

# TEST REPORT

|                        |                                                                 |
|------------------------|-----------------------------------------------------------------|
| EUT Description        | WLAN and BT, 1x1 PCIe M.2 2230 adapter card                     |
| Brand Name             | Intel® Wireless-AC 9461                                         |
| Model Name             | 9461NGW                                                         |
| FCC ID                 | PD99461NG                                                       |
| ISED ID                | 1000M-9461NG                                                    |
| Date of Test Start/End | 2017-08-17 / 2017-08-17                                         |
| Features               | 802.11 a/b/g/n/ac Wireless LAN + Bluetooth 5<br>(see section 5) |

|                      |                                                                             |
|----------------------|-----------------------------------------------------------------------------|
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|                     |                                                                 |
|---------------------|-----------------------------------------------------------------|
| Reference Standards | FCC CFR Title 47 Part 15E<br>RSS-247 issue 2<br>(see section 1) |
|---------------------|-----------------------------------------------------------------|

|                            |                                                                                                    |
|----------------------------|----------------------------------------------------------------------------------------------------|
| Test Report identification | 170727-01.TR06                                                                                     |
| Revision Control           | Rev. 00<br>This test report revision replaces any previous test report revision<br>(see section 8) |

The test results relate only to the samples tested.  
The test report shall not be reproduced in full, without written approval of the laboratory.

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# Table of Contents

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|                                                                            |           |
|----------------------------------------------------------------------------|-----------|
| <b>1. Standards, reference documents and applicable test methods .....</b> | <b>3</b>  |
| <b>2. General conditions, competences and guarantees .....</b>             | <b>3</b>  |
| <b>3. Environmental Conditions .....</b>                                   | <b>3</b>  |
| <b>4. Test samples .....</b>                                               | <b>3</b>  |
| <b>5. EUT Features .....</b>                                               | <b>4</b>  |
| <b>6. Remarks and comments .....</b>                                       | <b>4</b>  |
| <b>7. Test Verdicts summary .....</b>                                      | <b>5</b>  |
| 7.1. DYNAMIC FREQUENCY SELECTION .....                                     | 5         |
| <b>8. Document Revision History .....</b>                                  | <b>5</b>  |
| <b>Annex A. Test &amp; System Description .....</b>                        | <b>6</b>  |
| A.1 MEASUREMENT SYSTEM .....                                               | 6         |
| A.2 TEST EQUIPMENT LIST .....                                              | 7         |
| A.3 MEASUREMENT UNCERTAINTY EVALUATION .....                               | 7         |
| <b>Annex B. Test Results .....</b>                                         | <b>8</b>  |
| B.1 TEST CONDITIONS .....                                                  | 8         |
| B.2 TEST RESULTS FOR DYNAMIC FREQUENCY SELECTION (DFS) .....               | 8         |
| <b>Annex C. Photographs .....</b>                                          | <b>11</b> |
| C.1 TEST SAMPLE .....                                                      | 11        |

## 1. Standards, reference documents and applicable test methods

1. FCC 47 CFR part 15 - Subpart E – Unlicensed National Information Infrastructure Devices.
2. FCC OET KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02 – 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. RSS-247 Issue 2 — Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSS) and Licence-Exempt Local Area Network (LE-LAN) Devices
4. ANSI C63.10-2013 American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

## 2. General conditions, competences and guarantees

- ✓ Intel Mobile Communications France SAS Wireless RF Lab (Intel WRF Lab) is an ISO/IEC 17025:2005 testing laboratory accredited by the American Association for Laboratory Accreditation (A2LA) with the certificate number 3478.01.
- ✓ Intel Mobile Communications France SAS Wireless RF Lab (Intel WRF Lab) is an Accredited Test Firm recognized by the FCC, with Designation Number FR0011.
- ✓ Intel Mobile Communications France SAS Wireless RF Lab (Intel WRF Lab) is a Registered Test Site listed by ISED, with ISED Assigned Code 1000Y.
- ✓ 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 °C ±1 °C |
| Humidity    | 55 % ± 5 %  |

## 4. Test samples

| Sample | Control #     | Description    | Model          | Serial #          | Date of receipt |
|--------|---------------|----------------|----------------|-------------------|-----------------|
| #01    | 170727-01.S01 | Module         | 9461NGW        | WFM: 3413E86AD85D | 2017-07-28      |
|        | 170524-02.S15 | Extender Board | PCB00609_01    | 6092416-442       | 2017-05-30      |
|        | 170000-01.S14 | Laptop         | Latitude E5470 | 90LKMC2           | 2017-05-30      |

## 5. EUT Features

|                        |                                                                        |                              |
|------------------------|------------------------------------------------------------------------|------------------------------|
| Brand Name             | Intel® Wireless-AC 9461                                                |                              |
| Model Name             | 9461NGW                                                                |                              |
| FCC ID                 | PD99461NG                                                              |                              |
| ISED ID                | 1000M-9461NG                                                           |                              |
| Software Version       | Proset 99.0.31                                                         |                              |
| Driver Version         | 99.0.31.6                                                              |                              |
| Prototype / Production | Production                                                             |                              |
| Supported Radios       | 802.11b/g/n                                                            | 2.4GHz (2400.0 – 2483.5 MHz) |
|                        | 802.11a/n/ac                                                           | 5.2GHz (5150.0 – 5350.0 MHz) |
|                        |                                                                        | 5.6GHz (5470.0 – 5725.0 MHz) |
|                        |                                                                        | 5.8GHz (5725.0 – 5850.0 MHz) |
|                        | Bluetooth 5                                                            | 2.4GHz (2400.0 – 2483.5 MHz) |
| Antenna Information    | <b>WLAN/BT:</b> Slot antenna. WiFi 2.4GHz & 5GHz and BT (DRTU CHAIN A) |                              |
| Additional Information |                                                                        |                              |

## 6. Remarks and comments

1. The operating mode of the sample is client only without radar detection.
2. The maximum antenna gain is 5dBi.

## 7. Test Verdicts summary

### 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      |
|                |                  | DFS Detection Threshold           | NA      |
|                |                  | Channel Closing Transmission Time | P       |
|                |                  | Channel Move Time                 | P       |
|                |                  | U-NII Detection Bandwidth         | NA      |

## 8. Document Revision History

| Revision # | Date       | Modified by | Revision Details |
|------------|------------|-------------|------------------|
| Rev. 00    | 2017-08-25 | G.Roustan   | First Issue      |

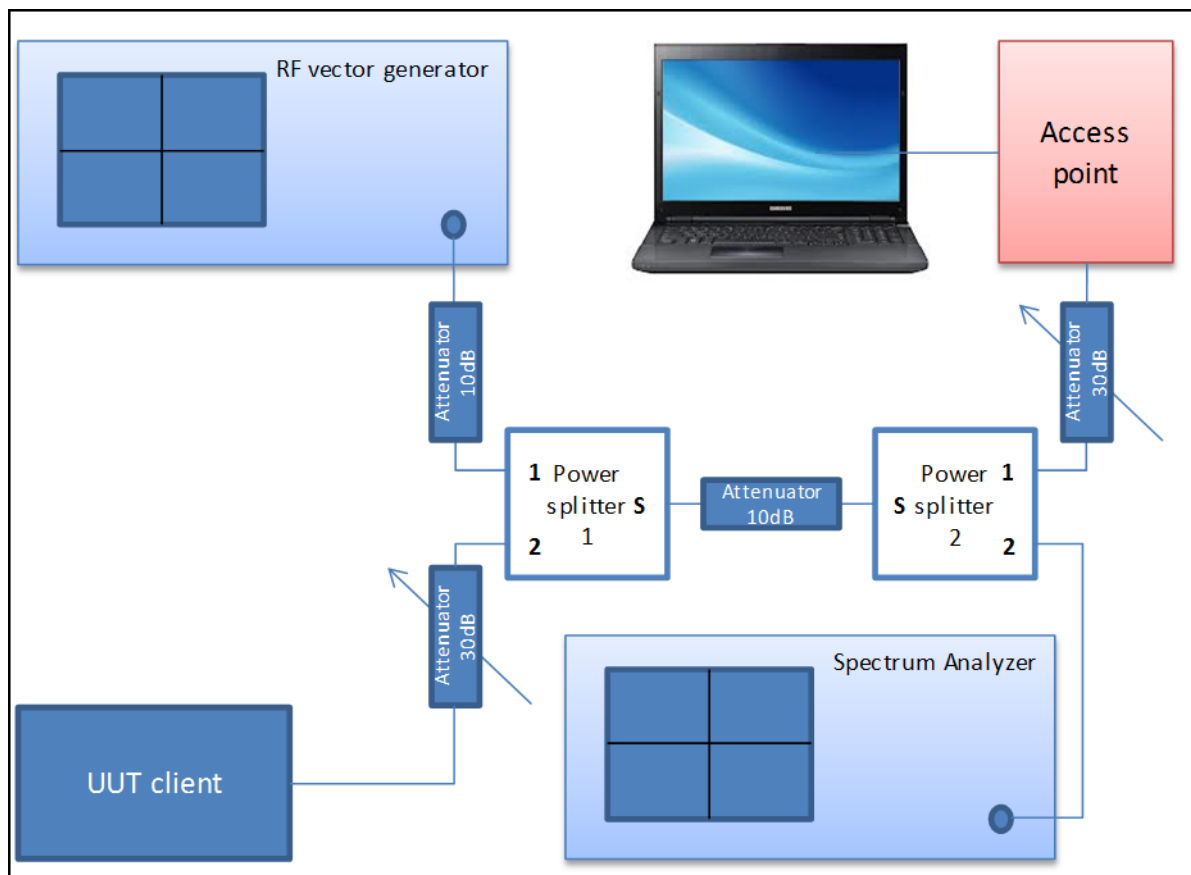
# Annex A. Test & System Description

## 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 laptop 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, this second laptop computer is also used as a server host, a video was streamed on the EUT.

### Conducted Setup



## A.2 Test Equipment List

### Conducted Setup

| ID#  | Device                  | Type/Model      | Serial Number | Manufacturer    | Cal. Date  | Cal. Due Date |
|------|-------------------------|-----------------|---------------|-----------------|------------|---------------|
| 0318 | Spectrum analyzer       | FSV30           | 103310        | Rohde & Schwarz | 2016-09-19 | 2018-9-19     |
| 0017 | Vector Signal Generator | SMJ100A         | 100458        | Rohde & Schwarz | 2015-10-21 | 2017-10-21    |
| 0261 | Access point*           | Aironet IOS     | FTX134390GV   | Cisco           | NA         | NA            |
|      | Laptop DELL             | Lattitude E5440 | -             | DELL            | NA         | NA            |

## A.3 Measurement Uncertainty Evaluation

The system uncertainty evaluation is shown in the below table:

| Measurement type | Uncertainty |
|------------------|-------------|
| Time domain      | $\pm 1$ ms  |

# Annex B. Test Results

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## B.1 Test Conditions

The EUT power supply was provided by the Extender test board,  $V_{\text{nominal}} = 3.3 \text{ V}_{\text{DC}}$ .  
The software PROSet/Wireless Intel® 99.0.31 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 §A.2 *Measurement system* was used to measure the Channel Closing Transmission Time and Channel Move Time.

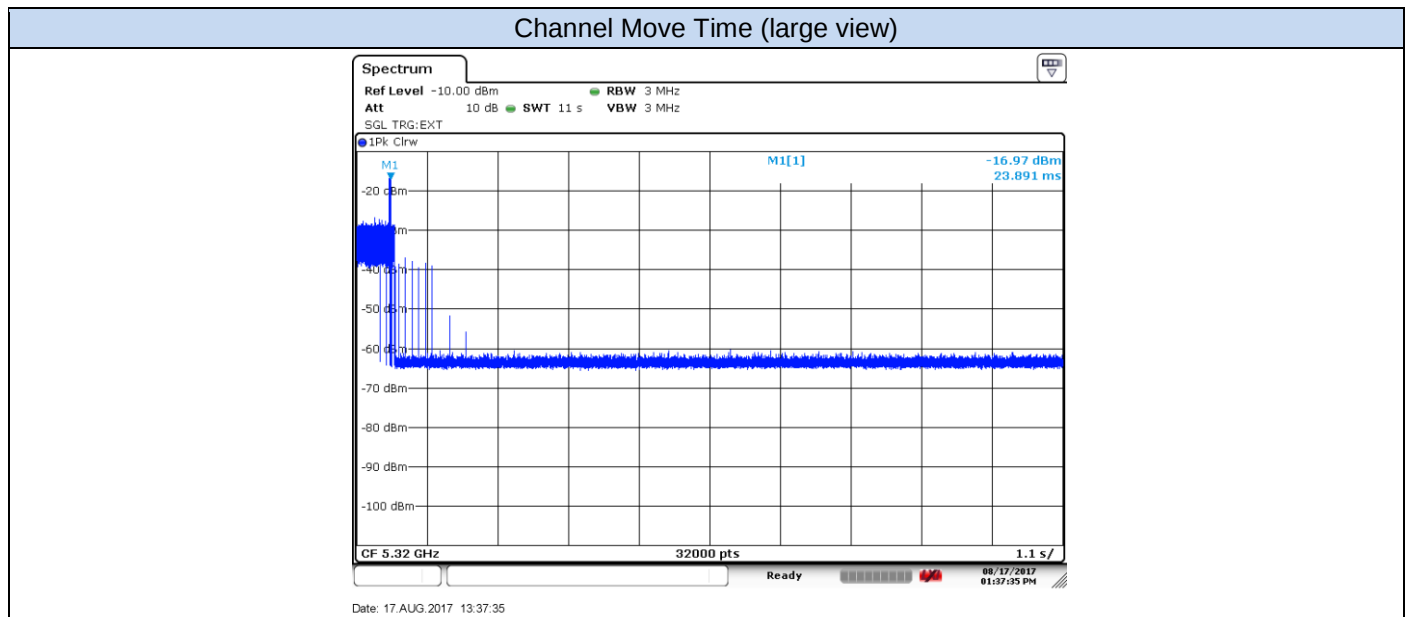
The *Client Device* (UUT) is set up to associate with the *Master Device*. The channel loading test file is streamed from the *Master Device* to the *Client Device*. Radar test waveforms generated with the vector signal generator are injected into the *Master* on the operating channel above the DFS detection 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

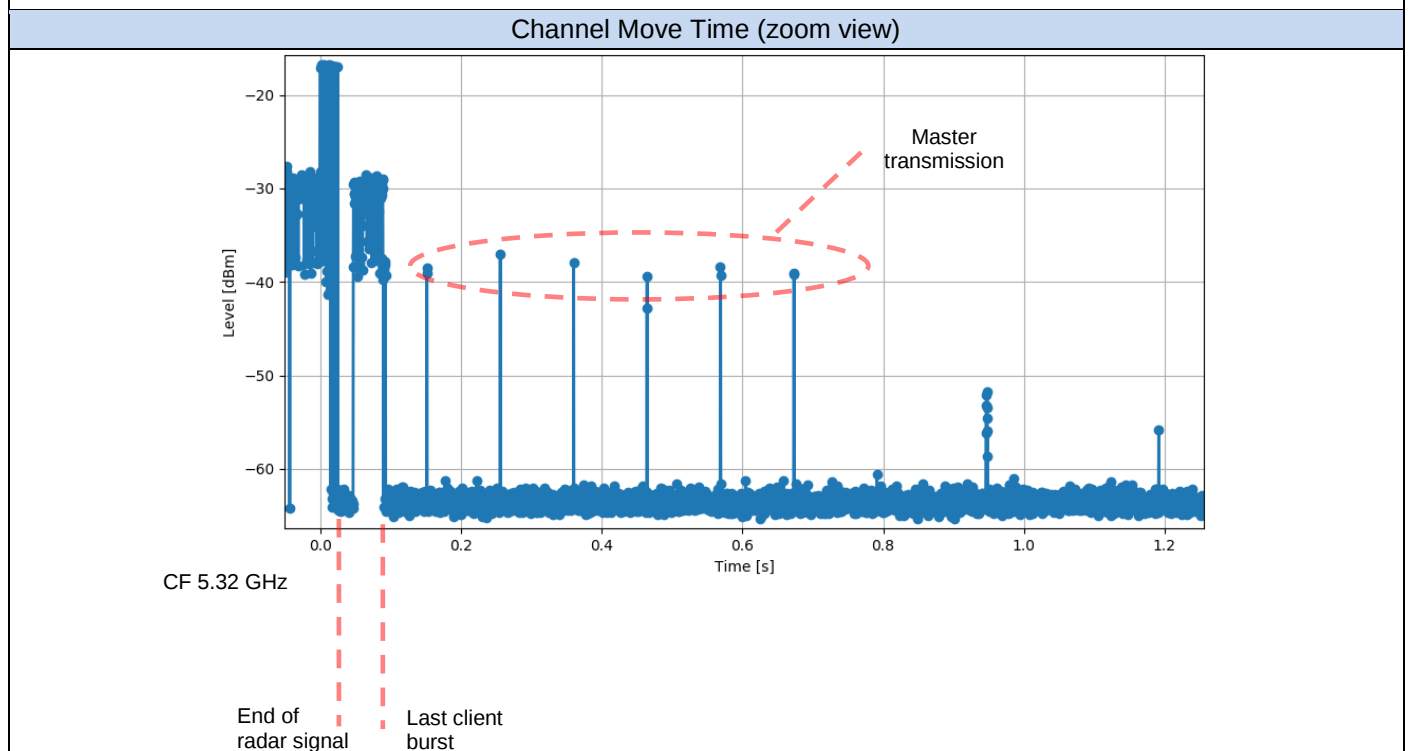
Tested Channel: 64, Frequency: 5320 MHz

| Test item                         | Results      | Limit                                                           |
|-----------------------------------|--------------|-----------------------------------------------------------------|
| Channel Closing Transmission Time | < 37.1 ms    | 200 ms + an aggregate of 60ms over remaining 10 seconds period. |
| Channel Move Time                 | 37.1 ms      | 10 seconds                                                      |
| Non-Occupancy Period              | > 30 minutes | 30 minutes                                                      |

## Results Screenshot



**Marker M1 shows the end of the radar signal.**  
**Channel move time < 10s test PASS**



This zoom picture is generated with proprietary tool which process of the spectrum analyzer trace.

Between end of radar signal and last client burst is the time to cease all transmissions on the current channel.

**Channel closing transmission time < 37.1 ms, test PASS**  
**Channel move time = 37.1 ms, test PASS**

