FCC WIFI TEST REPORT

No. 150106-WIFI

For

Bullitt Group

Product Name: Mobile Phone

Model Name: IM 5

Trade Name: Kodak

Issued Date: 2015-02-06

Test Laboratory:

GCCT, *Guangdong Telecommunications Terminal Products Quality Supervision and Testing Center*

Technology Road, High-tech Zone, He Yuan, Guang Dong, PR China 517001

Tel:+86(0)762-3607181, Fax:+86(0)762-3603336 Email: ncctmail@126.com. www.ncct.org.cn

CONTENTS

GENERAL SUMMARY

Product Name	Mobile Phone
Model Name	IM 5
Applicant	Bullitt Group
Manufacturer	CK Telecom Limited
Test Laboratory	GCCT, Guangdong Telecommunications Terminal Products Quality Supervision and Testing Center
Reference Standards	FCC CFR 47 Part 15C:"Radio Frequency Devices Sub-Part C: intentional Radiators"
Test Conclusion	This portable wireless equipment has been measured in all cases requested by the relevant standards. Test results in annex B of this test report are below limits specified in the relevant standards. General Judgment: Pass Date of issue: 2015.02.06
Comment	The test results in this report apply only to the tested sample of the stated device/equipment.

Approved by:	*Reviewed by:*	*Tested by:*
Luo Jian	Wen Xiaoyong	Gao Xiaoqing
Manager	Deputy Manager	Test Engineer

1. Test Laboratory

1.1 Testing Location

Company Name	GCCT, Guangdong Telecommunications Terminal Products Quality Supervision and Testing Center
Address	Technology Road, High-tech Zone, Heyuan, Guangdong Province, PR.China
Postal Code	517001
CNAS Registration No.	L4992
FCC Registration No.	303878
Telephone	+86-762-3607221
Fax	+86-762-3603336

1.2 Testing Environment

Environment Data	Temperature(℃)	Humidity(%)
Maximum Ambient	24.1	50
Minimum Ambient	20.2	41

EUT is under testing environment. The Extreme Temp. is provided by Applicant.

1.3 Project Data

Project Leader	Wen Xiaoyong
Testing Start Date	2015-01-26
Testing End Date	2015-02-06

2. Client Information

2.1 Applicant Information

Company Name	Bullitt Group
Address	4 The Aquarium, 1-7 King Street, Reading, RG1 2AN, UK
City	/
Postal Code	/
Country	/
Telephone	+44 1189 580 449
Fax	/

2.2 Manufacturer Information

Company Name	CK Telecom Limited
Address	Technology Road.High-Tech Development Zone. Heyuan
City	heyuan
Postal Code	/
Country	China
Telephone	0755-26738515
Fax	0755-26739500

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1 About EUT

Model Name	IM 5
FCC ID	ZL5IM5
Tx Frequency	GSM850:824.2～848.8 MHz UMTS Band V : 826.4~846.6MHz PCS1900 TX: 1850.2~1909.8MHz UMTS Band II TX: 1852.4~1907.6MHz Bluetooth/BLE: 2402 ~ 2480 MHz WIFI(802.11b/g/n-20): 2412 ~ 2462 MHz WIFI(n-40): 2422 ~ 2452 MHz
Rx Frequency	GSM850: 869.2~893.8 MHz UMTS Band V : 871.4~891.6 MHz PCS1900 TX: 1930.2~1989.8 MHz UMTS Band II TX: 1932.4~1987.6 MHz Bluetooth/BLE: 2402 ~ 2480 MHz WIFI(802.11b/g/n-20): 2412 ~ 2462 MHz WIFI(n-40): 2422 ~ 2452 MHz
Number of Channels	GSM850&WCDMA Band V:25 PCS1900&WCDMA Band II: 60 Bluetooth:79 WIFI(802.11b/g/n-20):11 WIFI(n-40):7 BLE:40
Modulation	GSM&DCS:GMSK WCDMA:BPSK/QPSK Bluetooth: GFSK&π/4-DQPSK&8DPSK WIFI:CCK/OFDM BLE:GFSK

Antenna Type	PIFA(GSM/DCS/WCDMA); MONOPOLE (Bluetooth/WIFI)
Antenna Gain	GSM850:-1dBi DCS1900: 1dBi WCDMA850: -1dBi WCDMA1900: 1dBi Bluetooth/BLE/WIFI: -2dBi
Normal Voltage	3.7V
Extreme Low Voltage	3.6V
Extreme High Voltage	4.2V
Extreme Low Temperature	0℃
Extreme High Temperature	40℃

Note: Photographs of EUT are shown in ANNEX A of this test report.

Extreme Voltage and Temperature is provided by Applicant.

3.2 Internal Identification of EUT

EUT ID *	IMEI	HW Version	SW Version
150106-M03	1:355616029939703 2:355616029941154	XL-V2.0	XL01D-S13A_BULLITT_L7EN_202_141230
150106-M04	1:355616029939216 2:355616029940669	XL-V2.0	XL01D-S13A_BULLITT_L7EN_202_141230

*EUT ID: is used to identify the test sample in the lab internally. 150106-M03 and 150106-M04 are the same mobile phone.

3.3 Internal Identification of AE

AE ID *	Description	Type	SN
150106-B03	Battery	CA366069HV	/
150106-C03	Adapter	A8-501000	/
150106-B04	Battery	CA366069HV	/
150106-C04	Adapter	A8-501000	/

*AE ID: is used to identify the test sample in the lab internally. 150106-B03 and 150106-B04 are the same accessories, 150106-C03 and 150106-C04 are the same accessories.

4. Test Results

4.1 Summary of Test Results

No	Test cases	Sample	Verdict
1	Maximum transmit power	M03	Pass

2	Maximum Power Spectral Density	M03	Pass
3	6dB Occupied Bandwidth	M03	Pass
4	Band Edge Compliance	M03	Pass
5	Conducted Transmission Spurious Emission	M03	Pass
6	AC Conducted Emission	M04	Pass
7	Radiated Spurious Emissions	M04	Pass
8	Antenna Requirements	M03	Pass

Note: please refer to Annex B in this test report for the detailed test results.

All measurement uncertainty is not taken into consideration for all presented test result.

4.2 Statements

GCCT has evaluated the test cases requested by the applicant/manufacturer as listed in section 4.1 of this report, for the EUT specified in section 3, according to the standards or reference documents listed in general summary.

5. Test Equipment Utilized

Table 1. Measurement Equipment

Hardware						
No.	**Name**	**Model**	**SN**	**Manufacturer**	**Cal. Date**	**Cal. Due Date**
1	Spectrum Analyzer	N9020A	MY52091261	Agilent	2014.08.15	2015.08.15
2	Switch Unit	/	E0112	/		/
Software						
Tech WIFI		v1.0.3				

Table 2. Radiated emission test system

No.	Name	Model	SN	Manufacturer	Cal. date	Cal. Due Date
1	Spectrum Analyzer	E4440A	MY48250641	Agilent	2014.08.15	2015.08.15
2	BiCoNilog Antenna	3142D	110050	ETS-Lindgren	2014.08.15	2015.08.15
3	Horn Antenna	3117	129169	ETS-Lindgren	2014.08.15	2015.08.15
4	Signal Generator	N5183A-532	MY49060563	Agilent	2014.08.15	2015.08.15
5	Universal Radio Communication Tester	E5515C	MY48367105	Agilent	2014.08.15	2015.08.15
6	RF Preselector	N9039A	MY48260024	Agilent	/	/
7	Loop Antenna	HFH2	860015/00	R&S	2014.08.15	2015.08.15

ANNEX A: EUT Photograph

EUT Front View

EUT behind View

EUT Left View

EUT Right View

EUT Top View

EUT Rear View

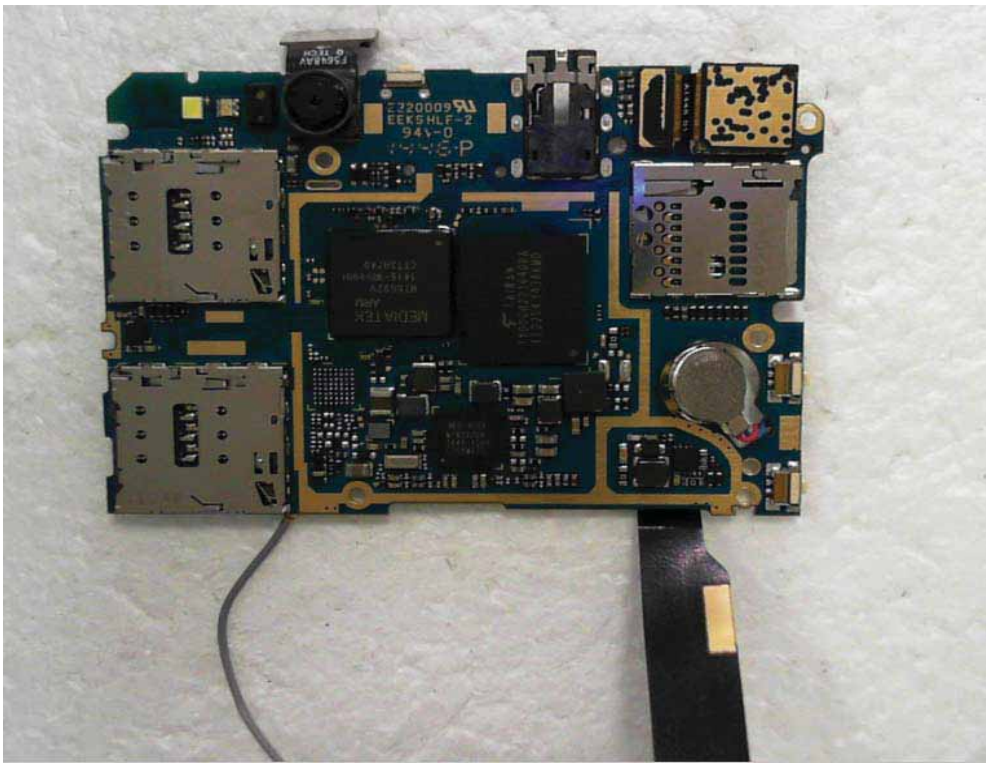
All

cover off

Mainboard With shielding Front View

Mainboard Without shielding Front View

Mainboard Rear

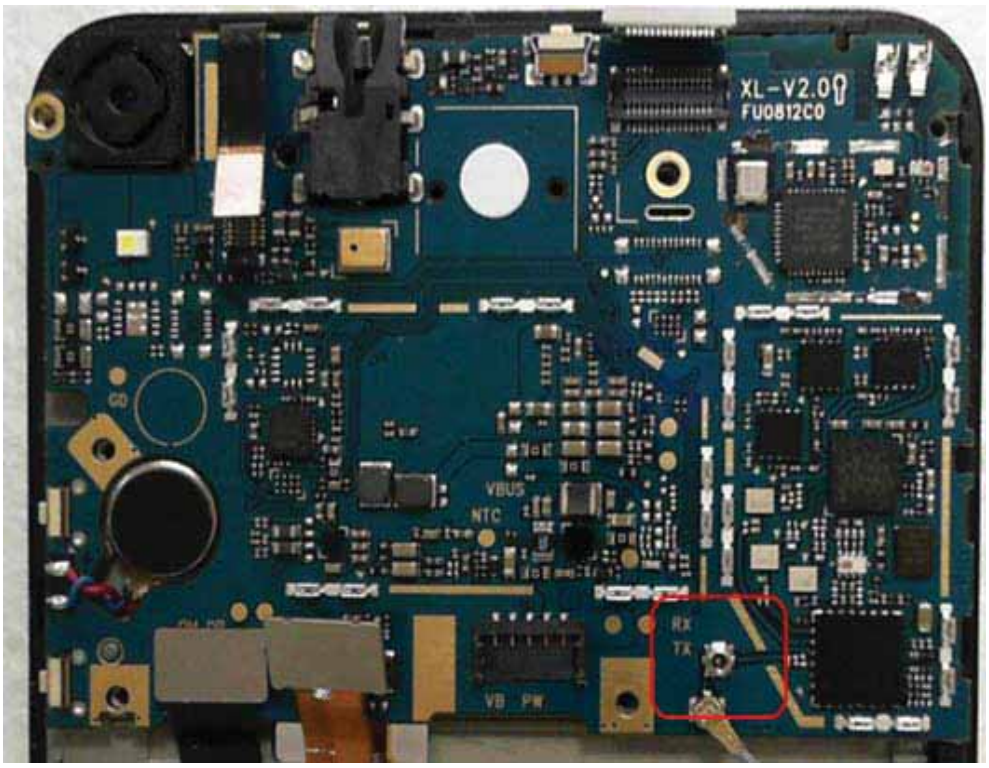


Battery

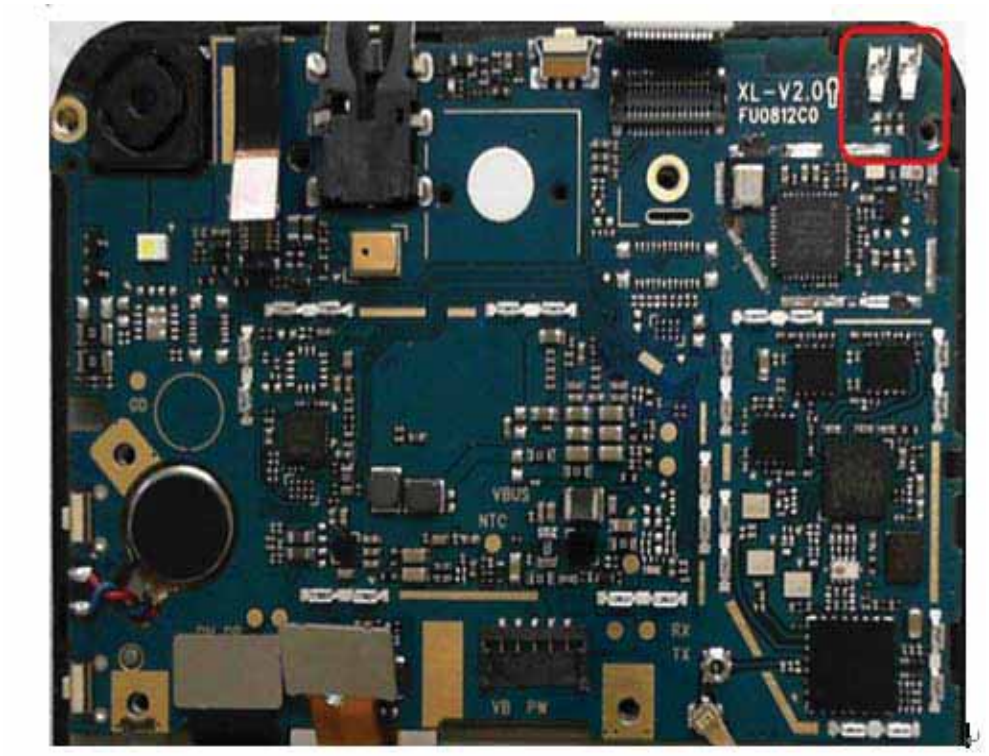
USB Cable

Headset

GSM/DCS/UMTS Antenna View



BT/WIFI Antenna View

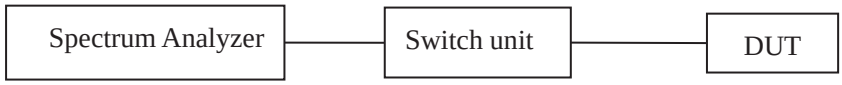


Adapter


Adapter Power
Model:A8-501000
Input:100-240V~50/60Hz
0.2A Max.
Output:5.0V ⎓1.0A
c UL us
LISTED
E466731
Made in China
DongGuan Anhai Power Technology Co.,Ltd.

ANNEX B: Detailed Test Results

The radiated test setup is shown in each radiated test case section. The conducted test setup is shown as following:



All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.

B.1 Maximum Transmit Power

B.1.1 Description

The maximum Peak Output power shall be equal to or less than 30dBm.

B.1.2 Test Results

Mode	Data rate(Mbps)	Limit (dBm)	Maximum transmit power(dBm)			Verdict
			2412MHz	2437MHz	2462MHz	
802.11b	1	30	12.47	12.239	11.372	Pass
802.11g	6		10.889	10.588	10.835	Pass
802.11n-20	6.5/7.2		9.481	9.714	9.981	Pass
Mode	**Data rate(Mbps)**	**Limit (dBm)**	**Maximum transmit power(dBm)**			**Verdict**
			2422MHz	**2437MHz**	**2452MHz**	
802.11n-40	6.5/7.2	30	7.463	8.884	8.365	Pass
Note	Antenna Gain is -2dBi					

B.2 Maximum Power Spectral Density

B.2.1 Description

The maximum Peak power spectral density shall be equal to or less than 8 dBm/3kHz.

B.2.2 Test Results

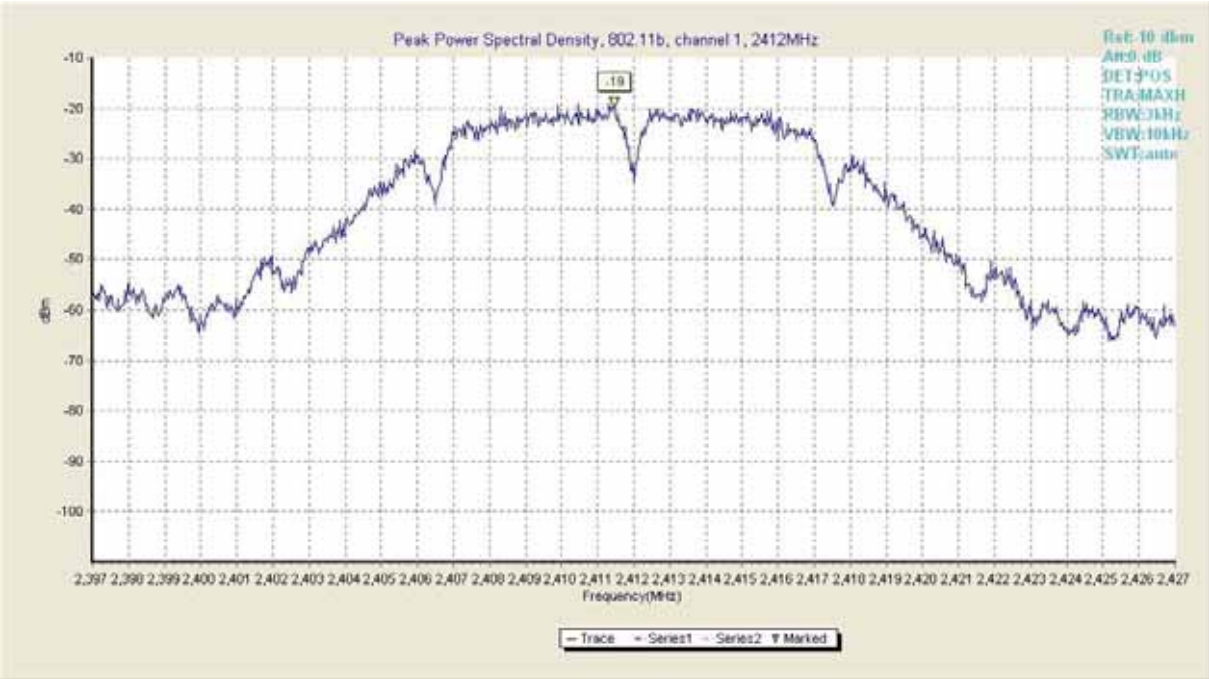
Test equipment parameter:

TRA: Max Hold RBW: 3kHz VBW: 10kHz Sweep time: AUTO

802.11b mode

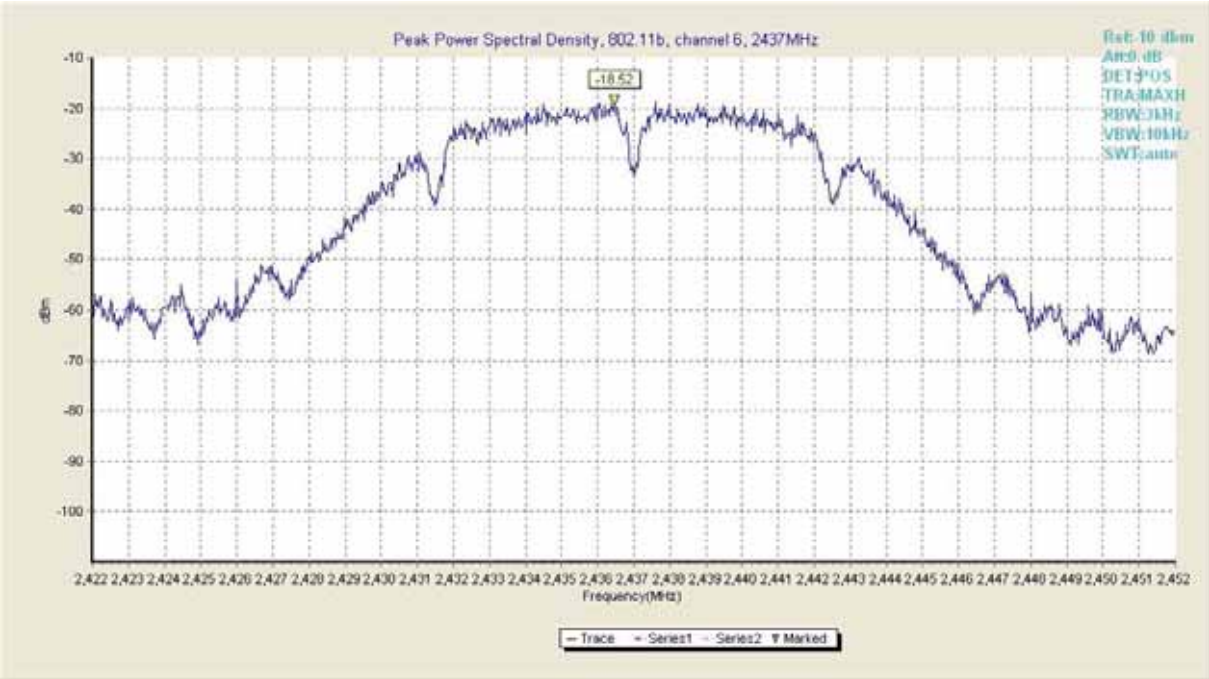
Limit	PSD(dBm/3kHz)	Verdict

(PSD dBm/3kHz)	Low Ch 2412MHz		Mid Ch 2437 MHz		High Ch 2462 MHz		
8	-19	Fig.1	-18.52	Fig.2	-17.62	Fig.3	Pass
Antenna Maximum Gain: -2dBi							



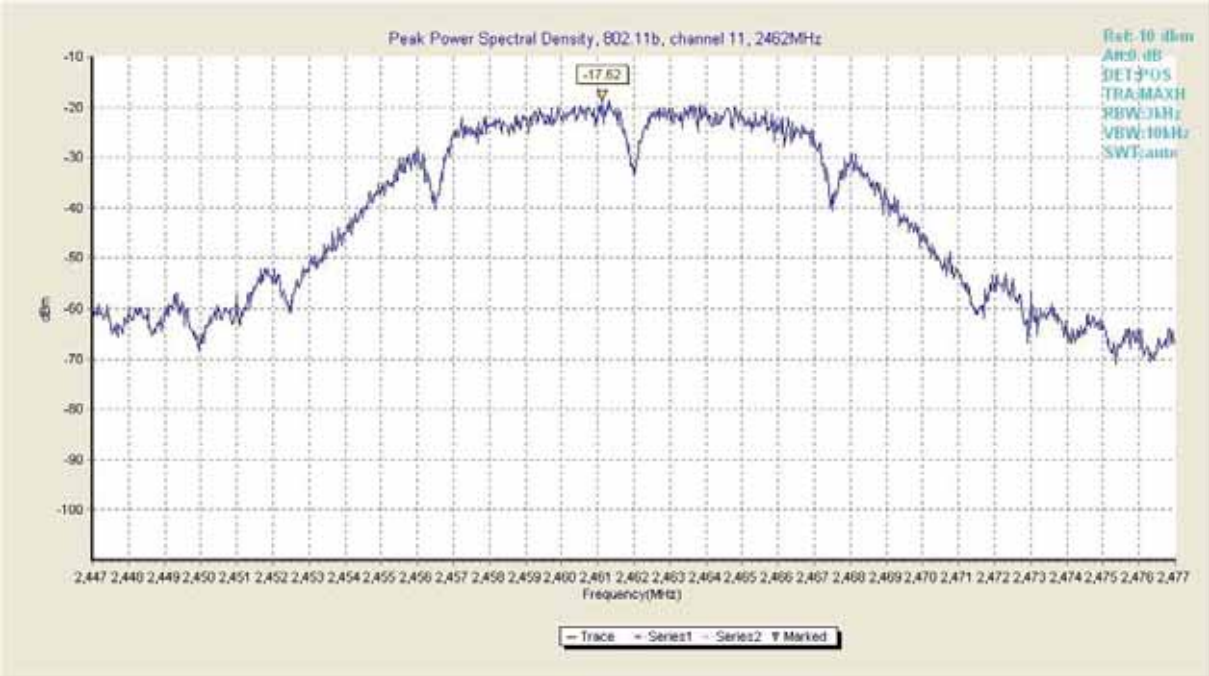
Test plot 1	2411.459MHz	-19.000dBm

Fig.1 Peak power spectral density of 802.11b in channel 1,2412MHz



Test plot 1	2436.459MHz	-18.520 dBm

Fig.2 Peak power spectral density of 802.11b in channel 6,2437MHz

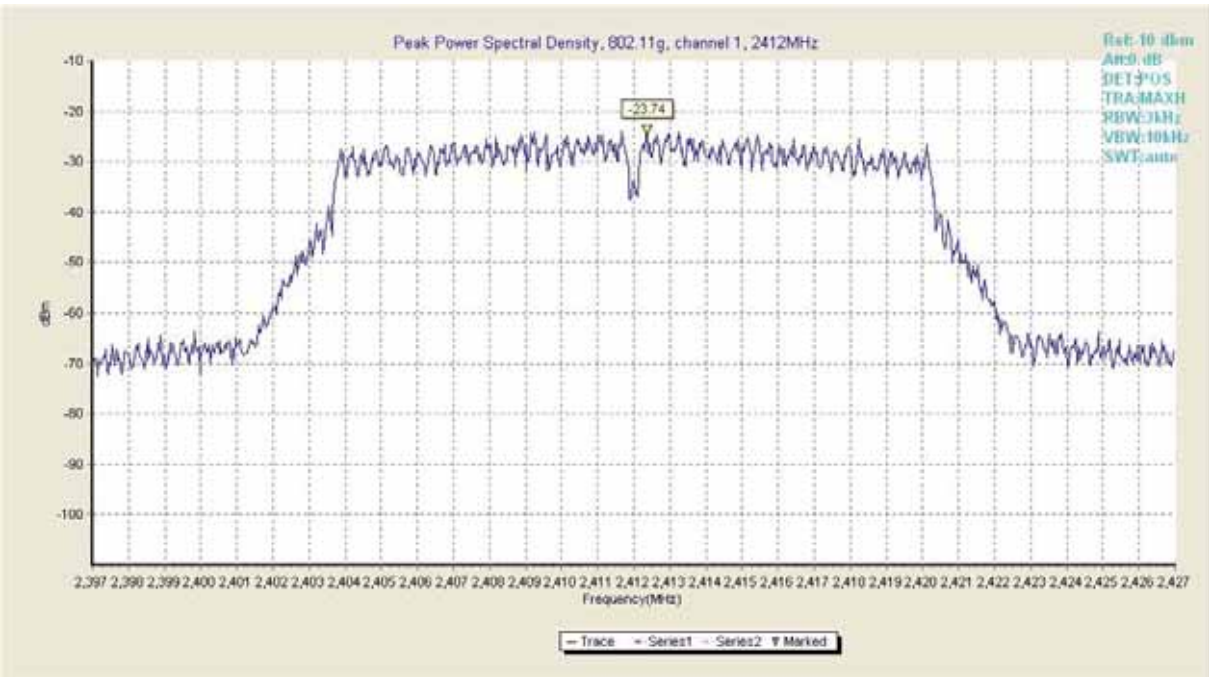


Test plot 1	2461.129MHz	-17.620dBm

Fig.3 Peak power spectral density of 802.11b in channel 11,2462MHz

802.11g mode

Limit (PSD dBm/3kHz)	PSD(dBm/3kHz)						Verdict
	2412MHz		2437 MHz		2462 MHz		
8	-23.74	Fig.4	-20.26	Fig.5	-20.51	Fig.6	Pass
Antenna Maximum Gain: -2dBi							

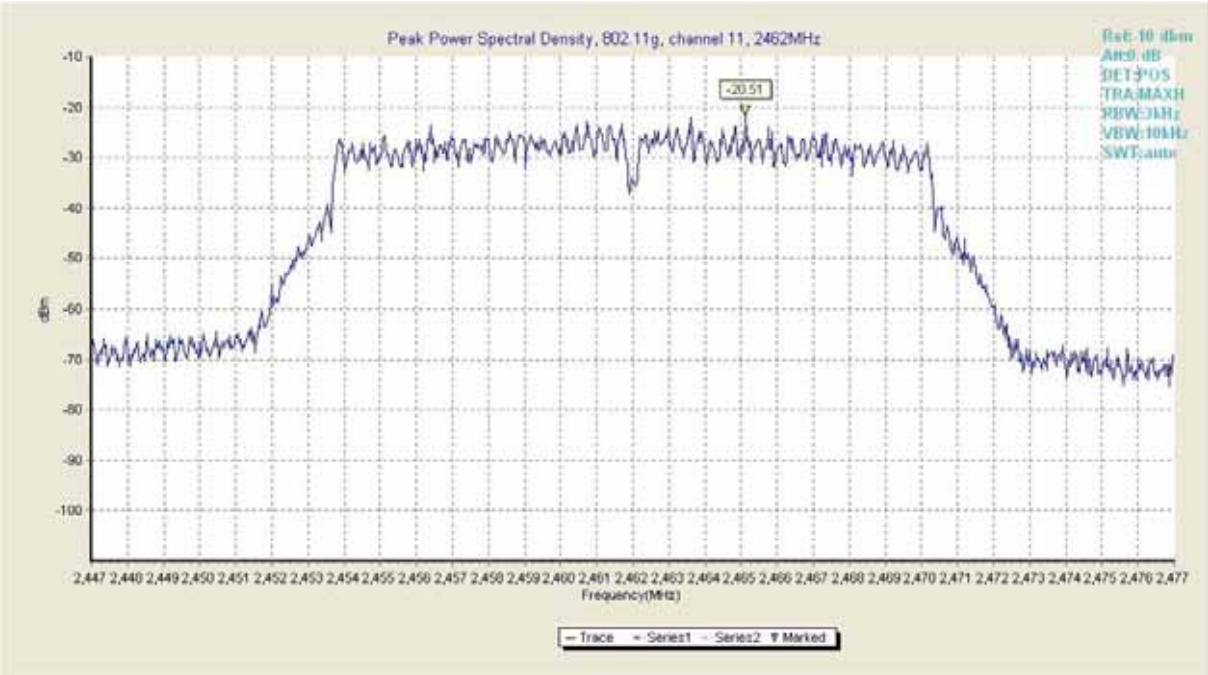


Test plot 1	2412.360MHz	-23.740dBm

Fig.4 Peak power spectral density of 802.11g in channel 1,2412MHz

Test plot 1	2438.530MHz	-20.260dBm

Fig.5 Peak power spectral density of 802.11g in channel 6,2437MHz

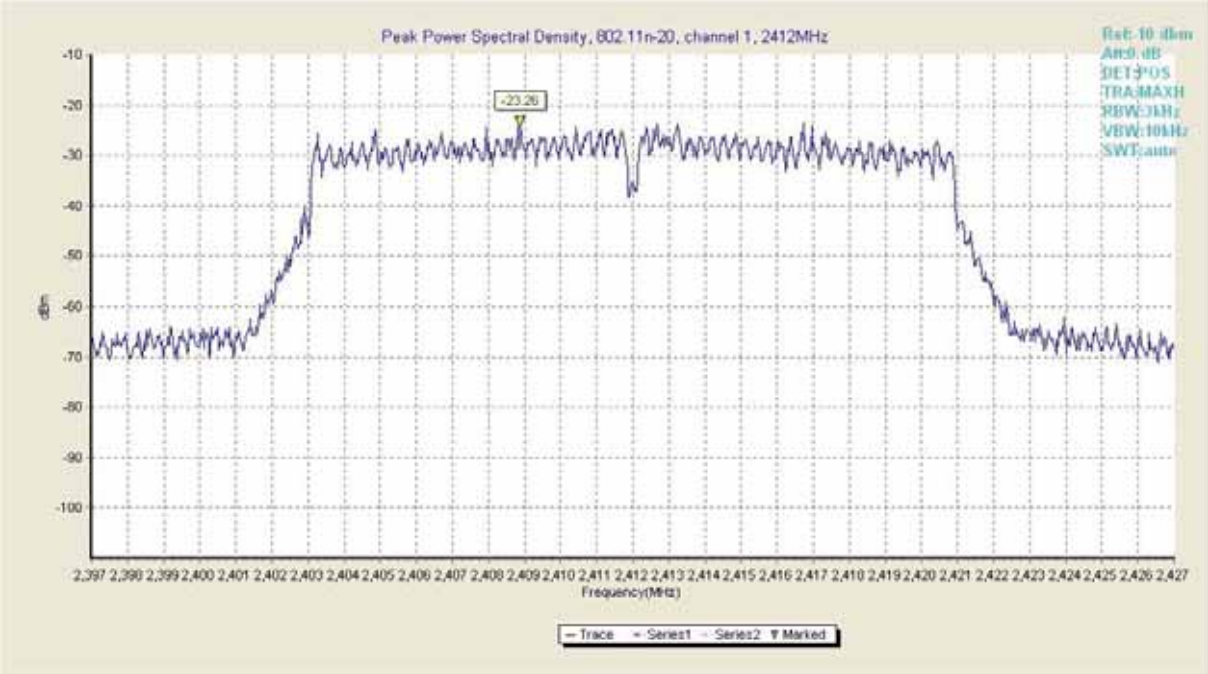


Test plot 1	2465.120MHz	-20.510dBm

Fig.6 Peak power spectral density of 802.11g in channel 11,2462MHz

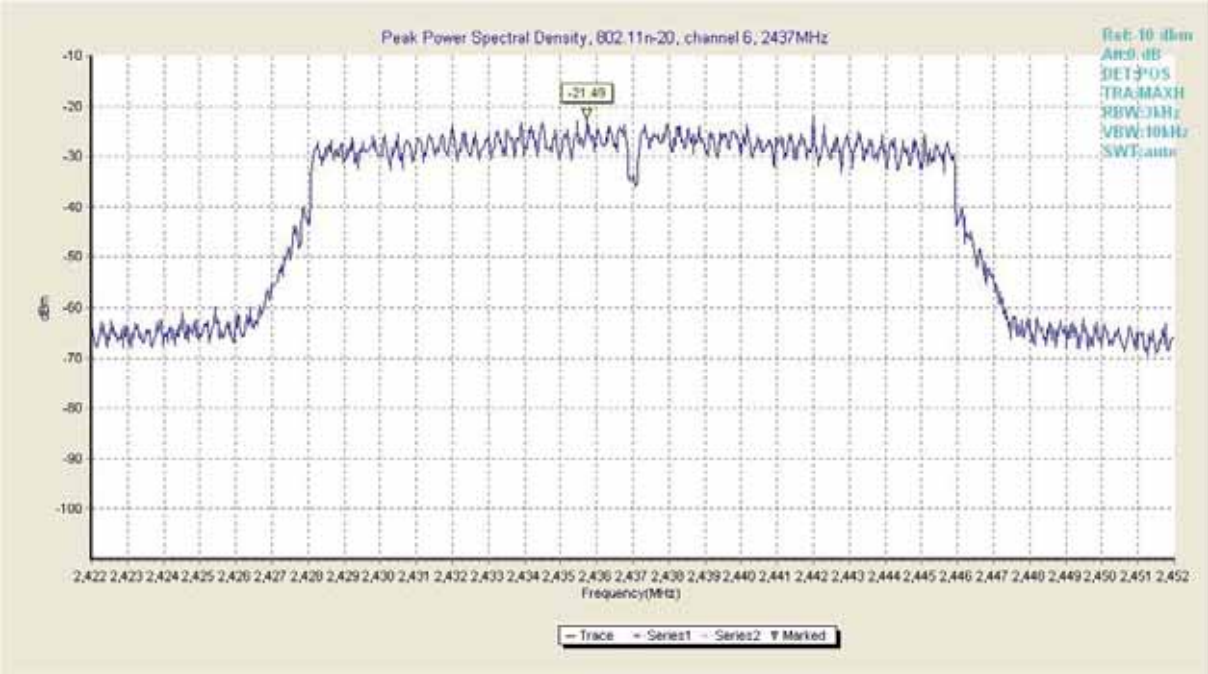
802.11n-20 mode

Limit (PSD dBm/3kHz)	**PSD(dBm/3kHz)**						**Verdict**
	2412MHz		**2437 MHz**		**2462 MHz**		
8	-23.26	Fig.7	-21.49	Fig.8	-22.64	Fig.9	Pass
Antenna Maximum Gain: -2dBi							



Test plot 1	2408.879MHz	-23.260dBm

Fig.7 Peak power spectral density of 802.11n-20 in channel 1,2412MHz



Test plot 1	2435.739MHz	-21.490dBm

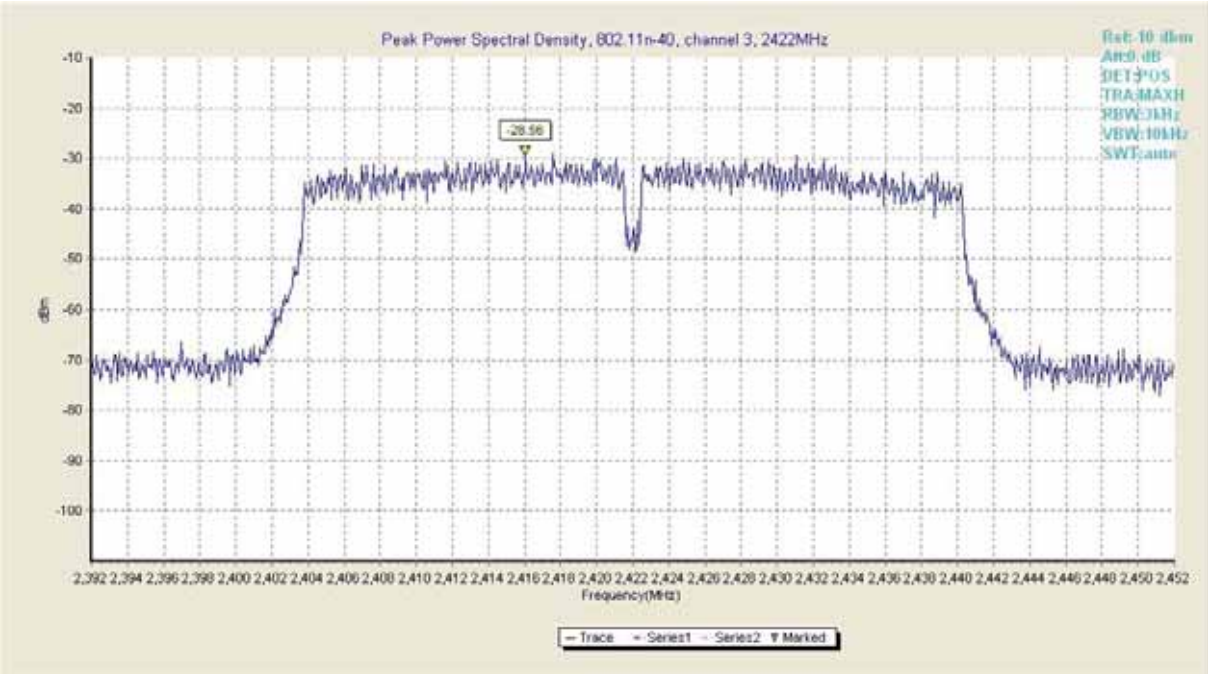
Fig.8 Peak power spectral density of 802.11n-20 in channel 6,2437MHz

Test plot 1	2463.229MHz	-22.639dBm

Fig.9 Peak power spectral density of 802.11n-20 in channel 11,2472MHz

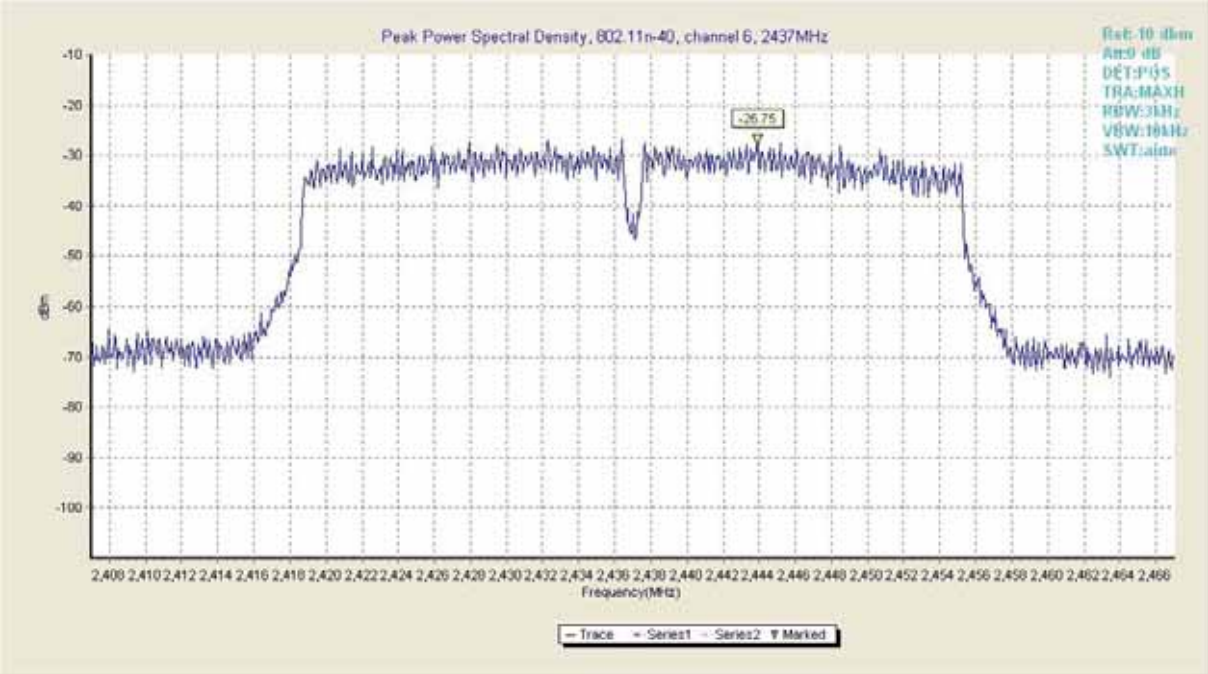
802.11n-40 mode

Limit (PSD dBm/3kHz)	PSD(dBm/3kHz)						Verdict
	2422MHz		2437 MHz		2452 MHz		
8	-28.56	Fig.10	-26.75	Fig.11	-28.3	Fig.12	Pass
Antenna Maximum Gain: -2dBi							



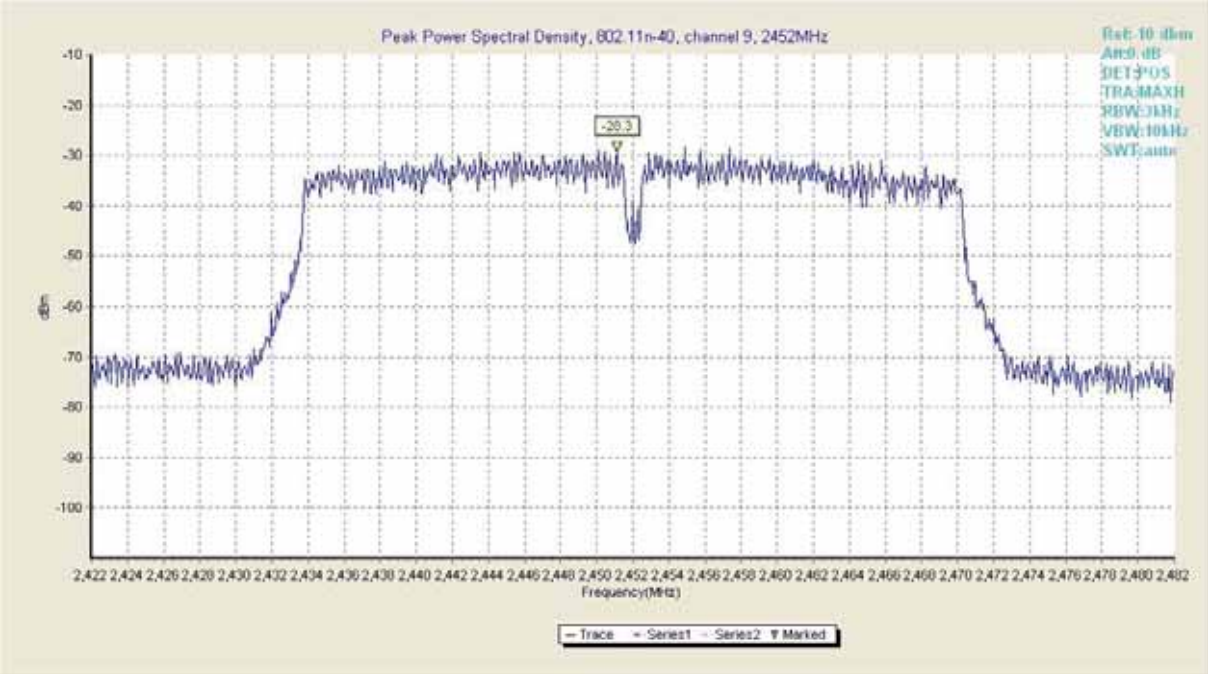
Test plot 1	2416.060MHz	-28.559dBm

Fig.10 Peak power spectral density of 802.11n-40 in channel 3,2422MHz



Test plot 1	2443.899MHz	-26.750dBm

Fig.11 Peak power spectral density of 802.11n-40 in channel 6,2437MHz



Test plot 1	2451.100MHz	-28.299dBm

Fig.12 Peak power spectral density of 802.11n-40 in channel 9,2452MHz

B.3 6dB Occupied Bandwidth

B.3.1 Description

The Occupied 6dB Bandwidth shall be equal to or more than 500 kHz.

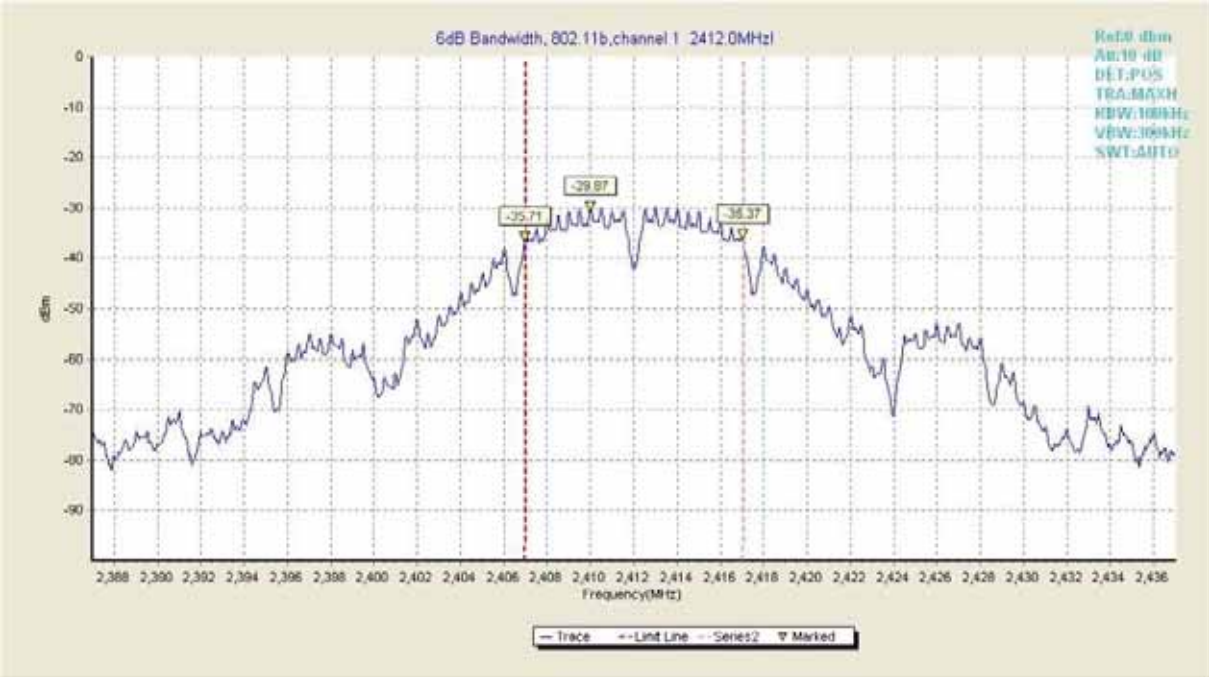
B.3.4 Test Results

Test equipment parameter:

TRA: Max Hold RBW: 100kHz VBW: 300kHz Sweep time: AUTO

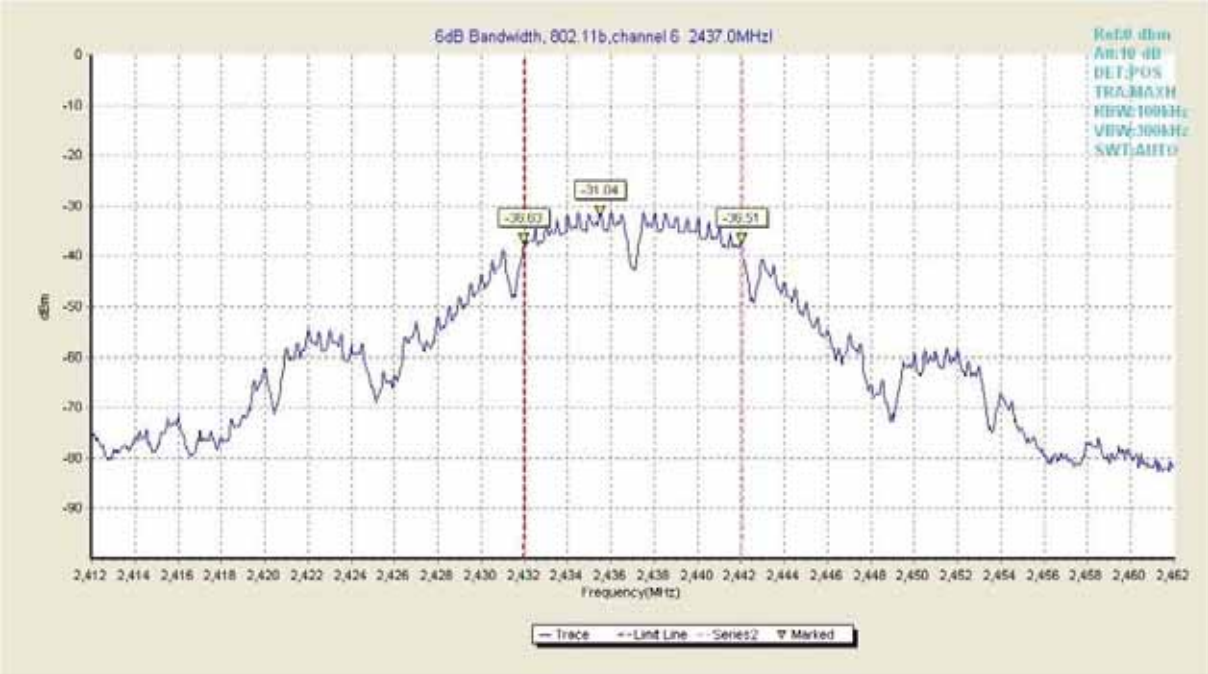
802.11 b mode

Channel	Frequency (MHz)	Limit (MHz)	Occupied Bandwidth (MHz)	Test Results	Verdict
1	2412	＞0.5	10.10	Fig.13	Pass
6	2437		10.10	Fig.14	Pass
11	2462		10.10	Fig.15	Pass



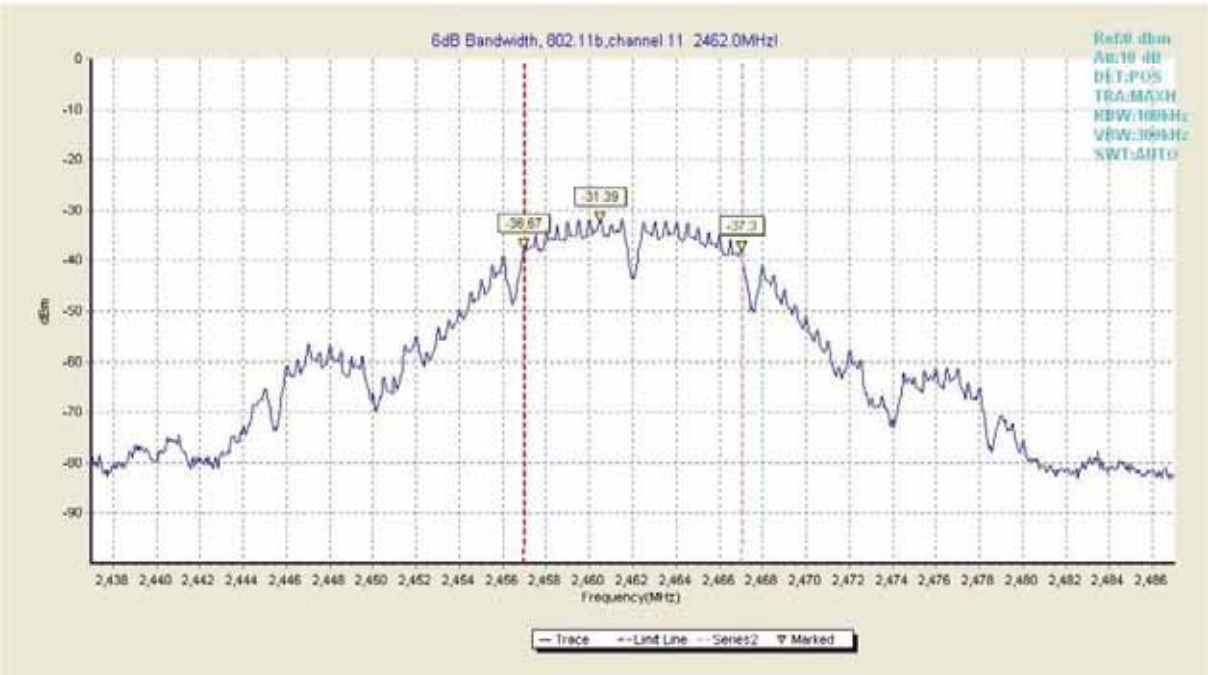
Test plot 1	2406.949MHz	-35.709 dBm
Test plot 2	2417.050 MHz	-35.369 dBm

Fig.13 6dB Bandwidth of 802.11b in channel 1,2412MHz



Test plot 1	2431.949MHz	-36.630 dBm
Test plot 2	2442.050 MHz	-36.509 dBm

Fig.14 6dB Bandwidth of 802.11b in channel 6,2437MHz



Test plot 1	2456.949 MHz	-36.669 dBm
Test plot 2	2467.050 MHz	-37.299 dBm

Fig.15 6dB Bandwidth of 802.11b in channel 11,2462MHz

802.11 g mode

Channel	Frequency (MHz)	Limit (MHz)	Occupied Bandwidth	Test Results	Verdict

			(MHz)		
1	2412	＞0.5	15.30	Fig.16	Pass
6	2437		15.30	Fig.17	Pass
11	2462		15.45	Fig.18	Pass

Test plot 1	2404.449 MHz	-38.549 dBm
Test plot 2	2419.750 MHz	-39.540 dBm

Fig.16 6dB Bandwidth of 802.11g in channel 1,2412MHz

Test plot 1	2429.250 MHz	-39.110 dBm

Test plot 2	2444.550 MHz	-37.860 dBm

Fig.17 6dB Bandwidth of 802.11g in channel 1,2437MHz

Test plot 1	2454.100 MHz	-42.439 dBm
Test plot 2	2469.550 MHz	-40.380 dBm

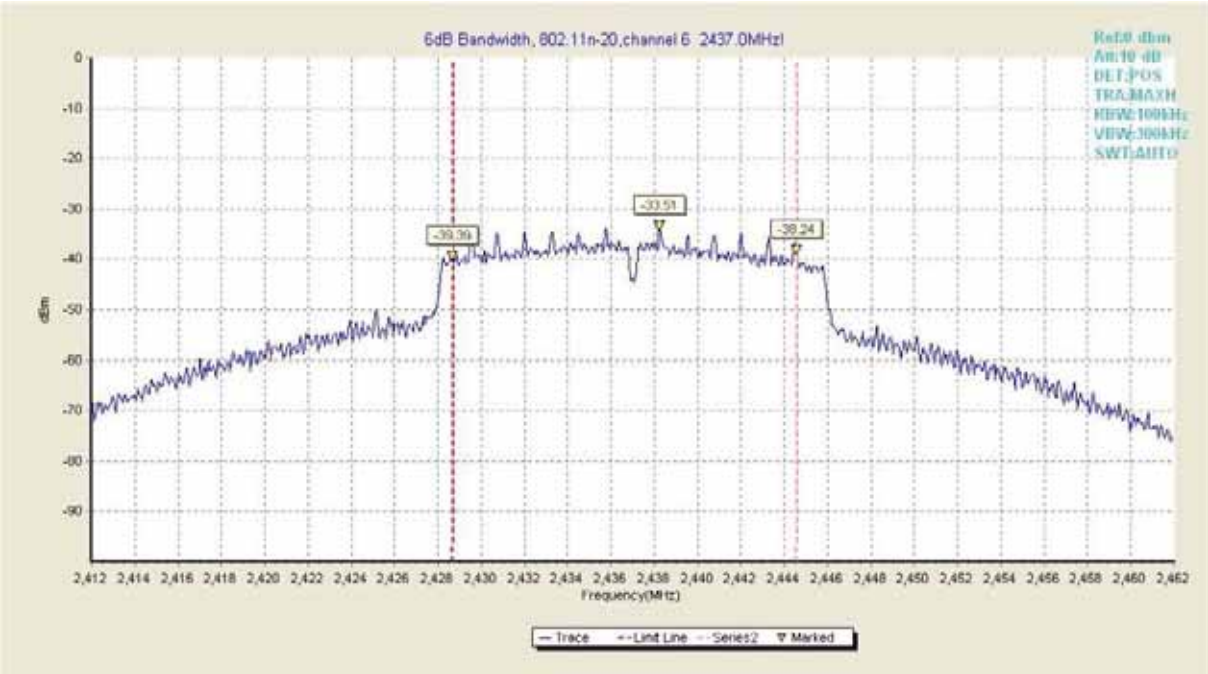
Fig.18 6dB Bandwidth of 802.11g in channel 1,2462MHz

802.11 n-20 mode

Channel	Frequency (MHz)	Limit (MHz)	Occupied Bandwidth (MHz)	Test Results	Verdict
1	2412	＞0.5	15.10	Fig.19	Pass
6	2437		15.90	Fig.20	Pass
11	2462		16.05	Fig.21	Pass

Test plot 1	2404.500 MHz	-37.580 dBm
Test plot 2	2419.600 MHz	-39.830 dBm

Fig.19 6dB Bandwidth of 802.11n-20 in channel 1,2412MHz



Test plot 1	2428.649 MHz	-39.389 dBm
Test plot 2	2444.550 MHz	-38.240 dBm

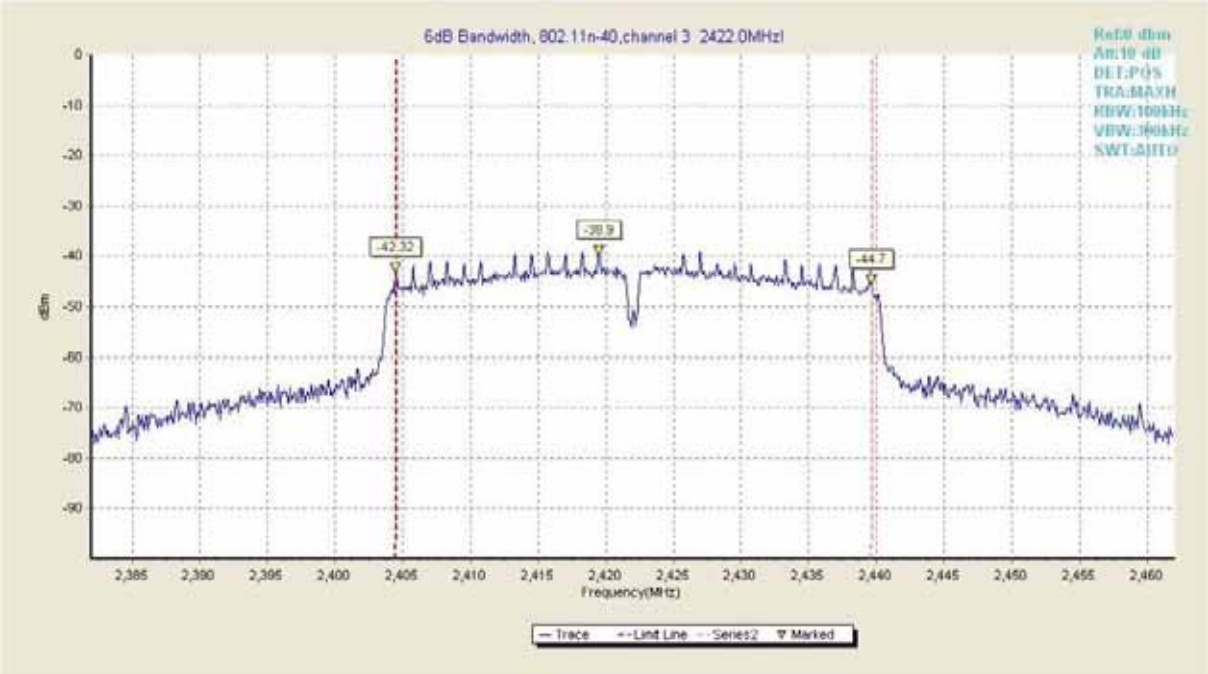
Fig.20 6dB Bandwidth of 802.11 n-20 in channel 6,2437MHz

Test plot 1	2453.500 MHz	-42.029 dBm
Test plot 2	2469.550 MHz	-40.599 dBm

Fig.21 6dB Bandwidth of 802.11 n-20 in channel 11,2462MHz

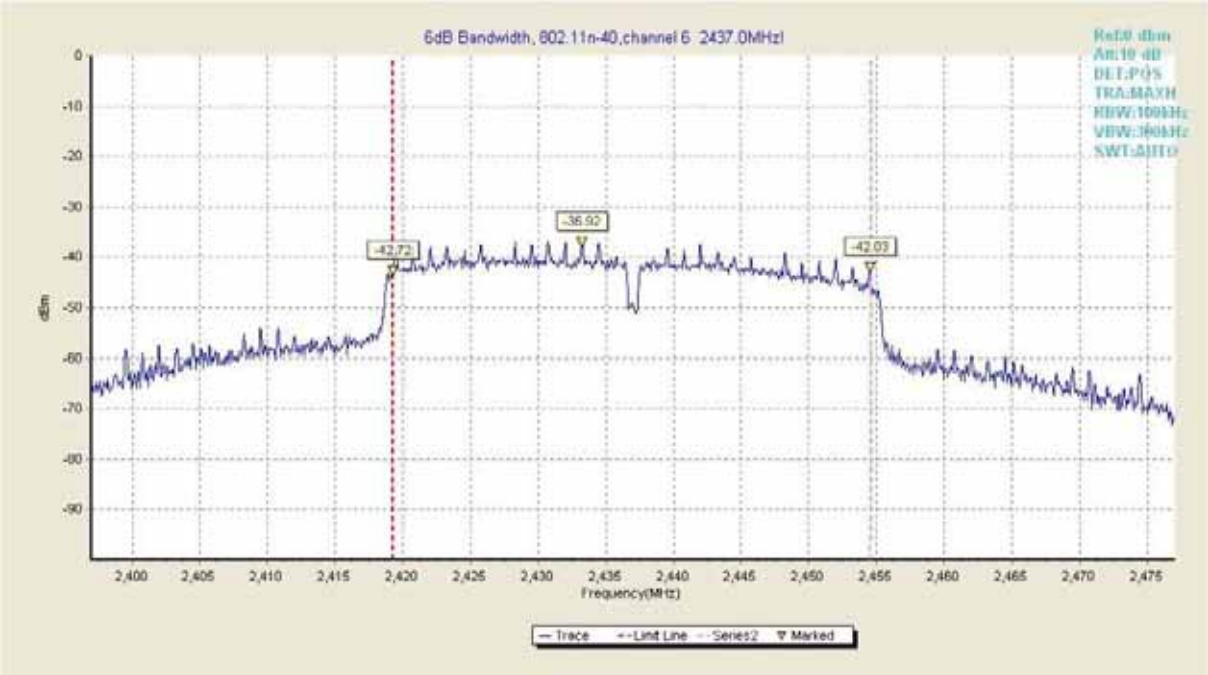
802.11 n-40 mode

Channel	Frequency (MHz)	Limit (MHz)	Occupied Bandwidth (MHz)	Test Results	Verdict
3	2422	＞0.5	35.12	Fig.22	Pass
6	2437		35.28	Fig.23	Pass
9	2452		35.12	Fig.24	Pass



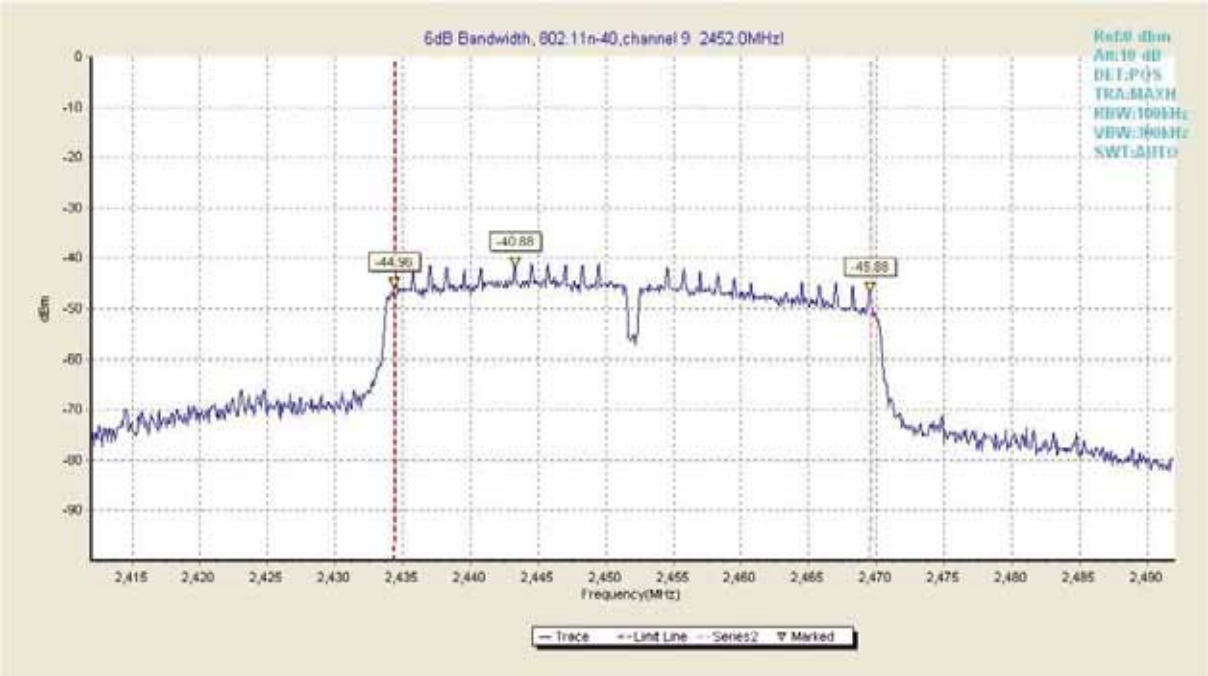
Test plot 1	2404.479 MHz	-42.320 dBm
Test plot 2	2439.600 MHz	-44.700 dBm

Fig.22 6dB Bandwidth of 802.11 n-40 in channel 3,2422MHz



Test plot 1	2419.239 MHz	-42.720 dBm
Test plot 2	2454.520MHz	-42.029 dBm

Fig.23 6dB Bandwidth of 802.11 n-40 in channel 6,2437MHz



Test plot 1	2434.399 MHz	-44.959 dBm
Test plot 2	2469.520 MHz	-45.880 dBm

Fig.24 6dB Bandwidth of 802.11 n-40 in channel 9,2452MHz

B.4Band Edge Compliance

B.4.1 Description

The Band Edges Compliance shall be equal to or more than 20 dB.

B.4.2Test Results

Test equipment parameter:

TRA: Max Hold RBW: 100kHz VBW: 300kHz Sweep time: AUTO

802.11b mode

Channel	Frequency(MHz)	Limit (dB)	Test Result(MHz)		Verdict
1	2412	≥20	29.33	Fig.25	Pass
11	2462		49.51	Fig.26	Pass

Fig25. Frequency Band Edges of 802.11b in channel 1,2412MHz

Fig26. Frequency Band Edges of 802.11b in channel 11,2462MHz

802.11g mode

Channel	Frequency(MHz)	Limit (dB)	Test Result(MHz)		Verdict
1	2412	≥20	29.33	Fig.27	Pass
11	2462		49.51	Fig.28	Pass

Fig27. Frequency Band Edges of 802.11g in channel 1,2412MHz

Fig28. Frequency Band Edges of 802.11g in channel 11,2462MHz

802.11n-20 mode

Channel	Frequency(MHz)	Limit (dB)	Test Result(MHz)		Verdict
1	2412	≥20	21.42	Fig.29	Pass
11	2462		34.30	Fig.30	Pass

Fig29. Frequency Band Edges of 802.11n-20 in channel 1,2412MHz

Fig30. Frequency Band Edges of 802.11n-20 in channel 11,2462MHz

802.11n-40 mode

Channel	Frequency(MHz)	Limit (dB)	Test Result(MHz)		Verdict
3	2422	≥20	21.37	Fig.31	Pass
9	2452		30.84	Fig.32	Pass

Fig31. Frequency Band Edges of 802.11n-40 in channel 1,2422MHz

Fig32. Frequency Band Edges of 802.11n-40 in channel 11,2452MHz

B.5 Conducted Transmission Spurious Emission

B.5.1 Description

All harmonics/spurious must be at least 20 dB down from the highest emissionlevel within the authorized band.For the following out of band conducted spurious emissions plots, the EUT was investigated in all available data rates for ”b”, ”g” and ”n” modes. The worst case spurious emissions for

the 2.4GHz band were found while transmitting in “b” mode at 1 Mbps and are shown in the plots below.

B.5.2 Test Result

Test equipment parameter:

TRA: Max Hold RBW: 100kHz VBW: 300kHz Sweep time: AUTO

802.11b mode

Channel	Frequency Range	Test Results	Verdict
1	30MHz ~ 1GHz	Fig.33	Pass
	1GHz ~ 2.5GHz	Fig.34	Pass
	2.5GHz ~ 7.5GHz	Fig.35	Pass
	7.5GHz ~ 10GHz	Fig.36	Pass
	10GHz ~ 15GHz	Fig.37	Pass
	15GHz ~ 20GHz	Fig.38	Pass
	20GHz ~ 26GHz	Fig.39	Pass
6	30MHz ~ 1GHz	Fig.40	Pass
	1GHz ~ 2.5GHz	Fig.41	Pass
	2.5GHz ~ 7.5GHz	Fig.42	Pass
	7.5GHz ~ 10GHz	Fig.43	Pass
	10GHz ~ 15GHz	Fig.44	Pass
	15GHz ~ 20GHz	Fig.45	Pass
	20GHz ~ 26GHz	Fig.46	Pass
11	30MHz ~ 1GHz	Fig.47	Pass
	1GHz ~ 2.5GHz	Fig.48	Pass
	2.5GHz ~ 7.5GHz	Fig.49	Pass
	7.5GHz ~ 10GHz	Fig.50	Pass
	10GHz ~ 15GHz	Fig.51	Pass
	15GHz ~ 20GHz	Fig.52	Pass
	20GHz ~ 26GHz	Fig.53	Pass

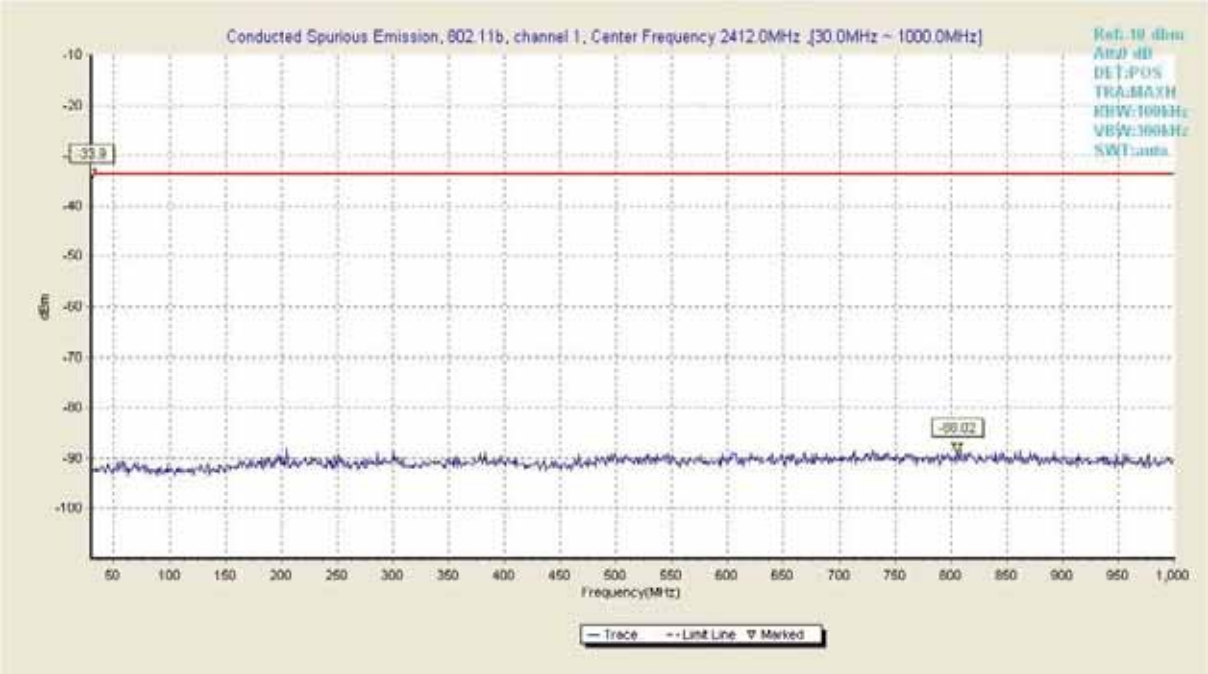


Fig33.Conducted Transmission Spurious Emission of 802.11b in channel 1,30MHz~1GHz

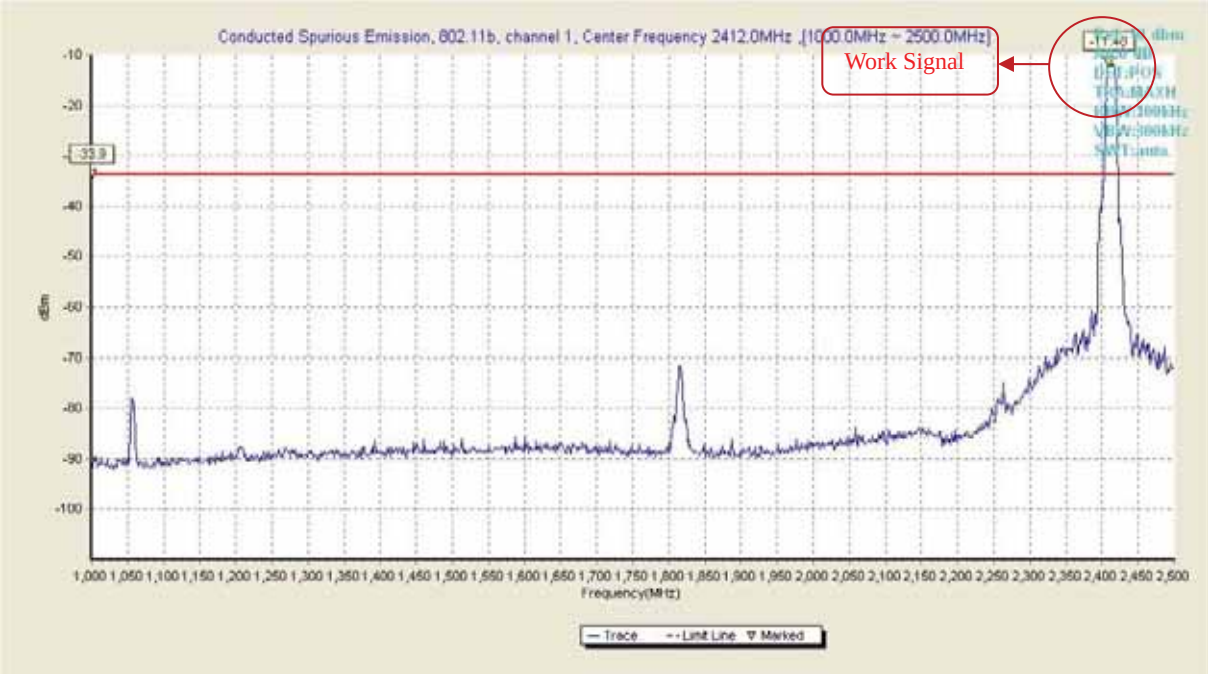


Fig34.Conducted Transmission Spurious Emission of 802.11b in channel 1,1GHz~2.5GHz

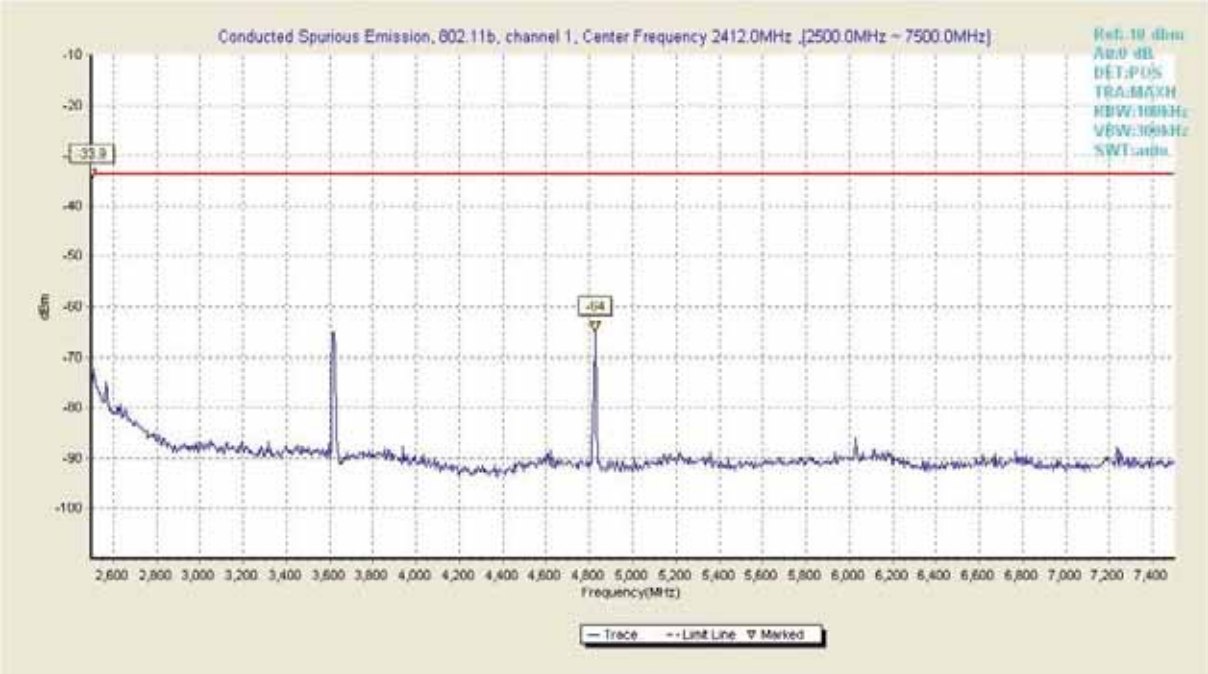


Fig35.Conducted Transmission Spurious Emission of 802.11b in channel 1, 2.5GHz~7.5GHz

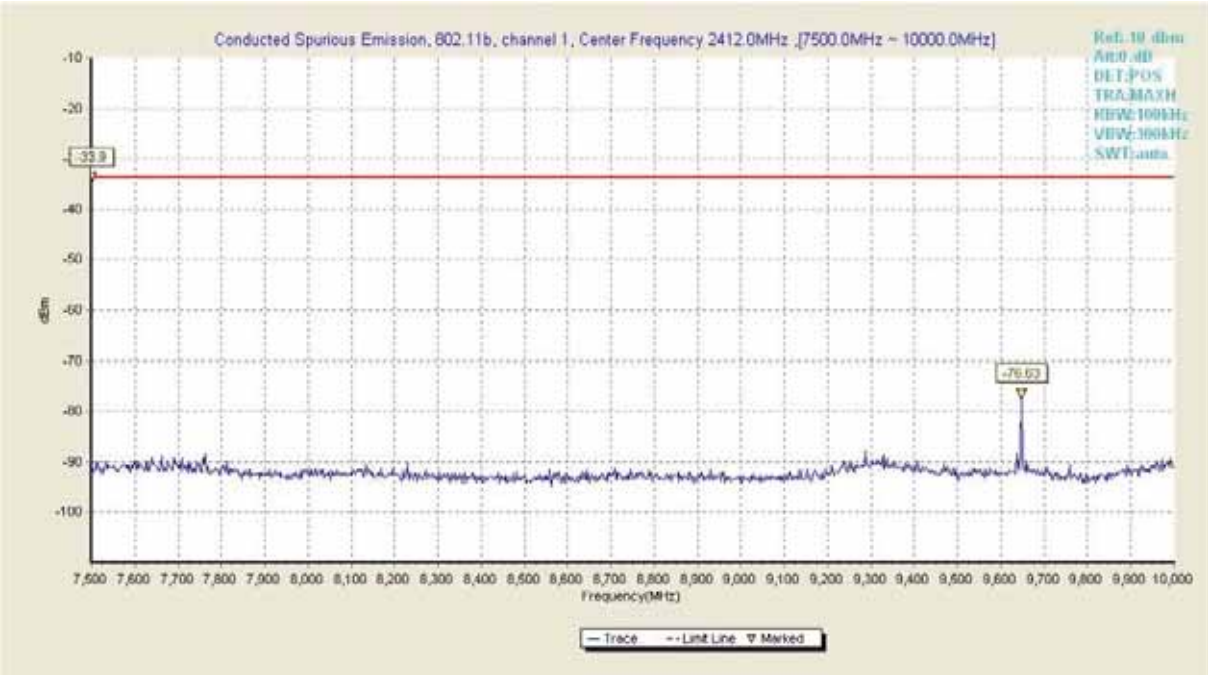


Fig36.Conducted Transmission Spurious Emission of 802.11b in channel 1, 7.5GHz~10.5GHz

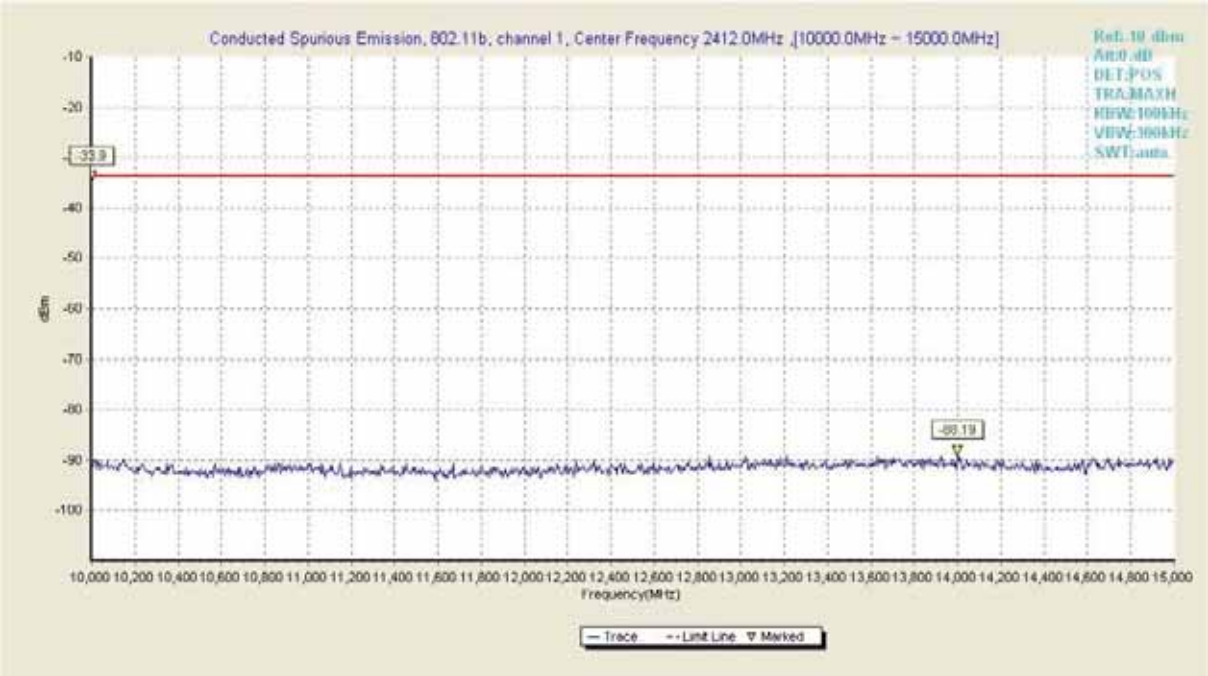


Fig37.Conducted Transmission Spurious Emission of 802.11b in channel 1, 10GHz~15GHz

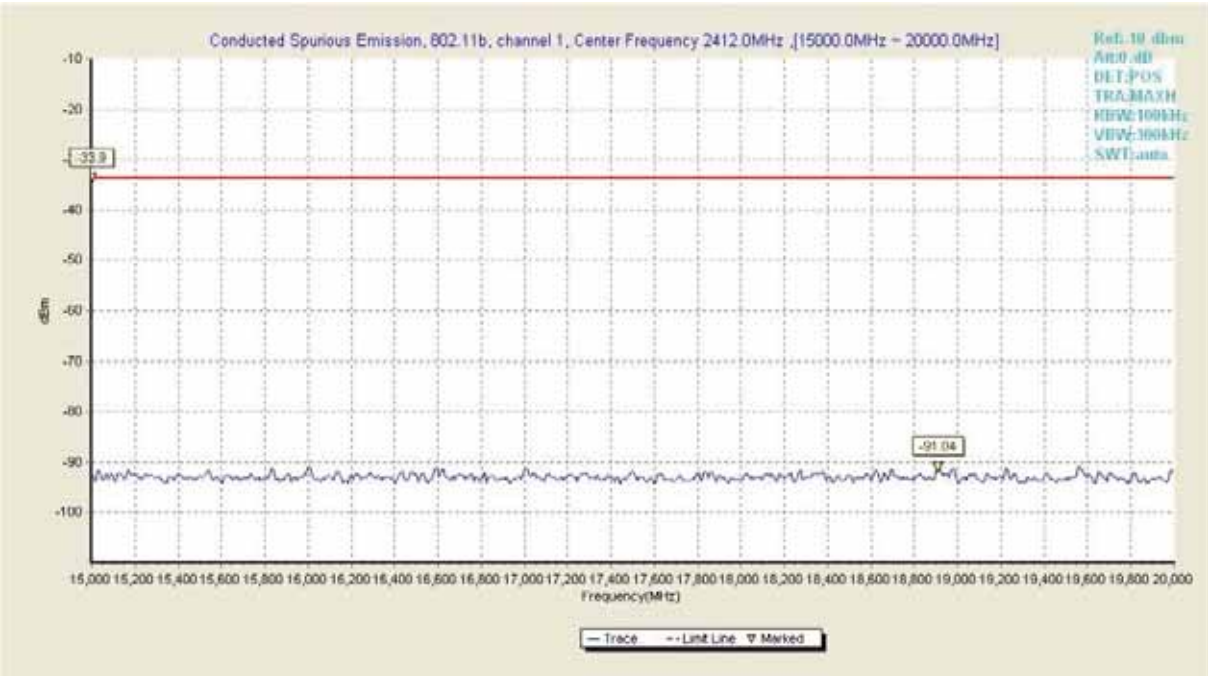


Fig38.Conducted Transmission Spurious Emission of 802.11b in channel 1, 15GHz~20GHz

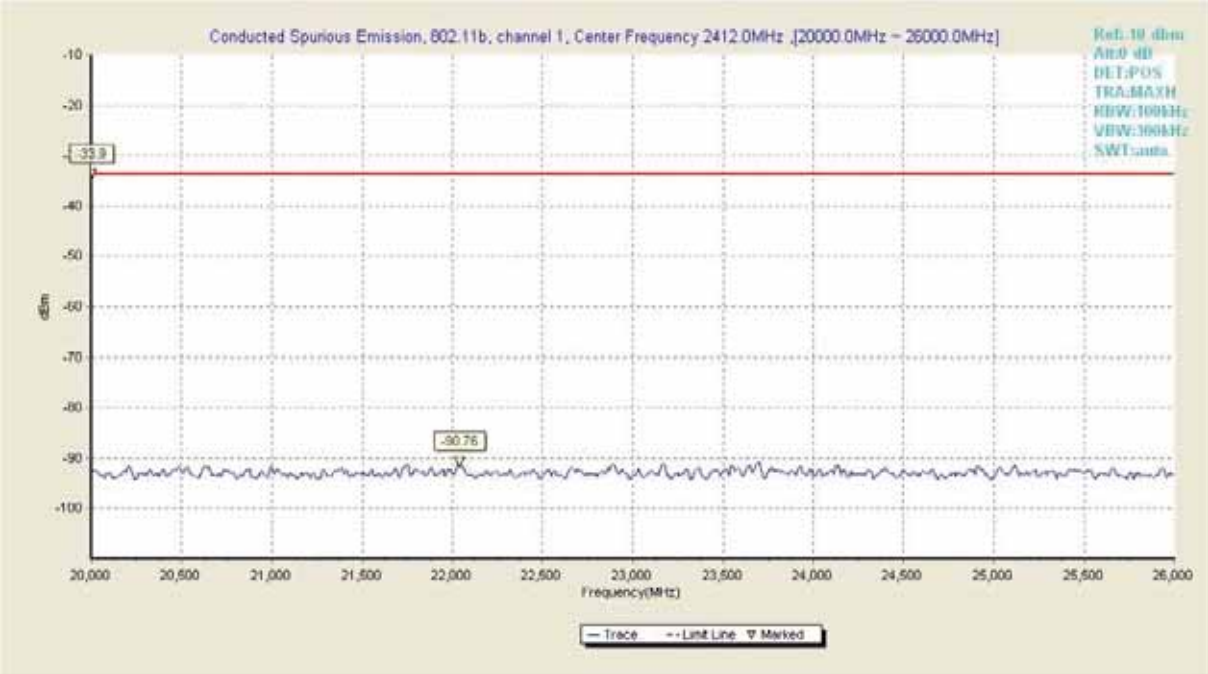


Fig39.Conducted Transmission Spurious Emission of 802.11b in channel 1, 20GHz~26GHz

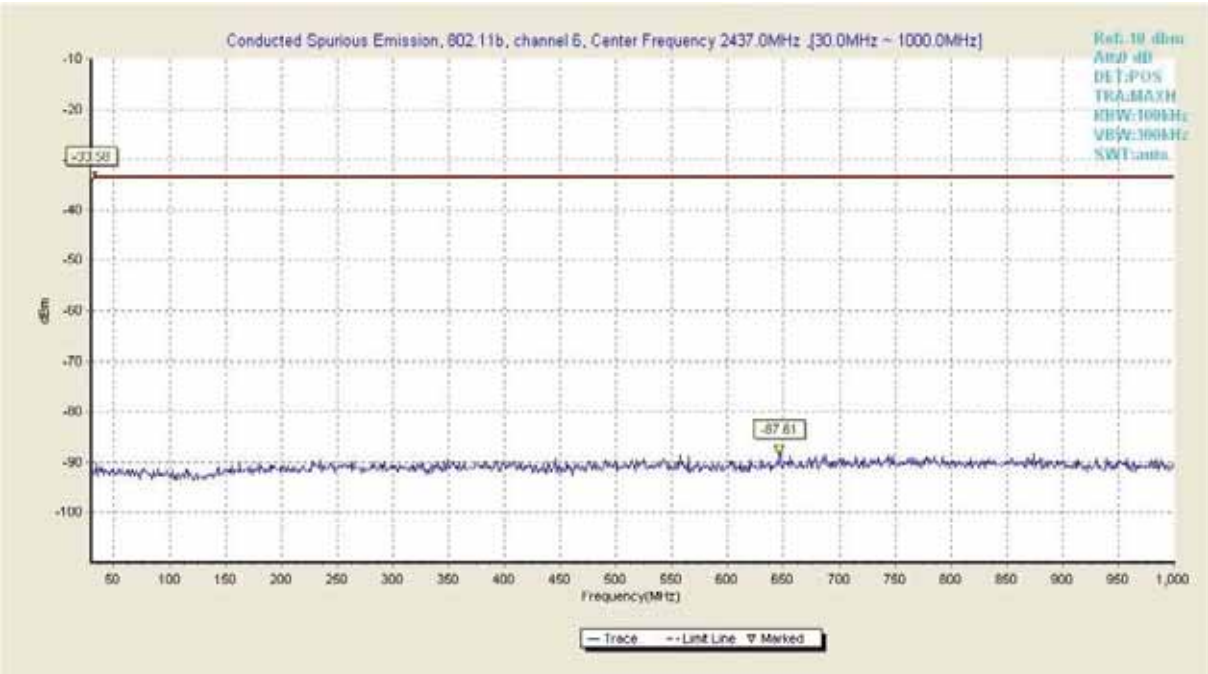


Fig40.Conducted Transmission Spurious Emission of 802.11b in channel 6, 30MHz~1GHz

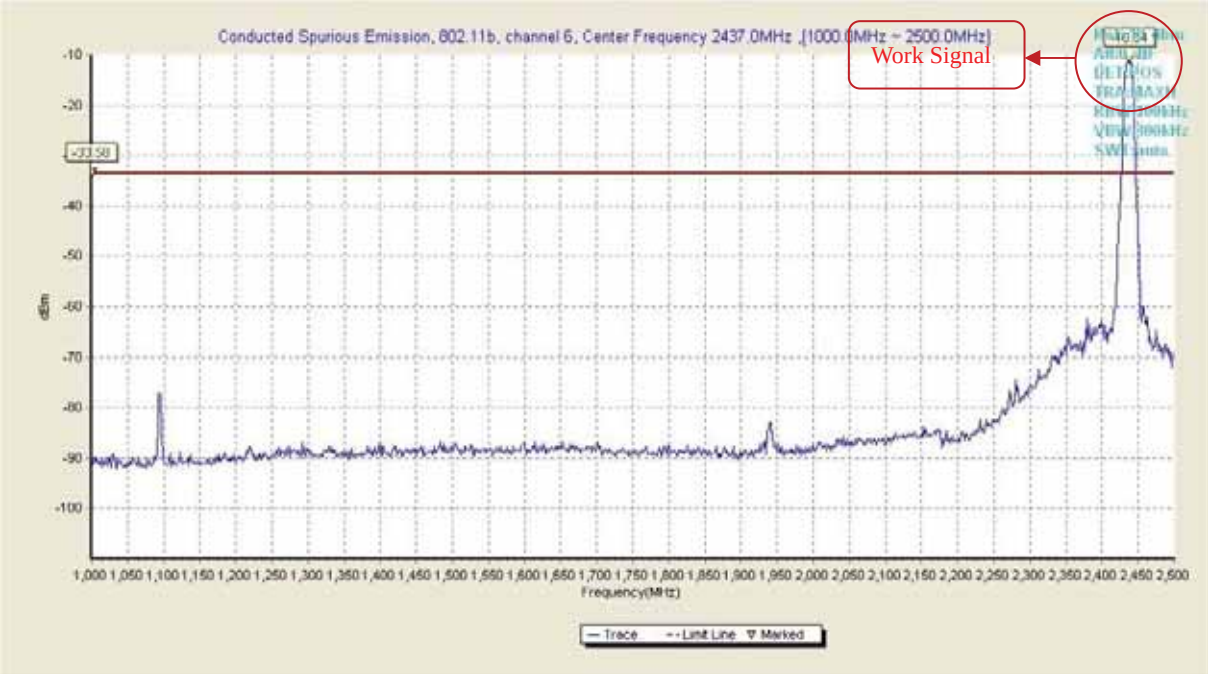


Fig41.Conducted Transmission Spurious Emission of 802.11b in channel 6, 1GHz~2.5GHz

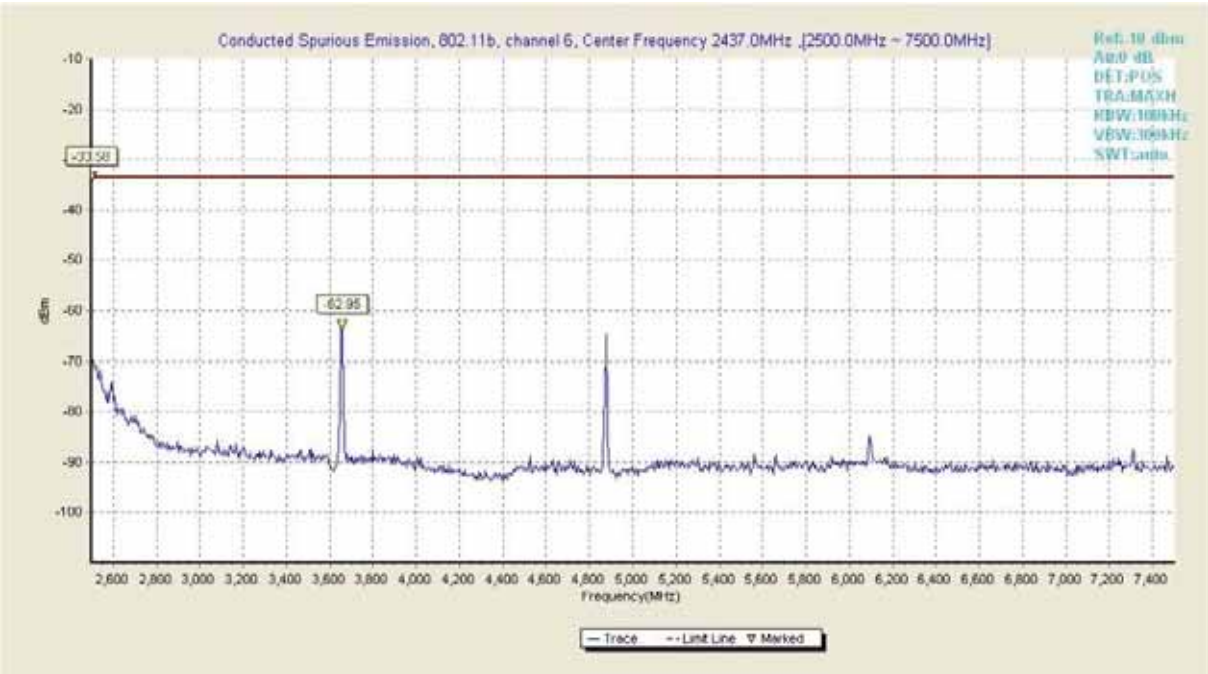


Fig42.Conducted Transmission Spurious Emission of 802.11b in channel 6, 2.5GHz~7.5GHz

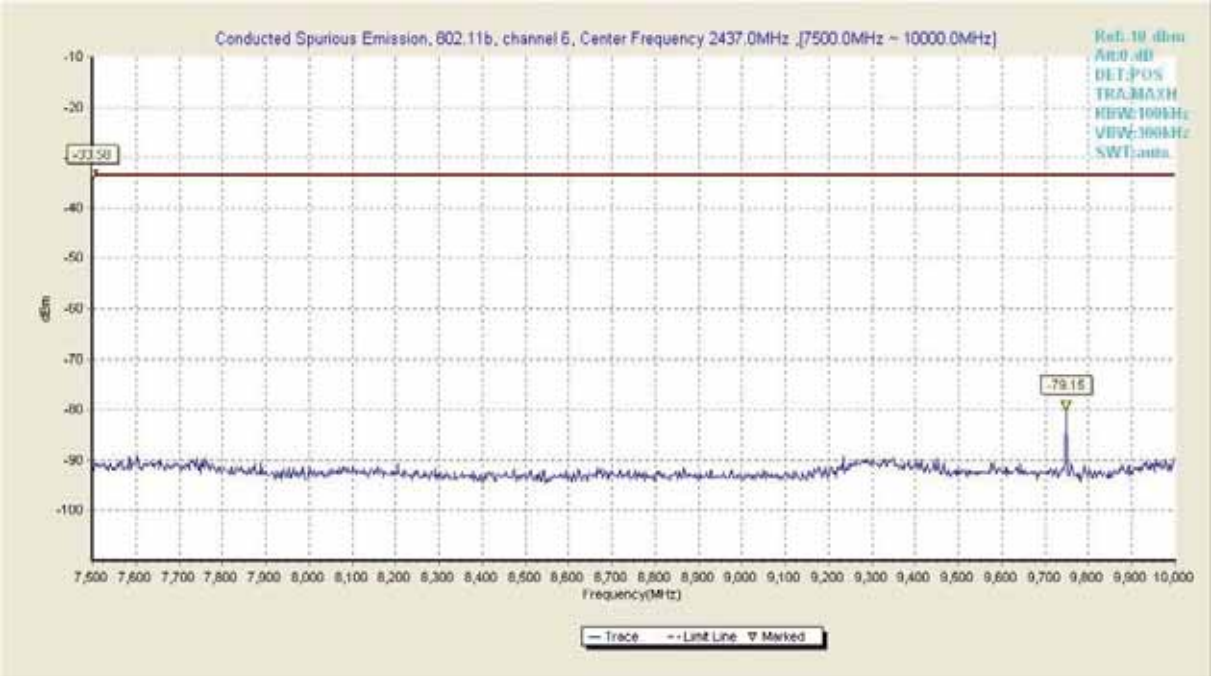


Fig43.Conducted Transmission Spurious Emission of 802.11b in channel 6, 7.5GHz~10GHz

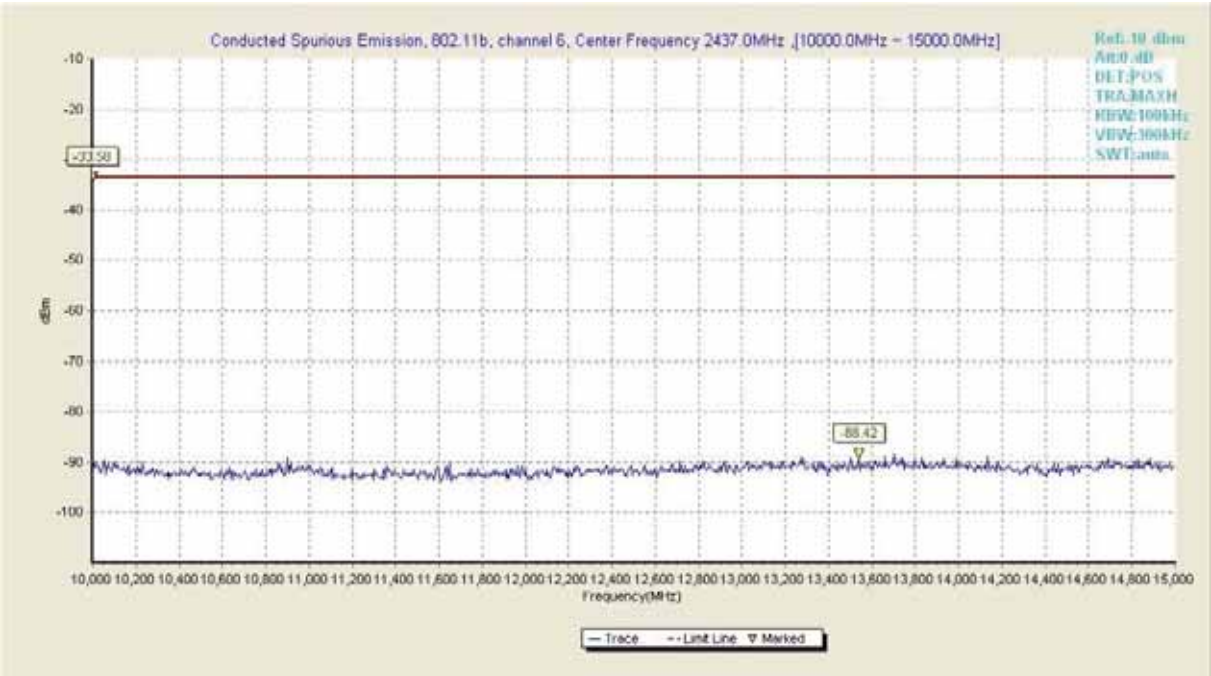


Fig44.Conducted Transmission Spurious Emission of 802.11b in channel 6, 10GHz~15GHz

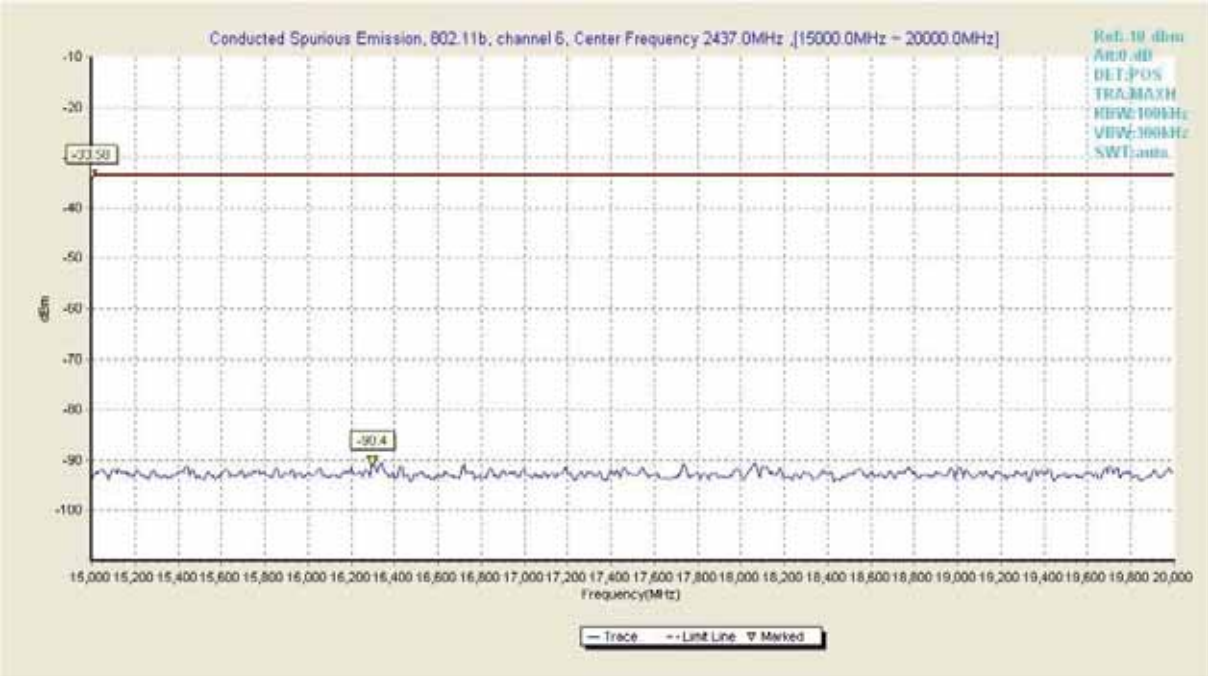


Fig45.Conducted Transmission Spurious Emission of 802.11b in channel 6, 15GHz~20GHz

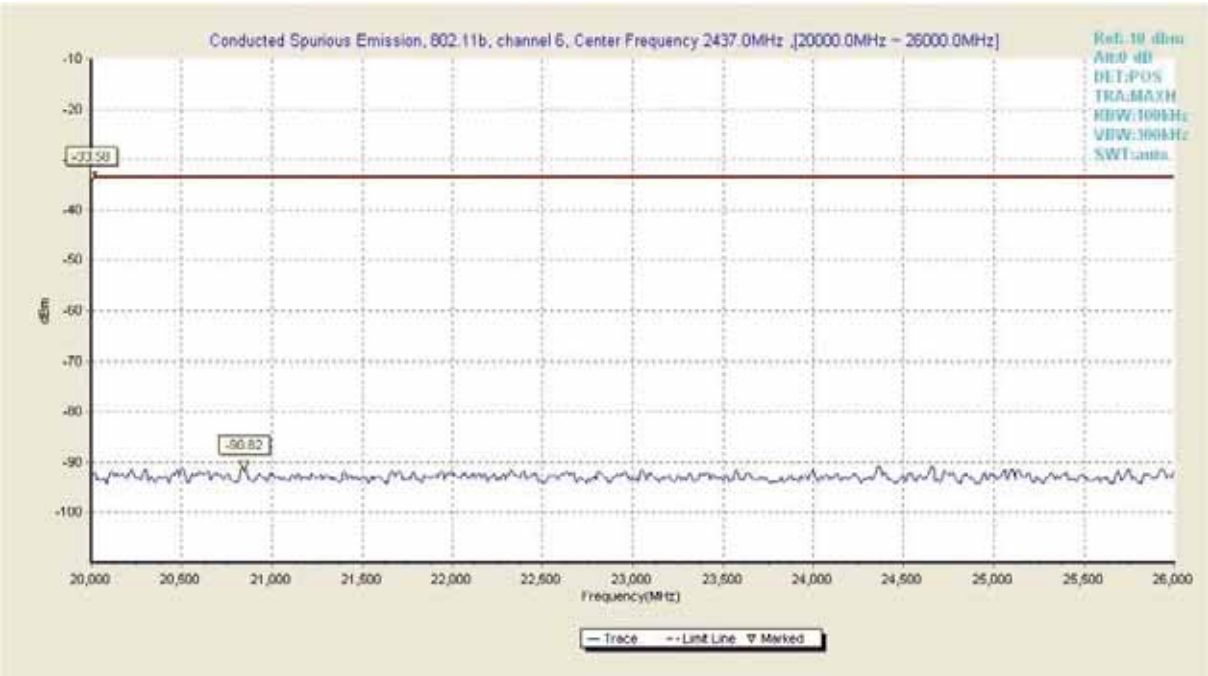


Fig46.Conducted Transmission Spurious Emission of 802.11b in channel 6, 20GHz~26GHz

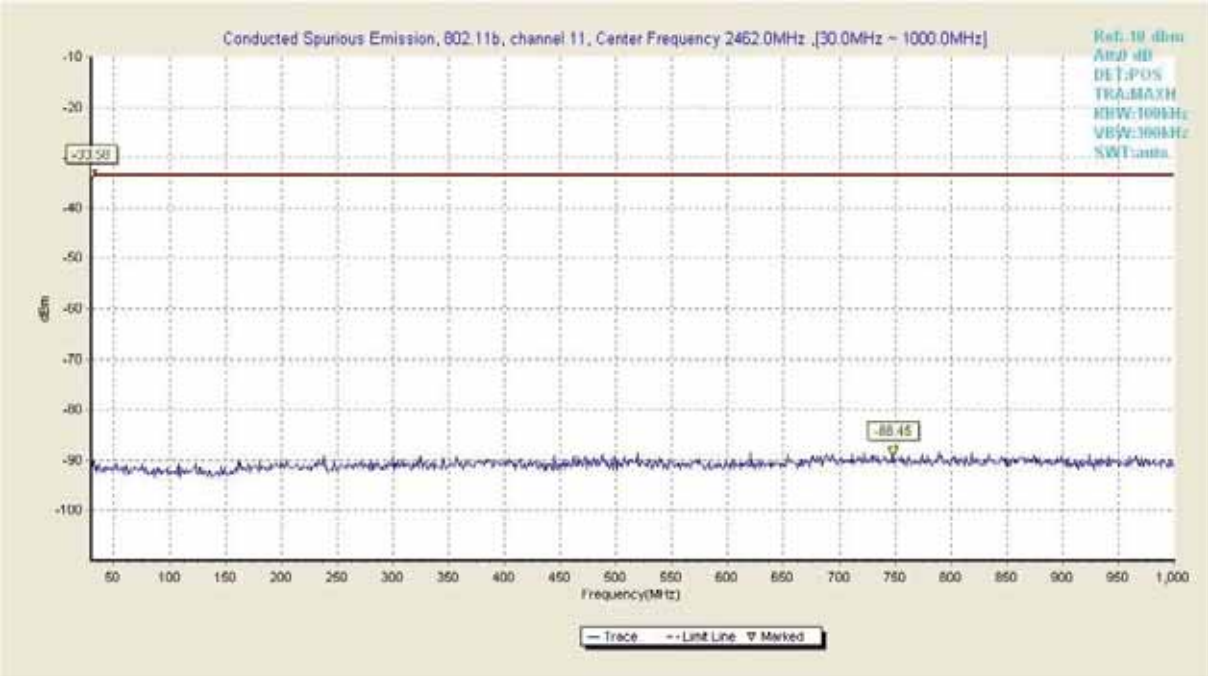


Fig47.Conducted Transmission Spurious Emission of 802.11b in channel 11, 30MHz~1GHz

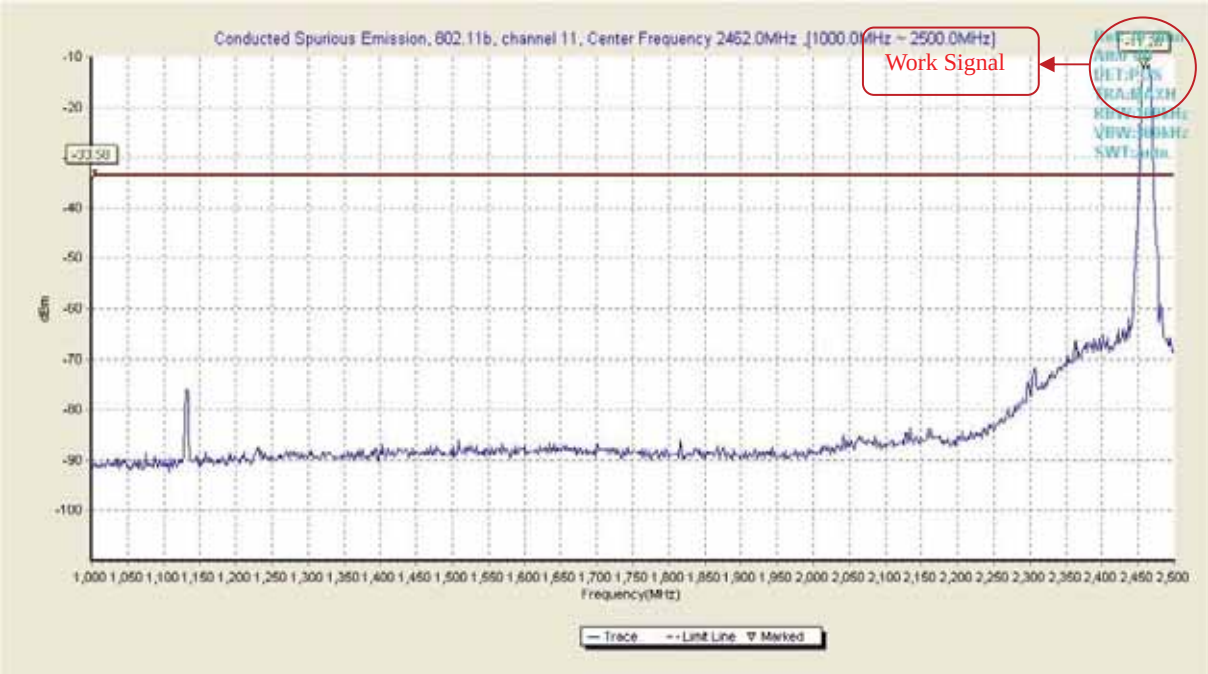


Fig48.Conducted Transmission Spurious Emission of 802.11b in channel 11, 1GHz~2.5GHz

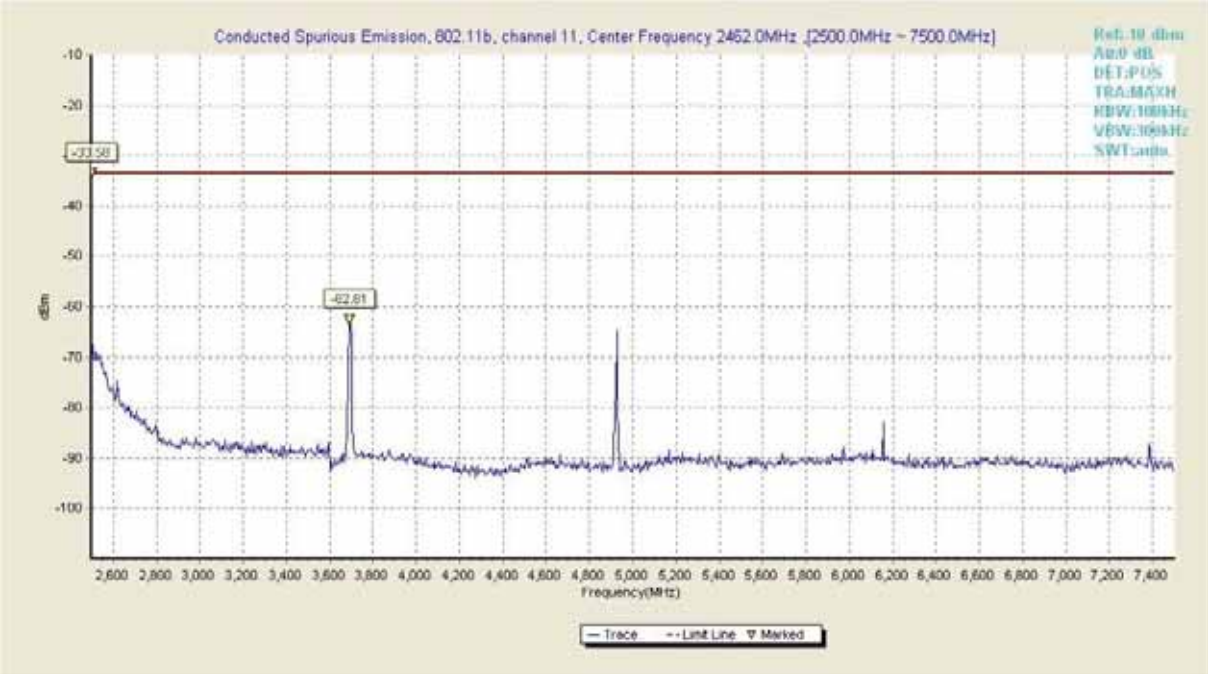


Fig49.Conducted Transmission Spurious Emission of 802.11b in channel 11, 2.5GHz~7.5GHz

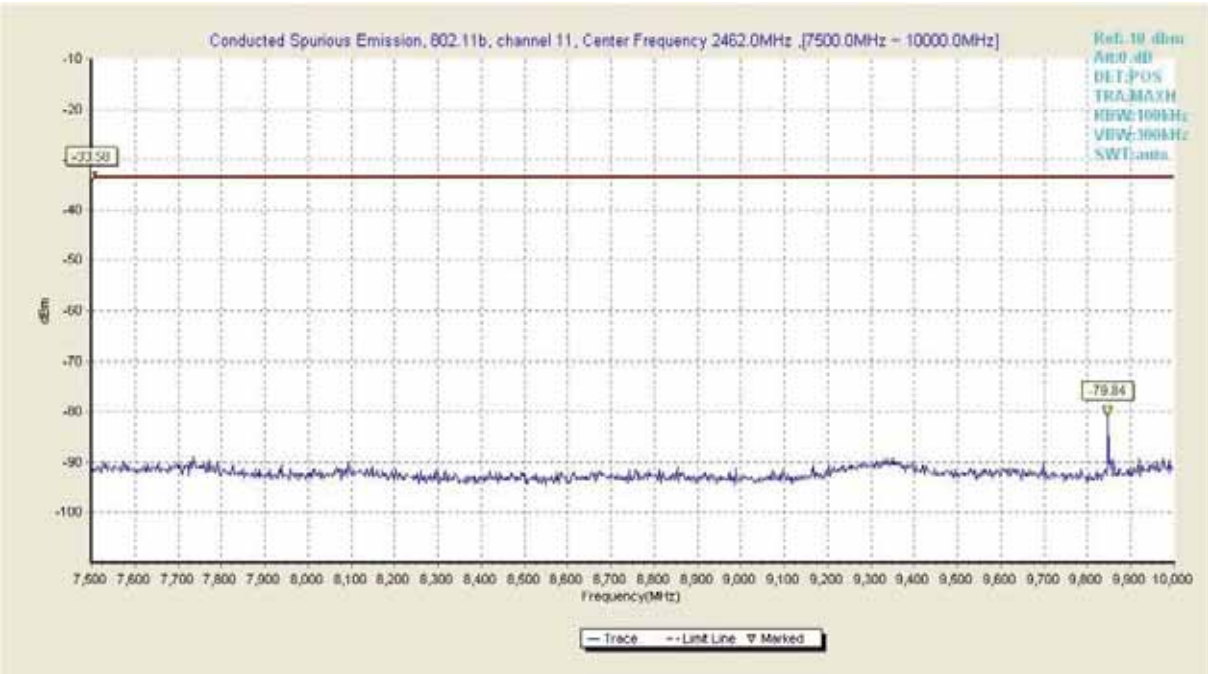


Fig50.Conducted Transmission Spurious Emission of 802.11b in channel 11, 7.5GHz~10GHz

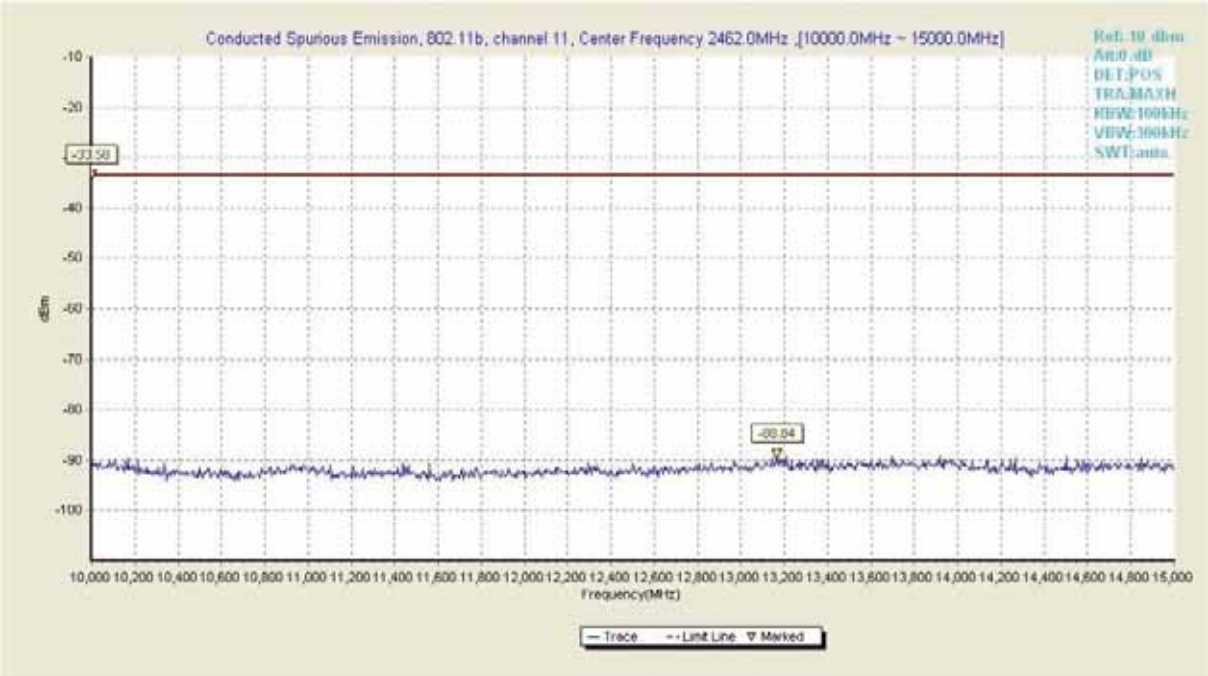


Fig51.Conducted Transmission Spurious Emission of 802.11b in channel 11, 10GHz~15GHz

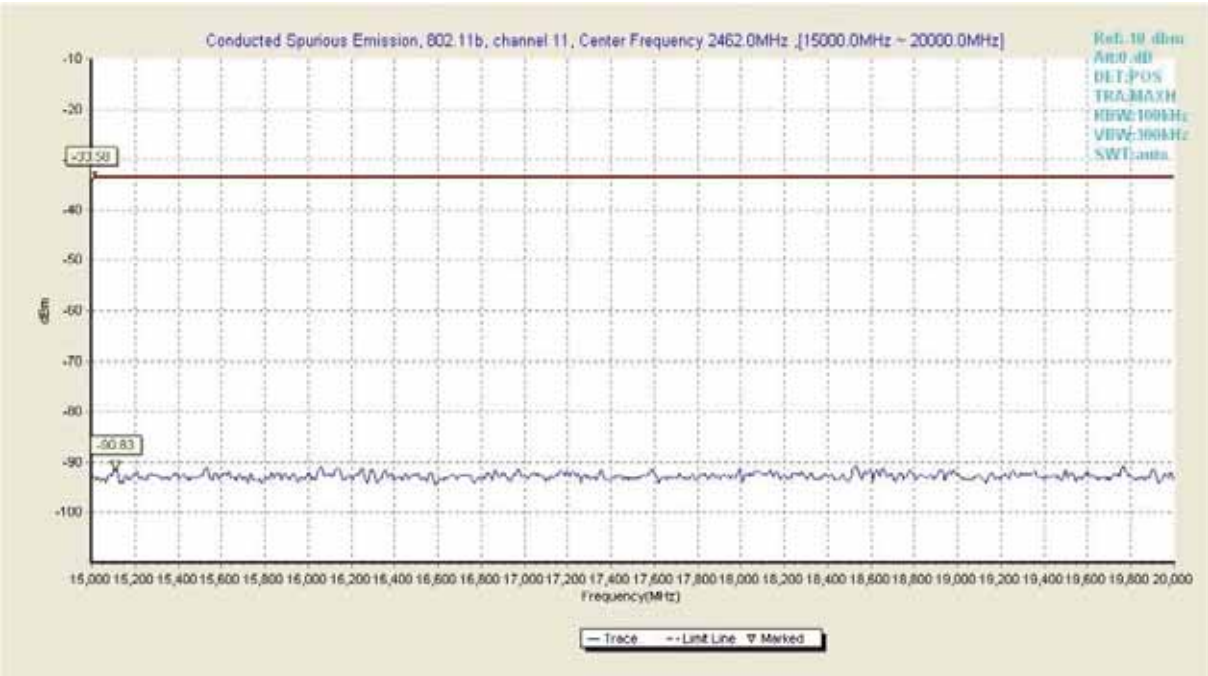


Fig52.Conducted Transmission Spurious Emission of 802.11b in channel 11, 15GHz~20GHz

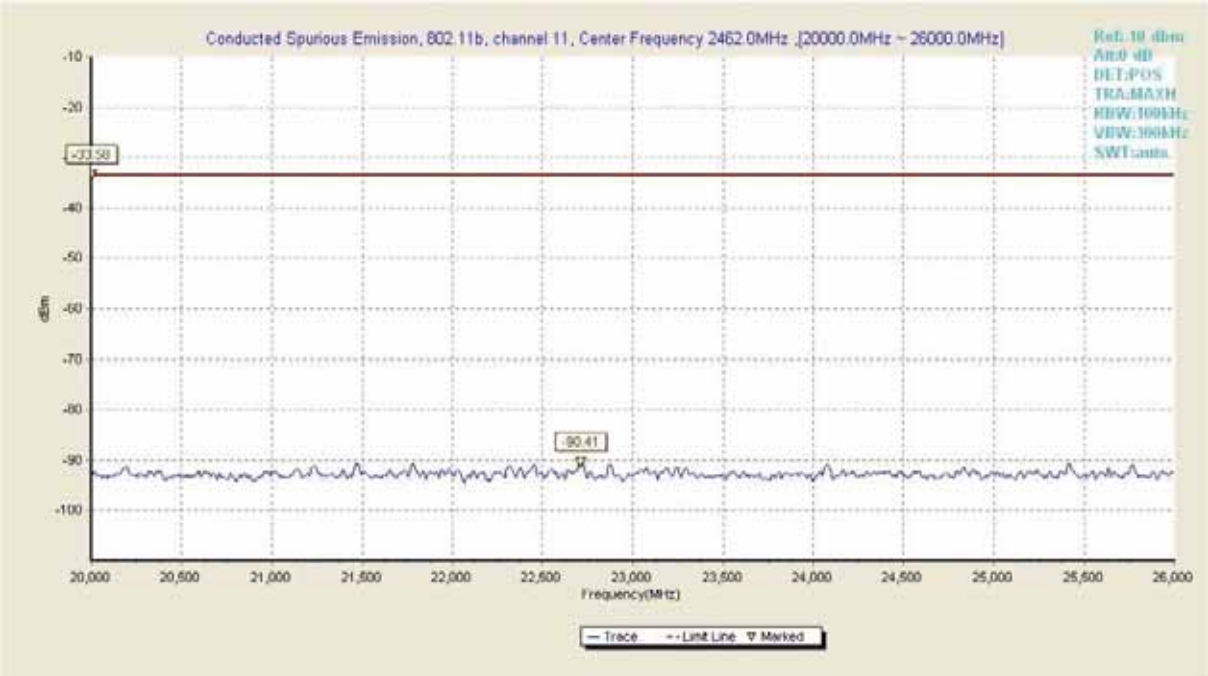


Fig53.Conducted Transmission Spurious Emission of 802.11b in channel 11, 20GHz~26GHz

802.11g mode

Channel	Frequency Range	Test Results	Verdict
1	30MHz ~ 1GHz	Fig.54	Pass
	1GHz ~ 2.5GHz	Fig.55	Pass
	2.5GHz ~ 7.5GHz	Fig.56	Pass
	7.5GHz ~ 10GHz	Fig.57	Pass
	10GHz ~ 15GHz	Fig.58	Pass
	15GHz ~ 20GHz	Fig.59	Pass
	20GHz ~ 26GHz	Fig.60	Pass
6	30MHz ~ 1GHz	Fig.61	Pass
	1GHz ~ 2.5GHz	Fig.62	Pass
	2.5GHz ~ 7.5GHz	Fig.63	Pass
	7.5GHz ~ 10GHz	Fig.64	Pass
	10GHz ~ 15GHz	Fig.65	Pass
	15GHz ~ 20GHz	Fig.66	Pass
	20GHz ~ 26GHz	Fig.67	Pass
11	30MHz ~ 1GHz	Fig.68	Pass
	1GHz ~ 2.5GHz	Fig.69	Pass
	2.5GHz ~ 7.5GHz	Fig.70	Pass
	7.5GHz ~ 10GHz	Fig.71	Pass
	10GHz ~ 15GHz	Fig.72	Pass
	15GHz ~ 20GHz	Fig.73	Pass
	20GHz ~ 26GHz	Fig.74	Pass

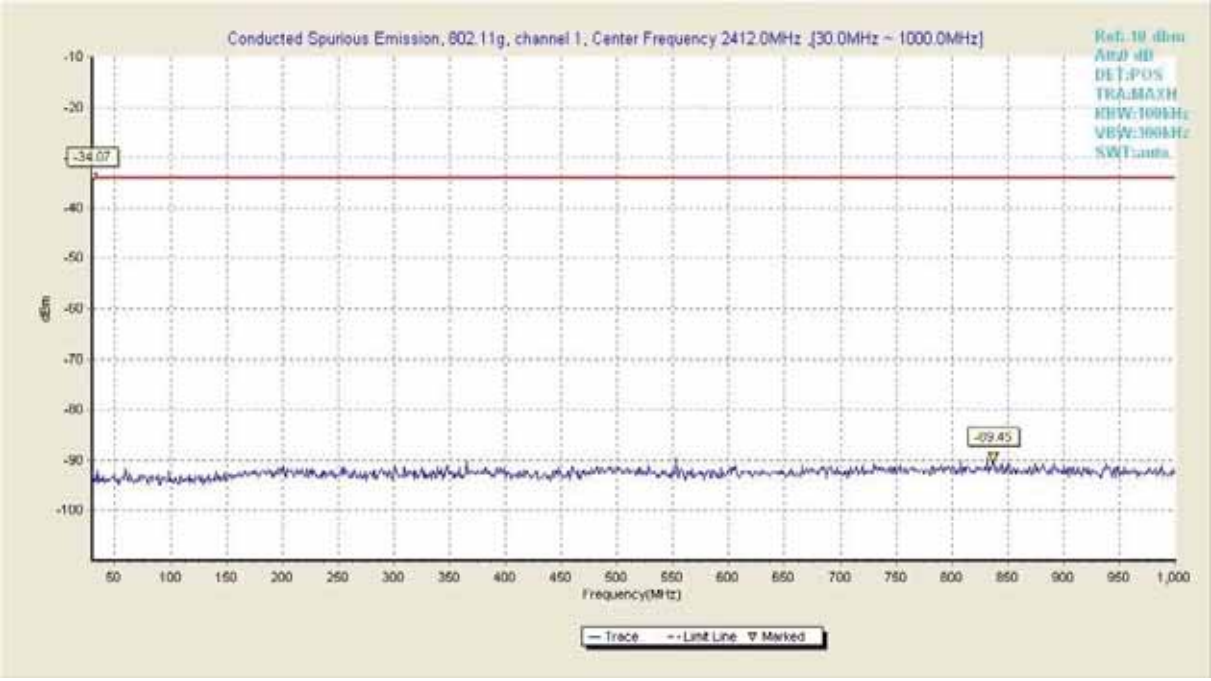


Fig54.Conducted Transmission Spurious Emission of 802.11g in channel 1, 30MHz~1GHz

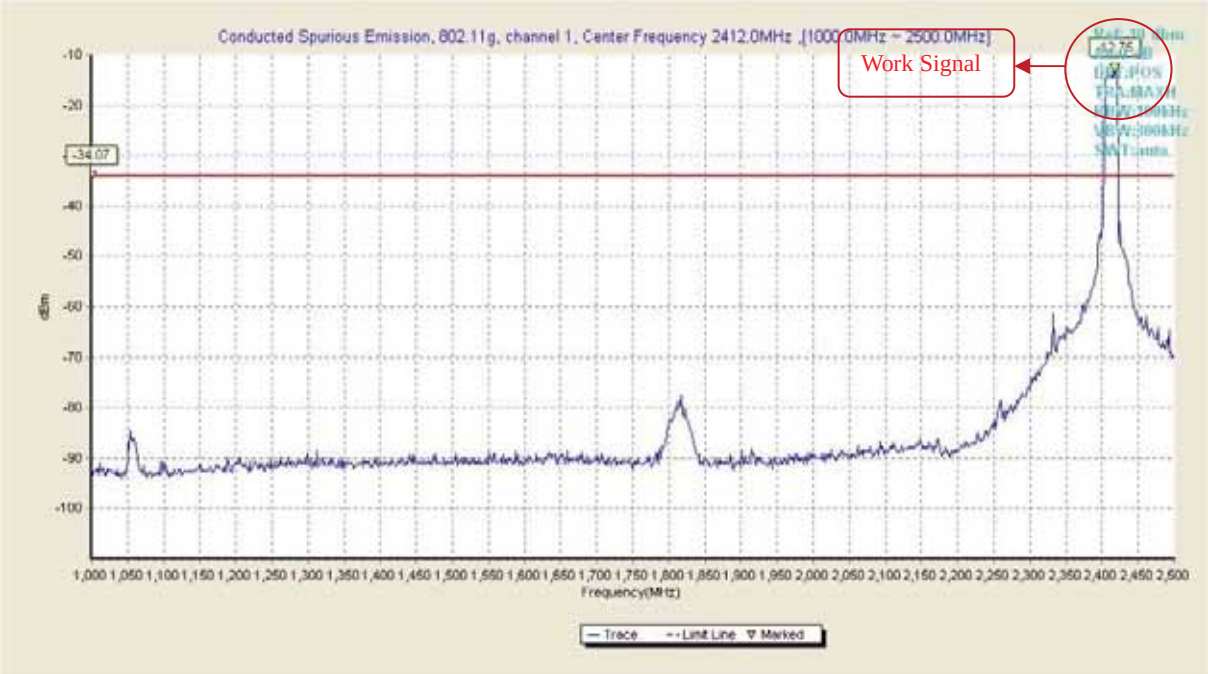


Fig55.Conducted Transmission Spurious Emission of 802.11g in channel 1, 1GHz ~ 2.5GHz

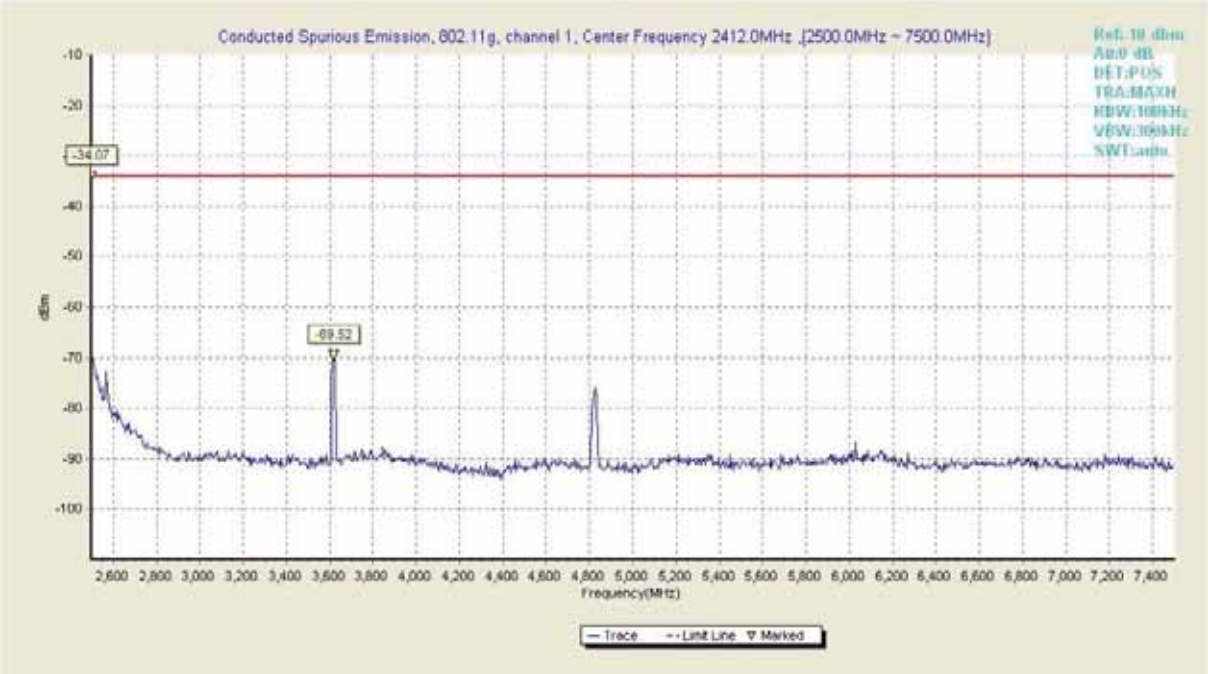


Fig56.Conducted Transmission Spurious Emission of 802.11g in channel 1, 2.5GHz ~ 7.5GHz

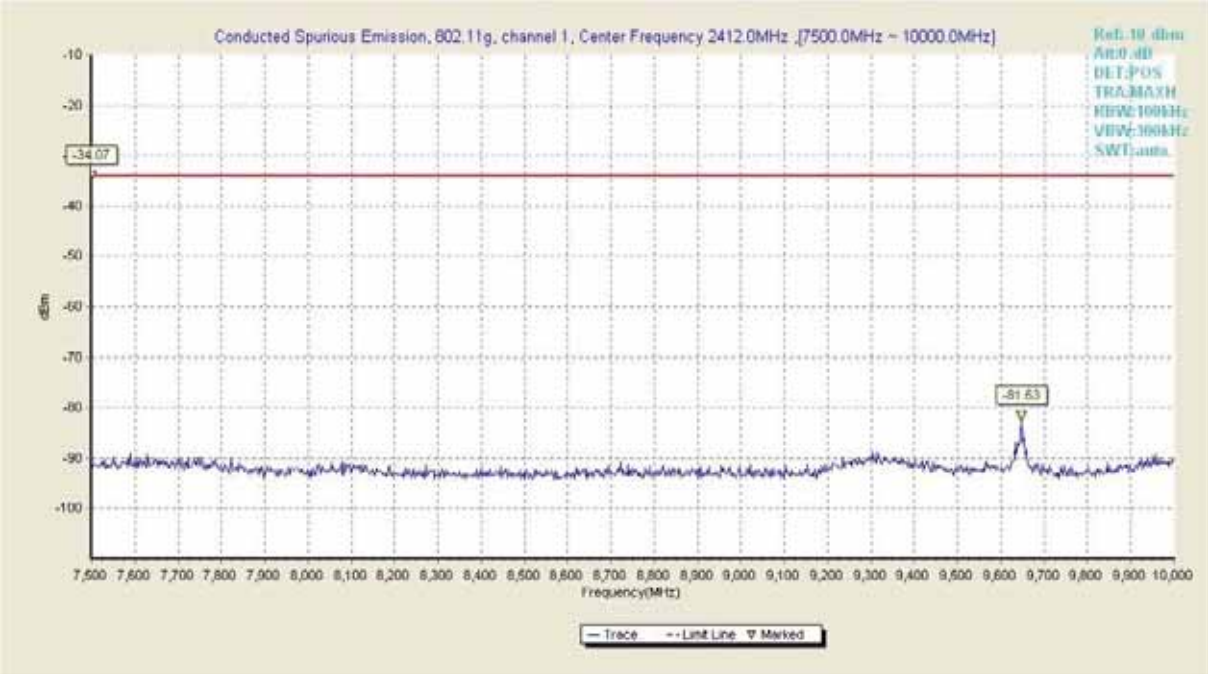


Fig57.Conducted Transmission Spurious Emission of 802.11g in channel 1, 7.5GHz ~ 10GHz

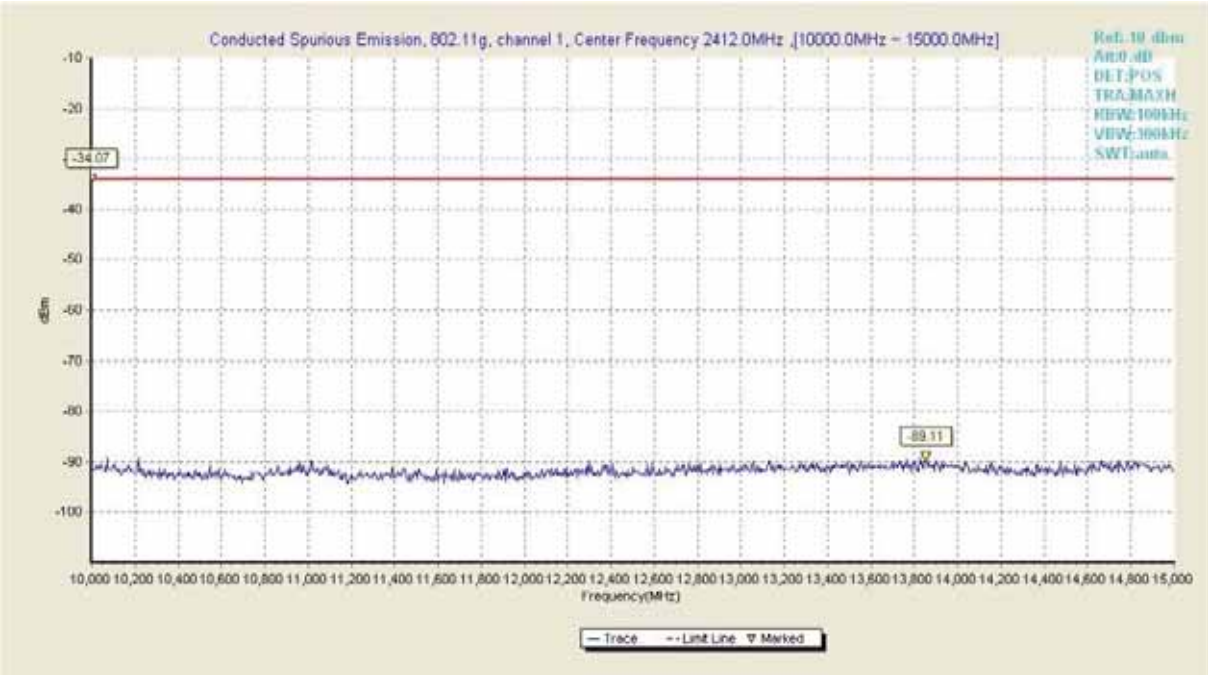


Fig58.Conducted Transmission Spurious Emission of 802.11g in channel 1, 10GHz ~ 15GHz

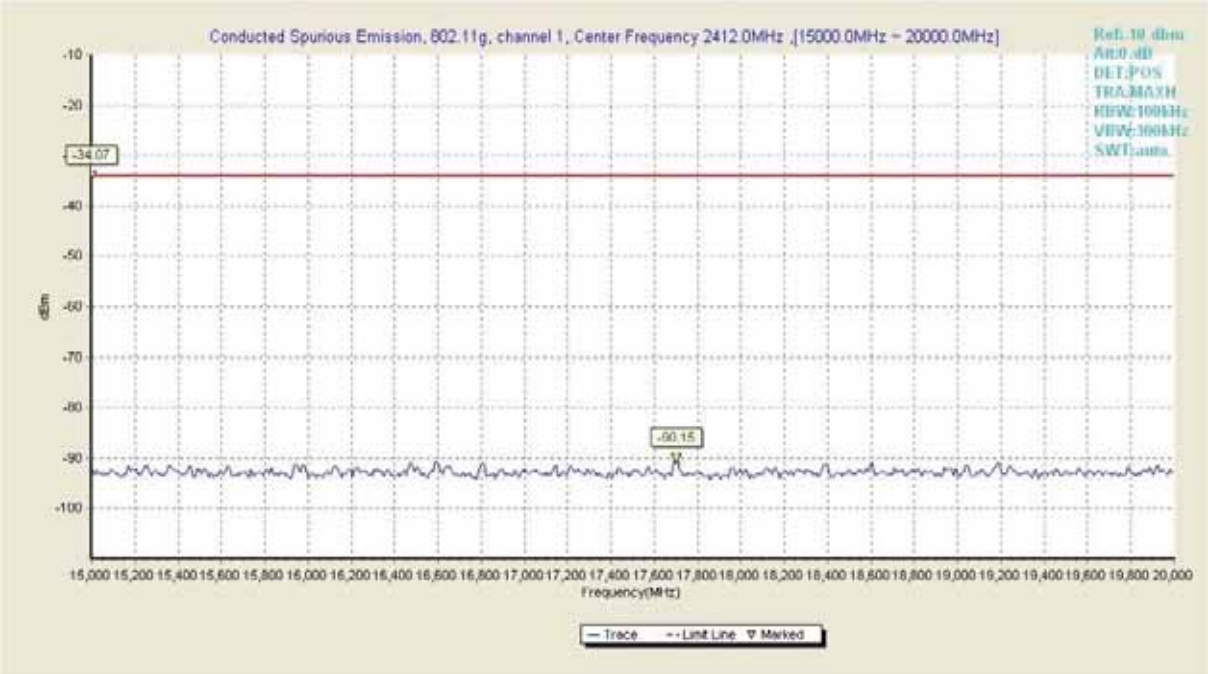


Fig59.Conducted Transmission Spurious Emission of 802.11g in channel 1, 15GHz ~ 20GHz

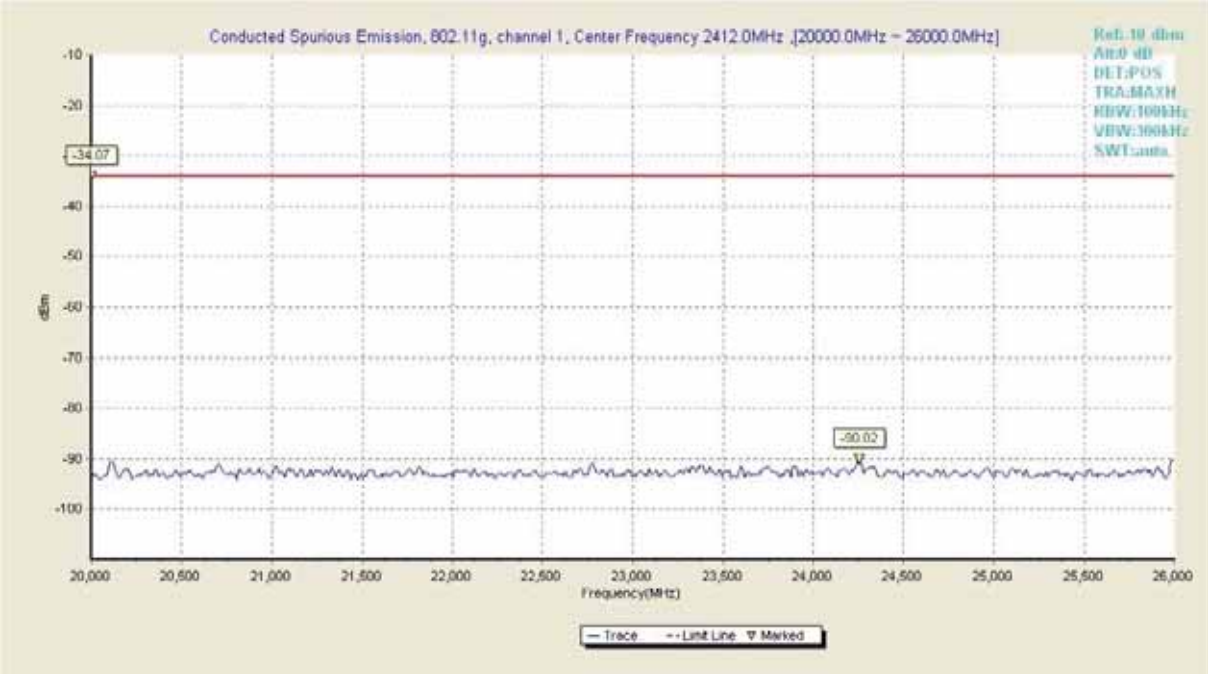


Fig60.Conducted Transmission Spurious Emission of 802.11g in channel 1, 20GHz ~ 26GHz

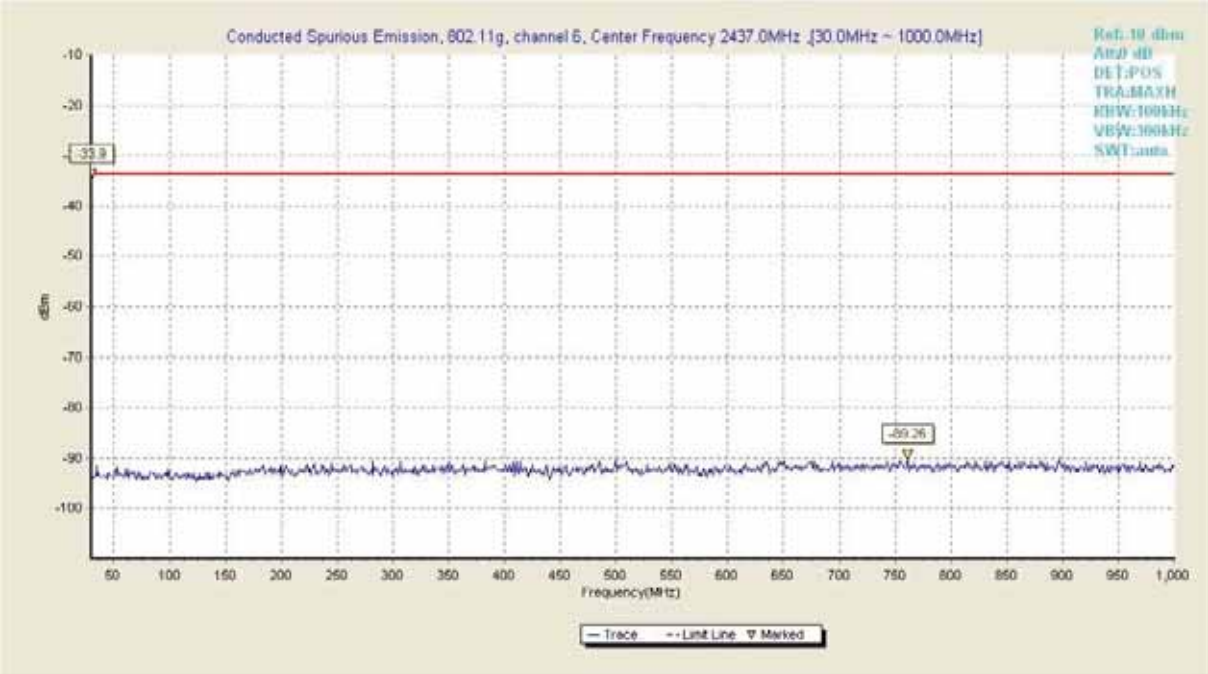


Fig61.Conducted Transmission Spurious Emission of 802.11g in channel 6, 30MHz~1GHz

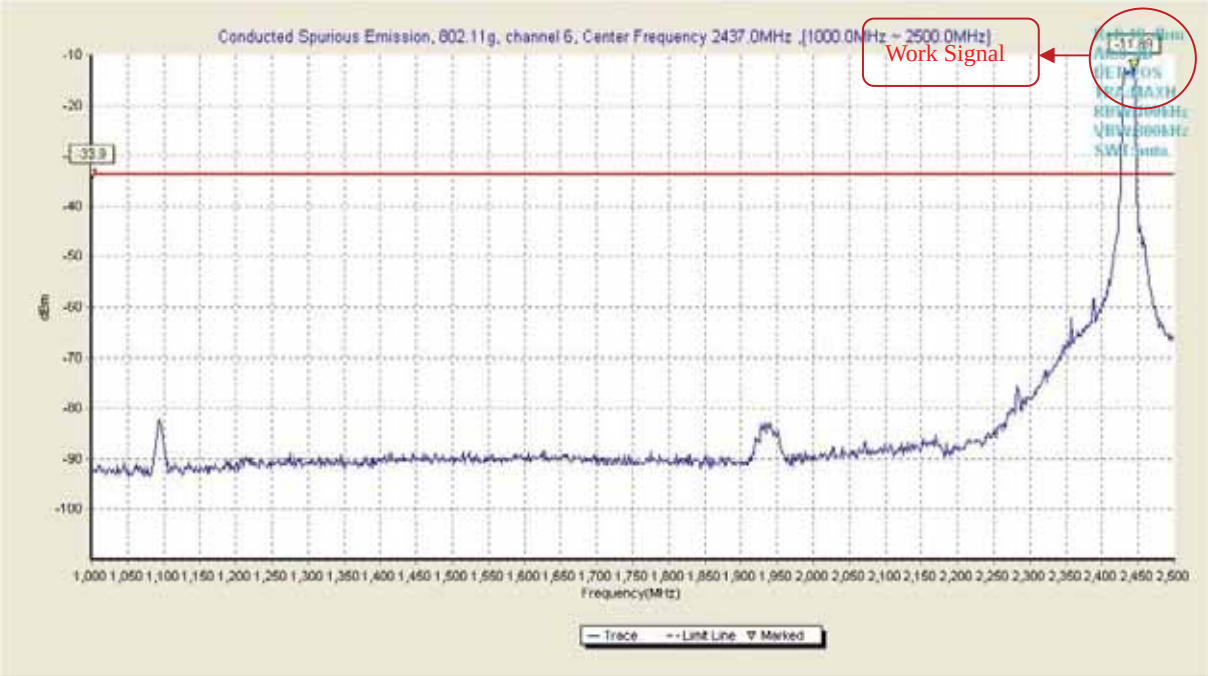


Fig62.Conducted Transmission Spurious Emission of 802.11g in channel 6, 1GHz ~ 2.5GHz

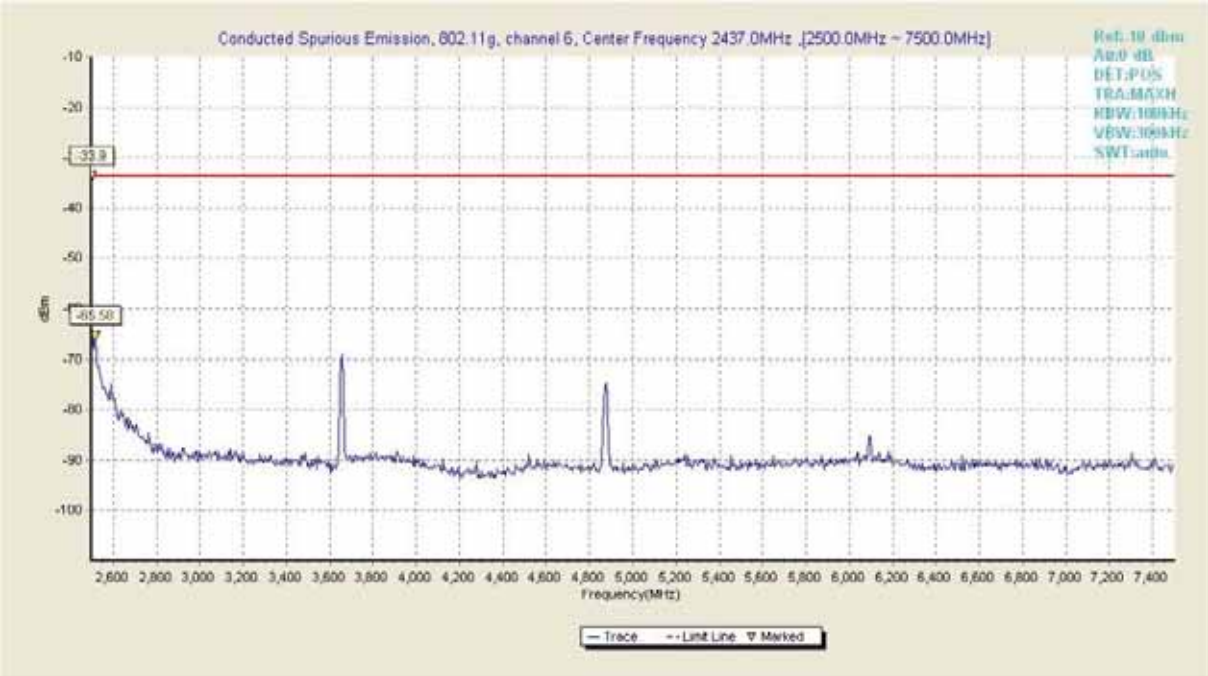


Fig63.Conducted Transmission Spurious Emission of 802.11g in channel 6, 2.5GHz ~ 7.5GHz

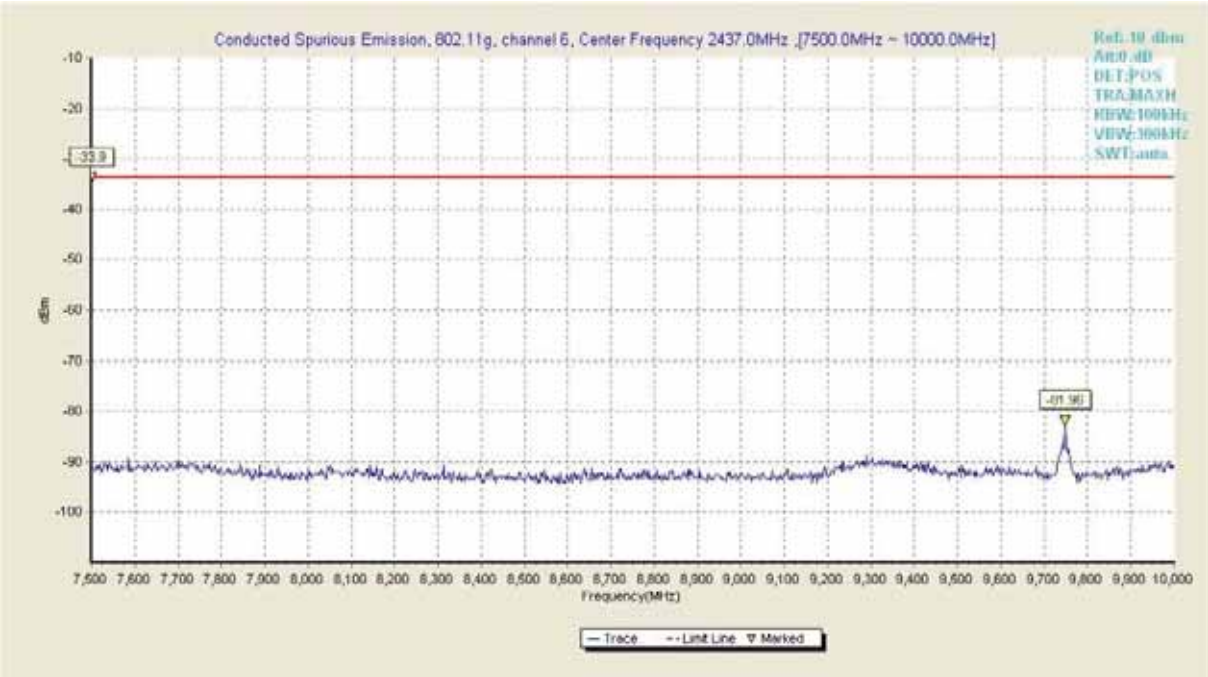


Fig64.Conducted Transmission Spurious Emission of 802.11g in channel 6, 7.5GHz ~ 10GHz

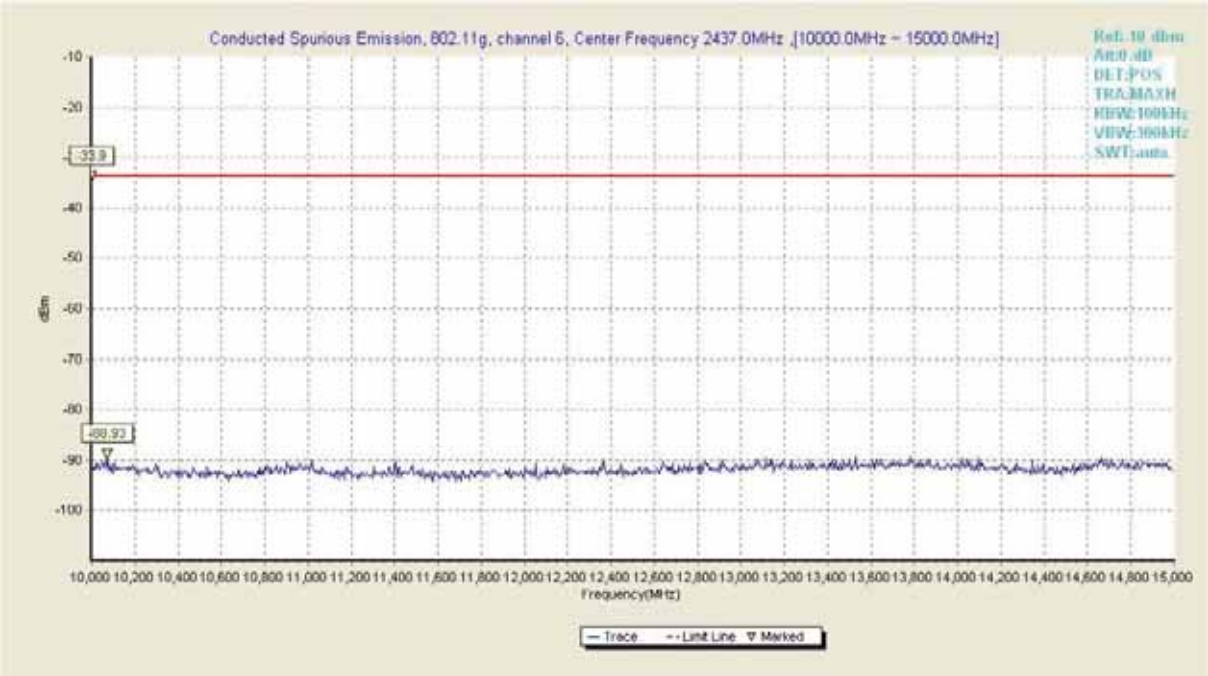


Fig65.Conducted Transmission Spurious Emission of 802.11g in channel 6, 10GHz ~ 15GHz

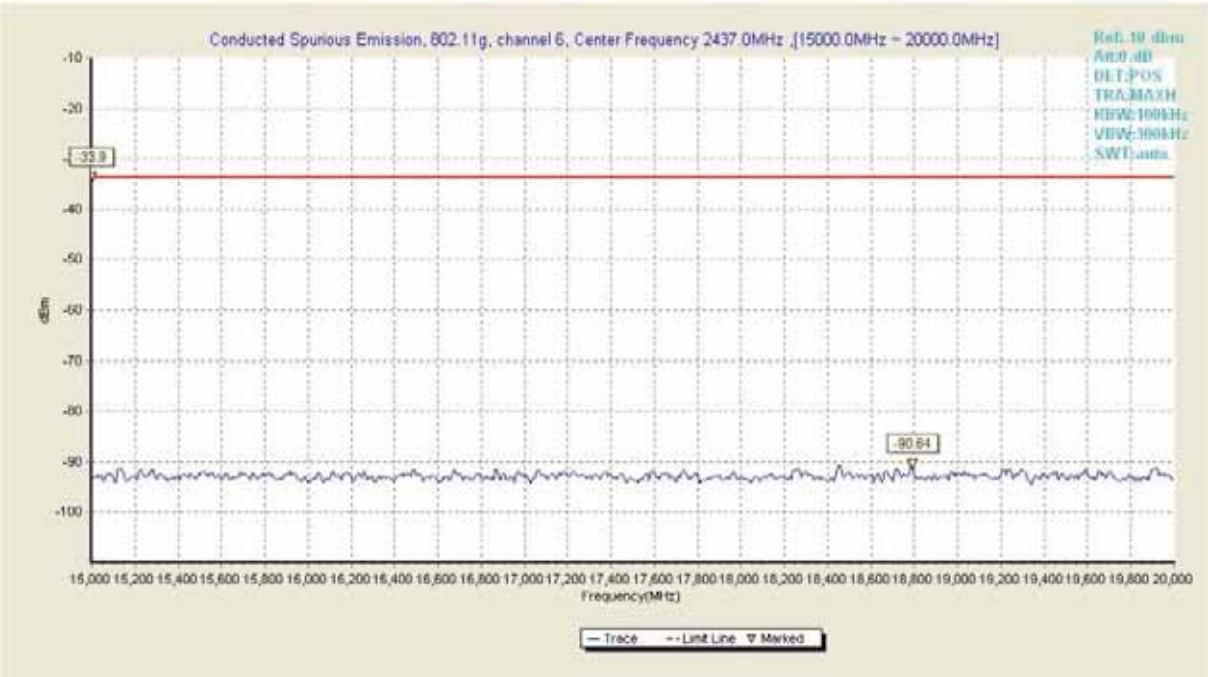


Fig66.Conducted Transmission Spurious Emission of 802.11g in channel 6, 15GHz ~ 20GHz

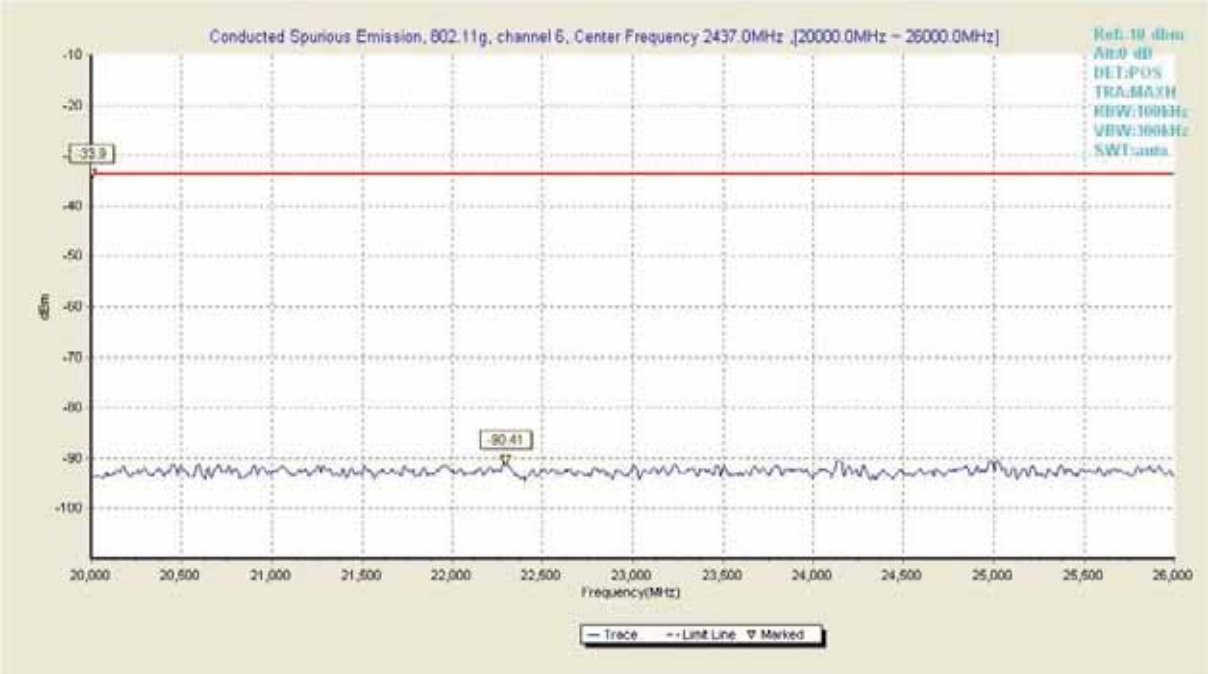


Fig67.Conducted Transmission Spurious Emission of 802.11g in channel 6, 20GHz ~ 26GHz

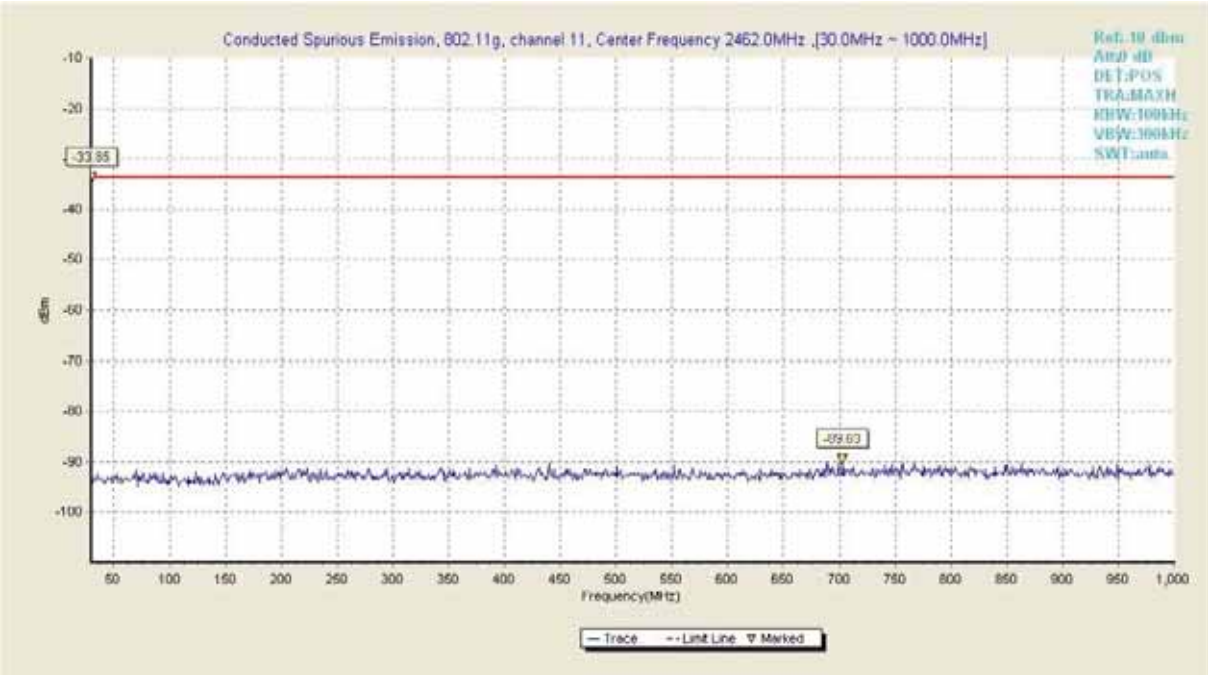


Fig68.Conducted Transmission Spurious Emission of 802.11g in channel 11, 30MHz~1GHz

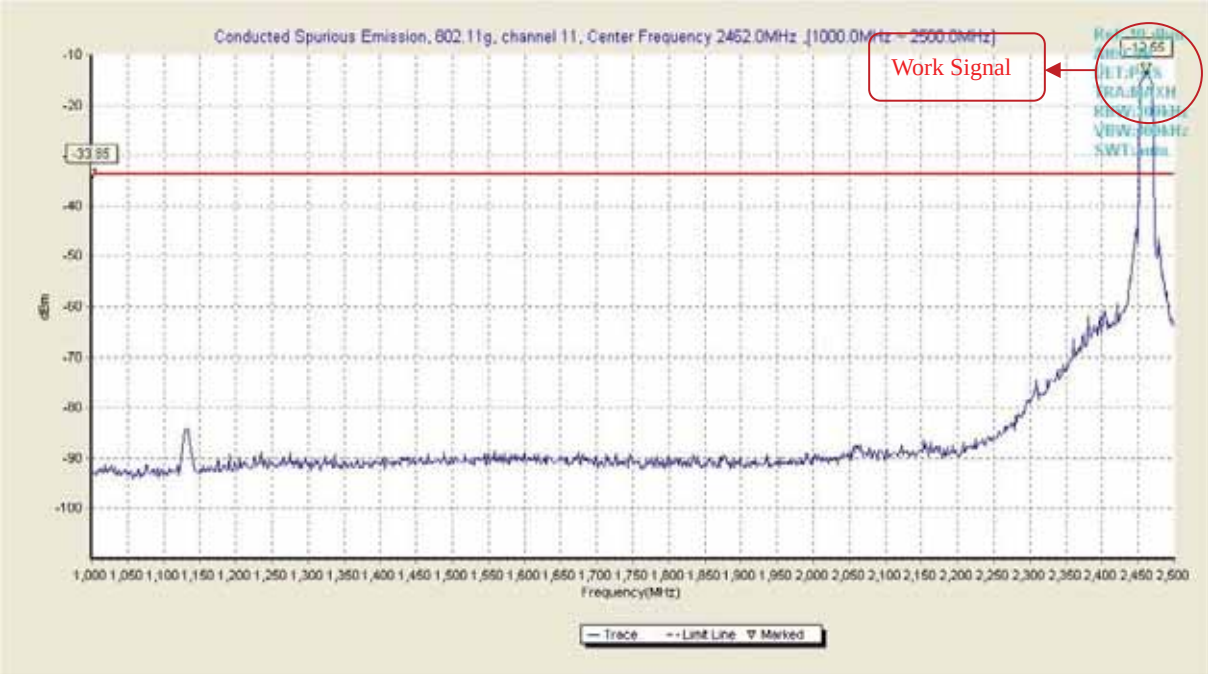


Fig69.Conducted Transmission Spurious Emission of 802.11g in channel 11, 1GHz ~ 2.5GHz

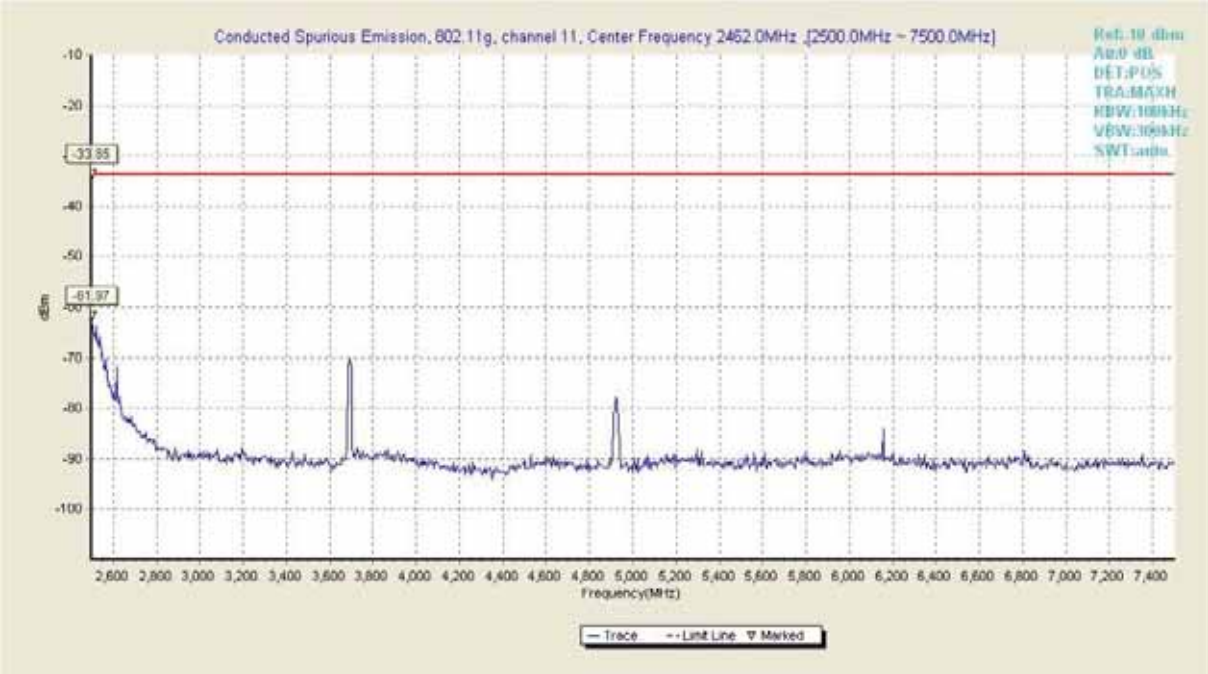


Fig70.Conducted Transmission Spurious Emission of 802.11g in channel 11, 2.5GHz ~ 7.5GHz

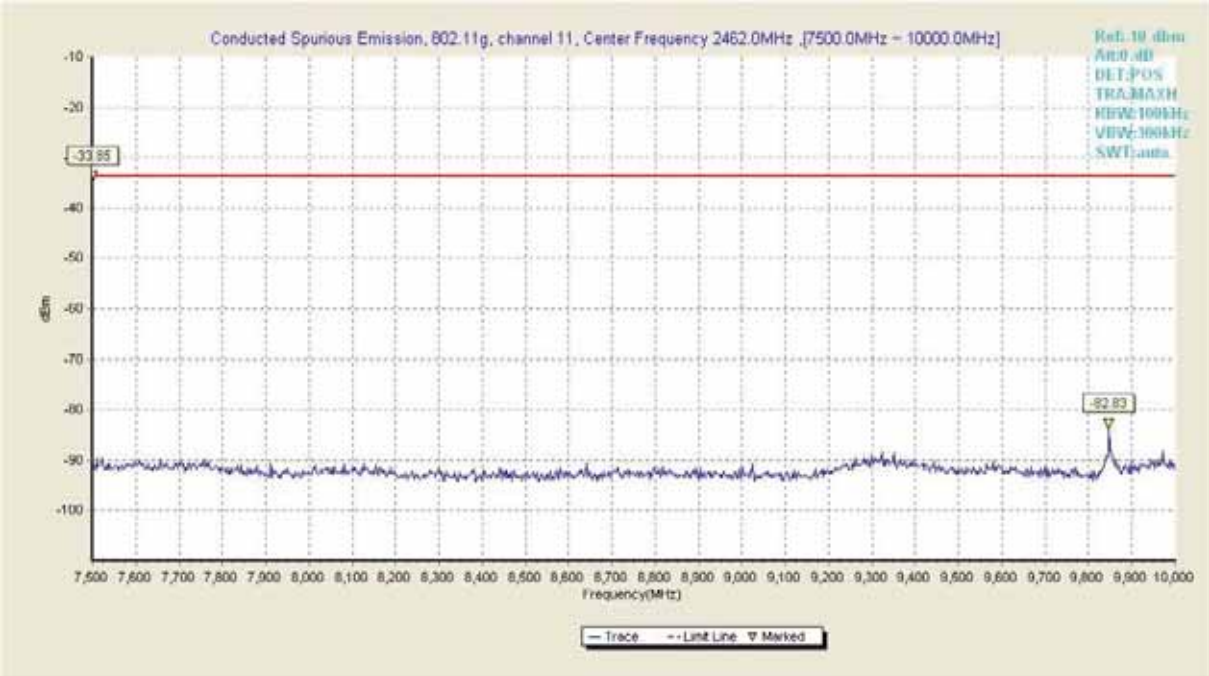


Fig71.Conducted Transmission Spurious Emission of 802.11g in channel 11, 7.5GHz ~ 10GHz

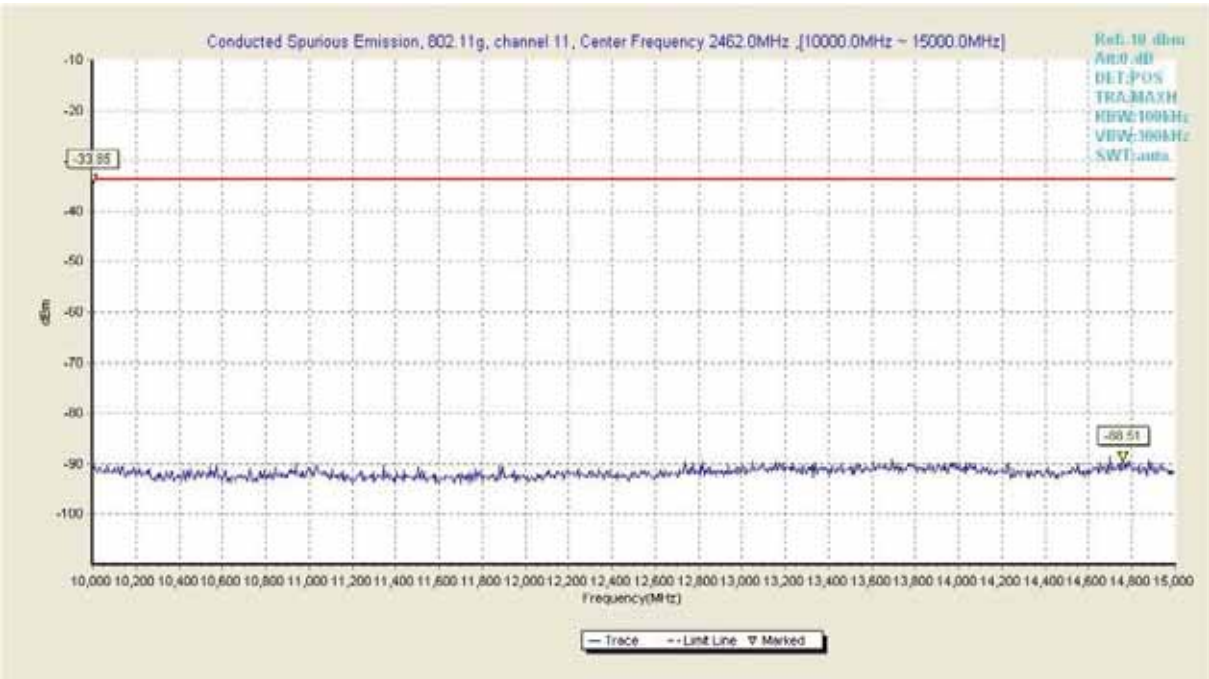


Fig72.Conducted Transmission Spurious Emission of 802.11g in channel 11, 10GHz ~ 15GHz

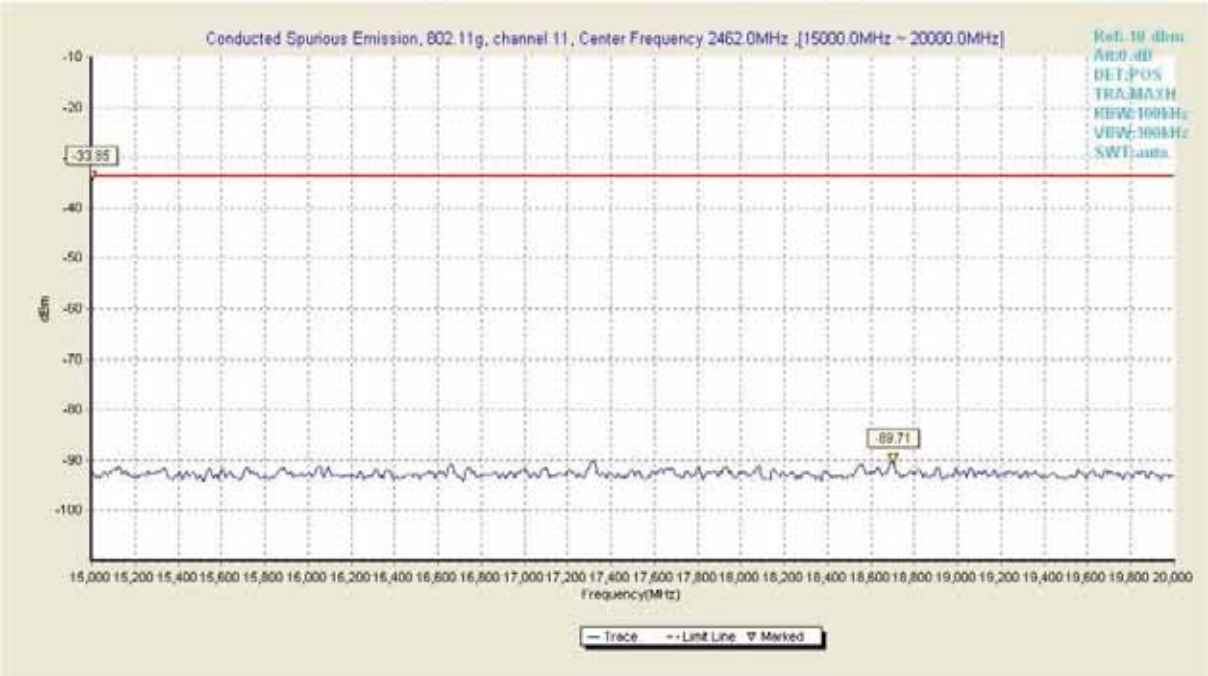


Fig73.Conducted Transmission Spurious Emission of 802.11g in channel 11, 15GHz ~ 20GHz

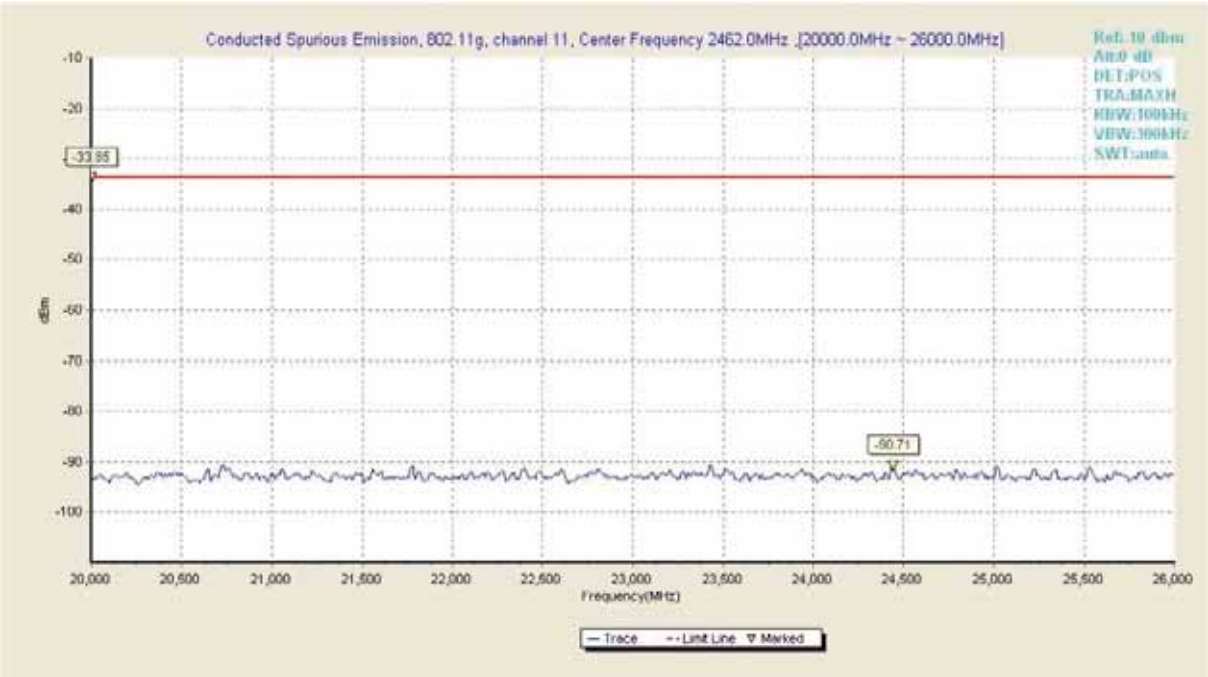


Fig74.Conducted Transmission Spurious Emission of 802.11g in channel 11, 20GHz ~ 26GHz

802.11n-20 mode

Channel	Frequency Range	Test Results	Verdict
1	30MHz ~ 1GHz	Fig.75	Pass
	1GHz ~ 2.5GHz	Fig.76	Pass
	2.5GHz ~ 7.5GHz	Fig.77	Pass
	7.5GHz ~ 10GHz	Fig.78	Pass
	10GHz ~ 15GHz	Fig.79	Pass

	15GHz ~ 20GHz	Fig.80	Pass
	20GHz ~ 26GHz	Fig.81	Pass
6	30MHz ~ 1GHz	Fig.82	Pass
	1GHz ~ 2.5GHz	Fig.83	Pass
	2.5GHz ~ 7.5GHz	Fig.84	Pass
	7.5GHz ~ 10GHz	Fig.85	Pass
	10GHz ~ 15GHz	Fig.86	Pass
	15GHz ~ 20GHz	Fig.87	Pass
	20GHz ~ 26GHz	Fig.88	Pass
11	30MHz ~ 1GHz	Fig.89	Pass
	1GHz ~ 2.5GHz	Fig.90	Pass
	2.5GHz ~ 7.5GHz	Fig.91	Pass
	7.5GHz ~ 10GHz	Fig.92	Pass
	10GHz ~ 15GHz	Fig.93	Pass
	15GHz ~ 20GHz	Fig.94	Pass
	20GHz ~ 26GHz	Fig.9	Pass

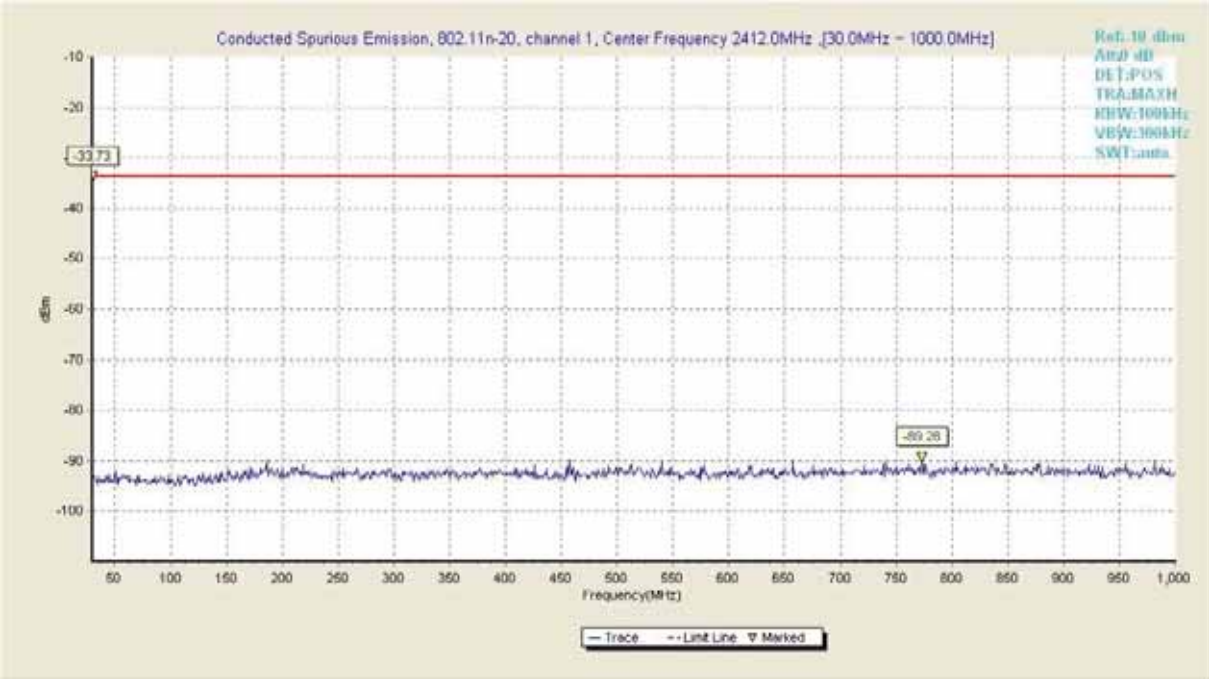


Fig75.Conducted Transmission Spurious Emission of 802.11n-20 in channel 1, 30MHz~1GHz

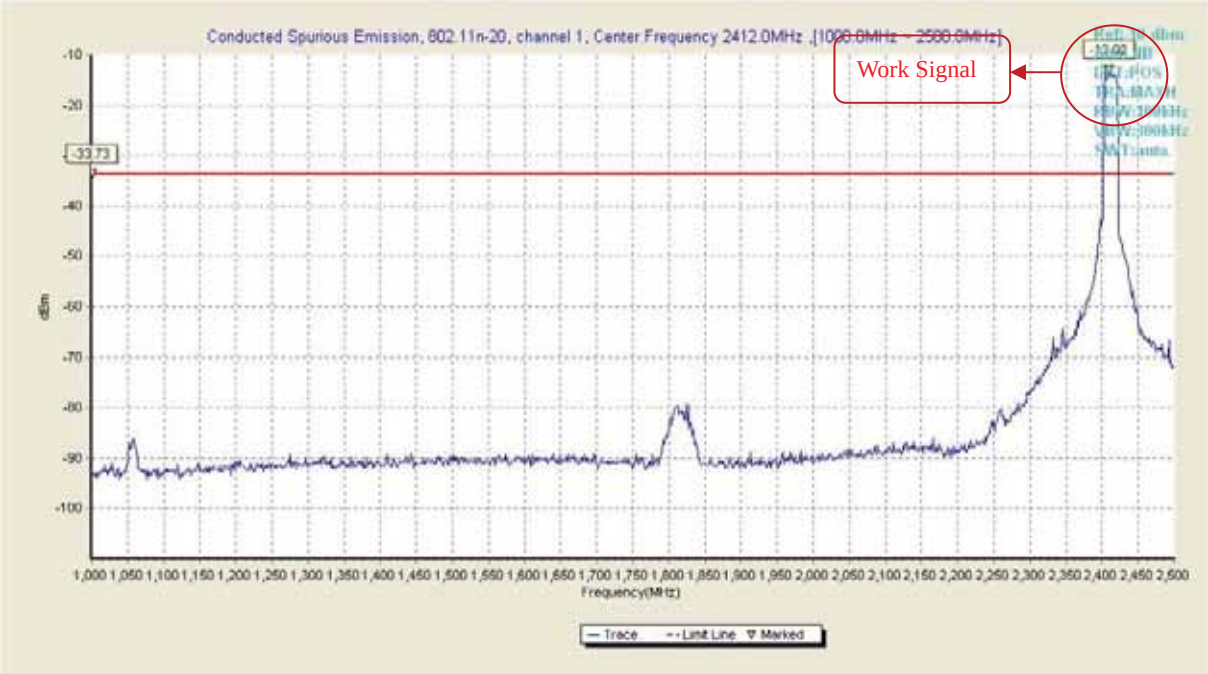


Fig76.Conducted Transmission Spurious Emission of 802.11n-20 in channel 1, 1GHz ~ 2.5GHz

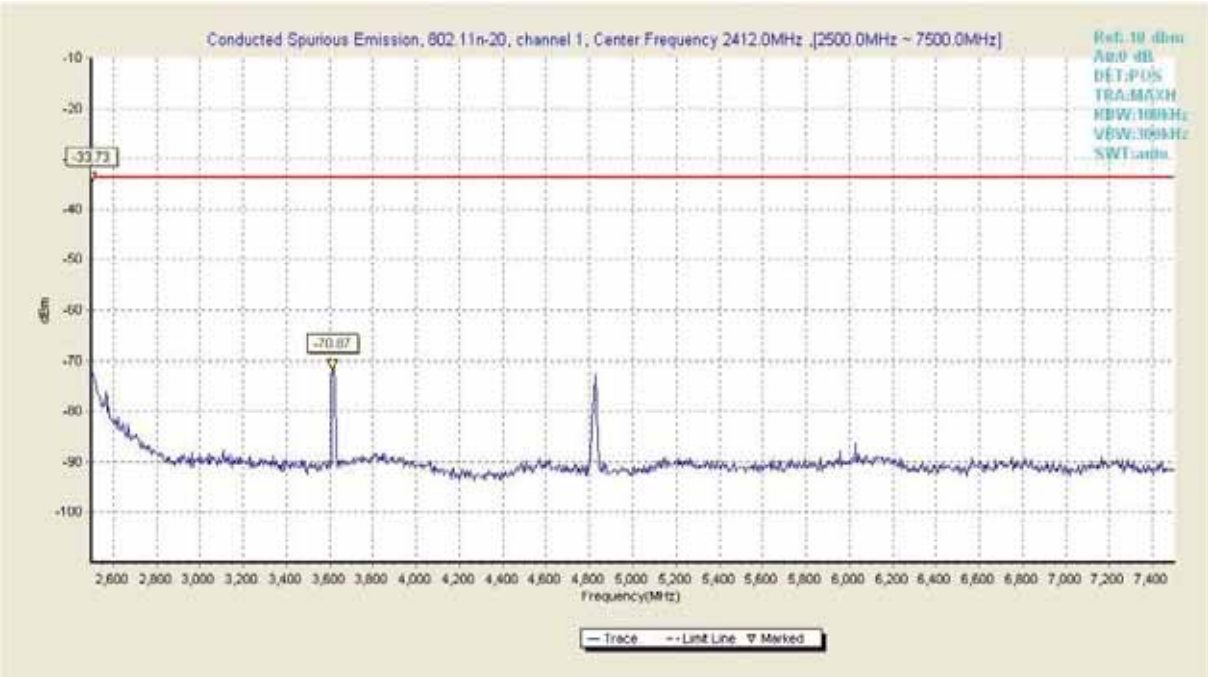


Fig77.Conducted Transmission Spurious Emission of 802.11n-20in channel 1, 2.5GHz ~ 7.5GHz

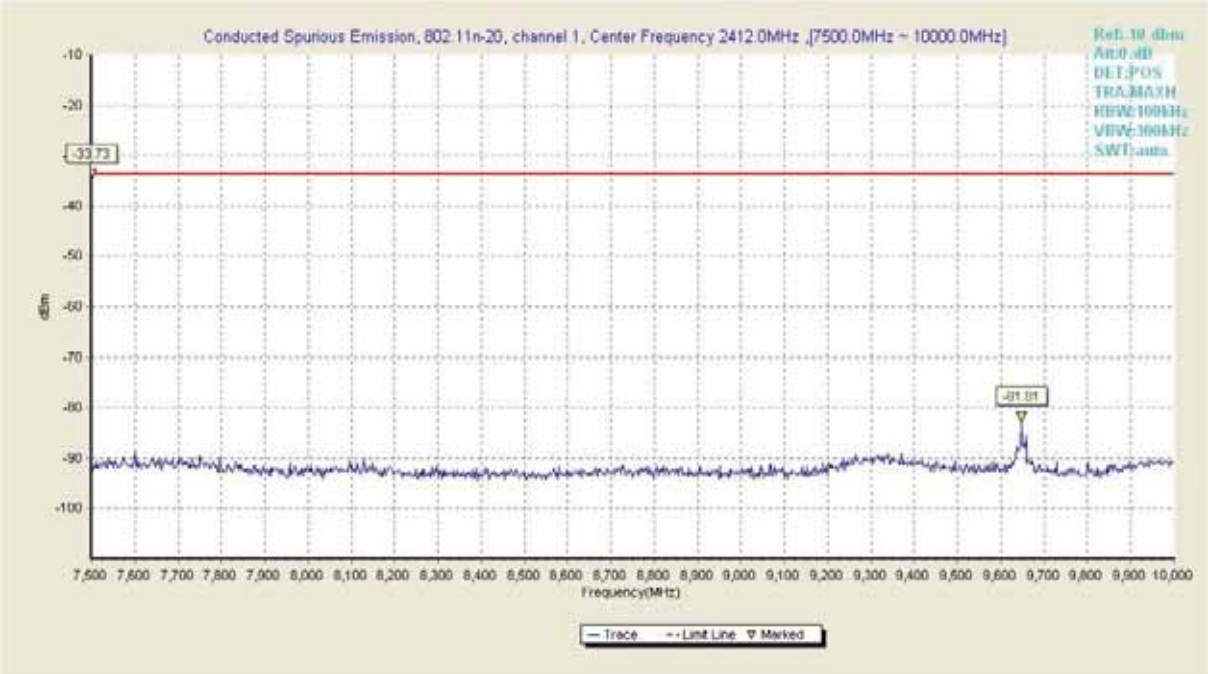


Fig78.Conducted Transmission Spurious Emission of 802.11n-20 in channel 1, 7.5GHz ~ 10GHz

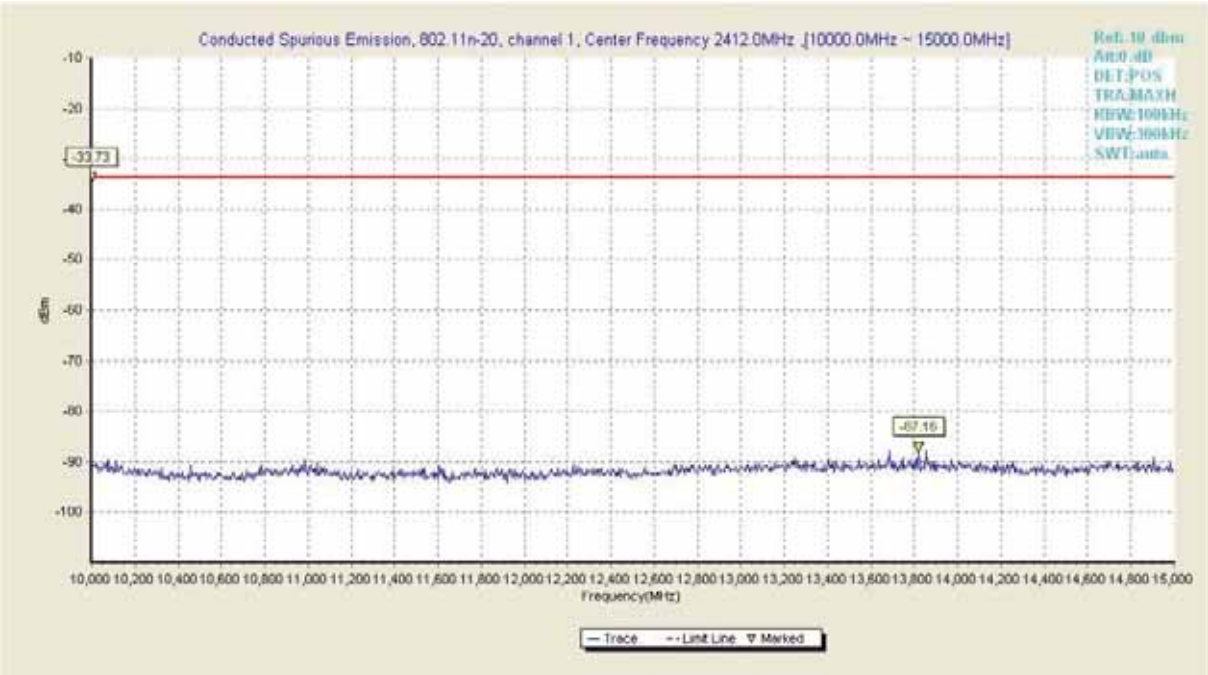


Fig79.Conducted Transmission Spurious Emission of 802.11n-20 in channel 1, 10GHz ~ 15GHz

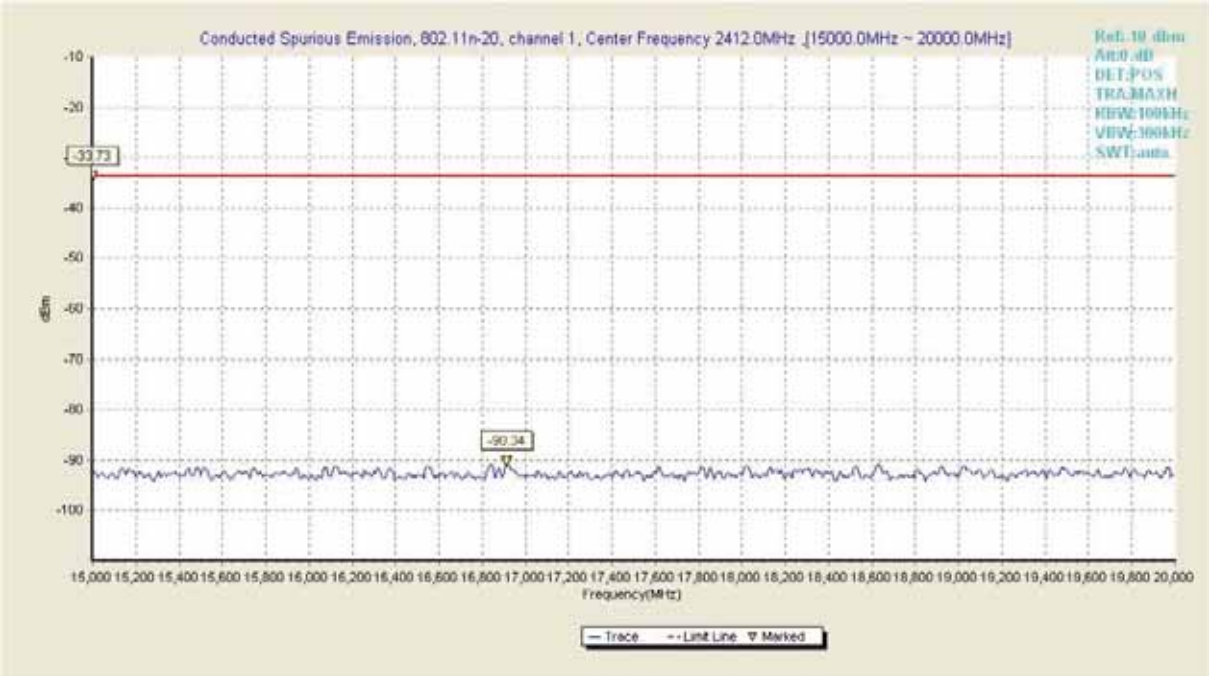


Fig80.Conducted Transmission Spurious Emission of 802.11n-20 in channel 1, 15GHz ~ 20GHz

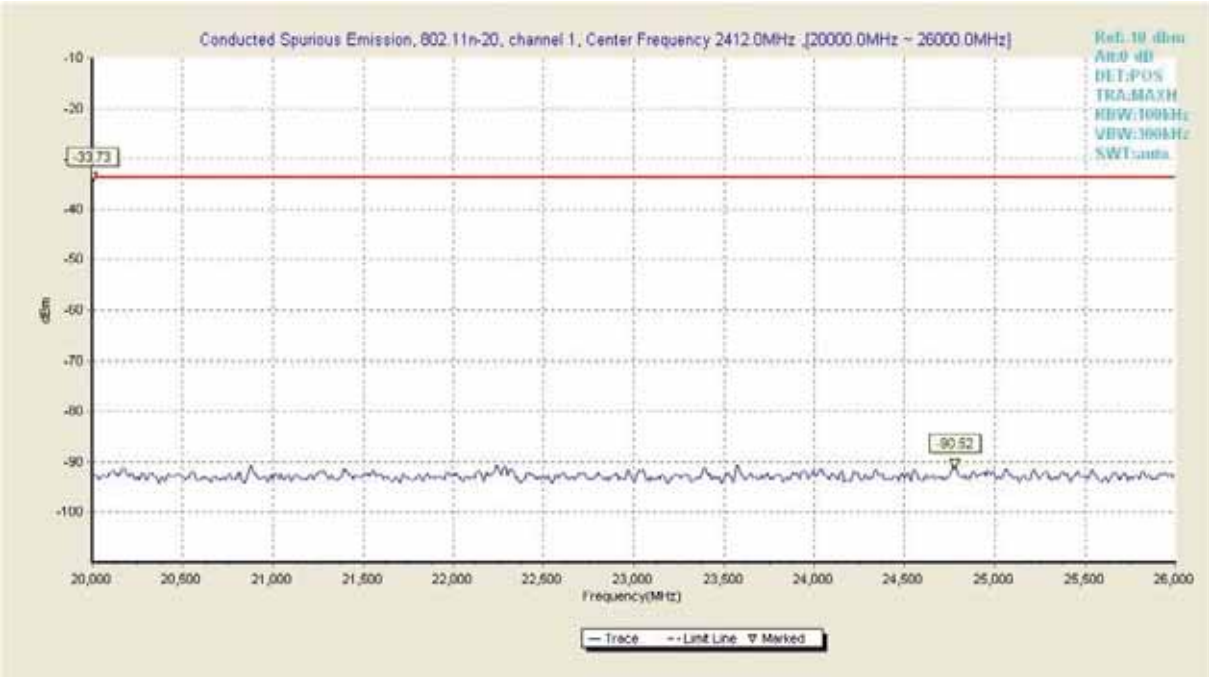


Fig81.Conducted Transmission Spurious Emission of 802.11n-20 in channel 1, 20GHz ~ 26GHz

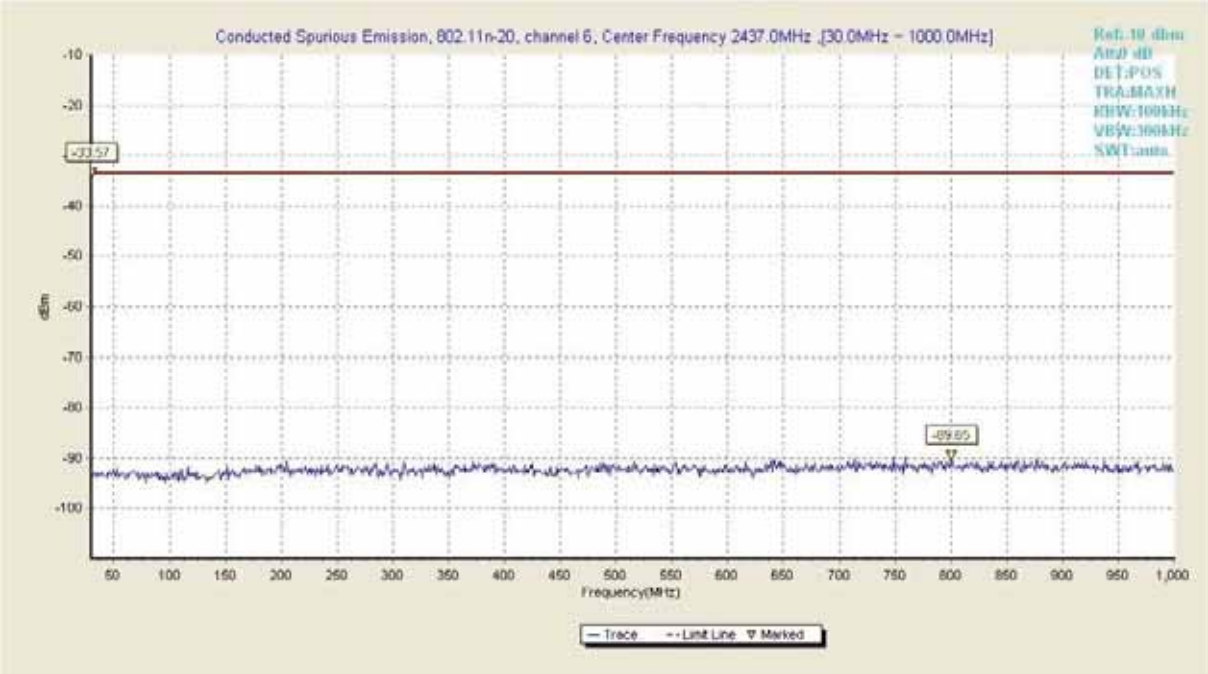


Fig82.Conducted Transmission Spurious Emission of 802.11n-20 in channel 6, 30MHz~1GHz

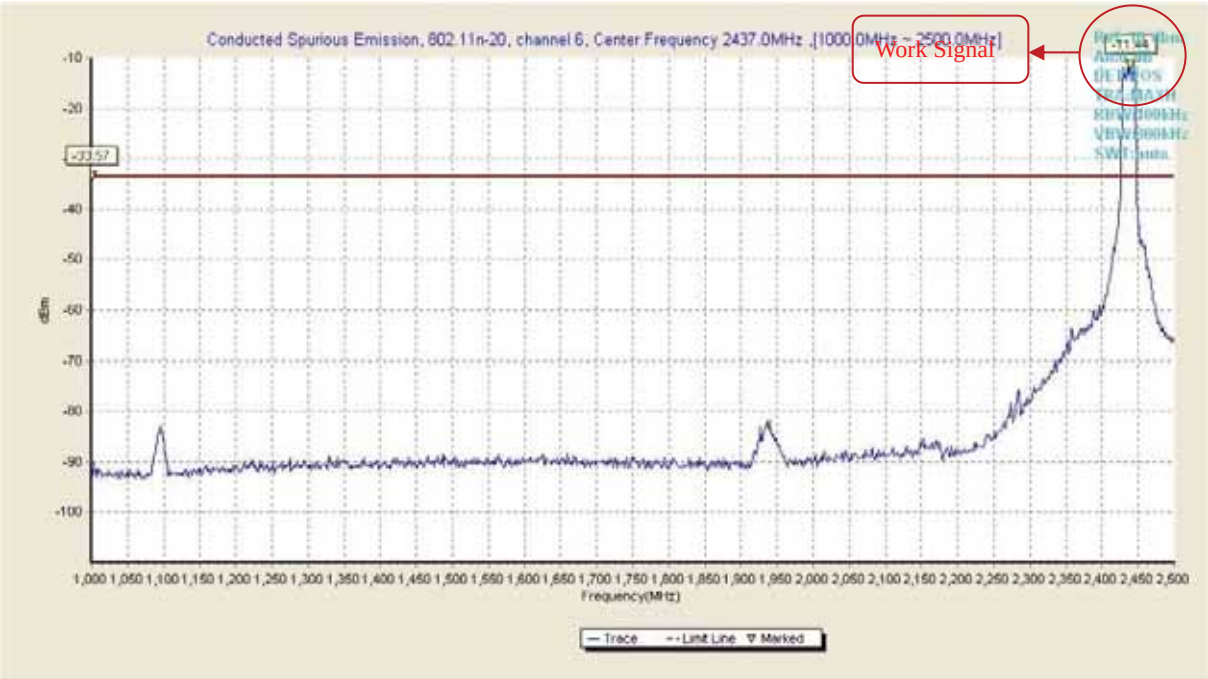


Fig83.Conducted Transmission Spurious Emission of 802.11n-20 in channel 6, 1GHz ~ 2.5GHz

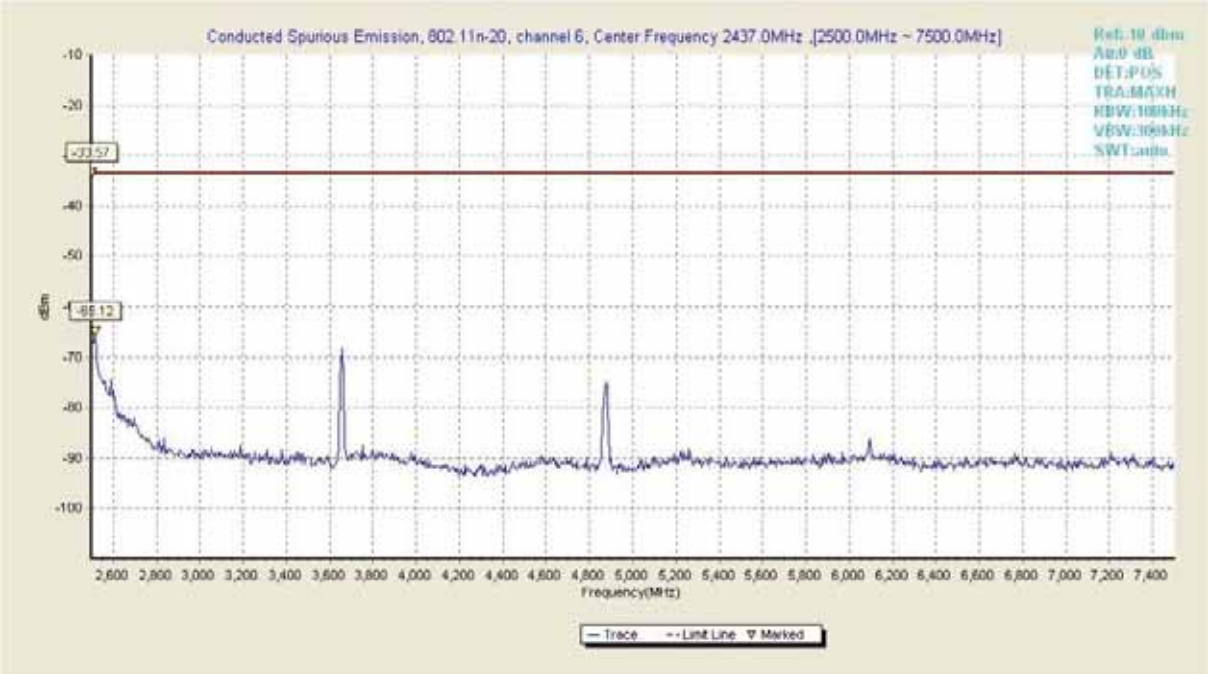


Fig84.Conducted Transmission Spurious Emission of 802.11n-20 in channel 6, 2.5GHz ~ 7.5GHz

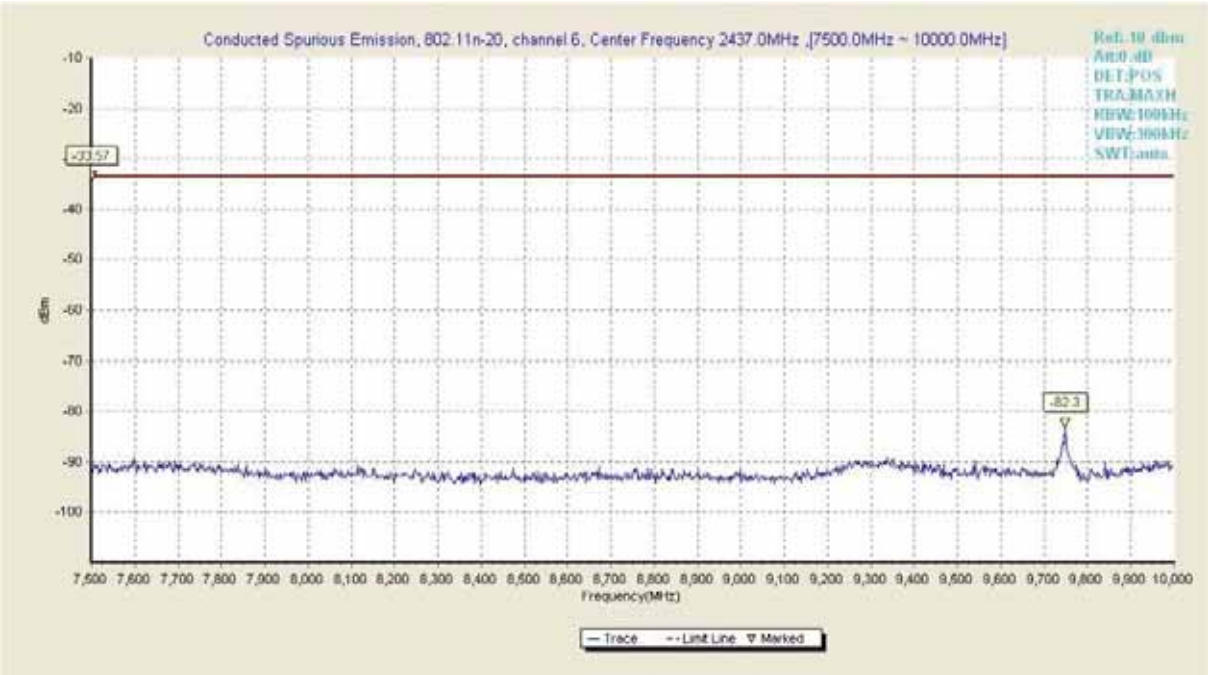


Fig85.Conducted Transmission Spurious Emission of 802.11n-20 in channel 6, 7.5GHz ~ 10GHz

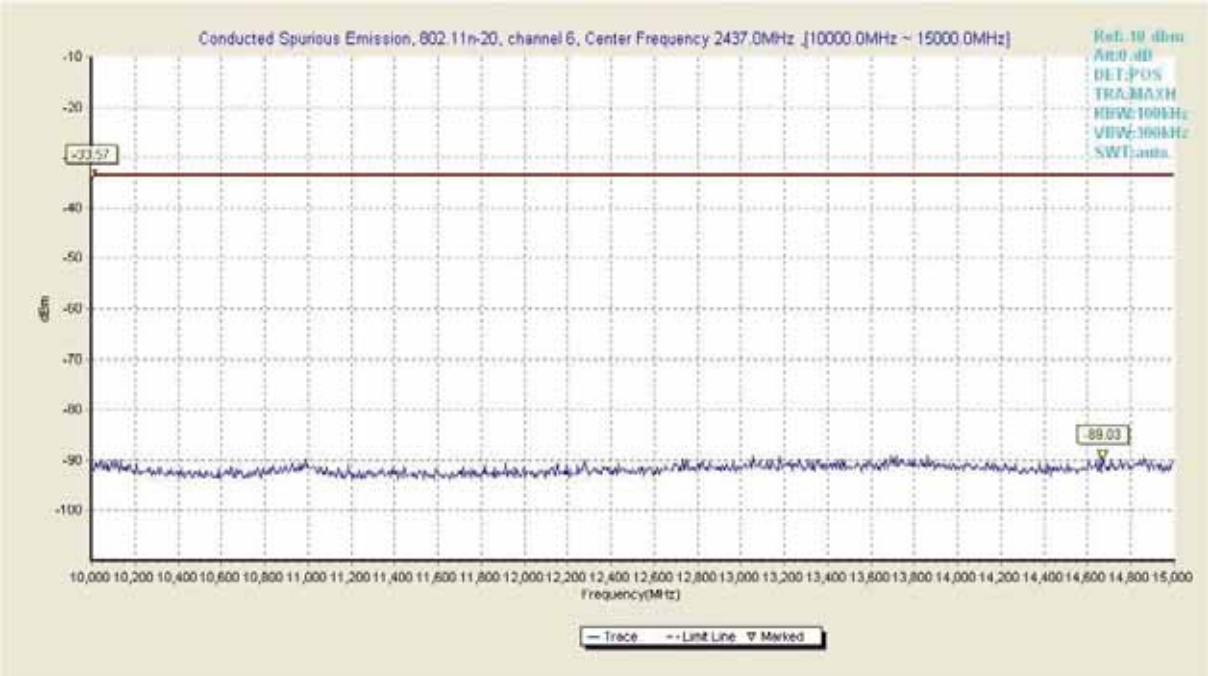


Fig86.Conducted Transmission Spurious Emission of 802.11n-20 in channel 6, 10GHz ~ 15GHz

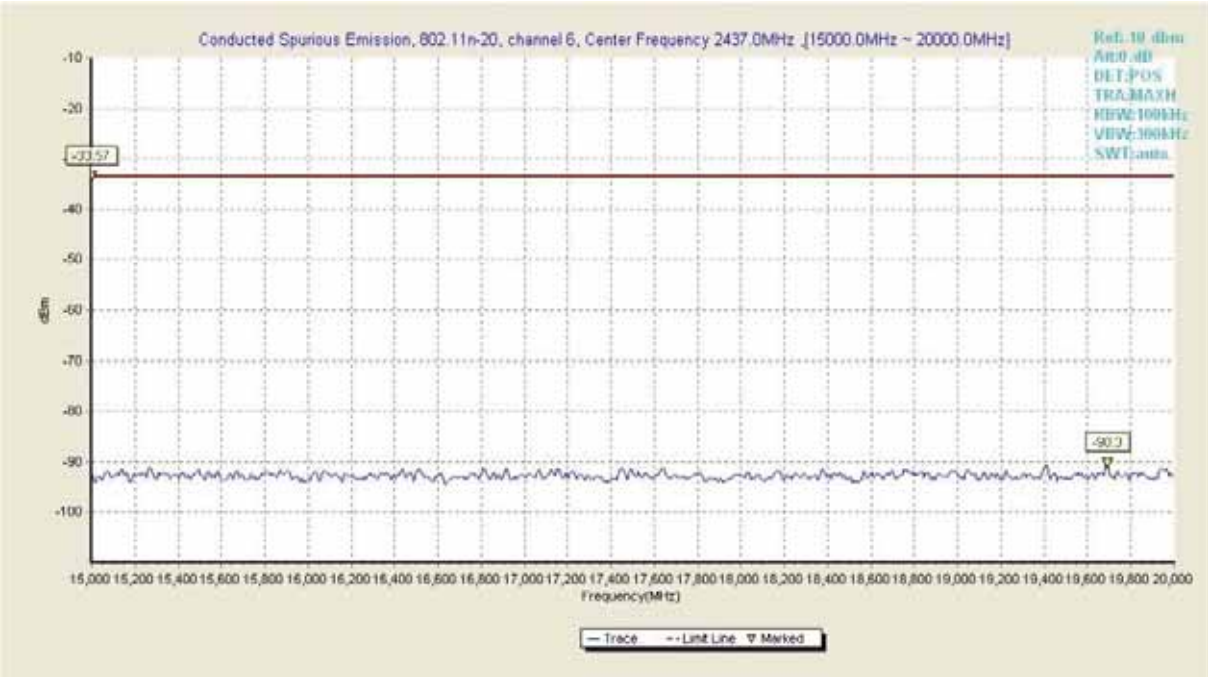


Fig87.Conducted Transmission Spurious Emission of 802.11n-20 in channel 6, 15GHz ~ 20GHz

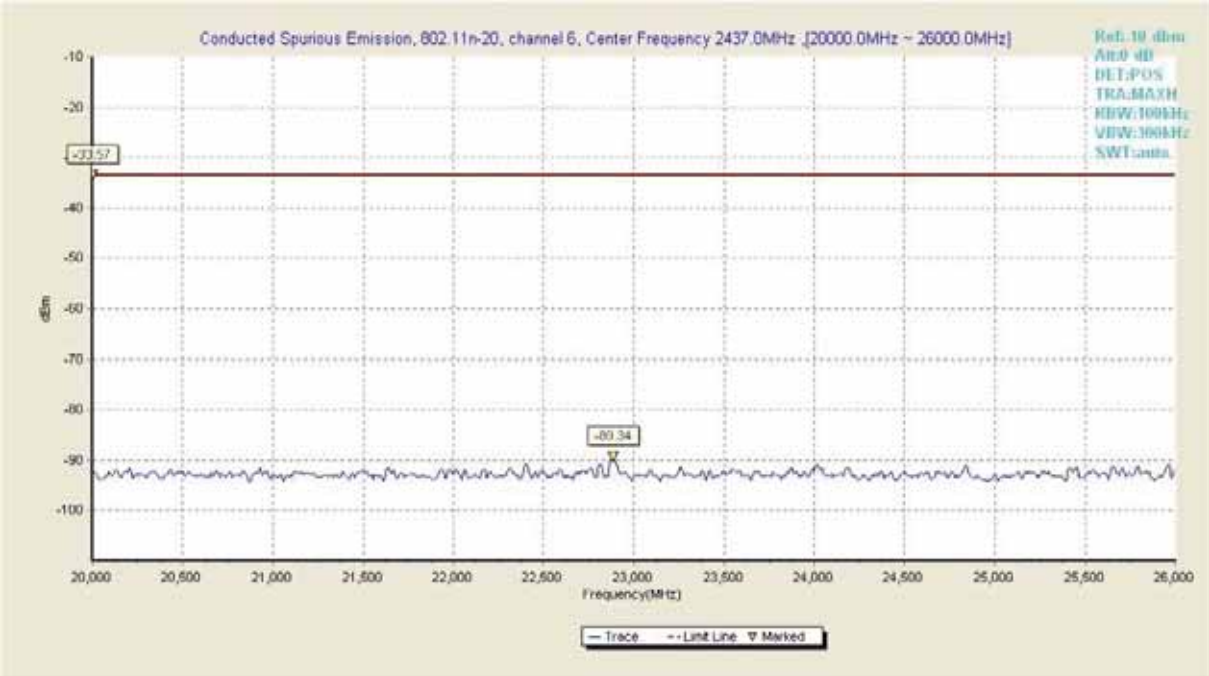


Fig88.Conducted Transmission Spurious Emission of 802.11n-20 in channel 6, 20GHz ~ 26GHz

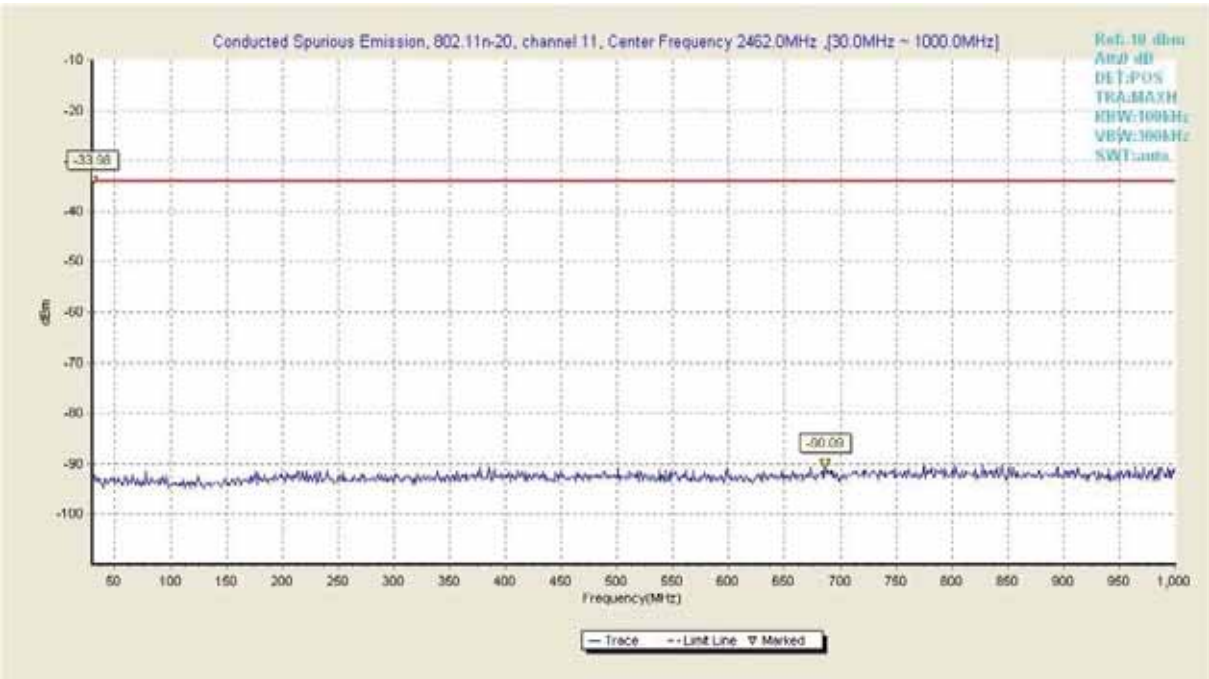


Fig89.Conducted Transmission Spurious Emission of 802.11n-20 in channel 11, 30MHz~1GHz

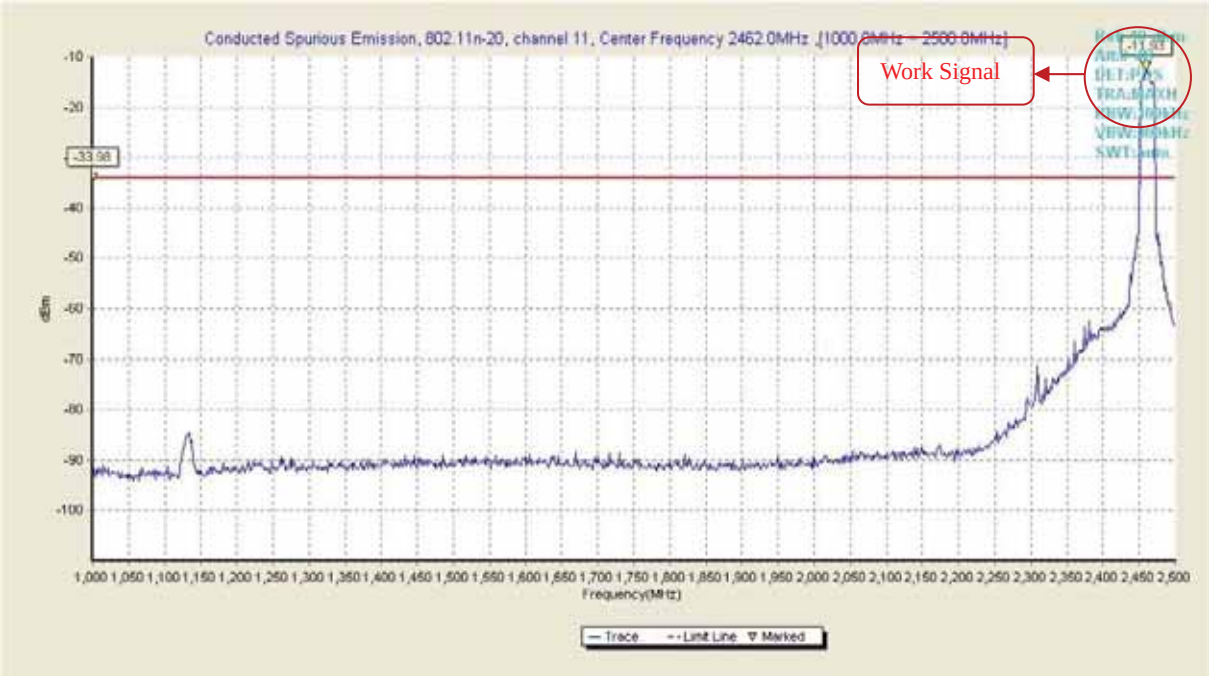


Fig90.Conducted Transmission Spurious Emission of 802.11n-20 in channel 11, 1GHz ~ 2.5GHz

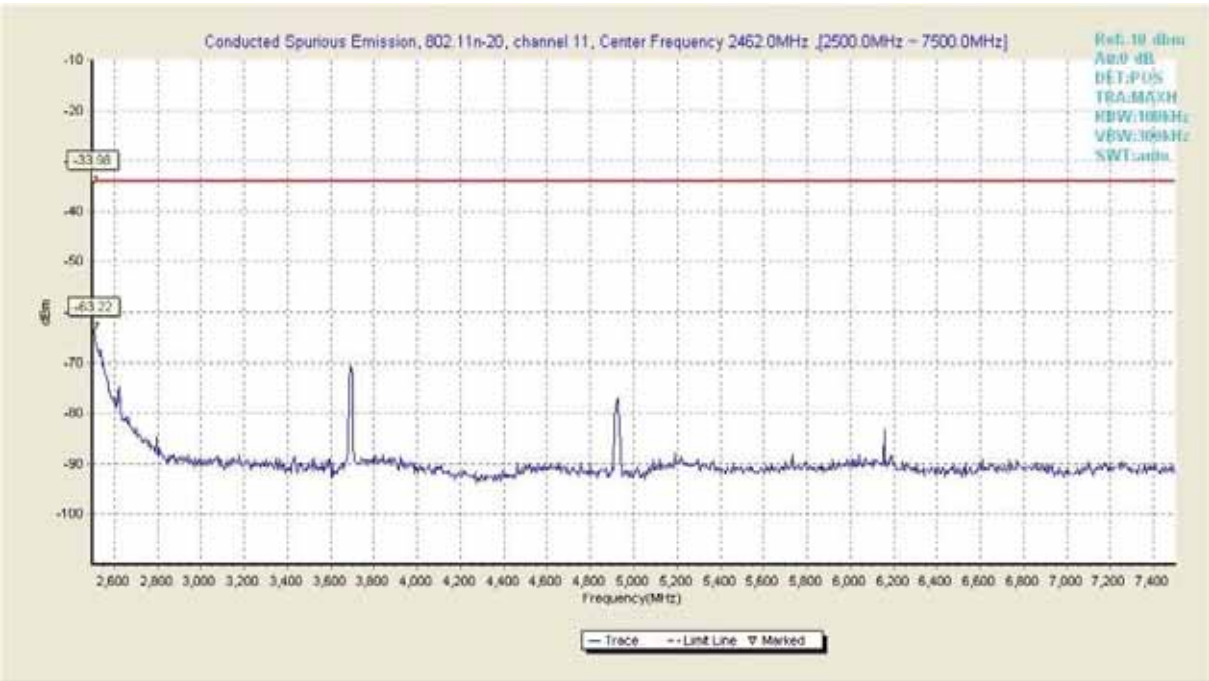


Fig91.Conducted Transmission Spurious Emission of 802.11n-20 in channel 11, 2.5GHz ~ 7.5GHz

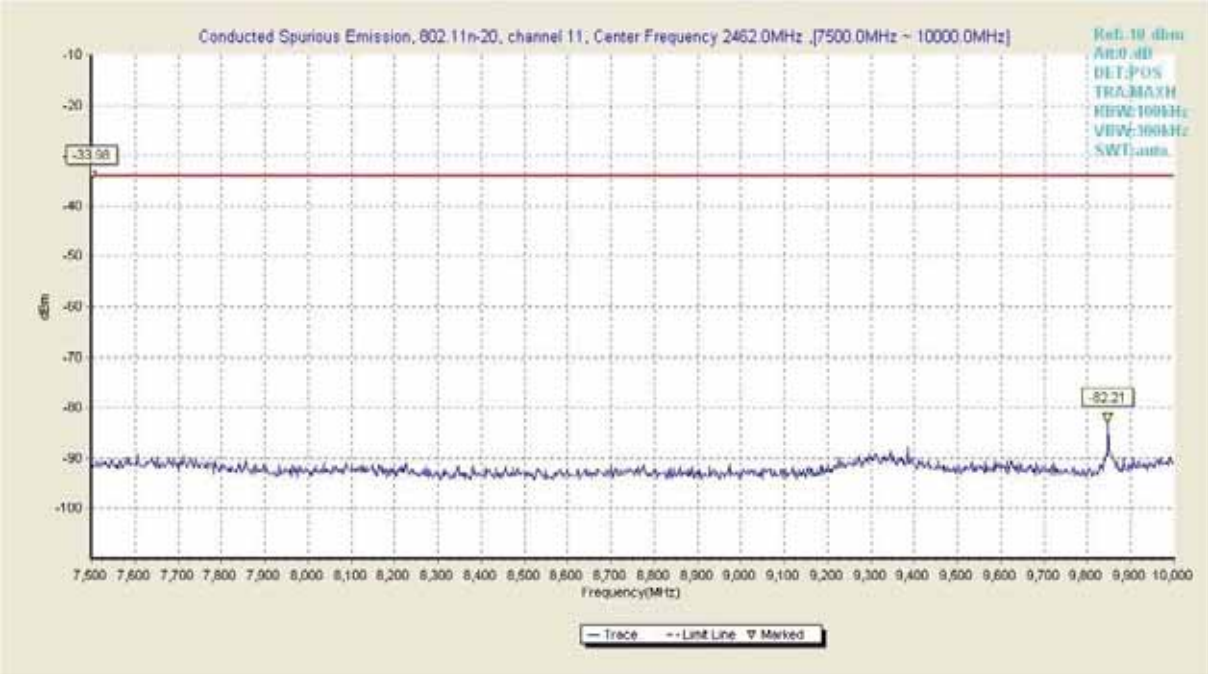


Fig92.Conducted Transmission Spurious Emission of 802.11n-20 in channel 11, 7.5GHz ~ 10GHz

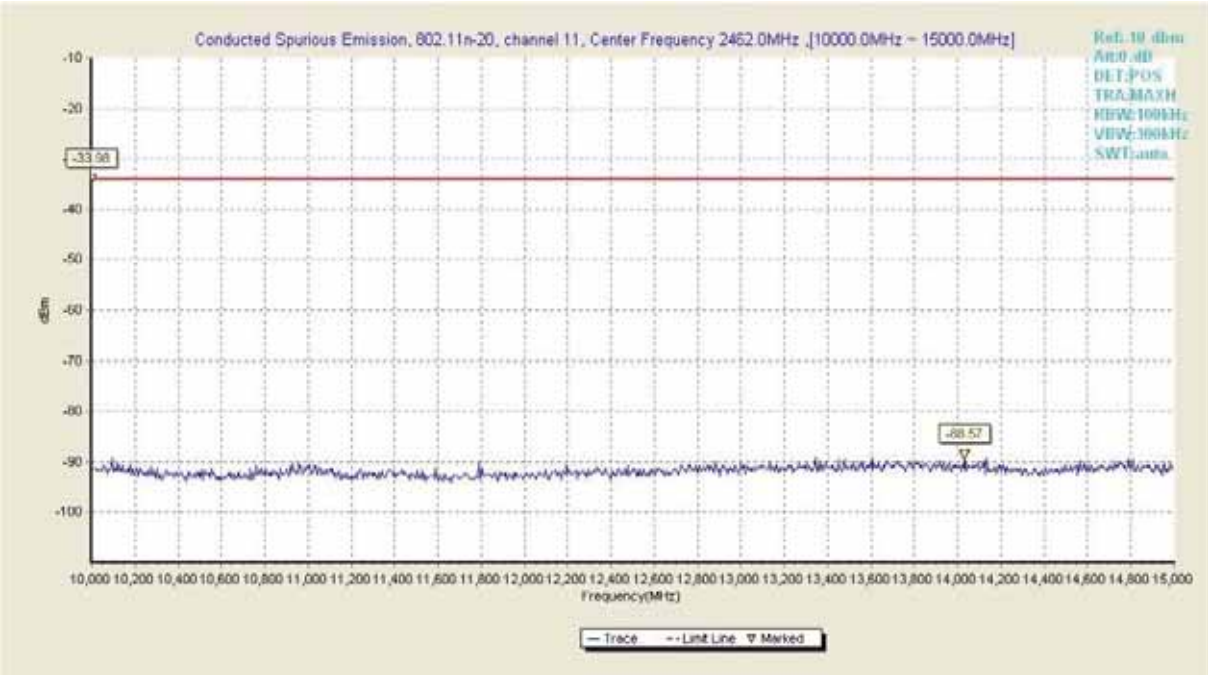


Fig93.Conducted Transmission Spurious Emission of 802.11n-20 in channel 11, 10GHz ~ 15GHz

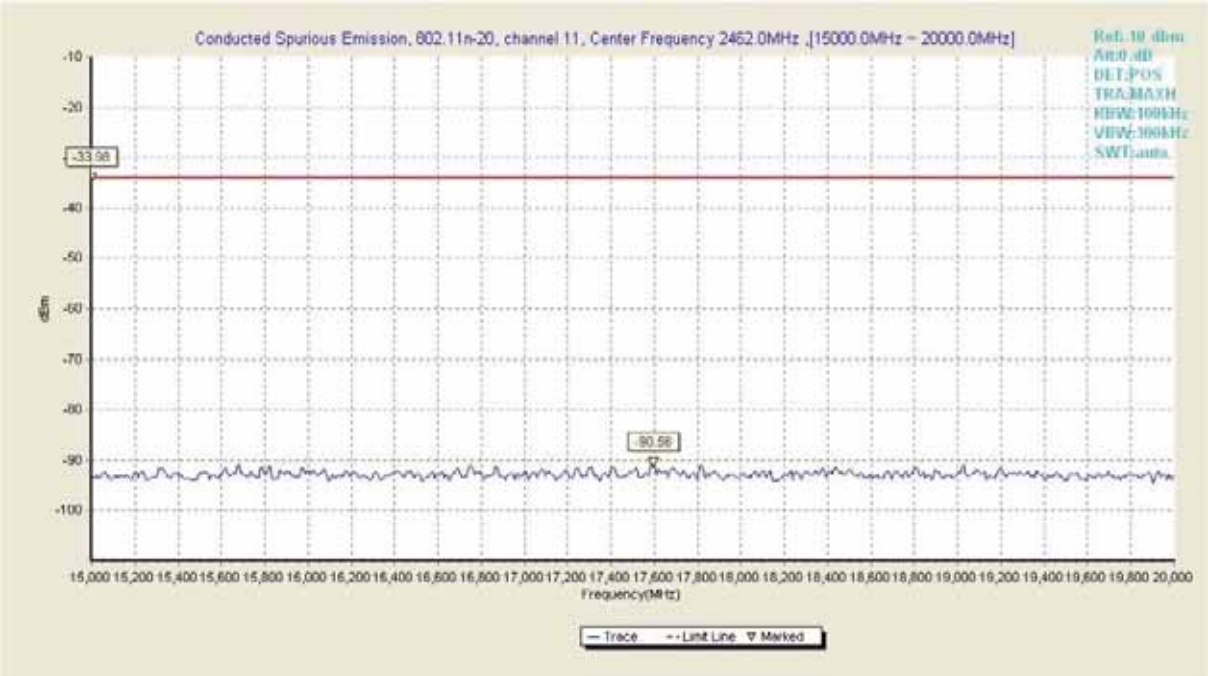


Fig94.Conducted Transmission Spurious Emission of 802.11n-20 in channel 11, 15GHz ~ 20GHz

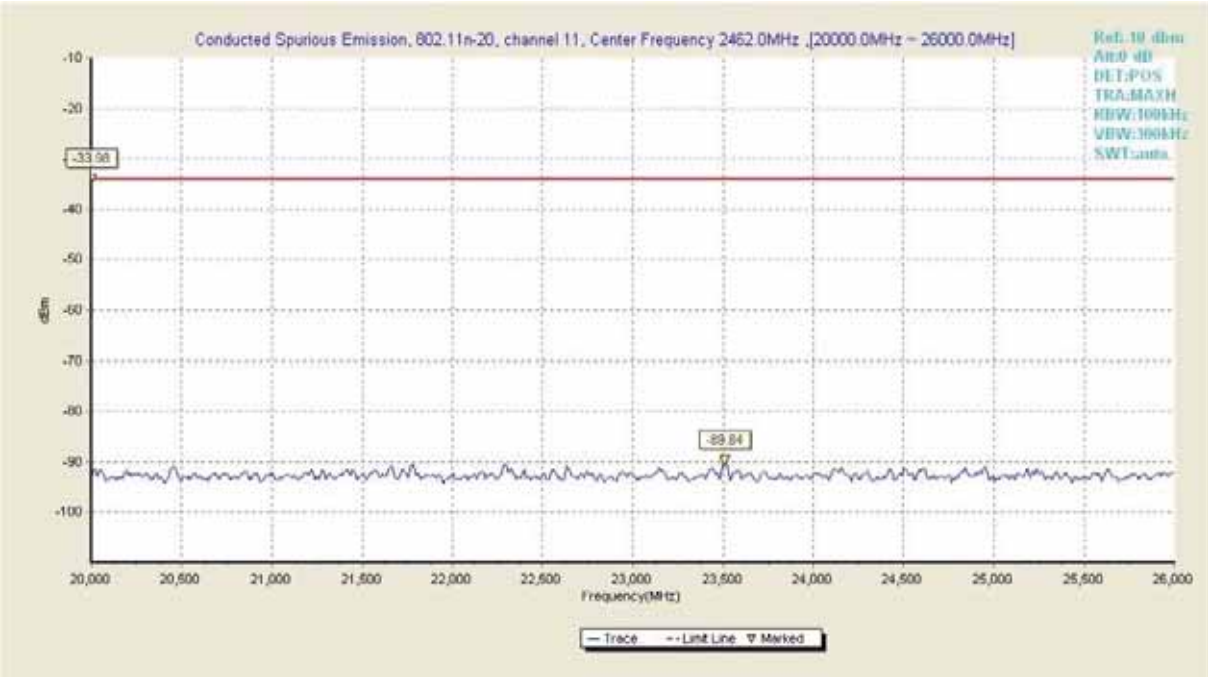


Fig95.Conducted Transmission Spurious Emission of 802.11n-20 in channel 11, 20GHz ~ 26GHz

802.11n-40 mode

Channel	Frequency Range	Test Results	Verdict
3	30MHz ~ 1GHz	Fig.96	Pass
	1GHz ~ 2.5GHz	Fig.97	Pass
	2.5GHz ~ 7.5GHz	Fig.98	Pass
	7.5GHz ~ 10GHz	Fig.99	Pass
	10GHz ~ 15GHz	Fig.100	Pass
	15GHz ~ 20GHz	Fig.101	Pass
	20GHz ~ 26GHz	Fig.102	Pass
6	30MHz ~ 1GHz	Fig.103	Pass
	1GHz ~ 2.5GHz	Fig.104	Pass
	2.5GHz ~ 7.5GHz	Fig.105	Pass
	7.5GHz ~ 10GHz	Fig.106	Pass
	10GHz ~ 15GHz	Fig.107	Pass
	15GHz ~ 20GHz	Fig.108	Pass
	20GHz ~ 26GHz	Fig.109	Pass
9	30MHz ~ 1GHz	Fig.110	Pass
	1GHz ~ 2.5GHz	Fig.111	Pass
	2.5GHz ~ 7.5GHz	Fig.112	Pass
	7.5GHz ~ 10GHz	Fig.113	Pass
	10GHz ~ 15GHz	Fig.114	Pass
	15GHz ~ 20GHz	Fig.115	Pass
	20GHz ~ 26GHz	Fig.116	Pass

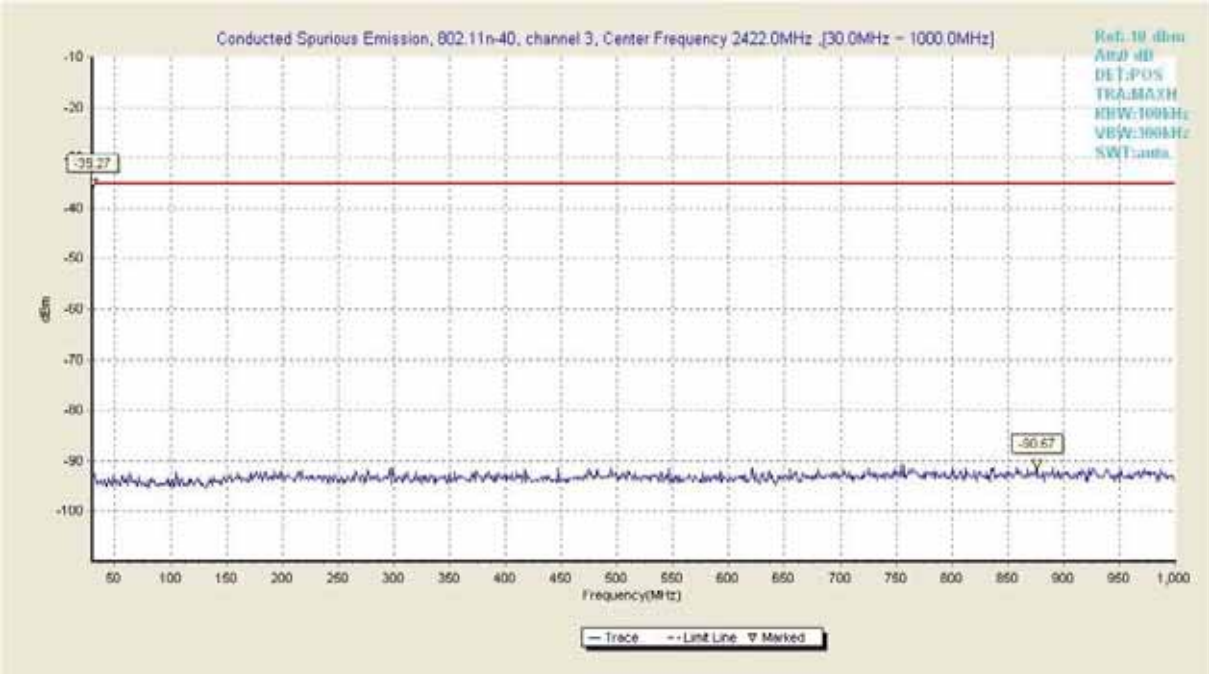


Fig96.Conducted Transmission Spurious Emission of 802.11n-40 in channel 1, 30MHz~1GHz

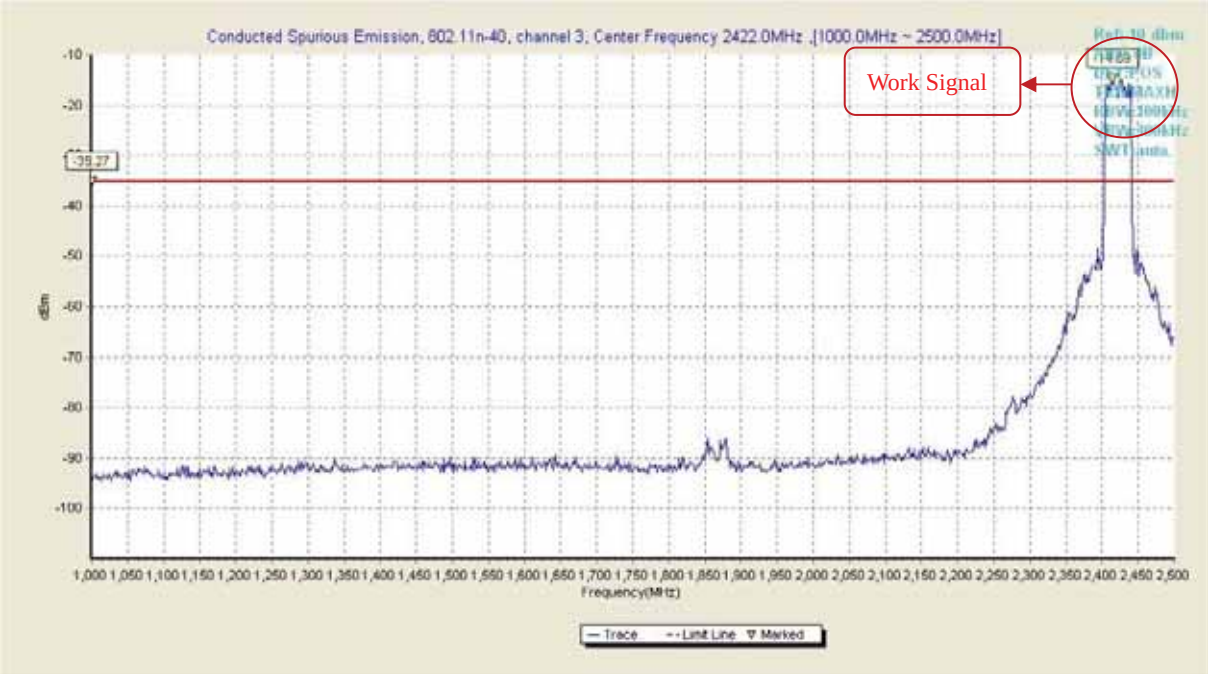


Fig97.Conducted Transmission Spurious Emission of 802.11n-40 in channel 1, 1GHz ~ 2.5GHz

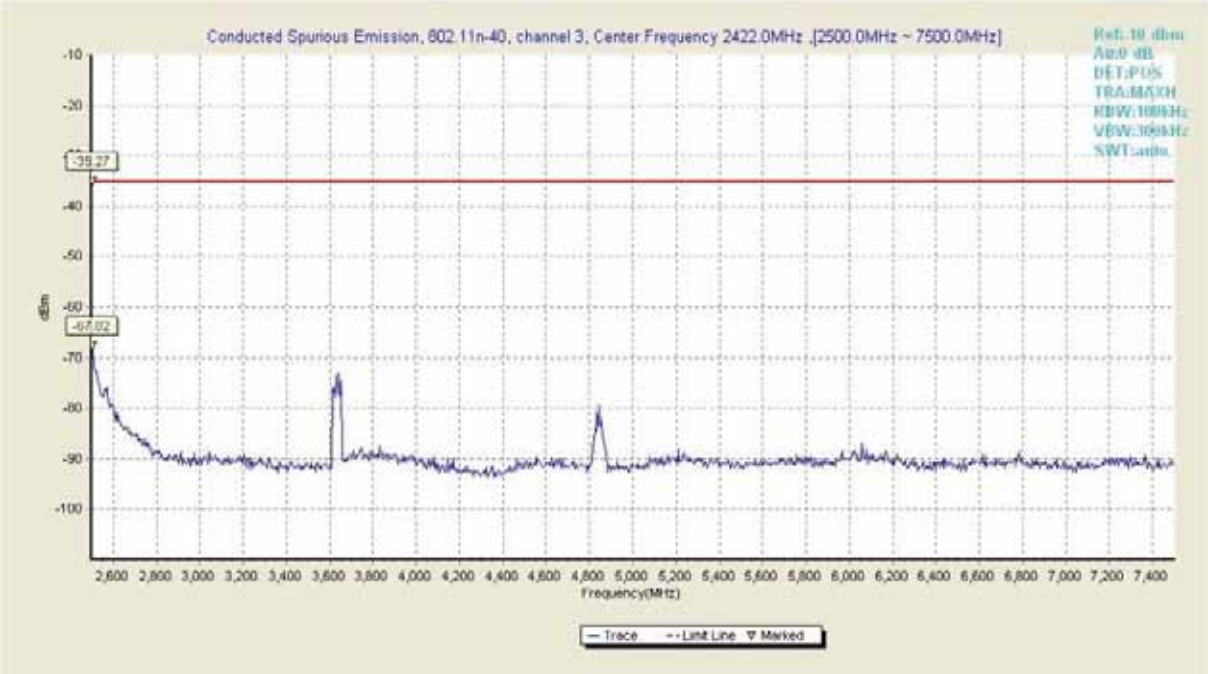


Fig98.Conducted Transmission Spurious Emission of 802.11n-40 in channel 1, 2.5GHz ~ 7.5GHz

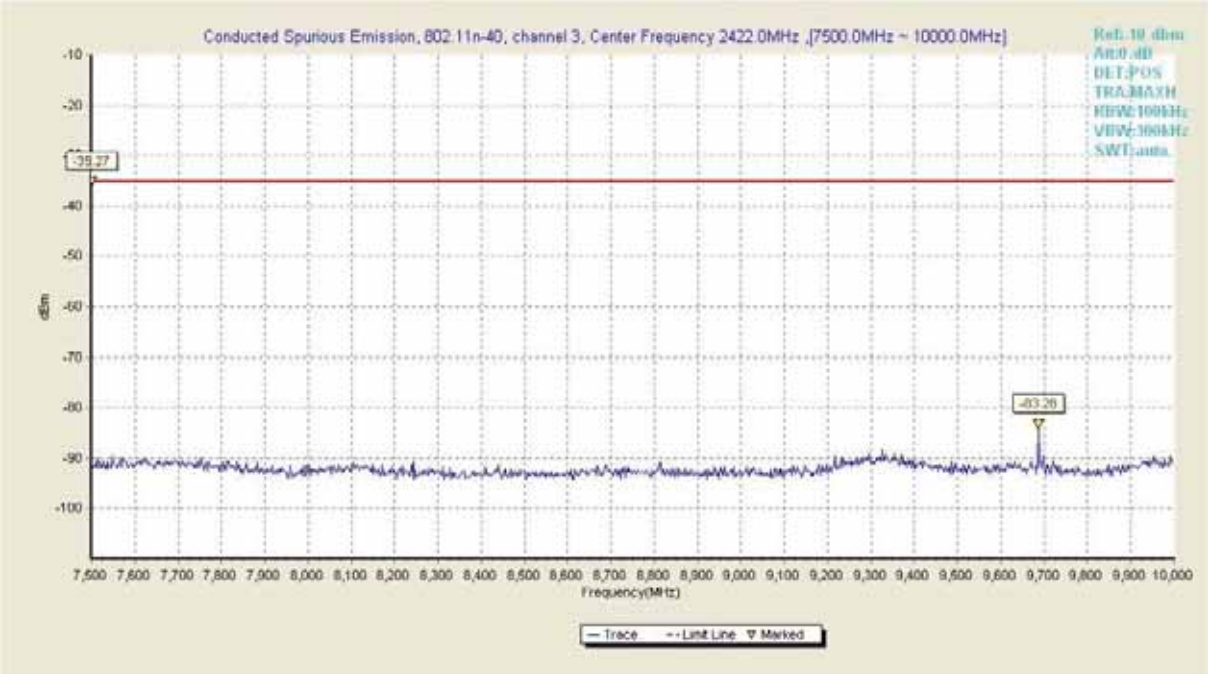


Fig99.Conducted Transmission Spurious Emission of 802.11n-40 in channel 1, 7.5GHz ~ 10GHz

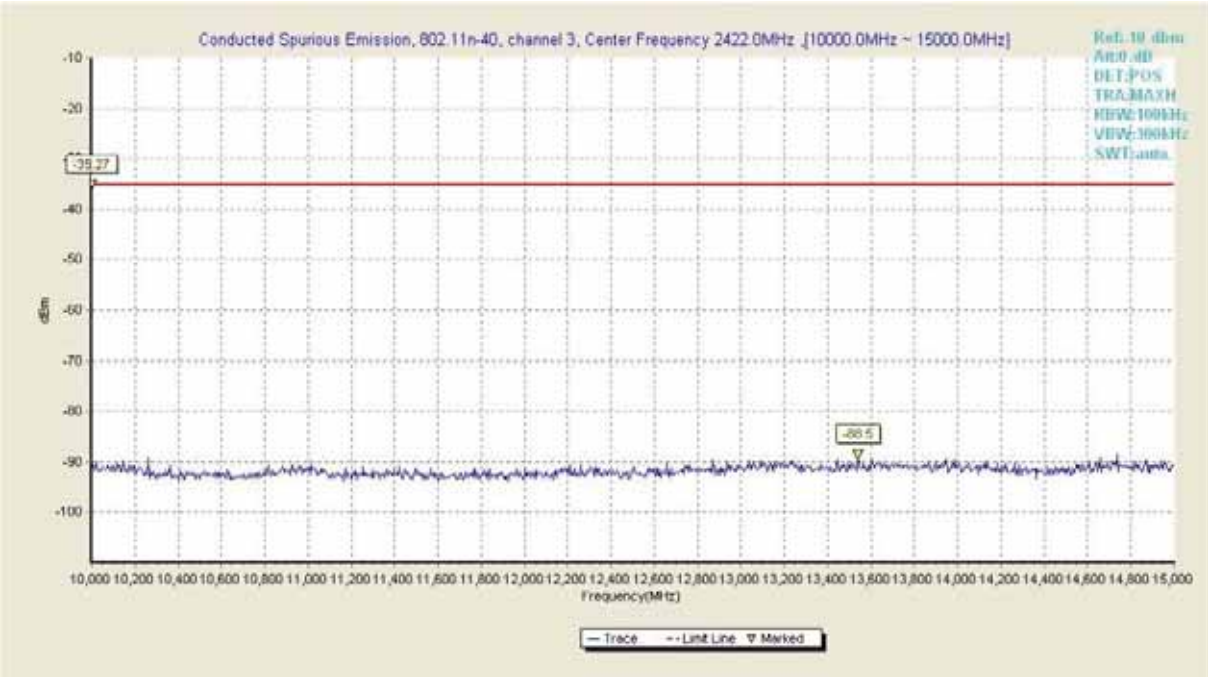


Fig100.Conducted Transmission Spurious Emission of 802.11n-40 in channel 1, 10GHz ~ 15GHz

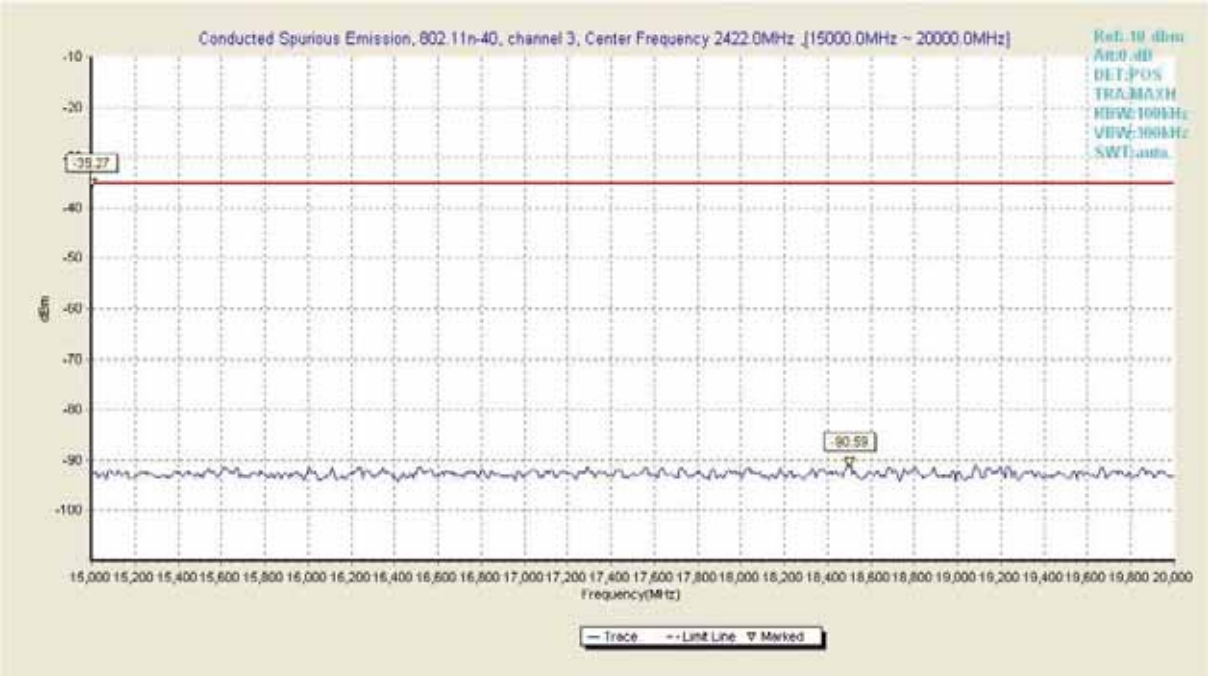


Fig101.Conducted Transmission Spurious Emission of 802.11n-40 n channel 1, 15GHz ~ 20GHz

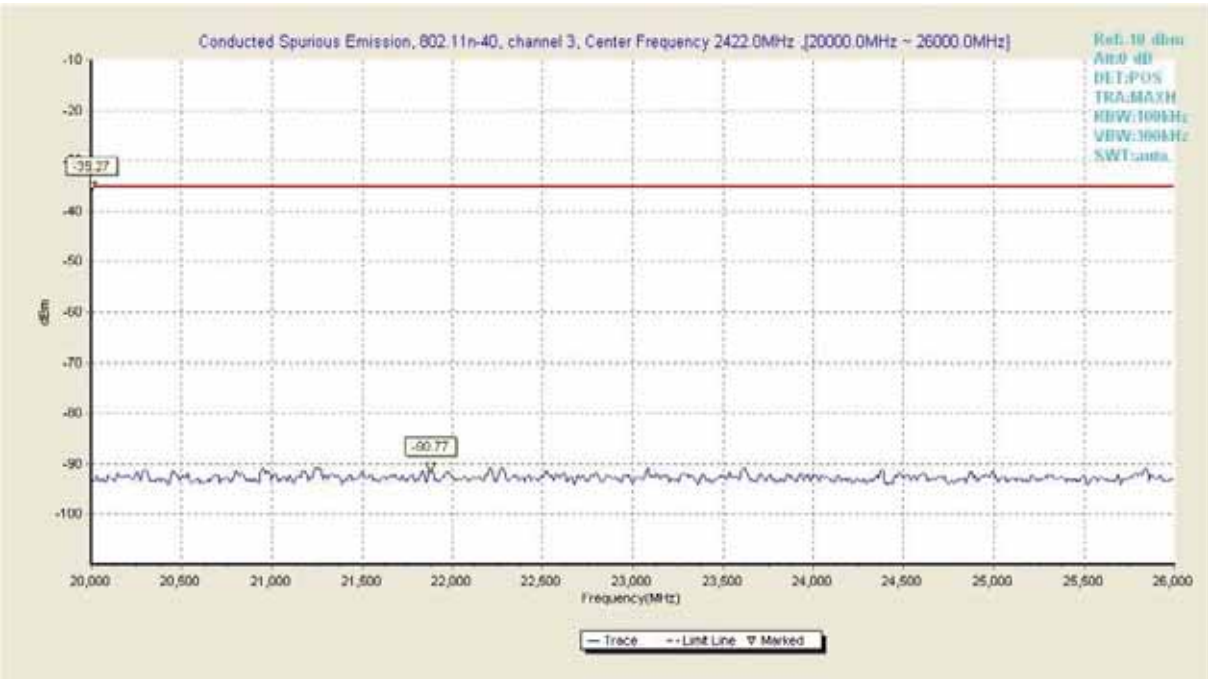


Fig102.Conducted Transmission Spurious Emission of 802.11n-40 in channel 1, 20GHz ~ 26GHz

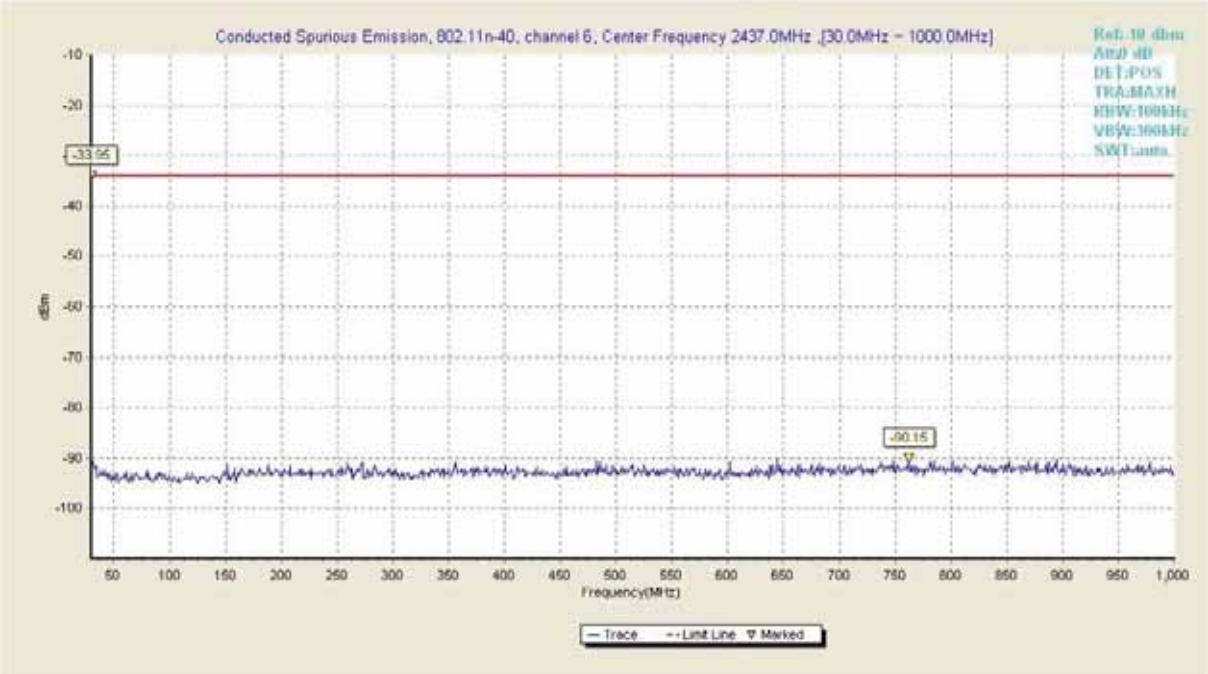


Fig103.Conducted Transmission Spurious Emission of 802.11n-40 in channel 6, 30MHz~1GHz

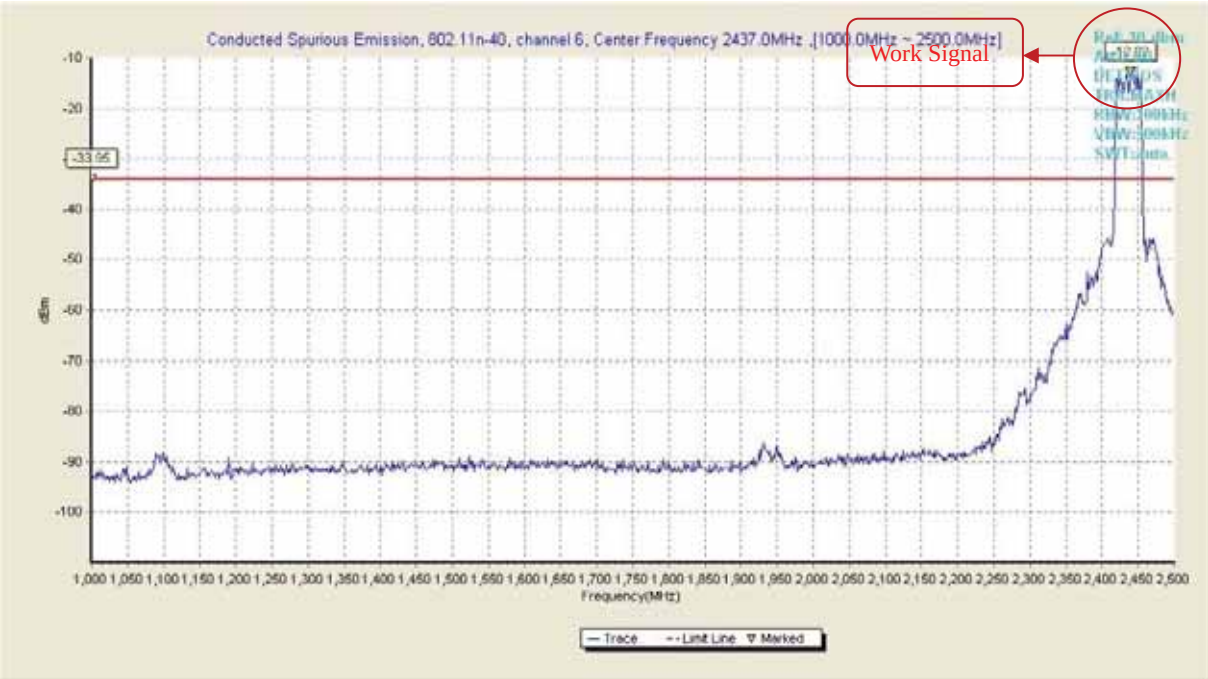


Fig104.Conducted Transmission Spurious Emission of 802.11n-40 in channel 6, 1GHz ~ 2.5GHz

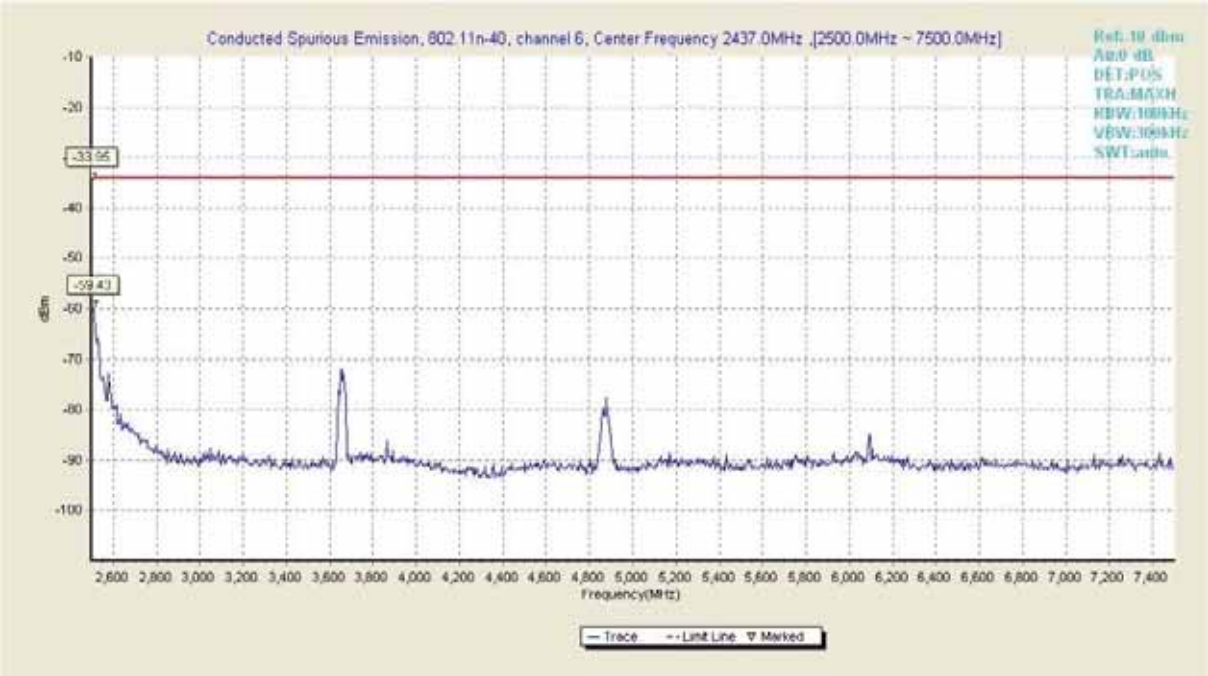


Fig105.Conducted Transmission Spurious Emission of 802.11n-40 in channel 6, 2.5GHz ~ 7.5GHz

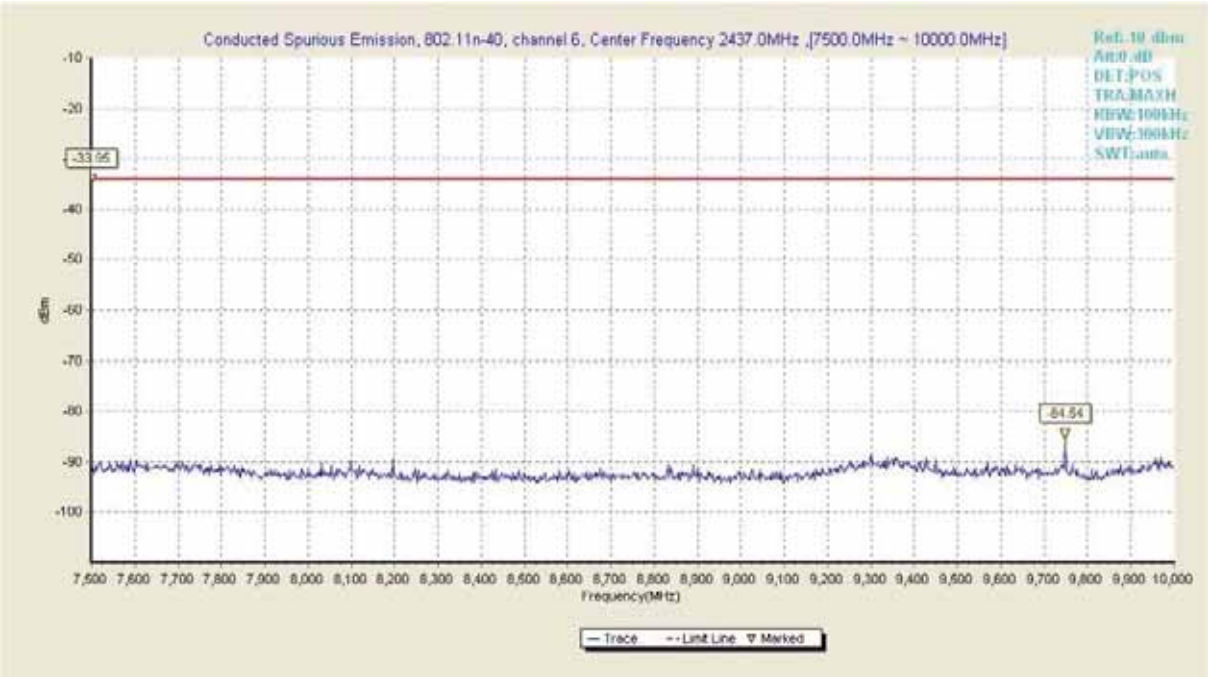


Fig106.Conducted Transmission Spurious Emission of 802.11n-40 in channel 6, 7.5GHz ~ 10GHz

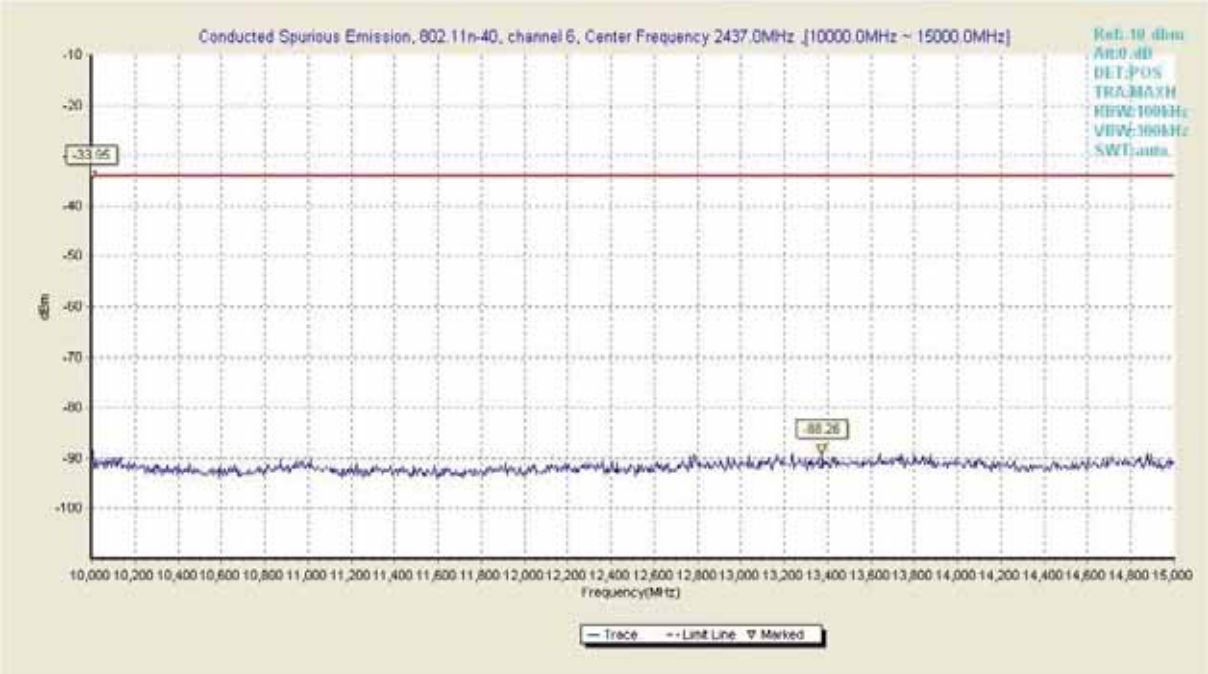


Fig107.Conducted Transmission Spurious Emission of 802.11n-40 in channel 6, 10GHz ~ 15GHz

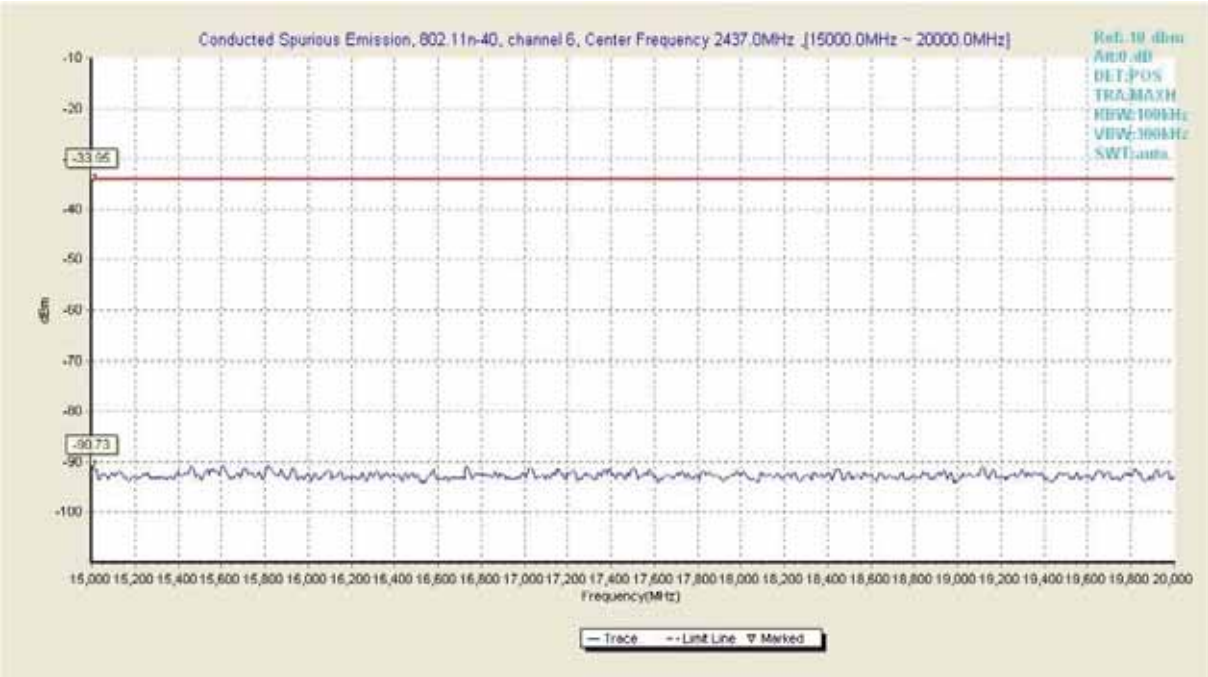


Fig108.Conducted Transmission Spurious Emission of 802.11n-40 in channel 6, 15GHz ~ 20GHz

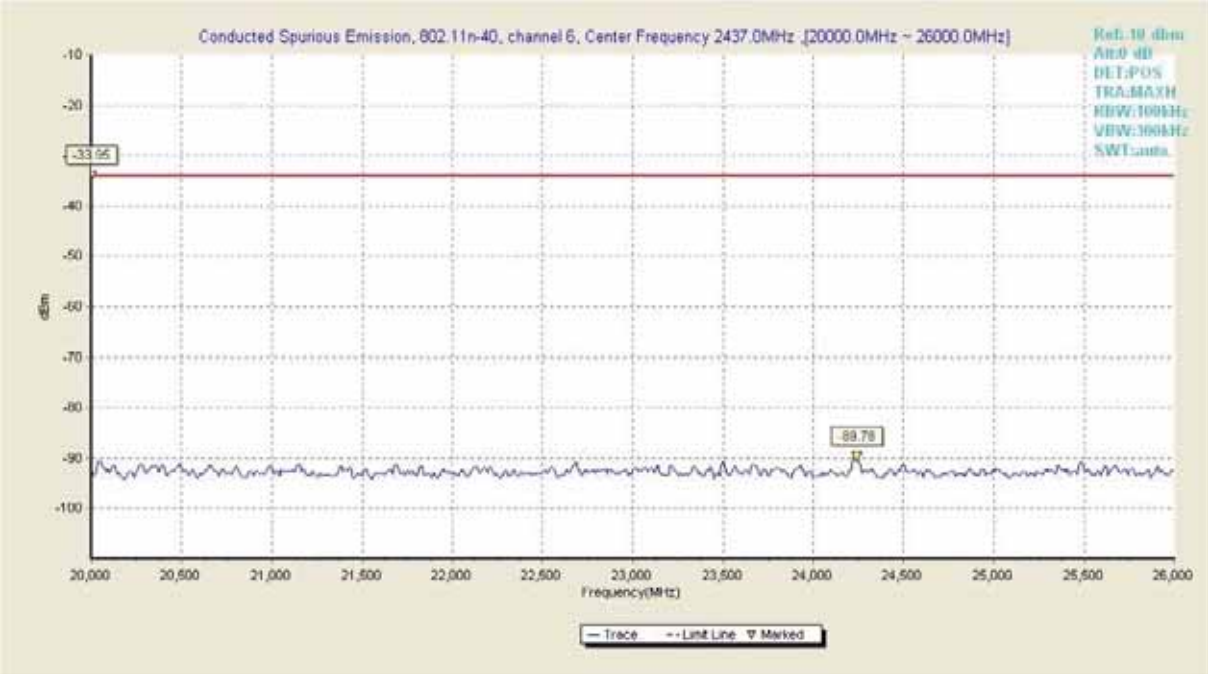


Fig109.Conducted Transmission Spurious Emission of 802.11n-40 in channel 6, 20GHz ~ 26GHz

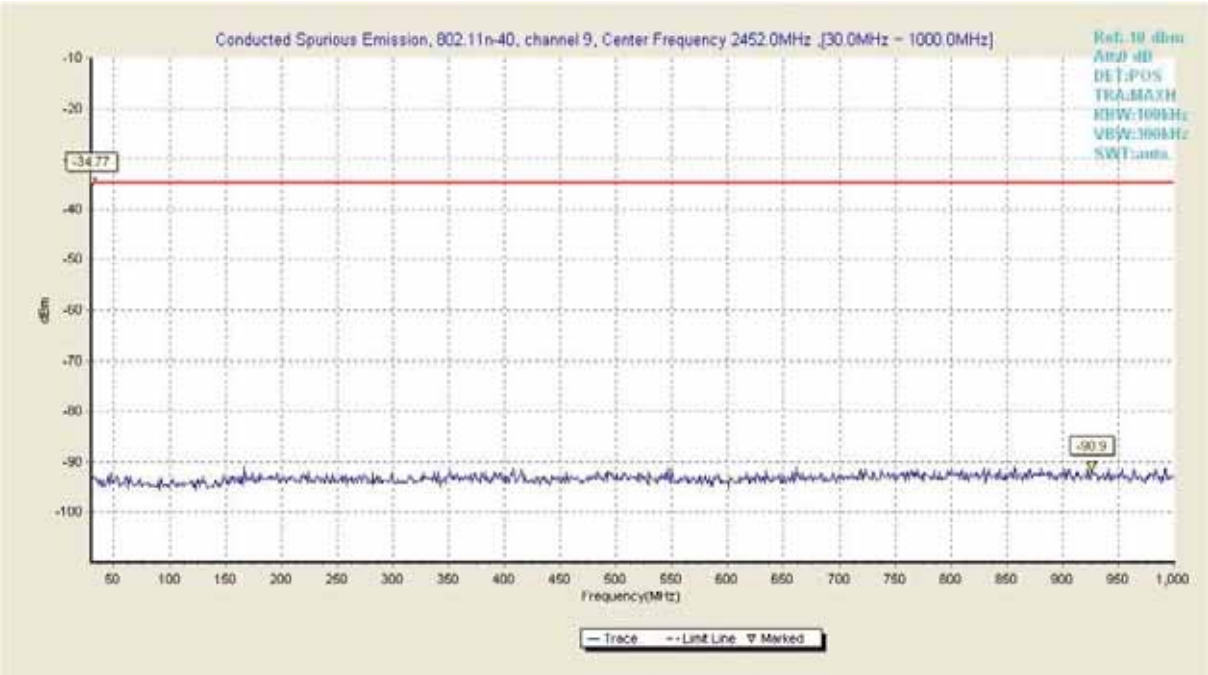


Fig110.Conducted Transmission Spurious Emission of 802.11n-40 in channel 11, 30MHz~1GHz

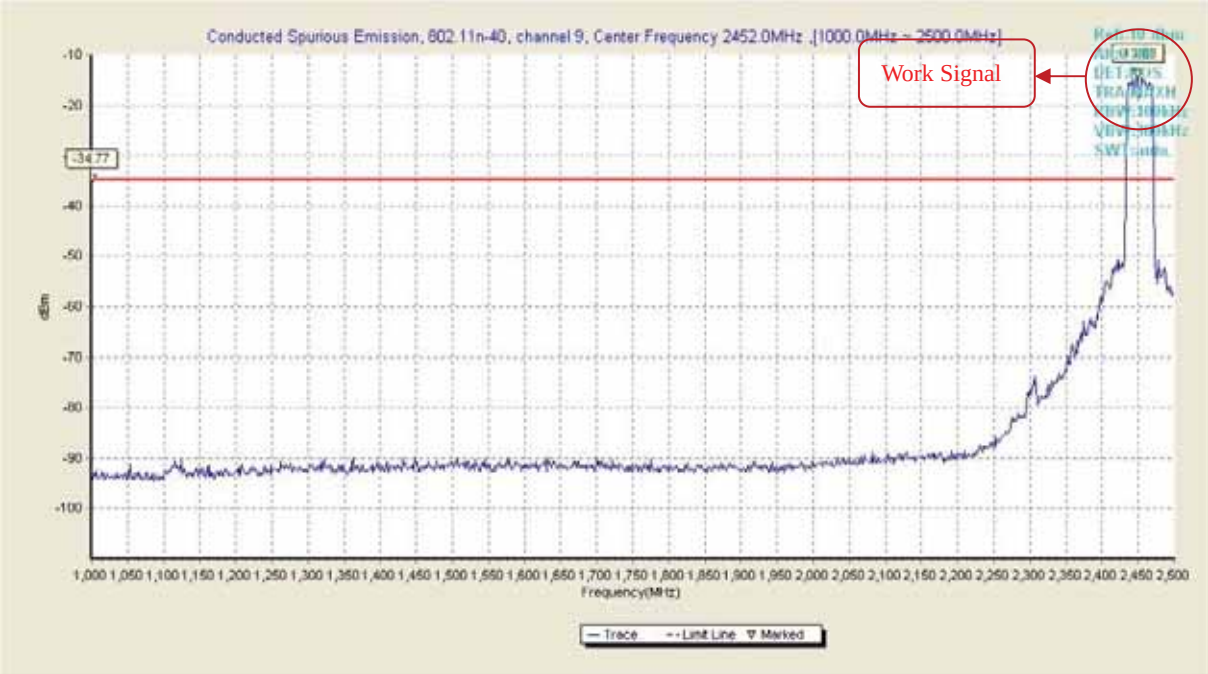


Fig111.Conducted Transmission Spurious Emission of 802.11n-40 in channel 11, 1GHz ~ 2.5GHz

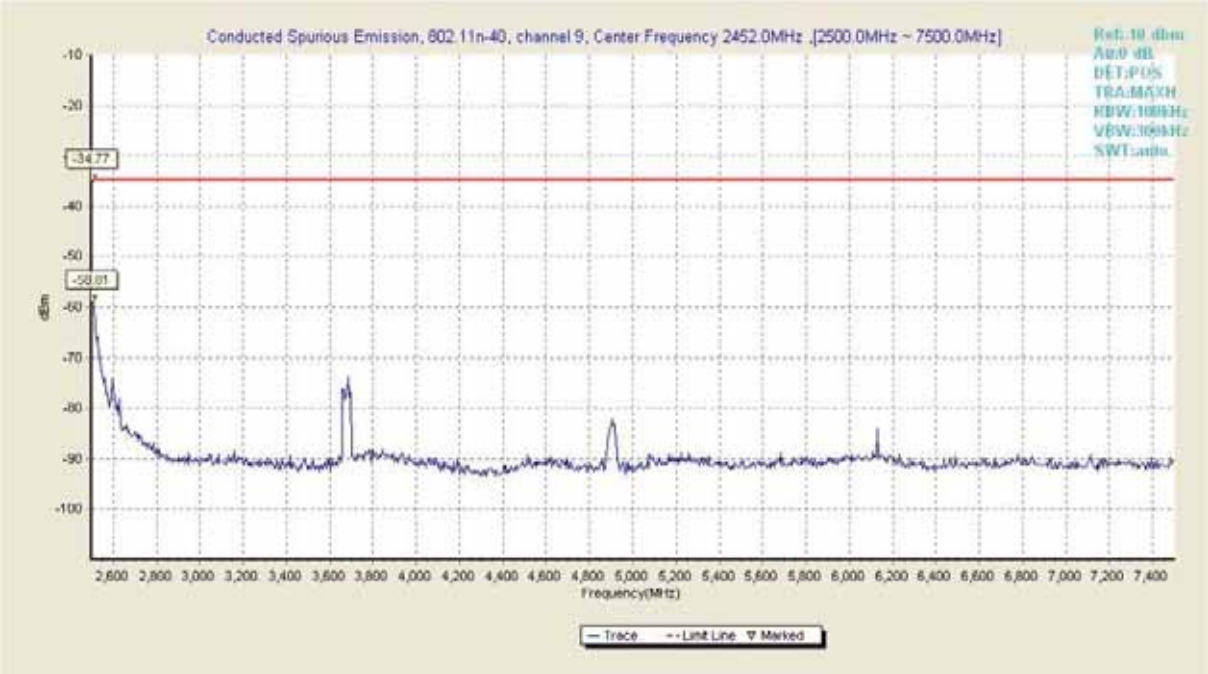


Fig112.Conducted Transmission Spurious Emission of 802.11n-40 in channel 11, 2.5GHz ~ 7.5GHz

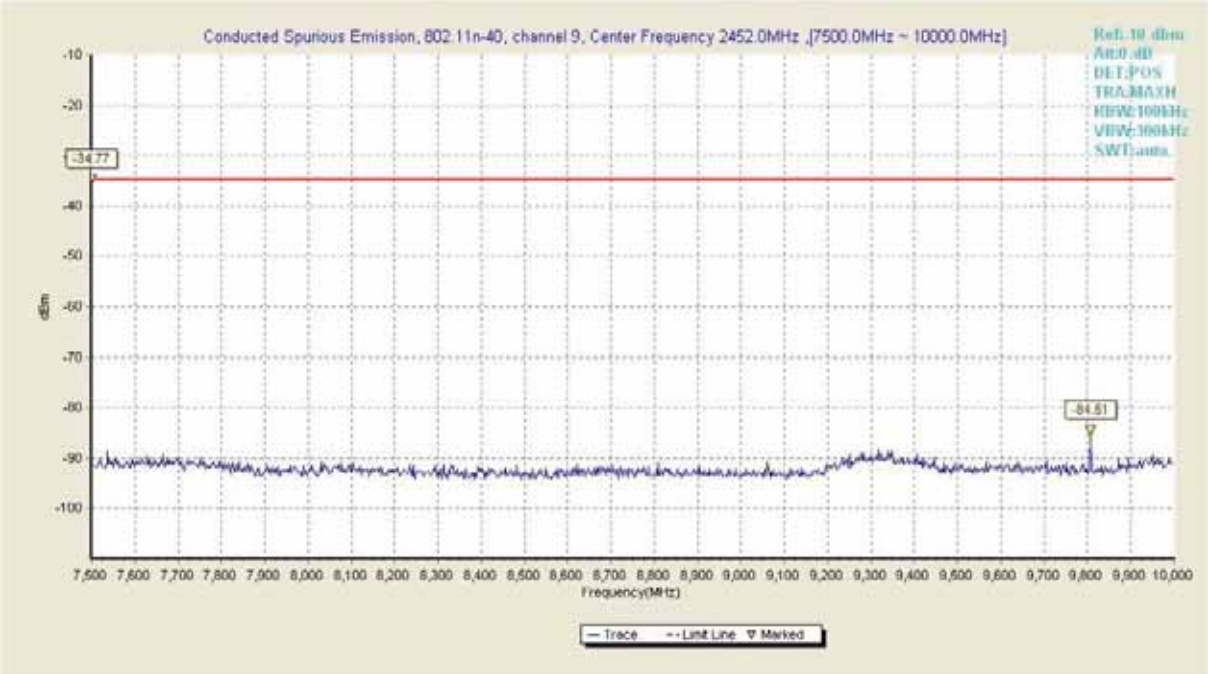


Fig113.Conducted Transmission Spurious Emission of 802.11n-40 in channel 11, 7.5GHz ~ 10GHz

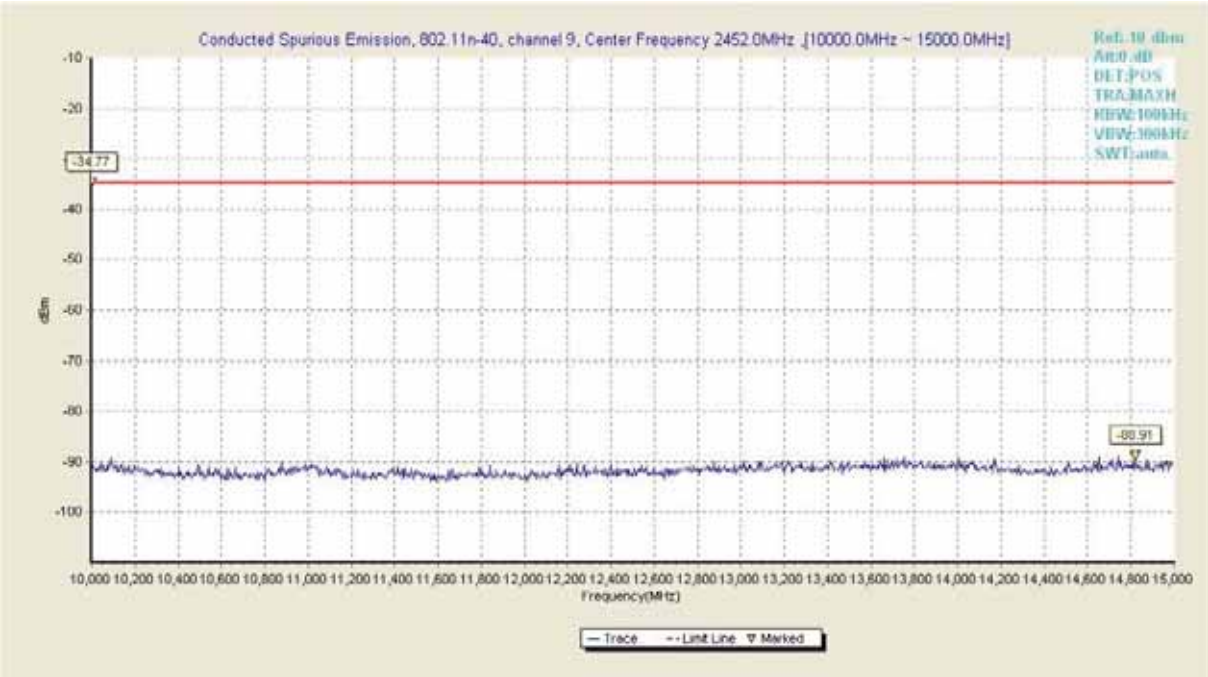


Fig114.Conducted Transmission Spurious Emission of 802.11n-40 in channel 11, 10GHz ~ 15GHz

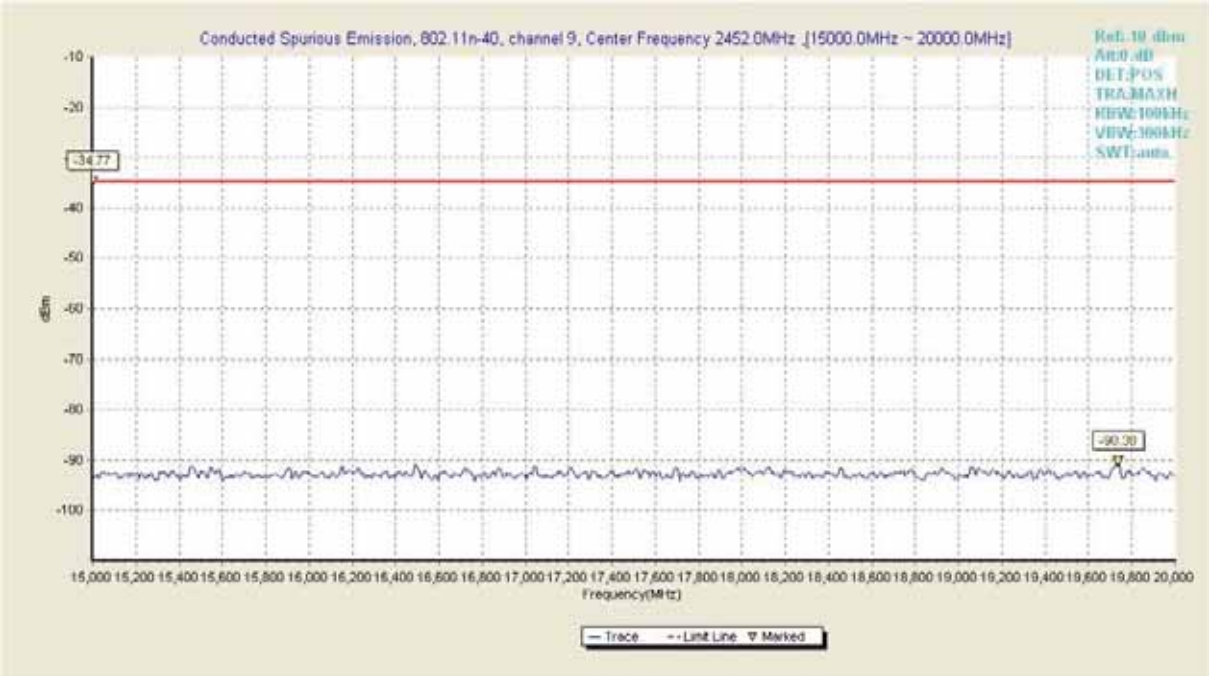


Fig115.Conducted Transmission Spurious Emission of 802.11n-40 in channel 11, 15GHz ~ 20GHz

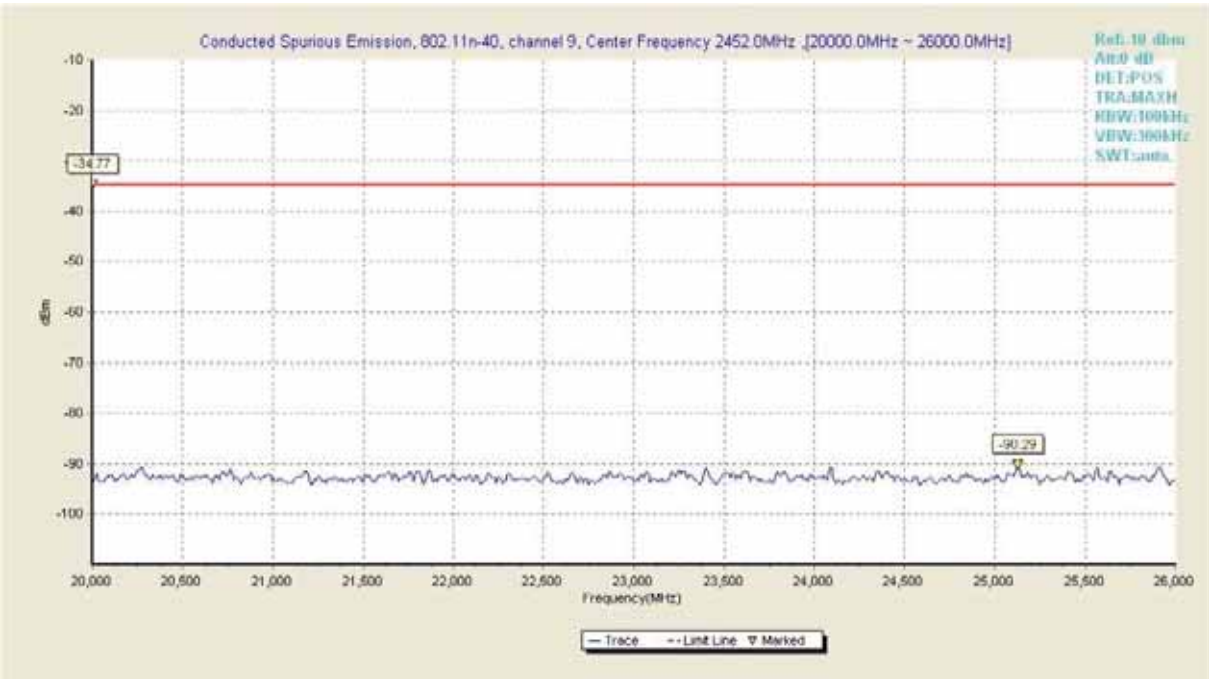


Fig116.Conducted Transmission Spurious Emission of 802.11n-40 in channel 11, 20GHz ~ 26GHz

B.6 AC Conducted Emission

B.6.1 Description

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits

B.6.2 Test Procedure

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.

2. Connect EUT to the power mains through a line impedance stabilization network (LISN).

3. All the support units are connecting to the other LISN.

4. The LISN provides 50 ohm coupling impedance for the measuring instrument.

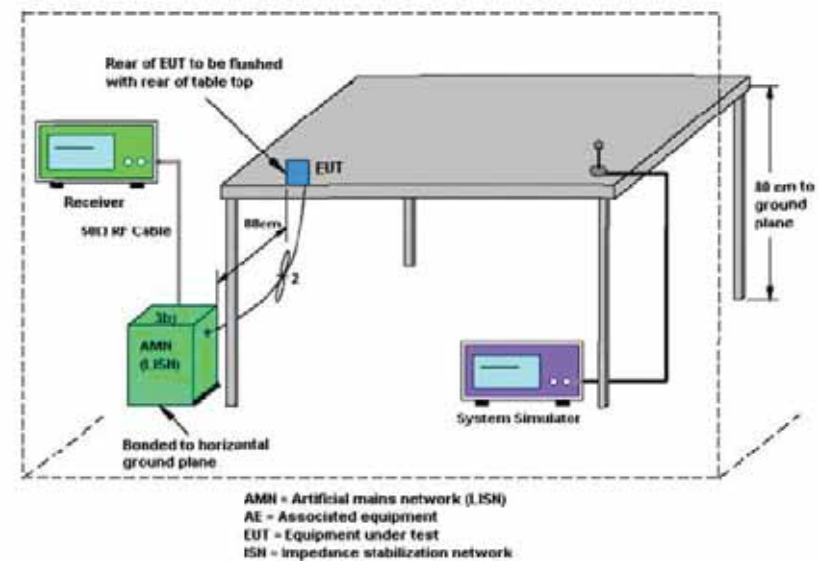
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.

6. Both sides of AC line were checked for maximum conducted interference.

7. The frequency range from 150 kHz to 30 MHz was searched.

8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

B.6.4 Test Setup



B.6.5 Test Results

Limit

Frequency of Emission(MHz)	Conducted Limit(dBμV)	
	Quasi –Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with logarithm of the frequency		

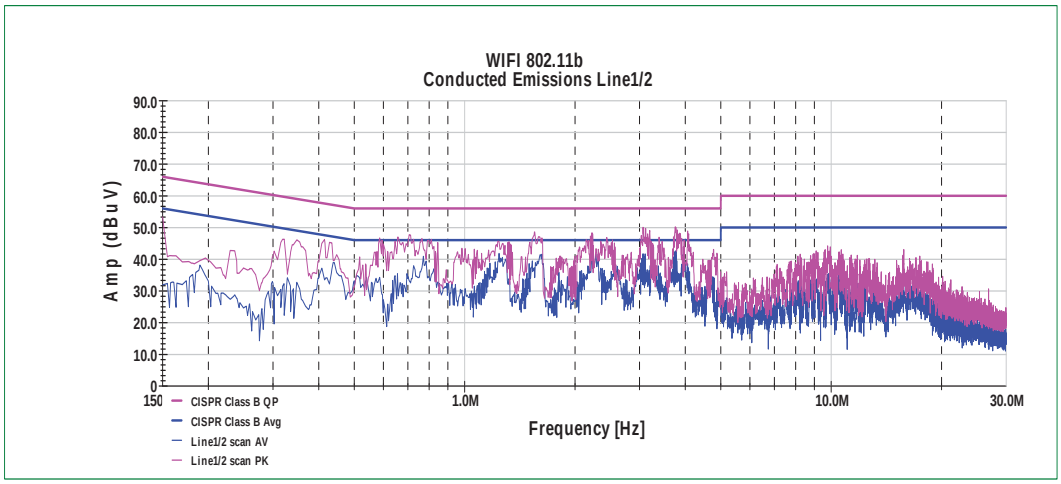


Fig.117 AC conduced emission of 802.11b in 30MHz~1GHz

B.7 Radiated Emission

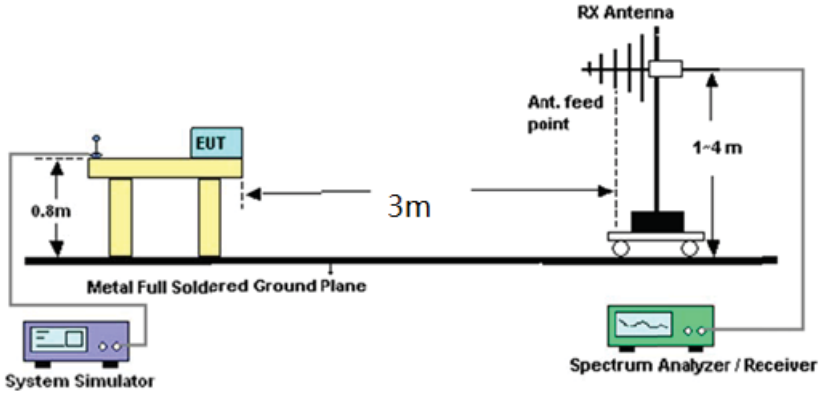
B.7.1 Limit of Radiated Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below

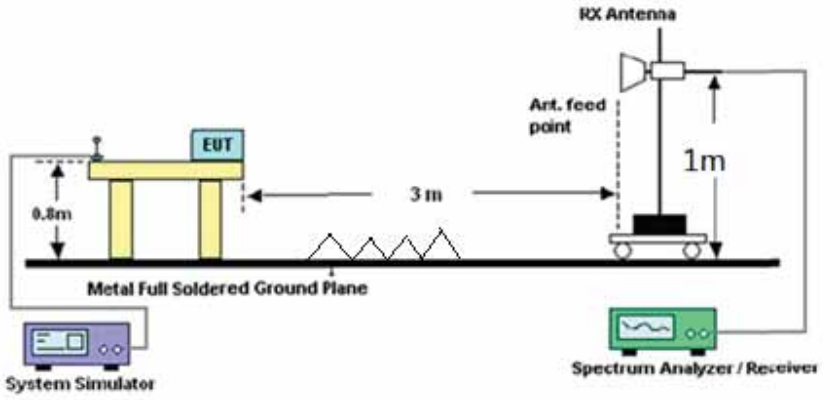
Frequency(MHz)	Field Strength(microvolts/meters)	Measurement Distance(Meters)
0.009-0.490	2400/F(kHz)	3000
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
above 960	500	3

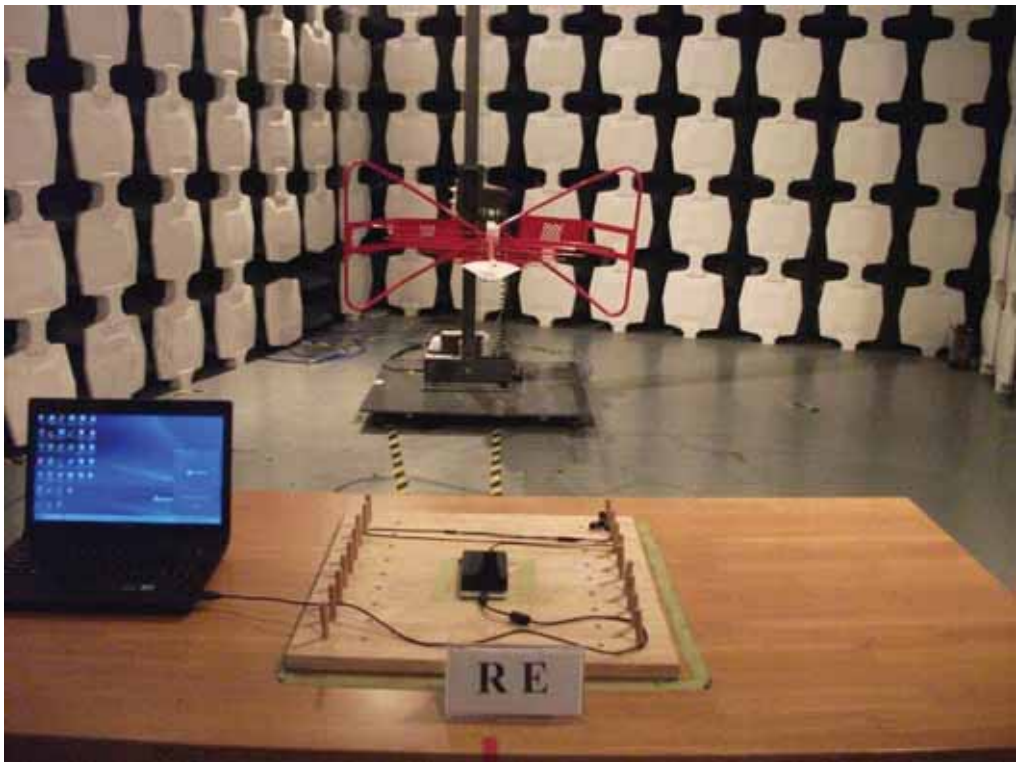
B.7.2 Test Setup

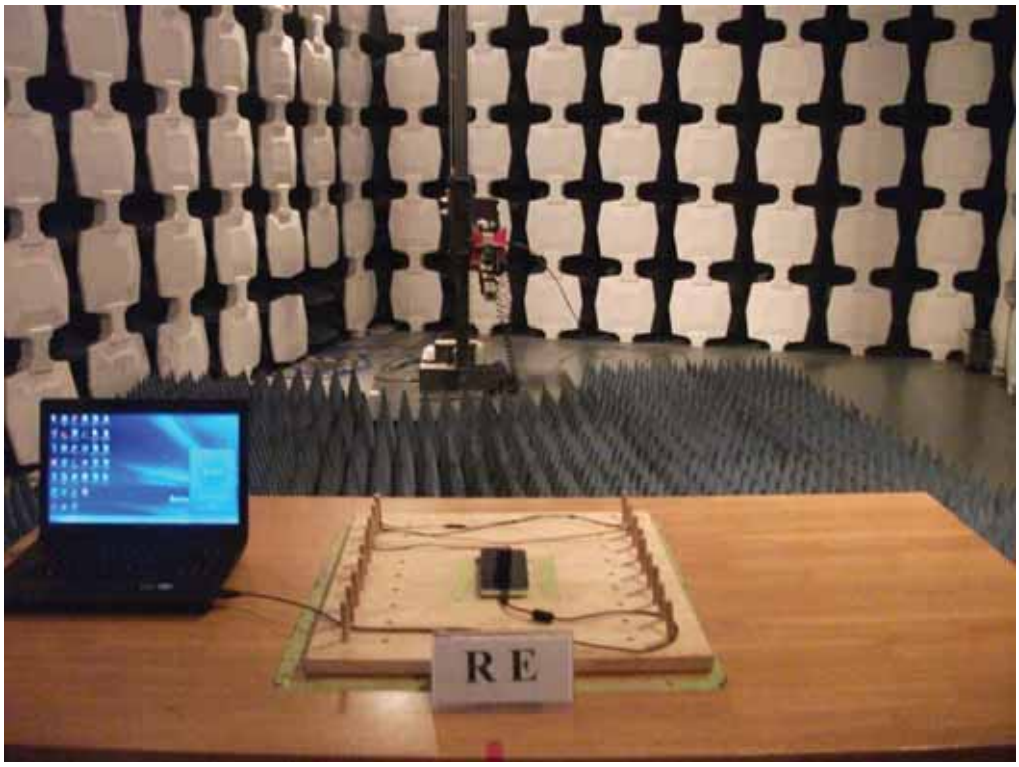
Radiated Emissions Frequency: Below 1GHz



Radiated Emissions Frequency: above 1GHz







B.7.3 Test Results

The low frequency, which started from 9kHz to 30MHz and the high frequency, which above 6GHz, were pre-scanned and which was 20dB lower than limit line per 15.31(0) were not reported.

Worst case data rate mode: 802.11b
Test Mode: Traffic
Verdict: Pass

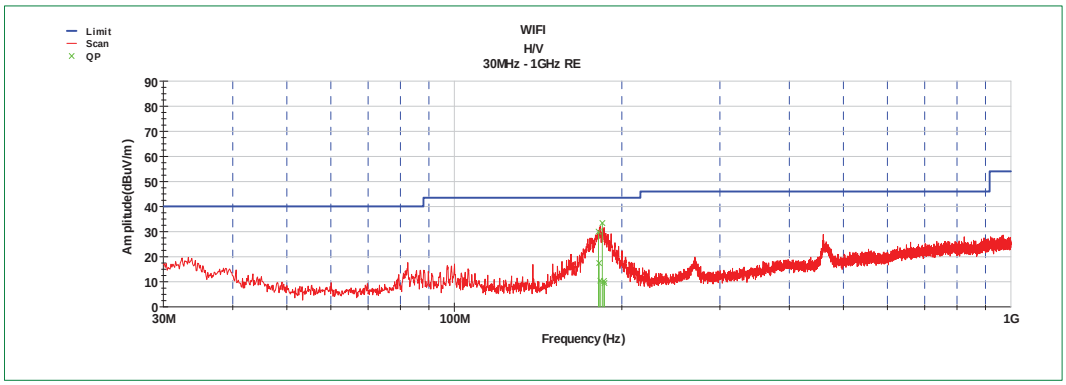


Fig.118 Radiated Emission of channel 1 in 30MHz-1GHz

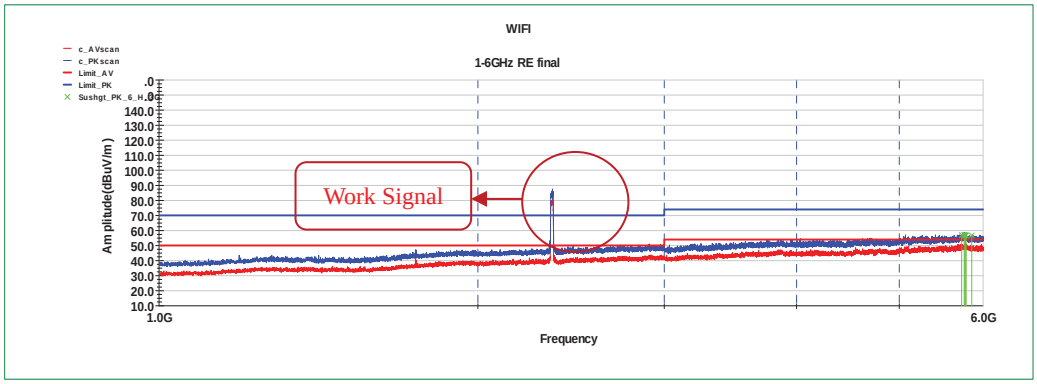


Fig.119 Radiated Emission of channel 1 in 1GHz-6GHz

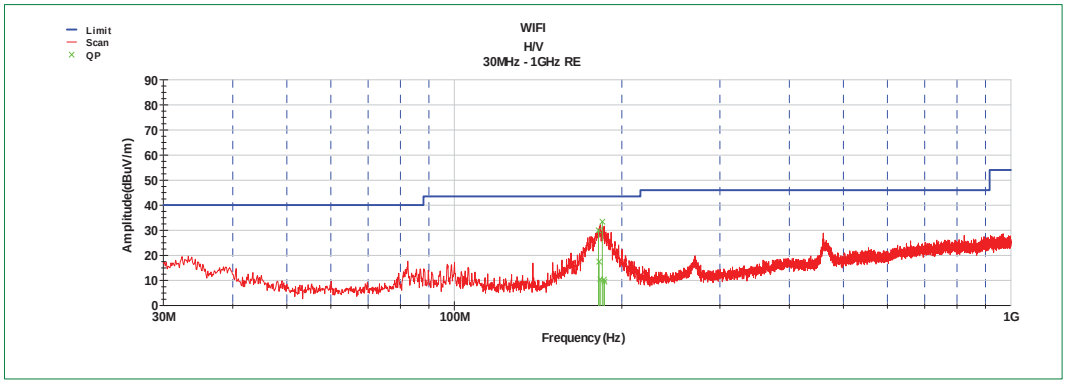


Fig.120 Radiated Emission of channel 6 in 30MHz-1GHz

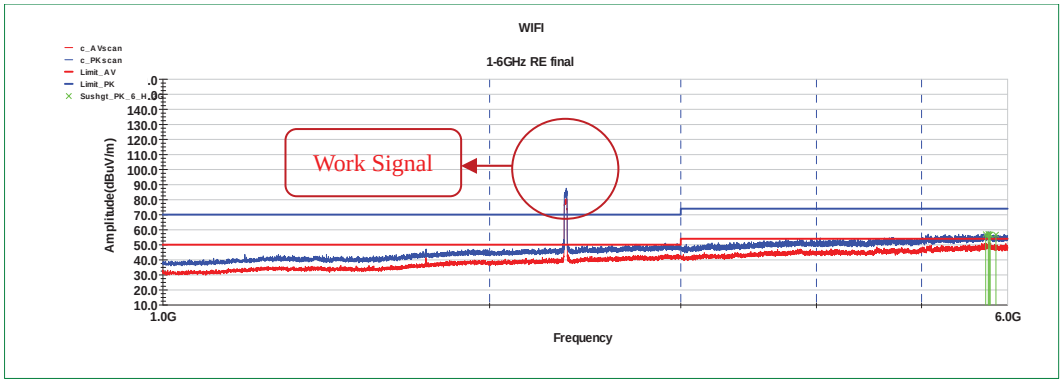


Fig.121 Radiated Emission of channel 6 in 1GHz-6GHz

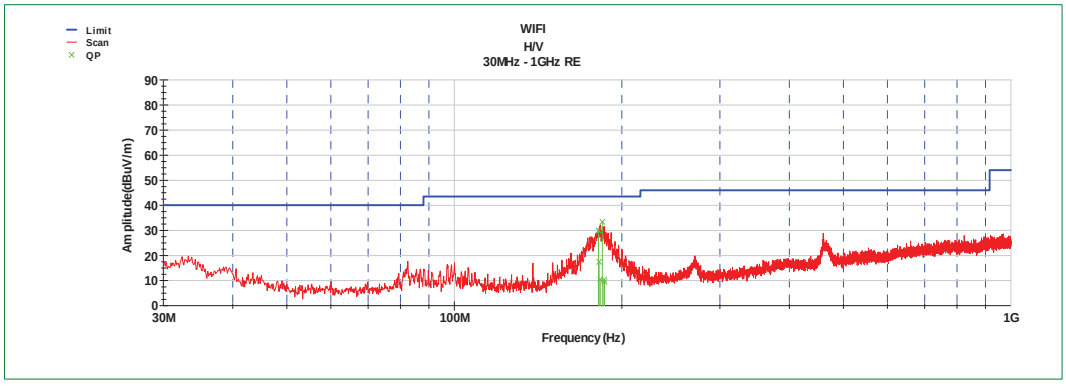


Fig.122 Radiated Emission of channel 11 in 30MHz-1GHz

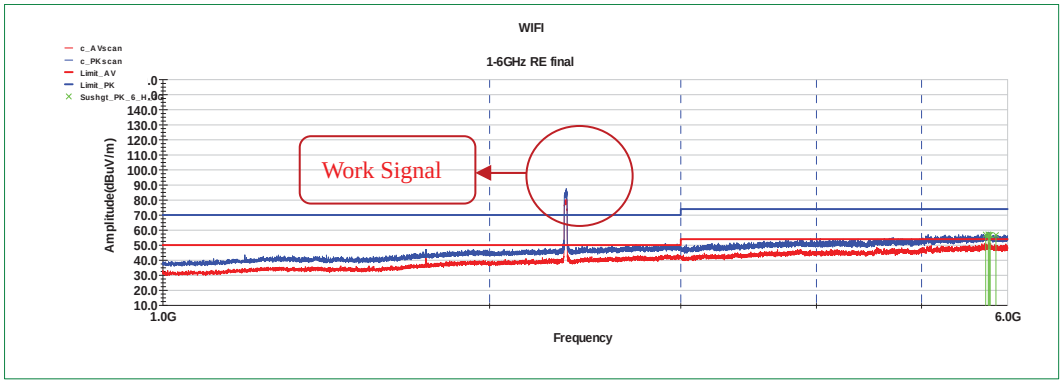


Fig.123 Radiated Emission of channel 11 in 1GHz-6GHz

B.8 Antenna Requirements

B.8.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

B.8.2 Antenna Connected construction

The Antenna type used in this product is PIFA Antenna without connector and it is considered to meet antenna requirement.

B.8.3 Antenna Gain

The antenna peak gain of EUT is less than 6dBi, Therefore, it is not necessary to reduced maximum peak output power limit.

END OF REPORT