

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

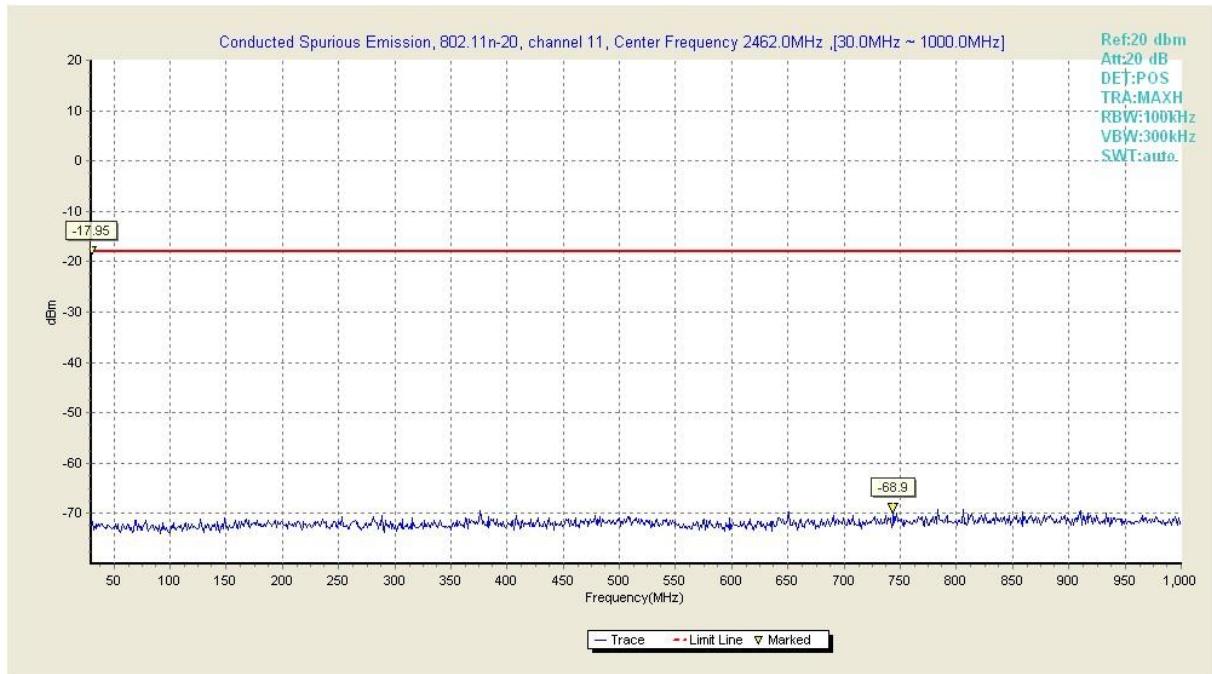


Fig89.Conducted Transmission Spurious Emission of 802.11n-20 in channel 11, 30MHz~1GHz

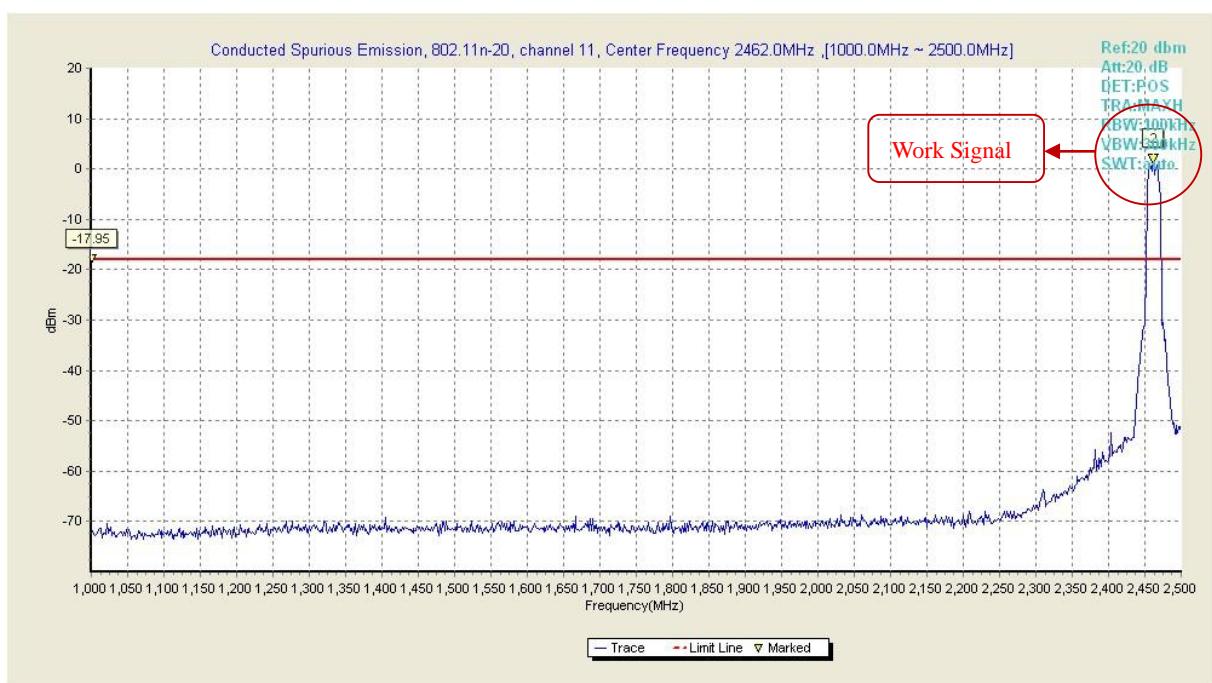


Fig90.Conducted Transmission Spurious Emission of 802.11n-20 in channel 11, 1GHz ~ 2.5GHz

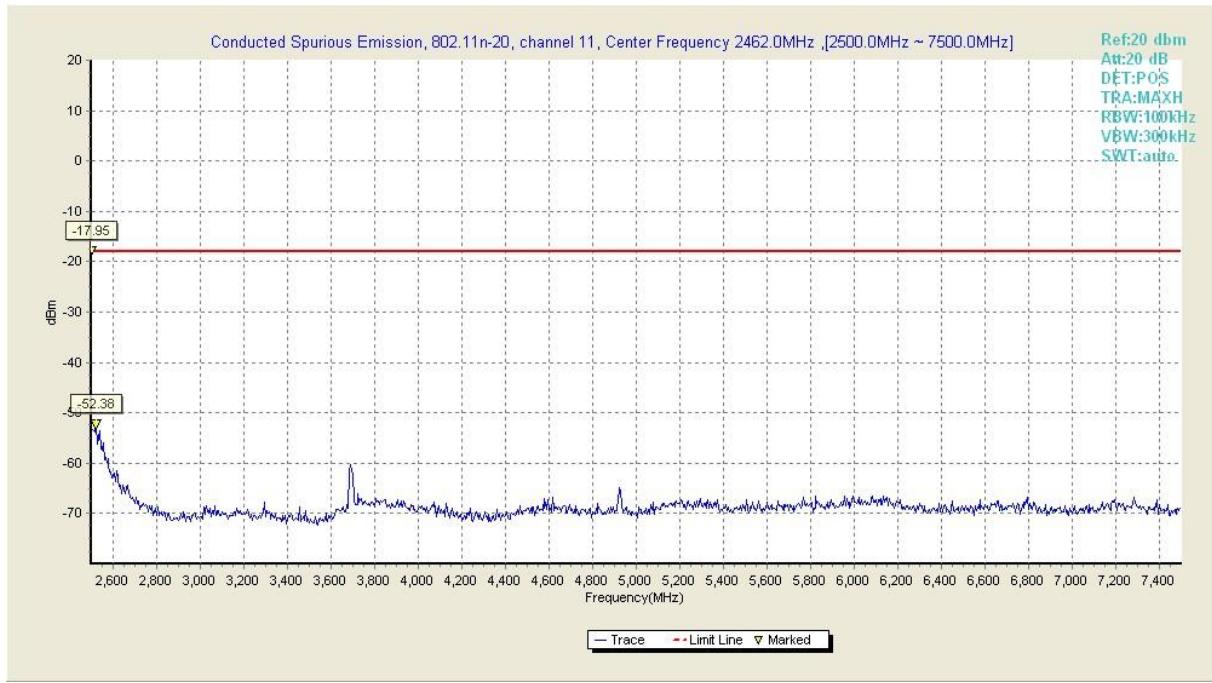


Fig91.Conducted Transmission Spurious Emission of 802.11n-20 in channel 11, 2.5GHz ~ 7.5GHz

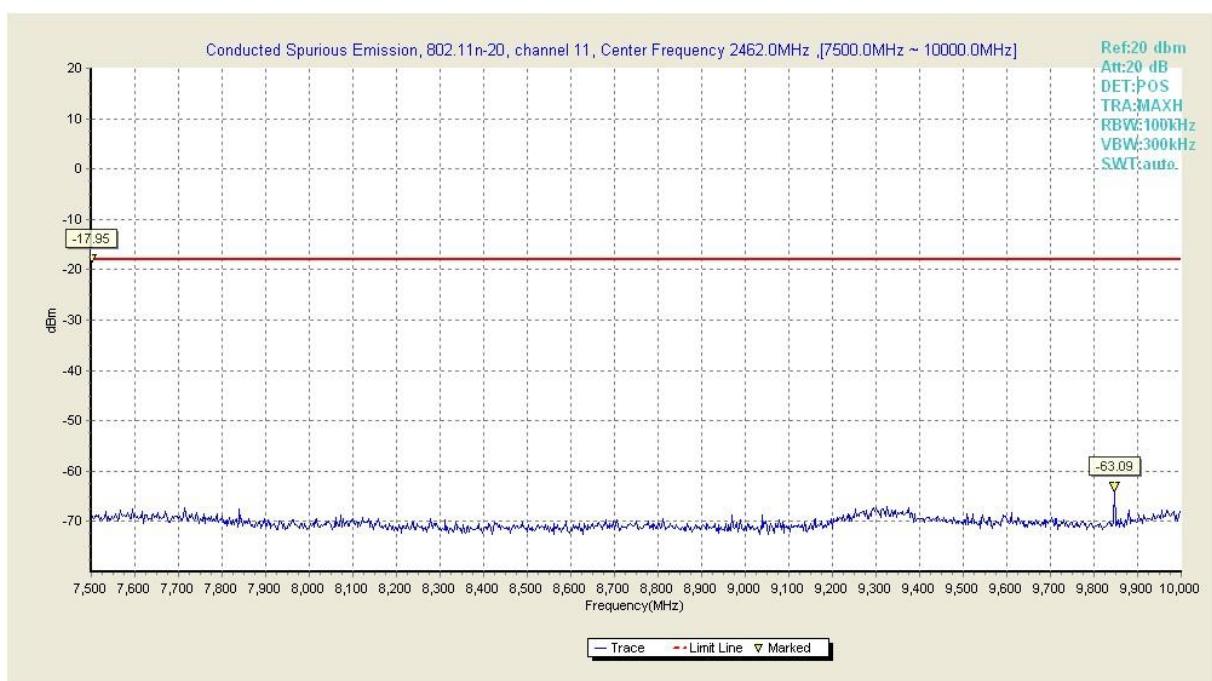


Fig92.Conducted Transmission Spurious Emission of 802.11n-20 in channel 11, 7.5GHz ~ 10GHz

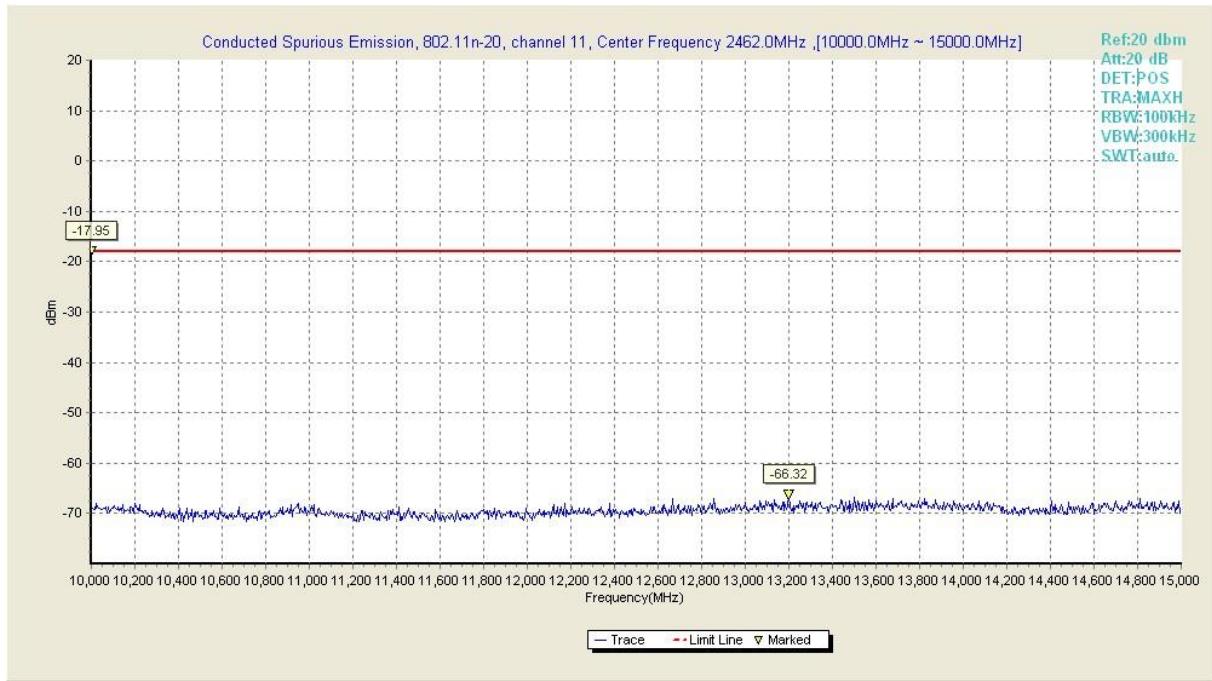


Fig93.Conducted Transmission Spurious Emission of 802.11n-20 in channel 11, 10GHz ~ 15GHz

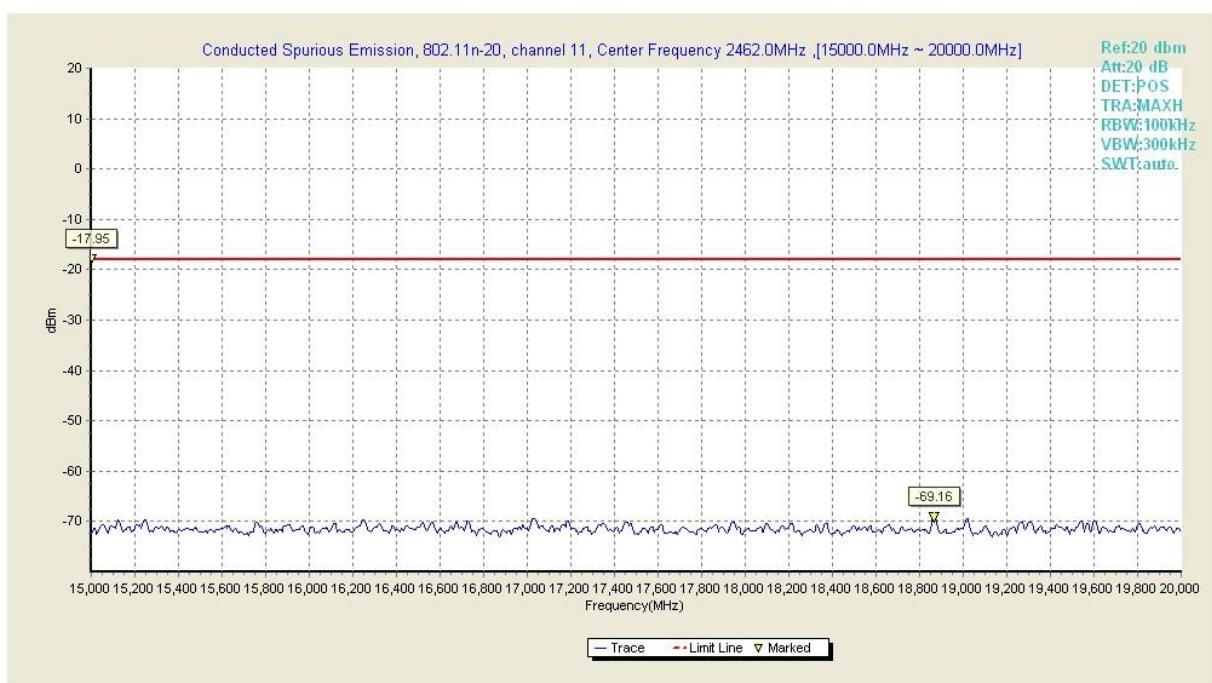


Fig94.Conducted Transmission Spurious Emission of 802.11n-20 in channel 11, 15GHz ~ 20GHz

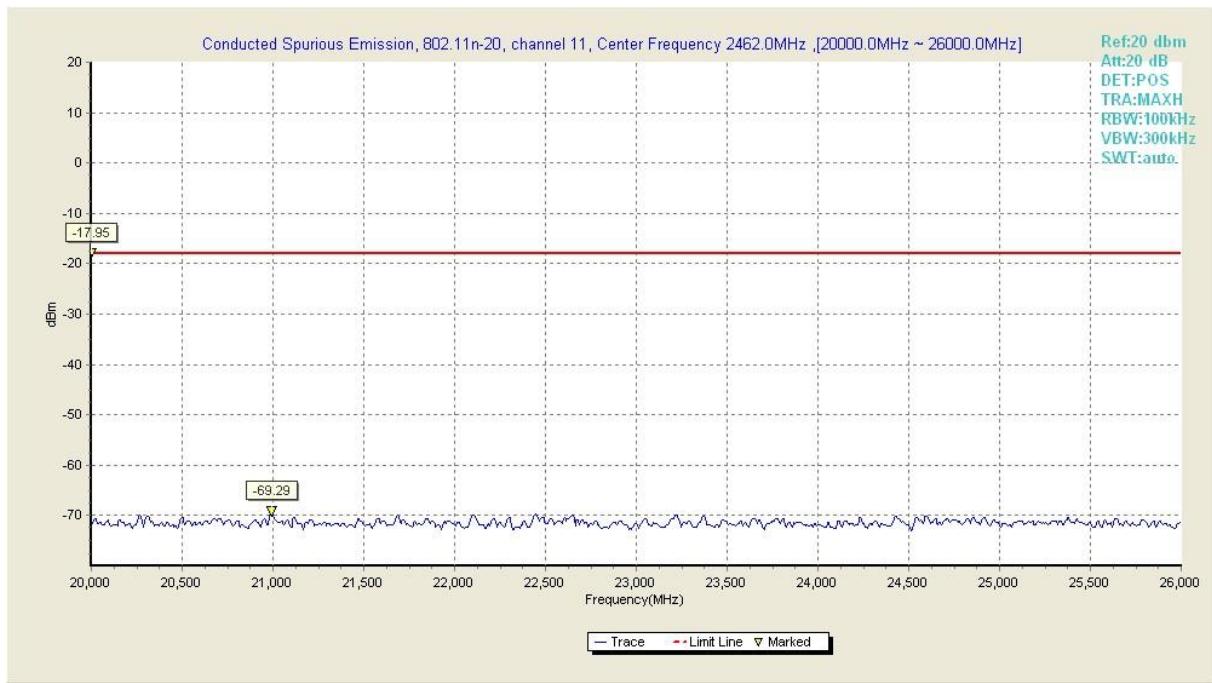


Fig95.Conducted Transmission Spurious Emission of 802.11n-20 in channel 11, 20GHz ~ 26GHz

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

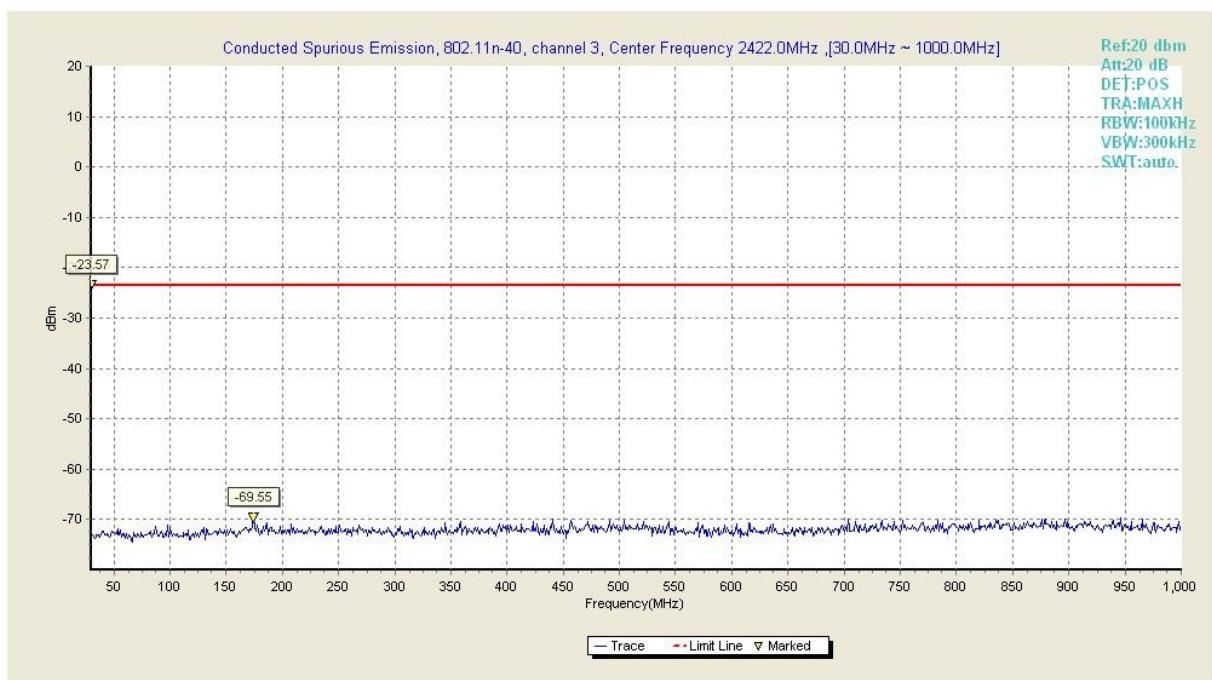


Fig96.Conducted Transmission Spurious Emission of 802.11n-40 in channel 1, 30MHz~1GHz

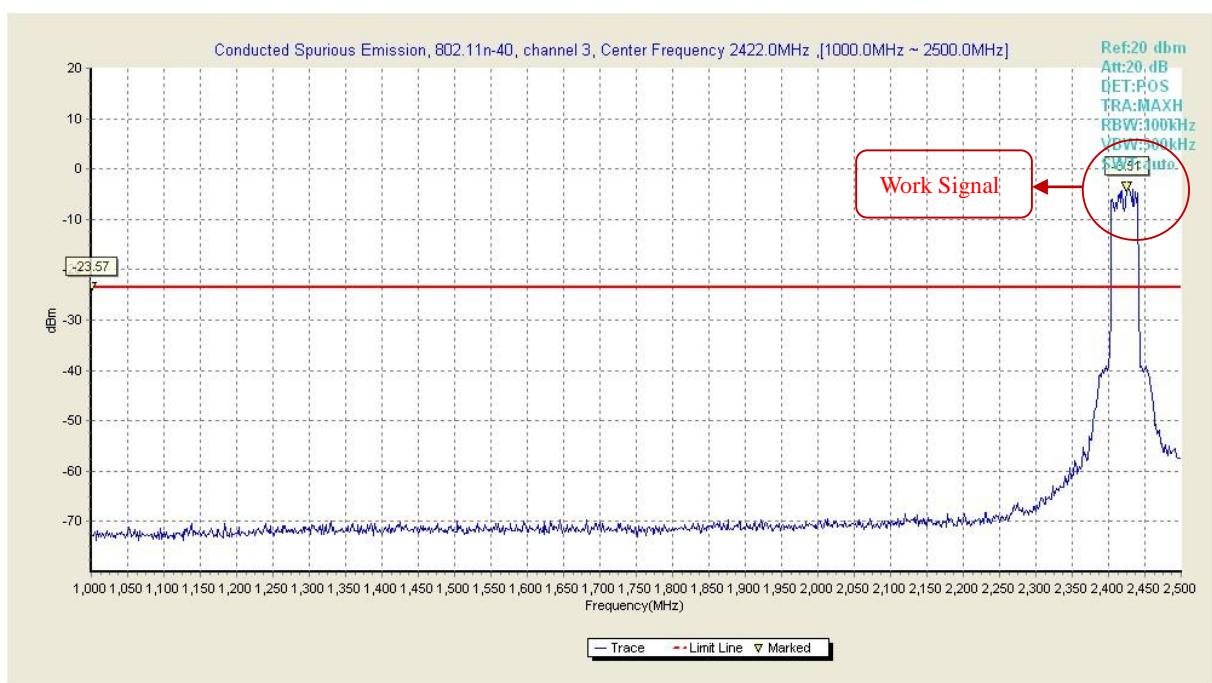


Fig97.Conducted Transmission Spurious Emission of 802.11n-40 in channel 1, 1GHz ~ 2.5GHz

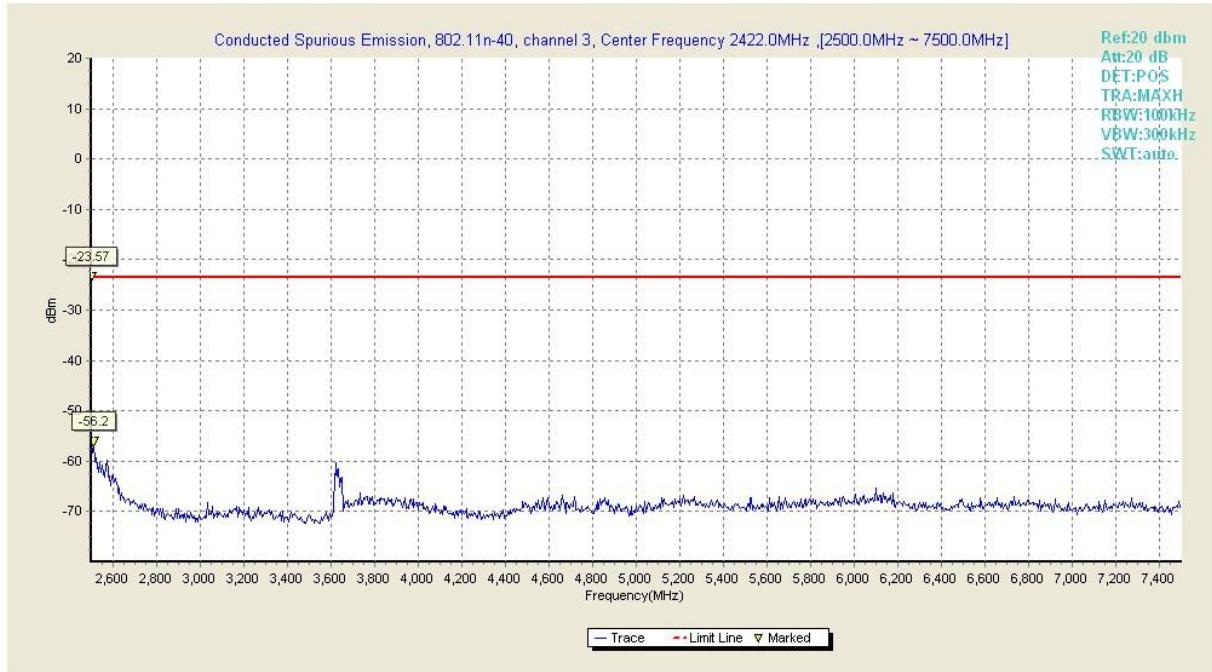


Fig98.Conducted Transmission Spurious Emission of 802.11n-40 in channel 1, 2.5GHz ~ 7.5GHz

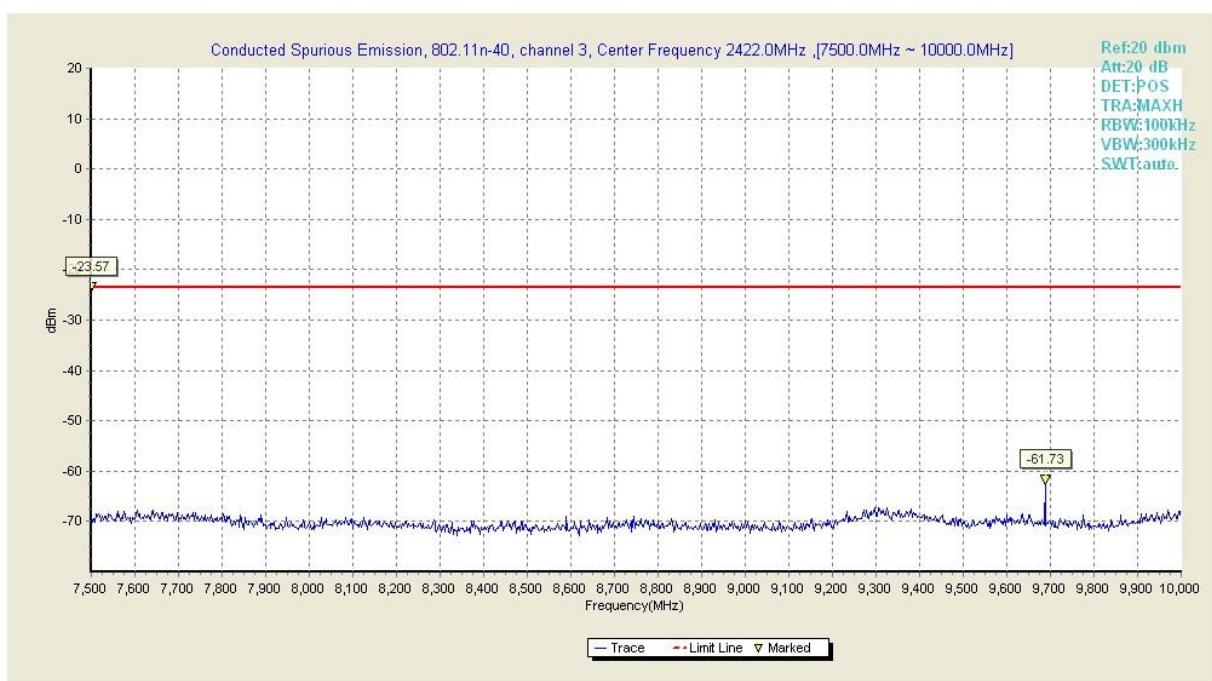


Fig99.Conducted Transmission Spurious Emission of 802.11n-40 in channel 1, 7.5GHz ~ 10GHz

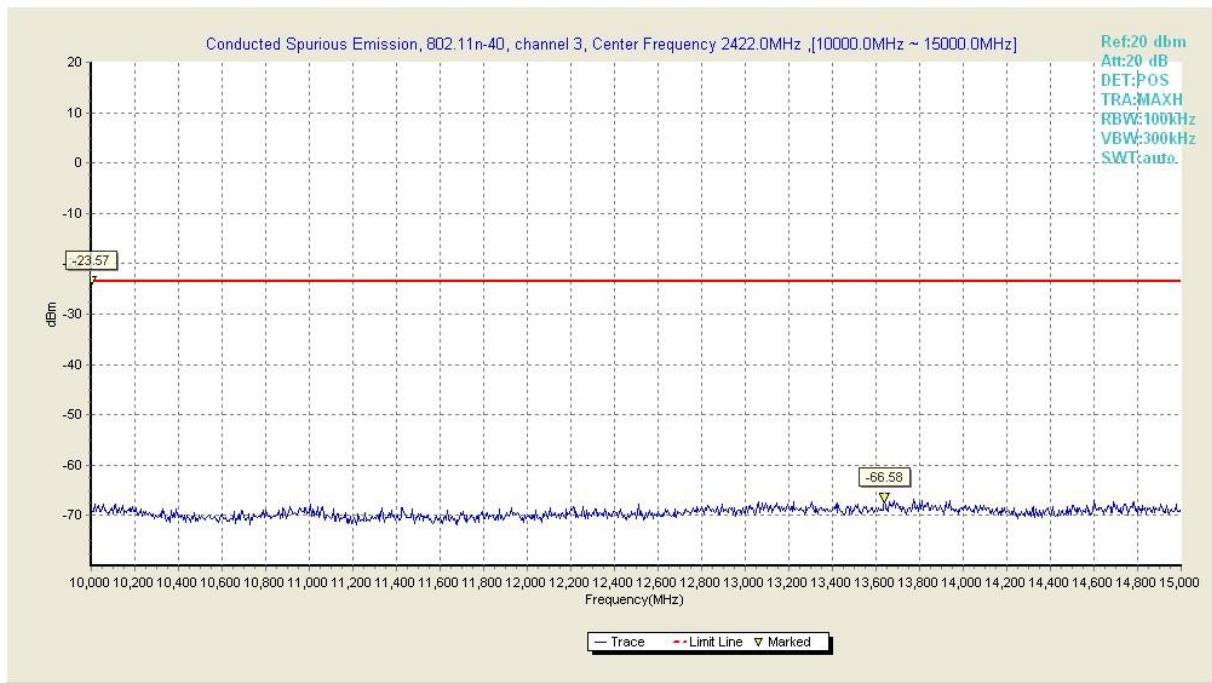


Fig100.Conducted Transmission Spurious Emission of 802.11n-40 in channel 1, 10GHz ~ 15GHz

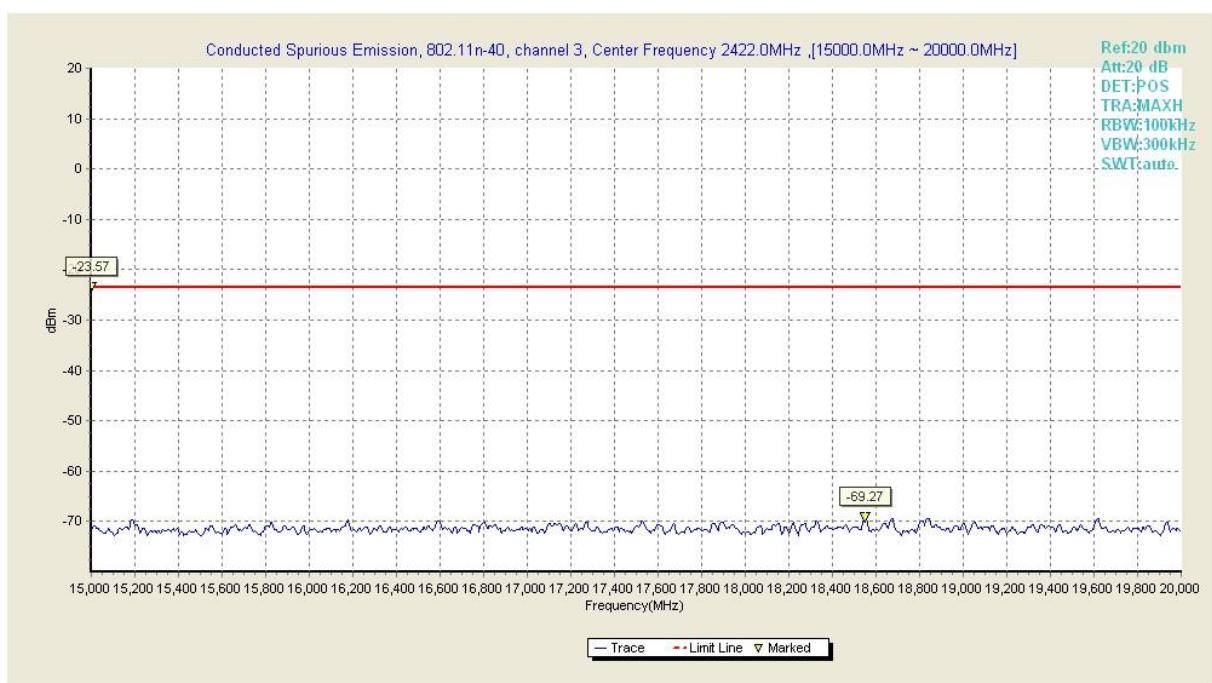


Fig101.Conducted Transmission Spurious Emission of 802.11n-40 n channel 1, 15GHz ~ 20GHz

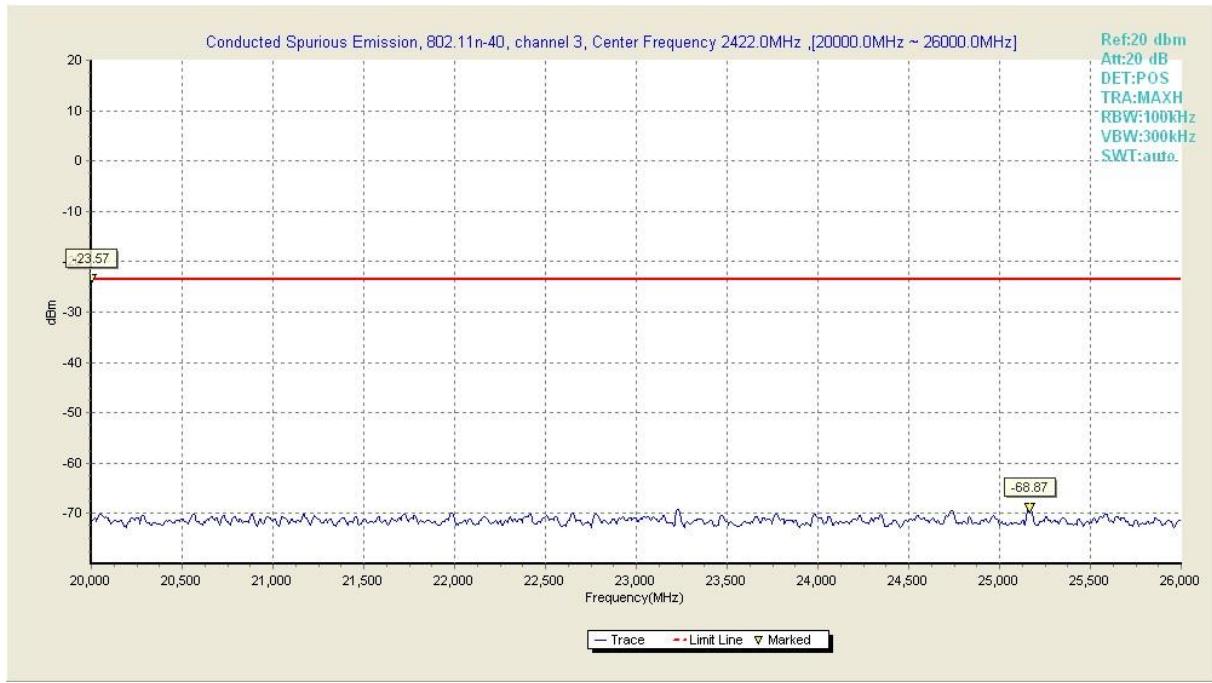


Fig102.Conducted Transmission Spurious Emission of 802.11n-40 in channel 1, 20GHz ~ 26GHz

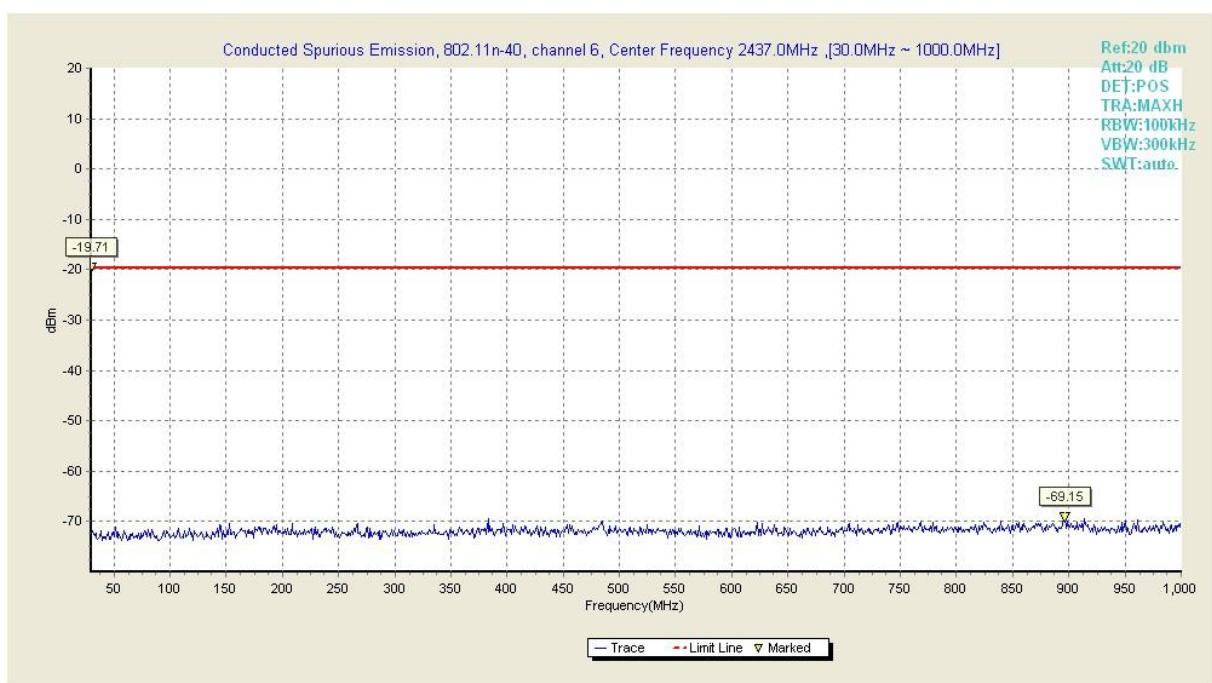


Fig103.Conducted Transmission Spurious Emission of 802.11n-40 in channel 6, 30MHz~1GHz

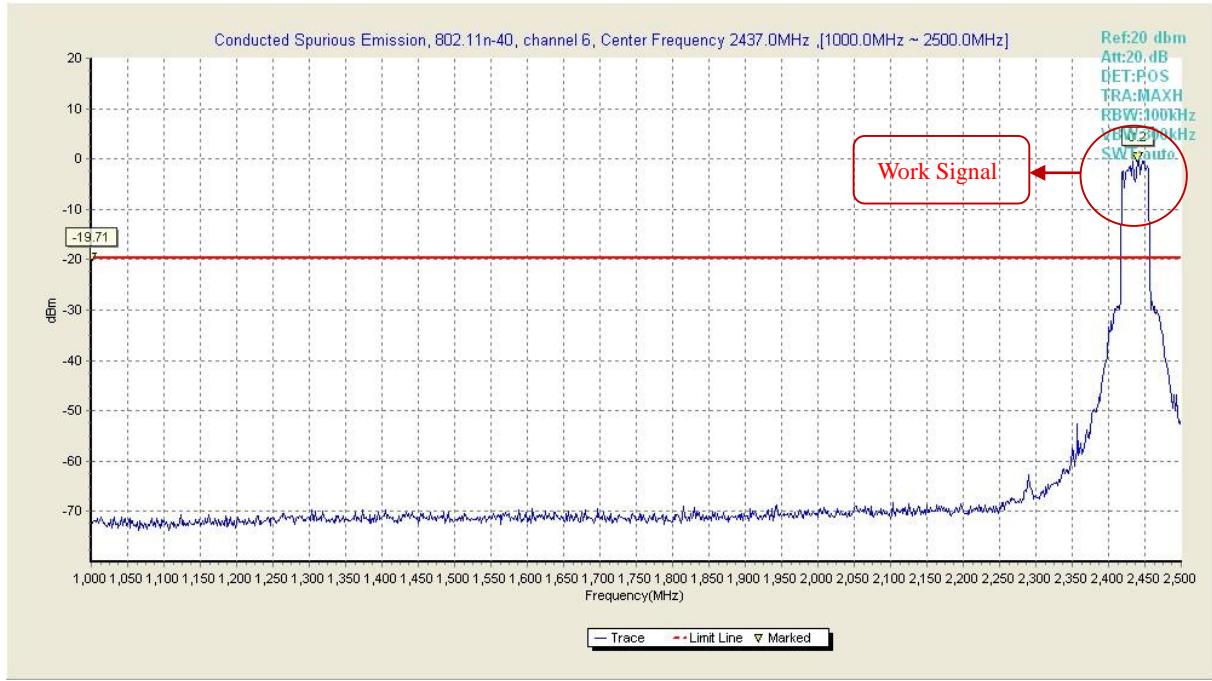


Fig104.Conducted Transmission Spurious Emission of 802.11n-40 in channel 6, 1GHz ~ 2.5GHz

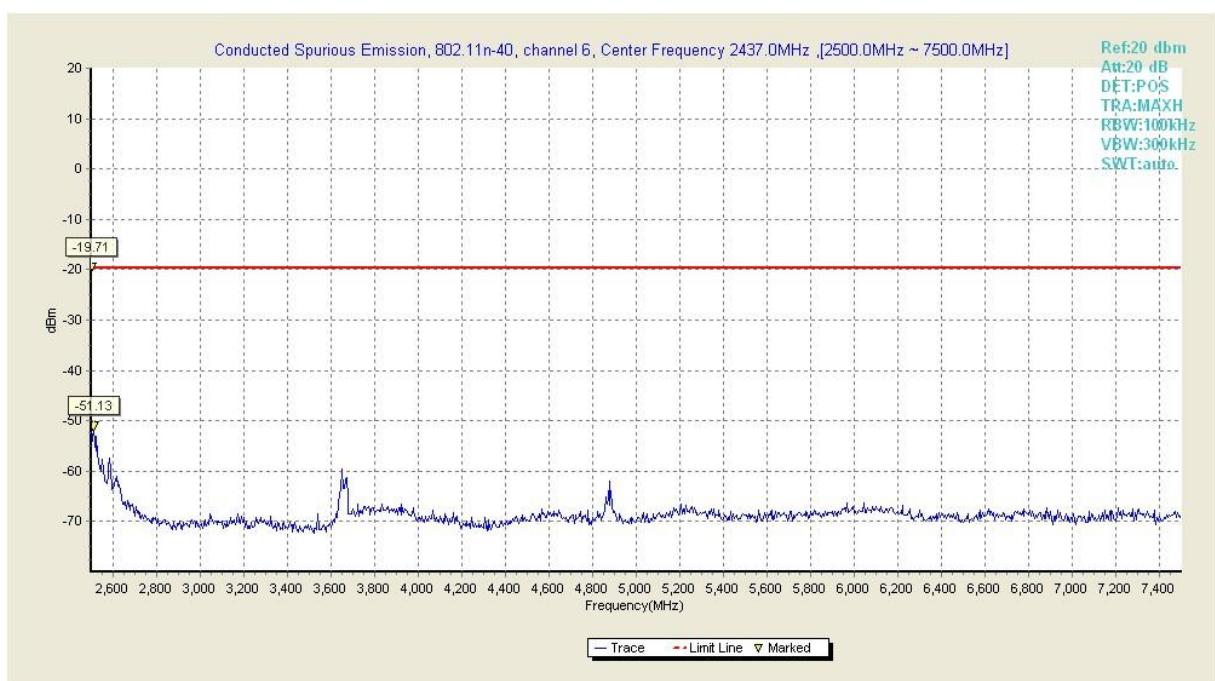


Fig105.Conducted Transmission Spurious Emission of 802.11n-40 in channel 6, 2.5GHz ~ 7.5GHz

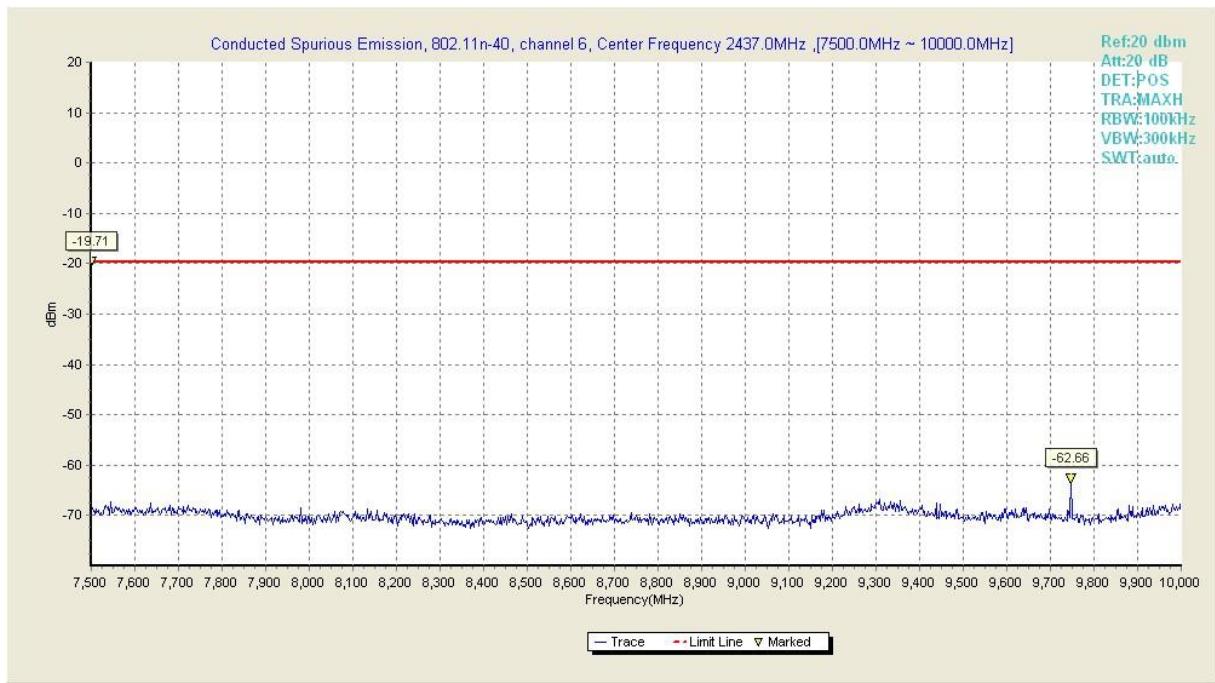


Fig106.Conducted Transmission Spurious Emission of 802.11n-40 in channel 6, 7.5GHz ~ 10GHz

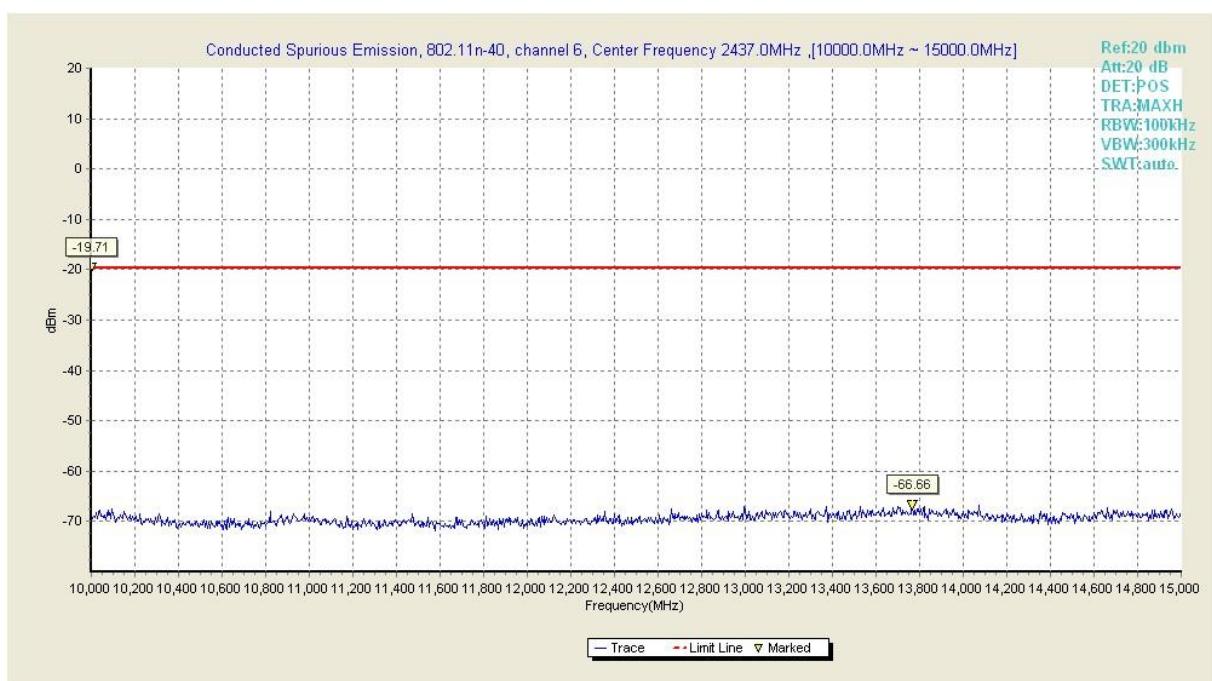


Fig107.Conducted Transmission Spurious Emission of 802.11n-40 in channel 6, 10GHz ~ 15GHz

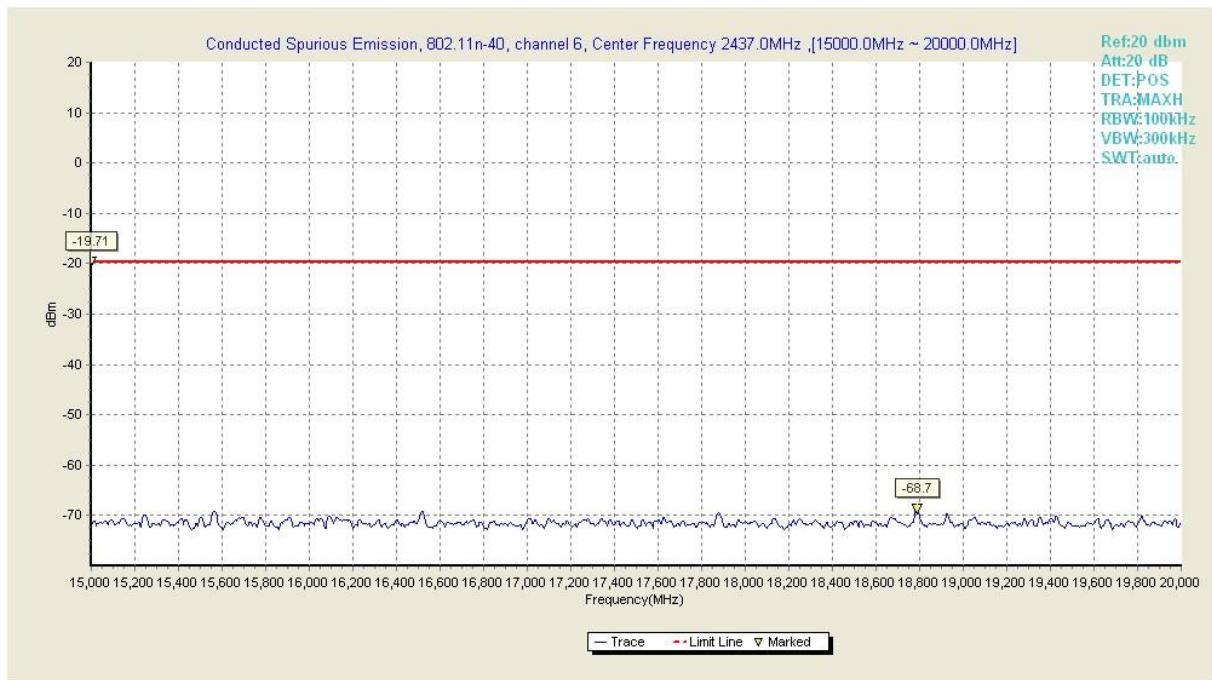


Fig108.Conducted Transmission Spurious Emission of 802.11n-40 in channel 6, 15GHz ~ 20GHz

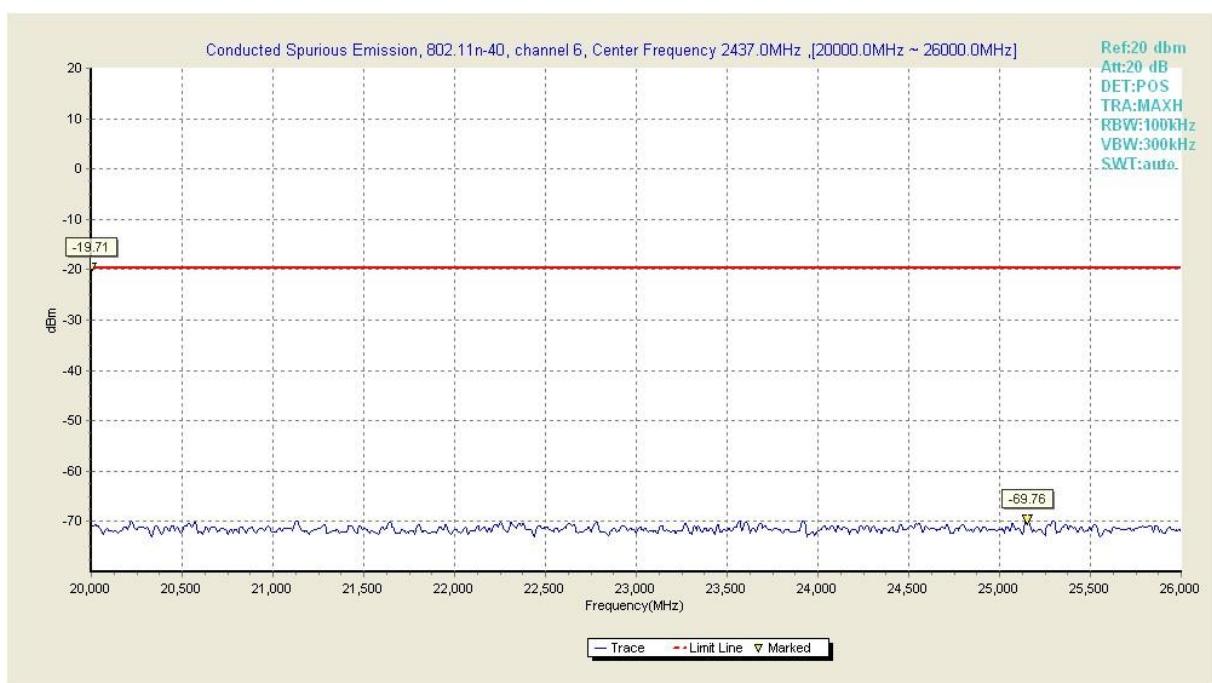


Fig109.Conducted Transmission Spurious Emission of 802.11n-40 in channel 6, 20GHz ~ 26GHz

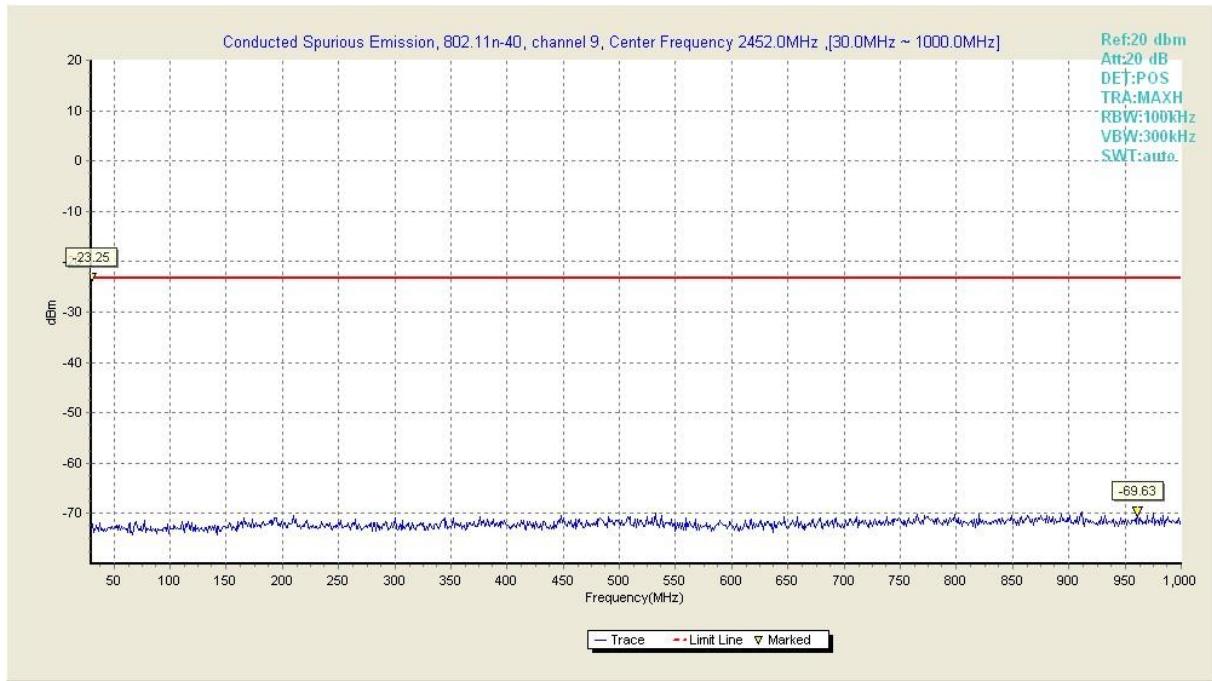


Fig110.Conducted Transmission Spurious Emission of 802.11n-40 in channel 11, 30MHz~1GHz

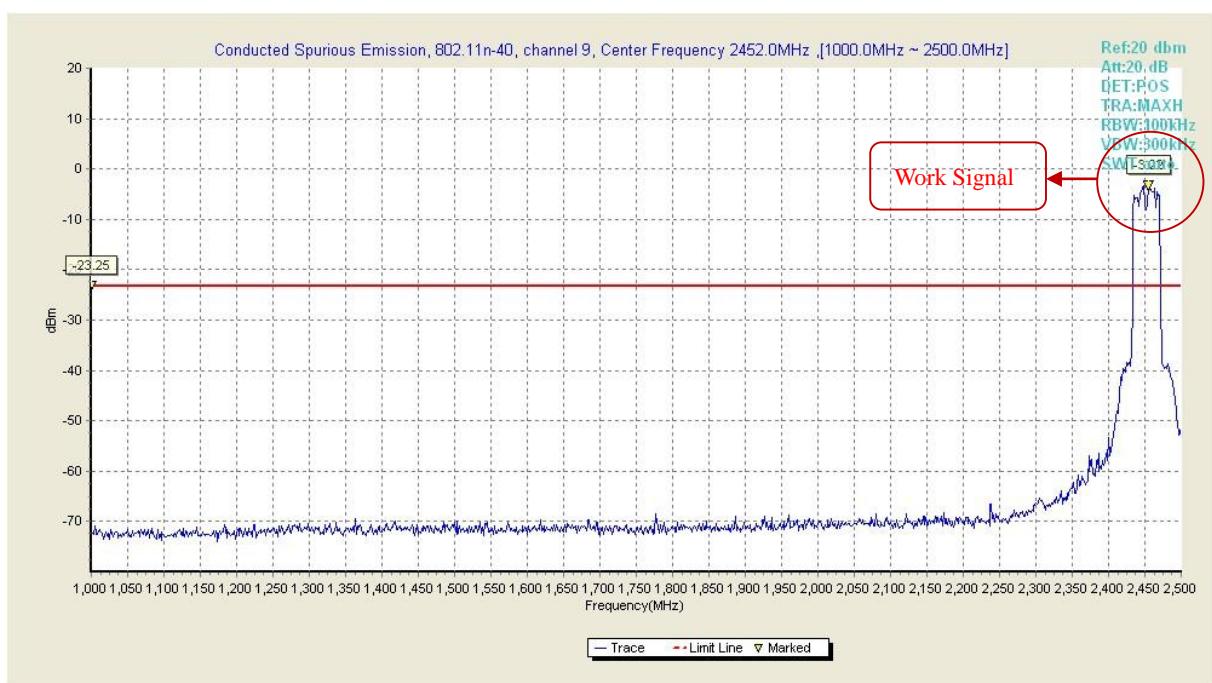


Fig111.Conducted Transmission Spurious Emission of 802.11n-40 in channel 11, 1GHz ~ 2.5GHz

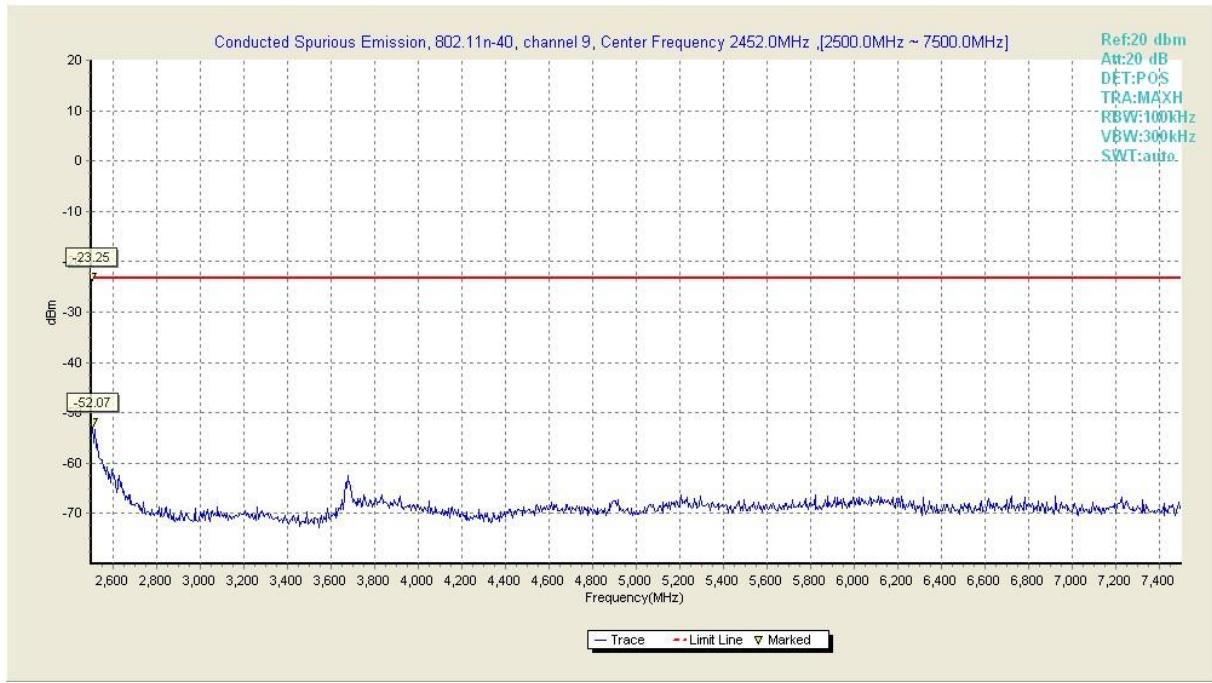


Fig112.Conducted Transmission Spurious Emission of 802.11n-40 in channel 11, 2.5GHz ~ 7.5GHz

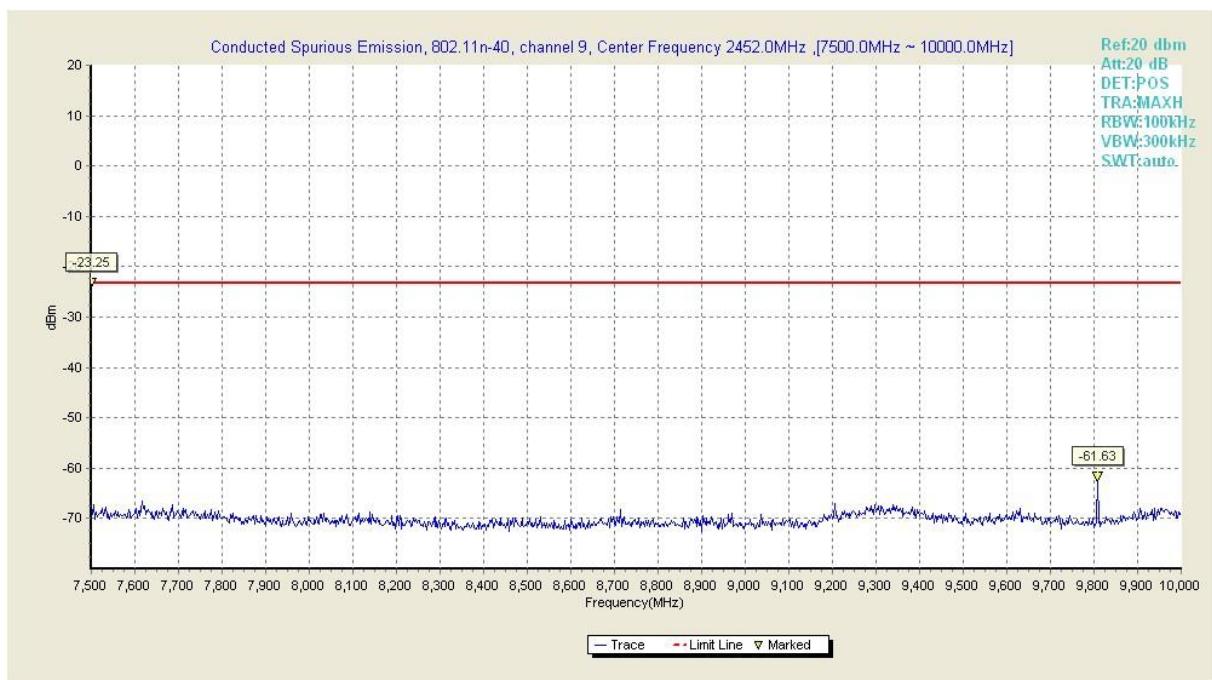


Fig113.Conducted Transmission Spurious Emission of 802.11n-40 in channel 11, 7.5GHz ~ 10GHz

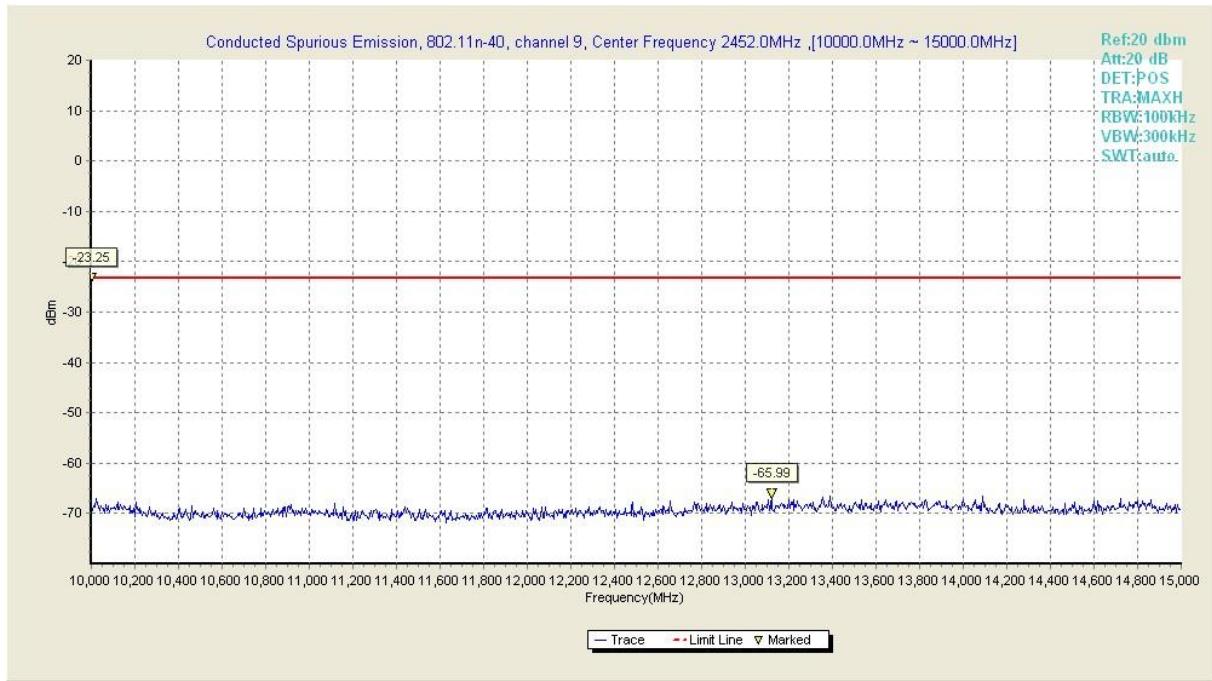


Fig114.Conducted Transmission Spurious Emission of 802.11n-40 in channel 11, 10GHz ~ 15GHz

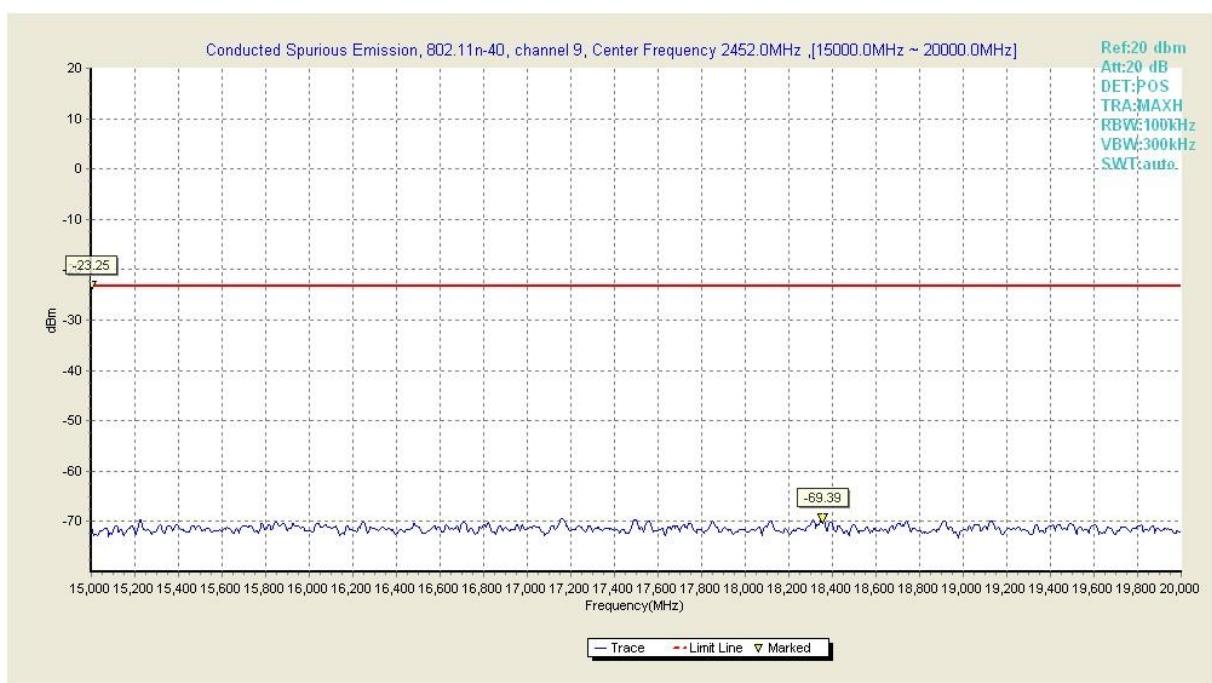


Fig115.Conducted Transmission Spurious Emission of 802.11n-40 in channel 11, 15GHz ~ 20GHz

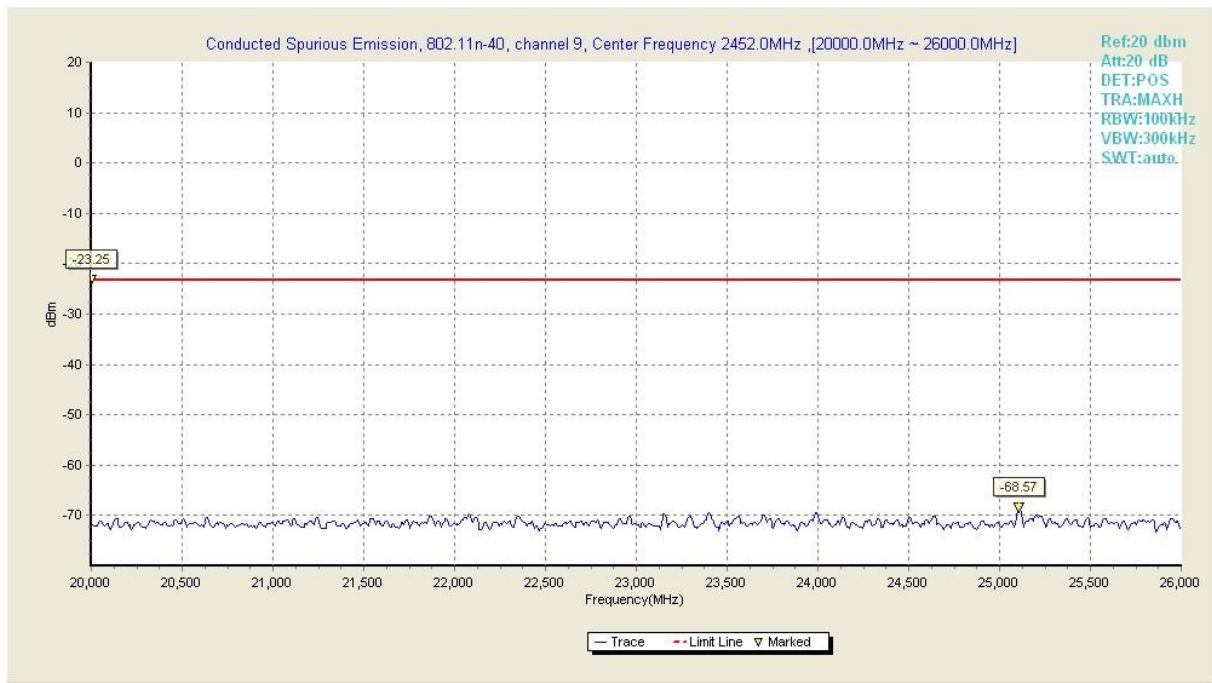


Fig116.Conducted Transmission Spurious Emission of 802.11n-40 in channel 11, 20GHz ~ 26GHz

B.6 AC Conducted Emission

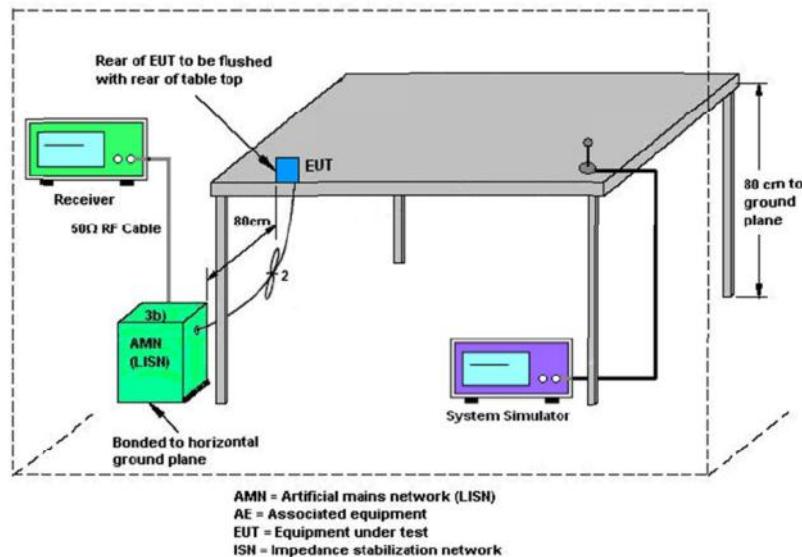
B.6.1 Description

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

- a) 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.
- b) Connect EUT to the power mains through a line impedance stabilization network (LISN).
- c) All the support units are connecting to the other LISN.
- d) The LISN provides 50 ohm coupling impedance for the measuring instrument.
- e) The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- f) Both sides of AC line were checked for maximum conducted interference.
- g) The frequency range from 150 kHz to 30 MHz was searched.
- h) Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

B.6.3 Test Setup



**B.6.4 Test Results****Limit**

Frequency of Emission(MHz)	Conducted Limit(dB μ V)	
	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

Line L**Scan Settings (1 Range)**

Frequencies			Receiver Settings			
Start	Stop	Step	Res BW	M-Time	Atten	Preamp
150 kHz	30 MHz	4 kHz	9 kHz (6dB)	5 ms	Auto	Off

Previous Measurement

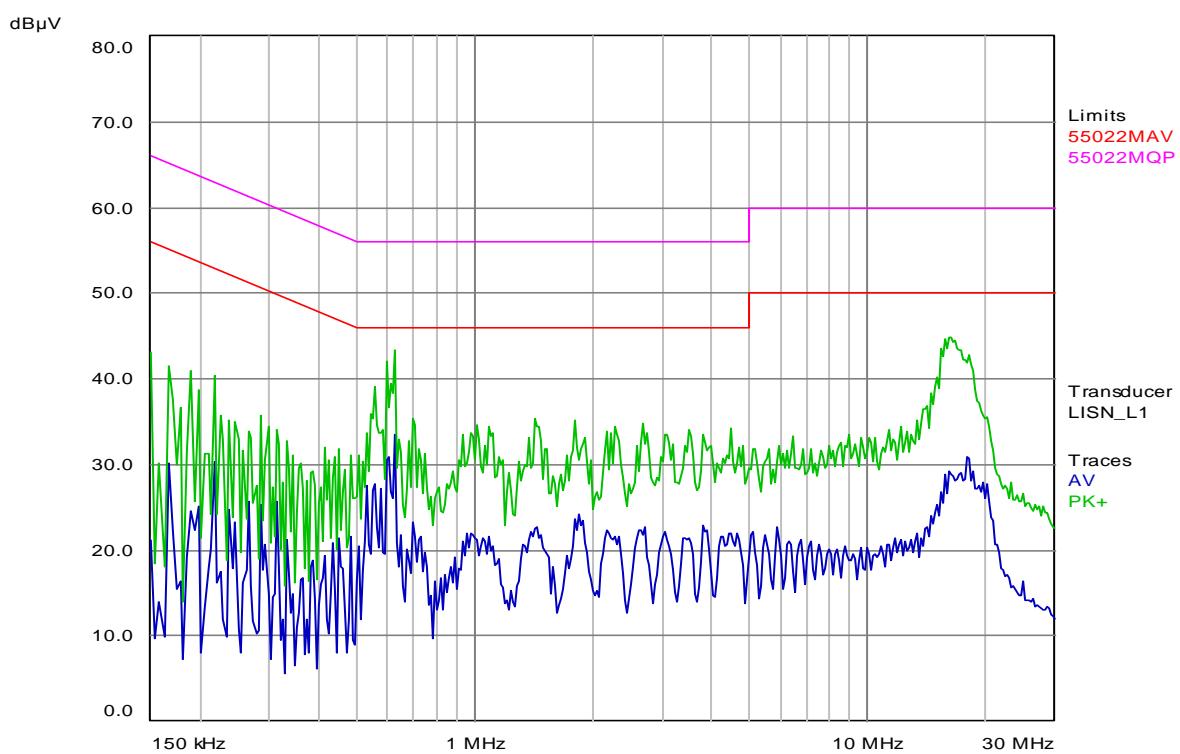
Detectors: AV, PK+

Meas Time: see scan settings

Peaks: 6

Acc. Margin: 10 dB

Pre-measurement Graph



Peak Search Results

Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
/	/	/	/	/	/	/

* = limit exceeded

Line N

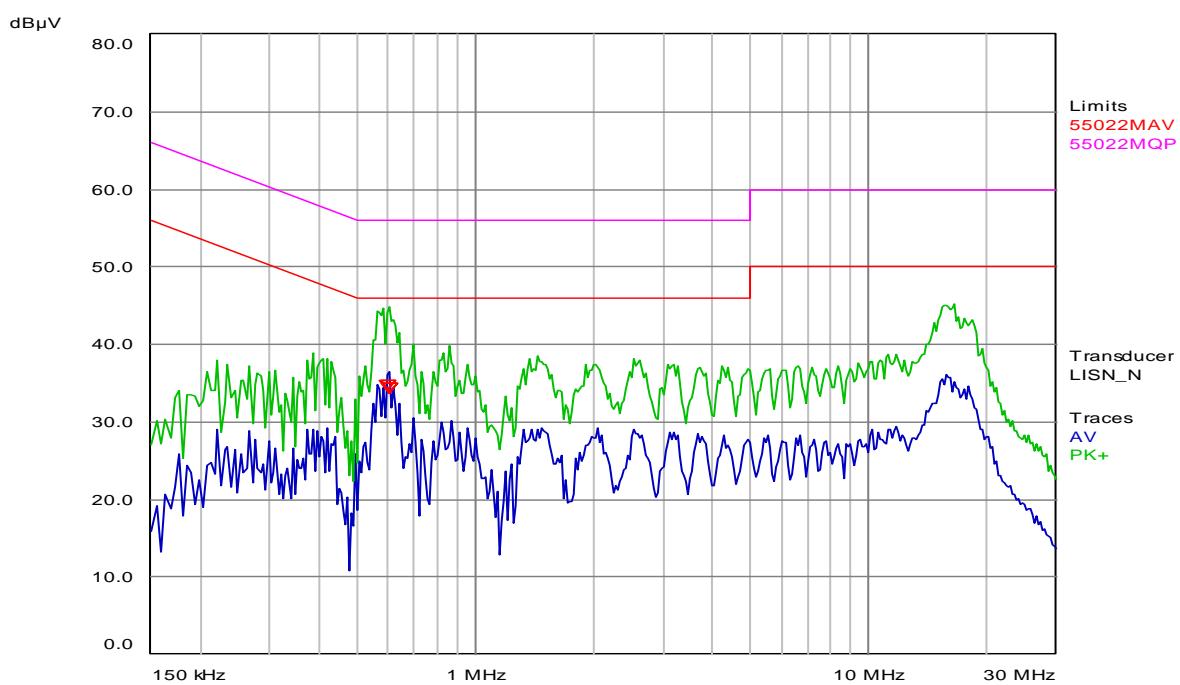
Scan Settings (1 Range)

Frequencies			Receiver Settings			
Start	Stop	Step	Res BW	M-Time	Atten	Preamp
150 kHz	30 MHz	4.5 kHz	9 kHz (6dB)	15 ms	Auto	Off

Final Measurement

Detectors: AV, QP Meas Time: 1 s
Peaks: 6 Acc. Margin: 10 dB

Pre-measurement Graph



Final Measurement Results

Trace	Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 AV	0.5955	34.01	46.00	-11.99		N / on
1 AV	0.6045	33.66	46.00	-12.34		N / on

* = limit exceeded

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

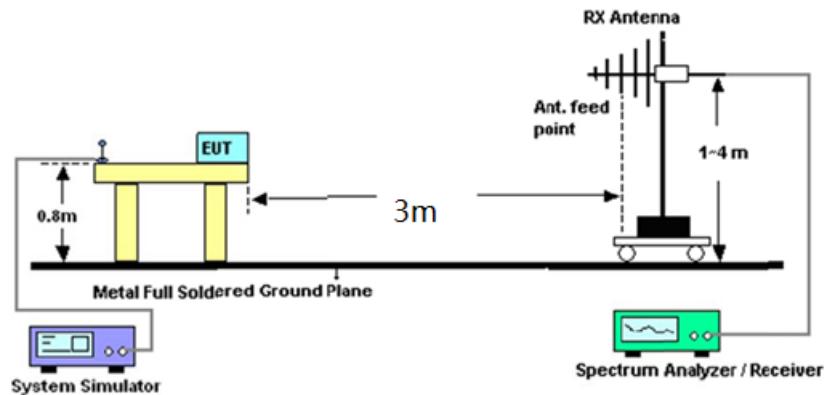
B.7.2 Test Procedure

- a. The EUT was placed on a turntable with 1.5 meter above ground.
- b. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The height of the antenna is varied between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
- e. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower(from 1 m to 4 m)and turntable(from 0 degree to 360 degrees)to find the maximum reading.
- f. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode. SA setting: Span= wide enough to fully capture the emission being measured; RBW=1MHz (f > 1GHz), RBW=100kHz (f < 1GHz), VBW ≥ RBW, Sweep time=auto, Trace= Max hold. Above 18GHz shall be extrapolated to specified distance using an extrapolation factor 20dB/decade from 3m to 1m.
- g. If the emission level of the EUT in peak mode was 20dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported.
- h. Emission level (dB μ V/m) = 20 log Emission level (μ V/m).

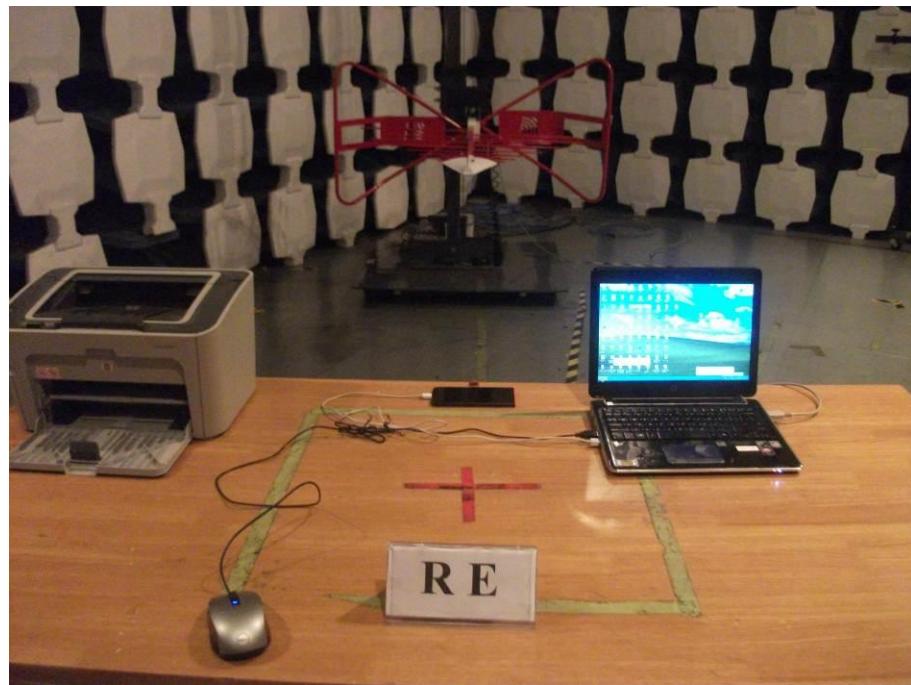
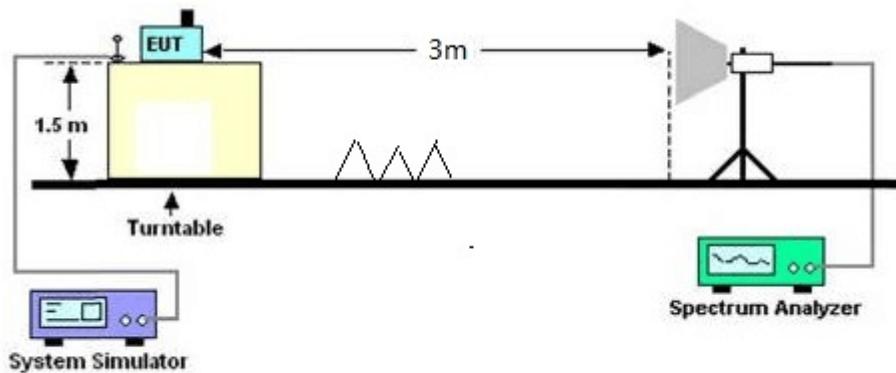
B.7.3 Test Setup

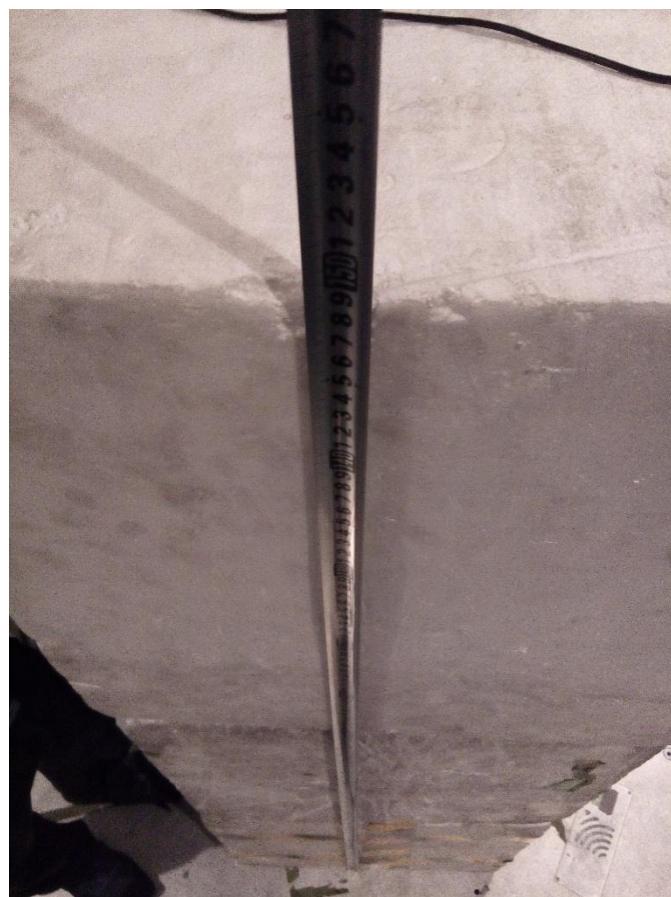
Frequency Band(MHz)	Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	QP	100kHz	100kHz
Above 1000	Peak	1MHz	1MHz
	Average	1MHz	10Hz

Radiated Emissions Frequency: Below 1GHz



Radiated Emissions Frequency: above 1GHz





B.7.4 Test Results

Above 6GHz, EUT was pre-scanned and which was 20dB lower than limit line per 15.31(0) not reported.

Worst case data rate mode: 802.11b

Test Mode: Traffic

Verdict: Pass

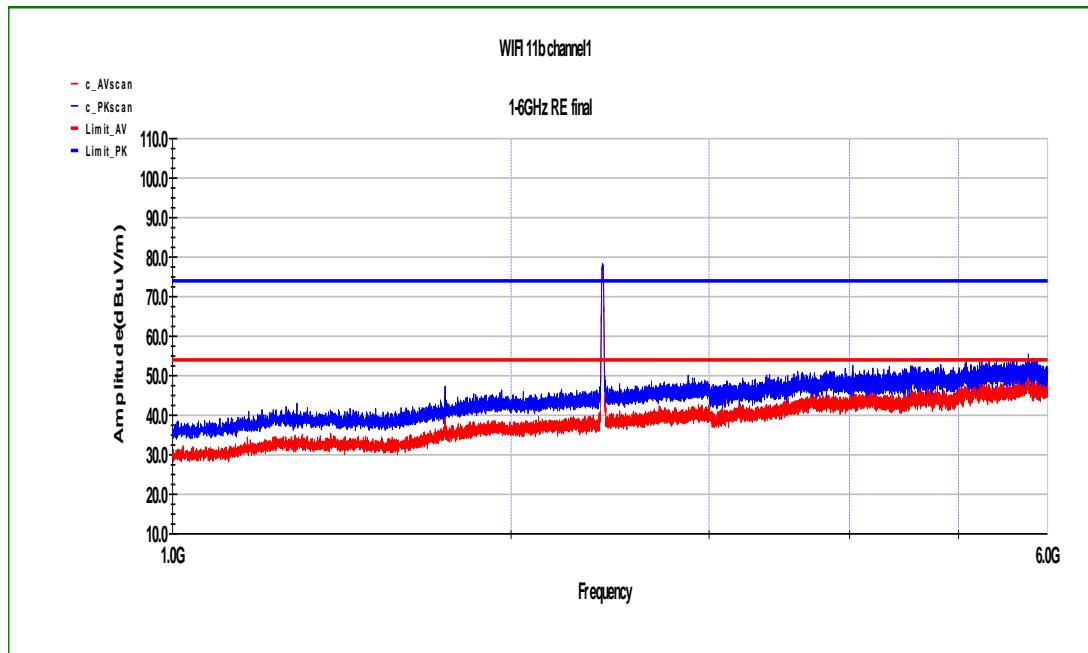


Fig.118 Radiated Emission of channel 1 in 30MHz-1GHz

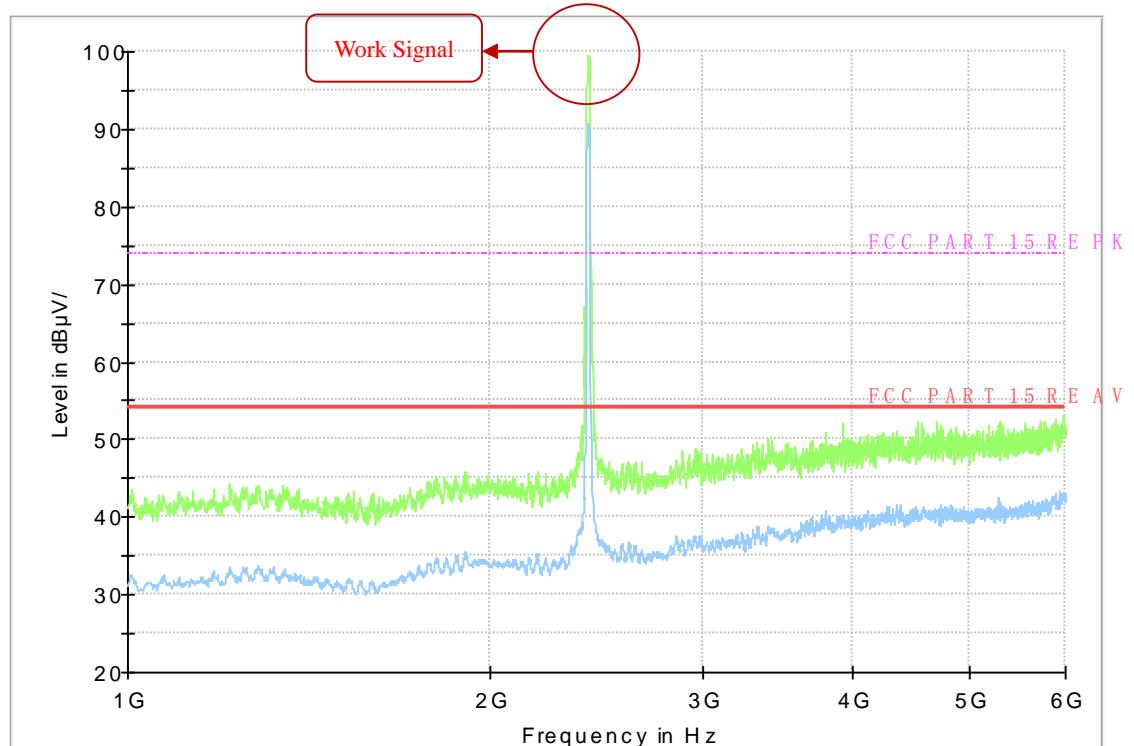


Fig.119 Radiated Emission of channel 1 in 1GHz-6GHz

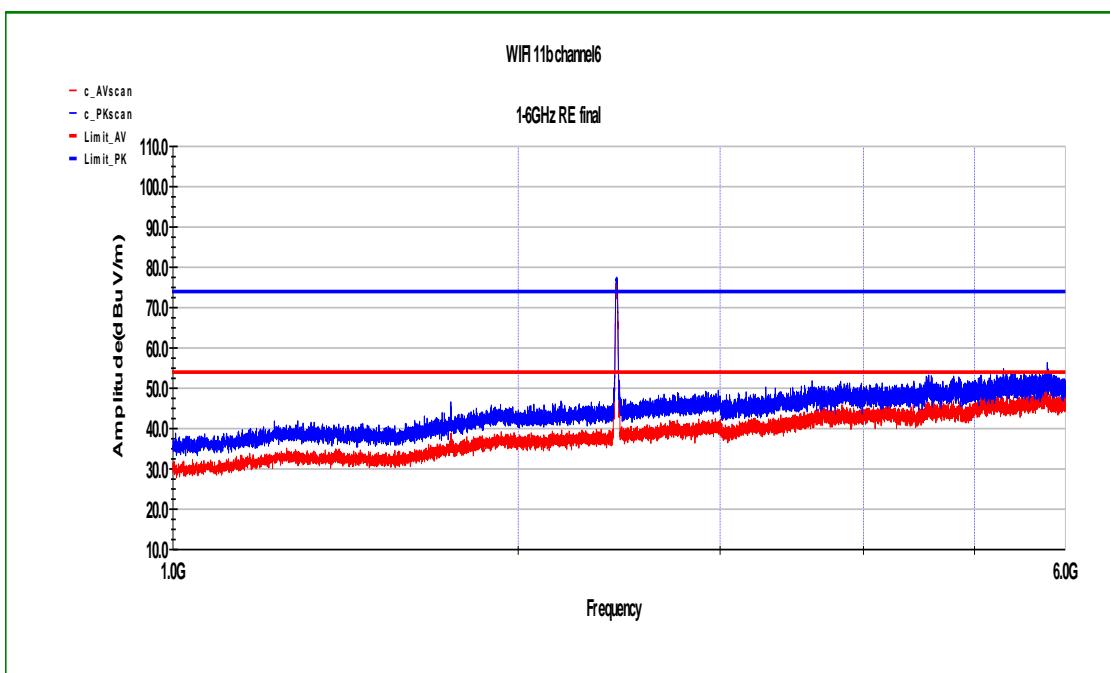


Fig.120 Radiated Emission of channel 6 in 30MHz-1GHz

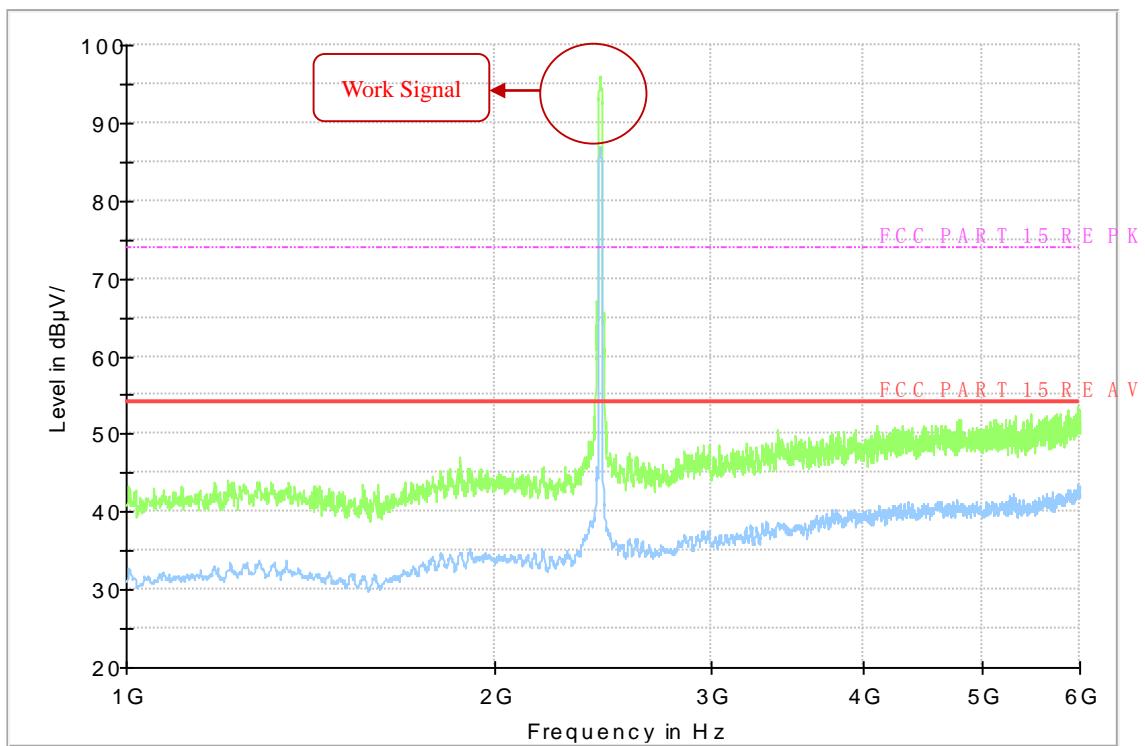


Fig.121 Radiated Emission of channel 6 in 1GHz-6GHz

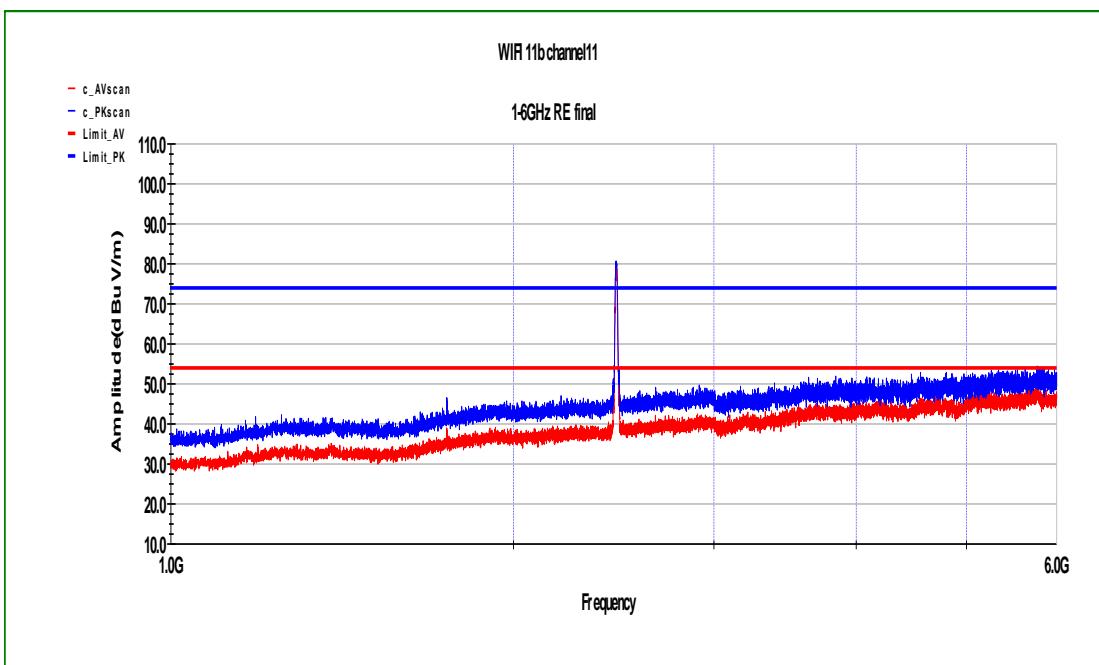


Fig.122 Radiated Emission of channel 11 in 30MHz-1GHz

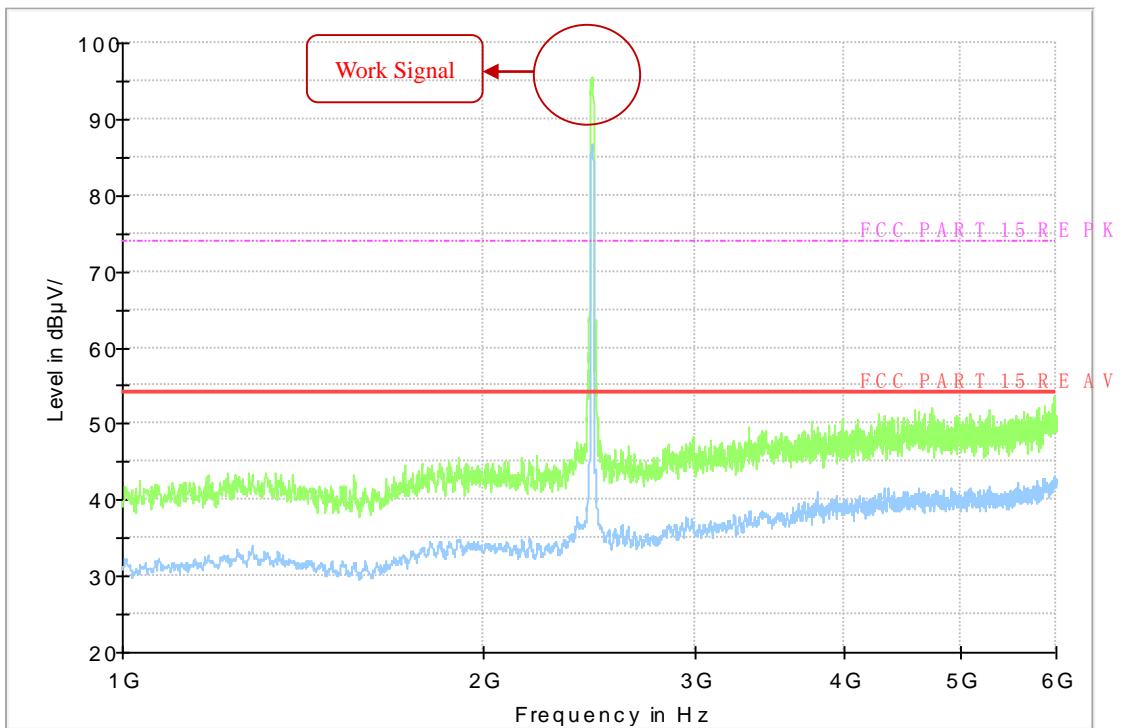


Fig.123 Radiated Emission of channel 11 in 1GHz-6GHz

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.

ANNEX C: Report Revision History

Report NO.	Report version	Description	Issue Date
150934-WIFI	NONE	Original	2015.12.14

*****END OF REPORT*****