

FCC PART 15C REPORT FOR CERTIFICATION On Behalf of

TCL Entertainment Solutions Limited

2.0 TCL• Roku TV Wireless Soundbar

Model Number: TSR1

Additional Model: TS120, TS1204, TDS1204, TS1204K, TDS1204K, FS1204, OS1204, AltoR1, Alto R, ***1204, TS7204, TS720, TDS7204, TS7204K, TDS7204K, FS7204, OS7204, AltoR7, ***7204 (“*” can be any alphanumeric character including blank for marketing differences)

FCC ID: 2ARUDTSR1

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	SHATIN, N.T. ,Hong Kong China.
Prepared By:	EST Technology Co., Ltd.
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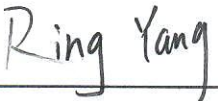
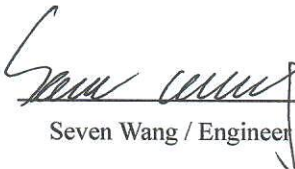
Report Number:	ESTE-R2107153
Date of Test:	Jun. 04~Jul. 27, 2021
Date of Report:	Jul. 28, 2021

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EST Technology Co., Ltd.

Applicant:	TCL Entertainment Solutions Limited		
Address:	7/F, building 22E, 22 science park east avenue Hong Kong science park, SHATIN, N.T., Hong Kong China.		
Manufacturer:	TCL Entertainment Solutions Limited		
Address:	7/F, building 22E, 22 science park east avenue Hong Kong science park, SHATIN, N.T., Hong Kong China.		
Factory:	Zhong Shan City Richsound Electronic Industrial Ltd.		
Address:	No.16, East Shagang Road, Gangkou, Zhongshan, Guangdong, China.		
E.U.T:	2.0 TCL• Roku TV Wireless Soundbar		
Model Number:	TSR1		
Additional Model:	TS120, TS1204, TDS1204, TS1204K, TDS1204K, FS1204, OS1204, AltoR1, Alto R, ***1204, TS7204, TS720, TDS7204, TS7204K, TDS7204K, FS7204, OS7204, AltoR7, ***7204(“*” can be any alphanumeric character including blank for marketing differences)		
Power Supply:	AC 100-240V, 50/60Hz, 30W		
Trade Name:	TCL	Serial No.:	-----
Date of Receipt:	Jun. 04, 2021	Date of Test:	Jun. 04~Jul. 27, 2021
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: Jul. 28, 2021	
 Ring Yang / Assistant	 Seven Wang / Engineer	 Approved by: Ice-man Hu / Manager	
Other Aspects:	None.		
<i>Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested</i>			
<i>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.</i>			

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Product Name	:	2.0 TCL• Roku TV Wireless Soundbar
Model Number	:	TSR1
Software Version	:	N/A
Hardware Version	:	N/A
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
Max Output Power (PEAK)	:	IEEE 802.11b:19.25dBm IEEE 802.11g:25.50dBm IEEE 802.11n HT20:27.69dBm IEEE 802.11n HT40:28.13dBm
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)
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	N/A	N/A	Internal	N/A	2.5
2	N/A	N/A	Internal	N/A	2.5

Note:

- 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.
- The EUT can work as CDD mode in IEEE 802.11n HT20 and IEEE 802.11n HT40,and can operate with one spatial stream.
- According to ANSI C63.10:2013 14.4.3.2.5 a):
 $\text{Directional gain} = 2\text{dBi} + 10 \times \log(2/1)\text{dB} = 5.01\text{dBi} < 6\text{dBi}$
 So,the output power limit and power spectral density no need to be reduced.
- After pre-test all antenna configurations,the worst case configuration as list 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

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 : Certified 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	1.08dB
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 $k=2$.

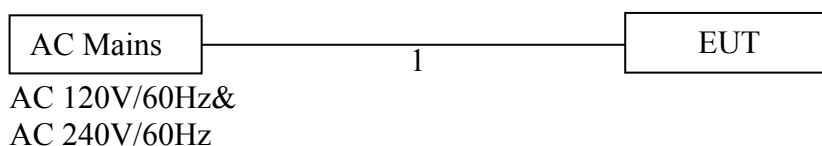
2.4. Assistant equipment used for test

Item	Equipment	Brand	Model Name/Type No.	FCC ID	Series No.
-	-	-	-	-	-

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	NO	1.2m	AC Cable

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.



(EUT: 2.0 TCL• Roku TV Wireless Soundbar)

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	MCS8	Low/Middle/High
	IEEE 802.11n HT40	MCS8	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	MCS8	Low/Middle/High
	IEEE 802.11n HT40	MCS8	Low/Middle/High
Power Spectral Density	IEEE 802.11b	1Mbps	Low/Middle/High
	IEEE 802.11g	6Mbps	Low/Middle/High
	IEEE 802.11n HT20	MCS8	Low/Middle/High
	IEEE 802.11n HT40	MCS8	Low/Middle/High
Conducted Band Edge	IEEE 802.11b	1Mbps	Low/ High
	IEEE 802.11g	6Mbps	Low/ High
	IEEE 802.11n HT20	MCS8	Low/ High
	IEEE 802.11n HT40	MCS8	Low/ High
Conducted Spurious Emissions	IEEE 802.11b	1Mbps	Low/Middle/High
	IEEE 802.11g	6Mbps	Low/Middle/High
	IEEE 802.11n HT20	MCS8	Low/Middle/High
	IEEE 802.11n HT40	MCS8	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	MCS8	Low/Middle/High
	IEEE 802.11n HT40	MCS8	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	MCS8	Low/Middle/High
	IEEE 802.11n HT40	MCS8	Low/Middle/High
Radiated Band Edge	IEEE 802.11b	1Mbps	Low/Middle/High
	IEEE 802.11g	6Mbps	Low/Middle/High
	IEEE 802.11n HT20	MCS8	Low/Middle/High
	IEEE 802.11n HT40	MCS8	Low/Middle/High
AC Power Line Conducted Emissions	IEEE 802.11b	1Mbps	Low/Middle/High
	IEEE 802.11g	6Mbps	Low/Middle/High
	IEEE 802.11n HT20	MCS8	Low/Middle/High
	IEEE 802.11n HT40	MCS8	Low/Middle/High

Note:

1. 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	SecureCRT 5.50		
Frequency(MHz)	2412	2437	2462
IEEE 802.11b Setting	85,94	85,94	85,94
IEEE 802.11g Setting	76,83	76,83	76,83
IEEE 802.11n HT20 Setting	76,83	76,83	76,83
Frequency(MHz)	2422	2437	2452
IEEE 802.11n HT40 Setting	76,83	76,83	76,83

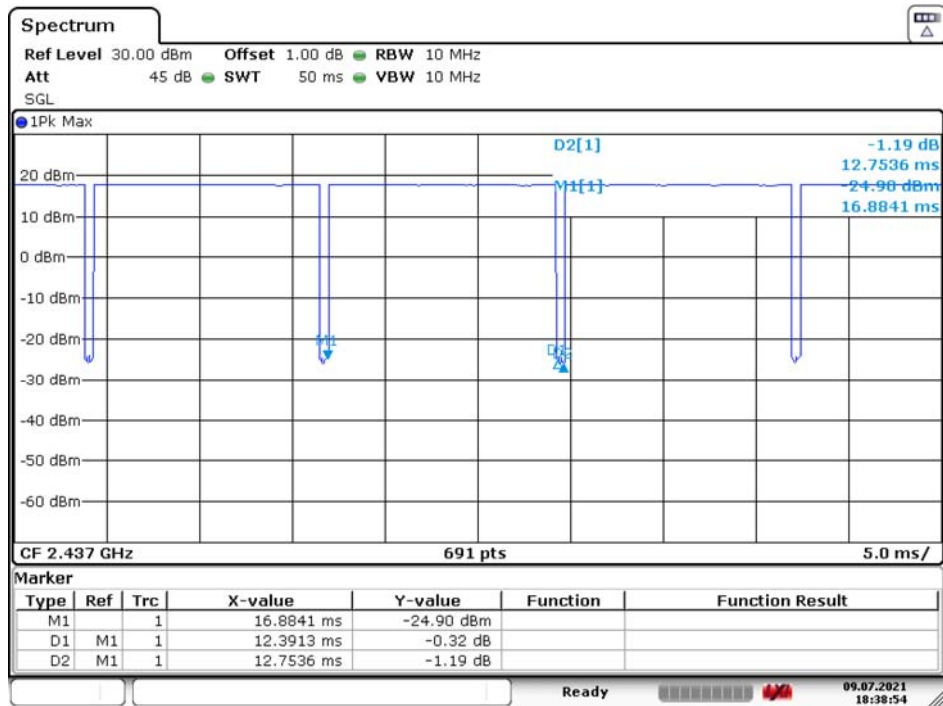
2.8. Duty Cycle

Temperature	24.1℃	Relative Humidity	55%	Test Voltage	AC 120V/60Hz
Mode	Fre(MHz)	On time(ms)	Total Time(ms)	Duty Cycle	Duty Factor
IEEE 802.11b	2437	12.3913	12.7536	97.16	0.13
IEEE 802.11g	2437	2.0580	2.5362	81.15	0.91
IEEE 802.11n HT20	2437	1.9257	2.4058	80.04	0.97
IEEE 802.11n HT40	2437	0.9565	1.4348	66.66	1.76

Note:

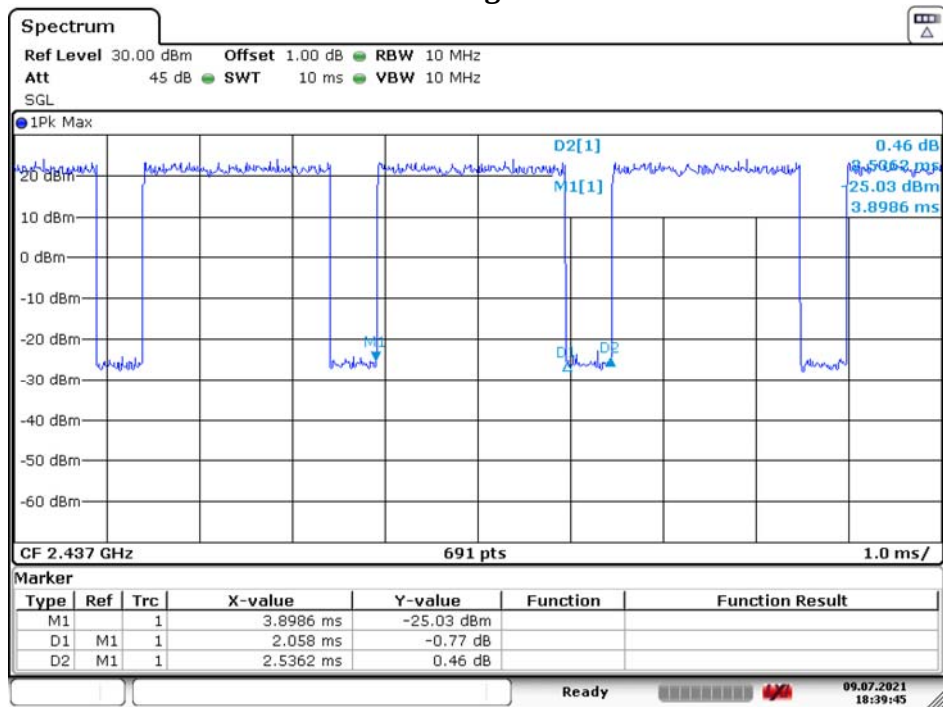
1. If duty cycle <98 %, the conducted average output power and average power spectral density should be add duty factor.
2. If duty cycle $\geq$ 98 %,the EUT is consider to be transmitting continuously,the conducted average output power and average power spectral density no need to add duty factor(consider 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



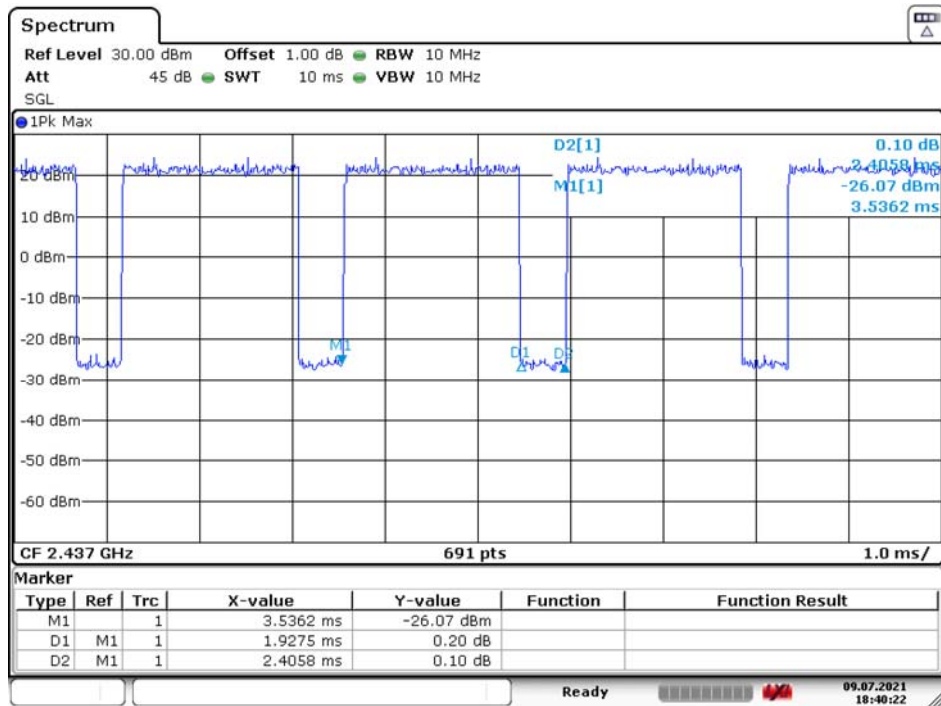
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IEEE 802.11g 2437MHz



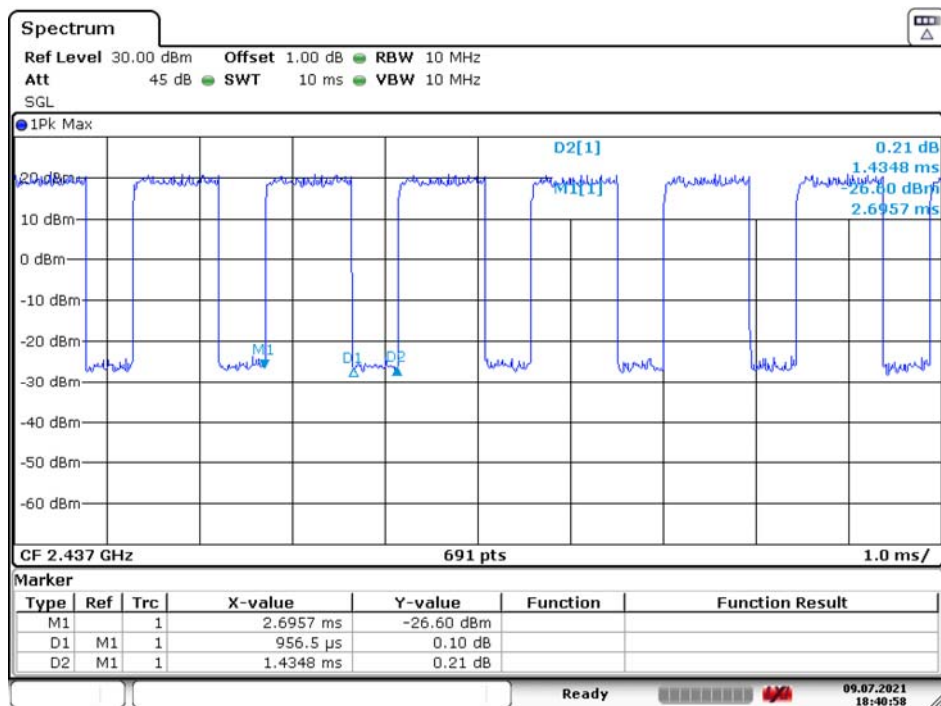
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IEEE 802.11n HT20 2437MHz



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IEEE 802.11n HT40 2437MHz



Date: 9.JUL.2021 18:40:58

2.9. Channel List

IEEE 802.11b/802.11g/802.11n HT20					
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					
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

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

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

For radiated emission test(Above 1000MHz)						
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

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

3. 6dB BANDWIDTH

3.1. Limit

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

3.2. Test Setup



3.3. 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

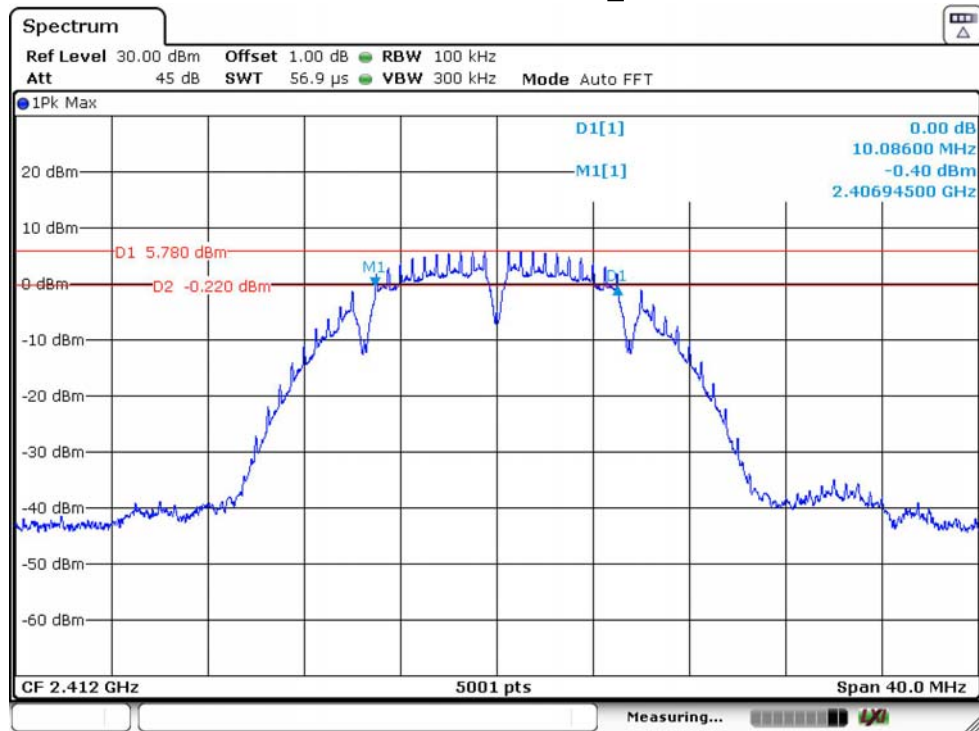
3.4. Test Procedure

- 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.

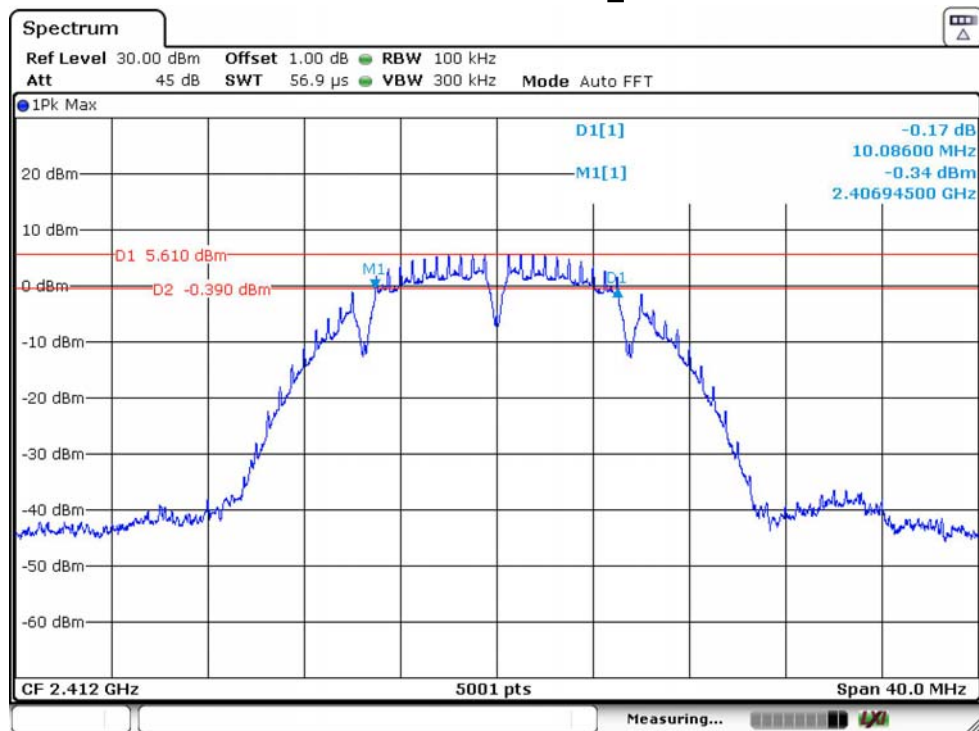
3.5. Test Result

Temperature	24.1 °C	Relative Humidity	55%	Test Voltage	AC 120V/60Hz
Mode	Freq (MHz)	6dB Bandwidth (MHz)		Limit (MHz)	Result
		ANT 1	ANT 2		
IEEE 802.11b	2412	10.086	10.086	≥ 0.5	PASS
	2437	10.086	10.086	≥ 0.5	PASS
	2462	10.086	10.086	≥ 0.5	PASS
IEEE 802.11g	2412	15.692	16.277	≥ 0.5	PASS
	2437	15.661	16.277	≥ 0.5	PASS
	2462	15.677	16.285	≥ 0.5	PASS
IEEE 802.11n HT20	2412	16.285	16.277	≥ 0.5	PASS
	2437	16.517	16.277	≥ 0.5	PASS
	2462	16.253	16.501	≥ 0.5	PASS
IEEE 802.11n HT40	2422	35.129	35.113	≥ 0.5	PASS
	2437	35.129	35.129	≥ 0.5	PASS
	2452	35.145	35.129	≥ 0.5	PASS

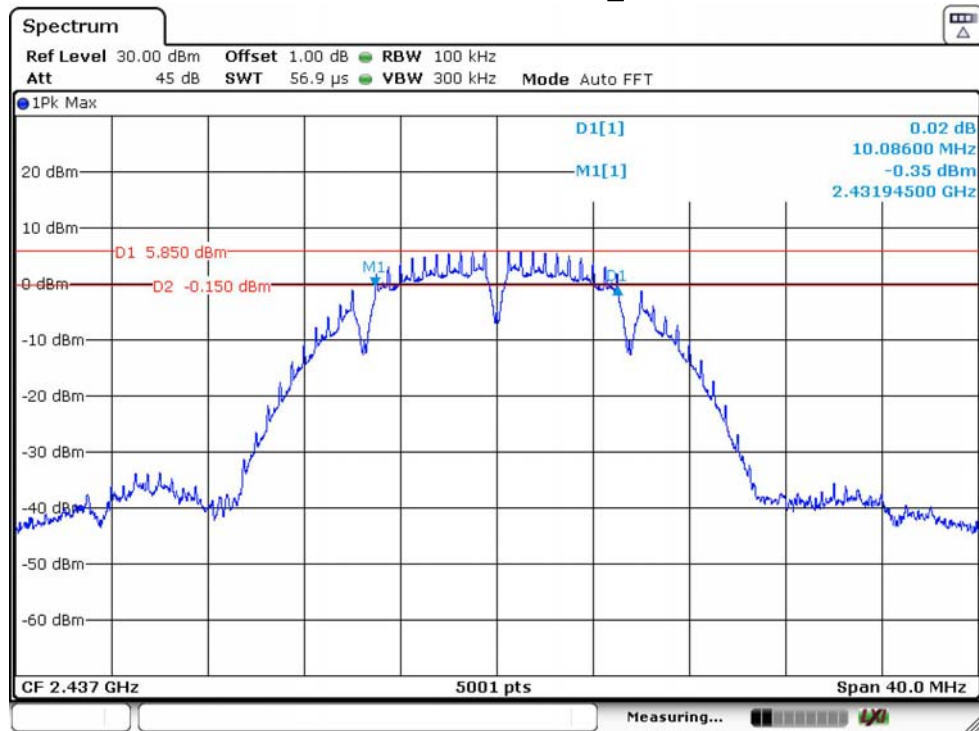
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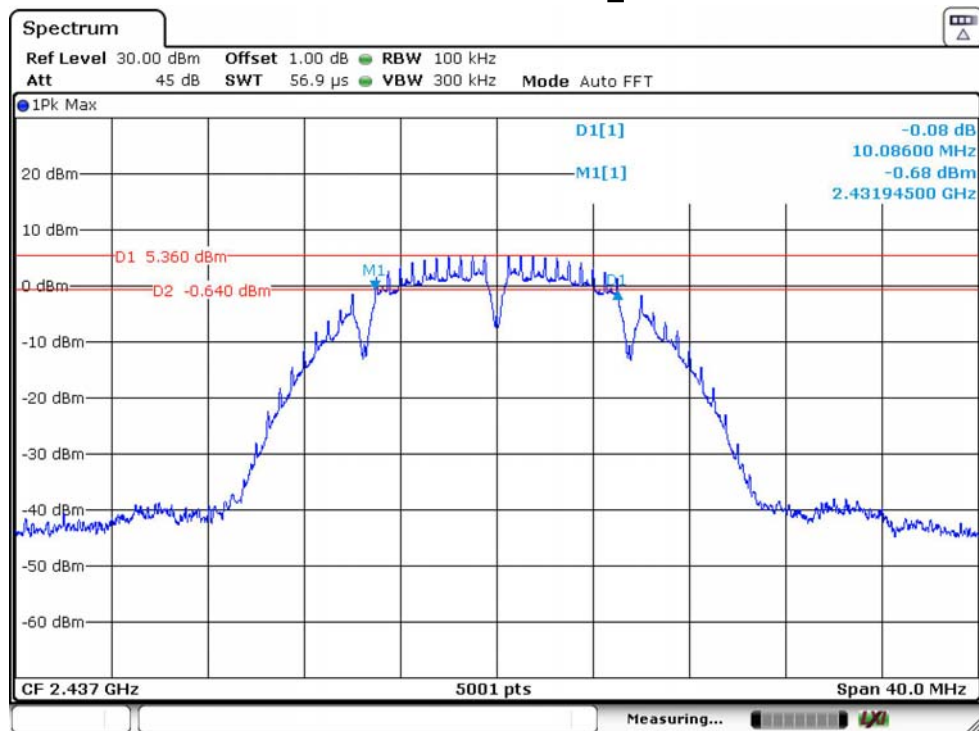
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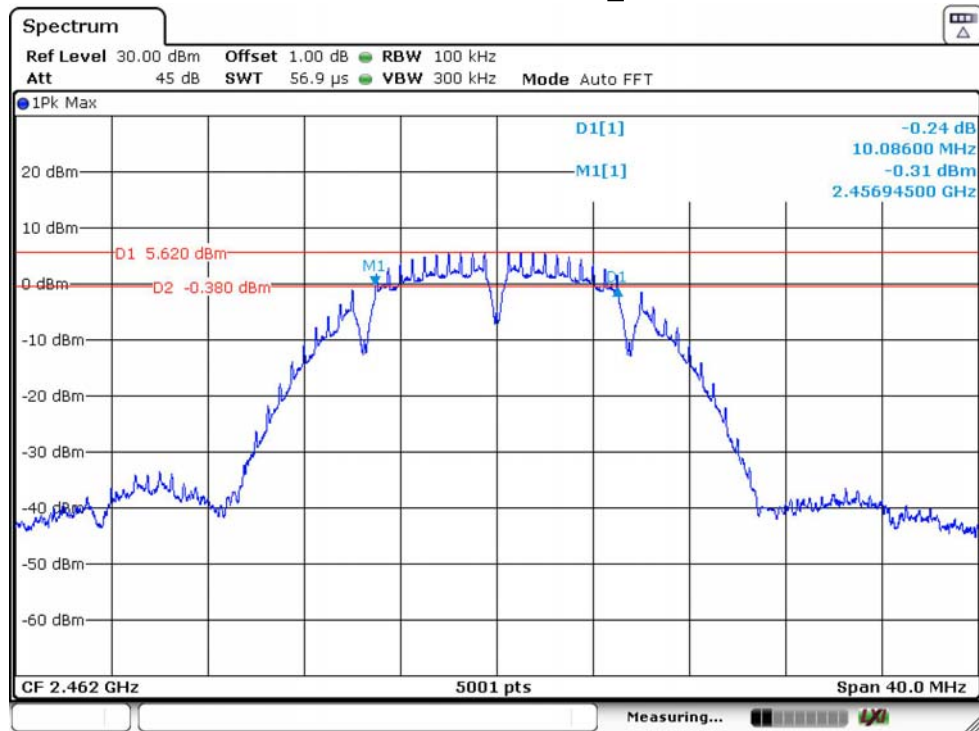
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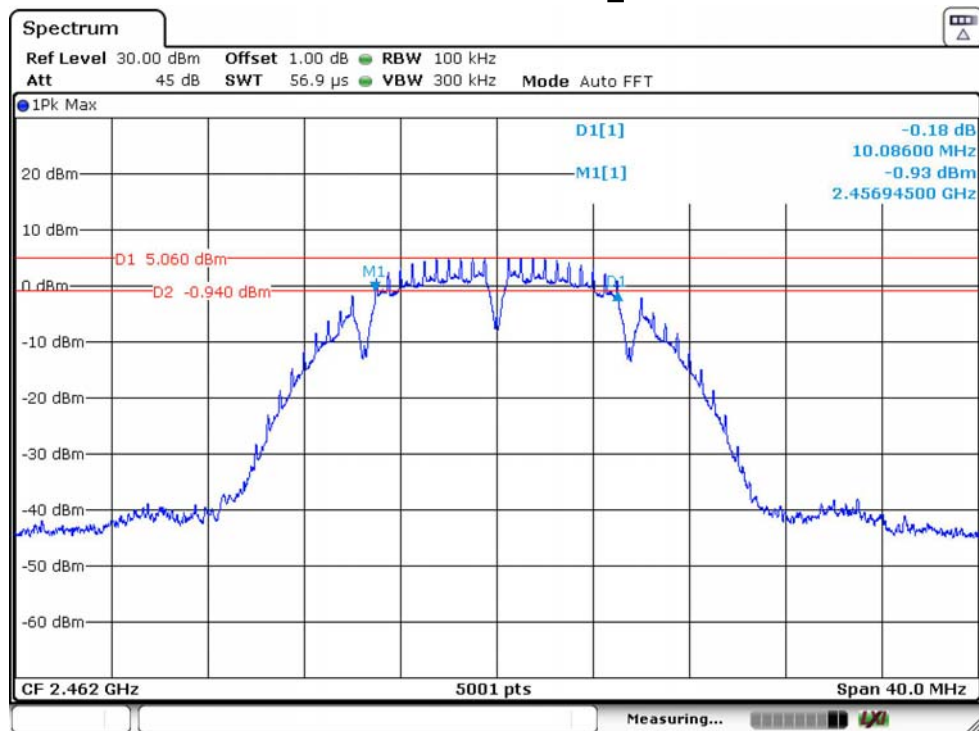
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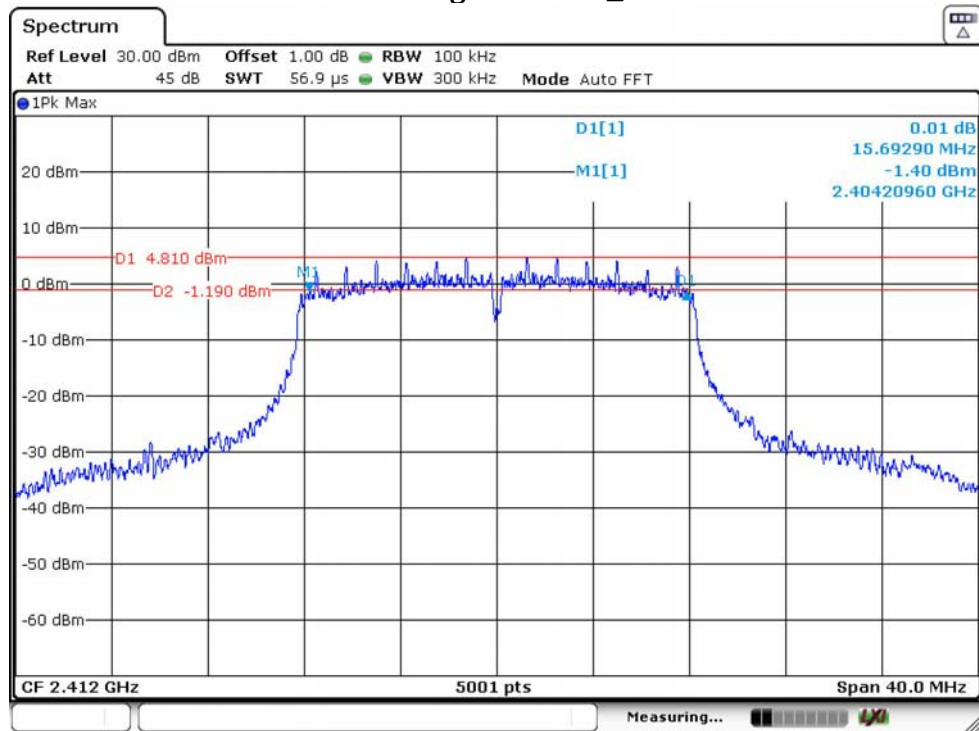
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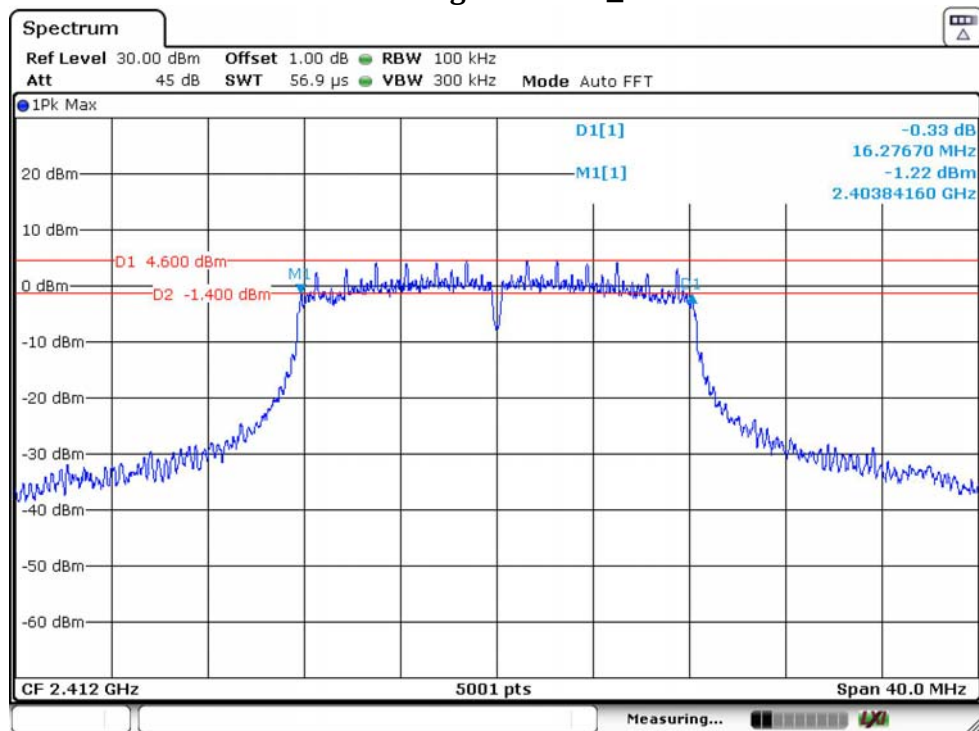
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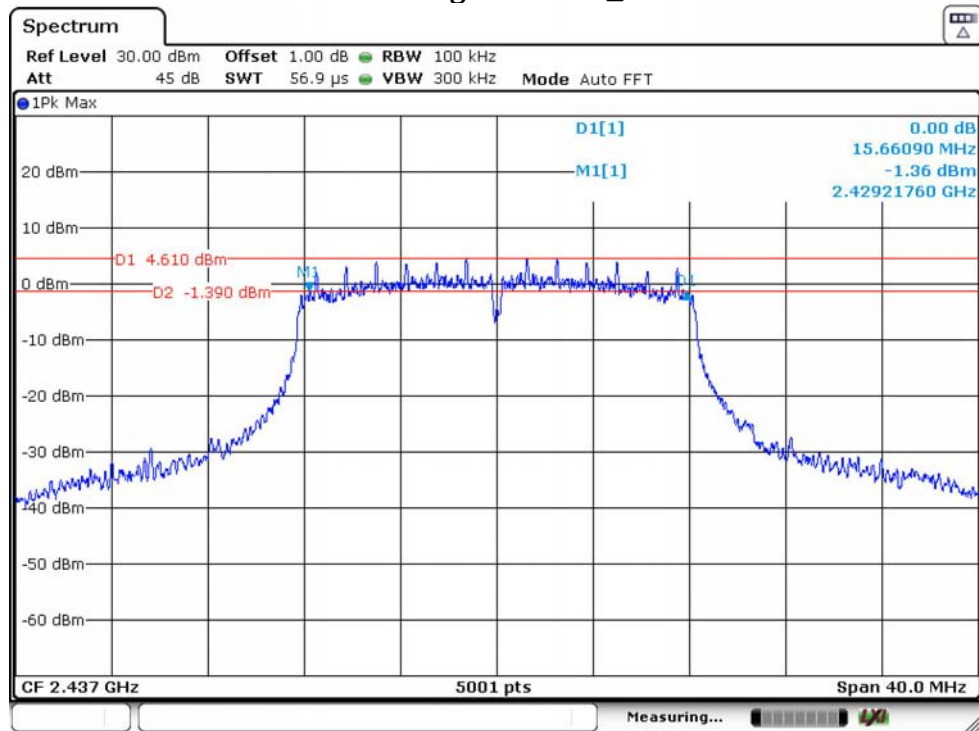
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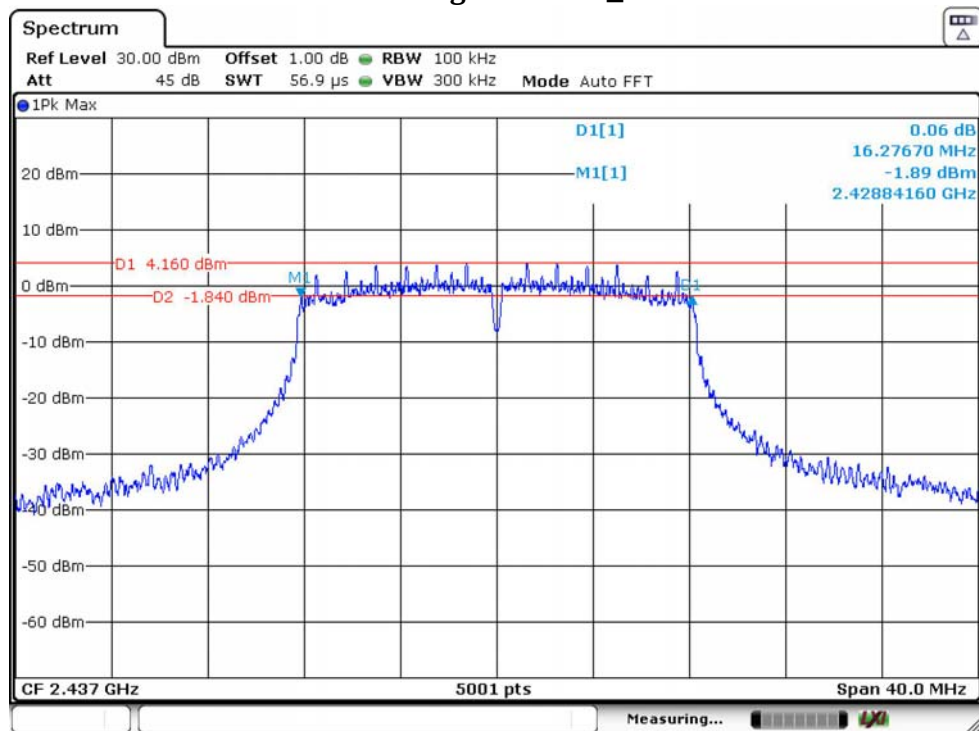
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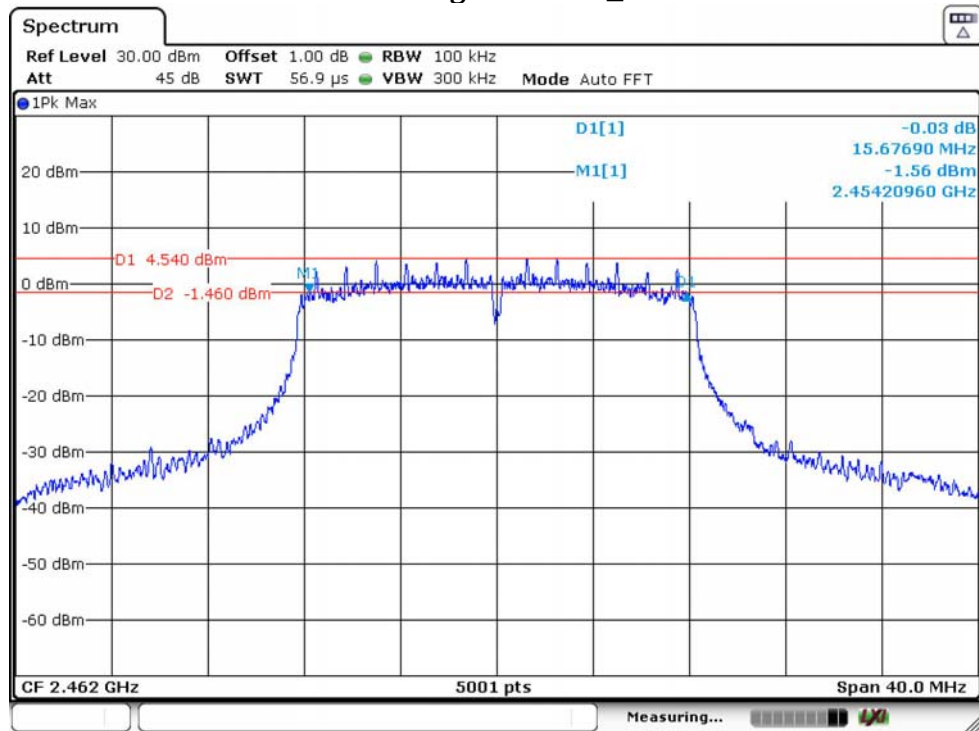
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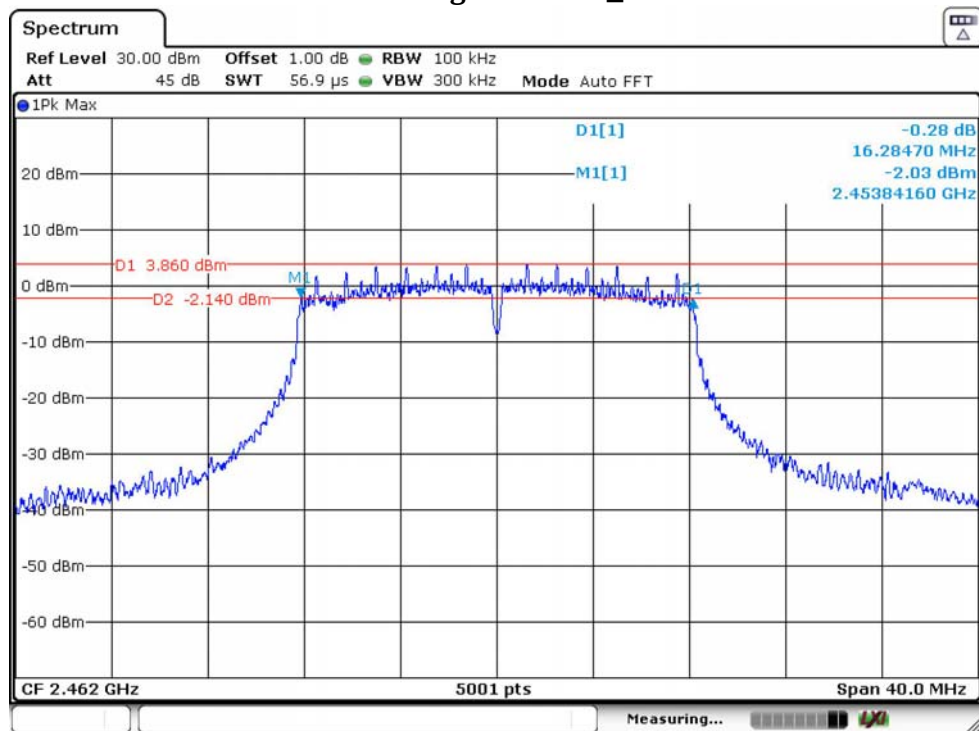
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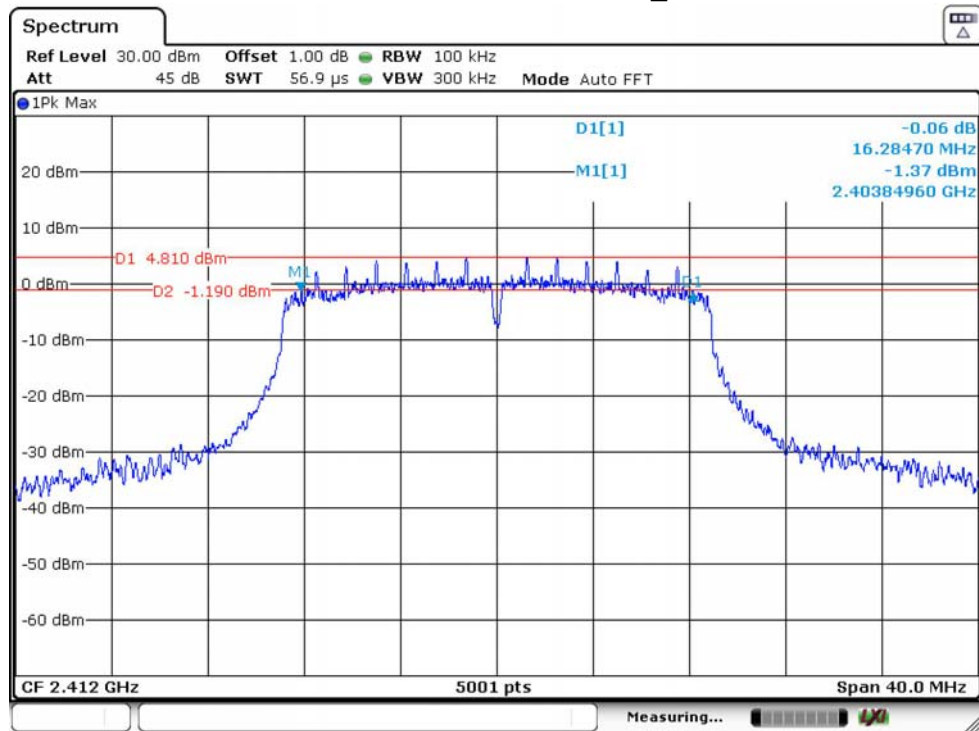
IEEE 802.11g 2462MHz_ANT 1



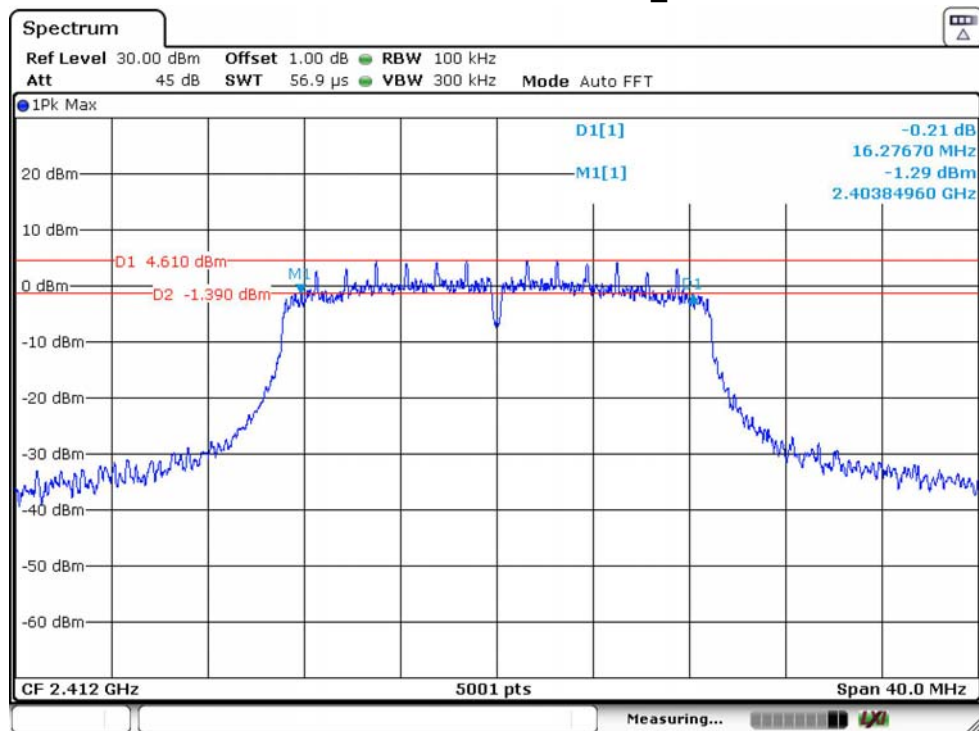
IEEE 802.11g 2462MHz_ANT 2



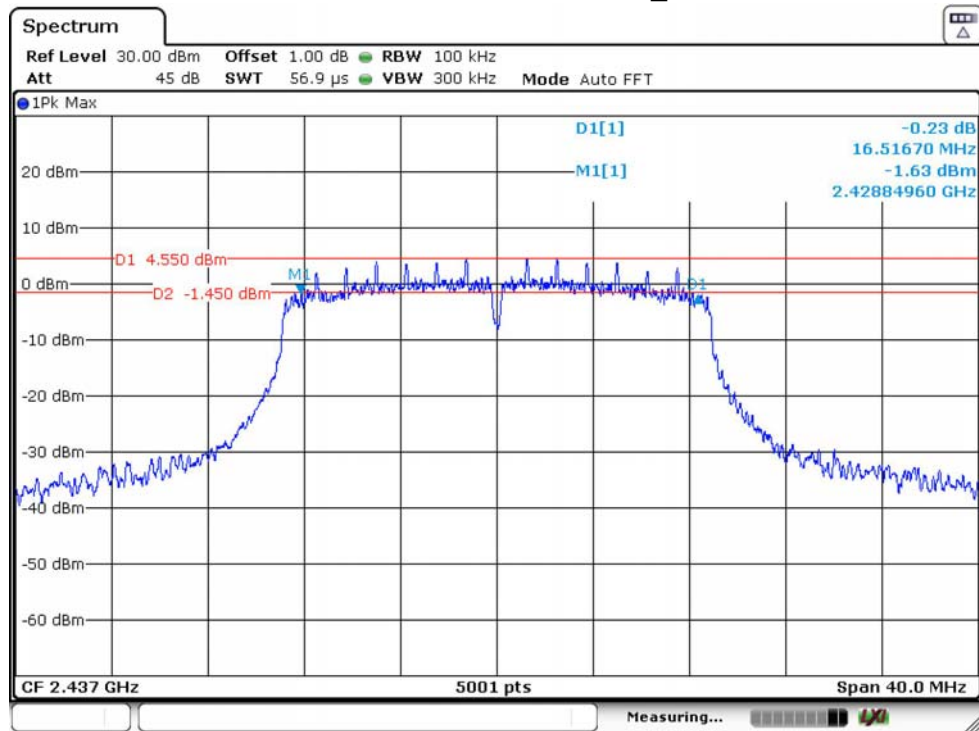
IEEE 802.11n HT20 2412MHz_ANT 1



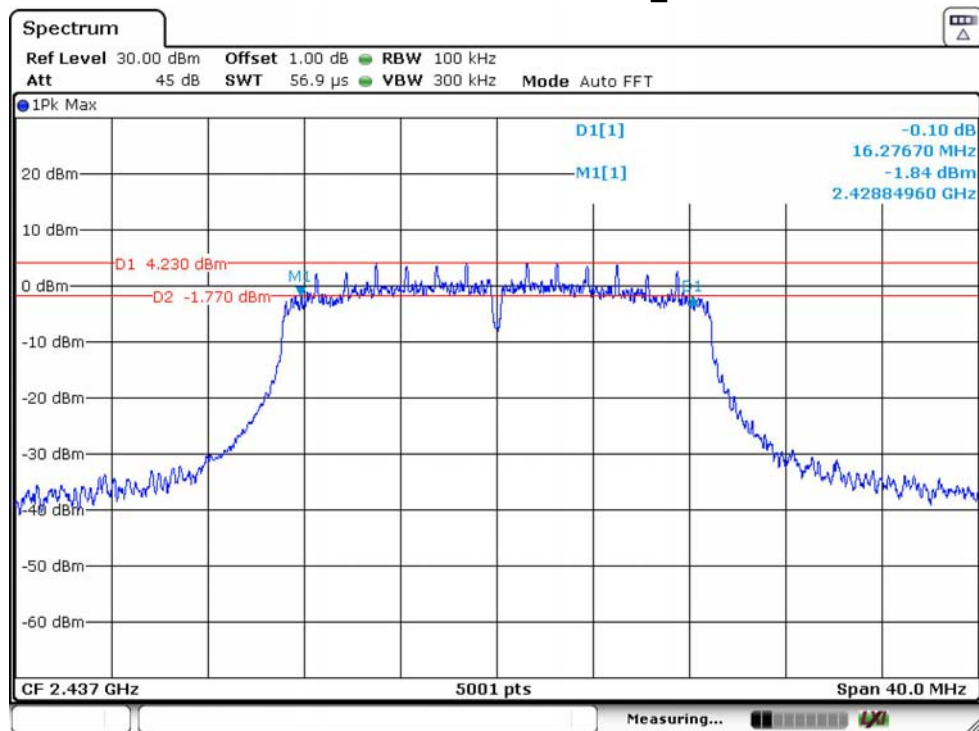
IEEE 802.11n HT20 2412MHz_ANT 2



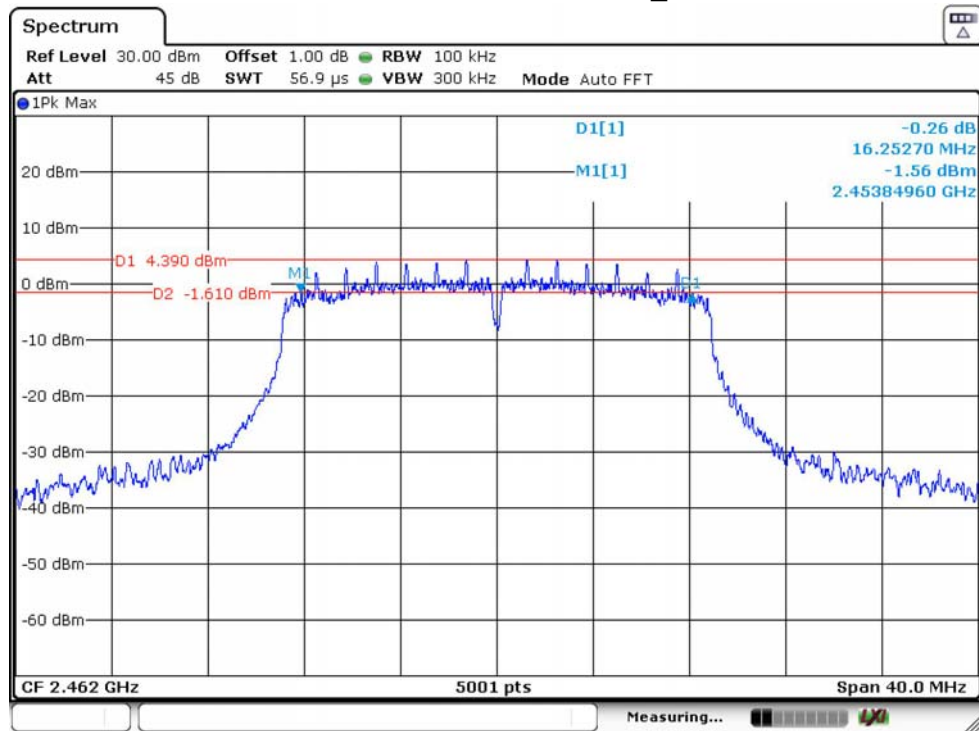
IEEE 802.11n HT20 2437MHz_ANT 1



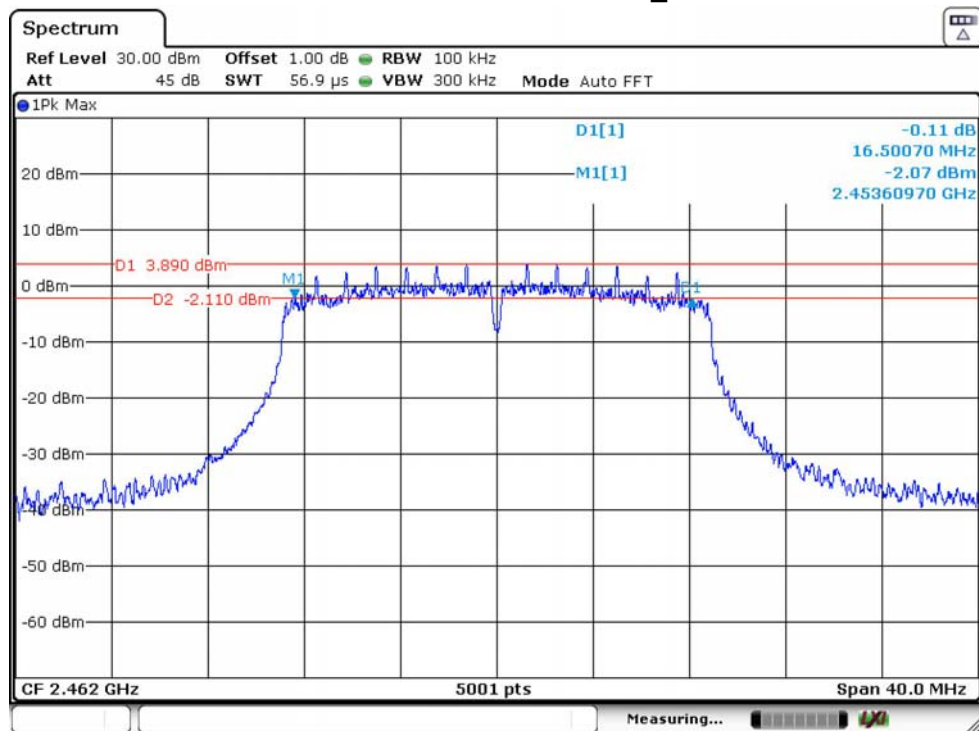
IEEE 802.11n HT20 2437MHz_ANT 2



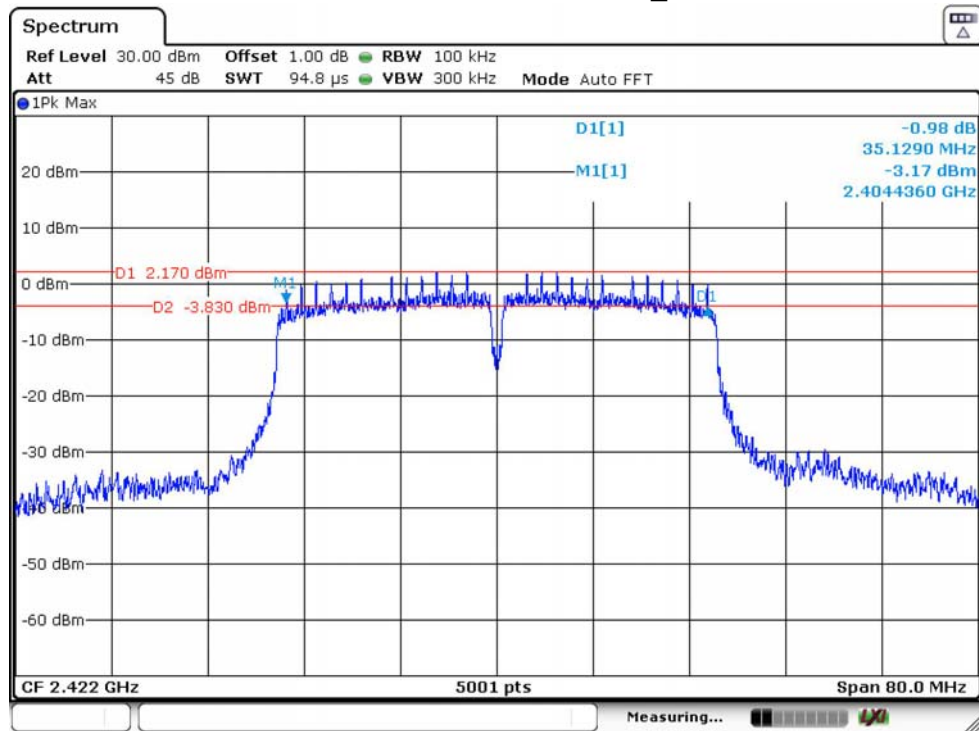
IEEE 802.11n HT20 2462MHz_ANT 1



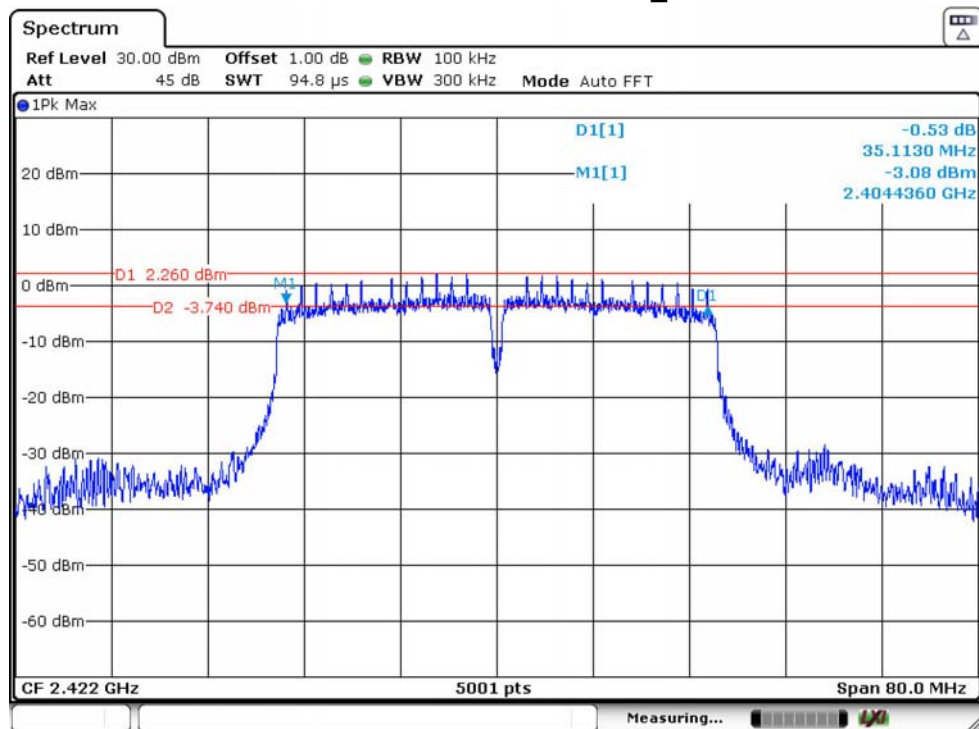
IEEE 802.11n HT20 2462MHz_ANT 2



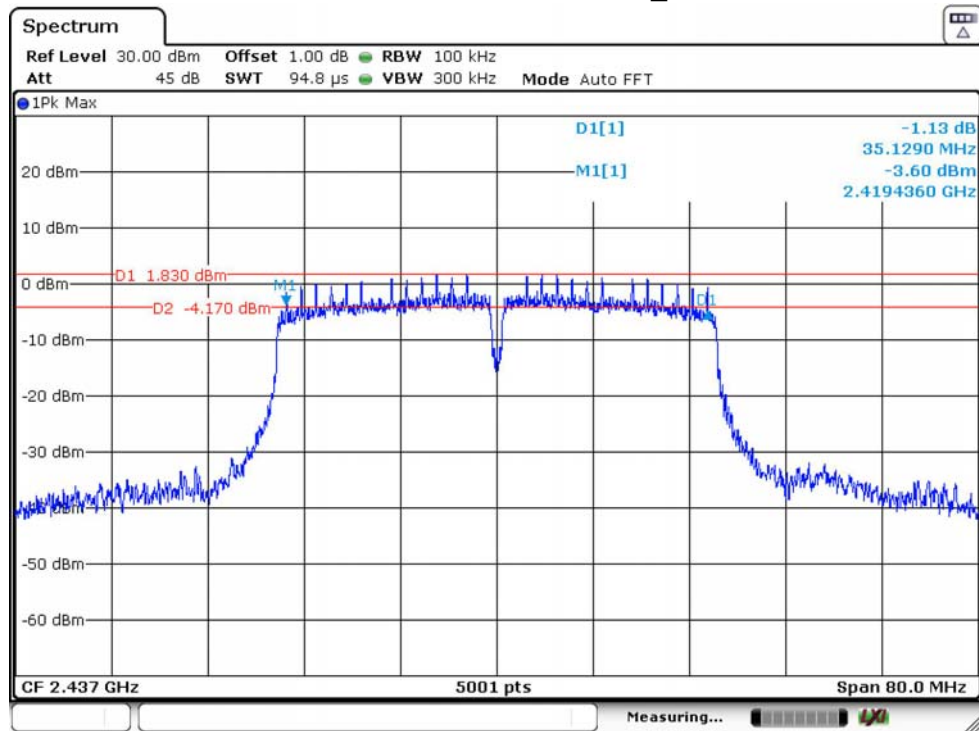
IEEE 802.11n HT40 2422MHz_ANT 1



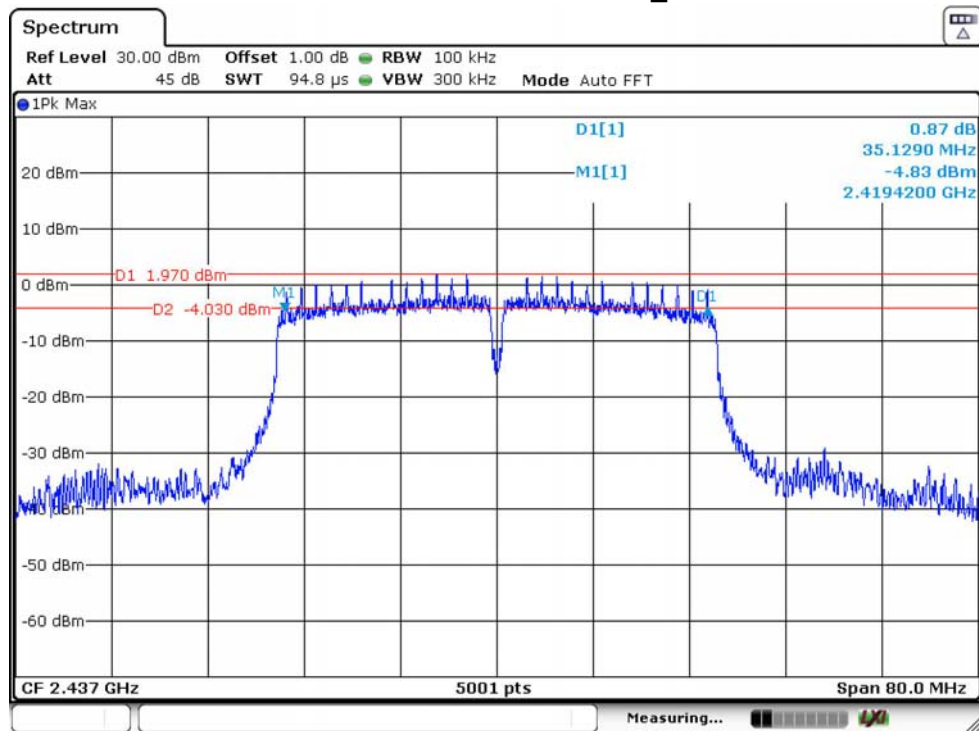
IEEE 802.11n HT40 2422MHz_ANT 2



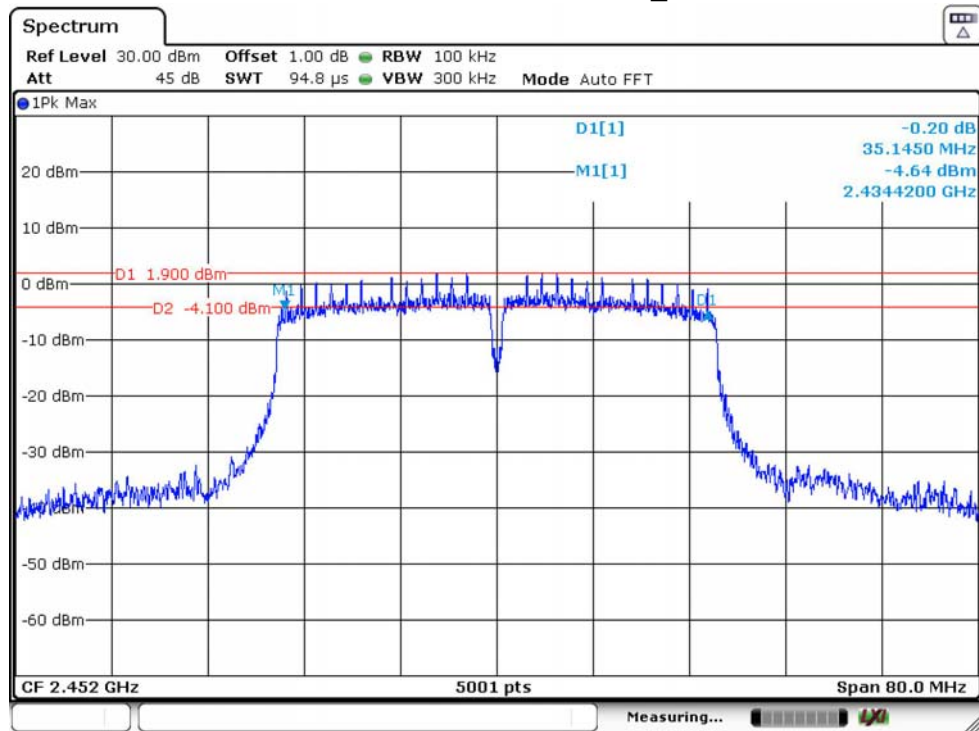
IEEE 802.11n HT40 2437MHz_ANT 1



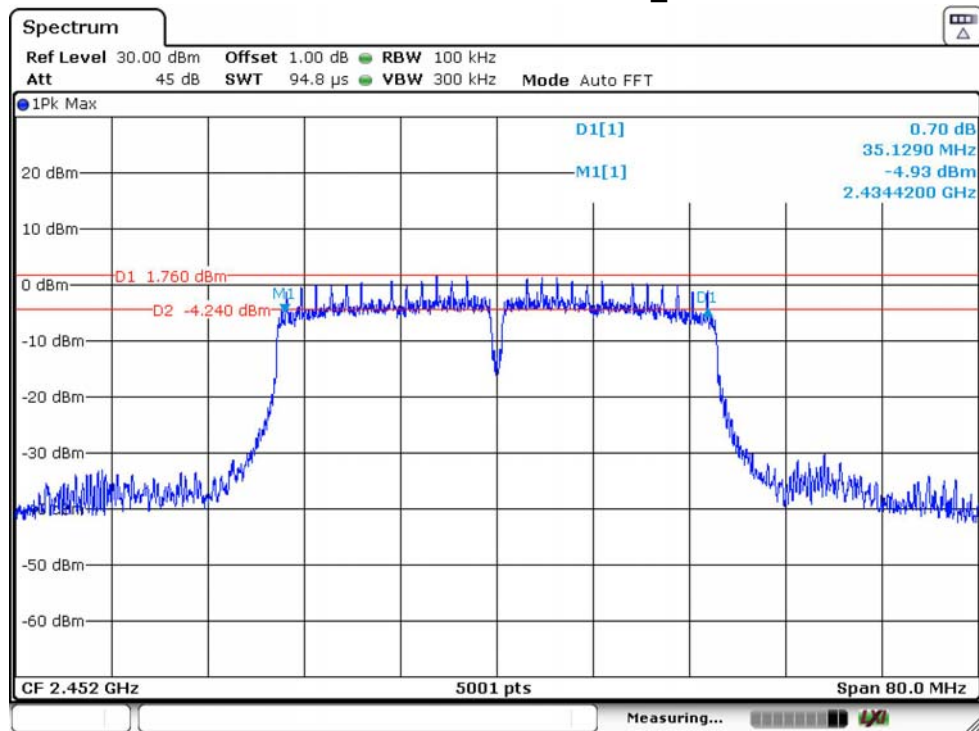
IEEE 802.11n HT40 2437MHz_ANT 2



IEEE 802.11n HT40 2452MHz_ANT 1



IEEE 802.11n HT40 2452MHz_ANT 2



4. MAXIMUM PEAK OUTPUT POWER

4.1. Limit

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

4.2. Test Setup



4.3. 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

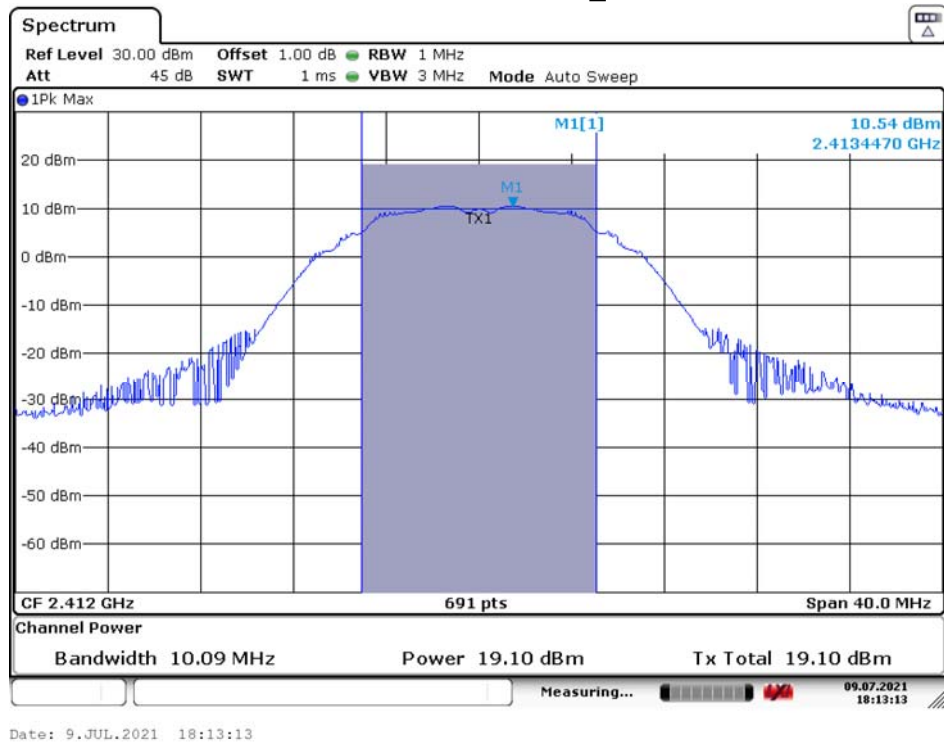
4.4. Test Procedure

- 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.

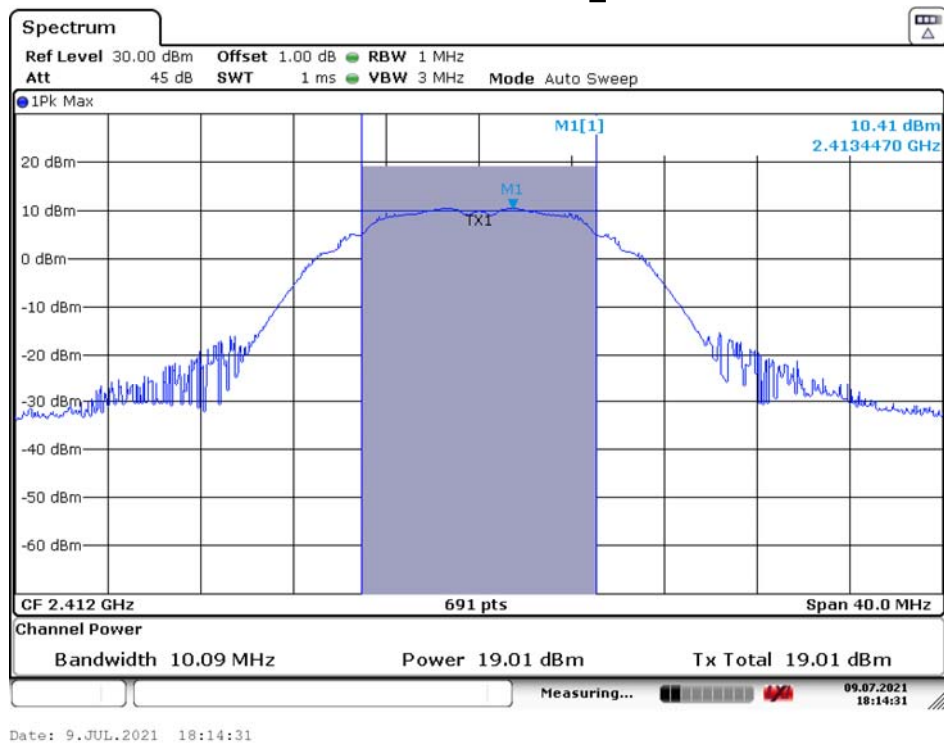
4.5. Test Result

Temperature	24.1℃	Relative Humidity		55%				Test Voltage		AC 120V/60Hz
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	19.10	19.01	0.0813	0.0796	19.10	19.01	1.0000	30.00	PASS
	2437	19.10	18.77	0.0813	0.0753	19.10	18.77	1.0000	30.00	PASS
	2462	19.25	18.56	0.0841	0.0718	19.25	18.56	1.0000	30.00	PASS
IEEE 802.11g	2412	25.19	25.50	0.3304	0.3548	25.19	25.50	1.0000	30.00	PASS
	2437	24.94	25.17	0.3119	0.3289	24.94	25.17	1.0000	30.00	PASS
	2462	25.09	24.92	0.3228	0.3105	25.09	24.92	1.0000	30.00	PASS
IEEE 802.11n HT20	2412	24.77	24.58	0.5870		27.69		1.0000	30.00	PASS
	2437	24.53	24.28	0.5517		27.42		1.0000	30.00	PASS
	2462	24.69	23.99	0.5451		27.36		1.0000	30.00	PASS
IEEE 802.11n HT40	2422	25.27	24.96	0.6498		28.13		1.0000	30.00	PASS
	2437	24.90	24.63	0.5994		27.78		1.0000	30.00	PASS
	2452	25.00	24.49	0.5974		27.76		1.0000	30.00	PASS

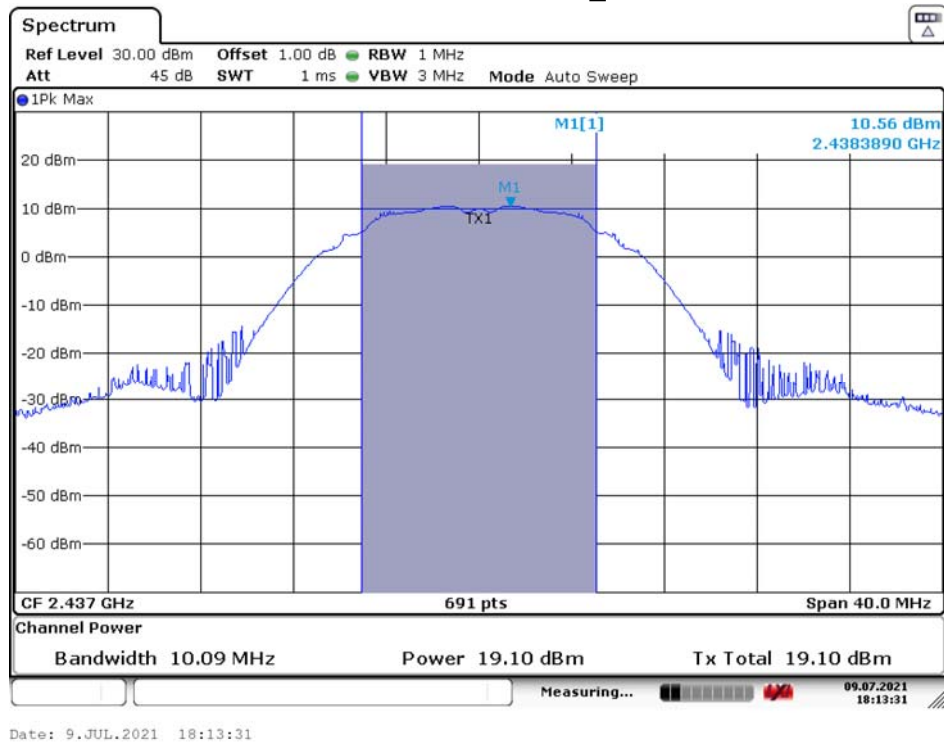
IEEE 802.11b 2412MHz_ANT 1



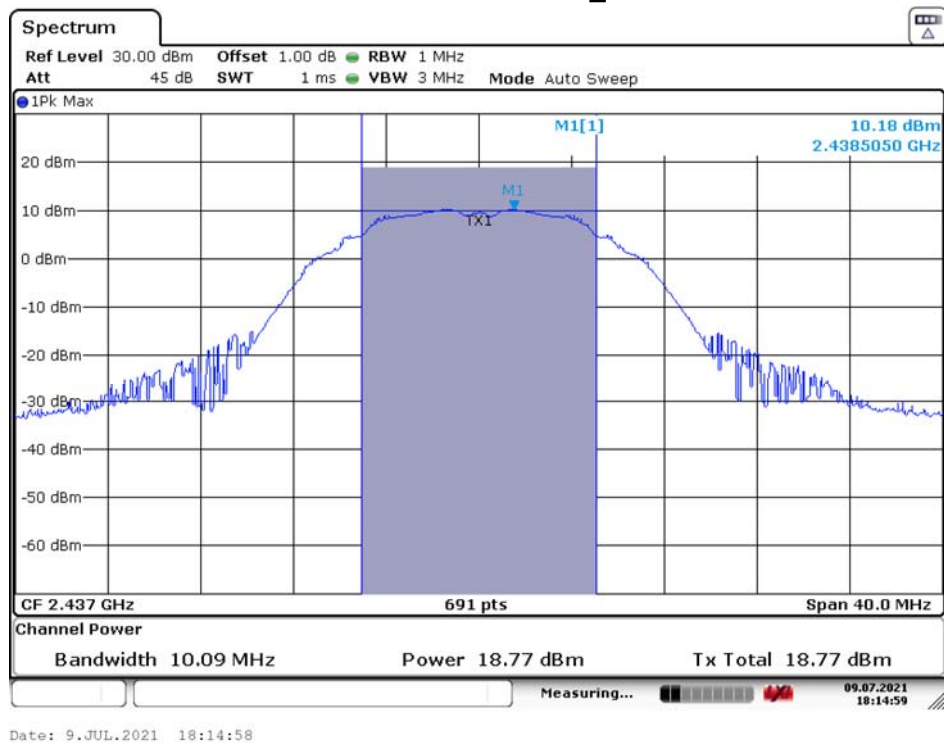
IEEE 802.11b 2412MHz_ANT 2



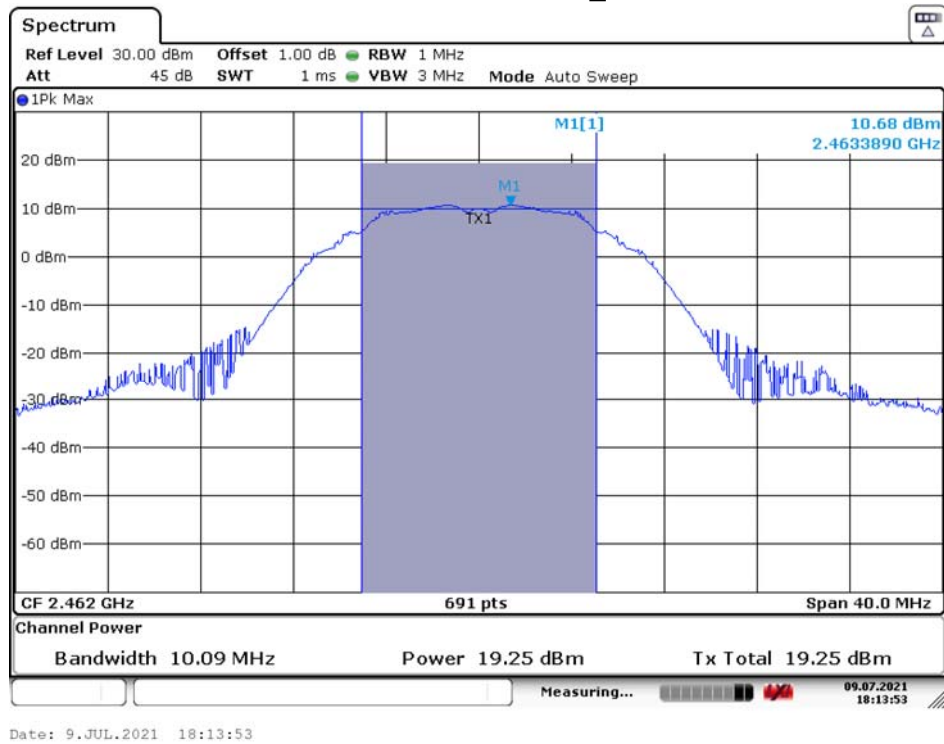
IEEE 802.11b 2437MHz_ANT 1



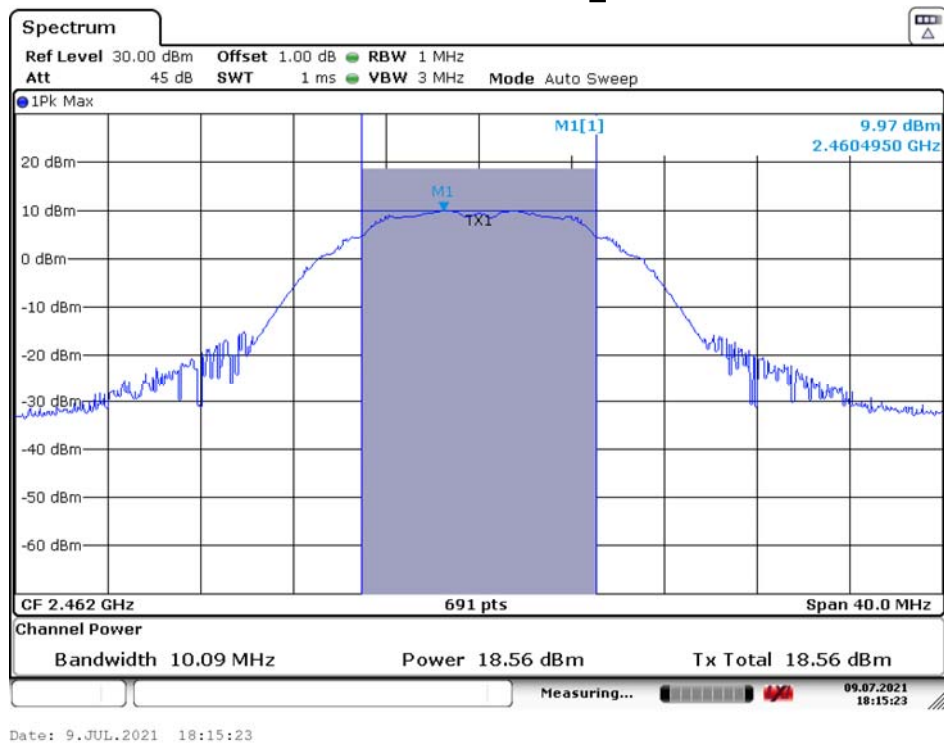
IEEE 802.11b 2437MHz_ANT 2



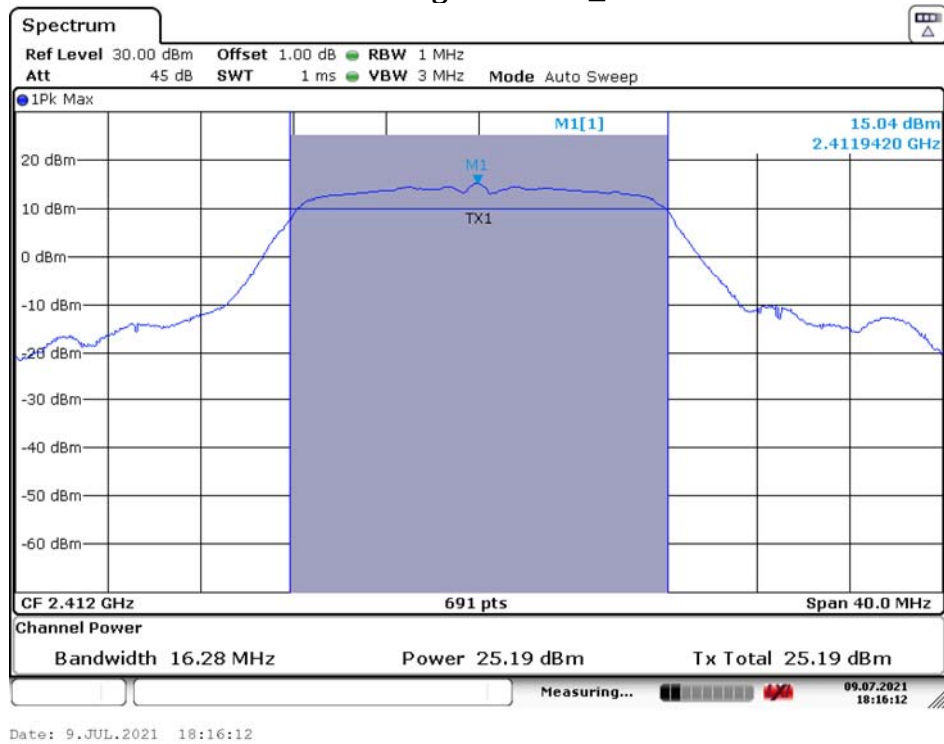
IEEE 802.11b 2462MHz_ANT 1



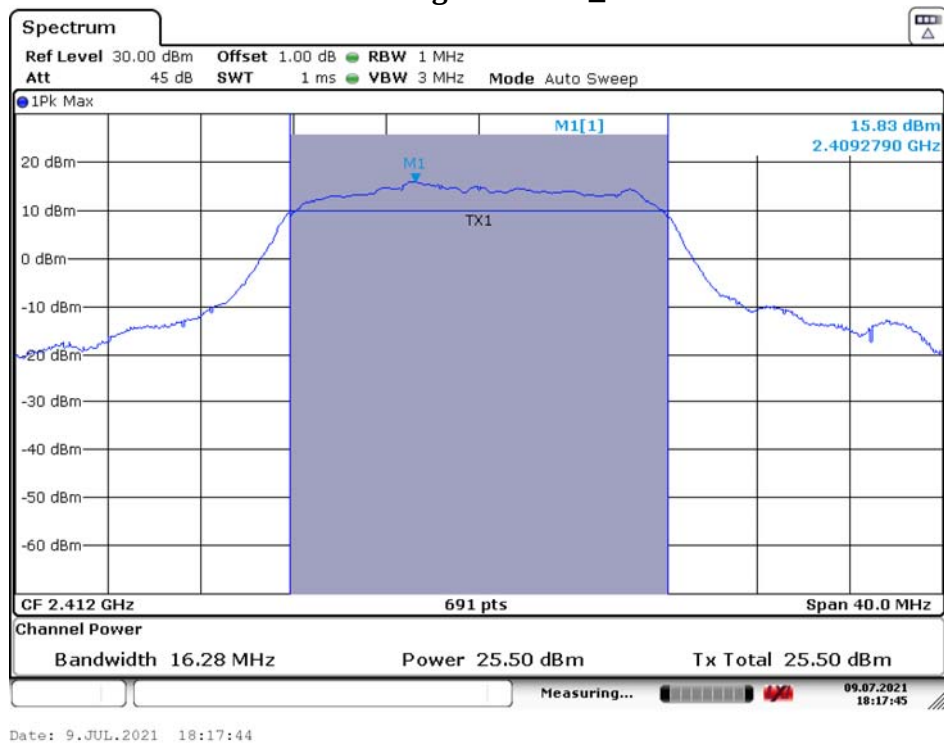
IEEE 802.11b 2462MHz_ANT 2



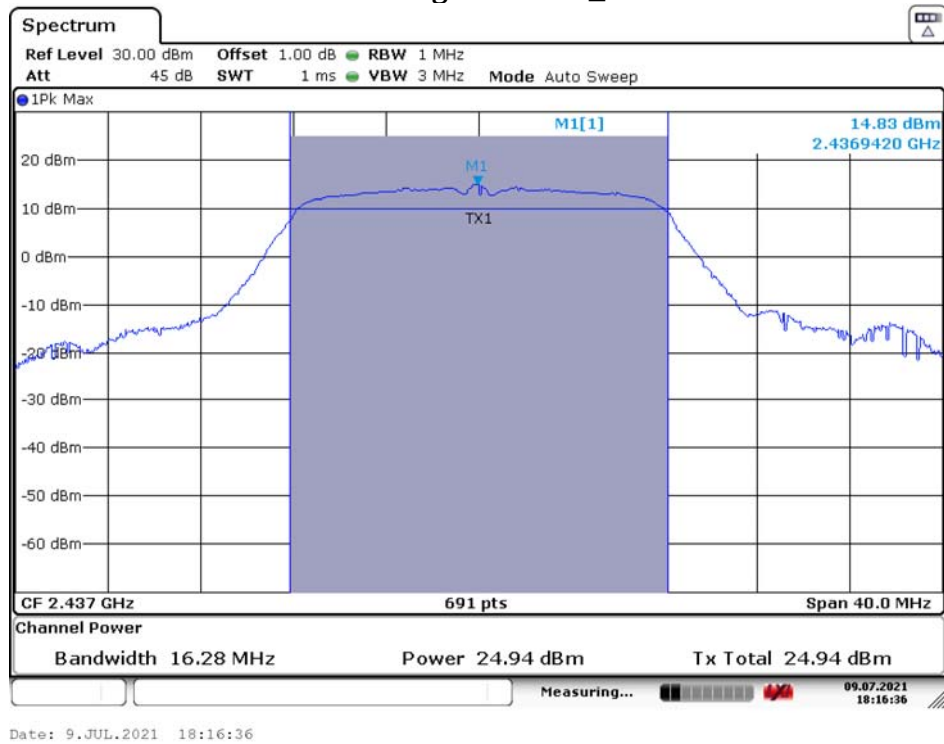
IEEE 802.11g 2412MHz_ANT 1



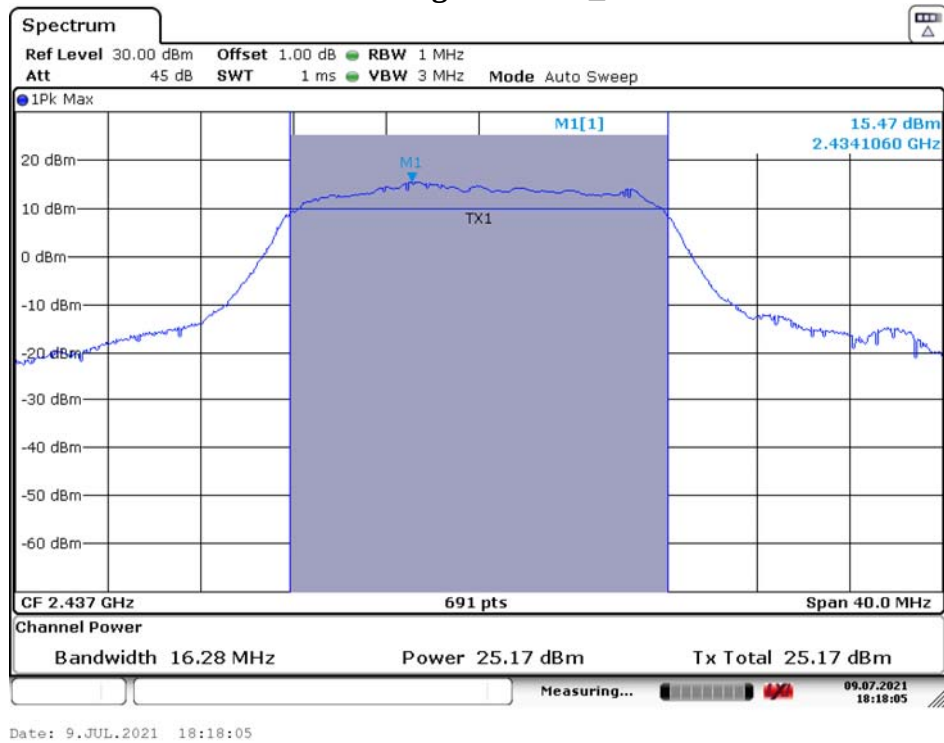
IEEE 802.11g 2412MHz_ANT 2



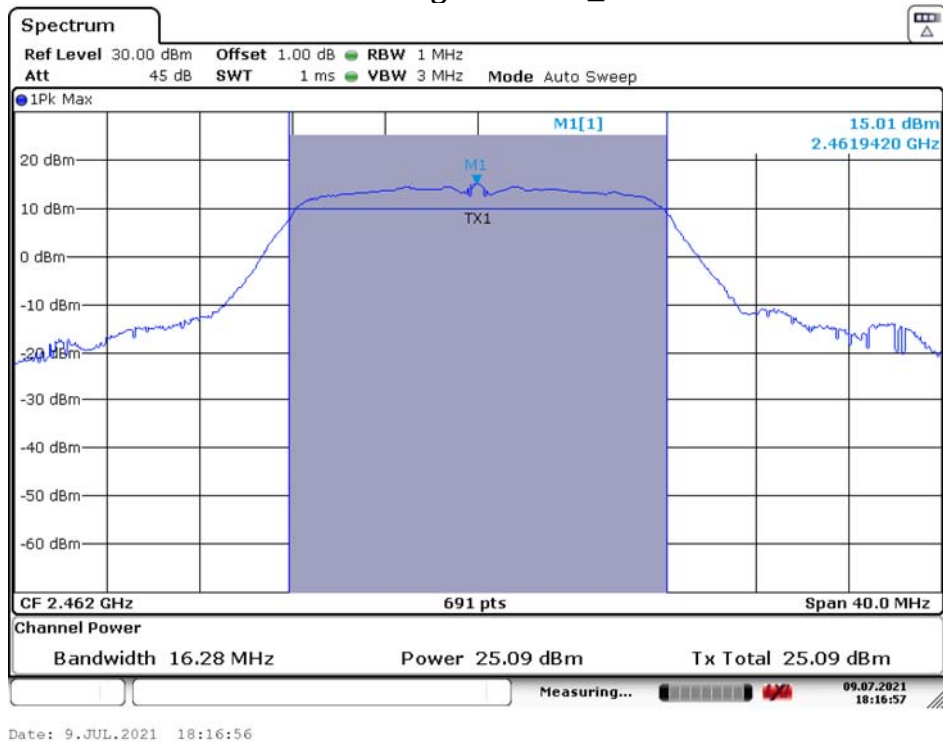
IEEE 802.11g 2437MHz_ANT 1



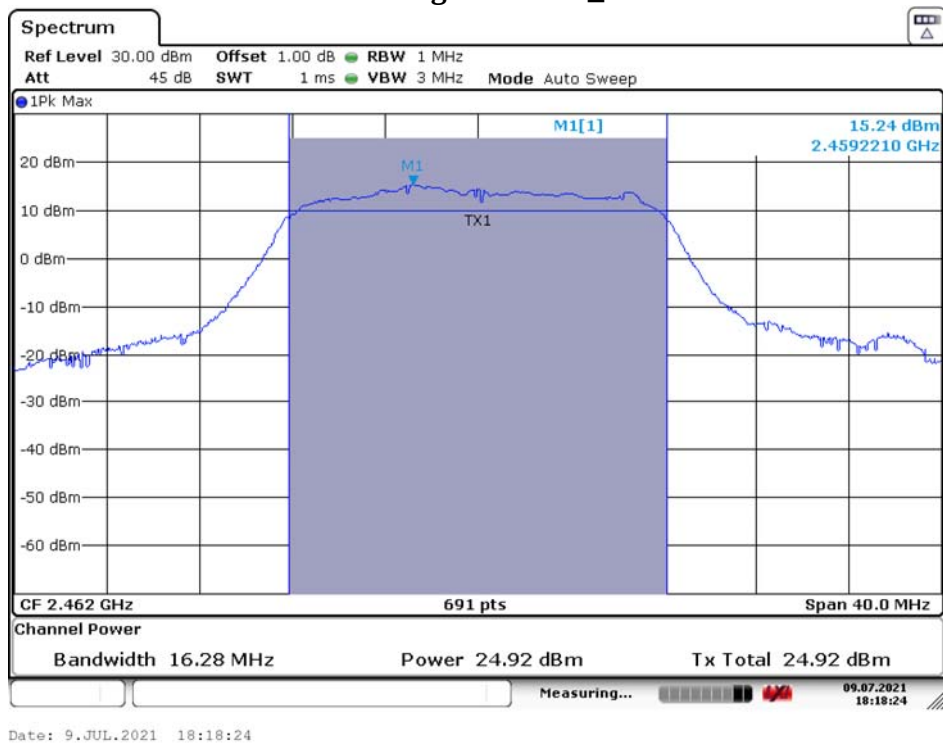
IEEE 802.11g 2437MHz_ANT 2



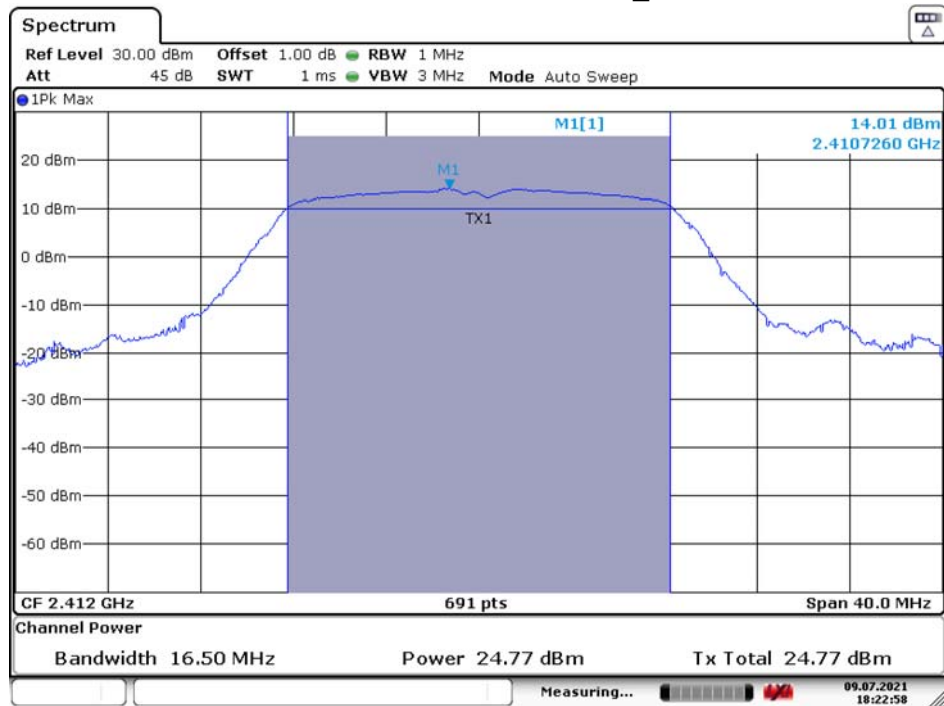
IEEE 802.11g 2462MHz_ANT 1



IEEE 802.11g 2462MHz_ANT 2

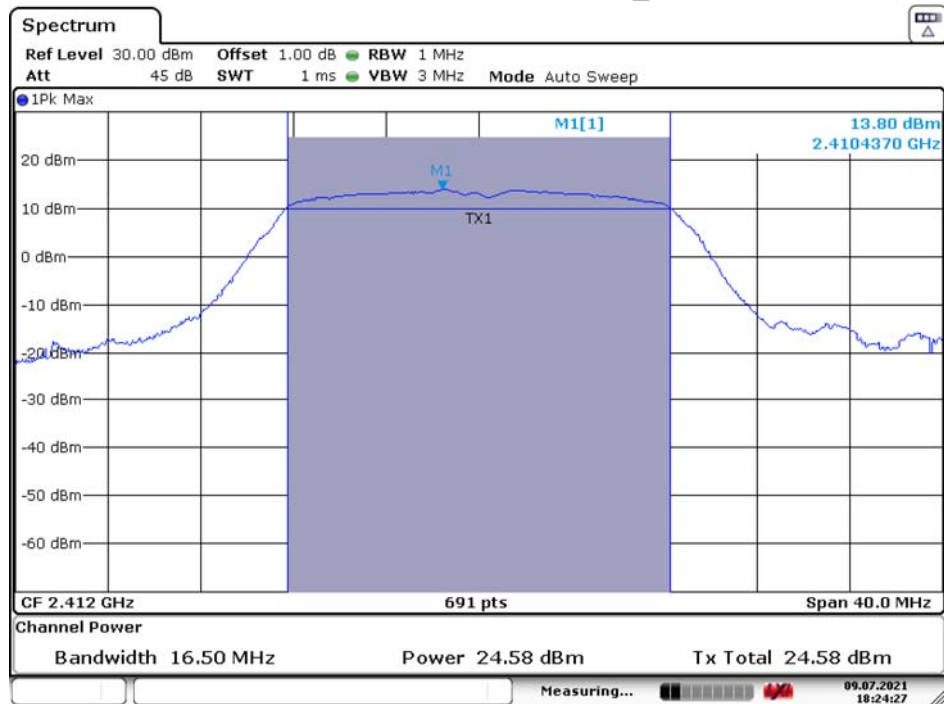


IEEE 802.11n HT20 2412MHz_ANT 1



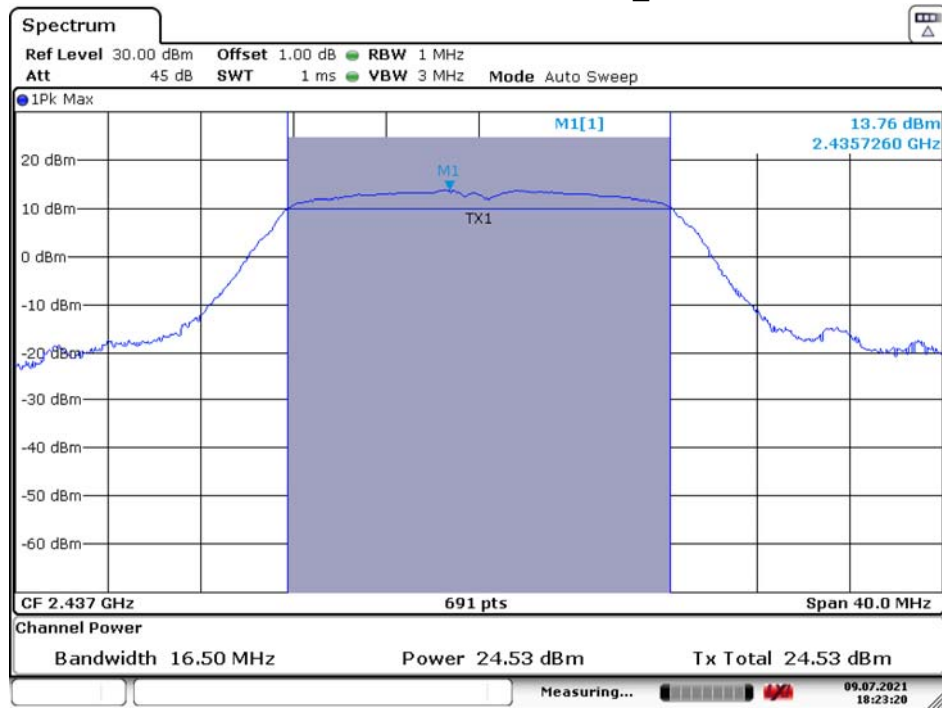
Date: 9.JUL.2021 18:22:58

IEEE 802.11n HT20 2412MHz_ANT 2



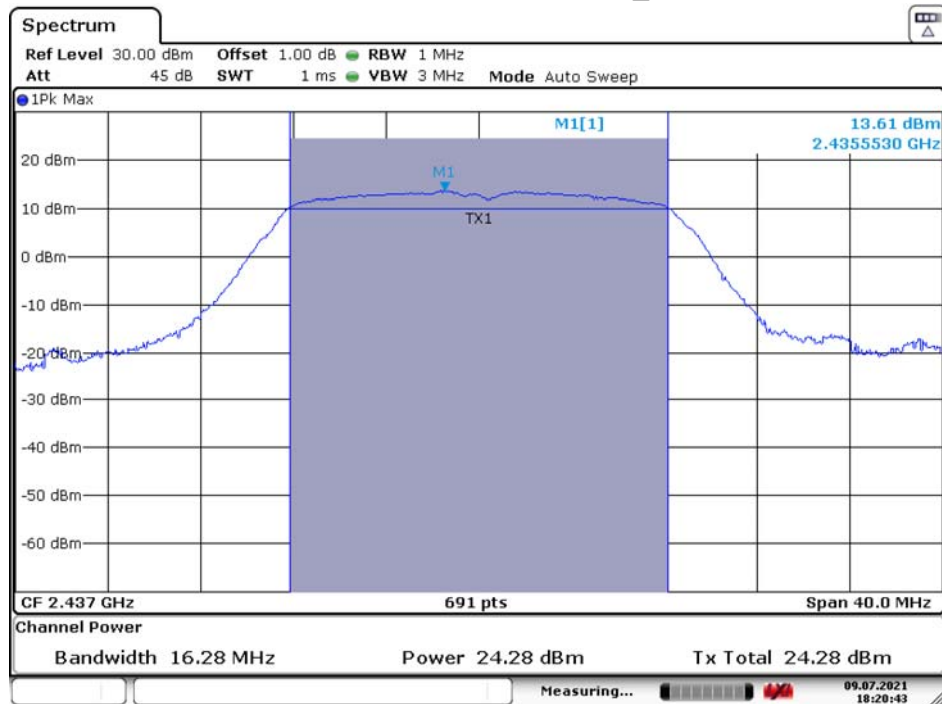
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IEEE 802.11n HT20 2437MHz_ANT 1



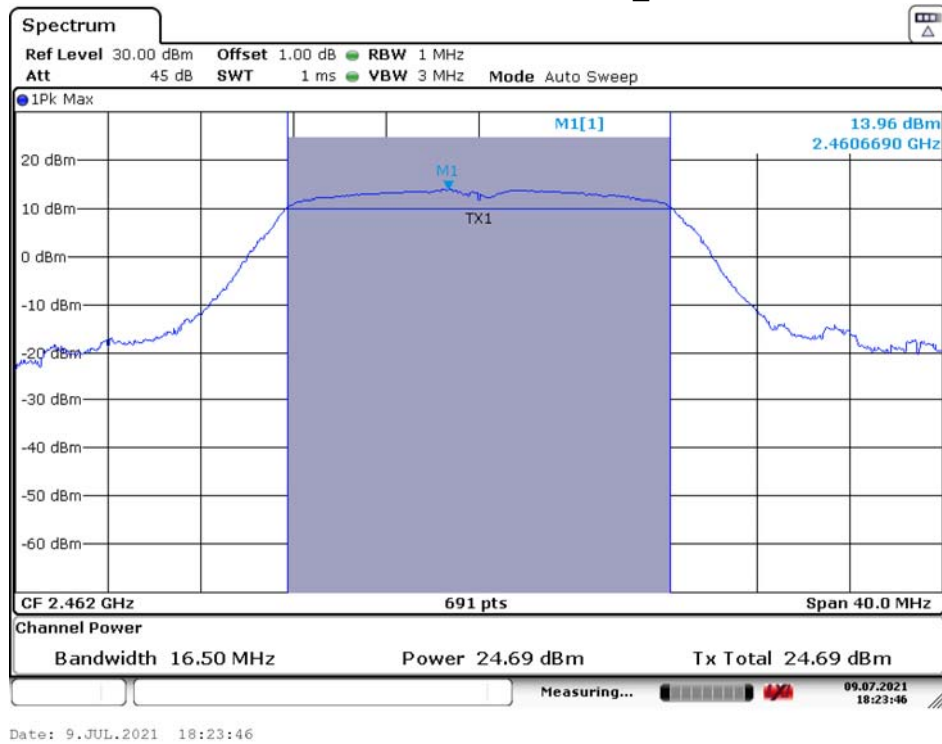
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IEEE 802.11n HT20 2437MHz_ANT 2

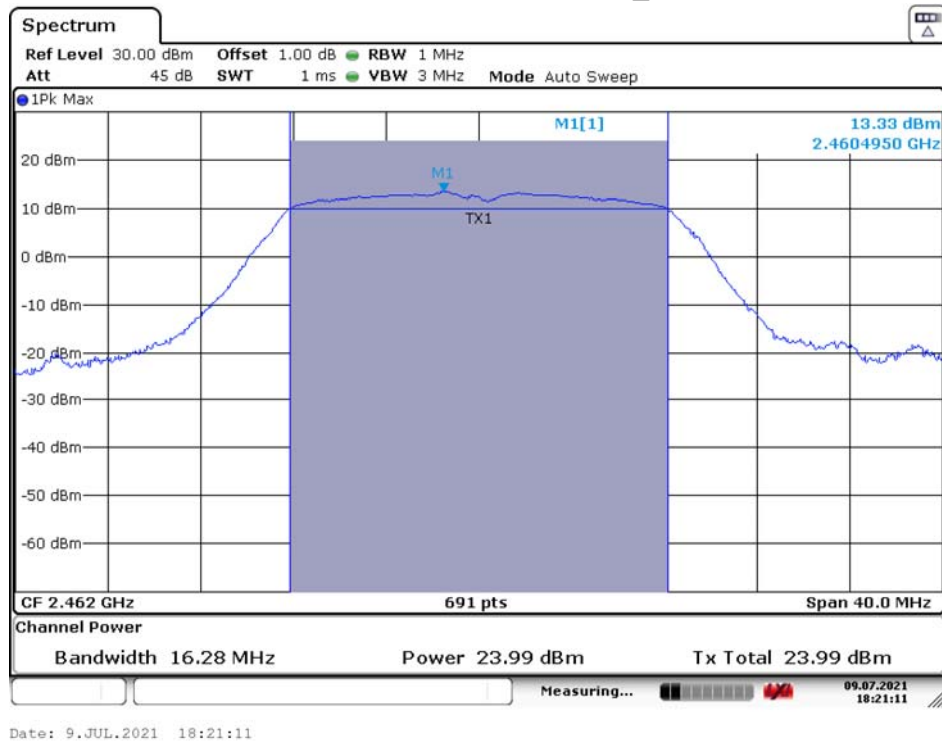


Date: 9.JUL.2021 18:20:43

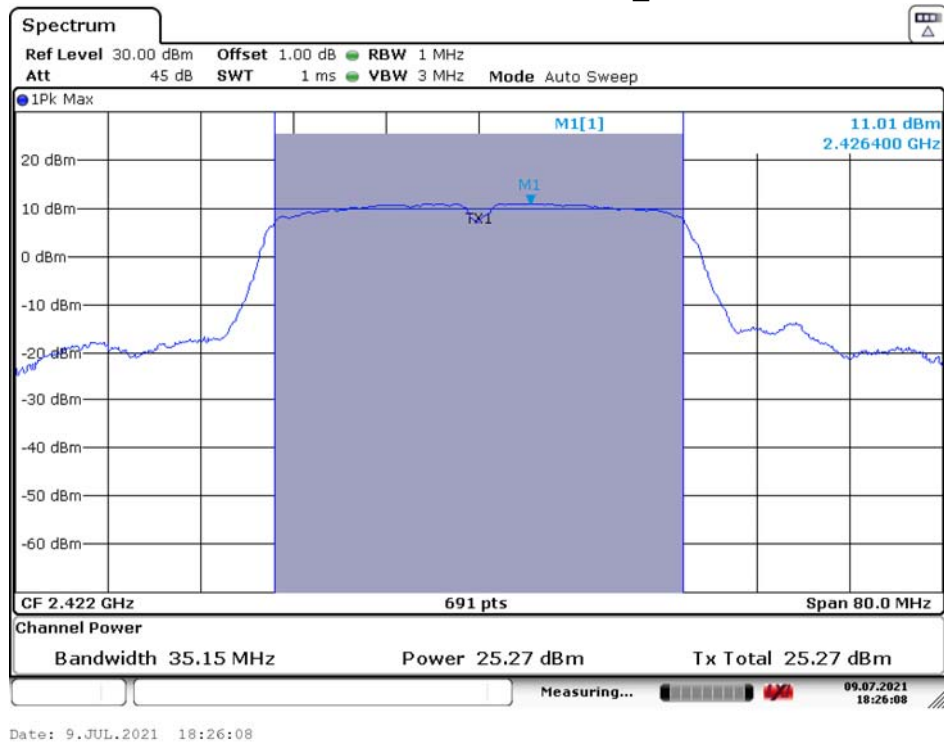
IEEE 802.11n HT20 2462MHz_ANT 1



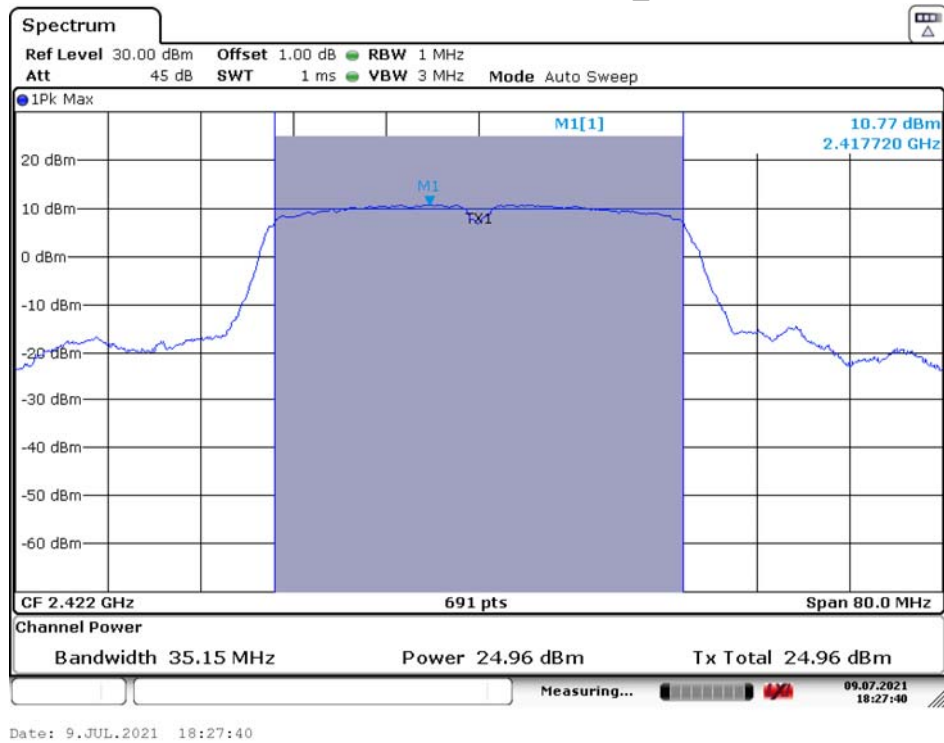
IEEE 802.11n HT20 2462MHz_ANT 2



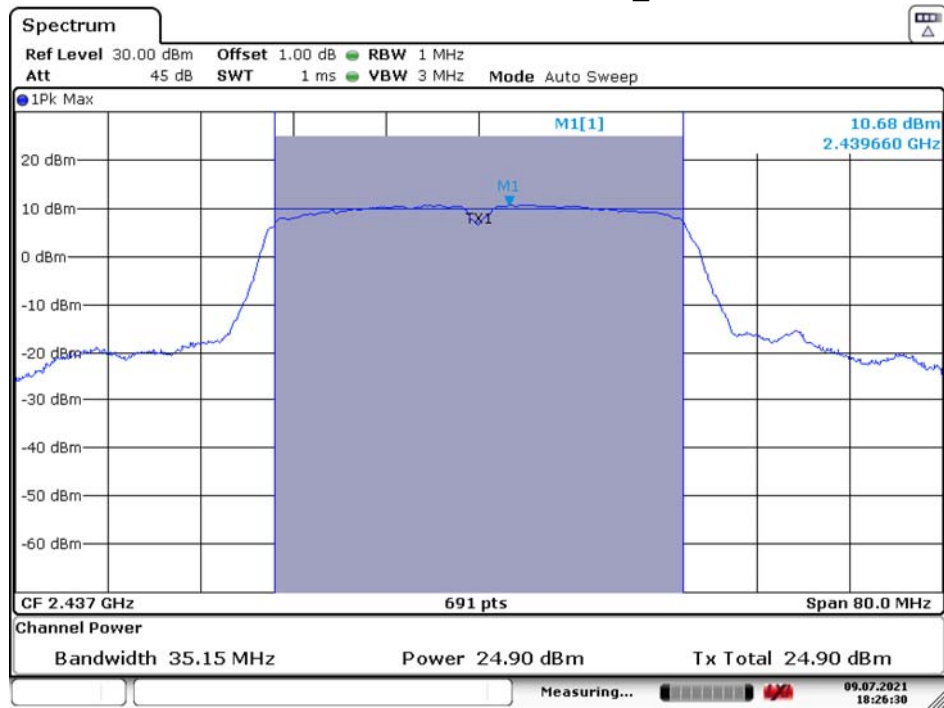
IEEE 802.11n HT40 2422MHz_ANT 1



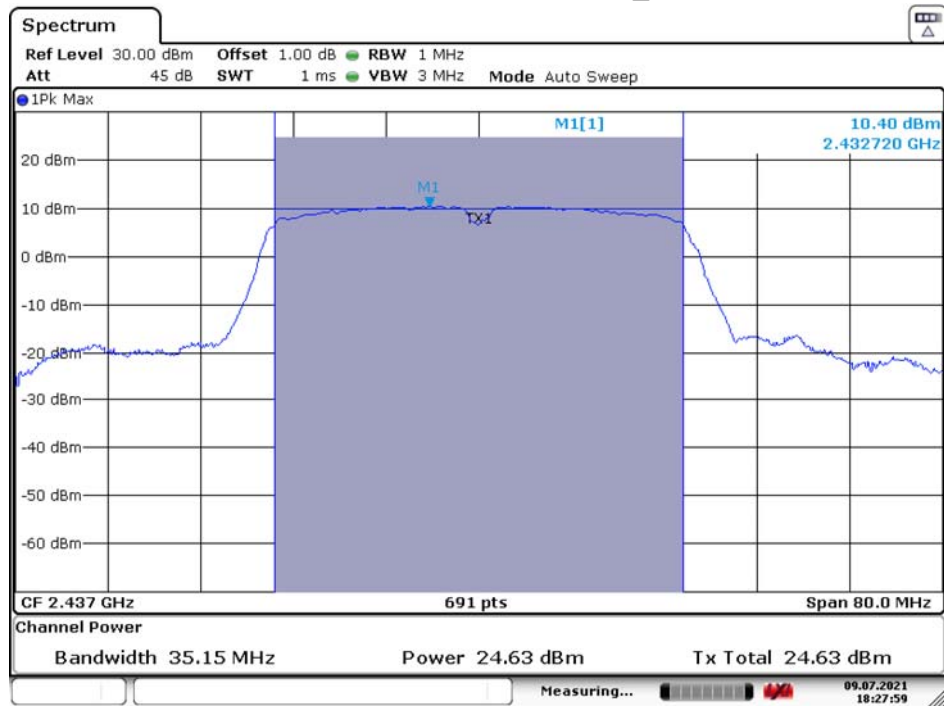
IEEE 802.11n HT40 2422MHz_ANT 2



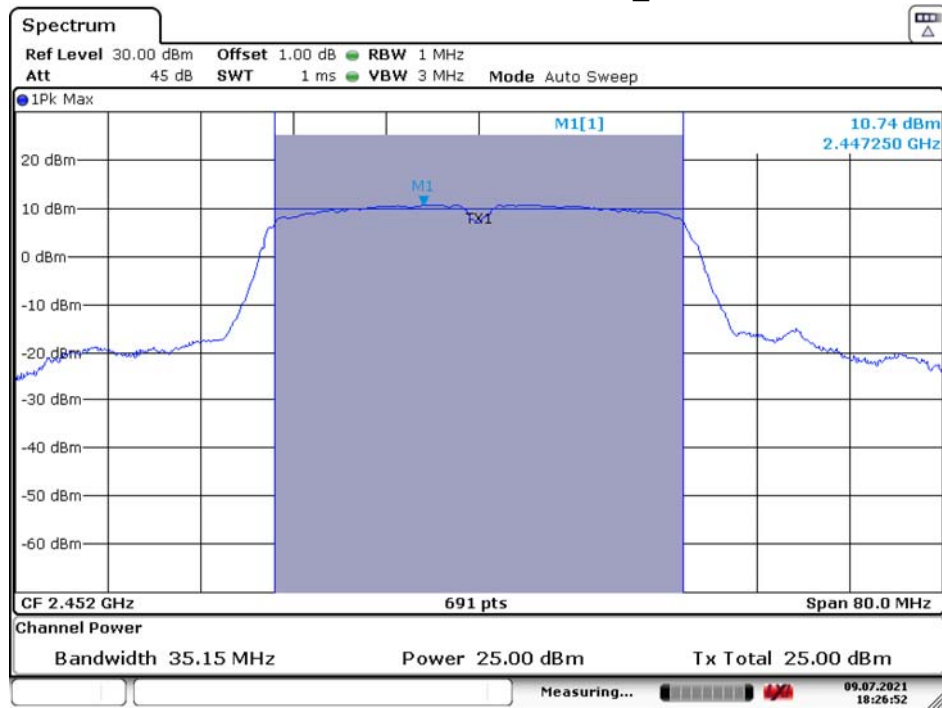
IEEE 802.11n HT40 2437MHz_ANT 1



IEEE 802.11n HT40 2437MHz_ANT 2

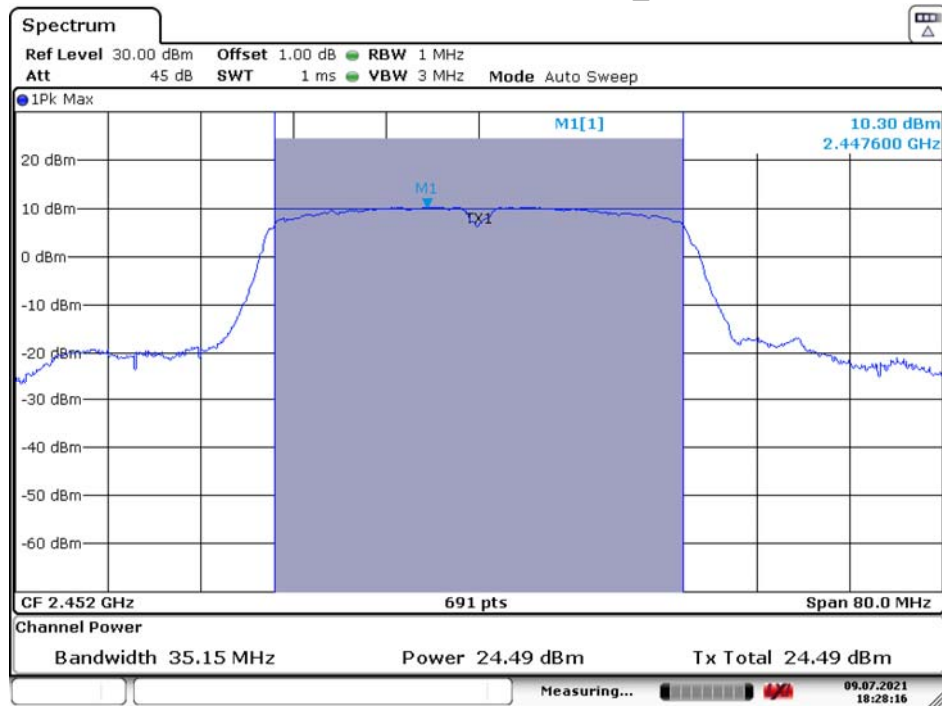


IEEE 802.11n HT40 2452MHz_ANT 1



Date: 9.JUL.2021 18:26:52

IEEE 802.11n HT40 2452MHz_ANT 2



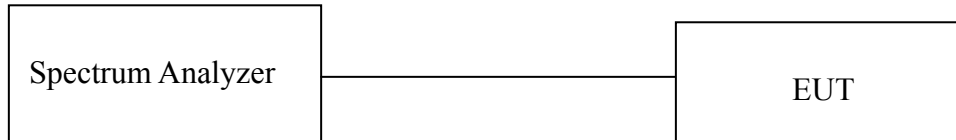
Date: 9.JUL.2021 18:28:16

5. POWER SPECTRAL DENSITY

5.1. 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.

5.2. Test Setup



5.3. 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

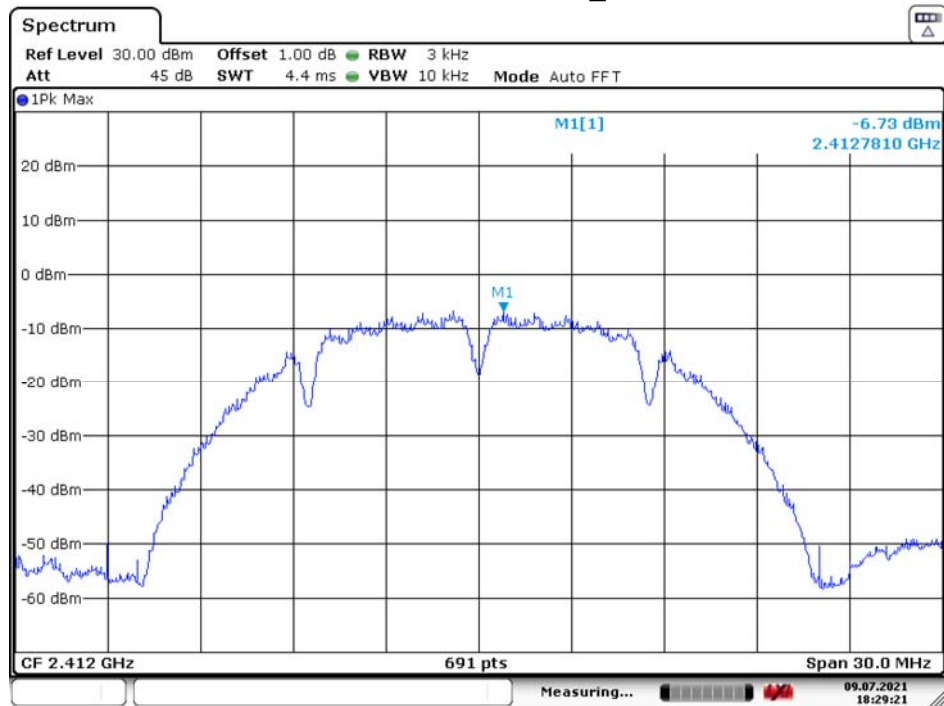
5.4. Test Procedure

- 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.

5.5. Test Result

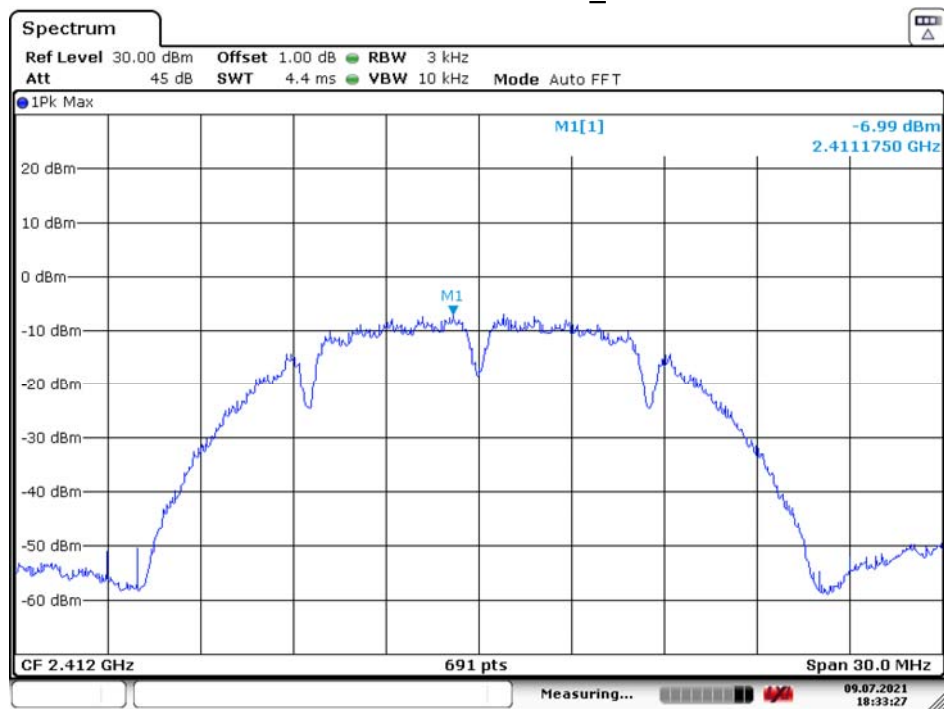
Temperature	24.1 °C	Relative Humidity		55%	Test Voltage	AC 120V/60Hz
Mode	Freq (MHz)	Power Density (dBm/3KHz)		Total Power Density (dBm/3KHz)	Limit (dBm/3KHz)	Result
		ANT 1	ANT 2			
IEEE 802.11b	2412	-6.73	-6.99	-6.73	8.00	PASS
	2437	-6.85	-7.03	-6.85	8.00	PASS
	2462	-7.67	-7.31	-7.67	8.00	PASS
IEEE 802.11g	2412	-8.77	-8.11	-8.77	8.00	PASS
	2437	-9.08	-8.51	-9.08	8.00	PASS
	2462	-8.95	-8.80	-8.95	8.00	PASS
IEEE 802.11n HT20	2412	-8.16	-8.37	-5.25	8.00	PASS
	2437	-8.47	-8.92	-5.68	8.00	PASS
	2462	-8.30	-9.11	-5.68	8.00	PASS
IEEE 802.11n HT40	2422	-10.34	-10.54	-7.43	8.00	PASS
	2437	-10.73	-10.82	-7.76	8.00	PASS
	2452	-10.60	-10.98	-7.78	8.00	PASS

IEEE 802.11b 2412MHz_ANT 1



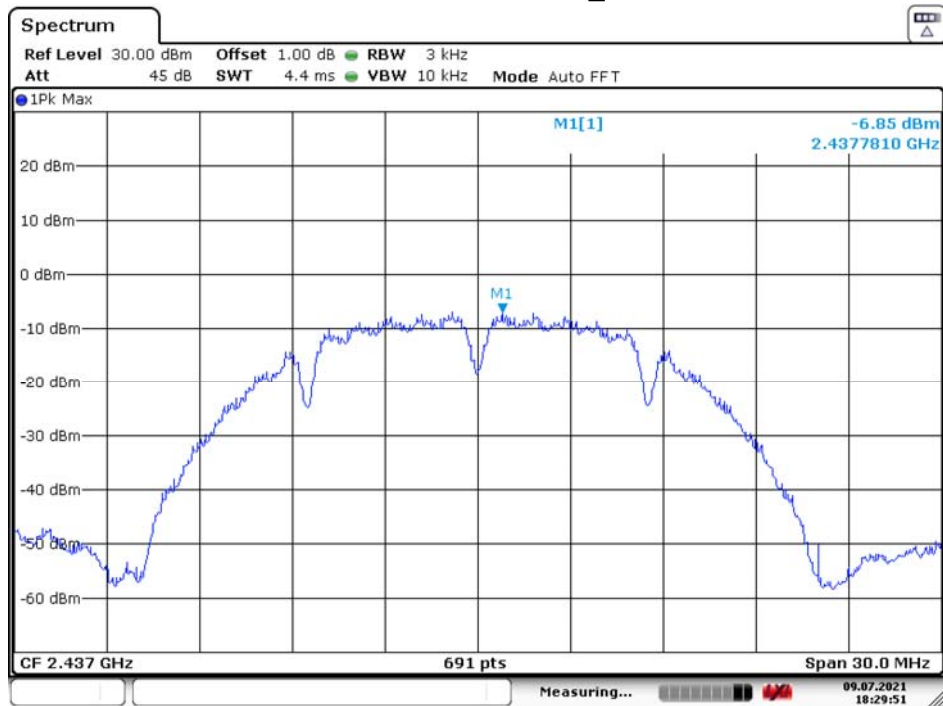
Date: 9.JUL.2021 18:29:21

IEEE 802.11b 2412MHz_ANT 2



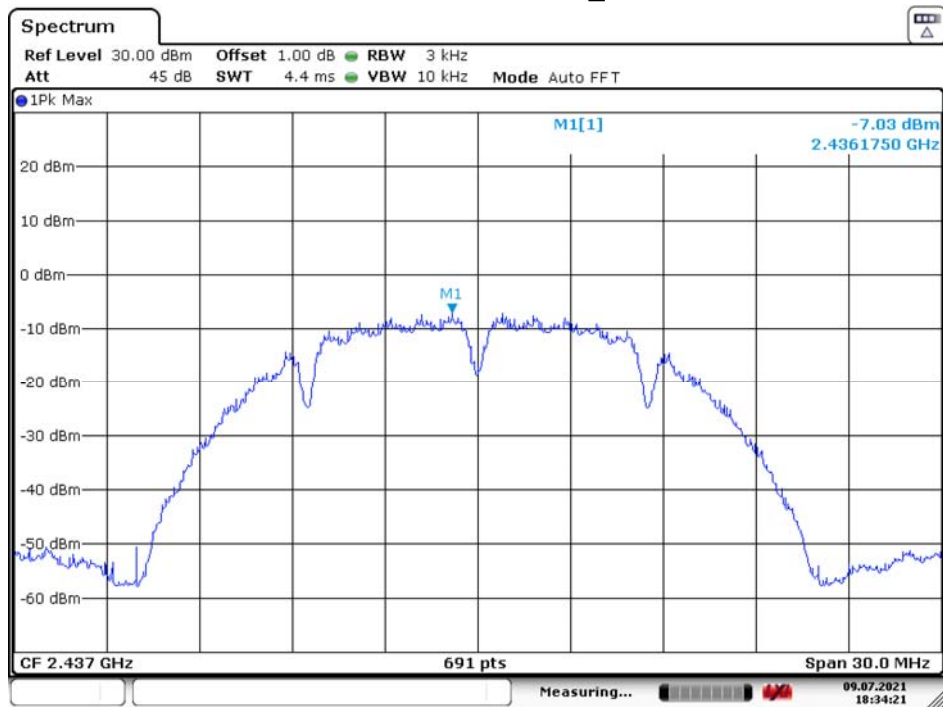
Date: 9.JUL.2021 18:33:27

IEEE 802.11b 2437MHz_ANT 1



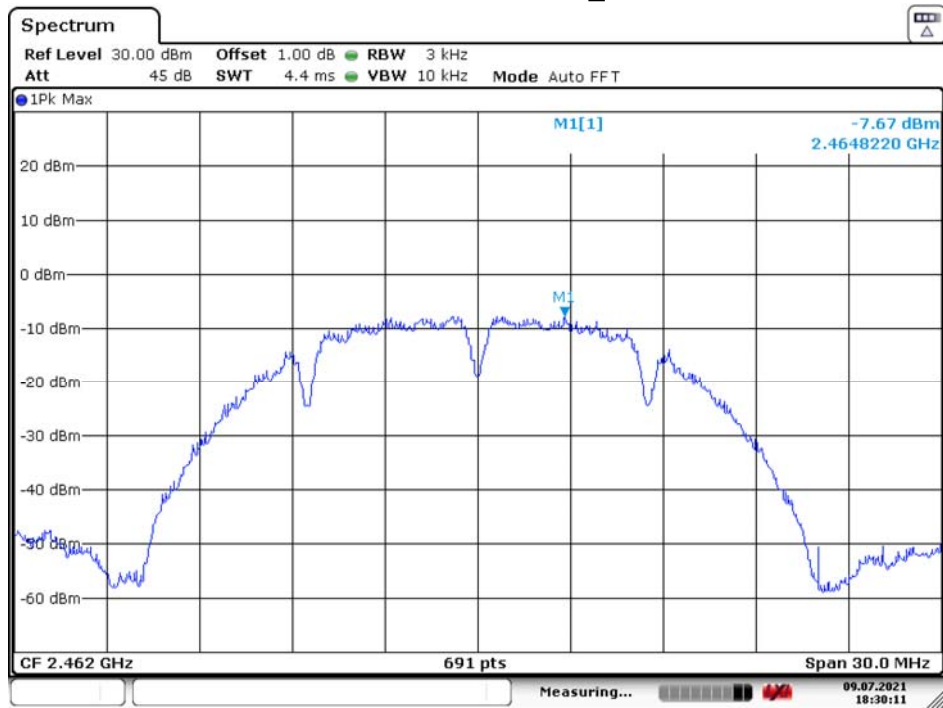
Date: 9.JUL.2021 18:29:51

IEEE 802.11b 2437MHz_ANT 2



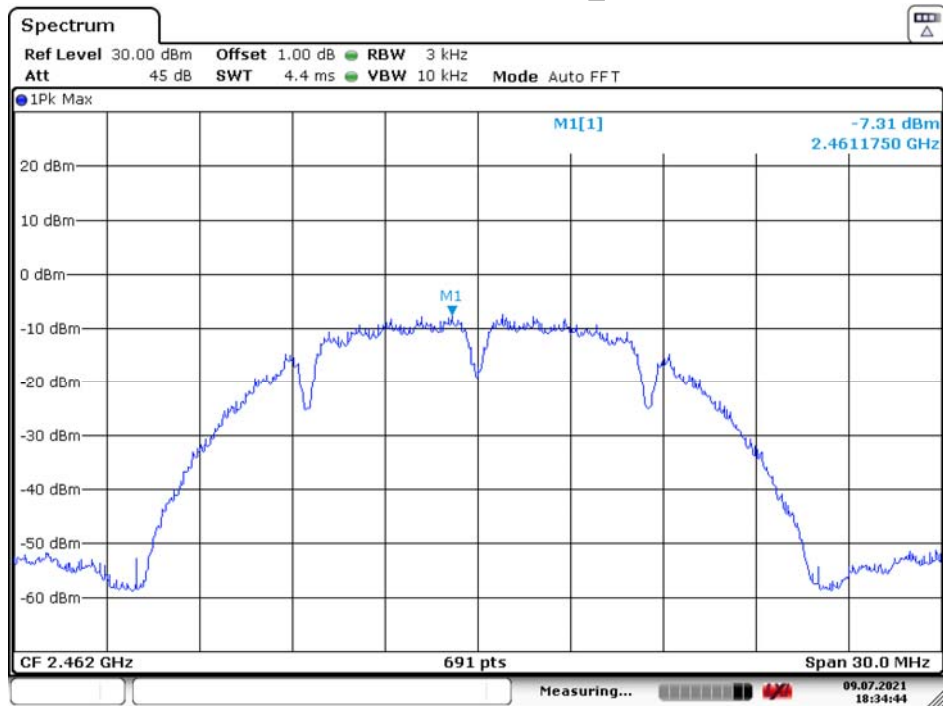
Date: 9.JUL.2021 18:34:21

IEEE 802.11b 2462MHz_ANT 1



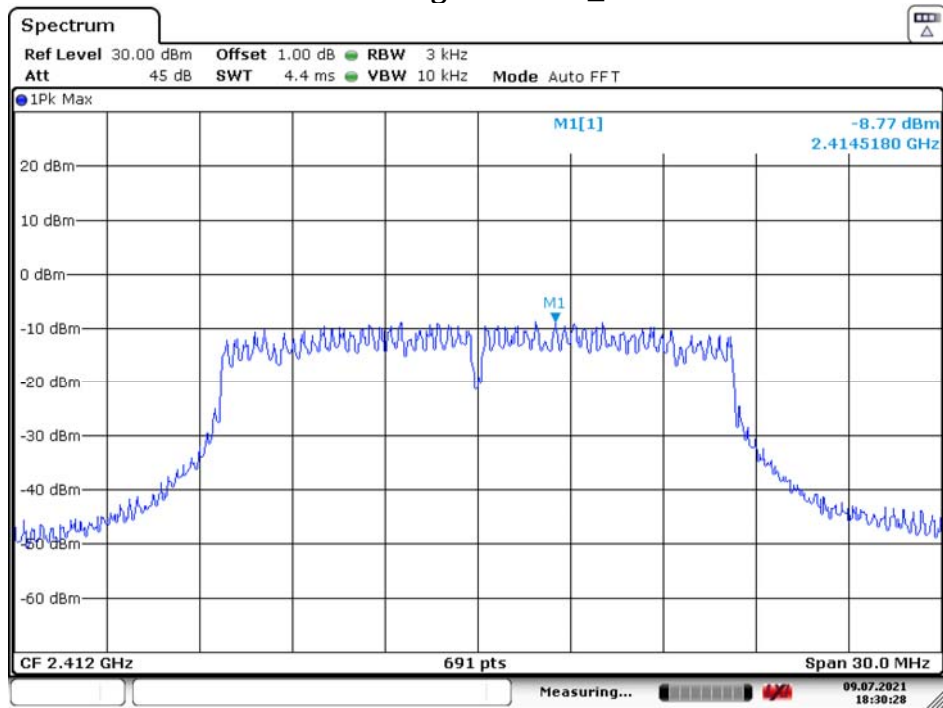
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IEEE 802.11b 2462MHz_ANT 2



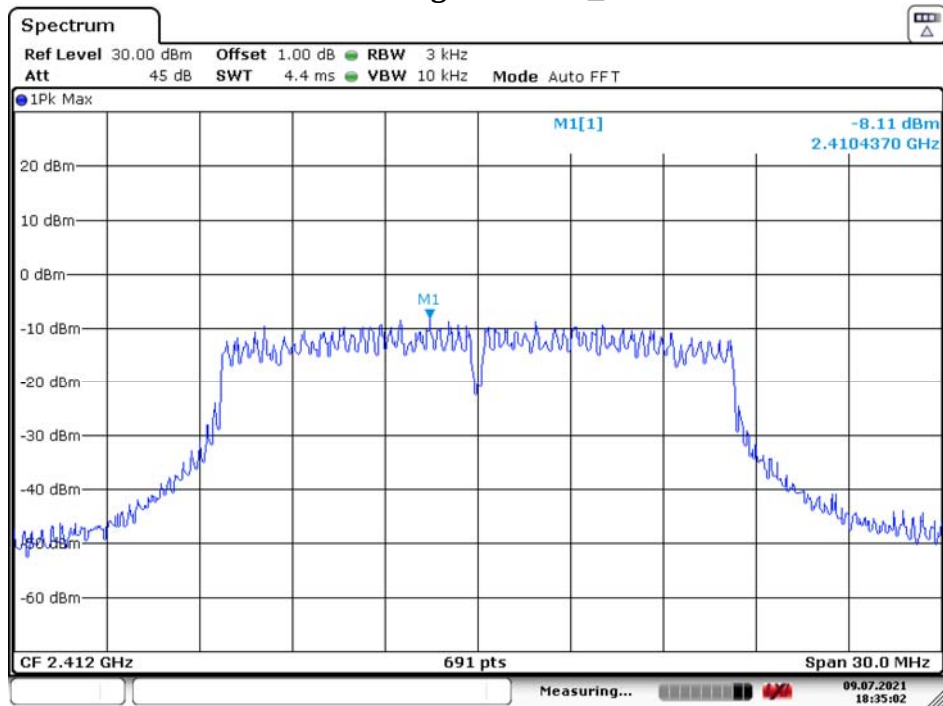
Date: 9.JUL.2021 18:34:44

IEEE 802.11g 2412MHz_ANT 1



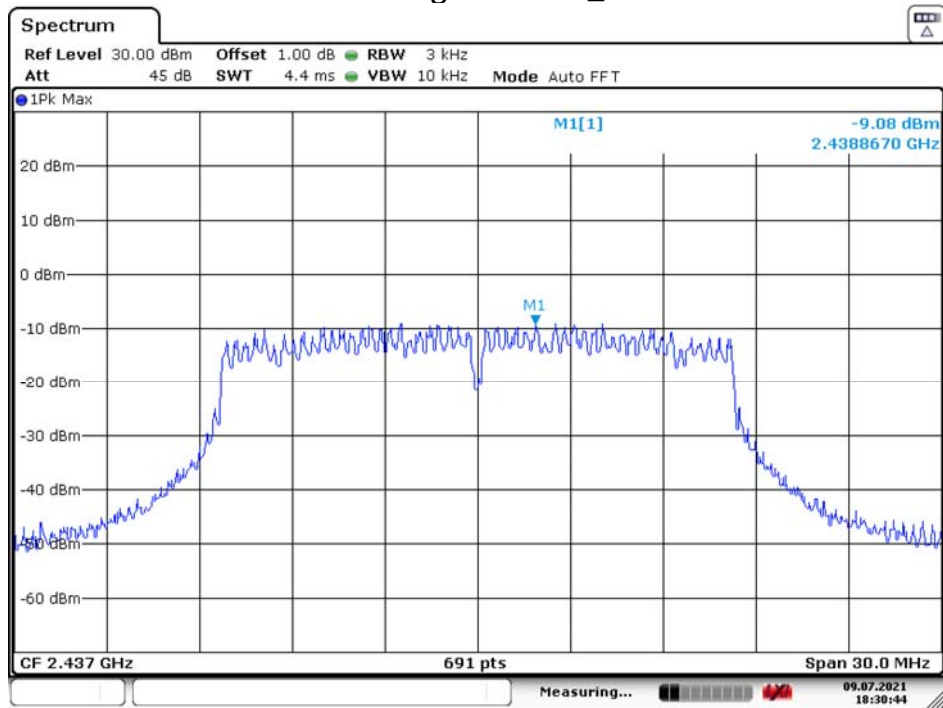
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IEEE 802.11g 2412MHz_ANT 2



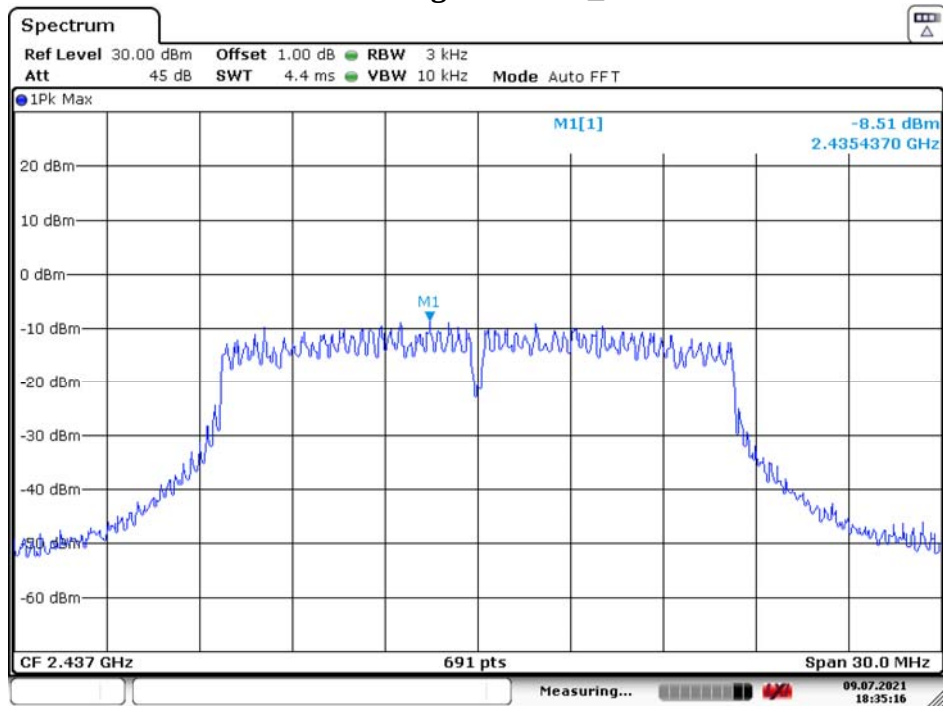
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IEEE 802.11g 2437MHz_ANT 1



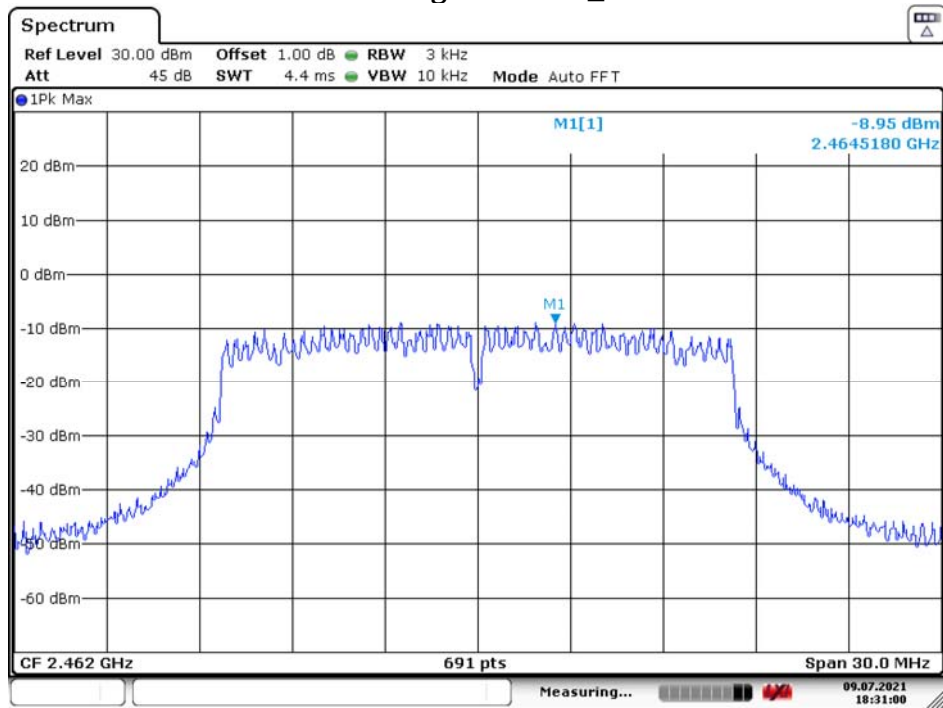
Date: 9.JUL.2021 18:30:44

IEEE 802.11g 2437MHz_ANT 2



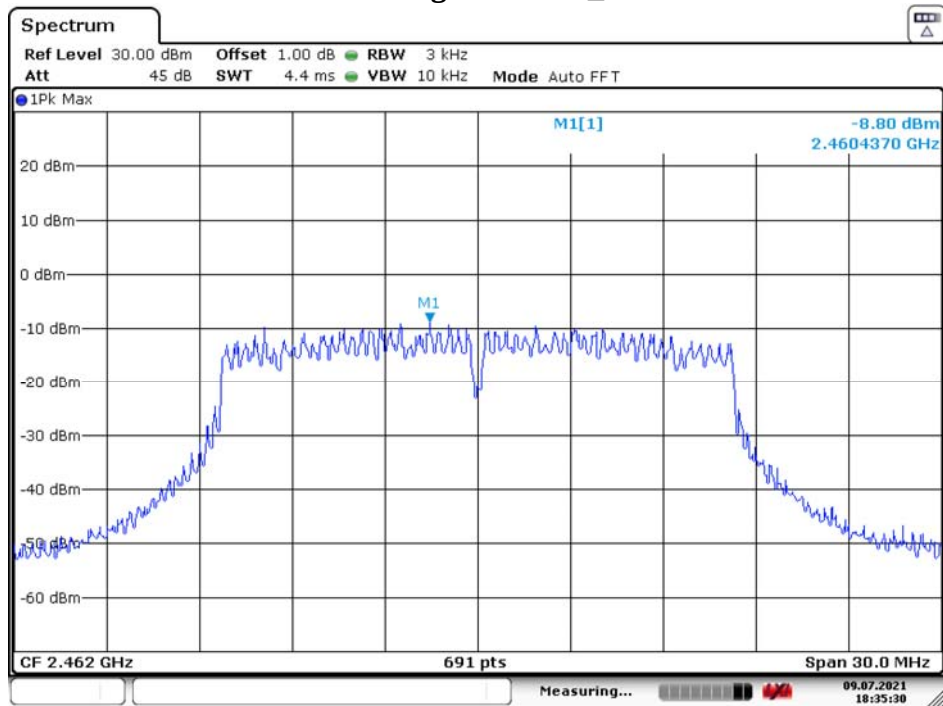
Date: 9.JUL.2021 18:35:16

IEEE 802.11g 2462MHz_ANT 1



Date: 9.JUL.2021 18:31:00

IEEE 802.11g 2462MHz_ANT 2



Date: 9.JUL.2021 18:35:30