



# FCC PART 15C TEST REPORT No.I21Z61147-IOT04

for

**HMD Global Oy**

**Smart Phone**

**TA-1399**

With

**FCC ID: 2AJOTTA-1399**

**Hardware Version: V1.0**

**Software Version: 04US\_0\_033**

**Issued Date: 2021-09-06**

**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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## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
I21Z61147-IOT04	Rev.0	1st edition	2021-09-06
I21Z61147-IOT04	Rev.1	Change P.5.Testing Location 1	2021-09-09

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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

Radiated testing Location: CTTL(BDA)

Address: No.18A, Kangding Street, Beijing Economic-Technology  
Development Area, Beijing, P. R. China 100176

### **1.3. Testing Environment**

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

### **1.4. Project date**

Testing Start Date: 2021-07-15


Testing End Date: 2021-09-06

## 1.5. Signature

谢秀珍

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Xie Xiuzhen  
( Prepared this test report )



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Zheng Wei  
(Reviewed this test report)

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Hu Xiaoyu  
(Approved this test report)



## **2. CLIENT INFORMATION**

### **2.1. Applicant Information**

Company Name: HMD Global Oy  
Address: Bertel Jungin aukio 9, 02600 Espoo, Finland  
City: /  
Postal Code: /  
Country: Finland  
Telephone: +393 316272922  
Fax: /

### **2.2. Manufacturer Information**

Company Name: HMD Global Oy  
Address: Bertel Jungin aukio 9, 02600 Espoo, Finland  
City: /  
Postal Code: /  
Country: Finland  
Telephone: +393 316272922  
Fax: /

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

#### EQUIPMENT(AE)

#### 3.1. About EUT

Description	Smart Phone
Model name	TA-1399
FCC ID	2AJOTTA-1399
WLAN Frequency Band	ISM Band: 5725MHz~5850MHz
Type of modulation	OFDM
Voltage	3.8V

#### 3.2. Internal Identification of EUT used during the test

EUT ID*	IMEI	HW Version	SW Version
EUT1	354773220015030	V1.0	04US_0_033
EUT2	354773220017127	V1.0	04US_0_033

\*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	NOTE
AE1	Battery	/
AE2	Adapter	/
AE3	USB Cable	/

##### AE1

Model	/
Manufacturer	TIANJIN LISHEN BATTERY JOINT-STOCK CO.,LTD.
Capacitance	4370mAh
Nominal voltage	3.87V

##### AE2

Model	1-CHUSQ302-097
Manufacturer	HUIZHOU PUAN ELECTRONICS CO.,LTD
Length	/

##### AE3

Model	/
Manufacturer	Huizhou Washin Electronics Co.,Ltd
Length	/

\*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 Smart 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.

FCC Part15	FCC CFR 47, Part 15, Subpart C and E: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.407 General technical requirements	2018
ANSI C63.10	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2013
UNII: KDB 789033 D02	General U-NII Test Procedures New Rules v02r01	2017-12
KDB 558074 D01	Federal Communications Commission Office of Engineering and Technology Laboratory Division GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES	2019
KDB-662911 D01	Emissions Testing of Transmitters with Multiple Outputs in the Same Band (e.g. MIMO Smart Antenna etc)	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	15.407 (a)	/	P
Peak Power Spectral Density	15.407 (a)	/	P
Occupied 6dB Bandwidth	15.407 (e)	/	P
Band Edges Compliance - Conducted& Radiated	15.407 (b)	/	P
Transmitter Spurious Emission - Conducted	15.407	/	P
Transmitter Spurious Emission - Radiated	15.407, 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.
NM	Not measured, The test was not measured by CTTL
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

CTTL has evaluated the test cases requested by the client/matrix 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.

### 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°C
Voltage	3.8V
Humidity	44%

## 7. TEST EQUIPMENTS 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	2022-05-24
2	LISN	ENV216	101459	Rohde & Schwarz	1 year	2022-03-22
3	Test Receiver	ESCI	100766	Rohde & Schwarz	1 year	2022-03-09
4	Shielding Room	S81	/	ETS-Lindgren	/	/

### Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Antenna	3117	139065	ETS	1 year	2021-09-22
2	Antenna	VULB 9163	9163-482	SCHWARZBECK	1 year	2021-11-04
3	Test Receiver	ESU26	100376	R&S	1 year	2021-09-04
4	Test Receiver	FSV40	101047	R&S	1 year	2022-06-02
5	Universal Radio Communication Tester	CMW500	159408	R&S	1 year	2022-03-08
6	Test Receiver	FSV30	101525	R&S	1 year	2022-02-20
7	Antenna	LB-7180-NF	J203001300 005	A-INFO	1 year	2022-02-28
8	Antenna	HFH2-Z2	829324	R&S	1 year	2021-12-10
9	Antenna	LB-180400- 25-C-KF	2110084000 006	A-INFO	1 year	2022-02-28
10	Anechoic Chamber	FACT-3	Ct000332-1 074	ETS	1 year	2022-01-21

Note:

The test dates were before the calibration due dates of equipment used (the Test Receiver which series number is 100376).

## 8. Measurement Uncertainty

### 8.1. Transmitter Output Power

Measurement Uncertainty: 0.387dB,k=1.96

### 8.2. Peak Power Spectral Density

Measurement Uncertainty: 0.705dB,k=1.96

### 8.3. Occupied 6dB Bandwidth

Measurement Uncertainty: 60.80Hz,k=1.96

### 8.4. Band Edges Compliance

Measurement Uncertainty : 0.62dB,k=1.96

### 8.5. Spurious Emissions

#### 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	/
$30\text{MHz} \leq f \leq 1\text{GHz}$	5.84
$1\text{GHz} \leq f \leq 18\text{GHz}$	5.82
$18\text{GHz} \leq f \leq 40\text{GHz}$	3.78

### 8.6. AC Power-line Conducted Emission

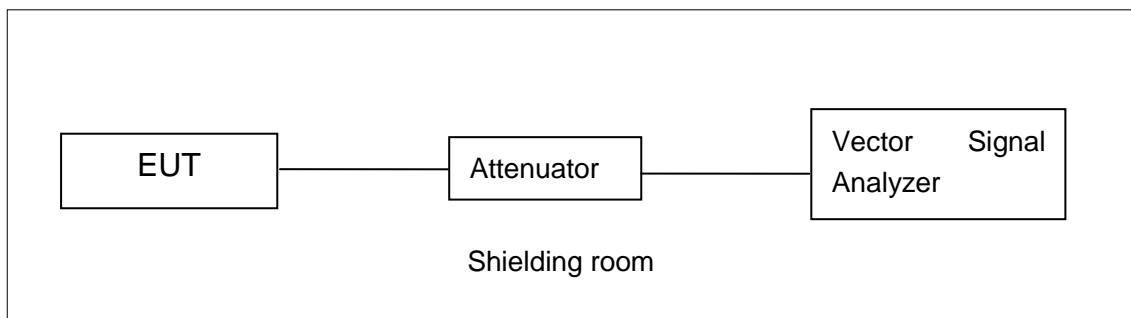
Measurement Uncertainty : 3.1dB,k=2

## ANNEX A: MEASUREMENT RESULTS

### A.1. Measurement Method

#### A.1.1. Conducted Measurements

- 1). Connect the EUT to the test system correctly.
- 2). Set the EUT to the required work mode.
- 3). Set the EUT to the required channel.
- 4). Set the spectrum analyzer to start measurement.
- 5). Record the values. Vector Signal Analyzer

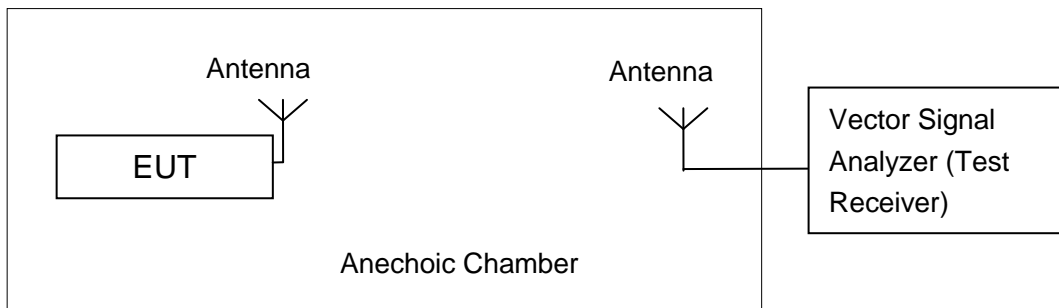


#### A.1.2. Radiated Emission Measurements

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;



The measurement is made according to ANSI C63.10.

The radiated emission test is performed in semi-anechoic chamber. The distance from the EUT to the reference point of measurement antenna is 3m. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept. During the test, the turntable is rotated 360° and the measurement antenna is moved from 1m to 4m to get the maximization result.

## A.2. Maximum Peak Output Power

### Measurement Limit and Method:

Standard	Limit (dBm)
FCC CRF Part 15.407(a)	< 30

### A.2.1. Maximum Average Output Power-Conducted

#### Measurement Results:

##### SISO-chain1

##### 802.11a mode

Mode	Data Rate (Mbps)	Test Result (dBm)		
		5745MHz (Ch149)	5785MHz (Ch157)	5825MHz (Ch165)
802.11a	6	16.12	15.93	16.31

The data rate 6Mbps is selected as worse condition, and the following cases are performed with this condition.

##### 802.11n-HT20 mode

Mode	Data Rate (Index)	Test Result (dBm)		
		5745MHz (Ch149)	5785MHz (Ch157)	5825MHz (Ch165)
802.11n(20MHz)	MCS0	15.72	15.54	15.74

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

##### 802.11ac-HT20 mode

Mode	Data Rate (Index)	Test Result (dBm)		
		5745MHz (Ch149)	5785MHz (Ch157)	5825MHz (Ch165)
802.11ac(20MHz)	MCS0	15.21	14.82	15.04

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)	
		5755MHz (Ch151)	5795MHz (Ch159)
802.11n(40MHz)	MCS0	15.61	15.35

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

### 802.11ac-HT40 mode

Mode	Data Rate (Index)	Test Result (dBm)	
		5755MHz (Ch151)	5795MHz (Ch159)
802.11ac(40MHz)	MCS0	14.93	14.64

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

### 802.11ac-HT80 mode

Mode	Data Rate (Index)	Test Result (dBm)
		5775MHz (Ch155)
802.11ac(80MHz)	MCS0	13.46

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

### SISO-chain2

#### 802.11a mode

Mode	Data Rate (Mbps)	Test Result (dBm)		
		5745MHz (Ch149)	5785MHz (Ch157)	5825MHz (Ch165)
802.11a	6	16.45	16.25	16.42

The data rate 6Mbps is selected as worse condition, and the following cases are performed with this condition.

#### 802.11n-HT20 mode

Mode	Data Rate (Index)	Test Result (dBm)		
		5745MHz (Ch149)	5785MHz (Ch157)	5825MHz (Ch165)
802.11n(20MHz)	MCS0	16.32	16.11	16.22

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

#### 802.11ac-HT20 mode

Mode	Data Rate (Index)	Test Result (dBm)		
		5745MHz (Ch149)	5785MHz (Ch157)	5825MHz (Ch165)
802.11ac(20MHz)	MCS0	16.04	15.87	15.86

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)	
		5755MHz (Ch151)	5795MHz (Ch159)
802.11n(40MHz)	MCS0	16.24	15.99

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

**802.11ac-HT40 mode**

Mode	Data Rate (Index)	Test Result (dBm)	
		5755MHz (Ch151)	5795MHz (Ch159)
802.11ac(40MHz)	MCS0	15.39	15.27

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

**802.11ac-HT80 mode**

Mode	Data Rate (Index)	Test Result (dBm)
		5775MHz (Ch155)
802.11ac(80MHz)	MCS0	12.97

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

**MIMO&CDD**
**802.11a mode**

Mode	Data Rate (Mbps)	Test Result (dBm)		
		5745MHz (Ch149)	5785MHz (Ch157)	5825MHz (Ch165)
802.11a	6	19.27	18.97	19.33

The data rate 6Mbps is selected as worse condition, and the following cases are performed with this condition.

**802.11n-HT20 mode**

Mode	Data Rate (Index)	Test Result (dBm)		
		5745MHz (Ch149)	5785MHz (Ch157)	5825MHz (Ch165)
802.11n(20MHz)	MCS0	19.12	19.01	19.11

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



**802.11ac-HT20 mode**

Mode	Data Rate (Index)	Test Result (dBm)		
		5745MHz (Ch149)	5785MHz (Ch157)	5825MHz (Ch165)
802.11ac(20MHz)	MCS0	18.74	18.66	18.67

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)	
		5755MHz (Ch151)	5795MHz (Ch159)
802.11n(40MHz)	MCS0	18.96	18.85

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

**802.11ac-HT40 mode**

Mode	Data Rate (Index)	Test Result (dBm)	
		5755MHz (Ch151)	5795MHz (Ch159)
802.11ac(40MHz)	MCS0	18.18	18.11

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

**802.11ac-HT80 mode**

Mode	Data Rate (Index)	Test Result (dBm)
		5775MHz (Ch155)
802.11ac(80MHz)	MCS0	16.85

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

The duty cycle of all mode are greater than or equal to 98%.

**Conclusion: PASS**

### A.3. Peak Power Spectral Density

#### Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.407(a)	< 30 dBm/500 kHz

The measurement is made according to ANSI C63.10 and KDB789033 D02

#### Measurement Uncertainty:

Measurement Uncertainty	0.75dB
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#### Measurement Results:

##### SISO-chain2

Mode	Channel	Power Spectral Density ( dBm/500kHz )	Conclusion
802.11a	149	5.75	P
	157	5.10	P
	165	6.16	P
802.11n HT20	149	5.68	P
	157	5.41	P
	165	6.08	P
802.11n HT40	151	1.73	P
	159	0.91	P
802.11ac HT80	155	-3.73	P

##### MIMO&CDD

Mode	Channel	Power Spectral Density ( dBm/500kHz )	Conclusion
802.11a	149	8.53	P
	157	8.70	P
	165	8.82	P
802.11n HT20	149	9.04	P
	157	8.96	P
	165	9.21	P
802.11n HT40	151	4.36	P
	159	4.82	P
802.11ac HT80	155	-0.02	P

**Conclusion: PASS**

### A.4. Occupied 6dB Bandwidth

#### Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.407 (e)	≥ 500

The measurement is made according to KDB789033 D02 .

#### Measurement Uncertainty:

Measurement Uncertainty	60.80Hz
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#### Measurement Result:

Mode	Channel	Occupied 6dB Bandwidth ( KHz)		conclusion
		Fig.	Value	
802.11a	149	Fig.1	15.10	P
	157	Fig.2	15.30	P
	165	Fig.3	15.60	P
802.11n HT20	149	Fig.4	16.50	P
	157	Fig.5	16.55	P
	165	Fig.6	16.00	P
802.11n HT40	151	Fig.7	35.68	P
	159	Fig.8	36.32	P
802.11ac HT80	155	Fig.9	75.04	P

#### Conclusion: PASS

#### Test graphs as below:

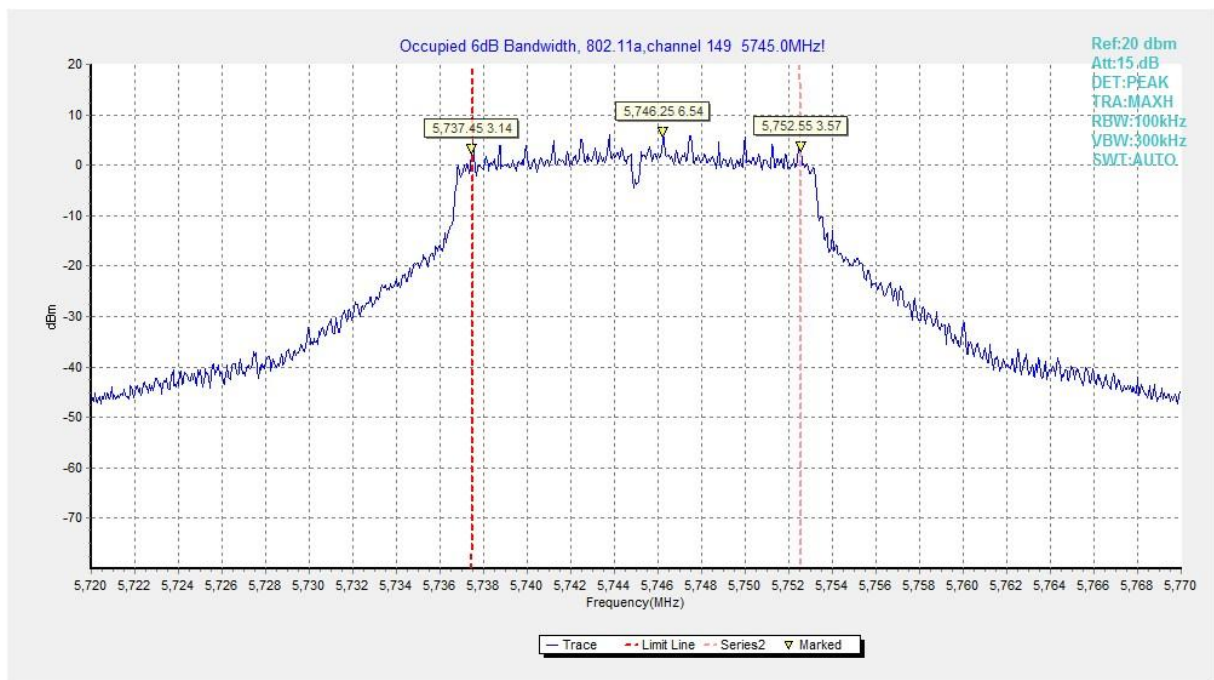
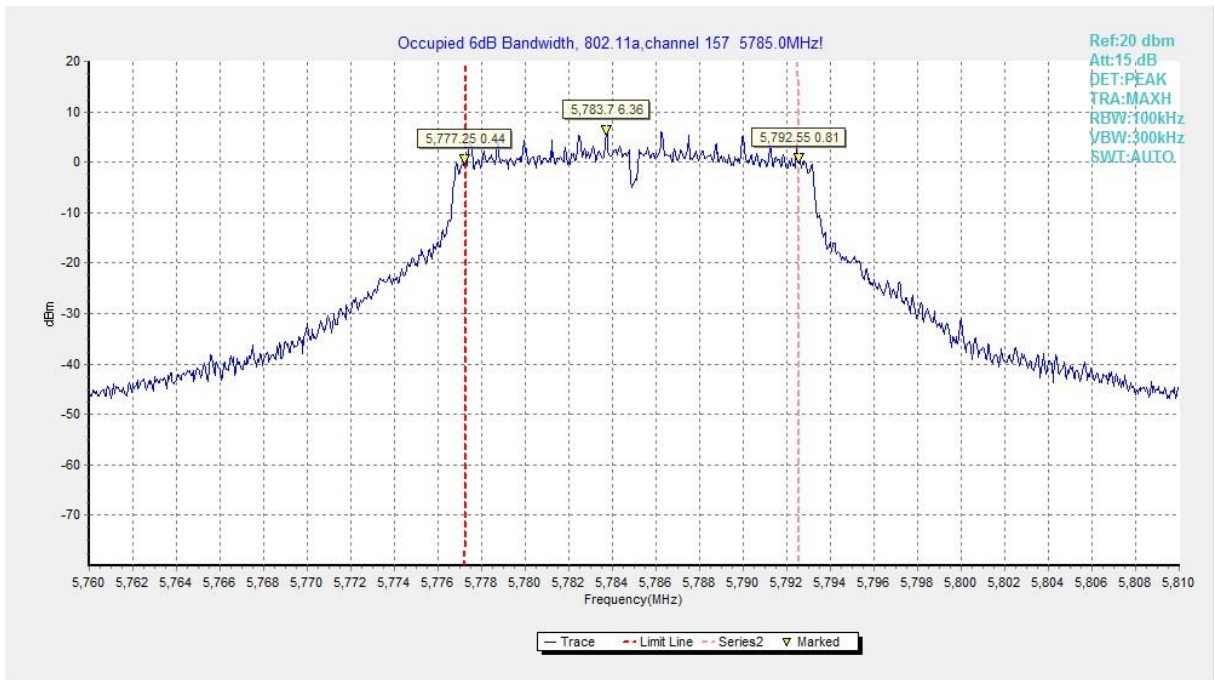
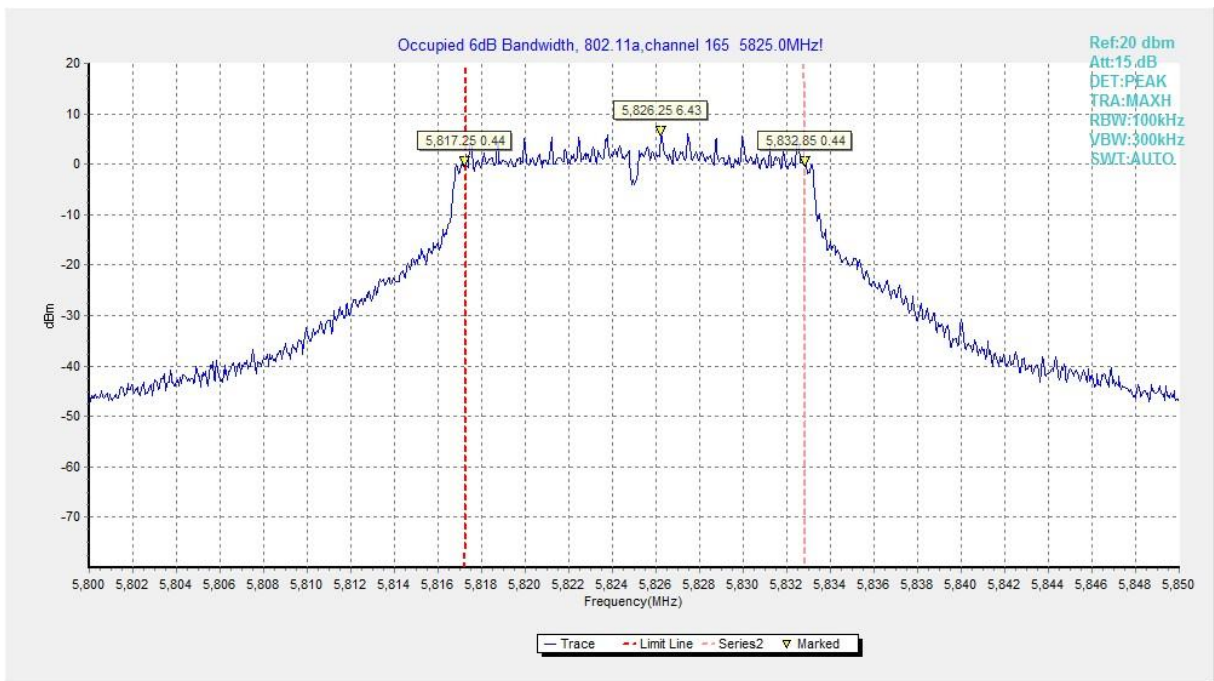


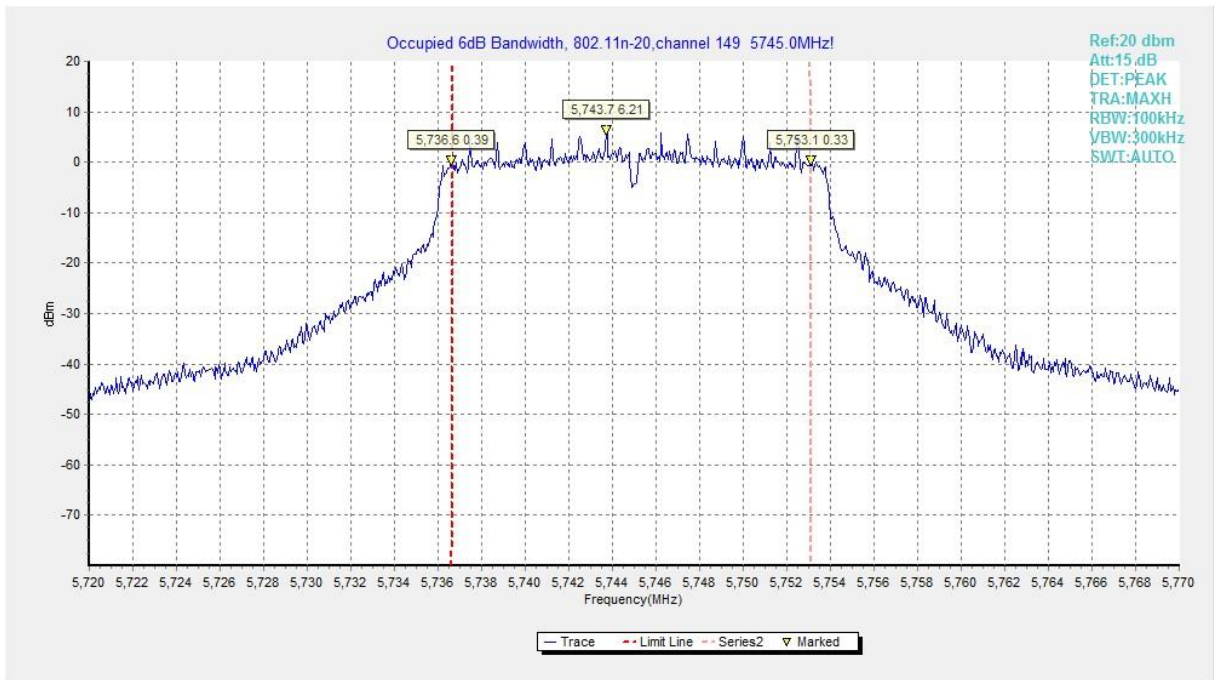
Fig. 1 Occupied 6dB Bandwidth (802.11a, Ch 149)



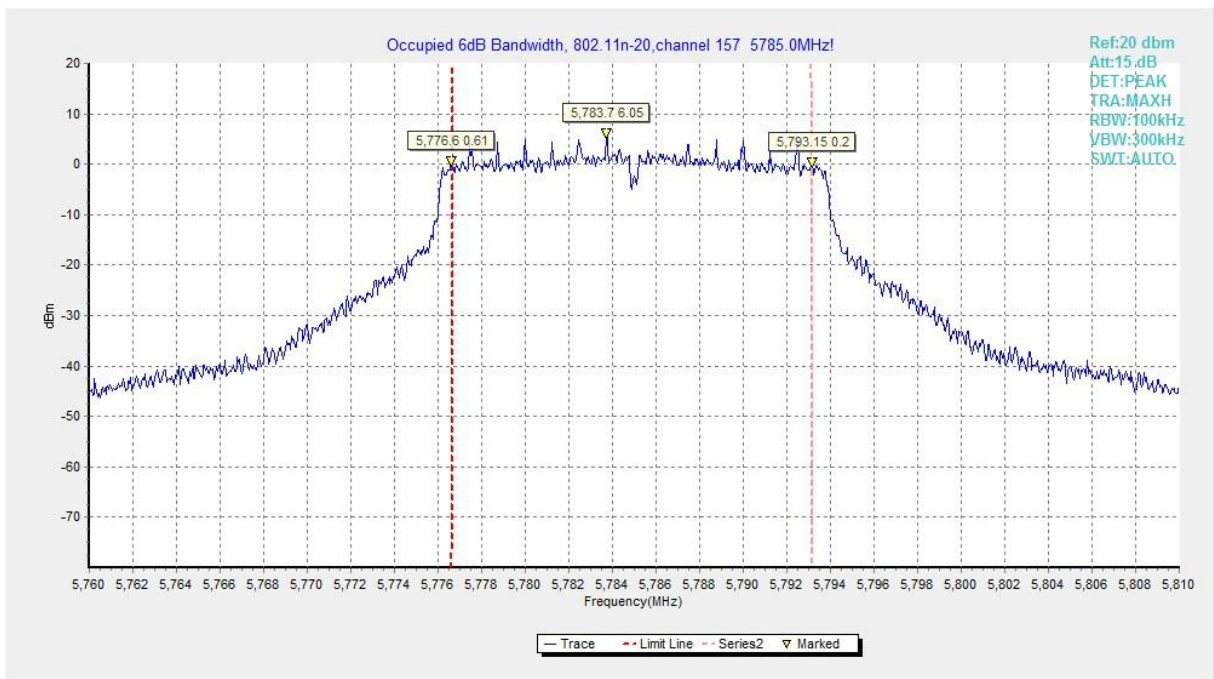
**Fig. 2 Occupied 6dB Bandwidth (802.11a, Ch 157)**



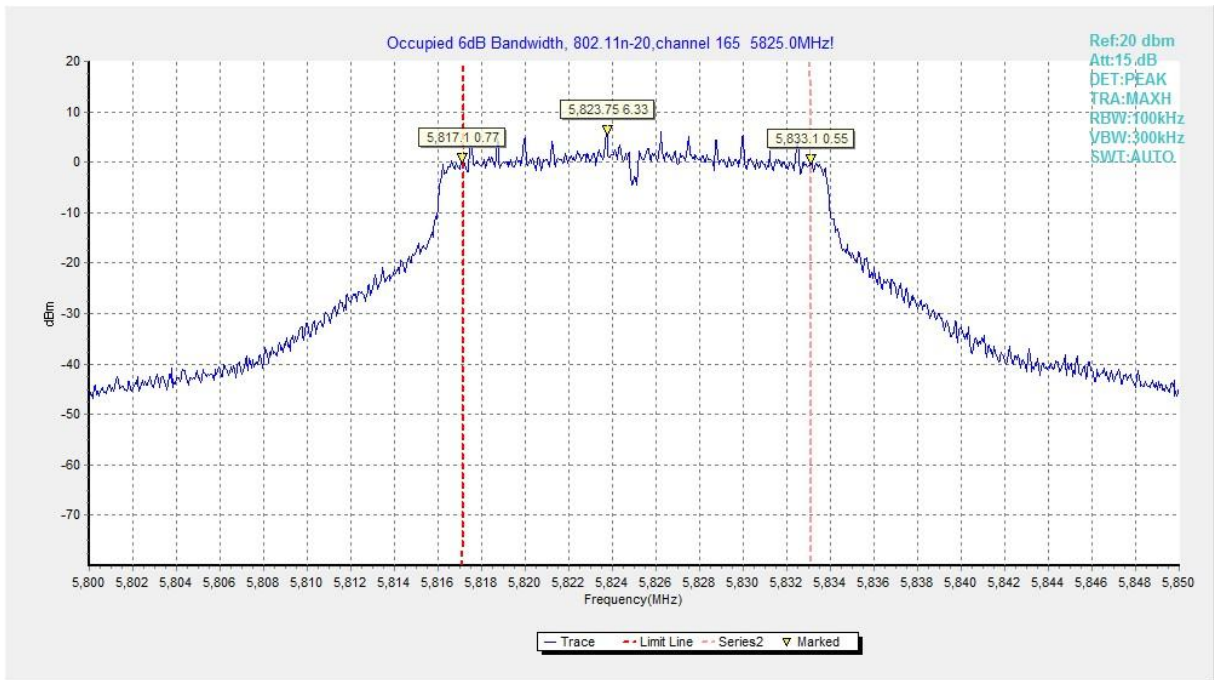
**Fig. 3 Occupied 6dB Bandwidth (802.11a, Ch 165)**



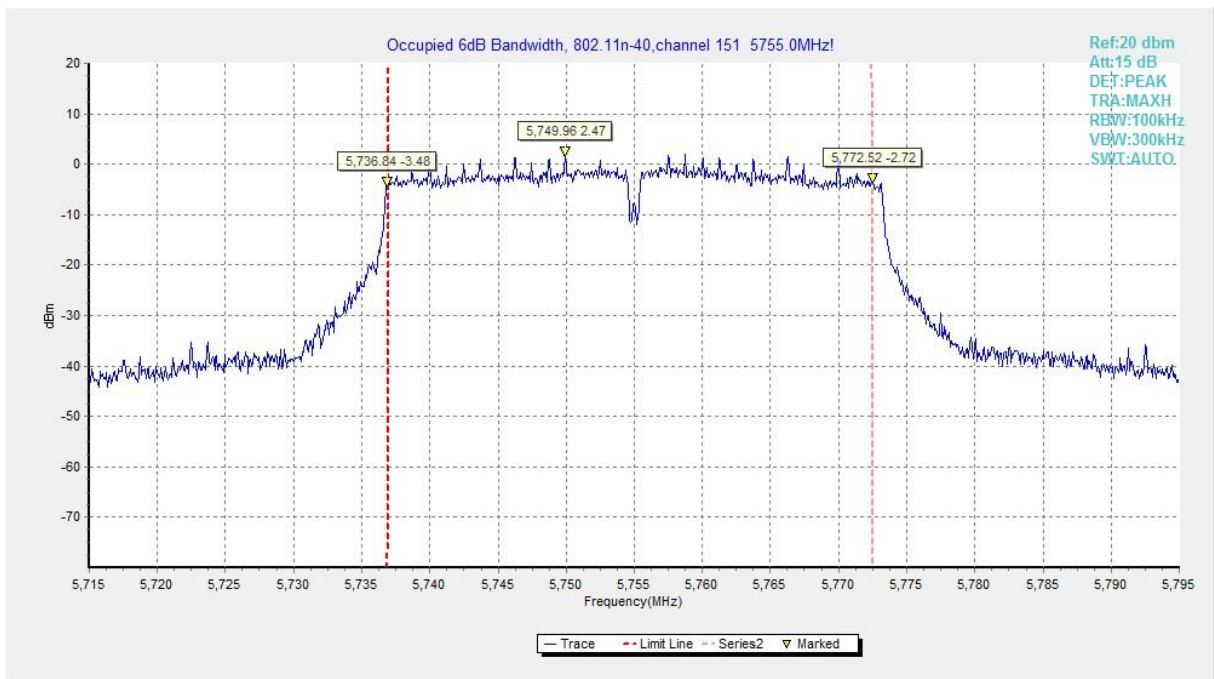
**Fig. 4 Occupied 6dB Bandwidth (802.11n-HT20, Ch 149)**



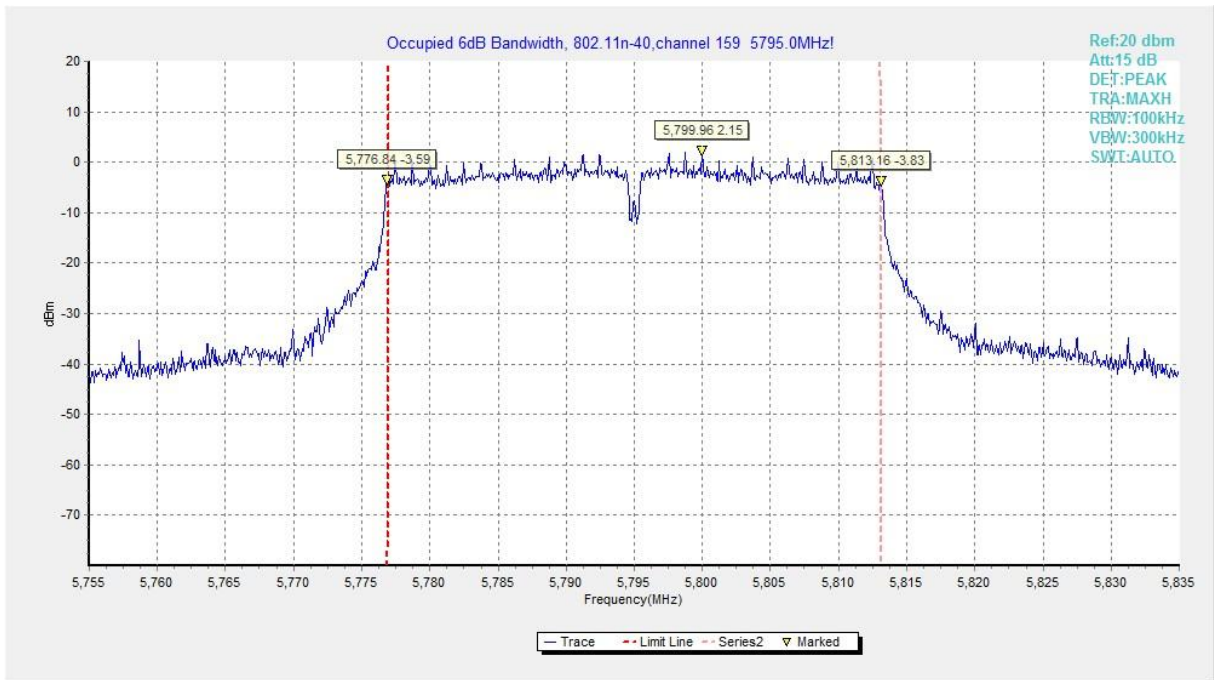
**Fig. 5 Occupied 6dB Bandwidth (802.11n-HT20, Ch 157)**



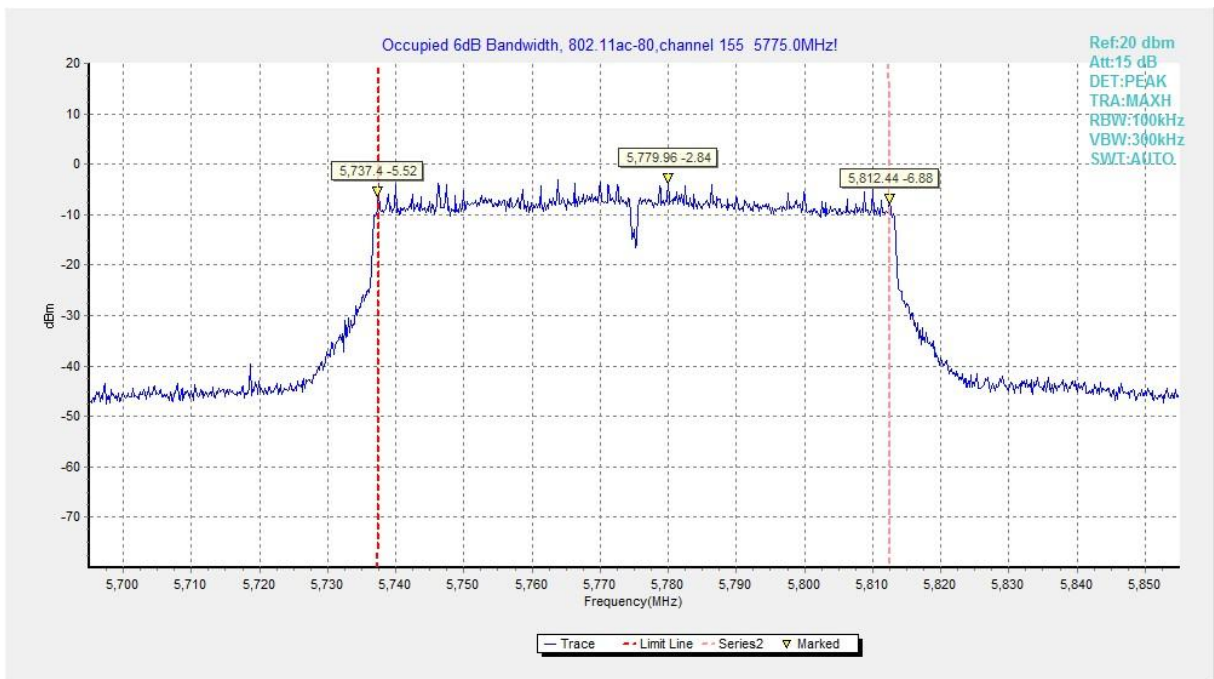
**Fig. 6 Occupied 6dB Bandwidth (802.11n-HT20, Ch 165)**



**Fig. 7 Occupied 6dB Bandwidth (802.11n-HT40, Ch 151)**



**Fig. 8 Occupied 6dB Bandwidth (802.11n-HT40, Ch 159)**



**Fig. 9 Occupied 6dB Bandwidth (802.11ac-HT80, Ch 155)**

## A.5. Transmitter Spurious Emission

### A.5.1 Transmitter Spurious Emission - Radiated

#### Measurement Limit:

Standard	Limit (dBm/MHz)	
FCC 47 CFR Part 15.407	at the band edge	27
	at 5 MHz above or below the band edge	15.6
	at 25 MHz above or below the band edge	10
	at 75 MHz or more above or below the band edge	-27
	Note: Increasing linearly from point to point.	

The measurement is made according to KDB 789033

#### Measurement Results:

##### Chain 1, Chain 2, MIMO

Note: All combinations were tested and only the worst results are shown in this report.

#### Worst cases,

**802.11a, 802.11n HT20, 802.11ac VHT20, 802.11n HT40, 802.11ac VHT40, 802.11ac VHT80, MIMO**

##### 802.11a mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11a	149	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
	157	9k Hz ~30 MHz	---	P
		30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
		26.5 GHz~ 40 GHz	---	P
	165	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P

##### 802.11n-HT20 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT20)	149	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
	157	9k Hz ~30 MHz	---	P
		30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P



		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
		26.5 GHz~ 40 GHz	---	P
	165	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P

**802.11n-HT40 mode**

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT40)	151	9k Hz ~30 MHz	---	P
		30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
	159	26.5 GHz~ 40 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
			7 GHz ~ 18 GHz	---

**802.11ac-HT20 mode**

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11ac (HT20)	149	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
	157	9k Hz ~30 MHz	---	P
		30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
	165	26.5 GHz~ 40 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P

**802.11ac-HT40 mode**

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11ac (HT40)	151	9k Hz ~30 MHz	---	P
		30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P

		18 GHz ~ 26.5 GHz	---	P
		26.5 GHz~ 40 GHz	---	P
	159	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P

**802.11ac-HT80 mode**

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11ac (HT80)	155	9k Hz ~30 MHz	---	P
		30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
		26.5 GHz~ 40 GHz	---	P

**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.

**Average Results:**
**802.11a**

## Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5389.750	42.40	-27.65	32.74	37.32	54.00	11.60	H
5391.500	42.33	-27.64	32.74	37.24	54.00	11.67	H
11490.062	35.01	-35.13	39.20	30.95	54.00	18.99	H
15900.375	38.25	-32.89	39.08	32.06	54.00	15.75	V
17714.688	42.05	-31.73	42.10	31.69	54.00	11.95	V
17848.062	42.37	-31.20	41.91	31.66	54.00	11.63	V

## Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5405.750	42.35	-27.64	32.75	37.25	54.00	11.65	H
5407.250	42.30	-27.65	32.75	37.20	54.00	11.70	H
11569.812	35.42	-35.04	39.19	31.28	54.00	18.58	H
17728.438	42.15	-31.72	42.08	31.80	54.00	11.85	H
17831.562	42.28	-31.27	41.93	31.62	54.00	11.72	H
15909.312	38.36	-32.90	39.08	32.17	54.00	15.64	V

## Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5418.500	42.25	-27.68	32.75	37.17	54.00	11.75	H
5420.750	42.29	-27.68	32.75	37.22	54.00	11.71	H
11650.250	35.10	-35.05	39.17	30.99	54.00	18.90	V
17720.875	42.19	-31.73	42.09	31.83	54.00	11.81	V
17827.438	42.15	-31.29	41.94	31.50	54.00	11.85	H
15908.625	38.32	-32.90	39.08	32.14	54.00	15.68	H

**802.11n-HT20**

## Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5395.750	42.38	-27.62	32.74	37.26	54.00	11.62	H
5406.500	42.29	-27.65	32.75	37.19	54.00	11.71	H
11490.062	34.97	-35.13	39.20	30.90	54.00	19.03	V
17838.438	41.95	-31.24	41.92	31.27	54.00	12.05	H
16055.750	38.31	-33.09	39.26	32.15	54.00	15.69	V
17919.562	42.17	-30.93	41.81	31.29	54.00	11.83	V

## Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5399.500	42.29	-27.63	32.74	37.17	54.00	11.71	H
5403.750	42.28	-27.64	32.74	37.17	54.00	11.72	H
11569.812	35.07	-35.04	39.19	30.93	54.00	18.93	V
16094.250	38.39	-33.07	39.37	32.10	54.00	15.61	H
17732.562	42.13	-31.72	42.07	31.78	54.00	11.87	V
17845.312	42.15	-31.21	41.91	31.44	54.00	11.85	V

## Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5391.250	42.36	-27.65	32.74	37.27	54.00	11.64	H
5406.000	42.36	-27.64	32.75	37.26	54.00	11.64	H
11650.250	35.28	-35.05	39.17	31.16	54.00	18.72	H
17722.938	41.70	-31.73	42.09	31.34	54.00	12.30	H
17832.250	42.35	-31.27	41.93	31.69	54.00	11.65	H
15898.312	38.35	-32.88	39.08	32.16	54.00	15.65	H

**802.11ac-HT20**

## Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5378.750	42.36	-27.71	32.73	37.34	54.00	11.64	H
5389.750	42.32	-27.65	32.74	37.24	54.00	11.68	H
11490.062	34.92	-35.13	39.20	30.85	54.00	19.08	H
17716.750	42.06	-31.73	42.09	31.70	54.00	11.94	V
15929.938	38.59	-32.93	39.09	32.43	54.00	15.41	H
17844.625	42.49	-31.21	41.92	31.79	54.00	11.51	V

## Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5402.250	42.38	-27.63	32.74	37.27	54.00	11.62	H
5405.000	42.38	-27.64	32.75	37.27	54.00	11.62	H
11569.812	35.48	-35.04	39.19	31.33	54.00	18.52	H
17763.500	42.46	-31.59	42.03	32.02	54.00	11.54	V
17854.938	42.52	-31.16	41.90	31.78	54.00	11.48	H
15901.062	38.81	-32.89	39.08	32.61	54.00	15.19	V

## Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5393.750	42.33	-27.63	32.74	37.22	54.00	11.67	H
5397.250	42.35	-27.62	32.74	37.23	54.00	11.65	H
11650.250	35.26	-35.05	39.17	31.14	54.00	18.74	V
16181.562	38.51	-33.01	39.61	31.91	54.00	15.49	H
17711.250	41.99	-31.74	42.10	31.62	54.00	12.01	H
17841.188	42.65	-31.23	41.92	31.95	54.00	11.35	H

**802.11n-HT40**

## Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5396.500	42.31	-27.62	32.74	37.19	54.00	11.69	H
5407.500	42.33	-27.65	32.75	37.23	54.00	11.67	H
11510.000	35.81	-35.11	39.20	31.72	54.00	18.19	V
16153.688	38.53	-33.03	39.53	32.02	54.00	15.47	V
17837.062	42.18	-31.25	41.93	31.50	54.00	11.82	H
17855.625	42.26	-31.16	41.90	31.52	54.00	11.74	V

## Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5399.750	42.32	-27.63	32.74	37.21	54.00	11.68	H
5406.750	42.34	-27.65	32.75	37.24	54.00	11.66	H
11589.750	35.94	-35.05	39.18	31.81	54.00	18.06	H
15906.562	39.09	-32.89	39.08	32.90	54.00	14.91	H
17839.812	42.08	-31.23	41.92	31.39	54.00	11.92	H
17853.562	42.09	-31.17	41.90	31.36	54.00	11.91	V

**802.11ac-HT40**

## Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5407.750	42.43	-27.65	32.75	37.33	54.00	11.57	H
5411.750	42.38	-27.66	32.75	37.29	54.00	11.62	H
11510.000	35.30	-35.11	39.20	31.21	54.00	18.70	V
15915.500	38.91	-32.91	39.08	32.73	54.00	15.09	V
17825.375	42.01	-31.30	41.94	31.37	54.00	11.99	V
17841.188	42.05	-31.23	41.92	31.36	54.00	11.95	H

## Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5404.750	42.40	-27.64	32.75	37.30	54.00	11.60	H
5409.250	42.39	-27.65	32.75	37.30	54.00	11.61	H
11589.750	35.74	-35.05	39.18	31.60	54.00	18.26	H
15932.688	38.93	-32.93	39.09	32.77	54.00	15.07	V
17830.875	42.10	-31.28	41.93	31.44	54.00	11.90	V
17848.062	42.26	-31.20	41.91	31.55	54.00	11.74	V

**802.11ac-HT80**

## Channel 155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5393.750	42.4	-27.6	32.7	37.28	48.3	5.9	H
5401.500	42.4	-27.6	32.7	37.26	48.3	5.9	H
11549.875	35.5	-35.1	39.2	31.35	48.3	12.8	V
15914.813	39.0	-32.9	39.1	32.77	48.3	9.3	H
17824.000	42.1	-31.3	41.9	31.46	48.3	6.2	V
17837.750	42.2	-31.2	41.9	31.47	48.3	6.1	V

**Peak Results:**
**802.11a**

## Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5651.567	56.56	-27.57	33.02	51.12	69.36	12.80	H
5653.852	56.86	-27.57	33.02	51.41	71.05	14.19	H
11490.200	47.28	-35.13	39.20	43.22	74.00	26.72	V
17234.950	53.39	-31.79	41.77	43.41	68.30	14.91	V
17389.500	54.98	-31.71	42.14	44.55	68.30	13.32	V
17554.500	54.76	-31.86	42.32	44.29	68.30	13.54	V

## Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5755.500	59.29	-27.44	33.17	53.57	68.30	9.01	H
5839.000	59.18	-27.57	33.28	53.46	68.30	9.12	H
11569.950	46.80	-35.04	39.19	42.66	74.00	27.20	V
17078.750	54.82	-32.23	41.39	45.66	68.30	13.48	V
17226.700	54.58	-31.79	41.75	44.62	68.30	13.72	H
17354.850	52.96	-31.72	42.06	42.63	68.30	15.34	V

## Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5920.472	57.86	-27.21	33.39	51.68	71.55	13.69	V
5924.368	58.05	-27.21	33.40	51.86	68.67	10.62	V
11650.250	47.58	-35.05	39.17	43.46	74.00	26.42	V
17227.800	55.01	-31.79	41.75	45.05	68.30	13.29	H
17396.100	54.81	-31.72	42.15	44.37	68.30	13.49	H
17474.750	53.30	-31.79	42.34	42.75	68.30	15.00	H



**802.11n-HT20**

## Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5650.661	56.61	-27.57	33.02	51.16	68.69	12.08	V
5654.528	56.88	-27.57	33.02	51.43	71.55	14.67	V
11490.200	45.66	-35.13	39.20	41.59	74.00	28.34	H
17052.350	54.58	-32.31	41.33	45.56	68.30	13.72	V
17234.950	53.14	-31.79	41.77	43.16	68.30	15.16	H
17286.100	54.46	-31.76	41.89	44.33	68.30	13.84	H

## Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5761.000	61.74	-27.44	33.17	56.01	68.30	6.56	H
5809.000	61.56	-27.50	33.24	55.82	68.30	6.74	H
11569.950	46.71	-35.04	39.19	42.57	74.00	27.29	V
17354.850	52.57	-31.72	42.06	42.24	68.30	15.73	V
17407.650	54.73	-31.73	42.18	44.28	68.30	13.57	H
17618.850	54.90	-31.82	42.23	44.48	68.30	13.40	H

## Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5922.484	57.39	-27.21	33.40	51.21	70.06	12.67	V
5922.901	57.35	-27.21	33.40	51.16	69.75	12.41	V
11650.250	46.81	-35.05	39.17	42.69	74.00	27.19	H
17074.350	54.88	-32.24	41.38	45.74	68.30	13.42	V
17462.100	54.85	-31.78	42.31	44.31	68.30	13.45	V
17474.750	53.36	-31.79	42.34	42.81	68.30	14.94	H

**802.11ac-HT20**

## Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5652.717	56.66	-27.57	33.02	51.21	70.21	13.56	H
5655.736	56.76	-27.57	33.02	51.30	72.44	15.69	H
11490.200	46.39	-35.13	39.20	42.33	74.00	27.61	H
16841.150	54.38	-32.27	40.98	45.67	68.30	13.92	H
17234.950	52.76	-31.79	41.77	42.78	68.30	15.54	V
17309.750	54.83	-31.75	41.95	44.63	68.30	13.47	V

## Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5761.000	60.64	-27.44	33.17	54.91	68.30	7.66	V
5807.500	60.09	-27.50	33.24	54.35	68.30	8.21	H
11569.950	47.32	-35.04	39.19	43.18	74.00	26.68	H
17244.850	54.24	-31.78	41.79	44.23	68.30	14.06	V
17321.300	54.34	-31.74	41.98	44.11	68.30	13.96	V
17354.850	52.22	-31.72	42.06	41.89	68.30	16.08	V

## Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5921.550	57.26	-27.21	33.39	51.08	70.75	13.49	H
5924.252	57.67	-27.21	33.40	51.48	68.75	11.09	V
11650.250	47.80	-35.05	39.17	43.69	74.00	26.20	H
17474.750	52.27	-31.79	42.34	41.72	68.30	16.03	H
17500.050	55.44	-31.81	42.40	44.85	68.30	12.86	V
17523.150	54.75	-31.83	42.37	44.21	68.30	13.55	H

**802.11n-HT40**

## Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5650.359	56.37	-27.57	33.02	50.92	68.47	12.09	V
5650.374	56.27	-27.57	33.02	50.82	68.48	12.21	H
11510.000	47.88	-35.11	39.20	43.79	74.00	26.12	V
17265.200	51.87	-31.77	41.84	41.79	68.30	16.43	V
17401.600	55.01	-31.72	42.17	44.56	68.30	13.29	V
17585.850	55.13	-31.84	42.28	44.70	68.30	13.16	V

## Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5924.626	55.75	-27.21	33.40	49.56	68.48	12.73	H
5924.698	56.86	-27.21	33.40	50.67	68.42	11.56	V
11589.750	47.91	-35.05	39.18	43.78	74.00	26.09	V
17385.100	55.00	-31.71	42.13	44.58	68.30	13.30	V
17518.750	55.48	-31.83	42.37	44.93	68.30	12.82	H
17578.150	55.51	-31.85	42.29	45.07	68.30	12.79	H

**802.11ac-HT40**

## Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5650.288	55.73	-27.57	33.02	50.29	68.41	12.68	V
5650.388	55.58	-27.57	33.02	50.13	68.49	12.91	V
11510.000	48.30	-35.11	39.20	44.21	74.00	25.70	V
17265.200	52.58	-31.77	41.84	42.51	68.30	15.72	H
17296.550	55.32	-31.75	41.92	45.16	68.30	12.98	H
17490.150	54.67	-31.80	42.38	44.09	68.30	13.63	H

## Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5924.871	56.44	-27.21	33.40	50.24	68.30	11.86	H
5924.957	56.70	-27.21	33.40	50.50	68.23	11.54	V
11589.750	47.49	-35.05	39.18	43.35	74.00	26.51	V
17385.100	53.20	-31.71	42.13	42.78	68.30	15.10	V
17450.550	55.33	-31.77	42.28	44.82	68.30	12.97	H
17560.550	55.61	-31.86	42.31	45.16	68.30	12.69	V

**802.11ac-HT80**

## Channel 155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5650.072	56.6	-27.6	33.0	51.19	68.3	11.6	V
5650.115	55.3	-27.6	33.0	49.88	68.3	13.0	H
11550.150	46.8	-35.1	39.2	42.64	74.0	27.2	V
17212.400	55.2	-31.8	41.7	45.34	68.3	13.1	H
17325.150	52.2	-31.7	42.0	41.94	68.3	16.1	H
17590.250	55.8	-31.8	42.3	45.41	68.3	12.5	H

## A.6. Band Edges Compliance

### A6.1 Band Edges - Radiated

#### Measurement Limit:

Standard	Limit (dBm/MHz)	
FCC 47 CFR Part 15.407	at the band edge	27
	at 5 MHz above or below the band edge	15.6
	at 25 MHz above or below the band edge	10
	at 75 MHz or more above or below the band edge	-27
	Note: increasing linearly from point to point.	

#### Measurement Result:

#### EUT1, Chain 1, Chain 2, MIMO

Note: All combinations were tested and only the worst results are shown in this report.

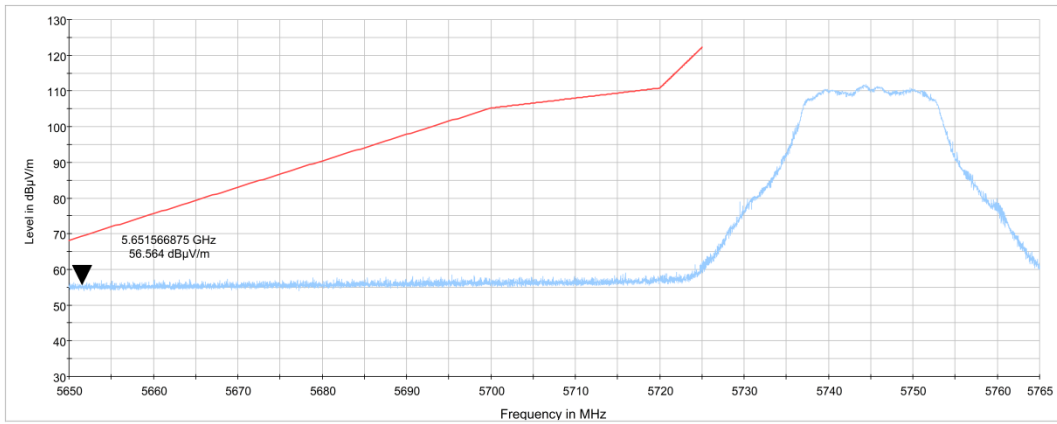
#### Worst cases,

**802.11a, 802.11n HT20, 802.11ac VHT20, 802.11n HT40, 802.11ac VHT40, 802.11ac VHT80, MIMO**

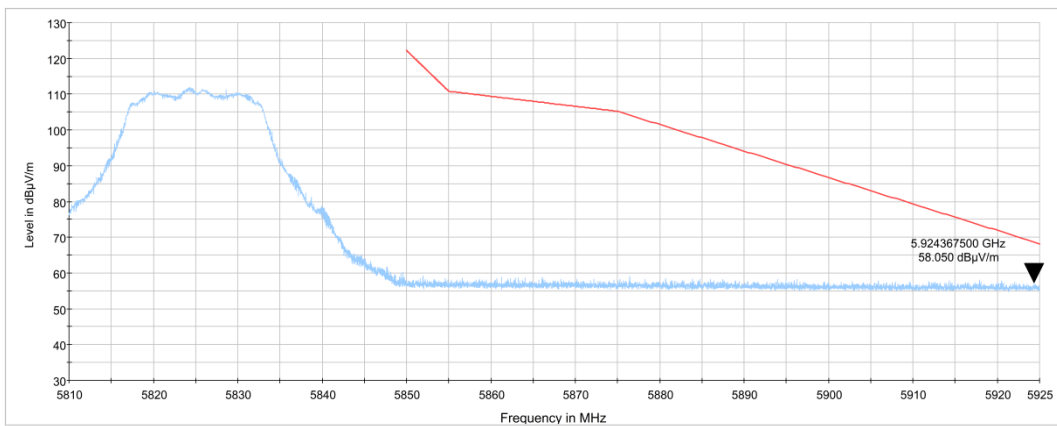
Mode	Channel	Test Results	Conclusion
802.11a	5745 MHz	Fig.10	P
	5825 MHz	Fig.11	P
802.11n HT20	5745 MHz	Fig.12	P
	5825 MHz	Fig.13	P
802.11n HT40	5755 MHz	Fig.14	P
	5795 MHz	Fig.15	P
802.11ac HT20	5745 MHz	Fig.16	P
	5825 MHz	Fig.17	P
802.11ac HT40	5755 MHz	Fig.18	P
	5795 MHz	Fig.19	P
802.11ac HT80	5775 MHz	Fig.20 Fig.21	P

**Conclusion: PASS**

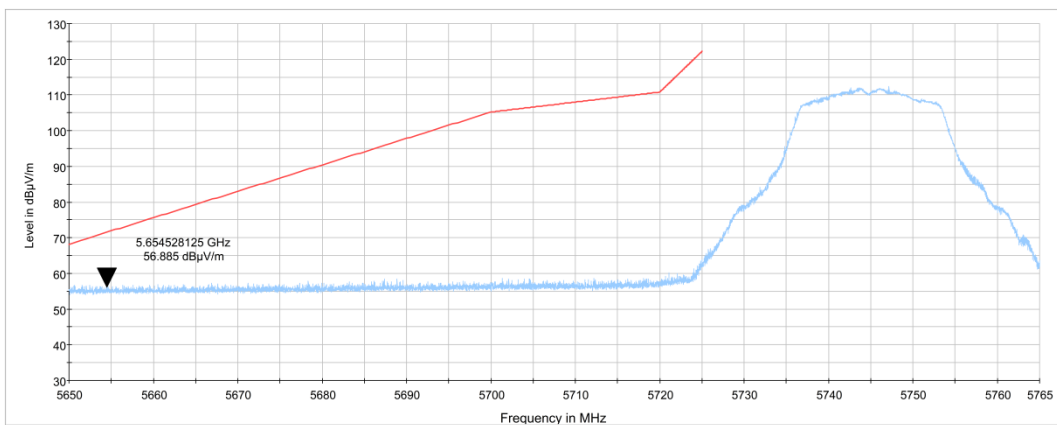
**Test graphs as below:**



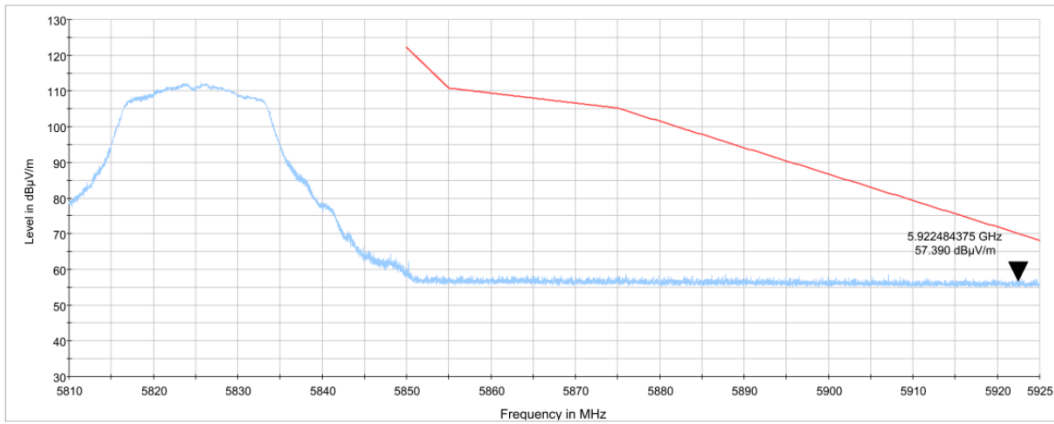
**Fig. 10 Band Edges (802.11a Ch149,5745MHz)**



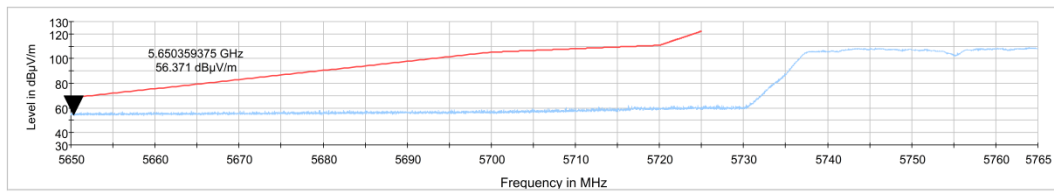
**Fig. 11 Band Edges (802.11a Ch165, 5825MHz)**



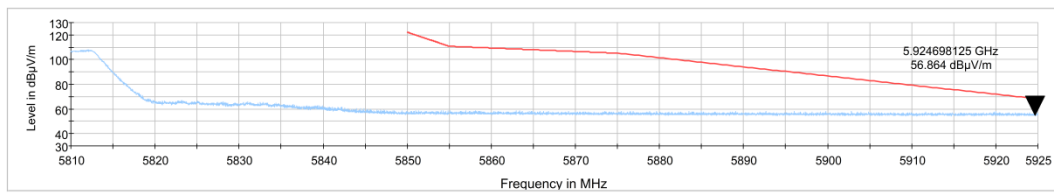
**Fig. 12 Band Edges (802.11n-HT20 Ch149, 5745MHz)**



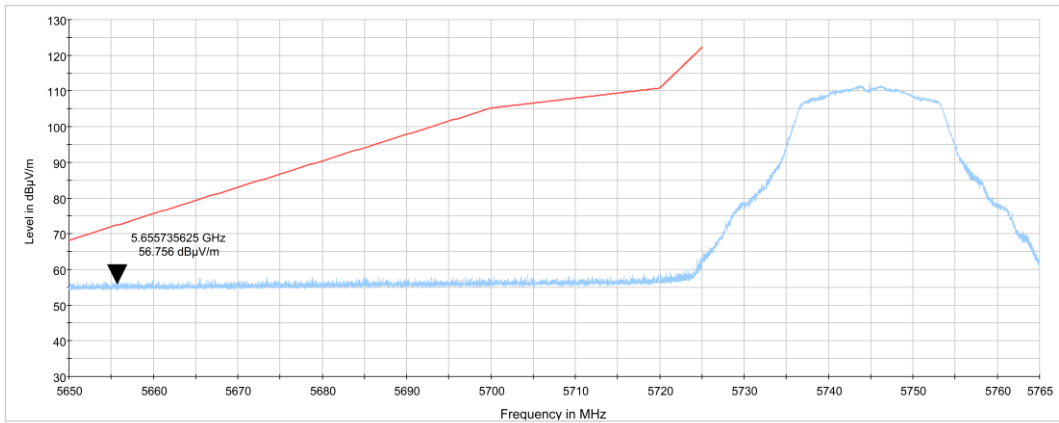
**Fig. 13 Band Edges (802.11n-HT20 Ch165, 5825MHz)**



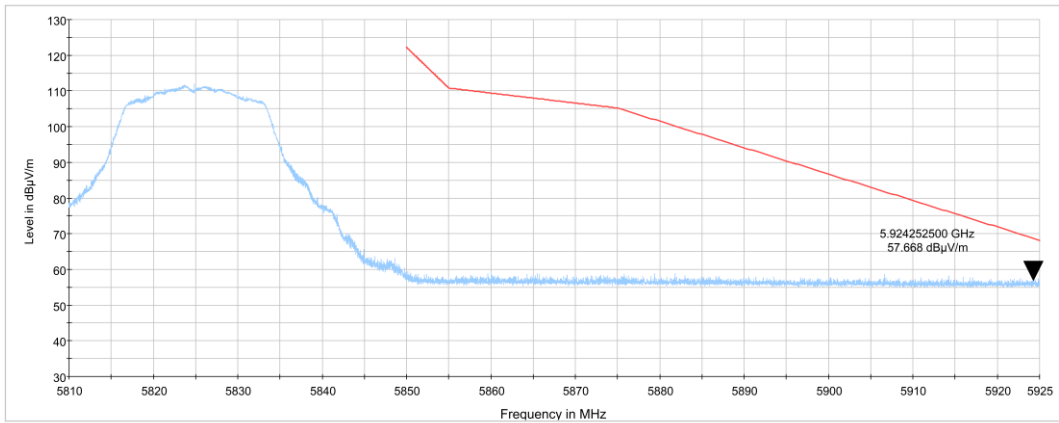
**Fig. 14 Band Edges (802.11n-HT40 Ch151, 5755MHz)**



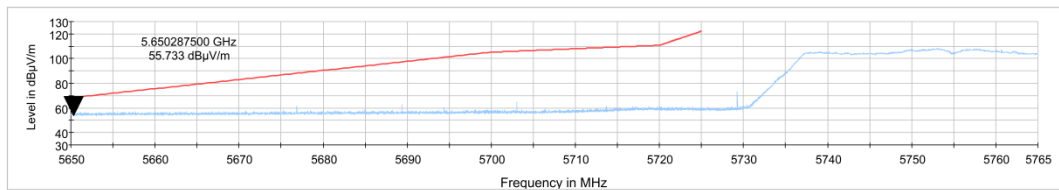
**Fig. 15 Band Edges (802.11n-HT40 Ch159, 5795MHz)**



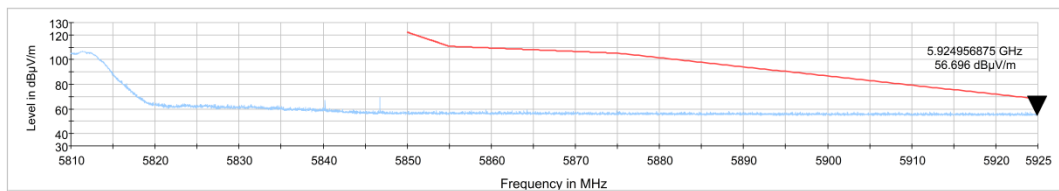
**Fig. 16 Band Edges (802.11ac-HT20 Ch149, 5745MHz)**



**Fig. 17 Band Edges (802.11ac-HT20 Ch165, 5825MHz)**

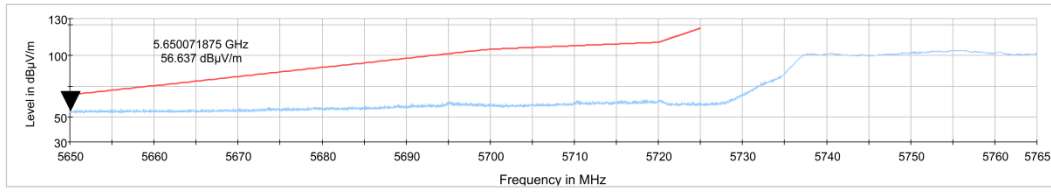


**Fig. 18 Band Edges (802.11ac-HT40 Ch151, 5755MHz)**

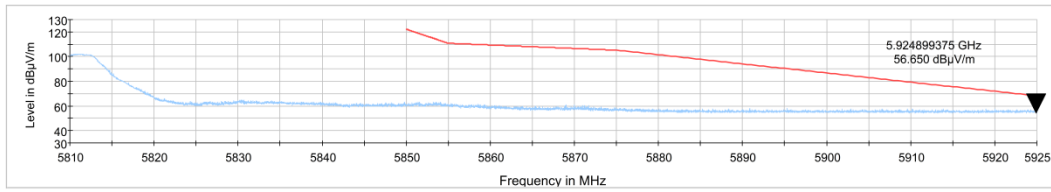




**Fig. 19 Band Edges (802.11ac-HT40 Ch159, 5795MHz)**



**Fig. 20 Band Edges (802.11ac-HT80 Ch155, 5775MHz)**



**Fig. 21 Band Edges (802.11ac-HT80, 5775MHz)**

## A.7. AC Powerline Conducted Emission

### Test Condition:

Voltage (V)	Frequency (Hz)
120	60

### Measurement uncertainty:

Expanded measurement uncertainty for this test item is  $U = 3.08\text{dB}$ ,  $k=2$ .

### Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		With charger		
		802.11a	Idle	
0.15 to 0.5	66 to 56	Fig.22	Fig.23	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)

Frequency range (MHz)	Average Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		With charger		
		802.11a	Idle	
0.15 to 0.5	56 to 46	Fig.22	Fig.23	P
0.5 to 5	46			
5 to 30	50			

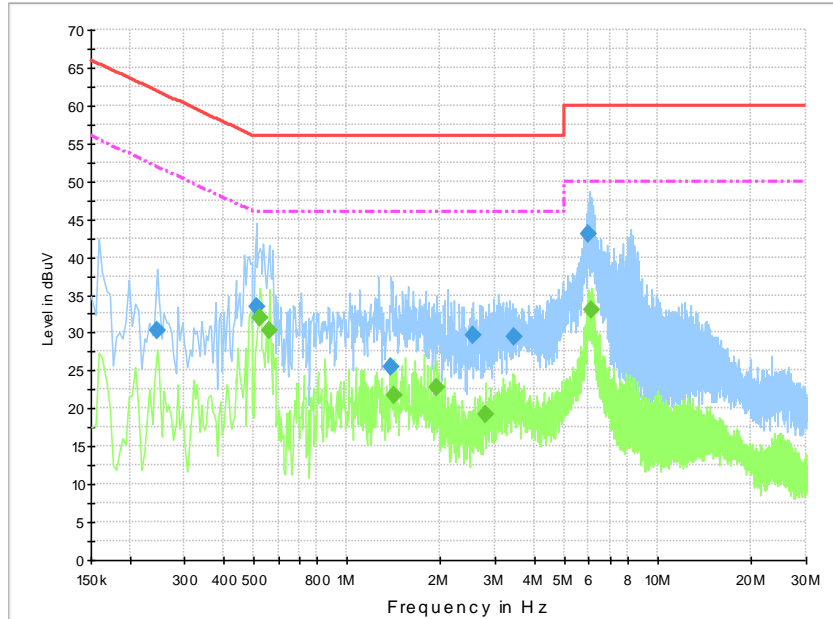
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

The measurement is made according to ANSI C63.10 .

**Conclusion: PASS**

**Test graphs as below:**

Traffic:



**Fig. 22 AC Power line Conducted Emission-802.11a**

Note1: The graphic result above is the maximum of the measurements for both phase line and neutral line.

### Final Result 1

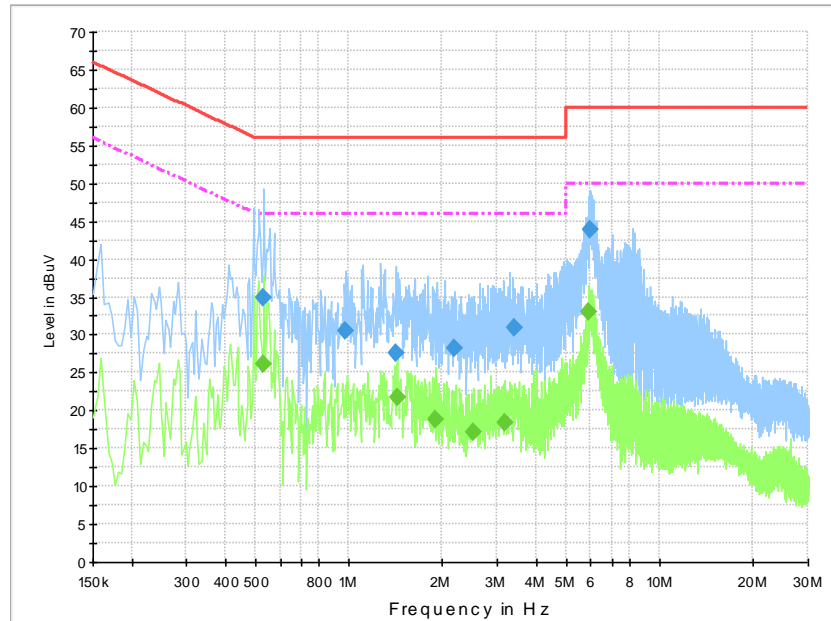
Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.244500	30.2	5000.0	9.000	On	N	19.7	31.7	61.9
0.510000	33.5	5000.0	9.000	On	L1	19.8	22.5	56.0
1.392000	25.5	5000.0	9.000	On	L1	19.6	30.5	56.0
2.535000	29.6	5000.0	9.000	On	L1	19.6	26.4	56.0
3.430500	29.4	5000.0	9.000	On	L1	19.7	26.6	56.0
5.982000	43.0	5000.0	9.000	On	L1	19.7	17.0	60.0

### Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.523500	32.0	5000.0	9.000	On	L1	19.8	14.0	46.0
0.564000	30.2	5000.0	9.000	On	L1	19.8	15.8	46.0
1.410000	21.7	5000.0	9.000	On	N	19.6	24.3	46.0
1.936500	22.8	5000.0	9.000	On	N	19.6	23.2	46.0
2.782500	19.3	5000.0	9.000	On	L1	19.7	26.7	46.0
6.085500	33.0	5000.0	9.000	On	L1	19.6	17.0	50.0

Note2: The measurement results showed here are worst cases.

Idle:



**Fig. 23 AC Power line Conducted Emission-Idle**

Note1: The graphic result above is the maximum of the measurements for both phase line and neutral line.

### Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.532500	34.9	5000.0	9.000	On	N	19.8	21.1	56.0
0.978000	30.6	5000.0	9.000	On	L1	19.7	25.4	56.0
1.414500	27.5	5000.0	9.000	On	L1	19.6	28.5	56.0
2.184000	28.2	5000.0	9.000	On	L1	19.6	27.8	56.0
3.403500	30.9	5000.0	9.000	On	L1	19.7	25.1	56.0
6.004500	43.8	5000.0	9.000	On	L1	19.6	16.2	60.0

### Final Result 2




Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.532500	26.2	5000.0	9.000	On	L1	19.8	19.8	46.0
1.428000	21.7	5000.0	9.000	On	N	19.6	24.3	46.0
1.896000	18.8	5000.0	9.000	On	N	19.6	27.2	46.0
2.508000	17.1	5000.0	9.000	On	L1	19.6	28.9	46.0
3.160500	18.3	5000.0	9.000	On	L1	19.7	27.7	46.0
5.928000	33.1	5000.0	9.000	On	L1	19.7	16.9	50.0

Note2: The measurement results showed here are worst cases.

## ANNEX B: 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 C: Accreditation Certificate

<p>United States Department of Commerce National Institute of Standards and Technology</p>  	
<hr/> <h3>Certificate of Accreditation to ISO/IEC 17025:2017</h3> <hr/>	
<p>NVLAP LAB CODE: 600118-0</p>	
<p><b>Telecommunication Technology Labs, CAICT</b> Beijing China</p>	
<p><i>is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:</i></p>	
<p><b>Electromagnetic Compatibility &amp; Telecommunications</b></p>	
<p><i>This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).</i></p>	
<hr/> <p>2020-09-29 through 2021-09-30 <i>Effective Dates</i></p>	 <hr/> <p><i>[Signature]</i> For the National Voluntary Laboratory Accreditation Program</p>

\*\*\* END OF REPORT BODY \*\*\*