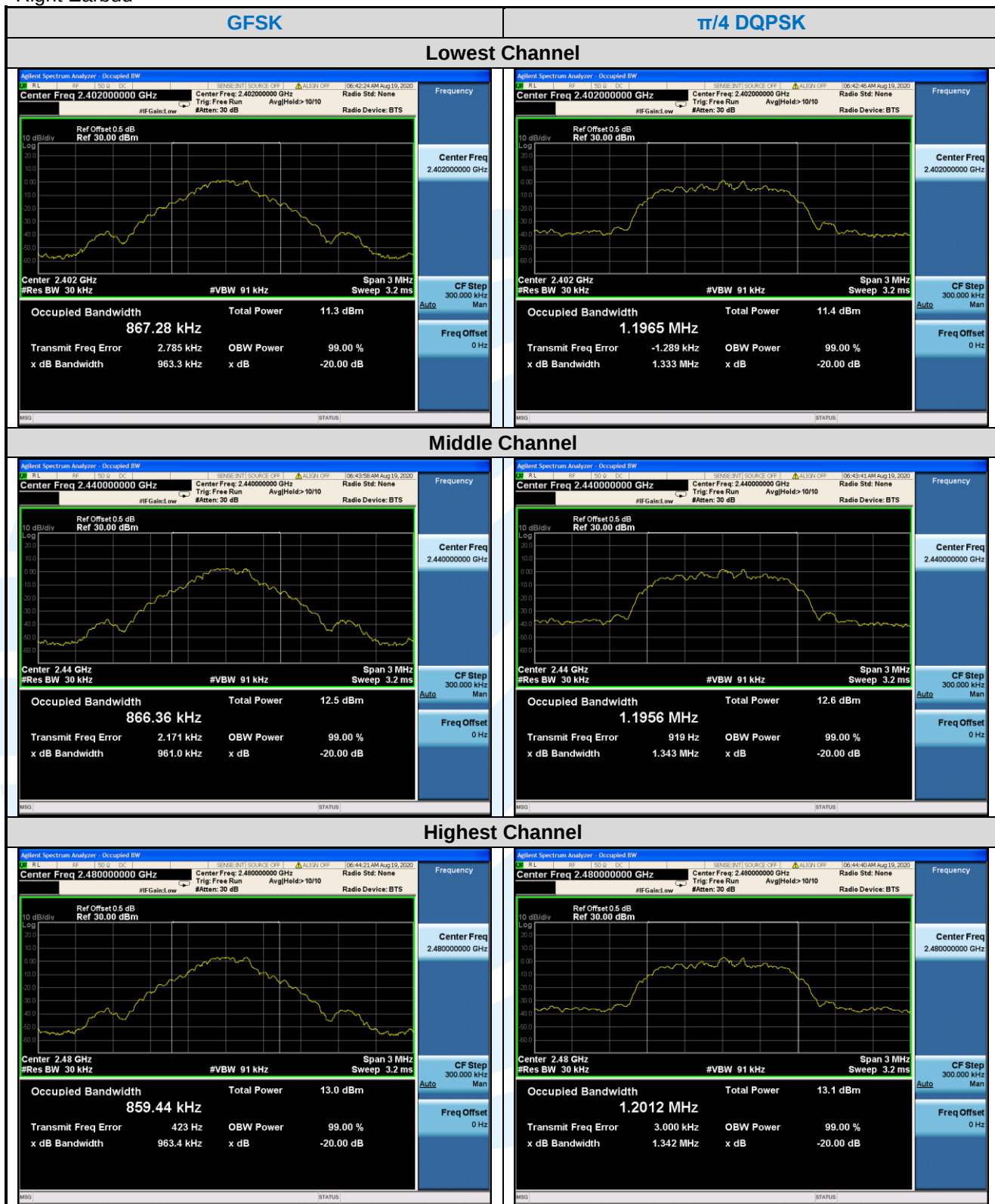


## Right Earbud



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## 5.5 CARRIER FREQUENCIES SEPARATION

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Requirement:</b> | FCC 47 CFR Part 15 Subpart C Section 15.247 (a)(1)<br>RSS-247 Issue 2, Section 5.1(b)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Test Method:</b>      | ANSI C63.10-2013 Section 7.8.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Limit:</b>            | Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.<br>Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.                                                                                                                                                                                                                                                                                                                                             |
| <b>Test Procedure:</b>   | Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.<br>Use the following spectrum analyzer settings: <ul style="list-style-type: none"> <li>a) Span: Wide enough to capture the peaks of two adjacent channels.</li> <li>b) RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.</li> <li>c) Video (or average) bandwidth (VBW) <math>\geq</math> RBW.</li> <li>d) Sweep: Auto.</li> <li>e) Detector function: Peak.</li> <li>f) Trace: Max hold.</li> <li>g) Allow the trace to stabilize.</li> <li>h) Use the marker-delta function to determine the separation between the peaks of the adjacent channels.</li> </ul> <p>Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.</p> |
| <b>Test Setup:</b>       | Refer to section 4.5.3 for details.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Instruments Used:</b> | Refer to section 3 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Test Results:</b>     | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Left Earbud              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

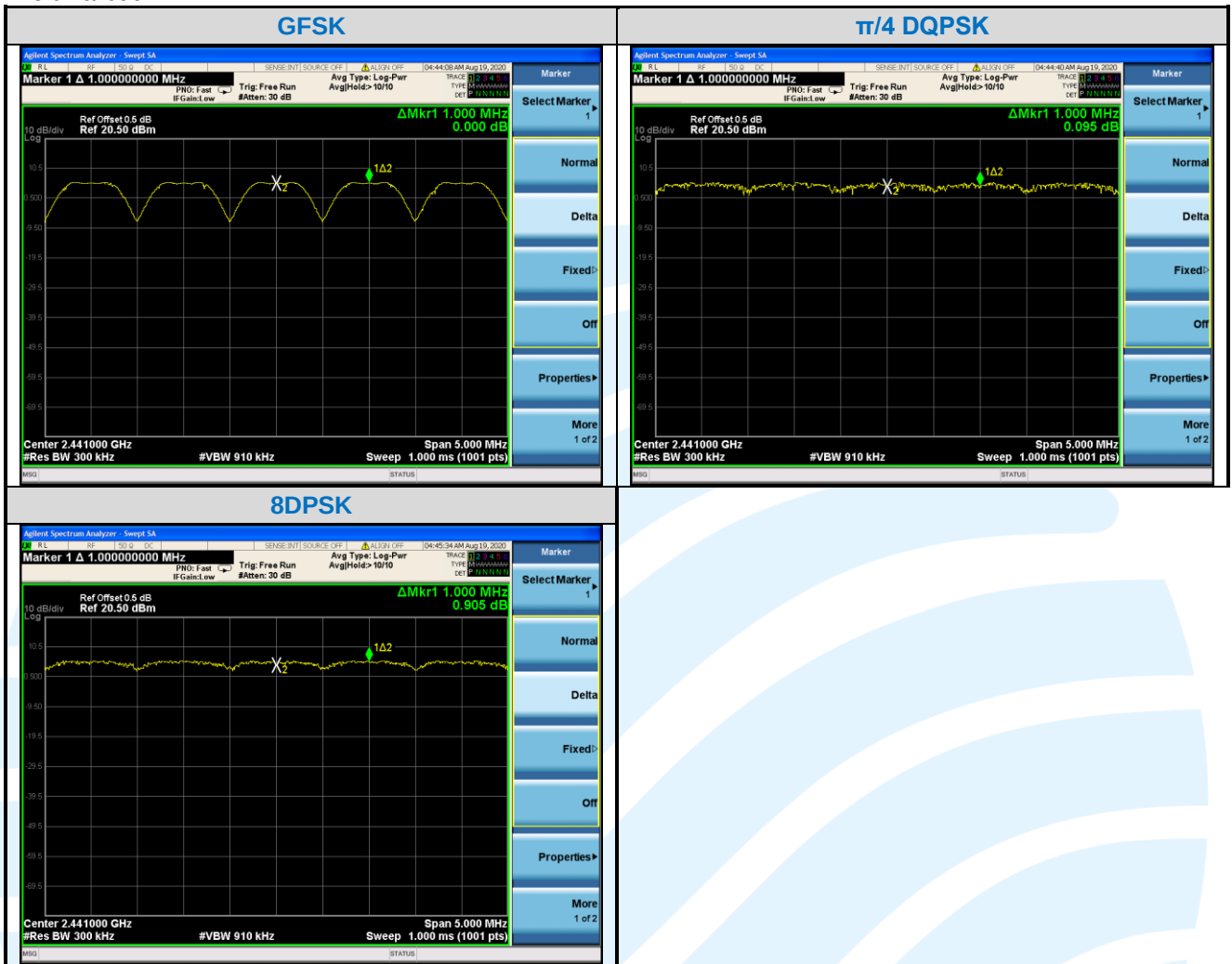
| Type of Modulation                                    | Adjacent Channel Separation (MHz) | Minimum Limit (MHz) |
|-------------------------------------------------------|-----------------------------------|---------------------|
|                                                       | Channel 39                        | Channel 39          |
| GFSK                                                  | 1.000                             | 0.642               |
| $\pi/4$ DQPSK                                         | 1.000                             | 0.891               |
| 8DPSK                                                 | 1.000                             | 0.874               |
| Note: The minimum limit is two-third 20 dB bandwidth. |                                   |                     |

Right Earbud

| Type of Modulation                                    | Adjacent Channel Separation (MHz) | Minimum Limit (MHz) |
|-------------------------------------------------------|-----------------------------------|---------------------|
|                                                       | Channel 39                        | Channel 39          |
| GFSK                                                  | 1.000                             | 0.641               |
| $\pi/4$ DQPSK                                         | 1.000                             | 0.895               |
| 8DPSK                                                 | 1.000                             | 0.874               |
| Note: The minimum limit is two-third 20 dB bandwidth. |                                   |                     |

### The test plots as follows:

Left Earbud



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## Right Earbud



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## 5.6 NUMBER OF HOPPING CHANNEL

**Test Requirement:** FCC 47 CFR Part 15 Subpart C Section 15.247(b)(1)  
RSS-247 Issue 2, Section 5.1(d)

**Test Method:** ANSI C63.10-2013 Section 7.8.3

**Limit:** Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels.

**Test Procedure:** Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.  
Use the following spectrum analyzer settings:

- a) Span: The frequency band of operation. Depending on the number of channels the device supports, it may be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
- b) RBW < 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
- c) VBW ≥ RBW.
- d) Sweep: Auto.
- e) Detector function: Peak.
- f) Trace: Max hold.
- g) Allow the trace to stabilize.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

**Test Setup:** Refer to section 4.5.3 for details.

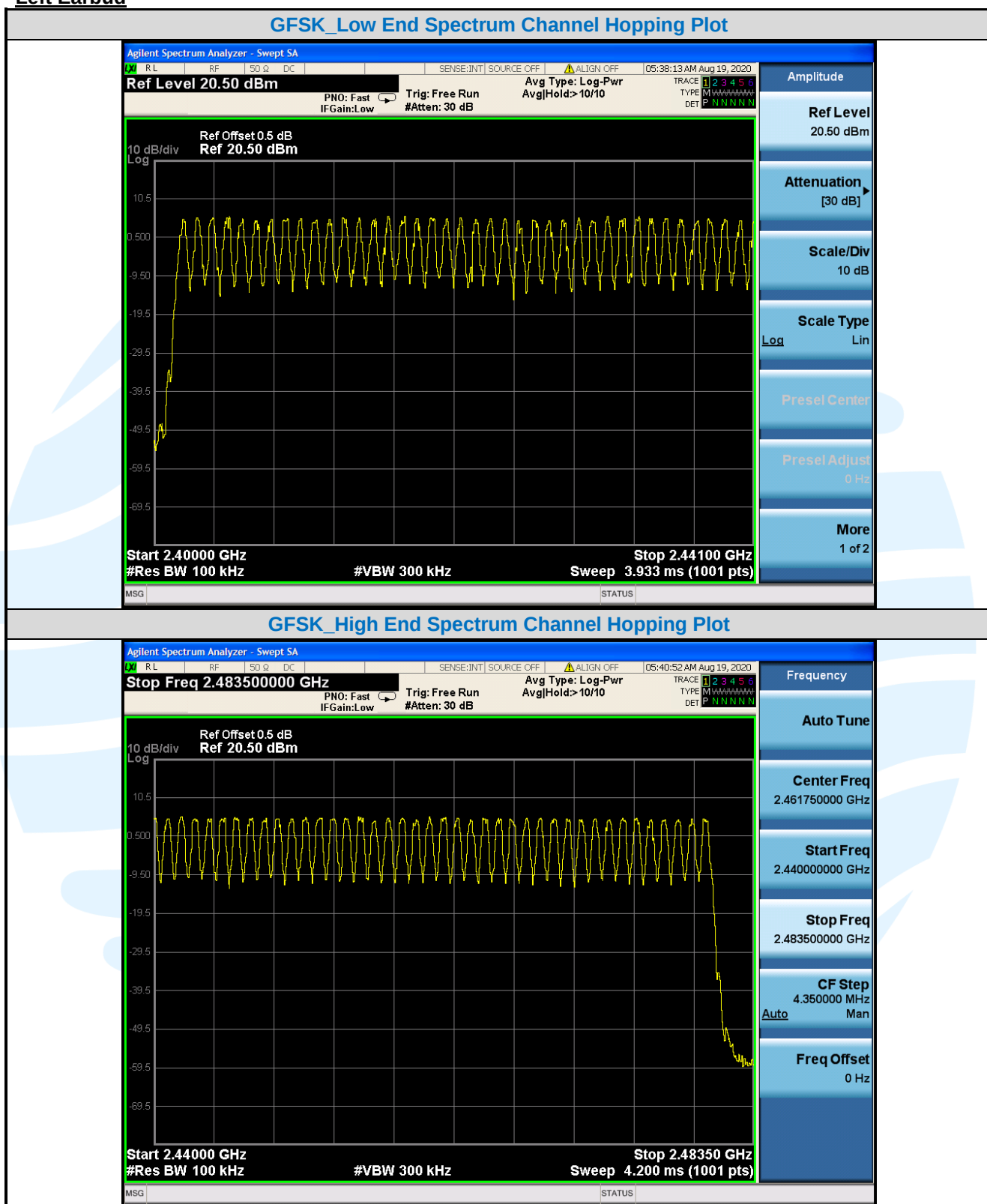
**Instruments Used:** Refer to section 3 for details

**Test Results:** Pass

| Type of Modulation | Number of Hopping Channel |
|--------------------|---------------------------|
| GFSK               | 79                        |
| $\pi/4$ DQPSK      | 79                        |
| 8DPSK              | 79                        |

The test plots as follows:

### Left Earbud



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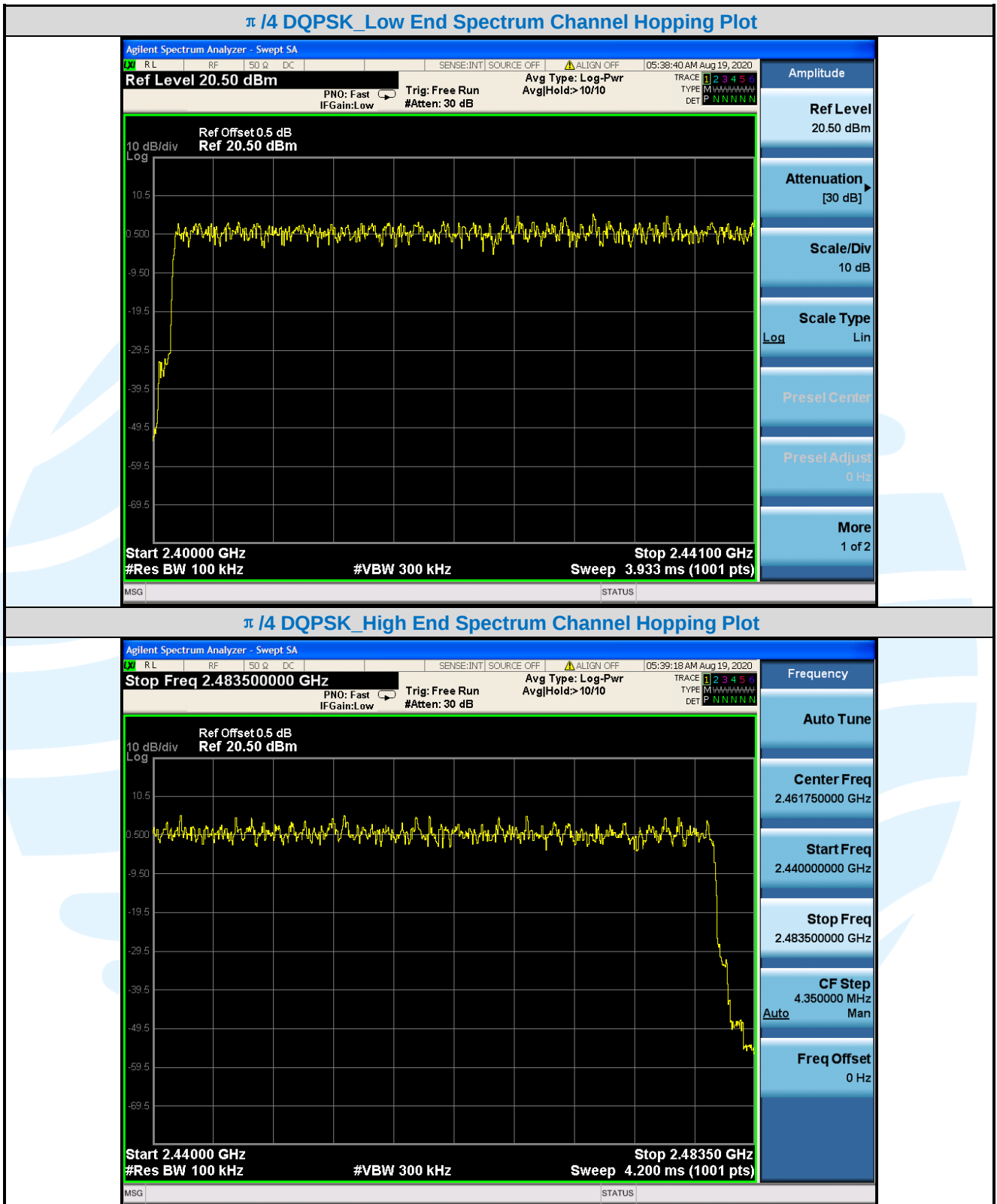
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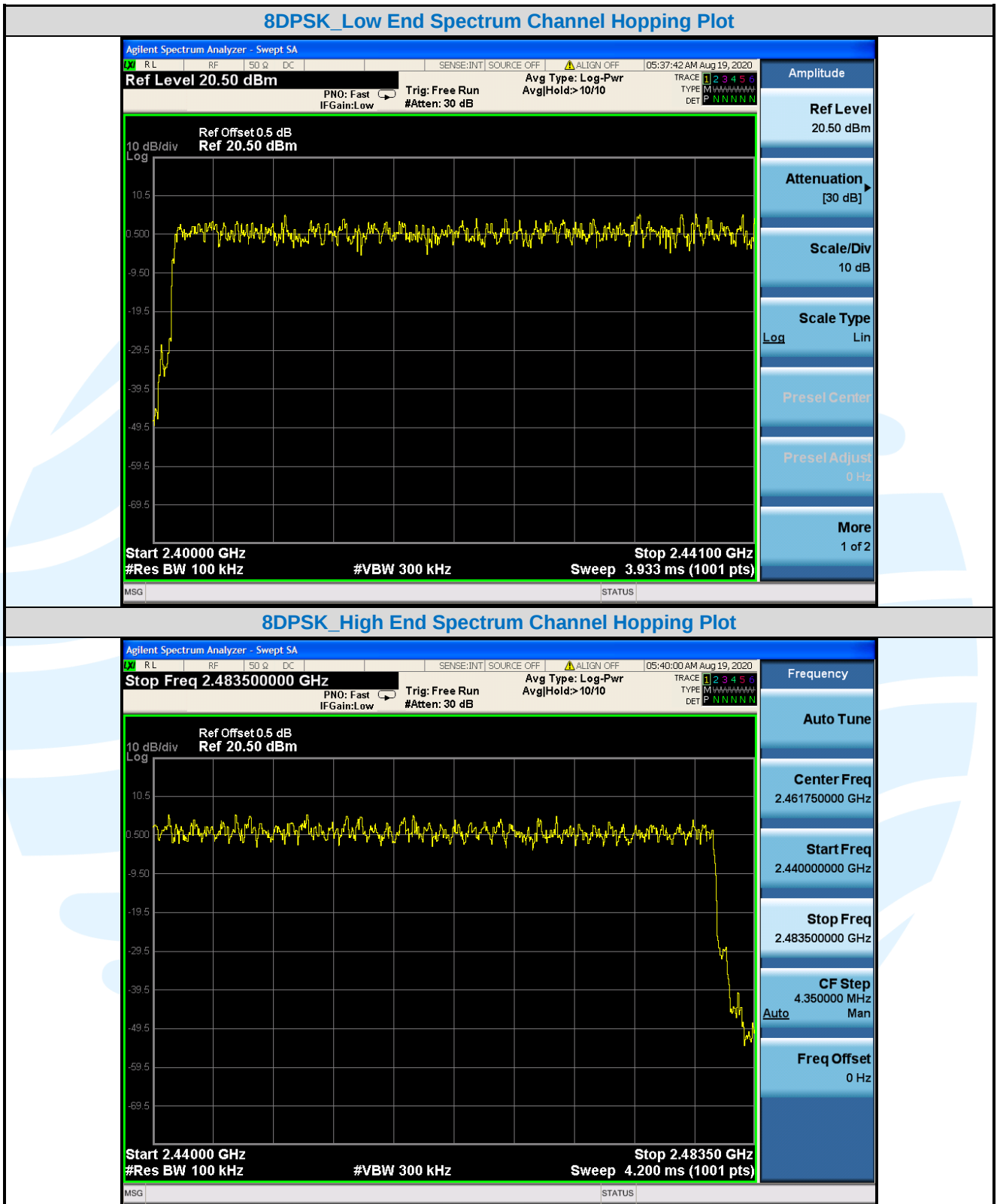
Tel: +86-755-28230888

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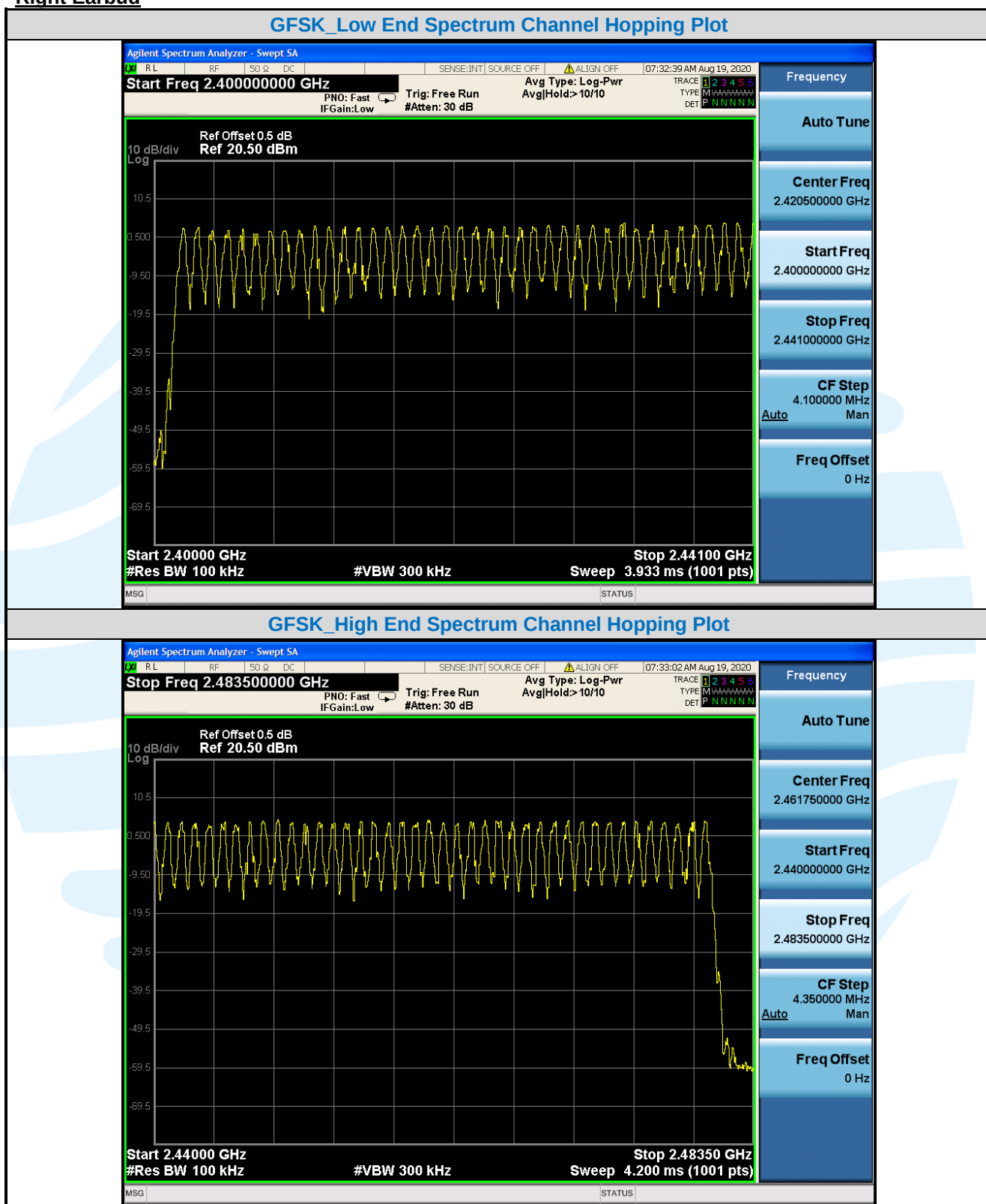
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### Right Earbud



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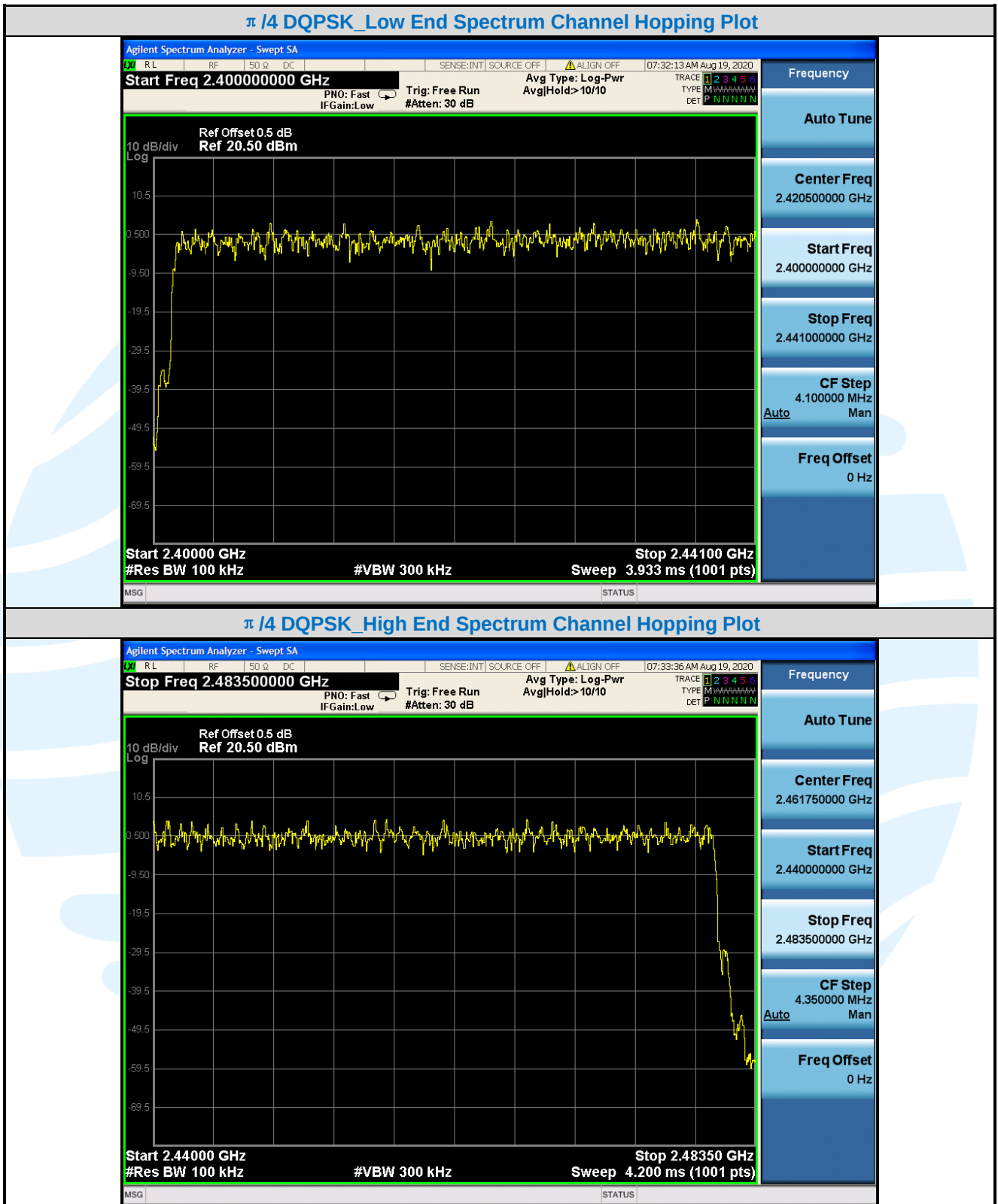
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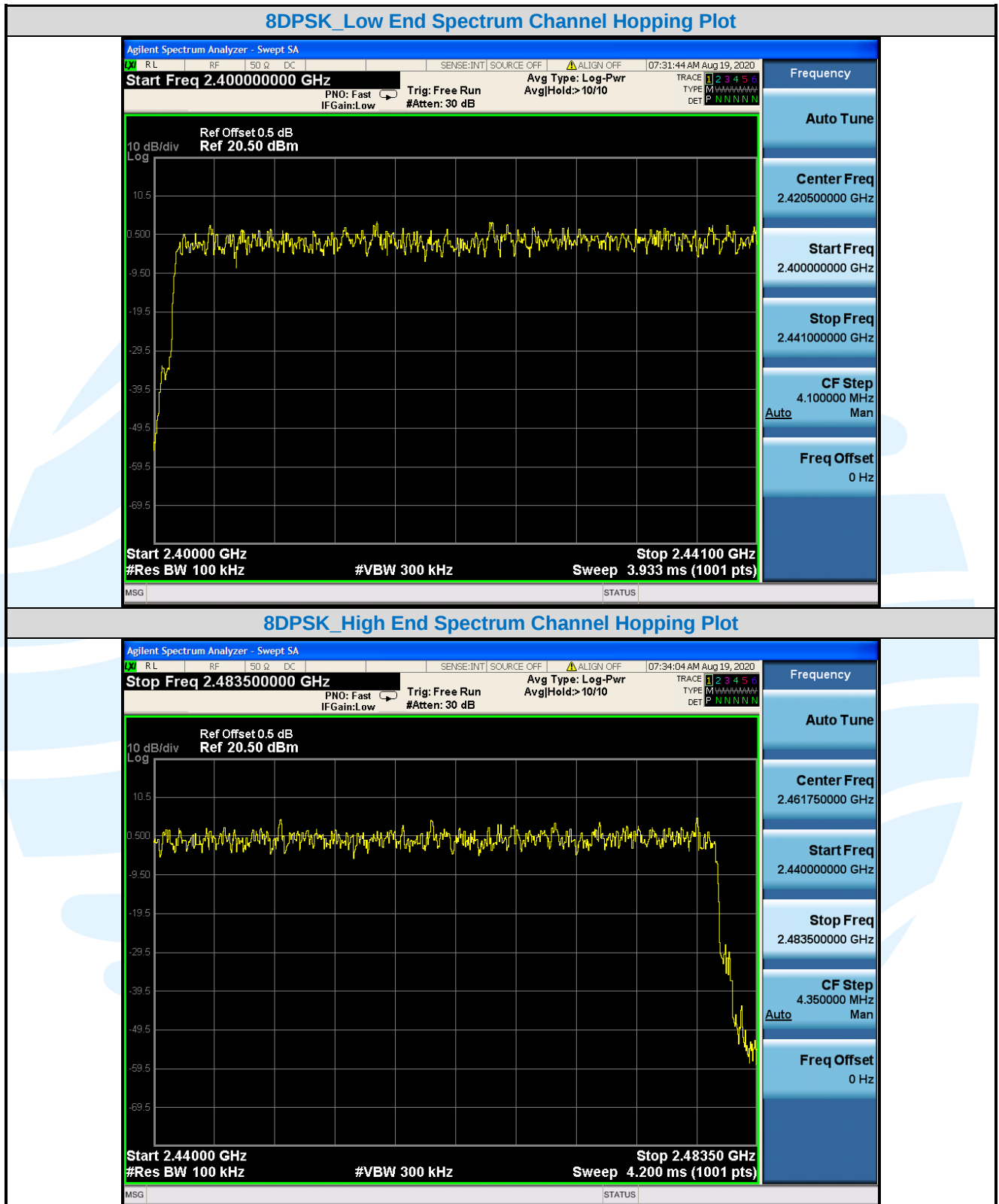
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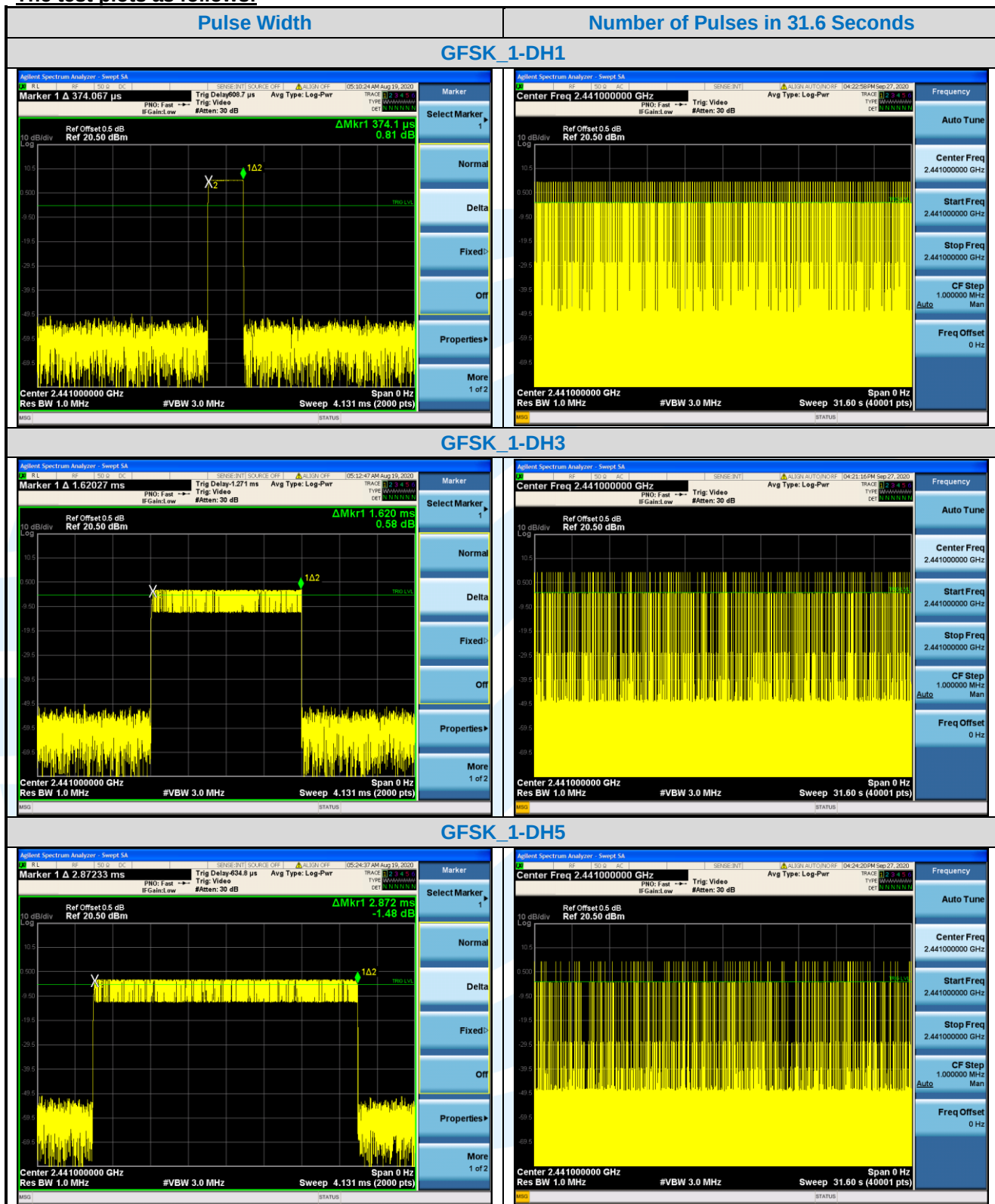
## 5.7 DWELL TIME

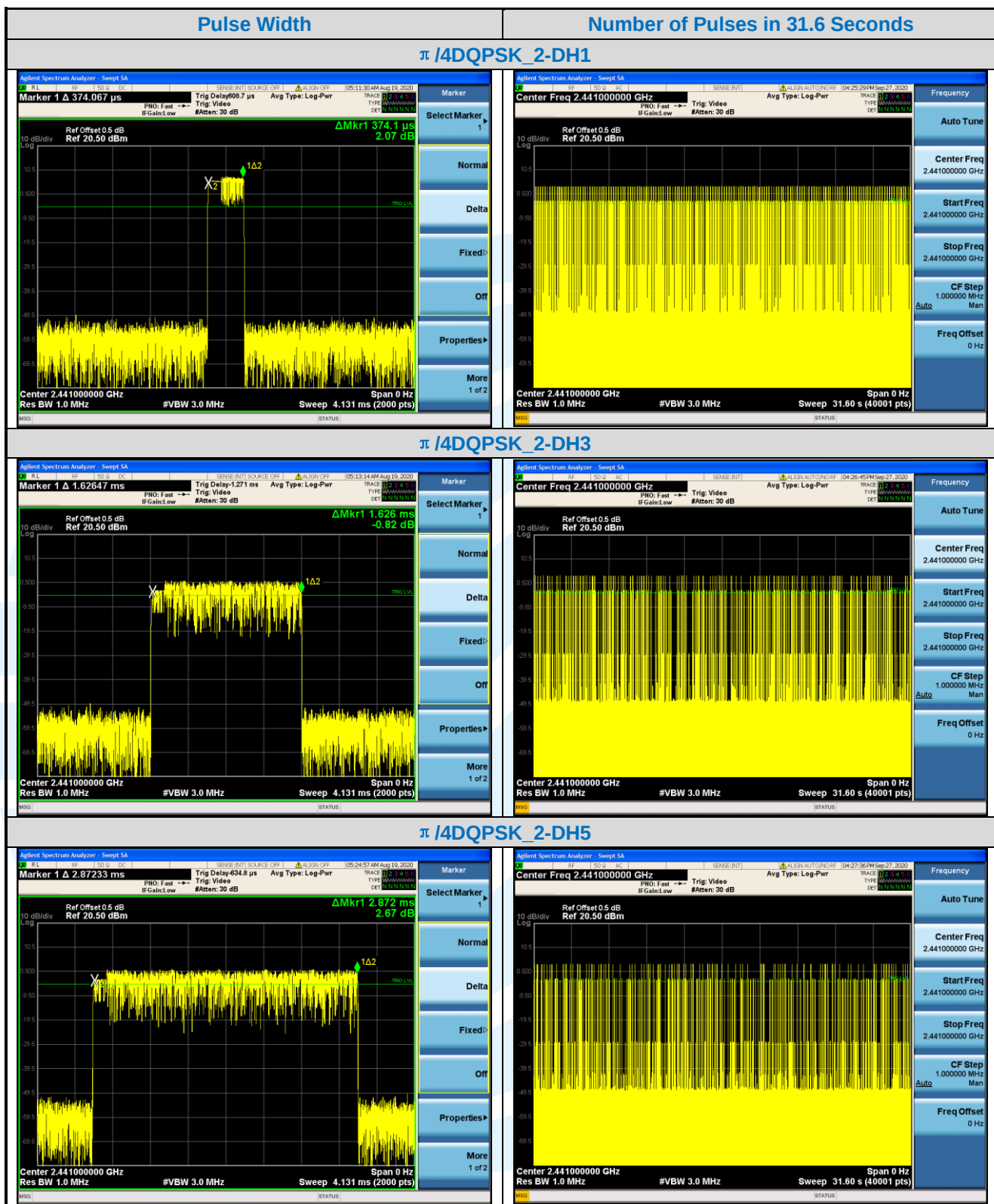
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Requirement:</b> | FCC 47 CFR Part 15 Subpart C Section 15.247(a)(1)<br>RSS-247 Issue 2, Section 5.1(d)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Test Method:</b>      | ANSI C63.10-2013 Section 7.8.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Limit:</b>            | Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Test Procedure:</b>   | Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.<br>Use the following spectrum analyzer settings: <ul style="list-style-type: none"> <li>a) Span = zero span, centered on a hopping channel</li> <li>b) RBW shall be <math>\leq</math> channel spacing and where possible RBW should be set <math>\gg 1 / T</math>, where T is the expected dwell time per channel.</li> <li>c) Sweep = As necessary to capture the entire dwell time per hopping channel; where possible use a video trigger and trigger delay so that the transmitted signal starts a little to the right of the start of the plot. The trigger level might need slight adjustment to prevent triggering when the system hops on an adjacent channel; a second plot might be needed with a longer sweep time to show two successive hops on a channel.</li> <li>d) Detector function = peak</li> <li>e) Trace = max hold</li> <li>f) Use the marker-delta function to determine the dwell time</li> </ul> <p>Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.</p> |
| <b>Test Setup:</b>       | Refer to section 4.5.3 for details.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Instruments Used:</b> | Refer to section 3 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Test Results:</b>     | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

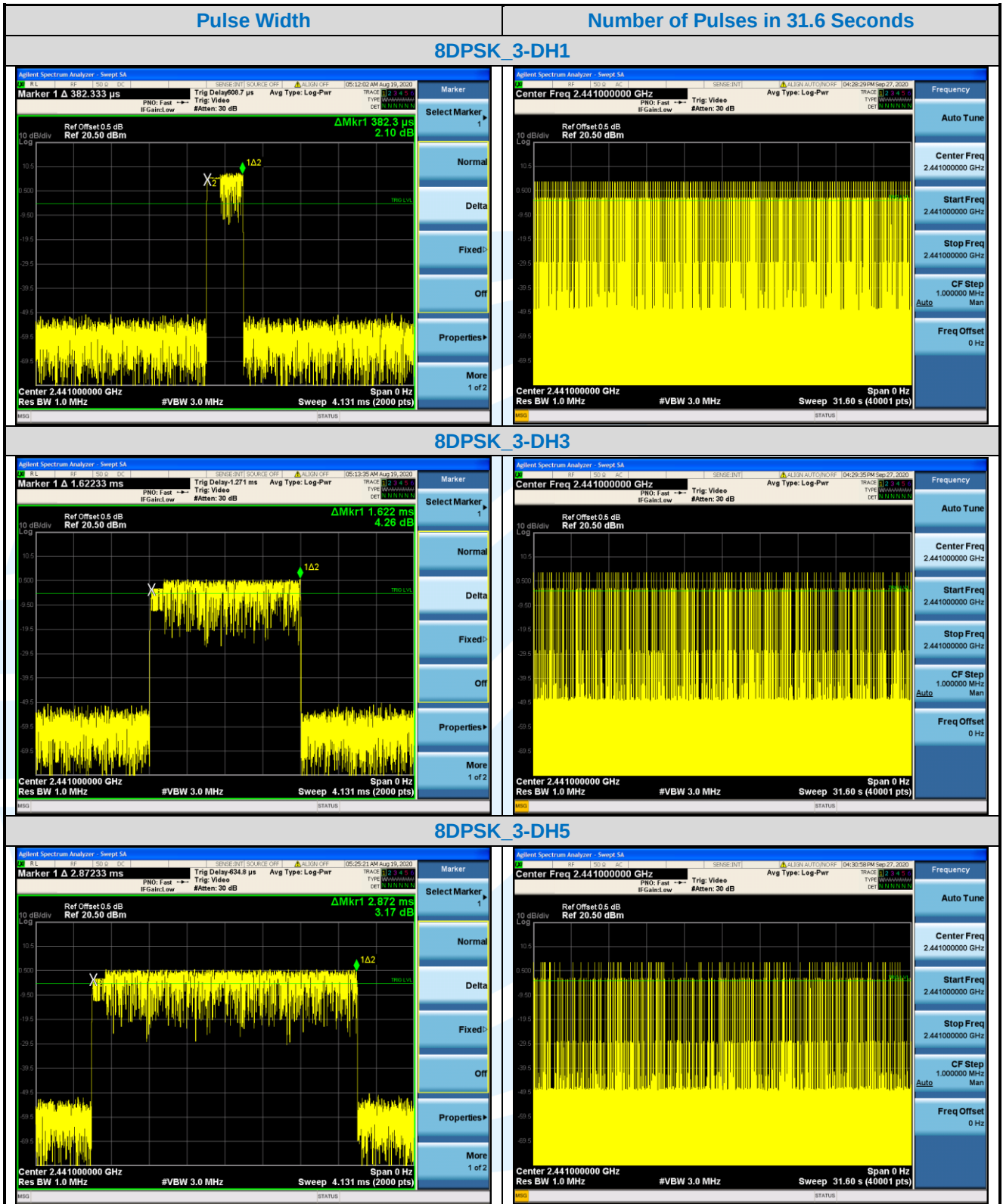
Left Earbud

| Type of Modulation | Test Frequency | Packet | Pulse Width | Number of Pulses in 31.6 seconds | Dwell Time | Limit |
|--------------------|----------------|--------|-------------|----------------------------------|------------|-------|
|                    |                |        | ms          |                                  | ms         | ms    |
| GFSK               | 2441MHz        | 1-DH1  | 0.374       | 312.000                          | 116.69     | < 400 |
|                    |                | 1-DH3  | 1.620       | 160.000                          | 259.20     | < 400 |
|                    |                | 1-DH5  | 2.872       | 112.000                          | 321.66     | < 400 |
| $\pi/4$ DQPSK      | 2441MHz        | 2-DH1  | 0.374       | 318.000                          | 118.93     | < 400 |
|                    |                | 2-DH3  | 1.626       | 158.000                          | 256.91     | < 400 |
|                    |                | 2-DH5  | 2.872       | 108.000                          | 310.18     | < 400 |
| 8DPSK              | 2441MHz        | 3-DH1  | 0.382       | 320.000                          | 122.24     | < 400 |
|                    |                | 3-DH3  | 1.622       | 160.000                          | 259.52     | < 400 |
|                    |                | 3-DH5  | 2.872       | 104.000                          | 298.69     | < 400 |

The test plots as follows:







Right Earbud

| Type of Modulation | Test Frequency | Packet | Pulse Width | Number of Pulses in 31.6 seconds | Dwell Time    | Limit |
|--------------------|----------------|--------|-------------|----------------------------------|---------------|-------|
|                    |                |        | ms          |                                  | ms            | ms    |
| GFSK               | 2441MHz        | 1-DH1  | 0.376       | 318.000                          | 119.57        | < 400 |
|                    |                | 1-DH3  | 1.622       | 155.000                          | 251.41        | < 400 |
|                    |                | 1-DH5  | 2.870       | 110.000                          | 315.70        | < 400 |
| $\pi/4$ DQPSK      | 2441MHz        | 2-DH1  | 0.376       | 312.000                          | 117.31        | < 400 |
|                    |                | 2-DH3  | 1.622       | 153.000                          | 248.17        | < 400 |
|                    |                | 2-DH5  | 2.870       | 113.000                          | 324.31        | < 400 |
| 8DPSK              | 2441MHz        | 3-DH1  | 0.376       | 316.000                          | 118.82        | < 400 |
|                    |                | 3-DH3  | 1.622       | 157.000                          | 254.65        | < 400 |
|                    |                | 3-DH5  | 2.876       | 113.000                          | <b>324.99</b> | < 400 |

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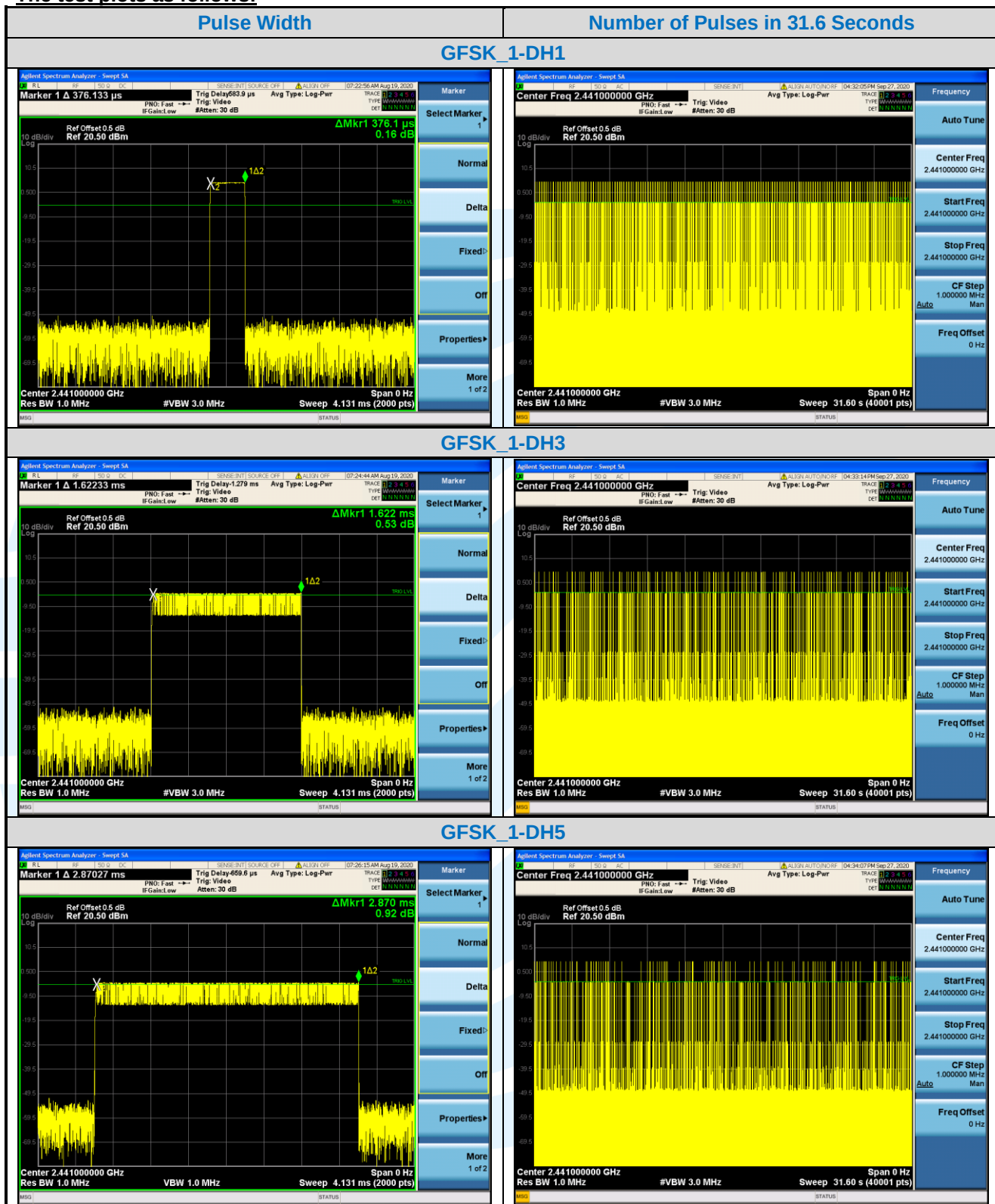
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The test plots as follows:



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