



**FCC PART 15C  
TEST REPORT  
No. I15Z41179-SRD01**

**for**

**Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd**

**Smart Phone**

**Model Name: Coolpad 3320A**

**With**

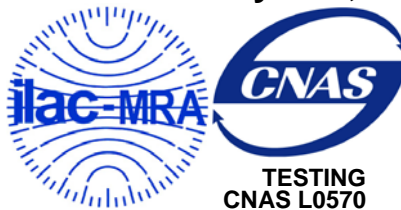
**Hardware Version: P2**

**Software Version: 5.1.155.00.T2.150617.3320A**

**FCC ID: R38YL3320A**

**IC number: 10367A-YL3320A**

**Issued Date: July 17<sup>th</sup>, 2015**



**Note:**

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

**Test Laboratory:**

CTTL, Telecommunication Technology Labs, Academy of Telecommunication Research, MIIT.

No.52, HuayuanNorth Road, Haidian District, Beijing, P. R. China 100191.

[Tel:+86\(0\)10-62304633-2512](tel:+86(0)10-62304633-2512), [Fax:+86\(0\)10-62304633-2504](tel:+86(0)10-62304633-2504)

Email: [ctl\\_terminals@catr.cn](mailto:ctl_terminals@catr.cn), website: [www.chinattl.com](http://www.chinattl.com)

## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
I15Z41179-SRD01	Rev.0	1st edition	2015-07-17

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## **1. Test Laboratory**

### **1.1. Testing Location**

Location 1:CTTL(huayuan North Road)

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

Location 2:CTTL(Shouxiang)

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

### **1.2. Testing Environment**

Normal Temperature: 15-35°C  
Extreme Temperature: -20/+55°C  
Relative Humidity: 20-75%

### **1.3. Project data**

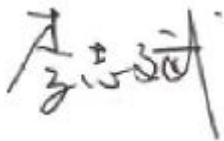
Testing Start Date: 2015-06-08  
Testing End Date: 2015-07-08

### **1.4. Signature**



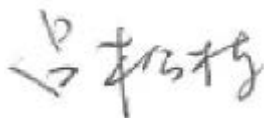
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**Xu Zhongfei**  
**(Prepared this test report)**



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**Li Zhibin**  
**(Reviewed this test report)**



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**Lv Songdong**  
**(Approved this test report)**





## **2. Client Information**

### **2.1. Applicant Information**

Company Name: Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd  
Address: Coolpad Information Harbor, 2nd Mengxi Road, Hi-Tech Industrial Park(North), Nanshan district, Shenzhen, P.R.C  
City: Shenzhen  
Postal Code: /  
Country: China  
Telephone: +86 13410415799  
Fax: /

### **2.2. Manufacturer Information**

Company Name: Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd  
Address: Coolpad Information Harbor, 2nd Mengxi Road, Hi-Tech Industrial Park(North), Nanshan district, Shenzhen, P.R.C  
City: Shenzhen  
Postal Code: /  
Country: China  
Telephone: +86 13410415799  
Fax: /



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

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

Description	Smart Phone
Model Name	Coolpad 3320A
Market Name	Coolpad Rogue
RF Protocol	IEEE 802.11b/g/n20
Operating Frequency	2412MHz~2462MHz
FCC ID	R38YL3320A
IC Number	10367A-YL3320A

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

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

<b>EUT ID*</b>	<b>IMEI</b>	<b>HW Version</b>	<b>SW Version</b>
EUT1	/	P2	5.1.155.00.T2.150617.3320A

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

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

<b>AE ID*</b>	<b>Description</b>	<b>Type</b>	<b>SN</b>
AE1	ADAPTOR	CYSK05-050100	/

\*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.

<b>Reference</b>	<b>Title</b>	<b>Version</b>
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, 2014
ANSI C63.10	American National Standard for Testing Unlicensed Wireless Devices	Jun,2013
IC RSS-247	Digital Transmission Systems(DTSs),Frequency Hopping Systems(FHSs) and Licence-Exempt Local Area Network(LE-LAN) Devices	Issue 1 May,2015
IC RSS-Gen	General Requirements for Compliance of Radio Apparatus	Issue 4 Nov,2014

## 5. Test Results

### 5.1. Summary of Test Results

No	Test cases	Standard Sub-clause	Sub-clause of IC	Verdict
0	Antenna Requirement	15.203	/	P
1	Maximum Peak Output Power	15.247 (b)	RSS-247 Issue1 5.4	P
2	Peak Power Spectral Density	15.247 (e)	RSS-247 Issue1 5.2	P
3	Occupied 6dB Bandwidth	15.247 (a)	RSS-247 Issue1 5.2	P
4	Band Edges Compliance	15.247 (d)	RSS-247 Issue1 5.4	P
5	Transmitter Spurious Emission - Conducted	15.247 (d)	RSS-247 Issue1 5.5	P
6	Transmitter Spurious Emission - Radiated	15.247, 15.205, 15.209	RSS-247 Issue1 5.5	P
7	AC Powerline Conducted Emission	15.107, 15.207	RSS-Gen Issue3 7.2.4	P
8	Occupied Bandwidth	/	RSS-Gen Issue3 4.6.1	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 isotropical 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** (23 metersx17 metersx10 meters) did not exceed following limits:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 M
Ground system resistance	< 4
Normalised site attenuation (NSA)	< ±4dB, 3m/10m distance, from 30 to 1000 MHz
Site voltage standing-wave ratio ( $S_{VSWR}$ )	Between 0 and 6 dB, from 1GHz to 18GHz
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. = 35 °C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 M
Ground system resistance	< 4

## 6. Test Facilities Utilized

### Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Calibration Due date
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	2015-07-08	2016-07-07
2	Test Receiver	ESS	847151/015	Rohde & Schwarz	2015-11-29	2016-11-28
3	LISN	ESH2-Z5	829991/012	Rohde & Schwarz	2015-4-15	2016-4-14
4	Shielding Room	S81	/	ETS-Lindgren	/	/

### Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Test Receiver	ESCI 7	100948	Rohde & Schwarz	1 year	2016-07-16
2	Loop antenna	HFH2-Z2	829324/00 7	Rohde & Schwarz	3 year	2017-12-16
3	BiLog Antenna	VULB9163	234	Schwarzbeck	3 year	2016-09-15
4	Dual-Ridge Waveguide Horn Antenna	3115	6914	EMCO	3 year	2017-12-15
5	Dual-Ridge Waveguide Horn Antenna	3116	2661	ETS-Lindgren	3 year	2017-06-30
6	Vector Signal Analyzer	FSV	101047	Rohde & Schwarz	1 year	2016-07-03
7	Semi-anechoic chamber	/	CT000332 -1074	Frankonia German	/	/

### Anechoic chamber

Fully anechoic chamber by ETS-Lindgren.

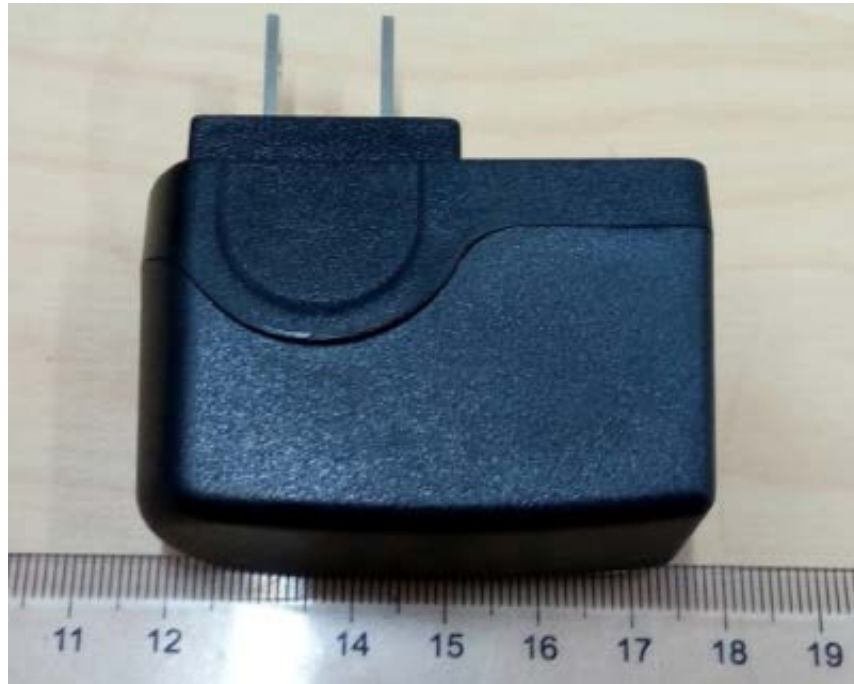
**ANNEX A: EUT photograph**



**Picture A-1: Mobile Phone**



**Picture A-2: Mobile Phone**



Picture A-3: Charger(AE1)



Picture A-4: Charger(AE1)





## **ANNEX B: MEASUREMENT RESULTS FOR RECEIVER**

### **B.0 Antenna requirement**

#### **Measurement Limit:**

<b>Standard</b>	<b>Requirement</b>
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 -0.5 dBi.**

**The RF transmitter uses an integrate antenna without connector.**

### B.1 Maximum Average Output Power

**Measurement Limit:**

Standard	Limit (dBm)
FCC CRF Part 15.247(b)(1) RSS-247 Issue1 5.4	< 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	16.74	Fig.2	16.45	Fig.3	16.78
	2	Fig.4	16.98	Fig.5	16.69	Fig.6	17.02
	5.5	Fig.7	17.18	Fig.8	17.13	Fig.9	17.50
	11	Fig.10	17.31	Fig.11	17.23	Fig.12	17.57
802.11g	6	Fig.13	16.07	Fig.14	15.73	Fig.15	16.03
	9	Fig.16	16.03	Fig.17	15.75	Fig.18	16.03
	12	Fig.19	16.10	Fig.20	15.81	Fig.21	16.09
	18	Fig.22	16.18	Fig.23	15.89	Fig.24	16.14
	24	Fig.25	16.35	Fig.26	16.06	Fig.27	16.33
	36	Fig.28	16.41	Fig.29	16.16	Fig.30	16.38
	48	Fig.31	16.48	Fig.32	16.15	Fig.33	16.41
	54	Fig.34	16.38	Fig.35	16.10	Fig.36	16.37

**802.11n mode**

Mode	Data Rate (MCS Index)	Test Result (dBm)					
		2412MHz (Ch1)		2437MHz (Ch6)		2462 MHz (Ch11)	
802.11n (20MHz)	MCS0	Fig.37	16.09	Fig.38	15.73	Fig.39	16.04
	MCS1	Fig.40	16.21	Fig.41	15.87	Fig.42	16.14
	MCS2	Fig.43	16.28	Fig.44	15.95	Fig.45	16.19
	MCS3	Fig.46	16.44	Fig.47	16.13	Fig.48	16.37
	MCS4	Fig.49	16.51	Fig.50	16.19	Fig.51	16.42
	MCS5	Fig.52	16.55	Fig.53	16.19	Fig.54	16.43
	MCS6	Fig.55	16.51	Fig.56	16.16	Fig.57	16.40
	MCS7	Fig.58	16.45	Fig.59	16.11	Fig.60	16.38

See ANNEX C for test graphs.

**Conclusion: PASS**

## B.2 Peak Power Spectral Density

### Measurement Limit:

Standard	Limit
FCC CRF Part 15.247(d) RSS-247 Issue1 5.2	< 8 dBm/3 kHz

### Measurement Results:

#### 802.11b/g mode

Mode	Channel	Peak Power Spectral Density (dBm)		Conclusion
802.11b	1	Fig.61	-6.21	P
	6	Fig.62	-6.25	P
	11	Fig.63	-5.45	P
802.11g	1	Fig.64	-10.57	P
	6	Fig.65	-9.45	P
	11	Fig.66	-9.25	P

#### 802.11n mode

Mode	Channel	Peak Power Spectral Density(dBm)		Conclusion
802.11n (20MHz)	1	Fig.67	-10.05	P
	6	Fig.68	-9.55	P
	11	Fig.69	-9.24	P

See ANNEX C for test graphs.

**Conclusion: PASS**

### B.3 Occupied 6dB Bandwidth

**Measurement Limit:**

Standard	Limit (kHz)
FCC 47 CFR Part 15.247 (a) RSS-247 Issue1 5.2	≥ 500

**Measurement Result:**

**802.11b/g mode**

Mode	Channel	Test Results ( kHz)		conclusion
802.11b	1	Fig.70	9508	P
	6	Fig.71	9595	P
	11	Fig.72	9595	P
802.11g	1	Fig.73	16194	P
	6	Fig.74	16194	P
	11	Fig.75	16281	P

**802.11n mode**

Mode	Channel	Test Results ( kHz)		conclusion
802.11n (20MHz)	1	Fig.76	17410	P
	6	Fig.77	17410	P
	11	Fig.78	17149	P

See ANNEX C for test graphs.

**Conclusion: PASS**

## B.4 Band Edges Compliance

### Measurement Limit:

Standard	Limit (dBc)
FCC 47 CFR Part 15.247 (d) RSS-247 Issue1 5.4	> 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 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

## B.5 Transmitter Spurious Emission

### B.5.1 Transmitter Spurious Emission - Conducted

**Measurement Limit:**

Standard	Limit
FCC 47 CFR Part 15.247 (d) RSS-247 Issue1 5.5	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 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**

**B.5.2 Transmitter Spurious Emission - Radiated**

**Measurement Limit:**

Standard	Limit
FCC 47 CFR Part 15.247, 15.205, 15.209 RSS-247 Issue1 5.5	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( $\mu$ V/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 ~3 GHz	Fig.113	P
		3 GHz ~ 18 GHz	Fig.114	P
	6	30 MHz ~1 GHz	Fig.115	P
		1 GHz ~3 GHz	Fig.116	P
		3 GHz ~ 18 GHz	Fig.117	P
	11	1 GHz ~3 GHz	Fig.118	P
		3 GHz ~ 18 GHz	Fig.119	P
	Power(CH1)	2.38 GHz ~ 2.45 GHz	Fig.120	P
Power(CH11)	2.45 GHz ~ 2.5 GHz	Fig.121	P	
802.11g	1	1 GHz ~3 GHz	Fig.122	P
		3 GHz ~ 18 GHz	Fig.123	P
	6	30 MHz ~1 GHz	Fig.124	P
		1 GHz ~3 GHz	Fig.125	P
		3 GHz ~ 18 GHz	Fig.126	P
	11	1 GHz ~3 GHz	Fig.127	P
		3 GHz ~ 18 GHz	Fig.128	P
	Power(CH1)	2.38 GHz ~ 2.45 GHz	Fig.129	P
Power(CH11)	2.45 GHz ~ 2.5 GHz	Fig.130	P	

**802.11n mode**

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (20M)	1	1 GHz ~3 GHz	Fig.131	P
		3 GHz ~ 18 GHz	Fig.132	P
	6	30 MHz ~1 GHz	Fig.133	P
		1 GHz ~3 GHz	Fig.134	P
		3 GHz ~ 18 GHz	Fig.135	P
	11	1 GHz ~3 GHz	Fig.136	P
		3 GHz ~ 18 GHz	Fig.137	P
	Power(CH1)	2.38 GHz ~ 2.45 GHz	Fig.138	P
Power(CH11)	2.45 GHz ~ 2.5 GHz	Fig.139	P	
/	All channels	18 GHz~ 26.5 GHz	Fig.140	P



**802.11b CH1 (1-18GHz)**

Frequency (MHz)	MaxPeak (dBµV/m)	Pathloss. (dB)	antenna factor	Receiver (dBm)	Polarization	Limit (dBµV/m)
2383.130	54.9	-38.8	27.7	66.000	H	74.0
17824.500	57.6	-18.5	45.6	30.500	V	74.0
17915.250	57.5	-17.7	45.6	29.600	H	74.0
17938.500	57.5	-17.7	45.6	29.600	V	74.0
17892.750	57.5	-18.5	45.6	30.400	H	74.0
17986.500	57.2	-17.7	45.6	29.300	H	74.0

Frequency (MHz)	Average (dBµV/m)	Pathloss. (dB)	antenna factor	Receiver (dBm)	Polarization	Limit (dBµV/m)
2382.240	41.7	-38.8	27.7	52.800	V	54.0
17973.000	46.9	-17.7	45.6	19.000	V	54.0
17917.500	46.7	-17.7	45.6	18.800	H	54.0
17989.500	46.7	-17.7	45.6	18.800	H	54.0
17972.250	46.7	-17.7	45.6	18.800	H	54.0
17992.500	46.6	-17.7	45.6	18.700	V	54.0

**802.11b CH 6(1-18GHz)**

Frequency (MHz)	MaxPeak (dBµV/m)	Pathloss. (dB)	antenna factor	Receiver (dBm)	Polarization	Limit (dBµV/m)
17964.000	58.9	-17.7	45.6	31.000	H	74.0
17961.750	57.5	-17.7	45.6	29.600	V	74.0
17917.500	57.4	-17.7	45.6	29.500	V	74.0
17925.000	57.3	-17.7	45.6	29.400	H	74.0
17994.750	57.2	-17.7	45.6	29.300	V	74.0
17982.000	57.1	-17.7	45.6	29.200	V	74.0



Frequency (MHz)	Average (dBµV/m)	Pathloss. (dB)	antenna factor	Receiver (dBm)	Polarization	Limit (dBµV/m)
17991.750	46.7	-17.7	45.6	18.800	H	54.0
17958.750	46.7	-17.7	45.6	18.800	V	54.0
17922.750	46.6	-17.7	45.6	18.700	H	54.0
17955.000	46.6	-17.7	45.6	18.700	V	54.0
17977.500	46.6	-17.7	45.6	18.700	V	54.0
17997.000	46.6	-17.7	45.6	18.700	H	54.0

**802.11b CH11 (1-18GHz)**

Frequency (MHz)	MaxPeak (dBµV/m)	Pathloss. (dB)	antenna factor	Receiver (dBm)	Polarization	Limit (dBµV/
2498.955	55.2	-38.8	27.7	66.300	V	74.0
17901.750	57.9	-18.5	45.6	30.800	H	74.0
17954.250	57.9	-17.7	45.6	30.000	H	74.0
17987.250	57.8	-17.7	45.6	29.900	V	74.0
17881.500	57.6	-18.5	45.6	30.500	V	74.0
17989.500	57.4	-17.7	45.6	29.500	H	74.0

Frequency (MHz)	Average (dBµV/m)	Pathloss. (dB)	antenna factor	Receiver (dBm)	Polarization	Limit (dBµV/m)
2495.930	41.9	-38.9	27.7	53.100	V	54.0
17950.500	47.0	-17.7	45.6	19.100	H	54.0
17964.000	46.9	-17.7	45.6	19.000	V	54.0
17929.500	46.7	-17.7	45.6	18.800	V	54.0
17976.000	46.6	-17.7	45.6	18.700	H	54.0
17974.500	46.6	-17.7	45.6	18.700	H	54.0



**802.11g CH1 (1-18GHz)**

Frequency (MHz)	MaxPeak (dBµV/m)	Pathloss. (dB)	antenna factor	Receiver (dBm)	Polarization	Limit (dBµV/m)
2382.725	55.1	-38.8	27.7	66.200	H	74.0
17943.000	57.8	-17.7	45.6	29.900	V	74.0
17896.500	57.8	-18.5	45.6	30.700	H	74.0
17850.000	57.7	-18.5	45.6	30.600	V	74.0
17997.000	57.6	-17.7	45.6	29.700	V	74.0
17998.500	57.5	-17.7	45.6	29.600	V	74.0

Frequency (MHz)	Average (dBµV/m)	Pathloss. (dB)	antenna factor	Receiver (dBm)	Polarization	Limit (dBµV/m)
2389.745	43.1	-38.8	27.7	54.200	V	54.0
17997.000	46.8	-17.7	45.6	18.900	H	54.0
17974.500	46.7	-17.7	45.6	18.800	V	54.0
17964.000	46.7	-17.7	45.6	18.800	H	54.0
17961.000	46.7	-17.7	45.6	18.800	V	54.0
17943.000	46.6	-17.7	45.6	18.700	V	54.0

**802.11g CH6 (1-18GHz)**

Frequency (MHz)	MaxPeak (dBµV/m)	Pathloss. (dB)	antenna factor	Receiver (dBm)	Polarization	Limit (dBµV/m)
17985.000	57.8	-17.7	45.6	29.900	H	74.0
17962.500	57.7	-17.7	45.6	29.800	V	74.0
17920.500	57.6	-17.7	45.6	29.700	V	74.0
17951.250	57.3	-17.7	45.6	29.400	H	74.0
17953.500	57.0	-17.7	45.6	29.100	V	74.0
17892.000	57.0	-18.5	45.6	29.900	H	74.0



Frequency (MHz)	Average (dBµV/m)	Pathloss. (dB)	antenna factor	Receiver (dBm)	Polarization	Limit (dBµV/m)
17960.250	47.1	-17.7	45.6	19.200	V	54.0
17921.250	46.9	-17.7	45.6	19.000	V	54.0
17997.750	46.8	-17.7	45.6	18.900	V	54.0
17979.000	46.7	-17.7	45.6	18.800	H	54.0
17976.000	46.7	-17.7	45.6	18.800	V	54.0
17988.750	46.6	-17.7	45.6	18.700	H	54.0

**802.11g CH11 (1-18GHz)**

Frequency (MHz)	MaxPeak (dBµV/m)	Pathloss. (dB)	antenna factor	Receiver (dBm)	Polarization	Limit (dBµV/m)
2483.515	65.1	-38.9	27.7	76.300	H	74.0
17936.250	57.6	-17.7	45.6	29.700	V	74.0
17988.000	57.5	-17.7	45.6	29.600	V	74.0
17808.000	57.3	-18.5	45.6	30.200	H	74.0
17982.000	57.3	-17.7	45.6	29.400	V	74.0
17859.750	57.3	-18.5	45.6	30.200	V	74.0

Frequency (MHz)	Average (dBµV/m)	Pathloss. (dB)	antenna factor	Receiver (dBm)	Polarization	Limit (dBµV/m)
2483.770	45.6	-38.9	27.7	56.800	V	54.0
17983.500	47.0	-17.7	45.6	19.100	V	54.0
17976.000	47.0	-17.7	45.6	19.100	V	54.0
17968.500	46.8	-17.7	45.6	18.900	H	54.0
17982.750	46.8	-17.7	45.6	18.900	H	54.0
17972.250	46.7	-17.7	45.6	18.800	V	54.0

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

Frequency (MHz)	MaxPeak (dBµV/m)	Pathloss. (dB)	antenna factor	Receiver (dBm)	Polarization	Limit (dBµV/m)
2389.940	60.8	-38.8	27.7	71.900	V	74.0
17910.750	57.9	-18.5	45.6	30.800	V	74.0
17939.250	57.9	-17.7	45.6	30.000	H	74.0
17941.500	57.3	-17.7	45.6	29.400	V	74.0
17977.500	57.2	-17.7	45.6	29.300	H	74.0
17966.250	57.2	-17.7	45.6	29.300	V	74.0

Frequency (MHz)	Average (dBµV/m)	Pathloss. (dB)	antenna factor	Receiver (dBm)	Polarization	Limit (dBµV/m)
2389.975	44.8	-38.8	27.7	55.900	V	54.0
17925.000	46.9	-17.7	45.6	19.000	H	54.0
17982.750	46.9	-17.7	45.6	19.000	V	54.0
17921.250	46.8	-17.7	45.6	18.900	H	54.0
17983.500	46.7	-17.7	45.6	18.800	H	54.0
17964.750	46.7	-17.7	45.6	18.800	H	54.0

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

Frequency (MHz)	MaxPeak (dBµV/m)	Pathloss. (dB)	antenna factor	Receiver (dBm)	Polarization	Limit (dBµV/m)
17849.250	57.6	-18.5	45.6	30.500	V	74.0
17991.750	57.5	-17.7	45.6	29.600	V	74.0
17992.500	57.5	-17.7	45.6	29.600	H	74.0
17925.750	57.5	-17.7	45.6	29.600	H	74.0
17984.250	57.4	-17.7	45.6	29.500	V	74.0
17867.250	57.3	-18.5	45.6	30.200	V	74.0

Frequency (MHz)	Average (dB $\mu$ V/m)	Pathloss. (dB)	antenna factor	Receiver (dBm)	Polarization	Limit (dB $\mu$ V/m)
17997.750	55.4	-17.7	45.6	27.500	H	54.0
17956.500	55.5	-17.7	45.6	27.600	V	54.0
17975.250	55.4	-17.7	45.6	27.500	H	54.0
17985.750	54.7	-17.7	45.6	26.800	V	54.0
17955.000	55.0	-17.7	45.6	27.100	V	54.0
17964.000	56.3	-17.7	45.6	28.400	H	54.0

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

Frequency (MHz)	MaxPeak (dB $\mu$ V/m)	Pathloss. (dB)	antenna factor	Receiver (dBm)	Polarization	Limit (dB $\mu$ V/m)
2483.735	67.5	-38.9	27.7	78.700	H	74.0
17953.500	57.9	-17.7	45.6	30.000	H	74.0
17877.750	57.8	-18.5	45.6	30.700	V	74.0
17937.750	57.4	-17.7	45.6	29.500	V	74.0
17909.250	57.2	-18.5	45.6	30.100	H	74.0
17936.250	57.1	-17.7	45.6	29.200	V	74.0

Frequency (MHz)	Average (dB $\mu$ V/m)	Pathloss. (dB)	antenna factor	Receiver (dBm)	Polarization	Limit (dB $\mu$ V/m)
2483.520	48.4	-38.9	27.7	59.600	V	54.0
17901.000	46.8	-18.5	45.6	19.700	H	54.0
17979.000	46.8	-17.7	45.6	18.900	V	54.0
17955.000	46.8	-17.7	45.6	18.900	V	54.0
17968.500	46.7	-17.7	45.6	18.800	V	54.0
17915.250	46.7	-17.7	45.6	18.800	H	54.0

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:

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

## B.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 (dB $\mu$ V)	Result (dB $\mu$ V)	Conclusion
		Traffic	
0.15 to 0.5	Fig.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)-AE1

Frequency range (MHz)	Average-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)	Conclusion
		Traffic	
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.

See ANNEX C for test graphs.

Conclusion: PASS



## B.7 Occupied Bandwidth

### Measurement Limit:

Standard	Limit
RSS-Gen Issue3 4.6.1	/

### Measurement Result:

#### 802.11b/g mode

Mode	Channel	Test Results ( kHz)		conclusion
802.11b	1	Fig.142	16585	P
	6	Fig.143	16541	P
	11	Fig.144	16324	P
802.11g	1	Fig.145	24747	P
	6	Fig.146	24703	P
	11	Fig.147	23792	P

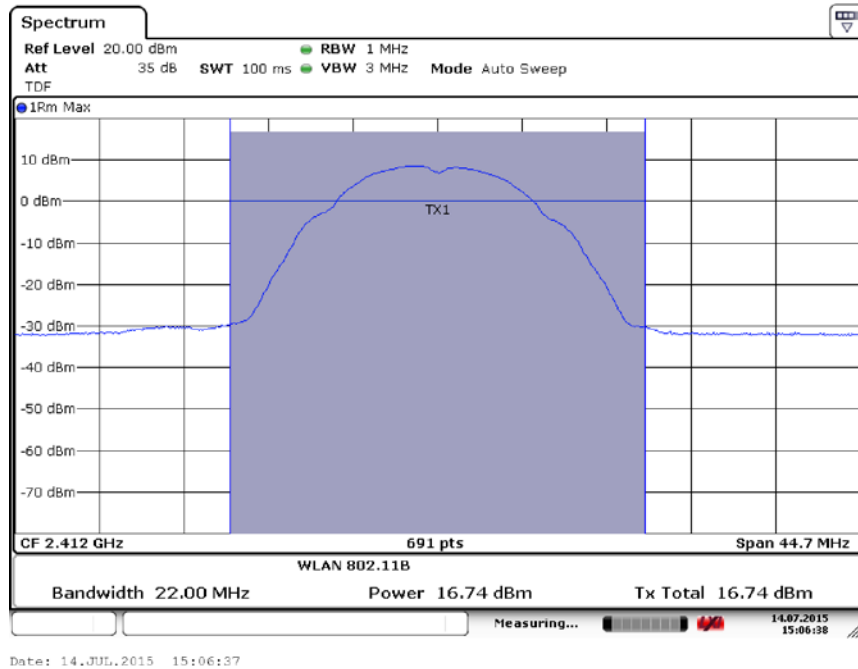
#### 802.11n mode

Mode	Channel	Test Results ( kHz)		conclusion
802.11n (20MHz)	1	Fig.148	25051	P
	6	Fig.149	24660	P
	11	Fig.150	24182	P

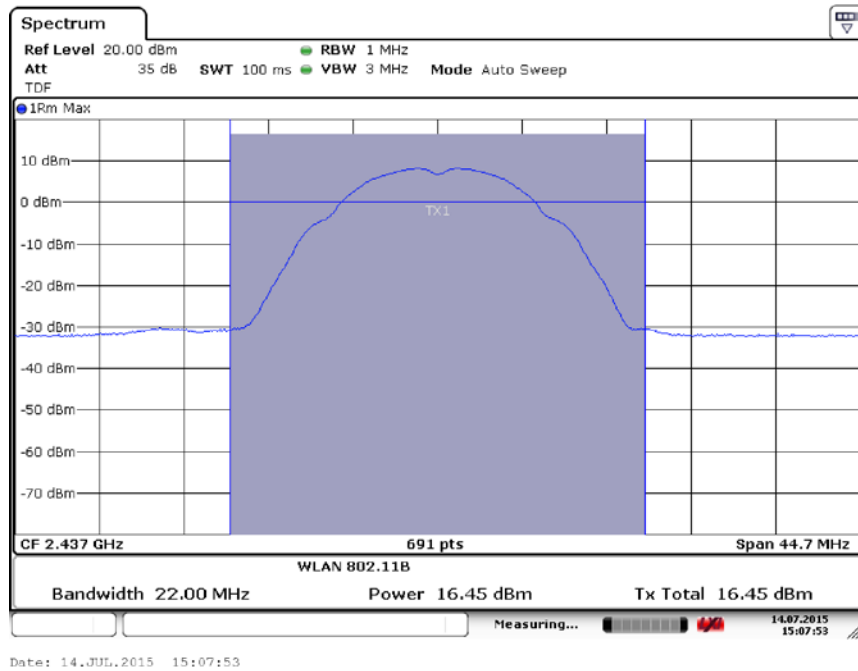
See ANNEX C for test graphs.

**Conclusion: PASS**

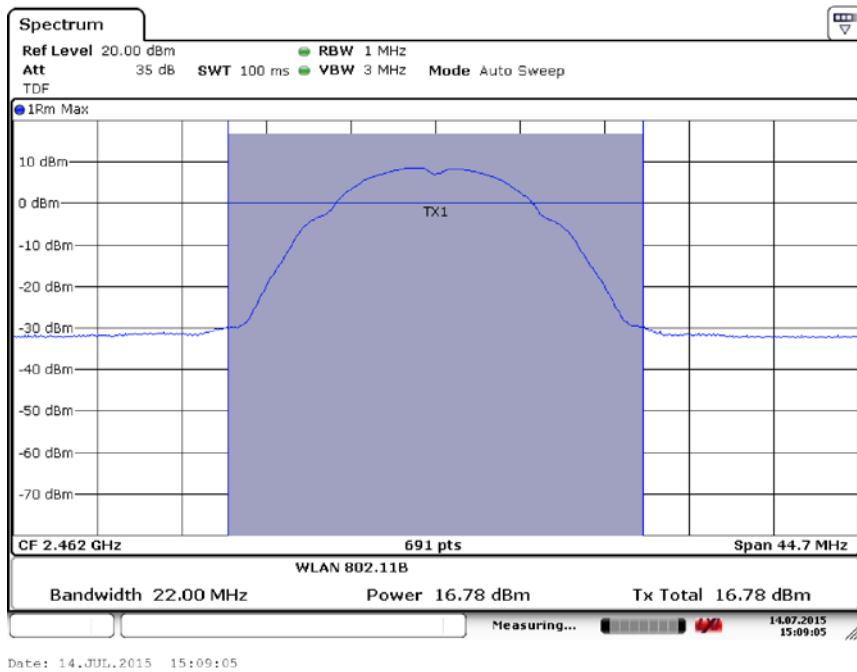
## ANNEX C: TEST LAYOUTS



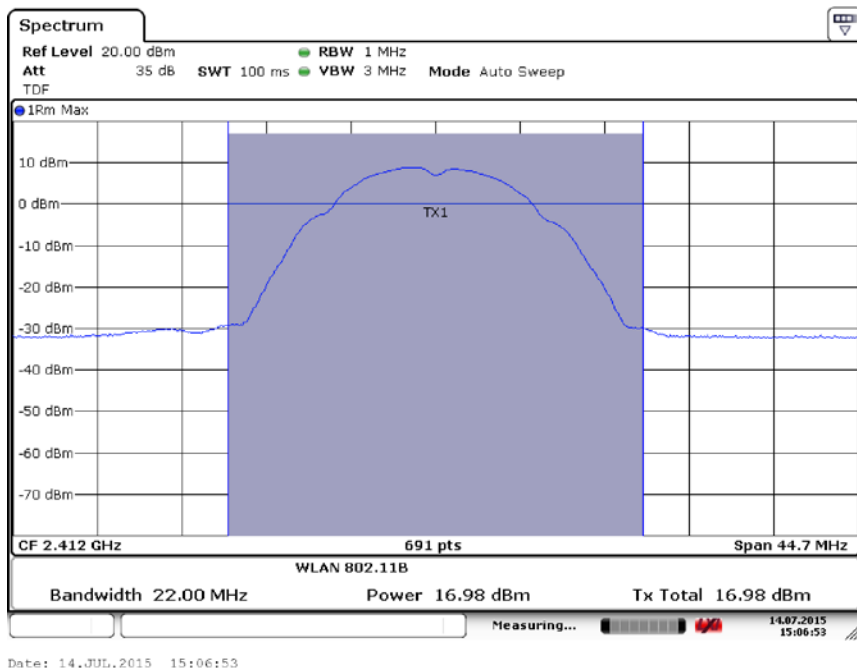
**Fig.1 Maximum Average Output Power (802.11b, Ch 1,1Mbps)**



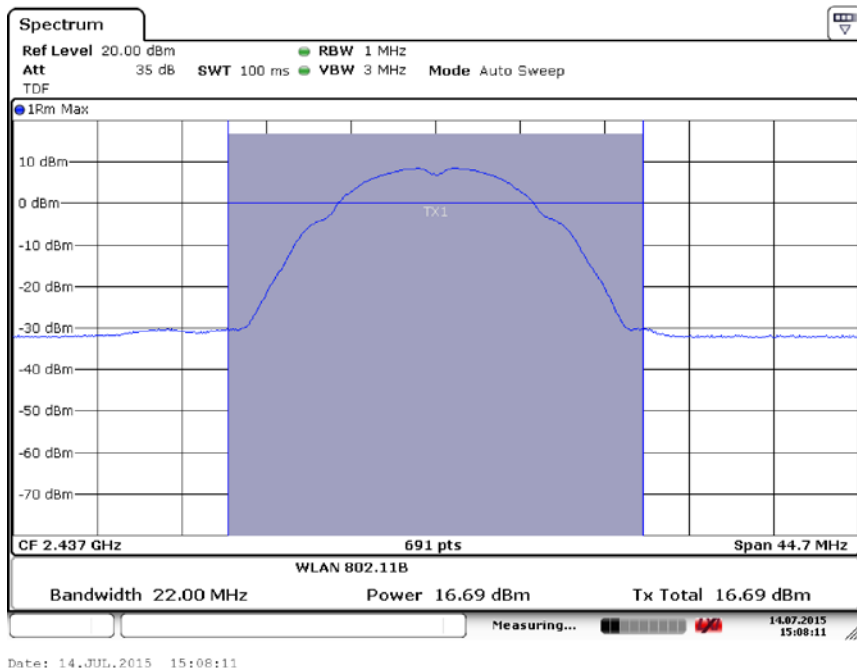
**Fig.2 Maximum Average Output Power (802.11b, Ch 6,1Mbps)**



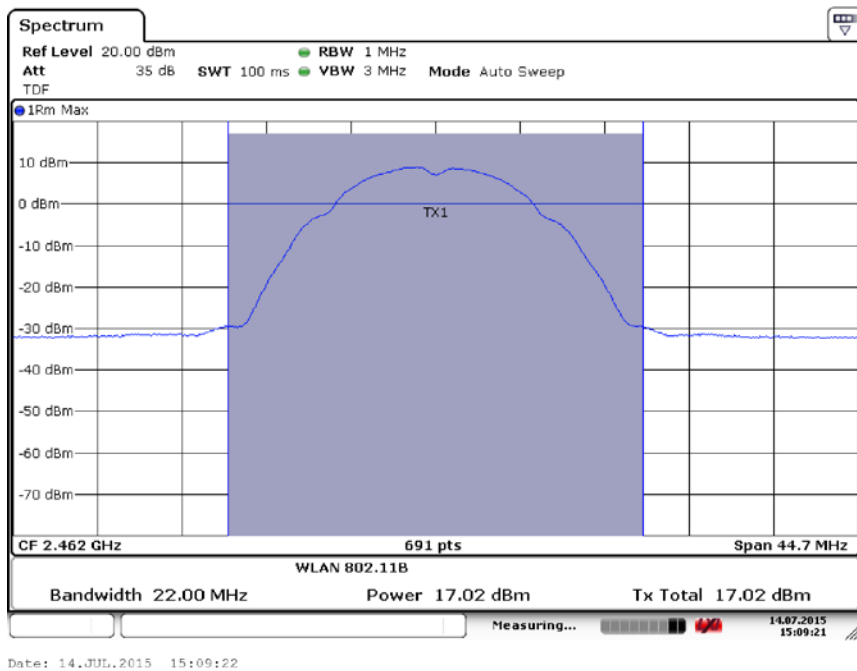
**Fig.3 Maximum Average Output Power (802.11b, Ch 11,1Mbps)**



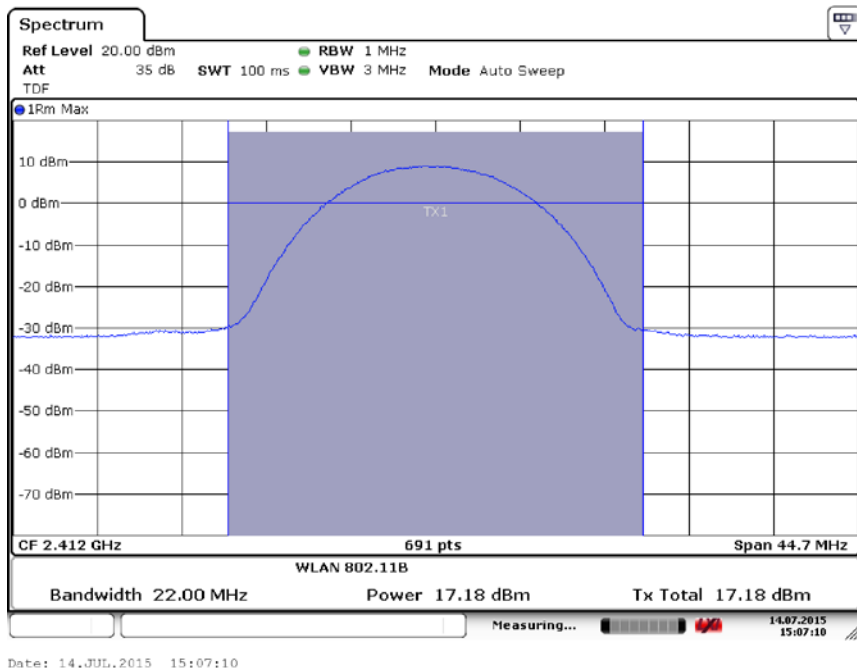
**Fig.4 Maximum Average Output Power (802.11b, Ch 1,2Mbps)**



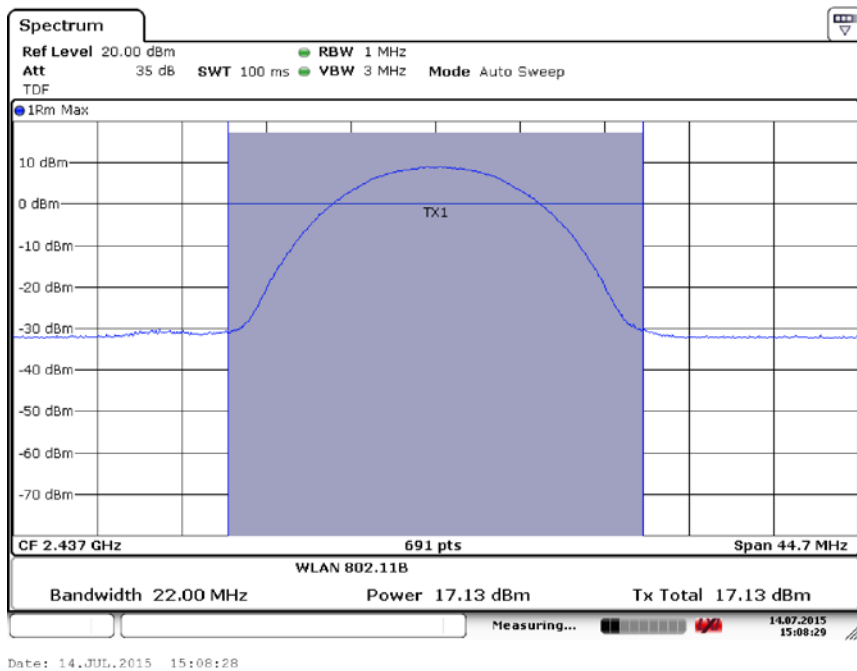
**Fig.5 Maximum Average Output Power (802.11b, Ch 6,2Mbps)**



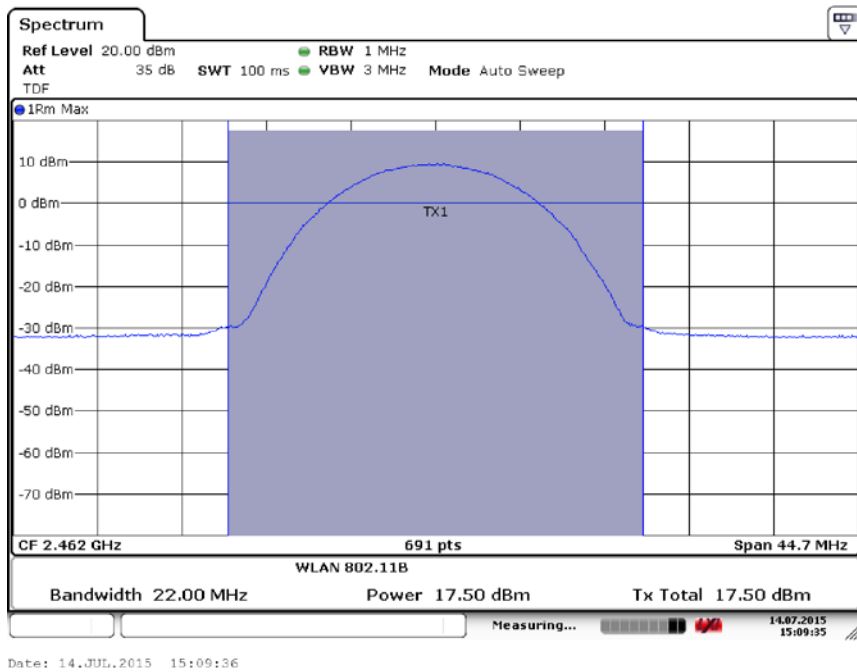
**Fig.6 Maximum Average Output Power (802.11b, Ch 11,2Mbps)**



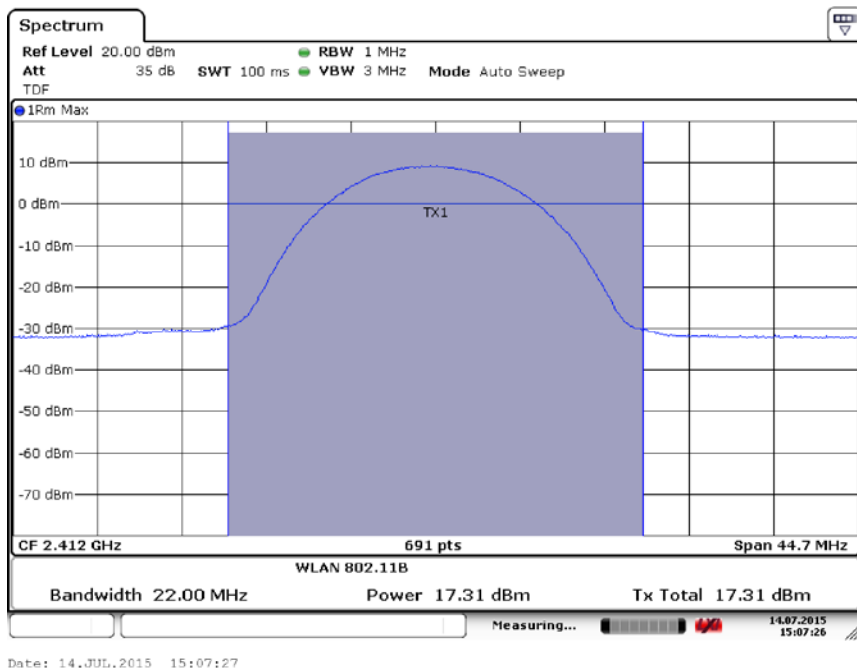
**Fig.7 Maximum Average Output Power (802.11b, Ch 1,5Mbps)**



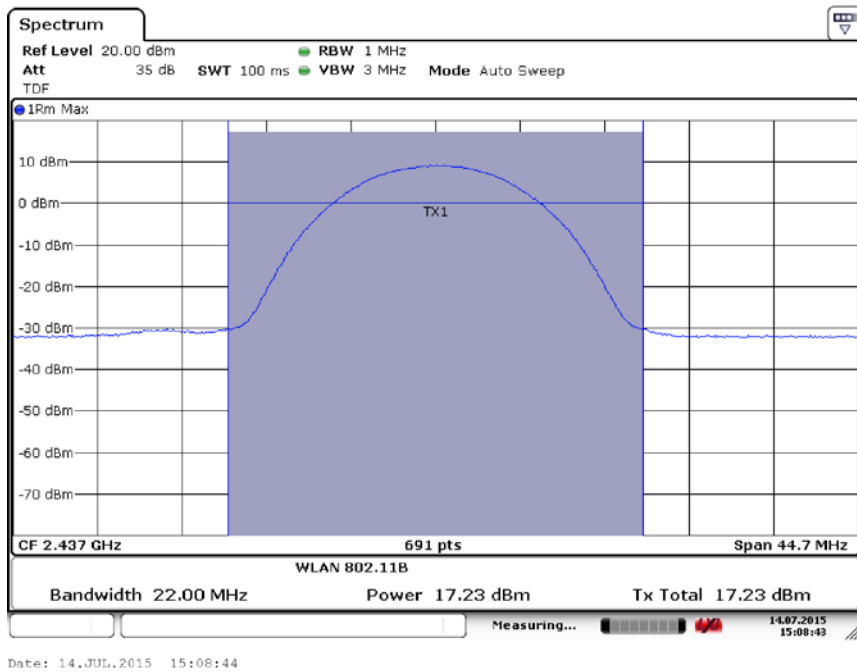
**Fig.8 Maximum Average Output Power (802.11b, Ch 6,5Mbps)**



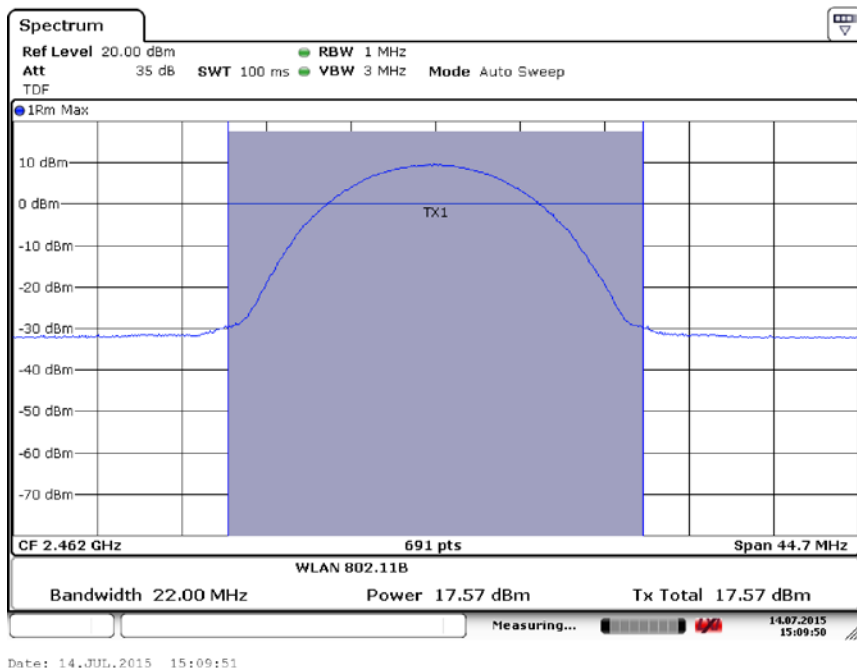
**Fig.9 Maximum Average Output Power (802.11b, Ch 11,5.5Mbps)**



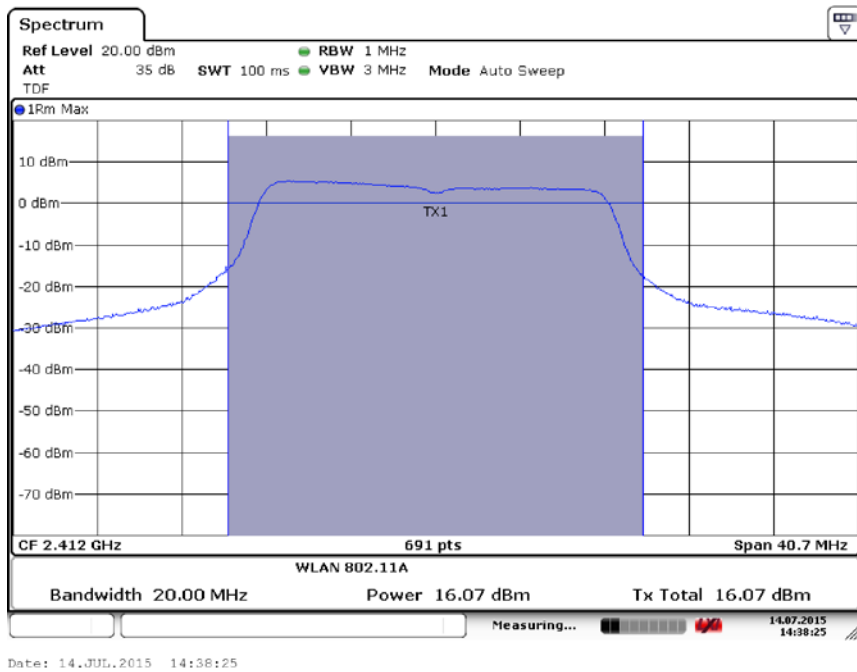
**Fig.10 Maximum Average Output Power (802.11b, Ch 1,11Mbps)**



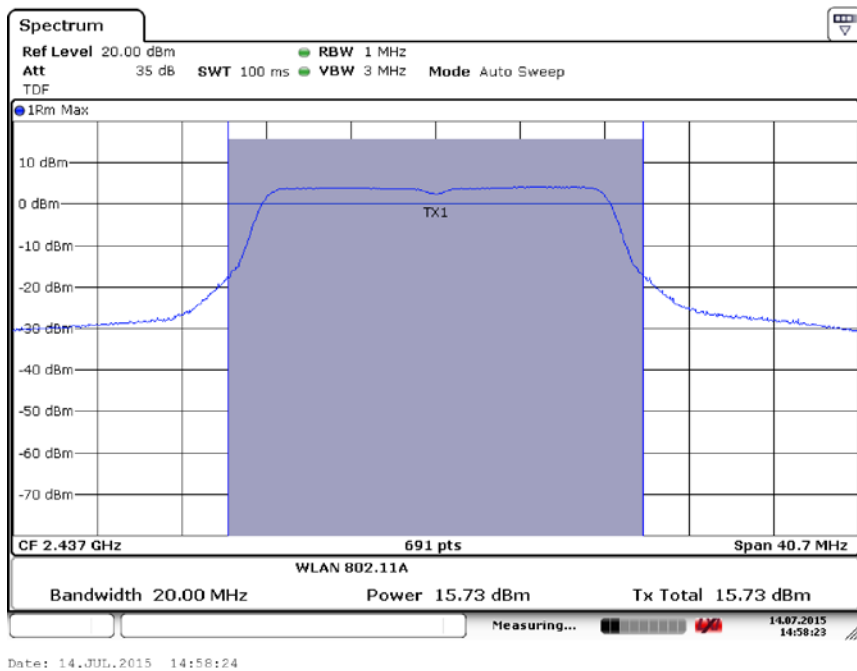
**Fig.11 Maximum Average Output Power (802.11b, Ch 6,11Mbps)**



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

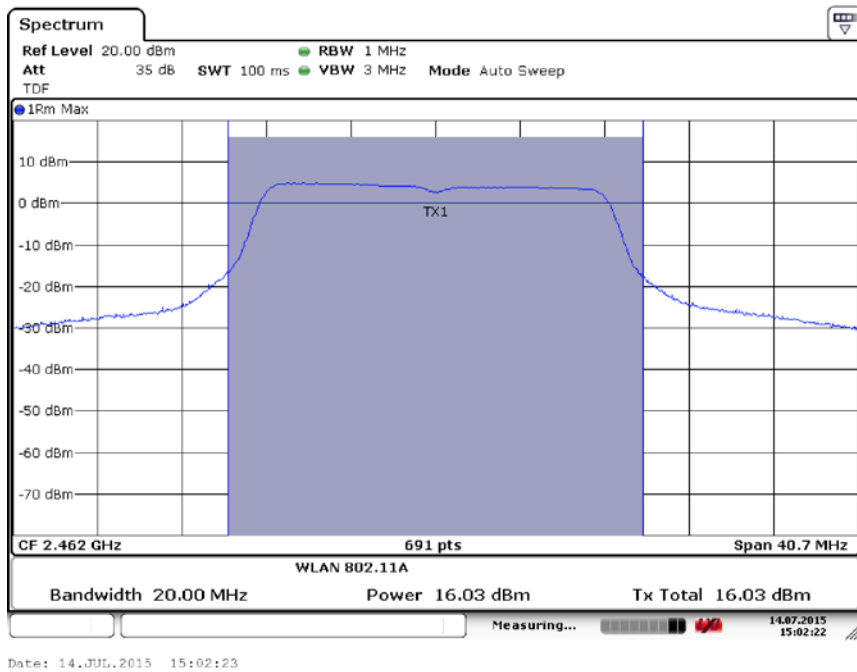


**Fig.13 Maximum Average Output Power (802.11g, Ch 1,6Mbps)**

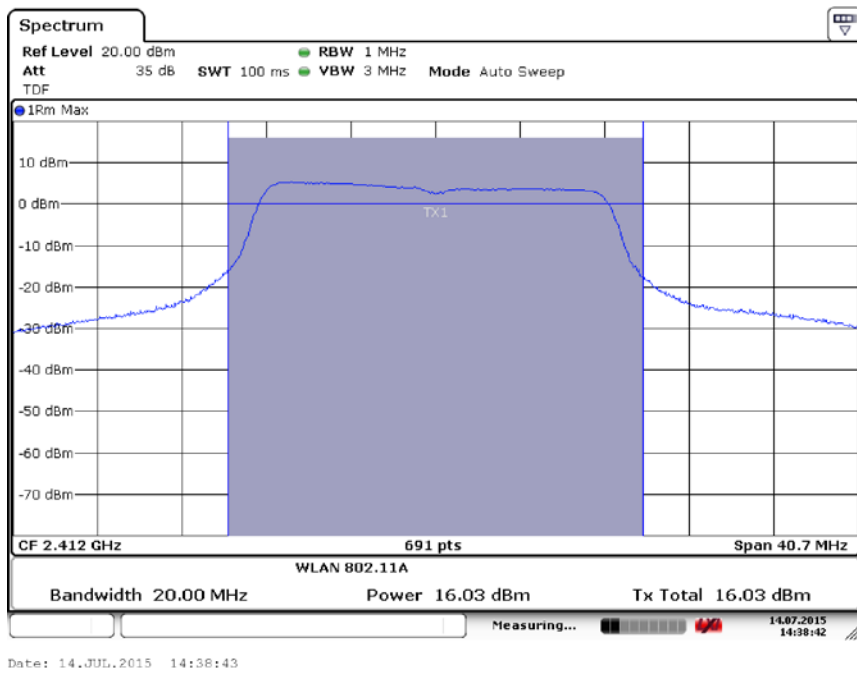


**Fig.14 Maximum Average Output Power (802.11g, Ch 6,6Mbps)**

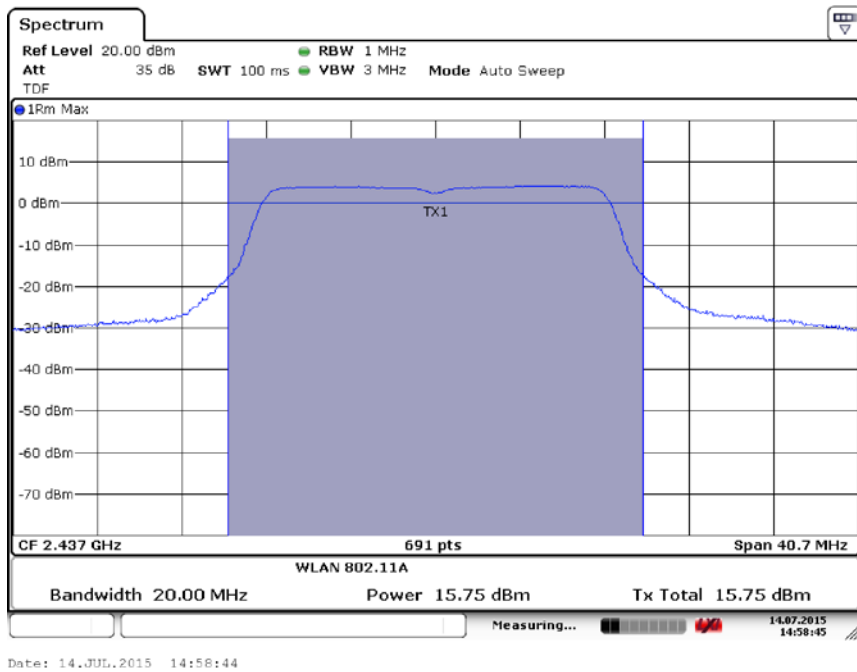




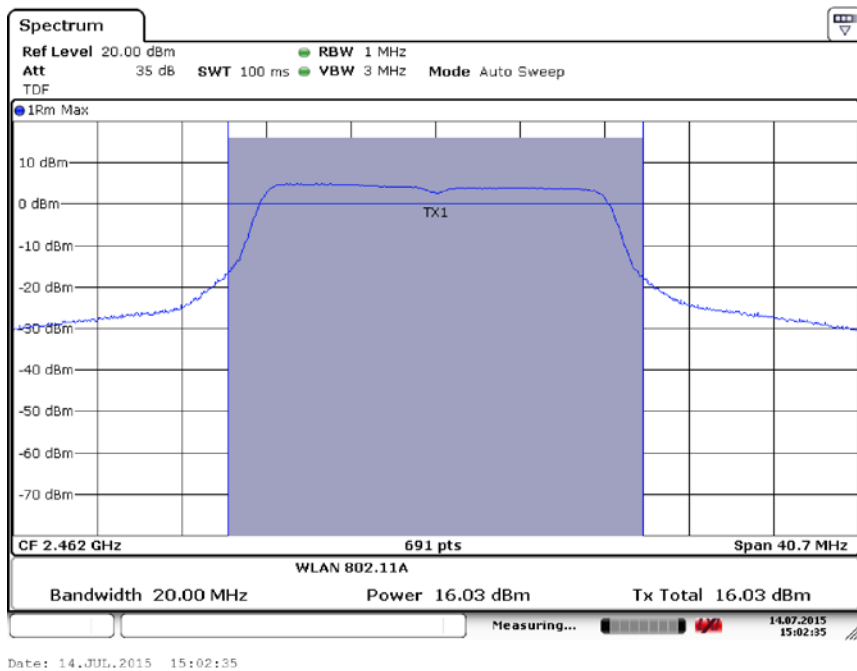
**Fig.15 Maximum Average Output Power (802.11g, Ch 11,6Mbps)**



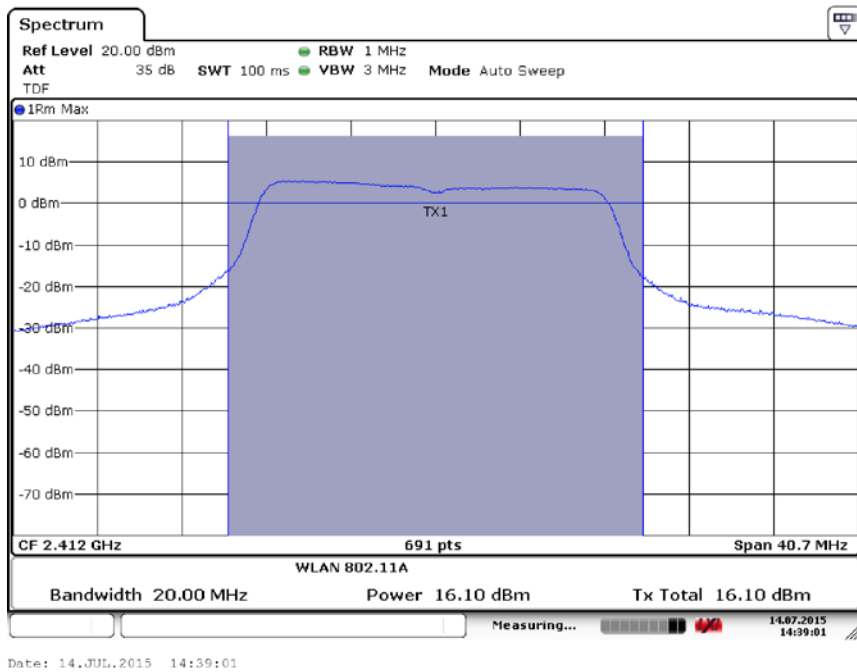
**Fig.16 Maximum Average Output Power (802.11g, Ch 1,9Mbps)**



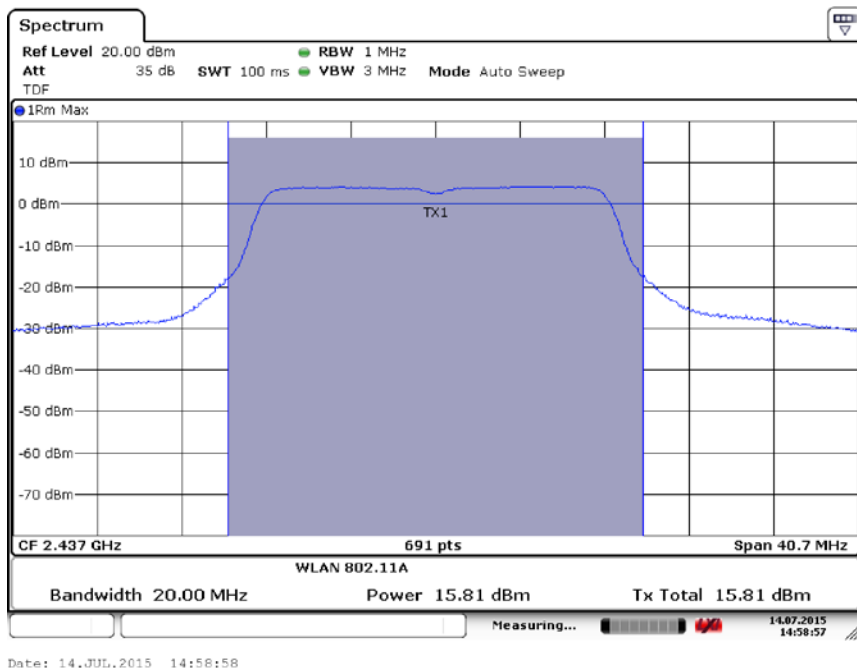
**Fig.17 Maximum Average Output Power (802.11g, Ch 6,9Mbps)**



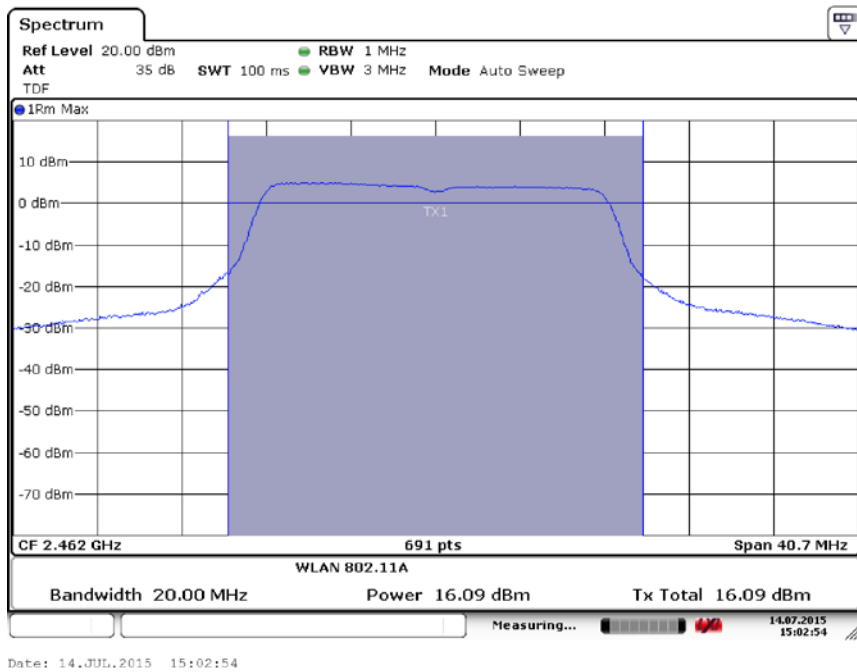
**Fig.18 Maximum Average Output Power (802.11g, Ch 11,9Mbps)**



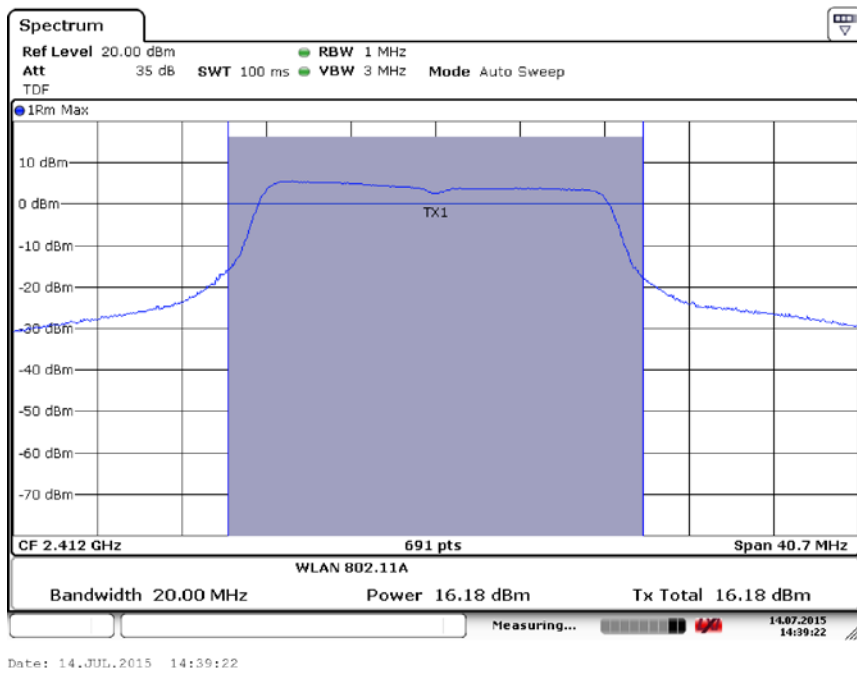
**Fig.19 Maximum Average Output Power (802.11g, Ch 1,12Mbps)**



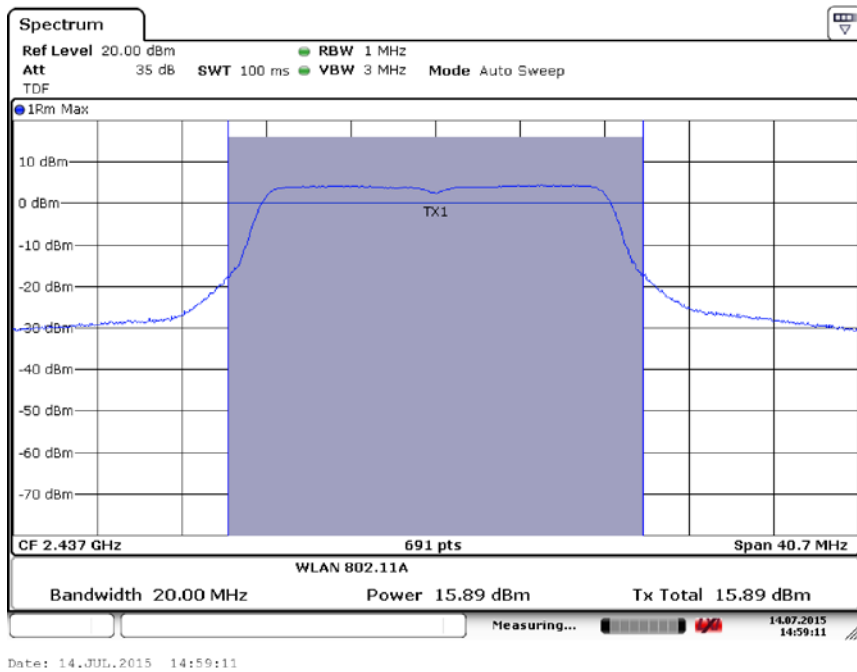
**Fig.20 Maximum Average Output Power (802.11g, Ch 6,12Mbps)**



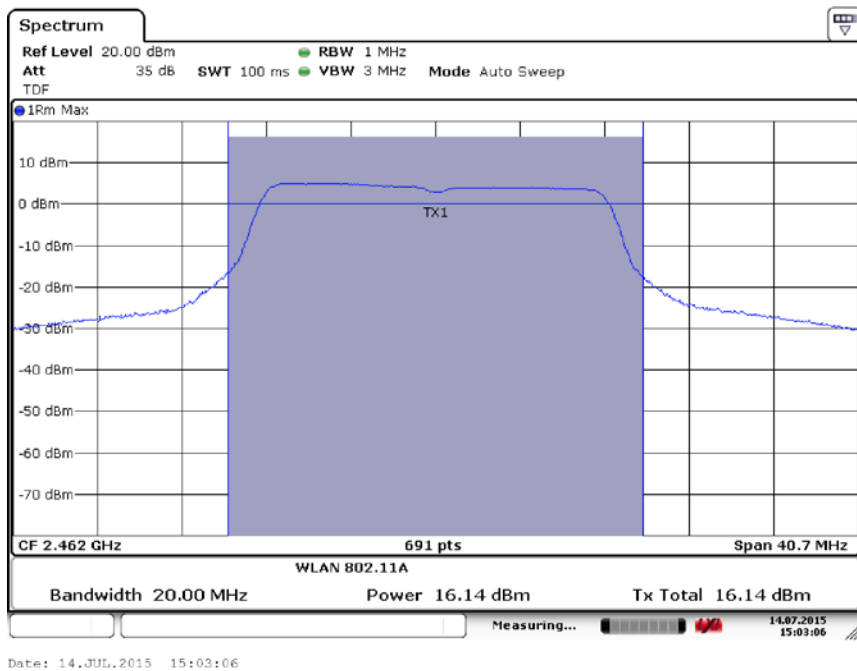
**Fig.21 Maximum Average Output Power (802.11g, Ch 11,12Mbps)**



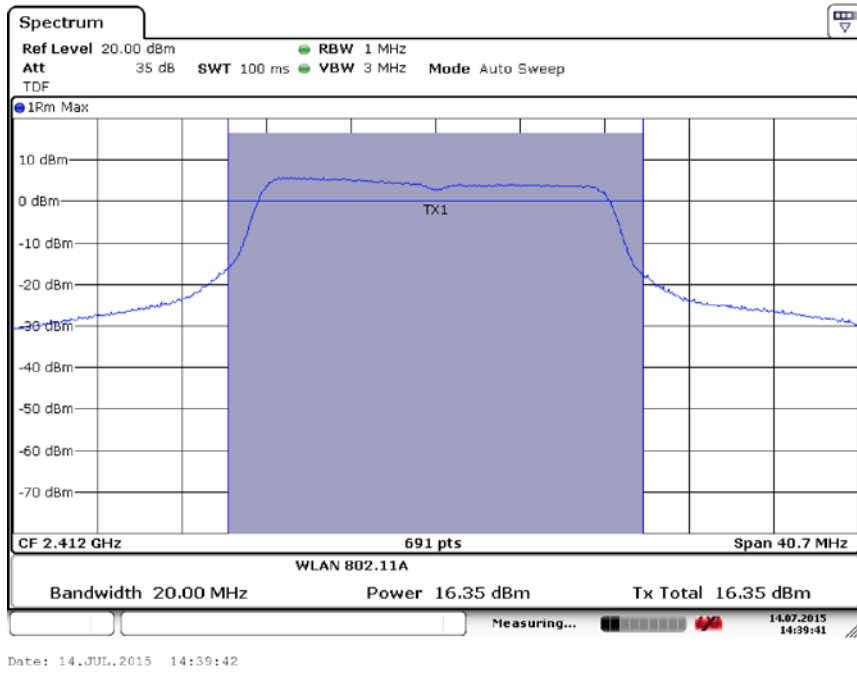
**Fig.22 Maximum Average Output Power (802.11g, Ch 1,18Mbps)**



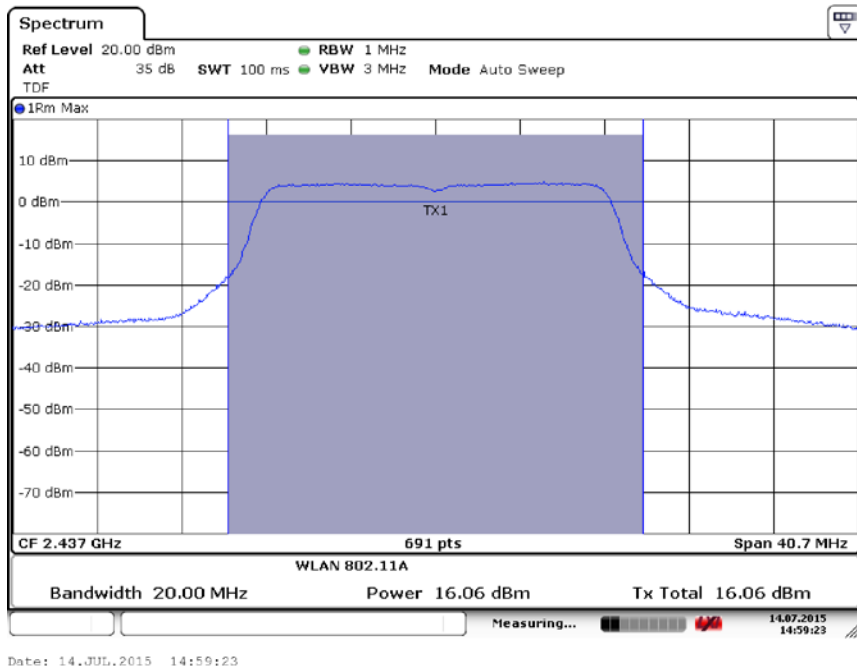
**Fig.23 Maximum Average Output Power (802.11g, Ch 6,18Mbps)**



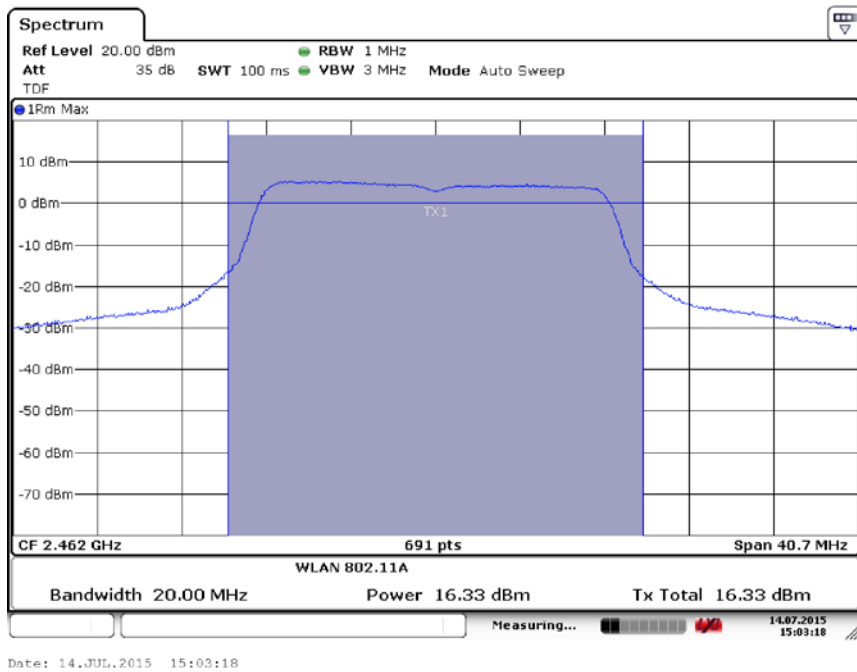
**Fig.24 Maximum Average Output Power (802.11g, Ch 11,18Mbps)**



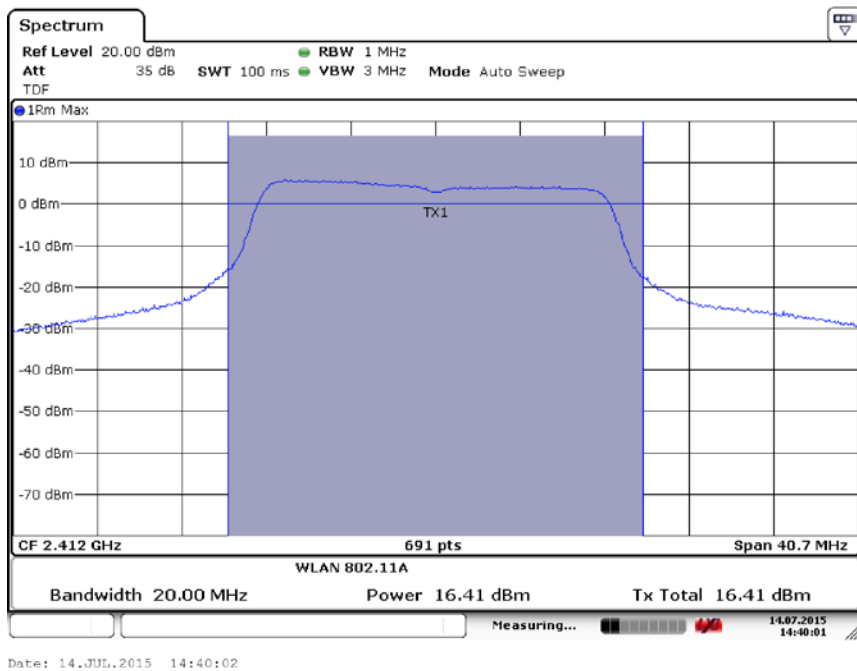
**Fig.25 Maximum Average Output Power (802.11g, Ch 1,24Mbps)**



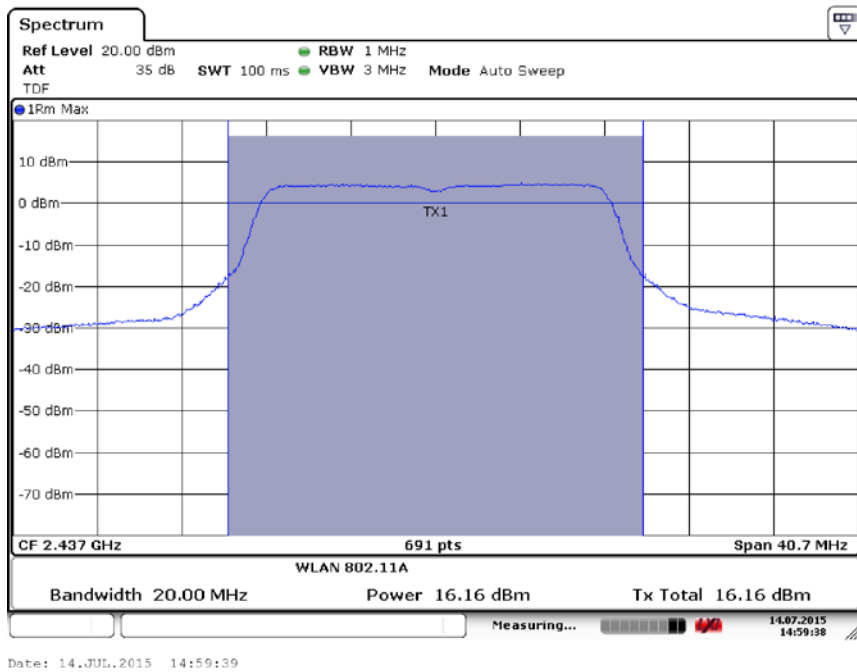
**Fig.26 Maximum Average Output Power (802.11g, Ch 6,24Mbps)**



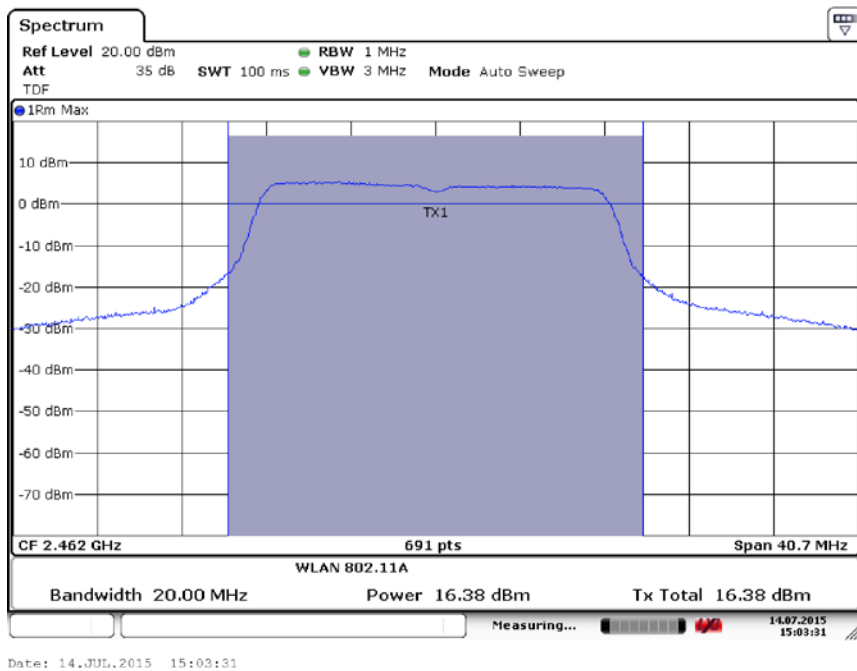
**Fig.27 Maximum Average Output Power (802.11g, Ch 11,24Mbps)**



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

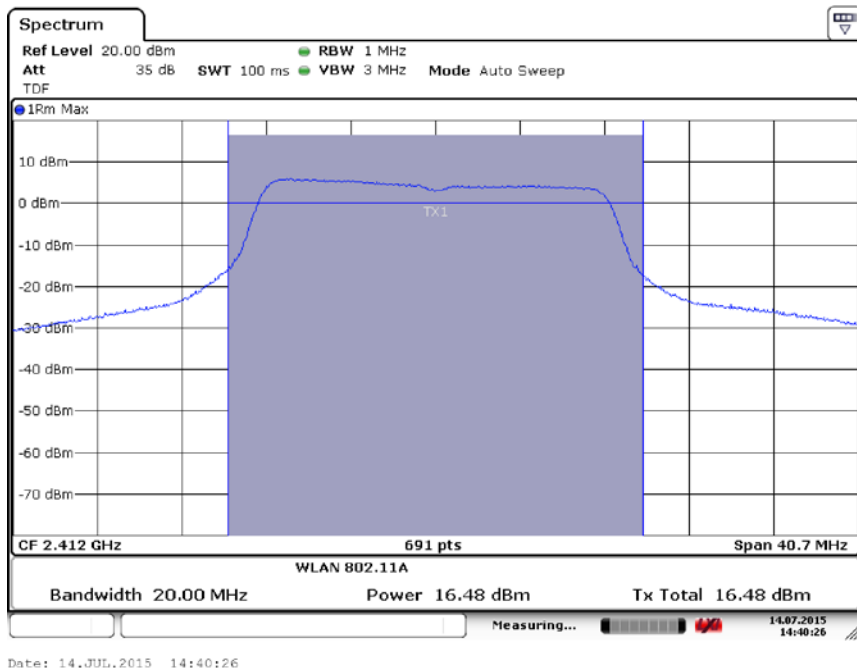


**Fig.29 Maximum Average Output Power (802.11g, Ch 6,36Mbps)**

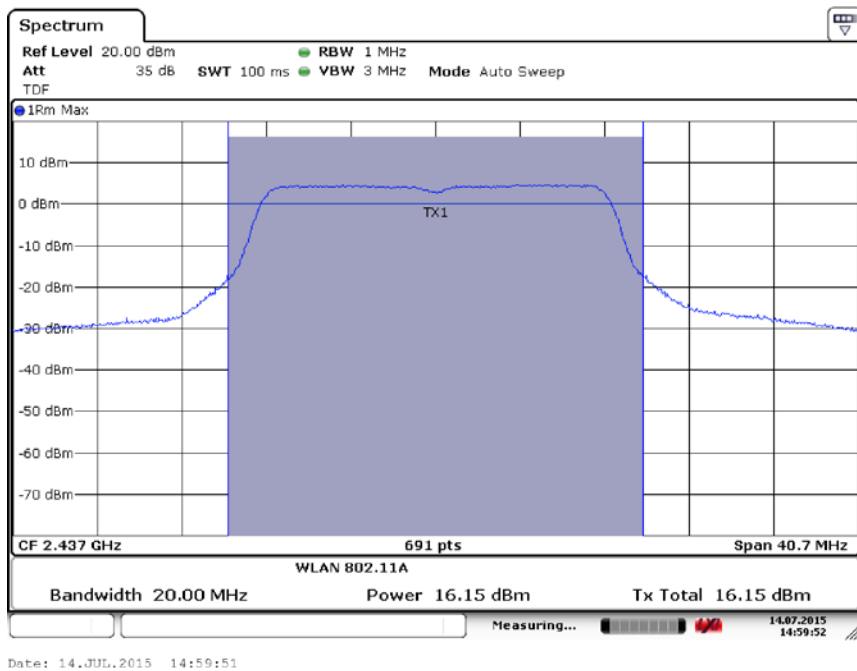


**Fig.30 Maximum Average Output Power (802.11g, Ch 11,36Mbps)**

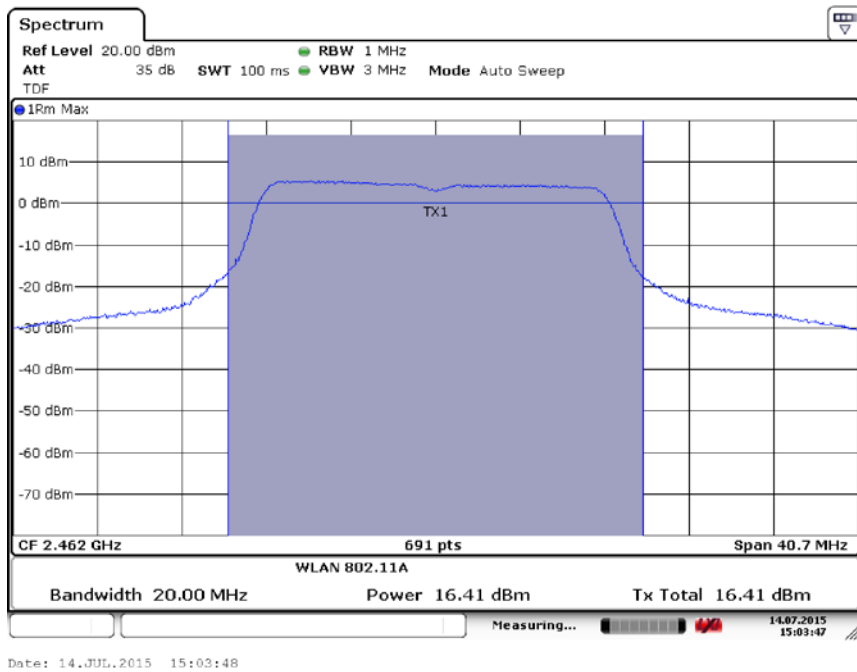




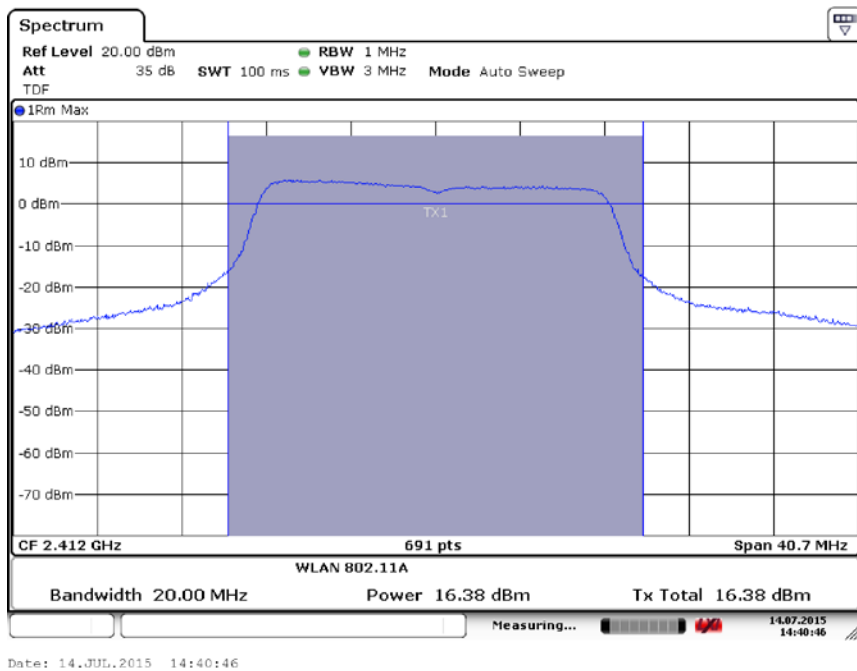
**Fig.31 Maximum Average Output Power (802.11g, Ch 1,48Mbps)**



**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)**