

FCC PART 15C TESTREPORT

No. I18Z60067-IOT01

for

Vodafone

GSM UMTS LTE mobile phone

VFD 720

with

FCC ID: 2ACCJH081

Hardware Version: PIO 02

Software Version: 3E22

Issued Date: 2018-03-27



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
I18Z60067-IOT01	Rev.0	1st edition	2018-03-27



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	8
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.	TEST CONDITIONS	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
AN	NEX A: DETAILED TEST RESULTS	13



A.1. MEASUREMENT METHOD	13
A.2. MAXIMUM OUTPUT POWER	14
A.2.1. PEAK OUTPUT POWER-CONDUCTED	
A.2.2. AVERAGE OUTPUT POWER-CONDUCTED	
A.3. PEAK POWER SPECTRAL DENSITY	17
A.4. DTS 6-DB SIGNAL BANDWIDTH	24
A.5. BAND EDGES COMPLIANCE	30
A.6. TRANSMITTER SPURIOUS EMISSION	35
A.6.1 Transmitter Spurious Emission – Conducted	35
A.6.2 Transmitter Spurious Emission - Radiated	88
A.7. AC POWER-LINE CONDUCTED EMISSION	103
ANNEY D. ACCDEDITATION CERTIFICATE	100



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: 2017-12-08
Testing End Date: 2018-03-15

1.4. Signature

Jiang Xue

(Prepared this test report)

知か

Zheng Wei

(Reviewed this test report)

Lv Songdong

(Approved this test report)



2. Client Information

2.1. Applicant Information

Company Name: TCL Communication Ltd.

7/F, Block F4, TCL International E City, Zhong Shan Yuan Road, Address:

Nanshan District, Shenzhen, Guangdong, P.R. China 518052

City: Shenzhen

Postal Code: /

Country: China

Telephone: 0086-755-36611722

Fax: 0086-75536612000-81722

2.2. Manufacturer Information

Company Name: Vodafone Procurement Company S.à.r.l

Address: 15 rue Edward Steichen, L-2540 Luxembourg, Grand-Duché de

Luxembourg

City: /
Postal Code: /
Country: /
Telephone: /
Fax: /



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

3.1. About EUT

Description GSM UMTS LTE mobile phone

Model name VFD 720 FCC ID 2ACCJH081

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 23.20dBm(OFDM)
Power Supply 3.8V DC by Battery

3.2. Internal Identification of EUT

EUT ID*	SN or IMEI	HW Version	SW Version
EUT10	352861090205617/625	PIO 02	3E22
EUT2	/	PIO 02	3E22

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

3.3. Internal Identification of AE

Length of cable

AE ID*	Description	SN	Remarks
AE1	Battery	/	inbuilt
AE2	Charger	/	17TCT-CH-1235
AE3	Charger	/	18TCT-CH-0001
AE4	Charger	/	1860067CH013
AE9	USB Cable	/	17TCT-DC-0222
AE1			
Model		CAC2900007C1	
Manufac	turer	BYD	
Capacita	nce	2900mAh	
Nominal	voltage	V	
AE2			
Model		CBA0058AGAC5	
Manufac	turer	PUAN	
Length o	f cable	/	
AE3			
Model		CBA0058AAAC4	
Manufacturer		BYD	



AE4

Model CBA0058AAVC1

Manufacturer BYD Length of cable /

AE9

Model CDA6050000C1

Manufacturer Juwei
Length of cable m

3.4. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.10	EUT10+ AE1+ AE2+ AE9	WFI
Set.14	EUT10+ AE1+ AE3+ AE9	WFI
Set.16	EUT10+ AE1+ AE4+ AE9	WFI

3.5. 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 and Phone.

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

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



4. Reference Documents

4.1. Documents supplied by applicant

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

4.2. Reference Documents for testing

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

Reference	Title	Version
	FCC CFR 47, Part 15, Subpart C:	
	15.205 Restricted bands of operation;	
FCC Part15	15.209 Radiated emission limits, general requirements;	2016
	15.247 Operation within the bands 902-928MHz,	
	2400-2483.5 MHz, and 5725-5850 MHz.	
ANSI C63.10	American National Standard of Procedures for Compliance	2013
ANSI 003.10	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)	1	Р
Peak Power Spectral Density	15.247 (e)	1	Р
Occupied 6dB Bandwidth	15.247 (a)	1	Р
Band Edges Compliance	15.247 (d)	1	Р
Transmitter Spurious Emission - Conducted	15.247 (d)	1	Р
Transmitter Spurious Emission - Radiated	15.247, 15.205, 15.209	1	Р
AC Powerline Conducted Emission	15.107, 15.207	1	Р

Please refer to ANNEX A for detail.

Terms used in Verdict column

Р	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		
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.

This model is a variant product which market name is 5052A which FCC ID is 2ACCJH080; and all the conducted test results have been tested from 5052A.

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	3.8V(By battery)
Humidity	H nom	44%



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	2018-08-03
3	LISN	ENV216	101200	Rohde & Schwarz	1 year	2018-03-15
4	Shielding Room	S81	/	ETS-Lindgren	/	/

Radiated emission test system

	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	2018-07-25
2	Loop antenna	HFH2-Z2	829324/00 7	Rohde & Schwarz	3 years	2019-01-13
3	BiLog Antenna	VULB9163	235	Schwarzbeck	3 years	2019-05-10
4	Dual-Ridge Waveguide Horn Antenna	3115	6914	EMCO	3 years	2020-12-15
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. <u>Transmitter Spurious Emission</u>

Conducted (k=1.96)

Johnandea (K-1:50)	
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	4.86
1GHz ≤ f ≤18GHz	5.26
18GHz ≤ f ≤40GHz	5.28

7.6. AC Power-line Conducted Emission

Measurement Uncertainty: 3.38dBm,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

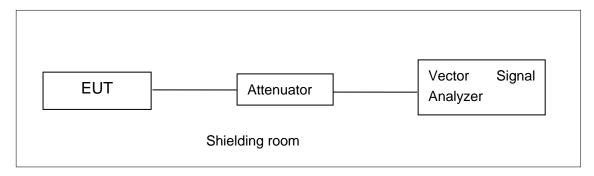


Fig.A.1.1.1: Test Setup Diagram for Conducted Measurements

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;

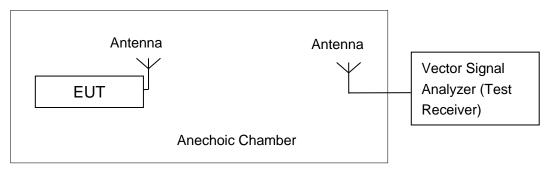


Fig.A.1.2.1: Test Setup Diagram for Radiated Measurements



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 \geq [1.5 \times 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

	Data Rate	Test Result (dBm)			
Mode	(Mbps)	2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)	
	1	19.55	/	/	
000 445	2	20.02	/	/	
802.11b	5.5	21.03	/	/	
	11	22.55	23.20	22.70	
	6	21.97	/	/	
	9	21.98	/	/	
	12	22.00	/	/	
902.11%	18	21.98	/	/	
802.11g	24	22.42	/	/	
	36	22.34	/	/	
	48	22.60	/	/	
	54	22.63	23.01	22.76	

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



802.11n-HT20 mode

	Data Rate	Test Result (dBm)			
Mode	(Index)	2412MHz	2437MHz	2462 MHz	
		(Ch1)	(Ch6)	(Ch11)	
	MCS0	21.50	/	/	
	MCS1	21.25	/	/	
	MCS2	21.29	/	/	
802.11n	MCS3	21.73	/	/	
(20MHz)	MCS4	21.79	/	/	
	MCS5	21.86	/	/	
	MCS6	21.92	/	/	
	MCS7	22.02	22.32	21.96	

The data rate MCS7 is selected as worse condition, and the following cases are performed with this condition.

802.11n-HT40 mode

	Data Rate (Index)	Test Result (dBm)			
Mode		2422MHz	2437MHz	2452 MHz	
	, ,	(Ch3)	(Ch6)	(Ch9)	
	MCS0	20.10	/	/	
-	MCS1	19.93	/	/	
	MCS2	19.99	/	/	
802.11n	MCS3	20.28	/	/	
(40MHz)	MCS4	20.32	/	/	
	MCS5	20.38	/	/	
	MCS6	20.40	/	/	
-	MCS7	20.85	20.71	20.93	

The data rate MCS7 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

Modo	Test Result (dBm)			
Mode	2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)	
802.11b	16.24	16.81	16.11	
802.11g	13.96	14.35	14.10	

802.11n-HT20 mode

Mode	Test Result (dBm)			
Wiode	2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)	
802.11n (20MHz)	13.55	13.77	13.57	

802.11n-HT40 mode

Modo	Test Result (dBm)			
Mode	2422MHz (Ch3)	2437MHz (Ch6)	2452 MHz (Ch9)	
802.11n(40MHz)	11.77	11.74	11.70	

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

ccairing incuc				
Mode	Channel	<u>-</u>	ctral Density /3 kHz)	Conclusion
	1	Fig.A.3.1	-9.58	Р
802.11b	6	Fig.A.3.2	-7.98	Р
	11	Fig.A.3.3	-8.59	Р
	1	Fig.A.3.4	-12.93	Р
802.11g	6	Fig.A.3.5	-11.41	Р
	11	Fig.A.3.6	-9.71	Р

802.11n-HT20 mode

Mode	Channel	Power Spectral Density (dBm/3 kHz)		Conclusion
000.445	1	Fig.A.3.7	-12.26	Р
802.11n	6	Fig.A.3.8	-11.22	Р
(HT20)	11	Fig.A.3.9	-12.75	Р

802.11n-HT40 mode

Mode	Channel	-	ctral Density /3 kHz)	Conclusion
000 11 n	3	Fig.A.3.10	-15.23	Р
802.11n	6	Fig.A.3.11	-16.91	Р
(HT40)	9	Fig.A.3.12	-16.76	Р

Conclusion: Pass

Test graphs as below:



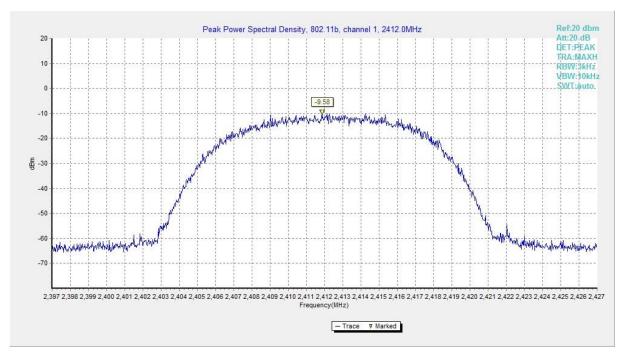


Fig.A.3.1 Power Spectral Density(802.11b,Ch1)

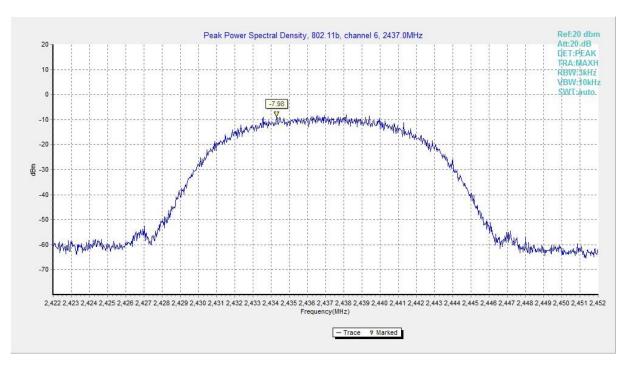


Fig.A.3.2 Power Spectral Density (802.11b, Ch 6)



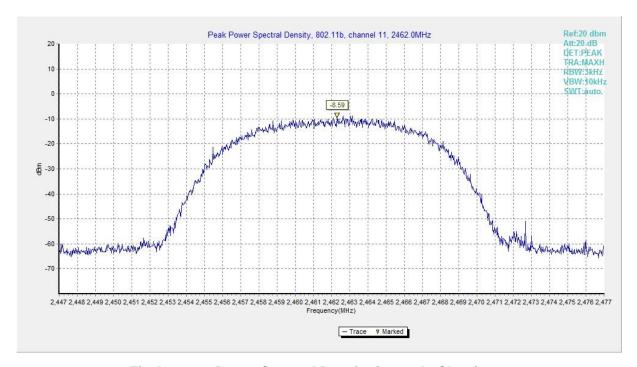


Fig.A.3.3 Power Spectral Density (802.11b, Ch 11)

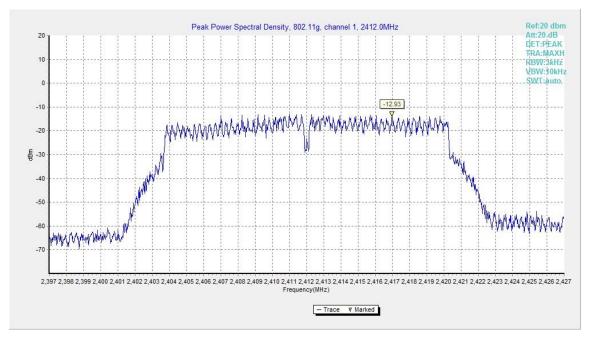


Fig.A.3.4 Power Spectral Density (802.11g, Ch 1)



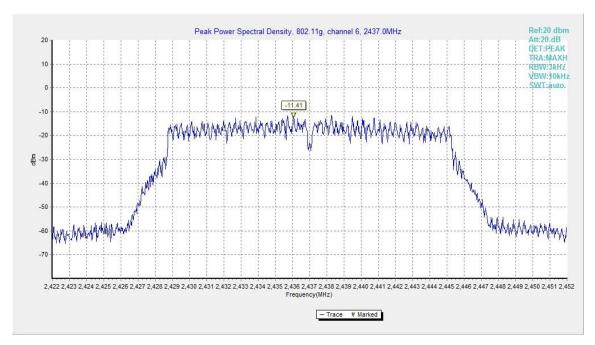


Fig.A.3.5 Power Spectral Density (802.11g, Ch 6)

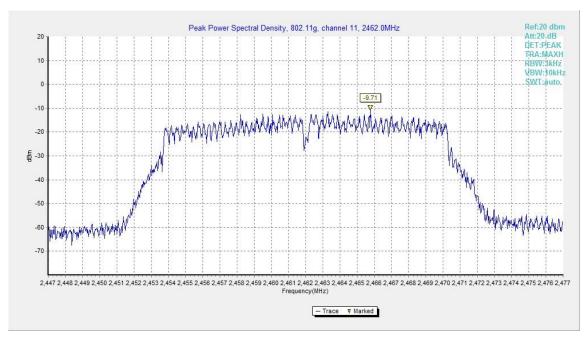


Fig.A.3.6 Power Spectral Density (802.11g, Ch 11)



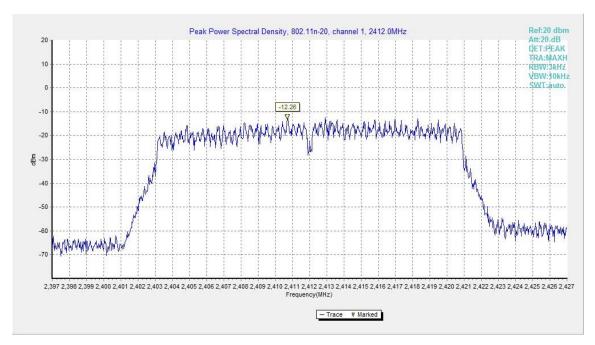


Fig.A.3.7 Power Spectral Density (802.11n-HT20, Ch 1)

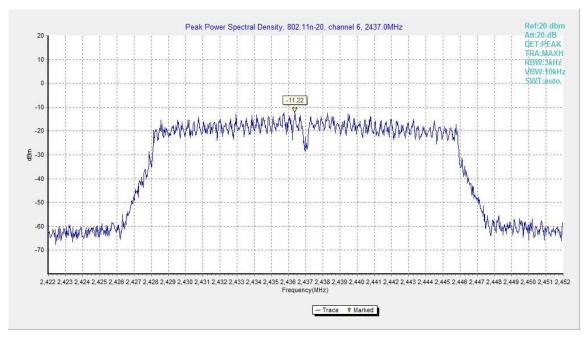


Fig.A.3.8 Power Spectral Density (802.11n-HT20, Ch 6)



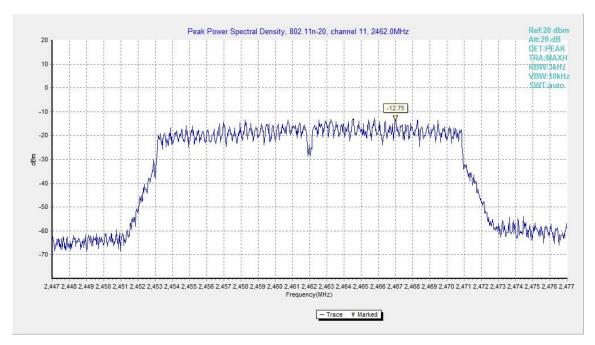


Fig.A.3.9 Power Spectral Density (802.11n-HT20, Ch 11)

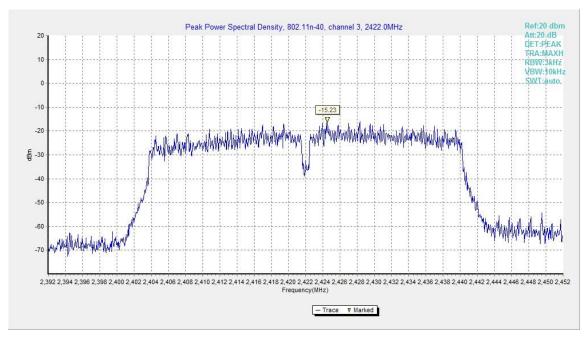


Fig.A.3.10 Power Spectral Density (802.11n-HT40, Ch 3)



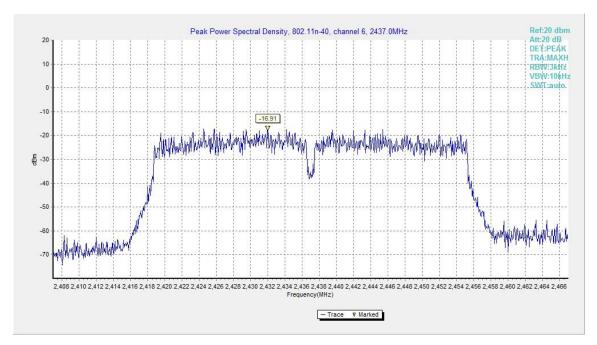


Fig.A.3.11 Power Spectral Density (802.11n-HT40, Ch 6)

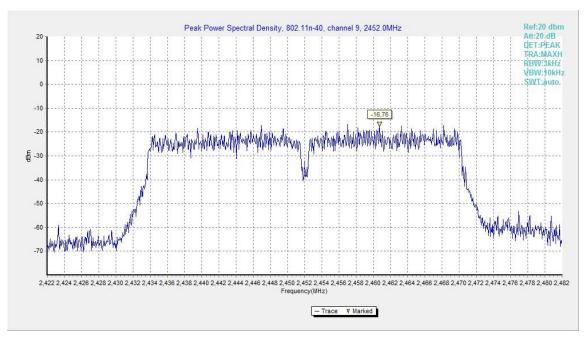


Fig.A.3.12 Power Spectral Density (802.11n-HT40, Ch 9)



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	-	B Bandwidth (Hz)	conclusion
	1	Fig.A.4.1	9680.00	Р
802.11b	6	Fig.A.4.2	8950.00	Р
	11	Fig.A.4.3	8558.00	Р
	1	Fig.A.4.4	16400.00	Р
802.11g	6	Fig.A.4.5	16350.00	Р
	11	Fig.A.4.6	16160.00	Р

802.11n-HT20 mode

Mode	Channel	-	IB Bandwidth (Hz)	conclusion
802.11n (HT20)	1	Fig.A.4.7	17310.00	Р
	6	Fig.A.4.8	16600.00	Р
	11	Fig.A.4.9	16410.00	Р

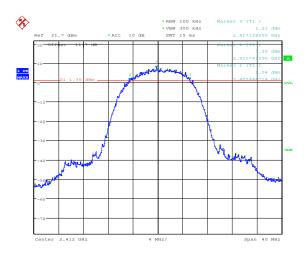
802.11n-HT40 mode

Mode	Channel	•	B Bandwidth (Hz)	conclusion
902 11 n	3	Fig.A.4.10	35380.00	Р
802.11n	6	Fig.A.4.11	35130.00	Р
(HT40)	9	Fig.A.4.12	26410.00	Р

Conclusion: Pass



Test graphs as below:



Date: 20.DEC.2017 16:11:28

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

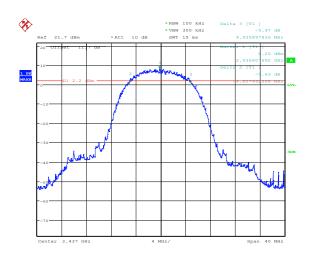
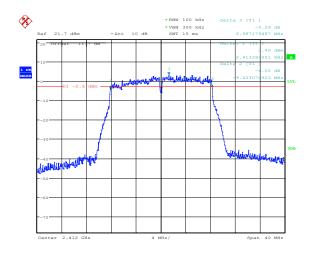


Fig.A.4.2 Occupied 6dB Bandwidth (802.11b, Ch 6)





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



Date: 20.DEC.2017 16:19:12

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

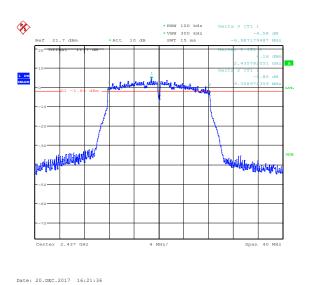
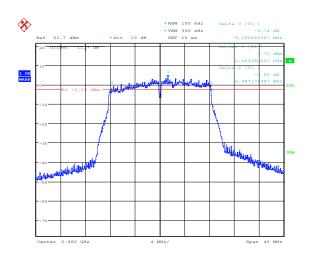


Fig.A.4.5 Occupied 6dB Bandwidth (802.11g, Ch 6)





Date: 20.DEC.2017 16:23:15

Date: 20.DEC.2017 16:31:22

Date: 20.DEC.2017 16:32:57

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

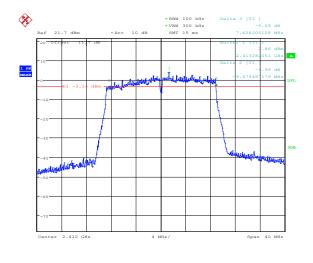


Fig.A.4.7 Occupied 6dB Bandwidth (802.11n-20MHz, Ch 1)

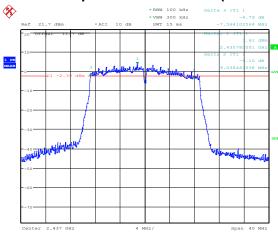
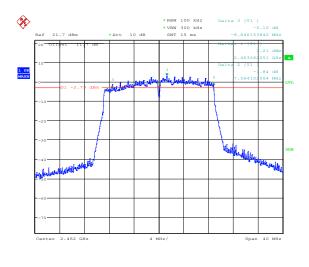


Fig.A.4.8 Occupied 6dB Bandwidth (802.11n-HT20, Ch 6)





Date: 20.DEC.2017 16:34:41

Date: 21.DEC.2017 09:56:39

Date: 21.DEC.2017 09:58:19

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

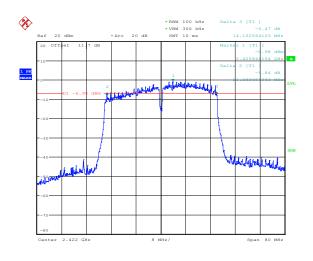


Fig.A.4.10 Occupied 6dB Bandwidth (802.11n-40MHz, Ch 3)

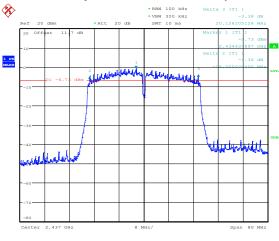


Fig.A.4.11 Occupied 6dB Bandwidth (802.11n-HT40, Ch 6)



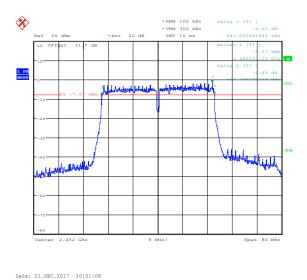


Fig.A.4.12 Occupied 6dB Bandwidth (802.11n-HT40, Ch 9)



A.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 = 100MHzb) Sweep Time: coupledc) Set the RBW= 100 kHzc) Set the VBW= 300 kHz

d) Detector: Peake) 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
902 11b	1	Fig.A.5.1	Р
802.11b	11	Fig.A.5.2	Р
002.44 ~	1	Fig.A.5.3	Р
802.11g	11	Fig.A.5.4	Р

802.11n-HT20 mode

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

802.11n-HT40 mode

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

Conclusion: Pass Test graphs as below:





Fig.A.5.1 Band Edges (802.11b, Ch 1)



Fig.A.5.2 Band Edges (802.11b, Ch 11)



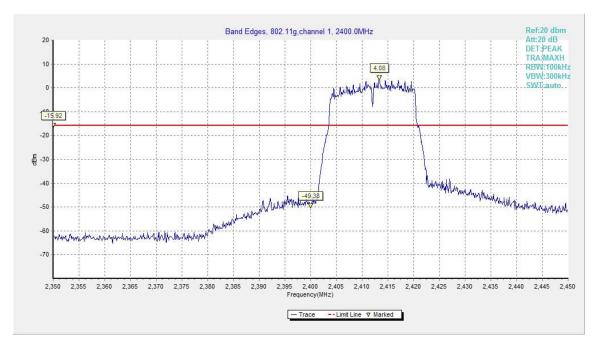


Fig.A.5.3 Band Edges (802.11g, Ch 1)



Fig.A.5.4 Band Edges (802.11g, Ch 11)



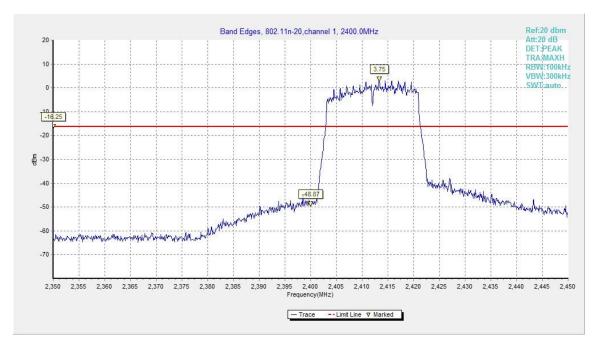


Fig.A.5.5 Band Edges (802.11n-HT20, Ch 1)



Fig.A.5.6 Band Edges (802.11n-HT20, Ch 11)



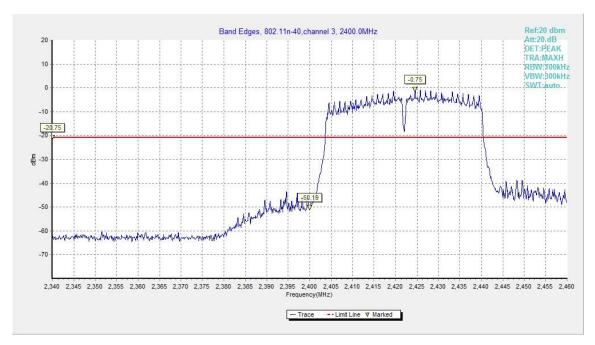


Fig.A.5.7 Band Edges (802.11n-HT40, Ch 3)

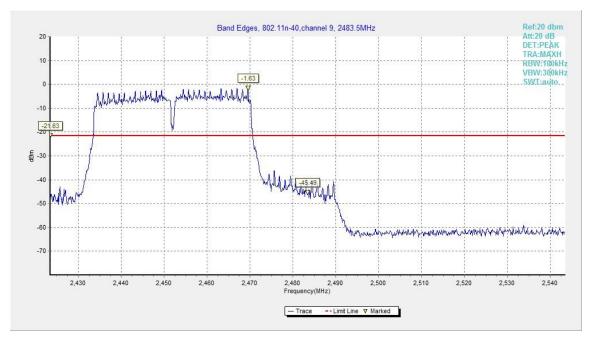


Fig.A.5.8 Band Edges (802.11n-HT40, Ch 9)



A.6. Transmitter Spurious Emission

A.6.1 Transmitter Spurious Emission – Conducted

Method of Measurement: See ANSI C63.10-2013-clause 11.11.2

Establish a reference level by using the following procedure:

- a) Set instrument center frequency to DTS channel center frequency
- b) Set the span to $\,\geqslant\,$ 1.5 times the DTS bandwidth
- c) Set the RBW= 100 kHz
- d) Set the VBW= 300 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 PSD level

Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

Establish an emission level by using the following procedure:

- a) Set the center frequency and span to encompass frequency range to be measured.
- b) Set the RBW = 100 kHz.
- c) Set the VBW = 300 kHz.
- d) Detector = peak.
- e) Sweep time = auto couple.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247 (d)	20dB below peak output power in 100 kHz
	bandwidth

EUT ID: EUT2

Measurement Results:



802.11b mode

MODE	Channel	Frequency Range	Test Results	Conclusion
802.11b	1	2.412 GHz	Fig.A.6.1.1	Р
		30 MHz ~ 1 GHz	Fig.A.6.1.2	Р
		1 GHz ~ 2.5 GHz	Fig.A.6.1.3	Р
		2.5 GHz ~ 7.5 GHz	Fig.A.6.1.4	Р
		7.5 GHz ~ 10 GHz	Fig.A.6.1.5	Р
		10 GHz ~ 15 GHz	Fig.A.6.1.6	Р
		15 GHz ~ 20 GHz	Fig.A.6.1.7	Р
		20 GHz ~ 26 GHz	Fig.A.6.1.8	Р
	6	2.437 GHz	Fig.A.6.1.9	Р
		30 MHz ~ 1 GHz	Fig.A.6.1.10	Р
		1 GHz ~ 2.5 GHz	Fig.A.6.1.11	Р
		2.5 GHz ~ 7.5 GHz	Fig.A.6.1.12	Р
		7.5 GHz ~ 10 GHz	Fig.A.6.1.13	Р
		10 GHz ~ 15 GHz	Fig.A.6.1.14	Р
		15 GHz ~ 20 GHz	Fig.A.6.1.15	Р
		20 GHz ~ 26 GHz	Fig.A.6.1.16	Р
	11	2.462 GHz	Fig.A.6.1.17	Р
		30 MHz ~ 1 GHz	Fig.A.6.1.18	Р
		1 GHz ~ 2.5 GHz	Fig.A.6.1.19	Р
		2.5 GHz ~ 7.5 GHz	Fig.A.6.1.20	Р
		7.5 GHz ~ 10 GHz	Fig.A.6.1.21	Р
		10 GHz ~ 15 GHz	Fig.A.6.1.22	Р
		15 GHz ~ 20 GHz	Fig.A.6.1.23	Р
		20 GHz ~ 26 GHz	Fig.A.6.1.24	Р



802.11g mode

MODE	Channel	Frequency Range	Test Results	Conclusion
802.11g	1	2.412 GHz	Fig.A.6.1.25	Р
		30 MHz ~ 1 GHz	Fig.A.6.1.26	Р
		1 GHz ~ 2.5 GHz	Fig.A.6.1.27	Р
		2.5 GHz ~ 7.5 GHz	Fig.A.6.1.28	Р
		7.5 GHz ~ 10 GHz	Fig.A.6.1.29	Р
		10 GHz ~ 15 GHz	Fig.A.6.1.30	Р
		15 GHz ~ 20 GHz	Fig.A.6.1.31	Р
		20 GHz ~ 26 GHz	Fig.A.6.1.32	Р
	6	2.437 GHz	Fig.A.6.1.33	Р
		30 MHz ~ 1 GHz	Fig.A.6.1.34	Р
		1 GHz ~ 2.5 GHz	Fig.A.6.1.35	Р
		2.5 GHz ~ 7.5 GHz	Fig.A.6.1.36	Р
		7.5 GHz ~ 10 GHz	Fig.A.6.1.37	Р
		10 GHz ~ 15 GHz	Fig.A.6.1.38	Р
		15 GHz ~ 20 GHz	Fig.A.6.1.39	Р
		20 GHz ~ 26 GHz	Fig.A.6.1.40	Р
	11	2.462 GHz	Fig.A.6.1.41	Р
		30 MHz ~ 1 GHz	Fig.A.6.1.42	Р
		1 GHz ~ 2.5 GHz	Fig.A.6.1.43	Р
		2.5 GHz ~ 7.5 GHz	Fig.A.6.1.44	Р
		7.5 GHz ~ 10 GHz	Fig.A.6.1.45	Р
		10 GHz ~ 15 GHz	Fig.A.6.1.46	Р
		15 GHz ~ 20 GHz	Fig.A.6.1.47	Р
		20 GHz ~ 26 GHz	Fig.A.6.1.48	Р