



**FCC PART 15C  
TESTREPORT  
No.I17Z60904-SRD02**

**for**

**Lenovo(Shanghai) Electronics Technology Co., Ltd.**

**Portable Tablet Computer**

**Lenovo TB-7304F**

**with**

**FCC ID: O57TB7304F**

**Hardware Version: Lenovo Tablet TB-7304F**

**Software Version: TB-7304F\_RF01\_170602**

**Issued Date: 2017-07-06**

**Note:**

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

**Test Laboratory:**

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## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
I17Z60904-SRD02	Rev.0	1st edition	2017-07-06



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## 1. Test Laboratory

### 1.1. Testing Location

Conducted testing Location:CTTL(Huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,  
P. R. China100191

Radiated testing Location:CTTL(Shouxiang)

Address: No. 51 Shouxiang Science Building, Xueyuan Road,  
Haidian District, Beijing, P. R. China100191

### 1.2. Testing Environment

Normal Temperature: 15-35°C

Extreme Temperature: 0/+45°C

Relative Humidity: 20-75%

### 1.3. Project data

Testing Start Date: 2017-06-13

Testing End Date: 2017-07-04

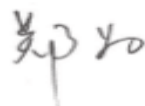
### 1.4. Signature



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Jiang Xue

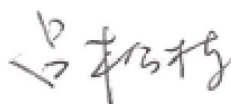
(Prepared this test report)



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Zheng Wei

(Reviewed this test report)



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Lv Songdong

(Approved this test report)



## **2. Client Information**

### **2.1. Applicant Information**

Company Name: Lenovo(Shanghai) Electronics Technology Co., Ltd.  
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Country: China  
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### **2.2. Manufacturer Information**

Company Name: Lenovo PC HK Limited  
Address: 23/F, Lincoln House, Taikoo Place  
979 King's Road, Quarry Bay, Hong Kong  
City: Hong Kong  
Postal Code: /  
Country: China  
Telephone: +86-10-57877542  
Fax: +86-10-58863425

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

#### **3.1. About EUT**

Description	Portable Tablet Computer
Model name	Lenovo TB-7304F
FCC ID	O57TB7304F
IC ID	/
With WLAN Function	Yes
Frequency Range	ISM 2400MHz~2483.5MHz
Type of Modulation	DSSS/CCK/OFDM
Number of Channels	11
Antenna	Integral Antenna
MAX Conducted Power	21.51dBm(OFDM)
Power Supply	3.8V DC by Battery

#### **3.2. Internal Identification of EUT**

<b>EUT ID*</b>	<b>SN or IMEI</b>	<b>HW Version</b>	<b>SW Version</b>
EUT1	HGCE7ESK(25)	Lenovo Tablet TB-7304F	TB-7304F_RF01_170602
EUT2	HGCE7ES7(25)	Lenovo Tablet TB-7304F	TB-7304F_RF01_170602

\*EUT ID: is used to identify the test sample in the lab internally.

#### **3.3. Internal Identification of AE**

<b>AE ID*</b>	<b>Description</b>	<b>SN</b>
AE1	Battery	/
AE2	Battery	/
AE3	Charger	/
AE4	Charger	/
AE9	Charger	/
AE10	Charger	/
AE14	USB Cable	/
AE15	USB Cable	/
<b>AE1</b>		
Model	L13D1P31	
Manufacturer	Sunwoda	
Capacitance	3450 mAh	
Nominal voltage	3.8 V	
<b>AE2</b>		
Model	L13D1P31	
Manufacturer	SCUD	
Capacitance	3450 mAh	
Nominal voltage	3.8 V	
<b>AE3</b>		



Model	C-P56
Manufacturer	Huntkey
Length of cable	/
AE4	
Model	C-P57
Manufacturer	Huntkey
Length of cable	/
AE9	
Model	C-P56
Manufacturer	Acbel
Length of cable	/
AE10	
Model	C-P57
Manufacturer	Acbel
Length of cable	/
AE14	
Model	L29B-05100070
Manufacturer	LIQI
Length of cable	80cm
AE15	
Model	S29B-05100070
Manufacturer	SAIBAO
Length of cable	80cm

\*AE ID: is used to identify the test sample in the lab internally.



### **3.4. General Description**

The Equipment under Test (EUT) is a model of Portable Tablet Computer with integrated antenna and inbuilt battery.

It has Bluetooth function.

It consists of normal options: travel charger, USB cable.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the client.

### **3.5. Interpretation of the Test Environment**

For the test methods, the test environment uncertainty figures correspond to an expansion factor  $k=2$ .

Measurement Uncertainty

Parameter	Uncertainty
temperature	0.48°C
humidity	2 %
DC voltages	0.003V

## **4. Reference Documents**

### **4.1. Documents supplied by applicant**

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

### **4.2. Reference Documents for testing**

The following documents listed in this section are referred for testing.

Reference	Title	Version
	FCC CFR 47, Part 15, Subpart C:	
	15.205 Restricted bands of operation;	
FCC Part15	15.209 Radiated emission limits, general requirements;	2016
	15.247 Operation within the bands 902-928MHz, 2400-2483.5 MHz, and 5725-5850 MHz.	
ANSI C63.10	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	2013

## 5. Test Results

### 5.1. Summary of Test Results

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15C	Sub-clause of IC	Verdict
Maximum Peak Output Power	15.247 (b)	/	<b>P</b>
Peak Power Spectral Density	15.247 (e)	/	<b>P</b>
Occupied 6dB Bandwidth	15.247 (a)	/	<b>P</b>
Band Edges Compliance	15.247 (d)	/	<b>P</b>
Transmitter Spurious Emission - Conducted	15.247 (d)	/	<b>P</b>
Transmitter Spurious Emission - Radiated	15.247, 15.205, 15.209	/	<b>P</b>
AC Powerline Conducted Emission	15.107, 15.207	/	<b>P</b>

Please refer to **ANNEX A** for detail.

Terms used in Verdict column

P	Pass, The EUT complies with the essential requirements in the standard.
NP	Not Perform, The test was not performed by CTTL
NA	Not Applicable, The test was not applicable
F	Fail, The EUT does not comply with the essential requirements in the standard
F	Fail, The EUT does not comply with the essential requirements in the standard

### 5.2. Statements

The test cases as listed in section 5.1 of this report for the EUT specified in section 3 was performed by CTTL and according to the standards or reference documents listed in section 4.2

The EUT met all requirements of the standards or reference documents, and only the WLAN function was tested in this report.

### 5.3. Test Conditions

T nom	Normal Temperature
T min	Low Temperature
T max	High Temperature
V nom	Normal Voltage

For this report, if the test cases listed above are tested under normal temperature and normal voltage, and also under norm humidity, the specific condition is shown as follows:

Temperature	T nom	26°C
Voltage	V nom	3.8V(By battery)
Humidity	H nom	44%

## 6. Test Facilities Utilized

### Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Calibration Due date
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	2017-06-02	2018-06-01
2	Test Receiver	ESCI	100344	Rohde & Schwarz	2017-02-16	2018-03-15
3	LISN	ENV216	101200	Rohde & Schwarz	2016-07-11	2017-08-10
4	Shielding Room	S81	/	ETS-Lindgren	/	/

### Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Calibration Due date
1	Test Receiver	ESCI 7	100948	Rohde & Schwarz	2016-07-06	2017-07-05
2	Loop antenna	HFH2-Z2	829324/007	Rohde & Schwarz	2014-12-17	2017-12-16
3	BiLog Antenna	VULB9163	302	Schwarzbeck	2017-02-28	2020-03-27
4	Dual-Ridge Waveguide Horn Antenna	3115	6914	EMCO	2014-12-16	2017-12-15
5	Dual-Ridge Waveguide Horn Antenna	3116	2661	ETS-Lindgren	2017-06-17	2020-06-16
6	Vector Signal Analyzer	FSV	101047	Rohde & Schwarz	2017-06-28	2018-06-27
7	Semi-anechoic chamber	/	CT000332-1074	Frankonia German	/	/

## 7. Measurement Uncertainty

### 7.1. Maximum Output Power

Measurement Uncertainty: 0.339dB,k=1.96

### 7.2. Peak Power Spectral Density

Measurement Uncertainty: 0.705dBm/MHz,k=1.96

### 7.3. DTS 6-dB Signal Bandwidth

Measurement Uncertainty: 60.80Hz,k=1.96

### 7.4. Band Edges Compliance

Measurement Uncertainty : 0.62dBm,k=1.96

### 7.5. Transmitter Spurious Emission

#### Conducted (k=1.96)

Frequency Range	Uncertainty(dBm)
$30\text{MHz} \leq f \leq 2\text{GHz}$	1.22
$2\text{GHz} \leq f \leq 3.6\text{GHz}$	1.22
$3.6\text{GHz} \leq f \leq 8\text{GHz}$	1.22
$8\text{GHz} \leq f \leq 12.75\text{GHz}$	1.51
$12.75\text{GHz} \leq f \leq 26\text{GHz}$	1.51
$26\text{GHz} \leq f \leq 40\text{GHz}$	1.59

#### Radiated (k=2)

Frequency Range	Uncertainty(dBm)
$30\text{MHz} \leq f \leq 1\text{GHz}$	4.86
$1\text{GHz} \leq f \leq 18\text{GHz}$	5.26
$18\text{GHz} \leq f \leq 40\text{GHz}$	5.28

### 7.6. AC Power-line Conducted Emission

Measurement Uncertainty : 3.38dBm,k=2

## **ANNEX A: Detailed Test Results**

### **A.1. Measurement Method**

#### **A.1.1. Conducted Measurements**

Connect the EUT to the test system as Fig.A.1.1.1 shows.

Set the EUT to the required work mode.

Set the EUT to the required channel.

Set the Vector Signal Analyzer and start measurement.

Record the values. Vector Signal Analyzer

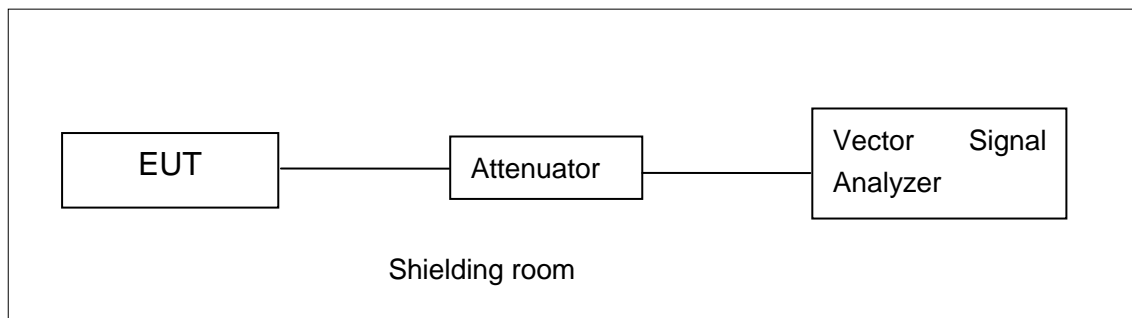


Fig.A.1.1.1: Test Setup Diagram for Conducted Measurements

#### **A.1.2. Radiated Emission Measurements**

In the case of radiated emission, the used settings are as follows,

Sweep frequency from 30 MHz to 1GHz, RBW = 100 kHz, VBW = 300 kHz;

Sweep frequency from 1 GHz to 26GHz, RBW = 1MHz, VBW = 10Hz;

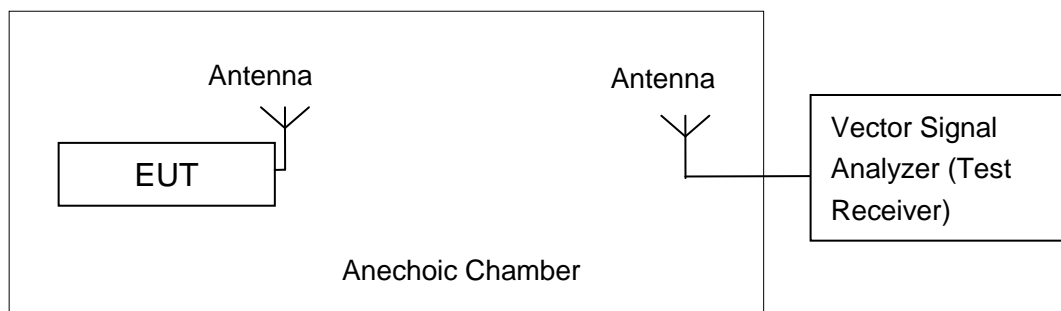


Fig.A.1.2.1: Test Setup Diagram for Radiated Measurements

## **A.2. Maximum Output Power**

**Method of Measurement: See ANSI C63.10-2013-clause 11.9.1.2**

- a) Set the RBW = 1 MHz.
- b) Set the VBW = 3 MHz.
- c) Set the span  $\geq [1.5 \times \text{DTS bandwidth}]$ .
- d) Detector = peak.
- e) Sweep time = auto couple.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select the peak detector).

**Measurement Limit:**

Standard	Limit (dBm)
FCC CRF Part 15.247(b)	< 30

**EUT ID: EUT2**

### **A.2.1. Peak Output Power-conducted**

**Measurement Results:**

#### **802.11b/g mode**

Mode	Data Rate (Mbps)	Test Result (dBm)		
		2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)
802.11b	1	17.42	/	/
	2	17.67	/	/
	5.5	19.48	/	/
	11	20.56	21.12	20.60
802.11g	6	21.51	21.44	21.07
	9	21.03	/	/
	12	21.38	/	/
	18	20.87	/	/
	24	21.38	/	/
	36	21.38	/	/
	48	21.44	/	/
	54	21.38	/	/

The data rate 11Mbps and 6Mbps are selected as worse condition, and the following cases are performed with this condition.

**802.11n-HT20 mode**

Mode	Data Rate (Index)	Test Result (dBm)		
		2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)
802.11n (20MHz)	MCS0	20.90	/	/
	MCS1	20.38	/	/
	MCS2	20.51	/	/
	MCS3	20.90	/	/
	MCS4	20.84	/	/
	MCS5	20.93	20.96	20.98
	MCS6	20.91	/	/
	MCS7	20.84	/	/

The data rate MCS5 is selected as worse condition, and the following cases are performed with this condition.

**802.11n-HT40 mode**

Mode	Data Rate (Index)	Test Result (dBm)		
		2422MHz (Ch3)	2437MHz (Ch6)	2452 MHz (Ch9)
802.11n (40MHz)	MCS0	20.86	20.92	20.85
	MCS1	20.73	/	/
	MCS2	20.72	/	/
	MCS3	20.62	/	/
	MCS4	20.68	/	/
	MCS5	20.75	/	/
	MCS6	20.74	/	/
	MCS7	20.34	/	/

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**Conclusion: Pass**

**A.2.2. Average Output Power-conducted**

**Method of Measurement: See ANSI C63.10-2013-clause 11.9.2.2.2**

The procedure for this method is as follows:

- a) Set span = 80MHz.
- b) Set RBW = 1MHz.
- c) Set VBW = 3MHz
- d) Number of points in sweep = 625
- e) Sweep time = auto.
- f) Detector = RMS.
- g) The trigger shall be set to "free run."
- h) Trace average 100 traces in power averaging (rms) mode.

i) Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function, with band limits set equal to the OBW band edges.

**802.11b/g mode**

Mode	Test Result (dBm)		
	2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)
802.11b	14.41	14.02	13.95
802.11g	13.08	13.02	12.63

**802.11n-HT20 mode**

Mode	Test Result (dBm)		
	2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)
802.11n (20MHz)	12.43	12.15	12.12

**802.11n-HT40 mode**

Mode	Test Result (dBm)		
	2422MHz (Ch3)	2437MHz (Ch6)	2452 MHz (Ch9)
802.11n(40MHz)	12.22	12.22	12.19

**Conclusion: Pass**



### **A.3. Peak Power Spectral Density**

**Method of Measurement: See ANSI C63.10-2013-clause 11.10.2**

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span to 1.5 times the DTS bandwidth.
- c) Set the RBW to RBW = 3 kHz.
- d) Set the VBW = 10 kHz.
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.

**Measurement Limit:**

Standard	Limit
FCC CRF Part 15.247(e)	< 8 dBm/3 kHz

**Measurement Results:**

**802.11b/g mode**

Mode	Channel	Power Spectral Density ( dBm/3 kHz )		Conclusion
802.11b	1	Fig.A.3.1	-8.94	<b>P</b>
	6	Fig.A.3.2	-9.57	<b>P</b>
	11	Fig.A.3.3	-8.69	<b>P</b>
802.11g	1	Fig.A.3.4	-10.96	<b>P</b>
	6	Fig.A.3.5	-11.23	<b>P</b>
	11	Fig.A.3.6	-12.06	<b>P</b>

**802.11n-HT20 mode**

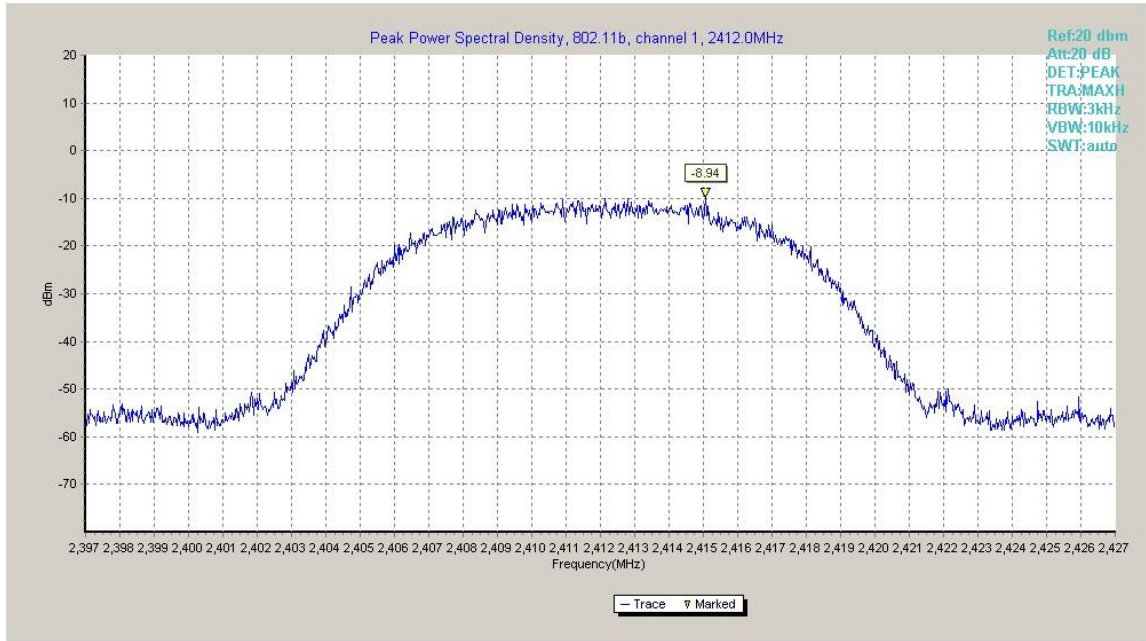
Mode	Channel	Power Spectral Density ( dBm/3 kHz )		Conclusion
802.11n (HT20)	1	Fig.A.3.7	-10.89	<b>P</b>
	6	Fig.A.3.8	-13.47	<b>P</b>
	11	Fig.A.3.9	-11.86	<b>P</b>

**802.11n-HT40 mode**

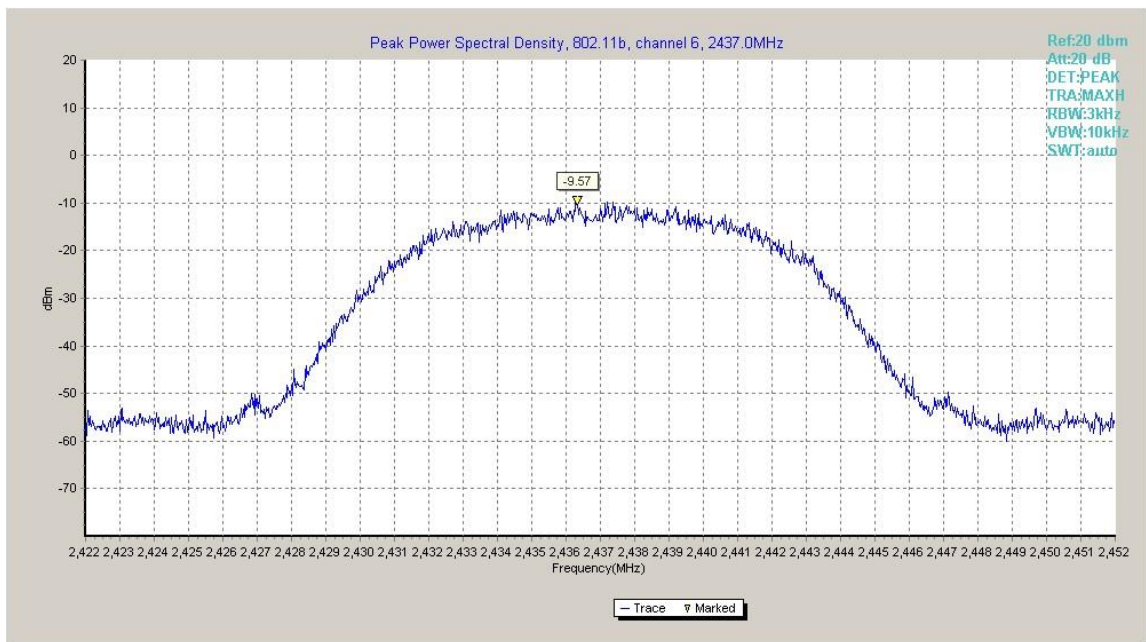
Mode	Channel	Power Spectral Density ( dBm/3 kHz )		Conclusion
802.11n (HT40)	3	Fig.A.3.10	-16.02	<b>P</b>
	6	Fig.A.3.11	-16.16	<b>P</b>
	9	Fig.A.3.12	-14.78	<b>P</b>

**Conclusion: Pass**

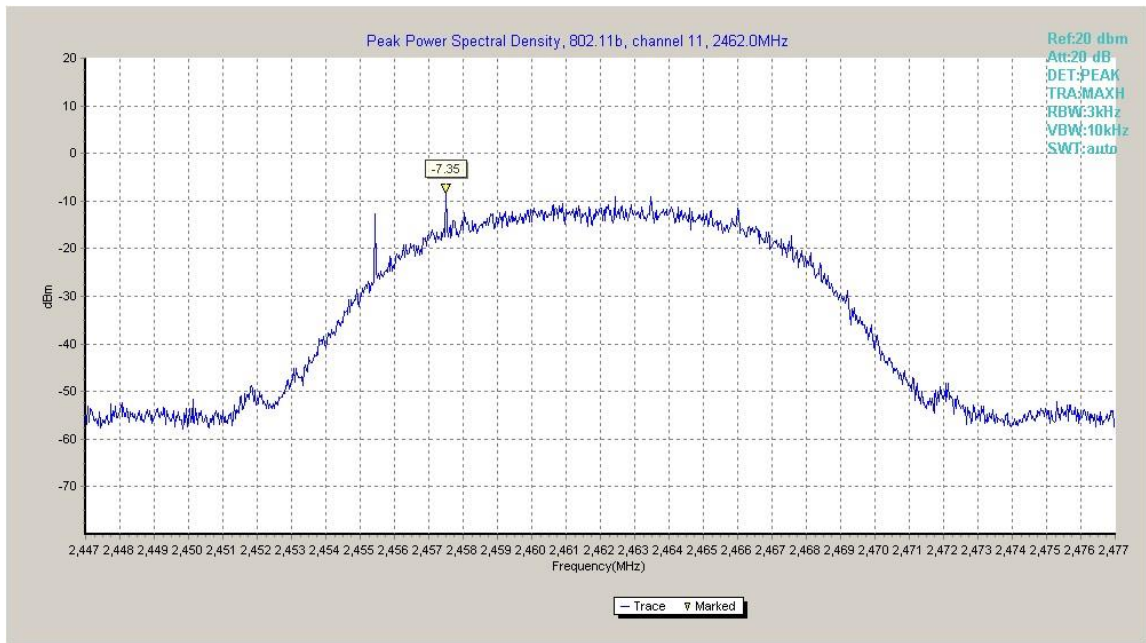
**Test graphs as below:**



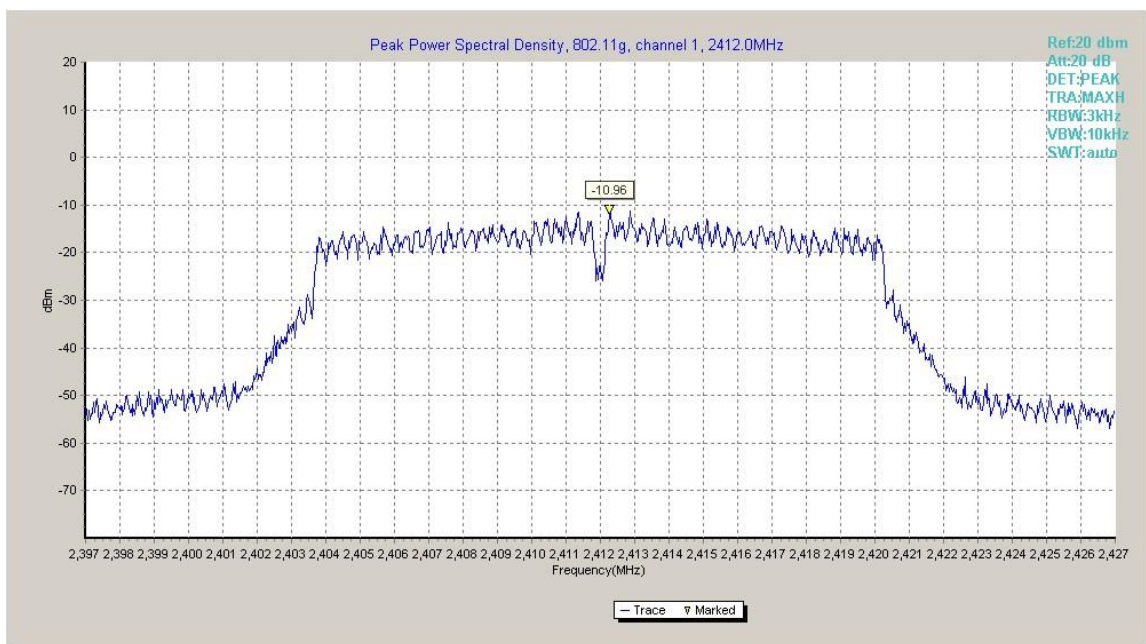
**Fig.A.3.1 Power Spectral Density(802.11b,Ch1)**



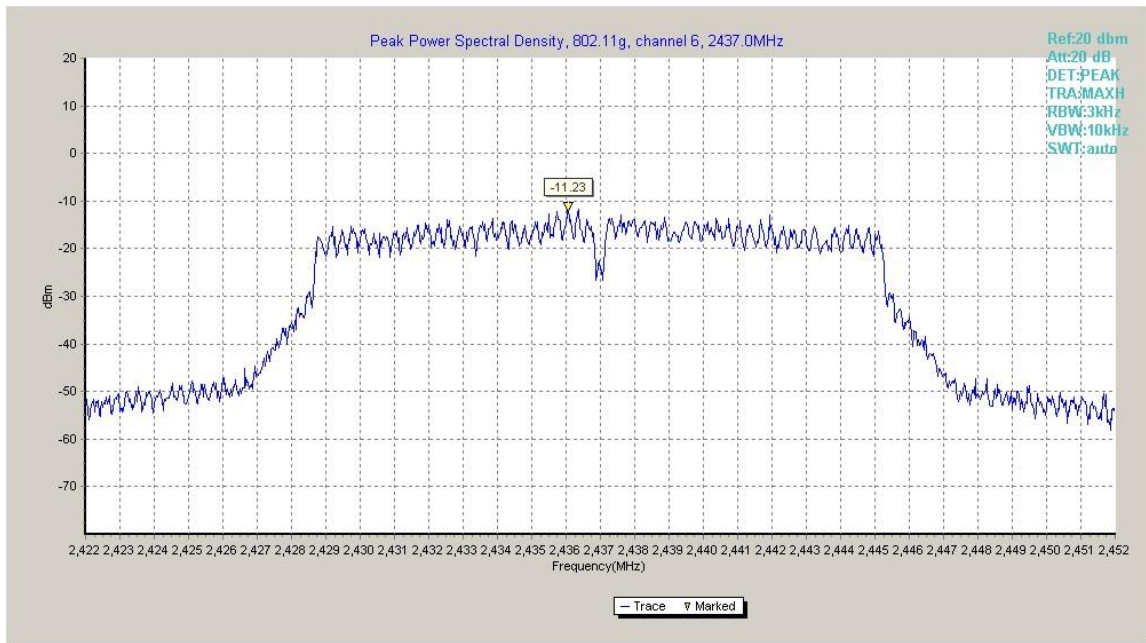
**Fig.A.3.2 Power Spectral Density (802.11b, Ch 6)**



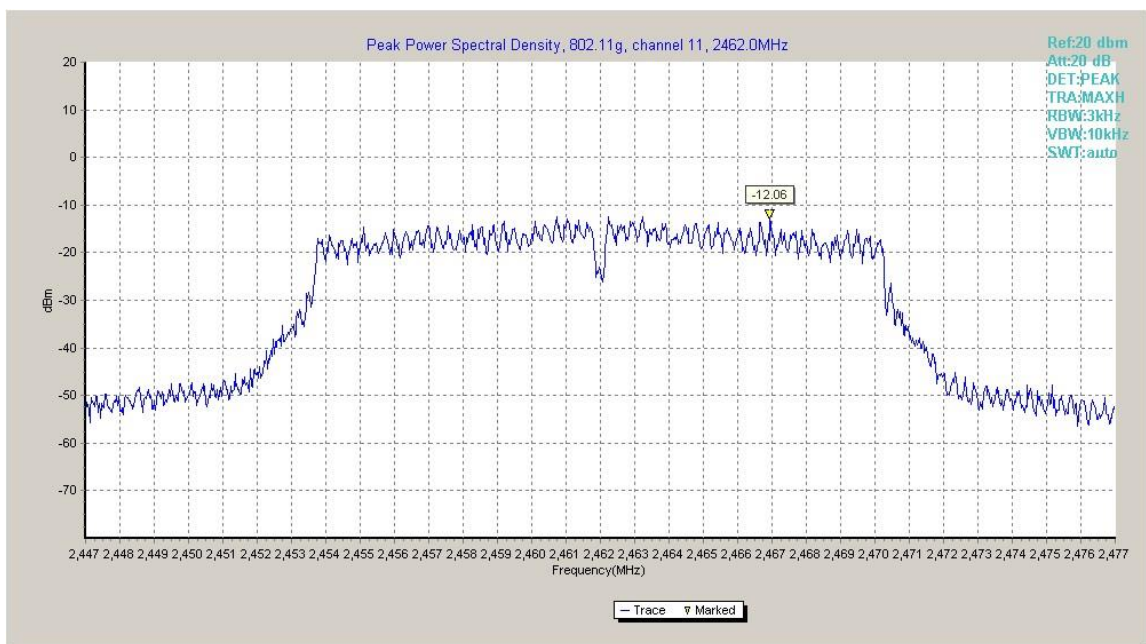
**Fig.A.3.3 Power Spectral Density (802.11b, Ch 11)**



**Fig.A.3.4 Power Spectral Density (802.11g, Ch 1)**

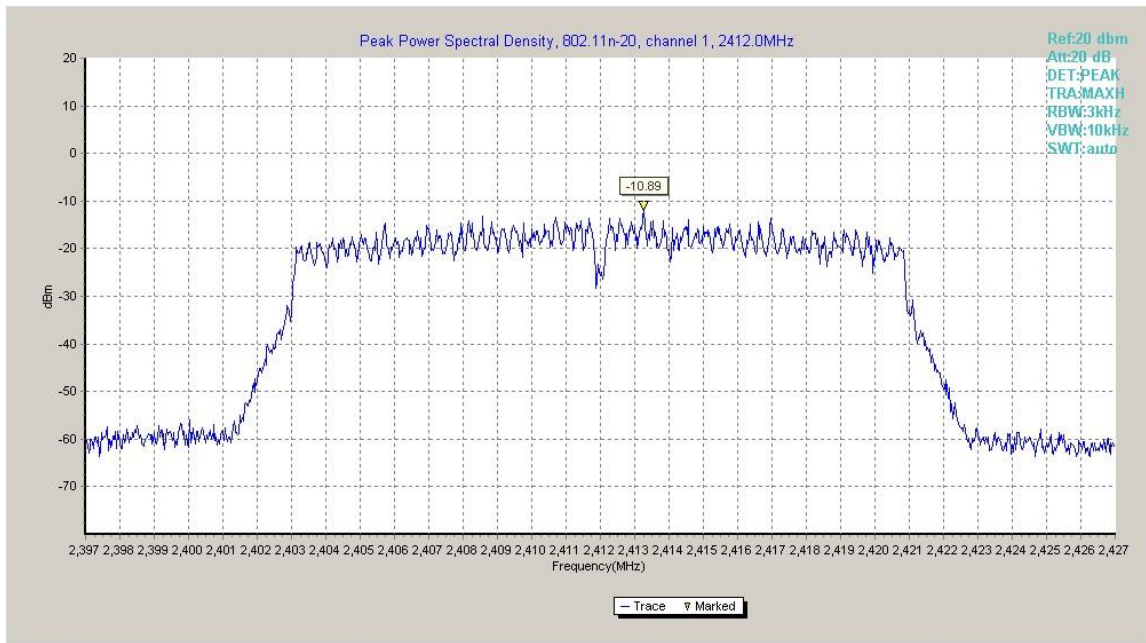


**Fig.A.3.5 Power Spectral Density (802.11g, Ch 6)**

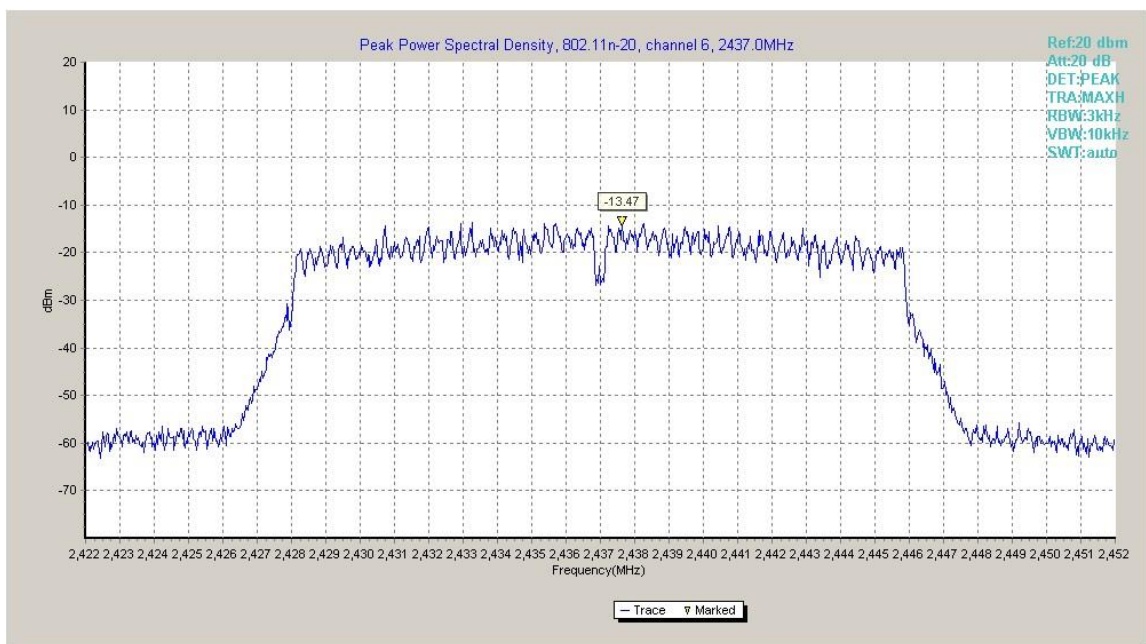


**Fig.A.3.6 Power Spectral Density (802.11g, Ch 11)**

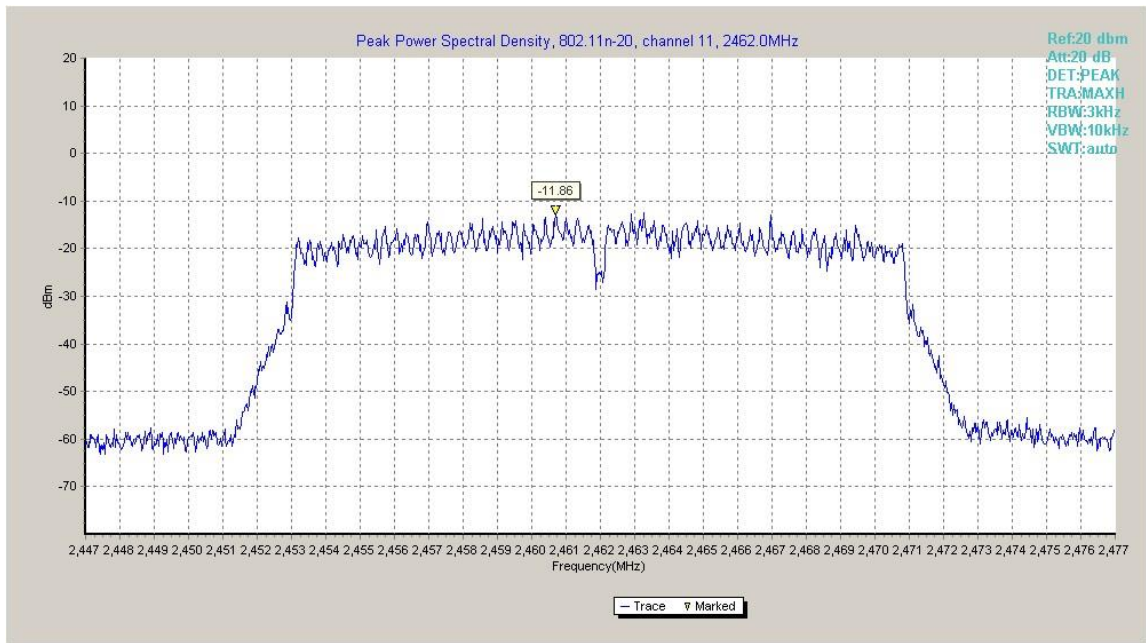




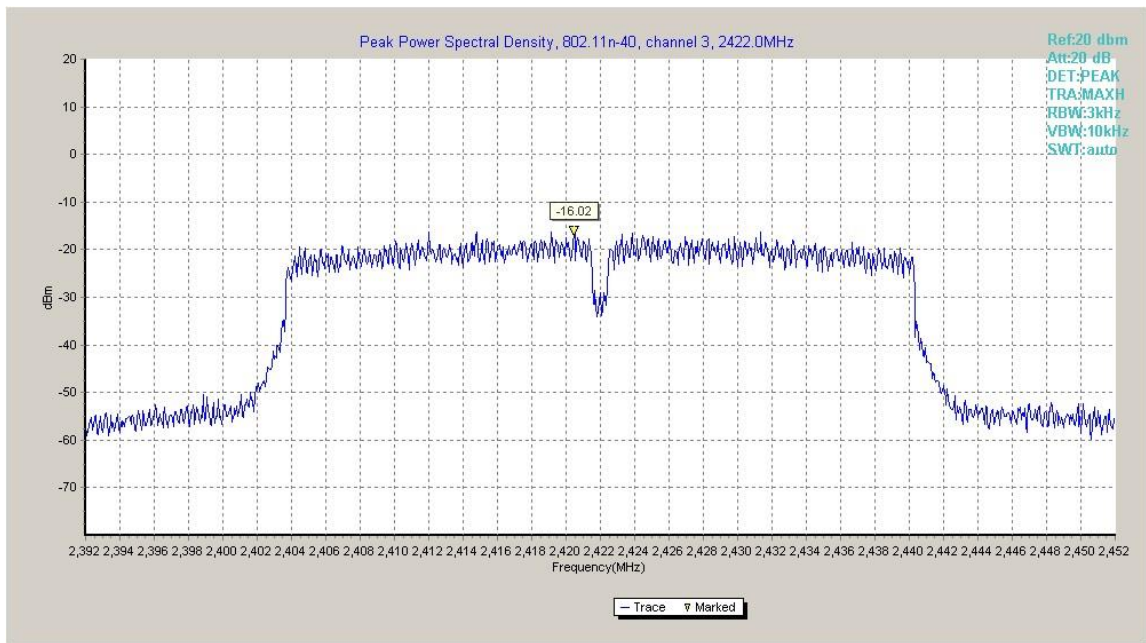
**Fig.A.3.7 Power Spectral Density (802.11n-HT20, Ch 1)**



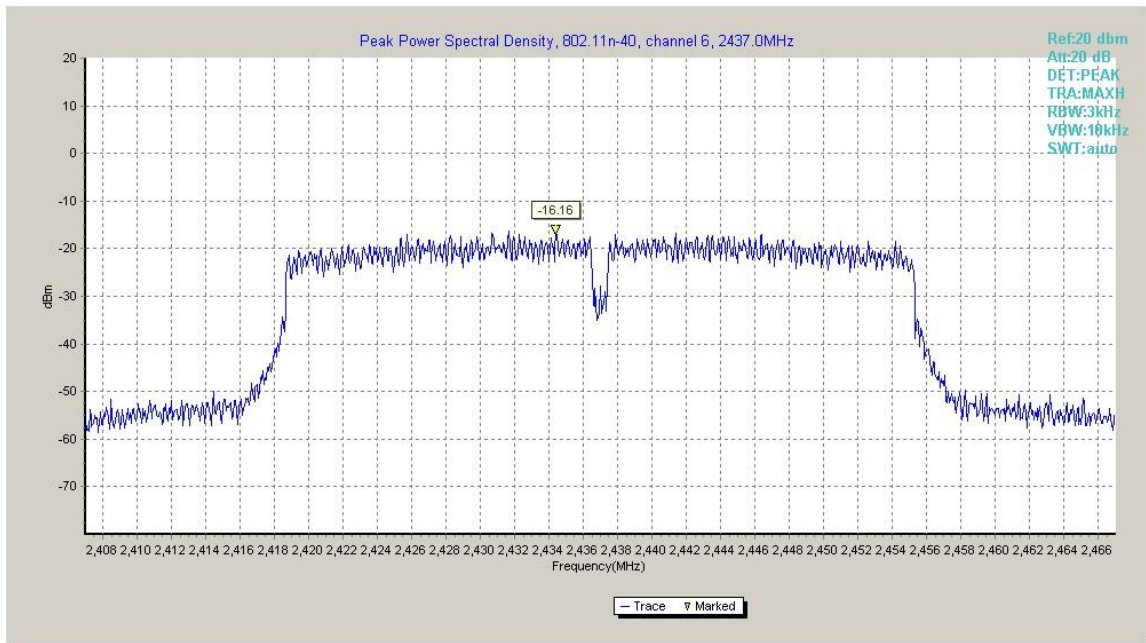
**Fig.A.3.8 Power Spectral Density (802.11n-HT20, Ch 6)**



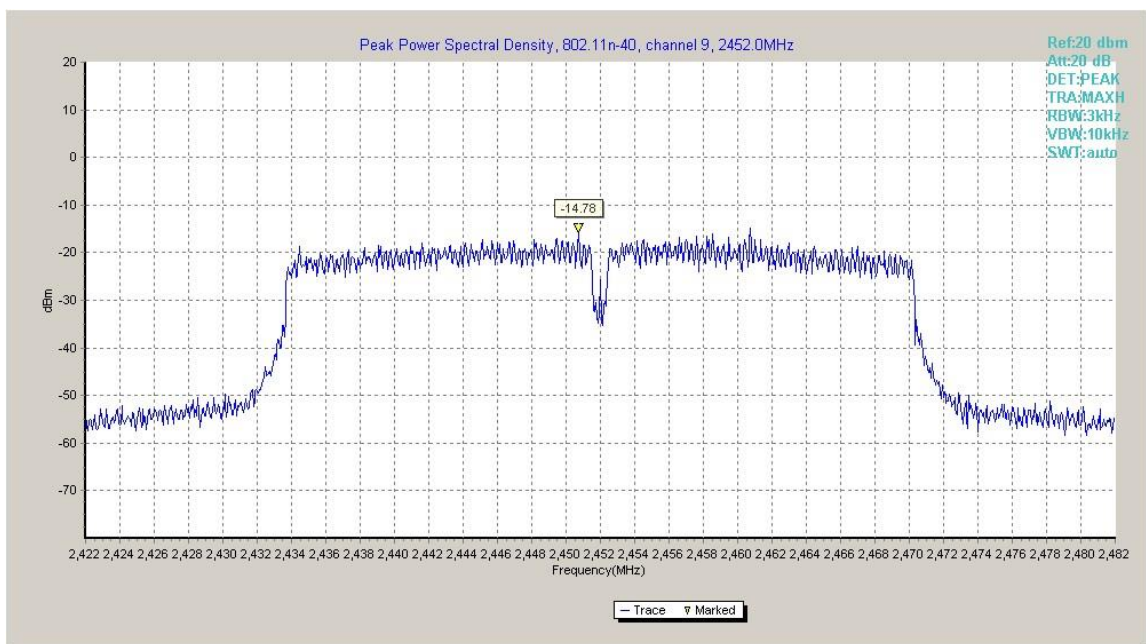
**Fig.A.3.9 Power Spectral Density (802.11n-HT20, Ch 11)**



**Fig.A.3.10 Power Spectral Density (802.11n-HT40, Ch 3)**



**Fig.A.3.11 Power Spectral Density (802.11n-HT40, Ch 6)**



**Fig.A.3.12 Power Spectral Density (802.11n-HT40, Ch 9)**

#### **A.4. DTS 6-dB Signal Bandwidth**

**Method of Measurement: See ANSI C63.10-2013 section 11.8.1.**

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) = 300 kHz.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

**Measurement Limit:**

Standard	Limit (kHz)
FCC 47 CFR Part 15.247 (a)	≥ 500

**EUT ID: EUT2**

**Measurement Result:**

##### **802.11b/g mode**

Mode	Channel	Occupied 6dB Bandwidth ( kHz)		conclusion
802.11b	1	Fig.A.4.1	9000.00	<b>P</b>
	6	Fig.A.4.2	8650.00	<b>P</b>
	11	Fig.A.4.3	8700.00	<b>P</b>
802.11g	1	Fig.A.4.4	9350.00	<b>P</b>
	6	Fig.A.4.5	10000.00	<b>P</b>
	11	Fig.A.4.6	9300.00	<b>P</b>

##### **802.11n-HT20 mode**

Mode	Channel	Occupied 6dB Bandwidth ( kHz)		conclusion
802.11n (HT20)	1	Fig.A.4.7	7600.00	<b>P</b>
	6	Fig.A.4.8	10000.00	<b>P</b>
	11	Fig.A.4.9	11300.00	<b>P</b>

##### **802.11n-HT40 mode**

Mode	Channel	Occupied 6dB Bandwidth ( kHz)		conclusion
802.11n (HT40)	3	Fig.A.4.10	23600.00	<b>P</b>
	6	Fig.A.4.11	22880.00	<b>P</b>
	9	Fig.A.4.12	23440.00	<b>P</b>

**Conclusion: Pass**



Test graphs as below:

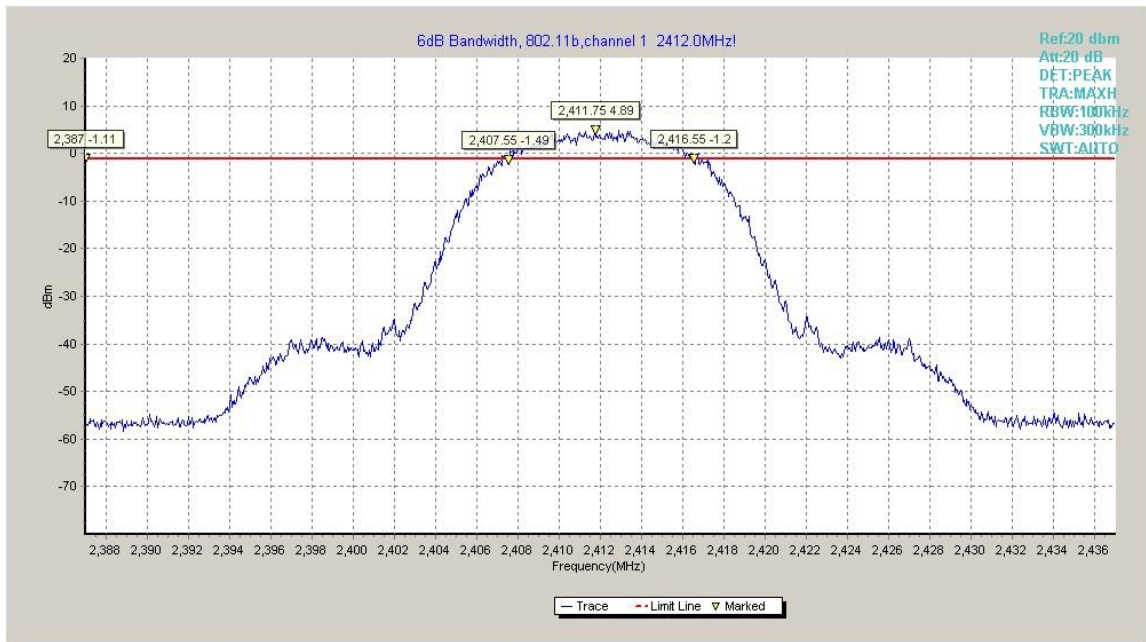


Fig.A.4.1 Occupied 6dB Bandwidth(802.11b,Ch 1)



Fig.A.4.2 Occupied 6dB Bandwidth (802.11b, Ch 6)

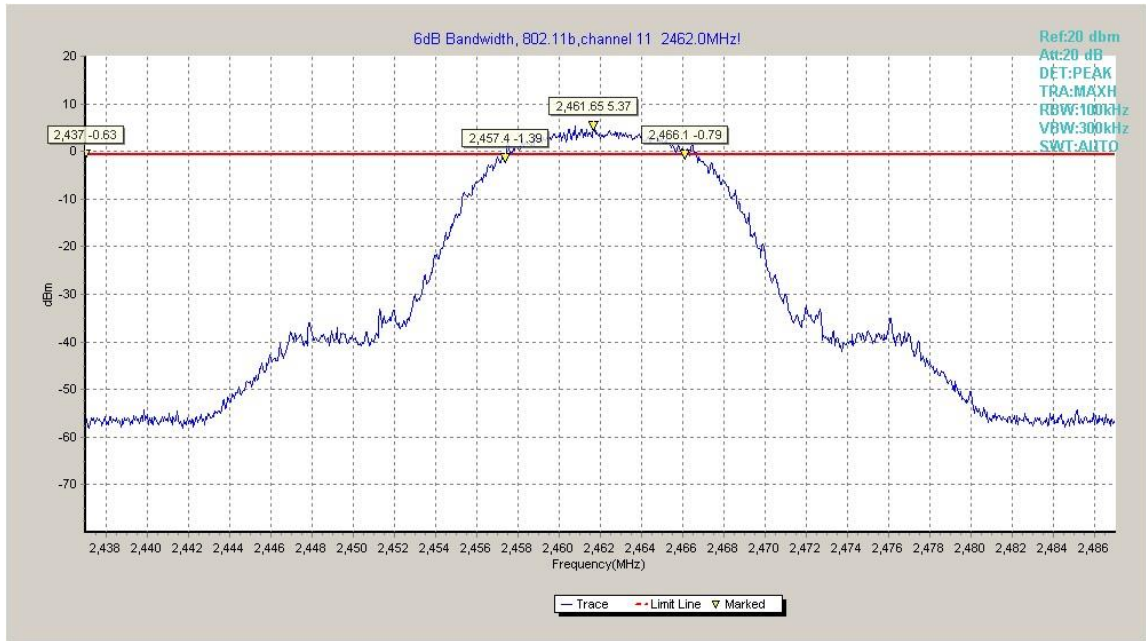


Fig.A.4.3 Occupied 6dB Bandwidth (802.11b, Ch 11)

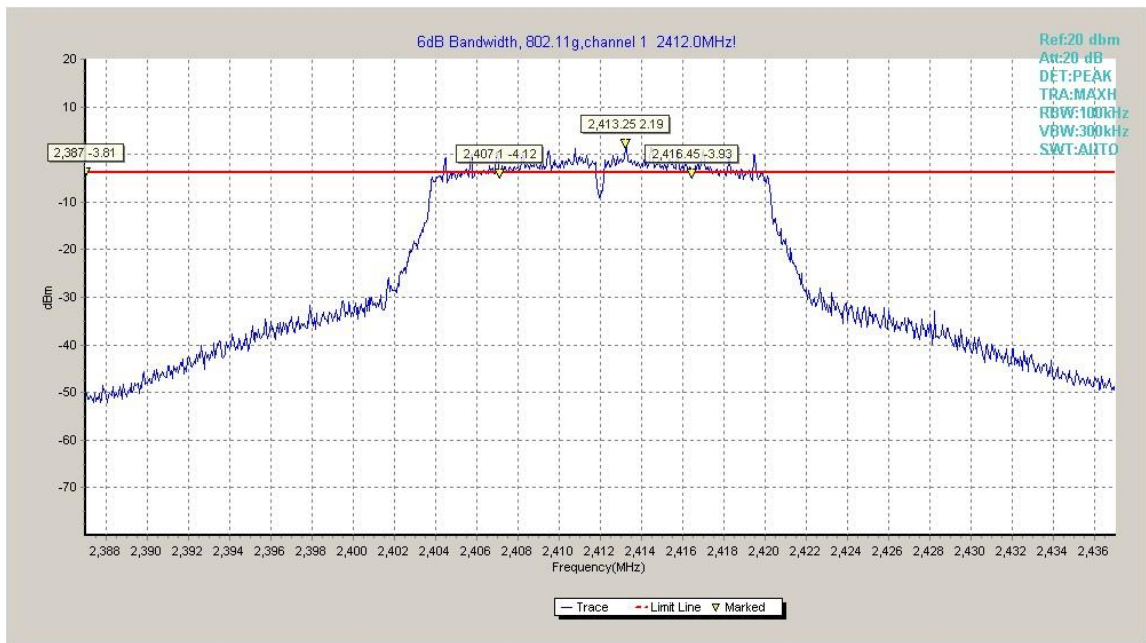
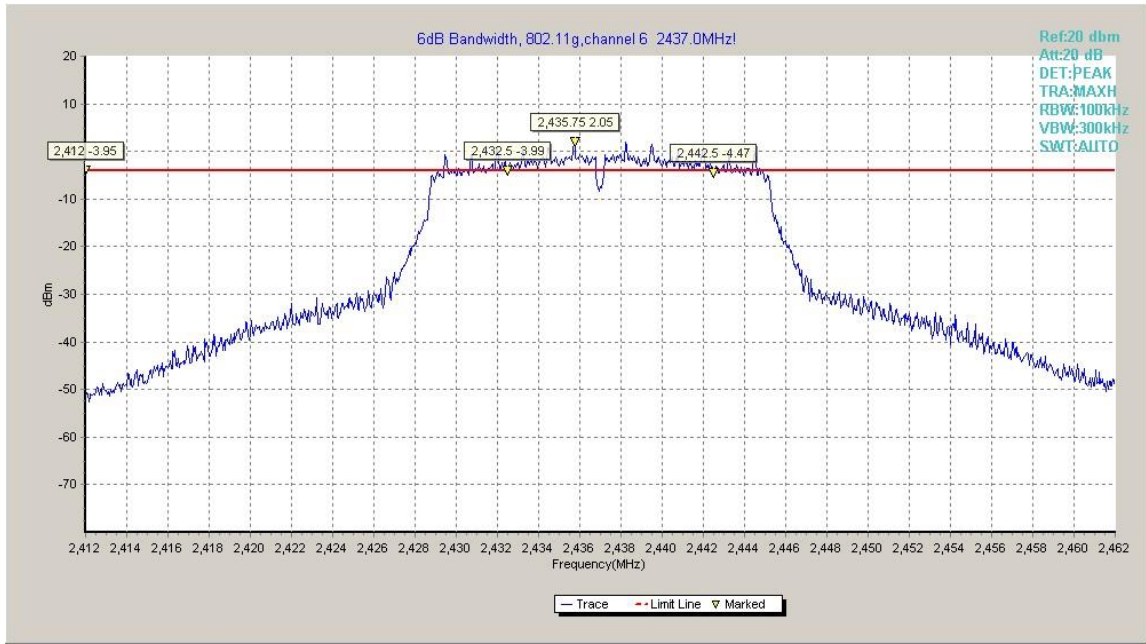
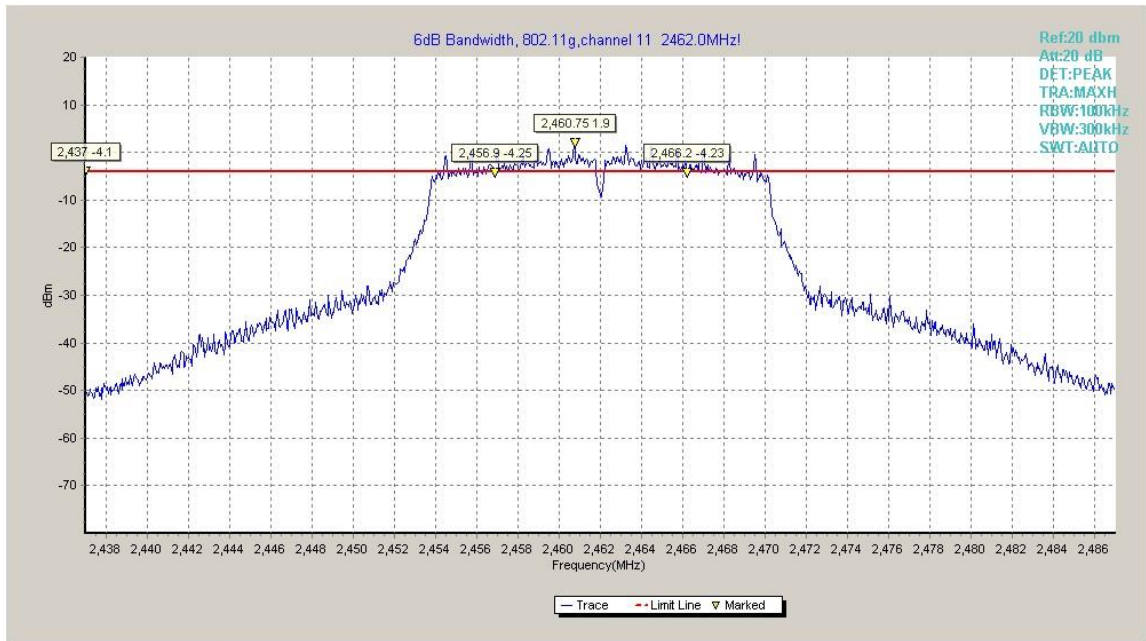


Fig.A.4.4 Occupied 6dB Bandwidth (802.11g, Ch 1)



**Fig.A.4.5 Occupied 6dB Bandwidth (802.11g, Ch 6)**



**Fig.A.4.6 Occupied 6dB Bandwidth (802.11g, Ch 11)**

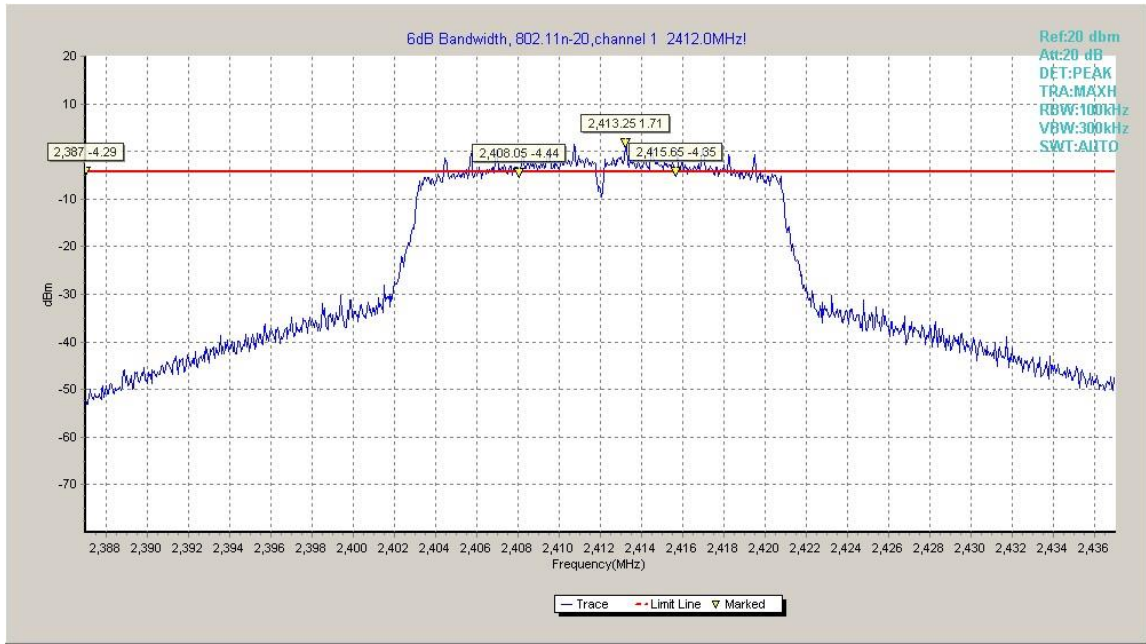


Fig.A.4.7 Occupied 6dB Bandwidth (802.11n-20MHz, Ch 1)

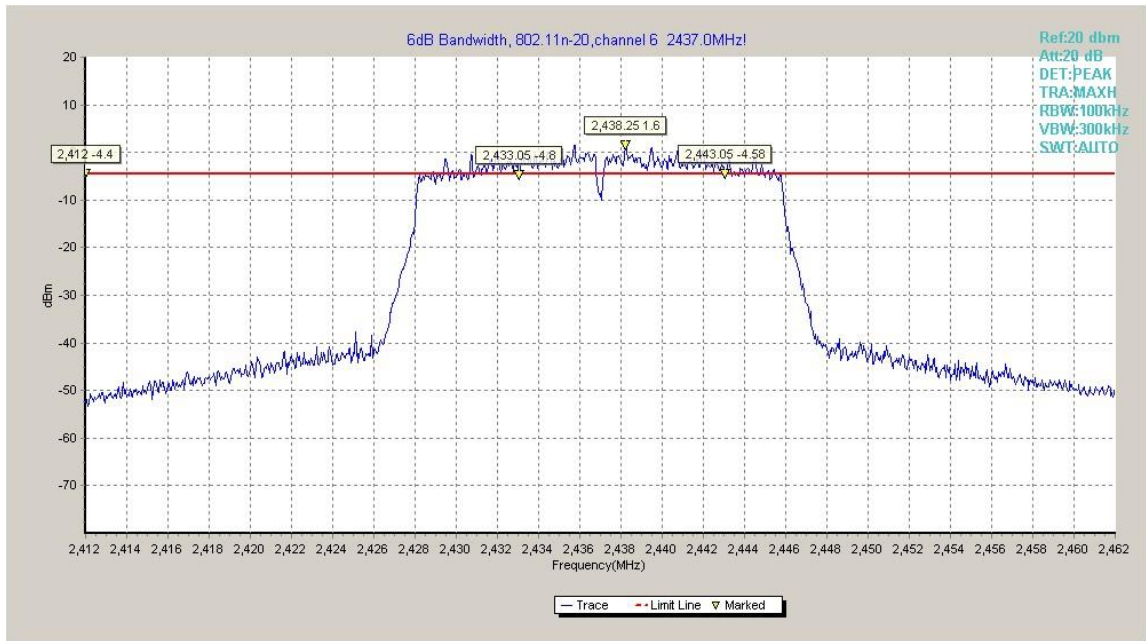


Fig.A.4.8 Occupied 6dB Bandwidth (802.11n-HT20, Ch 6)



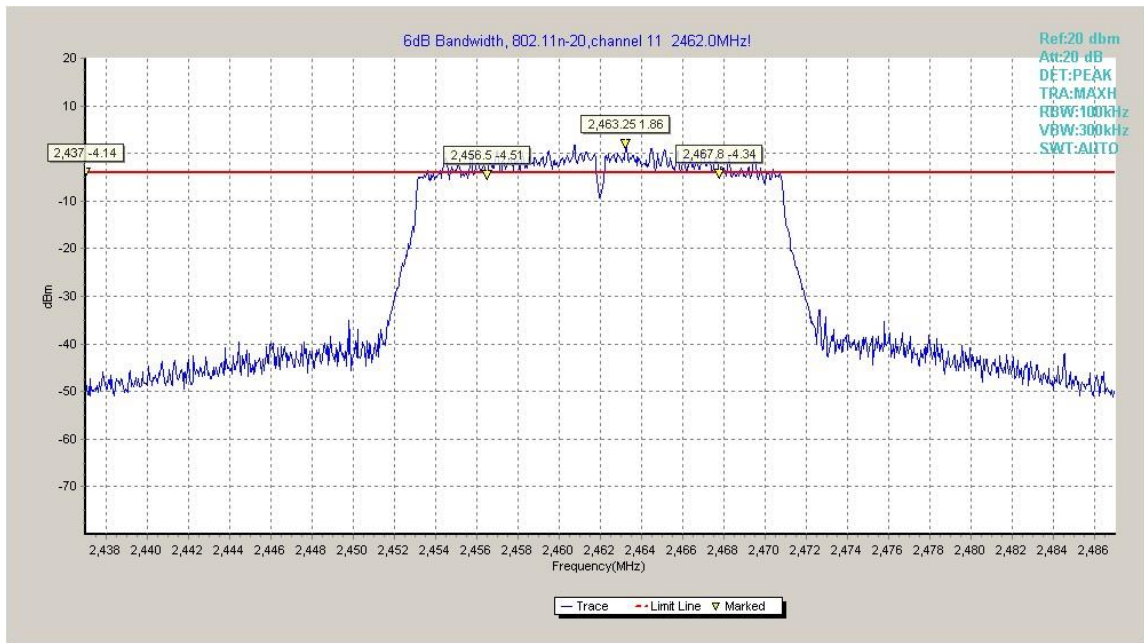


Fig.A.4.9 Occupied 6dB Bandwidth (802.11n-HT20, Ch 11)

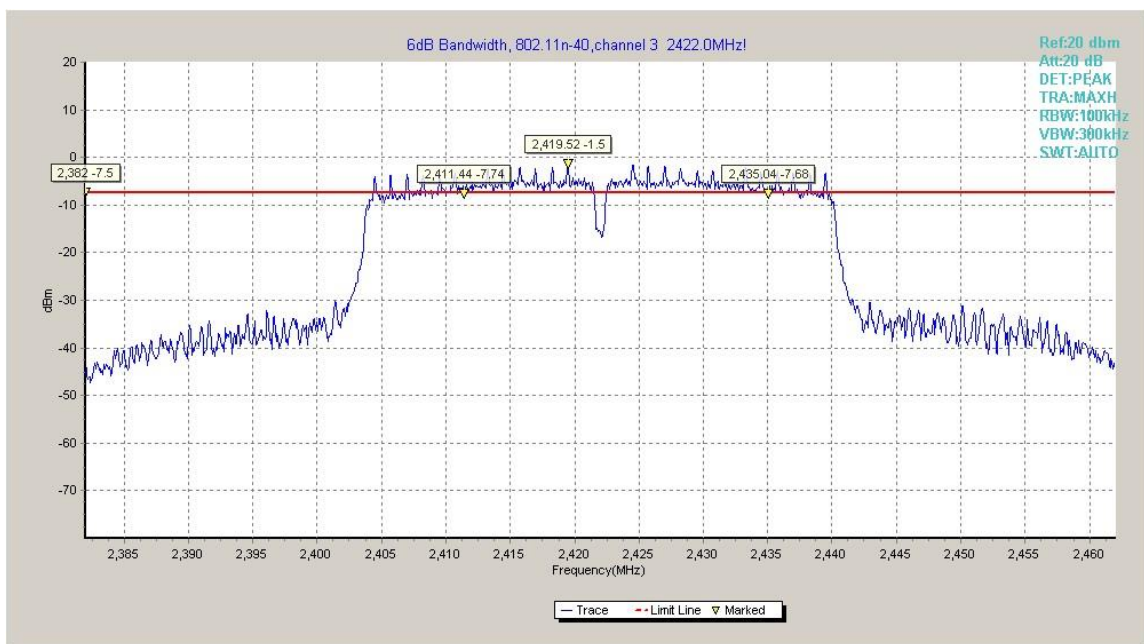
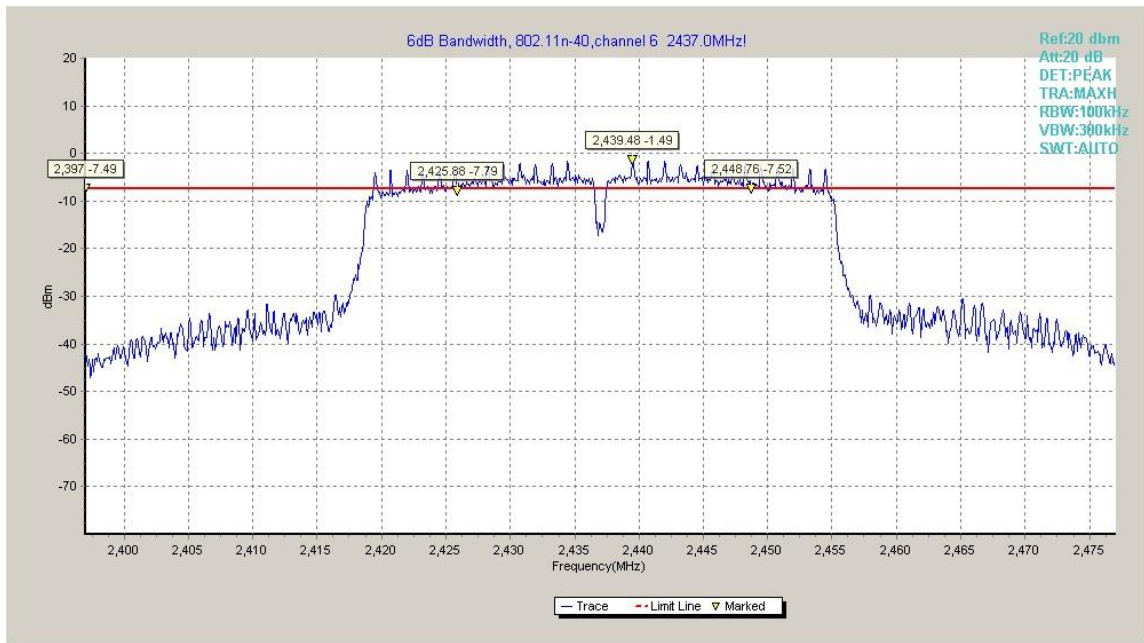
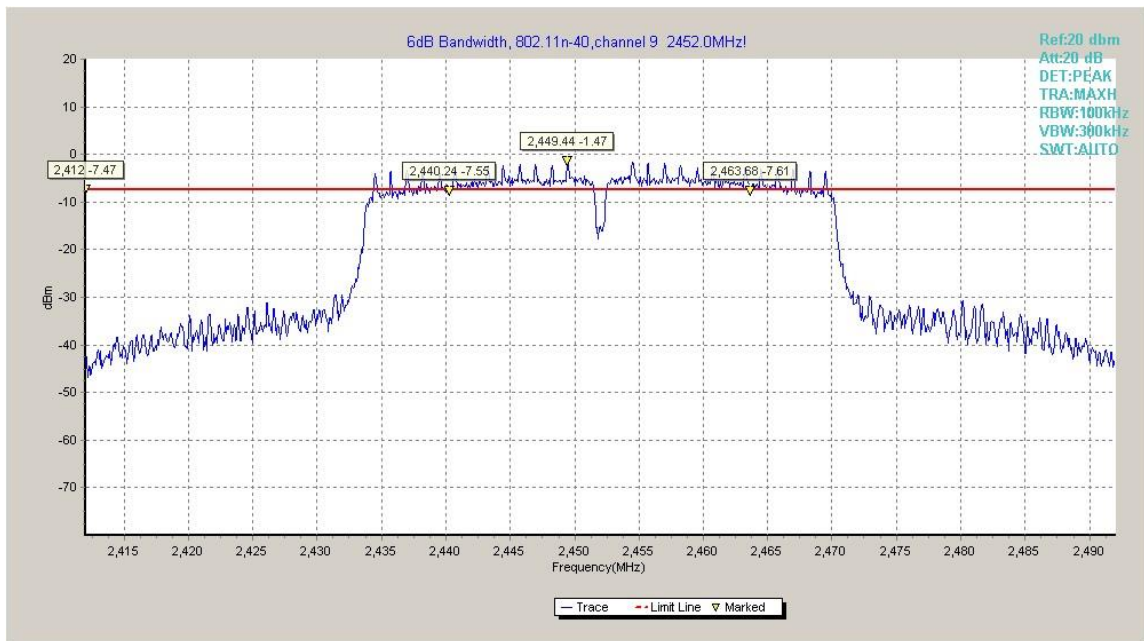


Fig.A.4.10 Occupied 6dB Bandwidth (802.11n-40MHz, Ch 3)



**Fig.A.4.11 Occupied 6dB Bandwidth (802.11n-HT40, Ch 6)**



**Fig.A.4.12 Occupied 6dB Bandwidth (802.11n-HT40, Ch 9)**

### **A.5. Band Edges Compliance**

**Method of Measurement: See ANSI C63.10-2013-clause 6.10.4**

Connect the spectrum analyzer to the EUT using an appropriate RF cable connected to the EUT output. Configure the spectrum analyzer settings as described below.

- a) Set Span = 100MHz
- b) Sweep Time: coupled
- c) Set the RBW= 100 kHz
- c) Set the VBW= 300 kHz
- d) Detector: Peak
- e) Trace: Max hold

**Measurement Limit:**

Standard	Limit (dBc)
FCC 47 CFR Part 15.247 (d)	> 20

**EUT ID: EUT2**

**Measurement Result:**

#### **802.11b/g mode**

Mode	Channel	Test Results	Conclusion
802.11b	1	Fig.A.5.1	<b>P</b>
	11	Fig.A.5.2	<b>P</b>
802.11g	1	Fig.A.5.3	<b>P</b>
	11	Fig.A.5.4	<b>P</b>

#### **802.11n-HT20 mode**

Mode	Channel	Test Results	Conclusion
802.11n (HT20)	1	Fig.A.5.5	<b>P</b>
	11	Fig.A.5.6	<b>P</b>

#### **802.11n-HT40 mode**

Mode	Channel	Test Results	Conclusion
802.11n (HT40)	3	Fig.A.5.7	<b>P</b>
	9	Fig.A.5.8	<b>P</b>

**Conclusion: Pass**

**Test graphs as below:**

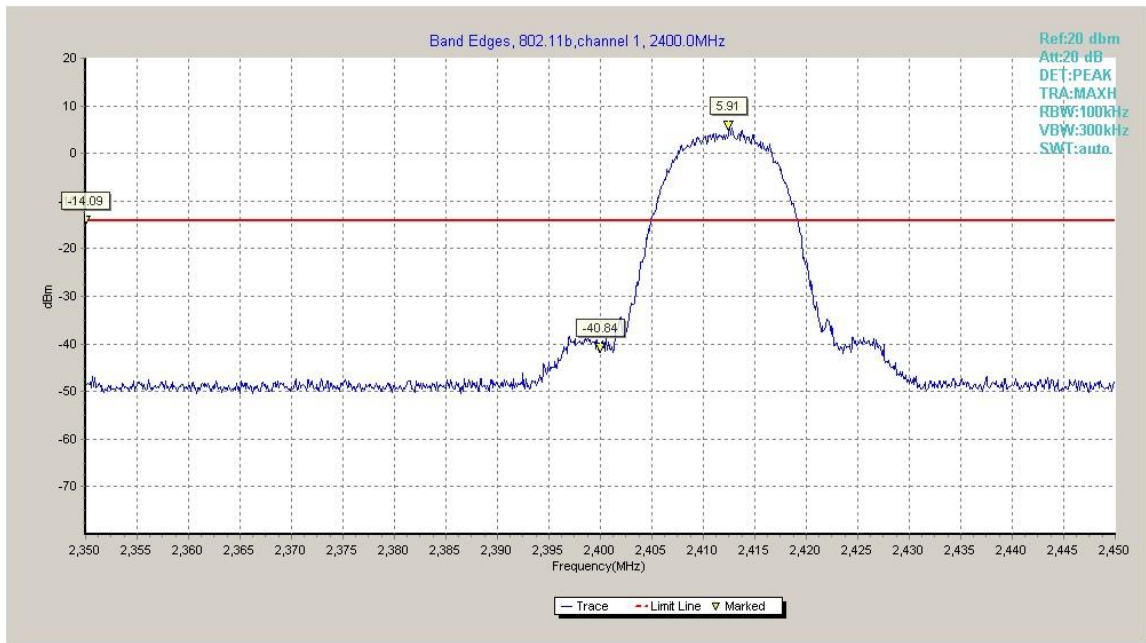


Fig.A.5.1 Band Edges (802.11b, Ch 1)

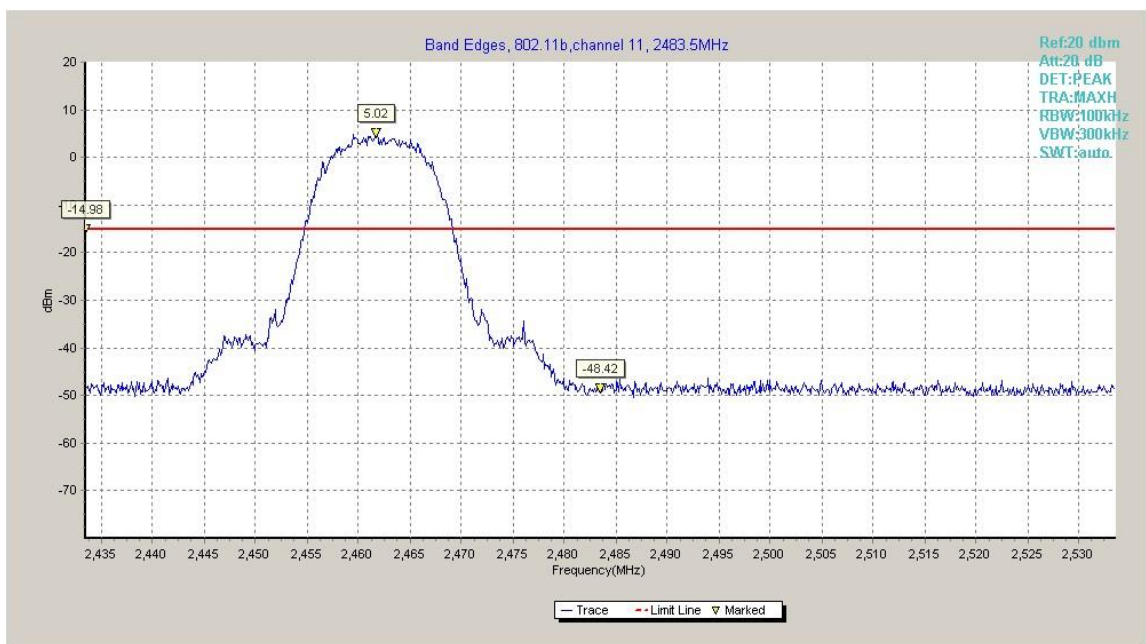


Fig.A.5.2 Band Edges (802.11b, Ch 11)





Fig.A.5.3 Band Edges (802.11g, Ch 1)

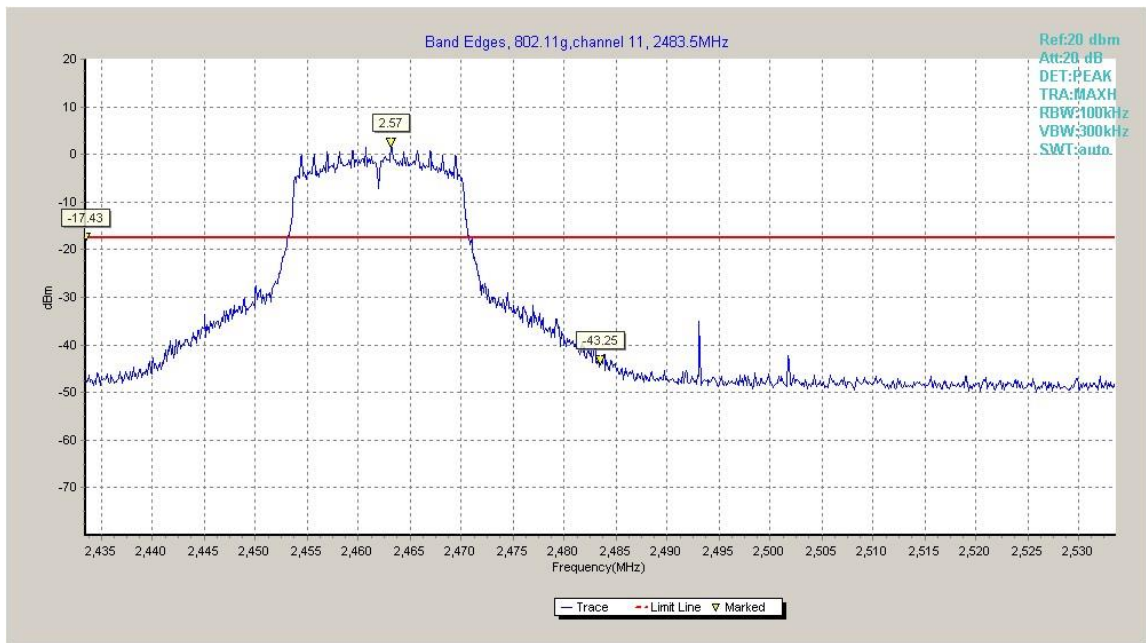
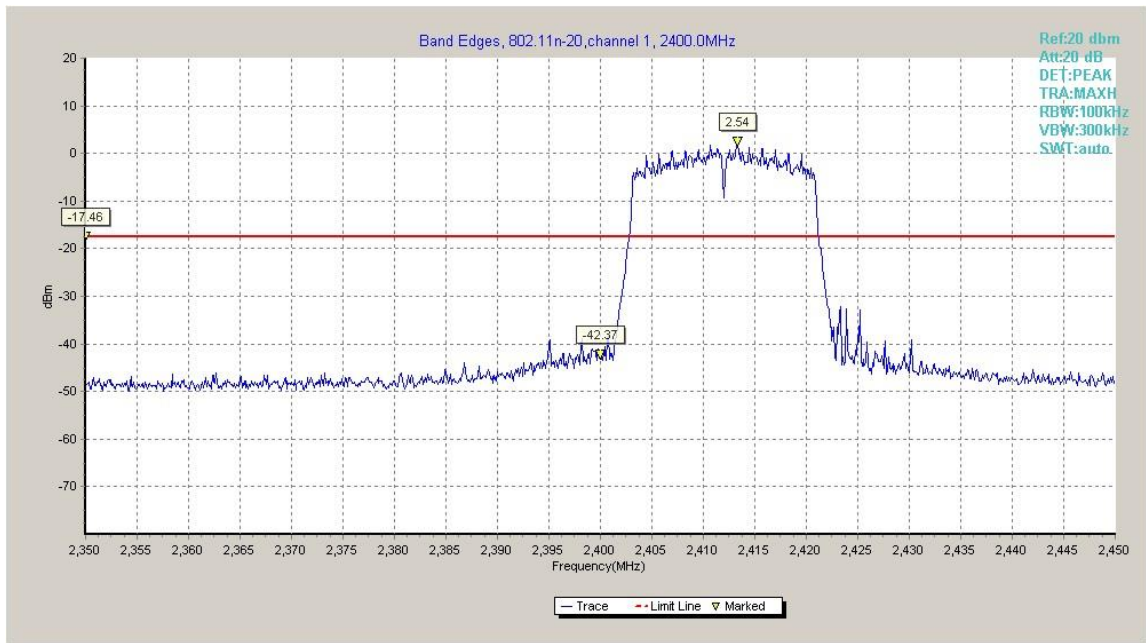
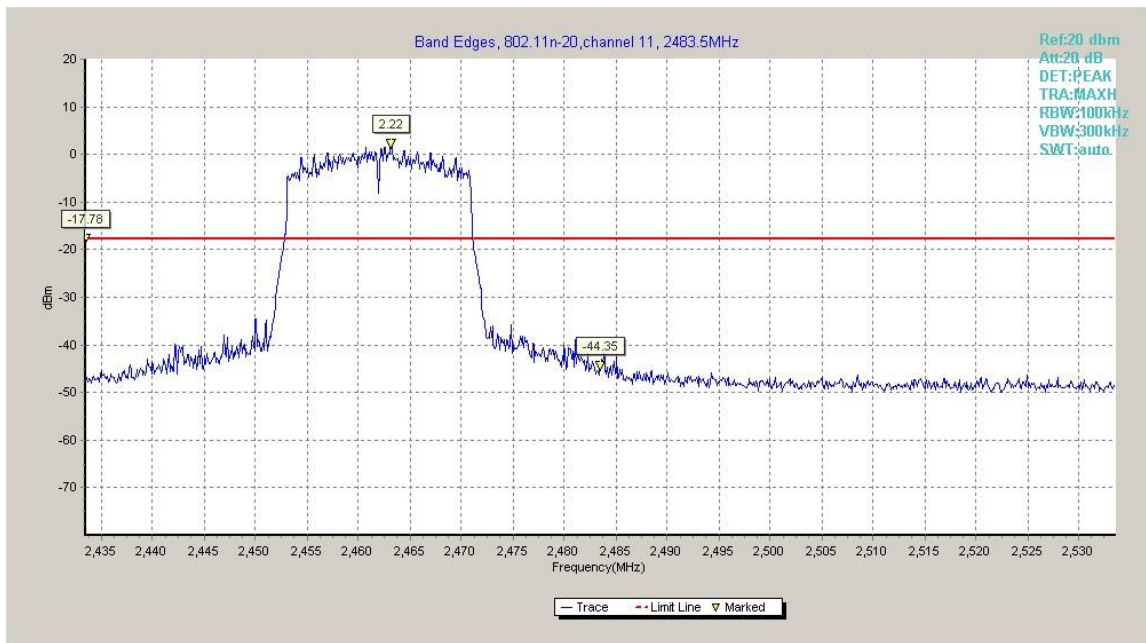


Fig.A.5.4 Band Edges (802.11g, Ch 11)



**Fig.A.5.5 Band Edges (802.11n-HT20, Ch 1)**



**Fig.A.5.6 Band Edges (802.11n-HT20, Ch 11)**

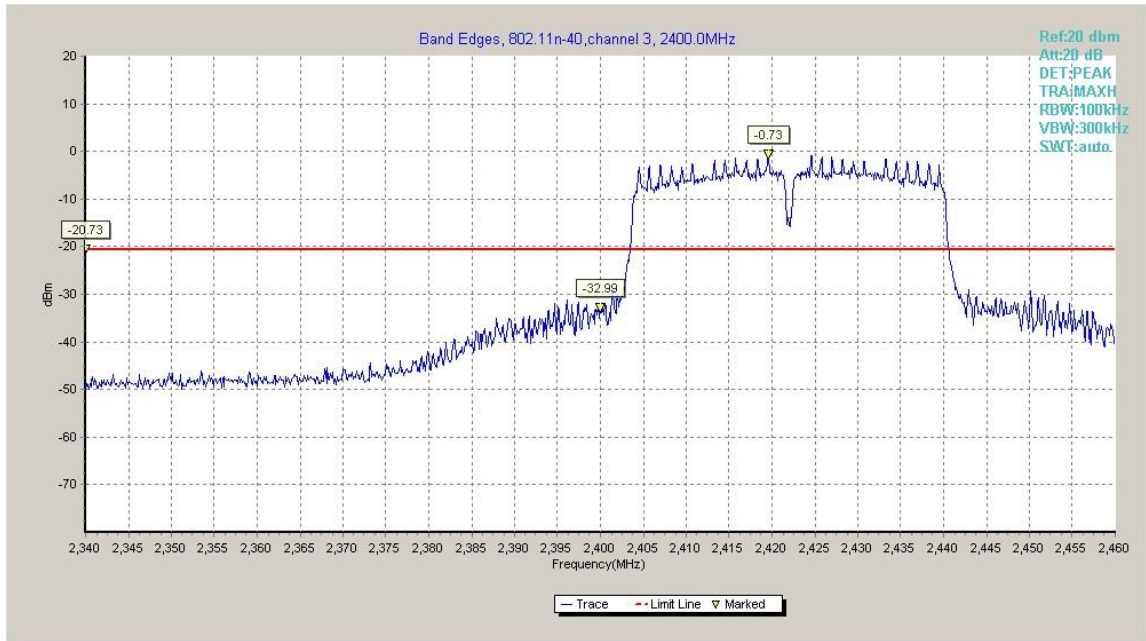


Fig.A.5.7 Band Edges (802.11n-HT40, Ch 3)

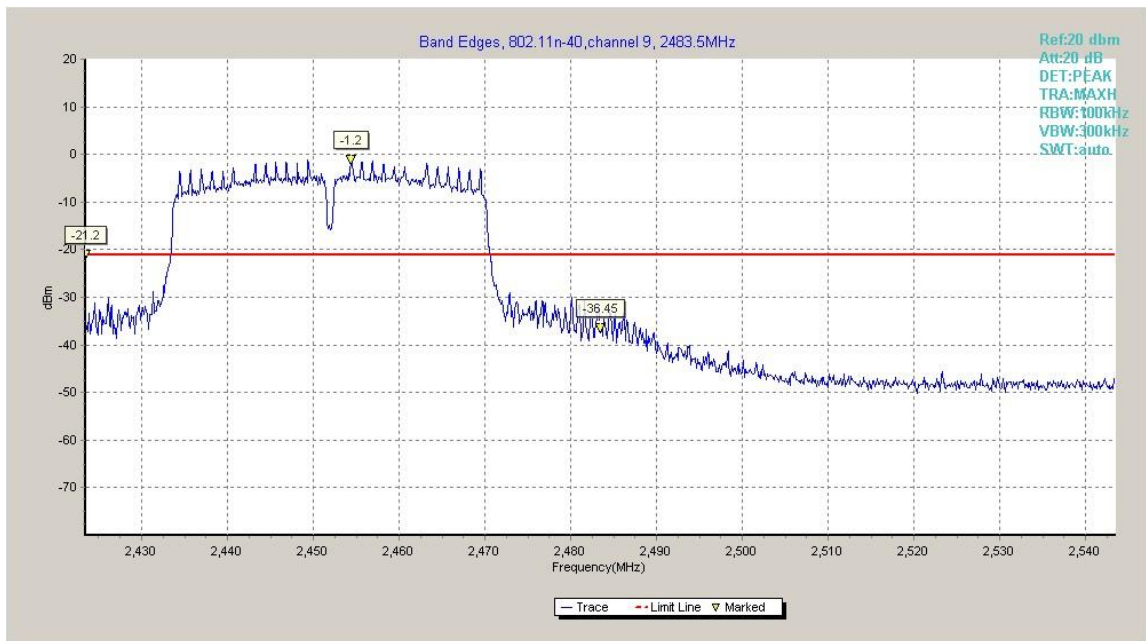


Fig.A.5.8 Band Edges (802.11n-HT40, Ch 9)



**A.6. Transmitter Spurious Emission**

**A.6.1 Transmitter Spurious Emission – Conducted**

**Method of Measurement: See ANSI C63.10-2013-clause 11.11.2**

Establish a reference level by using the following procedure:

- a) Set instrument center frequency to DTS channel center frequency
- b) Set the span to  $\geq 1.5$  times the DTS bandwidth
- c) Set the RBW= 100 kHz
- d) Set the VBW= 300 kHz
- e) Detector = Peak
- f) Sweep time = auto couple
- g) Trace mode = max hold
- h) Allow trace to fully stabilize
- i) Use the peak marker function to determine the maximum PSD level

Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

Establish an emission level by using the following procedure:

- a) Set the center frequency and span to encompass frequency range to be measured.
- b) Set the RBW = 100 kHz.
- c) Set the VBW = 300 kHz.
- d) Detector = peak.
- e) Sweep time = auto couple.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.

**Measurement Limit:**

Standard	Limit
FCC 47 CFR Part 15.247 (d)	20dB below peak output power in 100 kHz bandwidth

**EUT ID: EUT2**

**Measurement Results:**

**802.11b mode**

<b>MODE</b>	<b>Channel</b>	<b>Frequency Range</b>	<b>Test Results</b>	<b>Conclusion</b>
802.11b	1	2.412 GHz	Fig.A.6.1.1	<b>P</b>
		30 MHz ~ 1 GHz	Fig.A.6.1.2	<b>P</b>
		1 GHz ~ 2.5 GHz	Fig.A.6.1.3	<b>P</b>
		2.5 GHz ~ 7.5 GHz	Fig.A.6.1.4	<b>P</b>
		7.5 GHz ~ 10 GHz	Fig.A.6.1.5	<b>P</b>
		10 GHz ~ 15 GHz	Fig.A.6.1.6	<b>P</b>
		15 GHz ~ 20 GHz	Fig.A.6.1.7	<b>P</b>
		20 GHz ~ 26 GHz	Fig.A.6.1.8	<b>P</b>
	6	2.437 GHz	Fig.A.6.1.9	<b>P</b>
		30 MHz ~ 1 GHz	Fig.A.6.1.10	<b>P</b>
		1 GHz ~ 2.5 GHz	Fig.A.6.1.11	<b>P</b>
		2.5 GHz ~ 7.5 GHz	Fig.A.6.1.12	<b>P</b>
		7.5 GHz ~ 10 GHz	Fig.A.6.1.13	<b>P</b>
		10 GHz ~ 15 GHz	Fig.A.6.1.14	<b>P</b>
		15 GHz ~ 20 GHz	Fig.A.6.1.15	<b>P</b>
		20 GHz ~ 26 GHz	Fig.A.6.1.16	<b>P</b>
	11	2.462 GHz	Fig.A.6.1.17	<b>P</b>
		30 MHz ~ 1 GHz	Fig.A.6.1.18	<b>P</b>
		1 GHz ~ 2.5 GHz	Fig.A.6.1.19	<b>P</b>
		2.5 GHz ~ 7.5 GHz	Fig.A.6.1.20	<b>P</b>
		7.5 GHz ~ 10 GHz	Fig.A.6.1.21	<b>P</b>
		10 GHz ~ 15 GHz	Fig.A.6.1.22	<b>P</b>
		15 GHz ~ 20 GHz	Fig.A.6.1.23	<b>P</b>
		20 GHz ~ 26 GHz	Fig.A.6.1.24	<b>P</b>

**802.11g mode**

<b>MODE</b>	<b>Channel</b>	<b>Frequency Range</b>	<b>Test Results</b>	<b>Conclusion</b>
802.11g	1	2.412 GHz	Fig.A.6.1.25	<b>P</b>
		30 MHz ~ 1 GHz	Fig.A.6.1.26	<b>P</b>
		1 GHz ~ 2.5 GHz	Fig.A.6.1.27	<b>P</b>
		2.5 GHz ~ 7.5 GHz	Fig.A.6.1.28	<b>P</b>
		7.5 GHz ~ 10 GHz	Fig.A.6.1.29	<b>P</b>
		10 GHz ~ 15 GHz	Fig.A.6.1.30	<b>P</b>
		15 GHz ~ 20 GHz	Fig.A.6.1.31	<b>P</b>
		20 GHz ~ 26 GHz	Fig.A.6.1.32	<b>P</b>
	6	2.437 GHz	Fig.A.6.1.33	<b>P</b>
		30 MHz ~ 1 GHz	Fig.A.6.1.34	<b>P</b>
		1 GHz ~ 2.5 GHz	Fig.A.6.1.35	<b>P</b>
		2.5 GHz ~ 7.5 GHz	Fig.A.6.1.36	<b>P</b>
		7.5 GHz ~ 10 GHz	Fig.A.6.1.37	<b>P</b>
		10 GHz ~ 15 GHz	Fig.A.6.1.38	<b>P</b>
		15 GHz ~ 20 GHz	Fig.A.6.1.39	<b>P</b>
		20 GHz ~ 26 GHz	Fig.A.6.1.40	<b>P</b>
	11	2.462 GHz	Fig.A.6.1.41	<b>P</b>
		30 MHz ~ 1 GHz	Fig.A.6.1.42	<b>P</b>
		1 GHz ~ 2.5 GHz	Fig.A.6.1.43	<b>P</b>
		2.5 GHz ~ 7.5 GHz	Fig.A.6.1.44	<b>P</b>
		7.5 GHz ~ 10 GHz	Fig.A.6.1.45	<b>P</b>
		10 GHz ~ 15 GHz	Fig.A.6.1.46	<b>P</b>
		15 GHz ~ 20 GHz	Fig.A.6.1.47	<b>P</b>
		20 GHz ~ 26 GHz	Fig.A.6.1.48	<b>P</b>

**802.11n-HT20 mode**

<b>MODE</b>	<b>Channel</b>	<b>Frequency Range</b>	<b>Test Results</b>	<b>Conclusion</b>
802.11n (HT20)	1	2.412 GHz	Fig.A.6.1.49	<b>P</b>
		30 MHz ~ 1 GHz	Fig.A.6.1.50	<b>P</b>
		1 GHz ~ 2.5 GHz	Fig.A.6.1.51	<b>P</b>
		2.5 GHz ~ 7.5 GHz	Fig.A.6.1.52	<b>P</b>
		7.5 GHz ~ 10 GHz	Fig.A.6.1.53	<b>P</b>
		10 GHz ~ 15 GHz	Fig.A.6.1.54	<b>P</b>
		15 GHz ~ 20 GHz	Fig.A.6.1.55	<b>P</b>
		20 GHz ~ 26 GHz	Fig.A.6.1.56	<b>P</b>
	6	2.437 GHz	Fig.A.6.1.57	<b>P</b>
		30 MHz ~ 1 GHz	Fig.A.6.1.58	<b>P</b>
		1 GHz ~ 2.5 GHz	Fig.A.6.1.59	<b>P</b>
		2.5 GHz ~ 7.5 GHz	Fig.A.6.1.60	<b>P</b>
		7.5 GHz ~ 10 GHz	Fig.A.6.1.61	<b>P</b>
		10 GHz ~ 15 GHz	Fig.A.6.1.62	<b>P</b>
		15 GHz ~ 20 GHz	Fig.A.6.1.63	<b>P</b>
		20 GHz ~ 26 GHz	Fig.A.6.1.64	<b>P</b>
	11	2.462 GHz	Fig.A.6.1.65	<b>P</b>
		30 MHz ~ 1 GHz	Fig.A.6.1.66	<b>P</b>
		1 GHz ~ 2.5 GHz	Fig.A.6.1.67	<b>P</b>
		2.5 GHz ~ 7.5 GHz	Fig.A.6.1.68	<b>P</b>
		7.5 GHz ~ 10 GHz	Fig.A.6.1.69	<b>P</b>
		10 GHz ~ 15 GHz	Fig.A.6.1.70	<b>P</b>
		15 GHz ~ 20 GHz	Fig.A.6.1.71	<b>P</b>
		20 GHz ~ 26 GHz	Fig.A.6.1.72	<b>P</b>



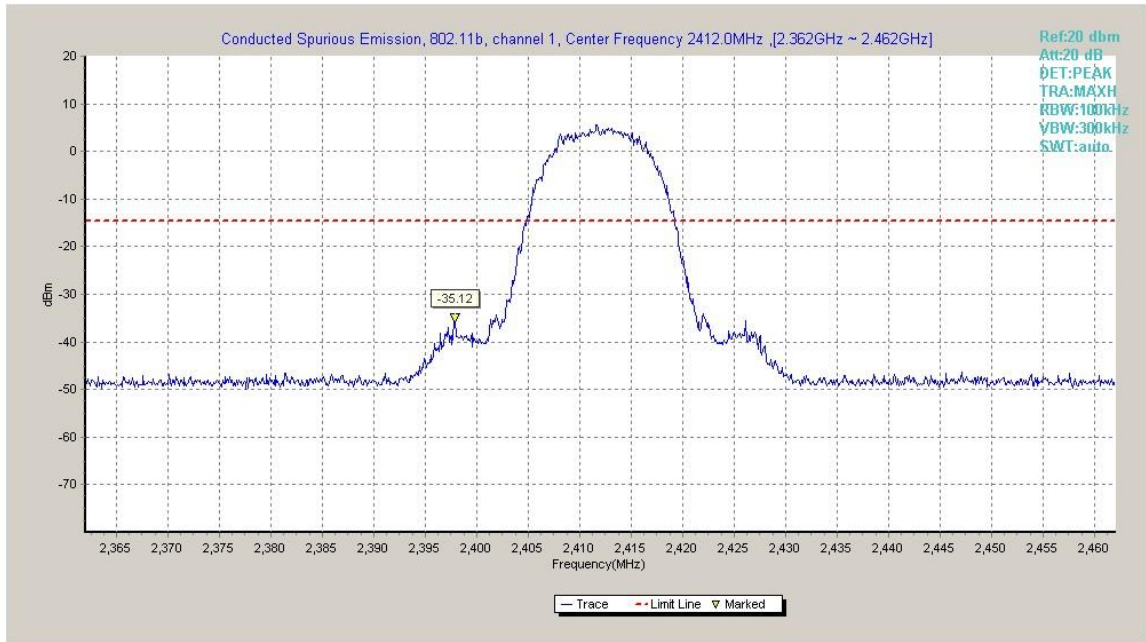
**802.11n-HT40 mode**

MODE	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT40)	3	2.422 GHz	Fig.A.6.1.73	<b>P</b>
		30 MHz ~ 1 GHz	Fig.A.6.1.74	<b>P</b>
		1 GHz ~ 2.5 GHz	Fig.A.6.1.75	<b>P</b>
		2.5 GHz ~ 7.5 GHz	Fig.A.6.1.76	<b>P</b>
		7.5 GHz ~ 10 GHz	Fig.A.6.1.77	<b>P</b>
		10 GHz ~ 15 GHz	Fig.A.6.1.78	<b>P</b>
		15 GHz ~ 20 GHz	Fig.A.6.1.79	<b>P</b>
		20 GHz ~ 26 GHz	Fig.A.6.1.80	<b>P</b>
	6	2.437 GHz	Fig.A.6.1.81	<b>P</b>
		30 MHz ~ 1 GHz	Fig.A.6.1.82	<b>P</b>
		1 GHz ~ 2.5 GHz	Fig.A.6.1.83	<b>P</b>
		2.5 GHz ~ 7.5 GHz	Fig.A.6.1.84	<b>P</b>
		7.5 GHz ~ 10 GHz	Fig.A.6.1.85	<b>P</b>
		10 GHz ~ 15 GHz	Fig.A.6.1.86	<b>P</b>
		15 GHz ~ 20 GHz	Fig.A.6.1.87	<b>P</b>
		20 GHz ~ 26 GHz	Fig.A.6.1.88	<b>P</b>
	9	2.452 GHz	Fig.A.6.1.89	<b>P</b>
		30 MHz ~ 1 GHz	Fig.A.6.1.90	<b>P</b>
		1 GHz ~ 2.5 GHz	Fig.A.6.1.91	<b>P</b>
		2.5 GHz ~ 7.5 GHz	Fig.A.6.1.92	<b>P</b>
		7.5 GHz ~ 10 GHz	Fig.A.6.1.93	<b>P</b>
		10 GHz ~ 15 GHz	Fig.A.6.1.94	<b>P</b>
		15 GHz ~ 20 GHz	Fig.A.6.1.95	<b>P</b>
		20 GHz ~ 26 GHz	Fig.A.6.1.96	<b>P</b>

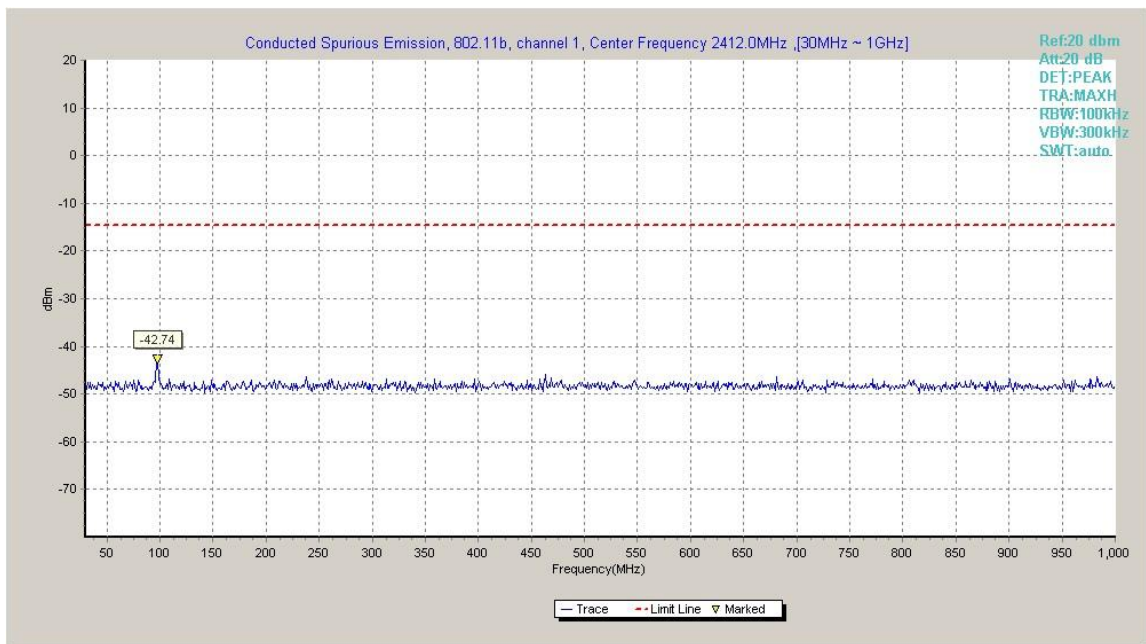
**Conclusion: Pass**

**Test graphs as below:**

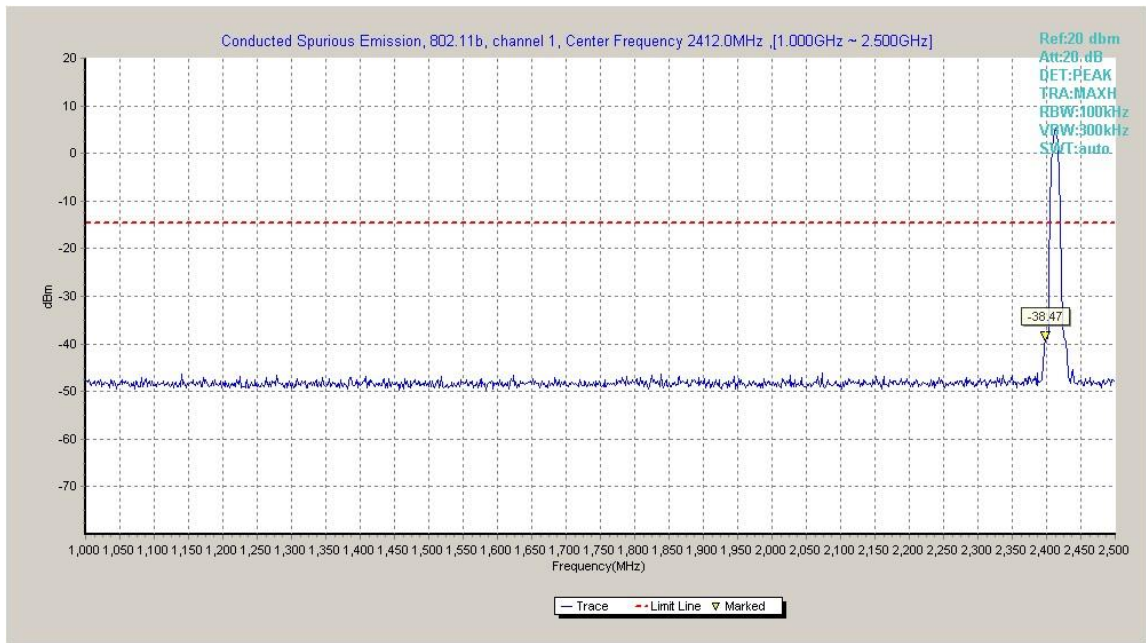




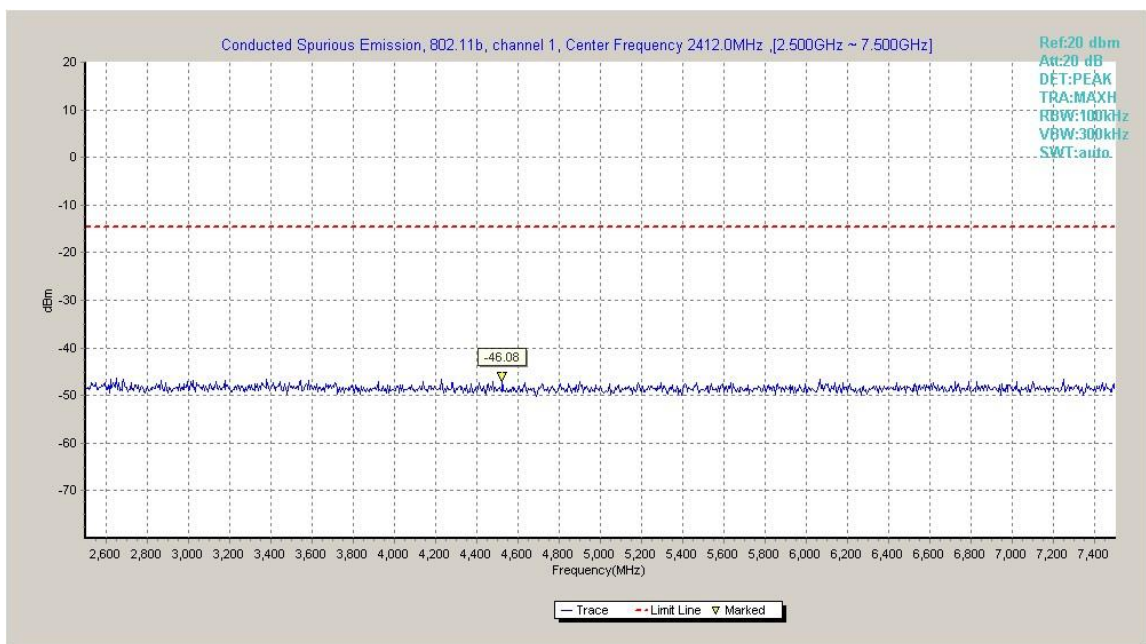
**Fig.A.6.1.1 Transmitter Spurious Emission - Conducted (802.11b, Ch1, Center Frequency)**



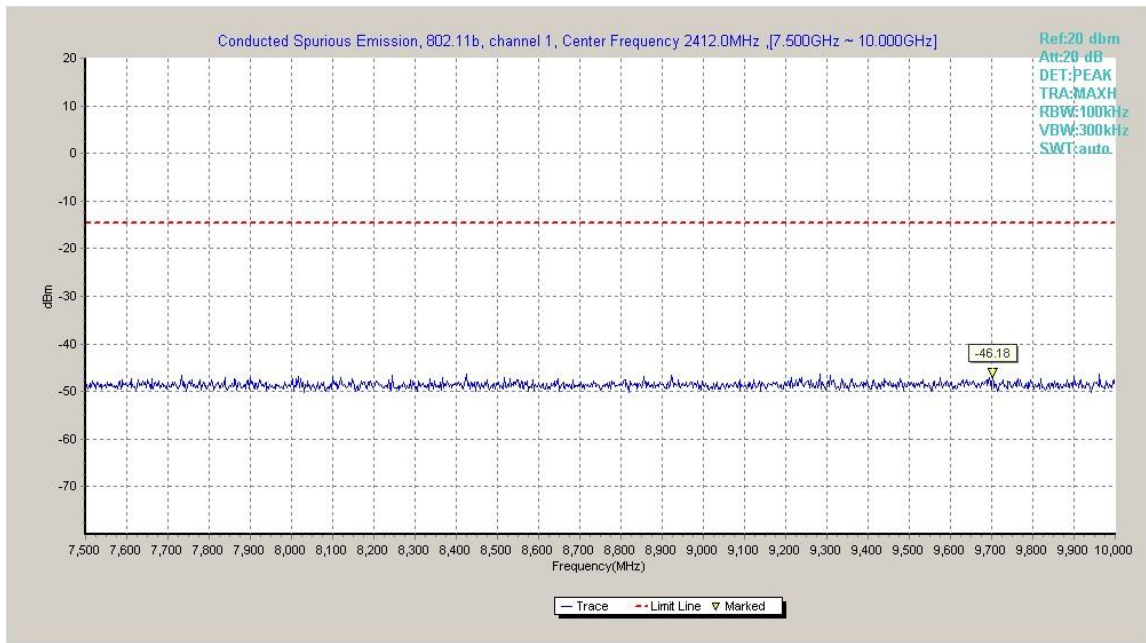
**Fig.A.6.1.2 Transmitter Spurious Emission - Conducted (802.11b, Ch1, 30 MHz-1 GHz)**



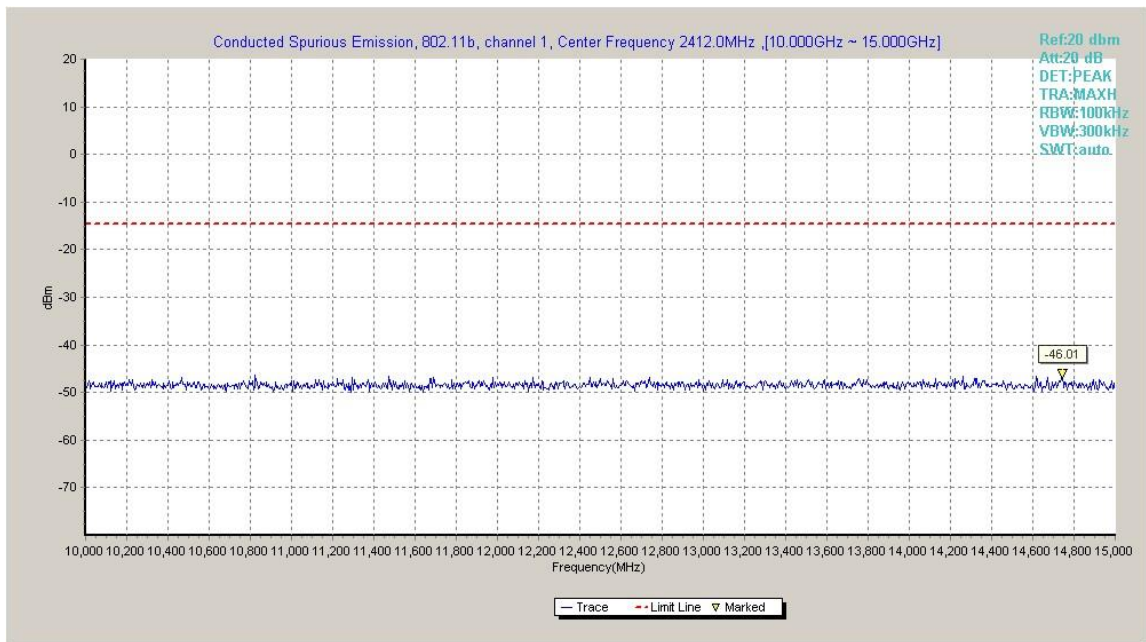
**Fig.A.6.1.3 Transmitter Spurious Emission - Conducted (802.11b, Ch1, 1 GHz-2.5 GHz)**



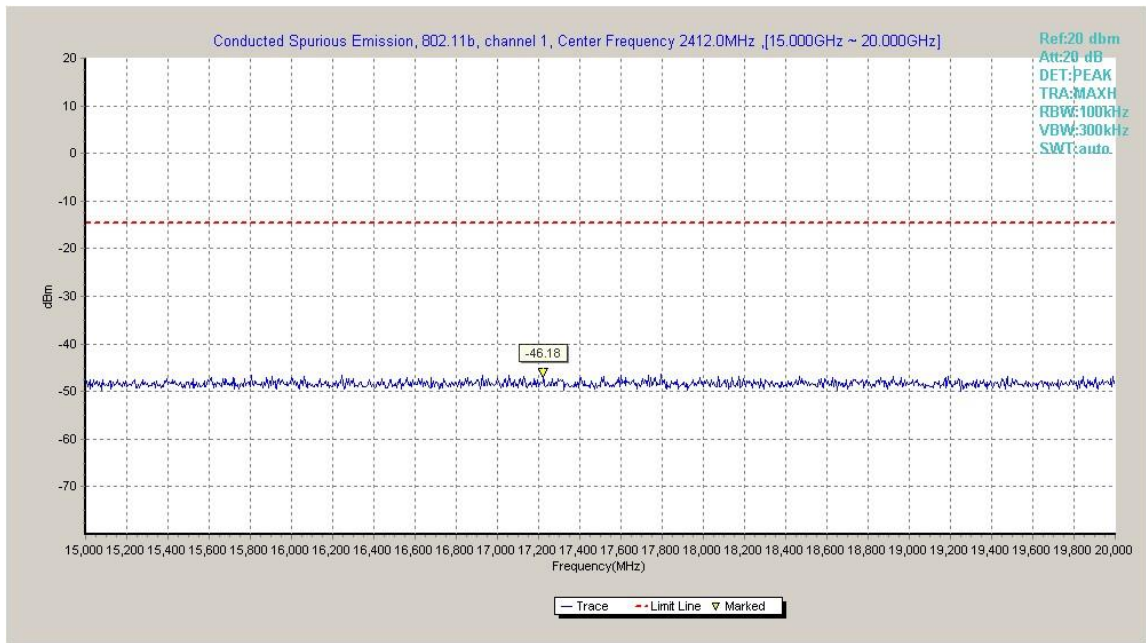
**Fig.A.6.1.4 Transmitter Spurious Emission - Conducted (802.11b, Ch1, 2.5 GHz-7.5 GHz)**



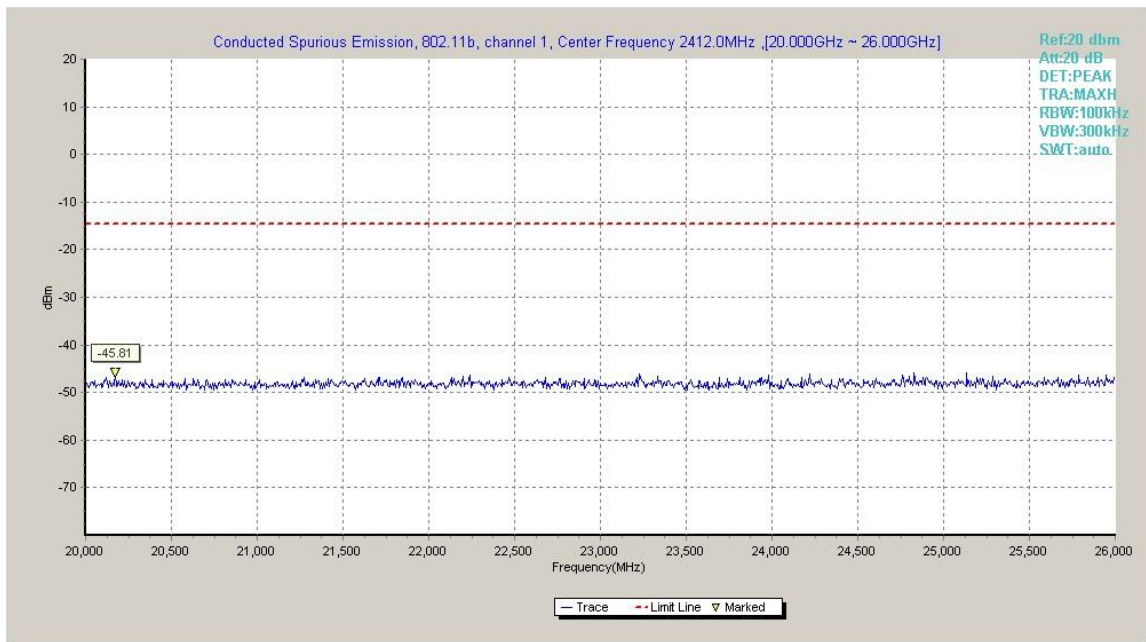
**Fig.A.6.1.5 Transmitter Spurious Emission - Conducted (802.11b, Ch1, 7.5 GHz-10 GHz)**



**Fig.A.6.1.6 Transmitter Spurious Emission - Conducted (802.11b, Ch1, 10 GHz-15 GHz)**

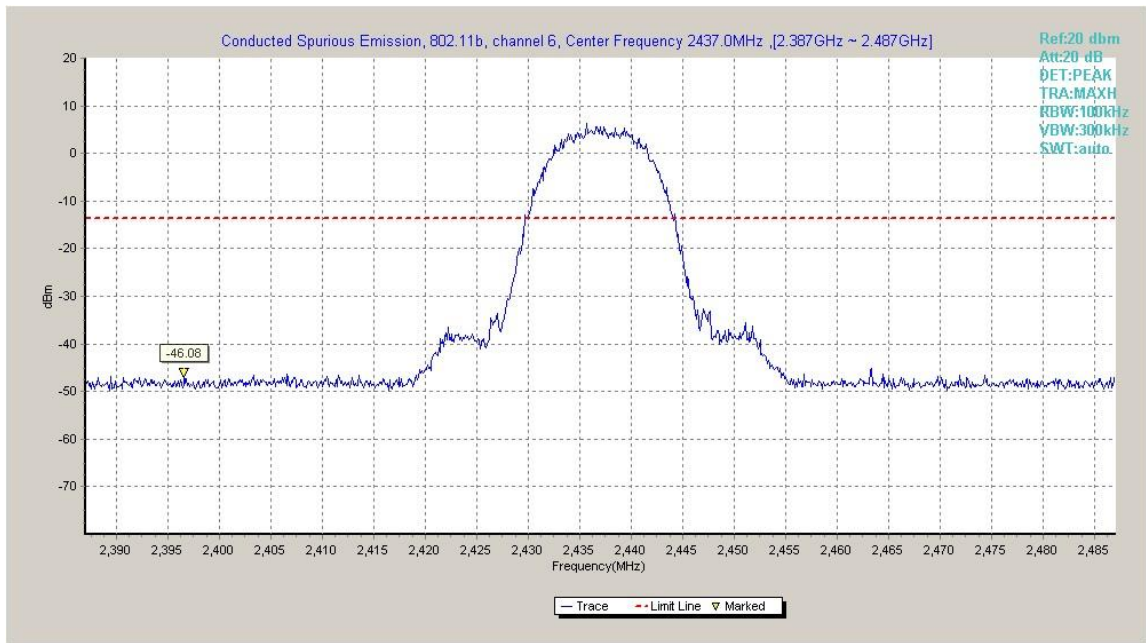


**Fig.A.6.1.7 Transmitter Spurious Emission - Conducted (802.11b, Ch1, 15 GHz-20 GHz)**

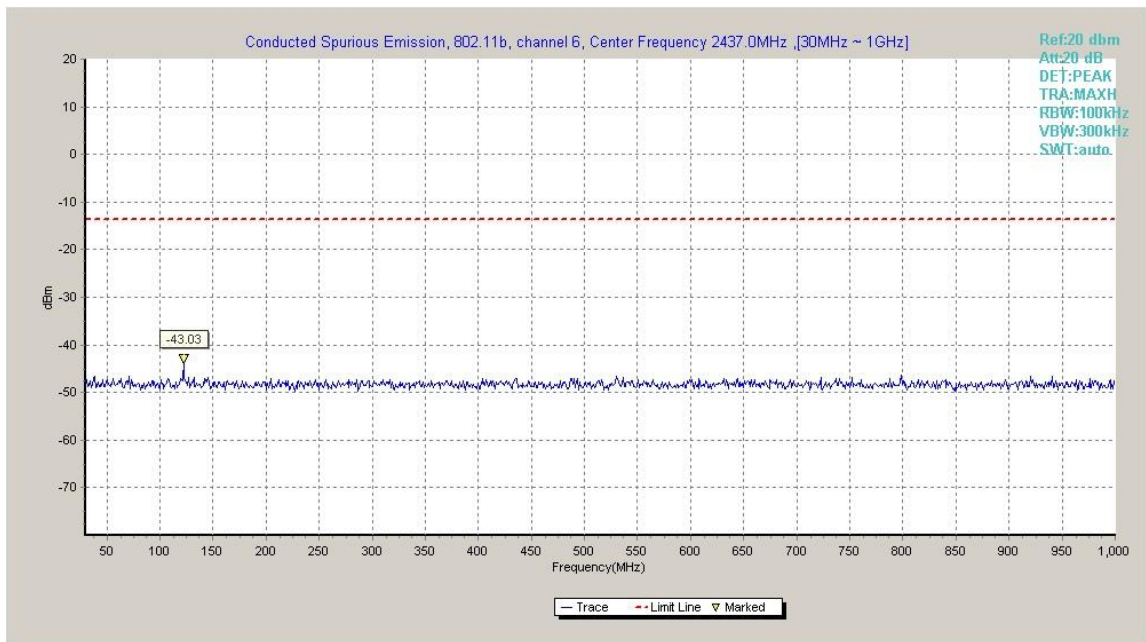


**Fig.A.6.1.8 Transmitter Spurious Emission - Conducted (802.11b, Ch1, 20 GHz-26 GHz)**





**Fig.A.6.1.9 Transmitter Spurious Emission - Conducted (802.11b, Ch6, Center Frequency)**



**Fig.A.6.1.10 Transmitter Spurious Emission - Conducted (802.11b, Ch6, 30 MHz-1 GHz)**