FCC RADIO TEST REPORT

Report Reference No. ..... :	POCE12050932RF
Compiled by (+ signature)	Bill Jiang
Approved by (+ signature)	Machael Mo
Applicant's name ..... :	ALFA NETWORK Inc.
Address..... :	4F-1 No.106, Rueiguang Rd., Neihu Distric, Taipei City 114
Manufacture's Name ..... :	ALFA NETWORK Inc.
Address..... :	4F-1 No.106, Rueiguang Rd., Neihu Distric, Taipei City 114
Test specification:	
Standard ..... :	FCC Part15.247
Test procedure ..... :	ANSI C63.4-2003
Test item description	
Product name ..... :	IEEE802.11n long Range USB adapter
FCC/IC ID	UQ23668
Trademark ..... :	ALFA
Model and/or type reference :	Refer to page 5
Rating(s) ..... :	DC 5V, 300mA, 1.5W
Testing Laboratory information:	
Testing Laboratory Name ..... :	Shenzhen POCE Technology Co., Ltd.
Address ..... :	Room 501-502, Bldg. 1, Xinghua Garden, Bao'an Road, Xixiang, Bao'an District, Shenzhen, Guangdong, China

This device described above has been tested by Shenzhen POCE Technology Co., Ltd., and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Testing ..... :	
Date of receipt of test item ..... :	May 01, 2012
Date (s) of performance of tests ..... :	May 01, 2012 ~May 09, 2012
Date of Issue..... :	May 09, 2012
Test Result..... :	**Pass**

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247 (a)(2)	6dB Bandwidth	PASS	
15.247 (b)	Peak Output Power	PASS	
15.247 (c)	Radiated Spurious Emission	PASS	
15.247 (d)	Power Spectral Density	PASS	
15.203	Antenna Requirement	PASS	

1.1 TEST FACILITY

Shenzhen POCE Technology Co., Ltd.
Add. : Room 501-502, Bldg. 1, Xinghua Garden, Bao'an Road, Xixiang, Bao'an District, Shenzhen, Guangdong, China
FCC FRN Registration Nombre:222278

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %。

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	Radiated Emission Test	±3.17dB
3	RF power,conducted	±0.16dB
4	Spurious emissions,conducted	±0.21dB
5	All emissions,radiated(<1G)	±4.68dB
6	All emissions,radiated(>1G)	±4.89dB

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	IEEE802.11n long Range USB adapter
Model Name	AWUS036NHA,UBDo-na,UBDo-nat,UBDO-na8,AWUS036R, AWUS036RH,AWUS036M,AWUS036MH,AWUS052E,AWUS052N,AWUS052H,AWUS052HD,AWUS052NEH,AWUS052NEW,AWUS0521H, AWUS0522H
OEM Brand/Model Name	N/A
Model Difference	All the models are identical except the model name.
Product Description	The EUT is a IEEE802.11n long Range USB adapter Operation Frequency: 802.11b/g/n(20MHz): 2412~2462 MHz 802.11n(40MHz):2422~2452 MHz Modulation Type: CCK/OFDM/DBPSK/DAPSK Bit Rate of Transmitter 802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6 Mbps 802.11n(20MHz):54/144.44/130/117/115.56/104/86.67/78/52/6.5 Mbps 802.11n(40MHz):150/120/108/90/54 Mbps Number Of Channel 11 CH, Please see Note 2. Antenna Designation: external Antenna Antenna Gain(Peak) 5dBi Output Power(EIRP): 802.11b: 15.95 dBm (Max.) 802.11g: 14.94 dBm (Max.) 802.11n(20M) : 15.85dBm (Max.) 802.11n (40M): 13.91 dBm (Max.) Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.
Channel List	Please refer to the Note 2.
Power Source	DC 5V by USB
Connecting I/O Port(s)	Please refer to the User's Manual
Products Covered	N/A

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

Channel List for 802.11b/g/n(20MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

Channel List for 802.11b/g/n(40MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
03	2422	06	2437	09	2452		
04	2427	07	2442				
05	2432	08	2447				

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11
Mode 3	802.11n(20) CH1/ CH6/ CH11
Mode 4	802.11n(40) CH3/ CH6/ CH9

For Conducted Emission	
Final Test Mode	Description
Mode 5	NORMAL LINK

For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11
Mode 3	802.11n(20) CH1/ CH6/ CH11
Mode 4	802.11n(40) CH3/ CH6/ CH9

Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

(2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

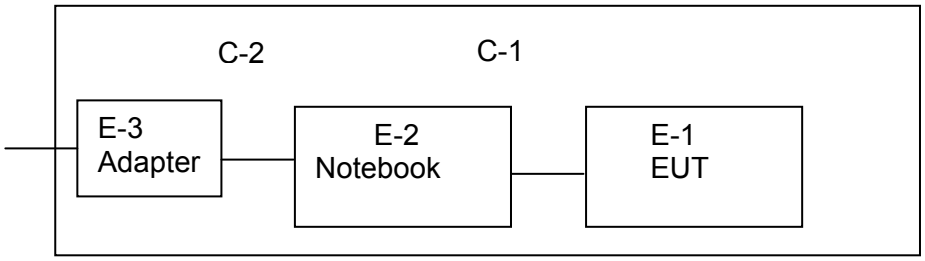
2.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of WLAN

Test software Version	Test program: N/A		
802.11b	2412 MHz	2437 MHz	2462 MHz
802.11g	2412 MHz	2437 MHz	2462 MHz
802.11n(20MHz)	2412 MHz	2437 MHz	2462 MHz
802.11n(40MHz)	2422 MHz	2437 MHz	2452 MHz

2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated:



2.5 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	IEEE802.11n long Range USB adapter	ALFA	AWUS036NHA	N/A	EUT
E-2	Notebook computer	IBM	2366	N/A	N/A
E-3	Adapter	IBM	08K8202	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	100cm	USB Line
C-2	NO	YES	120cm	DC line

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

2.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	Agilent	E4407B	160400005	Jul. 06, 2012
2	Test Receiver	R&S	ESPI	101318	Jul. 06, 2012
3	Bilog Antenna	TESEQ	CBL6111D	31216	Jul. 06, 2012
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	Jul. 06, 2012
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	Jul. 06, 2012
6	Horn Antenna	EM	EM-AH-10180	2011071402	Jul. 06, 2012
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	Jul. 06, 2012
8	Amplifier	EM	EM-30180	060538	Jul. 06, 2012
9	Loop Antenna	ARA	PLA-1030/B	1029	Jul. 06, 2012
10	Power Meter	R&S	NRVS	100696	Jul. 06, 2012

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Test Receiver	R&S	ESCI	101160	Jul. 06, 2012
2	LISN	R&S	ENV216	101313	Jul. 06, 2012
3	LISN	EMCO	3816/2	00042990	Jul. 06, 2012
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	Jul. 06, 2012
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	Jul. 06, 2012
6	Absorbing clamp	R&S	MOS-21	100423	Jul. 06, 2012

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

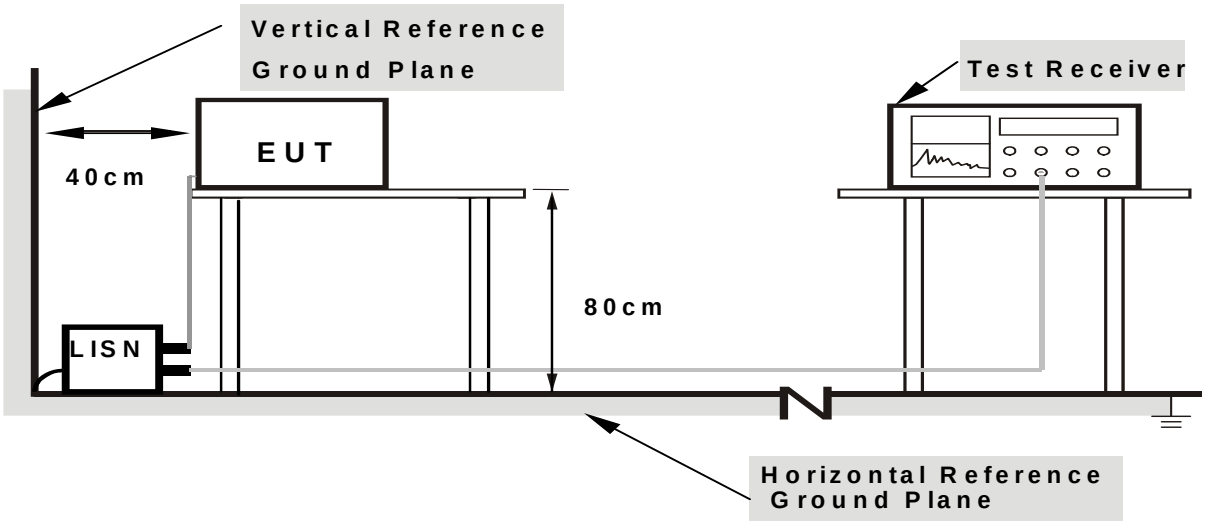
3.1.2 TEST PROCEDURE

a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.5 EUT OPERATING CONDITIONS

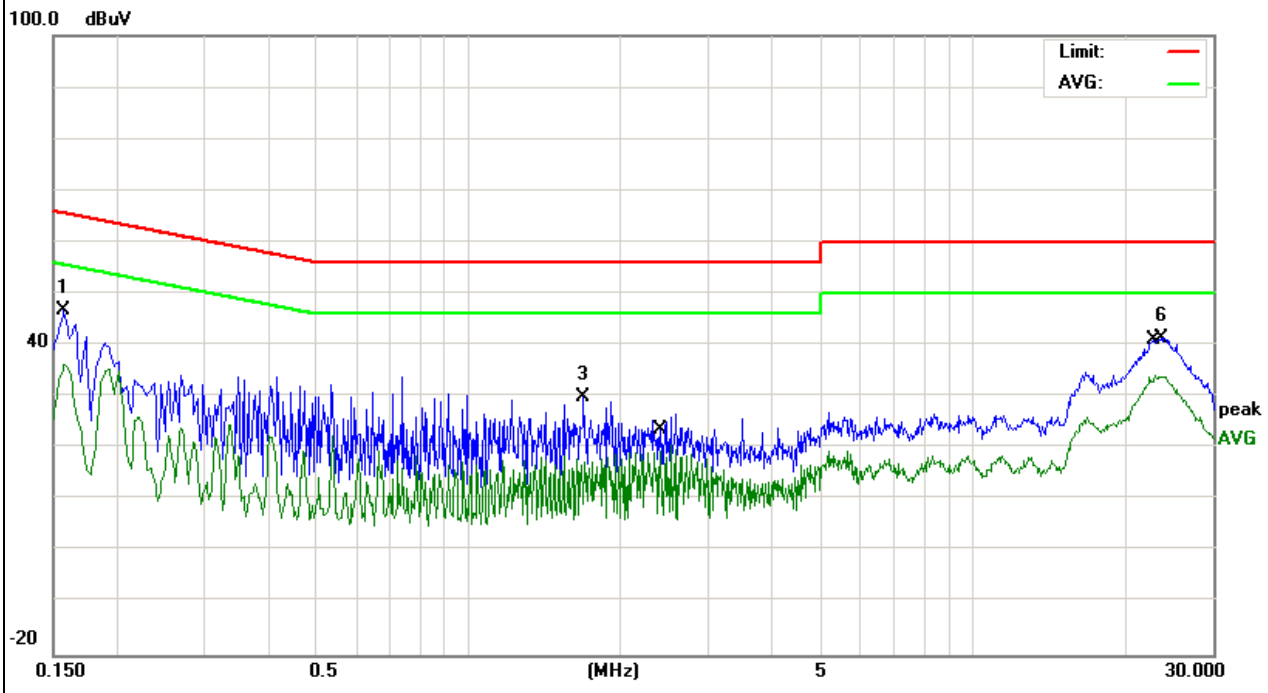
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.1.6 TEST RESULTS

EUT：	IEEE802.11n long Range USB adapter	Model Name. ：	AWUS036NHA
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Test Date：	2012-05-05
Test Mode：	Normal Link	Phase：	L
Test Voltage ：	DC 5V From PC AC 120V/60Hz		

Freq. (MHz)	Reading (dBuV)	Factor (dBuV)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Detector
0.158	36	10.69	46.69	65.56	-18.87	peak
0.158	25.53	10.69	36.22	55.56	-19.34	AVG
1.694	19.6	10.42	30.02	56	-25.98	peak
2.402	9.02	10.42	19.44	46	-26.56	AVG
23.03	23.35	10.73	34.08	50	-15.92	AVG
23.654	30.61	10.73	41.34	60	-18.66	peak

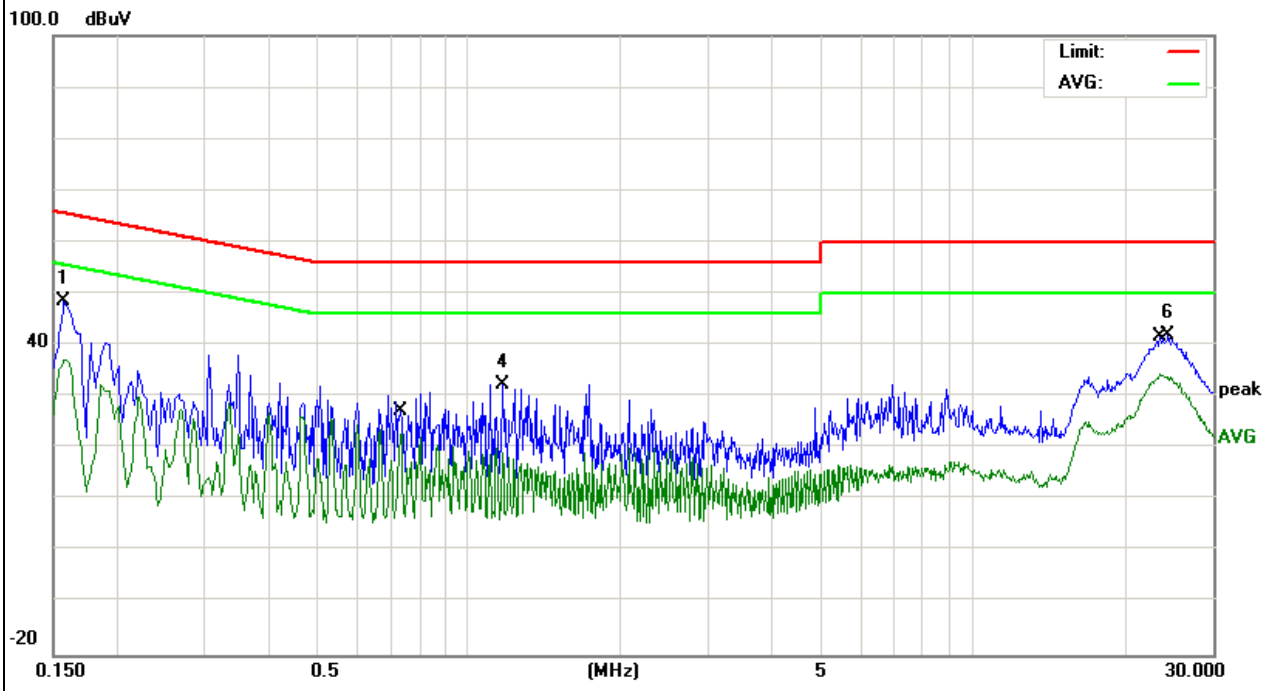
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. N/A means All Data have pass Limit



EUT：	IEEE802.11n long Range USB adapter	Model Name. ：	AWUS036NHA
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Test Date：	2012-05-05
Test Mode：	Normal Link	Phase：	N
Test Voltage ：	DC 5V From PC AC 120V/60Hz		

Freq. (MHz)	Reading (dBuV)	Factor (dBuV)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Detector
0.158	37.86	10.56	48.42	65.56	-17.14	peak
0.158	26.68	10.56	37.24	55.56	-18.32	AVG
0.738	12.43	10.41	22.84	46	-23.16	AVG
1.17	22	10.45	32.45	56	-23.55	peak
23.57	23.64	10.77	34.41	50	-15.59	AVG
24.482	31.05	10.78	41.83	60	-18.17	peak

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. N/A means All Data have pass Limit



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class A (dBuV/m) (at 3M)		Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80	60	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

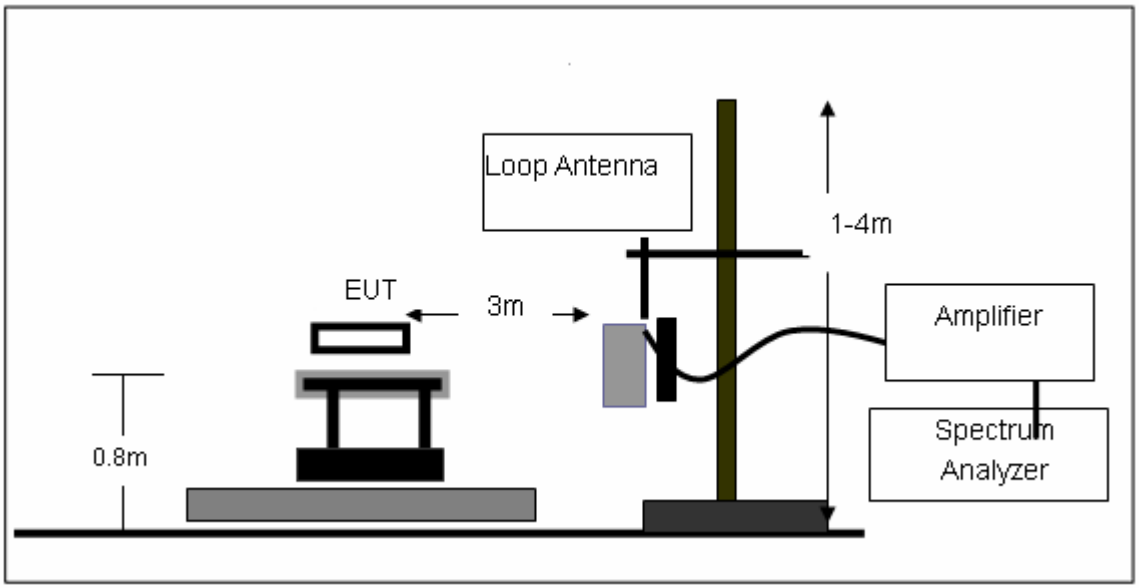
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

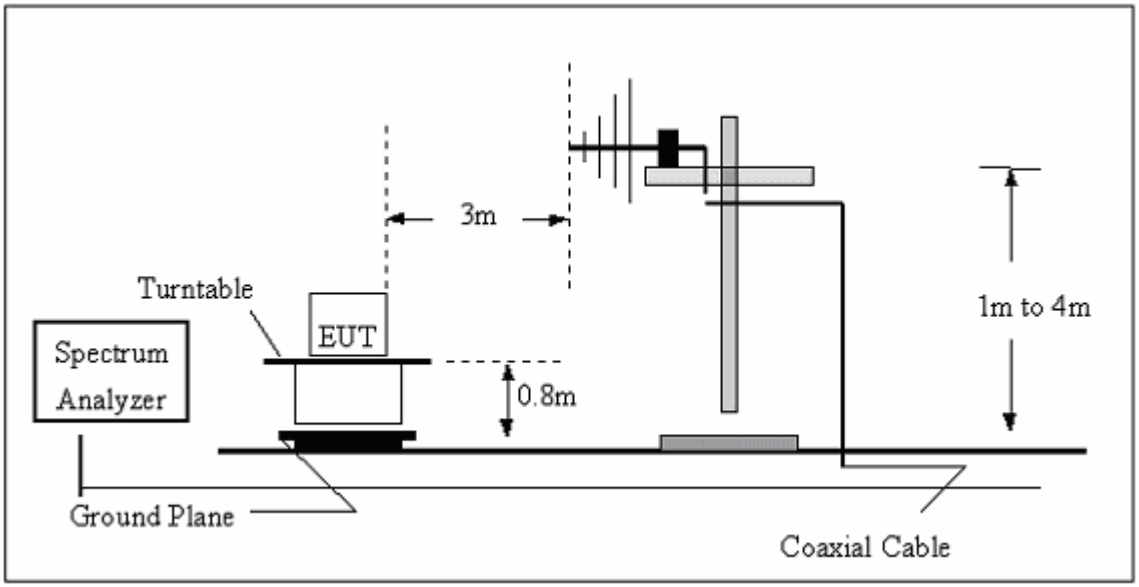
No deviation

3.2.4 TEST SETUP

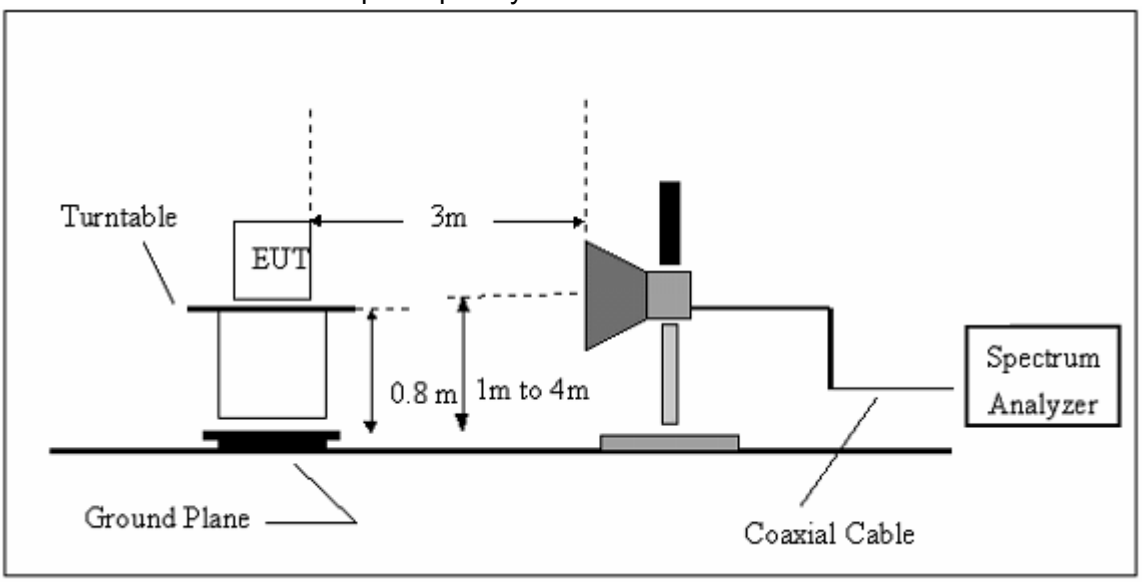
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

EUT：	IEEE802.11n long Range USB adapter	Model Name. ：	AWUS036NHA
Temperature：	20 ℃	Relative HuMaylong Mobility Tabletity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

NOTE:

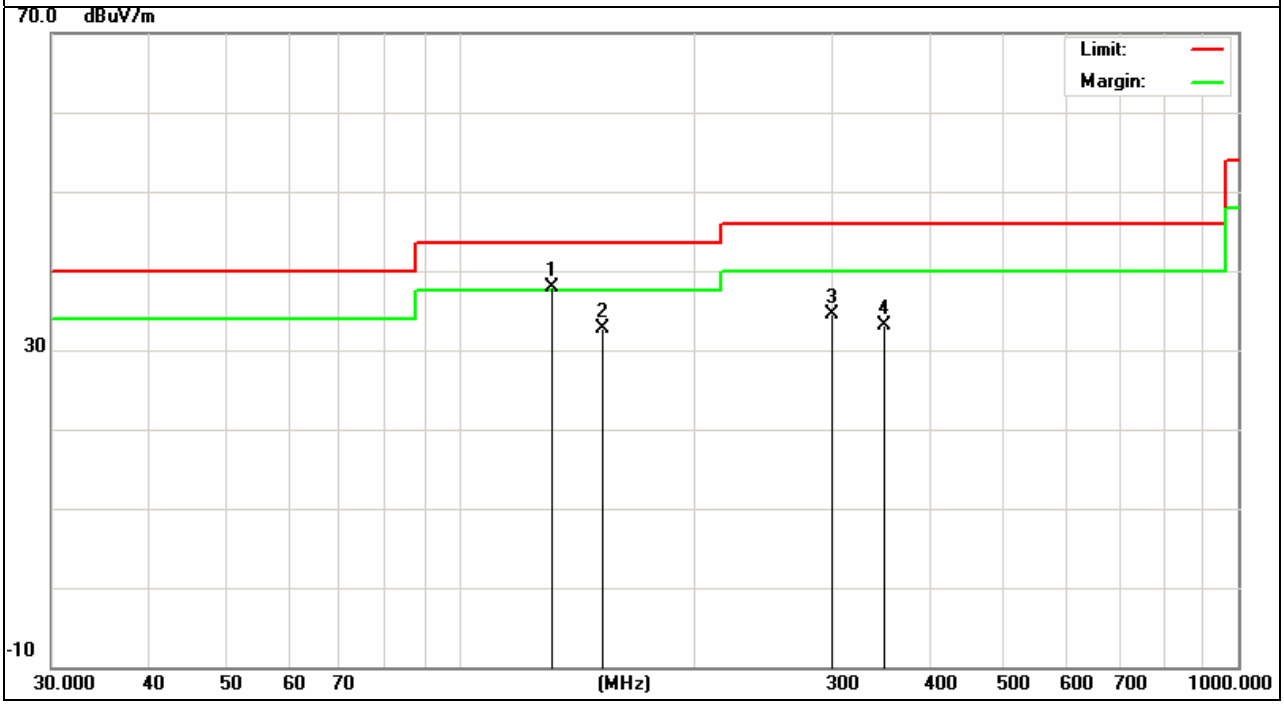
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =20 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	TX	Polarization：	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
131.2100	26.00	11.93	37.93	43.50	-5.57	Quasi-Peak
152.6700	21.21	11.54	32.75	43.50	-10.75	Quasi-Peak
300.3300	19.92	14.57	34.49	46.00	-11.51	Quasi-Peak
351.2100	17.77	15.40	33.17	46.00	-12.83	Quasi-Peak

Remark:
1. Factor = Antenna Factor + Cable Loss.

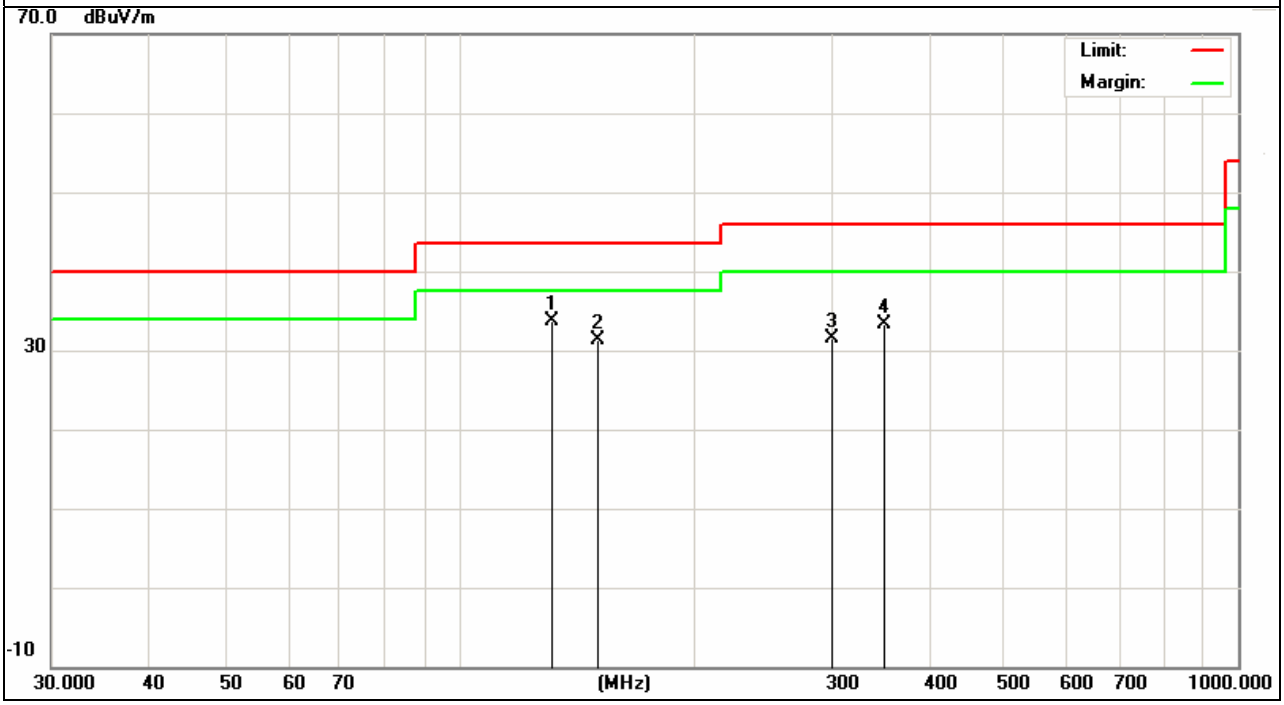


EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	TX	Polarization：	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
131.2100	21.77	11.93	33.70	43.50	-9.80	Quasi-Peak
149.5200	19.43	11.79	31.22	43.50	-12.28	Quasi-Peak
300.3300	17.01	14.57	31.58	46.00	-14.42	Quasi-Peak
351.2100	17.99	15.40	33.39	46.00	-12.61	Quasi-Peak

Remark:

1. Factor = Antenna Factor + Cable Loss

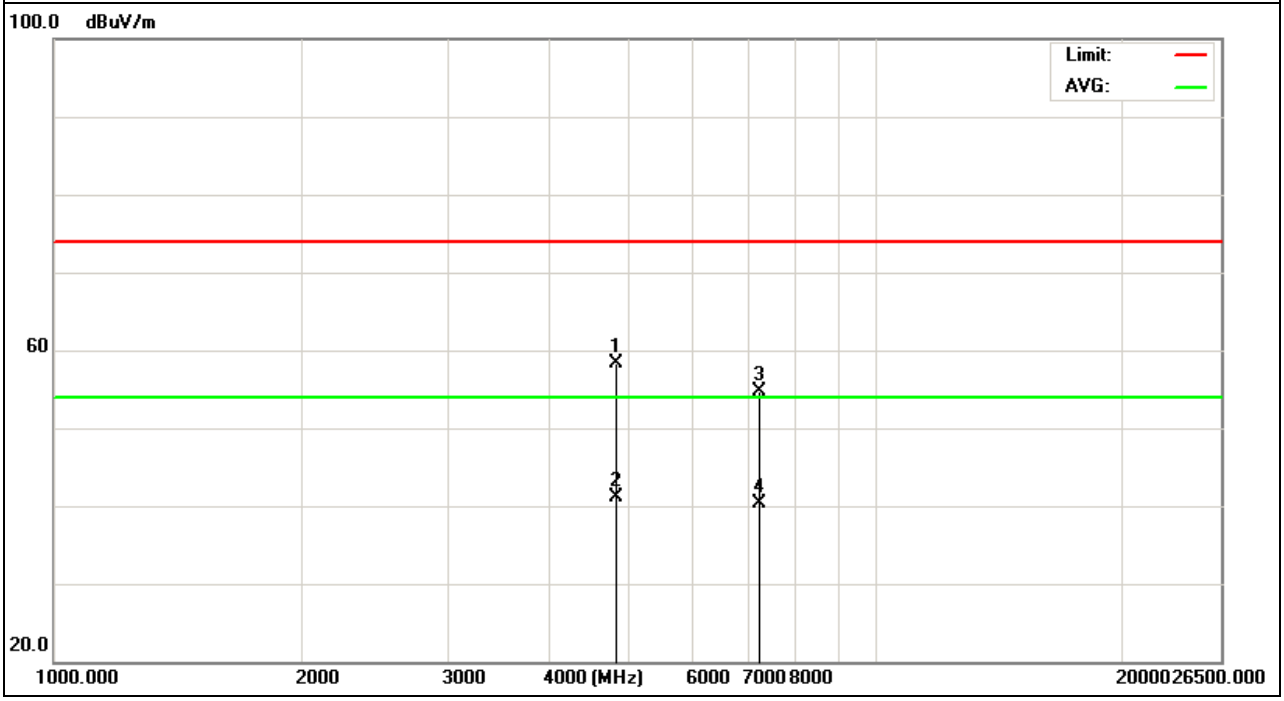


3.2.8 TEST RESULTS (ABOVE 1000 MHZ)

EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH1 (802.11b Mode)/2412	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824	66.38	-8.12	58.26	74	-15.74	peak
4824	49.31	-8.12	41.19	54	-12.81	AVG
7239	62.14	-7.47	54.67	74	-19.33	peak
7239	47.75	-7.47	40.28	54	-13.72	AVG

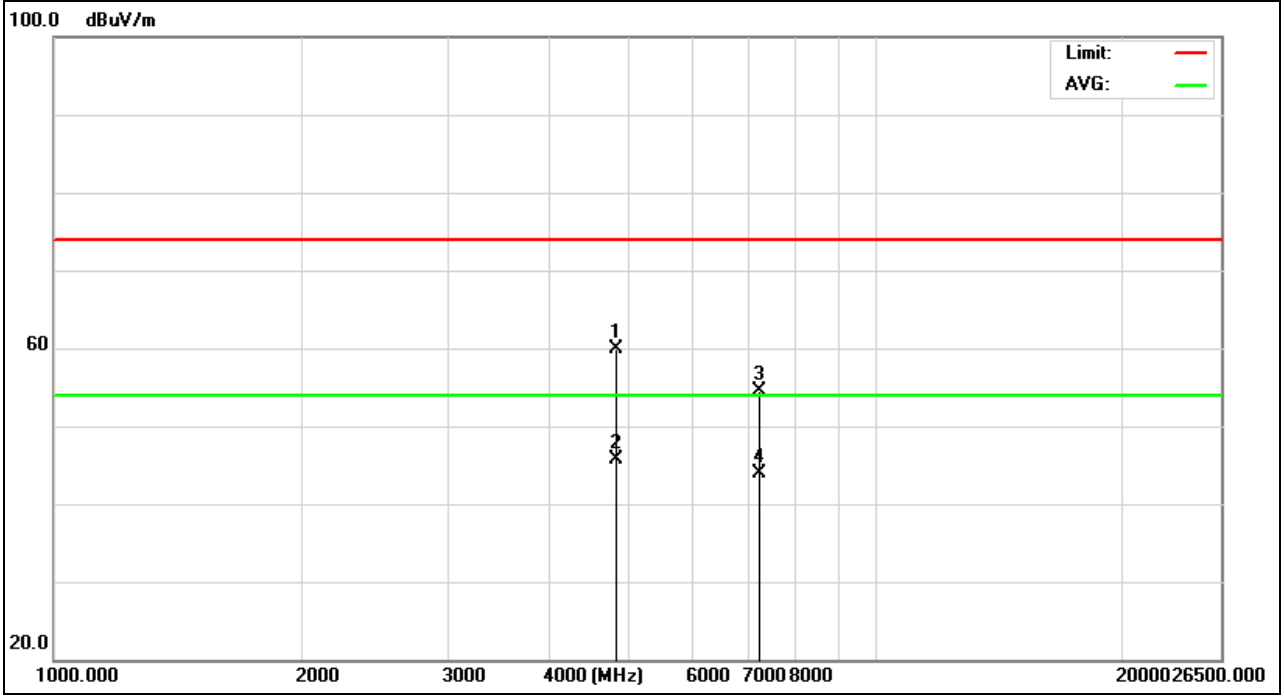
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. No emission detected above 18GHz



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH1 (802.11b Mode)/2412	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824	67.99	-8.12	59.87	74	-14.13	peak
4824	53.8	-8.12	45.68	54	-8.32	AVG
7239	62.01	-7.47	54.54	74	-19.46	peak
7239	51.44	-7.47	43.97	54	-10.03	AVG

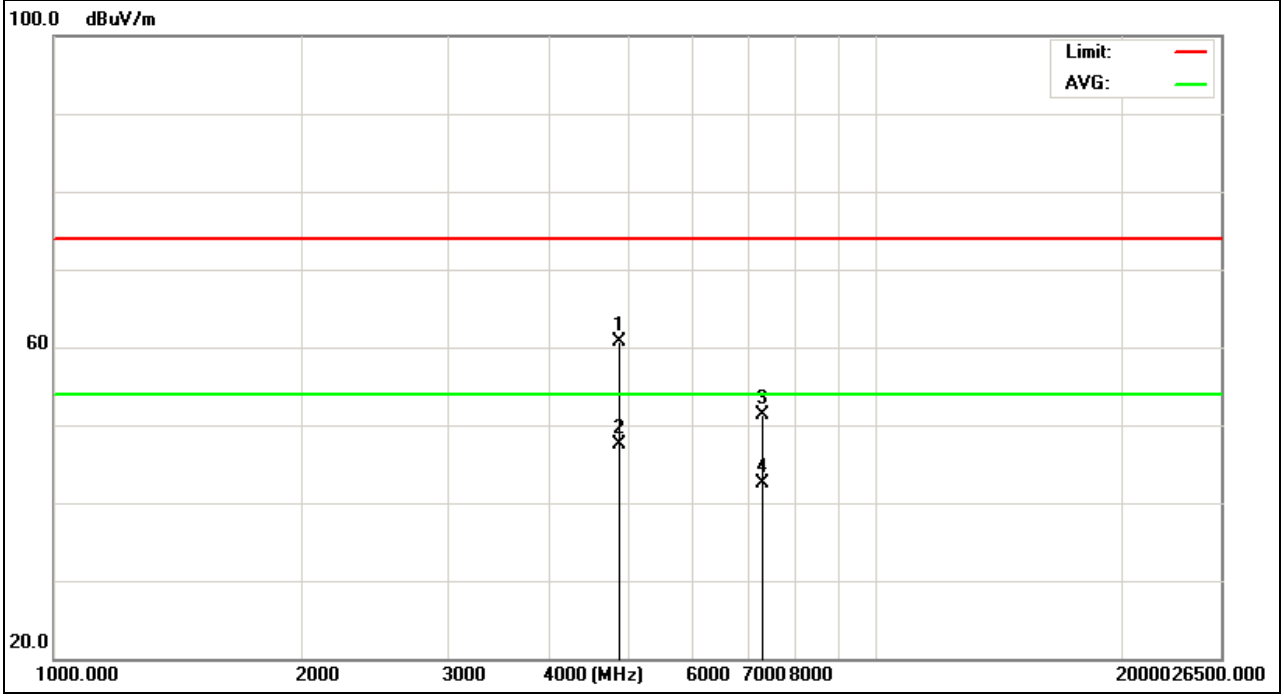
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. No emission detected above 18GHz



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH6 (802.11b Mode)/2437	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	68.85	-8.19	60.66	74	-13.34	peak
4874	55.67	-8.19	47.48	54	-6.52	AVG
7311	58.43	-7.21	51.22	74	-22.78	peak
7311	49.62	-7.21	42.41	54	-11.59	AVG

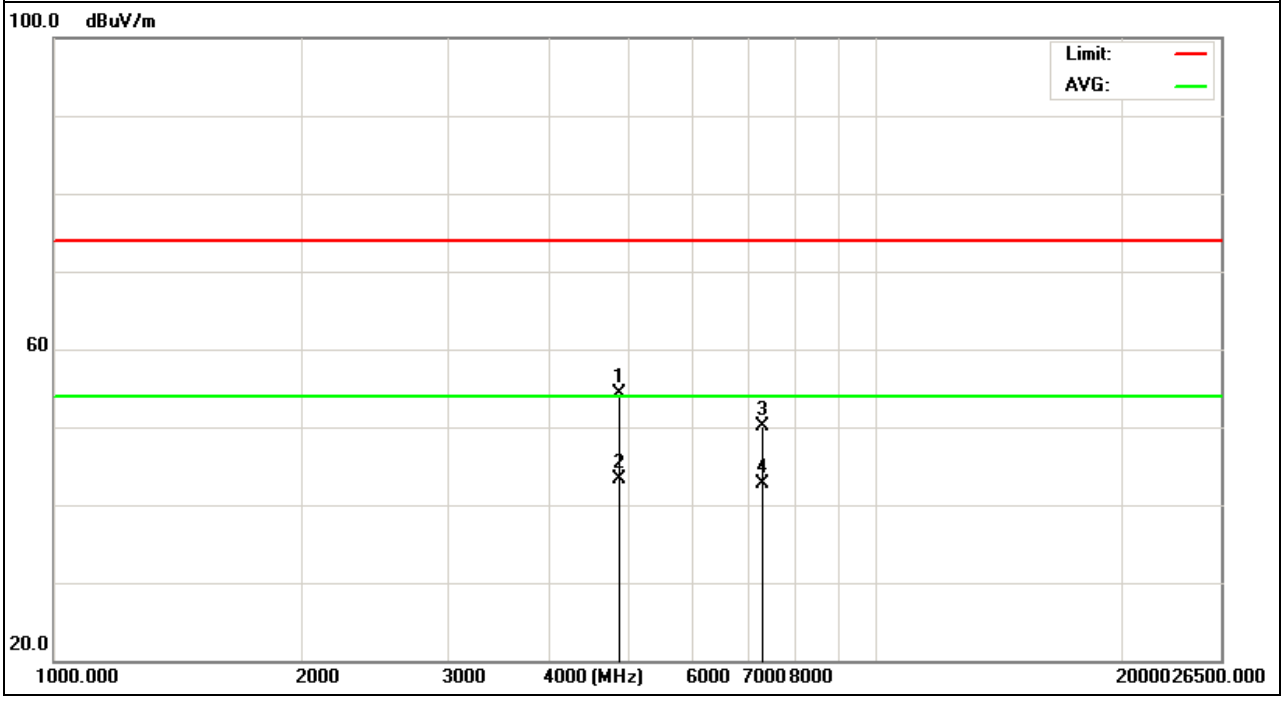
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. No emission detected above 18GHz



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH6 (802.11b Mode)/2437	Polarization：	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874	62.51	-8.19	54.32	74	-19.68	peak
4874	51.52	-8.19	43.33	54	-10.67	AVG
7311	57.39	-7.21	50.18	74	-23.82	peak
7311	49.99	-7.21	42.78	54	-11.22	AVG

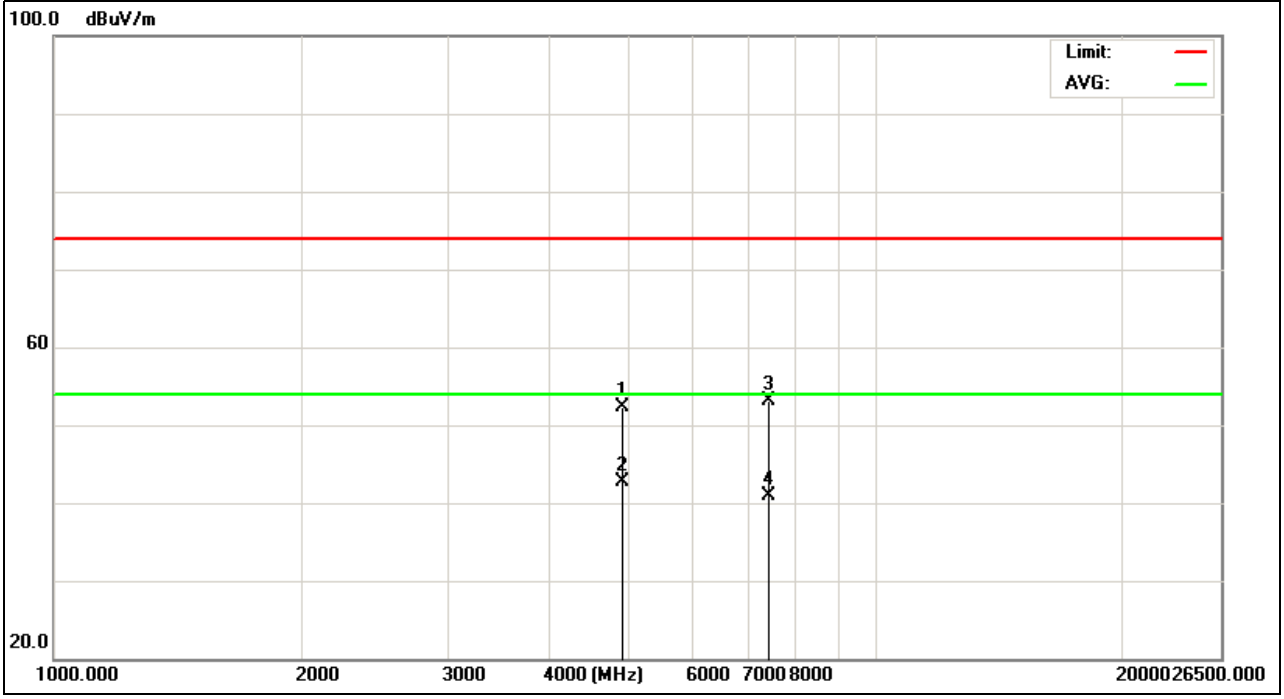
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. No emission detected above 18GHz



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH11 (802.11b Mode)/2462	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4924	60.58	-8.22	52.36	74	-21.64	peak
4924	51	-8.22	42.78	54	-11.22	AVG
7386	60.57	-7.39	53.18	74	-20.82	peak
7386	48.36	-7.39	40.97	54	-13.03	AVG

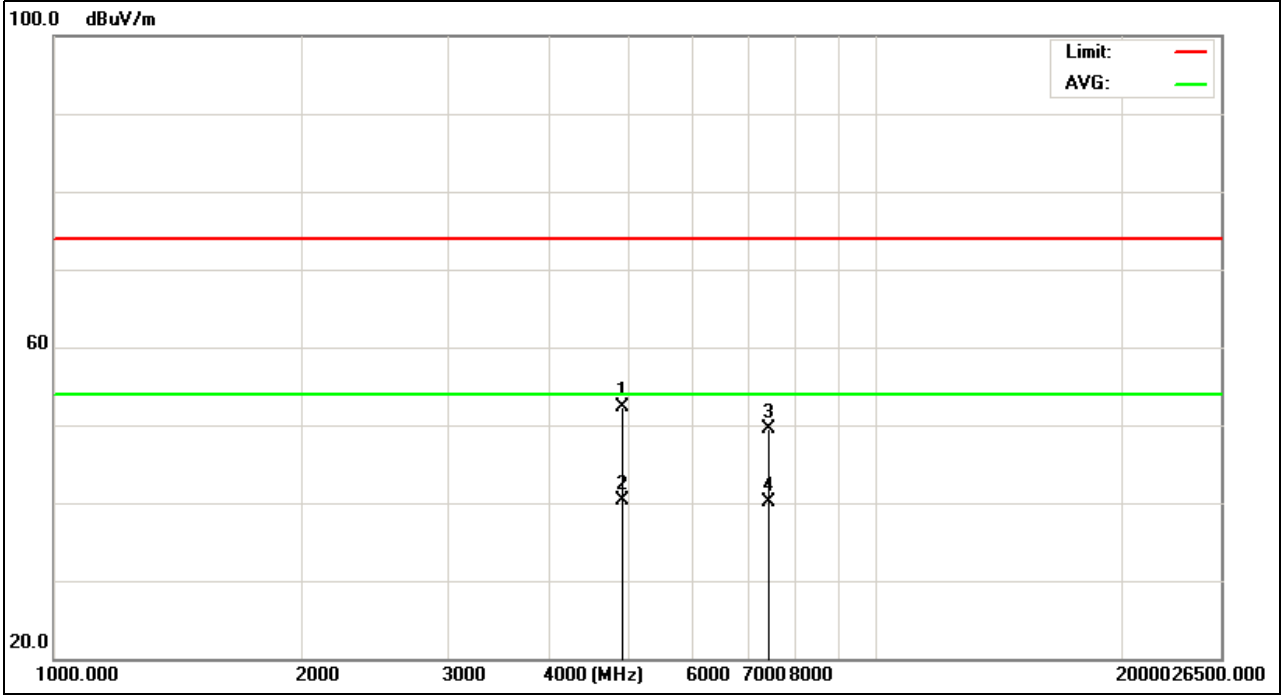
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. No emission detected above 18GHz



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH11 (802.11b Mode)/2462	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4924	60.58	-8.22	52.36	74	-21.64	peak
4924	48.6	-8.22	40.38	54	-13.62	AVG
7386	56.88	-7.39	49.49	74	-24.51	peak
7386	47.57	-7.39	40.18	54	-13.82	AVG

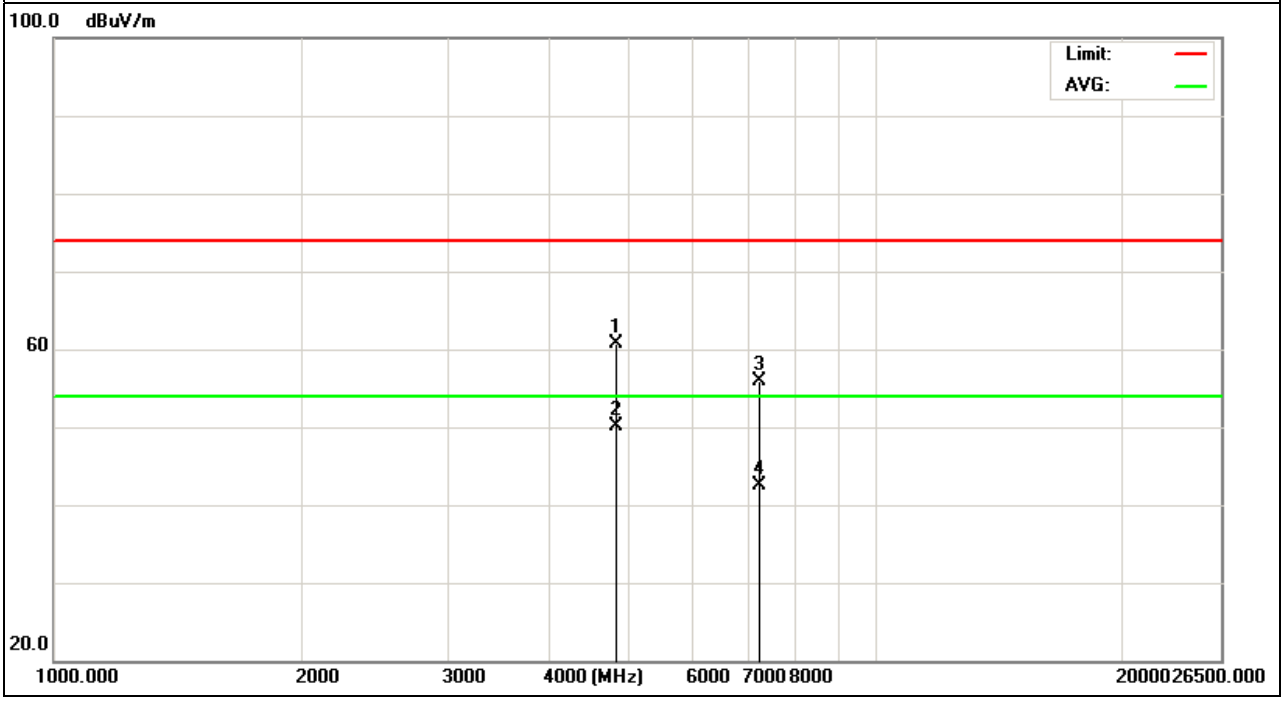
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. No emission detected above 18GHz



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH1 (802.11g Mode)/2412	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824	68.76	-8.12	60.64	74	-13.36	peak
4824	58.3	-8.12	50.18	54	-3.82	AVG
7239	63.44	-7.47	55.97	74	-18.03	peak
7239	49.95	-7.47	42.48	54	-11.52	AVG

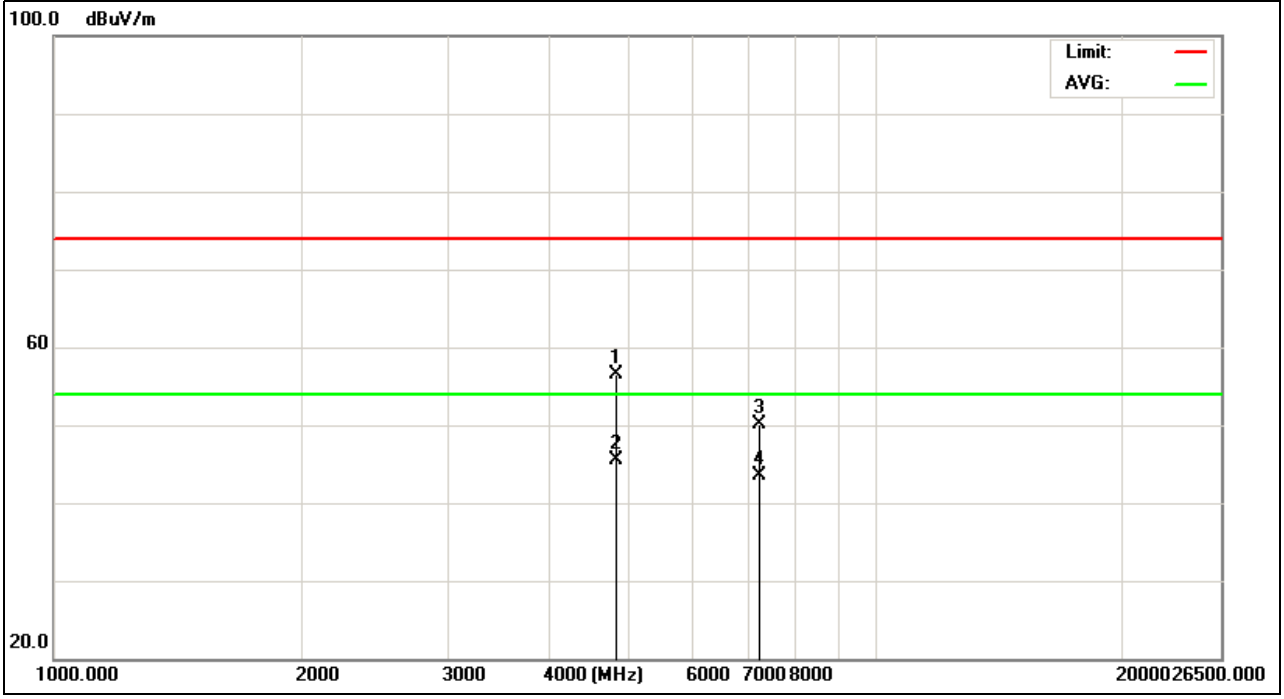
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. No emission detected above 18GHz



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH1 (802.11g Mode)/2412	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824	64.6	-8.12	56.48	74	-17.52	peak
4824	53.67	-8.12	45.55	54	-8.45	AVG
7239	57.61	-7.47	50.14	74	-23.86	peak
7239	50.89	-7.47	43.42	54	-10.58	AVG

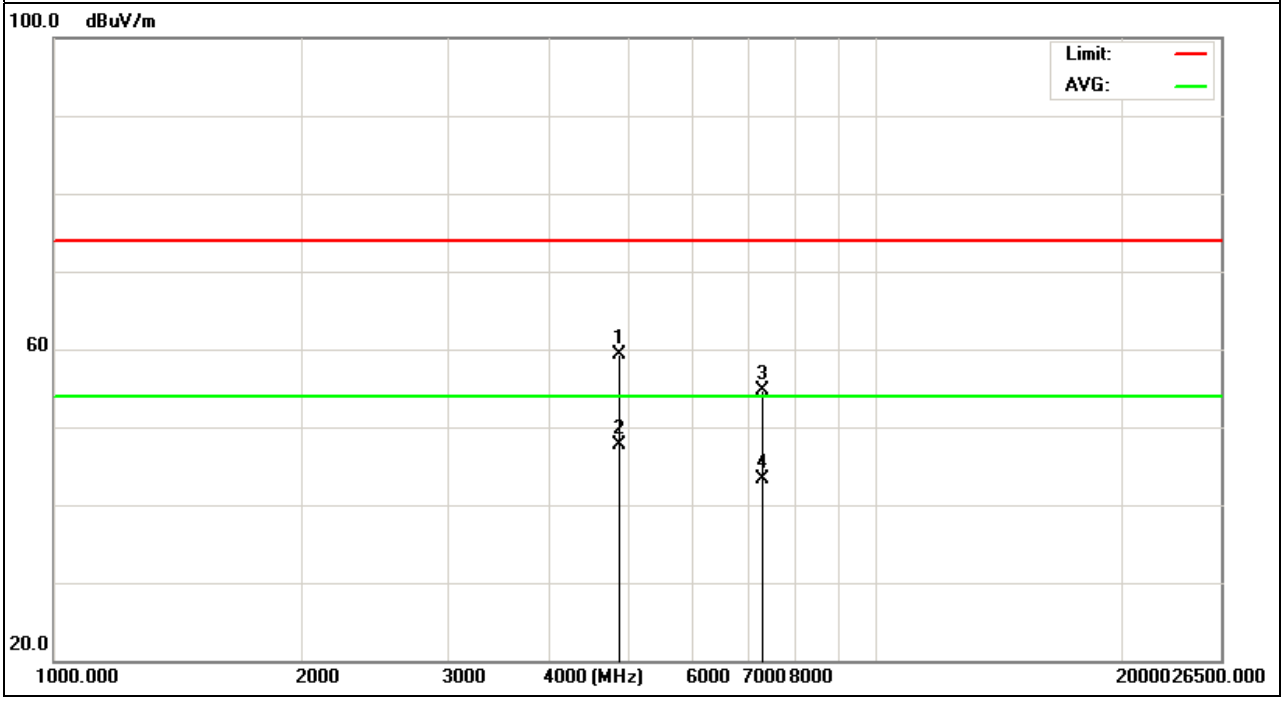
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. No emission detected above 18GHz



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH6 (802.11g Mode)/2437	Polarization：	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	67.55	-8.19	59.36	74	-14.64	peak
4874	55.83	-8.19	47.64	54	-6.36	AVG
7311	61.83	-7.21	54.62	74	-19.38	peak
7311	50.43	-7.21	43.22	54	-10.78	AVG

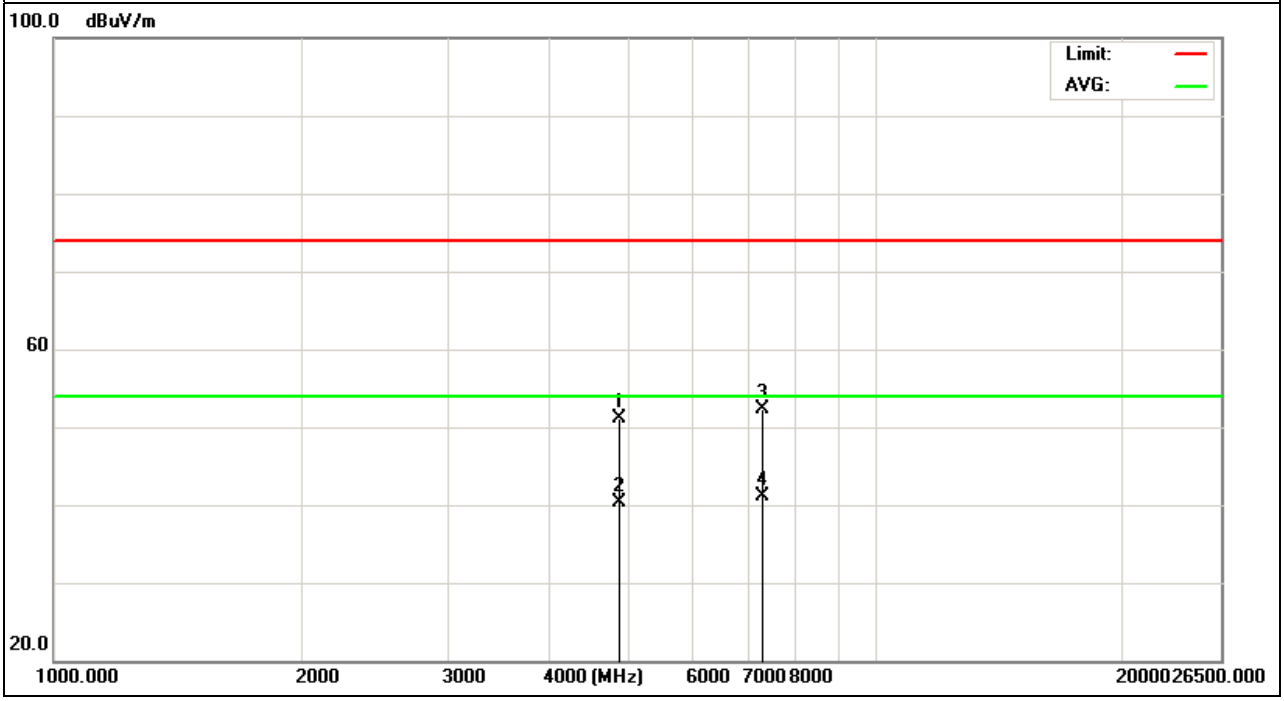
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. No emission detected above 18GHz



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH6 (802.11g Mode)/2437	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	59.37	-8.19	51.18	74	-22.82	peak
4874	48.54	-8.19	40.35	54	-13.65	AVG
7311	59.54	-7.21	52.33	74	-21.67	peak
7311	48.39	-7.21	41.18	54	-12.82	AVG

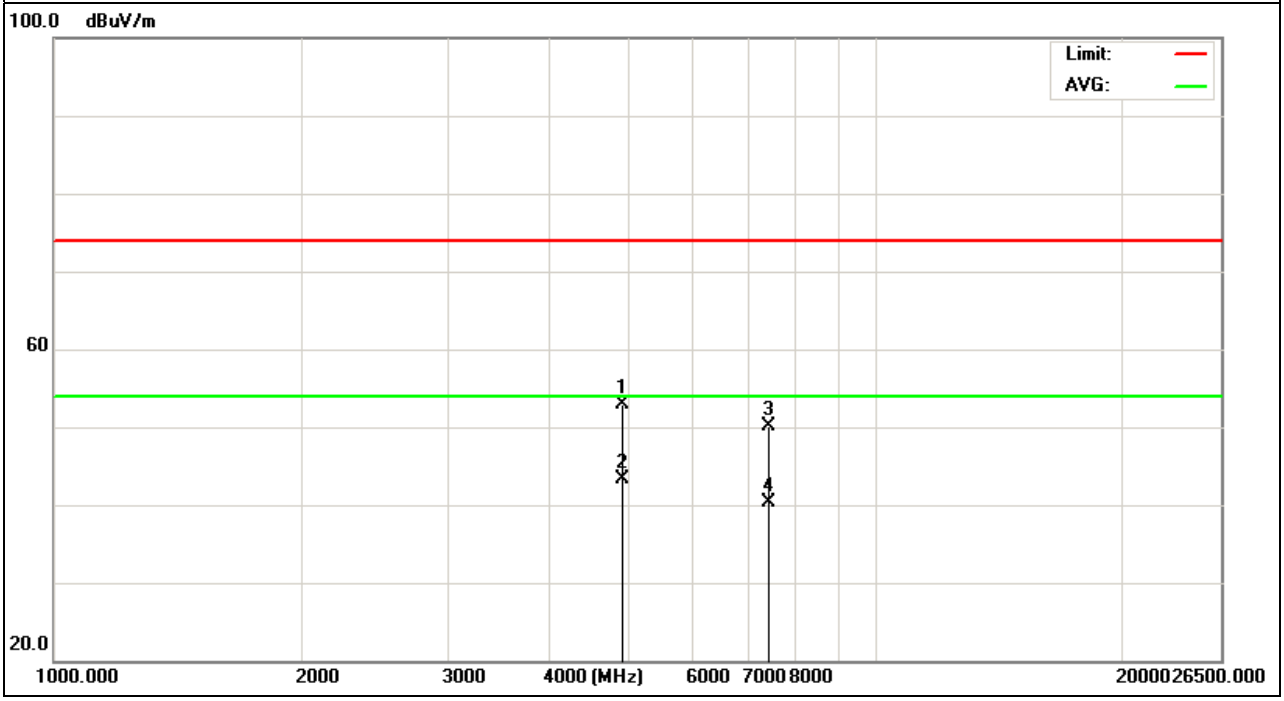
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. No emission detected above 18GHz



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH11 (802.11g Mode)/2462	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4924	61.2	-8.22	52.98	74	-21.02	peak
4924	51.51	-8.22	43.29	54	-10.71	AVG
7386	57.57	-7.39	50.18	74	-23.82	peak
7386	47.76	-7.39	40.37	54	-13.63	AVG

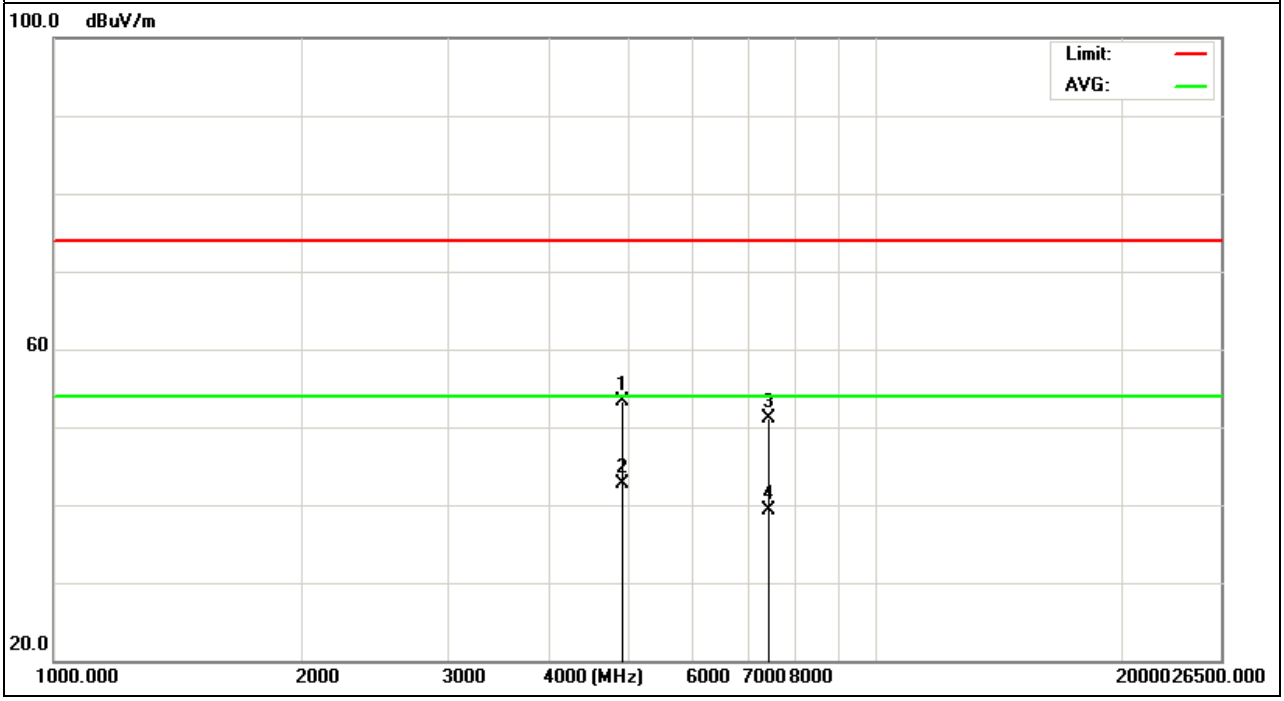
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. No emission detected above 18GHz



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH11(802.11g Mode)/2462	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4924	61.51	-8.22	53.29	74	-20.71	peak
4924	50.9	-8.22	42.68	54	-11.32	AVG
7386	58.55	-7.39	51.16	74	-22.84	peak
7386	46.77	-7.39	39.38	54	-14.62	AVG

Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. No emission detected above 18GHz

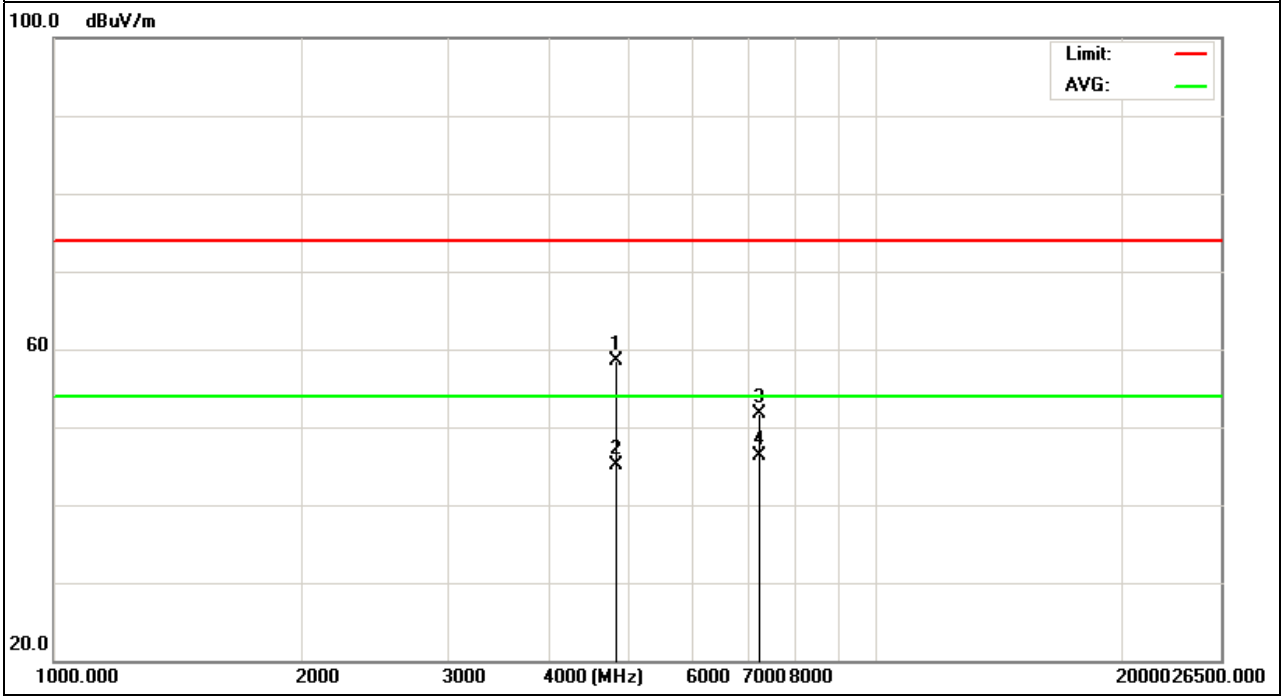


EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH1(802.11n Mode)/20MHz	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824	66.69	-8.12	58.57	74	-15.43	peak
4824	53.29	-8.12	45.17	54	-8.83	AVG
7239	59.14	-7.47	51.67	74	-22.33	peak
7239	53.83	-7.47	46.36	54	-7.64	AVG

Remark:

3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
4. No emission detected above 18GHz

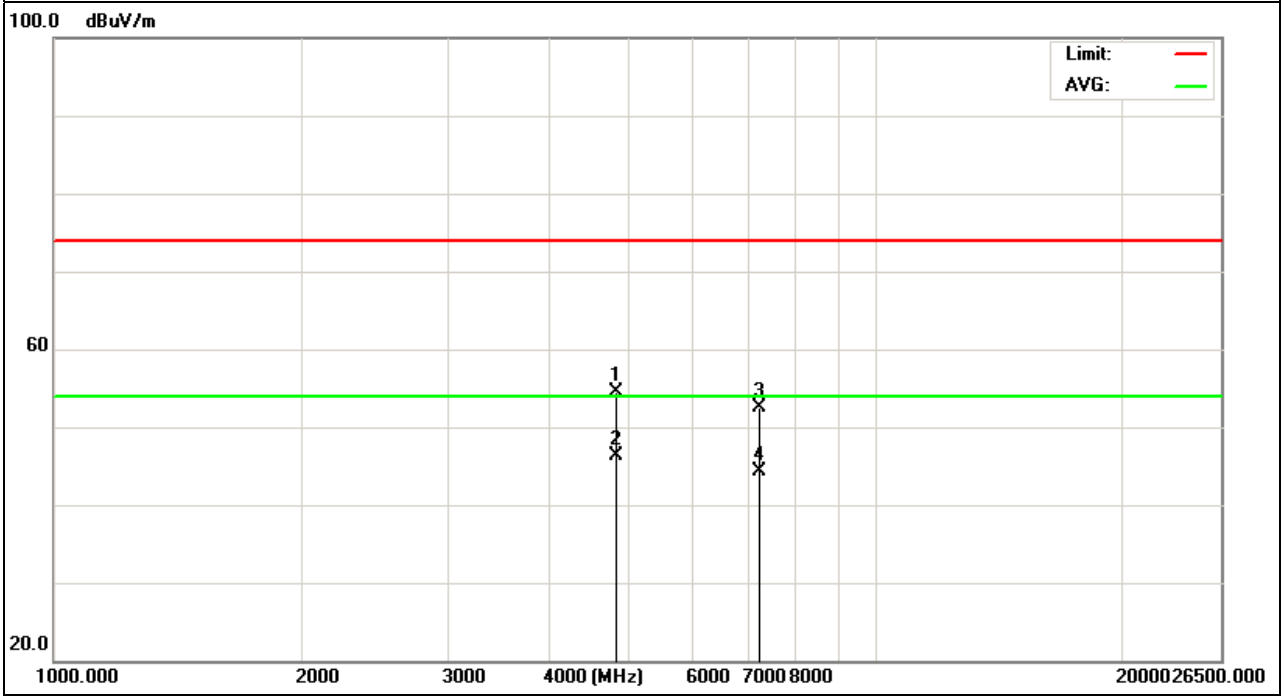


EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH1(802.11n Mode)/20MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4824	62.71	-8.12	54.59	74	-19.41	peak
4824	54.47	-8.12	46.35	54	-7.65	AVG
7239	60.03	-7.47	52.56	74	-21.44	peak
7239	51.84	-7.47	44.37	54	-9.63	AVG

Remark:

3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
4. No emission detected above 18GHz

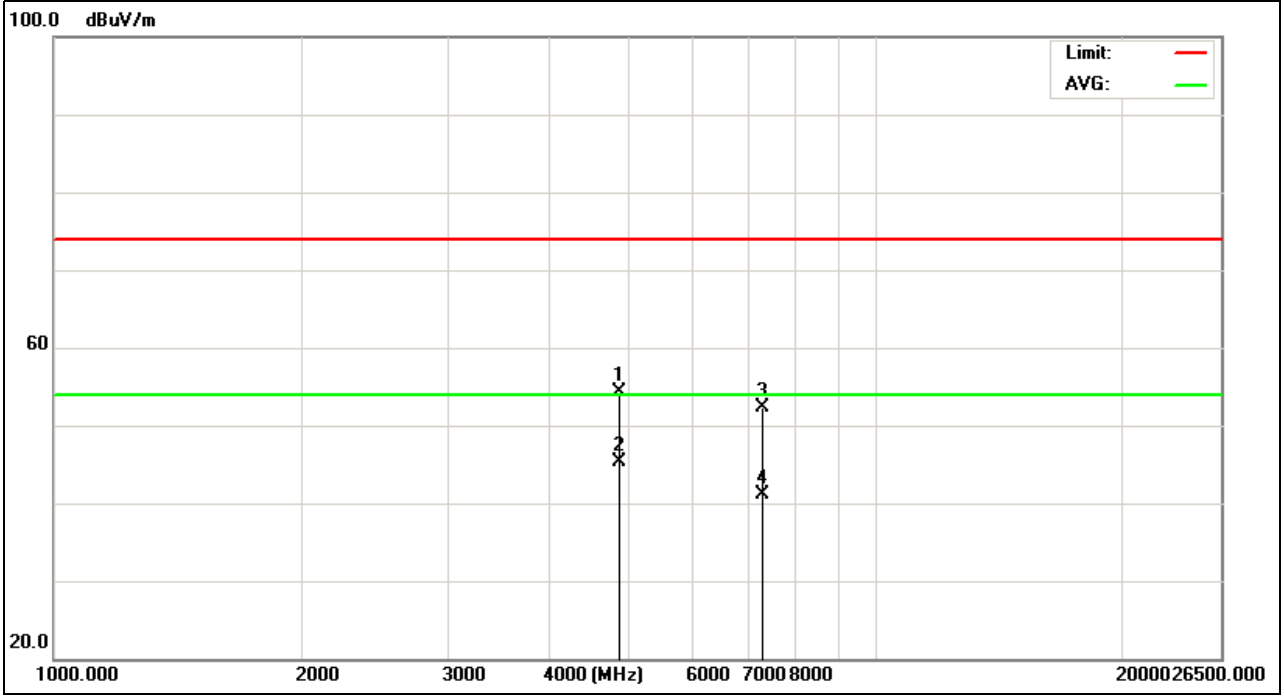


EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH6(802.11n Mode)/20MHz	Polarization：	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	62.5	-8.19	54.31	74	-19.69	peak
4874	53.54	-8.19	45.35	54	-8.65	AVG
7311	59.52	-7.21	52.31	74	-21.69	peak
7311	48.39	-7.21	41.18	54	-12.82	AVG

Remark:

3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
4. No emission detected above 18GHz

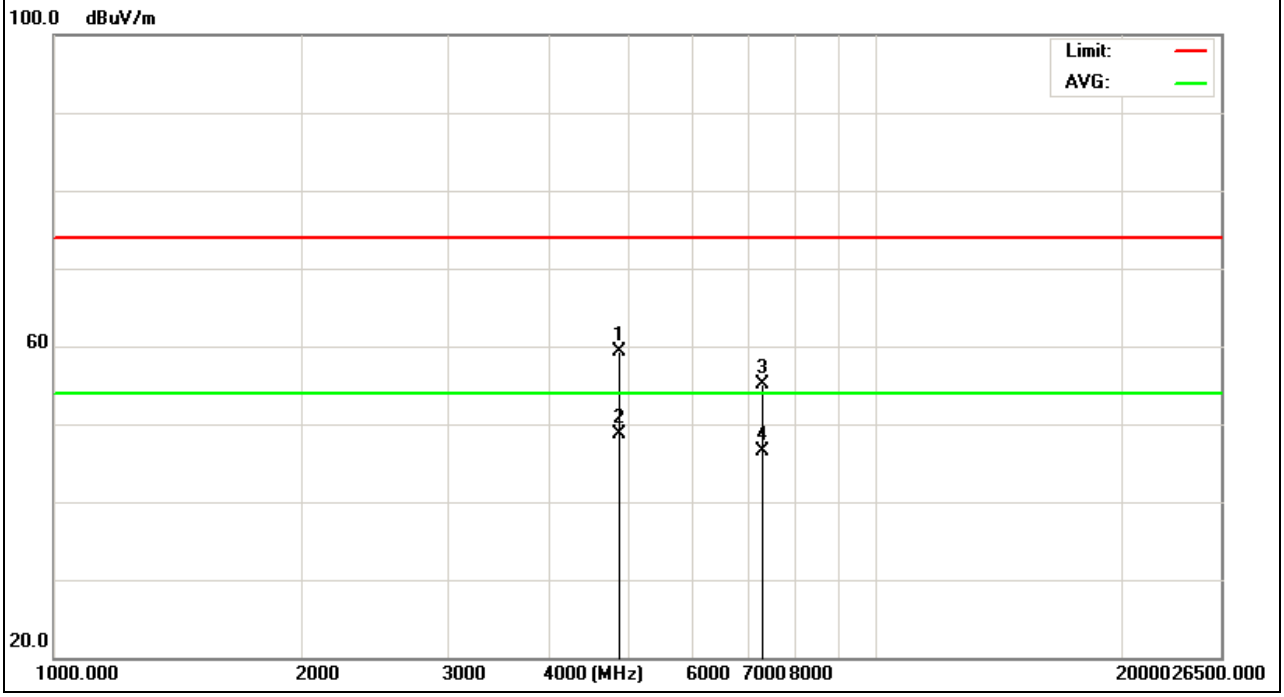


EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH6(802.11n Mode)/20MHz	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	67.45	-8.19	59.26	74	-14.74	peak
4874	56.85	-8.19	48.66	54	-5.34	AVG
7311	62.4	-7.21	55.19	74	-18.81	peak
7311	53.69	-7.21	46.48	54	-7.52	AVG

Remark:

3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
4. No emission detected above 18GHz

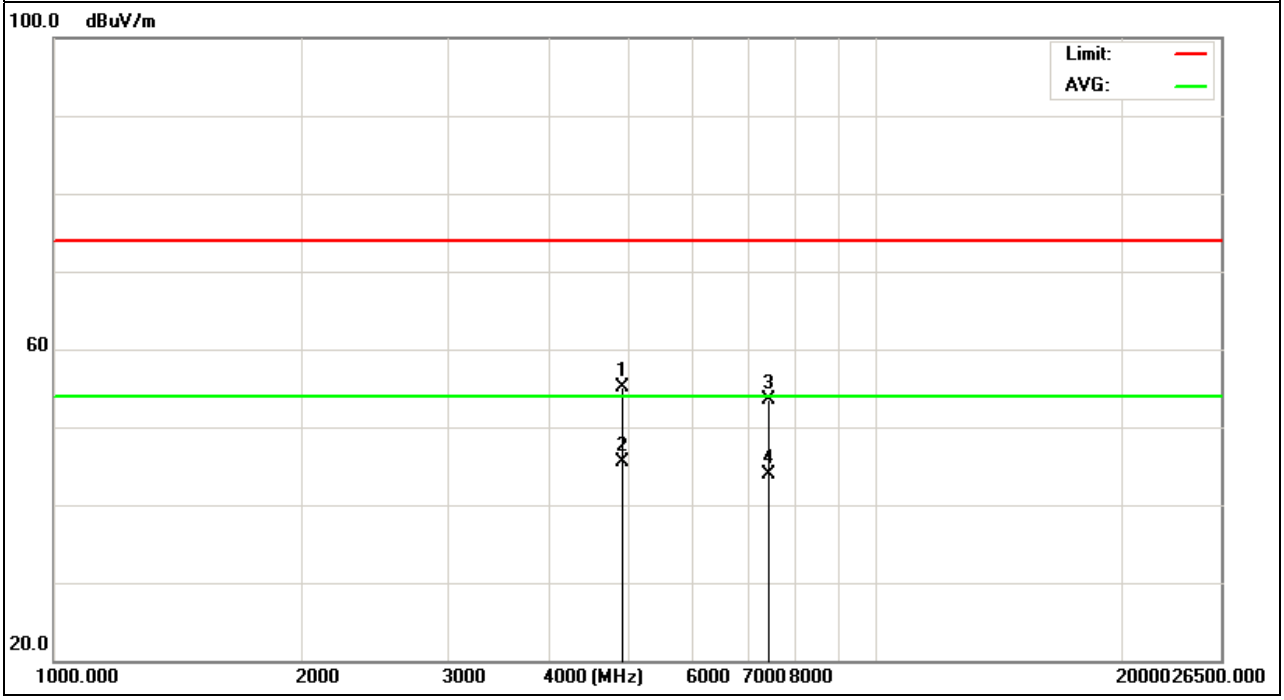


EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH11(802.11n Mode)/20MHz	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4924	63.29	-8.22	55.07	74	-18.93	peak
4924	53.77	-8.22	45.55	54	-8.45	AVG
7386	60.97	-7.39	53.58	74	-20.42	peak
7386	51.33	-7.39	43.94	54	-10.06	AVG

Remark:

3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
4. No emission detected above 18GHz

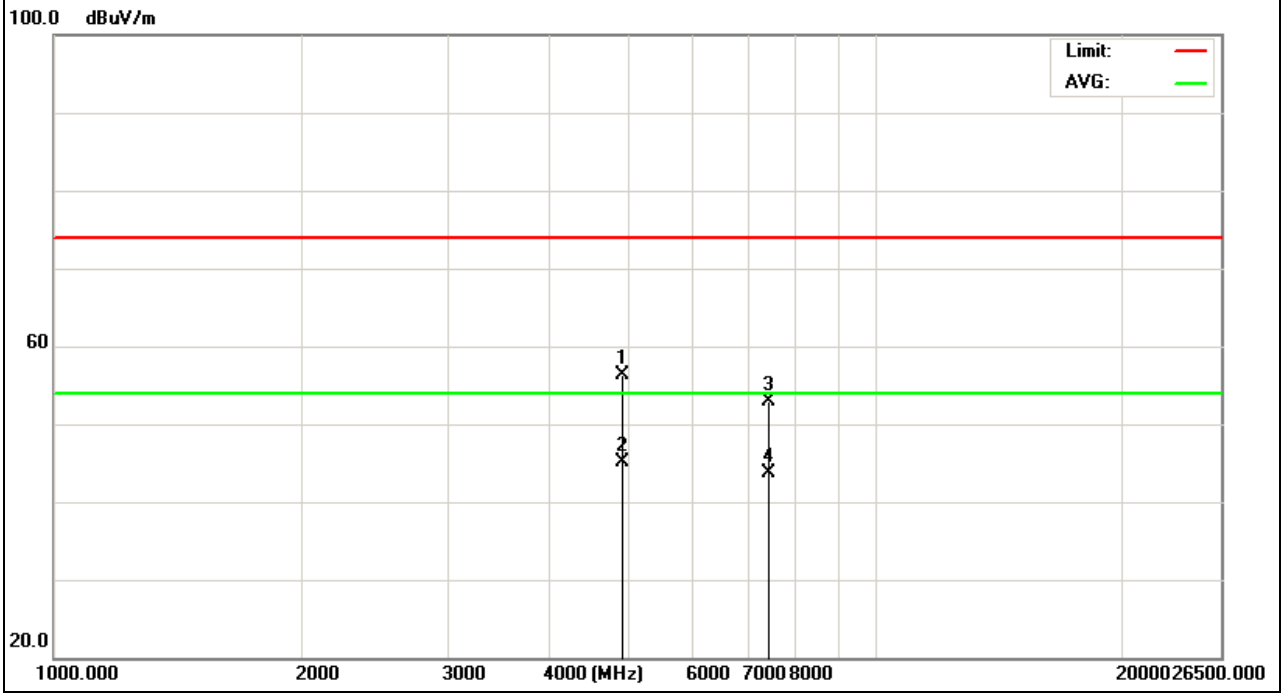


EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH11(802.11n Mode)/20MHz	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4924	64.44	-8.22	56.22	74	-17.78	peak
4924	53.32	-8.22	45.1	54	-8.9	AVG
7386	60.21	-7.39	52.82	74	-21.18	peak
7386	51.12	-7.39	43.73	54	-10.27	AVG

Remark:

3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
4. No emission detected above 18GHz

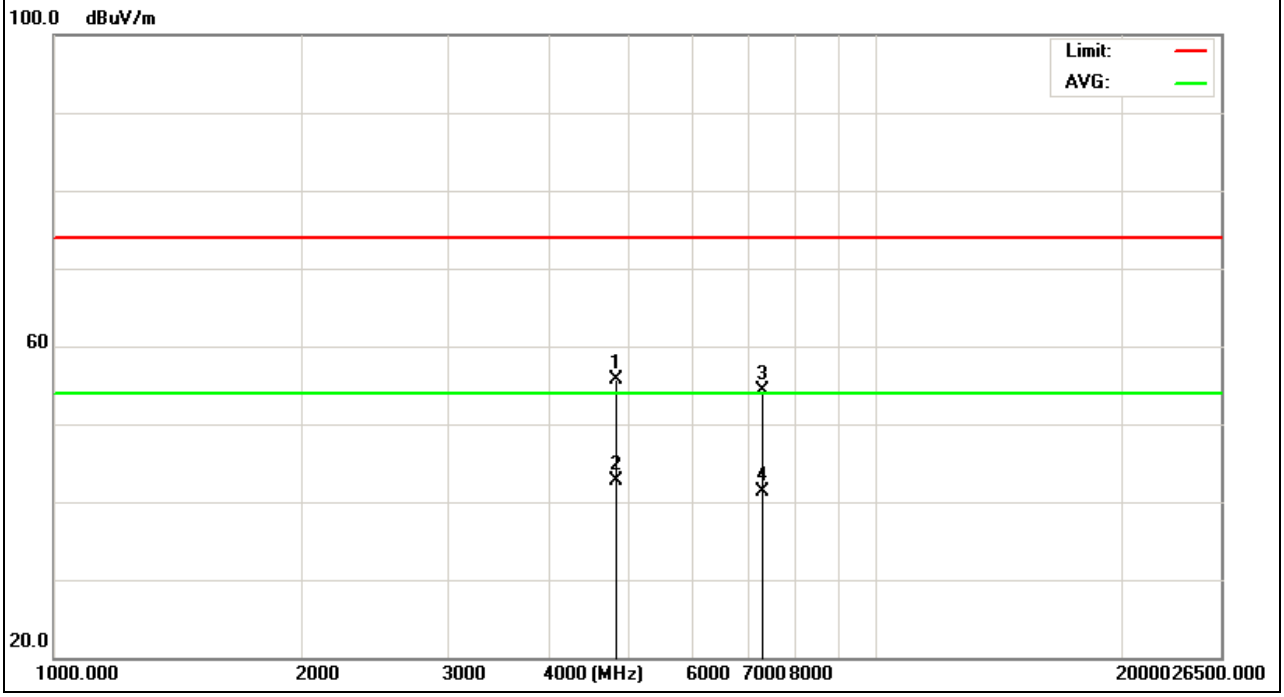


EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH3(802.11n Mode)/40MHz	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4844	63.71	-8.07	55.64	74	-18.36	peak
4844	50.72	-8.07	42.65	54	-11.35	AVG
7266	61.67	-7.4	54.27	74	-19.73	peak
7266	48.76	-7.4	41.36	54	-12.64	AVG

Remark:

5. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
6. No emission detected above 18GHz

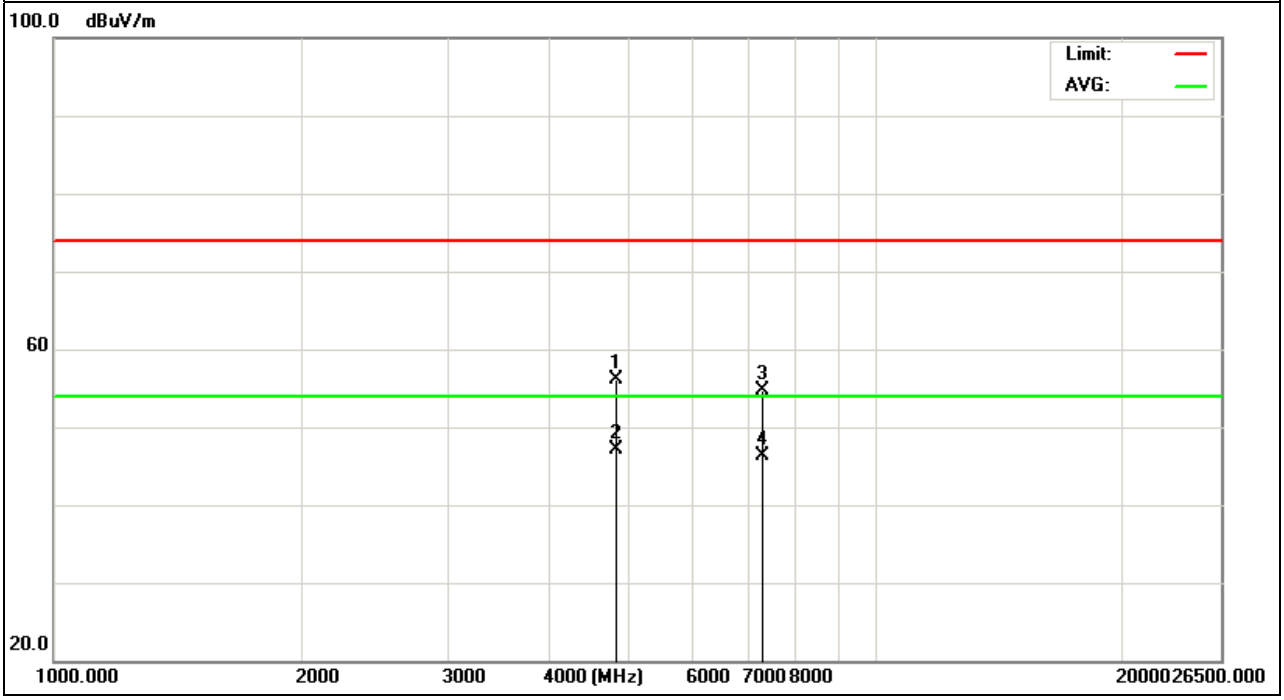


EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH3(802.11n Mode)/40MHz	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4844	64.21	-8.07	56.14	74	-17.86	peak
4844	55.18	-8.07	47.11	54	-6.89	AVG
7266	62.07	-7.4	54.67	74	-19.33	peak
7266	53.75	-7.4	46.35	54	-7.65	AVG

Remark:

5. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
6. No emission detected above 18GHz

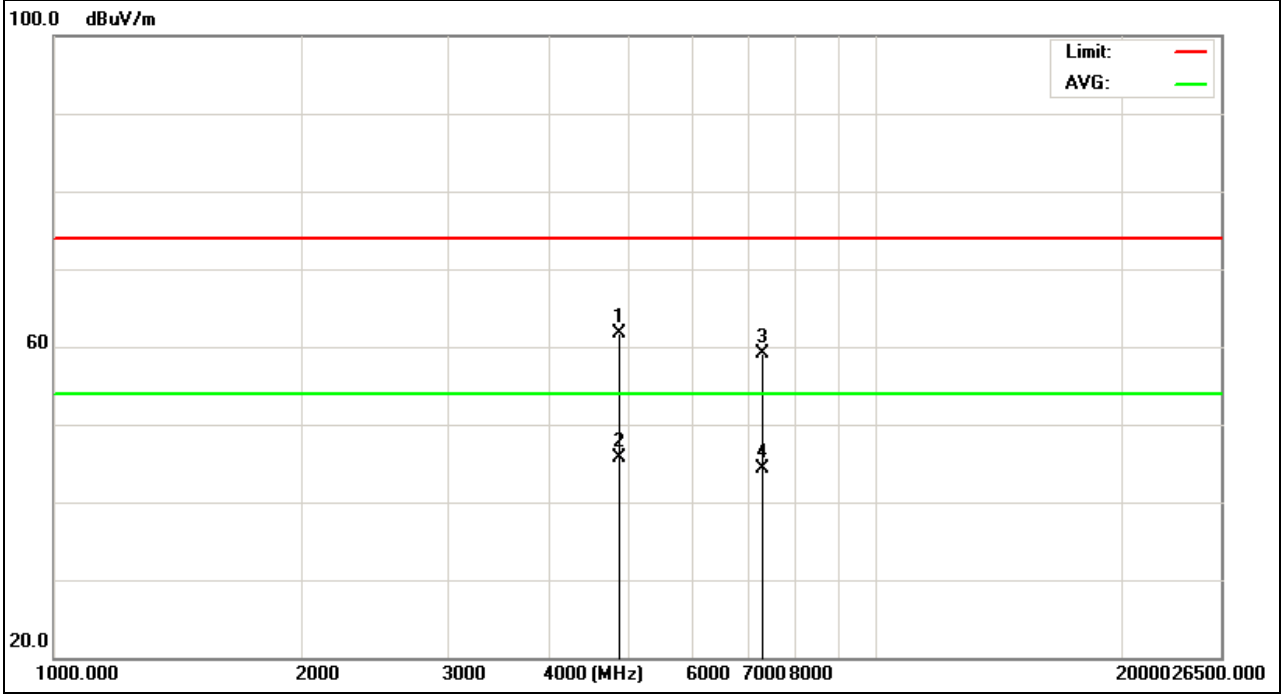


EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH6(802.11n Mode)/40MHz	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	69.99	-8.19	61.8	74	-12.2	peak
4874	53.87	-8.19	45.68	54	-8.32	AVG
7311	66.41	-7.21	59.2	74	-14.8	peak
7311	51.51	-7.21	44.3	54	-9.7	AVG

Remark:

5. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
6. No emission detected above 18GHz

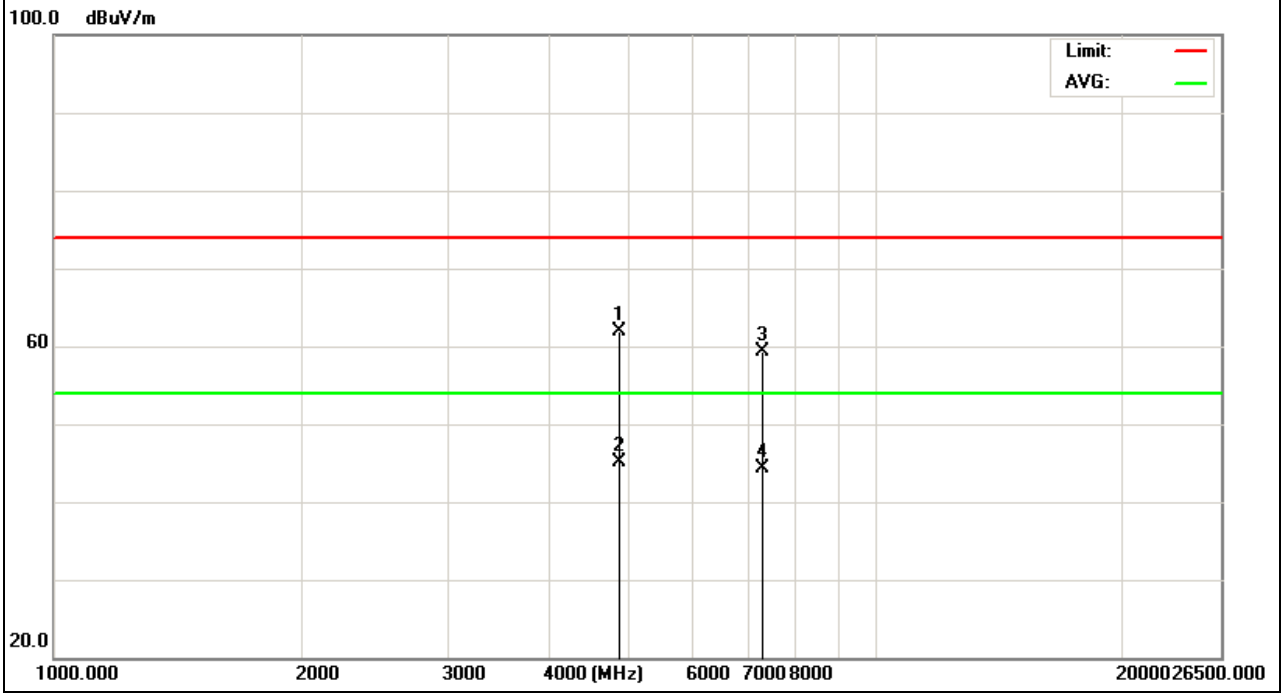


EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH6(802.11n Mode)/40MHz	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	70.14	-8.19	61.95	74	-12.05	peak
4874	53.22	-8.19	45.03	54	-8.97	AVG
7311	66.44	-7.21	59.23	74	-14.77	peak
7311	51.48	-7.21	44.27	54	-9.73	AVG

Remark:

5. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
6. No emission detected above 18GHz

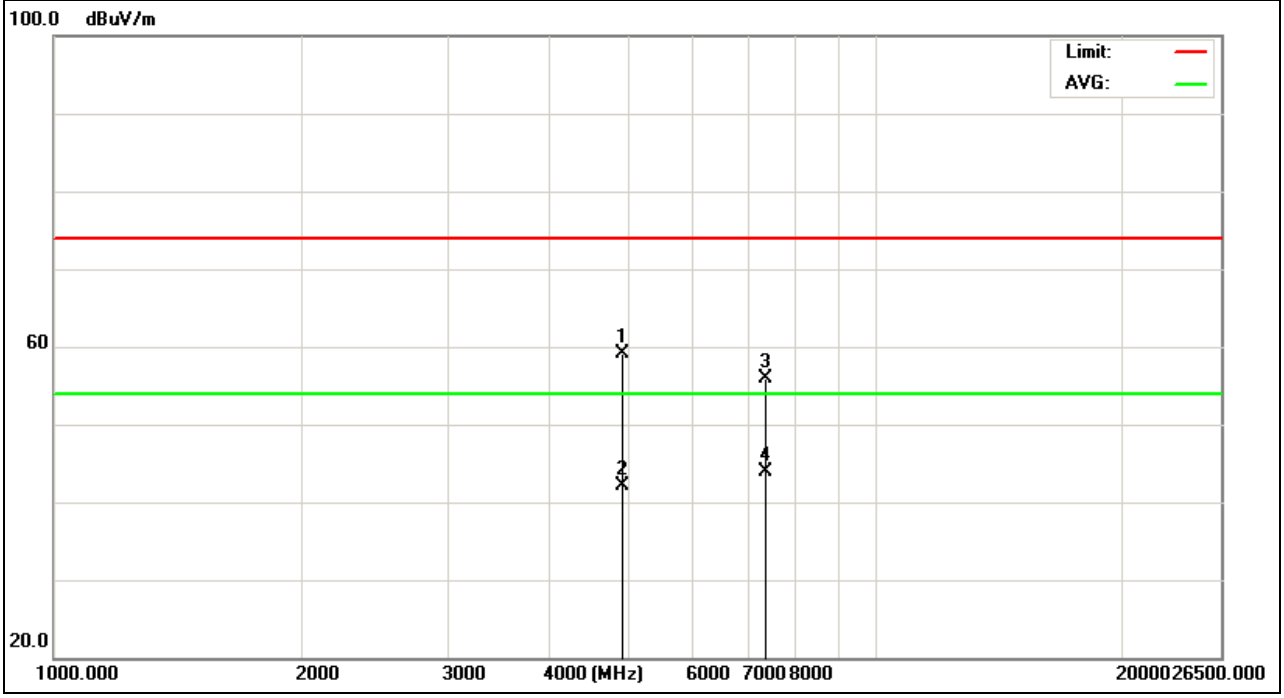


EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH9(802.11n Mode)/40MHz	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4904	67.45	-8.31	59.14	74	-14.86	peak
4904	50.34	-8.31	42.03	54	-11.97	AVG
7356	63.24	-7.24	56	74	-18	peak
7356	51.09	-7.24	43.85	54	-10.15	AVG

Remark:

7. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
8. No emission detected above 18GHz

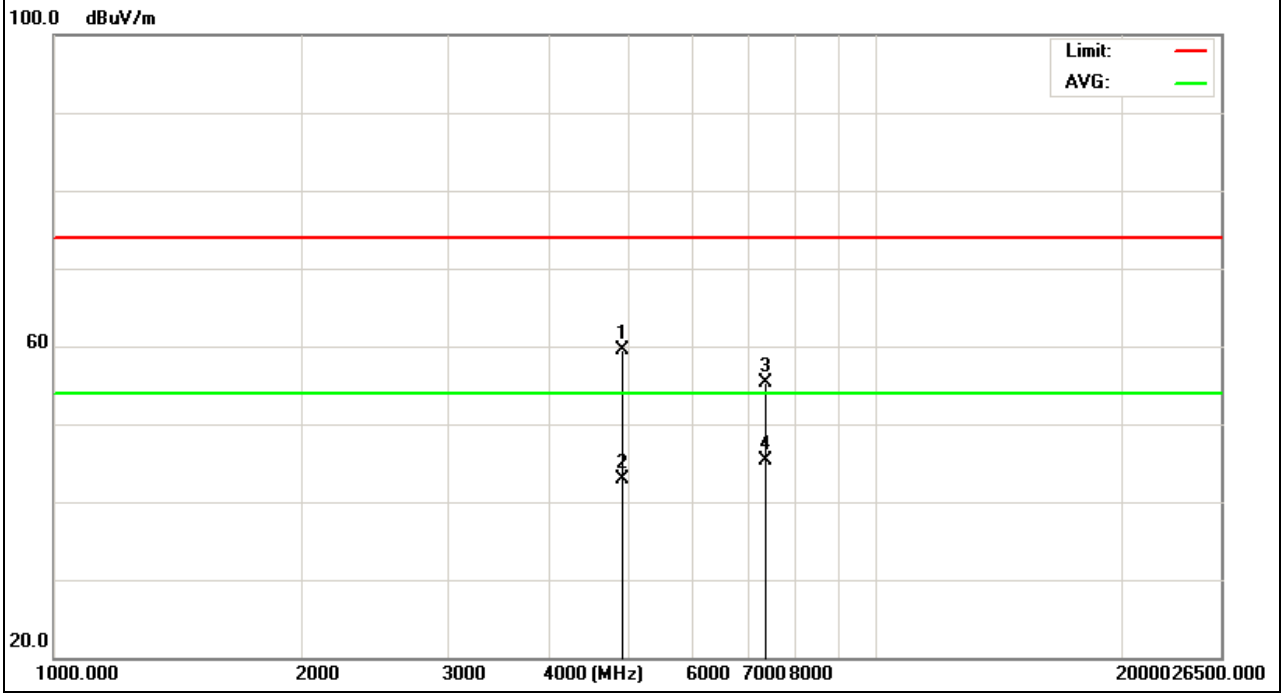


EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH9(802.11n Mode)/40MHz	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4904	67.88	-8.31	59.57	74	-14.43	peak
4904	51.22	-8.31	42.91	54	-11.09	AVG
7356	62.58	-7.24	55.34	74	-18.66	peak
7356	52.47	-7.24	45.23	54	-8.77	AVG

Remark:

7. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
8. No emission detected above 18GHz

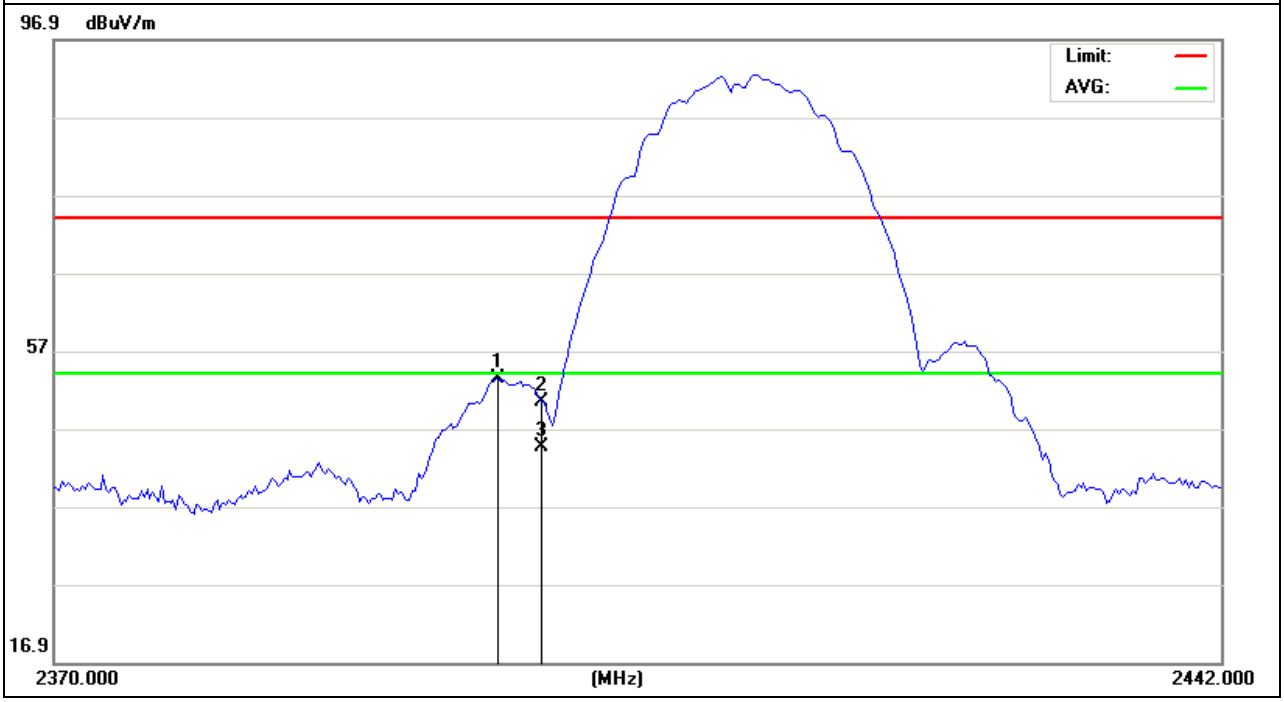


4.BAND EDGE EMISSION

EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH1(802.11b Mode)	Polarization：	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2400	40.98	-0.69	40.49	74	-33.31	peak
2400	36.15	-0.69	37.25	54	-14.96	AVG

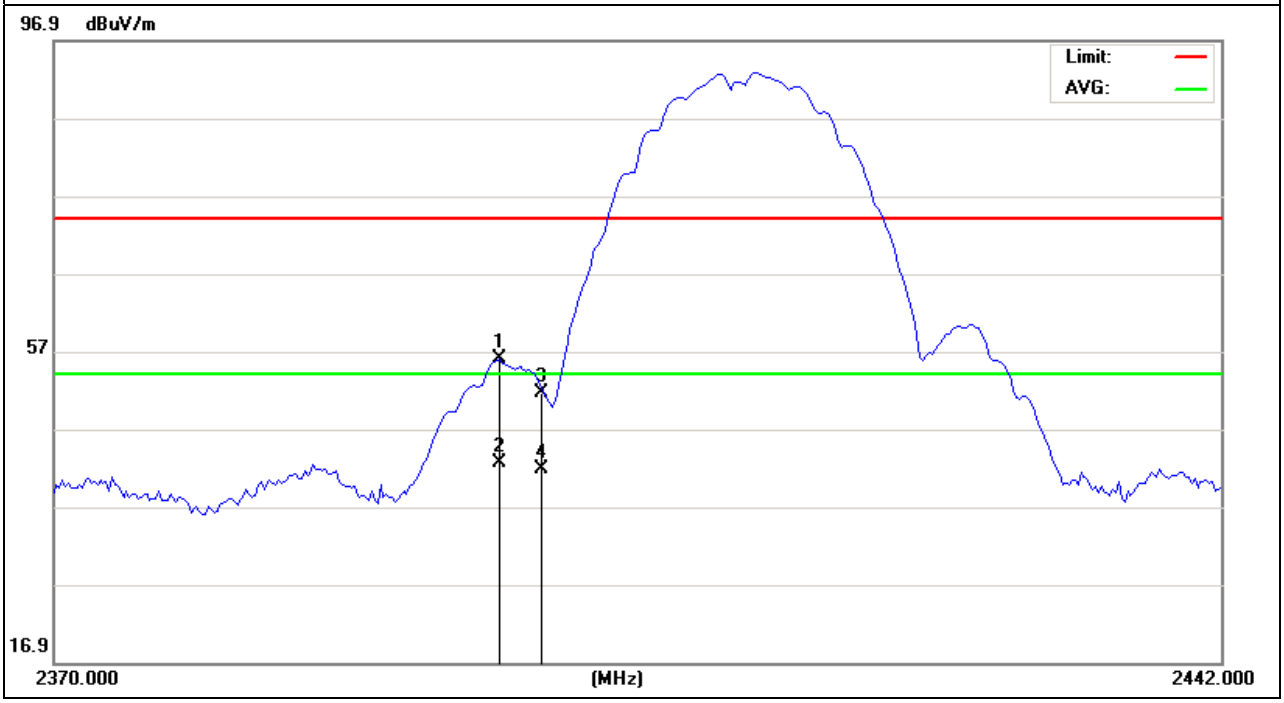
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH1(802.11b Mode)	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2439.12	55.68	-0.69	54.99	74	-19.01	peak
2439.12	41.26	-0.69	40.57	54	-13.43	AVG

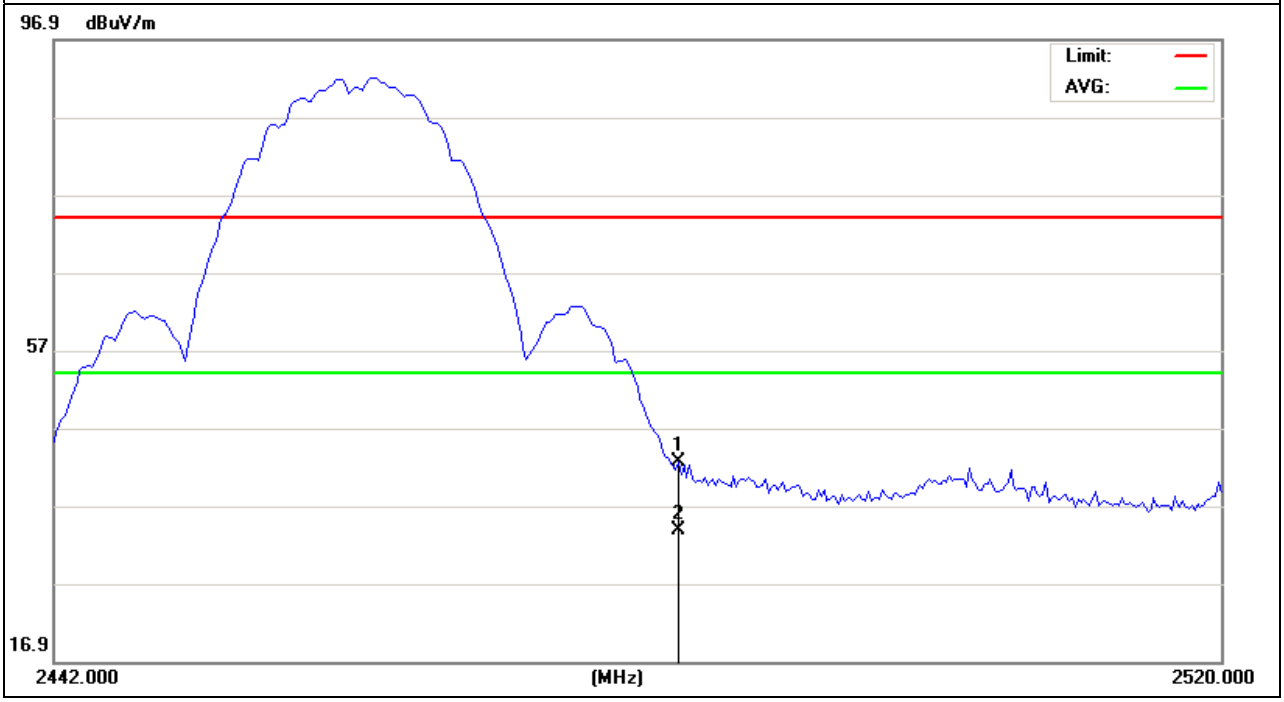
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH11(802.11b Mode)	Polarization：	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	41.16	-0.47	40.69	74	-33.31	peak
2483.5	34.11	-0.47	33.64	54	-20.36	AVG

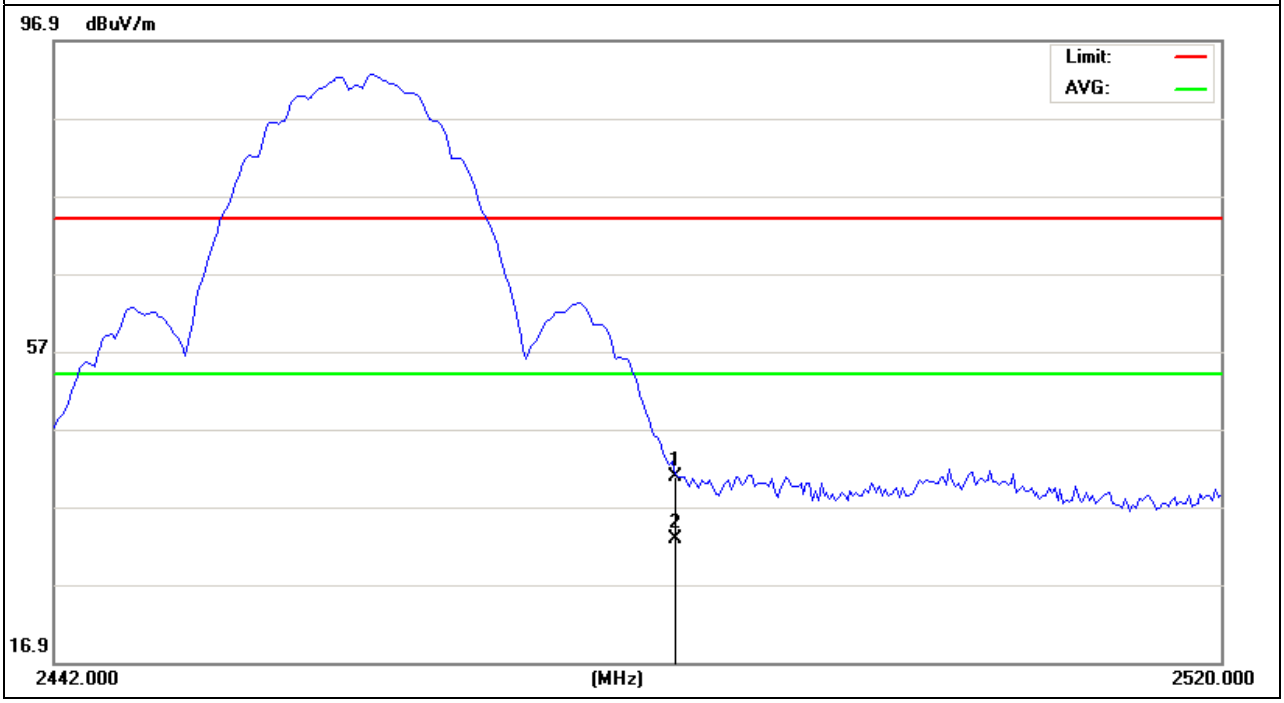
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH11(802.11b Mode)	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	40.98	-0.47	40.51	74	-33.49	peak
2483.5	33.58	-0.47	33.11	54	-20.89	AVG

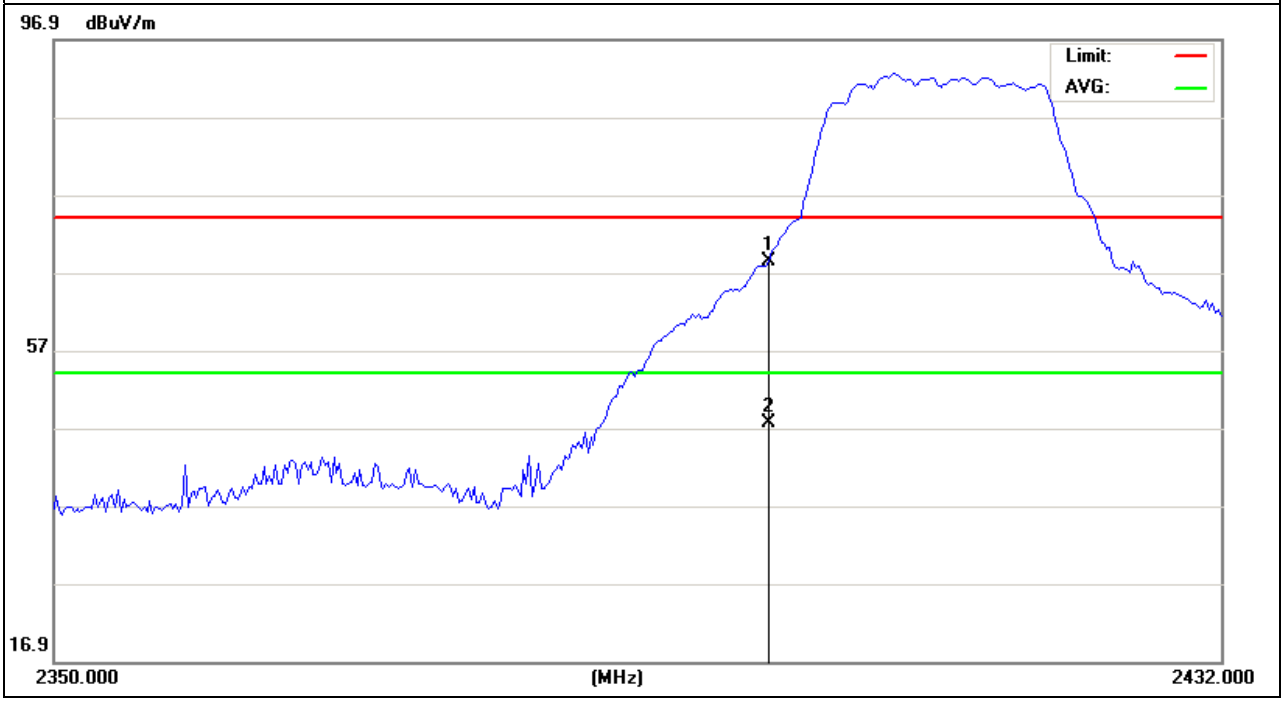
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH1(802.11g Mode)	Polarization：	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2400	65.18	-0.69	64.49	74	-9.51	peak
2400	47.95	-0.69	47.26	54	-6.74	AVG

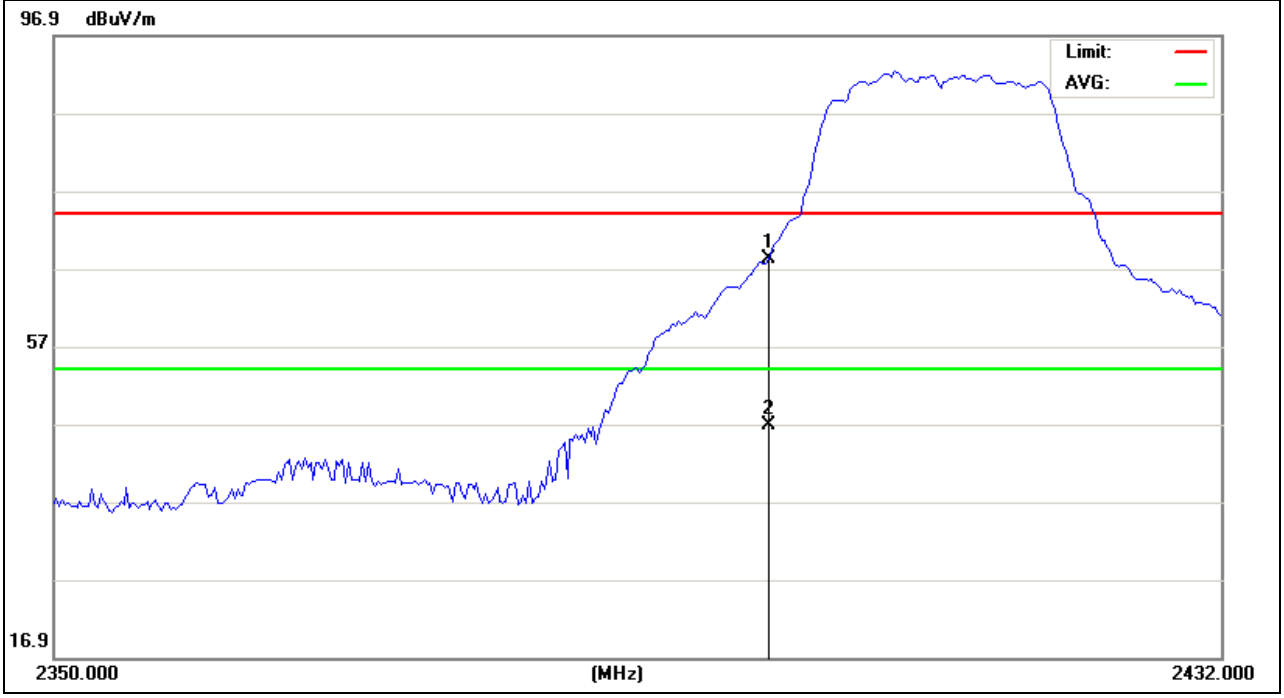
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH1(802.11gMode)	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2400	67.36	-0.69	66.67	74	-7.33	peak
2400	47.15	-0.69	46.46	54	-7.54	AVG

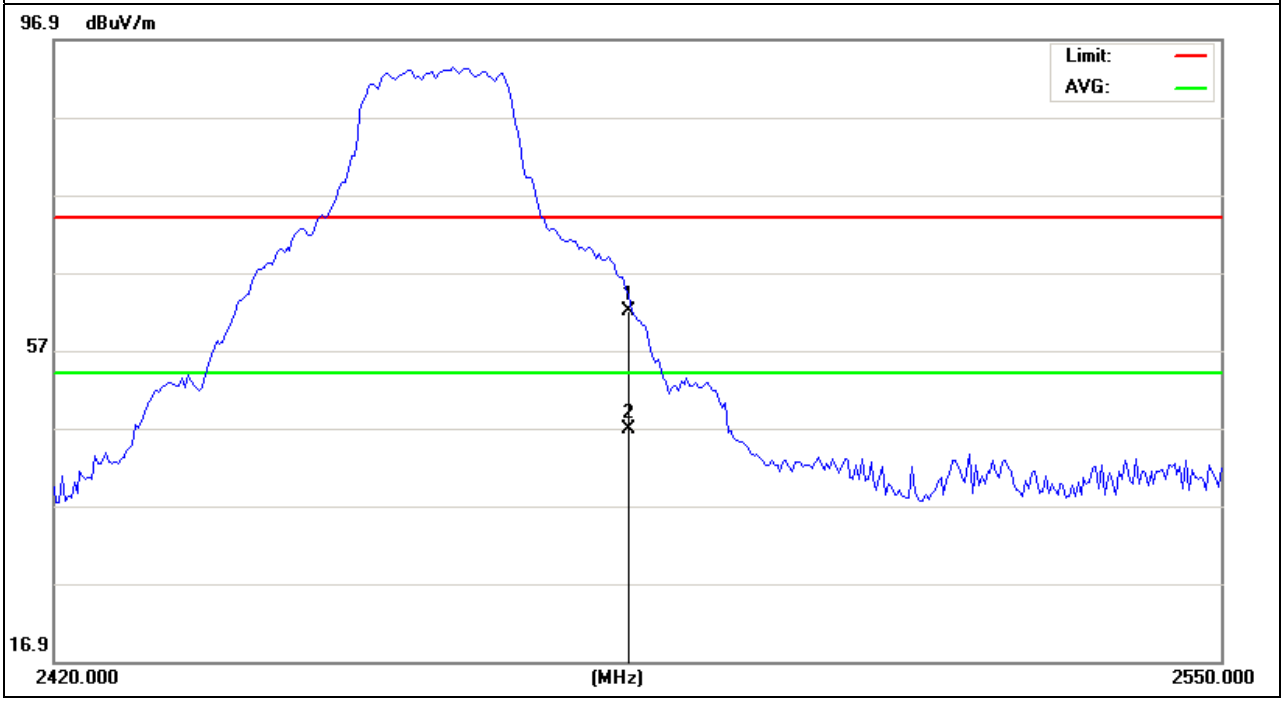
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH11(802.11g Mode)	Polarization：	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	63.33	-0.47	62.86	74	-11.14	peak
2483.5	46.97	-0.47	46.5	54	-7.5	AVG

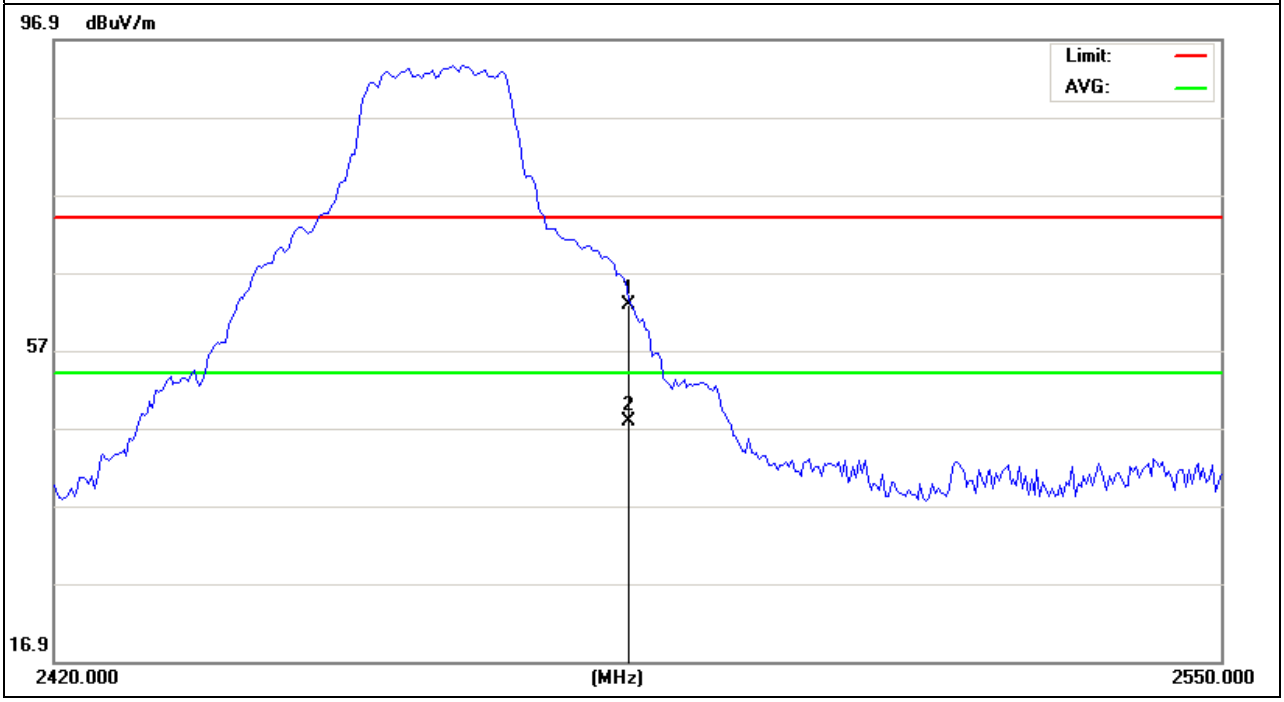
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH11(802.11g Mode)	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	64.25	-0.47	63.78	74	-10.22	peak
2483.5	49.62	-0.47	49.15	54	-4.85	AVG

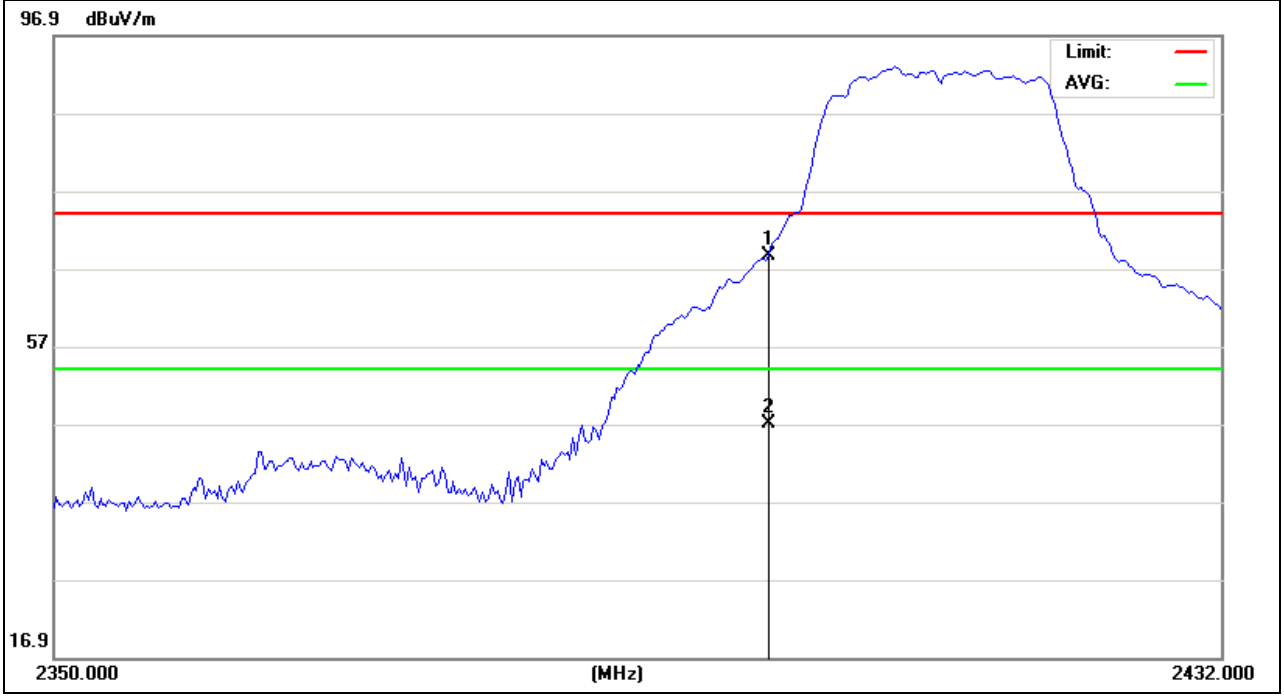
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH1(802.11N Mode)/20MHz	Polarization：	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2400	67.69	-0.69	67	74	-7	peak
2400	48.15	-0.69	47.46	54	-6.54	AVG

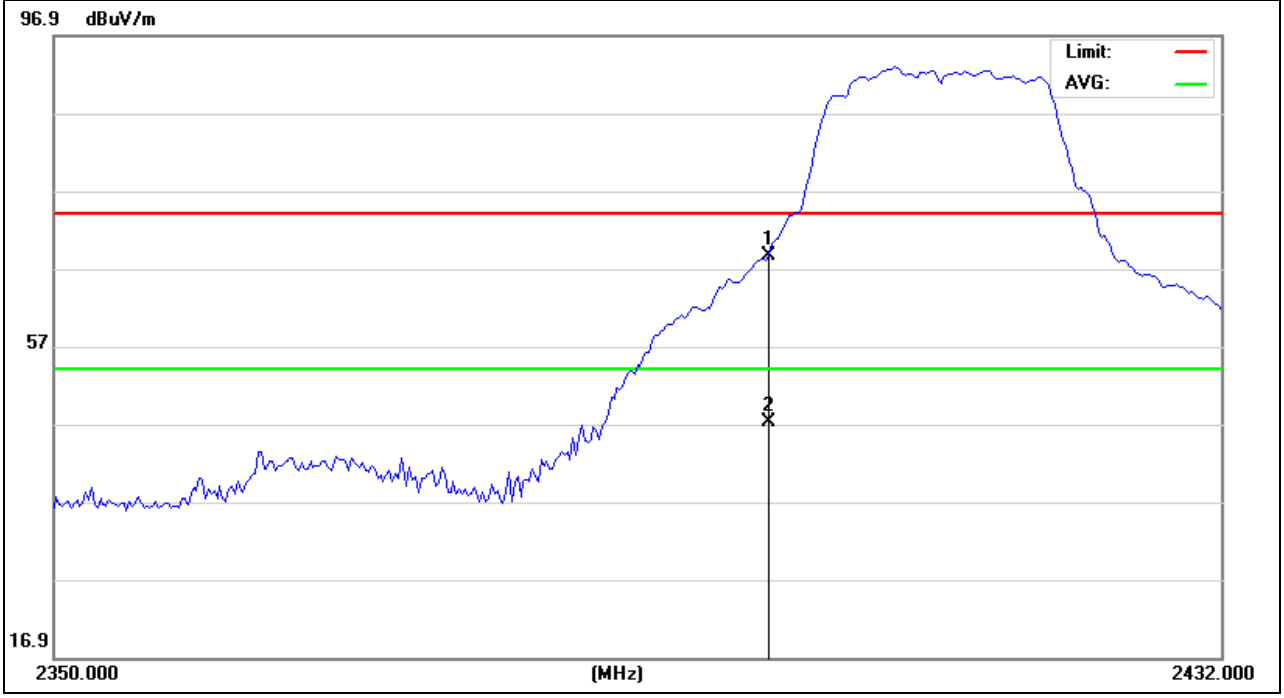
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH1(802.11N Mode)/20MHz	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2400	68.84	-0.69	68.15	74	-5.85	peak
2400	47.35	-0.69	46.66	54	-7.34	AVG

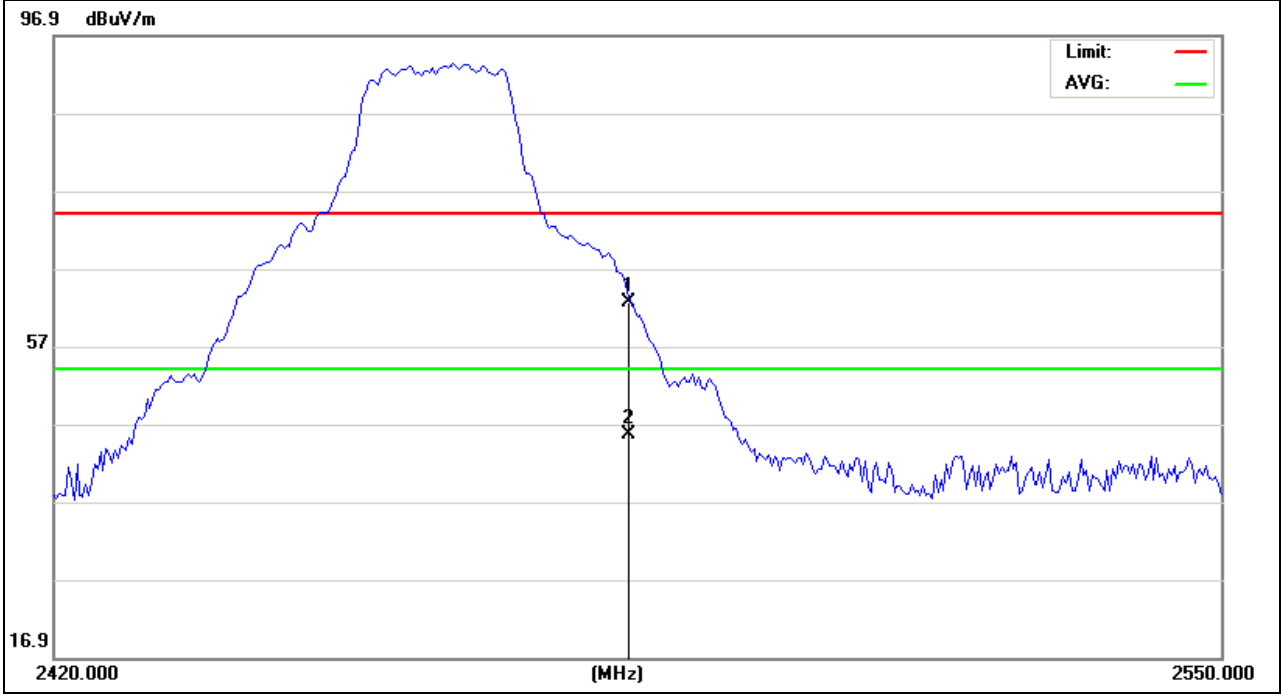
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH11(802.11N Mode)/20MHz	Polarization：	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	64.78	-0.47	64.31	74	-9.69	peak
2483.5	48.61	-0.47	48.14	54	-5.86	AVG

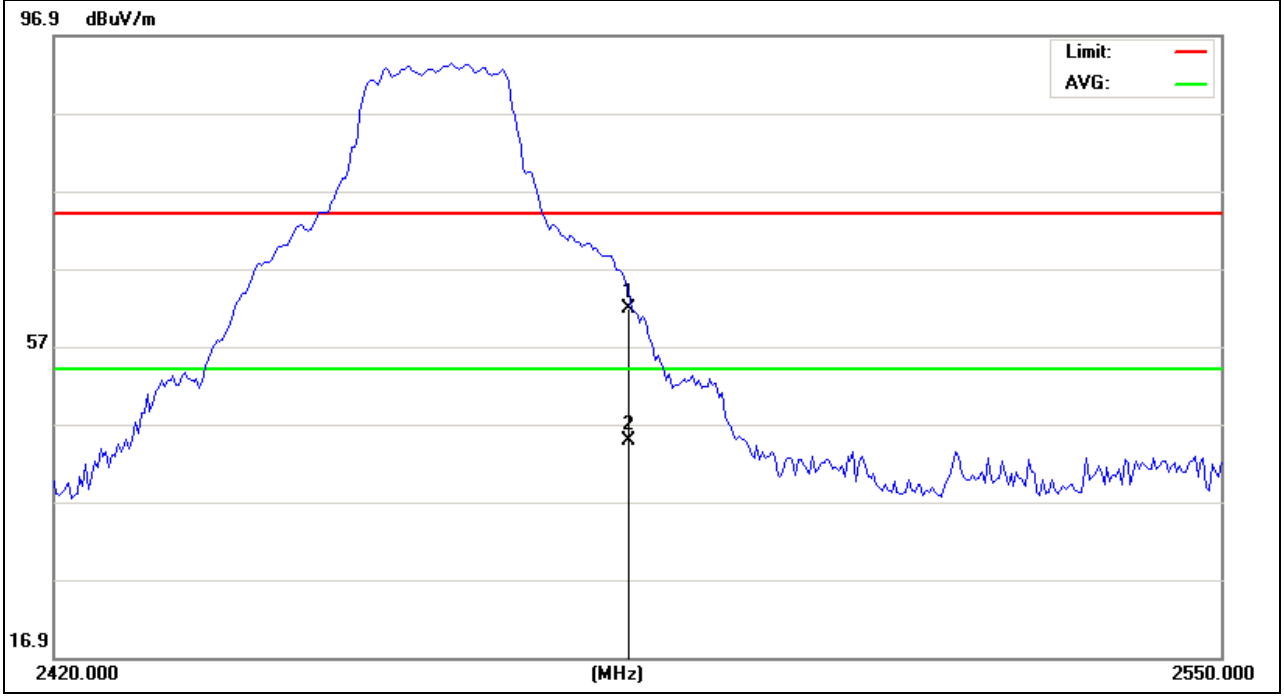
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH11(802.11N Mode)/20MHz	Polarization：	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	65.41	-0.47	64.94	74	-9.06	peak
2483.5	48.29	-0.47	47.82	54	-6.18	AVG

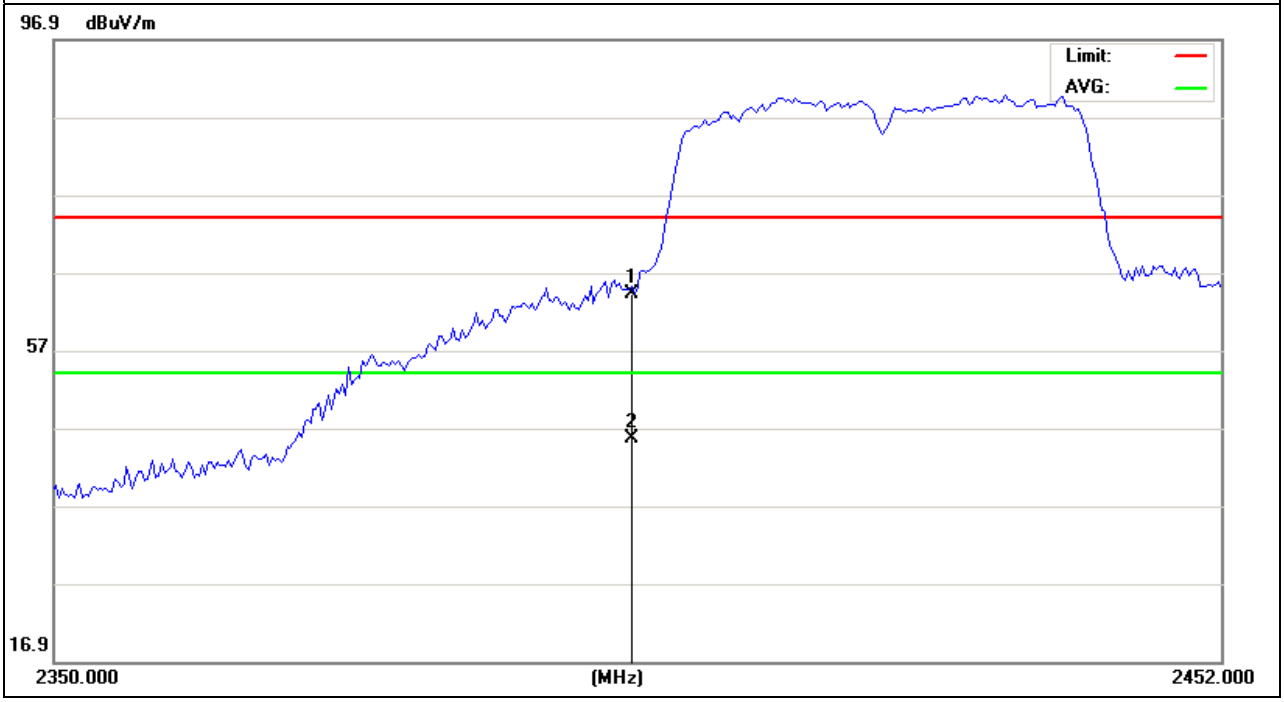
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH3(802.11n Mode)/40M	Polarization：	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2400	62.54	-0.47	62.07	74	-11.93	peak
2400	45.36	-0.47	44.89	54	-9.11	AVG

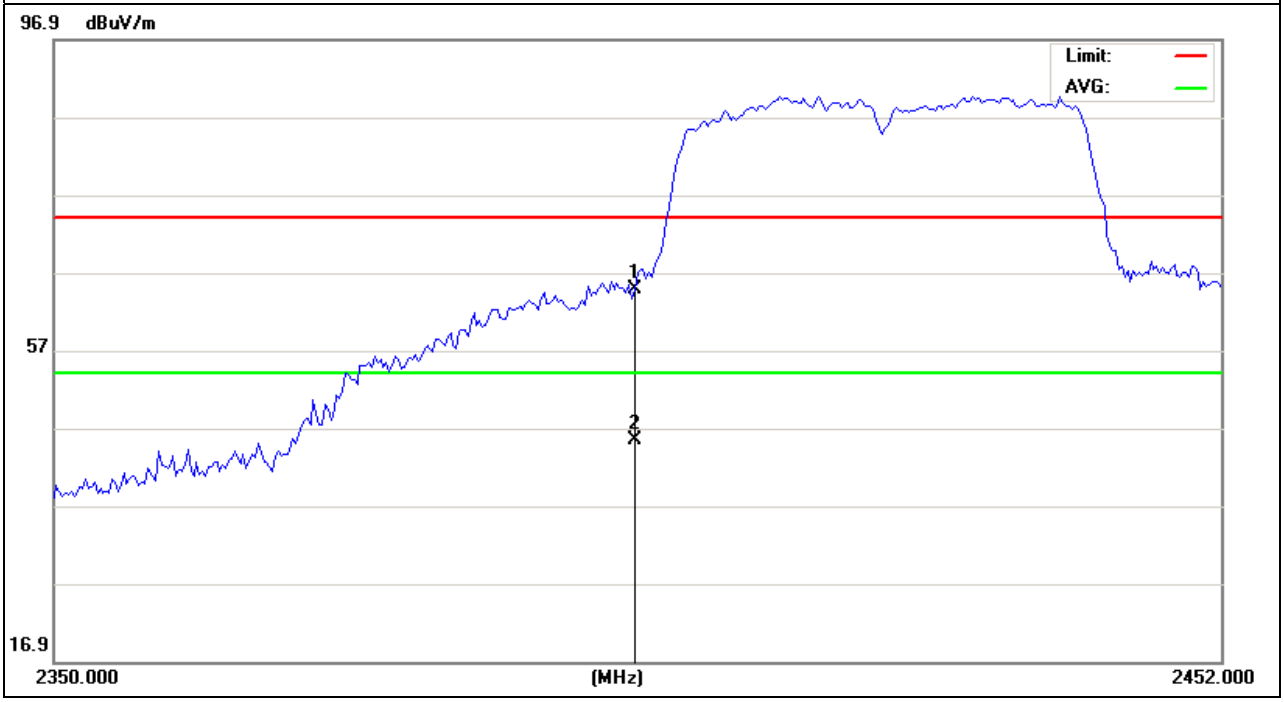
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH3(802.11n Mode)/40M	Polarization：	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	68.32	-0.47	67.85	74	-6.15	peak
2483.5	48.61	-0.47	48.14	54	-5.86	AVG

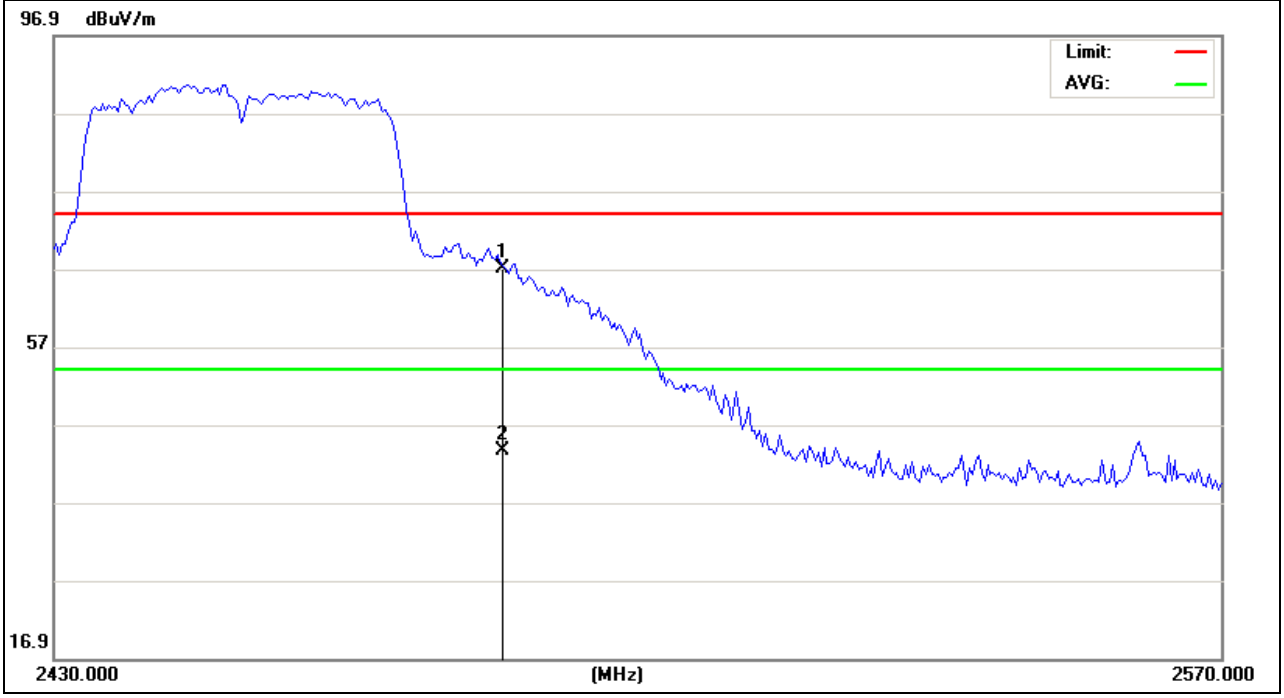
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH9(802.11n Mode)/40MHz	Polarization：	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	67.84	-0.47	67.37	74	-6.63	peak
2483.5	47.88	-0.47	47.41	54	-6.59	AVG

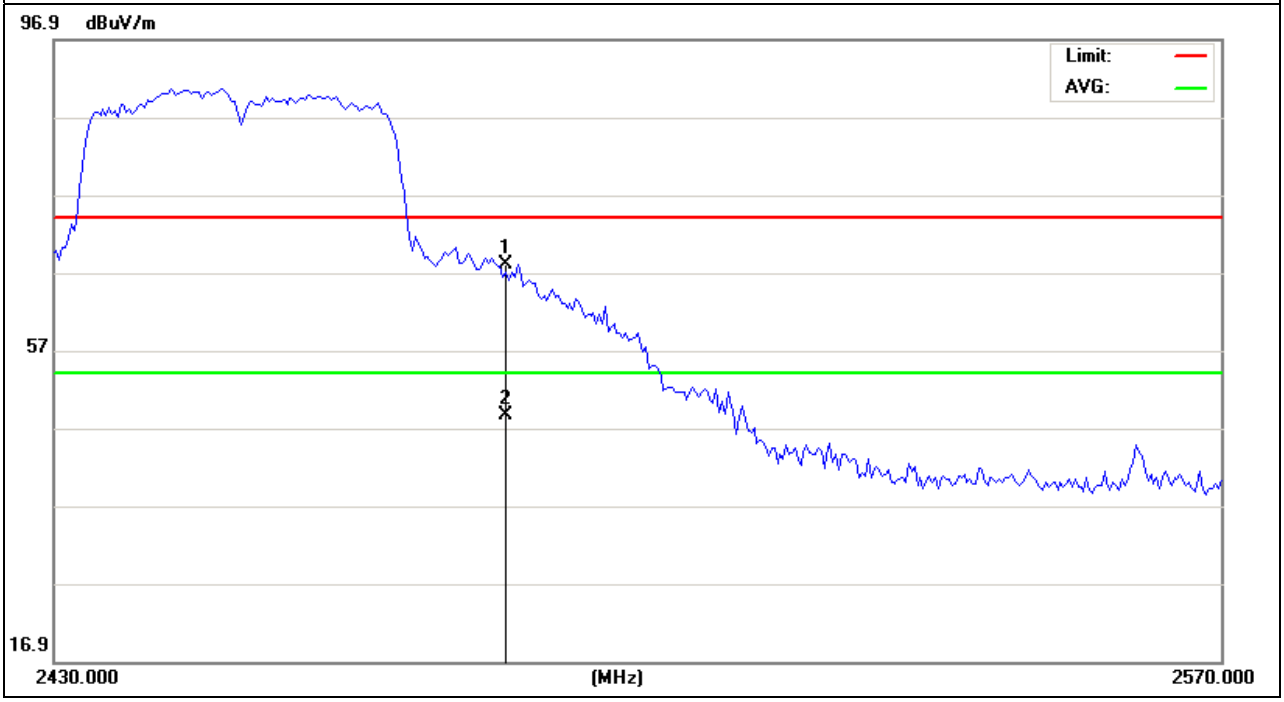
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	CH9(802.11n Mode)/40MHz	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	67.42	-0.47	66.95	74	-7.05	peak
2483.5	47.15	-0.47	46.68	54	-7.32	AVG

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



5. POWER SPECTRAL DENSITY TEST

5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	5-30 % greater than the EBW
RB	100 kHz
VB	300 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

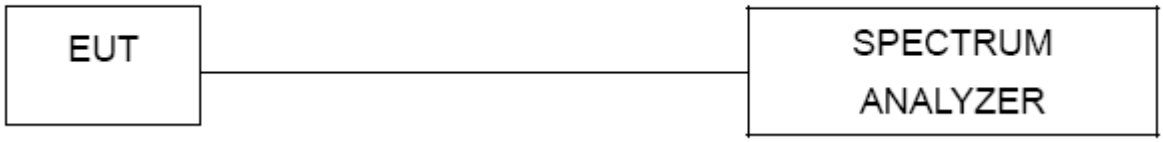
5.1.1 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW= 100KHz, VBW=300KHz, Sweep time = Auto.

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



5.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

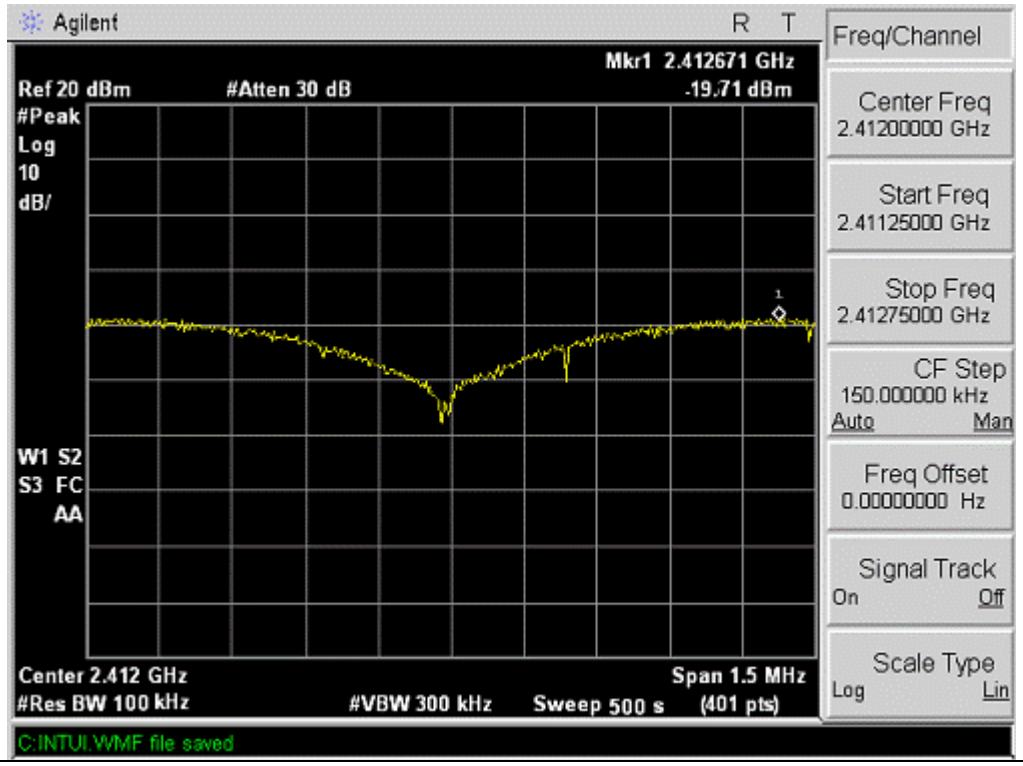
5.1.5 TEST RESULTS

EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1015 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	TX B MODE /CH01, CH06, CH11		

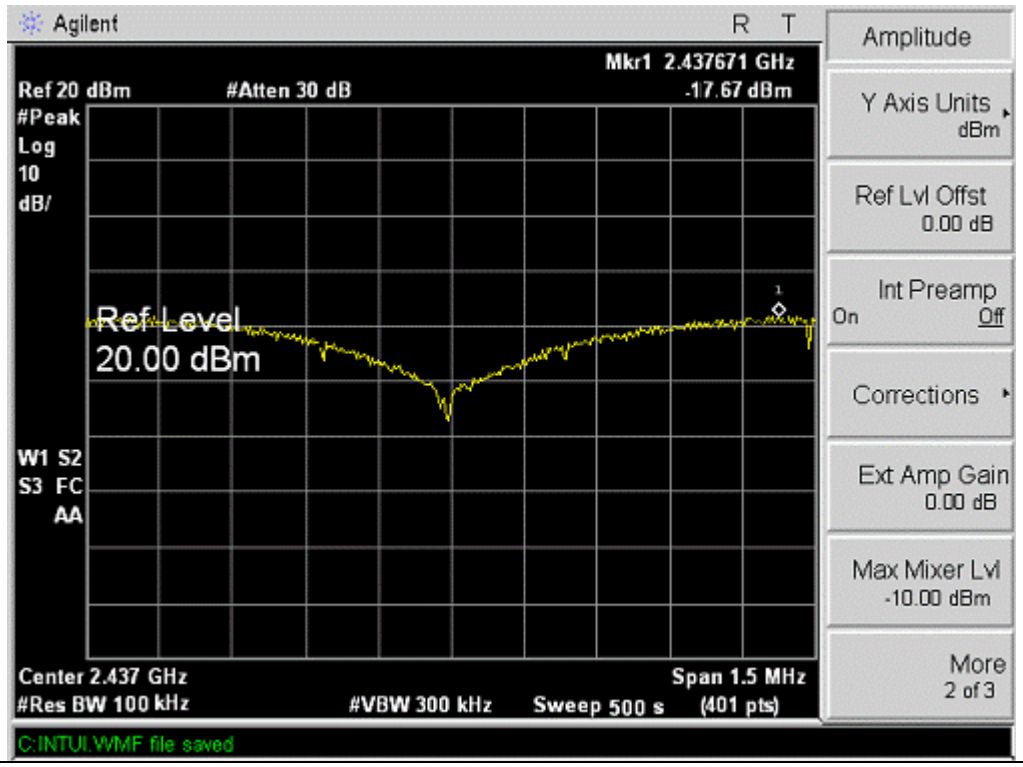
Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-19.71	8	**PASS**
2437MHz	-17.67	8	**PASS**
2462 MHz	-18.17	8	**PASS**

.

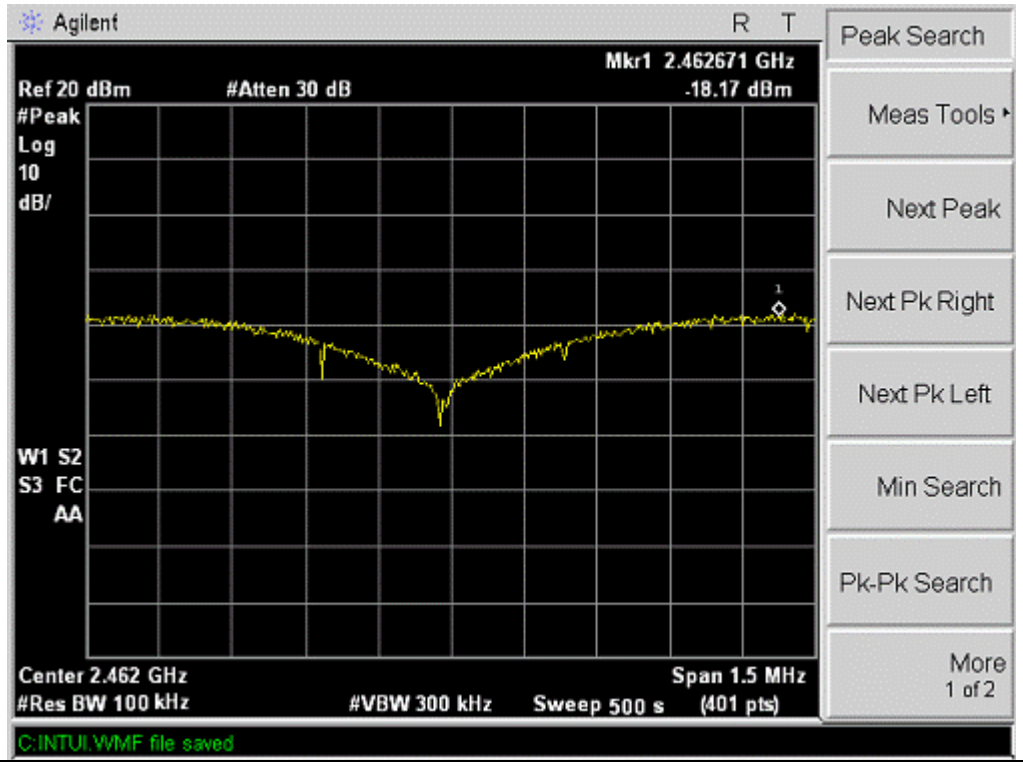
TX CH01



TX CH06



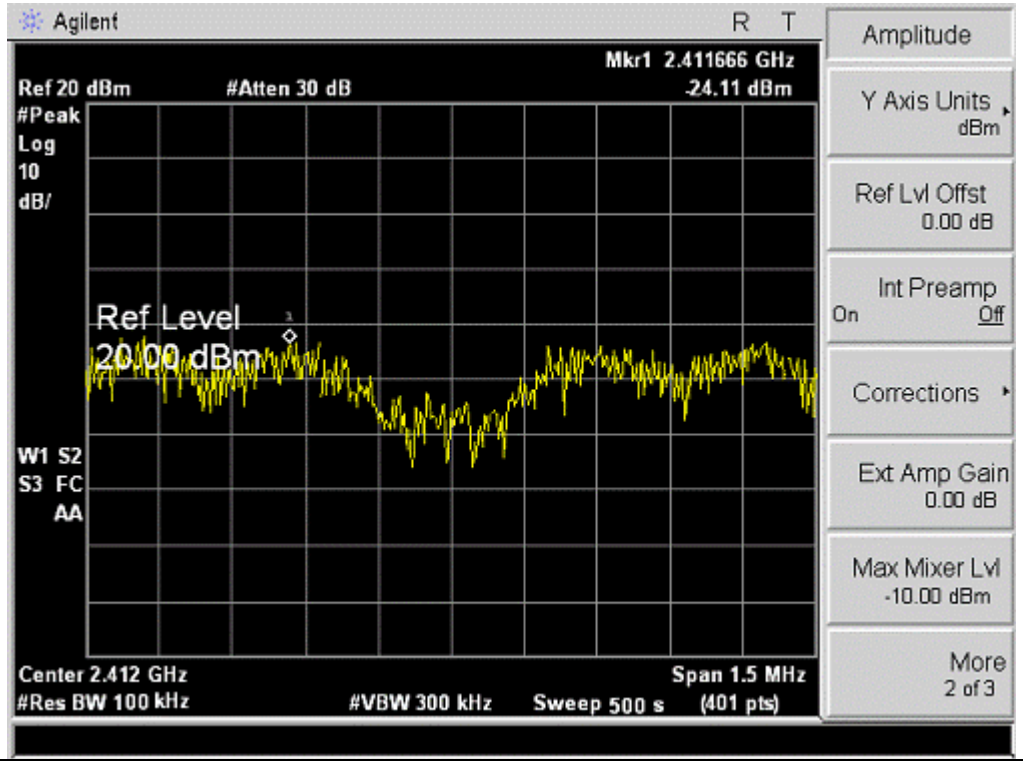
TX CH11



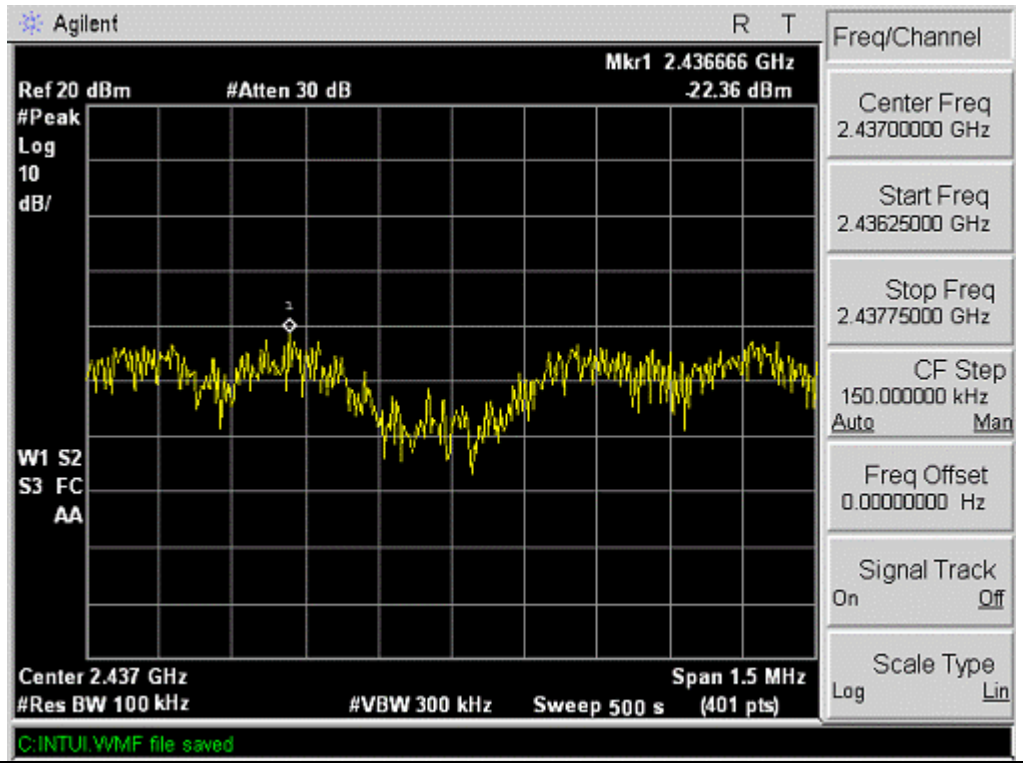
EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1015 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	TX G MODE /CH01, CH06, CH11		

Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-24.11	8	**PASS**
2437MHz	-22.36	8	**PASS**
2462 MHz	-21.66	8	**PASS**

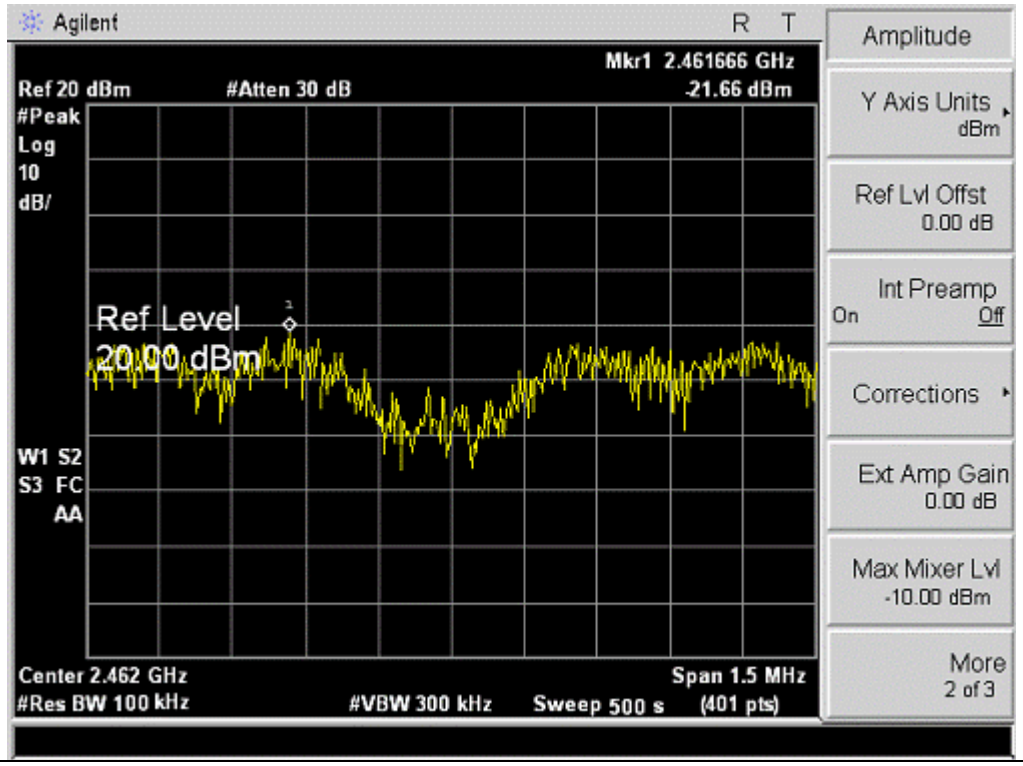
TX CH01



TX CH06



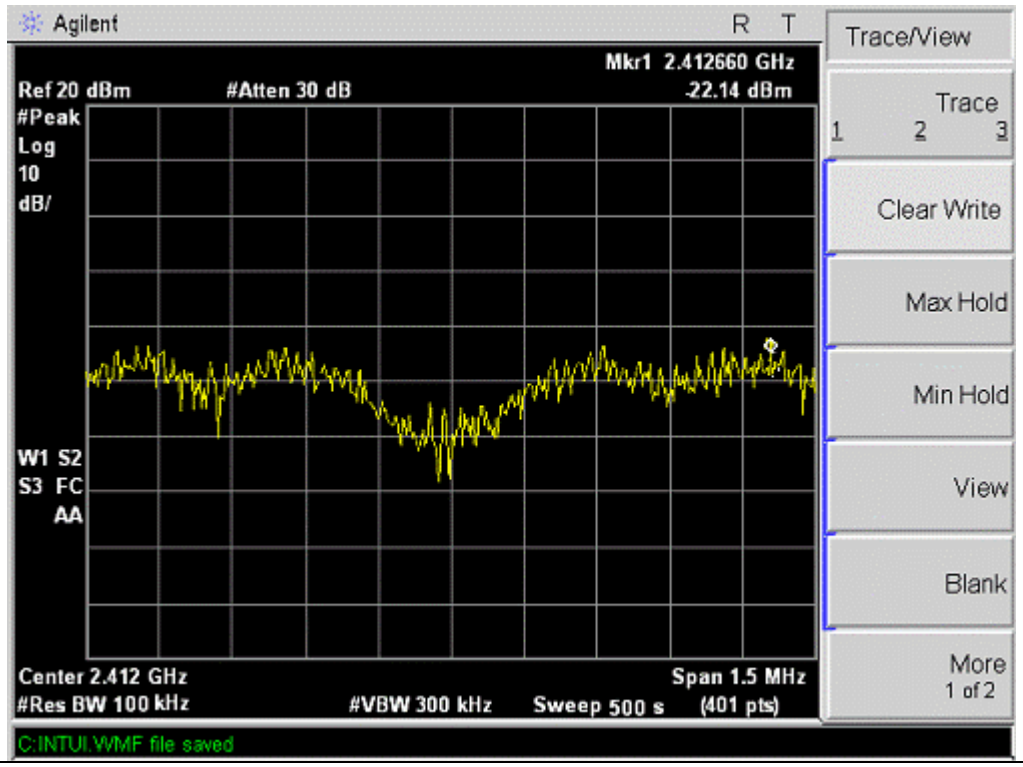
TX CH11



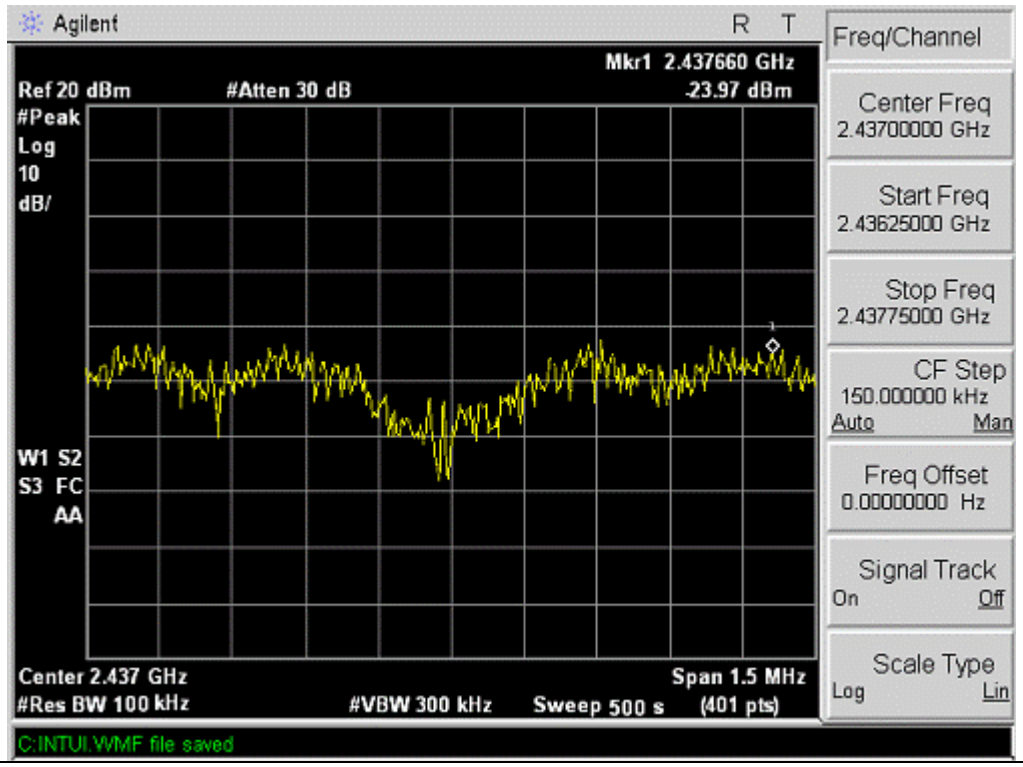
EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1015 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	TX n MODE /CH01, CH06, CH11		

Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-22.14	8	**PASS**
2437MHz	-23.97	8	**PASS**
2462 MHz	-23.66	8	**PASS**

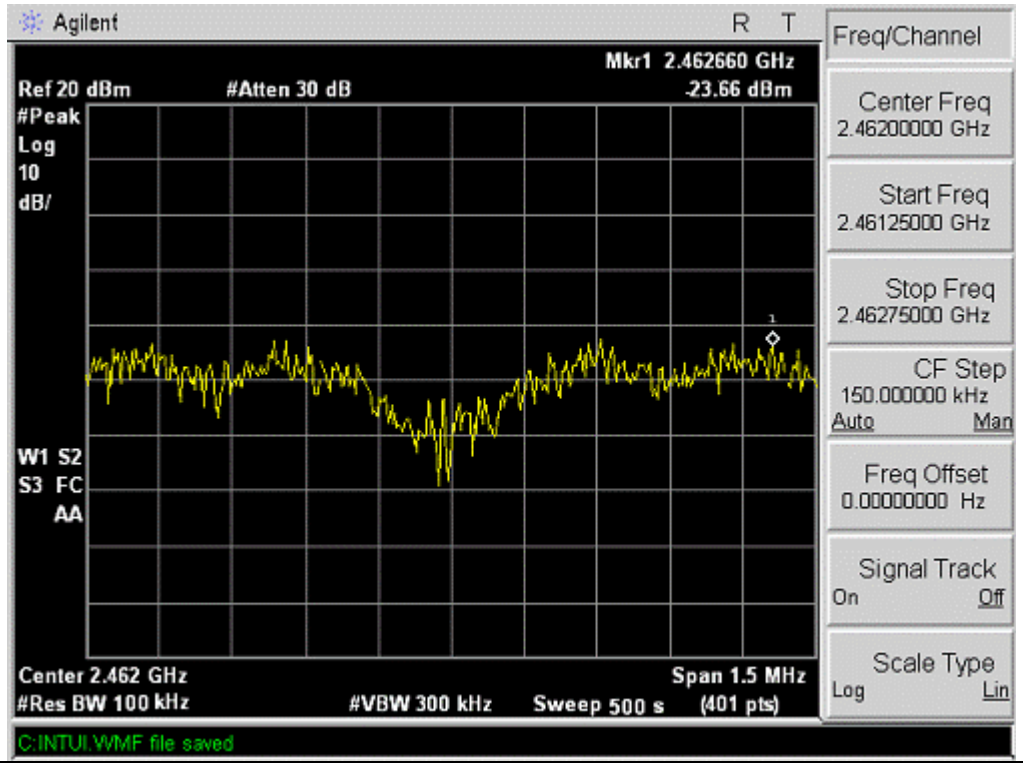
TX CH01



TX CH06



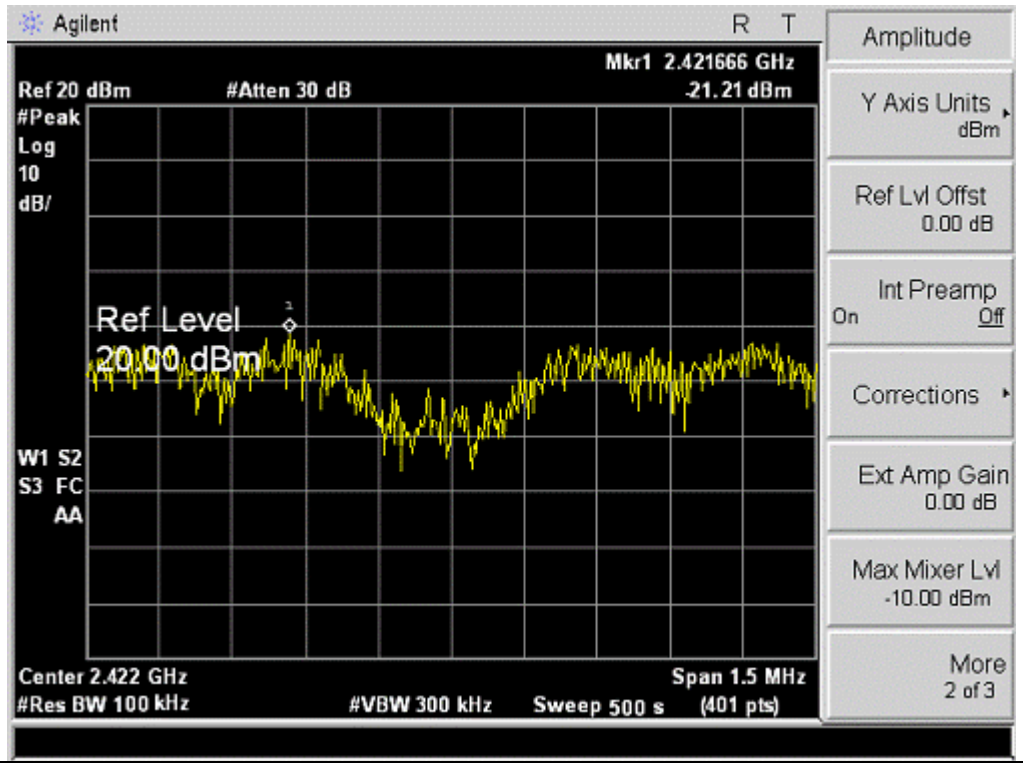
TX CH11



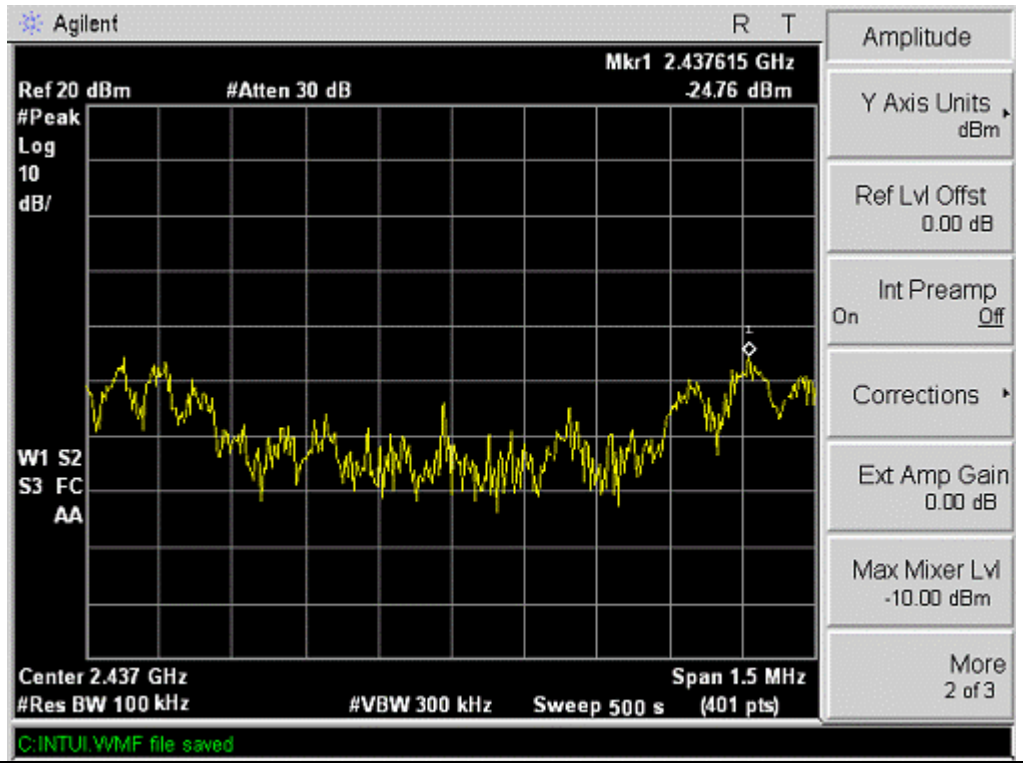
EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1015 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	TX n MODE /CH03, CH06, CH09/40MHz		

Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-21.21	8	**PASS**
2437MHz	-24.76	8	**PASS**
2462 MHz	-24.15	8	**PASS**

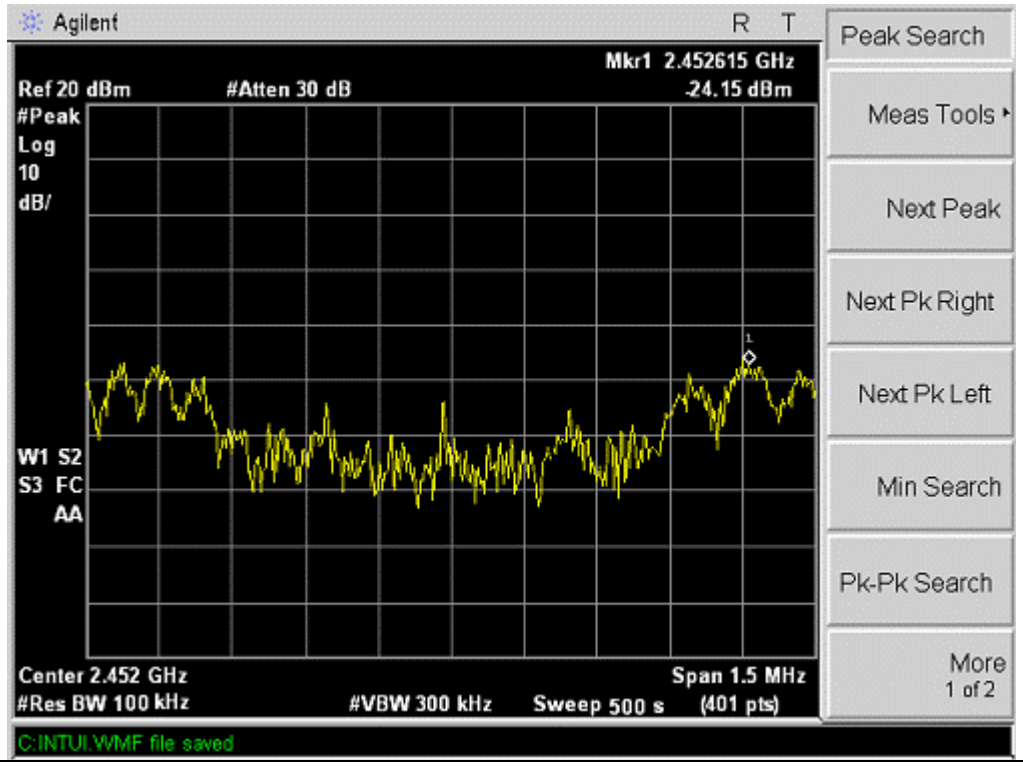
TX CH01



TX CH06



TX CH11



6. BANDWIDTH TEST

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C& RSS-210 Annex 8				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	>= 500KHz (6dB bandwidth)	2400-2483.5	PASS

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	1-5 % of the emission bandwidth (EBW).
VB	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

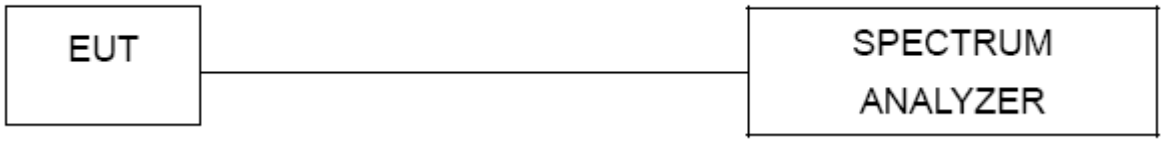
6.1.1 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

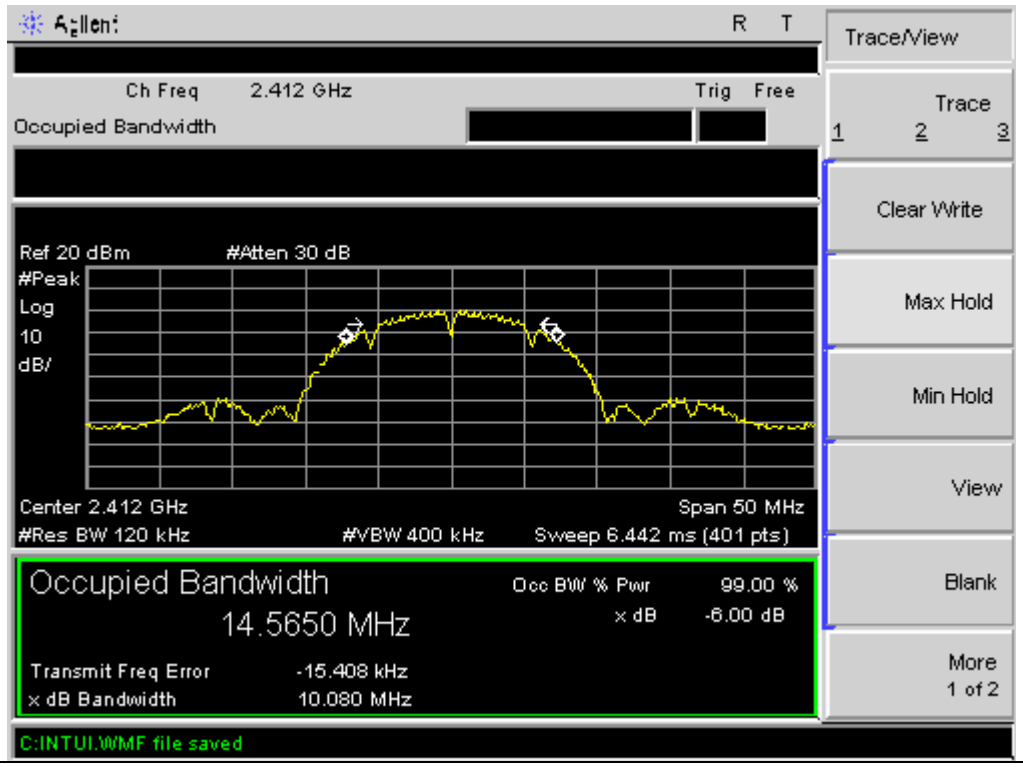
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5 TEST RESULTS

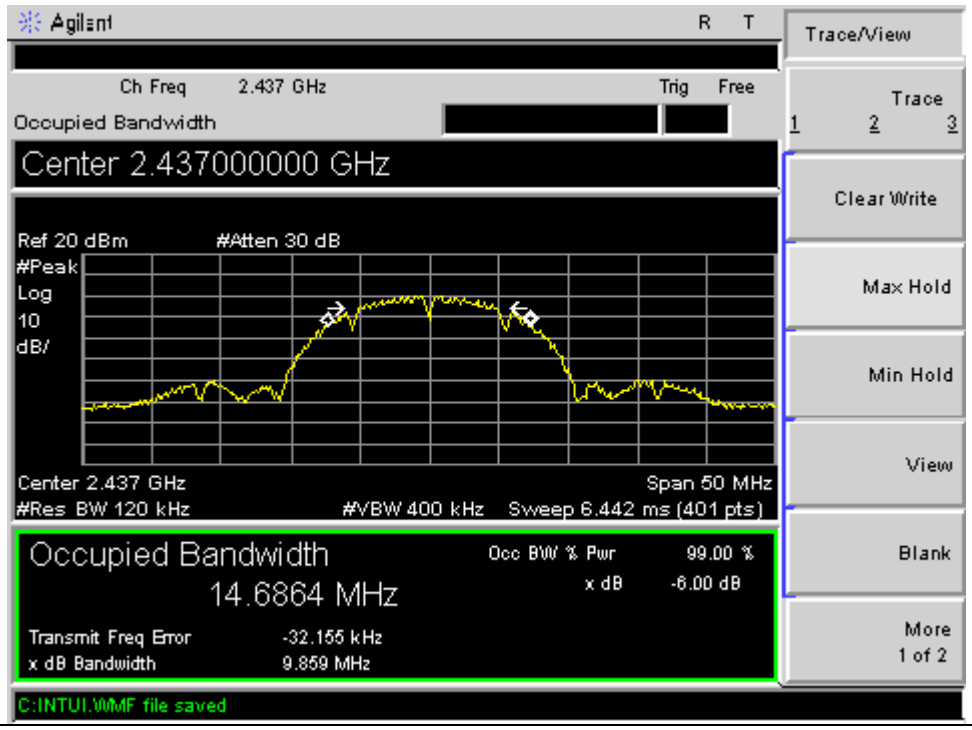
EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	TX B MODE /CH01, CH06, CH11		

Frequency	6dB Bandwidth (MHz)	Channel Separation (MHz)	Result
2412 MHz	10.08	>=500KHz	**PASS**
2437 MHz	9.85	>=500KHz	**PASS**
2462 MHz	10.11	>=500KHz	**PASS**

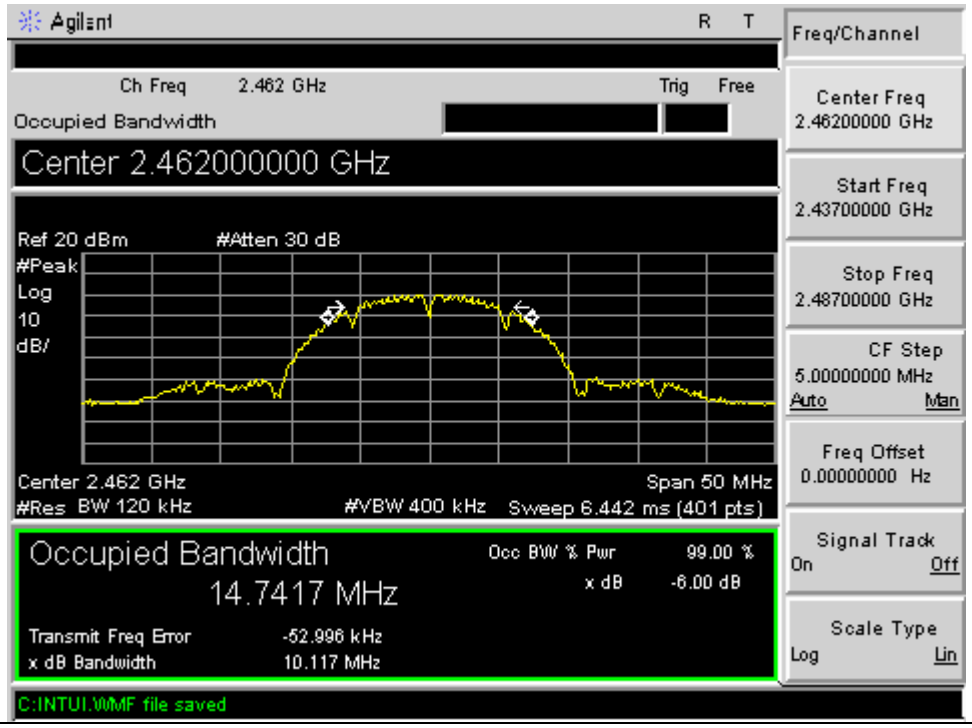
TX CH 01



TX CH 06



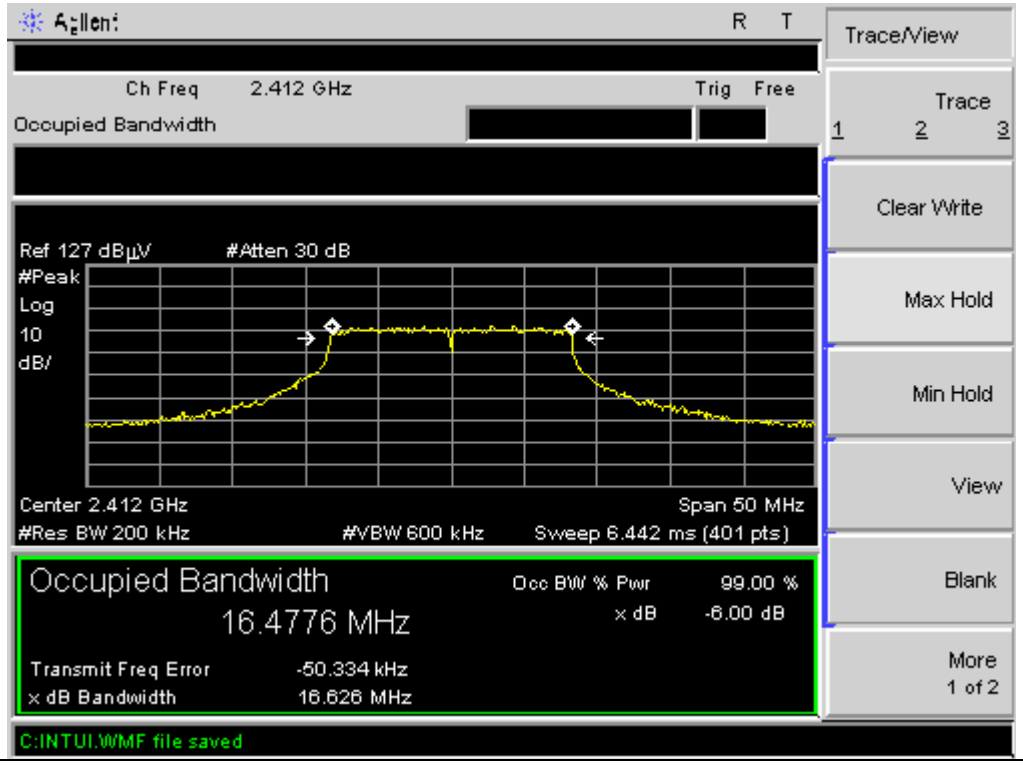
TX CH 11



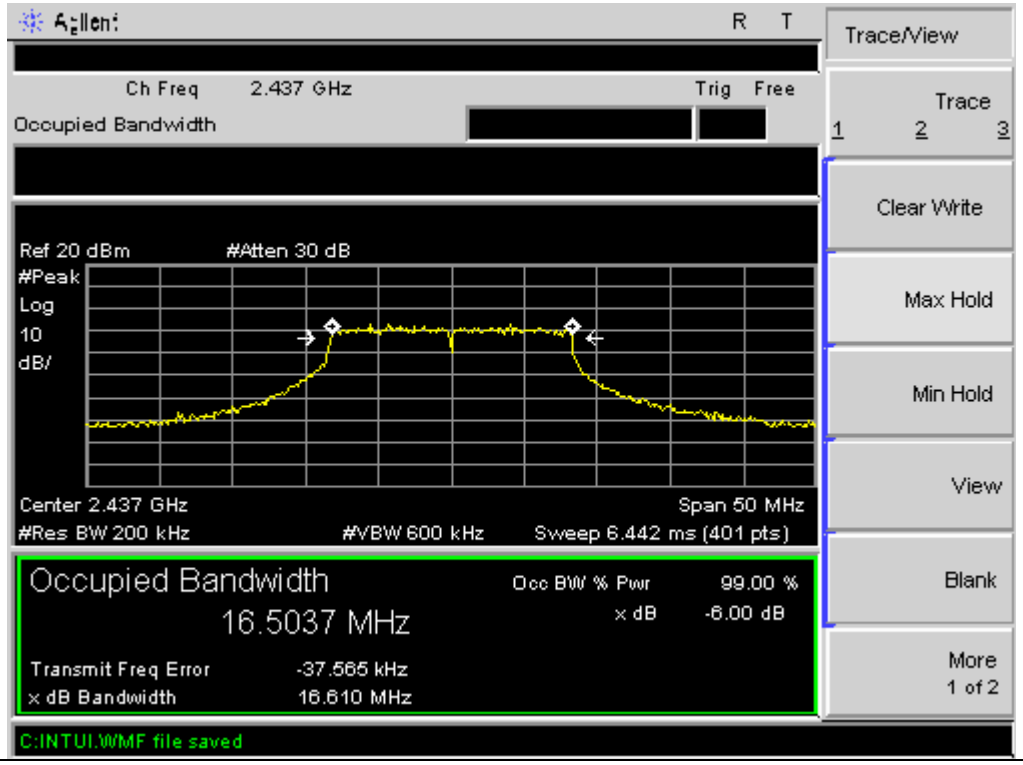
EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	TX G MODE /CH01, CH06, CH11		

Frequency	6dB Bandwidth (MHz)	Channel Separation (MHz)	Result
2412 MHz	16.626	>=500KHz	**PASS**
2437 MHz	16.610	>=500KHz	**PASS**
2462 MHz	16.656	>=500KHz	**PASS**

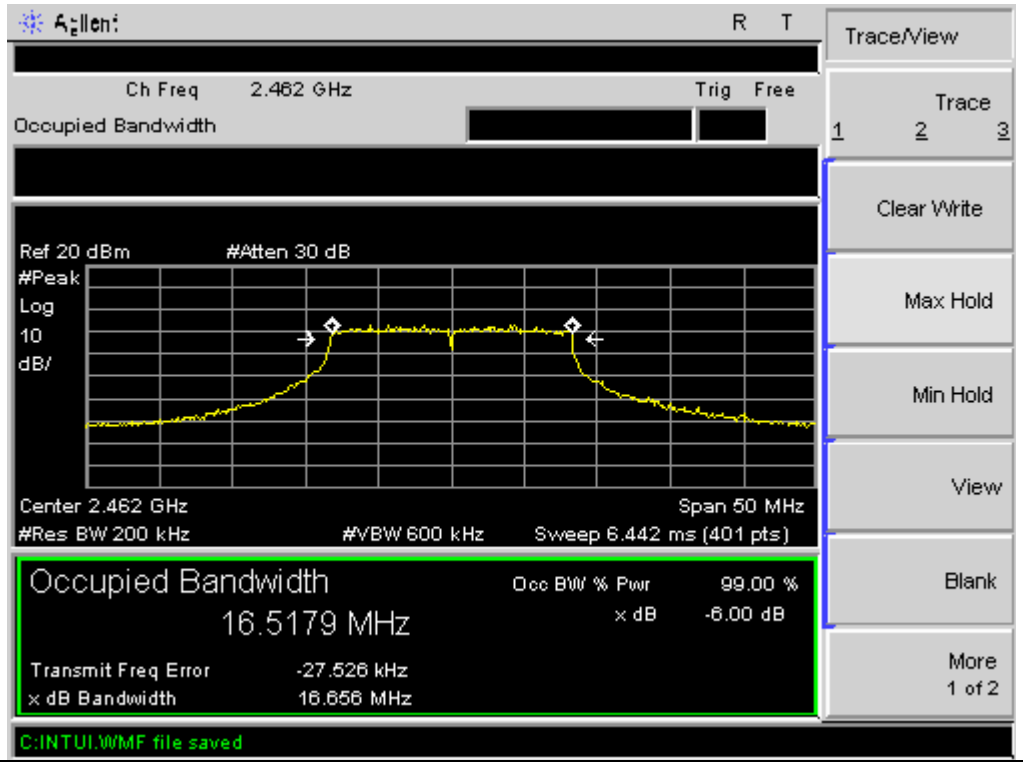
TX CH 01



TX CH 06



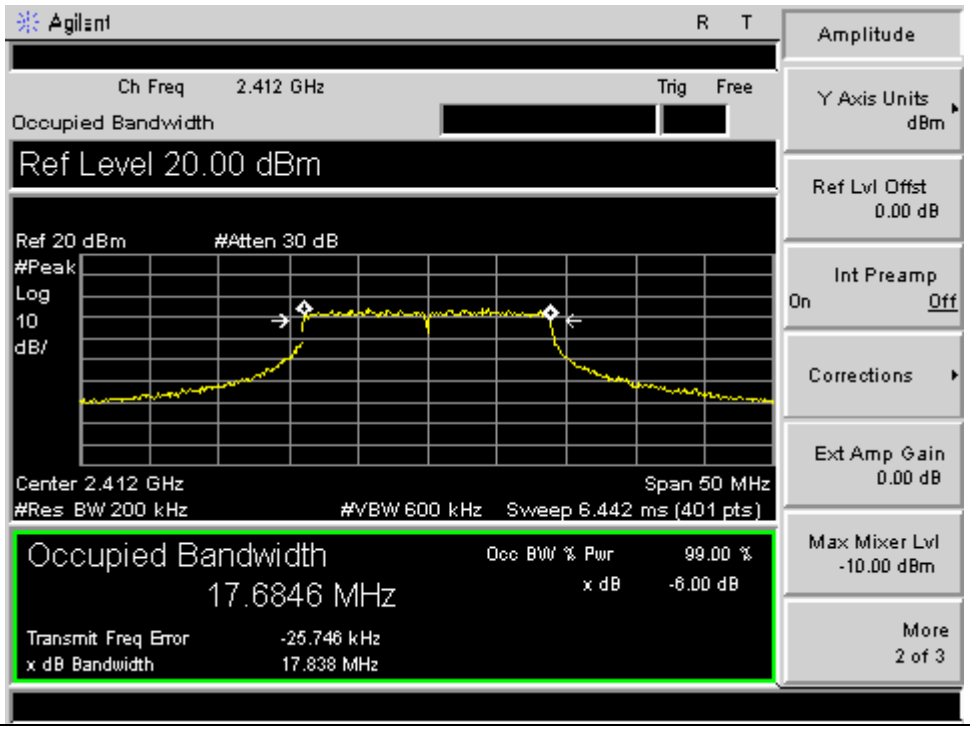
TX CH 11



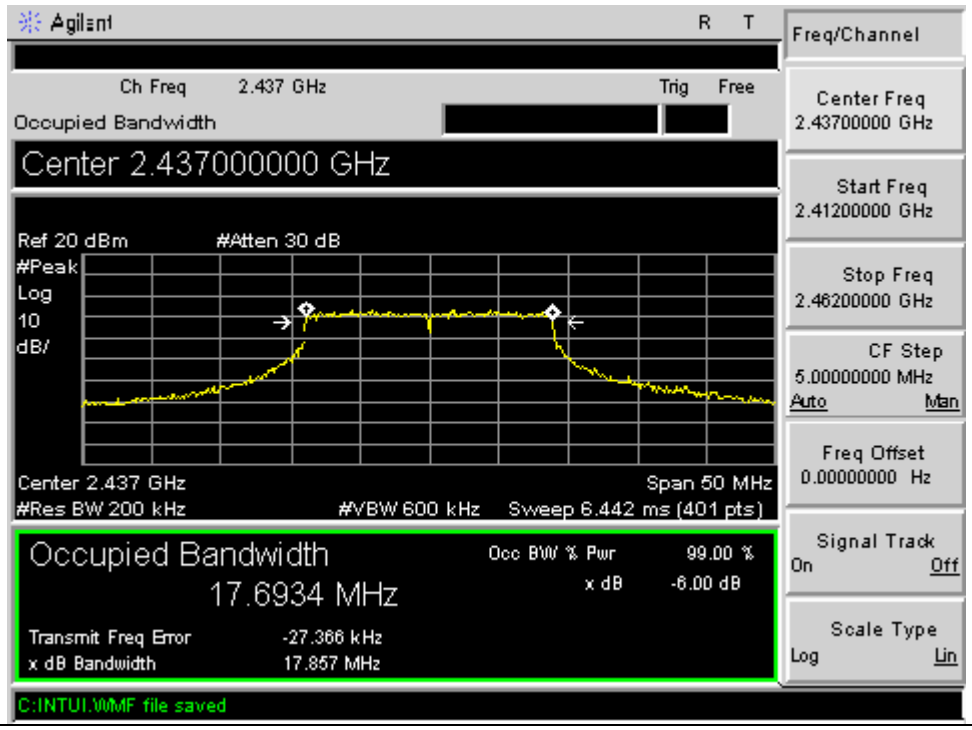
EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	TX n MODE /CH01, CH06, CH11/20MHz		

Frequency	6dB Bandwidth (MHz)	Channel Separation (MHz)	Result
2412 MHz	17.83	>=500KHz	**PASS**
2437 MHz	17.86	>=500KHz	**PASS**
2462 MHz	17.87	>=500KHz	**PASS**

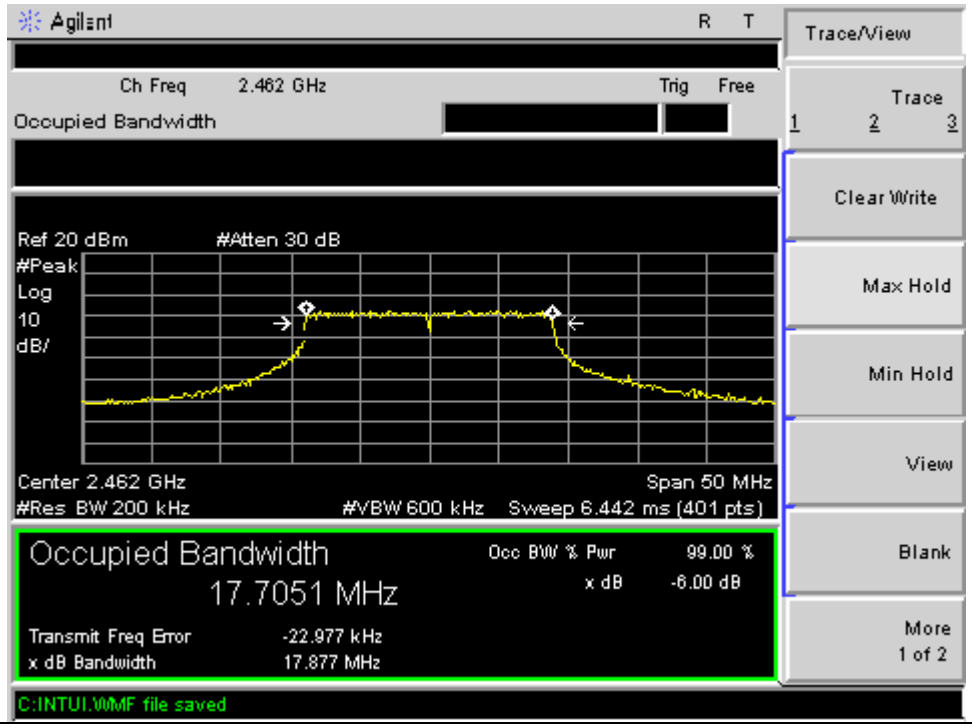
TX CH 01



TX CH 06



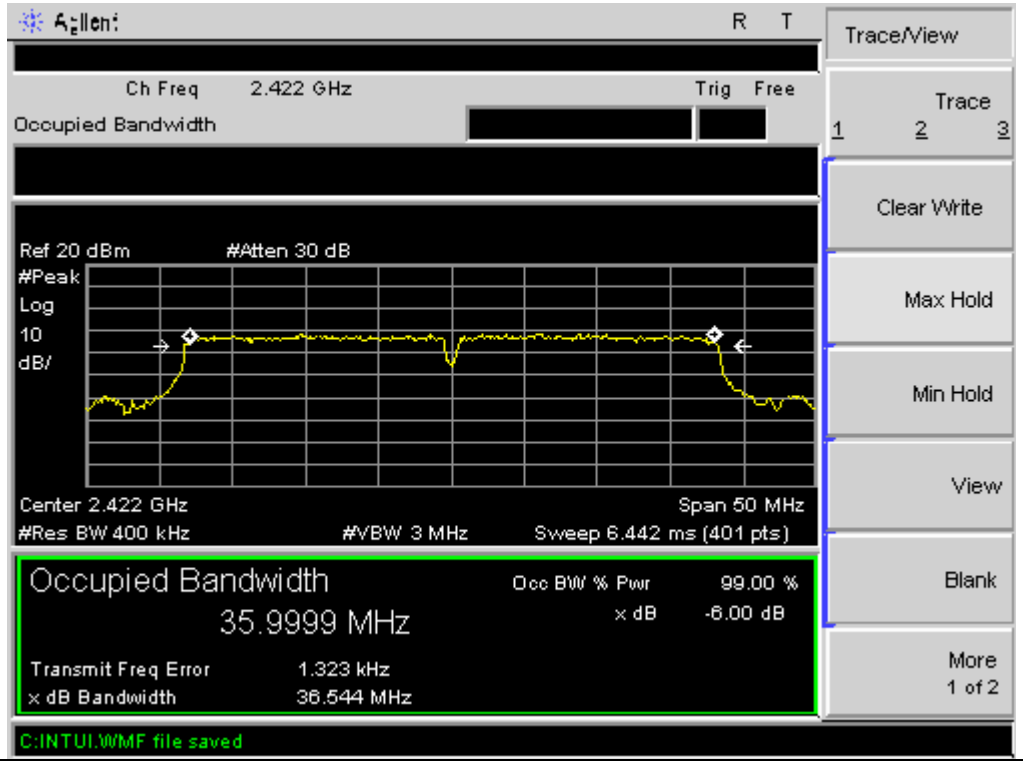
TX CH 11



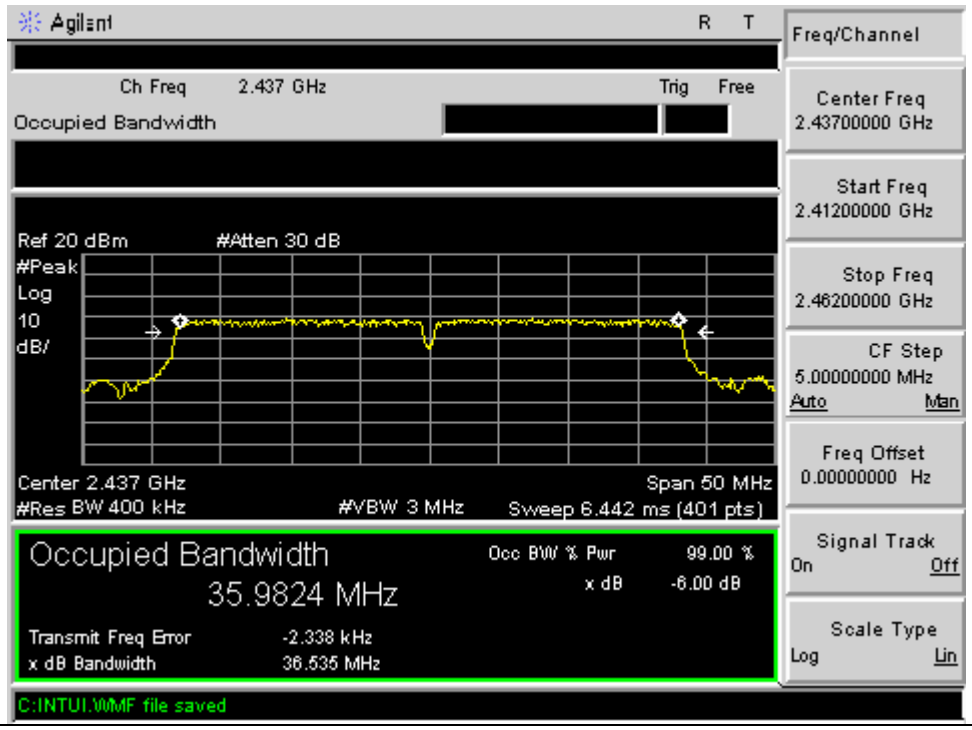
EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	TX n MODE /CH03, CH06, CH09/40MHz		

Frequency	6dB Bandwidth (MHz)	Channel Separation (MHz)	Result
2412 MHz	36.54	>=500KHz	**PASS**
2437 MHz	36.53	>=500KHz	**PASS**
2452 MHz	36.54	>=500KHz	**PASS**

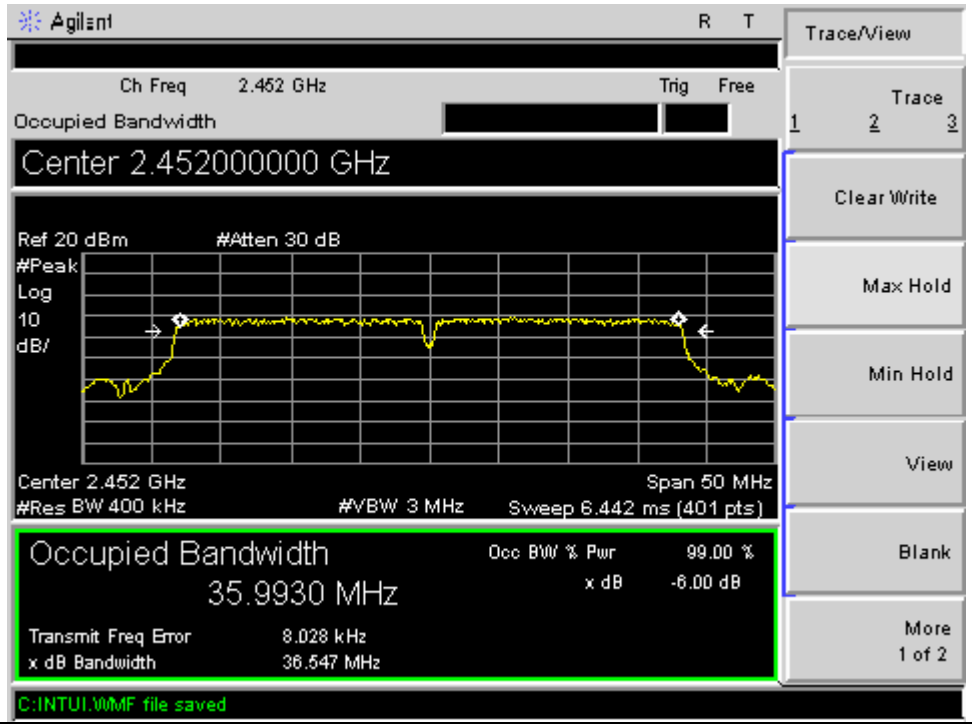
TX CH 01



TX CH 06



TX CH 11



7. PEAK OUTPUT POWER TEST

7.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C& RSS-210 Annex 8				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(1)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

7.1.1 TEST PROCEDURE

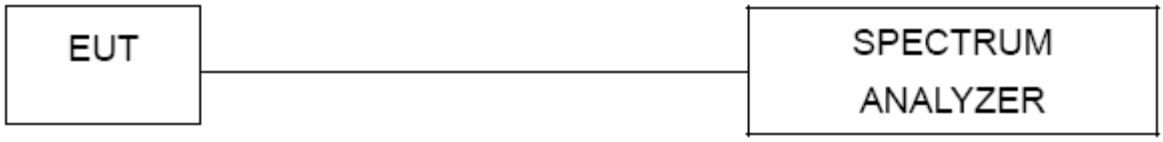
Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	5-30 % greater than the EBW
RB	1MHz
VB	3MHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

a. The EUT was directly connected to the spectrum analyzer.

7.1.2 DEVIATION FROM STANDARD

No deviation.

7.1.3 TEST SETUP



7.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.1.5 TEST RESULTS

EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	TX B MODE /CH01, CH06, CH11		

Test Channel	Frequency	Peak output power. Antenna B	Antenna Gain A(B)	**Max. Power**	LIMIT
	(MHz)	dBm	dBi	dBm	dBm
CH01	2412	10.95	5	**15.95**	30
CH06	2437	10.41	5	15.41	30
CH11	2462	10.58	5	15.58	30

EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	TX G MODE /CH01, CH06, CH11		

Test Channel	Frequency	Peak output power. Antenna B	Antenna Gain A(B)	**Max. Power**	LIMIT
	(MHz)	dBm	dBi	dBm	dBm
CH01	2412	9.94	5	**14.94**	30
CH06	2437	9.78	5	14.78	30
CH11	2462	9.68	5	14.68	30

EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	TX N MODE /CH01, CH06, CH11/20MHz		

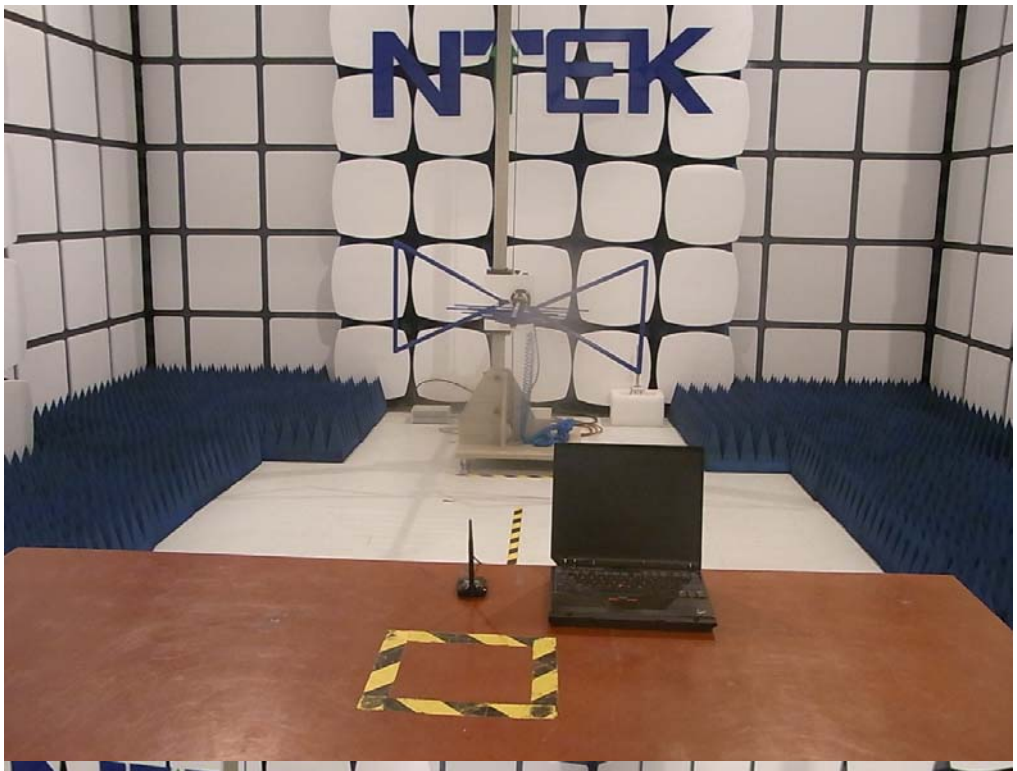
Test Channel	Frequency	Peak output power. Antenna B	Antenna Gain A(B)	**Max. Power**	LIMIT
	(MHz)	dBm	dBi	dBm	dBm
CH01	2412	10.85	5	**15.85**	30
CH06	2437	10.48	5	15.48	30
CH11	2462	10.65	5	15.65	30

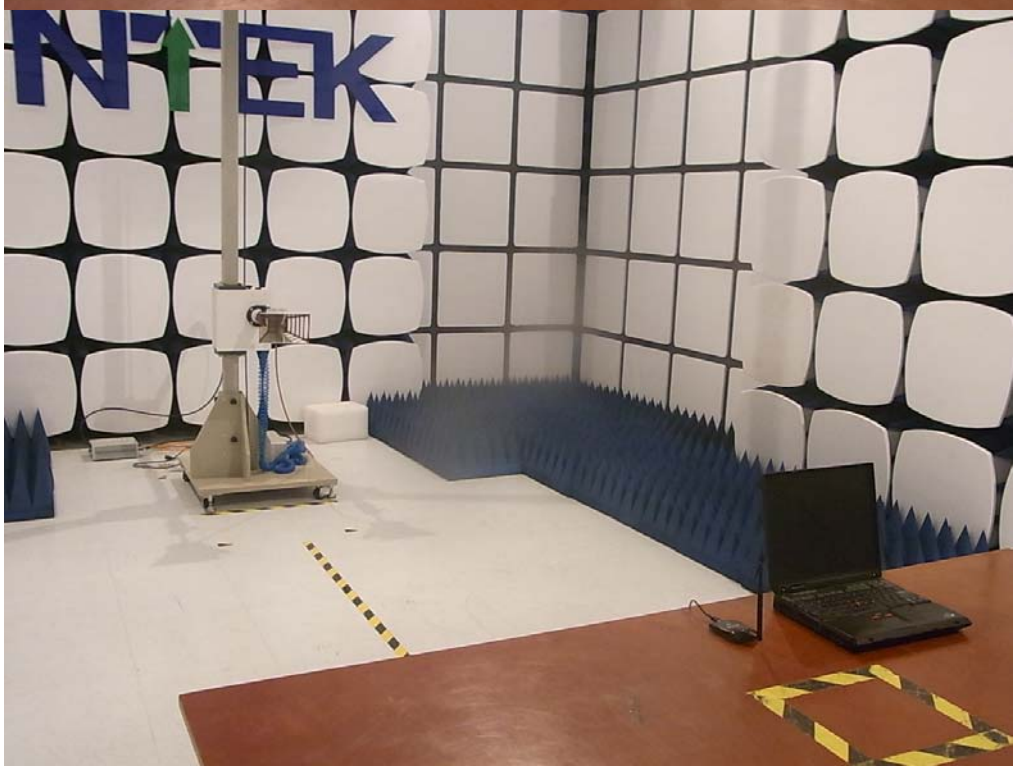
EUT：	IEEE802.11n long Range USB adapter	Model Name ：	AWUS036NHA
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 5V From PC AC 120V/60Hz
Test Mode ：	TX N MODE /CH03, CH06, CH09/40MHz		

Test Channel	Frequency	Peak output power. Antenna A(B)	Antenna Gain A(B)	**Max. Power**	LIMIT
	(MHz)	(dBm)	dBi	dBm	dBm
CH03	2422	8.87	5	13.87	30
CH06	2437	8.91	5	**13.91**	30
CH09	2452	8.88	5	13.88	30

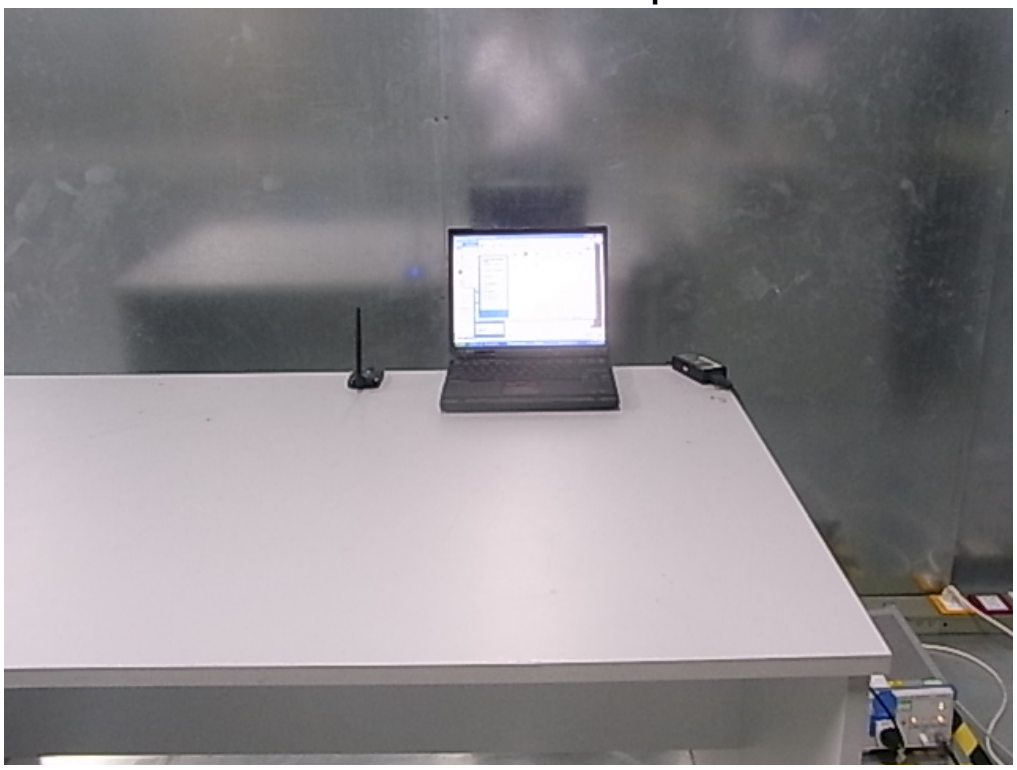
8. EUT TEST PHOTO

Radiated Measurement Photos

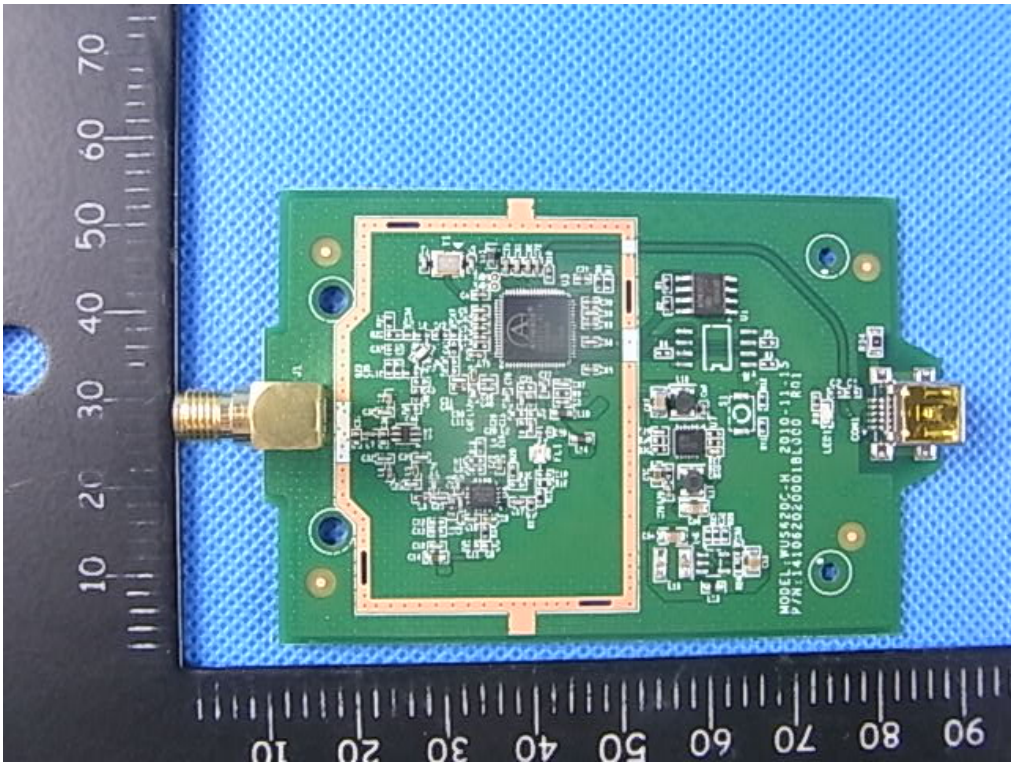




Conducted Measurement photos



APPENDIX-PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS

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