APPLICATION CERTIFICATION FCC Part 15C
On Behalf of
Xiamen Prima Technology Inc

WiFi module
Model No.: WPC0GR2231R

FCC ID: 2ADID-WPC0GR2231R

Prepared for	:	Xiamen Prima Technology Inc.
Address	:	No.178, Xinfeng Road, Xiamen, Fujian, P.R. China
Prepared by	:	Shenzhen Accurate Technology Co., Ltd.
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Report No.	:	ATE20171983
Date of Test	:	Sep. 26, 2017--Oct. 27, 2017
Date of Report	:	Oct. 28, 2017

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Description Page

Test Report Certification

Applicant : Xiamen Prima Technology Inc

Manufacturer : Xiamen Prima Technology Inc

EUT Description : WiFi module

(A) MODEL NO.: WPC0GR2231R

(B) Trade Mark : PRIMA

(C) Voltage: DC 12V

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247:2017
ANSI C63.10: 2013

The EUT was tested according to DTS test procedure of Apr 05, 2017 KDB558074 D01 DTS Meas Guidance v04 for compliance to FCC 47CFR 15.247 requirements

The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.247 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

Date of Test : Sep. 26, 2017--Oct. 27, 2017

Date of Report : Oct. 28, 2017

Prepared by : (Timothy Engineer)

Approved & Authorized Signer : (Sean Liu, Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT	:	WiFi module
Model Number	:	WPC0GR2231R
Frequency Range	:	802.11b/g/n(20MHz): 2412-2462MHz 802.11n(40MHz): 2422-2452MHz
Number of Channels	:	802.11b/g/n (20MHz):11 802.11n (40MHz): 7
$G_{ANT\ MAX}$	:	5dBi(two antennas have the same gain)
Directional gain	:	8.01
Type of Antenna	:	MIMO Antenna
Power Supply	:	DC 12V
Data Rate	:	802.11b: 11, 5.5, 2, 1 Mbps 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n: up to 150Mbps
Modulation Type	:	CCK, OFDM
Applicant	:	Xiamen Prima Technology Inc
Address	:	No.178, Xinfeng Road, Xiamen, Fujian, P.R. China.
Manufacturer	:	Xiamen Prima Technology Inc
Address	:	Wanlida, Industry Zone Building C, Nanjing Fujian, P.R. China.
Date of sample received	:	Sep. 26, 2017
Date of Test	:	Sep. 26, 2017--Oct. 27, 2017

1.2.Description of Test Facility

EMC Lab	:	Recognition of accreditation by Federal Communications Commission (FCC) The Designation Number is CN1189 The Registration Number is 708358 Listed by Innovation, Science and Economic Development Canada (ISEDC) The Registration Number is 5077A-2 Accredited by China National Accreditation Service for Conformity Assessment (CNAS) The Registration Number is CNAS L3193 Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 4297.01
Name of Firm	:	Shenzhen Accurate Technology Co., Ltd
Site Location	:	1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

1.3.Measurement Uncertainty

Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty (9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty (30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty (Above 1GHz)	=	4.06dB, k=2

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated dates	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 07, 2017	Jan. 06, 2018
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 07, 2017	Jan. 06, 2018
Spectrum Analyzer	Rohde&Schwarz	FSV-40	101495	Jan. 07, 2017	Jan. 06, 2018
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 07, 2017	Jan. 06, 2018
Pre-Amplifier	Rohde&Schwarz	CBLU1183540-01	3791	Jan. 07, 2017	Jan. 06, 2018
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 13, 2017	Jan. 12, 2018
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 13, 2017	Jan. 12, 2018
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 13, 2017	Jan. 12, 2018
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 13, 2017	Jan. 12, 2018
Open Switch and Control Unit	Rohde&Schwarz	OSP120 + OSP-B157	101244 + 100866	Jan. 07, 2017	Jan. 06, 2018
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 07, 2017	Jan. 06, 2018
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 07, 2017	Jan. 06, 2018
Highpass Filter	Wainwright Instruments	WHKX3.6/18G-10SS	N/A	Jan. 07, 2017	Jan. 06, 2018
Band Reject Filter	Wainwright Instruments	WRCG2400/2485-2375/2510-60/11SS	N/A	Jan. 07, 2017	Jan. 06, 2018

3. OPERATION OF EUT DURING TESTING

3.1.Operating Mode

The mode is used: **1.802.11b Transmitting mode**
Low Channel: 2412MHz
Middle Channel: 2437MHz
High Channel: 2462MHz

2.802.11g Transmitting mode
Low Channel: 2412MHz
Middle Channel: 2437MHz
High Channel: 2462MHz

3.802.11n (20MHz) Transmitting mode
Low Channel: 2412MHz
Middle Channel: 2437MHz
High Channel: 2462MHz

4.802.11n (40MHz) Transmitting mode
Low Channel: 2422MHz
Middle Channel: 2437MHz
High Channel: 2452MHz

3.2.Carrier Frequency of Channels

802.11b, 802.11g, 802.11n (20MHz)

Channel	Frequency(MHz)	Channel	Frequency(MHz)
01	2412	07	2442
02	2417	08	2447
03	2422	09	2452
04	2427	10	2457
05	2432	11	2462
06	2437	---	---

802.11n (40MHz)

Channel	Frequency(MHz)	Channel	Frequency(MHz)
---	---	07	2442
---	---	08	2447
03	2422	09	2452
04	2427	---	---
05	2432	---	---
06	2437	---	---

3.3.Configuration and peripherals

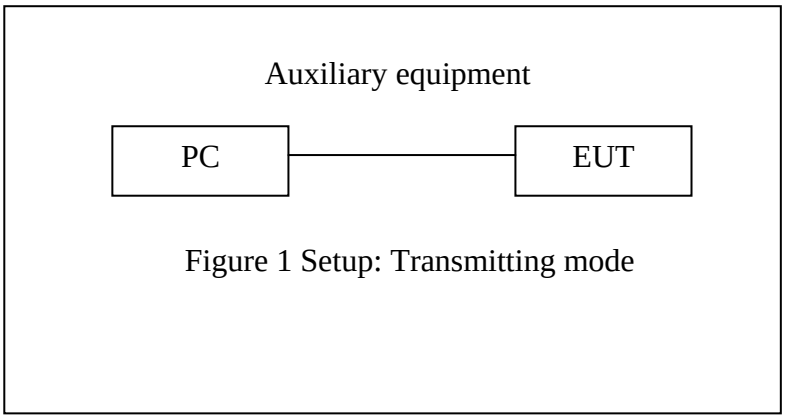


Figure 1 Setup: Transmitting mode

(EUT: WiFi module)

Note: The EUT have two antenna(1 and 2), They can transmit simultaneously.

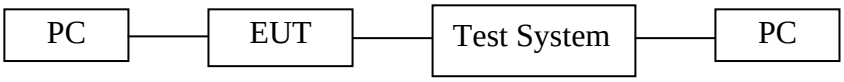
4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.207	AC power Line Conducted Emission Test	N/A
Section 15.247(a)(2)	6dB Occupied Bandwidth Test	Compliant
KDB558074 D01 DTS Meas Guidance v04	Duty cycle	Compliant
KDB558074 D01 DTS Meas Guidance v04	OBW	Compliant
Section 15.247(b)(3)	Maximum conducted (average) output power	Compliant
Section 15.247(e)	Power Spectral Density Test	Compliant
Section 15.205 Section 15.209	Radiated Spurious Emissions Test	Compliant
Section 15.247(d)	Band Edge Compliance Test	Compliant
Section 15.203	Antenna Requirement	Compliant

Note: The power supply mode of the EUT is DC 12V, According to the FCC standard requirements, conducted emission is not applicable.

5. 6DB OCCUPIED BANDWIDTH TEST

5.1.Block Diagram of Test Setup



5.2.The Requirement For Section 15.247(a)(1)

Section 15.247(a)(2): Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB band-width shall be at least 500 kHz

5.3.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

5.4.Operating Condition of EUT

5.4.1.Setup the EUT and simulator as shown as Section 5.1.

5.4.2.Turn on the power of all equipment.

5.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 and 2422-2452MHz. We select 2412MHz, 2437MHz, 2462MHz and 2422MHz, 2437MHz, 2452MHz TX frequency to transmit.

5.5.Test Procedure

5.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

5.5.2.Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz.

5.5.3.The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

5.6.Test Result

The test was performed with 802.11b				
Channel	Frequency (MHz)	6dB Bandwidth ANT 1 (MHz)	6dB Bandwidth ANT 2(MHz)	Limit (MHz)
Low	2412	10.070	10.085	> 0.5MHz
Middle	2437	10.075	10.075	> 0.5MHz
High	2462	9.565	9.555	> 0.5MHz

The test was performed with 802.11g				
Channel	Frequency (MHz)	6dB Bandwidth ANT 1 (MHz)	6dB Bandwidth ANT 2(MHz)	Limit (MHz)
Low	2412	16.350	16.350	> 0.5MHz
Middle	2437	16.350	16.350	> 0.5MHz
High	2462	16.355	16.355	> 0.5MHz

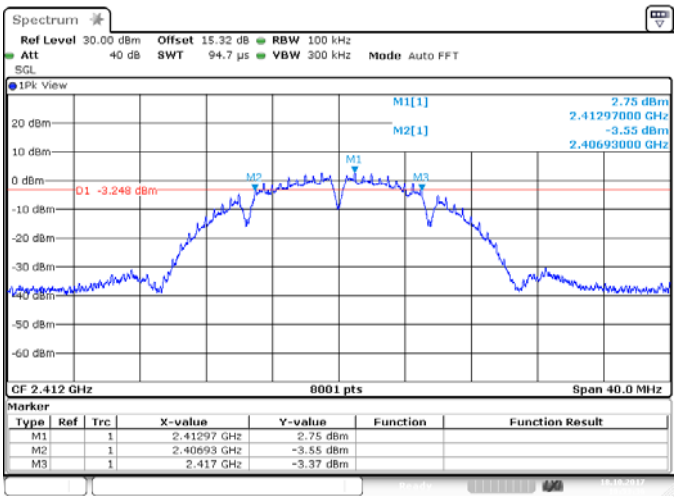
The test was performed with 802.11n (Bandwidth: 20 MHz)				
Channel	Frequency (MHz)	6dB Bandwidth ANT 1 (MHz)	6dB Bandwidth ANT 2(MHz)	Limit (MHz)
Low	2412	17.580	17.580	> 0.5MHz
Middle	2437	17.595	17.590	> 0.5MHz
High	2462	17.580	17.580	> 0.5MHz

The test was performed with 802.11n (Bandwidth: 40 MHz)				
Channel	Frequency (MHz)	6dB Bandwidth ANT 1 (MHz)	6dB Bandwidth ANT 2(MHz)	Limit (MHz)
Low	2422	36.070	36.000	> 0.5MHz
Middle	2437	35.790	35.710	> 0.5MHz
High	2452	35.700	35.810	> 0.5MHz

The spectrum analyzer plots are attached as below.

6dB Bandwidth

ANT 1(802.11b)



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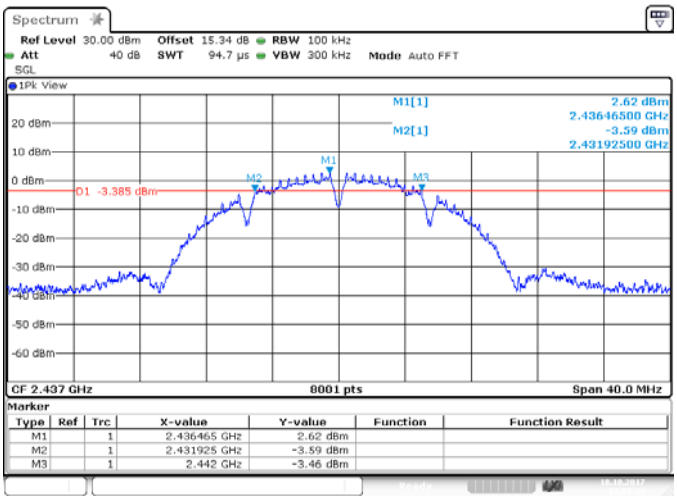

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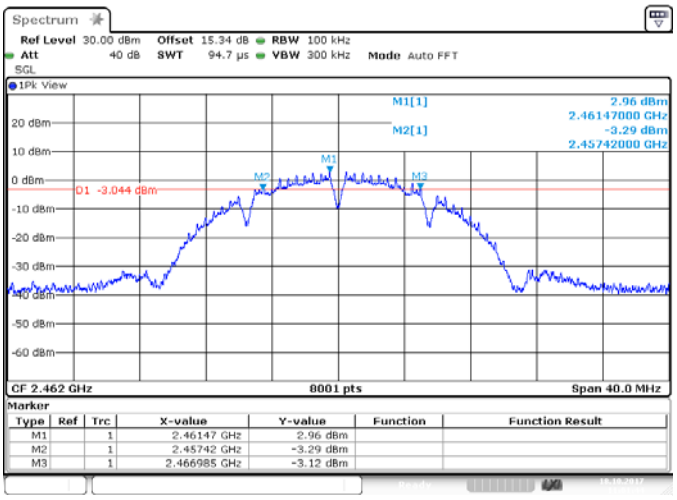

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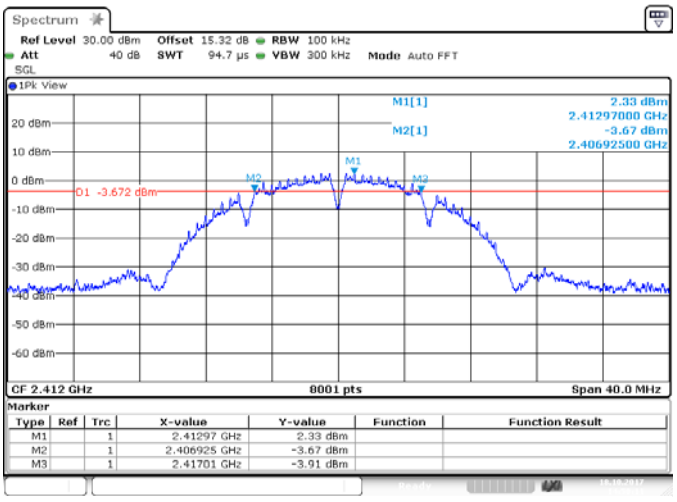

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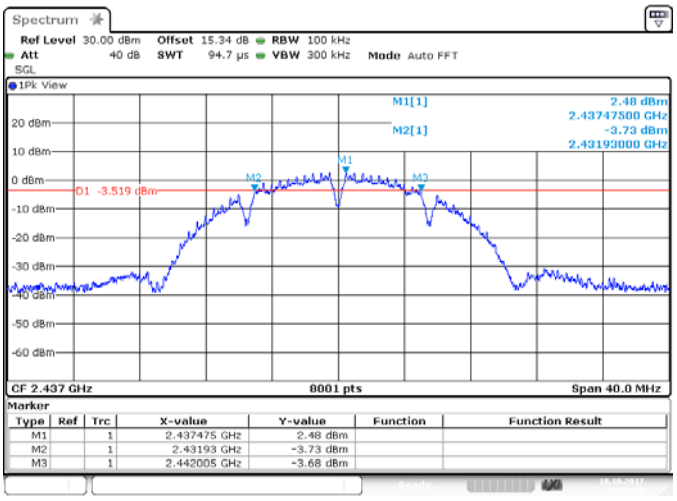

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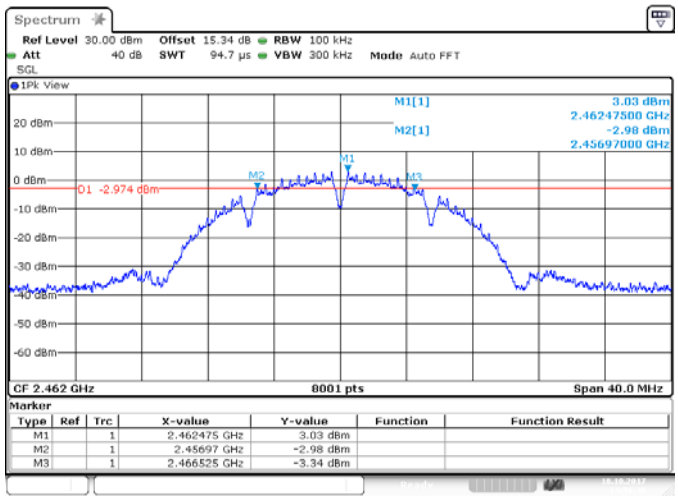

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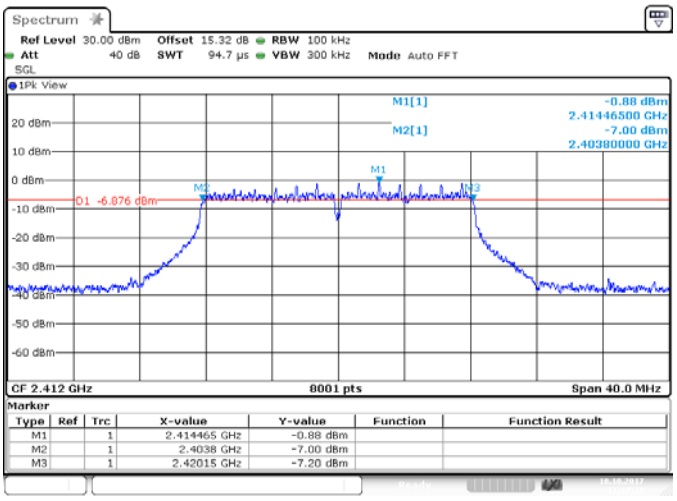

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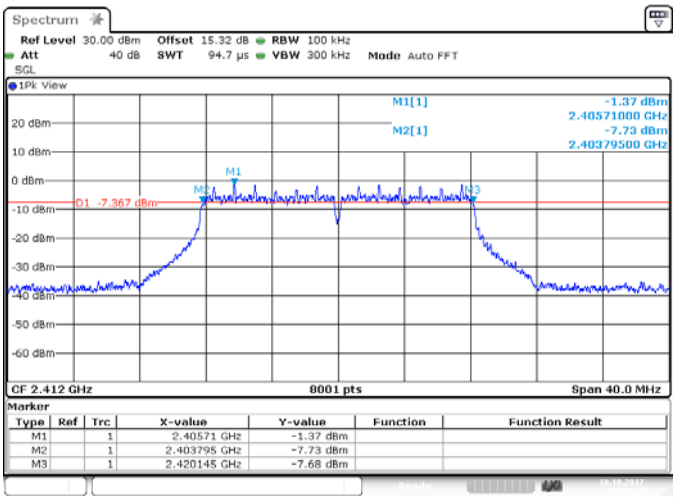

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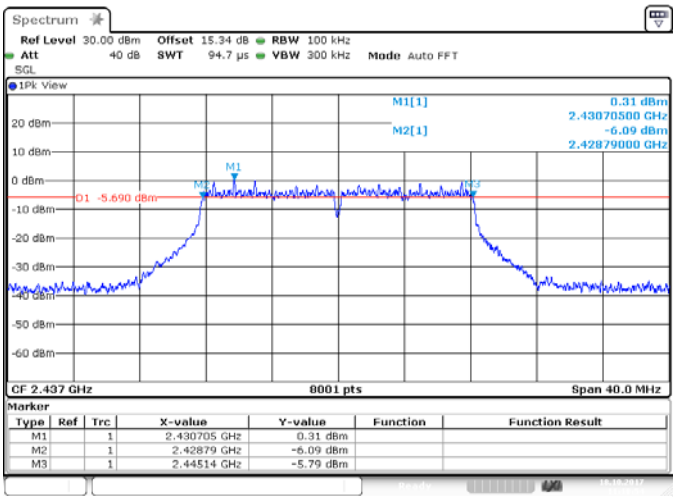

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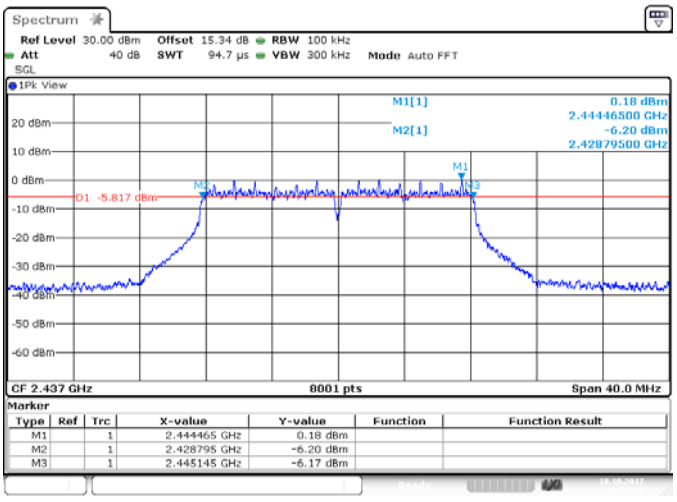

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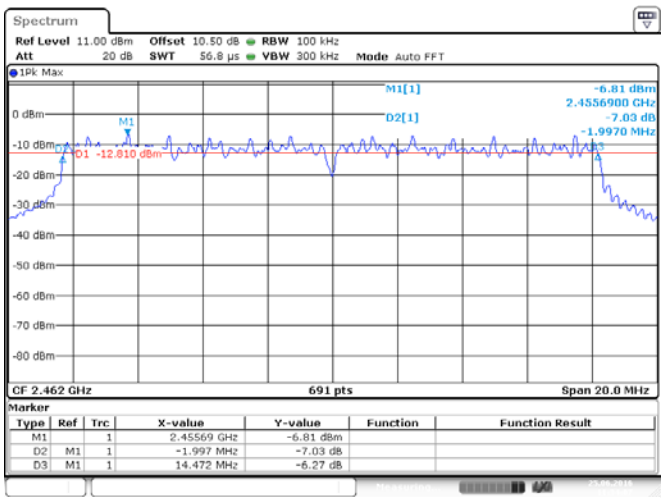

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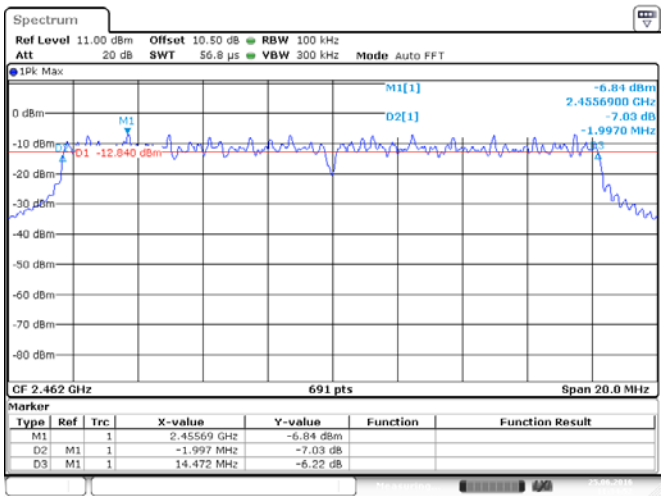

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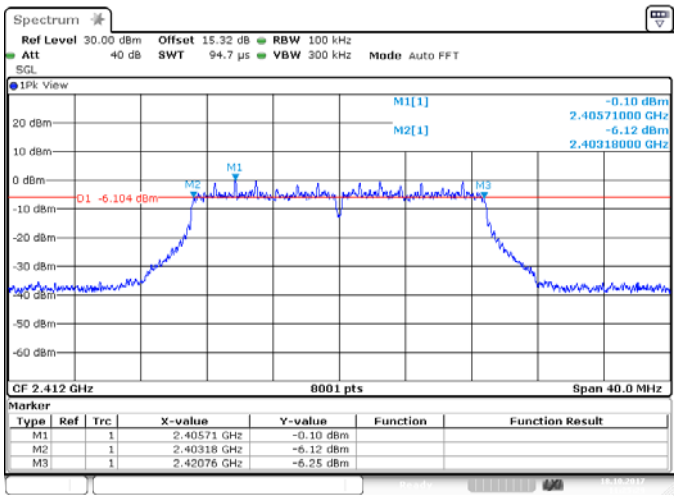

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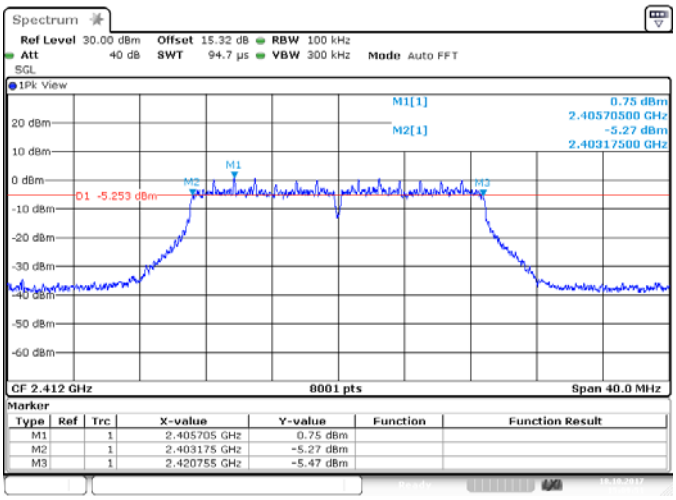

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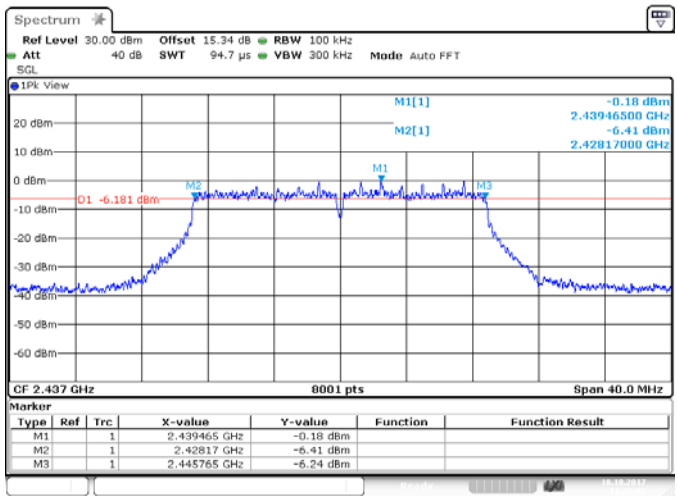

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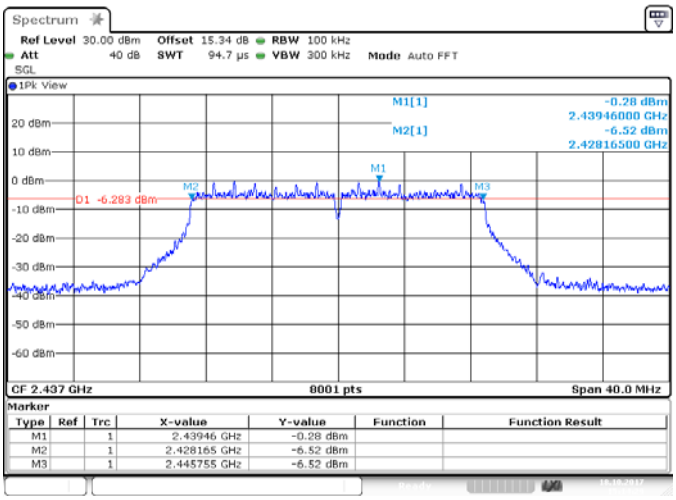

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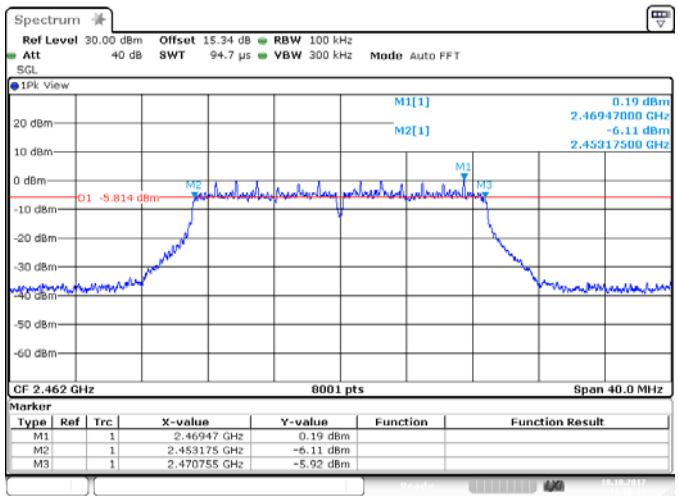

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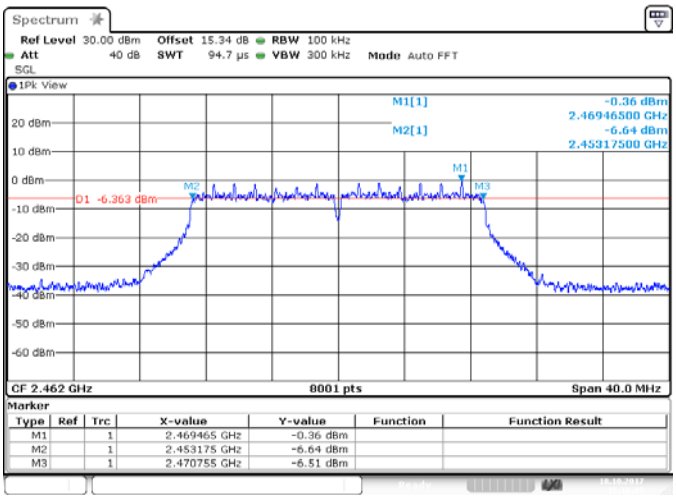

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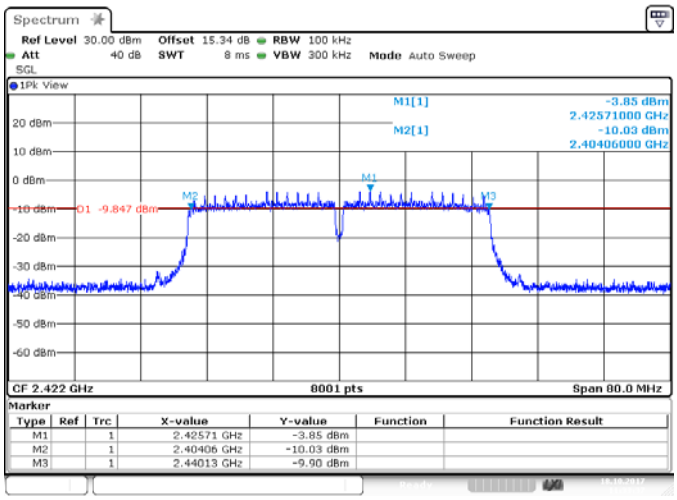
ANT 1(802.11n40)



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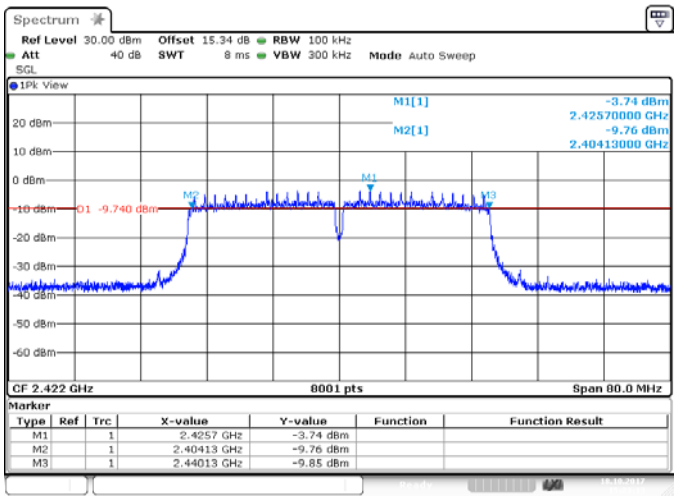

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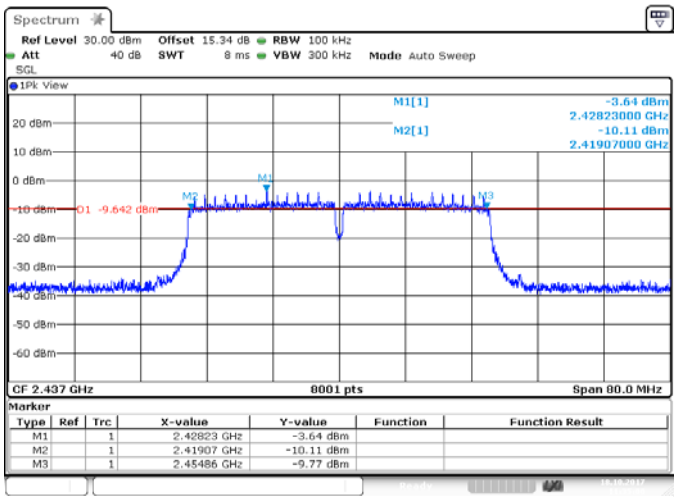

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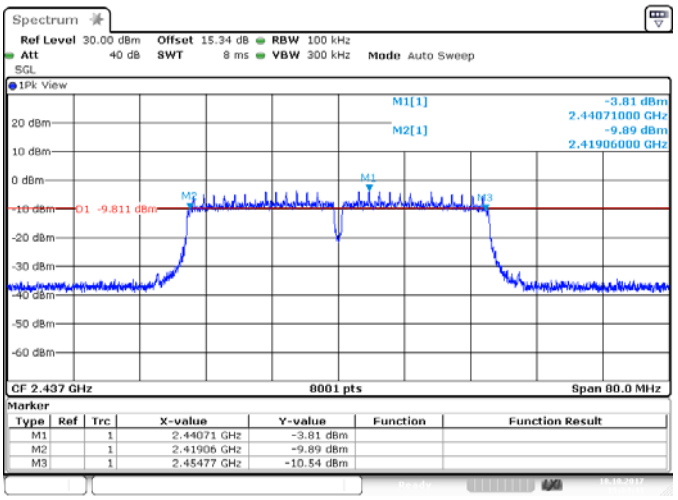

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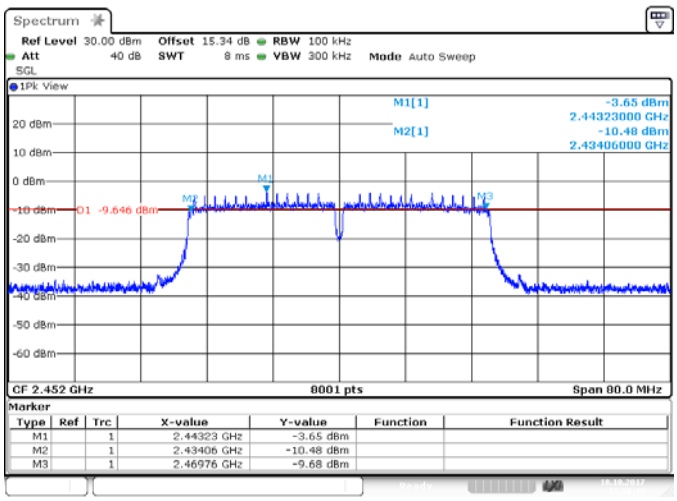

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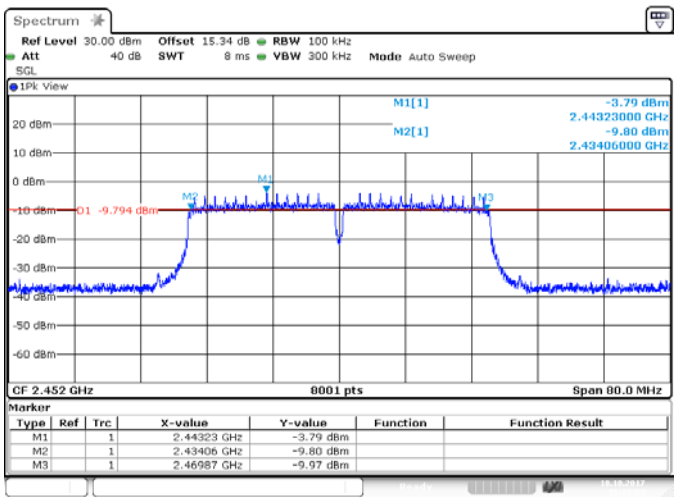

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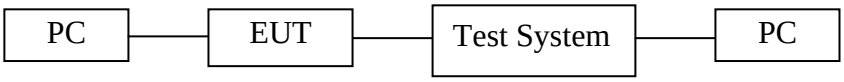
6. 99% OCCUPIED BANDWIDTH

6.1.Block Diagram of Test Setup



6.2.EUT Configuration on Measurement

The following equipment is installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

6.3.Operating Condition of EUT

6.3.1.Setup the EUT and simulator as shown as Section 6.1.

6.3.2.Turn on the power of all equipment.

6.3.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 and 2422-2452MHz. We select 2412MHz, 2437MHz, 2462MHz and 2422MHz, 2437MHz, 2452MHz TX frequency to transmit.

6.4.Test Procedure

6.4.1.The transmitter output was connected to the spectrum analyzer through a low loss cable. The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

6.4.2.The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

6.4.3.A peak, or peak hold, may be used in place of the sampling detector as this may produce a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold may be necessary to determine the occupied bandwidth if the device is not transmitting continuously.

6.4.4.Set SPA “Meas” function, Select “Occupied Bandwidth” function, Select “99% Power Bandwidth”. The frequency of the upper and lower markers indicating the edges of the transmitters “99% Power” emission bandwidth shall be recorded to automate by SPA.

6.5.Measurement Result

The test was performed with 802.11b			
Channel	Frequency (MHz)	99% Occupied Bandwidth ANT1 (MHz)	99% Occupied Bandwidth ANT2 (MHz)
Low	2412	15.463	15.463
Middle	2437	15.438	15.448
High	2462	15.333	15.403

The test was performed with 802.11g			
Channel	Frequency (MHz)	99% Occupied Bandwidth ANT1 (MHz)	99% Occupied Bandwidth ANT2 (MHz)
Low	2412	16.793	17.028
Middle	2437	16.868	17.043
High	2462	17.023	17.008

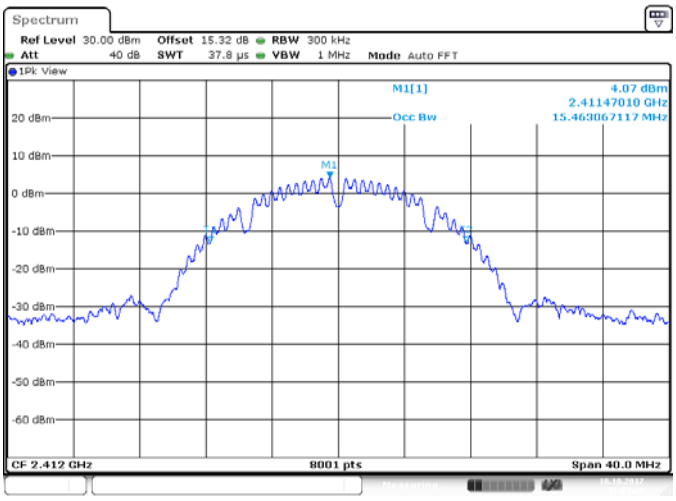
The test was performed with 802.11 n20			
Channel	Frequency (MHz)	99% Occupied Bandwidth ANT1 (MHz)	99% Occupied Bandwidth ANT2 (MHz)
Low	2412	17.888	18.123
Middle	2437	18.128	18.193
High	2462	18.148	18.013

The test was performed with 802.11n40			
Channel	Frequency (MHz)	99% Occupied Bandwidth ANT1 (MHz)	99% Occupied Bandwidth ANT2 (MHz)
Low	2412	36.475	36.455
Middle	2437	36.465	36.485
High	2462	36.465	36.495

The spectrum analyzer plots are attached as below.

99% Bandwidth

ANT 1(802.11b)



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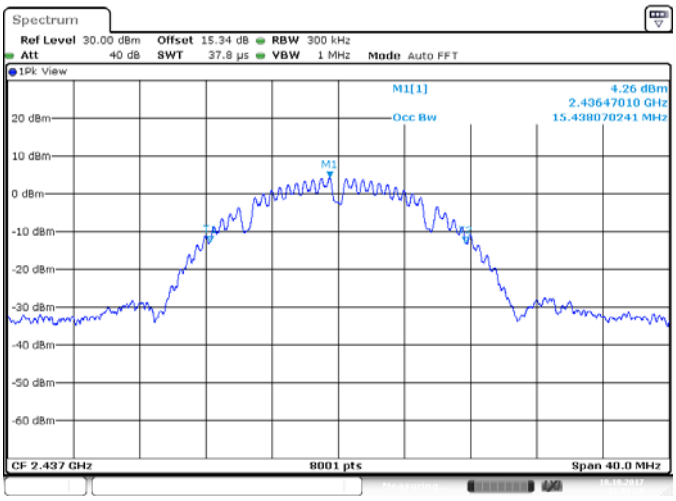
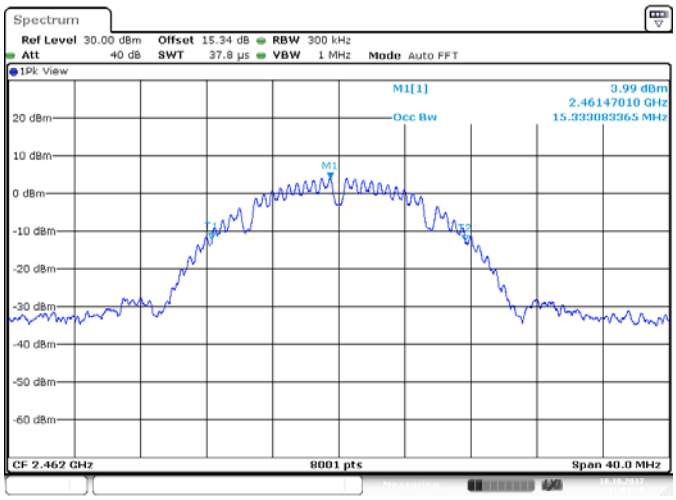
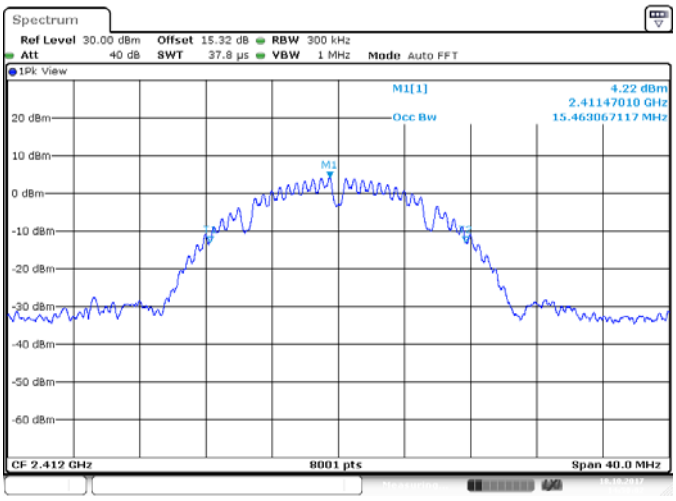


Date: 18.OCT.2017 10:57:28

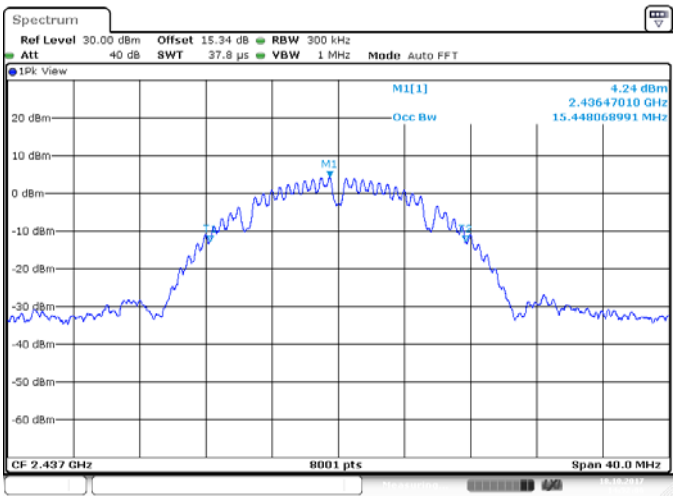


Date: 18.OCT.2017 11:01:36

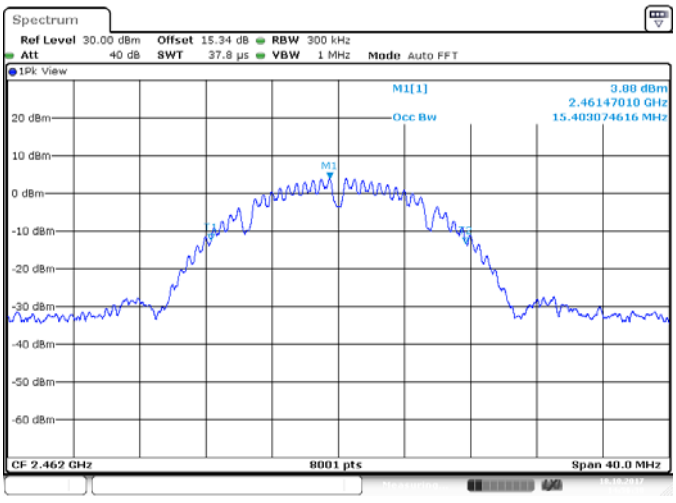
ANT 2(802.11b)



Date: 18.OCT.2017 14:50:02

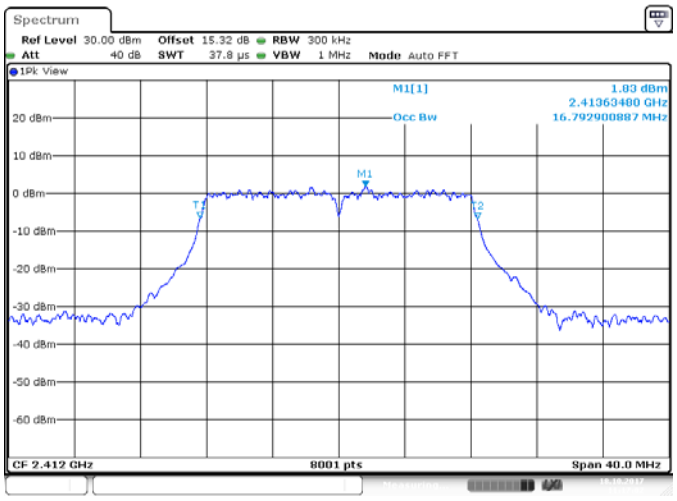


Date: 18.OCT.2017 14:52:06



Date: 18.OCT.2017 14:56:39

ANT 1(802.11g)



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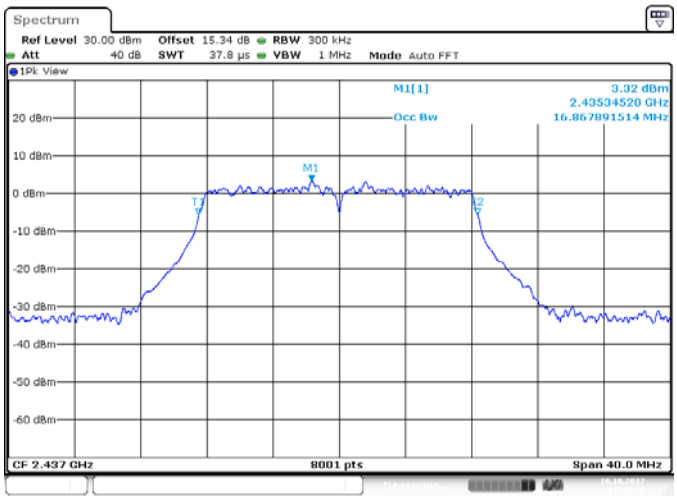
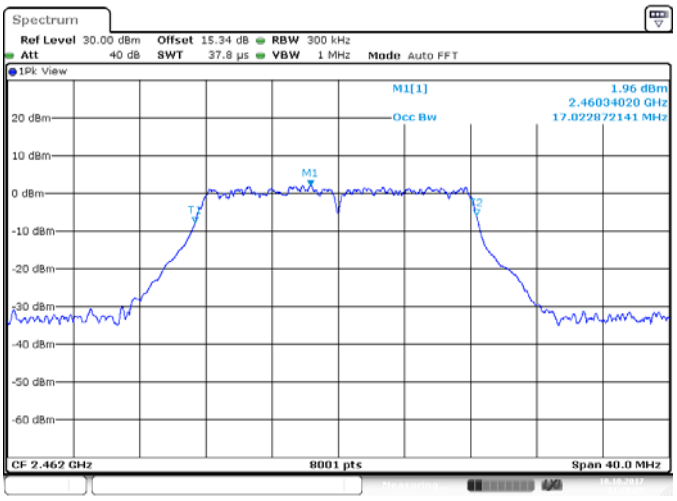
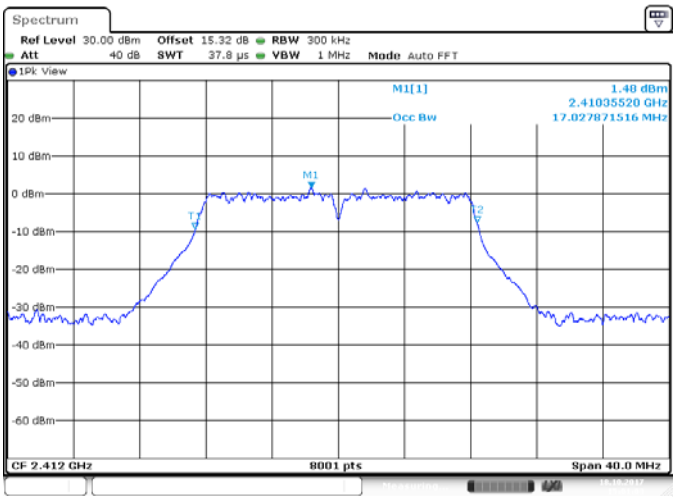


Date: 18.OCT.2017 11:18:46

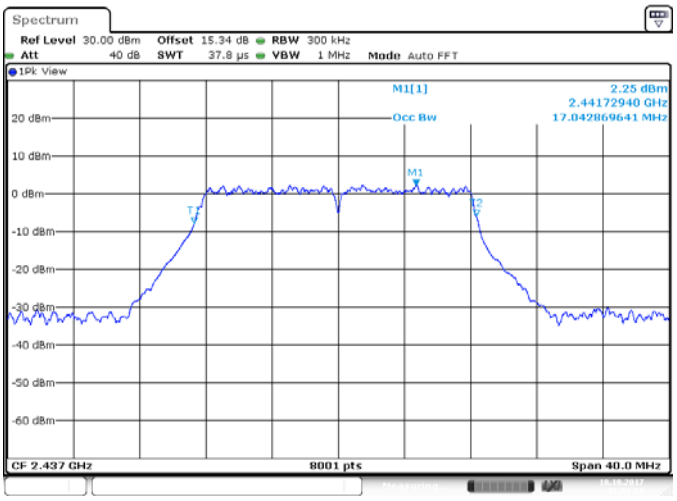


Date: 18.OCT.2017 11:20:20

ANT 2(802.11g)



Date: 18.OCT.2017 15:01:03



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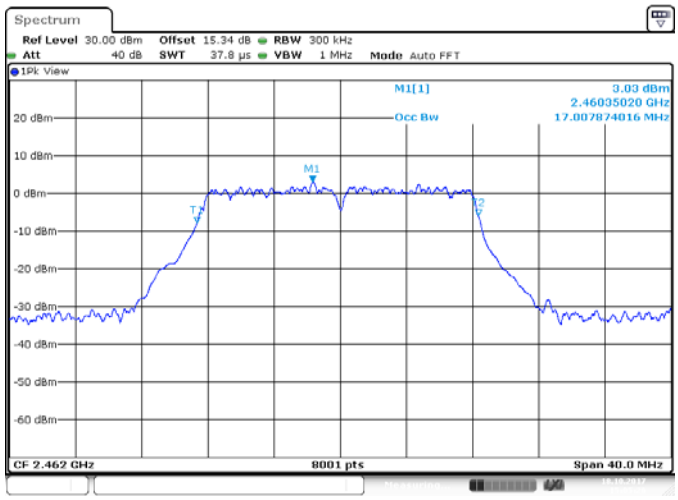
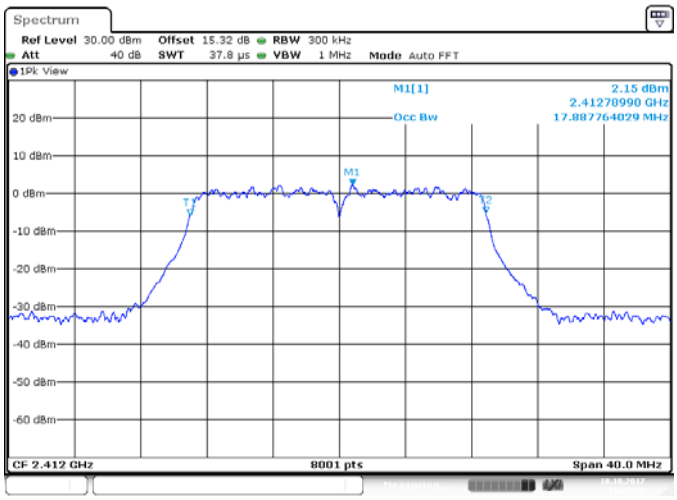


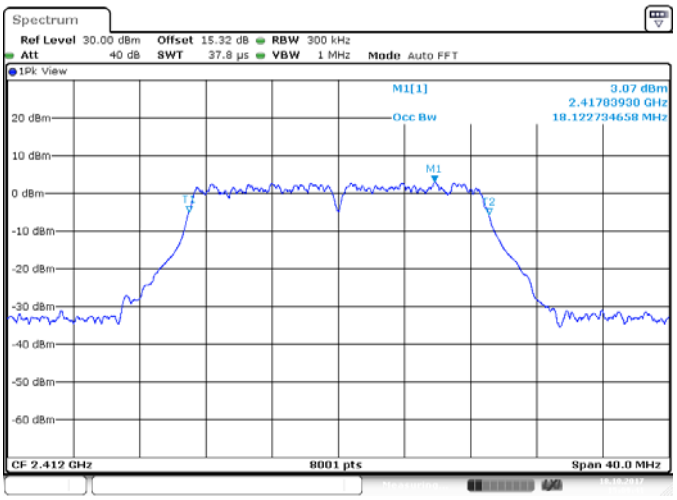
Date: 18.OCT.2017 15:05:26

ANT 1(802.11n20)



Date: 18.OCT.2017 11:25:20

ANT 2(802.11 n20)



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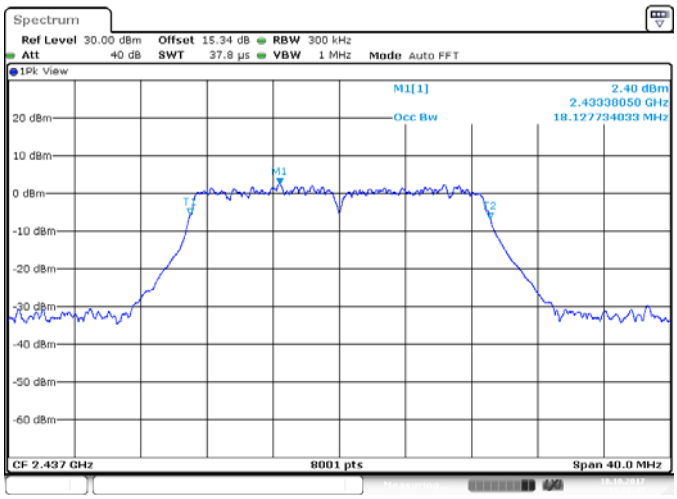

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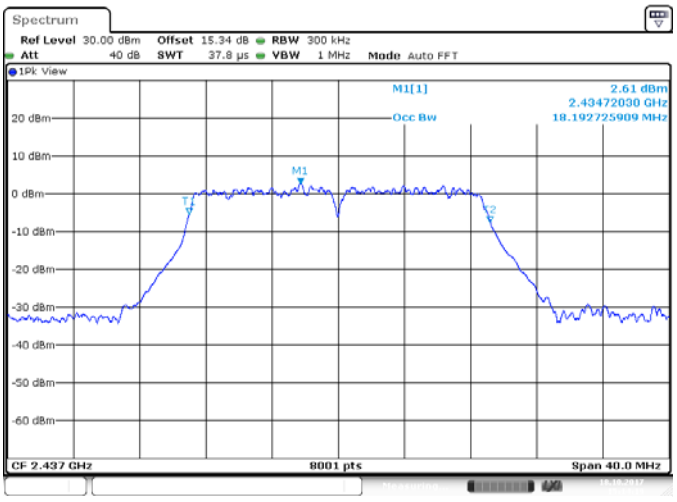
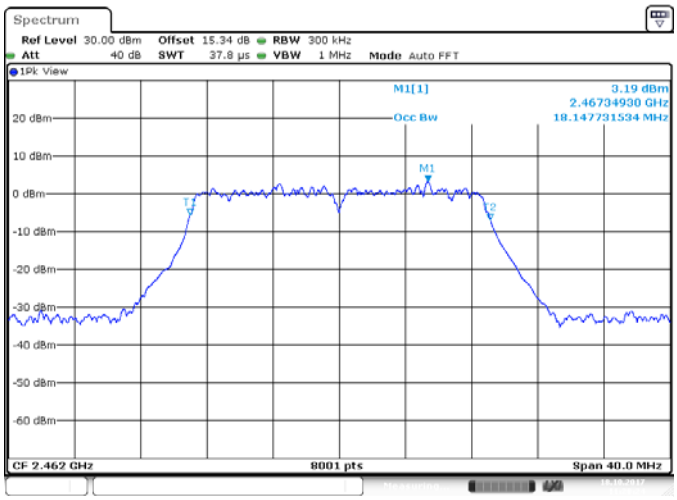


Date: 18.OCT.2017 15:14:20



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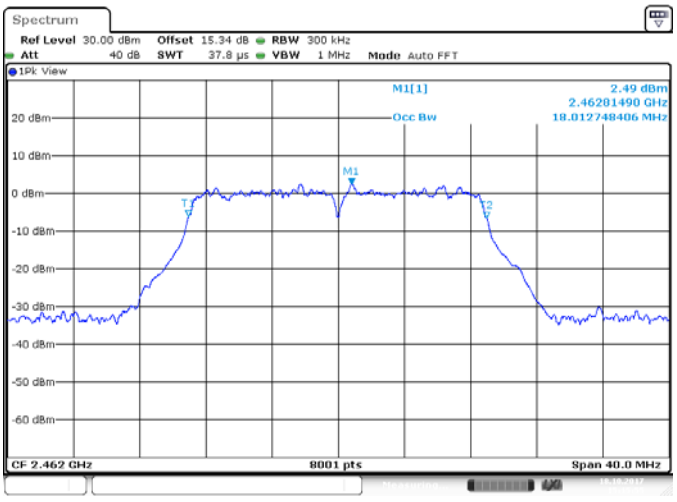
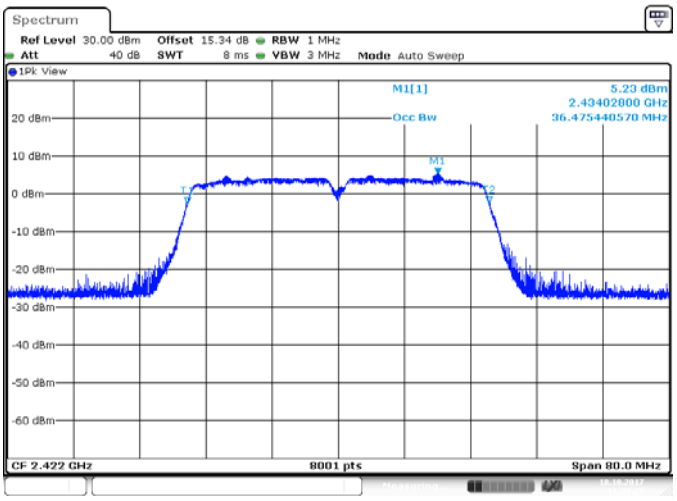


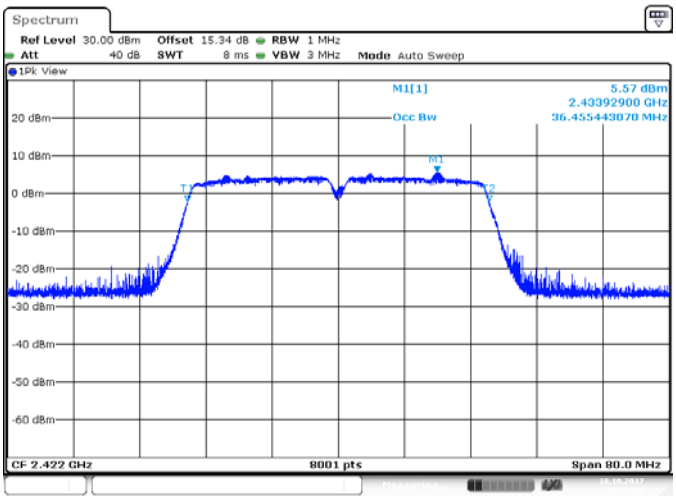
Date: 18.OCT.2017 15:15:55

ANT 1(802.11n40)

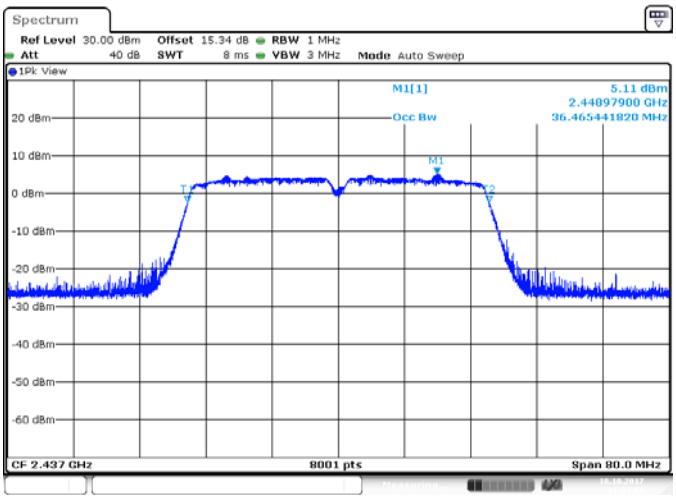


Date: 18.OCT.2017 11:33:28

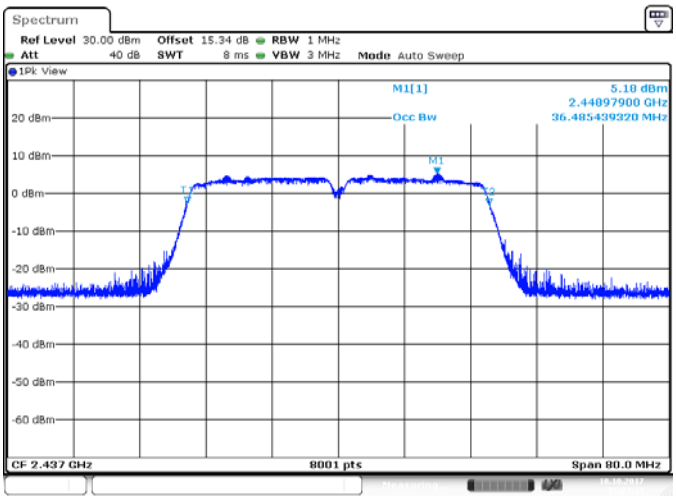
ANT 2(802.11n40)



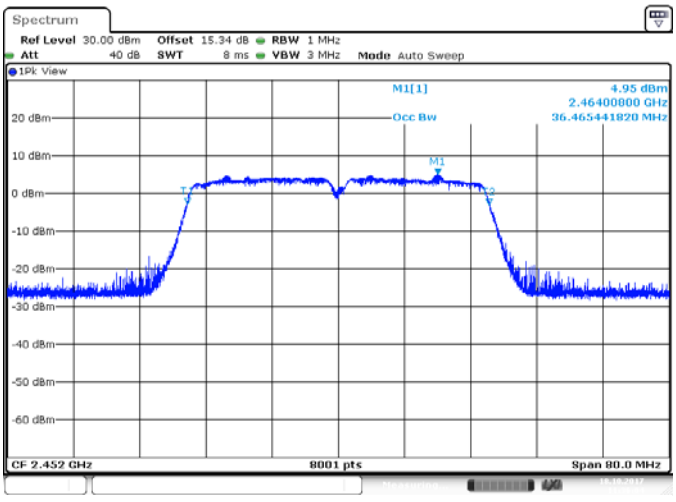
Date: 18.OCT.2017 15:23:03



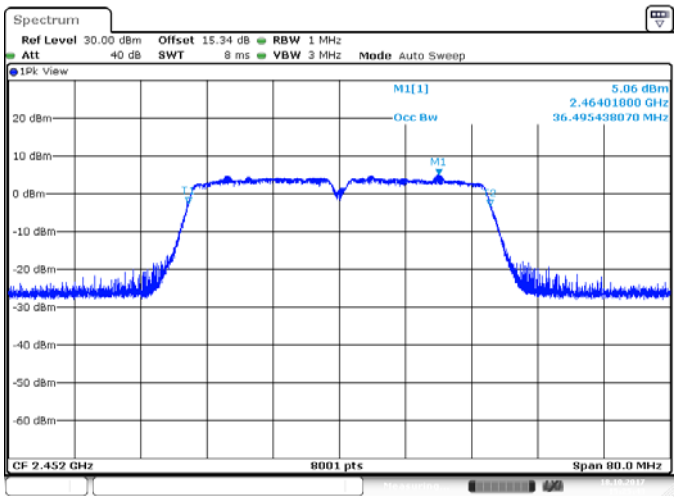
Date: 18.OCT.2017 11:34:51



Date: 18.OCT.2017 15:24:31



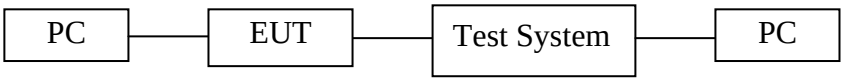
Date: 18.OCT.2017 11:36:04



Date: 18.OCT.2017 15:25:43

7. DUTY CYCLE MEASUREMENT

7.1.Block Diagram of Test Setup



7.2.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

7.3.Operating Condition of EUT

7.3.1.Setup the EUT and simulator as shown as Section 7.1.

7.3.2.Turn on the power of all equipment.

7.3.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 and 2422-2452MHz. We select 2437MHz TX frequency to transmit.

7.4.Test Procedure

Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:
1. A diode detector and an oscilloscope that together have sufficiently short response time to permit accurate measurements of the on- and off-times of the transmitted signal.
2. The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on- and off-times of the transmitted signal
a. Set the center frequency of the instrument to the centre frequency of the transmission
b. Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value(10MHz).
c. Set detector = Peak or average.
d. The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100.
(For example, if VBW and/or RBW are limited to 3MHz, then the zero-span method of measuring duty cycle shall not be used if T≤16.7 microseconds.)

7.5.Test Result

The test was performed with 802.11b					
Channel	Frequency (MHz)	duty cycle(x) ANT 1	10log(1/x) ANT 1	duty cycle(x) ANT 2	10log(1/x) ANT 2
Middle	2437	98.31%	0.07	98.91%	0.05

The test was performed with 802.11g					
Channel	Frequency (MHz)	duty cycle(x) ANT 1	10log(1/x) ANT 1	duty cycle(x) ANT 2	10log(1/x) ANT 2
Middle	2437	94.24%	0.26	93.30%	0.30

The test was performed with 802.11n20					
Channel	Frequency (MHz)	duty cycle(x) ANT 1	10log(1/x) ANT 1	duty cycle(x) ANT 2	10log(1/x) ANT 2
Middle	2437	95.25%	0.21	94.57%	0.24

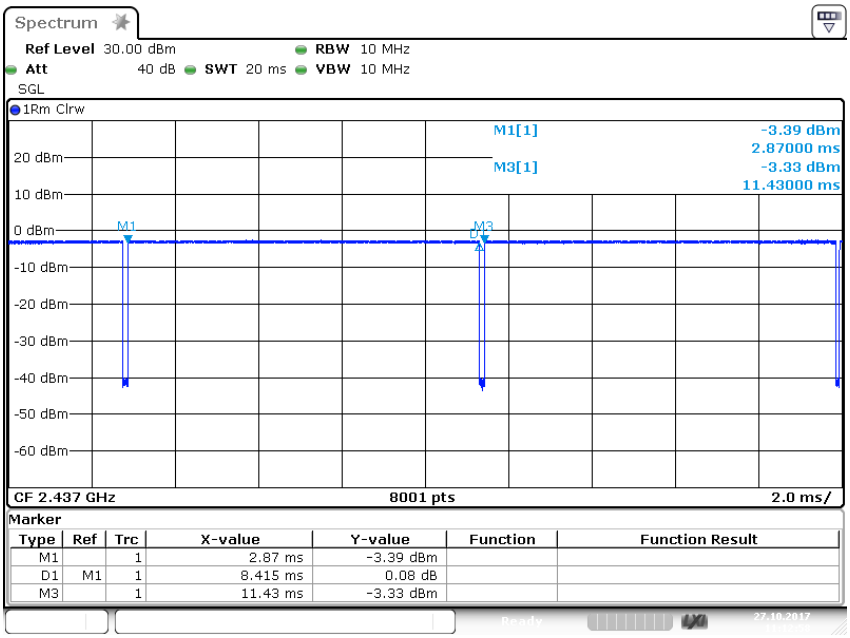
The test was performed with 802.11n40					
Channel	Frequency (MHz)	duty cycle(x) ANT 1	10log(1/x) ANT 1	duty cycle(x) ANT 2	10log(1/x) ANT 2
Middle	2437	89.58%	0.48	88.32%	0.54

Note: The duty cycle's parameter settings for each mode(802.11b,g,n) are the same, Therefore, other channels can refer to the test data of the middle channel.

The spectrum analyzer plots are attached as below.

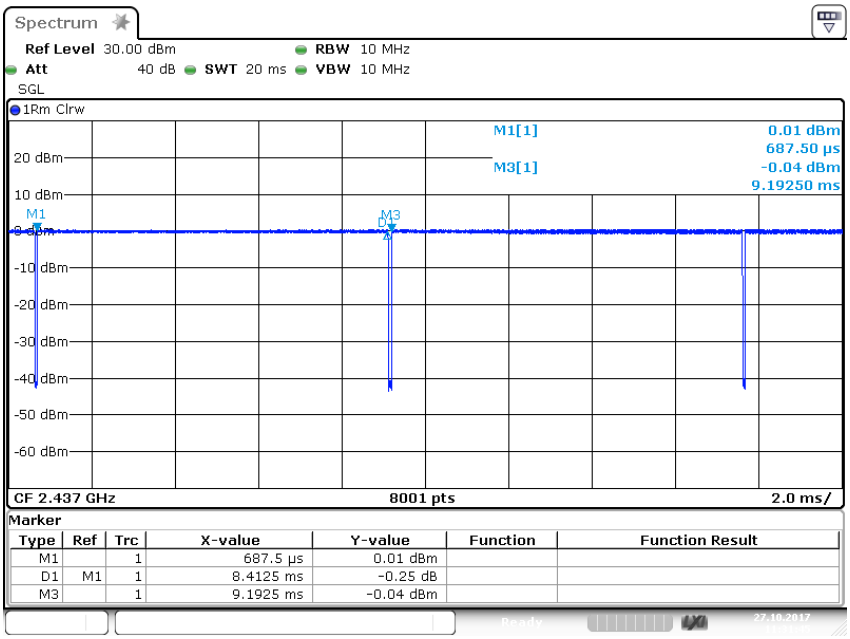
duty cycle

802.11b Channel Middle 2437MHz(ANT 1)



Date: 27.OCT.2017 11:12:58

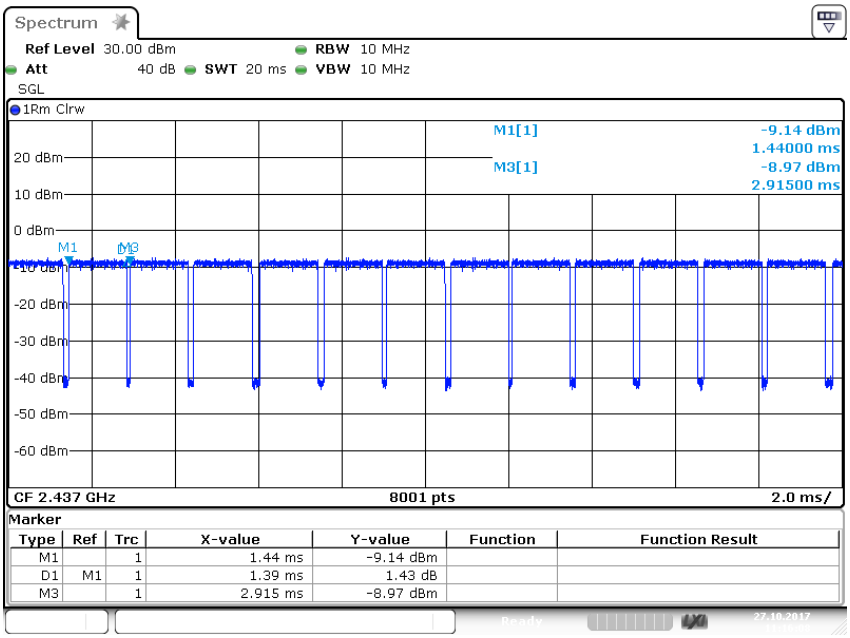
802.11b Channel Middle 2437MHz(ANT 2)



Date: 27.OCT.2017 11:31:45

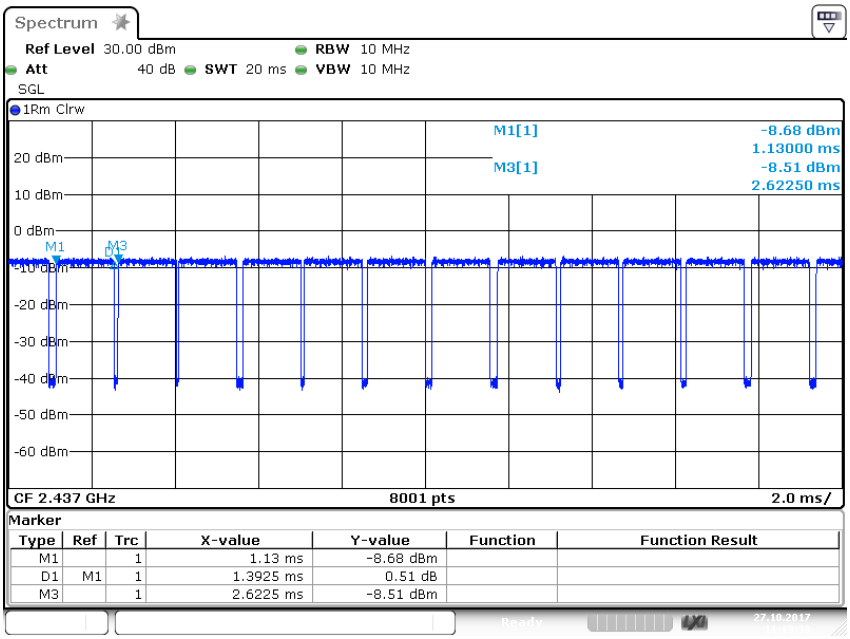
duty cycle

802.11g Channel Middle 2437MHz(ANT 1)



Date: 27.OCT.2017 11:16:08

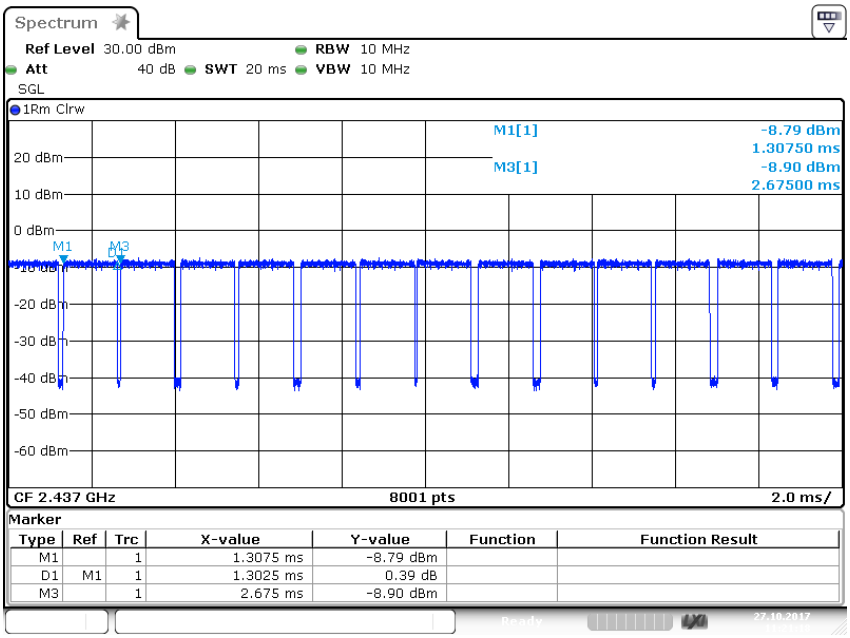
802.11g Channel Middle 2437MHz(ANT 2)



Date: 27.OCT.2017 11:19:38

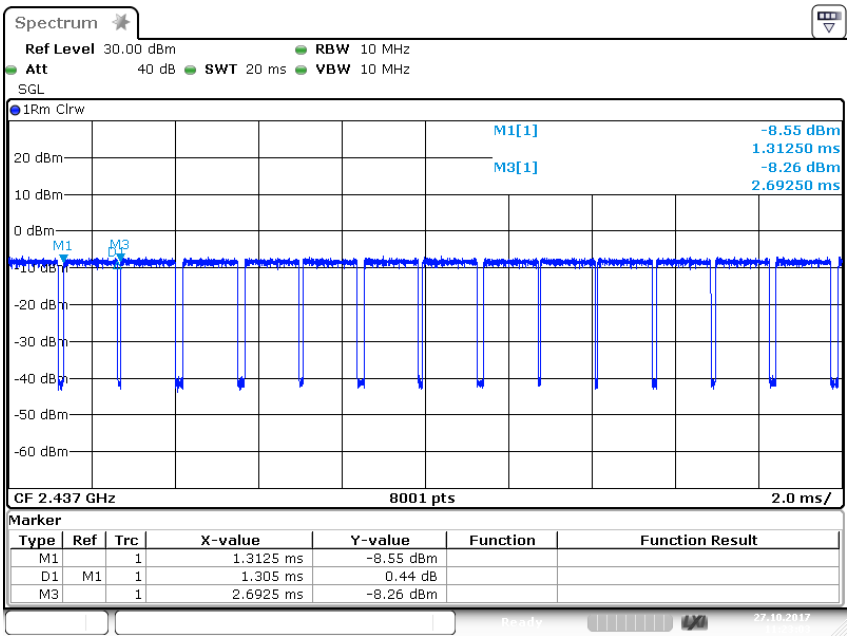
duty cycle

802.11n20 Channel Middle 2437MHz(ANT 1)



Date: 27.OCT.2017 11:21:17

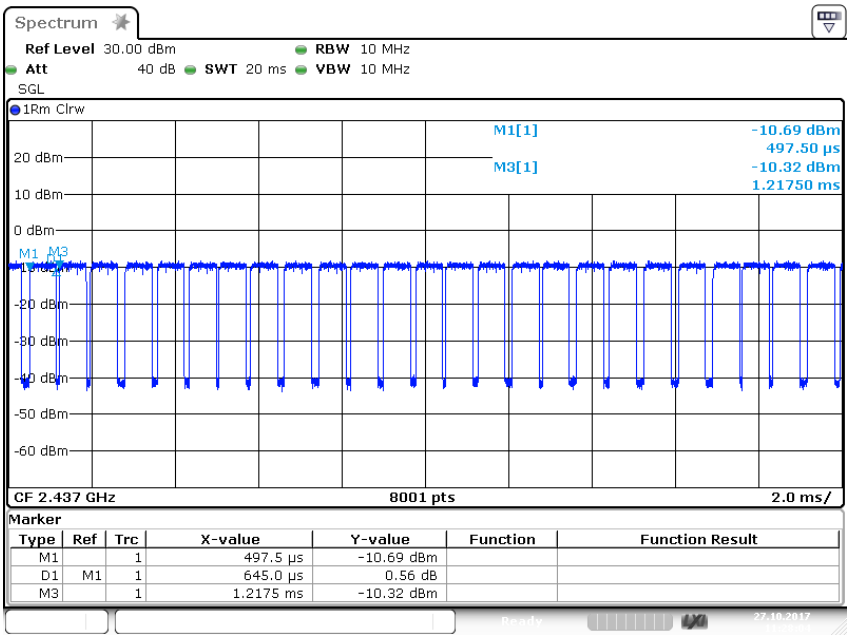
802.11n20 Channel Middle 2437MHz(ANT 2)



Date: 27.OCT.2017 11:23:03

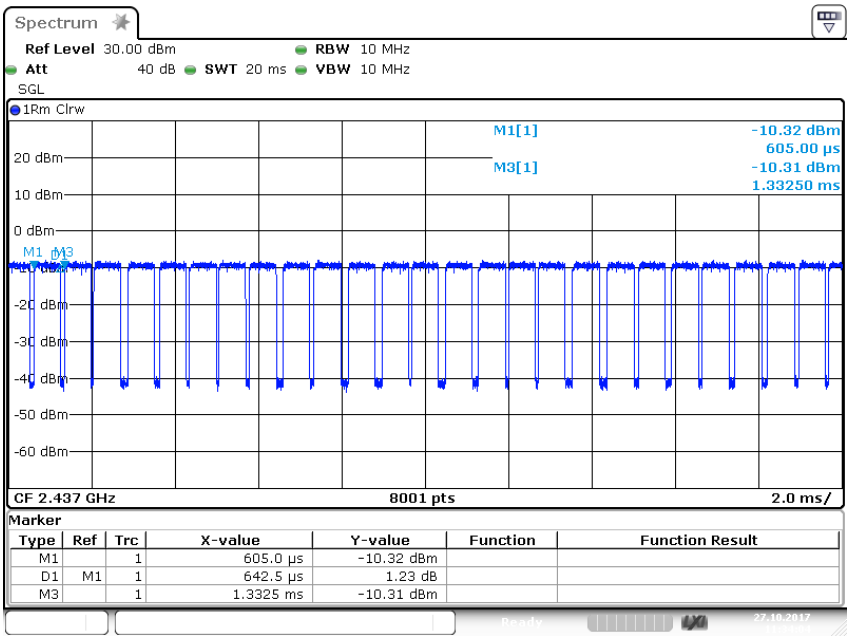
duty cycle

802.11n40 Channel Middle 2437MHz(ANT 1)



Date: 27.OCT.2017 11:28:04

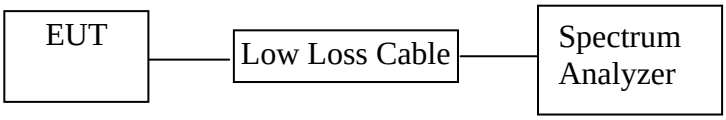
802.11n40 Channel Middle 2437MHz(ANT 2)



Date: 27.OCT.2017 11:34:04

8. POWER SPECTRAL DENSITY TEST

8.1.Block Diagram of Test Setup



8.2.The Requirement For Section 15.247(e)

Section 15.247(e): For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

8.3.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

8.4.Operating Condition of EUT

8.4.1.Setup the EUT and simulator as shown as Section 8.1.

8.4.2.Turn on the power of all equipment.

8.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 and 2422-2452MHz. We select 2412MHz, 2437MHz, 2462MHz and 2422MHz, 2437MHz, 2452MHz TX frequency to transmit.

8.5.Test Procedure

8.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

8.5.2.Measurement Procedure PKPSD:

This procedure must be used if maximum peak conducted output power was used to demonstrate compliance to the fundamental output power limit, and is optional if the maximum (average) conducted output power was used to demonstrate compliance.

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW 3 kHz $\leqslant$ RBW $\leqslant$ 100 kHz.

4. Set the VBW ≥ 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

8.5.3.Measurement the maximum power spectral density.

8.6.Test Result

PASS

The test was performed with 802.11b(SISO)							
Frequency (MHz)	Power Spectral Density ANT 1 (dBm)	Power Spectral Density ANT 2 (dBm)	10log(1/x) ANT 1	10log(1/x) ANT 2	Final Power Spectral Density ANT 1 (dBm)	Final Power Spectral Density ANT 2 (dBm)	Limits (dBm)
2412	-4.01	-3.99	0.07	0.05	-3.94	-3.94	8 dBm
2437	-3.61	-3.74	0.07	0.05	-3.54	-3.69	8 dBm
2462	-4.02	-4.13	0.07	0.05	-3.95	-4.08	8 dBm

The test was performed with 802.11g(SISO)							
Frequency (MHz)	Power Spectral Density ANT 1 (dBm)	Power Spectral Density ANT 2 (dBm)	10log(1/x) ANT 1	10log(1/x) ANT 2	Final Power Spectral Density ANT 1 (dBm)	Final Power Spectral Density ANT 2 (dBm)	Limits (dBm)
2412	-15.70	-16.35	0.26	0.30	-15.44	-16.05	8 dBm
2437	-14.94	-15.10	0.26	0.30	-14.68	-14.80	8 dBm
2462	-15.53	-14.96	0.26	0.30	-15.27	-14.66	8 dBm

The test was performed with 802.11n20(SISO)							
Frequency (MHz)	Power Spectral Density ANT 1 (dBm)	Power Spectral Density ANT 2 (dBm)	10log(1/x) ANT 1	10log(1/x) ANT 2	Final Power Spectral Density ANT 1 (dBm)	Final Power Spectral Density ANT 2 (dBm)	Limits (dBm)
2412	-17.03	-16.13	0.21	0.24	-16.82	-15.89	8 dBm
2437	-16.84	-15.87	0.21	0.24	-16.63	-15.63	8 dBm
2462	-16.67	-17.11	0.21	0.24	-16.46	-16.87	8 dBm

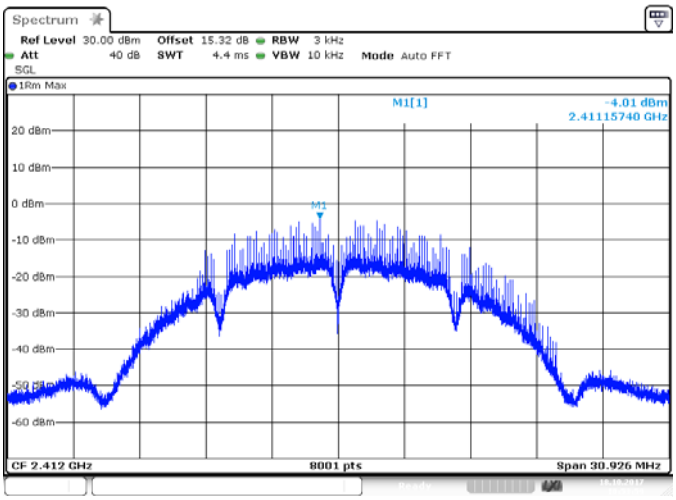
The test was performed with 802.11n40(SISO)							
Frequency (MHz)	Power Spectral Density ANT 1 (dBm)	Power Spectral Density ANT 2 (dBm)	10log(1/x) ANT 1	10log(1/x) ANT 2	Final Power Spectral Density ANT 1 (dBm)	Final Power Spectral Density ANT 2 (dBm)	Limits (dBm)
2422	-21.14	-20.85	0.48	0.54	-3.94	-3.94	8 dBm
2437	-21.54	-21.07	0.48	0.54	-3.54	-3.69	8 dBm
2452	-21.55	-20.99	0.48	0.54	-3.95	-4.08	8 dBm

The test was performed with 802.11n20(MIMO)								
Frequency (MHz)	Power Spectral Density ANT 1 (dBm)	Power Spectral Density ANT 2 (dBm)	10log(1/x) ANT 1	10log(1/x) ANT 2	Final Power Spectral Density ANT 1 (dBm)	Final Power Spectral Density ANT 2 (dBm)	Total Power Spectral Density (dBm)	Limits (dBm)
2412	-19.70	-18.34	0.21	0.24	-19.49	-18.10	-15.73	5.99 dBm
2437	-18.25	-18.99	0.21	0.24	-18.04	-18.75	-15.38	5.99 dBm
2462	-18.65	-18.32	0.21	0.24	-18.44	-18.08	-15.25	5.99 dBm

The test was performed with 802.11n40(MIMO)								
Frequency (MHz)	Power Spectral Density ANT 1 (dBm)	Power Spectral Density ANT 2 (dBm)	10log(1/x) ANT 1	10log(1/x) ANT 2	Final Power Spectral Density ANT 1 (dBm)	Final Power Spectral Density ANT 2 (dBm)	Total Power Spectral Density (dBm)	Limits (dBm)
2422	-23.76	-22.45	0.48	0.54	-23.28	-21.91	-19.53	5.99 dBm
2437	-23.83	-22.72	0.48	0.54	-23.35	-22.18	-19.72	5.99 dBm
2452	-22.55	-23.73	0.48	0.54	-22.07	-23.19	-19.59	5.99 dBm

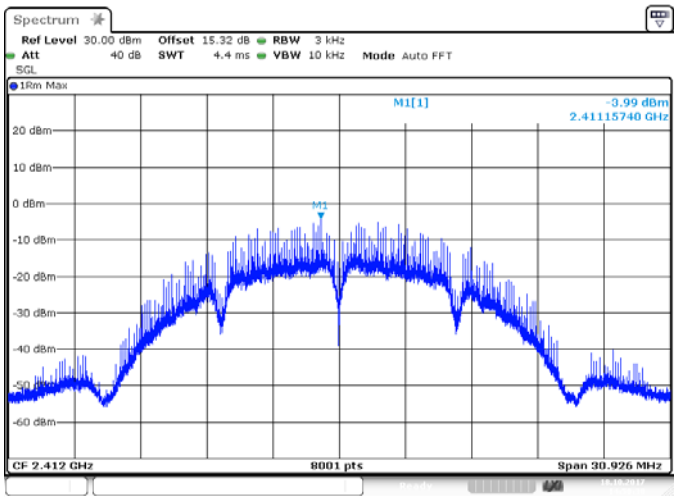
Test mode: SISO
The spectrum analyzer plots are attached as below.

ANT 1(802.11b)

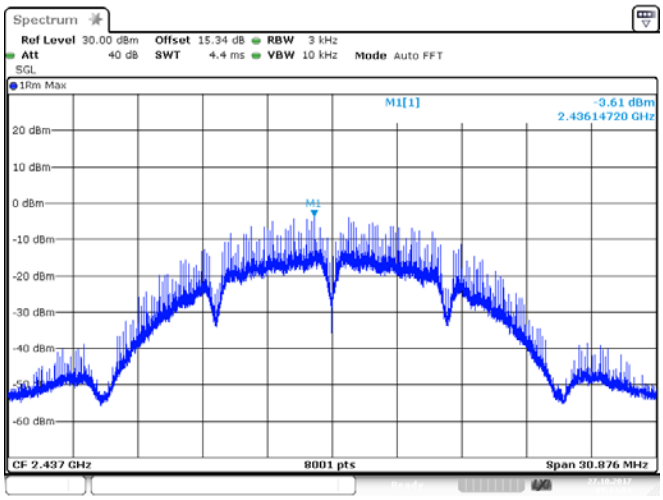


Date: 18.OCT.2017 10:54:00

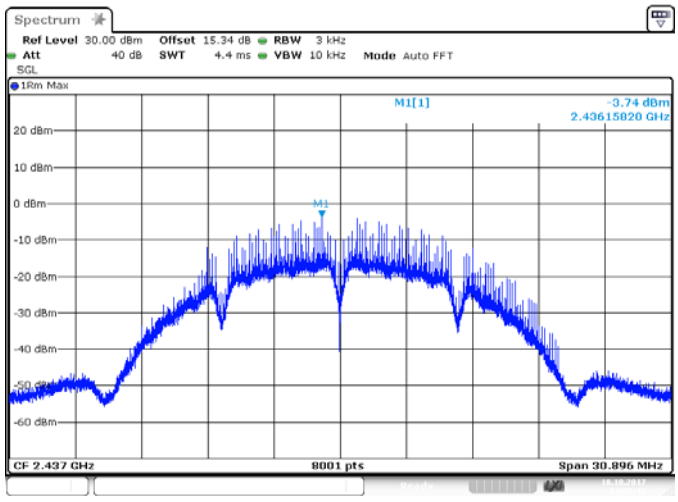
ANT 2(802.11b)



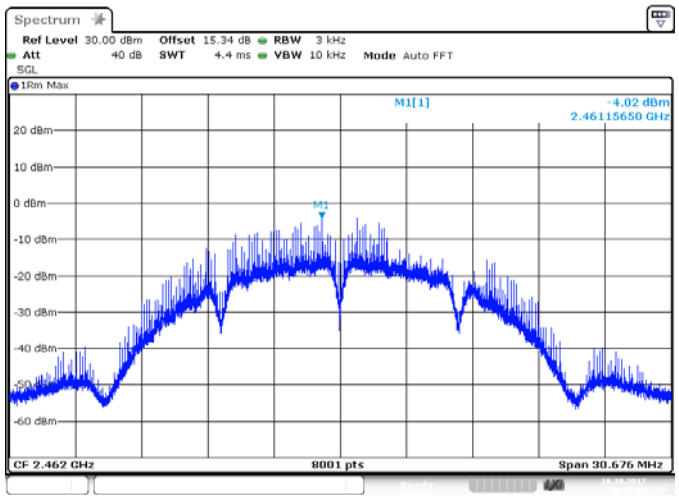
Date: 18.OCT.2017 14:50:38



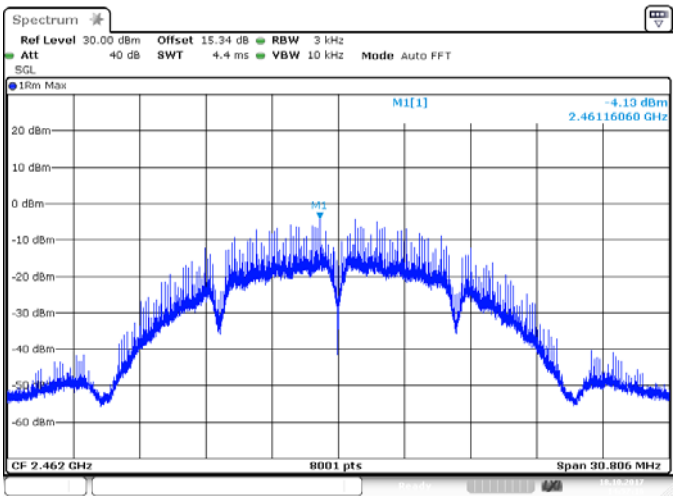
Date: 27.OCT.2017 09:14:51



Date: 18.OCT.2017 14:52:42

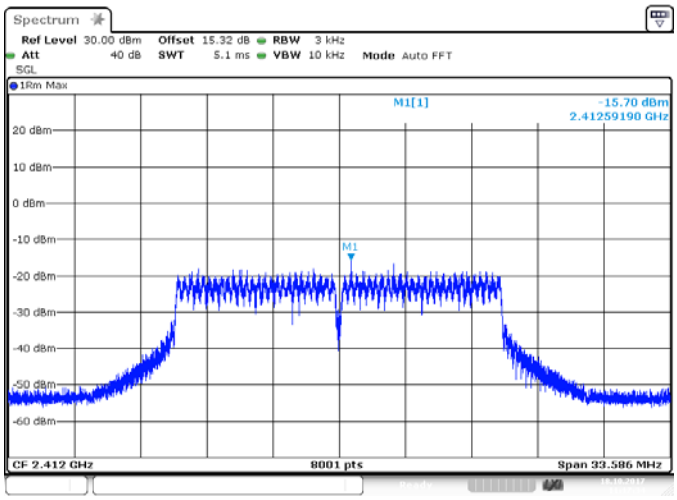


Date: 18.OCT.2017 10:59:29



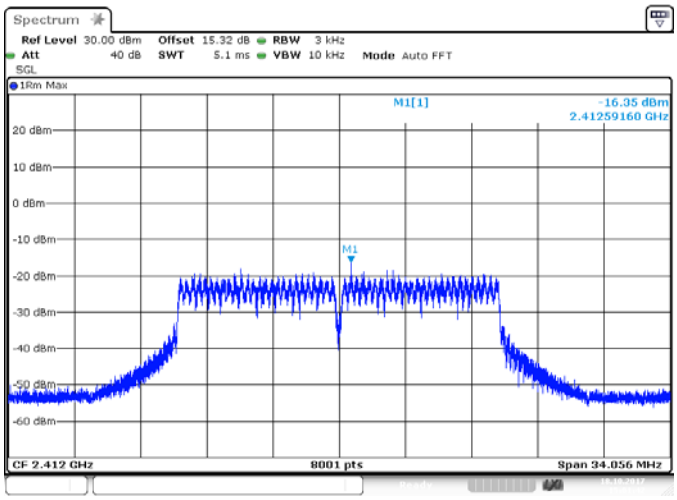
Date: 18.OCT.2017 14:57:16

ANT 1(802.11g)



Date: 18.OCT.2017 11:17:35

ANT 2(802.11g)



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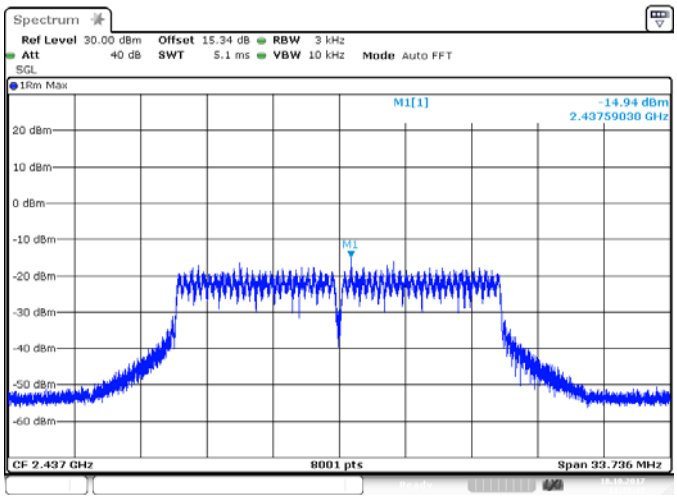

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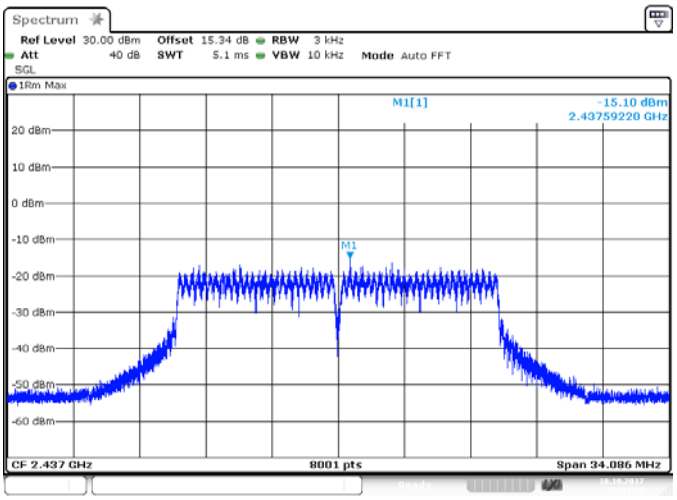

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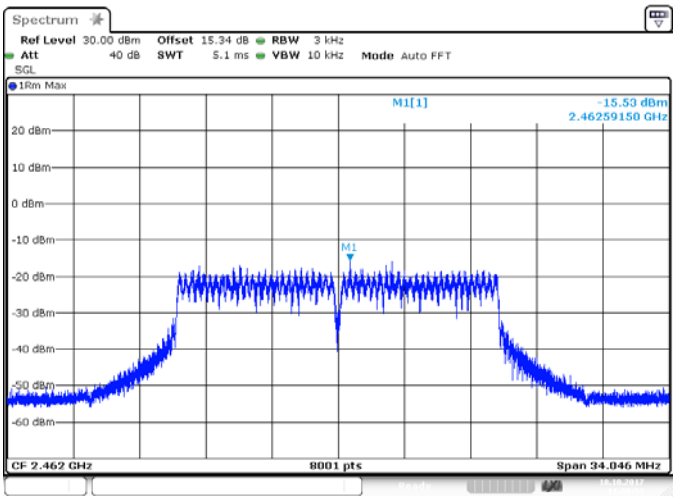

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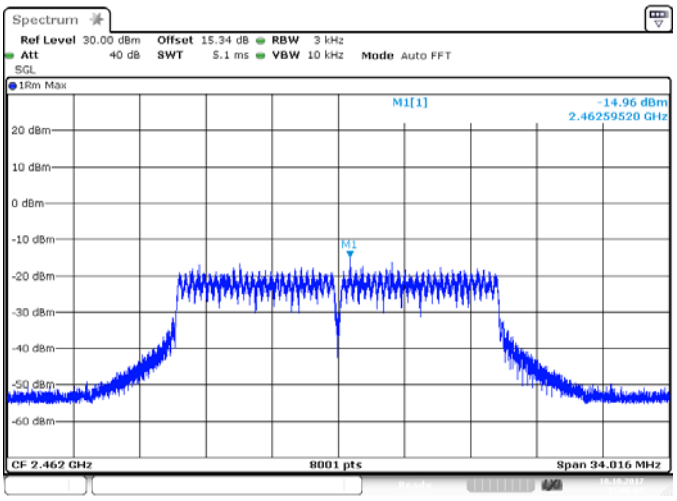
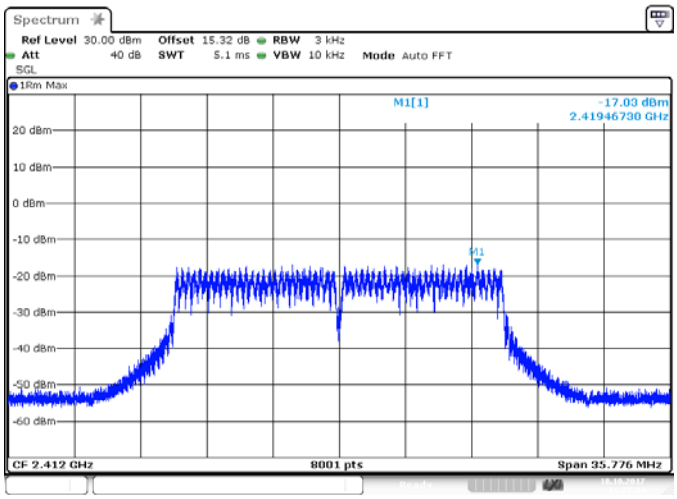


Date: 18.OCT.2017 15:06:05

ANT 1(802.11n20)



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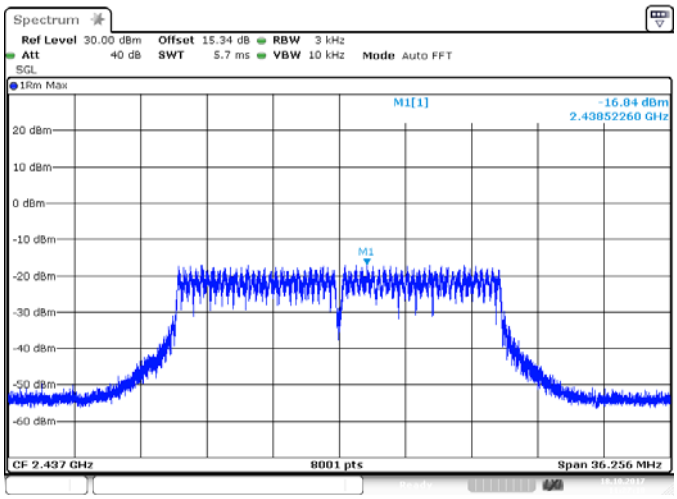

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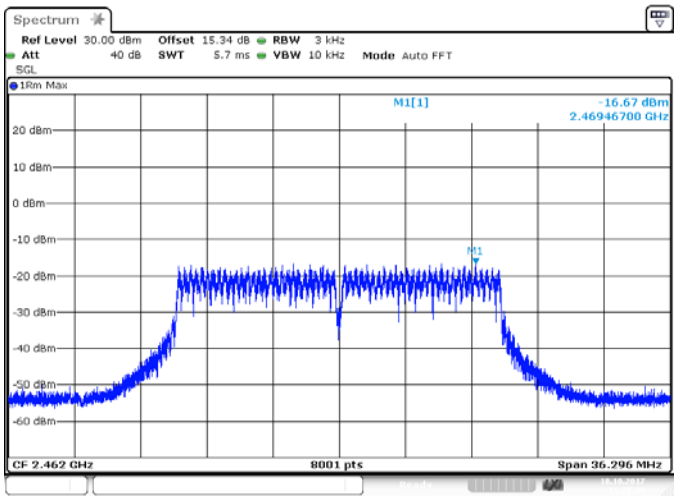
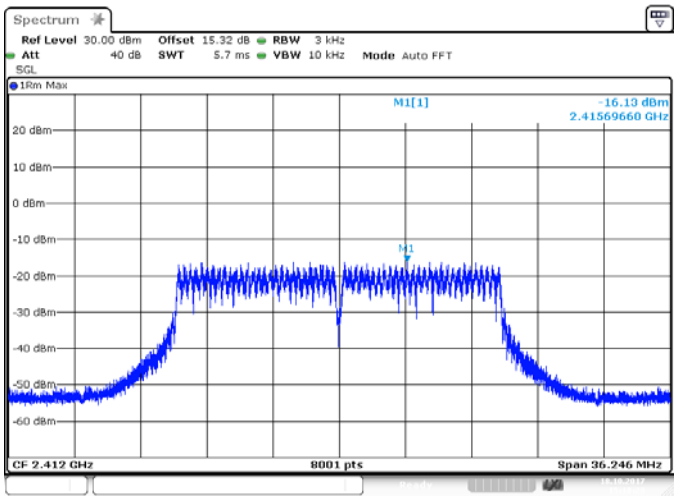


Date: 18.OCT.2017 11:28:58

ANT 2(802.11 n20)



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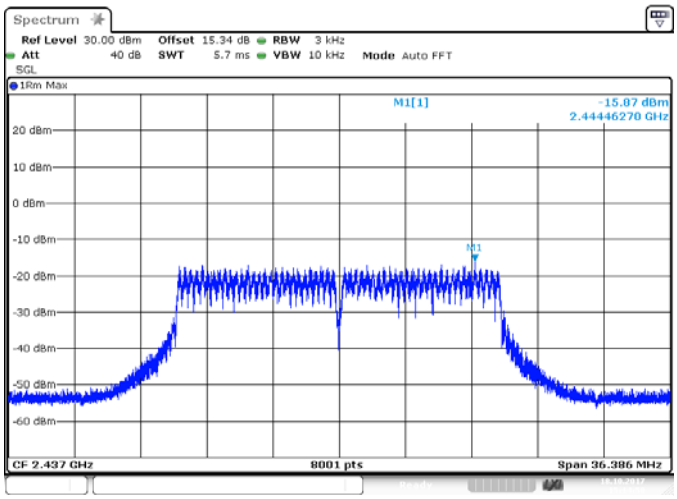

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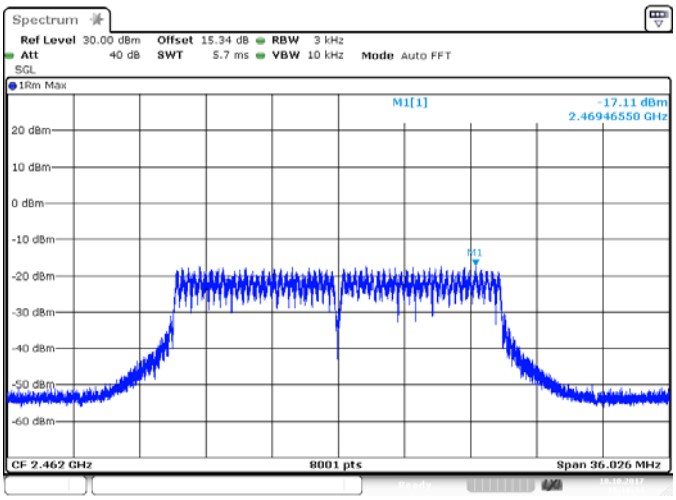

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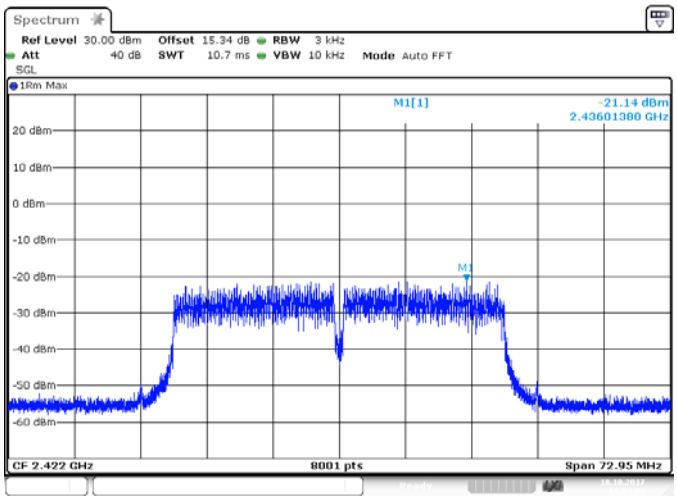
ANT 1(802.11n40)



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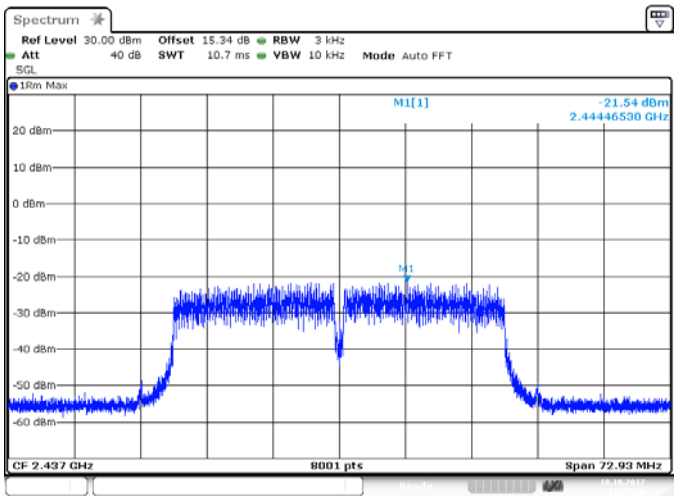
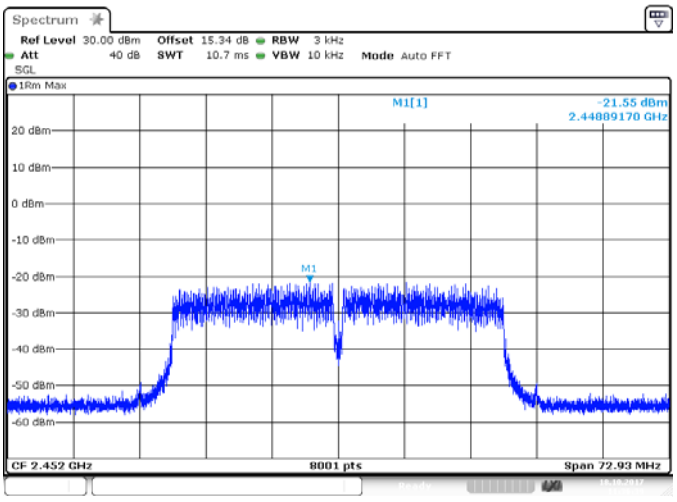
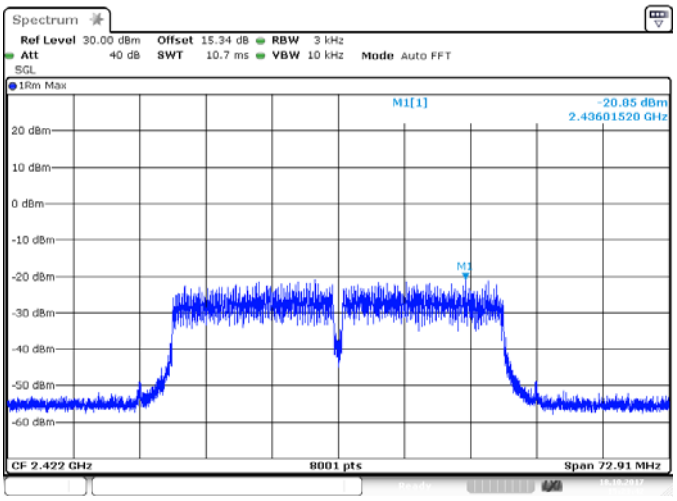


Date: 18.OCT.2017 11:35:26

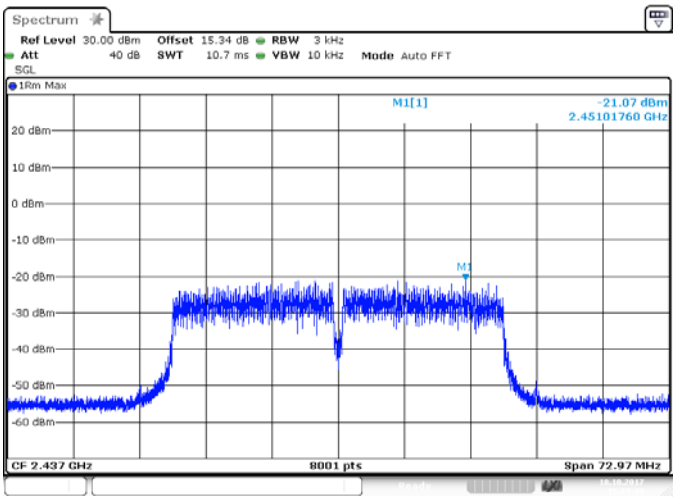


Date: 18.OCT.2017 11:36:39

ANT 2(802.11n40)



Date: 18.OCT.2017 15:23:42



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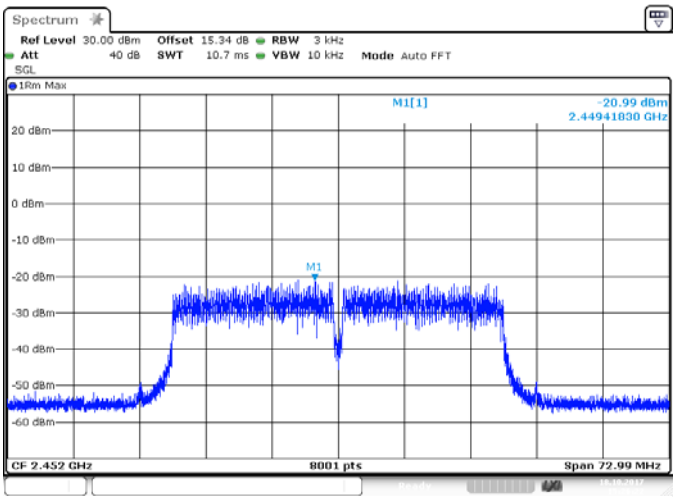
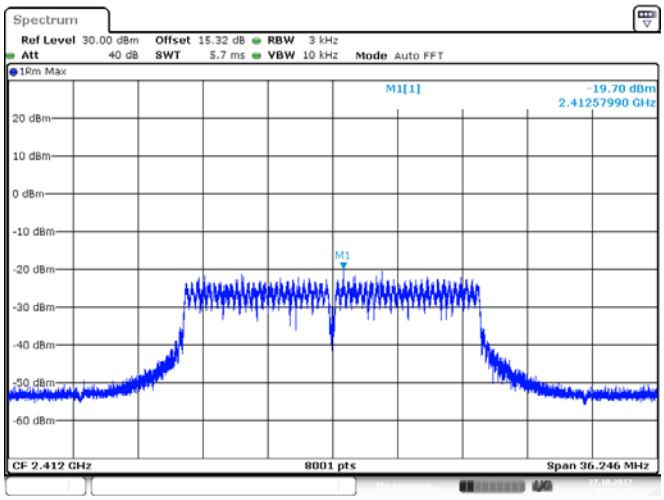


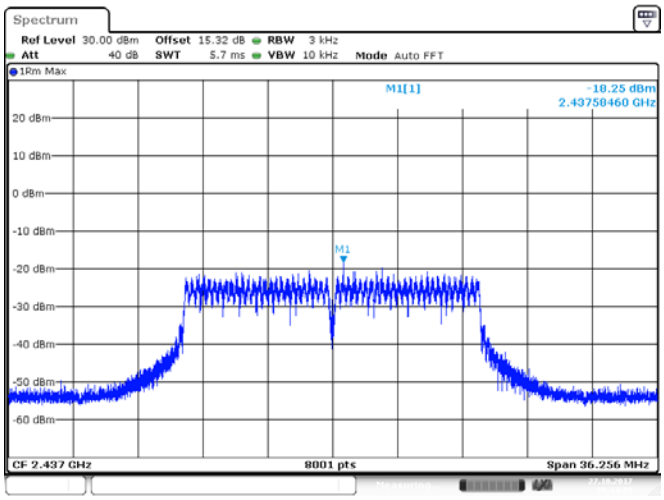
Date: 18.OCT.2017 15:26:22

Test mode: MIMO
The spectrum analyzer plots are attached as below.

ANT 1(802.11n20)



Date: 27.OCT.2017 09:40:23



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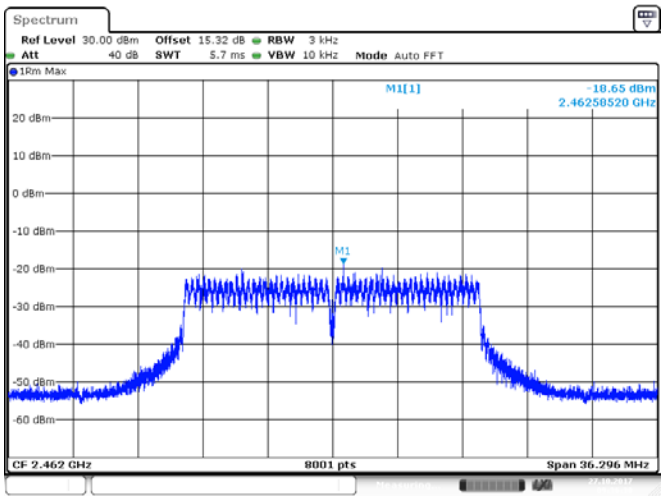
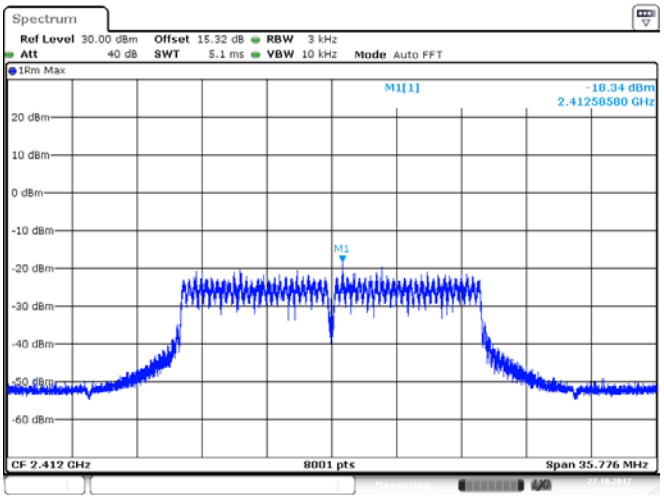


Date: 27.OCT.2017 09:36:30

ANT 2(802.11 n20)



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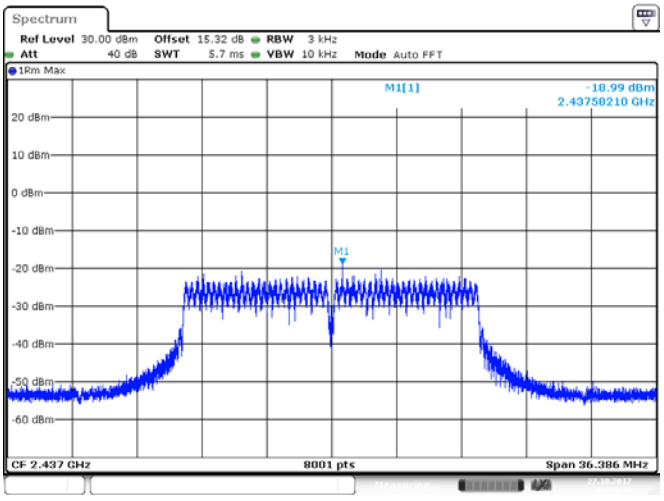
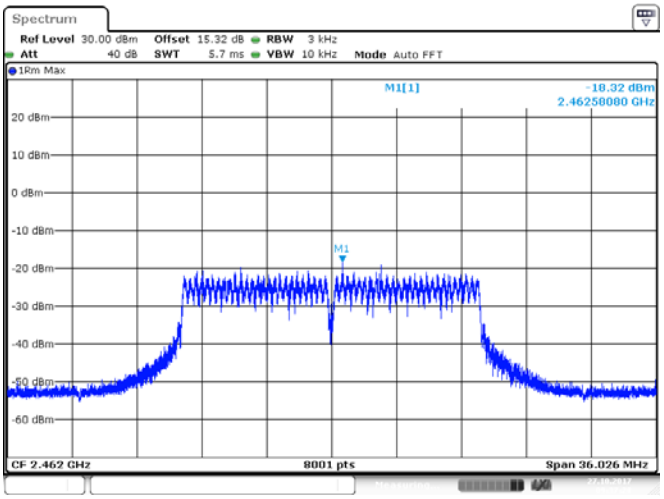
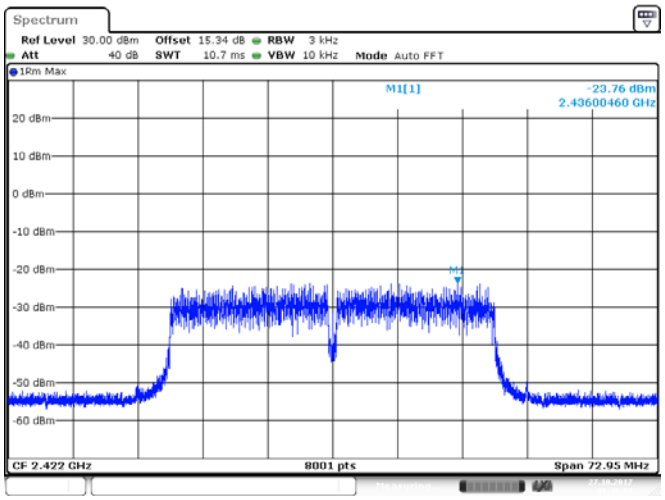


Date: 27.OCT.2017 09:39:40

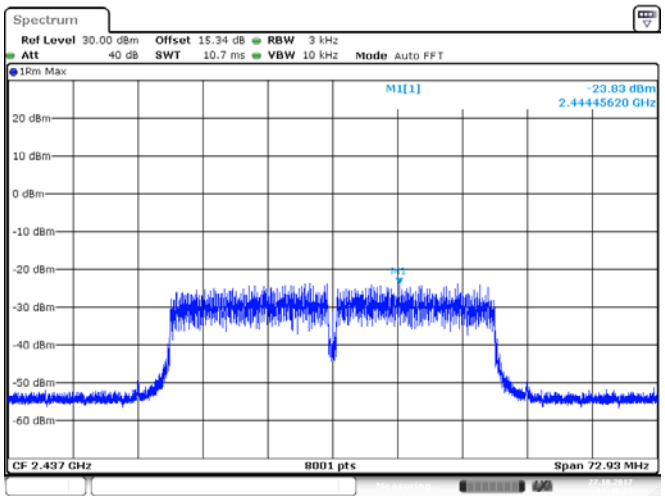


Date: 27.OCT.2017 09:37:28

ANT 1(802.11n40)



Date: 27.OCT.2017 09:43:59



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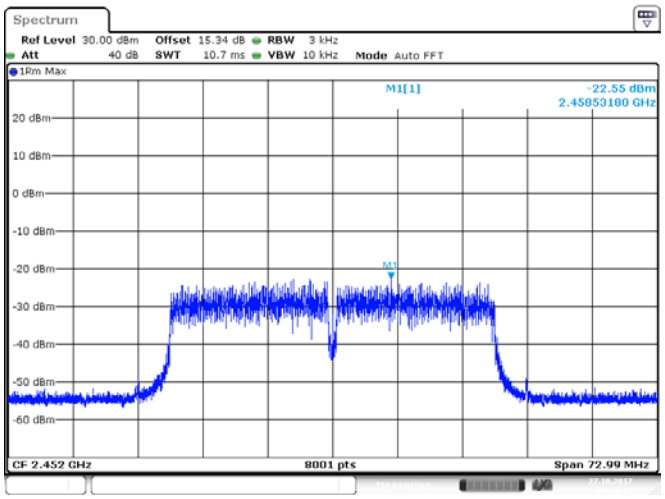
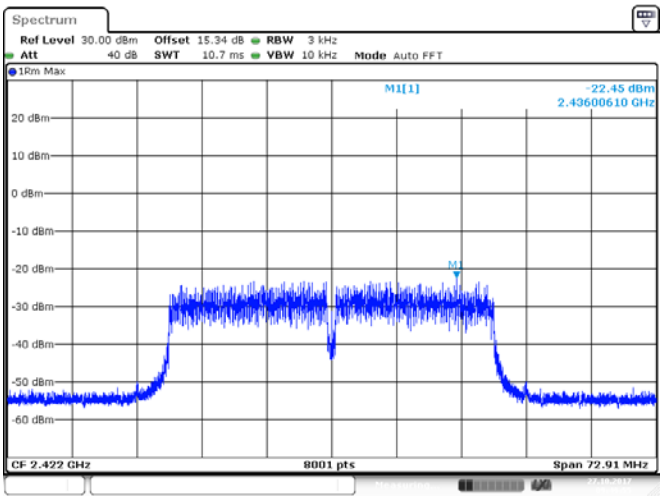


Date: 27.OCT.2017 09:48:12

ANT 2(802.11n40)



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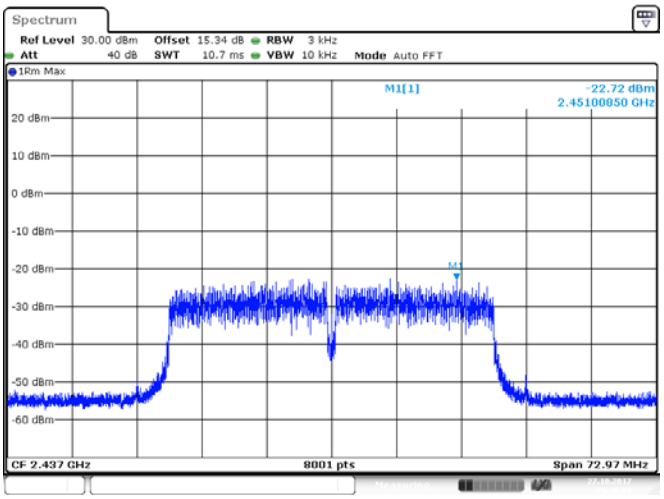
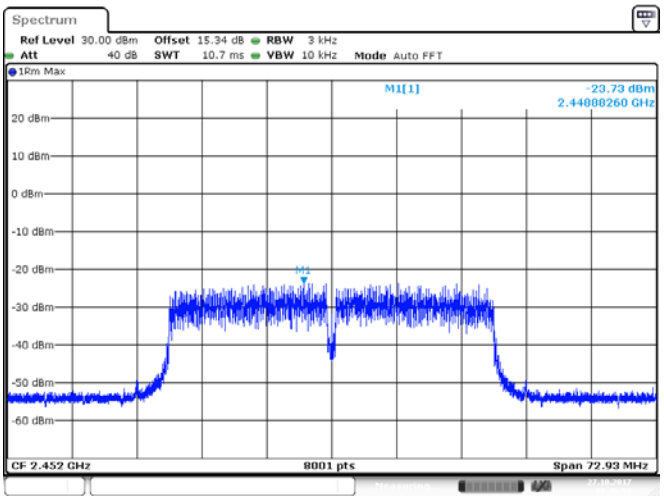


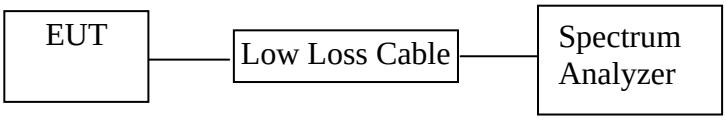
Date: 27.OCT.2017 09:48:59



Date: 27.OCT.2017 09:46:50

9. MAXIMUM CONDUCTED (AVERAGE) OUTPUT POWER

9.1.Block Diagram of Test Setup



9.2.The Requirement For Section 15.247(b)(3)

Section 15.247(b)(3): For systems using digital modulation in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands: 1 Watt.

9.3.EUT Configuration on Measurement

The equipment is installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

9.4.Operating Condition of EUT

9.4.1.Setup the EUT and simulator as shown as Section 9.1.

9.4.2.Turn on the power of all equipment.

9.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 and 2422-2452MHz. We select 2412MHz, 2437MHz, 2462MHz and 2422MHz, 2437MHz, 2452MHz TX frequency to transmit.

9.5.Test Procedure

9.5.1.The EUT was tested according to DTS test procedure of Apr 05, 2017 KDB558074 D01 DTS Meas Guidance v04 for compliance to FCC 47CFR 15.247 requirements.

9.5.2.The transmitter output was connected to the spectrum analyzer through a low loss cable.

9.5.3.Set RBW = 1-5% of the OBW, not to exceed 1 MHz, VBW $\geqslant$ 3 x RBW, Sweep time = auto, Set span to at least 1.5 times the OBW, Detector = RMS.

9.5.4.Measurement the Maximum conducted (average) output power.

9.6.Test Result

Final power= Ave output power+10log(1/ duty cycle)

The test was performed with 802.11b							
Frequency (MHz)	Ave output power ANT 1(dBm)	Ave output power ANT 2 (dBm)	10log(1/ duty cycle) ANT 1	10log(1/ duty cycle) ANT 2	Final output power ANT 1 (dBm)	Final output power ANT 2 (dBm)	Limits dBm / W
2412	13.09	13.14	0.07	0.05	13.16	13.19	30dBm/1W
2437	13.23	13.26	0.07	0.05	13.3	13.31	30dBm/1W
2462	13.12	12.96	0.07	0.05	13.19	13.01	30dBm/1W

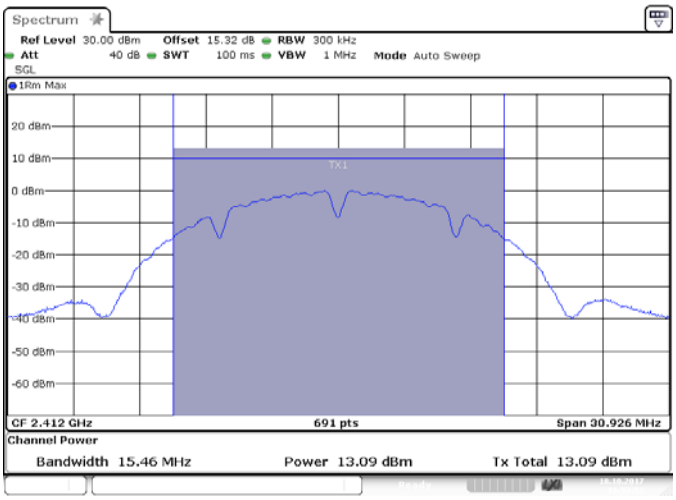
The test was performed with 802.11g							
Frequency (MHz)	Ave output power ANT 1(dBm)	Ave output power ANT 2 (dBm)	10log(1/ duty cycle) ANT 1	10log(1/ duty cycle) ANT 2	Final output power ANT 1 (dBm)	Final output power ANT 2 (dBm)	Limits dBm / W
2412	11.67	11.65	0.26	0.30	11.93	11.95	30dBm/1W
2437	11.61	11.63	0.26	0.30	11.87	11.93	30dBm/1W
2462	11.32	11.37	0.26	0.30	11.58	11.67	30dBm/1W

The test was performed with 802.11n20								
Frequency (MHz)	Ave output power ANT1 (dBm)	Ave output power ANT 2 (dBm)	10log(1/ duty cycle) ANT 1	10log(1/ duty cycle) ANT 2	Final output power ANT 1 (dBm)	Final output power ANT 2 (dBm)	Total output power (dBm)	Limits dBm
2412	11.03	11.06	0.21	0.24	11.24	11.30	14.28	27.99dBm
2437	11.34	10.98	0.21	0.24	11.55	11.22	14.39	27.99dBm
2462	10.68	10.70	0.21	0.24	10.89	10.94	13.93	27.99dBm

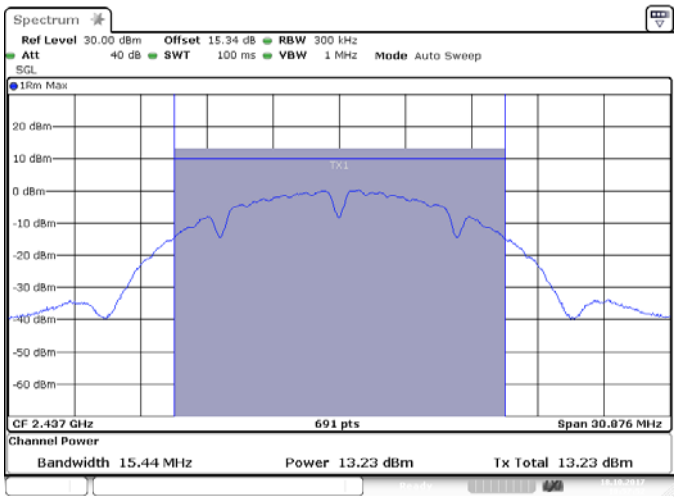
The test was performed with 802.11n40								
Frequency (MHz)	Ave output power ANT 1(dBm)	Ave output power ANT 2 (dBm)	10log(1/ duty cycle) ANT 1	10log(1/ duty cycle) ANT 2	Final output power ANT 1 (dBm)	Final output power ANT 2 (dBm)	Total output power (dBm)	Limits dBm
2422	8.84	8.82	0.48	0.54	9.32	9.36	12.35	27.99dBm
2437	8.80	8.78	0.48	0.54	9.28	9.32	12.31	27.99dBm
2452	8.65	8.68	0.48	0.54	9.13	9.22	12.19	27.99dBm

The spectrum analyzer plots are attached as below.

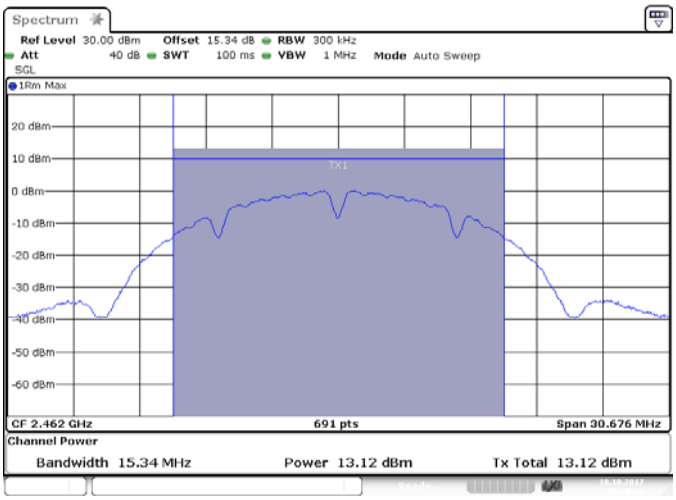
ANT 1(802.11b)



Date: 18.OCT.2017 10:53:52

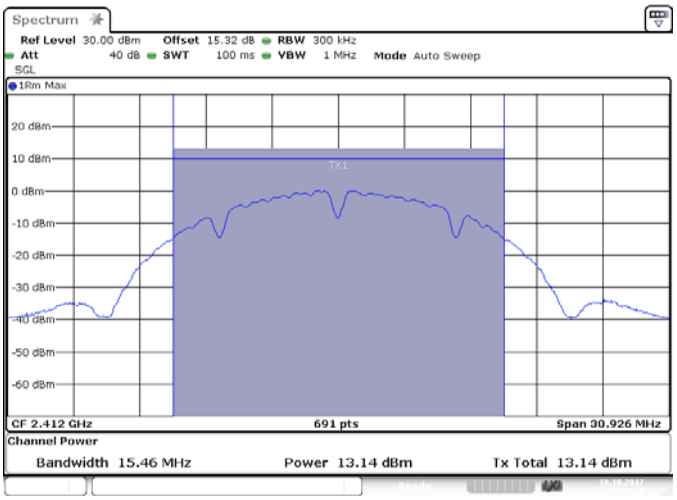


Date: 18.OCT.2017 10:57:52



Date: 18.OCT.2017 10:59:21

ANT 2(802.11b)



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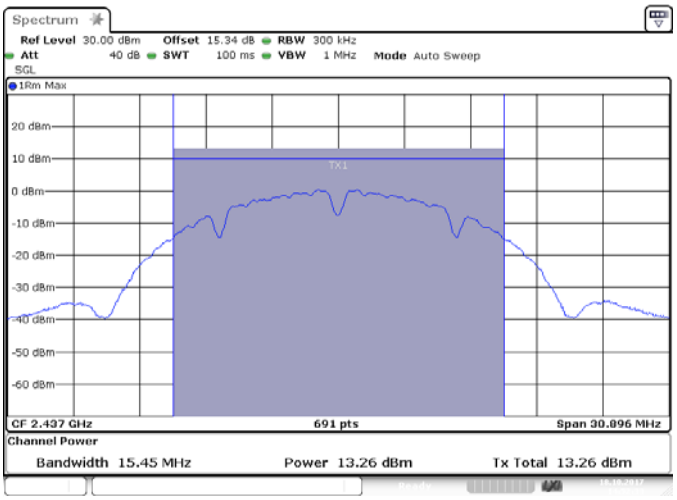

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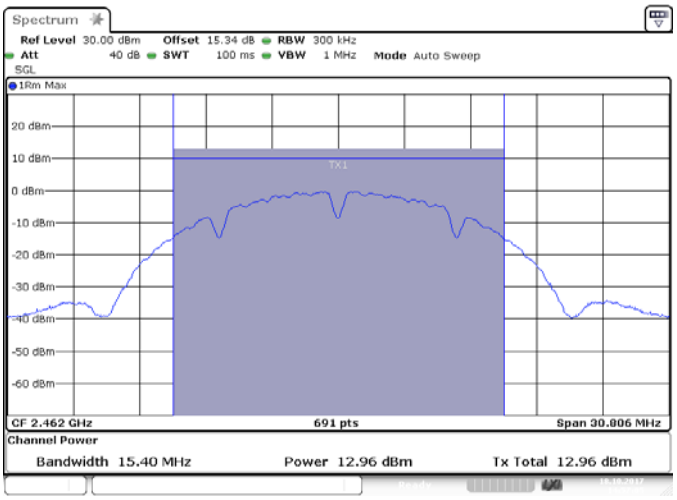

Date: 18.OCT.2017 14:57:05