



FCC PART 15C TEST REPORT No.I21Z60291-IOT04

for

TCL Communication Ltd.

GSM/UMTS/LTE mobile phone

T774B, T775B

With

FCC ID: 2ACCJN054

Hardware Version: 03

Software Version: v3.0.9DF2

Issued Date: 2021-03-08

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.

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CTTL-Telecommunication Technology Labs, CAICT

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REPORT HISTORY

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1. Test Laboratory

1.1.Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (ISED#: 24849). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

Location 1:CTTL(Huayuan North Road)

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

1.3. Testing Environment

Normal Temperature: 15-35°C

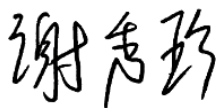
Relative Humidity: 20-75%

1.4. Project date

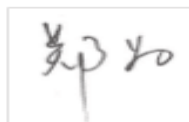
Testing Start Date: 2021-02-22

Testing End Date: 2021-03-08

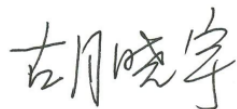
1.5. Signature



Xie Xiuzhen
(Prepared this test report)



Zheng Wei
(Reviewed this test report)



Hu Xiaoyu
(Approved this test report)

2. Client Information

2.1.Applicant Information

Company Name: TCL Communication Ltd.
Address: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science
Park, Shatin, NT, Hong Kong
City: Hong Kong
Postal Code: /
Country: China
Telephone: 0086-755-36611722
Fax: 0086-755-36612000-81722

2.2.Manufacturer Information

Company Name: TCL Communication Ltd.
Address: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science
Park, Shatin, NT, Hong Kong
City: Hong Kong
Postal Code: /
Country: China
Telephone: 0086-755-36611722
Fax: 0086-755-36612000-81722

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

3.1. About EUT

Description	GSM/UMTS/LTE mobile phone
Model name	T774B, T775B
FCC ID	2ACCJN054
With WLAN Function	Yes
Frequency Band	ISM 2400MHz~2483.5MHz
Type of Modulation	DSSS/CCK/OFDM
Number of Channels	11
Antenna	Integral Antenna
MAX Conducted Power	24.03dBm
Power Supply	3.85V

3.2. Internal Identification of EUT

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	351897970000224	03	v3.0.9DF2
EUT2	351897970000406	03	v3.0.9DF2

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

3.3. Internal Identification of AE

AE ID*	Description	SN
AE1	Battery	/
AE2	Battery	/
AE3	USB Cable	/
AE4	USB Cable	/
AE5	Charger1	/

AE1

Model	TLp048A1
Manufacturer	BYD
Capacity	4360 mAh
Nominal Voltage	3.85V

AE2

Model	TLp048A7
Manufacturer	VEKEN
Capacity	4360 mAh
Nominal Voltage	3.85V

AE3

Model	CDA0000128C1
Manufacturer	Juwei
Length of cable	/

AE4

Model	CDA0000128C2
Manufacturer	Shenghua
Length of cable	/

AE5

Model	UC13US
Manufacturer	PUAN
Length of cable	/

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

3.4. General Description

The Equipment under Test (EUT) is a model of GSM/UMTS/LTE mobile phone 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.

3.5. 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:	2018
	15.205 Restricted bands of operation;	
	15.209 Radiated emission limits, general requirements;	
ANSI C63.10	15.247 Operation within the bands 902-928MHz,	2013
	2400-2483.5 MHz, and 5725-5850 MHz.	
	American National Standard of Procedures for Compliance	
KDB 558074 D01	Testing of Unlicensed Wireless Devices	2019
	Federal Communications Commission Office of	
	Engineering and Technology Laboratory Division	
KDB 558074 D01	GUIDANCE FOR COMPLIANCE MEASUREMENTS ON	2019
	DIGITAL TRANSMISSION SYSTEM, FREQUENCY	
	HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID	
KDB 558074 D01	SYSTEM DEVICES OPERATING UNDER SECTION	2019
	15.247 OF THE FCC RULES	

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
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.

5.3. Test Conditions

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	3.85V(By battery)
Humidity	H nom	20-75%

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	2021-05-06
2	LISN	ENV216	101200	R&S	1 year	2021-05-19
3	Test Receiver	ESCI	100344	R&S	1 year	2022-02-23
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	2022-02-23
2	Dual-Ridge Waveguide Horn Antenna	3115	00167250	ETS-Lindgren	1 year	2021-05-14
3	BiLog Antenna	VULB9163	9163-1223	Schwarzbeck	1 year	2021-03-18

7. Measurement Uncertainty

7.1. Maximum Output Power

Measurement Uncertainty: 0.387dB,k=1.96

7.2. Peak Power Spectral Density

Measurement Uncertainty: 0.705dB,k=1.96

7.3. DTS 6-dB Signal Bandwidth

Measurement Uncertainty: 60.80Hz,k=1.96

7.4. Band Edges Compliance

Measurement Uncertainty : 0.62dB,k=1.96

7.5. Transmitter Spurious Emission

Conducted (k=1.96)

Frequency Range	Uncertainty(dB)
$30\text{MHz} \leq f \leq 2\text{GHz}$	1.22
$2\text{GHz} \leq f \leq 3.6\text{GHz}$	1.22
$3.6\text{GHz} \leq f \leq 8\text{GHz}$	1.22
$8\text{GHz} \leq f \leq 12.75\text{GHz}$	1.51
$12.75\text{GHz} \leq f \leq 26\text{GHz}$	1.51
$26\text{GHz} \leq f \leq 40\text{GHz}$	1.59

Radiated (k=2)

Frequency Range	Uncertainty(dB)
9kHz-30MHz	/
$30\text{MHz} \leq f \leq 1\text{GHz}$	4.86
$1\text{GHz} \leq f \leq 18\text{GHz}$	5.26
$18\text{GHz} \leq f \leq 40\text{GHz}$	5.28

7.6. AC Power-line Conducted Emission

Measurement Uncertainty : 3.38dB,k=2

ANNEX A: EUT parameters

Disclaimer: the worse case provided by the client may affect the validity of the measurement results in this report, and the client shall bear the impact and consequences arising therefrom.

ANNEX B: Detailed Test Results

B.1. Measurement Method

B.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

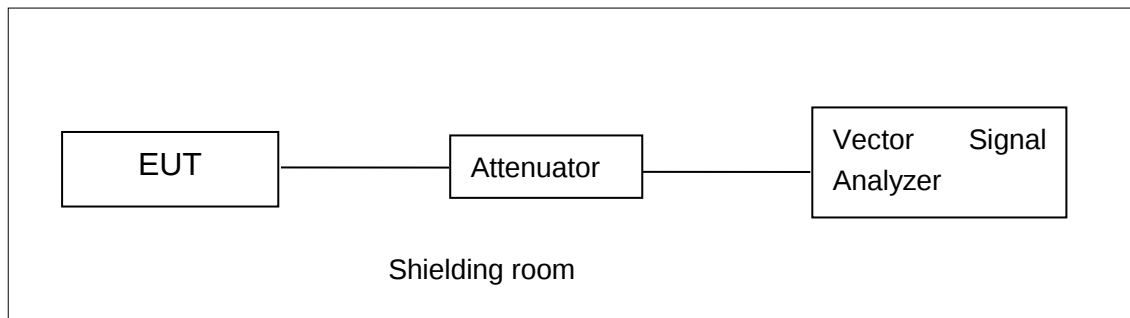


Fig.AB.1.1.1: Test Setup Diagram for Conducted Measurements

B.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;

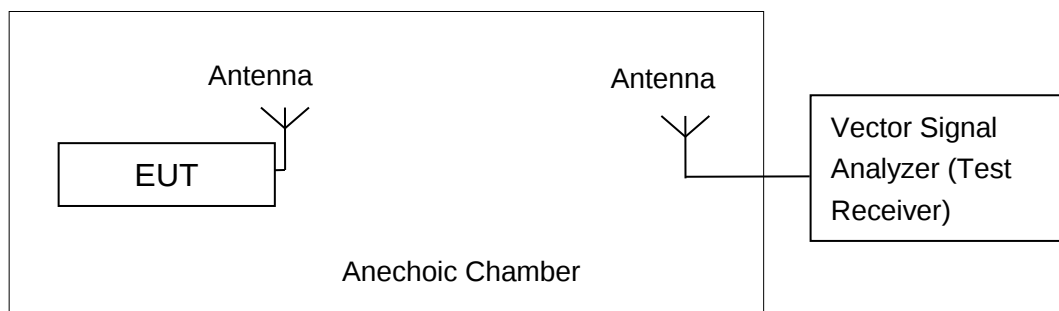


Fig.B.1.2.1: Test Setup Diagram for Radiated Measurements

B.2. Maximum Output Power

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

- Set the RBW = 1 MHz.
- Set the VBW = 3 MHz.
- Set the span $\geq [1.5 \times \text{DTS bandwidth}]$.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- 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

B.2.1. Peak Output Power-conducted

Measurement Results:

Duty Cycle

Mode	802.11b	802.11g	802.11n-HT20	802.11n-HT40
Duty Cycle	98%	98%	98%	98%

802.11b/g mode

Mode	Data Rate (Mbps)	Test Result (dBm)		
		2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)
802.11b	1	20.77	20.16	20.77
802.11g	6	24.03	23.43	23.84

The data rate 1Mbps and 6Mbps 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	22.72	22.32	22.58

The data rate MCS0 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	22.27	22.47	23.34

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

Conclusion: Pass

B.3. Peak Power Spectral Density

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

- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set the RBW to $RBW = 3 \text{ kHz}$.
- Set the VBW = 10 kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- 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.B.3.1	-6.76	P
	6	Fig.B.3.2	-7.60	P
	11	Fig.B.3.3	-6.64	P
802.11g	1	Fig.B.3.4	-9.65	P
	6	Fig.B.3.5	-9.99	P
	11	Fig.B.3.6	-9.54	P

802.11n-HT20 mode

Mode	Channel	Power Spectral Density (dBm/3 kHz)		Conclusion
802.11n (HT20)	1	Fig.B.3.7	-10.33	P
	6	Fig.B.3.8	-11.60	P
	11	Fig.B.3.9	-11.78	P

802.11n-HT40 mode

Mode	Channel	Power Spectral Density (dBm/3 kHz)		Conclusion
802.11n (HT40)	3	Fig.B.3.10	-13.81	P
	6	Fig.B.3.11	-14.71	P
	9	Fig.B.3.12	-14.33	P

Conclusion: Pass

Test graphs as below:

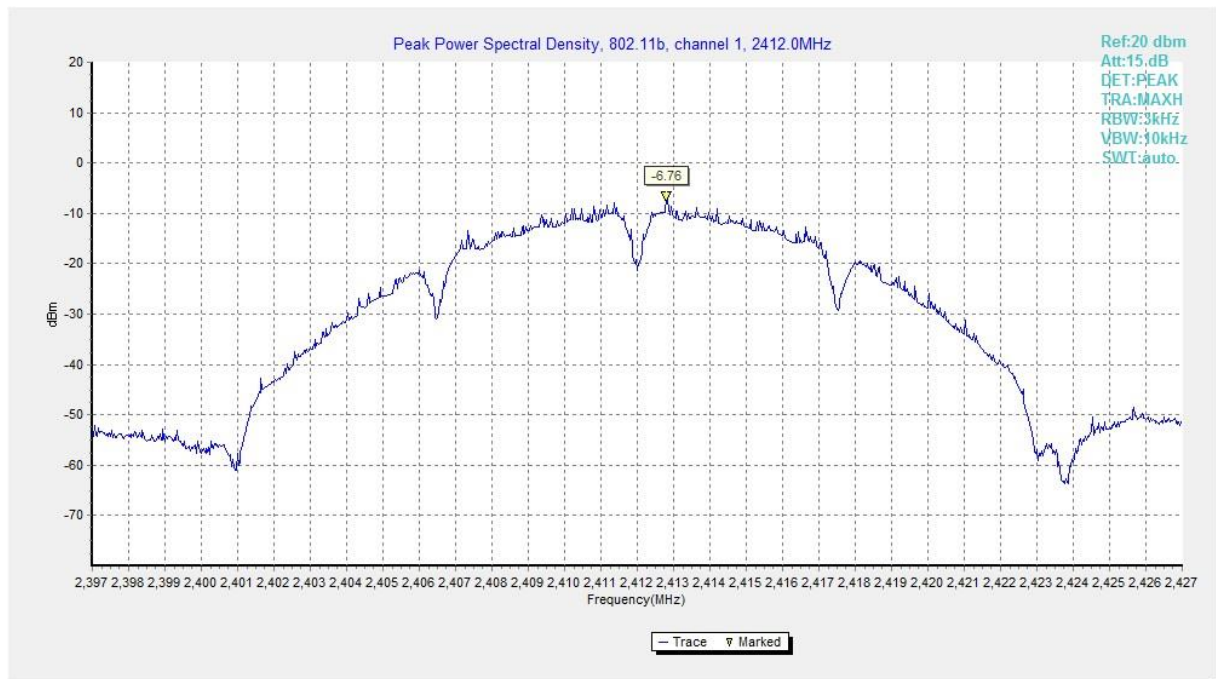


Fig.B.3.1 Power Spectral Density(802.11b,Ch1)

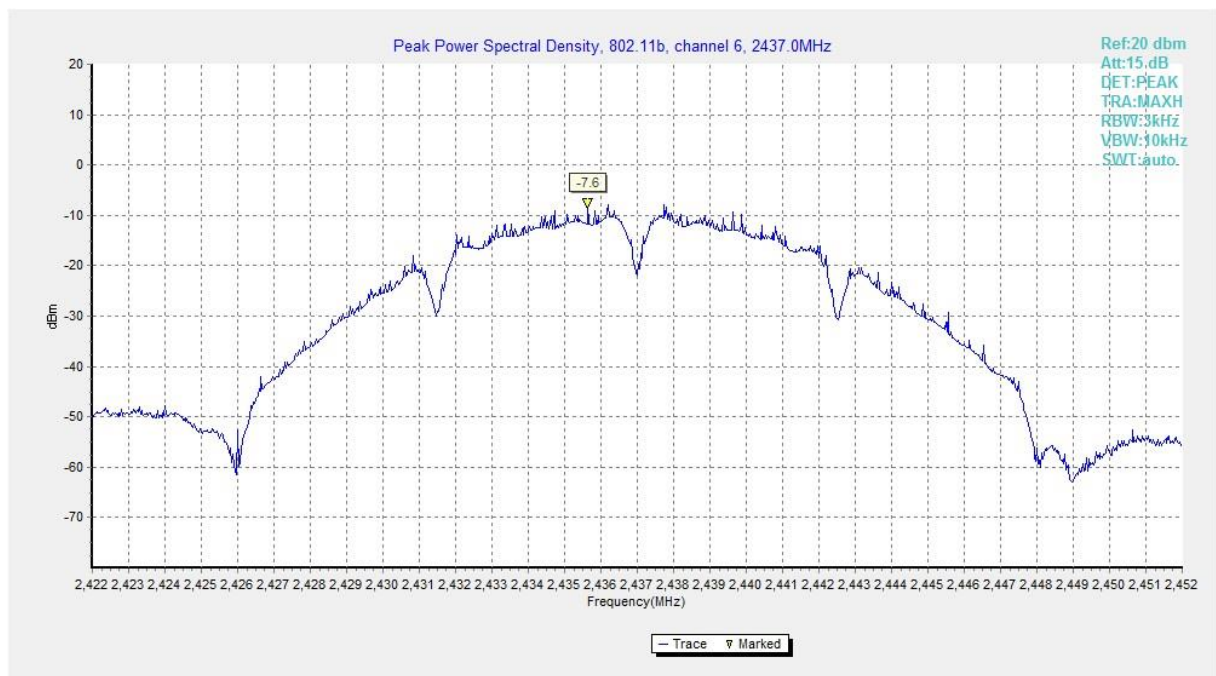


Fig.B.3.2 Power Spectral Density (802.11b, Ch 6)

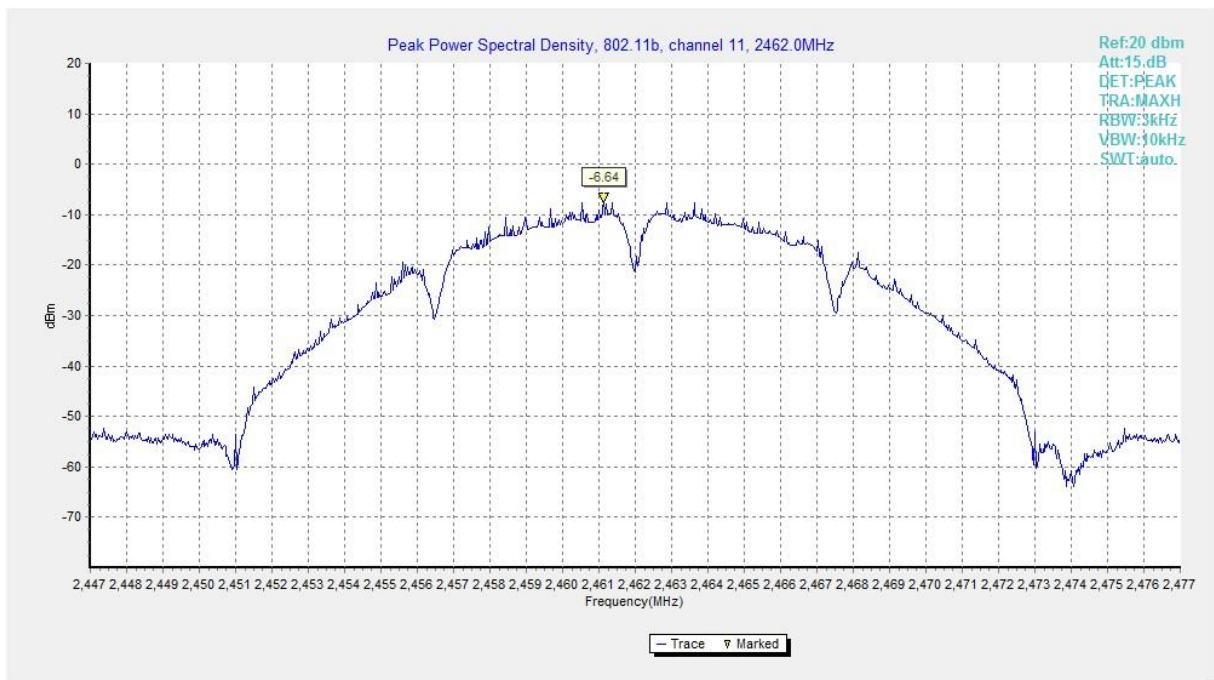


Fig.B.3.3 Power Spectral Density (802.11b, Ch 11)

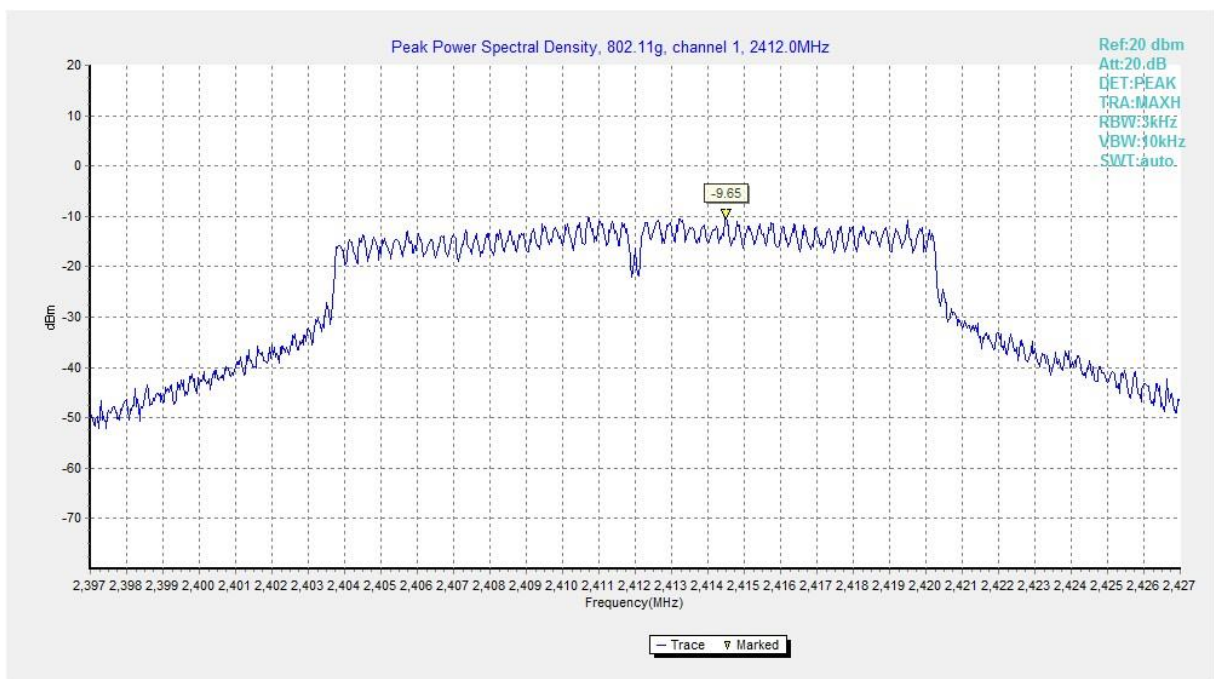


Fig.B.3.4 Power Spectral Density (802.11g, Ch 1)

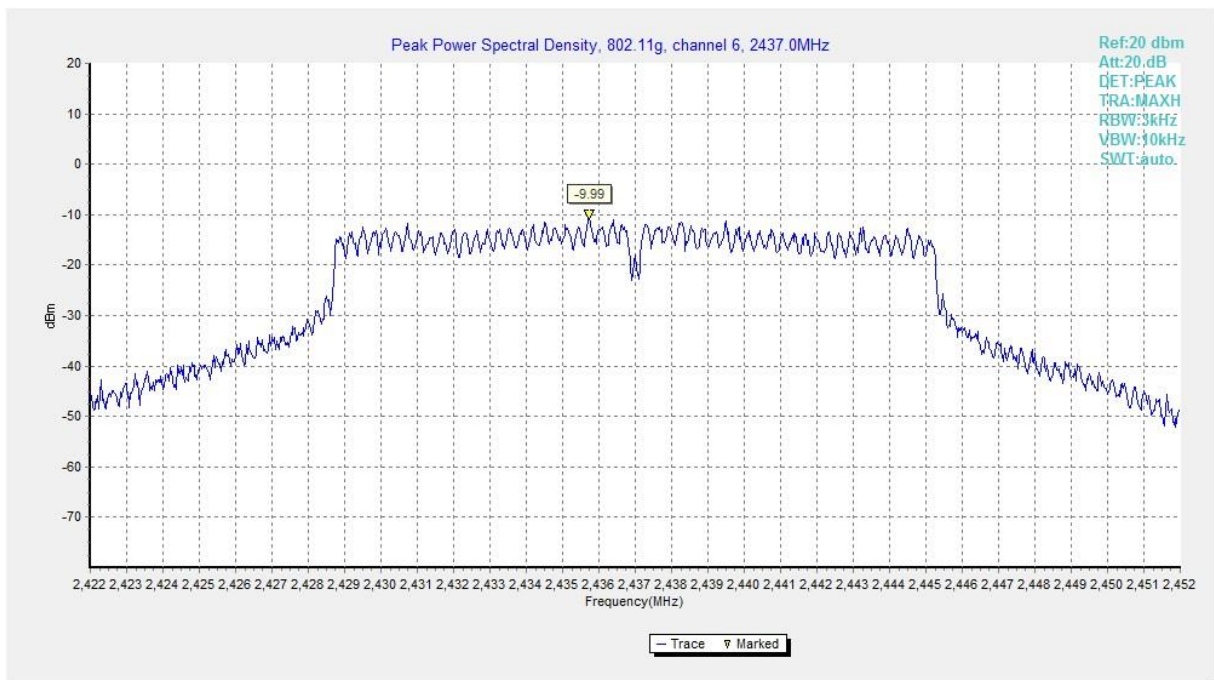


Fig.B.3.5 Power Spectral Density (802.11g, Ch 6)

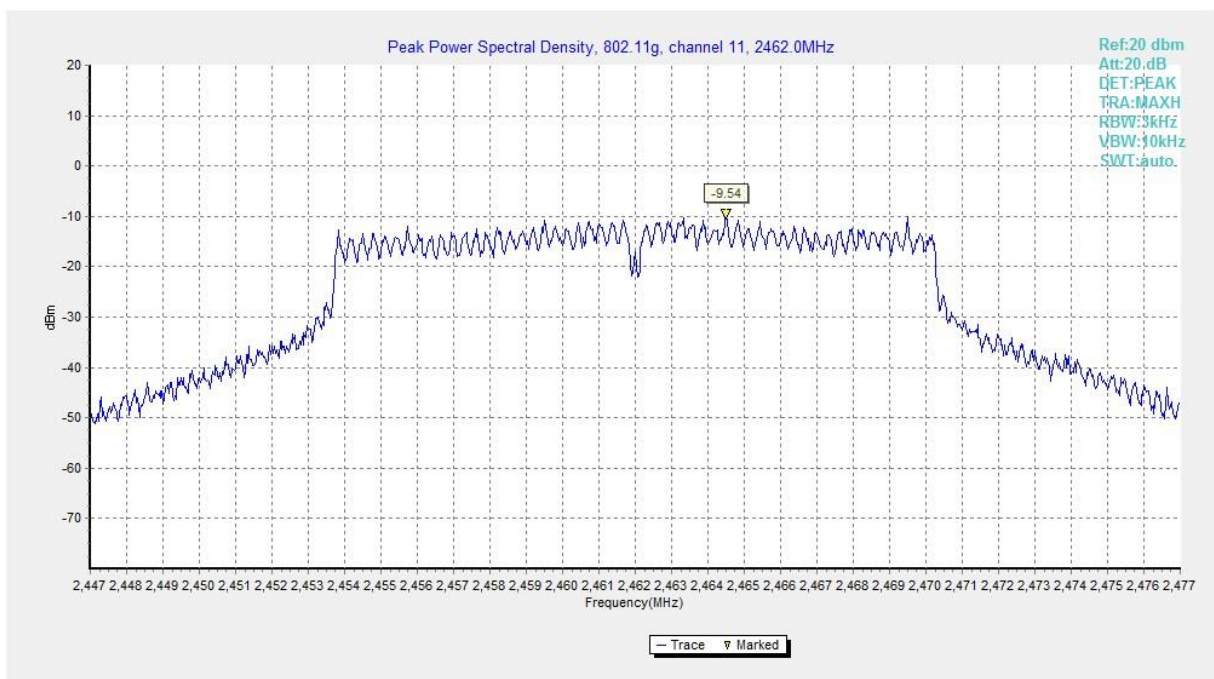


Fig.B.3.6 Power Spectral Density (802.11g, Ch 11)

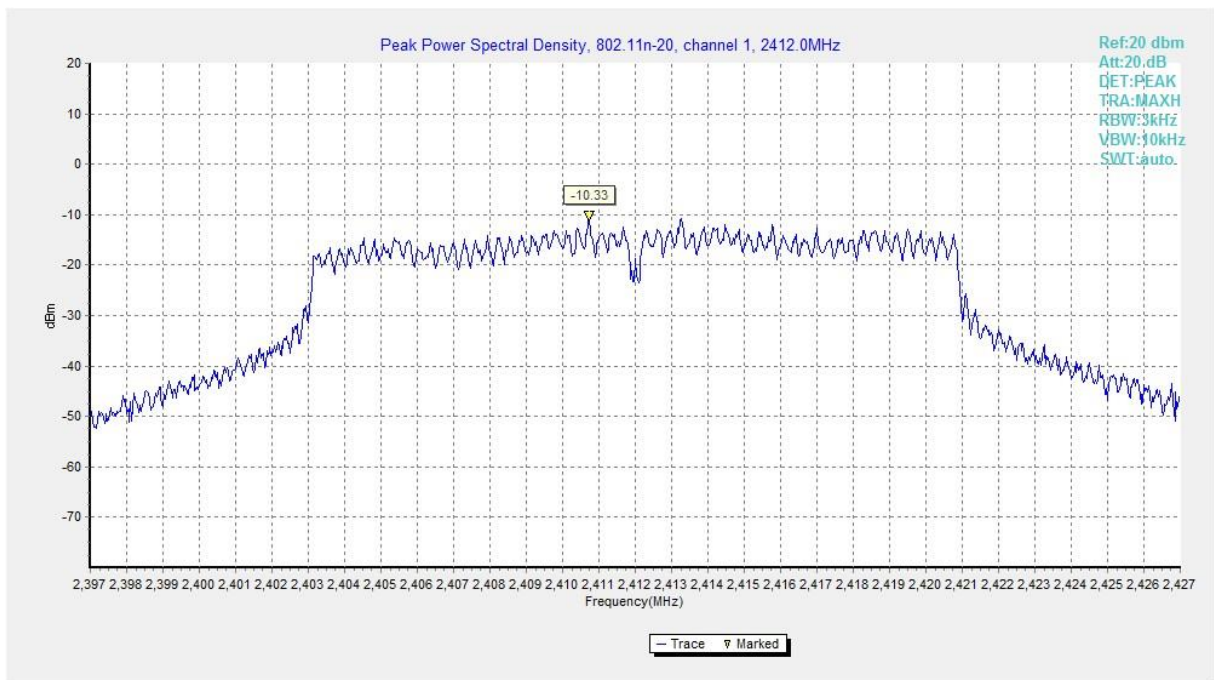


Fig.B.3.7 Power Spectral Density (802.11n-HT20, Ch 1)

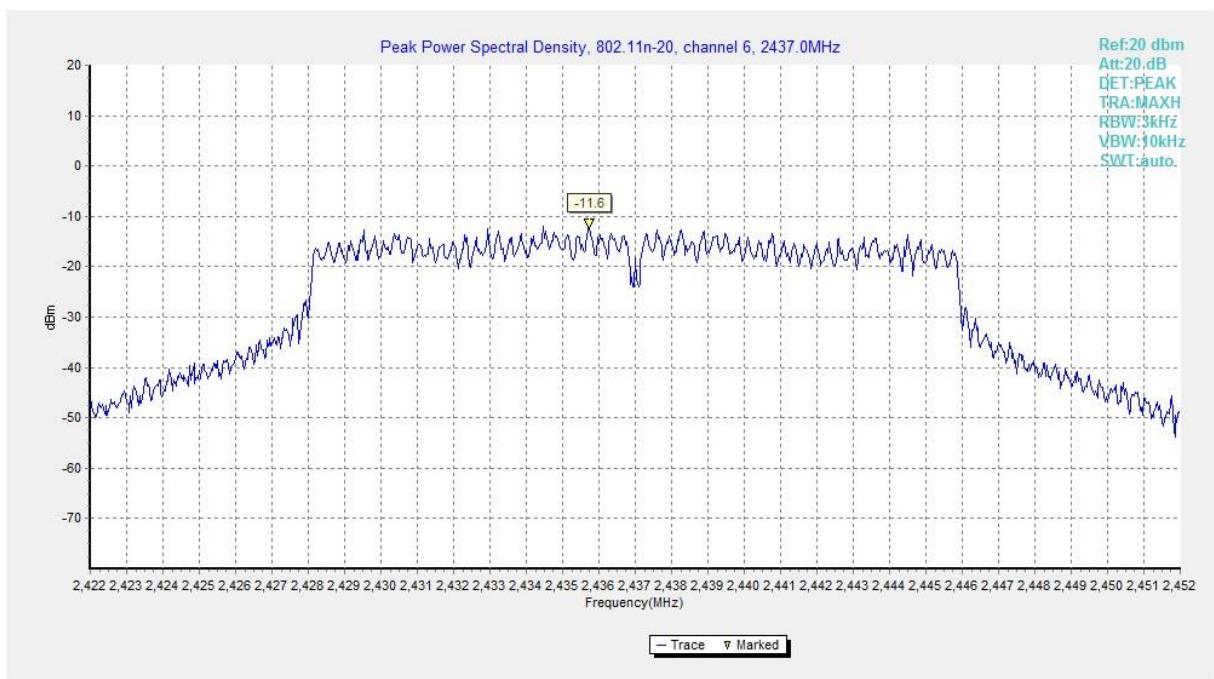


Fig.B.3.8 Power Spectral Density (802.11n-HT20, Ch 6)

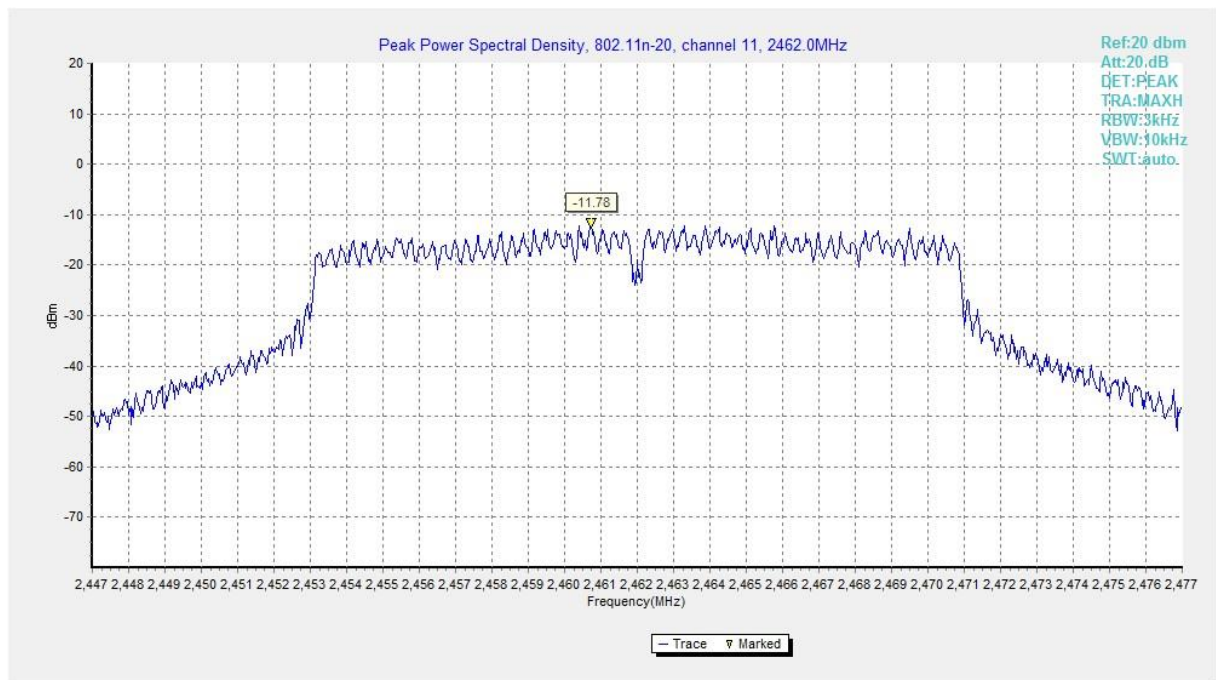


Fig.B.3.9 Power Spectral Density (802.11n-HT20, Ch 11)

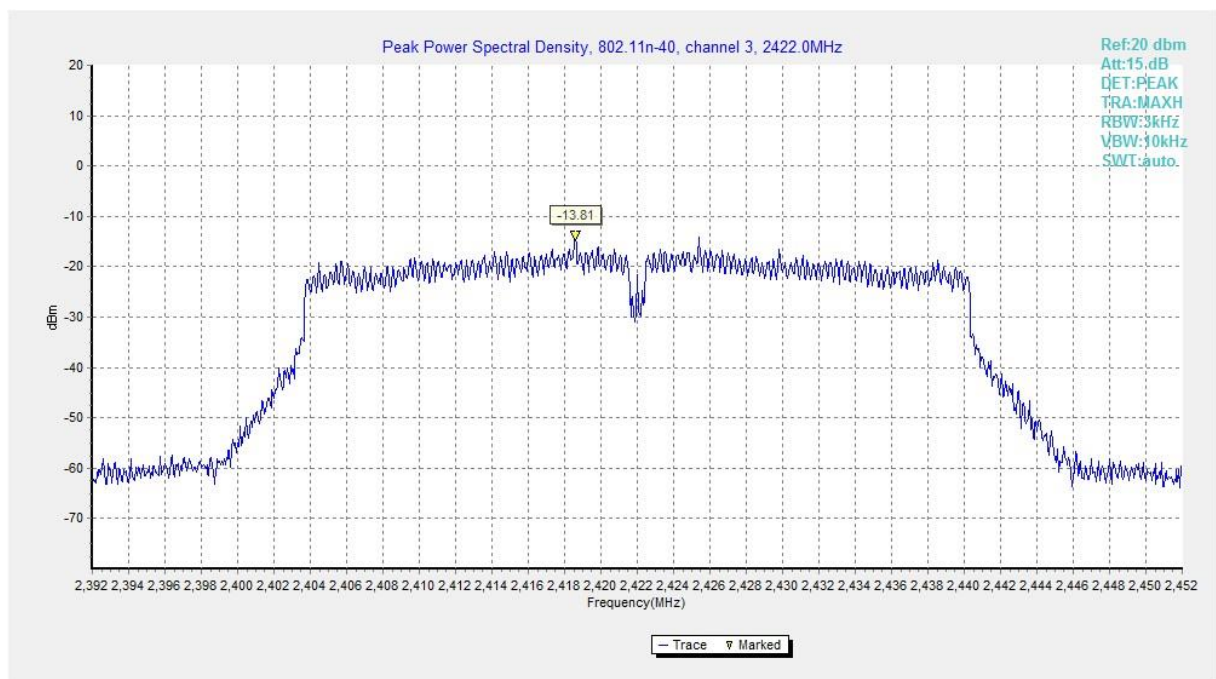


Fig.B.3.10 Power Spectral Density (802.11n-HT40, Ch 3)

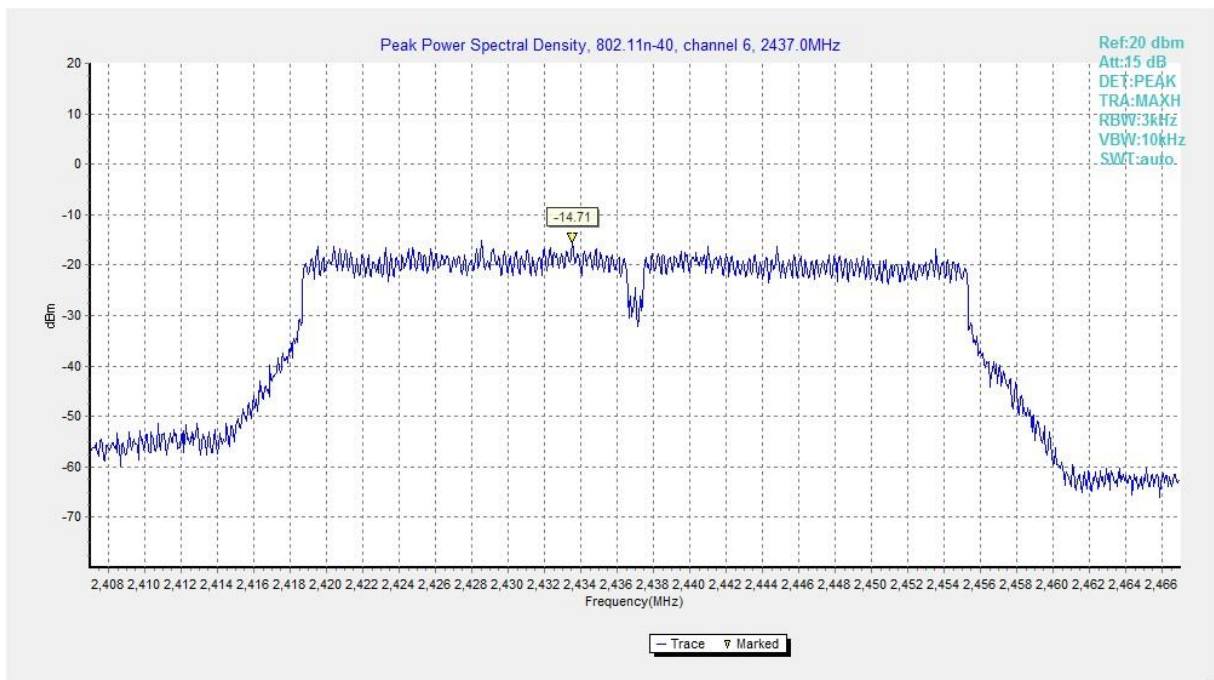


Fig.B.3.11 Power Spectral Density (802.11n-HT40, Ch 6)

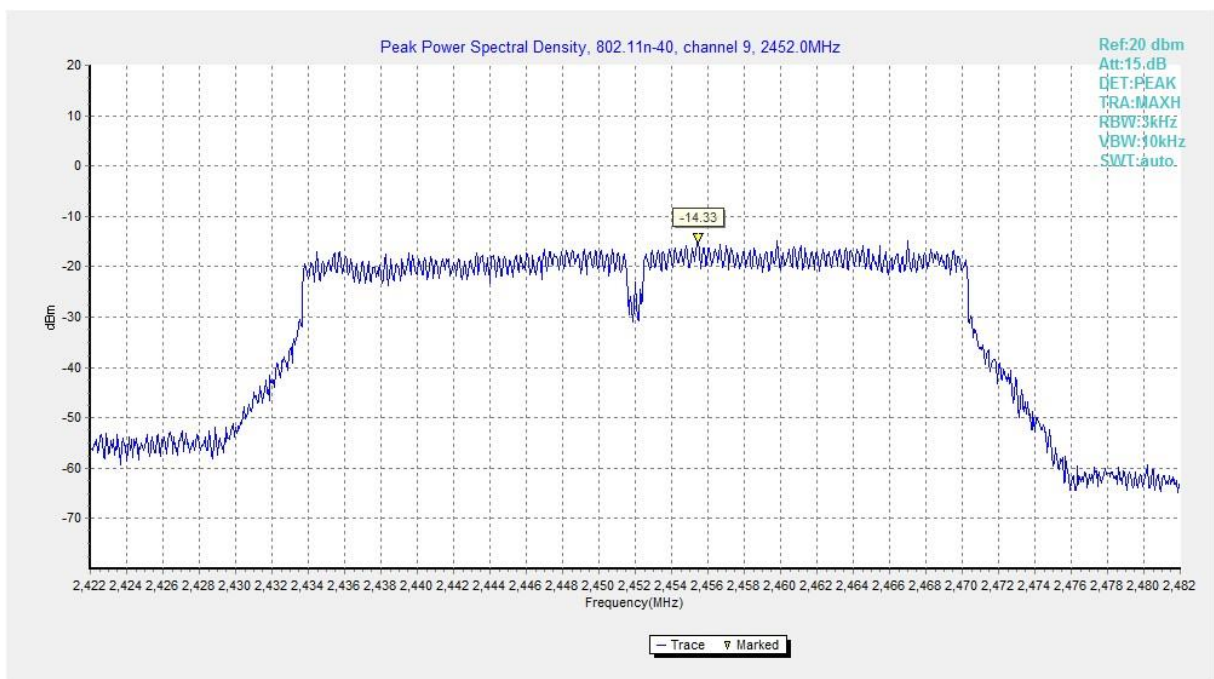


Fig.B.3.12 Power Spectral Density (802.11n-HT40, Ch 9)

B.4. DTS 6-dB Signal Bandwidth

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

- Set RBW = 100 kHz.
- Set the video bandwidth (VBW) = 300 kHz.
- Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Allow the trace to stabilize.
- 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 (MHz)		conclusion
802.11b	1	Fig.B.4.1	8.05	P
	6	Fig.B.4.2	8.05	P
	11	Fig.B.4.3	8.05	P
802.11g	1	Fig.B.4.4	15.30	P
	6	Fig.B.4.5	15.35	P
	11	Fig.B.4.6	15.35	P

802.11n-HT20 mode

Mode	Channel	Occupied 6dB Bandwidth (MHz)		conclusion
802.11n (HT20)	1	Fig.B.4.7	15.90	P
	6	Fig.B.4.8	16.00	P
	11	Fig.B.4.9	15.95	P

802.11n-HT40 mode

Mode	Channel	Occupied 6dB Bandwidth (MHz)		conclusion
802.11n (HT40)	3	Fig.B.4.10	35.12	P
	6	Fig.B.4.11	35.68	P
	9	Fig.B.4.12	35.76	P

Conclusion: Pass

Test graphs as below:



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

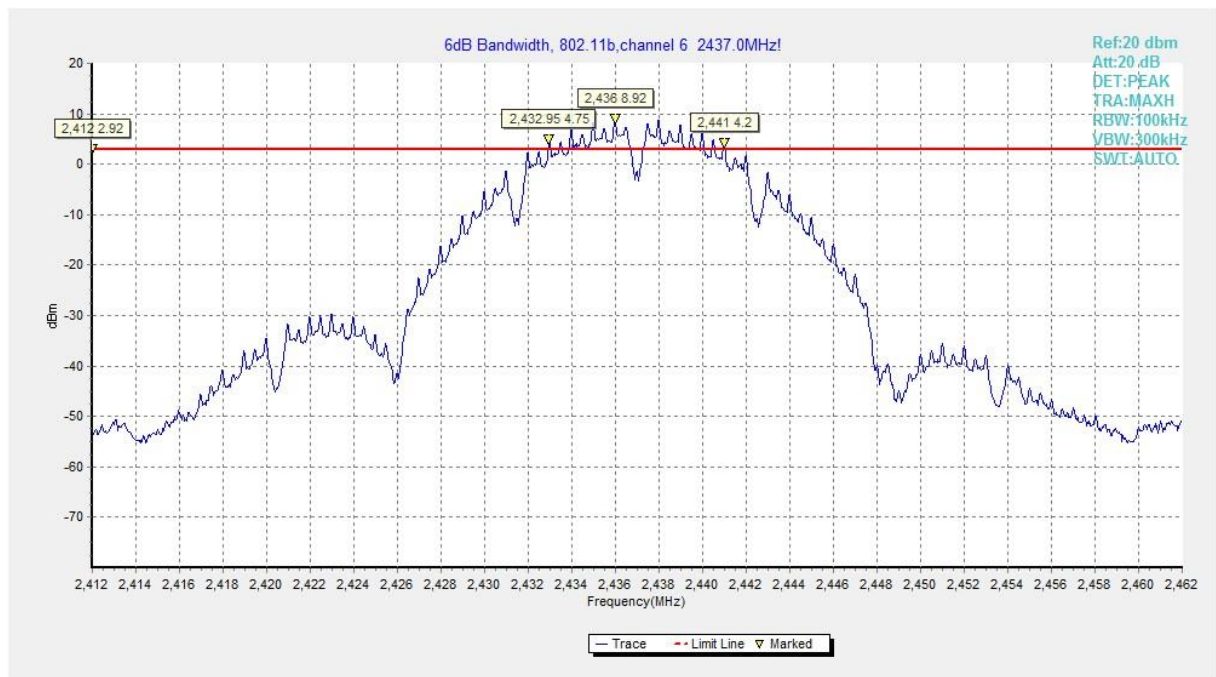


Fig.B.4.2 Occupied 6dB Bandwidth (802.11b, Ch 6)

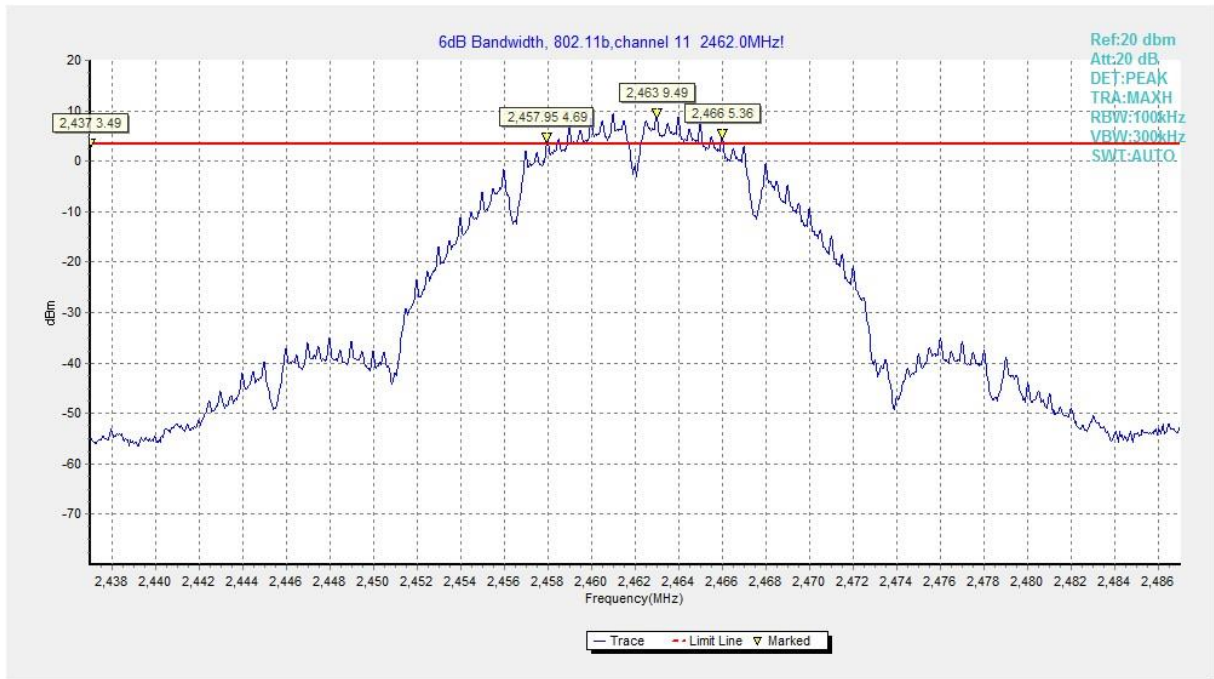


Fig.B.4.3 Occupied 6dB Bandwidth (802.11b, Ch 11)

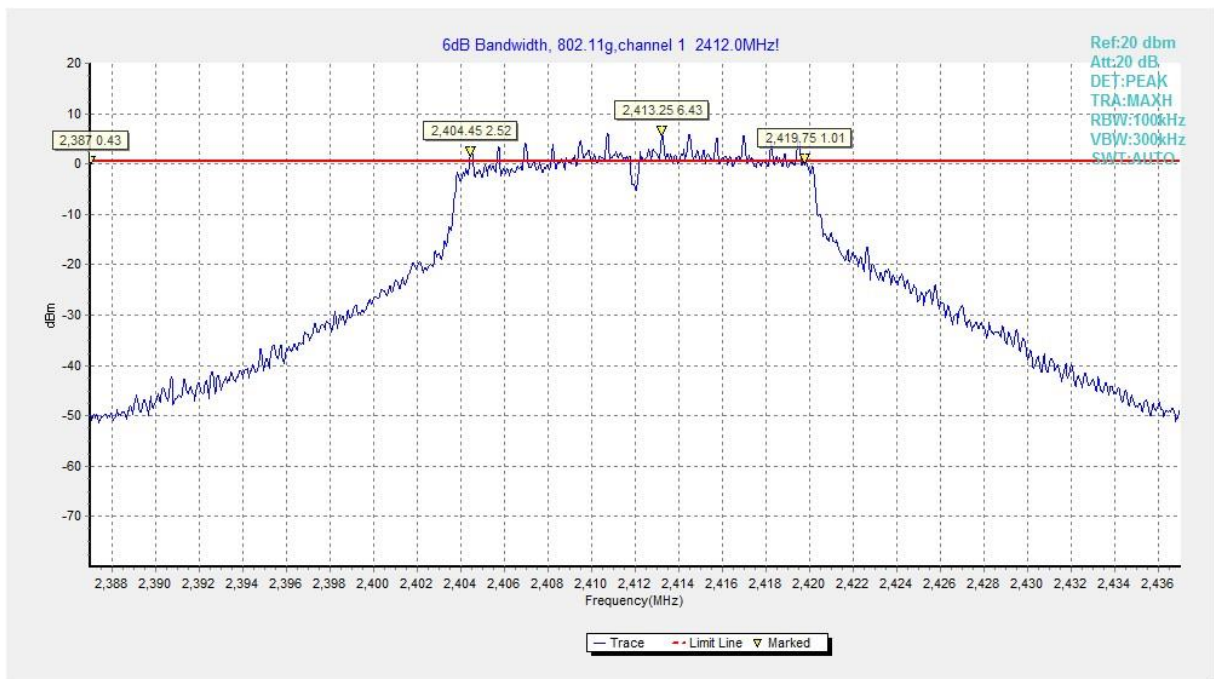


Fig.B.4.4 Occupied 6dB Bandwidth (802.11g, Ch 1)

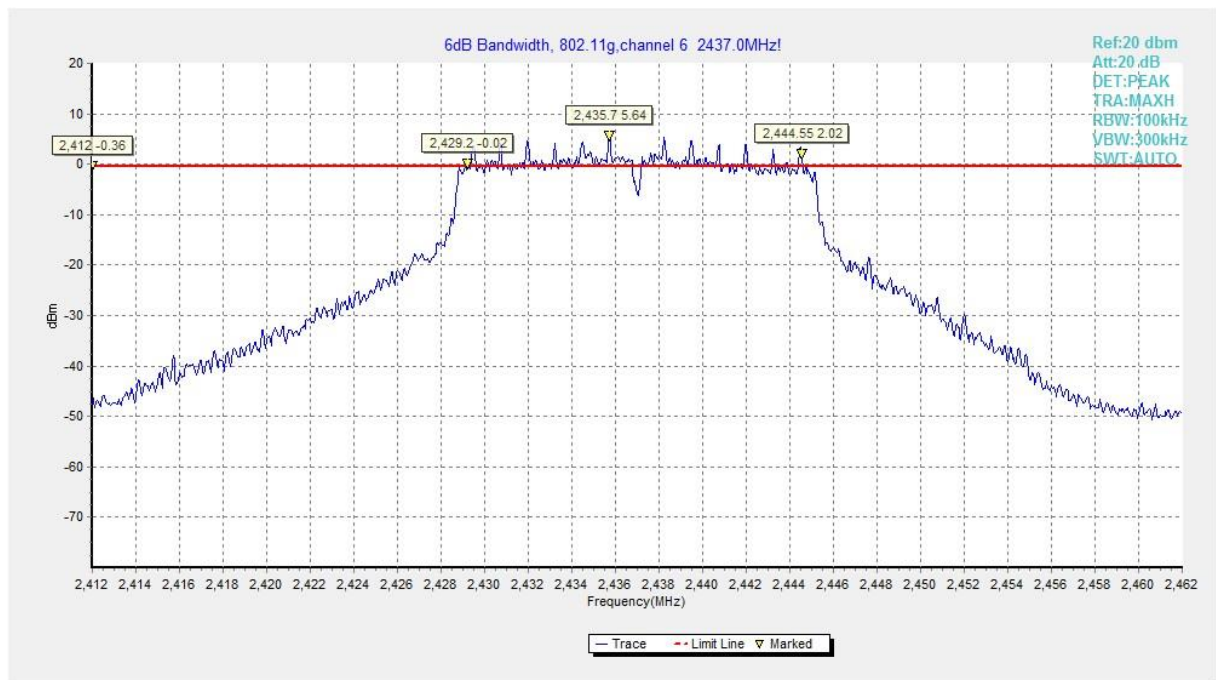


Fig.B.4.5 Occupied 6dB Bandwidth (802.11g, Ch 6)

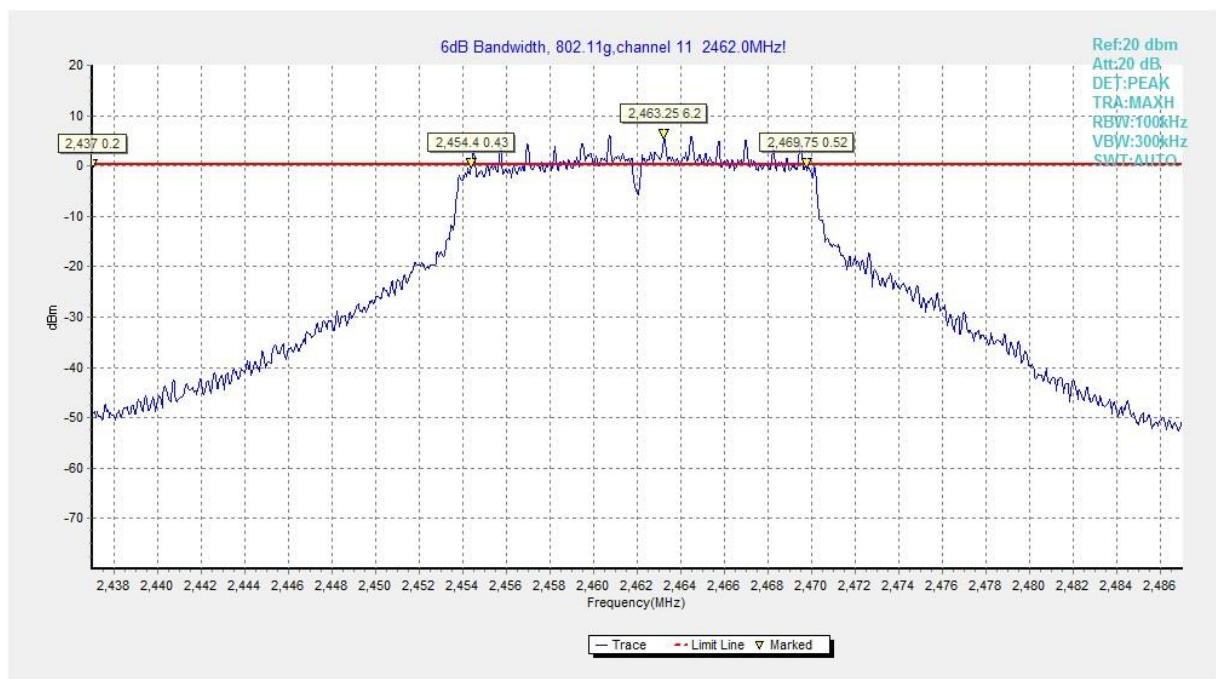


Fig.B.4.6 Occupied 6dB Bandwidth (802.11g, Ch 11)

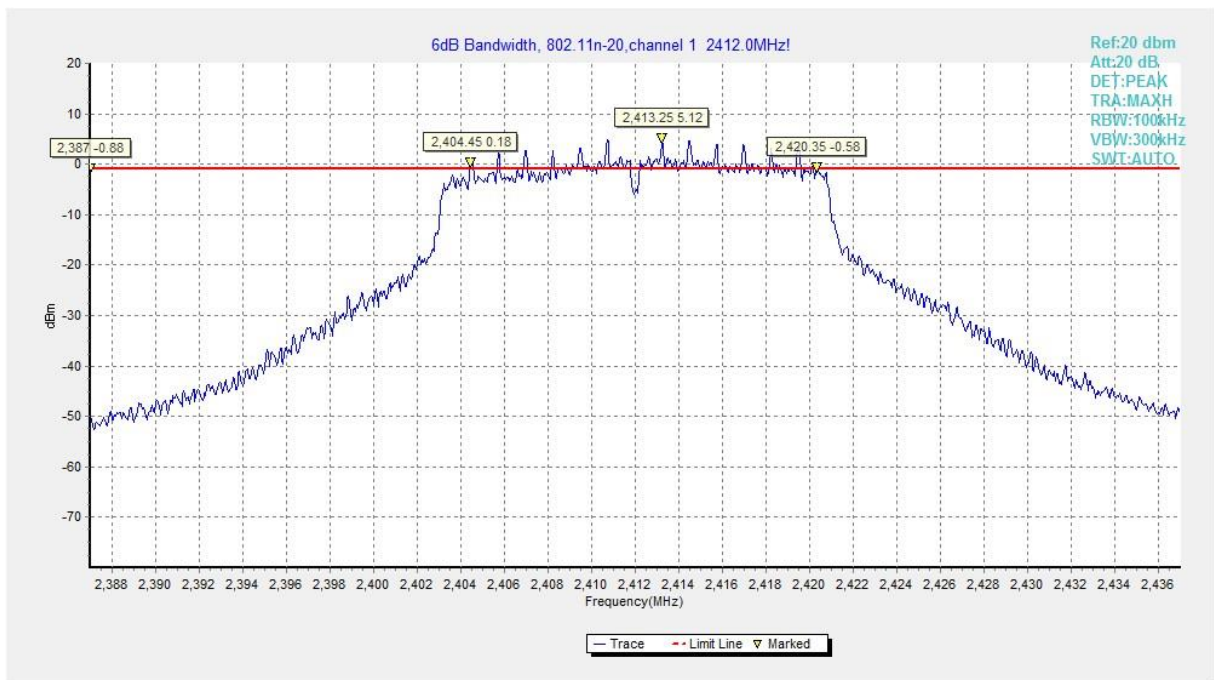


Fig.B.4.7 Occupied 6dB Bandwidth (802.11n-20MHz, Ch 1)

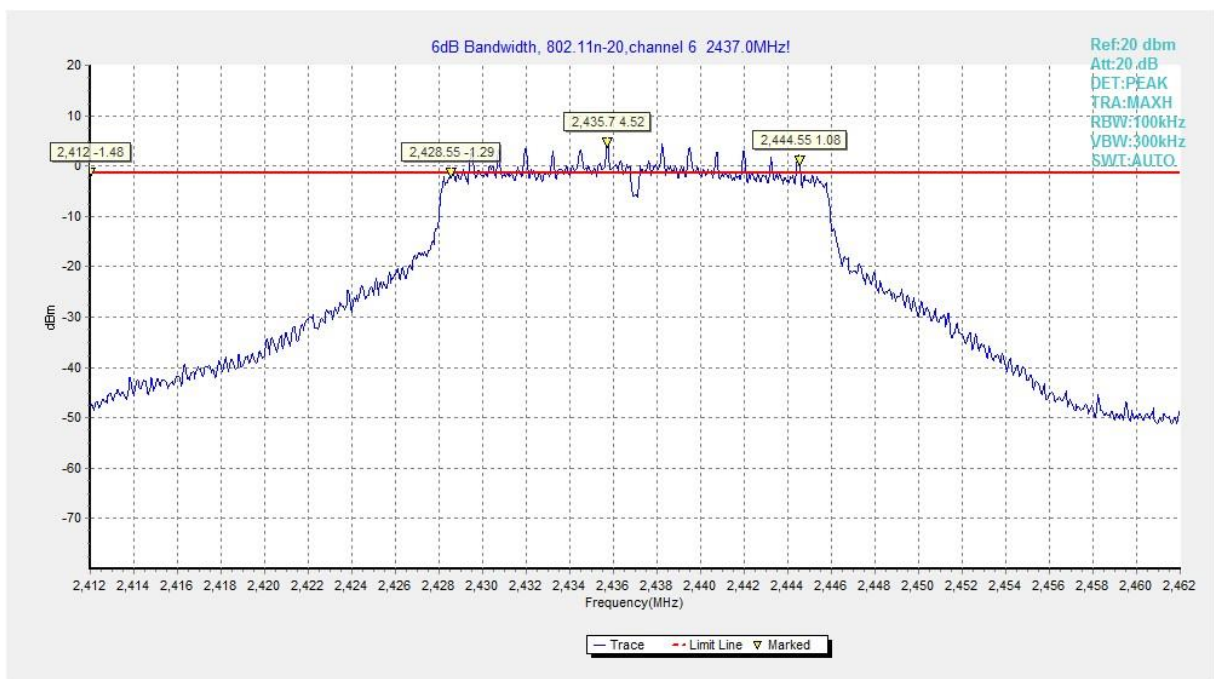


Fig.B.4.8 Occupied 6dB Bandwidth (802.11n-HT20, Ch 6)

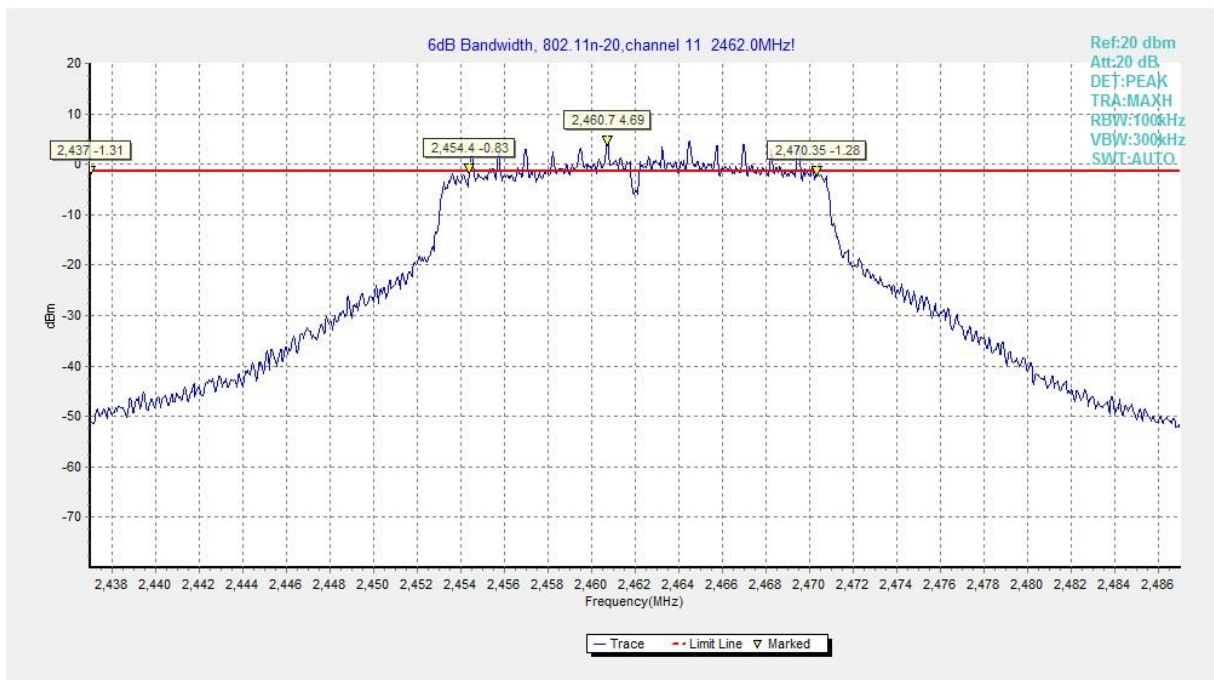


Fig.B.4.9 Occupied 6dB Bandwidth (802.11n-HT20, Ch 11)

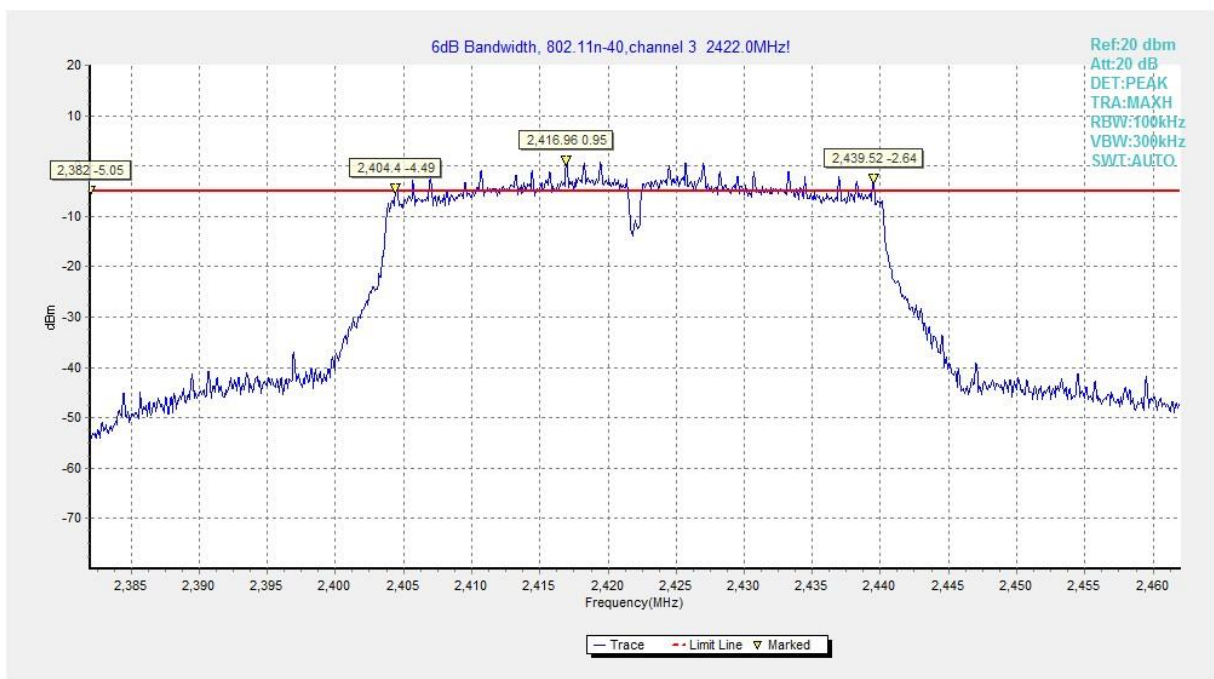


Fig.B.4.10 Occupied 6dB Bandwidth (802.11n-40MHz, Ch 3)

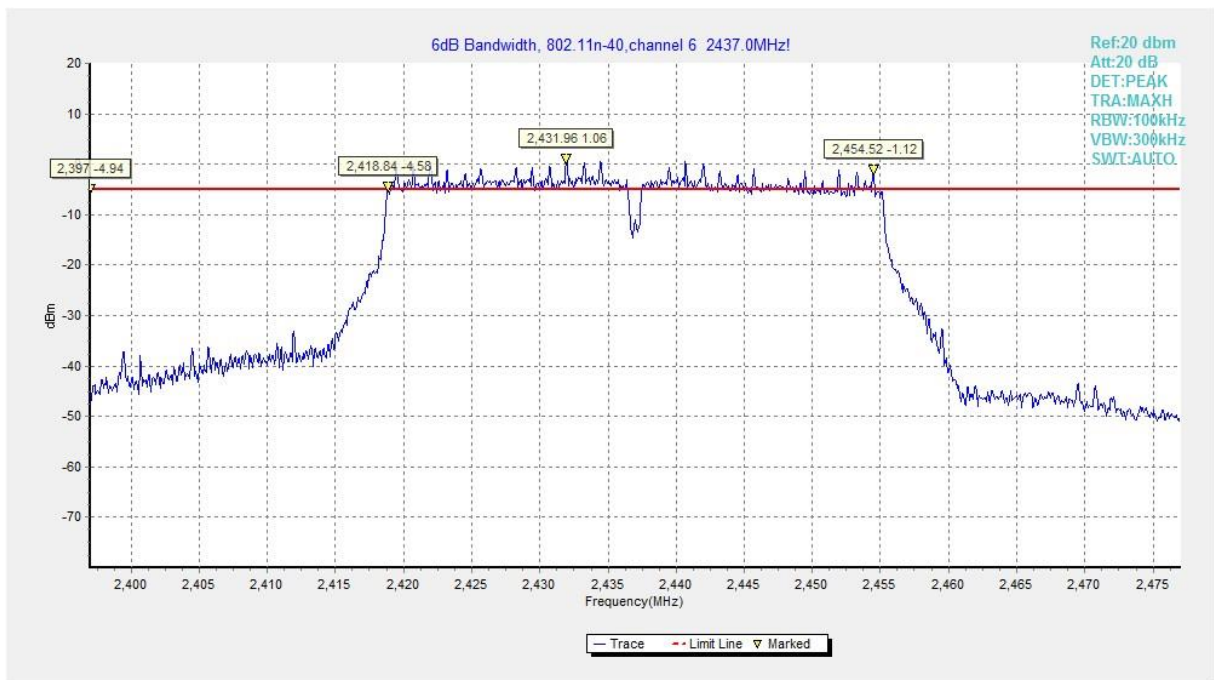


Fig.B.4.11 Occupied 6dB Bandwidth (802.11n-HT40, Ch 6)

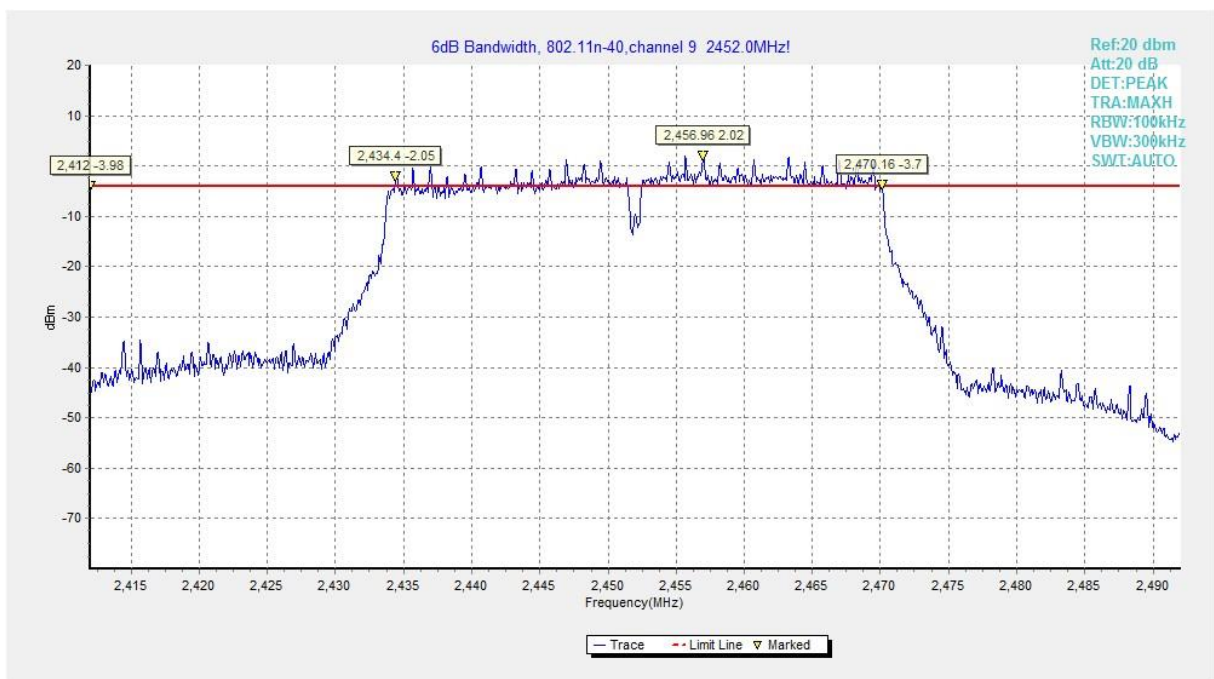


Fig.B.4.12 Occupied 6dB Bandwidth (802.11n-HT40, Ch 9)

B.5. Band Edges Compliance

Method of Measurement: See ANSI C63.10-2013-clause 6.10.4

Connect the spectrum analyzer to the EUT using an appropriate RF cable connected to the EUT output. Configure the spectrum analyzer settings as described below.

- a) Set Span = 100MHz
- b) Sweep Time: coupled
- c) Set the RBW= 100 kHz
- c) Set the VBW= 300 kHz
- d) Detector: Peak
- e) Trace: Max hold

Measurement Limit:

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

EUT ID: EUT2

Measurement Result:

802.11b/g mode

Mode	Channel	Test Results	Conclusion
802.11b	1	Fig.B.5.1	P
	11	Fig.B.5.2	P
802.11g	1	Fig.B.5.3	P
	11	Fig.B.5.4	P

802.11n-HT20 mode

Mode	Channel	Test Results	Conclusion
802.11n (HT20)	1	Fig.B.5.5	P
	11	Fig.B.5.6	P

802.11n-HT40 mode

Mode	Channel	Test Results	Conclusion
802.11n (HT40)	3	Fig.B.5.7	P
	9	Fig.B.5.8	P

Conclusion: Pass

Test graphs as below: