APPLICATION CERTIFICATION FCC Part 15C
On Behalf of
HAOLIYUAN (SHENZHEN) ELECTRONIC CO., LTD

150M High Gain Wireless USB Adapter
Model No.: WU112K

FCC ID: 2AAD8-WU112K

Prepared for	:	HAOLIYUAN (SHENZHEN) ELECTRONIC CO., LTD
Address	:	3/F, Building A1, Junfeng Industrial Park, Yonghe Road, Fuyong, Bao'an District, Shenzhen, Guangdong,China
Prepared by	:	ACCURATE TECHNOLOGY CO., LTD
Address	:	F1, Bldg. A, Changyuan New Material Port, Keyuan Rd. Science & Industry Park, Nanshan, Shenzhen, Guangdong P.R. China
		Tel: (0755) 26503290
		Fax: (0755) 26503396

Report Number	:	ATE20141832
Date of Test	:	Sep 21-Oct 09,2014
Date of Report	:	Oct 09,2014

TABLE OF CONTENTS

Description Page

Test Report Certification

Applicant **:** HAOLIYUAN (SHENZHEN) ELECTRONIC CO., LTD

Manufacturer **:** HAOLIYUAN (SHENZHEN) ELECTRONIC CO., LTD

EUT Description **:** 150M High Gain Wireless USB Adapter

(A) MODEL NO.: WU112K

(B) SERIAL NO.: N/A

(C) POWER SUPPLY: DC 5V (Power by USB)

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247
ANSI C63.4: 2009

The EUT was tested according to DTS test procedure of Jun 05, 2014 KDB558074 D01 DTS Meas Guidance v03r02 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 21-Oct 09,2014

Date of Report : Oct 09,2014

Prepared by :

(Engineer)

Approved & Authorized Signer :

(Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT	:	150M High Gain Wireless USB Adapter
Model Number	:	WU112K
Frequency Range	:	802.11b/g/n (20MHz): 2412-2462MHz 11 Channels 802.11n (40MHz): 2422-2452MHz 7 Channels
Modulation	:	CCK,OFDM
Antenna Gain	:	1.5dBi
Power Supply	:	DC 5V (USB Port)
Applicant	:	HAOLIYUAN (SHENZHEN) ELECTRONIC CO., LTD
Address	:	3/F, Building A1, Junfeng Industrial Park, Yonghe Road, Fuyong, Bao'an District, Shenzhen, Guangdong,China
Manufacturer	:	HAOLIYUAN (SHENZHEN) ELECTRONIC CO., LTD
Address	:	3/F, Building A1, Junfeng Industrial Park, Yonghe Road, Fuyong, Bao'an District, Shenzhen, Guangdong,China
Date of sample received	:	Sep 21,2014
Date of Test	:	Sep 21-Oct 09,2014

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.Special Accessory and Auxiliary Equipment

n.a.

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. 11, 2014	Jan. 10, 2015
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 11, 2014	Jan. 10, 2015
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 11, 2014	Jan. 10, 2015
Pre-Amplifier	Rohde&Schwarz	CBLU1183540-01	3791	Jan. 11, 2014	Jan. 10, 2015
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 15, 2014	Jan. 14, 2015
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 15, 2014	Jan. 14, 2015
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 15, 2014	Jan. 14, 2015
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1067	Jan. 15, 2014	Jan. 14, 2015
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 11, 2014	Jan. 10, 2015
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 11, 2014	Jan. 10, 2015
Highpass Filter	Wainwright Instruments	WHKX3.6/18G-10SS	N/A	Jan. 11, 2014	Jan. 10, 2015
Band Reject Filter	Wainwright Instruments	WRCG2400/2485-2375/2510-60/11SS	N/A	Jan. 11, 2014	Jan. 10, 2015

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

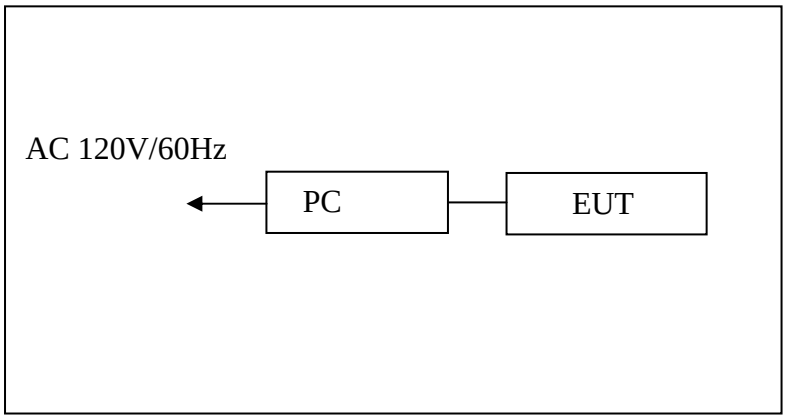
Low Channel: 2412MHz
Middle Channel: 2437MHz
High Channel: 2462MHz

4.802.11n (40MHz) Transmitting mode

Low Channel: 2422MHz
Middle Channel: 2437MHz
High Channel: 2452MHz

5. Charging

3.2.Configuration and peripherals

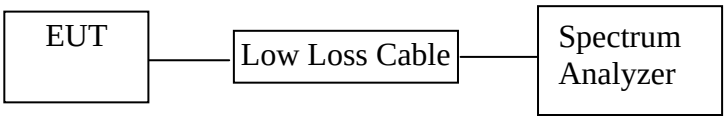


4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.247(a)(2)	6dB 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 15.207	AC Power Line Conducted Emission Test	Compliant
Section 15.203	Antenna Requirement	Compliant

5. 6DB&20DB BANDWIDTH MEASUREMENT

5.1.Block Diagram of Test Setup



5.2.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.

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

1. Set resolution bandwidth (RBW) = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 x 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.

20dB bandwidth

1. Set resolution bandwidth (RBW) = 1%-5% OBW.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.

4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Once the reference level is established, the equipment is conditioned with typical modulating signals to produce the worst-case (i.e., the widest) bandwidth. Unless otherwise specified for an unlicensed wireless device, measure the bandwidth at the －20 dB levels with respect to the reference level

5.6.Test Result

The test was performed with 802.11b				
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	20dB Bandwidth (MHz)	Limit (MHz)
Low	2412	10.12	17.598	> 0.5MHz
Middle	2437	10.12	17.135	> 0.5MHz
High	2462	10.12	17.54	> 0.5MHz

The test was performed with 802.11g				
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	20dB Bandwidth (MHz)	Limit (MHz)
Low	2412	16.60	19.740	> 0.5MHz
Middle	2437	16.60	19.392	> 0.5MHz
High	2462	16.60	19.624	> 0.5MHz

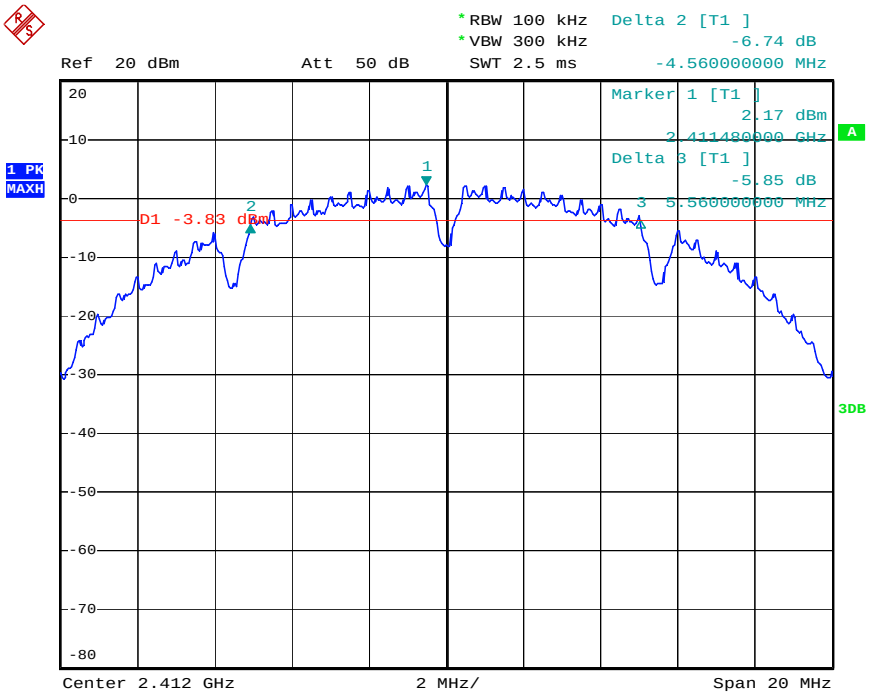
The test was performed with 802.11n (Bandwidth: 20 MHz)				
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	20dB Bandwidth (MHz)	Limit (MHz)
Low	2412	17.84	20.904	> 0.5MHz
Middle	2437	17.84	20.123	> 0.5MHz
High	2462	17.84	19.472	> 0.5MHz

The test was performed with 802.11n (Bandwidth: 40 MHz)				
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	20dB Bandwidth (MHz)	Limit (MHz)
Low	2422	36.56	40.84	> 0.5MHz
Middle	2437	36.56	40.96	> 0.5MHz
High	2452	36.56	40.96	> 0.5MHz

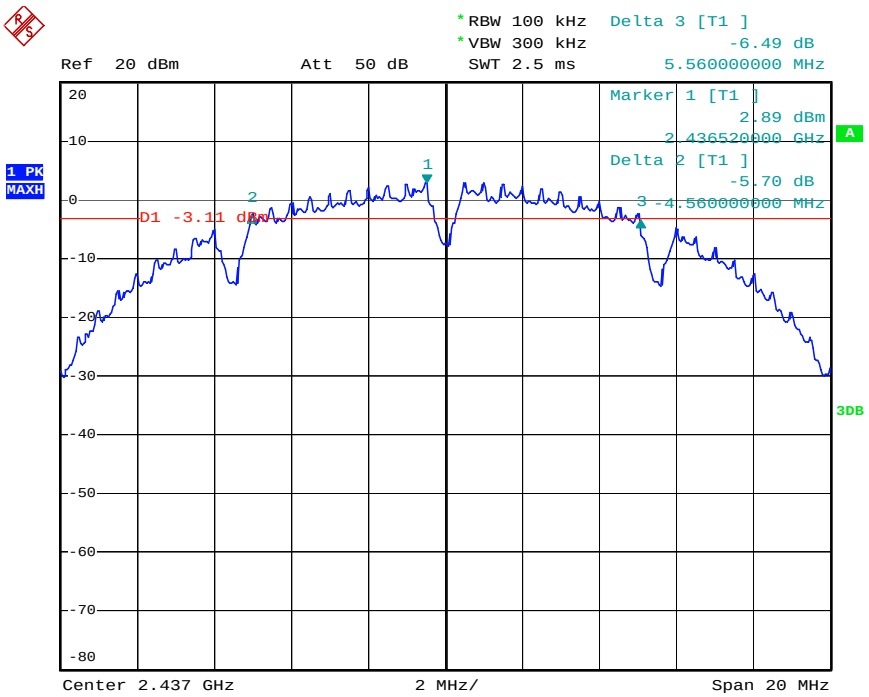
The spectrum analyzer plots are attached as below.

6dB Bandwidth

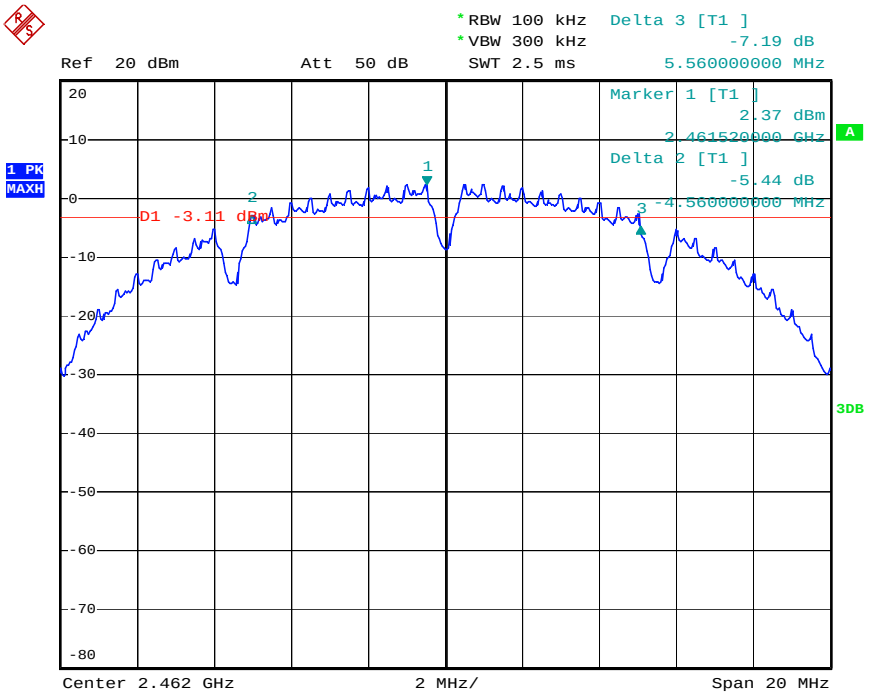
802.11b Channel Low 2412MHz



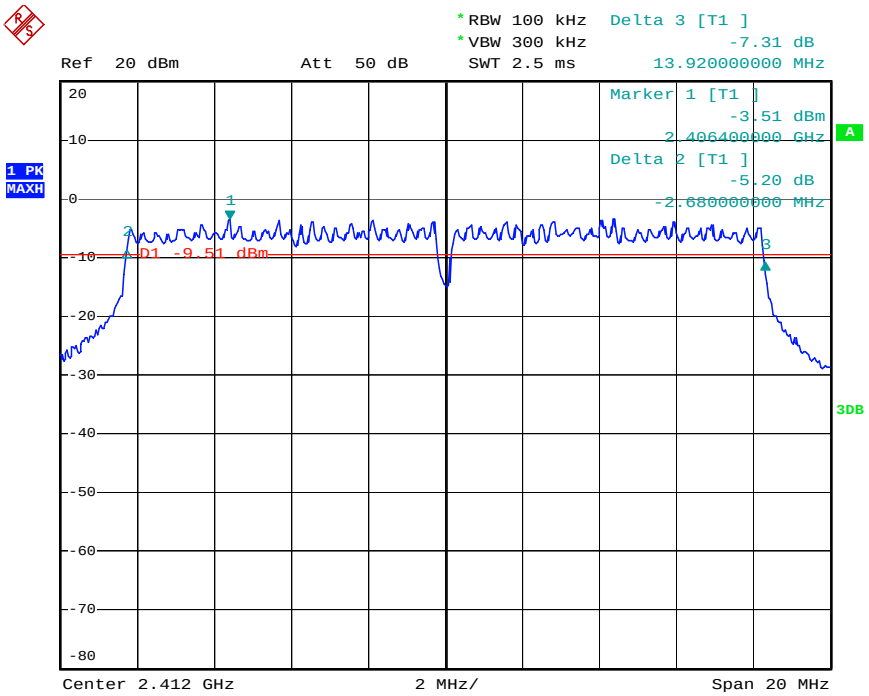
802.11b Channel Middle 2437MHz



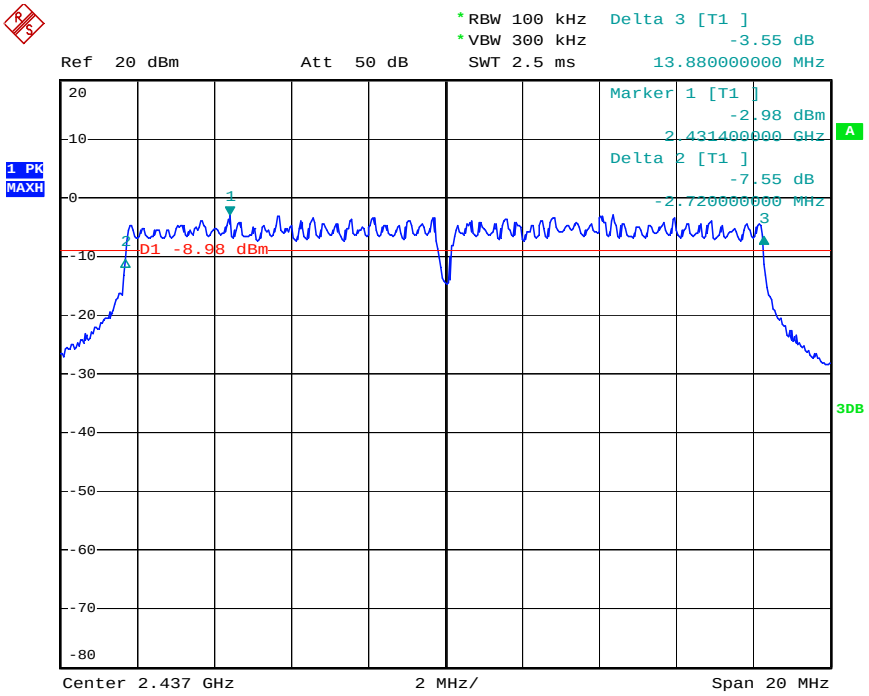
802.11b Channel High 2462MHz



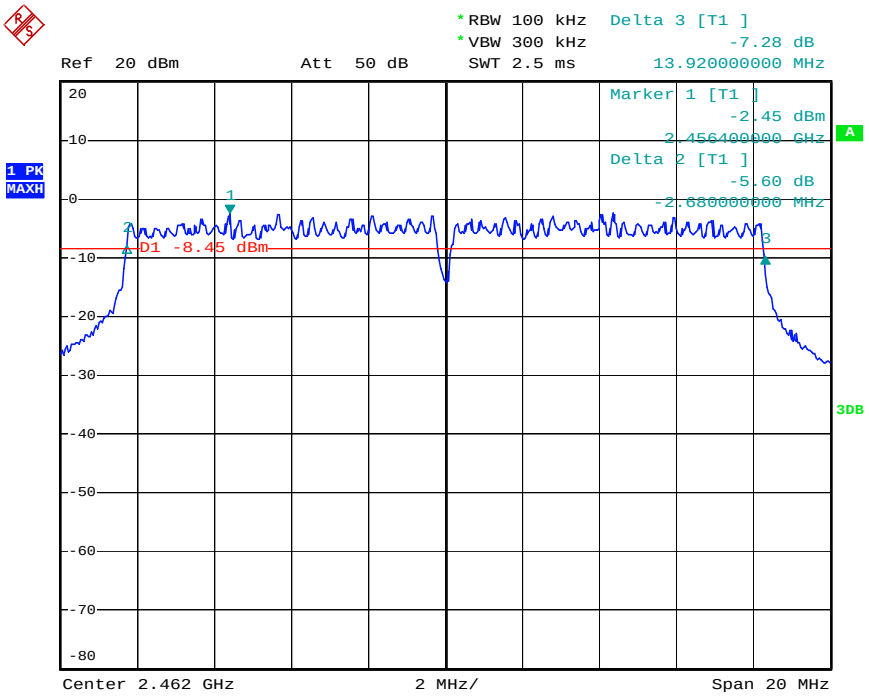
802.11g Channel Low 2412MHz



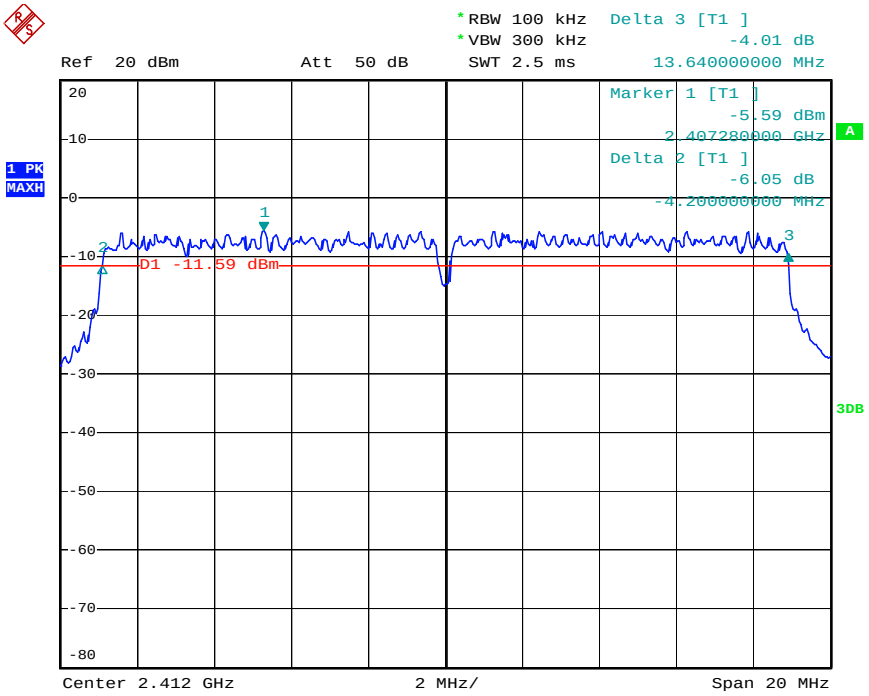
802.11g Channel Middle 2437MHz



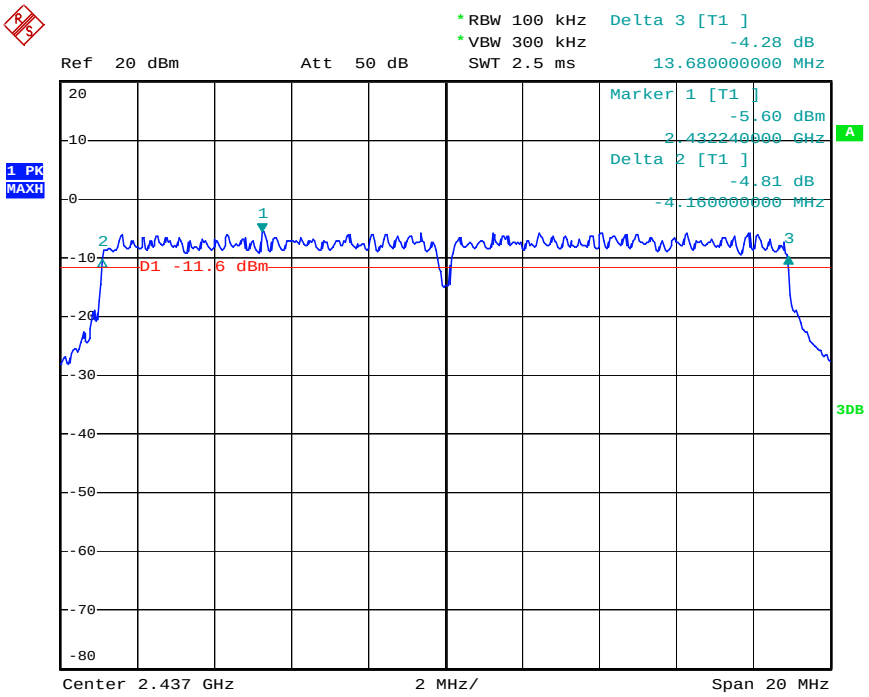
802.11g Channel High 2462MHz



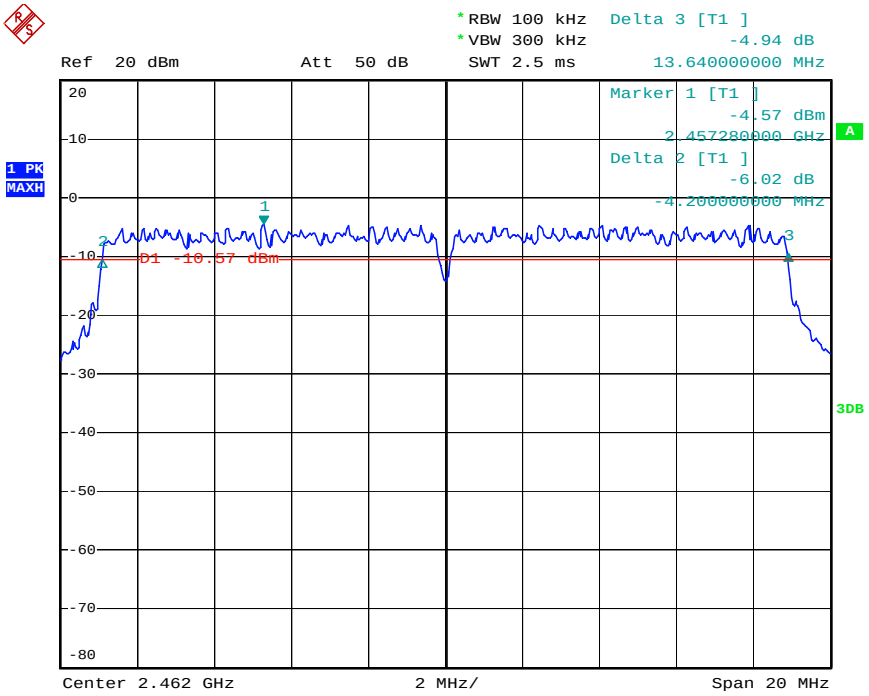
802.11n Channel Low 2412MHz (20MHz)



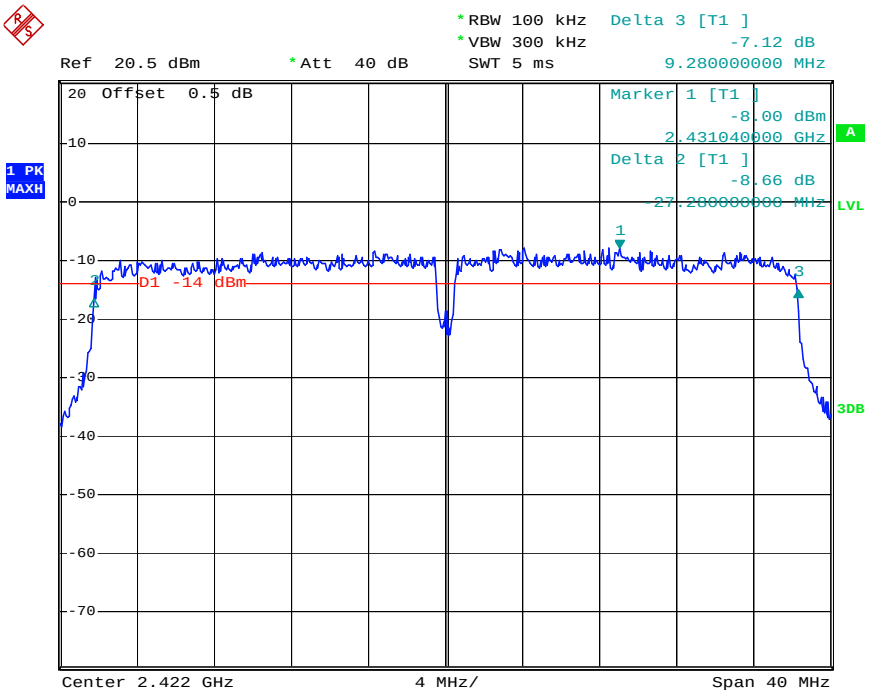
802.11n Channel Middle 2437MHz(20MHz)



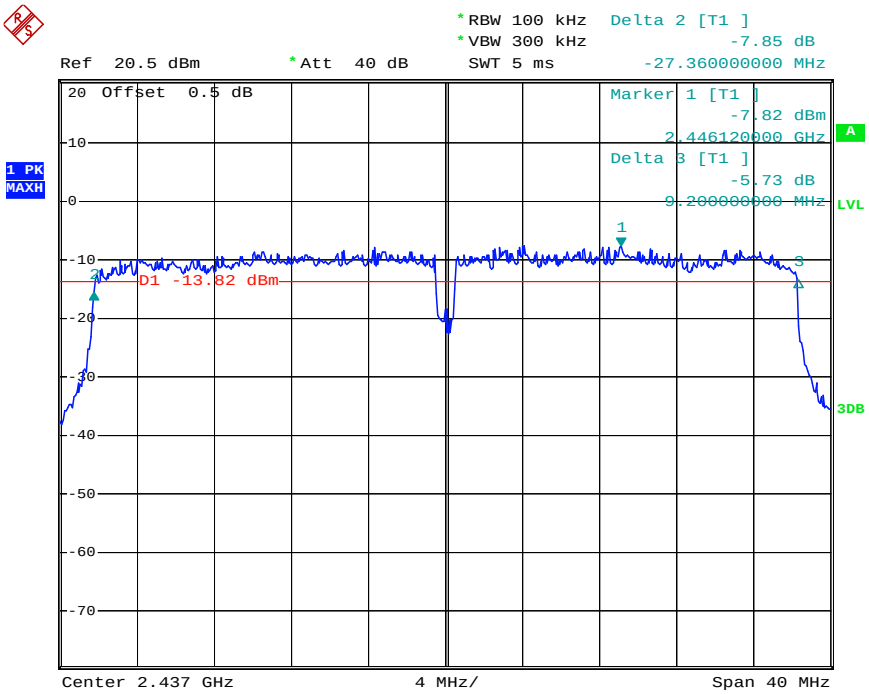
802.11n Channel High 2462MHz(20MHz)



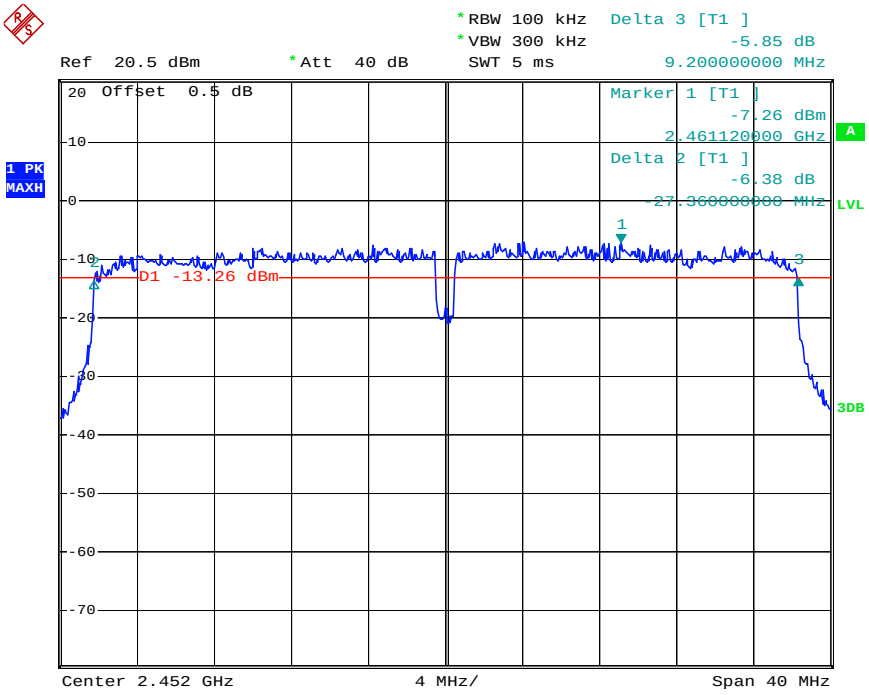
802.11n Channel Low 2422MHz (40MHz)



802.11n Channel Middle 2437MHz(40MHz)

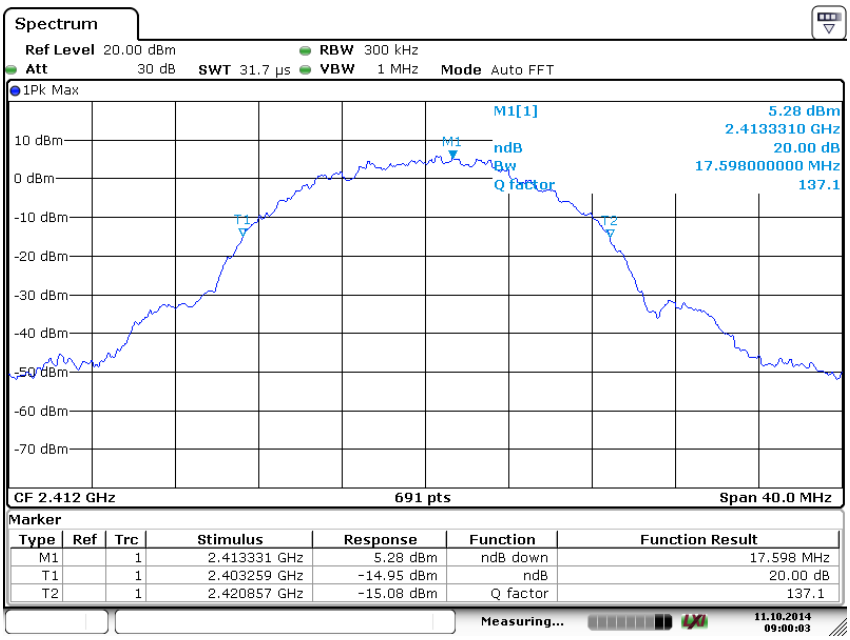


802.11n Channel High 2452MHz(40MHz)

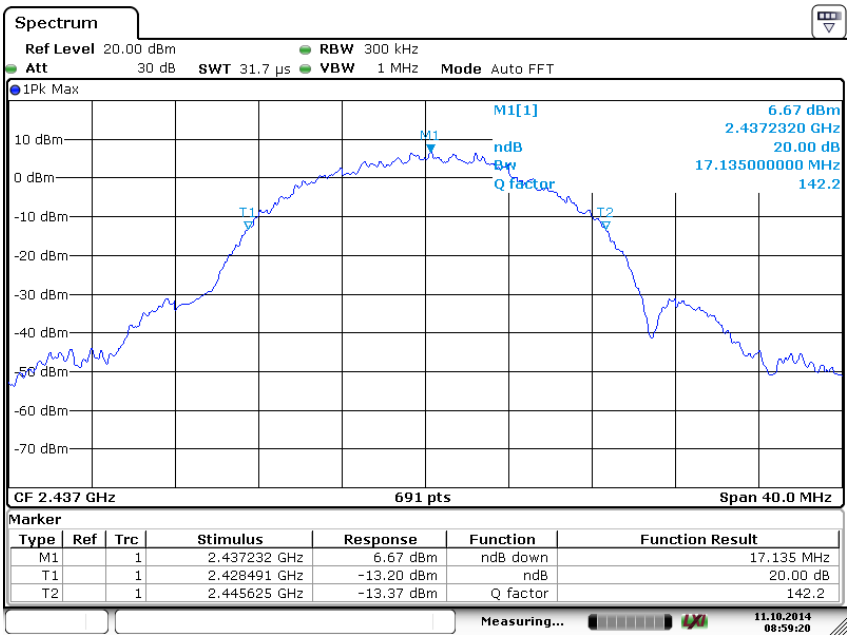


20dB Bandwidth

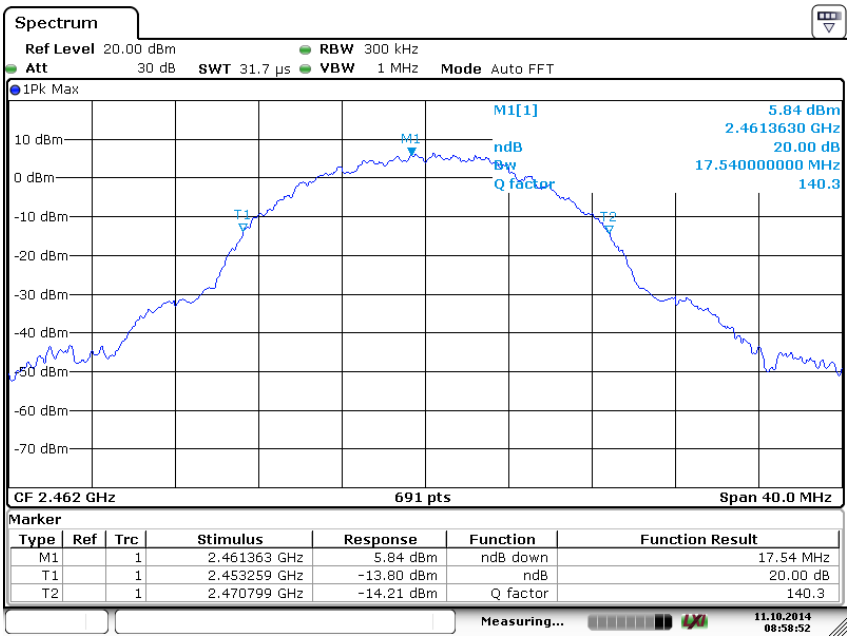
802.11b Channel Low 2412MHz



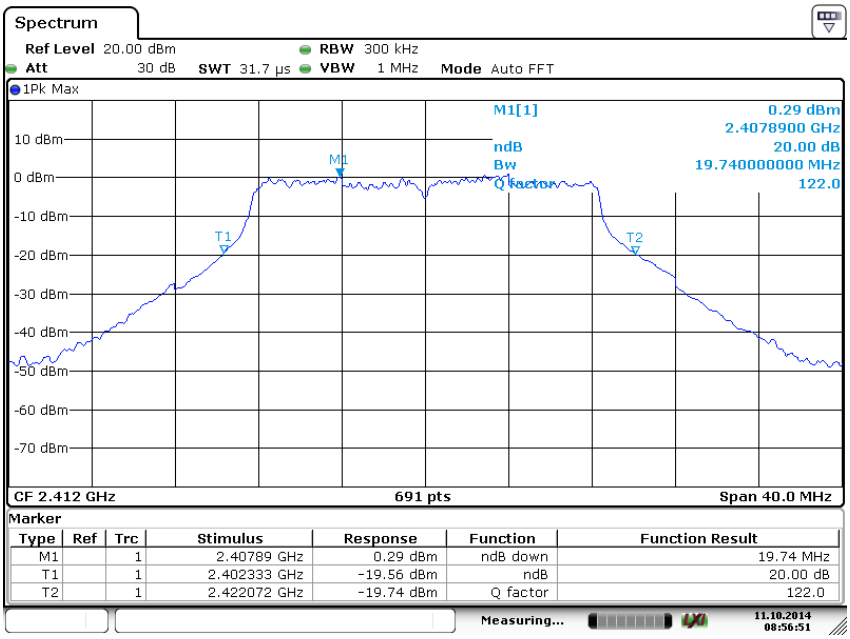
802.11b Channel Middle 2437MHz



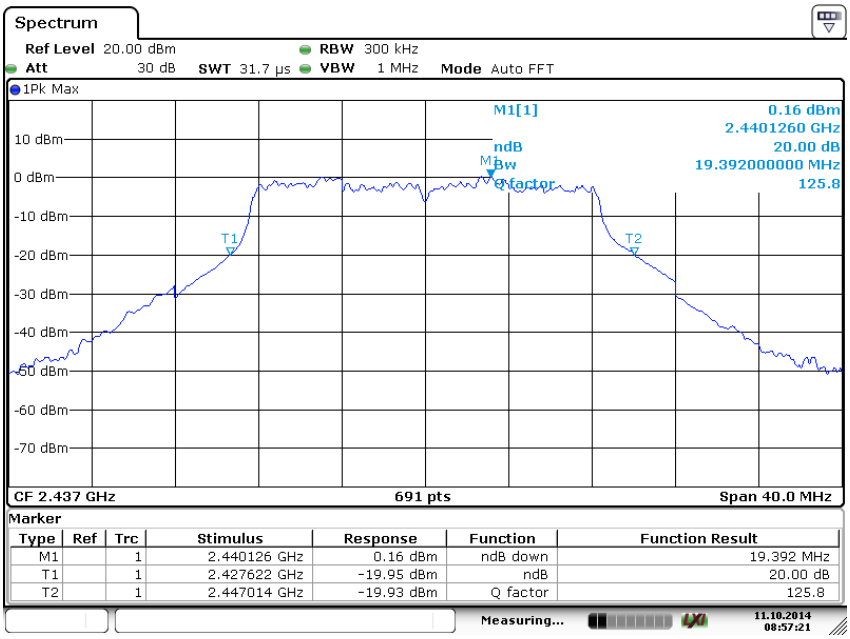
802.11b Channel High 2462MHz



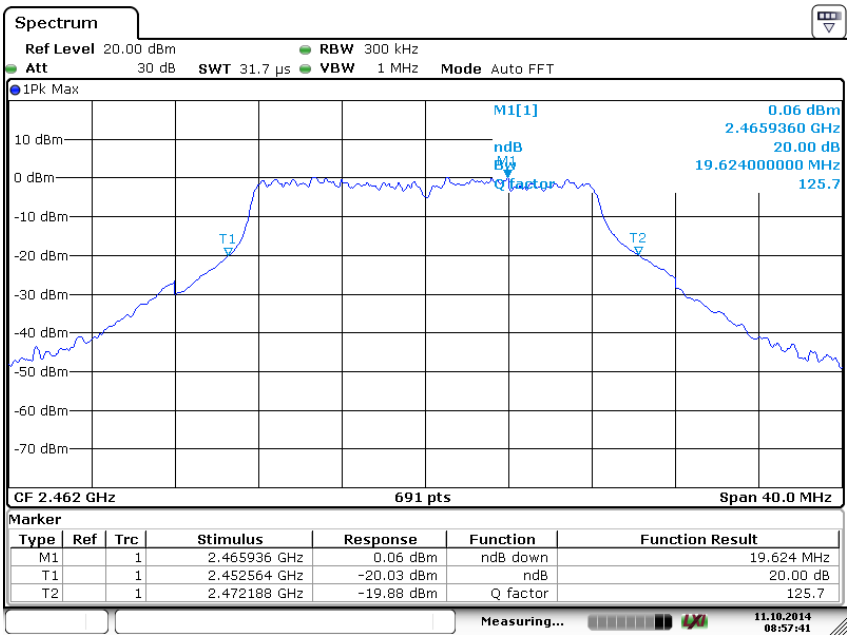
802.11g Channel Low 2412MHz



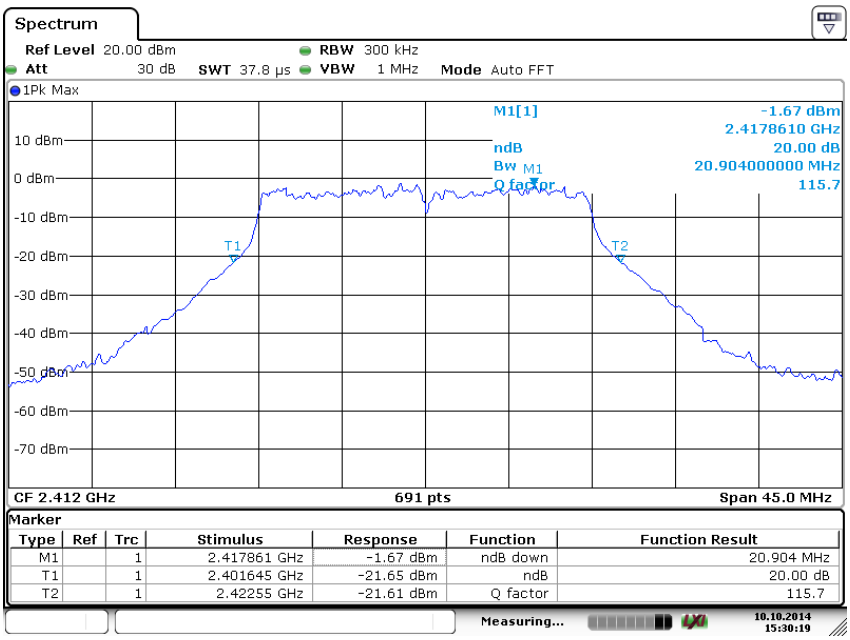
802.11g Channel Middle 2437MHz



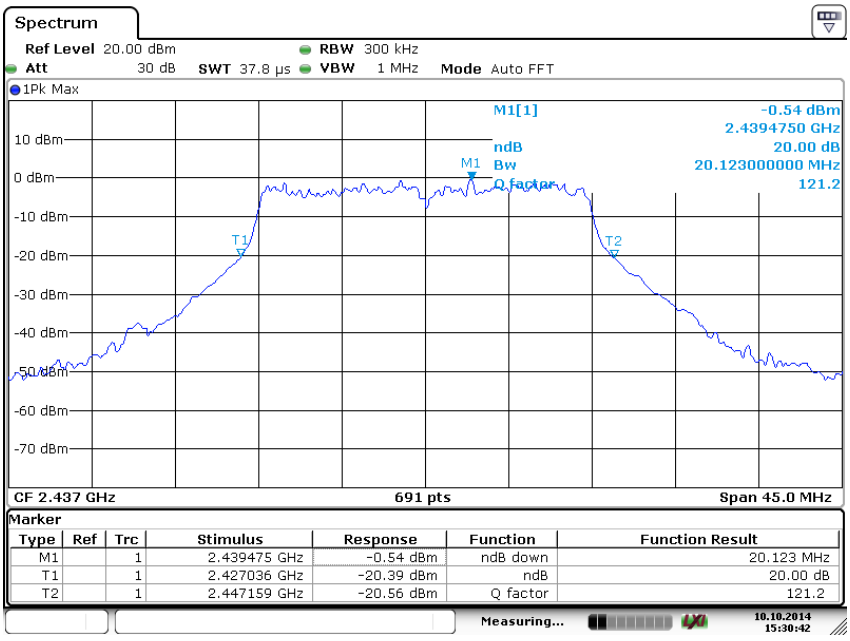
802.11g Channel High 2462MHz



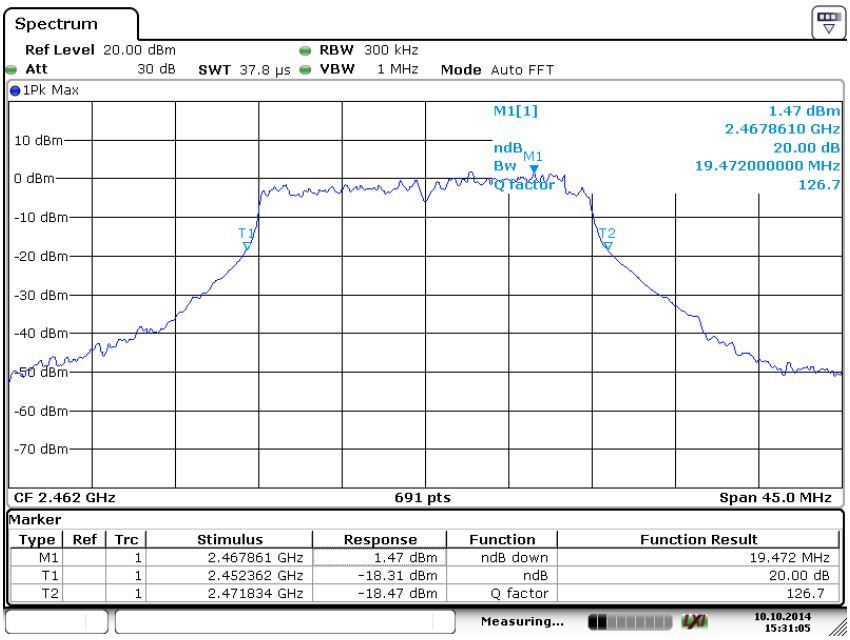
802.11n Channel Low 2412MHz (20MHz)



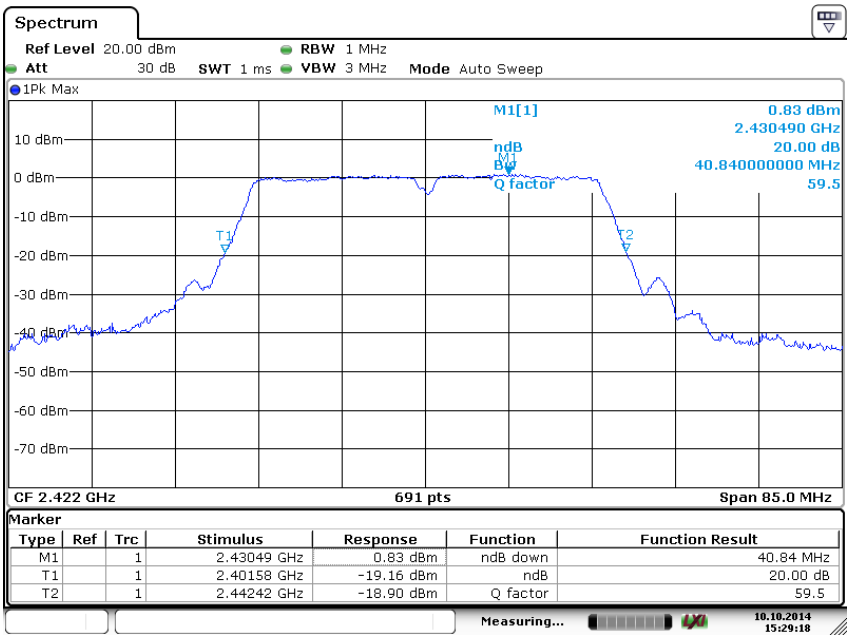
802.11n Channel Middle 2437MHz(20MHz)



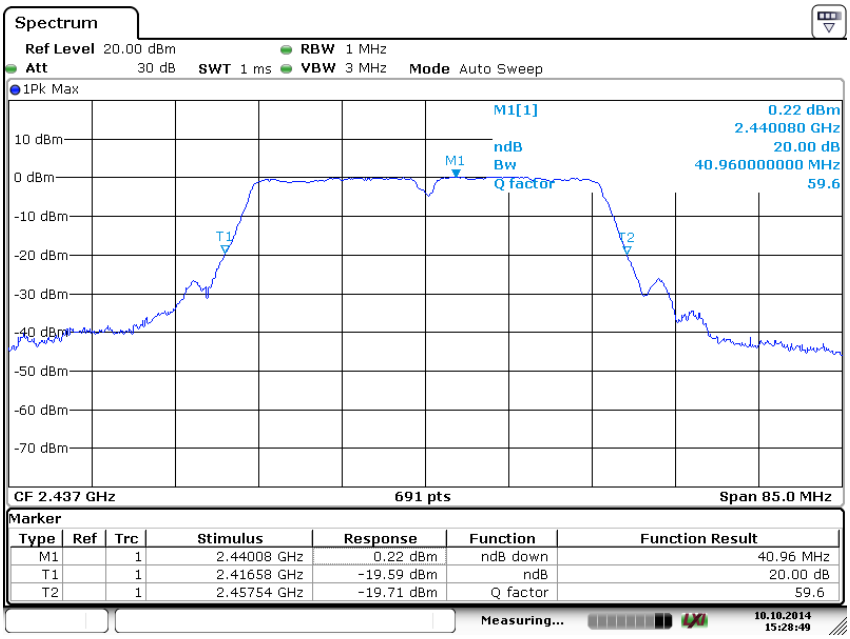
802.11n Channel High 2462MHz(20MHz)



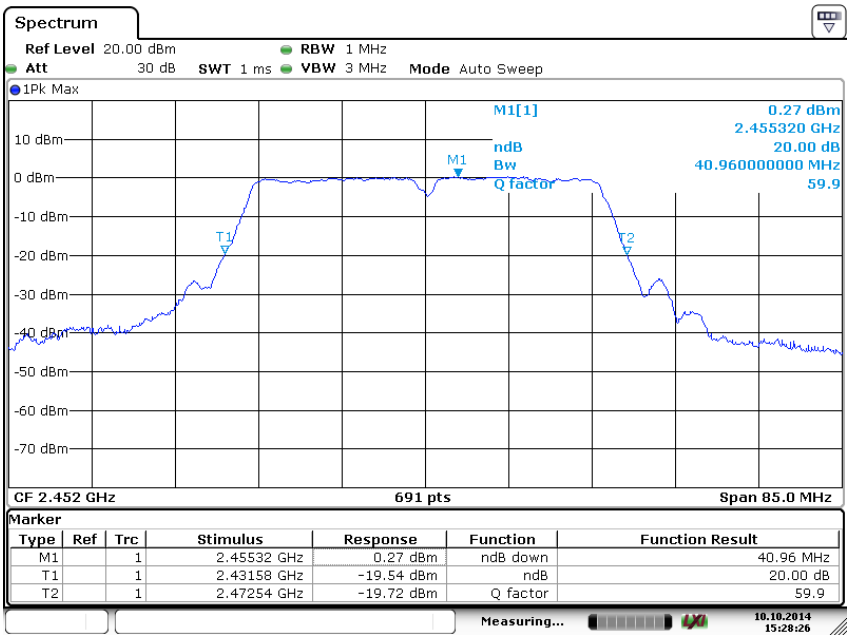
802.11n Channel Low 2422MHz (40MHz)



802.11n Channel Middle 2437MHz(40MHz)

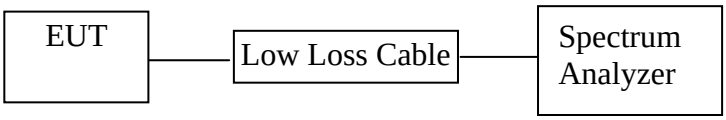


802.11n Channel High 2452MHz(40MHz)



6. MAXIMUM OUTPUT POWER

6.1.Block Diagram of Test Setup



6.2.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.

6.3.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.

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

6.5.1.The EUT was tested according to DTS test procedure of Jun 05, 2014 KDB558074 D01 DTS Meas Guidance v03r02 for compliance to FCC 47CFR 15.247 requirements.

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

6.5.3.Set RBW of spectrum analyzer to 1-5% of the OBW, not to exceed 1 MHz and VBW $\geqslant$ 3 x RBW.

6.5.4.Measurement the maximum Average output power.

6.6.Test Result

The test was performed with 802.11b				
Channel	Frequency (MHz)	Average Output Power(dBm)	Average Output Power(mW)	Limits dBm / W
Low	2412	9.20	8.32	30 dBm / 1 W
Middle	2437	9.14	8.20	30 dBm / 1 W
High	2462	9.26	8.43	30 dBm / 1 W

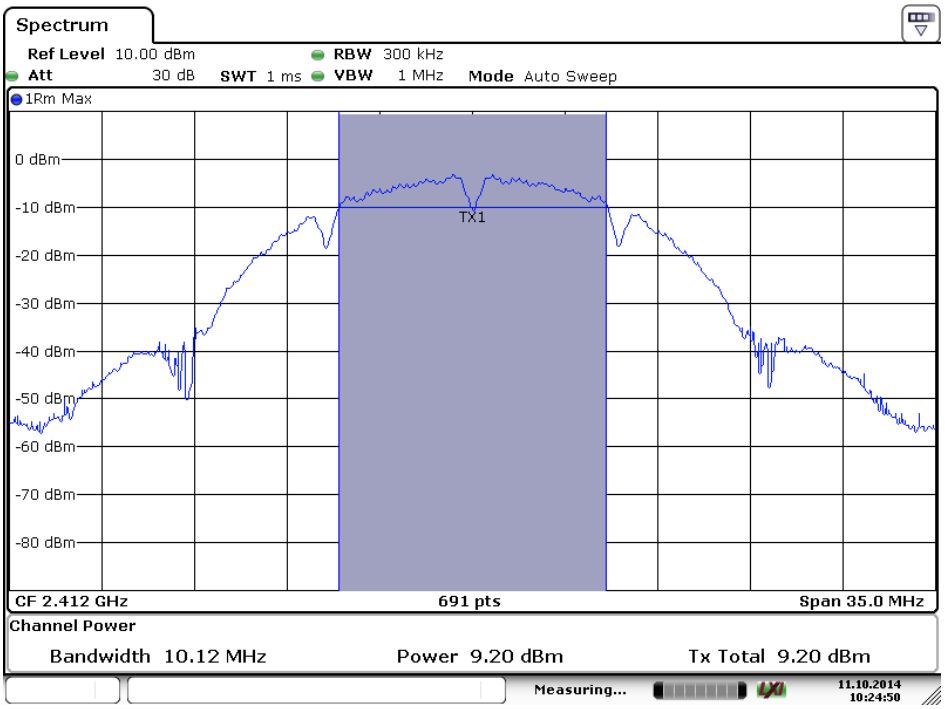
The test was performed with 802.11g				
Channel	Frequency (MHz)	Average Output Power(dBm)	Average Output Power(mW)	Limits dBm / W
Low	2412	7.23	5.28	30 dBm / 1 W
Middle	2437	7.12	5.15	30 dBm / 1 W
High	2462	7.46	5.57	30 dBm / 1 W

The test was performed with 802.11n (20MHz)				
Channel	Frequency (MHz)	Average Output Power(dBm)	Average Output Power(mW)	Limits dBm / W
Low	2412	7.26	5.32	30 dBm / 1 W
Middle	2437	6.92	4.92	30 dBm / 1 W
High	2462	6.63	4.60	30 dBm / 1 W

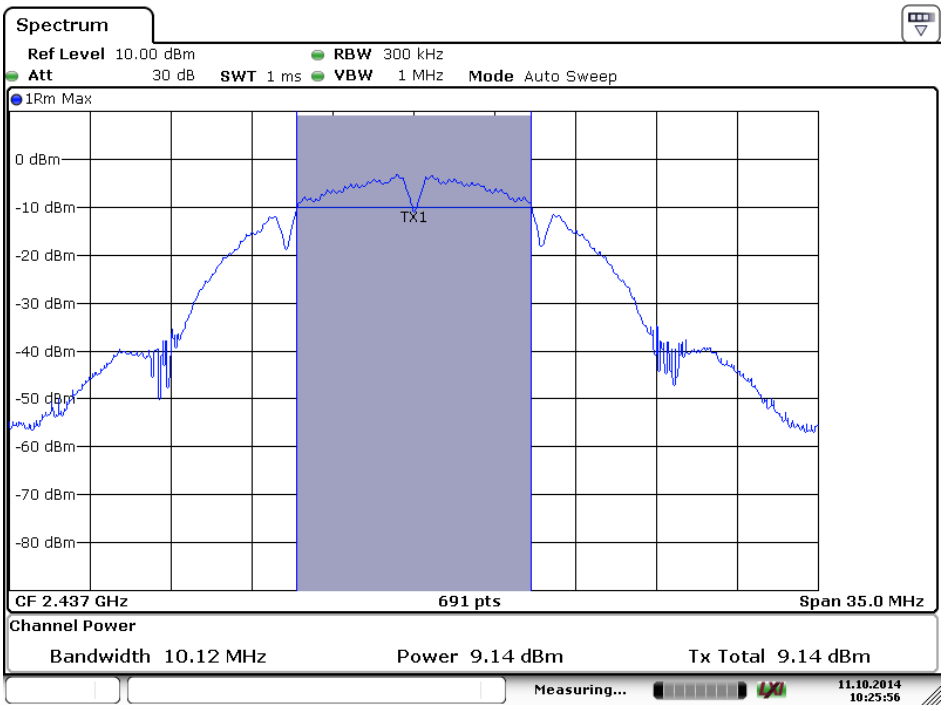
The test was performed with 802.11n (40MHz)				
Channel	Frequency (MHz)	Average Output Power(dBm)	Average Output Power(mW)	Limits dBm / W
Low	2422	4.88	3.08	30 dBm / 1 W
Middle	2437	4.82	3.03	30 dBm / 1 W
High	2452	4.83	3.04	30 dBm / 1 W

The spectrum analyzer plots are attached as below.

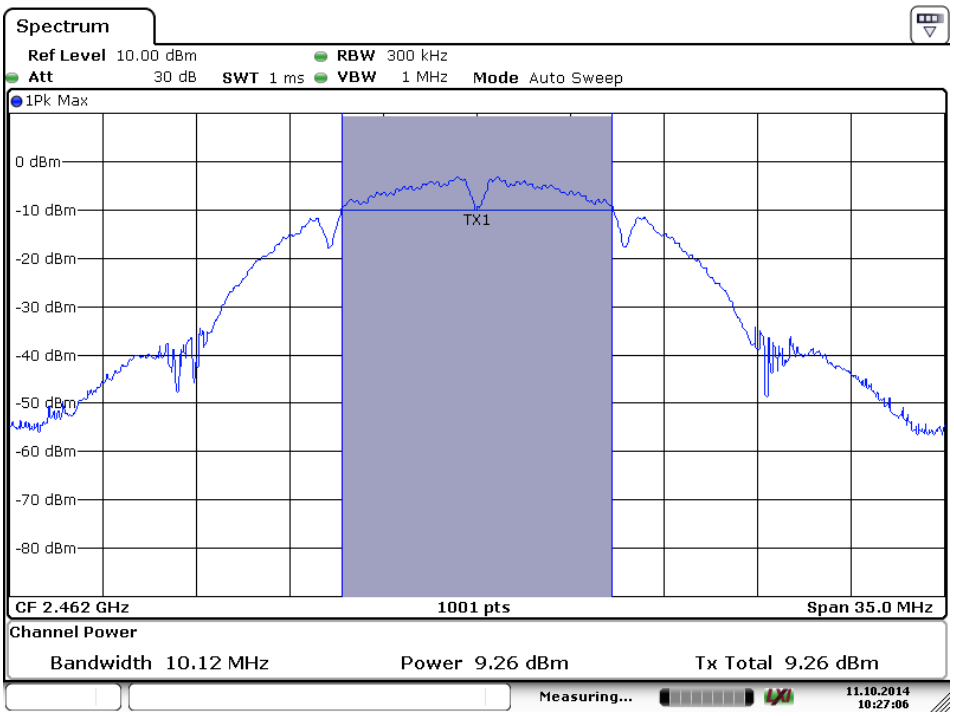
802.11b Channel Low 2412MHz



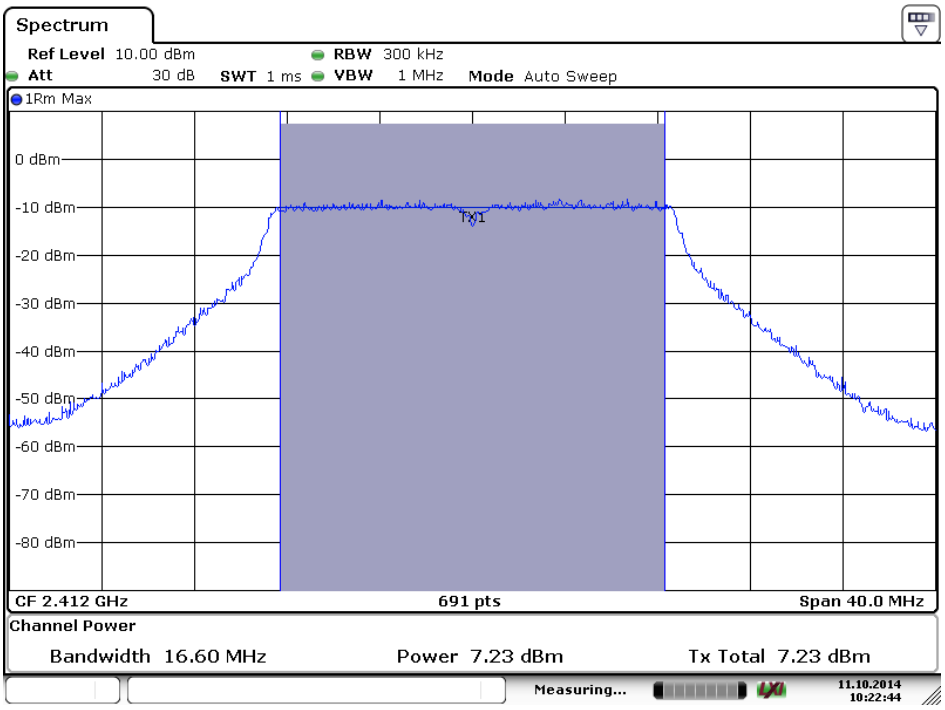
802.11b Channel Middle 2437MHz



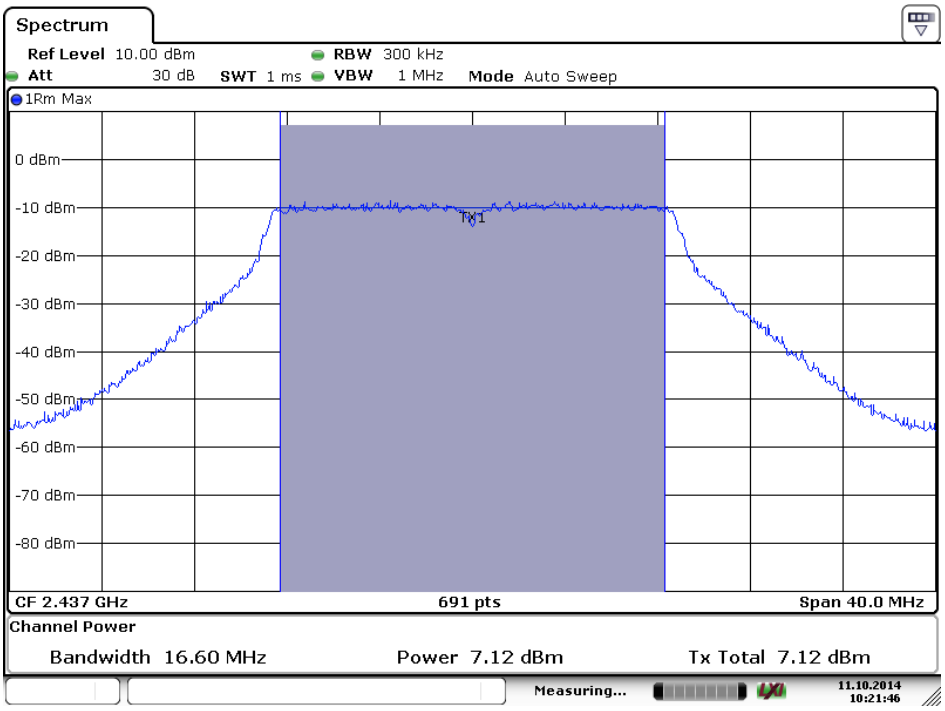
802.11b Channel High 2462MHz



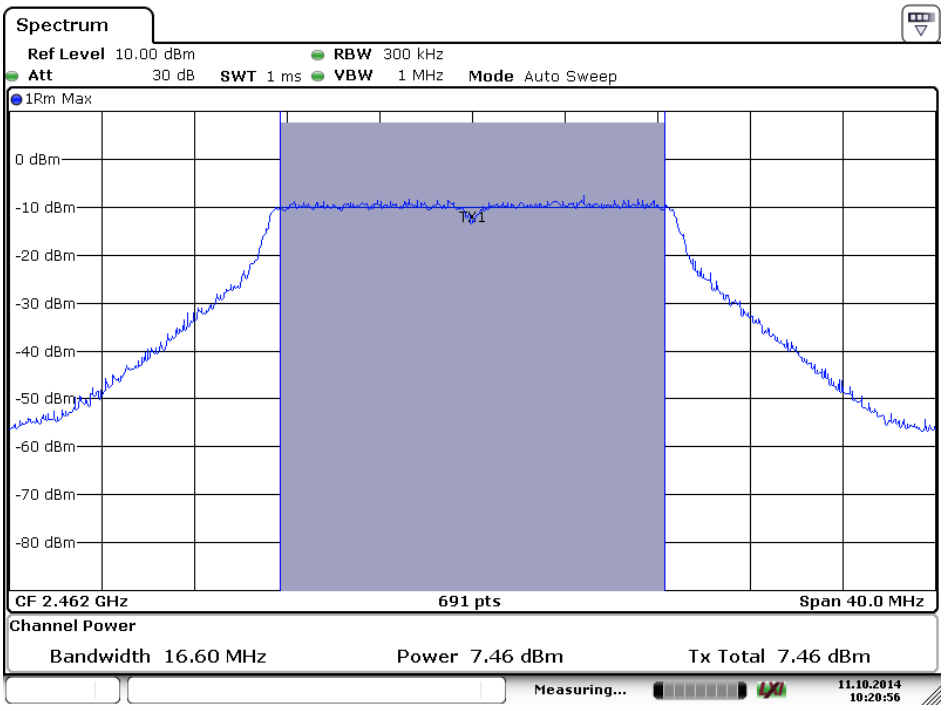
802.11g Channel Low 2412MHz



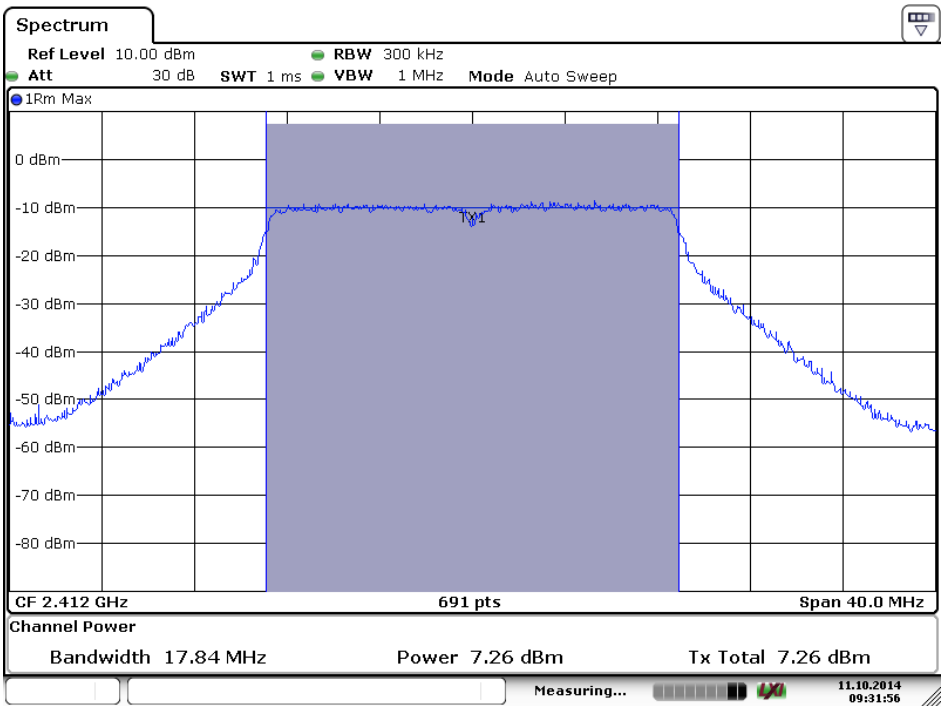
802.11g Channel Middle 2437MHz



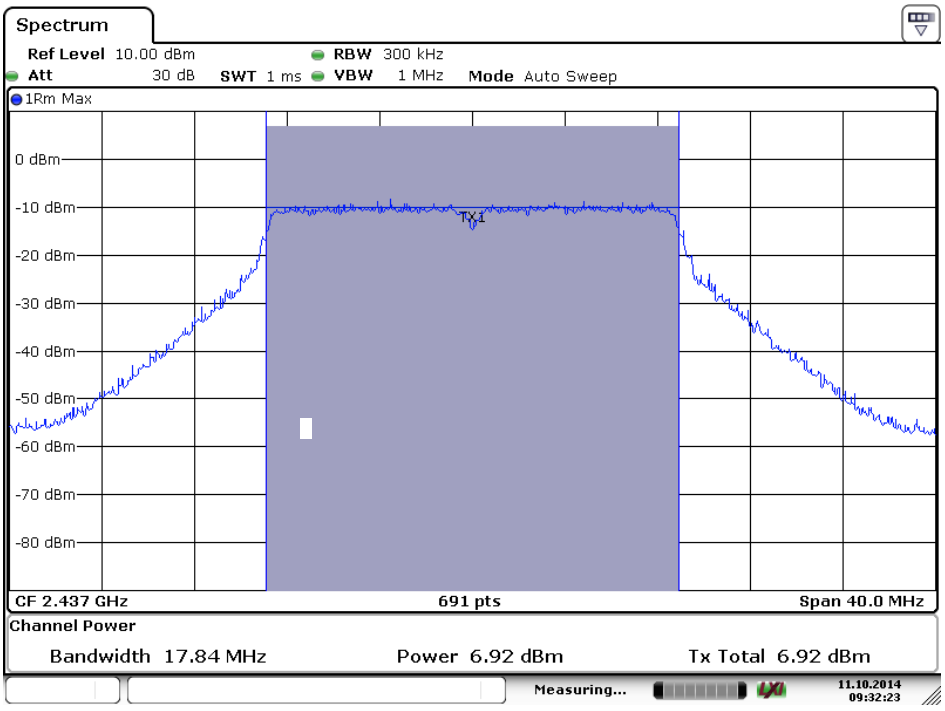
802.11g Channel High 2462MHz



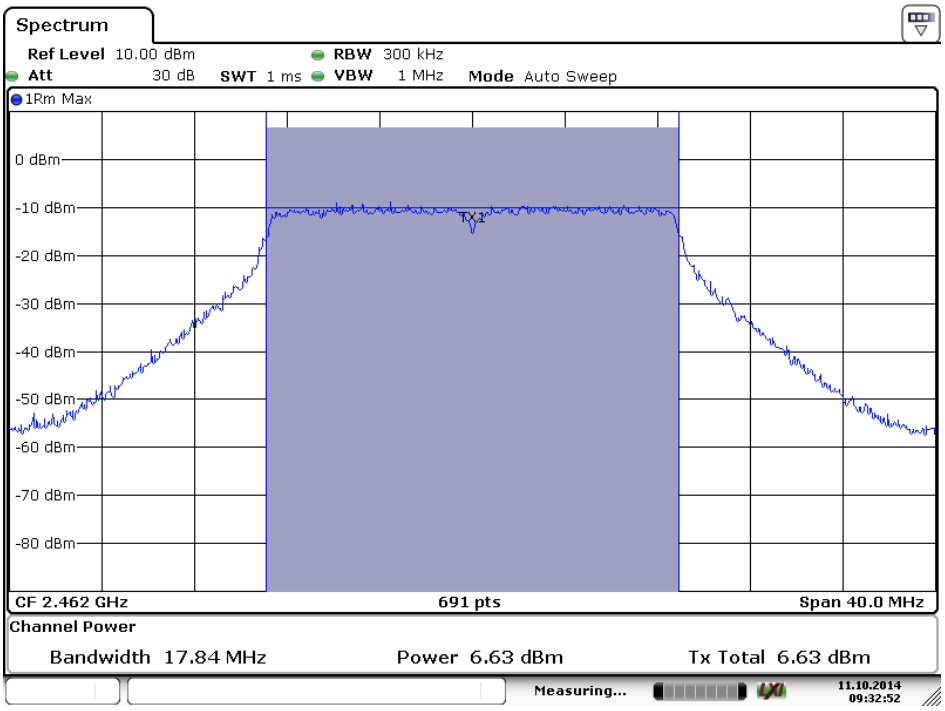
802.11n Channel Low 2412MHz (20MHz)



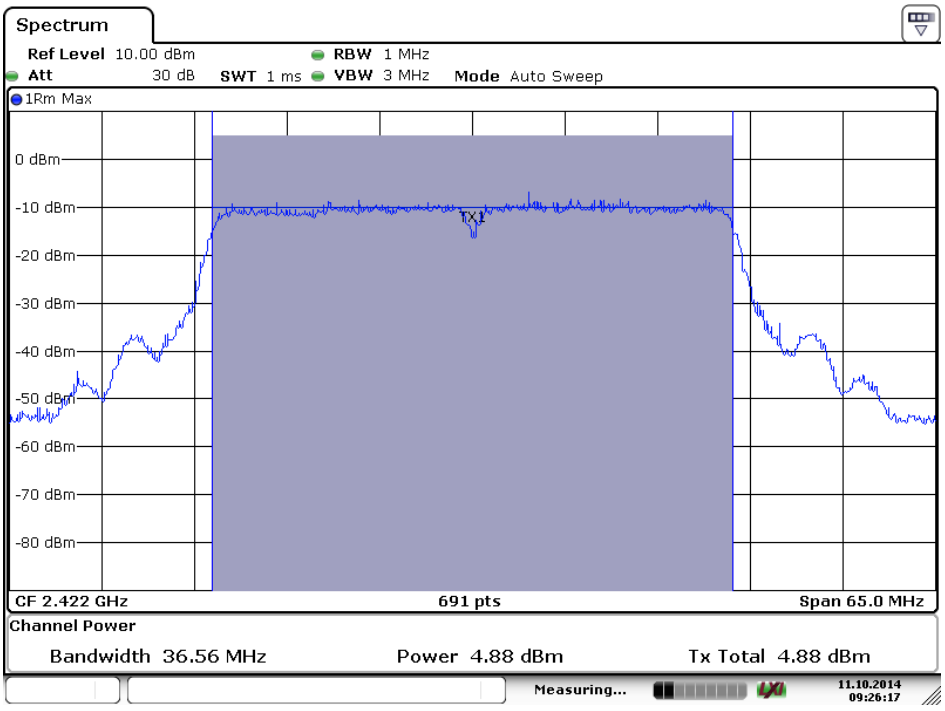
802.11n Channel Middle 2437MHz (20MHz)



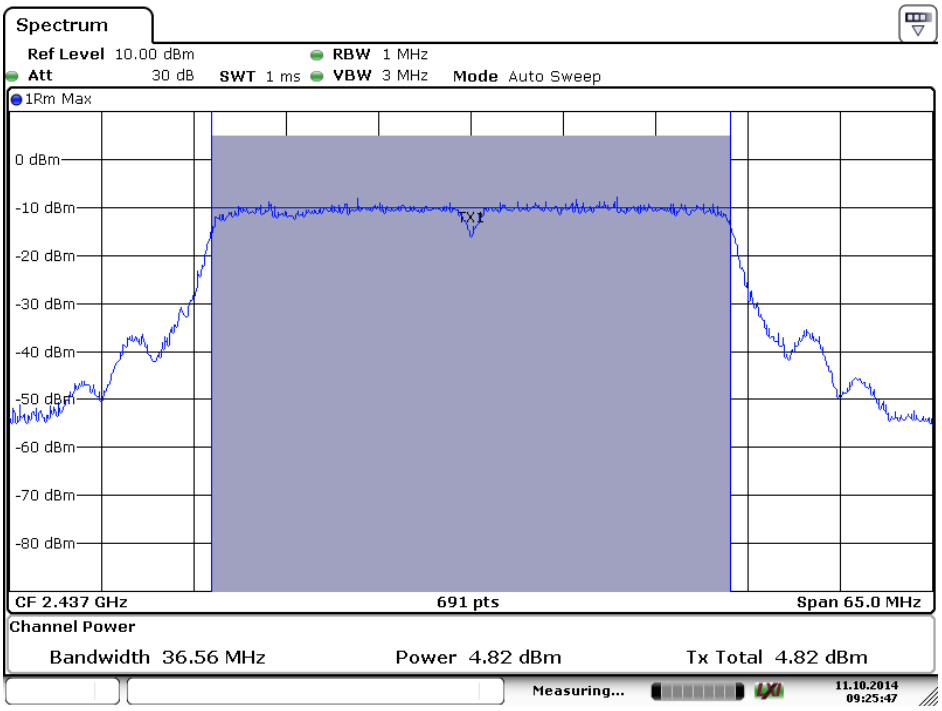
802.11n Channel High 2462MHz (20MHz)



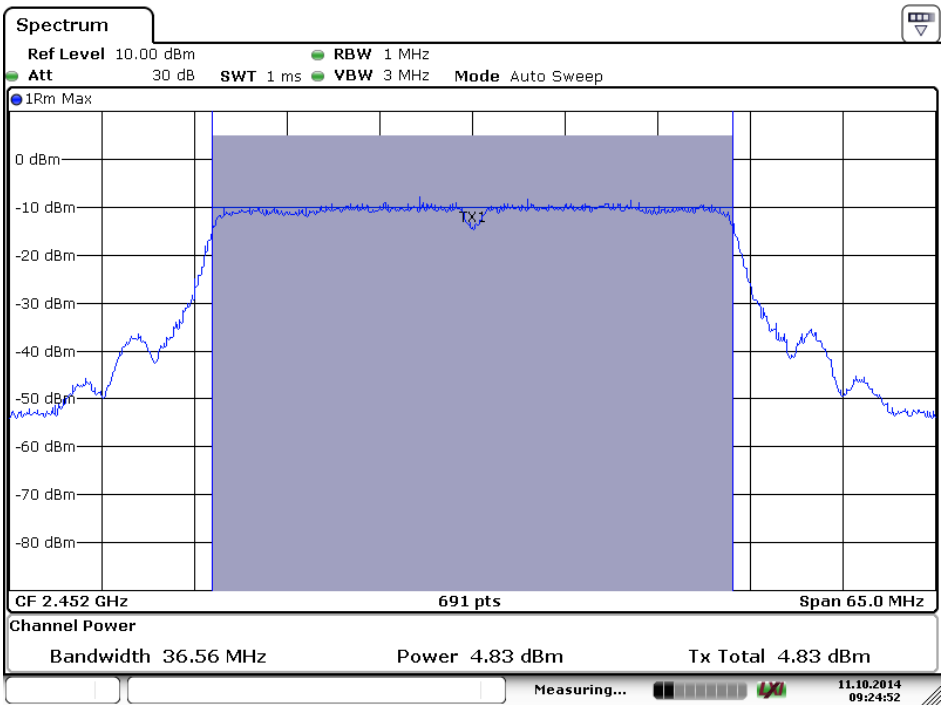
802.11n Channel Low 2422MHz (40MHz)



802.11n Channel Middle 2437MHz (40MHz)

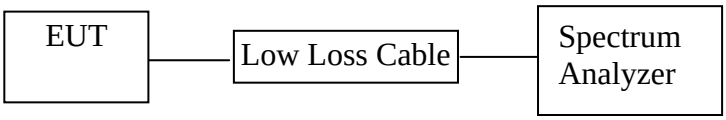


802.11n Channel High 2452MHz (40MHz)



7. POWER SPECTRAL DENSITY MEASUREMENT

7.1.Block Diagram of Test Setup



7.2.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.

7.3.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.

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

7.5.2.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.

7.5.3.Measurement the maximum power spectral density.

7.6.Test Result

The test was performed with 802.11b			
Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)
Low	2412	-19.36	8 dBm
Middle	2437	-19.20	8 dBm
High	2462	-20.11	8 dBm

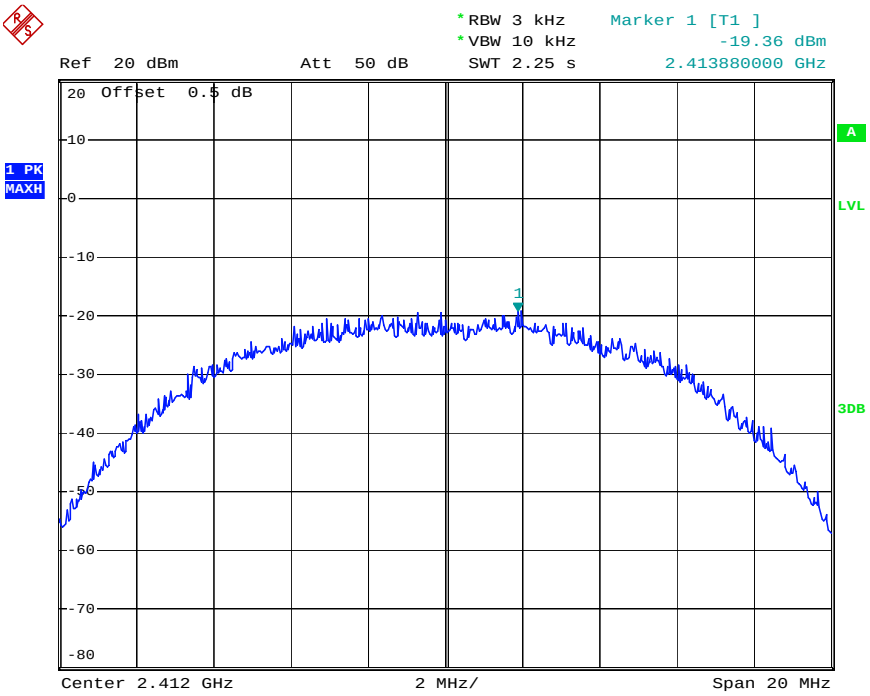
The test was performed with 802.11g			
Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)
Low	2412	-23.88	8 dBm
Middle	2437	-24.52	8 dBm
High	2462	-23.79	8 dBm

The test was performed with 802.11n (20MHz)			
Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)
Low	2412	-24.54	8 dBm
Middle	2437	-25.50	8 dBm
High	2462	-24.74	8 dBm

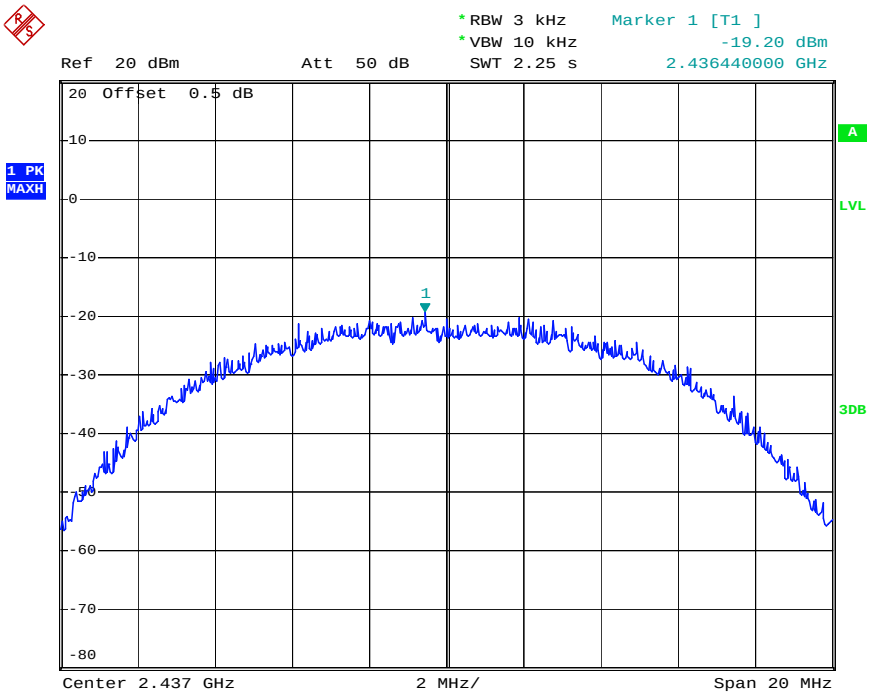
The test was performed with 802.11n (40MHz)			
Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)
Low	2422	-29.52	8 dBm
Middle	2437	-29.55	8 dBm
High	2452	-30.52	8 dBm

The spectrum analyzer plots are attached as below.

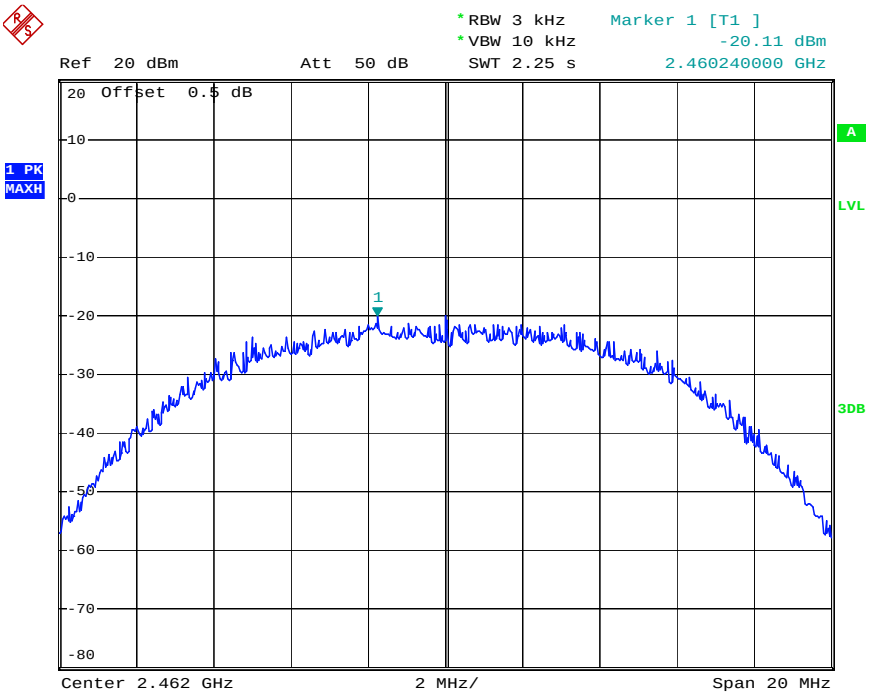
802.11b Channel Low 2412MHz



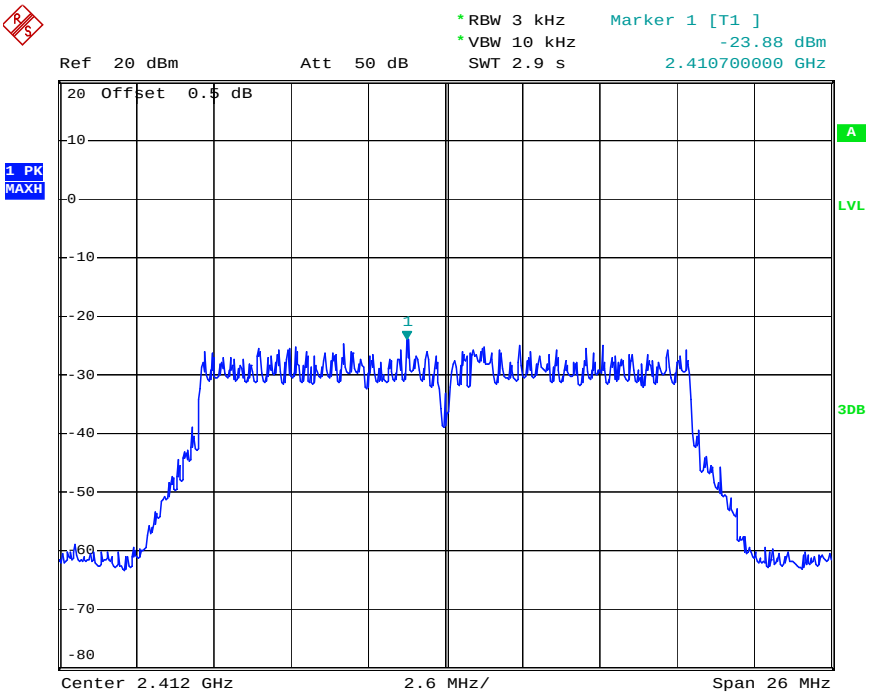
802.11b Channel Middle 2437MHz



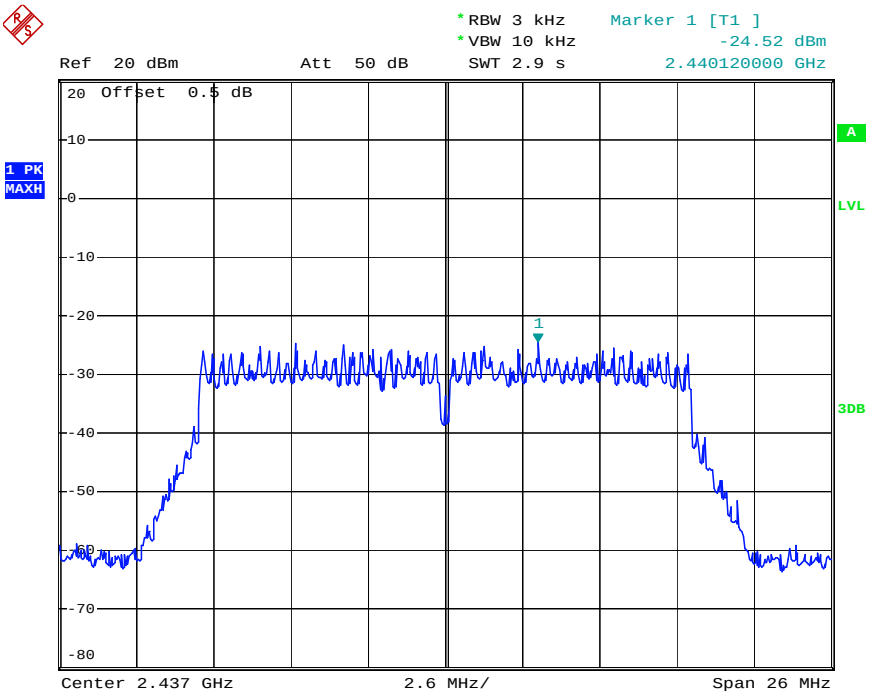
802.11b Channel High 2462MHz



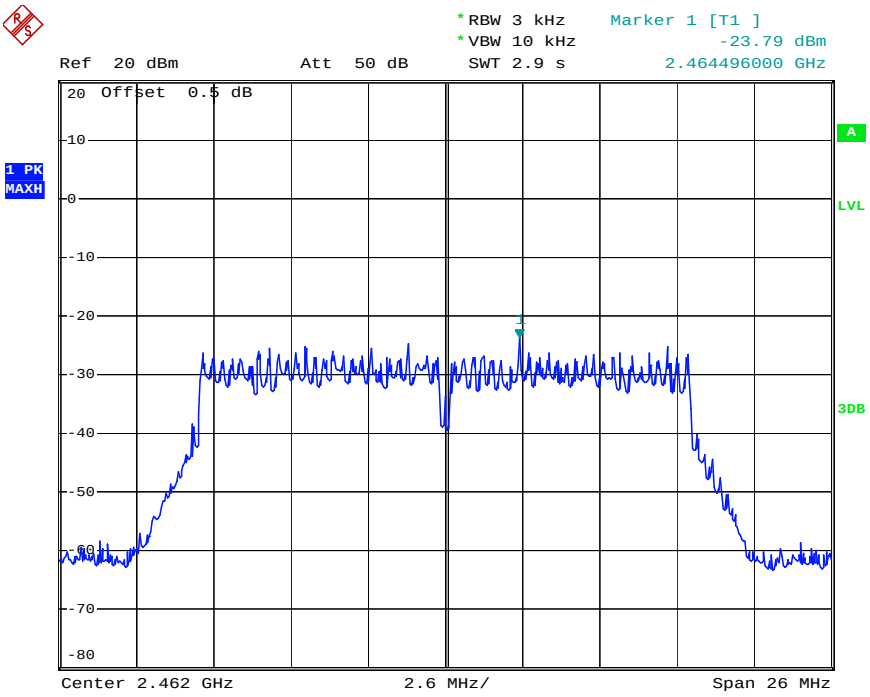
802.11g Channel Low 2412MHz



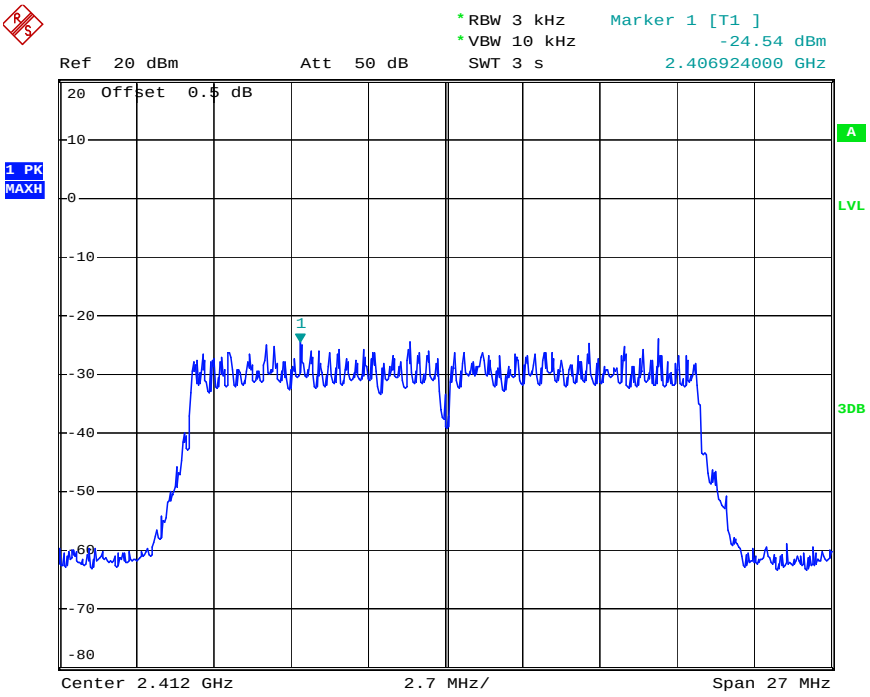
802.11g Channel Middle 2437MHz



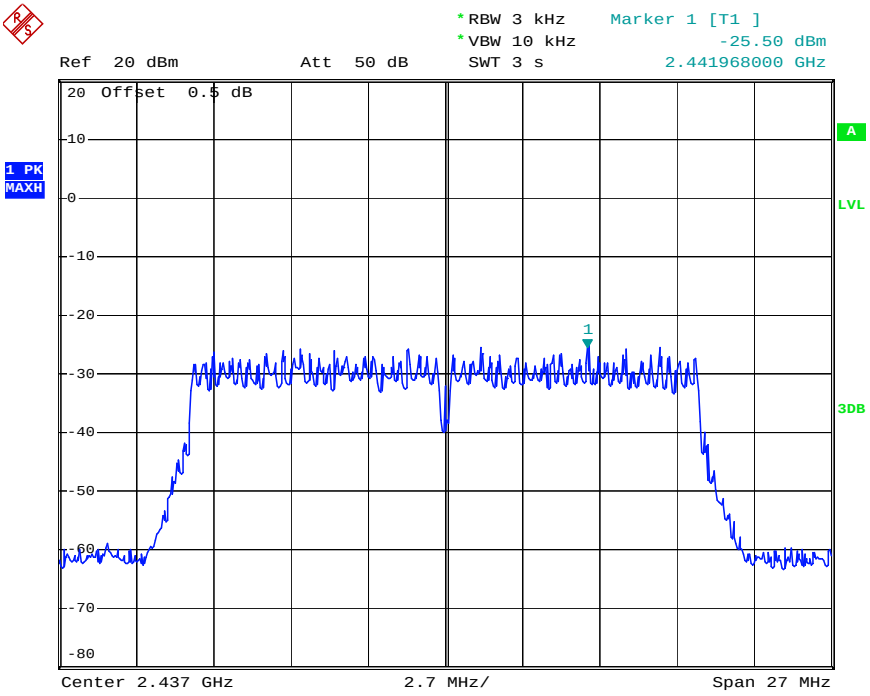
802.11g Channel High 2462MHz



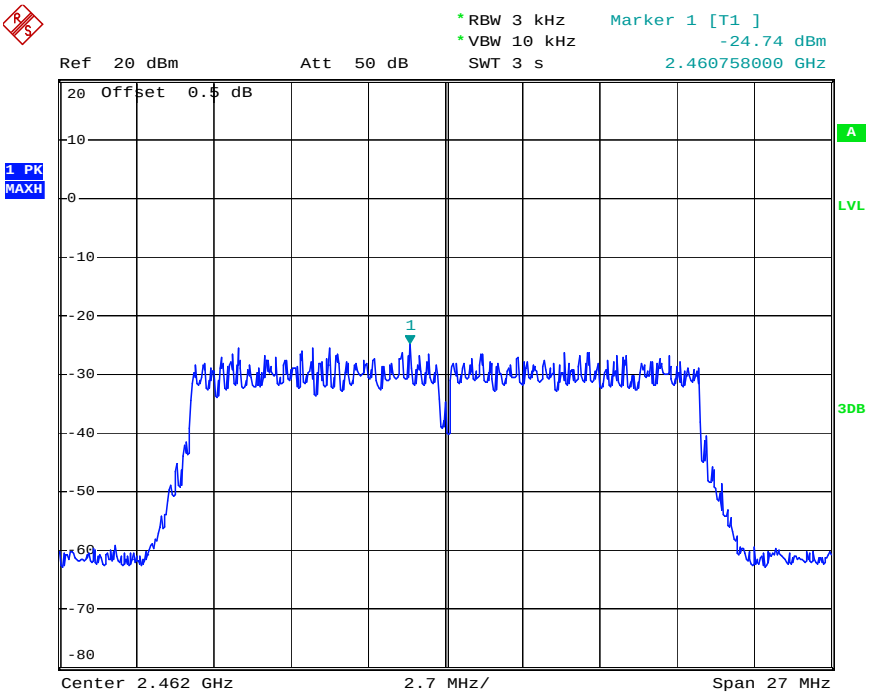
802.11n Channel Low 2412MHz (20MHz)



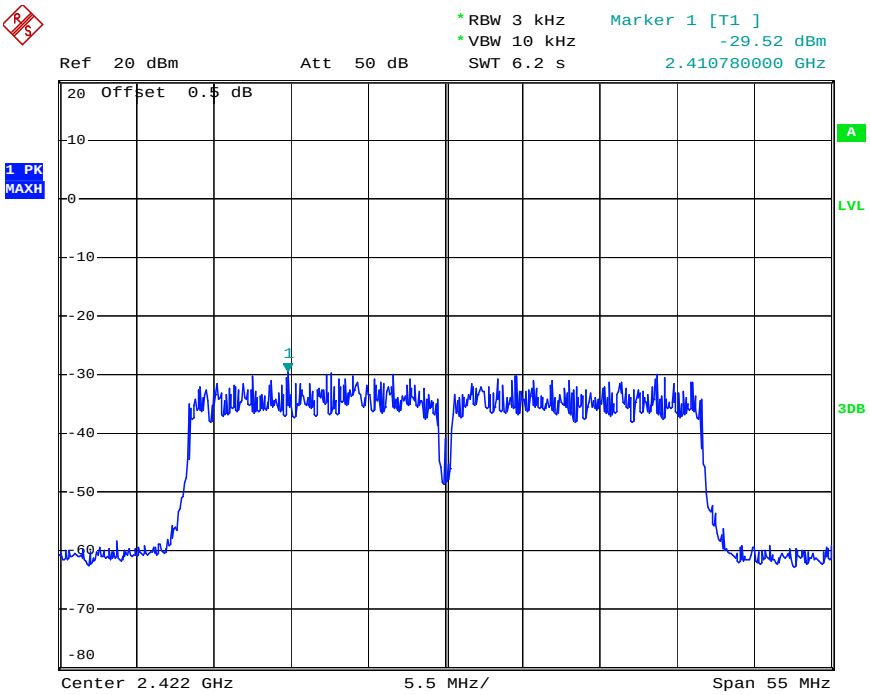
802.11n Channel Middle 2437MHz (20MHz)



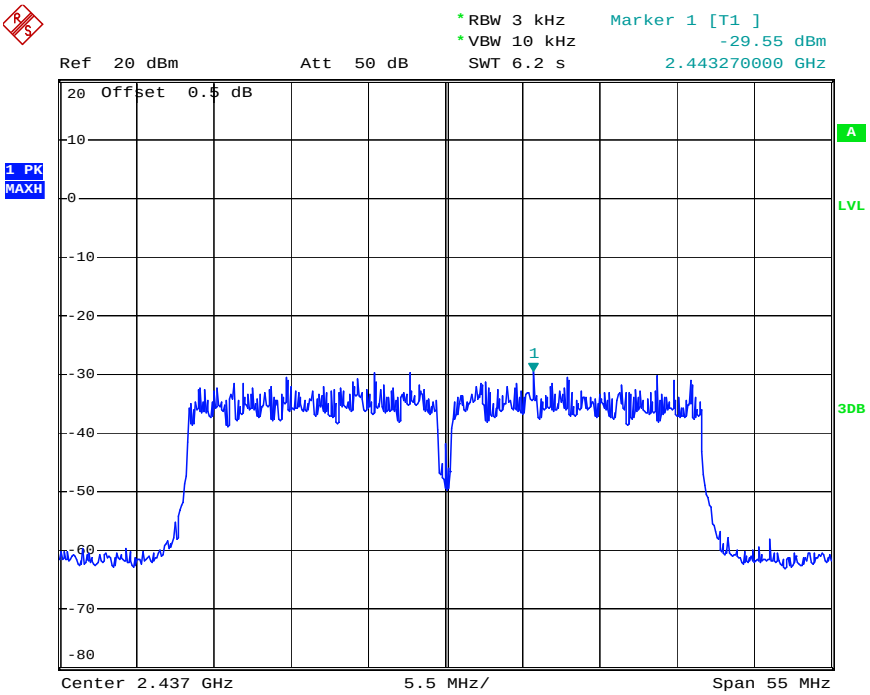
802.11n Channel High 2462MHz(20MHz)



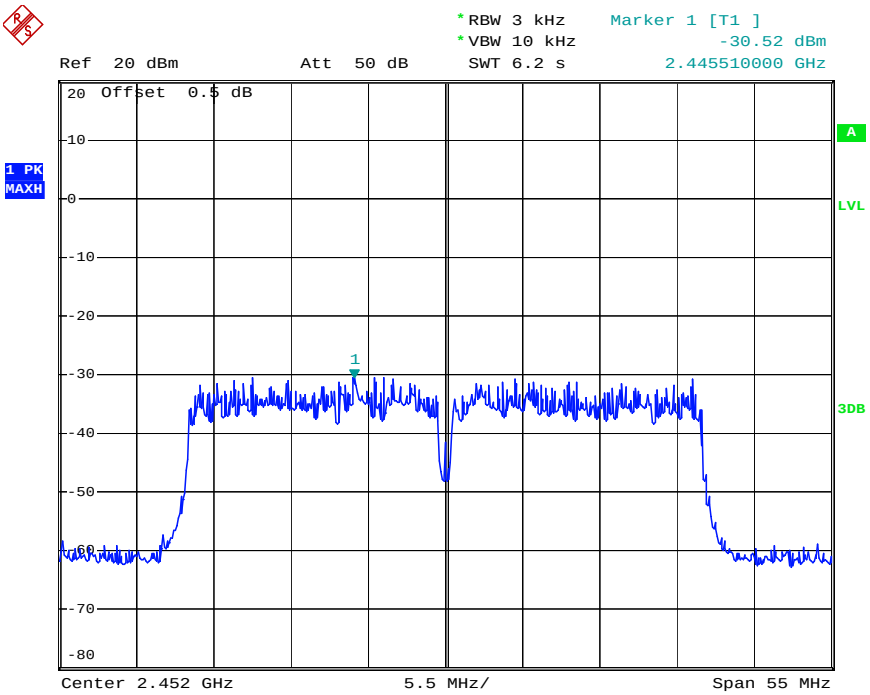
802.11n Channel Low 2422MHz (40MHz)



802.11n Channel Middle 2437MHz(40MHz)

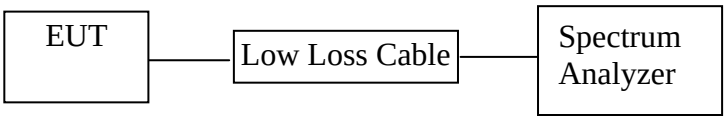


802.11n Channel High 2452MHz(40MHz)



8. BAND EDGE COMPLIANCE TEST

8.1.Block Diagram of Test Setup



8.2.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).

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 MHz. We select 2412MHz, 2462MHz and 2422MHz, 2452MHz TX frequency to transmit.

8.5.Test Procedure

Conducted Band Edge:

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

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

Radiate Band Edge:

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

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

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

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

Set RBW (1 MHz), VBW (3MHz) for Peak measurement, RBW (1 MHz), VBW (10Hz) for AV measurement.

8.5.7. The band edges was measured and recorded.

8.6. Test Result

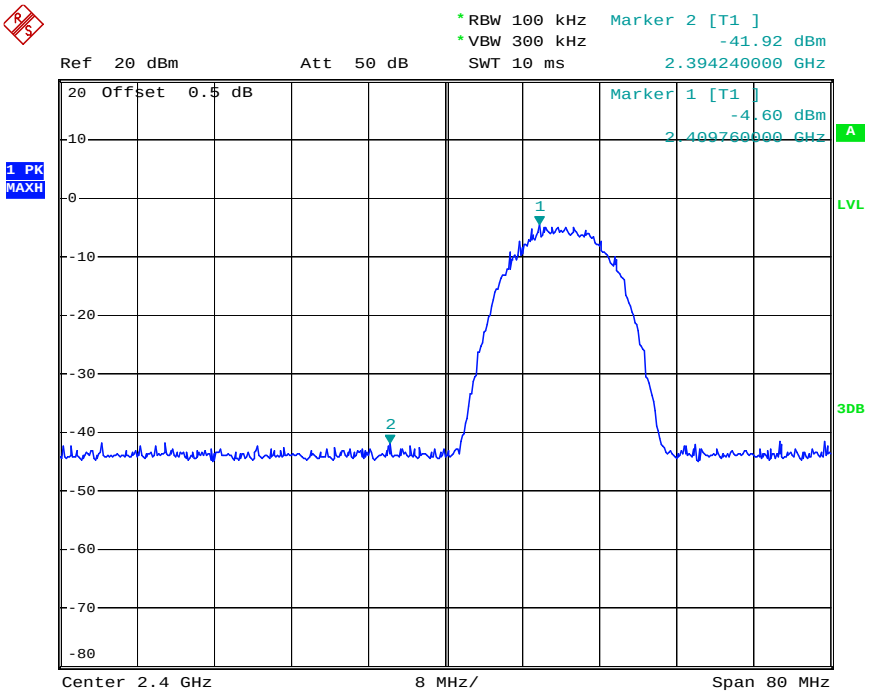
The test was performed with 802.11b		
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2412	37.32	> 20dBc
2462	36.98	> 20dBc

The test was performed with 802.11g		
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2412	33.63	> 20dBc
2462	33.11	> 20dBc

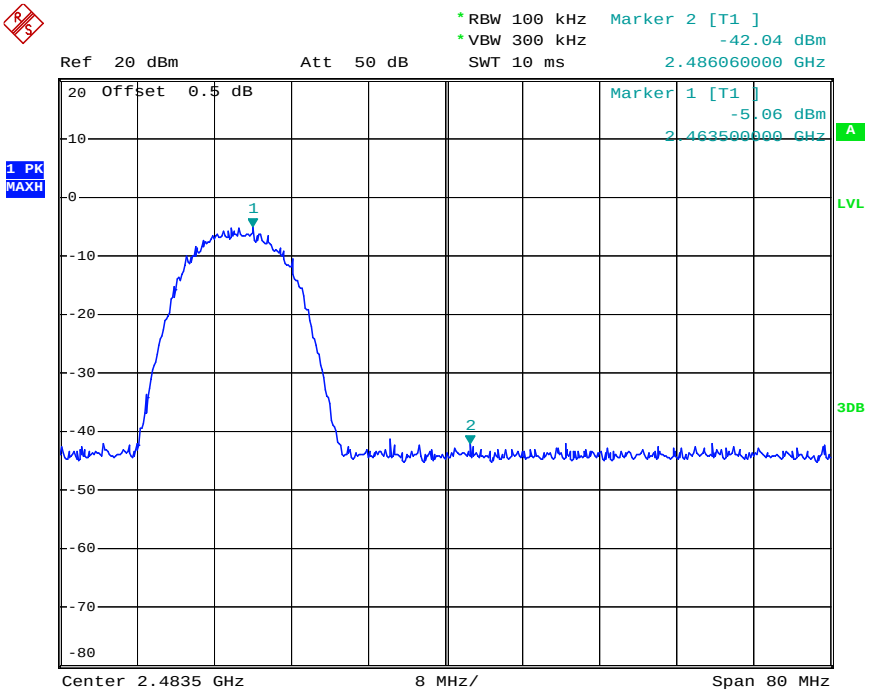
The test was performed with 802.11n (20MHz)		
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2412	34.39	> 20dBc
2462	33.21	> 20dBc

The test was performed with 802.11n (40MHz)		
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2422	29.43	> 20dBc
2452	29.21	> 20dBc

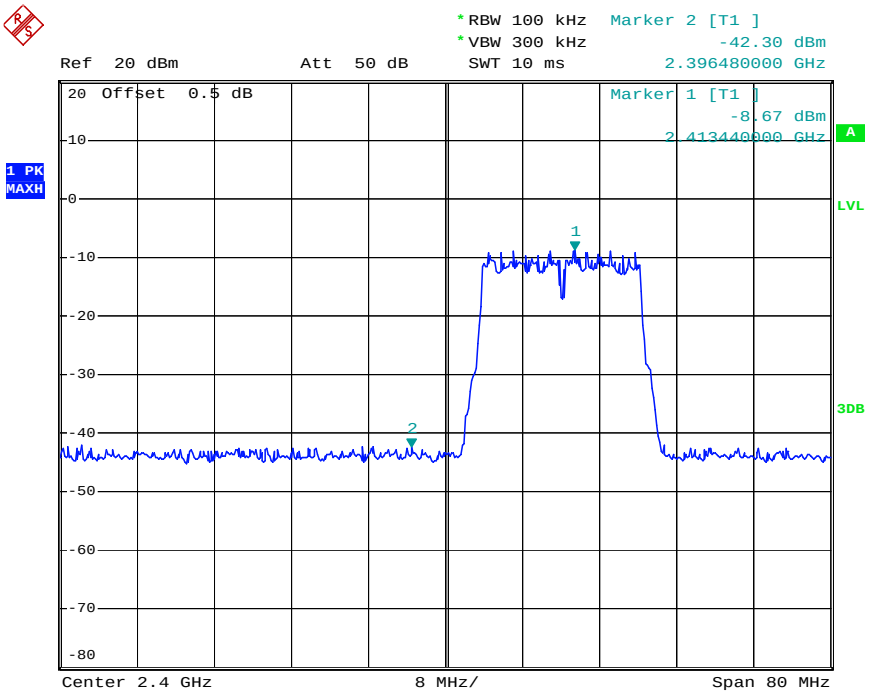
802.11b Channel Low 2412MHz



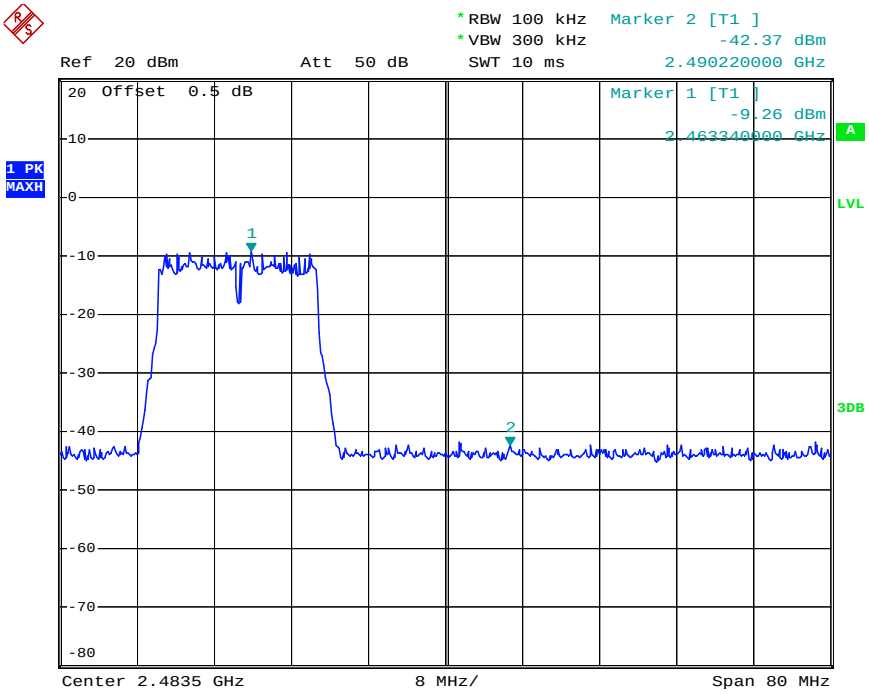
802.11b Channel High 2462MHz



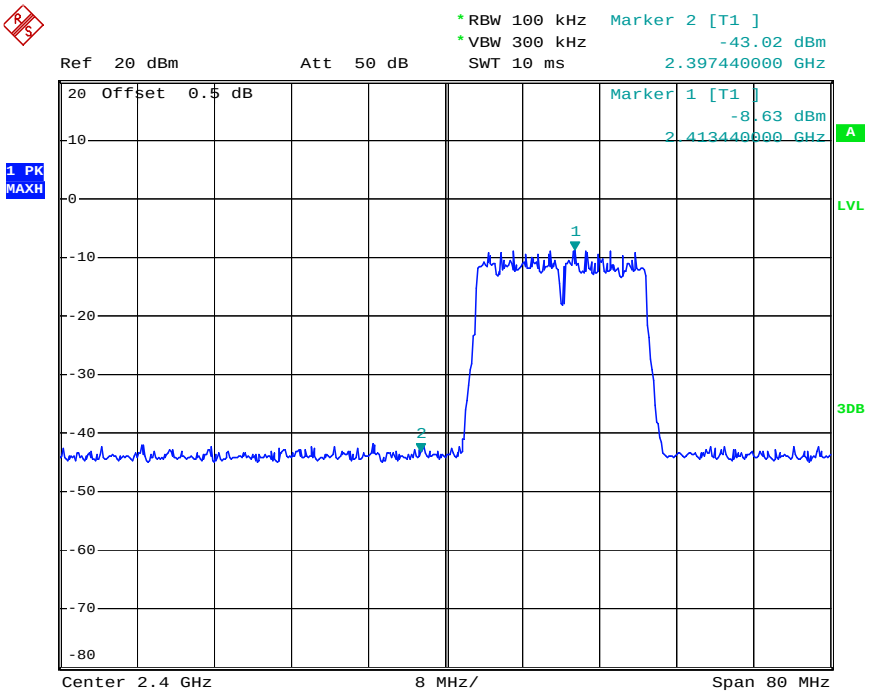
802.11g Channel Low 2412MHz



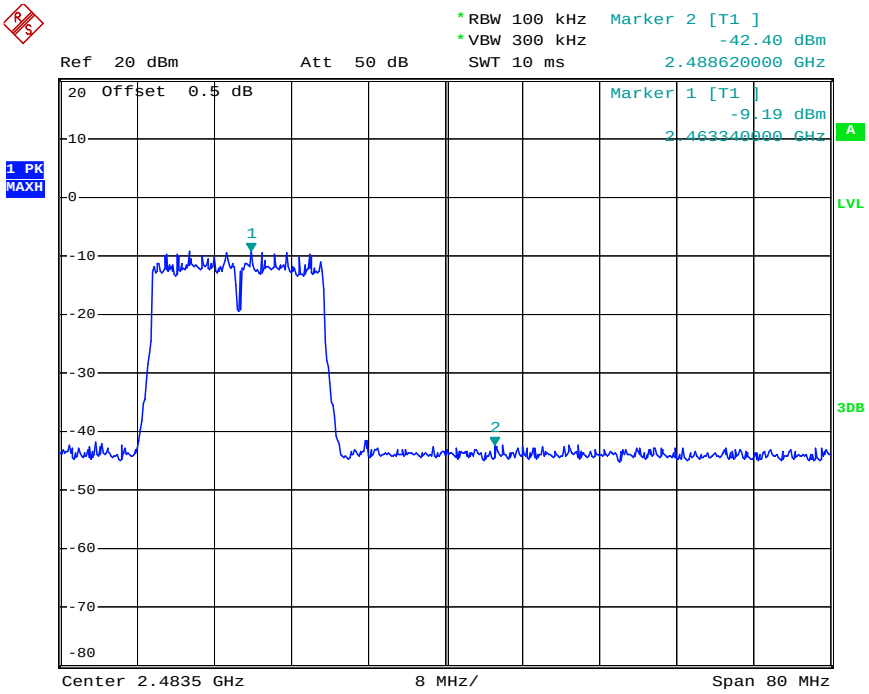
802.11g Channel High 2462MHz



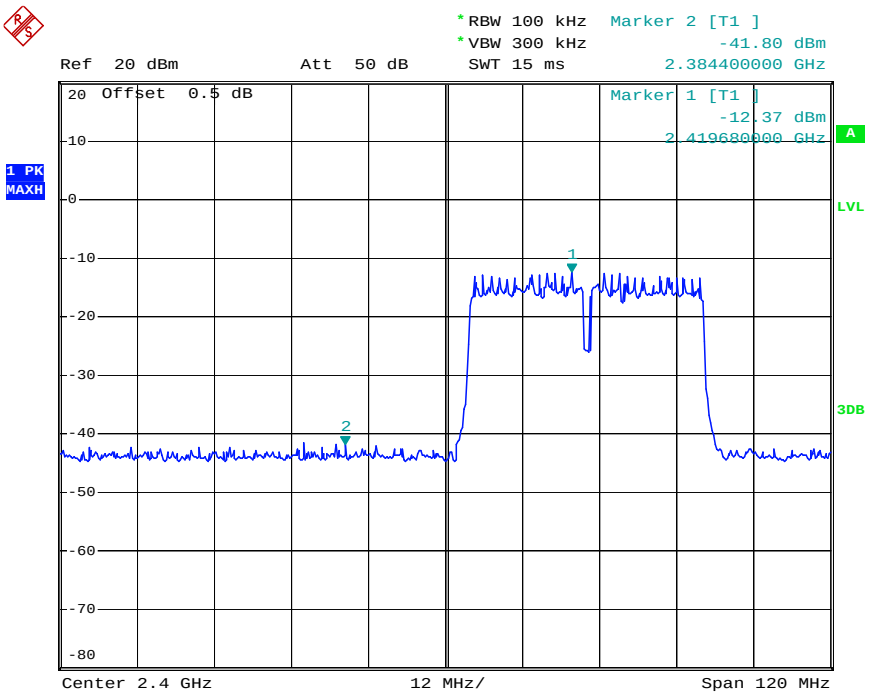
802.11n Channel Low 2412MHz (20MHz)



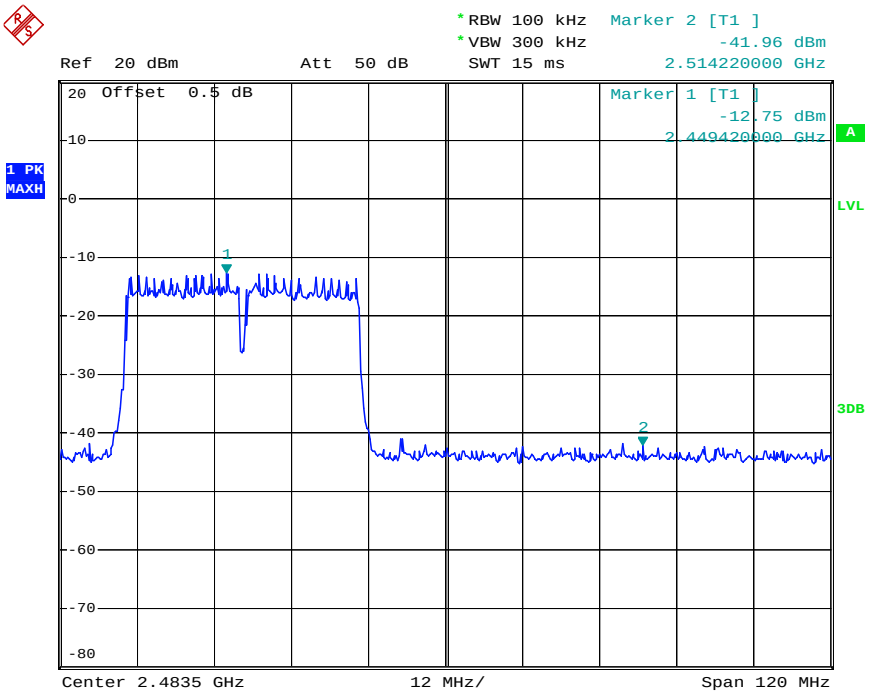
802.11n Channel High 2462MHz (20MHz)



802.11n Channel Low 2422MHz (40MHz)



802.11n Channel High 2452MHz (40MHz)



Radiated Band Edge Result

Note:

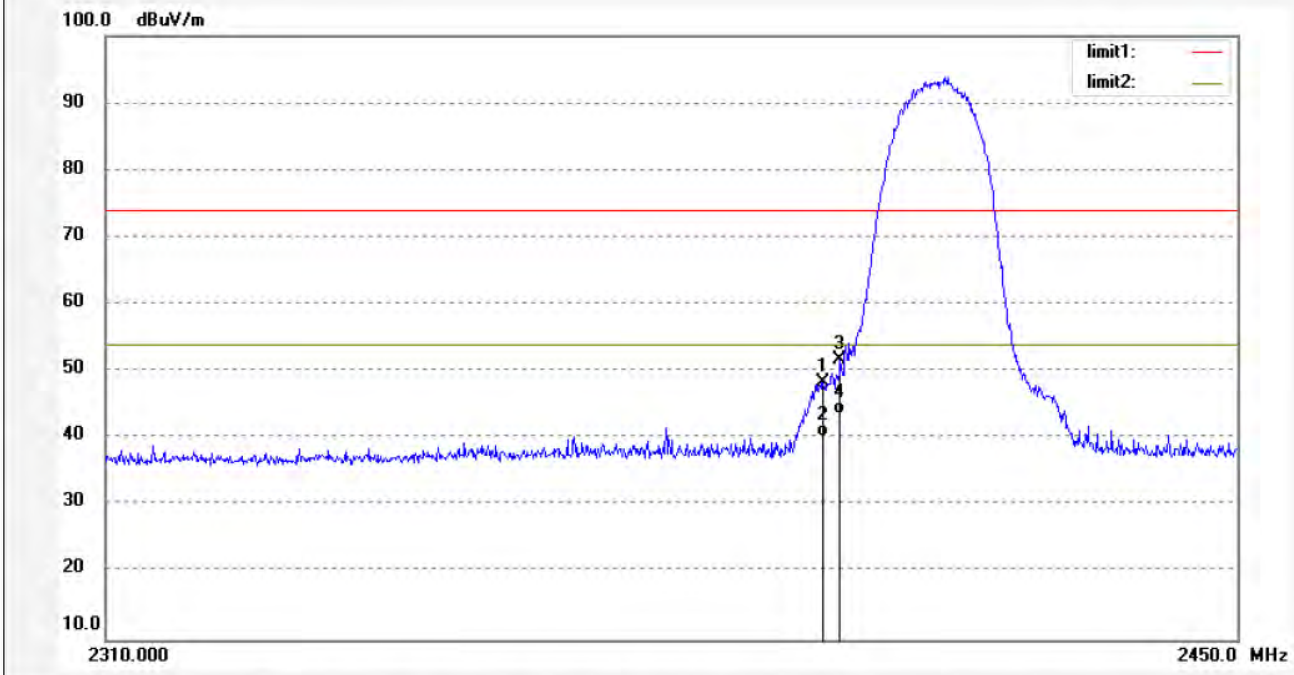
1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is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

   Result = Reading + Corrected Factor
3. Display the measurement of peak values.

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.: ricky #2545	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 5V
Test item: Radiation Test	Date: 2014/09/20
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9:32:45
EUT: 150M High Gain Wireless USB Adapter	Engineer Signature:
Mode: TX 2412MHz(802.11b)	Distance: 3m
Model: WU112K	
Manufacturer: HAOLIYUAN	

Note: Report No:ATE20141832



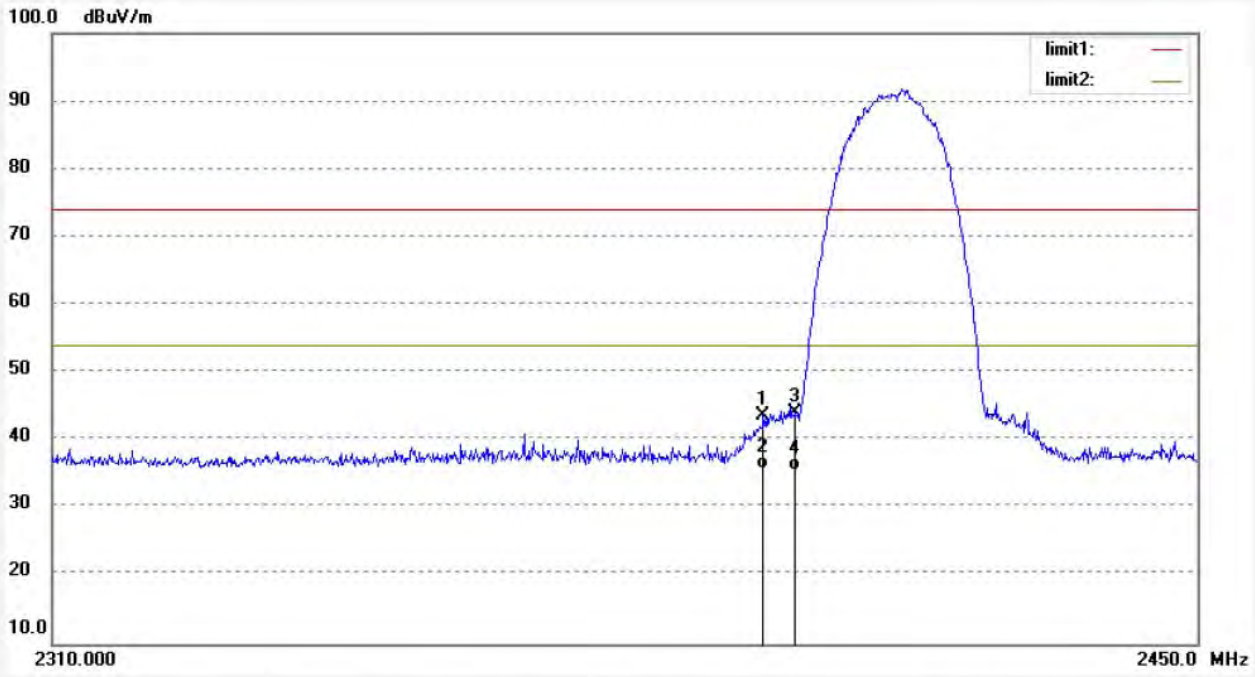
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2397.920	55.02	-6.76	48.26	74.00	-25.74	peak			
2	2397.920	47.01	-6.76	40.25	54.00	-13.75	AVG			
3	2400.020	58.43	-6.76	51.67	74.00	-22.33	peak			
4	2400.020	50.37	-6.76	43.61	54.00	-10.39	AVG			

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.: ricky #2546
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2412MHz(802.11b)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Vertical
Power Source: DC 5V
Date: 2014/09/20
Time: 9:35:57
Engineer Signature:
Distance: 3m

Note: Report No:ATE20141832



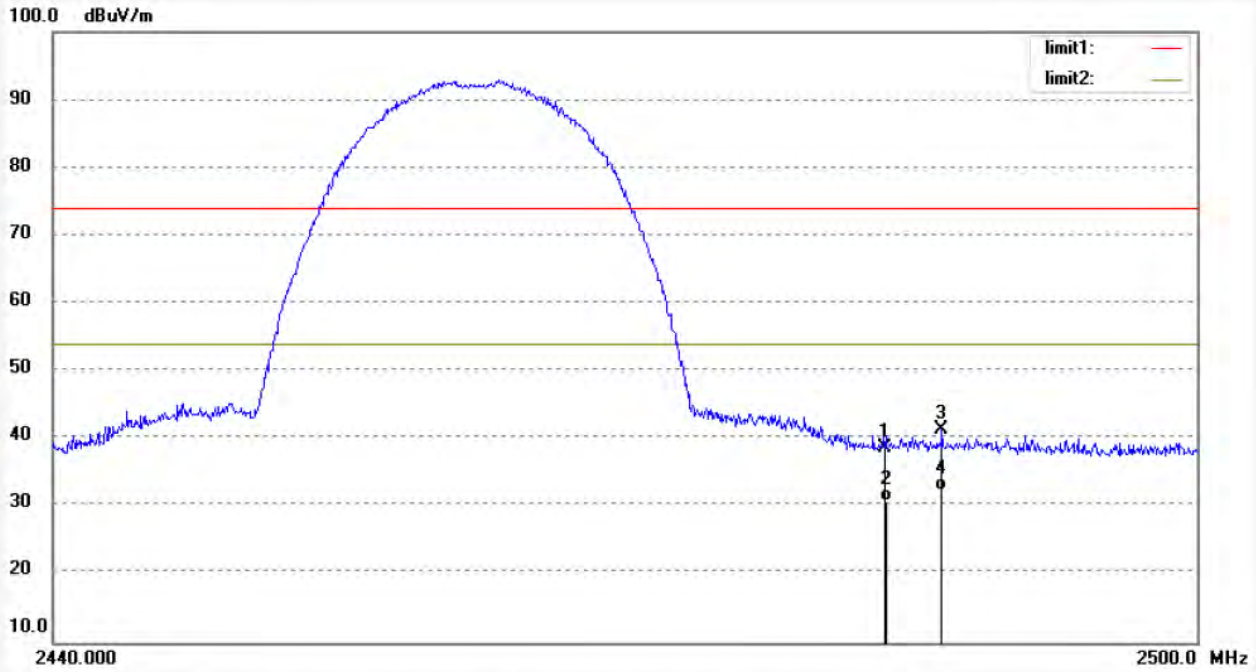
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2396.100	50.41	-6.76	43.65	74.00	-30.35	peak			
2	2396.100	42.48	-6.76	35.72	54.00	-18.28	AVG			
3	2400.020	50.74	-6.76	43.98	74.00	-30.02	peak			
4	2400.020	42.38	-6.76	35.62	54.00	-18.38	AVG			

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.: ricky #2547
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2462MHz(802.11b)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Vertical
Power Source: DC 5V
Date: 2014/09/20
Time: 9:38:37
Engineer Signature:
Distance: 3m

Note: Report No:ATE20141832



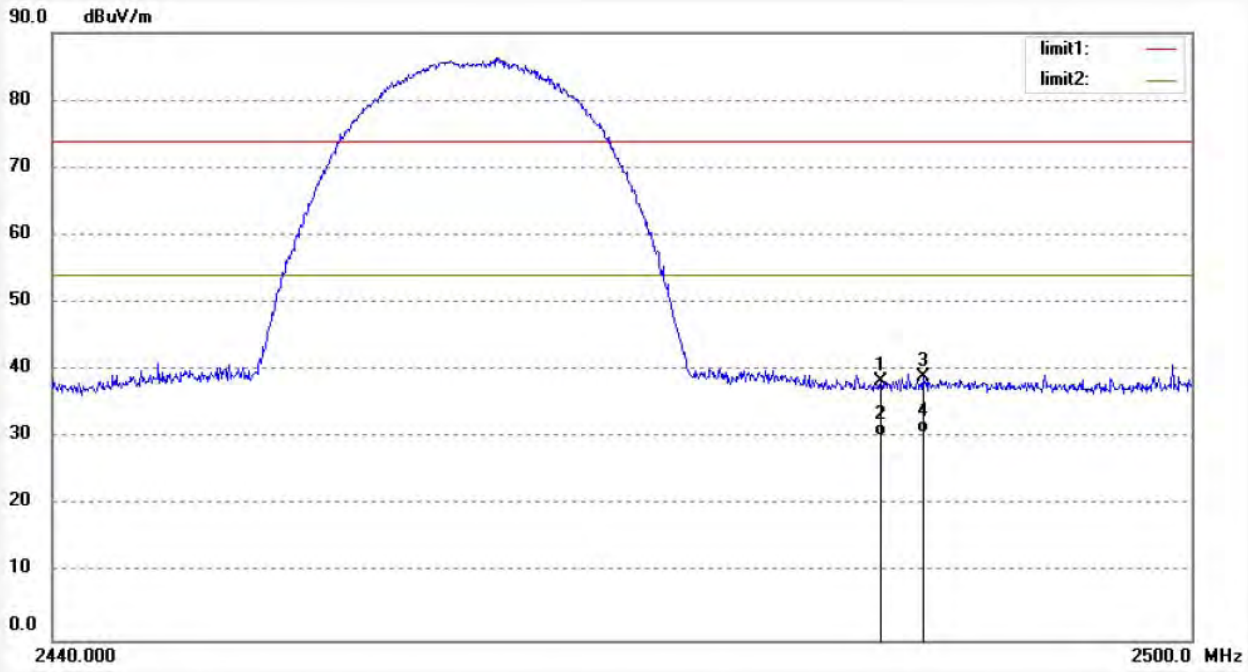
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	45.22	-6.54	38.68	74.00	-35.32	peak			
2	2483.500	37.35	-6.54	30.81	54.00	-23.19	AVG			
3	2486.500	47.98	-6.54	41.44	74.00	-32.56	peak			
4	2486.500	38.98	-6.54	32.44	54.00	-21.56	AVG			

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.: ricky #2548
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2462MHz(802.11b)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Horizontal
Power Source: DC 5V
Date: 2014/09/20
Time: 9:39:55
Engineer Signature:
Distance: 3m

Note: Report No:ATE20141832



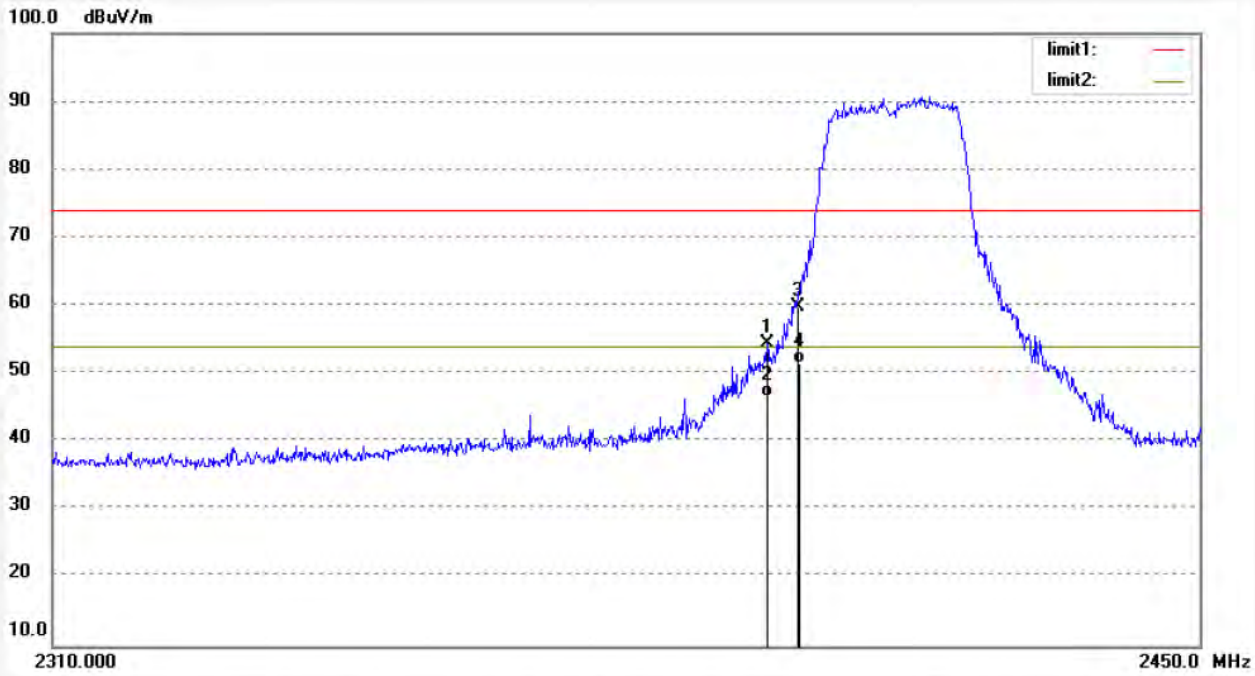
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	44.83	-6.54	38.29	74.00	-35.71	peak			
2	2483.500	36.78	-6.54	30.24	54.00	-23.76	AVG			
3	2485.720	45.47	-6.54	38.93	74.00	-35.07	peak			
4	2485.720	37.35	-6.54	30.81	54.00	-23.19	AVG			

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.: ricky #2551
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2412MHz(802.11g)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Vertical
Power Source: DC 5V
Date: 2014/09/20
Time: 9:44:28
Engineer Signature:
Distance: 3m

Note: Report No:ATE20141832



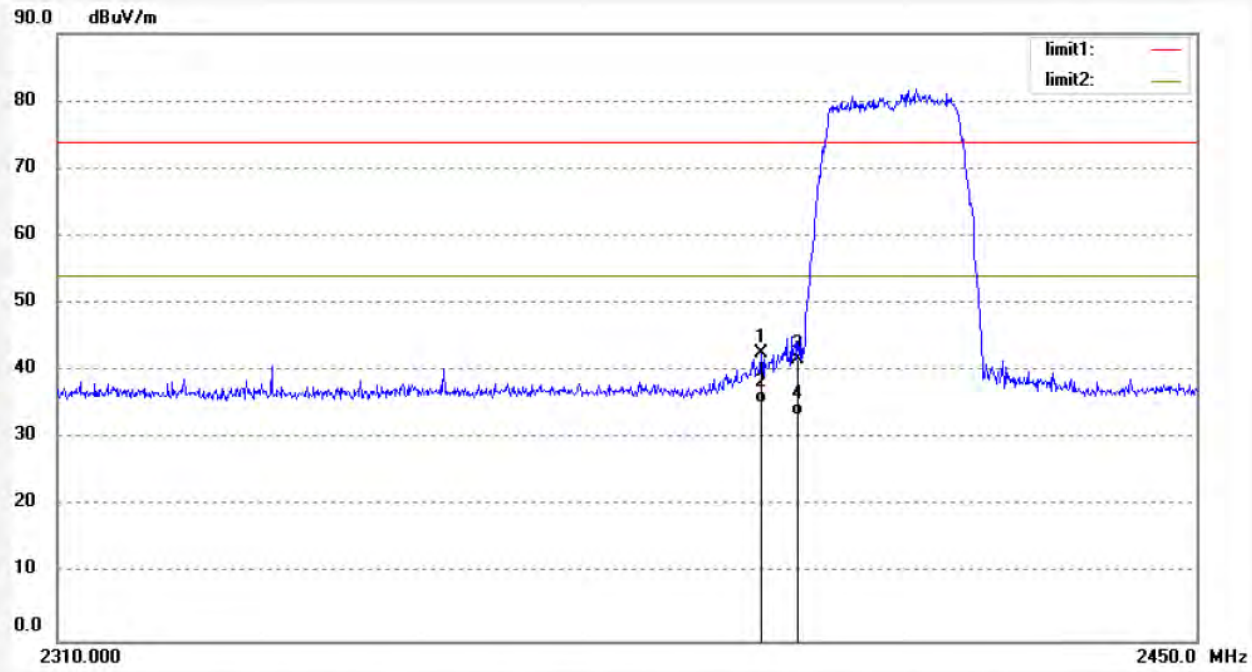
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2396.380	61.12	-6.76	54.36	74.00	-19.64	peak			
2	2396.380	53.24	-6.76	46.48	54.00	-7.52	AVG			
3	2400.020	66.59	-6.76	59.83	74.00	-14.17	peak			
4	2400.020	58.23	-6.76	51.47	54.00	-2.53	AVG			

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.: ricky #2552
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2412MHz(802.11g)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Horizontal
Power Source: DC 5V
Date: 2014/09/20
Time: 9:45:37
Engineer Signature:
Distance: 3m

Note: Report No:ATE20141832

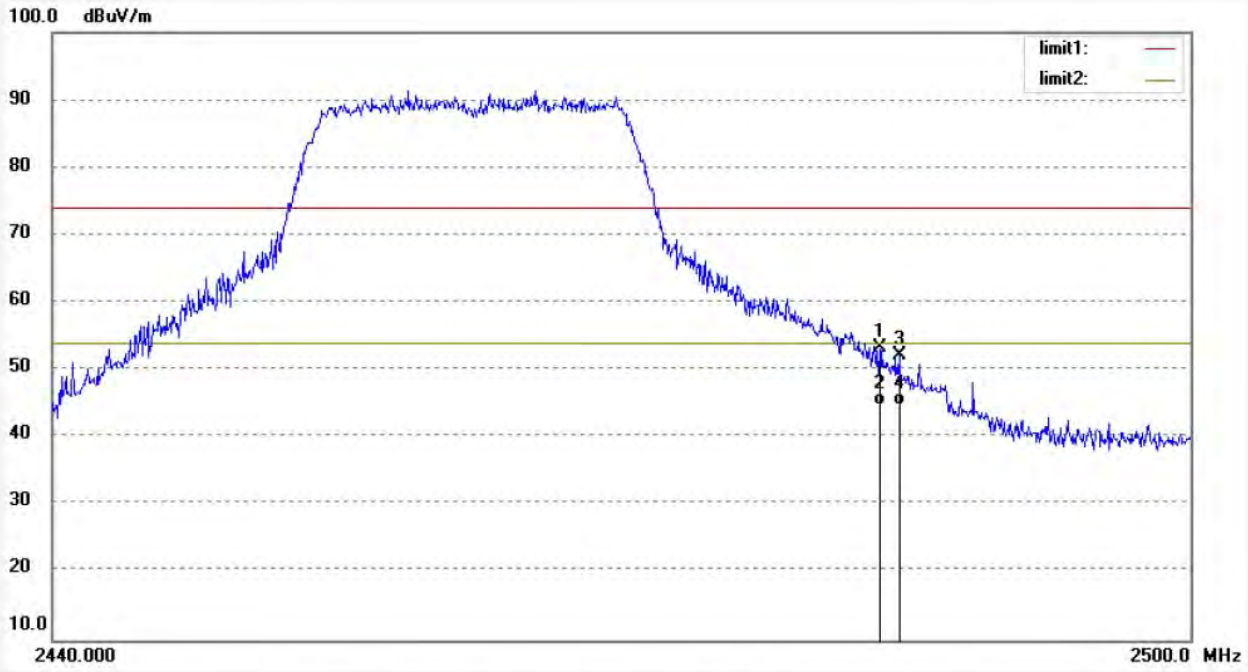


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2395.680	49.44	-6.76	42.68	74.00	-31.32	peak			
2	2395.680	42.03	-6.76	35.27	54.00	-18.73	AVG			
3	2400.020	48.43	-6.76	41.67	74.00	-32.33	peak			
4	2400.020	40.21	-6.76	33.45	54.00	-20.55	AVG			

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.: ricky #2550	Polarization: Vertical
Standard: FCC PK	Power Source: DC 5V
Test item: Radiation Test	Date: 2014/09/20
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9:42:26
EUT: 150M High Gain Wireless USB Adapter	Engineer Signature:
Mode: TX 2462MHz(802.11g)	Distance: 3m
Model: WU112K	
Manufacturer: HAOLIYUAN	

Note: Report No:ATE20141832



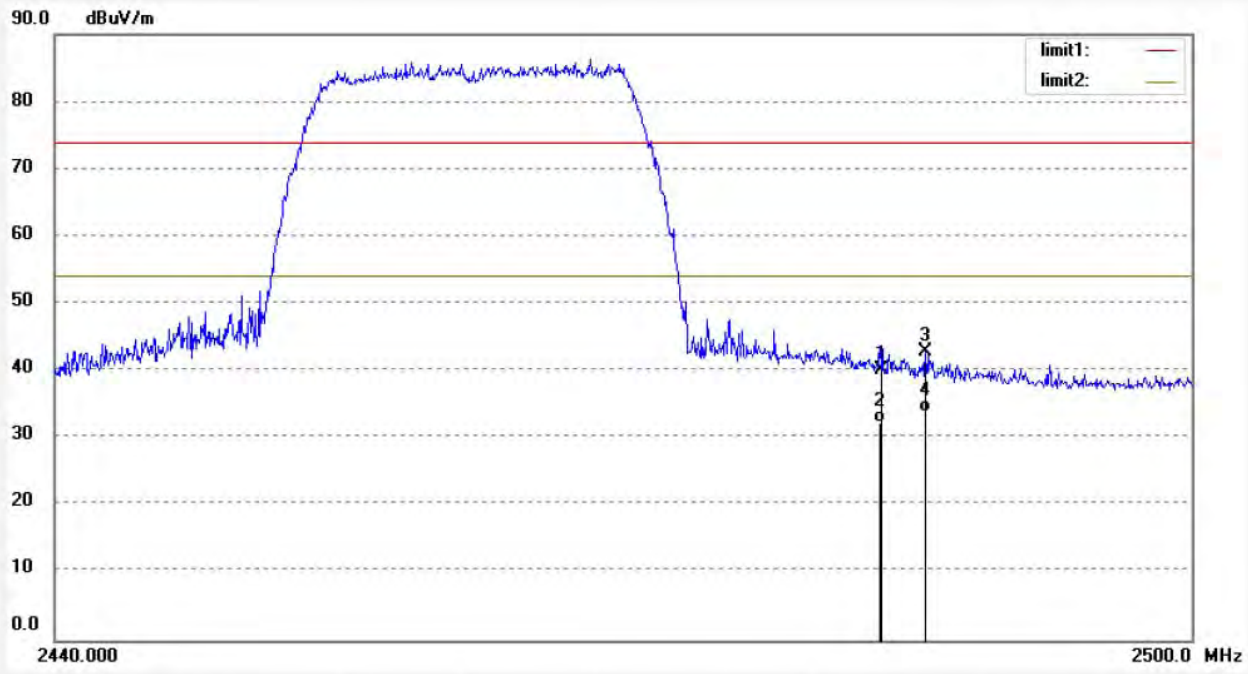
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	59.74	-6.54	53.20	74.00	-20.80	peak			
2	2483.500	51.36	-6.54	44.82	54.00	-9.18	AVG			
3	2484.520	58.78	-6.54	52.24	74.00	-21.76	peak			
4	2484.520	51.23	-6.54	44.69	54.00	-9.31	AVG			

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.: ricky #2549
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2462MHz(802.11g)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Horizontal
Power Source: DC 5V
Date: 2014/09/20
Time: 9:41:23
Engineer Signature:
Distance: 3m

Note: Report No:ATE20141832



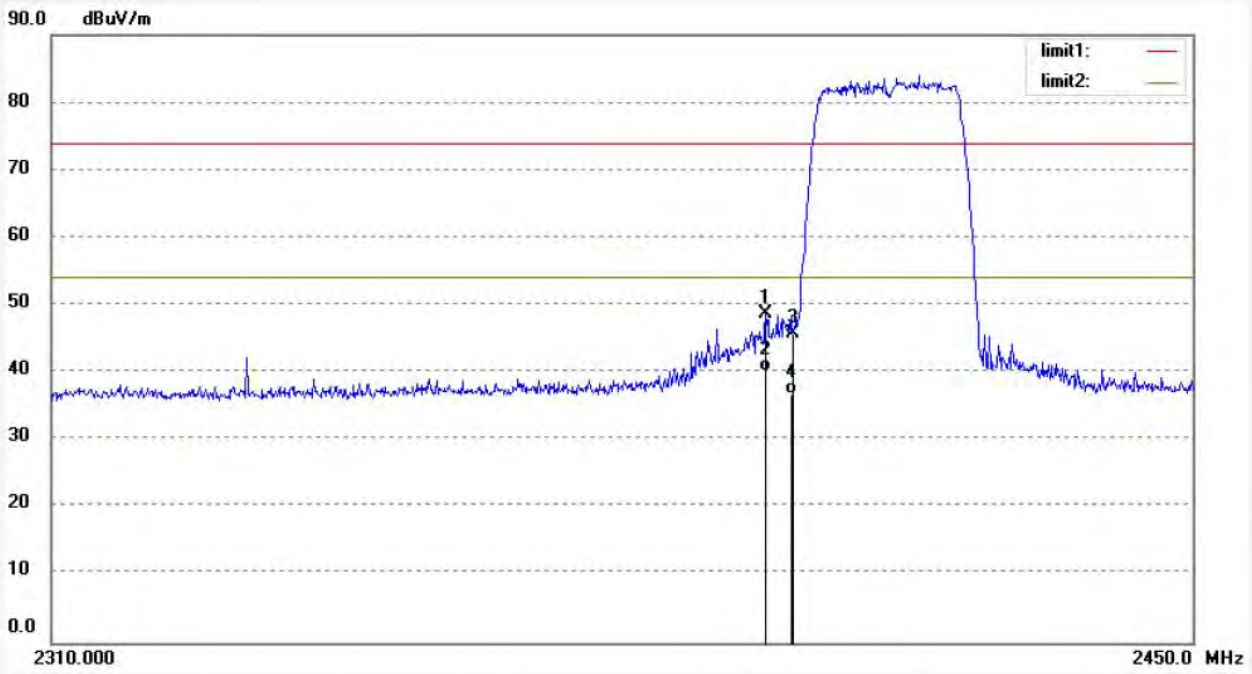
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	46.73	-6.54	40.19	74.00	-33.81	peak			
2	2483.500	38.86	-6.54	32.32	54.00	-21.68	AVG			
3	2485.840	49.37	-6.54	42.83	74.00	-31.17	peak			
4	2485.840	40.35	-6.54	33.81	54.00	-20.19	AVG			

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.: ricky #2553
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2412MHz(802.11n20)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Horizontal
Power Source: DC 5V
Date: 2014/09/20
Time: 9:47:04
Engineer Signature:
Distance: 3m

Note: Report No:ATE20141832



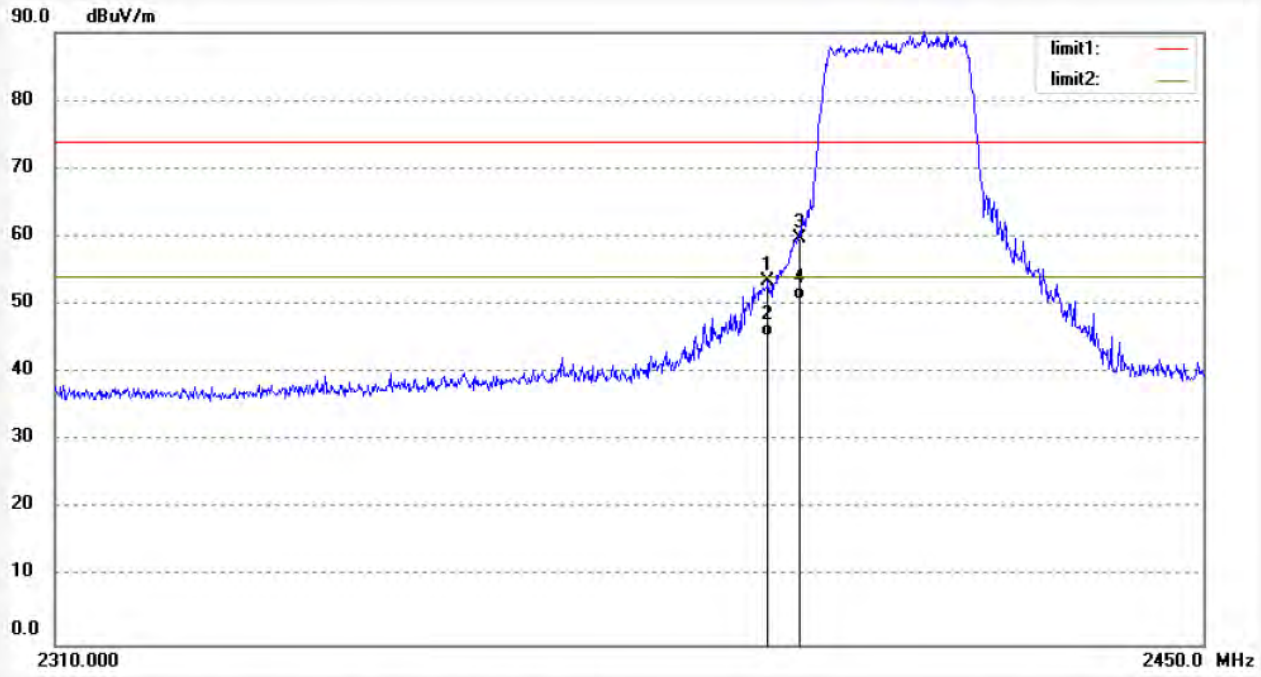
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2396.800	55.41	-6.76	48.65	74.00	-25.35	peak			
2	2396.800	46.89	-6.76	40.13	54.00	-13.87	AVG			
3	2400.020	52.56	-6.76	45.80	74.00	-28.20	peak			
4	2400.020	43.51	-6.76	36.75	54.00	-17.25	AVG			

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.: ricky #2554
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2412MHz(802.11n20)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Vertical
Power Source: DC 5V
Date: 2014/09/20
Time: 9:48:12
Engineer Signature:
Distance: 3m

Note: Report No:ATE20141832



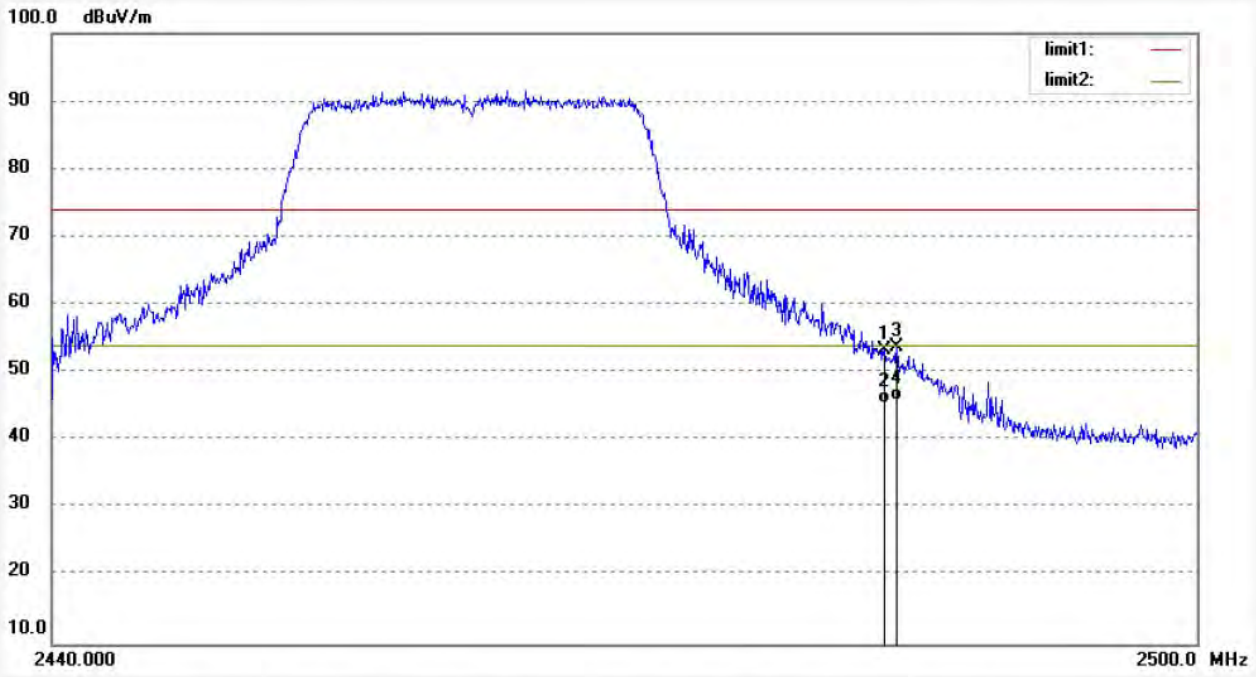
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2396.100	60.28	-6.76	53.52	74.00	-20.48	peak			
2	2396.100	52.12	-6.76	45.36	54.00	-8.64	AVG			
3	2399.740	66.39	-6.76	59.63	74.00	-14.37	peak			
4	2399.740	57.54	-6.76	50.78	54.00	-3.22	AVG			

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.: ricky #2555
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2462MHz(802.11n20)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Vertical
Power Source: DC 5V
Date: 2014/09/20
Time: 9:50:28
Engineer Signature:
Distance: 3m

Note: Report No:ATE20141832



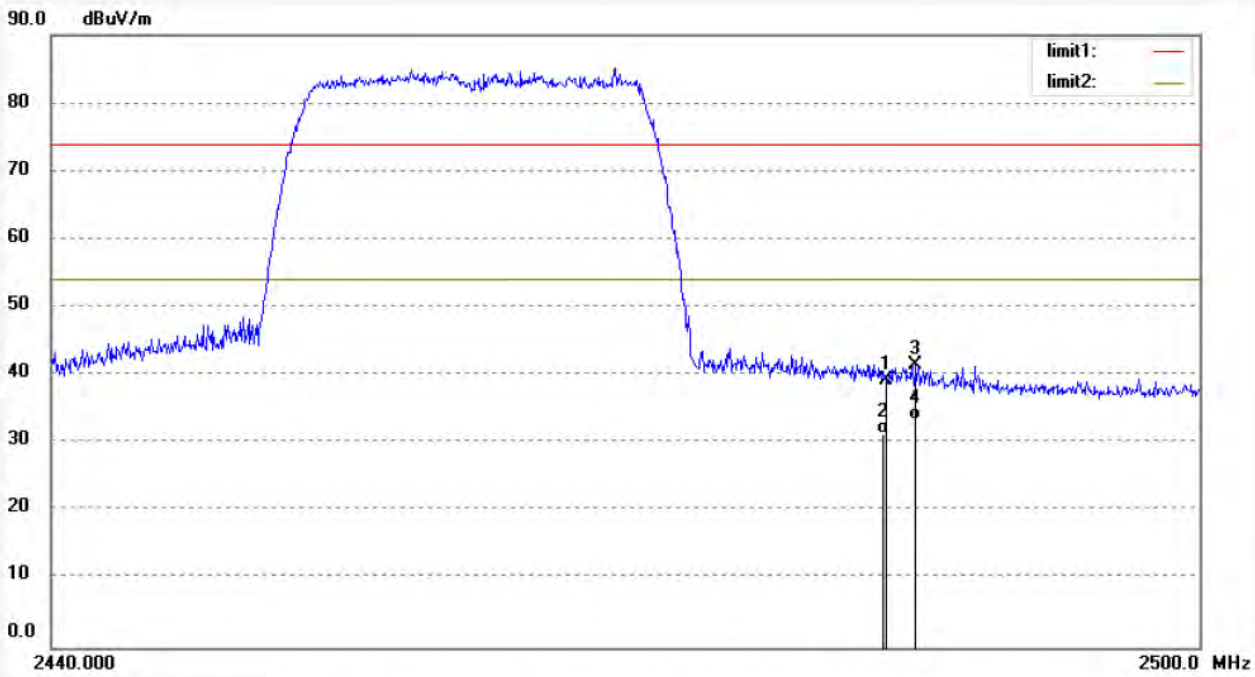
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	59.90	-6.54	53.36	74.00	-20.64	peak			
2	2483.500	52.01	-6.54	45.47	54.00	-8.53	AVG			
3	2484.160	60.41	-6.54	53.87	74.00	-20.13	peak			
4	2484.160	52.35	-6.54	45.81	54.00	-8.19	AVG			

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.: ricky #2556
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2462MHz(802.11n20)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Horizontal
Power Source: DC 5V
Date: 2014/09/20
Time: 9:51:40
Engineer Signature:
Distance: 3m

Note: Report No:ATE20141832



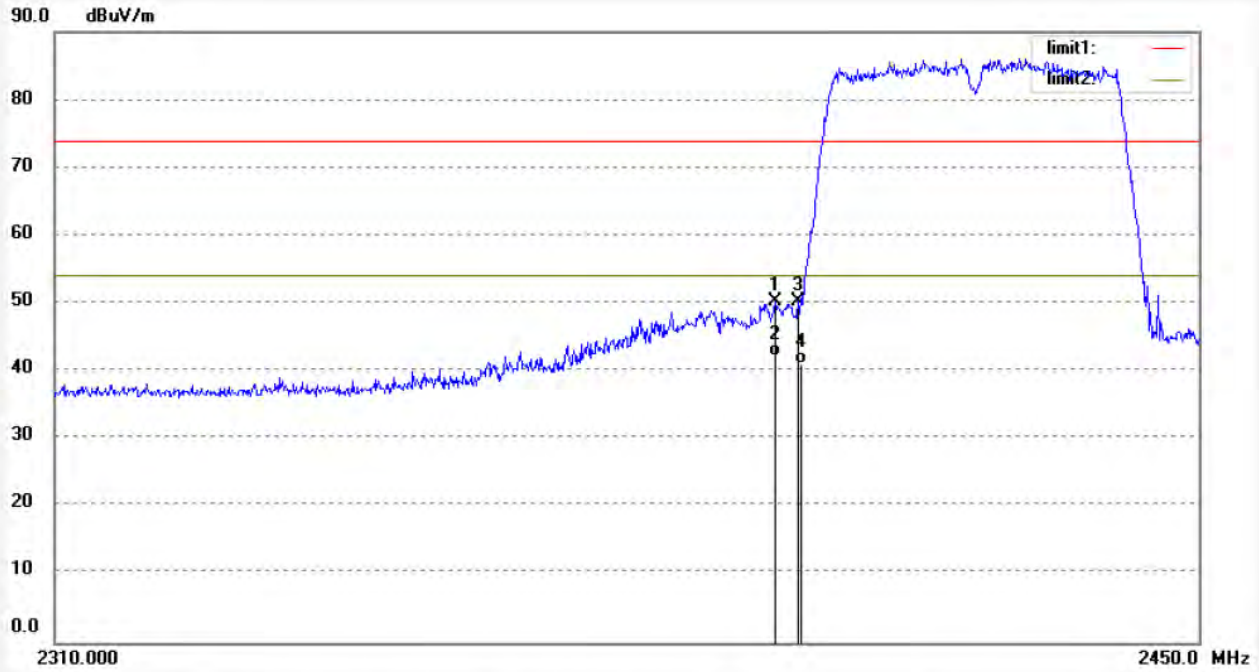
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	45.86	-6.54	39.32	74.00	-34.68	peak			
2	2483.500	38.01	-6.54	31.47	54.00	-22.53	AVG			
3	2485.060	48.05	-6.54	41.51	74.00	-32.49	peak			
4	2485.060	40.02	-6.54	33.48	54.00	-20.52	AVG			

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.: ricky #2559
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2422MHz(802.11n40)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Vertical
Power Source: DC 5V
Date: 2014/09/20
Time: 9:57:08
Engineer Signature:
Distance: 3m

Note: Report No:ATE20141832



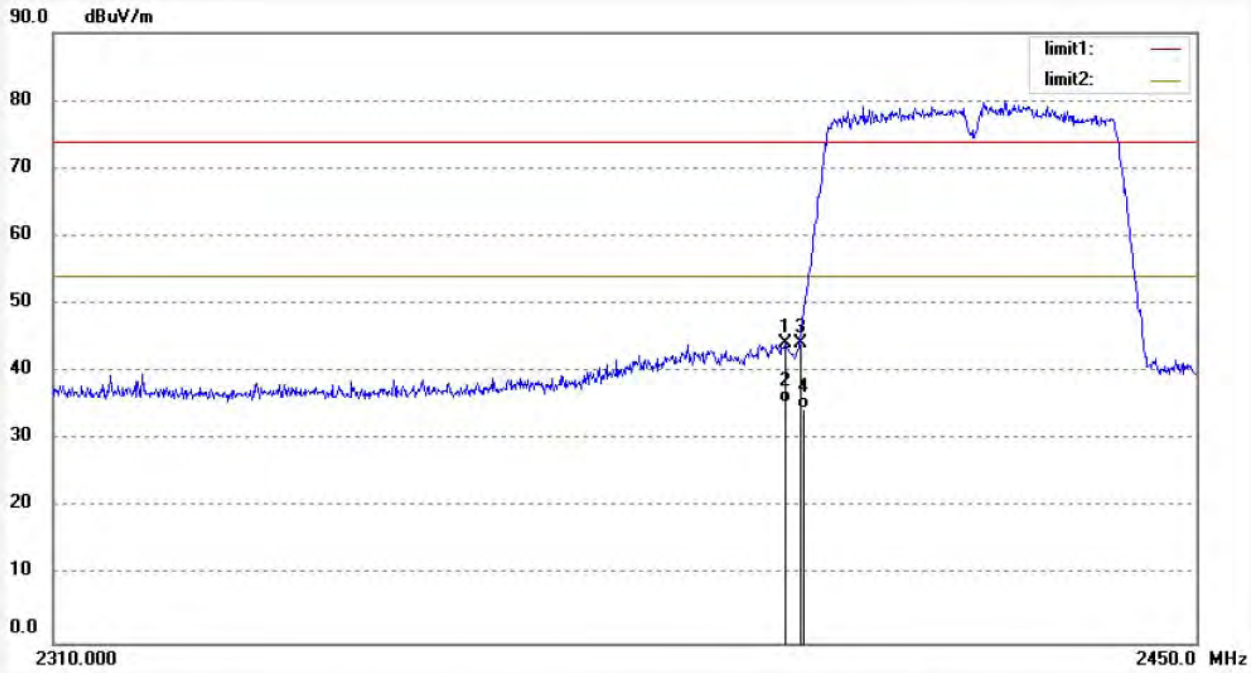
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2397.360	57.00	-6.76	50.24	74.00	-23.76	peak			
2	2397.360	48.96	-6.76	42.20	54.00	-11.80	AVG			
3	2400.160	56.99	-6.76	50.23	74.00	-23.77	peak			
4	2400.160	47.89	-6.76	41.13	54.00	-12.87	AVG			

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.: ricky #2560
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2422MHz(802.11n40)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Horizontal
Power Source: DC 5V
Date: 2014/09/20
Time: 9:58:40
Engineer Signature:
Distance: 3m

Note: Report No:ATE20141832



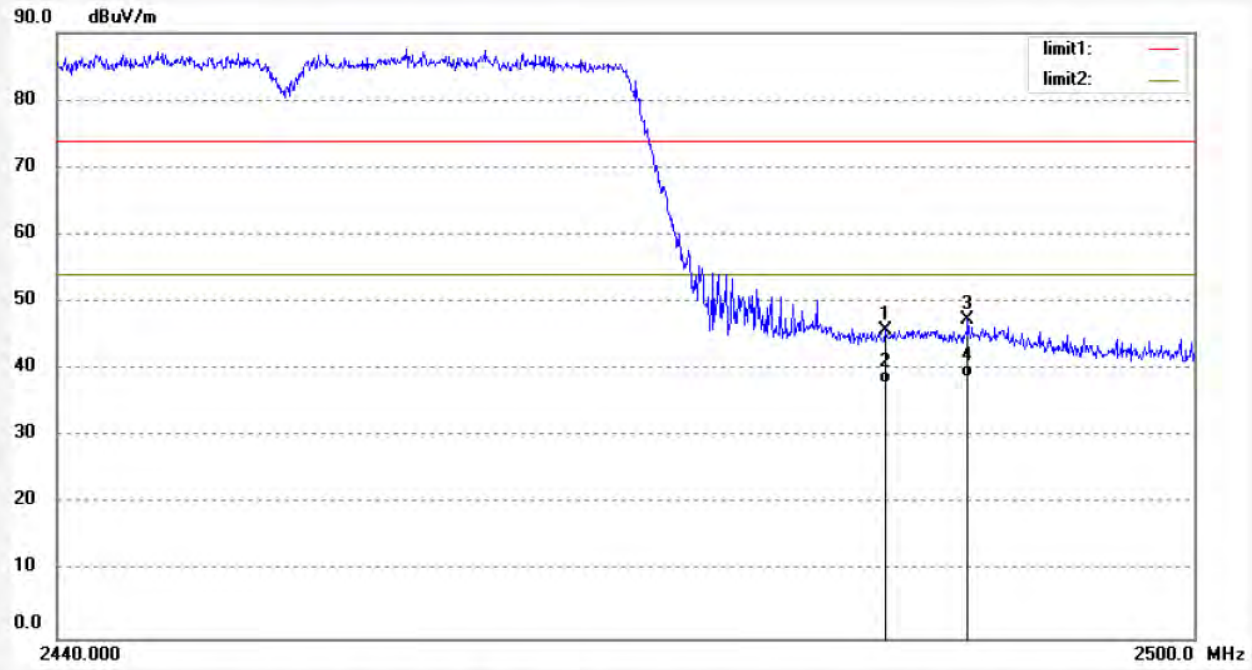
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2398.760	51.08	-6.76	44.32	74.00	-29.68	peak			
2	2398.760	42.13	-6.76	35.37	54.00	-18.63	AVG			
3	2400.580	50.95	-6.76	44.19	74.00	-29.81	peak			
4	2400.580	41.36	-6.76	34.60	54.00	-19.40	AVG			

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.: ricky #2558
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2452MHz(802.11n40)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Vertical
Power Source: DC 5V
Date: 2014/09/20
Time: 9:54:42
Engineer Signature:
Distance: 3m

Note: Report No:ATE20141832



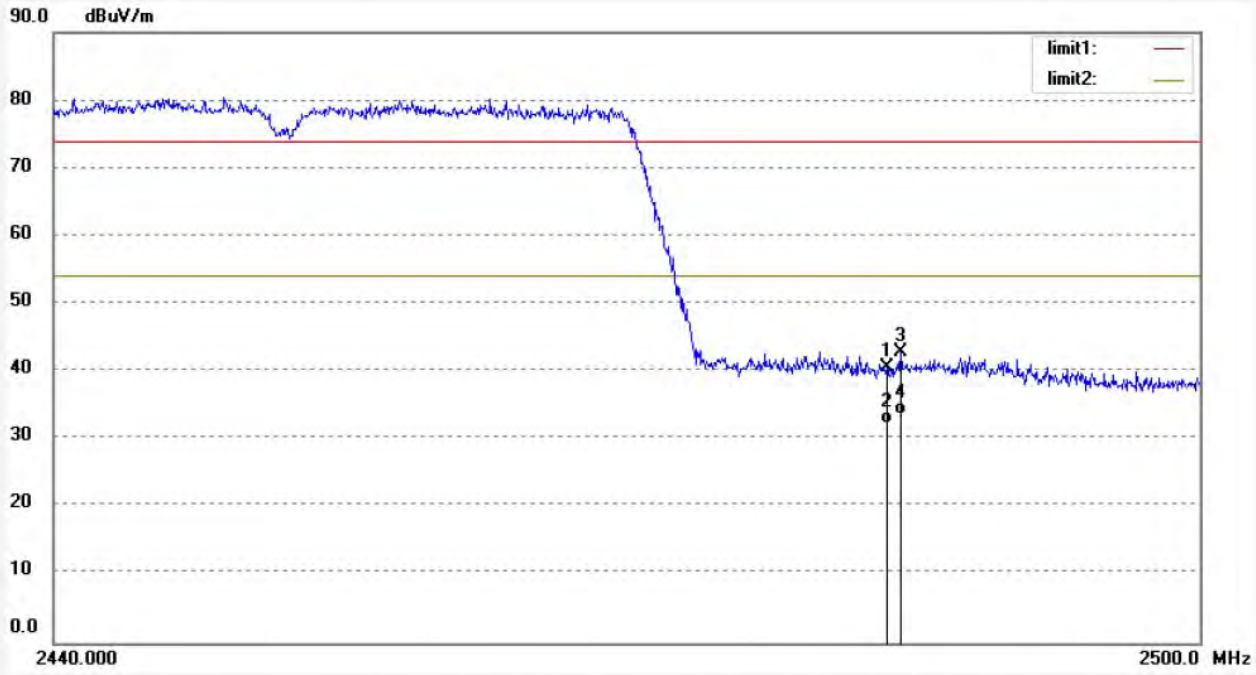
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.560	52.22	-6.54	45.68	74.00	-28.32	peak			
2	2483.560	44.35	-6.54	37.81	54.00	-16.19	AVG			
3	2488.000	53.90	-6.52	47.38	74.00	-26.62	peak			
4	2488.000	45.35	-6.52	38.83	54.00	-15.17	AVG			

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.: ricky #2557
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2452MHz(802.11n40)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Horizontal
Power Source: DC 5V
Date: 2014/09/20
Time: 9:53:17
Engineer Signature:
Distance: 3m

Note: Report No:ATE20141832

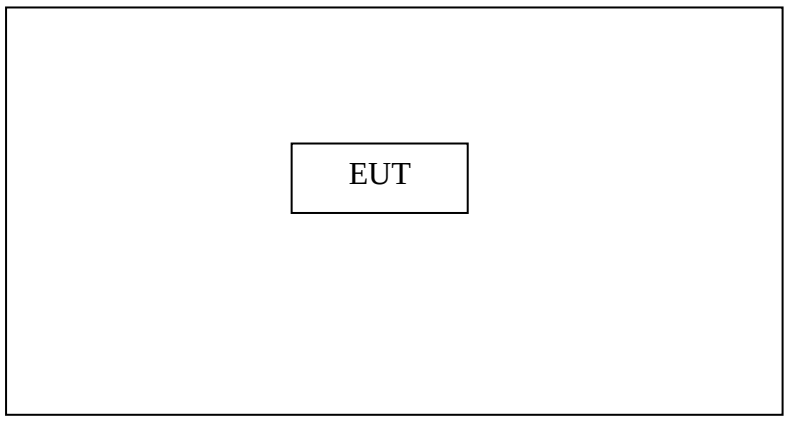


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	47.13	-6.54	40.59	74.00	-33.41	peak			
2	2483.500	38.89	-6.54	32.35	54.00	-21.65	AVG			
3	2484.220	49.32	-6.54	42.78	74.00	-31.22	peak			
4	2484.220	40.24	-6.54	33.70	54.00	-20.30	AVG			

9. RADIATED SPURIOUS EMISSION TEST

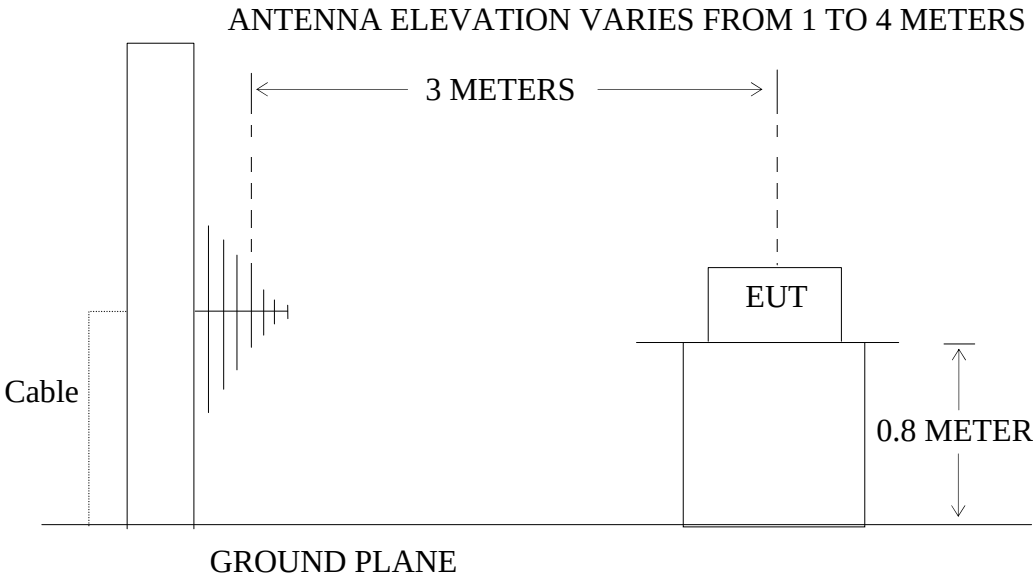
9.1.Block Diagram of Test Setup

9.1.1.Block diagram of connection between the EUT and peripherals



Setup: Transmitting mode

9.1.2.Semi-Anechoic Chamber Test Setup Diagram



9.2.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).

9.3.Restricted bands of operation

9.3.1.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			

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

[2]Above 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 Section15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

9.4.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.

9.5.Operating Condition of EUT

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

9.5.2.Turn on the power of all equipment.

9.5.3.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.

9.6.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. 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 bilog 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 interface cables must be manipulated according to ANSI C63.4: 2009 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 final measurement in band 9-90 kHz, 110-490 kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.
When average radiated emissions measurements are specified there is also a limit on the peak emissions level which is 20 dB above the applicable maximum permitted average emission limit

RBW (120 kHz), VBW (300 kHz) for QP detector below 1GHz
RBW (1 MHz), VBW (3MHz) for Peak measurement above 1GHz
RBW (1 MHz), VBW (10Hz) for AV measurement above 1GHz
If the peak-detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement.

9.7.The Field Strength of Radiation Emission Measurement Results

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

2. The average measurement was not performed when peak measured data under the limit of average detection.

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.

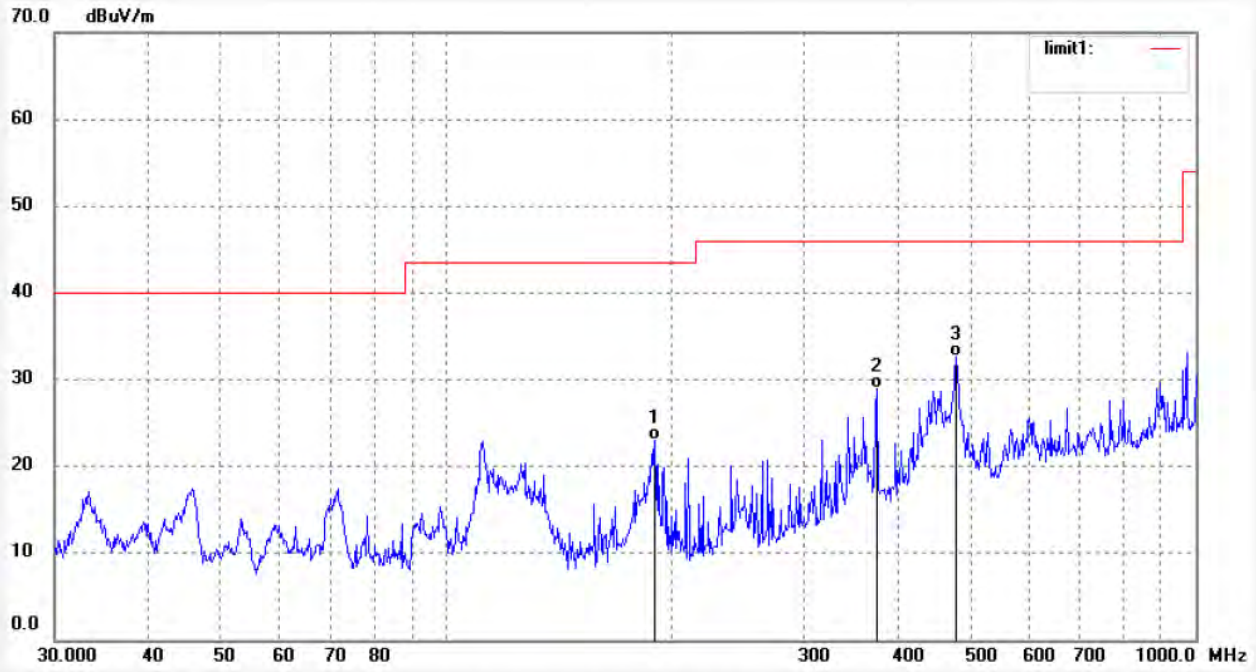
5. The 18-25GHz emissions are not reported, because the levels are too low against the limit.

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.: ricky #2521	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 2014/09/20
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 8:41:44
EUT: 150M High Gain Wireless USB Adapter	Engineer Signature:
Mode: TX 2412MHz(802.11b)	Distance: 3m
Model: WU112K	
Manufacturer: HAOLIYUAN	

Note: Report No.:ATE20141832



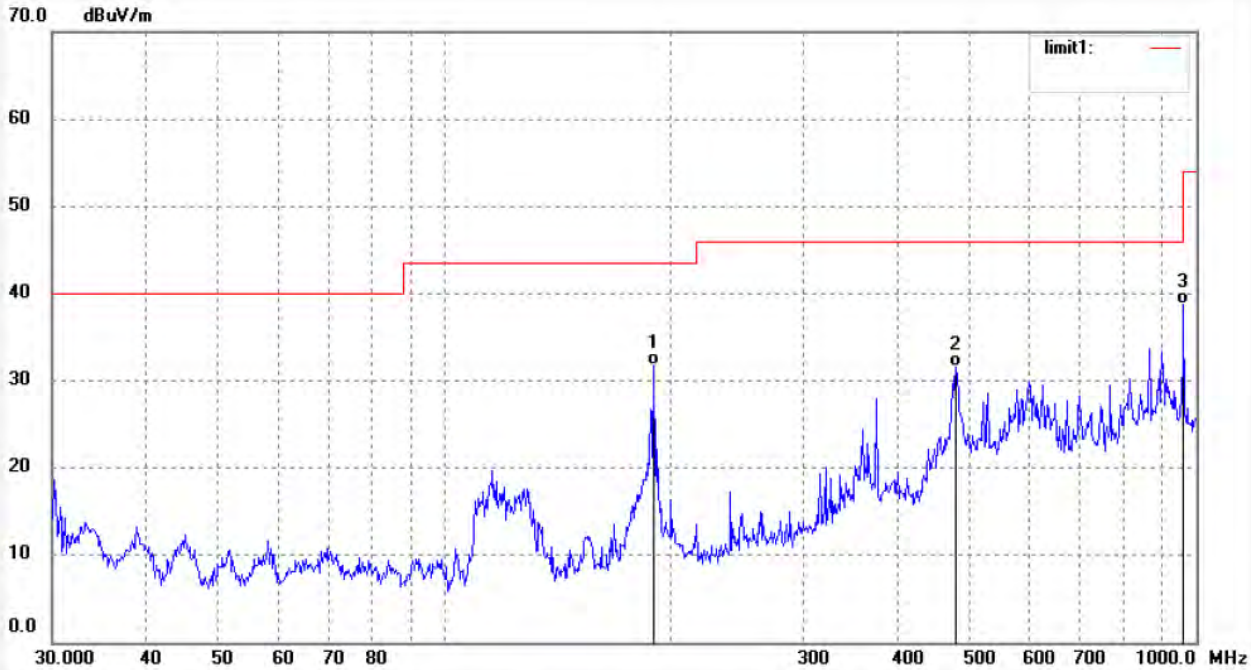
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	189.7385	43.92	-20.99	22.93	43.50	-20.57	QP			
2	374.6225	44.82	-15.82	29.00	46.00	-17.00	QP			
3	478.8456	46.84	-14.17	32.67	46.00	-13.33	QP			

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.: ricky #2522
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2412MHz(802.11b)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Horizontal
Power Source: DC 5V
Date: 2014/09/20
Time: 8:47:50
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141832



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	189.7385	52.75	-20.99	31.76	43.50	-11.74	QP			
2	478.8456	45.81	-14.17	31.64	46.00	-14.36	QP			
3	962.1623	43.97	-5.23	38.74	54.00	-15.26	QP			

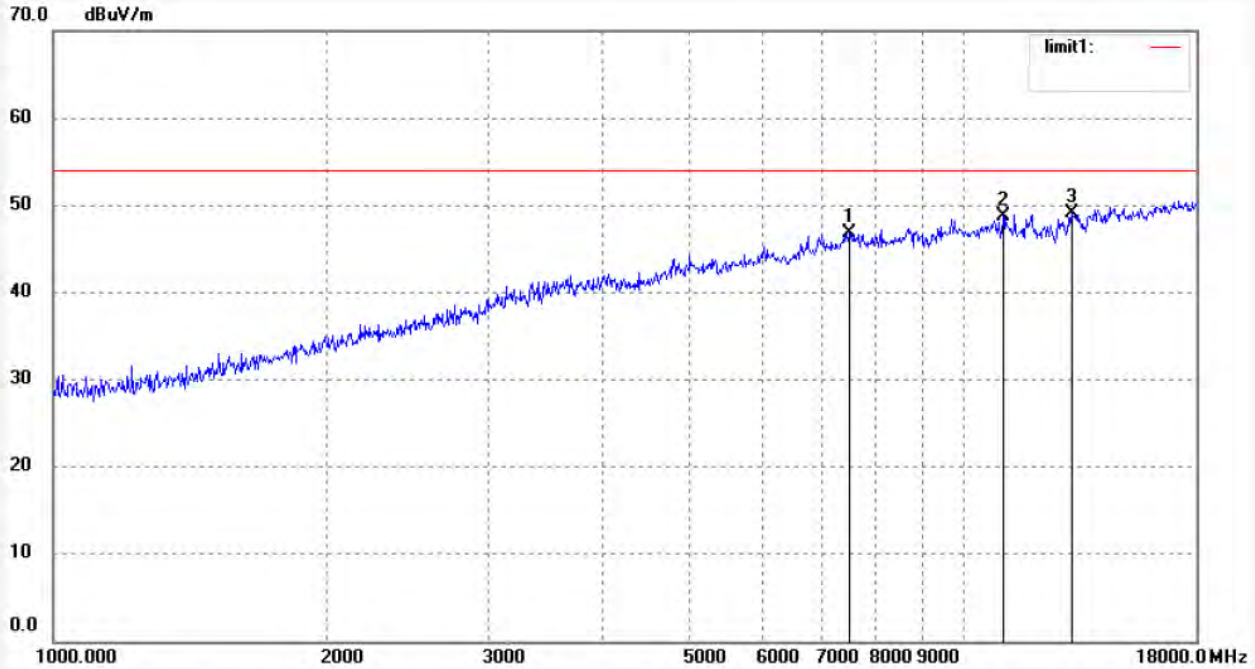
Above 1G

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.: ricky #2584
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2412MHz(802.11b)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Vertical
Power Source: DC 5V
Date: 2014/09/20
Time: 14:49:50
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141832

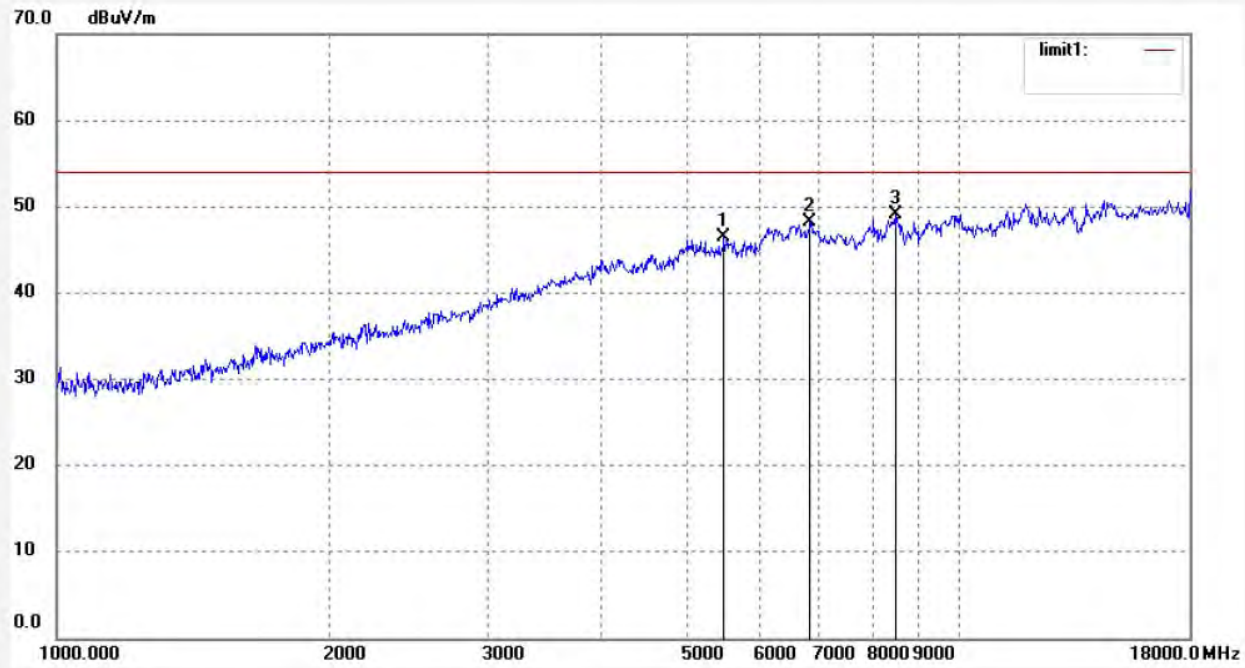


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	7476.006	41.69	5.07	46.76	54.00	-7.24	peak			
2	11044.129	37.99	10.68	48.67	54.00	-5.33	peak			
3	13135.536	2.64	46.40	49.04	54.00	-4.96	peak			

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.: ricky #2583	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 2014/09/20
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 14:48:28
EUT: 150M High Gain Wireless USB Adapter	Engineer Signature:
Mode: TX 2412MHz(802.11b)	Distance: 3m
Model: WU112K	
Manufacturer: HAOLIYUAN	

Note: Report No.:ATE20141832



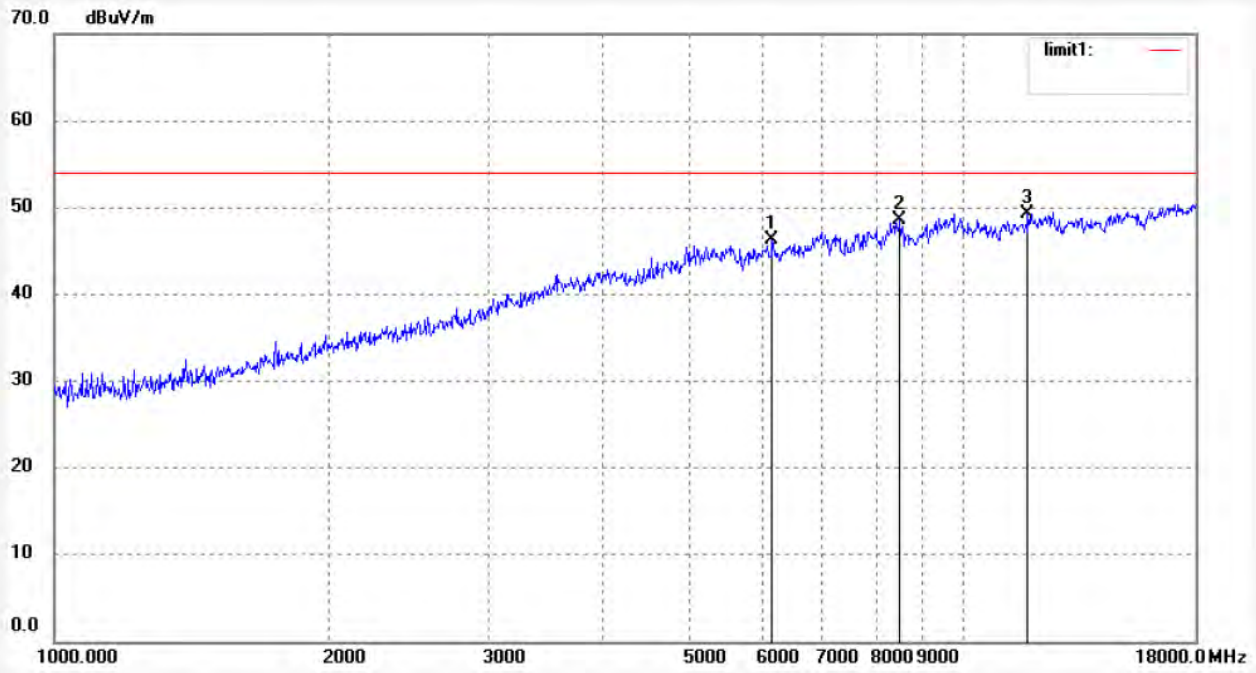
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	5487.260	44.29	2.09	46.38	54.00	-7.62	peak			
2	6835.279	43.01	5.29	48.30	54.00	-5.70	peak			
3	8514.456	40.23	8.87	49.10	54.00	-4.90	peak			

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.: ricky #2582
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2437MHz(802.11b)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Horizontal
Power Source: DC 5V
Date: 2014/09/20
Time: 14:47:52
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141832



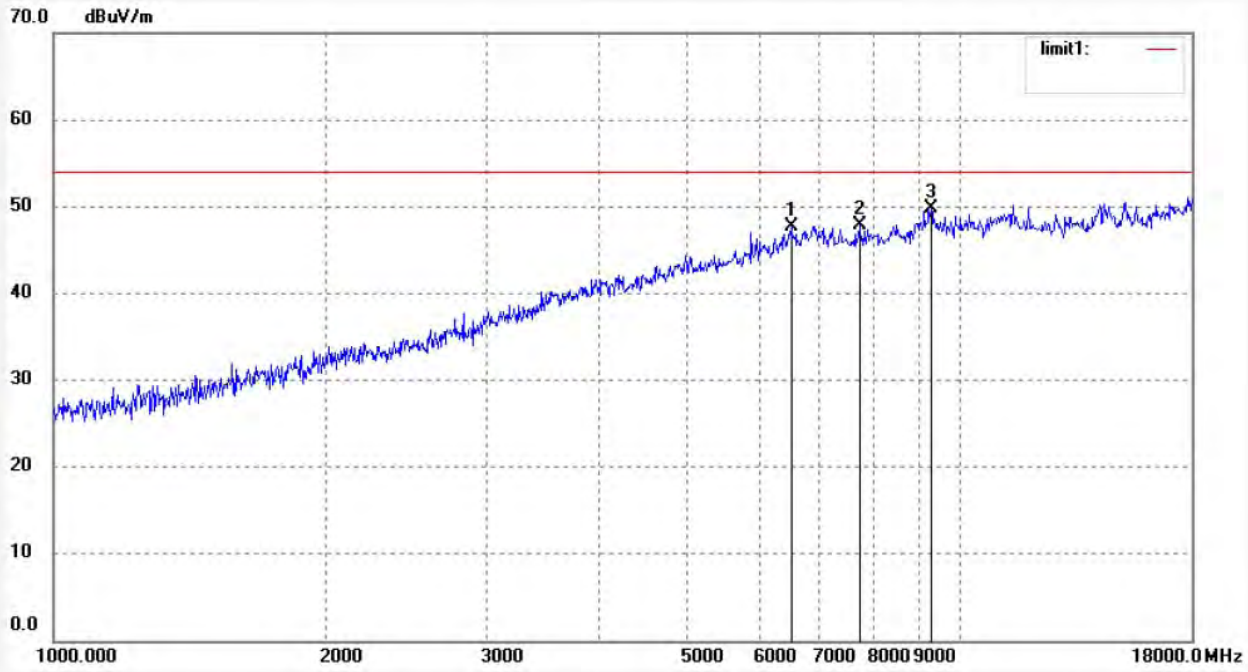
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	6159.797	42.65	3.56	46.21	54.00	-7.79	peak			
2	8514.456	39.70	8.87	48.57	54.00	-5.43	peak			
3	11769.214	36.19	13.14	49.33	54.00	-4.67	peak			

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.: ricky #2581
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2437MHz(802.11b)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Vertical
Power Source: DC 5V
Date: 2014/09/20
Time: 14:46:33
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141832



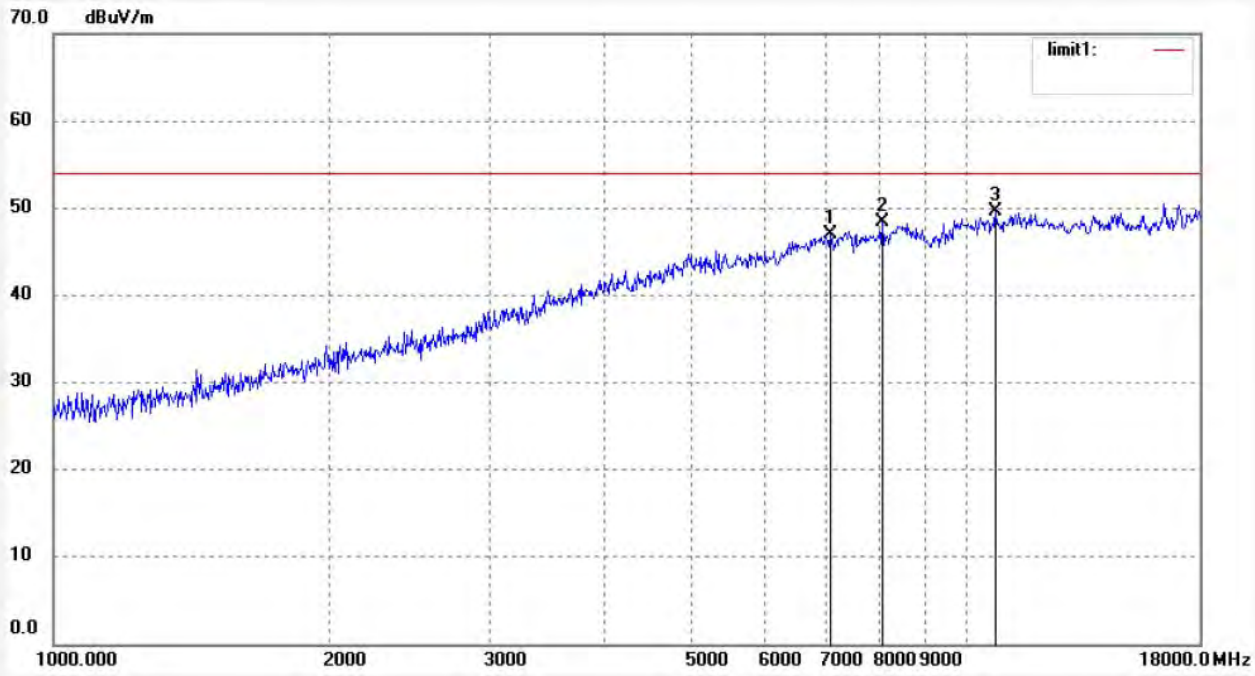
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	6507.536	43.18	4.45	47.63	54.00	-6.37	peak			
2	7739.857	41.50	6.36	47.86	54.00	-6.14	peak			
3	9285.710	39.96	9.77	49.73	54.00	-4.27	peak			

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.: ricky #2580
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2462MHz(802.11b)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Vertical
Power Source: DC 5V
Date: 2014/09/20
Time: 14:45:36
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141832



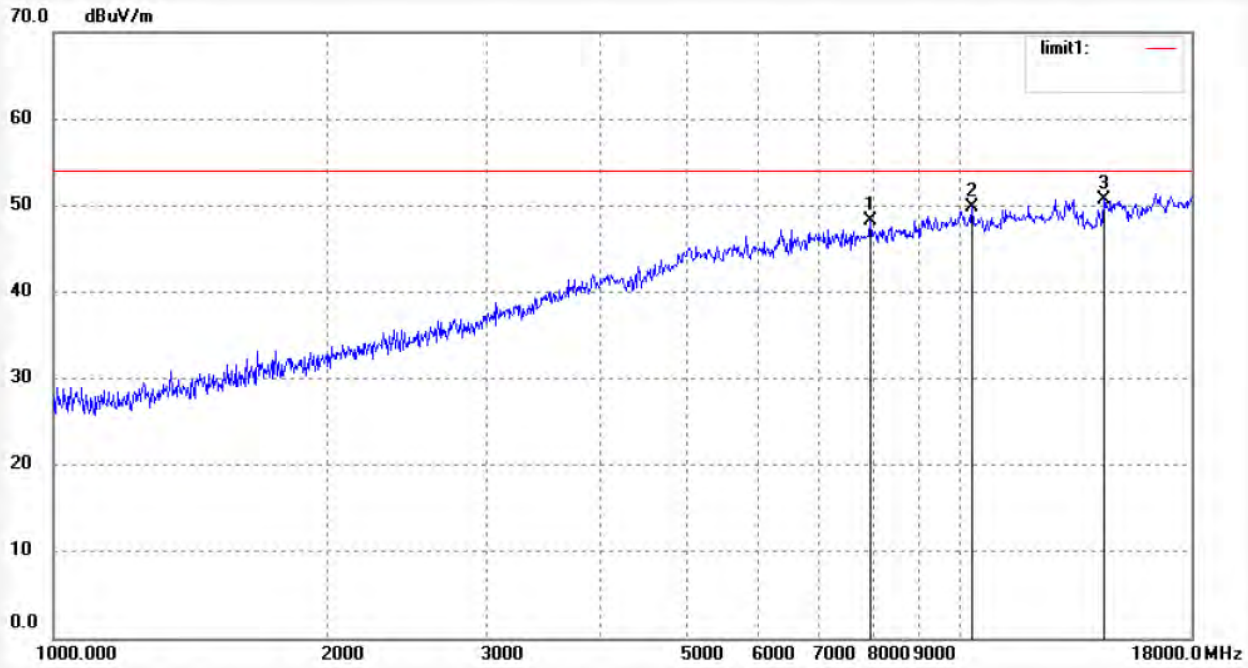
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	7096.999	42.04	4.99	47.03	54.00	-6.97	peak			
2	8082.803	39.89	8.47	48.36	54.00	-5.64	peak			
3	10760.538	39.46	10.20	49.66	54.00	-4.34	peak			

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.: ricky #2579
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2462MHz(802.11b)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Horizontal
Power Source: DC 5V
Date: 2014/09/20
Time: 14:44:29
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141832

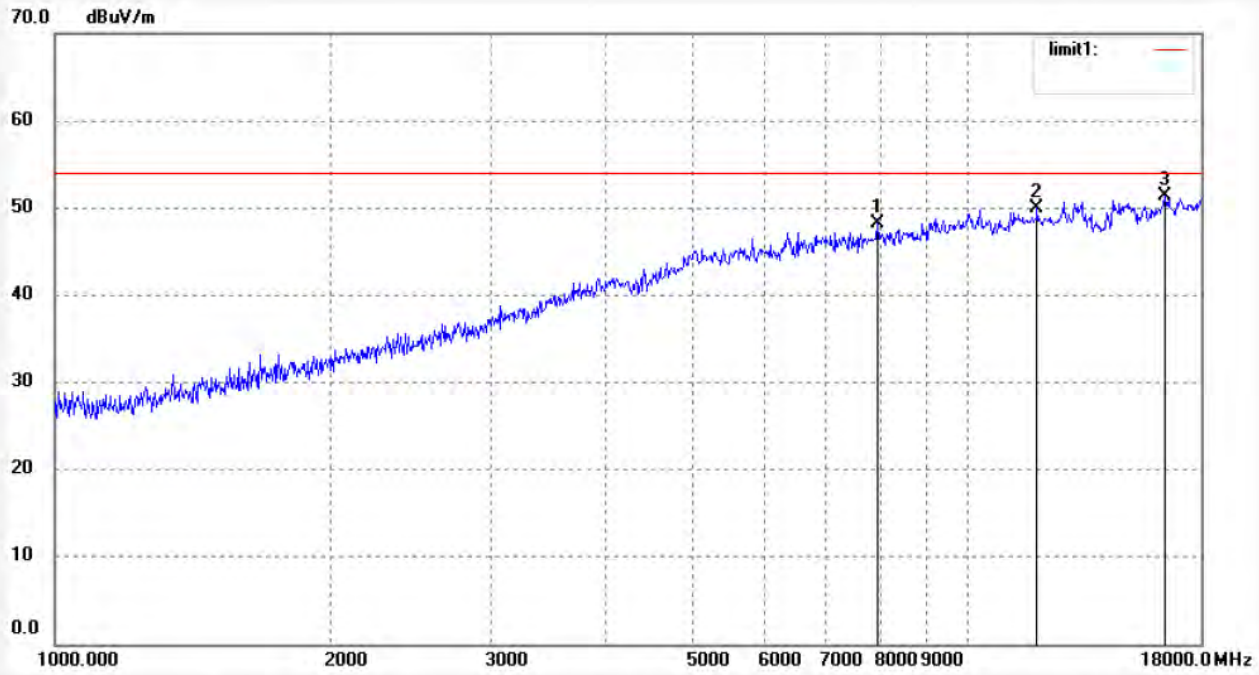


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	7966.832	40.10	8.03	48.13	54.00	-5.87	peak			
2	10303.978	39.53	10.27	49.80	54.00	-4.20	peak			
3	14408.425	0.76	49.99	50.75	54.00	-3.25	peak			

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.: ricky #2573	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 2014/09/20
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 14:38:19
EUT: 150M High Gain Wireless USB Adapter	Engineer Signature:
Mode: TX 2412MHz(802.11g)	Distance: 3m
Model: WU112K	
Manufacturer: HAOLIYUAN	

Note: Report No.:ATE20141832



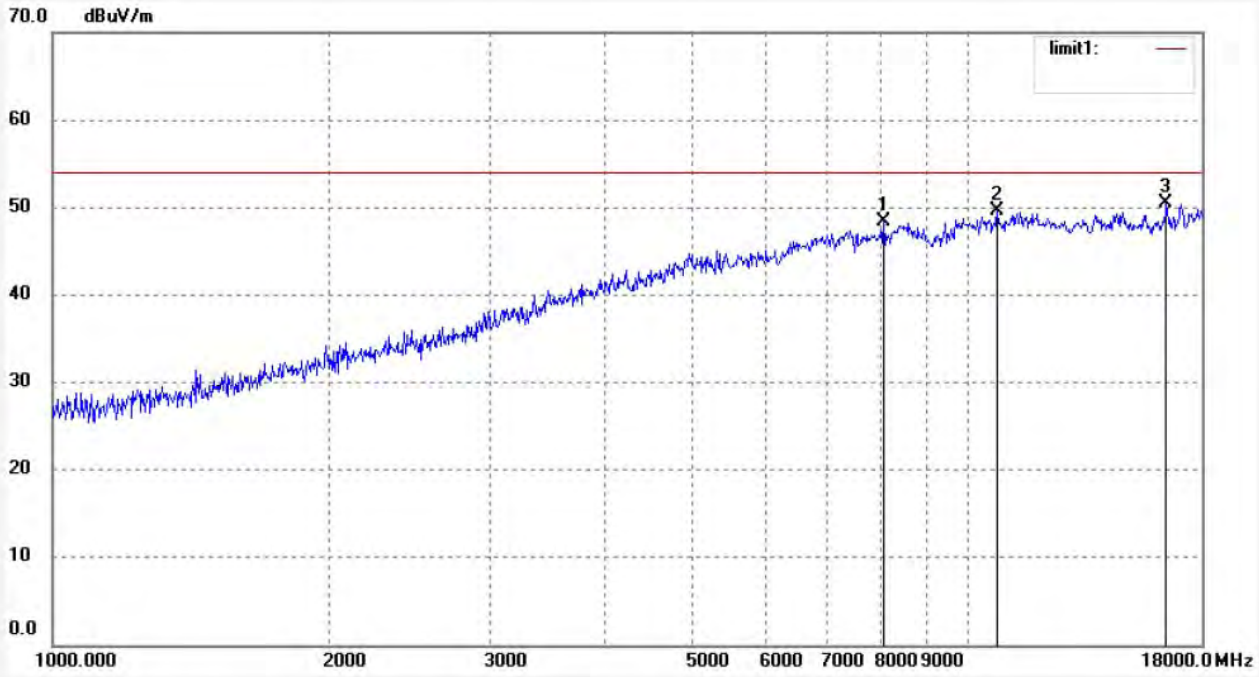
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	7966.832	40.10	8.03	48.13	54.00	-5.87	peak			
2	11906.073	37.44	12.58	50.02	54.00	-3.98	peak			
3	16457.318	2.18	49.14	51.32	54.00	-2.68	peak			

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.: ricky #2574
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2412MHz(802.11g)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Vertical
Power Source: DC 5V
Date: 2014/09/20
Time: 14:39:11
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141832



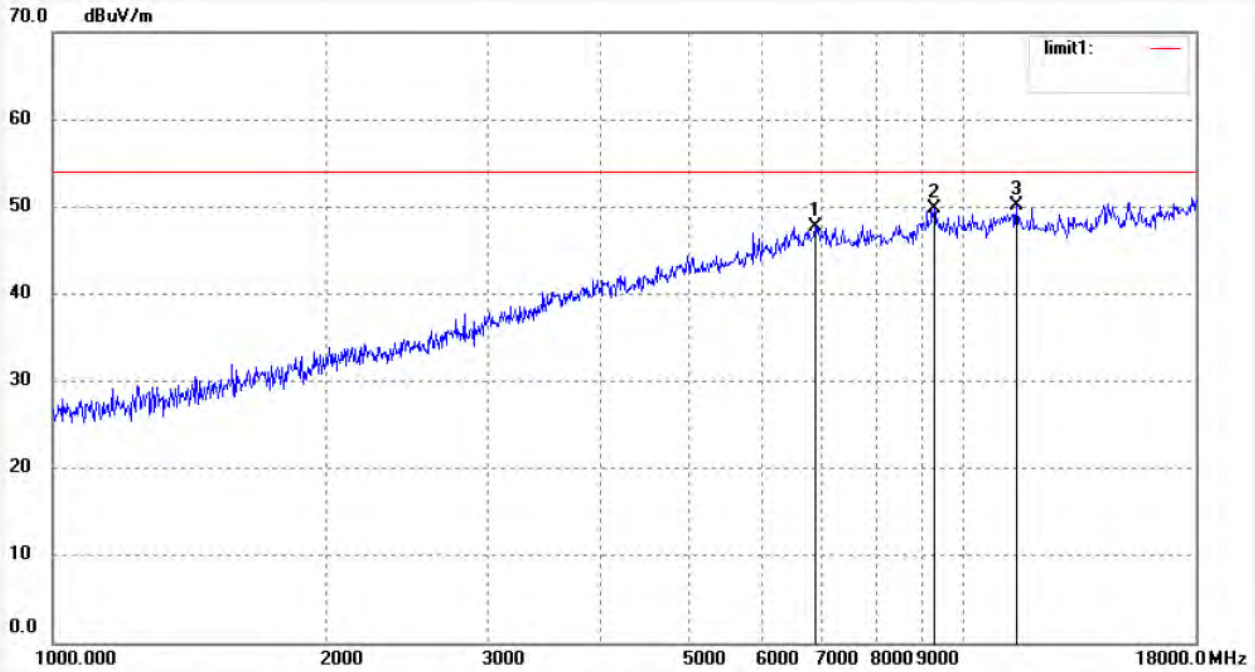
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	8082.803	39.89	8.47	48.36	54.00	-5.64	peak			
2	10760.538	39.46	10.20	49.66	54.00	-4.34	peak			
3	16457.318	1.28	49.14	50.42	54.00	-3.58	peak			

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.: ricky #2575
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2437MHz(802.11g)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Vertical
Power Source: DC 5V
Date: 2014/09/20
Time: 14:40:37
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141832



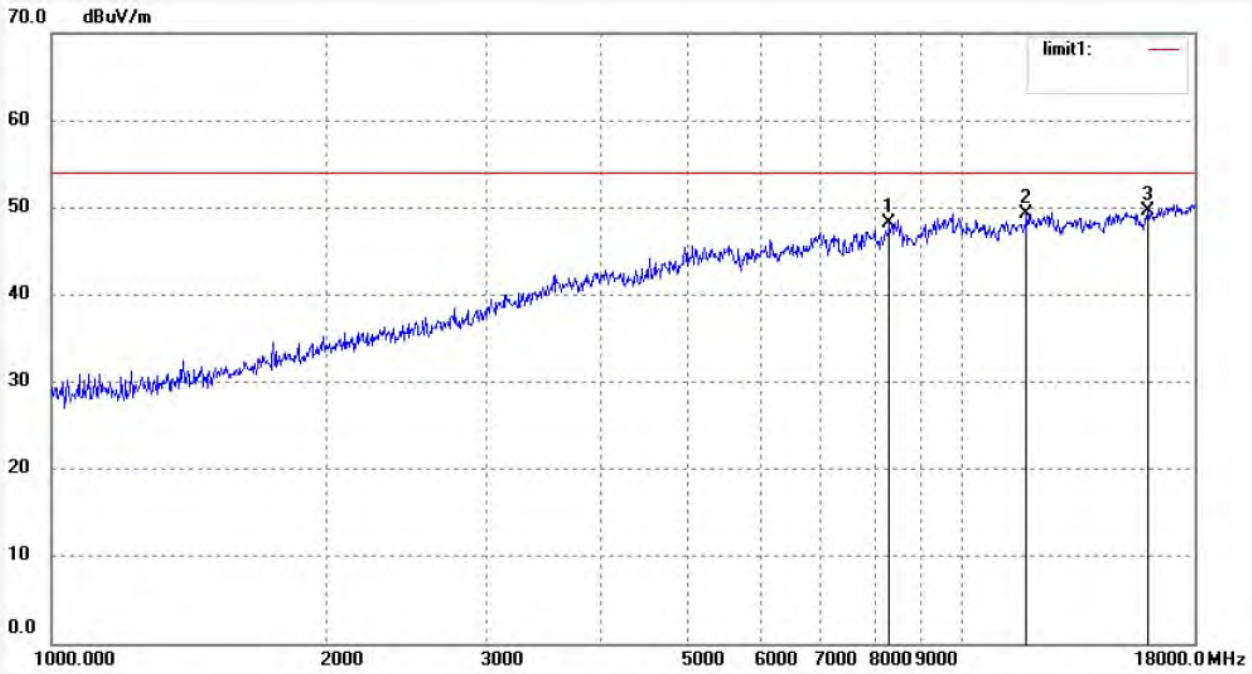
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	6874.906	42.35	5.36	47.71	54.00	-6.29	peak			
2	9285.710	39.96	9.77	49.73	54.00	-4.27	peak			
3	11433.909	38.37	11.79	50.16	54.00	-3.84	peak			

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.: ricky #2576
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2437MHz(802.11g)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Horizontal
Power Source: DC 5V
Date: 2014/09/20
Time: 14:41:51
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141832



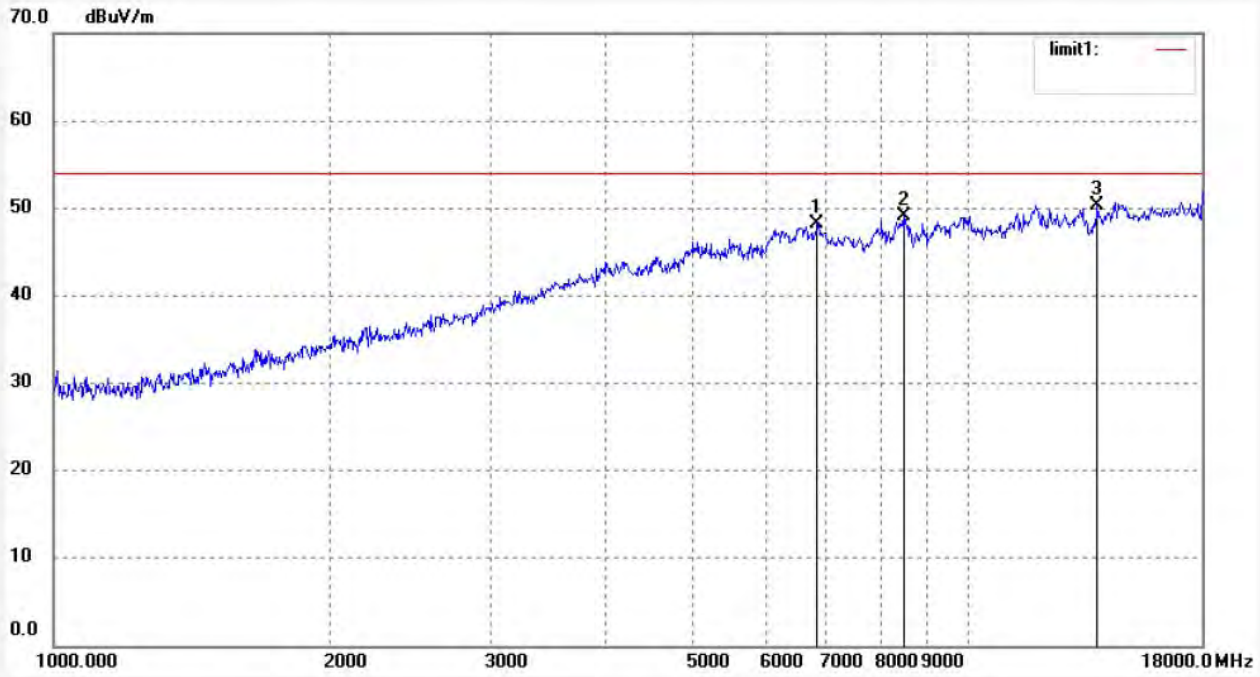
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	8319.836	39.31	8.91	48.22	54.00	-5.78	peak			
2	11769.214	36.19	13.14	49.33	54.00	-4.67	peak			
3	15988.449	1.03	48.60	49.63	54.00	-4.37	peak			

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.: ricky #2577
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2462MHz(802.11g)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Horizontal
Power Source: DC 5V
Date: 2014/09/20
Time: 14:42:40
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141832



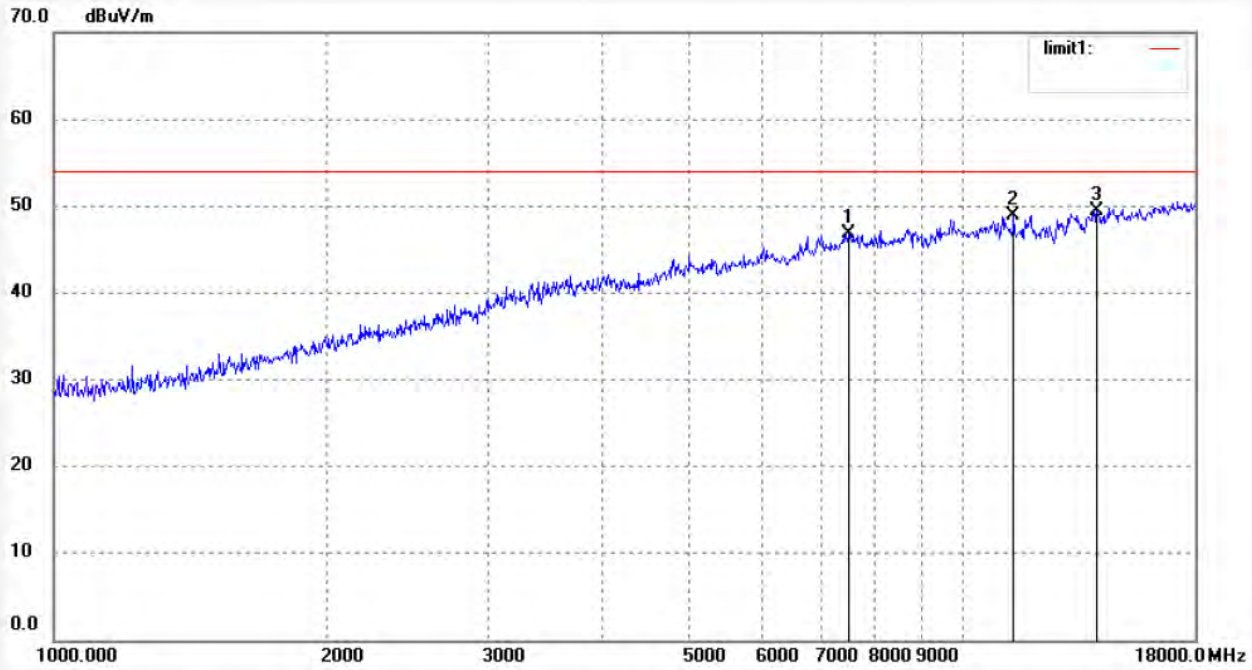
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	6835.279	43.01	5.29	48.30	54.00	-5.70	peak			
2	8514.456	40.23	8.87	49.10	54.00	-4.90	peak			
3	13837.024	2.80	47.59	50.39	54.00	-3.61	peak			

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.: ricky #2578
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2462MHz(802.11g)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Vertical
Power Source: DC 5V
Date: 2014/09/20
Time: 14:43:38
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141832



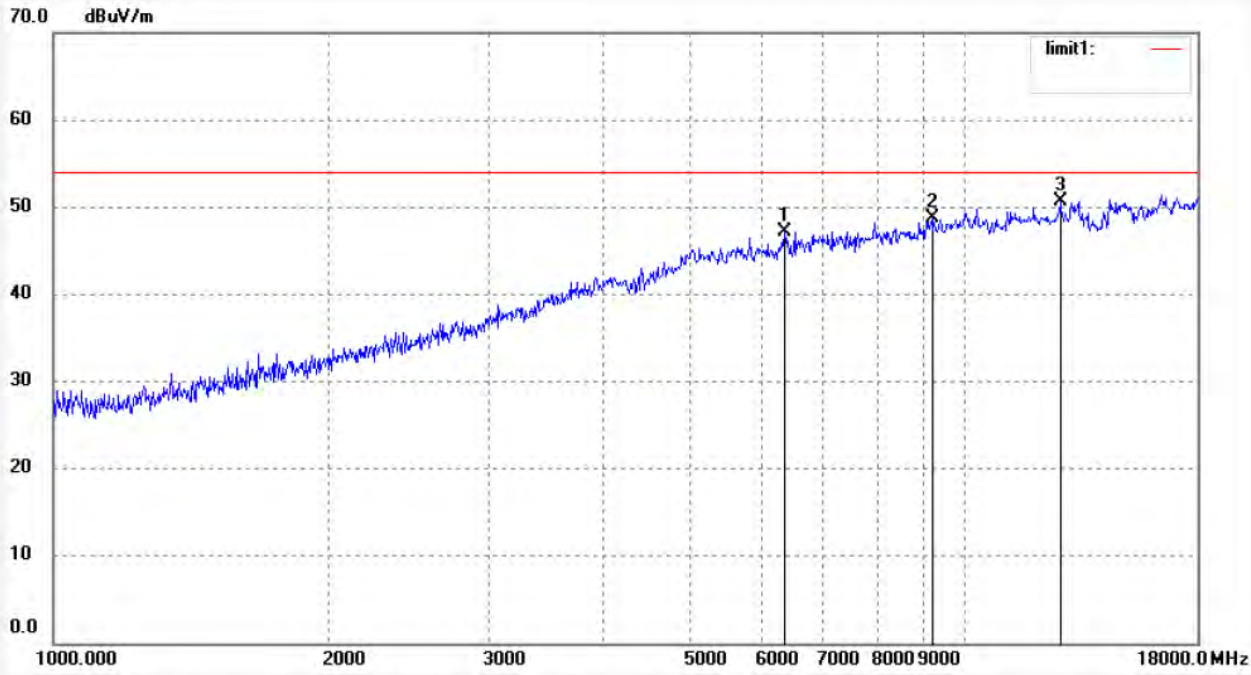
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	7476.006	41.69	5.07	46.76	54.00	-7.24	peak			
2	11368.003	37.28	11.63	48.91	54.00	-5.09	peak			
3	14038.447	1.32	48.10	49.42	54.00	-4.58	peak			

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.: ricky #2567
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2412MHz(802.11n20)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Horizontal
Power Source: DC 5V
Date: 2014/09/20
Time: 14:30:16
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141832



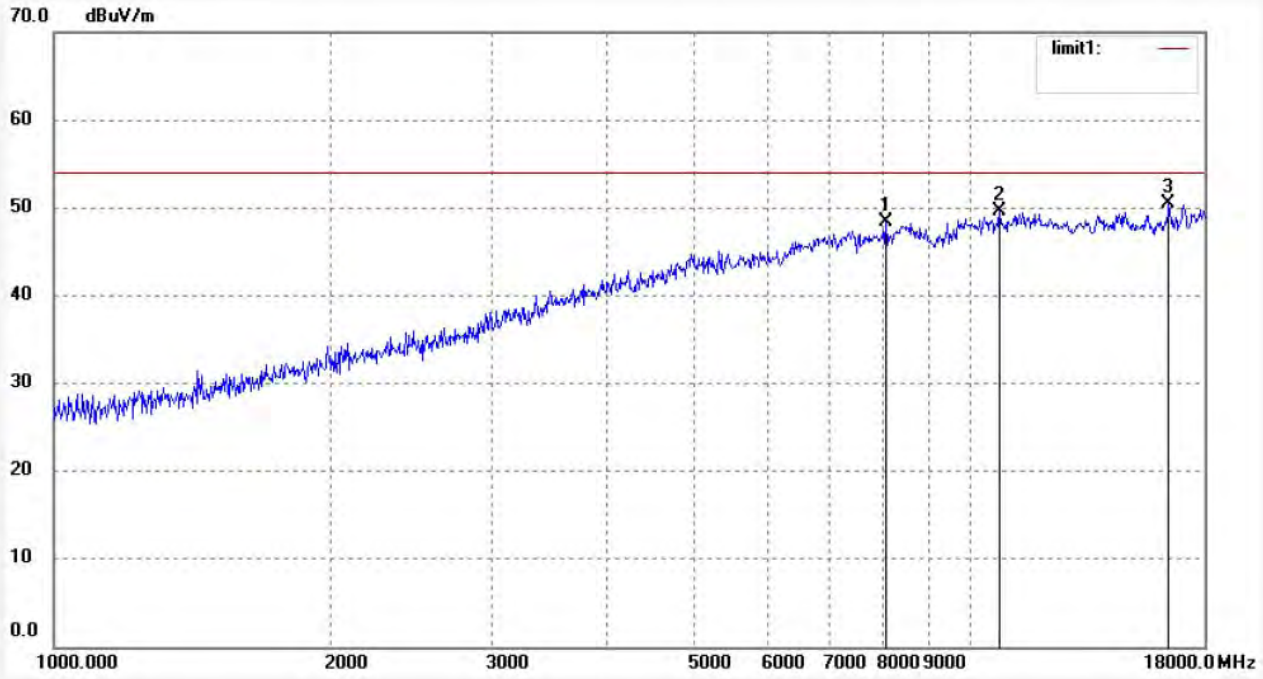
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	6340.436	42.98	4.20	47.18	54.00	-6.82	peak			
2	9205.540	39.44	9.27	48.71	54.00	-5.29	peak			
3	12724.473	4.91	45.76	50.67	54.00	-3.33	peak			

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.: ricky #2568
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2412MHz(802.11n20)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Vertical
Power Source: DC 5V
Date: 2014/09/20
Time: 14:31:31
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141832



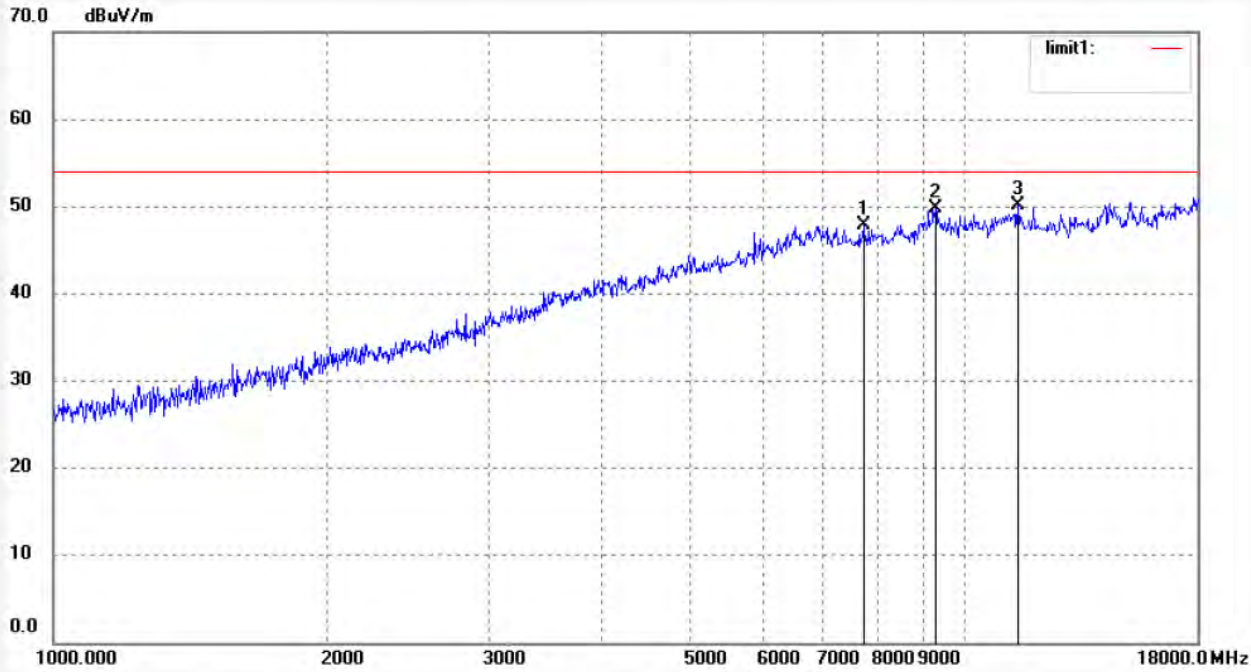
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	8082.803	39.89	8.47	48.36	54.00	-5.64	peak			
2	10760.538	39.46	10.20	49.66	54.00	-4.34	peak			
3	16457.318	1.28	49.14	50.42	54.00	-3.58	peak			

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.: ricky #2569
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2437MHz(802.11n20)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Vertical
Power Source: DC 5V
Date: 2014/09/20
Time: 14:32:22
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141832

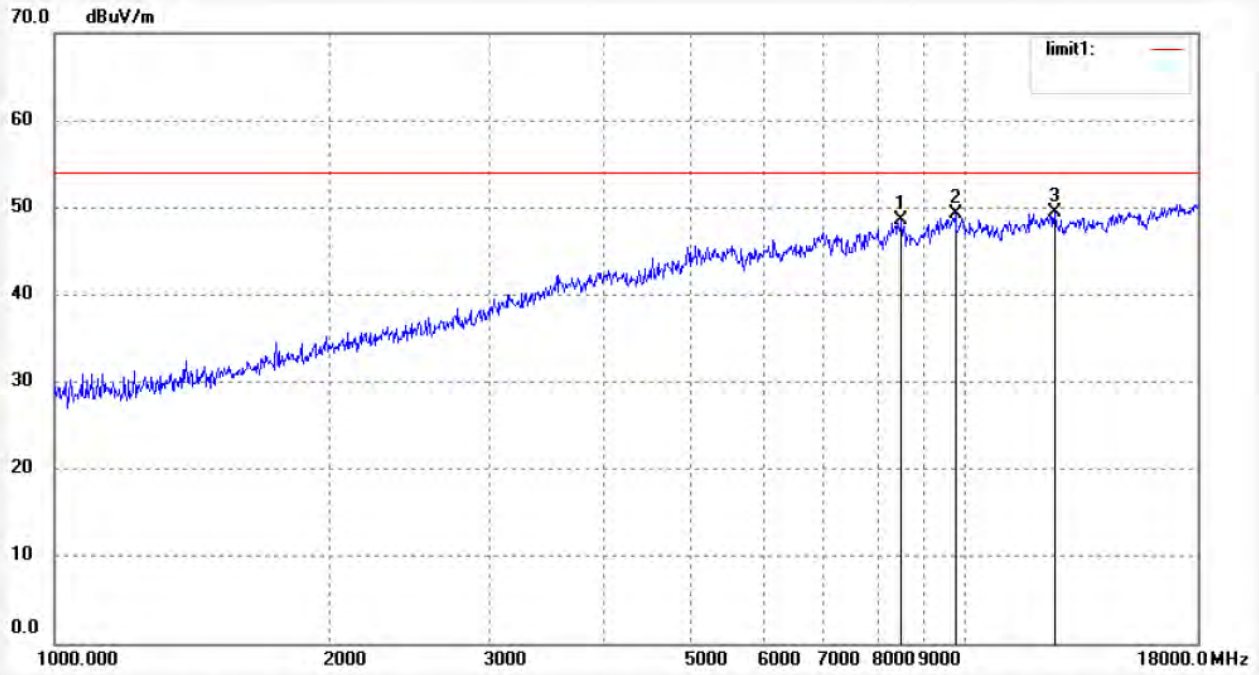


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	7739.857	41.50	6.36	47.86	54.00	-6.14	peak			
2	9285.710	39.96	9.77	49.73	54.00	-4.27	peak			
3	11433.909	38.37	11.79	50.16	54.00	-3.84	peak			

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.: ricky #2570	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 2014/09/20
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 14:33:41
EUT: 150M High Gain Wireless USB Adapter	Engineer Signature:
Mode: TX 2437MHz(802.11n20)	Distance: 3m
Model: WU112K	
Manufacturer: HAOLIYUAN	

Note: Report No.:ATE20141832



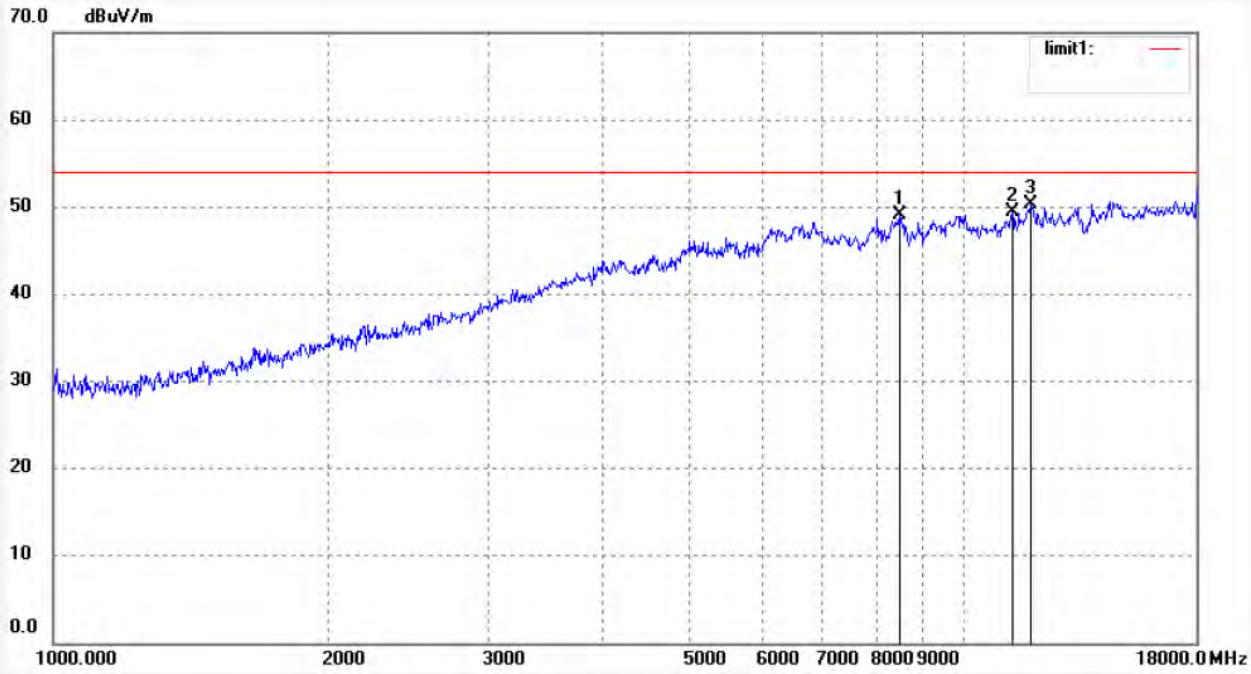
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	8514.456	39.70	8.87	48.57	54.00	-5.43	peak			
2	9753.371	38.47	10.81	49.28	54.00	-4.72	peak			
3	12541.903	3.90	45.47	49.37	54.00	-4.63	peak			

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.: ricky #2571
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2462MHz(802.11n20)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Horizontal
Power Source: DC 5V
Date: 2014/09/20
Time: 14:34:50
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141832



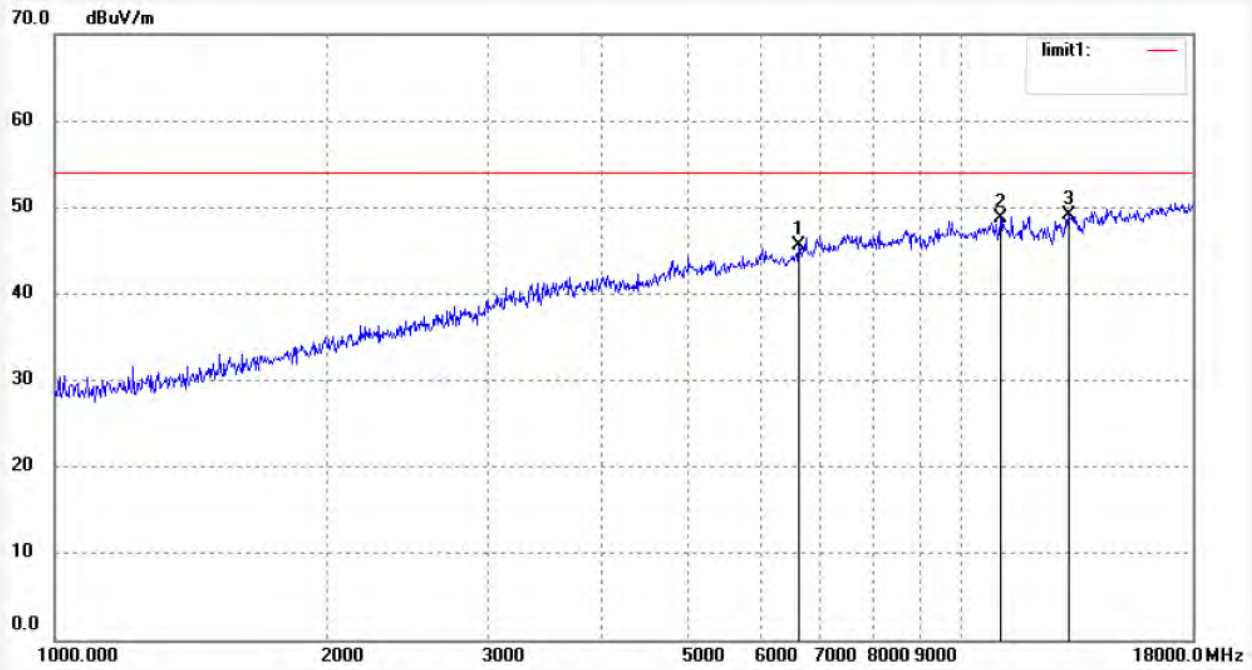
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	8514.456	40.23	8.87	49.10	54.00	-4.90	peak			
2	11302.477	38.13	11.38	49.51	54.00	-4.49	peak			
3	11837.445	37.18	13.08	50.26	54.00	-3.74	peak			

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.: ricky #2572
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2462MHz(802.11n20)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Vertical
Power Source: DC 5V
Date: 2014/09/20
Time: 14:36:18
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141832



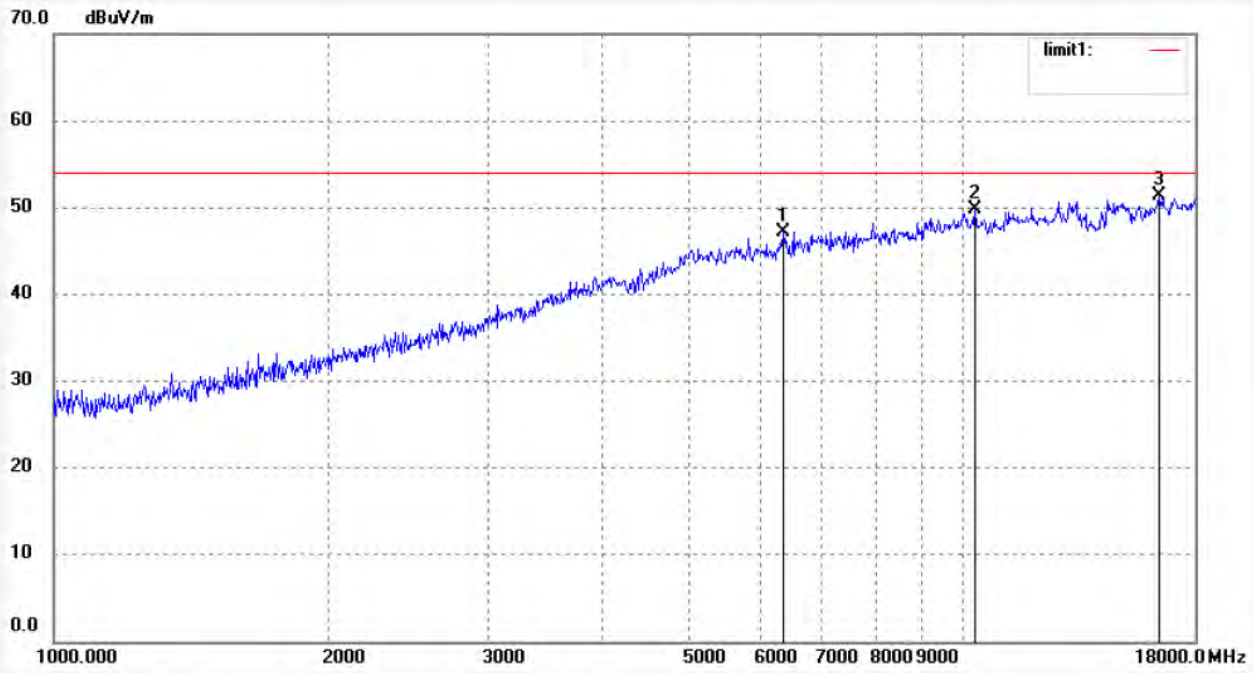
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	6621.376	41.15	4.52	45.67	54.00	-8.33	peak			
2	11044.129	37.99	10.68	48.67	54.00	-5.33	peak			
3	13135.536	2.64	46.40	49.04	54.00	-4.96	peak			

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.: ricky #2561
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2422MHz(802.11n40)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Horizontal
Power Source: DC 5V
Date: 2014/09/20
Time: 13:32:46
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141832



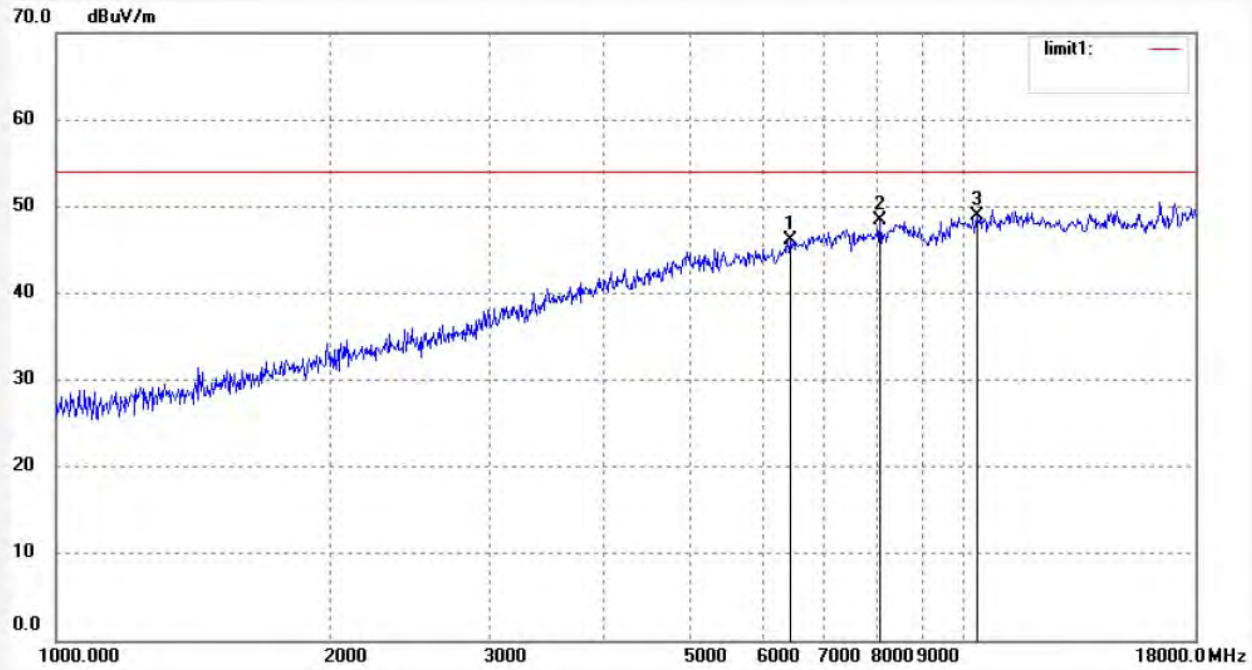
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	6340.436	42.98	4.20	47.18	54.00	-6.82	peak			
2	10303.978	39.53	10.27	49.80	54.00	-4.20	peak			
3	16457.318	2.18	49.14	51.32	54.00	-2.68	peak			

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.: ricky #2562
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2422MHz(802.11n40)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Vertical
Power Source: DC 5V
Date: 2014/09/20
Time: 14:25:33
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141832



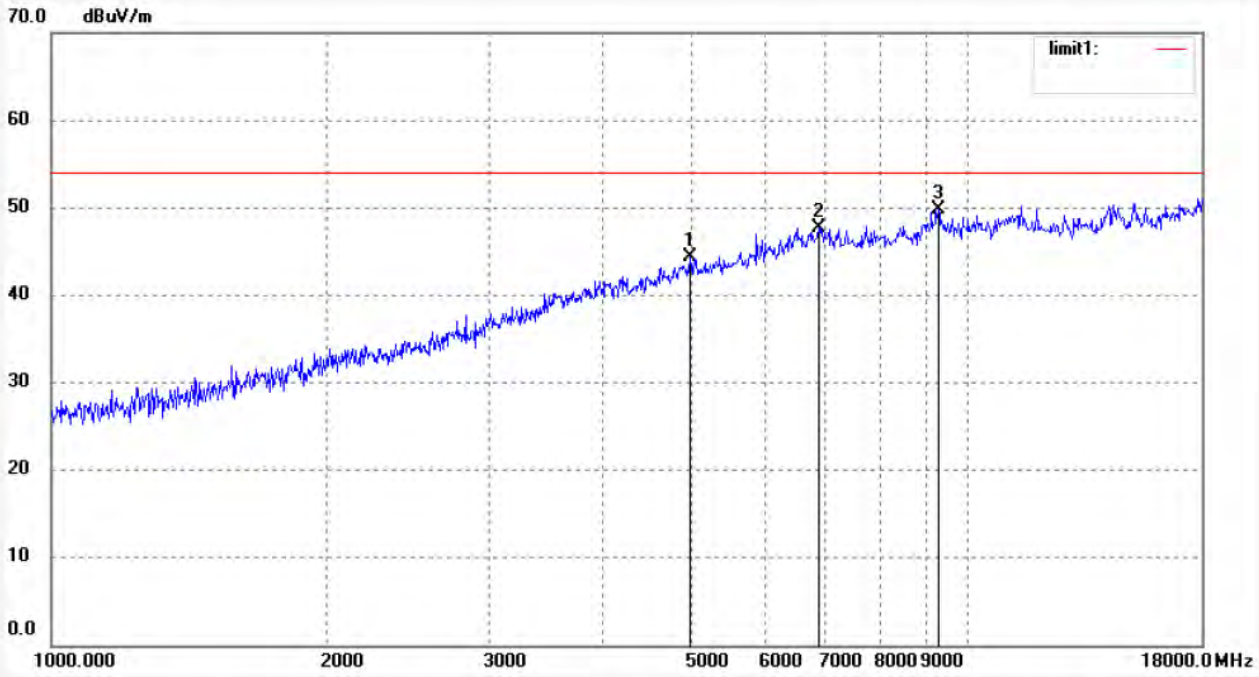
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	6432.733	41.64	4.46	46.10	54.00	-7.90	peak			
2	8082.803	39.89	8.47	48.36	54.00	-5.64	peak			
3	10363.715	38.73	10.20	48.93	54.00	-5.07	peak			

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.: ricky #2563
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2437MHz(802.11n40)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Vertical
Power Source: DC 5V
Date: 2014/09/20
Time: 14:26:26
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141832



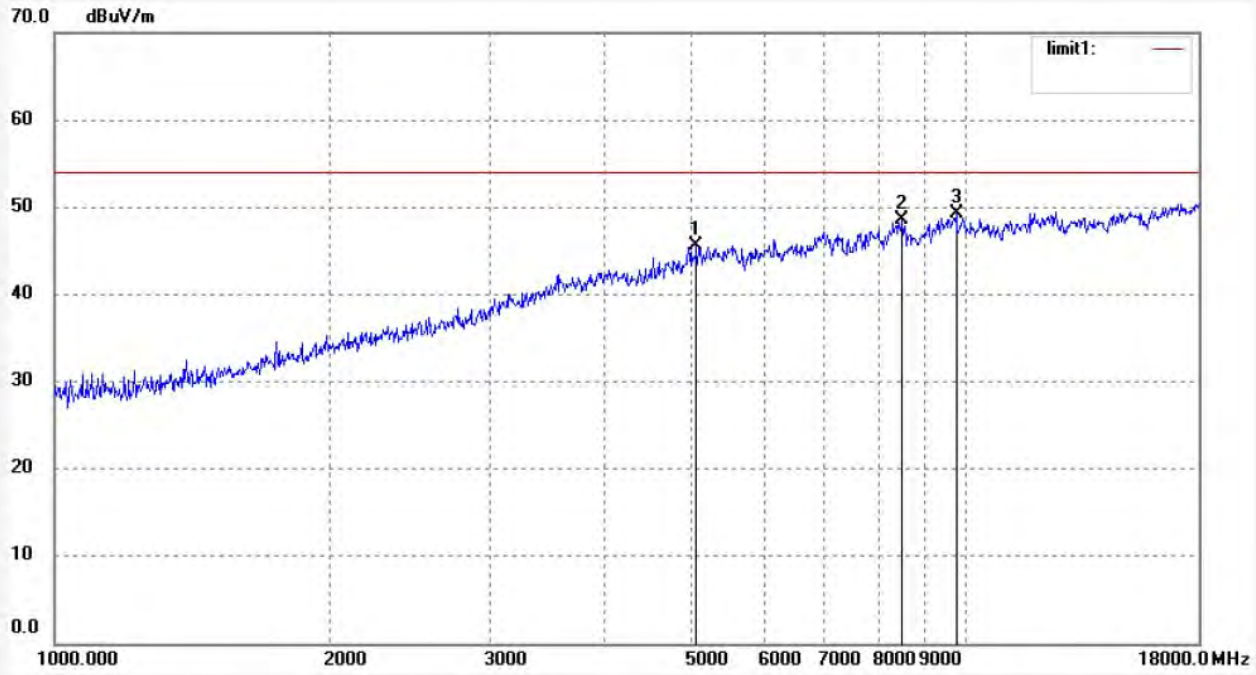
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4973.662	43.04	1.38	44.42	54.00	-9.58	peak			
2	6874.906	42.35	5.36	47.71	54.00	-6.29	peak			
3	9285.710	39.96	9.77	49.73	54.00	-4.27	peak			

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.: ricky #2564
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2437MHz(802.11n40)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Horizontal
Power Source: DC 5V
Date: 2014/09/20
Time: 14:27:21
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141832

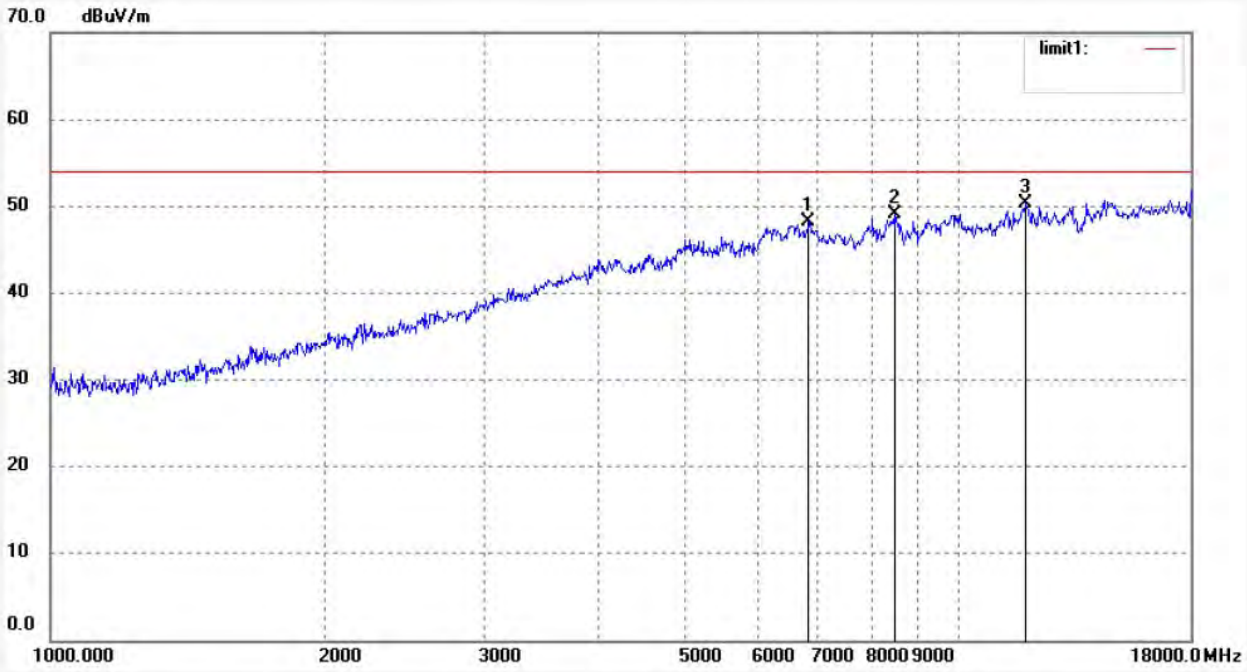


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	5060.668	44.27	1.36	45.63	54.00	-8.37	peak			
2	8514.456	39.70	8.87	48.57	54.00	-5.43	peak			
3	9753.371	38.47	10.81	49.28	54.00	-4.72	peak			

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.: ricky #2565	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 2014/09/20
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 14:28:33
EUT: 150M High Gain Wireless USB Adapter	Engineer Signature:
Mode: TX 2452MHz(802.11n40)	Distance: 3m
Model: WU112K	
Manufacturer: HAOLIYUAN	

Note: Report No.:ATE20141832



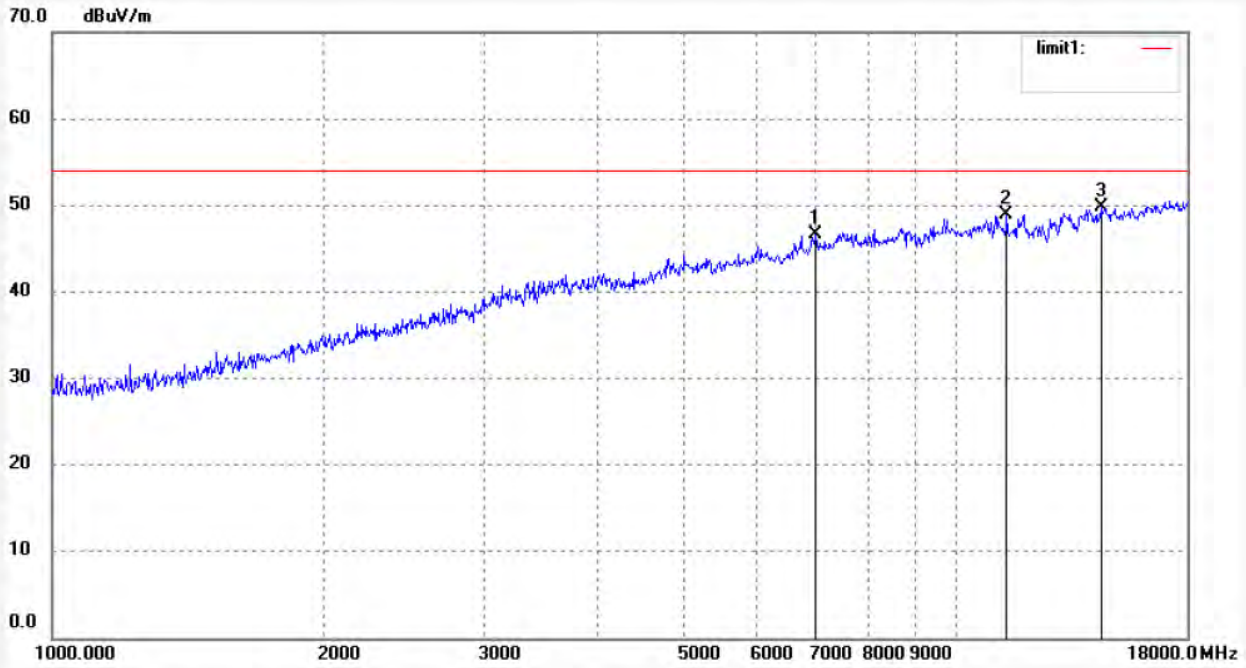
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	6835.279	43.01	5.29	48.30	54.00	-5.70	peak			
2	8514.456	40.23	8.87	49.10	54.00	-4.90	peak			
3	11837.445	37.18	13.08	50.26	54.00	-3.74	peak			

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.: ricky #2566
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: 150M High Gain Wireless USB Adapter
Mode: TX 2452MHz(802.11n40)
Model: WU112K
Manufacturer: HAOLIYUAN

Polarization: Vertical
Power Source: DC 5V
Date: 2014/09/20
Time: 14:29:53
Engineer Signature:
Distance: 3m

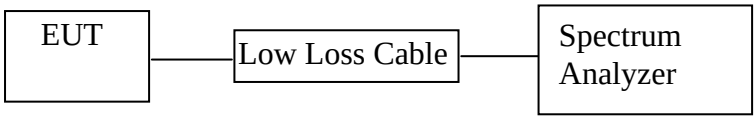
Note: Report No.:ATE20141832



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	6995.172	41.06	5.59	46.65	54.00	-7.35	peak			
2	11368.003	37.28	11.63	48.91	54.00	-5.09	peak			
3	14450.131	-0.43	50.19	49.76	54.00	-4.24	peak			

10. CONDUCTED SPURIOUS EMISSION COMPLIANCE TEST

10.1. Block Diagram of Test Setup



10.2. 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).

10.3. 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.

10.4. Operating Condition of EUT

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

10.4.2. Turn on the power of all equipment.

10.4.3. 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.

10.5. Test Procedure

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

10.5.2. Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz (below 1GHz).

10.5.3. Set RBW of spectrum analyzer to 1MHz and VBW to 3MHz (above 1GHz).

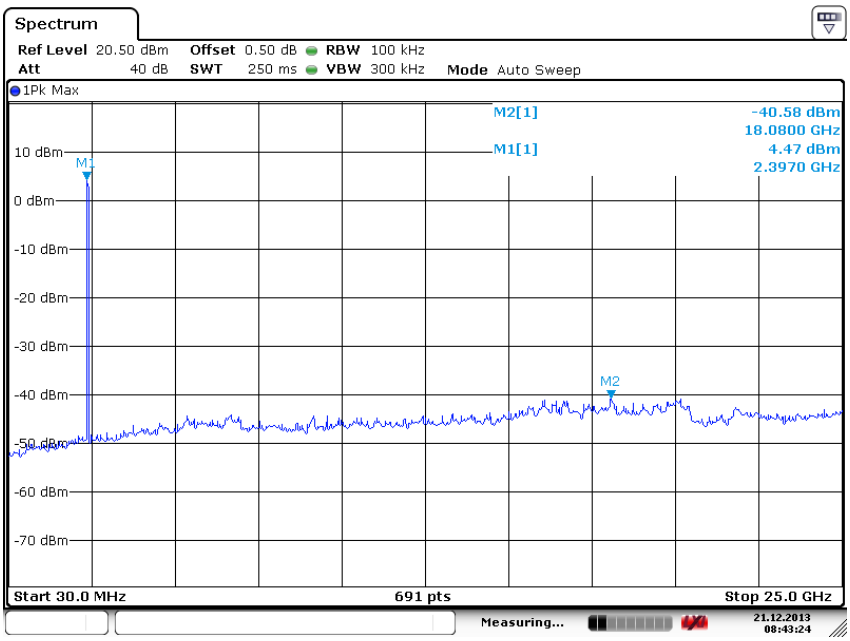
10.5.4. The Conducted Spurious Emission was measured and recorded.

10.6. Test Result

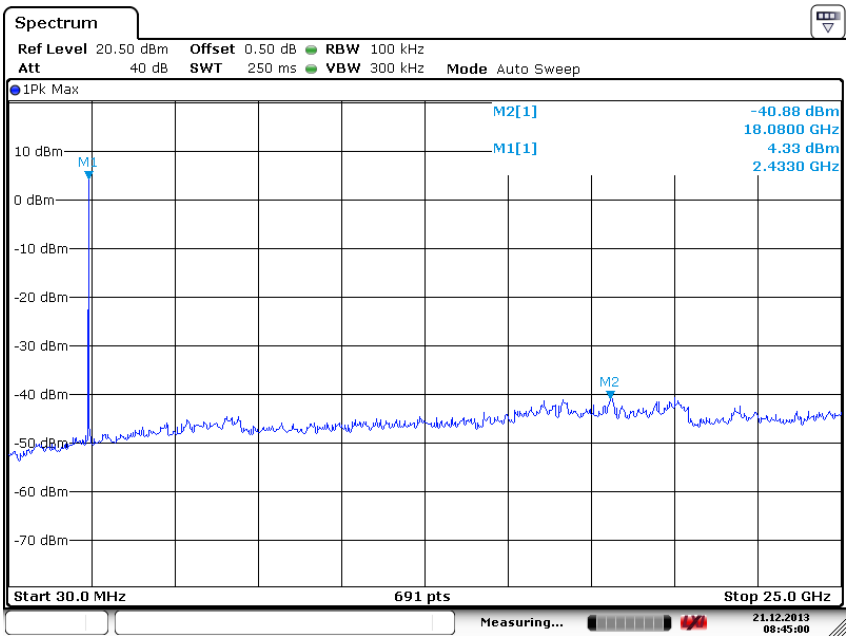
Pass.

The spectrum analyzer plots are attached as below.

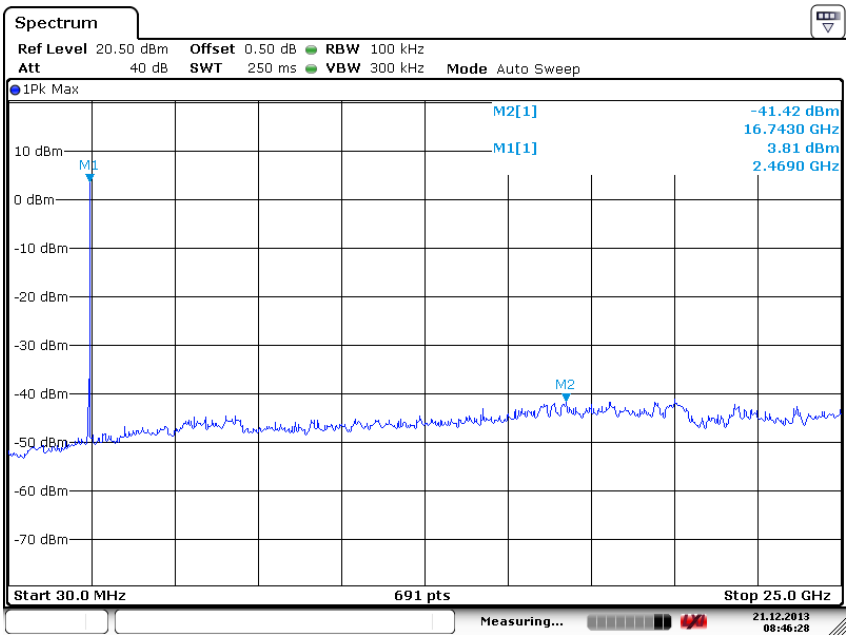
TX 802.11b Channel Low 2412MHz



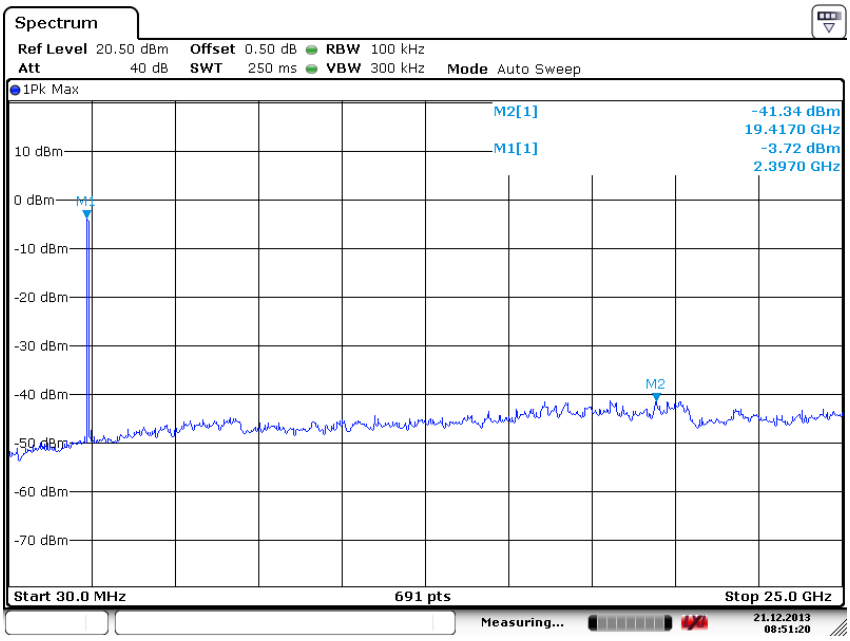
TX 802.11b Channel Middle 2437MHz



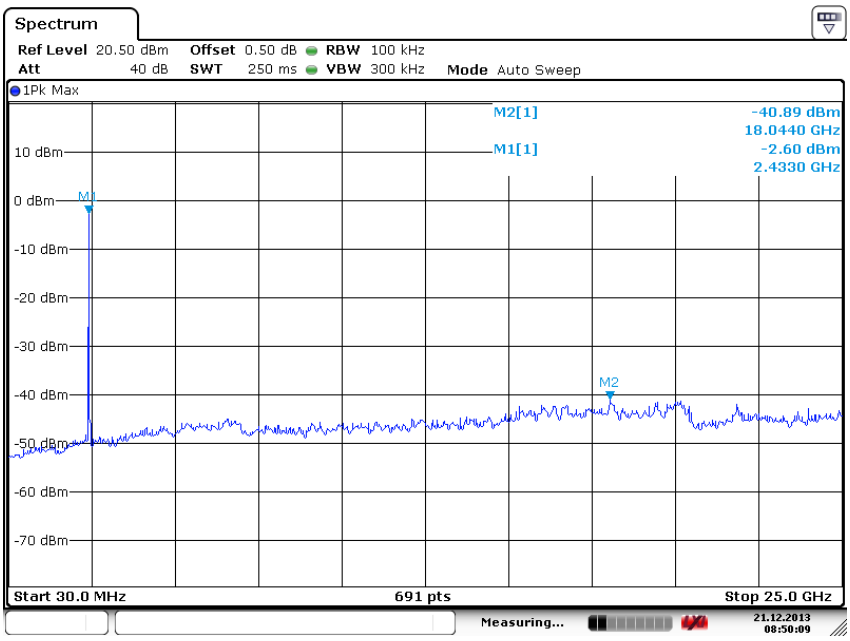
TX 802.11b Channel High 2462MHz



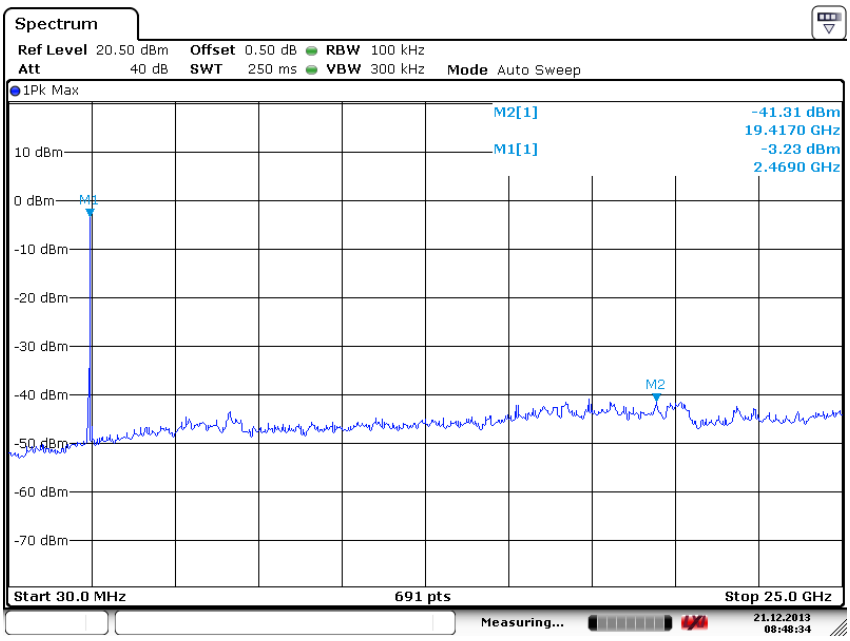
TX 802.11g Channel Low 2412MHz



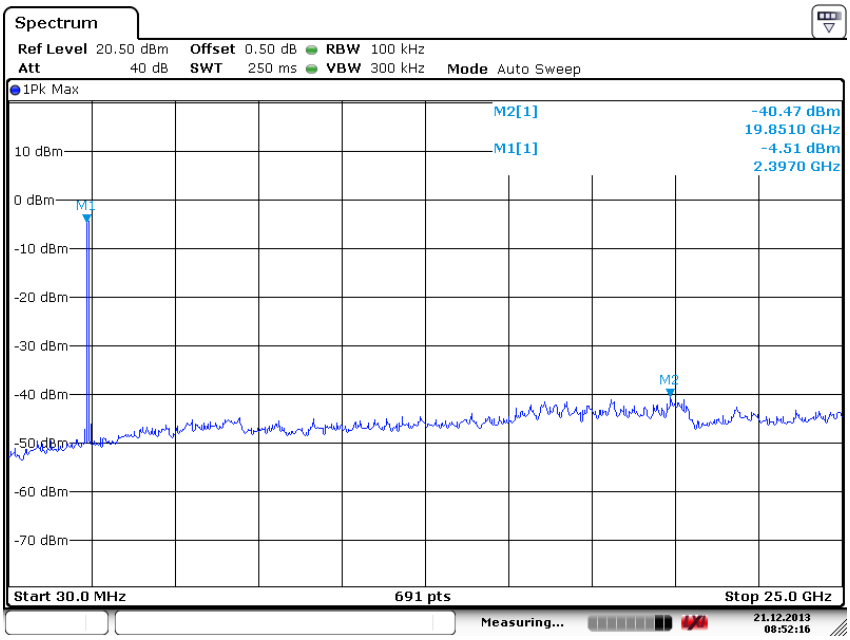
TX 802.11g Channel Middle 2437MHz



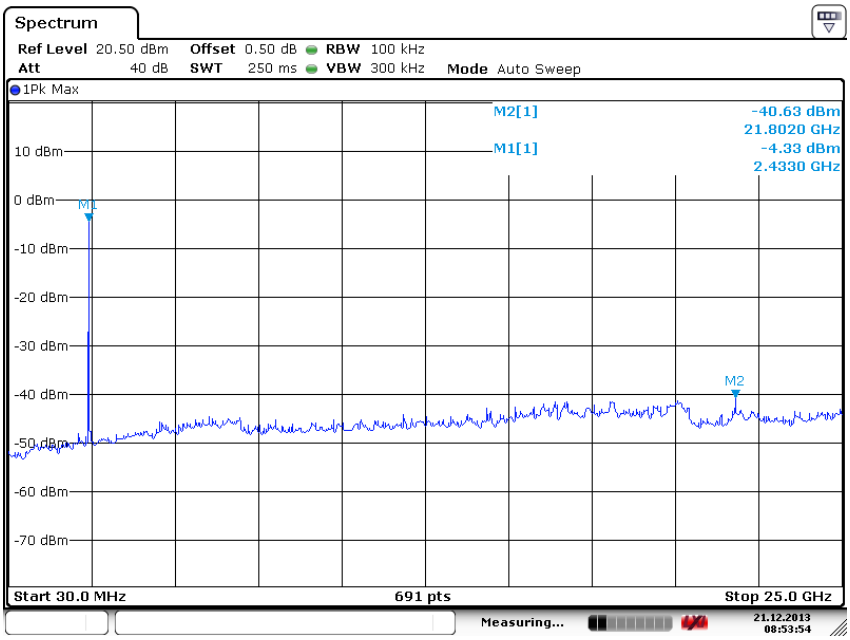
TX 802.11g Channel High 2462MHz



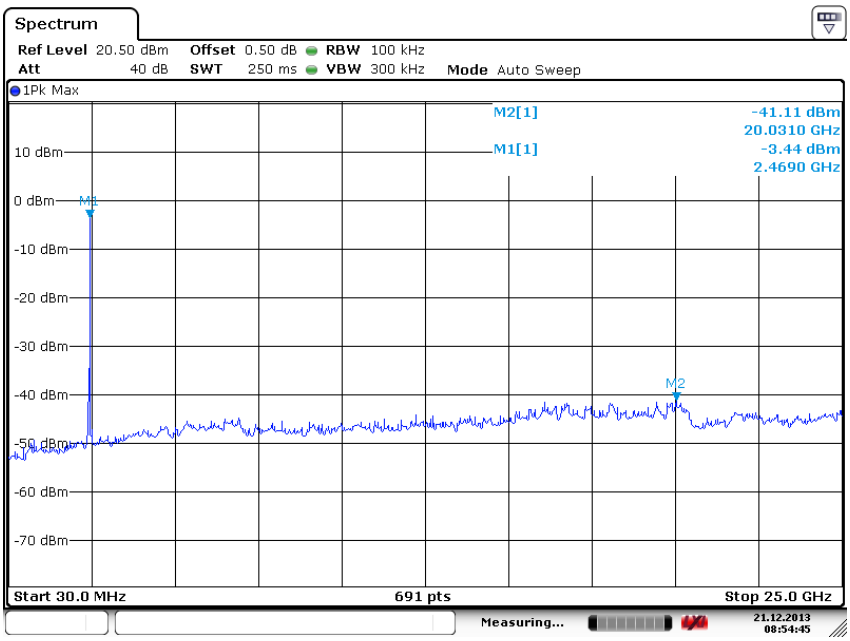
TX 802.11n Channel Low 2412MHz (20MHz)



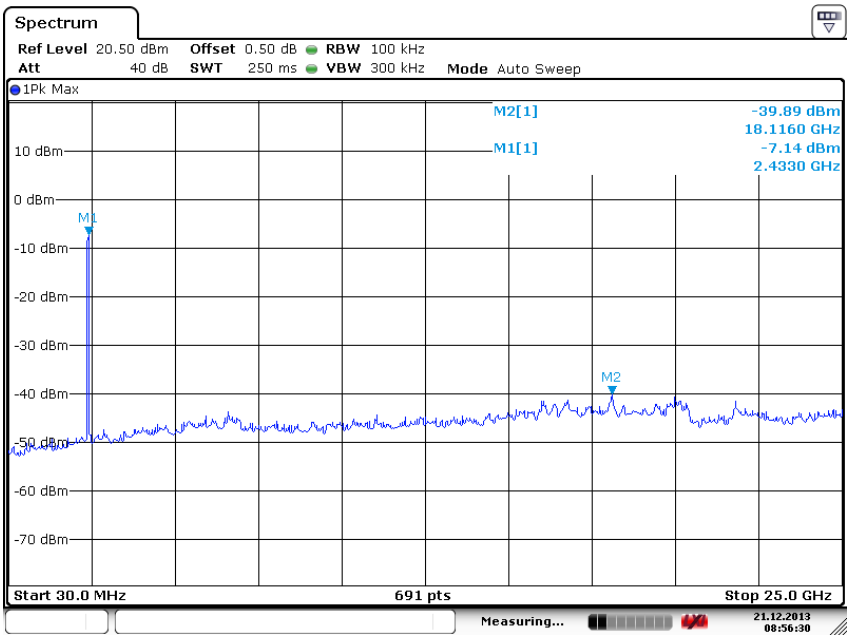
TX 802.11n Channel Middle 2437MHz (20MHz)



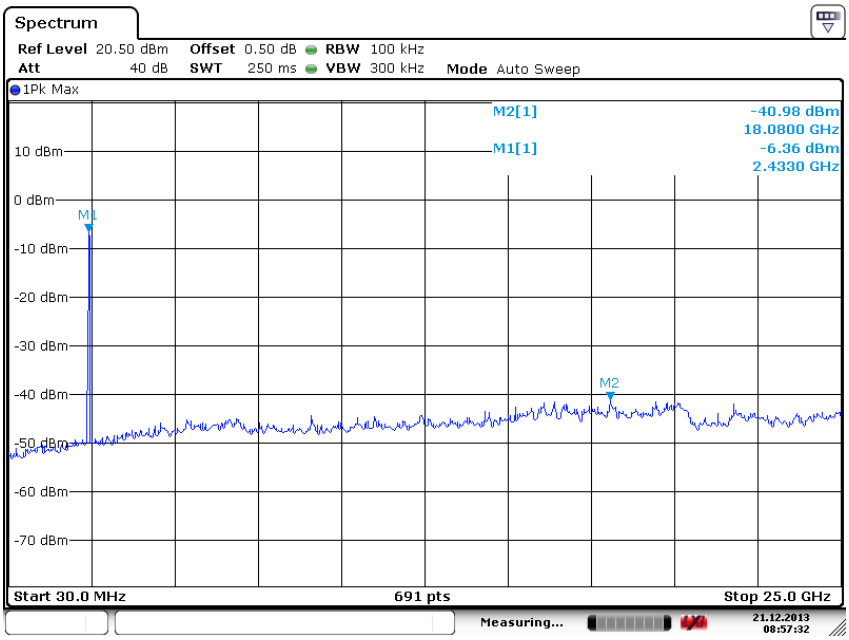
TX 802.11n Channel High 2462MHz (20MHz)



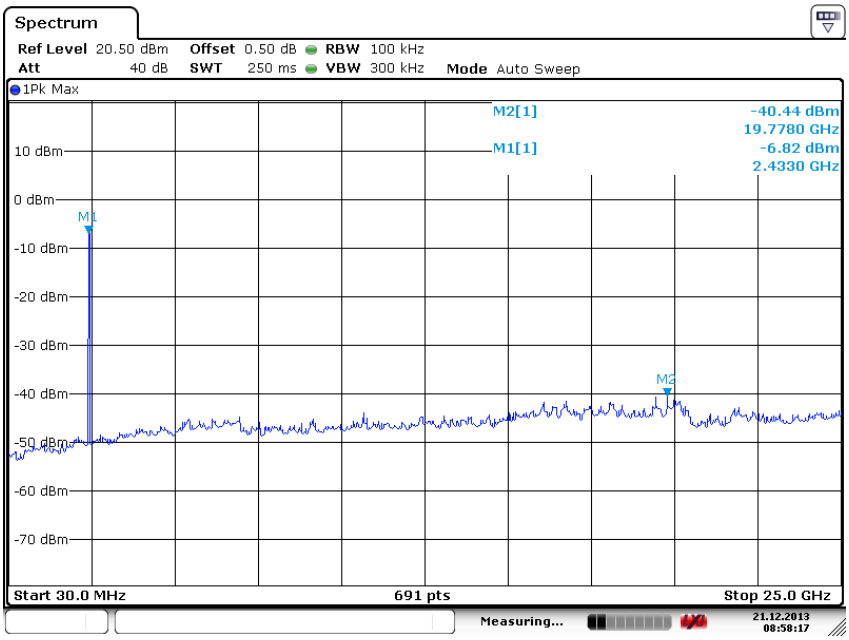
TX 802.11n Channel Low 2422MHz (40MHz)



TX 802.11n Channel Middle 2437MHz (40MHz)



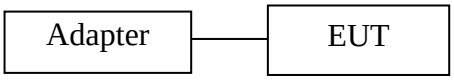
TX 802.11n Channel High 2452MHz (40MHz)



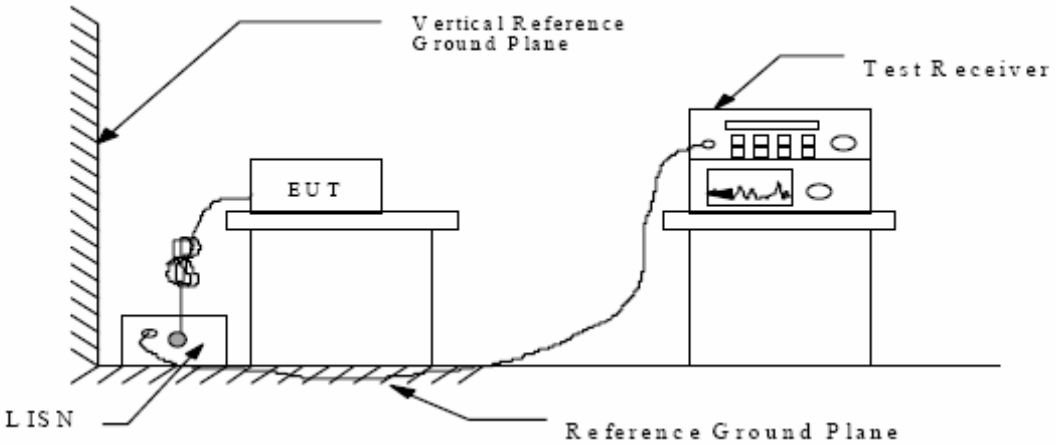
11. AC POWER LINE CONDUCTED EMISSION FOR FCC PART 15 SECTION 15.207(A)

11.1. Block Diagram of Test Setup

11.1.1. Block diagram of connection between the EUT and simulators



11.1.2. Shielding Room Test Setup Diagram



11.2. The Emission Limit

11.2.1. Conducted Emission Measurement Limits According to Section 15.207(a)

Frequency (MHz)	Limit dB(μV)	
	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

* Decreases with the logarithm of the frequency.

11.3.Configuration of EUT on Measurement

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

11.4.Operating Condition of EUT

11.4.1.Setup the EUT and simulator as shown as Section 11.1.

11.4.2.Turn on the power of all equipment.

11.4.3.Let the EUT work in (Charging) mode measure it.

11.5.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4: 2009 on Conducted Emission Measurement.

The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

11.6.Power Line Conducted Emission Measurement Results

ACCURATE TECHNOLOGY CO.,LTD

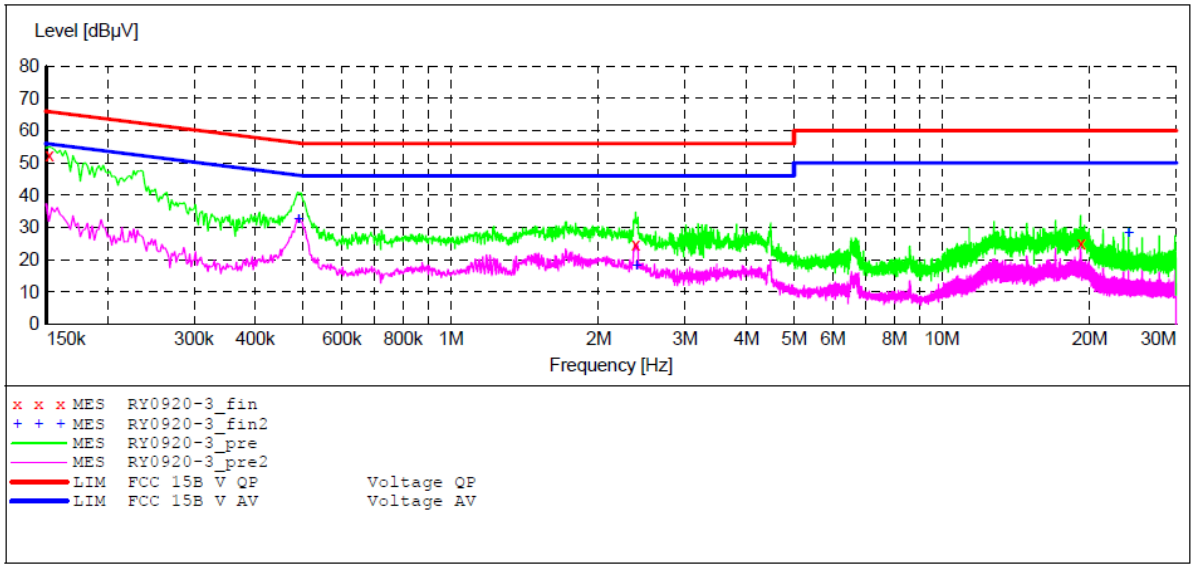
CONDUCTED EMISSION STANDARD EN 55015

EUT: 150M High Gain Wireless USB Adapter M/N:WU112K
Manufacturer: HAOLIYUAN
Operating Condition: Operation
Test Site: 1#Shielding Room
Operator: Ricky
Test Specification: N 120V/60Hz
Comment:
Report No.:ATE20141832

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak Average	1.0 s	9 kHz	LISN(ESH3-Z5)



MEASUREMENT RESULT: "RY0920-3_fin"

2014-9-20 11:41

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.152000	52.20	10.4	66	13.7	QP	N	GND
2.378000	24.60	11.7	56	31.4	QP	N	GND
19.185500	24.90	11.9	60	35.1	QP	N	GND

MEASUREMENT RESULT: "RY0920-3_fin2"

2014-9-20 11:41

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.490000	32.30	11.5	46	13.9	AV	N	GND
2.391500	18.20	11.7	46	27.8	AV	N	GND
24.000500	28.00	12.0	50	22.0	AV	N	GND

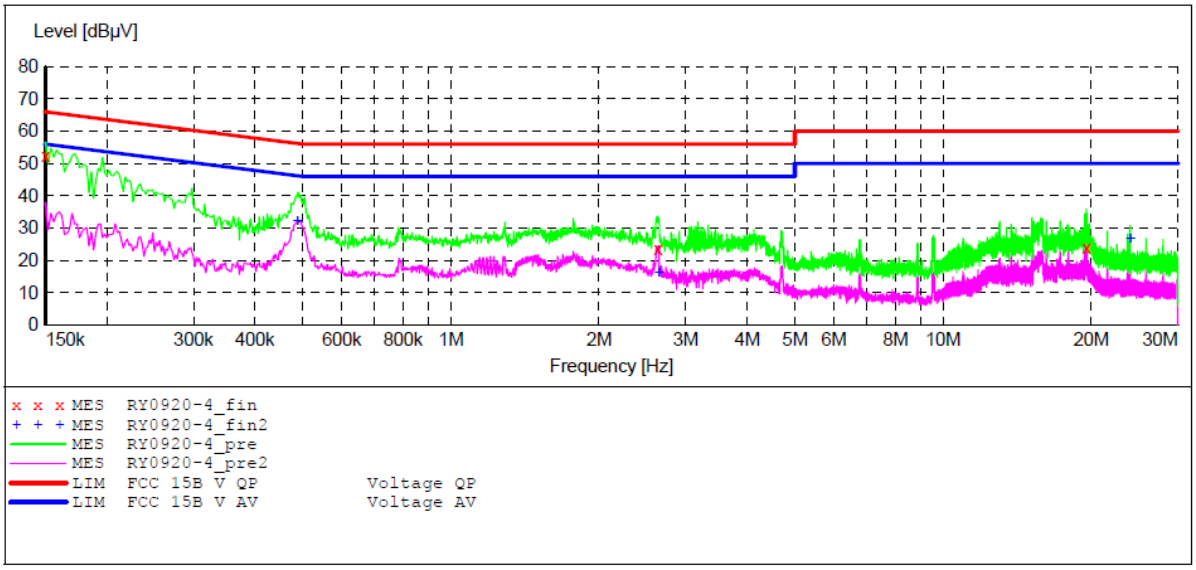
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD EN 55015

```
EUT:                  150M High Gain Wireless USB Adapter   M/N:WU112K
Manufacturer:         HAOLIYUAN
Operating Condition:  Operation
Test Site:            1#Shielding Room
Operator:             Ricky
Test Specification:   L 120V/60Hz
Comment:
                      Report No.:ATE20141832
```

SCAN TABLE: "V 150K-30MHz fin"

```
  Short Description:              _SUB_STD_VTERM2 1.70
  Start      Stop       Step      Detector  Meas.     IF       Transducer
  Frequency  Frequency  Width               Time      Bandw.
  150.0 kHz  30.0 MHz   4.5 kHz   QuasiPeak 1.0 s     9 kHz    LISN(ESH3-Z5)
                                  Average
```



MEASUREMENT RESULT: "RY0920-4_fin"

2014-9-20 11:45

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	52.40	10.3	66	13.6	QP	L1	GND
2.634500	23.60	11.7	56	32.4	QP	L1	GND
19.581500	23.90	11.9	60	36.1	QP	L1	GND

MEASUREMENT RESULT: "RY0920-4_fin2"

2014-9-20 11:45

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.488000	32.20	11.5	46	14.0	AV	L1	GND
2.648000	16.00	11.7	46	30.0	AV	L1	GND
24.000500	26.80	12.0	50	23.2	AV	L1	GND

12. ANTENNA REQUIREMENT

12.1. The Requirement

According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

12.2. Antenna Construction

Device is equipped with unique antenna, which isn't displaced by other antenna. Therefore, the equipment complies with the antenna requirement of Section 15.203.