



# DFS TEST REPORT

**FCC ID** : MSQ-RTAX5X00  
**Equipment** : ROG Rapture AX10000 Tri-band Gaming Mesh Router  
**Brand Name** : ASUS  
**Model Name** : GT6  
**Applicant** : ASUSTeK COMPUTER INC.  
1F., No. 15, Lide Rd., Beitou, Taipei City 112, Taiwan  
**Manufacturer (1)** : Compal Networking(KunShan) CO., LTD  
No.520,Nan Bang RD., Economic & Technical  
Development Zone, KunShan,JiangSu,China  
**Manufacturer (2)** : ARCADYAN TECHNOLOGY (VIETNAM) CO., LTD.  
Land plot No. D4-5-6, Thang Long Industrial Park (Vinh  
Phuc), Thien Ke Commune, Binh Xuyen District, 15000  
Vinh Phuc Province, Vietnam  
**Standard** : 47 CFR FCC Part 15.407

The product was received on Aug. 05, 2022, and testing was started from Aug. 05, 2022 and completed on Aug. 05, 2022. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in FCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02 and shown compliance with the applicable technical standards.

The test results in this variant report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.

Approved by: Sam Chen

**Sporton International Inc. Hsinchu Laboratory**

No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)



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TEL : 886-3-656-9065  
FAX : 886-3-656-9085  
Report Template No.: CB-A12\_4 Ver1.1



## Summary of Test Result

| Report Clause                                     | Ref Std. Clause      | Test Items                                | Result (PASS/FAIL) | Remark |
|---------------------------------------------------|----------------------|-------------------------------------------|--------------------|--------|
| -                                                 | FCC KDB 905462 7.8.1 | DFS: UNII Detection Bandwidth Measurement | PASS               | -      |
| Note: Reference to Sporton Project No.: FZ221807. |                      |                                           |                    |        |

**Declaration of Conformity:**

1. The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
2. The measurement uncertainty please refer to report "Measurement Uncertainty".

**Comments and Explanations:**

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

**Reviewed by: Sam Chen**

**Report Producer: Sandy Chuang**

# 1 General Description

## 1.1 Information

### 1.1.1 RF General Information

| Specification Items                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Description                                                                 |                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------|
| Frequency Range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 5250 MHz – 5350 MHz<br>5470 MHz – 5725 MHz                                  |                                               |
| Power Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | From power adapter                                                          |                                               |
| Channel Bandwidth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 20/40/80/160 MHz operating channel bandwidth                                |                                               |
| Operating Mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <input checked="" type="checkbox"/> Master (AP Router, Repeater, Mesh)      |                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <input type="checkbox"/> Client with radar detection                        |                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <input checked="" type="checkbox"/> Client without radar detection (Bridge) |                                               |
| Communication Mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input checked="" type="checkbox"/> IP Based (Load Based)                   | <input type="checkbox"/> Frame Based          |
| TPC Function                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <input checked="" type="checkbox"/> With TPC                                | <input type="checkbox"/> Without TPC          |
| Weather Band (5600~5650MHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <input checked="" type="checkbox"/> With 5600~5650MHz                       | <input type="checkbox"/> Without 5600~5650MHz |
| Firmware Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 388_20542                                                                   |                                               |
| <ul style="list-style-type: none"><li>• 11a, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.</li><li>• VHT20, VHT40, VHT80 and VHT160 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM modulation.</li><li>• HEW20, HEW40, HEW80 and HEW160 use a combination of OFDMA-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM modulation.</li><li>• EUT employ a TPC mechanism and TPC have the capability to operate at least 6 dB below highest RF output power.</li></ul> |                                                                             |                                               |

Note: The above information was declared by manufacturer.

**TPC Power Result****<UNII 2A>****Non-beamforming mode**

| Mode                     | Min Power (dBm) | Max Power (dBm) | Min EIRP (dBm) | Max EIRP (dBm) |
|--------------------------|-----------------|-----------------|----------------|----------------|
| 802.11a_Nss1,(6Mbps)_4TX | -               | -               | -              | -              |
| 5.25-5.35GHz             | 17.49           | 23.49           | 21.81          | 27.81          |

**Beamforming mode****4T1S**

| Mode                               | Min Power (dBm) | Max Power (dBm) | Min EIRP (dBm) | Max EIRP (dBm) |
|------------------------------------|-----------------|-----------------|----------------|----------------|
| 802.11ax HEW20-BF_Nss1,(MCS0)_4TX  | -               | -               | -              | -              |
| 5.25-5.35GHz                       | 17.47           | 23.47           | 23.90          | 29.90          |
| 802.11ax HEW40-BF_Nss1,(MCS0)_4TX  | -               | -               | -              | -              |
| 5.25-5.35GHz                       | 17.42           | 23.42           | 23.85          | 29.85          |
| 802.11ax HEW80-BF_Nss1,(MCS0)_4TX  | -               | -               | -              | -              |
| 5.25-5.35GHz                       | 17.33           | 23.33           | 23.76          | 29.76          |
| 802.11ax HEW160-BF_Nss1,(MCS0)_4TX | -               | -               | -              | -              |
| 5.25-5.35GHz                       | 17.33           | 23.33           | 23.76          | 29.76          |

**4T2S**

| Mode                              | Min Power (dBm) | Max Power (dBm) | Min EIRP (dBm) | Max EIRP (dBm) |
|-----------------------------------|-----------------|-----------------|----------------|----------------|
| 802.11ax HEW20-BF_Nss2,(MCS0)_4TX | -               | -               | -              | -              |
| 5.25-5.35GHz                      | 17.92           | 23.92           | 22.24          | 28.24          |
| 802.11ax HEW40-BF_Nss2,(MCS0)_4TX | -               | -               | -              | -              |
| 5.25-5.35GHz                      | 17.81           | 23.81           | 22.13          | 28.13          |
| 802.11ax HEW80-BF_Nss2,(MCS0)_4TX | -               | -               | -              | -              |
| 5.25-5.35GHz                      | 17.83           | 23.83           | 22.15          | 28.15          |

Note: The manufacturer declared that TPC is applied to this equipment. The test result of TPC is equal to RF output power minus 6dBm which is recorded as a reference for the manufacturer.

**<UNII 2C>****Non-beamforming mode**

| Mode                     | Min Power (dBm) | Max Power (dBm) | Min EIRP (dBm) | Max EIRP (dBm) |
|--------------------------|-----------------|-----------------|----------------|----------------|
| 802.11a_Nss1,(6Mbps)_4TX | -               | -               | -              | -              |
| 5.47-5.725GHz            | 17.89           | 23.89           | 20.69          | 26.69          |

**Beamforming mode****4T1S**

| Mode                               | Min Power (dBm) | Max Power (dBm) | Min EIRP (dBm) | Max EIRP (dBm) |
|------------------------------------|-----------------|-----------------|----------------|----------------|
| 802.11ax HEW20-BF_Nss1,(MCS0)_4TX  | -               | -               | -              | -              |
| 5.47-5.725GHz                      | 17.74           | 23.74           | 23.87          | 29.87          |
| 802.11ax HEW40-BF_Nss1,(MCS0)_4TX  | -               | -               | -              | -              |
| 5.47-5.725GHz                      | 17.83           | 23.83           | 23.96          | 29.96          |
| 802.11ax HEW80-BF_Nss1,(MCS0)_4TX  | -               | -               | -              | -              |
| 5.47-5.725GHz                      | 17.71           | 23.71           | 23.84          | 29.84          |
| 802.11ax HEW160-BF_Nss1,(MCS0)_4TX | -               | -               | -              | -              |
| 5.47-5.725GHz                      | 17.63           | 23.63           | 23.76          | 29.76          |

Note: The manufacturer declared that TPC is applied to this equipment. The test result of TPC is equal to RF output power minus 6dBm which is recorded as a reference for the manufacturer.

**1.1.2 Antenna Information**

| Ant. | Port        |                     |                              |                              | Brand Name | Model Name                        | Antenna Type | Connector | Gain (dBi) |
|------|-------------|---------------------|------------------------------|------------------------------|------------|-----------------------------------|--------------|-----------|------------|
|      | WLAN 2.4GHz | WLAN 5GHz UNII 1~2A | WLAN 5GHz UNII 2C~4 (Mode 1) | WLAN 5GHz UNII 2C~4 (Mode 2) |            |                                   |              |           |            |
| 1    | 2           | 4                   | -                            | -                            | LYNwave    | MLX22M-121AA1-A / MLX22M-121AA1-B | Dipole       | I-PEX     | Note1      |
| 2    | 1           | 3                   | -                            | -                            | LYNwave    | MLX22M-121AA1-A / MLX22M-121AA1-B | Dipole       | I-PEX     |            |
| 3    | -           | 2                   | -                            | -                            | LYNwave    | MLX22M-121AA1-A / MLX22M-121AA1-B | Dipole       | I-PEX     |            |
| 4    | -           | 1                   | -                            | -                            | LYNwave    | MLX22M-121AA1-A / MLX22M-121AA1-B | Dipole       | I-PEX     |            |
| 5    | -           | -                   | 4                            | 4                            | LYNwave    | MLX22M-121AA1-A / MLX22M-121AA1-B | Dipole       | I-PEX     |            |
| 6    | -           | -                   | 1                            | 1                            | LYNwave    | MLX22M-121AA1-A / MLX22M-121AA1-B | Dipole       | I-PEX     |            |
| 7    | -           | -                   | 3                            | 3                            | LYNwave    | MLX22M-121AA1-A / MLX22M-121AA1-B | Dipole       | I-PEX     |            |
| 8    | -           | -                   | 2                            | -                            | LYNwave    | MLX22M-121AA1-A / MLX22M-121AA1-B | Dipole       | I-PEX     |            |
| 9    | -           | -                   | -                            | 2                            | LYNwave    | MLX22M-121AA1-A / MLX22M-121AA1-B | Dipole       | I-PEX     |            |

Note1: <Antenna gain>

| Ant. | Port        |                     |                              |                              | Gain(dBi)   |           |         |         |       |        |       |        |       |
|------|-------------|---------------------|------------------------------|------------------------------|-------------|-----------|---------|---------|-------|--------|-------|--------|-------|
|      | WLAN 2.4GHz | WLAN 5GHz UNII 1~2A | WLAN 5GHz UNII 2C~4 (Mode 1) | WLAN 5GHz UNII 2C~4 (Mode 2) | WLAN 2.4GHz | WLAN 5GHz |         |         |       |        |       |        |       |
|      |             |                     |                              |                              |             | UNII 1    | UNII 2A | UNII 2C |       | UNII 3 |       | UNII 4 |       |
|      |             |                     |                              |                              |             |           |         | Mode1   | Mode2 | Mode1  | Mode2 | Mode1  | Mode2 |
| 1    | 2           | 4                   | -                            | -                            | 4.1         | 3.53      | 3.81    | -       | -     | -      | -     | -      | -     |
| 2    | 1           | 3                   | -                            | -                            | 3.39        | 3.26      | 4.32    | -       | -     | -      | -     | -      | -     |
| 3    | -           | 2                   | -                            | -                            | -           | 2.32      | 2.96    | -       | -     | -      | -     | -      | -     |
| 4    | -           | 1                   | -                            | -                            | -           | 2.31      | 2.44    | -       | -     | -      | -     | -      | -     |
| 5    | -           | -                   | 4                            | 4                            | -           | -         | -       | 1.43    | 1.43  | 2.08   | 2.08  | 2.5    | 2.5   |
| 6    | -           | -                   | 1                            | 1                            | -           | -         | -       | 1.66    | 1.66  | 1.91   | 1.91  | 2.89   | 2.89  |
| 7    | -           | -                   | 3                            | 3                            | -           | -         | -       | 2.8     | 2.8   | 3.51   | 3.51  | 3.79   | 3.79  |
| 8    | -           | -                   | 2                            | -                            | -           | -         | -       | 2.55    | -     | 3.36   | -     | 3.65   | -     |
| 9    | -           | -                   | -                            | 2                            | -           | -         | -       | -       | 3.64  | -      | 3.64  | -      | 3.29  |

<Directional Gain>

| Directional Gain(dBi) |             |           |         |         |       |        |       |        |       |
|-----------------------|-------------|-----------|---------|---------|-------|--------|-------|--------|-------|
| Item                  | WLAN 2.4GHz | WLAN 5GHz |         |         |       |        |       |        |       |
|                       |             | UNII 1    | UNII 2A | UNII 2C |       | UNII 3 |       | UNII 4 |       |
|                       |             |           |         | Mode1   | Mode2 | Mode1  | Mode2 | Mode1  | Mode2 |
| 2T1S                  | 6.01        | -         | -       | -       | -     | -      | -     | -      | -     |
| 2T2S                  | 4.1         | -         | -       | -       | -     | -      | -     | -      | -     |
| 4T1S                  | -           | 6.24      | 6.43    | 6.13    | 4.83  | 7.23   | 5.25  | 6.76   | 4.95  |
| 4T2S                  | -           | -         | 4.32    | -       | -     | 4.23   | 3.64  | 3.79   | 3.79  |

Note2: The above information (except gain) was declared by manufacturer.

The directional gain is measured which follows the procedure of KDB 662911 D03.

Note3: Mode1 was Ant.5~7+Ant.8 and Mode 2 was Ant. 5~7+Ant.9.

Note4: The EUT support the antenna with TX/RX diversity functions. Both Ant.8 and Ant.9 can be used as transmitting and receiving antennas, but only one of them will be used at one time.

Ant. 8 generated be the worst case, so it was selected to test and recorded in the report.

Note5: Antennas' Model Name: MLX22M-121AA1-A are for EUT 1 use and MLX22M-121AA1-B are for EUT 2 use. They're same type of antennas.

**For 2.4GHz function:**

**For IEEE 802.11b/g/n/VHT/ax (2TX/2RX):**

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

**For 5GHz function:**

**For IEEE 802.11a/n/ac/ax (4TX/4RX):**

Port 1, Port 2, Port 3 and Port 4 can be used as transmitting/receiving antenna.

Port 1, Port 2, Port 3 and Port 4 could transmit/receive simultaneously.

### 1.1.3 DFS Band Carrier Frequencies

There are four bandwidth systems.

For 20MHz bandwidth systems, use Channel 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140, 144.

For 40MHz bandwidth systems, use Channel 54, 62, 102, 110, 118, 126, 134, 142.

For 80MHz bandwidth systems, use Channel 58, 106, 122, 138.

For 160MHz bandwidth systems, use Channel 50, 114

| Frequency Band          | Channel No. | Frequency | Channel No. | Frequency |
|-------------------------|-------------|-----------|-------------|-----------|
| 5250~5350 MHz<br>Band 2 | 50          | 5250 MHz  | 58          | 5290 MHz  |
|                         | 52          | 5260 MHz  | 60          | 5300 MHz  |
|                         | 54          | 5270 MHz  | 62          | 5310 MHz  |
|                         | 56          | 5280 MHz  | 64          | 5320 MHz  |
| 5470~5725 MHz<br>Band 3 | 100         | 5500 MHz  | 122         | 5610 MHz  |
|                         | 102         | 5510 MHz  | 124         | 5620 MHz  |
|                         | 104         | 5520 MHz  | 126         | 5630 MHz  |
|                         | 106         | 5530 MHz  | 128         | 5640 MHz  |
|                         | 108         | 5540 MHz  | 132         | 5660 MHz  |
|                         | 110         | 5550 MHz  | 134         | 5670 MHz  |
|                         | 112         | 5560 MHz  | 136         | 5680 MHz  |
|                         | 114         | 5570 MHz  | 138         | 5690 MHz  |
|                         | 116         | 5580 MHz  | 140         | 5700 MHz  |
|                         | 118         | 5590 MHz  | 142         | 5710 MHz  |
|                         | 120         | 5600 MHz  | 144         | 5720 MHz  |

#### 1.1.4 Table for EUT supports functions

| Function  | Support Type                  |
|-----------|-------------------------------|
| AP Router | Master                        |
| Bridge    | Slave without radar detection |
| Repeater  | Master                        |
| Mesh      | Master                        |

Note: The above information was declared by manufacturer.

#### 1.1.5 Table for EUT Information

| EUT   | PCB board Version | Color of outer case |       |
|-------|-------------------|---------------------|-------|
|       |                   | Black               | White |
| EUT 1 | R1.20             | V                   | V     |
| EUT 2 | R2.00             | V                   | V     |

Note 1: From the above EUTs, EUT 2 (color: white) was selected to test all items.

Note 2: The above information was declared by manufacturer.

#### 1.1.6 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: FZ221807.

Below is the table for the change of the product with respect to the original one.

| Modifications                                                                                                                                                                                                                                                                                                                    | Performance Checking                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| 1. Upgrading the PCB version of EUT to R2.00 from R1.20.<br>The difference is listed below:<br>(1) Mainboard: Adding common mode filter to TX path of USB3.0 (Location: FL1).<br>(2) I/O board: Adding common mode filter to RX path of USB3.0 (Location: FL3).<br>2. Revising the black and white housing to the final version. | After evaluation,<br>the test results don't be affected. |
| 3. Adding the Zero wait function of EUT 2.<br>4. Adding a set antennas (Model Name: MLX22M-121AA1-B) which is almost same as the original antenna but the grey color. The new antennas is available for the white housing only.                                                                                                  | Dynamic In-Service Monitoring_Zero Wait                  |

## 1.2 Accessories

| Accessories                                                           |                |            |            |                                                                |                                          |
|-----------------------------------------------------------------------|----------------|------------|------------|----------------------------------------------------------------|------------------------------------------|
| No.                                                                   | Equipment Name | Brand Name | Model Name | Rating                                                         | Remark                                   |
| 1                                                                     | Adapter 1      | DELTA      | ADP-45FE F | INPUT: 100-240V~1.2A, 50-60Hz<br>OUTPUT: 19V, 2.37A            | With the DC cable:<br>Non-shielded, 1.6m |
| 2                                                                     | Adapter 2      | AcBel      | ADH011     | INPUT: 100-240V~1.4A, 50-60Hz<br>OUTPUT: 19.5V, 2.31A, 45W MAX | With the DC cable:<br>Non-shielded, 1.6m |
| Others                                                                |                |            |            |                                                                |                                          |
| RJ-45 cable*1: Non-shielded, 1.5m<br>Power cord*2: Non-shielded, 0.8m |                |            |            |                                                                |                                          |

## 1.3 Support Equipment

| Support Equipment |             |            |            |            |
|-------------------|-------------|------------|------------|------------|
| No.               | Equipment   | Brand Name | Model Name | FCC ID     |
| A                 | Notebook    | DELL       | E4300      | N/A        |
| B                 | Notebook    | DELL       | E4300      | N/A        |
| C                 | WLAN module | Intel      | AX210NGW   | PD9AX210NG |

## 1.4 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR FCC Part 15.407
- FCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02

## 1.5 Testing Location Information

| Testing Location Information                                    |                                                                                    |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------|
| Test Lab. : Sporton International Inc. Hsinchu Laboratory       |                                                                                    |
| Hsinchu                                                         | ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.) |
| (TAF: 3787)                                                     | TEL: 886-3-656-9065 FAX: 886-3-656-9085                                            |
| Test site Designation No. TW3787 with FCC.                      |                                                                                    |
| Conformity Assessment Body Identifier (CABID) TW3787 with ISED. |                                                                                    |

| Test Condition | Test Site No. | Test Engineer | Test Environment<br>(°C / %) | Test Date     |
|----------------|---------------|---------------|------------------------------|---------------|
| DFS            | DF01-CB       | Mason Chen    | 21.2~22.1 / 63~67            | Aug. 05, 2022 |

## 2 Test Configuration of EUT

### 2.1 Test Channel Frequencies Configuration

| Test Channel Frequencies Configuration |                          |
|----------------------------------------|--------------------------|
| IEEE Std.                              | Test Channel Freq. (MHz) |
| 802.11ax (HEW160)                      | 5570 MHz                 |

### 2.2 The Worst Case Measurement Configuration

| The Worst Case Mode for Following Conformance Tests |                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tests Item                                          | Dynamic Frequency Selection (DFS)                                                                                                                                                                                                                                                                                                                                         |
| Test Condition                                      | Radiated measurement<br>The EUT shall be configured to operate at the highest transmitter output power setting. If more than one antenna assembly is intended for this power setting, the gain of the antenna assembly with the lowest gain shall be used. The DFS radar test signals have been aligned to the direction corresponding to the EUT's maximum antenna gain. |
| Modulation Mode                                     | 802.11ax (HEW160)                                                                                                                                                                                                                                                                                                                                                         |
| 1                                                   | EUT 2 - Master (AP Router)                                                                                                                                                                                                                                                                                                                                                |



### 3 Dynamic Frequency Selection (DFS) Test Result

#### 3.1 General DFS Information

##### 3.1.1 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 (Note 1).                                                                                  |
| Channel Closing Transmission Time                                                                                                                                                                                                                                                                                                                                                                          | 200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second periods. (Notes 1 and 2). |
| U-NII Detection Bandwidth                                                                                                                                                                                                                                                                                                                                                                                  | Minimum 100% of the 99% power bandwidth (Note 3).                                                     |
| Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.                                                                                                                                                                                                                             |                                                                                                       |
| 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 0 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) |
| EIRP $\geq$ 200 mW                                                                                                                                                                                                                                                                               | -64 dBm          |
| EIRP < 200 mW and PSD < 10dBm/MHz                                                                                                                                                                                                                                                                | -62 dBm          |
| EIRP < 200 mW and PSD $\geq$ 10dBm/MHz                                                                                                                                                                                                                                                           | -64 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. |                  |
| Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911D01.                                                                                                                                                                                           |                  |

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

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

### 3.1.3 Applicability of DFS Requirements during Normal Operation

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

| Additional requirements for devices with multiple bandwidth modes | Master Device or Client with Radar Detection | Client Without Radar Detection                       |
|-------------------------------------------------------------------|----------------------------------------------|------------------------------------------------------|
| U-NII Detection Bandwidth and Statistical Performance Check       | All BW modes must be tested                  | Not required                                         |
| Channel Move Time and Channel Closing Transmission Time           | Test using widest BW mode available          | Test using the widest BW mode available for the link |
| All other tests                                                   | Any single BW mode                           | Not required                                         |

**Note:** Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.



### 3.1.4 User Access Restrictions

| User Access Restrictions            |                                                                                                                                                                                                                                              |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> | 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. |

### 3.1.5 Channel Loading/Data Streaming

|                                     |                                                                                                |
|-------------------------------------|------------------------------------------------------------------------------------------------|
| <input type="checkbox"/>            | The data file (MPEG-4) has been transmitting in a streaming mode.                              |
| <input checked="" type="checkbox"/> | Software to ping the client is permitted to simulate data transfer with random ping intervals. |
| <input checked="" type="checkbox"/> | Minimum channel loading of approximately 17%.                                                  |
| <input type="checkbox"/>            | Unicast protocol has been used.                                                                |

## 3.2 Radar Test Waveform Calibration

### 3.2.1 Short Pulse Radar Test Waveforms

| Radar Type                                                                                                                                  | Pulse Width (μsec) | PRI (μsec)                                      | Number of Pulses                                                                                         | Minimum Percentage of Successful Detection | Minimum Trials |
|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------|----------------|
| 0                                                                                                                                           | 1                  | 1428                                            | 18                                                                                                       | See Note 1                                 | See Note 1     |
| 1A                                                                                                                                          | 1                  | 15 unique PRI in KDB 905462 D02 Table 5a        | $\text{Roundup}\left\{\left(\frac{1}{360}\right) \times \left(\frac{19 \times 10^6}{PRI}\right)\right\}$ | 60%                                        | 15             |
| 1B                                                                                                                                          | 1                  | 15 unique PRI within 518-3066, Excluding 1A PRI |                                                                                                          | 60%                                        | 15             |
| 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            |
| <b>Note 1:</b> 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 1 through 4. If more than 30 waveforms are used for short pulse radar types 1 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.

### 3.2.2 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:

- The transmission period for the Long Pulse Radar test signal is 12 seconds.
- 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.
- 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.
- 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.
- Each pulse has a linear FM chirp between 5 and 20 MHz, with the chirp width being randomly chosen. Each pulse within a transmission period will have the same chirp width. 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.

- ♦ 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.
- ♦ 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.

### 3.2.3 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             |

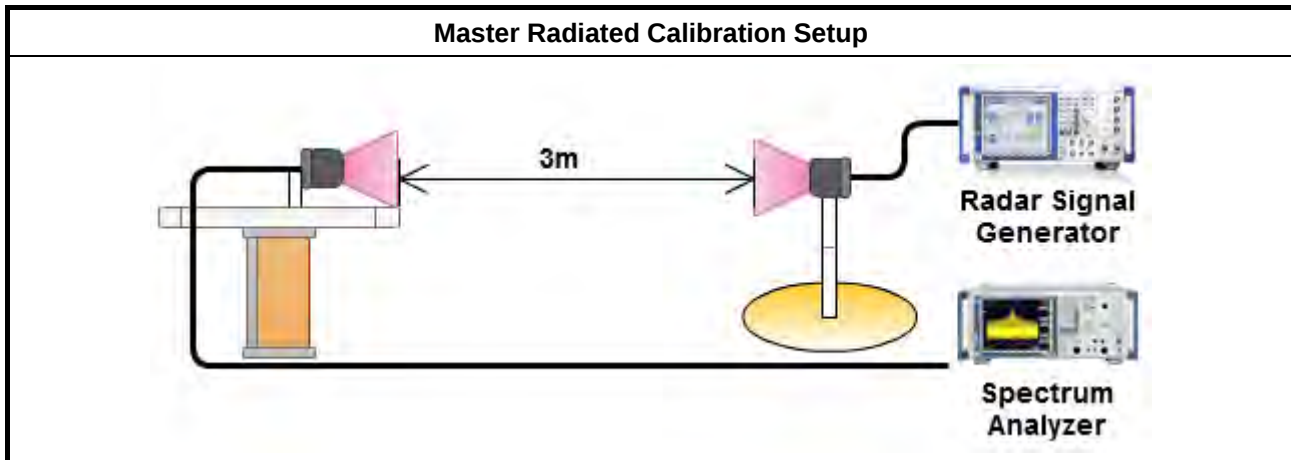
For the Frequency Hopping Radar Type, the same Burst parameters are used for each waveform. The hopping sequence is different for each waveform and a 100-length segment is selected from the hopping sequence defined by the following algorithm:

The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250 – 5724 MHz. Next, the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group.

### 3.2.4 DFS Threshold Level

| DFS Threshold Level                                                                                                                                                                                        |                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| DFS Threshold level: -63 dBm                                                                                                                                                                               | <input type="checkbox"/> at the antenna connector           |
|                                                                                                                                                                                                            | <input checked="" type="checkbox"/> in front of the antenna |
| The Interference <b>Radar Detection Threshold Level</b> is $-64 \text{ dBm} + 0 [\text{dBi}] + 1 \text{ dB} = -63 \text{ dBm}$ . That had been taken into account the output power range and antenna gain. |                                                             |

### 3.2.5 Calibration Setup

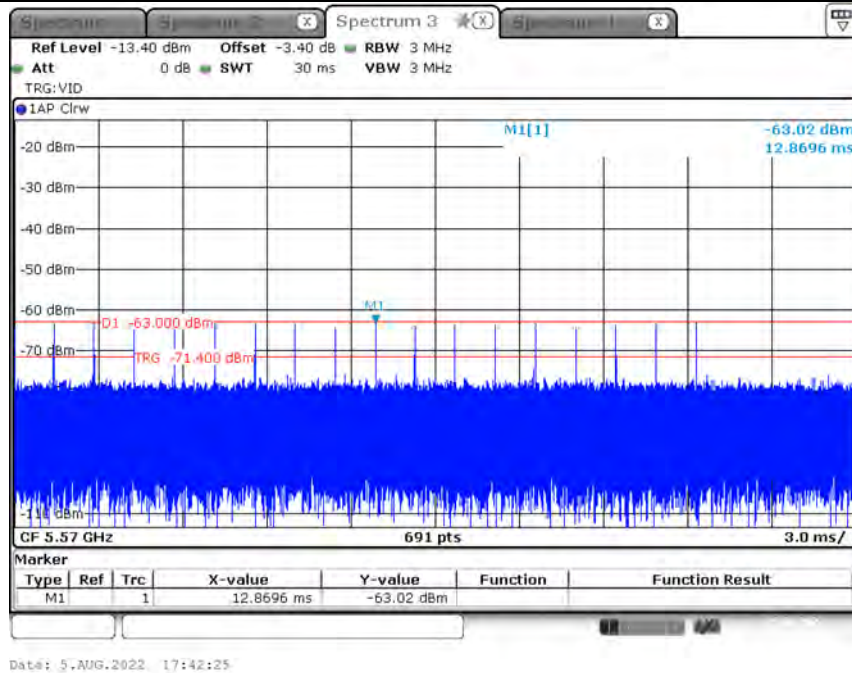




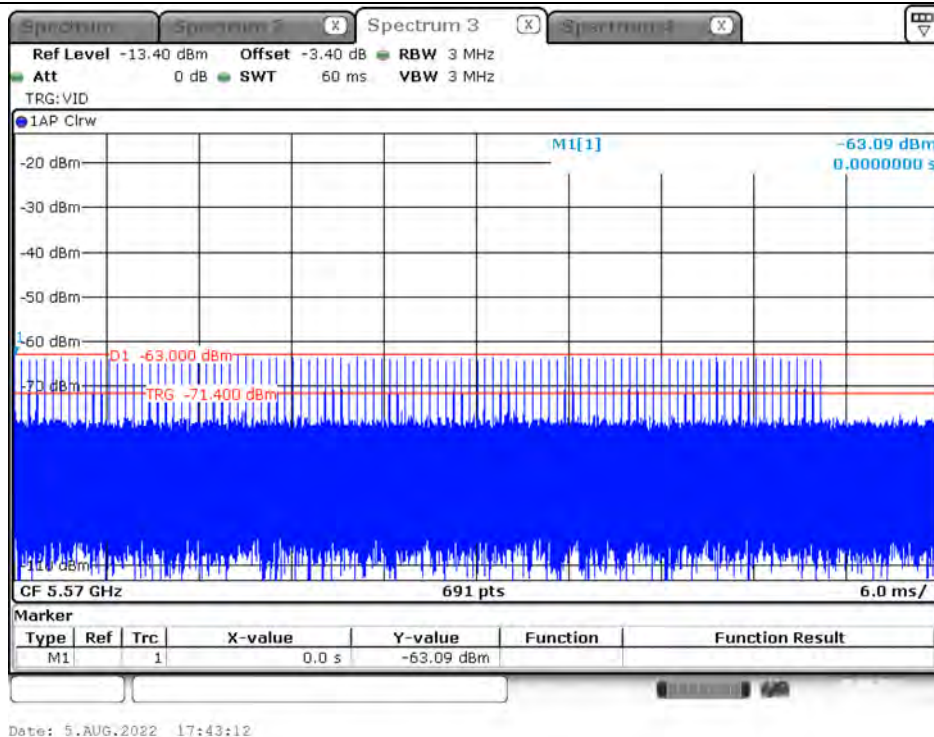
### 3.2.6 Radar Waveform calibration Plot

Test Frequency: 5570 MHz

Radar #0 DFS detection threshold level

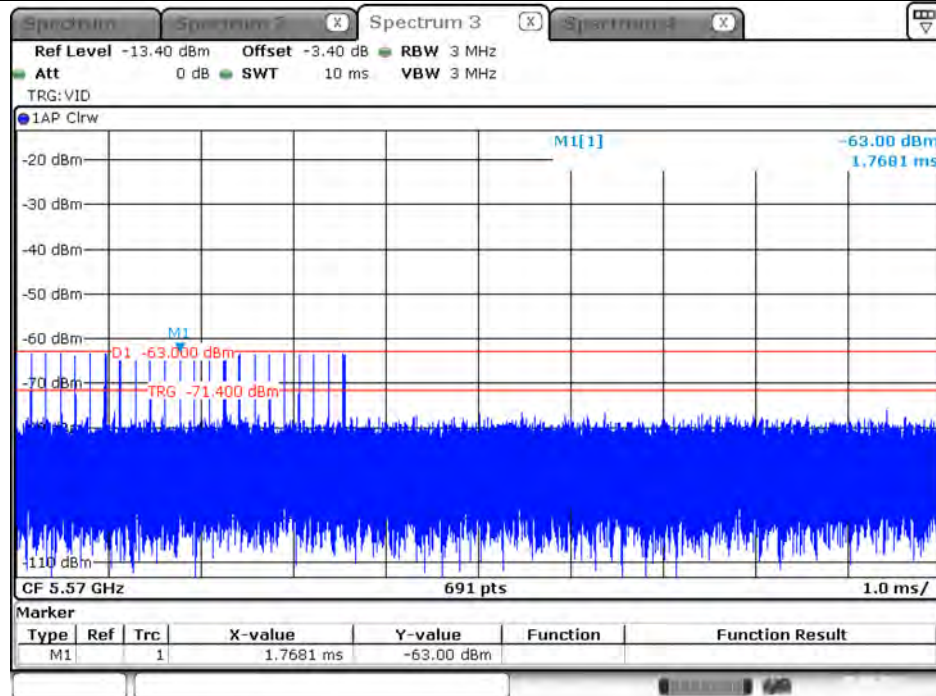


Radar #1 DFS detection threshold level



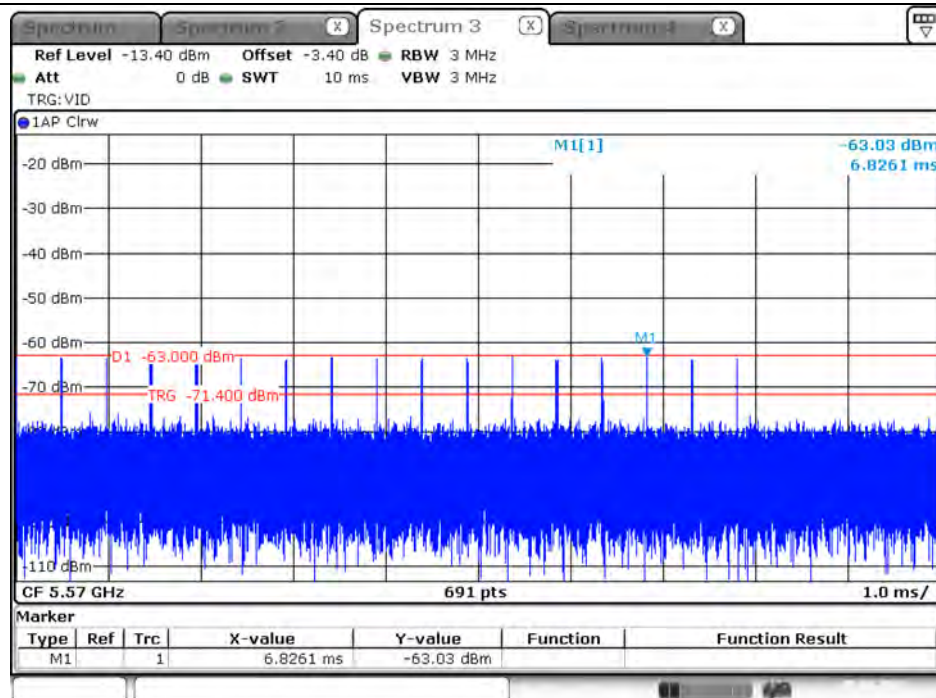


### Radar #2 DFS detection threshold level



Date: 5.AUG.2022 17:43:47

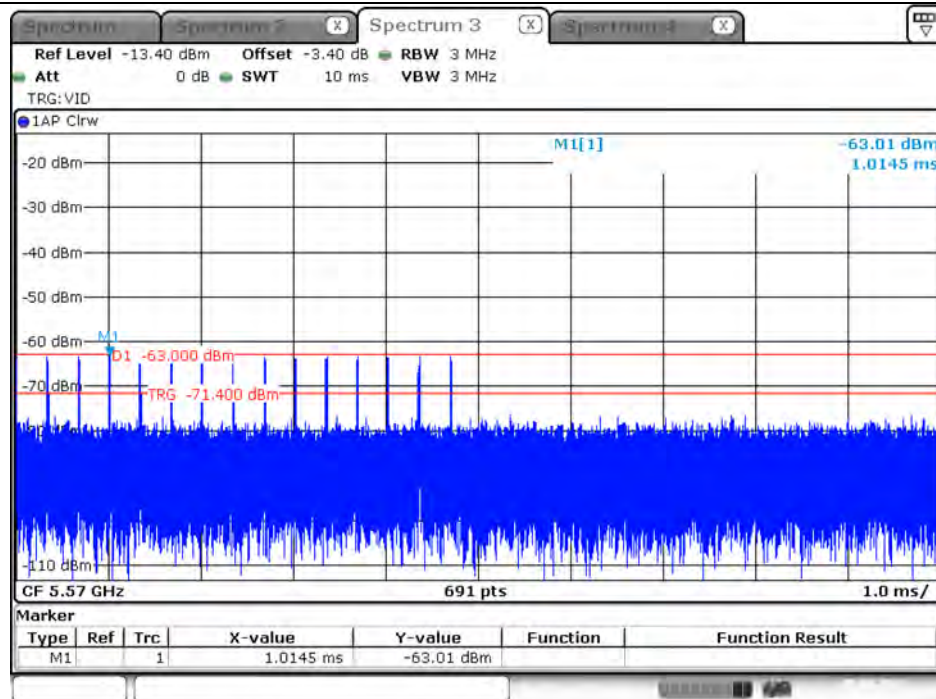
### Radar #3 DFS detection threshold level



Date: 5.AUG.2022 17:44:05

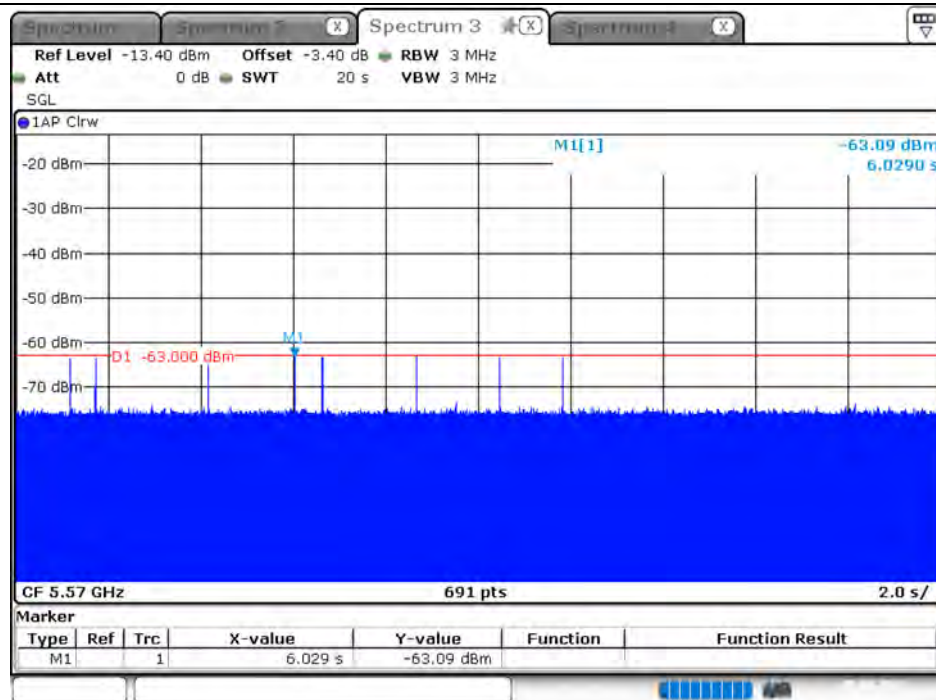


### Radar #4 DFS detection threshold level

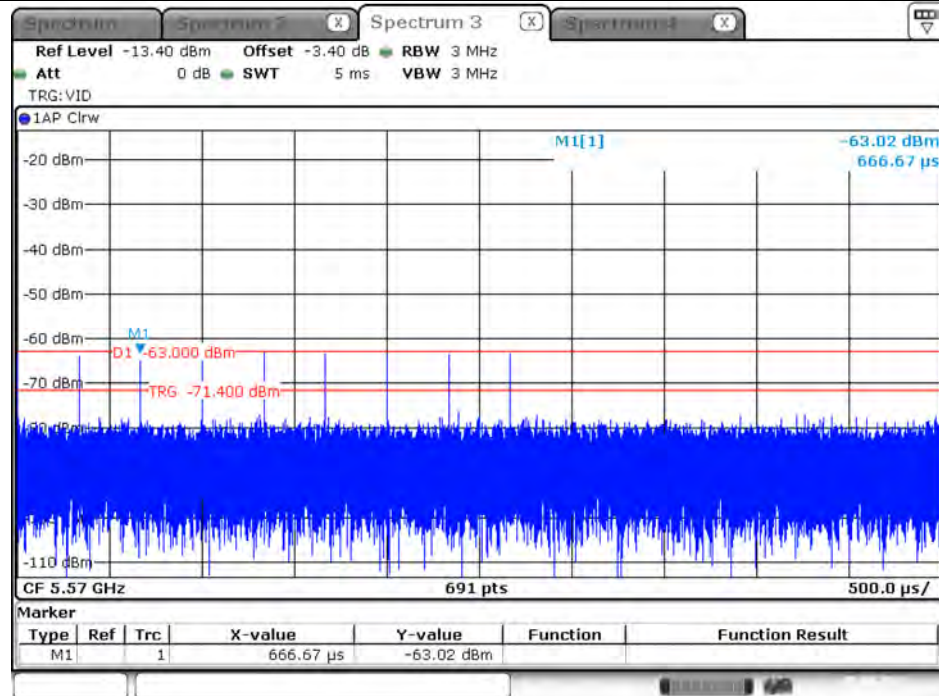


Date: 5.AUG.2022 17:44:28

### Radar #5 DFS detection threshold level



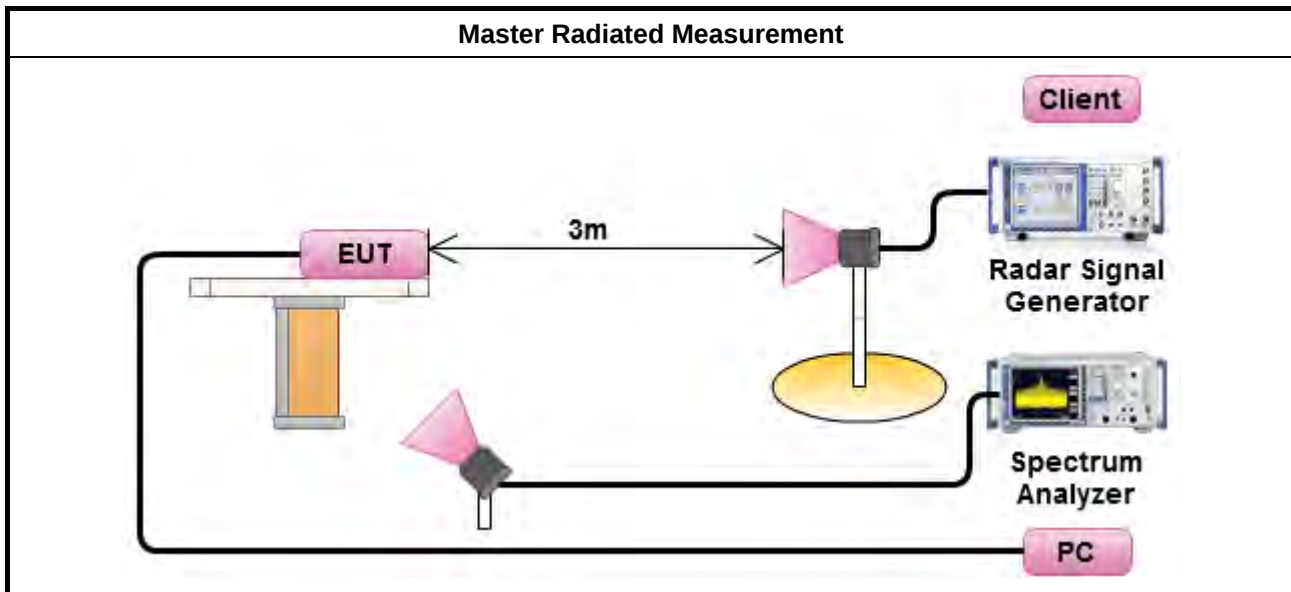
Date: 5.AUG.2022 17:47:01

**Radar #6 DFS detection threshold level**


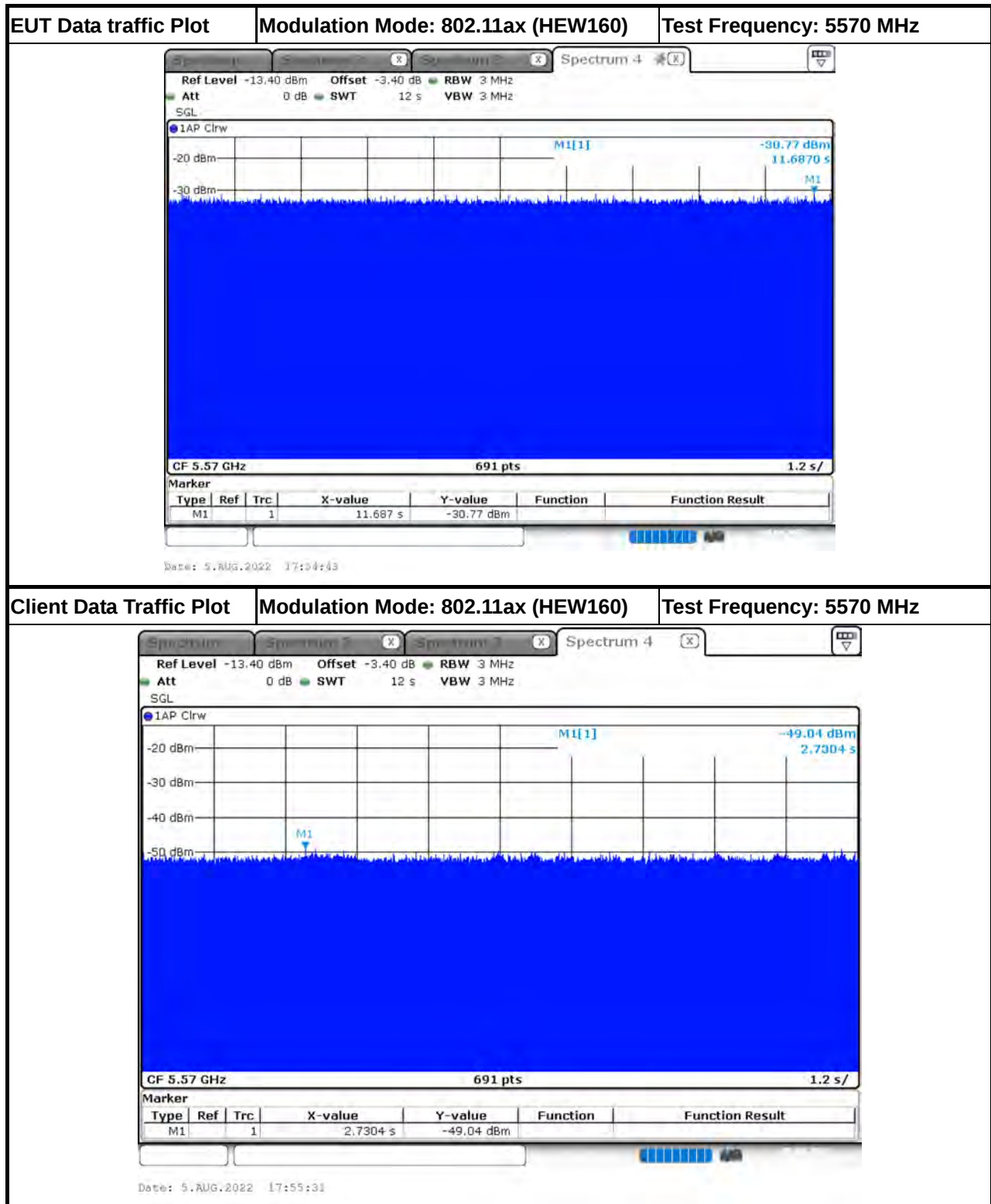
Date: 5.AUG.2022 17:48:40

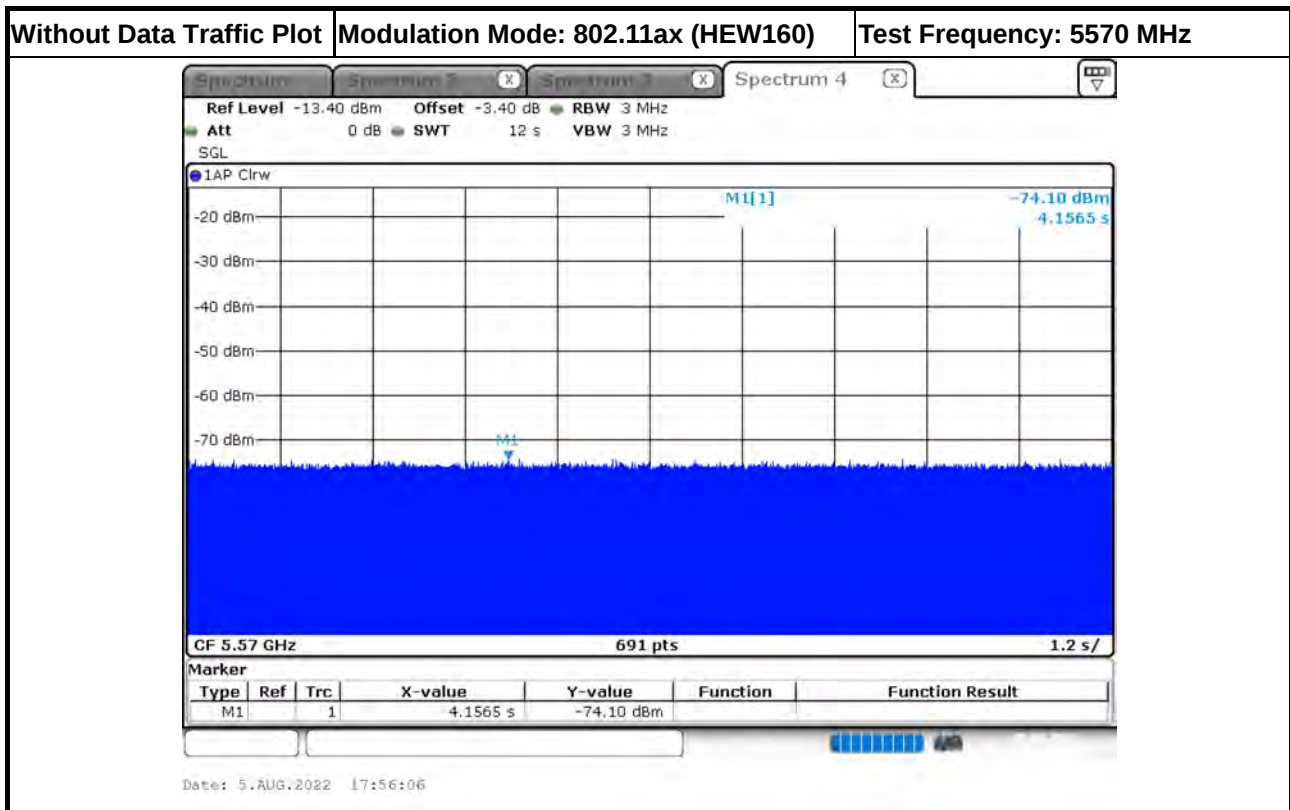
### 3.2.7 Test Setup

A spectrum analyzer is used as a monitor to verify that the EUT has vacated the Channel within the (Channel Closing Transmission Time and Channel Move Time, and does not transmit on a Channel during the Non-Occupancy Period after the detection and Channel move.



### 3.2.8 Data traffic Plot





## 4 Test Equipment and Calibration Data

| Instrument              | Brand       | Model No.   | Serial No.       | Characteristics | Calibration Date | Calibration Due Date | Remark             |
|-------------------------|-------------|-------------|------------------|-----------------|------------------|----------------------|--------------------|
| Spectrum Analyzer       | R&S         | FSV40       | 101026           | 9kHz~40GHz      | Dec. 07, 2021    | Dec. 06, 2022        | Radiated (DF01-CB) |
| Vector Signal generator | R&S         | SMU200A     | 105352           | 25MHz-6GHz      | Mar. 11, 2022    | Mar. 10, 2023        | Radiated (DF01-CB) |
| Horn Antenna            | SCHWARZBECK | BBHA 9120 D | BBHA 9120 D 1370 | 1GHz~18GHz      | Jun. 23, 2022    | Jun. 22, 2023        | Radiated (DF01-CB) |
| Horn Antenna            | COM-POWER   | AH-118      | 071042           | 1GHz ~ 18GHz    | Dec. 20, 2021    | Dec. 19, 2022        | Radiated (DF01-CB) |
| RF Power Divider        | STI         | 2 Way       | DV-2way -05      | 1GHz ~ 8GHz     | Oct. 04, 2021    | Oct. 03, 2022        | Radiated (DF01-CB) |
| RF Power Divider        | STI         | 2 Way       | DV-2way -06      | 1GHz ~ 8GHz     | Oct. 04, 2021    | Oct. 03, 2022        | Radiated (DF01-CB) |
| RF Power Divider        | MTJ         | 4 Way       | DFS-01-DV-01     | 1GHz ~ 6GHz     | Oct. 04, 2021    | Oct. 03, 2022        | Radiated (DF01-CB) |
| RF Cable-high           | Woken       | RG402       | High Cable-57    | 1 GHz ~18 GHz   | Oct. 04, 2021    | Oct. 03, 2022        | Radiated (DF01-CB) |
| RF Cable-high           | Woken       | RG402       | High Cable-58    | 1 GHz ~18 GHz   | Oct. 04, 2021    | Oct. 03, 2022        | Radiated (DF01-CB) |
| RF Cable-high           | Woken       | RG402       | High Cable-59    | 1 GHz ~18 GHz   | Oct. 04, 2021    | Oct. 03, 2022        | Radiated (DF01-CB) |

Note: Calibration Interval of instruments listed above is one year.



## 5 Measurement Uncertainty

| Test Items        | Uncertainty | Remark                   |
|-------------------|-------------|--------------------------|
| Radiated Emission | 3.5 dB      | Confidence levels of 95% |

## **1. Dynamic In-Service Monitoring (Zero-Wait CAC)**

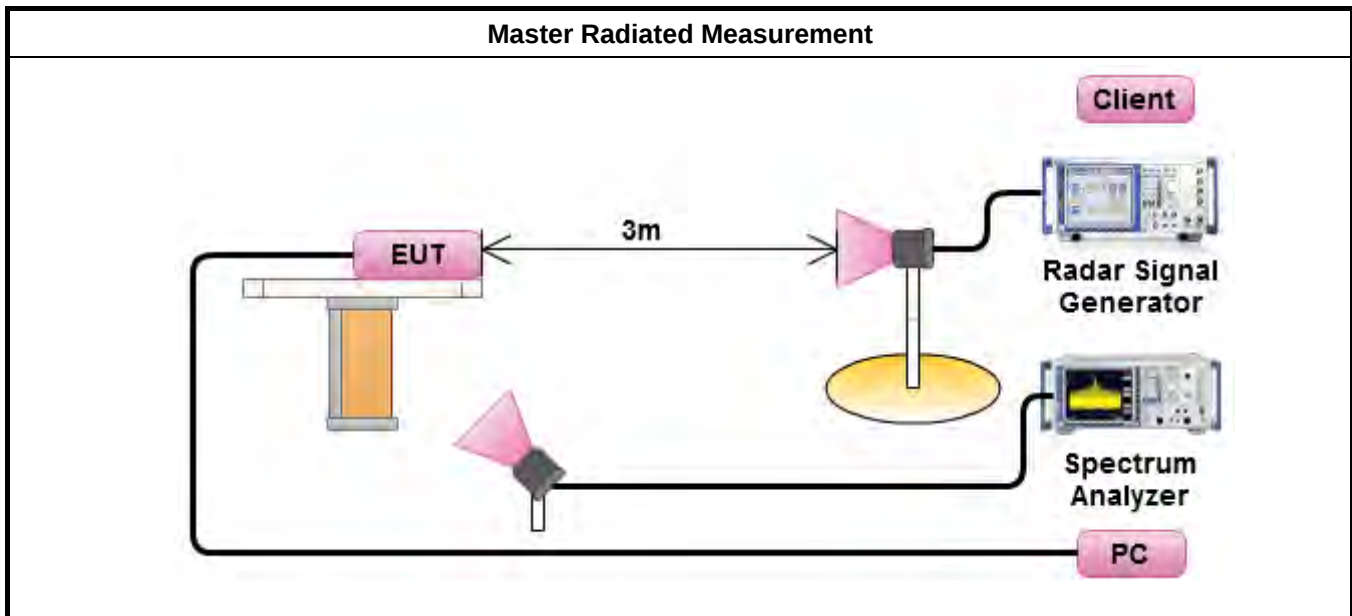
### **1.1. Measuring Instruments**

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

### **1.2. Test Procedure**

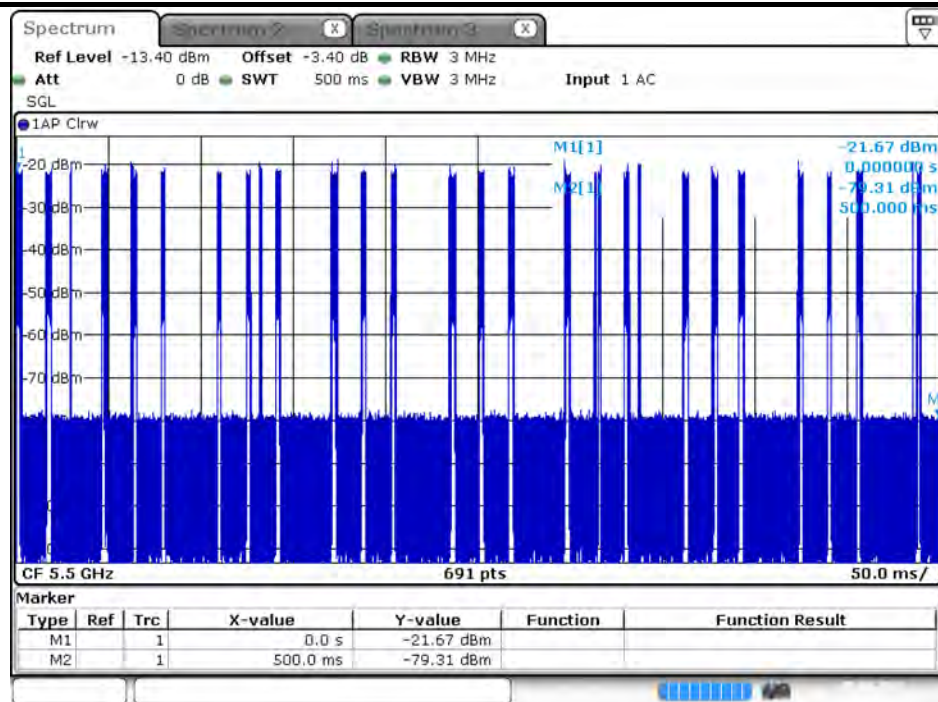
|                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pre-clearing a targeted channel for zero time switching from a operation channel                                                                                                                                                                                                                                                                                                              |
| Before the operation channel moves from operation channels to targeted channels for zero time switching, one minute CAC should be performed on the targeted switching channel to make sure no radar presence. When CAC completed with no radar presence, channel move to targeted channel immediately. If radar detected at any time during CAC, EUT stays on the original operation channel. |

### 1.3. Test Setup

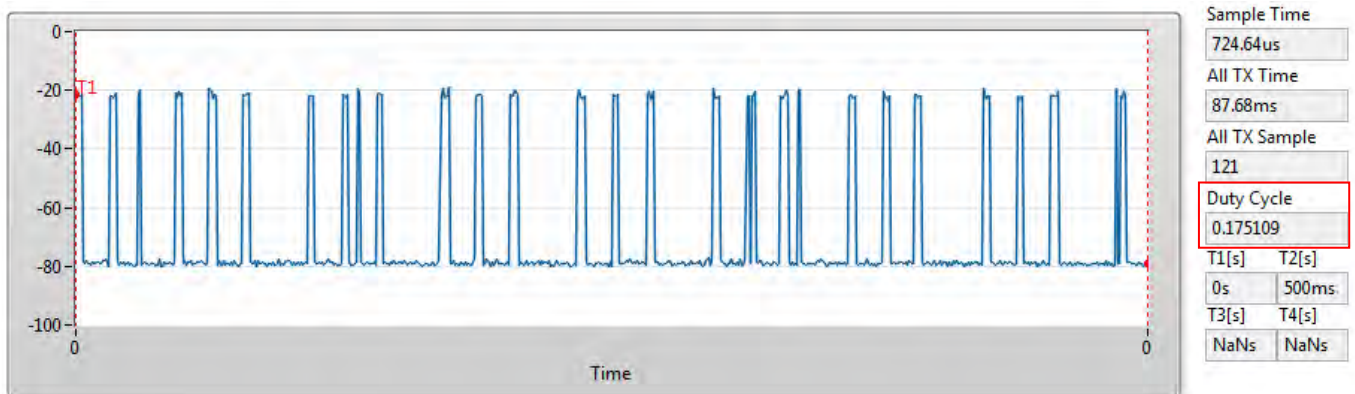


| Test Channel Frequencies Configuration |                          |
|----------------------------------------|--------------------------|
| IEEE Std.                              | Test Channel Freq. (MHz) |
| 802.11ax (HEW160)                      | 5570                     |

## 1.4. Operation Frequency Data Traffic

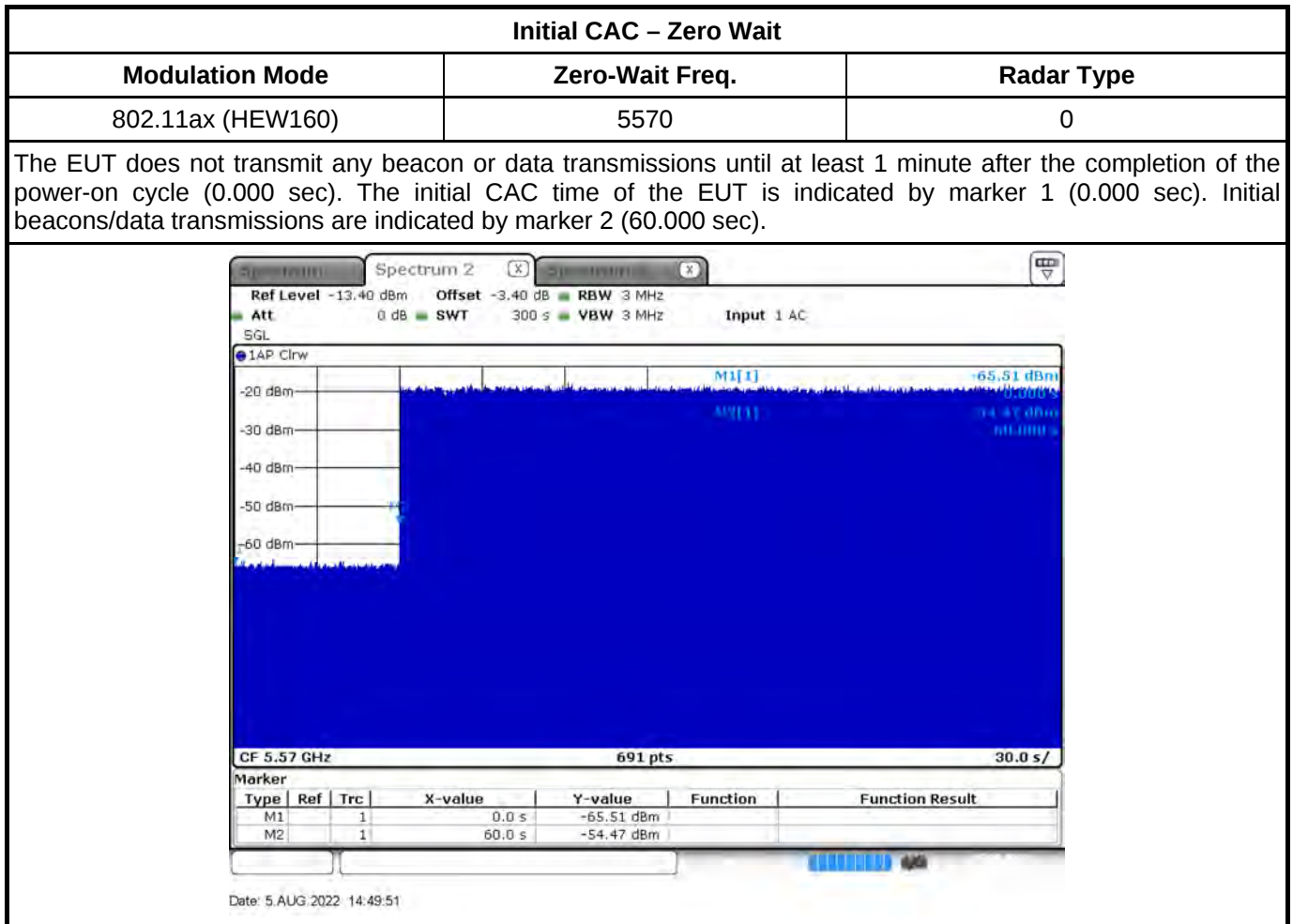


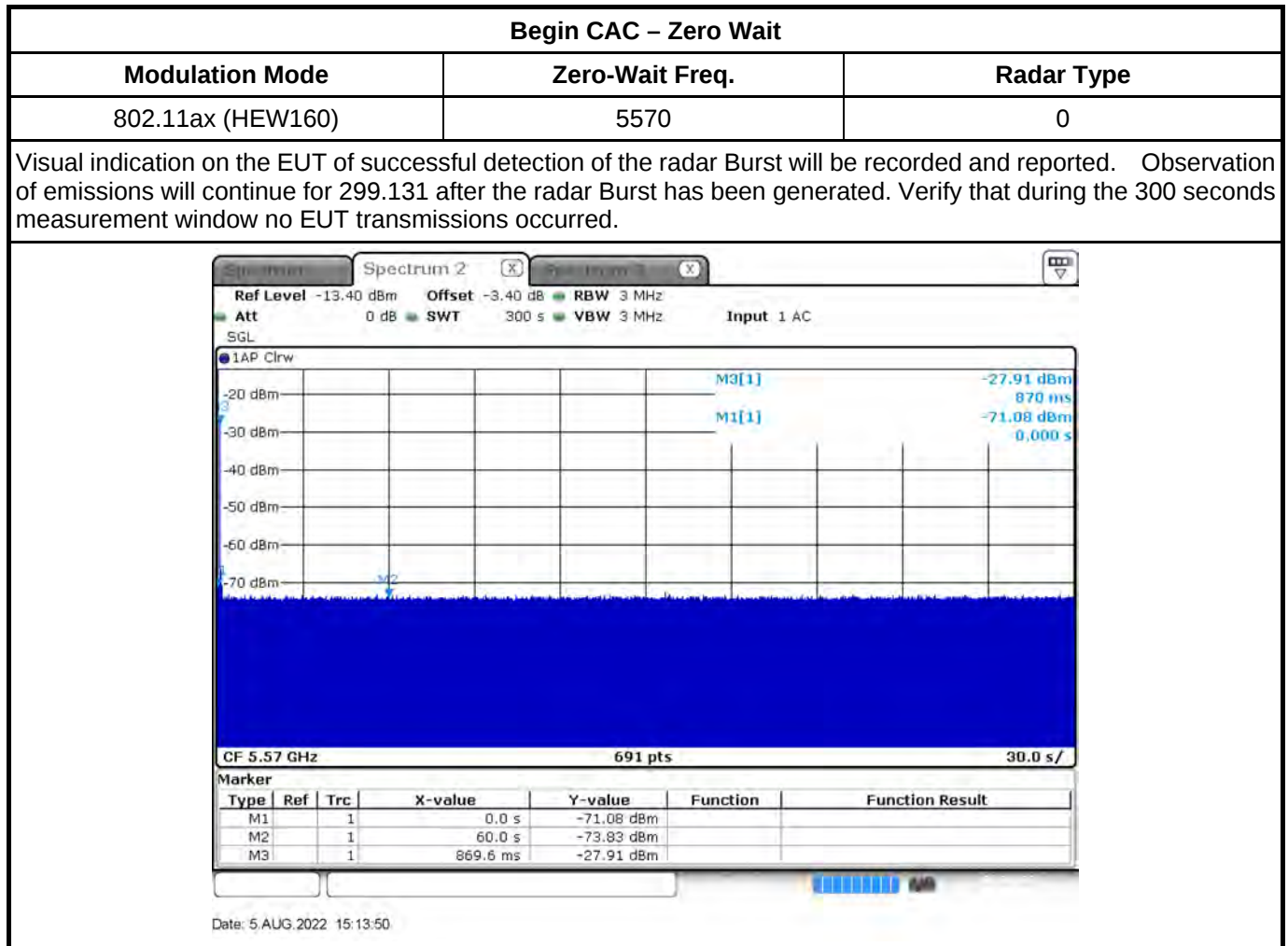
Date: 5.AUG.2022 14:37:10



**1.5. Test Result of Dynamic In-Service Monitoring**

| Dynamic In-Service Monitoring Test Result |                      |                             |                       |                                     |                           |                                 |
|-------------------------------------------|----------------------|-----------------------------|-----------------------|-------------------------------------|---------------------------|---------------------------------|
| Detection Threshold Level (dBm)           |                      |                             | -63                   |                                     |                           |                                 |
| Modulation Mode                           | Operation Freq.(MHz) | Targeted Channel Freq.(MHz) | Radar Test Signal (#) | Nr of Times Triggered (# out of 20) | Detection Probability (%) | Detection Probability Limit (%) |
| 802.11ax (HEW160)                         | 5500                 | 5570                        | 0                     | 19                                  | 95                        | 60                              |

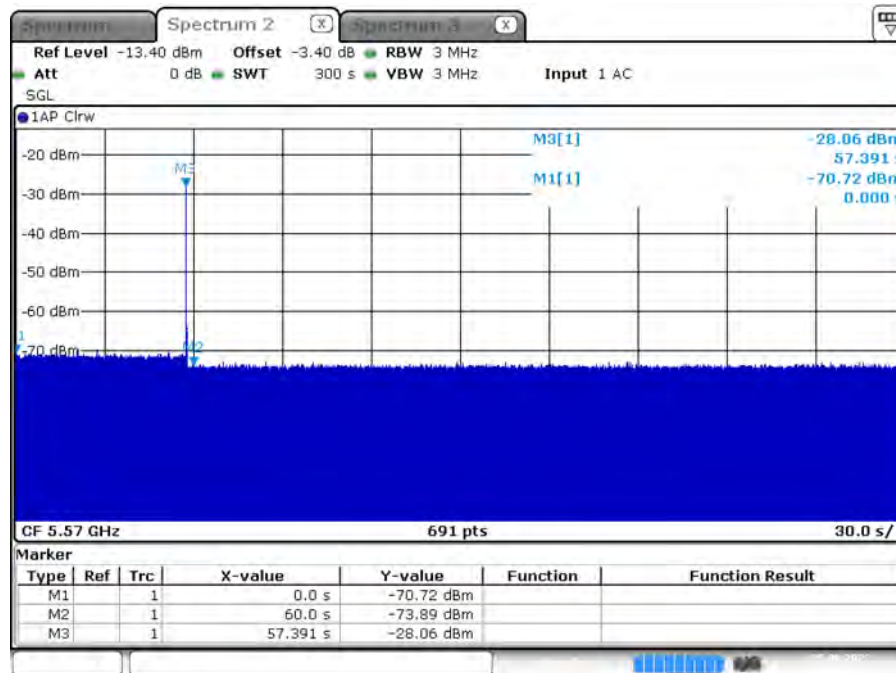




## End CAC – Zero Wait

| Modulation Mode   | Zero-Wait Freq. | Radar Type |
|-------------------|-----------------|------------|
| 802.11ax (HEW160) | 5570            | 0          |

Visual indication on the EUT of successful detection of the radar Burst will be recorded and reported. Observation of emissions will continue for 242.609 seconds after the radar Burst has been generated. Verify that during the 300 seconds measurement window no EUT transmissions occurred.



Date: 5.AUG.2022 15:22:56