

FCC PART 15C REPORT FOR CERTIFICATION  
On Behalf of

Soundlab Technology Company Limited

Soundbar

Model Number: Klipsch Cinema 800 Sound bar

FCC ID: 2ATKO-BAR800

Prepared for:	Soundlab Technology Company Limited
	No.101,202,Building 1, Microlab Industrial Park, No.2 Baozi South
	Road, Kengzi, Pingshan District, ShenZhen, China
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Report Number:	ESTE-R2008098
Date of Test:	Jul. 14~Aug. 18, 2020
Date of Report:	Aug. 19, 2020



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## EST Technology Co., Ltd.

<b>Applicant:</b>	Soundlab Technology Company Limited		
<b>Address:</b>	No.101,202,Building 1, Microlab Industrial Park, No.2 Baozi South Road, Kengzi, Pingshan District, ShenZhen, China		
<b>Manufacturer:</b>	Klipsch Group Inc. 3502 Woodview Trace, Indianapolis, IN 46268		
<b>E.U.T:</b>	Soundbar		
<b>Model Number:</b>	Klipsch Cinema 800 Sound bar		
<b>Power Supply:</b>	AC 100~240V, 50/60Hz		
<b>Trade Name:</b>	Klipsch	<b>Serial No.:</b>	-----
<b>Date of Receipt:</b>	Jul. 14, 2020	<b>Date of Test:</b>	Jul. 14~Aug. 18, 2020
<b>Test Specification:</b>	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		
<b>Test Result:</b>	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.			
<b>Prepared by:</b>	<b>Reviewed by:</b>	<span style="font-size: small;">Date: Aug. 19, 2020</span>  <b>Approved by:</b> <b>EST</b> <i>[Signature]</i>	
Ring Yang	Seven Wang	Iceman Hu / Manager	
Ring Yang / Assistant	Seven Wang / Engineer		
<b>Other Aspects:</b> None.			
<b>Abbreviations:</b> OK/P=passed      fail/F=failed      n.a/N=not applicable      E.U.T=equipment under tested			
<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	:	Soundbar
Model Number	:	Klipsch Cinema 800 Sound bar
Software Version	:	V28
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
Max Output Power (PEAK)	:	IEEE 802.11b:15.71dBm IEEE 802.11g:18.86dBm IEEE 802.11n HT20:19.27dBm IEEE 802.11n HT40:19.86dBm
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	2.34
2	N/A	N/A	Internal	N/A	2.34

Only one antenna transmission is supported, Simultaneous transmission is not supported.

## 2. SUMMARY OF TEST

### 2.1. Summary of test result

<b>Report Section</b>	<b>Description of Test Item</b>	<b>FCC Standard Section</b>	<b>Results</b>
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)	$\pm 4.60 \text{ dB}(\text{Polarize: H})$
	$\pm 4.68 \text{ dB}(\text{Polarize: V})$
Uncertainty for spurious emissions test (1GHz to 25GHz)	$\pm 4.96\text{dB}$
Uncertainty for radio frequency	$7 \times 10^{-8}$
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.

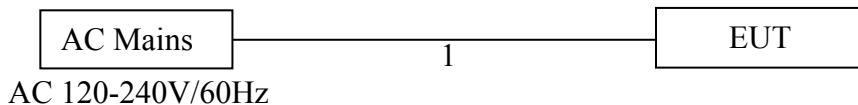
### 2.4. Assistant equipment used for test

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

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	NO	1.5m	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: Soundbar)



## 2.7. Power Setting of Test Software

Software Name	SecureCRT 5.50		
Frequency(MHz)	2412	2437	2462
IEEE 802.11b Setting	13	13	13
IEEE 802.11g Setting	13	13	13
IEEE 802.11n HT20 Setting	13	13	13
Frequency(MHz)	2422	2437	2452
IEEE 802.11n HT40 Setting	13	13	13

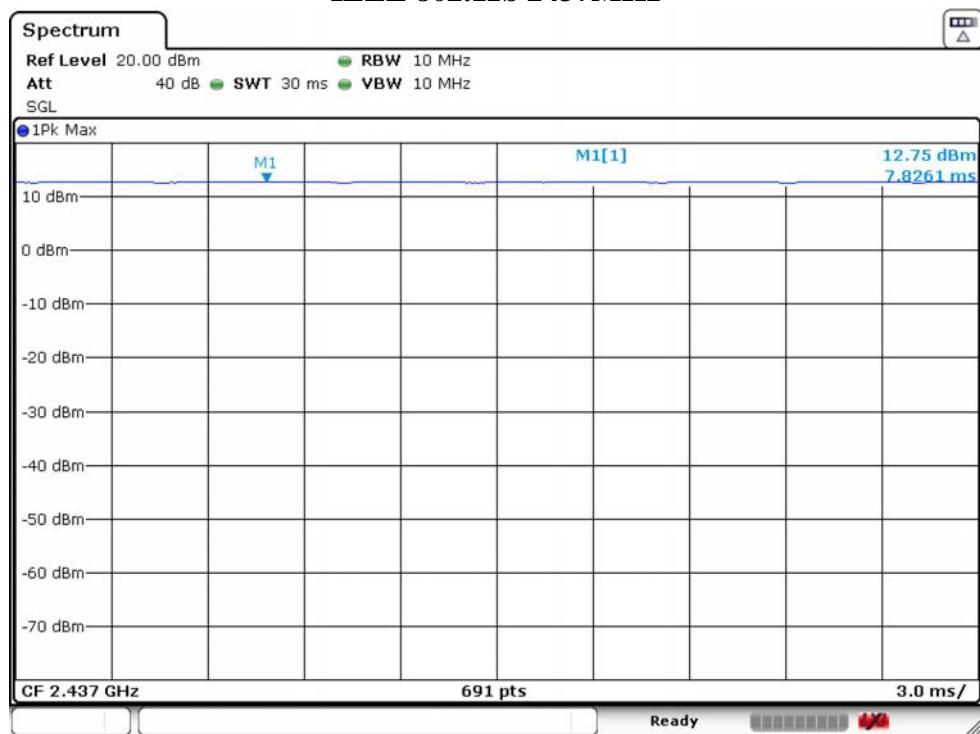
## 2.8. Duty Cycle

Temperature	24.7°C	Relative Humidity	53%	Test Voltage	120V/60Hz
Mode	Fre(MHz)	On time(ms)	Total Time(ms)	Duty Cycle	Duty Factor
IEEE 802.11b	2437	1.00000	1.00000	100.00%	0.00
IEEE 802.11g	2437	1.40000	1.40870	99.38%	0.00
IEEE 802.11n HT20	2437	1.31014	1.32174	99.12%	0.00
IEEE 802.11n HT40	2437	0.65217	0.66670	97.82%	0.10

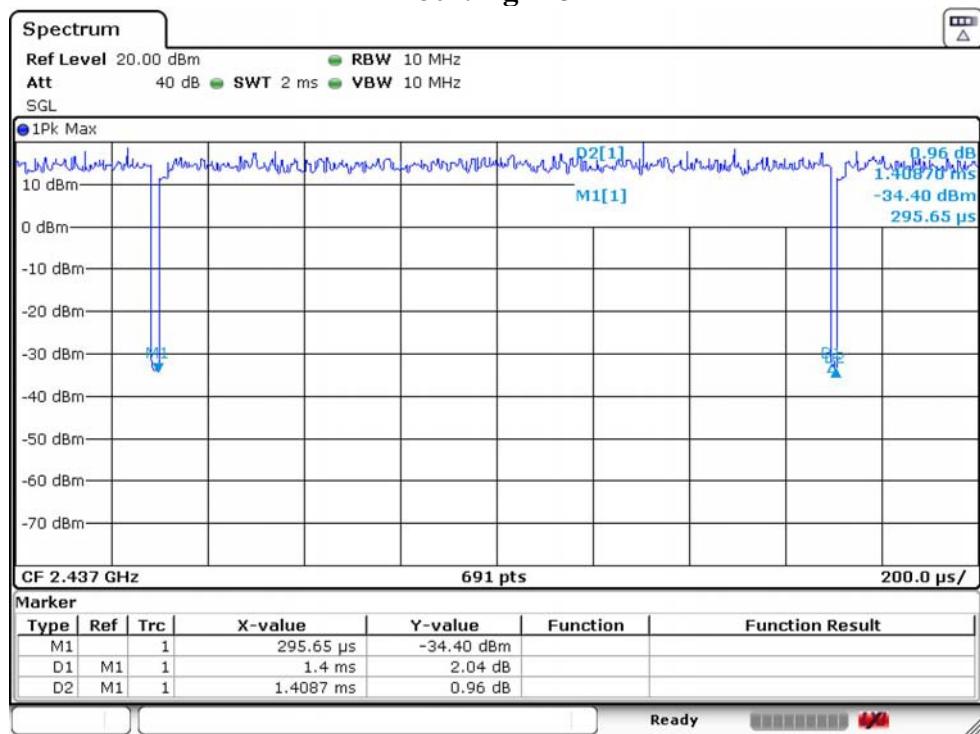
Note:

1. If duty cycle <98 %, the conducted average output power and average power spectral density should be add duty factor.
2. If duty cycle  $\geqslant 98\%$ ,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).

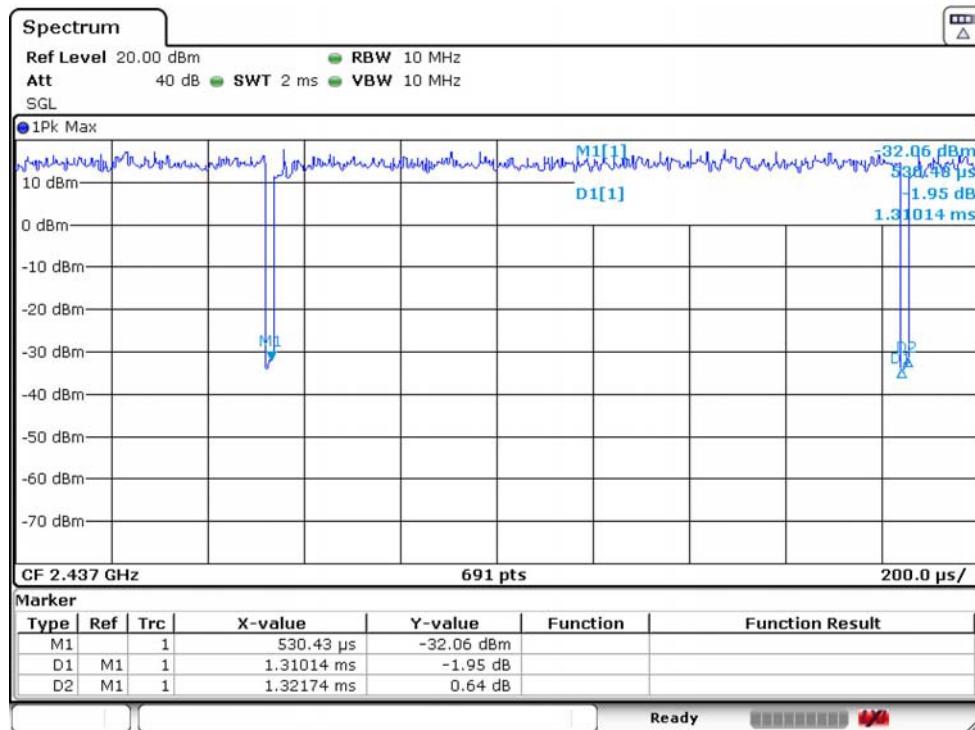
## IEEE 802.11b 2437MHz



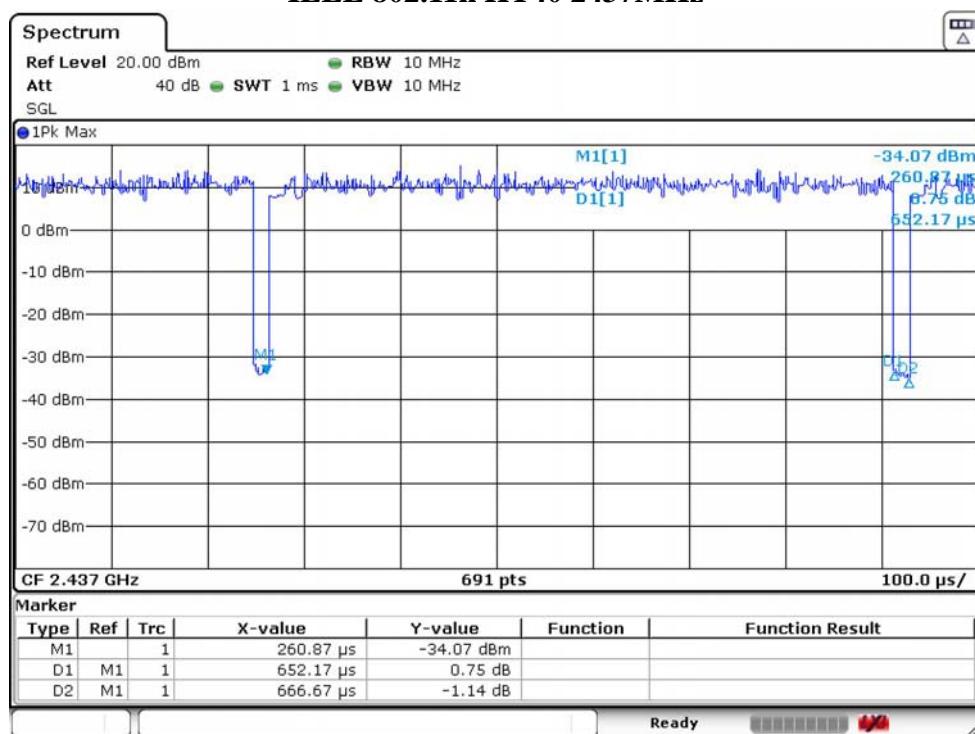
## IEEE 802.11g 2437MHz



## IEEE 802.11n HT20 2437MHz



## IEEE 802.11n HT40 2437MHz



## 2.9. Channel List

IEEE 802.11b/802.11g/802.11n HT20					
Channel	Frequency	Channel	Frequency	Channel	Frequency
	(MHz)		(MHz)		(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	Channel	Frequency	Channel	Frequency
	(MHz)		(MHz)		(MHz)
3	2422	6	2437	9	2452
4	2427	7	2442		
5	2432	8	2447		

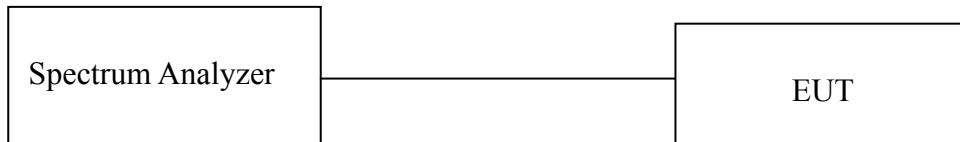


### 3. 6DB BANDWIDTH

#### 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

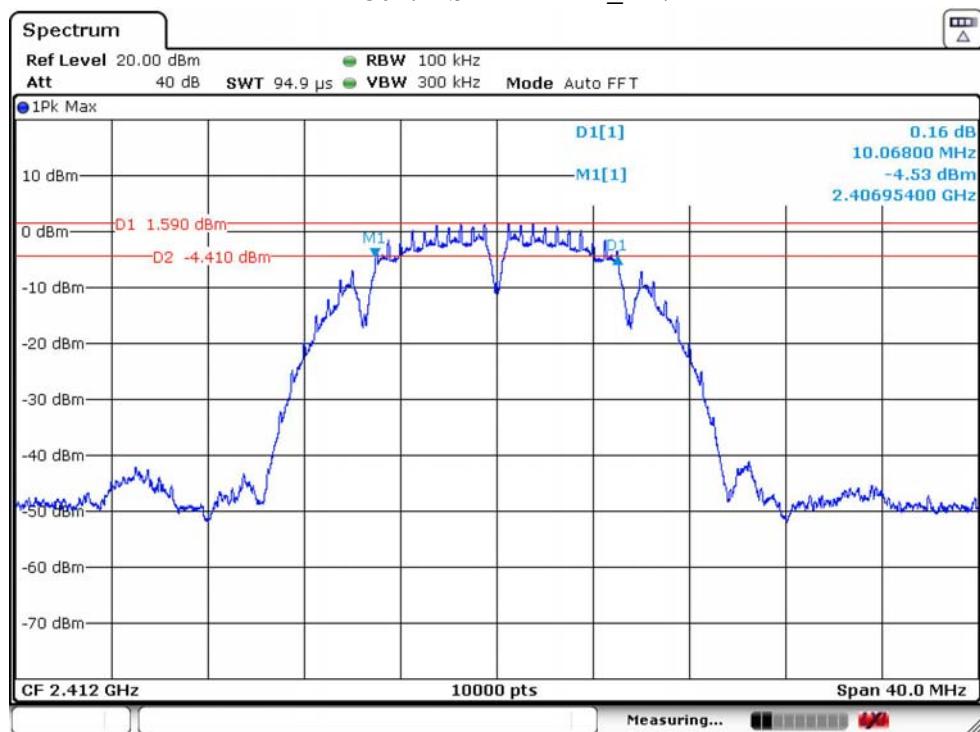
#### 3.4. Test Procedure

- 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.

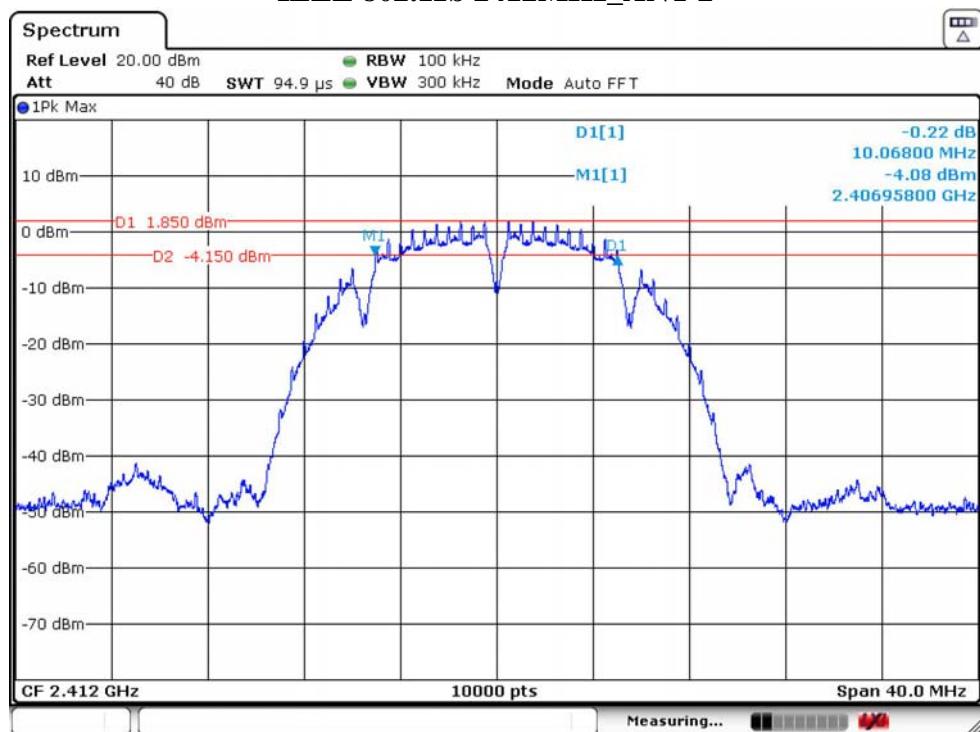
### 3.5. Test Result

Temperature	24.7°C	Relative Humidity	53%	Test Voltage	120V/60Hz
Mode	Freq (MHz)	6dB Bandwidth (MHz)		Limit (MHz)	Result
		ANT 1	ANT 2		
IEEE 802.11b	2412	10.068	10.068	≥0.5	PASS
	2437	10.068	10.072	≥0.5	PASS
	2462	10.064	10.056	≥0.5	PASS
IEEE 802.11g	2412	16.360	16.356	≥0.5	PASS
	2437	16.352	16.348	≥0.5	PASS
	2462	16.352	16.352	≥0.5	PASS
IEEE 802.11n HT20	2412	17.568	17.580	≥0.5	PASS
	2437	17.568	17.564	≥0.5	PASS
	2462	17.572	17.568	≥0.5	PASS
IEEE 802.11n HT40	2422	36.248	36.256	≥0.5	PASS
	2437	35.832	36.104	≥0.5	PASS
	2452	36.056	36.272	≥0.5	PASS

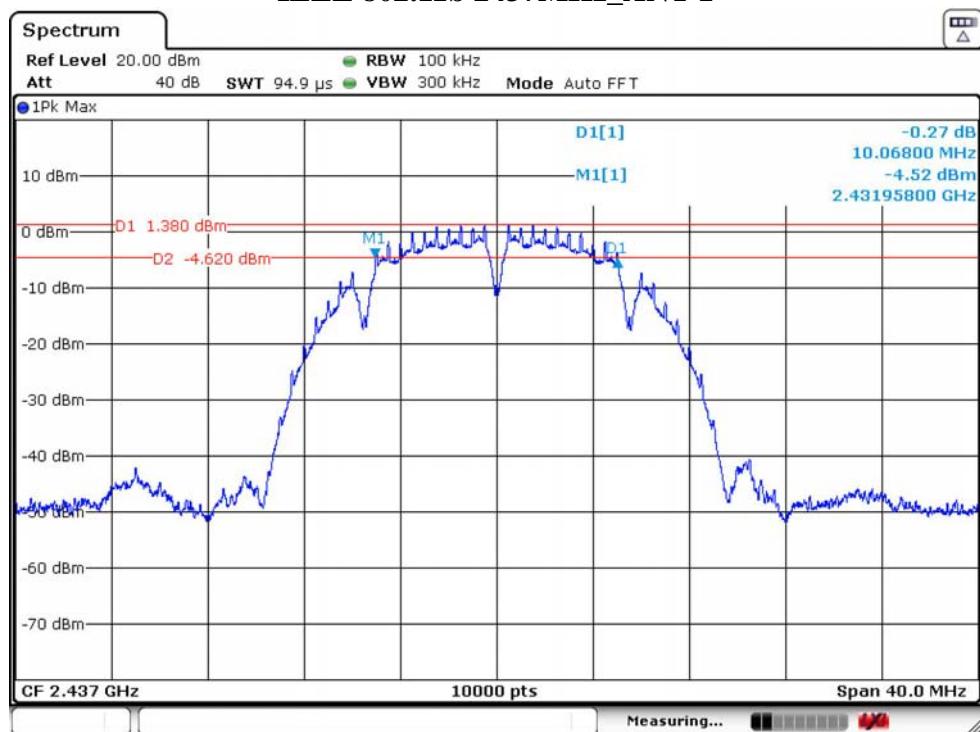
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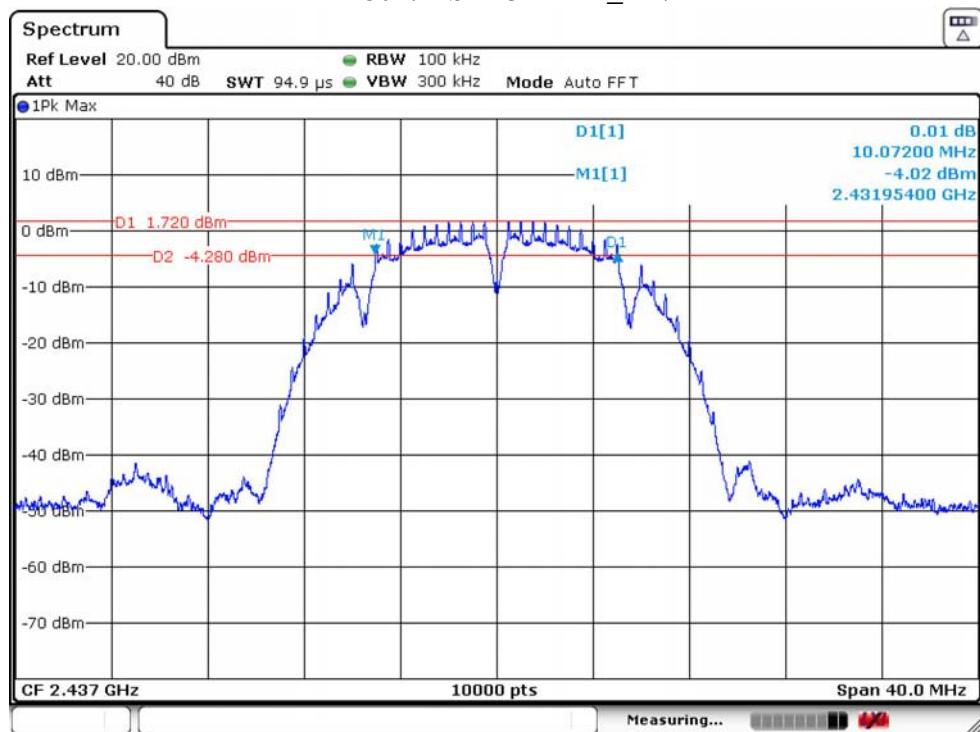
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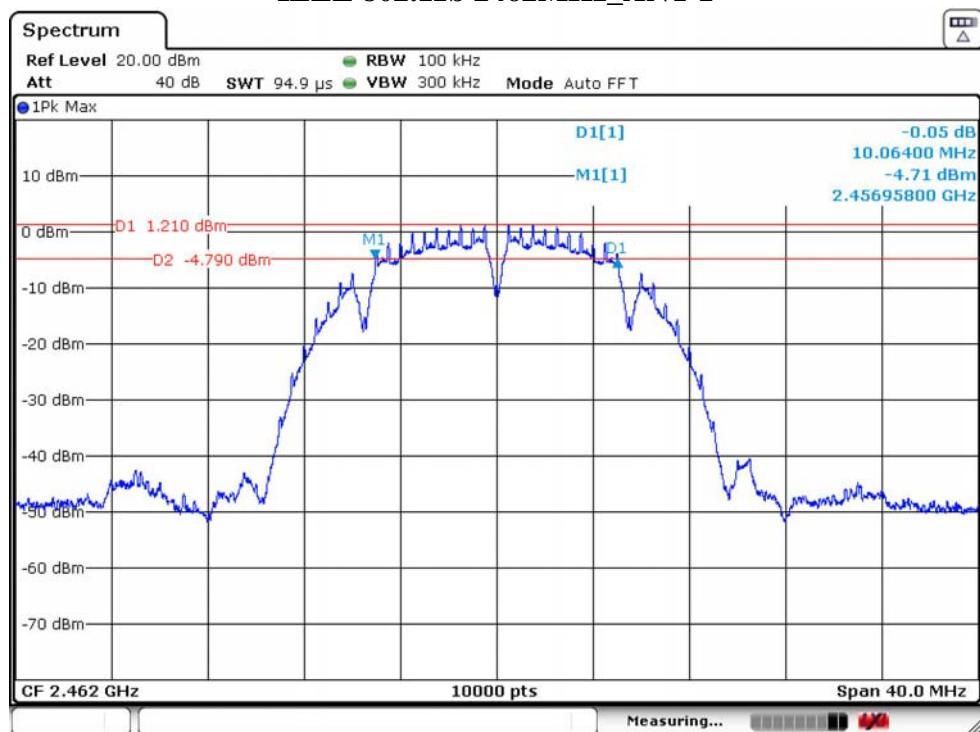
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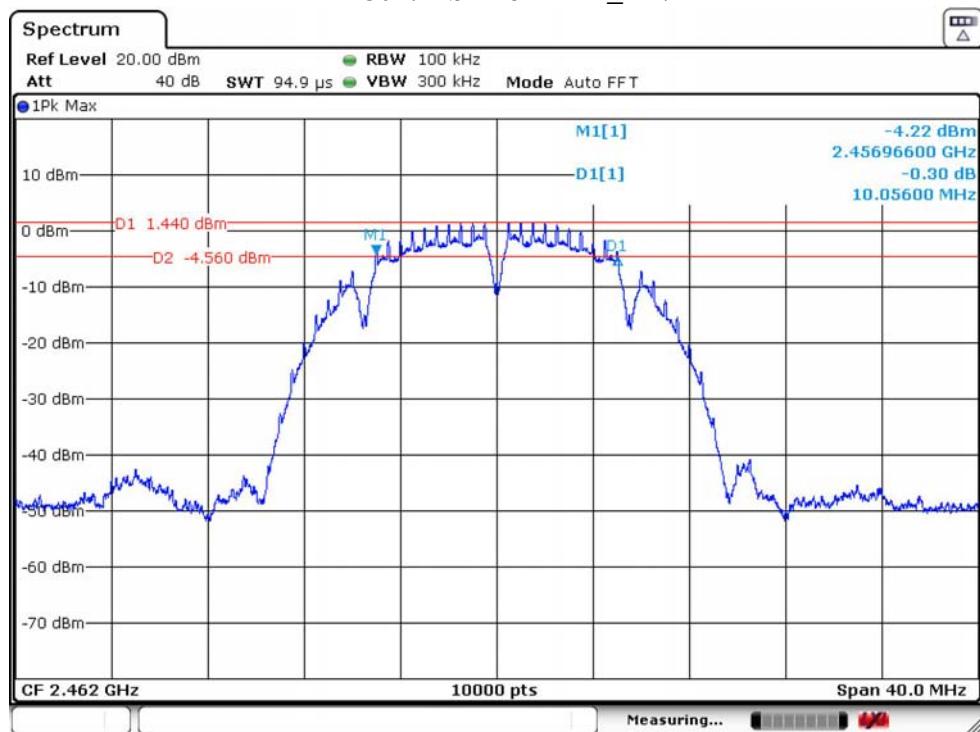
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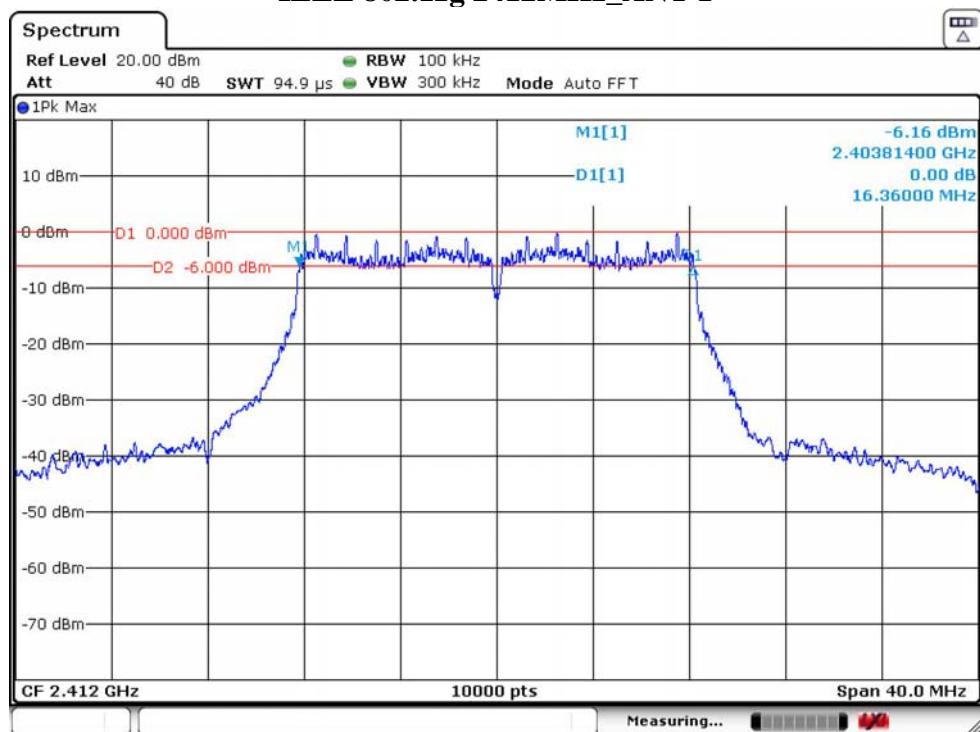
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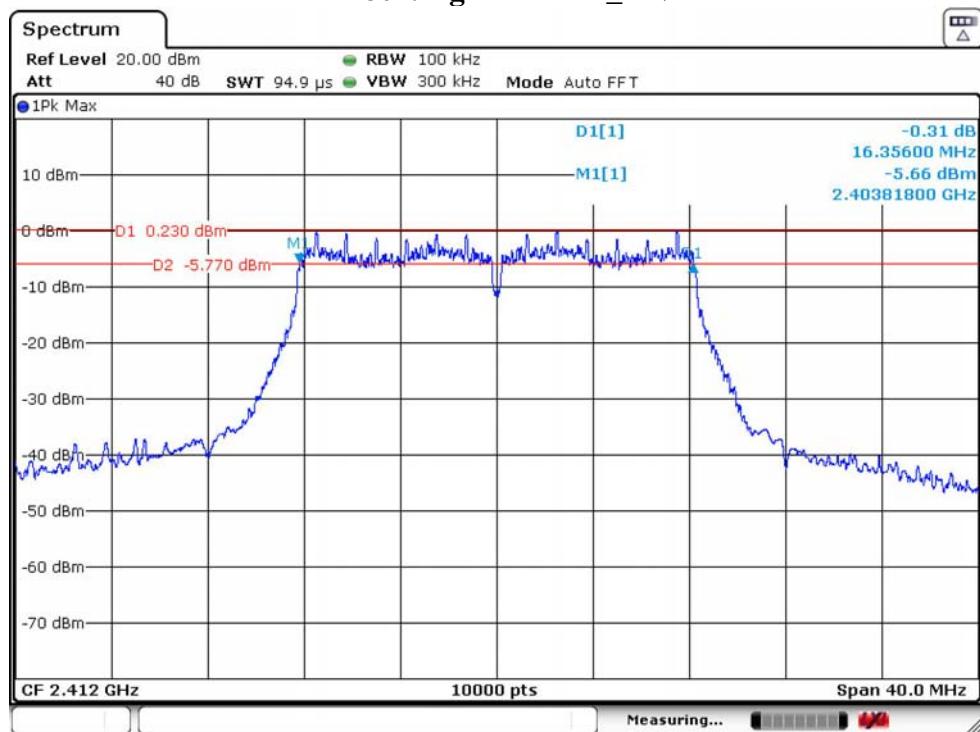
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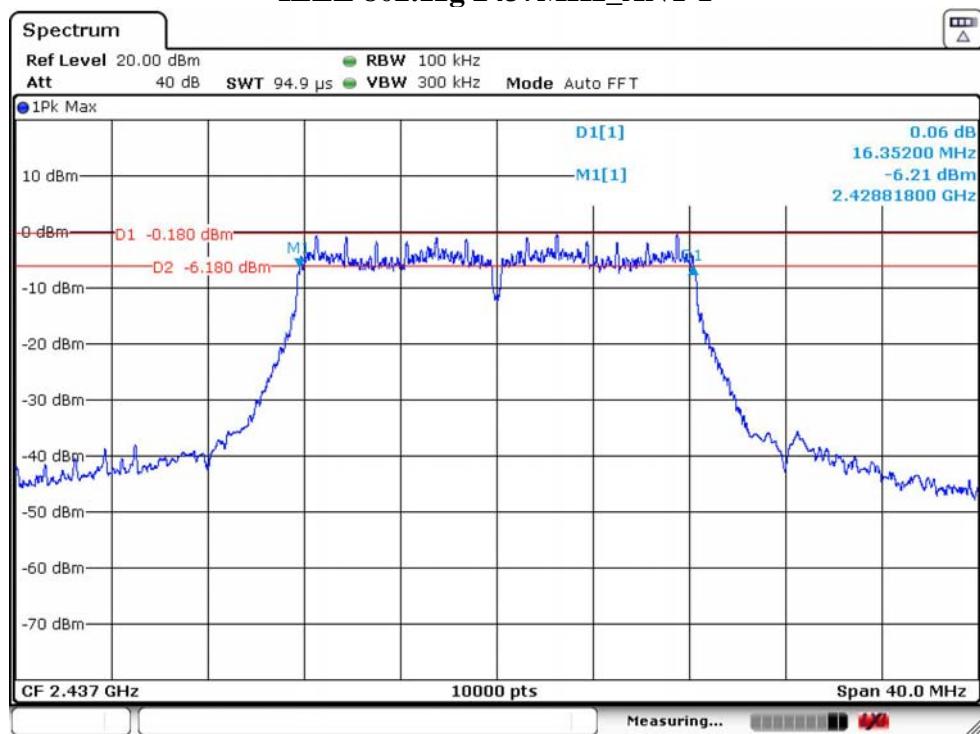
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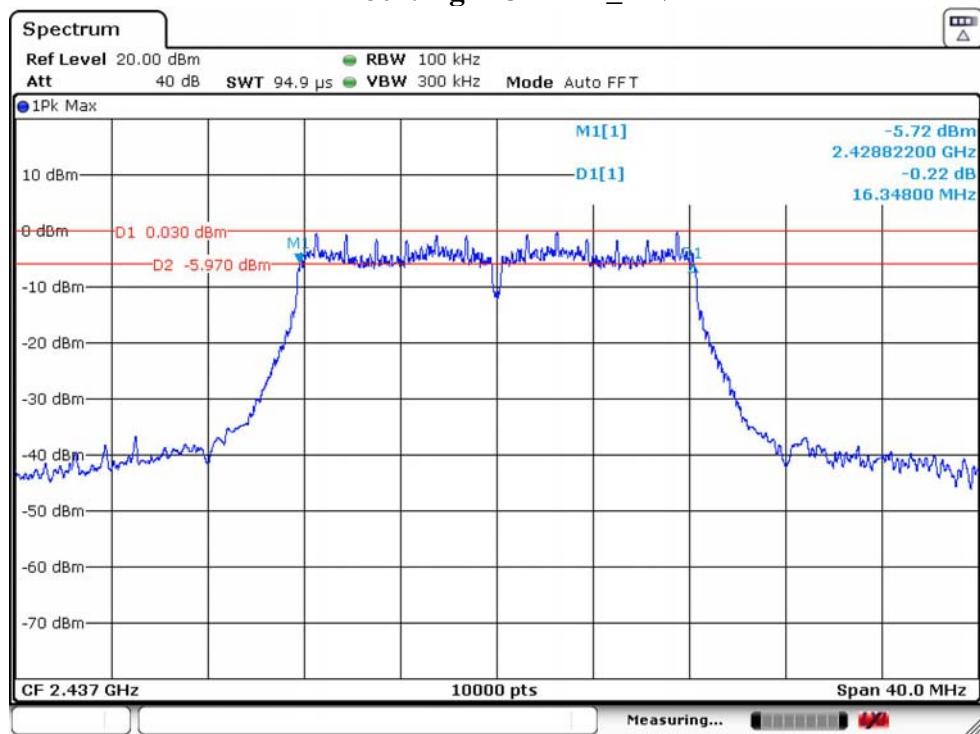
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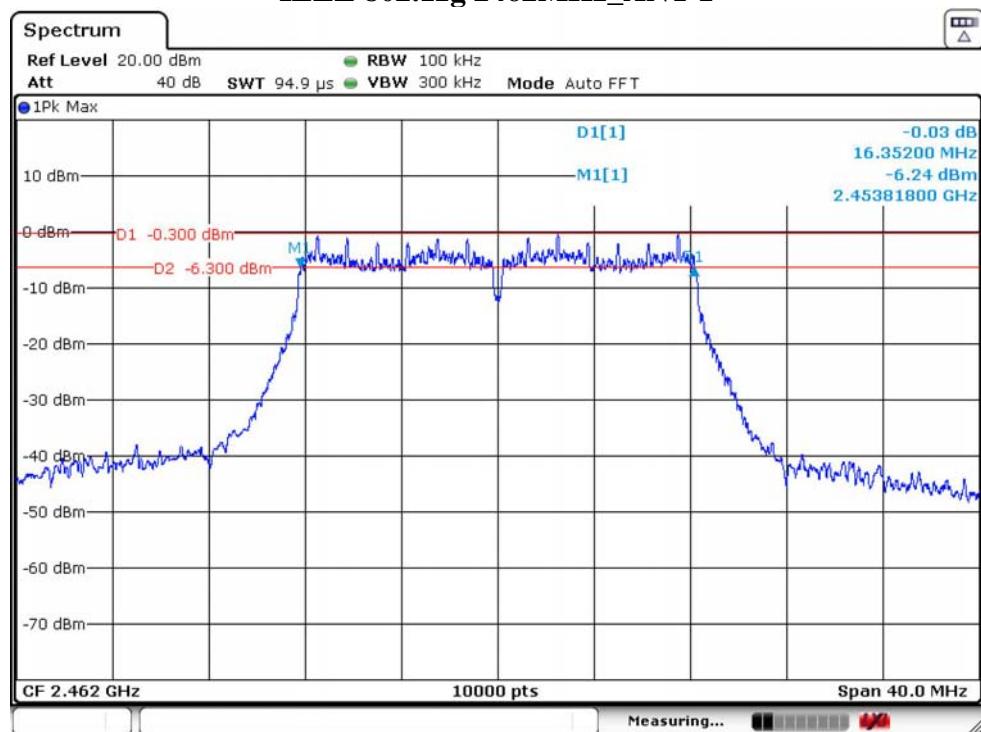
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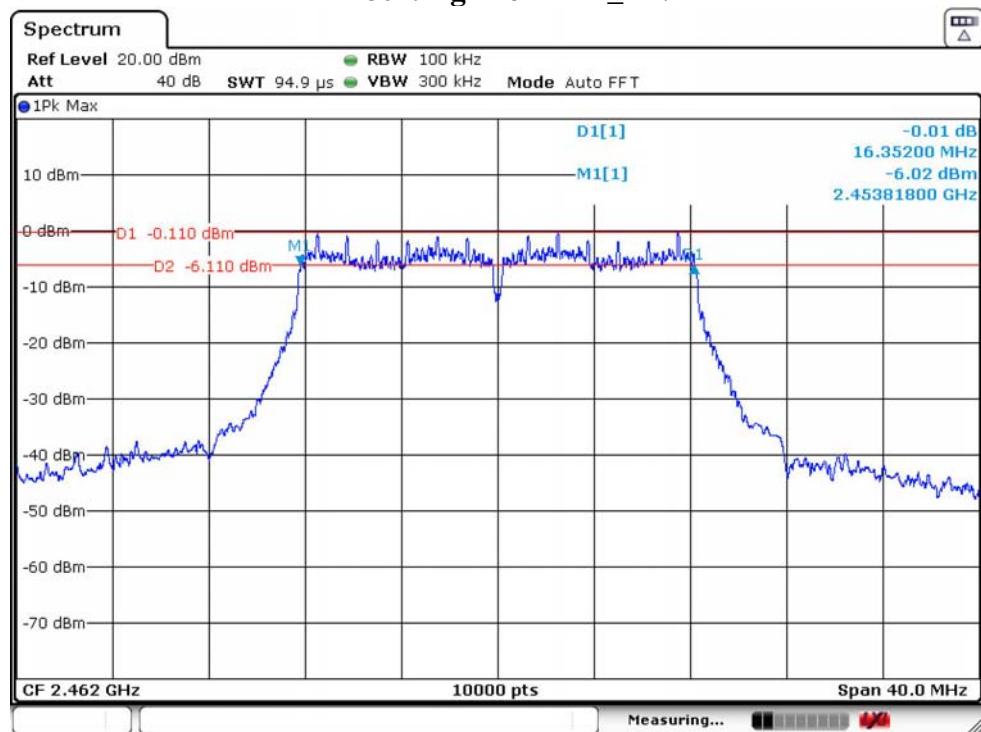
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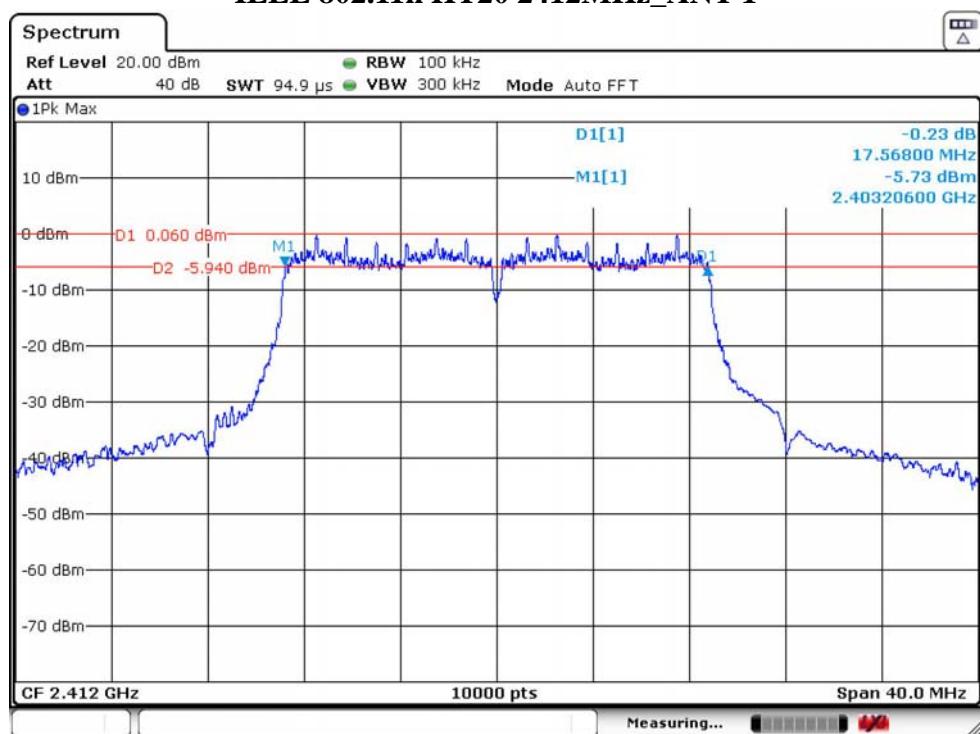
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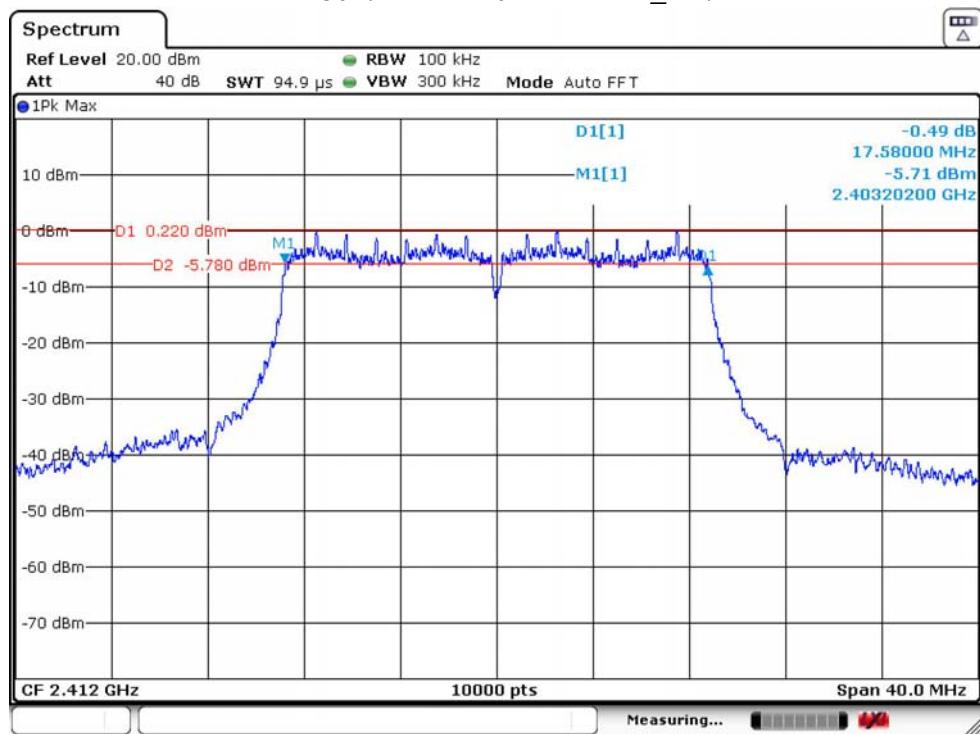
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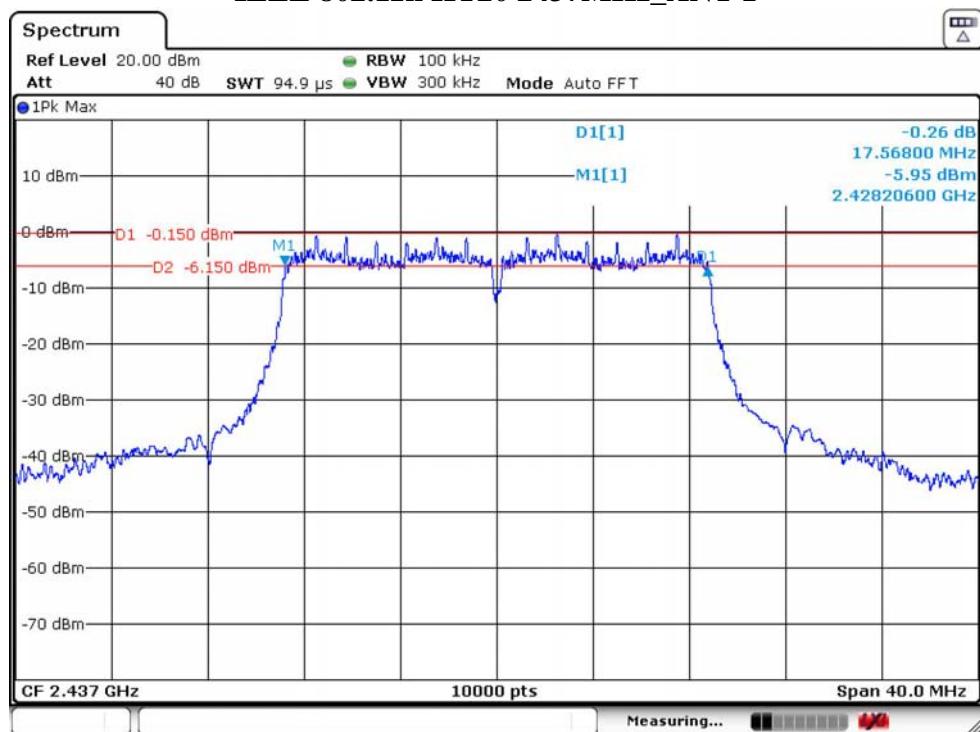
## IEEE 802.11n HT20 2412MHz\_ANT 1



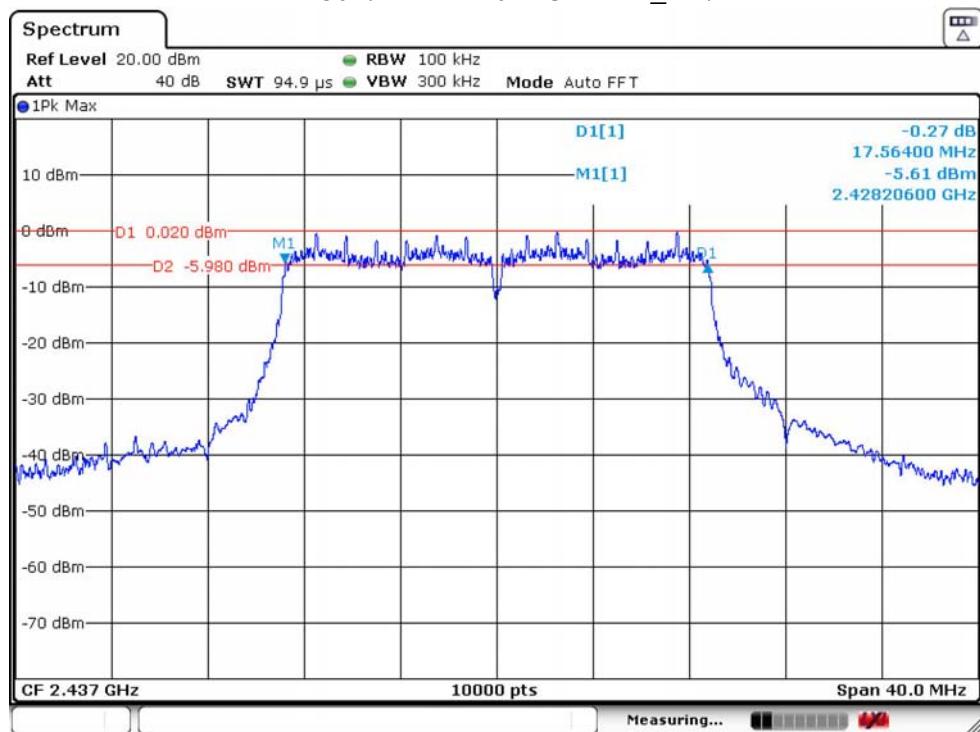
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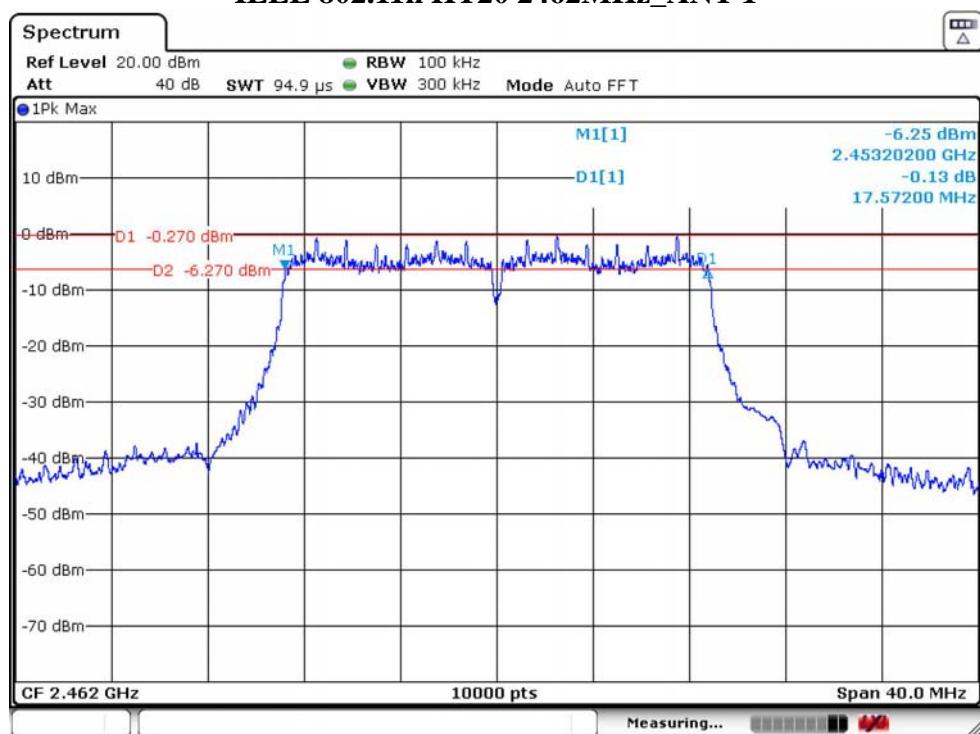
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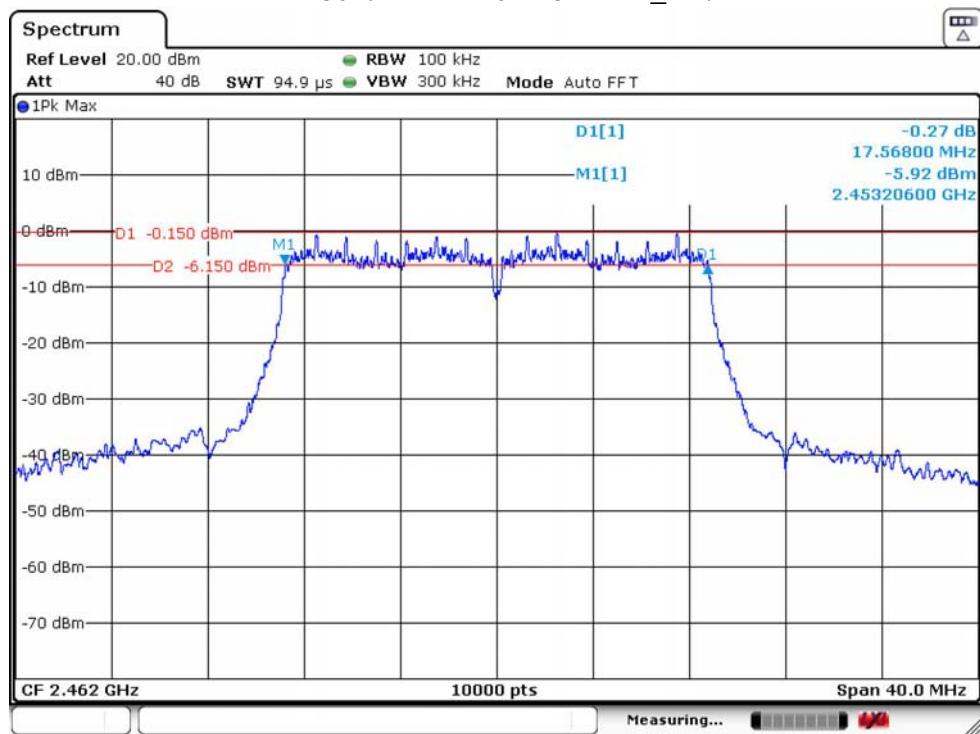
## IEEE 802.11n HT20 2437MHz\_ANT 2



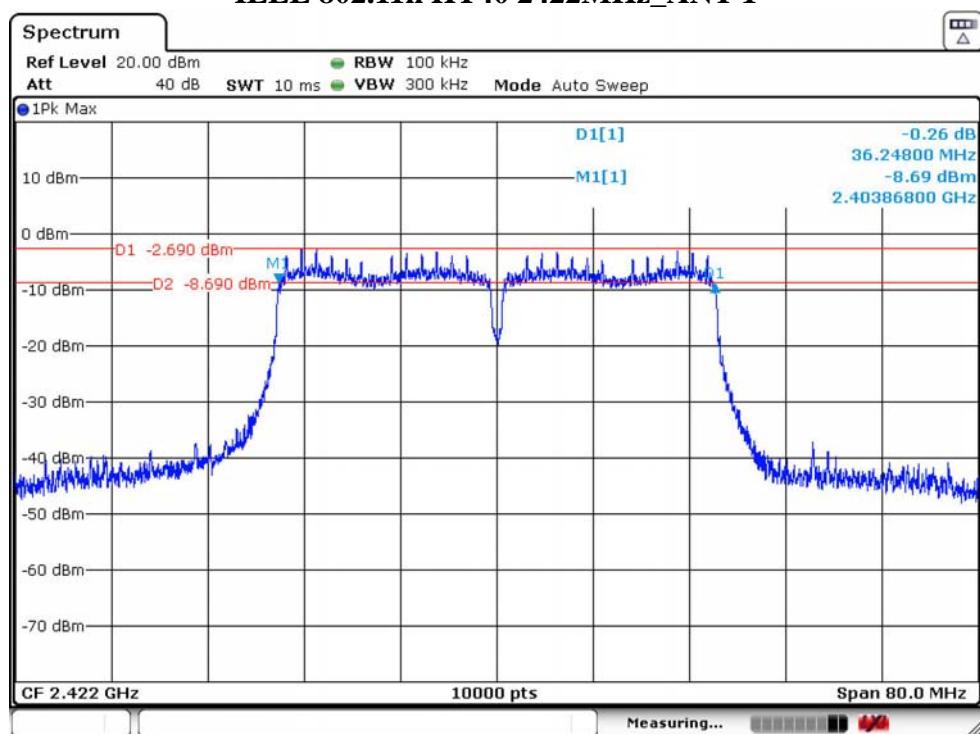
## IEEE 802.11n HT20 2462MHz\_ANT 1



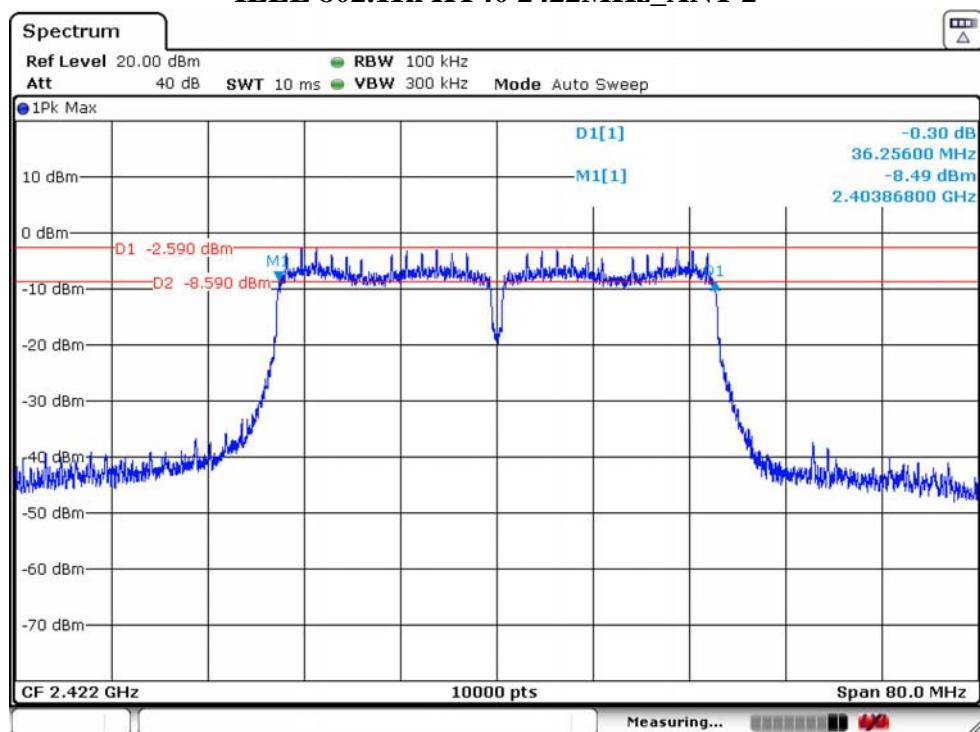
## IEEE 802.11n HT20 2462MHz\_ANT 2



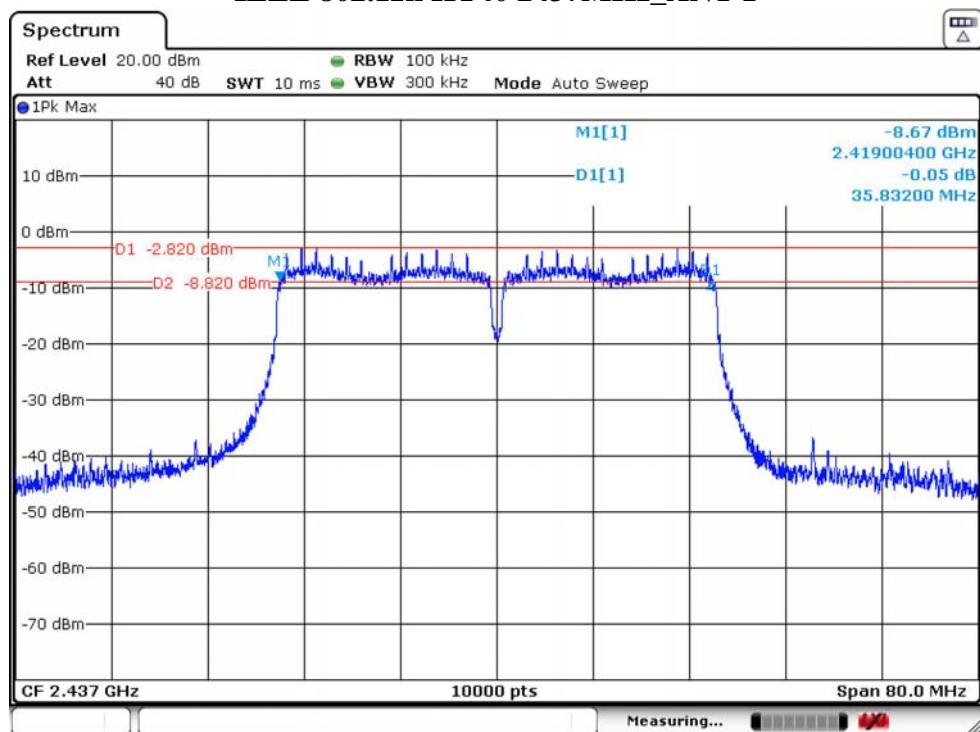
## IEEE 802.11n HT40 2422MHz\_ANT 1



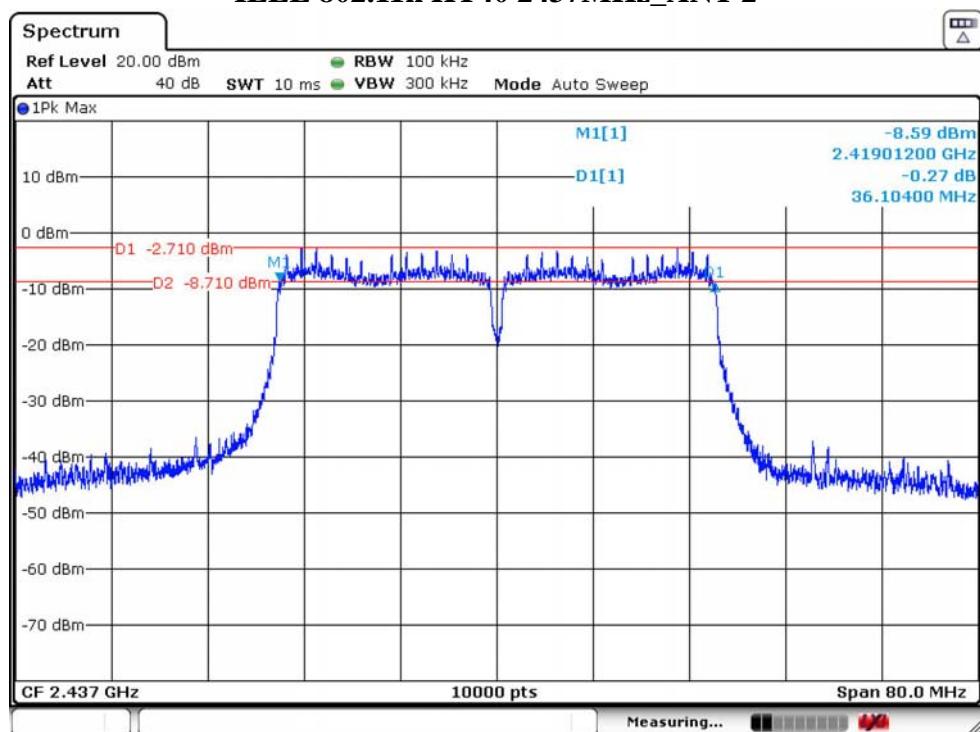
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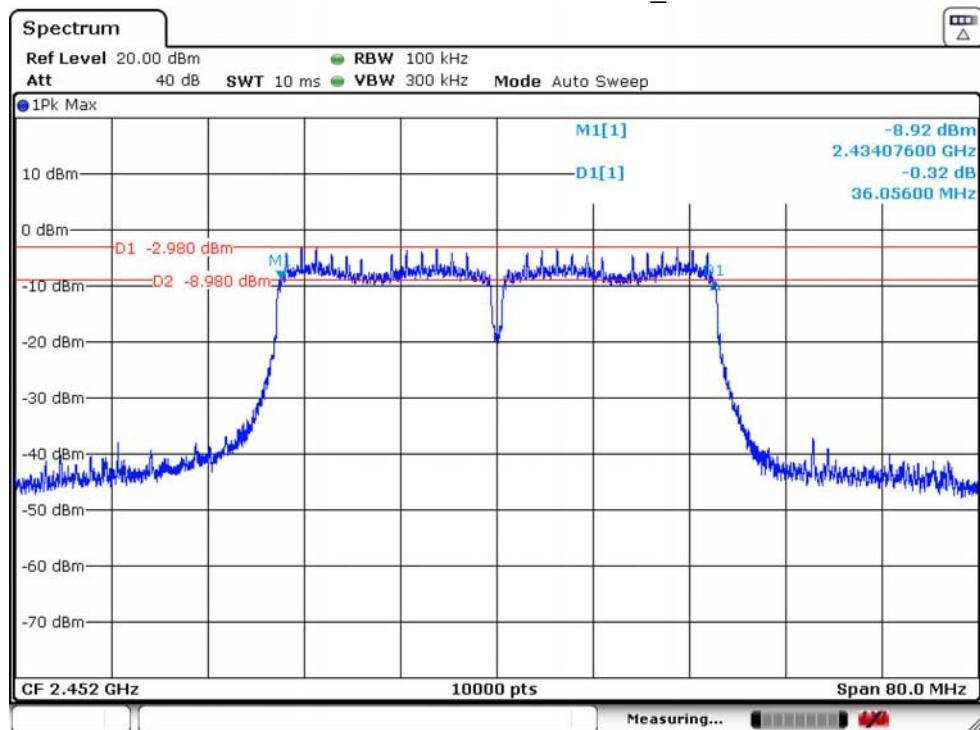
## IEEE 802.11n HT40 2437MHz\_ANT 1



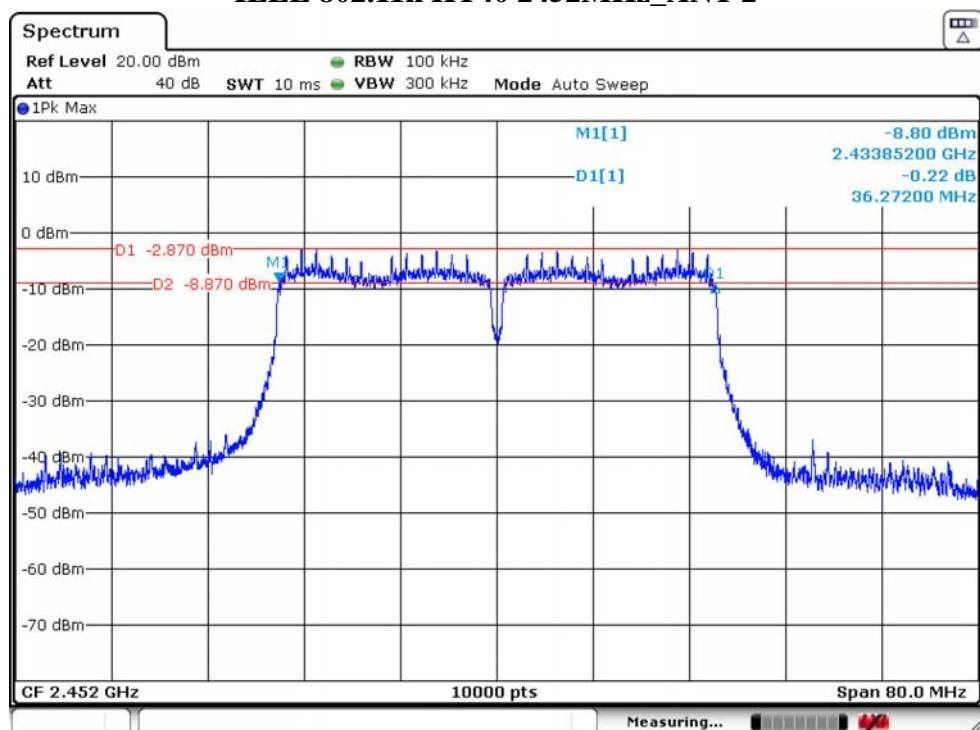
## IEEE 802.11n HT40 2437MHz\_ANT 2



## IEEE 802.11n HT40 2452MHz\_ANT 1



## IEEE 802.11n HT40 2452MHz\_ANT 2

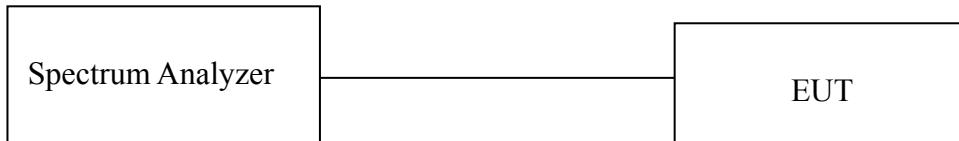


## 4. MAXIMUM PEAK OUTPUT POWER

### 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

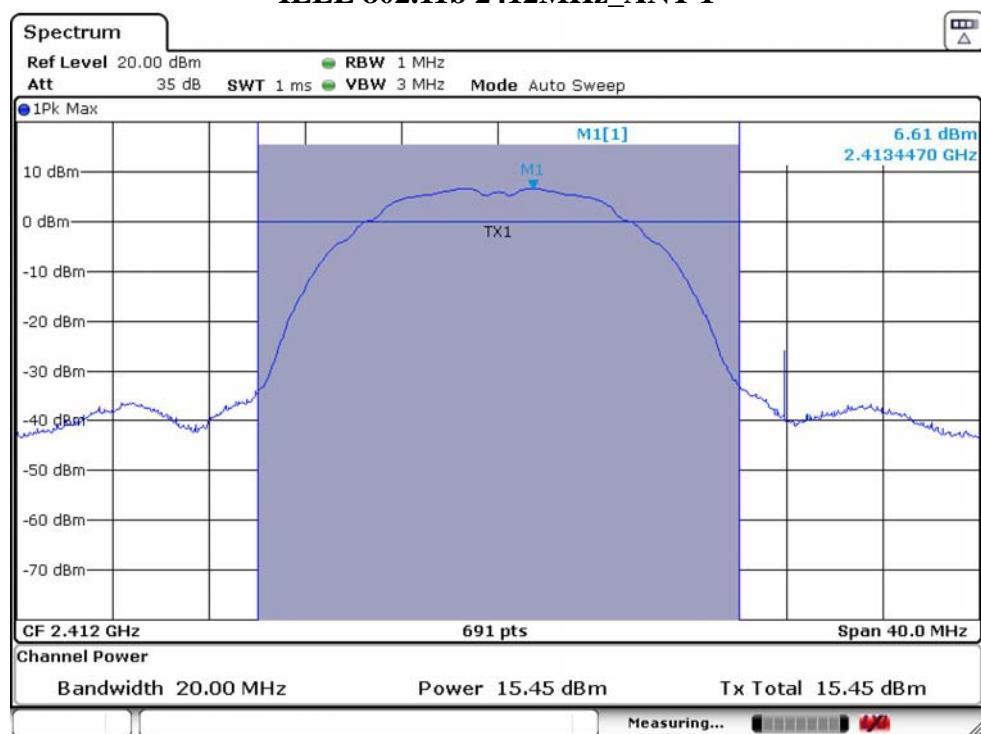
Spectrum Parameters	Setting
RBW	1MHz
VBW	3MHz
Span	40MHz(20MHz Bandwidth mode)/80MHz(40MHz Bandwidth mode)
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

### 4.4. Test Procedure

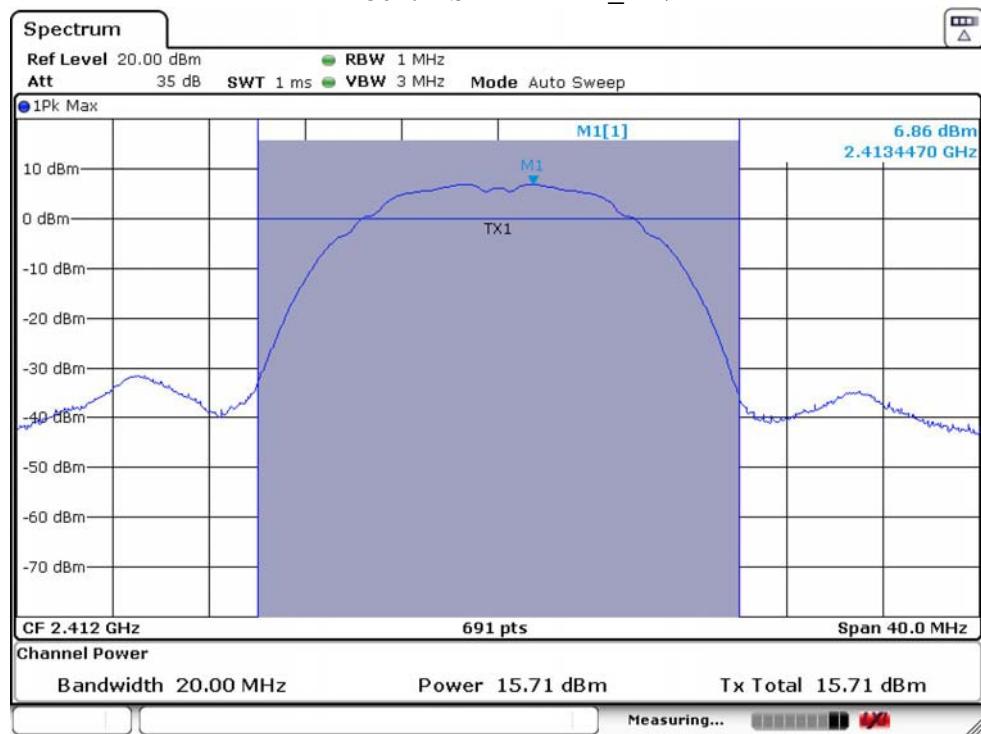
- Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- Spectrum analyzer setting parameters in accordance with section 4.3.
- Set the EUT transmit continuously with maximum output power.
- Use the channel power function to measure maximum peak output power, allow trace to stabilize,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



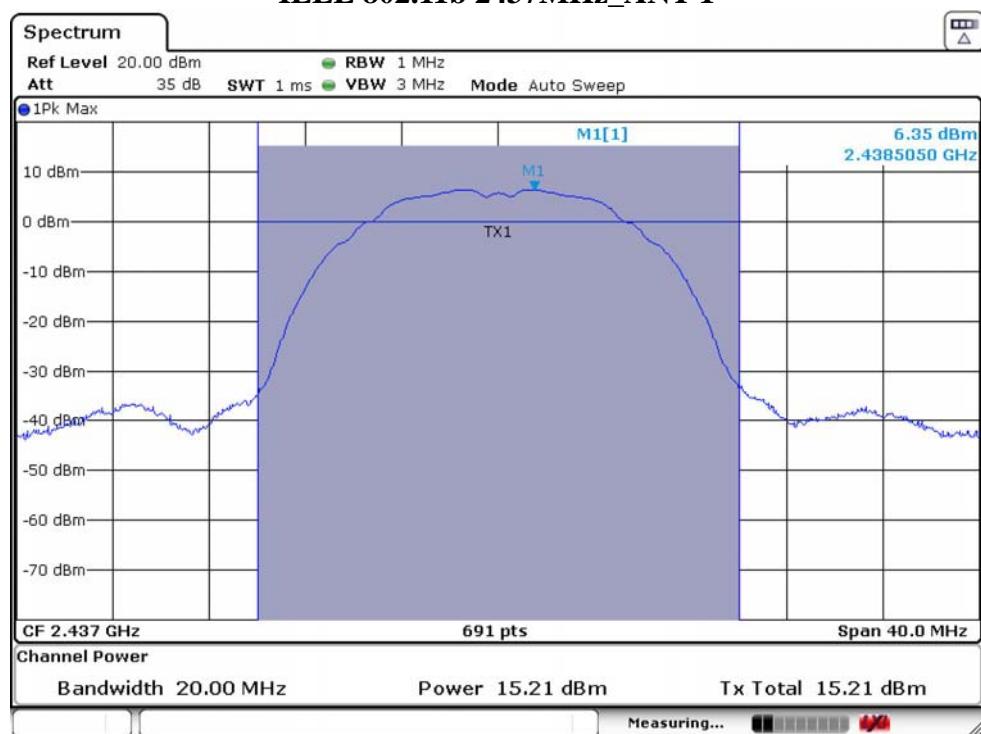
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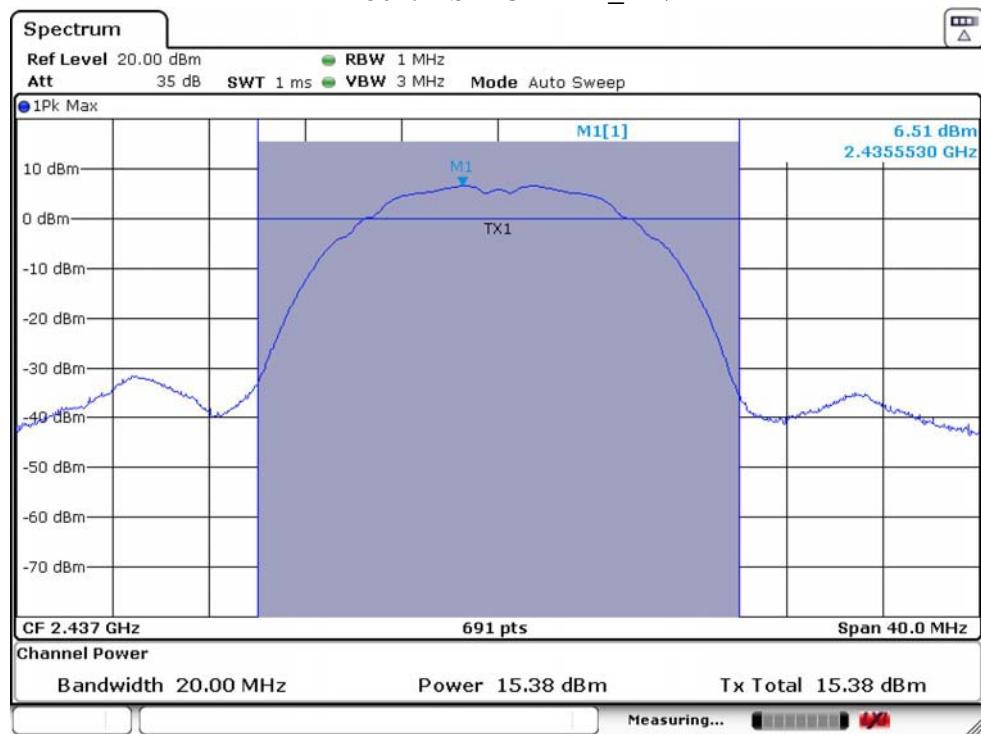
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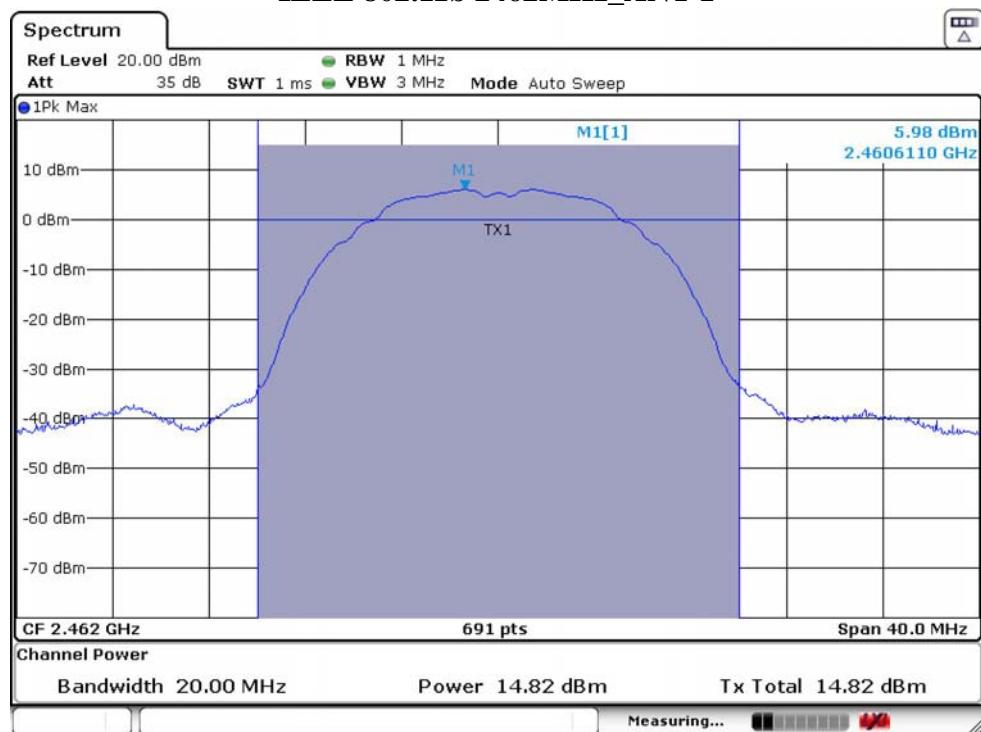
## IEEE 802.11b 2437MHz\_ANT 1



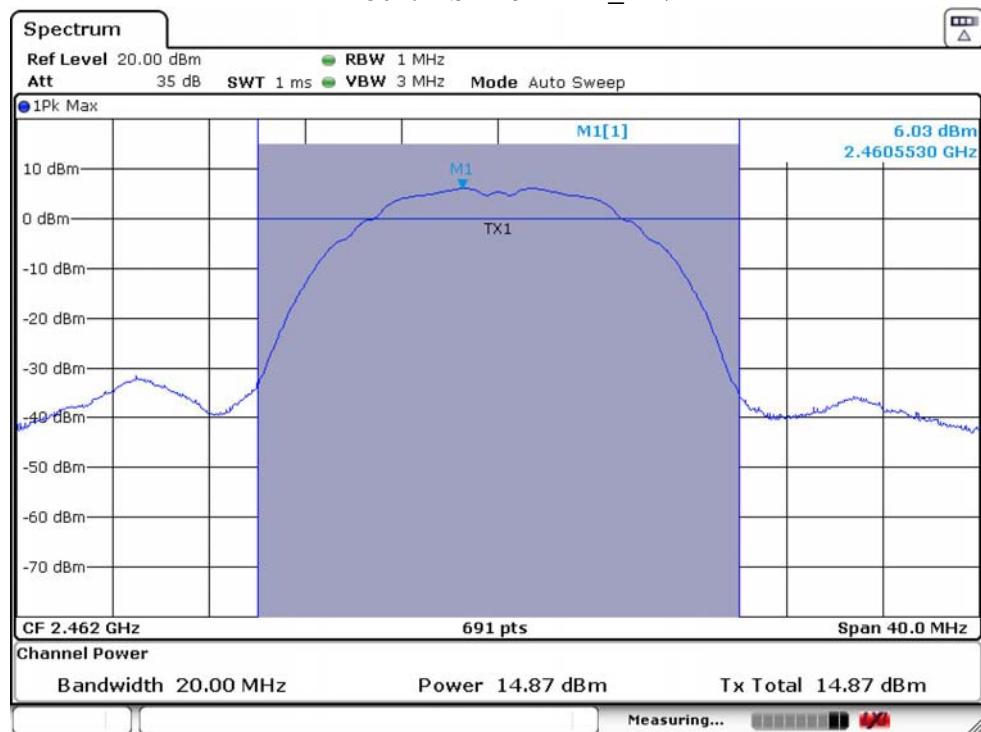
## IEEE 802.11b 2437MHz\_ANT 2



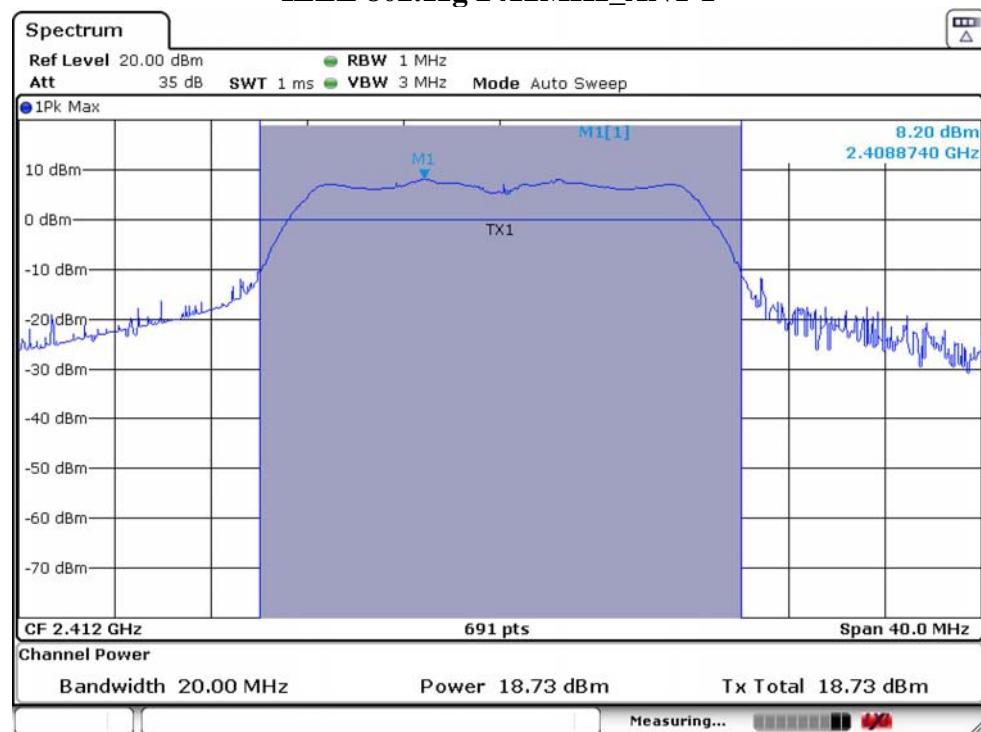
## IEEE 802.11b 2462MHz\_ANT 1



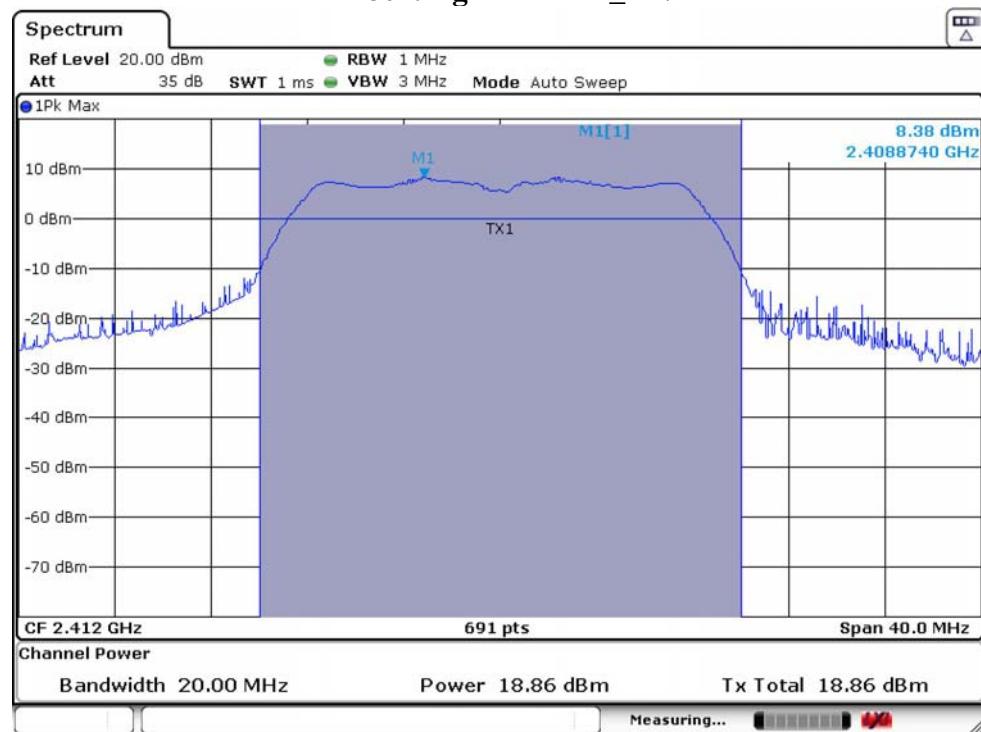
## IEEE 802.11b 2462MHz\_ANT 2



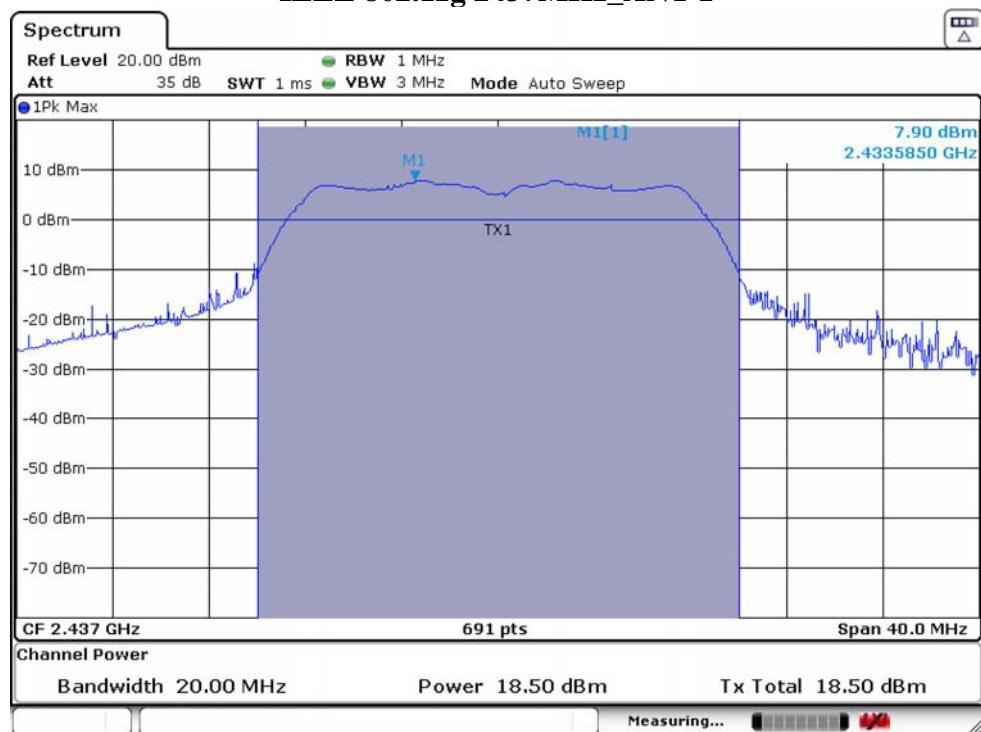
## IEEE 802.11g 2412MHz\_ANT 1



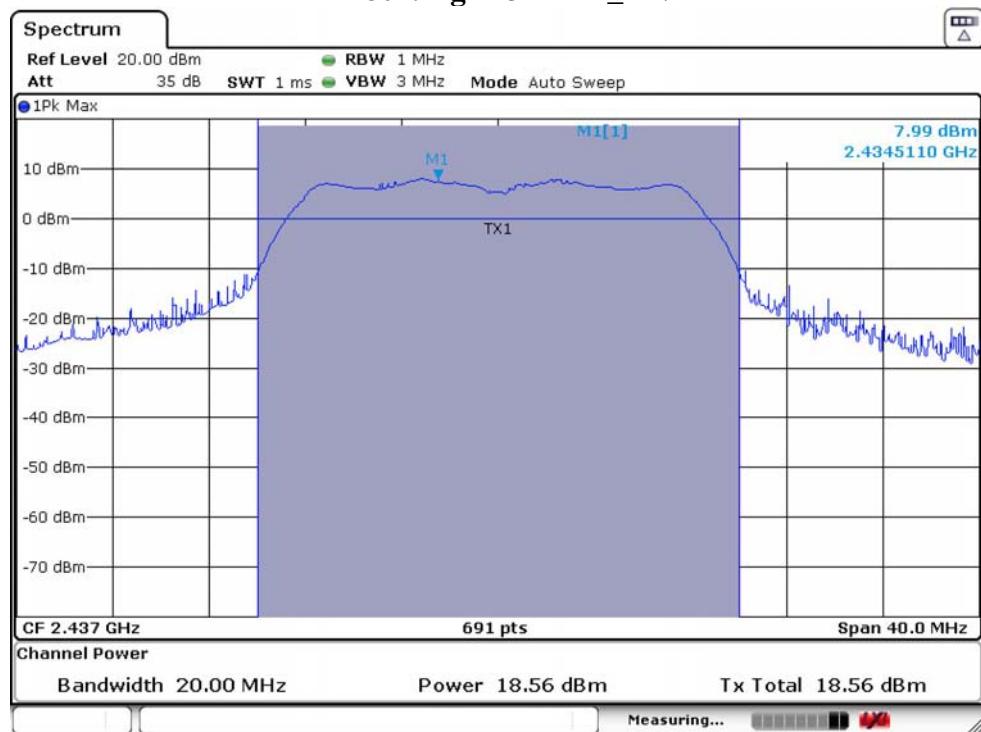
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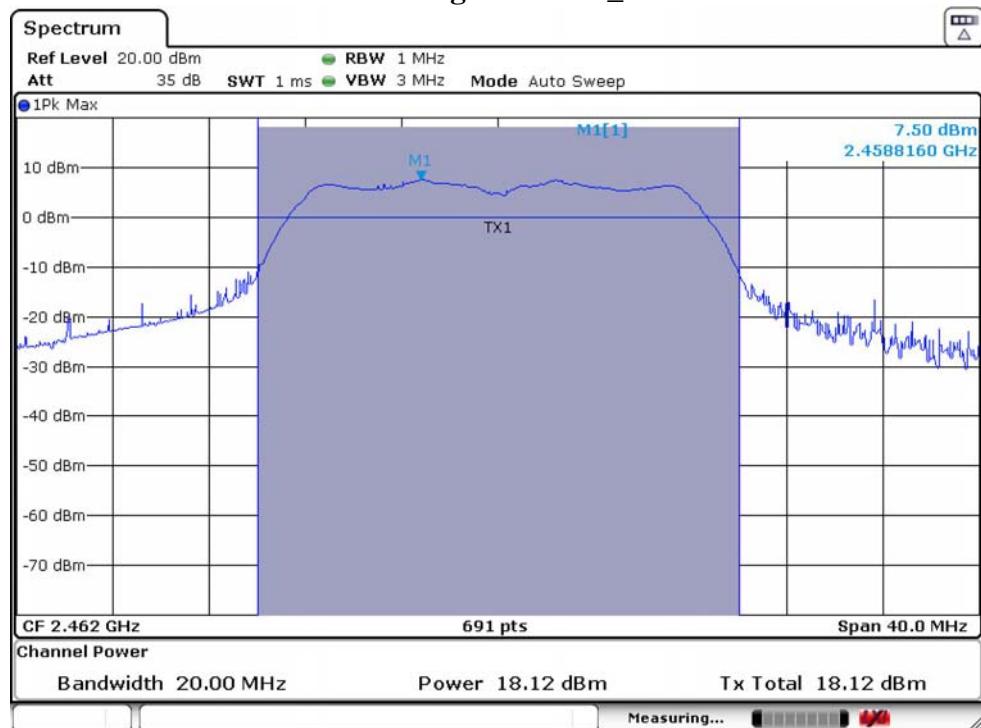
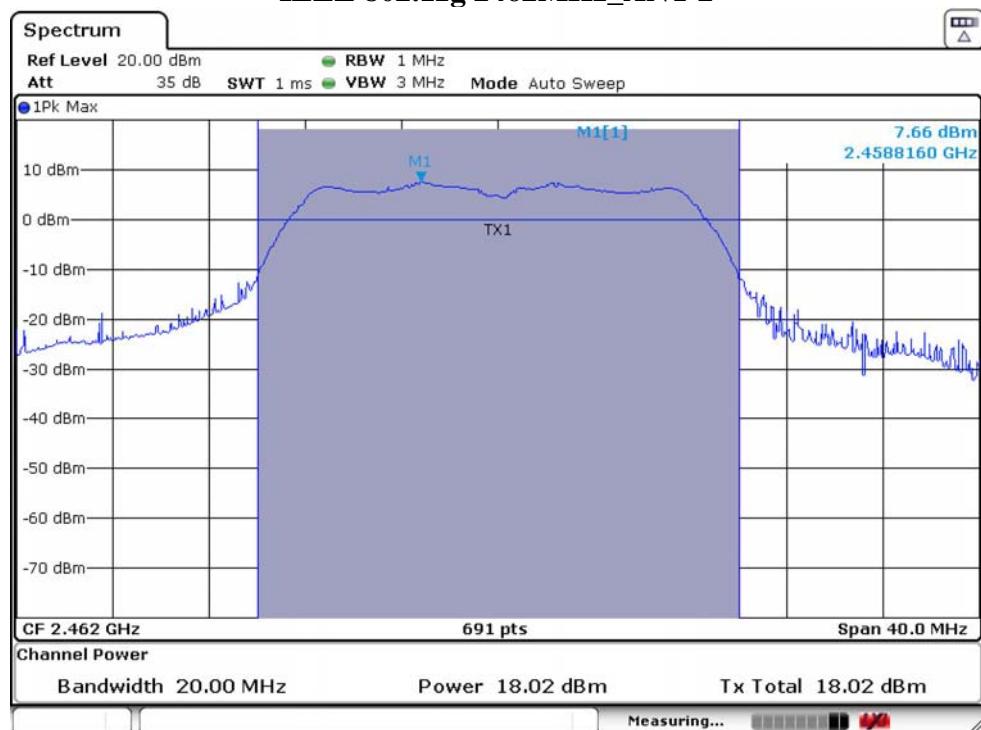


## IEEE 802.11g 2437MHz\_ANT 1

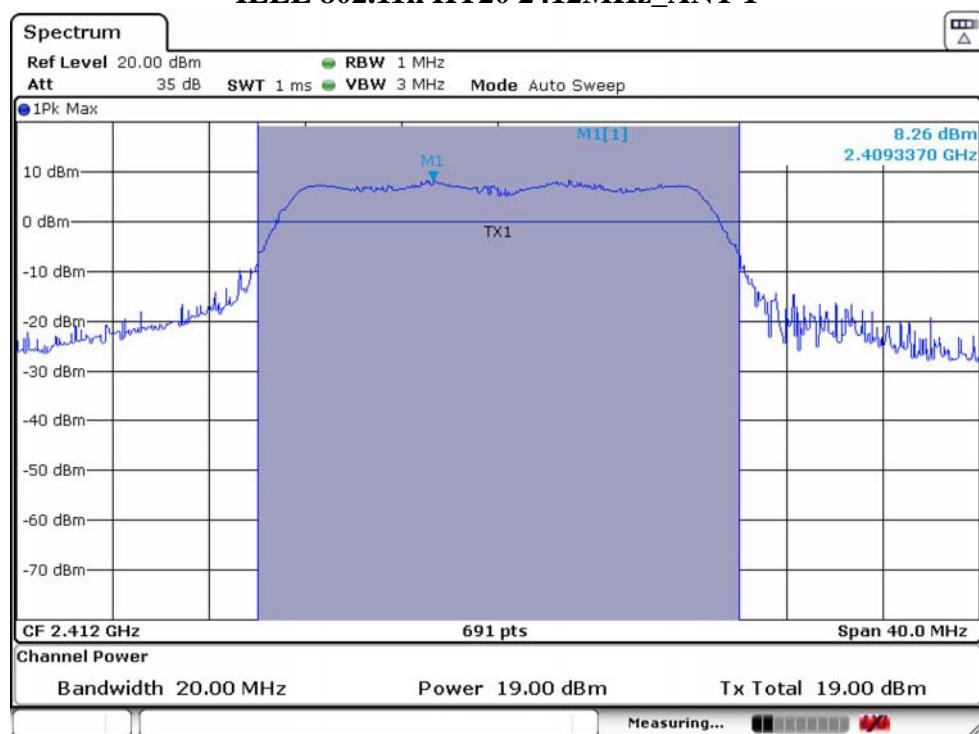


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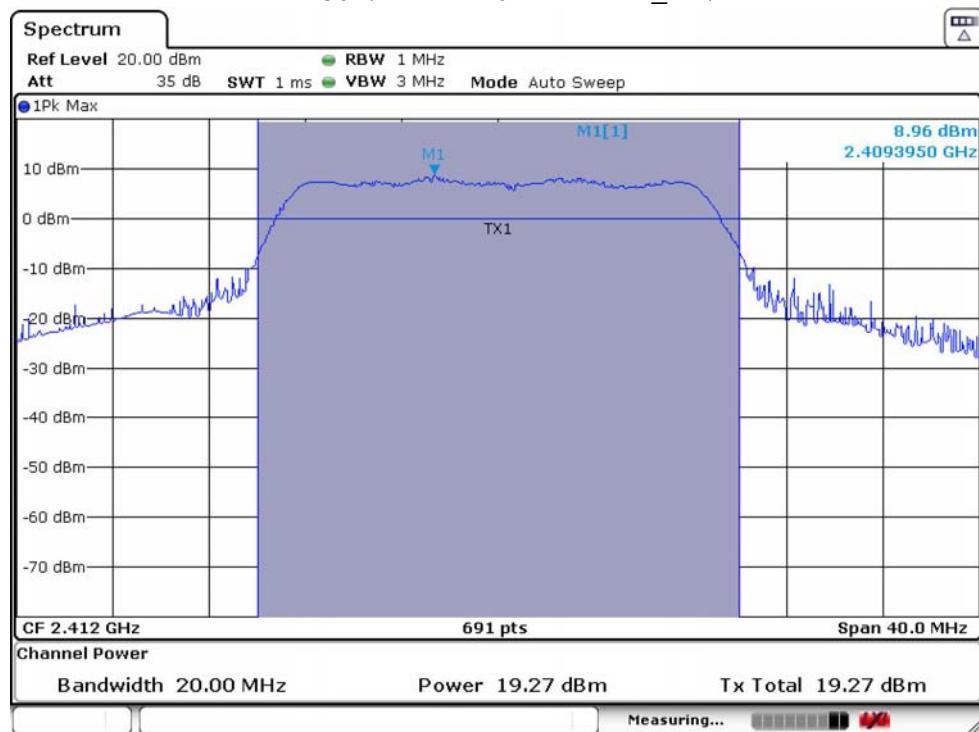


**IEEE 802.11g 2462MHz\_ANT 1****IEEE 802.11g 2462MHz\_ANT 2**

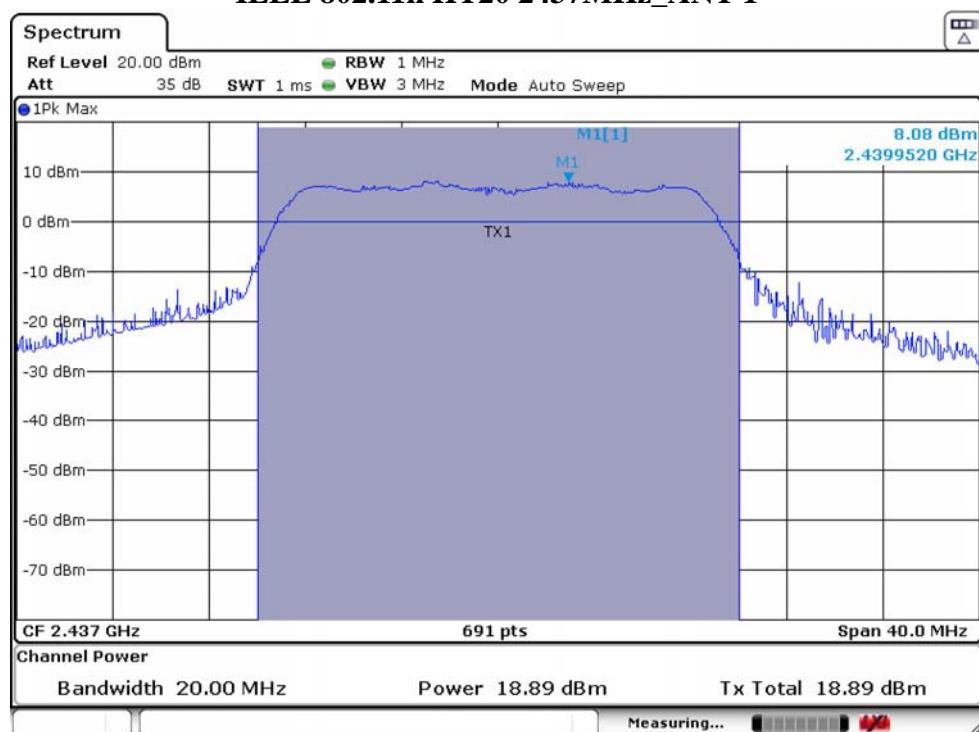
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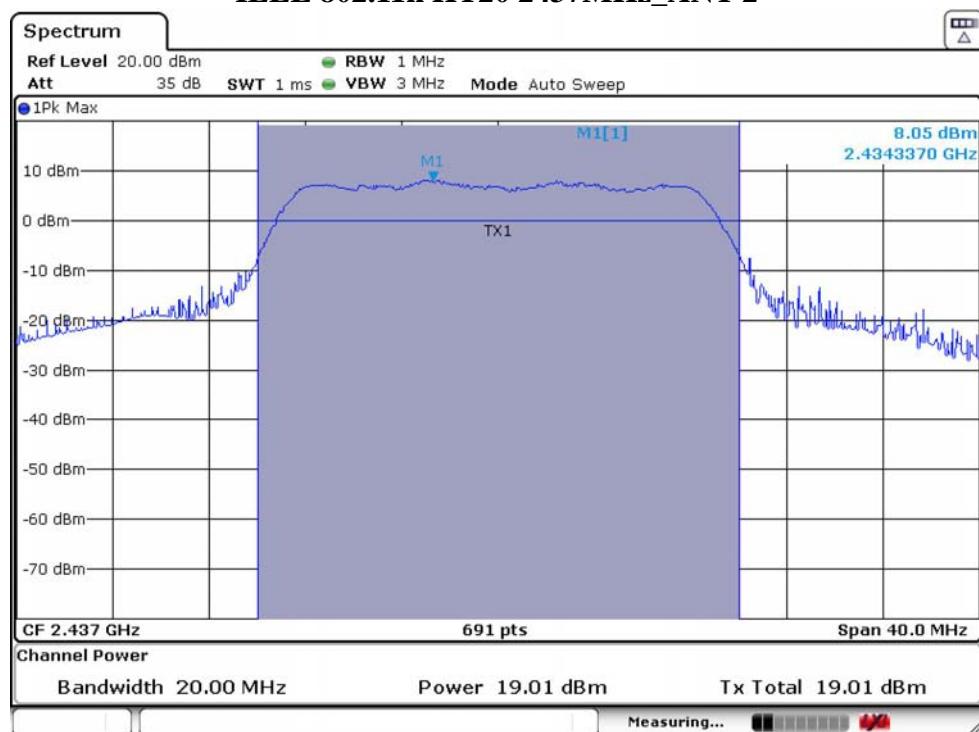
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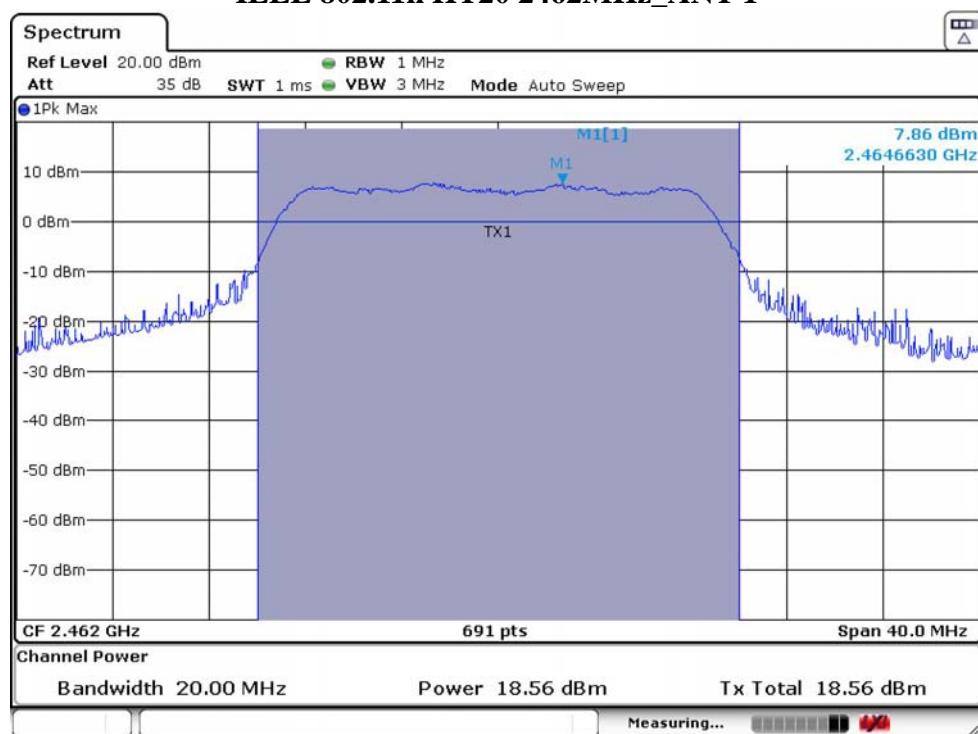
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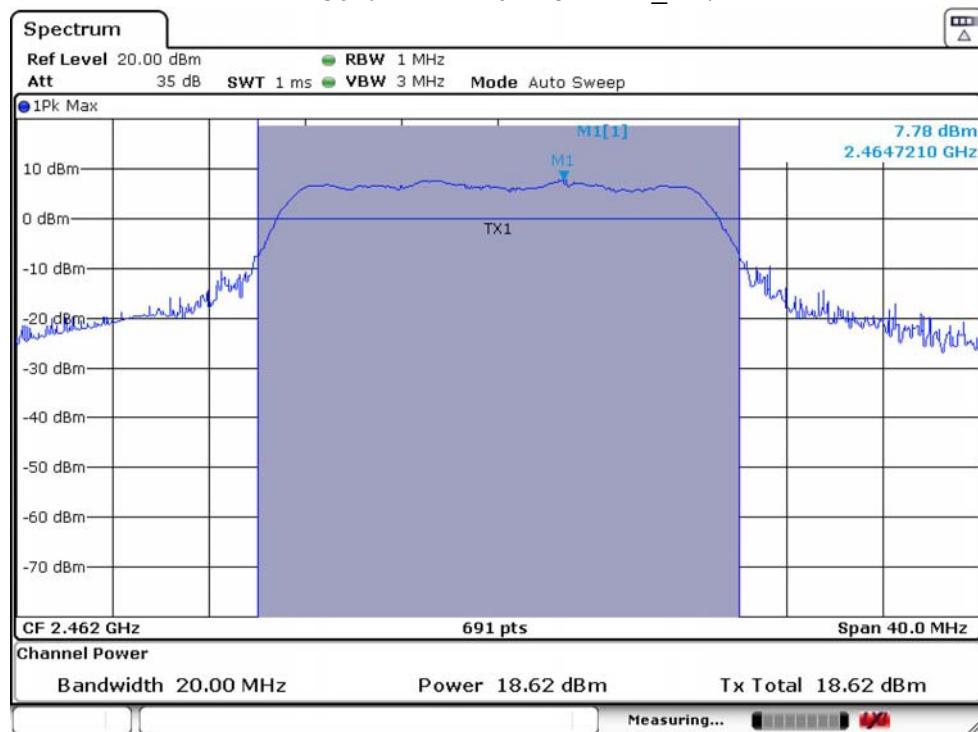
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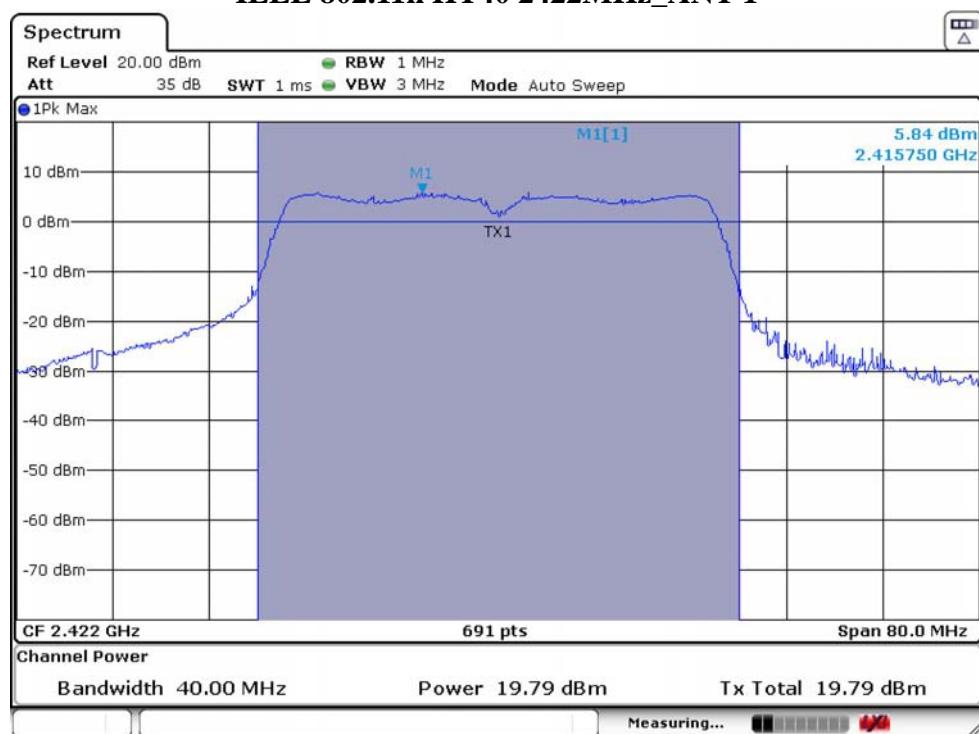
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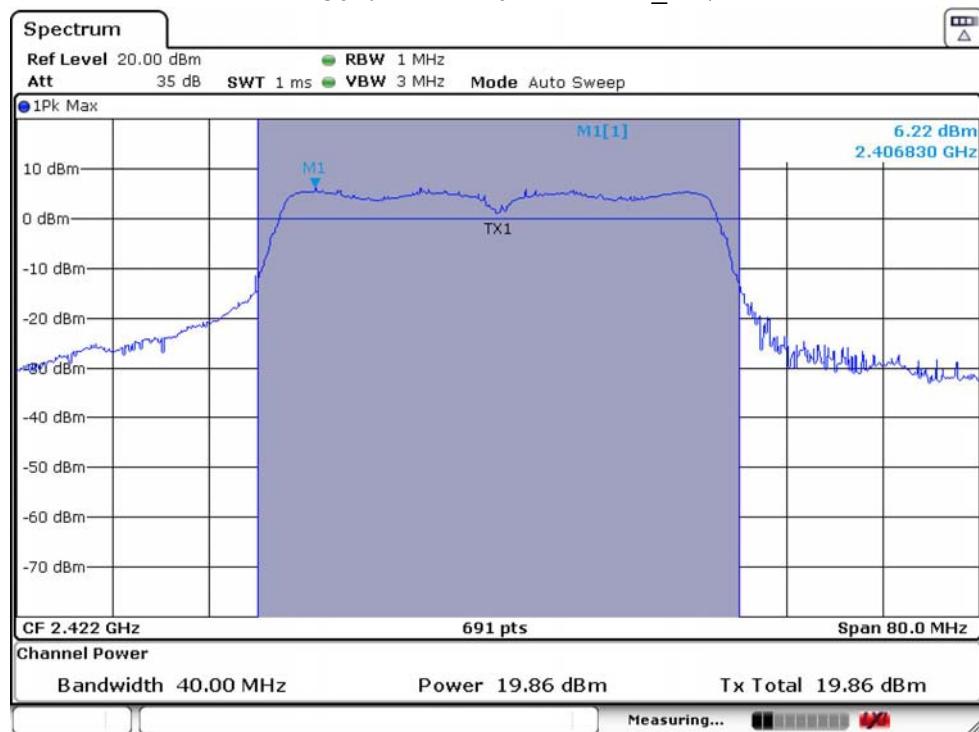
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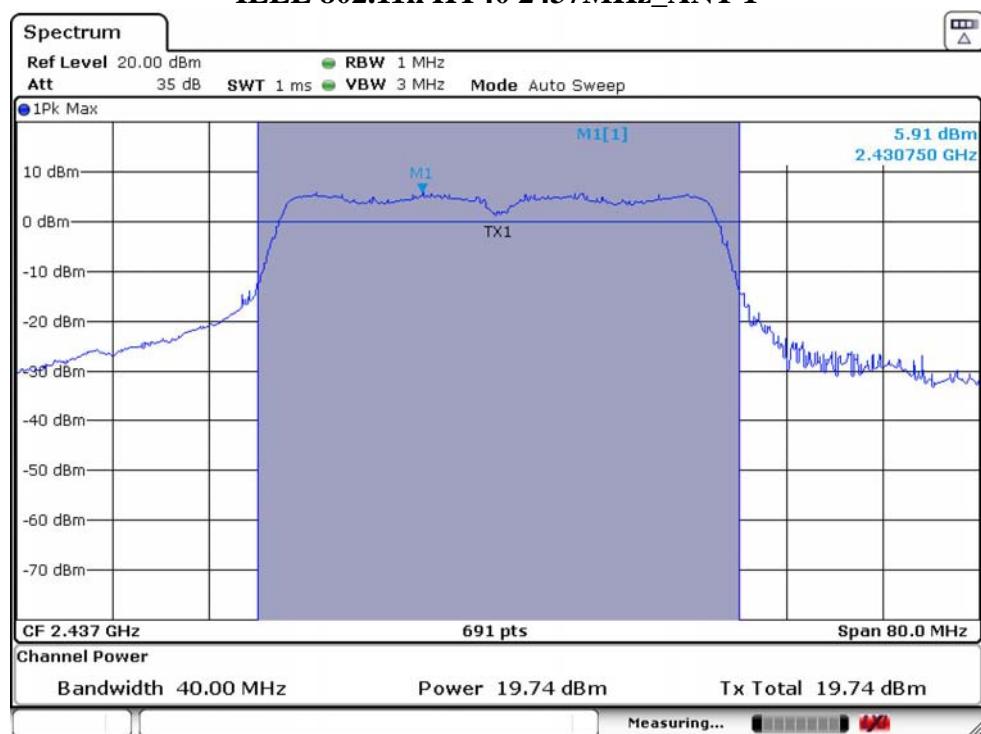
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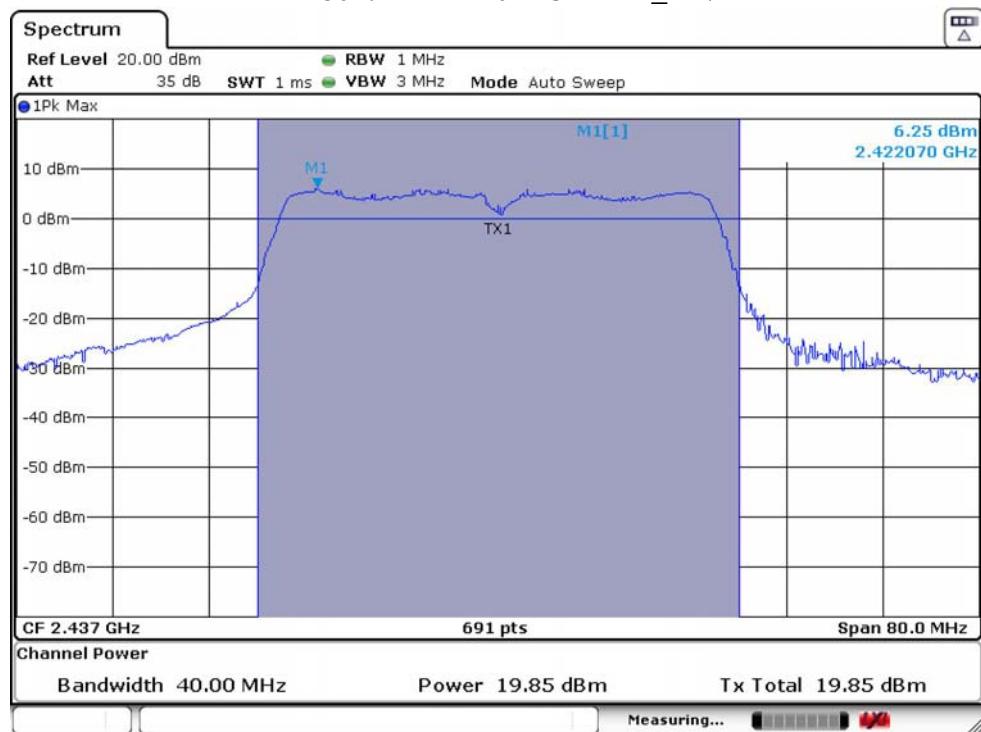
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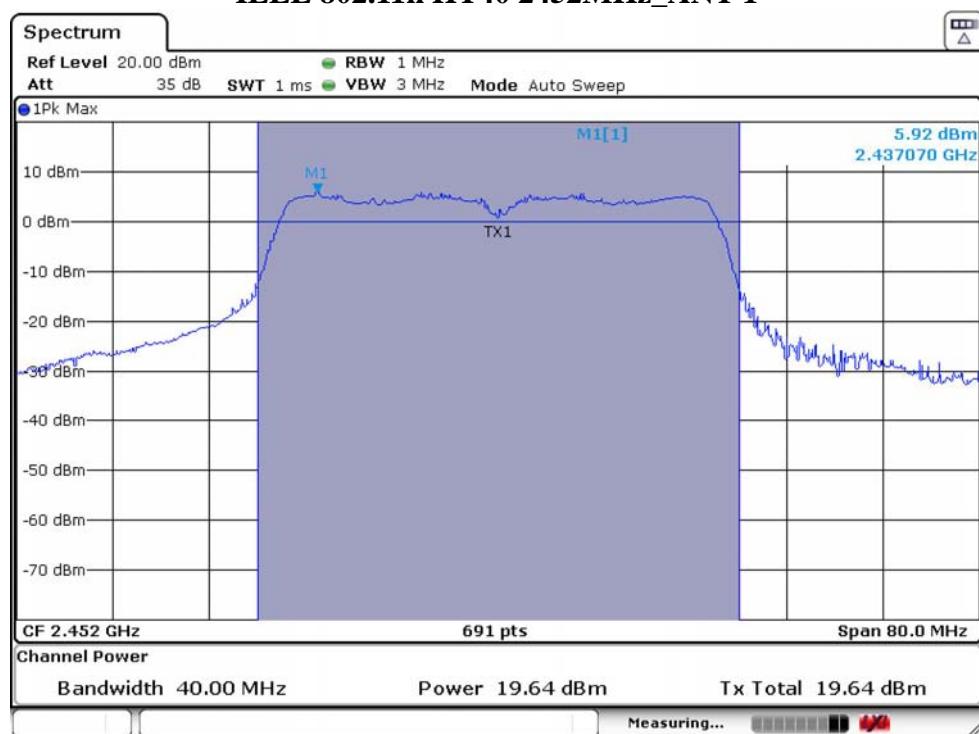
## IEEE 802.11n HT40 2437MHz\_ANT 1



## IEEE 802.11n HT40 2437MHz\_ANT 2



## IEEE 802.11n HT40 2452MHz\_ANT 1



## IEEE 802.11n HT40 2452MHz\_ANT 2

