

# TEST REPORT

Report No.: **BCTC2504325353-4E**

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Applicant: **SHENZHEN MINEWSEMI CO., LTD**

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Product Name: **WiFi Module**

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Test Model: **ME16WS01**

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Tested Date: **2025-05-06 to 2025-06-18**

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Issued Date: **2025-06-27**

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**Shenzhen BCTC Testing Co., Ltd.**



**FCC ID:2BDJ6-ME16WS01**

Product Name: WiFi Module  
Trademark: MINEWSEMI  
Model/Type Reference: ME16WS01,ME16WS0  
Prepared For: SHENZHEN MINEWSEMI CO., LTD  
Address: 3rd Floor,I Building, Gangzhilong Science Park, NO.6, Qinglong Road,Longhua District, Shenzhen  
Manufacturer: SHENZHEN MINEWSEMI CO., LTD  
Address: 3rd Floor,I Building, Gangzhilong Science Park, NO.6, Qinglong Road,Longhua District, Shenzhen  
Prepared By: Shenzhen BCTC Testing Co., Ltd.  
Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China  
Sample Received Date: 2025-05-06  
Sample Tested Date: 2025-05-06 to 2025-06-18  
Report No.: BCTC2504325353-4E  
Test Standards: FCC Part 15.407  
Test Results: PASS  
Remark: This is WIFI-5GHz band radio test report.

Tested by:



Brave Zeng/ Project Handler

Approved by:



Zero Zhou/Reviewer

The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

## Table Of Content

| Test Report Declaration  | Page |
|--|------|
| 1. Version .....   | 4    |
| 2. Test Summary .....  | 5    |
| 3. Measurement Uncertainty .....                                     | 6    |
| 4. Product Information And Test Setup .....                          | 7    |
| 4.1 Product Information.....   | 7    |
| 4.2 Test Setup Configuration .....                                   | 8    |
| 4.3 Test Setup Configuration .....                                   | 8    |
| 5. Test Facility And Test Instrument Used.....                       | 9    |
| 5.1 Test Facility.....   | 9    |
| 5.2 Test Instrument Used.....  | 9    |
| 5.3 Test method.....   | 9    |
| 6. Dynamic Frequency Selection (DFS) Test Result .....               | 10   |
| 6.1 DFS Parameters .....   | 10   |
| 6.2 Applicability of DFS Requirements Prior to Use of a Channel..... | 11   |
| 6.3 Applicability of DFS Requirements during Normal Operation.....   | 11   |
| 6.4 Uniform Spreading .....  | 12   |
| 6.5 User Access Restrictions .....                                   | 12   |
| 6.6 Channel Loading/Data Streaming .....                             | 12   |
| 6.7 Radar Test Waveform Calibration.....                             | 13   |
| 6.8 UNII Detection Bandwidth .....                                   | 17   |
| 6.9 In-service Monitoring .....                                      | 18   |
| 7. EUT Test Setup Photographs.....                                   | 21   |

(Note: N/A Means Not Applicable)

## 1. Version

| Report No.        | Issue Date | Description | Approved |
|-------------------|------------|-------------|----------|
| BCTC2504325353-4E | 2025-06-27 | Original    | Valid    |

## 2. Test Summary

The Product has been tested according to the following specifications:

| Items                          | Description of Test                           | Result         |
|--------------------------------|---|----------------|
| Performance Requirements Check | Initial Channel Availability Check Time (CAC) | Not Applicable |
|                                | Radar Burst at the Beginning of the CAC       | Not Applicable |
|                                | Radar Burst at the End of the CAC             | Not Applicable |
| In-Service Monitoring          | Channel Move Time                             | Compliance     |
|                                | Channel Closing Transmission Time             | Compliance     |
|                                | Non-Occupancy Period                          | Compliance     |
| Radar Detection                | Statistical Performance Check                 | Not Applicable |

Note: EUT is client device without radar detection.



### 3. Measurement Uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expended uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

| No. | Item                  | Uncertainty  |
|-----|-----------------------|--------------|
| 1   | In-service Monitoring | $\pm 0.1$ ms |

 GO, LTD

## 4. Product Information And Test Setup

### 4.1 Product Information

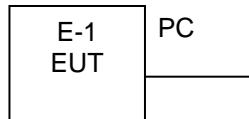
|                       |  |
|-----------------------|--|
| Model/Type reference: | ME16WS01,ME16WS0   |
| Model differences:    | The following models of units we produce are identical in electrical, mechanical and physical structure; The difference is only in the model name, we finally have ME16WS01 as test model. |
| Hardware Version:     | N/A  |
| Software Version:     | N/A  |
| Operation Frequency:  | Band 2A: 5260MHz~5320MHz<br>Band 2C: 5500MHz~5700MHz   |
| Channel Separation:   | 802.11a:20MHz<br>802.11n: 20MHz/40MHz  |
| Type of Modulation:   | OFDM with BPSK/QPSK/16QAM/64QAM/256QAM   |
| Antenna Type:         | PCB antenna  |
| Antenna Gain:         | 3.01dBi  |
| Remark:               | The antenna gain of the product is provided by the customer, and the test data is affected by the customer information.  |
| Ratings:              | DC 3.3V  |



## 4.2 Test Setup Configuration

See test photographs attached in *EUT TEST SETUP PHOTOGRAPHS* for the actual connections between Product and support equipment.

DFS



## 4.3 Test Setup Configuration

| No. | Device Type | Brand | Model    | Series No. | Note      |
|-----|-------------|-------|----------|------------|-----------|
| E-1 | WiFi Module | N/A   | ME16WS01 | ---        | EUT       |
| E-2 | PC          | N/A   | N/A      | N/A        | Auxiliary |
| E-3 | Router      | Asus  | N/A      | N/A        | Auxiliary |

Router: FCC ID:MSQ-RTAXJ300 , IC:3568A-RTAXJ300

| Item | Shielded Type | Ferrite Core | Length | Note |
|------|---------------|--------------|--------|------|
| C-1  | N/A           | N/A          | N/A    | N/A  |

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
3. The product is a client device without radar detection function and is a passive device.

## 5. Test Facility And Test Instrument Used

### 5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

FCC Test Firm Registration Number: 712850

A2LA certificate registration number is: CN1212

ISED Registered No.: 23583

ISED CAB identifier: CN0017

### 5.2 Test Instrument Used

| Equipment                    | Manufacturer | Model#          | Serial#    | Last Cal.    | Next Cal.    |
|------------------------------|--------------|-----------------|------------|--------------|--------------|
| Signal Analyzer20kHz-26.5GHz | Keysight     | N9020A          | MY49100060 | May 16, 2024 | May 15, 2025 |
| Signal Generator             | Keysight     | N5182B          | MY56200519 | May 16, 2024 | May 15, 2025 |
| Signal Analyzer20kHz-26.5GHz | Keysight     | N9020A          | MY49100060 | May 14, 2025 | May 13, 2026 |
| Signal Generator             | Keysight     | N5182B          | MY56200519 | May 14, 2025 | May 13, 2026 |
| 6 axis Robot 6               | /            | SAR             | /          | /            | /            |
| WIFI6 router WIFI6           | Asus         | VS087A4-AV6-NNN | /          | /            | /            |

Router: FCC ID:MSQ-RTAXJ300 , IC:3568A-RTAXJ300

### 5.3 Test method

KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02

KDB 905462 D03 UNII Clients Without Radar Detection New Rules v01r02

## 6. Dynamic Frequency Selection (DFS) Test Result

### 6.1 DFS Parameters

**Table D.1: DFS requirement values**

| Parameter                         | Value   |
|-----------------------------------|---|
| Non-occupancy period              | Minimum 30 minutes  |
| Channel Availability Check Time   | 60 seconds  |
| Channel Move Time                 | 10 seconds See Note 1.  |
| Channel Closing Transmission Time | 200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second periods. See Notes 1 and 2. |
| U-NII Detection Bandwidth         | Minimum 100% of the 99% power bandwidth See Note 3.   |

Note 1: The instant that the *Channel Move Time* and the *Channel Closing Transmission Time* begins is as follows:

- 1) For the Short pulse radar Test Signals this instant is the end of the *Burst*.
- 2) For the Frequency Hopping radar Test Signal, this instant is the end of the last radar *Burst* generated.
- 3) For the Long Pulse radar Test Signal this instant is the end of the 12 second period defining the radar transmission.

Note 2: The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate *Channel* changes (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the *U-NII Detection Bandwidth* detection test, radar type 1 is used and for each frequency step the minimum percentage of detection is 90%. Measurements are performed with no data traffic.

**Table D.2: Interference threshold values**

| Maximum Transmit Power | Value (see note) |
|------------------------|------------------|
| $\geq 200$ milliwatt   | -64 dBm          |
| < 200 milliwatt        | -62 dBm          |

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.

Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.

Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

## 6.2 Applicability of DFS Requirements Prior to Use of a Channel

| Requirement                     | DFS Operational mode |                                |                             |
|---------------------------------|----------------------|--------------------------------|-----------------------------|
|                                 | Master               | Client without radar detection | Client with radar detection |
| Non-Occupancy Period            | Yes                  | Not required                   | Yes                         |
| DFS Detection Threshold         | Yes                  | Not required                   | Yes                         |
| Channel Availability Check Time | Yes                  | Not required                   | Not required                |
| Uniform Spreading               | Yes                  | Not required                   | Not required                |
| U-NII Detection Bandwidth       | Yes                  | Not required                   | Yes                         |

## 6.3 Applicability of DFS Requirements during Normal Operation

| Requirement                       | DFS Operational mode |                                |                             |
|-----------------------------------|----------------------|--------------------------------|-----------------------------|
|                                   | Master               | Client without radar detection | Client with radar detection |
| DFS Detection Threshold           | Yes                  | Not required                   | Yes                         |
| Channel Closing Transmission Time | Yes                  | Yes                            | Yes                         |
| Channel Move Time                 | Yes                  | Yes                            | Yes                         |
| U-NII Detection Bandwidth         | Yes                  | Not required                   | Yes                         |

## 6.4 Uniform Spreading

Manufacturer Declare the Uniform Spreading:

- For the 5250-5350 MHz and 5470-5725 MHz bands, the Master device provides, on aggregate, uniform loading of the spectrum across all devices by selecting an operating channel among the available channels using a Gaussian random algorithm.

## 6.5 User Access Restrictions

User Access Restrictions

- DFS controls (hardware or software) related to radar detection are NOT accessible to the user. Manufacturer statement confirming that information regarding the parameters of the detected Radar Waveforms is not available to the end user.

## 6.6 Channel Loading/Data Streaming

- IP Based (Load Based) - stream the test file from the Master to the Client

The client device is link with the master device and plays the WAV audio file from master device to client device. Test file download in NTIA website (<http://ntiacsd.ntia.doc.gov/dfs/>)

The client device is link with the master device and plays the MPEG file (6 1/2 Magic Hours) from master device to client device. Test file download in NTIA website (<http://ntiacsd.ntia.doc.gov/dfs/>)

Alternative streaming e.g., FTP with about 17 to 20% loading and submit proposal to FCC.

- Frame Based - stream the test file from the Master to the Client.

fixed talk/listen ratio, set the ratio to 45%/55%

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## 6.7 Radar Test Waveform Calibration

### Short Pulse Radar Test Waveforms:

**Table 5 – Short Pulse Radar Test Waveforms**

| Radar Type                  | Pulse Width (μsec) | PRI (μsec)  | Number of Pulses   | Minimum Percentage of Successful Detection | Minimum Number of Trials |
|-----------------------------|--------------------|---|--|--|--------------------------|
| 0                           | 1                  | 1428  | 18   | See Note 1                                 | See Note 1               |
| 1                           | 1                  | Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a   | $\text{Roundup} \left\{ \left( \frac{1}{360} \right) \cdot \left( \frac{19 \cdot 10^6}{\text{PRI}_{\mu\text{sec}}} \right) \right\}$ | 60%  | 30                       |
|                             |                    | Test B: 15 unique PRI values randomly selected within the range of 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A |  |  |                          |
| 2                           | 1-5                | 150-230   | 23-29  | 60%  | 30                       |
| 3                           | 6-10               | 200-500   | 16-18  | 60%  | 30                       |
| 4                           | 11-20              | 200-500   | 12-16  | 60%  | 30                       |
| Aggregate (Radar Types 1-4) |                    |   |  | 80%  | 120                      |

**Note 1:** Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.

A minimum of 30 unique waveforms are required for each of the short pulse radar types 2 through 4. For short pulse radar type 1, the same waveform is used a minimum of 30 times. If more than 30 waveforms are used for short pulse radar types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. The aggregate is the average of the percentage of successful detections of short pulse radar types 1-4.

**Long Pulse Radar Test Waveform:**

| Radar Type | Pulse Width (μsec) | Chirp Width (MHz) | PRI (μsec) | Number of Pulses per Burst | Number of Bursts | Minimum Percentage of Successful Detection | Minimum Trials |
|------------|--------------------|-------------------|------------|----------------------------|------------------|--|----------------|
| 5          | 50-100             | 5-20              | 1000-2000  | 1-3                        | 8-20             | 80%  | 30             |

Each waveform is defined as follows:

1. The transmission period for the Long Pulse Radar test signal is 12 seconds.
2. There are a total of 8 to 20 Bursts in the 12 second period, with the number of Bursts being randomly chosen. This number is Burst Count
3. Each Burst consists of 1 to 3 pulses, with the number of pulses being randomly chosen. Each Burst within the 12 second sequence may have a different number of pulses.
4. The pulse width is between 50 and 100 microseconds, with the pulse width being randomly chosen. Each pulse within a Burst will have the same pulse width. Pulses in different Bursts may have different pulse widths.
5. Each pulse has a linear FM chirp between 5 and 20 MHz, with the chirp width being randomly chosen. Each pulse within a Burst will have the same chirp width. Pulses in different Bursts may have different chirp widths. The chirp is centered on the pulse. For example, with a radar frequency of 5300 MHz and a 20 MHz chirped signal, the chirp starts at 5290 MHz and ends at 5310 MHz.
6. If more than one pulse is present in a Burst, the time between the pulses will be between 1000 and 2000 microseconds, with the time being randomly chosen. If three pulses are present in a Burst, the time between the first and second pulses is chosen independently of the time between the second and third pulses.
7. The 12 second transmission period is divided into even intervals. The number of intervals is equal to Burst\_Count. Each interval is of length  $(12,000,000 / \text{Burst\_Count})$  microseconds. Each interval

contains one Burst. The start time for the Burst, relative to the beginning of the interval, is between 1 and  $[(12,000,000 / \text{Burst\_Count}) - (\text{Total Burst Length}) + (\text{One Random PRI Interval})]$  microseconds, with the start time being randomly chosen. The step interval for the start time is 1 microsecond. The start time for each Burst is chosen independently.

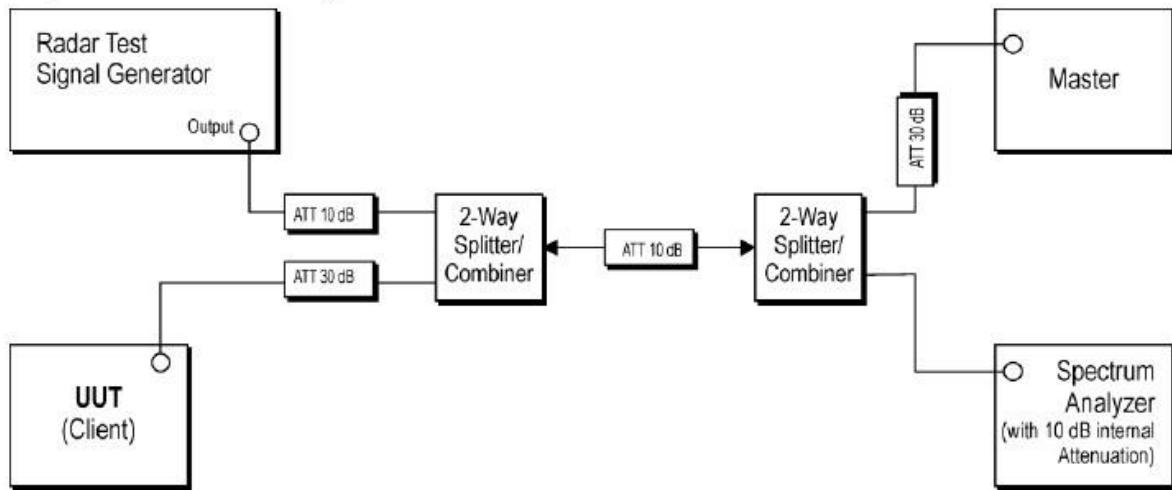
**Frequency Hopping Radar Test Waveform:**

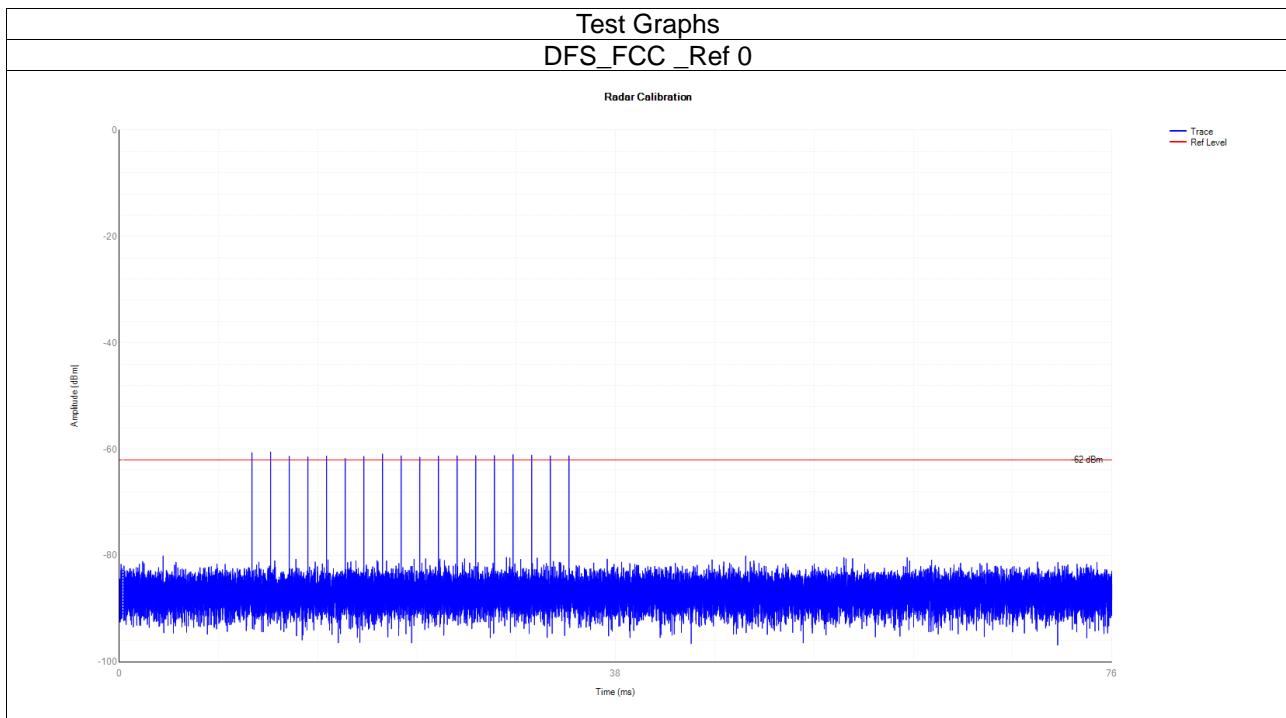
| Radar Type | Pulse Width (μsec) | PRI (μsec) | Pulses per Hop | Hopping Rate (kHz) | Hopping Sequence Length (ms) | Minimum Percentage of Successful Detection | Minimum Trials |
|------------|--------------------|------------|----------------|--------------------|------------------------------|--|----------------|
| 6          | 1                  | 333        | 9              | 0.333              | 300                          | 70%  | 30             |

The FCC Type 6 waveform uses a static waveform with 100 bursts in the instruments ARB. In addition, the RF list mode is operated with a list containing 100 frequencies from a randomly generated list and it had be ensured that at least one of the random frequencies falls into the UNII Detection Bandwidth of the DUT. Each burst from the waveform file initiates a trigger pulse at the beginning that switches the RF list from one item to the next one.

**DFS Threshold Level:**

| DFS Threshold Level   |  |
|---|--|
| DFS Threshold level: -62 dBm  | <input checked="" type="checkbox"/> at the antenna connector<br><input type="checkbox"/> in front of the antenna |
| The Interference Radar Detection Threshold Level is -62dBm. That had been taken into account the output power range and antenna gain. |  |

**Test Set up:**
**Setup for Client with injection at the Master**


**Test result:**

## 6.8 UNII Detection Bandwidth

### UNII Detection Bandwidth Limit:

| Channel Bandwidth (MHz) | 99% Power Bandwidth (MHz) | UNII Detection Bandwidth (MHz) |
|-------------------------|---------------------------|--------------------------------|
| 20                      | N/A                       | N/A                            |
| 40                      | N/A                       | N/A                            |
| 80                      | N/A                       | N/A                            |

UNII Detection Bandwidth is minimum 100% of the 99% power bandwidth. A single radar Burst is generated for a minimum of 10 trials, and the response of the UUT is noted. The UUT must detect the Radar Waveform 90% or more of the time.

### Measuring Instruments:

Refer a test equipment and calibration data table in this test report.

### Test Procedures:

| Test Method   |
|---|
| Refer as KDB905462 D02 UNII DFS Compliance Procedures New Rules v02, clause 7.8.1 for UNII Detection Bandwidth test. During the U-NII Detection Bandwidth detection test, radar type 1 is used and for each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic. The EUT is set up as a standalone device (no associated Client and no traffic). The radar frequency is increased in 1 MHz steps, repeating the above test sequence, until the detection rate falls below 90%. The highest frequency at which detection is greater than or equal to 90% is denoted as FH. The radar frequency is decreased in 1 MHz steps, repeating the above test sequence, until the detection rate falls below 90%. The lowest frequency at which detection is greater than or equal to 90% is denoted as FL. UNII Detection Bandwidth = FH -FL |

**Test result: Not required**

## 6.9 In-service Monitoring

### In-service Monitoring Limit:

| <b>In-service Monitoring Limit</b> |   |
|------------------------------------|---|
| Channel Move Time                  | 10 sec  |
| Channel Closing Transmission Time  | 200 ms + an aggregate of 60 ms over remaining 10 sec periods. |
| Non-occupancy period               | Minimum 30 minutes  |

### Measuring Instruments:

Refer a test equipment and calibration data table in this test report

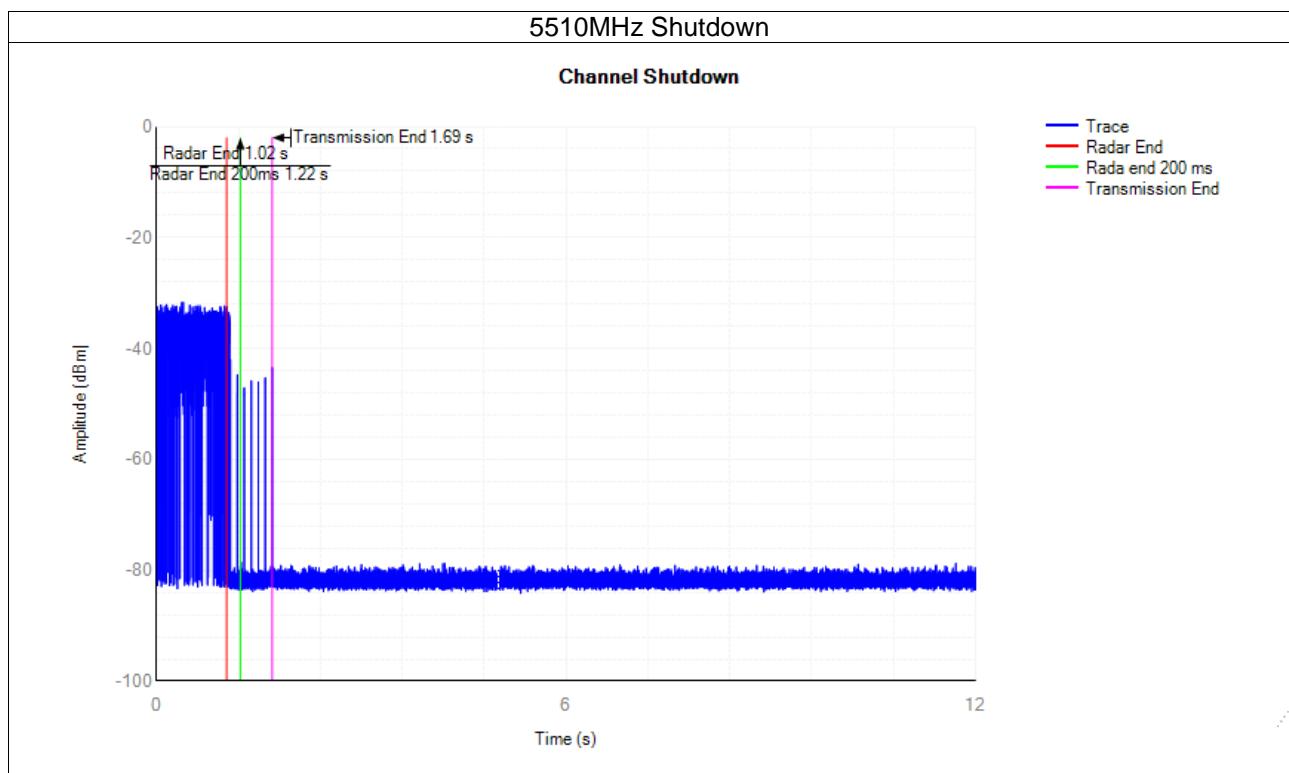
### Test Procedures:

| <b>Test Method</b>  |
|---|
| <p><input checked="" type="checkbox"/> Refer as KDB905462 D02 UNII DFS Compliance Procedures New Rules v02, clause 7.8.3 verified during In-Service Monitoring; Channel Closing Transmission Time, Channel Move Time. Client Device will associate with the EUT. Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds. Measure and record the transmissions from the EUT during the observation time (Channel Move Time). Compare the Channel Move Time and Channel Closing Transmission Time limits.</p> |
| <p><input checked="" type="checkbox"/> Refer as KDB905462 D02 UNII DFS Compliance Procedures New Rules v02, clause 8.3 verified during In-Service Monitoring; Channel Closing Transmission Time, Channel Move Time. One 10 sec plot needs to be reported for the Short Pulse Radar Types 1-4 and one for the Long Pulse Radar Type in a 22 sec plot. And zoom-in a 600 ms plot verified channel closing time for the aggregate transmission time starting from 200ms after the end of the radar signal to the completion of the channel move.</p>                                     |
| <p><input checked="" type="checkbox"/> Refer as KDB905462 D02 UNII DFS Compliance Procedures New Rules v02, clause 7.8.3 verified during In-Service Monitoring; Non-Occupancy Period. Client Device will associate with the EUT. Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds. Measure and record the transmissions from the EUT during the observation time (Non-Occupancy Period). Compare the Non-Occupancy Period limits.</p>   |

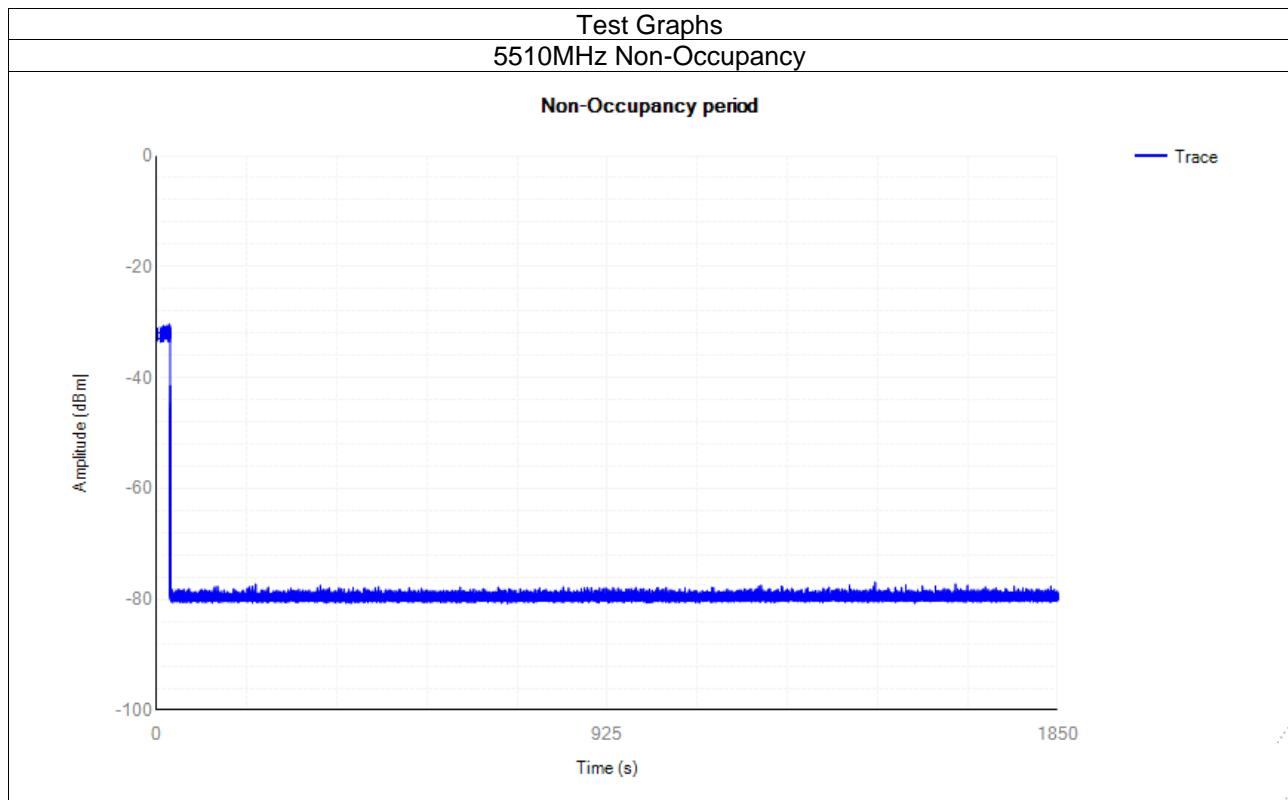
Note: The test data shows only the worst mode and maximum bandwidth.

**Test Result of In-service Monitoring:**

| Channel Closing Transmission Time and Channel Move Time Result |                 |                       |                             |                             |                                   |         |
|--|-----------------|-----------------------|-----------------------------|-----------------------------|-----------------------------------|---------|
| Mode   | Frequency (MHz) | Channel Move Time (s) | Limit Channel Move Time (s) | Close Transmission Time (s) | Limit Close Transmission Time (s) | Verdict |
| N40  | 5510            | 0.6681                | 10                          | 0.0404                      | 0.26                              | Pass    |



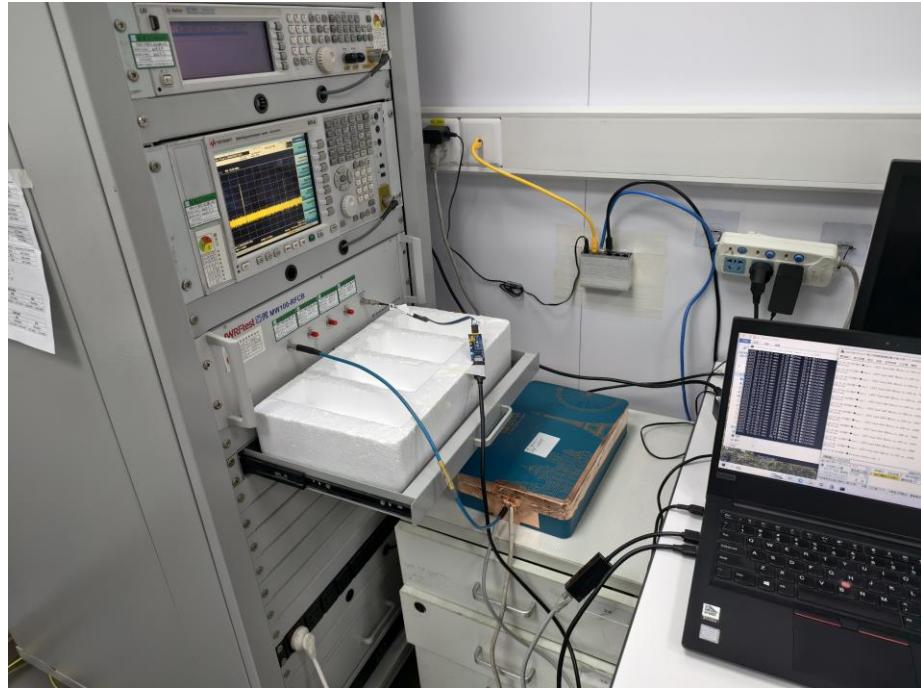
| Non-Occupancy Period Result |             |                      |       |         |
|-----------------------------|-------------|----------------------|-------|---------|
| Modulation Mode             | Freq. (MHz) | Non-Occupancy Period |       |         |
|                             |             | Measured             | Limit | Verdict |
| N40                         | 5510        | >30min               | 30min | PASS    |
| 1850 sec Timing Plot        |             |                      |       |         |



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## 7. EUT Test Setup Photographs

DFS



**STATEMENT**

1. The equipment lists are traceable to the national reference standards.
2. The test report can not be partially copied unless prior written approval is issued from our lab.
3. The test report is invalid without the "special seal for inspection and testing".
4. The test report is invalid without the signature of the approver.
5. The test process and test result is only related to the Unit Under Test.
6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.
7. The quality system of our laboratory is in accordance with ISO/IEC17025.
8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

Address:

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※※※※ END ※※※※

