FCC PART 15C
TEST REPORT
No. I14Z45730-SRD01

for

TCT Mobile Limited

HSUPA/HSDPA/UMTS Tri-band/GSM Quad band mobile phone

Model Name: 5138E

With

FCC ID: RAD490

Hardware Version: Proto

Software Version: 6B13

Issued Date: 2014-06-06

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

FCC 2.948 Listed: No.733176

IC O.A.T.S listed: No.6629A-1

Test Laboratory:

TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology

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

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CONTENTS

1. TEST LABORATORY

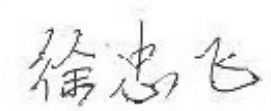
1.1. Testing Location

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

1.2. Project Data

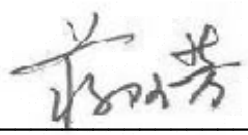
Testing Start Date:	2014-04-18
Testing End Date:	2014-04-24

1.3. Signature



Xu Zhongfei

(Prepared this test report)



Jiang Afang

(Reviewed this test report)

Xiao Li

Deputy Director of the laboratory

(Approved this test report)

2. CLIENT INFORMATION

2.1. Applicant Information

Company Name:	TCT Mobile Limited
Address /Post:	5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203
Contact	Gong Zhizhou
Email	zhizhou.gong@jrdcom.com
Telephone:	0086-21-61460890
Fax:	0086-21-61460602

2.2. Manufacturer Information

Company Name:	TCT Mobile Limited
Address /Post:	5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203
Contact	Gong Zhizhou
Email	zhizhou.gong@jrdcom.com
Telephone:	0086-21-61460890
Fax:	0086-21-61460602

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

3.1. About EUT

Description	HSUPA/HSDPA/UMTS Tri-band/GSM Quad band mobile phone
Model name	5138E
FCC ID	RAD490
IC ID	/
With WLAN Function	Yes
Frequency Range	ISM 2400MHz~2483.5MHz
Type of Modulation	DSSS/CCK/OFDM
Number of Channels	13
Antenna	Integral Antenna
MAX Conducted Power	24.16dBm(OFDM)
GPRS Class	Class 12
GPRS operation mode	Class B
Power Supply	3.8V DC by Battery

3.2. Internal Identification of EUT Used During the Test

EUT ID*	IMEI	HW Version	SW Version
EUT1	/	Proto	6B13
EUT2	/	Proto	6B13

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

3.3. Internal Identification of AE Used During the Test

AE ID*	Description	Type	SN
AE1	Battery	TLi018D1	/
AE2	Charger	CBA3007AG0C1	/

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

3.4. General Description

Equipment Under Test (EUT) is a model of HSUPA/HSDPA/UMTS Tri-band/GSM Quad band mobile phone with integrated antenna. It consists of normal options: Battery and Charger.
Manual and specifications of the EUT were provided to fulfil the test.
Samples undergoing test were selected by the Client.

4. Reference Documents

4.1. Documents supplied by applicant

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

4.2. REFERENCE DOCUMENTS FOR TESTING

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part15	FCC CFR 47, Part 15, Subpart C: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902-928MHz, 2400-2483.5 MHz, and 5725-5850 MHz.	Oct, 2012
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2003
KDB558074 v03r01	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247	2013

5. LABORATORY ENVIRONMENT

Conducted RF performance testing is performed in shielding room.

EMC performance testing is performed in Semi-anechoic chamber.

6. SUMMARY OF TEST RESULTS

6.1. Summary of Test Results

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

Please refer to **ANNEX A** for detail.

Terms used in Verdict column

P	Pass, The EUT complies with the essential requirements in the standard.
NP	Not Perform, The test was not performed by TMC
NA	Not Applicable, The test was not applicable
F	Fail, The EUT does not comply with the essential requirements in the standard

6.2. Statements

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

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

This model is a variant product which market name is 5038E; all the test result has been derived from test report of 5038E.

6.3. Test Conditions

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

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

7. TEST EQUIPMENTS UTILIZED

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Calibration Due date
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	2013-07-08	2014-07-07
2	Test Receiver	ESS	847151/015	Rohde & Schwarz	2013-11-29	2014-11-28
3	LISN	ESH2-Z5	829991/012	Rohde & Schwarz	2013-4-15	2015-4-14
4	Shielding Room	S81	/	ETS-Lindgren	/	/

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Calibration Due date
1	Test Receiver	ESU26	100376	Rohde & Schwarz	2013-11-6	2014-11-5
2	BiLog Antenna	VULB9163	9163-514	Schwarzbeck	2011-11-11	2014-11-10
3	Dual-Ridge Waveguide Horn Antenna	3117	00119024	ETS-Lindgren	2011-4-20	2015-4-19
4	Dual-Ridge Waveguide Horn Antenna	3116	2661	EMCO	2011-7-1	2014-06-30
5	Loop antenna	HFH2-Z2	829324/007	Rohde & Schwarz	2011-12-21	2014-12-20
6	Semi-anechoic chamber	/	CT000332-1074	Frankonia German	/	/

ANNEX A: MEASUREMENT RESULTS

A.1. Measurement Method

A.1.1. Conducted Measurements

Connect the EUT to the test system as Fig.A.1.1.1 shows.
Set the EUT to the required work mode.
Set the EUT to the required channel.
Set the Vector Signal Analyzer and start measurement.
Record the values. Vector Signal Analyzer

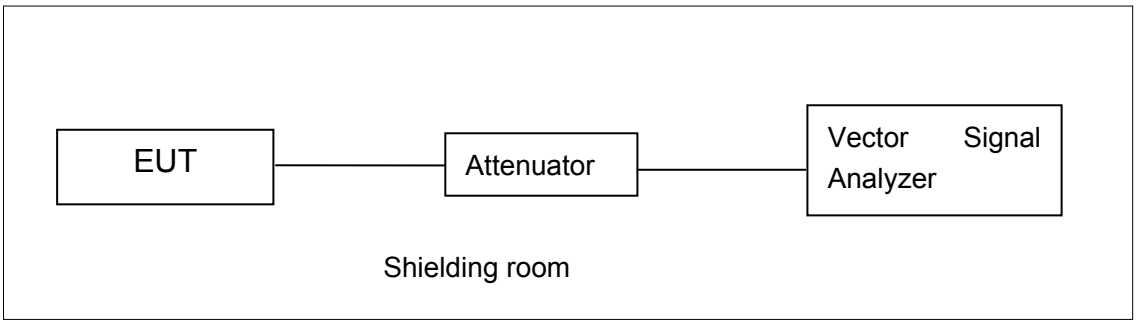


Fig.A.1.1.1: Test Setup Diagram for Conducted Measurements

A.1.2. Radiated Emission Measurements

In the case of radiated emission, the used settings are as follows,
Sweep frequency from 30 MHz to 1GHz, RBW = 100 kHz, VBW = 300 kHz;
Sweep frequency from 1 GHz to 26GHz, RBW = 1MHz, VBW = 10Hz;

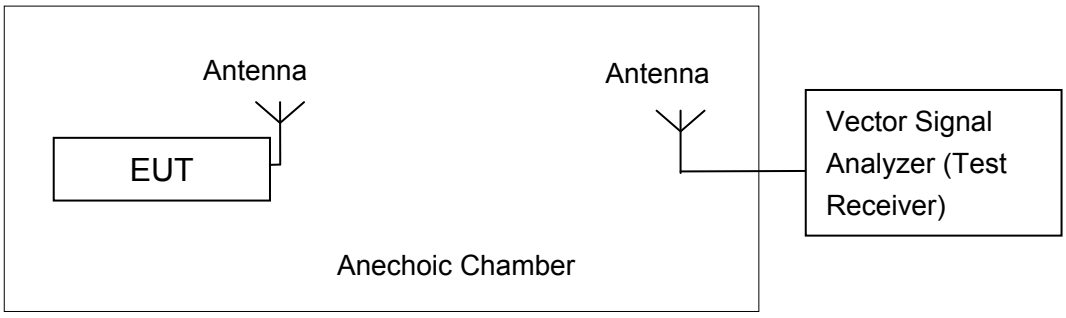


Fig.A.1.2.1: Test Setup Diagram for Radiated Measurements

A.2. Maximum Output Power

Measurement Limit and Method:

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

Note: The Duty cycle of EUT is 98.1%, so all measurements of maximum conducted output power will be performed with the EUT transmitting continuously.

A.2.1. Maximum Peak Output Power-conducted

Method of Measurement: See KDB558074 section 9.1.2.

Measurement Results:

802.11b/g mode

Mode	Data Rate (Mbps)	Test Result (dBm)				
		2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)	2467 MHz (Ch12)	2472 MHz (Ch13)
802.11b	1	20.11	/	/	/	/
	2	20.25	/	/	/	/
	5.5	21.81	/	/	/	/
	11	23.21	23.63	24.03	14.46	14.38
802.11g	6	23.21	/	/	/	/
	9	23.25	/	/	/	/
	12	23.12	/	/	/	/
	18	22.98	/	/	/	/
	24	23.40	/	/	/	/
	36	23.38	/	/	/	/
	48	23.43	/	/	/	/
	54	23.45	23.68	24.16	16.02	15.92

The data rate 11Mbps and 54Mbps are selected as worse condition, and the following cases are performed with this condition.

802.11n-HT20 mode

Mode	Data Rate (Index)	Test Result (dBm)				
		2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)	2467 MHz (Ch12)	2472 MHz (Ch13)
802.11n (20MHz)	MCS0	21.24	/	/	/	/
	MCS1	21.04	/	/	/	/
	MCS2	21.13	/	/	/	/
	MCS3	21.49	21.91	22.34	13.46	13.57
	MCS4	21.31	/	/	/	/
	MCS5	21.38	/	/	/	/
	MCS6	21.35	/	/	/	/
	MCS7	21.22	/	/	/	/

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

802.11n-HT40 mode

Mode	Data Rate (Index)	Test Result (dBm)				
		2422MHz (Ch3)	2437MHz (Ch6)	2452 MHz (Ch9)	2457 MHz (Ch10)	2462 MHz (Ch11)
802.11n (40MHz)	MCS0	19.11	/	/	/	/
	MCS1	18.95	/	/	/	/
	MCS2	18.97	/	/	/	/
	MCS3	19.37	19.48	19.91	17.82	17.97
	MCS4	19.34	/	/	/	/
	MCS5	19.18	/	/	/	/
	MCS6	19.04	/	/	/	/
	MCS7	19.07	/	/	/	/

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

Conclusion: Pass

A.2.2. Maximum Average Output Power-conducted

Method of Measurement: See KDB558074 section 9.2.1.2.

802.11b/g mode

Mode	Test Result (dBm)				
	2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)	2467 MHz (Ch12)	2472 MHz (Ch13)
802.11b	16.67	16.89	17.25	9.17	9.07
802.11g	14.54	14.76	15.05	6.94	7.06

802.11n-HT20 mode

Mode	Test Result (dBm)				
	2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)	2467 MHz (Ch12)	2472 MHz (Ch13)
802.11n (20MHz)	12.44	12.94	13.46	4.57	4.66

802.11n-HT40 mode

Mode	Test Result (dBm)				
	2422MHz (Ch3)	2437MHz (Ch6)	2452 MHz (Ch9)	2457 MHz (Ch10)	2462 MHz (Ch11)
802.11n (40MHz)	10.43	10.49	10.66	8.61	8.48

Conclusion: Pass

Measurement Uncertainty:

Measurement Uncertainty	0.75dB

A.3. Peak Power Spectral Density

Method of Measurement: See KDB558074 section 10.2.

Measurement Limit:

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

Modulation type and data rate tested:

802.11b	802.11g	802.11n-HT20	802.11n-HT40
11Mbps(CCK)	54Mbps(OFDM)	MCS3(OFDM)	MCS3(OFDM)

Measurement Results:

802.11b/g mode

Mode	Channel	Power Spectral Density (dBm/3 kHz)		Conclusion
802.11b	1	Fig.A.3.1	-6.25	P
	6	Fig.A.3.2	-6.90	P
	11	Fig.A.3.3	-5.70	P
	12	Fig.A.3.4	-14.34	P
	13	Fig.A.3.5	-15.30	P
802.11g	1	Fig.A.3.6	-11.86	P
	6	Fig.A.3.7	-10.02	P
	11	Fig.A.3.8	-10.04	P
	12	Fig.A.3.9	-18.09	P
	13	Fig.A.3.10	-17.42	P

802.11n-HT20 mode

Mode	Channel	Power Spectral Density (dBm/3 kHz)		Conclusion
802.11n (HT20)	1	Fig.A.3.11	-10.85	P
	6	Fig.A.3.12	-11.11	P
	11	Fig.A.3.13	-10.79	P
	12	Fig.A.3.14	-20.35	P
	13	Fig.A.3.15	-18.62	P

802.11n-HT40 mode

Mode	Channel	Power Spectral Density (dBm/3 kHz)		Conclusion
802.11n (HT40)	3	Fig.A.3.16	-17.42	**P**
	6	Fig.A.3.17	-17.55	**P**
	9	Fig.A.3.18	-17.10	**P**
	10	Fig.A.3.19	-16.81	**P**
	11	Fig.A.3.20	-16.98	**P**

Conclusion: Pass

Measurement Uncertainty:

Measurement Uncertainty	0.75dB

Test graphs as below:

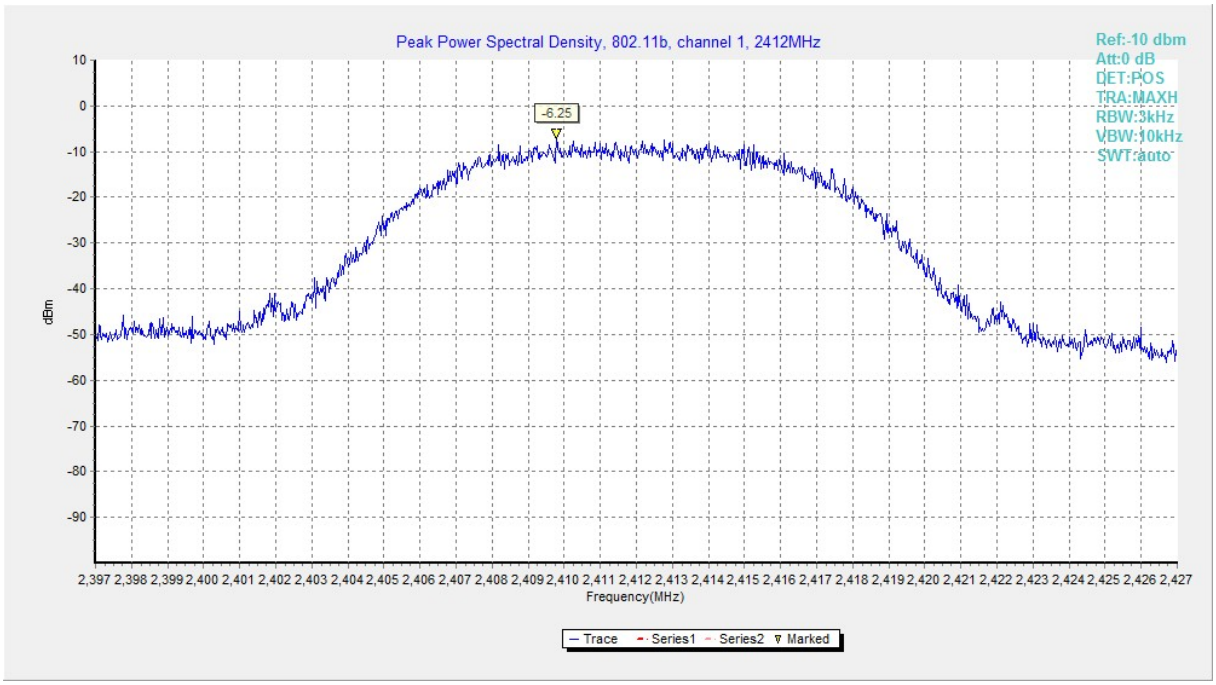


Fig.A.3.1 Power Spectral Density (802.11b, Ch 1)

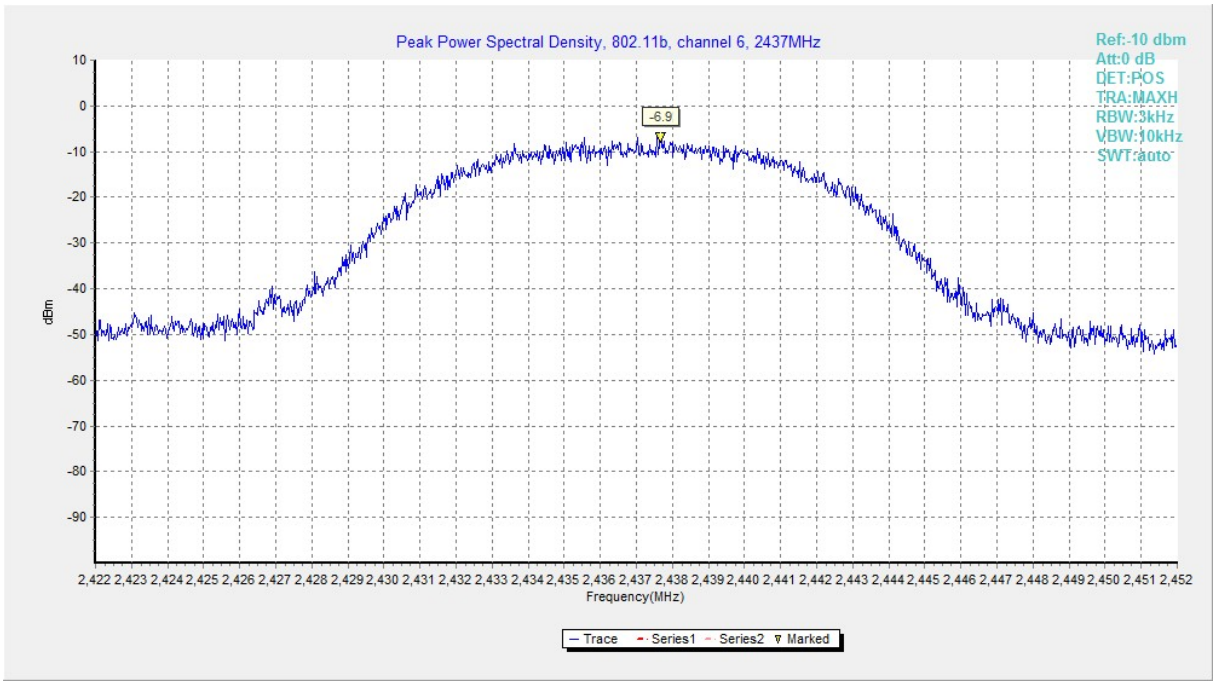


Fig.A.3.2 Power Spectral Density (802.11b, Ch 6)

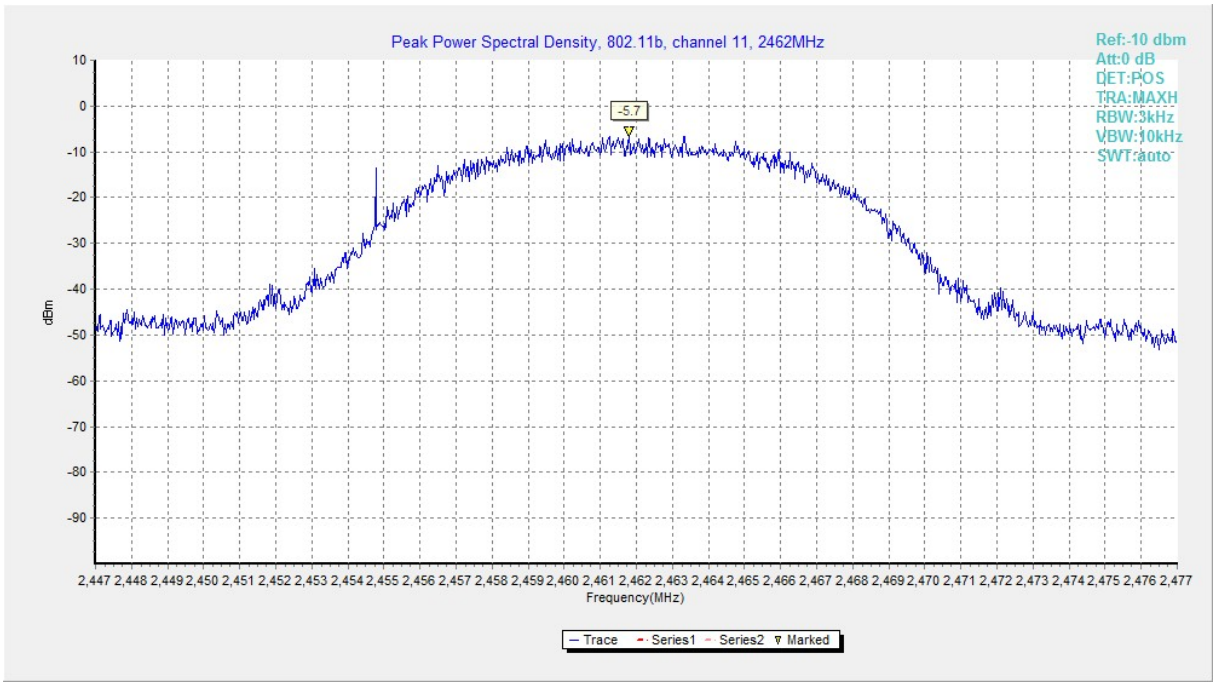


Fig.A.3.3 Power Spectral Density (802.11b, Ch 11)

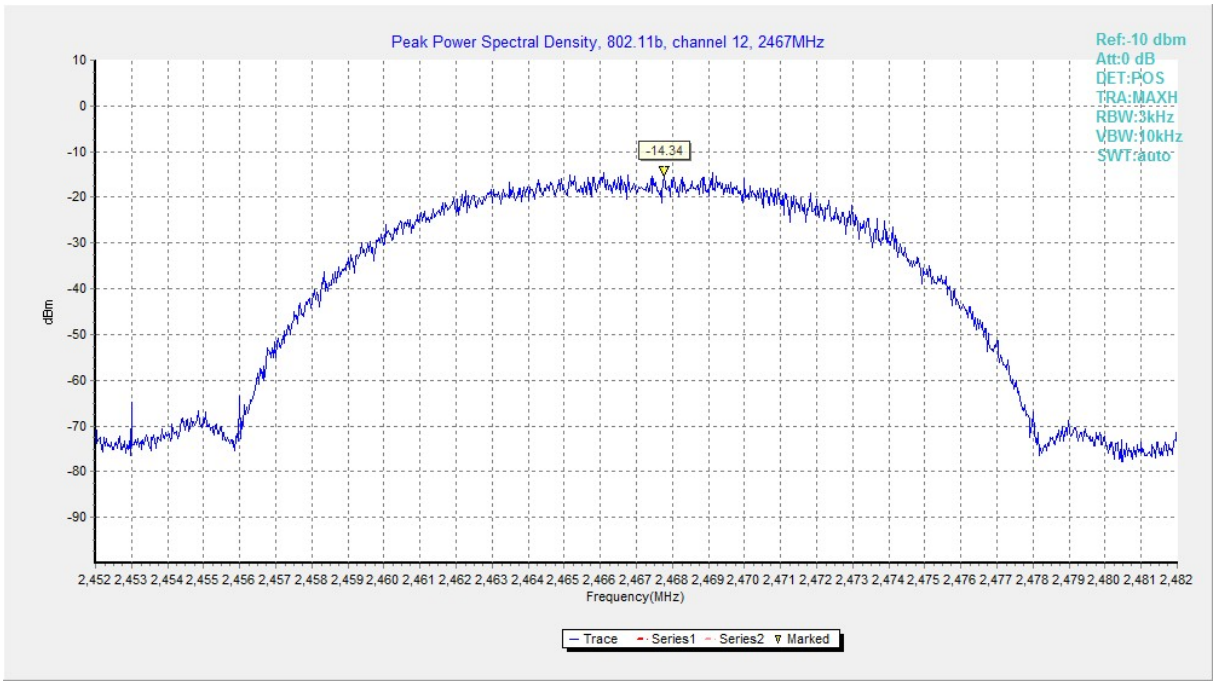


Fig.A.3.4 Power Spectral Density (802.11b, Ch 12)

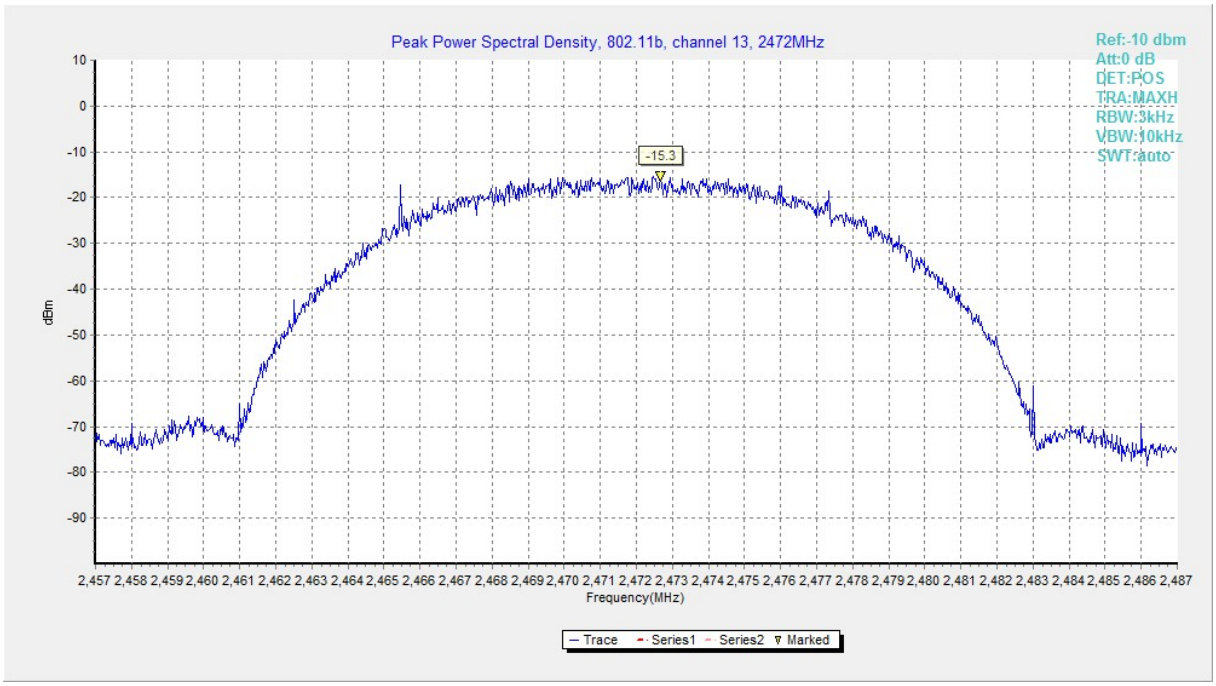


Fig.A.3.5 Power Spectral Density (802.11b, Ch 13)

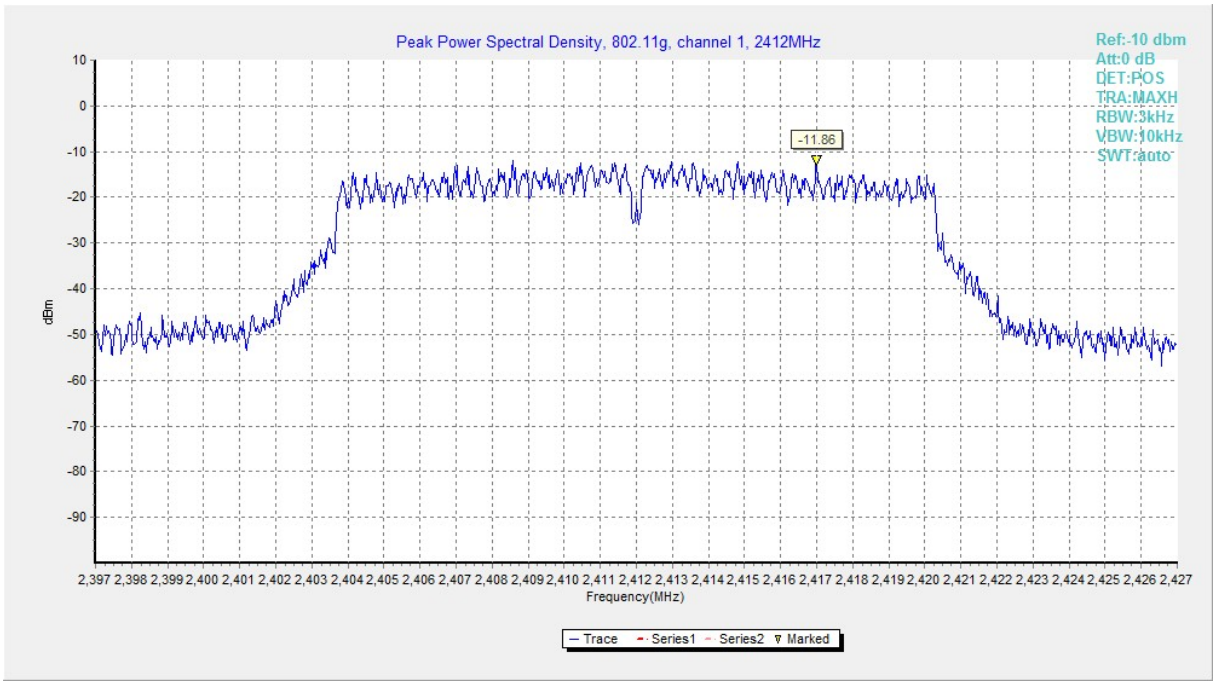


Fig.A.3.6 Power Spectral Density (802.11g, Ch 1)

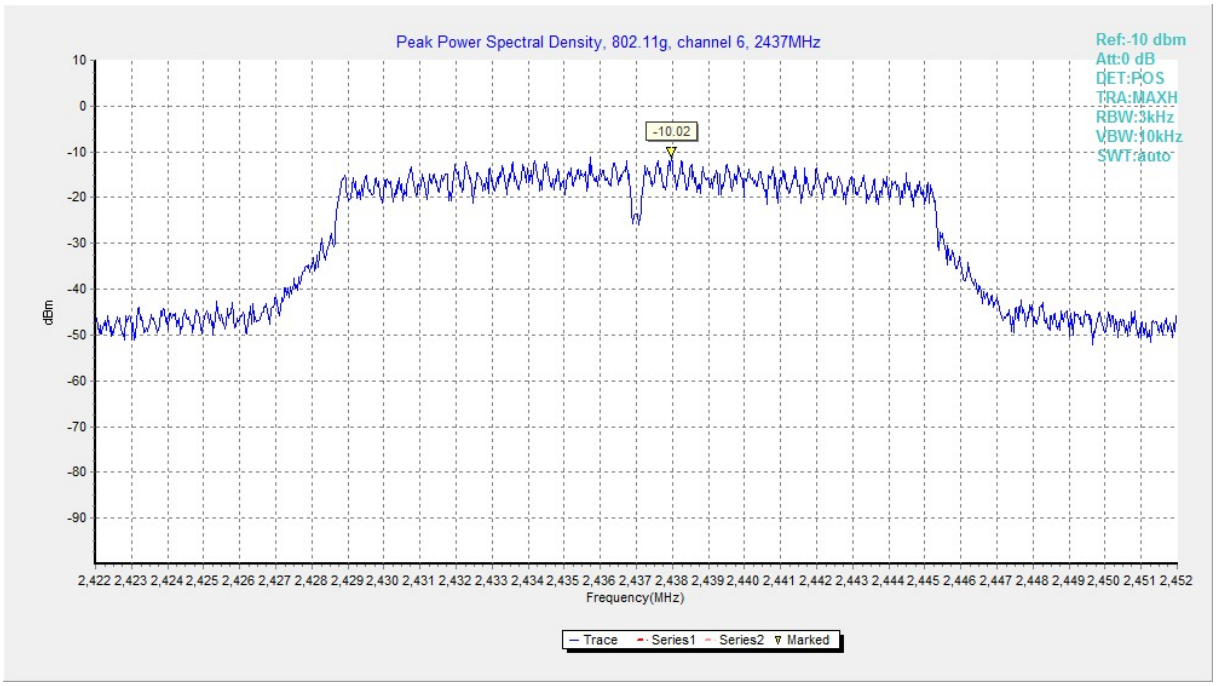


Fig.A.3.7 Power Spectral Density (802.11g, Ch 6)

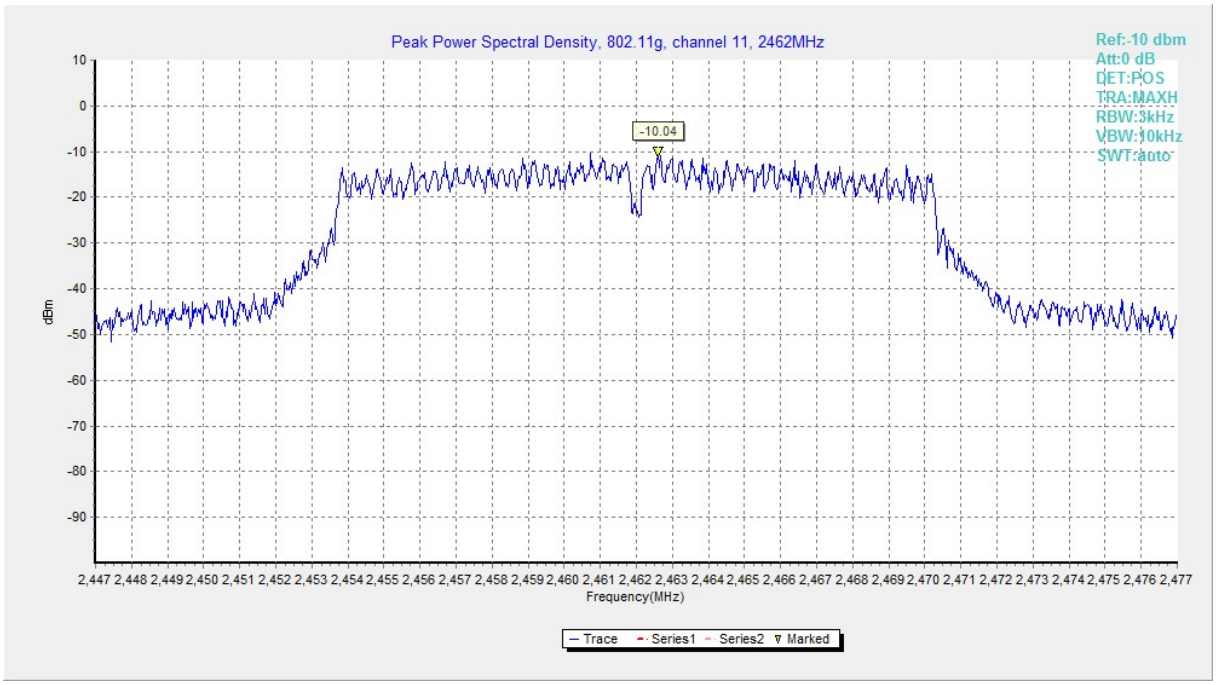


Fig.A.3.8 Power Spectral Density (802.11g, Ch 11)

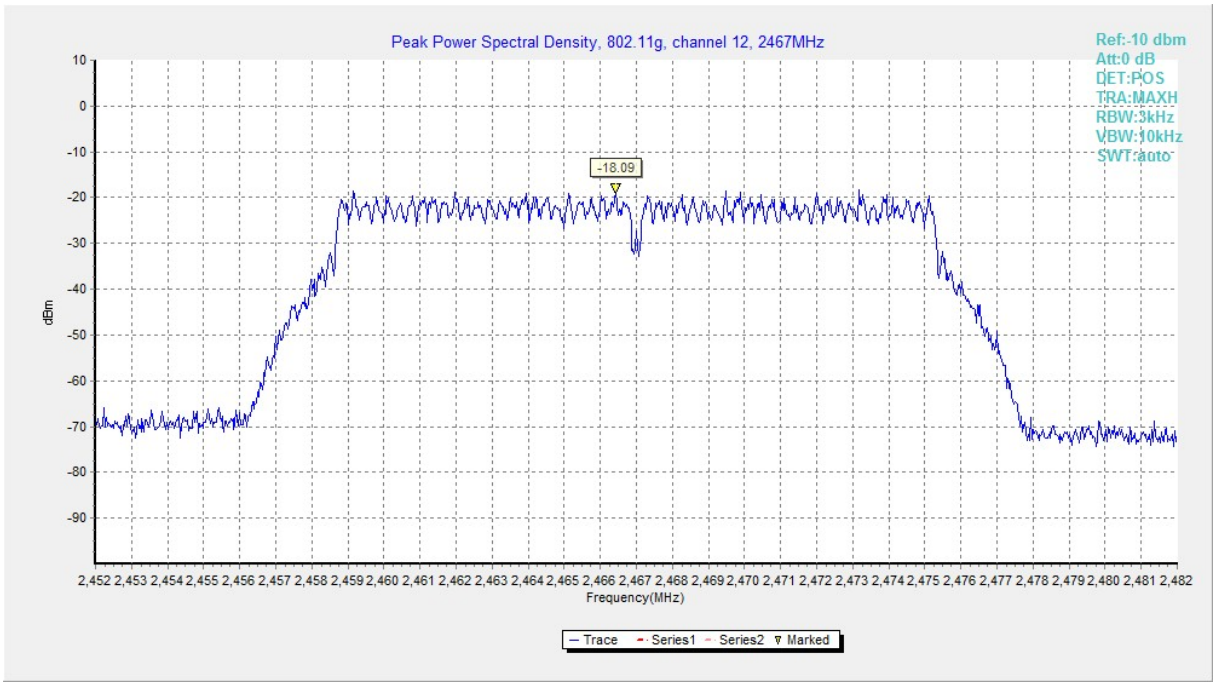


Fig.A.3.9 Power Spectral Density (802.11g, Ch 12)

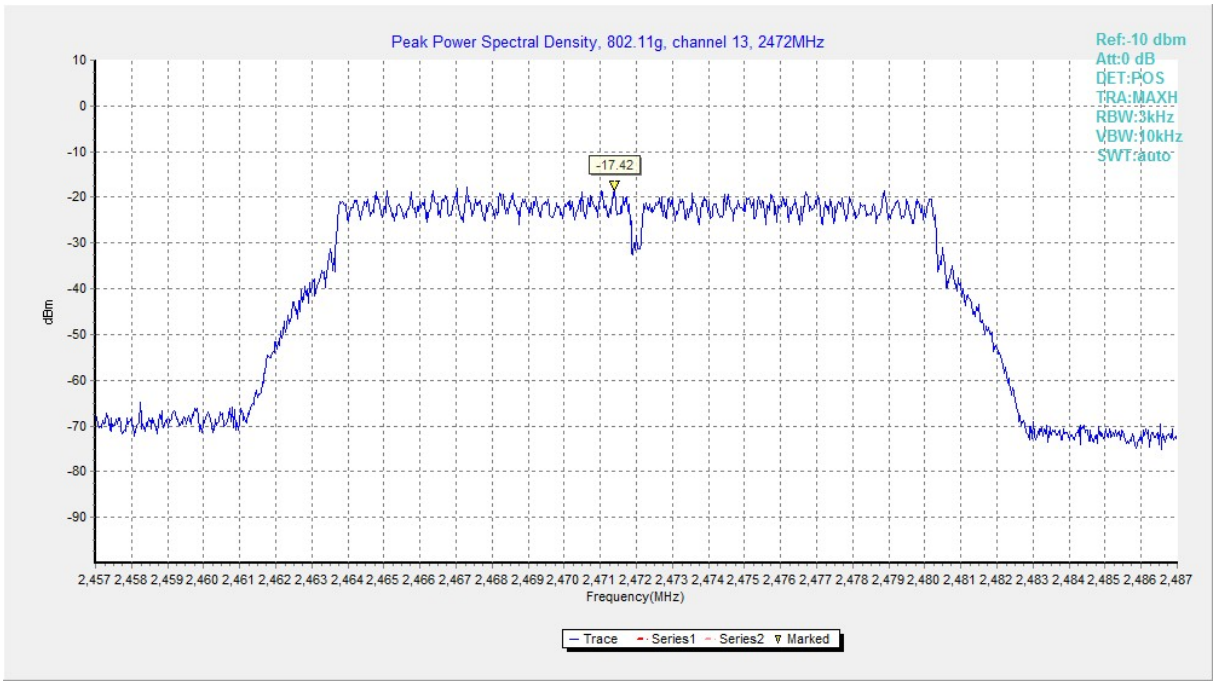


Fig.A.3.10 Power Spectral Density (802.11g, Ch 13)

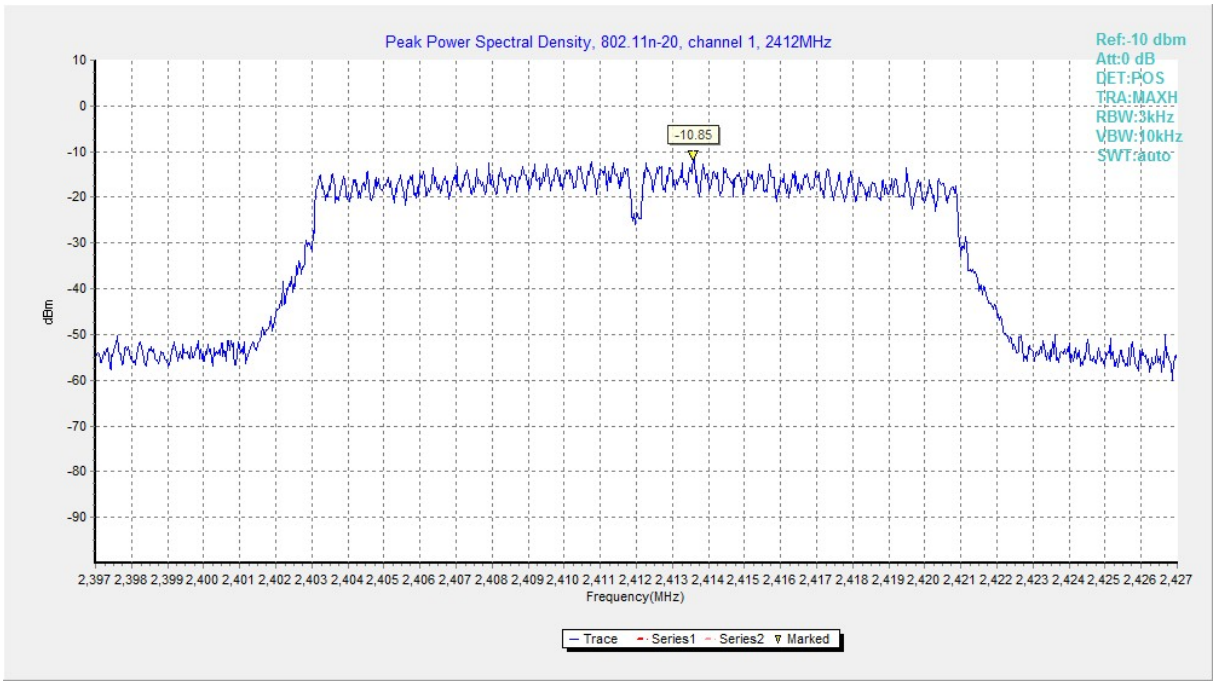


Fig.A.3.11 Power Spectral Density (802.11n-HT20, Ch 1)

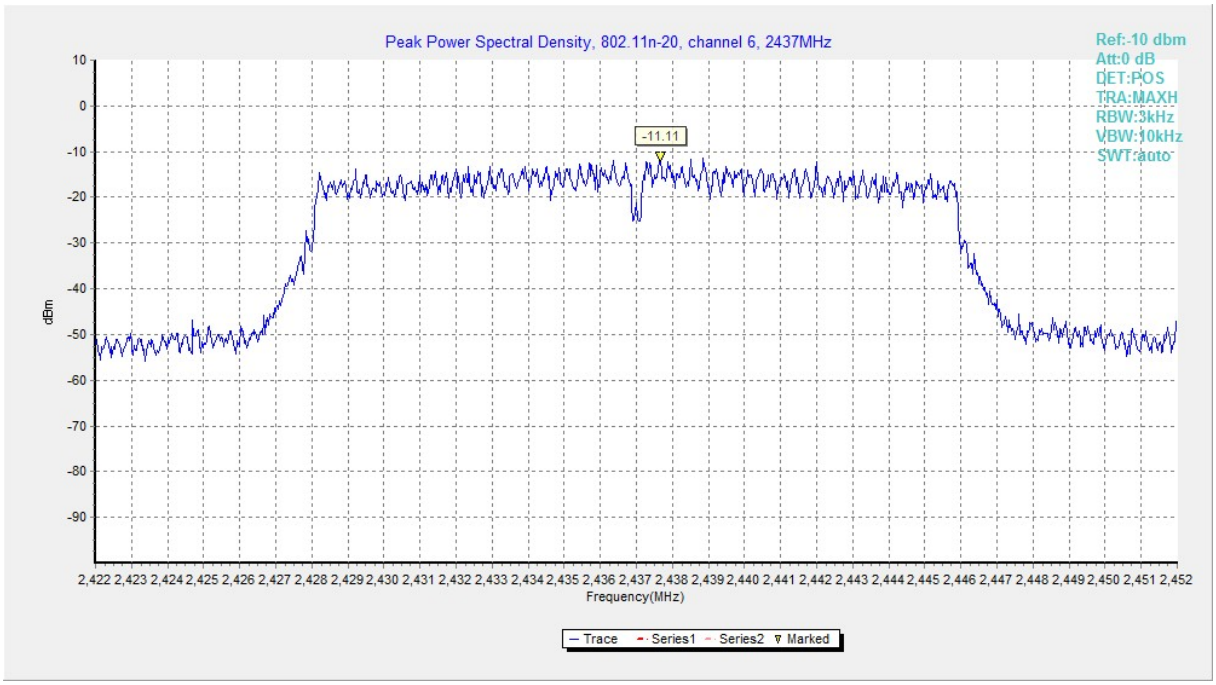


Fig.A.3.12 Power Spectral Density (802.11n-HT20, Ch 6)

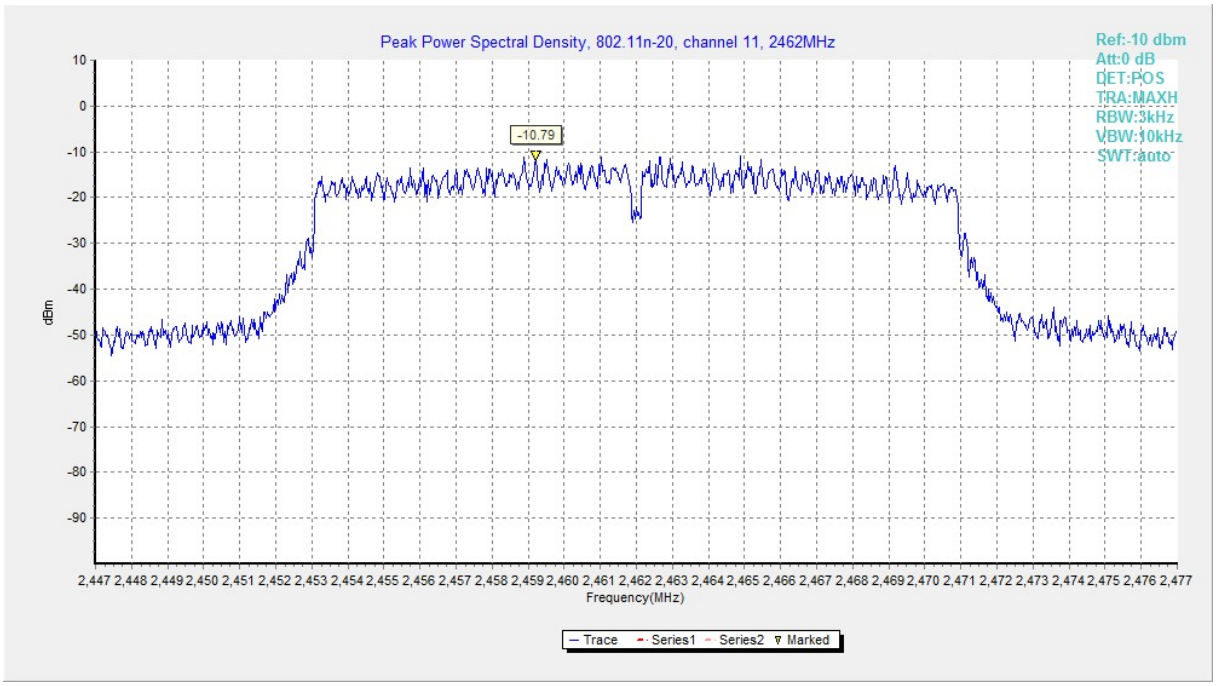


Fig.A.3.13 Power Spectral Density (802.11n-HT20, Ch 11)

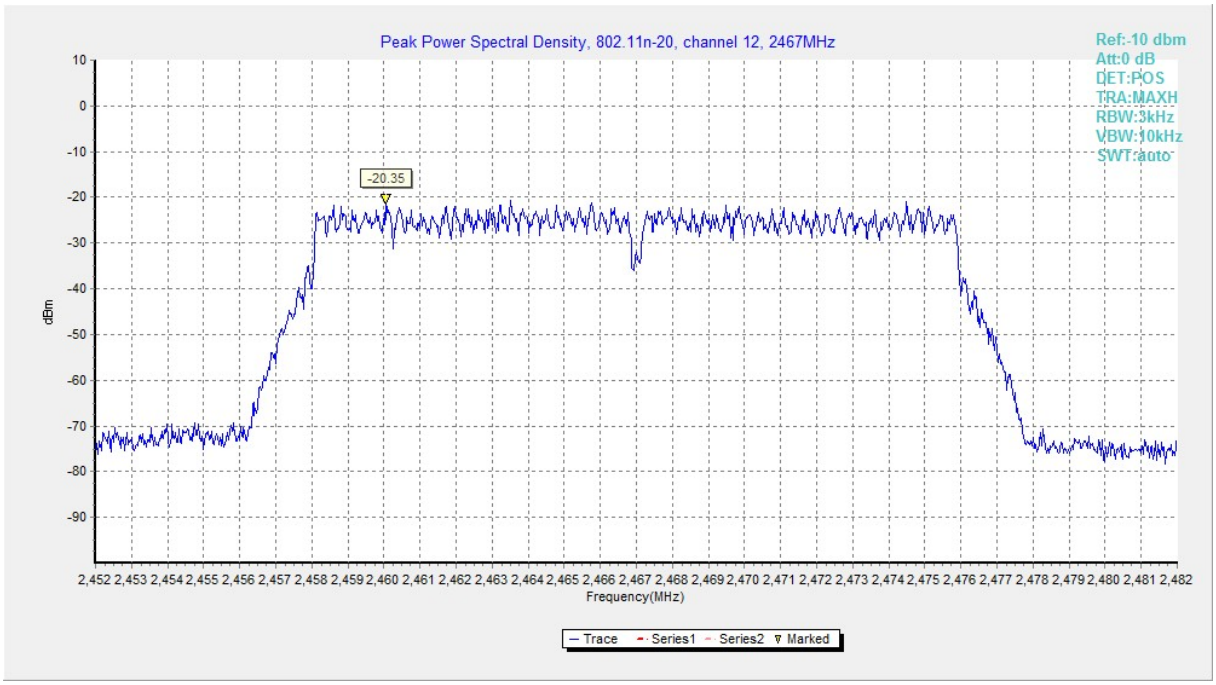


Fig.A.3.14 Power Spectral Density (802.11 n-HT20, Ch 12)

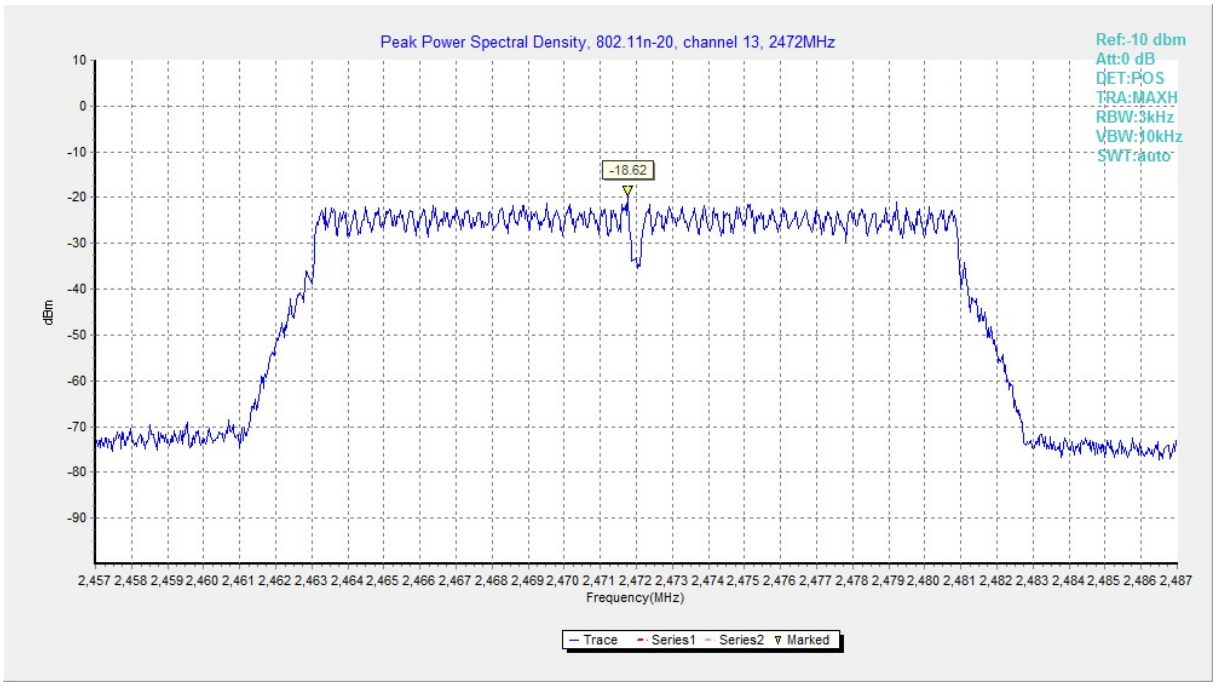


Fig.A.3.15 Power Spectral Density (802.11 n-HT20, Ch 13)

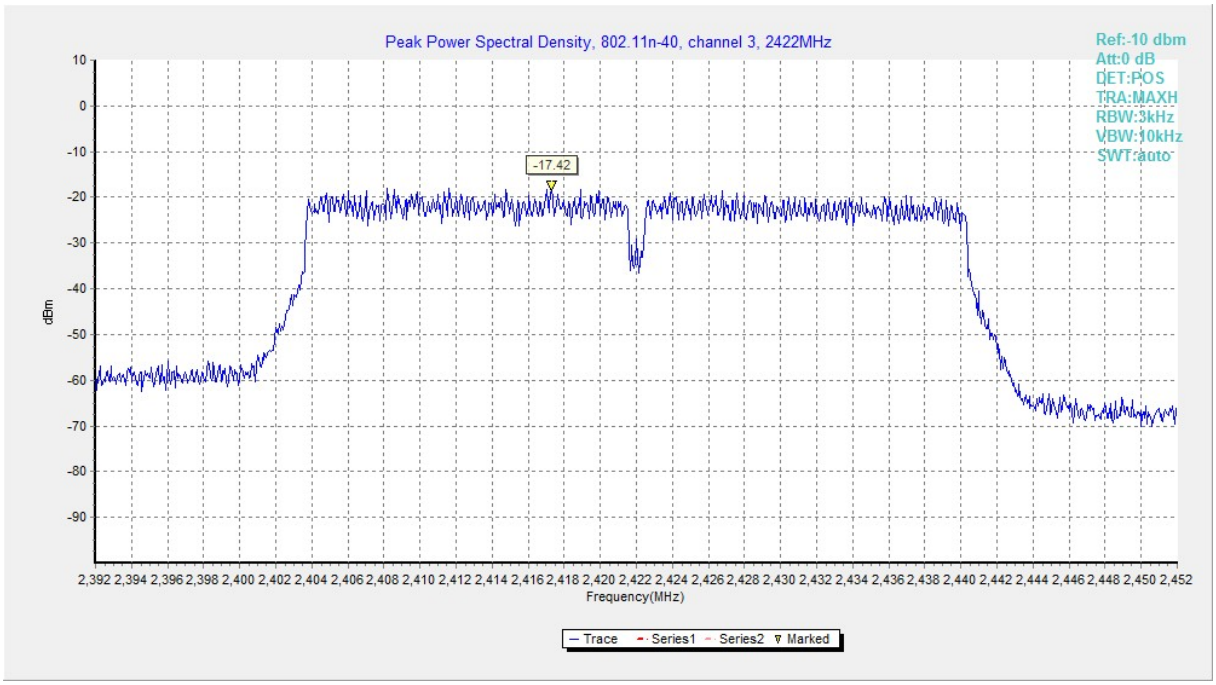


Fig.A.3.16 Power Spectral Density (802.11n-HT40, Ch 3)

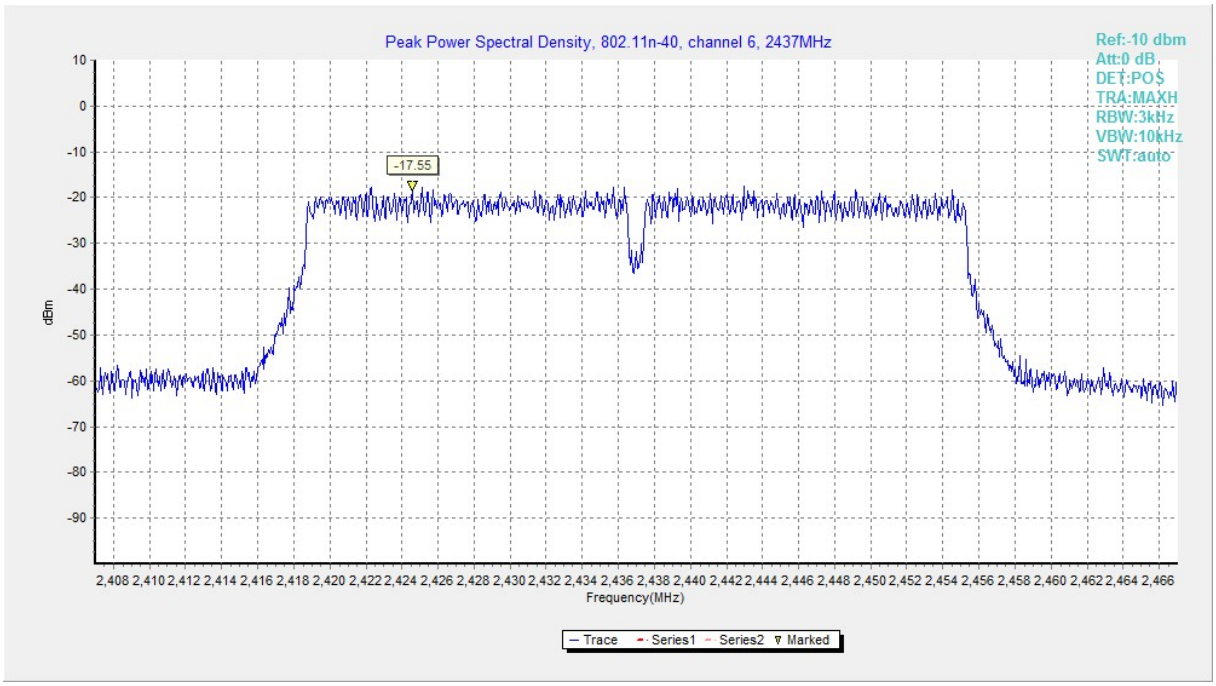


Fig.A.3.17 Power Spectral Density (802.11n-HT40, Ch 6)

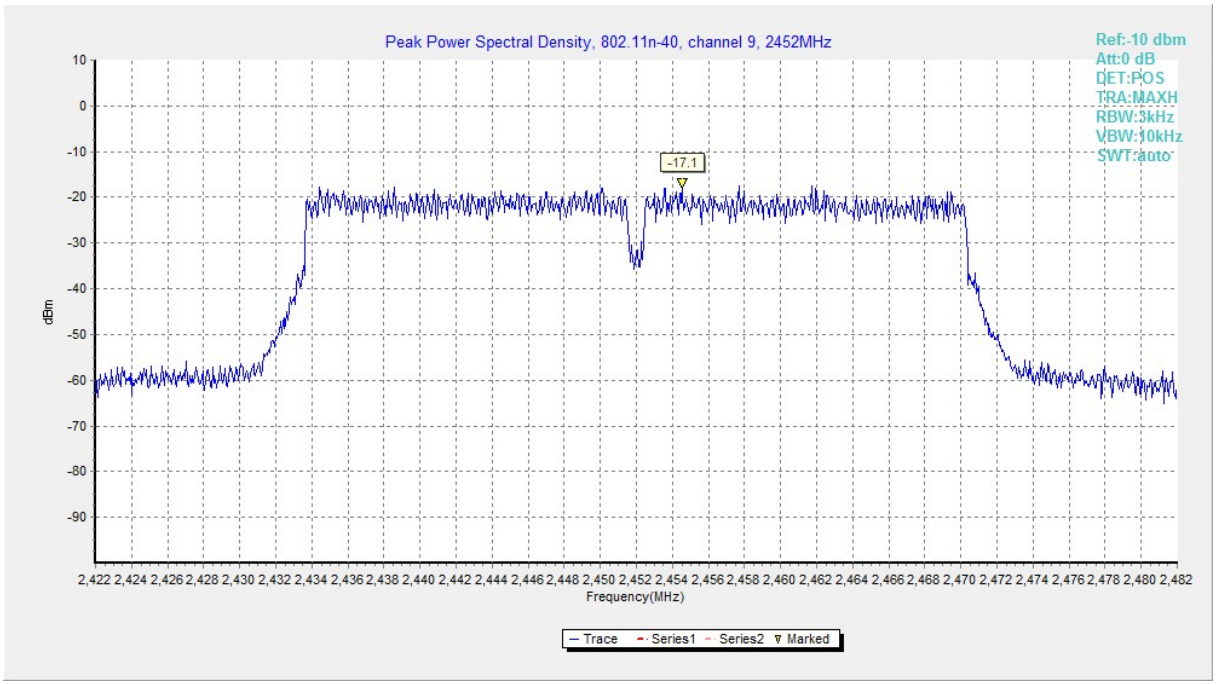


Fig.A.3.18 Power Spectral Density (802.11n-HT40, Ch 9)

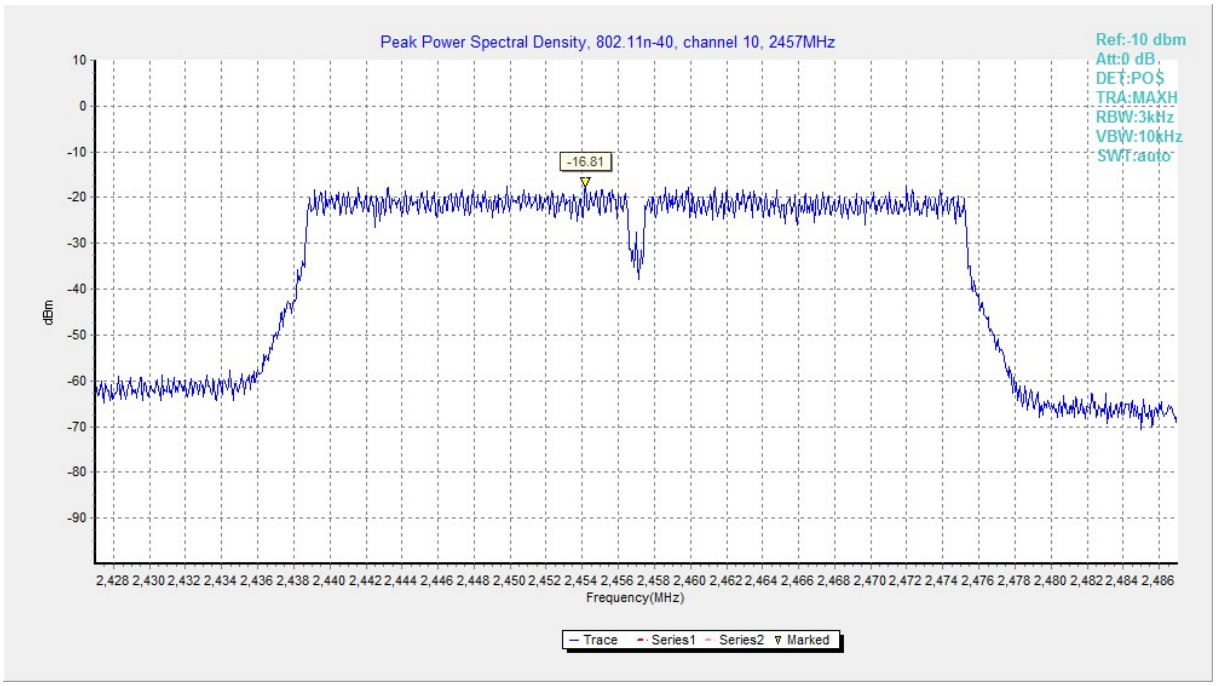


Fig.A.3.19 Power Spectral Density (802.11 n-HT40, Ch 10)

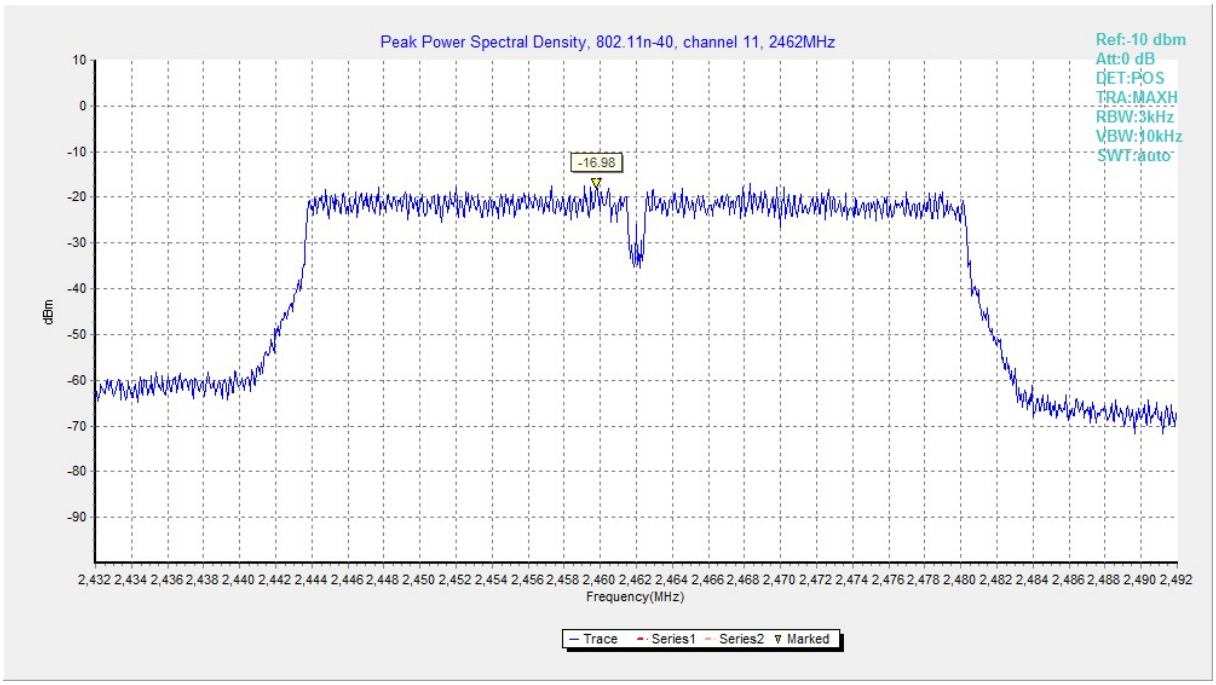


Fig.A.3.20 Power Spectral Density (802.11 n-HT40, Ch 11)