

## DFS TEST REPORT

### Part 15 Subpart E 15.407 & RSS-247 (Issue 2)

**Equipment under test** IIRCADE GAME CONSOLE BARTOP

**Model name** IRORO2-128C19

**FCC ID** 2AXRR-IRORO2

**IC ID** 26813-IRORO2

**Applicant** IIRCADE, INC.

**Manufacturer** IIRCADE, INC.

**Date of test(s)** 2022.05.23 ~ 2022.06.17

**Date of issue** 2022.06.22

**Issued to**  
**IIRCADE, INC.**

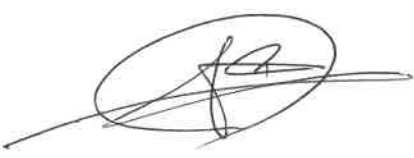
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Report No.:

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**Revision history**

| Revision | Date of issue | Test report No. | Description |
|----------|---------------|-----------------|-------------|
| -        | 2022.06.22    | KES-RF1-22T0072 | Initial     |

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**1. General information**

Applicant: IIRCADE, INC.  
Applicant address: No.A-627, 338 GwanggyoJungang-Ro, Suji-Gu, Yongin-Si, Gyeonggi-Do,16942  
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Test Facility: FCC Accreditation Designation No.: KR0100, Registration No.: 444148  
ISED Registration No.: 23298  
FCC,IC rule part(s): FCC : 15.247 / IC : RSS-247  
FCC ID: 2AXRR-IRORO2  
IC ID: 26813-IRORO2  
Test device serial No.: ☒ Production ☐ Pre-production ☐ Engineering

**1.1. EUT description**

Equipment under test: iiRCADE GAME CONSOLE BARTOP  
Frequency range: **2 402 MHz ~ 2 480 MHz (BDR/EDR)**  
2 402 MHz ~ 2 480 MHz (LE 1Mbps)  
2 412 MHz ~ 2 462 MHz (11b/g/n\_HT20)  
2 422 MHz ~ 2 452 MHz (11n\_HT40)  
**UNII-1** 5 180 MHz ~ 5 240 MHz (11a/an\_VHT20/ac\_VHT20)  
5 190 MHz ~ 5 230 MHz (11an\_VHT40/ac\_VHT40)  
5 210 MHz (11ac\_VHT80)  
**UNII-2A** 5 260 MHz ~ 5 320 MHz (11a/an\_VHT20/ac\_VHT20)  
5 270 MHz ~ 5 310 MHz (11an\_VHT40/ac\_VHT40)  
5 290 MHz (11ac\_VHT80)  
**UNII-2C** 5 500 MHz ~ 5 720 MHz (11a/an\_VHT20/ac\_VHT20)  
5 530 MHz ~ 5 710 MHz (11an\_VHT40/ac\_VHT40)  
5 530 MHz ~ 5 690 MHz (11ac\_VHT80)  
**UNII-3** 5 745 MHz ~ 5 825 MHz (11a/an\_VHT20/ac\_VHT20)  
5 755 MHz ~ 5 795 MHz (11an\_VHT40/ac\_VHT40)  
5 775 MHz (11ac\_VHT80)  
Model: IRORO2-128C19  
Modulation technique: **GFSK,  $\pi$ /4DQPSK, 8DPSK, CCK, DQPSK, DBPSK, OFDM, QPSK, BPSK 16QAM, 64QAM, 256QAM**

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|                       |                                                                                   |
|-----------------------|-----------------------------------------------------------------------------------|
| Number of channels    | 2 402 MHz ~ 2 480 MHz (BDR/EDR) : 79ch                                            |
|                       | 2 402 MHz ~ 2 480 MHz (LE 1Mbps) : 40ch                                           |
|                       | 2 412 MHz ~ 2 462 MHz (11b/g/n_HT20) : 11ch                                       |
|                       | 2 422 MHz ~ 2 452 MHz (11n_HT40) : 7ch                                            |
| UNII-1                | 5 180 MHz ~ 5 240 MHz (11a/an_VHT20/ac_VHT20) : 4ch                               |
|                       | 5 190 MHz ~ 5 230 MHz (11an_VHT40/ac_VHT40) : 2ch                                 |
|                       | 5 210 MHz (11ac_VHT80) : 1ch                                                      |
| UNII-2A               | 5 260 MHz ~ 5 320 MHz (11a/an_VHT20/ac_VHT20) : 4ch                               |
|                       | 5 270 MHz ~ 5 310 MHz (11an_VHT40/ac_VHT40) : 2ch                                 |
|                       | 5 290 MHz (11ac_VHT80) : 1ch                                                      |
| UNII-2C               | 5 500 MHz ~ 5 720 MHz (11a/an_VHT20/ac_VHT20) : 12ch                              |
|                       | 5 530 MHz ~ 5 710 MHz (11an_VHT40/ac_VHT40) : 6ch                                 |
|                       | 5 530 MHz ~ 5 690 MHz (11ac_VHT80) : 3ch                                          |
| UNII-3                | 5 745 MHz ~ 5 825 MHz (11a/an_VHT20/ac_VHT20) : 5ch                               |
|                       | 5 755 MHz ~ 5 795 MHz (11an_VHT40/ac_VHT40) : 2ch                                 |
|                       | 5 775 MHz (11ac_VHT80) : 1ch                                                      |
| Antenna specification | PCB Antenna                                                                       |
|                       | BT / LE / 2.4G WiFi : -0.58 dBi                                                   |
|                       | UNII-1 : 0.50 dBi / UNII-2A : 0.06 dBi / UNII-2C : -1.43 dBi / UNII-3 : -2.35 dBi |
| Power source          | DC 24 V                                                                           |
| H/W version           | 1.5                                                                               |
| S/W version           | 9.008.002                                                                         |

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## 1.2. Test configuration

The IIRCADE, INC.// iIRCADE GAEM CONSOLE BARTOP // IRORO2-128C19 //

FCC ID: 2AXRR-IRORO2 // IC ID: 26813-IRORO2 was tested according to the specification of EUT, the EUT must comply with following standards and KDB documents.

FCC Part 15.247  
ISED RSS-247 Issue 2 and RSS-Gen Issue 5  
KDB 558074 D01 v05 r02  
ANSI C63.10-2013

## 1.3. Information about derivative model

N/A

## 1.4. Accessory information

| Equipment | Manufacturer | Model | Serial No. | Power source |
|-----------|--------------|-------|------------|--------------|
| -         | -            | -     | -          | -            |

## 1.5. Sample calculation

Where relevant, the following sample calculation is provided  
For all conducted test items :

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 0.72 + 10 = 10.72 \text{ (dB)}\end{aligned}$$

For Radiation test :

$$\text{Field strength level (dB}\mu\text{V/m)} = \text{Measured level (dB}\mu\text{V)} + \text{Antenna factor (dB)} + \text{Cable loss (dB)} - \text{Amplifier gain (dB)}$$

## 1.6. Measurement Uncertainty

| Test Item                                                                                                                                     |            | Uncertainty |
|-----------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------|
| Uncertainty for Conduction emission test                                                                                                      |            | 2.46 dB     |
| Uncertainty for Radiation emission test<br>(include Fundamental emission)                                                                     | Below 1GHz | 4.40 dB     |
|                                                                                                                                               | Above 1GHz | 5.94 dB     |
| Note. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2. |            |             |

## 1.7. Frequency/channel operations

| Ch. | Frequency (MHz) | Mode                                     |
|-----|-----------------|------------------------------------------|
| 00  | 2 402           | BDR 1 Mbps,<br>EDR 2 Mbps,<br>EDR 3 Mbps |
| .   | .               | .                                        |
| 40  | 2 442           | BDR 1 Mbps,<br>EDR 2 Mbps,<br>EDR 3 Mbps |
| .   | .               | .                                        |
| 78  | 2 480           | BDR 1 Mbps,<br>EDR 2 Mbps,<br>EDR 3 Mbps |

| Ch. | Frequency (MHz) | Mode       |
|-----|-----------------|------------|
| 00  | 2 402           | BLE 1 Mbps |
| .   | .               | .          |
| 20  | 2 442           | BLE 1 Mbps |
| .   | .               | .          |
| 39  | 2 480           | BLE 1 Mbps |

| Ch. | Frequency (MHz) | Mode             |
|-----|-----------------|------------------|
| 1   | 2 412           | 802.11b/g/n_HT20 |
| .   | .               | .                |
| 6   | 2 437           | 802.11b/g/n_HT20 |
| .   | .               | .                |
| 11  | 2 462           | 802.11b/g/n_HT20 |

| Ch. | Frequency (MHz) | Mode         |
|-----|-----------------|--------------|
| 3   | 2 422           | 802.11n_HT40 |
| .   | .               | .            |
| 6   | 2 437           | 802.11n_HT40 |
| .   | .               | .            |
| 9   | 2 452           | 802.11n_HT40 |

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### UNII-1

| Ch. | Frequency (MHz) |
|-----|-----------------|
| 36  | 5 180           |
| 44  | 5 220           |
| 48  | 5 240           |

### UNII-2A

| Ch. | Frequency (MHz) |
|-----|-----------------|
| 52  | 5 260           |
| 56  | 5 280           |
| 64  | 5 320           |

### UNII-2C

| Ch. | Frequency (MHz) |
|-----|-----------------|
| 100 | 5 500           |
| 120 | 5 620           |
| 144 | 5 700           |

### UNII-3

| Ch. | Frequency (MHz) |
|-----|-----------------|
| 149 | 5 745           |
| 157 | 5 785           |
| 165 | 5 825           |

### 802.11a/an\_VHT20/ac\_VHT20 mode

### UNII-1

| Ch. | Frequency (MHz) |
|-----|-----------------|
| 38  | 5 190           |
| 46  | 5 230           |

### UNII-2A

| Ch. | Frequency (MHz) |
|-----|-----------------|
| 54  | 5 270           |
| 62  | 5 310           |

### UNII-2C

| Ch. | Frequency (MHz) |
|-----|-----------------|
| 102 | 5 510           |
| 118 | 5 590           |
| 142 | 5 710           |

### UNII-3

| Ch. | Frequency (MHz) |
|-----|-----------------|
| 151 | 5 755           |
| 159 | 5 795           |

### 802.11an\_VHT20/ac\_VHT40 mode

### UNII-1

| Ch. | Frequency (MHz) |
|-----|-----------------|
| 42  | 5 210           |

### UNII-2A

| Ch. | Frequency (MHz) |
|-----|-----------------|
| 58  | 5 290           |

### UNII-2C

| Ch. | Frequency (MHz) |
|-----|-----------------|
| 106 | 5 530           |
| 122 | 5 610           |
| 138 | 5 690           |

### UNII-3

| Ch. | Frequency (MHz) |
|-----|-----------------|
| 155 | 5 775           |

### 802.11ac\_VHT80 mode

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**2. Summary of tests**

| Reference          | Parameter                         | Test results |
|--------------------|-----------------------------------|--------------|
| 15.407(h)(iii)(iv) | Channel Move Time                 | Pass         |
|                    | Channel Closing Transmission Time | Pass         |
|                    | Non-Occupancy Period              | Pass         |

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### 3. DFS (Dynamic Frequency Selection) test description

#### 3.1. Applicability

The following table from KDB 905462 D02 v02 lists the applicable requirements for the DFS testing.  
The device evaluated in this report is considered a client device without radar detection capability.

| Requirement                     | Operational Mode |                                |                             |
|---------------------------------|------------------|--------------------------------|-----------------------------|
|                                 | Master           | Client Without Radar Detection | Client With Radar Detection |
| Non-Occupancy Period            | Yes              | Not required                   | Yes                         |
| DFS Detection Threshold         | Yes              | Not required                   | Yes                         |
| Channel Availability Check Time | Yes              | Not required                   | Not required                |
| U-NII Detection Bandwidth       | Yes              | Not required                   | Yes                         |

Table 2.1. DFS Applicability

| Requirement                       | Operational Mode                             |                                |
|-----------------------------------|----------------------------------------------|--------------------------------|
|                                   | Master Device or Client with Radar Detection | Client Without Radar Detection |
| DFS Detection Threshold           | Yes                                          | Not required                   |
| Channel Closing Transmission Time | Yes                                          | Yes                            |
| Channel Move Time                 | Yes                                          | Yes                            |
| U-NII Detection Bandwidth         | Yes                                          | Not required                   |
| Non-Occupancy Period              | NA/Yes                                       | Yes                            |

| Additional requirements for devices with multiple                                                                                                                                                                                                                                                                                                            | 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                                         |
| <b>Note:</b> 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. |                                              |                                                      |

Table 2.2. DFS Applicability During normal operation

### 3.2. Requirements

KDB 905462 D02 v02 the following are the requirements for Client Devices:

- a) A Client Device will not transmit before having received appropriate control signals from a Master Device.
- b) A Client Device will stop all its transmissions whenever instructed by a Master Device to which it is associated and will meet the Channel Move Time and Channel Closing Transmission Time requirements. The Client Device will not resume any transmissions until it has again received control signals from a Master Device.
- c) If a Client Device is performing In-Service Monitoring and detects a Radar Waveform above the DFS Detection Threshold, it will inform the Master Device. This is equivalent to the Master Device detecting the Radar Waveform and d) through f) of section 5.1.1 apply.
- d) Irrespective of Client Device or Master Device detection the Channel Move Time and Channel Closing Transmission Time requirements remain the same.
- e) The client test frequency must be monitored to ensure no transmission of any type has occurred for 30 minutes. Note: If the client moves with the master, the device is considered compliant if nothing appears in the client non-occupancy period test. For devices that shutdown (rather than moving channels), no beacons should appear

| Parameter                         | Value                                                                                                           |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Non-occupancy period              | Minimum 30 minutes                                                                                              |
| Channel Availability Check Time   | 60 seconds                                                                                                      |
| Channel Move Time                 | 10 seconds<br>See Note 1.                                                                                       |
| Channel Closing Transmission Time | 200 milliseconds + an<br>Aggregate of 60 milliseconds over remaining 10<br>second period.<br>See Notes 1 and 2. |
| U-NII Detection Bandwidth         | Minimum 100% of the U-NII 99% transmission<br>power bandwidth. See Note3.                                       |

**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 a Channel move (and 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 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

Table 2.3. DFS Response Requirement Values

### 3.3. DFS Detection Thresholds

The DFS detection thresholds are defined for Master devices and Client Devices with In-service monitoring. These detection Thresholds are listed in the following table.

| Maximum Transmit Power                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Value<br>(See Notes 1, 2, and 3) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| EIRP $\geq$ 200 milliwatt                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | -64 dBm                          |
| EIRP < 200 milliwatt and<br>Power spectral density < 10 dBm/MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | -62 dBm                          |
| EIRP < 200 milliwatt that do not meet the power spectral<br>density requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                            | -64 dBm                          |
| <p><b>Note 1:</b> This is the level at the input of the receiver assuming a 0 dBi receive antenna.</p> <p><b>Note 2:</b> 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 respons.</p> <p><b>Note 3:</b> EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01</p> |                                  |

Table 2.4. DFS Detection Thresholds for Master Devices and Client Devices With Radar Detection

### 3.4. Parameters of DFS Test Signals

As the EUT is a Client Device with no Radar Detection only Zero type radar pulse is required for the testing. Radar Pulse type 0 was used in the evaluation of the Client device for the purpose of measuring the channel Move Time and the Channel Closing Transmission Time.

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

Table 2.5. Short Pulse Radar Test Waveforms

| Radar Type | Pulse Width (μsec) | Chirp Width (MHz) | PRI (μsec) | 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             |

Table 2.6. Short Pulse Radar Test Waveforms

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

Table 2.7. Frequency Hopping Radar Test Waveform

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## 4. Test results

### 4.1. DFS (Dynamic Frequency Selection)

#### Test setup

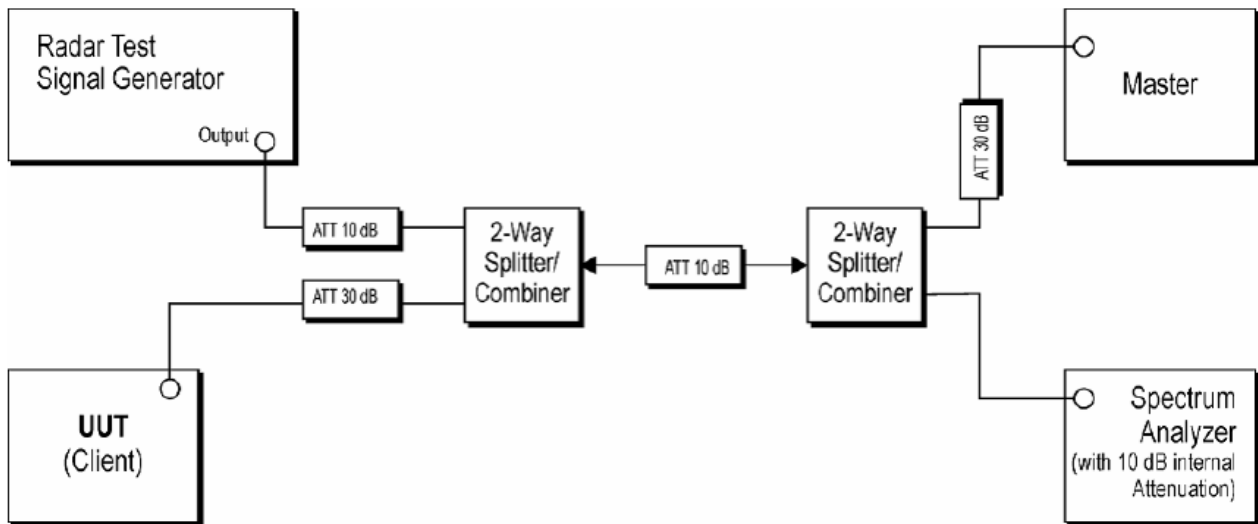


Figure 1: Conducted Test Setup for DFS

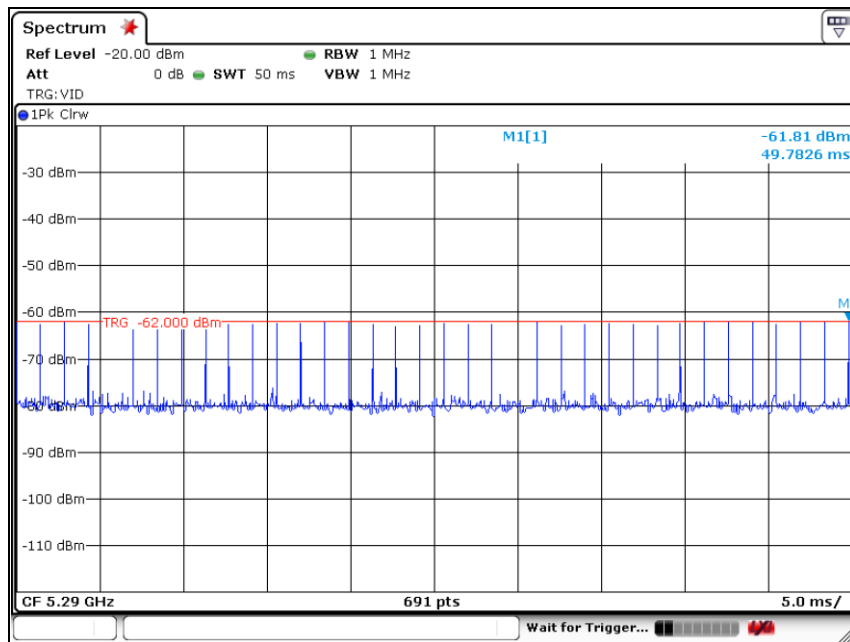
#### Test procedure

KDB 905462 D02 v02 describes a radiated test setup and a conducted test setup. The conducted test setup was used for this testing. Figure 1 shows the typical test setup.

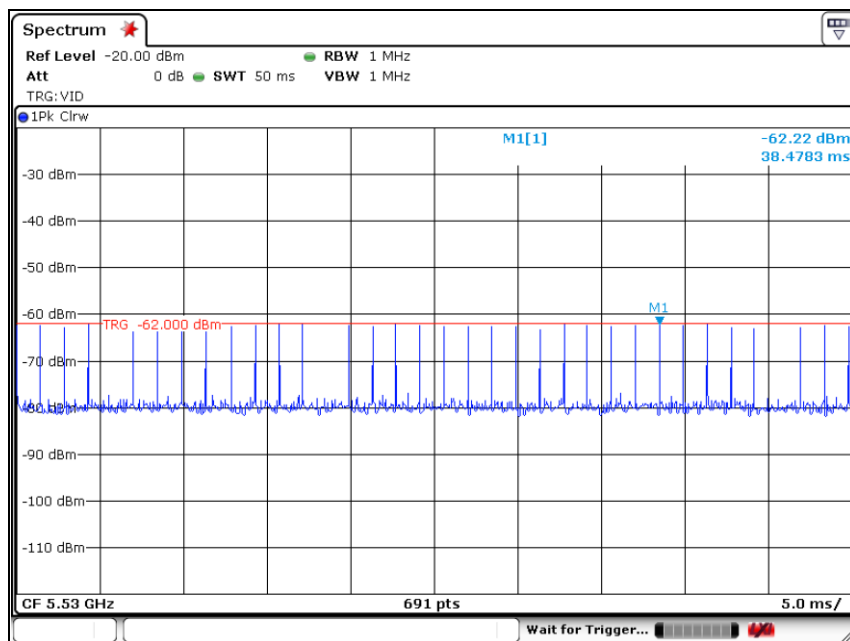
1. One frequency will be chosen from the Operating Channels of the UUT within the 5250 ~5350 MHz or 5470 ~5725 MHz bands.
2. The Client Device (EUT) is setup per the diagram in Figure 1 and communications between the Master device and the Client is established.
3. An MPEG or data file that is typical for the device is streamed from the Master to the Client to properly load the network.

#### 4.1.1 Radar waveform

Mode: 802.11ac\_VHT80 (Band2A)  
Operating frequency: 5 290 MHz



Mode: 802.11ac\_VHT80 (Band2C)  
Operating frequency: 5 530 MHz

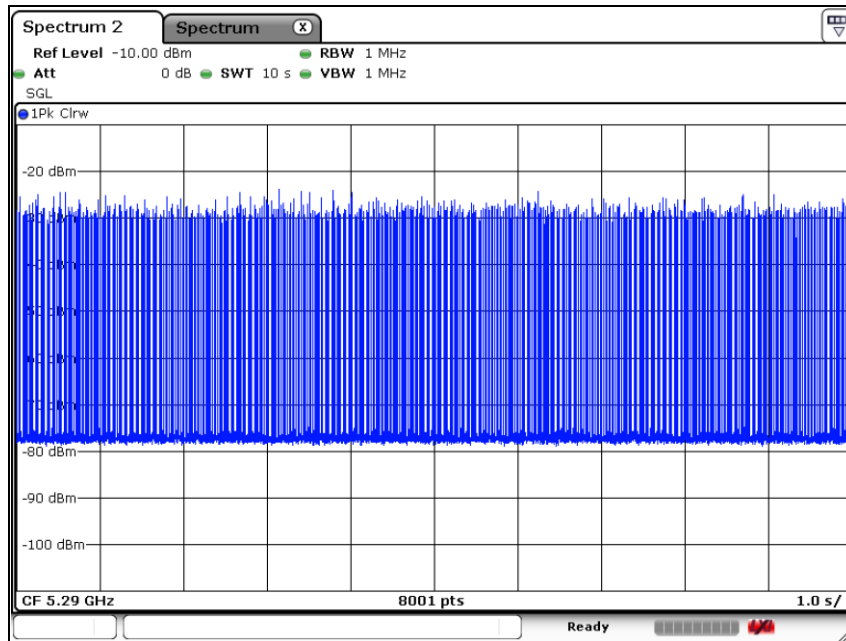


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## 4.1.2 LAN Traffic

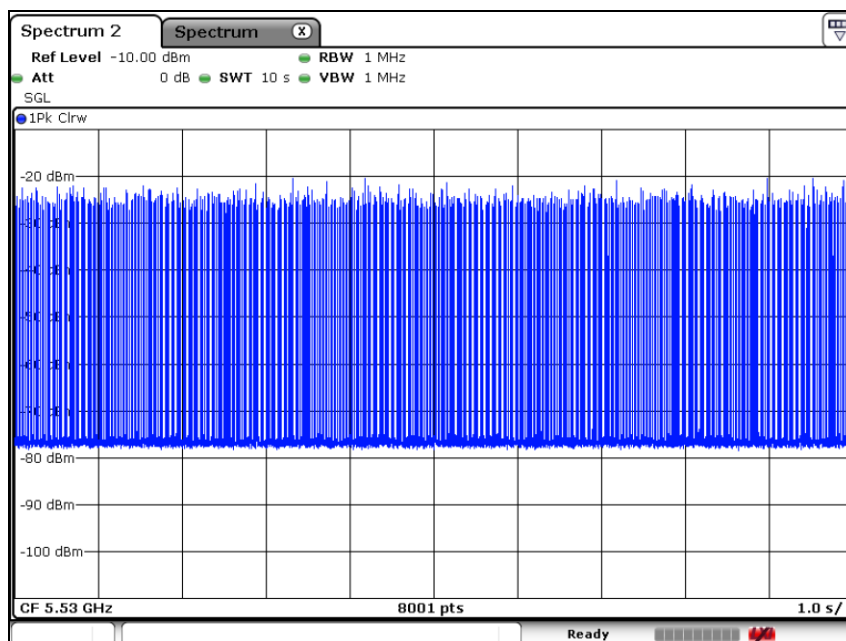
Mode: 802.11ac\_VHT80 (Band2A)

Operating frequency: 5 290 MHz



Mode: 802.11ac\_VHT80 (Band2C)

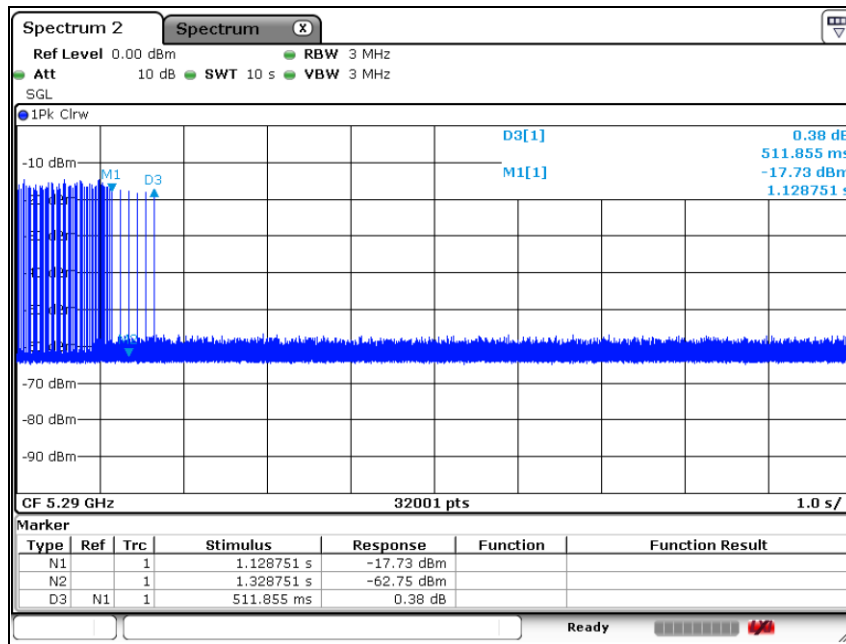
Operating frequency: 5 530 MHz



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#### 4.1.3 Channel move time & aggregate channel closing transmission time

Mode: 802.11ac\_VHT80 (Band2A)  
 Operating frequency: 5 290 MHz



| Channel closing transmission time calculated | Test results |
|----------------------------------------------|--------------|
| Sweep time[S] sec                            | 10           |
| Sampling bins[B]                             | 32001        |
| Number of sampling bins in 10 sec[N]         | 1            |
| Closing transmission time [C] ms             | 0.312        |

| Channel move time (s) | Limit  |
|-----------------------|--------|
| 0.512                 | ≤ 10 s |

Note:

**Dwell = S/B;**

Where **dwel** is the dwell time per spectrum analyzer sampling bin, **S** is the sweep time and **B** is the number of spectrum analyzer sampling bins.

An upper bound of the aggregate duration of the channel closing transmission time is calculated by:

**C = N × Dwell;**

Where **C** is the closing time, **N** is the number of spectrum analyzer sampling bins showing a U-NII transmission and dwell is the dwell time per bin.

**Dwell = [S] / [B] = 10 / 32001 = 0.000312**

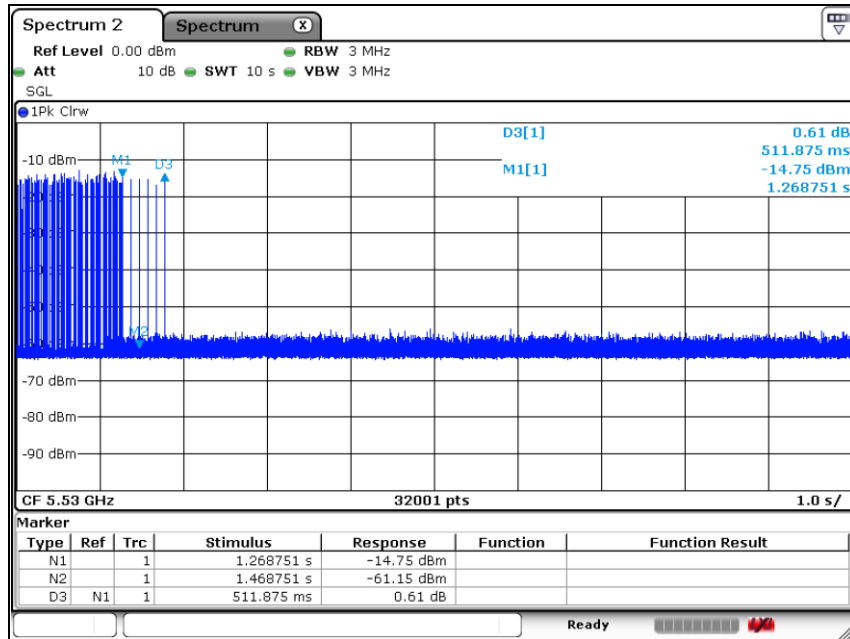
**Closing Transmission Time[C] = [N] × [Dwell] = 1 × 0.000312 = 0.000312 s = 0.312 ms**

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Mode: 802.11ac\_VHT80 (Band2C)  
Operating frequency: 5 530 MHz



| Channel closing transmission time calculated | Test results |
|----------------------------------------------|--------------|
| Sweep time[S] sec                            | 10           |
| Sampling bins[B]                             | 32001        |
| Number of sampling bins in 10 sec[N]         | 1            |
| Closing transmission time [C] ms             | 0.312        |

| Channel move time (s) | Limit  |
|-----------------------|--------|
| 0.512                 | ≤ 10 s |

Note:

**Dwell = S/B;**

Where **dwel** is the dwell time per spectrum analyzer sampling bin, **S** is the sweep time and **B** is the number of spectrum analyzer sampling bins.

An upper bound of the aggregate duration of the channel closing transmission time is calculated by:

**C = N × Dwell;**

Where **C** is the closing time, **N** is the number of spectrum analyzer sampling bins showing a U-NII transmission and dwell is the dwell time per bin.

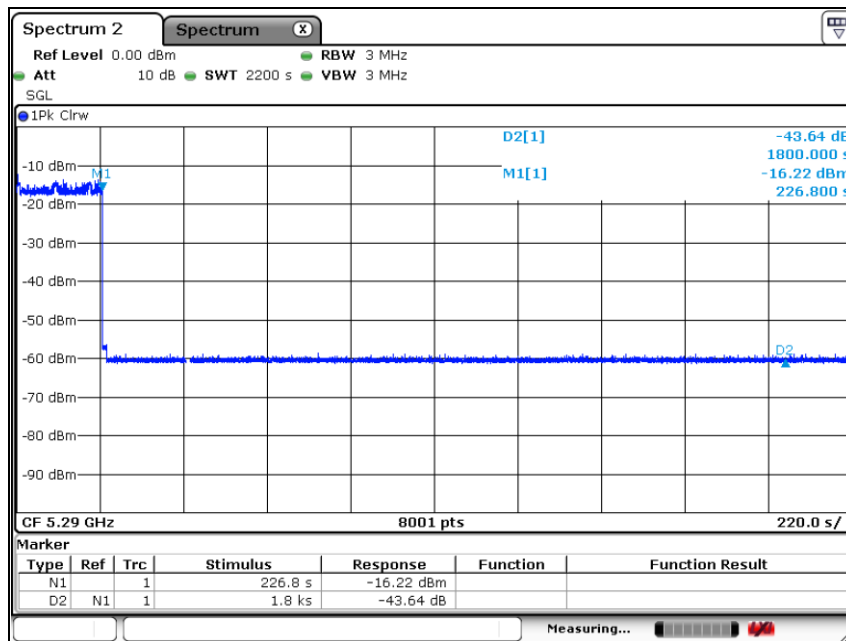
**Dwell = [S] / [B] = 10 / 32001 = 0.000312**

**Closing Transmission Time[C] = [N] × [Dwell] = 1 × 0.000312 = 0.000312 s = 0.312 ms**

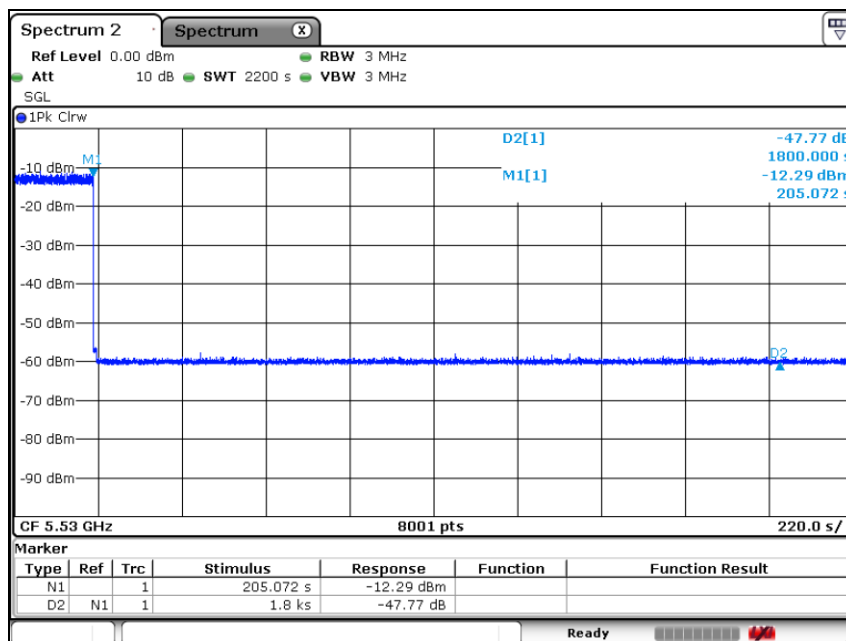
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#### 4.1.4 Non-occupancy period

Mode: 802.11ac\_VHT80 (Band2A)  
Operating frequency: 5 290 MHz



Mode: 802.11ac\_VHT80 (Band2C)  
Operating frequency: 5 530 MHz



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**Appendix A. Measurement equipment**

| Equipment                   | Manufacturer  | Model           | Serial No.   | Calibration interval | Calibration due. |
|-----------------------------|---------------|-----------------|--------------|----------------------|------------------|
| Spectrum Analyzer           | R&S           | FSV3044         | 101272       | 1 year               | 2023.03.14       |
| MXG Vector SIGNAL GENERATOR | AGILENT       | N5182A          | MY50143829   | 1 year               | 2023.01.14       |
| Attenuator                  | HP            | 30dB ATTENUATOR | 3318A05137   | 1 year               | 2023.01.14       |
| Attenuator                  | SRT           | F04-H930-01     | 17041002     | 1 year               | 2023.01.14       |
| Attenuator                  | Mini-Circuits | BW-S10-2W263+   | 2            | 1 year               | 2023.01.17       |
| Attenuator                  | Mini-Circuits | BW-S10-2W263+   | 3            | 1 year               | 2023.01.17       |
| Splitter                    | MINI-CIRCUITS | ZFSC-2-10G+     | FG63701930-1 | 1 year               | 2023.06.16       |
| Splitter                    | MINI-CIRCUITS | ZFSC-2-10G+     | FG63701930-2 | 1 year               | 2023.06.16       |

**Peripheral devices**

| Device                | Manufacturer         | Model No.         | Serial No.    | Note.             |
|-----------------------|----------------------|-------------------|---------------|-------------------|
| Access Point (Master) | Cisco system Inc.    | AIR-RM3000AC-A-K9 | -             | FCC ID: LDK102086 |
| Notebook computer     | LG Electronics Inc., | LGS53             | 306QCZP560949 | Notebook computer |

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