

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

WiFi module
Model No.: WP0DR1110

FCC ID: 2ADID-WP0DR1110

Prepared for : Xiamen Prima Technology Inc.
Address : No.178, Xinfeng Road, Xiamen, Fujian, P.R. China

Prepared by : ACCURATE TECHNOLOGY CO., LTD
Address : F1, Bldg. A, Chan Yuan New Material Port, Keyuan
Rd. Science & Industry Park, Nan Shan, Shenzhen,
Guangdong P.R. China

Tel: (0755) 26503290
Fax: (0755) 26503396

Report No. : ATE20170115
Date of Test : Feb. 10, 2017-Feb. 23, 2017
Date of Report : Feb. 24, 2017

TABLE OF CONTENTS

Description	Page
Test Report Certification	
1. GENERAL INFORMATION	5
1.1. Description of Device (EUT).....	5
1.2. Carrier Frequency of Channels	6
1.3. Accessory and Auxiliary Equipment.....	6
1.4. Description of Test Facility	7
1.5. Measurement Uncertainty	7
2. MEASURING DEVICE AND TEST EQUIPMENT	8
3. OPERATION OF EUT DURING TESTING	9
3.1. Operating Mode	9
3.2. Configuration and peripherals	9
4. TEST PROCEDURES AND RESULTS	10
5. POWER LINE CONDUCTED MEASUREMENT	11
5.1. Power Line Conducted Emission Measurement Limits.....	11
5.2. Power Line Conducted Emission Measurement Results	11
6. 6DB&99% BANDWIDTH MEASUREMENT	12
6.1. Block Diagram of Test Setup.....	12
6.2. The Requirement For Section 15.247(a)(2).....	12
6.3. EUT Configuration on Measurement	12
6.4. Operating Condition of EUT	12
6.5. Test Procedure	12
6.6. Test Result	13
7. MAXIMUM CONDUCTED (AVERAGE) OUTPUT POWER	26
7.1. Block Diagram of Test Setup.....	26
7.2. The Requirement For Section 15.247(b)(3).....	26
7.3. EUT Configuration on Measurement	26
7.4. Operating Condition of EUT	26
7.5. Test Procedure	26
7.6. Test Result	27
8. POWER SPECTRAL DENSITY MEASUREMENT	34
8.1. Block Diagram of Test Setup.....	34
8.2. The Requirement For Section 15.247(e).....	34
8.3. EUT Configuration on Measurement	34
8.4. Operating Condition of EUT	34
8.5. Test Procedure	34
8.6. Test Result	35
9. BAND EDGE COMPLIANCE TEST	42
9.1. Block Diagram of Test Setup.....	42
9.2. The Requirement For Section 15.247(d)	42
9.3. EUT Configuration on Measurement	42
9.4. Operating Condition of EUT	42
9.5. Test Procedure	42
9.6. Test Result	43

10. RADIATED SPURIOUS EMISSION TEST	65
10.1. Block Diagram of Test Setup.....	65
10.2. The Limit For Section 15.247(d)	66
10.3. Restricted bands of operation	67
10.4. Configuration of EUT on Measurement	67
10.5. Operating Condition of EUT	68
10.6. Test Procedure	68
10.7. The Field Strength of Radiation Emission Measurement Results	69
11. ANTENNA REQUIREMENT.....	100
11.1. The Requirement	100
11.2. Antenna Construction	100

Test Report Certification

Applicant : Xiamen Prima Technology Inc.
Address : No.178, Xinfeng Road, Xiamen, Fujian, P.R. China
Manufacturer 1 : Xiamen Prima Technology Inc.
Address : Wanlida, Industry Zone Building C, Nanjing Fujian, P.R. China
Product : WiFi module
Model No. : WP0DR1110
Trade name : PRIMA

Measurement Procedure Used:

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

The EUT was tested according to DTS test procedure of Apr 08, 2016 KDB558074 D01 DTS Meas Guidance v03r05 for compliance to FCC 47CFR 15.247 requirements

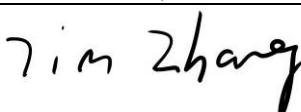
The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.247 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY 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 :
Date of Report :

Feb. 10, 2017-Feb. 23, 2017

Feb. 24, 2017

Prepared by :


(Tim.zhang, Engineer)

Approved & Authorized Signer :


(Sean Liu, Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	WiFi module
Model Number	:	WP0DR1110
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
Antenna Gain	:	5.0dBi
Type of Antenna	:	External Antenna
Power Supply	:	DC 3.3V
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	:	Feb. 10, 2017
Date of Test	:	Feb. 10, 2017-Feb. 23, 2017

1.2.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	---	---

1.3.Accessory and Auxiliary Equipment

PC

Manufacturer: LENOVO
M/N: 4290-RT8
S/N: R9-FW93G 11/08

1.4.Description of Test Facility

EMC Lab	: Accredited by TUV Rheinland Shenzhen	
	Listed by FCC The Registration Number is 752051	
	Listed by Industry Canada The Registration Number is 5077A-2	
	Accredited by China National Accreditation Committee for Laboratories The Certificate Registration Number is L3193	
Name of Firm	:	ACCURATE TECHNOLOGY CO. LTD
Site Location	:	F1, Bldg. A, Changyuan New Material Port, Keyuan Rd. Science & Industry Park, Nanshan, Shenzhen, Guangdong P.R. China

1.5.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	1 Year
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 07, 2017	1 Year
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 07, 2017	1 Year
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 07, 2017	1 Year
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 13, 2017	1 Year
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 13, 2017	1 Year
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 13, 2017	1 Year
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 13, 2017	1 Year
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 07, 2017	1 Year
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 07, 2017	1 Year
Highpass Filter	Wainwright Instruments	WHKX3.6/18 G-10SS	N/A	Jan. 07, 2017	1 Year
Band Reject Filter	Wainwright Instruments	WRCG2400/2 485-2375/2510 -60/11SS	N/A	Jan. 07, 2017	1 Year

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. Configuration and peripherals

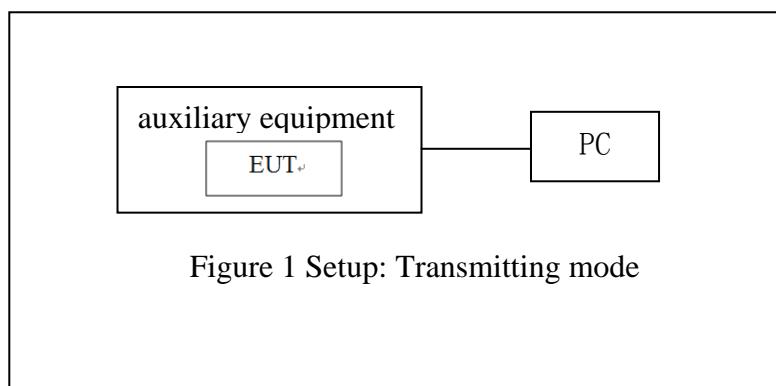


Figure 1 Setup: Transmitting mode

4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.207	Power Line Conducted Emission	N/A
Section 15.247(a)(2)	6dB&20dB Bandwidth Test	Compliant
Section 15.247(e)	Power Spectral Density Test	Compliant
Section 15.247(b)(3)	Maximum Peak Output Power Test	Compliant
Section 15.247(d)	Band Edge Compliance Test	Compliant
Section 15.247(d) Section 15.209	Radiated Spurious Emission Test	Compliant
Section 15.247(d)	Conducted Spurious Emission Test	Compliant
Section 15.203	Antenna Requirement	Compliant

5. POWER LINE CONDUCTED MEASUREMENT

5.1.Power Line Conducted Emission Measurement Limits

Frequency (MHz)	Limit dB(μ V)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 – 56.0 *	56.0 – 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0

NOTE1: The lower limit shall apply at the transition frequencies.
NOTE2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

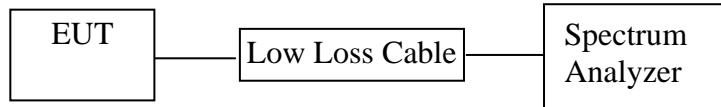
5.2.Power Line Conducted Emission Measurement Results

N/A.

Note: The power supply mode of the EUT is DC 3.3V, According to the FCC standard requirements, conducted emission is not applicable

6. 6DB&99% BANDWIDTH MEASUREMENT

6.1. Block Diagram of Test Setup



6.2. The Requirement For Section 15.247(a)(2)

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

ANSI C63.10: The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

6.3. 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.

6.4. Operating Condition of EUT

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

6.4.2. Turn on the power of all equipment.

6.4.3. 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.

6.5. Test Procedure

1. Set resolution bandwidth (RBW) = 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

99% bandwidth

1. Set resolution bandwidth (RBW) = 1%-5% OBW.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth

6.6. Test Result

The test was performed with 802.11b				
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	99% Bandwidth (MHz)
Low	2412	10.072	> 0.5MHz	15.352
Middle	2437	10.072	> 0.5MHz	15.276
High	2462	10.101	> 0.5MHz	14.975

The test was performed with 802.11g				
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	99% Bandwidth (MHz)
Low	2412	16.440	> 0.5MHz	16.614
Middle	2437	16.440	> 0.5MHz	16.614
High	2462	16.440	> 0.5MHz	16.573

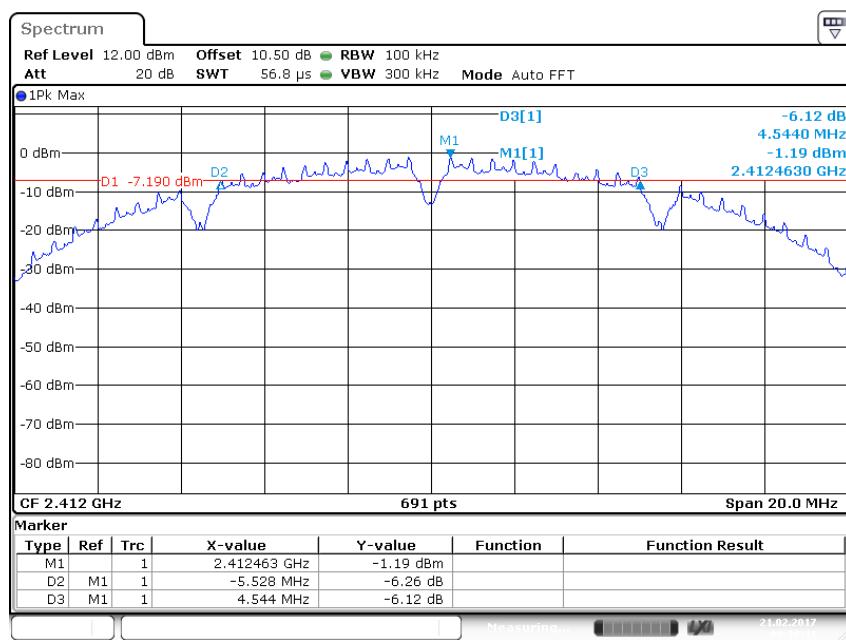
The test was performed with 802.11n (Bandwidth: 20 MHz)				
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	99% Bandwidth (MHz)
Low	2412	17.597	> 0.5MHz	17.855
Middle	2437	17.597	> 0.5MHz	17.855
High	2462	17.598	> 0.5MHz	17.855

The test was performed with 802.11n (Bandwidth: 40 MHz)				
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	99% Bandwidth (MHz)
Low	2422	35.716	> 0.5MHz	36.295
Middle	2437	35.521	> 0.5MHz	36.295
High	2452	35.745	> 0.5MHz	36.295

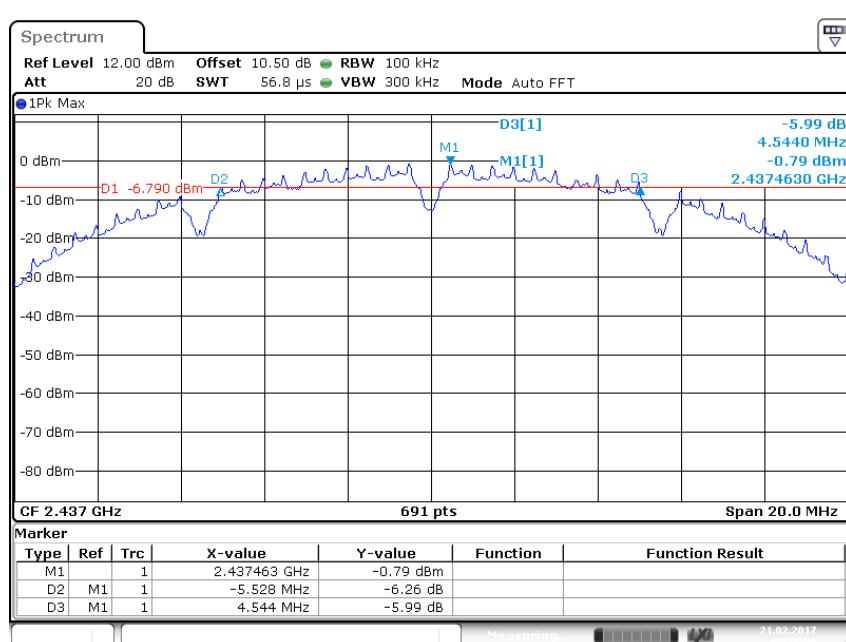
The spectrum analyzer plots are attached as below.

6dB Bandwidth

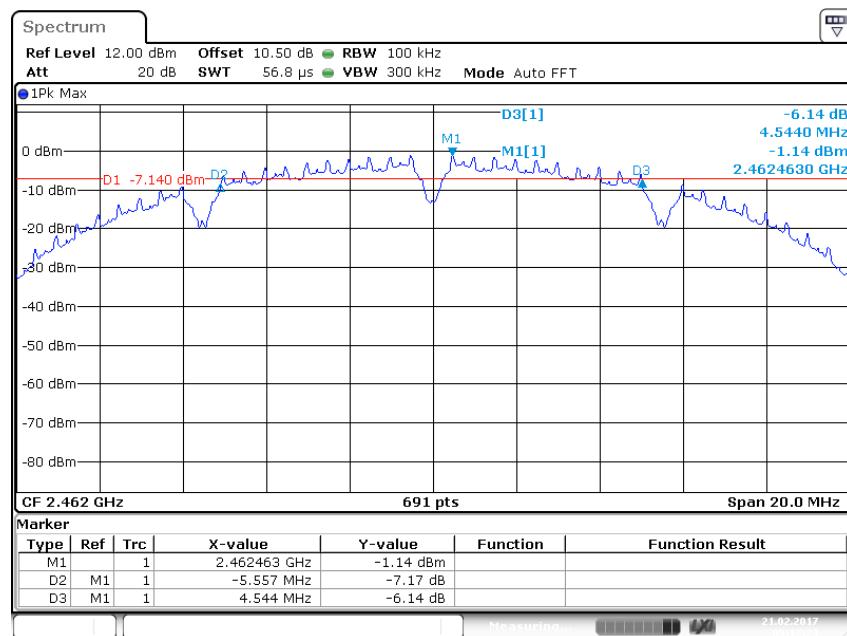
802.11b Channel Low 2412MHz



802.11b Channel Middle 2437MHz

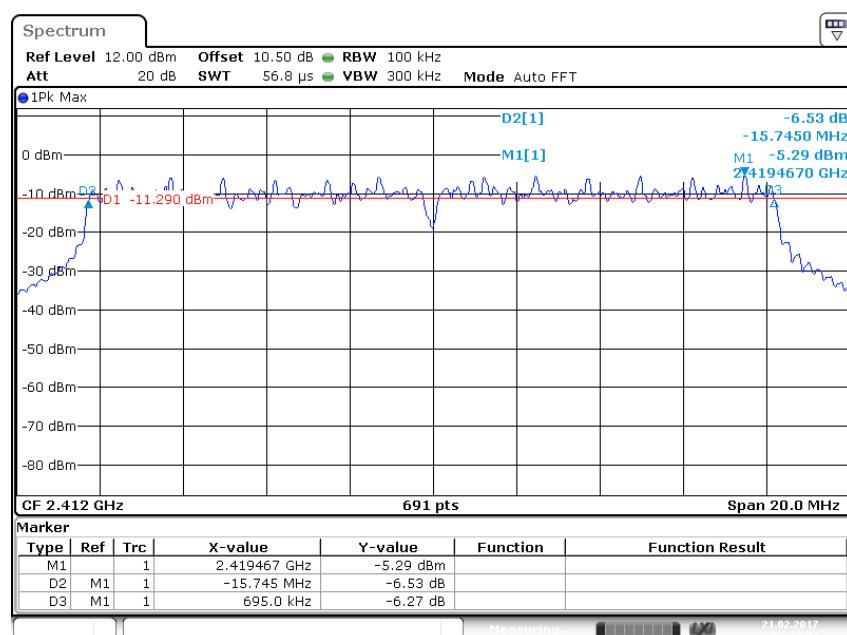


802.11b Channel High 2462MHz



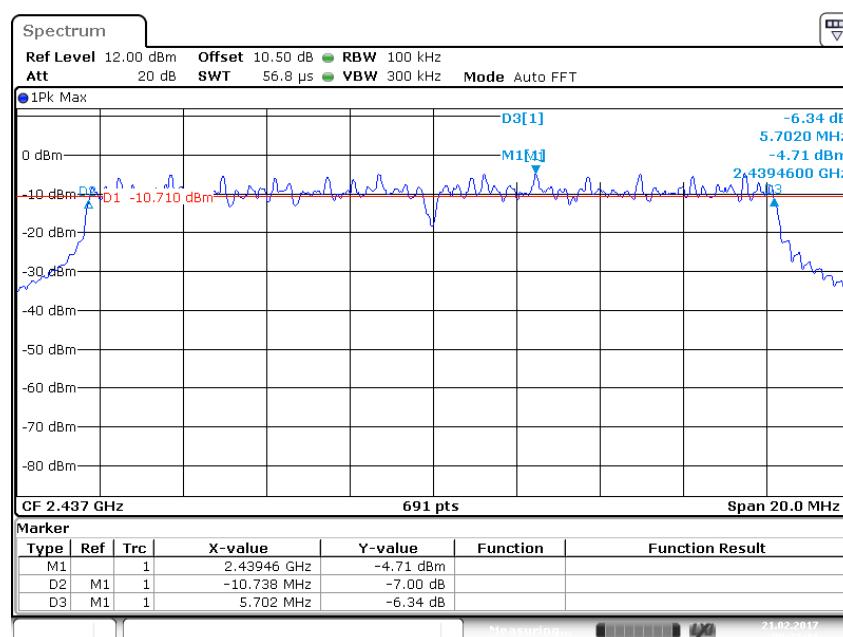
Date: 21.FEB.2017 09:17:23

802.11g Channel Low 2412MHz



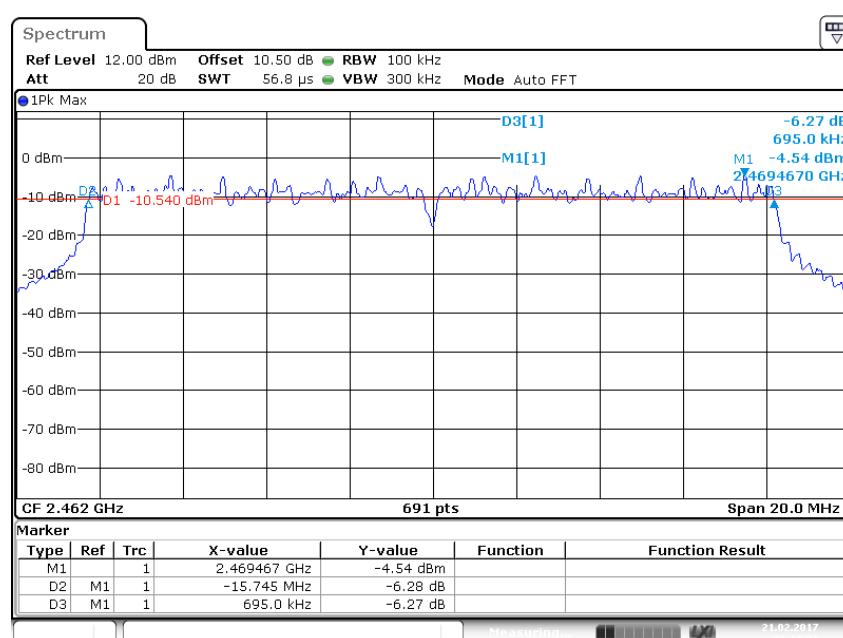
Date: 21.FEB.2017 09:24:35

802.11g Channel Middle 2437MHz



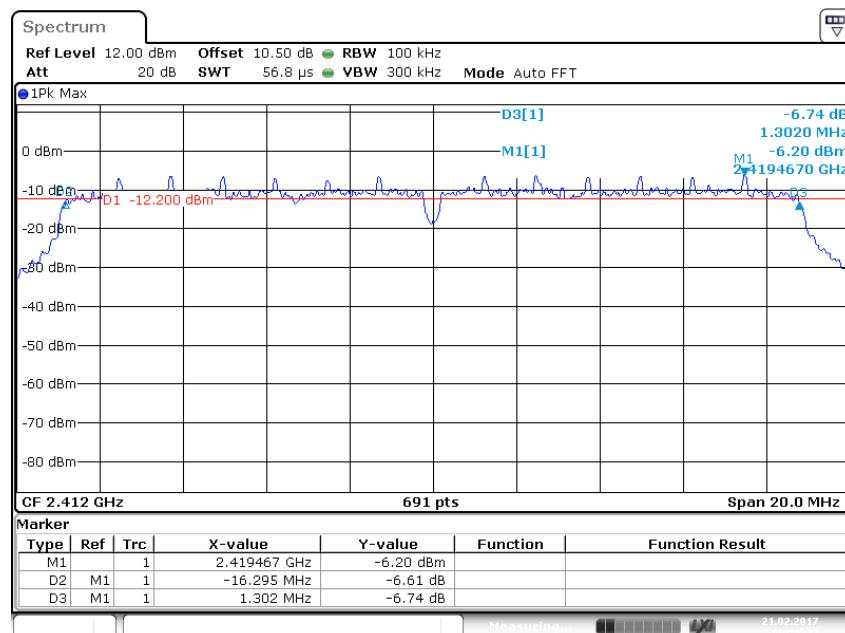
Date: 21.FEB.2017 09:23:11

802.11g Channel High 2462MHz



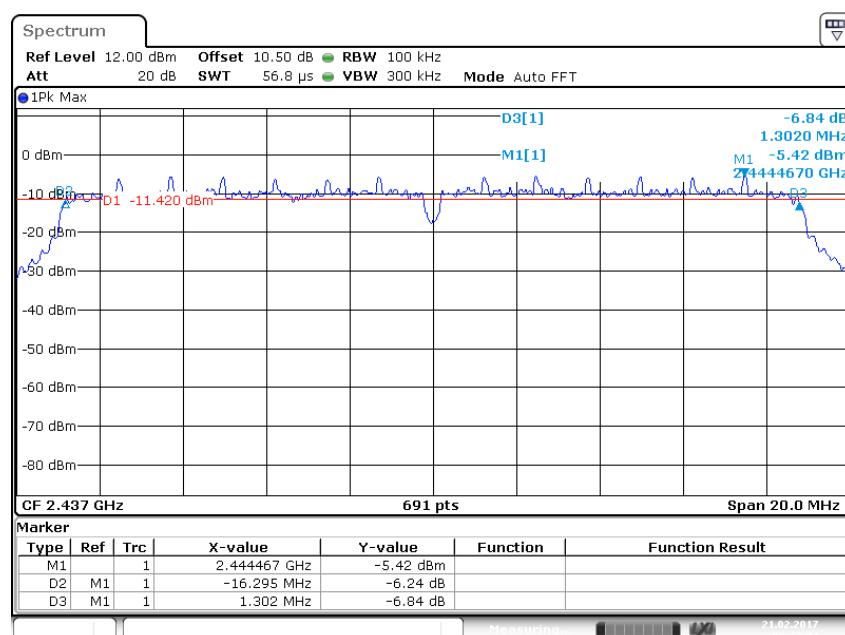
Date: 21.FEB.2017 09:20:02

802.11n Channel Low 2412MHz (20MHz)



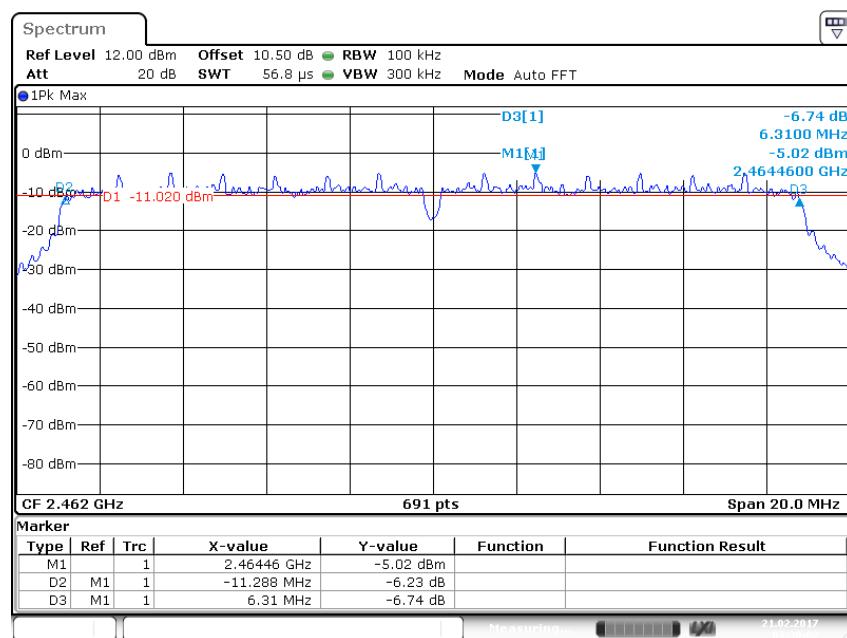
Date: 21.FEB.2017 09:26:22

802.11n Channel Middle 2437MHz(20MHz)

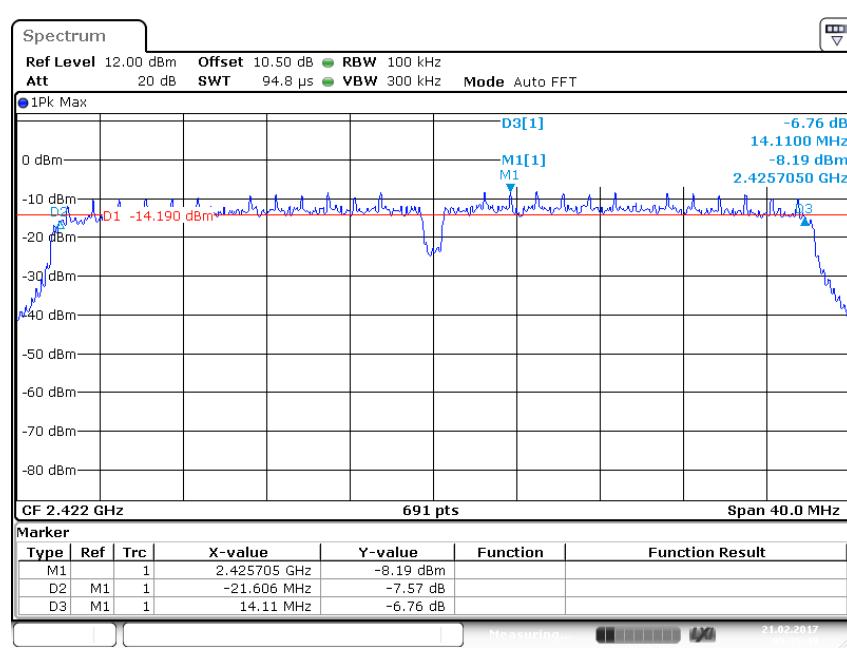


Date: 21.FEB.2017 09:27:35

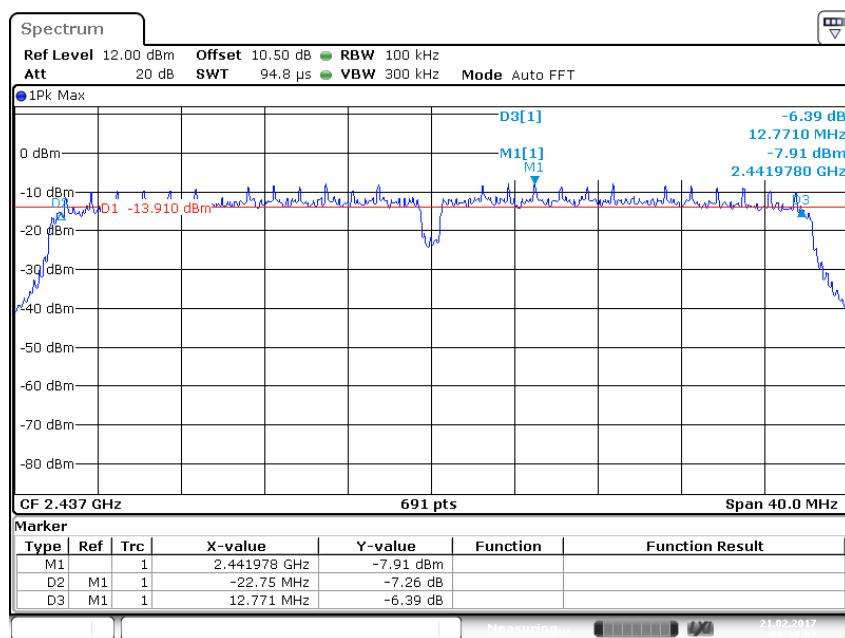
802.11n Channel High 2462MHz(20MHz)



802.11n Channel Low 2422MHz (40MHz)

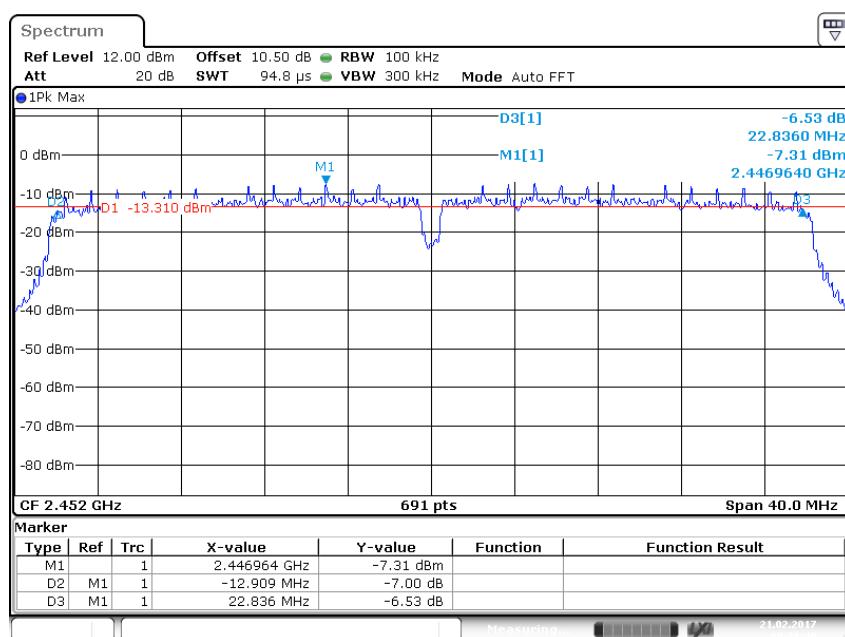


802.11n Channel Middle 2437MHz(40MHz)



Date: 21.FEB.2017 09:37:03

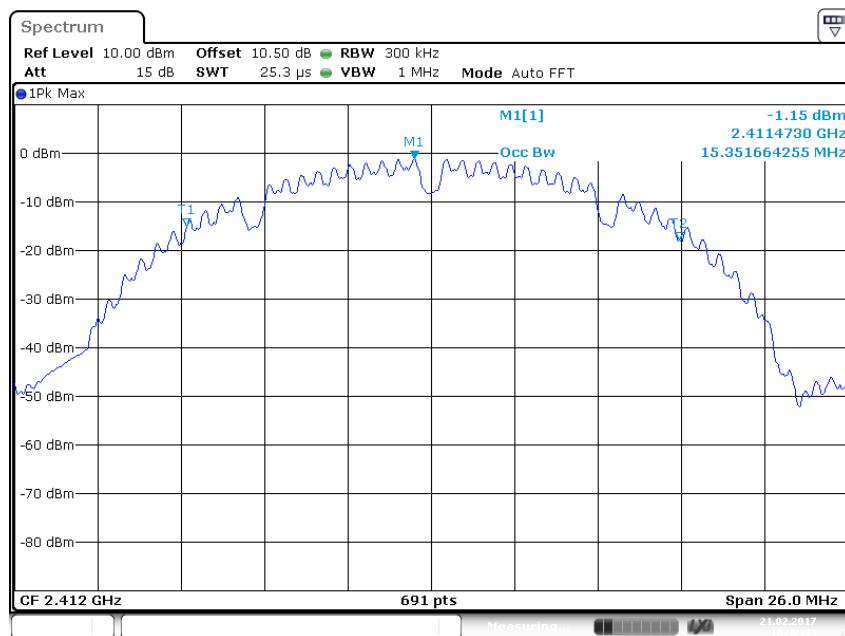
802.11n Channel High 2452MHz(40MHz)



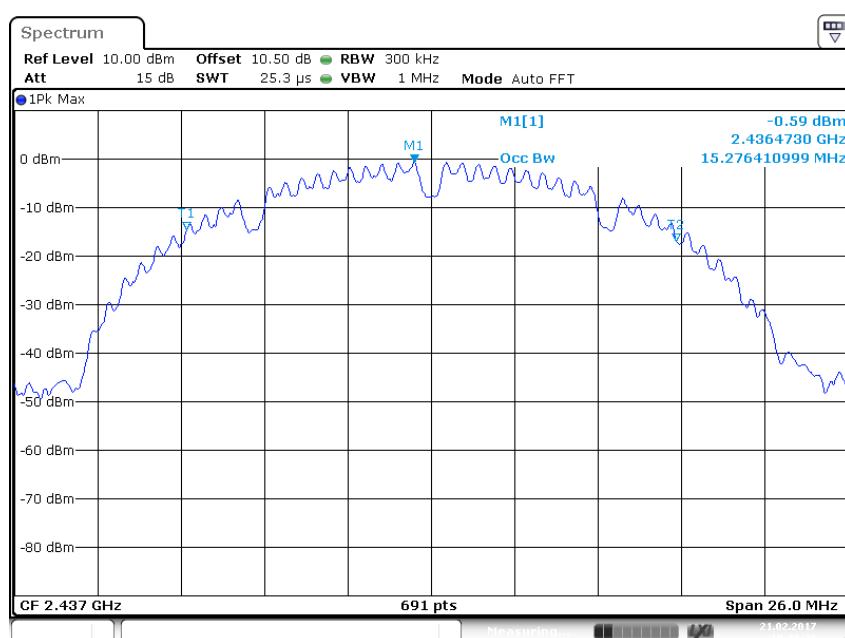
Date: 21.FEB.2017 09:38:41

99% Bandwidth

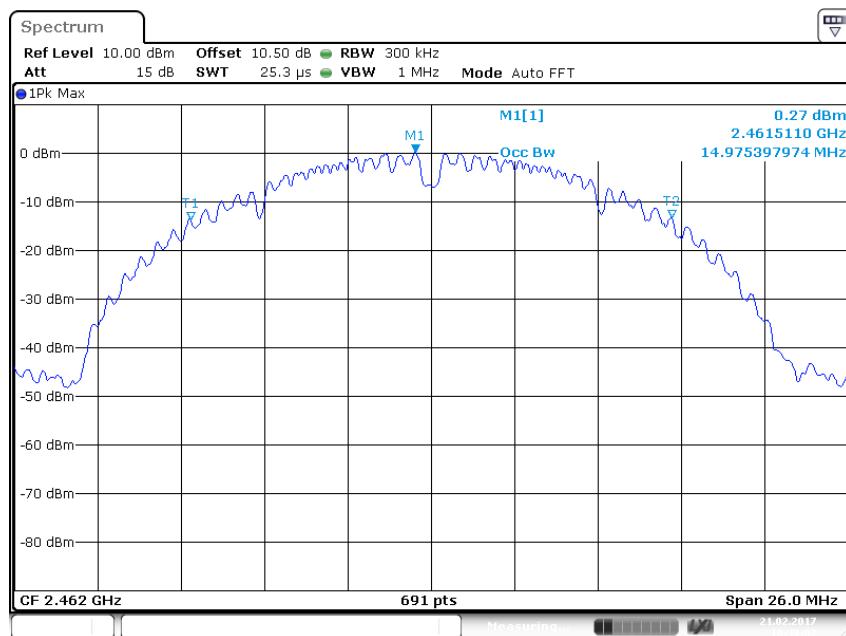
802.11b Channel Low 2412MHz



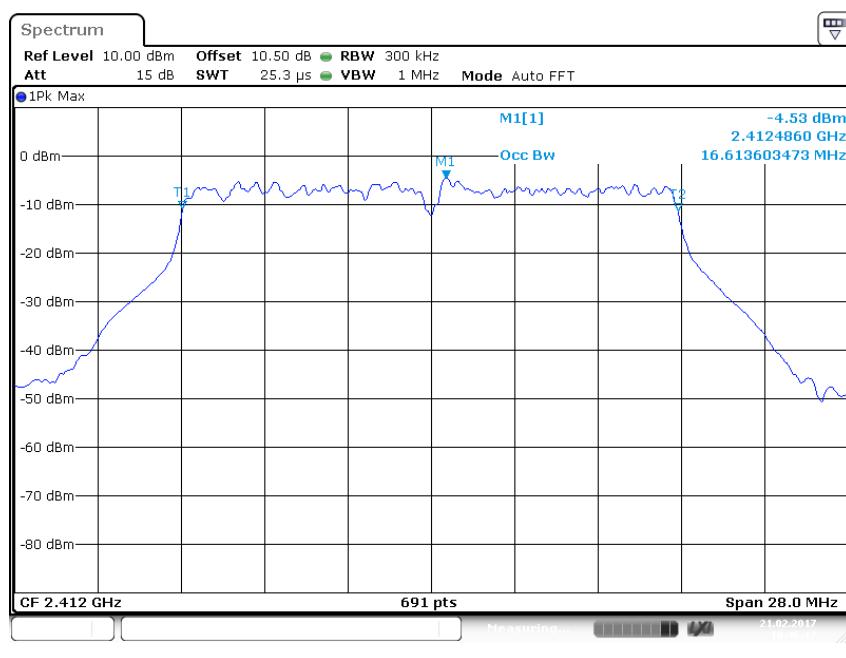
802.11b Channel Middle 2437MHz



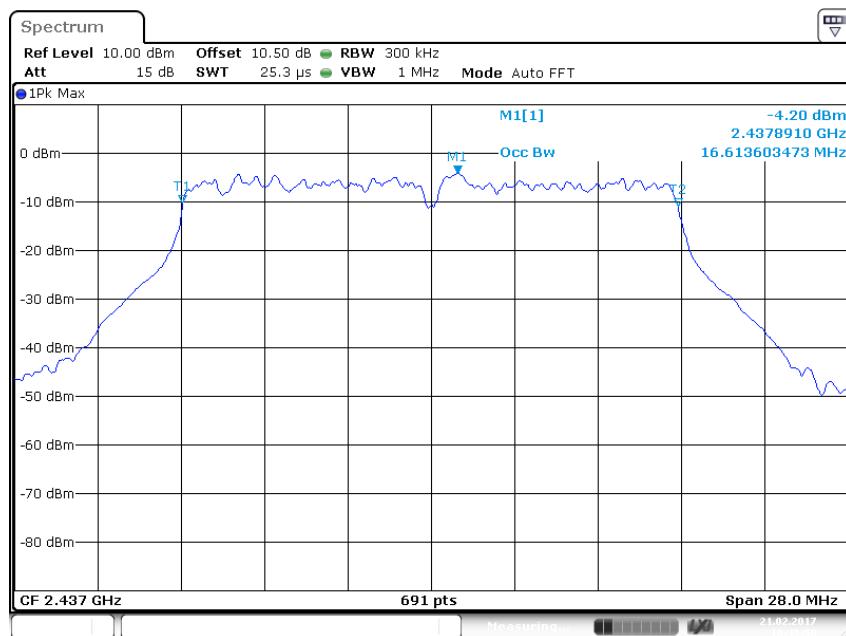
802.11b Channel High 2462MHz



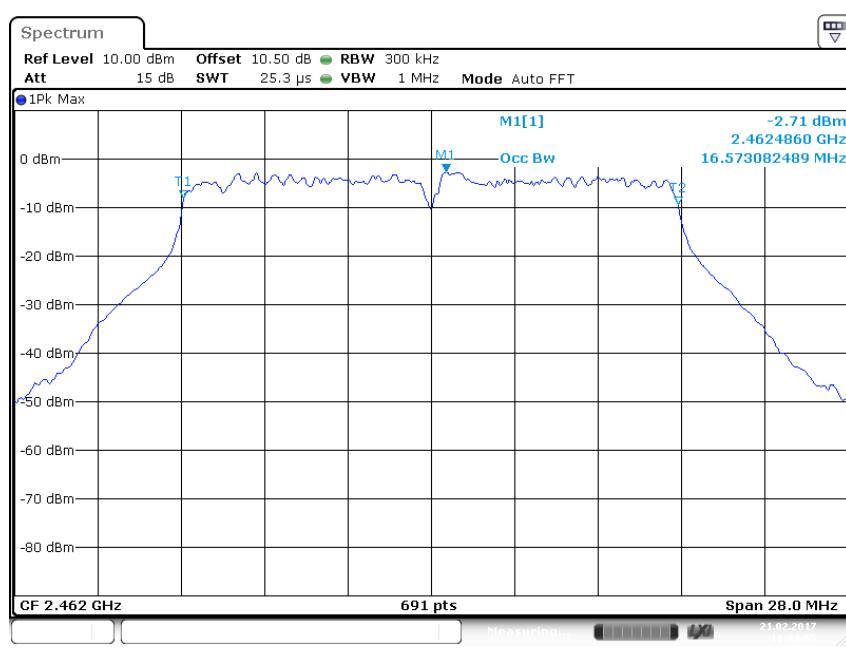
802.11g Channel Low 2412MHz



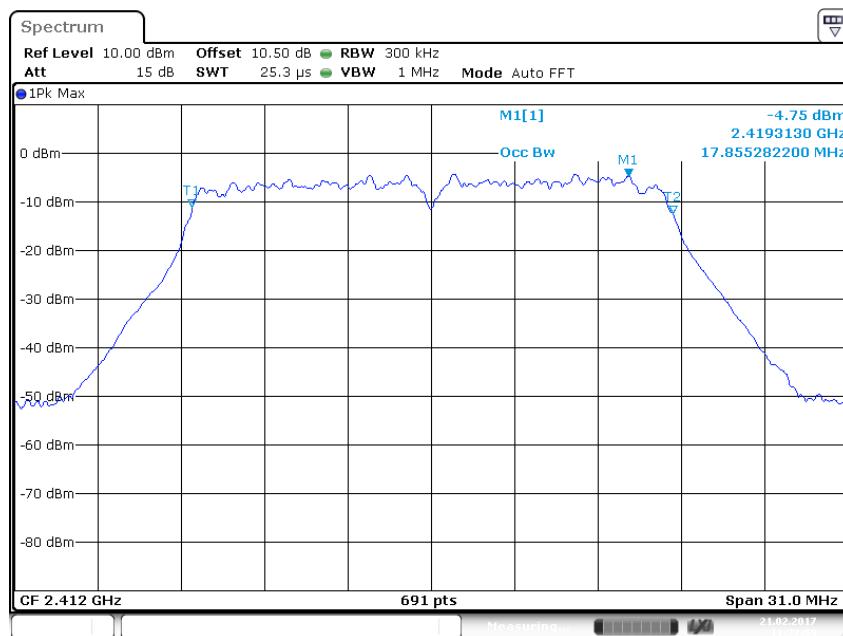
802.11g Channel Middle 2437MHz



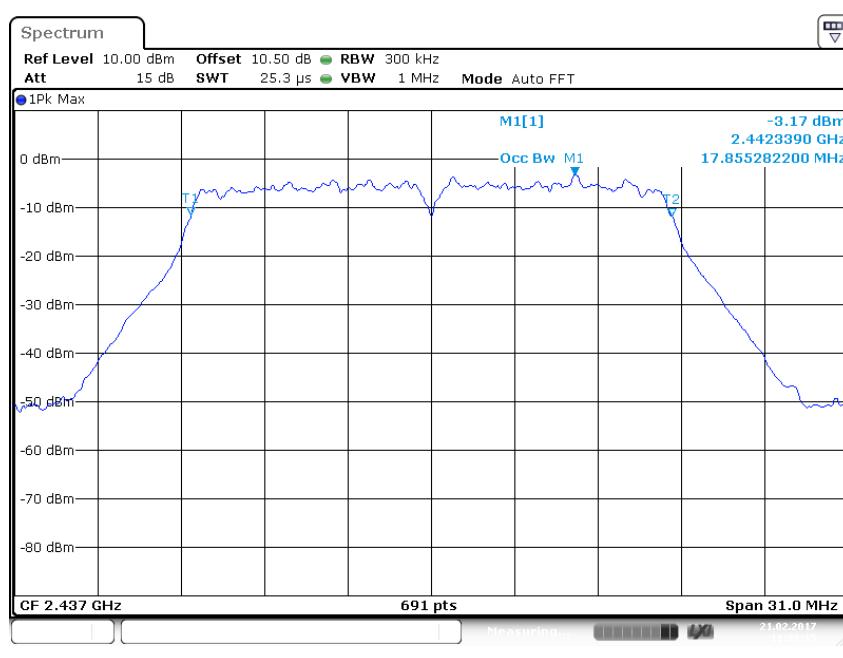
802.11g Channel High 2462MHz



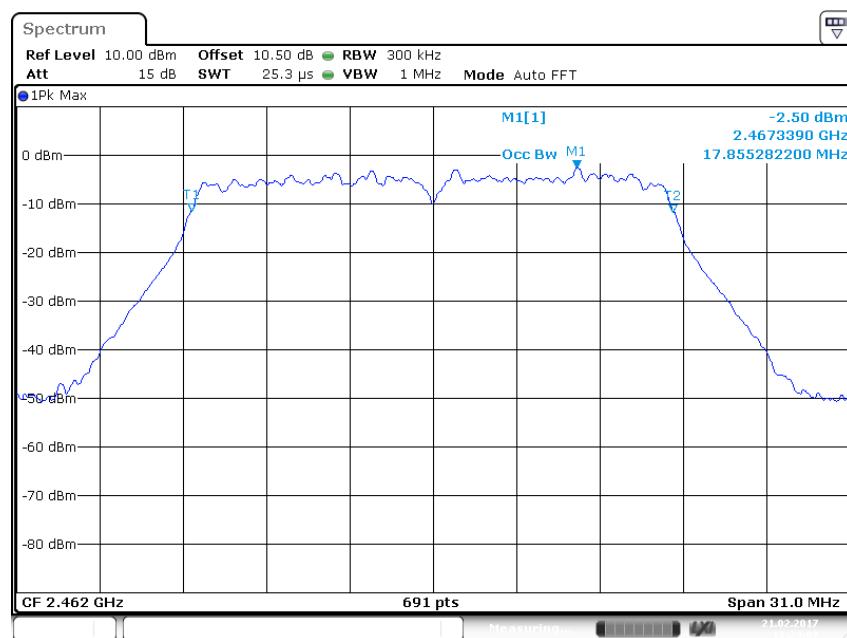
802.11n Channel Low 2412MHz (20MHz)



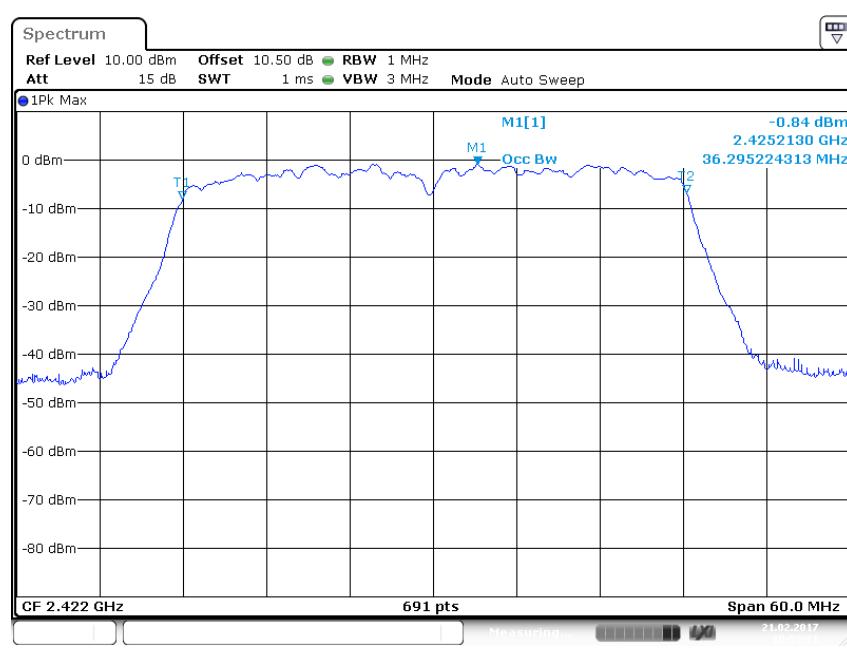
802.11n Channel Middle 2437MHz(20MHz)



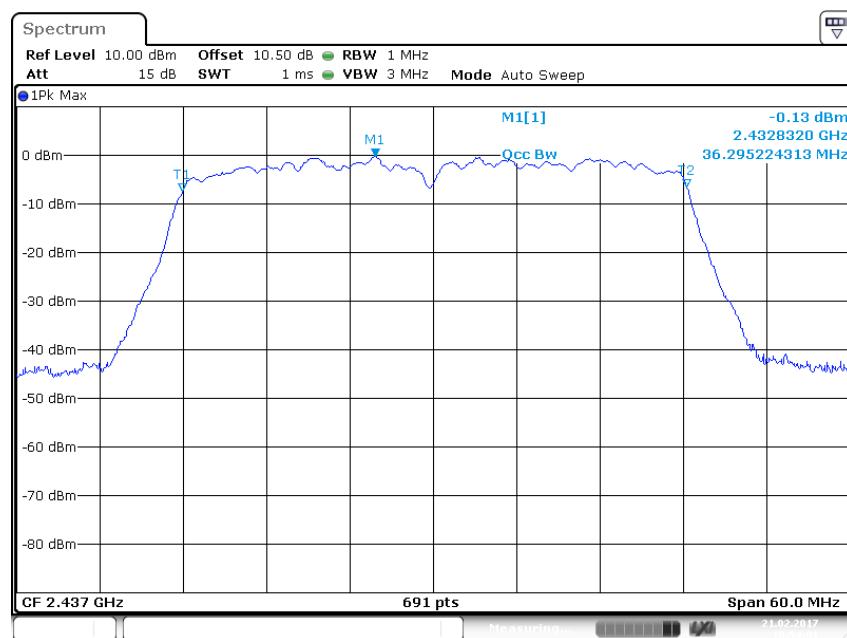
802.11n Channel High 2462MHz(20MHz)



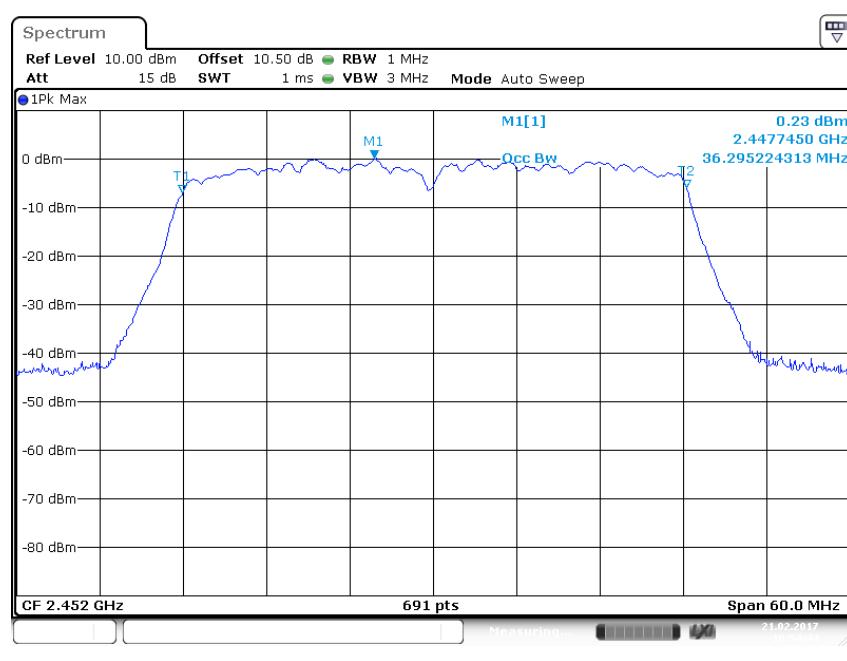
802.11n Channel Low 2422MHz (40MHz)



802.11n Channel Middle 2437MHz(40MHz)

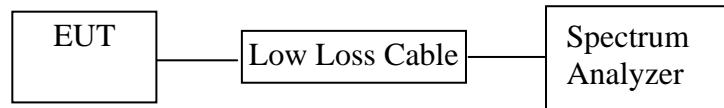


802.11n Channel High 2452MHz(40MHz)



7. MAXIMUM CONDUCTED (AVERAGE) OUTPUT POWER

7.1. Block Diagram of Test Setup



7.2. 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.

7.3. 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.

7.4. Operating Condition of EUT

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

7.4.2. Turn on the power of all equipment.

7.4.3. 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.

7.5. Test Procedure

7.5.1. The EUT was tested according to DTS test procedure of Apr 08, 2016

KDB558074 D01 DTS Meas Guidance v03r05 for compliance to FCC 47CFR 15.247 requirements.

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

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

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

7.6. Test Result

The test was performed with 802.11b				
Channel	Frequency (MHz)	Ave output power (dBm)	Ave output power (mW)	Limits dBm / W
Low	2412	12.91	19.543	30 dBm / 1 W
Middle	2437	13.03	20.091	30 dBm / 1 W
High	2462	13.22	20.989	30 dBm / 1 W

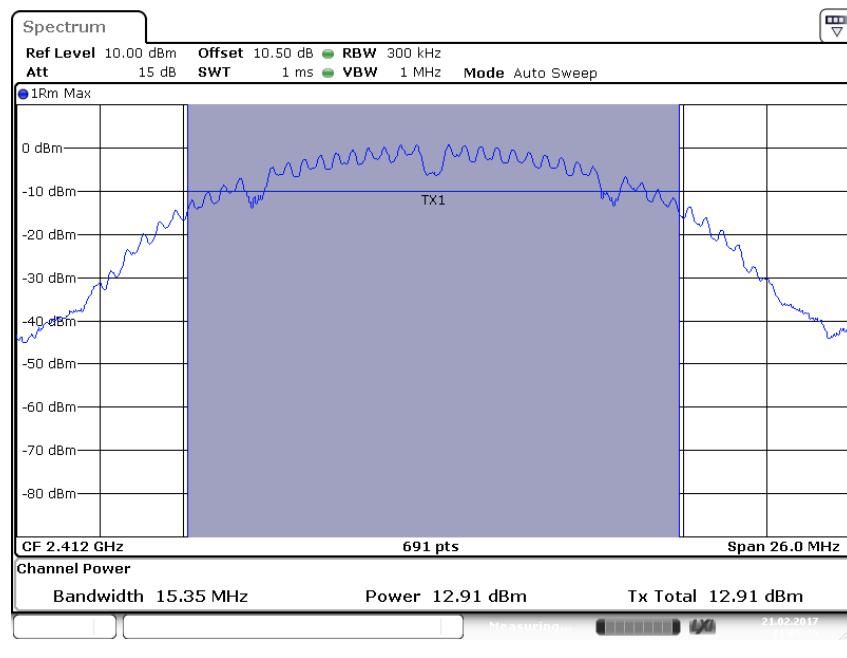
The test was performed with 802.11g				
Channel	Frequency (MHz)	Ave output power (dBm)	Ave output power (mW)	Limits dBm / W
Low	2412	11.02	12.647	30 dBm / 1 W
Middle	2437	11.82	15.205	30 dBm / 1 W
High	2462	10.61	11.508	30 dBm / 1 W

The test was performed with 802.11n (20MHz)				
Channel	Frequency (MHz)	Ave output power (dBm)	Ave output power (mW)	Limits dBm / W
Low	2412	10.90	12.303	30 dBm / 1 W
Middle	2437	11.66	14.655	30 dBm / 1 W
High	2462	10.92	12.359	30 dBm / 1 W

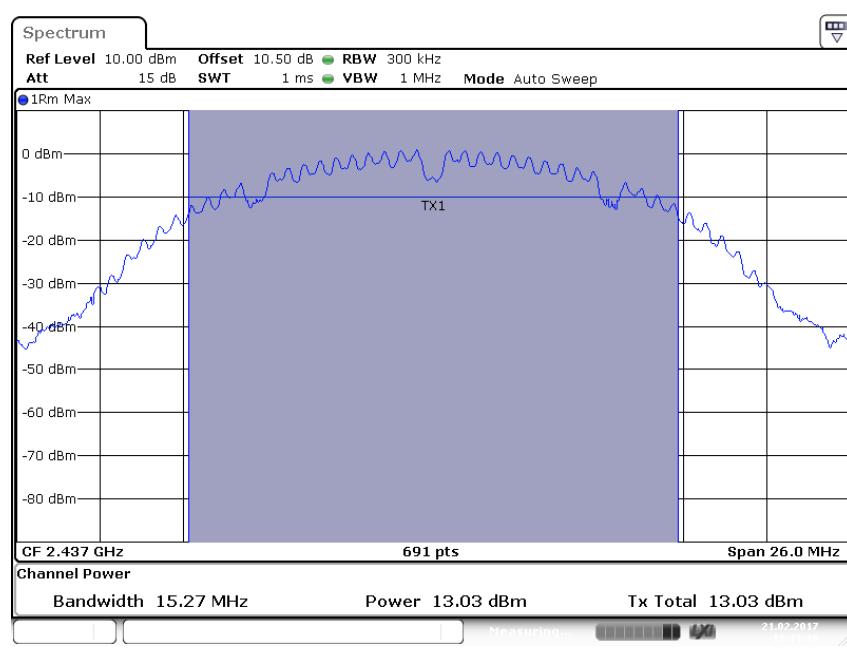
The test was performed with 802.11n (40MHz)				
Channel	Frequency (MHz)	Ave output power (dBm)	Ave output power (mW)	Limits dBm / W
Low	2422	8.16	6.546	30 dBm / 1 W
Middle	2437	8.45	6.998	30 dBm / 1 W
High	2452	8.49	7.063	30 dBm / 1 W

The spectrum analyzer plots are attached as below.

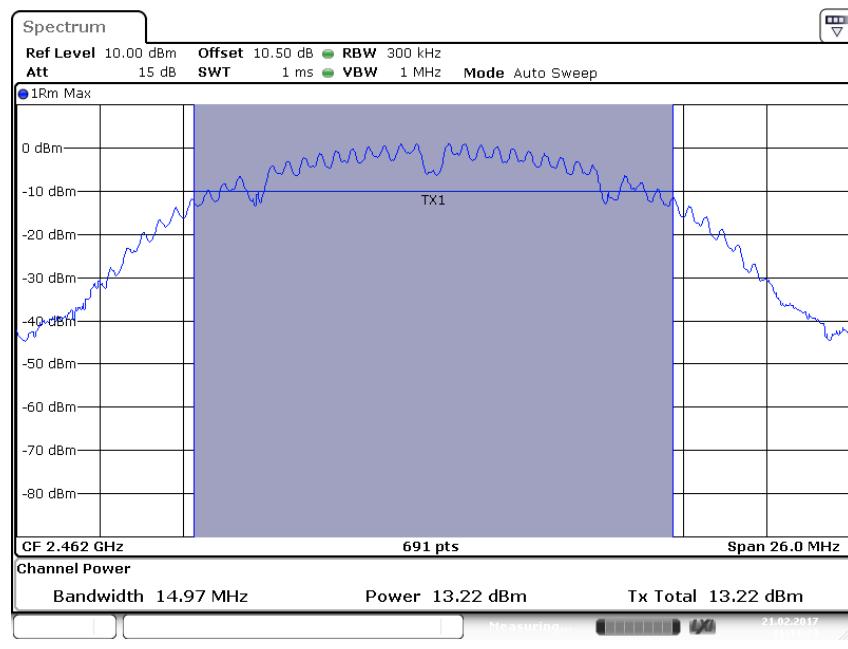
802.11b Channel Low 2412MHz



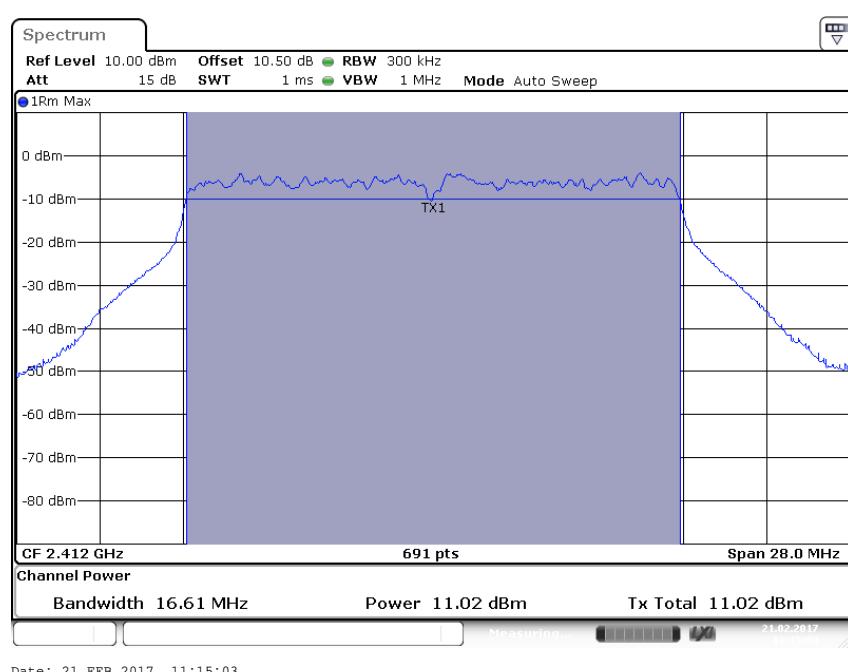
802.11b Channel Middle 2437MHz



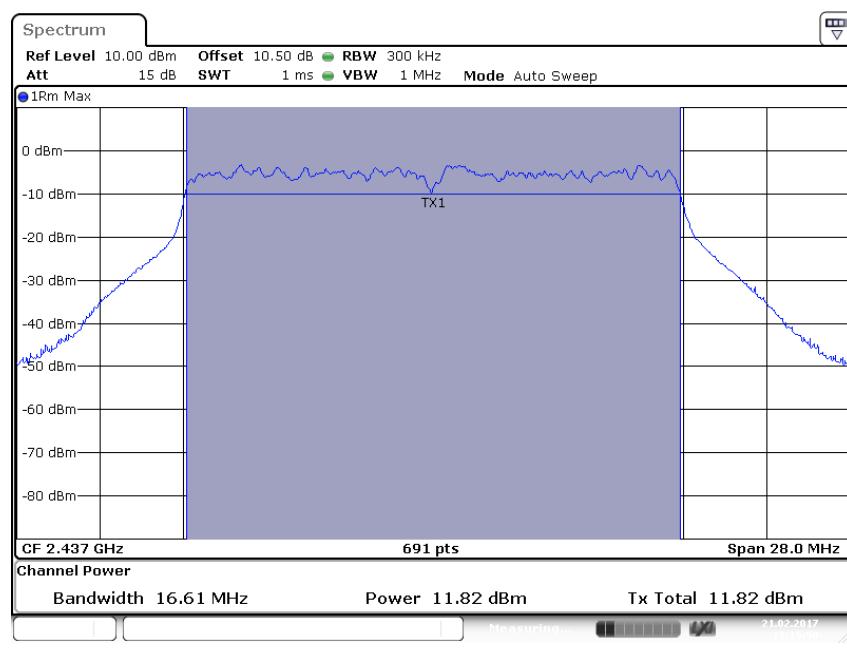
802.11b Channel High 2462MHz



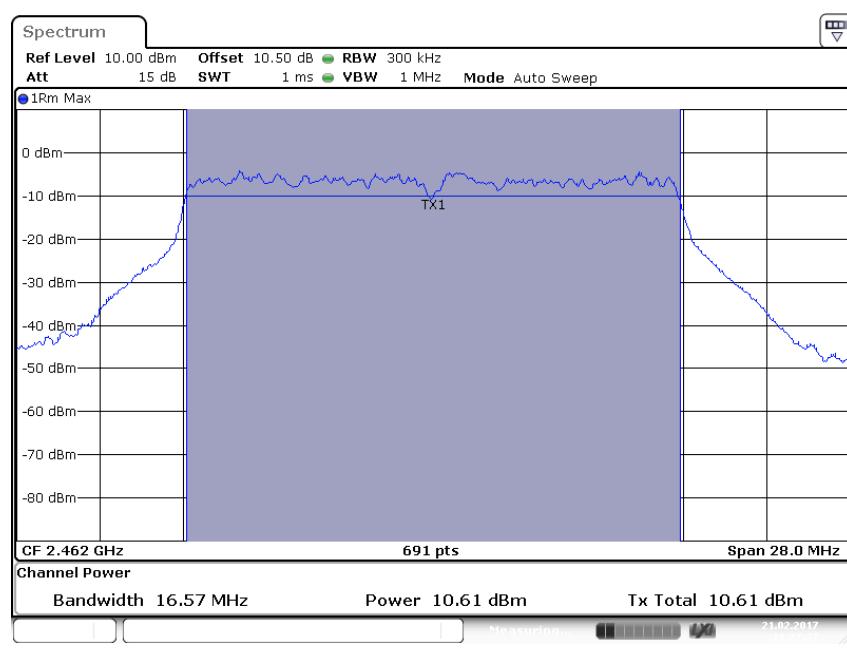
802.11g Channel Low 2412MHz



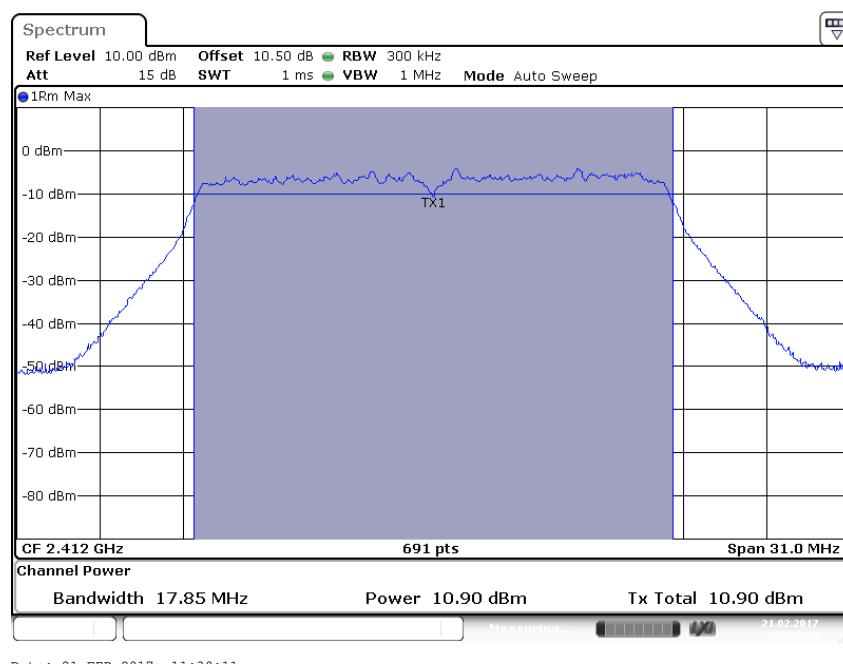
802.11g Channel Middle 2437MHz



802.11g Channel High 2462MHz

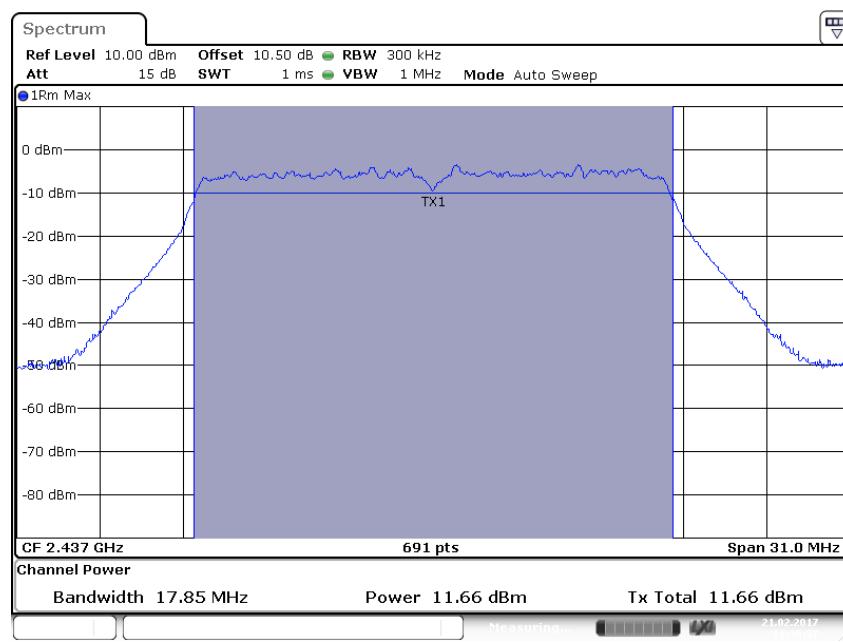


802.11n Channel Low 2412MHz (20MHz)



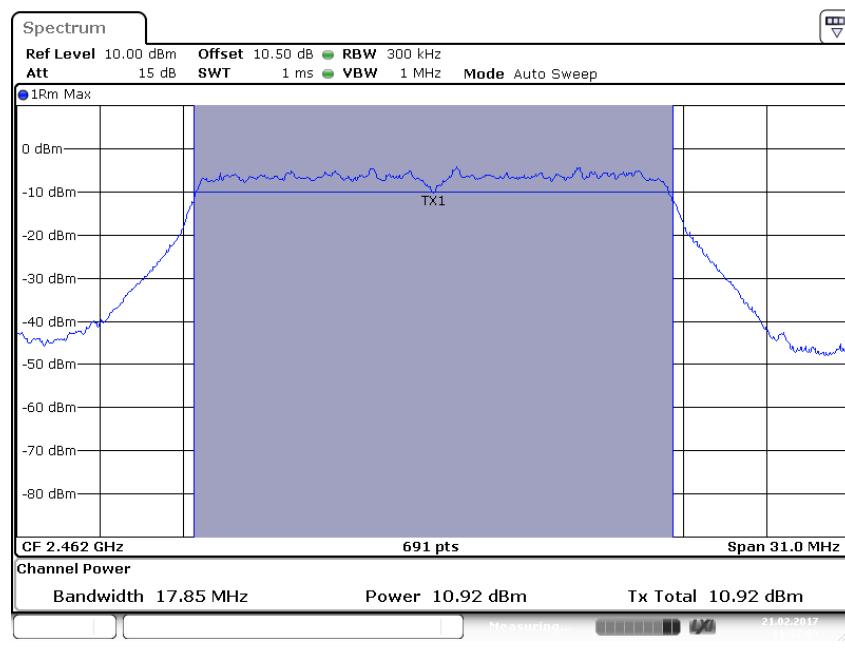
Date: 21.FEB.2017 11:30:11

802.11n Channel Middle 2437MHz (20MHz)



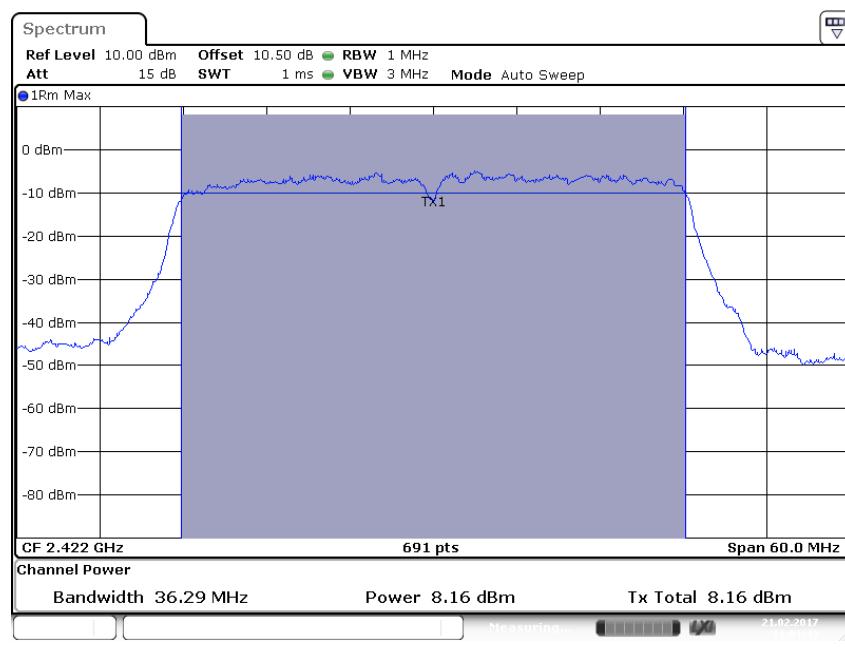
Date: 21.FEB.2017 11:30:58

802.11n Channel High 2462MHz (20MHz)



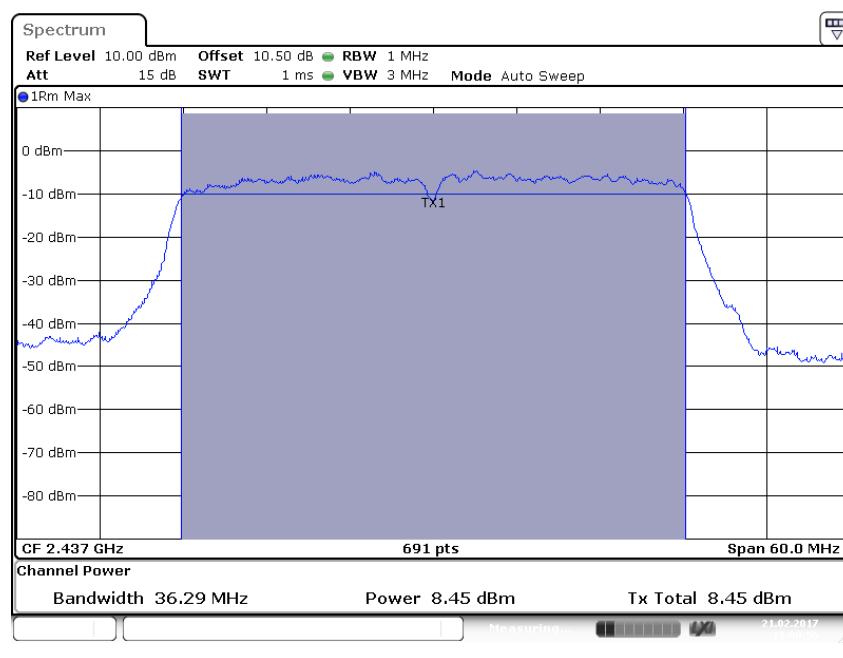
Date: 21.FEB.2017 11:32:06

802.11n Channel Low 2422MHz (40MHz)

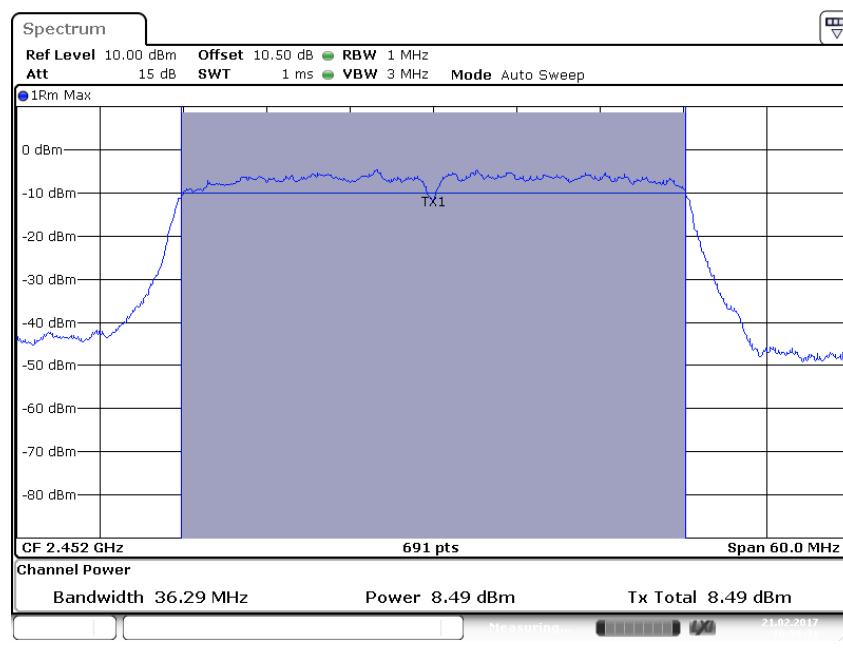


Date: 21.FEB.2017 11:01:44

802.11n Channel Middle 2437MHz (40MHz)



802.11n Channel High 2452MHz (40MHz)



8. POWER SPECTRAL DENSITY MEASUREMENT

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 $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
4. Set the VBW $\geq 3 \times \text{RBW}$.
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

The test was performed with 802.11b

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)
Low	2412	-17.82	8 dBm
Middle	2437	-17.26	8 dBm
High	2462	-17.15	8 dBm

The test was performed with 802.11g

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)
Low	2412	-28.21	8 dBm
Middle	2437	-27.92	8 dBm
High	2462	-27.34	8 dBm

The test was performed with 802.11n (20MHz)

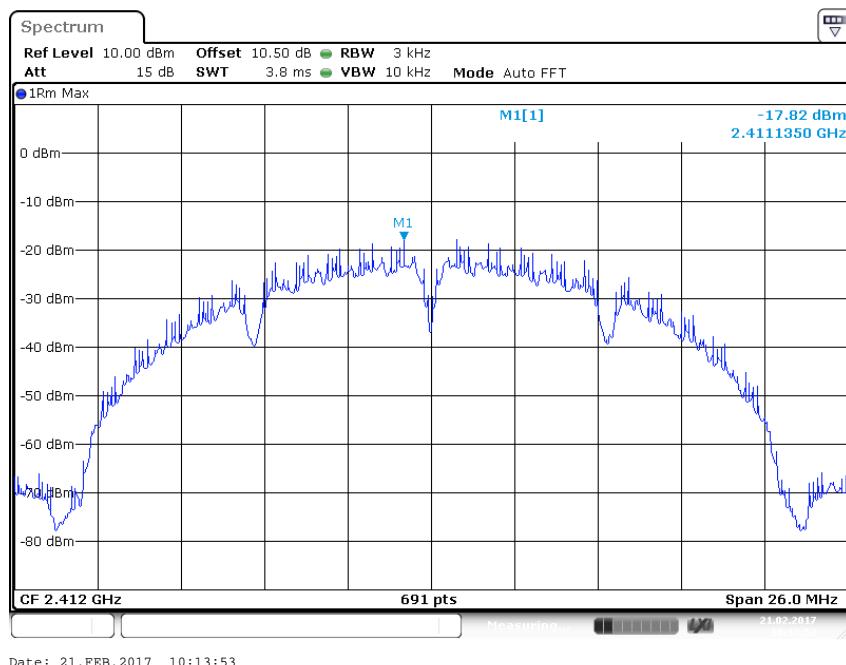
Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)
Low	2412	-27.54	8 dBm
Middle	2437	-27.17	8 dBm
High	2462	-27.28	8 dBm

The test was performed with 802.11n (40MHz)

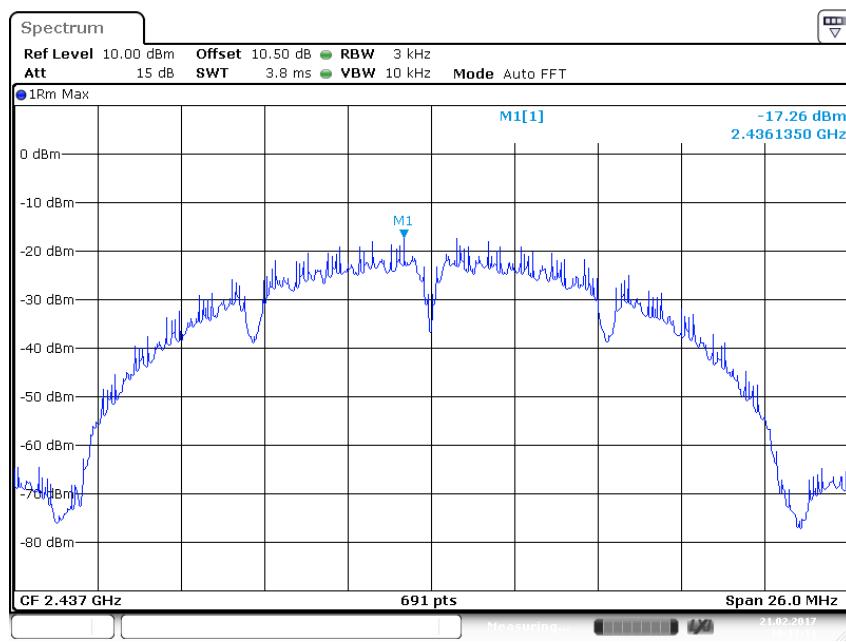
Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)
Low	2422	-31.69	8 dBm
Middle	2437	-31.52	8 dBm
High	2452	-31.20	8 dBm

The spectrum analyzer plots are attached as below.

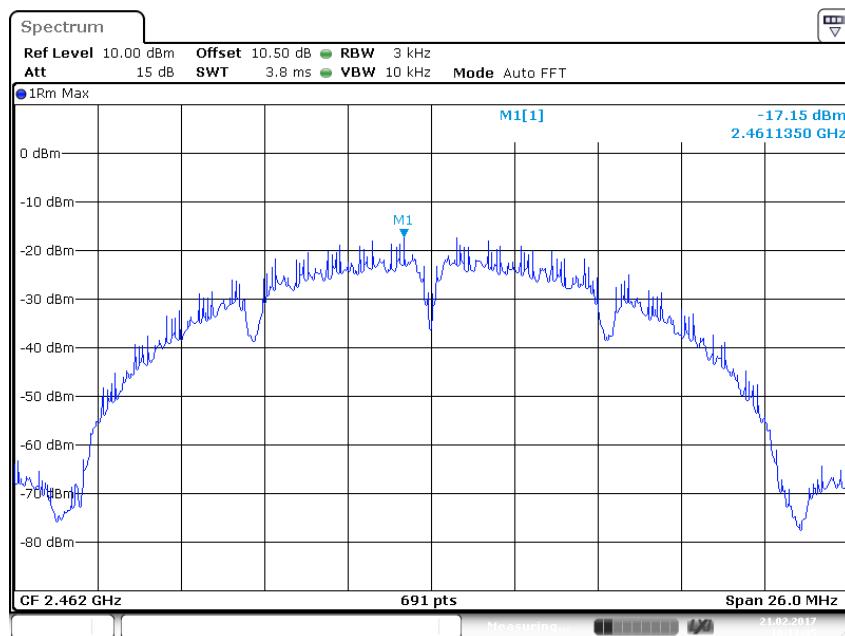
802.11b Channel Low 2412MHz



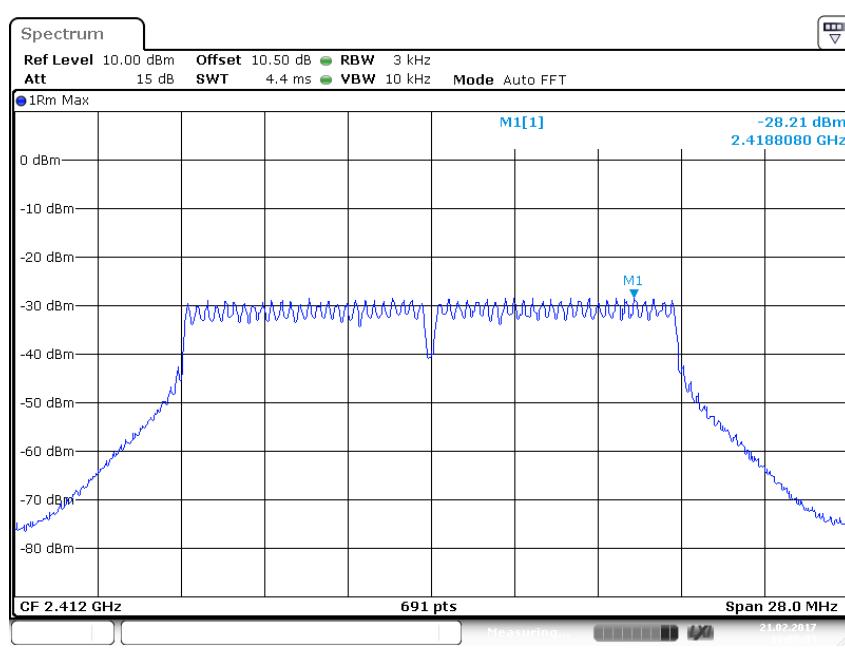
802.11b Channel Middle 2437MHz



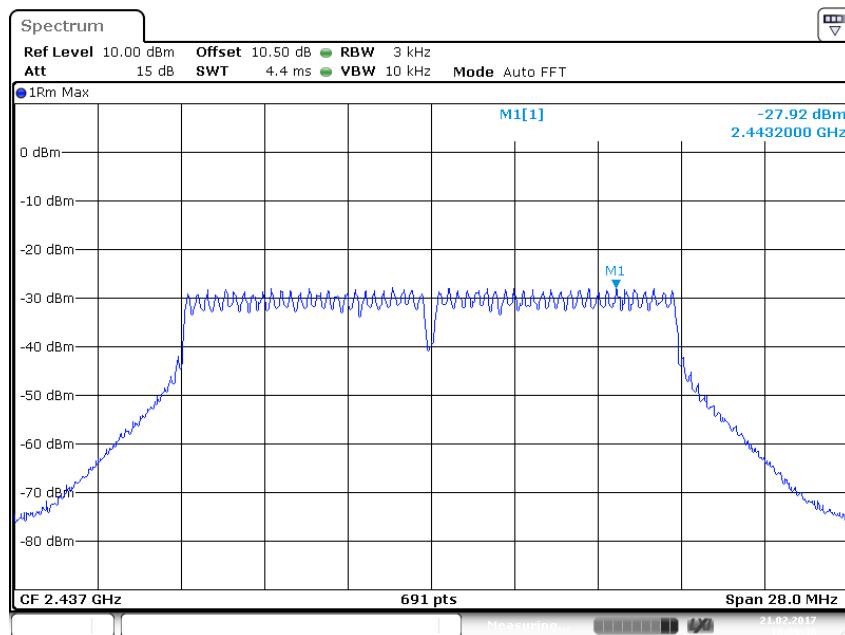
802.11b Channel High 2462MHz



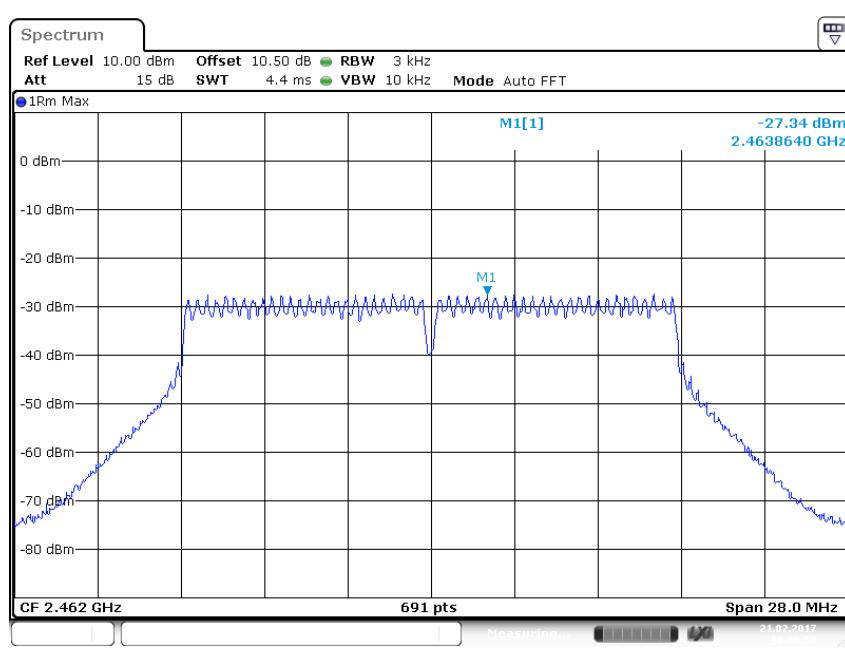
802.11g Channel Low 2412MHz



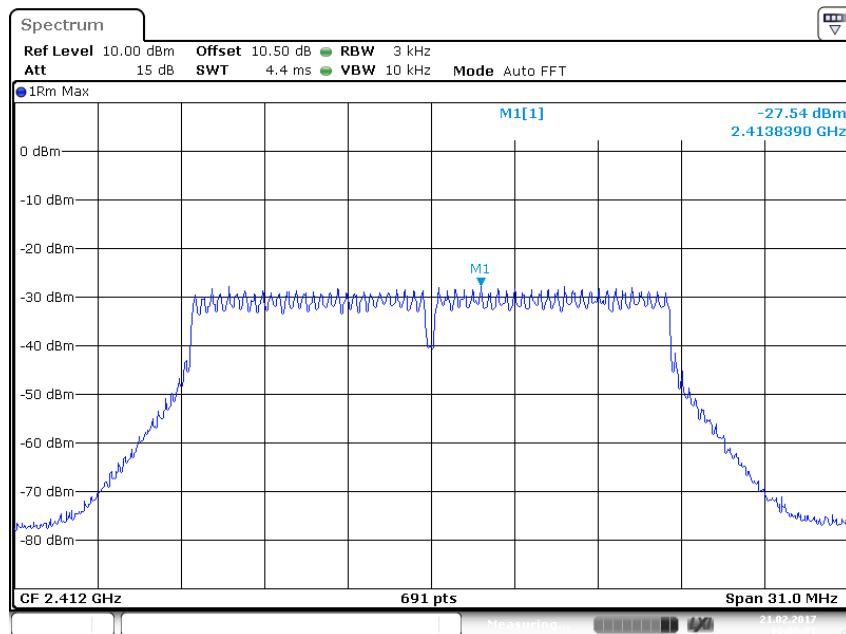
802.11g Channel Middle 2437MHz



802.11g Channel High 2462MHz

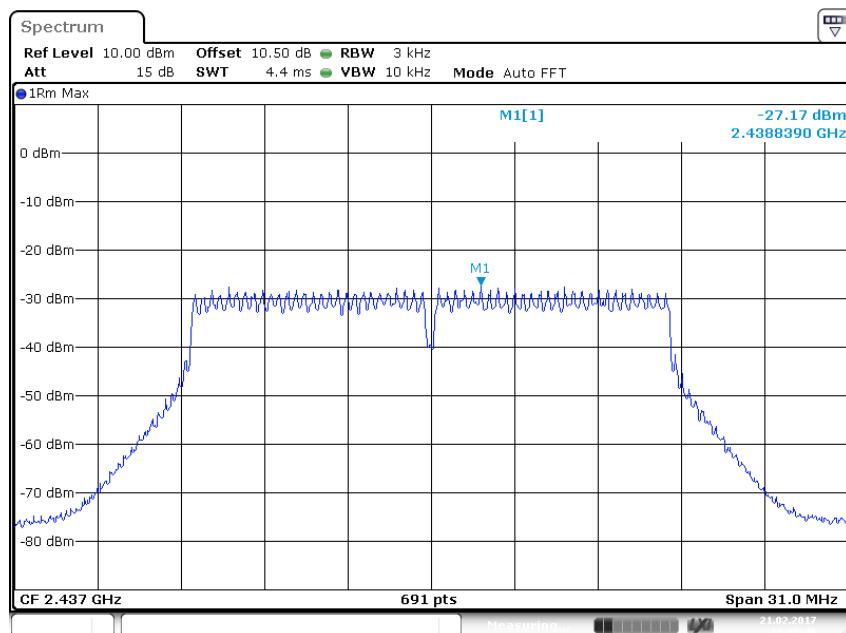


802.11n Channel Low 2412MHz (20MHz)



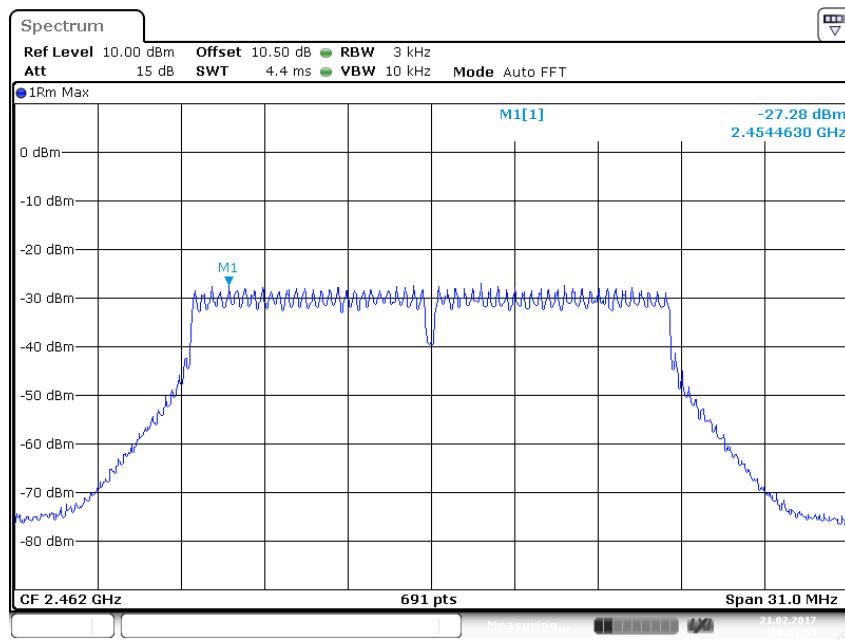
Date: 21.FEB.2017 10:06:21

802.11n Channel Middle 2437MHz (20MHz)

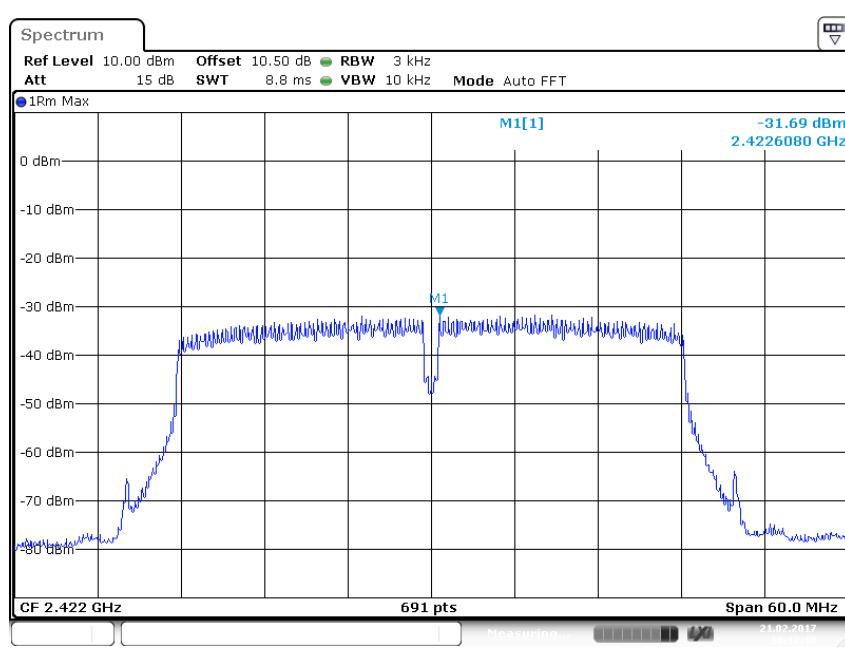


Date: 21.FEB.2017 10:05:47

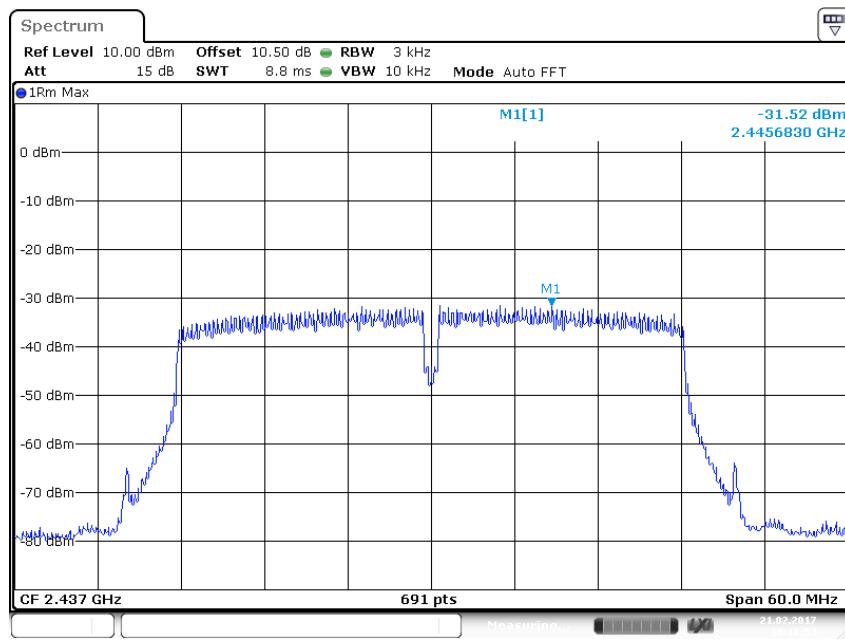
802.11n Channel High 2462MHz(20MHz)



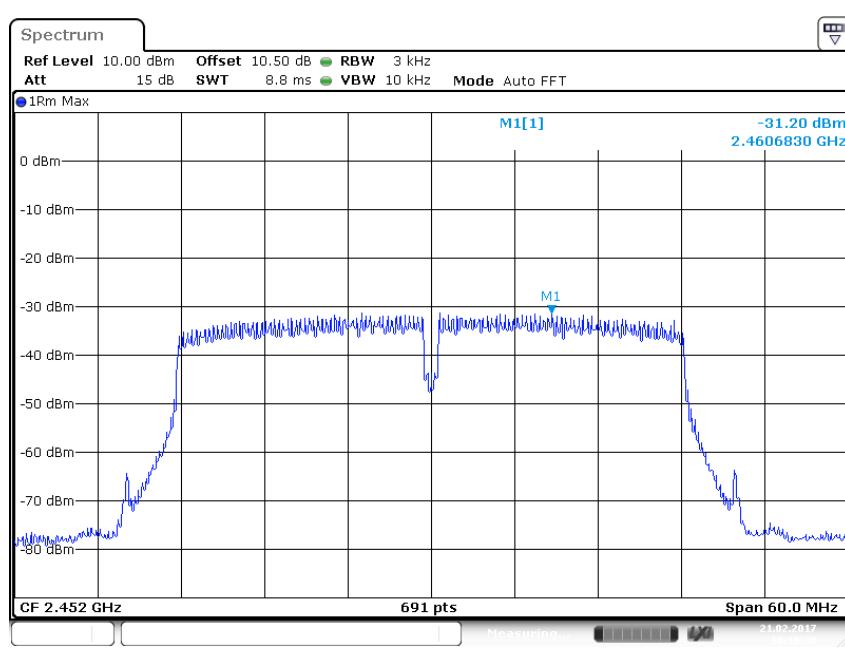
802.11n Channel Low 2422MHz (40MHz)



802.11n Channel Middle 2437MHz(40MHz)

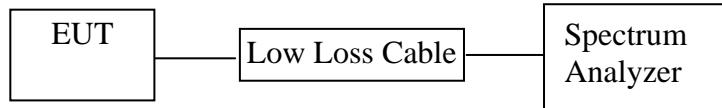


802.11n Channel High 2452MHz(40MHz)



9. BAND EDGE COMPLIANCE TEST

9.1. Block Diagram of Test Setup



9.2. The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

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, 2462MHz and 2422MHz, 2452MHz TX frequency to transmit.

9.5. Test Procedure

Conducted Band Edge:

9.5.1. The transmitter output was connected to the spectrum analyzer via a low loss

cable.

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

Radiate Band Edge:

9.5.3. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.

9.5.4. The turntable was rotated for 360 degrees to determine the position of maximum emission level.

9.5.5. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.

9.5.6. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

9.5.7. RBW=1MHz, VBW=1MHz

9.5.8. The band edges were measured and recorded.

9.6. Test Result

The test was performed with 802.11b

channel	Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
1	2400	47.67	> 20dBc
11	2483.5	60.74	> 20dBc

The test was performed with 802.11g

channel	Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
1	2400	42.70	> 20dBc
11	2483.5	51.96	> 20dBc

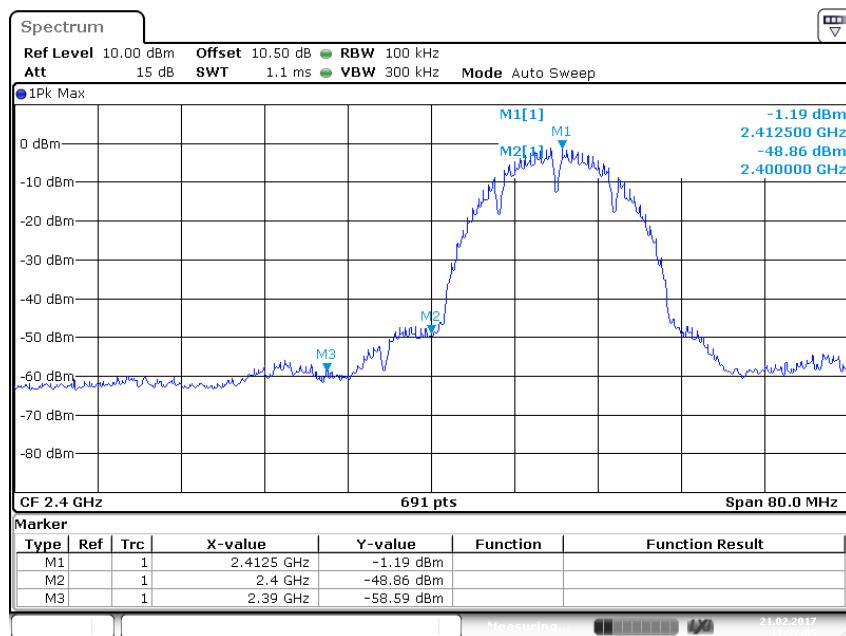
The test was performed with 802.11n (20MHz)

channel	Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
1	2400	39.81	> 20dBc
11	2483.5	53.43	> 20dBc

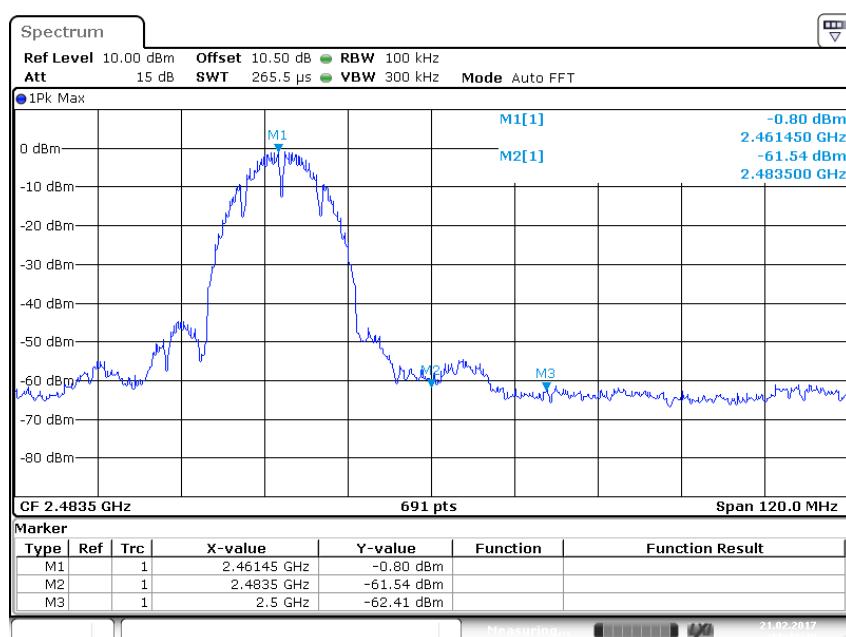
The test was performed with 802.11n (40MHz)

channel	Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
3	2400	36.98	> 20dBc
9	2483.5	49.34	> 20dBc

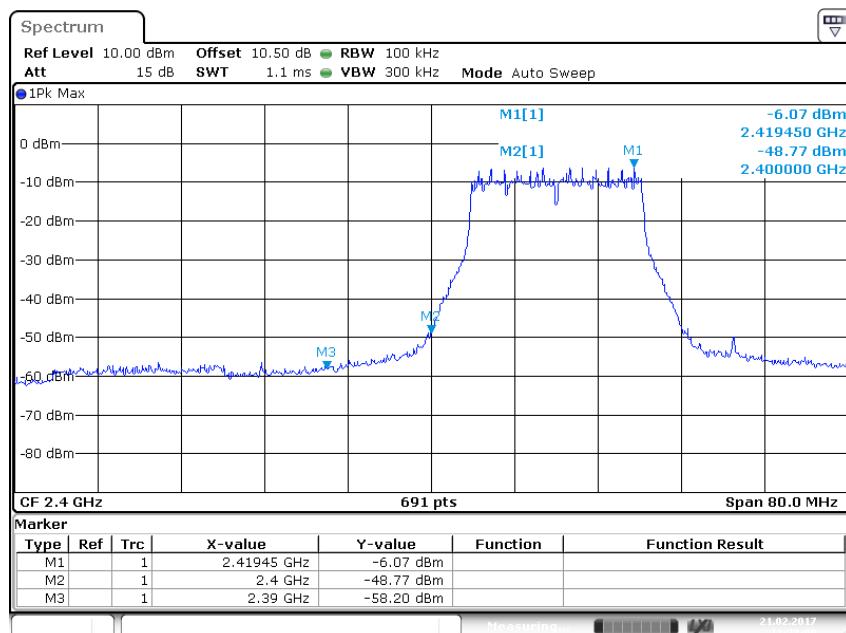
802.11b Channel Low 2412MHz



802.11b Channel High 2462MHz

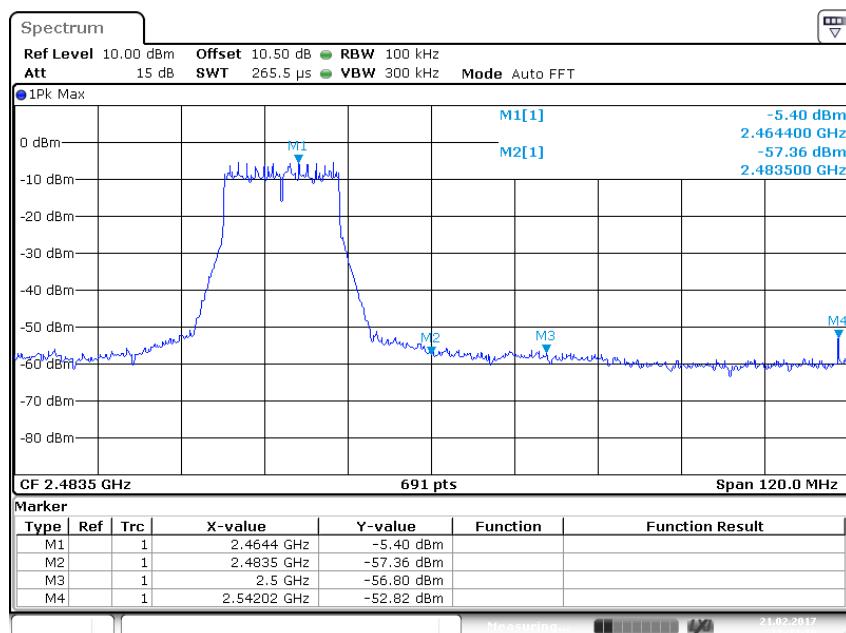


802.11g Channel Low 2412MHz



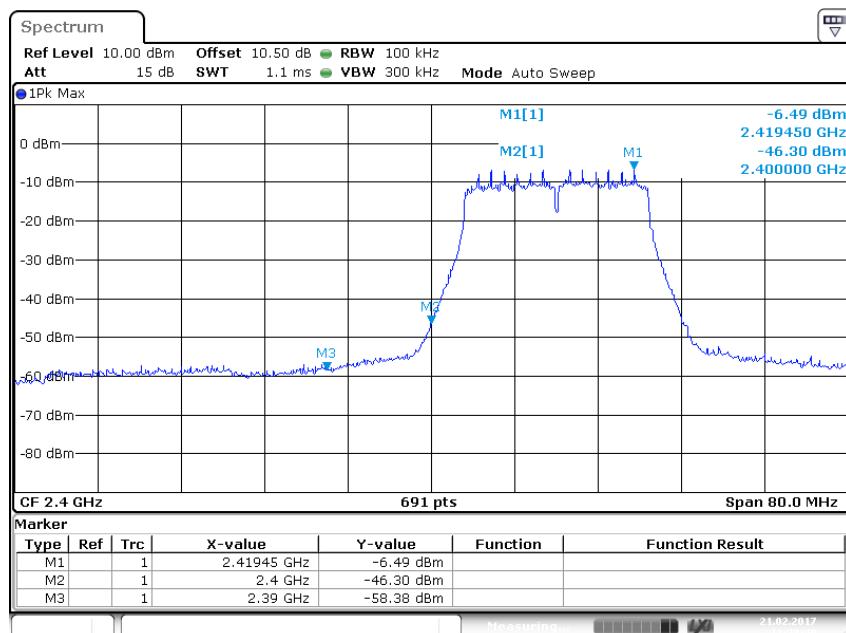
Date: 21.FEB.2017 11:38:09

802.11g Channel High 2462MHz



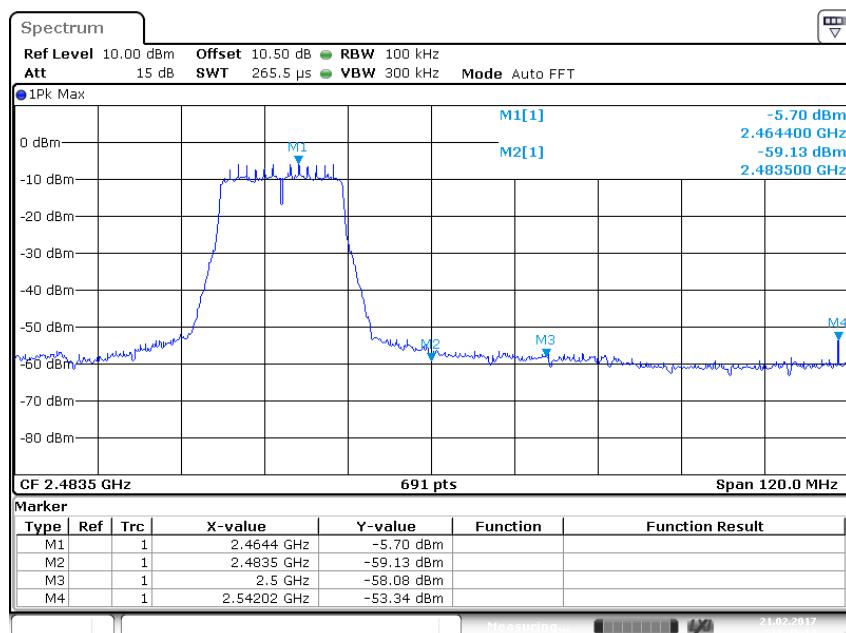
Date: 21.FEB.2017 11:44:19

802.11n Channel Low 2412MHz (20MHz)



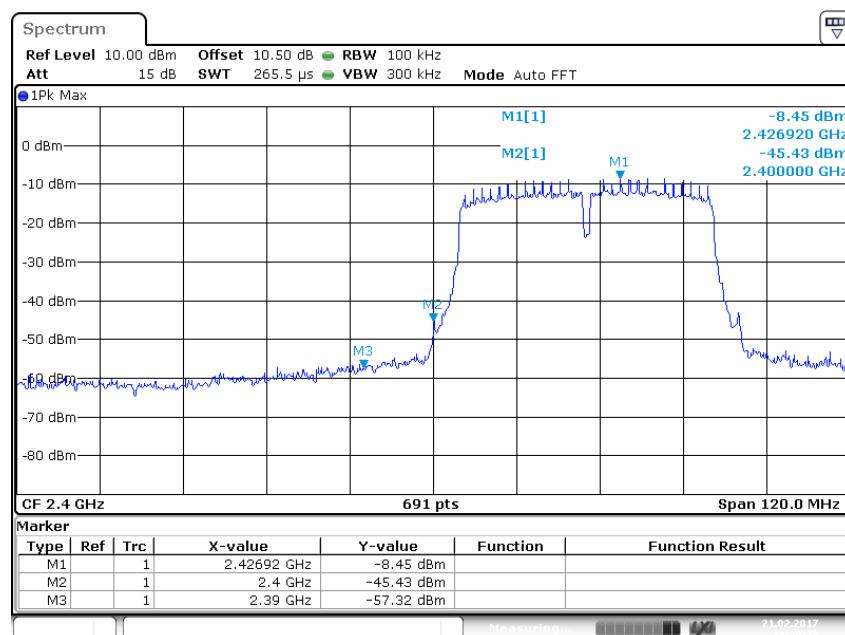
Date: 21.FEB.2017 11:38:40

802.11n Channel High 2462MHz (20MHz)

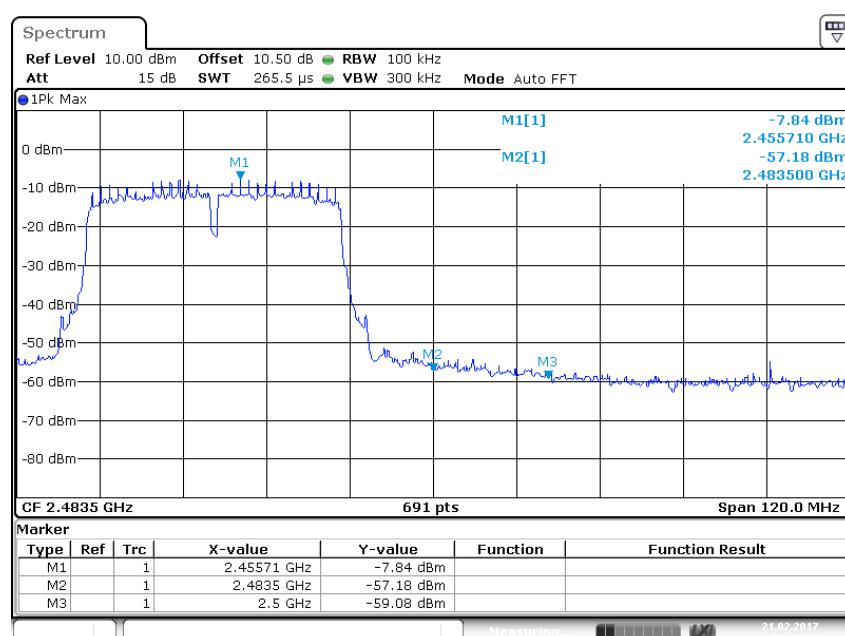


Date: 21.FEB.2017 11:45:14

802.11n Channel Low 2422MHz (40MHz)



802.11n Channel High 2452MHz (40MHz)



Radiated Band Edge Result

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:
Result = Reading + Corrected Factor
3. Display the measurement of peak values.

Test Procedure:

The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground(Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

Let the EUT work in TX modes then measure it.

We select 2412MHz, 2462MHz TX frequency to transmit(802.11b/g/n20 mode).

We select 2422MHz, 2452MHz TX frequency to transmit(802.11n40 mode).

During the radiated emission test, the spectrum analyzer was set with the following configurations:

- 1.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
- 2.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
- 3.All modes of operation were investigated and the worst-case emissions are reported.

Job No.: STAR2017 #31

Polarization: Horizontal

Standard: FCC PK

Power Source: DC 3.3V

Test item: Radiation Test

Date: 17/02/21/

Temp.(C)/Hum.(%) 25 C / 55 %

Time: 16/07/12

EUT: WIFI module

Engineer Signature: star

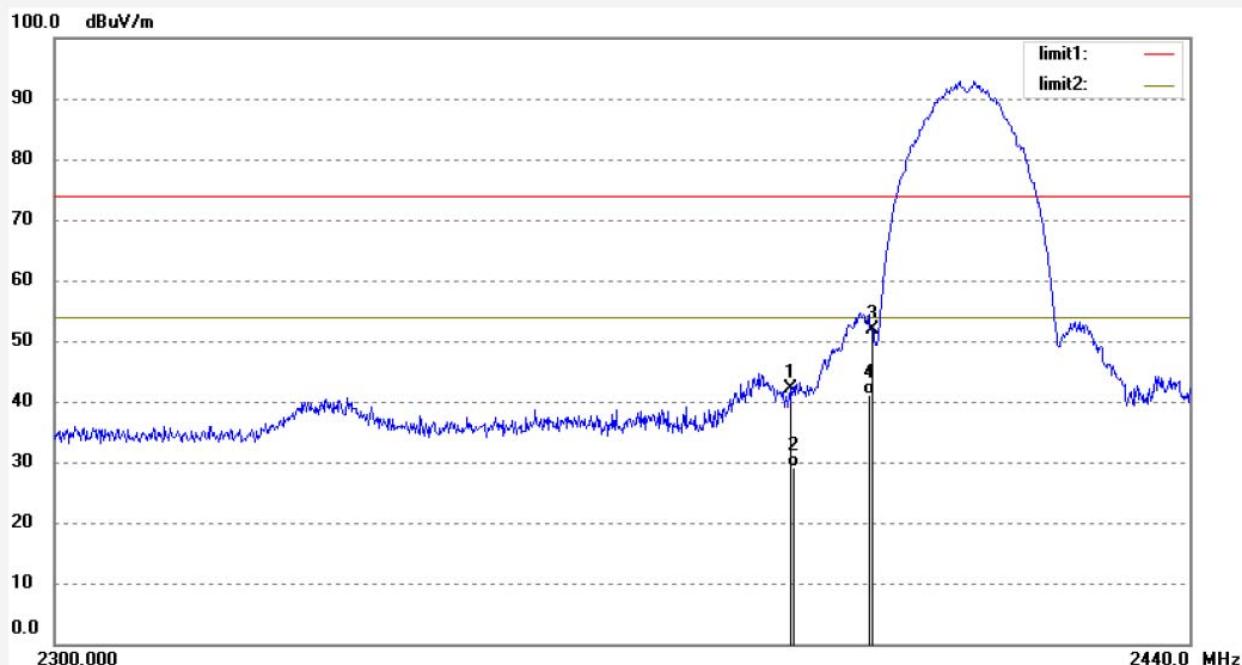
Mode: TX Channel 1(802.11b)

Distance: 3m

Model: WP0DR1110

Manufacturer: Prima

Note: Report No.:ATE20170115



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	48.12	-5.89	42.23	74.00	-31.77	peak			
2	2390.000	35.14	-5.89	29.25	54.00	-24.75	AVG			
3	2400.000	57.74	-5.80	51.94	74.00	-22.06	peak			
4	2400.000	46.97	-5.80	41.17	54.00	-12.83	AVG			

Note: Average measurement with peak detection at No.2&4



ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2017 #32

Polarization: Vertical

Standard: FCC PK

Power Source: DC 3.3V

Test item: Radiation Test

Date: 17/02/21/

Temp.(C)/Hum.(%) 25 C / 55 %

Time: 16/08/41

EUT: WIFI module

Engineer Signature: star

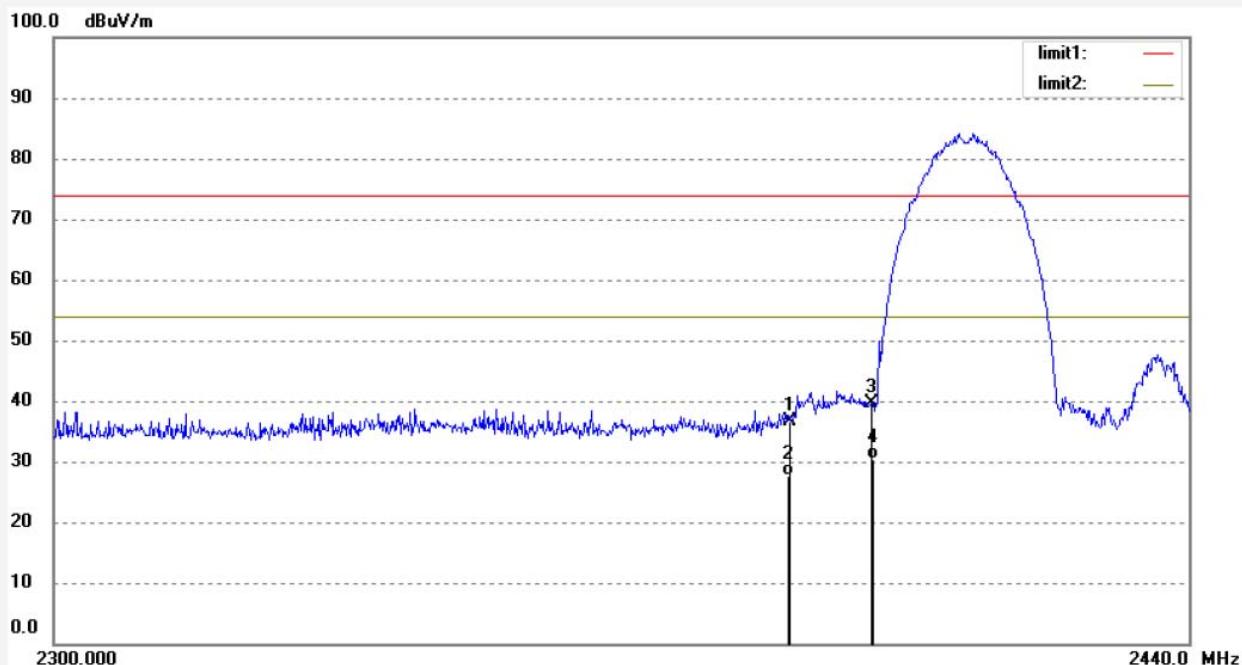
Mode: TX Channel 1(802.11b)

Distance: 3m

Model: WP0DR1110

Manufacturer: Prima

Note: Report No.:ATE20170115



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	42.58	-5.89	36.69	74.00	-37.31	peak			
2	2390.000	33.57	-5.89	27.68	54.00	-26.32	AVG			
3	2400.000	45.36	-5.80	39.56	74.00	-34.44	peak			
4	2400.000	36.17	-5.80	30.37	54.00	-23.63	AVG			

Note: Average measurement with peak detection at No.2&4



ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2017 #34

Polarization: Horizontal

Standard: FCC PK

Power Source: DC 3.3V

Test item: Radiation Test

Date: 17/02/21/

Temp.(C)/Hum.(%) 25 C / 55 %

Time: 16/12/06

EUT: WIFI module

Engineer Signature: star

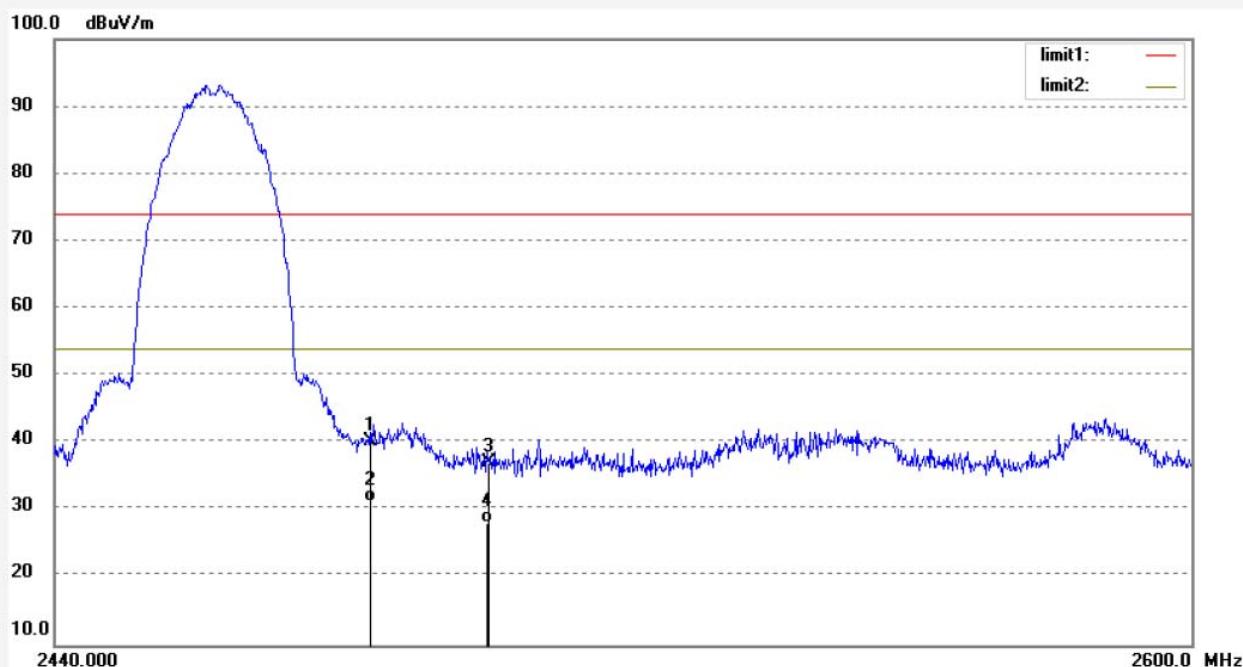
Mode: TX Channel 11(802.11b)

Distance: 3m

Model: WP0DR1110

Manufacturer: Prima

Note: Report No.:ATE20170115



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	45.69	-5.51	40.18	74.00	-33.82	peak			
2	2483.500	36.70	-5.51	31.19	54.00	-22.81	AVG			
3	2500.000	42.71	-5.50	37.21	74.00	-36.79	peak			
4	2500.000	33.69	-5.50	28.19	54.00	-25.81	AVG			

Note: Average measurement with peak detection at No.2&4

ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2017 #33

Polarization: Vertical

Standard: FCC PK

Power Source: DC 3.3V

Test item: Radiation Test

Date: 17/02/21/

Temp.(C)/Hum.(%) 25 C / 55 %

Time: 16/10/41

EUT: WIFI module

Engineer Signature: star

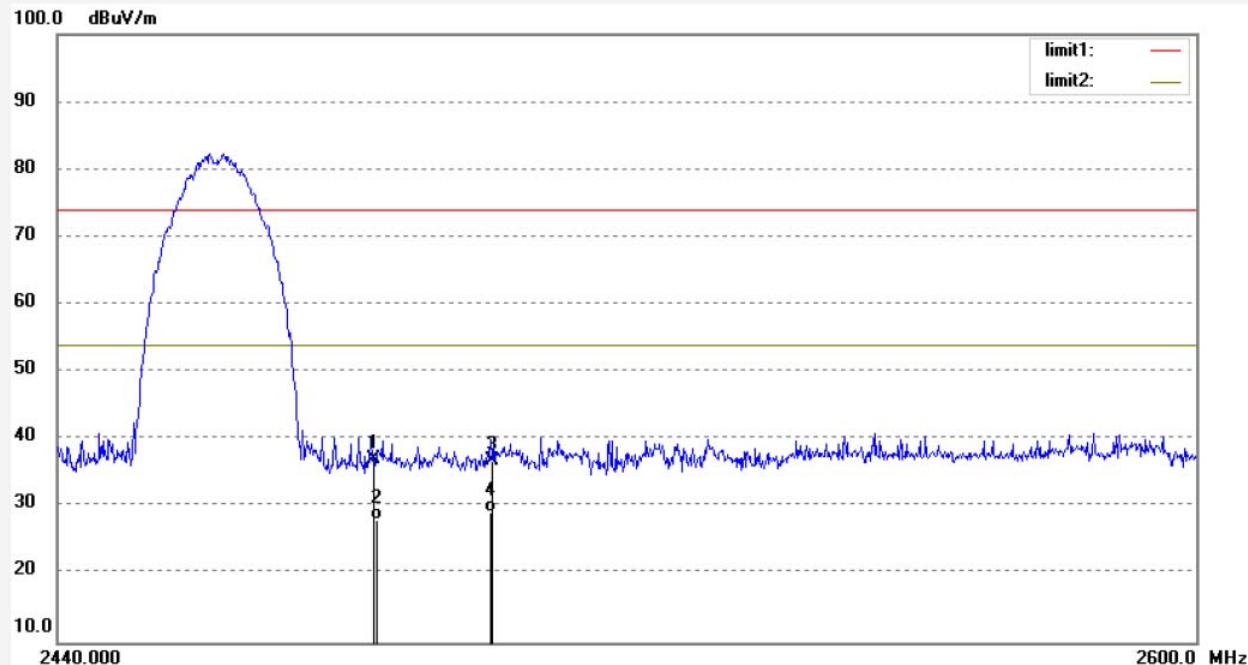
Mode: TX Channel 11(802.11b)

Distance: 3m

Model: WP0DR1110

Manufacturer: Prima

Note: Report No.:ATE20170115



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	42.64	-5.51	37.13	74.00	-36.87	peak			
2	2483.500	33.70	-5.51	28.19	54.00	-25.81	AVG			
3	2500.000	42.45	-5.50	36.95	74.00	-37.05	peak			
4	2500.000	34.72	-5.50	29.22	54.00	-24.78	AVG			

Note: Average measurement with peak detection at No.2&4



ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: STAR2017 #38

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: WIFI module

Mode: TX Channel 1(802.11g)

Model: WP0DR1110

Manufacturer: Prima

Polarization: Horizontal

Power Source: DC 3.3V

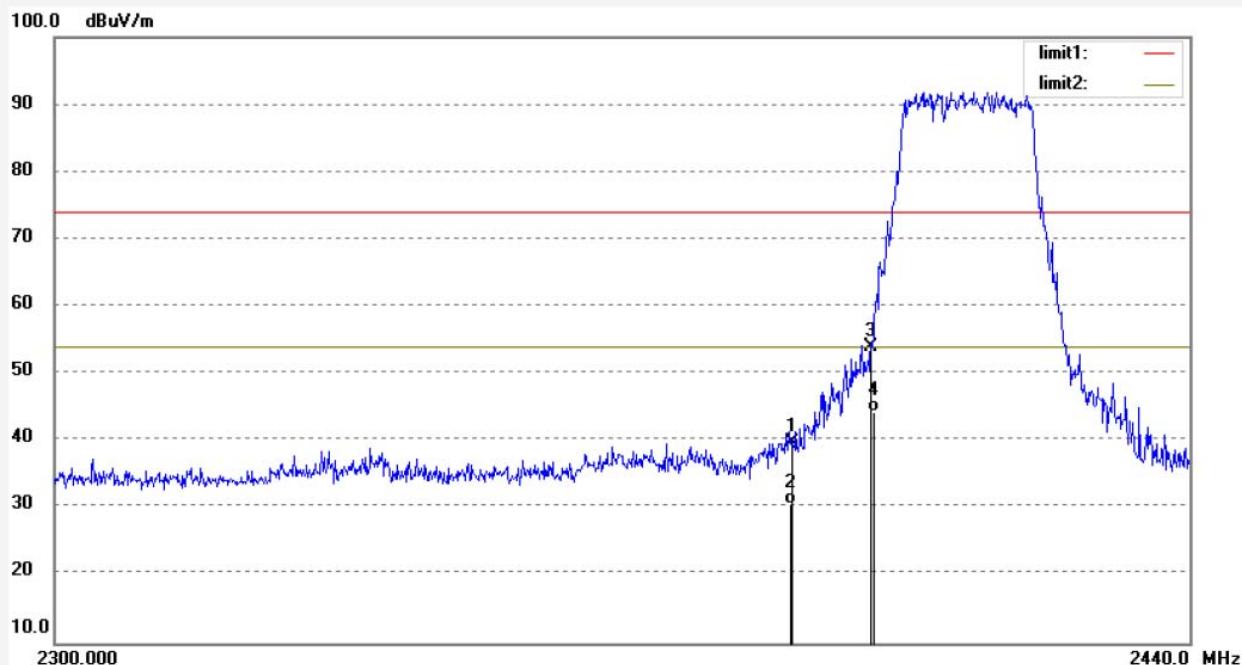
Date: 17/02/21/

Time: 16/18/55

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20170115



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	45.62	-5.89	39.73	74.00	-34.27	peak			
2	2390.000	36.44	-5.89	30.55	54.00	-23.45	AVG			
3	2400.000	59.69	-5.80	53.89	74.00	-20.11	peak			
4	2400.000	50.10	-5.80	44.30	54.00	-9.70	AVG			

Note: Average measurement with peak detection at No.2&4



ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: STAR2017 #37

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: WIFI module

Mode: TX Channel 1(802.11g)

Model: WP0DR1110

Manufacturer: Prima

Polarization: Vertical

Power Source: DC 3.3V

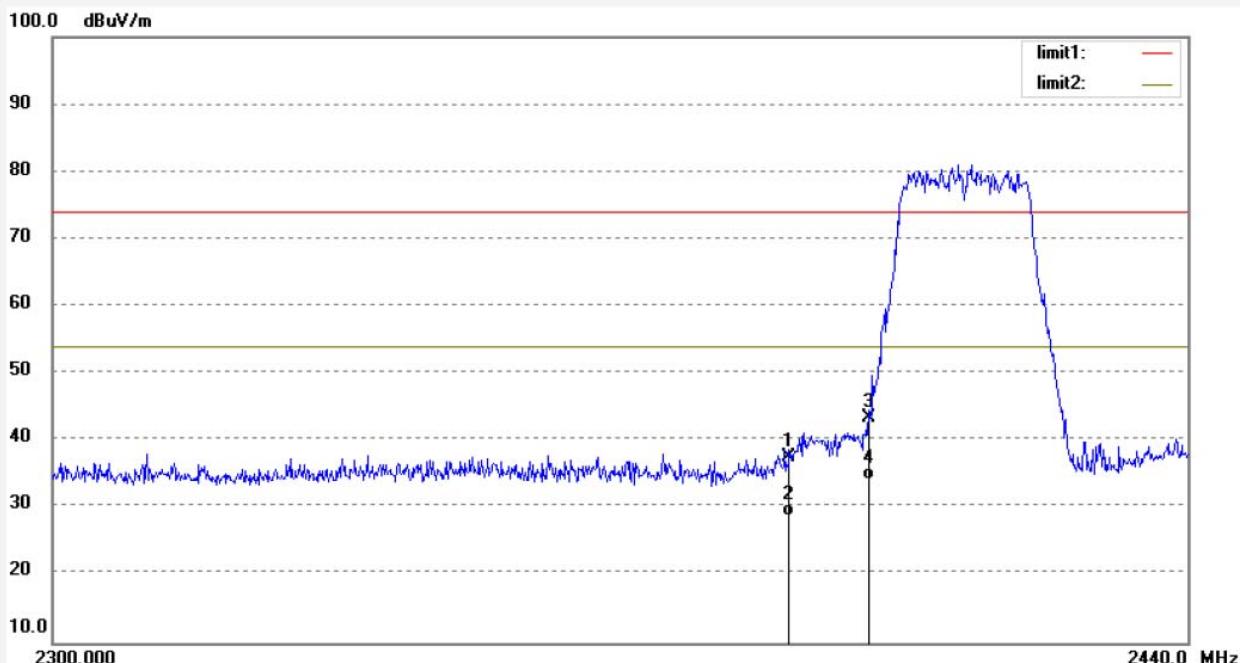
Date: 17/02/21/

Time: 16/17/19

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20170115



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	43.35	-5.89	37.46	74.00	-36.54	peak			
2	2390.000	34.67	-5.89	28.78	54.00	-25.22	AVG			
3	2400.000	49.31	-5.80	43.51	74.00	-30.49	peak			
4	2400.000	40.10	-5.80	34.30	54.00	-19.70	AVG			

Note: Average measurement with peak detection at No.2&4



ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: STAR2017 #35

Polarization: Horizontal

Standard: FCC PK

Power Source: DC 3.3V

Test item: Radiation Test

Date: 17/02/21/

Temp.(C)/Hum.(%) 25 C / 55 %

Time: 16/13/26

EUT: WIFI module

Engineer Signature: star

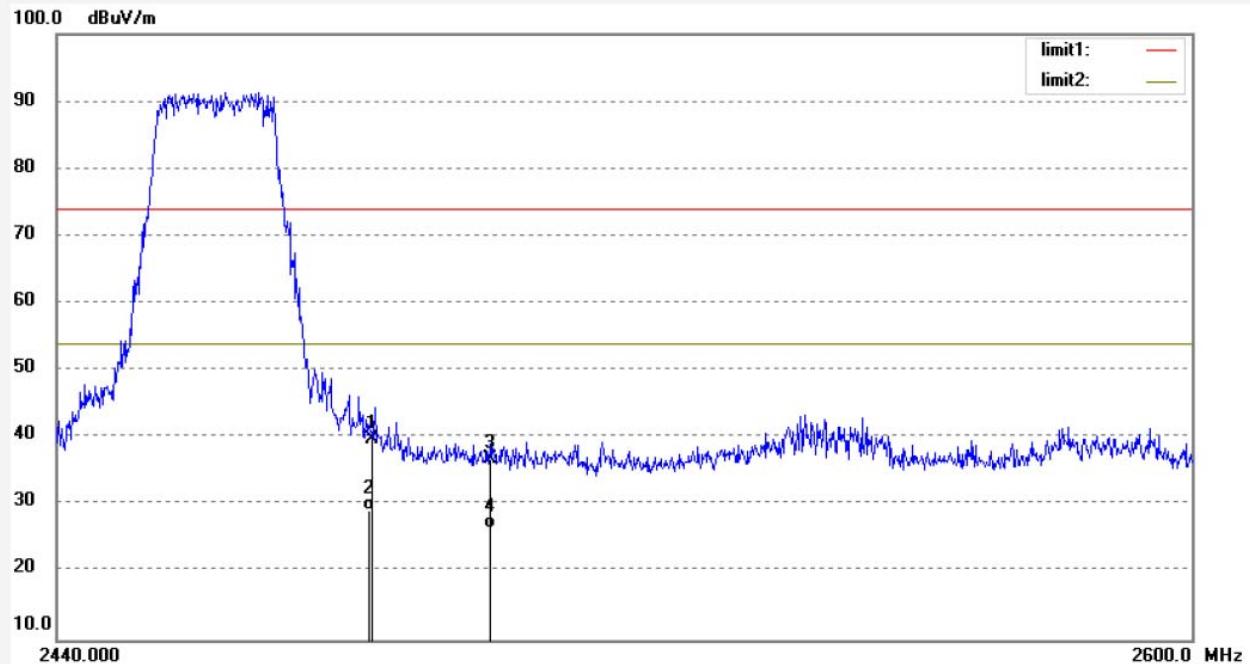
Mode: TX Channel 11(802.11g)

Distance: 3m

Model: WP0DR1110

Manufacturer: Prima

Note: Report No.:ATE20170115



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	45.24	-5.51	39.73	74.00	-34.27	peak			
2	2483.500	34.70	-5.51	29.19	54.00	-24.81	AVG			
3	2500.000	42.36	-5.50	36.86	74.00	-37.14	peak			
4	2500.000	32.14	-5.50	26.64	54.00	-27.36	AVG			

Note: Average measurement with peak detection at No.2&4



ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2017 #36

Polarization: Vertical

Standard: FCC PK

Power Source: DC 3.3V

Test item: Radiation Test

Date: 17/02/21/

Temp.(C)/Hum.(%) 25 C / 55 %

Time: 16/15/24

EUT: WIFI module

Engineer Signature: star

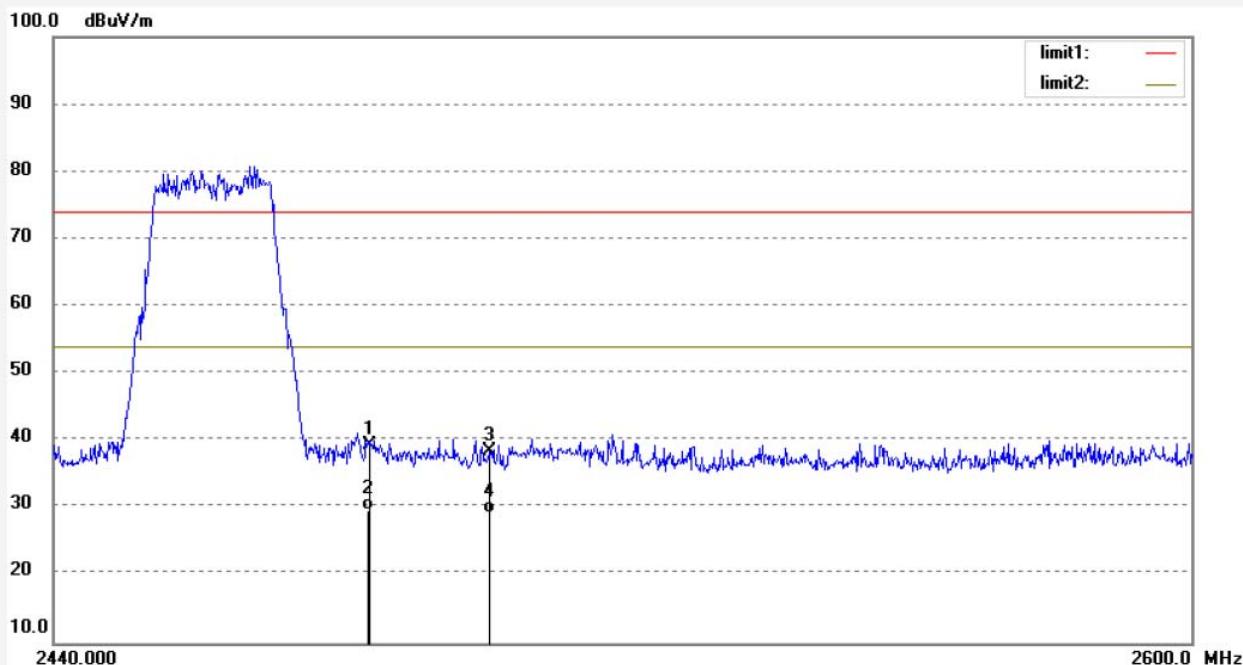
Mode: TX Channel 11(802.11g)

Distance: 3m

Model: WP0DR1110

Manufacturer: Prima

Note: Report No.:ATE20170115



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	44.78	-5.51	39.27	74.00	-34.73	peak			
2	2483.500	35.14	-5.51	29.63	54.00	-24.37	AVG			
3	2500.000	43.87	-5.50	38.37	74.00	-35.63	peak			
4	2500.000	34.68	-5.50	29.18	54.00	-24.82	AVG			

Note: Average measurement with peak detection at No.2&4



ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2017 #39

Polarization: Horizontal

Standard: FCC PK

Power Source: DC 3.3V

Test item: Radiation Test

Date: 17/02/21/

Temp.(C)/Hum.(%) 25 C / 55 %

Time: 16/21/05

EUT: WIFI module

Engineer Signature: star

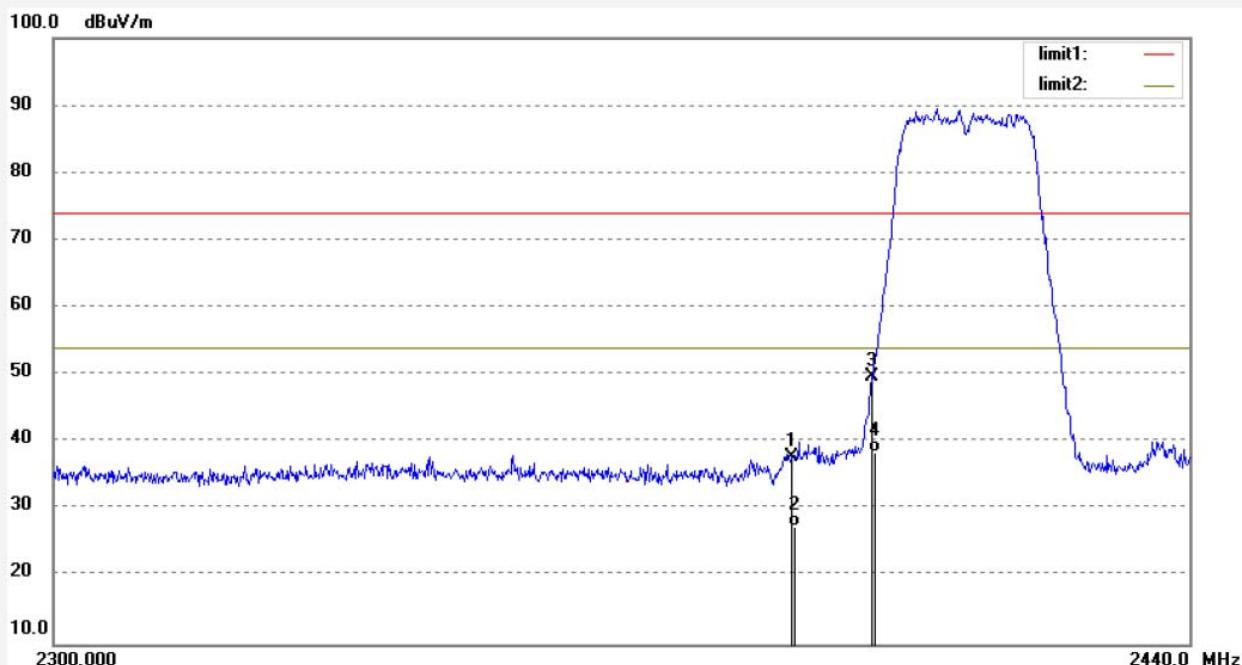
Mode: TX Channel 1(802.11n20)

Distance: 3m

Model: WP0DR1110

Manufacturer: Prima

Note: Report No.:ATE20170115



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	43.63	-5.89	37.74	74.00	-36.26	peak			
2	2390.000	33.40	-5.89	27.51	54.00	-26.49	AVG			
3	2400.000	55.57	-5.80	49.77	74.00	-24.23	peak			
4	2400.000	44.20	-5.80	38.40	54.00	-15.60	AVG			

Note: Average measurement with peak detection at No.2&4



ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2017 #40

Polarization: Vertical

Standard: FCC PK

Power Source: DC 3.3V

Test item: Radiation Test

Date: 17/02/21/

Temp.(C)/Hum.(%) 25 C / 55 %

Time: 16/22/56

EUT: WIFI module

Engineer Signature: star

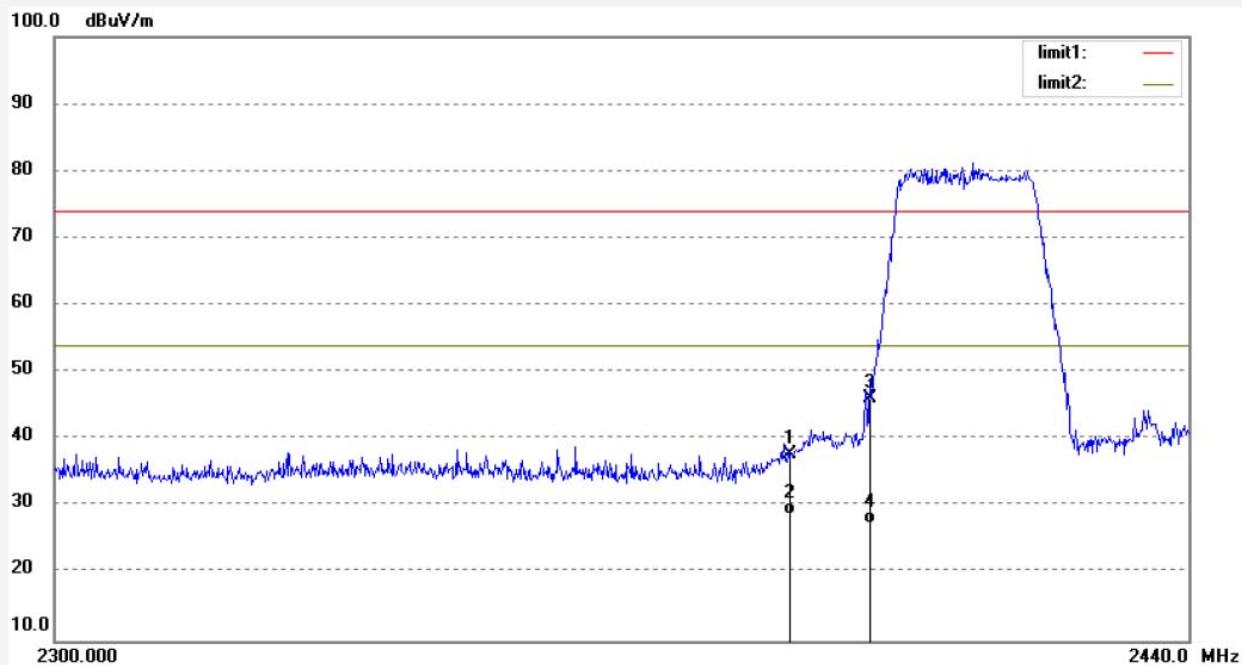
Mode: TX Channel 1(802.11n20)

Distance: 3m

Model: WP0DR1110

Manufacturer: Prima

Note: Report No.:ATE20170115



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	43.59	-5.89	37.70	74.00	-36.30	peak			
2	2390.000	34.68	-5.89	28.79	54.00	-25.21	AVG			
3	2400.000	52.00	-5.80	46.20	74.00	-27.80	peak			
4	2400.000	33.14	-5.80	27.34	54.00	-26.66	AVG			

Note: Average measurement with peak detection at No.2&4



ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2017 #42

Polarization: Horizontal

Standard: FCC PK

Power Source: DC 3.3V

Test item: Radiation Test

Date: 17/02/21/

Temp.(C)/Hum.(%) 25 C / 55 %

Time: 16/26/08

EUT: WIFI module

Engineer Signature: star

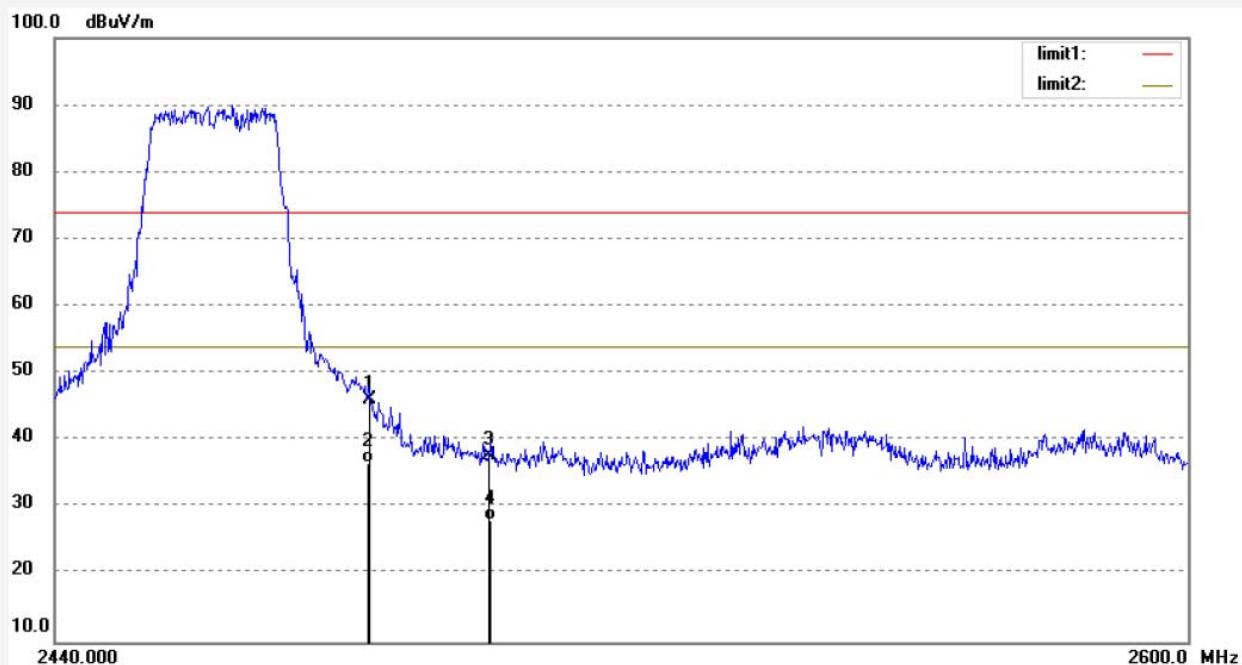
Mode: TX Channel 11(802.11n20)

Distance: 3m

Model: WP0DR1110

Manufacturer: Prima

Note: Report No.:ATE20170115



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	51.61	-5.51	46.10	74.00	-27.90	peak			
2	2483.500	42.10	-5.51	36.59	54.00	-17.41	AVG			
3	2500.000	43.20	-5.50	37.70	74.00	-36.30	peak			
4	2500.000	33.67	-5.50	28.17	54.00	-25.83	AVG			

Note: Average measurement with peak detection at No.2&4

Job No.: STAR2017 #41

Polarization: Vertical

Standard: FCC PK

Power Source: DC 3.3V

Test item: Radiation Test

Date: 17/02/21/

Temp.(C)/Hum.(%) 25 C / 55 %

Time: 16/24/24

EUT: WIFI module

Engineer Signature: star

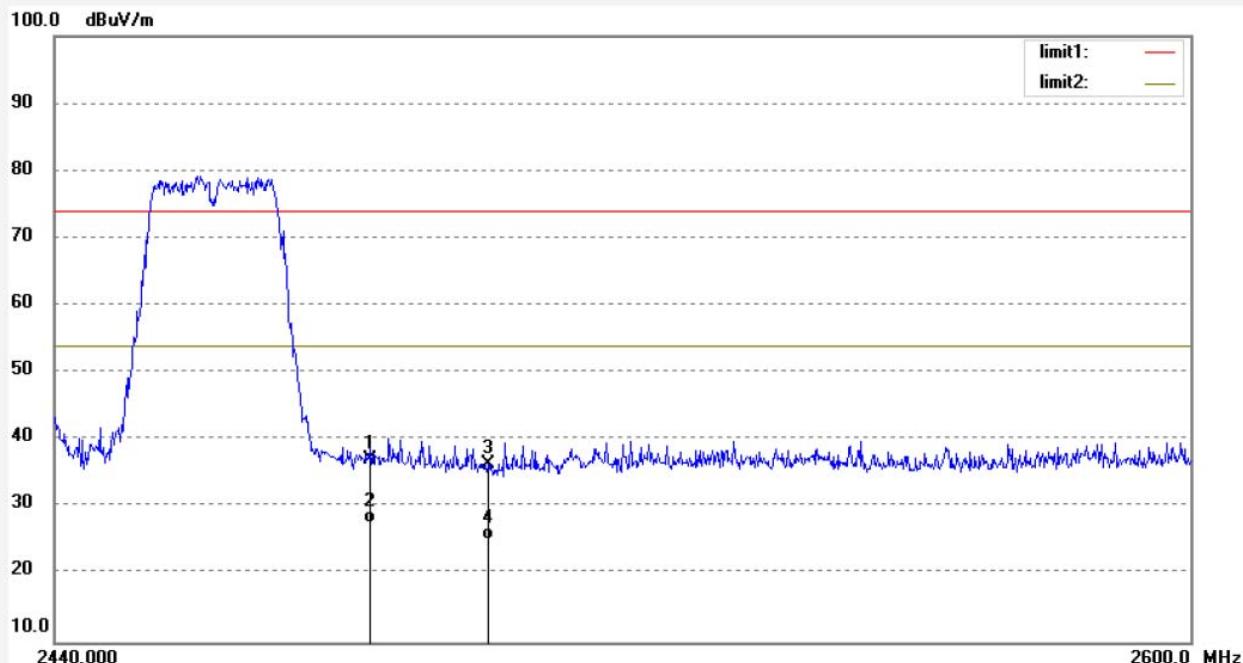
Mode: TX Channel 11(802.11n20)

Distance: 3m

Model: WP0DR1110

Manufacturer: Prima

Note: Report No.:ATE20170115



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	42.61	-5.51	37.10	74.00	-36.90	peak			
2	2483.500	33.10	-5.51	27.59	54.00	-26.41	AVG			
3	2500.000	41.93	-5.50	36.43	74.00	-37.57	peak			
4	2500.000	30.80	-5.50	25.30	54.00	-28.70	AVG			

Note: Average measurement with peak detection at No.2&4

ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2017 #43

Polarization: Horizontal

Standard: FCC PK

Power Source: DC 3.3V

Test item: Radiation Test

Date: 17/02/21/

Temp.(C)/Hum.(%) 25 C / 55 %

Time: 16/28/29

EUT: WIFI module

Engineer Signature: star

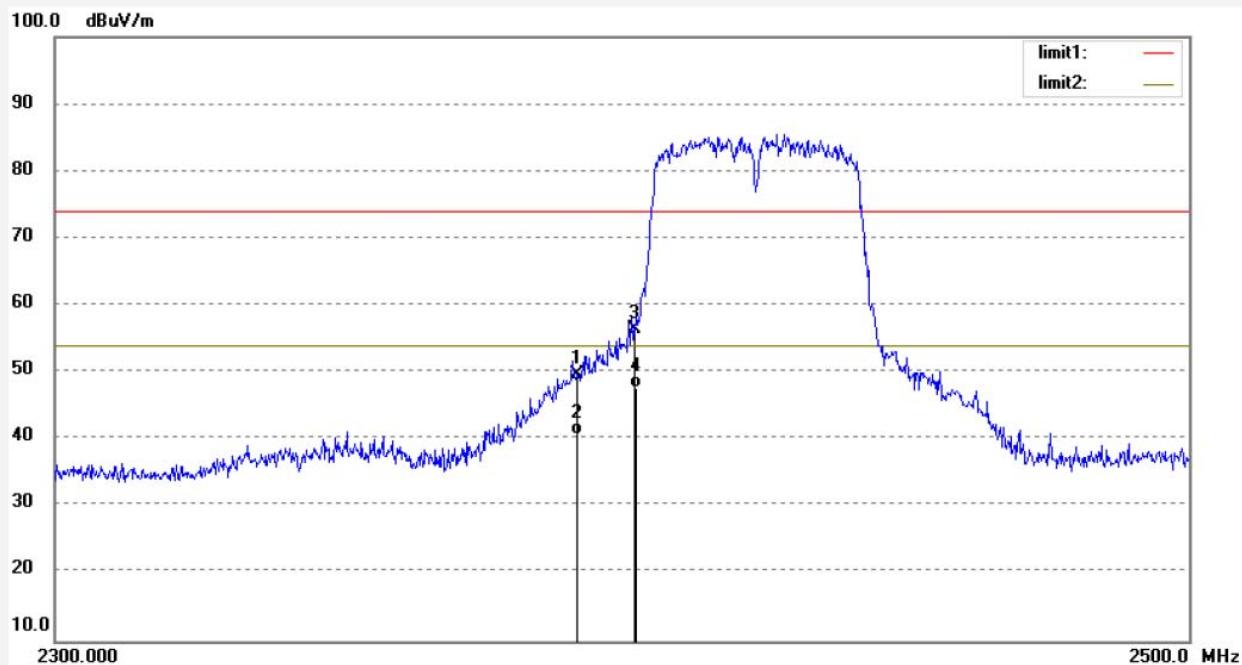
Mode: TX Channel 3(802.11n)40MHz

Distance: 3m

Model: WP0DR1110

Manufacturer: Prima

Note: Report No.:ATE20170115



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	55.65	-5.89	49.76	74.00	-24.24	peak			
2	2390.000	46.71	-5.89	40.82	54.00	-13.18	AVG			
3	2400.000	62.18	-5.80	56.38	74.00	-17.62	peak			
4	2400.000	53.40	-5.80	47.60	54.00	-6.40	AVG			

Note: Average measurement with peak detection at No.2&4

Job No.: STAR2017 #44

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: WIFI module

Mode: TX Channel 3(802.11n)40MHz

Model: WP0DR1110

Manufacturer: Prima

Polarization: Vertical

Power Source: DC 3.3V

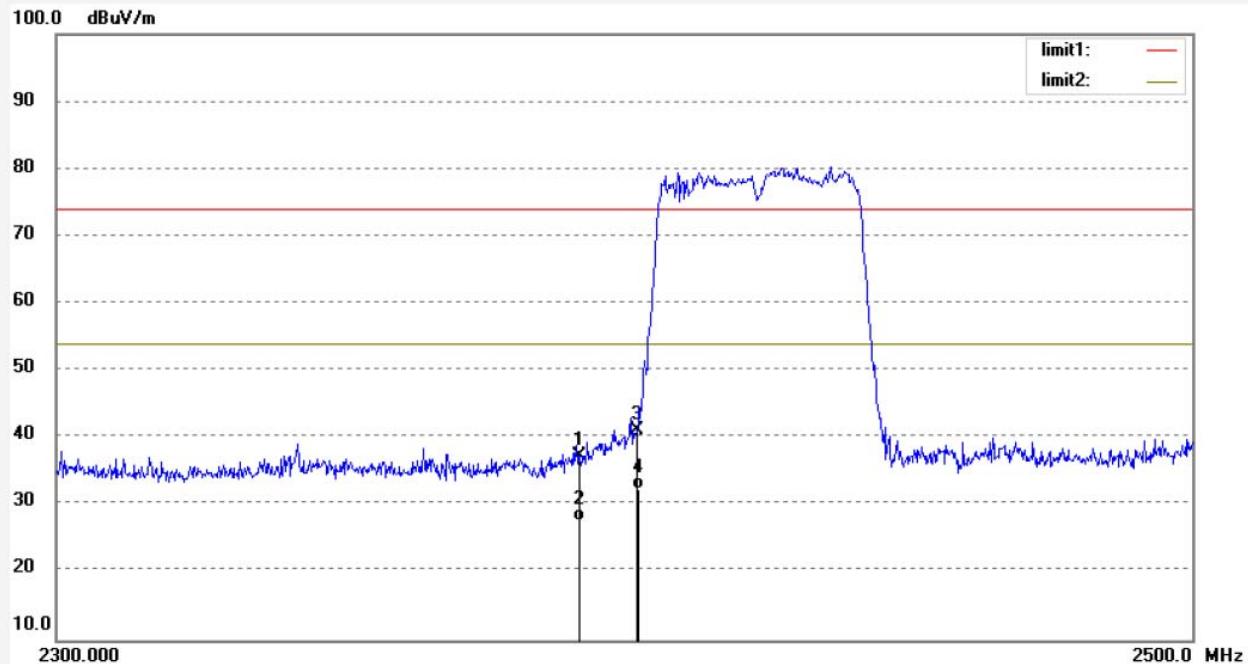
Date: 17/02/21/

Time: 16/30/30

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20170115



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	43.15	-5.89	37.26	74.00	-36.74	peak			
2	2390.000	33.65	-5.89	27.76	54.00	-26.24	AVG			
3	2400.000	47.05	-5.80	41.25	74.00	-32.75	peak			
4	2400.000	38.10	-5.80	32.30	54.00	-21.70	AVG			

Note: Average measurement with peak detection at No.2&4



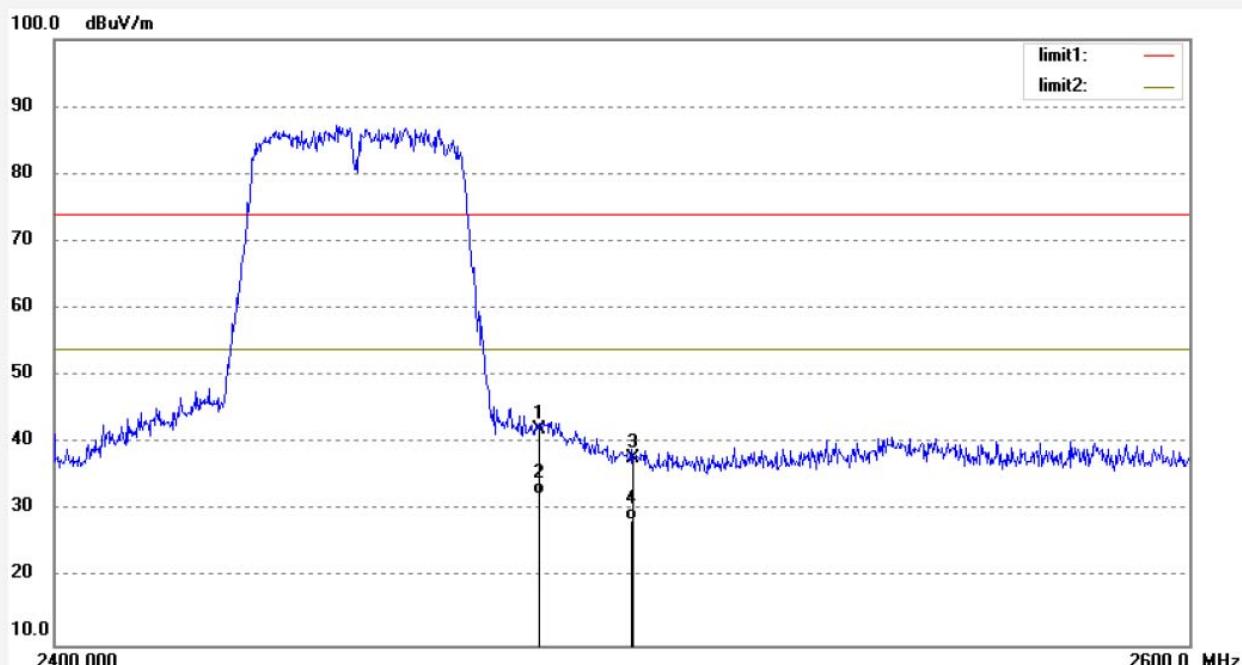
ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: STAR2017 #46	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 3.3V
Test item: Radiation Test	Date: 17/02/21/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 16/38/22
EUT: WIFI module	Engineer Signature: star
Mode: TX Channel 9(802.11n)40MHz	Distance: 3m
Model: WP0DR1110	
Manufacturer: Prima	

Note: Report No.:ATE20170115



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	47.47	-5.51	41.96	74.00	-32.04	peak			
2	2483.500	38.00	-5.51	32.49	54.00	-21.51	AVG			
3	2500.000	43.38	-5.50	37.88	74.00	-36.12	peak			
4	2500.000	34.07	-5.50	28.57	54.00	-25.43	AVG			

Note: Average measurement with peak detection at No.2&4

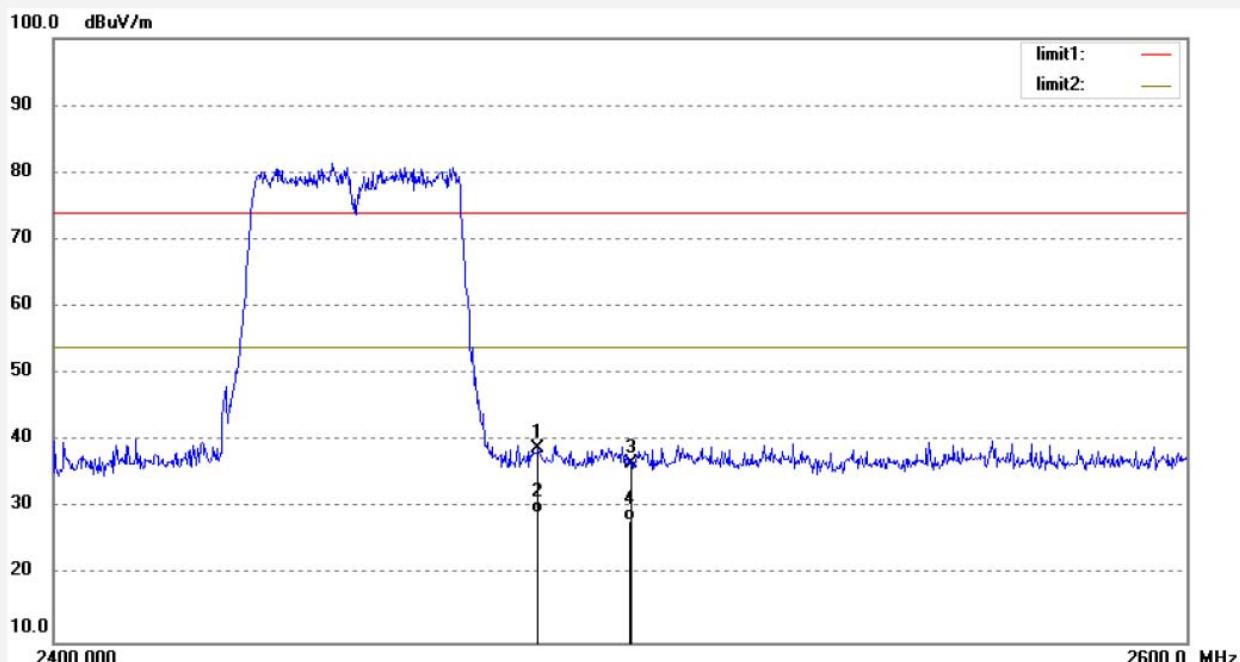


ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: STAR2017 #45	Polarization: Vertical
Standard: FCC PK	Power Source: DC 3.3V
Test item: Radiation Test	Date: 17/02/21/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 16/36/05
EUT: WIFI module	Engineer Signature: star
Mode: TX Channel 9(802.11n)40MHz	Distance: 3m
Model: WP0DR1110	
Manufacturer: Prima	
Note: Report No.:ATE20170115	



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	44.41	-5.51	38.90	74.00	-35.10	peak			
2	2483.500	34.70	-5.51	29.19	54.00	-24.81	AVG			
3	2500.000	42.23	-5.50	36.73	74.00	-37.27	peak			
4	2500.000	33.67	-5.50	28.17	54.00	-25.83	AVG			

Note: Average measurement with peak detection at No.2&4

10.RADIATED SPURIOUS EMISSION TEST

10.1.Block Diagram of Test Setup

10.1.1.Block diagram of connection between the EUT and peripherals

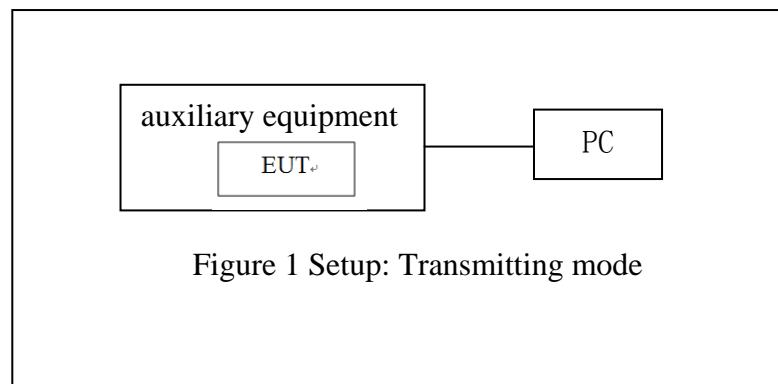
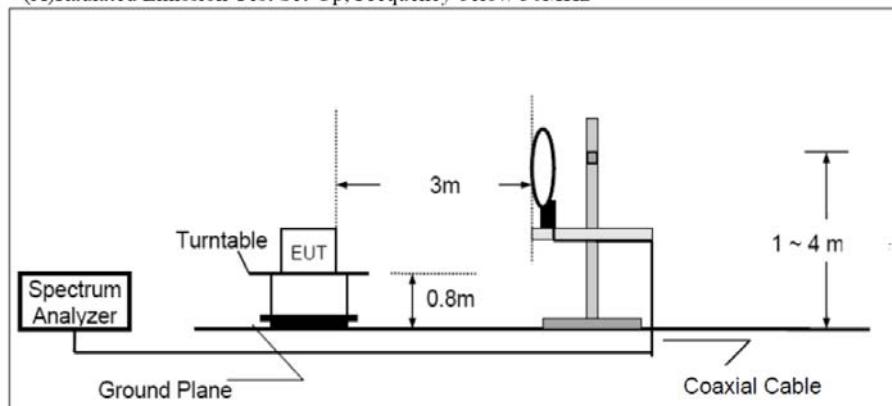


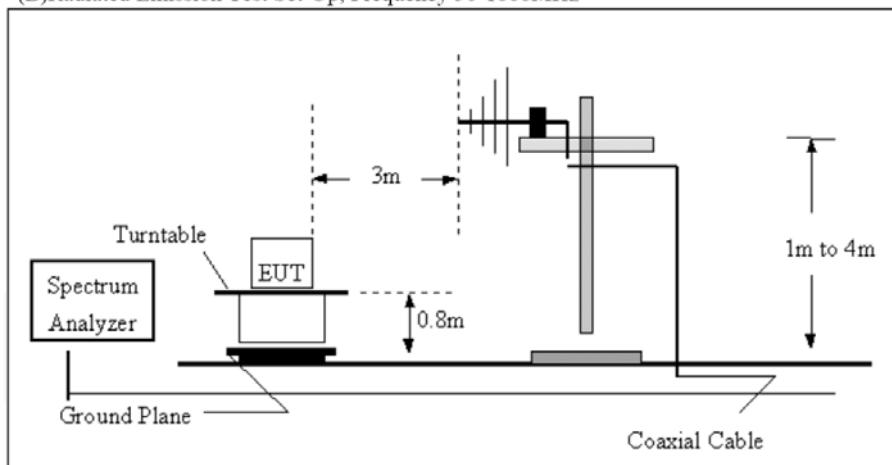
Figure 1 Setup: Transmitting mode

10.1.2.Semi-Anechoic Chamber Test Setup Diagram

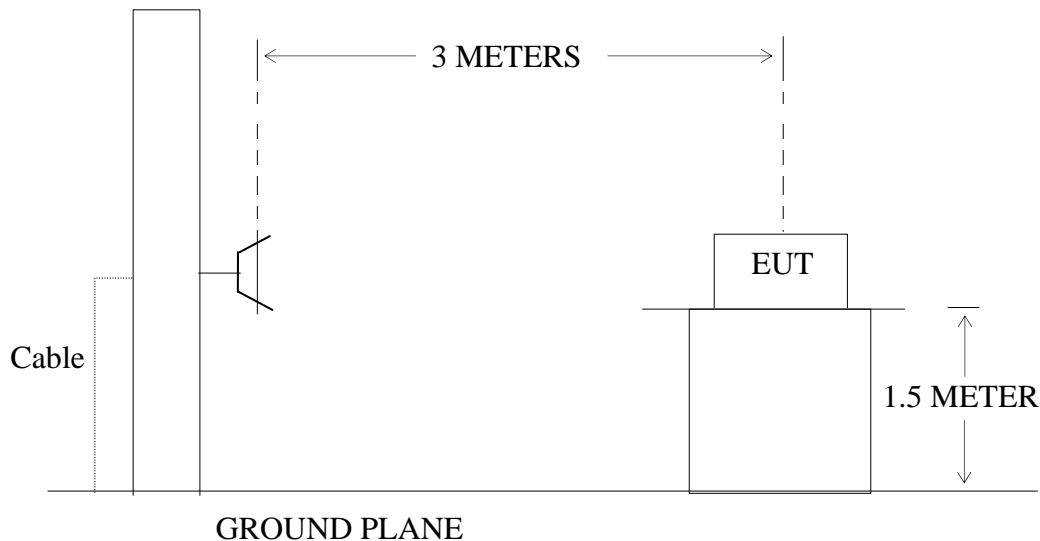
(A)Radiated Emission Test Set-Up, Frequency below 30MHz



(B)Radiated Emission Test Set-Up, Frequency 30-1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1GHz



10.2.The Limit For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

10.3. Restricted bands of operation

10.3.1. FCC Part 15.205 Restricted bands of operation

- (a) Except as shown in paragraph (d) of this section, Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

¹Until February 1, 1999, this restricted band shall be 0.490-0.510

²Above 38.6

- (b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

10.4. Configuration of EUT on Measurement

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

10.5.Operating Condition of EUT

10.5.1.Setup the EUT and simulator as shown as Section 10.1.

10.5.2.Turn on the power of all equipment.

10.5.3.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.

10.6.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground(Below 1GHz). The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground(Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The worst-case data rate for this channel to be 1Mbps for 802.11b mode and 6Mbps for 802.11g mode and 150Mbps for 802.11n mode, based on previous with 802.11 WLAN product design architectures.

The frequency range from 30MHz to 25000MHz is checked.

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

During the radiated emission test, the spectrum analyzer was set with the following configurations:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

10.7.The Field Strength of Radiation Emission Measurement Results

- Note:
1. Emissions attenuated more than 20 dB below the permissible value are not reported.
 2. *: Denotes restricted band of operation.
 3. The fundamental radiated emissions were reduced by Band Reject Filter in the attached plots.
 4. The EUT is tested radiation emission at each test mode (802.11 b/g/n) in three axes. The worst emissions are reported in all test mode and channels.
 5. The radiation emissions from 18-25GHz and 9KHz-30MHz are not reported, because the test values lower than the limits of 20dB.

Below 1G



ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg.A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2017 #1

Polarization: Horizontal

Standard: FCC Class B 3M Radiated

Power Source: DC 3.3V

Test item: Radiation Test

Date: 17/02/21

Temp.(C)/Hum.(%) 25 C / 55 %

Time: 14/38/28

EUT: WIFI module

Engineer Signature: star

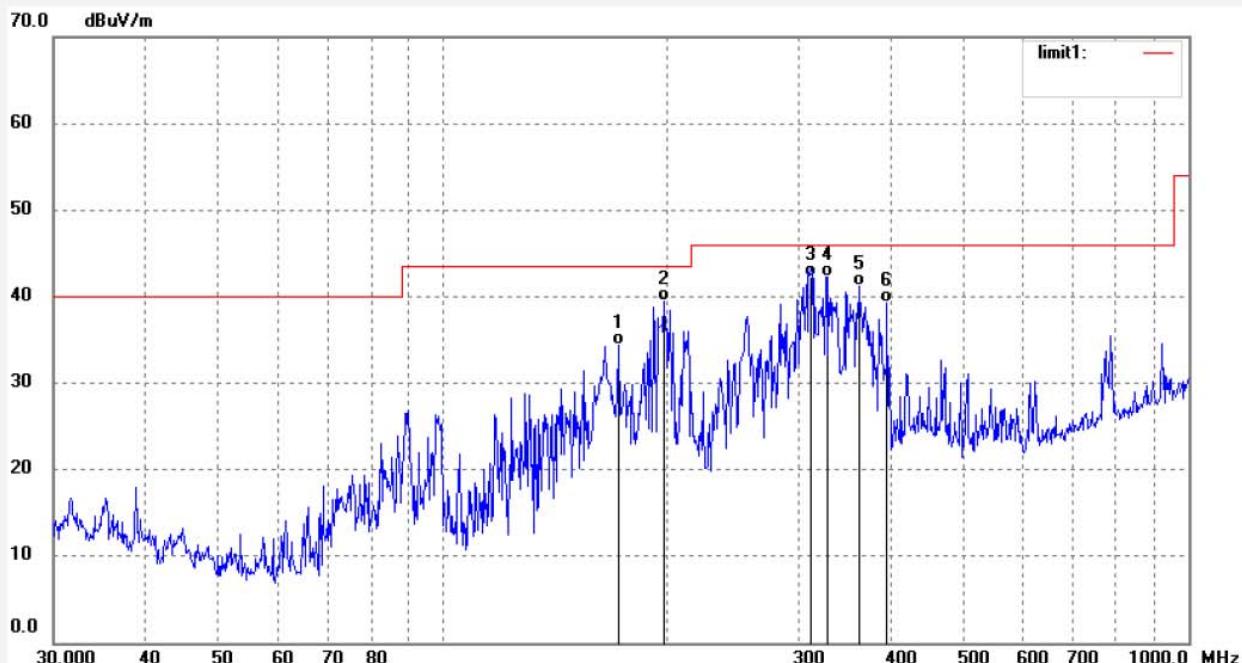
Mode: TX Channel 1(802.11b)

Distance: 3m

Model: WP0DR1110

Manufacturer: Prima

Note: Report No.:ATE20170115



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	171.9922	54.85	-20.50	34.35	43.50	-9.15	QP			
2	197.9457	58.21	-18.78	39.43	43.50	-4.07	QP			
3	311.4519	57.70	-15.42	42.28	46.00	-3.72	QP			
4	328.3069	57.02	-14.75	42.27	46.00	-3.73	QP			
5	360.9775	54.62	-13.44	41.18	46.00	-4.82	QP			
6	394.1199	52.44	-13.09	39.35	46.00	-6.65	QP			



ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

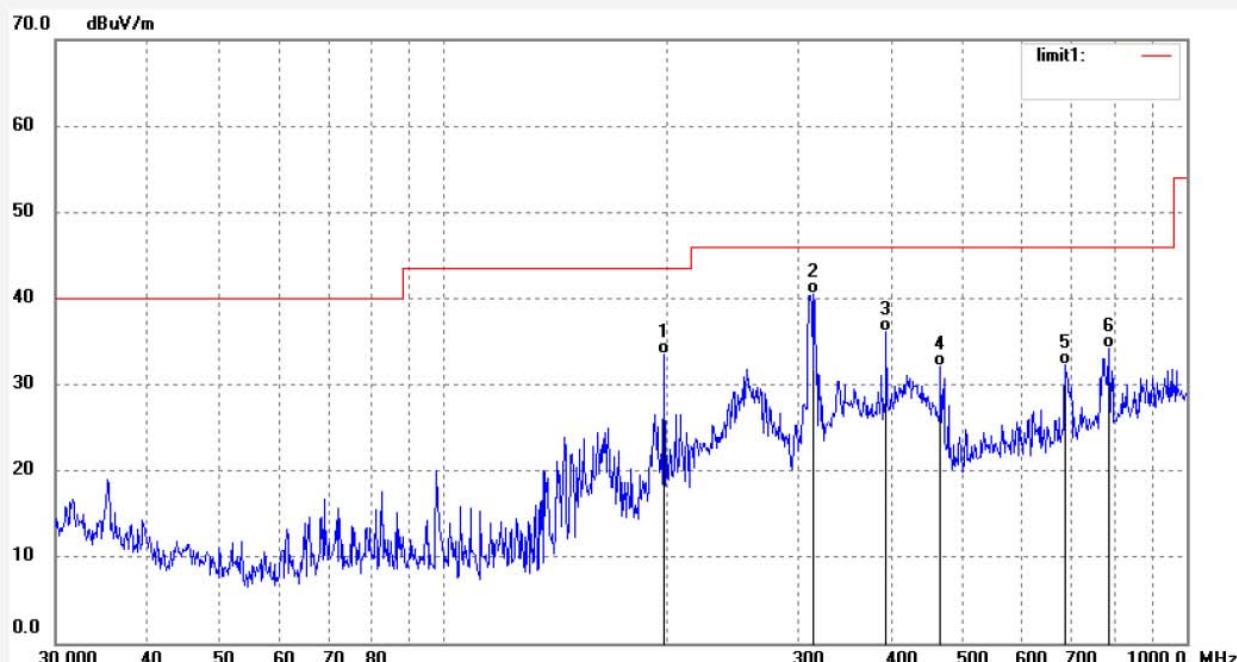
Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2017 #2	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.3V
Test item: Radiation Test	Date: 17/02/21/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 14/39/37
EUT: WIFI module	Engineer Signature: star
Mode: TX Channel 1(802.11b)	Distance: 3m
Model: WP0DR1110	
Manufacturer: Prima	

Note: Report No.:ATE20170115



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	197.9456	52.23	-18.78	33.45	43.50	-10.05	QP			
2	314.7522	55.78	-15.31	40.47	46.00	-5.53	QP			
3	394.1198	49.15	-13.09	36.06	46.00	-9.94	QP			
4	466.5230	43.49	-11.41	32.08	46.00	-13.92	QP			
5	686.6341	38.83	-6.62	32.21	46.00	-13.79	QP			
6	784.7128	38.69	-4.45	34.24	46.00	-11.76	QP			

Job No.: STAR2017 #4

Polarization: Horizontal

Standard: FCC Class B 3M Radiated

Power Source: DC 3.3V

Test item: Radiation Test

Date: 17/02/21/

Temp.(C)/Hum.(%) 25 C / 55 %

Time: 14/41/42

EUT: WIFI module

Engineer Signature: star

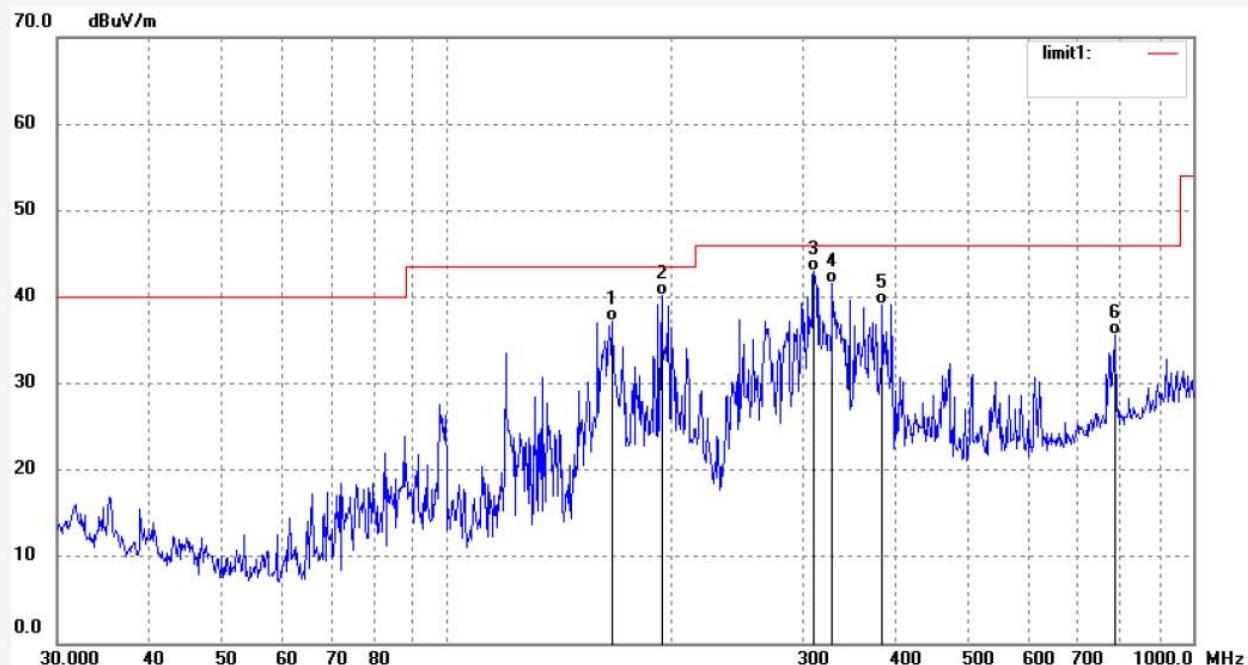
Mode: TX Channel 6(802.11b)

Distance: 3m

Model: WP0DR1110

Manufacturer: Prima

Note: Report No.:ATE20170115



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	166.6384	57.81	-20.66	37.15	43.50	-6.35	QP			
2	193.8163	59.27	-19.05	40.22	43.50	-3.28	QP			
3	310.3594	58.44	-15.45	42.99	46.00	-3.01	QP			
4	328.3068	56.39	-14.75	41.64	46.00	-4.36	QP			
5	383.1960	52.36	-13.21	39.15	46.00	-6.85	QP			
6	787.4749	39.96	-4.40	35.56	46.00	-10.44	QP			

Job No.: STAR2017 #3

Polarization: Vertical

Standard: FCC Class B 3M Radiated

Power Source: DC 3.3V

Test item: Radiation Test

Date: 17/02/21/

Temp.(C)/Hum.(%) 25 C / 55 %

Time: 14/40/17

EUT: WIFI module

Engineer Signature: star

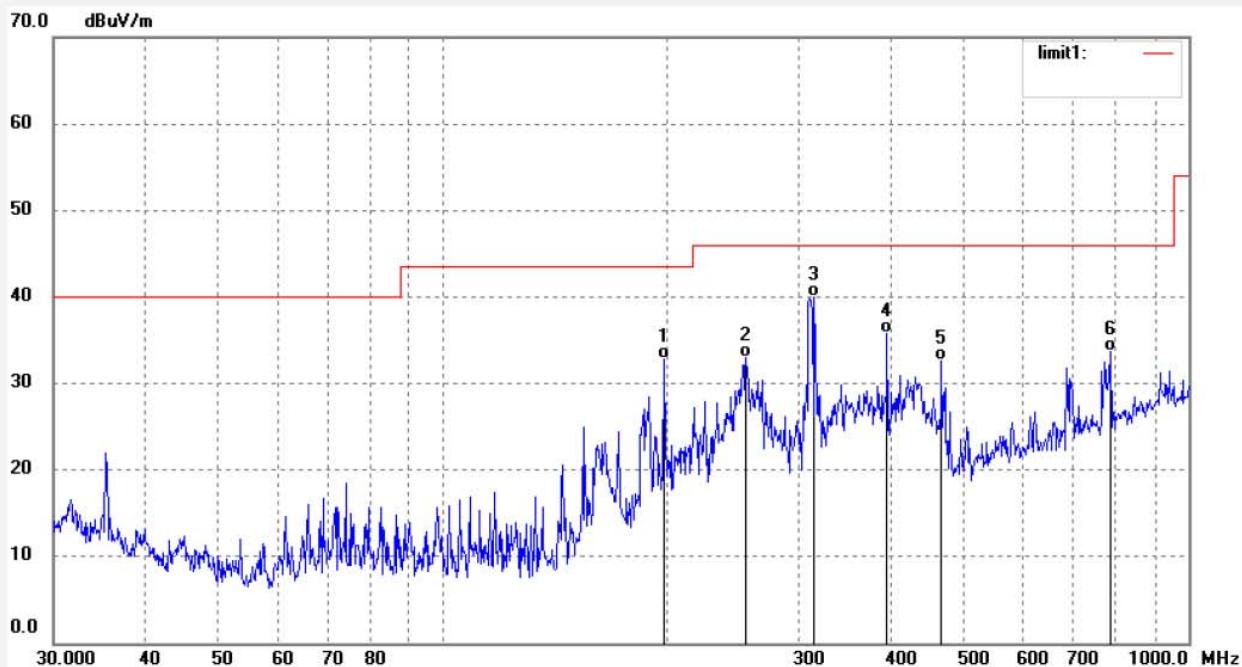
Mode: TX Channel 6(802.11b)

Distance: 3m

Model: WP0DR1110

Manufacturer: Prima

Note: Report No.:ATE20170115



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	197.9456	51.62	-18.78	32.84	43.50	-10.66	QP			
2	254.9252	50.81	-17.85	32.96	46.00	-13.04	QP			
3	314.7522	55.37	-15.31	40.06	46.00	-5.94	QP			
4	394.1198	48.83	-13.09	35.74	46.00	-10.26	QP			
5	466.5230	43.98	-11.41	32.57	46.00	-13.43	QP			
6	784.7128	38.09	-4.45	33.64	46.00	-12.36	QP			



ACCURATE TECHNOLOGY CO., LTD.

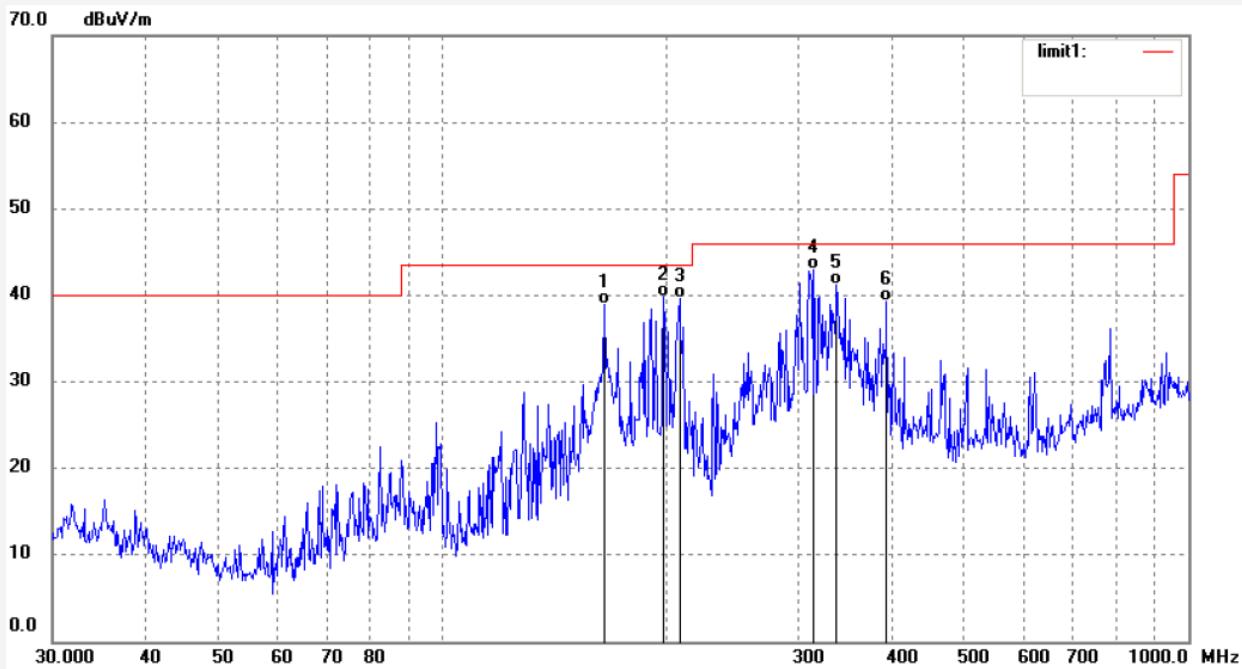
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.:	STAR2017 #5	Polarization:	Horizontal
Standard:	FCC Class B 3M Radiated	Power Source:	DC 3.3V
Test item:	Radiation Test	Date:	17/02/21/
Temp.(C)/Hum.(%)	25 C / 55 %	Time:	14/42/29
EUT:	WIFI module	Engineer Signature:	star
Mode:	TX Channel 11(802.11b)	Distance:	3m
Model:	WP0DR1110		
Manufacturer:	Prima		
Note:	Report No.:ATE20170115		



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	164.8911	59.76	-20.85	38.91	43.50	-4.59	QP			
2	197.9456	58.58	-18.78	39.80	43.50	-3.70	QP			
3	207.9260	58.14	-18.47	39.67	43.50	-3.83	QP			
4	314.7522	58.27	-15.31	42.96	46.00	-3.04	QP			
5	337.6660	55.58	-14.31	41.27	46.00	-4.73	QP			
6	394.1198	52.32	-13.09	39.23	46.00	-6.77	QP			



ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2017 #6

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: WIFI module

Mode: TX Channel 11(802.11b)

Model: WP0DR1110

Manufacturer: Prima

Polarization: Vertical

Power Source: DC 3.3V

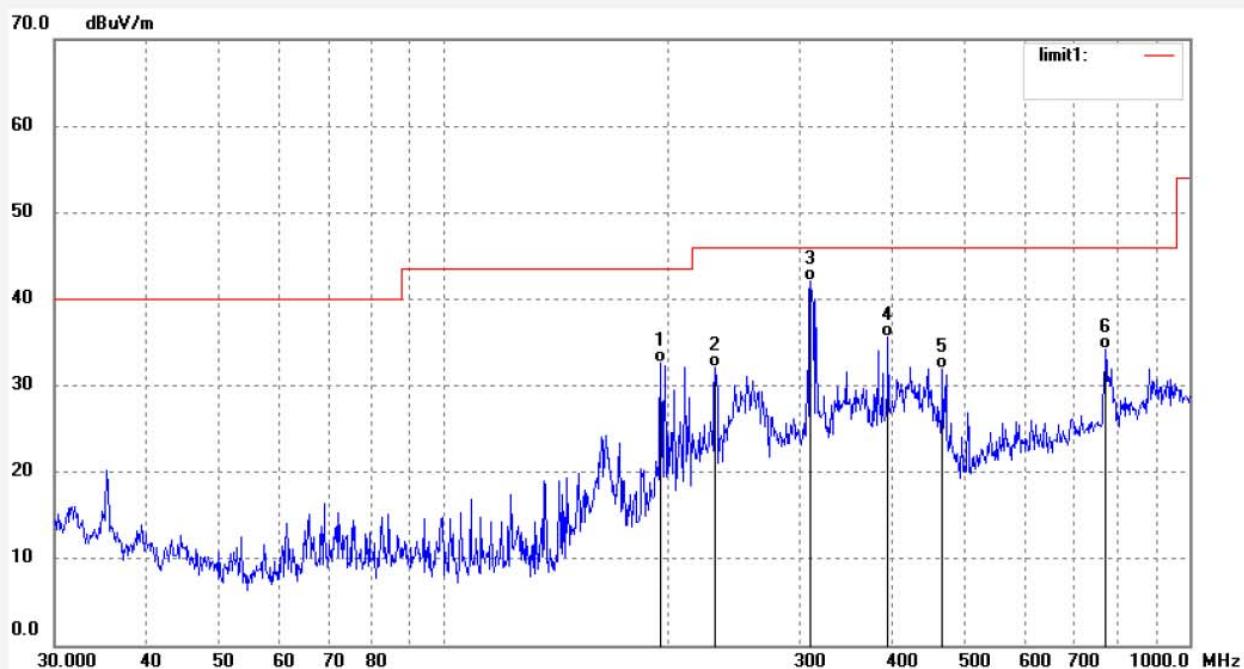
Date: 17/02/21/

Time: 14:43:41

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20170115



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	195.1830	51.63	-18.92	32.71	43.50	-10.79	QP			
2	231.0398	50.38	-18.27	32.11	46.00	-13.89	QP			
3	310.3594	57.57	-15.45	42.12	46.00	-3.88	QP			
4	394.1198	48.66	-13.09	35.57	46.00	-10.43	QP			
5	466.5230	43.37	-11.41	31.96	46.00	-14.04	QP			
6	771.0475	38.89	-4.73	34.16	46.00	-11.84	QP			