

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT INTIONAL RADIATOR CERTIFICATION

Product Name : MaxiDAS
Model Number : DS708
Trade Name : **Autel®**
FCC ID : XPRMAXIDASDS708
Report Number : SZEE090812119713-4
Date : Aug. 31, 2009

Standards	Results
☒ FCC Part 15: 2008	PASS

Prepared for:

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Prepared by:

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CENTRE TESTING INTERNATIONAL CORPORATION**

Building C, Hongwei Industrial Zone, Baoan 70 District, Shenzhen

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<i>N/A means not applicable.</i>	

1. CERTIFICATION INFORMATION

Applicant & Address: Autel Intelligent Technology Co., Ltd
Rm.2205-2206, Overseas Chinese Scholars Venture Bldg.,
Hi-Tech Industrial Park, Nanshan District, Shenzhen 518057,
China

Manufacturer & Address: Autel Intelligent Technology Co., Ltd
Rm.2205-2206, Overseas Chinese Scholars Venture Bldg.,
Hi-Tech Industrial Park, Nanshan District, Shenzhen 518057,
China

Type of Test: FCC Part 15 SUBPART C

FCC ID: XPRMAXIDASDS708

Equipment Under Test: MaxiDAS

Model Name: DS708

Technical Date: Adaptor: I/P: AC100-240V 50/60Hz 0.6A
O/P: DC12V 2A

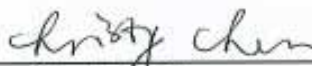
Serial Number: N/A

Date of test: Aug. 12, 2009 to Aug. 31, 2009

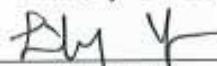
Condition of Test Sample: Normal

The above equipment was tested by Centre Testing International for compliance with the requirements set forth in the FCC Rules and Regulations Part 15, Subpart C and the measurement procedure according to ANSI C63.4.
The test results of this report relate only to the tested sample identified in this report.

Prepared by :


Christy Chen

Reviewed by :


Lily Yan

Approved by :


Jim Zhang
Manager

Date

:

Aug. 31, 2009

2. TEST SUMMARY

EMISSION -- FCC Part 15			
Clause	Test Item	Rule	Result
6	AC Power Line Conducted Emissions	15.207	PASS
7	Maximum Peak Conducted Output Power	15.247(b)(3)	PASS
8	Power Spectral Density	15.247(e)	PASS
9	6dB Spectrum Bandwidth	15.247(a)(2)	PASS
10	Radiated Emission	15.209	PASS
11	Band Edge Emission	15.247(d)	PASS

TABLE FOR TEST MODES				
Voltage:	AC120V/ 60Hz	Mode:	Max. Transmitting & normal	
Temperature:	24	Humidity:	54%	
Test Items		Mode - Modulation	Data Rate (Mbps)	Channel
AC Power Line Conducted Emissions		802.11b – DSSS	11	CH6
		802.11g – OFDM	54	CH6
Maximum Peak Conducted Output Power Power Spectral Density 6dB Spectrum Bandwidth Radiated Emission		802.11b – DSSS	1/11	CH1 CH6 CH11
		802.11g – OFDM	6 /24 / 54	
Band Edge Emission		802.11b – DSSS	1/11	Ch1 Ch11
		802.11g – OFDM	6 /24 / 54	

3. MEASUREMENT UNCERTAINTY

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement items	Uncertainty
AC Power Line Conducted Emissions	2.6 dB
Maximum Peak Conducted Output Power	0.5 dB
Power Spectral Density	0.5 dB
6dB Spectrum Bandwidth	--
Radiated Emissions / Band Edge Emissions	3.4 dB

4. PRODUCT INFORMATION

Items	Description
Rating	AC100-240V 50/60Hz 0.6A
Intentional Transceiver	Intentional Transceiver
Modulation	802.11b: DSSS with BPSK, QPSK, CCK 802.11g: OFDM with BPSK, QPSK, 16QAM, 64QAM
Data Rate	802.11b: 11/5.5/2/1 Mbps 802.11g: 54/48/36/24/18/12/9/6 Mbps Auto fallback
Frequency Range	2400 ~ 2483.5MHz
Channel Number	11
Transmit Power	802.11b: 25.09dBm 802.11g: 24.16dBm
Antenna	Printed Antenna: Peak gain 1.5dBi, Average gain -2dBi

5. TEST EQUIPMENT

Equipment	Manufacturer	Model Number	Serial Number	Last Calibration Date	Next Calibration Date
Shielding Room No. 1 —AC Power Line Conducted Emissions Measurement					
Receiver	R&S	ESCI	100435	01/29/2009	01/28/2010
LISN	R&S	ENV216	100098	06/13/2009	06/12/2010
3M Semi-anechoic Chamber — Radio Test Site					
Spectrum Analyzer	Agilent	E4443A	MY45300910	09/07/2008	09/06/2009
Biconilog Antenna	A.H.System	SAS-521-2	487	06/05/2009	06/04/2010
Horn Antenna	ETS-LINDGREN	3117	00057407	07/30/2009	07/29/2010
Loop Antenna	ETS-LINDGREN	6502	00071730	07/24/2009	07/23/2010
3M Chamber & Accessories	ETS-LINDGREN	FACT-3	N/A	05/11/2009	05/10/2010

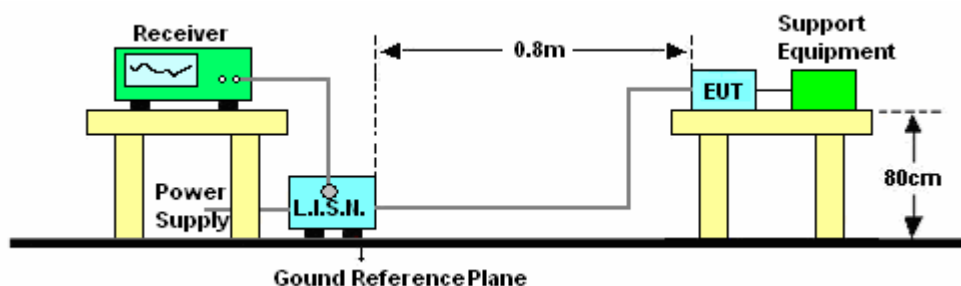
6. AC POWER LINE CONDUCTED EMISSIONS MEASUREMENT

6.1 LIMITS

Frequency (MHz)	Conducted Limit (dBuV) – Class B Digital Device	
	Q.P.	Average(dBuV)
0.150 – 0.5	66-56	56-46
0.5 – 5	56	46
5 - 30	60	50

Note: the tighter limit applies at the band edges.

6.2 BLOCK DIAGRAM OF TEST SETU

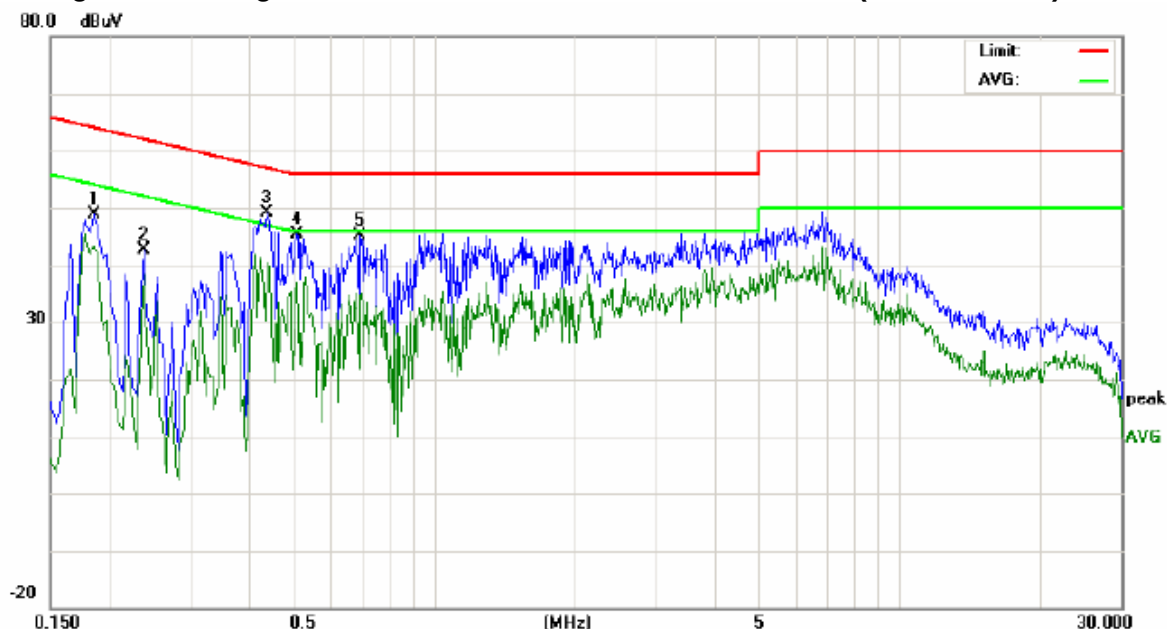


6.3 TEST PROCEDURE

- The EUT was placed 0.4 meters from the conducting wall of the shielded room and connected to the main through Line Impedance Stability Network (LISN). This provided a 50ohm coupling impedance for the tested equipments.
- The bandwidth of the field strength meter (Receiver) was set at 9kHz in 150kHz ~ 30MHz.
- The disturbance levels and the frequencies of at least two highest disturbances were recorded from each power line which comprises the EUT.

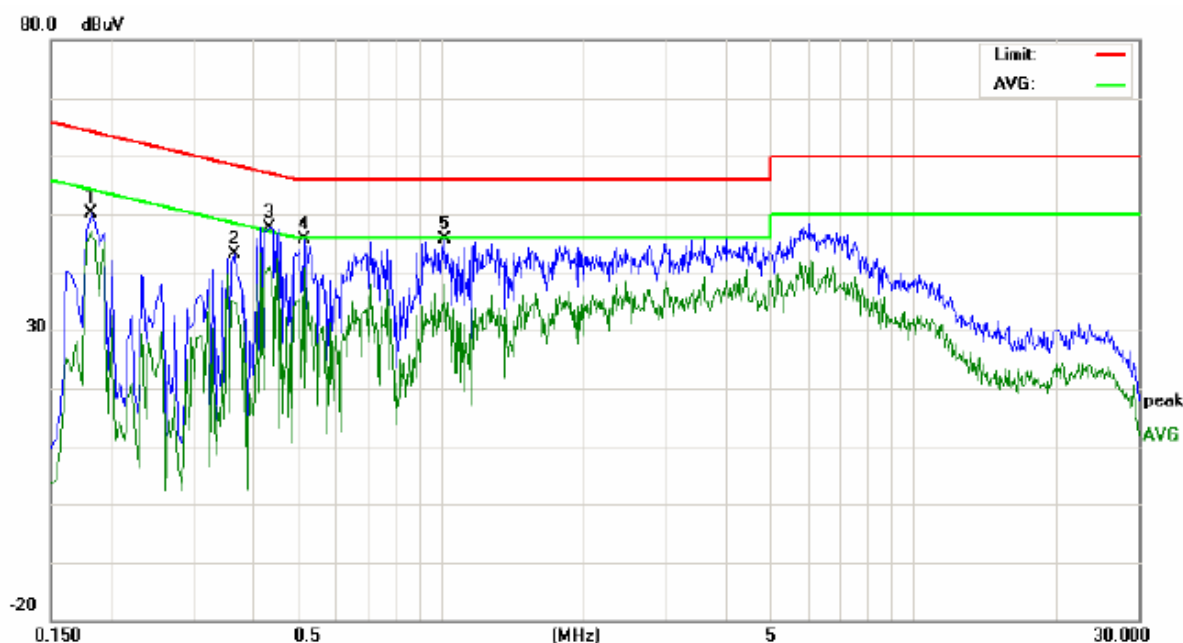
6.4 TEST RESULT

Figure 1: Test figure of Conducted disturbance on AC mains (802.11b mode)



Site site #1 Phase: **L1** Temperature: 24
Limit: FCC Class B Conduction (QP) Power: AC 120V/60Hz Humidity: 53 %
EUT: MaxiDAS
M/N: DS708
Mode: IEEE 80211b_CH6_11MHz
Note:

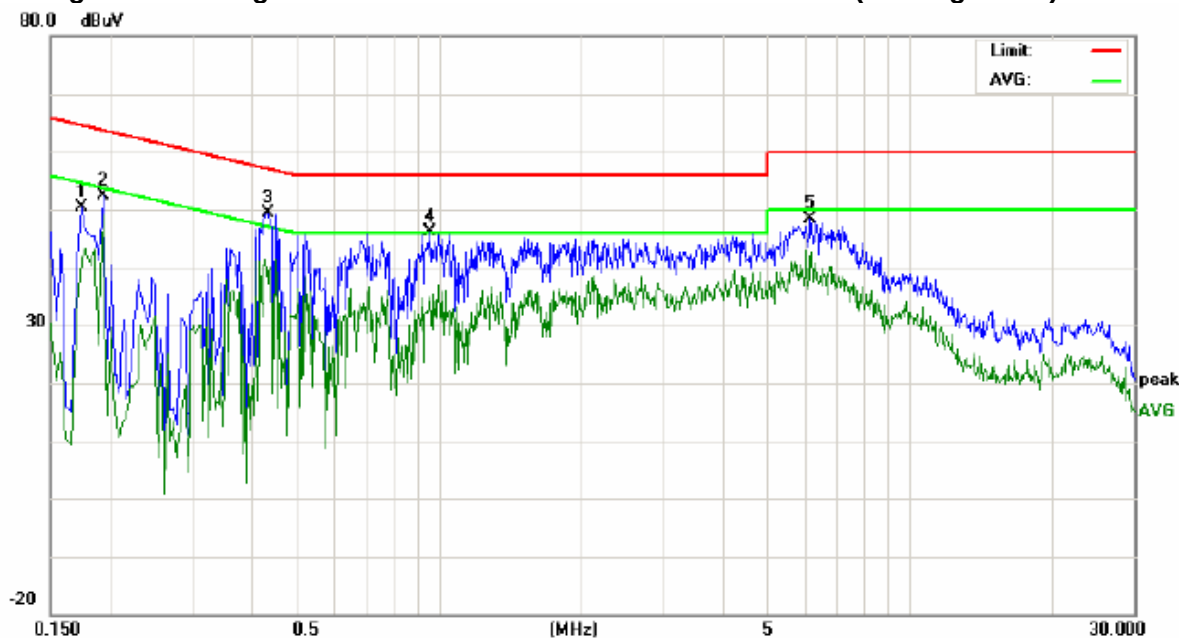
No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1860	38.81	39.35	30.21	9.95	48.76	49.30	40.16	64.21	54.21	-14.91	-14.05	P	
2	0.2380	32.63	28.55	15.03	9.94	42.57	38.49	24.97	62.17	52.17	-23.68	-27.20	P	
3	0.4380	39.12	37.52	24.73	9.94	49.06	47.46	34.67	57.10	47.10	-9.64	-12.43	P	
4	0.5100	35.35	34.36	20.82	9.93	45.28	44.29	30.75	56.00	46.00	-11.71	-15.25	P	
5	0.6940	35.47	32.11	18.75	9.76	45.23	41.87	28.51	56.00	46.00	-14.13	-17.49	P	



Site site #1 Phase: **N** Temperature: 24
 Limit: FCC Class B Conduction (QP) Power: AC 120V/60Hz Humidity: 53 %
 EUT: MaxiDAS
 M/N: DS708
 Mode: IEEE 80211b_CH6_11MHz
 Note:

No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1820	40.26	40.11	30.66	9.95	50.21	50.06	40.61	64.39	54.39	-14.33	-13.78	P	
2	0.3660	33.07	31.09	20.04	9.94	43.01	41.03	29.98	58.59	48.59	-17.56	-18.61	P	
3	0.4340	37.80	37.11	25.23	9.94	47.74	47.05	35.17	57.18	47.18	-10.13	-12.01	P	
4	0.5140	35.68	34.69	20.71	9.93	45.61	44.62	30.64	56.00	46.00	-11.38	-15.36	P	
5	1.0260	35.80	31.47	20.12	9.87	45.67	41.34	29.99	56.00	46.00	-14.66	-16.01	P	

Figure 2: Test figure of Conducted disturbance on AC mains (802.11g mode)



Site site #1

Phase: **L1**

Temperature: 24

Limit: FCC Class B Conduction (QP)

Power: AC 120V/60Hz

Humidity: 53 %

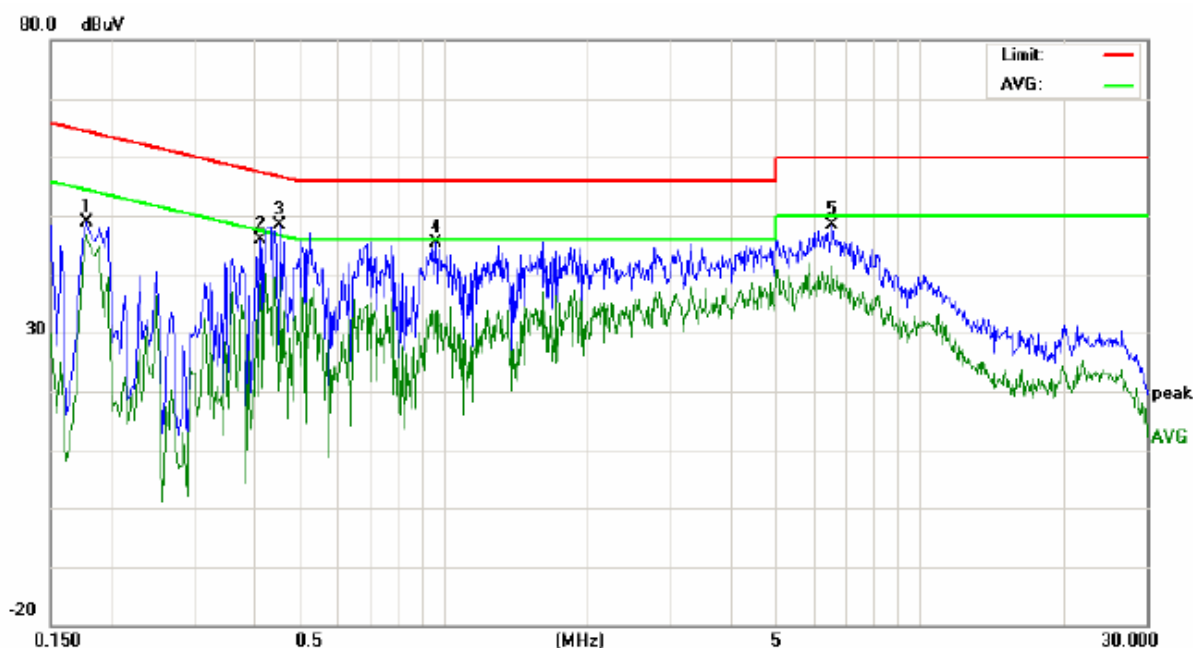
EUT: MaxiDAS

M/N: DS708

Mode: IEEE 80211g_CH6_54MHz

Note:

No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1740	40.31	39.01	24.18	9.96	50.27	48.97	34.14	64.77	54.77	-15.80	-20.63	P	
2	0.1940	42.49	39.52	27.10	9.94	52.43	49.46	37.04	63.86	53.86	-14.40	-16.82	P	
3	0.4340	39.51	37.45	25.66	9.94	49.45	47.39	35.60	57.18	47.18	-9.79	-11.58	P	
4	0.9620	36.32	32.18	21.86	9.85	46.17	42.03	31.71	56.00	46.00	-13.97	-14.29	P	
5	6.1700	38.58	33.29	25.46	9.86	48.44	43.15	35.32	60.00	50.00	-16.85	-14.68	P	



Site site #1 Phase: **N** Temperature: 24
 Limit: FCC Class B Conduction (QP) Power: AC 120V/60Hz Humidity: 53 %
 EUT: MaxiDAS
 M/N: DS708
 Mode: IEEE 80211g_CH6_54MHz
 Note:

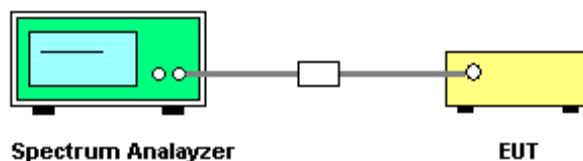
No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1780	38.99	40.43	29.22	9.95	48.94	50.38	39.17	64.58	54.58	-14.20	-15.41	P	
2	0.4140	36.00	36.12	23.64	9.94	45.94	46.06	33.58	57.57	47.57	-11.51	-13.99	P	
3	0.4540	38.43	36.55	21.83	9.94	48.37	46.49	31.77	56.80	46.80	-10.31	-15.03	P	
4	0.9660	35.61	33.27	20.69	9.86	45.47	43.13	30.55	56.00	46.00	-12.87	-15.45	P	
5	6.5900	38.47	33.45	25.16	9.86	48.33	43.31	35.02	60.00	50.00	-16.69	-14.98	P	

7. MAXIMUM PEAK OUTPUT POWER MEASUREMENT

7.1 LIMITS

The limit for peak output power is 1 Watt (30dBm).

7.2 BLOCK DIAGRAM OF TEST SETUP



7.3 TEST PROCEDURE

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Set spectrum analyzer's RBW and VBW to applicable value with Peak in Max Hold.
3. Record the channel power within 99% occupied bandwidth.

7.4 TEST RESULT

Measured Power= Reading Power + Antenna Gain + 10*log(1/x) + Cable Loss

Where, x means Duty Cycle measurement = $T_{on} / (T_{on} + T_{off}) = 100\%$; Cable Loss = 0.3dB;

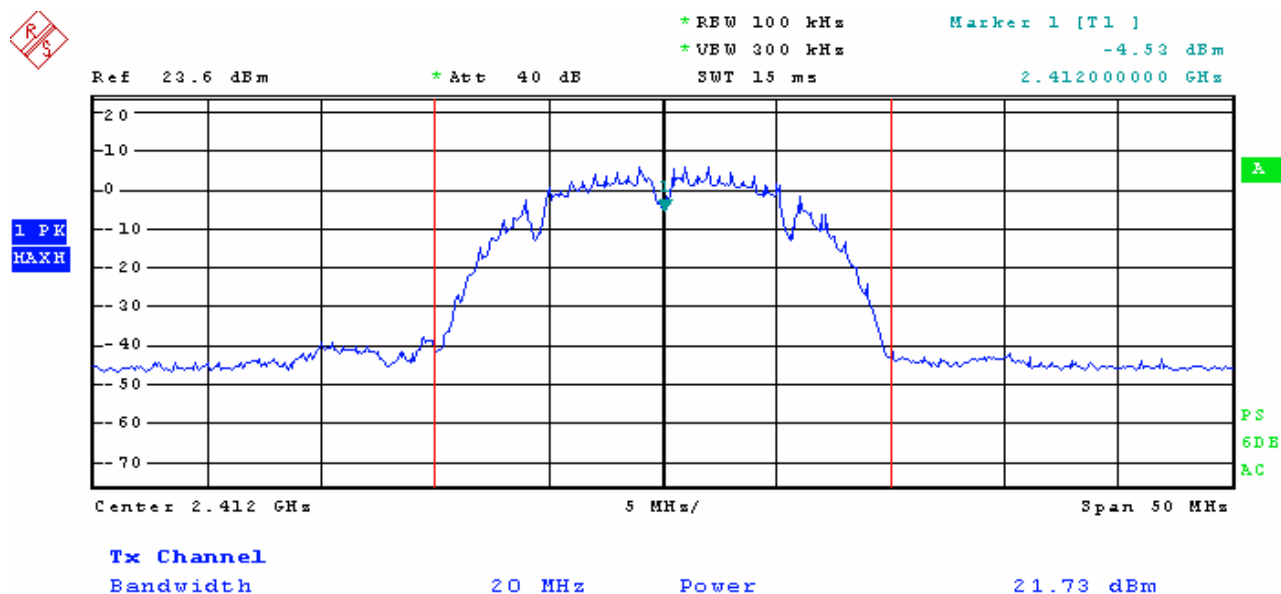
Antenna Gain = 1.5dBi

Mode - Modulation	Data Rate	Channel	Reading Power (dBm)	Measured Power (dBm)	Max. Limit (dBm)	Result (P/F)
802.11b – DSSS	1 Mbps	CH1	21.73	23.53	30	P
		CH6	22.36	24.16	30	P
		CH11	21.77	23.57	30	P
	11 Mbps	CH1	23.15	24.95	30	P
		CH6	23.16	24.96	30	P
		CH11	23.29	25.09	30	P
802.11g – OFDM	6 Mbps	CH1	17.04	18.84	30	P
		CH6	18.37	20.17	30	P
		CH11	19.55	21.35	30	P
	24 Mbps	CH1	17.94	19.74	30	P
		CH6	18.89	20.69	30	P
		CH11	19.76	21.56	30	P
	54 Mbps	CH1	18.43	20.23	30	P
		CH6	18.86	20.66	30	P
		CH11	20.44	22.24	30	P

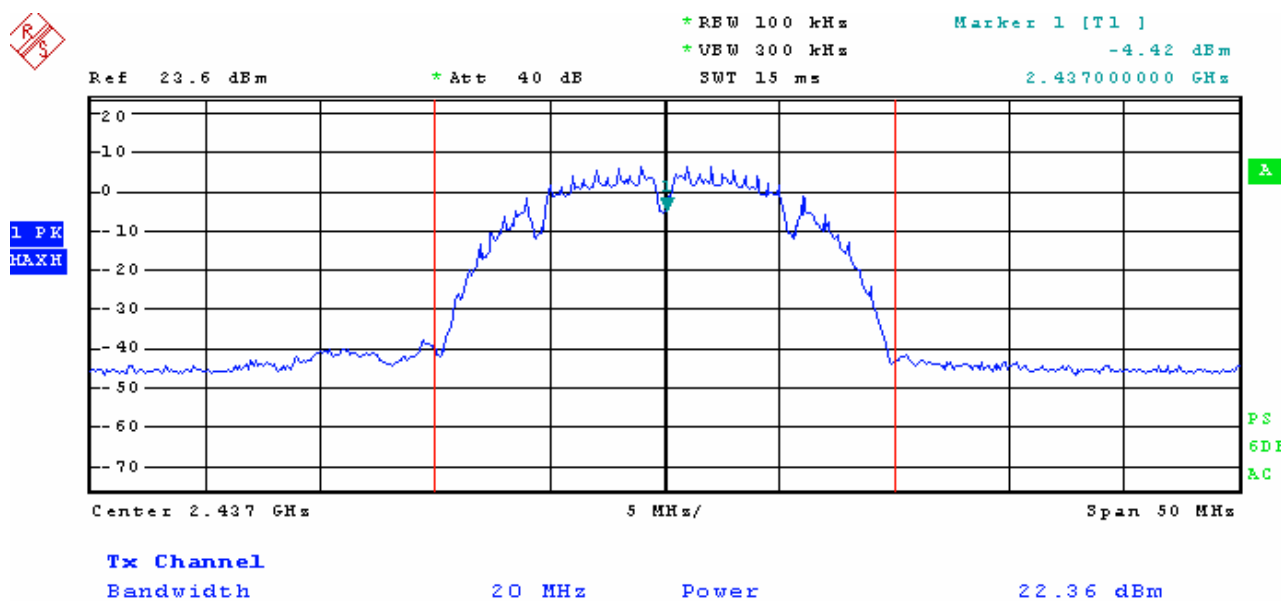
The unit does meet the FCC requirements. Please refer the graphs as below:

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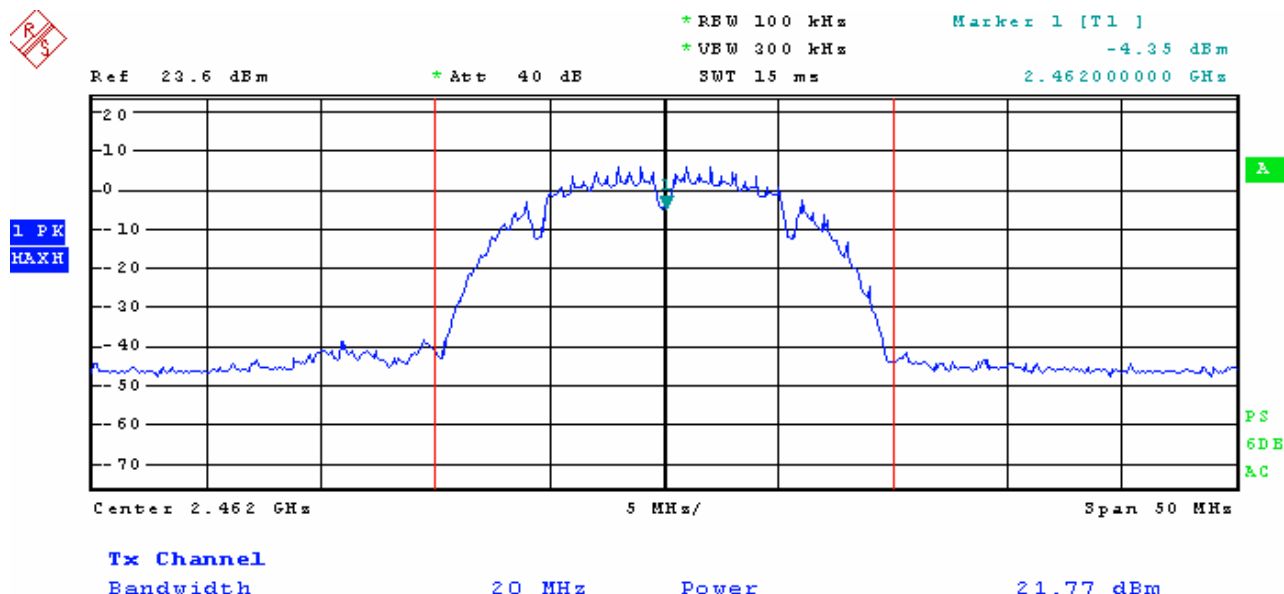
Figure 3: Test figure of Maximum Peak Output Power



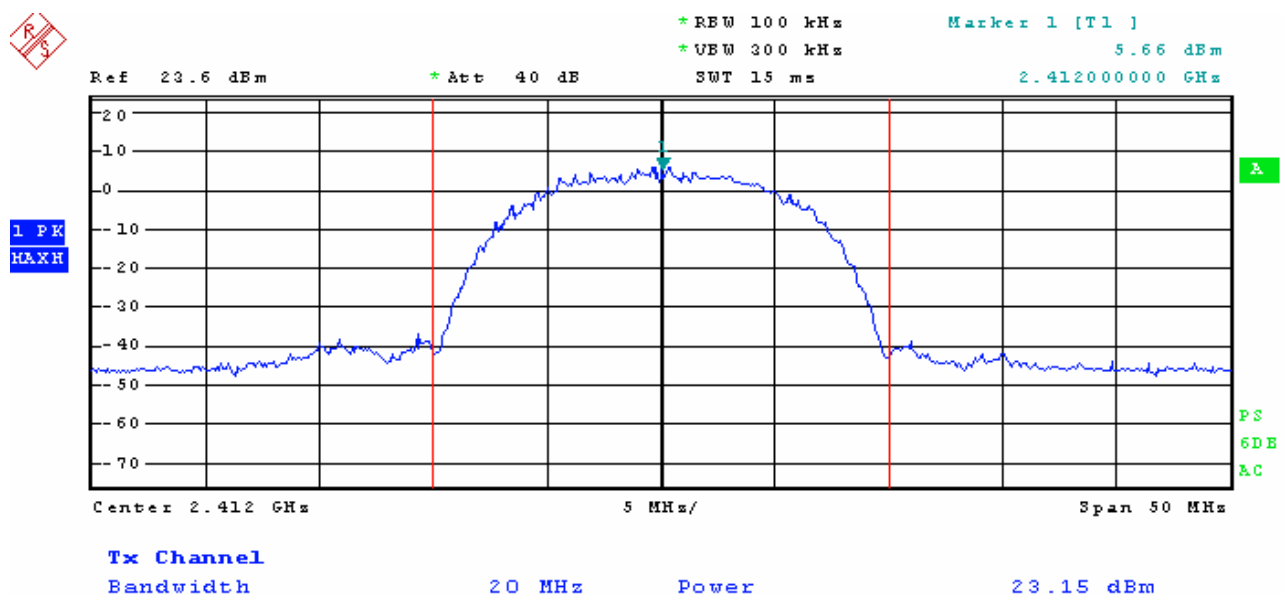
IEEE 802.11b, CH low, 1Mbps



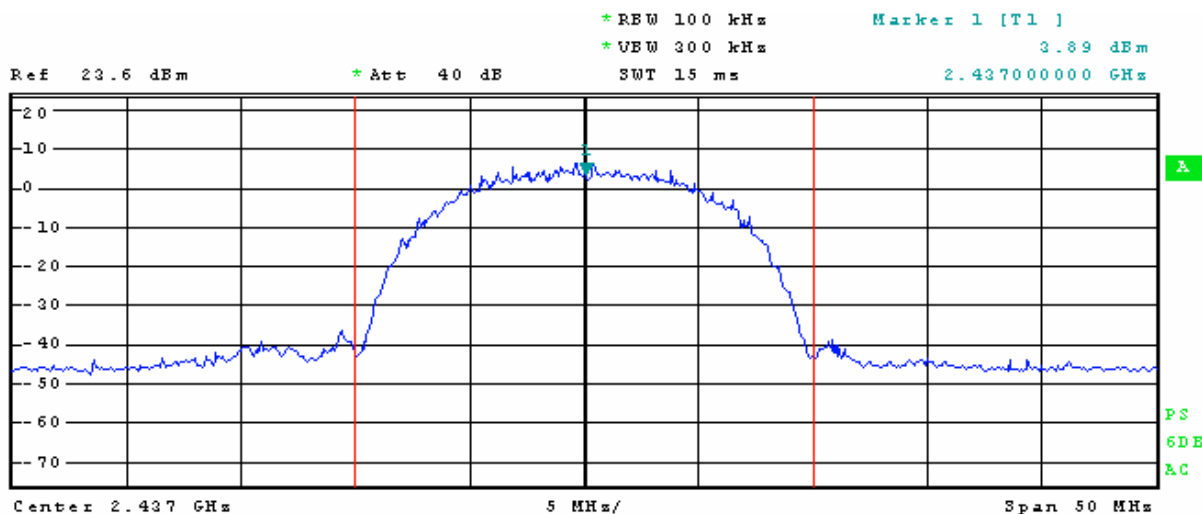
IEEE 802.11b, CH middle, 1Mbps



IEEE 802.11b, CH high, 1Mbps



IEEE 802.11b, CH low, 11Mbps



Tx Channel

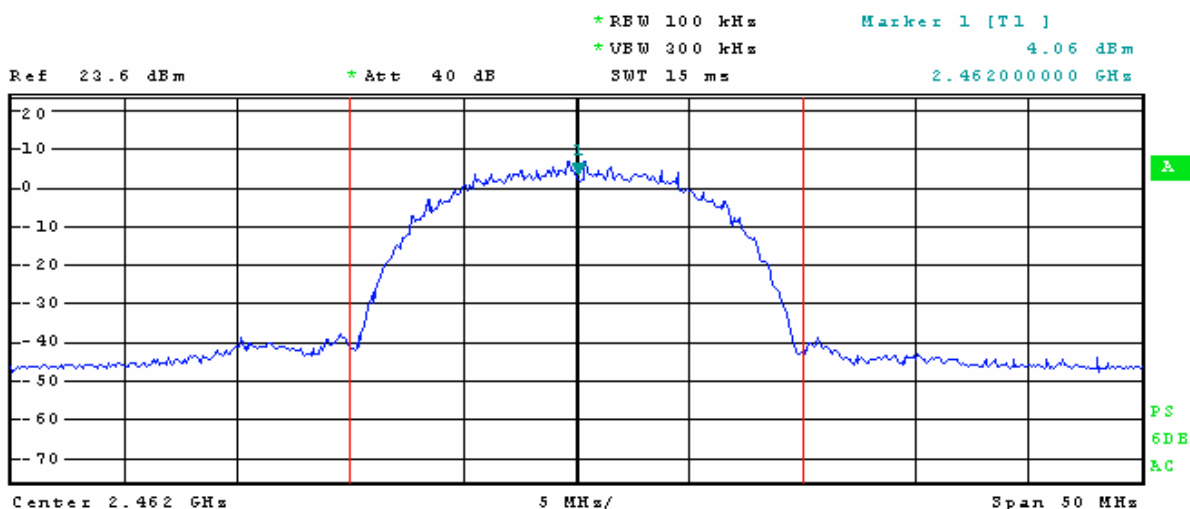
Bandwidth

20 MHz

Power

23.16 dBm

IEEE 802.11b, CH middle, 11Mbps



Tx Channel

Bandwidth

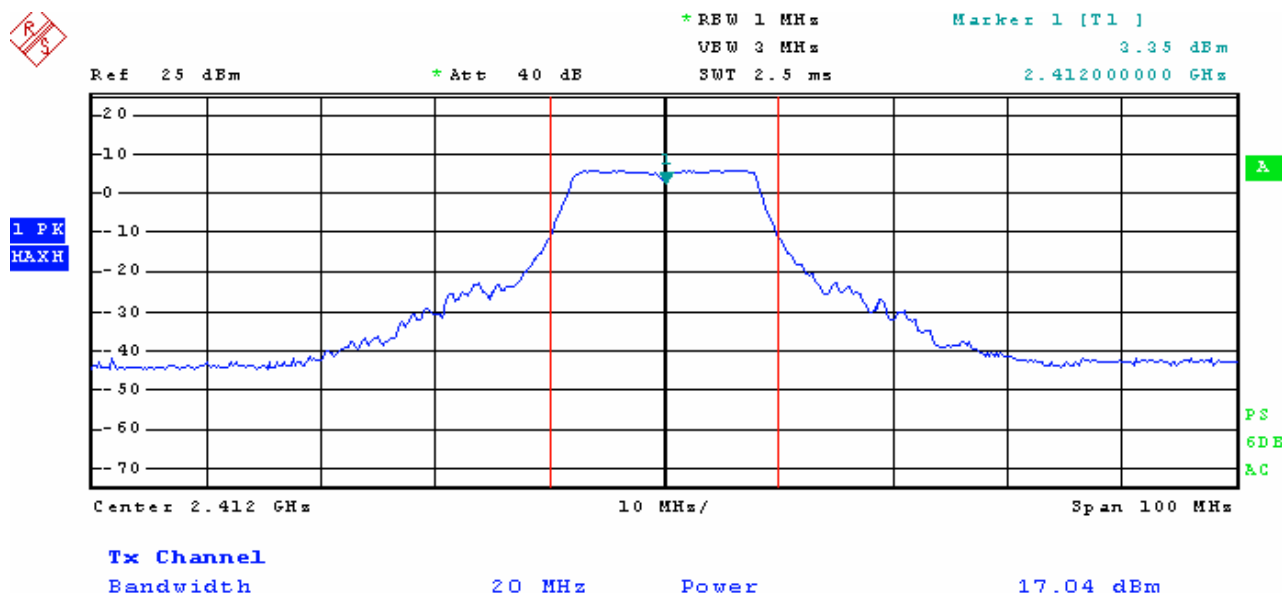
20 MHz

Power

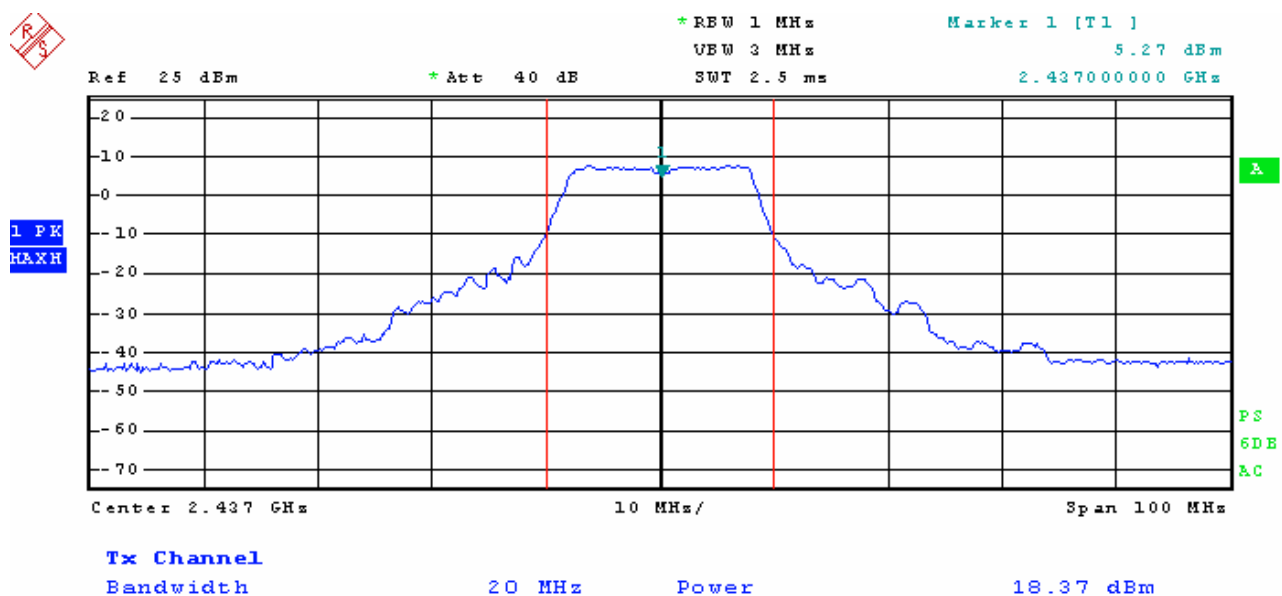
23.29 dBm

IEEE 802.11b, CH high, 11Mbps

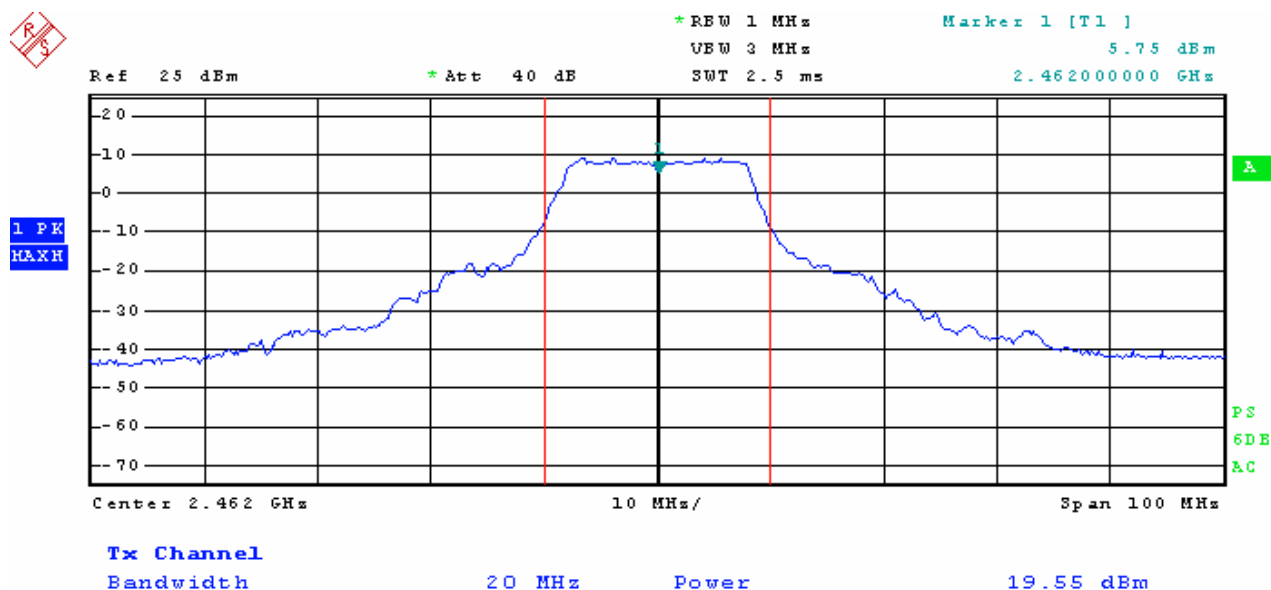




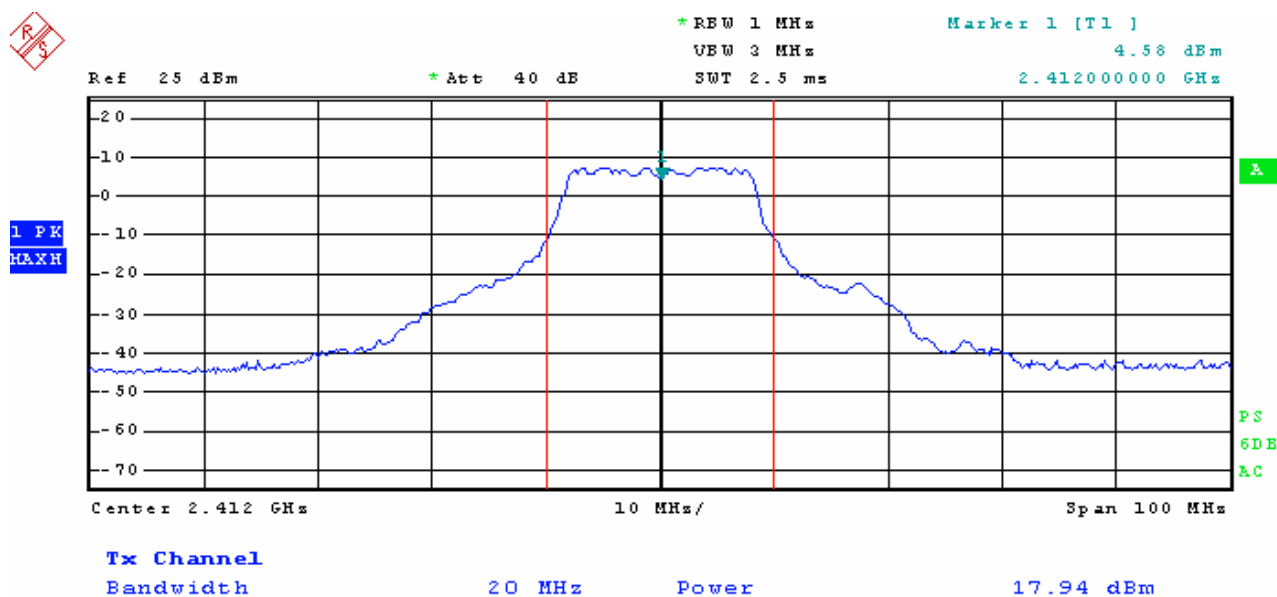
IEEE 802.11g, CH low, 6Mbps



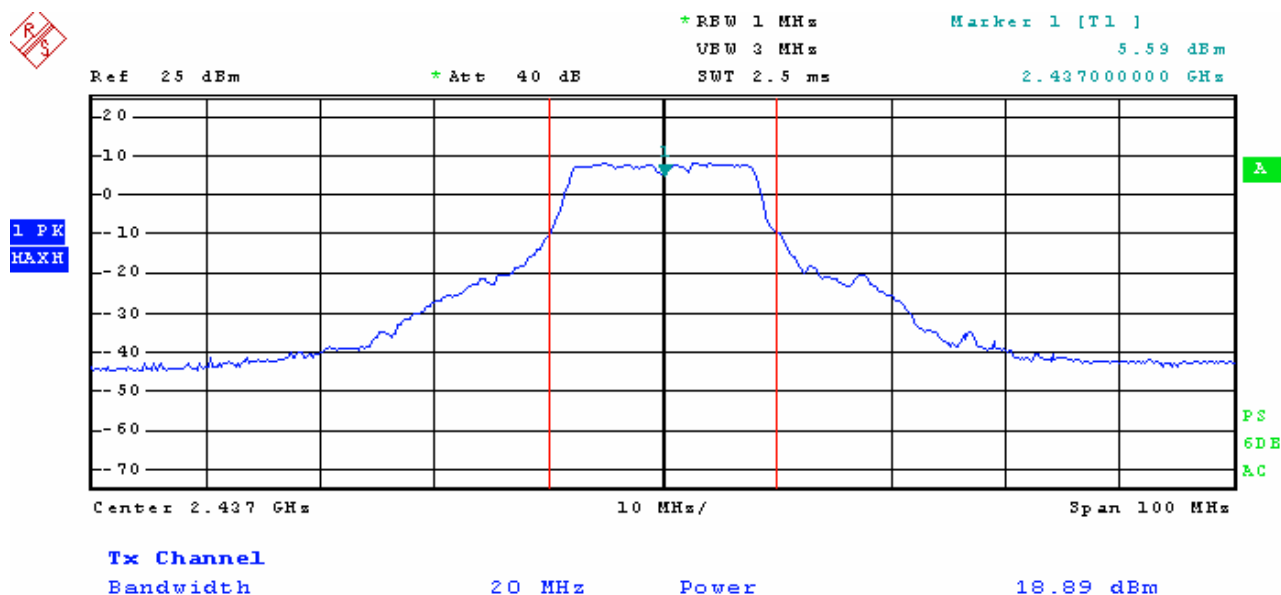
IEEE 802.11g, CH middle, 6Mbps



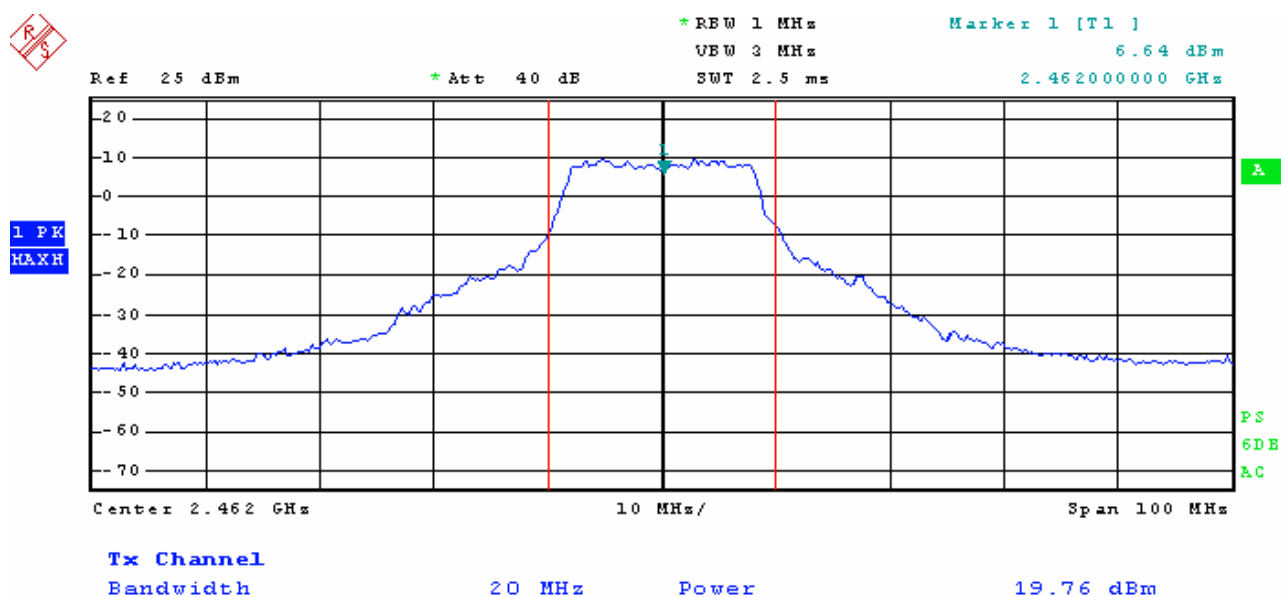
IEEE 802.11g, CH high, 6Mbps



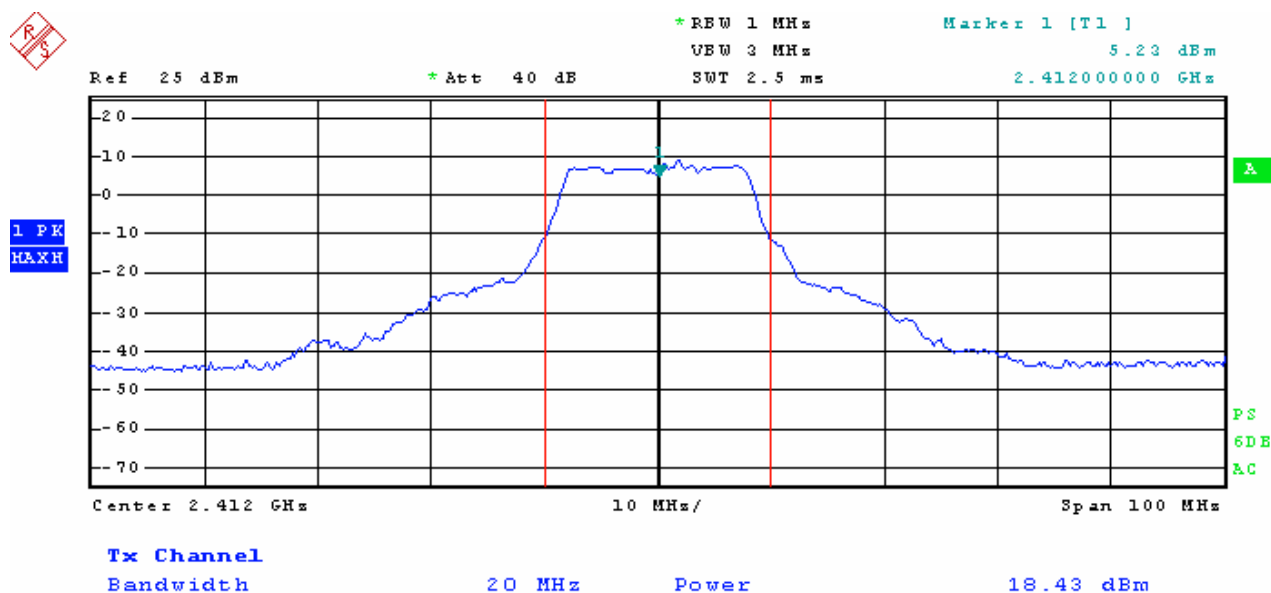
IEEE 802.11g, CH low, 24Mbps



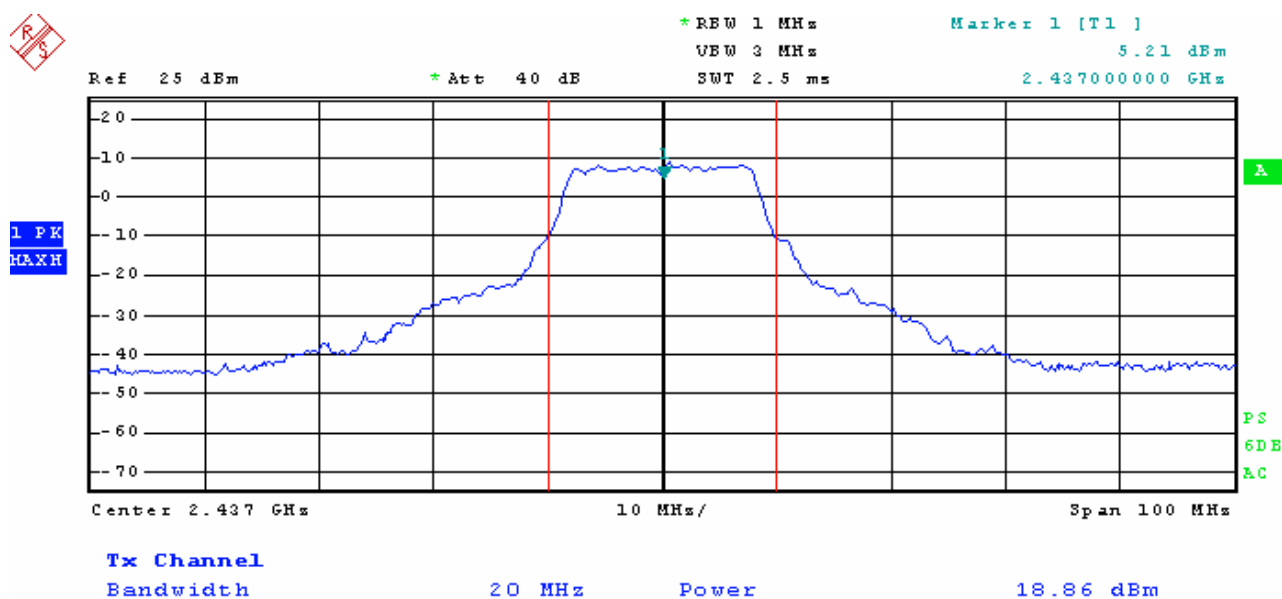
IEEE 802.11g, CH middle, 24Mbps



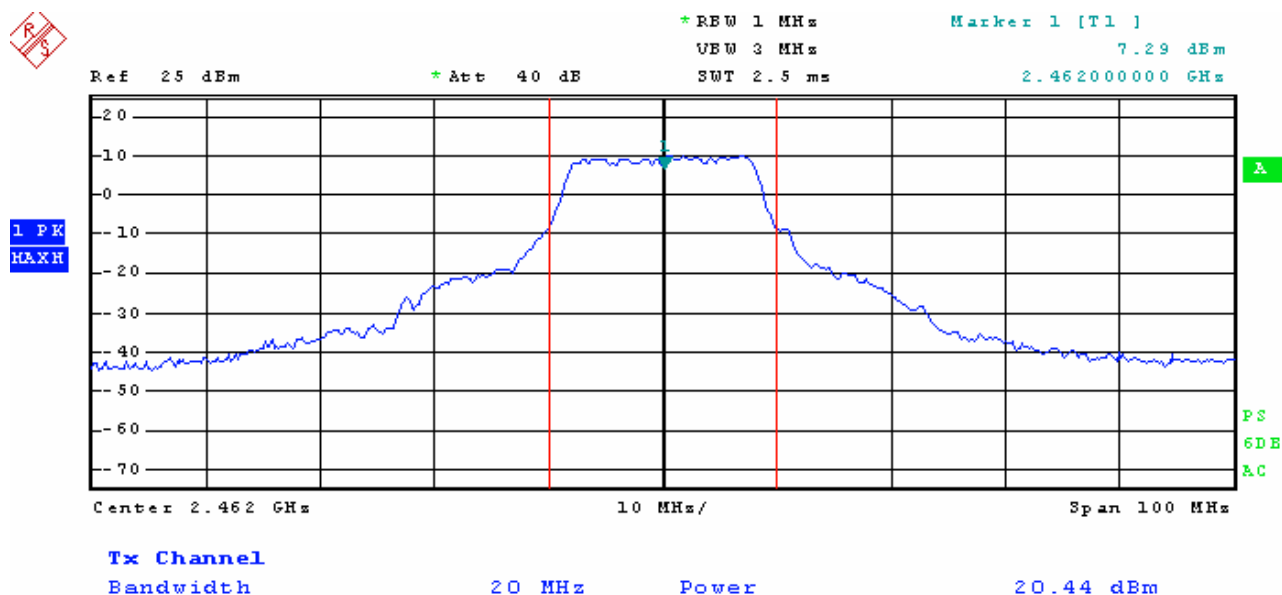
IEEE 802.11g, CH high, 24Mbps



IEEE 802.11g, CH low, 54Mbps



IEEE 802.11g, CH middle, 54Mbps

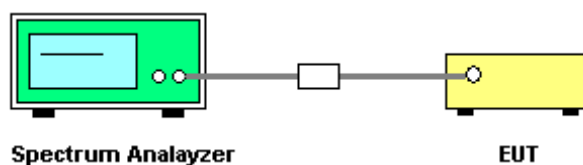


8. POWER SPECTRAL DENSITY (PSD) MEASUREMENT

8.1 LIMITS

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3kHz band during any time interval of continuous transmission.

8.2 BLOCK DIAGRAM OF TEST SETUP



8.3 TEST PROCEDURE

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Set RBW of spectrum analyzer to 3kHz and VBW to 10kHz with Peak in Max Hold.
3. Mark the frequency with max. peak power as the center of the display of the spectrum.
4. Set the span to 1.5MHz and record the maximum peak value.

8.4 TEST RESULT

Measured PSD = Reading PSD + Antenna Gain + $10 \cdot \log(1/x)$ + Cable Loss

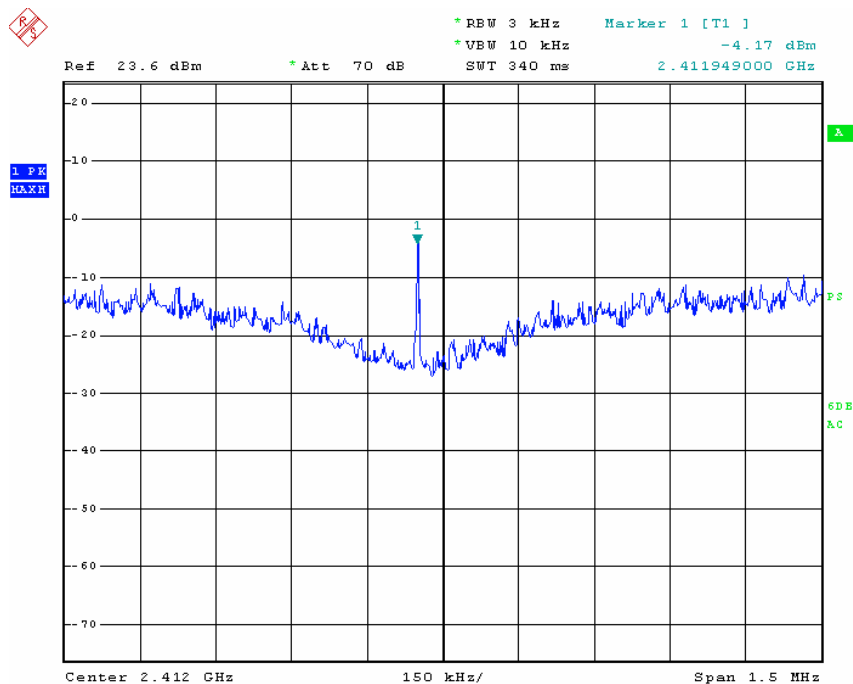
Where, x means Duty Cycle measurement = $T_{on} / (T_{on} + T_{off}) = 100\%$; Cable Loss = 0.9dB;

Antenna Gain = 1.5dBi

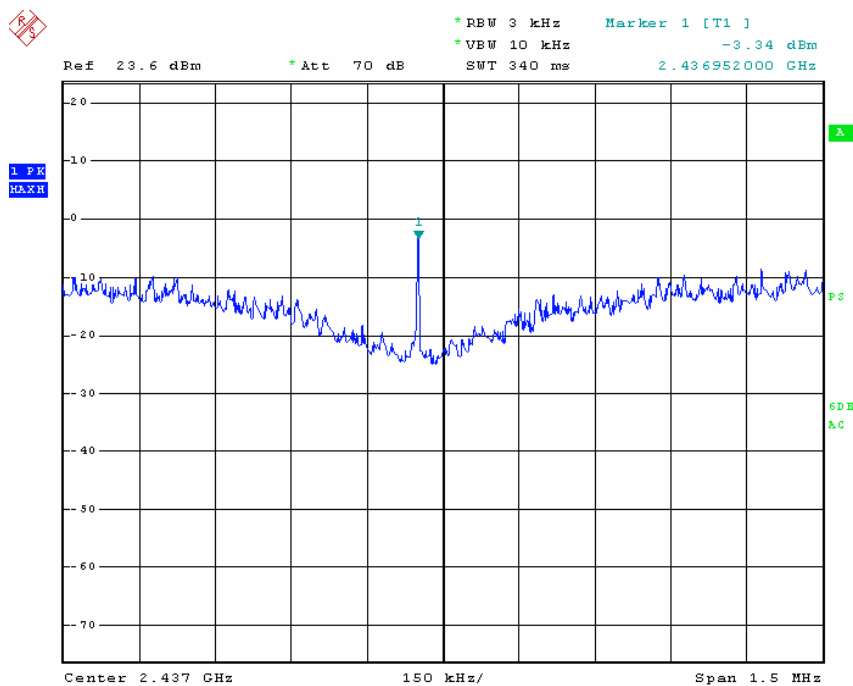
Mode Modulation	Data Rate	Channel	Reading PSD (dBm)	Measured PSD (dBm)	Max. Limit (dBm)	Result (P/F)
802.11b – DSSS	1 Mbps	CH1	-4.17	-2.37	8	P
		CH6	-3.34	-1.54	8	P
		CH11	-3.33	-1.53	8	P
	11 Mbps	CH1	3.44	5.24	8	P
		CH6	-0.36	1.44	8	P
		CH11	1.38	3.18	8	P
802.11g – OFDM	6 Mbps	CH1	-17.64	-15.84	8	P
		CH6	-15.90	-14.10	8	P
		CH11	-14.64	-12.84	8	P
	24 Mbps	CH1	-13.92	-12.12	8	P
		CH6	-12.50	-10.70	8	P
		CH11	-12.43	-10.63	8	P
	54 Mbps	CH1	-13.44	-11.64	8	P
		CH6	-12.72	-10.92	8	P
		CH11	-11.92	-10.12	8	P

The unit does meet the FCC requirements. Please refer the graphs as below:

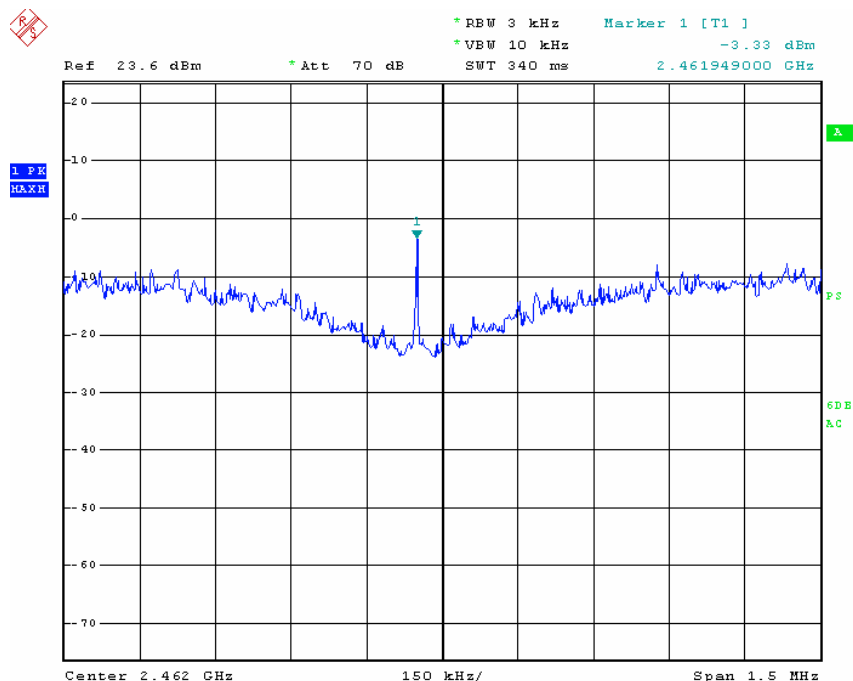
Figure 4: Test figure of Power Spectral Density



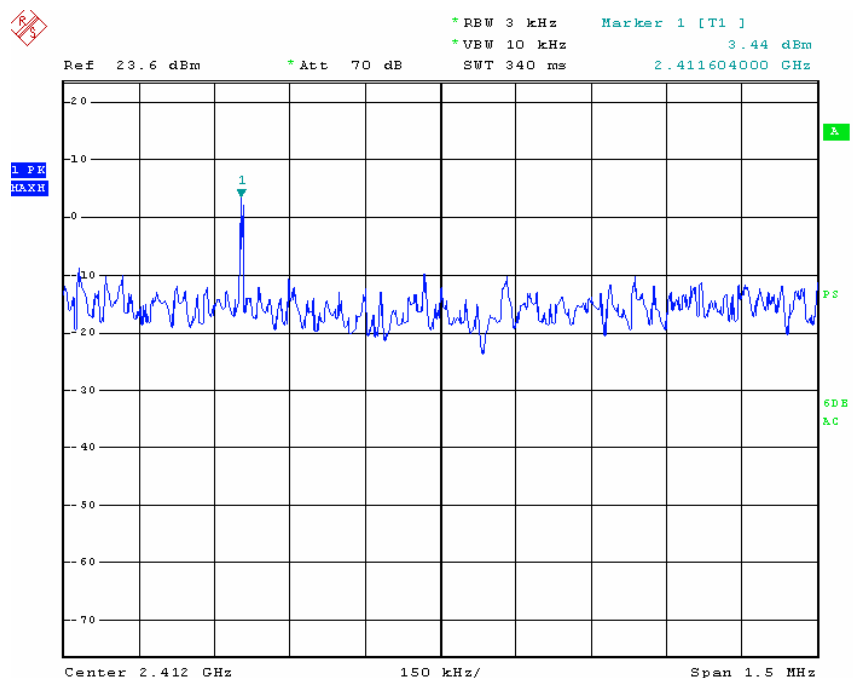
IEEE 802.11b, CH low, 1Mbps



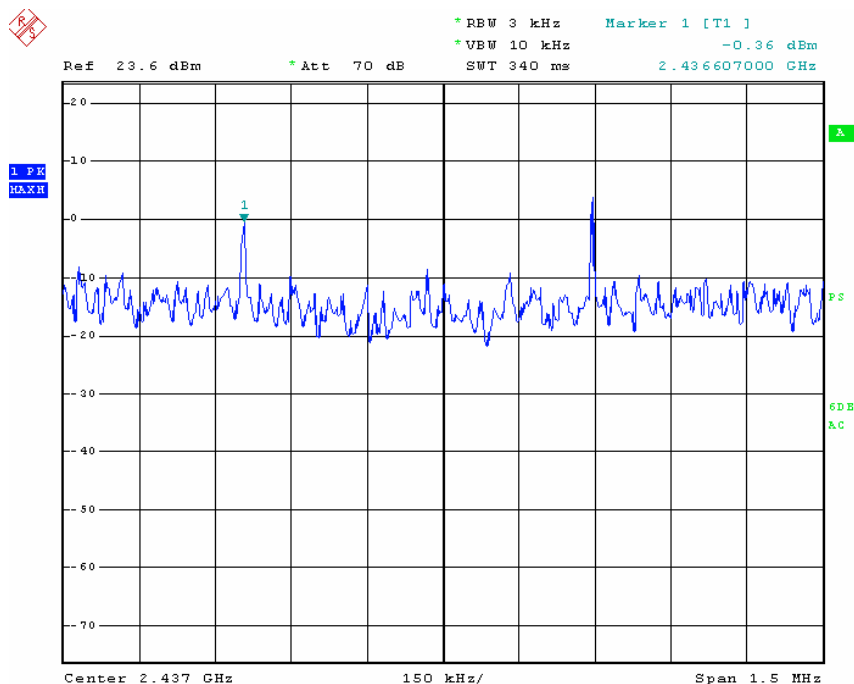
IEEE 802.11b, CH middle, 1Mbps



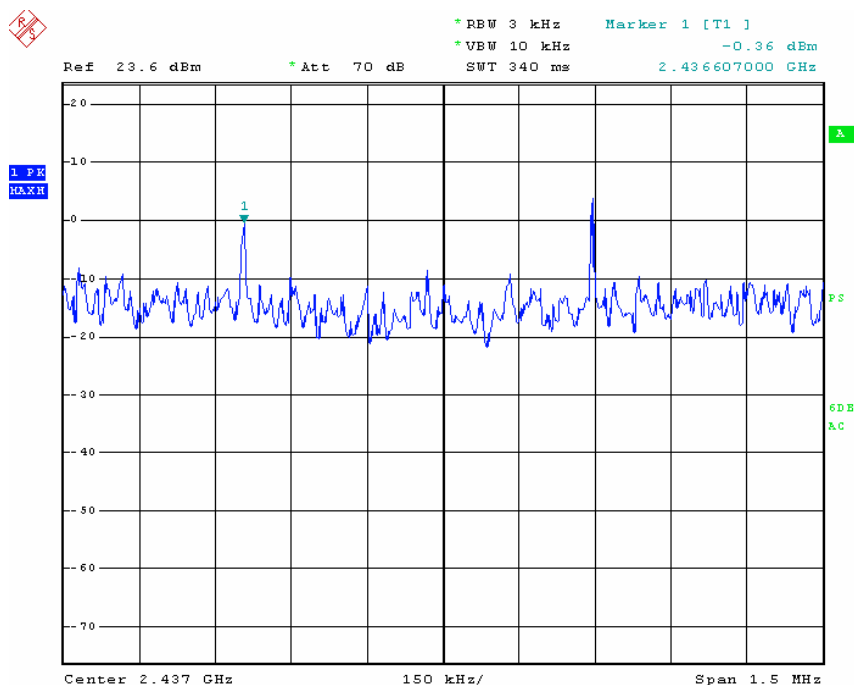
IEEE 802.11b, CH high, 1Mbps



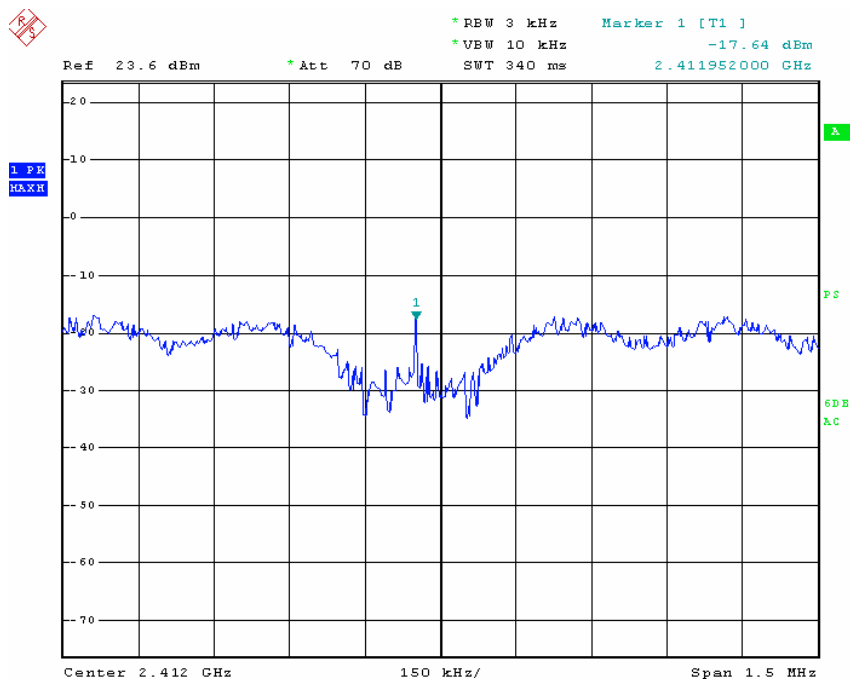
IEEE 802.11b, CH low, 11Mbps



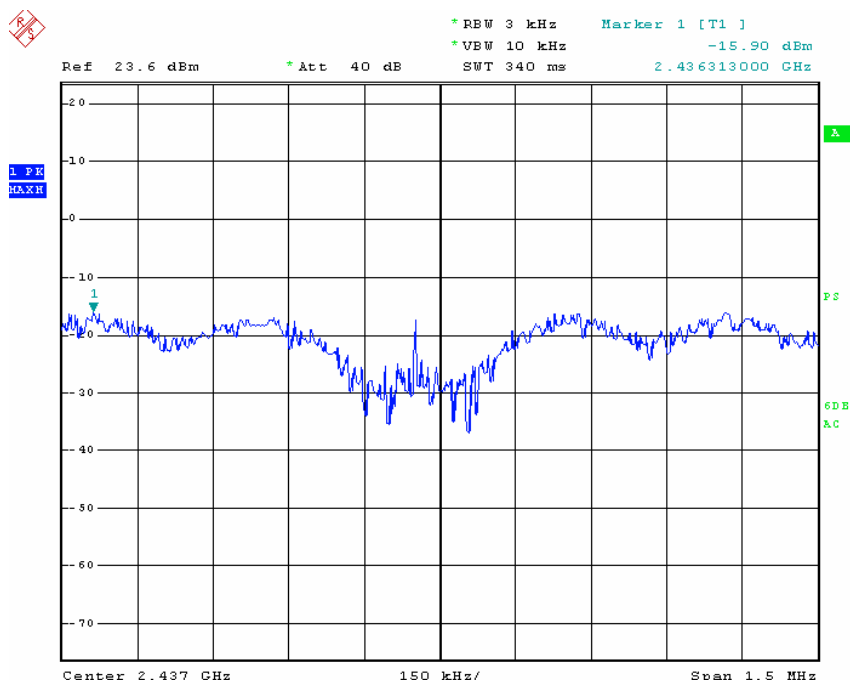
IEEE 802.11b, CH middle, 11Mbps



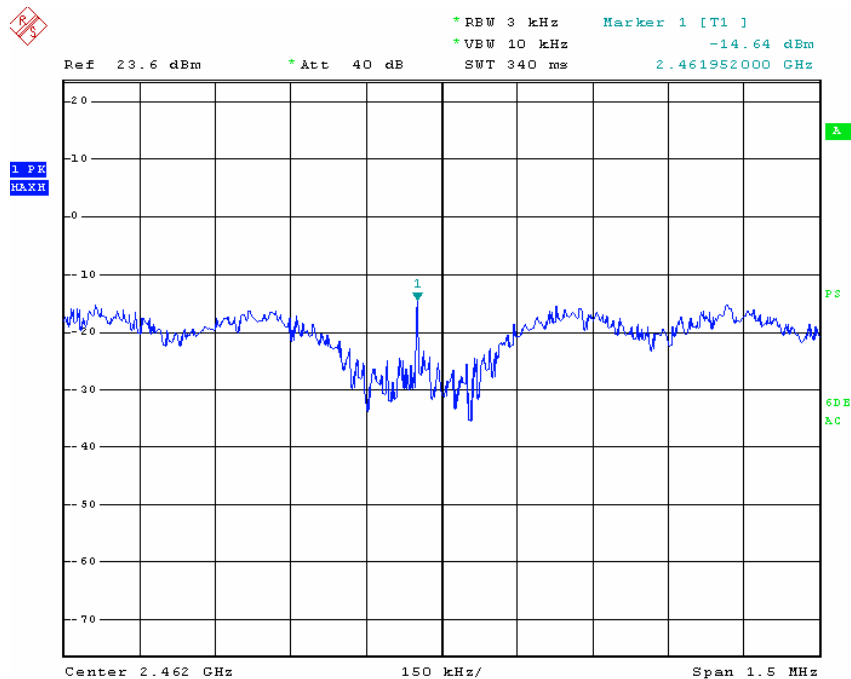
IEEE 802.11b, CH high, 11Mbps



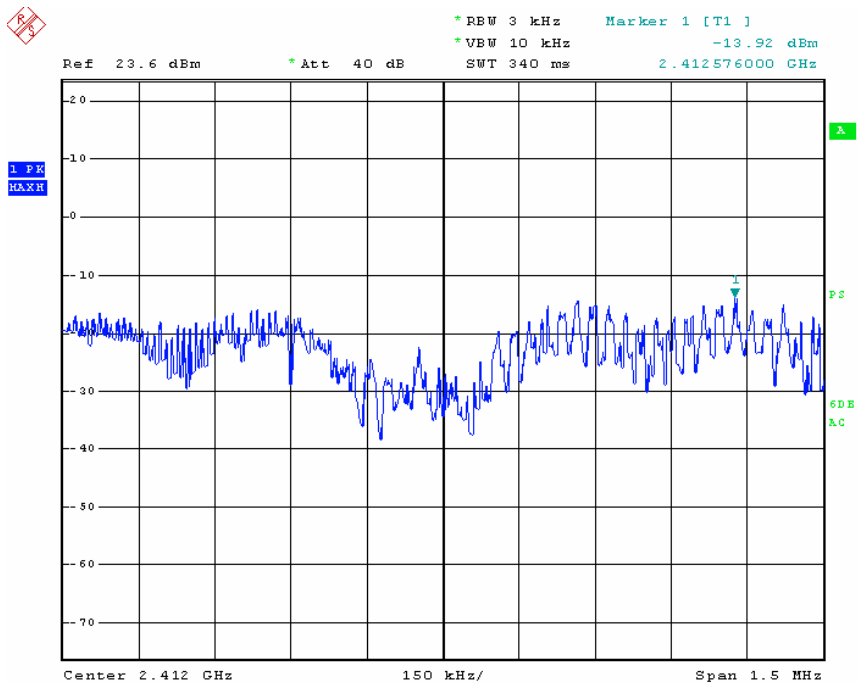
IEEE 802.11g, CH low, 6Mbps



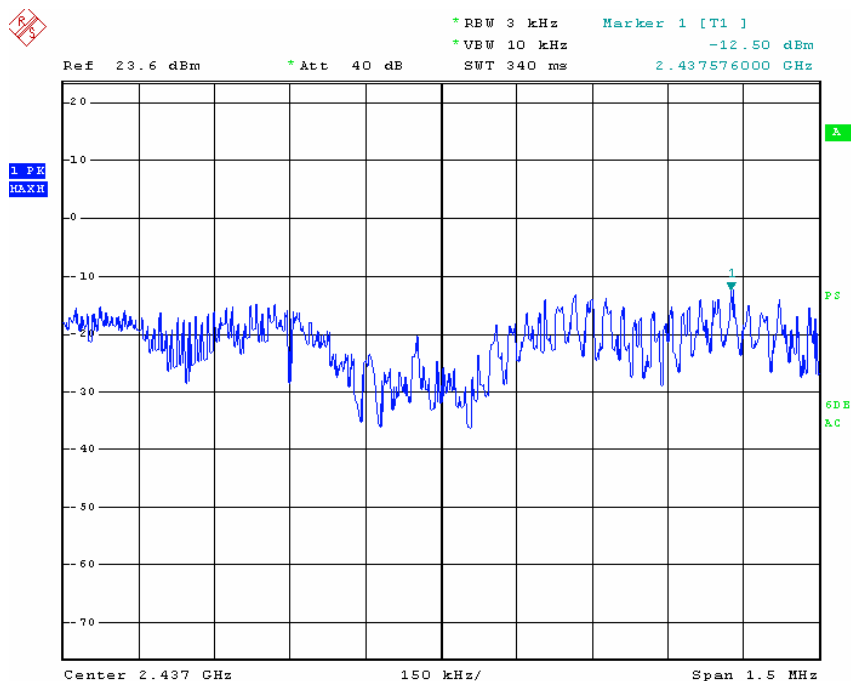
IEEE 802.11g, CH middle, 6Mbps



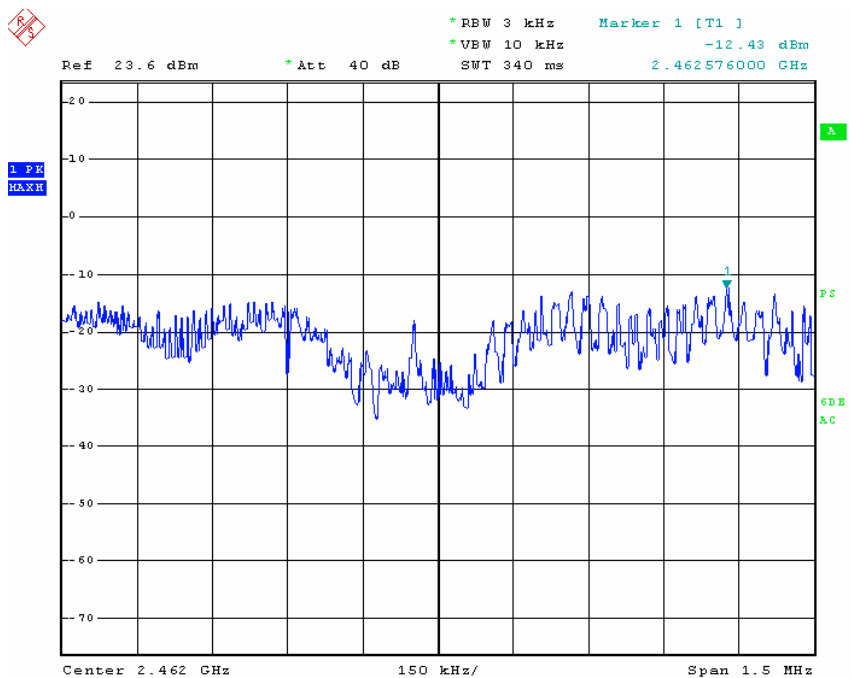
IEEE 802.11g, CH high, 6Mbps



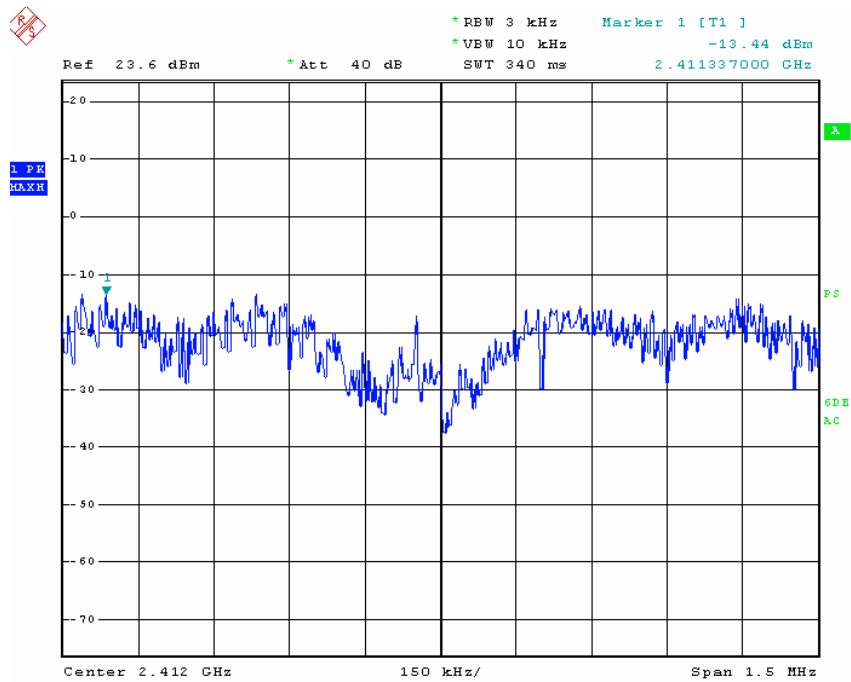
IEEE 802.11g, CH low, 24Mbps



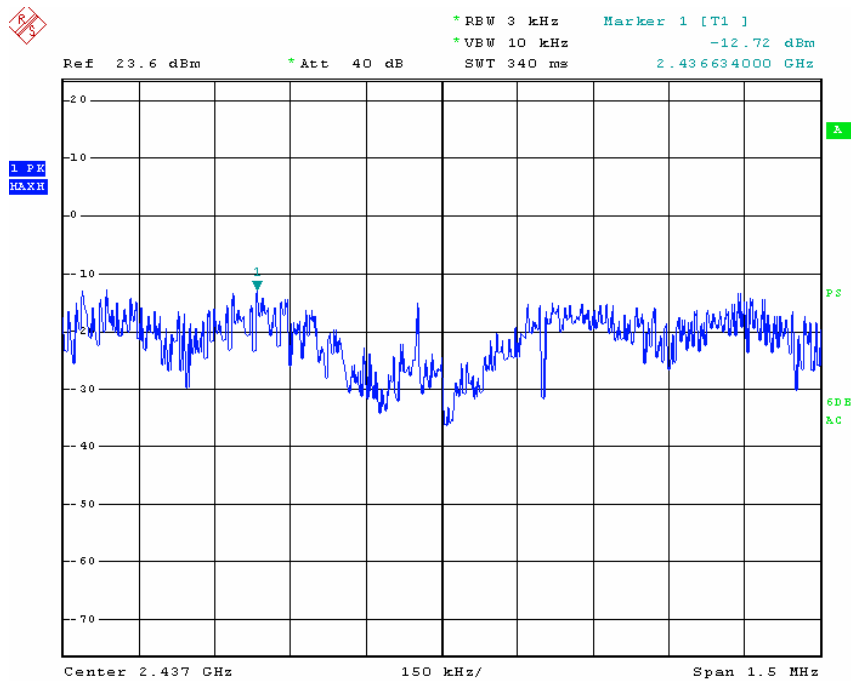
IEEE 802.11g, CH middle, 24Mbps



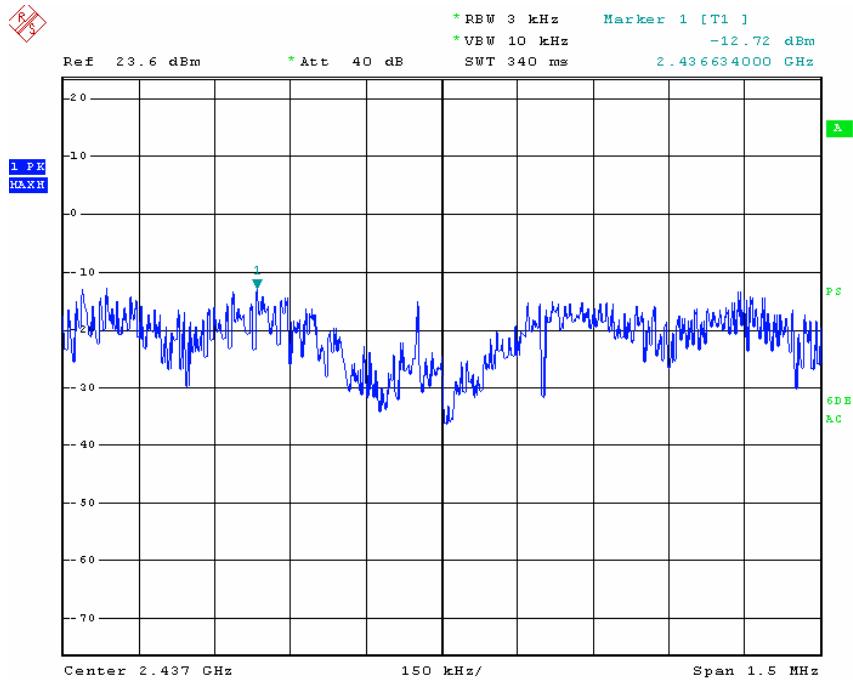
IEEE 802.11g, CH high, 24Mbps



IEEE 802.11g, CH low, 54Mbps



IEEE 802.11g, CH middle, 54Mbps



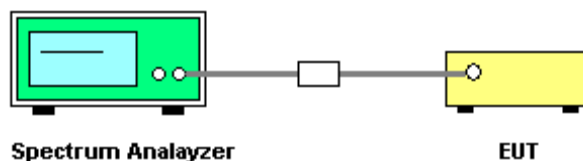
IEEE 802.11g, CH high, 54Mbps

9. 6DB SPECTRUM BANDWIDTH MEASUREMENT

9.1 LIMITS

The minimum 6 dB bandwidth shall be at least 500 kHz.

9.2 BLOCK DIAGRAM OF TEST SETUP



9.3 TEST PROCEDURE

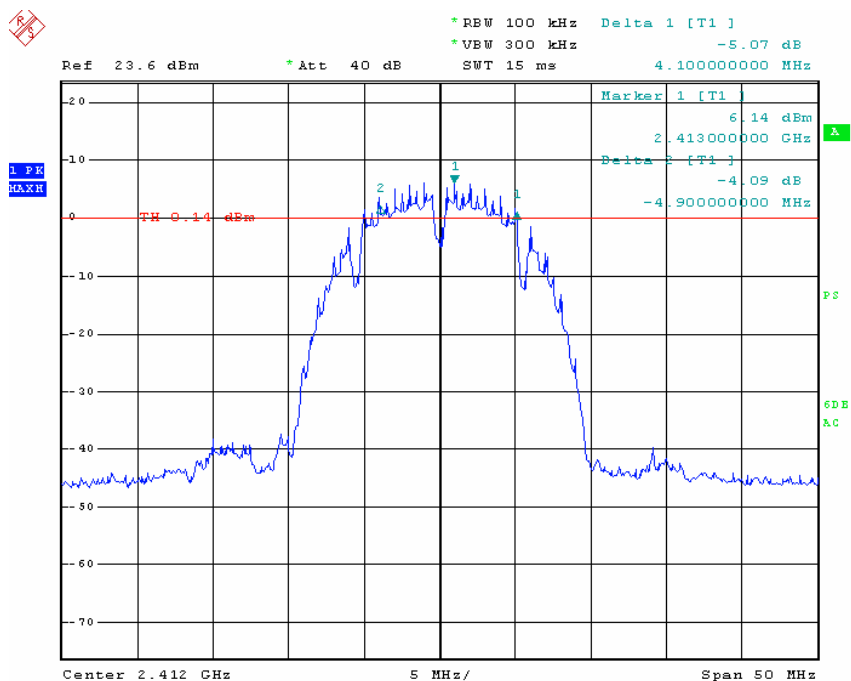
1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Set spectrum analyzer's RBW and VBW to applicable value with Peak in Max Hold.
3. Measured the spectrum width with power higher than 6dB below carrier.

9.4 TEST RESULT

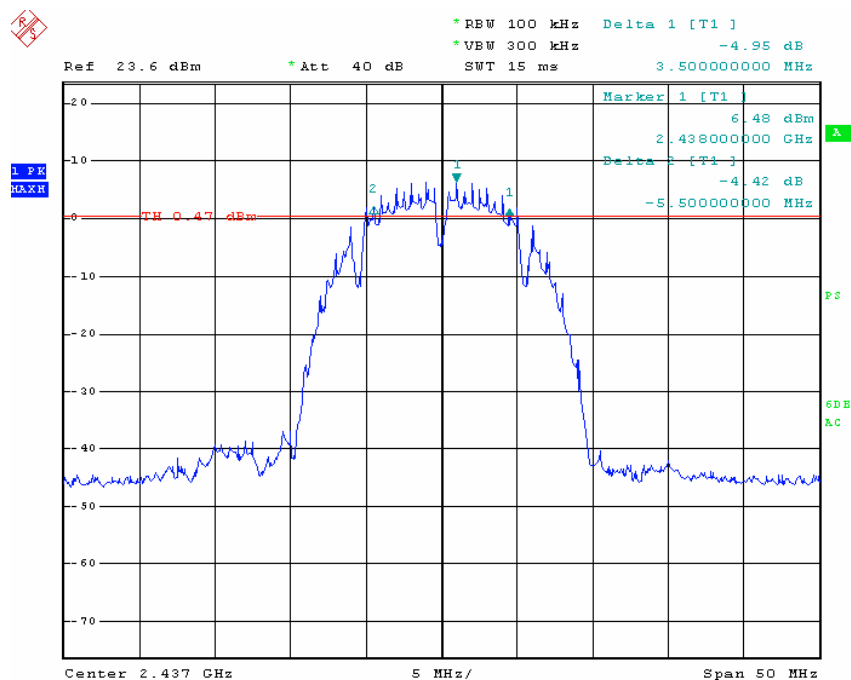
Mode - Modulation	Data Rate	Channel	6 dB BW (MHz)	Min. Limit (kHz)	Result (P/F)
802.11b-DSSS	1 Mbps	CH1	9.0	500	P
		CH6	9.0	500	P
		CH11	9.0	500	P
	11 Mbps	CH1	9.2	500	P
		CH6	9.2	500	P
		CH11	9.6	500	P
802.11g – OFDM	6 Mbps	CH1	16.6	500	P
		CH6	16.6	500	P
		CH11	16.6	500	P
	24 Mbps	CH1	16.6	500	P
		CH6	16.6	500	P
		CH11	16.6	500	P
	54 Mbps	CH1	16.5	500	P
		CH6	16.6	500	P
		CH11	16.6	500	P
		CH11	16.6	500	P

The unit does meet the FCC requirements. Please refer the graphs as below:

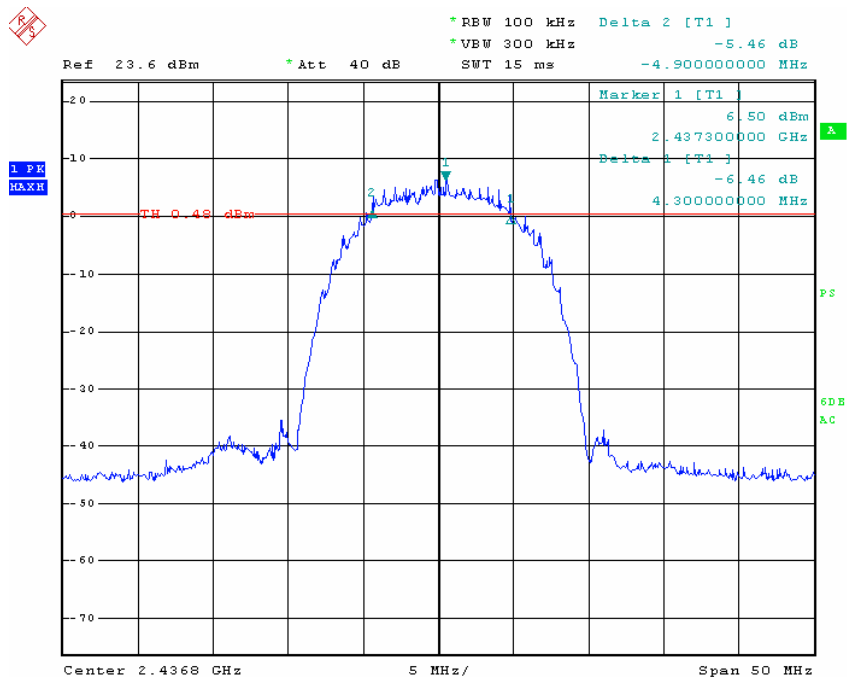
Figure 5: Test figure of 6dB Spectrum Bandwidth



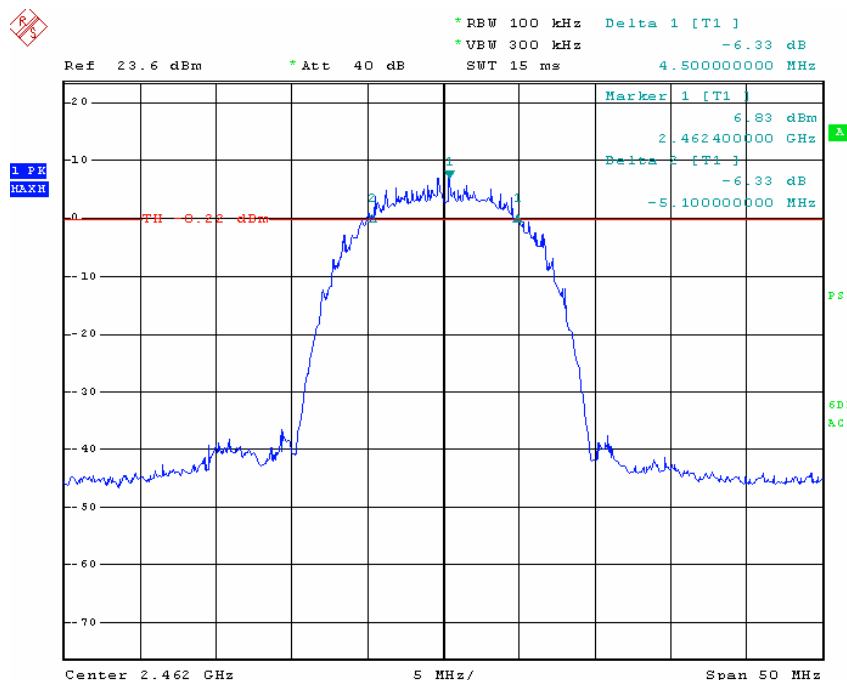
IEEE 802.11b, CH low, 1Mbps



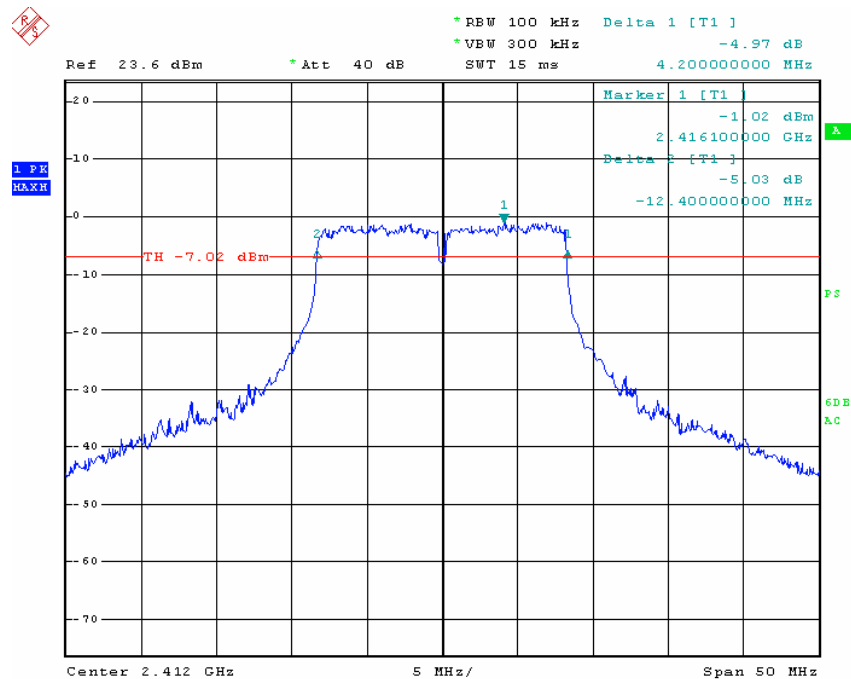
IEEE 802.11b, CH middle, 1Mbps



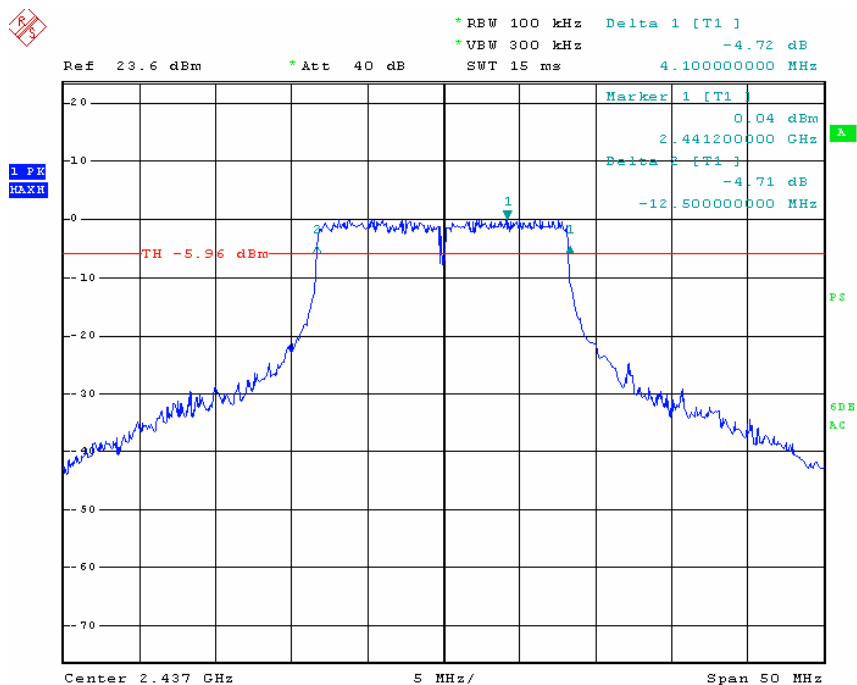
IEEE 802.11b, CH middle, 11Mbps



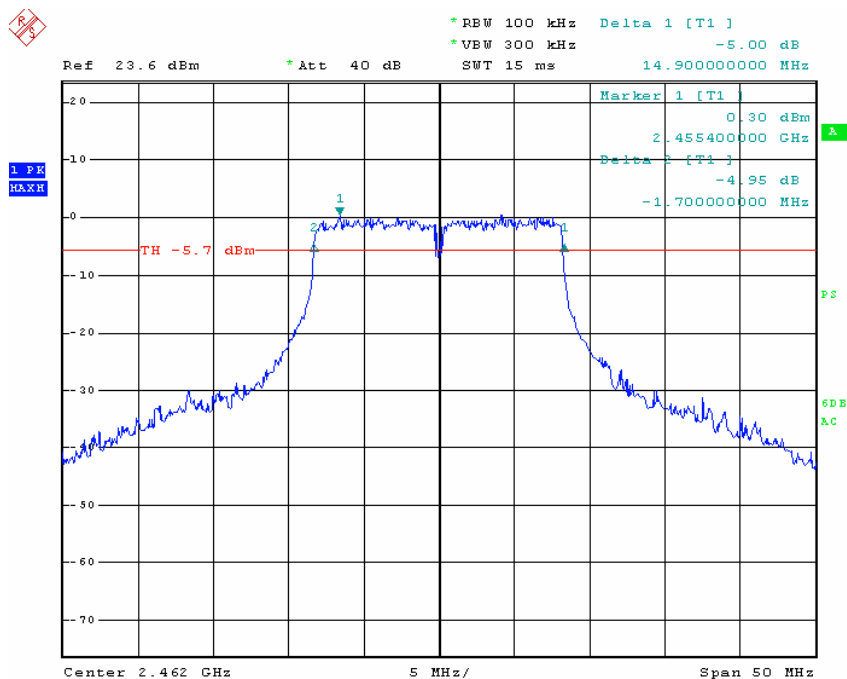
IEEE 802.11b, CH high, 11Mbps



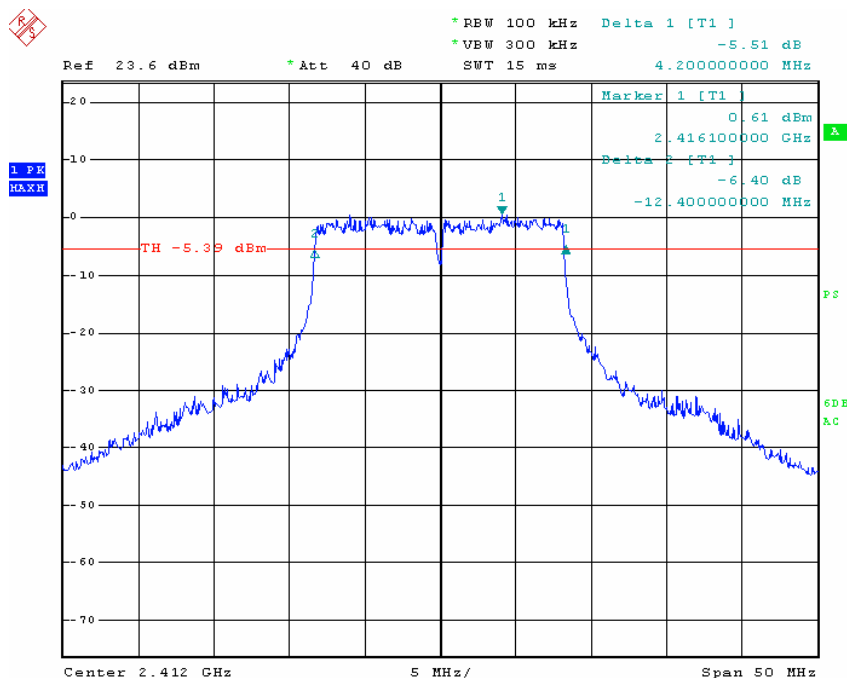
IEEE 802.11g, CH low, 6Mbps



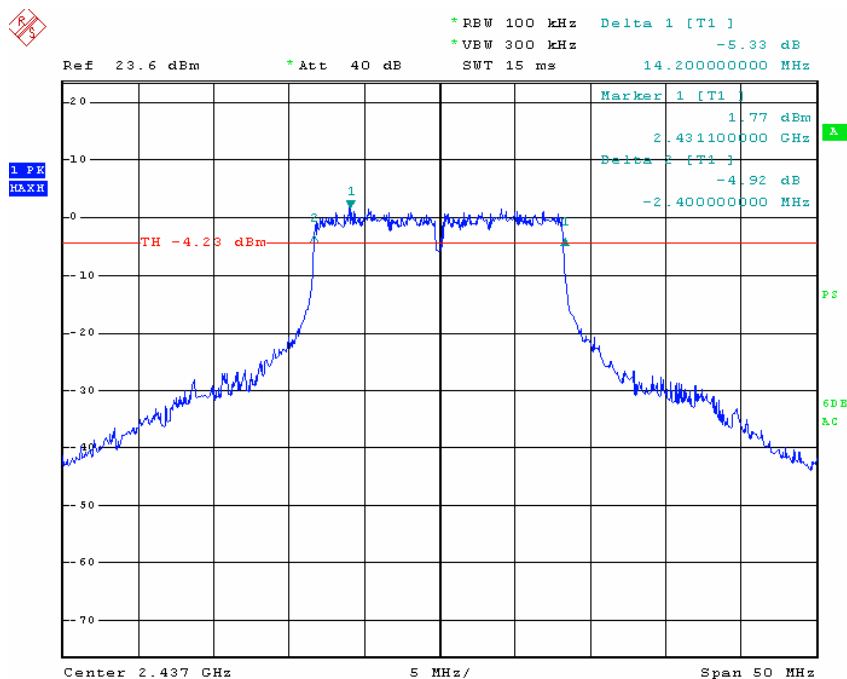
IEEE 802.11g, CH middle, 6Mbps



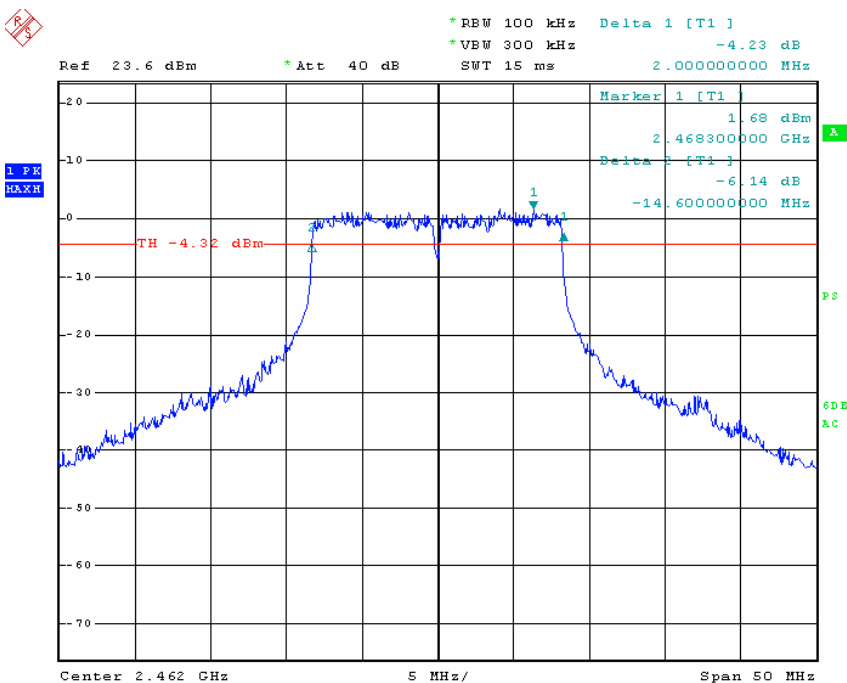
IEEE 802.11g, CH high, 6Mbps



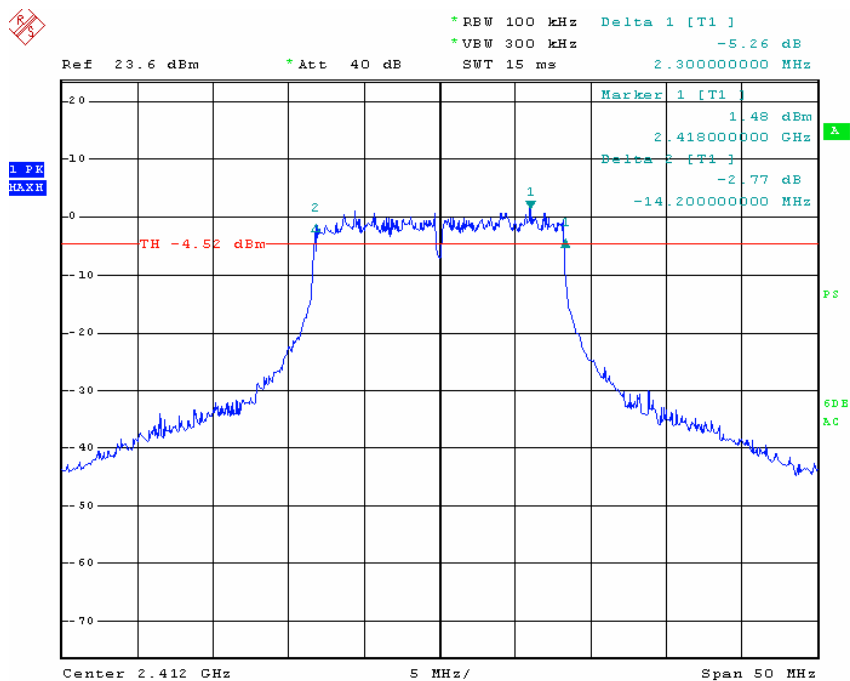
IEEE 802.11g, CH low, 24Mbps



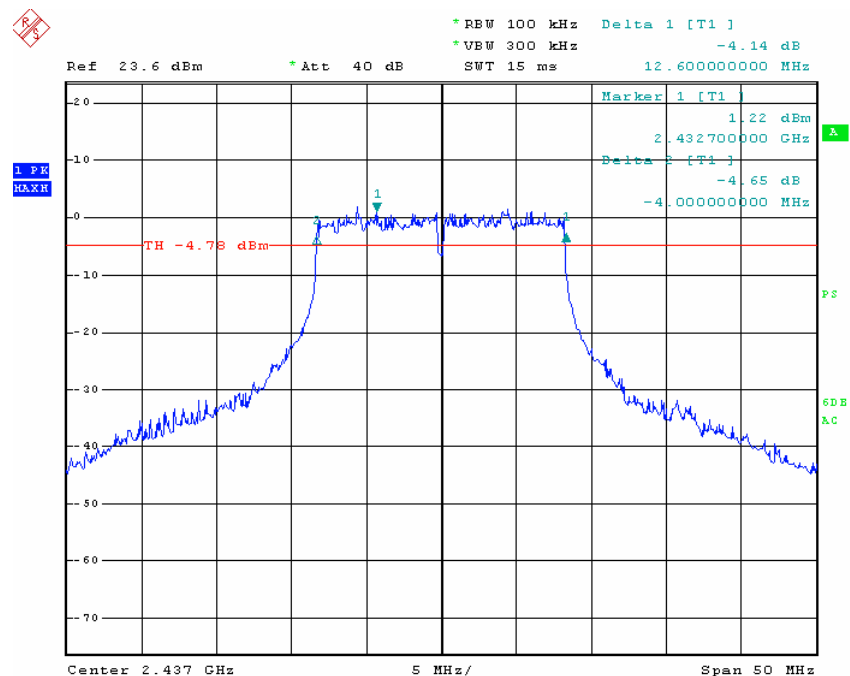
IEEE 802.11g, CH middle, 24Mbps



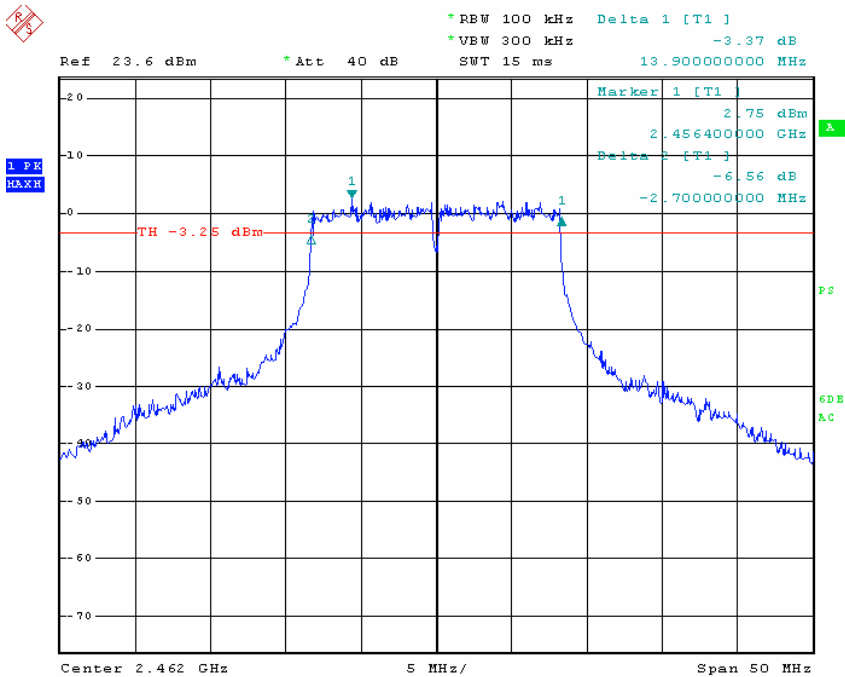
IEEE 802.11g, CH high, 24Mbps



IEEE 802.11g, CH low, 54Mbps



IEEE 802.11g, CH middle, 54Mbps



IEEE 802.11g, CH high, 54Mbps

10. RADIATED EMISSIONS MEASUREMENT

10.1 LIMITS

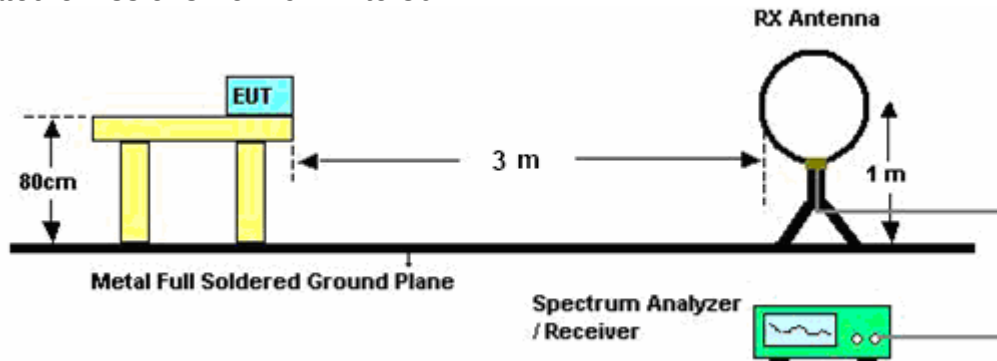
Rule: FCC Part15.209 -- The field strength of any emissions, which appear outside of operating frequency band and restricted band specified on 15.205(a), shall not exceed the general radiated emission limits as below.

Frequency (MHz)	Field strength ($\mu\text{V/m}$)	Distance (m)
0.009-0.490	$2400/F(\text{kHz})$	300
0.490-1.705	$24000/F(\text{kHz})$	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

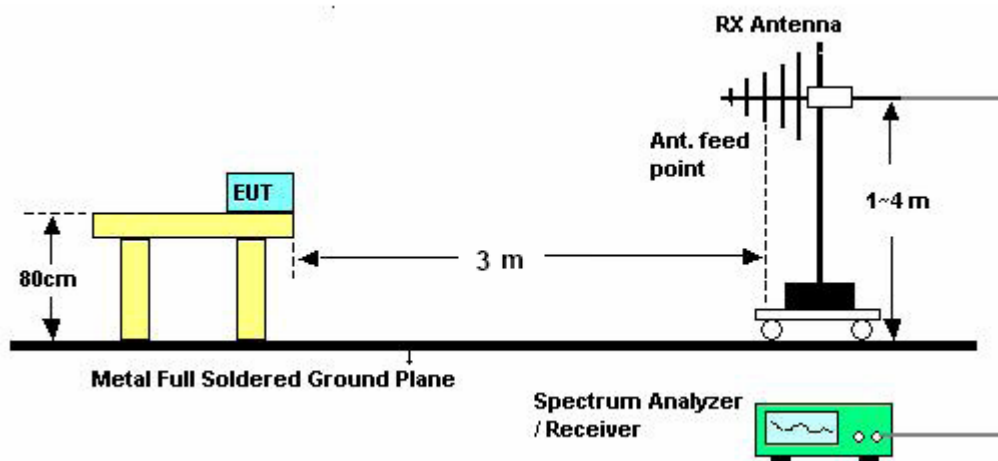
Note: the tighter limit applies at the band edges.

10.2 BLOCK DIAGRAM OF TEST SETUP

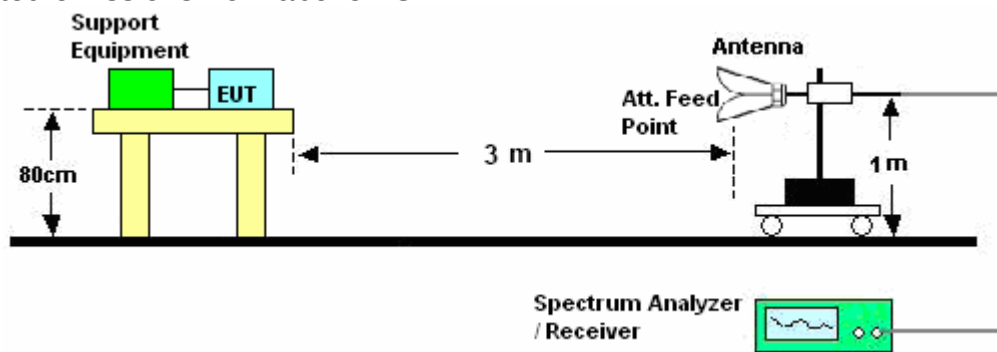
For radiated emissions from 9kHz to 30MHz



For radiated emissions from 30 - 1000MHz



For radiated emissions from above 1GHz



10.3 TEST PROCEDURE

1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise,

the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.

9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

10.4 TEST RESULT

According to test data, all spurious emissions at channel 1, 6 and 11 in IEEE 802.11b and IEEE 802.11g are almost the same, and the test data of channel 1 in IEEE 802.11b was worst, so it was chosen as representative for the test.

Figure 6: Test data and figure of Radiated Emissions, 9 kHz ~ 30MHz

Measurement Distance: 3m						
Frequency (kHz)	Reading Level - peak (dBμV/m)	Factor (dB)	Measurement - peak (dBμV/m)	Limit - QP (dBμV/m)	Result (P/F)	Polarization
38.4	36.28	16.76	53.04	115.92	P	H
150.0	54.92	12.20	67.12	104.08	P	H
7911.0	22.18	11.64	33.82	69.54	P	H
20746.5	37.69	11.07	48.76	69.54	P	H
39.3	35.77	16.58	52.35	115.72	P	V
150.0	50.33	12.20	62.53	104.08	P	V
7960.8	28.00	11.64	39.64	69.54	P	V
20846.0	39.70	11.05	50.75	69.54	P	V

Remark:

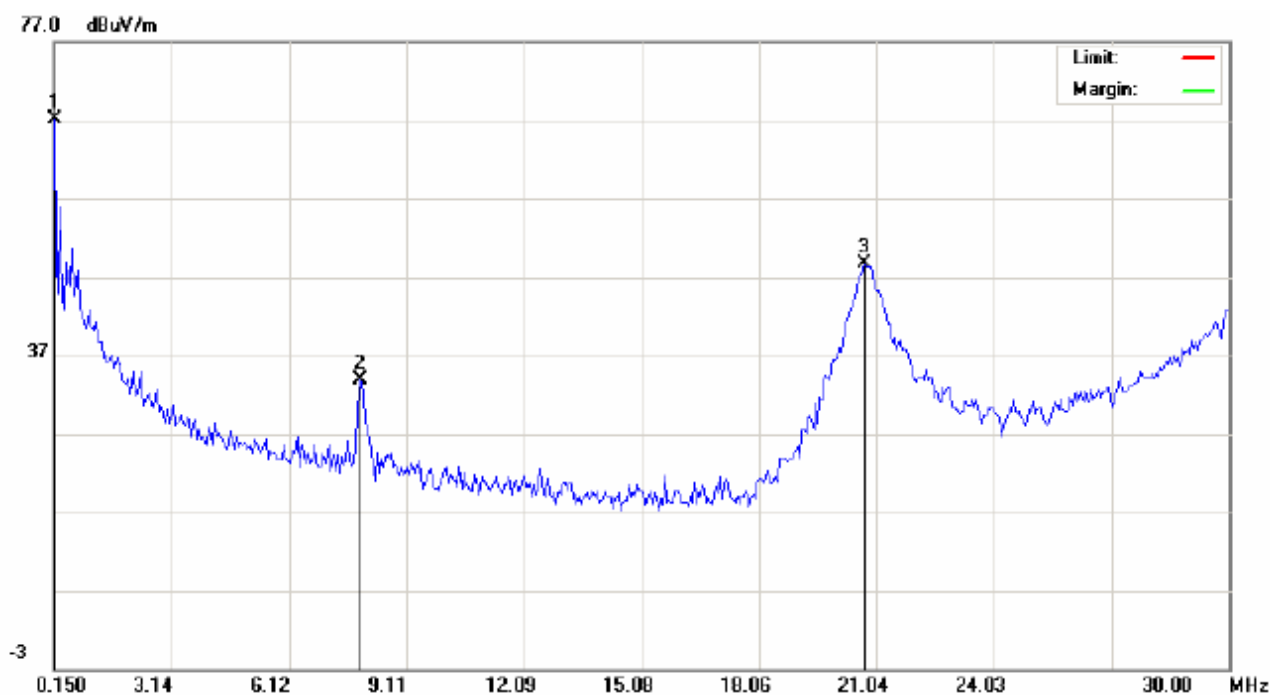
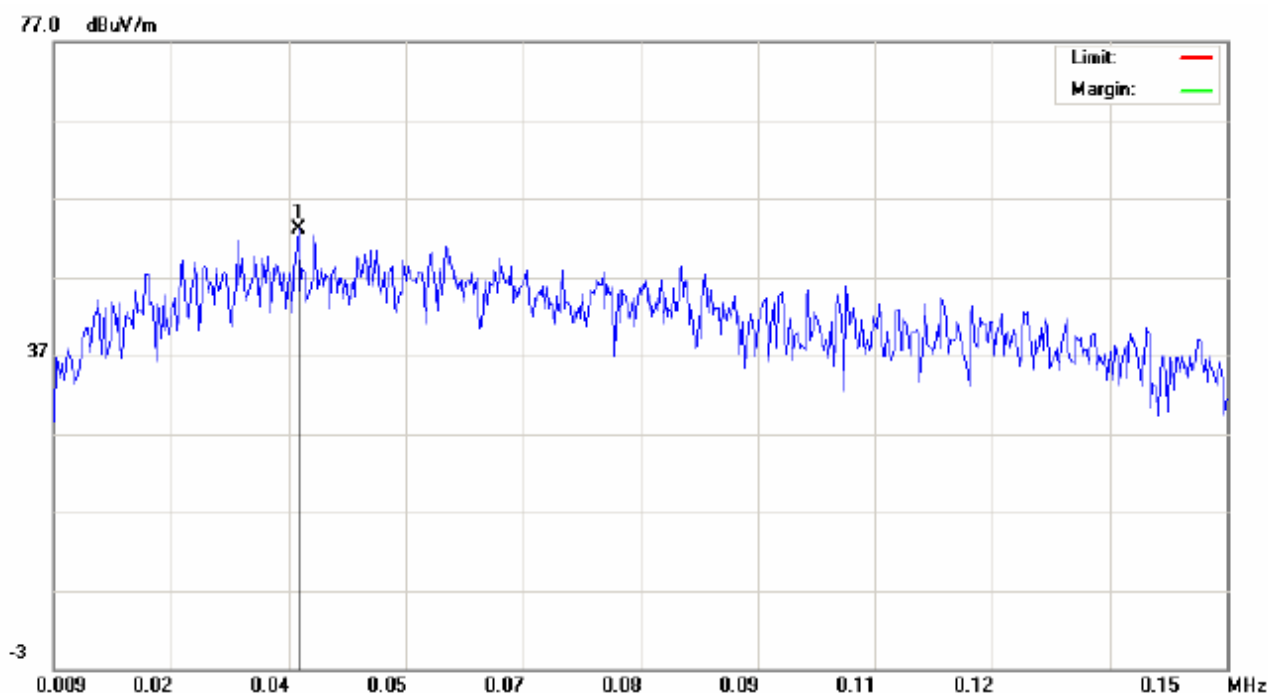
For test distance other than what is specified, but fulfilling the requirements of Section 15.31 (f) (2) the field strength is calculated by adding additionally an extrapolation factor of 40 dB/decade (inverse linear distance for field strength measurements).

Assume the tests performed at a reduced Test Distance of 3 m instead of the Specified Distance of 30m and 300m giving a Distance Extrapolation Factor of $DF1 = 40 \log(3m/30m) = -40 \text{ dB}$ and $DF1 = 40 \log(3m/300m) = -80 \text{ dB}$

Limit dBμV/m @3m = Limit dBμV/m @300m+ 80

Limit dBμV/m @3m = Limit dBμV/m @30m + 40

H:



V:

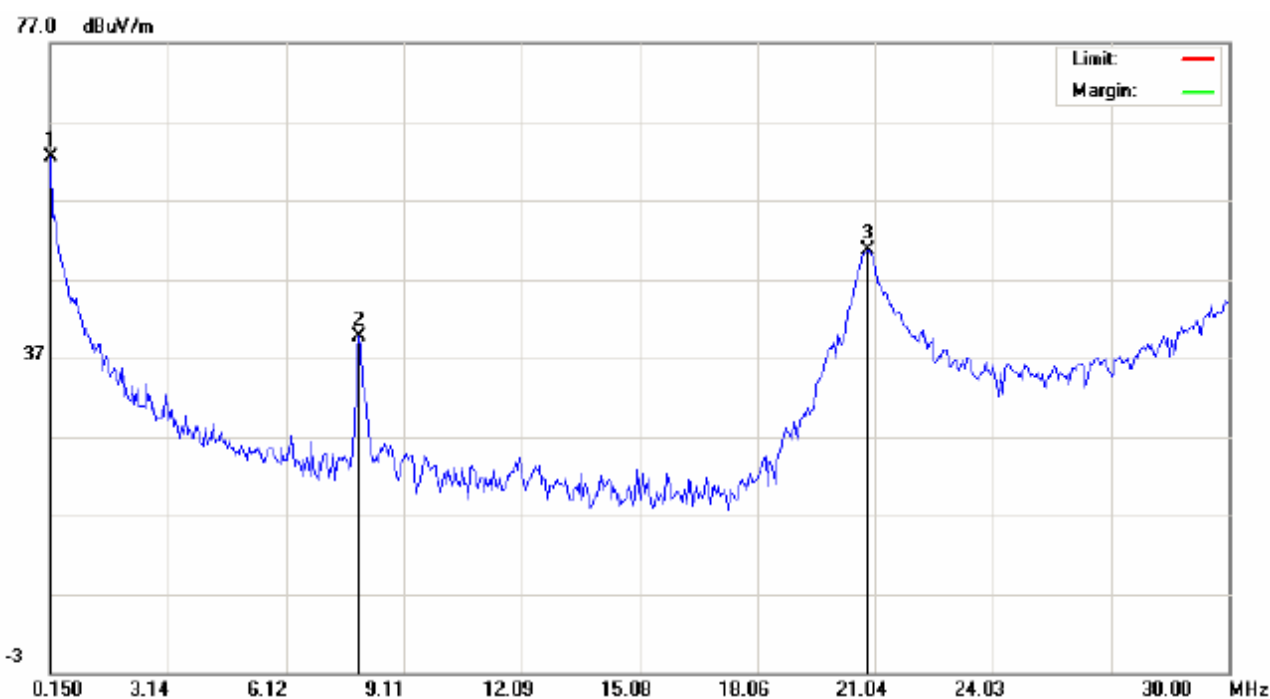
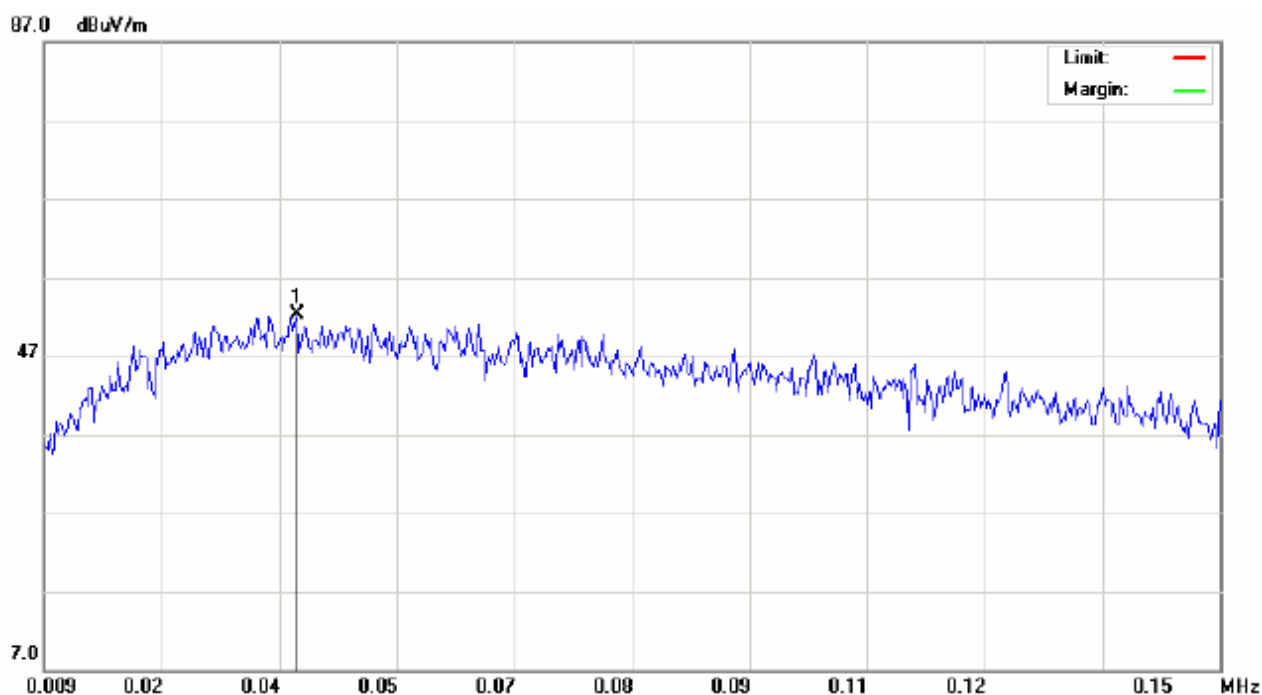
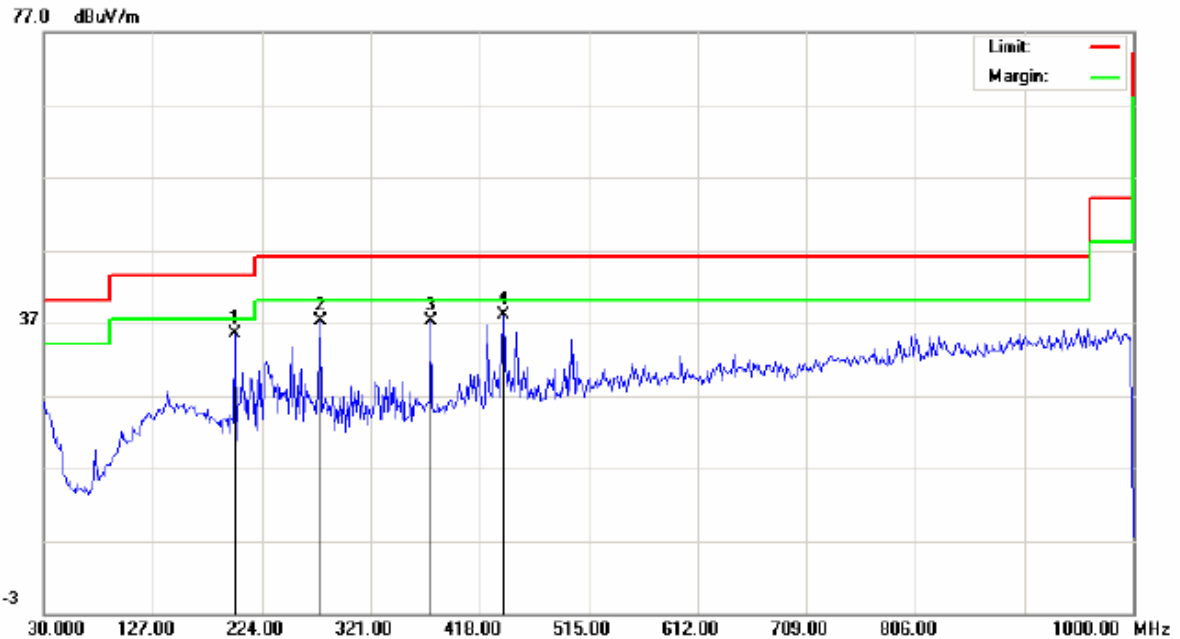


Figure 7: Test figure of Radiated Emissions, 30MHz ~ 1GHz



Site site #1

Polarization: *Horizontal*

Temperature: 26

Limit: FCC Class B 3M Radiation

Power: AC 120V/60Hz

Humidity: 60 %

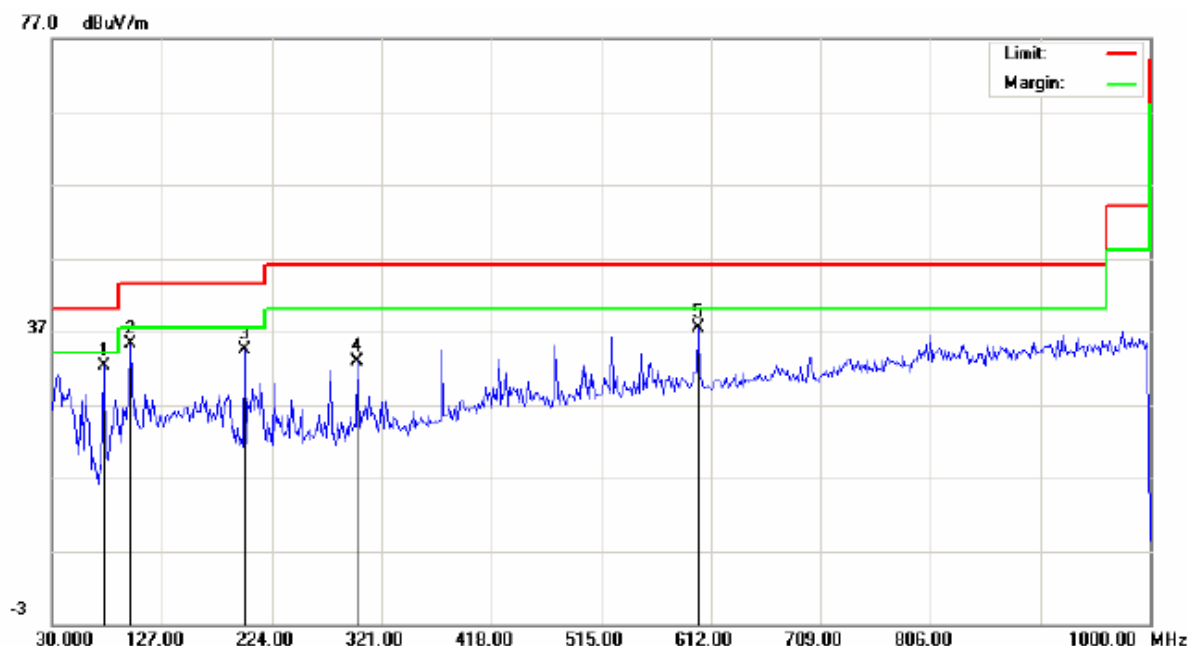
EUT: MaxiDAS

M/N: DS708

Mode: CH1_11MHz

Note: IEEE 802.11b

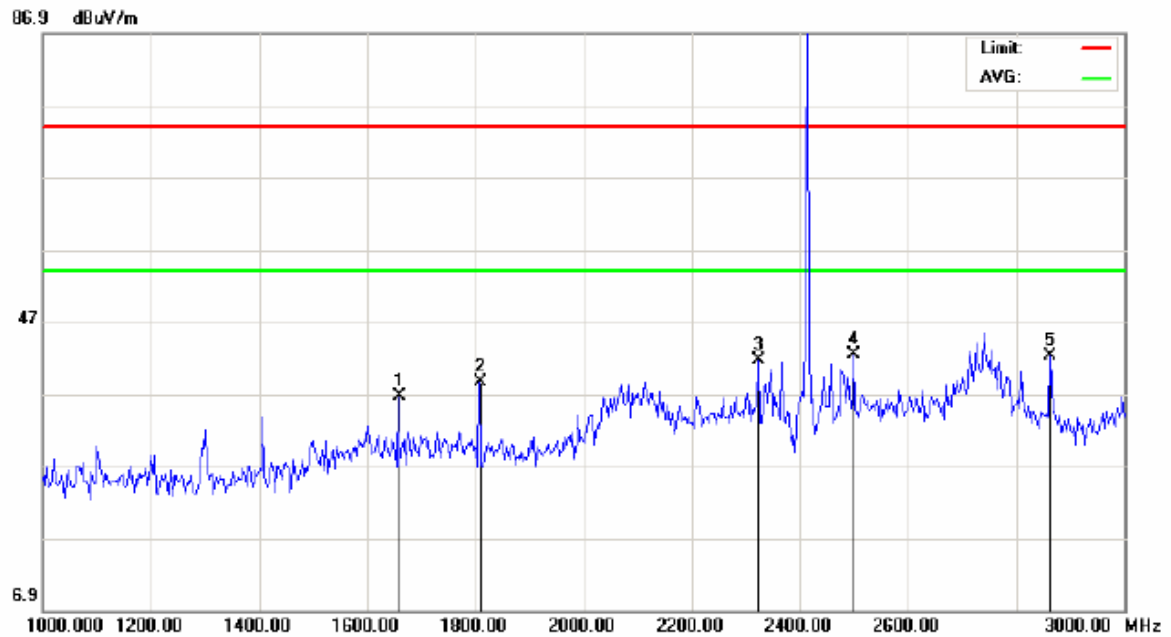
No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	199.7500	21.86	19.23		13.54	35.40	32.77		43.50		-10.73		P	
2	275.7333	22.24	20.96		15.12	37.36	36.08		46.00		-9.92		P	
3	374.3500	19.56	17.85		17.77	37.33	35.62		46.00		-10.38		P	
4	439.0167	18.55	17.52		19.56	38.11	37.08		46.00		-8.92		P	



Site site #1 Polarization: **Vertical** Temperature: 26
 Limit: FCC Class B 3M Radiation Power: AC 120V/60Hz Humidity: 60 %
 EUT: MaxiDAS
 M/N: DS708
 Mode: CH1_11MHz
 Note: IEEE 802.11b

No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	75.2667	23.89	21.36		8.40	32.29	29.76		40.00		-10.24		P	
2	99.5167	21.10	20.02		14.10	35.20	34.12		43.50		-9.38		P	
3	199.7500	20.94	18.52		13.54	34.48	32.06		43.50		-11.44		P	
4	299.9833	17.08	16.20		15.90	32.98	32.10		46.00		-13.90		P	
5	600.6833	14.75	13.20		22.79	37.54	35.99		46.00		-10.01		P	

Figure 8: Test figure of Radiated Emissions, 1GHz ~ 3GHz



Site site #1

Polarization: **Horizontal**

Temperature: 26

Limit: FCC Class B 3M Radiation

Power: AC 230V/50Hz

Humidity: 60 %

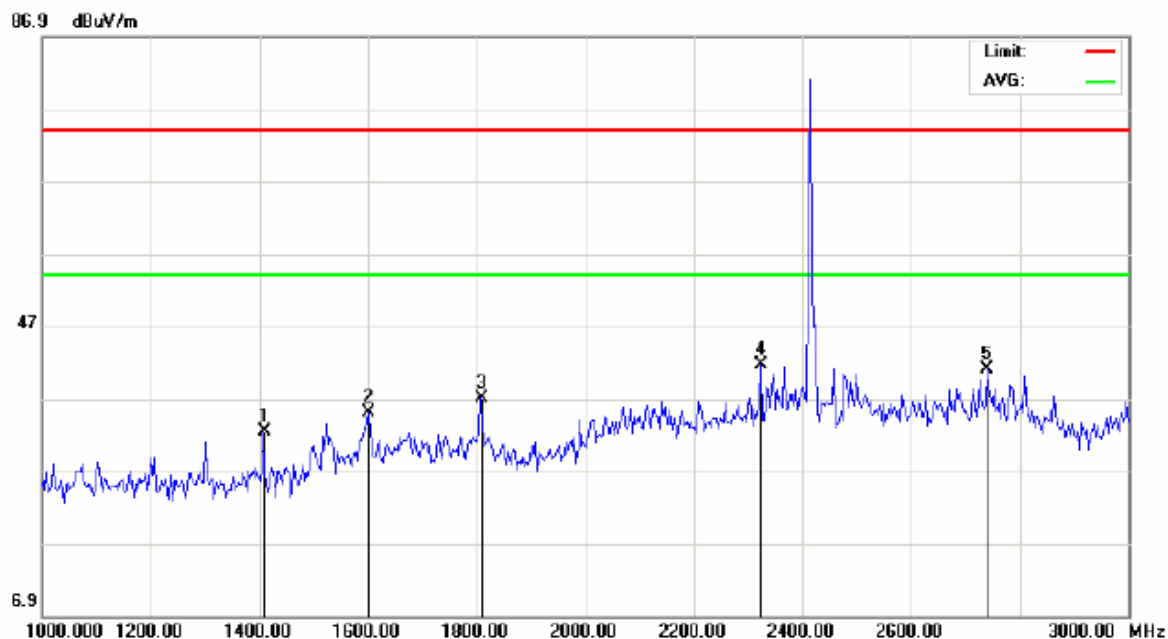
EUT: MaxiDAS

M/N: DS708

Mode: CH1_11MHz

Note: IEEE 802.11b

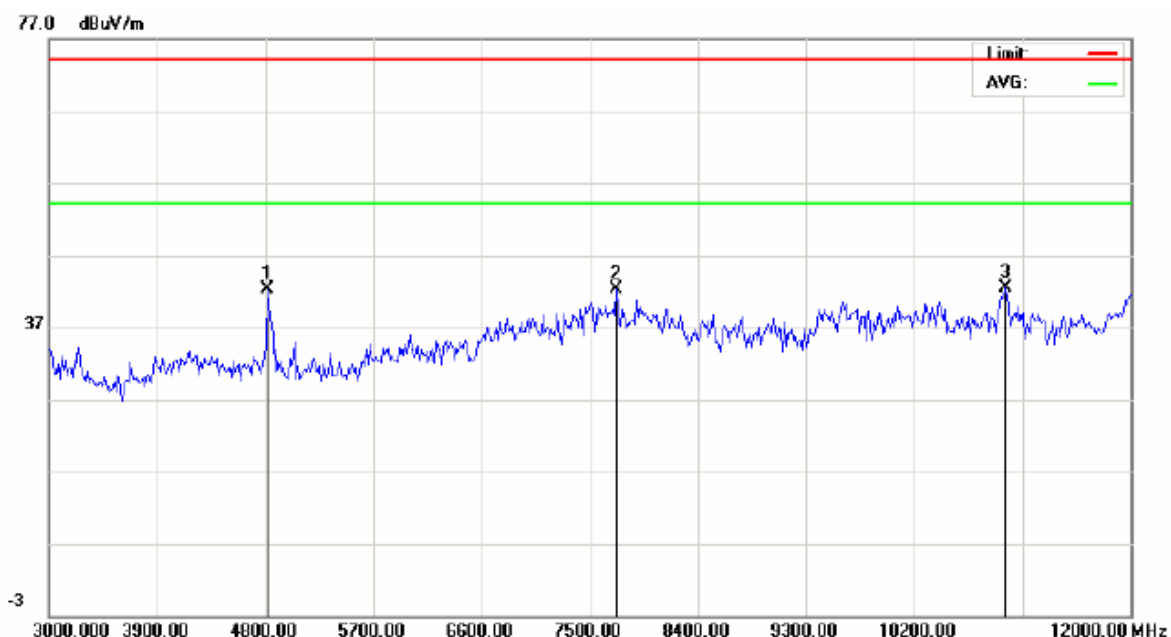
No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	1656.667	35.23			1.42	36.65			74.00	54.00	-37.35	-17.35	P	
2	1806.667	34.85			3.74	38.59			74.00	54.00	-35.41	-15.41	P	
3	2323.333	34.21			7.42	41.63			74.00	54.00	-32.37	-12.37	P	
4	2500.000	34.55			7.79	42.34			74.00	54.00	-31.66	-11.66	P	
5	2863.333	33.48			8.65	42.13			74.00	54.00	-31.87	-11.87	P	



Site site #1 Polarization: **Vertical** Temperature: 26
 Limit: FCC Class B 3M Radiation Power: AC 230V/50Hz Humidity: 60 %
 EUT: MaxiDAS
 M/N: DS708
 Mode: CH1_11MHz
 Note: IEEE 802.11b

No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	1406.667	34.00			-1.61	32.39			74.00	54.00	-41.61	-21.61	P	
2	1600.000	34.46			0.54	35.00			74.00	54.00	-39.00	-19.00	P	
3	1806.667	33.35			3.74	37.09			74.00	54.00	-36.91	-16.91	P	
4	2323.333	34.21			7.42	41.63			74.00	54.00	-32.37	-12.37	P	
5	2740.000	32.64			8.36	41.00			74.00	54.00	-33.00	-13.00	P	

Figure 9: Test figure of Radiated Emissions, above 3GHz

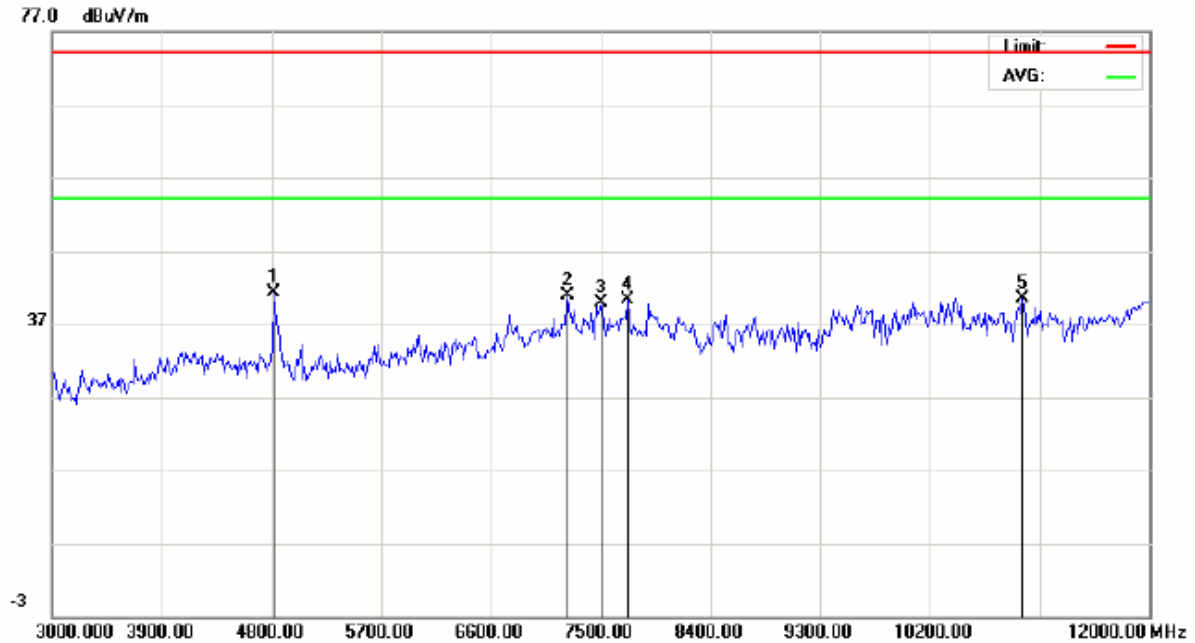


Site site #1 Polarization: **Horizontal** Temperature: 26
Limit: FCC Class B 3M Radiation Power: AC 230V/50Hz Humidity: 60 %
EUT: MaxiDAS
M/N: DS708
Mode: CH1_11MHz
Note: IEEE 802.11b

No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	4815.000	31.39			10.96	42.35			74.00	54.00	-31.65	-11.65	P	
2	7725.000	24.18			18.05	42.23			74.00	54.00	-31.77	-11.77	P	
3	10965.00	24.13			18.32	42.45			74.00	54.00	-31.55	-11.55	P	

Remark:

There are no signals found above 12GHz, so the graphs and data above 12GHz are not recorded.



Site site #1 Polarization: **Vertical** Temperature: 26
Limit: FCC Class B 3M Radiation Power: AC 230V/50Hz Humidity: 60 %
EUT: MaxiDAS
M/N: DS708
Mode: CH1_11MHz
Note: IEEE 802.11b

No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	4815.000	30.39			10.96	41.35			74.00	54.00	-32.65	-12.65	P	
2	7230.000	24.97			15.90	40.87			74.00	54.00	-33.13	-13.13	P	
3	7500.000	21.61			18.22	39.83			74.00	54.00	-34.17	-14.17	P	
4	7725.000	22.18			18.05	40.23			74.00	54.00	-33.77	-13.77	P	
5	10965.00	22.13			18.32	40.45			74.00	54.00	-33.55	-13.55	P	

Remark:

There are no signals found above 12GHz, so the graphs and data above 12GHz are not recorded.

11. BAND EDGE EMISSIONS MEASUREMENT & RESTRICTED BANDS OF OPERATION

11.1 REQUIREMENTS

Band Edges Requirements:

Section 15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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. 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) (see Section 15.205(c))

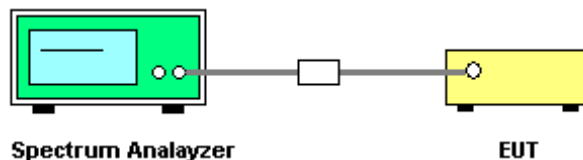
Restricted bands of operation:

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 MHz.

2 Above 38.6

11.2 BLOCK DIAGRAM OF TEST SETUP

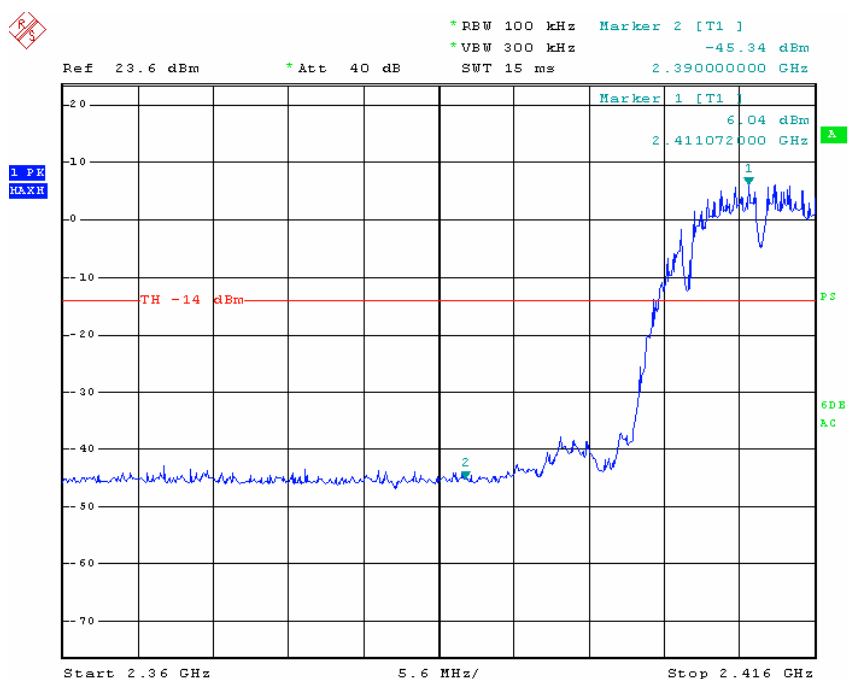


11.3 TEST PROCEDURE

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Set spectrum analyzer's RBW and VBW to applicable value with Peak in Max Hold.

11.4 TEST RESULT

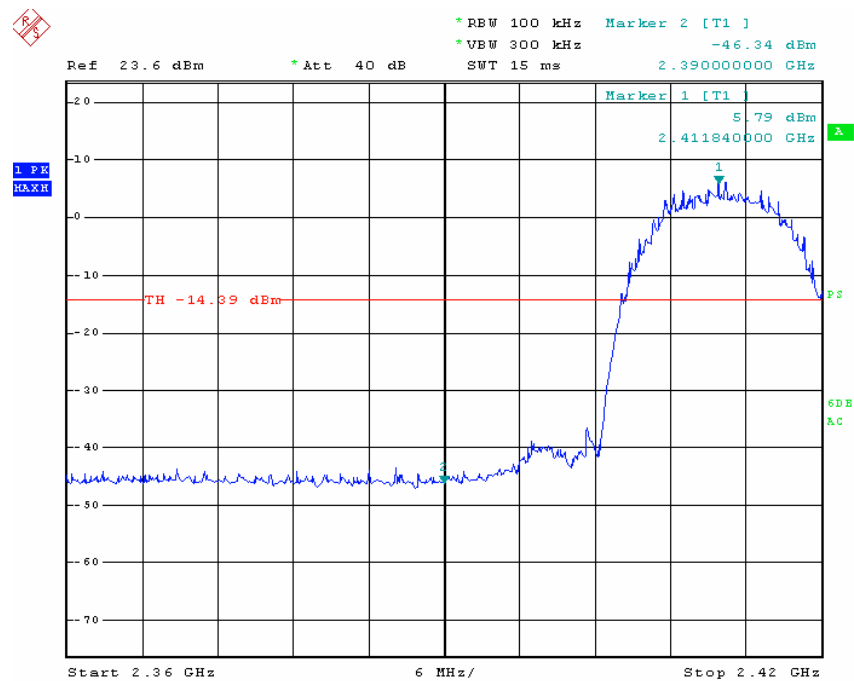
Figure 9: Test figure of Band Edges



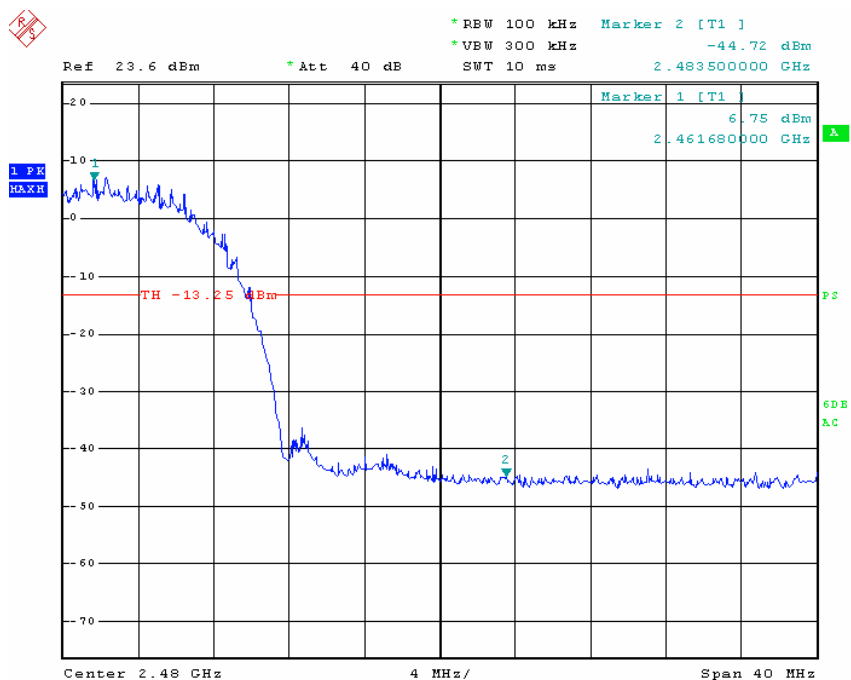
IEEE 802.11b, CH low, 1Mbps



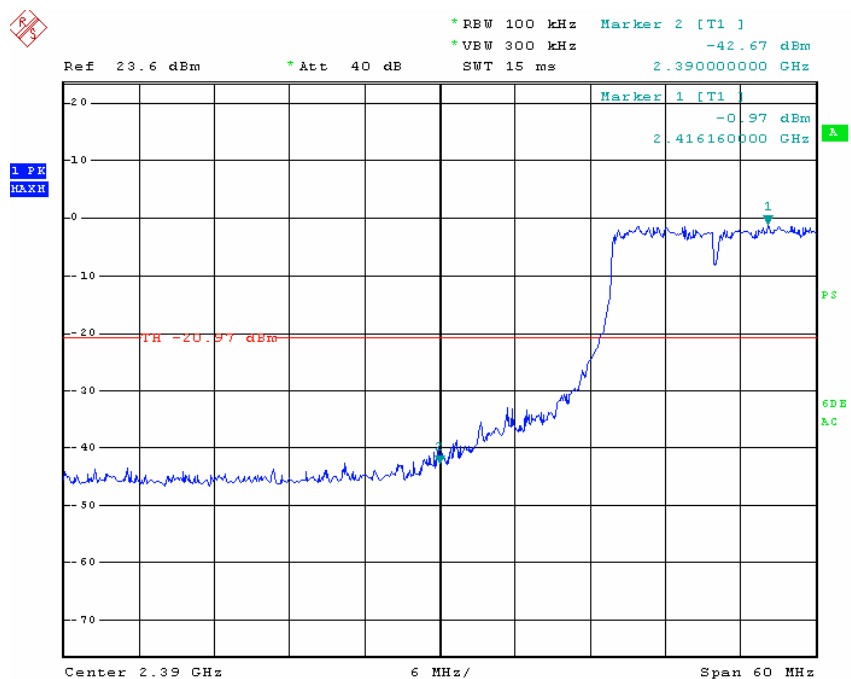
IEEE 802.11b, CH high, 1Mbps



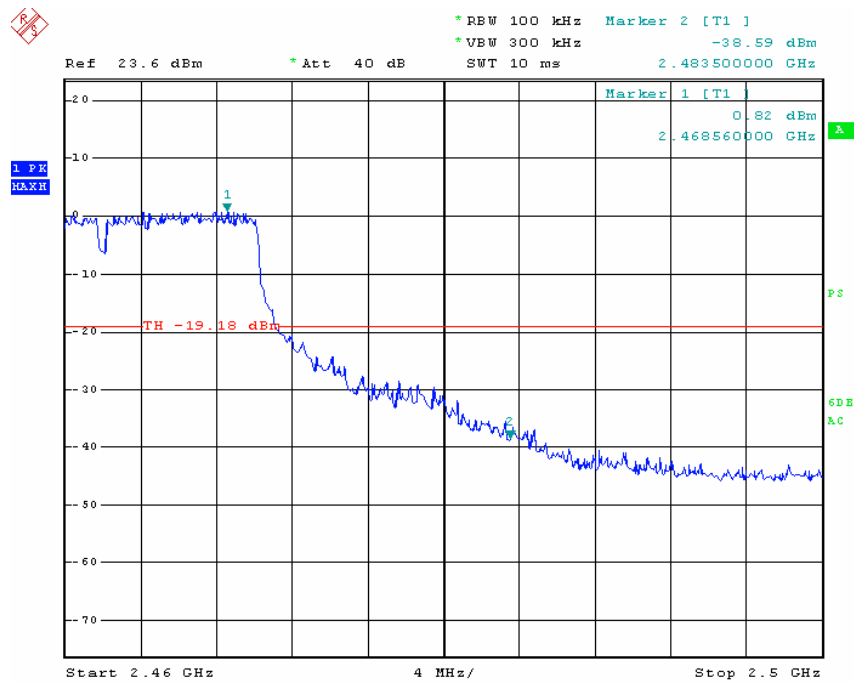
IEEE 802.11b, CH low, 11Mbps



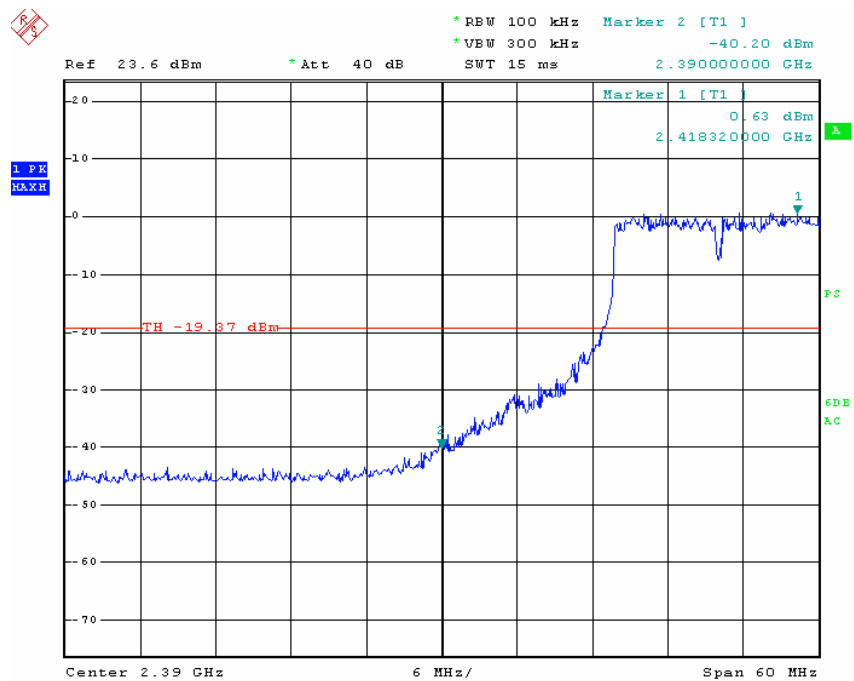
IEEE 802.11b, CH high, 11Mbps



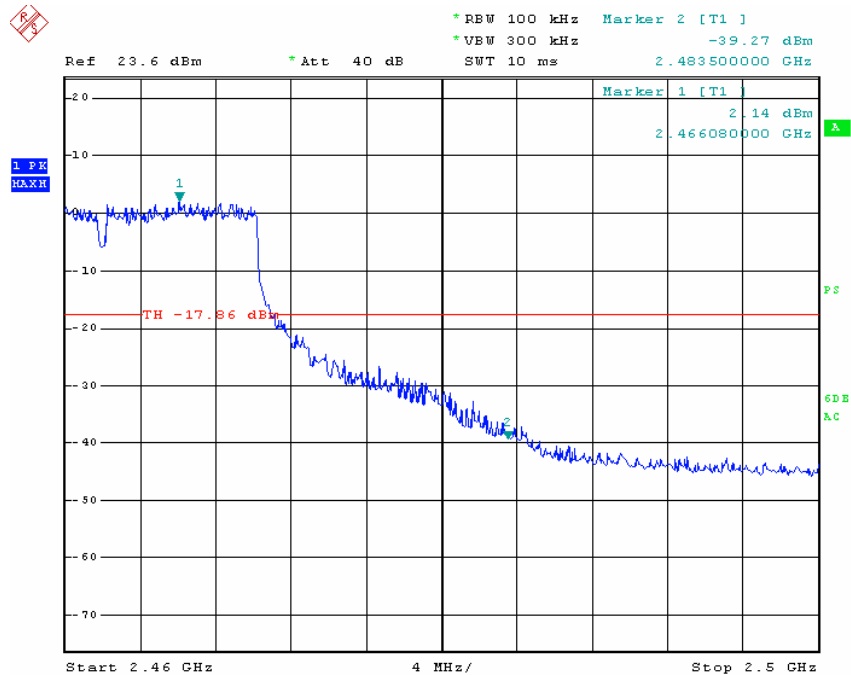
IEEE 802.11g, CH low, 6Mbps



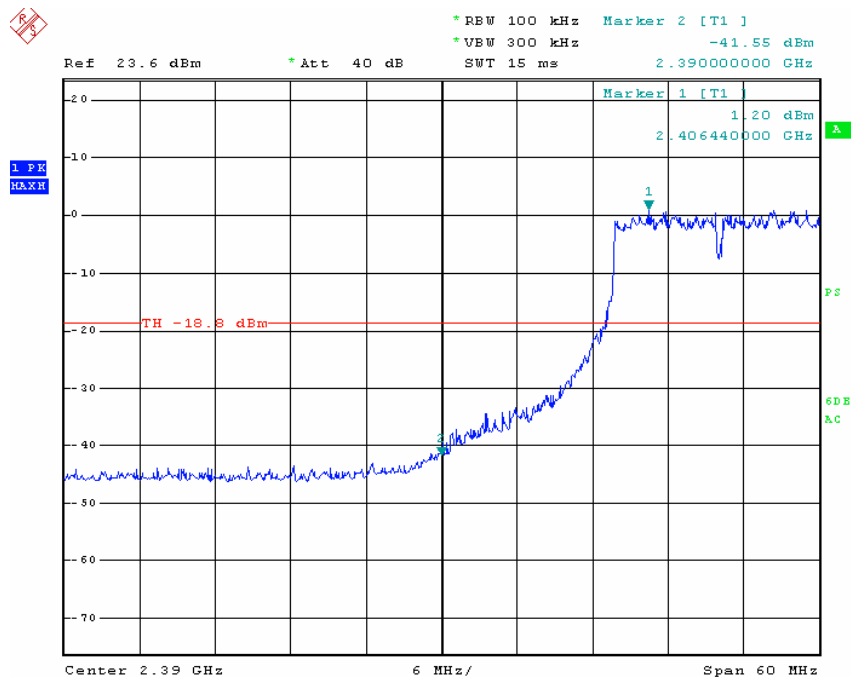
IEEE 802.11g, CH high, 6Mbps



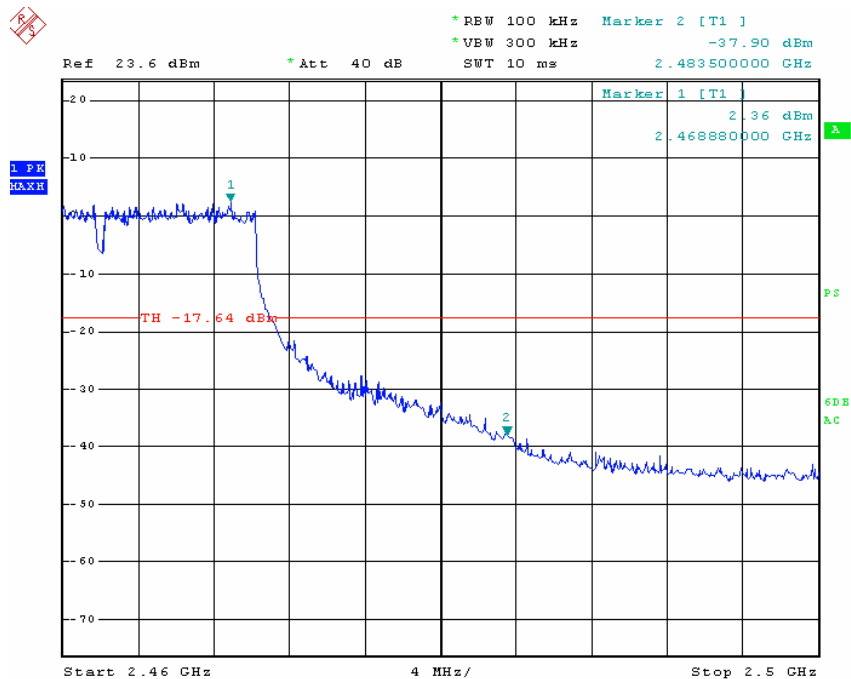
IEEE 802.11g, CH low, 24Mbps



IEEE 802.11g, CH high, 24Mbps



IEEE 802.11g, CH low, 54Mbps



IEEE 802.11g, CH high, 54Mbps

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

CE Test Setup (front)



CE Test Setup (back)



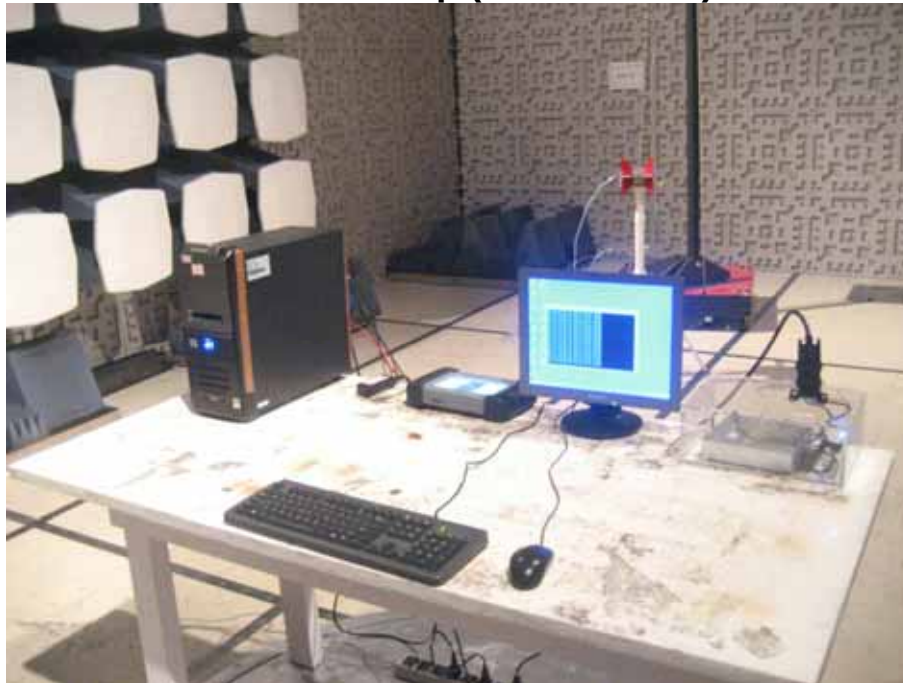
RE Test Setup (9 kHz ~ 30MHz)



RE Test Setup (30MHz ~ 1GHz)



RE Test Setup (Above 1GHz)



APPENDIX 2 EXTERNAL PHOTOGRAPHS OF EUT



View of total EUT



View of external EUT-1



View of external EUT-2

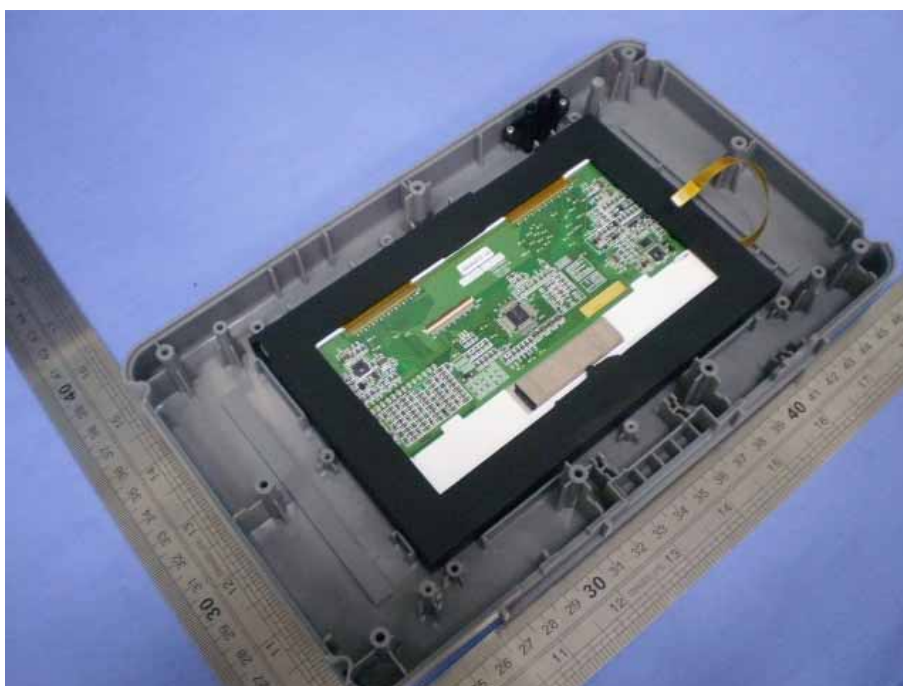


View of adaptor

APPENDIX 3 INTERNAL PHOTOGRAPHS OF EUT



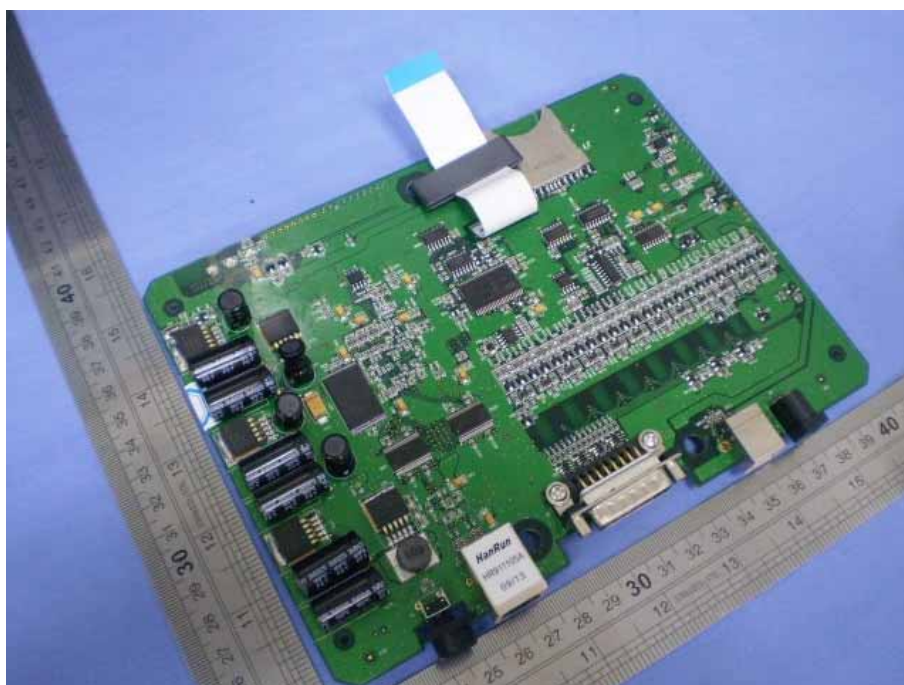
View of internal EUT-1



View of internal EUT-2



View of internal EUT-3



View of internal EUT-4

----- End of report -----