

FCC PART 15C REPORT FOR CERTIFICATION
On Behalf of

Hui Zhou Gaoshengda Technology Co.,LTD

WIFI+BT Module

Model Number: WKXT01M2501

FCC ID: 2AC23-WKXT01

Prepared for:	Hui Zhou Gaoshengda Technology Co.,LTD
	NO.75 Zhongkai Development Area, Huizhou, Guangdong, China
Prepared By:	EST Technology Co., Ltd.
	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China
	Tel: 86-769-83081888-808

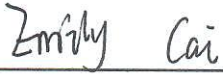
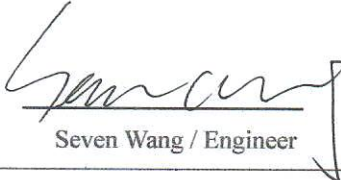
Report Number:	ESTE-R2201220
Date of Test:	Dec. 17, 2021~Jan. 18, 2022
Date of Report:	Jan. 20, 2022

TABLE OF CONTENTS

Description	Page
TEST REPORT VERIFICATION.....	3
1. GENERAL INFORMATION.....	5
1.1. Description of Device (EUT)	5
1.2. Antenna Information	6
2. SUMMARY OF TEST	7
2.1. Summary of test result.....	7
2.2. Test Facilities	8
2.3. Measurement uncertainty	9
2.4. Assistant equipment used for test.....	9
2.5. Block Diagram	9
2.6. Test Mode.....	10
2.7. Power Setting of Test Software.....	12
2.8. Duty Cycle.....	12
2.9. Channel List	16
2.10. Test Equipment List	17
7. 6dB BANDWIDTH.....	18
7.1. Limit	18
7.2. Test Setup.....	18
7.3. Spectrum Analyzer Setting.....	18
7.4. Test Procedure.....	18
7.5. Test Result.....	19
8. MAXIMUM PEAK OUTPUT POWER.....	29
8.1. Limit	29
8.2. Test Setup.....	29
8.3. Spectrum Analyzer Setting.....	29
8.4. Test Procedure.....	29
8.5. Test Result.....	30
9. POWER SPECTRAL DENSITY	49
9.1. Limit	49
9.2. Test Setup.....	49
9.3. Spectrum Analyzer Setting.....	49
9.4. Test Procedure.....	49
9.5. Test Result.....	50
10. CONDUCTED BAND EDGE	69
10.1. Limit	69
10.2. Test Setup.....	69
10.3. Spectrum Analyzer Setting.....	69
10.4. Test Procedure.....	69
10.5. Test Result.....	70
11. CONDUCTED SPURIOUS EMISSIONS.....	71
11.1. Limit	71
11.2. Test Setup.....	71
11.3. Spectrum Analyzer Setting.....	71
11.4. Test Procedure.....	71

11.5. Test Result.....	72
12. RADIATED SPURIOUS EMISSIONS AND BAND EDGE	74
12.1. Limit.....	74
12.2. Test Setup.....	75
12.3. Spectrum Analyzer Setting.....	76
12.4. Test Procedure.....	77
12.5. Test Result.....	78
13. AC POWER LINE CONDUCTED EMISSIONS	90
13.1. Limit.....	90
13.2. Test Setup.....	90
13.3. Spectrum Analyzer Setting.....	90
13.4. Test Procedure.....	90
13.5. Test Result.....	91
14. ANTENNA REQUIREMENTS.....	95
14.1. Limit.....	95
14.2. Test Result.....	95
15. TEST SETUP PHOTO	96
16. EUT PHOTO.....	98

EST Technology Co., Ltd.

Applicant:	Hui Zhou Gaoshengda Technology Co.,LTD		
Address:	NO.75 Zhongkai Development Area, Huizhou, Guangdong, China		
Manufacturer:	Hui Zhou Gaoshengda Technology Co.,LTD		
Address:	NO.75 Zhongkai Development Area, Huizhou, Guangdong, China		
Factory:	Hui Zhou Gaoshengda Technology Co., Ltd		
Address:	No. 2, Jin-da Road, Huinan High-tech Industrial Park, Hui-ao Avenue, Huizhou City, Guangdong, China		
E.U.T:	WIFI+BT Module		
Model Number:	WKXT01M2501		
Power Supply:	DC 3.3V From PC		
Trade Name:	GSD	Serial No.:	-----
Date of Receipt:	Dec. 17, 2021	Date of Test:	Dec. 17, 2021~Jan. 18, 2022
Test Specification:	FCC Part 15 Subpart C (15.247) ANSI C63.10:2013 FCC KDB 558074 D01 15.247 Meas Guidance v05r02 FCC KDB 662911 D01 Multiple Transmitter Output v02r01		
Test Result:	The device described above is tested by EST Technology Co., Ltd. The measurement results were contained in this test report and EST Technology Co., Ltd. was assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliance with the FCC Rules and Regulations Part 15 Subpart C requirements. This report applies to above tested sample only and shall not be reproduced in part without written approval of EST Technology Co., Ltd.		
Prepared by:	Reviewed by:	Date: Jan. 20, 2022	
 Emily Cai / Assistant	 Seven Wang / Engineer	 Approved by:  Iceman Hu / Manager	
Other Aspects:	None.		
Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested			
This test report is based on a single evaluation of one sample of above mentioned products ,It is not permitted to be duplicated in extracts without written approval of EST Technology Co., Ltd.			

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Product Name	:	WIFI+BT Module
Model Number	:	WKXT01M2501
Software Version	:	V1.0
Hardware Version	:	V1.0
Operation frequency	:	2412MHz~2462MHz 2422MHz~2452MHz
Number of channel	:	IEEE 802.11b: 11 Channels IEEE 802.11g: 11 Channels IEEE 802.11n HT20: 11 Channels IEEE 802.11n HT40: 7 Channels IEEE 802.11ax HE20: 11 Channels IEEE 802.11ax HE40: 7 Channels
Max Output Power (PEAK)	:	IEEE 802.11b: 17.62dBm IEEE 802.11g: 22.67dBm IEEE 802.11n HT20: 25.49dBm IEEE 802.11n HT40: 25.57dBm IEEE 802.11ax HE20: 25.39dBm IEEE 802.11ax HE40: 25.50dBm
Modulation Type	:	IEEE 802.11b mode: DSSS(CCK,QPSK, BPSK) IEEE 802.11g mode: OFDM (BPSK/QPSK/16QAM/64QAM) IEEE 802.11n mode: OFDM (BPSK/QPSK/16QAM/64QAM) IEEE 802.11ax mode: OFDM (BPSK/QPSK/16QAM/64QAM/ 1024QAM)
Sample Type	:	Prototype production

Note:

For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

1.2. Antenna Information

Ant No.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	-	-	PCB	-	1.5
2	-	-	PCB	-	1.5

Note:

1. The EUT has two antennas, the antennas can support SISO function in IEEE 802.11b and IEEE 802.11g, and can support MIMO function in IEEE 802.11n and IEEE 802.11ax.
2. The EUT can work as CDD mode in IEEE 802.11n HT20 and IEEE 802.11n HT40, and IEEE 802.11ax can operate with one spatial stream.
3. According to ANSI C63.10:2013 14.4.3.2.5 a):
 $\text{Directional gain} = 1.5\text{dBi} + 10 \times \log(2/1)\text{dB} = 4.51\text{dBi} < 6\text{dBi}$
 So, the output power limit and power spectral density do not need to be reduced.
4. After pre-test all antenna configurations, the worst case configuration is listed below.

TX Mode \ ANT No.	SISO Configuration	MIMO Configuration
IEEE 802.11b	ANT 1 and Ant 2	/
IEEE 802.11g	ANT 1 and Ant 2	/
IEEE 802.11n HT20	/	ANT1+ANT2
IEEE 802.11n HT40	/	ANT1+ANT2
IEEE 802.11ax HE20		ANT1+ANT2
IEEE 802.11ax HE40		ANT1+ANT2

2. SUMMARY OF TEST

2.1. Summary of test result

Report Section	Description of Test Item	FCC Standard Section	Results
3	6dB Bandwidth	15.247(a)(2)	PASS
4	Maximum Peak Output Power	15.247(b)(3)	PASS
5	Power Spectral Density	15.247(e)	PASS
6	Conducted Band Edge	15.247(d)	PASS
7	Conducted Spurious Emissions	15.247(d)	PASS
8	Radiated Spurious Emissions and Band Edge	15.205 15.209 15.247(d)	PASS
9	AC Power Line Conducted Emissions	15.207	PASS
10	Antenna Requirement	15.203	PASS

Note:

(1) "N/A" denotes test is not applicable in this test report

2.2. Test Facilities

EMC Lab : Certificated by CNAS, CHINA
Registration No.: L5288
This Certificate is valid until: November 12, 2023

Certificated by FCC, USA
Designation Number: CN1215
This Certificate is valid until: January 31, 2022

Certificated by A2LA, USA
Registration No.: 4366.01
This Certificate is valid until: January 31, 2022

Certificated by Industry Canada
CAB identifier No.: CN0035
This Certificate is valid until: January 31, 2022

Certificated by VCCI, Japan
Registration No.: C-14103; T-20073; R-13663;
R-20103; G-20097
Date of registration: Apr. 20, 2020
This Certificate is valid until: Apr. 19, 2023

Certificated by TUV Rheinland, Germany
Registration No.: UA 50413872 0001
Date of registration: July 31, 2018

Certificated by Intertek
Registration No.: 2011-RTL-L2-64
Date of registration: November 08, 2018

Name of Firm : EST Technology Co., Ltd.

Site Location : Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China

2.3. Measurement uncertainty

Test Item	Uncertainty
Uncertainty for Conduction emission test	$\pm 3.48\text{dB}$
Uncertainty for spurious emissions test (30MHz-1GHz)	$\pm 4.60\text{ dB(Polarize: H)}$
	$\pm 4.68\text{ dB(Polarize: V)}$
Uncertainty for spurious emissions test (1GHz to 25GHz)	$\pm 4.96\text{dB}$
Uncertainty for radio frequency	7×10^{-8}
Uncertainty for conducted RF Power	0.20dB
Uncertainty for Power density test	0.26dB

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2.4. Assistant equipment used for test

Item	Equipment	Brand	Model Name/Type No.	FCC ID	Series No.
A	Notebook	-	Thinkpad X280	-	-

Item	Shielded Type	Ferrite Core	Length	Note
-	-	-	-	-

2.5. Block Diagram

For radiated emissions test: EUT was placed on a turn table, which is 0.8 (or 1.5) meter high above ground. EUT was beset into 2.4G WIFI test mode by software before test.



DC 3.3V From PC

(EUT: WIFI+BT Module)

2.6. Test Mode

The test mode was selected for the final test as listed below.

Test Item	Mode	Date Rate	Test Channel
6dB Bandwidth	IEEE 802.11b	1Mbps	Low/Middle/High
	IEEE 802.11g	6Mbps	Low/Middle/High
	IEEE 802.11n HT20	MCS0	Low/Middle/High
	IEEE 802.11ax HE20	MCS0	Low/Middle/High
	IEEE 802.11n HT40	MCS0	Low/Middle/High
	IEEE 802.11ax HE40	MCS0	Low/Middle/High
Maximum Peak Output Power	IEEE 802.11b	1Mbps	Low/Middle/High
	IEEE 802.11g	6Mbps	Low/Middle/High
	IEEE 802.11n HT20	MCS0	Low/Middle/High
	IEEE 802.11ax HE20	MCS0	Low/Middle/High
	IEEE 802.11n HT40	MCS0	Low/Middle/High
	IEEE 802.11ax HE40	MCS0	Low/Middle/High
Power Spectral Density	IEEE 802.11b	1Mbps	Low/Middle/High
	IEEE 802.11g	6Mbps	Low/Middle/High
	IEEE 802.11n HT20	MCS0	Low/Middle/High
	IEEE 802.11ax HE20	MCS0	Low/Middle/High
	IEEE 802.11n HT40	MCS0	Low/Middle/High
	IEEE 802.11ax HE40	MCS0	Low/Middle/High
Conducted Band Edge	IEEE 802.11b	1Mbps	Low/High
	IEEE 802.11g	6Mbps	Low/High
	IEEE 802.11n HT20	MCS0	Low/High
	IEEE 802.11ax HE20	MCS0	Low/High
	IEEE 802.11n HT40	MCS0	Low/High
	IEEE 802.11ax HE40	MCS0	Low/High
Conducted Spurious Emissions	IEEE 802.11b	1Mbps	Low/Middle/High
	IEEE 802.11g	6Mbps	Low/Middle/High
	IEEE 802.11n HT20	MCS0	Low/Middle/High
	IEEE 802.11ax HE20	MCS0	Low/Middle/High
	IEEE 802.11n HT40	MCS0	Low/Middle/High
	IEEE 802.11ax HE40	MCS0	Low/Middle/High

Radiated Spurious Emissions(Below 1GHz)	IEEE 802.11b	1Mbps	Low/Middle/High
	IEEE 802.11g	6Mbps	Low/Middle/High
	IEEE 802.11n HT20	MCS0	Low/Middle/High
	IEEE 802.11ax HE20	MCS0	Low/Middle/High
	IEEE 802.11n HT40	MCS0	Low/Middle/High
	IEEE 802.11ax HE40	MCS0	Low/Middle/High
Radiated Spurious Emissions(Above 1GHz)	IEEE 802.11b	1Mbps	Low/Middle/High
	IEEE 802.11g	6Mbps	Low/Middle/High
	IEEE 802.11n HT20	MCS0	Low/Middle/High
	IEEE 802.11ax HE20	MCS0	Low/Middle/High
	IEEE 802.11n HT40	MCS0	Low/Middle/High
	IEEE 802.11ax HE40	MCS0	Low/Middle/High
Radiated Band Edge	IEEE 802.11b	1Mbps	Low/High
	IEEE 802.11g	6Mbps	Low/High
	IEEE 802.11n HT20	MCS0	Low/High
	IEEE 802.11ax HE20	MCS0	Low/High
	IEEE 802.11n HT40	MCS0	Low/High
	IEEE 802.11ax HE40	MCS0	Low/High
AC Power Line Conducted Emissions	IEEE 802.11b	1Mbps	Low/Middle/High
	IEEE 802.11g	6Mbps	Low/Middle/High
	IEEE 802.11n HT20	MCS0	Low/Middle/High
	IEEE 802.11ax HE20	MCS0	Low/Middle/High
	IEEE 802.11n HT40	MCS0	Low/Middle/High
	IEEE 802.11ax HE40	MCS0	Low/Middle/High

Note:

1. The test mode was selected for the final test as listed below.
2. In radiated measurement, the EUT had been pre-scan on the positioned of each 3 axis(X,Y,Z), the worst case was found when positioned on X-plane.

2.7. Power Setting of Test Software

Software Name	QATool_Dbg.exe		
Frequency(MHz)	2412	2437	2462
IEEE 802.11b Setting	16.5/15.5	16.5/15.5	16.5/15.5
IEEE 802.11g Setting	16/14	16/14	16/14
IEEE 802.11n HT20 Setting	15.5/14	15.5/14	15.5/14
IEEE 802.11ax HE20 Setting	15.5/14.5	15.5/14.5	15.5/14.5
Frequency(MHz)	2422	2437	2452
IEEE 802.11n HT40 Setting	15.5/13.5	15.5/13.5	15.5/13.5
IEEE 802.11ax HE40 Setting	13.5/12	13.5/12	13.5/12

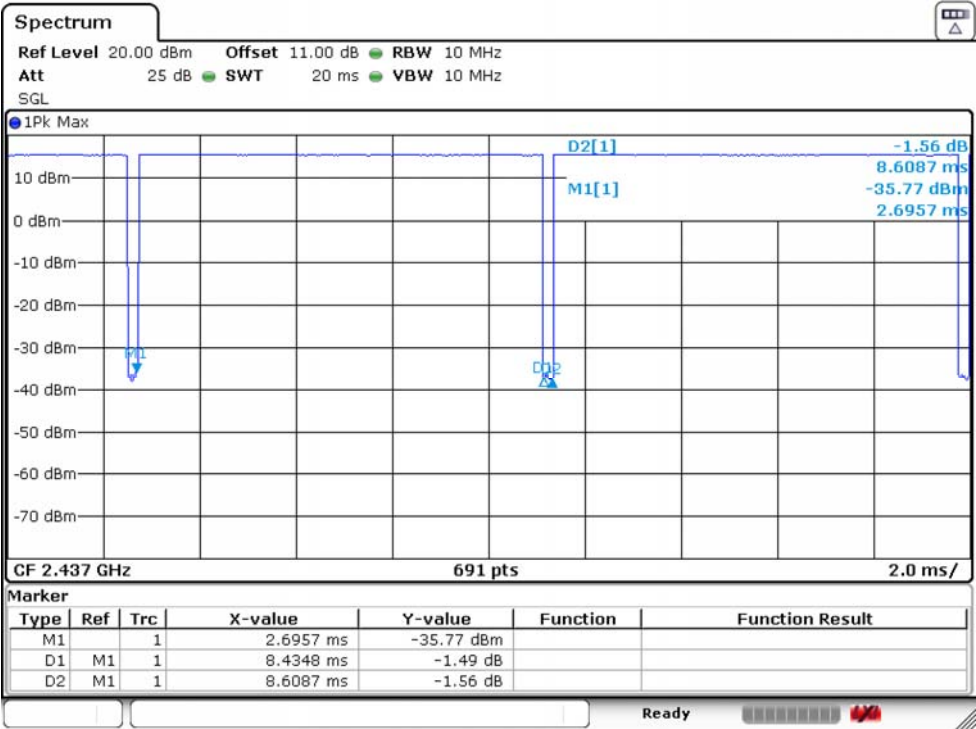
2.8. Duty Cycle

Temperature	23.6℃	Relative Humidity	56%	Test Voltage	DC 3.3V
Mode	Fre(MHz)	On time(ms)	Total Time(ms)	Duty Cycle	Duty Factor
IEEE 802.11b	2437	8.43480	8.60870	97.98%	0.09
IEEE 802.11g	2437	1.41304	1.63043	86.67%	0.62
IEEE 802.11n HT20	2437	1.31159	1.51449	86.60%	0.62
IEEE 802.11n HT40	2437	0.65797	0.88406	74.43%	1.28
IEEE 802.11ax HE20	2437	1.04348	1.26087	82.76%	0.82
IEEE 802.11ax HE40	2437	0.31884	0.52536	60.69%	2.17

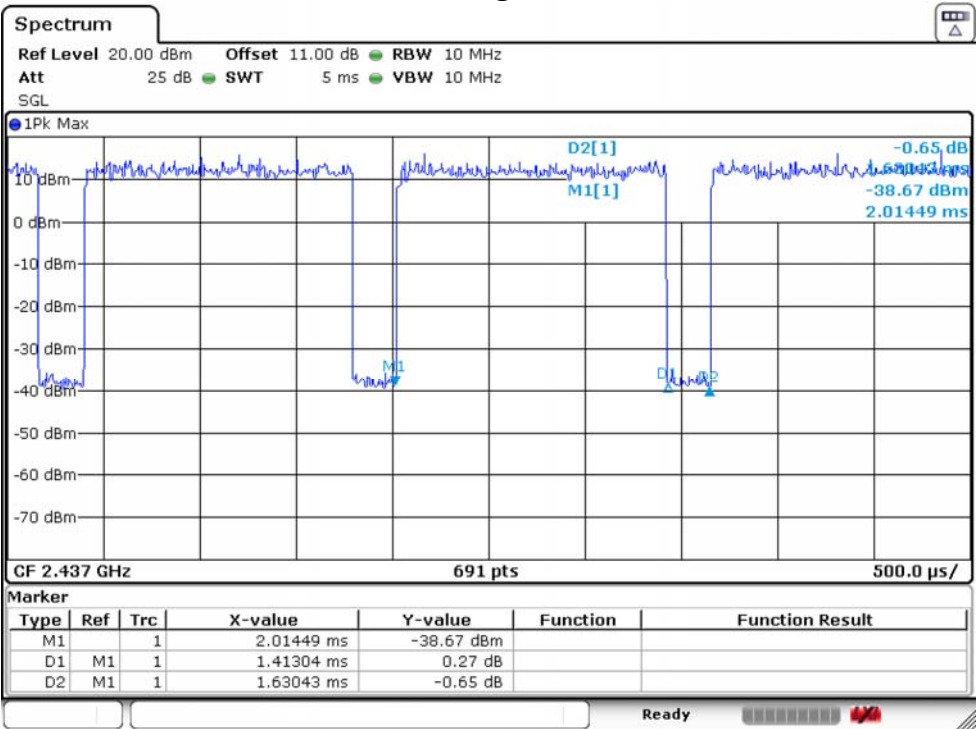
Note:

1. If duty cycle <98 %, the conducted average output power and average power spectral density should be add duty factor.
2. If duty cycle $\geq$ 98 %,the EUT is consider to be transmitting continuously,the conducted average output power and average power spectral density no need to add duty factor(consider to be zero).
3. The conducted peak output power and peak power spectral density no need to consider duty factor.
4. The on-time time is transmission duration(T).

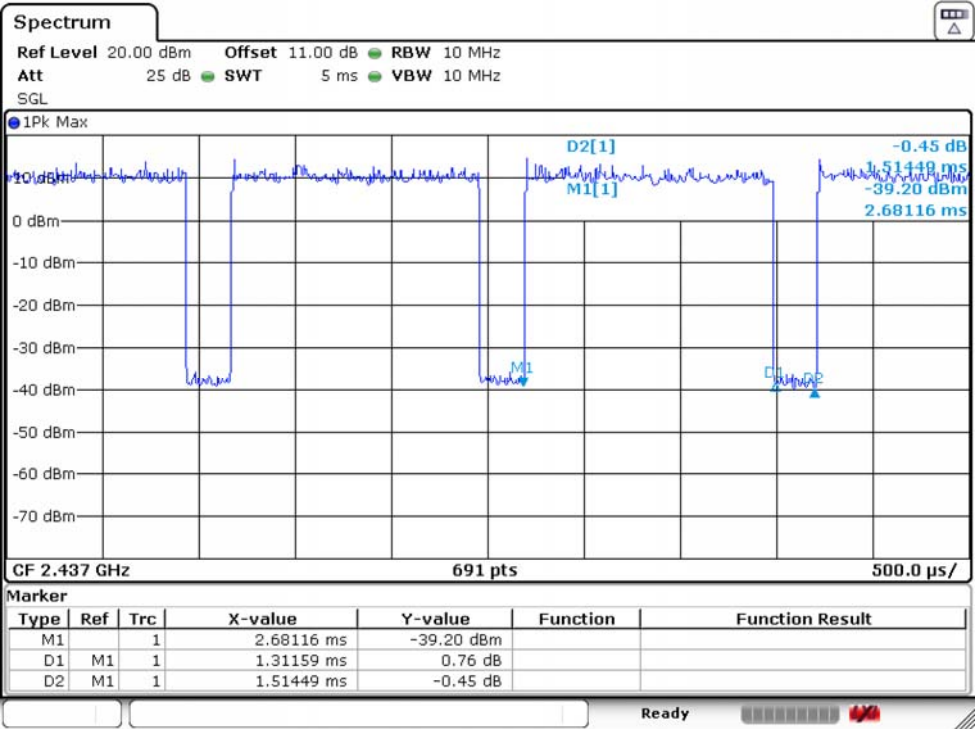
IEEE 802.11b 2437MHz



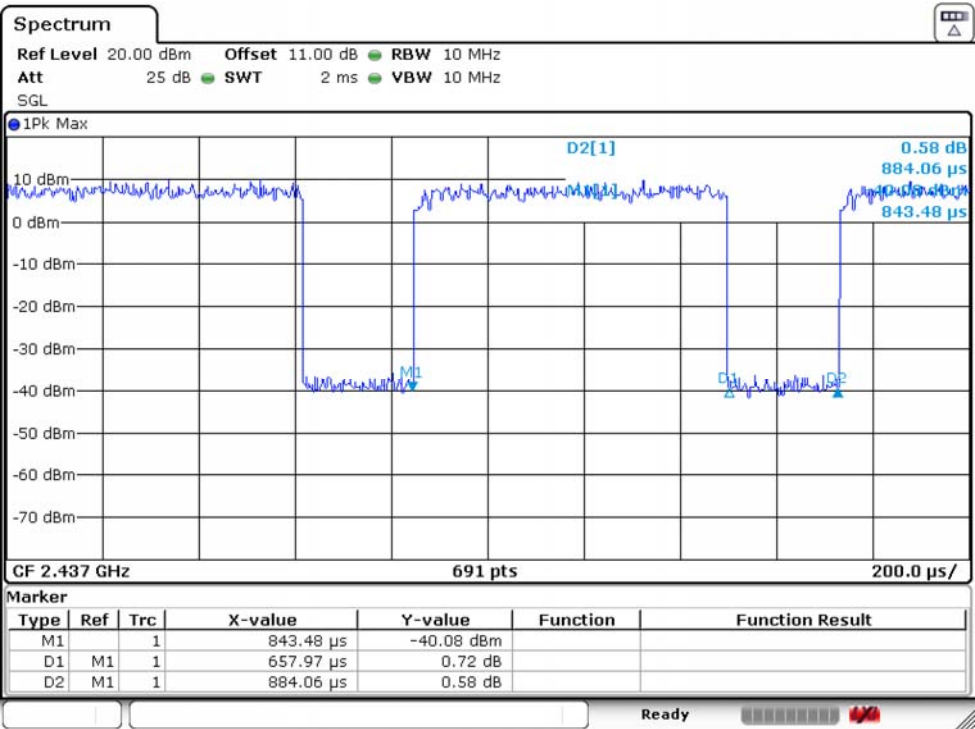
IEEE 802.11g 2437MHz



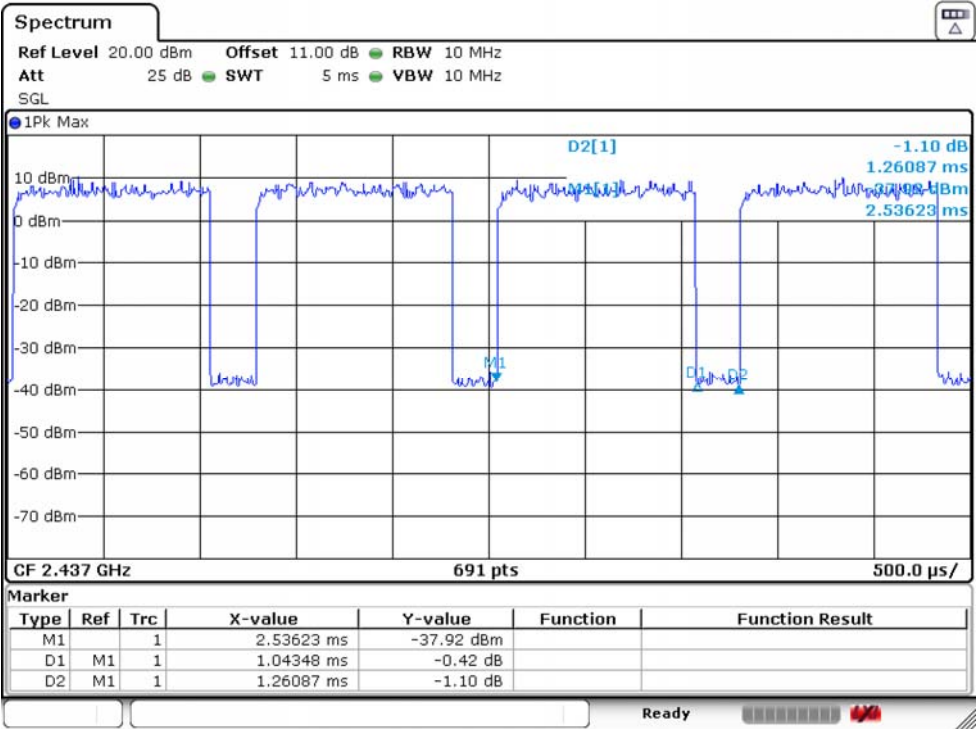
IEEE 802.11n HT20 2437MHz



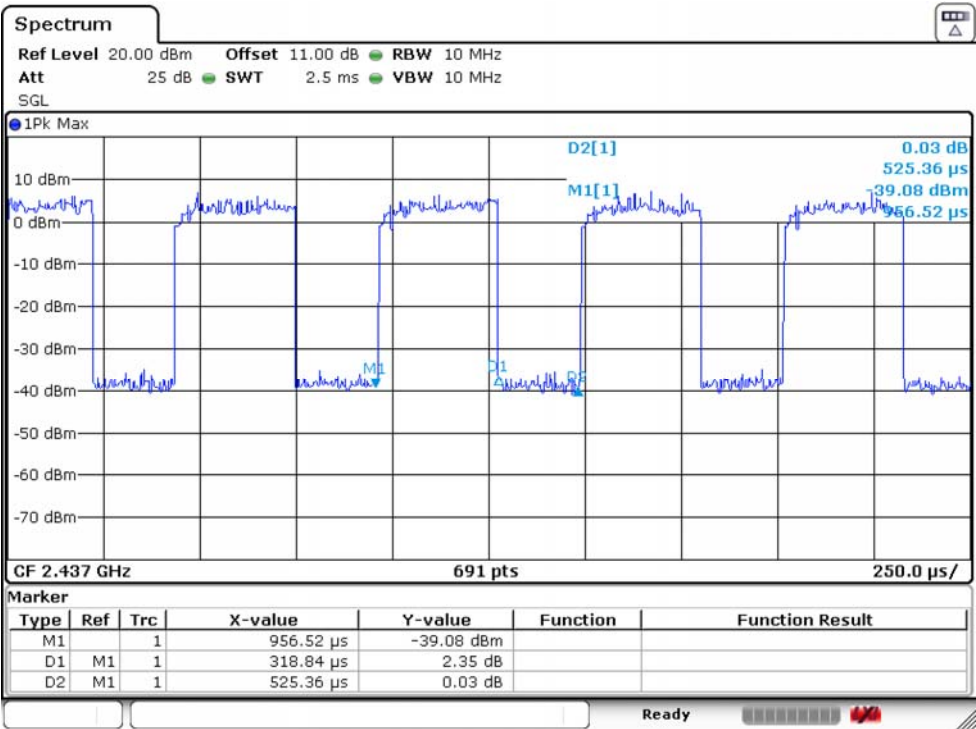
IEEE 802.11n HT40 2437MHz



IEEE 802.11ax HE20 2437MHz



IEEE 802.11ax HE40 2437MHz



2.9. Channel List

IEEE 802.11b/802.11g/802.11n HT20/802.11ax HE20					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	6	2437	11	2462
2	2417	7	2442		
3	2422	8	2447		
4	2427	9	2452		
5	2432	10	2457		
IEEE 802.11n HT40/802.11ax HE40					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
3	2422	6	2437	9	2452
4	2427	7	2442		
5	2432	8	2447		

2.10. Test Equipment List

For conducted emission test						
Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESHS30	EST-E001	LISAI	June 13,21	1 Year
Artificial Mains Network	Rohde & Schwarz	ENV216	EST-E002	LISAI	June 13,21	1 Year
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	EST-E078	LISAI	June 13,21	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A

3.

For radiated emission test(9kHz-30MHz)						
Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESR7	EST-E047	LISAI	June 13,21	1 Year
Active Loop Antenna	SCHWARZB ECK	FMZB 1519B	EST-E054	LISAI	June 13,21	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A
9kHz-30MHz Cable	N/A	EST-001	N/A	N/A	N/A	N/A

4.

For radiated emissions test (30MHz-1000MHz)						
Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESR7	EST-E047	LISAI	June 13,21	1 Year
Bilog Antenna	Teseq	CBL 6111D	EST-E034	LISAI	June 13,21	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A
30-1000MHz Cable	N/A	EST-002	N/A	N/A	N/A	N/A

5.

For radiated emission test(Above 100MHz)						
Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
Horn Antenna	SCHWARZB ECK	BBHA9120D	EST-E031	LISAI	June 13,21	1 Year
Signal Amplifier	SCHWARZB ECK	BBV9718	EST-E032	LISAI	June 13,21	1 Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	EST-E069	LISAI	July 19,21	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A
Above 1GHz Cable	N/A	EST-003	N/A	N/A	N/A	N/A

6.

For connect EUT antenna terminal test						
Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
Spectrum Analyzer	Rohde&Schwarz	FSV40	EST-E069	LISAI	July 19,21	1 Year

7. 6dB BANDWIDTH

7.1. Limit

Systems using digital modulation techniques operate in the 2400-2483.5 MHz, the minimum 6 dB bandwidth shall be at least 500 kHz.

7.2. Test Setup



7.3. Spectrum Analyzer Setting

6dB Bandwidth

Spectrum Parameters	Setting
RBW	100KHz
VBW	300KHz
Span	40MHz(20MHz Bandwidth mode)/80MHz(40MHz Bandwidth mode)
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

99% Occupied Bandwidth

Spectrum Parameters	Setting
RBW	300KHz(20MHz Bandwidth mode)/1MHz(40MHz Bandwidth mode)
VBW	1MHz(20MHz Bandwidth mode)/3MHz(40MHz Bandwidth mode)
Span	40MHz(20MHz Bandwidth mode)/80MHz(40MHz Bandwidth mode)
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

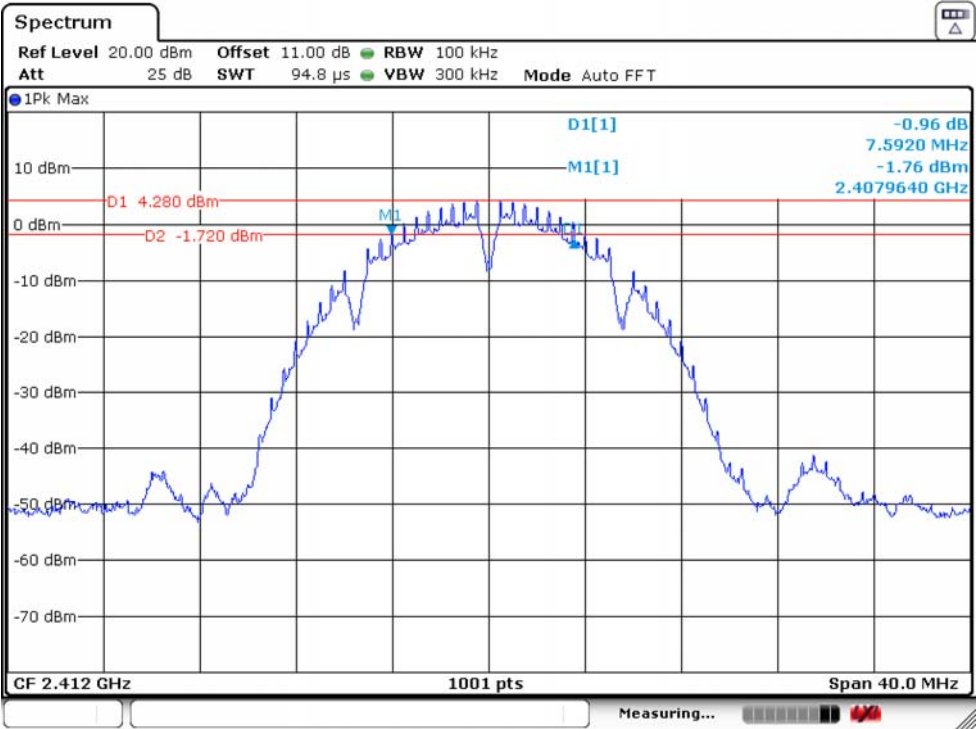
7.4. Test Procedure

- Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- Spectrum analyzer setting parameters in accordance with section 3.3.
- Set the EUT transmit continuously with maximum output power.
- Allow trace to stabilize, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
- Repeat above procedures until all modes and channels were measured.
- Record the results in the test report.

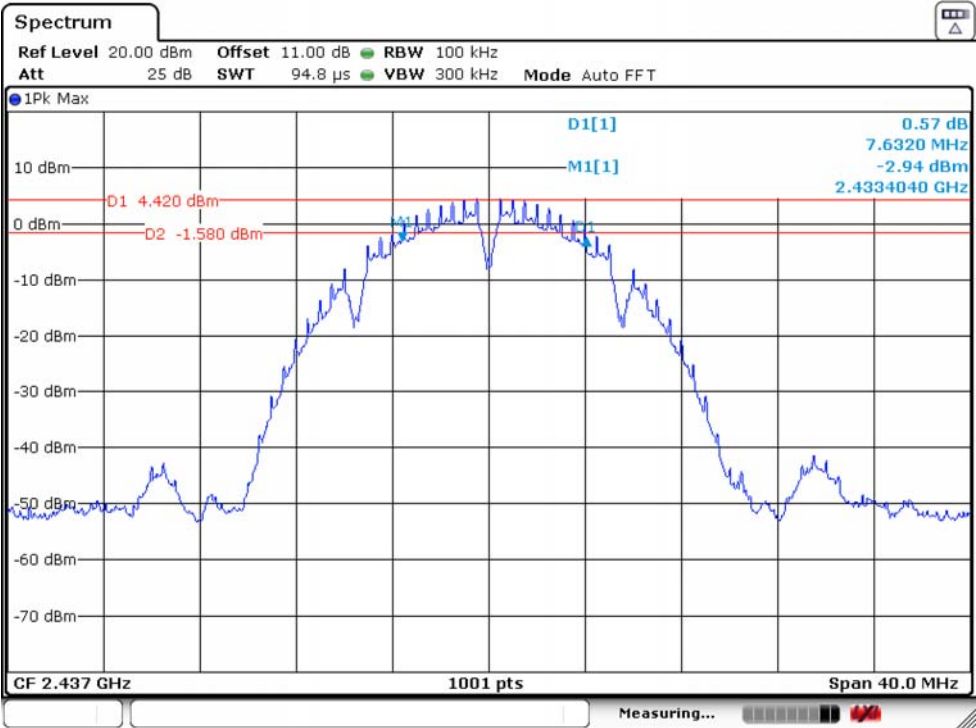
7.5. Test Result

Temperature	23.6℃	Relative Humidity	56%	Test Voltage	DC 3.3V
Mode	Freq (MHz)	6dB Bandwidth (MHz)		Limit (MHz)	Result
		ANT 1			
IEEE 802.11b	2412	7.592		≥0.5	PASS
	2437	7.632		≥0.5	PASS
	2462	7.632		≥0.5	PASS
IEEE 802.11g	2412	16.024		≥0.5	PASS
	2437	16.024		≥0.5	PASS
	2462	16.264		≥0.5	PASS
IEEE 802.11n HT20	2412	16.863		≥0.5	PASS
	2437	16.863		≥0.5	PASS
	2462	16.623		≥0.5	PASS
IEEE 802.11n HT40	2422	35.245		≥0.5	PASS
	2437	35.245		≥0.5	PASS
	2452	35.245		≥0.5	PASS
IEEE 802.11ax HE20	2412	18.981		≥0.5	PASS
	2437	19.061		≥0.5	PASS
	2462	19.061		≥0.5	PASS
IEEE 802.11ax HE40	2422	37.802		≥0.5	PASS
	2437	37.882		≥0.5	PASS
	2452	37.642		≥0.5	PASS

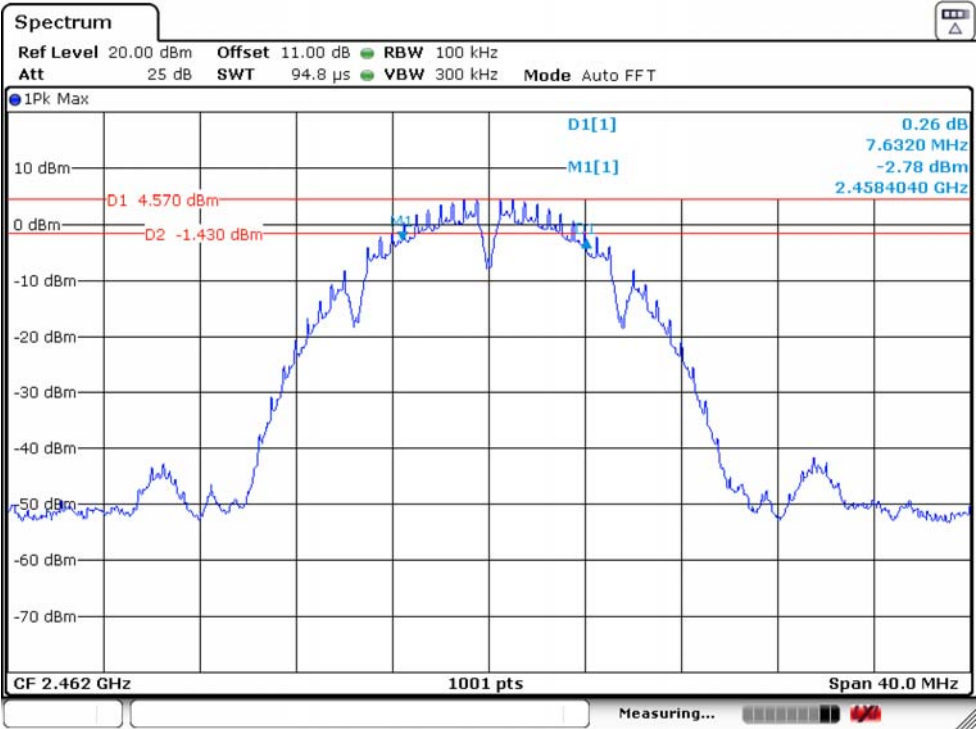
IEEE 802.11b 2412MHz_ANT 1



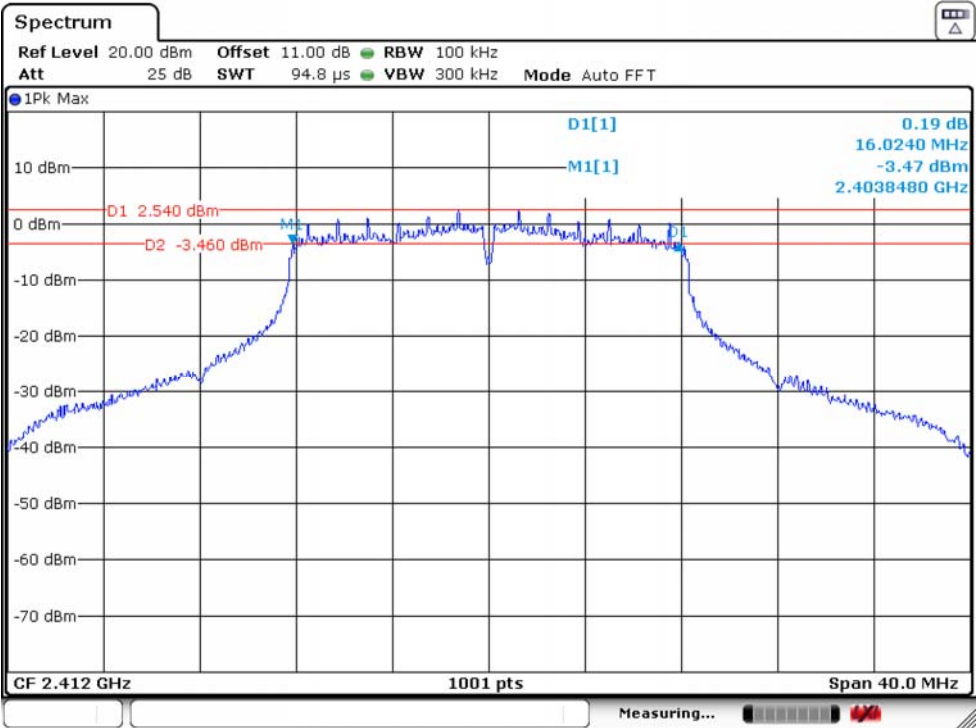
IEEE 802.11b 2437MHz_ANT 1



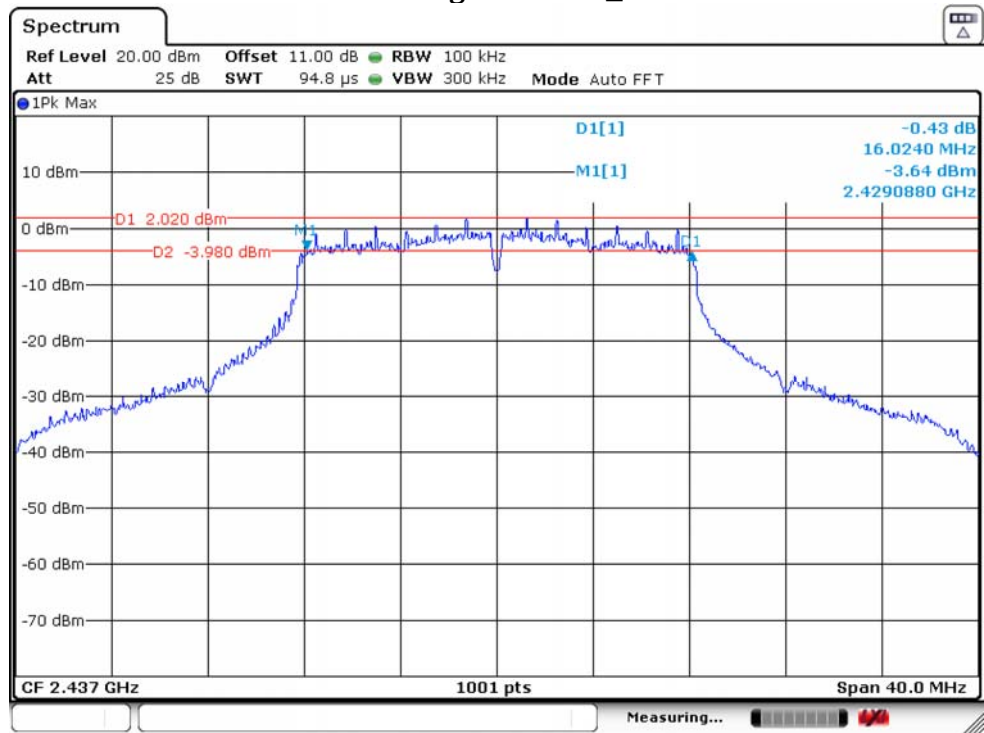
IEEE 802.11b 2462MHz_ANT 1



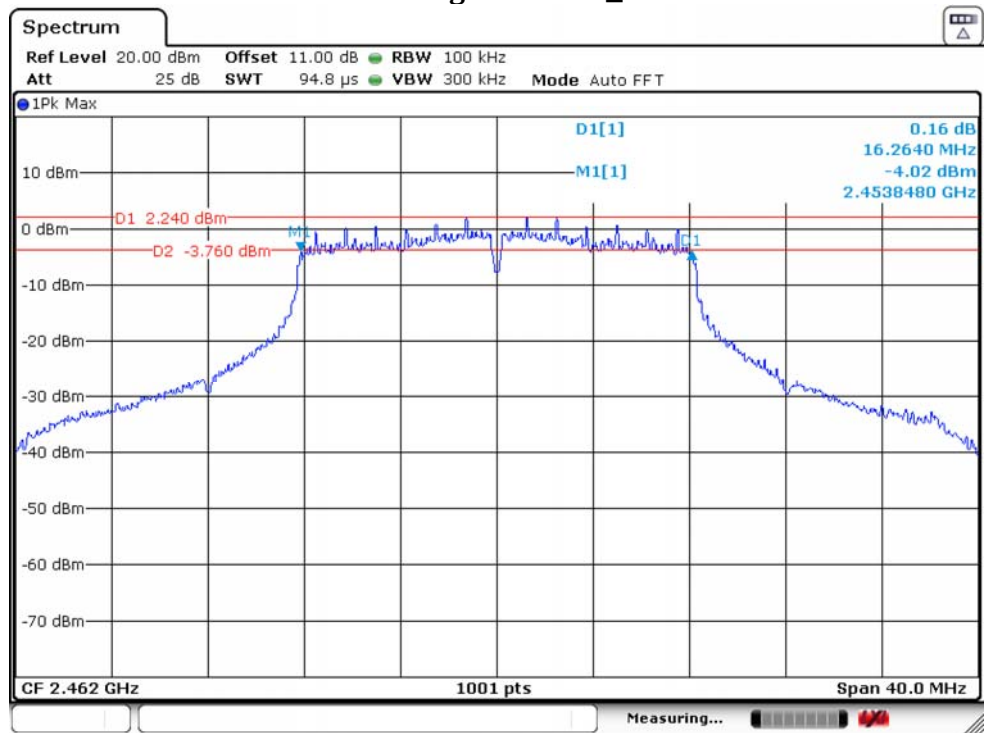
IEEE 802.11g 2412MHz_ANT 1



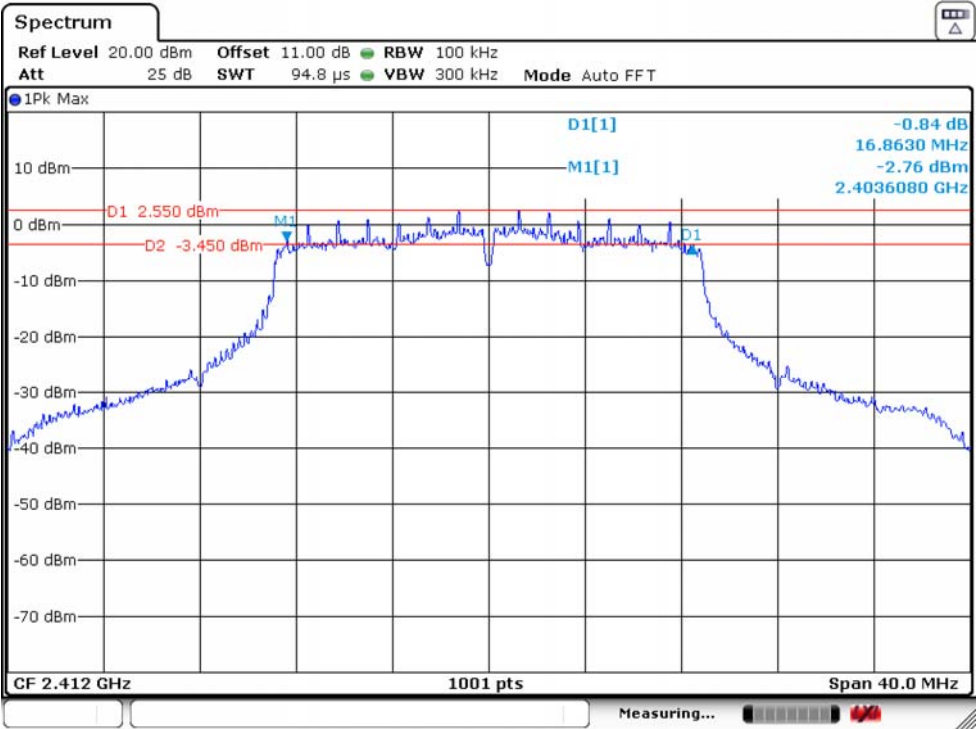
IEEE 802.11g 2437MHz_ANT 1



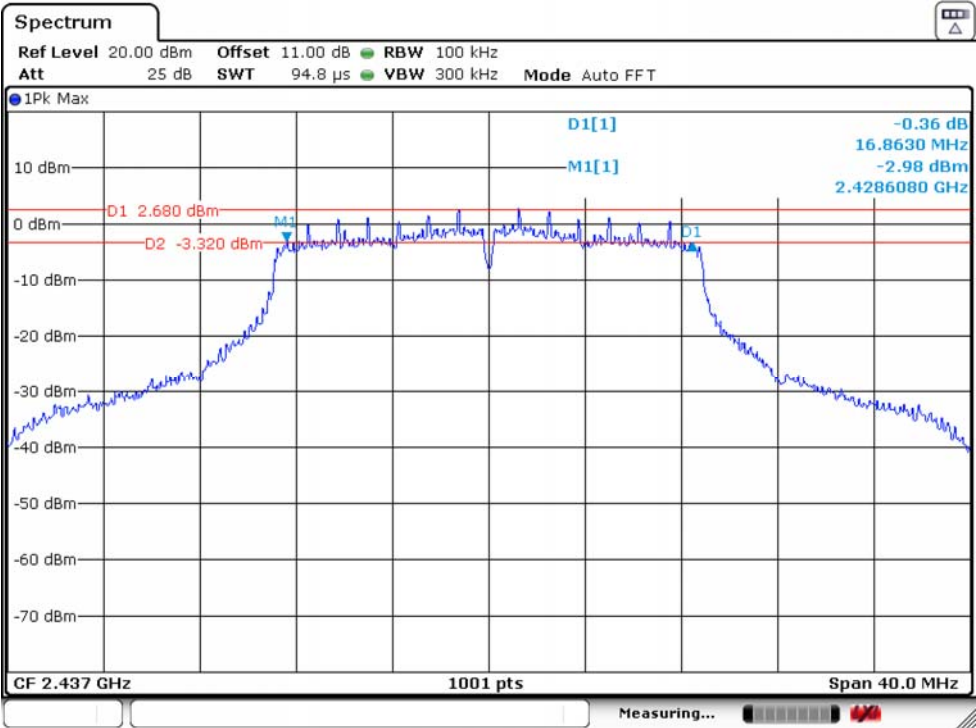
IEEE 802.11g 2462MHz_ANT 1



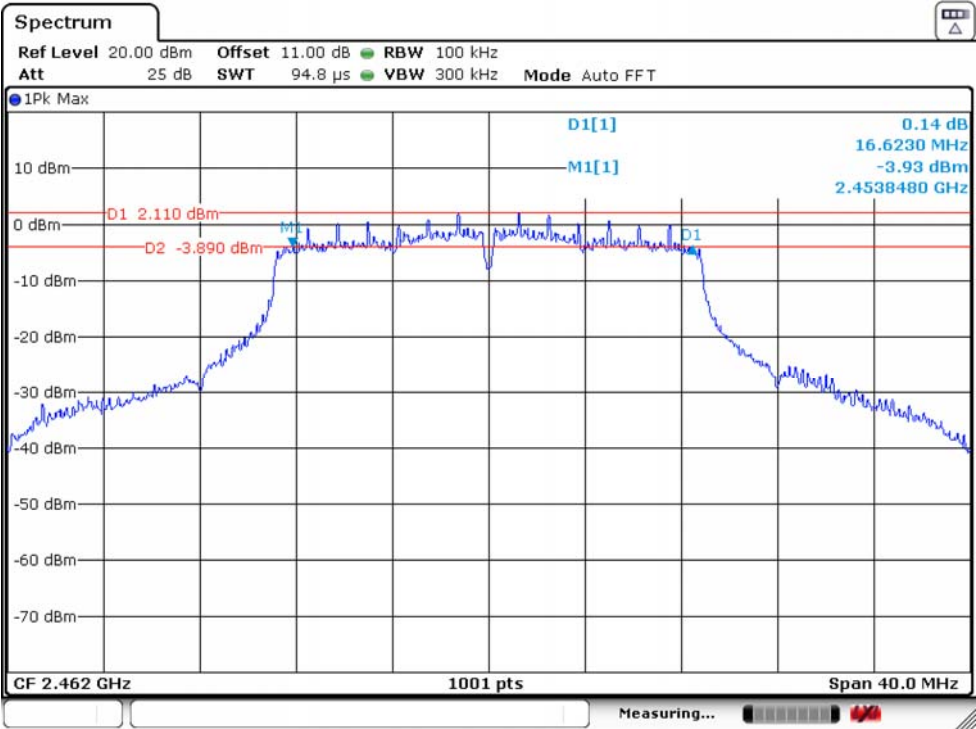
IEEE 802.11n HT20 2412MHz_ANT 1



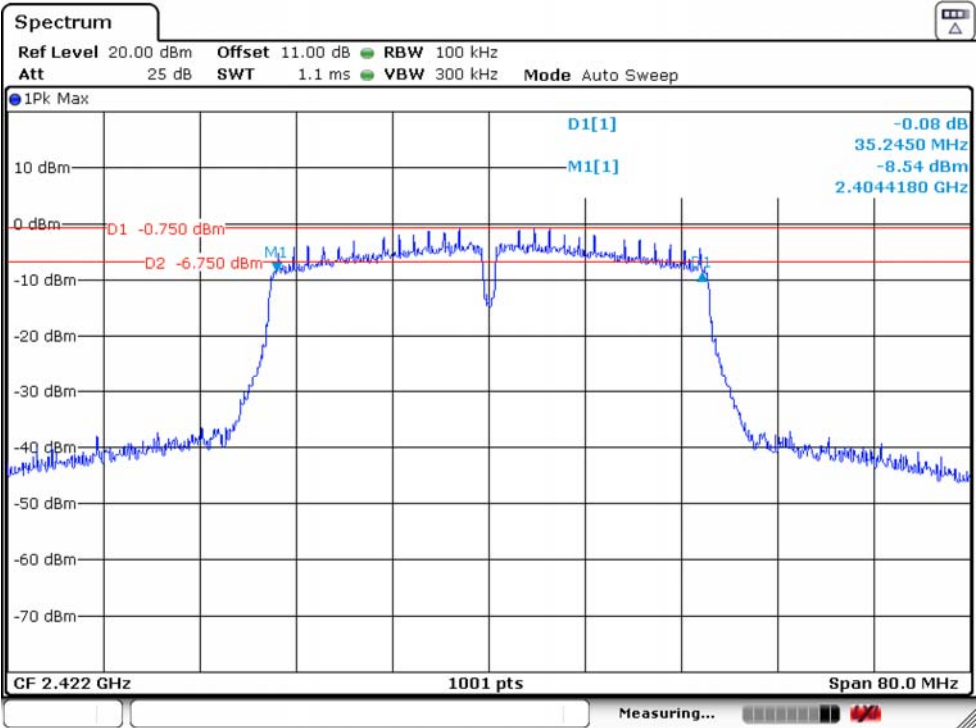
IEEE 802.11n HT20 2437MHz_ANT 1



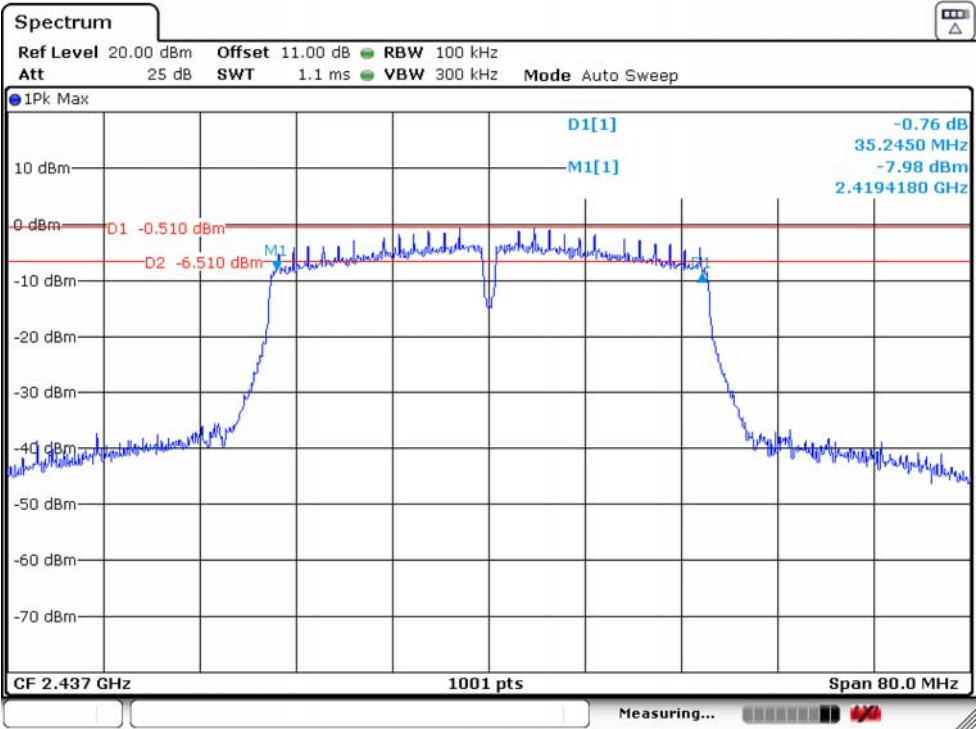
IEEE 802.11n HT20 2462MHz_ANT 1



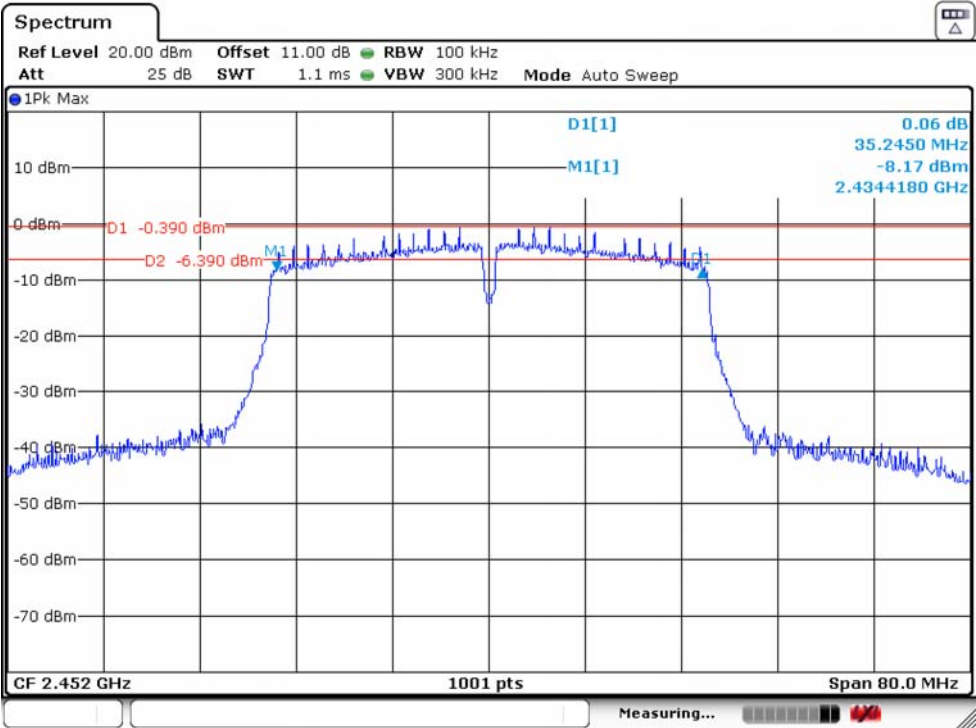
IEEE 802.11n HT40 2422MHz_ANT 1



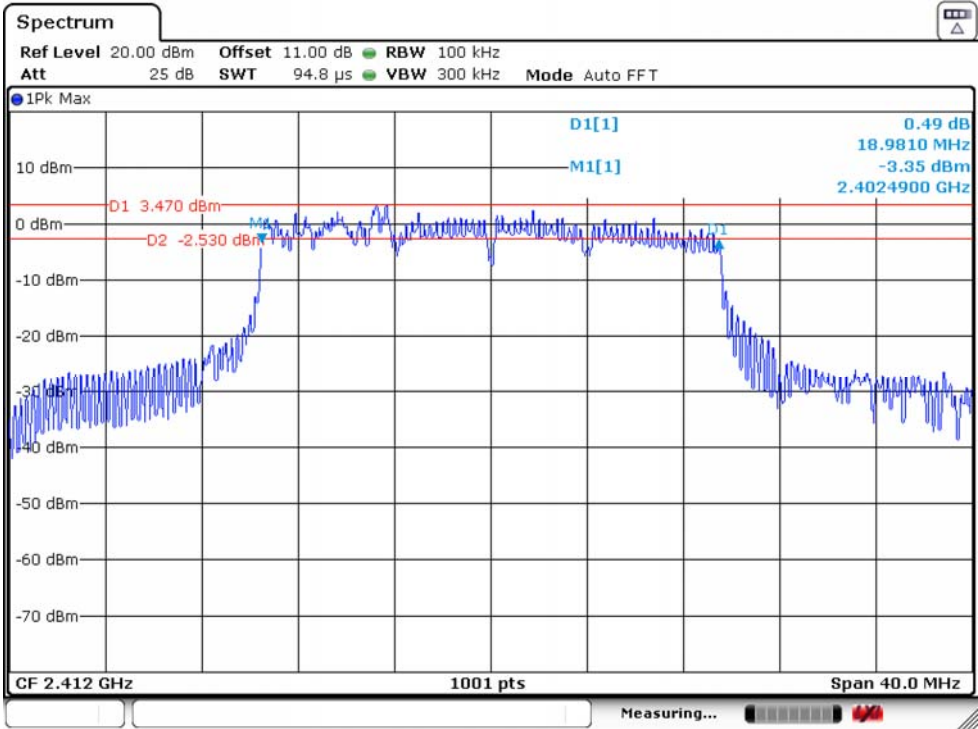
IEEE 802.11n HT40 2437MHz_ANT 1



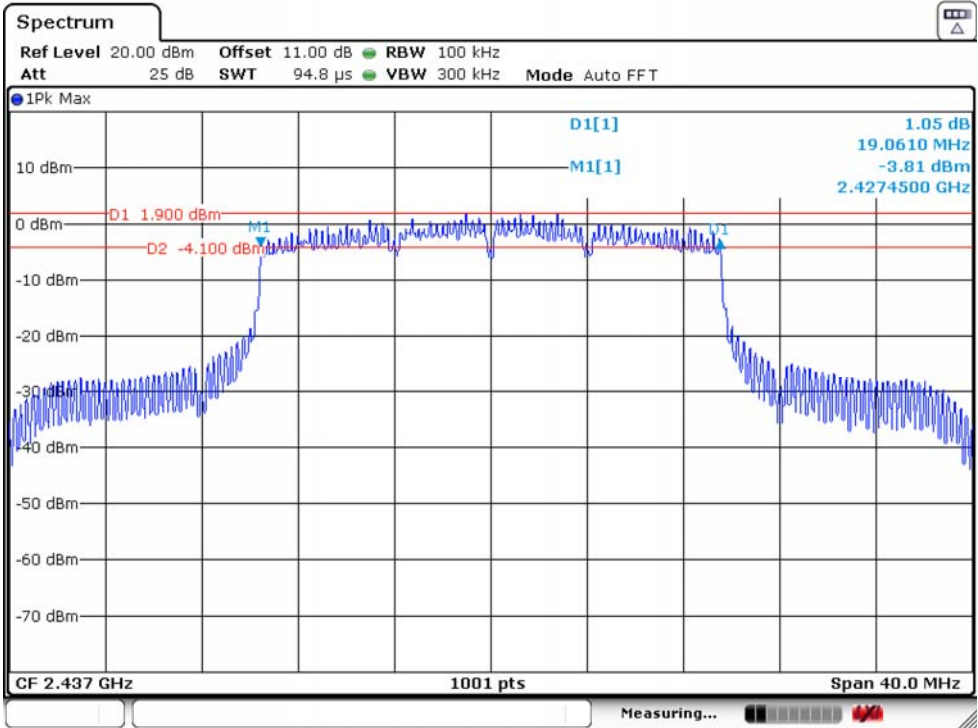
IEEE 802.11n HT40 2452MHz_ANT 1



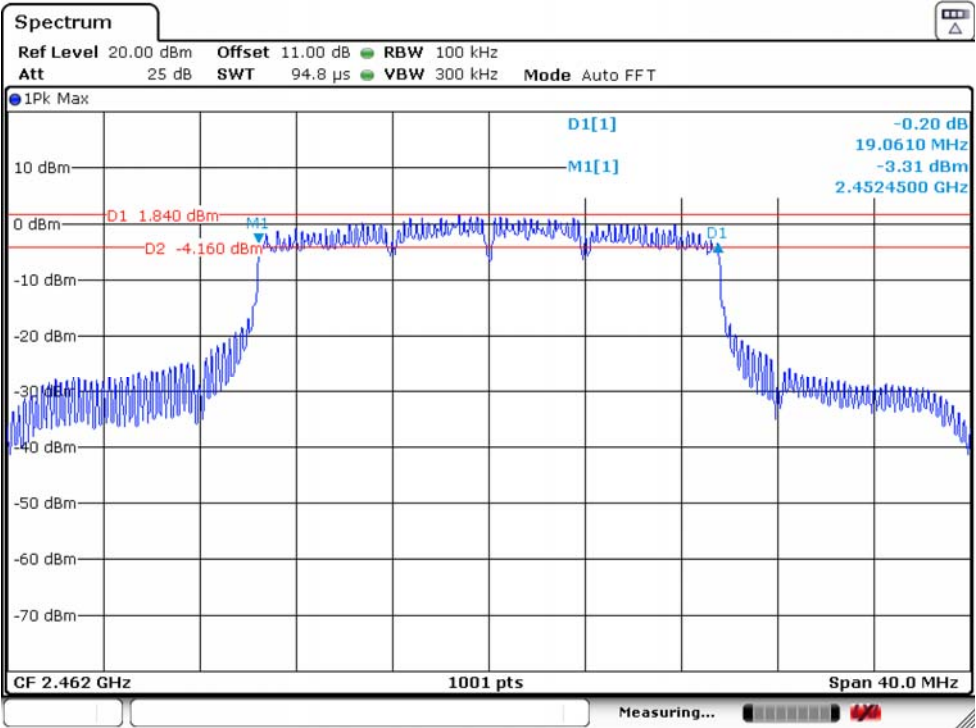
IEEE 802.11ax HE20 2412MHz_ANT 1



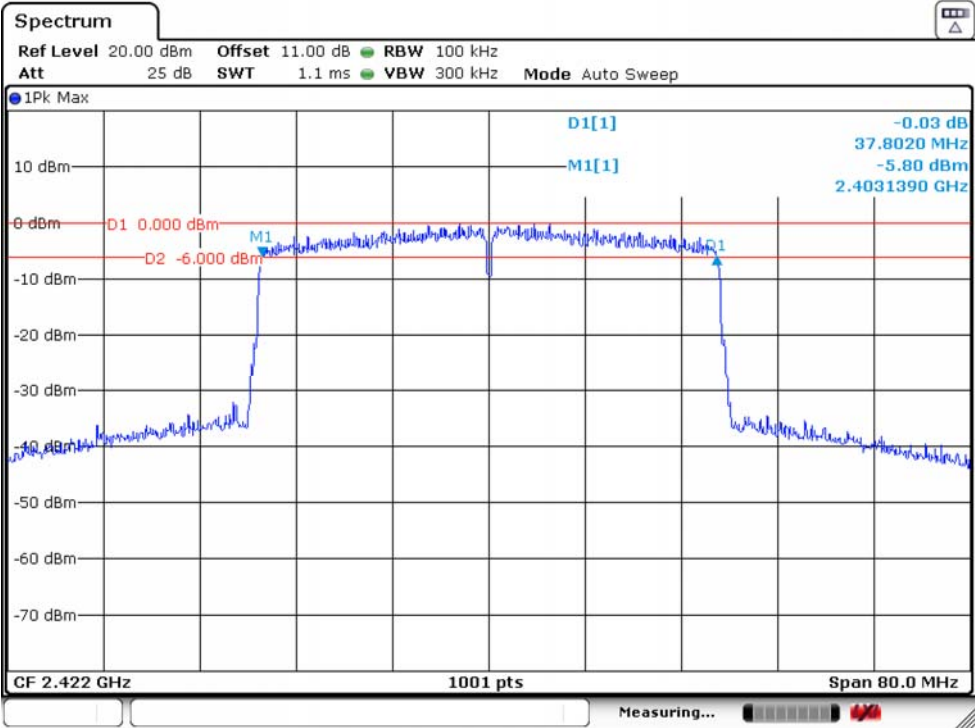
IEEE 802.11ax HE20 2437MHz_ANT 1



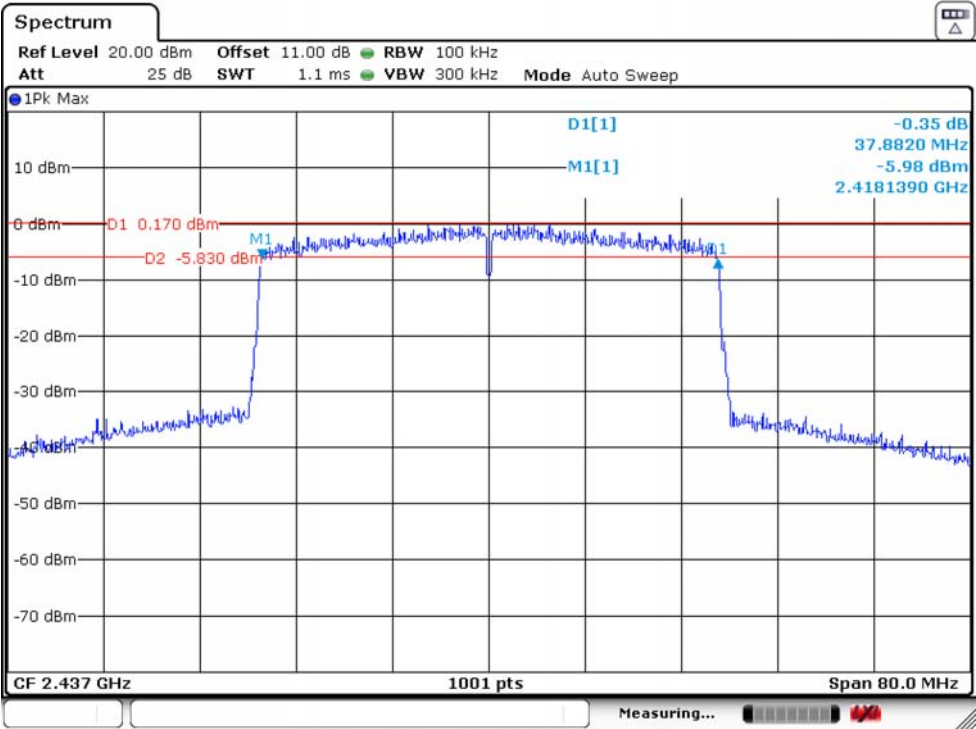
IEEE 802.11ax HE20 2462MHz_ANT 1



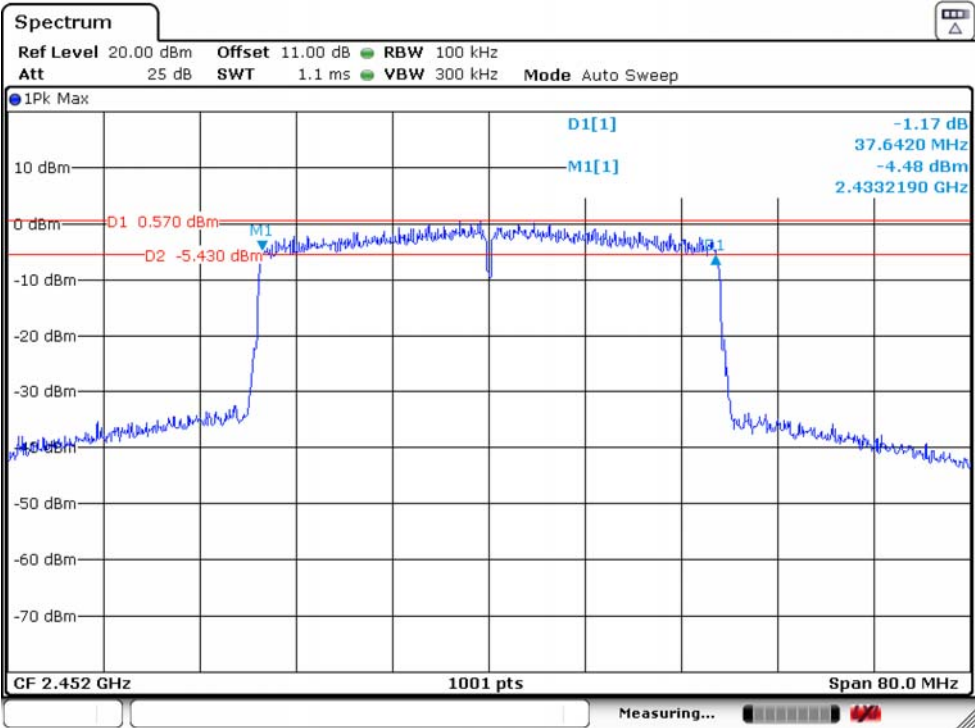
IEEE 802.11ax HE40 2422MHz_ANT 1



IEEE 802.11ax HE40 2437MHz_ANT 1



IEEE 802.11ax HE40 2452MHz_ANT 1



8. MAXIMUM PEAK OUTPUT POWER

8.1. Limit

For systems using digital modulation in 2400-2483.5MHz, the maximum peak output power is 1 Watt(30dBm).

8.2. Test Setup



8.3. Spectrum Analyzer Setting

Spectrum Parameters	Setting
RBW	1MHz
VBW	3MHz
Span	40MHz(20MHz Bandwidth mode)/80MHz(40MHz Bandwidth mode)
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

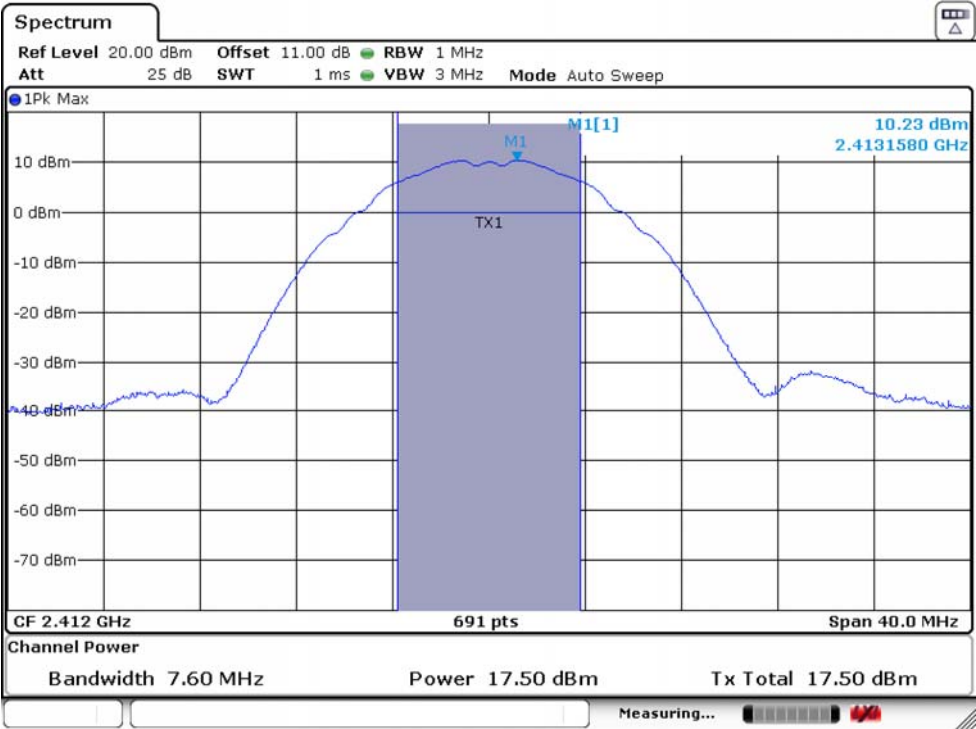
8.4. Test Procedure

- Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- Spectrum analyzer setting parameters in accordance with section 4.3.
- Set the EUT transmit continuously with maximum output power.
- Use the channel power function to measure maximum peak output power, allow trace to stabilize, save test pictures.
- Repeat above procedures until all modes and channels were measured.
- Record the results in the test report.

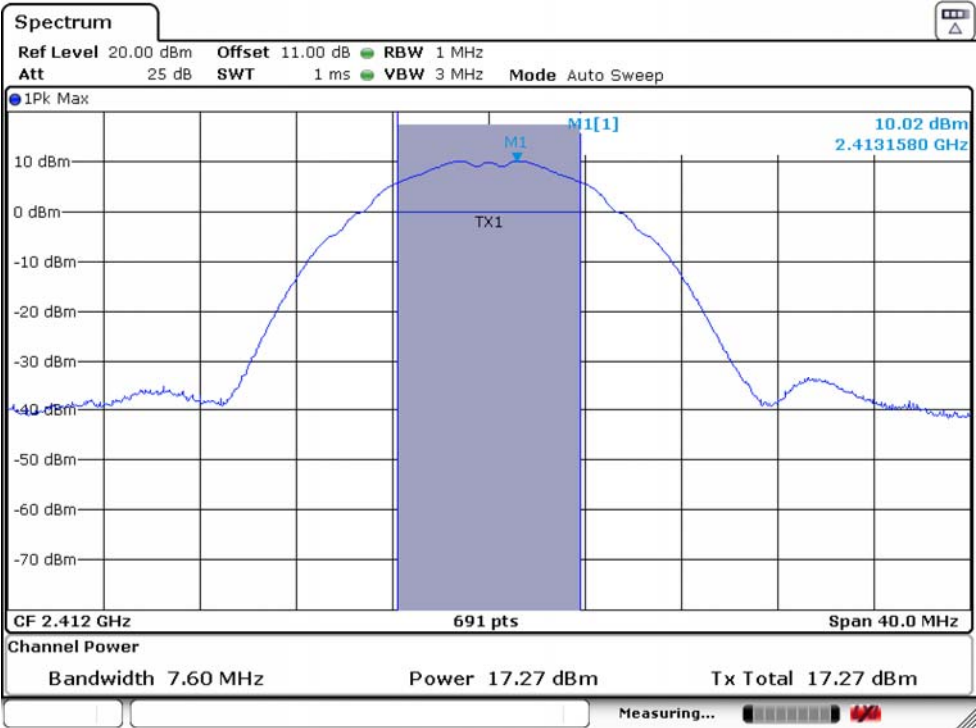
8.5. Test Result

Temperature	23.6°C	Relative Humidity		56%				Test Voltage		DC 3.3V
Mode	Freq (MHz)	Peak Output Power (dBm)		Total Peak Output Power (W)		Total Peak Output Power (dBm)		Limit		Result
		ANT 1	ANT 2	ANT 1	ANT 2	ANT 1	ANT 2	W	dBm	
IEEE 802.11b	2412	17.5	17.27	0.0562	0.0533	17.50	17.27	1.0000	30.00	PASS
	2437	17.62	17.3	0.0578	0.0537	17.62	17.30	1.0000	30.00	PASS
	2462	17.6	17.22	0.0575	0.0527	17.60	17.22	1.0000	30.00	PASS
IEEE 802.11g	2412	22.27	22.52	0.1687	0.1786	22.27	22.52	1.0000	30.00	PASS
	2437	22.31	22.47	0.1702	0.1766	22.31	22.47	1.0000	30.00	PASS
	2462	22.67	22.47	0.1849	0.1766	22.67	22.47	1.0000	30.00	PASS
IEEE 802.11n HT20	2412	22.28	22.46	0.3452		25.38		1.0000	30.00	PASS
	2437	22.27	22.45	0.3444		25.37		1.0000	30.00	PASS
	2462	22.61	22.35	0.3542		25.49		1.0000	30.00	PASS
IEEE 802.11n HT40	2422	22.65	22.27	0.3567		25.52		1.0000	30.00	PASS
	2437	22.69	22.31	0.3560		25.51		1.0000	30.00	PASS
	2452	22.80	22.30	0.3604		25.57		1.0000	30.00	PASS
IEEE 802.11ax HE20	2412	22.47	22.29	0.3460		25.39		1.0000	30.00	PASS
	2437	22.4	22.23	0.3409		25.33		1.0000	30.00	PASS
	2462	22.52	22.03	0.3382		25.29		1.0000	30.00	PASS
IEEE 802.11ax HE40	2422	22.57	22.4	0.3545		25.50		1.0000	30.00	PASS
	2437	22.63	22.35	0.3550		25.50		1.0000	30.00	PASS
	2452	22.62	22.32	0.3534		25.48		1.0000	30.00	PASS

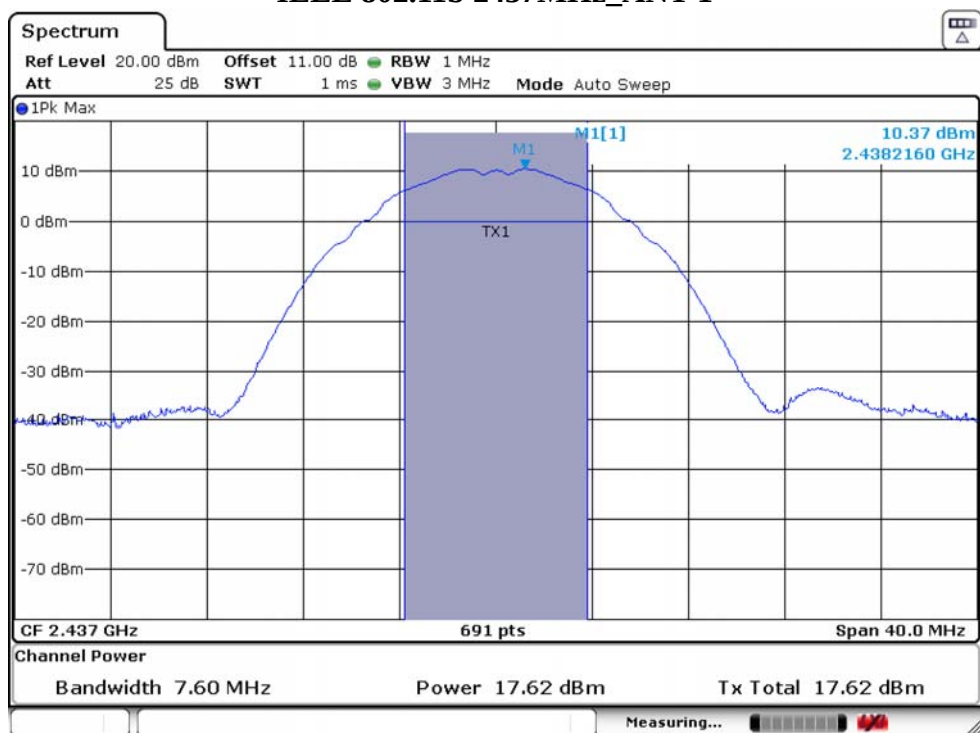
IEEE 802.11b 2412MHz_ANT 1



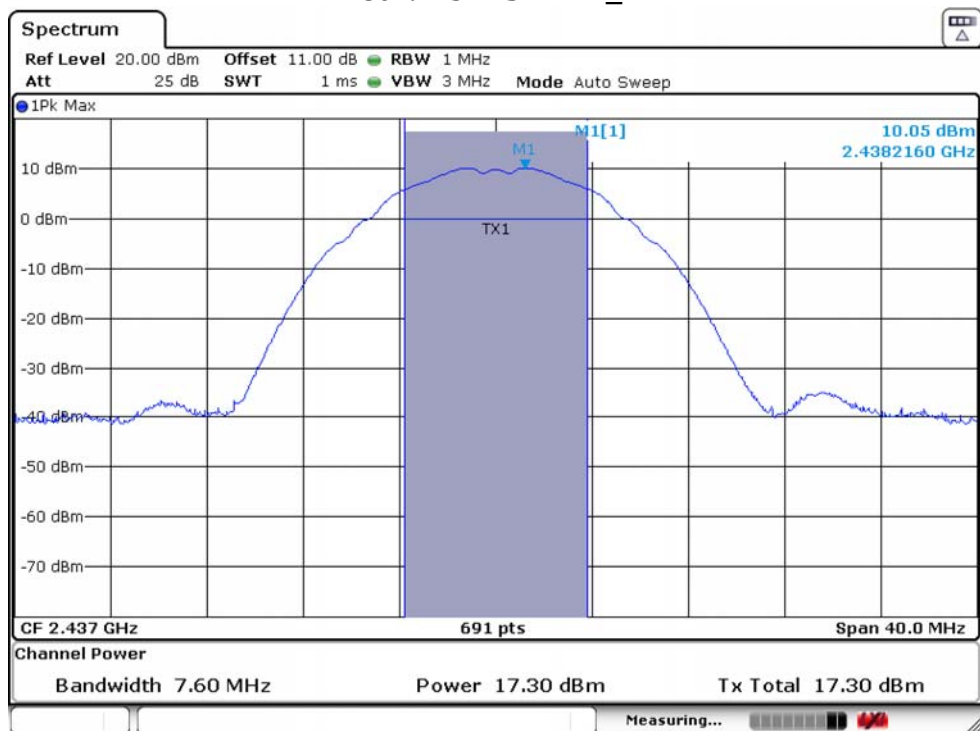
IEEE 802.11b 2412MHz_ANT 2



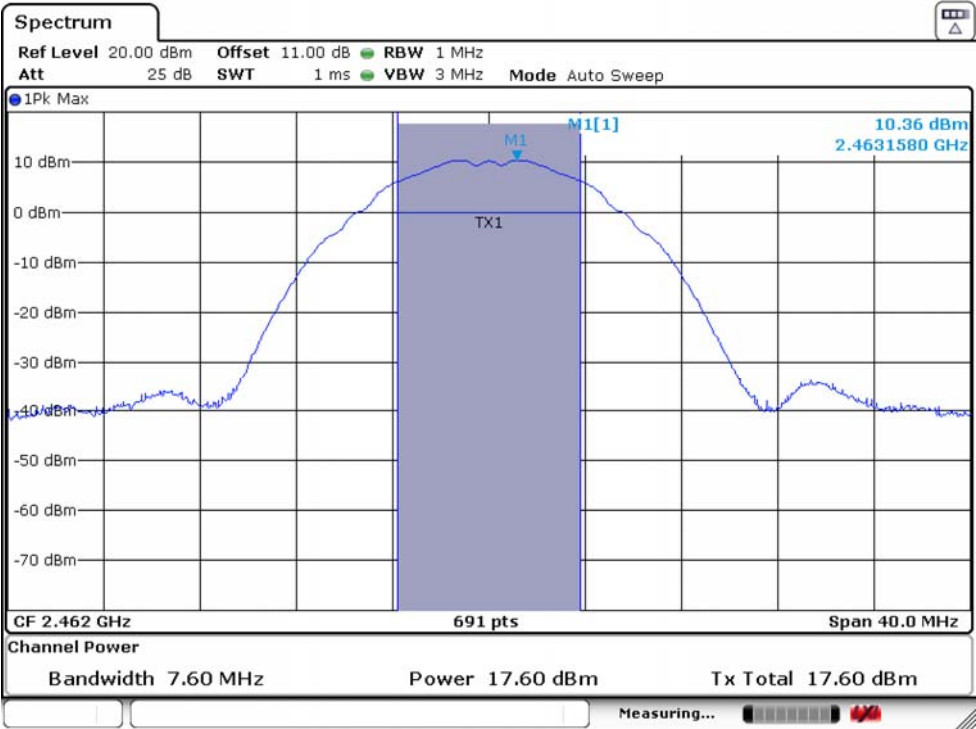
IEEE 802.11b 2437MHz_ANT 1



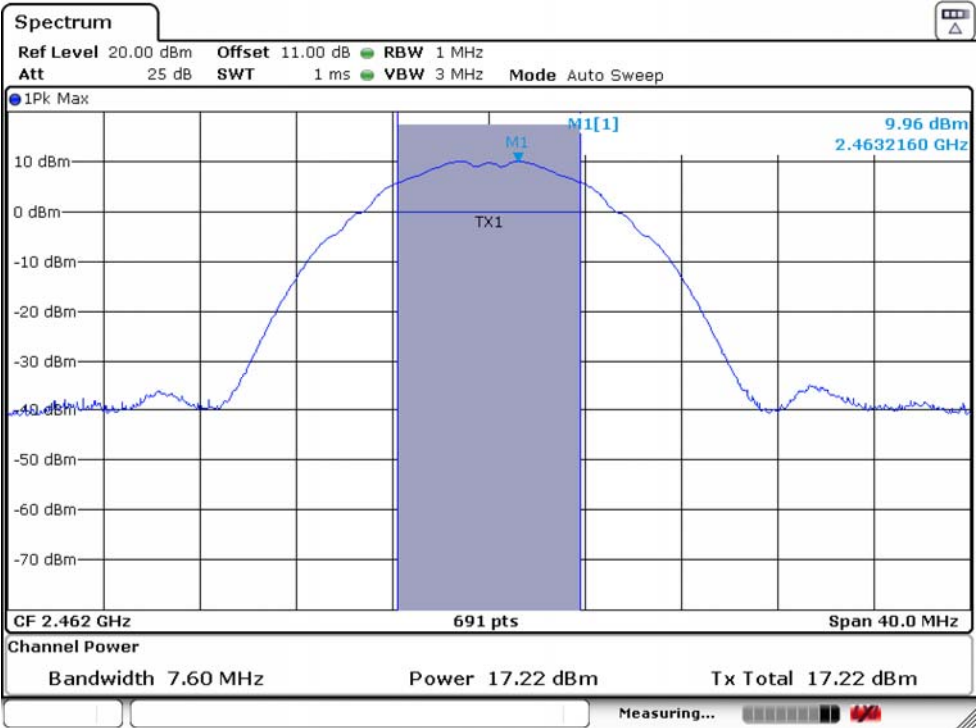
IEEE 802.11b 2437MHz ANT 2



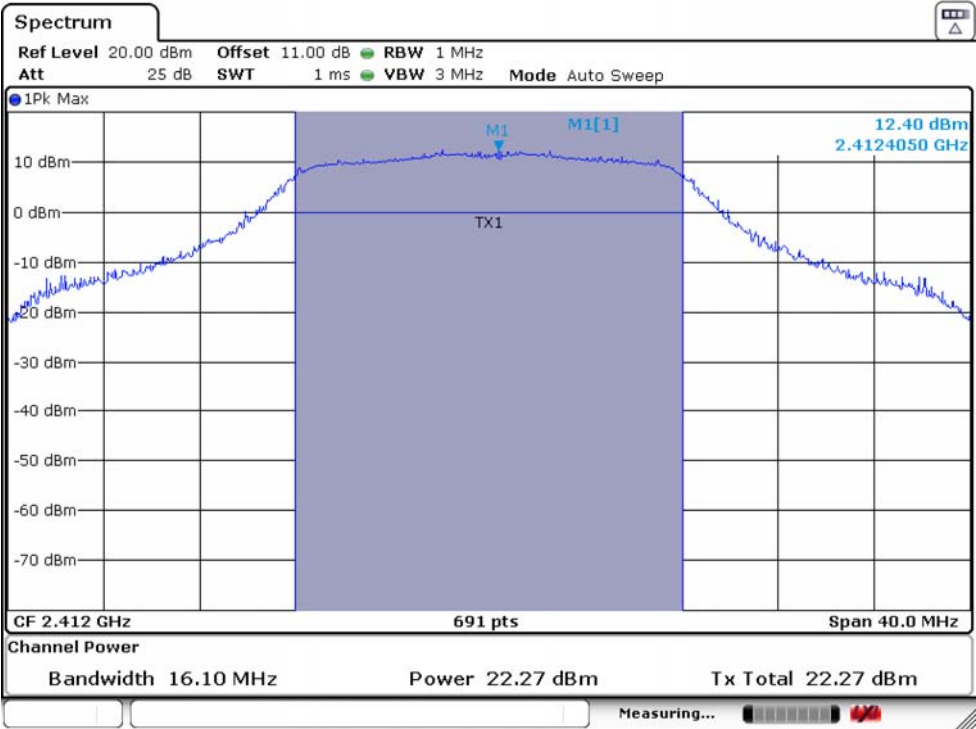
IEEE 802.11b 2462MHz_ANT 1



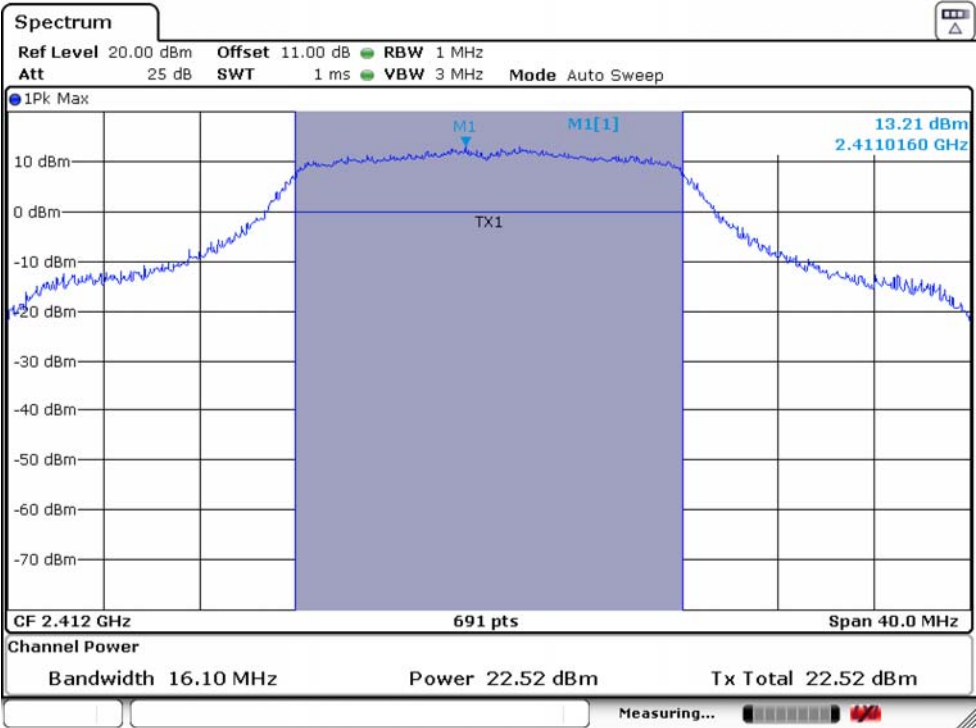
IEEE 802.11b 2462MHz_ANT 2



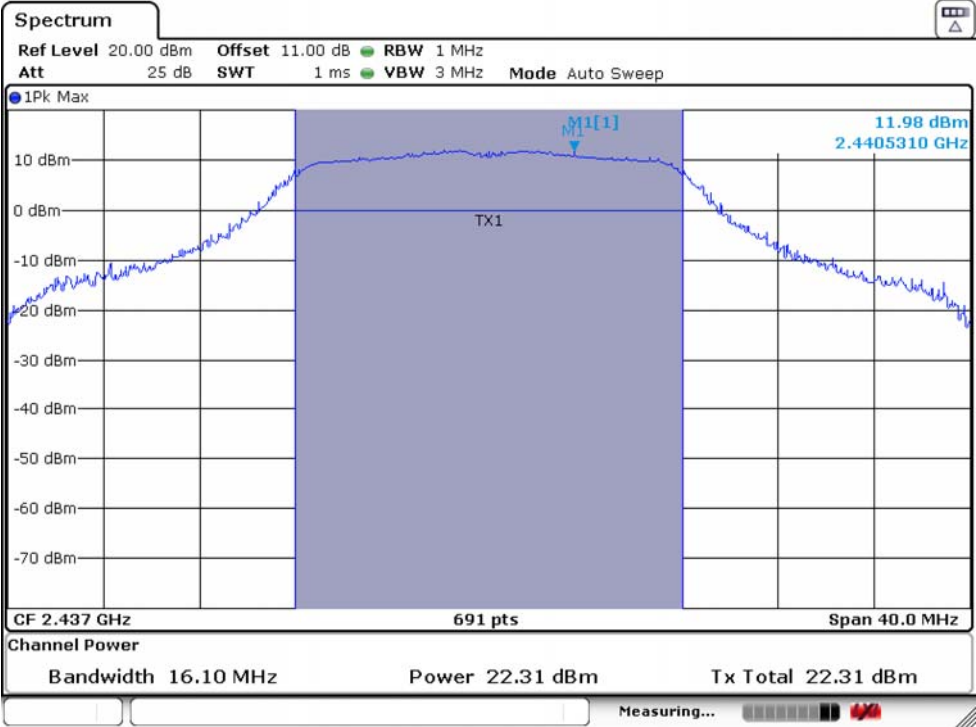
IEEE 802.11g 2412MHz_ANT 1



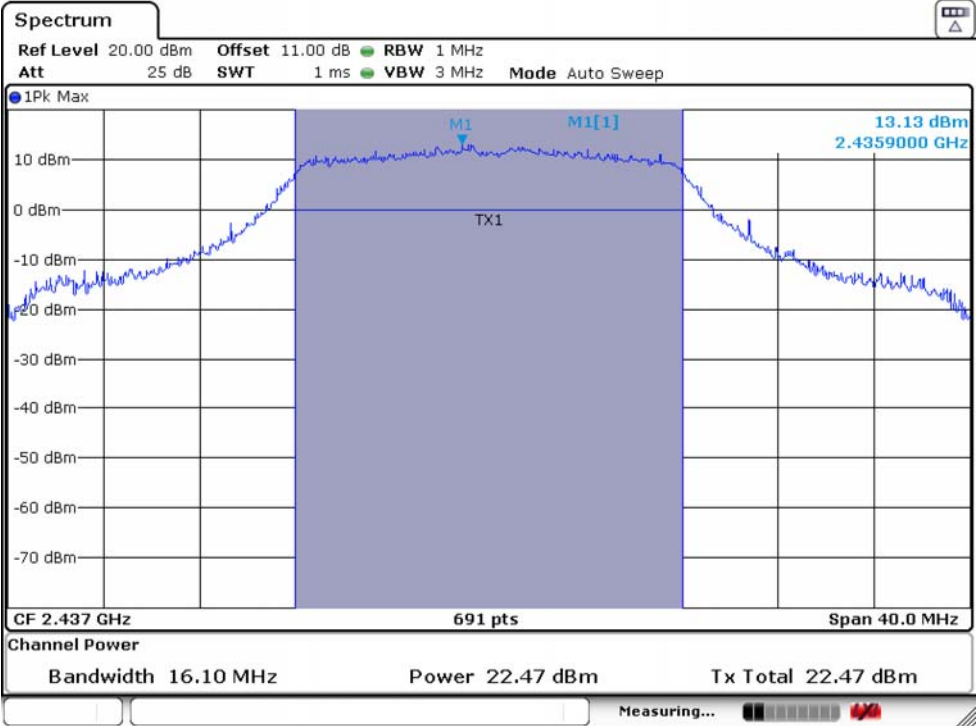
IEEE 802.11g 2412MHz_ANT 2



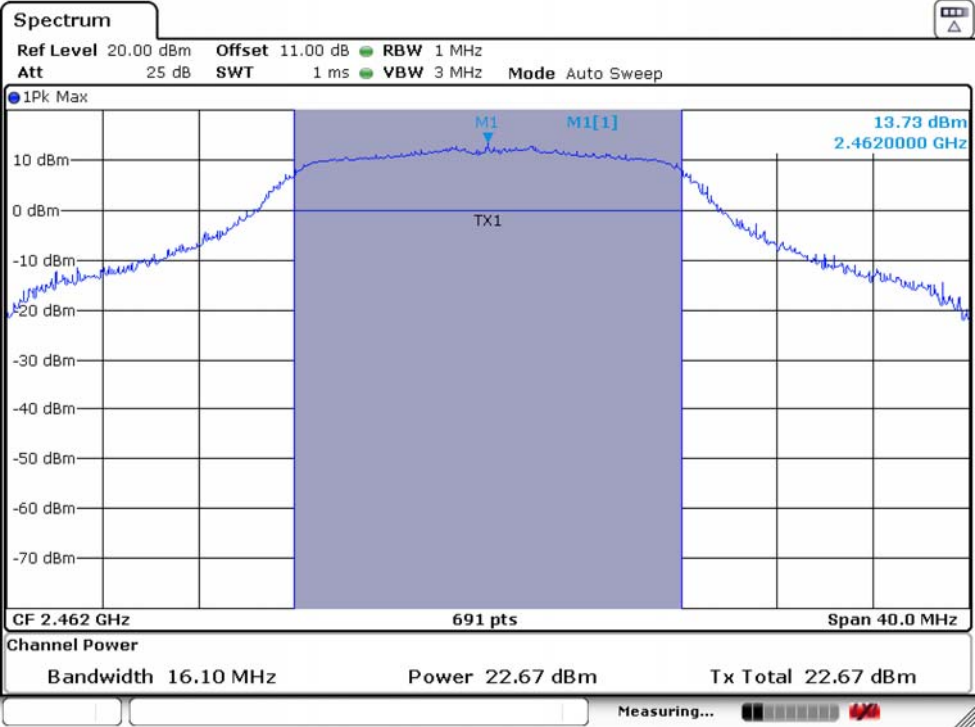
IEEE 802.11g 2437MHz_ANT 1



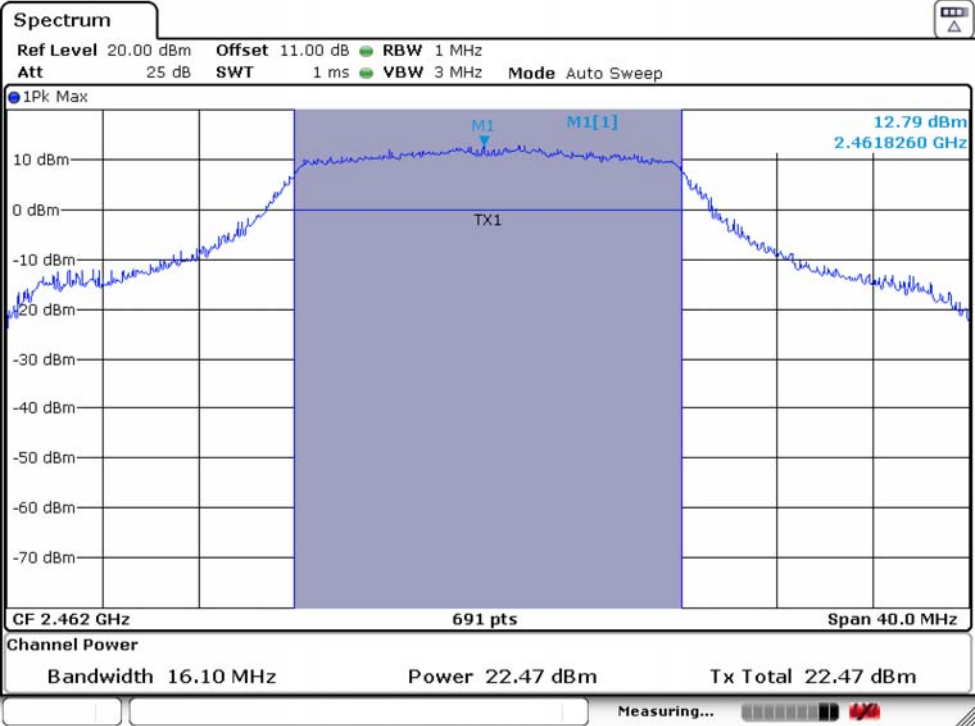
IEEE 802.11g 2437MHz_ANT 2



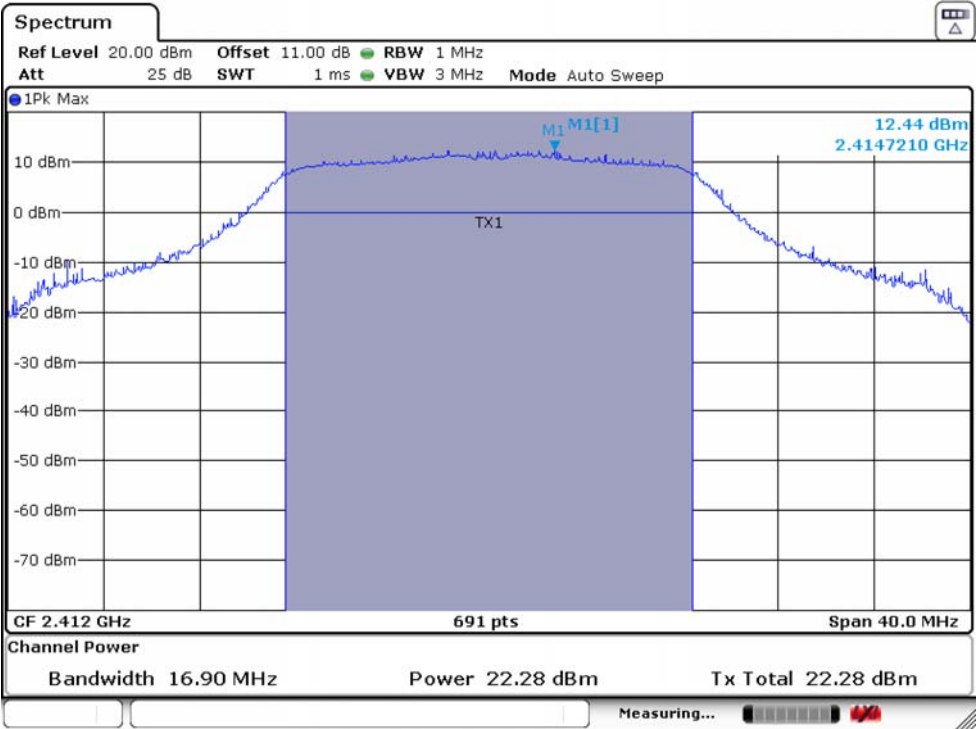
IEEE 802.11g 2462MHz_ANT 1



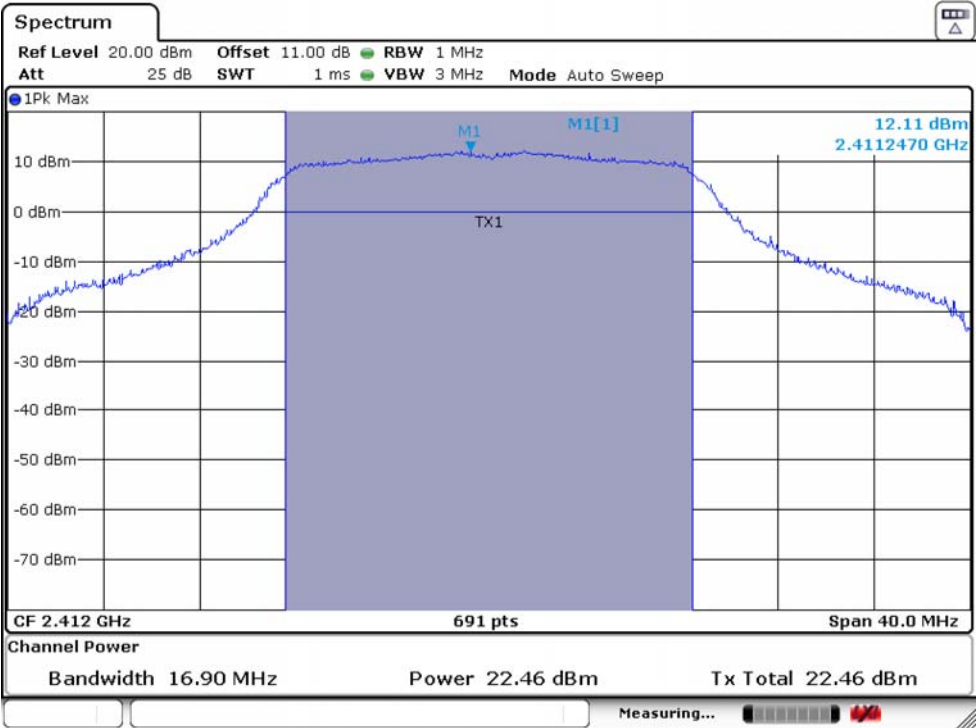
IEEE 802.11g 2462MHz_ANT 2



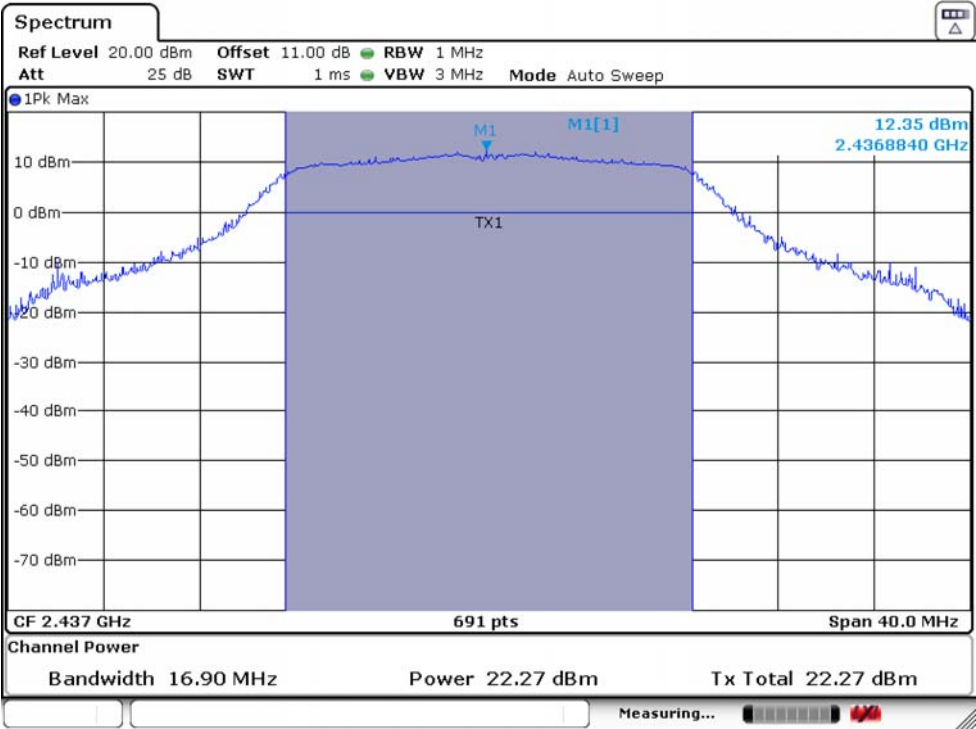
IEEE 802.11n HT20 2412MHz_ANT 1



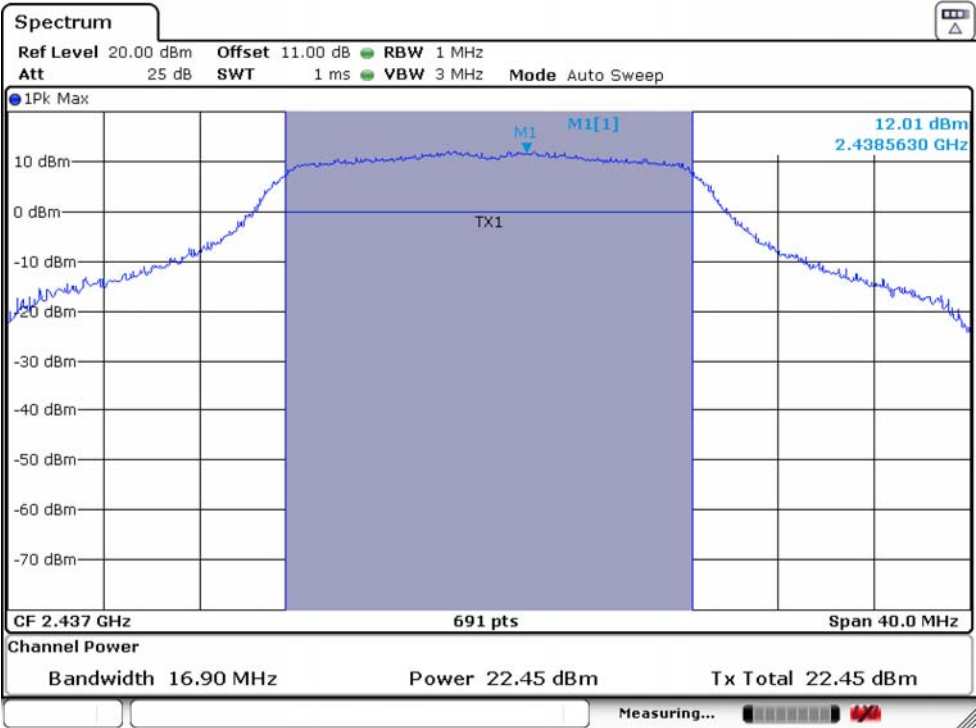
IEEE 802.11n HT20 2412MHz_ANT 2



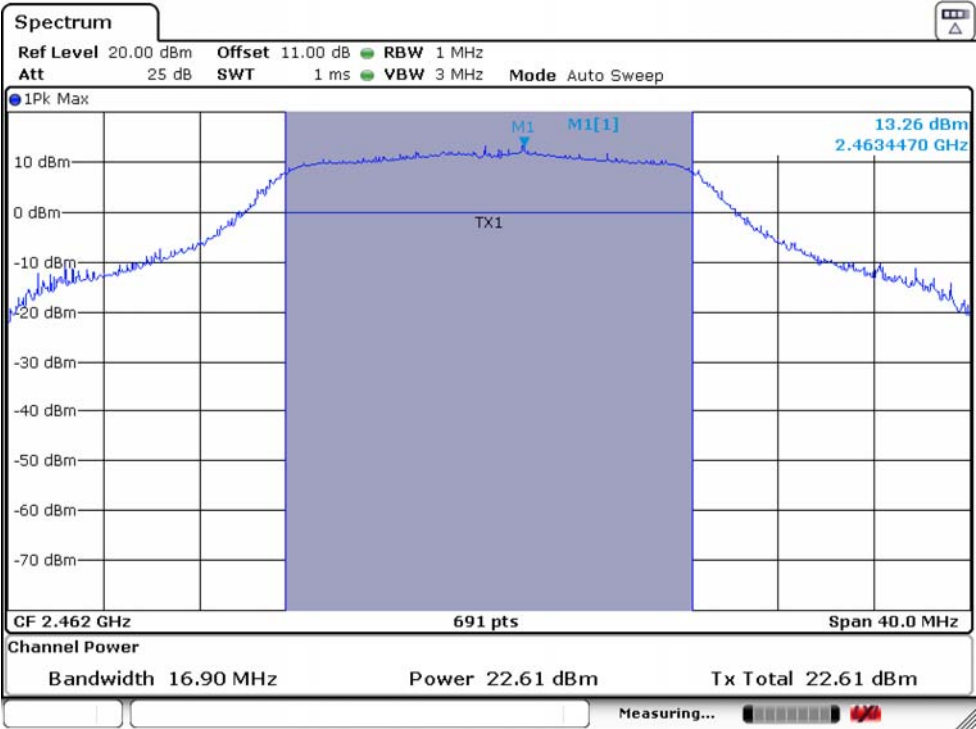
IEEE 802.11n HT20 2437MHz_ANT 1



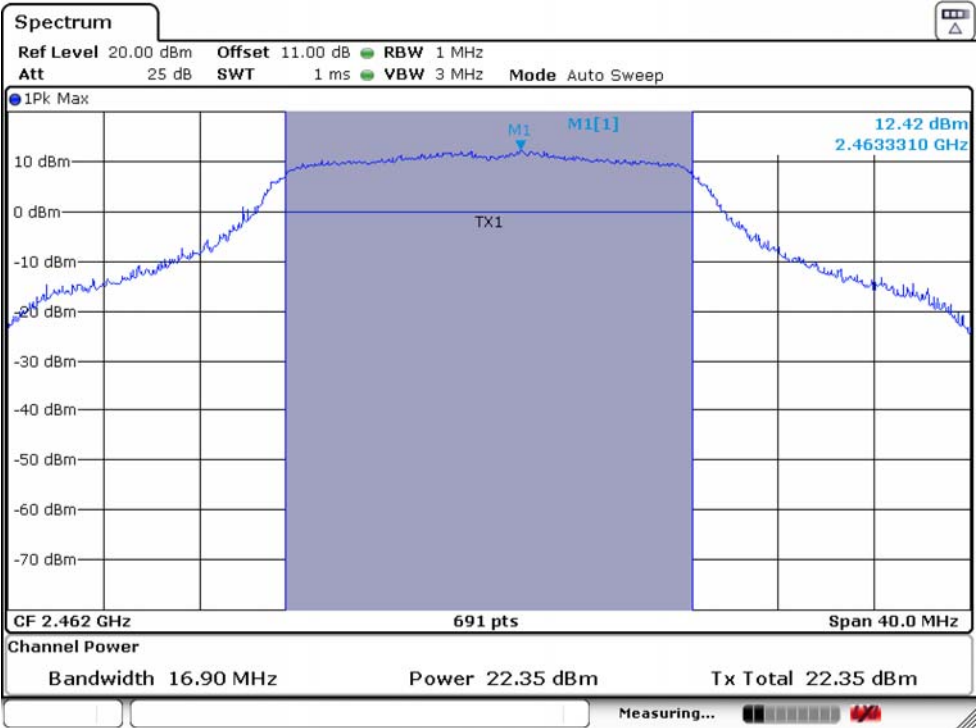
IEEE 802.11n HT20 2437MHz_ANT 2



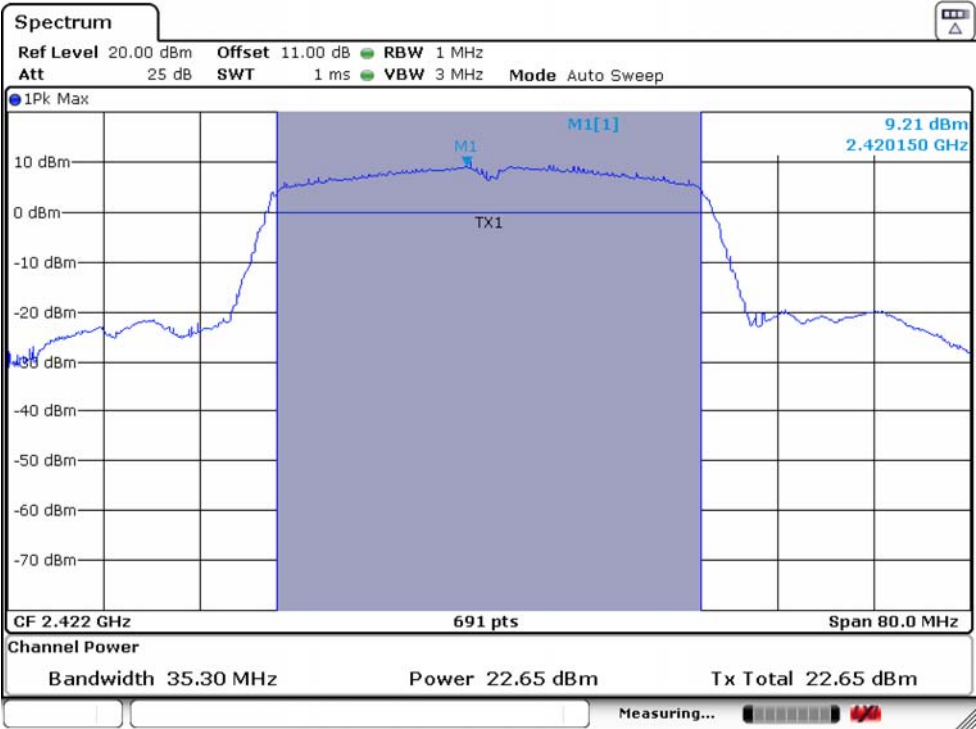
IEEE 802.11n HT20 2462MHz_ANT 1



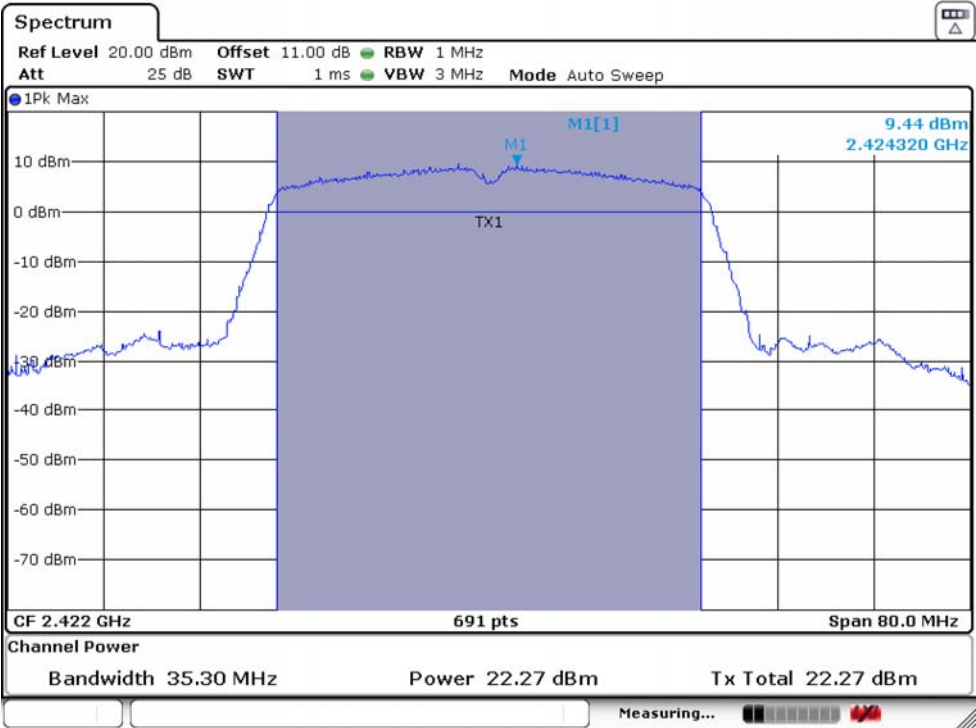
IEEE 802.11n HT20 2462MHz_ANT 2



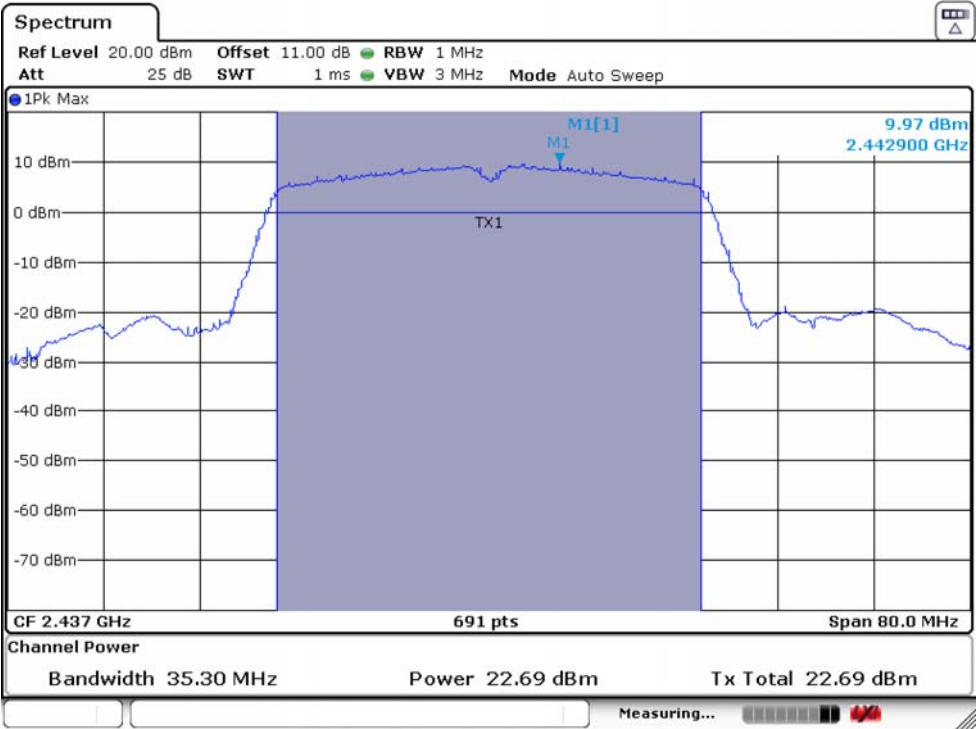
IEEE 802.11n HT40 2422MHz_ANT 1



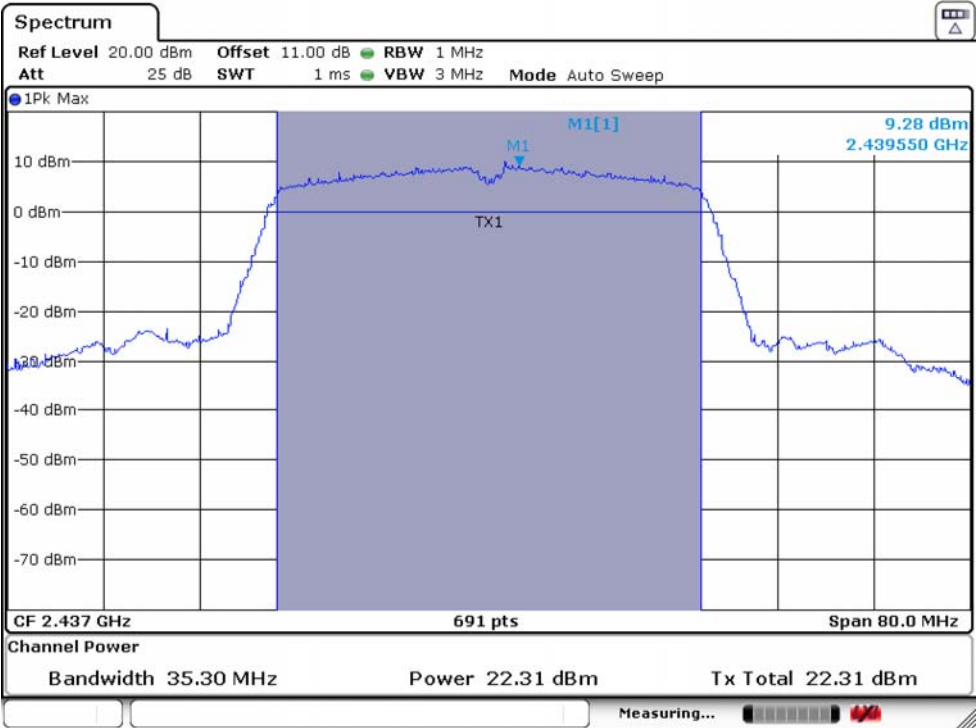
IEEE 802.11n HT40 2422MHz_ANT 2



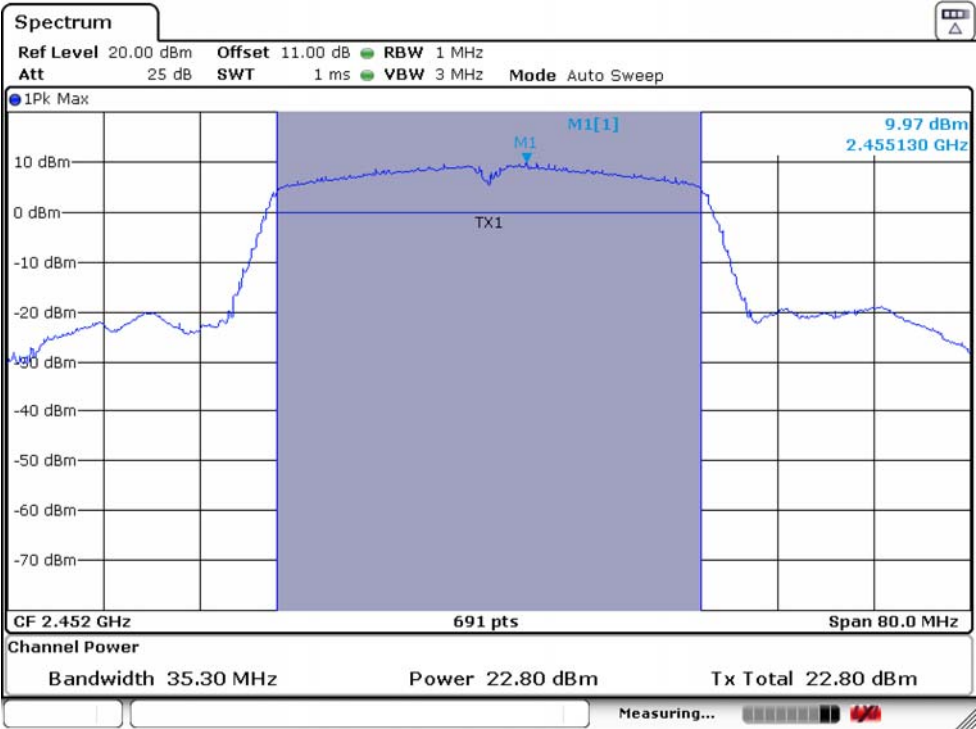
IEEE 802.11n HT40 2437MHz_ANT 1



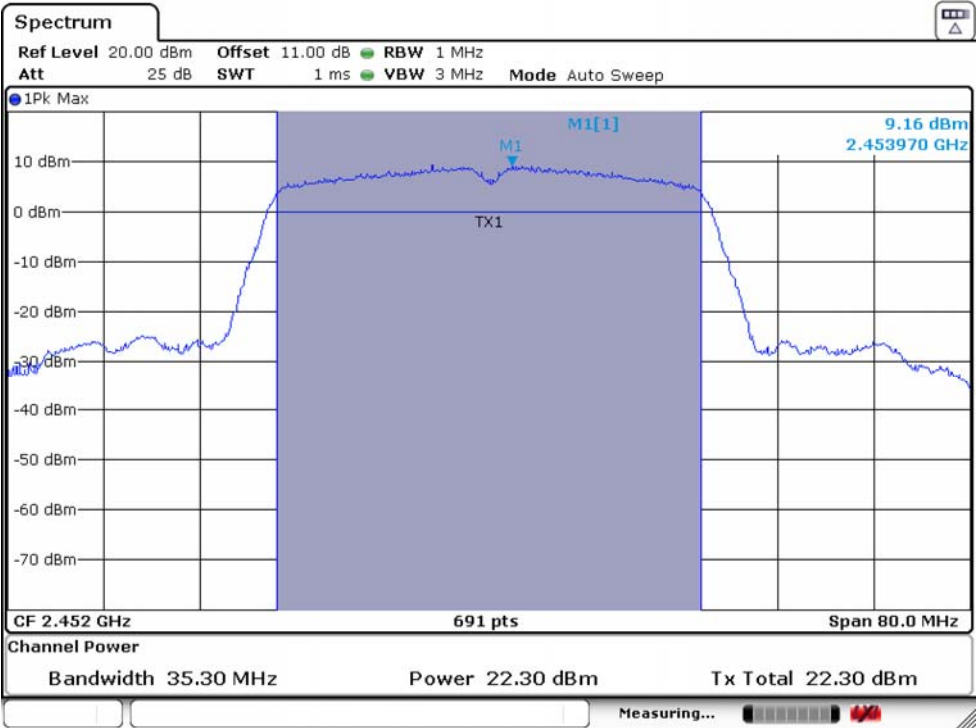
IEEE 802.11n HT40 2437MHz_ANT 2



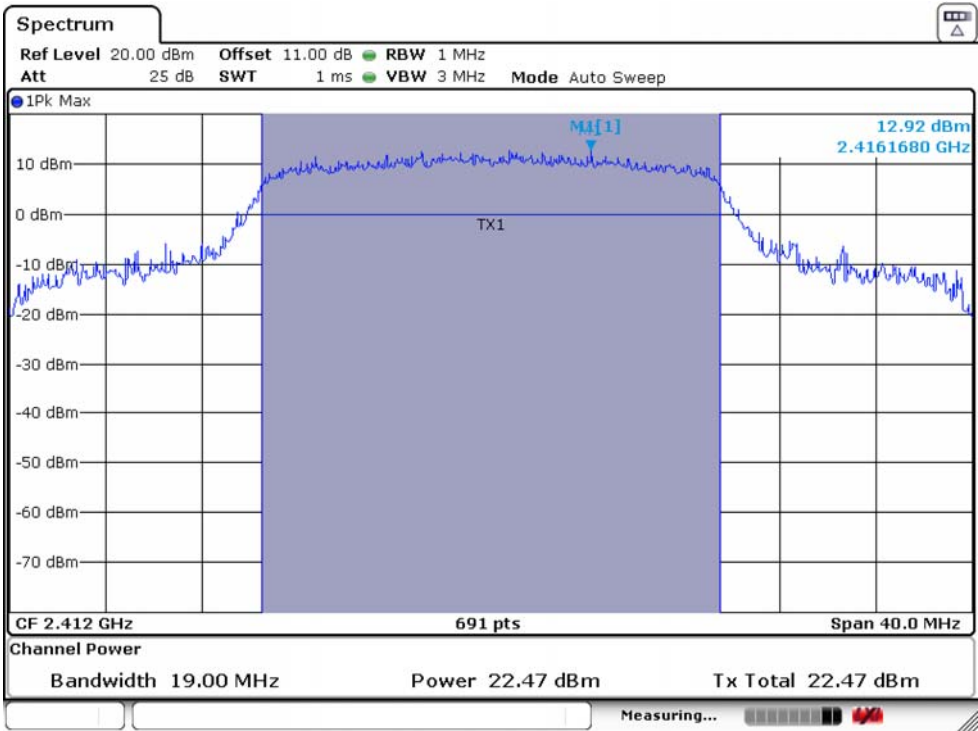
IEEE 802.11n HT40 2452MHz_ANT 1



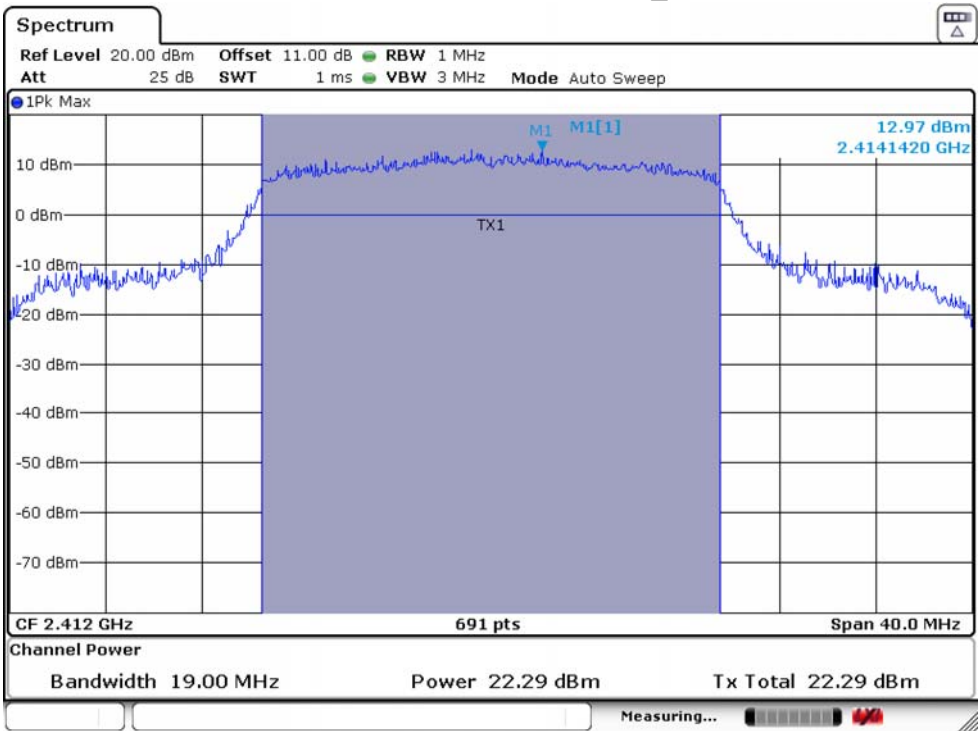
IEEE 802.11n HT40 2452MHz_ANT 2



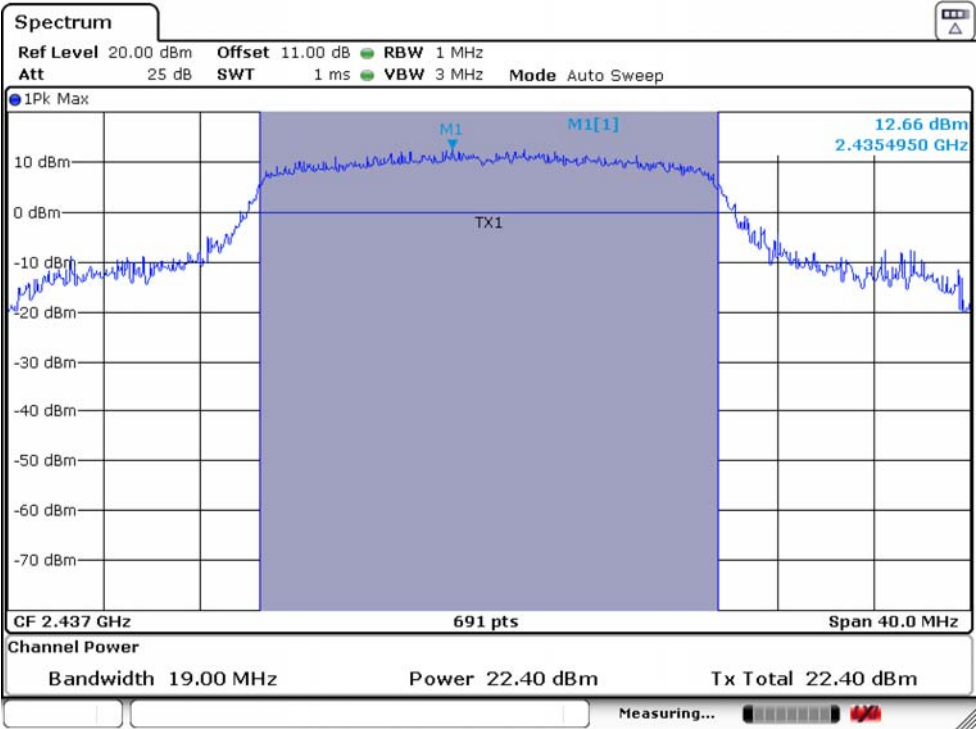
IEEE 802.11ax HE20 2412MHz_ANT 1



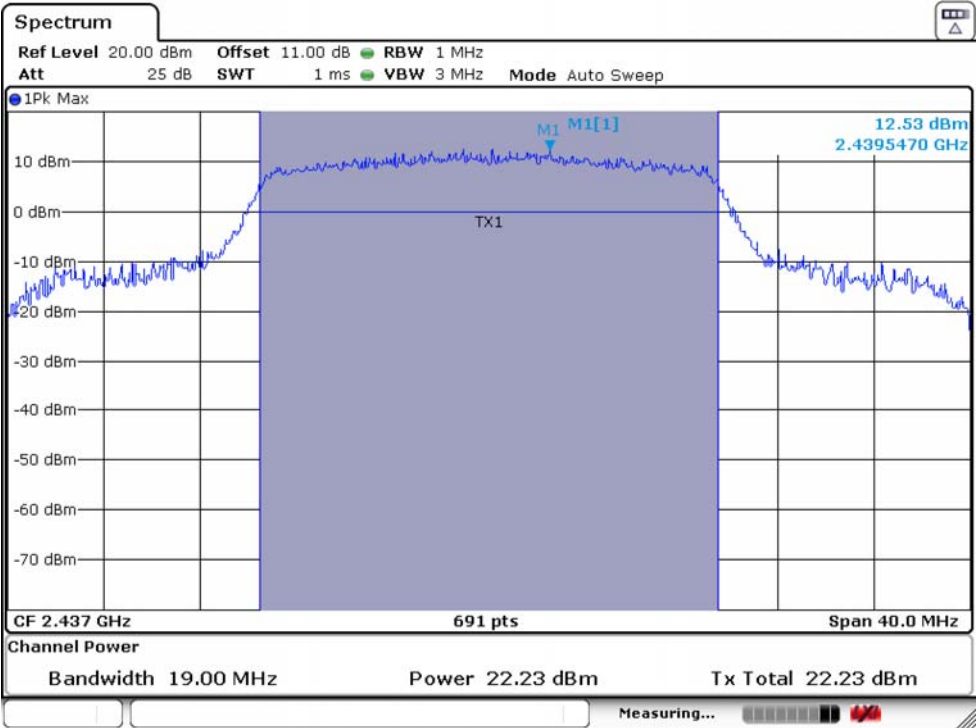
IEEE 802.11ax HE20 2412MHz_ANT 2



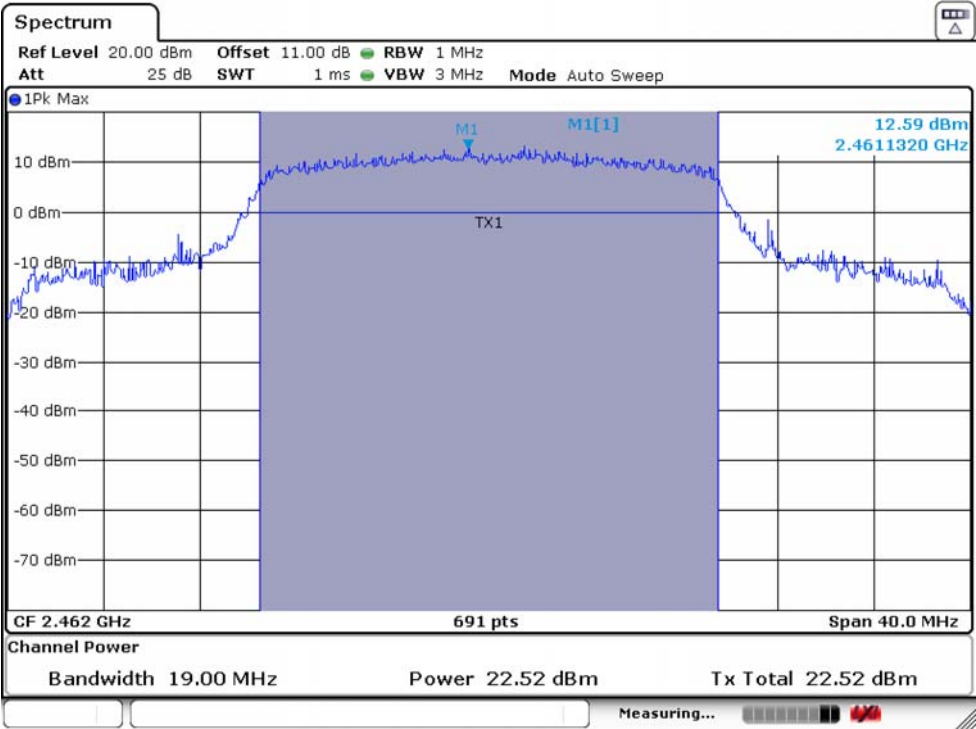
IEEE 802.11ax HE20 2437MHz_ANT 1



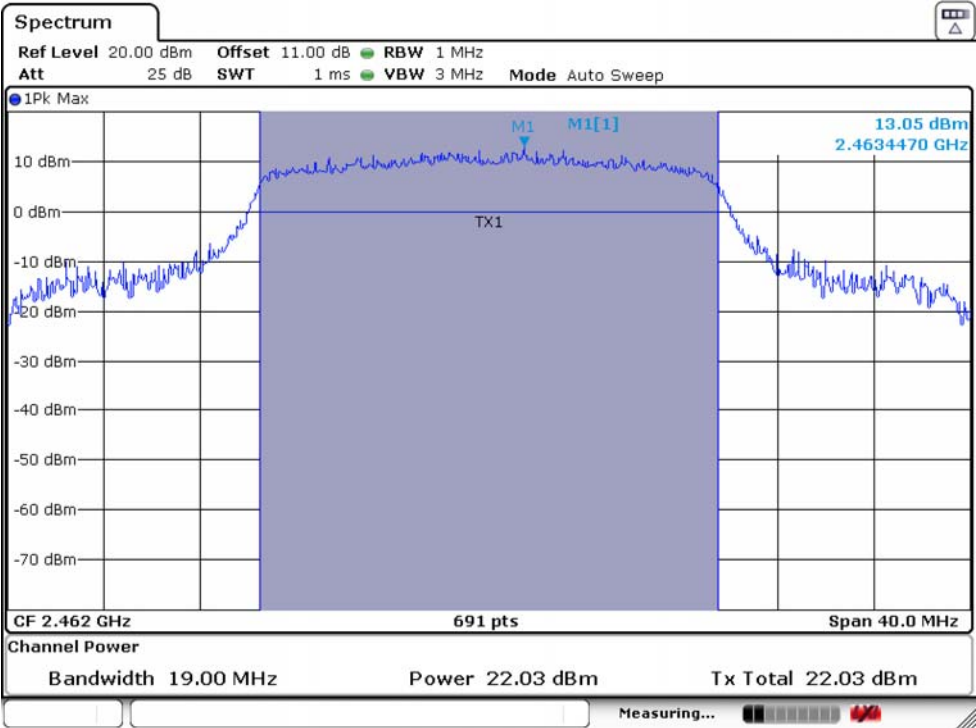
IEEE 802.11ax HE20 2437MHz_ANT 2



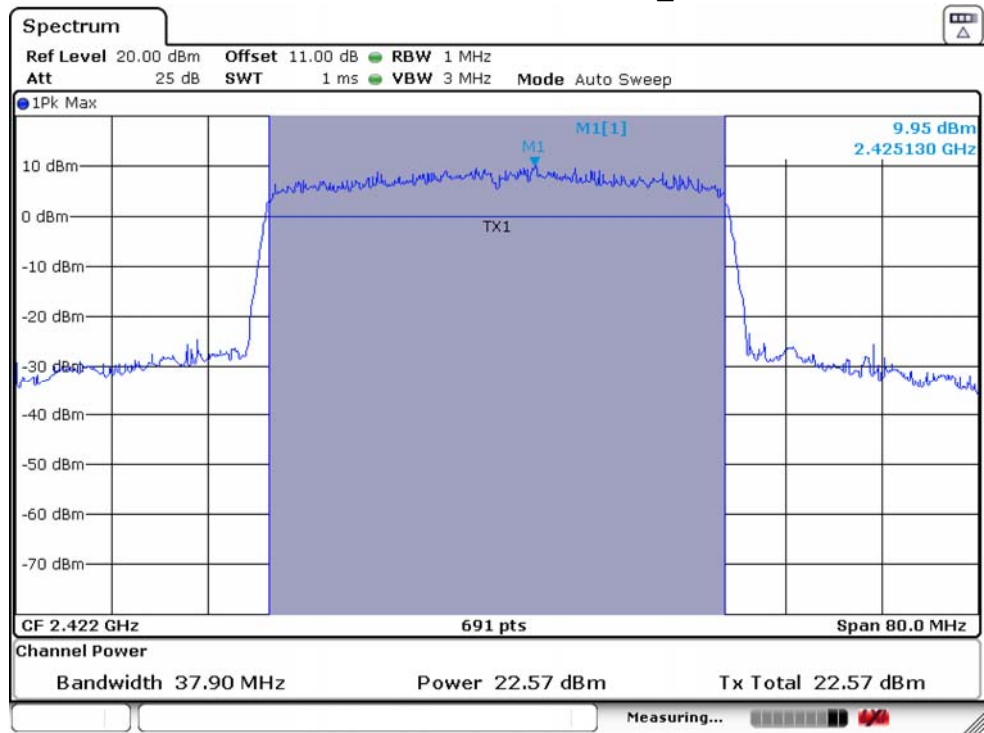
IEEE 802.11ax HE20 2462MHz_ANT 1



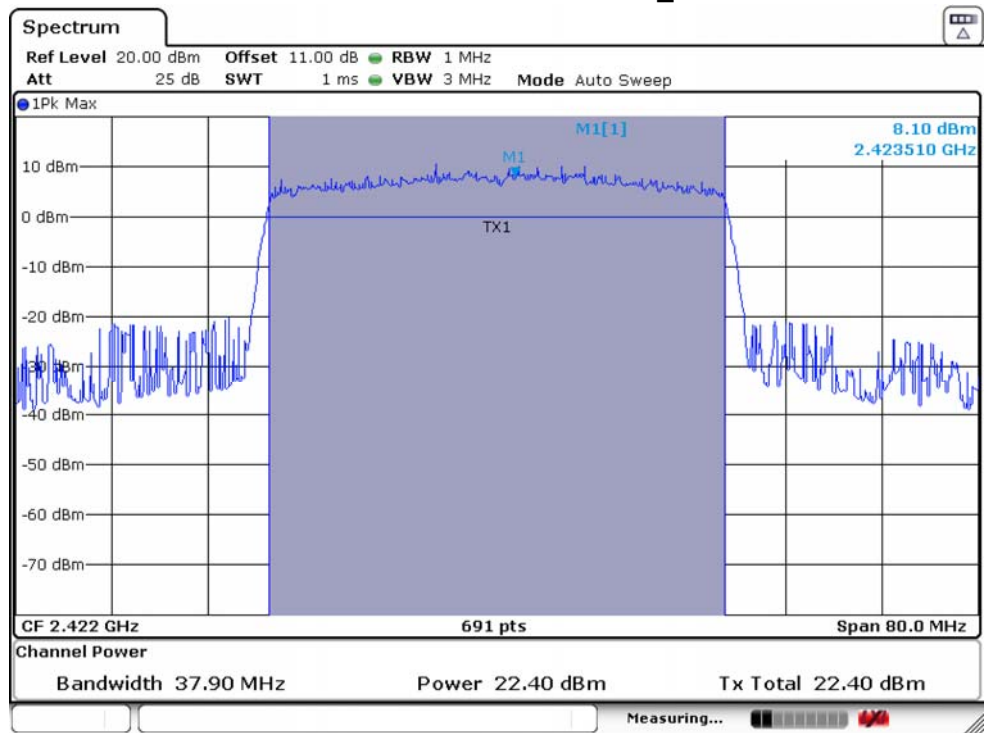
IEEE 802.11ax HE20 2462MHz_ANT 2



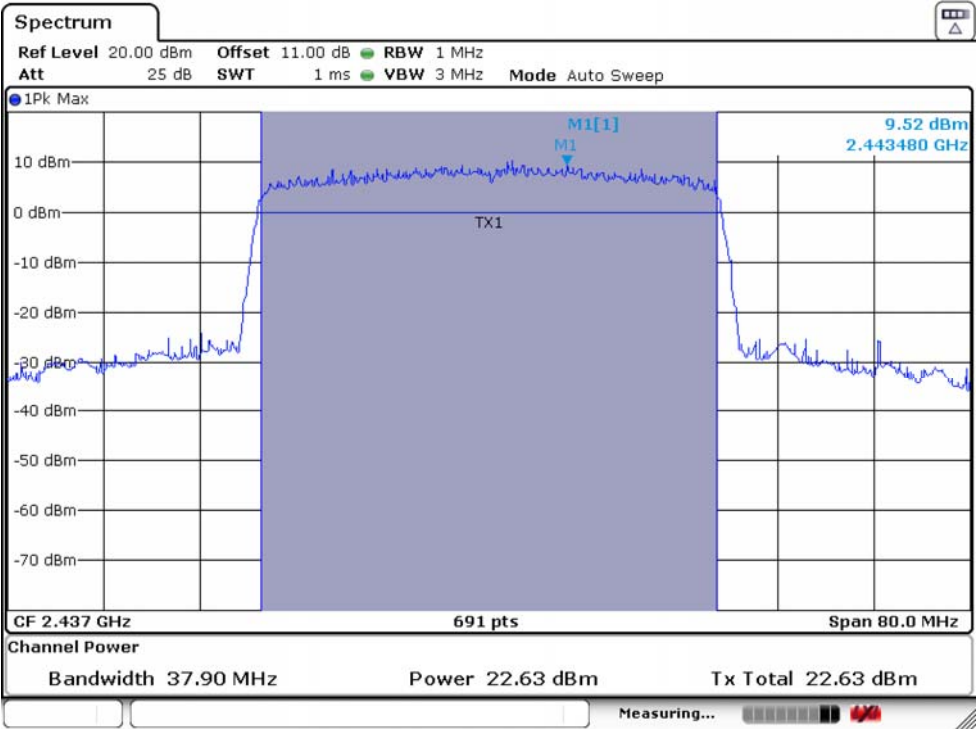
IEEE 802.11ax HE40 2422MHz_ANT 1



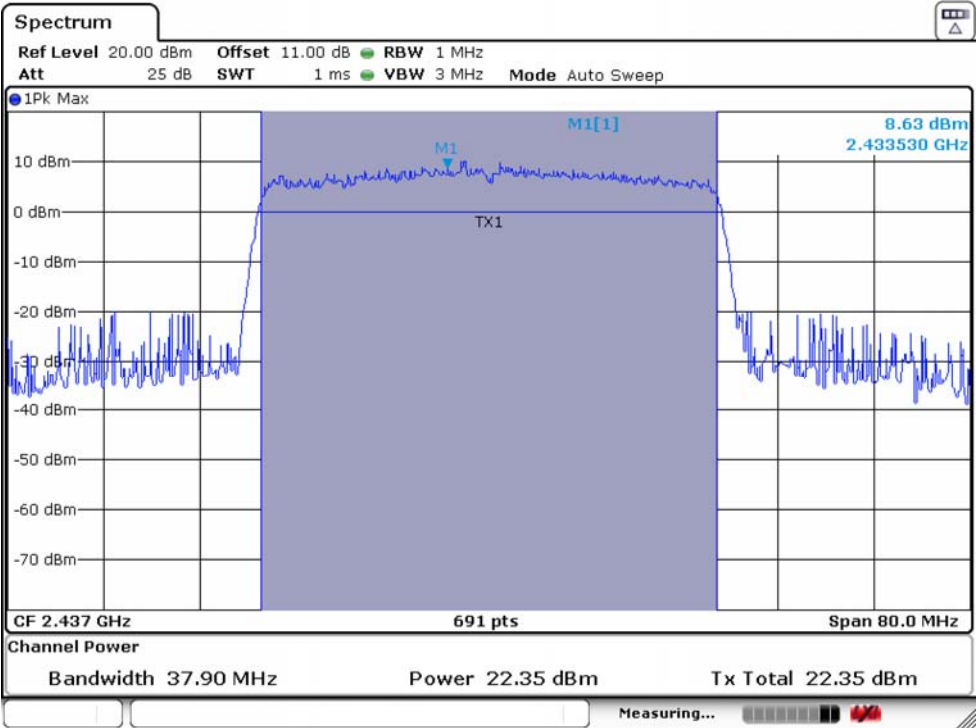
IEEE 802.11ax HE40 2422MHz_ANT 2



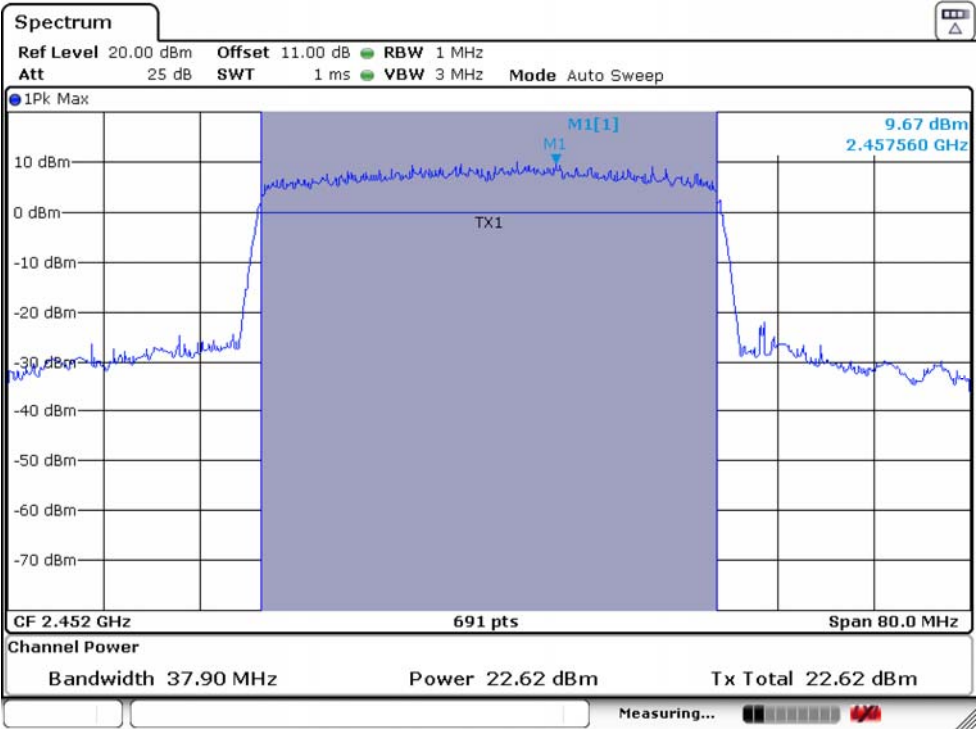
IEEE 802.11ax HE40 2437MHz_ANT 1



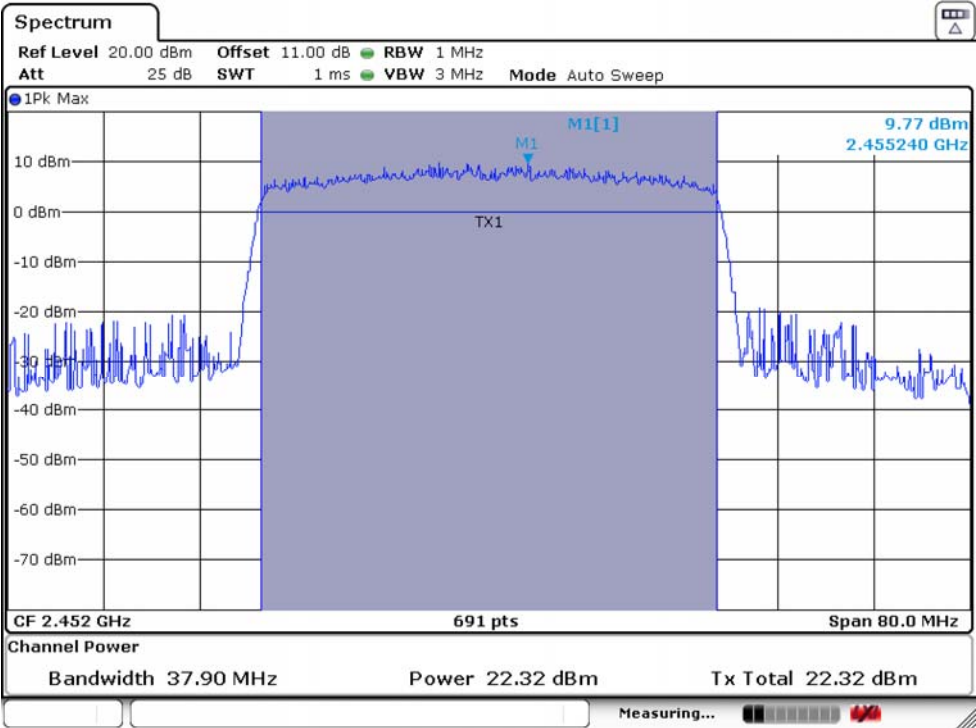
IEEE 802.11ax HE40 2437MHz_ANT 2



IEEE 802.11ax HE40 2452MHz_ANT 1



IEEE 802.11ax HE40 2452MHz_ANT 2

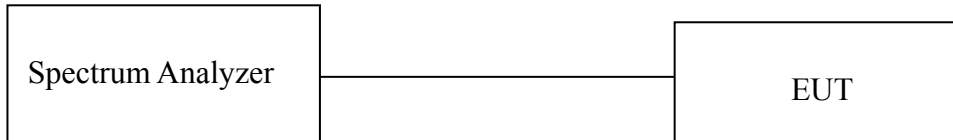


9. POWER SPECTRAL DENSITY

9.1. Limit

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.

9.2. Test Setup



9.3. Spectrum Analyzer Setting

Spectrum Parameters	Setting
RBW	3KHz
VBW	10KHz
Span	30MHz(20MHz Bandwidth mode)/60MHz(40MHz Bandwidth mode)
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

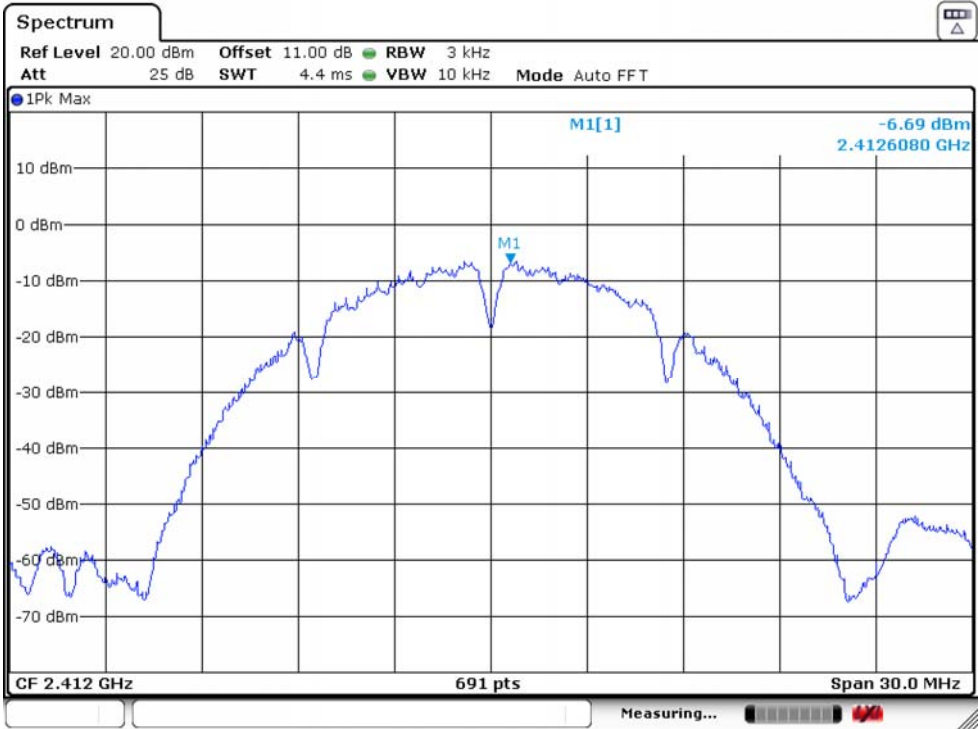
9.4. Test Procedure

- Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- Spectrum analyzer setting parameters in accordance with section 5.3.
- Set the EUT transmit continuously with maximum output power.
- Allow trace to stabilize, use the marker-to-peak function to set the marker to the peak of the emission.
- Repeat above procedures until all modes and channels were measured.
- Record the results in the test report.

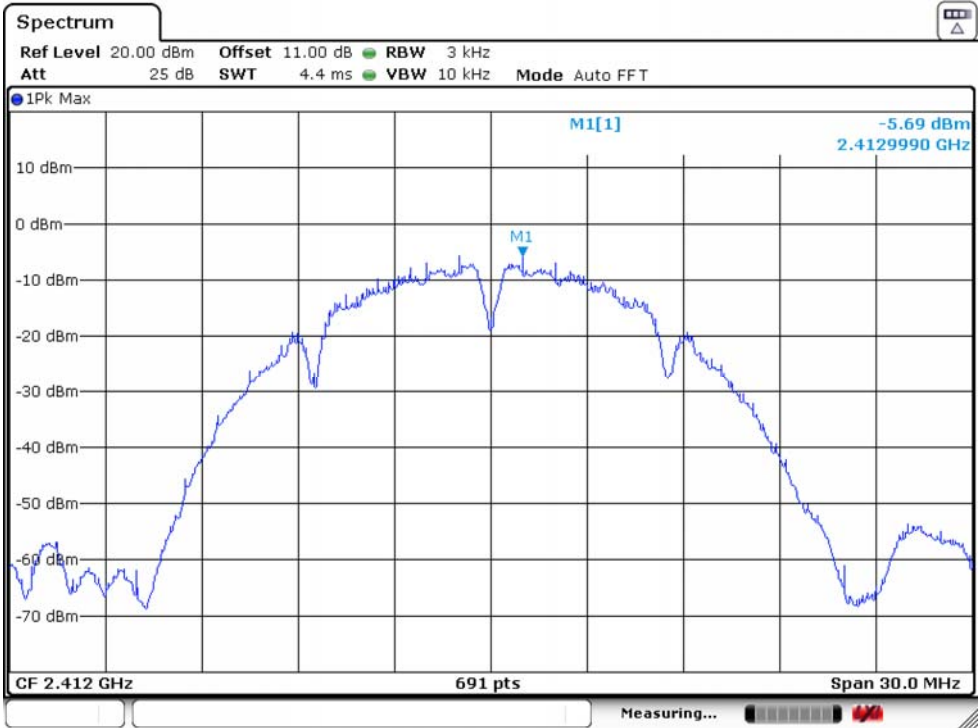
9.5. Test Result

Temperature	23.6℃	Relative Humidity		56%	Test Voltage	DC 3.3V
Mode	Freq (MHz)	Power Density (dBm/3KHz)		Total Power Density (dBm/3KHz)	Limit (dBm/3KHz)	Result
		ANT 1	ANT 2			
IEEE 802.11b	2412	-6.69	-5.69	-6.69	8.00	PASS
	2437	-6.15	-6.63	-6.15	8.00	PASS
	2462	-6.50	-6.98	-6.50	8.00	PASS
IEEE 802.11g	2412	-8.78	-10.07	-8.78	8.00	PASS
	2437	-9.03	-9.83	-9.03	8.00	PASS
	2462	-8.77	-9.42	-8.77	8.00	PASS
IEEE 802.11n HT20	2412	-7.70	-9.55	-5.52	8.00	PASS
	2437	-10.60	-10.47	-7.52	8.00	PASS
	2462	-9.75	-10.49	-7.09	8.00	PASS
IEEE 802.11n HT40	2422	-12.73	-13.45	-10.06	8.00	PASS
	2437	-12.91	-13.16	-10.02	8.00	PASS
	2452	-12.60	-13.62	-10.07	8.00	PASS
IEEE 802.11ax HE20	2412	-13.42	-13.97	-10.68	8.00	PASS
	2437	-14.67	-13.74	-11.17	8.00	PASS
	2462	-13.97	-13.57	-10.76	8.00	PASS
IEEE 802.11ax HE40	2422	-16.21	-15.36	-12.75	8.00	PASS
	2437	-16.15	-15.04	-12.55	8.00	PASS
	2452	-17.26	-15.13	-13.06	8.00	PASS

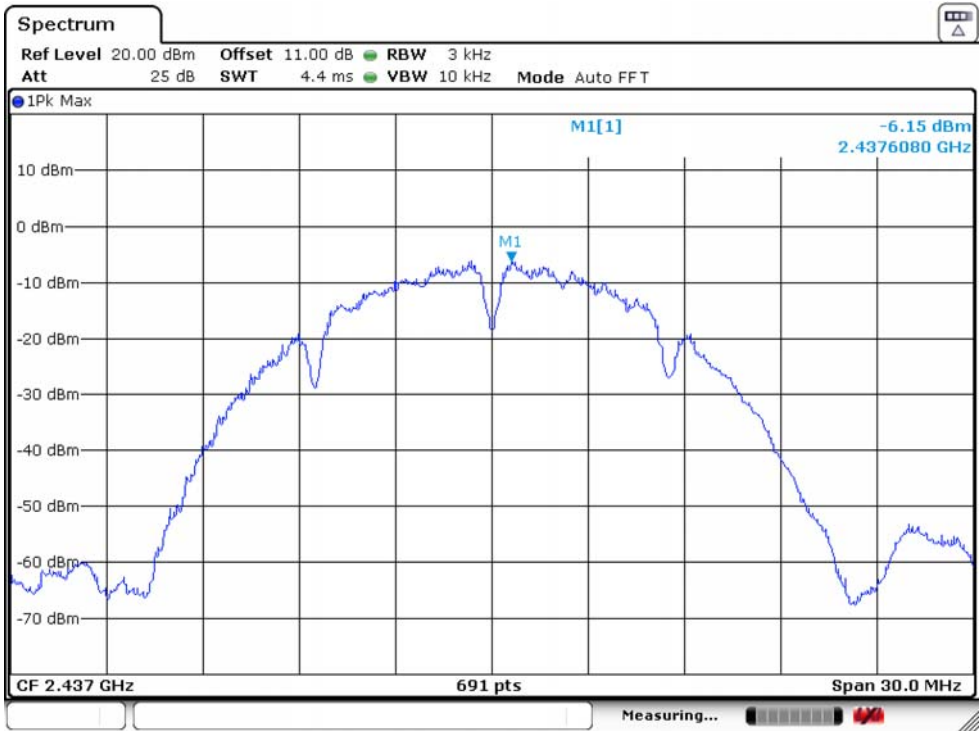
IEEE 802.11b 2412MHz_ANT 1



IEEE 802.11b 2412MHz_ANT 2



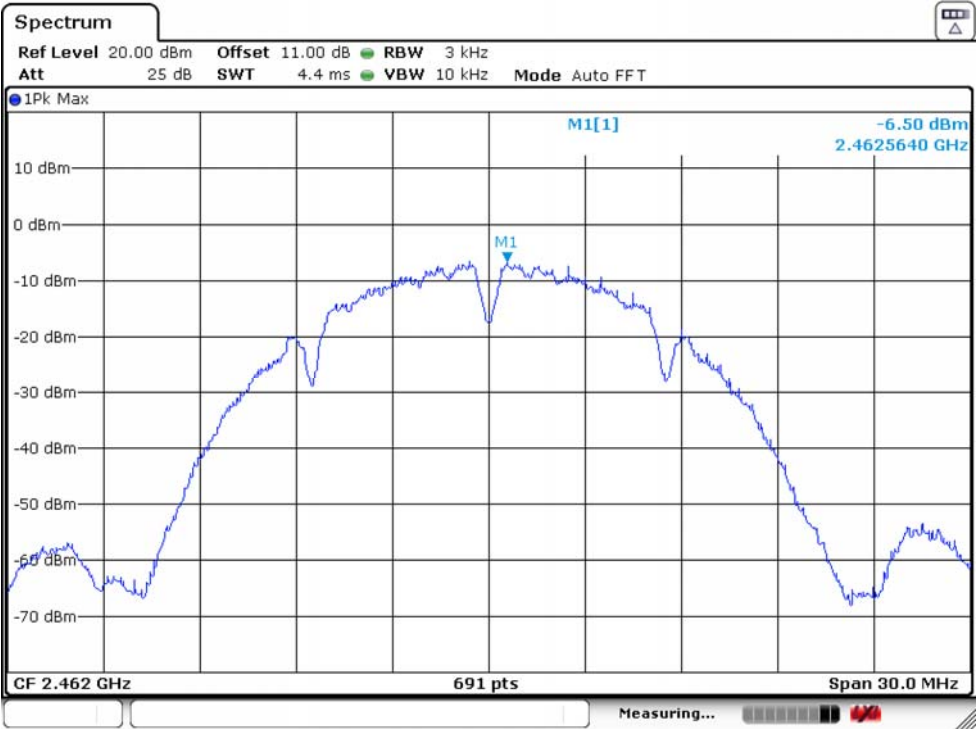
IEEE 802.11b 2437MHz_ANT 1



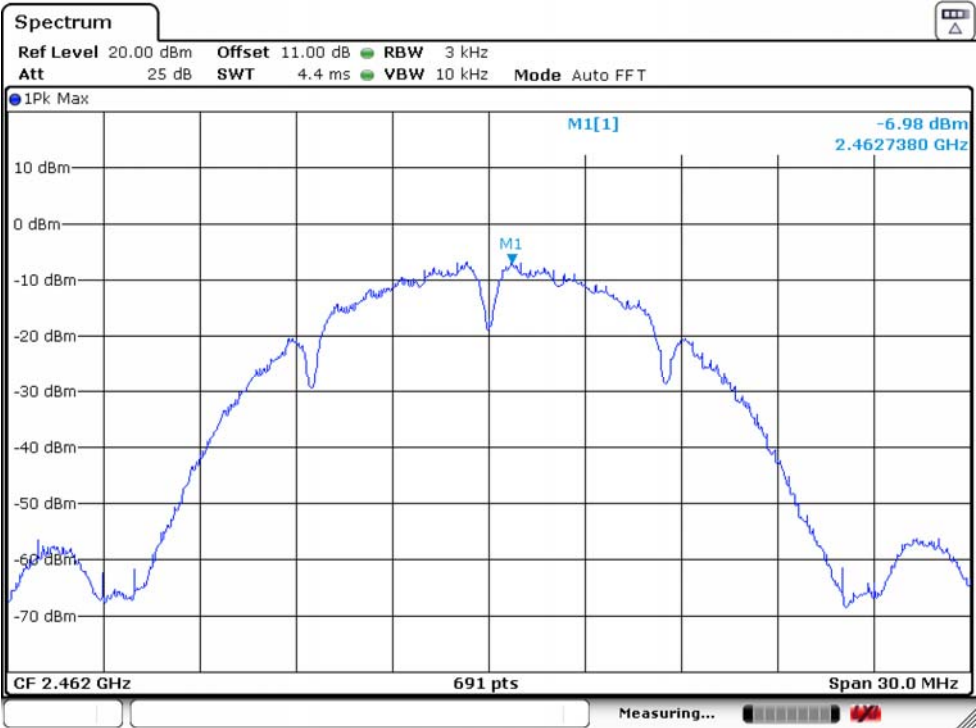
IEEE 802.11b 2437MHz_ANT 2



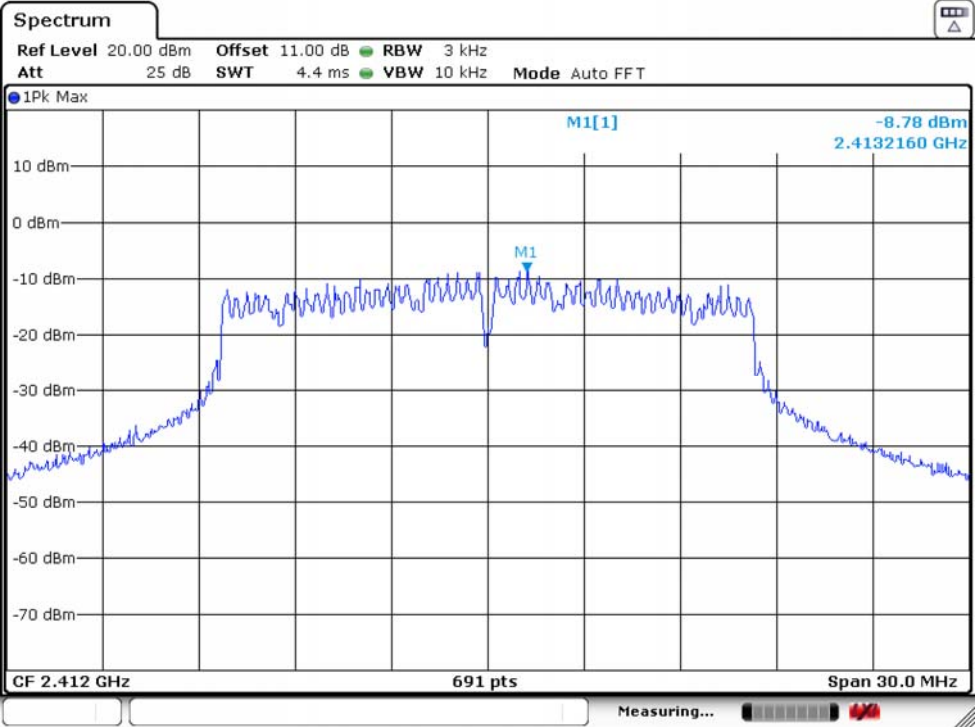
IEEE 802.11b 2462MHz_ANT 1



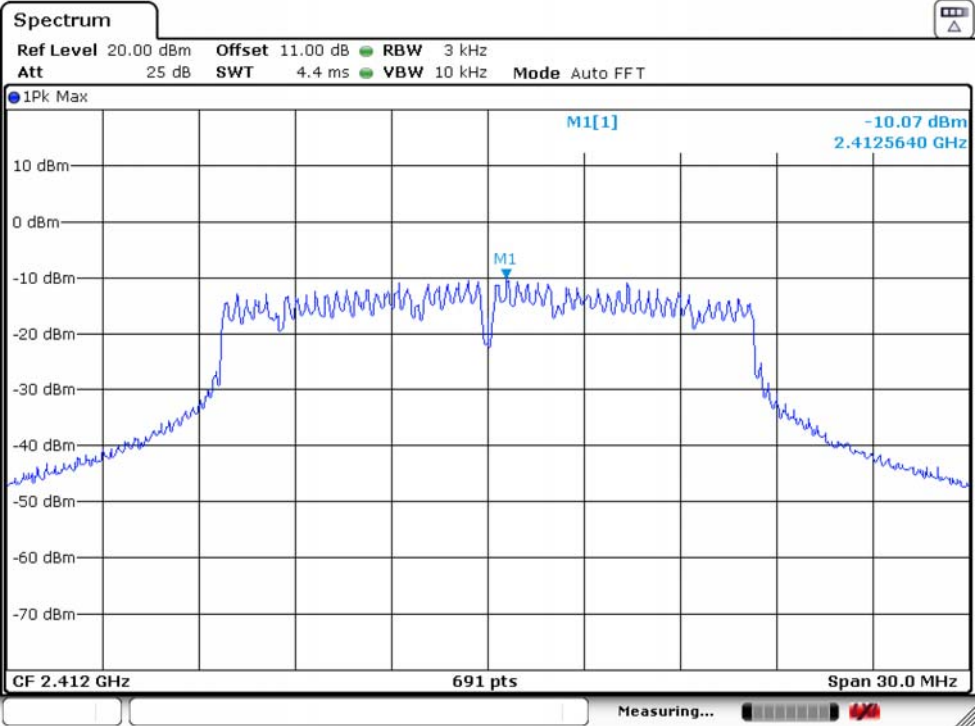
IEEE 802.11b 2462MHz_ANT 2



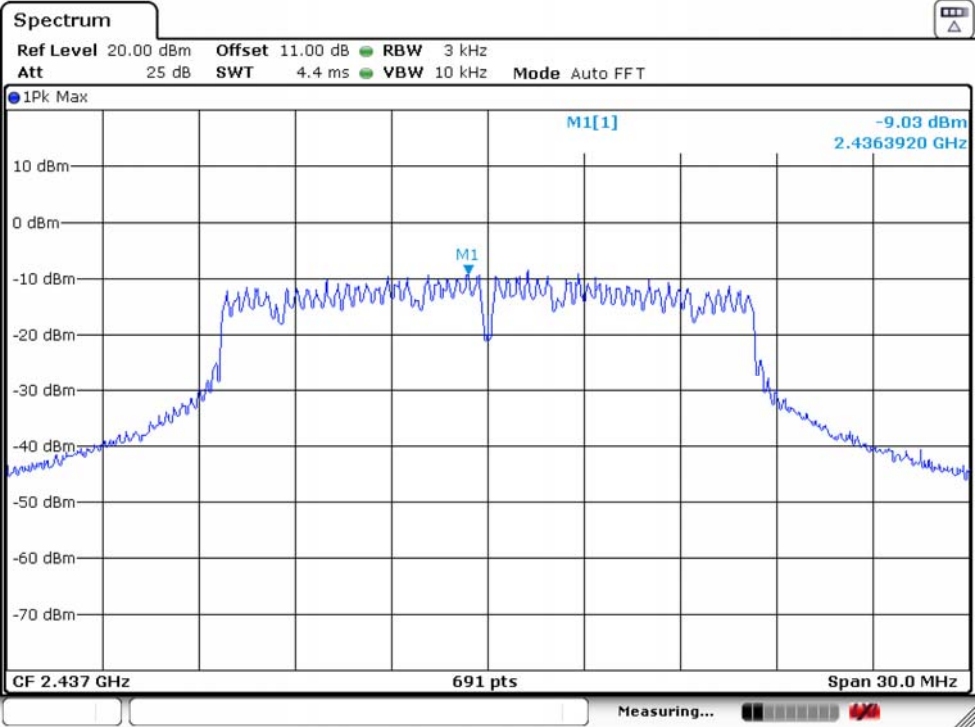
IEEE 802.11g 2412MHz_ANT 1



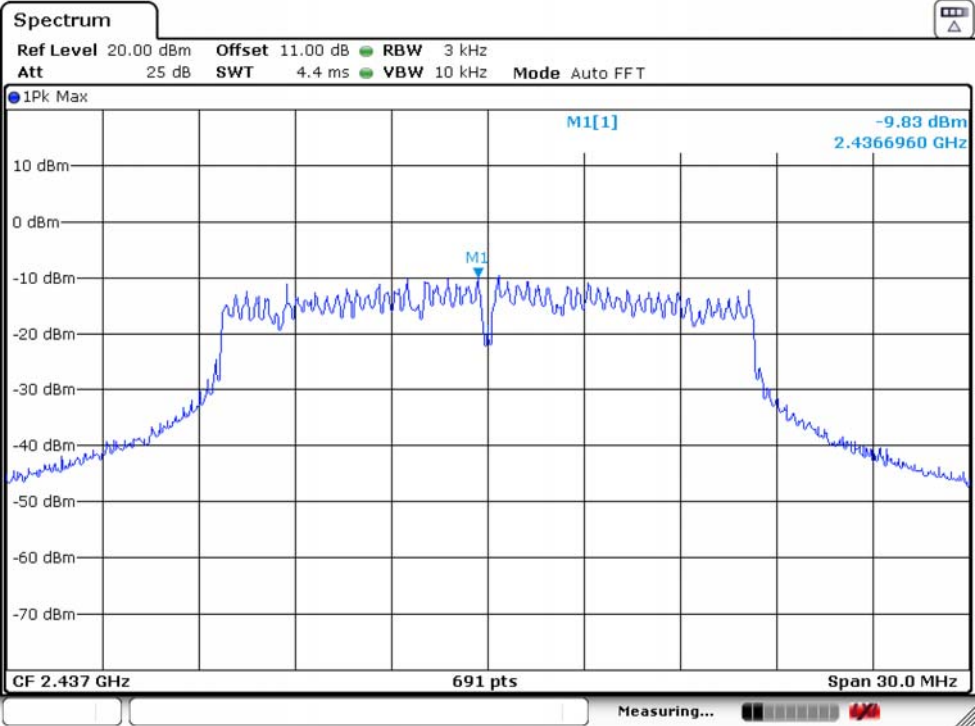
IEEE 802.11g 2412MHz_ANT 2



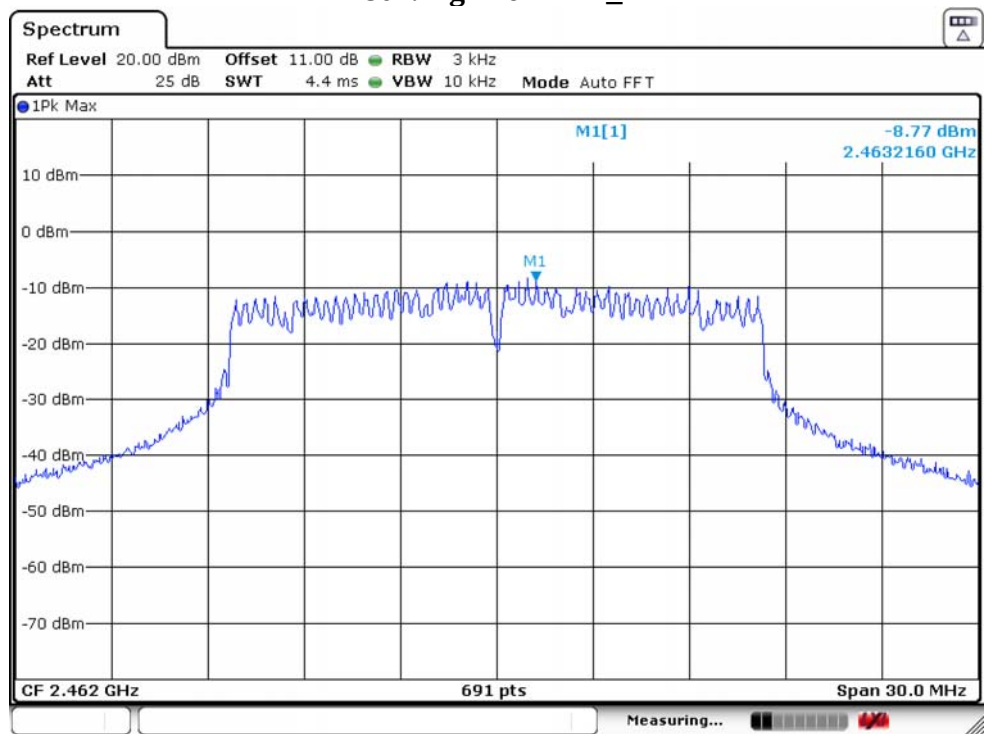
IEEE 802.11g 2437MHz_ANT 1



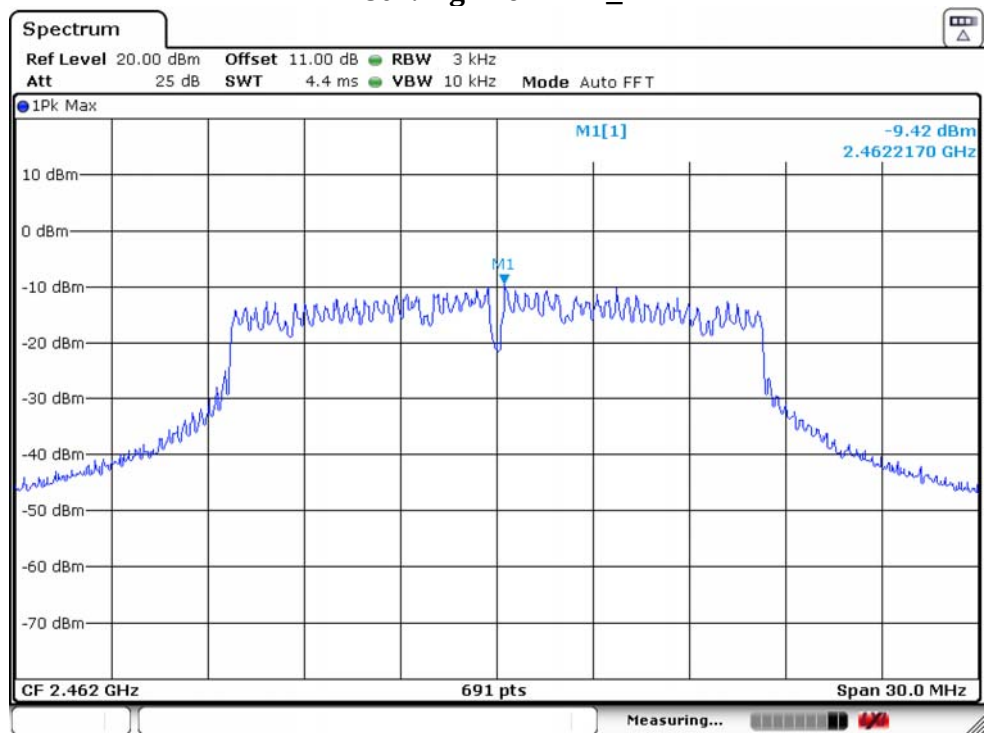
IEEE 802.11g 2437MHz_ANT 2



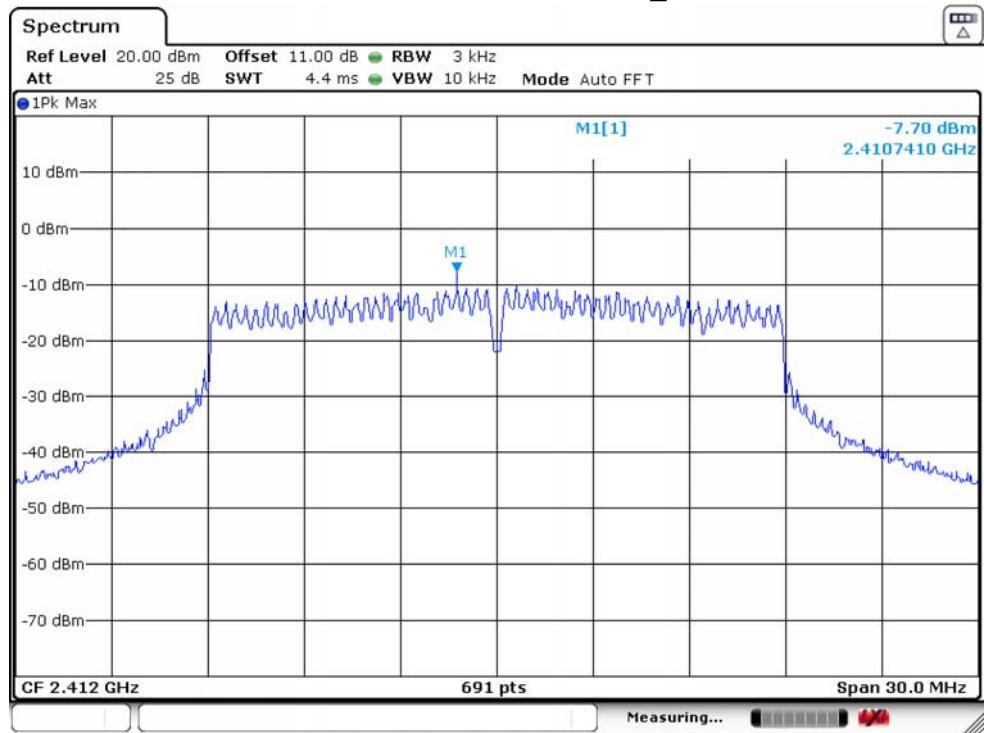
IEEE 802.11g 2462MHz_ANT 1



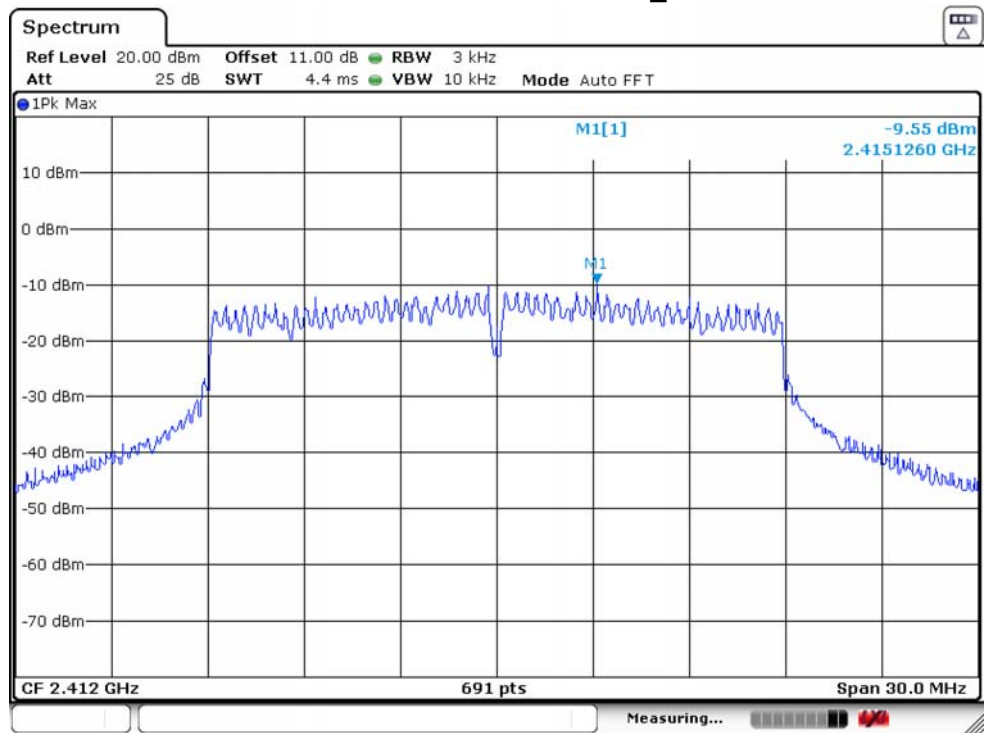
IEEE 802.11g 2462MHz_ANT 2



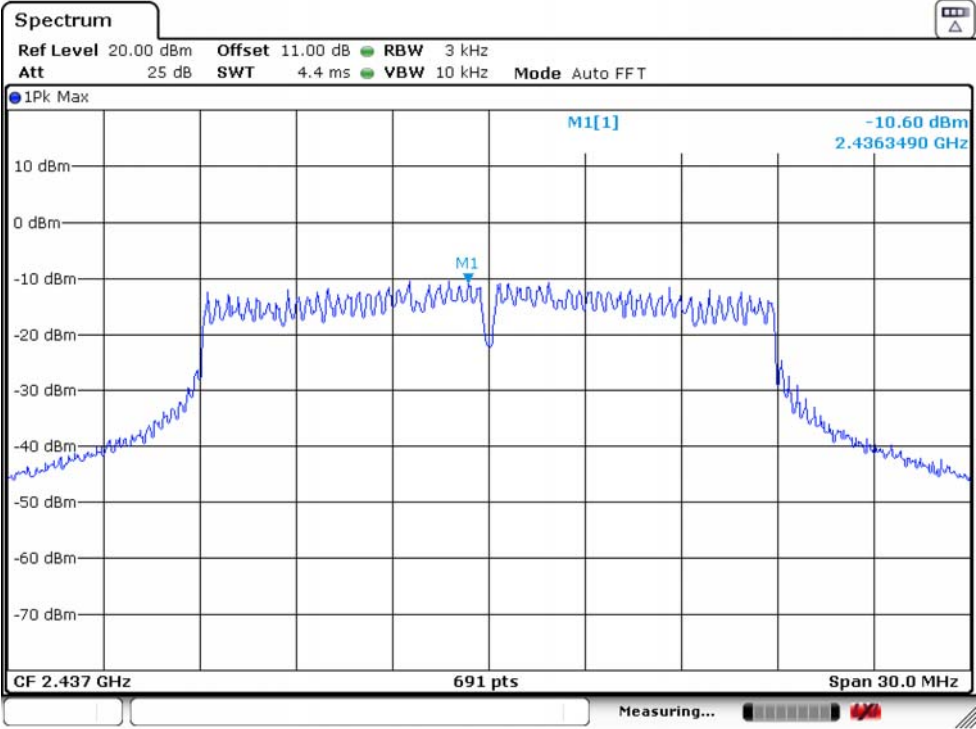
IEEE 802.11n HT20 2412MHz_ANT 1



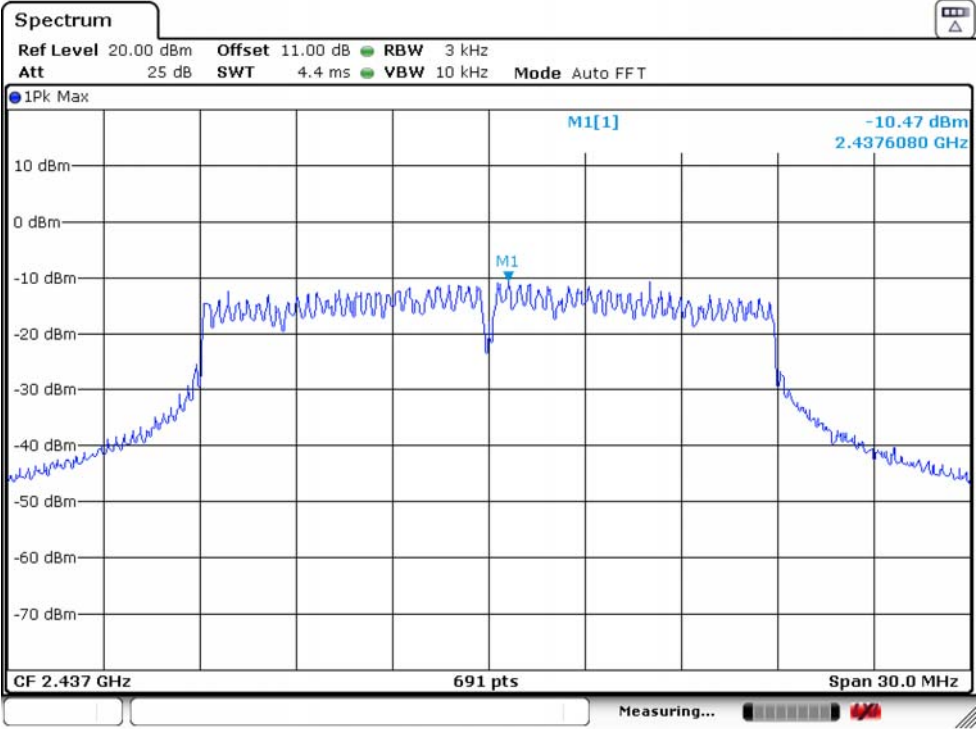
IEEE 802.11n HT20 2412MHz_ANT 2



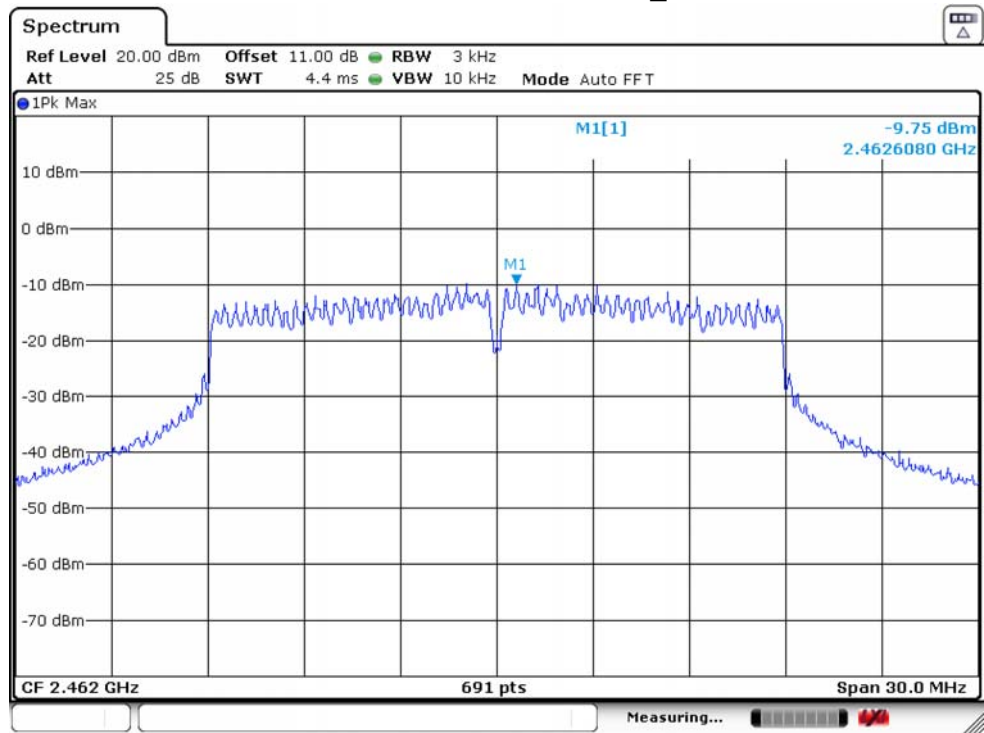
IEEE 802.11n HT20 2437MHz_ANT 1



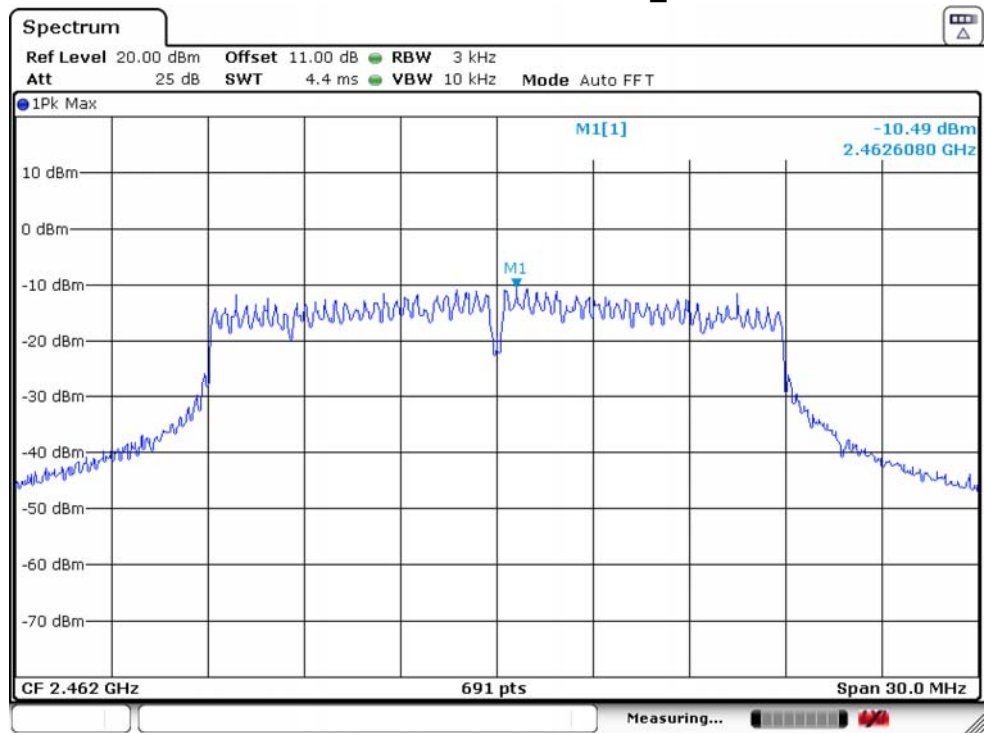
IEEE 802.11n HT20 2437MHz_ANT 2



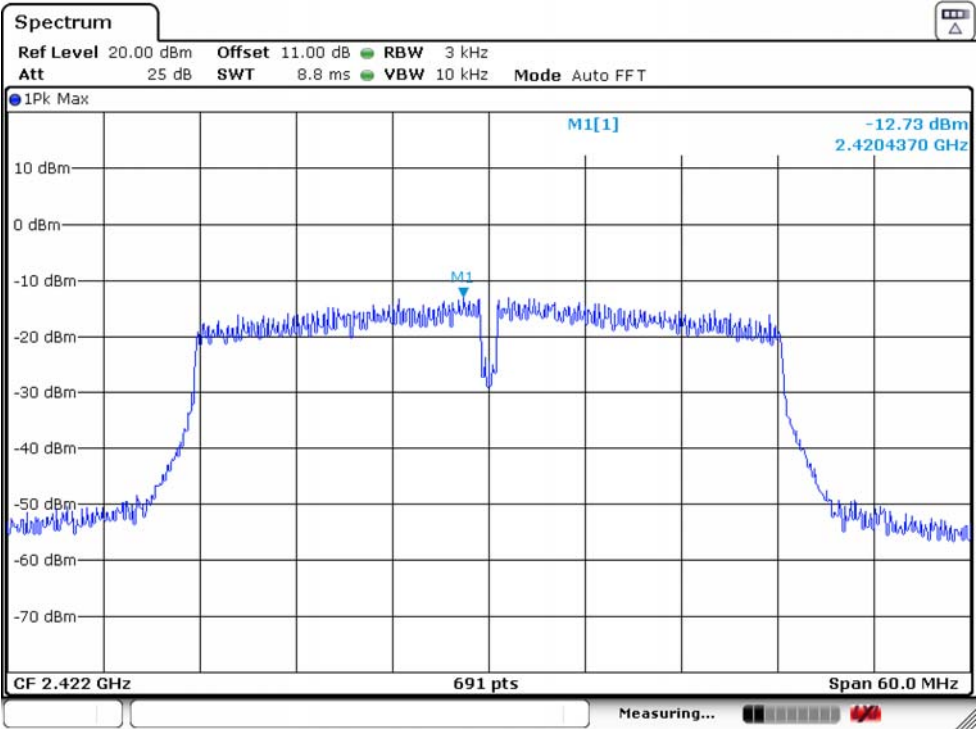
IEEE 802.11n HT20 2462MHz_ANT 1



IEEE 802.11n HT20 2462MHz_ANT 2



IEEE 802.11n HT40 2422MHz_ANT 1



IEEE 802.11n HT40 2422MHz_ANT 2

