FCC PART 15C
TEST REPORT
No. B17N00006-WLAN

for

Huawei Technologies Co., Ltd.

Smart Watch

Model Name: LEO-DLXX

With

Hardware Version: EA1LEOUM

Software Version: sawshark-userdebug7.1.1NFF47

FCC ID: QISLEO-DLXX

Issued Date: 2017-02-14

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

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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℃

Extreme Temperature: -10/+55℃

Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2017-01-04

Testing End Date: 2017-02-09

1.4. Signature

安然

An Ran

(Prepared this test report)

Tang Weisheng

(Reviewed this test report)

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(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	Huawei Technologies Co., Ltd
Address:	Administration Building，Huawei Base, Bantian, Longgang District, Shenzhen
City:	Shenzhen
Postal Code:	518129
Country:	China
Telephone:	0755-36376815
Fax:	/

2.2. Manufacturer Information

Company Name:	Huawei Technologies Co., Ltd
Address:	Administration Building, Huawei Base, Bantian, Longgang District, Shenzhen
City:	Shenzhen
Postal Code:	518129
Country:	China
Telephone:	0755-36376815
Fax:	/

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

3.1. About EUT

Description	Smart Watch
Model Name	LEO-DLXX
Market Name	/
RF Protocol	IEEE 802.11b/g/n20
Operating Frequency	2412MHz~2462MHz
FCC ID	QISLEO-DLXX

3.2. Internal Identification of EUT

EUT ID*	IMEI	HW Version	SW Version	Receive Date
EUT1	/	EA1LEOUM	sawshark-userdebug7.1.1NFF47	2017-01-04

*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	/
AE3	Charger	/

AE1

Model	HW-050100U01
Manufacturer	DONGGUAN PHITEK ELECTRONICS CO.,LTD.

AE2

Model	HW-050100U01
Manufacturer	SHENZHEN HUNTKEY ELECTRONIC CO.,LTD.

AE3

Model	HW-050100U01
Manufacturer	HUIZHOU BYD ELECTRONIC 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 B and ANNEX C** 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	2017-03-21	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 330	Schwarzbeck	2017-04-22	3 years
4	Horn Antenna	3117	00066585	ETS-Lindgren	2019-03-05	3 years
5	Universal Radio Communication Tester	CMW270	100540	Rohde & Schwarz	2017-04-13	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 -5dBi.
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	15.30	Fig.2	15.36	Fig.3	15.83
	2	Fig.4	15.43	Fig.5	15.53	Fig.6	15.70
	5.5	Fig.7	15.50	Fig.8	15.84	Fig.9	15.99
	11	Fig.10	15.42	Fig.11	15.62	Fig.12	15.95
802.11g	6	Fig.13	12.17	Fig.14	12.42	Fig.15	12.75
	9	Fig.16	12.08	Fig.17	12.42	Fig.18	12.74
	12	Fig.19	12.06	Fig.20	12.34	Fig.21	12.74
	18	Fig.22	12.04	Fig.23	12.33	Fig.24	12.73
	24	Fig.25	12.01	Fig.26	12.36	Fig.27	12.71
	36	Fig.28	12.02	Fig.29	12.34	Fig.30	12.72
	48	Fig.31	12.00	Fig.32	12.34	Fig.33	12.66
	54	Fig.34	12.00	Fig.35	12.33	Fig.36	12.70

802.11n-20MHz mode

Mode	Data Rate (MCS Index)	Test Result (dBm)					
		2412MHz (Ch1)		2437MHz (Ch6)		2462 MHz (Ch11)	
802.11n (20MHz)	MCS0	Fig.37	11.14	Fig.38	11.54	Fig.39	11.84
	MCS1	Fig.40	11.08	Fig.41	11.53	Fig.42	11.87
	MCS2	Fig.43	11.13	Fig.44	11.49	Fig.45	11.78
	MCS3	Fig.46	11.14	Fig.47	11.48	Fig.48	11.80
	MCS4	Fig.49	11.12	Fig.50	11.46	Fig.51	11.87
	MCS5	Fig.52	11.13	Fig.53	11.51	Fig.54	11.84
	MCS6	Fig.55	11.11	Fig.56	11.45	Fig.57	11.85
	MCS7	Fig.58	11.15	Fig.59	11.41	Fig.60	11.84

See ANNEX C 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.61	-7.55	P
	6	Fig.62	-7.14	P
	11	Fig.63	-6.60	P
802.11g	1	Fig.64	-11.89	P
	6	Fig.65	-11.94	P
	11	Fig.66	-11.07	P

802.11n-20MHz mode

Mode	Channel	Peak Power Spectral Density(dBm)		Conclusion
802.11n (20MHz)	1	Fig.67	-13.22	P
	6	Fig.68	-12.67	P
	11	Fig.69	-12.80	P

See ANNEX C 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.70	9000	P
	6	Fig.71	9500	P
	11	Fig.72	8500	P
802.11g	1	Fig.73	15100	P
	6	Fig.74	15150	P
	11	Fig.75	15150	P

802.11n-20MHz mode

Mode	Channel	Test Results (kHz)		conclusion
802.11n (20MHz)	1	Fig.76	14450	P
	6	Fig.77	15100	P
	11	Fig.78	15100	P

See ANNEX C 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.79	P
	11	Fig.80	P
802.11g	1	Fig.81	P
	11	Fig.82	P

802.11n-20MHz mode

Mode	Channel	Test Results	Conclusion
802.11n (20MHz)	1	Fig.83	P
	11	Fig.84	P

See ANNEX C 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.85	P
		30 MHz-3 GHz	Fig.86	P
		3GHz-18GHz	Fig.87	P
	6	2.437 GHz	Fig.88	P
		30 MHz-3 GHz	Fig.89	P
		3GHz-18GHz	Fig.90	P
	11	2.462 GHz	Fig.91	P
		30 MHz-3 GHz	Fig.92	P
		3GHz-18GHz	Fig.93	P
802.11g	1	2.412 GHz	Fig.94	P
		30 MHz-3 GHz	Fig.95	P
		3GHz-18GHz	Fig.96	P
	6	2.437 GHz	Fig.97	P
		30 MHz-3 GHz	Fig.98	P
		3GHz-18GHz	Fig.99	P
	11	2.462 GHz	Fig.100	P
		30 MHz-3 GHz	Fig.101	P
		3GHz-18GHz	Fig.102	P

802.11n-20MHz mode

802.11n (20MHz)	1	2.412 GHz	Fig.103	P
		30 MHz-3 GHz	Fig.104	P
		3GHz-18GHz	Fig.105	P
	6	2.437 GHz	Fig.106	P
		30 MHz-3 GHz	Fig.107	P
		3GHz-18GHz	Fig.108	P
	11	2.462 GHz	Fig.109	P
		30 MHz-3 GHz	Fig.110	P
		3GHz-18GHz	Fig.111	P
/	All channels	18GHz-26GHz	Fig.112	P

See ANNEX C 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.113	P
	6	9 kHz ~30 MHz	Fig.114	P
		30 MHz ~1 GHz	Fig.115	P
		1 GHz ~18 GHz	Fig.116	P
		18 GHz ~26.5 GHz	Fig.117	P
	11	1 GHz ~18 GHz	Fig.118	P
	Power(CH1)	2.38 GHz ~ 2.45 GHz	Fig.119	P
	Power(CH11)	2.45 GHz ~ 2.5 GHz	Fig.120	P
802.11g	1	1 GHz ~18 GHz	Fig.121	P
	6	9 kHz ~30 MHz	Fig.122	P
		30 MHz ~1 GHz	Fig.123	P
		1 GHz ~18 GHz	Fig.124	P
		18 GHz ~26.5 GHz	Fig.125	P
	11	1 GHz ~18 GHz	Fig.126	P
	Power(CH1)	2.38 GHz ~ 2.45 GHz	Fig.127	P
	Power(CH11)	2.45 GHz ~ 2.5 GHz	Fig.128	P

802.11n-20MHz mode

802.11n-20 MHz	1	1 GHz ~18 GHz	Fig.129	P
	6	9 kHz ~30 MHz	Fig.130	P
		30 MHz ~1 GHz	Fig.131	P
		1 GHz ~18 GHz	Fig.132	P
		18 GHz ~26.5 GHz	Fig.133	P
	11	1 GHz ~18 GHz	Fig.134	P
	Power(CH1)	2.38 GHz ~ 2.45 GHz	Fig.135	P
	Power(CH11)	2.45 GHz ~ 2.5 GHz	Fig.136	P

802.11b CH1 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
14143.500000	54.77	74.00	19.23	11.2	V
14567.000000	55.19	74.00	18.81	11.9	V
15784.000000	56.39	74.00	17.61	12.8	V
16528.500000	56.55	74.00	17.45	13.7	V
16717.000000	57.62	74.00	16.38	13.8	V
17387.500000	57.66	74.00	16.34	14.0	V

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
14544.000000	43.50	54.00	10.50	11.9	V
15145.000000	43.88	54.00	10.12	12.1	V
15757.000000	45.20	54.00	8.80	12.8	V
16208.500000	45.42	54.00	8.58	13.1	V
16690.500000	45.73	54.00	8.27	13.8	V
17385.000000	45.48	54.00	8.52	14.0	V

802.11b CH 6(1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
14330.500000	54.67	74.00	19.33	11.4	V
14594.000000	55.09	74.00	18.91	11.9	V
15728.500000	56.80	74.00	17.20	12.7	V
16186.000000	57.70	74.00	16.30	13.1	V
16744.000000	58.34	74.00	15.66	13.9	V
17361.000000	57.77	74.00	16.23	14.0	V

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
14170.000000	42.46	54.00	11.54	11.2	V
15147.500000	43.39	54.00	10.61	12.1	V
15680.500000	45.32	54.00	8.68	12.6	V
16223.500000	45.74	54.00	8.26	13.1	V
16802.500000	46.47	54.00	7.53	13.9	V
17298.500000	45.99	54.00	8.01	13.9	V

802.11b CH 11(1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
14551.500000	54.63	74.00	19.37	11.9	V
14575.500000	55.30	74.00	18.70	11.9	V
15731.000000	57.27	74.00	16.73	12.7	V
16286.500000	57.41	74.00	16.59	13.3	V
16790.000000	57.63	74.00	16.37	13.9	V
17291.500000	57.05	74.00	16.95	13.9	V

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
14539.500000	43.02	54.00	10.98	11.9	V
15151.000000	43.91	54.00	10.09	12.1	V
15773.500000	45.28	54.00	8.72	12.8	V
16200.500000	45.32	54.00	8.68	13.1	V
16693.500000	45.88	54.00	8.12	13.8	V
17434.000000	45.58	54.00	8.42	14.0	V

802.11g CH1 (1G-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13962.500000	54.08	74.00	19.92	10.8	V
14915.000000	54.62	74.00	19.38	12.0	V
15749.000000	56.80	74.00	17.20	12.8	V
16184.500000	57.20	74.00	16.80	13.1	V
16837.000000	57.90	74.00	16.10	13.9	V
17372.500000	57.48	74.00	16.52	14.0	V

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
14156.500000	42.55	54.00	11.45	11.2	V
15185.000000	43.61	54.00	10.39	12.2	V
15687.500000	45.47	54.00	8.53	12.7	V
16202.500000	45.67	54.00	8.33	13.1	V
16803.500000	46.70	54.00	7.30	13.9	V
17345.000000	45.93	54.00	8.07	14.0	V

802.11g CH6 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
14169.500000	53.98	74.00	20.02	11.2	V
14825.000000	54.17	74.00	19.83	11.9	V
15772.500000	56.72	74.00	17.28	12.8	V
16158.000000	56.70	74.00	17.30	13.1	V
16742.000000	57.27	74.00	16.73	13.9	V
17313.000000	57.12	74.00	16.88	13.9	V

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13996.000000	42.23	54.00	11.77	10.8	V
15166.500000	43.19	54.00	10.81	12.1	V
15770.000000	45.15	54.00	8.85	12.8	V
16283.000000	45.68	54.00	8.32	13.3	V
16786.500000	46.40	54.00	7.60	13.9	V
17365.000000	45.78	54.00	8.22	14.0	V

802.11g CH11 (1GHz-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
14541.000000	54.93	74.00	19.07	11.9	V
15135.000000	55.30	74.00	18.70	12.1	V
15676.500000	56.78	74.00	17.22	12.6	V
16197.000000	57.30	74.00	16.70	13.1	V
16698.000000	57.85	74.00	16.15	13.8	V
17356.000000	56.70	74.00	17.30	14.0	V

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
14540.500000	42.78	54.00	11.22	11.9	V
15164.000000	44.14	54.00	9.86	12.1	V
15761.000000	45.44	54.00	8.56	12.8	V
16191.500000	45.85	54.00	8.15	13.1	V
16745.000000	46.39	54.00	7.61	13.9	V
17268.500000	46.10	54.00	7.90	13.9	V

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

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
13948.500000	54.12	74.00	19.88	10.8	V
14805.000000	55.02	74.00	18.98	11.9	V
15654.500000	57.02	74.00	16.98	12.6	V
16503.000000	57.35	74.00	16.65	13.7	V
16707.000000	58.00	74.00	16.00	13.8	V
17257.000000	57.35	74.00	16.65	13.9	V

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
14440.500000	42.41	54.00	11.59	11.6	V
15158.500000	43.13	54.00	10.87	12.1	V
15694.500000	45.33	54.00	8.67	12.7	V
16210.500000	45.59	54.00	8.41	13.1	V
16797.000000	46.30	54.00	7.70	13.9	V
17454.000000	45.87	54.00	8.13	14.0	V

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

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
14539.000000	54.94	74.00	19.06	11.9	V
15171.000000	54.99	74.00	19.01	12.1	V
15653.500000	56.71	74.00	17.29	12.6	V
16334.000000	57.76	74.00	16.24	13.4	V
16763.000000	57.45	74.00	16.55	13.9	V
17950.000000	57.13	74.00	16.87	13.9	V

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
14348.500000	42.42	54.00	11.58	11.5	V
15153.500000	43.17	54.00	10.83	12.1	V
15691.000000	45.23	54.00	8.77	12.7	V
16226.000000	45.51	54.00	8.49	13.1	V
16804.500000	46.51	54.00	7.49	13.9	V
17368.000000	45.85	54.00	8.15	14.0	V

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

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
14395.500000	54.66	74.00	19.34	11.5	V
15131.500000	55.55	74.00	18.45	12.1	V
15685.500000	56.83	74.00	17.17	12.6	V
16304.000000	57.52	74.00	16.48	13.3	V
16779.000000	58.15	74.00	15.85	13.9	V
17378.500000	57.48	74.00	16.52	14.0	V

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Corr. (dB)	Pol
14515.000000	42.73	54.00	11.27	11.8	V
15172.000000	43.84	54.00	10.16	12.1	V
15688.000000	45.41	54.00	8.59	12.7	V
16245.000000	45.81	54.00	8.19	13.2	V
16783.500000	46.49	54.00	7.51	13.9	V
17354.500000	45.96	54.00	8.04	14.0	V

See ANNEX C 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) Traffic	Conclusion
0.15o 0.5	66 to 56	Fig.137	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.137	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
0.15o 0.5	66 to 56	Fig.138	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.138	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
0.16o 0.5	66 to 56	Fig.139	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.139	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
0.16o 0.5	66 to 56	Fig.140	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.140	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)-AE3

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV) Traffic	Conclusion
0.17o 0.5	66 to 56	Fig.141	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)-AE3

Frequency range (MHz)	Average-peak Limit (dBμV)	Result (dBμV) Traffic	Conclusion
0.15 to 0.5	56 to 46	Fig.141	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)-AE3

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV) Idle	Conclusion
0.17o 0.5	66 to 56	Fig.142	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)-AE3

Frequency range (MHz)	Average-peak Limit (dBμV)	Result (dBμV) Idle	Conclusion
0.15 to 0.5	56 to 46	Fig.142	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
0.18o 0.5	66 to 56	Fig.143	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.143	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
0.18o 0.5	66 to 56	Fig.144	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.144	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)	Conclusion
		Traffic	
0.19o 0.5	66 to 56	Fig.145	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)	Conclusion
		Traffic	
0.15 to 0.5	56 to 46	Fig.145	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)	Conclusion
		Idle	
0.19o 0.5	66 to 56	Fig.146	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)	Conclusion
		Idle	
0.15 to 0.5	56 to 46	Fig.146	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)-AE3

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV) Traffic	Conclusion
0.20o 0.5	66 to 56	Fig.147	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)-AE3

Frequency range (MHz)	Average-peak Limit (dBμV)	Result (dBμV) Traffic	Conclusion
0.15 to 0.5	56 to 46	Fig.147	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)-AE3

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV) Idle	Conclusion
0.20o 0.5	66 to 56	Fig.148	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)-AE3

Frequency range (MHz)	Average-peak Limit (dBμV)	Result (dBμV) Idle	Conclusion
0.15 to 0.5	56 to 46	Fig.148	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 C for test graphs.

Conclusion: PASS

ANNEX B: TEST LAYOUTS

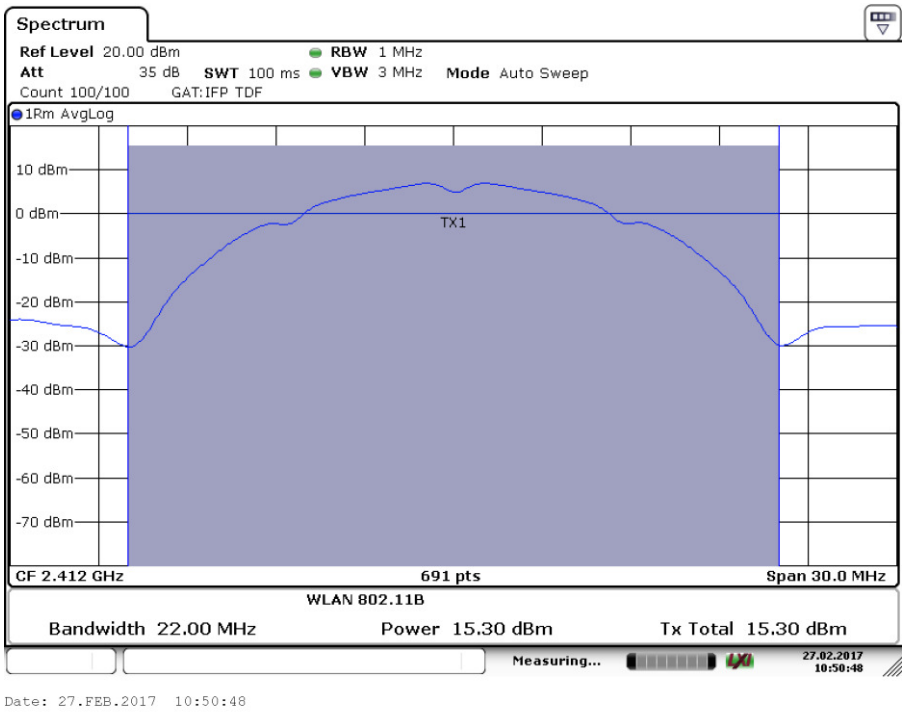

Fig.1 Maximum Average Output Power (802.11b, Ch 1, 1Mbps)

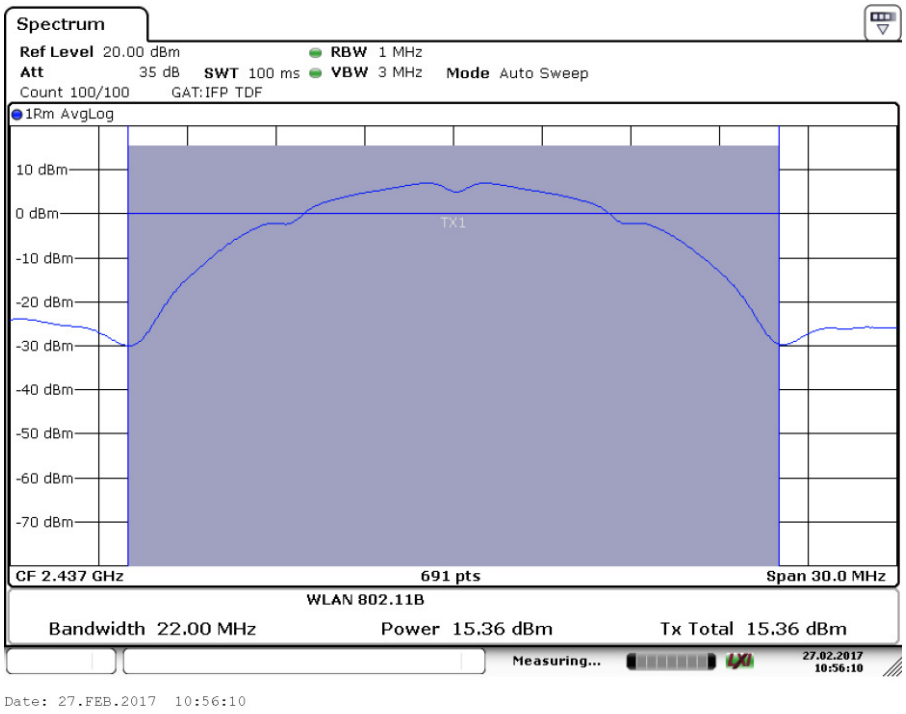

Fig.2 Maximum Average Output Power (802.11b, Ch 6, 1Mbps)

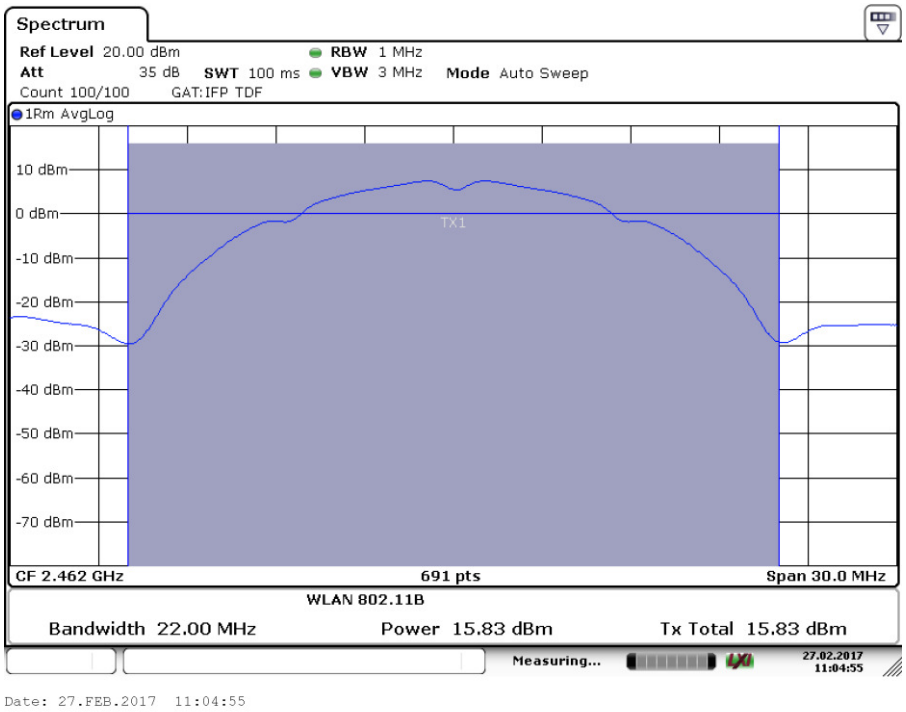

Fig.3 Maximum Average Output Power (802.11b, Ch 11, 1Mbps)

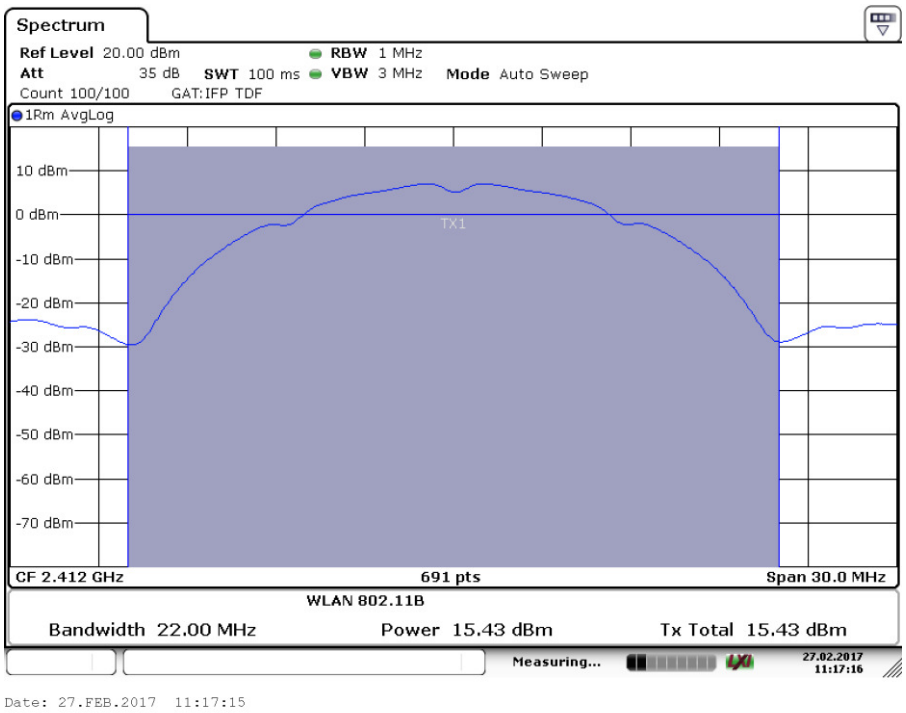

Fig.4 Maximum Average Output Power (802.11b, Ch 1, 2Mbps)

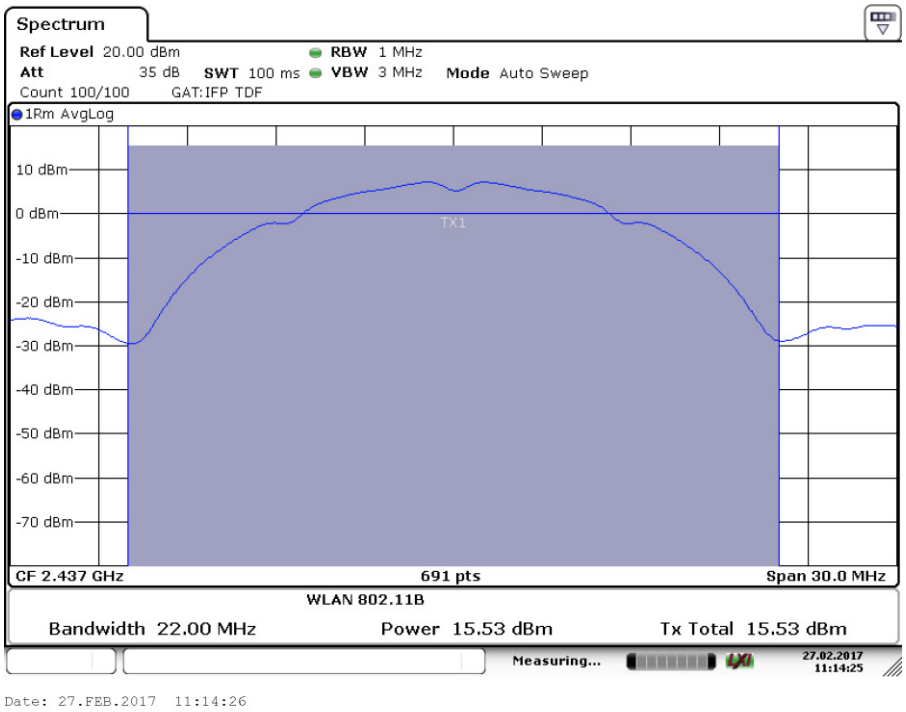

Fig.5 Maximum Average Output Power (802.11b, Ch 6, 2Mbps)

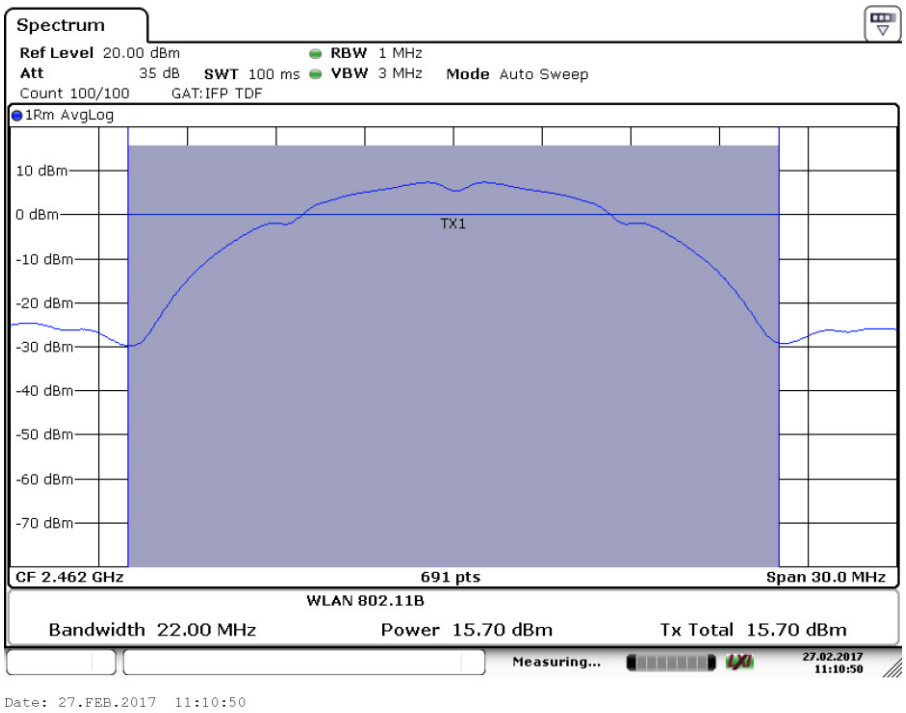

Fig.6 Maximum Average Output Power (802.11b, Ch 11, 2Mbps)

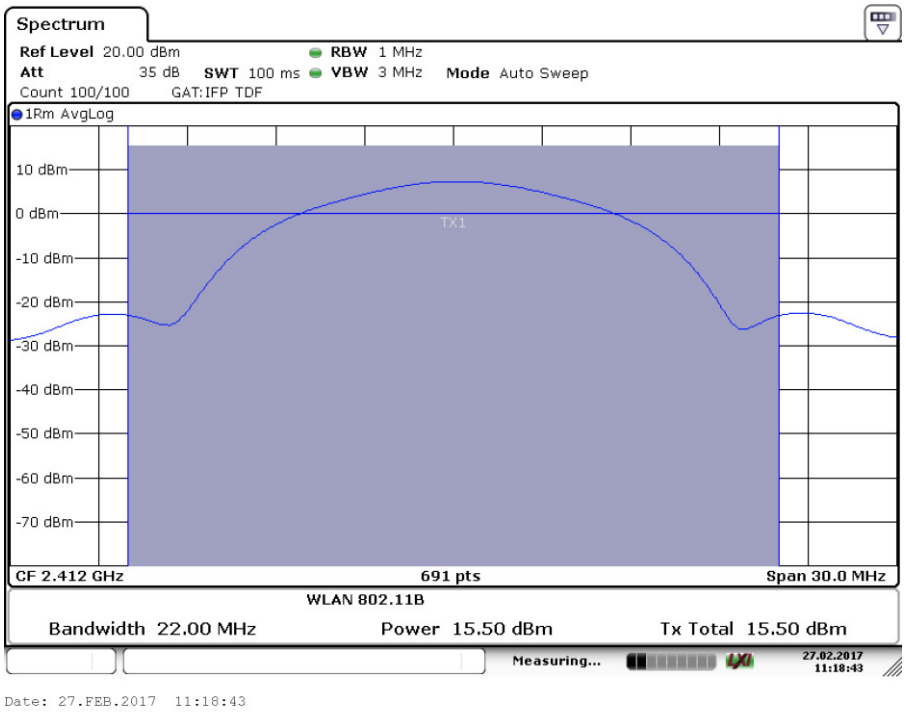

Fig.7 Maximum Average Output Power (802.11b, Ch 1, 5.5Mbps)

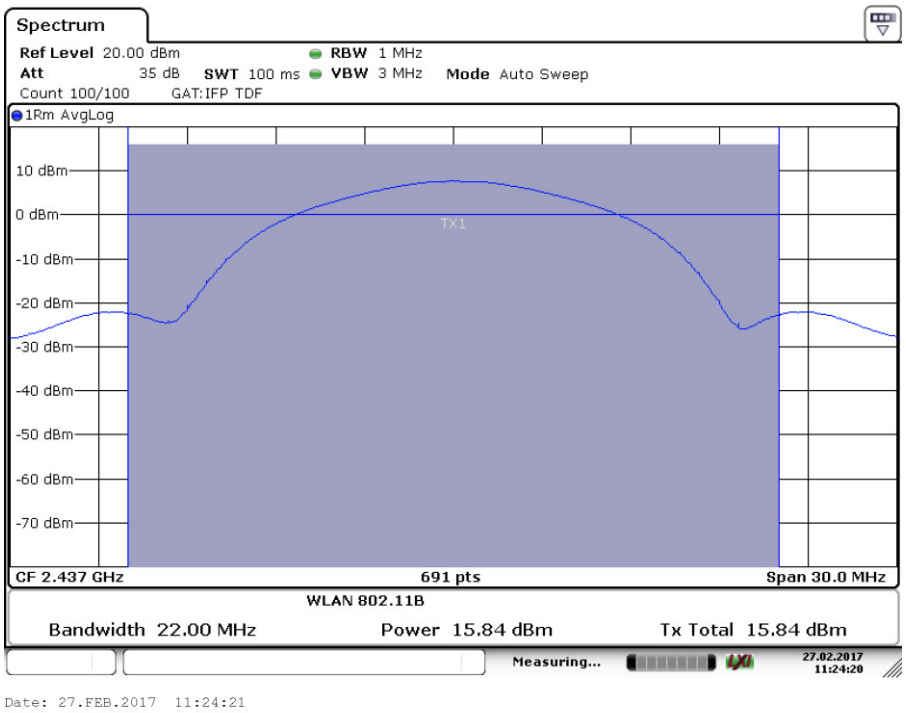

Fig.8 Maximum Average Output Power (802.11b, Ch 6, 5.5Mbps)

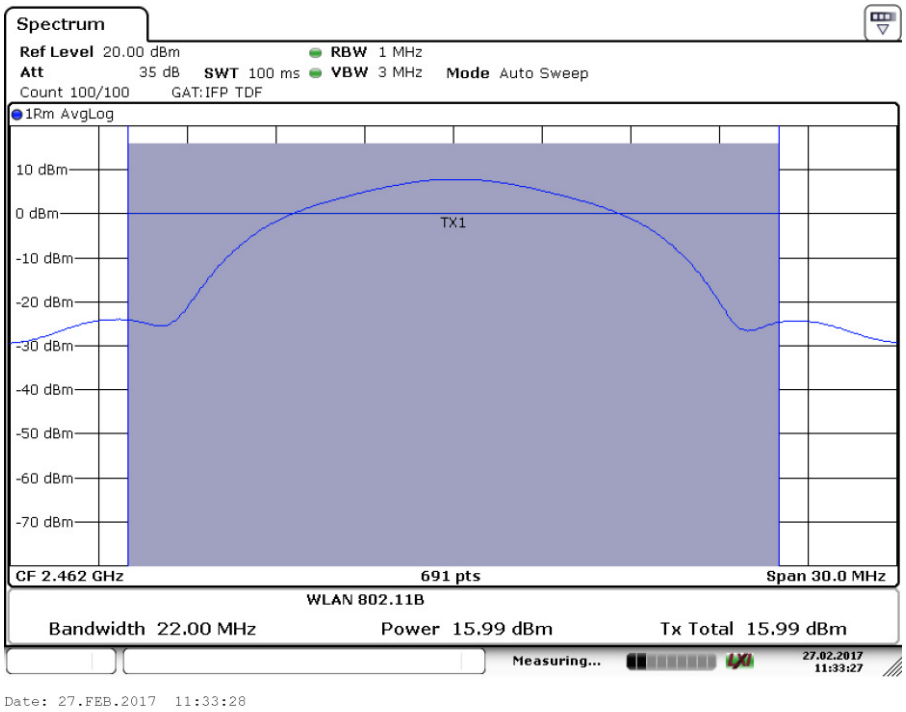

Fig.9 Maximum Average Output Power (802.11b, Ch 11, 5.5Mbps)

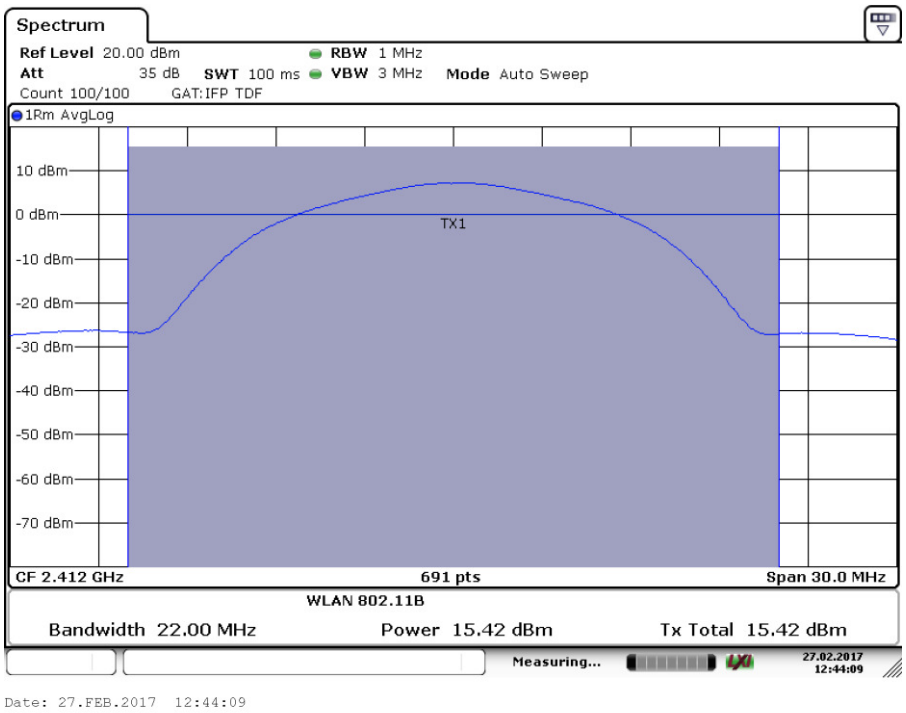

Fig.10 Maximum Average Output Power (802.11b, Ch 1, 11Mbps)

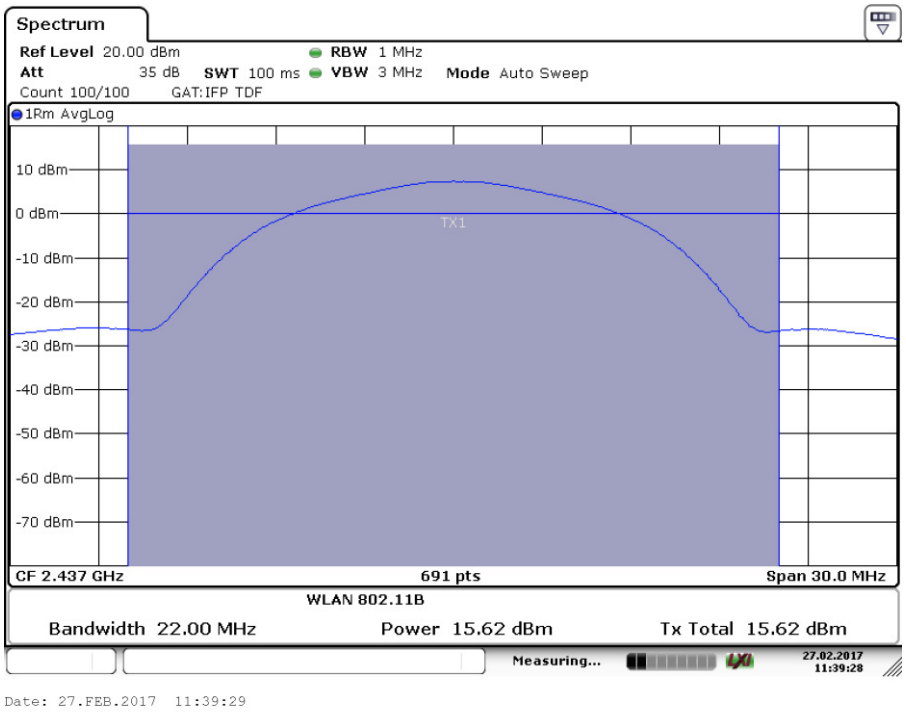

Fig.11 Maximum Average Output Power (802.11b, Ch 6, 11Mbps)

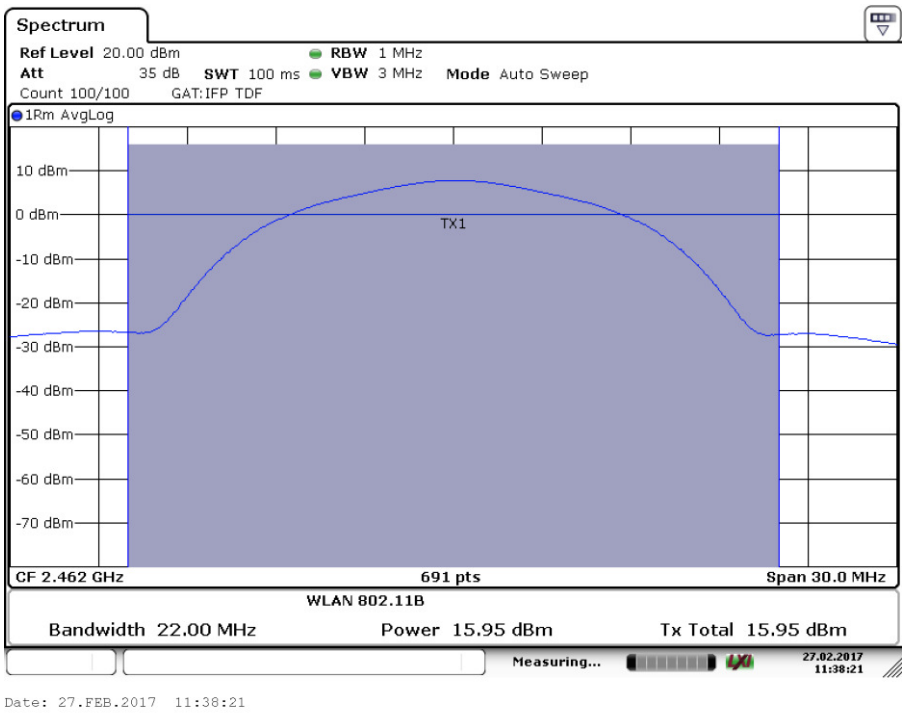

Fig.12 Maximum Average Output Power (802.11b, Ch 11, 11Mbps)

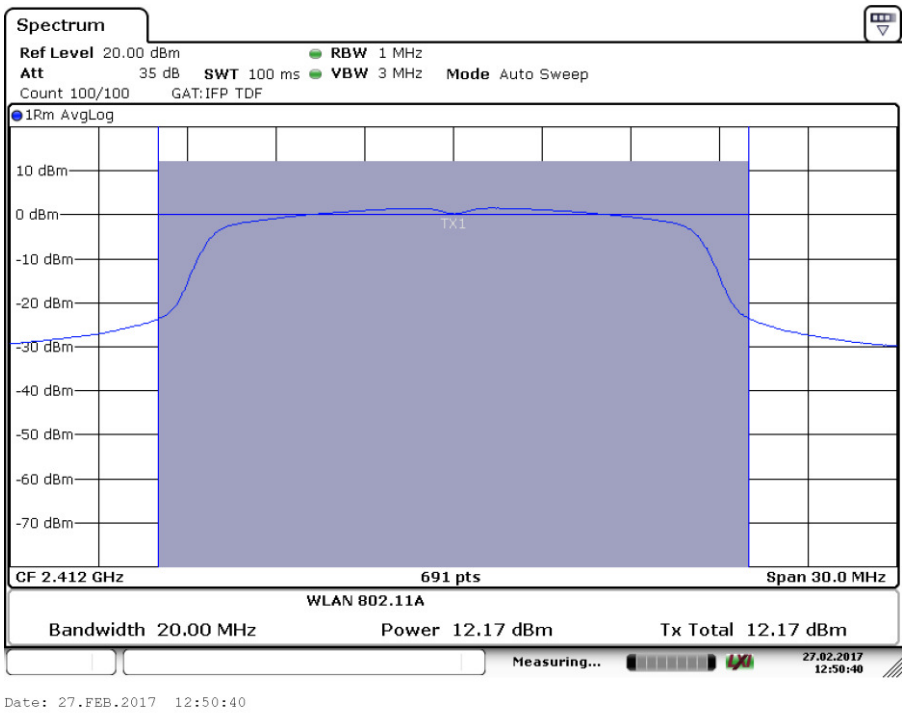

Fig.13 Maximum Average Output Power (802.11g, Ch 1, 6Mbps)

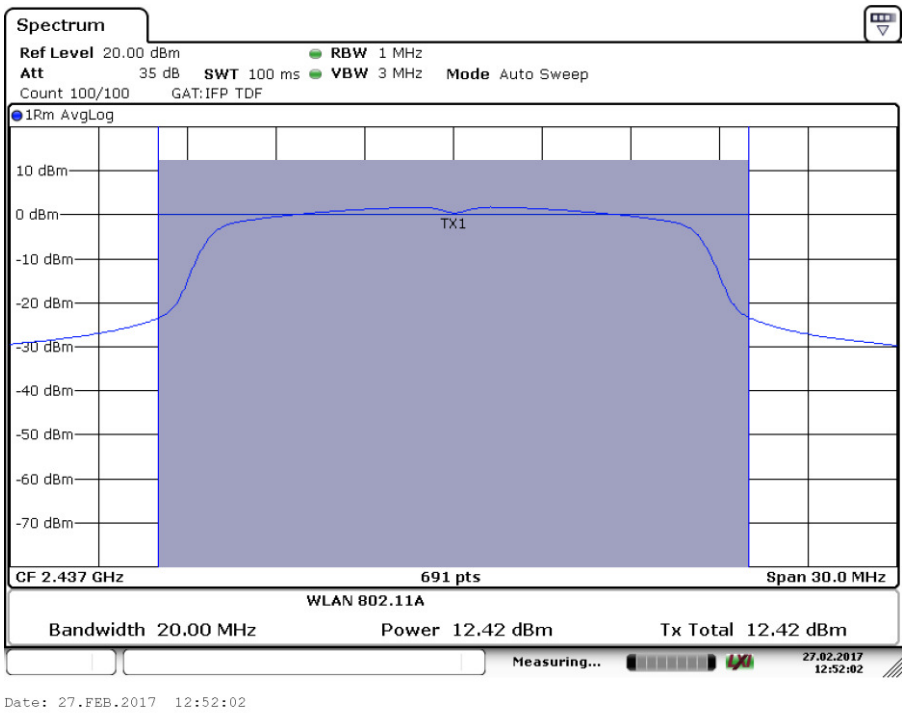

Fig.14 Maximum Average Output Power (802.11g, Ch 6, 6Mbps)

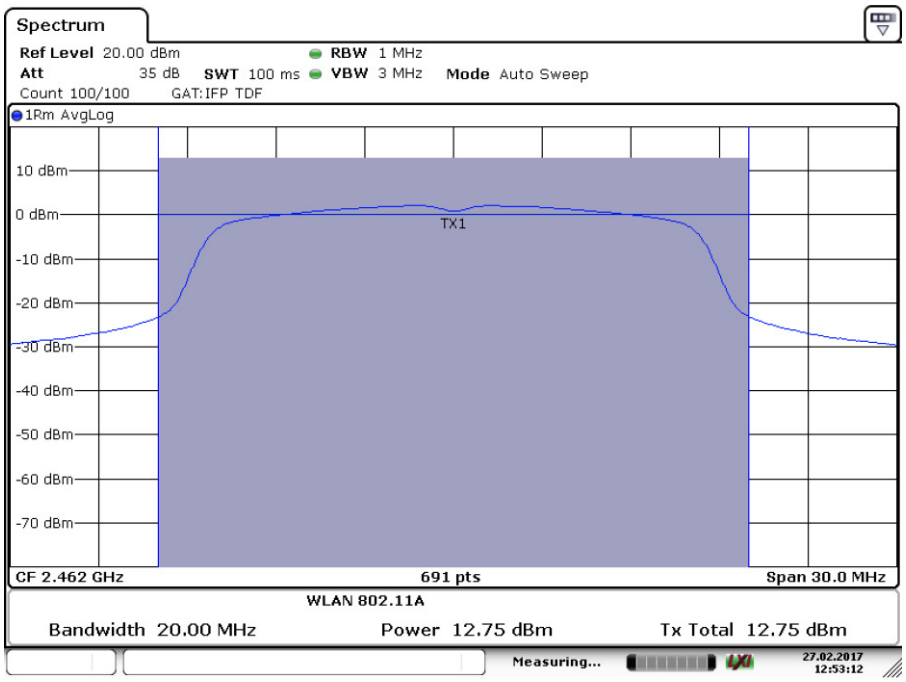

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Fig.15 Maximum Average Output Power (802.11g, Ch 11, 6Mbps)

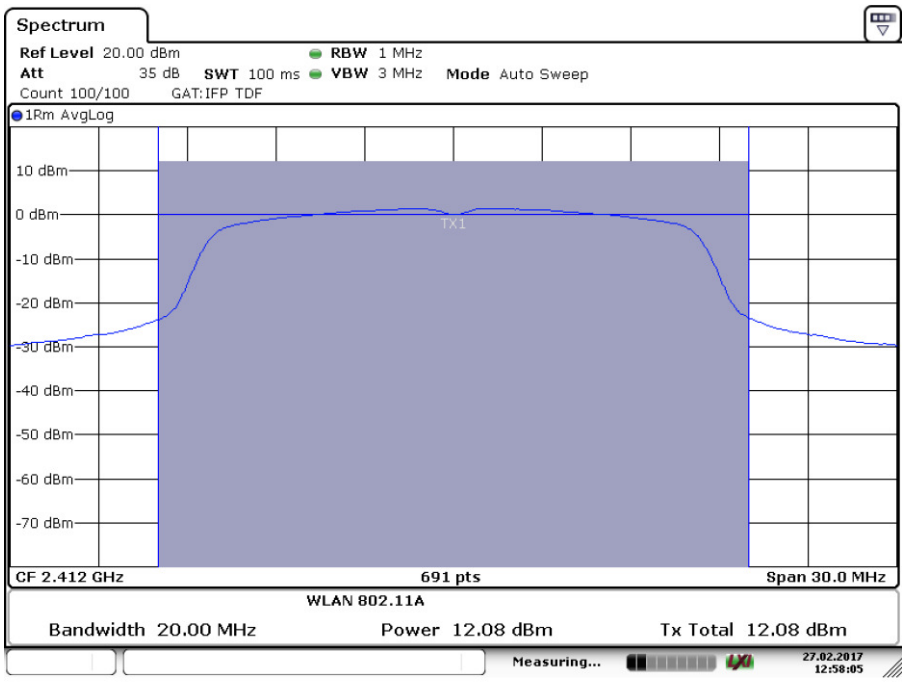

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Fig.16 Maximum Average Output Power (802.11g, Ch 1, 9Mbps)

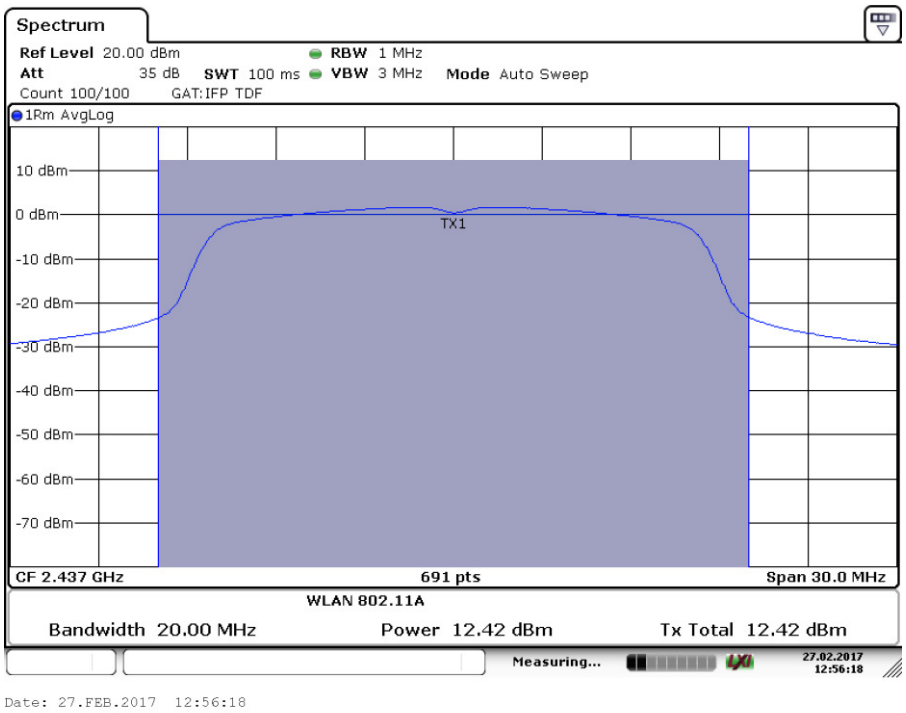

Fig.17 Maximum Average Output Power (802.11g, Ch 6, 9Mbps)

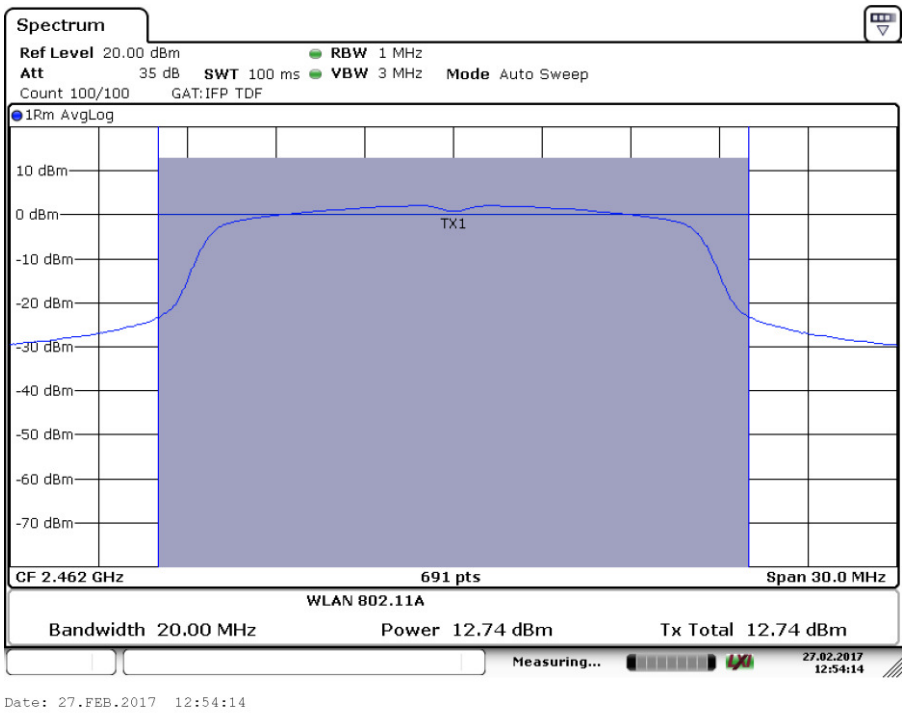

Fig.18 Maximum Average Output Power (802.11g, Ch 11, 9Mbps)

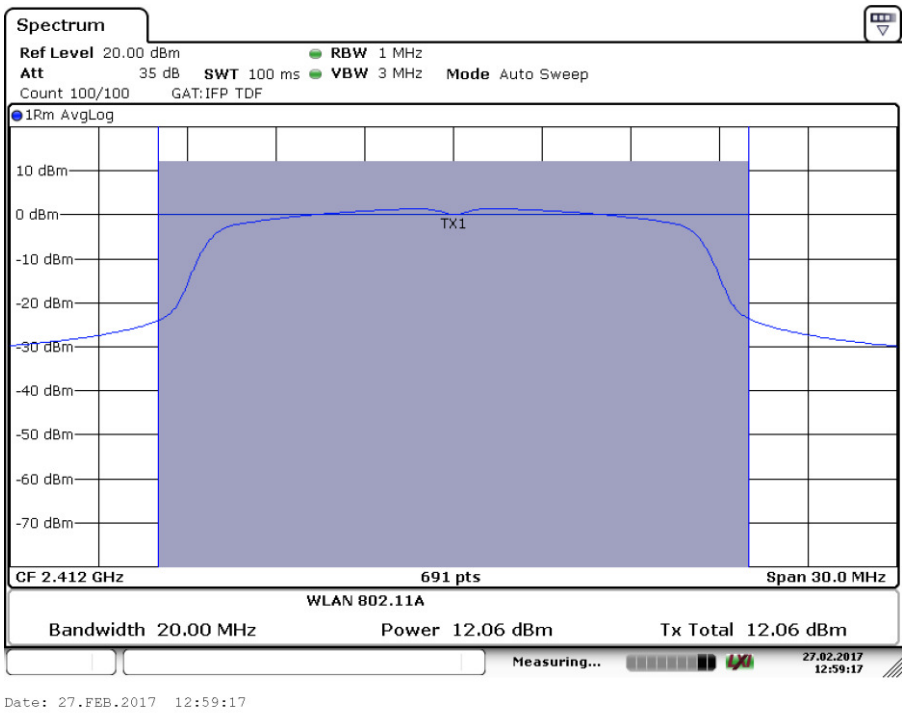

Fig.19 Maximum Average Output Power (802.11g, Ch 1, 12Mbps)

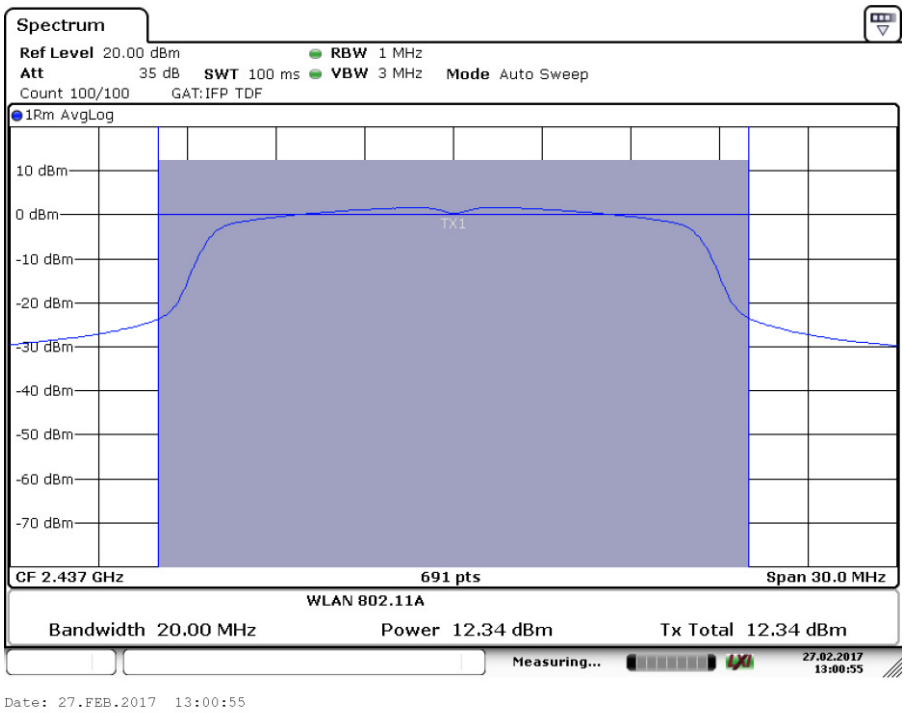

Fig.20 Maximum Average Output Power (802.11g, Ch 6, 12Mbps)

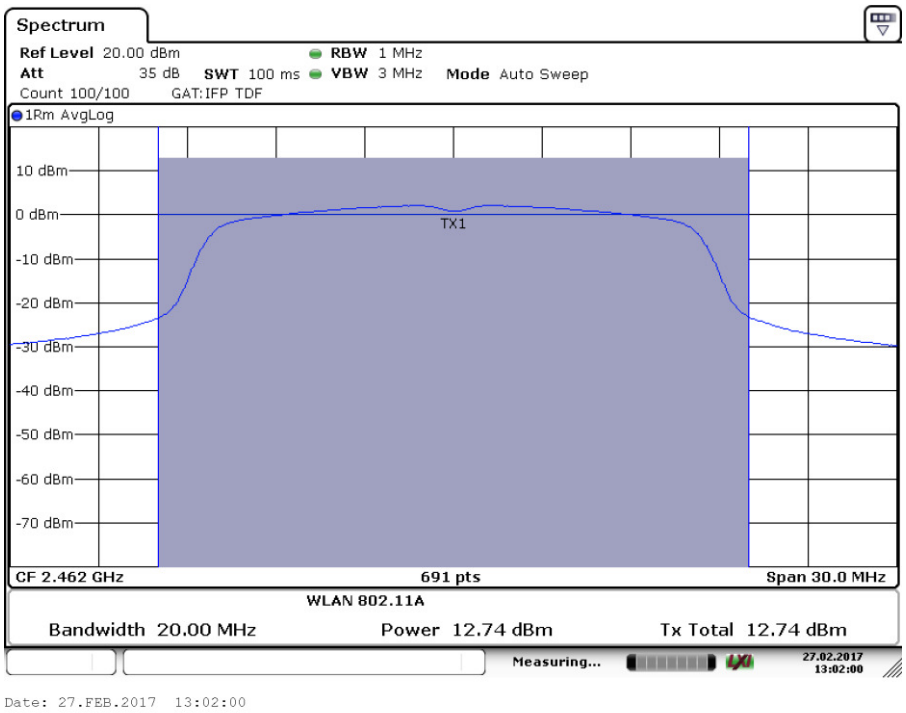

Fig.21 Maximum Average Output Power (802.11g, Ch 11, 12Mbps)

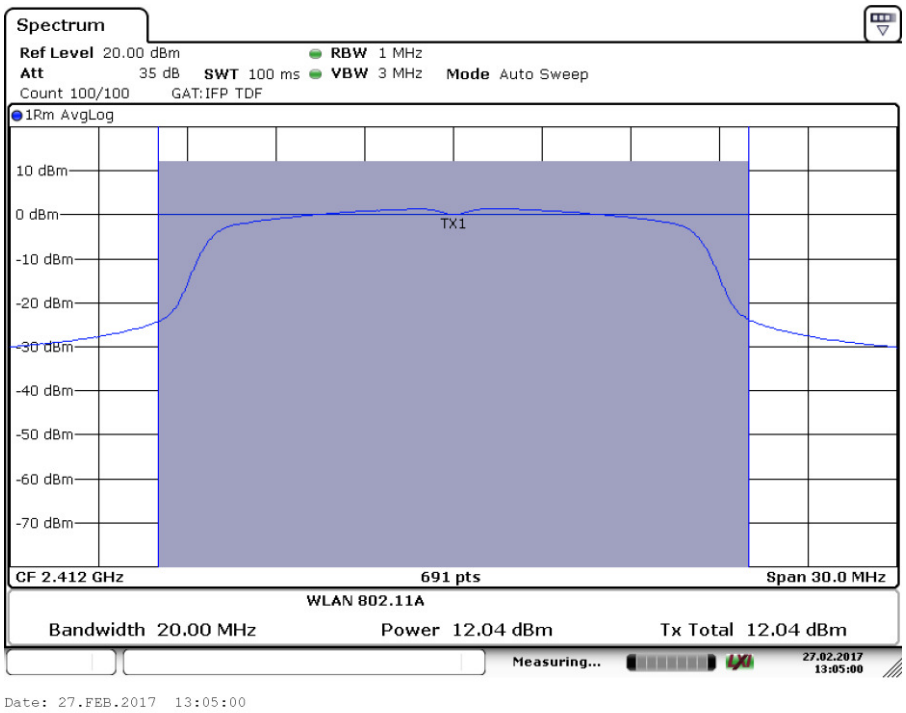

Fig.22 Maximum Average Output Power (802.11g, Ch 1, 18Mbps)

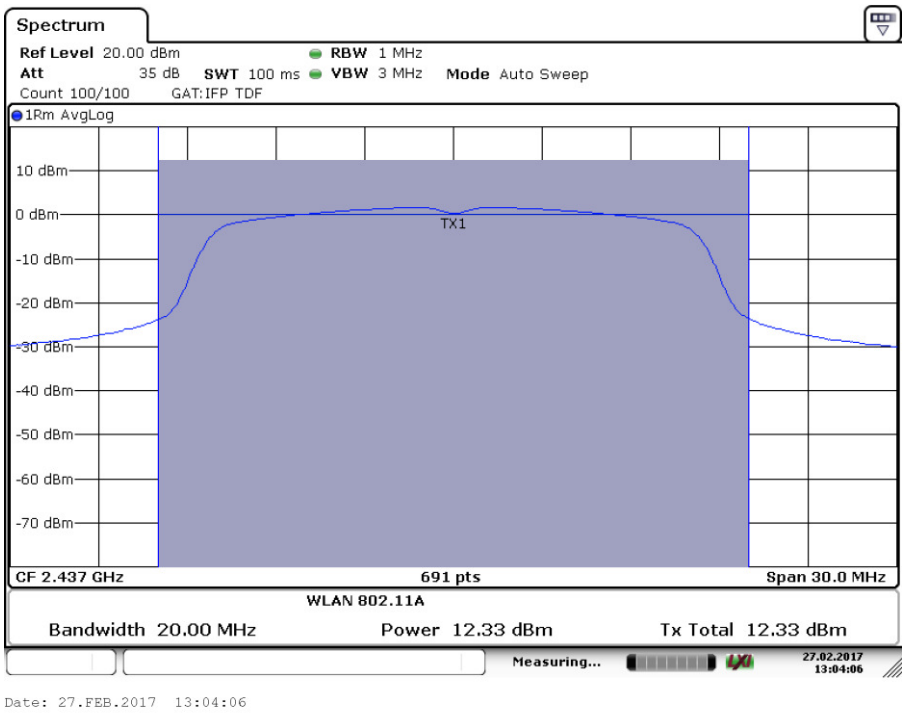

Fig.23 Maximum Average Output Power (802.11g, Ch 6, 18Mbps)

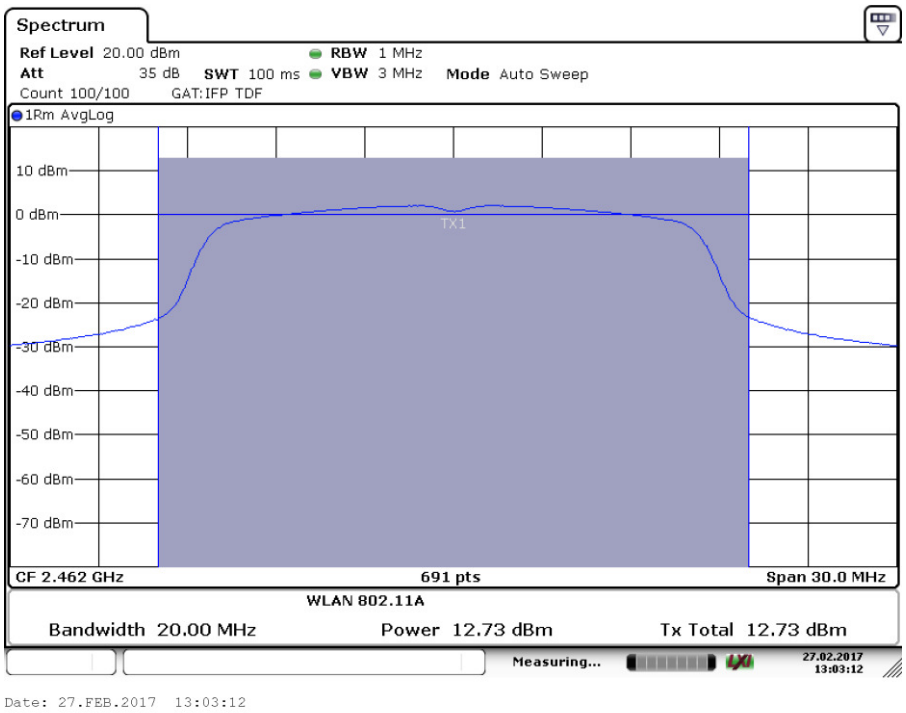

Fig.24 Maximum Average Output Power (802.11g, Ch 11, 18Mbps)

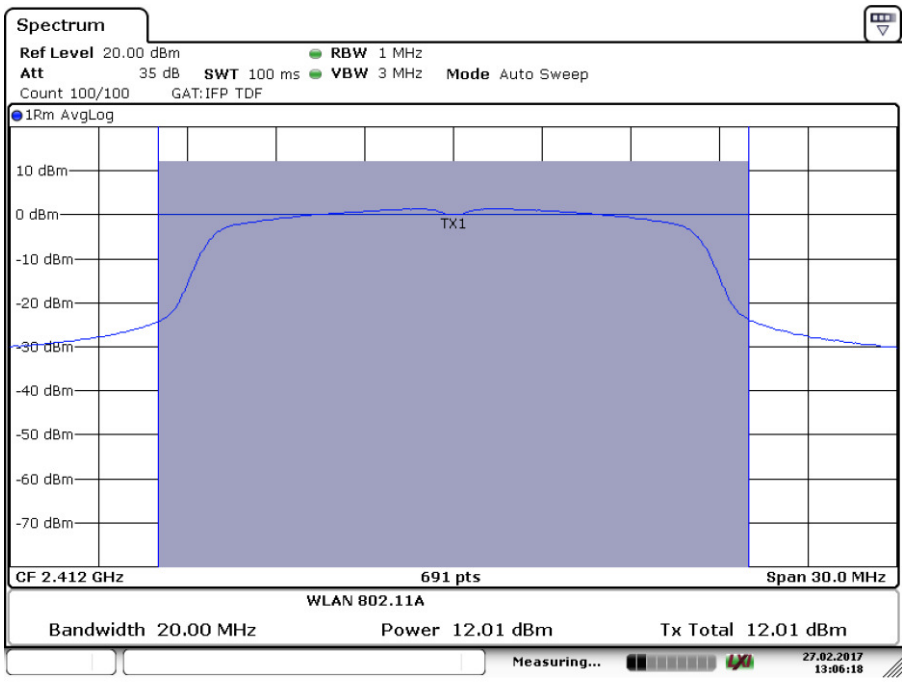

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Fig.25 Maximum Average Output Power (802.11g, Ch 1, 24Mbps)

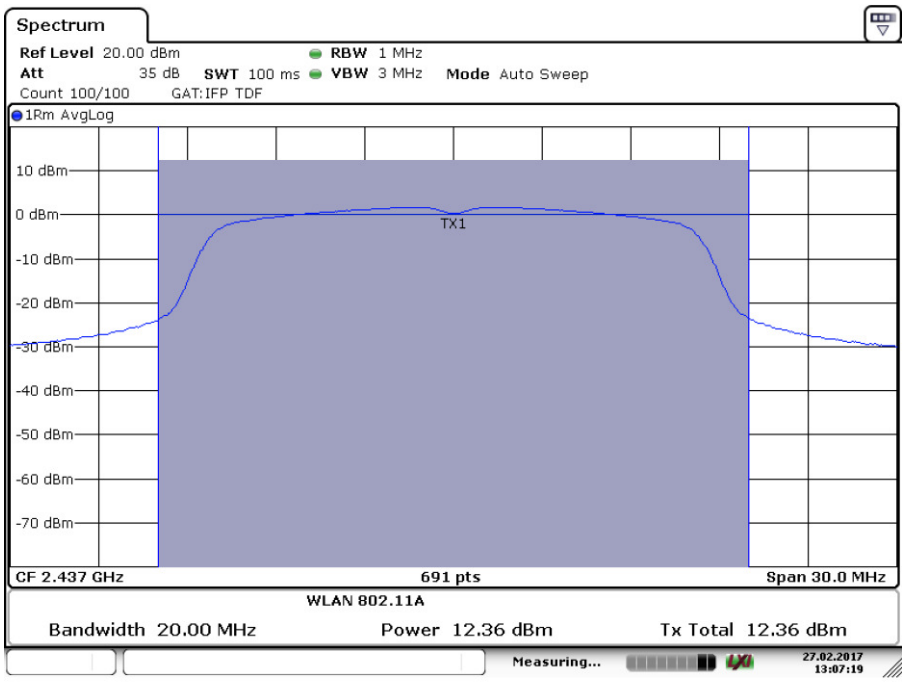

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Fig.26 Maximum Average Output Power (802.11g, Ch 6, 24Mbps)

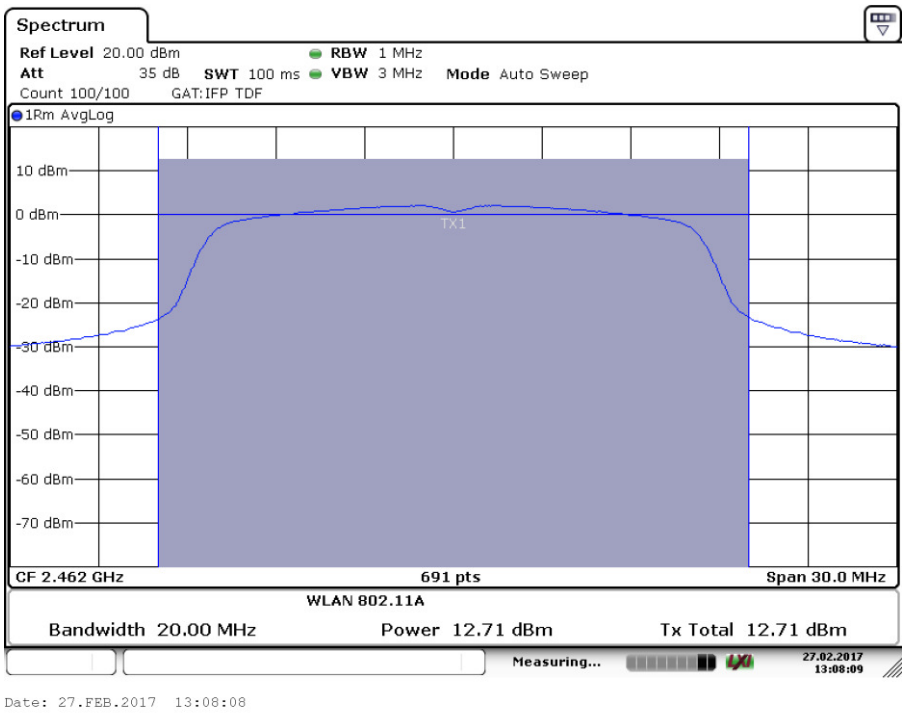

Fig.27 Maximum Average Output Power (802.11g, Ch 11, 24Mbps)

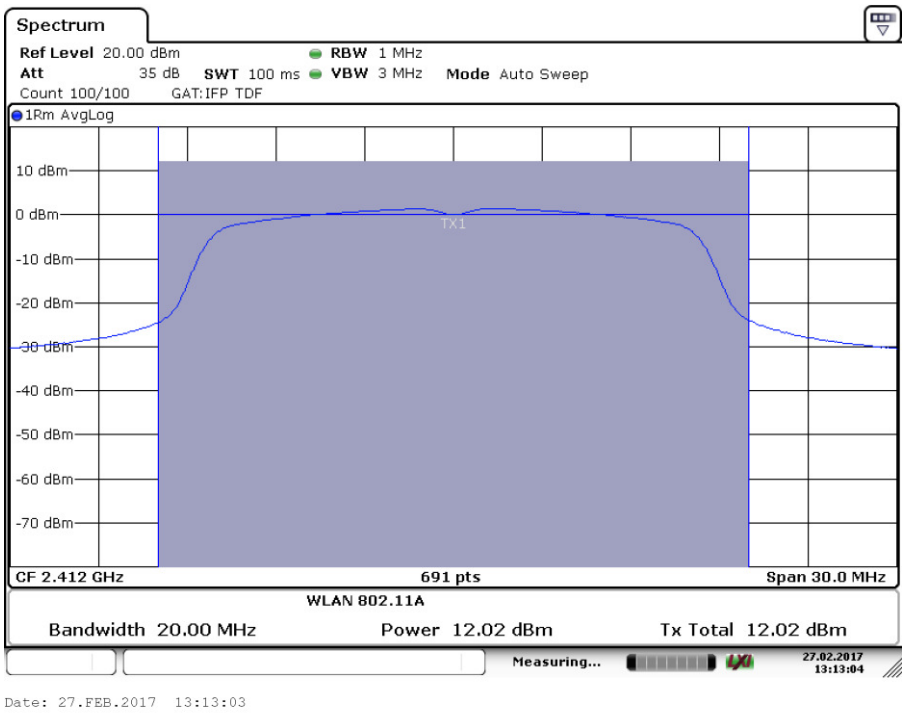

Fig.28 Maximum Average Output Power (802.11g, Ch 1, 36Mbps)

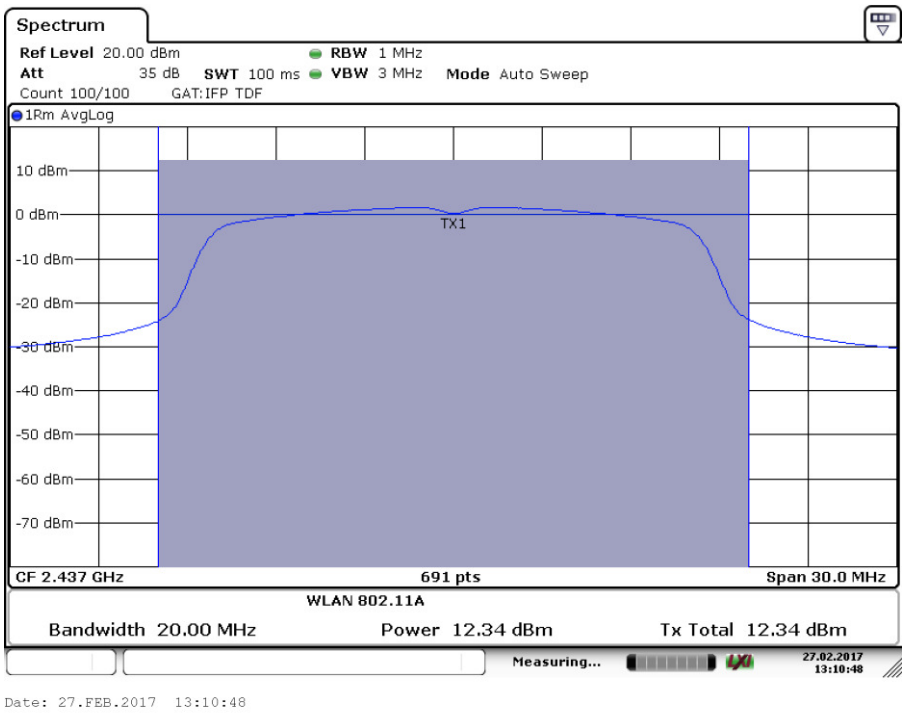

Fig.29 Maximum Average Output Power (802.11g, Ch 6, 36Mbps)

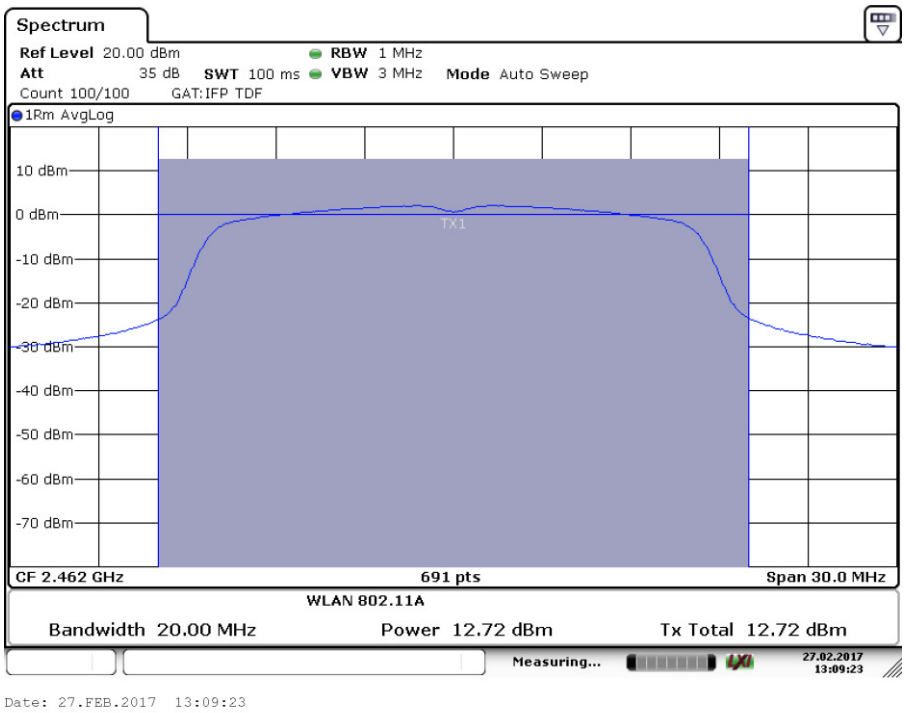

Fig.30 Maximum Average Output Power (802.11g, Ch 11, 36Mbps)

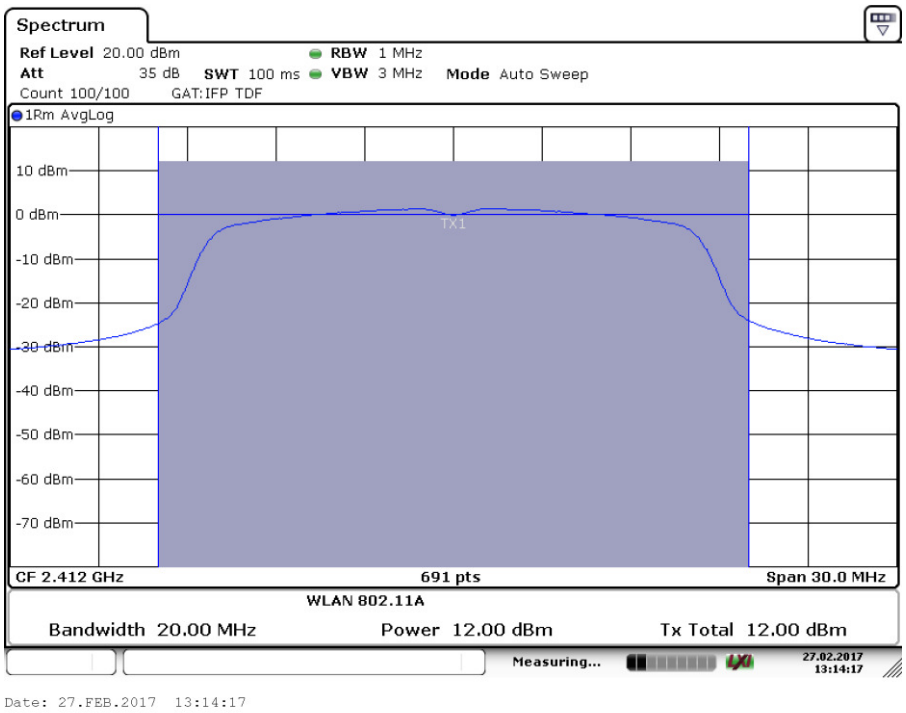

Fig.31 Maximum Average Output Power (802.11g, Ch 1, 48Mbps)

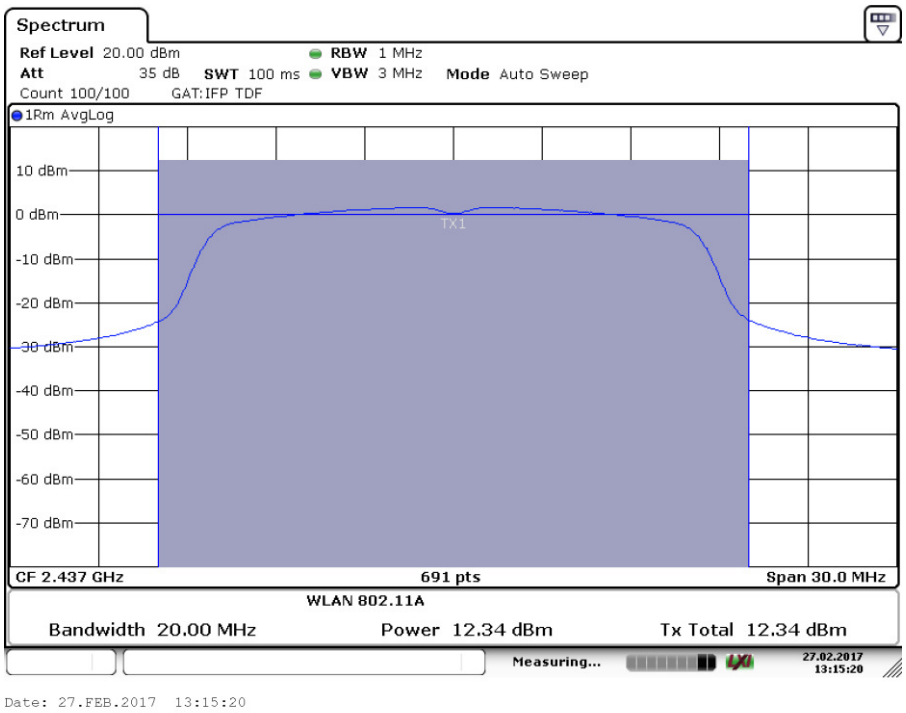

Fig.32 Maximum Average Output Power (802.11g, Ch 6, 48Mbps)

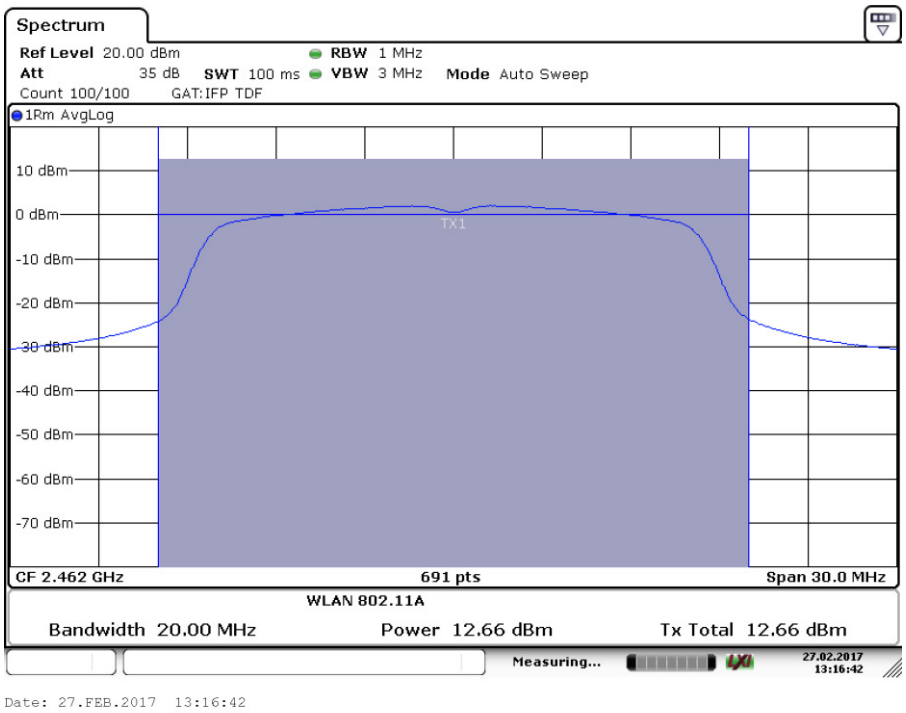

Fig.33 Maximum Average Output Power (802.11g, Ch 11, 48Mbps)

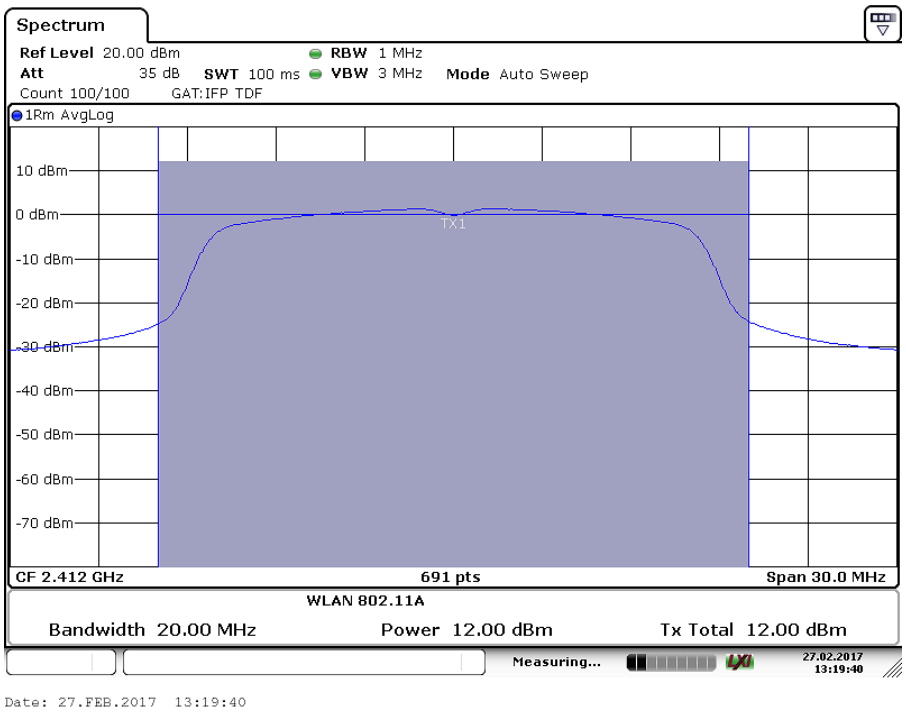

Fig.34 Maximum Average Output Power (802.11g, Ch 1, 54Mbps)

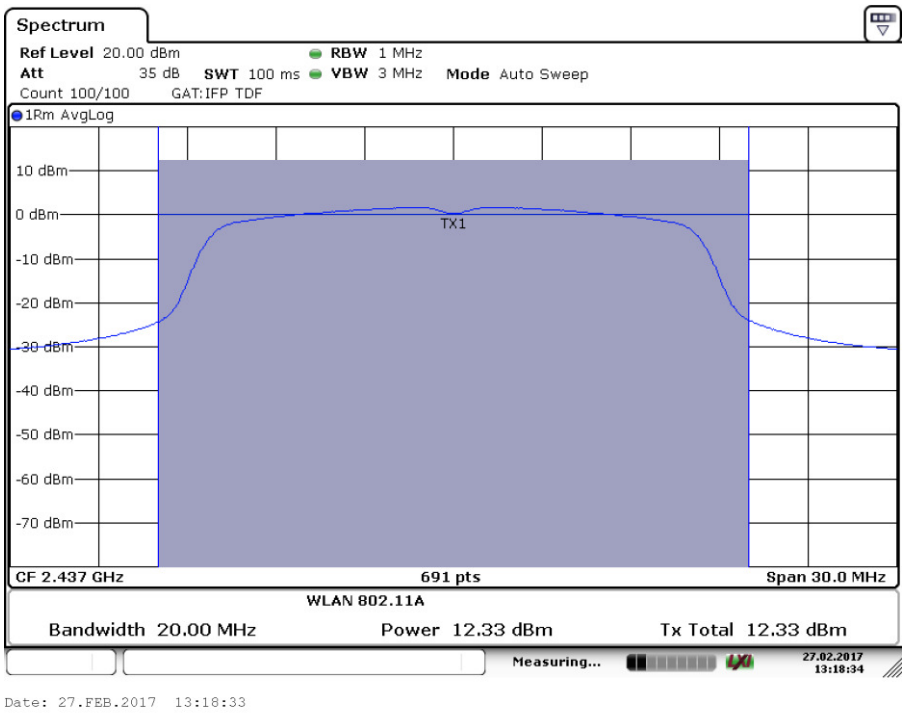

Fig.35 Maximum Average Output Power (802.11g, Ch 6, 54Mbps)

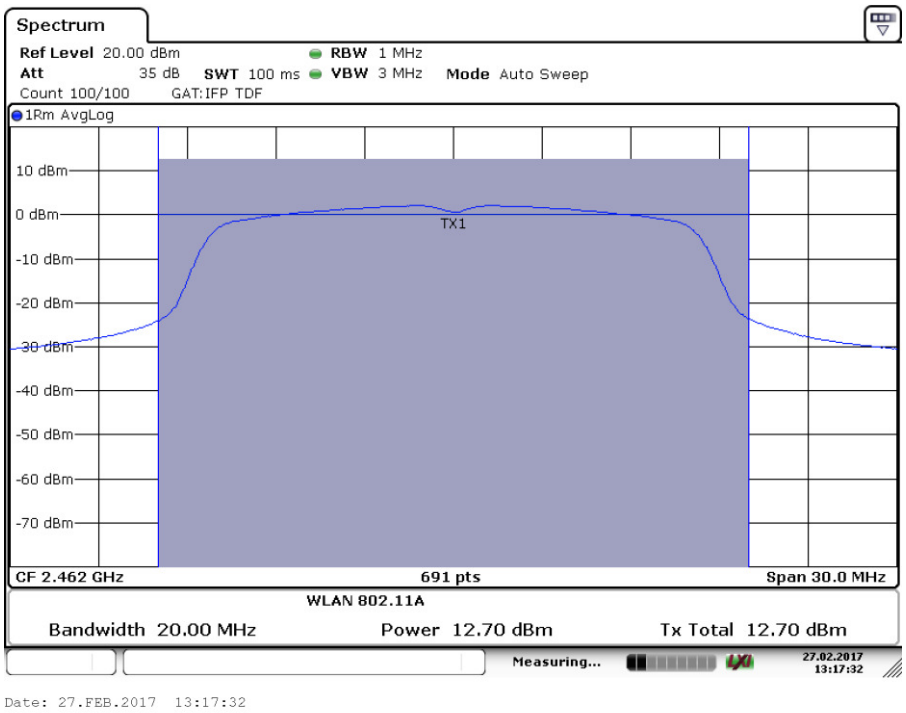

Fig.36 Maximum Average Output Power (802.11g, Ch 11, 54Mbps)

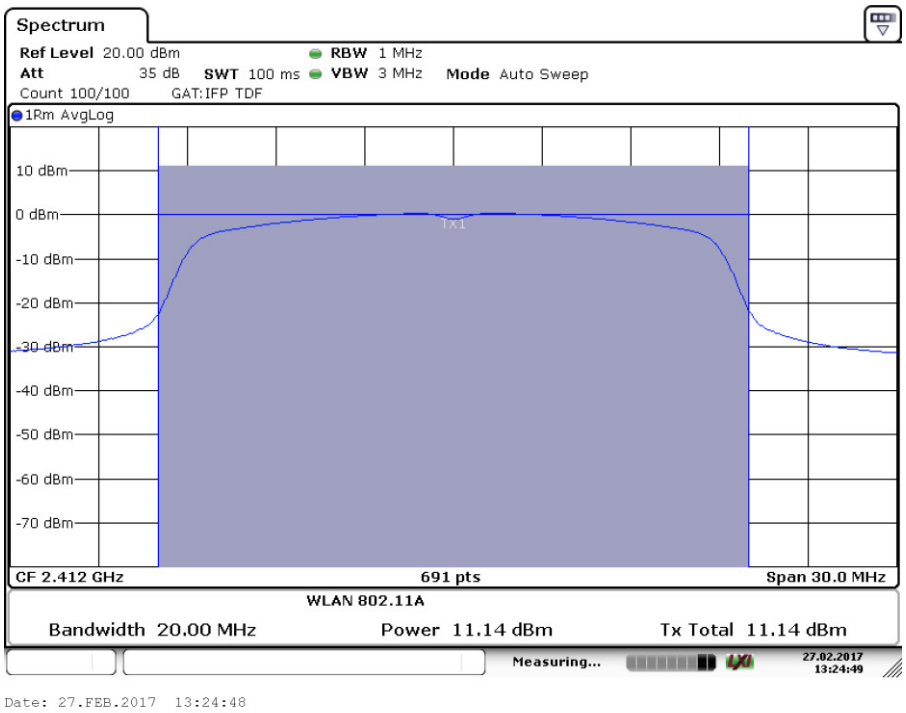

Fig.37 Maximum Average Output Power (802.11n-20MHz, Ch 1, MCS0)

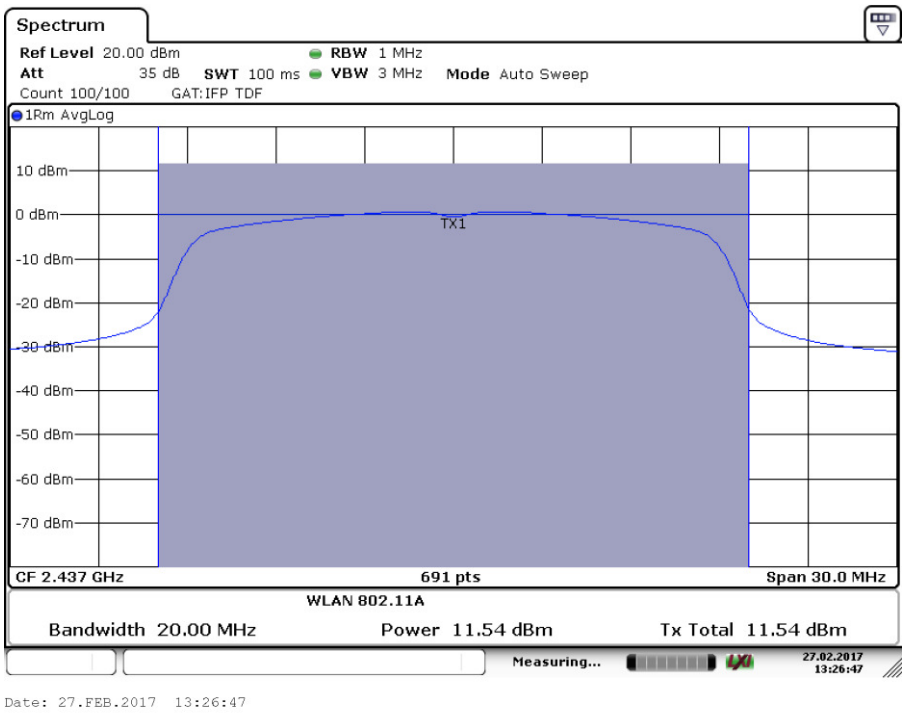

Fig.38 Maximum Average Output Power (802.11n-20MHz, Ch 6, MCS0)

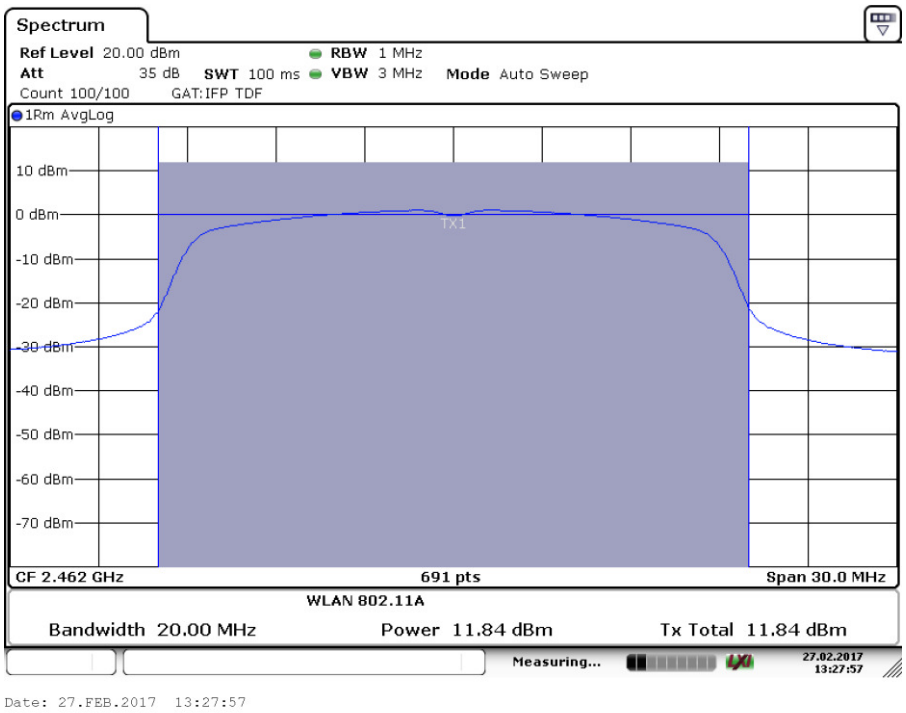

Fig.39 Maximum Average Output Power (802.11n-20MHz, Ch 11, MCS0)

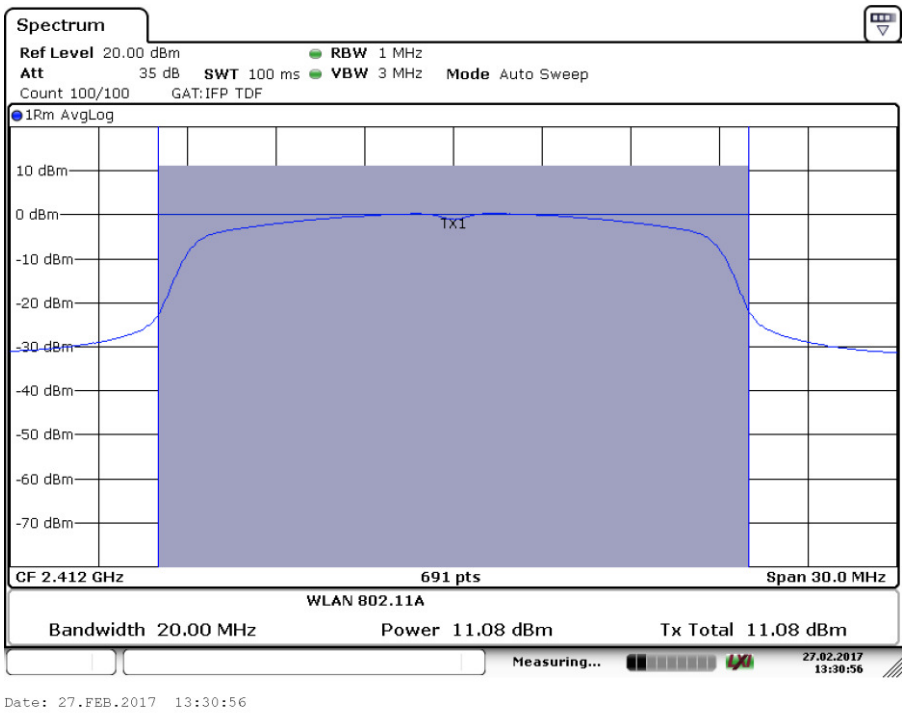

Fig.40 Maximum Average Output Power (802.11n-20MHz, Ch 1, MCS1)

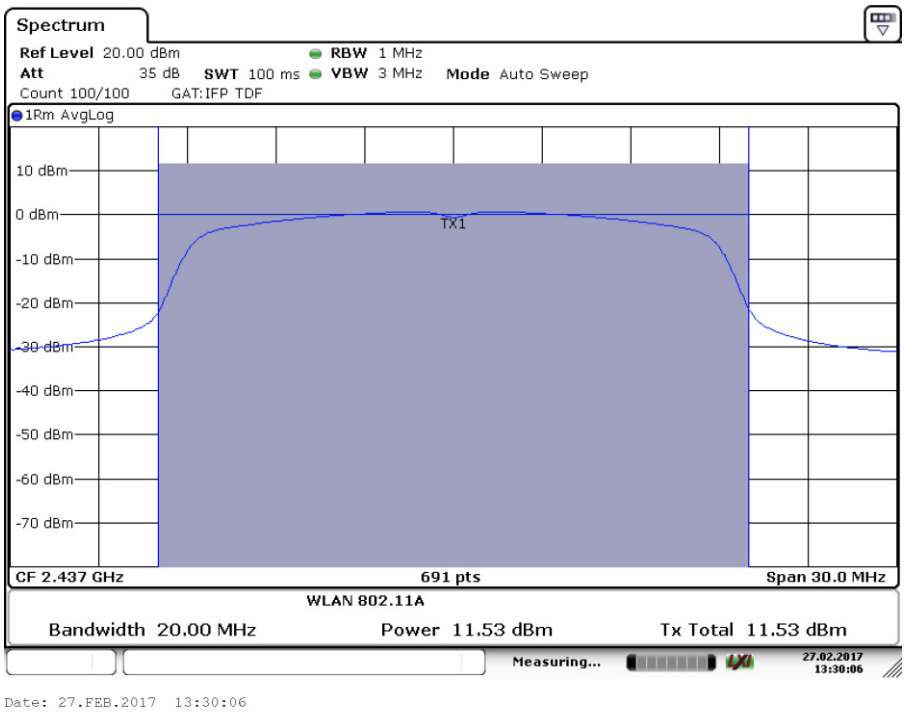

Fig.41 Maximum Average Output Power (802.11n-20MHz, Ch 6, MCS1)

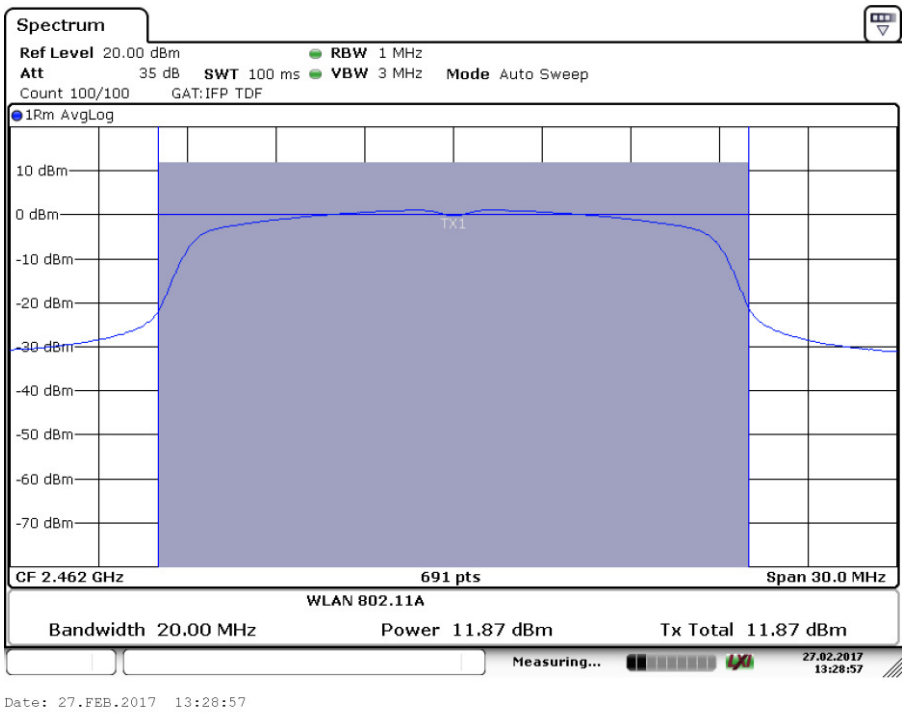

Fig.42 Maximum Average Output Power (802.11n-20MHz, Ch 11, MCS1)

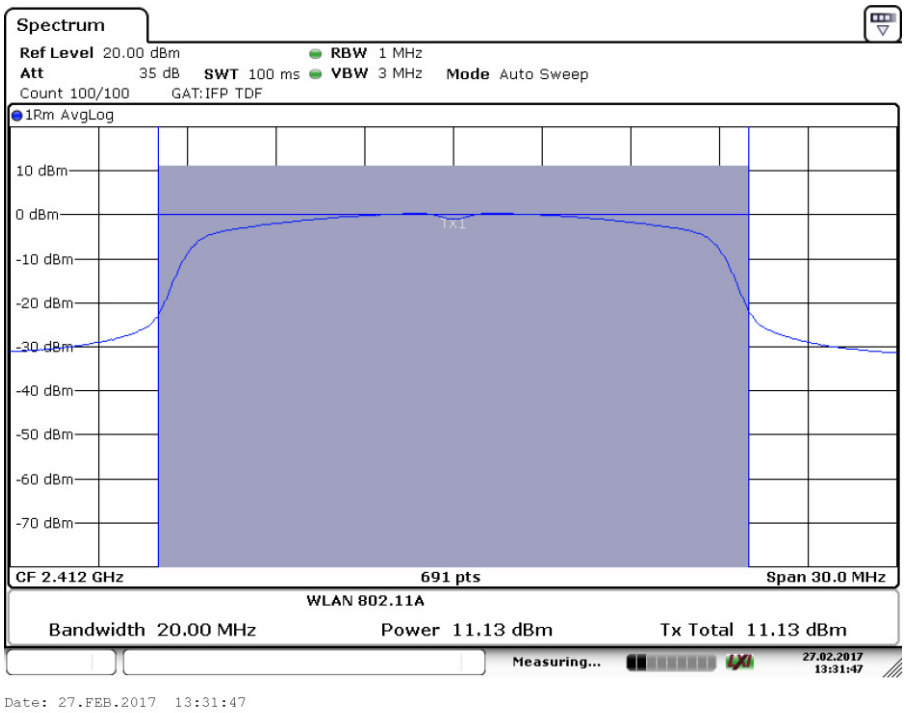

Fig.43 Maximum Average Output Power (802.11n-20MHz, Ch 1, MCS2)

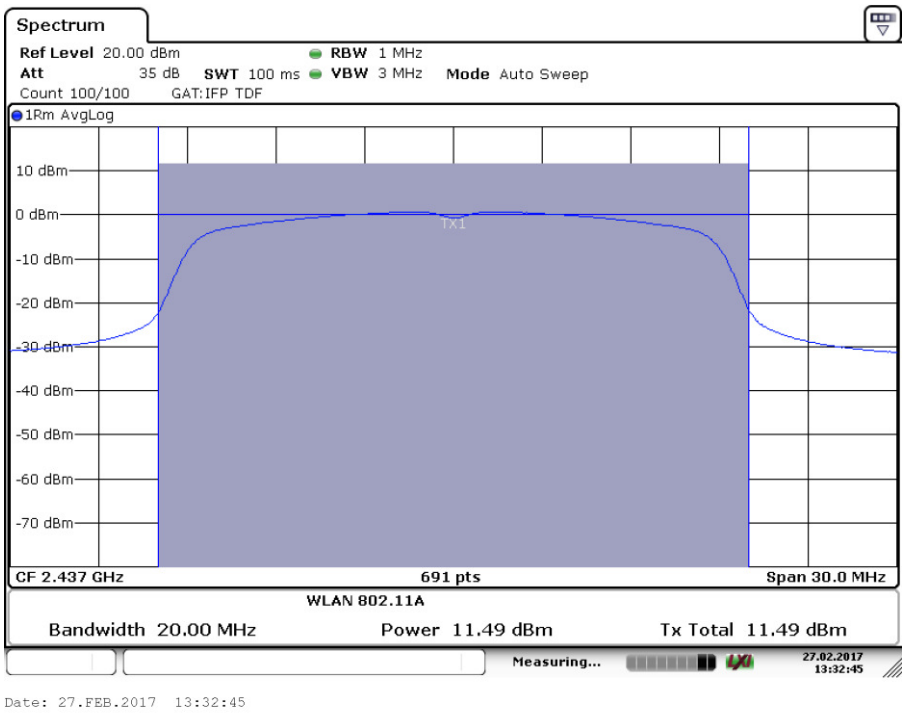

Fig.44 Maximum Average Output Power (802.11n-20MHz, Ch 6, MCS2)

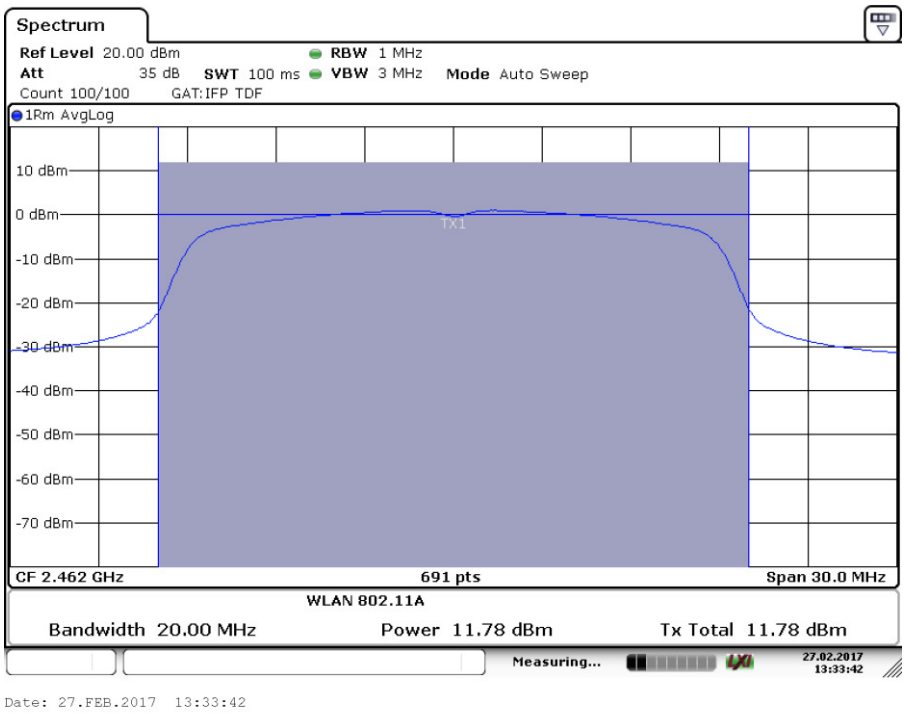

Fig.45 Maximum Average Output Power (802.11n-20MHz, Ch 11, MCS2)

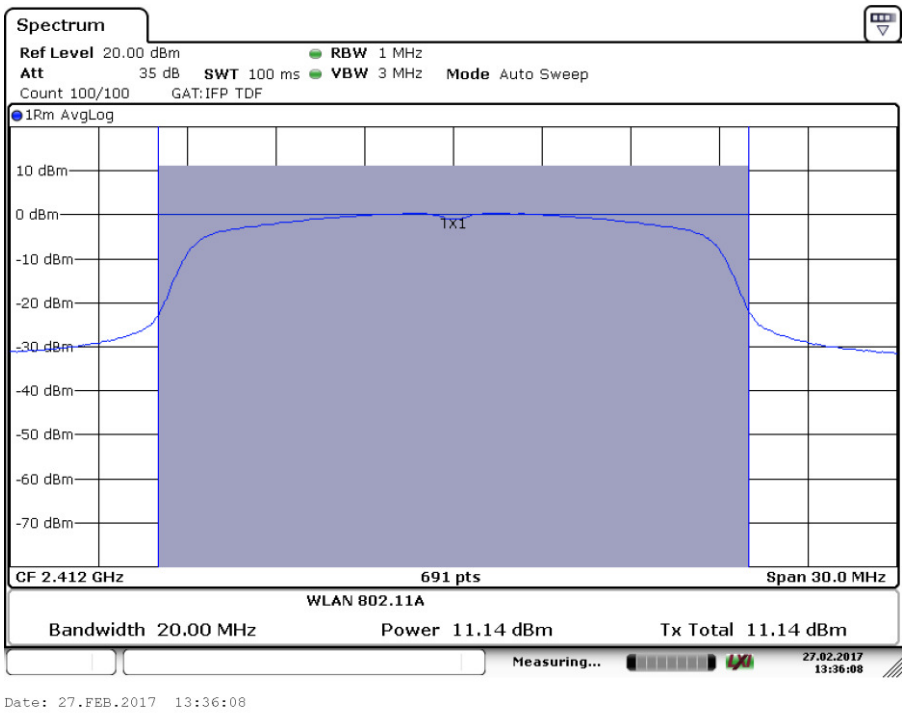

Fig.46 Maximum Average Output Power (802.11n-20MHz, Ch 1, MCS3)

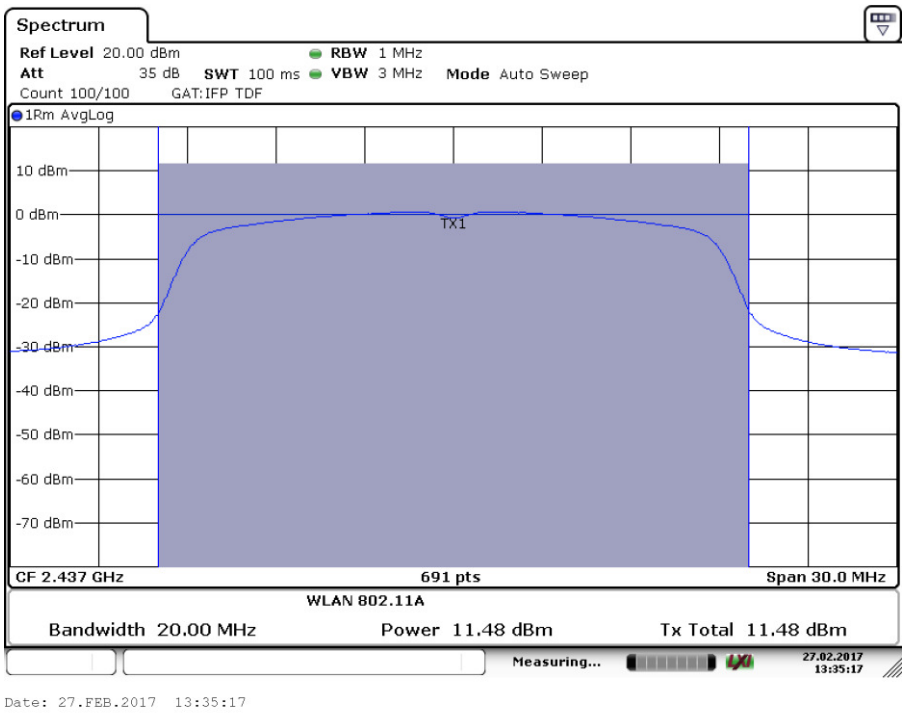

Fig.47 Maximum Average Output Power (802.11n-20MHz, Ch 6, MCS3)

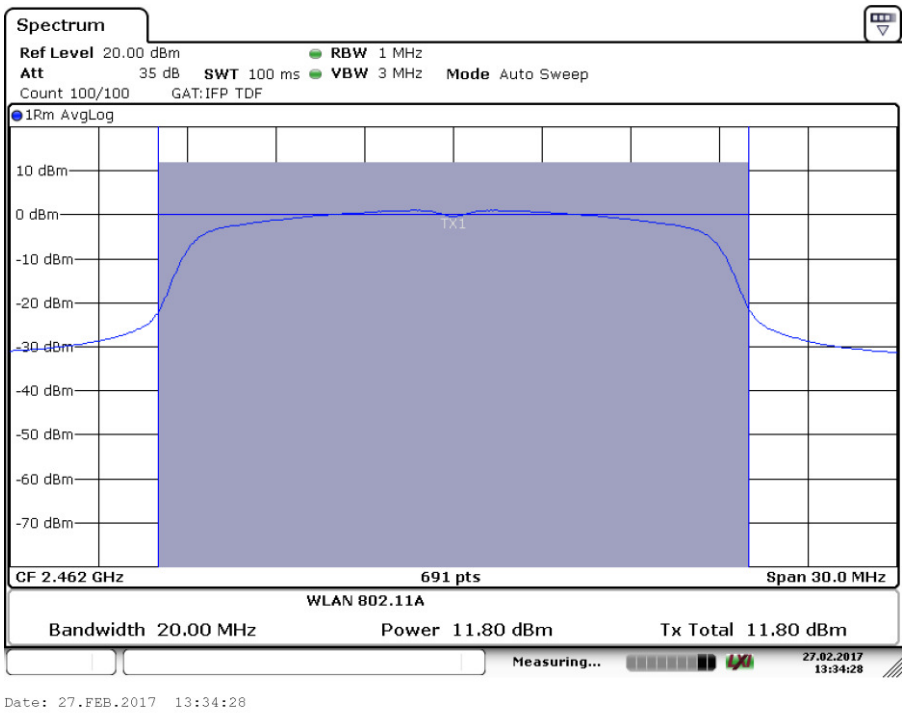

Fig.48 Maximum Average Output Power (802.11n-20MHz, Ch 11, MCS3)

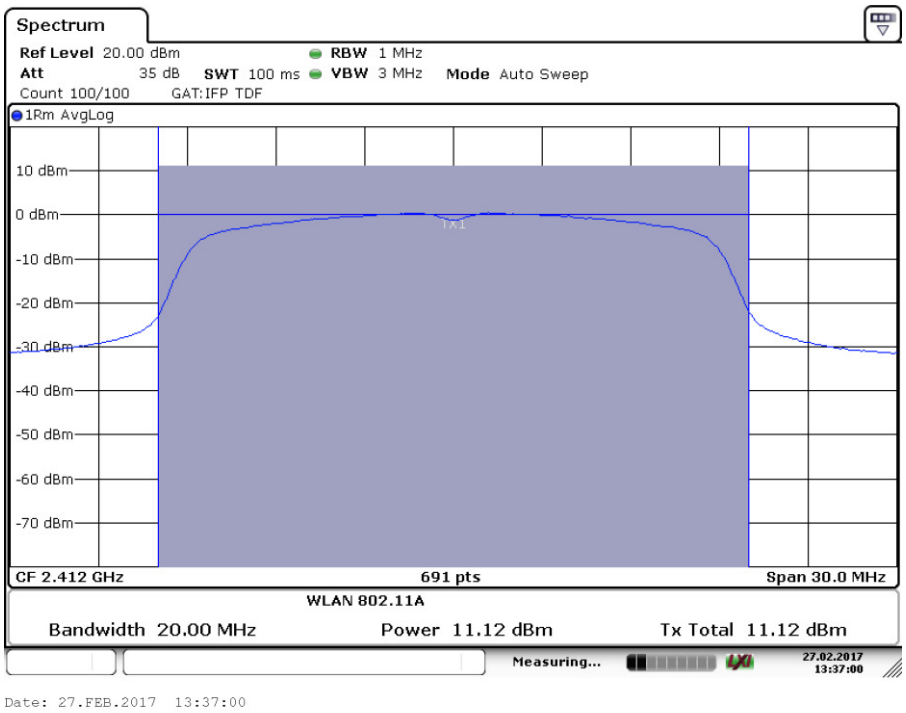

Fig.49 Maximum Average Output Power (802.11n-20MHz, Ch 1, MCS4)

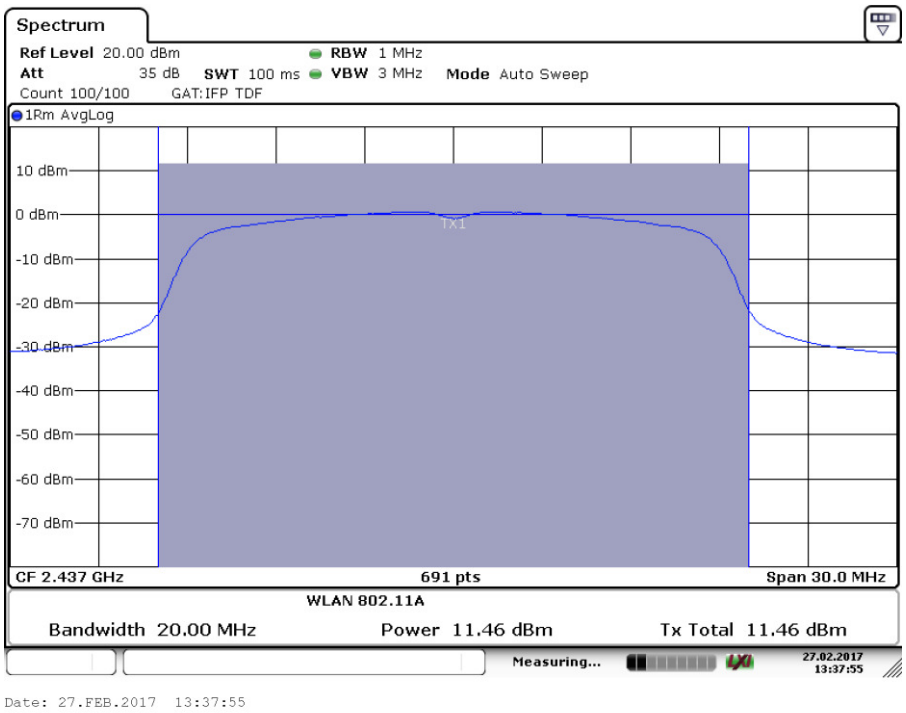

Fig.50 Maximum Average Output Power (802.11n-20MHz, Ch 6, MCS4)

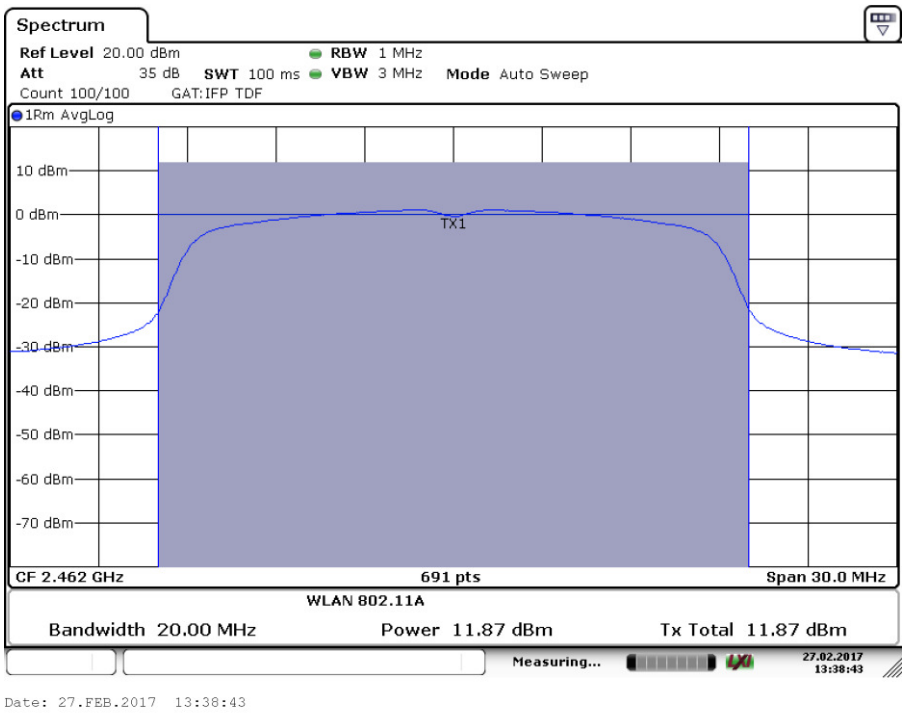

Fig.51 Maximum Average Output Power (802.11n-20MHz, Ch 11, MCS4)

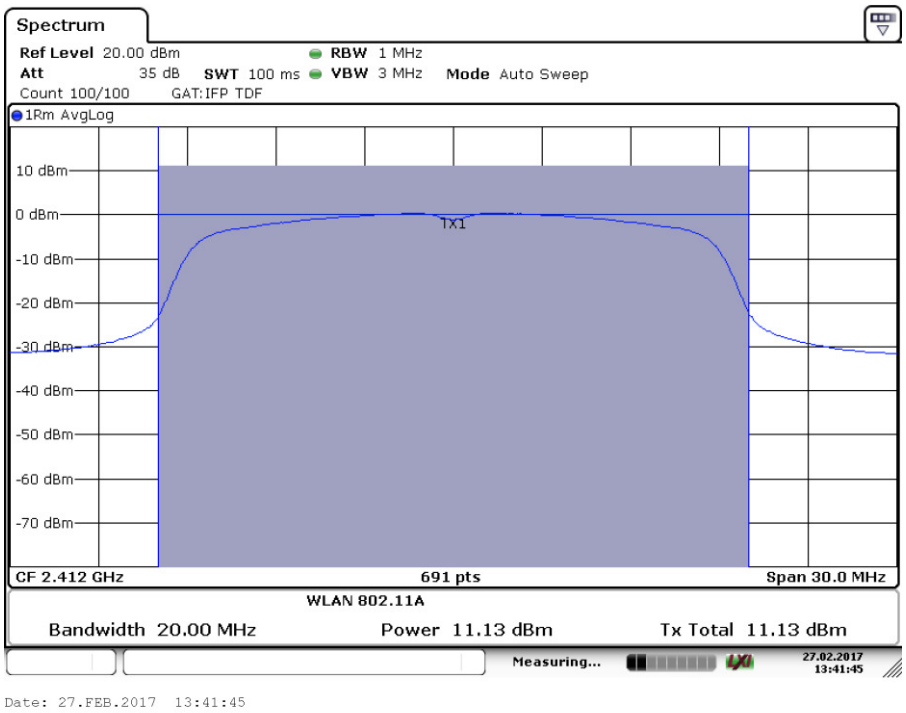

Fig.52 Maximum Average Output Power (802.11n-20MHz, Ch 1, MCS5)

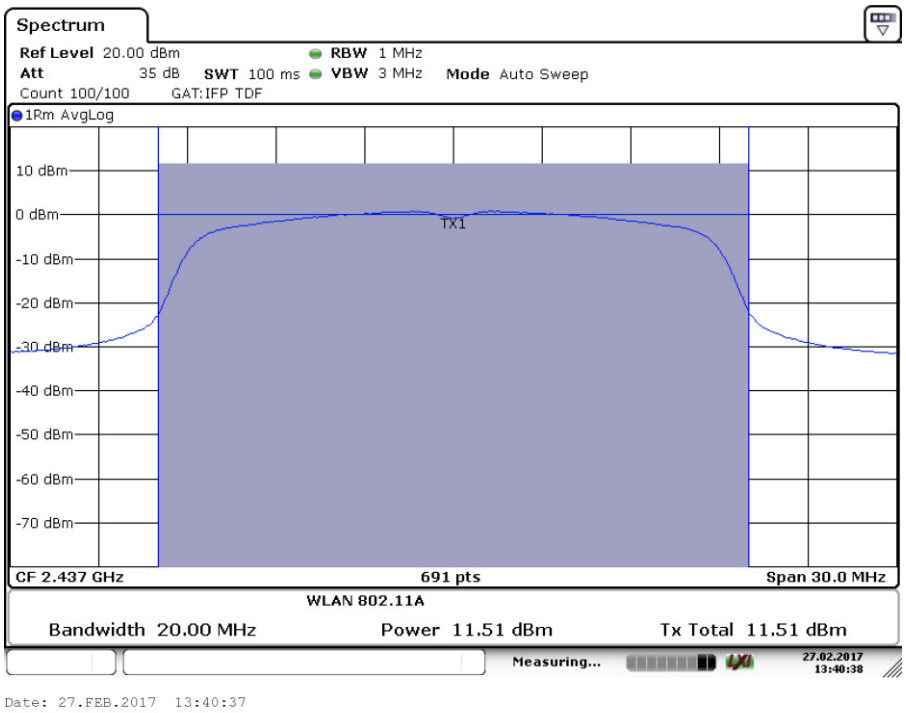

Fig.53 Maximum Average Output Power (802.11n-20MHz, Ch 6, MCS5)

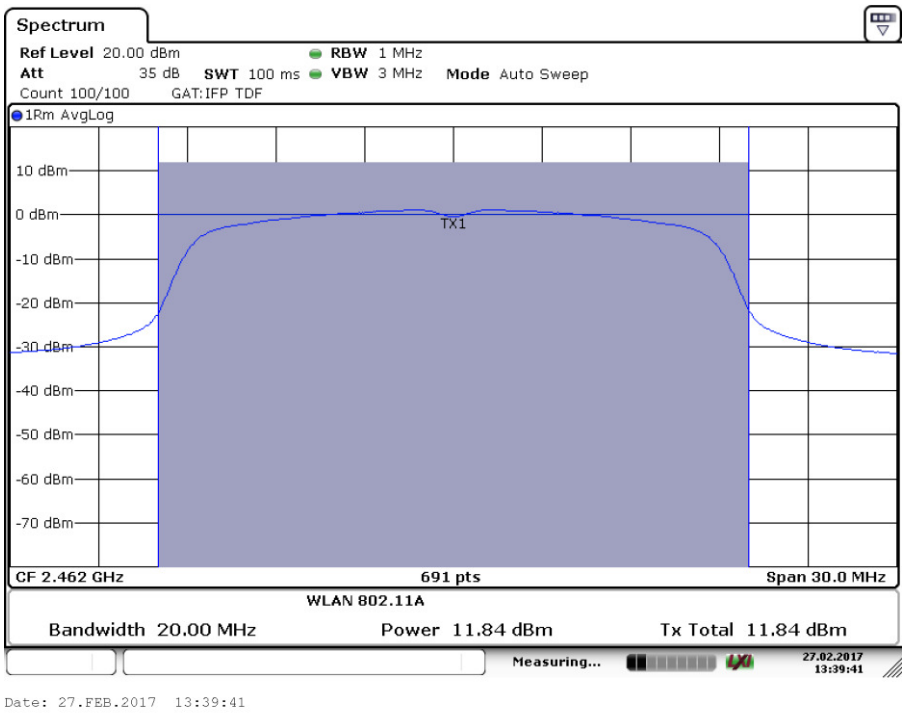

Fig.54 Maximum Average Output Power (802.11n-20MHz, Ch 11, MCS5)

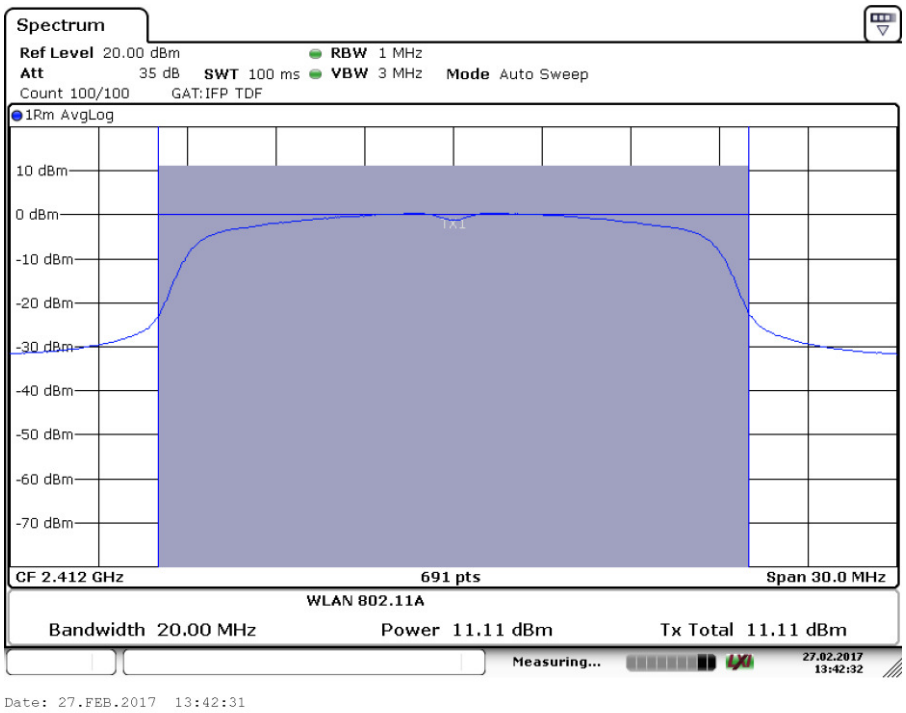

Fig.55 Maximum Average Output Power (802.11n-20MHz, Ch 1, MCS6)

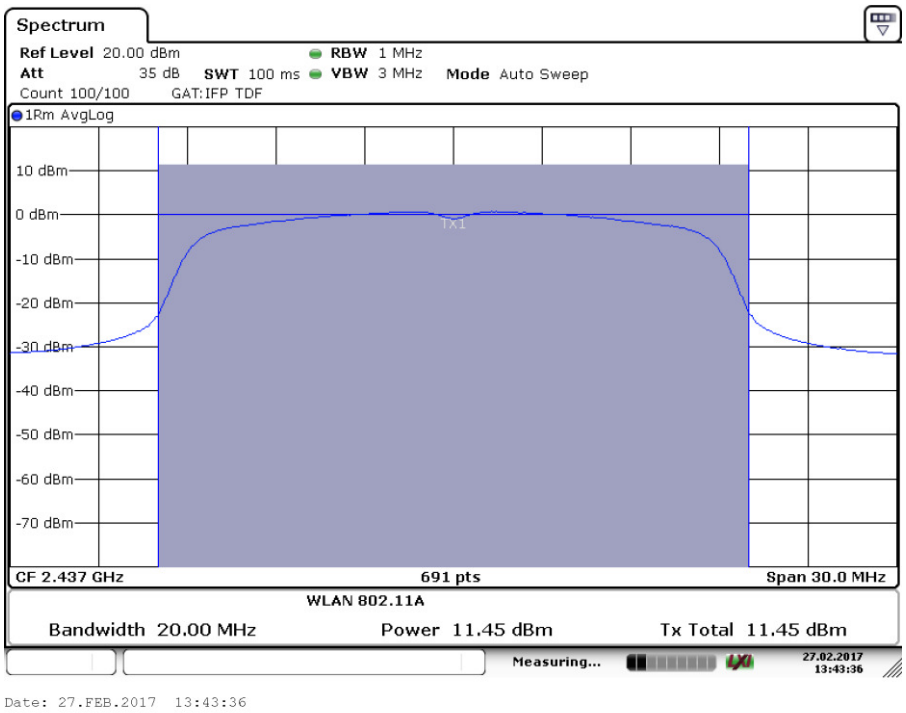

Fig.56 Maximum Average Output Power (802.11n-20MHz, Ch 6, MCS6)

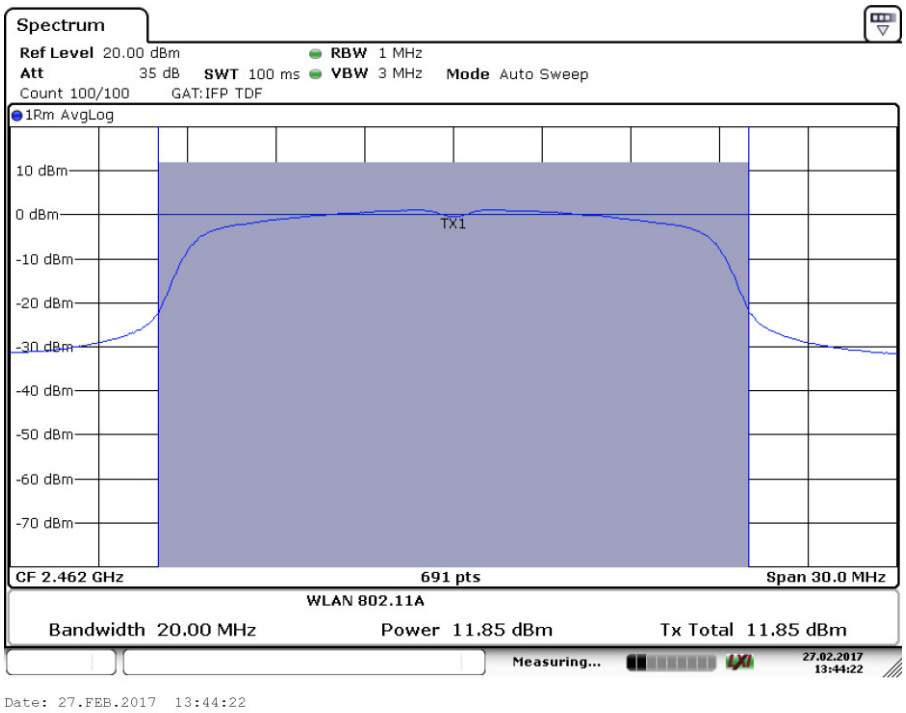

Fig.57 Maximum Average Output Power (802.11n-20MHz, Ch 11, MCS6)

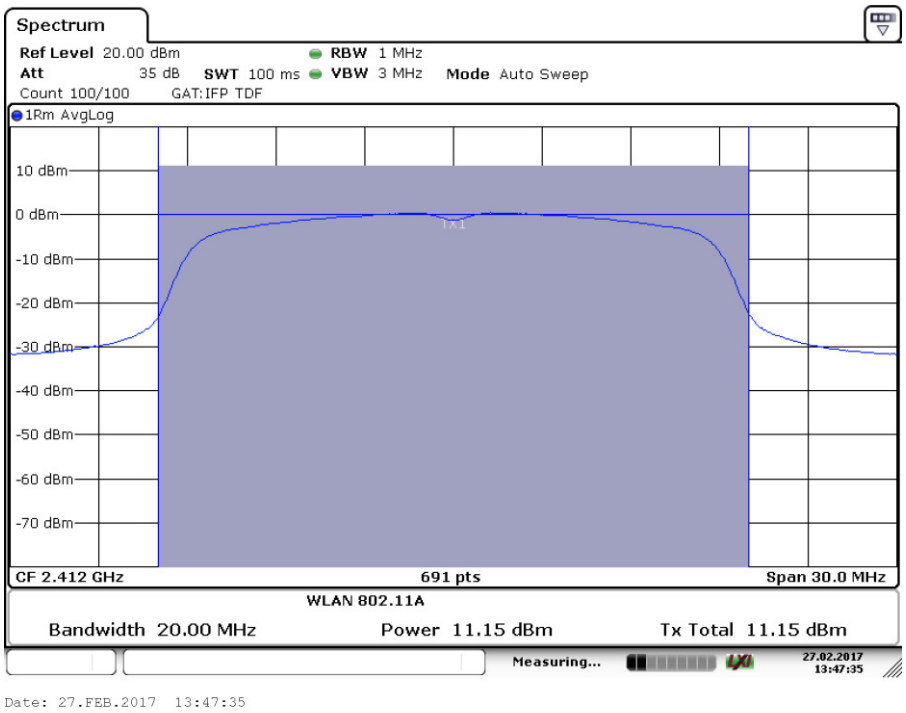

Fig.58 Maximum Average Output Power (802.11n-20MHz, Ch 1, MCS7)

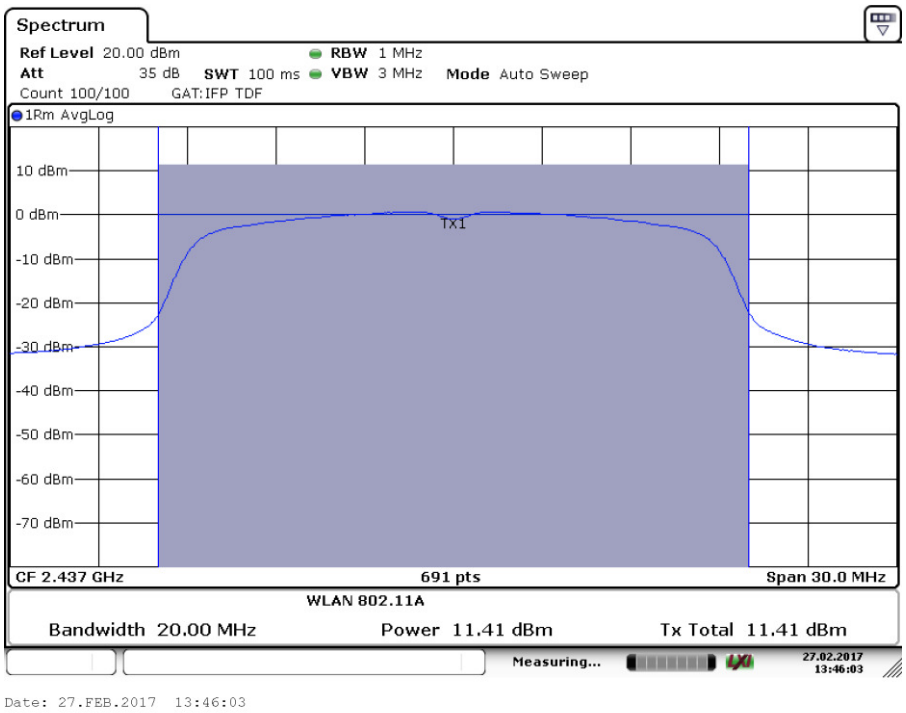

Fig.59 Maximum Average Output Power (802.11n-20MHz, Ch 6, MCS7)

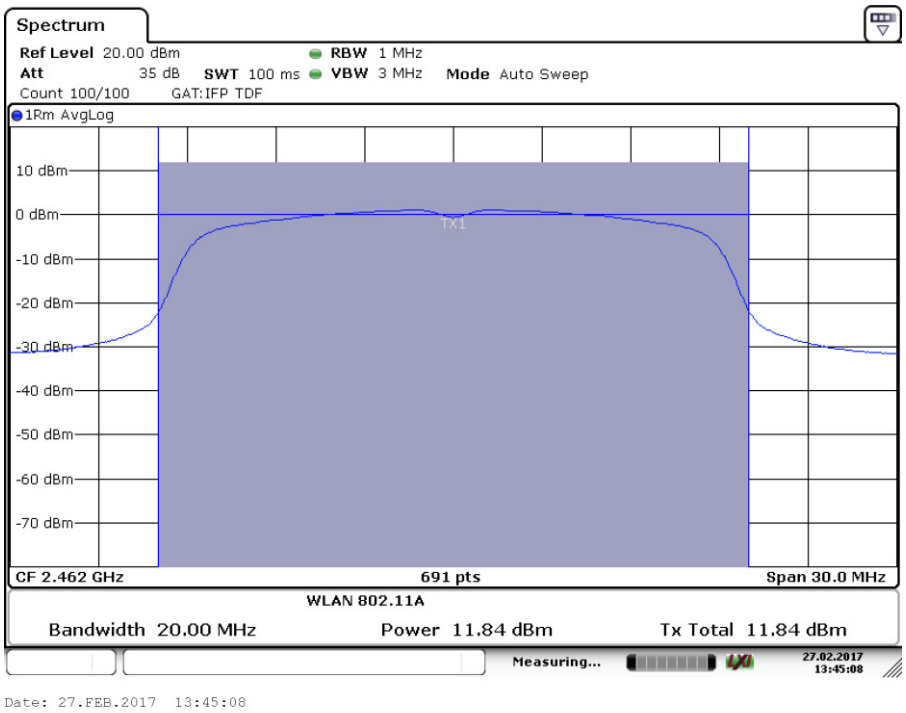

Fig.60 Maximum Average Output Power (802.11n-20MHz, Ch 11, MCS7)

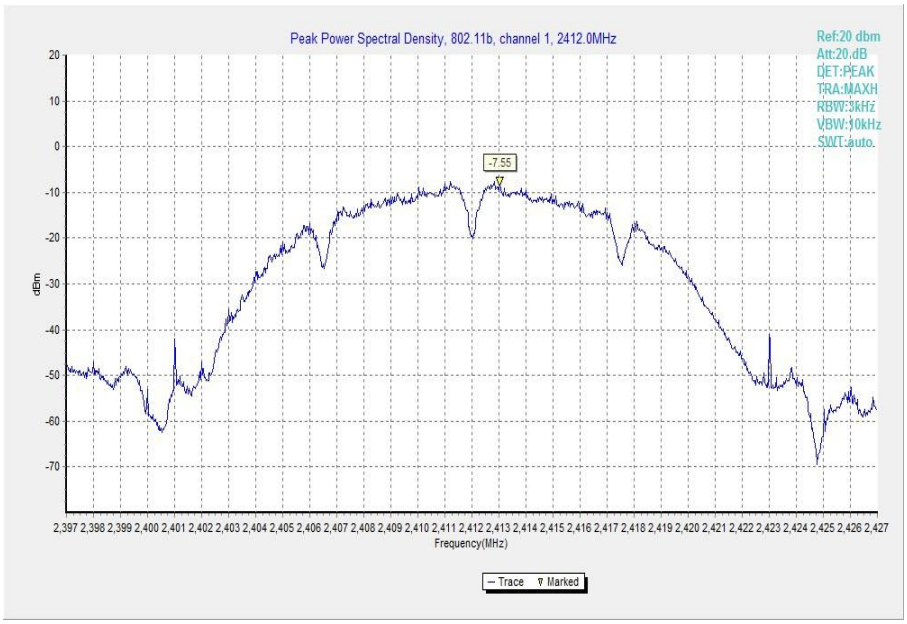

Fig.61 Power Spectral Density (802.11b, Ch 1)

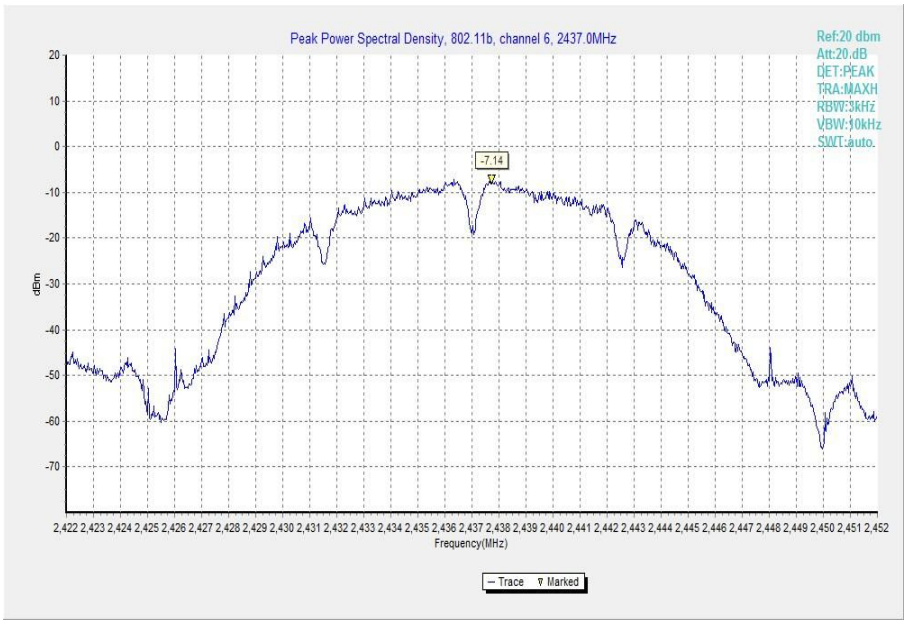

Fig.62 Power Spectral Density (802.11b, Ch 6)

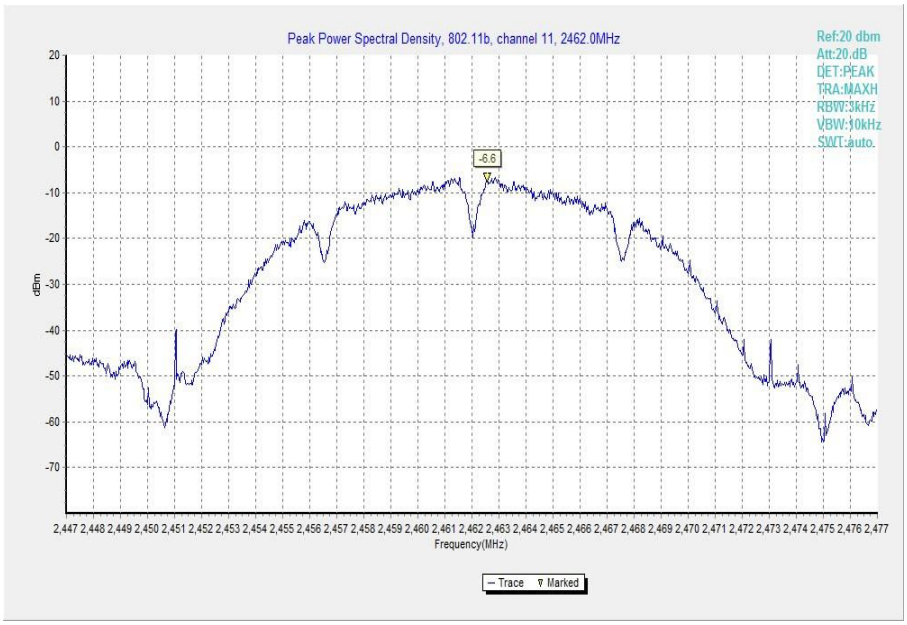

Fig.63 Power Spectral Density (802.11b, Ch 11)

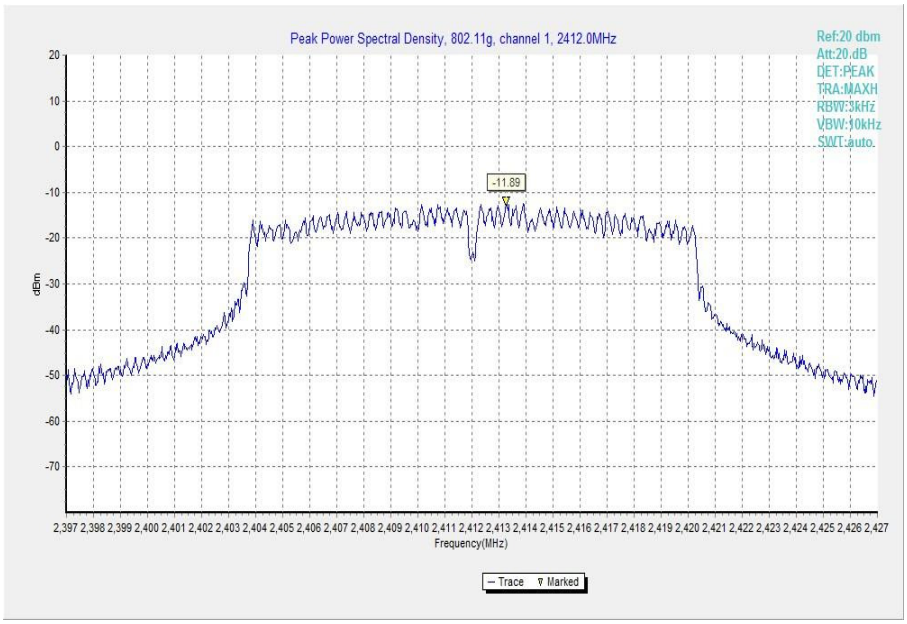

Fig.64 Power Spectral Density (802.11g, Ch 1)

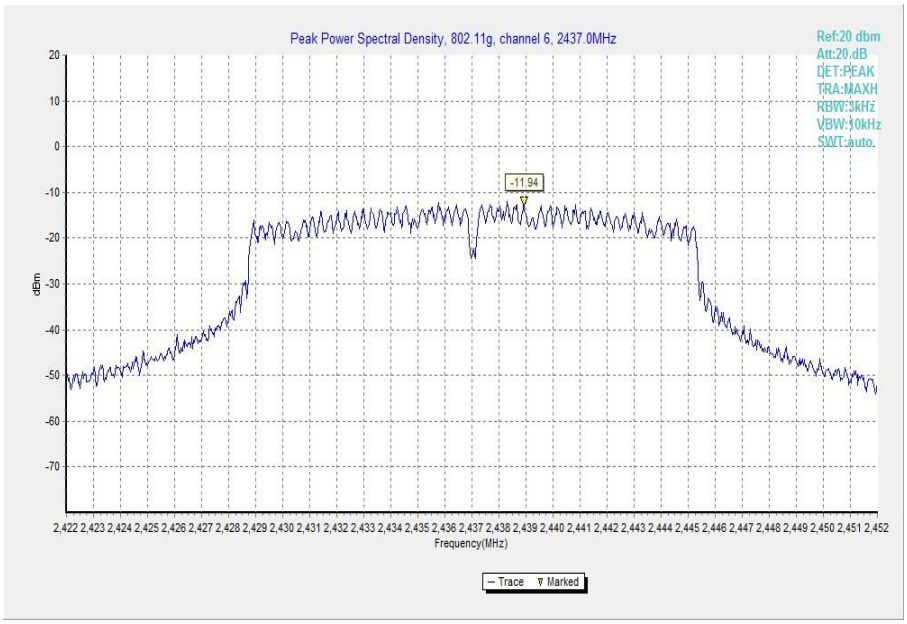

Fig.65 Power Spectral Density (802.11g, Ch 6)

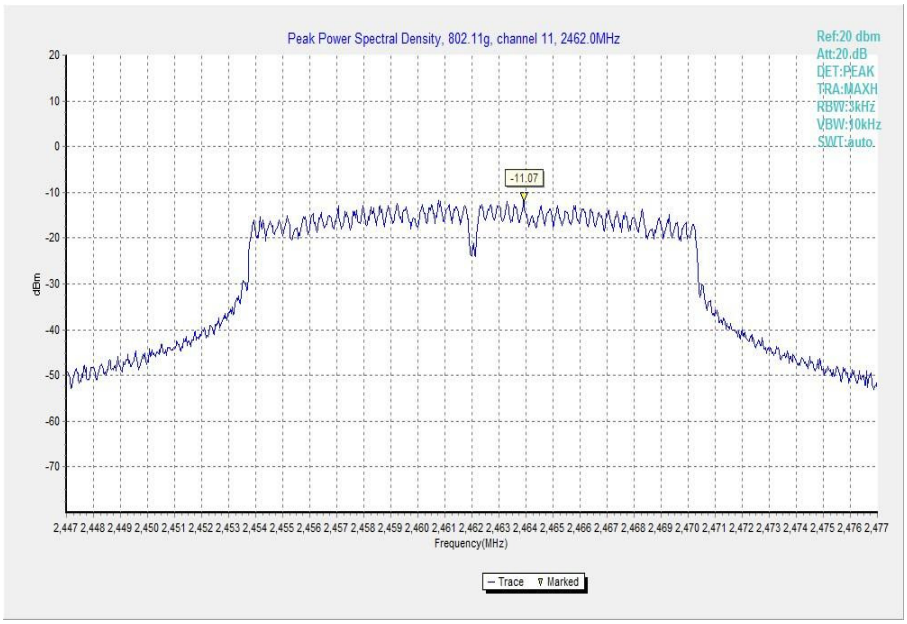

Fig.66 Power Spectral Density (802.11g, Ch 11)

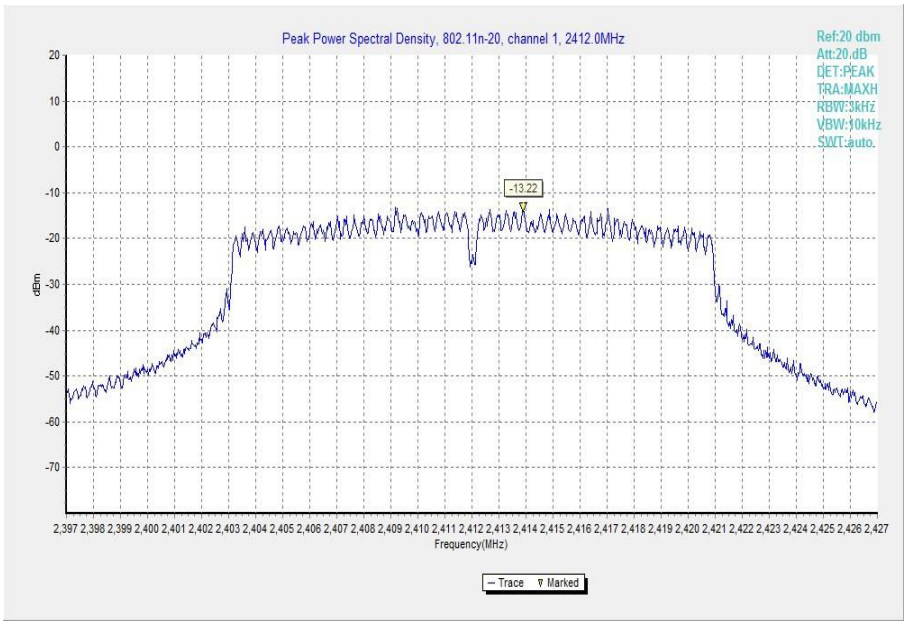

Fig.67 Power Spectral Density (802.11n-20MHz, Ch 1)

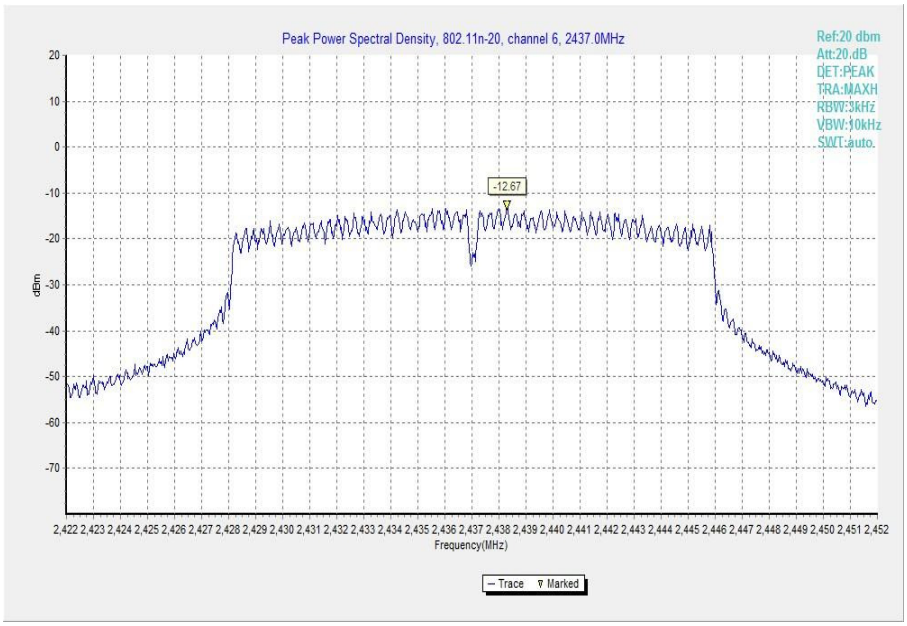

Fig.68 Power Spectral Density (802.11n-20MHz, Ch 6)