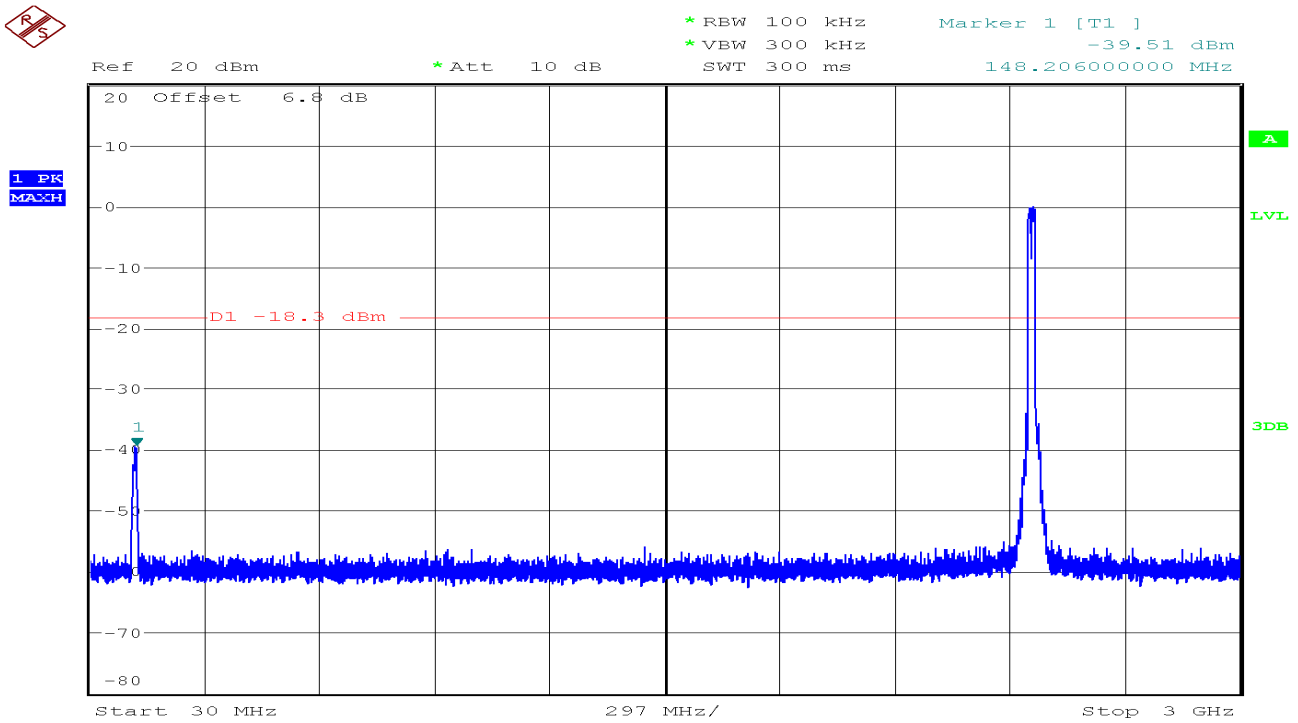

RBW 100 kHz
VBW 300 kHz
SWT 300 ms
Marker 1 [T1]
-39.41 dBm
122.664000000 MHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -17.8 dBm
A
LVL
3DB
Start 30 MHz
297 MHz/
Stop 3 GHz

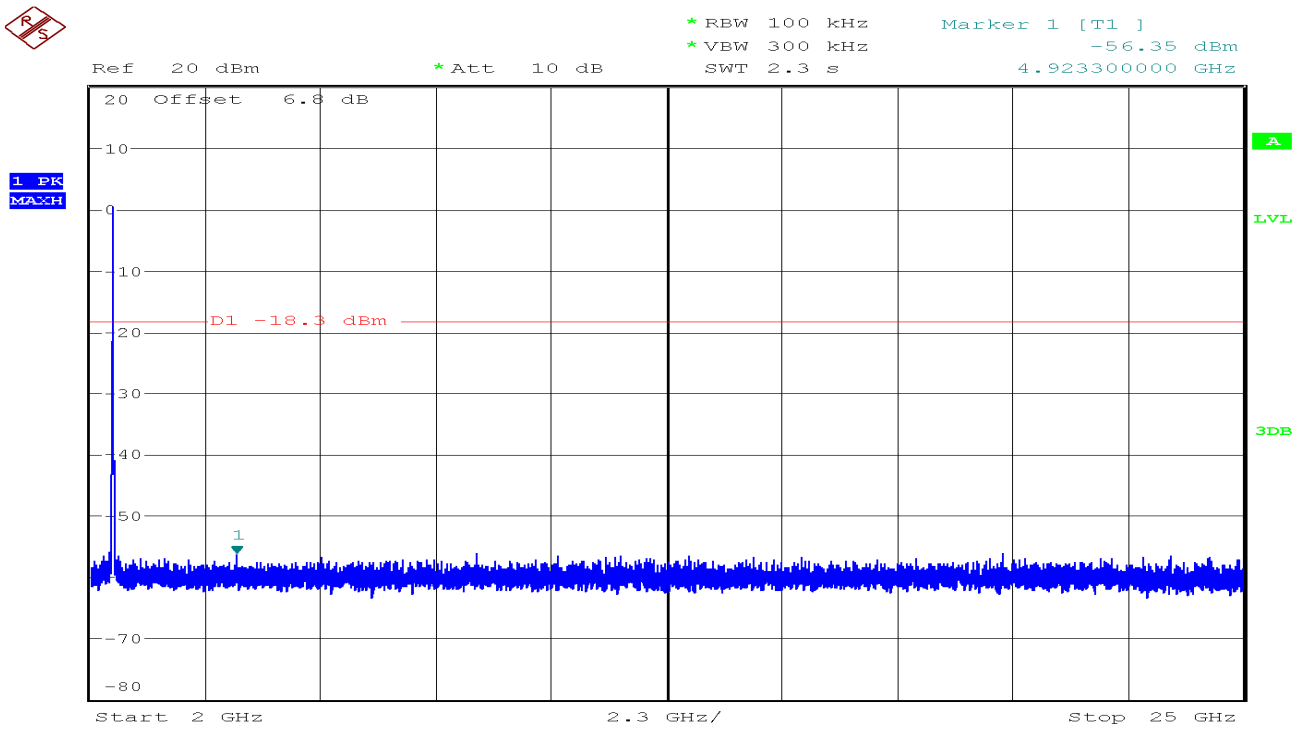

RBW 100 kHz
VBW 300 kHz
SWT 2.3 s
Marker 1 [T1]
-56.25 dBm
6.655200000 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
A
LVL
3DB
D1 -17.8 dBm
Start 2 GHz
2.3 GHz/
Stop 25 GHz

CH High


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
Marker 1 [T1]
1.70 dBm
2.469488108 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
A
LVL
3DB
D1 -18.3 dBm
Center 2.462 GHz
2.6585 MHz/
Span 26.585 MHz

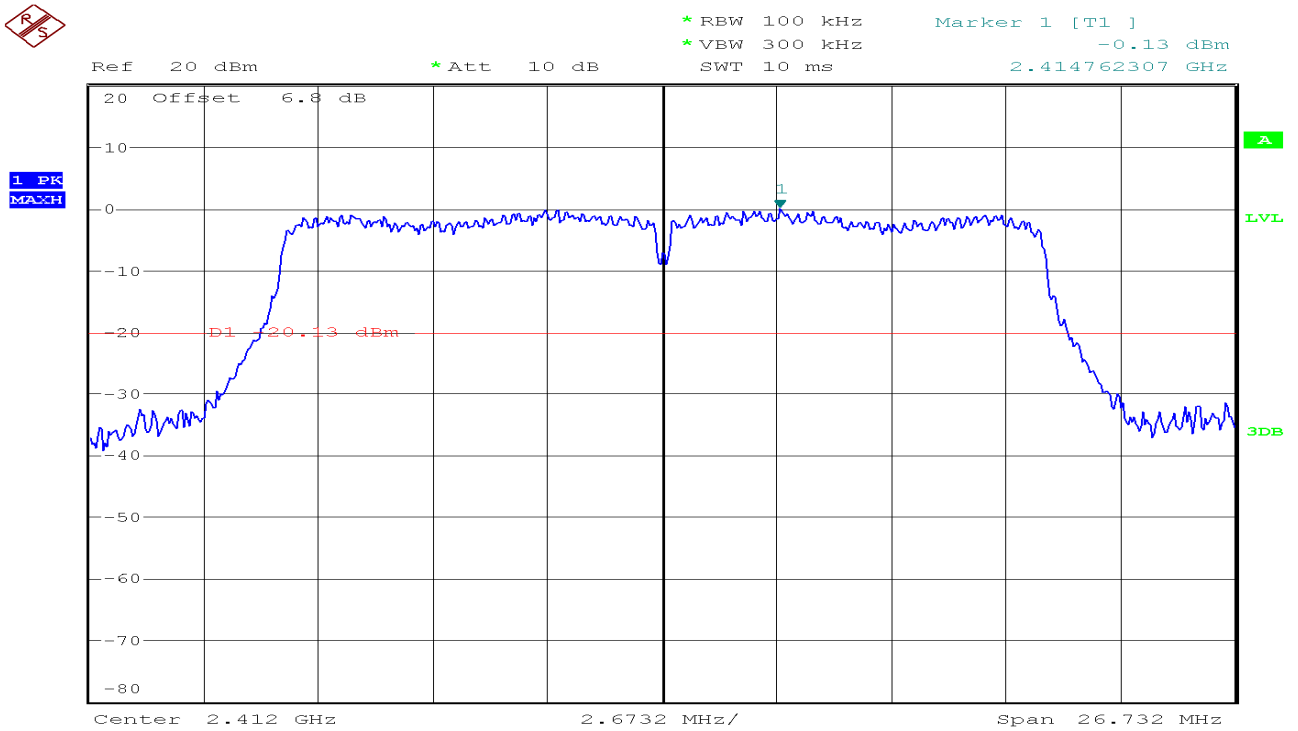

RBW 100 kHz
VBW 300 kHz
SWT 45 ms
Marker 2 [T1]
-40.81 dBm
2.485486000 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
Marker 1 [T1]
-45.73 dBm
2.483500000 GHz
1 PK
MAXH
A
LVL
3DB
D1 -18.3 dBm
Start 2.445 GHz
15.5 MHz/
Stop 2.6 GHz

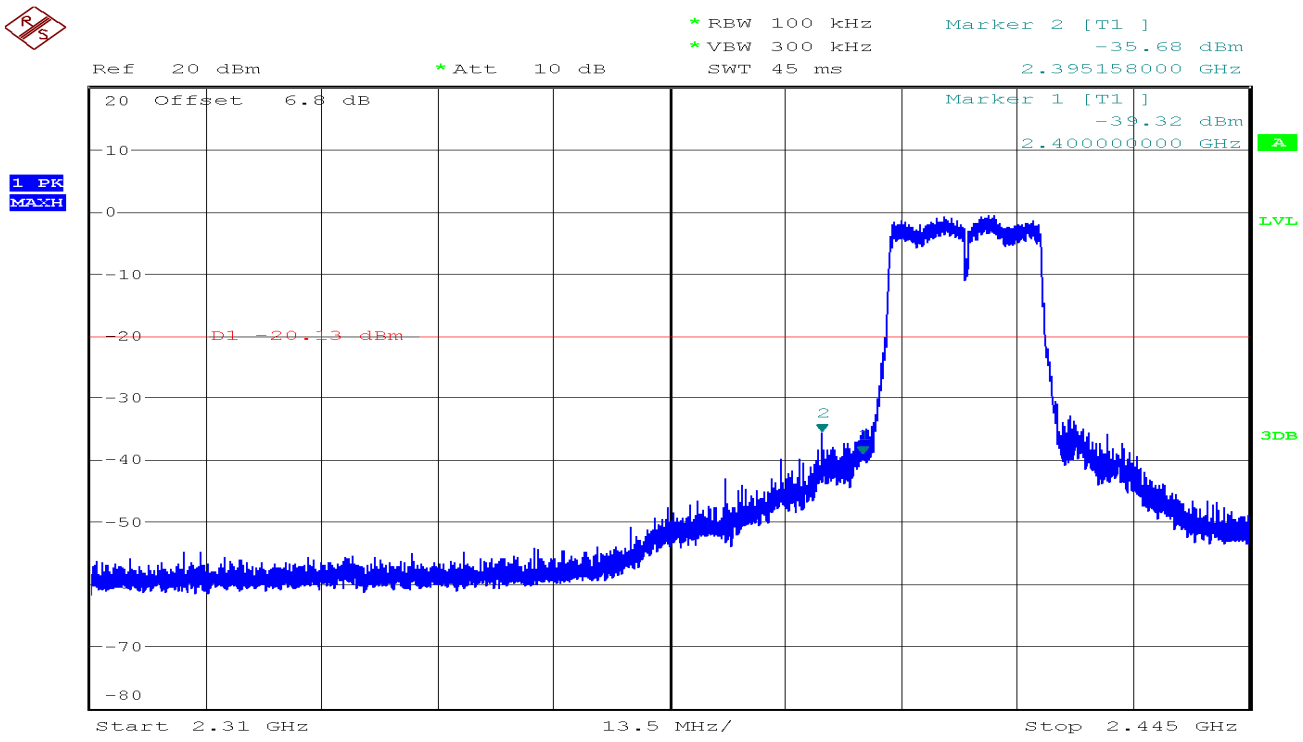

RBW 100 kHz
VBW 300 kHz
SWT 300 ms
Marker 1 [T1]
-39.51 dBm
148.206000000 MHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
A
LVL
3DB
D1 -18.3 dBm
Start 30 MHz
297 MHz/
Stop 3 GHz

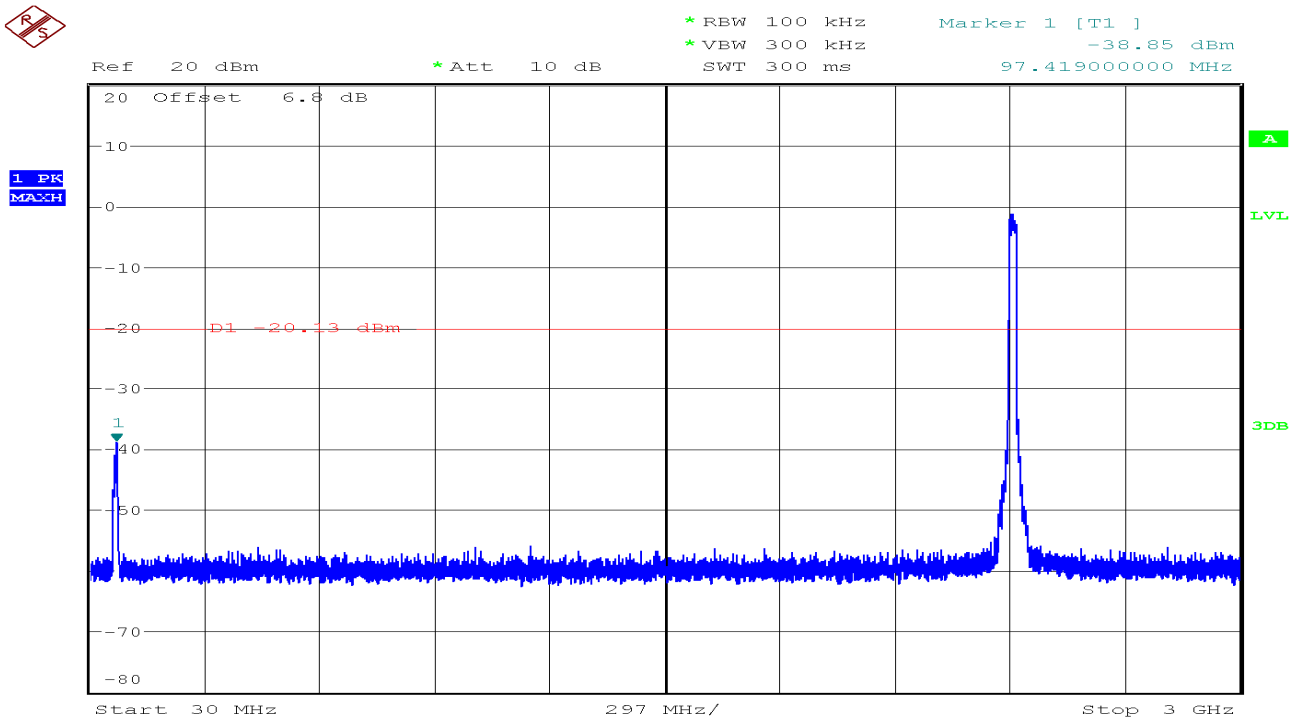


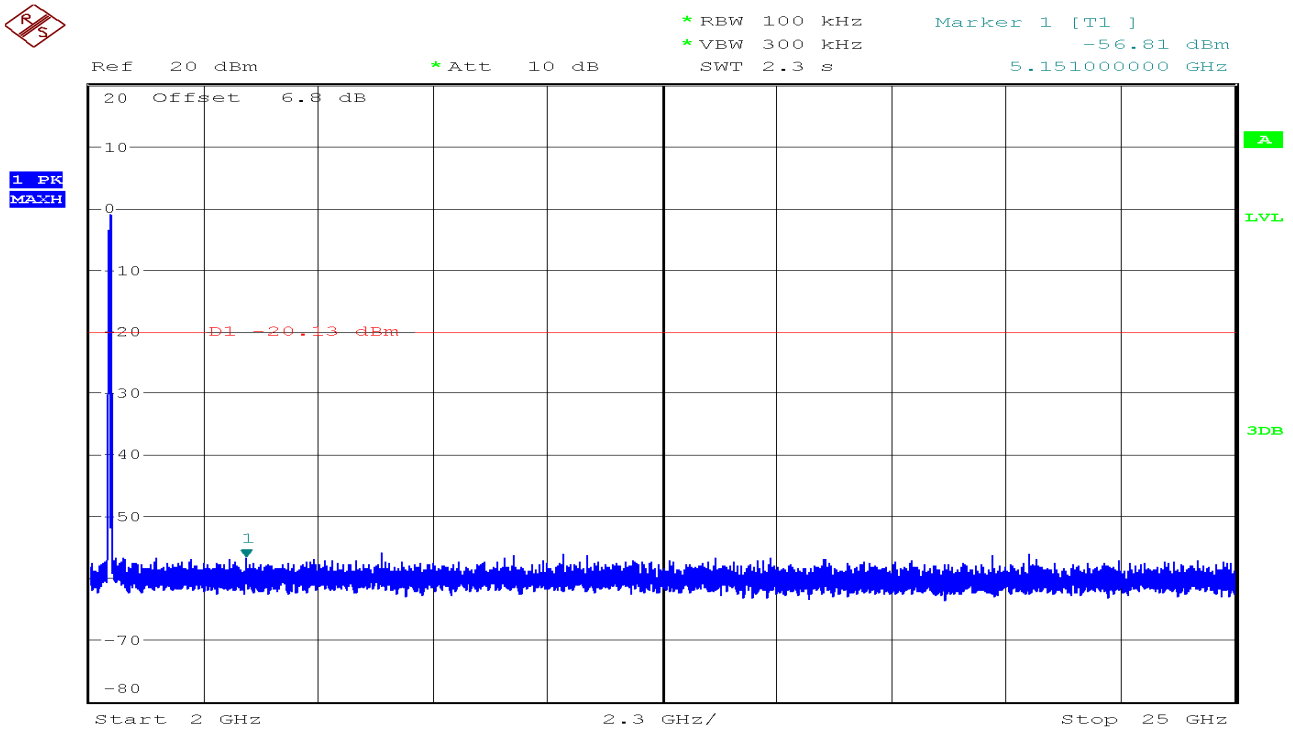
IEEE 802.11n HT20 mode/Chain 1

CH Low

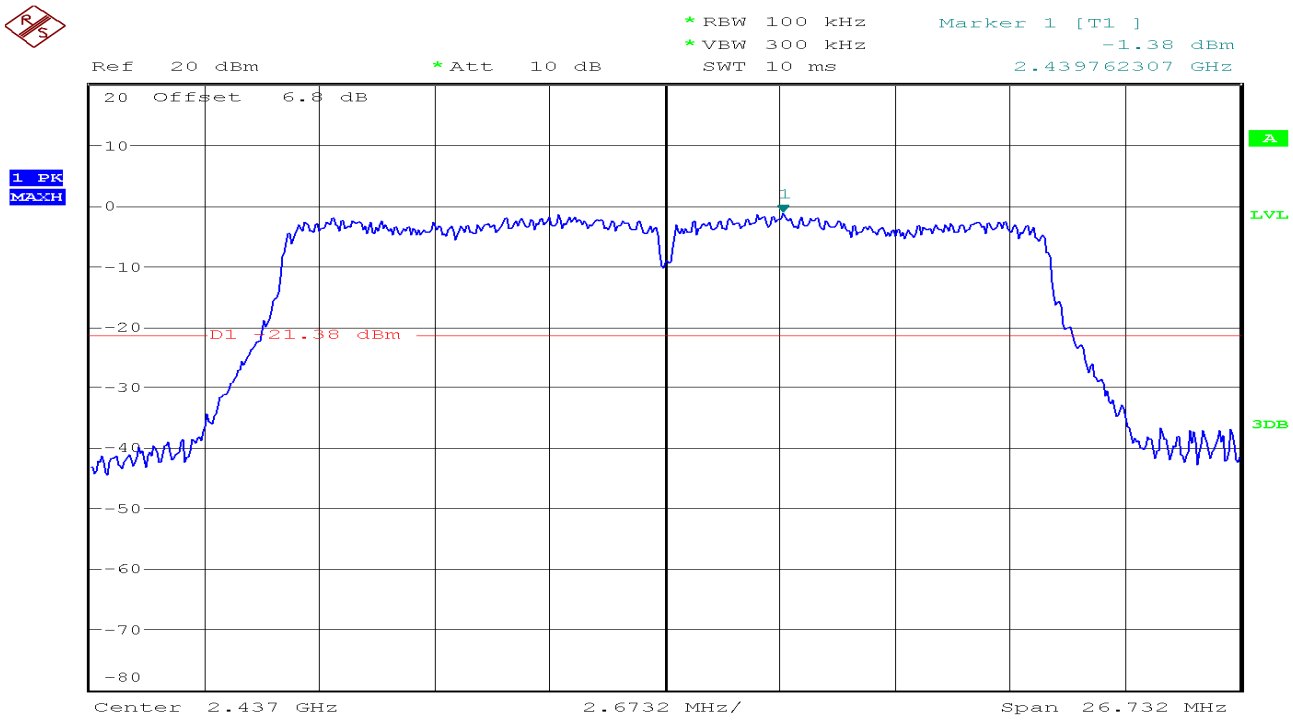


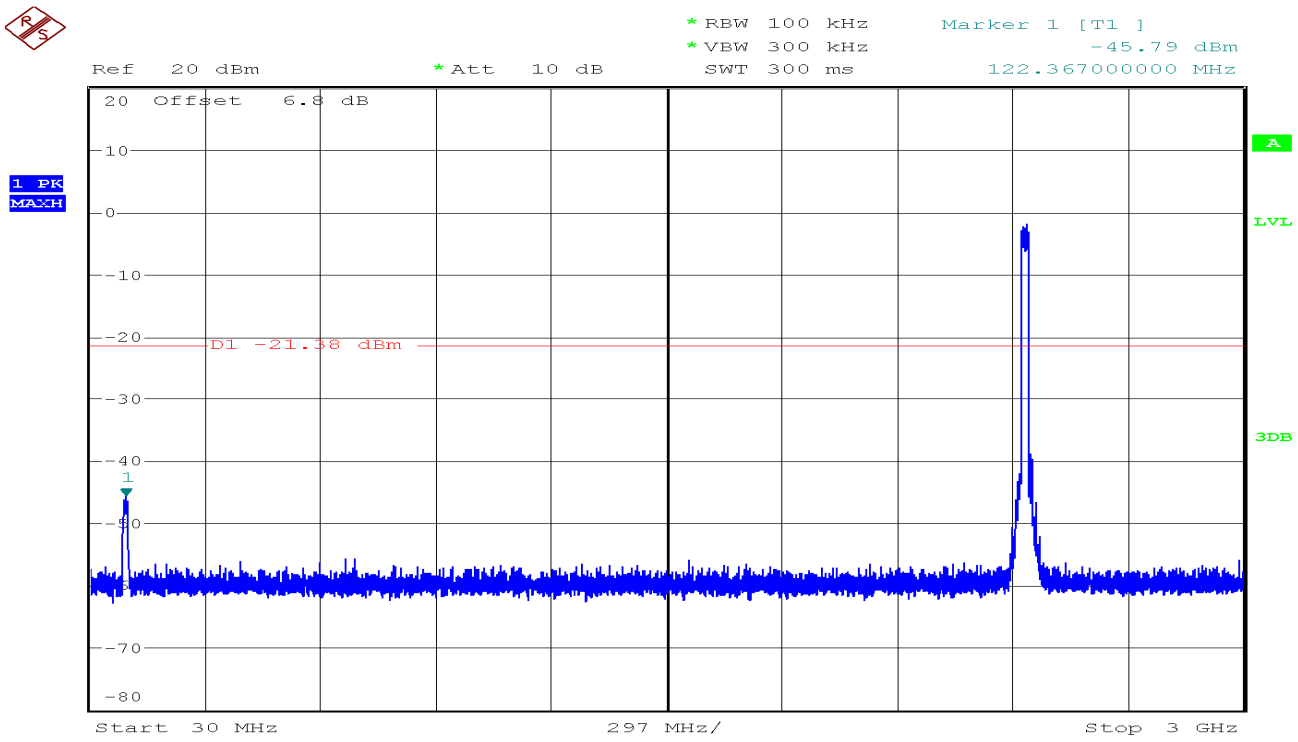

RBW 100 kHz
VBW 300 kHz
SWT 45 ms
Marker 2 [T1]
-35.68 dBm
2.395158000 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
Marker 1 [T1]
-39.32 dBm
2.400000000 GHz
1 PK
MAXH
A
LVL
3DB
D1 -20.13 dBm
Start 2.31 GHz
13.5 MHz/
Stop 2.445 GHz

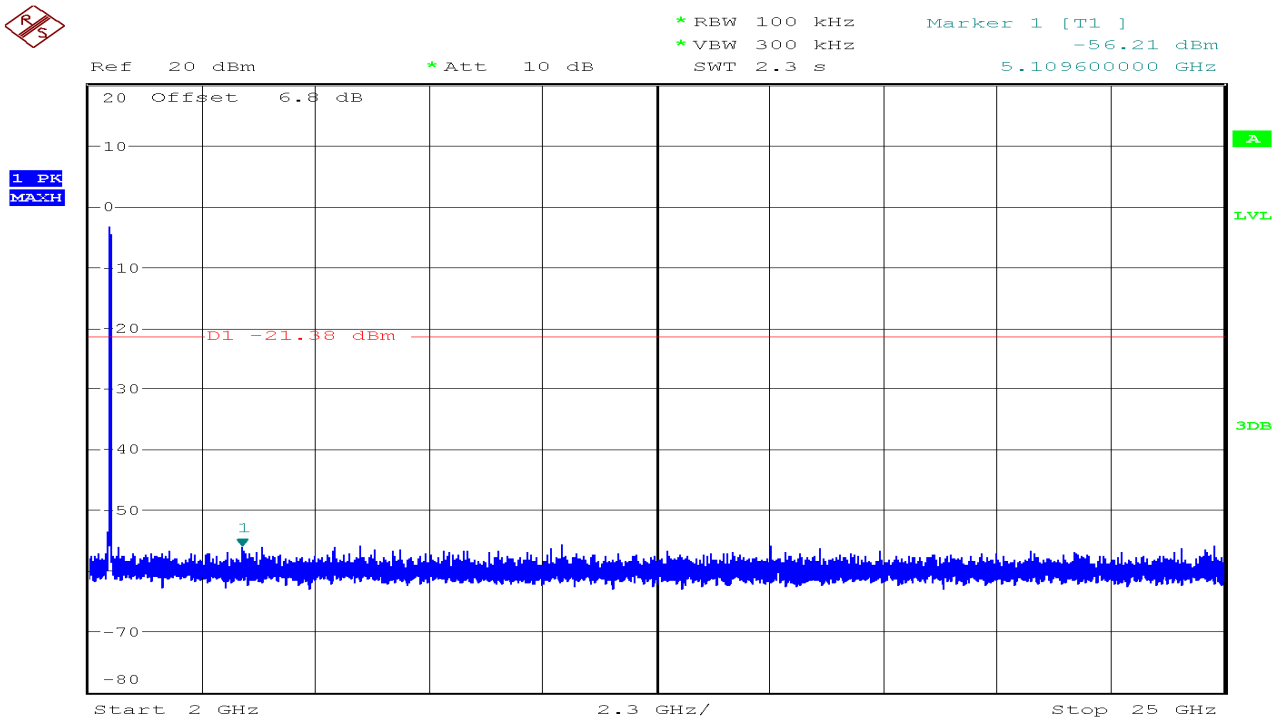

RBW 100 kHz
VBW 300 kHz
SWT 300 ms
Marker 1 [T1]
-38.85 dBm
97.419000000 MHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
A
LVL
3DB
D1 -20.13 dBm
Start 30 MHz
297 MHz/
Stop 3 GHz


RBW 100 kHz
VBW 300 kHz
SWT 2.3 s
Marker 1 [T1]
-56.81 dBm
5.151000000 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -20.13 dBm
A
LVL
3DB
Start 2 GHz
2.3 GHz/
Stop 25 GHz

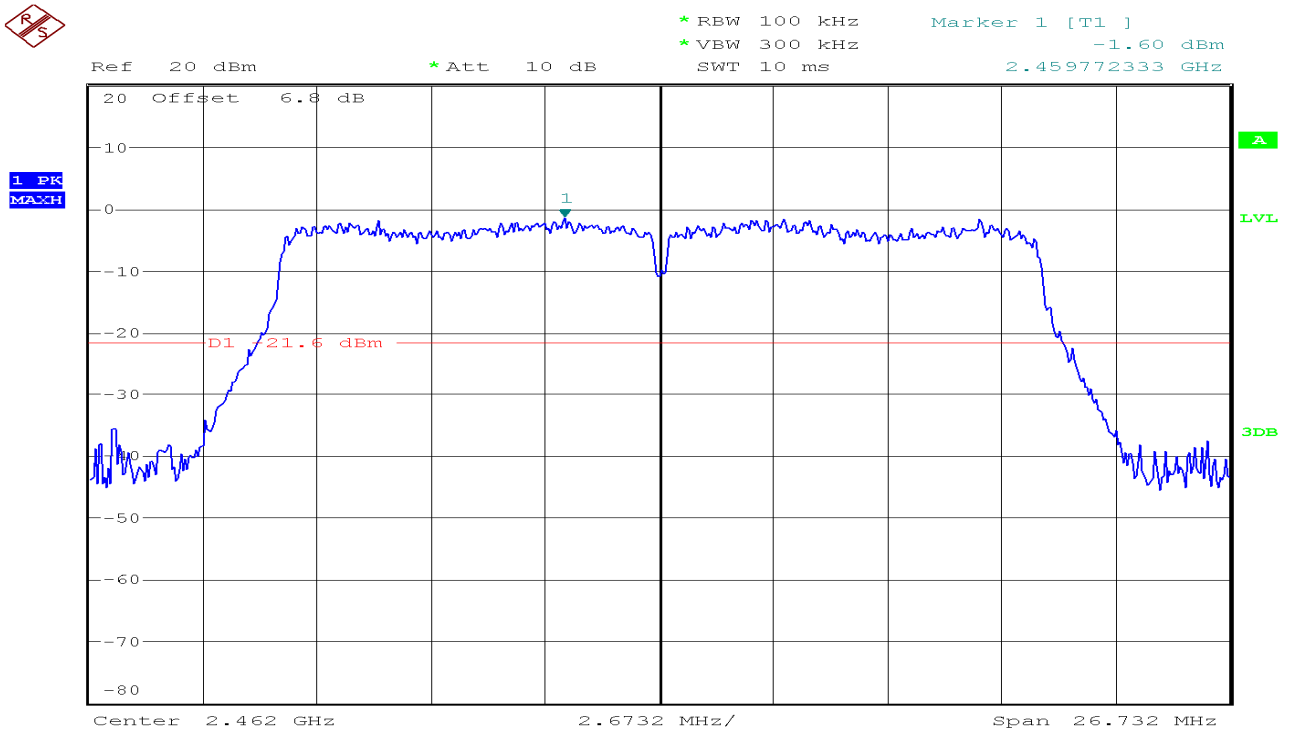
CH Mid

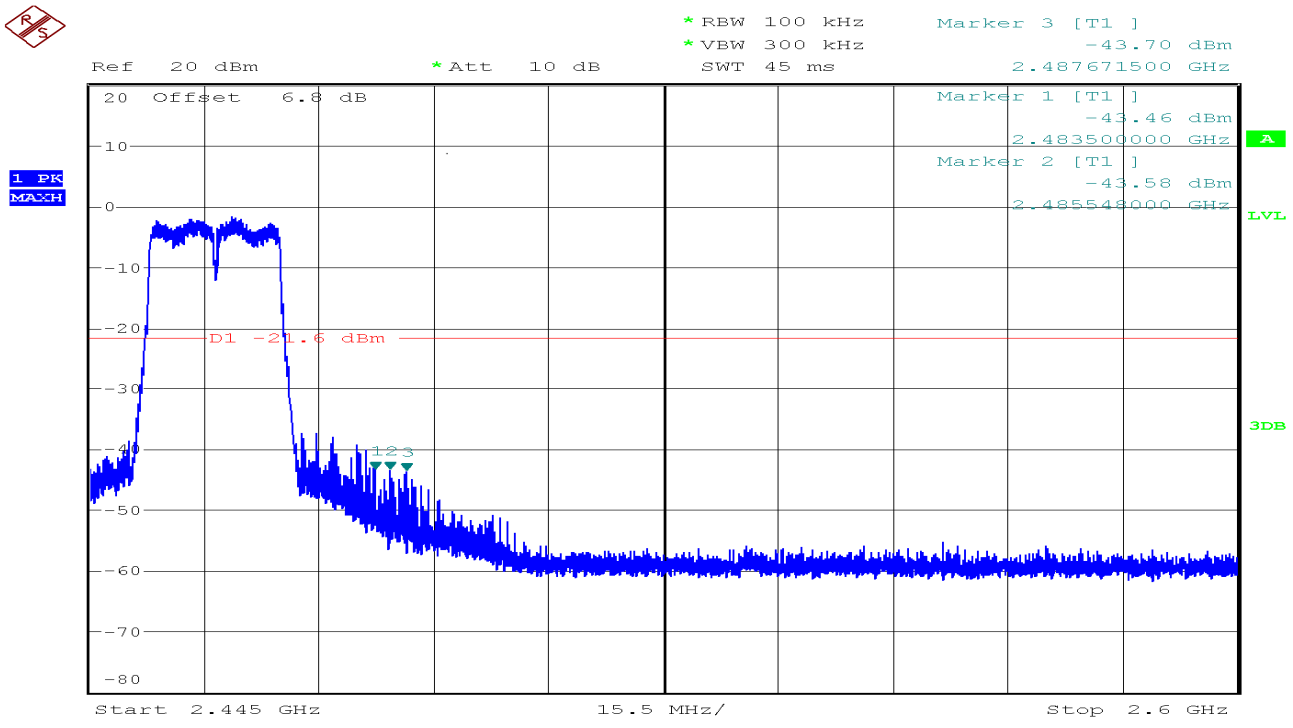

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
Marker 1 [T1]
-1.38 dBm
2.439762307 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -21.38 dBm
A
LVL
3DB
Center 2.437 GHz
2.6732 MHz/
Span 26.732 MHz

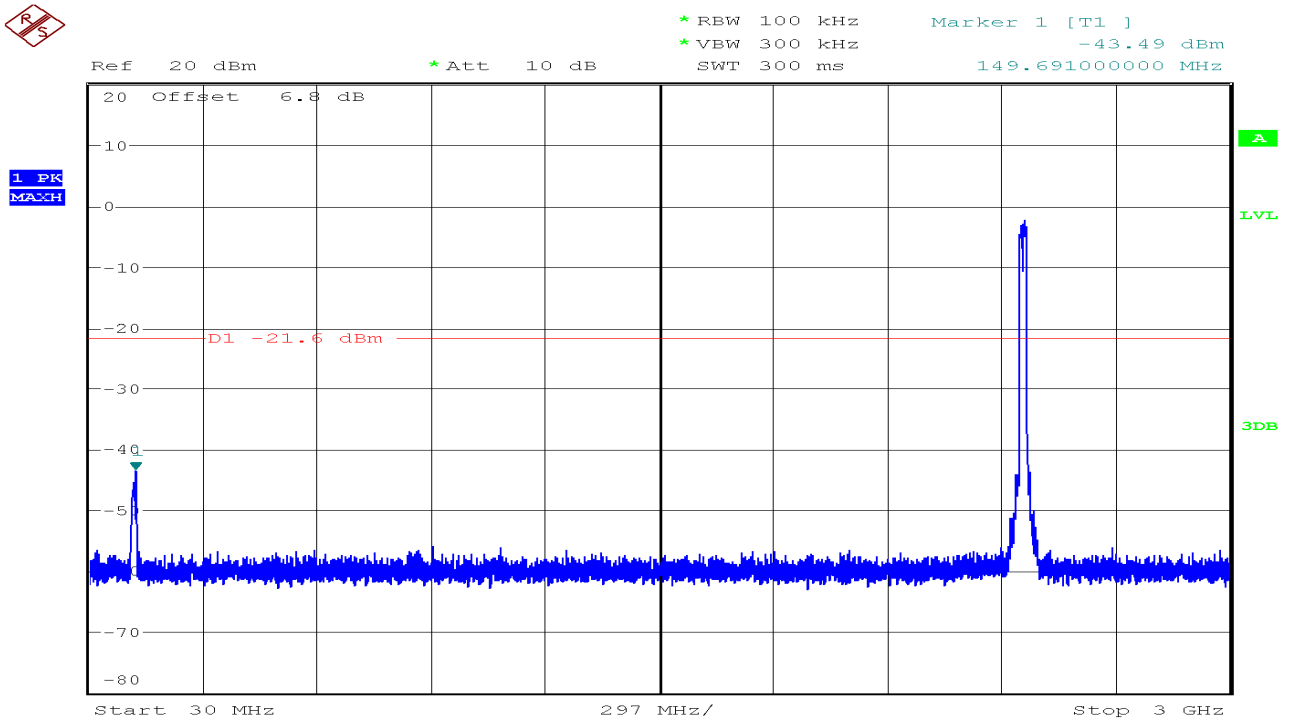

RBW 100 kHz
VBW 300 kHz
SWT 300 ms
Marker 1 [T1]
-45.79 dBm
122.367000000 MHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -21.38 dBm
A
LVL
3DB
Start 30 MHz
297 MHz/
Stop 3 GHz

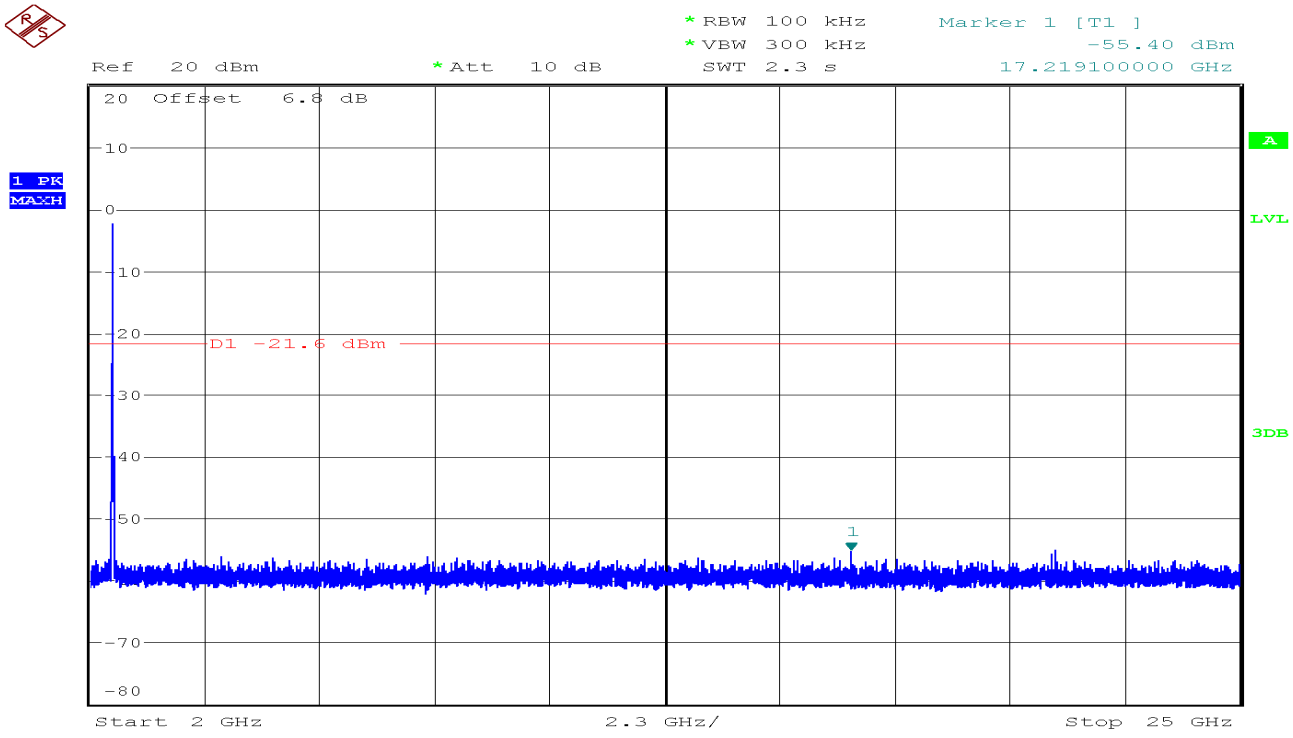

RBW 100 kHz
VBW 300 kHz
SWT 2.3 s
Marker 1 [T1]
-56.21 dBm
5.109600000 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -21.38 dBm
A
LVL
3DB
Start 2 GHz
2.3 GHz/
Stop 25 GHz

CH High


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
Marker 1 [T1]
-1.60 dBm
2.459772333 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
A
LVL
3DB
D1 -21.6 dBm
Center 2.462 GHz
2.6732 MHz/
Span 26.732 MHz


RBW 100 kHz
VBW 300 kHz
SWT 45 ms
Marker 3 [T1]
-43.70 dBm
2.487671500 GHz
Marker 1 [T1]
-43.46 dBm
2.483500000 GHz
Marker 2 [T1]
-43.58 dBm
2.485548000 GHz
Ref 20 dBm
Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
A
LVL
3DB
D1 -21.6 dBm
Start 2.445 GHz
15.5 MHz/
Stop 2.6 GHz


* RBW 100 kHz
* VBW 300 kHz
SWT 300 ms
Marker 1 [T1]
-43.49 dBm
149.691000000 MHz
Ref 20 dBm
* Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -21.6 dBm
A
LVL
3DB
Start 30 MHz
297 MHz/
Stop 3 GHz


* RBW 100 kHz
* VBW 300 kHz
SWT 2.3 s
Marker 1 [T1]
-55.40 dBm
17.219100000 GHz
Ref 20 dBm
* Att 10 dB
20 Offset 6.8 dB
1 PK
MAXH
D1 -21.6 dBm
A
LVL
3DB
Start 2 GHz
2.3 GHz/
Stop 25 GHz

7.5. RADIATED EMISSIONS

LIMIT

Radiated emissions from 9 kHz to 25 GHz were measured according to the methods defines in ANSI C63.10-2013. The EUT was placed above the ground plane, 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions

1. According to §15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

FREQUENCIES(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

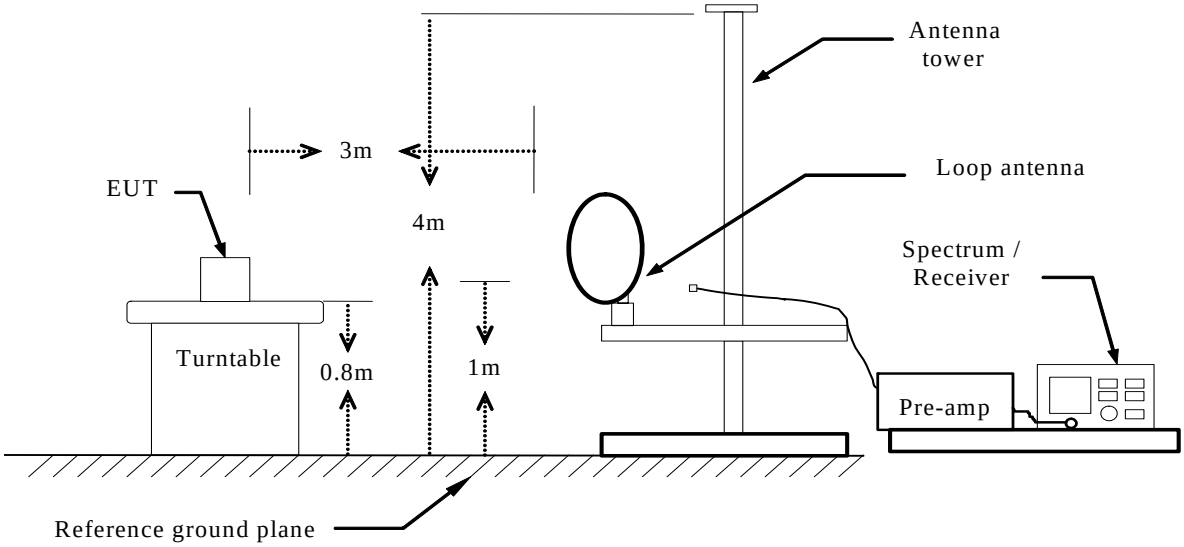
Remark: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

2.In the emission table above, the tighter limit applies at the band edges.

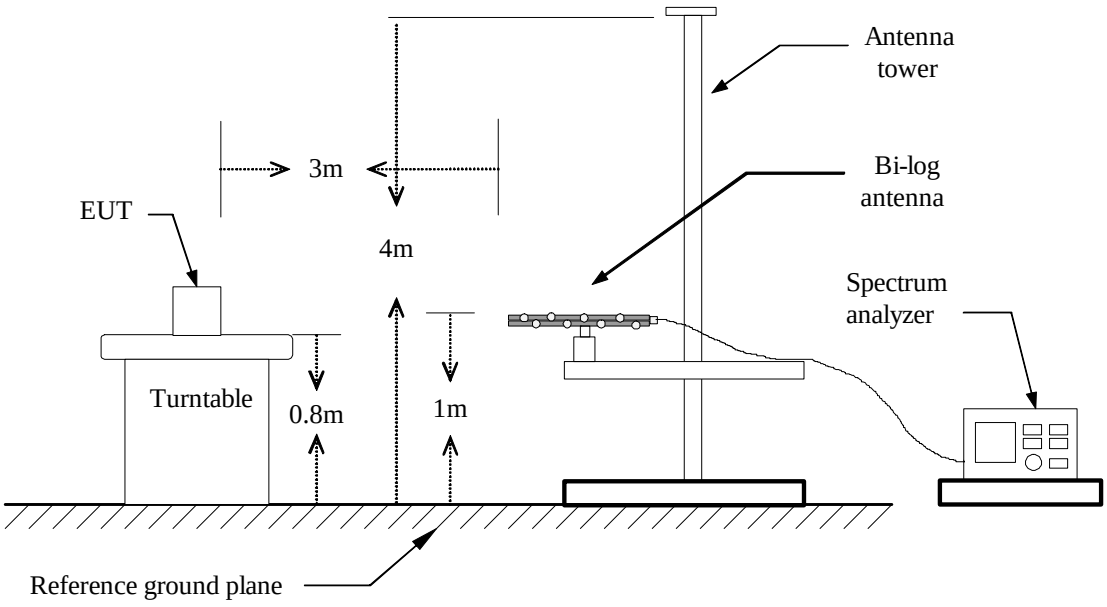
Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

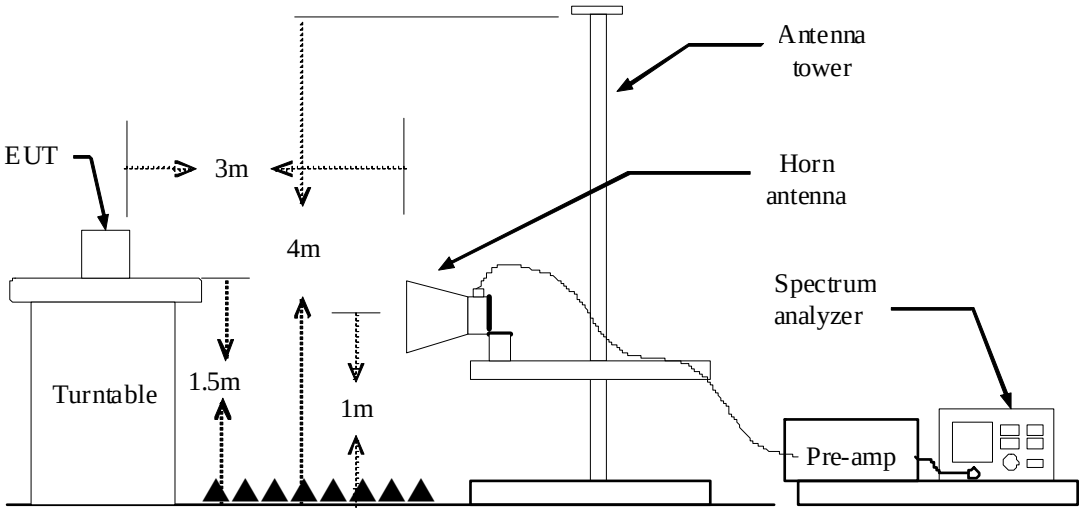
Below 30MHz



Below 1 GHz



Above 1 GHz



TEST PROCEDURE

1. The EUT is placed on a turntable above ground plane, which is 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum 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:

   Below 1GHz:

   RBW=100kHz / VBW=300kHz / Sweep=AUTO

   Above 1GHz:

   PEAK: RBW=VBW=1MHz / Sweep=AUTO

   AVERAGE: RBW=1MHz / Sweep=AUTO

   VBW=10Hz,when duty cycle is no less than 98 percent.

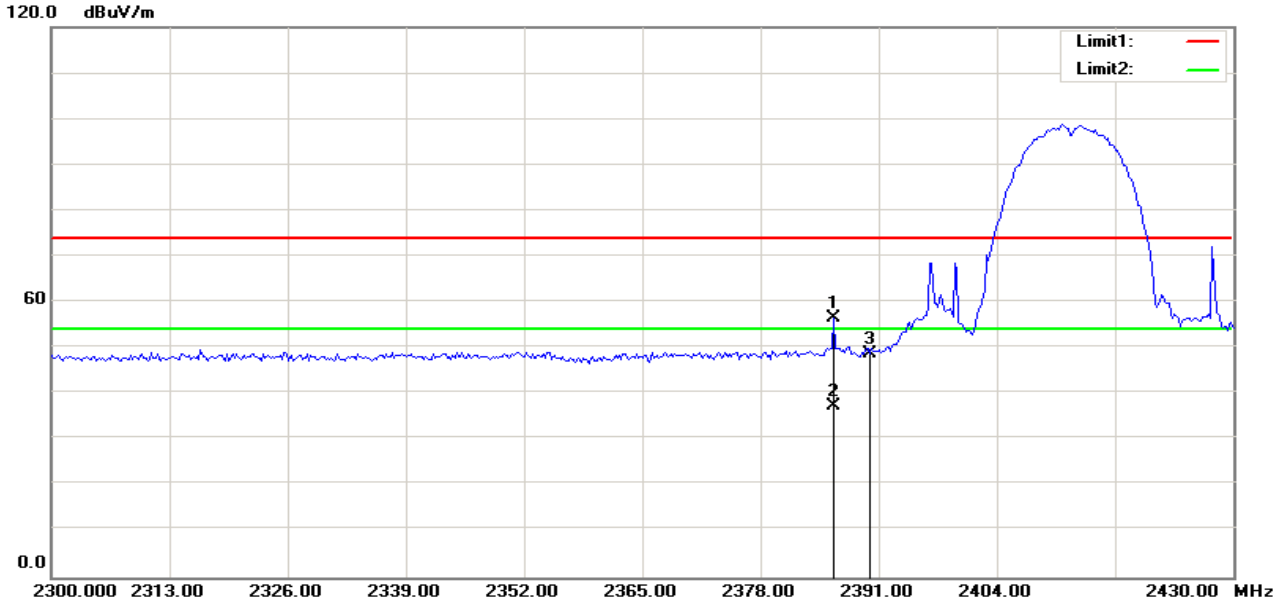
   VBW≧1/T,when duty cycle is less than 98 percent,where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximun power control level for the tested mode of operation.

Band	Duty Cycle(%)	T(s)	1/T(kHz)	VBW Setting
IEEE 802.11 b	97.3	1	0.001	10Hz
IEEE 802.11 g	96.3	0.995	0.001	10Hz
IEEE 802.11n HT20	96.7	0.994	0.001	10Hz

7. Repeat above procedures until the measurements for all frequencies are complete.

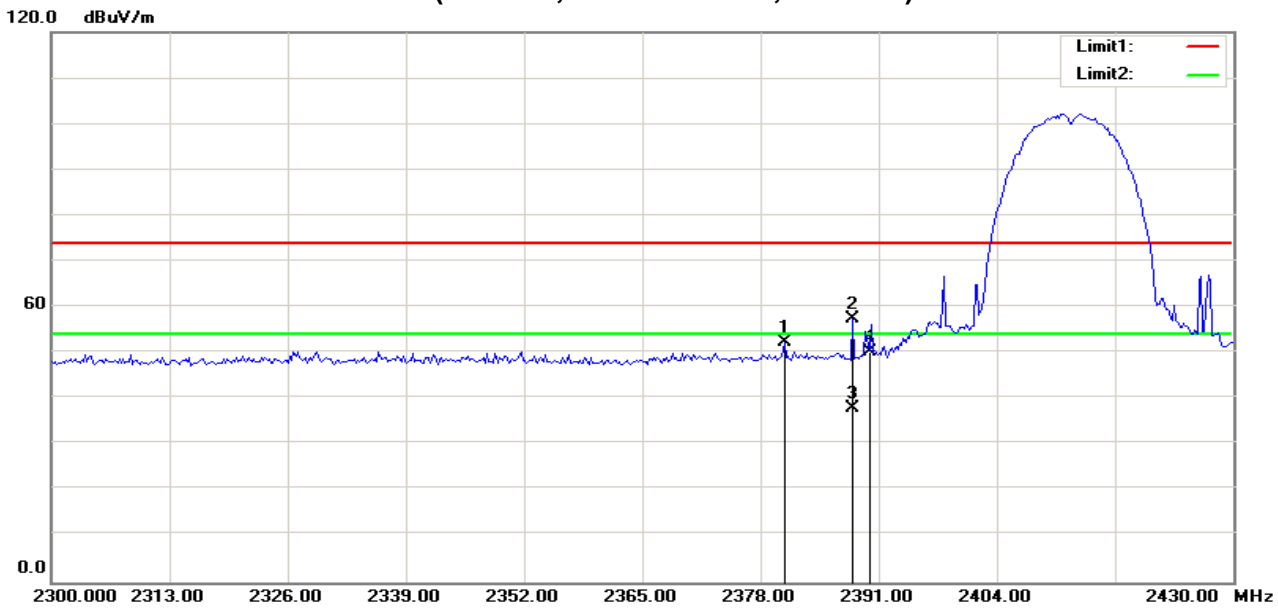
TEST RESULTS

RESTRICTED BANDEDGE (b Mode, Low Channel, Horizontal)



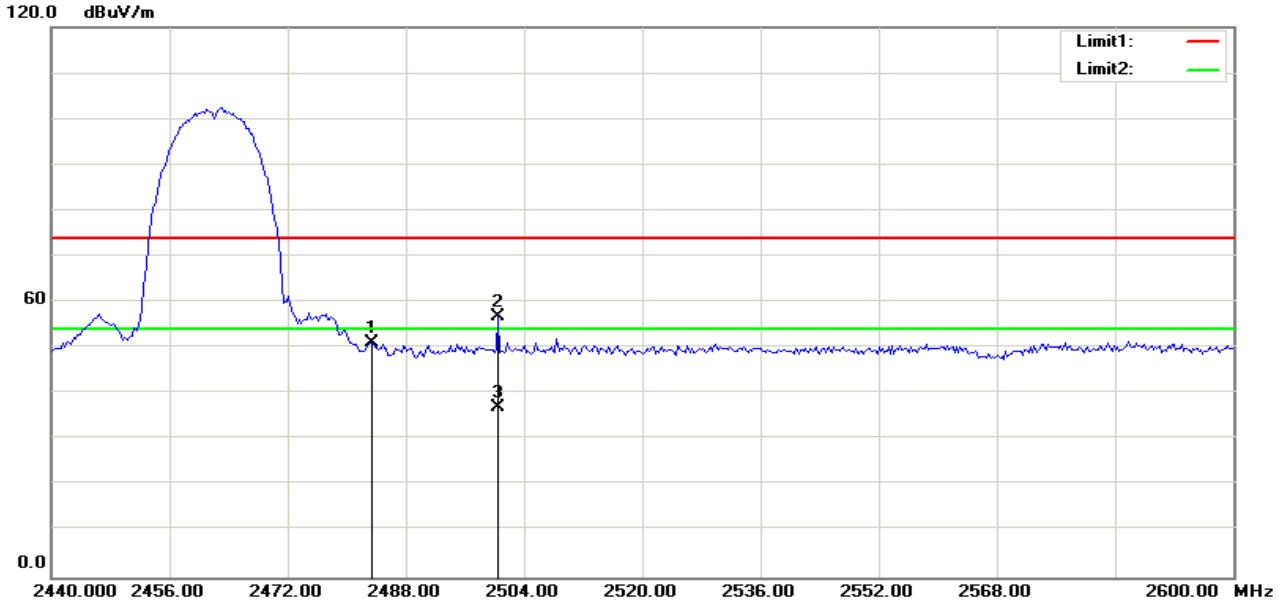
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2386.042	63.84	-7.35	56.49	74.00	-17.51	200	306	peak
2	2386.042	44.74	-7.35	37.39	54.00	-16.61	200	306	AVG
3	2390.000	55.92	-7.31	48.61	74.00	-25.39	100	352	peak

RESTRICTED BANDEDGE (b Mode, Low Channel, Vertical)



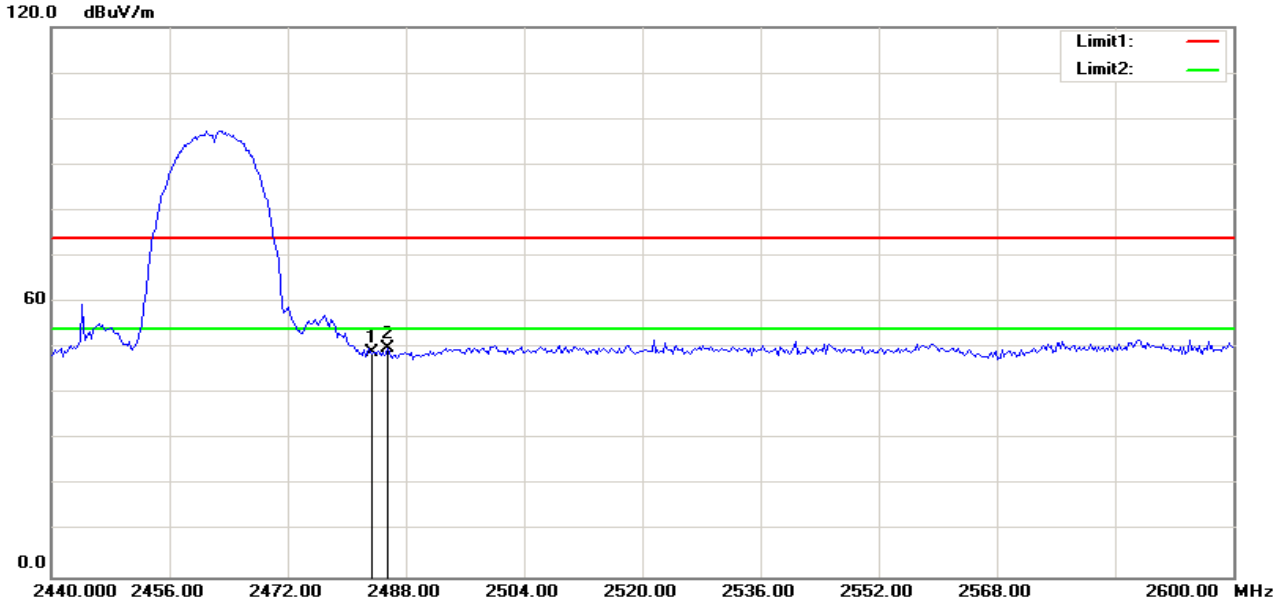
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2380.625	59.89	-7.40	52.49	74.00	-21.51	100	302	peak
2	2388.125	64.67	-7.33	57.34	74.00	-16.66	158	360	peak
3	2388.125	45.25	-7.33	37.92	54.00	-16.08	158	360	AVG
4	2390.000	57.71	-7.31	50.40	74.00	-23.60	100	128	peak

RESTRICTED BANDEDGE (b Mode, High Channel, Horizontal)



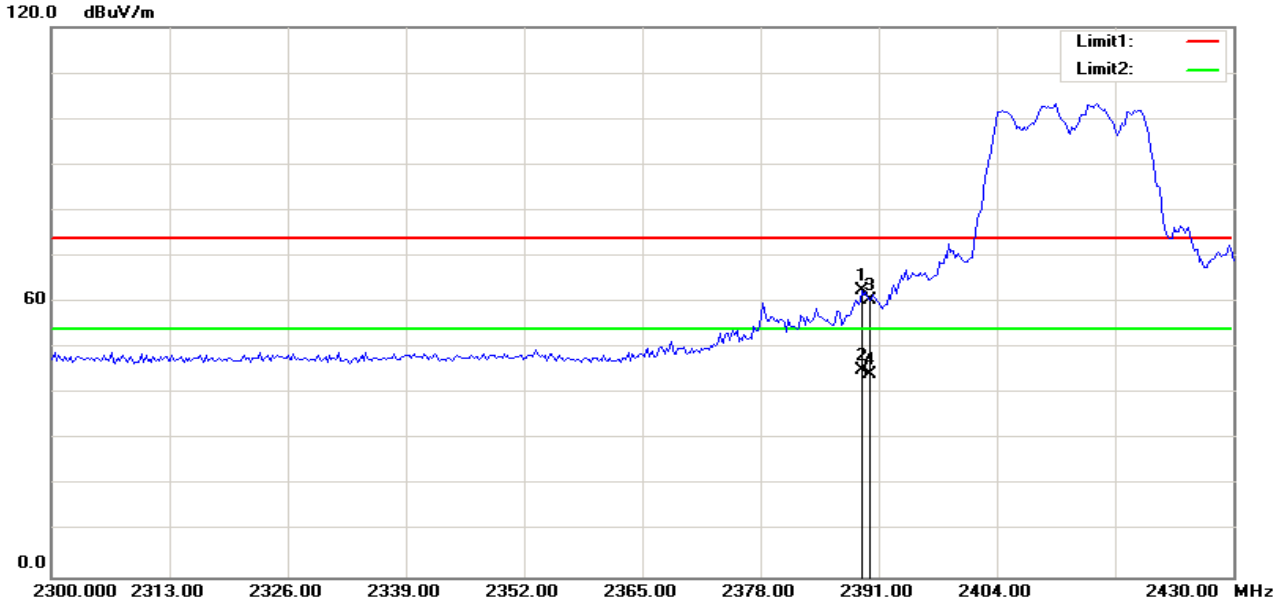
No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	2483.500	57.61	-6.44	51.17	74.00	-22.83	100	293	peak
2	2500.513	63.18	-6.29	56.89	74.00	-17.11	100	274	peak
3	2500.513	43.40	-6.29	37.11	54.00	-16.89	100	274	AVG

RESTRICTED BANDEDGE (b Mode, High Channel, Vertical)



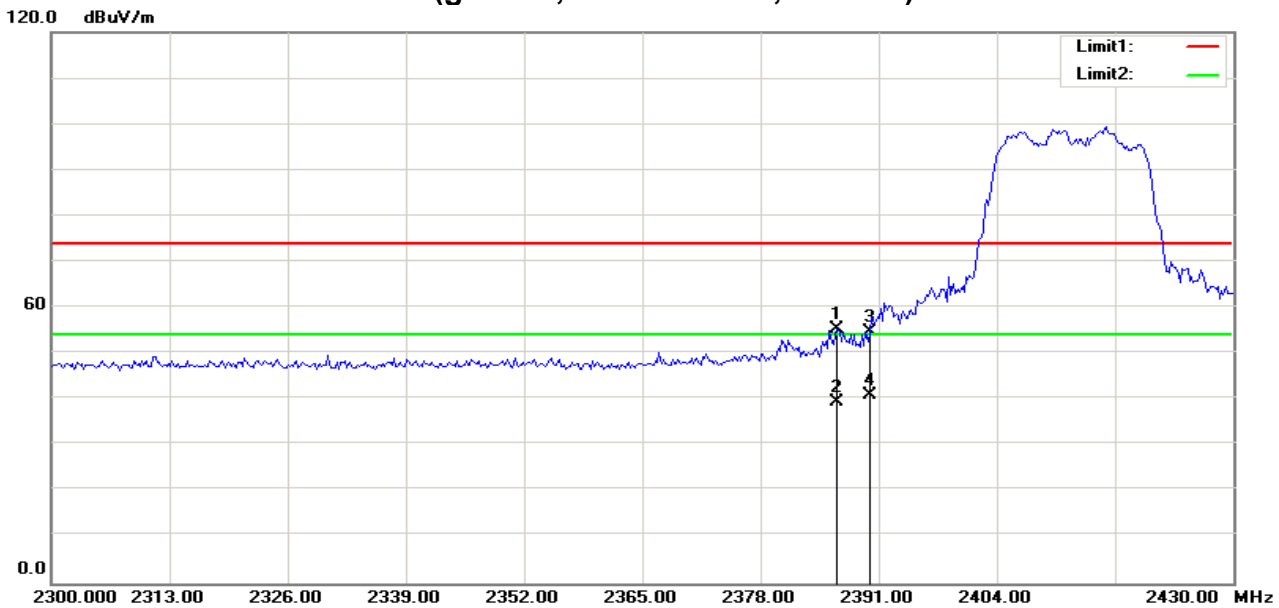
No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	2483.500	55.49	-6.44	49.05	74.00	-24.95	100	189	peak
2	2485.641	56.46	-6.42	50.04	74.00	-23.96	100	163	peak

RESTRICTED BANDEDGE (g Mode, Low Channel, Horizontal)



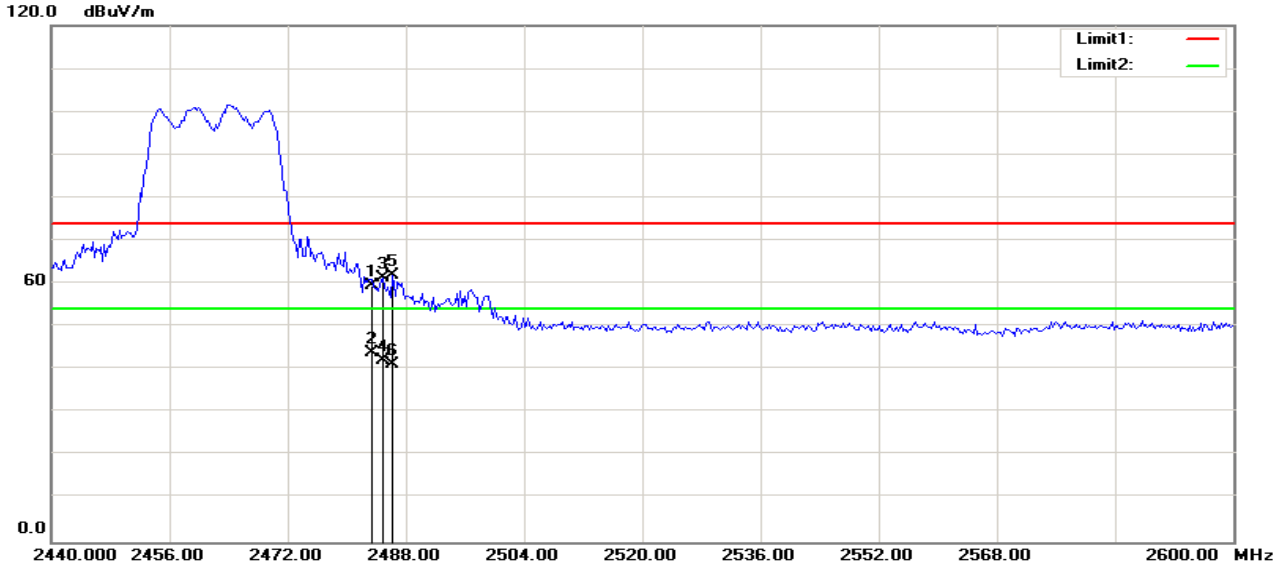
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2389.167	69.75	-7.32	62.43	74.00	-11.57	118	24	peak
2	2389.167	52.55	-7.32	45.23	54.00	-8.77	118	24	AVG
3	2390.000	67.85	-7.31	60.54	74.00	-13.46	100	30	peak
4	2390.000	51.68	-7.31	44.37	54.00	-9.63	100	30	AVG

RESTRICTED BANDEDGE (g Mode, Low Channel, Vertical)



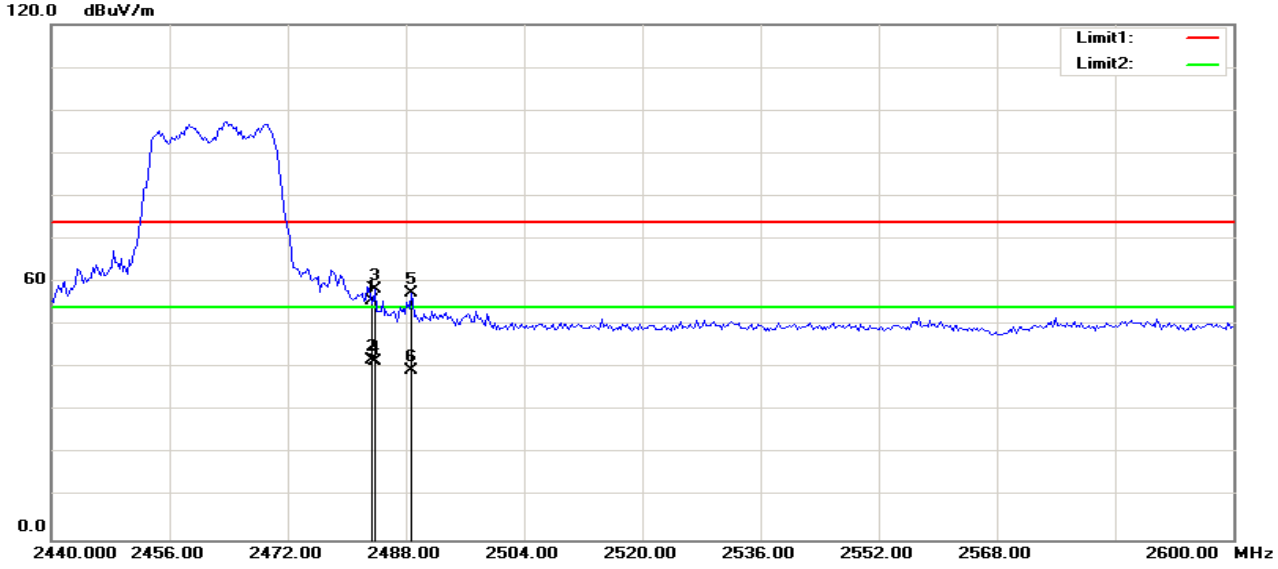
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2386.458	62.65	-7.34	55.31	74.00	-18.69	100	3	peak
2	2386.458	46.94	-7.34	39.60	54.00	-14.40	100	3	AVG
3	2390.000	62.13	-7.31	54.82	74.00	-19.18	100	3	peak
4	2390.000	48.32	-7.31	41.01	54.00	-12.99	100	3	AVG

RESTRICTED BANDEDGE (g Mode, High Channel, Horizontal)



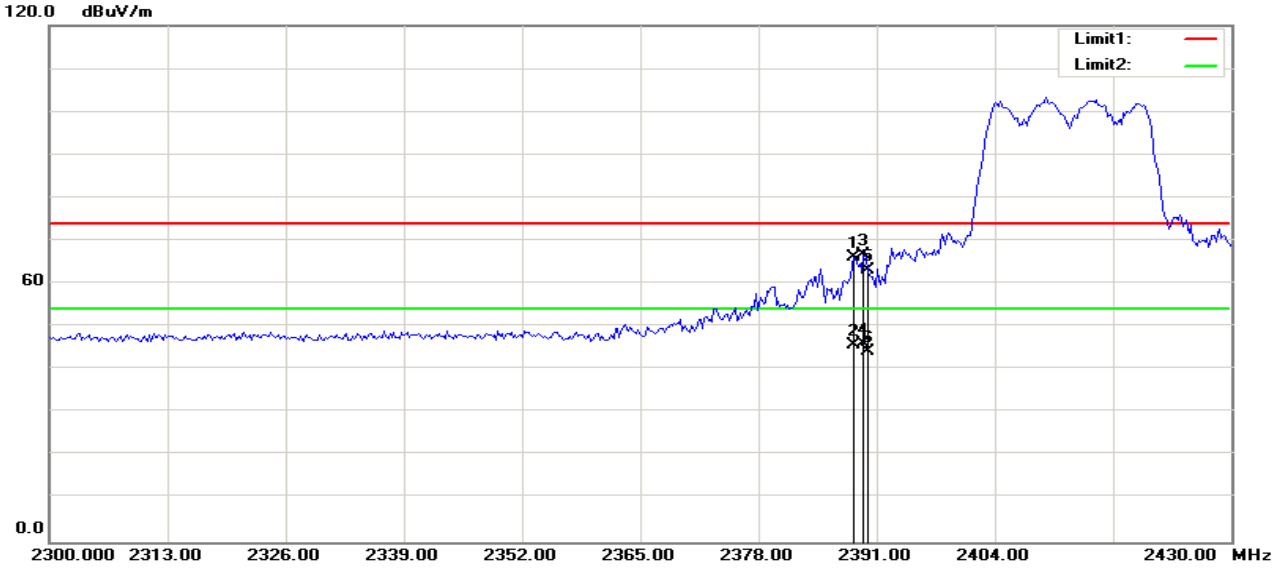
No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	2483.500	66.06	-6.44	59.62	74.00	-14.38	100	274	peak
2	2483.500	50.25	-6.44	43.81	54.00	-10.19	100	274	AVG
3	2484.872	67.84	-6.43	61.41	74.00	-12.59	100	285	peak
4	2484.872	48.73	-6.43	42.30	54.00	-11.70	100	285	AVG
5	2486.154	68.45	-6.42	62.03	74.00	-11.97	100	281	peak
6	2486.154	47.66	-6.42	41.24	54.00	-12.76	100	281	AVG

RESTRICTED BANDEDGE (g Mode, High Channel, Vertical)



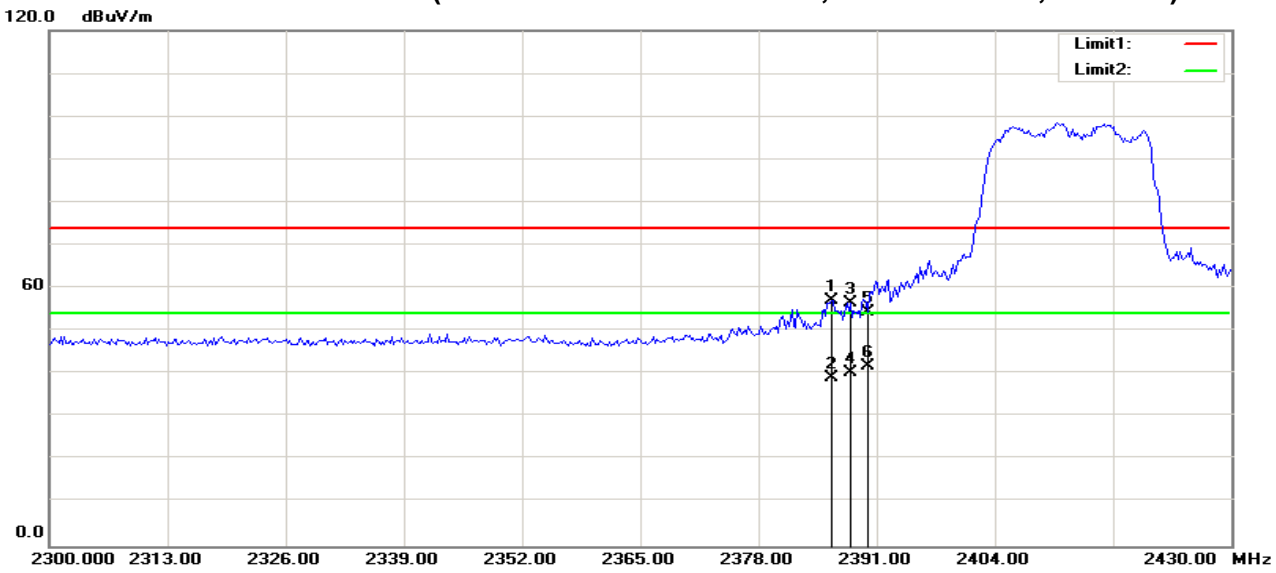
No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	2483.500	62.14	-6.44	55.70	74.00	-18.30	100	134	peak
2	2483.500	48.33	-6.44	41.89	54.00	-12.11	100	134	AVG
3	2483.846	64.80	-6.44	58.36	74.00	-15.64	113	129	peak
4	2483.846	47.99	-6.44	41.55	54.00	-12.45	113	129	AVG
5	2488.718	63.83	-6.39	57.44	74.00	-16.56	100	130	peak
6	2488.718	45.74	-6.39	39.35	54.00	-14.65	100	130	AVG

RESTRICTED BANDEDGE (IEEE 802.11n HT20 mode, Low Channel, Horizontal)



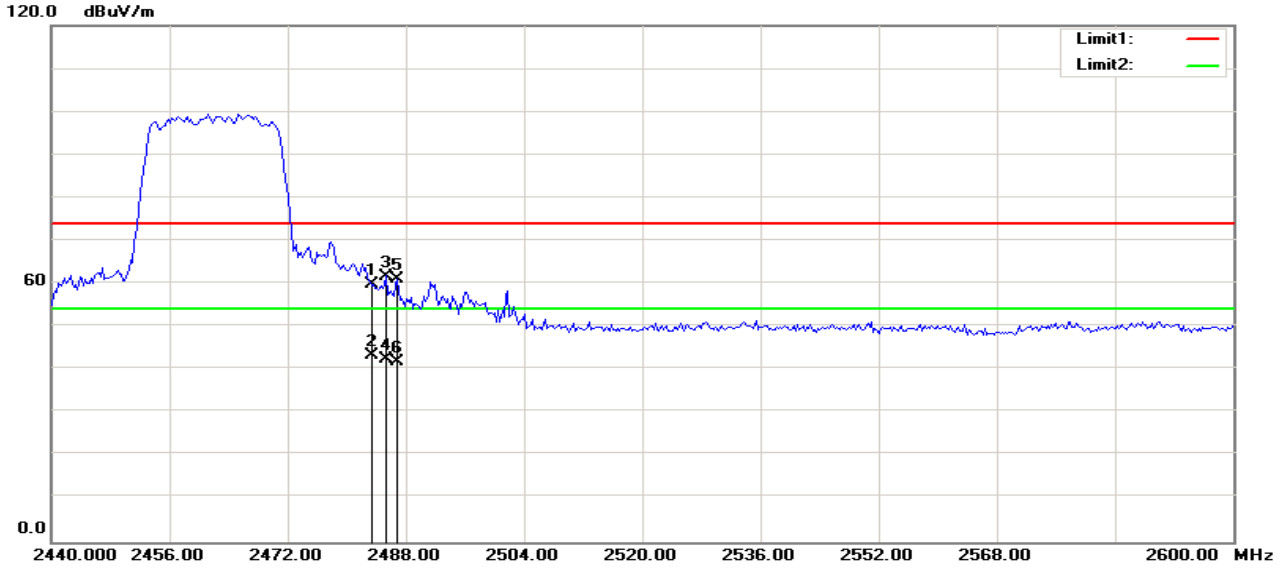
No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	2388.542	73.56	-7.32	66.24	74.00	-7.76	135	28	peak
2	2388.542	53.04	-7.32	45.72	54.00	-8.28	135	28	AVG
3	2389.583	73.97	-7.31	66.66	74.00	-7.34	113	87	peak
4	2389.583	53.37	-7.31	46.06	54.00	-7.94	113	87	AVG
5	2390.000	70.34	-7.31	63.03	74.00	-10.97	133	34	peak
6	2390.000	51.61	-7.31	44.30	54.00	-9.70	133	34	AVG

RESTRICTED BANDEDGE (IEEE 802.11n HT20 mode, Low Channel, Vertical)



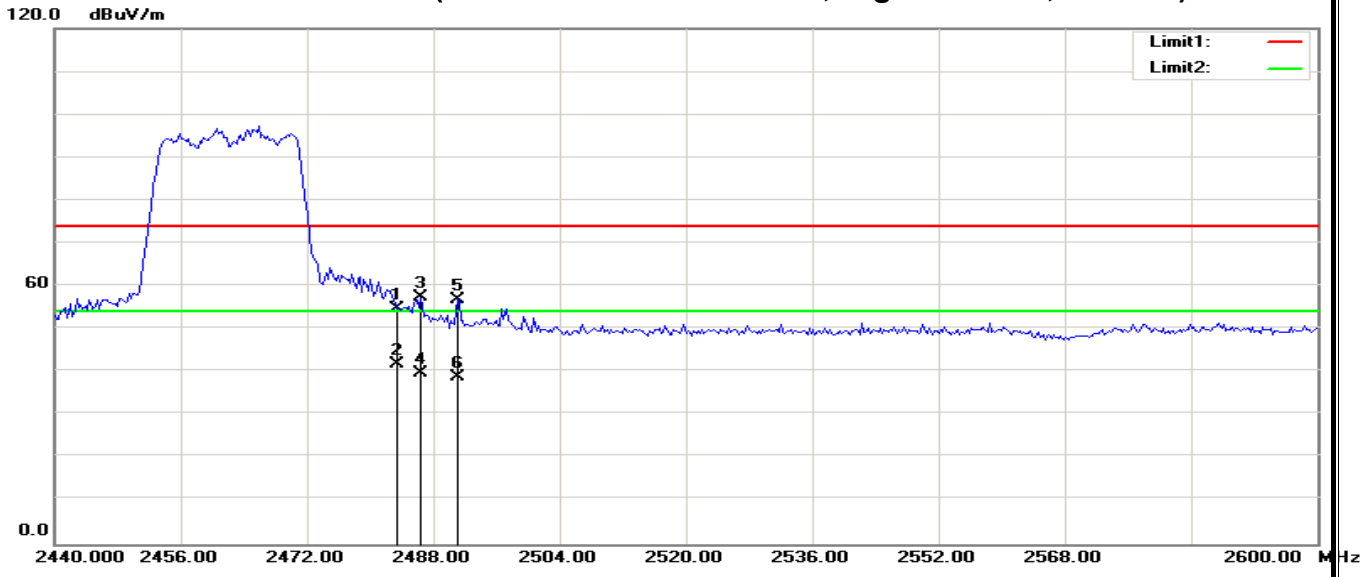
No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	2386.042	64.56	-7.35	57.21	74.00	-16.79	105	54	peak
2	2386.042	46.58	-7.35	39.23	54.00	-14.77	105	54	AVG
3	2388.125	63.97	-7.33	56.64	74.00	-17.36	133	0	peak
4	2388.125	47.58	-7.33	40.25	54.00	-13.75	133	0	AVG
5	2390.000	61.80	-7.31	54.49	74.00	-19.51	100	54	peak
6	2390.000	49.16	-7.31	41.85	54.00	-12.15	100	54	AVG

RESTRICTED BANDEDGE (IEEE 802.11n HT20 mode, High Channel, Horizontal)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	2483.500	66.39	-6.44	59.95	74.00	-14.05	100	271	peak
2	2483.500	49.90	-6.44	43.46	54.00	-10.54	100	271	AVG
3	2485.385	68.23	-6.43	61.80	74.00	-12.20	100	263	peak
4	2485.385	48.85	-6.43	42.42	54.00	-11.58	100	263	AVG
5	2486.923	67.53	-6.41	61.12	74.00	-12.88	100	270	peak
6	2486.923	48.26	-6.41	41.85	54.00	-12.15	100	270	AVG

RESTRICTED BANDEDGE (IEEE 802.11n HT20 mode, High Channel, Vertical)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	2483.500	61.09	-6.44	54.65	74.00	-19.35	133	116	peak
2	2483.500	48.44	-6.44	42.00	54.00	-12.00	133	116	AVG
3	2486.410	63.91	-6.42	57.49	74.00	-16.51	100	133	peak
4	2486.410	46.20	-6.42	39.78	54.00	-14.22	100	133	AVG
5	2491.026	63.37	-6.37	57.00	74.00	-17.00	100	130	peak
6	2491.026	45.23	-6.37	38.86	54.00	-15.14	100	130	AVG

Test Result of Radiated Emission

Below 30MHz

The interference of the frequency value is lower than the limit below 20 db, measured as the background noise values and will not be recorded.

30MHz-1GHz

Operation Mode:	Normal Link	**Test Date:**	2017-11-30
Temperature:	25°C	**Tested by:**	Lily.Wang
Humidity:	48% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
120.0050	V	23.67	12.86	36.53	43.50	-6.97	QP
179.9940	V	26.32	12.86	39.18	43.50	-4.32	QP
351.0700	V	23.04	14.62	37.66	46.00	-8.34	peak
435.4600	V	21.65	17.65	39.30	46.00	-6.70	peak
553.9800	V	18.29	19.86	38.15	46.00	-7.85	QP
791.9930	V	18.55	23.51	42.06	46.00	-3.94	QP
119.2400	H	22.21	12.82	35.03	43.50	-8.47	peak
179.3800	H	23.78	12.90	36.68	43.50	-6.82	peak
239.5200	H	25.71	12.25	37.96	46.00	-8.04	peak
299.6600	H	23.93	13.98	37.91	46.00	-8.09	peak
563.5000	H	16.93	20.13	37.06	46.00	-8.94	peak
791.9840	H	16.87	23.51	40.38	46.00	-5.62	QP

Remark:

1. *Measuring frequencies from 30 MHz to the 1GHz (No emission found between lowest internal used/generated frequency to 30 MHz).*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, 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.*
4. *Margin (dB) = Result (dBuV/m) – Limit (dBuV/m).*

Above 1 GHz

Operation Mode: TX / IEEE 802.11b / CH Low **Test Date:** 2017-11-28

Temperature: 24°C **Tested by:** Lily.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5004.808	43.97	-5.09	38.88	74.00	-35.12	100	160	peak
2	7538.462	41.93	6.59	48.52	74.00	-25.48	100	225	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4923.077	43.23	-5.17	38.06	74.00	-35.94	100	32	peak
2	7293.269	43.03	6.37	49.40	74.00	-24.60	100	29	peak
N/A									

Operation Mode: TX / IEEE 802.11b / CH Mid **Test Date:** 2017-11-28

Temperature: 24°C **Tested by:** Lily.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4841.346	43.89	-5.24	38.65	74.00	-35.35	100	102	peak
2	7252.404	42.41	6.34	48.75	74.00	-25.25	100	81	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4923.077	43.19	-5.17	38.02	74.00	-35.98	100	51	peak
2	7375.000	42.52	6.45	48.97	74.00	-25.03	100	232	peak
N/A									

Operation Mode: TX / IEEE 802.11b / CH High **Test Date:** 2017-11-28

Temperature: 24°C **Tested by:** Lily.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4882.212	43.80	-5.21	38.59	74.00	-35.41	100	226	peak
2	7701.923	42.17	6.74	48.91	74.00	-25.09	100	179	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5290.865	43.14	-3.73	39.41	74.00	-34.59	100	274	peak
2	7701.923	42.09	6.74	48.83	74.00	-25.17	100	62	peak
N/A									

Operation Mode: TX / IEEE 802.11g / CH Low **Test Date:** 2017-11-28

Temperature: 24°C **Tested by:** Lily.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5045.673	43.32	-4.89	38.43	74.00	-35.57	100	249	peak
2	7375.000	43.82	6.45	50.27	74.00	-23.73	100	9	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4923.077	43.04	-5.17	37.87	74.00	-36.13	100	27	peak
2	7088.942	43.40	6.19	49.59	74.00	-24.41	100	313	peak
N/A									

Operation Mode: TX / IEEE 802.11g / CH Mid **Test Date:** 2017-11-28

Temperature: 24°C **Tested by:** Lily.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	4923.077	43.57	-5.17	38.40	74.00	-35.60	100	38	peak
2	7742.788	43.32	6.78	50.10	74.00	-23.90	100	23	peak
N/A									

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	4923.077	42.65	-5.17	37.48	74.00	-36.52	100	223	peak
2	7252.404	43.17	6.34	49.51	74.00	-24.49	100	90	peak
N/A									

Operation Mode: TX / IEEE 802.11g / CH High **Test Date:** 2017-11-28

Temperature: 24°C **Tested by:** Lily.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5004.808	43.37	-5.09	38.28	74.00	-35.72	100	30	peak
2	7742.788	42.16	6.78	48.94	74.00	-25.06	100	360	peak
N/A									

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5045.673	43.13	-4.89	38.24	74.00	-35.76	100	49	peak
2	7415.865	42.21	6.48	48.69	74.00	-25.31	100	296	peak
N/A									

Operation Mode: TX / IEEE 802.11n HT20 mode / CH Low **Test Date:** 2017-11-28

Temperature: 24°C **Tested by:** Lily.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5086.538	43.93	-4.70	39.23	74.00	-34.77	100	296	peak
2	7252.404	42.64	6.34	48.98	74.00	-25.02	100	359	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5045.673	43.84	-4.89	38.95	74.00	-35.05	100	74	peak
2	7293.269	42.82	6.37	49.19	74.00	-24.81	100	173	peak
N/A									

Operation Mode: TX / IEEE 802.11n HT20 mode / CH Mid **Test Date:** 2017-11-28

Temperature: 24°C **Tested by:** Lily.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5045.673	43.21	-4.89	38.32	74.00	-35.68	100	181	peak
2	7252.404	42.17	6.34	48.51	74.00	-25.49	100	312	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4841.346	43.75	-5.24	38.51	74.00	-35.49	100	13	peak
2	7375.000	41.91	6.45	48.36	74.00	-25.64	100	24	peak
N/A									

Operation Mode: TX / IEEE 802.11n HT20 mode / CH High **Test Date:** 2017-11-28

Temperature: 24°C **Tested by:** Lily.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5209.135	43.93	-4.11	39.82	74.00	-34.18	100	166	peak
2	7293.269	43.21	6.37	49.58	74.00	-24.42	100	204	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5168.269	42.61	-4.31	38.30	74.00	-35.70	100	262	peak
2	7661.058	42.41	6.70	49.11	74.00	-24.89	100	25	peak
N/A									

7.6.POWERLINE CONDUCTED EMISSIONS

LIMIT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that 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 the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

** Decreases with the logarithm of the frequency.*

Test Configuration

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

TEST 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.

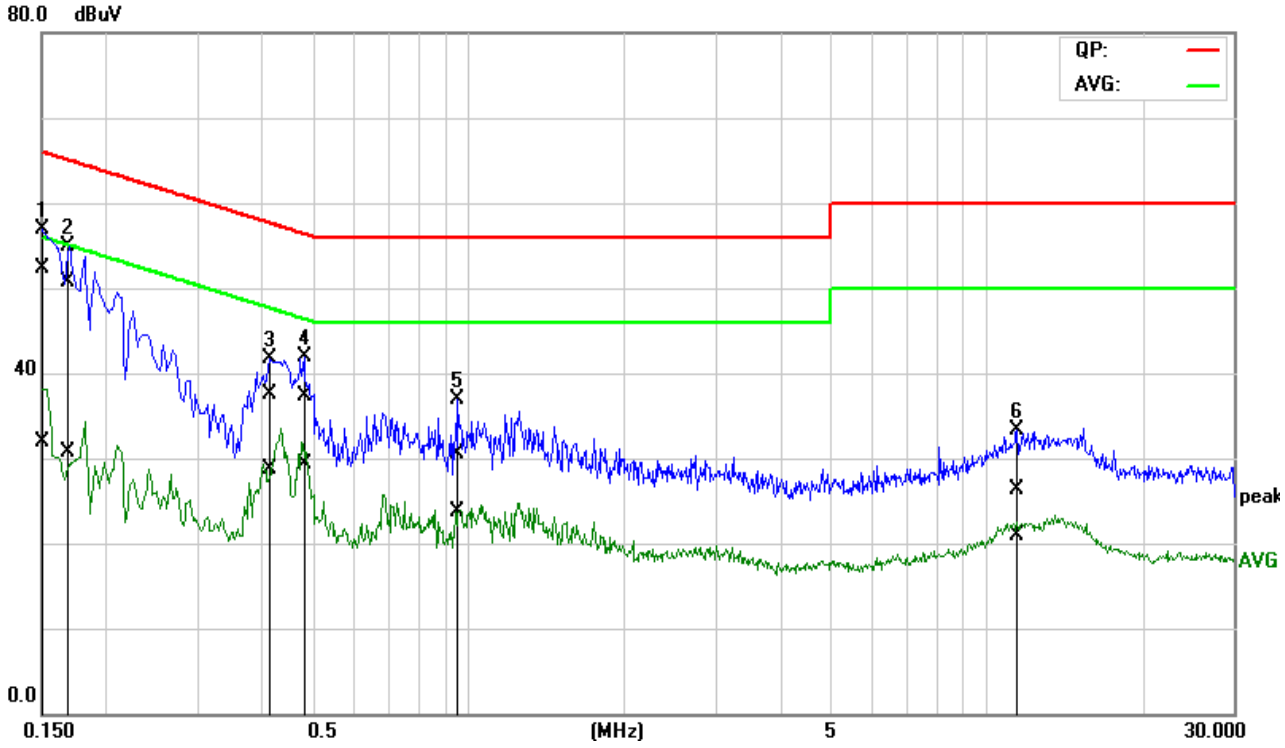
TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

TEST DATA

Job No.:	C171101R02	Date:	2017/11/30
Model No.:	OFR-T1-S	Time:	18:39:30
Standard:	FCC Class B	Temp.(C)/Hum.(%):	22(C)/48%
Test item:	Conduction test	Test By:	Lily.Wang
Line:	L1	Test Voltage:	AC 120V/60Hz
Model:		Description:	

L1

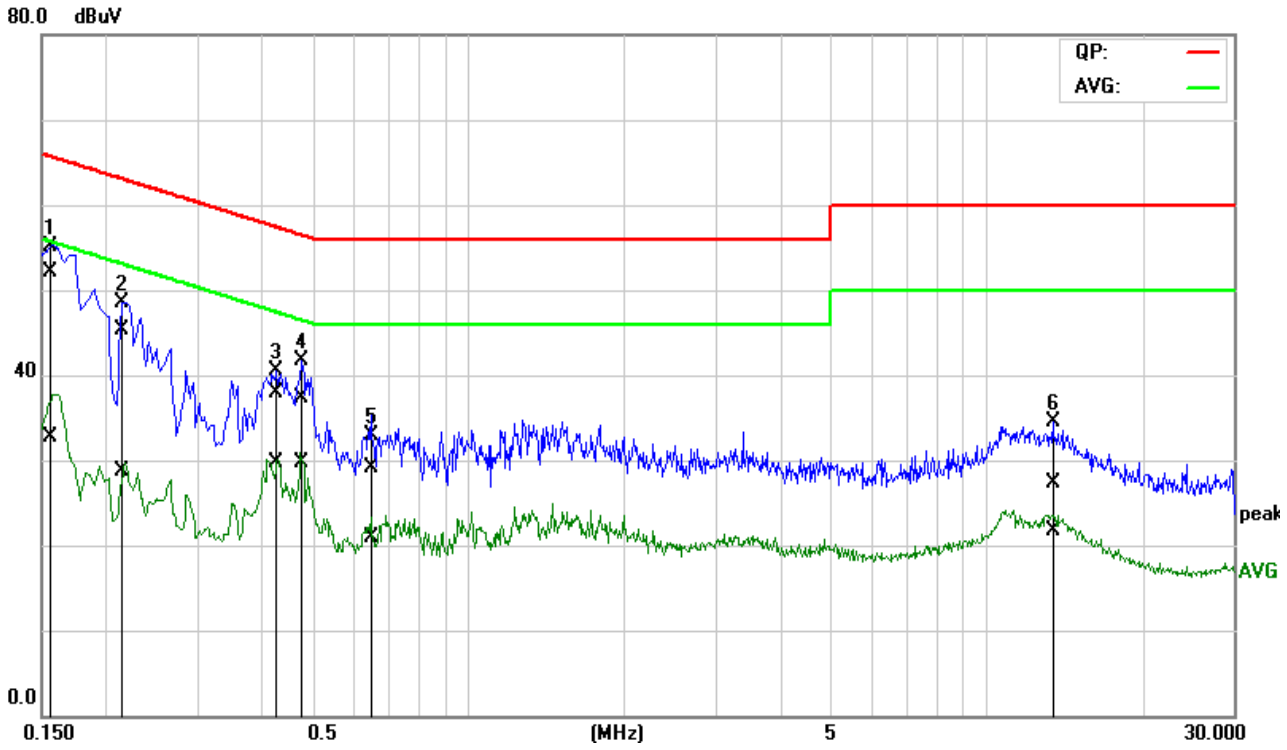


No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1503	31.66	11.35	20.59	52.25	31.94	65.98	55.98	-13.73	-24.04	Pass
2	0.1680	30.05	10.18	20.56	50.61	30.74	65.06	55.06	-14.45	-24.32	Pass
3	0.4144	17.02	8.13	20.53	37.55	28.66	57.56	47.56	-20.01	-18.90	Pass
4	0.4854	16.91	8.75	20.49	37.40	29.24	56.25	46.25	-18.85	-17.01	Pass
5	0.9523	10.09	3.15	20.51	30.60	23.66	56.00	46.00	-25.40	-22.34	Pass
6	11.5150	5.46	0.14	20.81	26.27	20.95	60.00	50.00	-33.73	-29.05	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

Job No.:	C171101R02	Date:	2017/11/30
Model No.:	OFR-T1-S	Time:	18:44:24
Standard:	FCC Class B	Temp.(C)/Hum.(%):	22(C)/48%
Test item:	Conduction test	Test By:	Lily.Wang
Line:	L2	Test Voltage:	AC 120V/60Hz
Model:		Description:	

L2

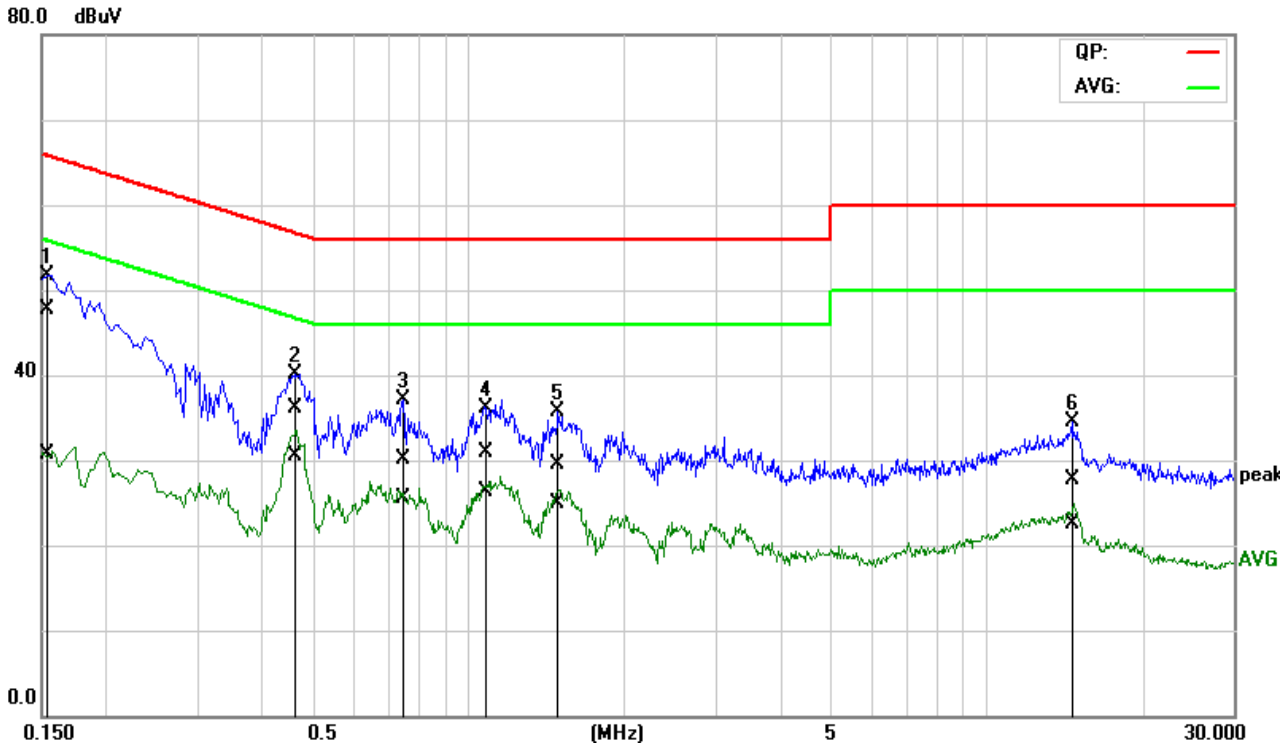


No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1536	31.73	12.29	20.36	52.09	32.65	65.80	55.80	-13.71	-23.15	Pass
2	0.2140	24.88	8.21	20.41	45.29	28.62	63.05	53.05	-17.76	-24.43	Pass
3	0.4279	17.42	9.19	20.45	37.87	29.64	57.29	47.29	-19.42	-17.65	Pass
4	0.4750	16.82	9.20	20.45	37.27	29.65	56.43	46.43	-19.16	-16.78	Pass
5	0.6560	8.71	0.49	20.46	29.17	20.95	56.00	46.00	-26.83	-25.05	Pass
6	13.4910	6.49	0.89	20.85	27.34	21.74	60.00	50.00	-32.66	-28.26	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

Job No.:	C171101R02	Date:	2017/11/30
Model No.:	OFR-T1-S	Time:	18:52:16
Standard:	FCC Class B	Temp.(C)/Hum.(%):	22(C)/48%
Test item:	Conduction test	Test By:	Lily.Wang
Line:	L1	Test Voltage:	AC 240V/60Hz
Model:		Description:	

L1

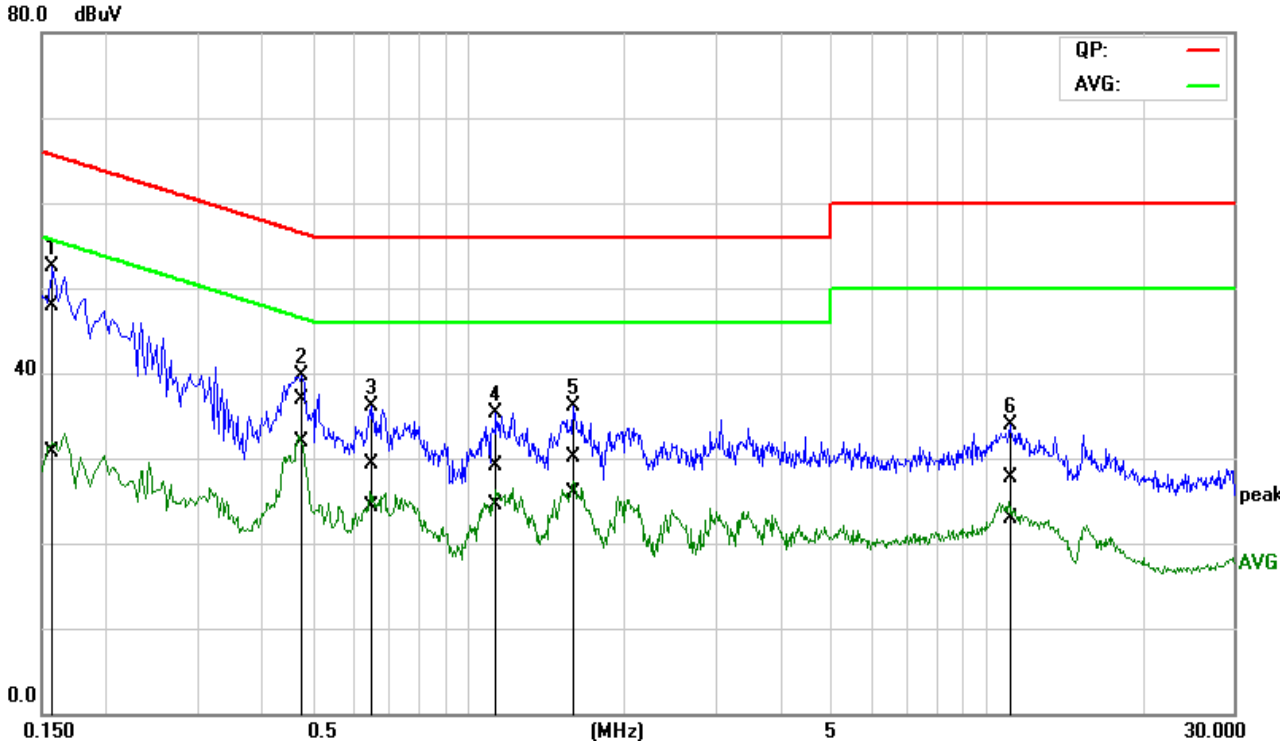


No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1539	27.05	10.11	20.58	47.63	30.69	65.79	55.79	-18.16	-25.10	Pass
2*	0.4599	15.69	9.98	20.49	36.18	30.47	56.69	46.69	-20.51	-16.22	Pass
3	0.7474	9.67	4.93	20.50	30.17	25.43	56.00	46.00	-25.83	-20.57	Pass
4	1.0876	10.46	5.79	20.43	30.89	26.22	56.00	46.00	-25.11	-19.78	Pass
5	1.5002	8.99	4.38	20.45	29.44	24.83	56.00	46.00	-26.56	-21.17	Pass
6	14.5806	6.87	1.77	20.78	27.65	22.55	60.00	50.00	-32.35	-27.45	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

Job No.:	C171101R02	Date:	2017/11/30
Model No.:	OFR-T1-S	Time:	18:58:36
Standard:	FCC Class B	Temp.(C)/Hum.(%):	22(C)/48%
Test item:	Conduction test	Test By:	Lily.Wang
Line:	L2	Test Voltage:	AC 240V/60Hz
Model:		Description:	

L2



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1572	27.45	10.36	20.37	47.82	30.73	65.61	55.61	-17.79	-24.88	Pass
2*	0.4738	16.47	11.38	20.45	36.92	31.83	56.45	46.45	-19.53	-14.62	Pass
3	0.6535	8.82	3.78	20.46	29.28	24.24	56.00	46.00	-26.72	-21.76	Pass
4	1.1141	8.69	4.08	20.46	29.15	24.54	56.00	46.00	-26.85	-21.46	Pass
5	1.5915	9.67	5.33	20.49	30.16	25.82	56.00	46.00	-25.84	-20.18	Pass
6	11.0443	6.81	1.99	20.93	27.74	22.92	60.00	50.00	-32.26	-27.08	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

*Re*mark:

1.The measuring frequencies range between 0.15 MHz and 30 MHz.

2.The emissions measured in the frequency range between 0.15 MHz and 30MHz were made with an instrument using Quasi-peak detector and Average detector.

3."---" denotes the emission level was or more than 2dB below the Average limit, and no re-check was made.

4.The IF bandwidth of SPA between 0.15MHz and 30MHz was 10KHz. The IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9kHz.

END OF REPORT