FCC PART 15C
TEST REPORT
No. I17N00290-WLAN

For

Doro AB

LTE phone

Model Name: DSB-0090

With

Hardware Version: 1011

Software Version: FRANK01A-S10A_DSB0090_201_USER_170503

FCC ID: WS5DSB0090

Issued Date: 2017-05-05

Test Laboratory:

FCC 2.948 Listed: No.342690

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.

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I17N00290-WLAN	Rev.0	1st edition	2017-05-05

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ANNEX C: PERSONS INVOLVED IN THIS TESTING 100

1. Test Laboratory

1.1. Testing Location

Location: CTTL(South Branch)

Address: TCL International E city, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, Guangdong, China 518000

1.2. Testing Environment

Normal Temperature: 15-35℃

Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2017-03-21

Testing End Date: 2017-04-26

1.4. Signature

Lin Kanfeng

(Prepared this test report)

Tang Weisheng

(Reviewed this test report)

Zhang Bojun

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	Doro AB
Address:	Magistratsvägen 10 SE-226 43 Lund Sweden
City:	Lund
Postal Code:	/
Country:	Sweden
Telephone:	+46 46 280 5000
Fax:	+46 46 280 5001

2.2. Manufacturer Information

Company Name:	CK TELECOM LTD.
Address:	Technology Road. High-Tech Development Zone. Heyuan, Guangdong, P.R. China
City:	Heyuan
Postal Code:	/
Country:	China
Telephone:	0755-26739100 ext.8515
Fax:	0755-26739600

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

3.1. About EUT

Description	LTE phone
Model Name	DSB-0090
Market Name	Doro8040
RF Protocol	IEEE 802.11b/g/n20/n40
Operating Frequency	2412MHz~2462MHz
FCC ID	WS5DSB0090

3.2. Internal Identification of EUT

EUT ID*	IMEI	HW Version	SW Version	Receive Date
EUT1	355115080003723	1011	FRANK01A-S10A_DSB0090_201_USER_170503	2017-03-21

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

3.3. Internal Identification of AE

AE ID*	Description	SN
AE1	Charger	/
AE2	Charger	/

AE1

Model	A2-3762-501000
Manufacturer	Dongguan Aohai Power Technology Co., LTD

AE2

Model	A806A-050100U-UK1
Manufacturer	Dongguan Aohai Power Technology Co., LTD

*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	Nov,2015
ANSI C63.10	American National Standard for Testing Unlicensed Wireless Devices	Jun,2013

5. Test Results

5.1. Summary of Test Results

No	Test cases	Sub-clause of Part15C	Verdict
0.	Antenna Requirement	15.203	**P**
1.	Maximum Peak Output Power	15.247 (b)	**P**
2.	Peak Power Spectral Density	15.247 (e)	**P**
3.	Occupied 6dB Bandwidth	15.247 (a)	**P**
4.	Band Edges Compliance	15.247 (d)	**P**
5.	Transmitter Spurious Emission - Conducted	15.247 (d)	**P**
6.	Transmitter Spurious Emission - Radiated	15.247, 15.205, 15.209	**P**
7.	AC Powerline Conducted Emission	15.107, 15.207	**P**

See **ANNEX A and ANNEX B** for details.

5.2. Statements

CTTL has evaluated the test cases requested by the applicant/manufacturer as listed in section 5.1 of this report, for the EUT specified in section 3, according to the standards or reference documents listed in section 4.2.

5.3. Terms used in the result table

Terms used in Verdict column

P	Pass
NA	Not Available
F	Fail

Abbreviations

AC	Alternating Current
AFH	Adaptive Frequency Hopping
BW	Band Width
E.I.R.P.	equivalent isotropic radiated power
ISM	Industrial, Scientific and Medical
R&TTE	Radio and Telecommunications Terminal Equipment
RF	Radio Frequency
Tx	Transmitter

5.4. Laboratory Environment

Semi-anechoic chamber did not exceed following limits along the EMC testing

Temperature	Min. = 15 ˚C, Max. = 30 ˚C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4Ω
Normalised site attenuation (NSA)	< ±4dB, 3m/10m distance, from 30 to 1000 MHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

Shielded room did not exceed following limits along the EMC testing

Temperature	Min. = 15 ˚C, Max. = 30 ˚C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω

Fully-anechoic chamber did not exceed following limits along the EMC testing

Temperature	Min. = 15 ˚C, Max. = 30 ˚C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4Ω
Voltage Standing Wave Ratio (VSWR)	≤6dB, from 1 to 18 GHz,3m distance

6. Test Facilities Utilized

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1	Vector Signal Analyzer	FSV40	100903	Rohde & Schwarz	2018-01-18	1 year

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1	Test Receiver	ESCI	100701	R&S	2017-08-09	1 year
2	Loop Antenna	HLA6120	35779	TESEQ	2019-05-02	3 years
3	BiLog Antenna	VULB9163	9163 329	Schwarzbeck	2020-02-17	3 years
4	Horn Antenna	3117	00066585	ETS-Lindgren	2019-03-05	3 years
5	Universal Radio Communication Tester	CMW270	100540	Rohde & Schwarz	2018-04-12	1 year
6	Spectrum Analyzer	FSP 40	100378	R&S	2017-12-15	1 year
7	Chamber	FACT5-2.0	4166	ETS-Lindgren	2018-05-13	3 years

Anechoic chamber

Fully anechoic chamber by ETS-Lindgren

ANNEX A: MEASUREMENT RESULTS FOR RECEIVER

A.0 Antenna requirement

Measurement Limit:

Standard	Requirement
FCC CRF Part 15.203	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

Conclusion: The Directional gains of antenna used for transmitting is 1.0dBi.
The RF transmitter uses an integrate antenna without connector.

A.1 Maximum Average Output Power

Measurement Limit:

Standard	Limit (dBm)
FCC CRF Part 15.247(b)(1)	< 30

Measurement Results:

802.11b/g mode

Mode	Data Rate (Mbps)	Test Result (dBm)					
		2412MHz (Ch1)		2437MHz (Ch6)		2462 MHz (Ch11)	
802.11b	1	Fig.1	15.23	Fig.2	14.33	Fig.3	14.41
	2	15.21		14.39		14.44	
	5.5	15.28		14.46		14.53	
	11	15.32		14.43		14.49	
802.11g	6	Fig.4	13.77	Fig.5	14.10	Fig.6	13.81
	9	13.70		14.11		14.08	
	12	13.72		14.18		14.09	
	18	13.64		14.12		14.15	
	24	13.58		14.09		13.93	
	36	13.62		14.03		13.91	
	48	13.56		14.07		13.85	
	54	13.59		14.09		14.07	

802.11n-20MHz mode

Mode	Data Rate (MCS Index)	Test Result (dBm)					
		2412MHz (Ch1)		2437MHz (Ch6)		2462 MHz (Ch11)	
802.11n (20MHz)	MCS0	Fig.7	13.52	Fig.8	13.06	Fig.9	13.29
	MCS1	13.47		12.97		13.16	
	MCS2	13.40		13.00		13.21	
	MCS3	13.62		13.04		13.19	
	MCS4	13.51		12.99		13.22	
	MCS5	13.48		13.07		13.27	
	MCS6	13.50		13.10		13.28	
	MCS7	13.51		13.13		13.36	

802.11n-20MHz mode

Mode	Data Rate (MCS Index)	Test Result (dBm)					
		2422MHz (Ch3)		2437MHz (Ch6)		2452 MHz (Ch9)	
802.11n (40MHz)	MCS0	Fig.10	13.48	Fig.11	12.17	Fig.12	12.53
	MCS1	13.63		12.23		12.48	
	MCS2	13.59		12.38		12.66	
	MCS3	13.60		12.29		12.69	
	MCS4	13.49		12.30		12.51	
	MCS5	13.67		12.23		12.44	
	MCS6	13.64		12.20		12.49	
	MCS7	13.72		12.25		12.51	

See ANNEX B for test graphs.

Conclusion: PASS

A.2 Peak Power Spectral Density

Measurement Limit:

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

Measurement Results:

802.11b/g mode

Mode	Channel	Peak Power Spectral Density(dBm)		Conclusion
802.11b	1	Fig.13	-4.06	P
	6	Fig.14	-4.70	P
	11	Fig.15	-4.63	P
802.11g	1	Fig.16	-7.23	P
	6	Fig.17	-7.74	P
	11	Fig.18	-6.16	P

802.11n-20MHz mode

Mode	Channel	Peak Power Spectral Density(dBm)		Conclusion
802.11n (20MHz)	1	Fig.19	-8.19	P
	6	Fig.20	-7.68	P
	11	Fig.21	-6.56	P

802.11n-40MHz mode

Mode	Channel	Peak Power Spectral Density(dBm)		Conclusion
802.11n (40MHz)	3	Fig.22	-9.37	P
	6	Fig.23	-11.09	P
	9	Fig.24	-11.71	P

See ANNEX B for test graphs.

Conclusion: PASS

A.3 Occupied 6dB Bandwidth

Measurement Limit:

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

Measurement Result:

802.11b/g mode

Mode	Channel	Test Results (kHz)		conclusion
802.11b	1	Fig.25	9500	P
	6	Fig.26	10050	P
	11	Fig.27	10050	P
802.11g	1	Fig.28	15450	P
	6	Fig.29	15750	P
	11	Fig.30	16000	P

802.11n-20MHz mode

Mode	Channel	Test Results (kHz)		conclusion
802.11n (20MHz)	1	Fig.31	16100	P
	6	Fig.32	16750	P
	11	Fig.33	16100	P

802.11n-40MHz mode

Mode	Channel	Test Results (kHz)		conclusion
802.11n (40MHz)	3	Fig.34	35120	P
	6	Fig.35	35680	P
	9	Fig.36	35280	P

See ANNEX B for test graphs.

Conclusion: PASS

A.4 Band Edges Compliance

Measurement Limit:

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

Measurement Result:

802.11b/g mode

Mode	Channel	Test Results	Conclusion
802.11b	1	Fig.37	P
	11	Fig.38	P
802.11g	1	Fig.39	P
	11	Fig.40	P

802.11n-20MHz mode

Mode	Channel	Test Results	Conclusion
802.11n (20MHz)	1	Fig.41	P
	11	Fig.42	P

802.11n-40MHz mode

Mode	Channel	Test Results	Conclusion
802.11n (40MHz)	3	Fig.43	P
	9	Fig.44	P

See ANNEX B for test graphs.

Conclusion: PASS

A.5 Transmitter Spurious Emission

A.5.1 Transmitter Spurious Emission - Conducted

Measurement Limit:

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

Measurement Results:

802.11b/g mode

MODE	Channel	Frequency Range	Test Results	Conclusion
802.11b	1	2.412 GHz	Fig.45	P
		30 MHz-1 GHz	Fig.46	P
		1GHz-10GHz	Fig.47	P
	6	2.437 GHz	Fig.48	P
		30 MHz-1 GHz	Fig.49	P
		1GHz-10GHz	Fig.50	P
	11	2.462 GHz	Fig.51	P
		30 MHz-1 GHz	Fig.52	P
		1GHz-10GHz	Fig.53	P
802.11g	1	2.412 GHz	Fig.54	P
		30 MHz-1 GHz	Fig.55	P
		1GHz-10GHz	Fig.56	P
	6	2.437 GHz	Fig.57	P
		30 MHz-1 GHz	Fig.58	P
		1GHz-10GHz	Fig.59	P
	11	2.462 GHz	Fig.60	P
		30 MHz-1 GHz	Fig.61	P
		1GHz-10GHz	Fig.62	P

802.11n-20MHz mode

802.11n (20MHz)	1	2.412 GHz	Fig.63	P
		30 MHz-1 GHz	Fig.64	P
		1GHz-10GHz	Fig.65	P
	6	2.437 GHz	Fig.66	P
		30 MHz-1 GHz	Fig.67	P
		1GHz-10GHz	Fig.68	P
	11	2.462 GHz	Fig.69	P
		30 MHz-1 GHz	Fig.70	P
		1GHz-10GHz	Fig.71	P

802.11n-40MHz mode

802.11n (20MHz)	3	2.422 GHz	Fig.72	P
		30 MHz-1 GHz	Fig.73	P
		1GHz-10GHz	Fig.74	P
	6	2.437 GHz	Fig.75	P
		30 MHz-1 GHz	Fig.76	P
		1GHz-10GHz	Fig.77	P
	9	2.452 GHz	Fig.78	P
		30 MHz-1 GHz	Fig.79	P
		1GHz-10GHz	Fig.80	P
/	All channels	10GHz-26GHz	Fig.81	P

See ANNEX B for test graphs.

Conclusion: PASS

A.5.2 Transmitter Spurious Emission - Radiated

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247, 15.205, 15.209	20dB below peak output power

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

Limit in restricted band:

Frequency of emission (MHz)	Field strength(μV/m)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Condition:

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	120kHz/300kHz	5
1000-4000	1MHz/3MHz	15
4000-18000	1MHz/3MHz	40
18000-26500	1MHz/3MHz	20

Note:

According to the performance evaluation, the radiated emission margin of EUT is over 20dB in the band below 30MHz. Therefore, the measurement starts from 30MHz to tenth harmonic.

The measurement results include the horizontal polarization and vertical polarization measurements.

Measurement Results:

802.11b/g mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11b	1	1 GHz ~18 GHz	Fig.82	P
	6	9 kHz ~30 MHz	Fig.83	P
		30 MHz ~1 GHz	Fig.84	P
		1 GHz ~18 GHz	Fig.85	P
		18 GHz ~26.5 GHz	Fig.86	P
	11	1 GHz ~18 GHz	Fig.87	P
	Power(CH1)	2.38 GHz ~ 2.45 GHz	Fig.88	P
	Power(CH11)	2.45 GHz ~ 2.5 GHz	Fig.89	P
802.11g	1	1 GHz ~18 GHz	Fig.90	P
	6	9 kHz ~30 MHz	Fig.91	P
		30 MHz ~1 GHz	Fig.92	P
		1 GHz ~18 GHz	Fig.93	P
		18 GHz ~26.5 GHz	Fig.94	P
	11	1 GHz ~18 GHz	Fig.95	P
	Power(CH1)	2.38 GHz ~ 2.45 GHz	Fig.96	P
	Power(CH11)	2.45 GHz ~ 2.5 GHz	Fig.97	P

802.11n-20MHz mode

802.11n-20 MHz	1	1 GHz ~18 GHz	Fig.98	P
	6	9 kHz ~30 MHz	Fig.99	P
		30 MHz ~1 GHz	Fig.100	P
		1 GHz ~18 GHz	Fig.101	P
		18 GHz ~26.5 GHz	Fig.102	P
	11	1 GHz ~18 GHz	Fig.103	P
	Power(CH1)	2.38 GHz ~ 2.45 GHz	Fig.104	P
	Power(CH11)	2.45 GHz ~ 2.5 GHz	Fig.105	P

802.11n-40MHz mode

802.11n-40 MHz	3	1 GHz ~18 GHz	Fig.106	P
	6	9 kHz ~30 MHz	Fig.107	P
		30 MHz ~1 GHz	Fig.108	P
		1 GHz ~18 GHz	Fig.109	P
		18 GHz ~26.5 GHz	Fig.110	P
	9	1 GHz ~18 GHz	Fig.111	P
	Power(CH3)	2.38 GHz ~ 2.45 GHz	Fig.112	P
	Power(CH9)	2.45 GHz ~ 2.5 GHz	Fig.113	P

802.11b CH1 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13381.000000	56.35	74.00	17.65	19.5	V
14698.500000	56.35	74.00	17.65	21.6	V
15284.500000	58.61	74.00	15.39	22.7	V
15962.500000	60.12	74.00	13.88	25.4	H
16602.000000	61.48	74.00	12.52	26.2	H
17704.000000	61.41	74.00	12.59	27.5	V

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
4824.000000	48.10	54.00	5.90	9.6	H
14683.000000	44.93	54.00	9.07	21.5	V
15112.000000	46.74	54.00	7.26	22.8	V
15739.000000	48.36	54.00	5.64	24.4	H
16592.500000	49.93	54.00	4.07	26.3	V
17707.500000	49.94	54.00	4.06	27.6	H

802.11b CH 6(1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13916.000000	56.18	74.00	17.82	20.7	V
14585.500000	56.48	74.00	17.52	21.3	V
15577.500000	58.62	74.00	15.38	23.8	H
15962.000000	60.02	74.00	13.98	25.4	V
16592.500000	62.02	74.00	11.98	26.3	V
17682.500000	61.34	74.00	12.66	27.1	V

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
4874.000000	47.96	54.00	6.04	9.8	H
14683.000000	45.04	54.00	8.96	21.5	V
15576.000000	46.90	54.00	7.10	23.8	H
15968.500000	48.41	54.00	5.59	25.6	H
16592.500000	50.01	54.00	3.99	26.3	V
17705.000000	49.86	54.00	4.14	27.6	H

802.11b CH 11(1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13911.000000	56.85	74.00	17.15	21.1	H
14704.000000	56.19	74.00	17.81	21.5	H
15257.500000	58.26	74.00	15.74	22.9	H
15771.500000	60.41	74.00	13.59	23.8	V
16608.000000	61.58	74.00	12.42	26.0	H
17711.000000	62.29	74.00	11.72	27.7	H

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
4924.000000	47.29	54.00	6.71	10.3	H
14686.500000	44.82	54.00	9.18	21.6	V
15576.000000	46.92	54.00	7.08	23.8	V
15739.000000	48.39	54.00	5.61	24.4	H
16589.500000	49.87	54.00	4.13	26.3	H
17707.500000	49.68	54.00	4.32	27.6	H

802.11g CH1 (1G-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13906.000000	56.03	74.00	17.97	20.9	V
14672.500000	57.02	74.00	16.98	21.3	H
15373.000000	58.50	74.00	15.50	22.8	H
15775.500000	60.12	74.00	13.88	23.9	V
17141.500000	61.23	74.00	12.77	26.6	H
17720.000000	62.72	74.00	11.28	27.7	H

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13909.500000	44.33	54.00	9.67	21.1	V
14683.000000	45.04	54.00	8.96	21.5	V
15575.500000	46.79	54.00	7.21	23.8	V
15732.500000	48.27	54.00	5.73	24.1	H
17110.000000	50.40	54.00	3.60	26.2	V
17706.500000	49.75	54.00	4.25	27.6	H

802.11g CH6 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13899.500000	55.83	74.00	18.17	20.5	V
14607.000000	57.06	74.00	16.94	21.5	V
15039.500000	59.02	74.00	14.98	22.5	V
16285.000000	60.44	74.00	13.56	24.8	H
16604.500000	61.13	74.00	12.87	26.1	H
17708.000000	61.82	74.00	12.18	27.6	H

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13909.500000	44.54	54.00	9.46	21.1	V
14676.000000	44.93	54.00	9.07	21.4	V
15576.000000	46.66	54.00	7.34	23.8	V
15717.000000	48.34	54.00	5.66	24.1	V
16592.500000	49.85	54.00	4.15	26.3	H
17707.000000	49.80	54.00	4.20	27.6	V

802.11g CH11 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13920.000000	56.18	74.00	17.82	20.4	V
14588.000000	56.59	74.00	17.41	21.3	V
15045.000000	58.51	74.00	15.49	22.5	V
16057.000000	60.00	74.00	14.00	25.4	V
16584.500000	61.70	74.00	12.30	26.4	V
17716.500000	61.48	74.00	12.52	27.7	H

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13909.000000	44.59	54.00	9.41	21.1	H
14687.000000	44.81	54.00	9.19	21.6	V
15576.000000	47.01	54.00	6.99	23.8	V
15739.500000	48.30	54.00	5.70	24.4	V
16586.500000	49.88	54.00	4.12	26.3	V
17707.500000	50.12	54.00	3.88	27.6	V

802.11n-20MHz CH1 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13909.000000	56.19	74.00	17.81	21.1	V
14651.500000	56.68	74.00	17.32	21.2	H
15021.000000	58.72	74.00	15.28	22.4	V
16236.000000	60.56	74.00	13.44	25.3	V
17115.500000	61.81	74.00	12.19	26.2	V
17694.000000	61.08	74.00	12.92	27.1	H

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13415.000000	43.72	54.00	10.28	20.3	V
14683.000000	45.03	54.00	8.97	21.5	H
15108.500000	46.68	54.00	7.32	22.7	V
15739.000000	48.39	54.00	5.61	24.4	H
16589.500000	49.90	54.00	4.10	26.3	V
17705.500000	49.89	54.00	4.11	27.6	H

802.11n-20MHz CH6 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13886.500000	56.29	74.00	17.71	20.3	H
14652.500000	57.01	74.00	16.99	21.2	H
15163.000000	59.03	74.00	14.97	22.4	V
15714.500000	60.10	74.00	13.90	24.1	V
16644.000000	61.58	74.00	12.42	25.7	H
17720.000000	61.18	74.00	12.82	27.7	V

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13909.000000	44.58	54.00	9.42	21.1	V
14700.500000	44.80	54.00	9.20	21.5	V
15576.000000	46.68	54.00	7.32	23.8	V
15966.000000	48.32	54.00	5.68	25.5	V
16592.500000	49.97	54.00	4.03	26.3	V
17702.000000	50.02	54.00	3.98	27.5	H

802.11n-20MHz CH11 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13906.500000	55.97	74.00	18.03	20.9	H
14707.000000	56.91	74.00	17.09	21.4	H
15045.000000	58.12	74.00	15.88	22.5	V
15966.000000	59.73	74.00	14.27	25.5	H
16649.500000	61.65	74.00	12.35	26.0	V
17705.000000	60.96	74.00	13.04	27.6	H

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13910.000000	44.24	54.00	9.76	21.2	V
14683.000000	45.01	54.00	8.99	21.5	H
15576.000000	46.80	54.00	7.20	23.8	V
15739.000000	48.19	54.00	5.81	24.4	H
16589.500000	50.02	54.00	3.98	26.3	V
17707.500000	49.97	54.00	4.03	27.6	H

802.11n-40MHz CH3 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13842.000000	56.54	74.00	17.46	19.8	V
14637.500000	56.16	74.00	17.84	21.4	V
15576.000000	58.87	74.00	15.13	23.8	V
15967.000000	60.67	74.00	13.33	25.5	V
16645.500000	62.11	74.00	11.89	25.8	H
17708.000000	61.42	74.00	12.58	27.6	H

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13909.000000	44.28	54.00	9.72	21.1	V
14683.000000	45.12	54.00	8.88	21.5	V
15577.000000	46.94	54.00	7.06	23.8	V
15737.000000	48.47	54.00	5.53	24.3	H
16584.500000	49.89	54.00	4.11	26.4	V
17707.500000	49.88	54.00	4.12	27.6	V

802.11n-40MHz CH6 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13338.500000	55.29	74.00	18.71	20.3	H
14655.500000	56.73	74.00	17.27	21.3	H
15113.000000	58.65	74.00	15.35	22.7	H
15798.000000	60.53	74.00	13.47	23.8	V
17101.500000	61.79	74.00	12.21	25.5	V
17745.000000	61.49	74.00	12.51	26.5	H

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13909.000000	44.51	54.00	9.49	21.1	V
14686.500000	44.77	54.00	9.23	21.6	V
15575.500000	46.75	54.00	7.25	23.8	V
15972.000000	48.34	54.00	5.66	25.5	H
16580.000000	49.99	54.00	4.01	26.4	V
17705.500000	49.92	54.00	4.08	27.6	H

802.11n-40MHz CH9 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13910.000000	55.77	74.00	18.23	21.2	V
14610.000000	56.38	74.00	17.62	21.4	V
15107.000000	58.85	74.00	15.15	22.6	V
15856.500000	59.92	74.00	14.08	24.3	V
16598.000000	62.58	74.00	11.42	26.3	V
17705.000000	62.74	74.00	11.26	27.6	V

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13909.000000	44.32	54.00	9.68	21.1	V
14687.500000	45.28	54.00	8.72	21.6	V
15576.000000	47.03	54.00	6.97	23.8	H
15940.000000	48.38	54.00	5.62	24.9	H
16592.500000	49.91	54.00	4.09	26.3	H
17709.000000	49.90	54.00	4.10	27.6	V

See ANNEX B for test graphs.

Conclusion: PASS

Note:

A "reference path loss" is established and the A_{Rpl} is the attenuation of “reference path loss”, and including the gain of receive antenna, the gain of the preamplifier, the cable loss. P_{Mea} is the field strength recorded from the instrument.

The measurement results are obtained as described below:

Result = P_{Mea} + A_{Rpl} = P_{Mea} + Cable Loss + Antenna Factor

A.6 AC Powerline Conducted Emission

Test Condition:

Voltage（V）	Frequency（Hz）
120	60

Measurement Result and limit:

WLAN (Quasi-peak Limit)-AE1

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)	Conclusion
		Traffic	
0.15 to 0.5	66 to 56	Fig.114	P
0.5 to 5	56		
5 to 30	60		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.			

WLAN (Average Limit)-AE1

Frequency range (MHz)	Average-peak Limit (dBμV)	Result (dBμV)	Conclusion
		Traffic	
0.15 to 0.5	56 to 46	Fig.114	P
0.5 to 5	46		
5 to 30	50		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.			

WLAN (Quasi-peak Limit)-AE1

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)	Conclusion
		Idle	
0.15 to 0.5	66 to 56	Fig.115	P
0.5 to 5	56		
5 to 30	60		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.			

WLAN (Average Limit)-AE1

Frequency range (MHz)	Average-peak Limit (dBμV)	Result (dBμV)	Conclusion
		Idle	
0.15 to 0.5	56 to 46	Fig.115	P
0.5 to 5	46		
5 to 30	50		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.			

WLAN (Quasi-peak Limit)-AE2

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV) Traffic	Conclusion
0.15 to 0.5	66 to 56	Fig.116	P
0.5 to 5	56		
5 to 30	60		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.			

WLAN (Average Limit)-AE2

Frequency range (MHz)	Average-peak Limit (dBμV)	Result (dBμV) Traffic	Conclusion
0.15 to 0.5	56 to 46	Fig.116	P
0.5 to 5	46		
5 to 30	50		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.			

WLAN (Quasi-peak Limit)-AE2

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV) Idle	Conclusion
0.15 to 0.5	66 to 56	Fig.117	P
0.5 to 5	56		
5 to 30	60		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.			

WLAN (Average Limit)-AE2

Frequency range (MHz)	Average-peak Limit (dBμV)	Result (dBμV) Idle	Conclusion
0.15 to 0.5	56 to 46	Fig.117	P
0.5 to 5	46		
5 to 30	50		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.			

Test Condition:

Voltage（V）	Frequency（Hz）
240	60

Measurement Result and limit:

WLAN (Quasi-peak Limit)-AE1

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV) Traffic	Conclusion
0.15 to 0.5	66 to 56	Fig.118	P
0.5 to 5	56		
5 to 30	60		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.			

WLAN (Average Limit)-AE1

Frequency range (MHz)	Average-peak Limit (dBμV)	Result (dBμV) Traffic	Conclusion
0.15 to 0.5	56 to 46	Fig.118	P
0.5 to 5	46		
5 to 30	50		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.			

WLAN (Quasi-peak Limit)-AE1

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV) Idle	Conclusion
0.15 to 0.5	66 to 56	Fig.119	P
0.5 to 5	56		
5 to 30	60		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.			

WLAN (Average Limit)-AE1

Frequency range (MHz)	Average-peak Limit (dBμV)	Result (dBμV) Idle	Conclusion
0.15 to 0.5	56 to 46	Fig.119	P
0.5 to 5	46		
5 to 30	50		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.			

WLAN (Quasi-peak Limit)-AE2

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV) Traffic	Conclusion
0.15 to 0.5	66 to 56	Fig.120	P
0.5 to 5	56		
5 to 30	60		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.			

WLAN (Average Limit)-AE2

Frequency range (MHz)	Average-peak Limit (dBμV)	Result (dBμV) Traffic	Conclusion
0.15 to 0.5	56 to 46	Fig.120	P
0.5 to 5	46		
5 to 30	50		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.			

WLAN (Quasi-peak Limit)-AE2

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV) Idle	Conclusion
0.15 to 0.5	66 to 56	Fig.121	P
0.5 to 5	56		
5 to 30	60		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.			

WLAN (Average Limit)-AE2

Frequency range (MHz)	Average-peak Limit (dBμV)	Result (dBμV) Idle	Conclusion
0.15 to 0.5	56 to 46	Fig.121	P
0.5 to 5	46		
5 to 30	50		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.			

See ANNEX B for test graphs.

Conclusion: PASS

ANNEX B: TEST LAYOUTS

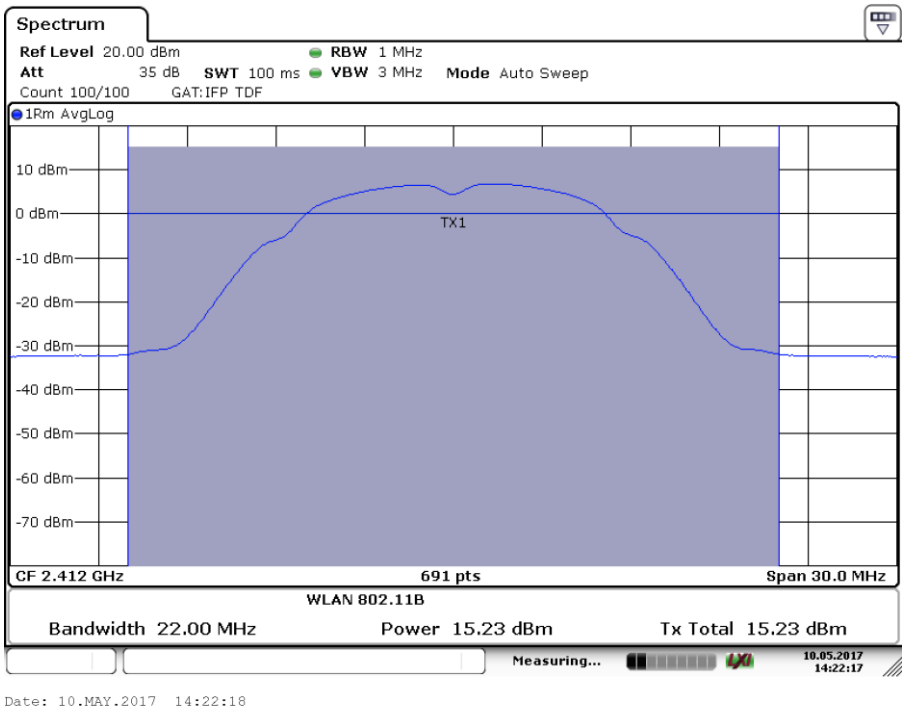

Fig.1 Maximum Average Output Power (802.11b, Ch 1, 1Mbps)

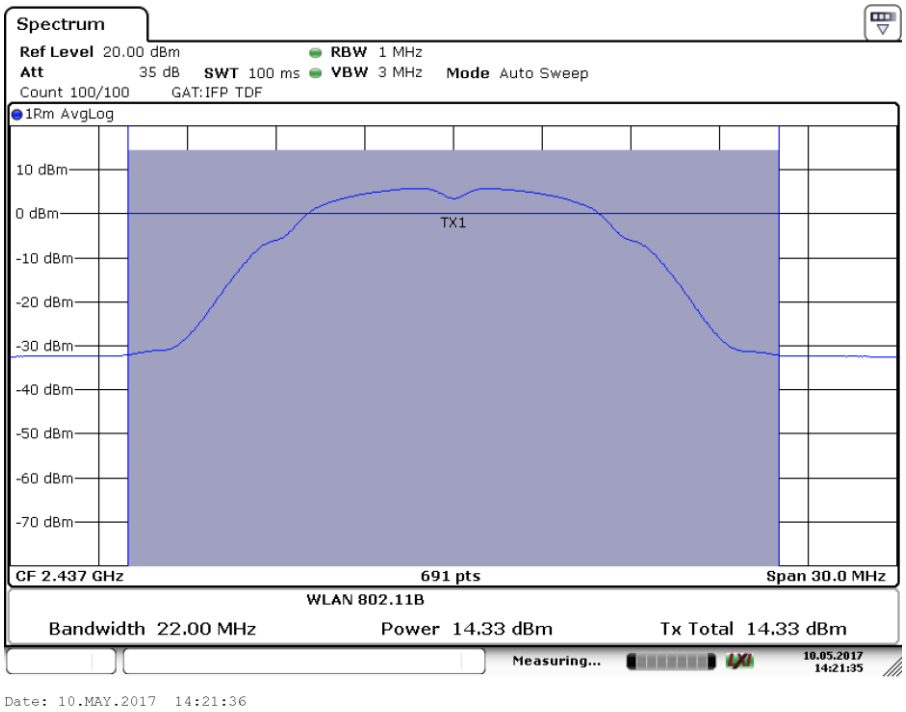

Fig.2 Maximum Average Output Power (802.11b, Ch 6, 1Mbps)

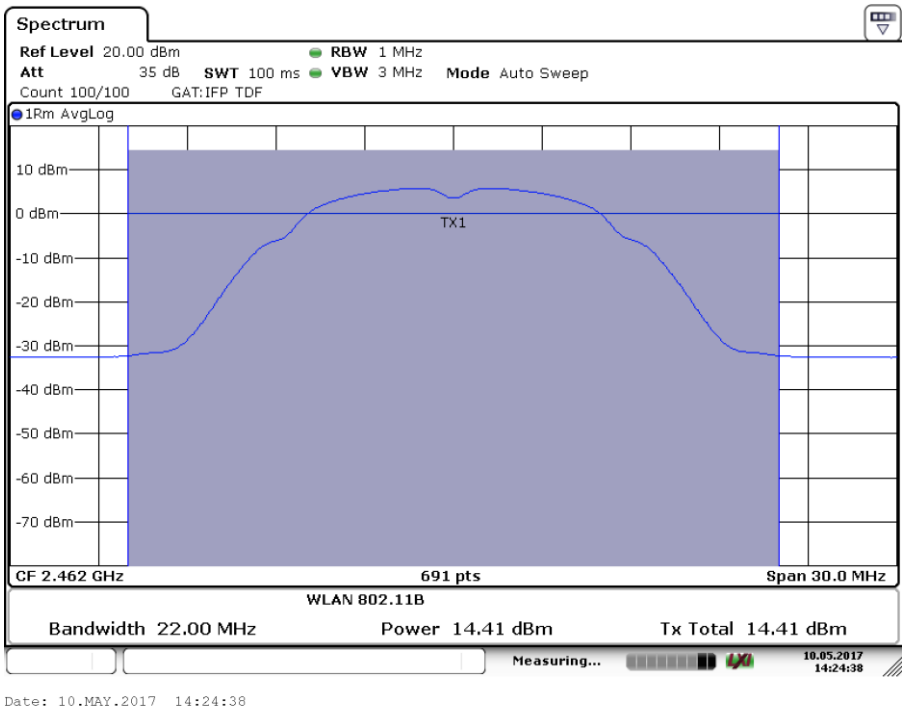

Fig.3 Maximum Average Output Power (802.11b, Ch 11, 1Mbps)

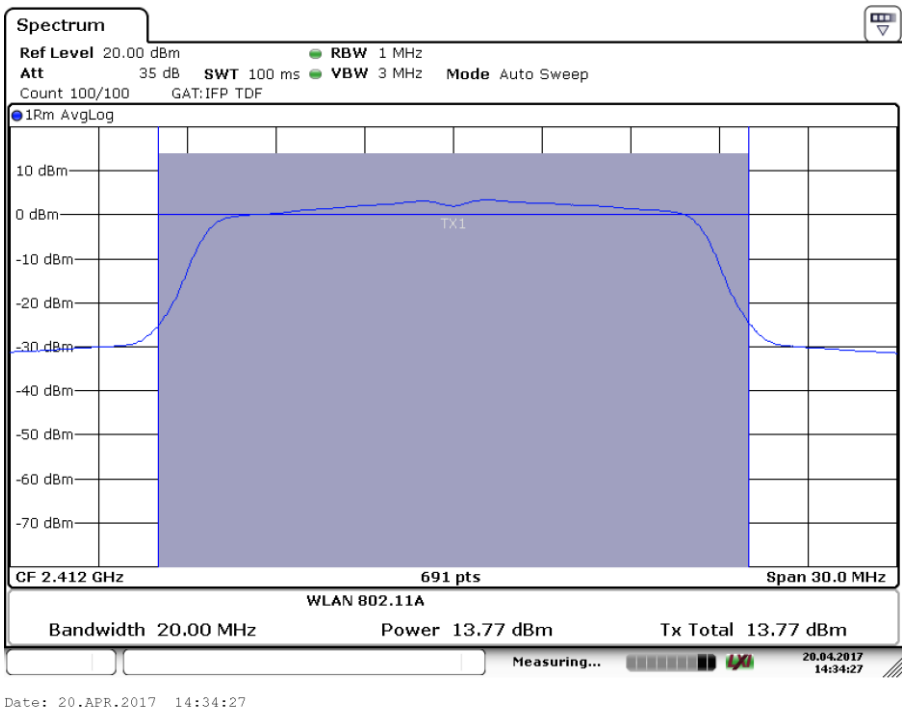

Fig.4 Maximum Average Output Power (802.11g, Ch 1, 6Mbps)

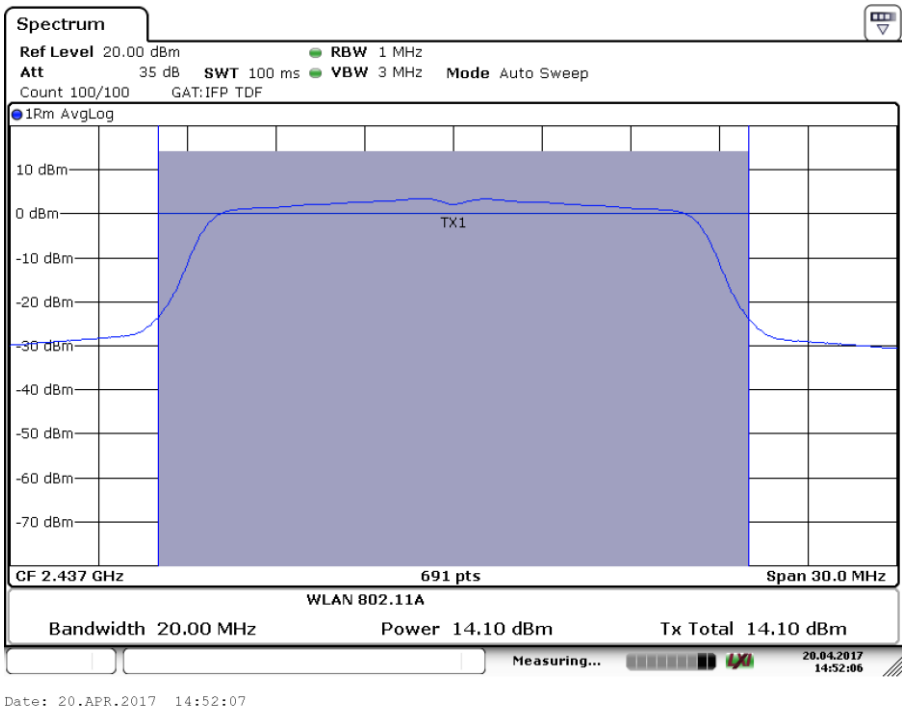

Fig.5 Maximum Average Output Power (802.11g, Ch 6, 6Mbps)

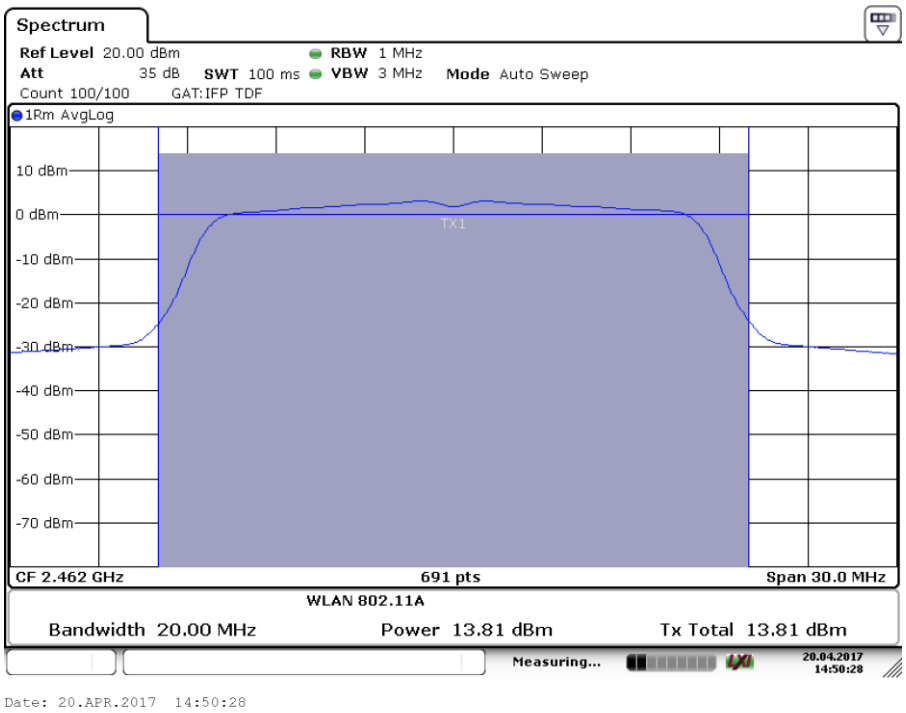

Fig.6 Maximum Average Output Power (802.11g, Ch 11, 6Mbps)

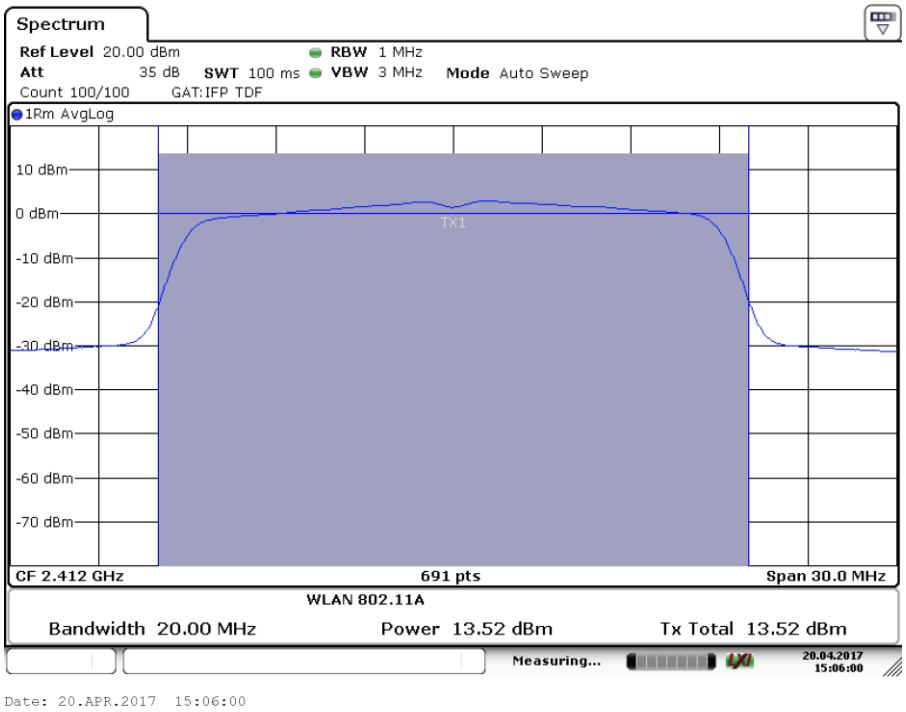

Fig.7 Maximum Average Output Power (802.11n-20MHz, Ch 1, MCS0)

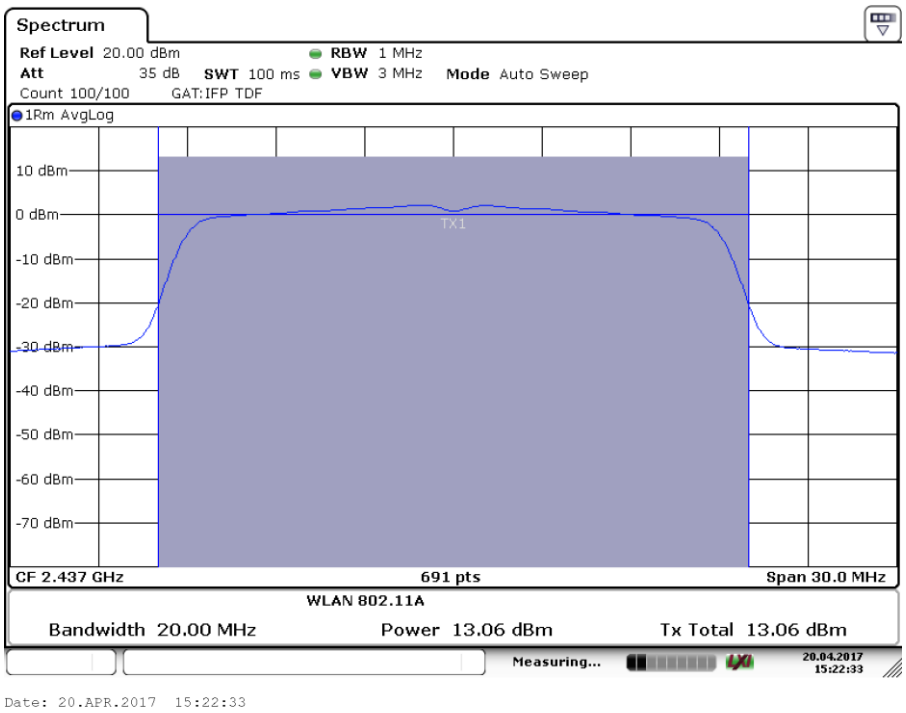

Fig.8 Maximum Average Output Power (802.11n-20MHz, Ch 6, MCS0)

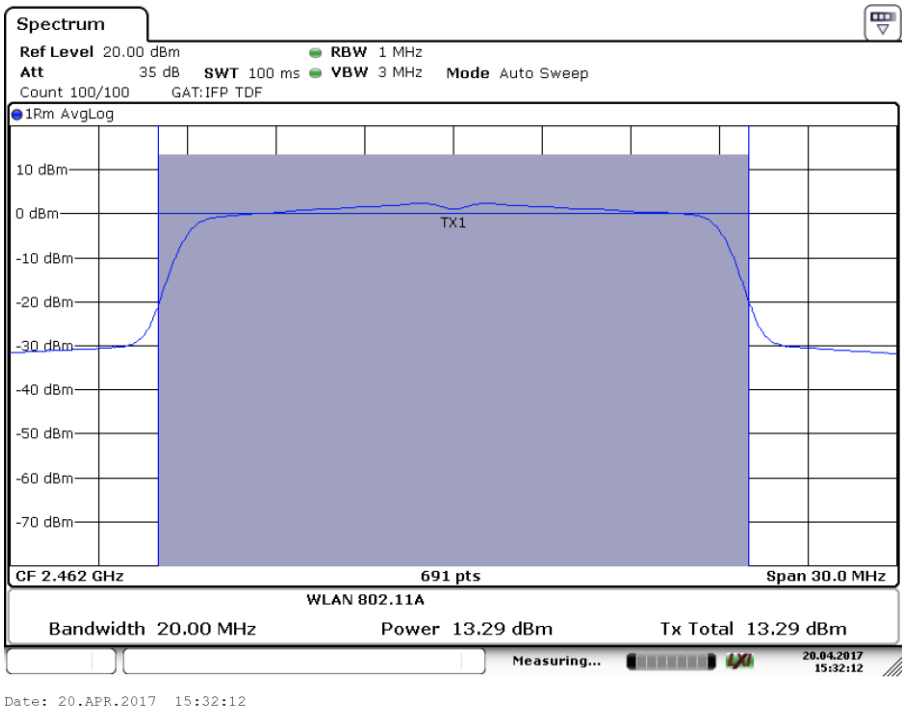

Fig.9 Maximum Average Output Power (802.11n-20MHz, Ch 11, MCS0)

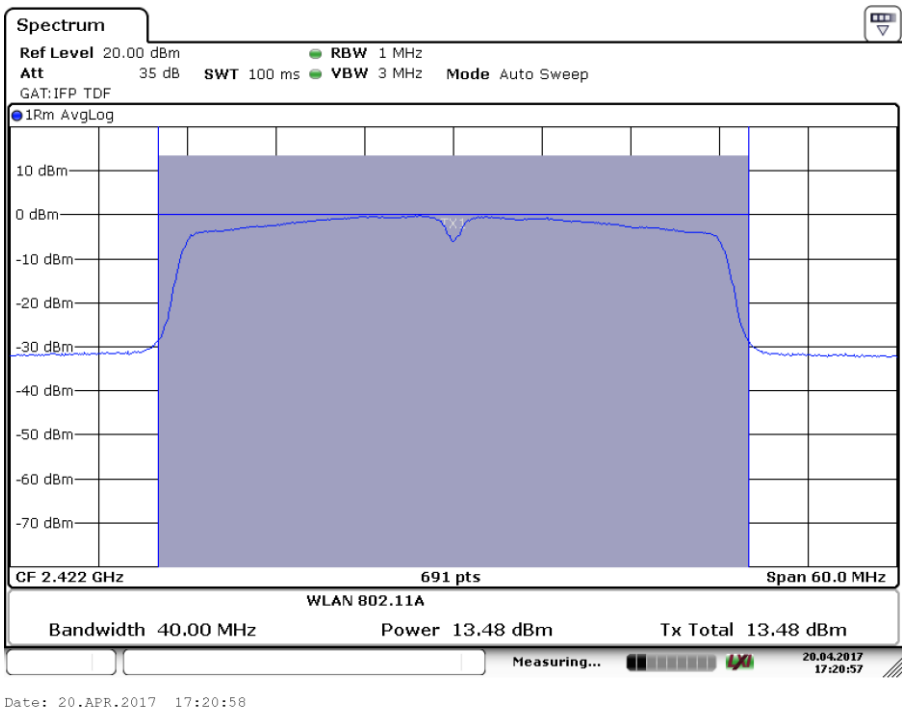

Fig.10 Maximum Average Output Power (802.11n-40MHz, Ch 3, MCS0)

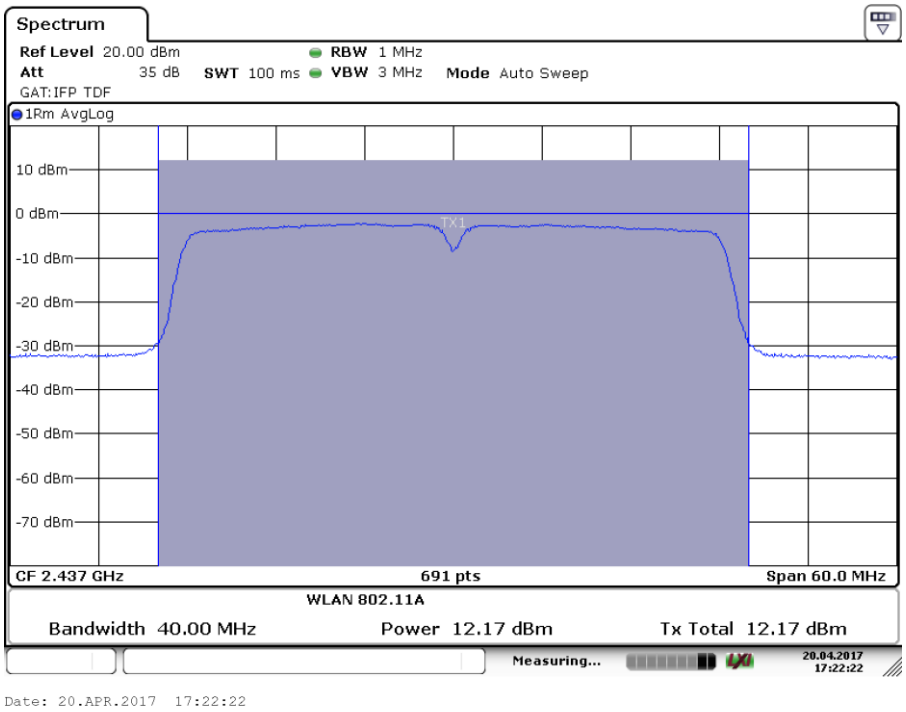

Fig.11 Maximum Average Output Power (802.11n-40MHz, Ch 6, MCS0)

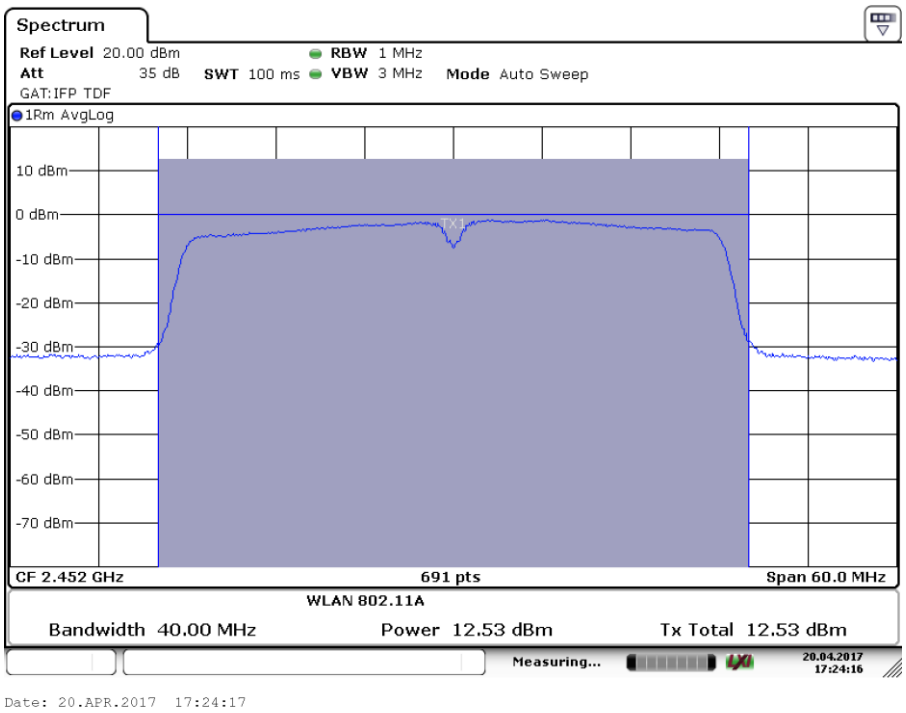

Fig.12 Maximum Average Output Power (802.11n-40MHz, Ch 9, MCS0)

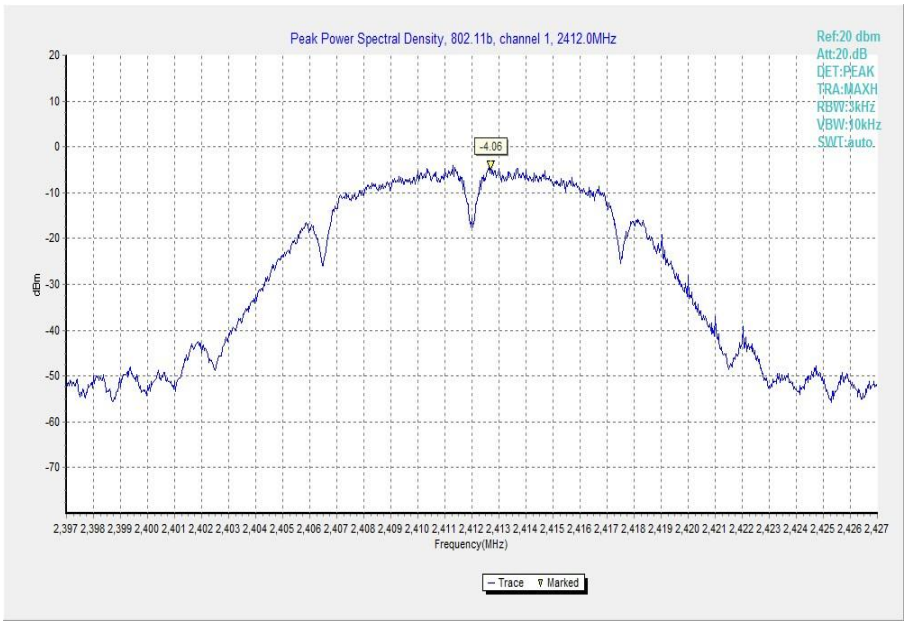

Fig.13 Power Spectral Density (802.11b, Ch 1)

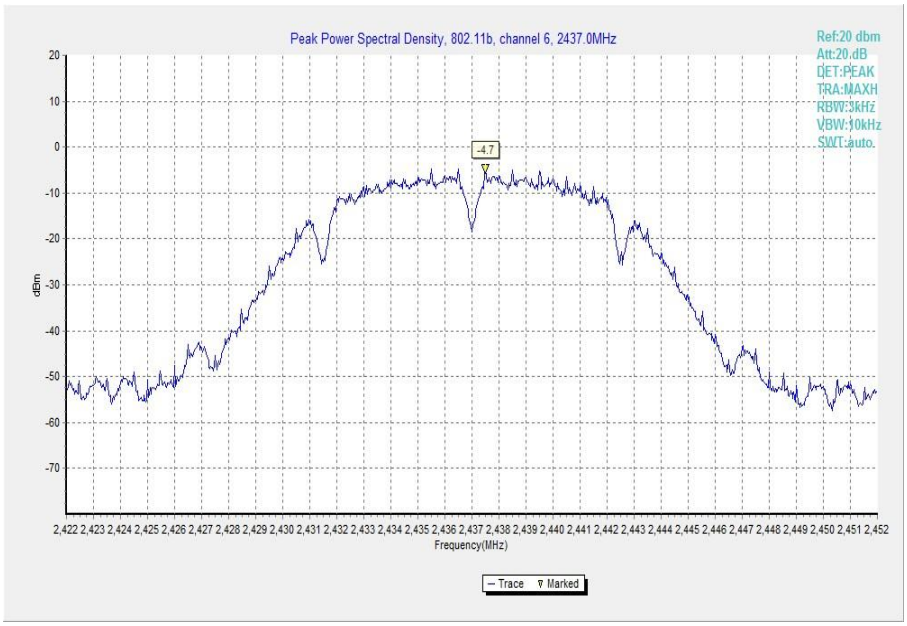

Fig.14 Power Spectral Density (802.11b, Ch 6)

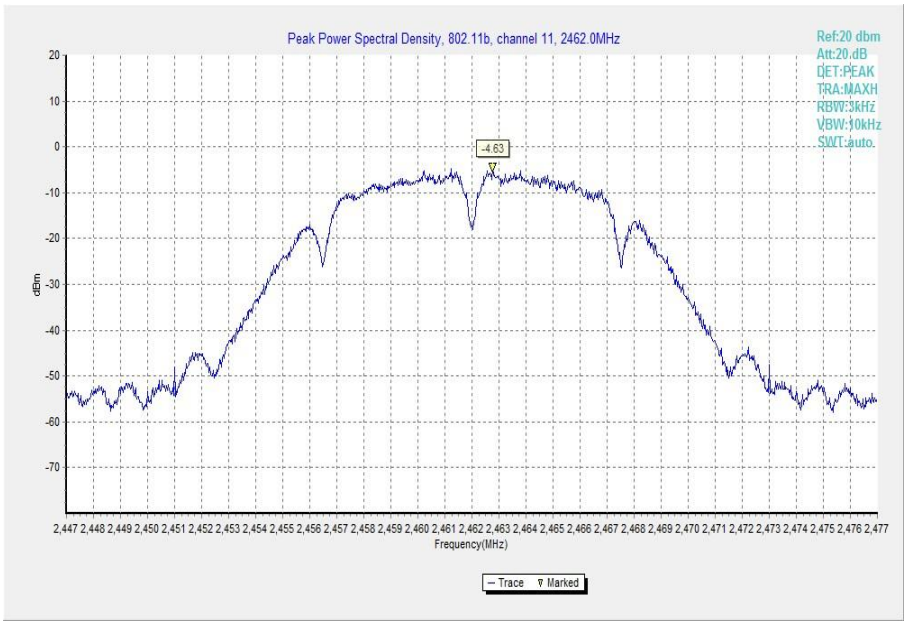

Fig.15 Power Spectral Density (802.11b, Ch 11)

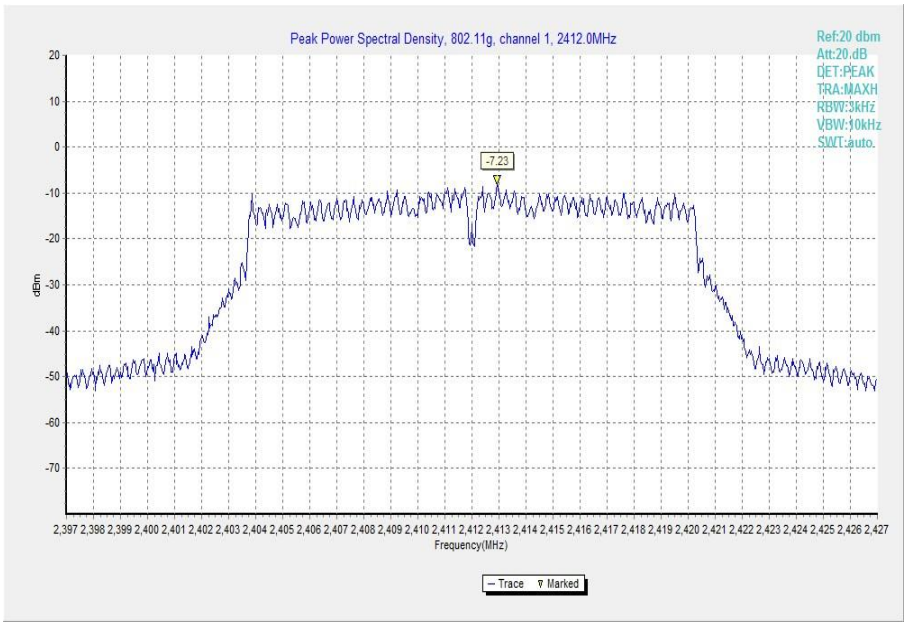

Fig.16 Power Spectral Density (802.11g, Ch 1)

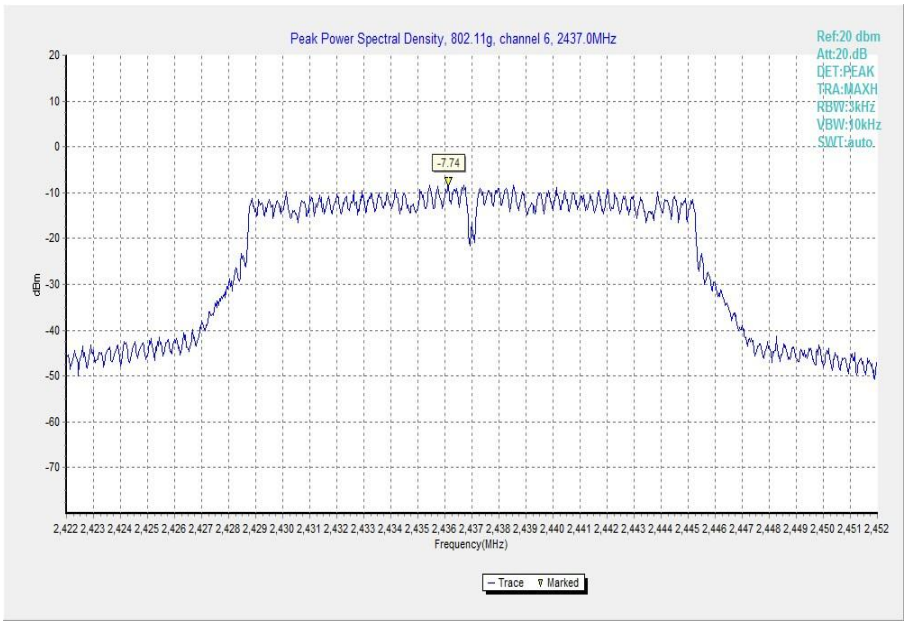

Fig.17 Power Spectral Density (802.11g, Ch 6)

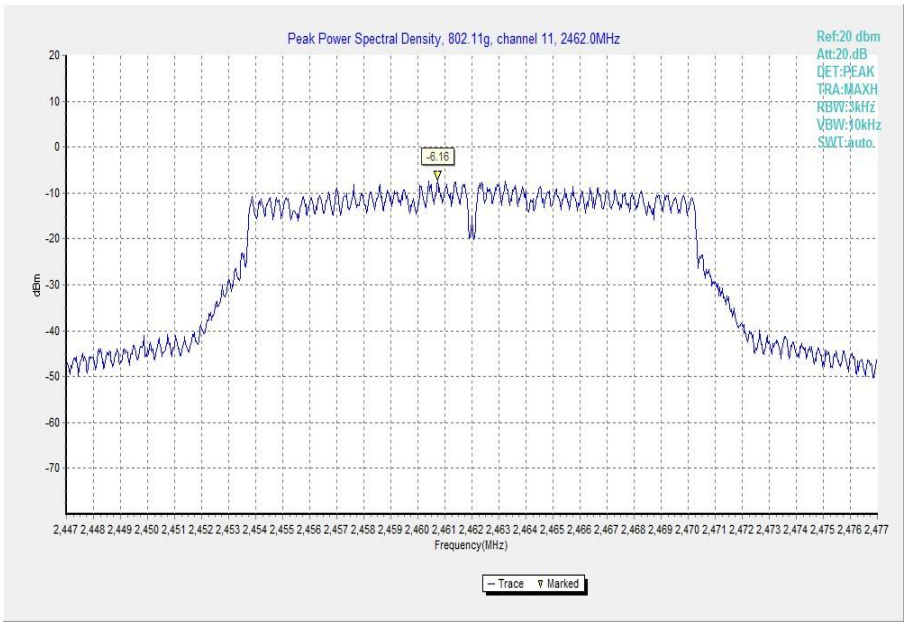

Fig.18 Power Spectral Density (802.11g, Ch 11)

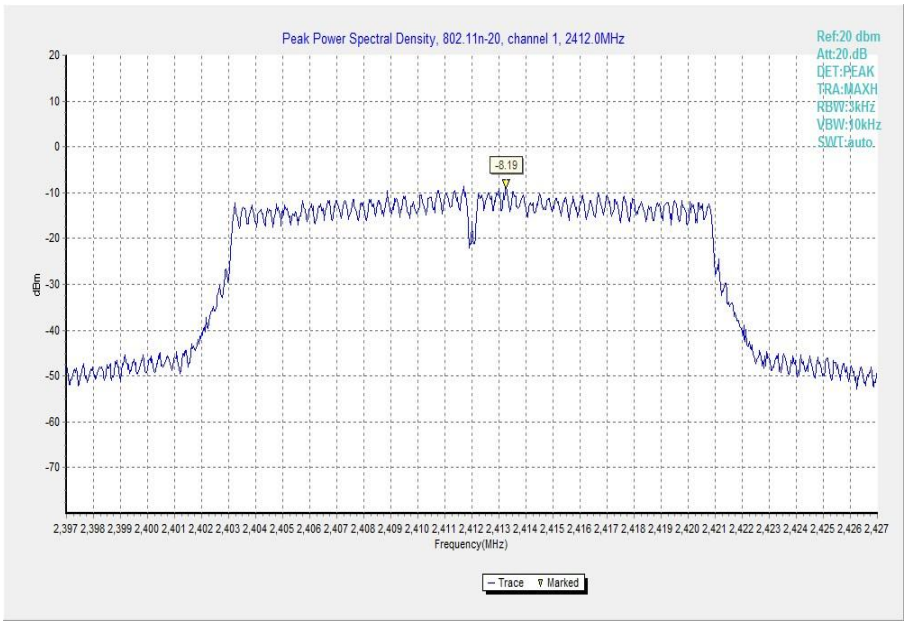

Fig.19 Power Spectral Density (802.11n-20MHz, Ch 1)

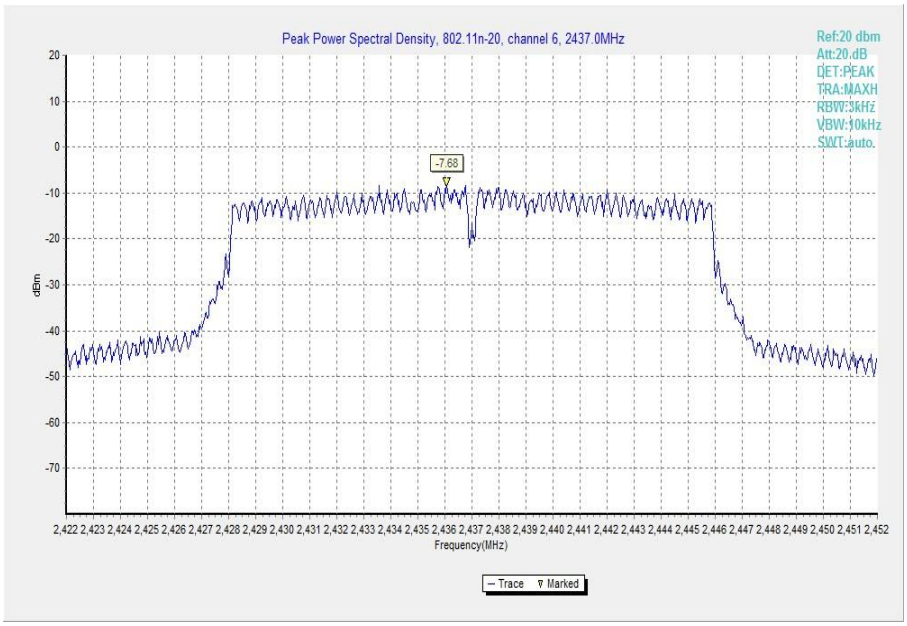

Fig.20 Power Spectral Density (802.11n-20MHz, Ch 6)

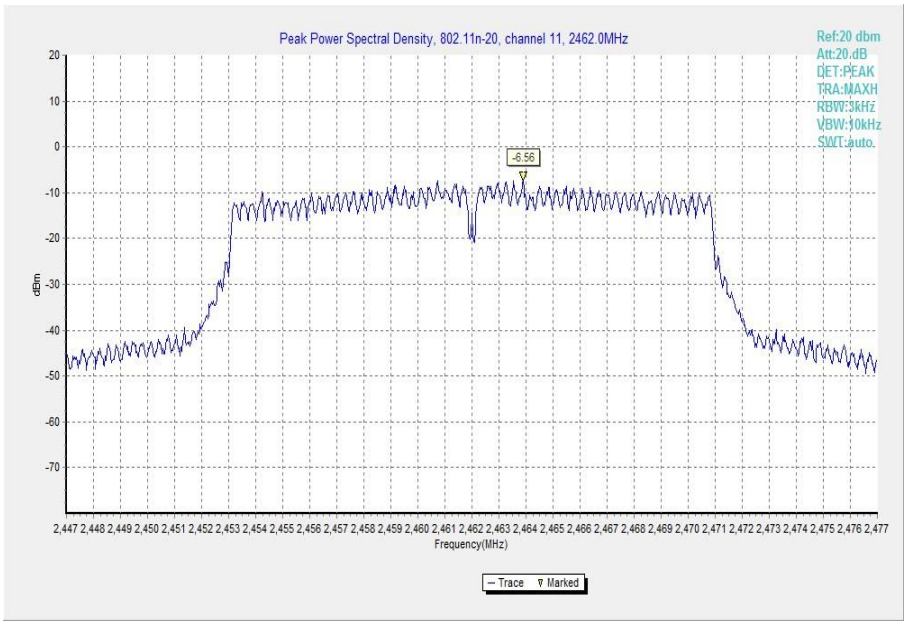

Fig.21 Power Spectral Density (802.11n-20MHz, Ch 11)

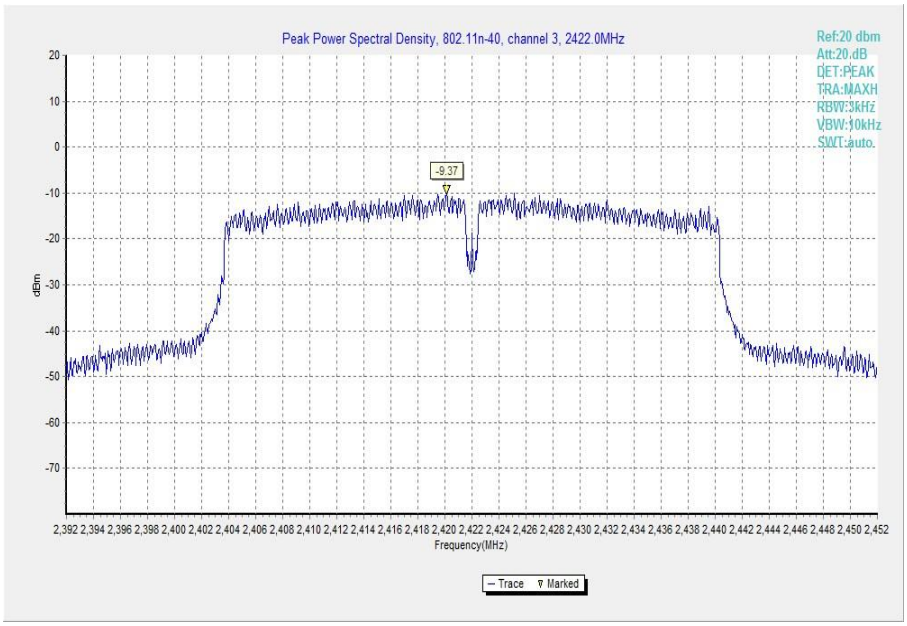

Fig.22 Power Spectral Density (802.11n-40MHz, Ch 3)

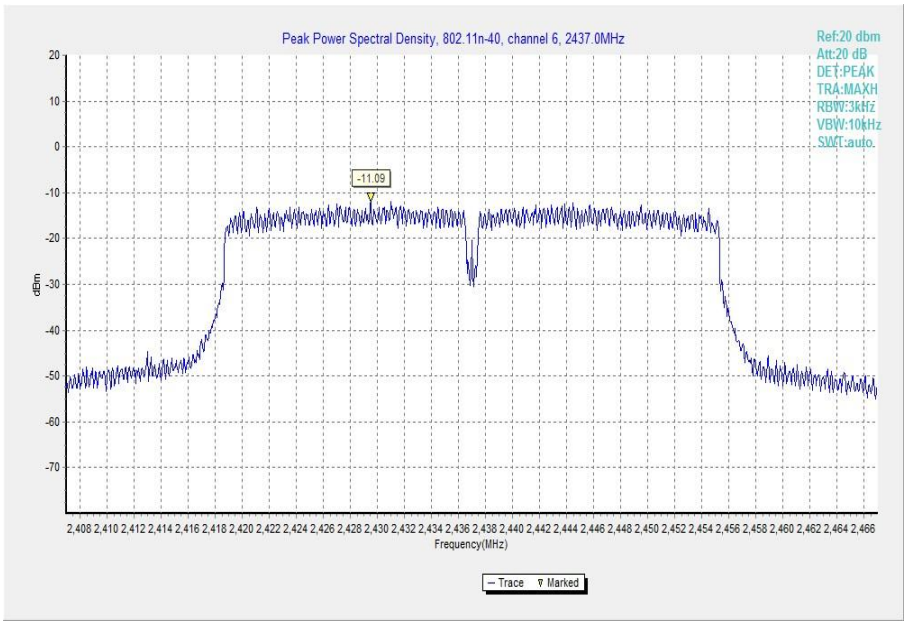

Fig.23 Power Spectral Density (802.11n-40MHz, Ch 6)

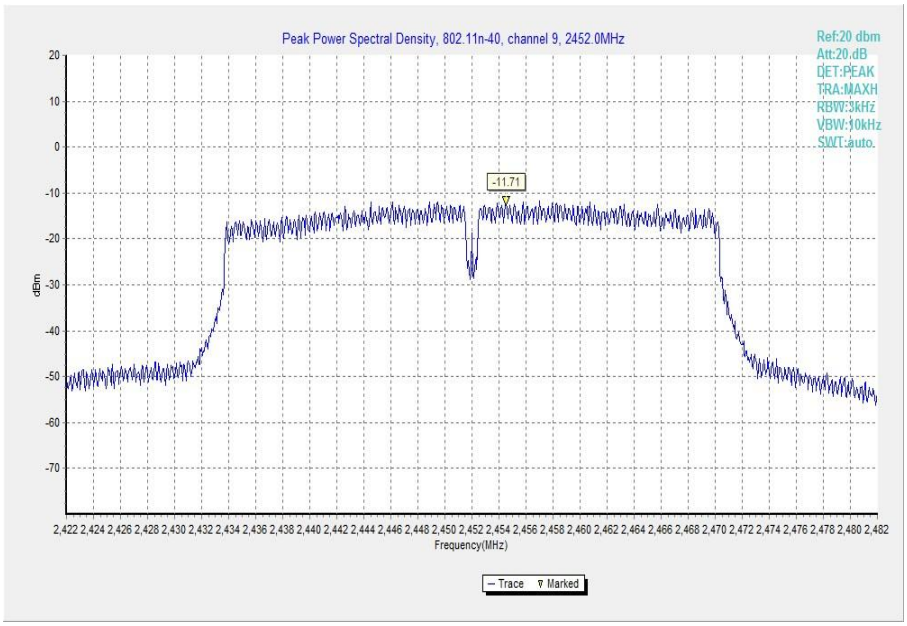

Fig.24 Power Spectral Density (802.11n-40MHz, Ch 9)

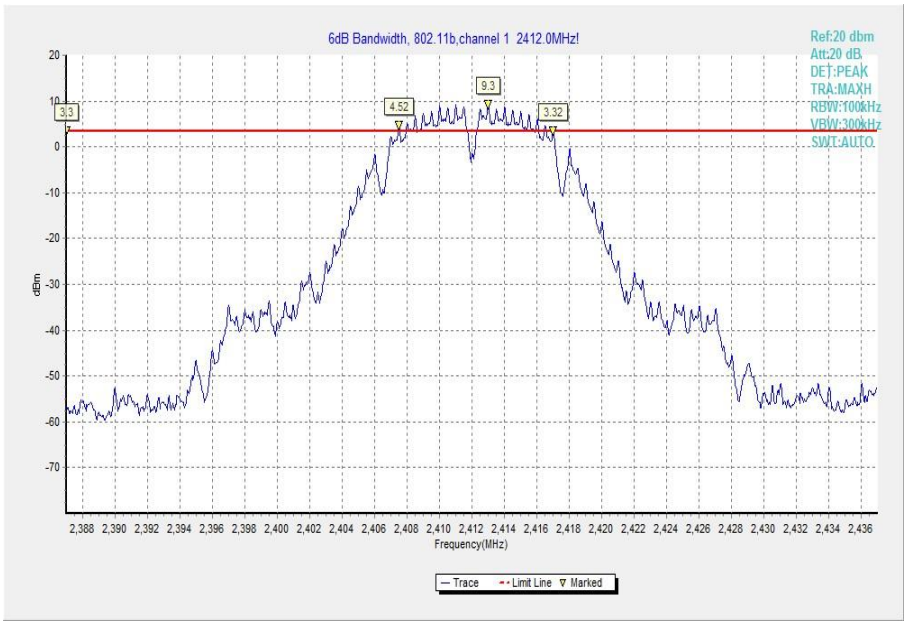

Fig.25 Occupied 6dB Bandwidth (802.11b, Ch 1)

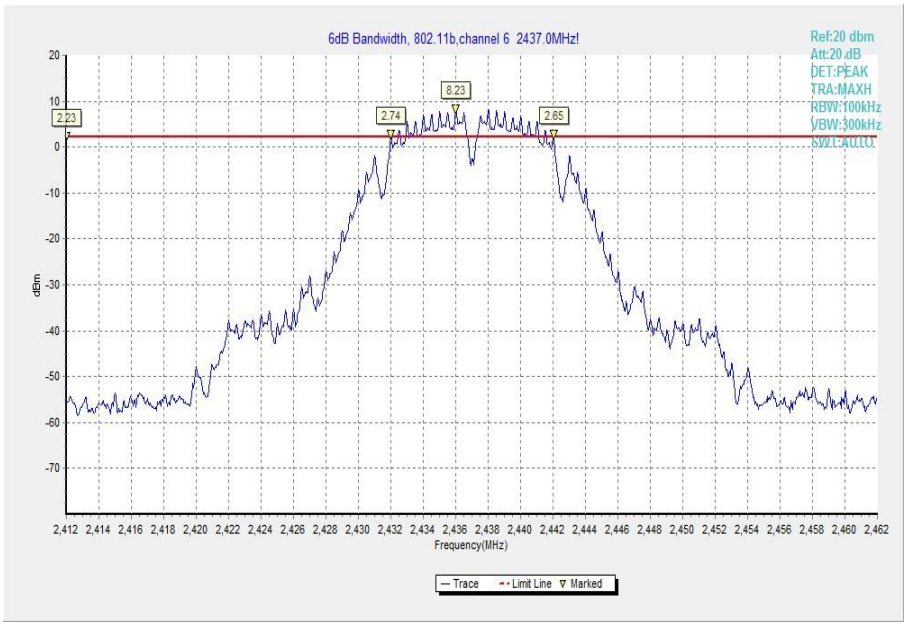

Fig.26 Occupied 6dB Bandwidth (802.11b, Ch 6)

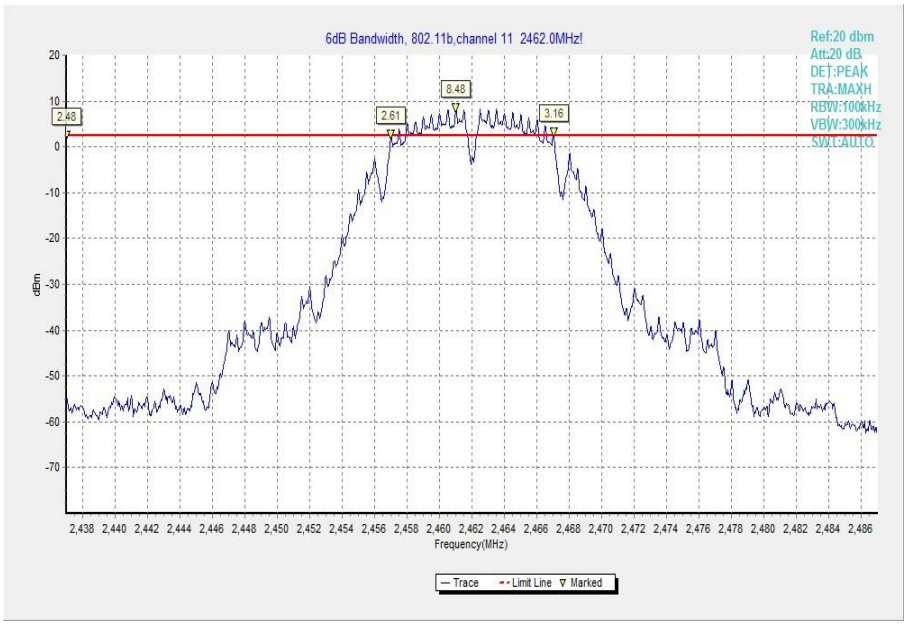

Fig.27 Occupied 6dB Bandwidth (802.11b, Ch 11)

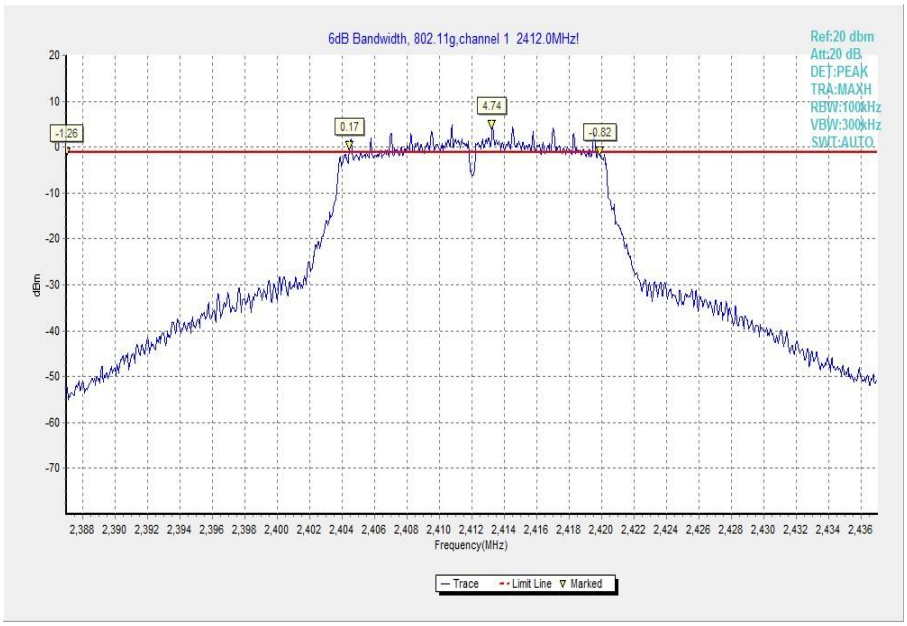

Fig.28 Occupied 6dB Bandwidth (802.11g, Ch 1)

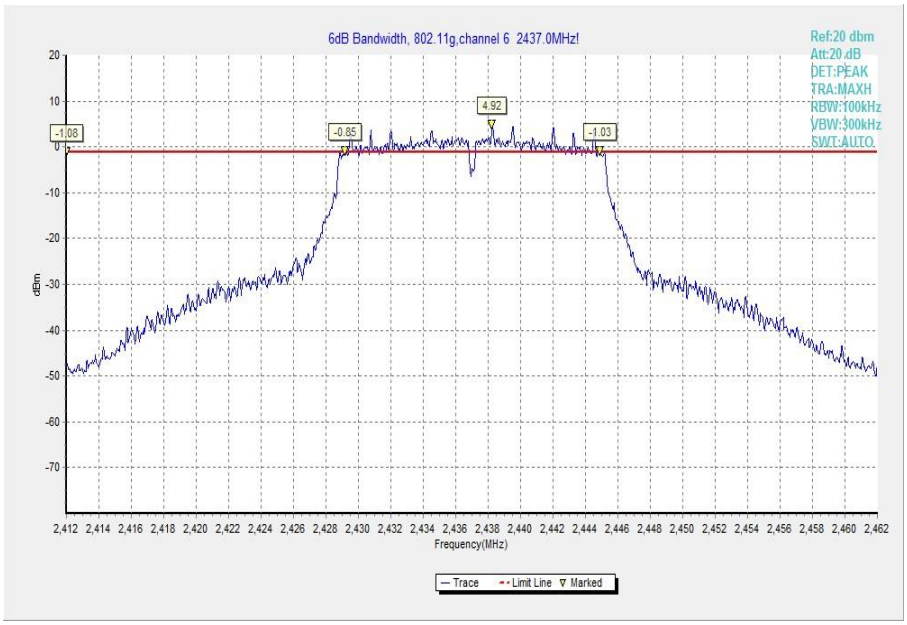

Fig.29 Occupied 6dB Bandwidth (802.11g, Ch 6)

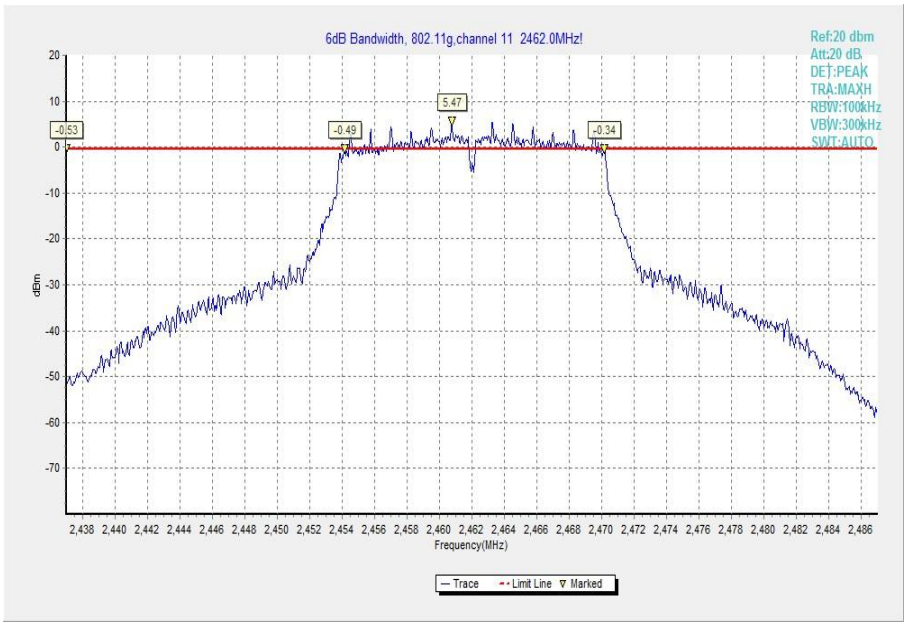

Fig.30 Occupied 6dB Bandwidth (802.11g, Ch 11)

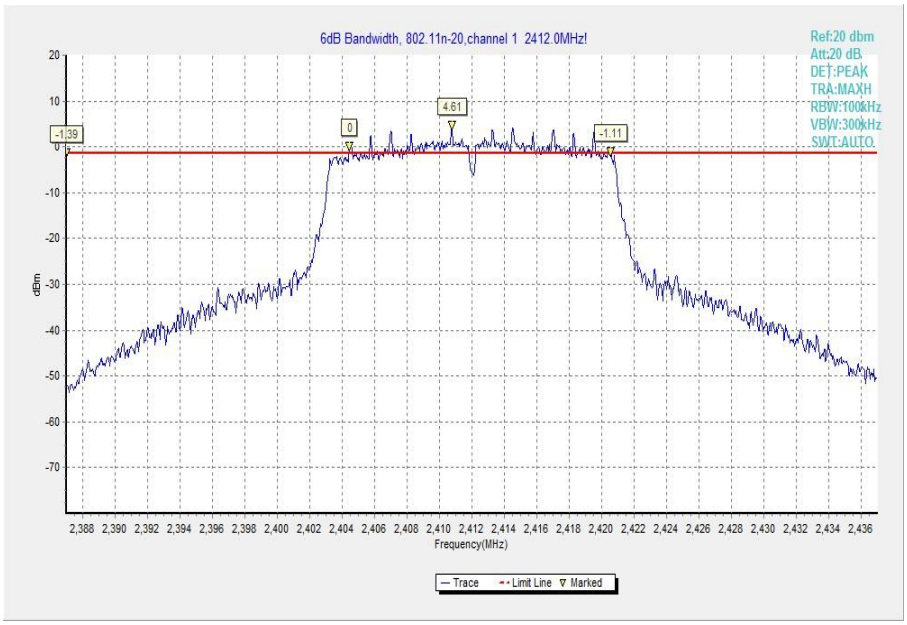

Fig.31 Occupied 6dB Bandwidth (802.11 n-20MHz, Ch 1)

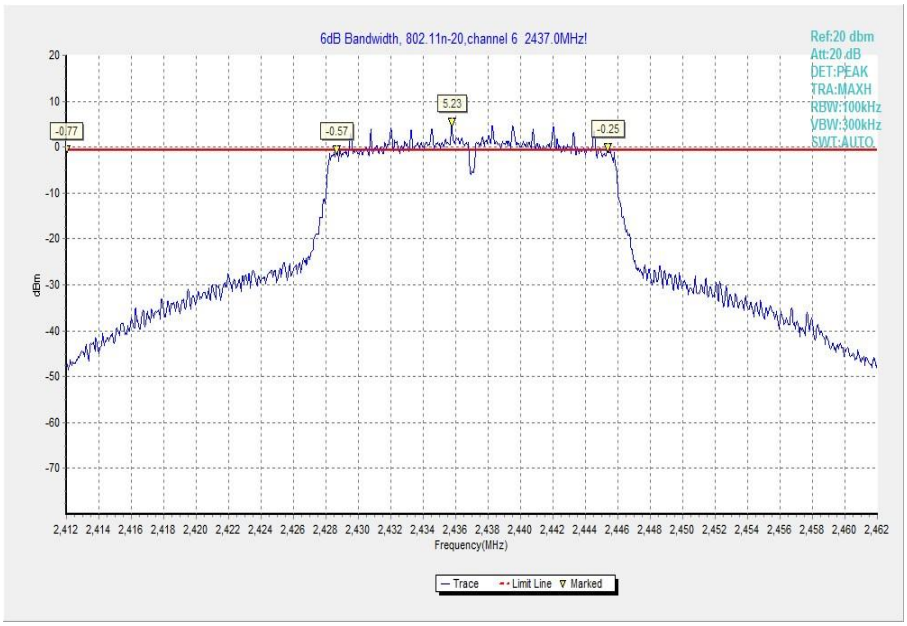

Fig.32 Occupied 6dB Bandwidth (802.11 n-20MHz, Ch 6)

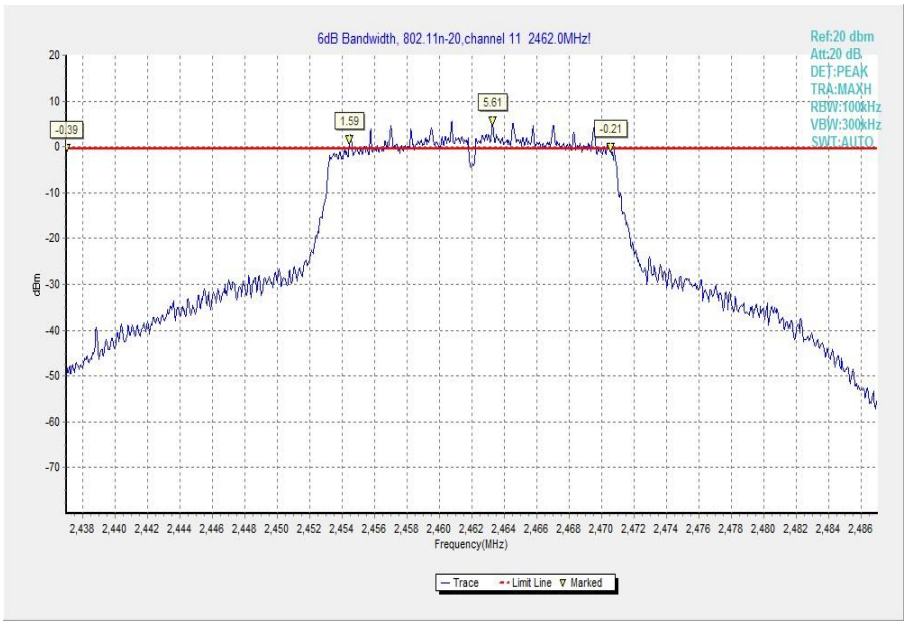

Fig.33 Occupied 6dB Bandwidth (802.11 n-20MHz, Ch 11)

Fig.34 Occupied 6dB Bandwidth (802.11 n-40MHz, Ch 3)

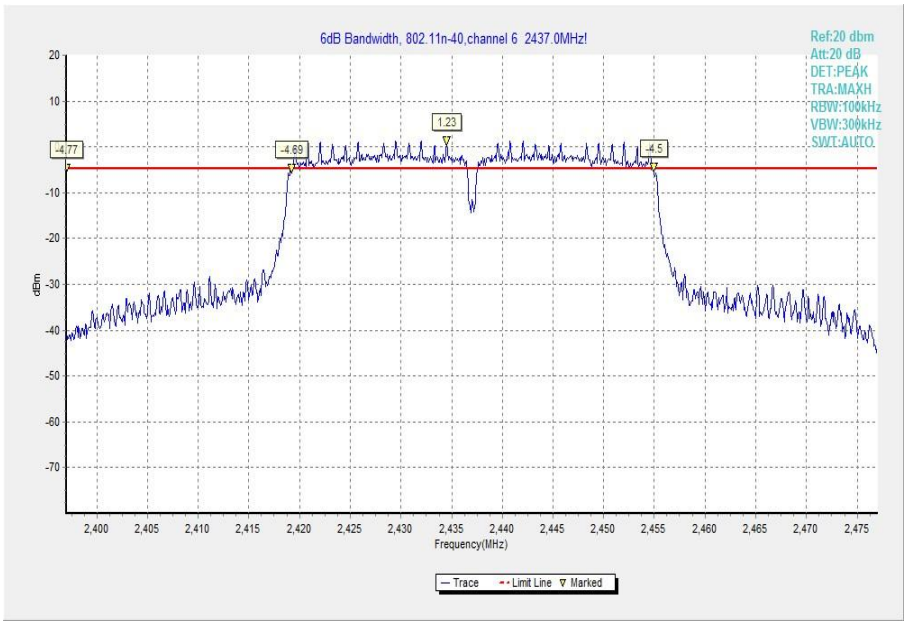

Fig.35 Occupied 6dB Bandwidth (802.11 n-40MHz, Ch 6)

Fig.36 Occupied 6dB Bandwidth (802.11 n-40MHz, Ch 9)

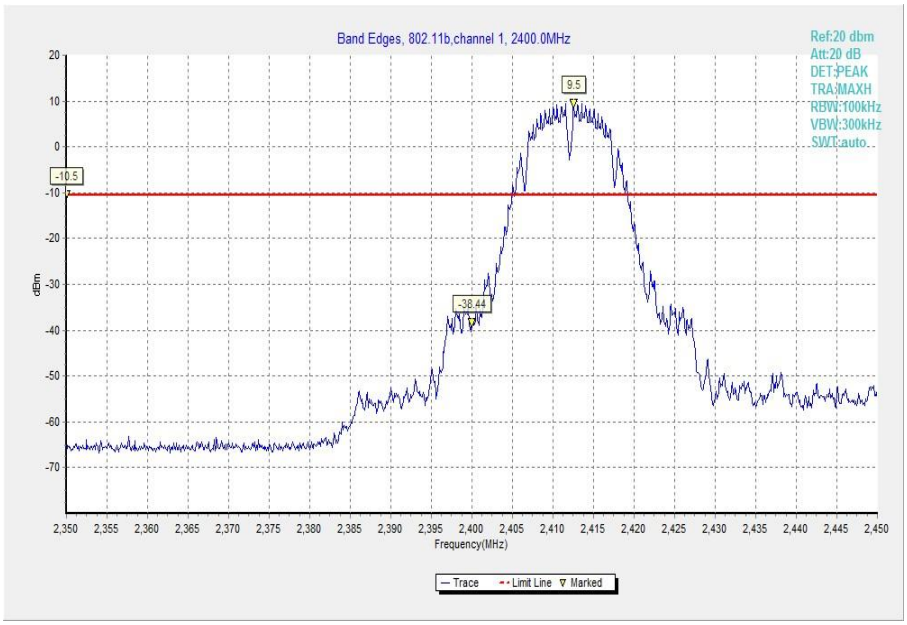

Fig.37 Band Edges (802.11b, Ch 1)

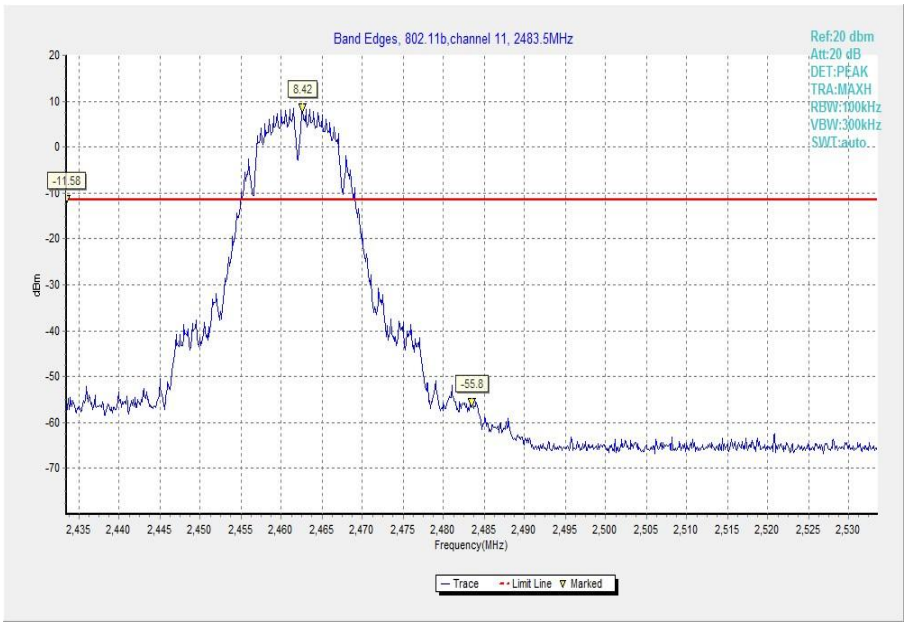

Fig.38 Band Edges (802.11b, Ch 11)

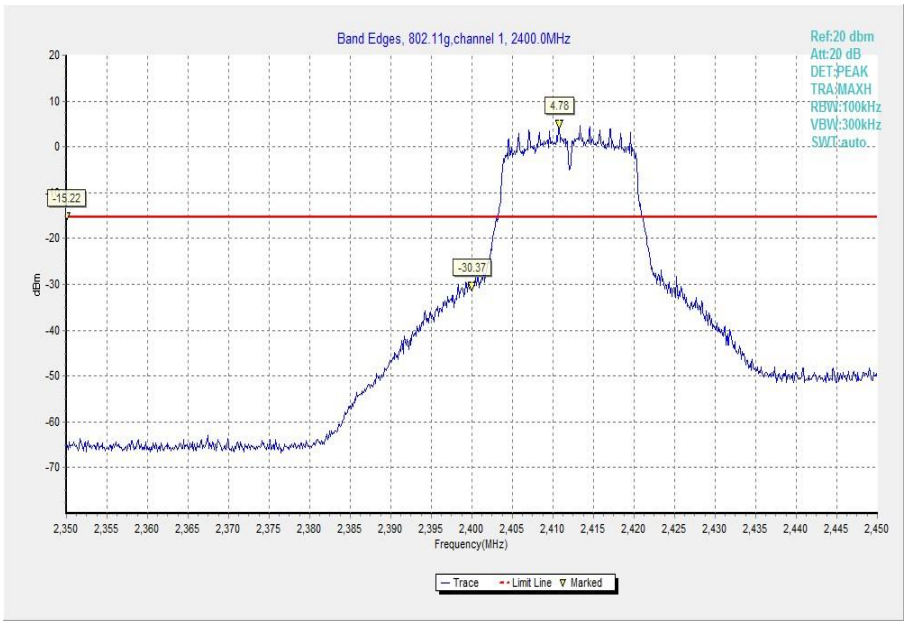

Fig.39 Band Edges (802.11g, Ch 1)

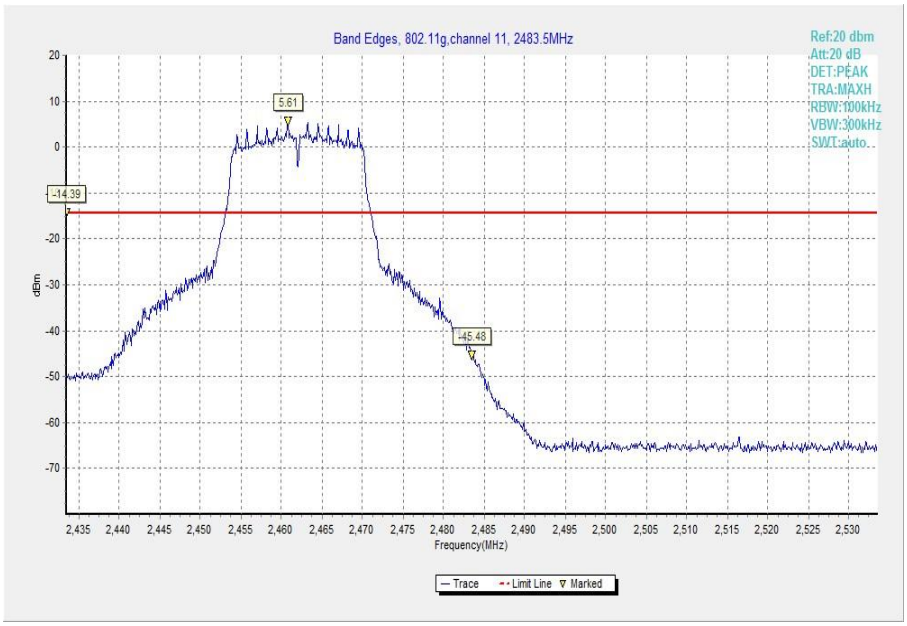

Fig.40 Band Edges (802.11g, Ch 11)

Fig.41 Band Edges (802.11 n-20MHz, Ch 1)

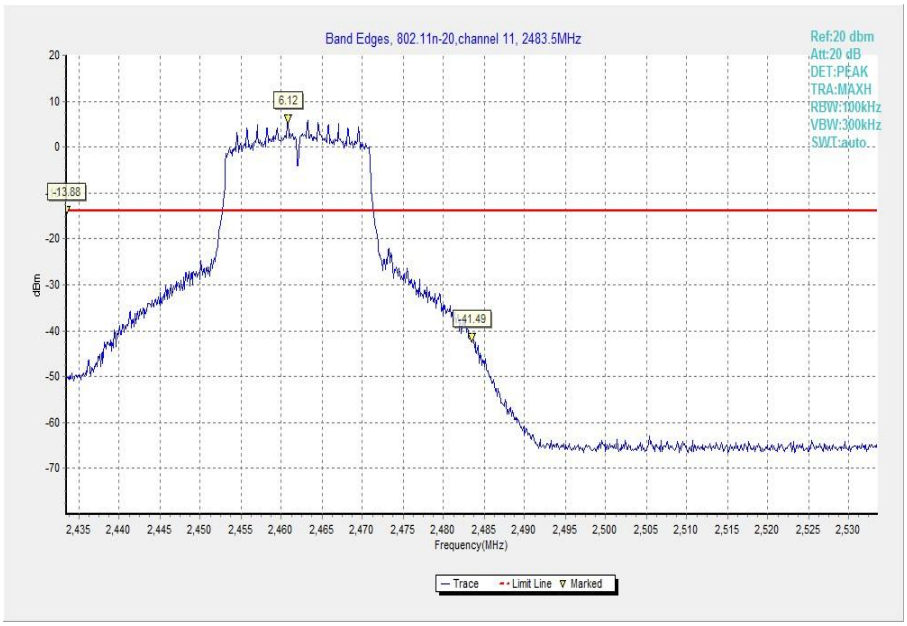

Fig.42 Band Edges (802.11 n-20MHz, Ch 11)

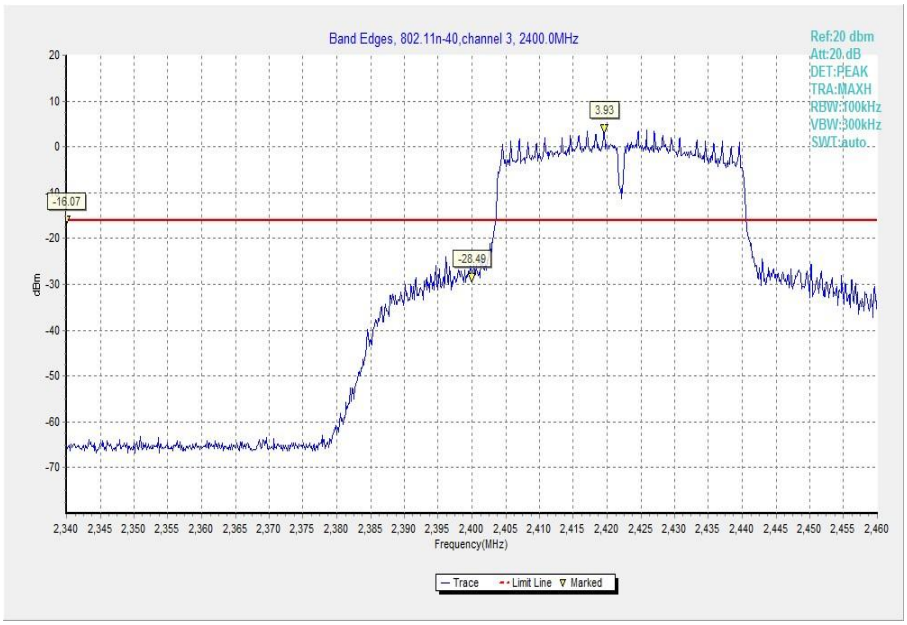

Fig.43 Band Edges (802.11 n-40MHz, Ch 3)

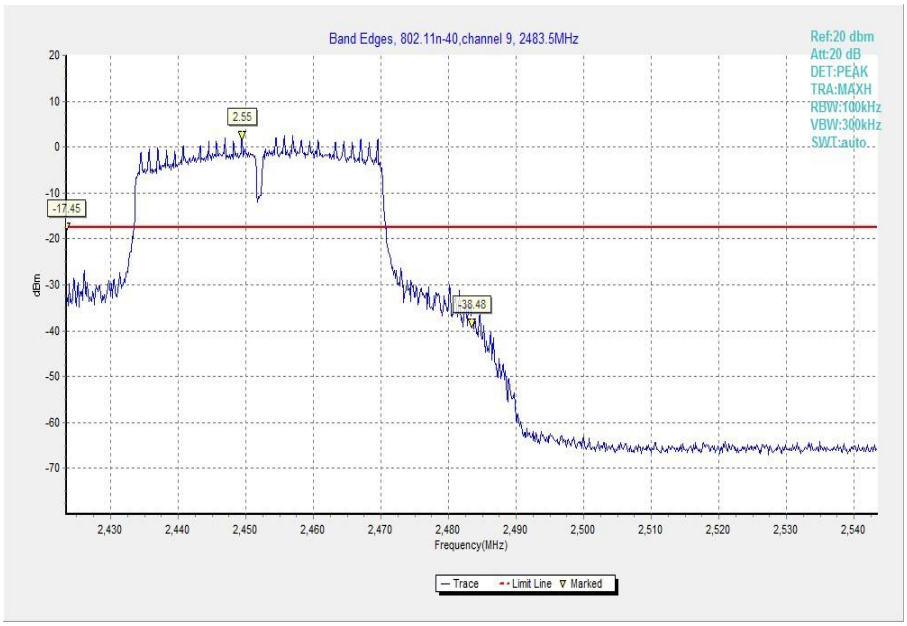

Fig.44 Band Edges (802.11 n-40MHz, Ch 9)

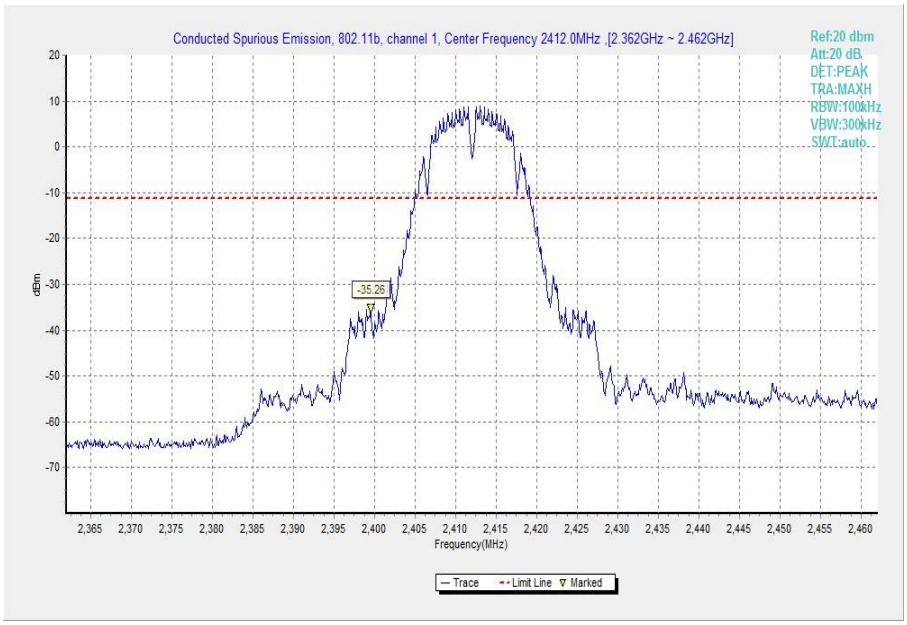

Fig.45 Conducted Spurious Emission (802.11b, Ch1, Center Frequency)

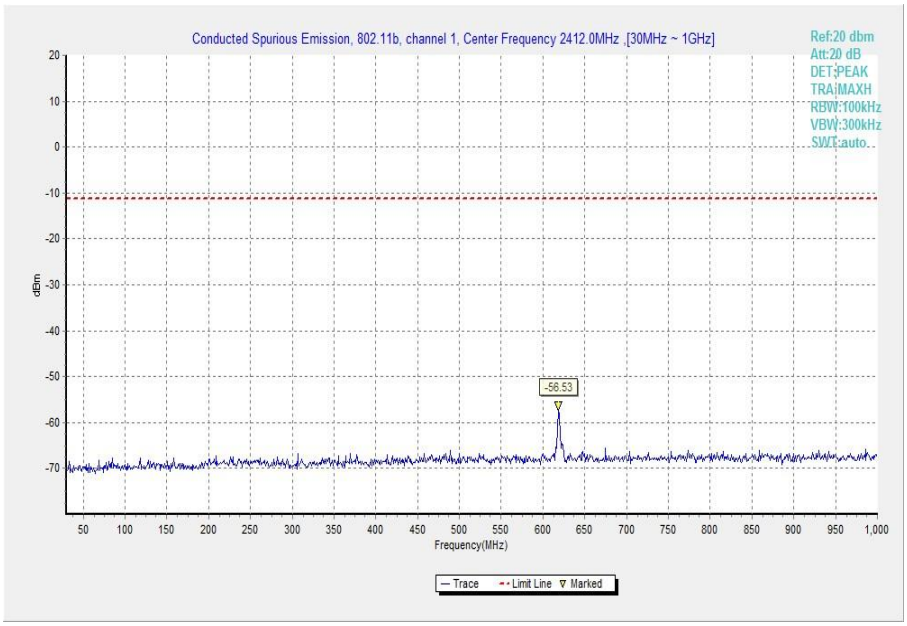

Fig.46 Conducted Spurious Emission (802.11b, Ch1, 30 MHz-1 GHz)

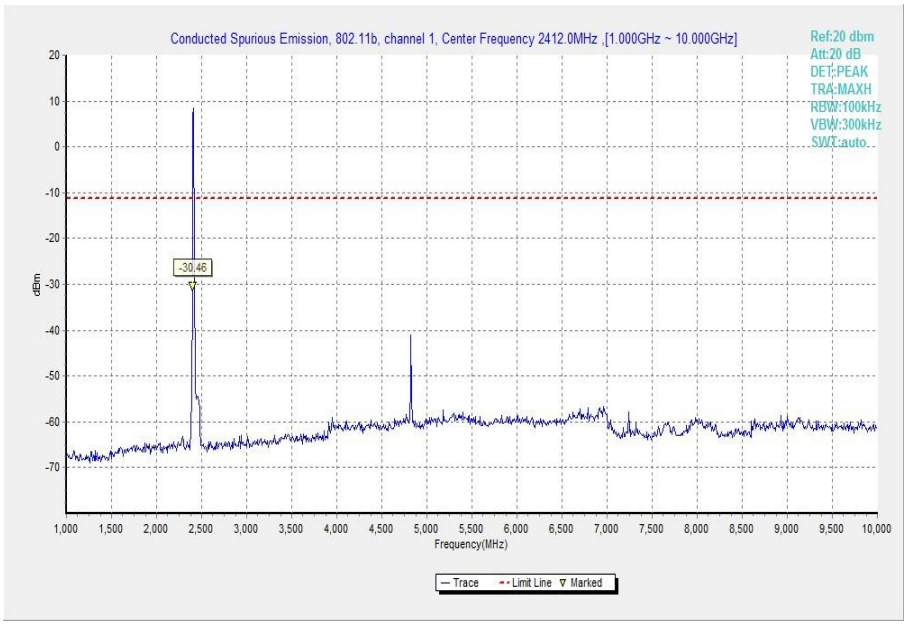

Fig.47 Conducted Spurious Emission (802.11b, Ch1, 1 GHz-10 GHz)

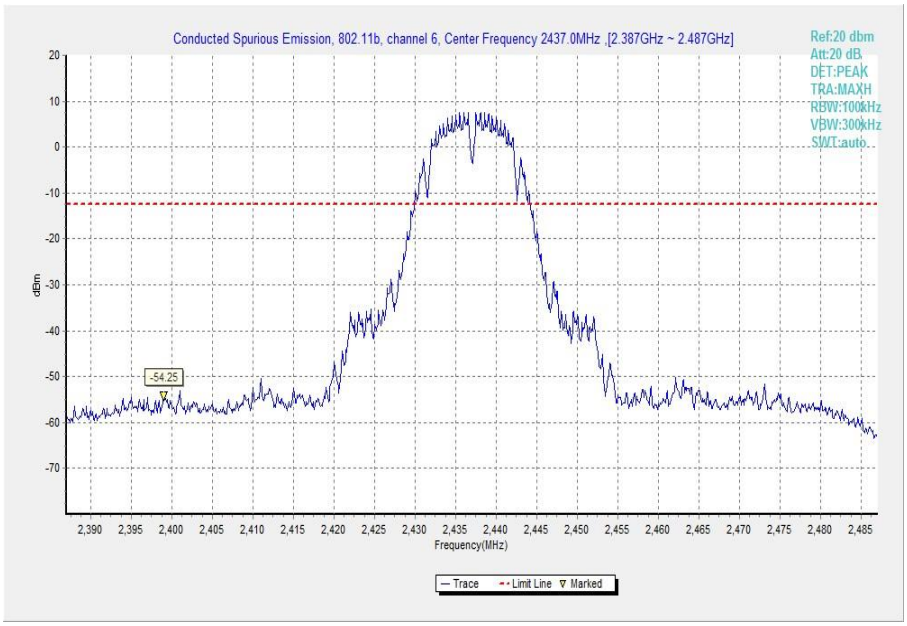

Fig.48 Conducted Spurious Emission (802.11b, Ch6, Center Frequency)

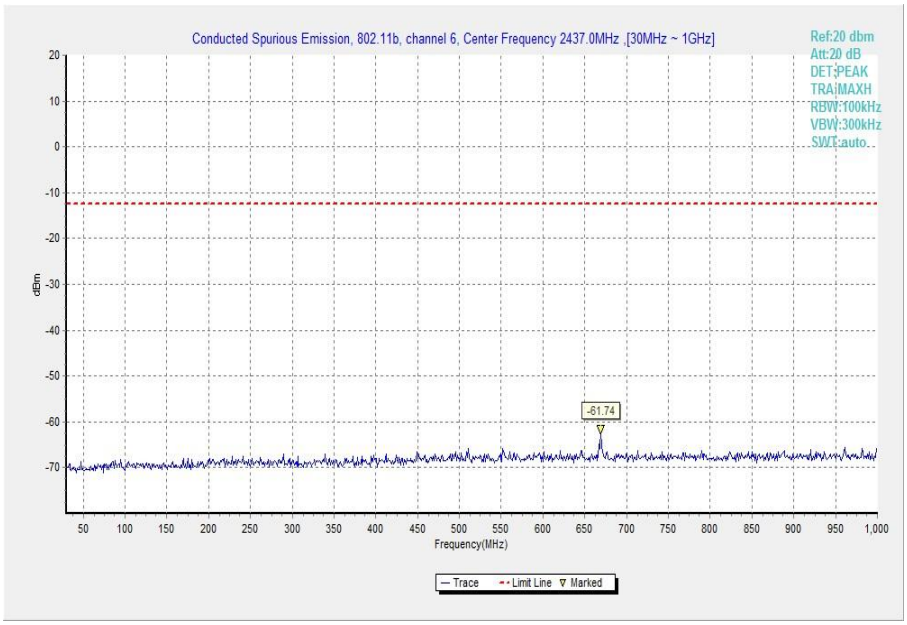

Fig.49 Conducted Spurious Emission (802.11b, Ch6, 30 MHz-1 GHz)

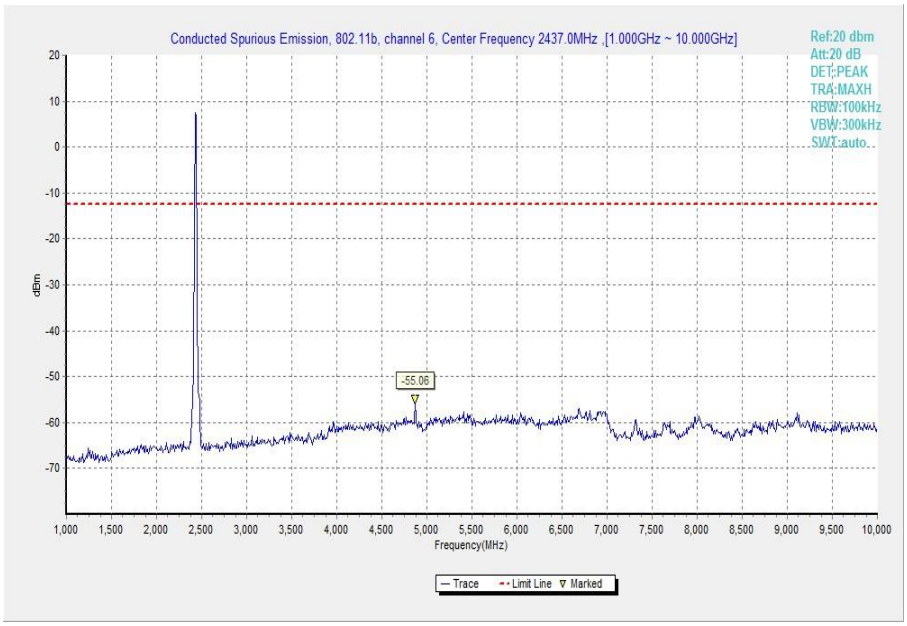

Fig.50 Conducted Spurious Emission (802.11b, Ch6, 1 GHz-10 GHz)