| DH5 Carrier Frequency Separation | |
|---|---|
| **Channel 00 (2402MHz)** | **Channel 39 (2441MHz)** |
|  |  |
| **Channel 78 (2480MHz)** | |
|  | |

## 2DH5 Carrier Frequency Separation
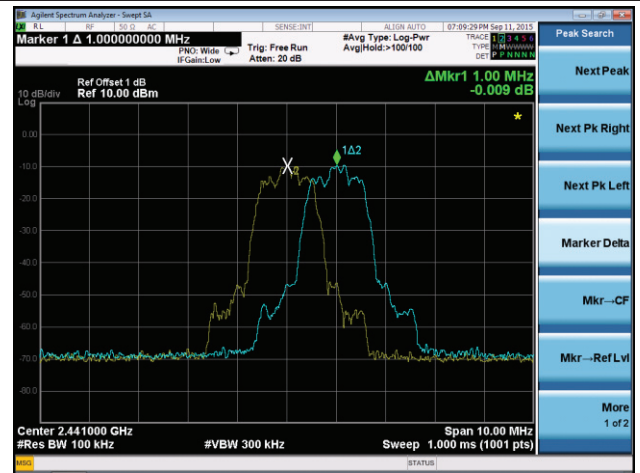
| Channel 00 (2402MHz) | Channel 39 (2441MHz) |
|---|---|
|  |  |

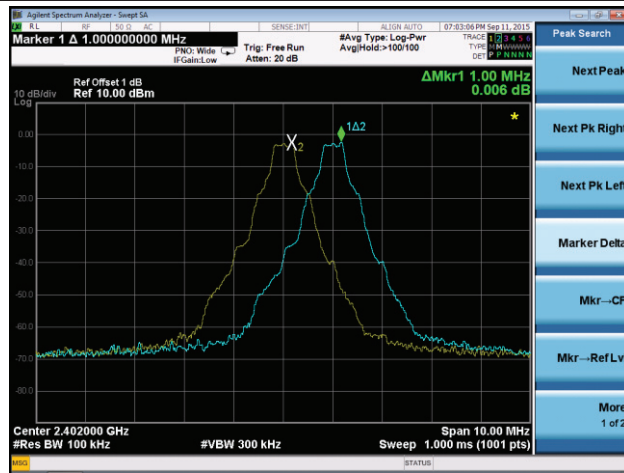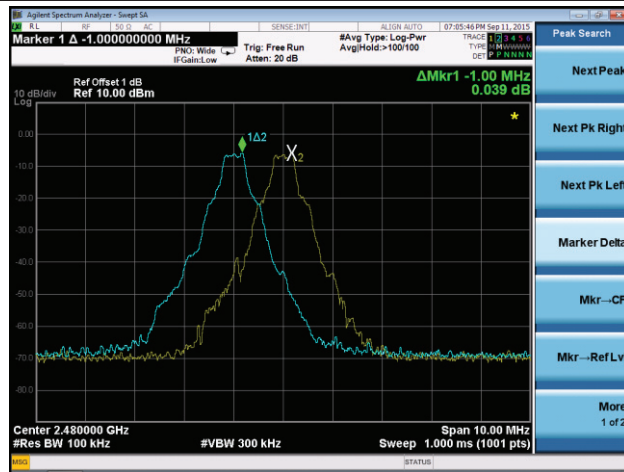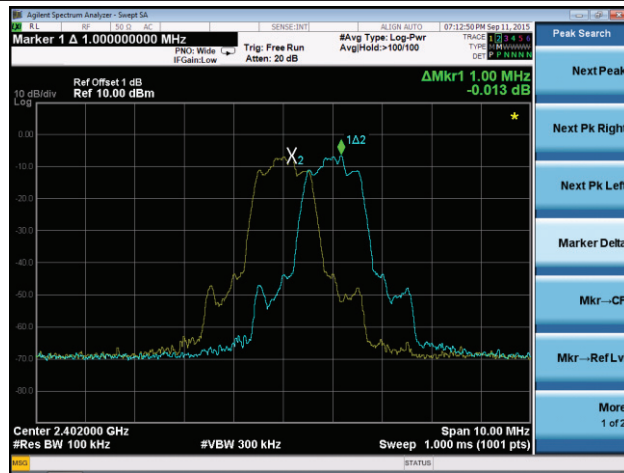| Channel 78 (2480MHz) | |
|---|---|
|  | |
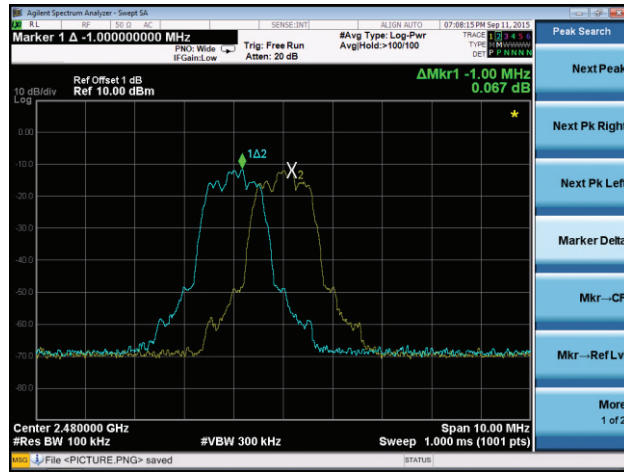
## 3DH5 Carrier Frequency Separation
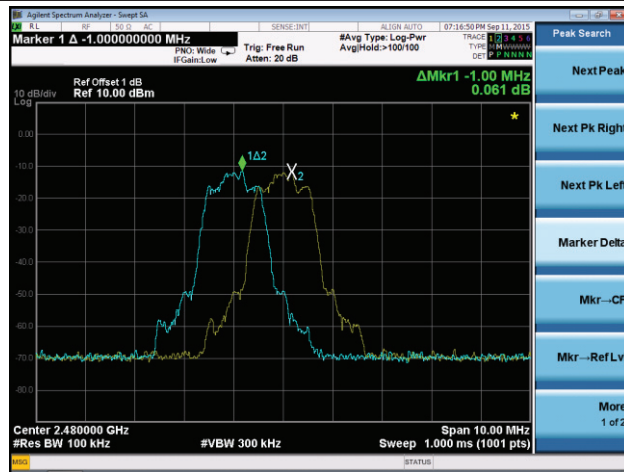
### Channel 00 (2402MHz)



### Channel 39 (2441MHz)



### Channel 78 (2480MHz)

## 7.5. Number of Hopping Channels Measurement

### 7.5.1. Test Limit

This frequency hopping system must employ a minimum of 15 hopping channels.
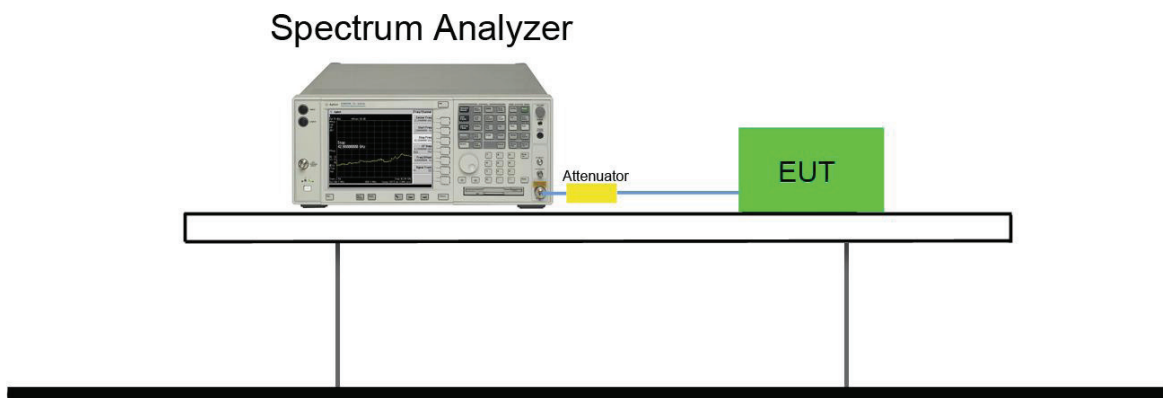
### 7.5.2. Test Procedure Used

ANSI C63.10-2013 - Section 7.8.3

### 7.5.3. Test Settitng

1. Span = the frequency band of operation.

2. RBW ≥ 1 % of the span

3. VBW ≥ RBW

4. Detector = Peak

5. Trace mode = max hold

6. Sweep time = auto couple

7. The trace was allowed to stabilize
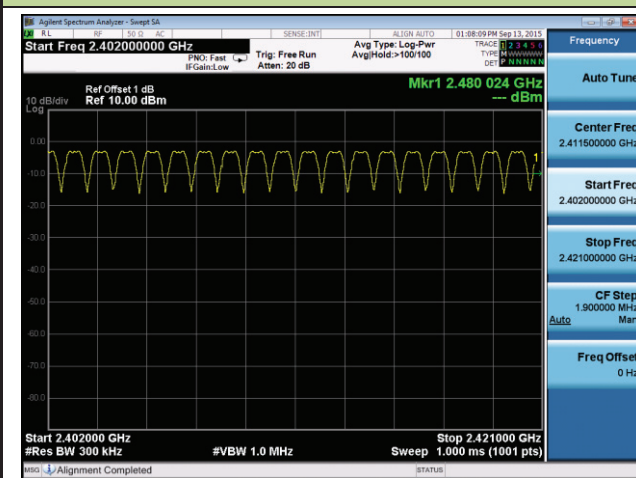
### 7.5.4. Test Setup

### 7.5.5. Test Result

| Test Mode (Hopping) | Channel Numbers | Frequency (MHz) | Limit (Hopping Channels) | Result |
|---|---|---|---|---|
| DH5 | 79 | 2402~2480 | ≥ 15 | Pass |
| 2DH5 | 79 | 2402~2480 | ≥ 15 | Pass |
| 3DH5 | 79 | 2402~2480 | ≥ 15 | Pass |

| DH5 Number of Hopping Channels | |
|---|---|
| 2402 ~ 2421MHz | 2422 ~ 2441MHz |
|  |  |
| 2442 ~ 2461MHz | 2462 ~ 2480MHz |
|  |  |
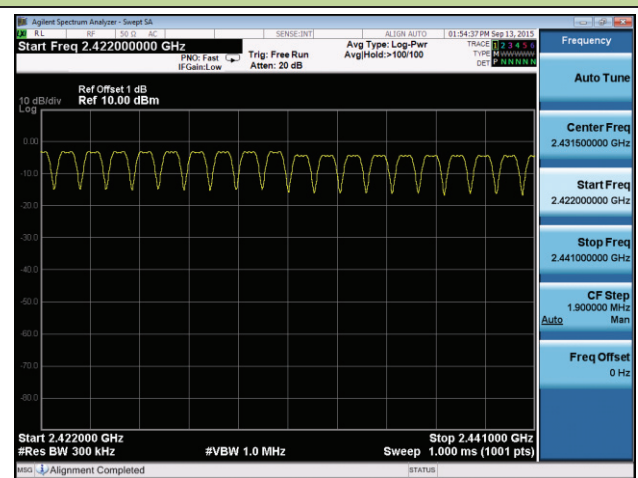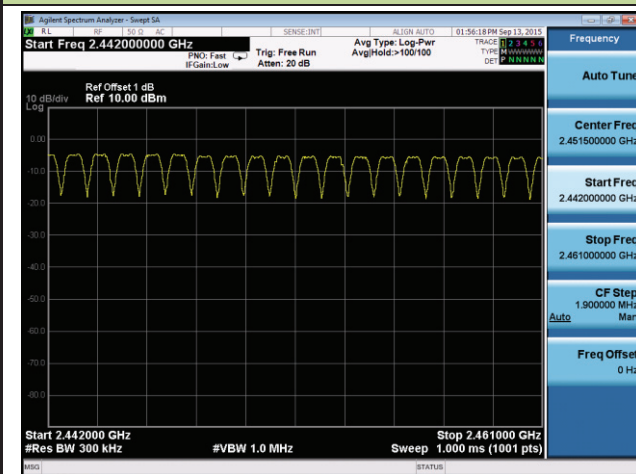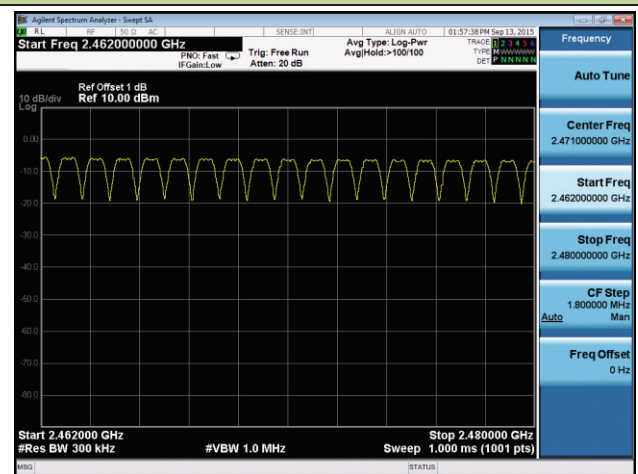
## 2DH5 Number of Hopping Channels

### 2402 ~ 2421MHz
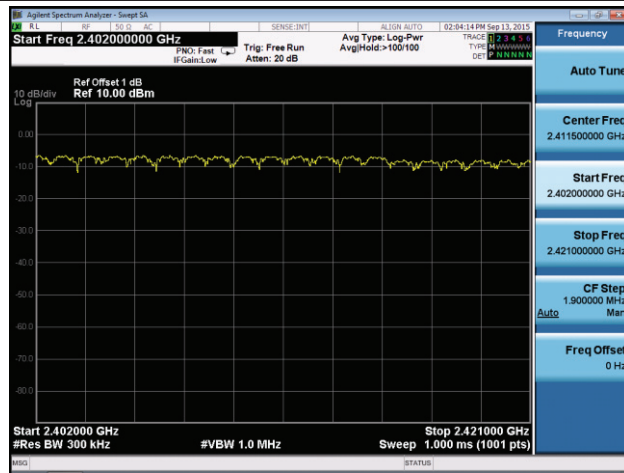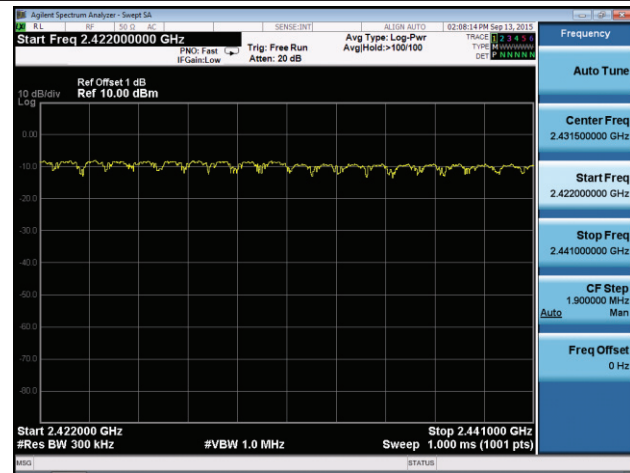


### 2422 ~ 2441MHz
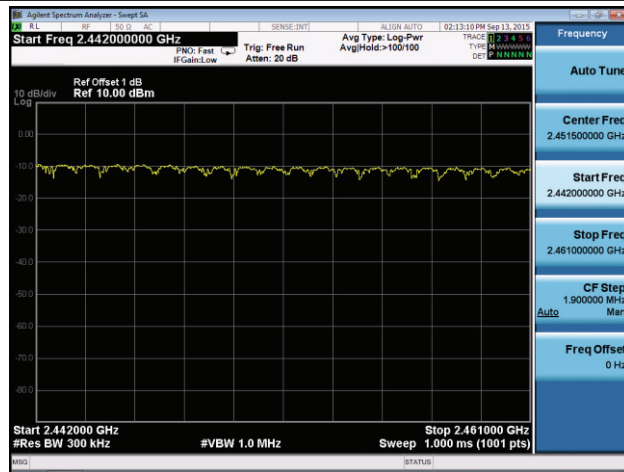


### 2442 ~ 2461MHz



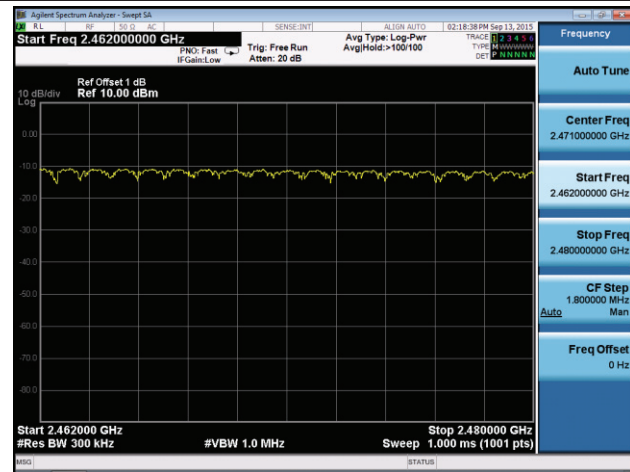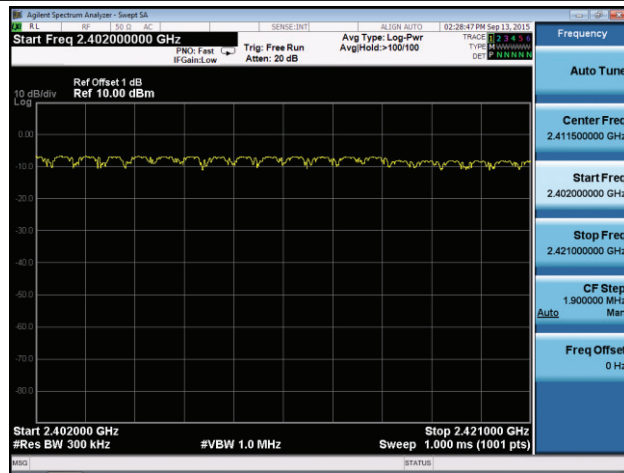### 2462 ~ 2480MHz

## 3DH5 Number of Hopping Channels
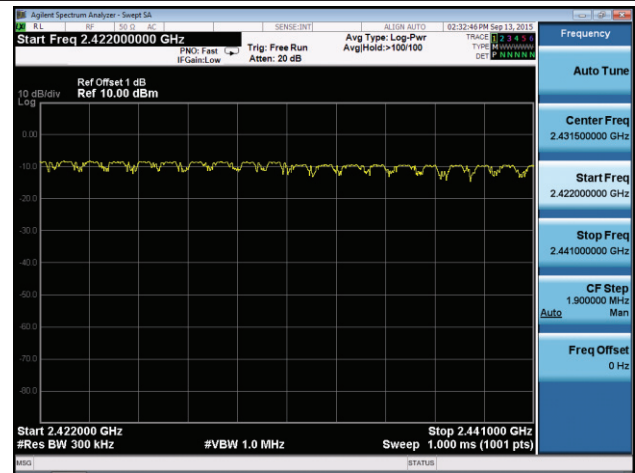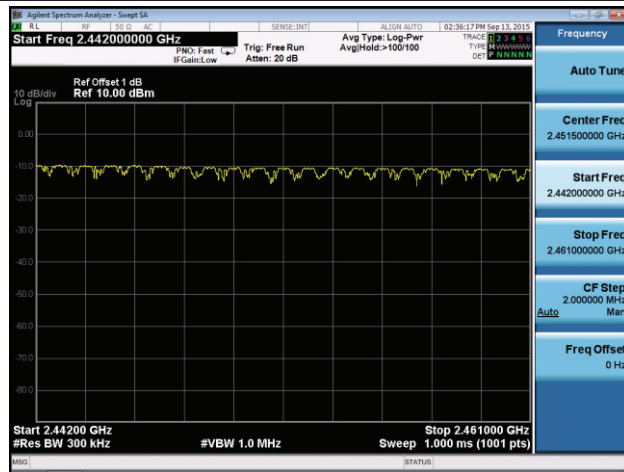
| 2402 ~ 2421MHz | 2422 ~ 2441MHz |
|---|---|
|  |  |

| 2442 ~ 2461MHz | 2462 ~ 2480MHz |
|---|---|
|  |  |
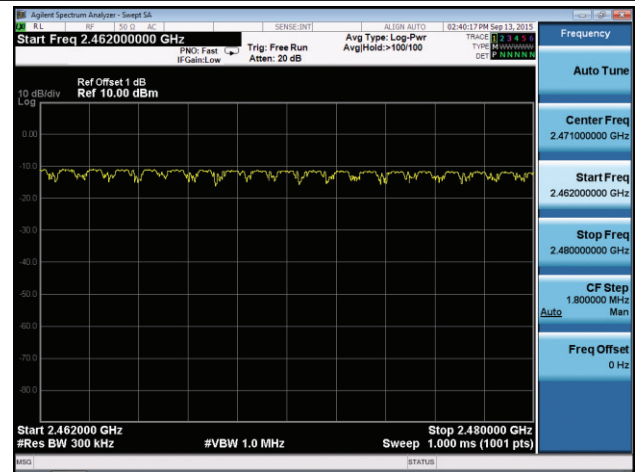
## 7.6. Time of Occupancy Measurement

### 7.6.1. Test Limit

The maximum permissible time of occupancy is 400ms within a period of 400ms multiplied by the

number of hopping channels employed.

### 7.6.2. Test Procedure Used

ANSI C63.10-2013 - Section 7.8.4

### 7.6.3. Test Settitng

1. Span = zero span, centered on a hopping channel.

2. RBW = 1MHz

3. VBW ≥ RBW

4. Sweep time = as necessary to capture the entire dwell time per hopping channel

5. Detector = Peak

6. Trace mode = max hold

If possible, use the marker-delta function to determine the dwell time. If this value varies with

different modes of operation (data rate, modulation format, etc.), repeat this test for each variation.

An oscilloscope may be used instead of a spectrum analyzer. The EUT shall show compliance

with the appropriate regulatory limit for the number of hopping channels. A plot of the data shall be

included in the test report.

### 7.6.4. Test Setup

Spectrum Analyzer
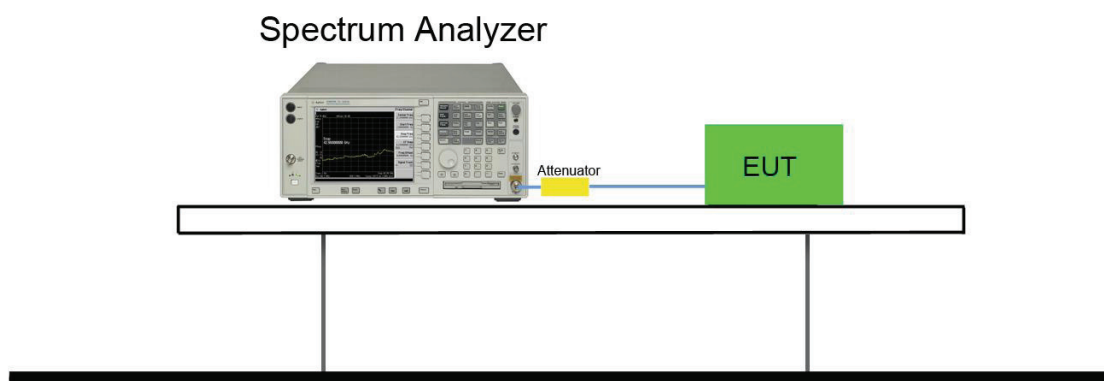
### 7.6.5. Test Result

| Test Mode | Channel No. | Frequency (MHz) | Time of Occupancy (ms) | Limit (ms) | Result |
|---|---|---|---|---|---|
| 3DH1 | 39 | 2441 | 60.80 | < 400 | Pass |
| 3DH3 | 39 | 2441 | 32.00 | < 400 | Pass |
| 3DH5 | 39 | 2441 | 21.84 | < 400 | Pass |

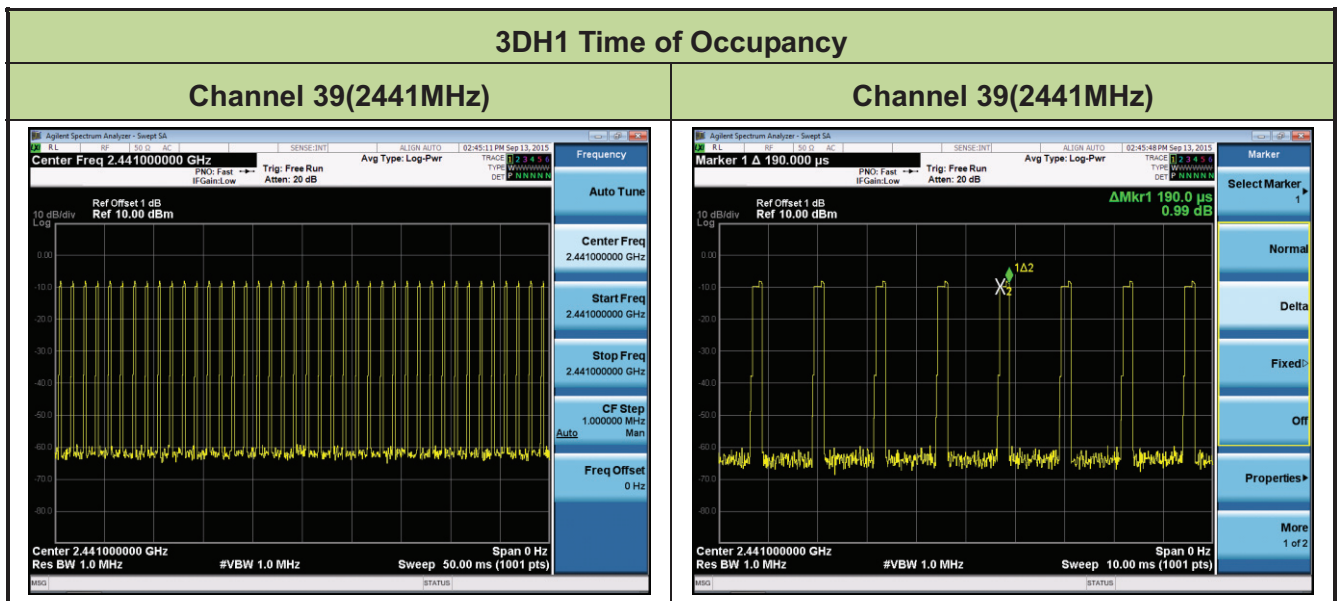| 3DH1 Time of Occupancy | |
|---|---|
| Channel 39(2441MHz) | Channel 39(2441MHz) |
|  |  |

Note: Test Time Period: 0.4*79=31.6sec, Hopping Times Within 1sec: 40/50msec=800 hops/sec.

The Maximum Occupancy Time within 31.6sec: [(0.190ms*800)/79]*31.6 =60.80 msec.

| 3DH3 Time of Occupancy | |
|---|---|
| Channel 39(2441MHz) | Channel 39(2441MHz) |
|  |  |
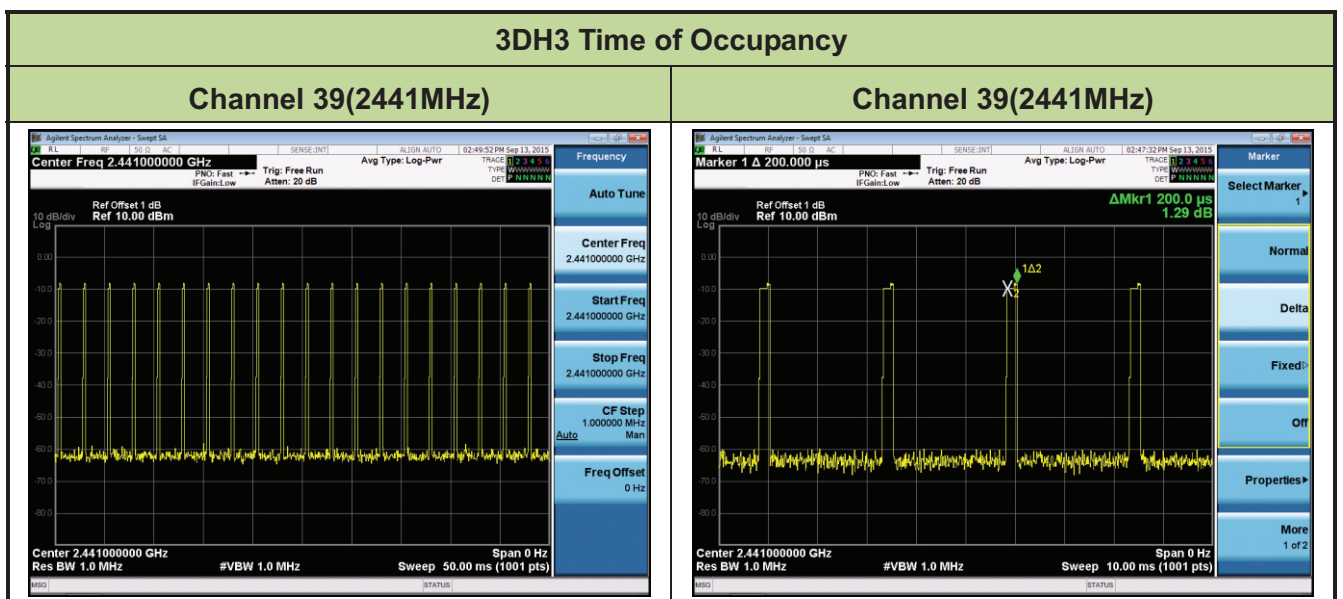
Note: Test Time Period: 0.4*79=31.6sec, Hopping Times Within 1sec: 20/50msec=400hops/sec.

The Maximum Occupancy Time within 31.6sec: [(0.200ms*400)/79]*31.6 =32.00 msec.

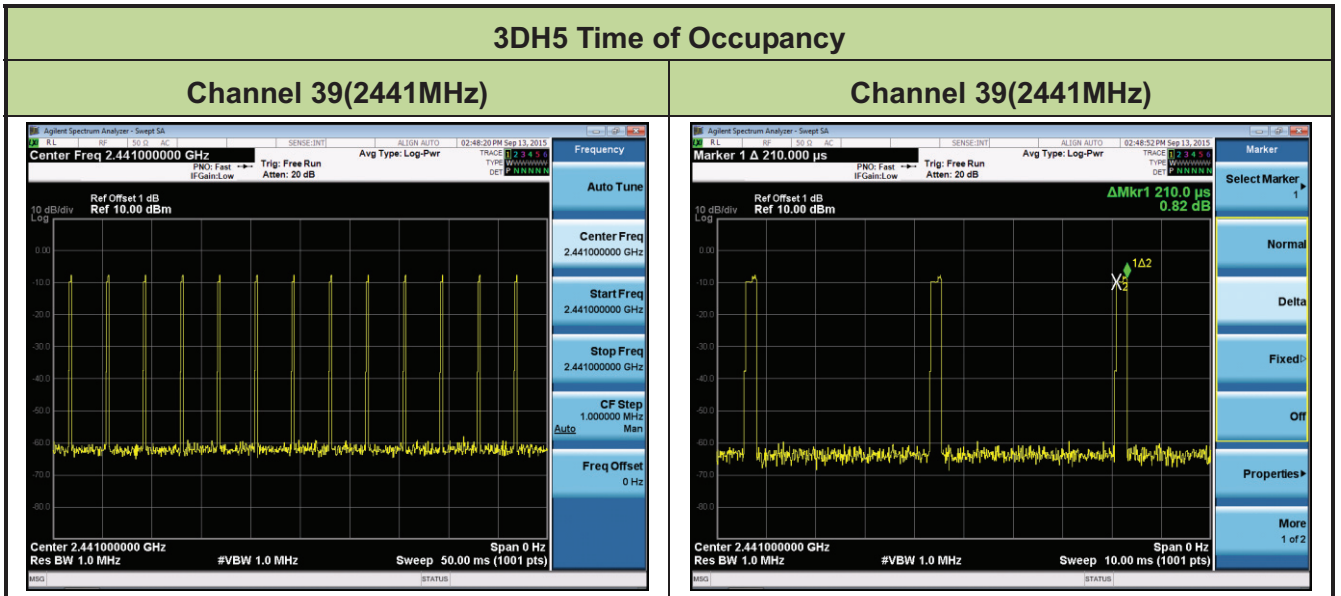| 3DH5 Time of Occupancy | |
|---|---|
| **Channel 39(2441MHz)** | **Channel 39(2441MHz)** |
|  |  |

Note: Test Time Period: 0.4*79=31.6sec, Hopping Times Within 1sec: 13/50msec=260 hops/sec.

The Maximum Occupancy Time within 31.6sec: [(0.210ms*260)/79]*31.6 =21.84 msec.

## 7.7. Band-edge Compliance Measurement

### 7.7.1. Test Limit

The maximum permissible emission level is 20dBc. Any emissions were lying outside of the

emission bandwidth and in authorized band edges to a field strength limit specified in Section

15.209 of the Title 47 CFR.

### 7.7.2. Test Procedure Used

ANSI C63.10-2013 - Section 6.10.4

### 7.7.3. Test Setting

1. Span = wide enough to capture the peak level of the emission operating on the channel closest

   to the band edge, as well as any modulation products which fall outside of the authorized band

   of operation.

2. RBW =100kHz

3. VBW ≥ RBW

4. Detector = peak

5. Sweep time = auto couple

6. Trace mode = max hold

7. Trace was allowed to stabilize

Allow the trace to stabilize. Set the marker on the emission at the band edge, or on the highest

modulation product outside of the band, if this level is greater than that at the band edge. Enable

the marker-delta function, than use the marker-to-peak function to move the marker to the peak of

the in-band emission.