

# FCC WIFI TEST REPORT

No. 150934-WIFI

For

OBI Connect FZE

Product Name: Mobile Phone

Model Name: Obi Worldphone SJ1.5

Trade Name: OBI

Issued Date: 2015-12-14

**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 GCCT.

To verify test report authenticity, send full test report to Email: gaoxiaoqing0310@126.com

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**GENERAL SUMMARY**

<b>Product Name</b>	Mobile Phone
<b>Model Name</b>	Obi Worldphone SJ1.5
<b>Trade Name</b>	OBI
<b>Applicant</b>	OBI Connect FZE
<b>Manufacturer</b>	CK Telecom Limited
<b>Test Laboratory</b>	GCCT, Guangdong Telecommunications Terminal Products Quality Supervision and Testing Center
<b>Reference Standards</b>	FCC CFR 47 Part 15C:“Radio Frequency Devices Sub-Part C: intentional Radiators” ANSI C63.10-2013, “American National Standard for Testing Unlicensed Wireless Devices” KDB 558074 D01 DTS Meas Guidance v03r03
<b>Test Conclusion</b>	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: 2015.12.14
<b>Comment</b>	The test results in this report apply only to the tested sample of the stated device/equipment.

*Approved by:*Luo JianLuo Jian  
Manager*Reviewed by:*Dong XiaoboDong Xiaobo  
Deputy Manager*Tested by:*Gao XiaoqingGao Xiaoqing  
Test Engineer

## 1. Test Laboratory

### 1.1 Testing Location

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

### 1.2 Testing Environment

Environment Data	Temperature(°C)	Humidity(%)
<b>Maximum Ambient</b>	26.2	45
<b>Minimum Ambient</b>	22.5	41

EUT is under testing environment.

### 1.3 Project Data

<b>Project Leader</b>	Dong Xiaobo
<b>Testing Start Date</b>	2015-10-23
<b>Testing End Date</b>	2015-12-14

## 2. Client Information

### 2.1 Applicant Information

Company Name	OBI Connect FZE
Address	B-21,Dubai Airport Free zone, PO BOX 371475, United Arab Emirates
City	Dubai
Postal Code	/
Country	United Arab Emirates

### 2.2 Manufacturer Information

Company Name	CK Telecom Limited
Address	Technology Road.High-Tech Development Zone. Heyuan, Guangdong,P.R.China.
City	Heyuan
Postal Code	/
Country	China

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

#### 3.1 About EUT

<b>Model Name</b>	Obi Worldphone SJ1.5
<b>FCC ID</b>	2AGBLSJ15
<b>Tx Frequency</b>	GSM850:824 ~ 848 MHz PCS1900 : 1850 ~ 1909MHz WCDMA Band V: 826 ~ 846MHz Bluetooth& BLE: 2402 ~ 2480MHz WIFI(802.11b/g/n-20): 2412 ~ 2462MHz WIFI(802.11n-40): 2422 ~ 2452MHz
<b>Rx Frequency</b>	GSM850: 869 ~ 893MHz GSM1900: 1930 ~ 1989MHz WCDMA Band V: 871 ~ 891MHz Bluetooth& BLE: 2402 ~ 2480MHz WIFI(802.11b/g/n-20): 2412 ~ 2462MHz WIFI(802.11n-40): 2422 ~ 2452MHz
<b>Number of Channels</b>	GSM850 :25 GSM1900 : 60 WCDMA Band V: 25 Bluetooth:79 BLE:40 WIFI(802.11b/g/n-20):11 WIFI(802.11n-40):7
<b>Modulation</b>	GSM:GMSK WCDMA:BPSK/QPSK BLE:GFSK Bluetooth: GFSK& $\pi$ /4-DQPSK&8DPSK WIFI:CCK/OFDM
<b>Antenna Gain</b>	GSM850&1900:-0.5dBi WCDMA Band V: -1dBi Bluetooth&BLE&WIFI: -1dBi
<b>Normal Voltage</b>	3.8V
<b>Extreme Low Voltage</b>	3.7V
<b>Extreme High Voltage</b>	4.2V
<b>Extreme Low Temperature</b>	0°C
<b>Extreme High Temperature</b>	40°C

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

Note: high and low voltage values in extreme condition test are given by manufacturer

**3.2 Internal Identification of EUT**

EUT ID *	IMEI	HW Version	SW Version
150934-M01	/	V1.0	OBI-SJ1.5-000-Ver1.5
150934-M02	/	V1.0	OBI-SJ1.5-000-Ver1.5

\*EUT ID: is used to identify the test sample in the lab internally. 150934-M01 and 150934-M02 are the same mobile phone.

**3.3 Internal Identification of AE**

AE ID *	Description	Model	Manufacturer
150934-B01	Battery	OB3000CKA	DONG GUAN DRN NEW ENERGY CO.,LTD.
150934-C01	Adapter	A0D2A5V	DONG GUAN AOHAI POWER TECHNOLOGY CO.,LTD.
150934-B02	Battery	OB3000CKA	DONG GUAN DRN NEW ENERGY CO.,LTD.
150934-C02	Adapter	A0D2A5V	DONG GUAN AOHAI POWER TECHNOLOGY CO.,LTD.

\*AE ID: is used to identify the test sample in the lab internally. 150934-B01 and 150934-B03 are the same accessories, 150934-C01 and 150934-C02 are the same accessories.

## 4. Test Results

### 4.1 Summary of Test Results

No	Test cases	Sample	Verdict
1	Maximum transmit power	M01	Pass
2	Maximum Power Spectral Density	M01	Pass
3	6dB Occupied Bandwidth	M01	Pass
4	Band Edge Compliance	M01	Pass
5	Conducted Transmission Spurious Emission	M01	Pass
6	AC Conducted Emission	M02	Pass
7	Radiated Emissions	M02	Pass
8	Antenna Requirements	M01	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**

<b>Hardware</b>						
No.	Name	Model	SN	Manufacturer	Cal. Date	Cal. Due Date
1	Spectrum Analyzer	N9020A	MY52091261	Agilent	2015.08.21	2016.08.20
2	Switch Unit	/	E0112	/		/
3	Power Meter	N1912A	MY54166002	Agilent	2015.08.21	2016.08.20
4	Power Sensor	N1921A	MY55090055	Agilent	2015.08.21	2016.08.20
<b>Software</b>						
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	2015.08.21	2016.08.20
2	BiCoNilog Antenna	3142E	00142015	ETS-Lindgren	2015.09.15	2017.09.14
3	Horn Antenna	3117	129169	ETS-Lindgren	2015.09.15	2017.09.14
4	Signal Generator	N5183A-5 32	MY49060563	Agilent	2015.08.21	2016.08.20
5	Universal Radio Communication Tester	E5515C	MY48367105	Agilent	2015.08.21	2016.08.20
6	RF Preselector	N9039A	MY48260024	Agilent	/	/
7	Loop Antenna	HFH2	860015/00	R&S	2015.08.21	2016.08.20

**Table 3.List of Accessories**

No.	Name	Model	SN	Manufacturer	Length	Shielding
1	PC	Pavilion dv2	CNC9112F 68	HP	/	/
2	Printer	BOISB-060 4-00	VNF3L523 98	HP	/	/
3	Mouse	M-UAV-DE L8	/	DELL	/	/
4	Power line for printer	I-SHENG	/	/	1.3m	unshielding

5	Power line for PC	A003145	/	/	2.8m	unshielding
6	USB cable	SHIELDED	E174089	/	/	unshielding
7	Adapter	Series PPP009D	HP	/	/	/

## ANNEX A: EUT Photograph

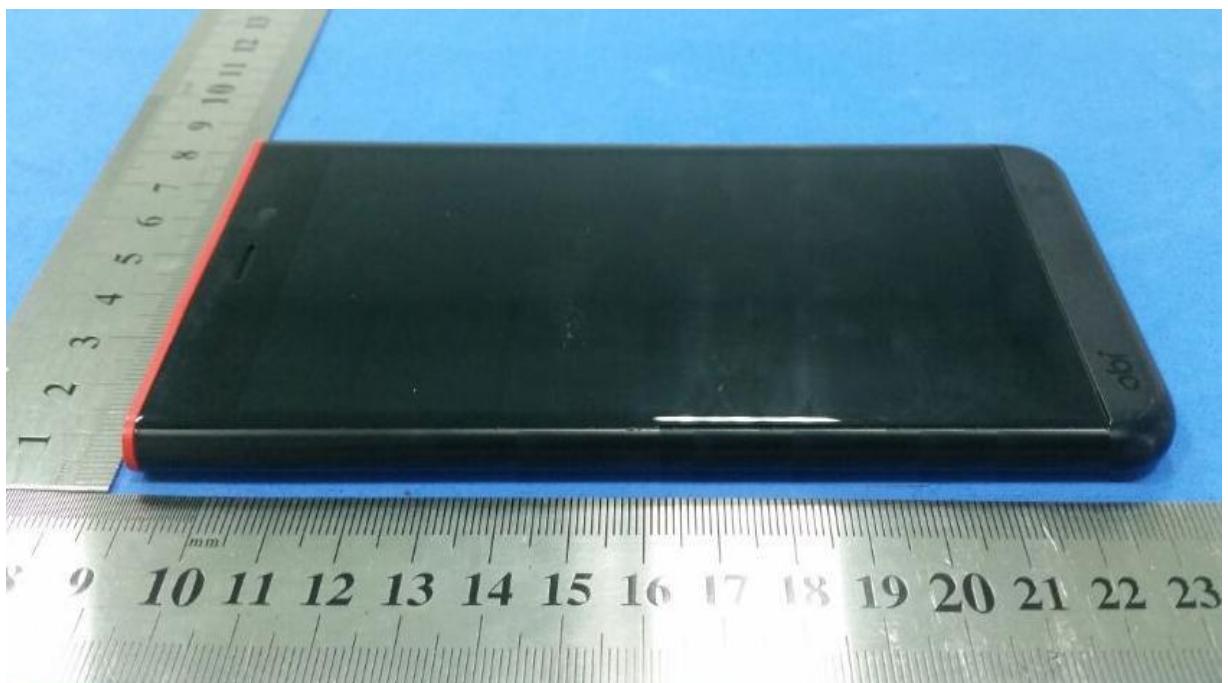
EUT Front View



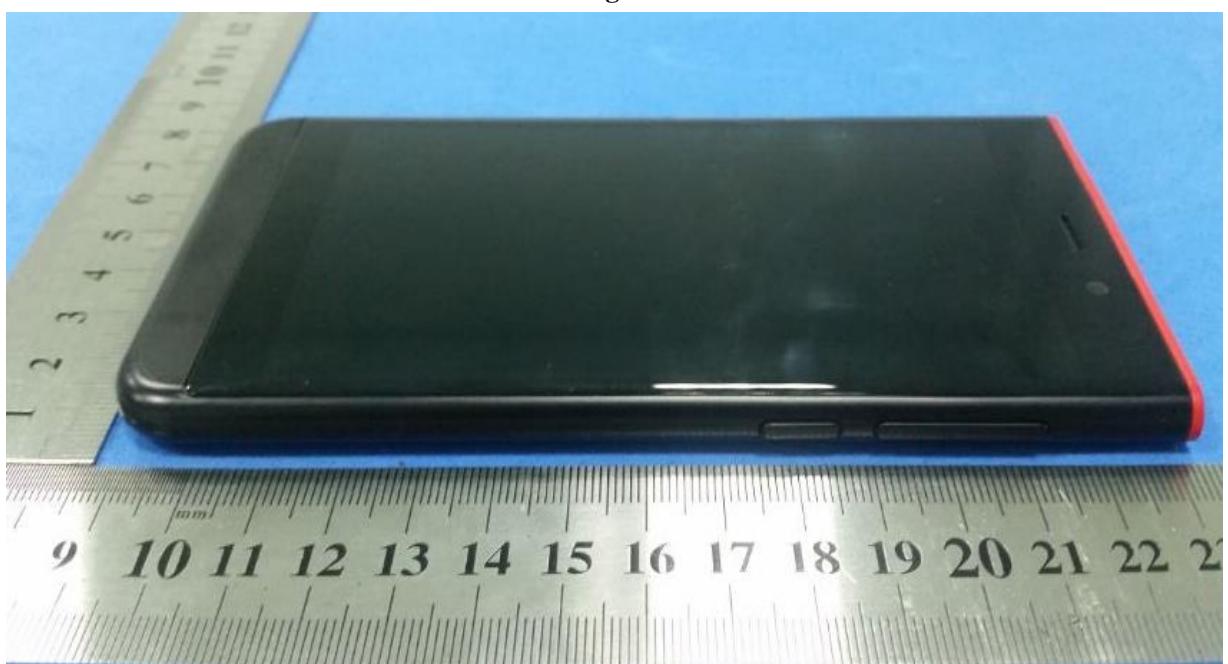
EUT behind View



EUT Left View



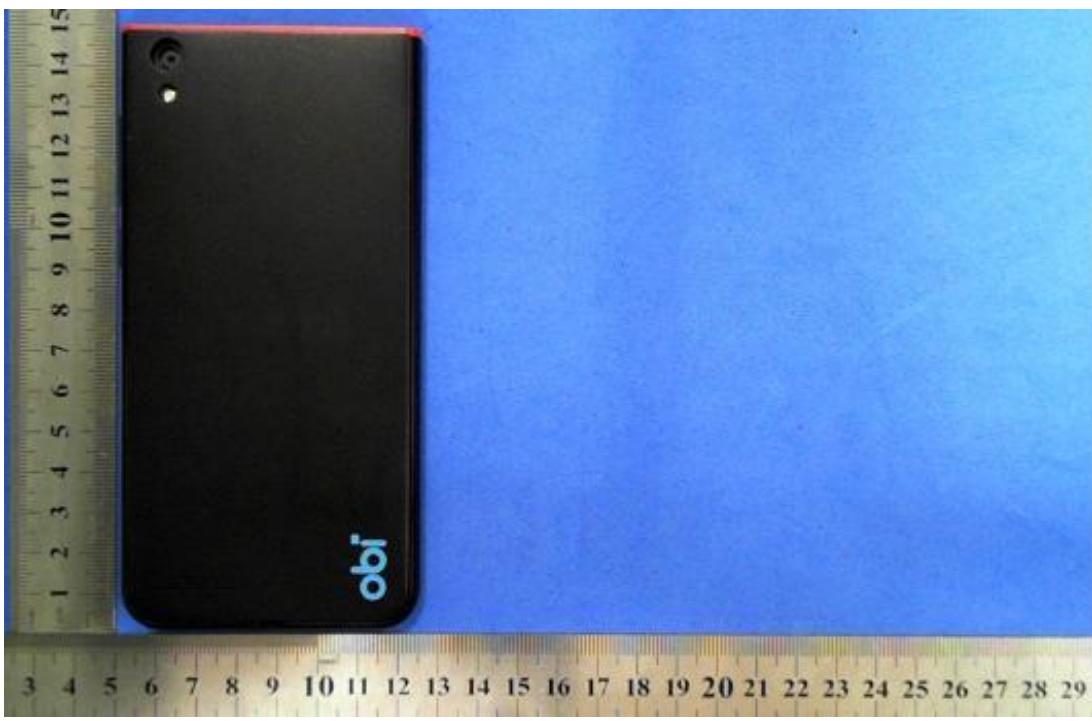
EUT Right View



EUT Top View



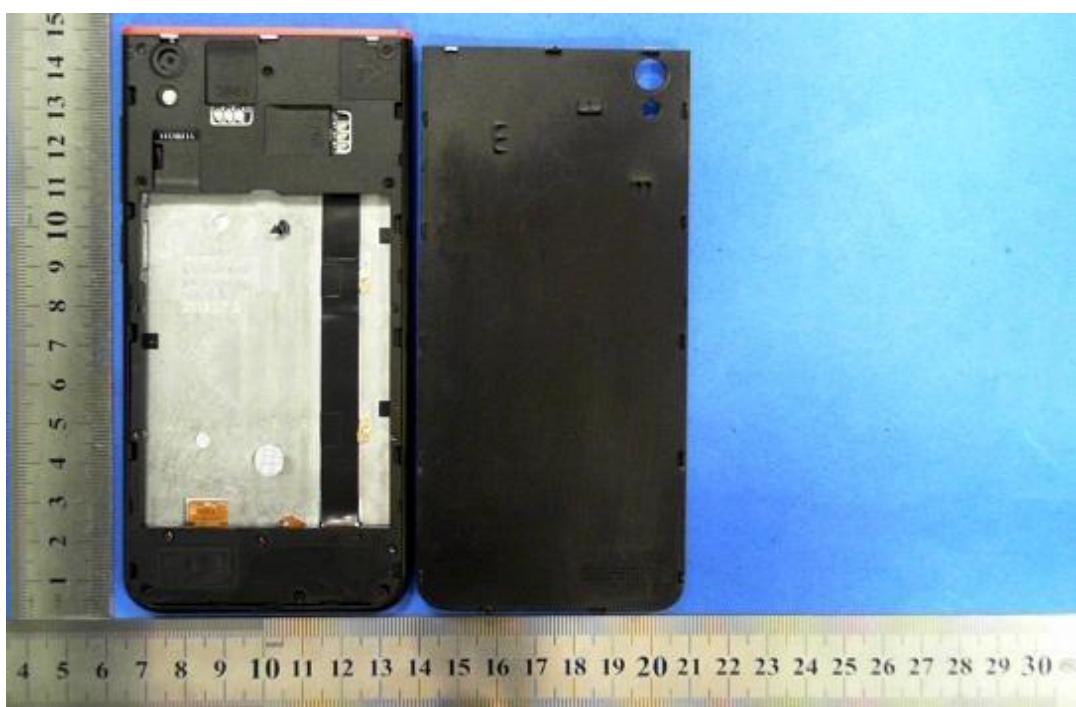
EUT Rear View



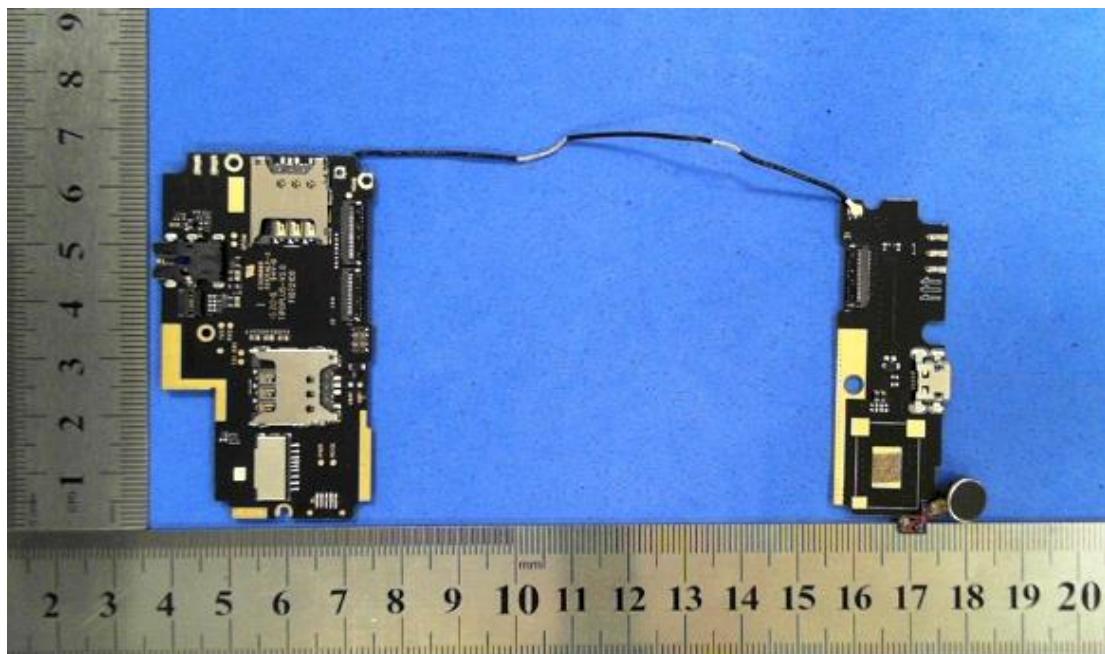
All



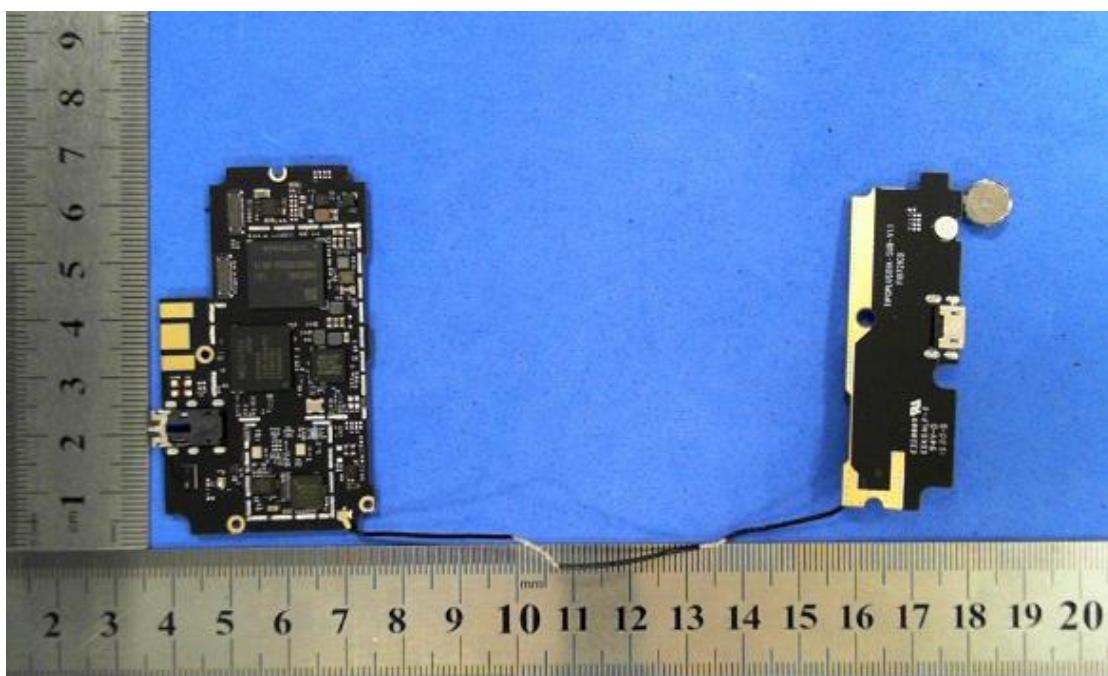
Cover off



Main board Front View



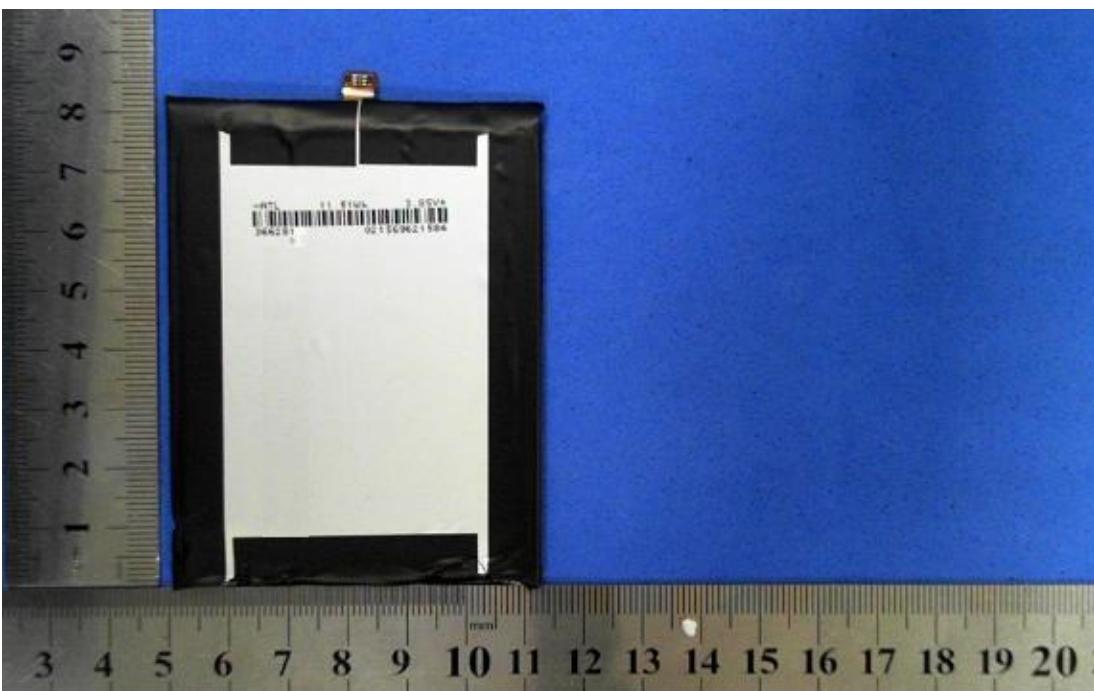
Main board Rear View



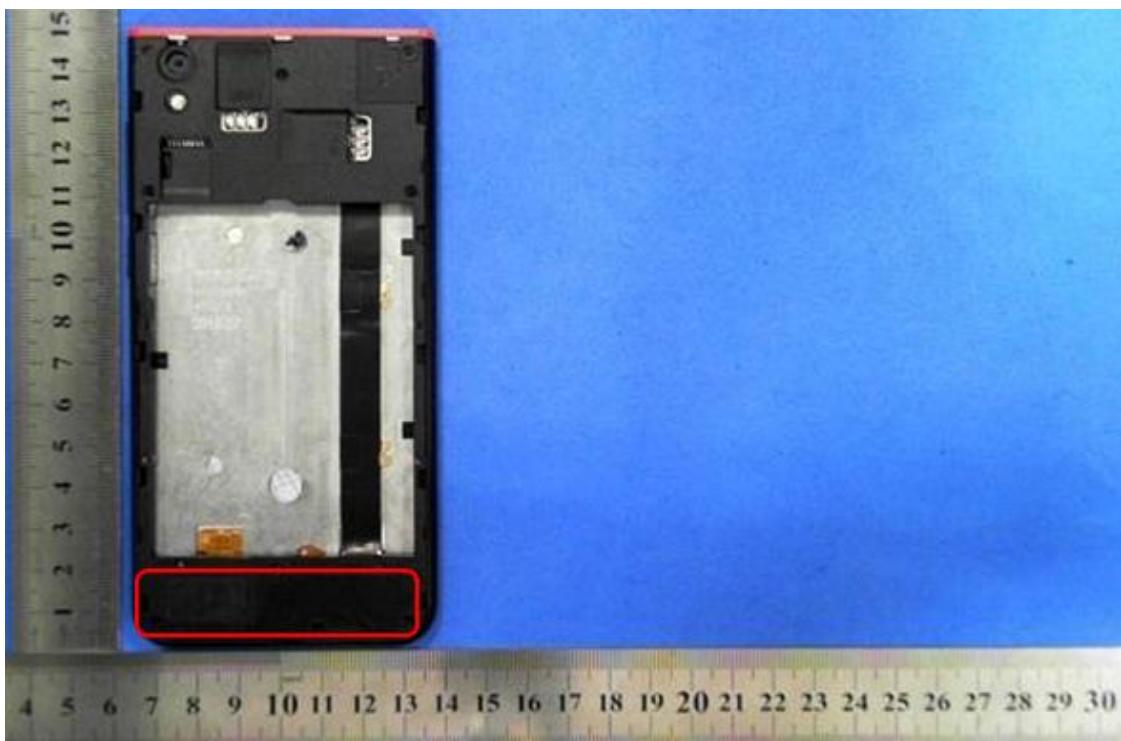
Battery Front View



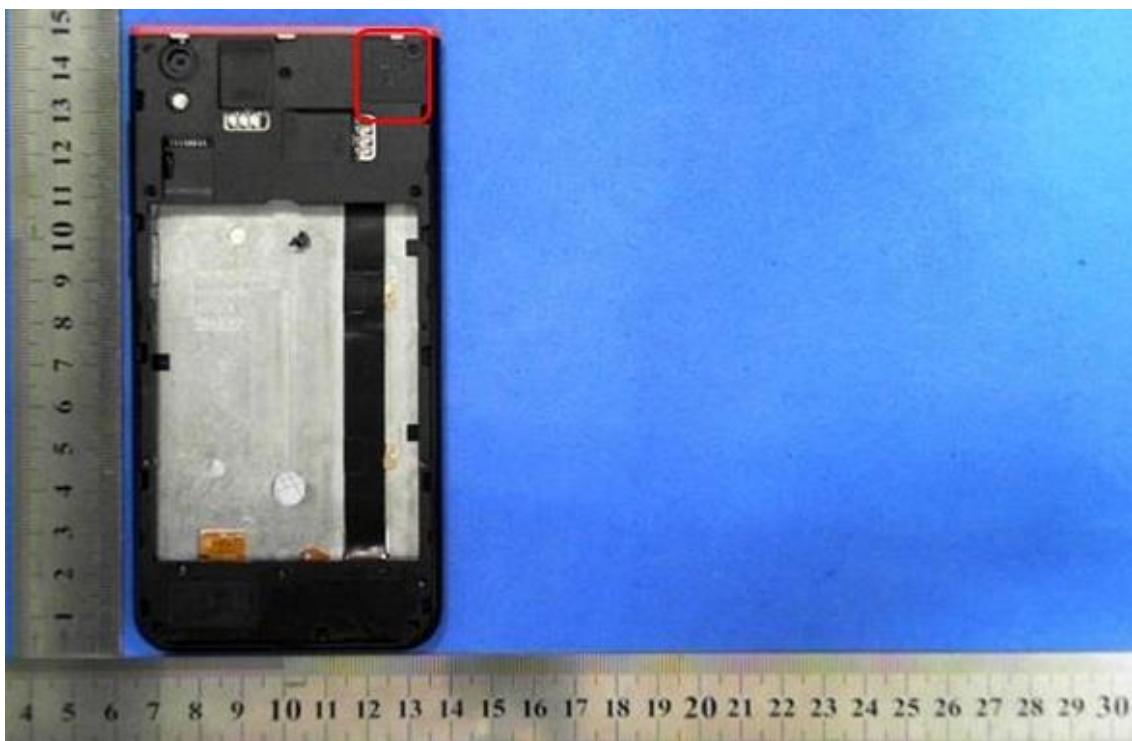
Battery Back View



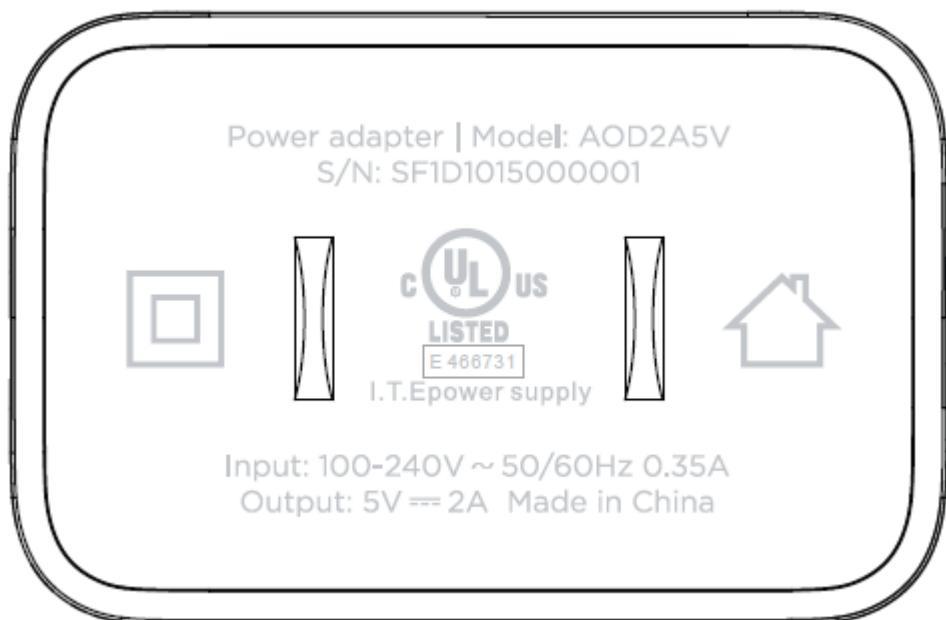
GSM/WCDMA Antenna View



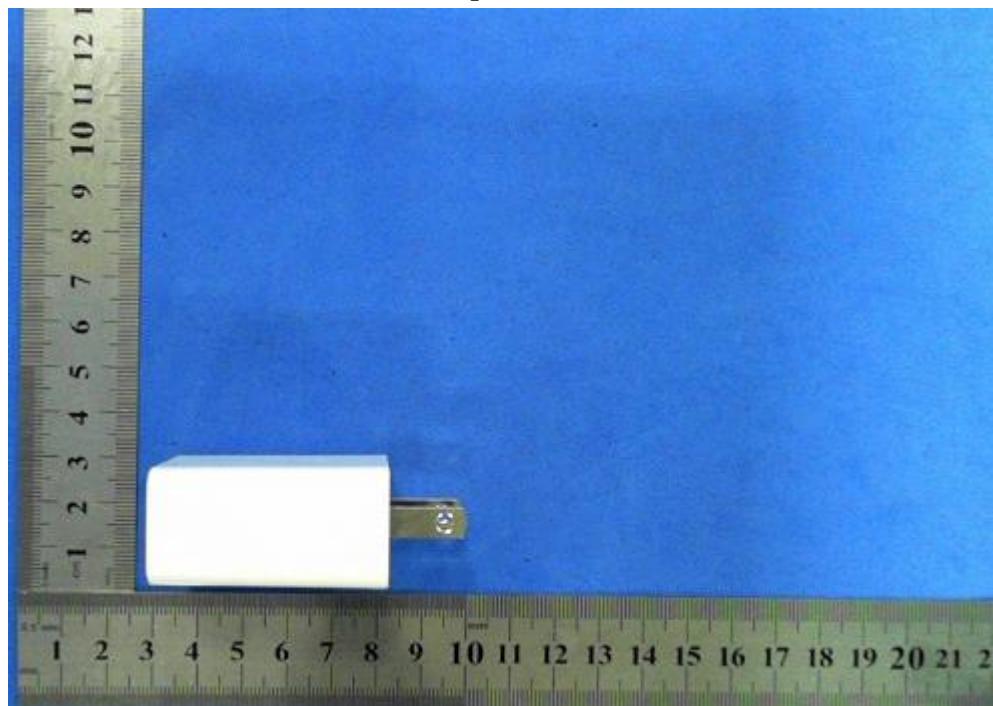
BT/WIFI Antenna View



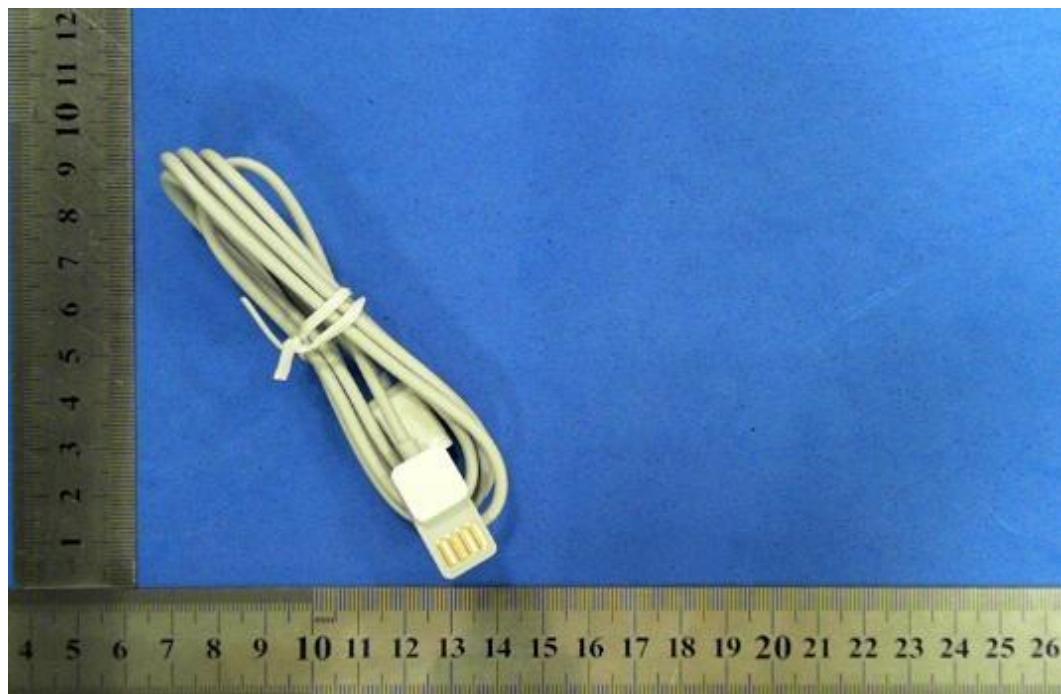
Adapter label view



Adapter view

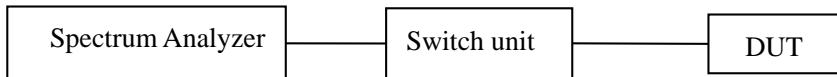


**USB Cable**



## ANNEX B: Detailed Test Results

The radiated test setup is shown in each radiated test case section. The conducted test setup except RF Power 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 Peak Transmit Power

#### B.1.1 Description

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

#### B.1.2 Test procedures

##### Conducted Measurement

EUT was set for low, mid, high channel with modulated mode and highest RF output power

The power meter was connected to the antenna terminal.

##### Standard Requirement

One of the following procedures may be used to determine the maximum peak conducted output power of a DTS EUT.

##### Procedures:

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

#### B.1.3 Test Setup



#### B.1.4 Test Results

Mode	Data rate(Mbps)	Duty cycle (%)	Limit (dBm)	Maximum Peak transmit power(dBm)			Verdict
				2412MHz	2437MHz	2462MHz	
802.11b	1	100	30	12.553	12.895	12.754	Pass

	2			12.436	12.843	12.351	Pass
	5.5			12.361	12.578	12.148	Pass

Mode	Data rate(Mbps )	Duty cycle (%)	Limit (dBm)	Maximum Peak transmit power(dBm)			Verdict
				2412MHz	2437MHz	2462MHz	
802.11g	6	100	30	11.728	11.474	11.499	Pass
	9			11.573	11.442	11.469	Pass
	12			11.553	11.414	11.457	Pass
	18			11.536	11.376	11.441	Pass
	24			11.442	11.338	11.439	Pass
	36			11.471	11.267	11.433	Pass
	48			11.427	11.252	11.426	Pass
	54			11.401	11.238	11.421	Pass

Mode	Data rate(Mbps )	Duty cycle (%)	Limit (dBm)	Maximum Peak transmit power(dBm)			Verdict
				2412MHz	2437MHz	2462MHz	
802.11n-20	MCS0	100	30	9.633	9.884	9.828	Pass
	MCS1			9.623	9.761	9.689	Pass
	MCS2			9.605	9.462	9.475	Pass
	MCS3			9.368	9.457	9.447	Pass
	MCS4			9.236	9.263	9.482	Pass
	MCS5			9.276	9.237	9.366	Pass
	MCS6			9.237	9.255	9.403	Pass
	MCS7			9.244	9.215	9.277	Pass
	MCS8			9.253	9.319	9.323	Pass
	MCS9			9.164	9.136	9.124	Pass
	MCS32			9.094	9.057	0.028	Pass

Mode	Data rate(Mbps )	Duty cycle (%)	Limit (dBm)	Maximum Peak transmit power(dBm)			Verdict

	)			<b>2412MHz</b>	<b>2437MHz</b>	<b>2462MHz</b>	
802.11n-40	MCS0	100	30	8.650	8.915	8.889	Pass
	MCS1			8.528	8.885	8.798	Pass
	MCS2			8.551	8.859	8.727	Pass
	MCS3			8.481	8.684	8.684	Pass
	MCS4			8.462	8.651	8.588	Pass
	MCS5			8.501	8.356	8.472	Pass
	MCS6			8.385	8.407	8.399	Pass
	MCS7			8.428	8.416	8.447	Pass
	MCS8			8.375	8.337	8.361	Pass
	MCS9			8.289	8.226	8.260	Pass
	MCS32			8.163	8.177	8.149	Pass

## 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.

### B.2.2 Test procedures

#### Conducted Measurement

EUT was set for low, mid, high channel with modulated mode and highest RF output power  
The spectrum analyzer was connected to the antenna terminal.

#### Procedures:

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance, and is optional if the maximum conducted (average) output power was used to demonstrate compliance.

- 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  $\geq 3$  kHz
- d) Set the VBW  $\geq 3$  RBW.
- 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.
- j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

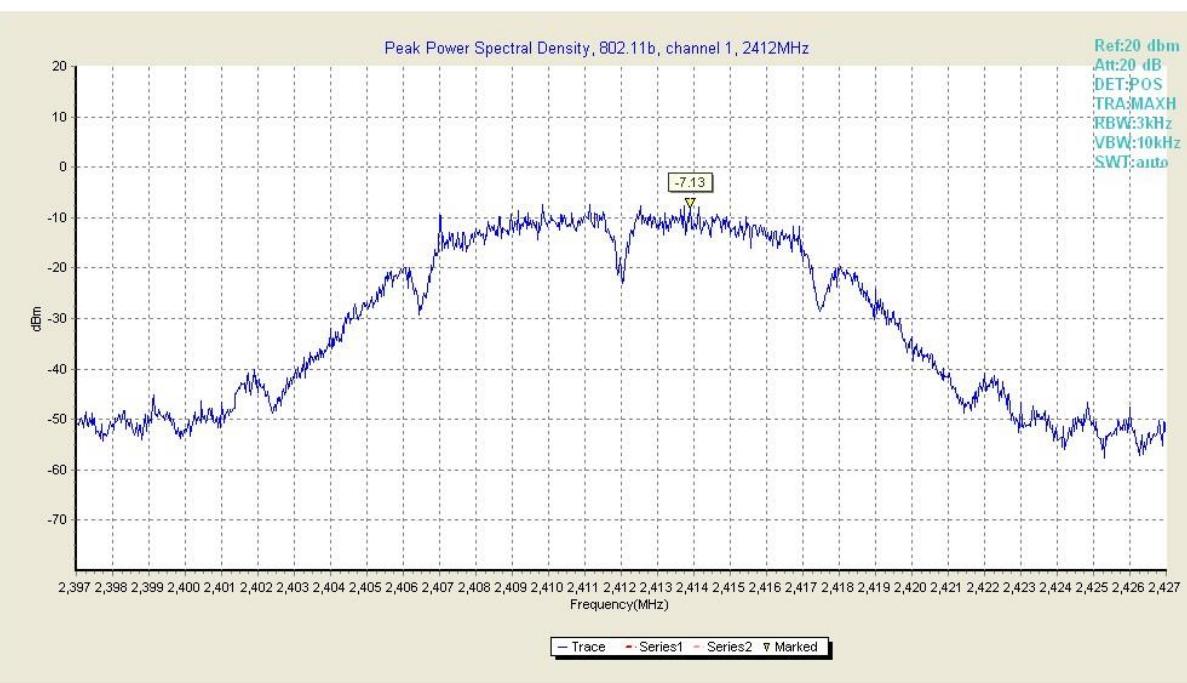
### B.2.2 Test Results

#### 802.11b mode

Limit	PSD(dBm)	Verdict
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(dBm)	Low Ch 2412MHz	Mid Ch 2437 MHz	High Ch 2462 MHz	
8	-7.130	Fig.1	-7.660	Fig.2

Antenna Maximum Gain: -1dBi

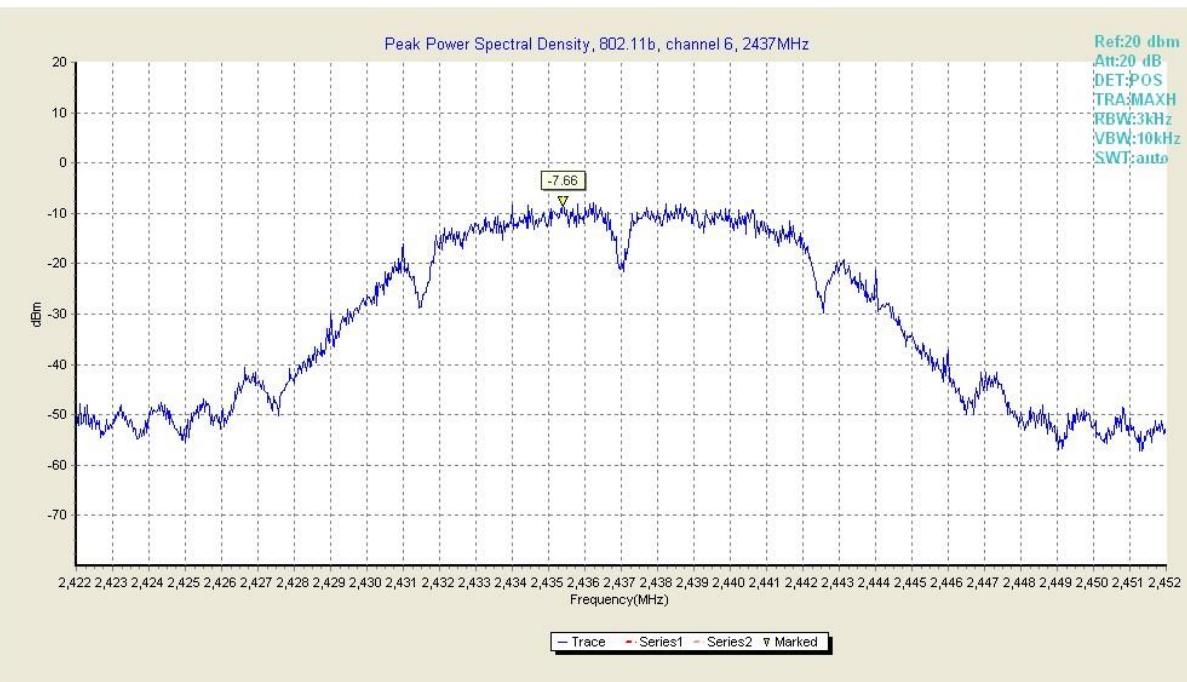


Test plot 1

2413.889893

-7.130000

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

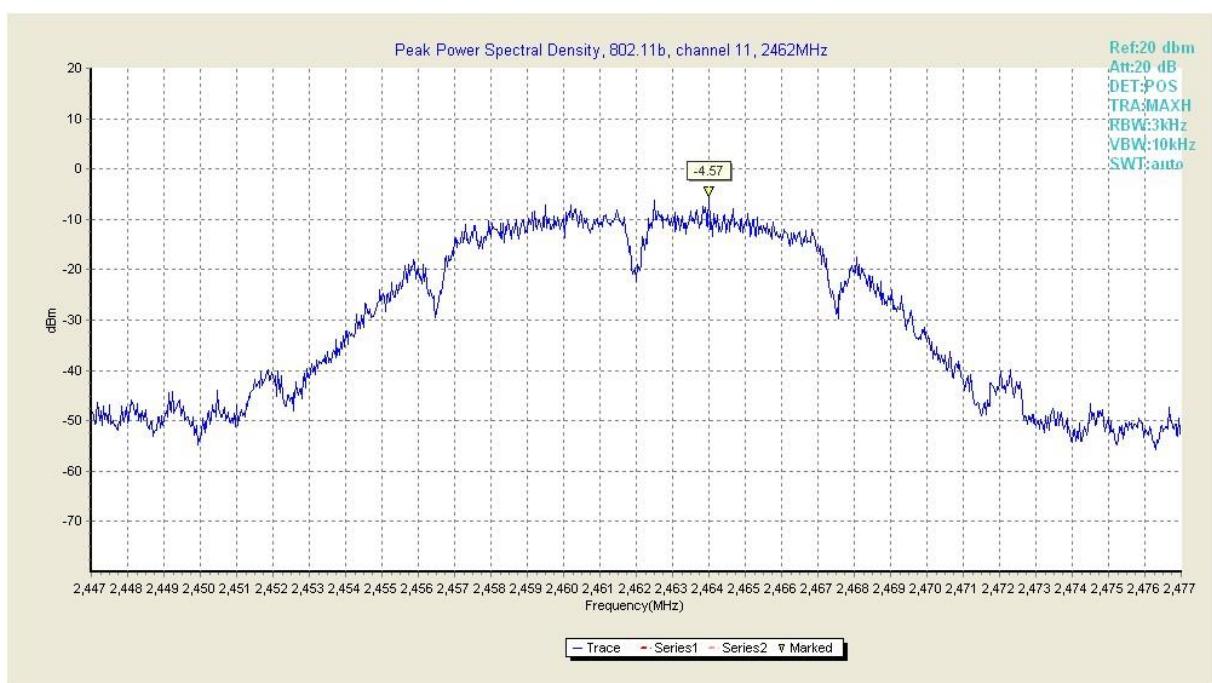


Test plot 1

2435.409912

-7.660000

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



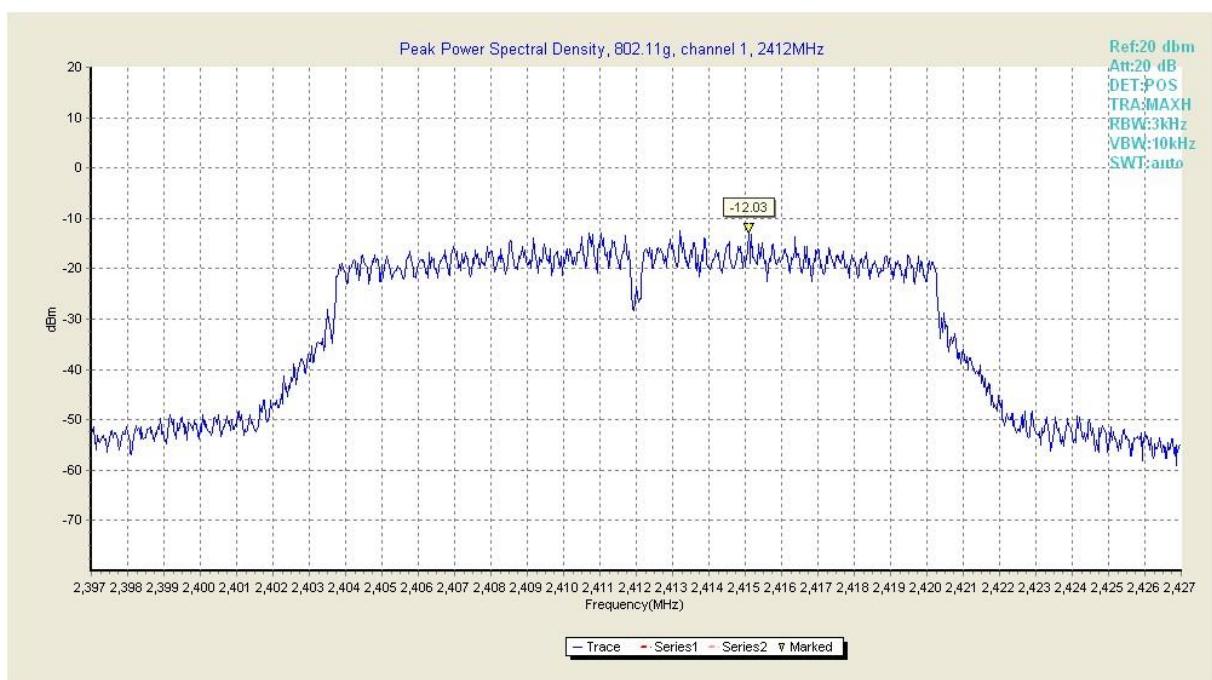
Test plot 1	2464.010010	-4.570000
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**Fig.3 Peak power spectral density of 802.11b in channel 11,2462MHz**

#### 802.11g mode

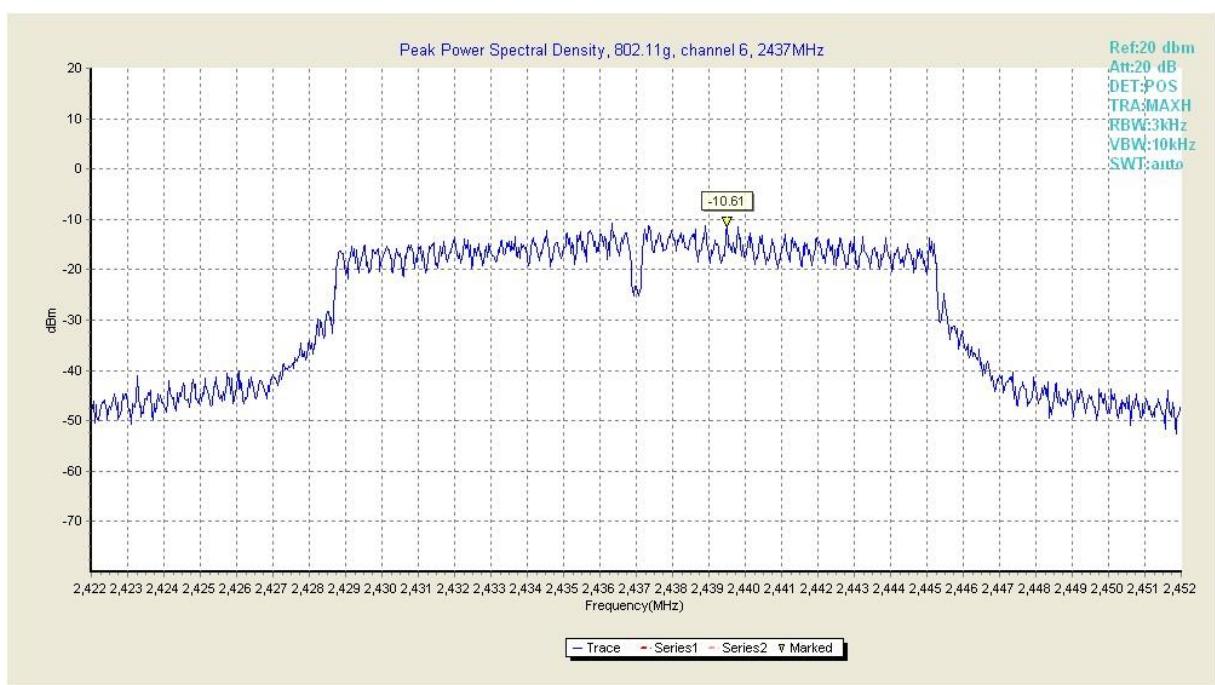
Limit (PSD dBm)	PSD(dBm)			Verdict			
	2412MHz	2437 MHz	2462 MHz				
8	-12.03	Fig.4	-10.61	Fig.5	-11.65	Fig.6	Pass

Antenna Maximum Gain: -1dBi



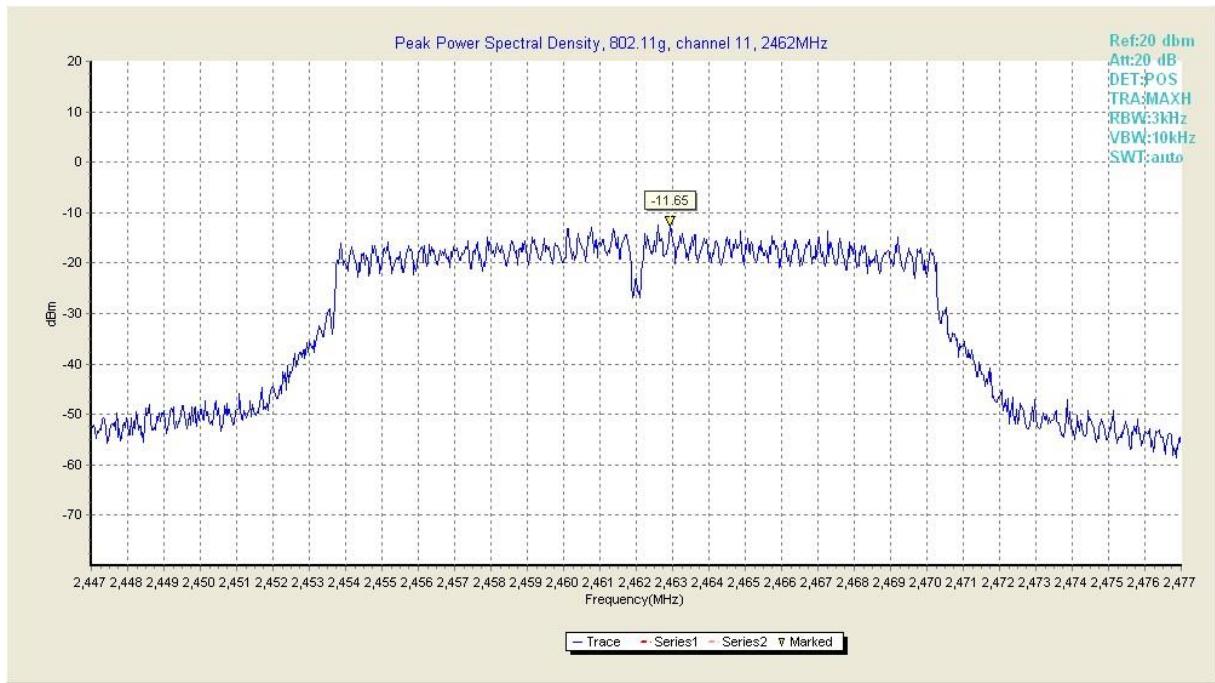
Test plot 1	2415.090088	-12.030000
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**Fig.4 Peak power spectral density of 802.11g in channel 1,2412MHz**



Test plot 1	2439.489990	-10.610000
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**Fig.5 Peak power spectral density of 802.11g in channel 6,2437MHz**

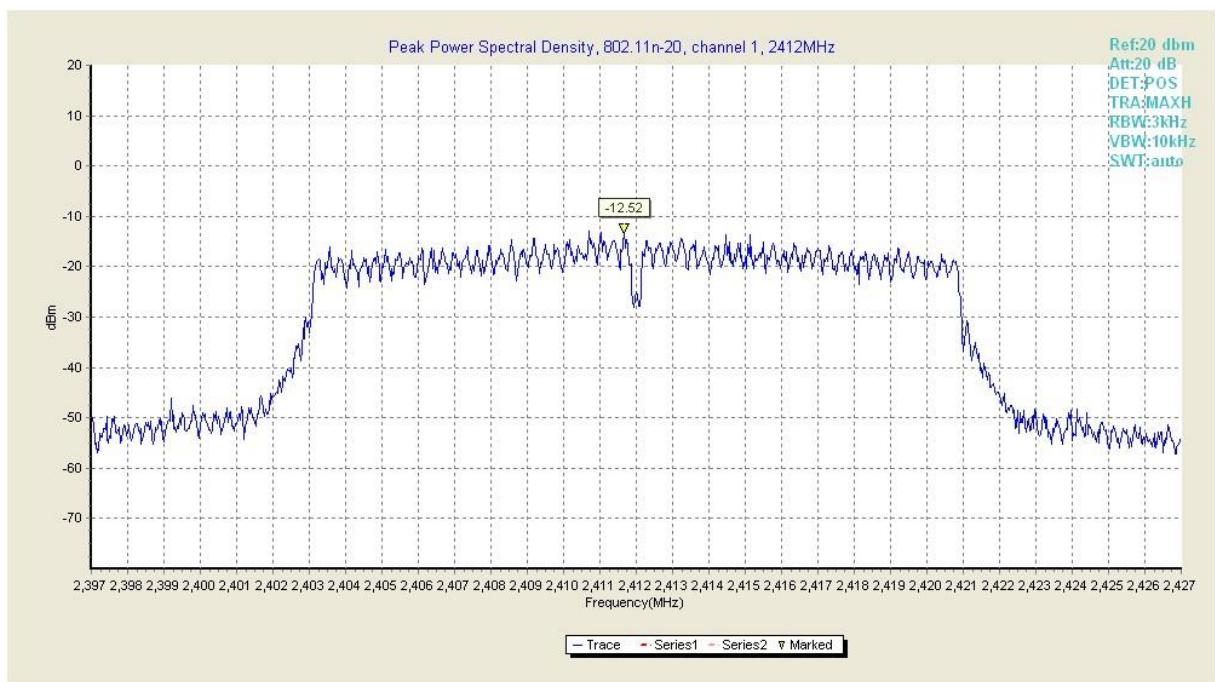


Test plot 1	2462.929932	-11.650000
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**Fig.6 Peak power spectral density of 802.11g in channel 11,2462MHz**

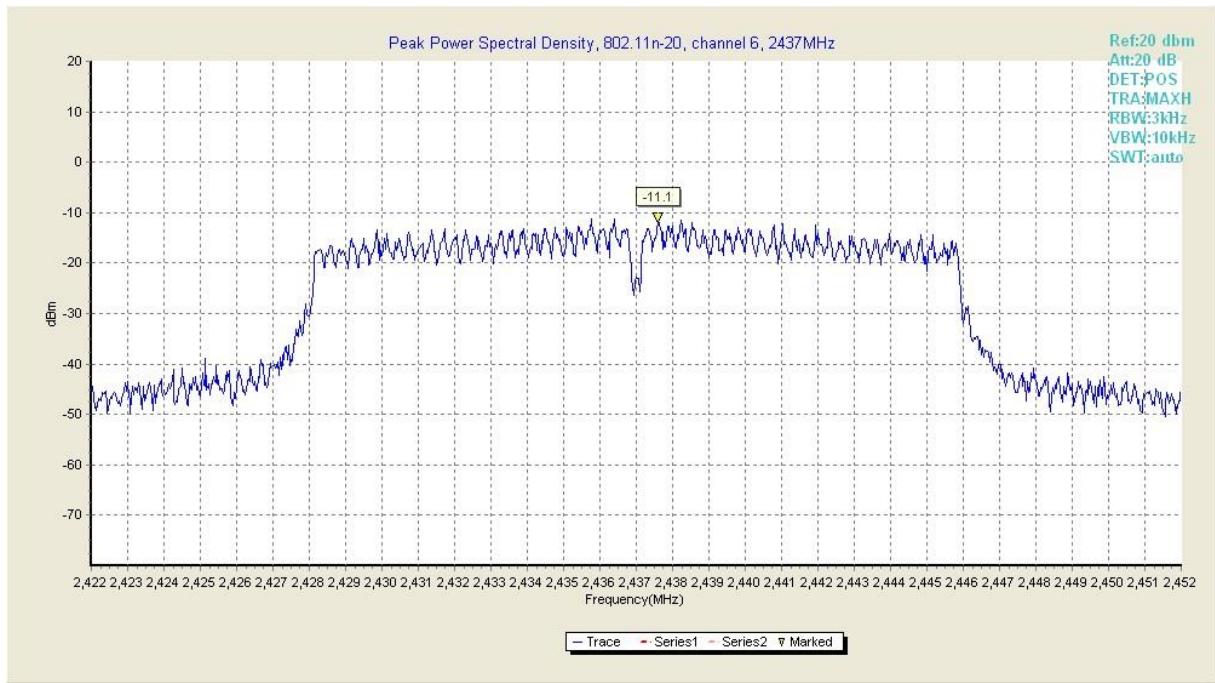
802.11n-20 mode

Limit (PSD dBm)	PSD(dBm)			Verdict			
	2412MHz	2437 MHz	2462 MHz				
8	-12.52	Fig.7	-11.10	Fig.8	-11.28	Fig.9	Pass
Antenna Maximum Gain: -1dBi							



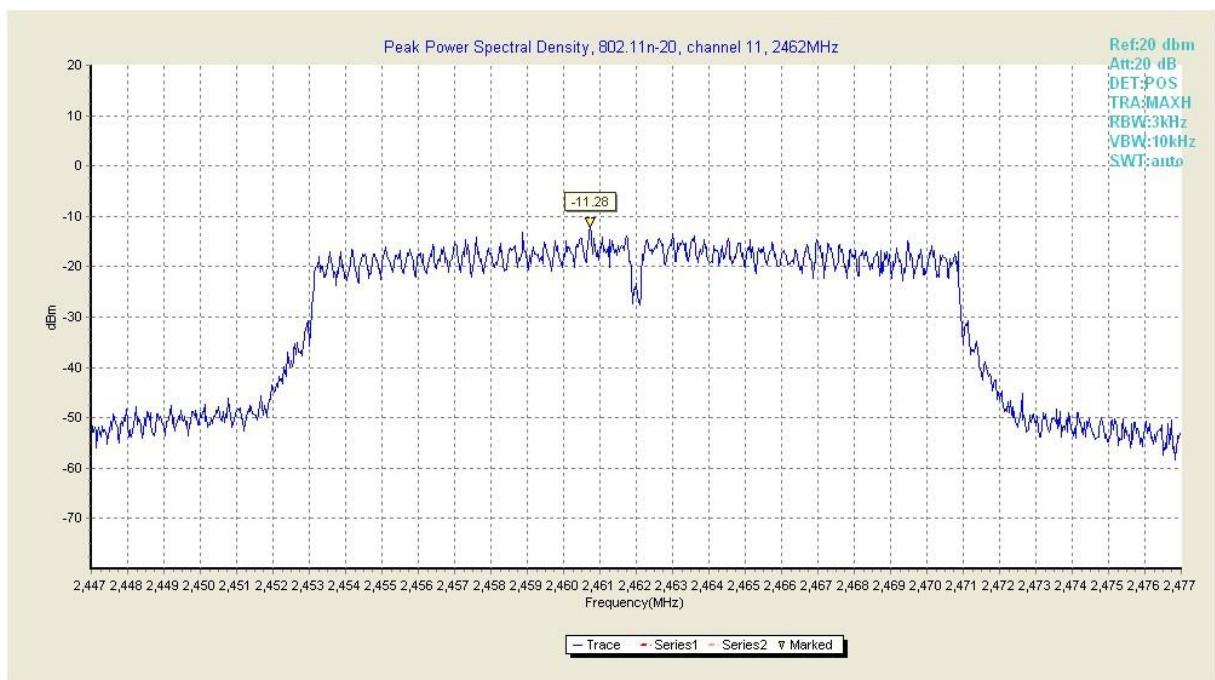
Test plot 1	2411.669922	-12.520000
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**Fig.7 Peak power spectral density of 802.11n-20 in channel 1,2412MHz**



Test plot 1	2437.600098	-11.100000
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**Fig.8 Peak power spectral density of 802.11n-20 in channel 6,2437MHz**



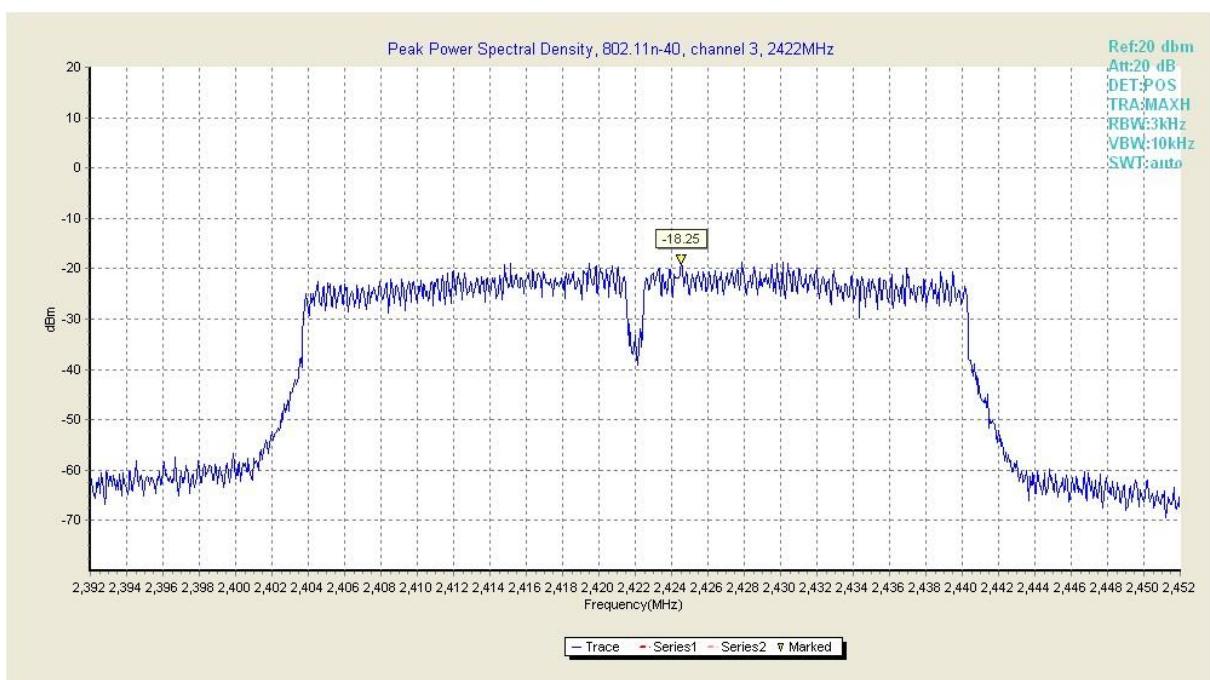
Test plot 1	2460.739990	-11.280000
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**Fig.9 Peak power spectral density of 802.11n-20 in channel 11,2462MHz**

#### 802.11n-40 mode

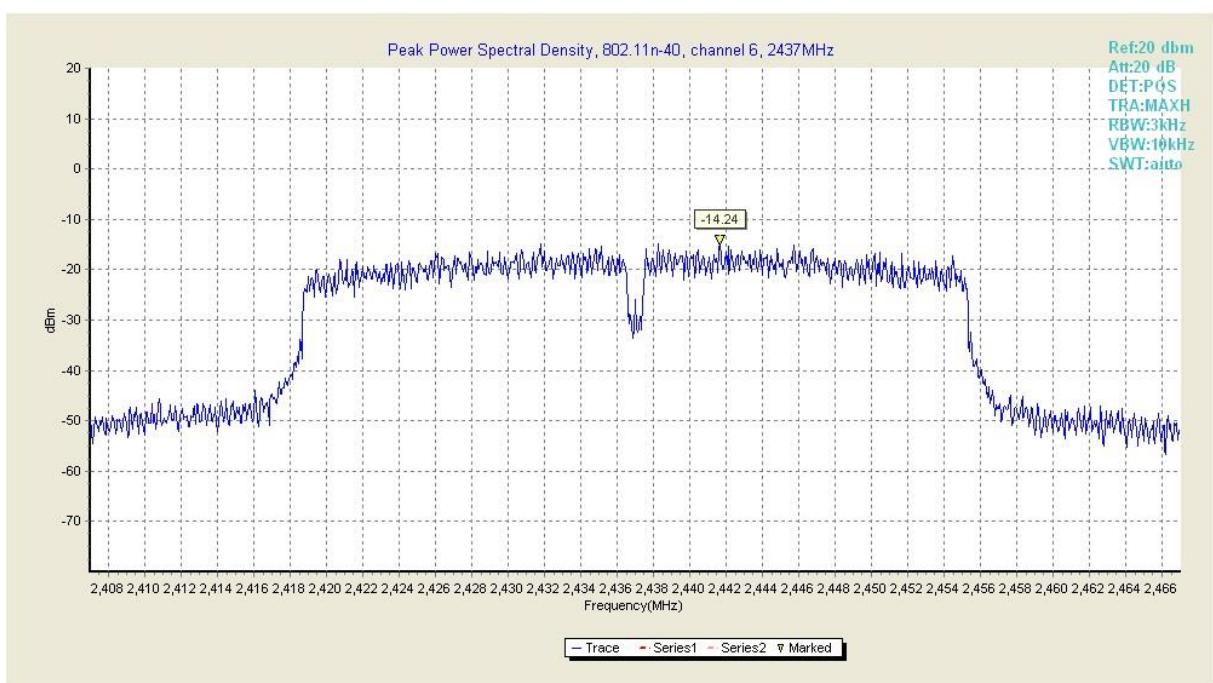
Limit (dBm)	PSD(dBm)			Verdict			
	2422MHz	2437 MHz	2452 MHz				
8	-18.25	Fig.10	-14.24	Fig.11	-17.95	Fig.12	Pass

Antenna Maximum Gain: -1dBi



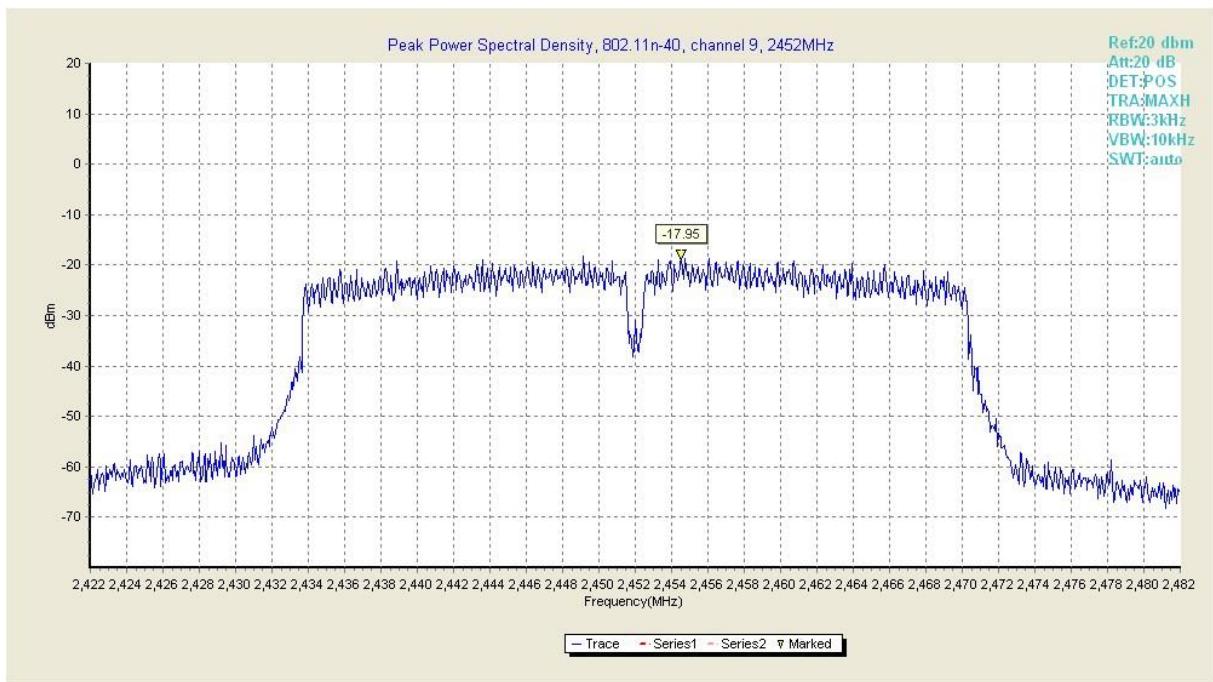
Test plot 1	2424.520020	-18.250000
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**Fig.10 Peak power spectral density of 802.11n-40 in channel 3,2422MHz**



Test plot 1	2441.679932	-14.240000
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**Fig.11 Peak power spectral density of 802.11n-40 in channel 6,2437MHz**



Test plot 1	2454.520020	-17.950001
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**Fig.12 Peak power spectral density of 802.11n-40 in channel 9,2452MHz**

**B.3 DTS(6dB&20dB)Channel Bandwidth****B.3.1 Description**

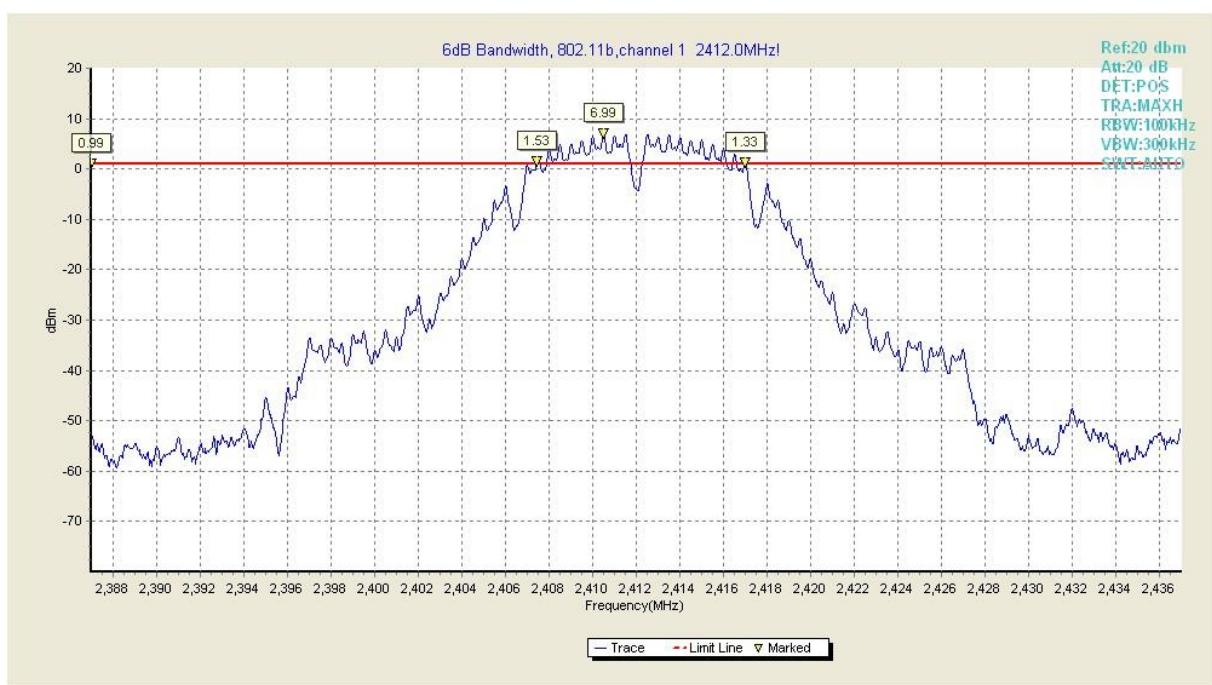
The Occupied 6dB Bandwidth shall be equal to or more than 500 kHz.

**B.3.2 Test Procedures**

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW)  $\geq 3$  RBW.
- 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.

**B.3.3 Test Results****802.11 b mode**

Channel	Frequency (MHz)	Limit (MHz)	Occupied Bandwidth (MHz)	Test Results	Verdict
1	2412	0.5	9.55	Fig.13	Pass
6	2437		9.10	Fig.14	Pass
11	2462		10.05	Fig.15	Pass

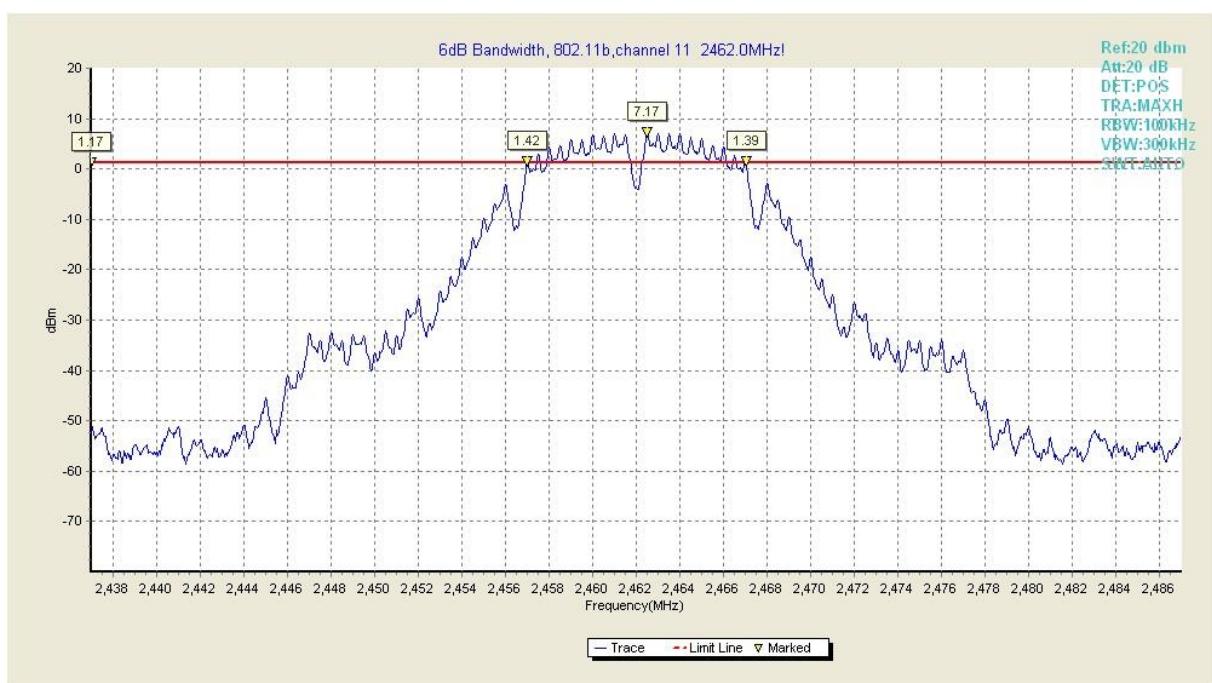


Test plot 1	2407.449951	1.530000
Test plot 2	2410.500000	6.990000
Test plot 3	2417.000000	1.330000

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



Test plot 1	2432.449951	1.110000
Test plot 2	2436.500000	7.010000
Test plot 3	2441.550049	1.710000



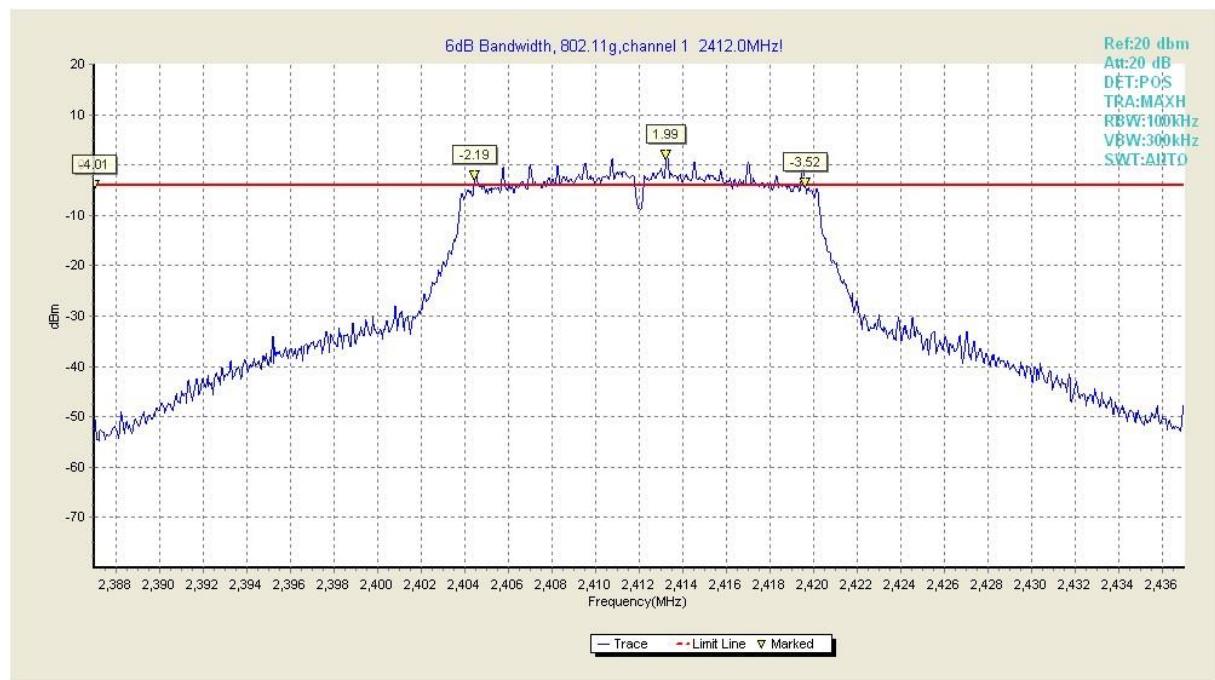
**Fig.14 6dB Bandwidth of 802.11b in channel 6,2437MHz**

Test plot 1	2457.000000	1.420000
Test plot 2	2462.500000	7.170000
Test plot 3	2467.050049	1.390000

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

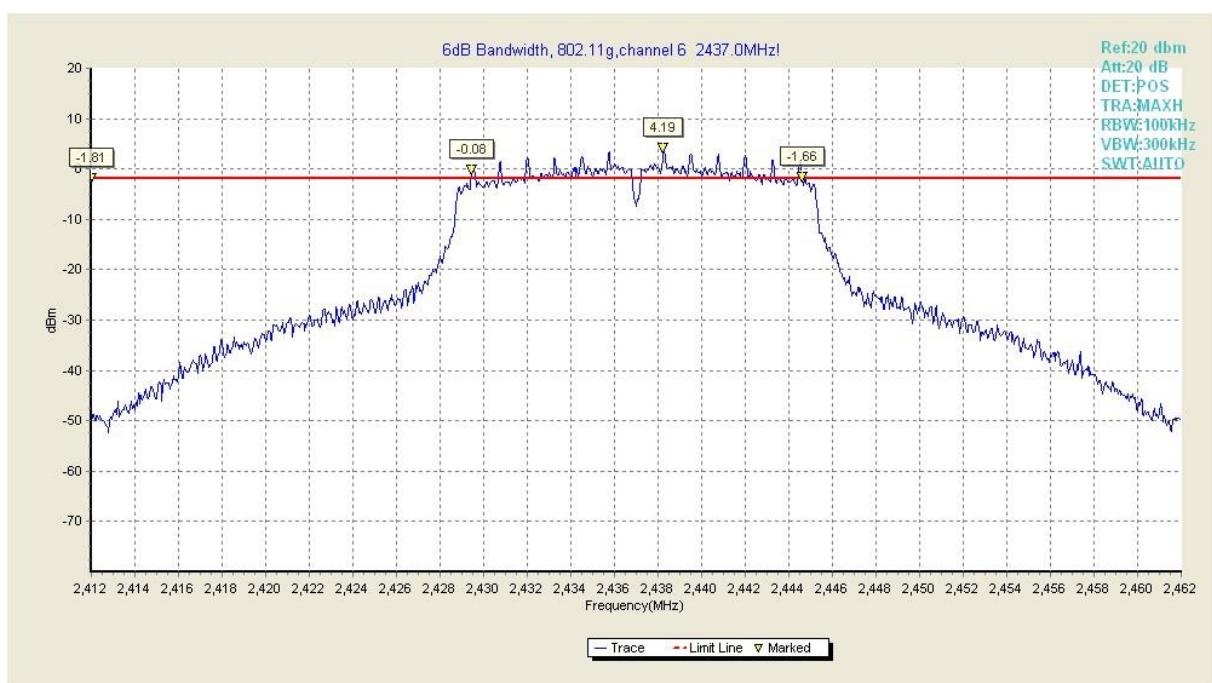
### 802.11 g mode

Channel	Frequency (MHz)	Limit (MHz)	Occupied Bandwidth (MHz)	Test Results	Verdict
1	2412	0.5	15.15	Fig.16	Pass
6	2437		15.15	Fig.17	Pass
11	2462		15.65	Fig.18	Pass



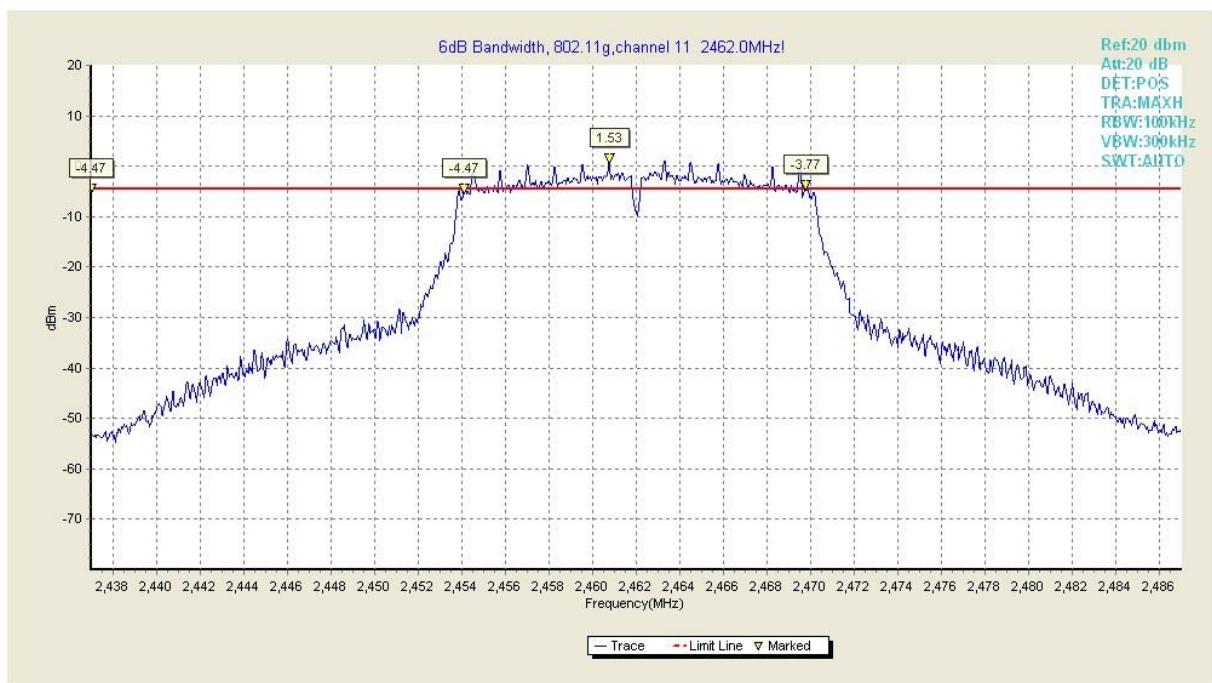
Test plot 1	2404.449951	-2.190000
Test plot 2	2413.250000	1.990000
Test plot 3	2419.600098	-3.520000

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



Test plot 1	2429.449951	-0.080000
Test plot 2	2438.250000	4.190000
Test plot 3	2444.600098	-1.660000

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

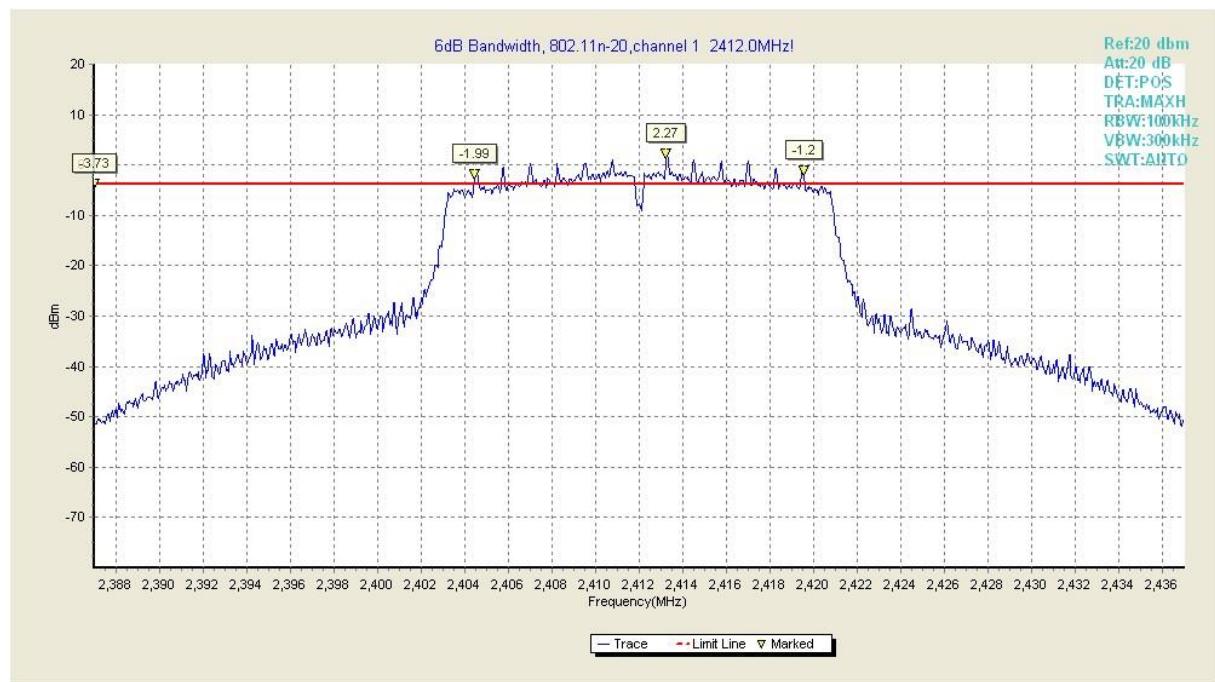


Test plot 1	2454.100098	-4.470000
Test plot 2	2460.750000	1.530000
Test plot 3	2469.750000	-3.770000

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		15.10	Fig.20	Pass
11	2462		15.15	Fig.21	Pass



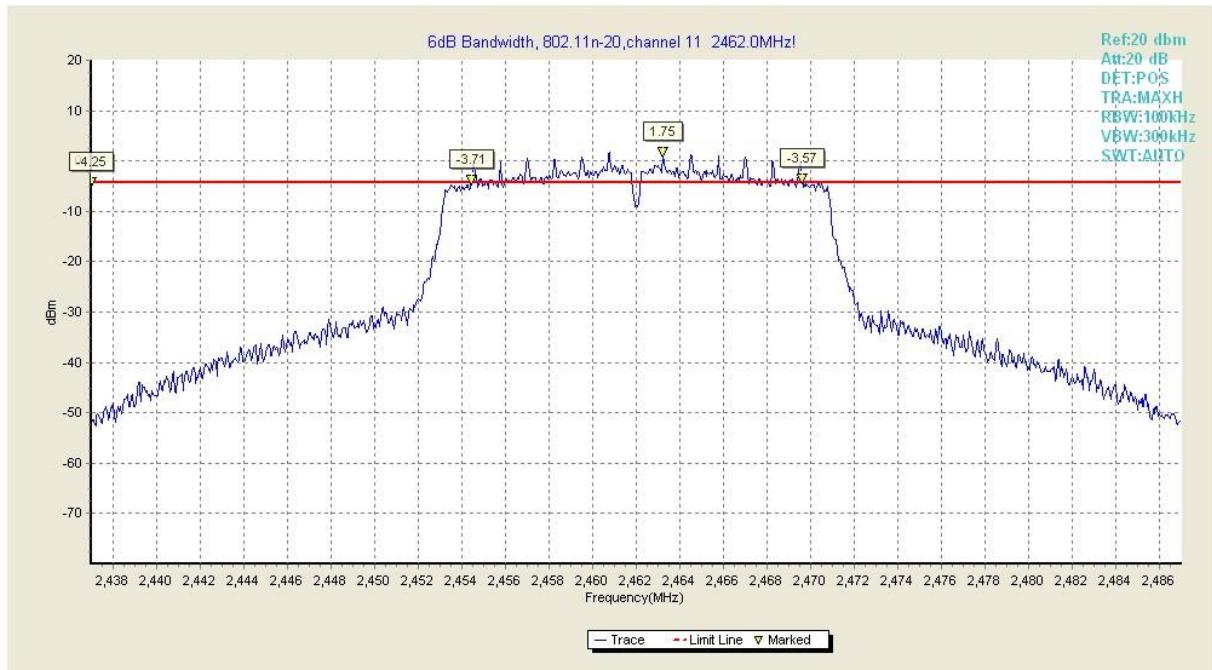
Test plot 1	2404.449951	-1.990000
Test plot 2	2413.250000	2.270000
Test plot 3	2419.550049	-1.200000

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



Test plot 1	2429.449951	-0.420000
Test plot 2	2438.250000	4.230000
Test plot 3	2444.550049	1.410000

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

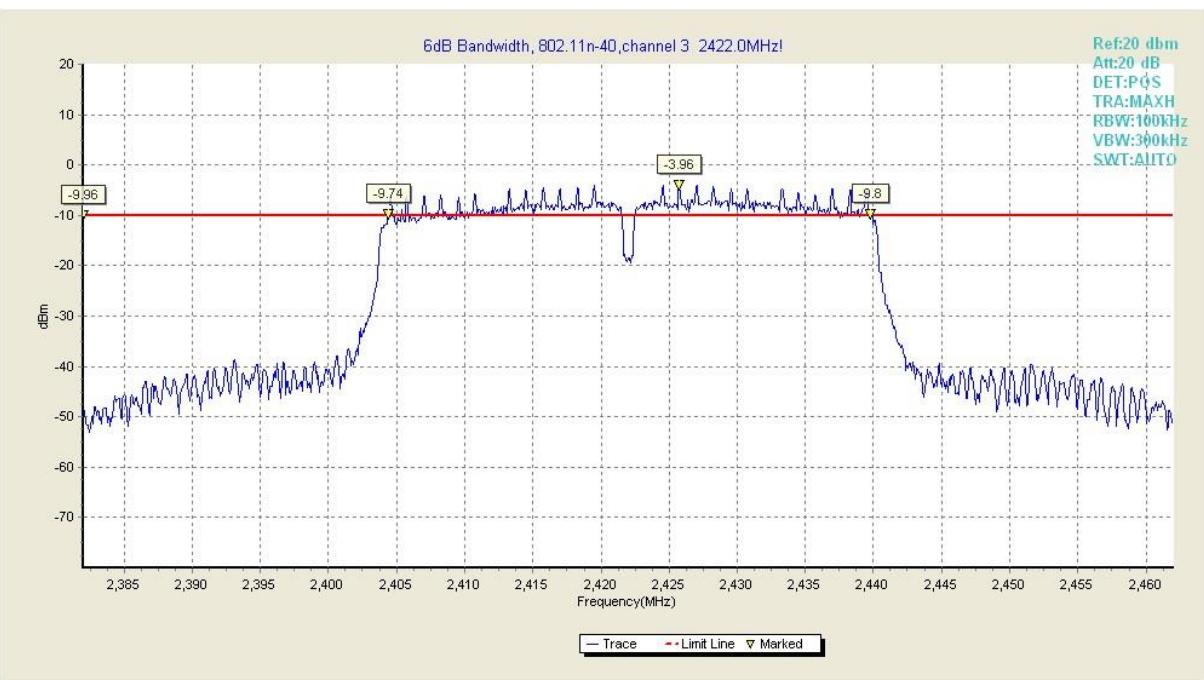


Test plot 1	2454.449951	-3.710000
Test plot 2	2463.250000	1.750000
Test plot 3	2469.600098	-3.570000

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

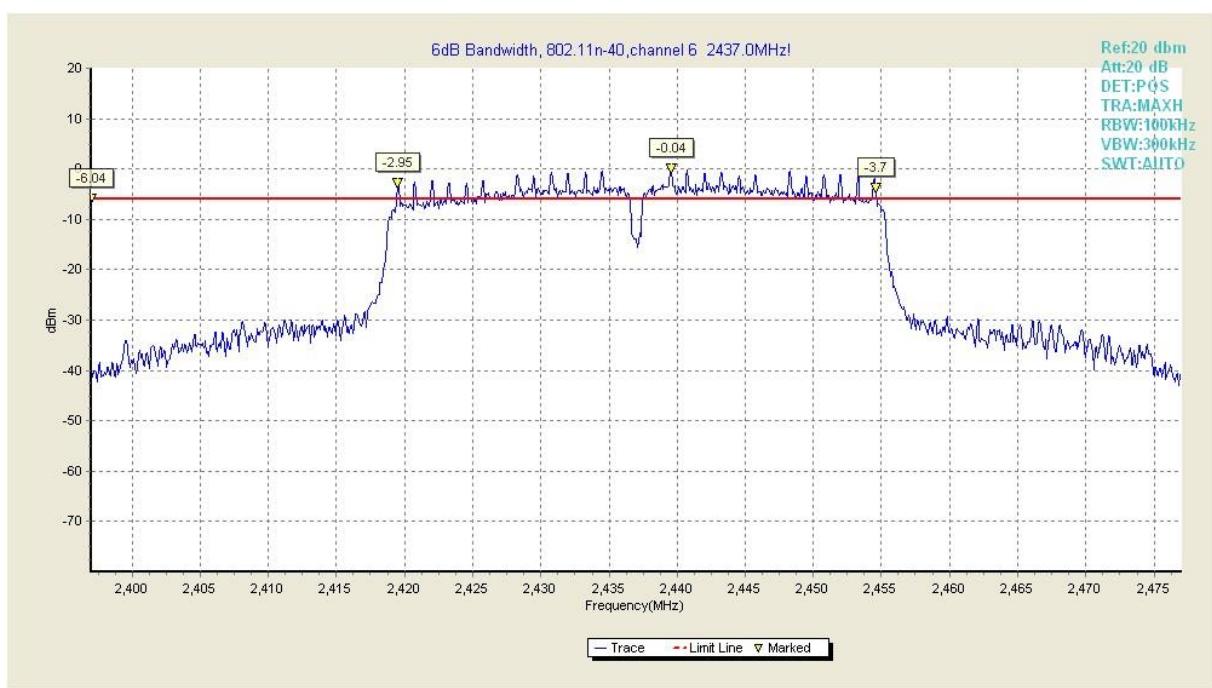
**802.11 n-40 mode**

Channel	Frequency (MHz)	Limit (MHz)	Occupied Bandwidth (MHz)	Test Results	Verdict
3	2422	0.5	35.36	Fig.22	Pass
6	2437		35.11	Fig.23	Pass
9	2452		35.20	Fig.24	Pass



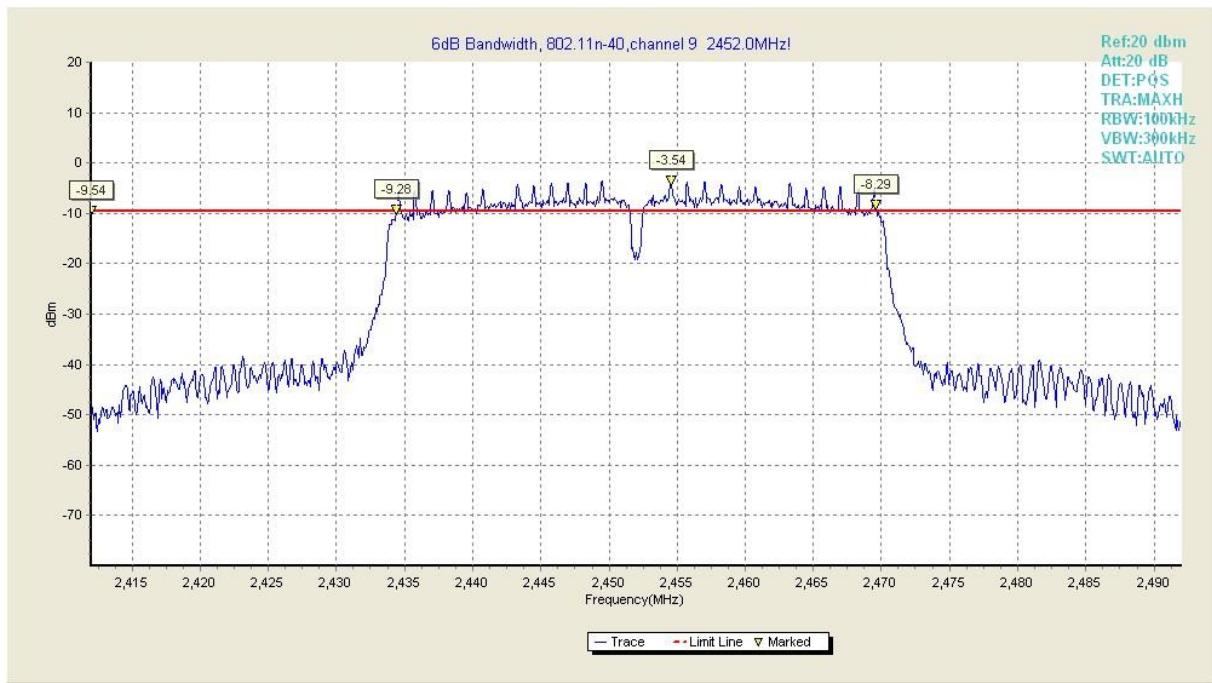
Test plot 1	2404.399902	-9.740000
Test plot 2	2425.760010	-3.960000
Test plot 3	2439.760010	-9.800000

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



Test plot 1	2419.479980	-2.950000
Test plot 2	2439.560059	-0.040000
Test plot 3	2454.600098	-3.700000

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



Test plot 1	2434.399902	-9.280000
Test plot 2	2454.560059	-3.540000
Test plot 3	2469.600098	-8.290000

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

## B.4 Band Edge Compliance

### B.4.1 Conducted Measurement

#### B.4.1.1 Description

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

#### B.4.1.2 Test procedures

##### Conducted Measurement

EUT was set for low, mid, high channel with modulated mode and highest RF output power

The spectrum analyzer was connected to the antenna terminal.

##### Standard Requirement

Emissions within 2 MHz of an authorized band edge may be measured using either the marker-delta method (for peak or average emissions) or the integration method (for average emissions only), described below, provided that the OBW edge falls within 2 MHz of the band edge. Otherwise, all unwanted emissions measurements shall be performed using the standard methods.

##### Procedures

###### Peak Detection

When using a peak detector to measure unwanted emissions at or near the band edge (within 2 MHz of the authorized band), the following integration procedure can be used.

- a) Set instrument center frequency to the frequency of the emission to be measured (must be within 2 MHz of the authorized band edge).
- b) Set span to 2 MHz
- c) RBW = 100 kHz.
- d) VBW  $\geq$  3 x RBW.
- e) Detector = peak.
- f) Sweep time = auto.
- g) Trace mode = max hold.
- h) Allow sweep to continue until the trace stabilizes (required measurement time may increase for low duty cycle applications)
- i) Compute the power by integrating the spectrum over 1 MHz using the analyzer's band power measurement function with band limits set equal to the emission frequency ( $f_{\text{emission}}$ )  $\pm$  0.5 MHz. If the instrument does not have a band power function, then sum the amplitude levels (in power units) at 100 kHz intervals extending across the 1 MHz spectrum defined by  $f_{\text{emission}} \pm 0.5$  MHz.

#### B.4.1.3 Test Results

##### 802.11b mode

Channel	Frequency(MHz)	Limit (dB)	Test Result(MHz)		Verdict
1	2400	20	36.42	Fig.25	Pass

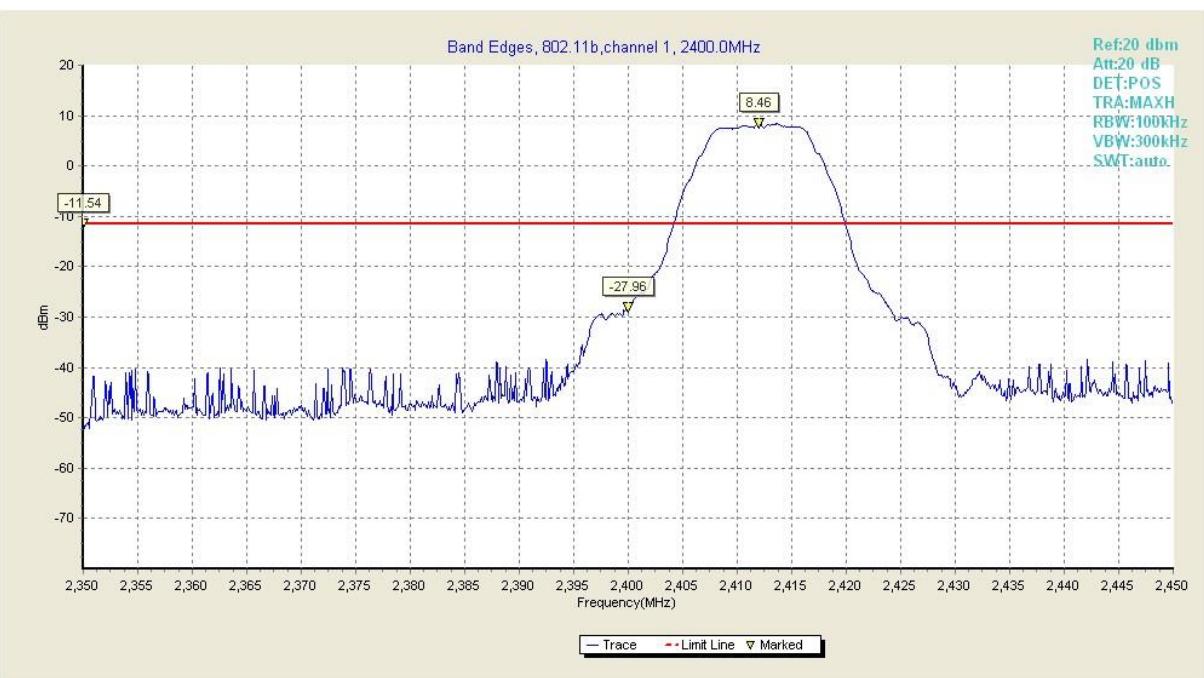
11

2483.5

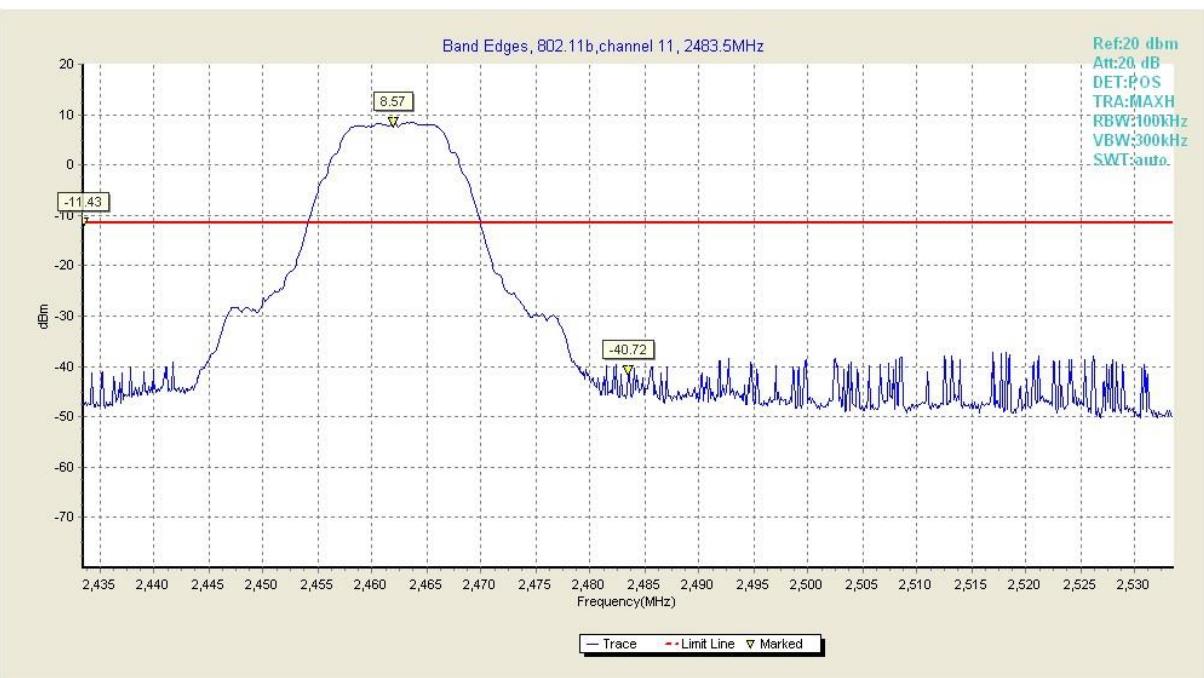
49.29

Fig.26

Pass



**Fig25. Frequency Band Edges of 802.11b in channel 1,2400MHz**



**Fig26. Frequency Band Edges of 802.11b in channel 11,2483.5MHz**

802.11g mode

Channel	Frequency(MHz)	Limit (dB)	Test Result(MHz)		Verdict
1	2400	20	26.57	Fig.27	Pass

11	2483.5		42.60	Fig.28	Pass
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Fig27. Frequency Band Edges of 802.11g in channel 1,2400MHz



Fig28. Frequency Band Edges of 802.11g in channel 11,2483.5MHz

802.11n-20 mode

Channel	Frequency(MHz)	Limit (dB)	Test Result(MHz)		Verdict
1	2400	20	23.94	Fig.29	Pass

11	2483.5		37.82	Fig.30	Pass
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Fig29. Frequency Band Edges of 802.11n-20 in channel 1,2400MHz



Fig30. Frequency Band Edges of 802.11n-20 in channel 11,2483.5MHz

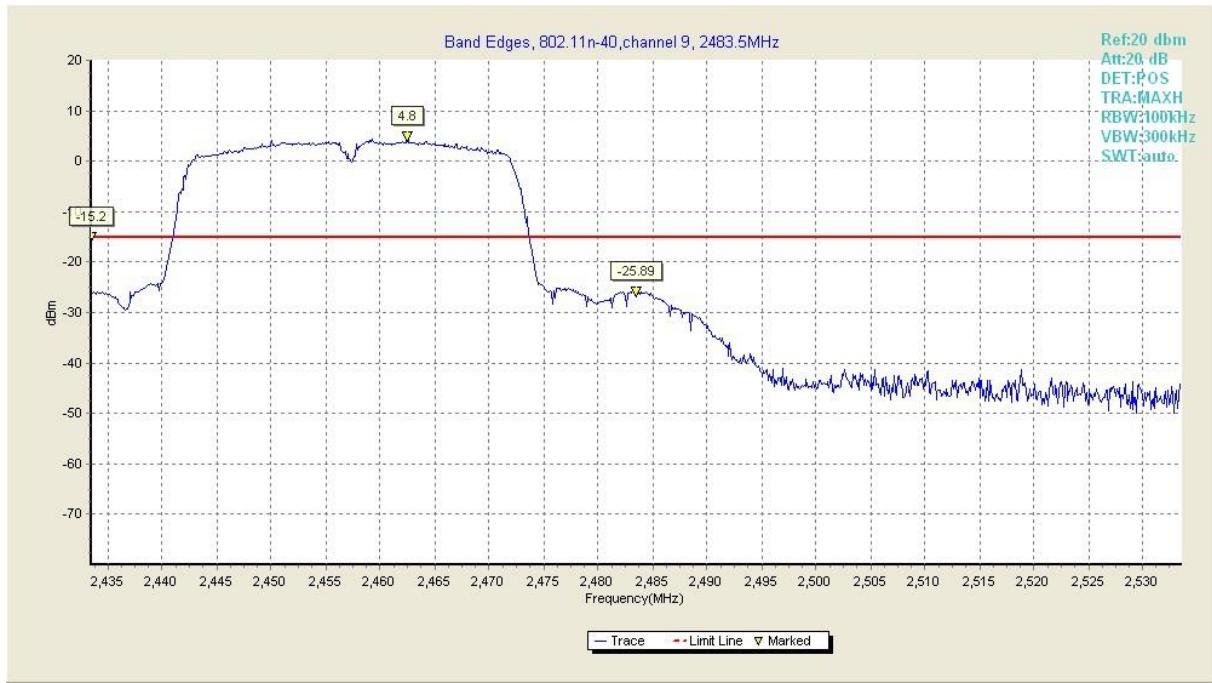
802.11n-40 mode

Channel	Frequency(MHz)	Limit (dB)	Test Result(MHz)		Verdict
3	2400	20	29.11	Fig.31	Pass

9	2483.5		30.69	Fig.32	Pass
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**Fig31. Frequency Band Edges of 802.11n-40 in channel 1,2400MHz**



**Fig32. Frequency Band Edges of 802.11n-40 in channel 11,2483.5MHz**

#### B.4.2 Radiated measurement

##### B.4.2.1 Procedures:

- Check the calibration of the measuring instrument using either an internal calibrator or a known signal

from an external generator.

- b) Position the EUT on the rotated table inside the anechoic chamber without connection to measurement instrument. Turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range. Repeat above procedures until all measured frequencies were complete.
- c) Set band RBW=1MHz, VBW=3MHz with a convenient frequency span from band edge.
- d) Find the highest point in edge frequency, and then calculate results.
- e) Repeat above procedures until all measured frequencies were complete.

#### B.4.2.2 Test Results

802.11b

Frequency (MHz)	Receiver Reading (dB $\mu$ V)	Detector (PK/QP/Ave)	Turn table Angle Degree	RX Antenna		Corrected Factor	Corrected Amplitude (dB)	FCC Part 15.247/209/205	
				Height (m)	Polar (H/V)			Limit (dB $\mu$ V/m)	Margin (dB)
2400MHz									
485.79	12.93	QP	35	1.1	H	21.09	34.02	46.5	12.48
1321.5	29.31	PK	314	1.5	V	-15.07	14.24	70	55.76
1281.2	17.53	Ave	243	1.5	V	-15.27	2.26	50	47.74
1753.67	30.91	PK	142	1.5	V	-14.35	16.56	70	53.44
1770.67	19.29	Ave	25	1.5	H	-14.34	4.95	50	45.05
1841.5	19.16	Ave	54	1.5	H	-13.38	5.78	50	44.22
1841.5	45.32	PK	86	1.5	V	-13.38	31.94	70	38.06
2412.08	68.64	Ave	342	1.5	V	-13.18	55.46	50	-5.46
2412.08	70.91	PK	98	1.5	H	-13.16	57.75	70	12.25
<b>2400</b>	<b>32.06</b>	<b>PK</b>	<b>175</b>	<b>1.5</b>	<b>H</b>	<b>-13.18</b>	<b>18.88</b>	<b>70</b>	<b>51.12</b>
<b>2400</b>	<b>20.85</b>	<b>Ave</b>	<b>293</b>	<b>1.5</b>	<b>V</b>	<b>-13.18</b>	<b>7.67</b>	<b>50</b>	<b>42.33</b>
2484.53	33.33	PK	287	1.5	V	-13.19	20.14	70	49.86
2484.53	22.66	Ave	14	1.5	V	-13.19	9.47	50	40.53
485.79	12.93	QP	64	1.5	V	21.09	34.02	46.5	12.48
2483.5MHz									
387.79	12.36	QP	43	1.1	H	21.09	33.45	46.5	13.05
3938.16	39.59	PK	54	1.5	V	-16.25	23.34	74	50.66
4153.5	27.31	Ave	45	1.5	V	-16.45	10.86	54	43.14

5374.67	43.64	PK	254	1.5	V	-17.41	26.23	74	47.77
6999.53	46.12	PK	146	1.5	H	-18.62	27.5	74	46.5
7079.33	39.49	Ave	242	1.5	H	-19.06	20.43	54	33.57
2316.3	32.44	PK	53	1.5	V	-13.19	19.25	70	50.75
2316.3	20.06	Ave	24	1.5	V	-13.19	6.87	50	43.13
2362.05	72.68	PK	23	1.5	H	-13.14	59.54	70	10.46
2362.05	70.36	Ave	0	1.5	H	-13.14	57.22	50	-7.22
<b>2483.50</b>	33.46	<b>PK</b>	<b>12</b>	<b>1.5</b>	<b>V</b>	<b>-13.11</b>	<b>20.35</b>	<b>70</b>	49.65
<b>2483.50</b>	23.78	<b>Ave</b>	<b>14</b>	<b>1.5</b>	<b>V</b>	<b>-13.11</b>	<b>10.67</b>	<b>50</b>	39.33
2492.22	34.16	PK	165	1.5	V	-13.08	21.08	70	48.92
2492.22	23.31	Ave	179	1.5	V	-13.08	10.23	50	39.77

802.11g

387.79	12.78	QP	56	1.5	H	21.09	33.87	46.5	12.63
3938.16	39.79	PK	42	1.5	V	-16.25	23.54	74	50.46
4153.50	27.24	Ave	44	1.5	V	-16.45	10.79	54	43.21
5374.67	43.52	PK	63	1.5	V	-17.41	26.11	74	47.89
6999.53	46.11	PK	24	1.5	H	-18.62	27.49	74	46.51
7079.33	39.8	Ave	314	1.5	H	-19.06	20.74	54	33.26
2316.30	32.39	PK	286	1.5	V	-13.19	19.20	70	50.8
2316.30	20	Ave	48	1.5	V	-13.19	6.81	50	43.19
2362.05	72.48	PK	13	1.5	H	-13.14	59.34	70	11.66
2362.05	70.35	Ave	0	1.5	H	-13.14	57.21	50	-7.21
<b>2483.50</b>	<b>33.56</b>	<b>PK</b>	<b>123</b>	<b>1.5</b>	<b>V</b>	<b>-13.11</b>	<b>20.45</b>	<b>70</b>	<b>49.55</b>
<b>2483.50</b>	<b>23.73</b>	<b>Ave</b>	<b>125</b>	<b>1.5</b>	<b>V</b>	<b>-13.11</b>	<b>10.62</b>	<b>50</b>	<b>39.38</b>
2492.22	34.14	PK	147	1.5	V	-13.08	21.06	70	48.94
2492.22	23.89	Ave	74	1.5	V	-13.08	10.81	50	39.19

802.11n-20

Frequency (MHz)	Receiver Reading (dB $\mu$ V)	Detector (PK/QP/Ave)	Turn table Angle Degree	RX Antenna		Corrected Factor	Corrected Amplitude Limit	FCC Part 15.247/209/205	
				Height (m)	Polar (H/V)			(dB) (dB $\mu$ V/m)	(dB) (dB $\mu$ V/m)
2400MHz									
485.79	12.43	QP	44	1.1	H	21.09	33.52	46.50	12.98
1321.5	29.56	PK	38	1.5	V	-15.07	14.49	70.00	55.51
1281.2	17.76	Ave	86	1.5	V	-15.27	2.49	50.00	47.51
1753.67	31.09	PK	84	1.5	H	-14.35	16.74	70.00	53.26
1770.67	19.15	AV	38	1.5	H	-14.34	4.81	50.00	45.19
1841.50	19.18	Ave	36	1.5	H	-13.38	6	50.00	44.00
1841.50	45.06	PK	91	1.5	V	-13.38	31.88	70.00	38.12
2412.08	68.74	Ave	284	1.5	V	-13.18	55.56	50.00	-5.56
2412.08	71.97	PK	156	1.5	H	-13.16	58.81	70.00	11.19
<b>2400.00</b>	<b>32.24</b>	<b>PK</b>	<b>321</b>	<b>1.5</b>	<b>V</b>	<b>-13.18</b>	<b>19.06</b>	<b>70.00</b>	<b>50.94</b>
<b>2400.00</b>	<b>21.23</b>	<b>Ave</b>	<b>37</b>	<b>1.5</b>	<b>V</b>	<b>-13.18</b>	<b>8.05</b>	<b>50.00</b>	<b>41.95</b>

2484.53	33.36	PK	79	1.5	V	-13.19	20.11	70.00	-49.89
2484.53	22.87	Ave	86	1.5	V	-13.19	9.65	50.00	-40.35
2483.5MHz									
387.79	12.23	QP	24	1.5	H	21.09	33.32	46.5	13.18
3938.16	39.48	PK	245	1.5	V	-16.25	23.23	74	50.77
4153.50	27.12	Ave	124	1.5	V	-16.45	10.67	54	43.33
5374.67	43.53	PK	42	1.5	V	-17.41	26.12	74	47.88
6999.53	45.94	PK	135	1.5	H	-18.62	27.32	74	46.68
7079.33	39.62	Ave	53	1.5	H	-19.06	20.56	54	33.44
2316.30	32.42	PK	48	1.5	V	-13.19	19.23	70	50.77
2316.30	20.08	Ave	96	1.5	V	-13.19	6.89	50	43.11
2362.05	72.35	PK	23	1.5	H	-13.14	59.21	70	10.79
2362.05	70.38	Ave	0	1.5	H	-13.14	57.24	50	-7.24
<b>2483.5</b>	<b>33.78</b>	<b>PK</b>	<b>354</b>	<b>1.5</b>	<b>V</b>	<b>-13.11</b>	<b>20.67</b>	<b>70</b>	<b>49.33</b>
<b>2483.5</b>	<b>23.83</b>	<b>Ave</b>	<b>350</b>	<b>1.5</b>	<b>V</b>	<b>-13.11</b>	<b>10.72</b>	<b>50</b>	<b>39.28</b>
2492.22	34.2	PK	158	1.5	V	-13.08	21.12	70	48.88
2492.22	23.97	Ave	156	1.5	V	-13.08	10.89	50	39.11

802.11n-40

Frequency (MHz)	Receiver Reading (dBμV)	Detector (PK/QP/Ave)	Turn table Angle Degree	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height (m)	Polar (H/V)			Limit (dB)	Margin (dB)
2400MHz									
485.79	13.43	QP	44	1.1	H	21.09	34.52	46.5	11.98
1321.5	29.44	PK	38	1.5	V	-15.07	14.37	70	55.63
1281.2	17.92	Ave	86	1.5	V	-15.27	2.65	50	47.35
1753.67	31.03	PK	84	1.5	H	-14.35	16.68	70	53.32
1770.67	19.13	Ave	38	1.5	H	-14.34	4.79	50	45.21
1841.50	19.72	Ave	36	1.5	H	-13.38	6.34	50	43.66
1841.5	44.92	PK	91	1.5	V	-13.38	31.54	70	38.46
2422.08	69.24	Ave	284	1.5	V	-13.28	55.96	50	-5.96

2422.08	72.25	PK	156	1.5	H	-13.26	58.99	70	11.01
<b>2400</b>	<b>32.3</b>	<b>PK</b>	<b>321</b>	<b>1.5</b>	<b>V</b>	<b>-13.18</b>	<b>19.12</b>	<b>70</b>	<b>50.88</b>
<b>2400</b>	<b>21.34</b>	<b>Ave</b>	<b>37</b>	<b>1.5</b>	<b>V</b>	<b>-13.18</b>	<b>8.16</b>	<b>50</b>	<b>41.84</b>
2484.53	33.36	PK	79	1.5	V	-13.19	20.17	70	49.83
2484.53	23.16	Ave	86	1.5	V	-13.19	9.97	50	40.03
2483.5MHz									
387.79	12.36	QP	35	1.5	H	21.09	33.45	46.5	13.05
3938.16	39.56	PK	48	1.5	V	-16.25	23.31	74	50.69
4153.50	27.68	Ave	59	1.5	V	-16.45	11.23	54	42.77
5374.67	43.65	PK	52	1.5	V	-17.41	26.24	74	47.76
6999.53	45.8	PK	127	1.5	H	-18.62	27.18	74	46.82
7079.33	39.35	Ave	156	1.5	H	-19.06	20.29	54	33.71
2316.30	32.66	PK	178	1.5	V	-13.19	19.47	70	50.53
2316.30	19.86	Ave	246	1.5	V	-13.19	6.67	50	43.33
2352.05	72.8	PK	253	1.5	H	-13.15	59.65	70	10.35
2352.05	70.49	Ave	249	1.5	H	-13.15	57.34	50	-7.34
<b>2483.5</b>	<b>33.53</b>	<b>PK</b>	<b>153</b>	<b>1.5</b>	<b>V</b>	<b>-13.11</b>	<b>20.42</b>	<b>70</b>	<b>49.58</b>
<b>2483.5</b>	<b>23.67</b>	<b>Ave</b>	<b>248</b>	<b>1.5</b>	<b>V</b>	<b>-13.11</b>	<b>10.56</b>	<b>50</b>	<b>39.44</b>
2492.22	34.4	PK	138	1.5	V	-13.08	21.32	70	48.68
2492.22	24	Ave	156	1.5	V	-13.08	10.92	50	39.08

## B.5 Conducted Transmission Spurious Emission

### B.5.1 Description

All harmonics/spurious must be at least 20 dB down from the highest emission level within the authorized band.

### B.5.2 Test Procedures

#### Conducted Measurement

EUT was set for low, mid, high channel with modulated mode and highest RF output power

The spectrum analyzer was connected to the antenna terminal.

#### Procedures

- a) The EUT was connected to SA by a low loss cable.
- b) Set RBW=100 kHz, VBW $\geq$  RBW, scan up to 10th harmonics. All harmonics/Spurs emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

### B.5.3 Test Result

#### 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