

# **SPECTRUM REPORT**

## **(5GHz RLAN)**

**Applicant:** Balena Ltd.

**Address of Applicant:** 6th Floor, One London Wall London, London, EC2Y 5EB  
United Kingdom

**Equipment Under Test (EUT)**

Product Name: balenaFin

Model No.: v1.1

Trade mark: balenaFin

**Standards:** ETSI EN 301 893 V2.1.1 (2017-05)

**Date of Receipt:** 23 Aug., 2019

**Date of Test:** 24 Aug., 2019 to 03 Aug., 2020

**Date of Issue:** 24 Aug., 2020

**Test Result:** PASS\*

\* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives. The protection requirements with respect to electromagnetic compatibility contained in Directive 2014/53/EU are considered.



Bruce Zhang

Laboratory Manager



This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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## 2 Version

Version No.	Date	Description
00	05 Aug., 2020	Original
01	24 Aug., 2020	Update Page 5

Tested by: Carey Chen  
Test Engineer

Date: 24 Aug., 2020

Reviewed by: Winner Zhang  
Project Engineer

Date: 24 Aug., 2020

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## 4 Test Summary

Test Items	Test Requirement	Test Method	Limit / Severity	Result
<b>Radio Spectrum Matter (RSM) Part of Tx</b>				
Centre frequencies	Clause 4.2.1	Clause 5.4.2	±20 ppm	PASS
Nominal Channel Bandwidth and Occupied Channel Bandwidth	Clause 4.2.2	Clause 5.4.3	>5MHz and 80%~100% Nominal Bandwidth	PASS
RF Output Power,EIRP	clause 4.2.3	Clause 5.4.4	Table 2	PASS
Power Spectrum Density	clause 4.2.3	Clause 5.4.4	Table 2	PASS
Transmitter unwanted emissions outside the 5 GHz RLAN bands	clause 4.2.4.1	clause 5.4.5	Table 4	PASS
Transmitter unwanted emissions within the 5 GHz RLAN bands	clause 4.2.4.2	clause 5.4.6	Figure 1	PASS
Dynamic Frequency Selection (DFS)	clause 4.2.6	clause 5.4.8.2.1.6	clause 4.2.6.2.5.2	PASS*
Adaptivity (Channel AccessMechanism)	clause 4.2.7	clause 5.4.9	clause 4.2.7.3.3.3	PASS
User Access Restrictions	clause 4.2.9	clause 4.2.9	clause 4.2.9.2	PASS
<b>Radio Spectrum Matter (RSM) Part of Rx</b>				
Receiver spurious emissions	clause 4.2.5	clause 5.4.7	Table 5	PASS
Receiver Blocking	clause 4.2.8	clause 5.4.10	clause 4.2.8.4	PASS
<b>Remark:</b> <ol style="list-style-type: none"> <li>1. Tx: In this whole report Tx (or tx) means Transmitter.</li> <li>2. Rx: In this whole report Rx (or rx) means Receiver.</li> <li>3. Pass: Meet the requirement.</li> <li>4. PASS* : Refer to DFS test report.</li> <li>5. N/A: Not Applicable.</li> <li>6. The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB (provided by the customer).</li> </ol>				

## 5 General Information

### 5.1 Client Information

Applicant:	Balena Ltd.
Address:	6th Floor, One London Wall London, London, EC2Y 5EB United Kingdom
Manufacturer:	Balena Ltd.
Address:	6th Floor, One London Wall London, London, EC2Y 5EB United Kingdom
Factory:	Fae Technology S.p.a.
Address:	Via C. Battisti, 136 Gazzaniga (BG) 24025 - Italia

### 5.2 General Description of E.U.T.

Product Name:	balenaFin
Model No.:	v1.1
Hardware version:	v10
Software version:	v2.51
Operating Frequency:	Band 1: 5180MHz~5240MHz Band 2: 5260MHz~5320MHz Band 3: 5500MHz~5700MHz
Nominal Bandwidth	20MHz & 40MHz & 80MHz
Channel Spacing:	10MHz
Modulation:	OFDM
Antenna Type:	Internal Antenna External Antenna
Antenna Gain	Internal Antenna: 1dBi External Antenna: 2dBi
TPC:	Support
Device Classification:	<input type="checkbox"/> Frame Based Equipment <input checked="" type="checkbox"/> Load Based Equipment
Power supply:	DC6V-30V

### 5.3 Test environment and mode, and test samples plans

Operating Environment:	
Temperature:	Normal: 15°C ~ 35°C, Extreme: -20°C ~ +55°C
Humidity:	20 % ~ 75 % RH
Atmospheric Pressure:	1008 mbar
Voltage:	Nominal: 24Vdc, Extreme: Low 5.4Vdc, High 26.4Vdc
Test mode:	
Transmitting mode:	Keep the EUT in continuously transmitting mode with modulation.
Receiving mode:	Keep the EUT in receiving mode.
We have verified the construction and function in typical operation. All the test items were carried out with the EUT in above test modes. And the test results are both the "worst case" and "worst setup" 6 Mbps for 802.11a, 6.5 Mbps for 802.11n(HT20), 13.5 Mbps for 802.11n(HT40), 29.3 Mbps for 802.11ac(HT80).	

### 5.4 Description of Support Units

The EUT has been tested as an independent unit.

### 5.5 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%)
Radio Frequency	±10ppm
RF Power, Conducted	±1.5 dB
RF Power, Radiated	±4.44 dB
Spurious emission, Conducted	±3.0 dB
Temperature	±2°C
Humidity	±5 %
Time	±10%
Radiated Emission (30MHz ~ 1000MHz)	±4.32 dB
Radiated Emission (1GHz ~ 18GHz)	±5.16 dB

### 5.6 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC - Designation No.: CN1211**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

● **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

● **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

### 5.7 Laboratory Location

Shenzhen ZhongjianNanfang Testing Co.,Ltd.

Address: No.110~116, Building B, Jinyuan Business Building, Xixiang Road, Bao'an District, Shenzhen, Guangdong, China

Tel: +86-755-23118282, Fax:+86-755-23116366

Email: info@ccis-cb.com, Website: <http://www.ccis-cb.com>

### 5.8 Test Instruments list

Radiated Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	SAEMC	9m*6m*6m	966	07-22-2017	07-21-2020
				07-22-2020	07-21-2021

BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-07-2019	03-06-2020
				03-07-2020	03-06-2021
Biconical Antenna	SCHWARZBECK	VUBA9117	359	06-22-2017	06-21-2020
				06-22-2020	06-21-2021
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-07-2019	03-06-2020
				03-07-2019	03-06-2020
Horn Antenna	SCHWARZBECK	BBHA9120D	1805	06-22-2017	06-21-2020
				06-22-2020	06-21-2021
EMI Test Software	AUDIX	E3	Version: 6.110919b		
Pre-amplifier	HP	8447D	2944A09358	03-07-2019	03-06-2020
				03-07-2019	03-06-2020
Pre-amplifier	CD	PAP-1G18	11804	03-07-2019	03-06-2020
				03-07-2019	03-06-2020
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-05-2019	03-04-2020
				03-05-2020	03-04-2021
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-05-2019	03-04-2020
				03-05-2020	03-04-2021
Signal Generator	Rohde & Schwarz	SMX	835454/016	03-05-2019	03-04-2020
				03-05-2020	03-04-2021
Signal Generator	R&S	SMR20	1008100050	03-05-2019	03-04-2020
				03-05-2020	03-04-2021
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-07-2019	03-06-2020
				03-07-2019	03-06-2020
Cable	MICRO-COAX	MFR64639	K10742-5	03-07-2019	03-06-2020
				03-07-2019	03-06-2020
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-07-2019	03-06-2020
				03-07-2019	03-06-2020
RF Switch Unit	MWRFTTEST	MW200	N/A	N/A	N/A
Test Software	MWRFTTEST	MTS8200	Version: 2.0.0.0		

Conducted method:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
Spectrum Analyzer	Agilent	N9020A	MY50510123	11-18-2018	11-17-2019
				11-18-2019	11-17-2020
Vector Signal Generator	Agilent	N5182A	MY49060014	11-18-2018	11-17-2019
				11-18-2019	11-17-2020
Signal Generator	R&S	SMR20	1008100050	03-05-2019	03-04-2020
				03-05-2020	03-04-2021
Power Sensor	D.A.R.E	RPR3006W	15I00041SNO12	11-25-2018	11-24-2019
				11-25-2019	11-24-2020
Power Sensor	D.A.R.E	RPR3006W	15I00041SNO54	11-25-2018	11-24-2019
				11-25-2019	11-24-2020
Power Sensor	D.A.R.E	RPR3006W	17I00015SNO27	11-25-2018	11-24-2019
				11-25-2019	11-24-2020
Power Sensor	D.A.R.E	RPR3006W	17I00015SNO28	11-25-2018	11-24-2019
				11-25-2019	11-24-2020
RF Switch Unit	Ascentest	AT890-RFB	N/A	N/A	N/A
Test Software	MWRFTTEST	MTS 8310	Version: 2.0.0.0		
DC Power Supply	XinNuoEr	WYK-10020K	1409050110020	09-25-2018	09-24-2019
				09-25-2019	09-24-2020
Temperature Humidity Chamber	HengPu	HPGDS-500	20140828008	11-01-2018	10-31-2019
				11-01-2019	10-31-2020

## 6 Essential Radio Test Suites Specification in EN 301 893

### 6.1 Justification

The EUT and test equipment were configured for testing according to ETSI EN 301 893 V2.1.1 (2017-05).  
The EUT was tested in the normal operating mode to represent worst-case results during the final qualification test.

### 6.2 Test Configuration of EUT

Channel List of 5150MHz ~ 5250MHz					
802.11a/802.11n(HT20)		802.11n(HT40)		802.11ac(HT80)	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
36	5180	38	5190	42	5210
40	5200	46	5230		
44	5220				
48	5240				
Remark: The EUT operation in above frequency list, and used test software to control the EUT for staying in continuous transmitting and receiving mode. Channel No.: 36(lowest channel) of 802.11a/n(HT20) chosen for testing. Channel No.: 38(lowest channel) of 802.11n(HT40) chosen for testing. Channel No.: 58(Middle channel) and 42(highest channel) of 802.11ac(HT80) chosen for testing.					

Test plan of 5150MHz ~ 5250MHz													
Clause No.	Test Conditions			Test Channel No.			Mode				Test mode		
	NVNT	NVLT	NVHT	36	38	42	802.11a	802.11n (HT20)	802.11n (HT40)	802.11ac (HT80)	Tx	Rx	Normal
4.2.1	√	√	√	√	√	√	√	√	√	√	√		
4.2.2	√			√	√	√	√	√	√	√	√		
4.2.3	√	√	√	√	√	√	√	√	√	√	√		
4.2.3 <sup>PSD</sup>	√			√	√	√	√	√	√	√	√		
4.2.4.1	√			√		√	√	√	√	√	√		
4.2.4.2	√			√	√	√	√	√	√	√	√	√	
4.2.5	√			√	√	√	√	√	√	√			
4.2.6													
4.2.7	√			√	√	√	√	√	√	√			√
4.2.8	√			√	√	√	√	√	√	√		√	
4.2.9													

**Note:**

1. “√” means that this configuration is chosen for test.
2. “NTNV” means Normal Temperature Normal Voltage, “LTLV” means Low Temperature Low Voltage, “LTHV” means Low Temperature High Voltage, “HTLV” means High Temperature Low Voltage, “HTHV” means High Temperature High Voltage.
3. Clause No.: “4.2.3<sup>PSD</sup>” was Power Density test item.



Channel List of 5250MHz ~ 5350MHz					
802.11a/802.11n(HT20)		802.11n(HT40)		802.11ac(HT80)	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
52	5260	54	5270	58	5290
56	5280	62	5310		
60	5300				
64	5320				

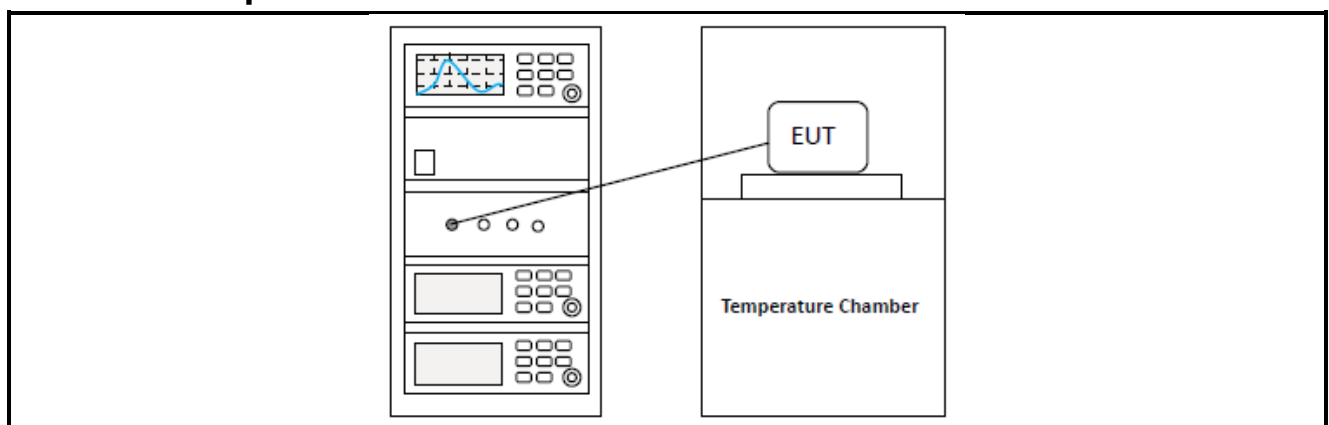
*Remark: The EUT operation in above frequency list, and used test software to control the EUT for staying in continuous transmitting and receiving mode. Channel No.: 52(lowest channel) of 802.11a/n(HT20) chosen for testing. Channel No.: 54(lowest channel) of 802.11n(HT40) chosen for testing. Channel No.: 58(Middle channel) and 122(highest channel) of 802.11ac(HT80) chosen for testing.*

Test plan of 5250MHz ~ 5350MHz													
Clause No.	Test Conditions			Test Channel No.			Mode				Test mode		
	NVNT	NVLT	NVHT	52	54	58	802.11a	802.11n (HT20)	802.11n (HT40)	802.11ac (HT80)	Tx	Rx	Normal
4.2.1	√	√	√	√	√	√	√	√	√	√	√		
4.2.2	√			√	√	√	√	√	√	√	√		
4.2.3	√	√	√	√	√	√	√	√	√	√	√		
4.2.3 <sup>PSD</sup>	√			√	√	√	√	√	√	√	√		
4.2.4.1	√			√		√	√	√	√	√	√		
4.2.4.2	√			√	√	√	√	√	√	√	√	√	
4.2.5	√			√	√	√	√	√	√	√			
4.2.6	√			√		√	√			√			√
4.2.7	√			√	√	√	√	√	√	√			√
4.2.8	√			√	√	√	√	√	√	√		√	
4.2.9													
<b>Note:</b> 1. “√” means that this configuration is chosen for test. 2. “NTNV” means Normal Temperature Normal Voltage, “LTLV” means Low Temperature Low Voltage, “LTHV” means Low Temperature High Voltage, “HTLV” means High Temperature Low Voltage, “HTHV” means High Temperature High Voltage. 3. Clause No.: “4.2.3 <sup>PSD</sup> ” was Power Density test item.													

Channel List of 5470MHz ~ 5725MHz					
802.11a/802.11n(HT20)					
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
100	5500	116	5580	132	5660
104	5520	120	5600	136	5680
108	5540	124	5620	140	5700
112	5560	128	5640		
802.11n(HT40)			802.11ac(HT80)		
102	5510	126	5630	106	5530
110	5550	134	5670	122	5610
118	5590				
Remark: The EUT operation in above frequency list, and used test software to control the EUT for staying in continuous transmitting and receiving mode. Channel No.: 100(lowest channel) and 128(highest channel) of 802.11a/n(HT20) chosen for testing. Channel No.: 102(lowest channel) and 134(highest channel) of 802.11n(HT40) chosen for testing. Channel No.: 106(lowest channel) and 122(highest channel) of 802.11ac(HT80) chosen for testing.					

Test plan of 5470MHz ~ 5725MHz												
Clause No.	Test Conditions			Test Channel		Mode				Test mode		
	NVNT	NVLT	NVHT	Lowest	Highest	802.11a	802.11n (HT20)	802.11n (HT40)	802.11ac (HT80)	Tx	Rx	Normal
4.2.1	√	√	√	√		√	√	√	√	√		
4.2.2	√			√		√	√	√	√	√		
4.2.3	√	√	√	√	√	√	√	√	√	√		
4.2.3 <sup>PSD</sup>	√			√	√	√	√	√	√	√		
4.2.4.1	√			√		√	√	√	√	√		
4.2.4.2	√			√	√	√	√	√	√	√	√	
4.2.5	√			√		√	√	√	√			
4.2.6	√			√		√			√			√
4.2.7	√			√		√	√	√	√			√
4.2.8	√			√		√	√	√	√		√	
4.2.9												
<b>Note:</b> 1. “√” means that this configuration is chosen for test. 2. “NTNV” means Normal Temperature Normal Voltage, “LTLV” means Low Temperature Low Voltage, “LTHV” means Low Temperature High Voltage, “HTLV” means High Temperature Low Voltage, “HTHV” means High Temperature High Voltage. 3. Clause No.: “4.2.3 <sup>PSD</sup> ” was Power Density test item.												

## 6.3 Test Setup Block



## 6.4 Test Results

### 6.4.1 Test Result Summary

Test Frequency Range: 5150MHz ~ 5250MHz				
Clause No.	Mode	Test Condition	Test Data	Verdict
4.2.1	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
		NVLT		
		NVHT		
4.2.2	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
4.2.3	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
		NVLT		
		NVHT		
4.2.3 <sup>PSD</sup>	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
4.2.4.1	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
4.2.4.2	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
4.2.5	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
4.2.6	N/A	N/A	See Section 6.4.2	Pass
4.2.7	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
4.2.8	802.11 a & n(HT40) & ac(HT80)	NVNT	See Section 6.4.3	Pass
4.2.9	N/A	N/A	See Section 6.4.4	Pass
<b>Note:</b> 1. “NVNT” means Normal Voltage Normal Temperature, “NVLT” means Normal Voltage Low Temperature, “NVHT” means Normal Voltage High Temperature. 2. Clause No.: “4.2.3 <sup>PSD</sup> ” was Power Density test item.				

Test Frequency Range: 5250MHz ~ 5350MHz				
Clause No.	Mode	Test Condition	Test Data	Verdict
4.2.1	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
		NVLT		
		NVHT		
4.2.2	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
4.2.3	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
		NVLT		
		NVHT		
4.2.3 <sup>PSD</sup>	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
4.2.4.1	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
4.2.4.2	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
4.2.5	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
4.2.6	802.11 a & ac(HT80)	NVNT	Please refer to DFS Report	Pass
4.2.7	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
4.2.8	802.11 a & n(HT40) & ac(HT80))	NVNT	See Section 6.4.3	Pass
4.2.9	N/A	N/A	See Section 6.4.4	Pass
<b>Note:</b> 1. “NVNT” means Normal Voltage Normal Temperature, “NVLT” means Normal Voltage Low Temperature, “NVHT” means Normal Voltage High Temperature. 2. Clause No.: “4.2.3 <sup>PSD</sup> ” was Power Density test item.				

Test Frequency Range: 5740MHz ~ 5725MHz				
Clause No.	Mode	Test Condition	Test Data	Verdict
4.2.1	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
		NVLT		
		NVHT		
4.2.2	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
4.2.3	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
		NVLT		
		NVHT		
4.2.3 <sup>PSD</sup>	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
4.2.4.1	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
4.2.4.2	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
4.2.5	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
4.2.6	802.11 a & ac(HT80)	NVNT	Please refer to DFS Report	Pass
4.2.7	802.11 a & n(HT20) & n(HT40) & ac(HT80)	NVNT	Appendix A – 5G Wi-Fi	Pass
4.2.8	802.11 a & n(HT40) & ac(HT80)	NVNT	See Section 6.4.3	Pass
4.2.9	N/A	N/A	See Section 6.4.4	Pass
<b>Note:</b> 1. “NVNT” means Normal Voltage Normal Temperature, “NVLT” means Normal Voltage Low Temperature, “NVHT” means Normal Voltage High Temperature. 2. Clause No.: “4.2.3 <sup>PSD</sup> ” was Power Density test item.				

#### 6.4.2 Dynamic Frequency Selection (DFS)

Requirement:	<p>Radar detection shall be used when operating on channels whose nominal bandwidth falls partly or completely within the frequency ranges 5 250 MHz to 5 350 MHz or 5 470 MHz to 5 725 MHz. This requirement applies to all types of RLAN devices regardless of the type of communication between these devices.</p> <p>Uniform Spreading is required across the frequency ranges 5 150 MHz to 5 350 MHz and 5 470 MHz to 5 725 MHz.</p> <p>Uniform Spreading is not applicable for equipment that only operates in the band 5 150 MHz to 5 250 MHz.</p>
Description:	Please refer to the appendix CCISE190807908 DFS Report.

## 6.4.3 Receiver Blocking

Test Frequency Range: 5150MHz ~ 5250MHz					
802.11a					
Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power(dBm) CW	PER measurement level (%)	PER Limit (%)	Results
-81.00 (Pmin+6dBm)	5100	-59	6	10	Pass
-81.00 (Pmin+6dBm)	4900	-53	2	10	Pass
	5000		4		
	5975		5		
<b>Note:</b> 1. The minimum performance criterion shall be PER less than or equal to 10 %. 2. Manufacturer declared the sensitivity level is -87 dBm.					
802.11n(HT40)					
Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power(dBm) CW	PER measurement level (%)	PER Limit (%)	Results
-81.00 (Pmin+6dBm)	5100	-59	7	10	Pass
-81.00 (Pmin+6dBm)	4900	-53	3	10	Pass
	5000		4		
	5975		3		
<b>Note:</b> 1. The minimum performance criterion shall be PER less than or equal to 10 %. 2. Manufacturer declared the sensitivity level is -87 dBm.					
802.11ac(HT80)					
Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power(dBm) CW	PER measurement level (%)	PER Limit (%)	Results
-81.00 (Pmin+6dBm)	5100	-59	2	10	Pass
-81.00 (Pmin+6dBm)	4900	-53	4	10	Pass
	5000		3		
	5975		2		
<b>Note:</b> 1. The minimum performance criterion shall be PER less than or equal to 10 %. 2. Manufacturer declared the sensitivity level is -87 dBm.					

Test Frequency Range: 5250MHz ~ 5350MHz					
802.11a					
Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power(dBm) CW	PER measurement level (%)	PER Limit (%)	Results
-81.00 (Pmin+6dBm)	5100	-59	3	10	Pass
-81.00 (Pmin+6dBm)	4900	-53	2	10	Pass
	5000		4		
	5975		3		
<b>Note:</b> 1. The minimum performance criterion shall be PER less than or equal to 10 %. 2. Manufacturer declared the sensitivity level is -87 dBm.					
802.11n(HT40)					
Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power(dBm) CW	PER measurement level (%)	PER Limit (%)	Results
-81.00 (Pmin+6dBm)	5100	-59	4	10	Pass
-81.00 (Pmin+6dBm)	4900	-53	3	10	Pass
	5000		5		
	5975		4		
<b>Note:</b> 1. The minimum performance criterion shall be PER less than or equal to 10 %. 2. Manufacturer declared the sensitivity level is -87 dBm.					
802.11ac(HT80)					
Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power(dBm) CW	PER measurement level (%)	PER Limit (%)	Results
-81.00 (Pmin+6dBm)	5100	-59	3	10	Pass
-81.00 (Pmin+6dBm)	4900	-53	3	10	Pass
	5000		5		
	5975		4		
<b>Note:</b> 1. The minimum performance criterion shall be PER less than or equal to 10 %. 2. Manufacturer declared the sensitivity level is -87 dBm.					



Test Frequency Range: 5740MHz ~ 5725MHz					
802.11a					
Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power(dBm) CW	PER measurement level (%)	PER Limit (%)	Results
-81.00 (Pmin+6dBm)	5100	-59	2	10	Pass
-81.00 (Pmin+6dBm)	4900	-53	3	10	Pass
	5000		2		
	5975		7		
<b>Note:</b> 1. The minimum performance criterion shall be PER less than or equal to 10 %. 2. Manufacturer declared the sensitivity level is -87 dBm.					
802.11n(HT40)					
Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power(dBm) CW	PER measurement level (%)	PER Limit (%)	Results
-81.00 (Pmin+6dBm)	5100	-59	2	10	Pass
-81.00 (Pmin+6dBm)	4900	-53	3	10	Pass
	5000		5		
	5975		6		
<b>Note:</b> 1. The minimum performance criterion shall be PER less than or equal to 10 %. 2. Manufacturer declared the sensitivity level is -87 dBm.					
802.11ac(HT80)					
Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power(dBm) CW	PER measurement level (%)	PER Limit (%)	Results
-81.00 (Pmin+6dBm)	5100	-59	2	10	Pass
-81.00 (Pmin+6dBm)	4900	-53	3	10	Pass
	5000		6		
	5975		4		
<b>Note:</b> 1. The minimum performance criterion shall be PER less than or equal to 10 %. 2. Manufacturer declared the sensitivity level is -87 dBm.					

#### 6.4.4 User Access Restrictions

Requirement:	The equipment shall be so constructed that settings (hardware and/or software) related to DFS shall not be accessible to the user if changing those settings result in the equipment no longer being compliant with the DFS requirements in clause 4.2.6.
Description:	The EUT has no radar detection function and the manufacturer will restrict access for the user to change certain hardware and/or software settings of the equipment.

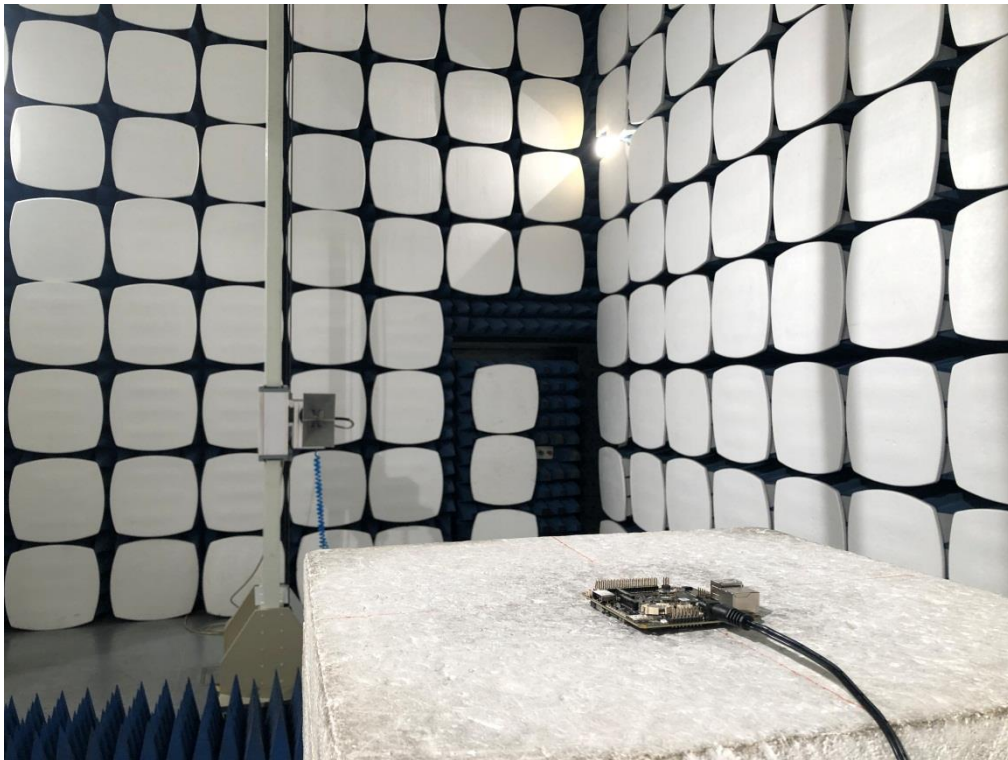
## 7 Test Setup Photos

Internal antenna:

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



External antenna:

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz





## 8 EUT photos

Refer to the report No.: CCISE190807901

-- End of report--