FCC PART 15C/ IC RSS-210 TEST REPORT

No. I14Z45243-SRD01

for

VSN Technologies Inc.

Quad GSM/Dual WCDMA Smart Phone

Model Name: V2001

Marketing Name: R.45

FCC ID: 2AA9WV2001

IC No.: 11665A-V2001

With

Hardware Version: P3

Software Version: TBW972323_898B_V007253

Issued Date: 2014-03-11

DAkkS Deutsche Akkreditierungsstelle D-PL-12123-01-01

Test Laboratory:
TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology
No. 52, Huayuan Bei Road, Haidian District, Beijing, P. R. China, 100191
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CONTENTS

1. TEST LABORATORY

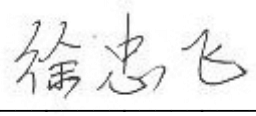
1.1. Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT
Address: No. 52, Huayuan Bei Road, Haidian District, Beijing, P. R. China
Postal Code: 100191
Telephone: 008610623046332046
Fax: 008610623046332063

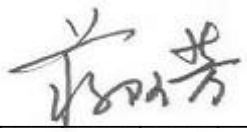
1.2. Project Data

Testing Start Date: 2014-03-06
Testing End Date: 2014-03-10

1.3. Signature



Xu Zhongfei
(Prepared this test report)



Jiang Afang
(Reviewed this test report)

Xiao Li
Deputy Director of the laboratory
(Approved this test report)

2. CLIENT INFORMATION

2.1. Applicant Information

Company Name:	VSN Technologies Inc.
Address /Post:	1975 E. Sunrise Blvd., #400 Fort Lauderdale, FL
City:	fort lauderdale
Postal Code:	33323
Country:	United States
Contact Person:	Donghailun
Contact Email	amit.verma@vsnmobil.com
Telephone:	9546094912
Fax:	9543068450

2.2. Manufacturer Information

Company Name:	Beijing Benywave Technology Co. Ltd.
Address /Post:	NO.55 Jiachang 2 Road, OPTO-Mechatronics Industrial Park, Tongzhou District
City:	Beijing
Postal Code:	100111
Country:	China
Telephone:	+86-10-58928917
Fax:	/

3. EQUIPMENT UNDER TEST(EUT) AND ANCILLARY EQUIPMENT(AE)

3.1. About EUT

Description	Quad GSM/Dual WCDMA Smart Phone
Model neme	V2001
Marketing Name	R.45
FCC ID	2AA9WV2001
IC ID	11665A-V2001
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	22.53dBm(OFDM)
Power Supply	3.8V DC by Battery

3.2. Internal Identification of EUT Used During the Test

EUT ID*	IMEI	HW Version	SW Version
EUT1	354694028010710	P3	TBW972323_898B_V007253
EUT2	354694028010694	P3	TBW972323_898B_V007253

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

3.3. Internal Identification of AE Used During the Test

AE ID*	Description	Type	SN
AE1	Battery	TBT9608	/

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

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 Part15	FCC CFR 47, Part 15, Subpart C: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902-928MHz, 2400-2483.5 MHz, and 5725-5850 MHz.	Oct, 2012
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2003
KDB558074	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247	2012
RSS-GEN	Spectrum Management and Telecommunications - Radio Standards Specification General Requirements and Information for the Certification of Radiocommunication Equipment	Issue 3
RSS-210	Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment	Issue 8

5. LABORATORY ENVIRONMENT

Conducted RF performance testing is performed in shielding room.

EMC performance testing is performed in Semi-anechoic chamber.

6. SUMMARY OF TEST RESULTS

6.1. Summary of Test Results

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15C	Sub-clause of IC	Verdict
Maximum Peak Output Power	15.247 (b)	A8	**P**
Peak Power Spectral Density	15.247 (e)	A8	**P**
Occupied 6dB Bandwidth	15.247 (a)	A8	**P**
99% Occupied Bandwidth	/	RSS-Gen 4.6.1	**P**
Band Edges Compliance	15.247 (d)	A8	**P**
Transmitter Spurious Emission - Conducted	15.247 (d)	A8	**P**
Transmitter Spurious Emission - Radiated	15.247, 15.205, 15.209	A8	**P**
Transmitter Spurious Emission - Radiated<30MHz	15.247, 15.209	A8	**P**
AC Powerline Conducted Emission	15.107, 15.207	7.2	**P**

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 TMC
NA	Not Applicable, The test was not applicable
F	Fail, The EUT does not comply with the essential requirements in the standard

6.2. Statements

TMC has evaluated the test cases requested by the client/manufacturer as listed in section 6.1 of this report for the EUT specified in section 3 according to the standards or reference documents listed in section 4.1.

This report only deals with the WLAN function among the features described in section 3.

6.3. Test Conditions

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

Temperature	26℃
Voltage	3.8V (By battery)
Humidity	44%

7. TEST EQUIPMENTS UTILIZED

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Calibration Due date
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	2013-07-08	2014-07-07
2	Test Receiver	ESS	847151/015	Rohde & Schwarz	2013-12-29	2014-10-30
3	LISN	ESH2-Z5	829991/012	Rohde & Schwarz	2013-4-15	2014-08-12
4	Shielding Room	S81	/	ETS-Lindgren	/	/

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Calibration Due date
1	Test Receiver	ESU26	100376	Rohde & Schwarz	2013-11-8	2014-11-7
2	BiLog Antenna	VULB9163	9163-514	Schwarzbeck	2011-11-11	2014-11-10
3	Dual-Ridge Waveguide Horn Antenna	3117	00119024	ETS-Lindgren	2014-2-2	2017-2-1
4	Dual-Ridge Waveguide Horn Antenna	3116	2661	EMCO	2011-7-1	2014-06-30
5	Loop antenna	HFH2-Z2	829324/007	Rohde & Schwarz	2011-12-21	2014-12-20
6	Semi-anechoic chamber	/	CT000332-1074	Frankonia German	/	/

ANNEX A: MEASUREMENT 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

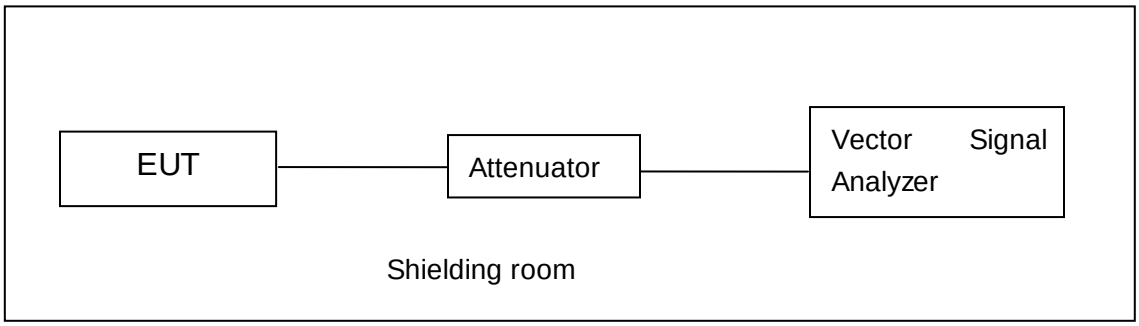


Fig.A.1.1.1: Test Setup Diagram for Conducted Measurements

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;

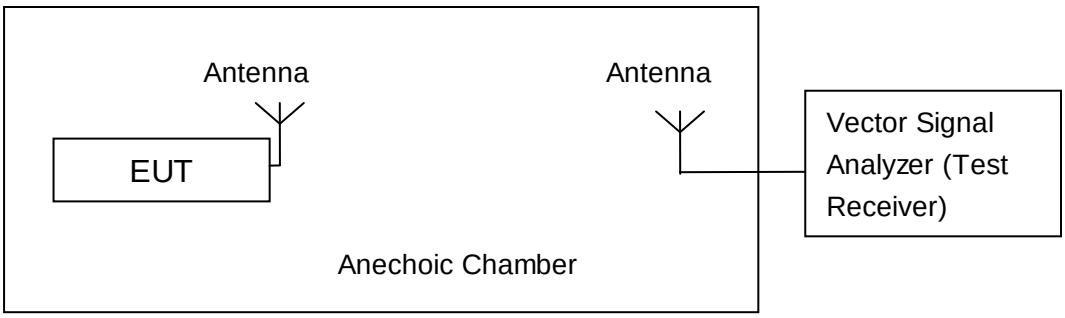


Fig.A.1.2.1: Test Setup Diagram for Radiated Measurements

A.2. Maximum Output Power

Measurement Limit and Method:

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

The measurement is made according to KDB558074, and section 9.1.2 is used for peak power measurement.

Note: The Duty cycle of EUT is 98.2%, so all measurements of maximum conducted output power will be performed with the EUT transmitting continuously.

EUT ID: EUT2

A.2.1. Maximum 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	16.78	/	/
	2	17.07	/	/
	5.5	18.43	/	/
	11	19.93	20.22	20.49
802.11g	6	20.82	/	/
	9	20.65	/	/
	12	20.51	/	/
	18	20.54	/	/
	24	21.05	22.51	21.54
	36	20.78	/	/
	48	20.82	/	/
	54	20.89	/	/

The data rate 11Mbps and 24Mbps 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	20.87	/	/
	MCS1	20.49	/	/
	MCS2	20.46	/	/
	MCS3	21.01	22.53	21.54
	MCS4	20.76	/	/
	MCS5	20.86	/	/
	MCS6	20.91	/	/
	MCS7	20.79	/	/

The data rate MCS3 is selected as worse condition, and the following cases are performed with this condition.

Conclusion: Pass

A.2.2. Maximum Average Output Power-conducted

The measurement is made according to KDB558074, and Method AVGSA-1 Alternative of section 9.2.1.3 is used for peak power measurement.

802.11b/g mode

Mode	Test Result (dBm)		
	2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)
802.11b	13.41	13.44	13.79
802.11g	12.01	13.36	12.61

802.11n-HT20 mode

Mode	Test Result (dBm)		
	2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)
802.11n (20MHz)	11.88	13.35	12.54

Conclusion: Pass

Measurement Uncertainty:

Measurement Uncertainty	0.75dB

A.3. Peak Power Spectral Density

Measurement Limit:

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

The measurement is made according to KDB558074.

Modulation type and data rate tested:

802.11b	802.11g	802.11n-HT20
11Mbps(CCK)	24Mbps(OFDM)	MCS3(OFDM)

Measurement Results:

802.11b/g mode

Mode	Channel	Power Spectral Density (dBm/3 kHz)		Conclusion
802.11b	1	Fig.A.3.1	-10.75	**P**
	6	Fig.A.3.2	-10.60	**P**
	11	Fig.A.3.3	-8.10	**P**
802.11g	1	Fig.A.3.4	-12.40	**P**
	6	Fig.A.3.5	-10.41	**P**
	11	Fig.A.3.6	-12.29	**P**

802.11n-HT20 mode

Mode	Channel	Power Spectral Density (dBm/3 kHz)		Conclusion
802.11n (HT20)	1	Fig.A.3.7	-12.58	**P**
	6	Fig.A.3.8	-11.28	**P**
	11	Fig.A.3.9	-11.57	**P**

Conclusion: Pass

Measurement Uncertainty:

Measurement Uncertainty	0.75dB

Test graphs as below:

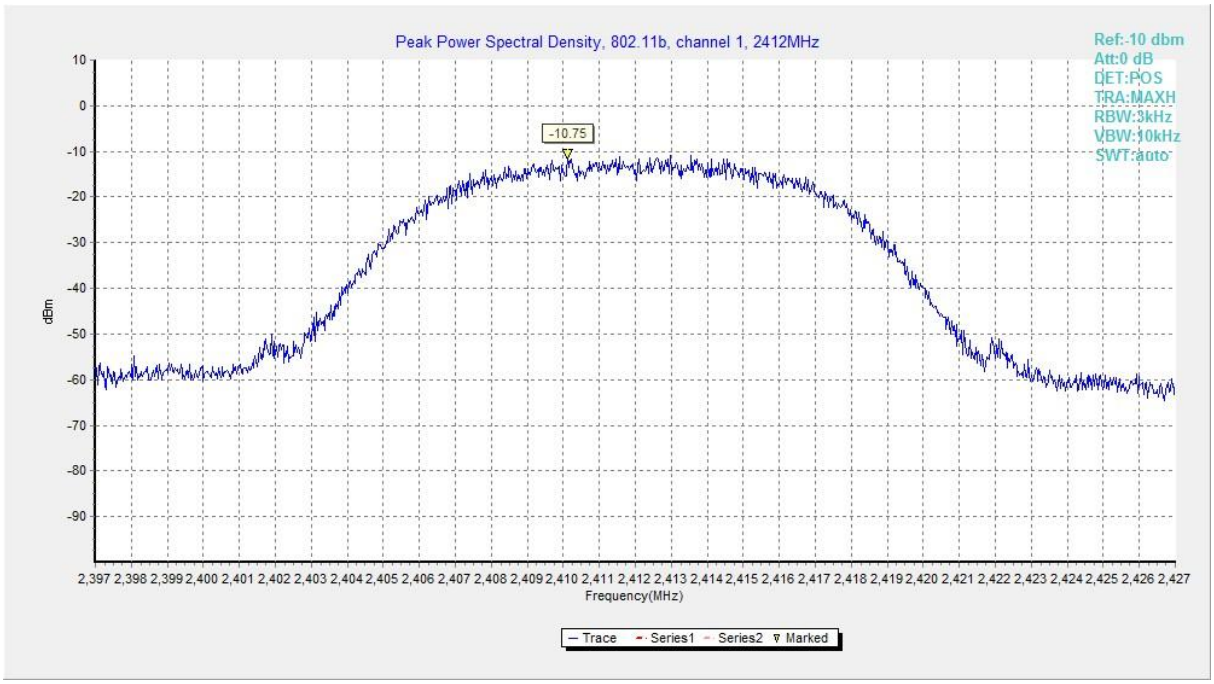


Fig.A.3.1 Power Spectral Density (802.11b, Ch 1)

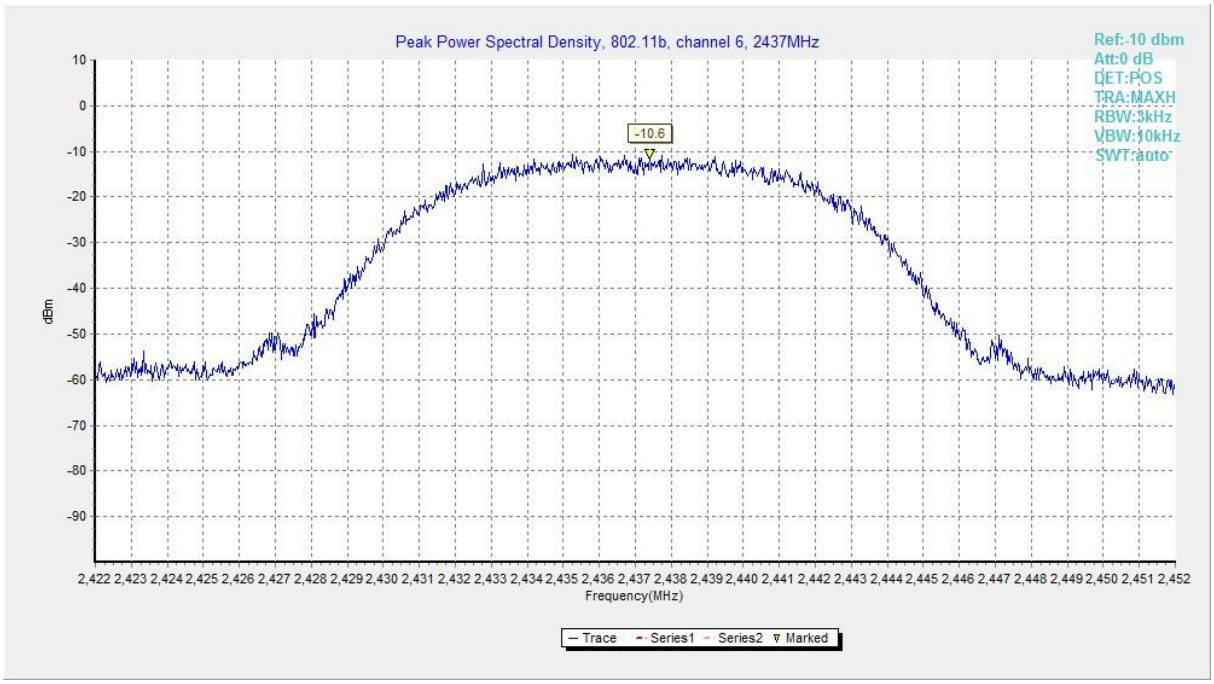


Fig.A.3.2 Power Spectral Density (802.11b, Ch 6)

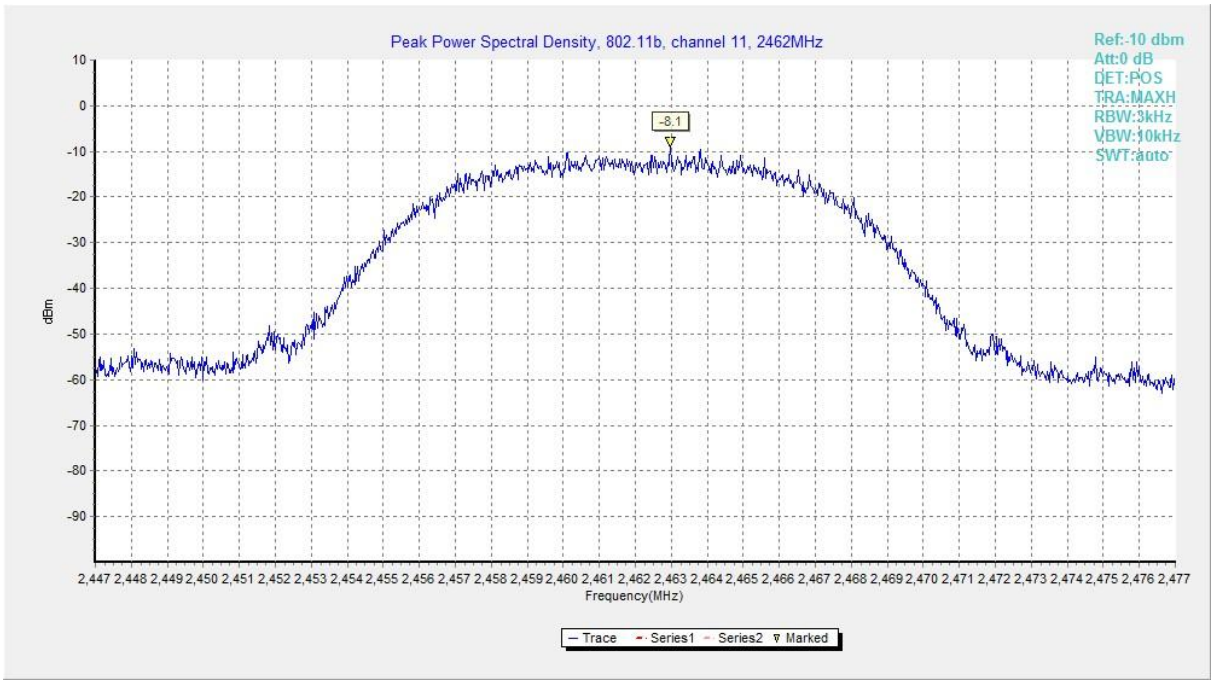


Fig.A.3.3 Power Spectral Density (802.11b, Ch 11)

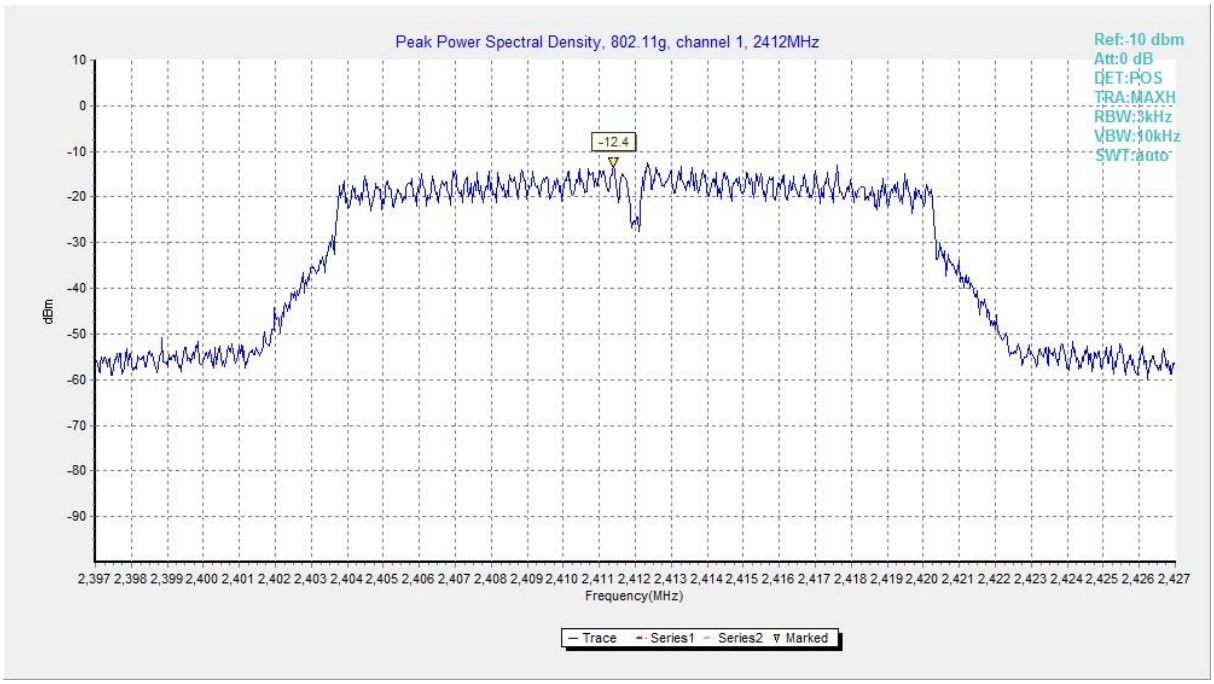


Fig.A.3.4 Power Spectral Density (802.11g, Ch 1)

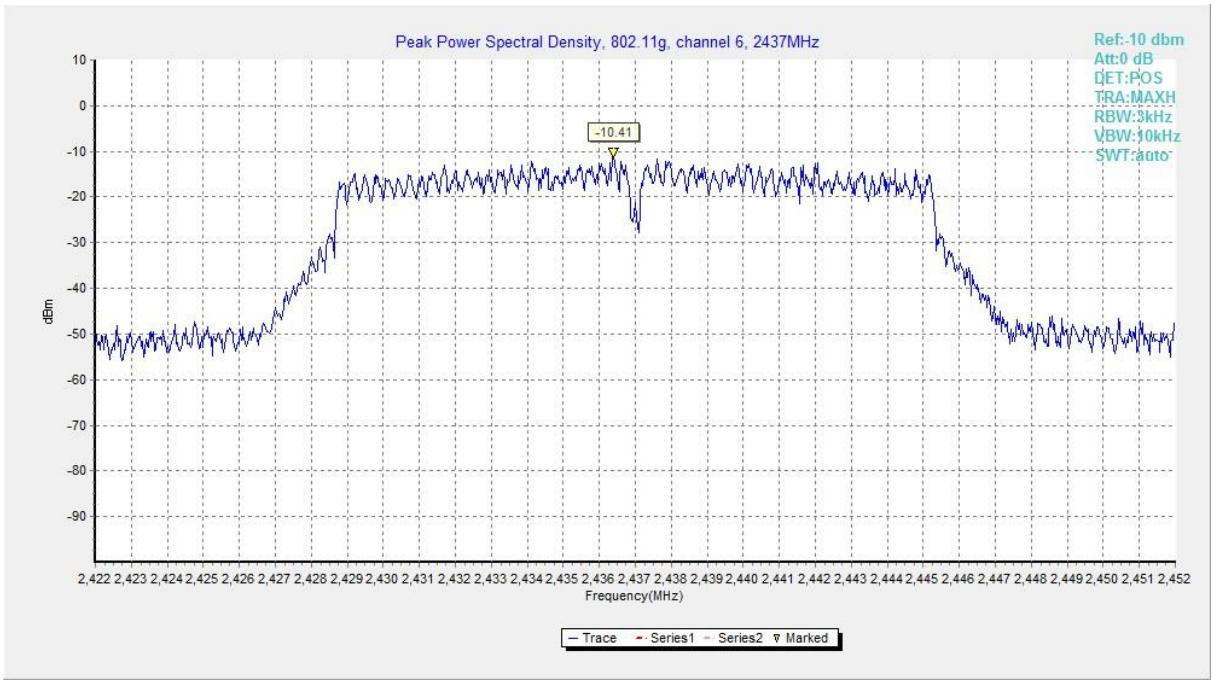


Fig.A.3.5 Power Spectral Density (802.11g, Ch 6)

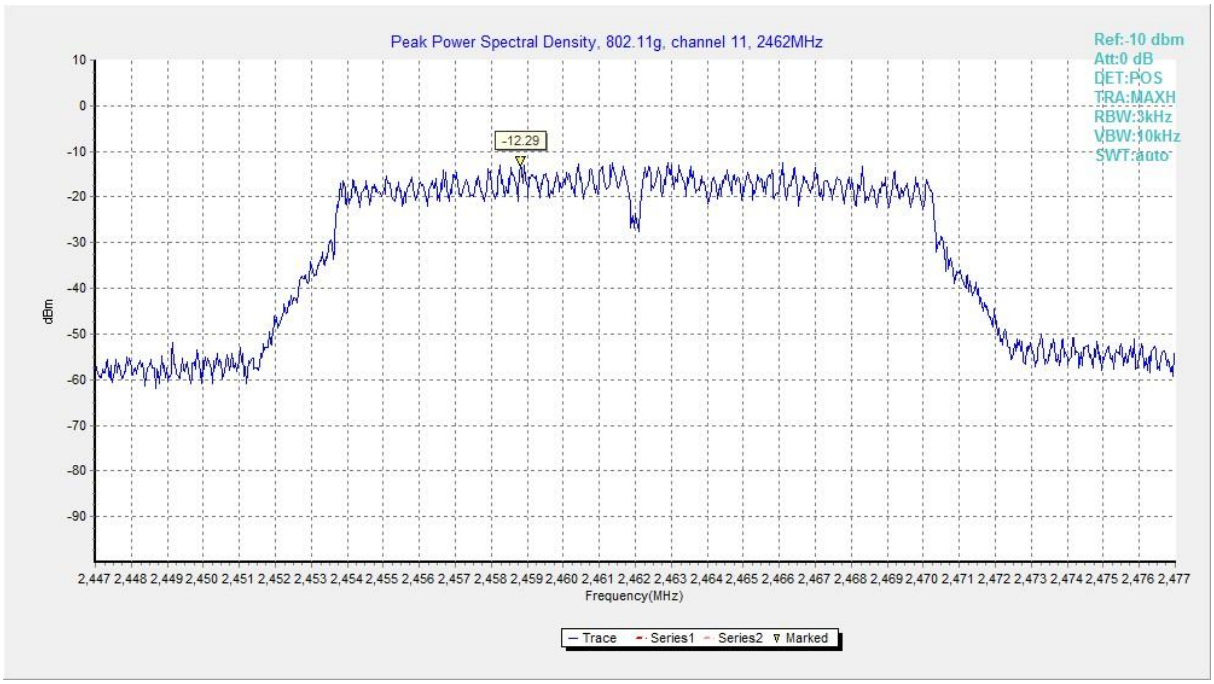


Fig.A.3.6 Power Spectral Density (802.11g, Ch 11)

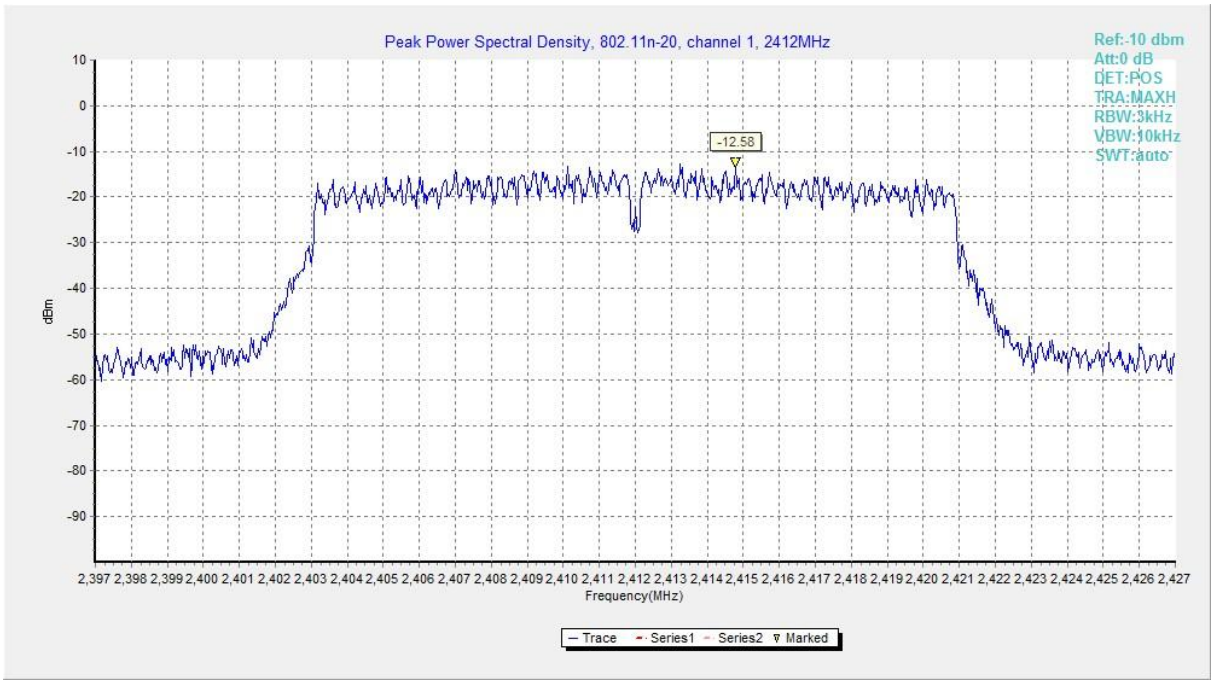


Fig.A.3.7 Power Spectral Density (802.11n-HT20, Ch 1)

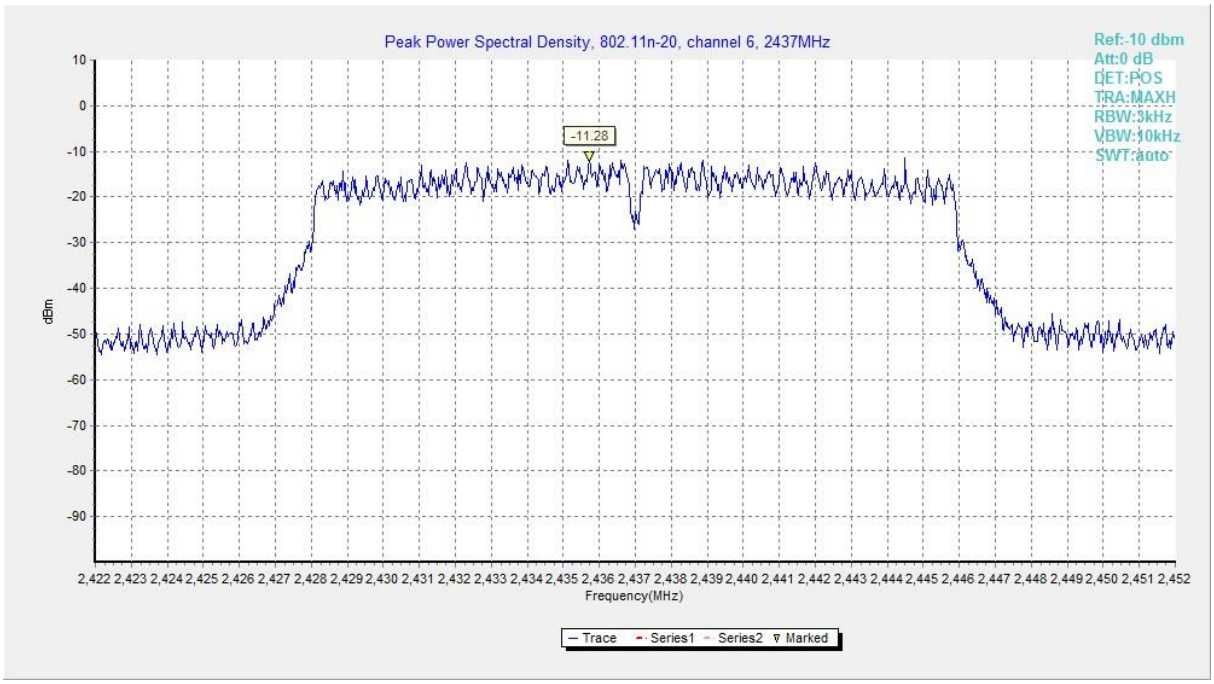


Fig.A.3.8 Power Spectral Density (802.11n-HT20, Ch 6)

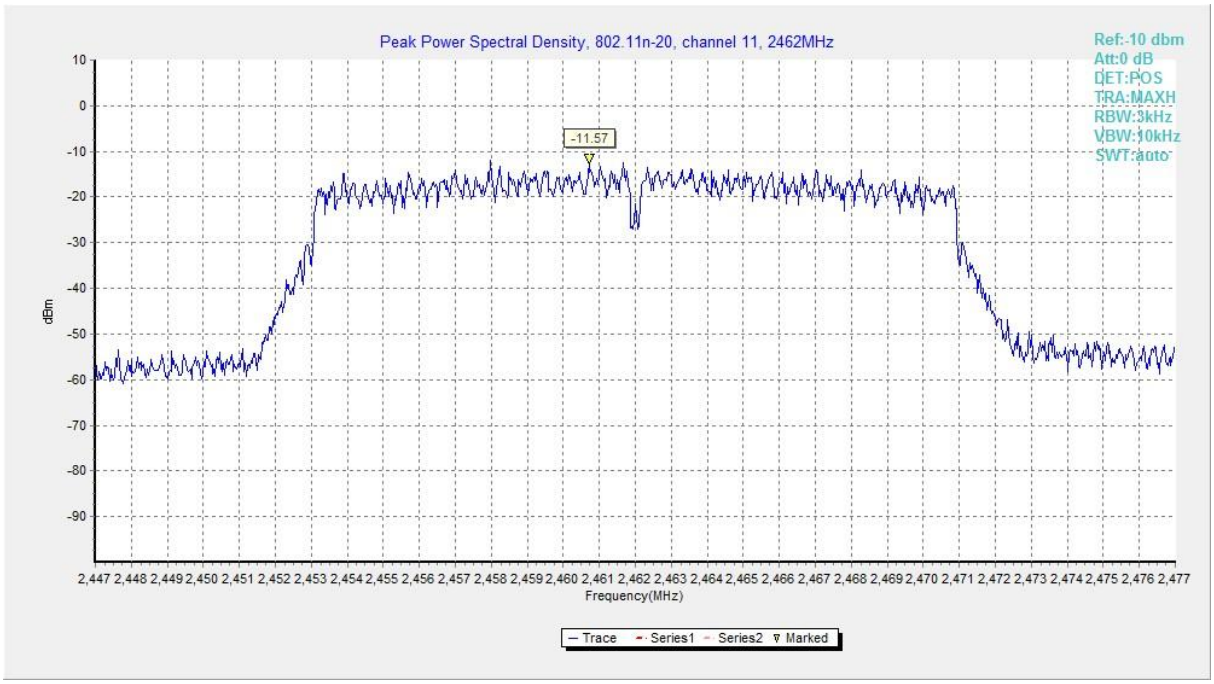


Fig.A.3.9 Power Spectral Density (802.11n-HT20, Ch 11)

A.4. Occupied 6dB Bandwidth

Measurement Limit:

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

The measurement is made according to KDB558074.

EUT ID: EUT2

Modulation type and data rate tested:

802.11b	802.11g	802.11n-HT20
11Mbps(CCK)	24Mbps(OFDM)	MCS3(OFDM)

Measurement Result:

802.11b/g mode

Mode	Channel	Occupied 6dB Bandwidth (kHz)		conclusion
802.11b	1	Fig.A.4.1	9300	P
	6	Fig.A.4.2	9200	P
	11	Fig.A.4.3	9150	P
802.11g	1	Fig.A.4.4	15900	P
	6	Fig.A.4.5	15750	P
	11	Fig.A.4.6	16250	P

802.11n-HT20 mode

Mode	Channel	Occupied 6dB Bandwidth (kHz)		conclusion
802.11n (HT20)	1	Fig.A.4.7	17200	P
	6	Fig.A.4.8	17500	P
	11	Fig.A.4.9	16550	P

Conclusion: Pass

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz

Test graphs as below:

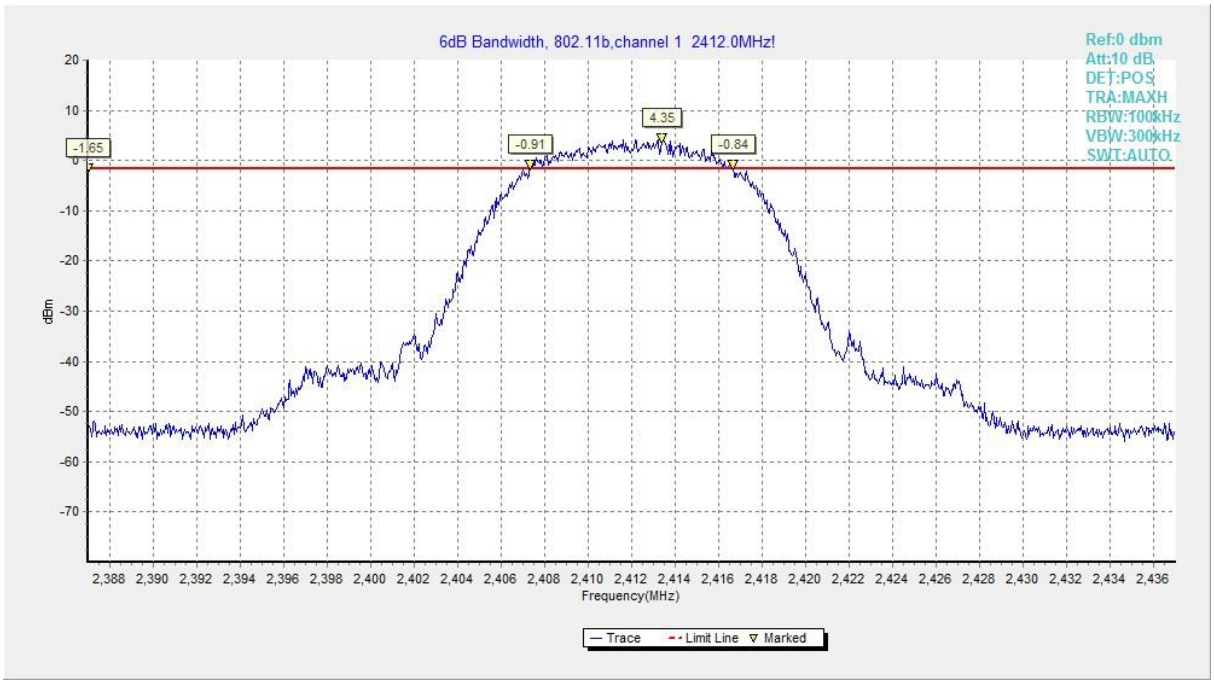


Fig.A.4.1 Occupied 6dB Bandwidth (802.11b, Ch 1)

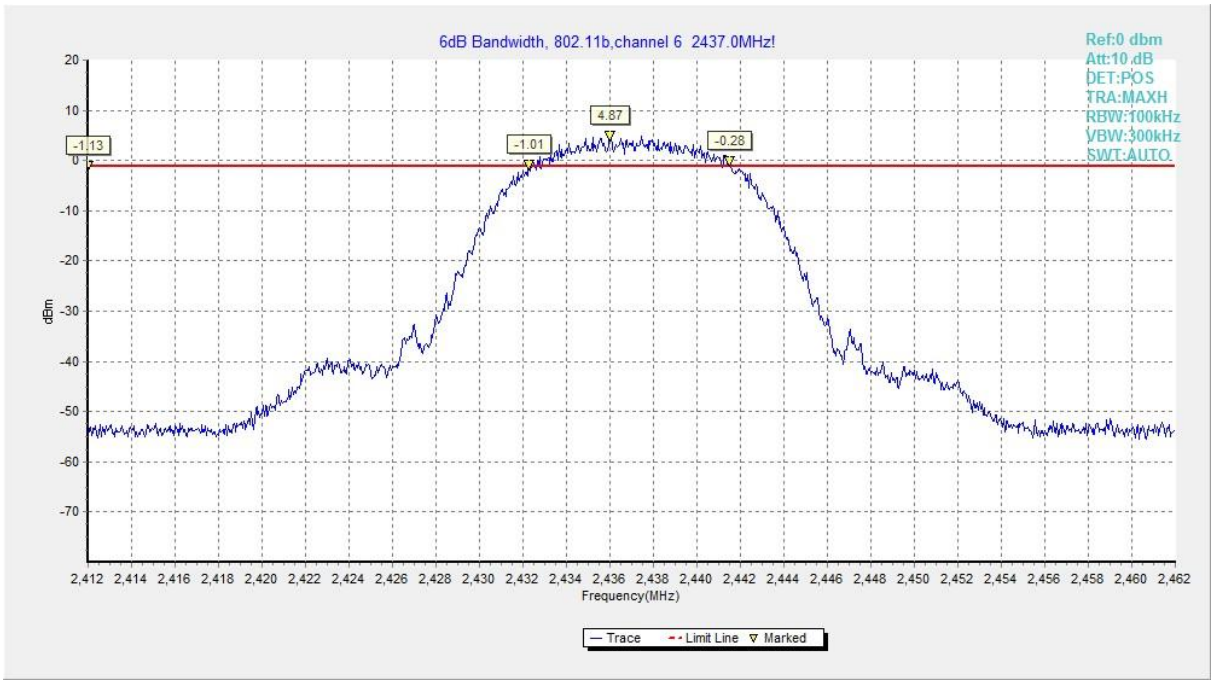


Fig.A.4.2 Occupied 6dB Bandwidth (802.11b, Ch 6)

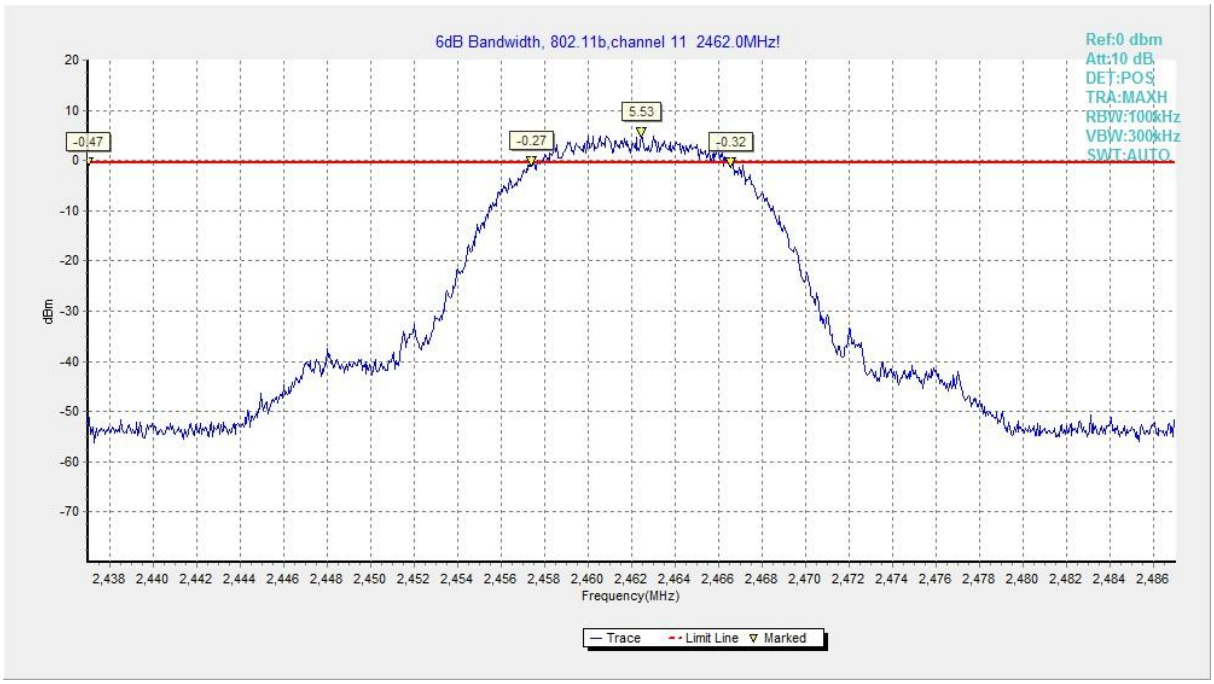


Fig.A.4.3 Occupied 6dB Bandwidth (802.11b, Ch 11)

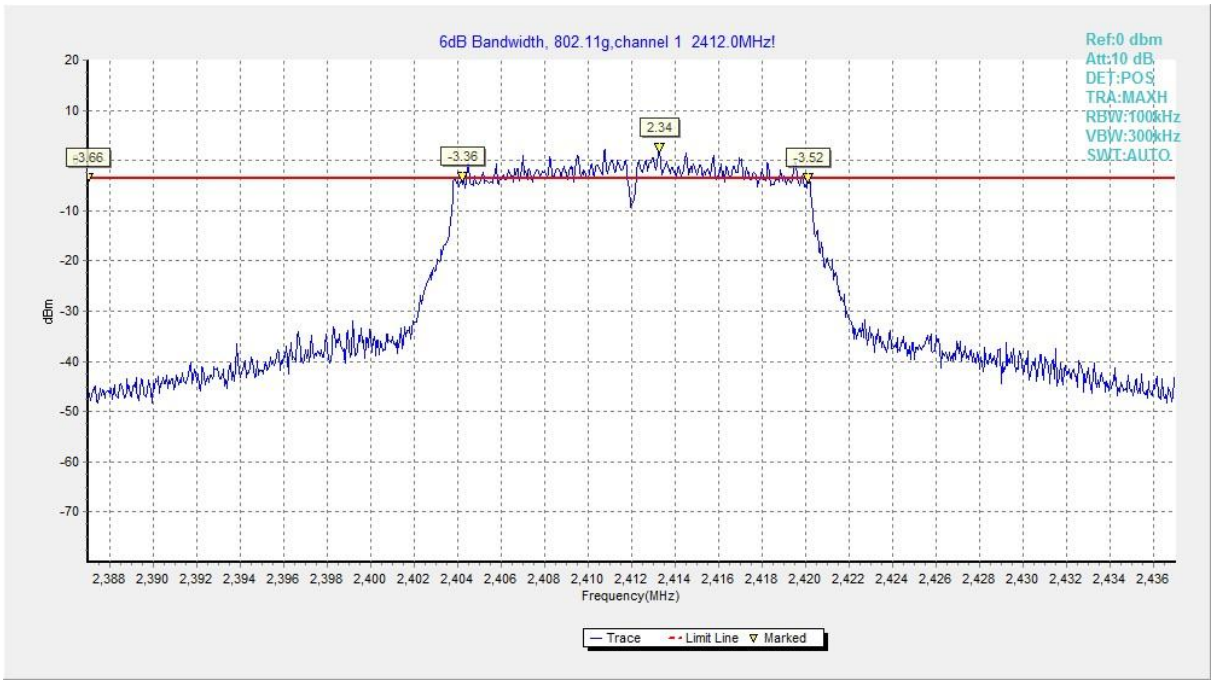


Fig.A.4.4 Occupied 6dB Bandwidth (802.11g, Ch 1)

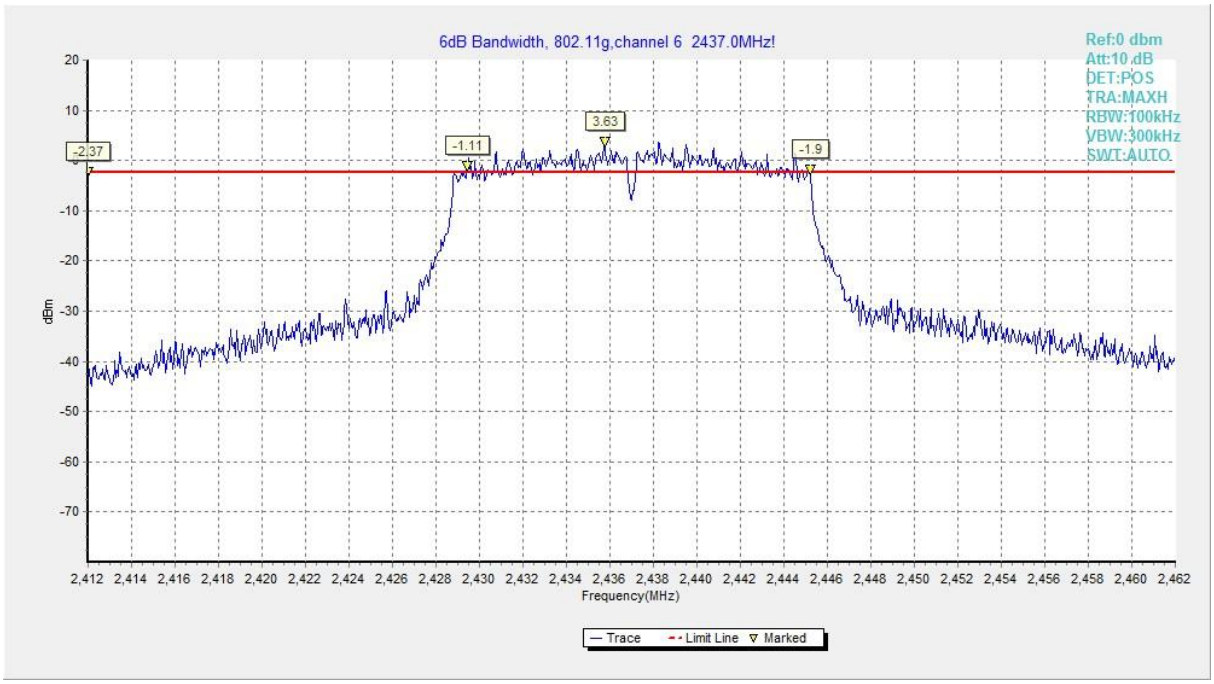


Fig.A.4.5 Occupied 6dB Bandwidth (802.11g, Ch 6)

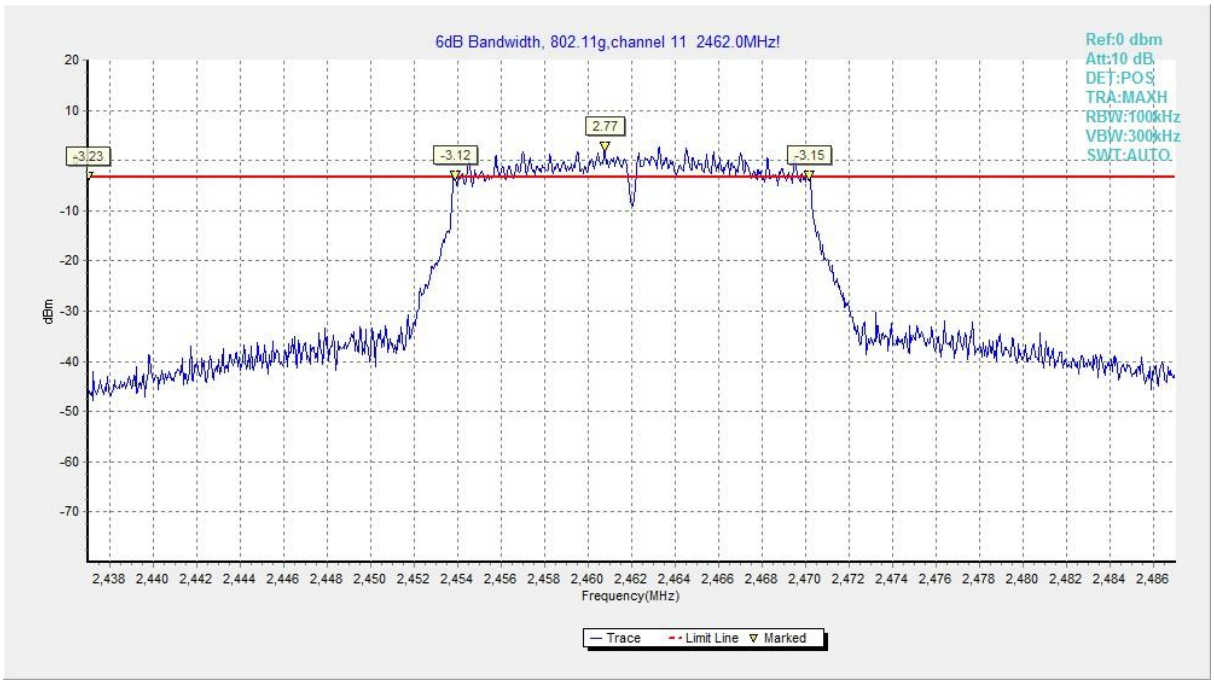


Fig.A.4.6 Occupied 6dB Bandwidth (802.11g, Ch 11)

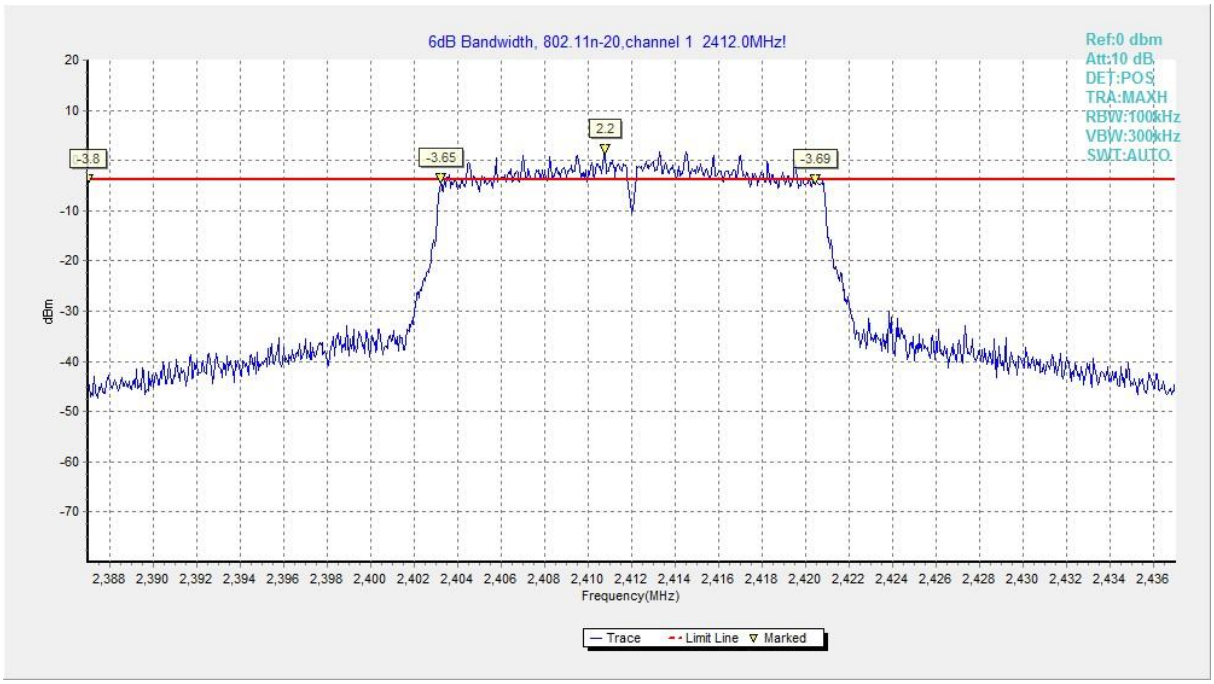


Fig.A.4.7 Occupied 6dB Bandwidth (802.11n-20MHz, Ch 1)

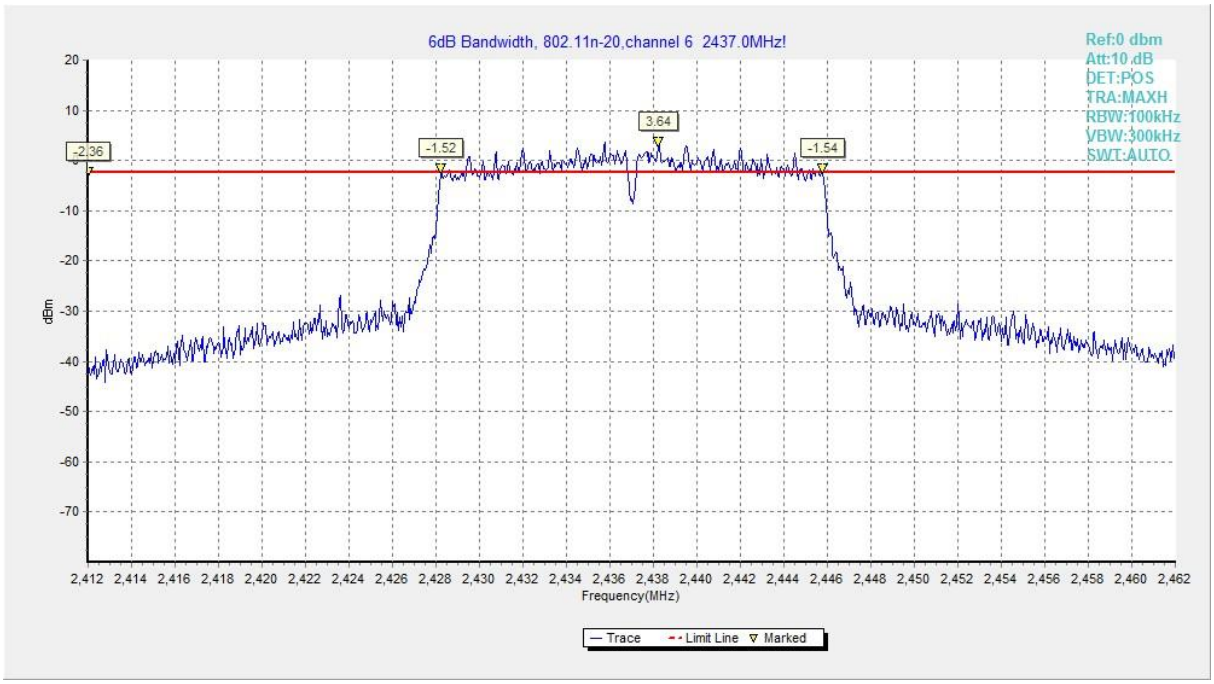


Fig.A.4.8 Occupied 6dB Bandwidth (802.11n-HT20, Ch 6)

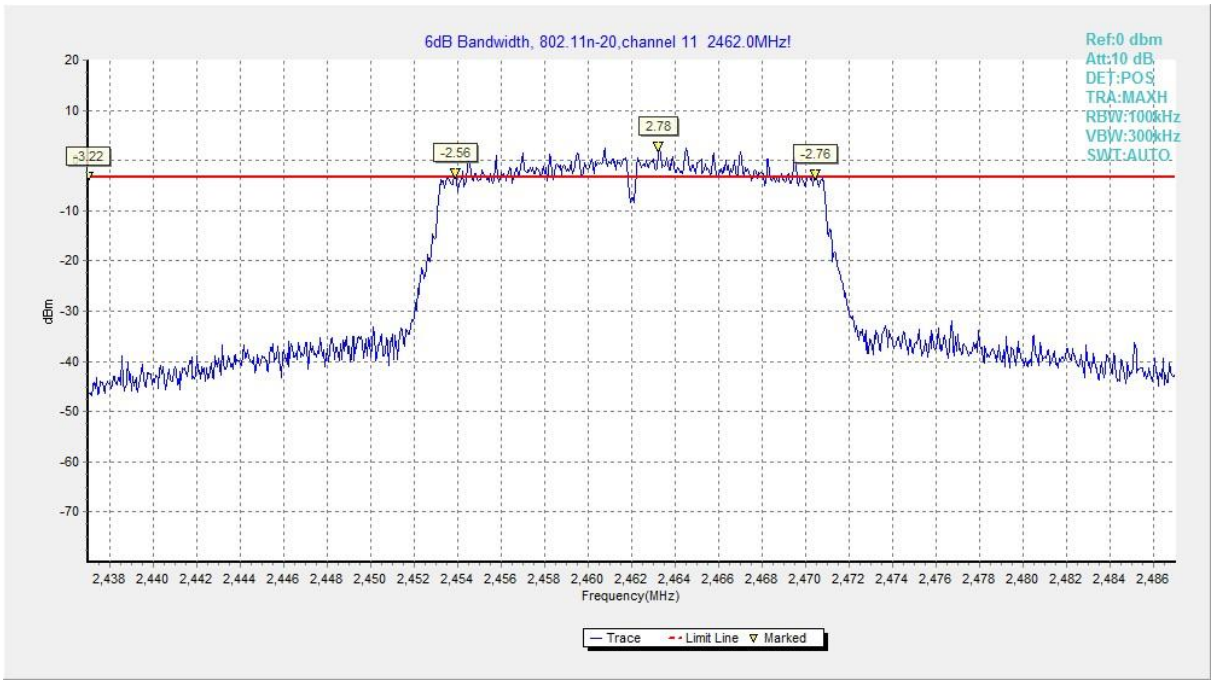


Fig.A.4.9 Occupied 6dB Bandwidth (802.11n-HT20, Ch 11)

A.5. 99% Occupied Channel Bandwidth

Reference : RSS-Gen 4.6.1

EUT ID: EUT2

Modulation type and data rate tested:

802.11b	802.11g	802.11n-HT20
11Mbps(CCK)	24Mbps(OFDM)	MCS3(OFDM)

Measurement Result:

802.11b/g mode

Mode	Channel	Occupied Bandwidth (MHz)		conclusion
802.11b	1	Fig.A.5.1	12.88	P
	6	Fig.A.5.2	12.79	P
	11	Fig.A.5.3	12.88	P
802.11g	1	Fig.A.5.4	17.60	P
	6	Fig.A.5.5	17.79	P
	11	Fig.A.5.6	17.69	P

802.11n-HT20 mode

Mode	Channel	Occupied Bandwidth (MHz)		conclusion
802.11n (HT20)	1	Fig.A.5.7	18.46	P
	6	Fig.A.5.8	18.56	P
	11	Fig.A.5.9	18.46	P

Conclusion: PASS

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz

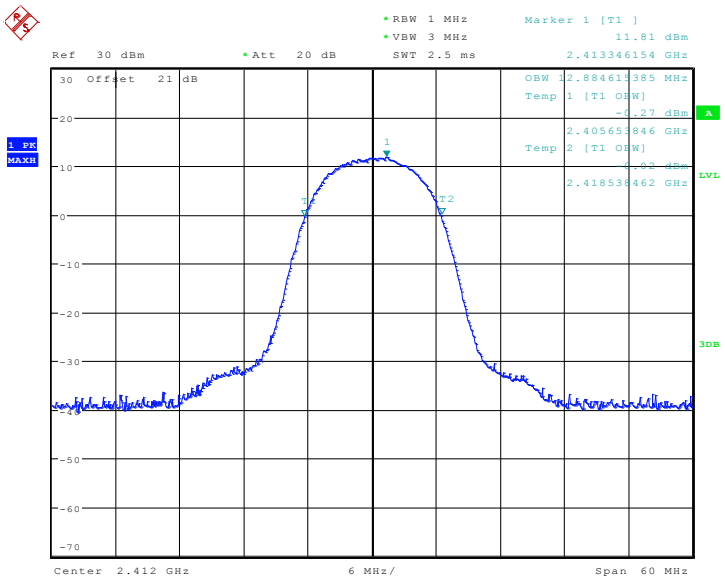


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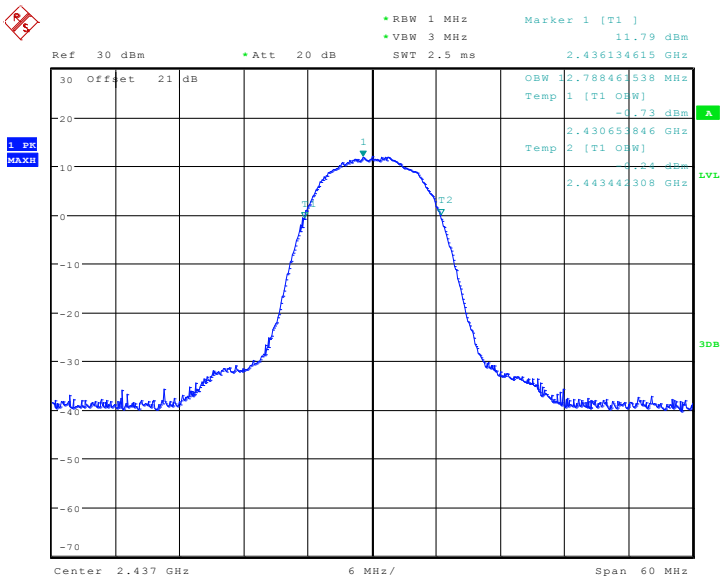
Fig.A.5.1 99%Occupied Bandwidth: (802.11b, Ch 1)



Date: 11.MAR.2014 16:29:49

Fig.A.5.2 99%Occupied Bandwidth: (802.11b, Ch 6)

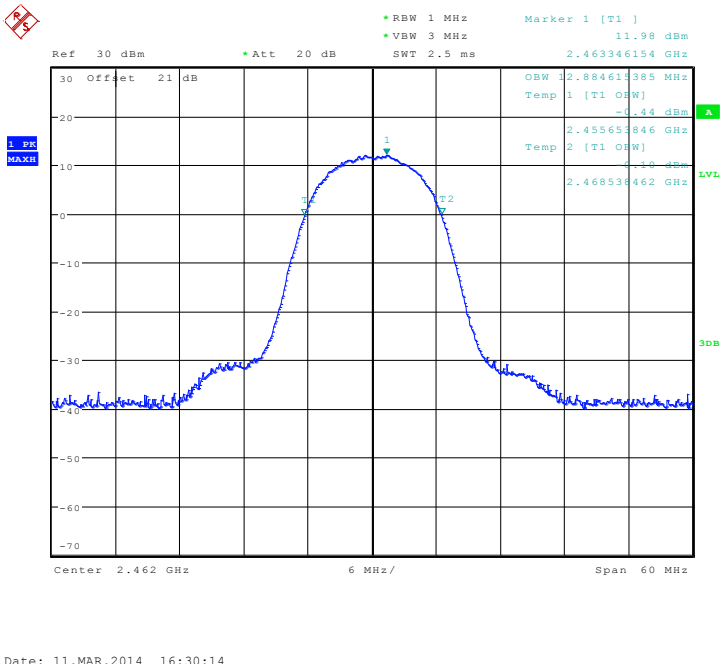


Fig.A.5.3 99%Occupied Bandwidth: (802.11b, Ch 11)

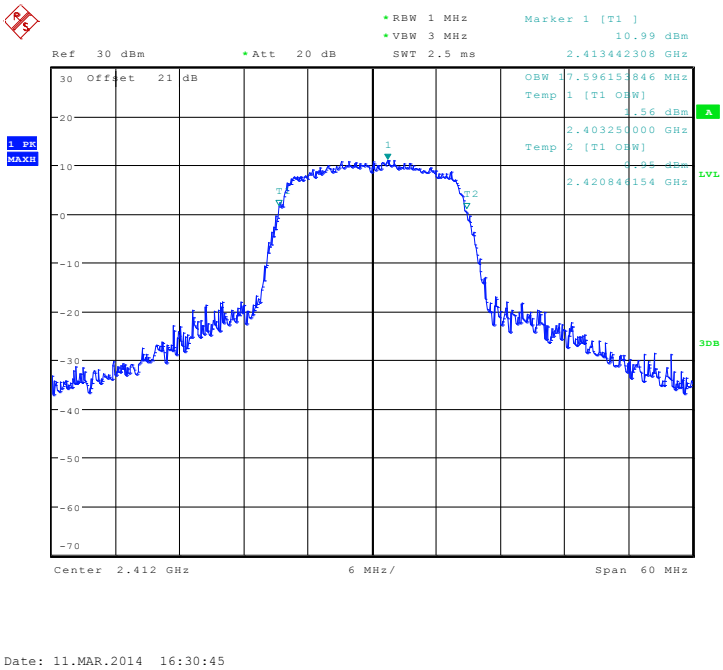


Fig.A.5.4 99%Occupied Bandwidth: (802.11g, Ch 1)

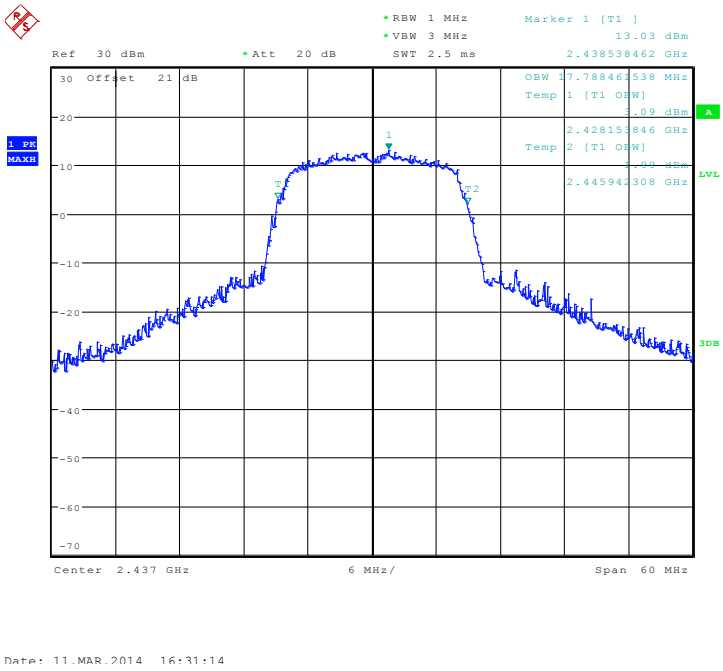


Fig.A.5.5 99%Occupied Bandwidth: (802.11g, Ch 6)

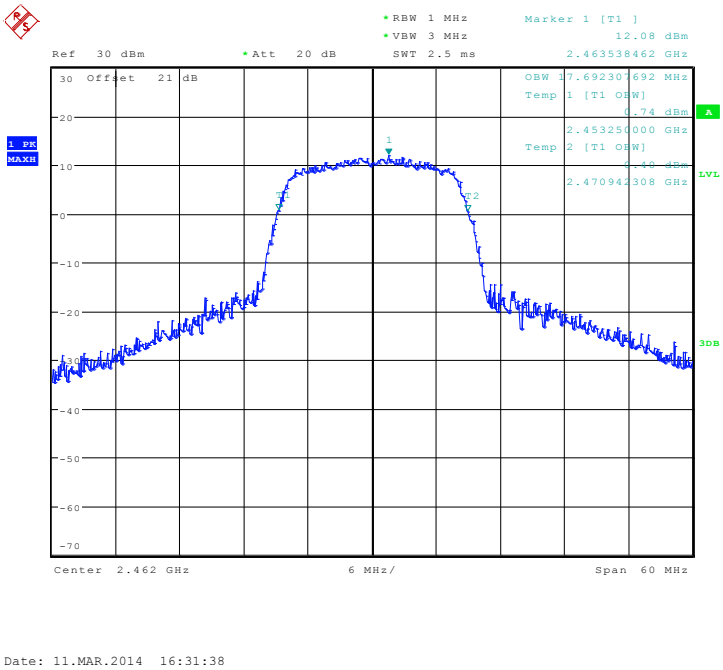


Fig.A.5.6 99%Occupied Bandwidth: (802.11g, Ch 11)

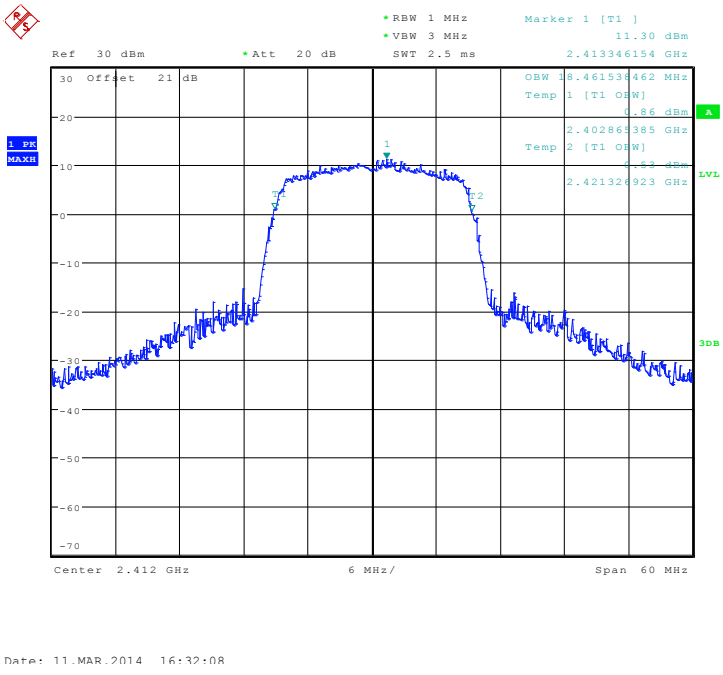


Fig.A.5.7 99% Occupied Bandwidth: (802.11n-HT20, Ch 1)

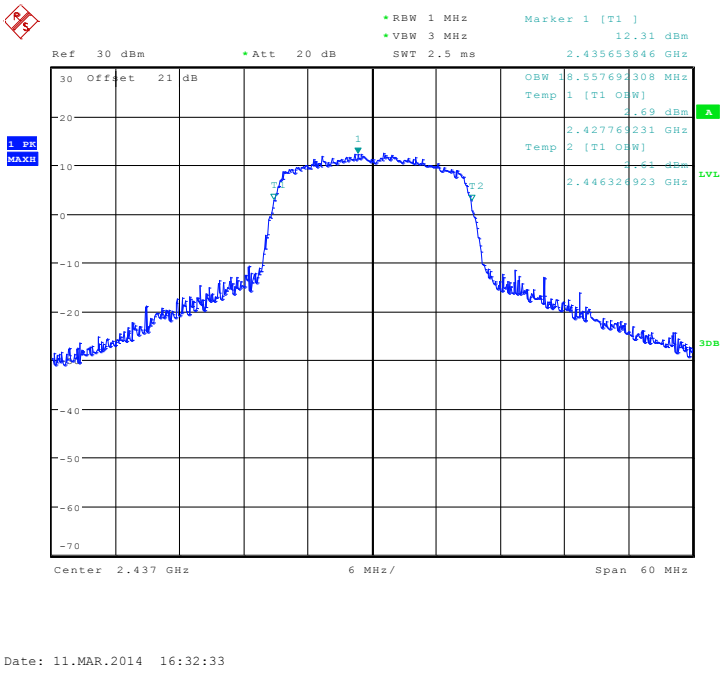


Fig.A.5.8 99% Occupied Bandwidth: (802.11n-HT20, Ch 6)

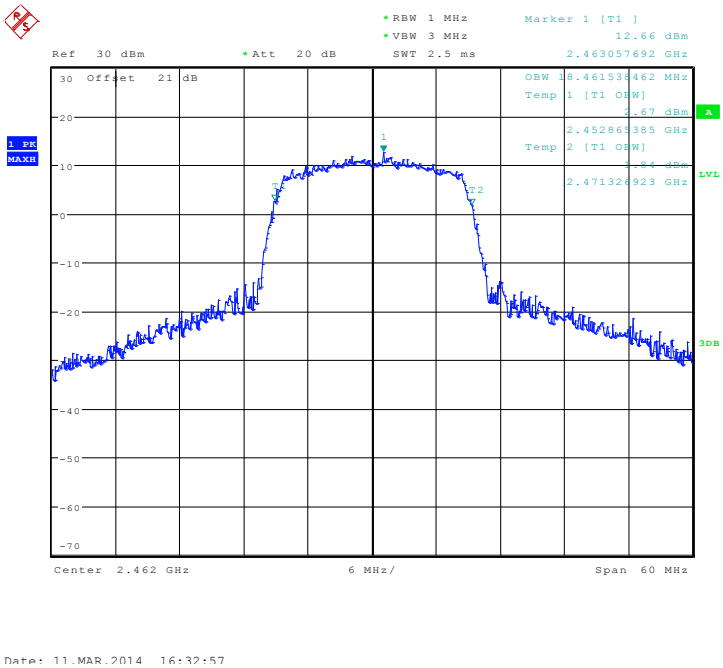


Fig.A.5.9 99% Occupied Bandwidth: (802.11n-HT20, Ch 11)

A.6. Band Edges Compliance

Measurement Limit:

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

The measurement is made according to KDB558074.

EUT ID: EUT2

Modulation type and data rate tested:

802.11b	802.11g	802.11n-HT20
11Mbps(CCK)	24Mbps(OFDM)	MCS3(OFDM)

Measurement Result:

802.11b/g mode

Mode	Channel	Test Results	Conclusion
802.11b	1	Fig.A.6.1	**P**
	11	Fig.A.6.2	**P**
802.11g	1	Fig.A.6.3	**P**
	11	Fig.A.6.4	**P**

802.11n-HT20 mode

Mode	Channel	Test Results	Conclusion
802.11n (HT20)	1	Fig.A.6.5	**P**
	11	Fig.A.6.6	**P**

Conclusion: Pass

Measurement Uncertainty:

Measurement Uncertainty	0.75dB

Test graphs as below: