FCC PART 15C
TESTREPORT
No. I18Z60588-IOT01

for

TCL Communication Ltd.

Tablet PC

8067/8068

with

FCC ID: 2ACCJBT12

Hardware Version: V1.2

Software Version: E1H

Issued Date: 2018-05-10

TESTING
NVLAP LAB CODE 600118-0

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.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S.Government..

Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

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

Tel:+86(0)10-62304633-2512, Fax:+86(0)10-62304633-2504

Email: cttl_terminals@caict.ac.cn, website: www.caict.ac.cn

REPORT HISTORY

Report Number	Revision	Description	Issue Date
I18Z60588-IOT01	Rev.0	1st edition	2018-04-28
I18Z60588-IOT01	Rev.1	Add the description of modification	2018-05-10

CONTENTS

1. TEST LABORATORY 5
1.1. TESTING LOCATION 5
1.2. TESTING ENVIRONMENT 5
1.3. PROJECT DATA 5
1.4. SIGNATURE 5
2. CLIENT INFORMATION 6
2.1. APPLICANT INFORMATION 6
2.2. MANUFACTURER INFORMATION 6
3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE) 7
3.1. ABOUT EUT 7
3.2. INTERNAL IDENTIFICATION OF EUT 7
3.3. INTERNAL IDENTIFICATION OF AE 7
3.4. EUT SET-UPS 8
3.5. GENERAL DESCRIPTION 8
3.6. INTERPRETATION OF THE TEST ENVIRONMENT 9
4. REFERENCE DOCUMENTS 9
4.1. DOCUMENTS SUPPLIED BY APPLICANT 9
4.2. REFERENCE DOCUMENTS FOR TESTING 9
5. TEST RESULTS 10
5.1. SUMMARY OF TEST RESULTS 10
5.2. STATEMENTS 10
5.3. TERMS USED IN THE RESULT TABLE 10
6. TEST FACILITIES UTILIZED 11
7. MEASUREMENT UNCERTAINTY 12
7.1. MAXIMUM OUTPUT POWER 12
7.2. PEAK POWER SPECTRAL DENSITY 12
7.3. DTS 6-DB SIGNAL BANDWIDTH 12
7.4. BAND EDGES COMPLIANCE 12
7.5. TRANSMITTER SPURIOUS EMISSION 12
7.6. AC POWER-LINE CONDUCTED EMISSION 12

ANNEX A: DETAILED TEST RESULTS 13

A.1. MEASUREMENT METHOD 13

A.2. MAXIMUM OUTPUT POWER 14

A.2.1. PEAK OUTPUT POWER-CONDUCTED 14
A.2.2. AVERAGE OUTPUT POWER-CONDUCTED 15

A.3. PEAK POWER SPECTRAL DENSITY 17

A.4. DTS 6-DB SIGNAL BANDWIDTH 24

A.5. BAND EDGES COMPLIANCE 31

A.6. TRANSMITTER SPURIOUS EMISSION 36

A.6.1 TRANSMITTER SPURIOUS EMISSION – CONDUCTED 36
A.6.2 TRANSMITTER SPURIOUS EMISSION - RADIATED 89

A.7. AC POWER-LINE CONDUCTED EMISSION 104

ANNEX B: ACCREDITATION CERTIFICATE 109

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℃

Extreme Temperature: -10/+55℃

Relative Humidity: 20-75%

1.3. Project data

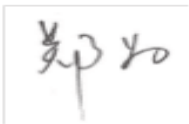
Testing Start Date: 2017-04-08

Testing End Date: 2018-04-26

1.4. Signature

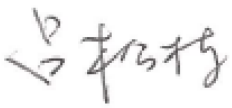
Jiang Xue

(Prepared this test report)



Zheng Wei

(Reviewed this test report)



Lv Songdong

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	TCL Communication Ltd.
Address:	7/F, Block F4, TCL Communication Technology Building, TCL International E City, Zhong Shan Yuan Road, Nanshan District, Shenzhen, Guangdong, P.R. China 518052
City:	Shenzhen
Postal Code:	518052
Country:	China
Telephone:	0086-755-36611722
Fax:	/

2.2. Manufacturer Information

Company Name:	TCL Communication Ltd.
Address:	7/F, Block F4, TCL Communication Technology Building, TCL International E City, Zhong Shan Yuan Road, Nanshan District, Shenzhen, Guangdong, P.R. China 518052
City:	Shenzhen
Postal Code:	518052
Country:	China
Telephone:	0086-755-36611722
Fax:	/

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

3.1. About EUT

Description	Tablet PC
Model name	8067/8068
FCC ID	2ACCJBT12
IC ID	/
With WLAN Function	Yes
Frequency Range	ISM 2400MHz~2483.5MHz
Type of Modulation	DSSS/CCK/OFDM
Number of Channels	11
Antenna	Integral Antenna
MAX Conducted Power	22.59dBm(OFDM)
Power Supply	3.9V DC by Battery

3.2. Internal Identification of EUT

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	7YLC03CQPGB0027	V1.2	E1H
EUT2	/	V1.2	E1H

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

3.3. Internal Identification of AE

AE ID*	Description	SN	Remarks
AE1	battery	/	/
AE2	Travel charger	/	18TCT-CH-0201
AE3	Travel charger	/	18TCT-CH-0213
AE4	Travel charger	/	NO TEST
AE5	Travel charger	/	NO TEST
AE6	Travel charger	/	NO TEST
AE7	Travel charger	/	NO TEST
AE12	Travel charger	/	18TCT-CH-0200
AE13	Travel charger	/	18TCT-CH-0219
AE8	USB Cable	/	18TCT-DC-0070
AE9	USB Cable	/	18TCT-DC-0082
AE10	USB Cable	/	/
AE11	USB Cable	/	/

AE1

Model	TLp025F7(CAC2580038C7)
Manufacturer	VEKEN
Capacitance	2580 mAh

Nominal voltage	3.8V

AE2, AE12

Model	CBA0058AGAC5
Manufacturer	PUAN
Length of cable	/

AE3, AE13

Model	CBA0058AGAC7
Manufacturer	CHENGYANG
Length of cable	/

AE4

Model	CBA0058AAAC5
Manufacturer	PUAN
Length of cable	

AE5

Model	CBA0058AKAC5
Manufacturer	PUAN
Length of cable	

AE6

Model	CBA0058ACAC5
Manufacturer	PUAN
Length of cable	

AE7

Model	CBA0058AAAC7
Manufacturer	CHENGYANG
Length of cable	

AE8

Model	CDA3122005C2
Manufacturer	SHENGHUA
Length of cable	1m

AE9

Model	CDA3122005C8
Manufacturer	PUAN
Length of cable	/

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

3.4. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.10	EUT1+ AE1+ AE3+ AE8	Charger
Set.11	EUT1+ AE1+ AE5+ AE8	Charger

3.5. General Description

The Equipment under Test (EUT) is a model of Tablet PC with integrated antenna and inbuilt

battery.
It has Bluetooth (EDR) function.
It consists of normal options: travel charger, USB cable.
Manual and specifications of the EUT were provided to fulfil the test.
Samples undergoing test were selected by the client.

3.6. Interpretation of the Test Environment

For the test methods, the test environment uncertainty figures correspond to an expansion factor k=2.

Measurement Uncertainty

Parameter	Uncertainty
temperature	0.48°C
humidity	2 %
DC voltages	0.003V

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.	2016
ANSI C63.10	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	2013

5. Test Results

5.1. 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 CTTL
NA	Not Applicable, The test was not applicable
BR	Re-use test data from basic model report.
F	Fail, The EUT does not comply with the essential requirements in the standard
F	Fail, The EUT does not comply with the essential requirements in the standard

5.2. Statements

The test cases as listed in section 5.1 of this report for the EUT specified in section 3 was performed by CTTL and according to the standards or reference documents listed in section 4.2

The EUT met all requirements of the standards or reference documents, and only the WLAN function was tested in this report.

The model of 8068 is a variant product which market name is 8067; and all the test results have been tested from 8067. The difference between 8067 and 8068 is that 8067 supports GPS while 8068 shuts off GPS function on software.

5.3. Terms used in the result table

T nom	Normal Temperature
T min	Low Temperature
T max	High Temperature
V nom	Normal Voltage

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

Temperature	T nom	26℃
Voltage	V nom	3.9V(By battery)

For the test cases tested under extreme condition, the specific condition is given at the specific test case part.

6. Test Facilities Utilized

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	1 year	2018-06-01
2	Test Receiver	ESCI	100344	Rohde & Schwarz	1 year	2019-02-28
3	LISN	ENV216	101200	Rohde & Schwarz	1 year	2019-04-15
4	Shielding Room	S81	/	ETS-Lindgren	/	/

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Test Receiver	ESU26	100235	R&S	1 year	2019-03-31
2	Loop antenna	HFH2-Z2	829324/007	Rohde & Schwarz	3 years	2019-01-03
3	EMI Antenna	VULB 9163	9163-301	Schwarzbeck	1 year	2019-02-03
4	EMI Antenna	3115	0067250	ETS-Lindgren	1 year	2018-12-31
5	Dual-Ridge Waveguide Horn Antenna	3116	2663	ETS-Lindgren	3 years	2020-05-31
6	Vector Signal Analyzer	FSV	101047	Rohde & Schwarz	1 year	2018-07-22

7. Measurement Uncertainty

7.1. Maximum Output Power

Measurement Uncertainty: 0.339dB,k=1.96

7.2. Peak Power Spectral Density

Measurement Uncertainty: 0.705dBm/MHz,k=1.96

7.3. DTS 6-dB Signal Bandwidth

Measurement Uncertainty: 60.80Hz,k=1.96

7.4. Band Edges Compliance

Measurement Uncertainty : 0.62dBm,k=1.96

7.5. Transmitter Spurious Emission

Conducted (k=1.96)

Frequency Range	Uncertainty(dBm)
30MHz ≤ f ≤ 2GHz	1.22
2GHz ≤ f ≤3.6GHz	1.22
3.6GHz ≤ f ≤8GHz	1.22
8GHz ≤ f ≤12.75GHz	1.51
12.75GHz ≤ f ≤26GHz	1.51
26GHz ≤ f ≤40GHz	1.59

Radiated (k=2)

Frequency Range	Uncertainty(dBm)
30MHz ≤ f ≤ 1GHz	5.16
1GHz ≤ f ≤18GHz	5.44
18GHz ≤ f ≤40GHz	5.28

7.6. AC Power-line Conducted Emission

Measurement Uncertainty : 3.08dBm,k=2

ANNEX A: Detailed Test 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

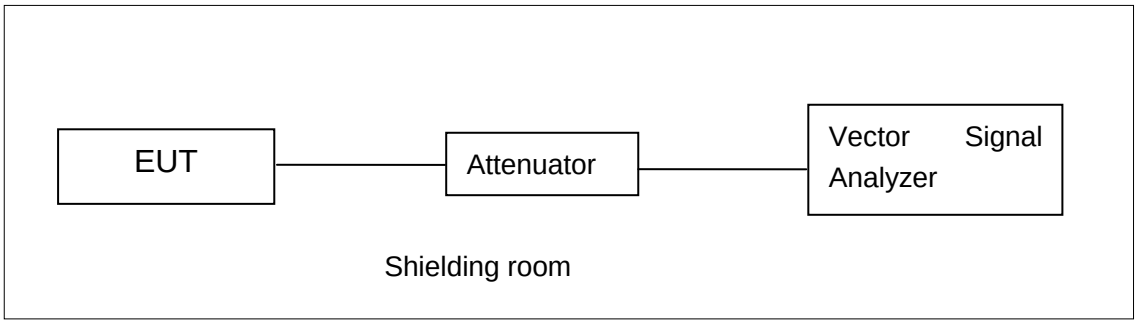


Fig.A.1.1.1: Test Setup Diagram for Conducted Measurements

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;

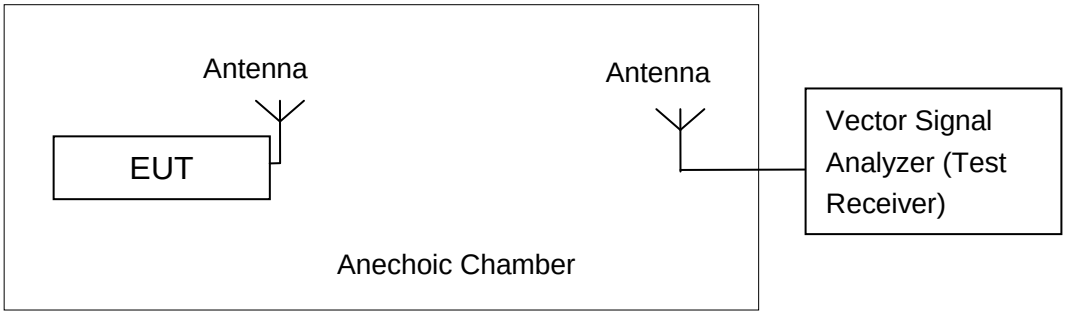


Fig.A.1.2.1: Test Setup Diagram for Radiated Measurements

A.2. Maximum Output Power

Method of Measurement: See ANSI C63.10-2013-clause 11.9.1.2

a) Set the RBW = 1 MHz.
b) Set the VBW = 3 MHz.
c) Set the span ≥ [1.5 × DTS bandwidth].
d) Detector = peak.
e) Sweep time = auto couple.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select the peak detector).

Measurement Limit:

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

EUT ID: EUT2

A.2.1. Peak Output Power-conducted

Measurement Results:

802.11b/g mode

Mode	Data Rate (Mbps)	Test Result (dBm)		
		2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)
802.11b	1	17.56	/	/
	2	17.71	/	/
	5.5	19.12	/	/
	11	20.34	20.91	21.27
802.11g	6	21.42	/	/
	9	21.30	/	/
	12	21.81	/	/
	18	21.43	/	/
	24	22.10	22.38	22.49
	36	21.88	/	/
	48	21.60	/	/
	54	21.62	/	/

The data rate 11Mbps and 24Mbps are selected as worse condition, and the following cases are performed with this condition.

802.11n-HT20 mode

Mode	Data Rate (Index)	Test Result (dBm)		
		2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)
802.11n (20MHz)	MCS0	21.66	/	/
	MCS1	21.13	/	/
	MCS2	21.60	/	/
	MCS3	21.67	/	/
	MCS4	21.07	/	/
	MCS5	21.64	/	/
	MCS6	21.74	22.32	22.59
	MCS7	21.67	/	/

The data rate MCS6 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)
802.11n (40MHz)	MCS0	21.98	/	/
	MCS1	21.88	/	/
	MCS2	21.92	/	/
	MCS3	22.06	/	/
	MCS4	22.26	/	/
	MCS5	22.56	22.39	22.57
	MCS6	21.86	/	/
	MCS7	22.17	/	/

The data rate MCS5 is selected as worse condition, and the following cases are performed with this condition.

Conclusion: Pass

A.2.2. Average Output Power-conducted

Method of Measurement: See ANSI C63.10-2013-clause 11.9.2.2.2

The procedure for this method is as follows:

a) Set span = 80MHz.

b) Set RBW = 1MHz.

c) Set VBW = 3MHz

d) Number of points in sweep = 625

e) Sweep time = auto.

f) Detector = RMS.

g) The trigger shall be set to “free run.”

h) Trace average 100 traces in power averaging (rms) mode.

i) Compute power by integrating the spectrum across the OBW of the signal using the instrument’s

band power measurement function, with band limits set equal to the OBW band edges.

802.11b/g mode

Mode	Test Result (dBm)		
	2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)
802.11b	13.96	13.92	13.89
802.11g	13.90	13.85	13.98

802.11n-HT20 mode

Mode	Test Result (dBm)		
	2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)
802.11n (20MHz)	13.51	13.62	13.73

802.11n-HT40 mode

Mode	Test Result (dBm)		
	2422MHz (Ch3)	2437MHz (Ch6)	2452 MHz (Ch9)
802.11n(40MHz)	14.37	13.43	13.75

Conclusion: Pass

A.3. Peak Power Spectral Density

Method of Measurement: See ANSI C63.10-2013-clause 11.10.2

a) Set analyzer center frequency to DTS channel center frequency.
b) Set the span to 1.5 times the DTS bandwidth.
c) Set the RBW to RBW = 3 kHz.
d) Set the VBW = 10 kHz.
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) Use the peak marker function to determine the maximum amplitude level within the RBW.

Measurement Limit:

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

Measurement Results:

802.11b/g mode

Mode	Channel	Power Spectral Density (dBm/3 kHz)		Conclusion
802.11b	1	Fig.A.3.1	-8.95	P
	6	Fig.A.3.2	-8.52	P
	11	Fig.A.3.3	-8.24	P
802.11g	1	Fig.A.3.4	-10.52	P
	6	Fig.A.3.5	-11.39	P
	11	Fig.A.3.6	-11.25	P

802.11n-HT20 mode

Mode	Channel	Power Spectral Density (dBm/3 kHz)		Conclusion
802.11n (HT20)	1	Fig.A.3.7	-10.78	P
	6	Fig.A.3.8	-11.19	P
	11	Fig.A.3.9	-11.44	P

802.11n-HT40 mode

Mode	Channel	Power Spectral Density (dBm/3 kHz)		Conclusion
802.11n (HT40)	3	Fig.A.3.10	-15.79	P
	6	Fig.A.3.11	-13.46	P
	9	Fig.A.3.12	-14.94	P

Conclusion: Pass

Test graphs as below:

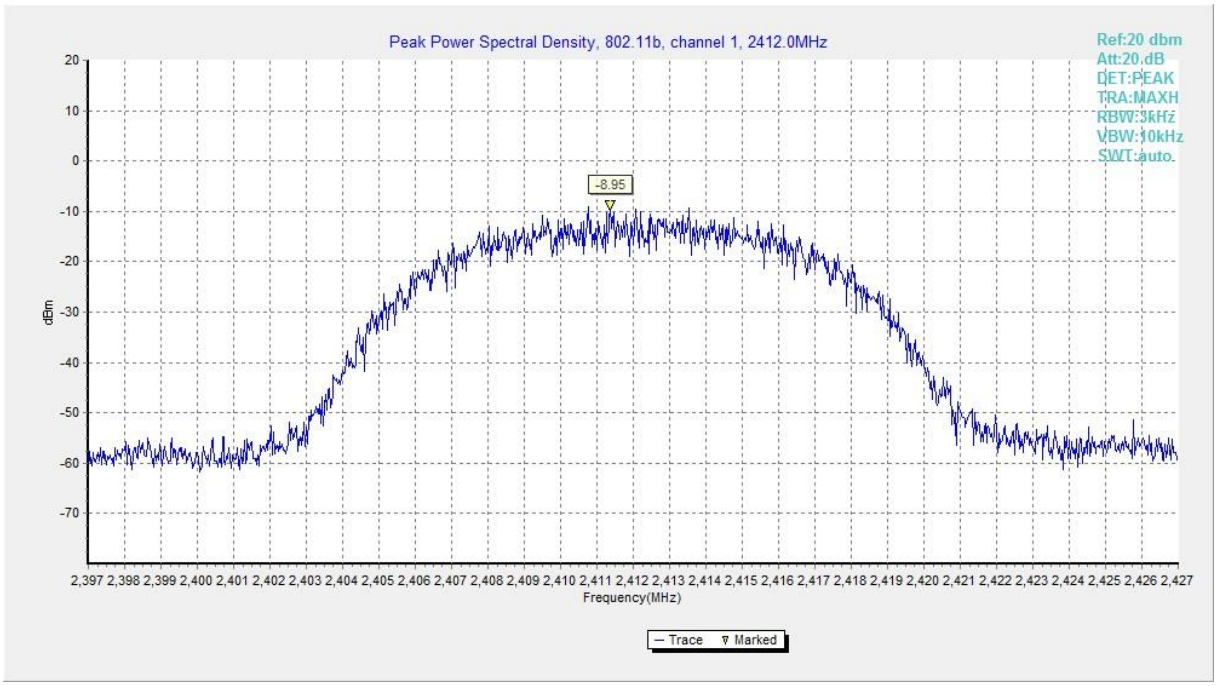


Fig.A.3.1 Power Spectral Density(802.11b,Ch1)

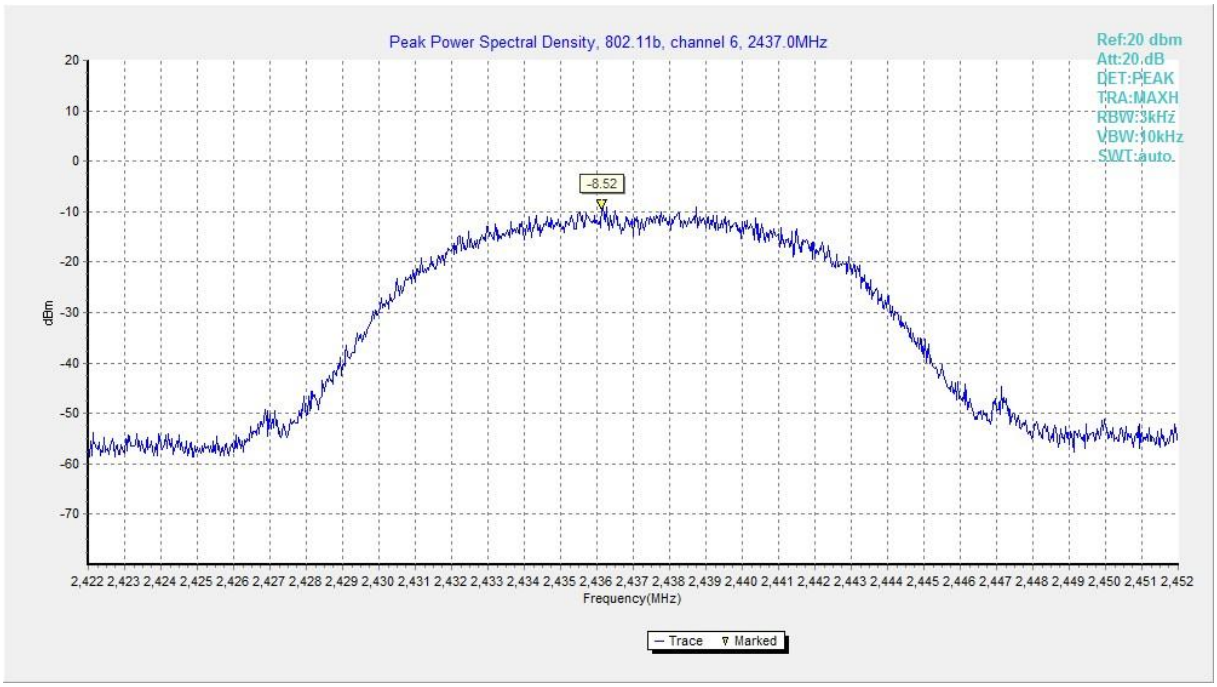


Fig.A.3.2 Power Spectral Density (802.11b, Ch 6)

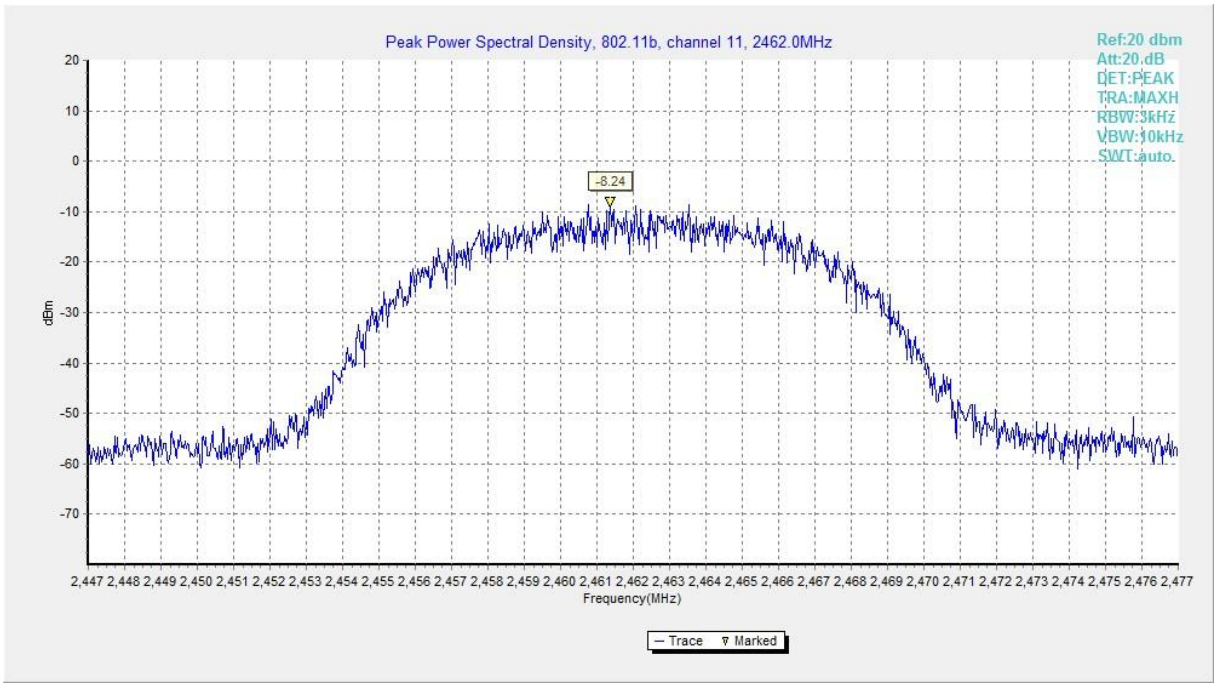


Fig.A.3.3 Power Spectral Density (802.11b, Ch 11)

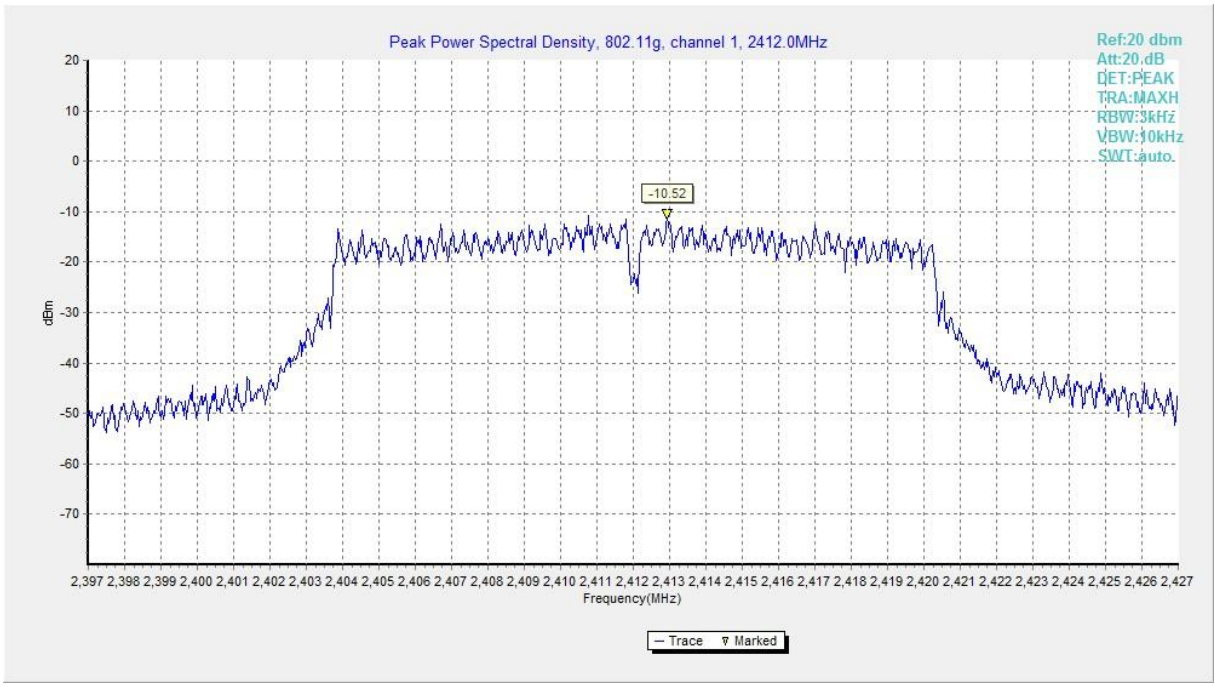


Fig.A.3.4 Power Spectral Density (802.11g, Ch 1)

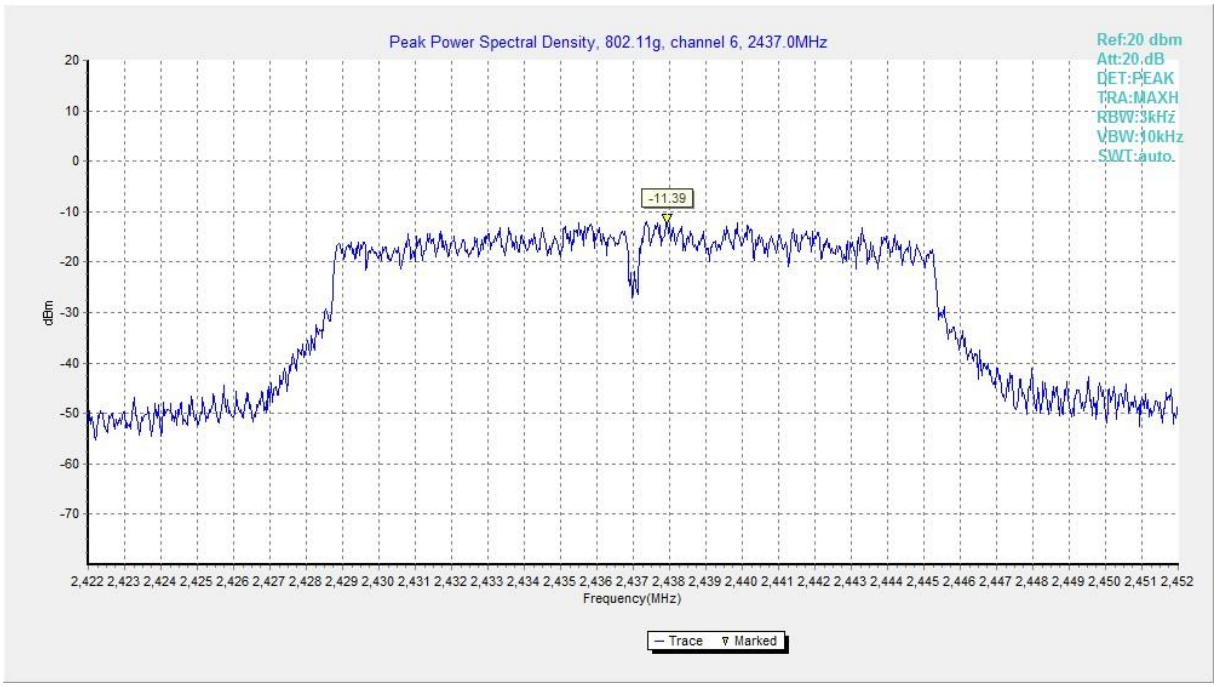


Fig.A.3.5 Power Spectral Density (802.11g, Ch 6)

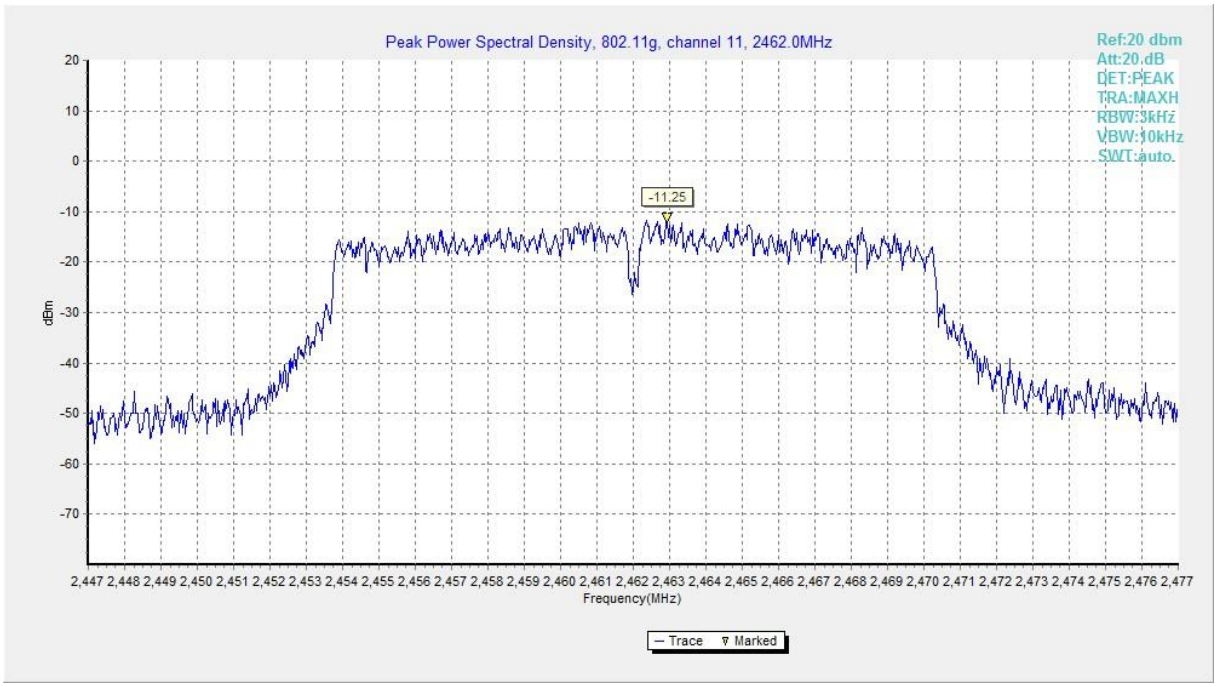


Fig.A.3.6 Power Spectral Density (802.11g, Ch 11)

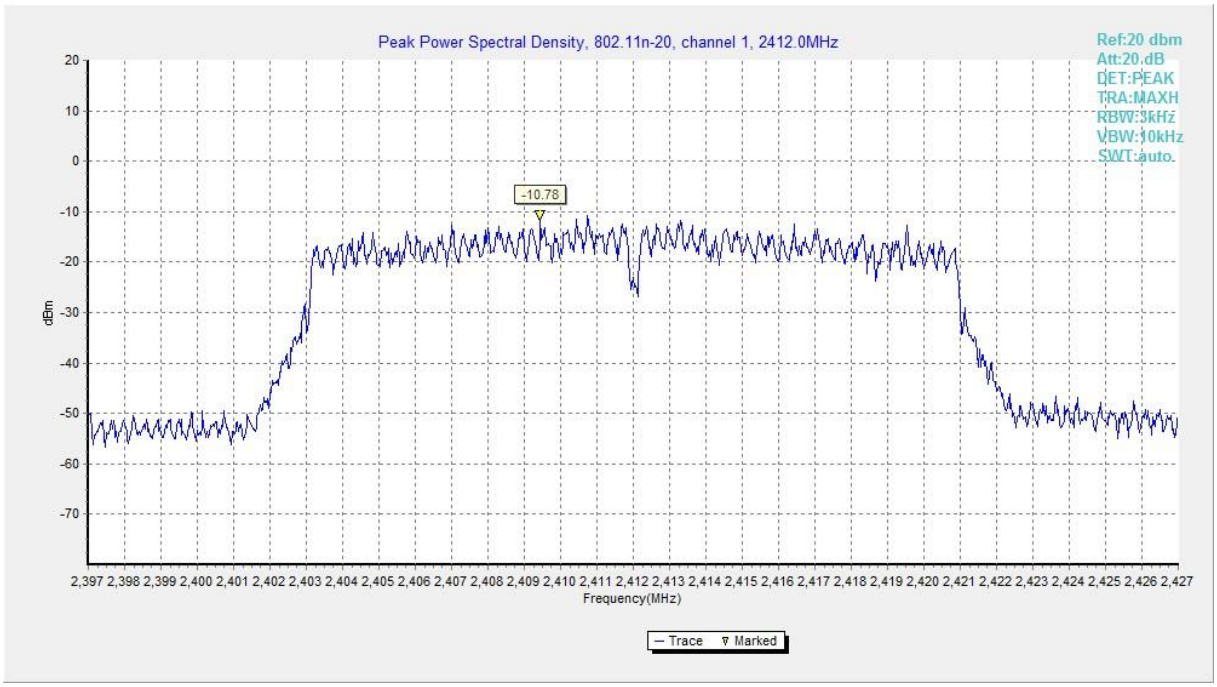


Fig.A.3.7 Power Spectral Density (802.11n-HT20, Ch 1)

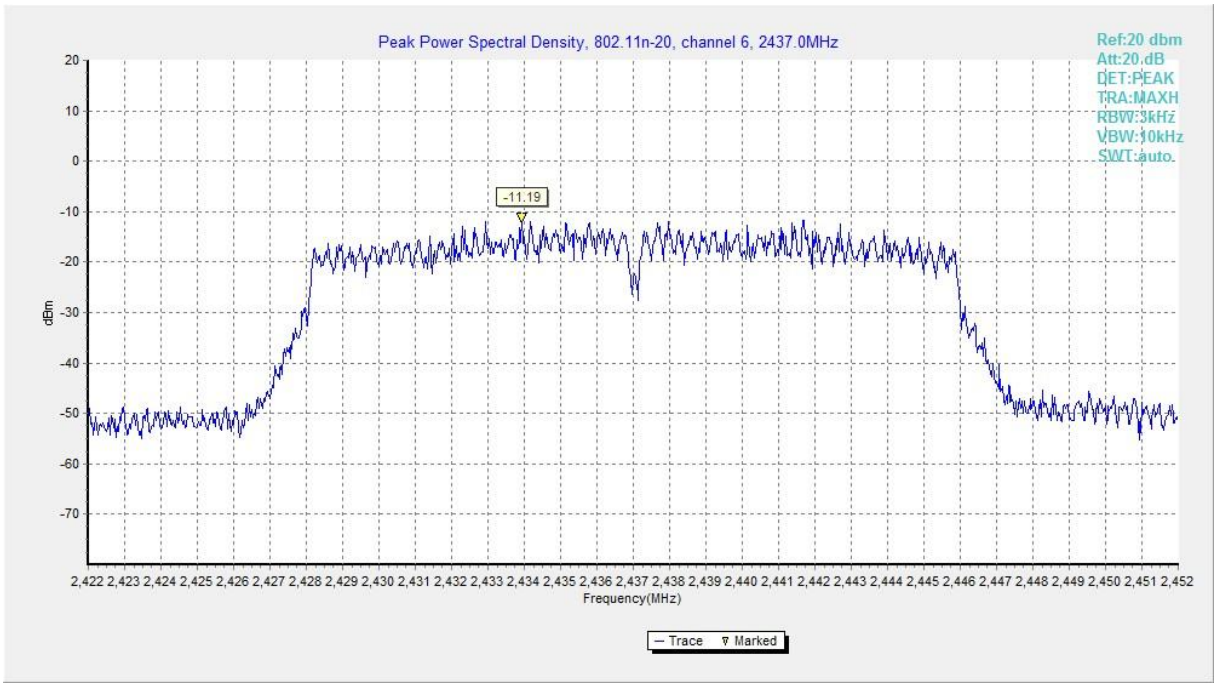


Fig.A.3.8 Power Spectral Density (802.11n-HT20, Ch 6)

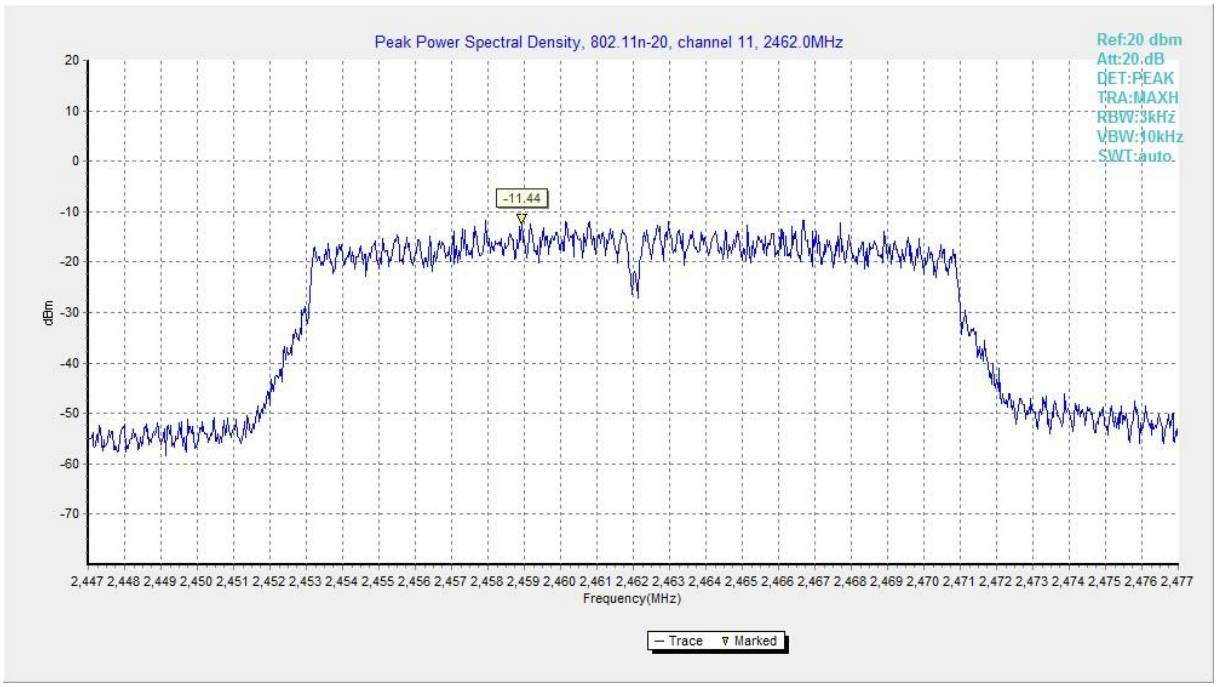


Fig.A.3.9 Power Spectral Density (802.11n-HT20, Ch 11)

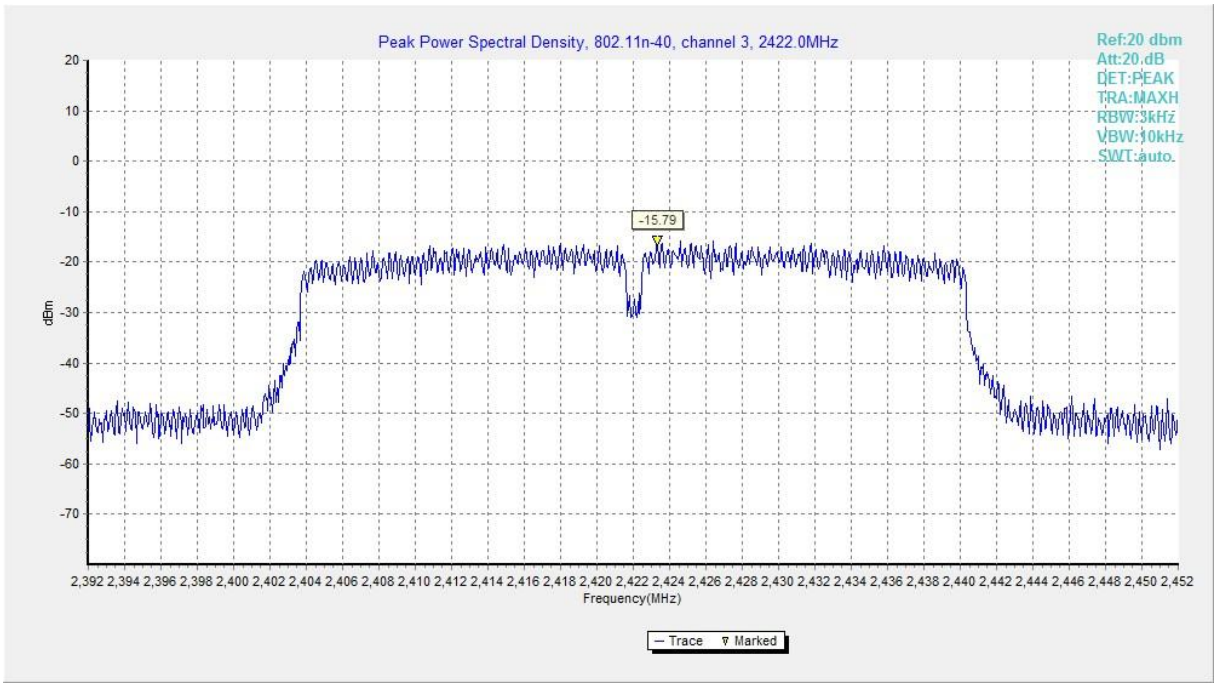


Fig.A.3.10 Power Spectral Density (802.11n-HT40, Ch 3)

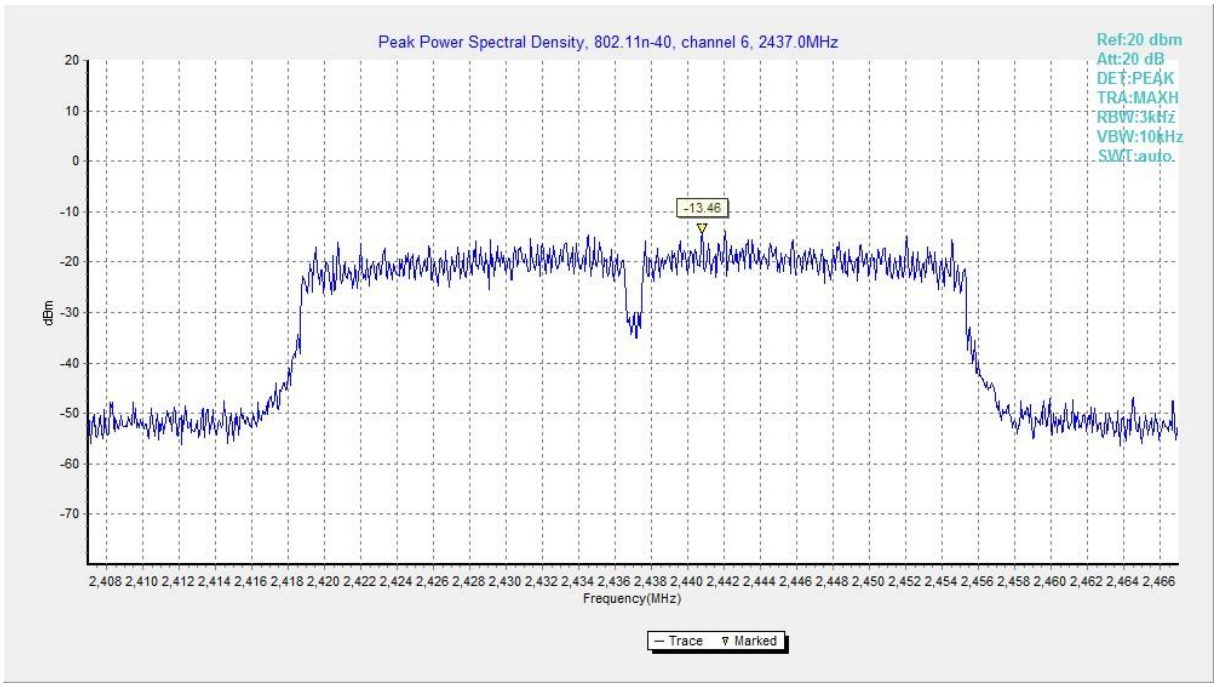


Fig.A.3.11 Power Spectral Density (802.11n-HT40, Ch 6)

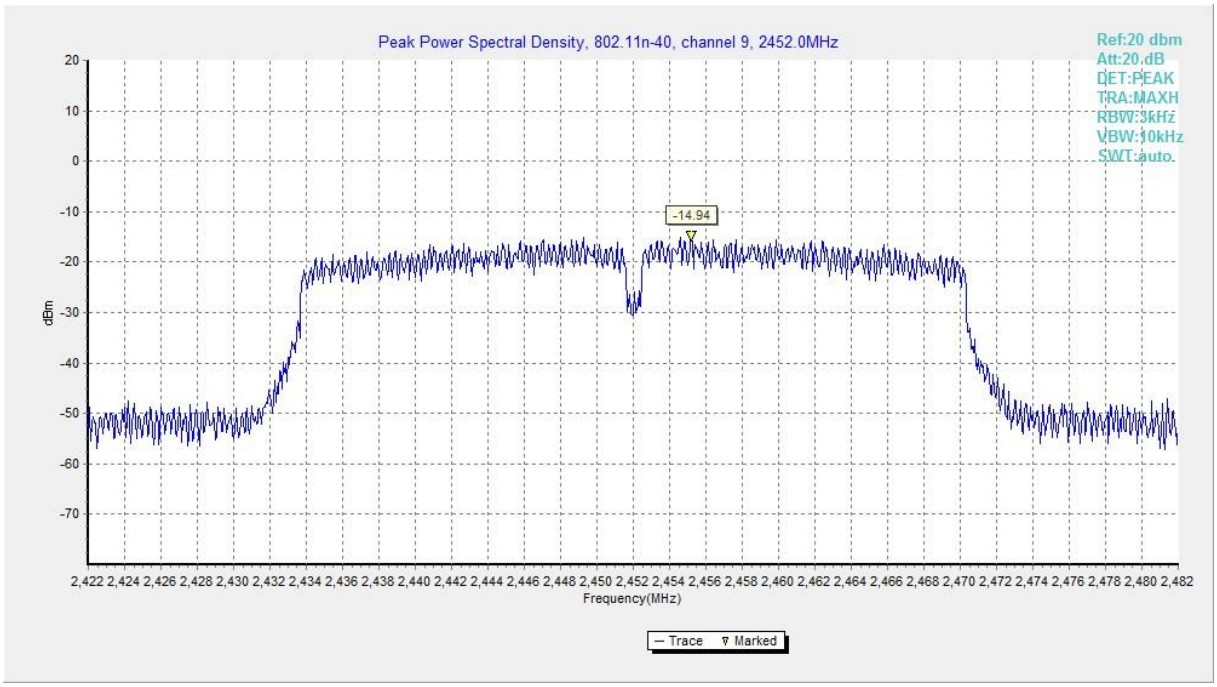


Fig.A.3.12 Power Spectral Density (802.11n-HT40, Ch 9)

A.4. DTS 6-dB Signal Bandwidth

Method of Measurement: See ANSI C63.10-2013 section 11.8.1.

a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) = 300 kHz.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Measurement Limit:

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

EUT ID: EUT2

Measurement Result:

802.11b/g mode

Mode	Channel	Occupied 6dB Bandwidth (kHz)		conclusion
802.11b	1	Fig.A.4.1	8900.00	P
	6	Fig.A.4.2	8900.00	P
	11	Fig.A.4.3	9500.00	P
802.11g	1	Fig.A.4.4	16450.00	P
	6	Fig.A.4.5	16400.00	P
	11	Fig.A.4.6	16450.00	P

802.11n-HT20 mode

Mode	Channel	Occupied 6dB Bandwidth (kHz)		conclusion
802.11n (HT20)	1	Fig.A.4.7	17700.00	P
	6	Fig.A.4.8	17700.00	P
	11	Fig.A.4.9	17700.00	P

802.11n-HT40 mode

Mode	Channel	Occupied 6dB Bandwidth (kHz)		conclusion
802.11n (HT40)	3	Fig.A.4.10	35760.00	P
	6	Fig.A.4.11	35520.00	P
	9	Fig.A.4.12	36000.00	P

Conclusion: Pass

Test graphs as below:

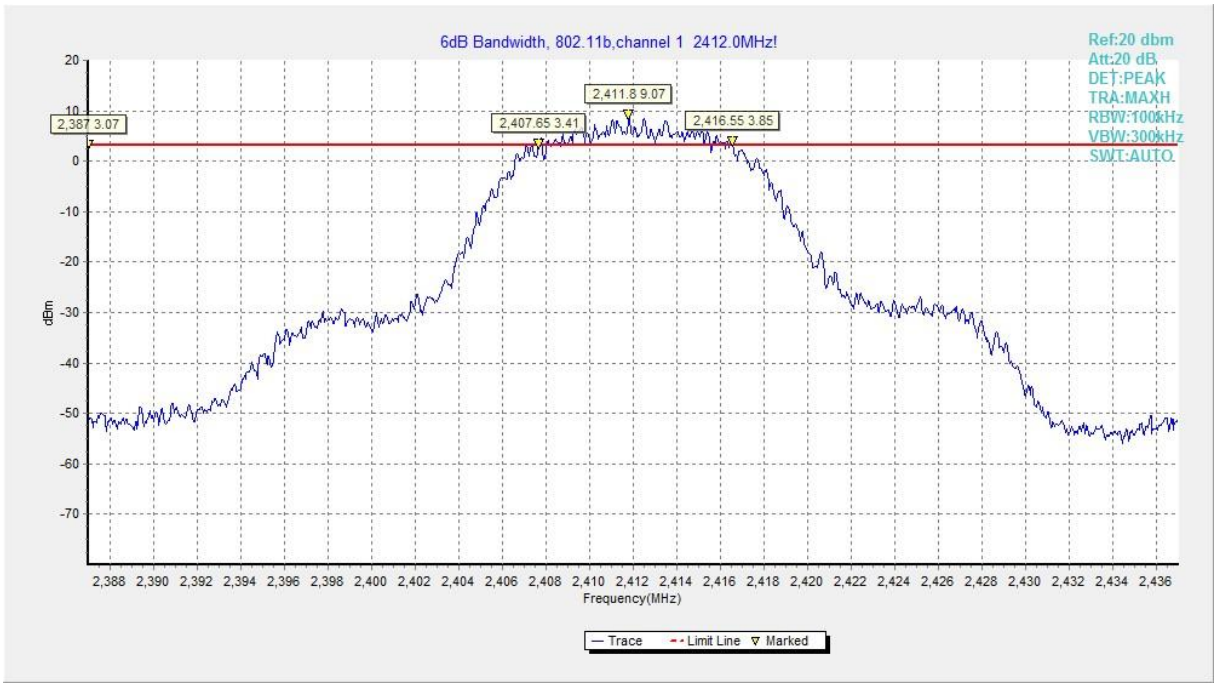


Fig.A.4.1 Occupied 6dB Bandwidth(802.11b,Ch 1)

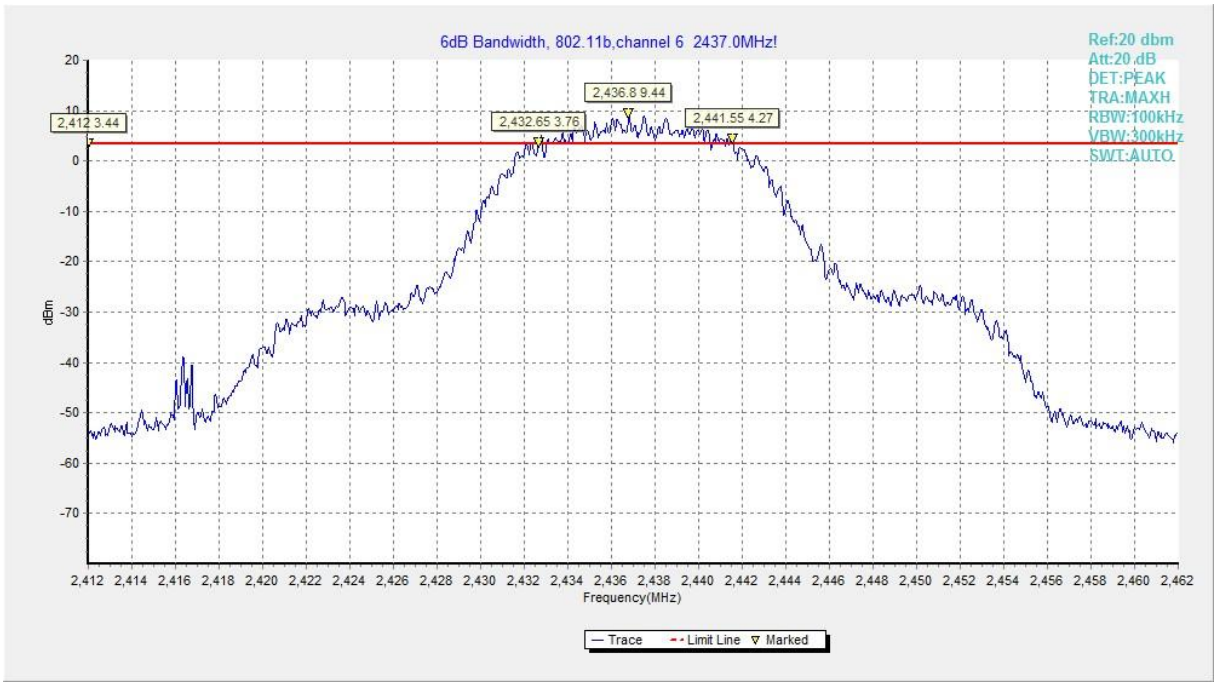


Fig.A.4.2 Occupied 6dB Bandwidth (802.11b, Ch 6)

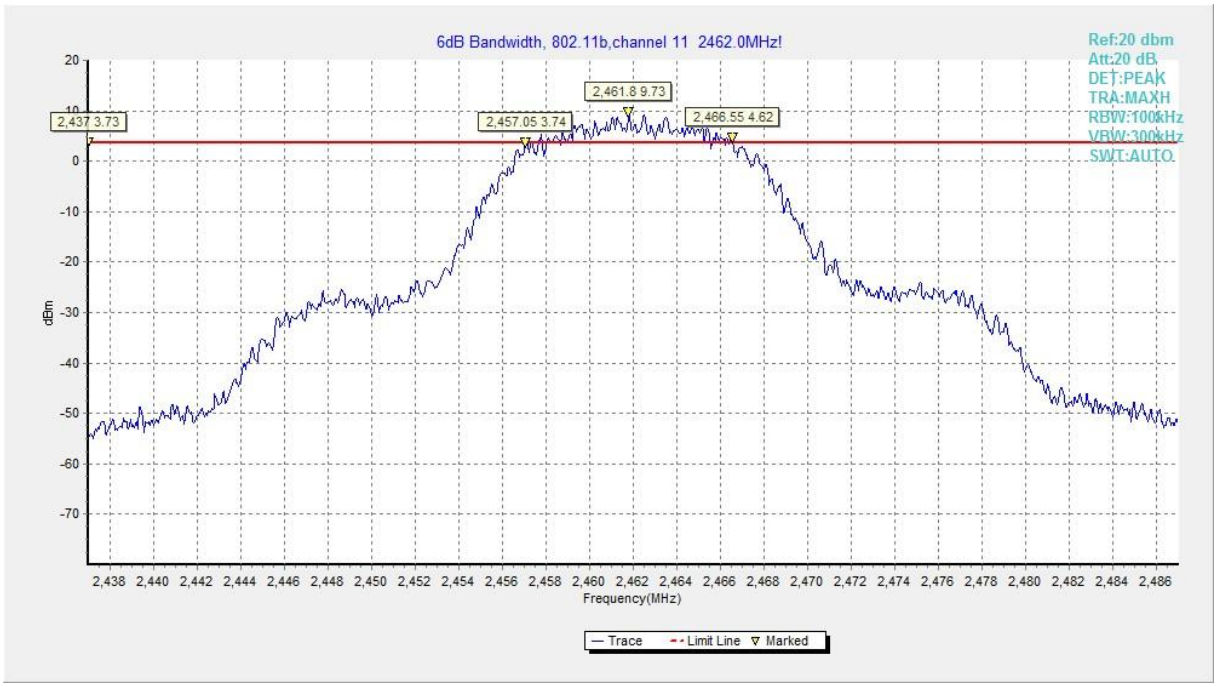


Fig.A.4.3 Occupied 6dB Bandwidth (802.11b, Ch 11)

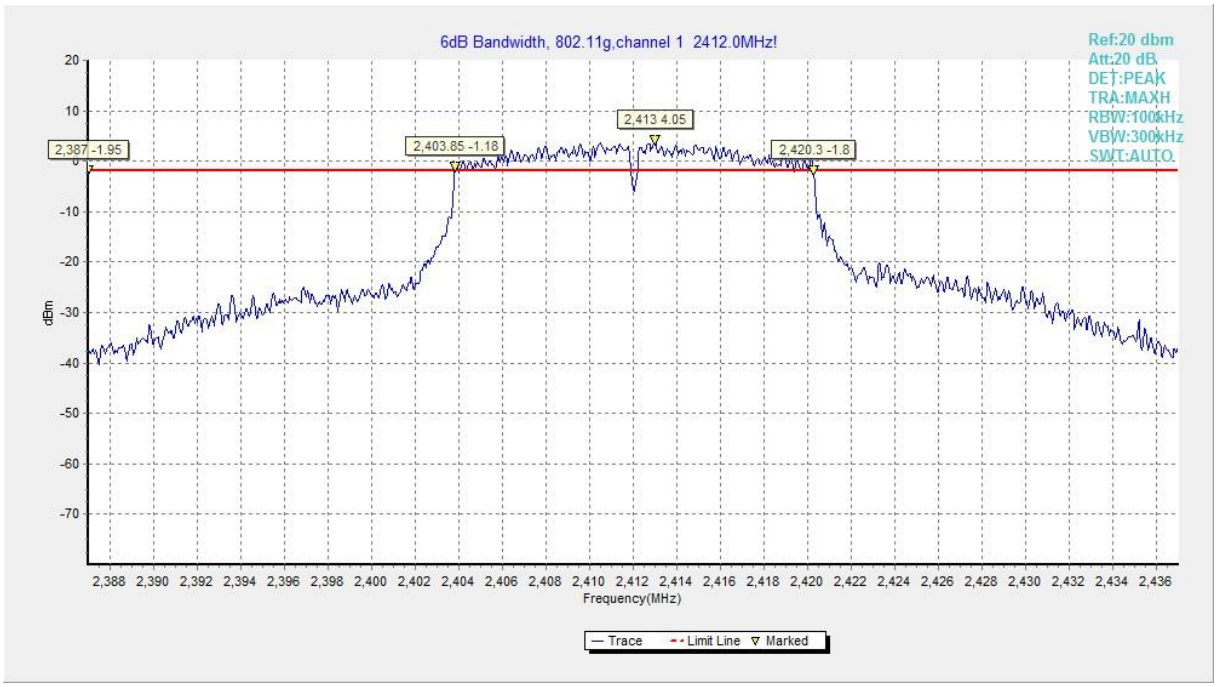


Fig.A.4.4 Occupied 6dB Bandwidth (802.11g, Ch 1)

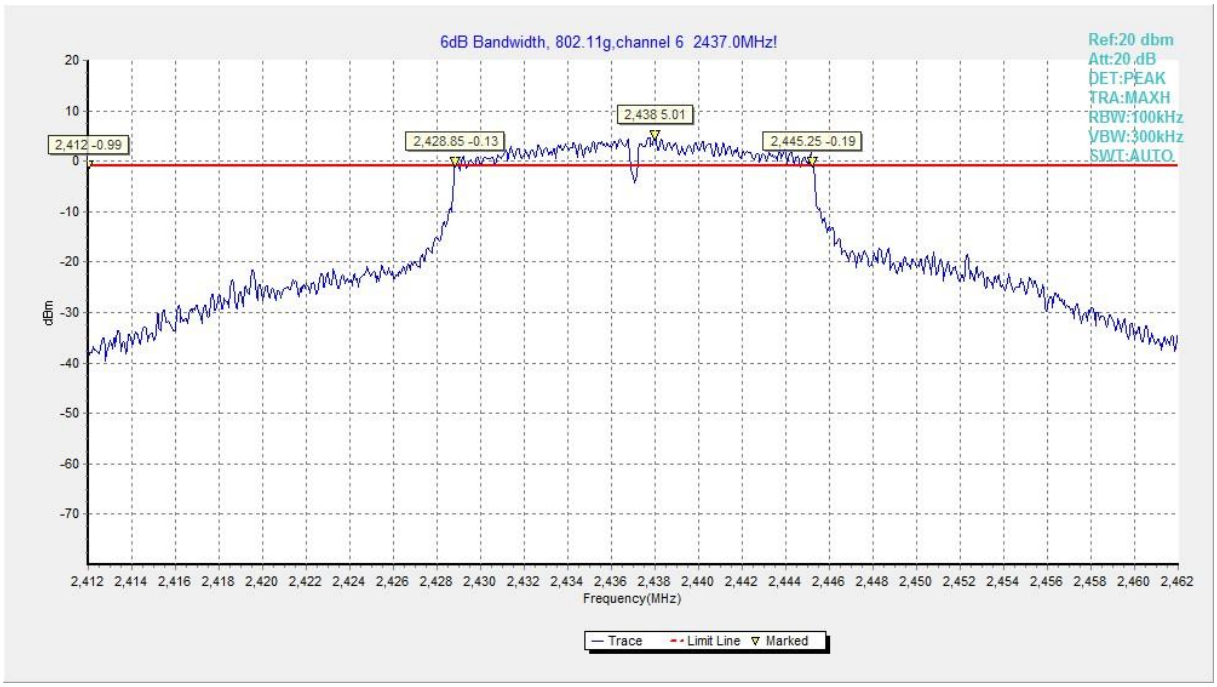


Fig.A.4.5 Occupied 6dB Bandwidth (802.11g, Ch 6)

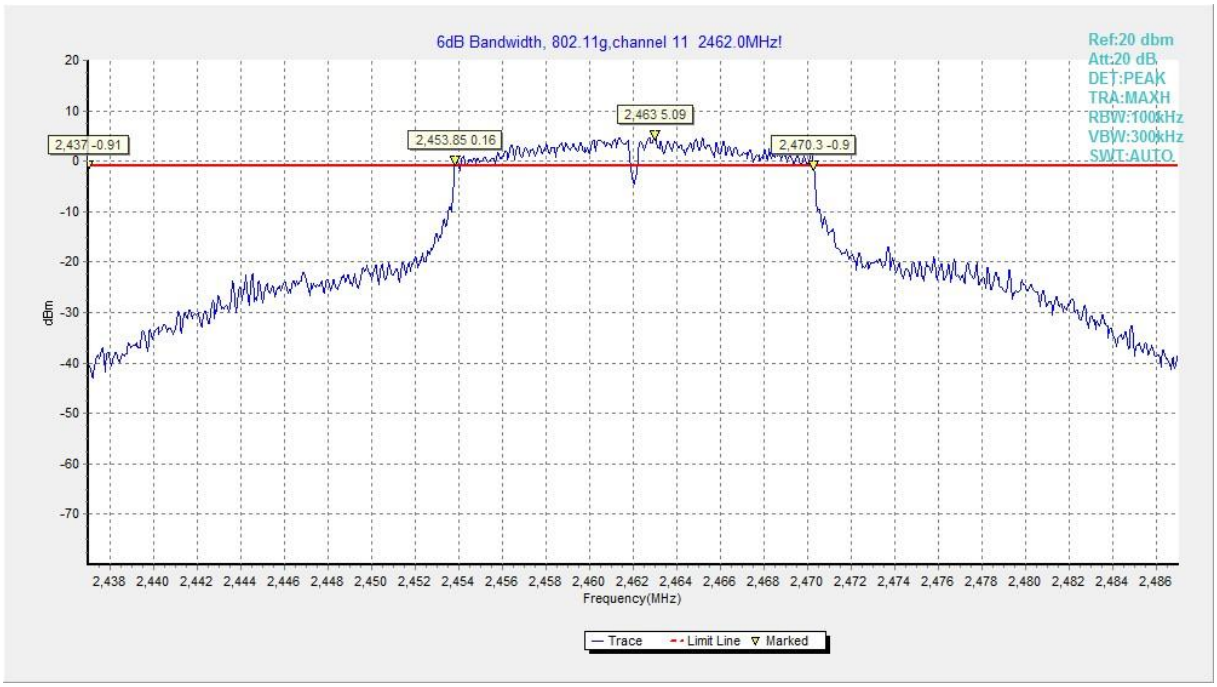


Fig.A.4.6 Occupied 6dB Bandwidth (802.11g, Ch 11)