



## TEST REPORT

Verified code: 742251

|  |   |   |               |
|--|---|---|---------------|
| <b>Report No.:</b>   | E202002244903-4   | <b>Application No.:</b>                       | E202002244903 |
| <b>Client:</b>   | Winstars Technology Limited   |   |               |
| <b>Address:</b>  | 1-5F, NO.5, Taisong Industrial Zone, Dalang Community, Dalang Street, Longhua District, Shenzhen China                        |   |               |
| <b>Sample Description:</b>   | Wireless AC750 Dual-Band Range Extender   |   |               |
| <b>Model:</b>  | WS-WN576A2  |   |               |
| <b>Adding Model .:</b>   | WL-WN576A2, SWV 733 B3 (IAN: 324886)  |   |               |
| <b>Test Location:</b>  | Guangzhou GRG Metrology & Test Co., Ltd.  |   |               |
| <b>Test Specification:</b>   | EN 301 893 V2.1.1 (2017-05)<br>Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU |   |               |
| <b>Issue Date:</b>   | 2020/05/26  |   |               |
| <b>Test Result:</b>  | Pass  |   |               |
| <b>Prepared By:</b><br>Test Engineer<br><br>Wu Haoming   | <b>Reviewed By:</b><br>Technical Manager<br><br>Wu Chengrong  | <b>Approved By:</b><br>Manager<br><br>Zhu Yan |               |
| <b>Other Aspects:</b>  |   |   |               |
| Note: /  |   |   |               |
| Abbreviations: ok / P = passed; fail / F = failed; n.a. / N = not applicable;  |   |   |               |
| The test result in this test report refers exclusively to the presented test sample. This report shall not be reproduced except in full, without the written approval of GRGT. |   |   |               |



### **DIRECTIONS OF TEST**

- 1. This station carries out test task according to the national regulation of verifications which can be traced to National Primary Standards and BIPM.**
- 2. The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory.**
- 3. If there is any objection concerning the test, the client should inform the laboratory within 15 days from the date of receiving the test report.**

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**1. TEST RESULT SUMMARY**

| Dynamic Frequency Selection (DFS)               |  |                       |                    |        |
|---|--|-----------------------|--------------------|--------|
| Standard  | Item   | Test Requirement      | Test Specification | Result |
| EN 301 893<br>V2.1.1<br>(2017-05)<br>Clause 4.7 | Channel Availability Check   | 4.2.6.2.2             | 5.4.8.2.1.2        | PASS   |
|   | Radar Detection Threshold<br>(during the Channel Availability Check) | 4.2.6.2.2             | 5.4.8.2.1.3        | PASS   |
|   | Off-Channel CAC<br>(Off-Channel Channel Availability Check)          | 4.2.6.2.3             | 5.4.8.2.1.4        | N.A    |
|   | In-Service Monitoring  | 4.2.6.2.4             | 5.4.8.2.1.5        | PASS   |
|   | Channel Shutdown and Non-Occupancy period                            | 4.2.6.2.5 & 4.2.6.2.6 | 5.4.8.2.1.6        | PASS   |
|   | Uniform Spreading  | 4.2.6.2.7             | /                  | N.A    |

## 2. GENERAL DESCRIPTION OF EUT

### 2.1 APPLICANT

Name: Winstars Technology Limited  
Address: 1-5F, NO.5, Taisong Industrial Zone, Dalang Community, Dalang Street, Longhua District, Shenzhen, China

### 2.2 MANUFACTURER

Name: Winstars Technology Limited  
Address: 1-5F, NO.5, Taisong Industrial Zone, Dalang Community, Dalang Street, Longhua District, Shenzhen, China

### 2.3 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

#### General Information

Equipment: Wireless AC750 Dual-Band Range Extender  
Model No.: WS-WN576A2  
Adding Model: WL-WN576A2, SWV 733 B3 (IAN: 324886)  
Trade Name: /  
Power Supply: AC 100-240V;50/60Hz;0.3A  
Note: /

#### Frequency/Channel Information

| Frequency Range(MHz) | Ch. Frequency(MHz) | Mode                                   |
|----------------------|--------------------|--|
| 5150MHz~5350MHz      | 5180MHz~5320MHz    | 802.11a; 802.11n(HT20); 802.11ac(VT20) |
|                      | 5190MHz~5310MHz    | 802.11n(HT40); 802.11ac(VT40)          |
|                      | 5210MHz~5290MHz    | 802.11ac(VT80);                        |
| 5470MHz~5725MHz      | 5500MHz~5700MHz    | 802.11a; 802.11n(HT20); 802.11ac(VT20) |
|                      | 5510MHz~5670MHz    | 802.11n(HT40); 802.11ac(VT40)          |
|                      | 5530MHz            | 802.11ac(VT80);                        |



**Antenna Information**

|                   |       |
|-------------------|-------|
| Antenna type:     | PCB   |
| Antenna number:   | 1     |
| Max Antenna gain: | 3 dBi |
| Note:             | /     |

**DFS Operation Mode Information**

|                                     |  |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | Master   |
| <input type="checkbox"/>            | Slave with radar detection                                 |
| <input type="checkbox"/>            | Slave without radar detection                              |
| Test mode:                          | DFS related to radar detection are NOT accessible to user. |
| Note:                               | The equipment has no Off-channel CAC function.             |

**2.4 TEST CONFIGURATION****Test Antenna**

| Modulation Mode | Tx/Rx Function | Test Antenna (Worst case) |
|-----------------|----------------|---------------------------|
| 802.11a         | 1T/1R          | antenna 0                 |
| 802.11n(HT20)   | 1T/1R          | antenna 0                 |
| 802.11n(HT40);  | 1T/1R          | antenna 0                 |
| 802.11ac(VT80)  | 1T/1R          | antenna 0                 |

**Test EUT Rate**

| Modulation Mode | Data Rate/Mcs | Test Data Rate (Worst Case) |
|-----------------|---------------|-----------------------------|
| 802.11a         | 6-54Mbps      | 54Mbps                      |
| 802.11n(HT20)   | MCS0-MCS7     | MCS7                        |
| 802.11n(HT40);  | MCS0-MCS7     | MCS7                        |
| 802.11ac(VT80)  | MCS0-MCS7     | MCS7                        |

**Test channel**

| Modulation Mode | Test Channel/ Frequency(MHz) |                    |
|-----------------|------------------------------|--------------------|
|                 | 5 250 to 5 350 MHz           | 5 470 to 5 725 MHz |
| 802.11a         | 64 (5320MHz)                 | 100 (5500MHz)      |
| 802.11ac(VT80)  | 58 (5290MHz)                 | 106 (5530MHz)      |

**2.5 LOCAL SUPPORTIVE INSTRUMENTS****Instruments:**

| Name of Equipment | Manufacturer | Model  | Serial Number          |
|-------------------|--------------|--------|------------------------|
| Notebook          | acer         | MS2392 | NXMPGCN01550311F8C6600 |

**Test software:**

| Software version | Test level  |
|------------------|---|
| CMD              | 802.11a Mode<br>5180MHz:37<br>5320MHz:33<br>5500MHz:33<br>5700MHz:33<br>802.11n HT20 Mode<br>5180MHz:35<br>5320MHz:33<br>5500MHz:30<br>5700MHz:33<br>802.11n HT40 Mode<br>5190MHz:35<br>5310MHz:30<br>5510MHz:30<br>5670MHz:30<br>802.11ac VHT80 Mode<br>5210MHz:30<br>5290MHz:30<br>5530MHz:30 |

### 3. LABORATORY AND ACCREDITATIONS

#### 3.1 LABORATORY

The tests and measurements refer to this report were performed by Shenzhen EMC Laboratory of Guangzhou GRG Metrology & Test Co., Ltd.

Add. : No.1301 Guanguang Road Xinlan Community, Guanlan Street, Longhua District Shenzhen, 518110, People's Republic of China

P.C. : 518000

Telephone : 0755-61180008

Fax : 0755-61180008

#### 3.2 ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies.

|      |                            |
|------|----------------------------|
| A2LA | Certificate Number 2861.01 |
|------|----------------------------|

#### 3.3 MEASUREMENT UNCERTAINTY

| Measurement        | Uncertainty              |
|--------------------|--------------------------|
| RF frequency       | $\pm 8.6 \times 10^{-7}$ |
| RF power conducted | $\pm 1.5$ dB             |
| Humidity           | $\pm 5$ %                |
| Temperature        | $\pm 1$ °C               |

This uncertainty represents an expanded uncertainty factor of  $k=2$ .



### 3.4 LIST OF USED TEST EQUIPMENT AT GRGT

| Name of Equipment                 | Manufacturer | Model  | Serial Number | Calibration Due |
|-----------------------------------|--------------|--------|---------------|-----------------|
| Dynamic Frequency Selection (DFS) |              |        |               |                 |
| Spectrum Analyzer                 | Agilent      | N9020A | MY50510140    | 2020-10-24      |
| Vector Signal Generator           | Agilent      | N5182A | MY50142870    | 2020-11-28      |
| Test SW                           | KEYSIGHT     | N7607B |               |                 |

**NOTE:** The calibration interval of the above test instruments is 12 months.

#### 4. DYNAMIC FREQUENCY SELECTION (DFS)

The conformance requirements in clause 4.2.6 shall be verified only under normal operating conditions.

The channels and the channel bandwidths to be used for testing are defined in clause 5.3.2.

Some of the tests may be facilitated by disabling certain operational features of the UUT for the duration of the test.

It should be noted that once a UUT is powered on, it will not start its normal operating functions immediately, as it will have to finish its power-up cycle first ( $T_{power\_up}$ ). As such, the UUT, as well as any other device used in the set-up, may be equipped with a feature that will indicate its status during the testing, e.g. power-up mode, normal operation mode, channel check status, radar detection event, etc.

The UUT is capable of transmitting a test transmission sequence as described in clause 5.3.1.2.

The UUT shall be configured to operate at its maximum Channel Occupancy Time without the use of any pauses in between transmissions. This is defined in clause 4.2.7.3.1 for Frame Based Equipment and in clause 4.2.7.3.2 for Load Based Equipment.

The signal generator is capable of generating any of the radar test signals defined in table D.3 and table D.4.

A spectrum analyser or equivalent shall be used to measure the aggregate transmission time of the UUT.

Clause 5.4.8.1.3.1 to clause 5.4.8.1.3.3 describe the different set-ups to be used during the measurements.

## Radar Test Signals

**Table D.3: Parameters of the reference DFS test signal**

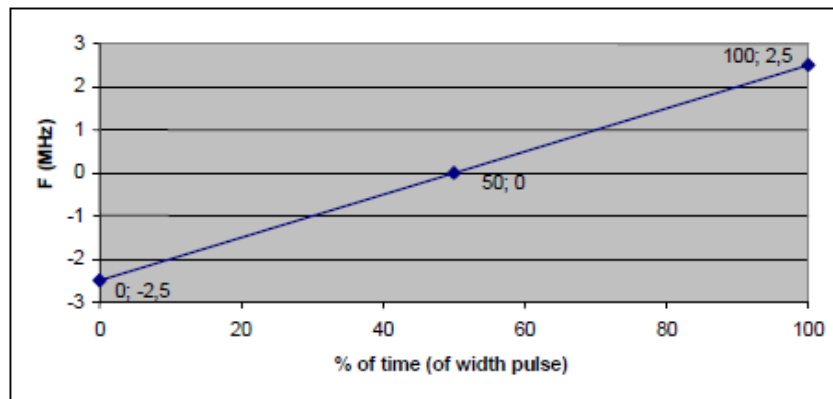
| Pulse width<br>$W$ ( $\mu$ s) | Pulse repetition<br>frequency PRF (PPS) | Pulses per burst<br>(PPB) |
|-------------------------------|---|---------------------------|
| 1                             | 700                                     | 18                        |

**Table D.4: Parameters of radar test signals**

| Radar test<br>signal #<br>(see note 1<br>to note 3) | Pulse width<br>$W$ ( $\mu$ s) |     | Pulse repetition frequency<br>PRF (PPS) |       | Number of<br>different<br>PRFs | Pulses per<br>burst for each<br>PRF (PPB)<br>(see note 5) |
|---|-------------------------------|-----|---|-------|--------------------------------|---|
|   | Min                           | Max | Min                                     | Max   |                                |   |
| 1   | 0,5                           | 5   | 200                                     | 1 000 | 1                              | 10<br>(see note 6)  |
| 2   | 0,5                           | 15  | 200                                     | 1 600 | 1                              | 15<br>(see note 6)  |
| 3   | 0,5                           | 15  | 2 300                                   | 4 000 | 1                              | 25  |
| 4   | 20                            | 30  | 2 000                                   | 4 000 | 1                              | 20  |
| 5   | 0,5                           | 2   | 300                                     | 400   | 2/3                            | 10<br>(see note 6)  |
| 6   | 0,5                           | 2   | 400                                     | 1 200 | 2/3                            | 15<br>(see note 6)  |

NOTE 1: Radar test signals #1 to #4 are constant PRF based signals. See figure D.1. These radar test signals are intended to simulate also radars using a packet based Staggered PRF. See figure D.2.

NOTE 2: Radar test signal #4 is a modulated radar test signal. The modulation to be used is a chirp modulation with a  $\pm 2,5$  MHz frequency deviation which is described below.



NOTE 3: Radar test signals #5 and #6 are single pulse based Staggered PRF radar test signals using 2 or 3 different PRF values. For radar test signal #5, the difference between the PRF values chosen shall be between 20 PPS and 50 PPS. For radar test signal #6, the difference between the PRF values chosen shall be between 80 PPS and 400 PPS. See figure D.3.

NOTE 4: Apart for the Off-Channel CAC testing, the radar test signals above shall only contain a single burst of pulses. See figure D.1, figure D.3 and figure D.4. For the Off-Channel CAC testing, repetitive bursts shall be used for the total duration of the test. See figure D.2 and figure D.5. See also clause 4.2.6.2.3, clause 5.4.8.2.1.4.2 and clause 5.4.8.2.1.4.3.

NOTE 5: The total number of pulses in a burst is equal to the number of pulses for a single PRF multiplied by the number of different PRFs used.

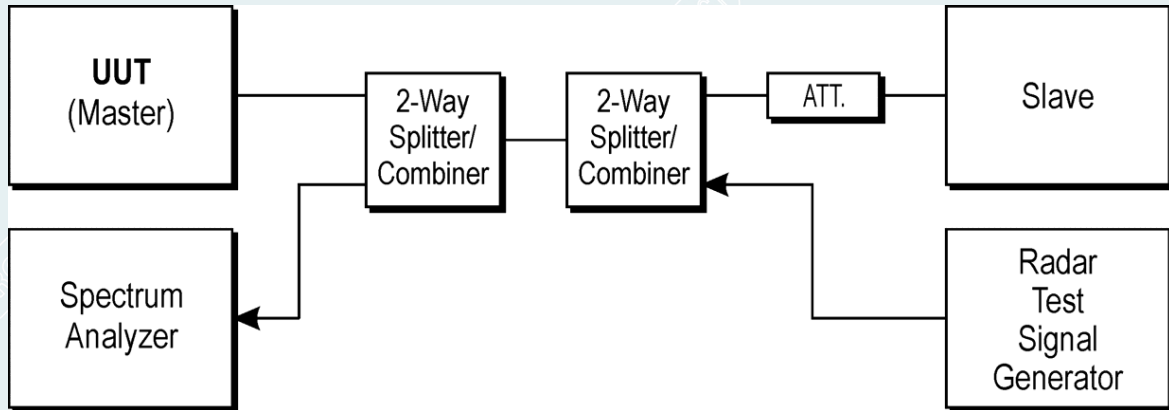
NOTE 6: For the CAC and Off-Channel CAC requirements, the minimum number of pulses (for each PRF) for any of the radar test signals to be detected in the band 5 600 MHz to 5 650 MHz shall be 18.

## Test set-ups

For three different DFS operation mode, there had difference setup.

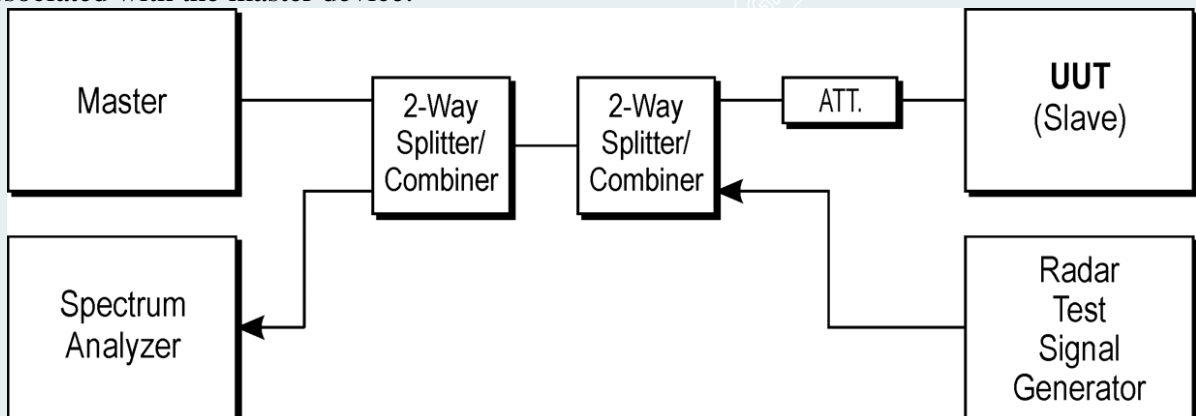
### Set-up A

Set-up A is a set-up whereby the UUT is an RLAN device operating in master mode. Radar test signals are injected into the UUT. This set-up also contains an RLAN device operating in slave mode which is associated with the UUT.



### Set-up B

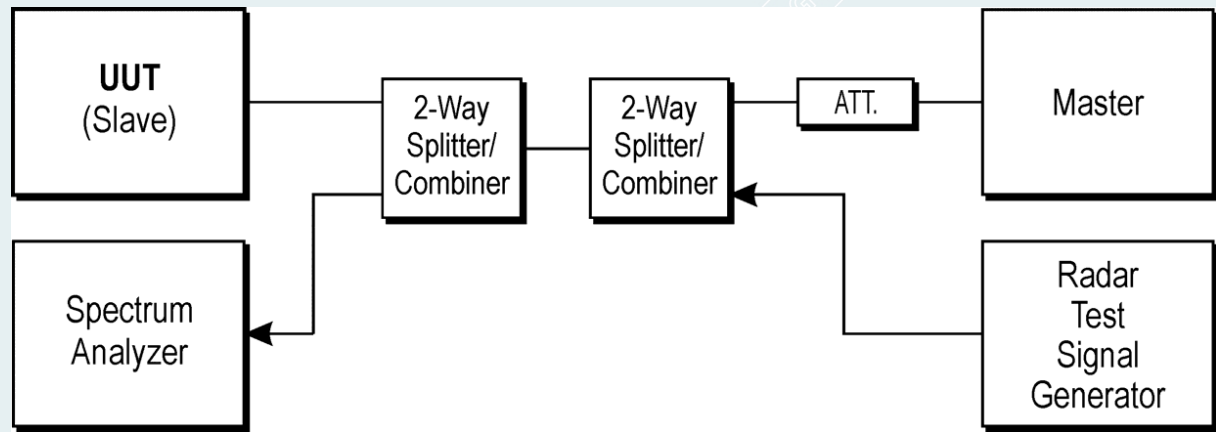
Set-up B is a set-up whereby the UUT is an RLAN device operating in slave mode, with or without Radar Interference Detection functions. This set-up also contains an RLAN device operating in master mode. The radar test signals are injected into the master device. The UUT (slave device) is associated with the master device.



### Set-up C

The UUT is an RLAN device operating in slave mode with Radar Interference Detection function. Radar test signals are injected into the slave device. This set-up also contains an RLAN device operating in master mode. The UUT (slave device) is associated with the master device.





### Test requirement

Table 6 lists the DFS related technical requirements and their applicability for every operational mode. If the RLAN device is capable of operating in more than one operational mode then every operating mode shall be assessed separately.

**Table 6: Applicability of DFS requirements**

| Requirement   | DFS Operational mode |  |   |
|---|----------------------|--|---|
|   | Master               | Slave without radar detection<br>(see table D.2, note 2) | Slave with radar detection<br>(see table D.2, note 2) |
| Channel Availability Check  | Required             | Not required   | Required<br>(see note 2)                              |
| Off-Channel CAC (see note 1)  | Required             | Not required   | Required<br>(see note 2)                              |
| In-Service Monitoring   | Required             | Not required   | Required  |
| Channel Shutdown  | Required             | Required   | Required  |
| Non-Occupancy Period  | Required             | Not required   | Required  |
| Uniform Spreading   | Required             | Not required   | Not required  |
| NOTE 1: Where implemented by the manufacturer.  |                      |  |   |
| NOTE 2: A slave with radar detection is not required to perform a CAC or <i>Off-Channel CAC</i> at initial use of the channel but only after the slave has detected a radar signal on the <i>Operating Channel</i> by <i>In-Service Monitoring</i> and the <i>Non-Occupancy Period</i> resulting from this detection has elapsed. |                      |  |   |

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

| Parameter   | Value                  |
|---|------------------------|
| Channel Availability Check Time   | 60 s (see note 1)      |
| Minimum Off-Channel CAC Time  | 6 minutes (see note 2) |
| Maximum Off-Channel CAC Time  | 4 hours (see note 2)   |
| Channel Move Time   | 10 s                   |
| Channel Closing Transmission Time   | 1 s                    |
| Non-Occupancy Period  | 30 minutes             |
| NOTE 1: For channels whose nominal bandwidth falls completely or partly within the band 5 600 MHz to 5 650 MHz, the <i>Channel Availability Check Time</i> shall be 10 minutes.               |                        |
| NOTE 2: For channels whose nominal bandwidth falls completely or partly within the band 5 600 MHz to 5 650 MHz, the <i>Off-Channel CAC Time</i> shall be within the range 1 hour to 24 hours. |                        |



**Table D.2: Radar Detection Threshold Levels**

| e.i.r.p. Spectral Density<br>(dBm/MHz)   | Value<br>(see note 1 and note 2) |
|--|----------------------------------|
| 10   | -62 dBm                          |
| <p>NOTE 1: This is the level at the input of the receiver of an RLAN device with a maximum e.i.r.p. density of 10 dBm/MHz and assuming a 0 dBi receive antenna. For devices employing different e.i.r.p. spectral density and/or a different receive antenna gain G (dBi) the Radar Detection Threshold Level at the receiver input follows the following relationship:<br/> DFS Detection Threshold (dBm) = <math>-62 + 10 - \text{e.i.r.p. Spectral Density (dBm/MHz)} + G \text{ (dBi)}</math>; however the Radar Detection Threshold Level shall not be less than -64 dBm assuming a 0 dBi receive antenna gain.</p> <p>NOTE 2: Slave devices with a maximum e.i.r.p. of less than 23 dBm do not have to implement radar detection unless these devices are used in fixed outdoor point to point or fixed outdoor point to multipoint applications (see clause 4.2.6.1.3).</p> |                                  |

**Table D.5: Detection probability**

| Parameter   | Detection Probability ( $P_d$ )  |                |
|---|--|----------------|
|   | Channels whose nominal bandwidth falls partly or completely within the 5 600 MHz to 5 650 MHz band | Other channels |
| CAC, Off-Channel CAC  | 99,99 %  | 60 %           |
| In-Service Monitoring   | 60 %   | 60 %           |
| <p>NOTE: <math>P_d</math> gives the probability of detection per simulated radar burst and represents a minimum level of detection performance under defined conditions. Therefore <math>P_d</math> does not represent the overall detection probability for any particular radar under real life conditions.</p> |  |                |

**EUT Power Density****802.11a mode**

| DUT Frequency (MHz) | EIRP Power Density (dBm) | Limit (dBm) | Result | Comment |
|---------------------|--------------------------|-------------|--------|---------|
| 5180.000000         | 3.88                     | <= 10.0     | PASS   | /       |
| 5320.000000         | 3.39                     | <= 7.0      | PASS   | /       |
| 5500.000000         | 8.62                     | <= 14.0     | PASS   | /       |
| 5700.000000         | 3.98                     | <= 14.0     | PASS   | /       |

**802.11n HT20 mode**

| DUT Frequency (MHz) | EIRP Power Density (dBm) | Limit (dBm) | Result | Comment |
|---------------------|--------------------------|-------------|--------|---------|
| 5180.000000         | 0.42                     | <= 10.0     | PASS   | /       |
| 5320.000000         | 2.16                     | <= 7.0      | PASS   | /       |
| 5500.000000         | 6.77                     | <= 14.0     | PASS   | /       |
| 5700.000000         | 1.95                     | <= 14.0     | PASS   | /       |

**802.11n HT40 mode**

| DUT Frequency (MHz) | EIRP Power Density (dBm) | Limit (dBm) | Result | Comment |
|---------------------|--------------------------|-------------|--------|---------|
| 5190.000000         | 1.75                     | <= 10.0     | PASS   | /       |
| 5310.000000         | 2.70                     | <= 7.0      | PASS   | /       |
| 5510.000000         | 5.06                     | <= 14.0     | PASS   | /       |
| 5670.000000         | 3.90                     | <= 14.0     | PASS   | /       |

**802.11ac VHT80 mode**

| DUT Frequency (MHz) | EIRP Power Density (dBm) | Limit (dBm) | Result | Comment |
|---------------------|--------------------------|-------------|--------|---------|
| 5210.000000         | -1.72                    | <= 10.0     | PASS   | /       |
| 5290.000000         | -0.89                    | <= 7.0      | PASS   | /       |
| 5530.000000         | 1.50                     | <= 14.0     | PASS   | /       |

DFS Detection Threshold (dBm) =  $-62 + 10 - 8.62 + 3 = -57.62$

Note:

$$\text{DFS Detection Threshold (dBm)} = -62 + 10 - \text{e.i.r.p. Spectral Density (dBm/MHz)} + G \text{ (dBi)}$$

## 4.1 CHANNEL AVAILABILITY CHECK

### 4.1.1 DEFINITION

The Channel Availability Check (CAC) is defined as a mechanism by which an RLAN device checks channels for the presence of radar signals. This mechanism is used for identifying Available Channels.

There shall be no transmissions by the device within the channels being checked during this process.

If no radars have been detected on a channel, then that channel becomes an Available Channel.

### 4.1.2 LIMIT

The Channel Availability Check shall be performed during a continuous period in time (Channel Availability Check Time ) which shall not be less than the value defined in table D.1.

During the Channel Availability Check, the RLAN shall be capable of detecting any of the radar test signals that fall within the ranges given by table D.4 with a level above the Radar Detection Threshold defined in table D.2.

The minimum required detection probability is defined in table D.5.

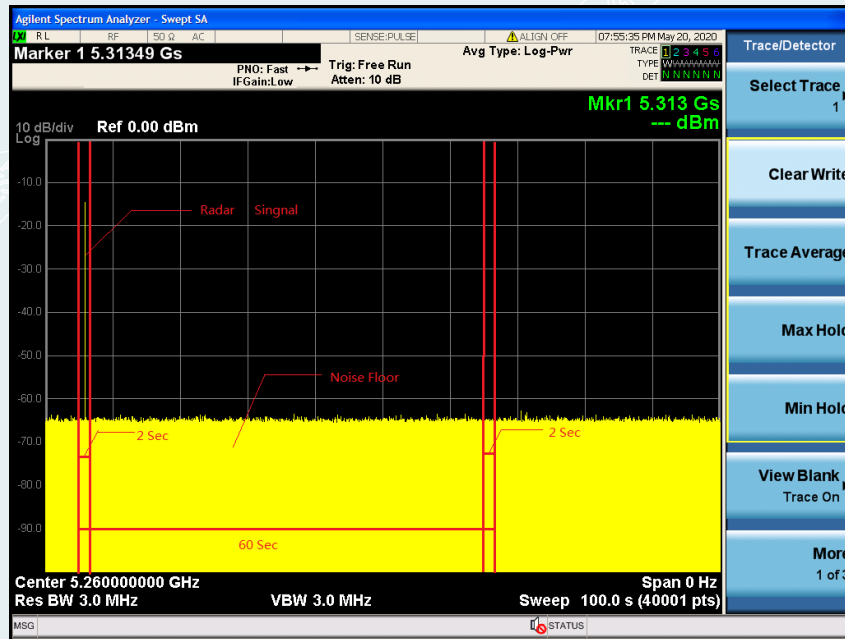
### 4.1.3 TEST RESULTS

a. Tests with a radar burst at the beginning of the Channel Availability Check Time

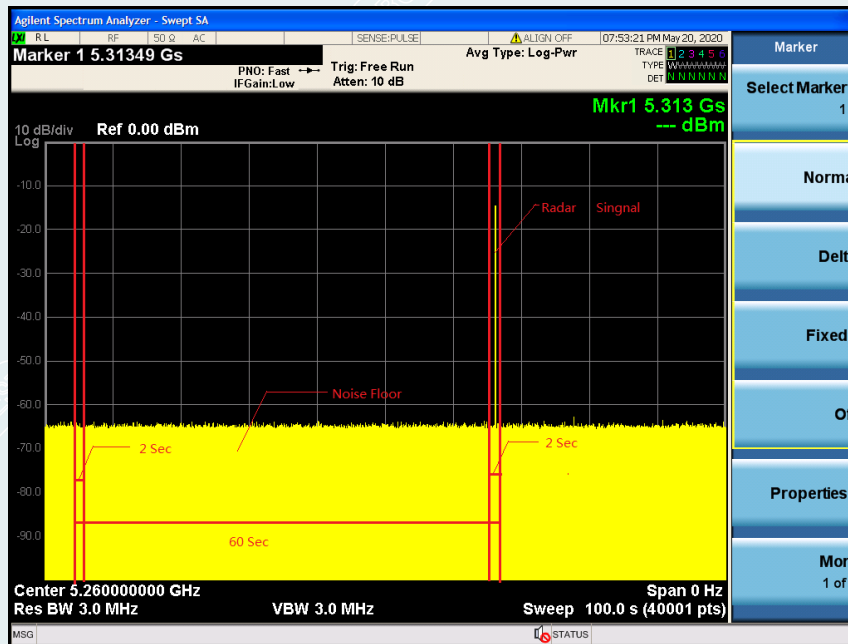
b. Tests with radar burst at the end of the Channel Availability Check Time 802.11a Mode:

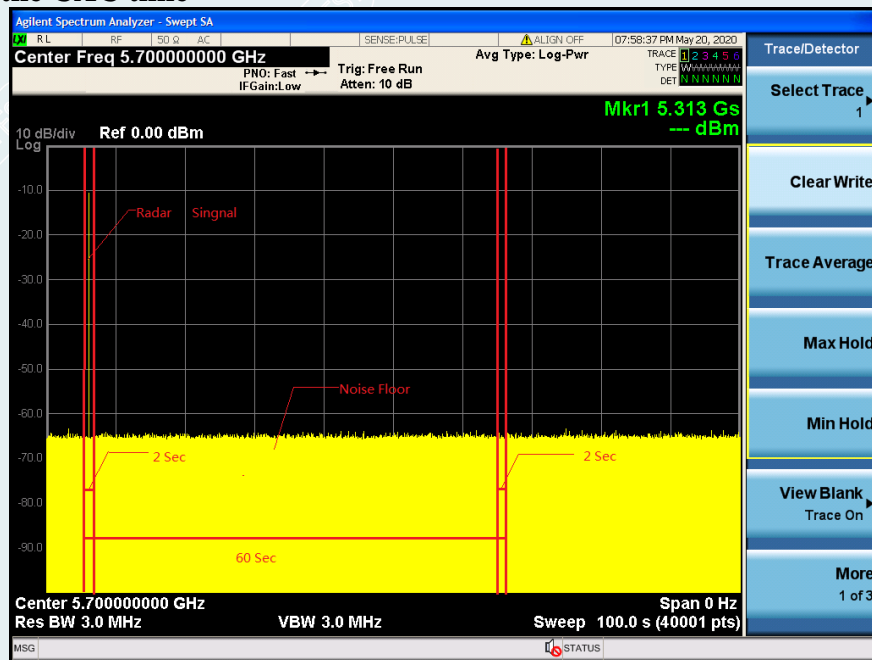
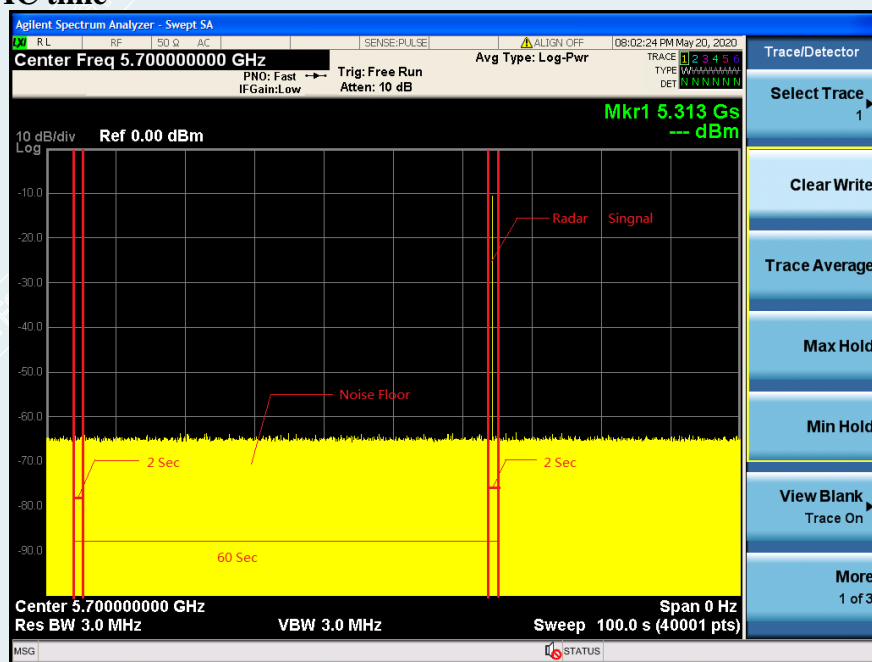
| DUT Frequency (MHz) | Waveform | CAC Type | Limit (s) | Result | Comment |
|---------------------|----------|----------|-----------|--------|---------|
| 5260.000000         | Ref.     | Begin    | 60.000    | PASS   | /       |
| 5260.000000         | Ref.     | End      | 60.000    | PASS   | /       |
| 5700.000000         | Ref.     | Begin    | 60.000    | PASS   | /       |
| 5700.000000         | Ref.     | End      | 60.000    | PASS   | /       |

**5260 MHz**  
**Beginning of the CAC time**



End of the CAC time

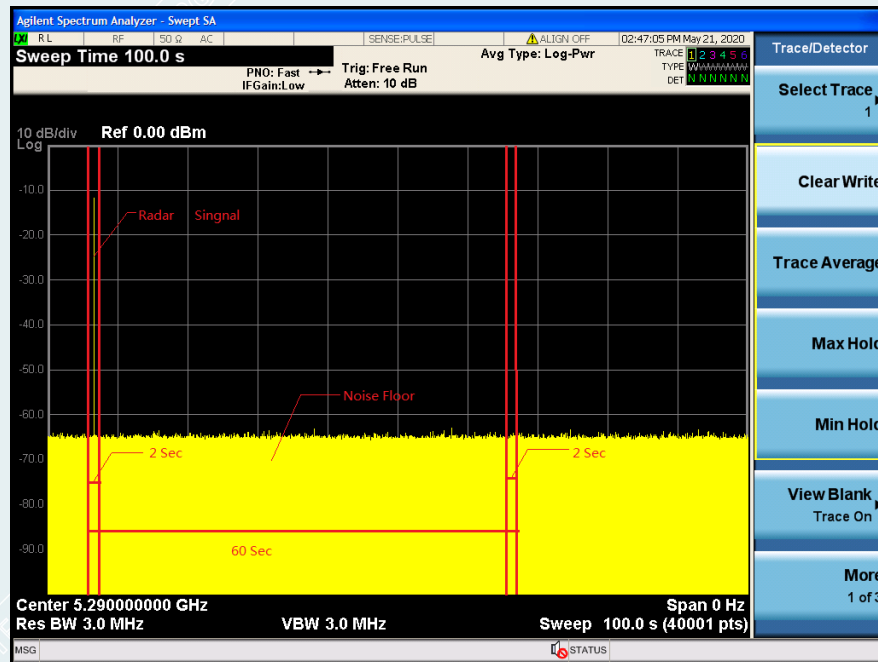
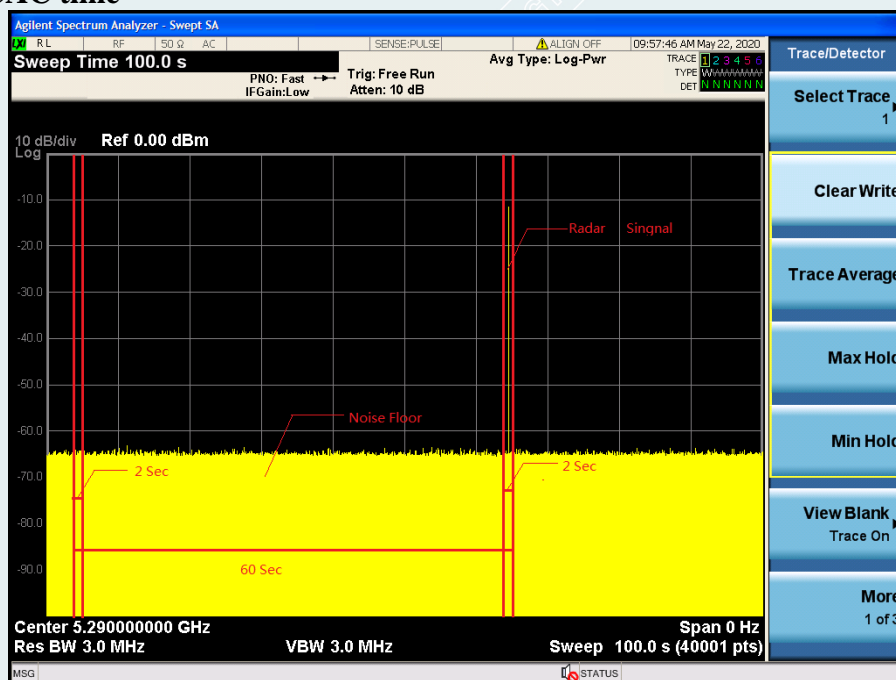


**5700 MHz****Beginning of the CAC time****End of the CAC time**



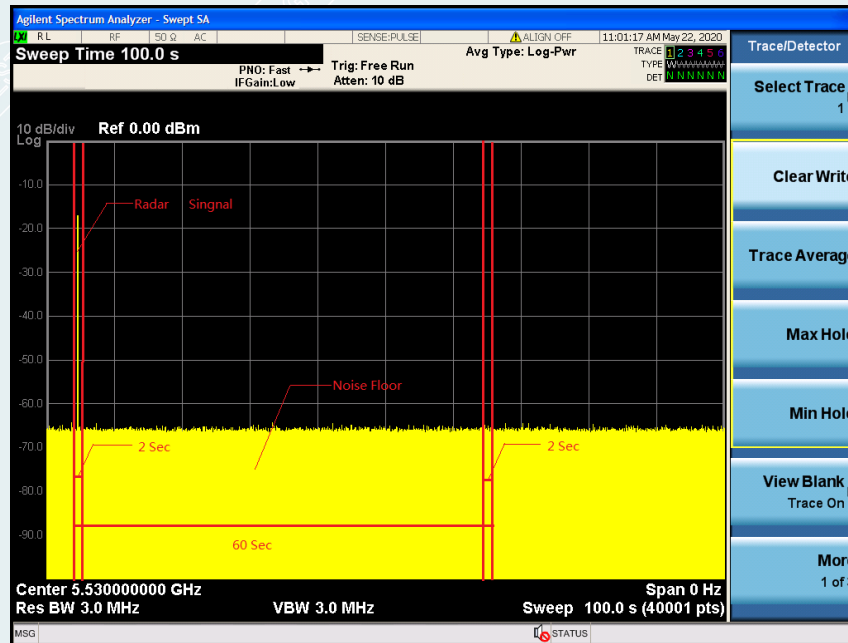
**802.11ac VHT80 Mode:**

| DUT Frequency (MHz) | Waveform | CAC Type | Limit (s) | Result | Comment |
|---------------------|----------|----------|-----------|--------|---------|
| 5290.000000         | Ref.     | Begin    | 60.000    | PASS   | /       |
| 5290.000000         | Ref.     | End      | 60.000    | PASS   | /       |
| 5530.000000         | Ref.     | Begin    | 60.000    | PASS   | /       |
| 5530.000000         | Ref.     | End      | 60.000    | PASS   | /       |

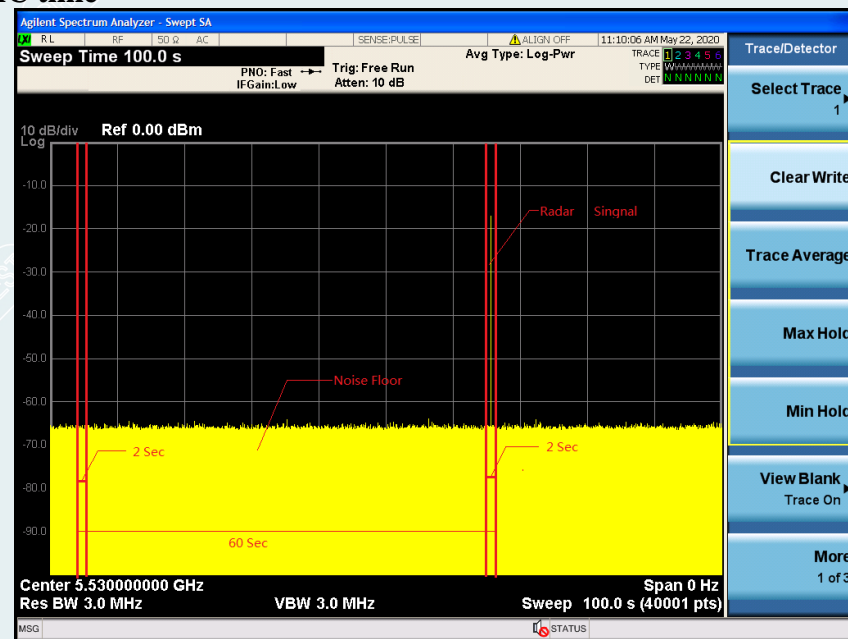
**5290 MHz****Beginning of the CAC time****End of the CAC time**

**5530 MHz**

## Beginning of the CAC time



## End of the CAC time



**TEST RESULTS:** The unit does meet the requirements.

**Radar detection threshold (during the channel availability check)****802.11a mode:**

| DUT Frequency (MHz) | Measurements | Pass | Limit     | Result | Comment |
|---------------------|--------------|------|-----------|--------|---------|
| 5260.000000         | 20           | 18   | $\geq 12$ | PASS   | /       |
| 5700.000000         | 20           | 19   | $\geq 12$ | PASS   | /       |

**802.11n HT20 mode:**

| DUT Frequency (MHz) | Measurements | Pass | Limit     | Result | Comment |
|---------------------|--------------|------|-----------|--------|---------|
| 5290.000000         | 20           | 20   | $\geq 12$ | PASS   | /       |
| 5530.000000         | 20           | 18   | $\geq 12$ | PASS   | /       |

**TEST RESULTS: The unit does meet the requirements.**

## 4.4 IN-SERVICE MONITORING

### 4.2.1 DEFINITION

The In-Service Monitoring is defined as the process by which an RLAN monitors each Operating Channel for the presence of radar signals.

### 4.2.2 LIMIT

The In-Service Monitoring shall be used to monitor an Operating Channel.

The In-Service-Monitoring shall start immediately after the RLAN has started transmissions on a channel.

During the In-Service Monitoring, the RLAN shall be capable of detecting any of the radar test signals that fall within the ranges given by table D.4 with a level above the Radar Detection Threshold defined in table D.2.

The minimum required detection probability associated to a given radar test signal is defined in table D.5.

### 4.4.4 TEST RESULTS

#### 802.11 a mode:

| DUT Frequency (MHz) | Waveform | Measurements | CCTT Fail | ISM Fail | Pass | Limit     | Result | Comment |
|---------------------|----------|--------------|-----------|----------|------|-----------|--------|---------|
| 5260.000000         | 1        | 20           | 0         | 1        | 19   | $\geq 12$ | PASS   | /       |
| 5260.000000         | 2        | 20           | 0         | 2        | 18   | $\geq 12$ | PASS   | /       |
| 5260.000000         | 3        | 20           | 0         | 2        | 18   | $\geq 12$ | PASS   | /       |
| 5260.000000         | 4        | 20           | 0         | 0        | 20   | $\geq 12$ | PASS   | /       |
| 5260.000000         | 5        | 20           | 0         | 1        | 19   | $\geq 12$ | PASS   | /       |
| 5260.000000         | 6        | 20           | 0         | 1        | 19   | $\geq 12$ | PASS   | /       |

| DUT Frequency (MHz) | Waveform | Measurements | CCTT Fail | ISM Fail | Pass | Limit     | Result | Comment |
|---------------------|----------|--------------|-----------|----------|------|-----------|--------|---------|
| 5700.000000         | 1        | 20           | 0         | 0        | 20   | $\geq 12$ | PASS   | /       |
| 5700.000000         | 2        | 20           | 0         | 0        | 20   | $\geq 12$ | PASS   | /       |
| 5700.000000         | 3        | 20           | 0         | 1        | 19   | $\geq 12$ | PASS   | /       |
| 5700.000000         | 4        | 20           | 0         | 1        | 19   | $\geq 12$ | PASS   | /       |
| 5700.000000         | 5        | 20           | 0         | 2        | 18   | $\geq 12$ | PASS   | /       |
| 5700.000000         | 6        | 20           | 0         | 1        | 19   | $\geq 12$ | PASS   | /       |

**802.11ac VHT80 mode:**

| DUT Frequency (MHz) | Waveform | Measurements | CCTT Fail | ISM Fail | Pass | Limit | Result | Comment |
|---------------------|----------|--------------|-----------|----------|------|-------|--------|---------|
| 5290.000000         | 1        | 20           | 0         | 0        | 20   | >= 12 | PASS   | /       |
| 5290.000000         | 2        | 20           | 0         | 1        | 19   | >= 12 | PASS   | /       |
| 5290.000000         | 3        | 20           | 0         | 1        | 19   | >= 12 | PASS   | /       |
| 5290.000000         | 4        | 20           | 0         | 2        | 18   | >= 12 | PASS   | /       |
| 5290.000000         | 5        | 20           | 0         | 0        | 20   | >= 12 | PASS   | /       |
| 5290.000000         | 6        | 20           | 0         | 1        | 19   | >= 12 | PASS   | /       |

| DUT Frequency (MHz) | Waveform | Measurements | CCTT Fail | ISM Fail | Pass | Limit | Result | Comment |
|---------------------|----------|--------------|-----------|----------|------|-------|--------|---------|
| 5530.000000         | 1        | 20           | 0         | 1        | 19   | >= 12 | PASS   | /       |
| 5530.000000         | 2        | 20           | 0         | 0        | 20   | >= 12 | PASS   | /       |
| 5530.000000         | 3        | 20           | 0         | 0        | 20   | >= 12 | PASS   | /       |
| 5530.000000         | 4        | 20           | 0         | 2        | 18   | >= 12 | PASS   | /       |
| 5530.000000         | 5        | 20           | 0         | 1        | 19   | >= 12 | PASS   | /       |
| 5530.000000         | 6        | 20           | 0         | 1        | 19   | >= 12 | PASS   | /       |

**TEST RESULTS: The unit does meet the requirements.**



## 4.3 CHANNEL SHUTDOWN AND NON-OCCUPANCY PERIOD

### 4.3.1 DEFINITION

The Channel Shutdown is defined as the process initiated by the RLAN device on an Operating Channel after a radar signal has been detected during the In-Service Monitoring on that channel. The master device shall instruct all associated slave devices to stop transmitting on this channel, which they shall do within the Channel Move Time.

Slave devices with a Radar Interference Detection function, shall stop their own transmissions on an Operating Channel within the Channel Move Time upon detecting a radar signal within this channel.

The aggregate duration of all transmissions of the RLAN device on this channel during the Channel Move Time shall be limited to the Channel Closing Transmission Time. The aggregate duration of all transmissions shall not include quiet periods in between transmissions.

The Non-Occupancy Period is defined as the time during which the RLAN device shall not make any transmissions on a channel after a radar signal was detected on that channel.

### 4.3.2 LIMIT

The Channel Move Time shall not exceed the limit defined in table D.1.

The Channel Closing Transmission Time shall not exceed the limit defined in table D.1.

The Non-Occupancy Period shall not be less than the value defined in table D.1.

### 4.3.3 TEST RESULTS

#### 802.11 a mode:

| DUT Frequency (MHz) | CCTT (s)  | Limit CCTT (s) | CMT (s)   | Limit CMT(s) | Result | Comment |
|---------------------|-----------|----------------|-----------|--------------|--------|---------|
| 5260.000000         | 0.0044999 | 1.000          | 0.8089798 | 10.000       | PASS   | /       |

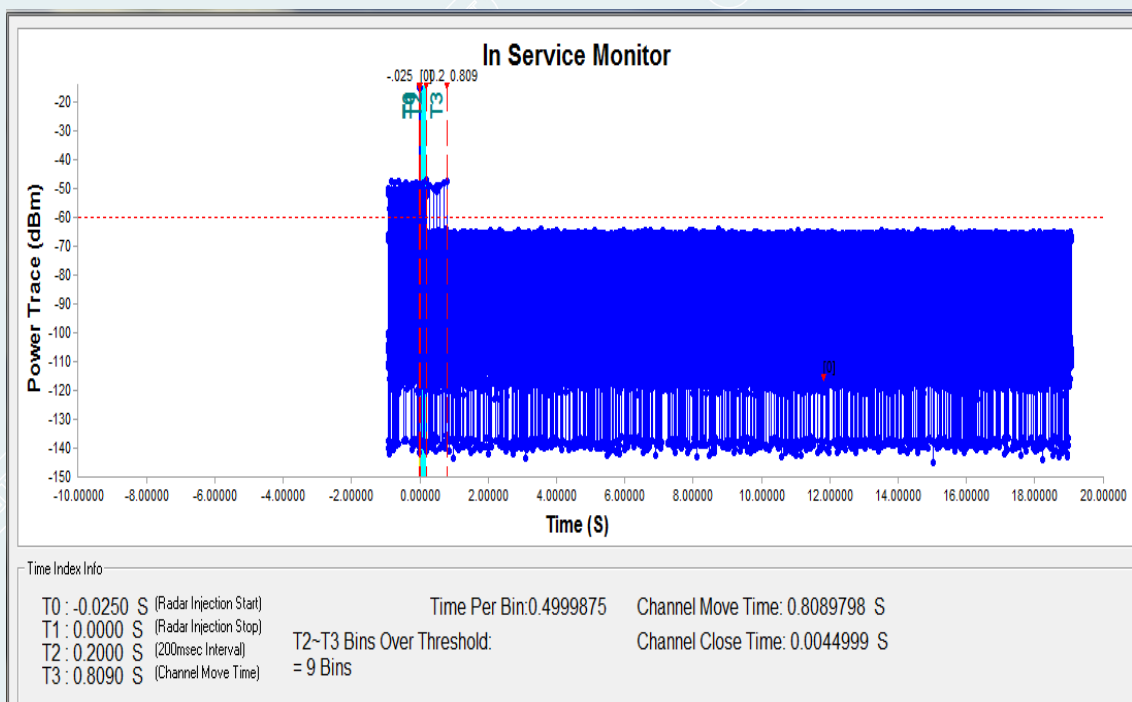
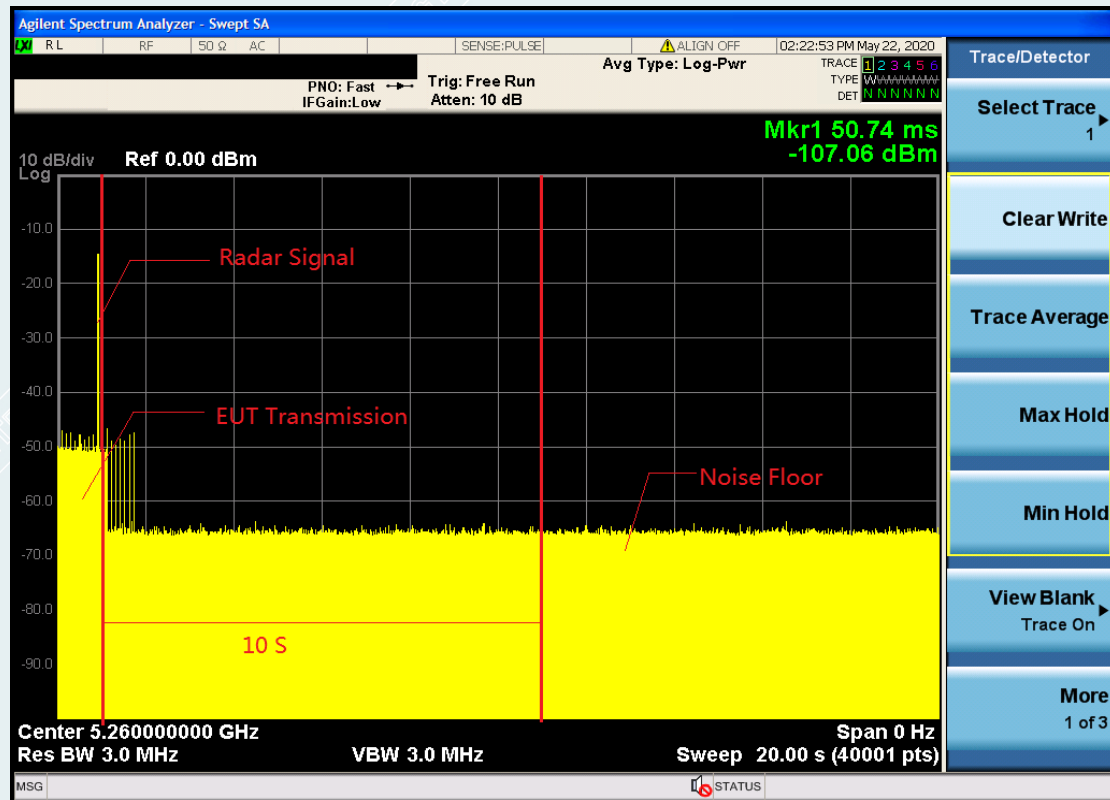
| DUT Frequency (MHz) | CCTT (s) | Limit CCTT (s) | CMT (s)   | Limit CMT(s) | Result | Comment |
|---------------------|----------|----------------|-----------|--------------|--------|---------|
| 5700.000000         | 0.003499 | 1.000          | 0.7249819 | 10.000       | PASS   | /       |

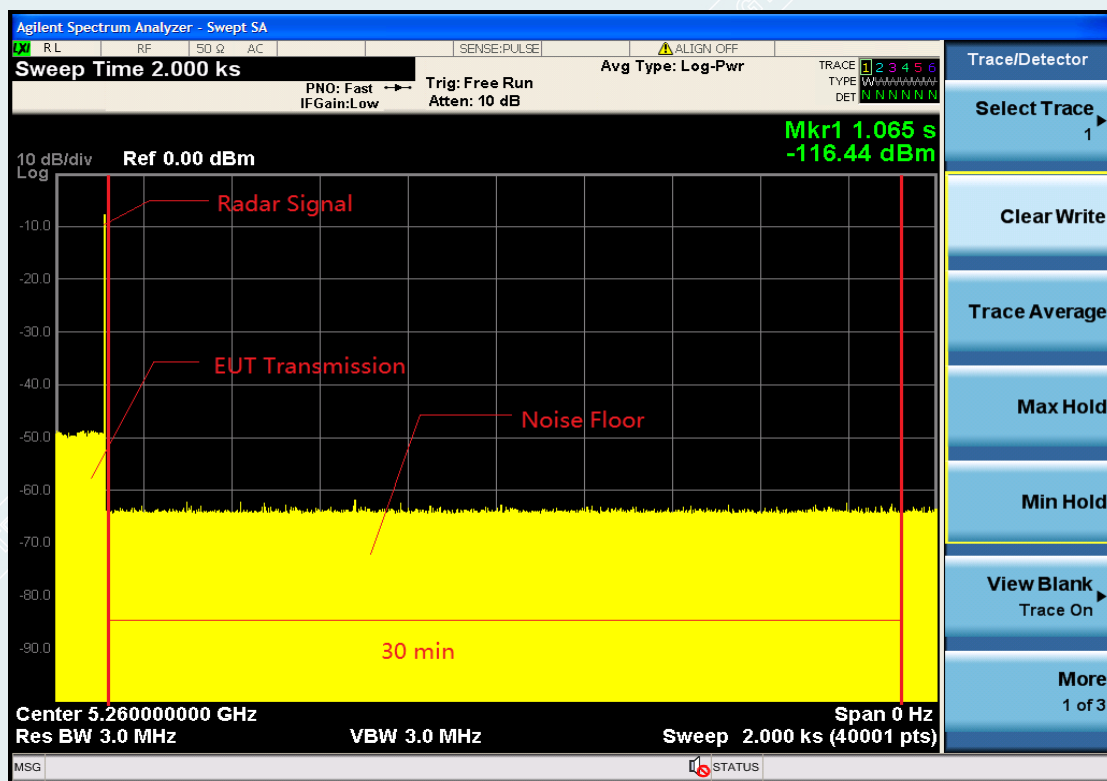
#### 802.11ac80 VHT40 mode:

| DUT Frequency (MHz) | CCTT (s) | Limit CCTT (s) | CMT (s)  | Limit CMT(s) | Result | Comment |
|---------------------|----------|----------------|----------|--------------|--------|---------|
| 5290.000000         | 0.002999 | 1.000          | 0.721982 | 10.000       | PASS   | /       |

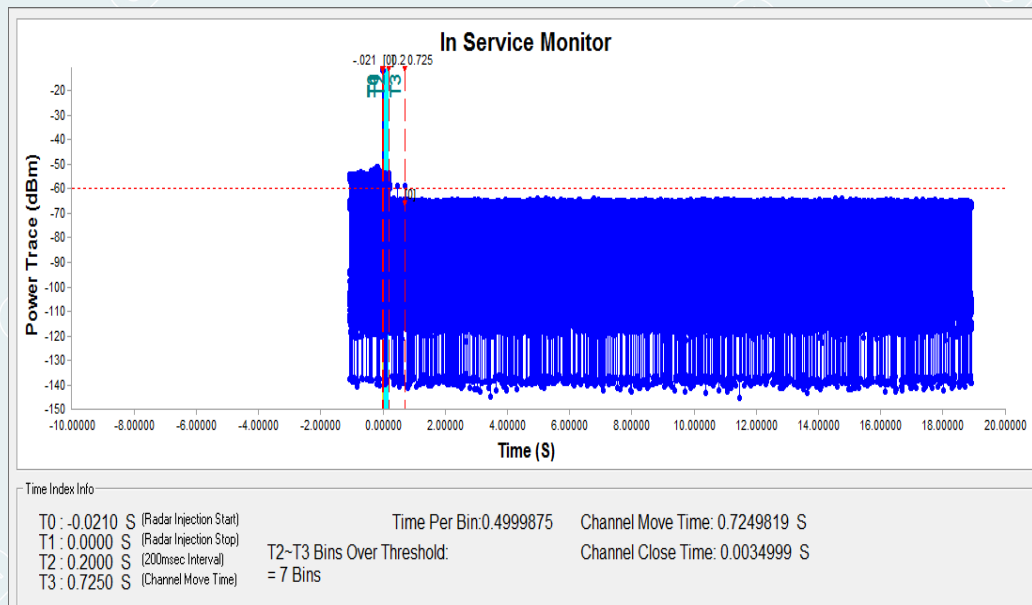
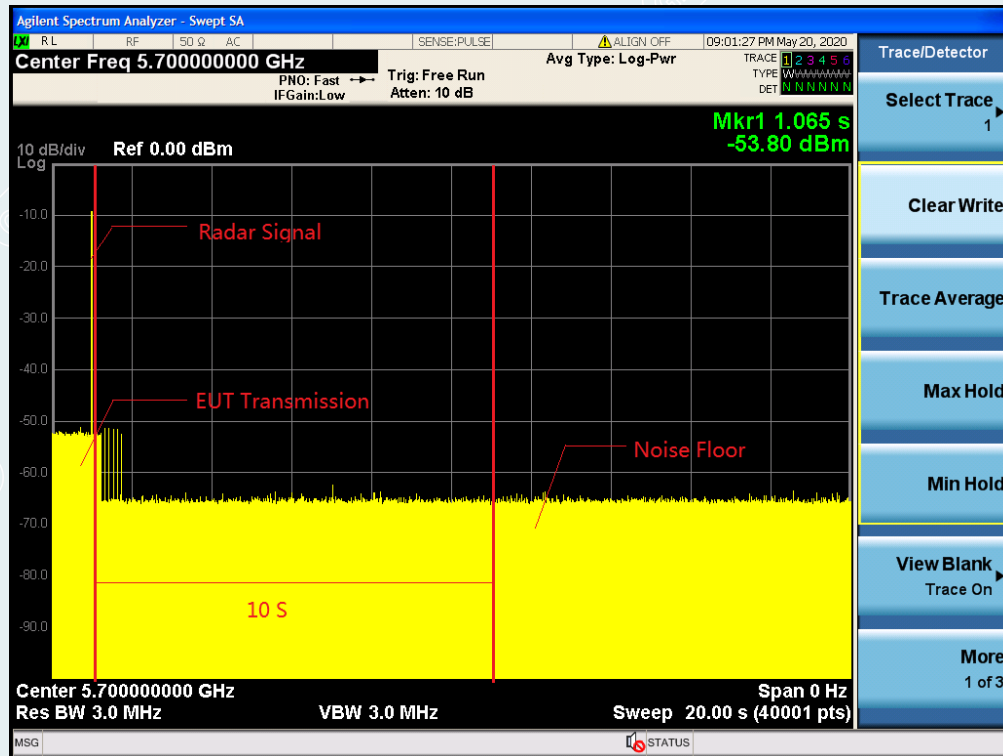
| DUT Frequency (MHz) | CCTT (s) | Limit CCTT (s) | CMT (s) | Limit CMT(s) | Result | Comment |
|---------------------|----------|----------------|---------|--------------|--------|---------|
| 5530.000000         | 0.000    | 1.000          | 0.000   | 10.000       | PASS   | /       |

**802.11a Mode:**  
5260MHz

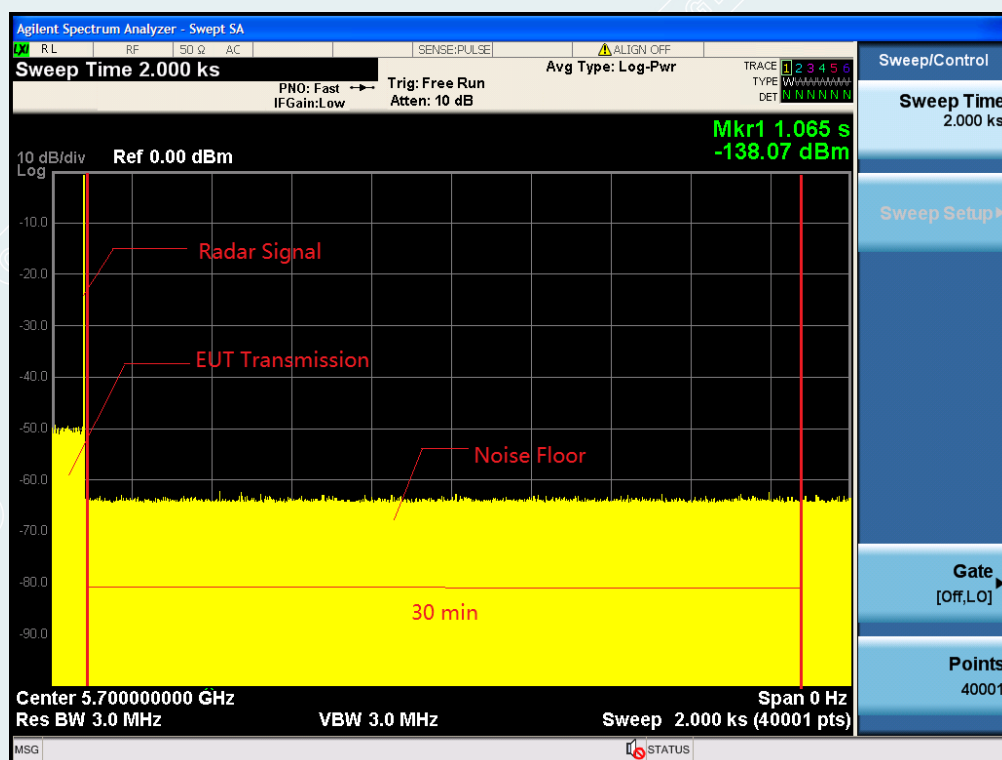


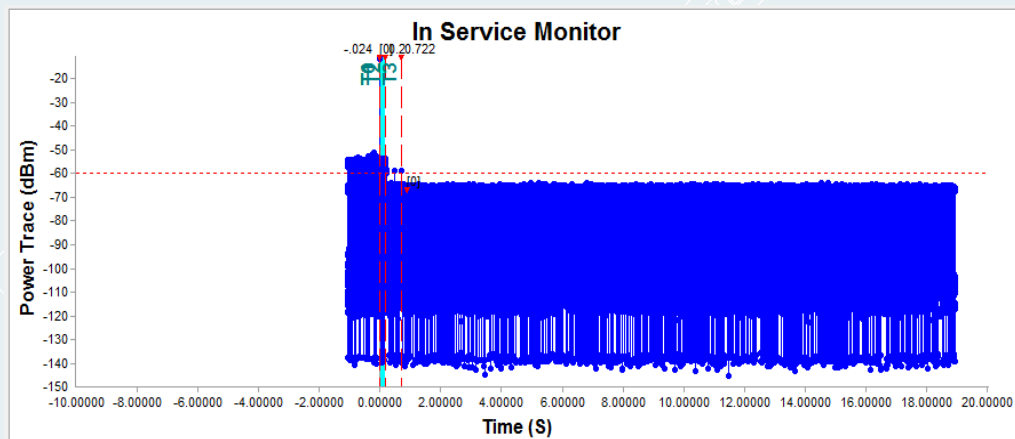
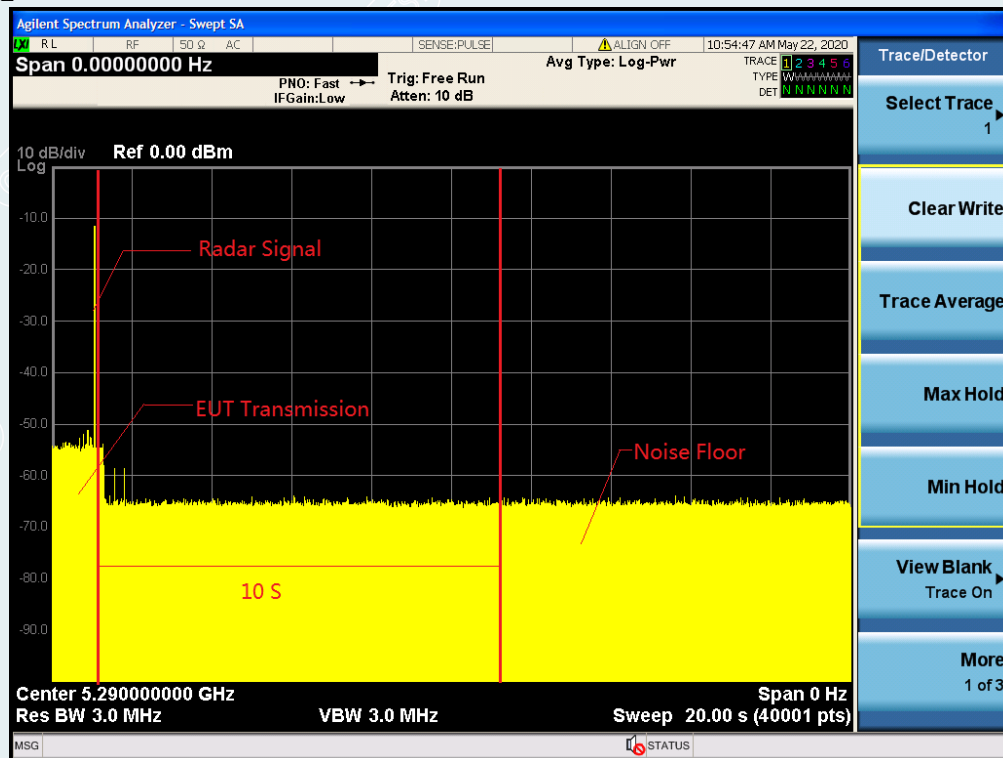


5700MHz







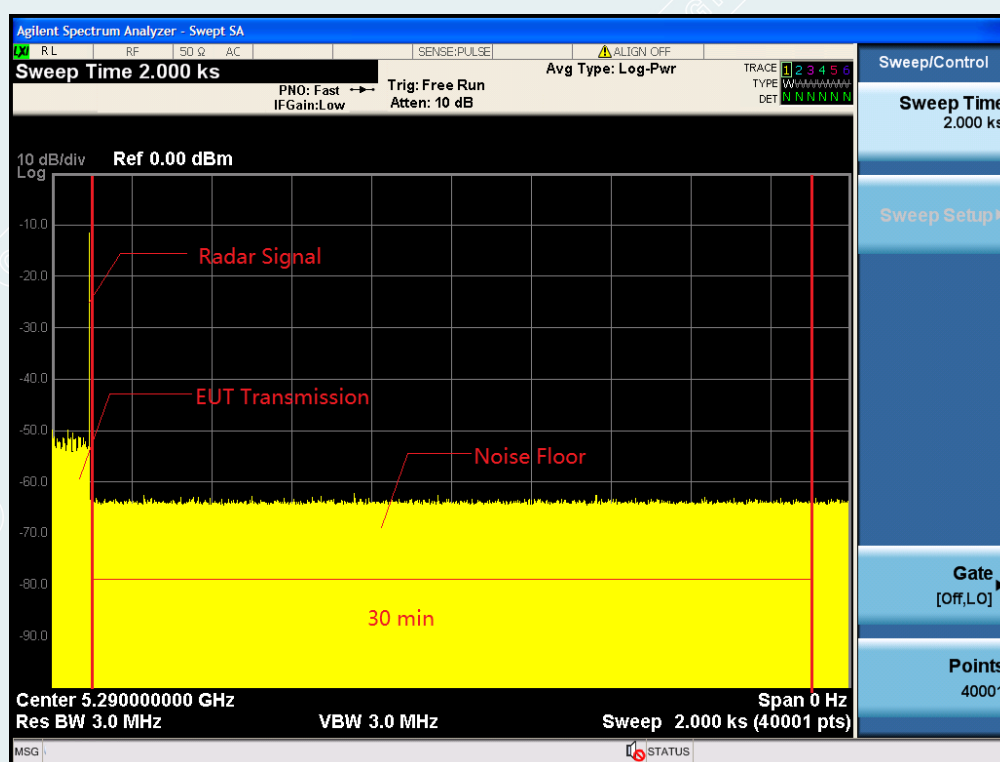
**802.11ac VHT80 Mode:**  
**5290MHz**

## Time Index Info

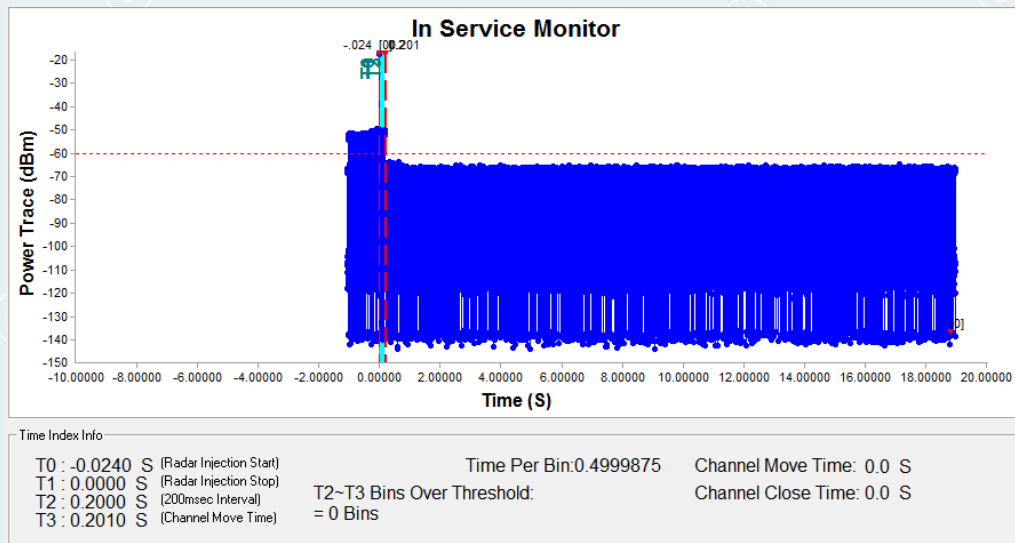
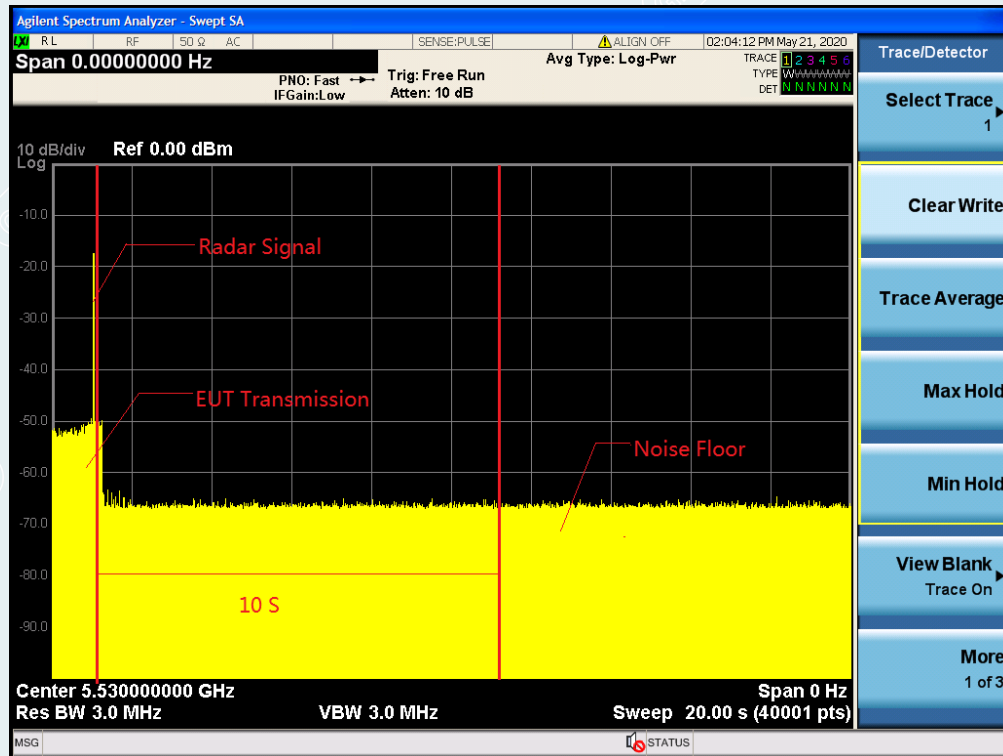
T0 : -0.0240 S (Radar Injection Start)  
T1 : 0.0000 S (Radar Injection Stop)  
T2 : 0.2000 S (200msec Interval)  
T3 : 0.7220 S (Channel Move Time)

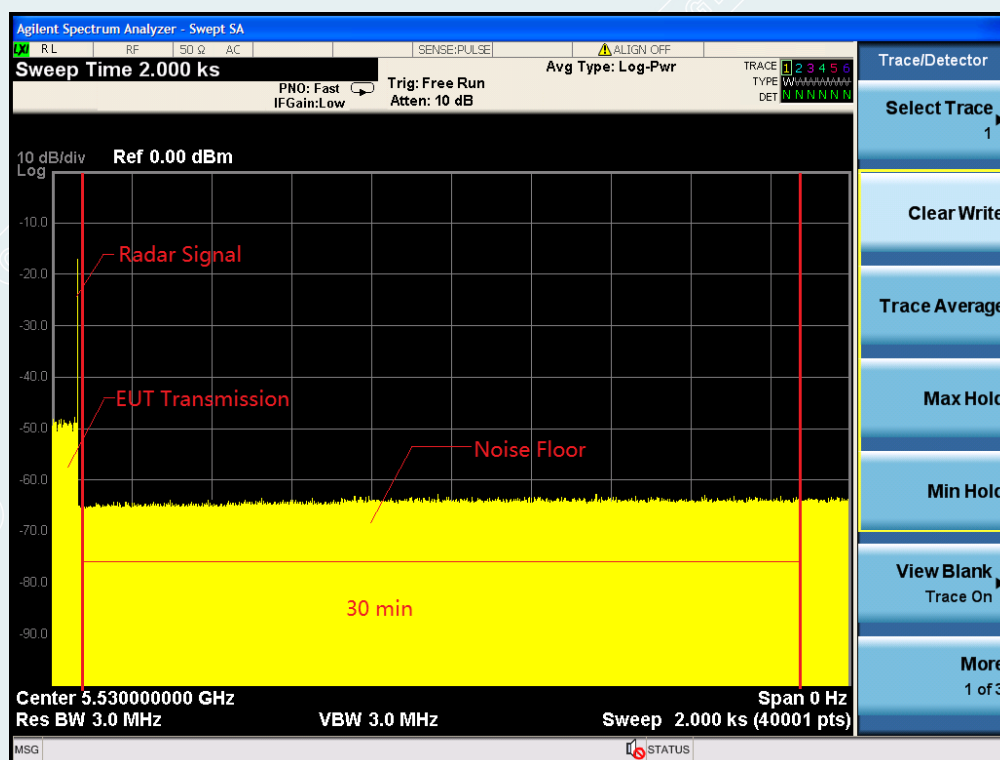
Time Per Bin: 0.4999875  
T2~T3 Bins Over Threshold:  
= 6 Bins

Channel Move Time: 0.721982 S  
Channel Close Time: 0.0029999 S



5700MHz





**TEST RESULTS:** The unit does meet the requirements.



## **4.4 UNIFORM SPREADING**

### **4.4.1 DEFINITION**

The Uniform Spreading is a mechanism to be used by the RLAN to provide, on aggregate, a uniform loading of the spectrum across all devices. The Uniform Spreading is limited to the channels being declared as part of the channel plan.

The required spreading may be achieved by various means. These means include network management functions controlling large numbers of RLAN devices as well as the channel selection function in an individual

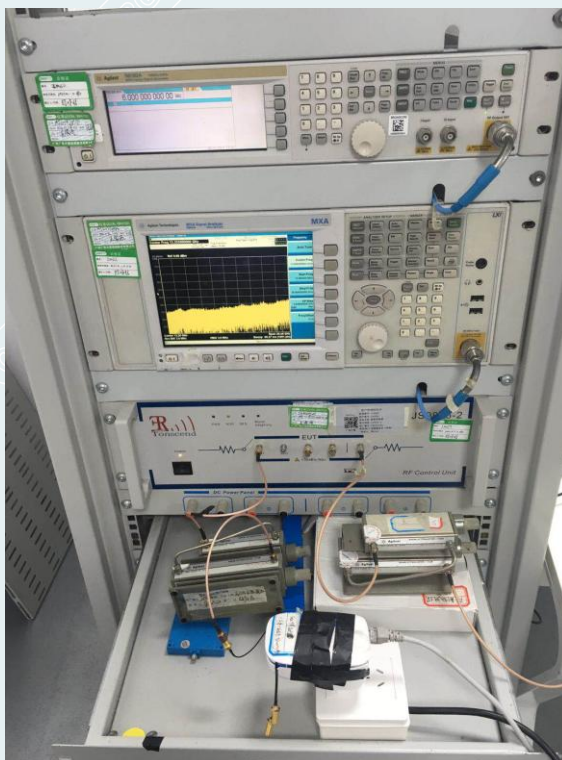
### **4.4.2 LIMIT**

Each of the declared channel plans (combination of centre frequencies and declared nominal bandwidths) shall make use of at least 60 % of the spectrum available in the applicable sub-band(s). Each of the Usable Channels shall be used with approximately equal probability. RLAN equipment for which the declared channel plan includes channels whose nominal bandwidth falls completely or partly within the band 5 600 MHz to 5 650 MHz may omit these channels from the list of Usable Channels at initial power up or at initial installation.

### **4.4.3 TEST RESULTS**

**The Client declared that the unit does meet the requirements. The declared channel plan(see clause 2.3) meet at least 60% of the spectrum available in the 5150MHz to 5350MHz and 5470MHz to 5725MHz, and each of the usable channels used with approximately equal probability.**

## APPENDIX A: PHOTOGRAPH OF THE TEST ARRANGEMENT



-----This is the last page of the report. -----