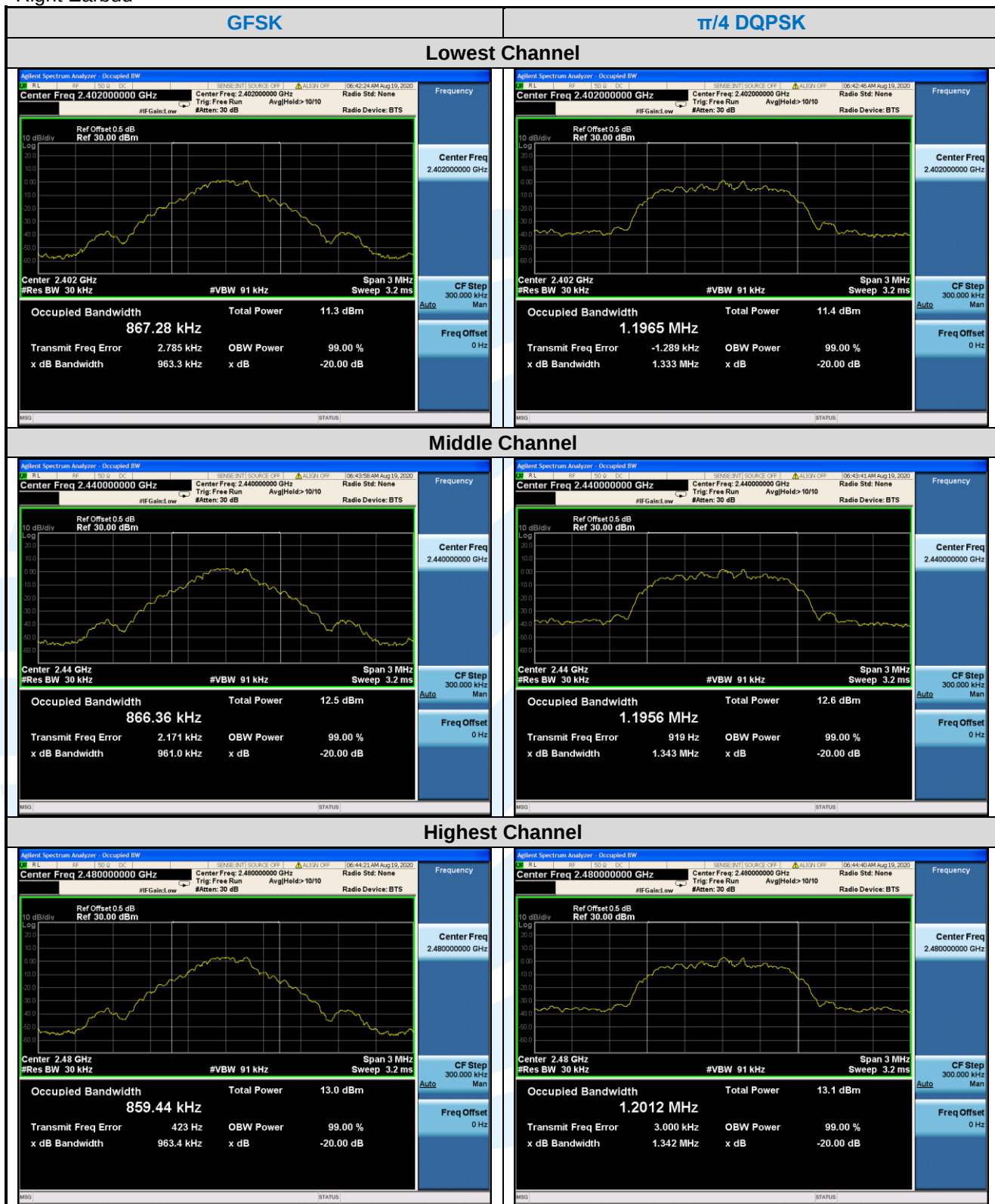


Right Earbud



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5.5 CARRIER FREQUENCIES SEPARATION

Test Requirement:	FCC 47 CFR Part 15 Subpart C Section 15.247 (a)(1) RSS-247 Issue 2, Section 5.1(b)
Test Method:	ANSI C63.10-2013 Section 7.8.2
Limit:	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. 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.
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: Wide enough to capture the peaks of two adjacent channels. 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. c) Video (or average) bandwidth (VBW) $\geq$ RBW. d) Sweep: Auto. e) Detector function: Peak. f) Trace: Max hold. g) Allow the trace to stabilize. h) Use the marker-delta function to determine the separation between the peaks of the adjacent channels. 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
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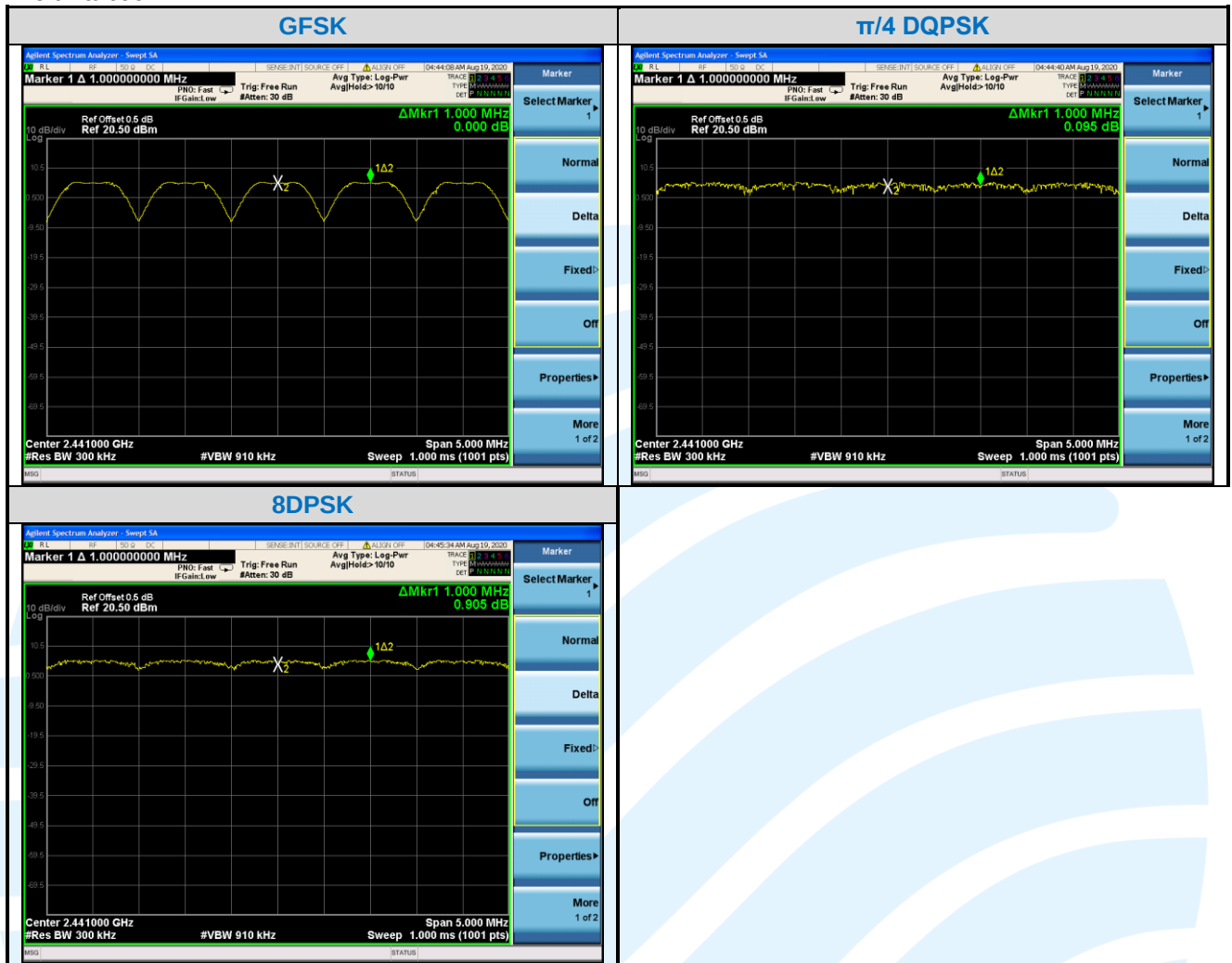
Type of Modulation	Adjacent Channel Separation (MHz)	Minimum Limit (MHz)
	Channel 39	Channel 39
GFSK	1.000	0.642
$\pi/4$ DQPSK	1.000	0.891
8DPSK	1.000	0.874
Note: The minimum limit is two-third 20 dB bandwidth.		

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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:

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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.

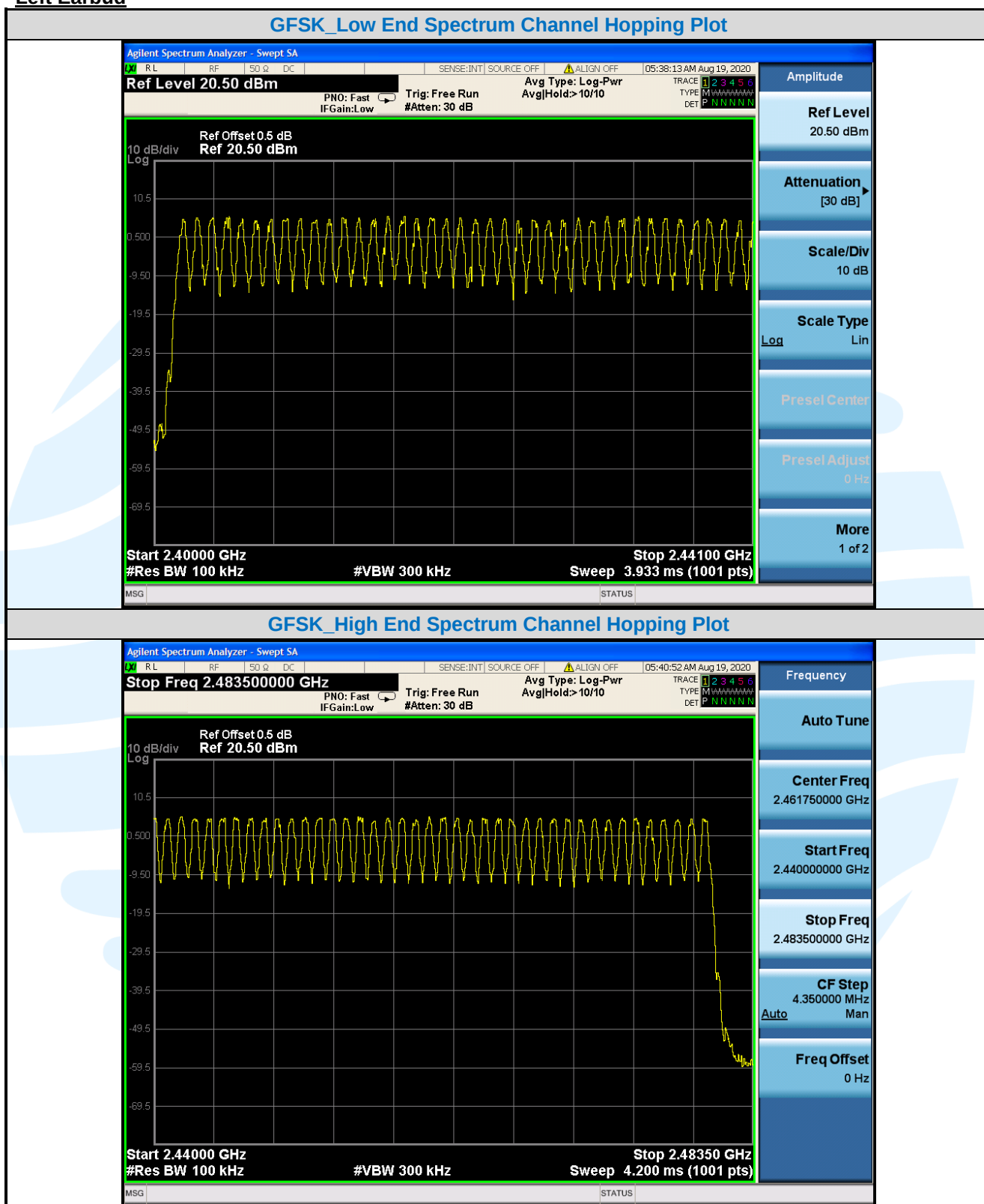
Instruments Used: Refer to section 3 for details

Test Results: Pass

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

The test plots as follows:

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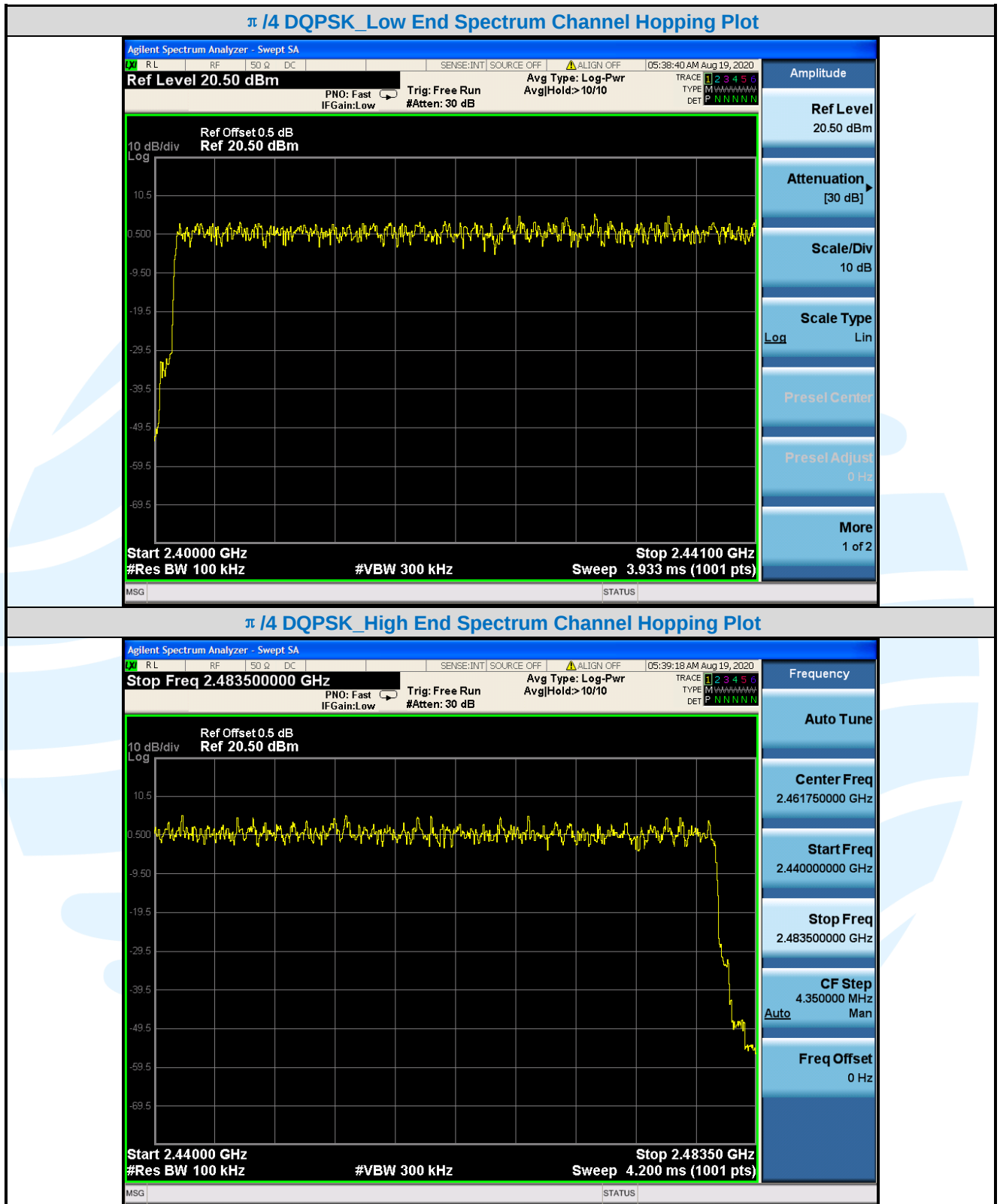
Tel: +86-755-28230888

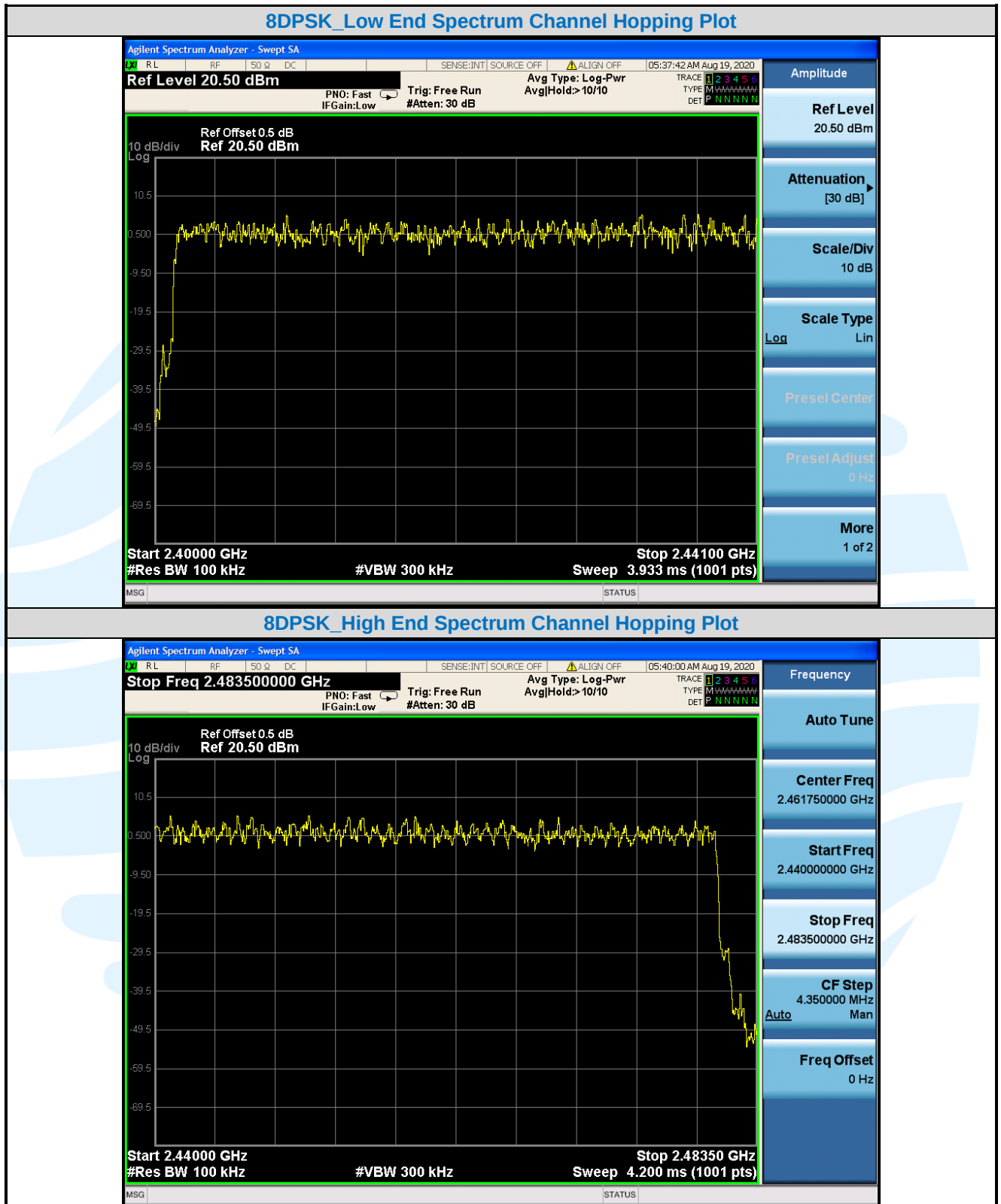
Fax: +86-755-28230886

E-mail: info@uttlab.com

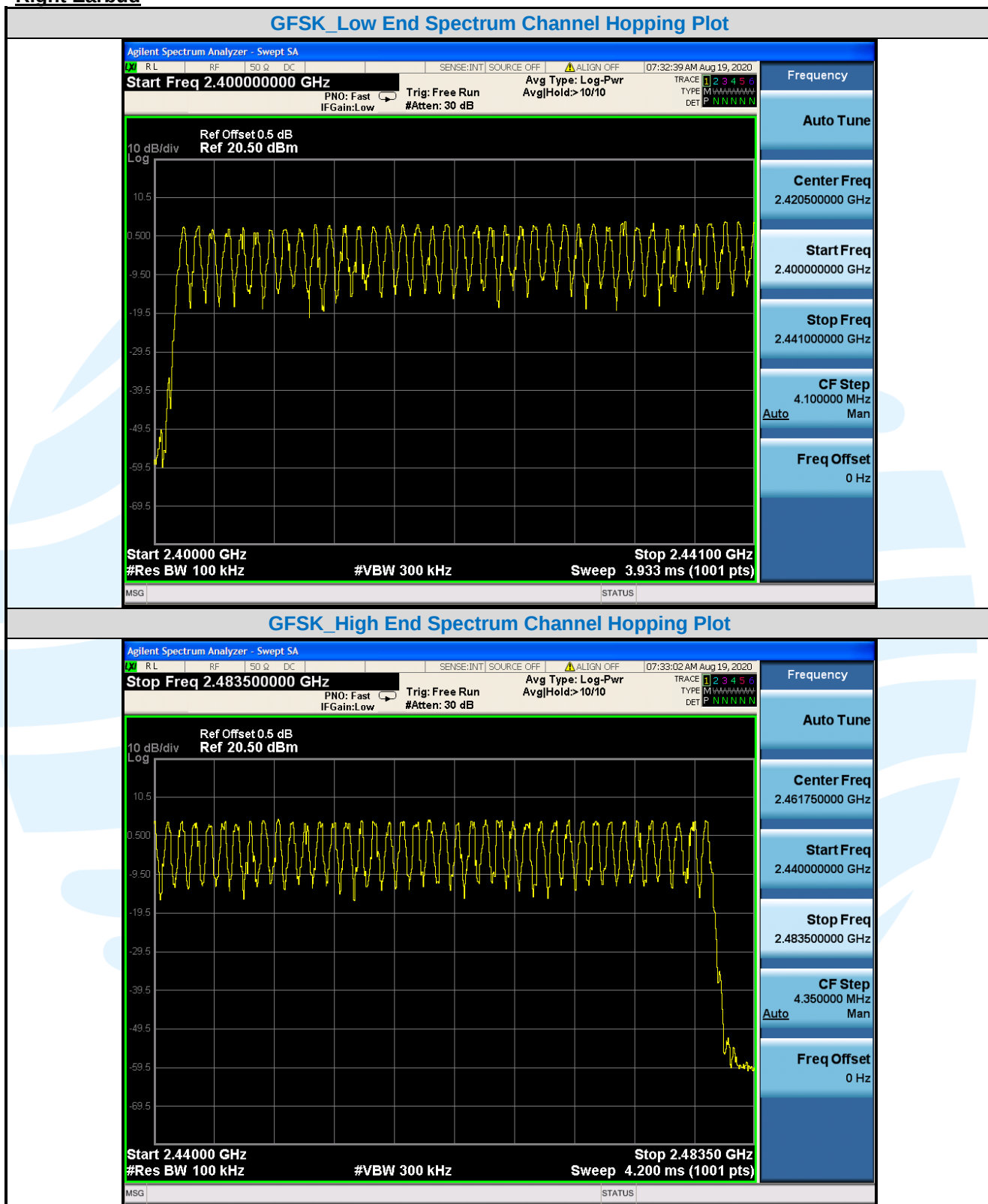
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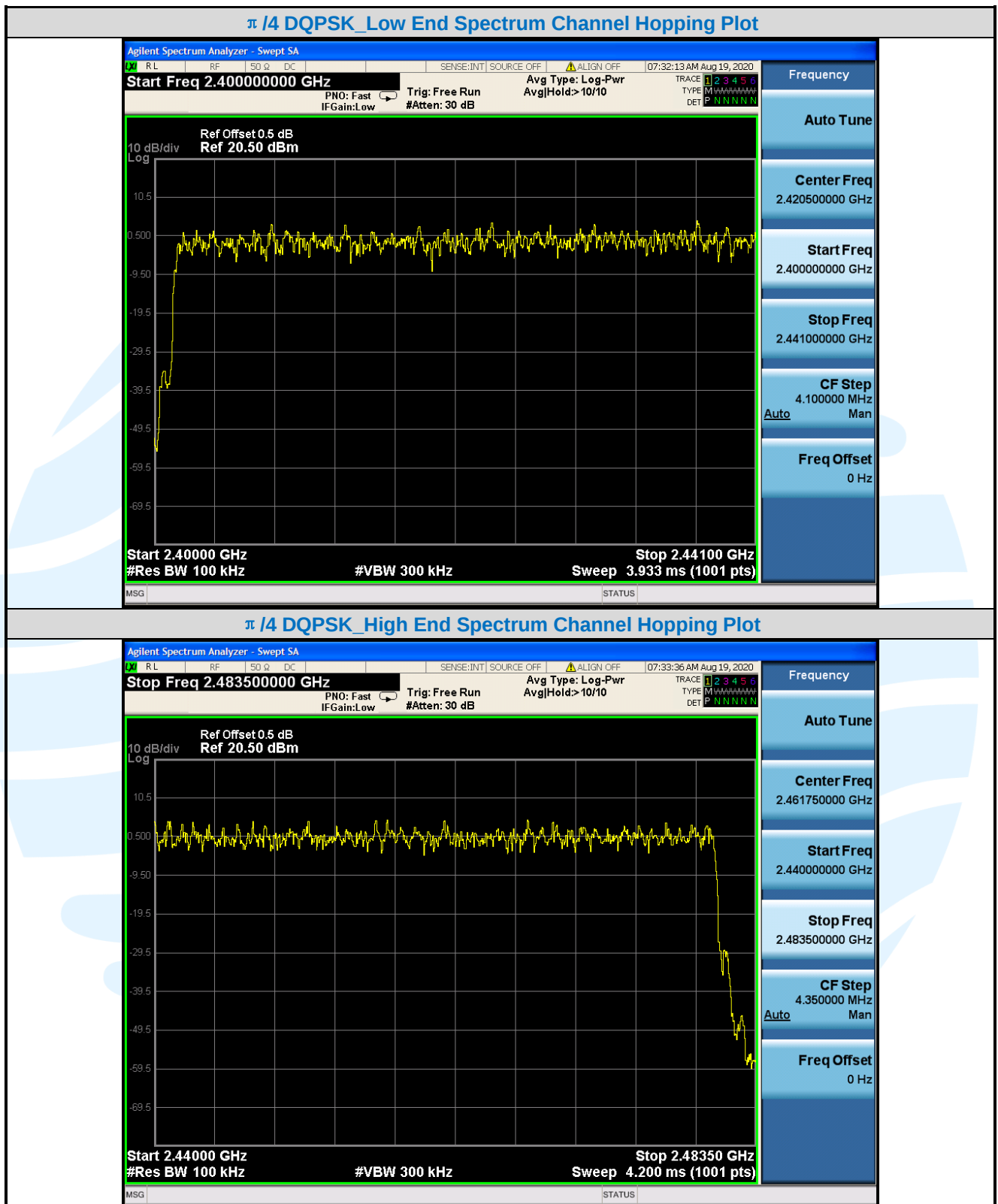
Tel: +86-755-28230888

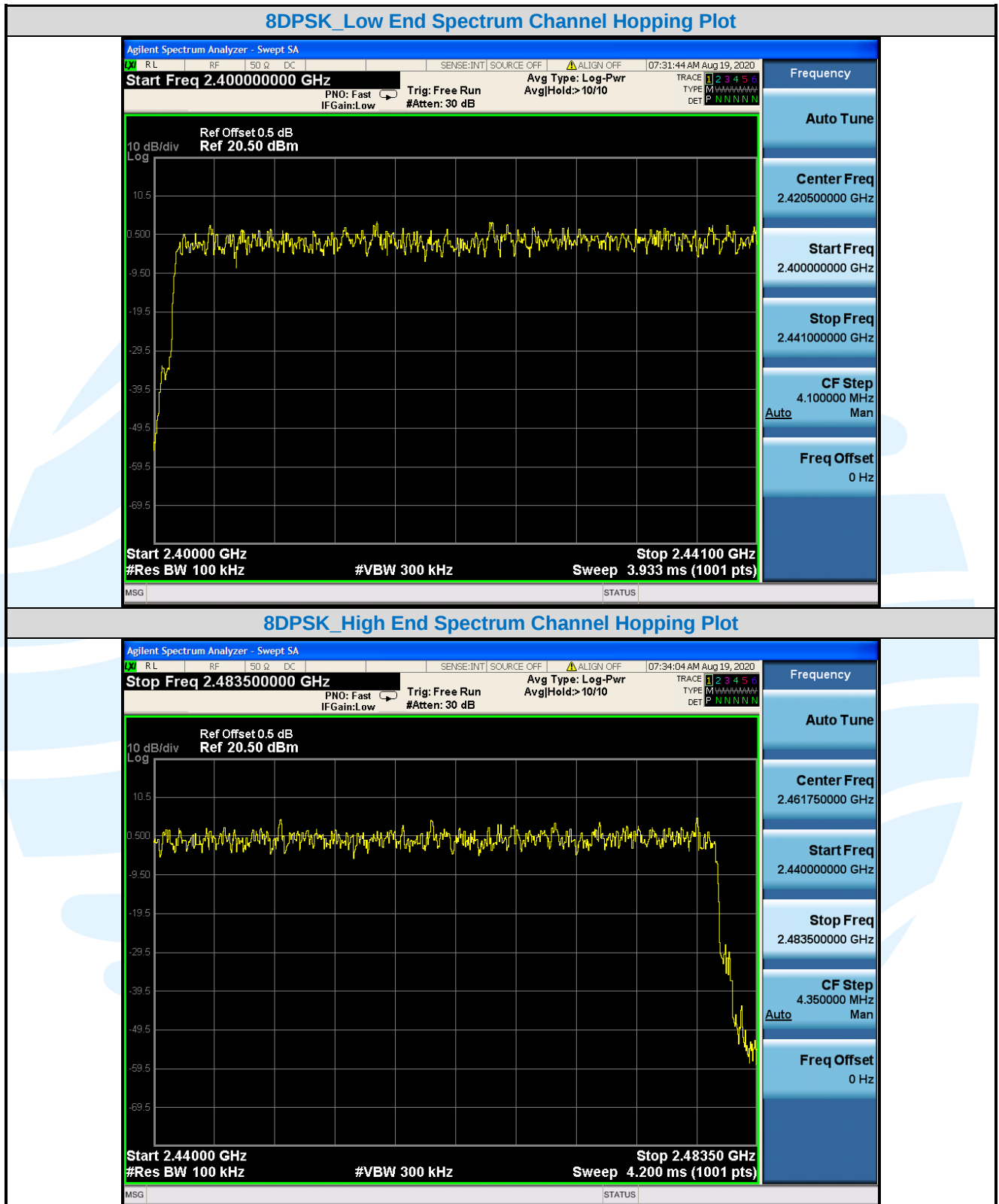
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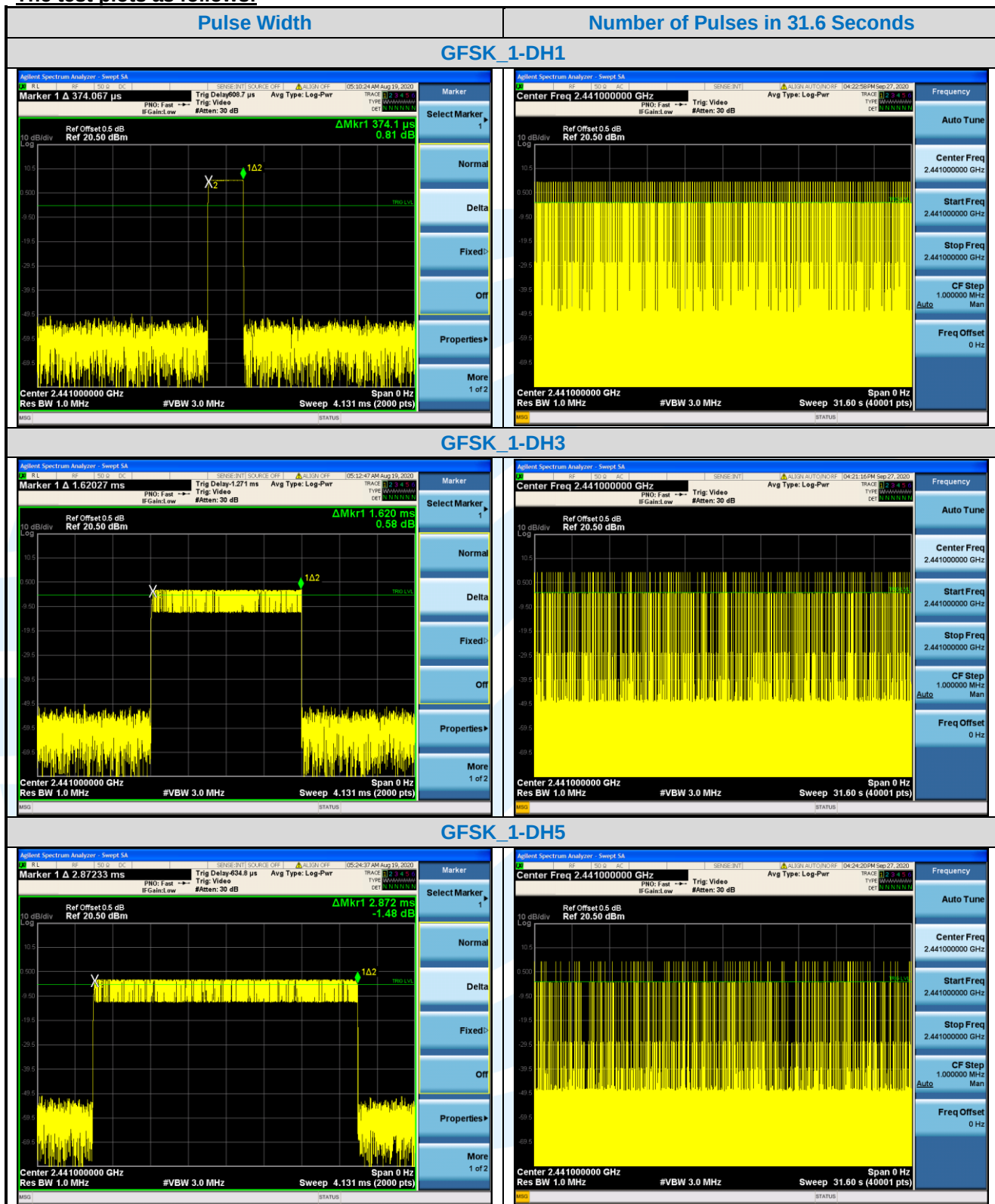
5.7 DWELL TIME

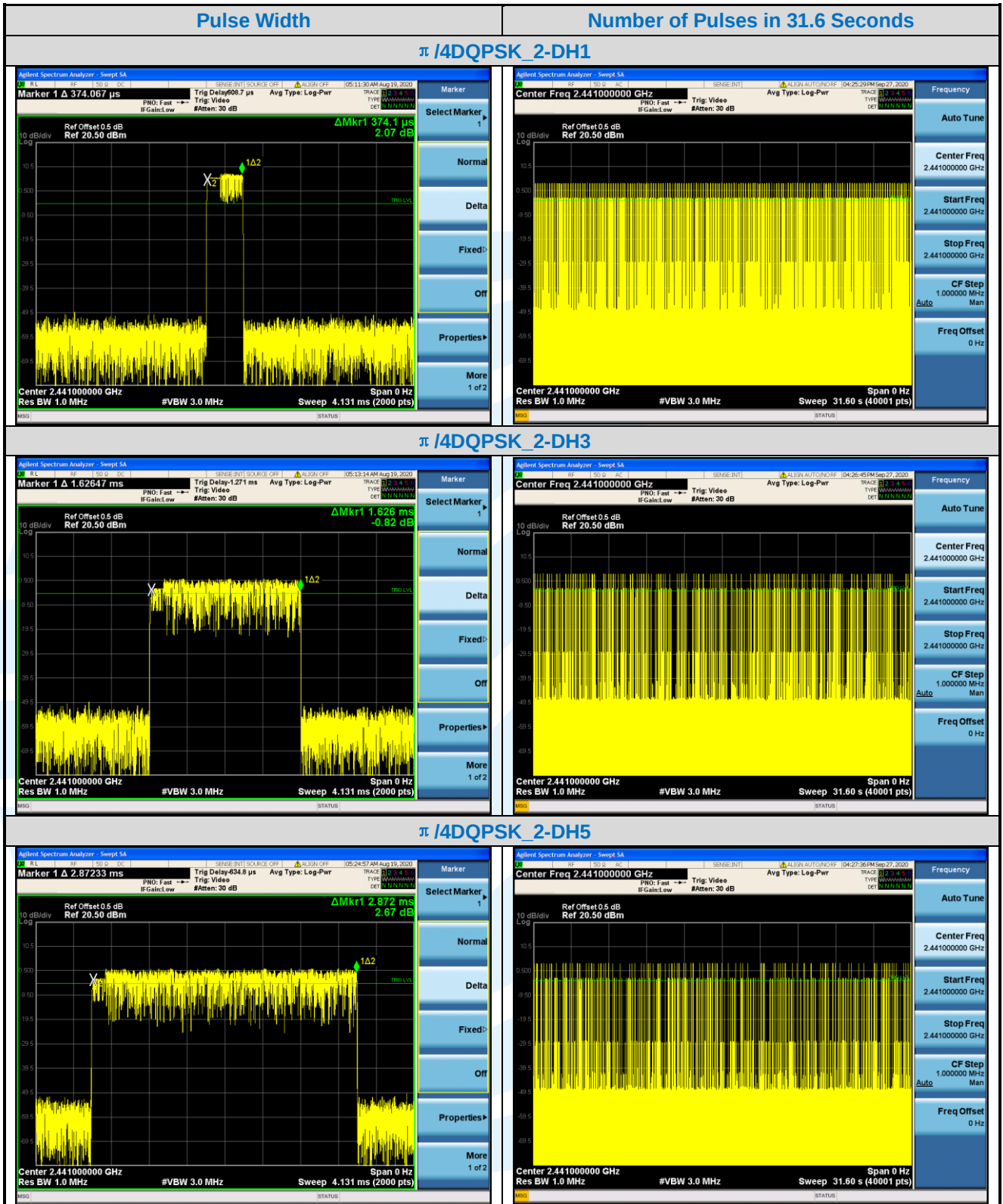
Test Requirement:	FCC 47 CFR Part 15 Subpart C Section 15.247(a)(1) RSS-247 Issue 2, Section 5.1(d)
Test Method:	ANSI C63.10-2013 Section 7.8.4
Limit:	Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.
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 = zero span, centered on a hopping channel b) RBW shall be $\leq$ channel spacing and where possible RBW should be set $\gg 1 / T$, where T is the expected dwell time per channel. 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. d) Detector function = peak e) Trace = max hold f) Use the marker-delta function to determine the dwell time 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

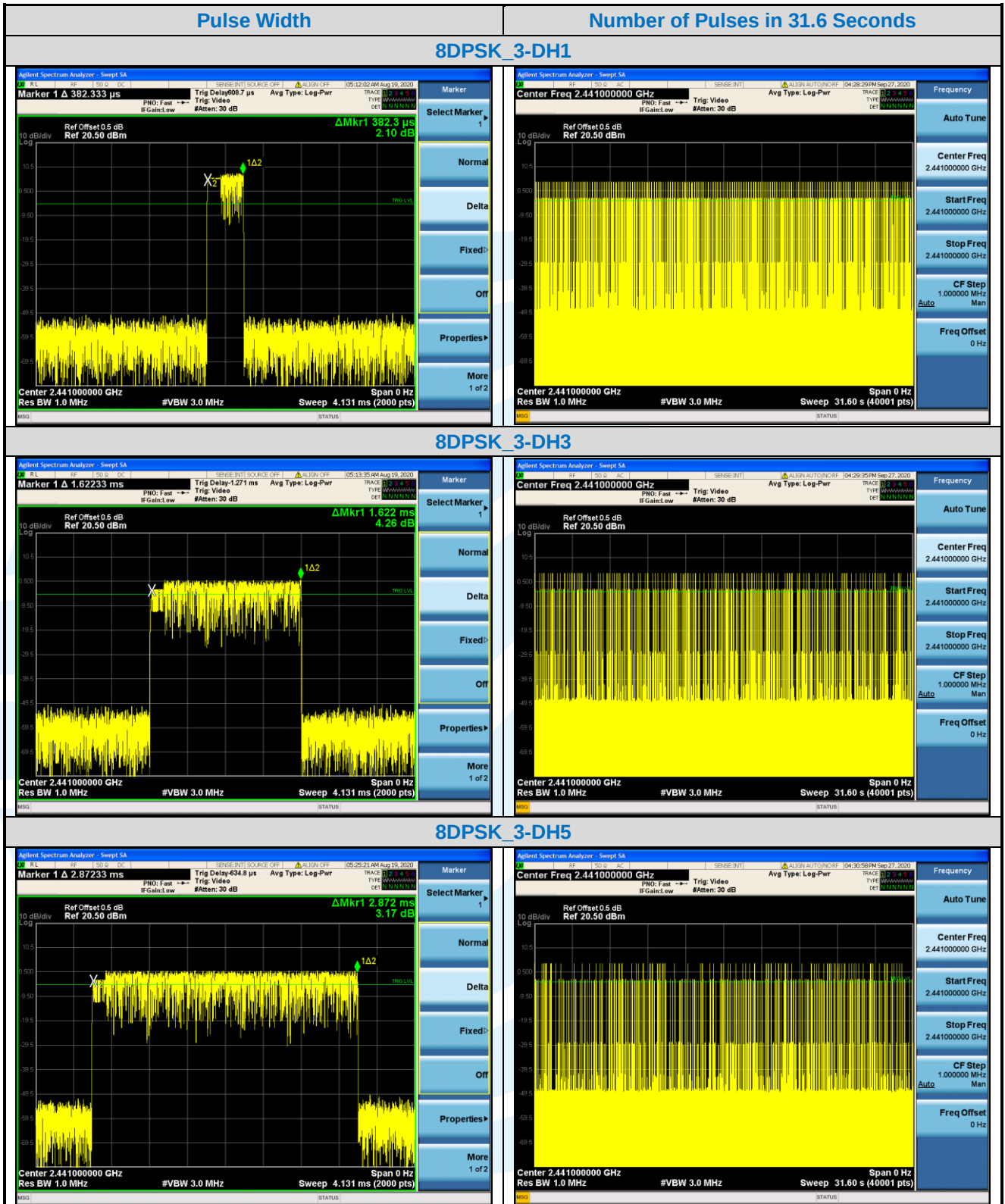
Left Earbud

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:





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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	324.99	< 400

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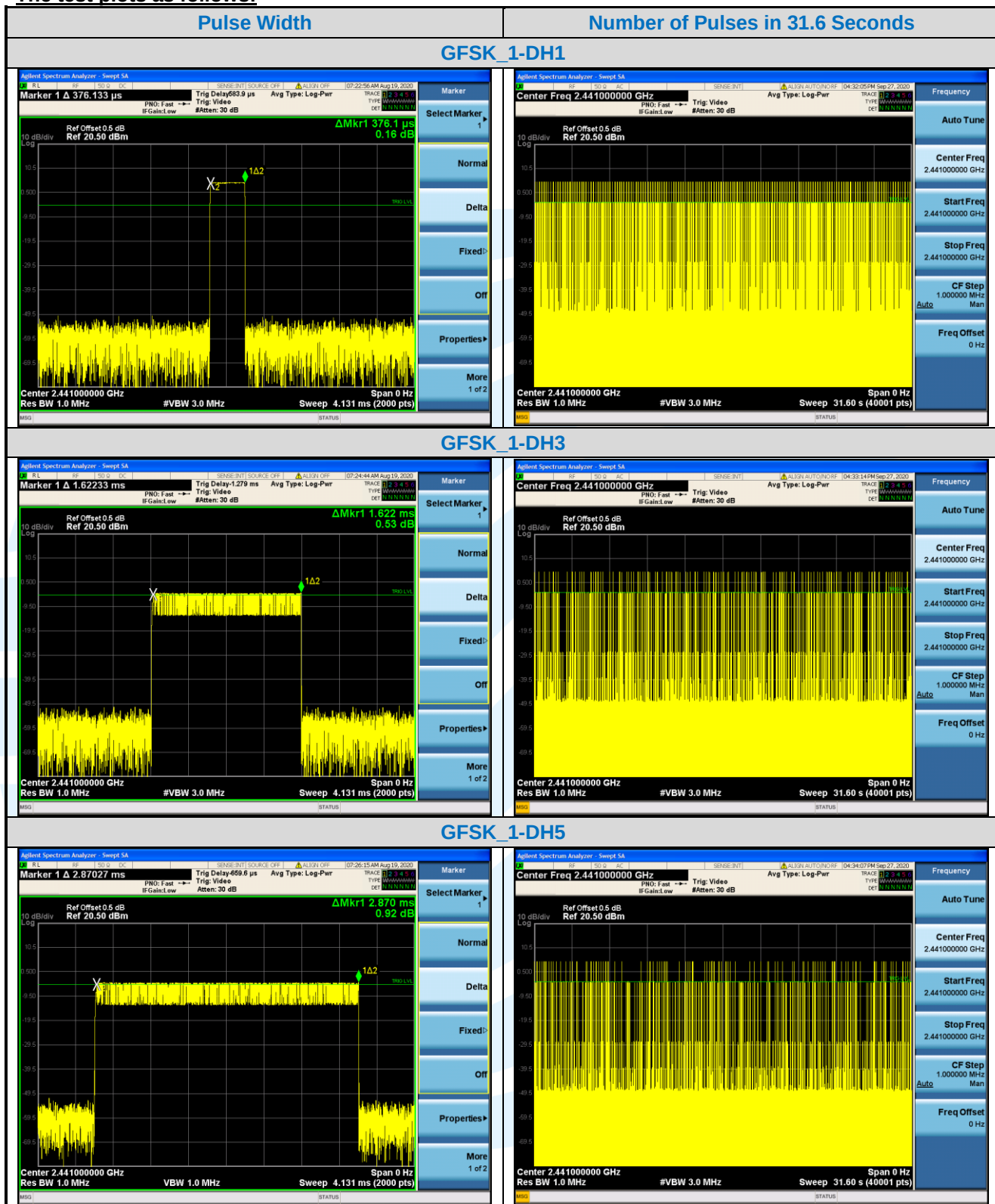
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