N° 1-6736
Scope available
on www.cofrac.fr

CERTIFICATE #3478.01

TEST REPORT

EUT Description	**2x2 Wi-Fi and BT, M.2 1216 adapter card**
Brand Name	**Intel® BE200D2W**
Model Name	**BE200D2W**
FCC/IC ID	**PD9BE200D2; 1000M-BE200D2**
Date of Test Start/End	**2023-07-25 / 2023-07-25**
Features	**2x2 Wi-Fi - IEEE 802.11be - Bluetooth®** (see section 5)

Applicant	**Intel Corporation SAS**
Address	**425 Rue de Goa – Le Cargo B6 – 06600 Antibes, FRANCE**
Contact Person	**Benjamin Lavenant**
Telephone/Fax/ Email	**Benjamin.lavenant@intel.com**

Reference Standards	**FCC CFR Title 47 Part 15E** **RSS-247 issue 2** (see section 1)

Test Report identification	**230526-09.TR15**
Revision Control	**Rev. 00** **This test report revision replaces any previous test report revision** (see section 8)

The test results relate only to the samples tested.
Reference to accreditation shall be used only by full reproduction of test report.

Issued by

Digitally signed by Requin
Date: 2023.07.28 17:24:00 +02'00'

Cedric REQUIN
(Test Engineer Lead)

Reviewed by

Digitally signed by Z.OUACHICHA
Date: 2023.07.28 17:58:03 +02'00'

Zayd OUACHICHA
(Technical Manager)

Table of Contents

1. Standards, reference documents and applicable test methods

FCC	1. FCC Title 47 CFR part 15 - Subpart E – Unlicensed National Information Infrastructure Devices. 2021-10-01 Edition 2. FCC OET KDB 905462 D02 v02 - UNII DFS Compliance Procedures New Rules – Compliance Measurement procedures for Unlicensed-National Information Infrastructure Devices Operating in the 5250-5350 MHz and 5470-5725 MHz Bands Incorporating Dynamic Frequency Selection. 3. ANSI C63.10-2013 American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.
ISED	1. RSS-247 Issue 2 – Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSS) and License-Exempt Local Area Network (LE-LAN) Devices 2. FCC OET KDB 905462 D02 v02 - UNII DFS Compliance Procedures New Rules – Compliance Measurement procedures for Unlicensed-National Information Infrastructure Devices Operating in the 5250-5350 MHz and 5470-5725 MHz Bands Incorporating Dynamic Frequency Selection. 3. ANSI C63.10-2013 American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

2. General conditions, competences and guarantees

- ✓ Tests performed under FCC standards identified in section 1 are covered by A2LA accreditation.
- ✓ Tests performed under ISED standards identified in section 1 are covered by Cofrac accreditation.
- ✓ Intel Corporation SAS Wireless RF Lab (Intel WRF Lab) is an ISO/IEC 17025:2017 laboratory accredited by the American Association for Laboratory Accreditation (A2LA) with the certificate number 3478.01.
- ✓ Intel Corporation SAS Wireless RF Lab (Intel WRF Lab) is an Accredited Test Firm recognized by the FCC, with Designation Number FR0011.
- ✓ Intel Corporation SAS Wireless RF Lab (Intel WRF Lab) is an ISO/IEC 17025:2017 testing laboratory accredited by the French Committee for Accreditation (Cofrac) with the certificate number 1-6736.
- ✓ Intel Corporation SAS Wireless RF Lab (Intel WRF Lab) is a Registered Test Site listed by ISED, with ISED company number 1000Y and CAB identifier FR0005.
- ✓ Intel WRF Lab only provides testing services and is committed to providing reliable, unbiased test results and interpretations.
- ✓ Intel WRF Lab is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.
- ✓ Intel WRF Lab has developed calibration and proficiency programs for its measurement equipment to ensure correlated and reliable results to its customers.
- ✓ This report is only referred to the item that has undergone the test.
- ✓ This report does not imply an approval of the product by the Certification Bodies or competent Authorities.

3. Environmental Conditions

- ✓ At the site where the measurements were performed the following limits were not exceeded during the tests:

Temperature	23.4ºC ± 2ºC
Humidity	42.1% ± 12.9%

4. Test samples

Sample	Control #	Description	Model	Serial #	Date of receipt	Note
#1	230724-02.S15	WiFi 7 Module	BE200D2W	04E8B963C3A1	2023-07-24	RF Conducted
	230526-08.S66	BNJ Extender Board	PCB00862	2202222756	2023-06-21	
	200525-01.S01	Laptop	HSN-I41C	00095001L0	2023-04-24	
	180001-01.S16	Socket	-	-	2022-06-23	

5. EUT Features

The herein information is provided by the customer

<table>
<tr><td>Brand Name</td><td>Intel® BE200D2W</td></tr>
<tr><td>Model Name</td><td>BE200D2W</td></tr>
<tr><td>Software Version</td><td>DRTU.04832.99.0.81</td></tr>
<tr><td>Driver Version</td><td>99.0.81.11</td></tr>
<tr><td>Prototype / Production</td><td>Production</td></tr>
<tr><td>Supported Radios</td><td>802.11b/g/n/ax/be — 2.4GHz (2400.0 – 2483.5 MHz)
802.11a/n/ac/ax/be — 5.2GHz (5150.0 – 5350.0 MHz)
5.6GHz (5470.0 – 5725.0 MHz)
5.8GHz (5725.0 – 5850.0 MHz)
802.11ax/be — 6.0GHz (5925.0 - 7125.0MHz)
Bluetooth — 2.4GHz (2400.0 – 2483.5 MHz)</td></tr>
<tr><td>Antenna Information</td><td>
<table>
<tr><td>Transmitter</td><td>Main(2)/Chain A</td><td>Aux(1)/Chain B</td></tr>
<tr><td>Manufacturer</td><td>Intel WRF Lab</td><td>Intel WRF Lab</td></tr>
<tr><td>Antenna type</td><td>PIFA</td><td>PIFA</td></tr>
<tr><td>Part number</td><td>WRF-Tri Band-Antenna</td><td>WRF-Tri Band-Antenna</td></tr>
</table>
</td></tr>
</table>

6. Remarks and comments

1. No deviations were made from the test methods listed in section 1 of this report
2. The operating mode of the sample is client only without radar detection.
3. The maximum antenna gain is +5.15dBi.

7. Test Verdicts summary

The statement of conformity to applicable standards in the table below are based on the measured values, without taking into account the measurement uncertainties.

7.1. Dynamic frequency selection

FCC part	RSS part	Test name	Verdict
15.407 (h) (2)	RSS-247 part 6.3	Non Occupancy Period	P
		DFS Detection Threshold	NA
		Channel Availability Check Time	NA
		Uniform Spreading	NA
		U-NII Detection Bandwidth	NA
		Channel Closing Transmission Time	P
		Channel Move Time	P

8. Document Revision History

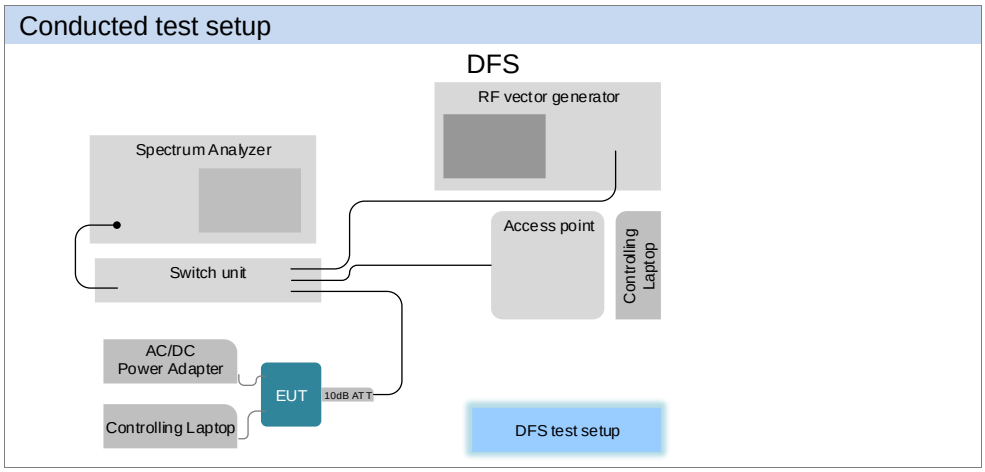
Revision #	Modified by	Revision Details
Rev. 00	Z.Ouachicha	First Issue

Annex A. Test & System Description

A.1 Measurement System

Measurements were performed using the following setups, made in accordance to the general provisions of FCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02.

The EUT was installed in a test fixture and this test fixture is connected to a laptop computer and AC/DC power adapter. A second computer was used to configure the access point on the DFS channels; a channel was selected randomly by the access point. To enable channel loading, data is streamed between the EUT laptop and the second computer.



A.2 Test Equipment List

ID#	Device	Type/Model	Serial #	Manufacturer	Cal. Date	Cal. Due Date
017-014	Vector signal generator	SMJ100A	100458	Rohde & Schwarz	2023-05-19	2025-05-19
017-015	Switch unit	OSP 120	106552	Rohde & Schwarz	2022-04-29	2024-04-29
447-000	Access point	MR7500	45C10M23B00928	Linksys	N/A	N/A
017-003	DC Power supply	E3640A	MY40006885	Agilent	N/A	N/A
299-000	Multimeter	34401A	US36054685	HP	2022-01-18	2024-01-18
311-000	Climatic chamber	SLT34/40	56746020930010	Secasi	2021-12-13	2023-12-13
273-000	Spectrum analyzer	FSV30	103309	Rohde & Schwarz	2023-02-01	2025-02-01
017-000	Measurement Software	WMS 32 v11.40.00	200226	Rohde & Schwarz	N/A	N/A
017-005	RF Cable 0.5m	PE3CA1039	-	Pasternack	2023-03-03	2024-03-03
017-006	RF Cable 1.2m	PE3C0666	-	Pasternack	2023-03-03	2024-03-03
322-000	Temp & Humidity Logger	RA12E-TH1-RAS	RA12-B89702	AVTECH	2021-09-02	2023-09-02
017-005	RF Cable 0.5m	PE3CA1039	-	Pasternack	2023-03-03	2024-03-03
017-006	RF Cable 1.2m	PE3C0666	-	Pasternack	2023-03-03	2024-03-03
017-007	Cable SMA Male to ML51-P	HRMP-ML51LP	DTR178-100RS	Hirose	2023-03-03	2024-03-03
017-008	Cable SMA Male to ML51-P	HRMP-ML51LP	DTR178-100RS	Hirose	2023-03-03	2024-03-03
053-000	Thermometer	t3000FC	46320032	Fluke	2021-11-15	2023-11-15
017-011	RF Cable 2m	0900670672000PJ	1936949	Radiall	2023-03-03	2024-03-03
017-012	RF Cable 2m	0900670672000PJ	1936947	Radiall	2023-03-03	2024-03-03
017-019	10dB attenuator	-	-	Pasternack	2023-03-03	2024-03-03
017-020	10dB attenuator	-	-	Pasternack	2023-03-03	2024-03-03

Conducted Setup
N/A: Not applicable

A.3 Measurement Uncertainty Evaluation

The system uncertainty evaluation is shown in the table below with a coverage factor of k = 2 to indicate a 95% level of confidence:

Measurement type	Uncertainty	Unit
Timing	±1	ms

Annex B. Test Results

The herein test results were performed by:

Test case measurement	Test Personnel
DFS	Cedric REQUIN

B.1 Test Conditions

The EUT power supply was provided by the Extender test board, $V_{nominal}$ = 3.3 V_{DC}.
The software PROSet/Wireless was used to set the EUT in normal operation mode.

B.2 Test results for Dynamic Frequency Selection (DFS)

Test procedure

The conducted setup shown on *Section A.1* was used to measure the Channel Closing Transmission Time and Channel Move Time.

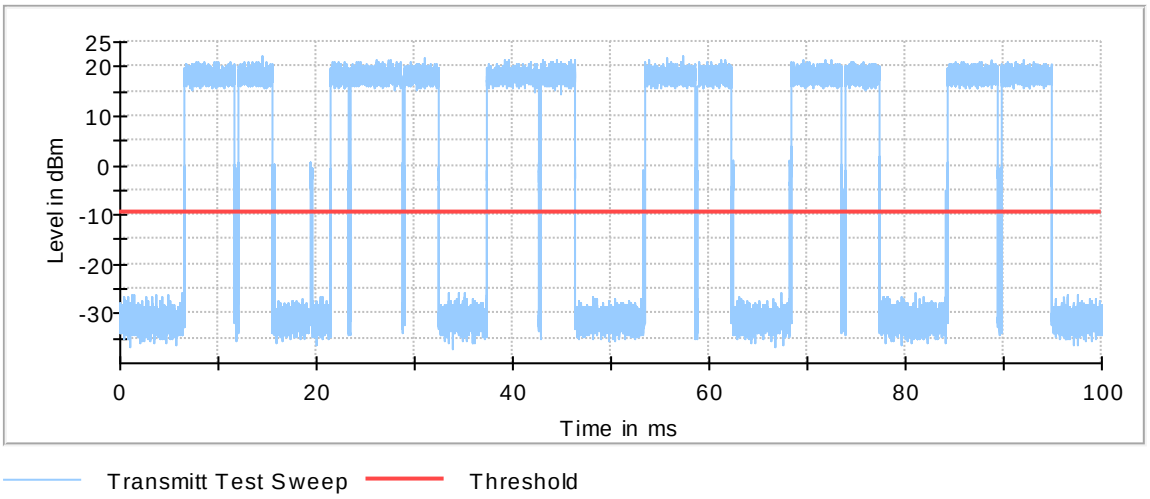
The *Client Device* (UUT) is set up to associate with the *Master Device.* Data is streamed between the *Master Device* and the *Client Device*. Radar test waveforms generated with the vector signal generator are injected into the *Master* on the operating channel above the DFS detection threshold. Observations are done on the transmissions of the UUT at the end of the radar burst on the Operating Channel for a duration greater than 10 seconds. We measured the transmissions from the UUT during the observation time, after radar detection occurs the Channel Move Time and Channel Closing Transmission Time are recorded.

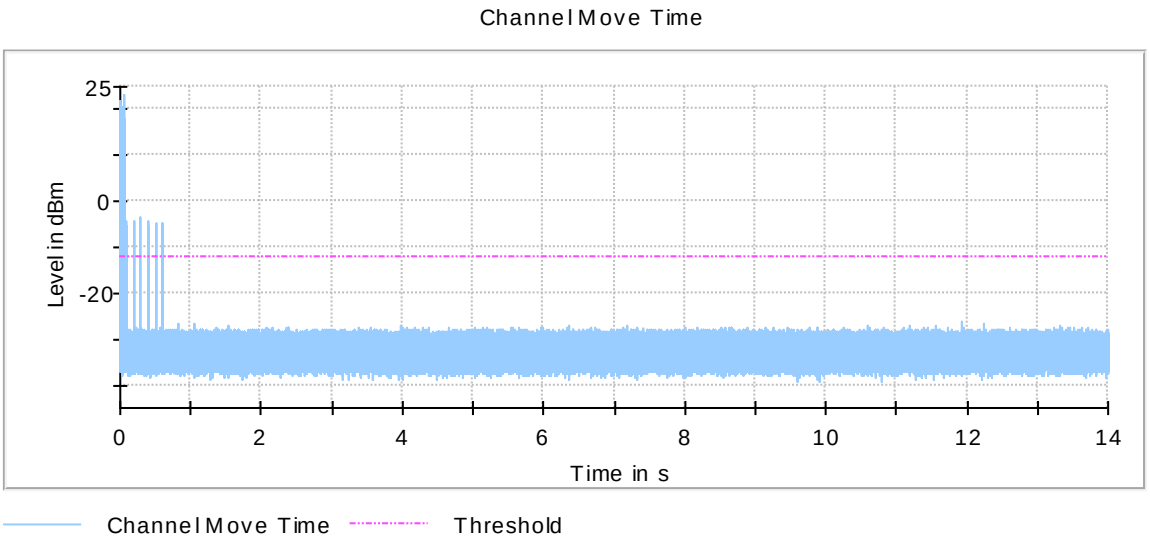
Results tables

Tested Channel: 64, Frequency: 5320 MHz

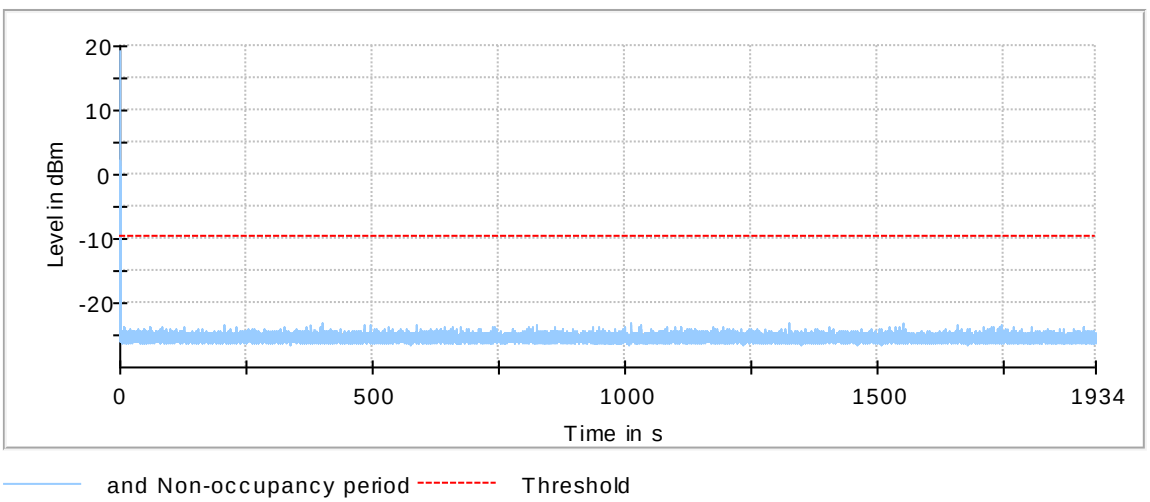
Test item	Results	Limit
Transmit Test Duty Cycle	51.330%	-
Channel Closing Transmission Time	<25.400ms	200 ms + an aggregate of 60ms over remaining 10 seconds period.
Channel Move Time	606 ms	10 seconds
Non-Occupancy Period	32 minutes	Minimum 30 minutes

Results Screenshot





Channel move time < 10s, test PASS



No transmission of any type has occurred for 30 minutes, test PASS