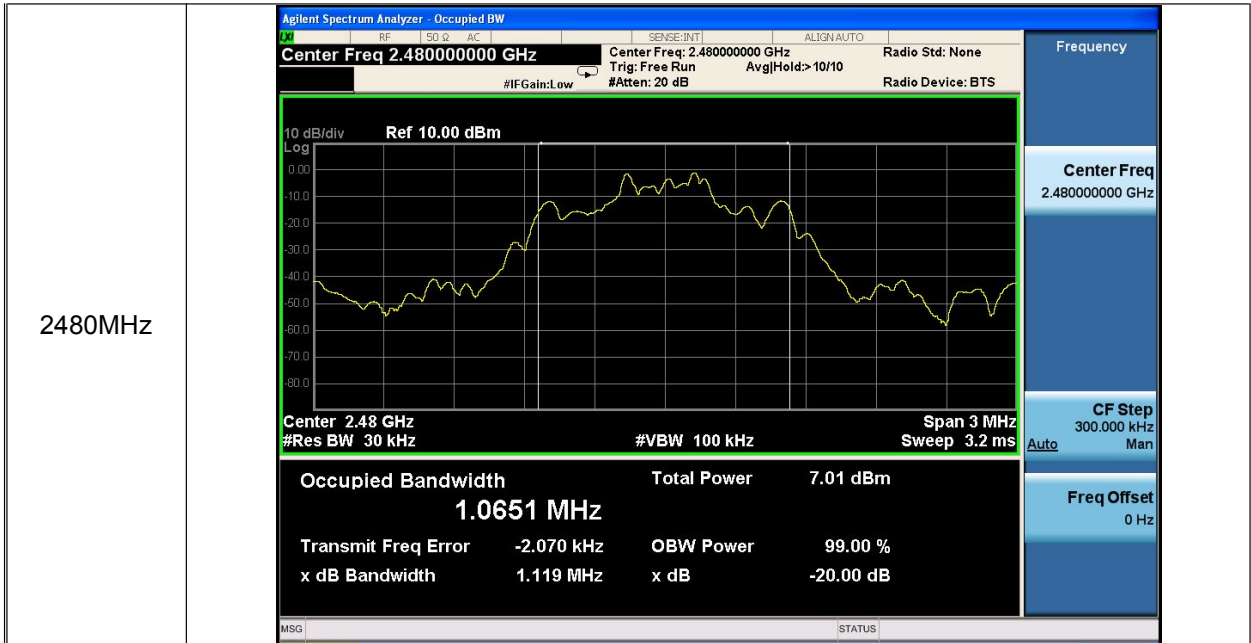




ATA Testing Technology Service Co., Ltd.

Report No.: ATA150921013F

Page: 26 of 57





ATA Testing Technology Service Co., Ltd.

Report No.: ATA150921013F

Page: 27 of 57

Modulation mode		8DPSK	
2402MHz	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.40200000 GHz</p> <p>Center Freq: 2.40200000 GHz</p> <p>Trig: Free Run AvgHold:>10/10</p> <p>#IFGain:Low #Atten: 20 dB</p> <p>Radio Std: None Radio Device: BTS</p> <p>10 dB/div Ref 10.00 dBm</p> <p>Center 2.402 GHz Span 3 MHz</p> <p>#Res BW 30 kHz #VBW 100 kHz Sweep 3.2 ms</p> <p>Occupied Bandwidth 1.1027 MHz</p> <p>Total Power 6.66 dBm</p> <p>Transmit Freq Error -2.407 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 1.164 MHz x dB -20.00 dB</p>		<p>Frequency</p> <p>Center Freq 2.40200000 GHz</p> <p>CF Step 300.000 kHz</p> <p>Freq Offset 0 Hz</p>
2441MHz	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.44100000 GHz</p> <p>Center Freq: 2.44100000 GHz</p> <p>Trig: Free Run AvgHold:>10/10</p> <p>#IFGain:Low #Atten: 20 dB</p> <p>Radio Std: None Radio Device: BTS</p> <p>10 dB/div Ref 10.00 dBm</p> <p>Center 2.441 GHz Span 3 MHz</p> <p>#Res BW 30 kHz #VBW 100 kHz Sweep 3.2 ms</p> <p>Occupied Bandwidth 1.1027 MHz</p> <p>Total Power 6.81 dBm</p> <p>Transmit Freq Error -2.206 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 1.162 MHz x dB -20.00 dB</p>		<p>Frequency</p> <p>Center Freq 2.44100000 GHz</p> <p>CF Step 300.000 kHz</p> <p>Freq Offset 0 Hz</p>



ATA Testing Technology Service Co., Ltd.

Report No.: ATA150921013F

Page: 28 of 57





7. Carrier Frequency Separation Test

7.1. Test Standard and Limit

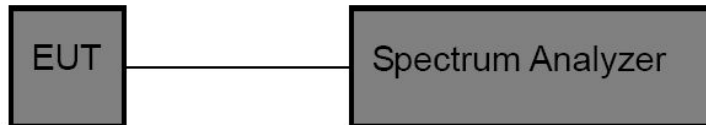
7.1.1 Test Standard

FCC Part15 C Section 15.247 (a)(1)

7.1.2 Test Limit

FCC Part 15 Subpart C(15.247)		
Test Item	Limit	Frequency Range (MHz)
Channel Separation	>25KHz or >two-thirds of the 20 dB bandwidth (Which is greater)	2400~2483.5

7.2. Test Setup



7.3. Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting:
RBW=100 kHz, VBW=300 kHz, detector= Peak, Sweep Time =auto.
- (3) The EUT was set to the Hopping Mode for Channel Separation Test and continuously transmitting for the Test.



7.4. Test Data

GFSK mode				
Channel Number	Channel Frequency (MHz)	Test Result (KHz)	Limit (KHz)	Judgment
CH 39	2441	1002	554.733	PASSED
$\pi/4$ -DQPSK mode				
Channel Number	Channel Frequency (MHz)	Test Result (KHz)	Limit (KHz)	Judgment
CH 39	2441	1002	744.667	PASSED
8DPSK mode				
Channel Number	Channel Frequency (MHz)	Test Result (KHz)	Limit (KHz)	Judgment
CH 39	2441	1002	774.667	PASSED
Remark: Test plot as follows				

According to section 6.4

Test Mode	20dB bandwidth (MHz)	Limit (kHz) (Carrier Frequency Separation)
GFSK	0.8321	554.733
$\pi/4$ -DQPSK	1.117	744.667
8DPSK	1.162	774.667



ATA Testing Technology Service Co., Ltd.

Report No.: ATA150921013F

Page: 31 of 57

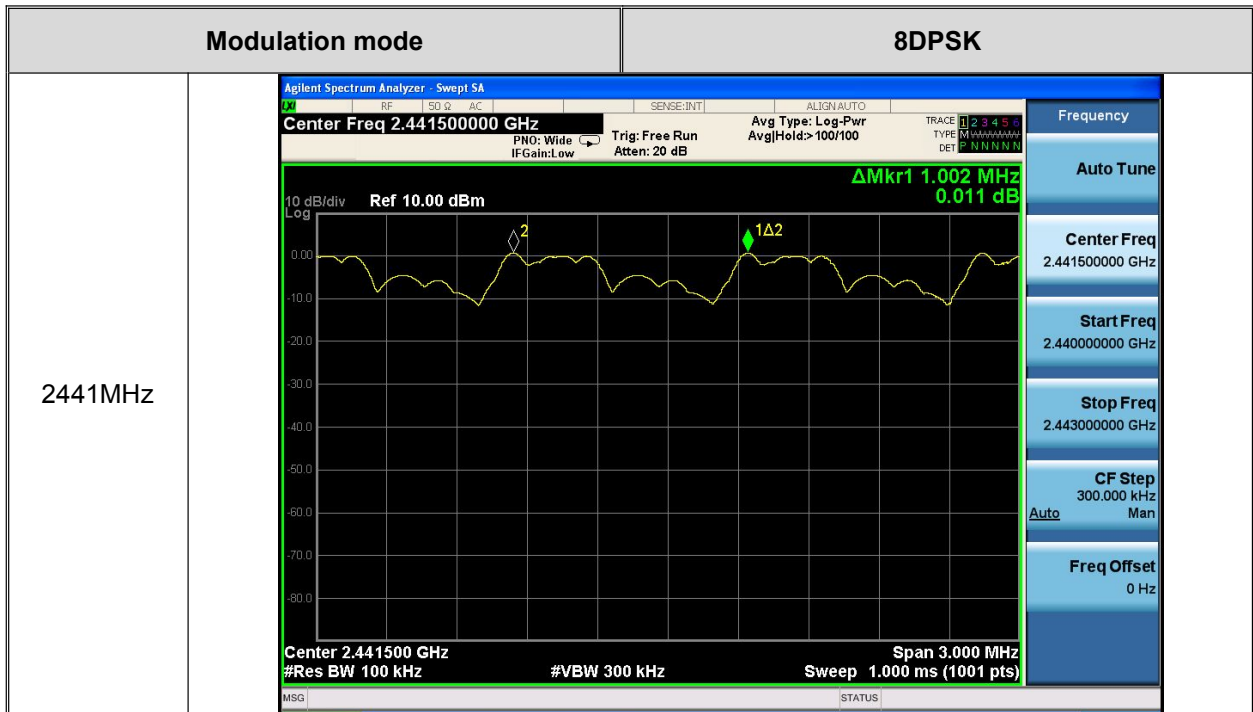




ATA Testing Technology Service Co., Ltd.

Report No.: ATA150921013F

Page: 32 of 57





8. Number of Hopping Channel

8.1. Test Standard and Limit

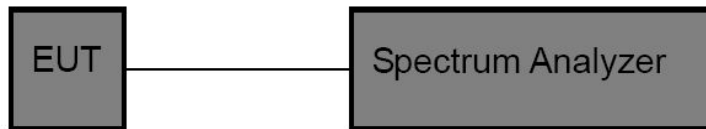
8.1.1 Test Standard

FCC Part15 C Section 15.247 (a)(1)

8.1.2 Test Limit

FCC Part 15 Subpart C (15.247)		
Test Item	Limit	Frequency Range (MHz)
Number of Hopping Channel	>15 channels	2400~2483.5

8.2. Test Setup



8.3. Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting: RBW=100 kHz, VBW=300 kHz, Detector=Peak, Sweep time= Auto.
- (3) The EUT was set to the Hopping Mode for Channel Separation Test and continuously transmitting for the Test.

8.4. Test Data

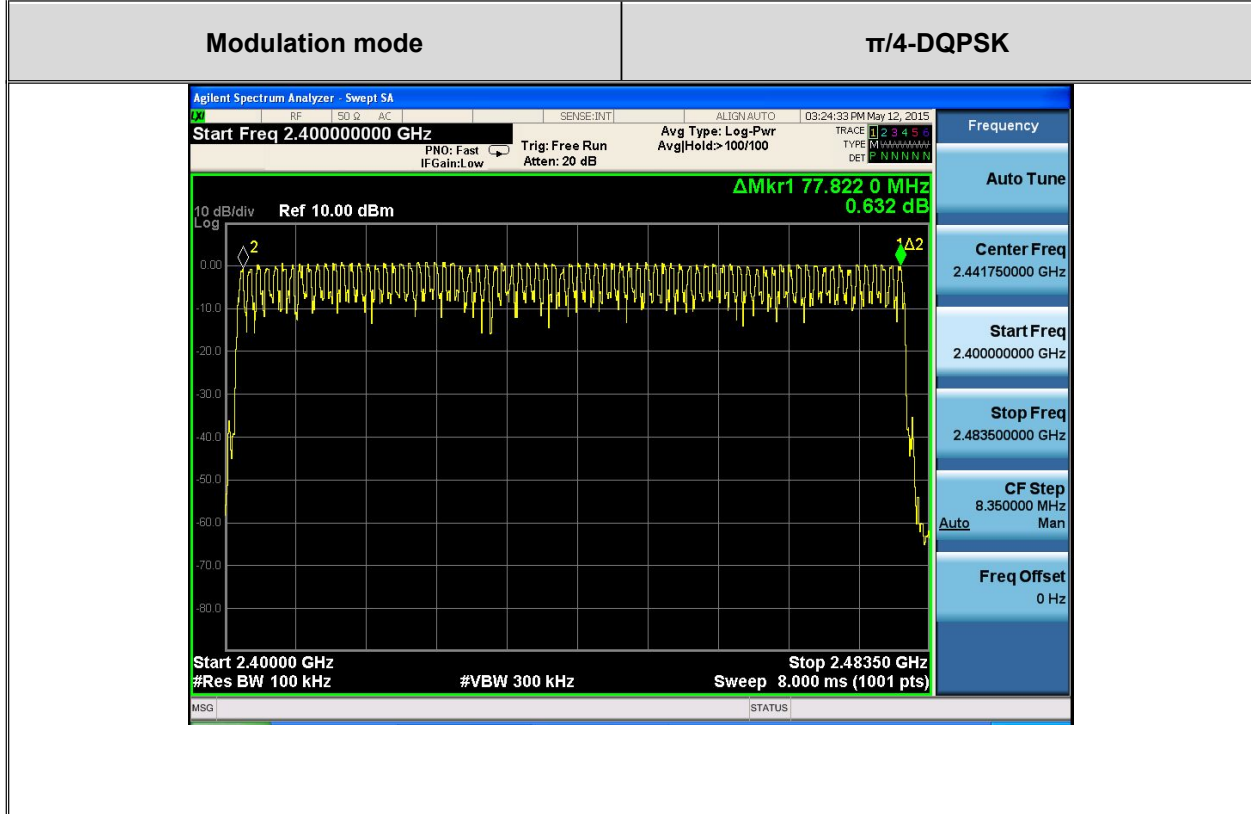
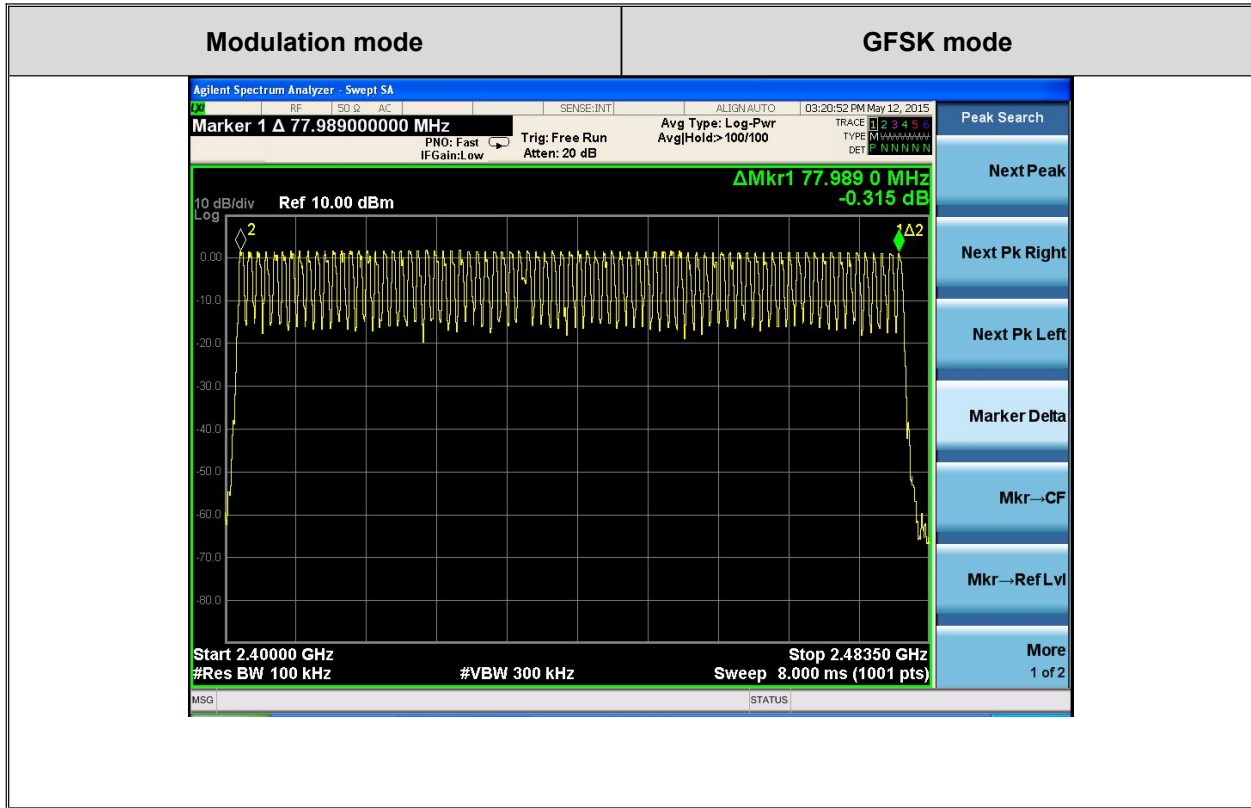
Mode	Quantity of Hopping Channel	Limit	Judgment
GFSK, $\pi/4$ -DQPSK, 8DPSK	79	>15	PASSED



ATA Testing Technology Service Co., Ltd.

Report No.: ATA150921013F

Page: 34 of 57

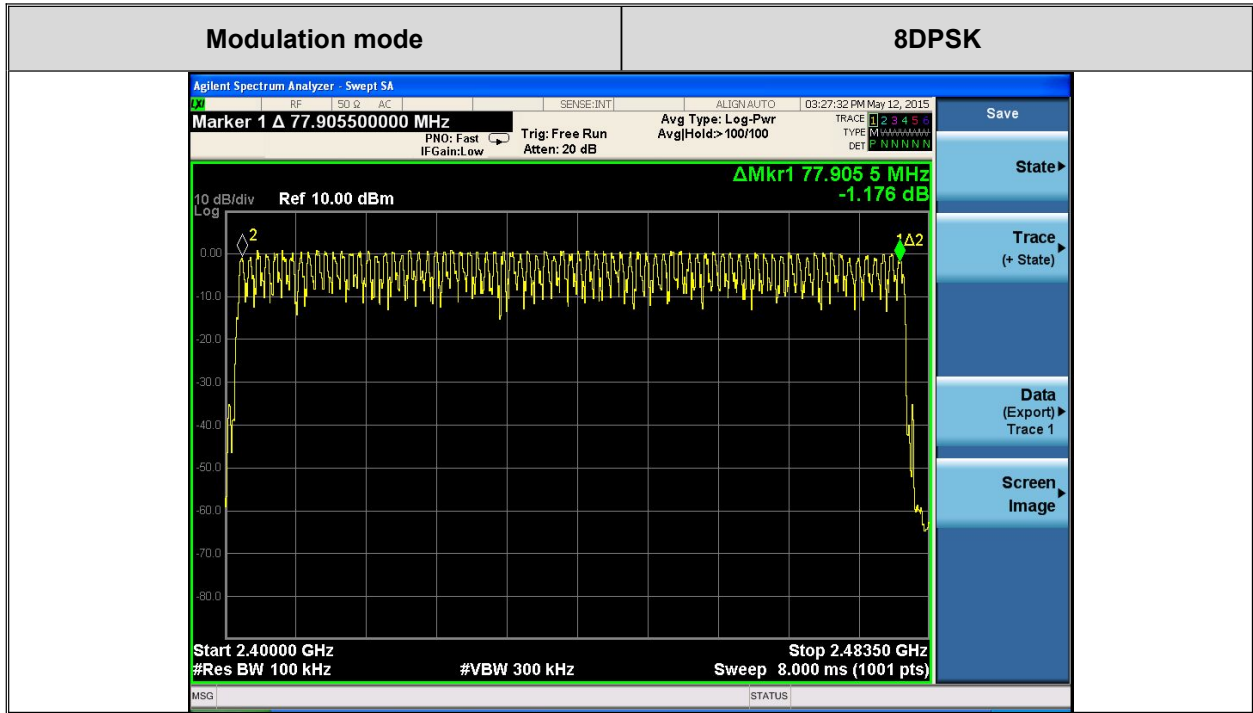




ATA Testing Technology Service Co., Ltd.

Report No.: ATA150921013F

Page: 35 of 57





9. Dwell Time Test

9.1. Test Standard and Limit

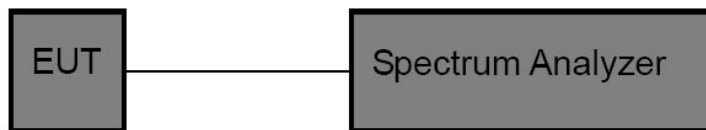
9.1.1 Test Standard

FCC Part15 C Section 15.247 (a)(1)

9.1.2 Test Limit

FCC Part 15 Subpart C(15.247)		
Section	Test Item	Limit
15.247(a)(1)	Dwell time	0.4 sec

9.2. Test Setup



9.3. Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting: RBW=1MHz, VBW=1MHz, Span=0Hz, Detector=Peak
- (3) Use video trigger with the trigger level set to enable triggering only on full pulses.
- (4) Sweep Time is more than once pulse time.
- (5) Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- (6) Measure the maximum time duration of one single pulse.
- (7) Set the EUT for packet transmitting.
- (8) Measure the maximum time duration of one single pulse.
- (9) The EUT was set to the Hopping Mode for Dwell Time Test



9.4. Test Data

For GFSK, $\pi/4$ -DQPSK and 8DPSK:

The test period: $T = 0.4 \text{ Second/Channel} \times 79 \text{ Channel} = 31.6 \text{ s}$

EUT: Bluetooth Speaker M/N: KTS-2003						
Mode	Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (s)	Limit (s)	Conclusion
GFSK	DH1	2441	0.364	0.233	<0.4	PASS
	DH3	2441	1.644	0.351	<0.4	PASS
	DH5	2441	2.864	0.367	<0.4	PASS
$\pi/4$ DQPSK	DH1	2441	0.371	0.237	<0.4	PASS
	DH3	2441	1.617	0.345	<0.4	PASS
	DH5	2441	2.864	0.367	<0.4	PASS
8- DQPSK	DH1	2441	0.374	0.239	<0.4	PASS
	DH3	2441	1.62	0.346	<0.4	PASS
	DH5	2441	2.873	0.368	<0.4	PASS

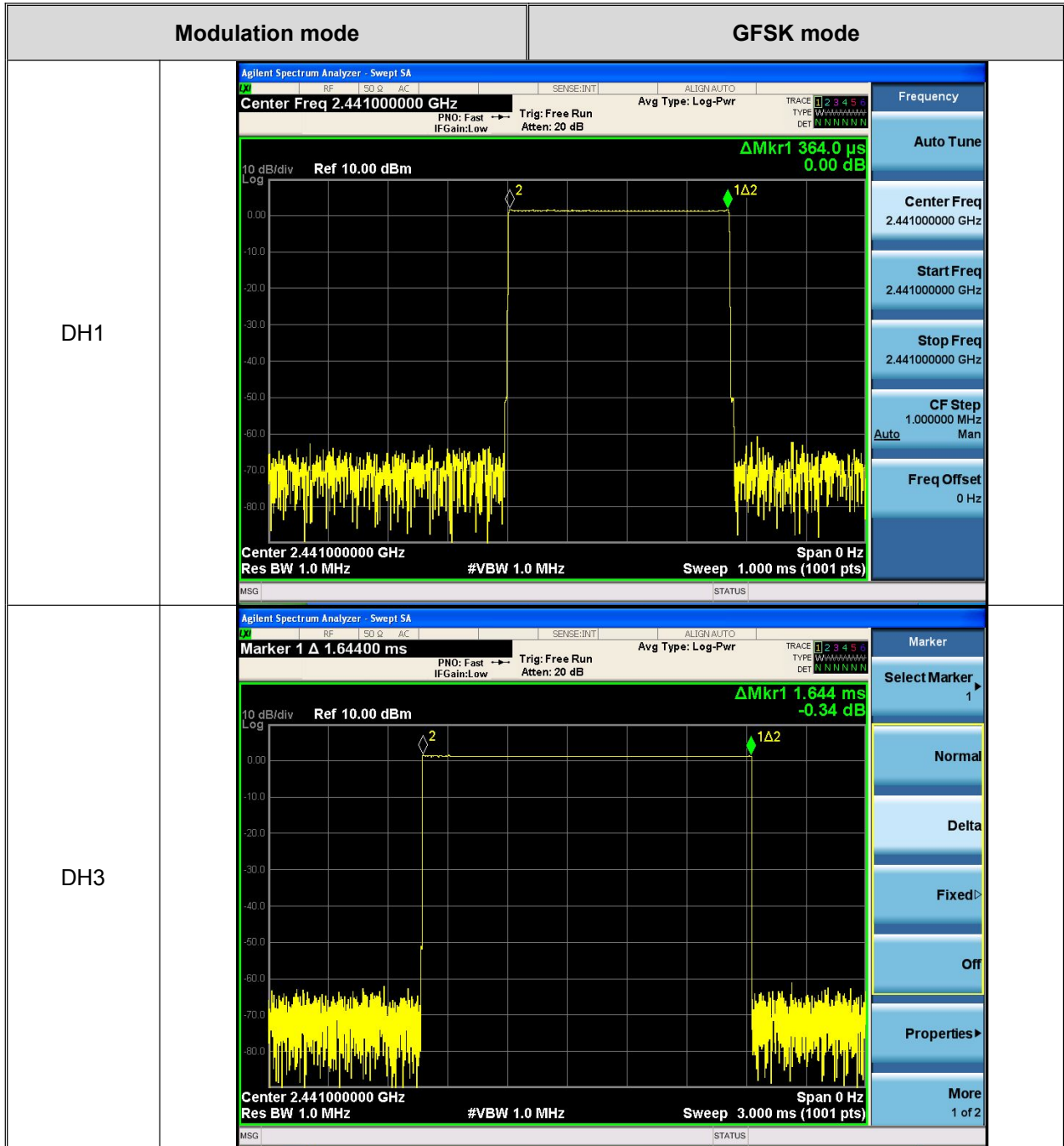
Note: 1 A period time = $0.4 \text{ (s)} \times 79 = 31.6\text{(s)}$
2 DH1 time slot = $\text{Pulse Duration} \times (1600/(1 \times 79)) \times \text{A period time}$
DH3 time slot = $\text{Pulse Duration} \times (1600/(3 \times 79)) \times \text{A period time}$
DH5 time slot = $\text{Pulse Duration} \times (1600/(5 \times 79)) \times \text{A period time}$

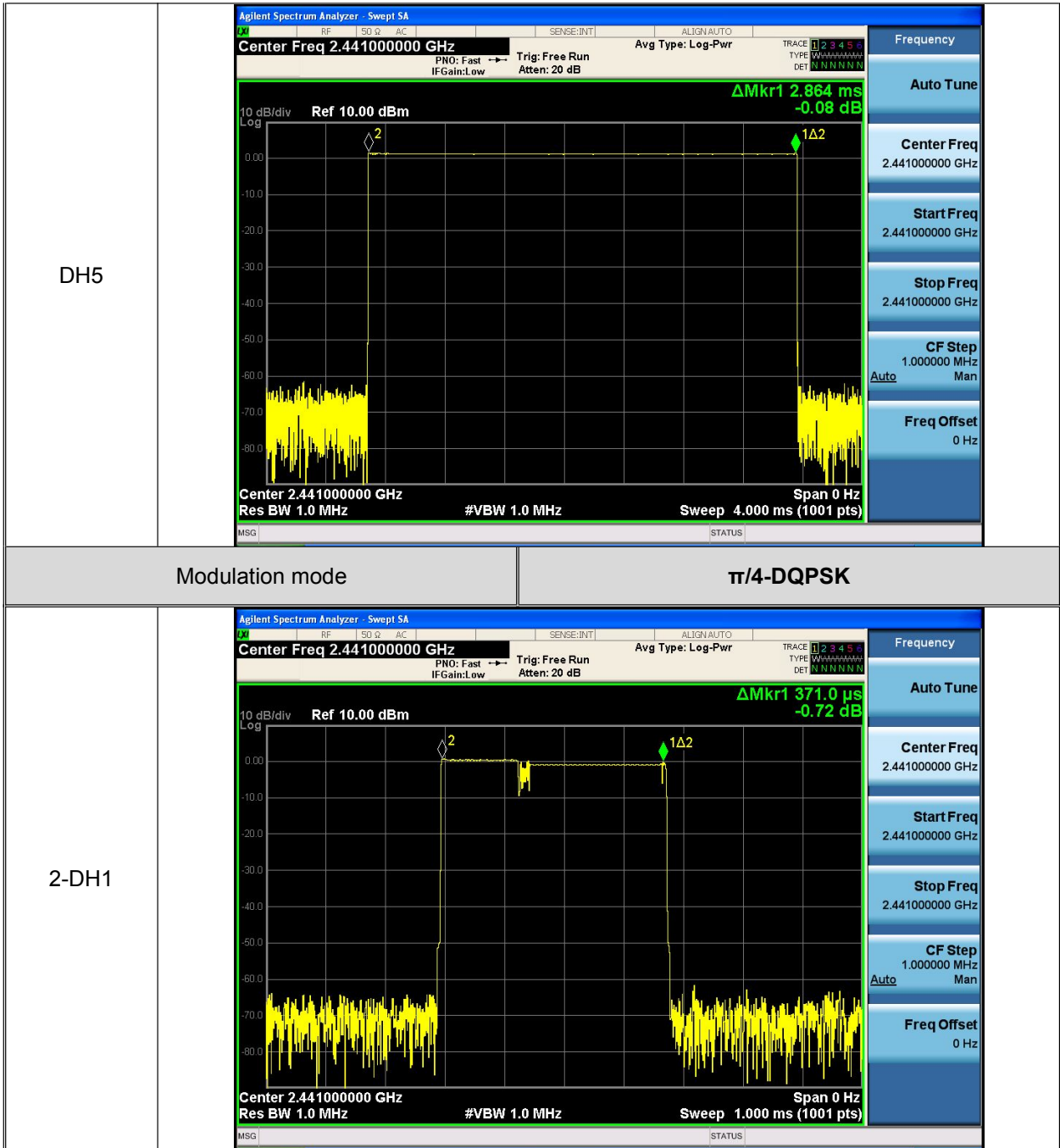


ATA Testing Technology Service Co., Ltd.

Report No.: ATA150921013F

Page: 38 of 57



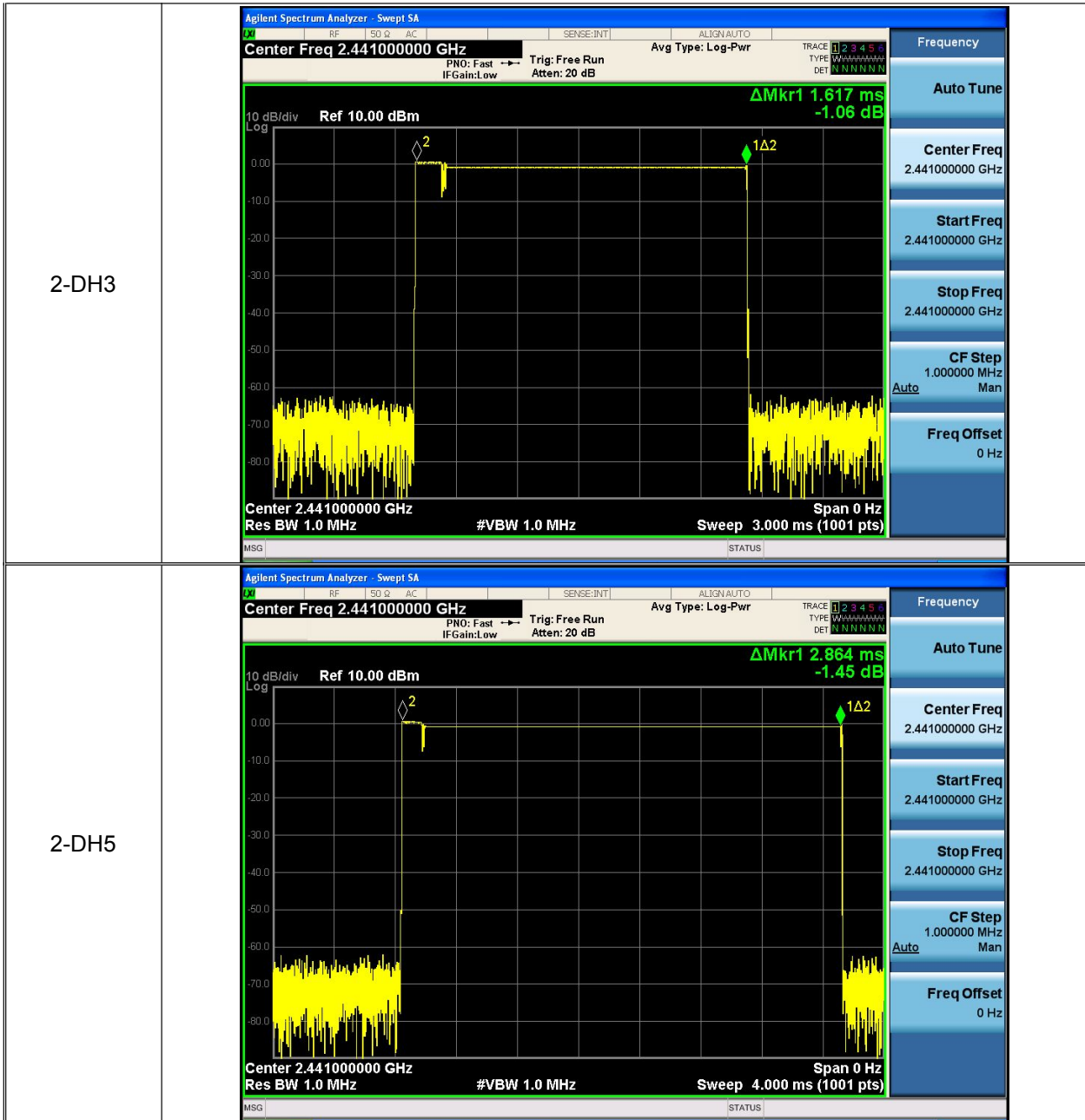




ATA Testing Technology Service Co., Ltd.

Report No.: ATA150921013F

Page: 40 of 57

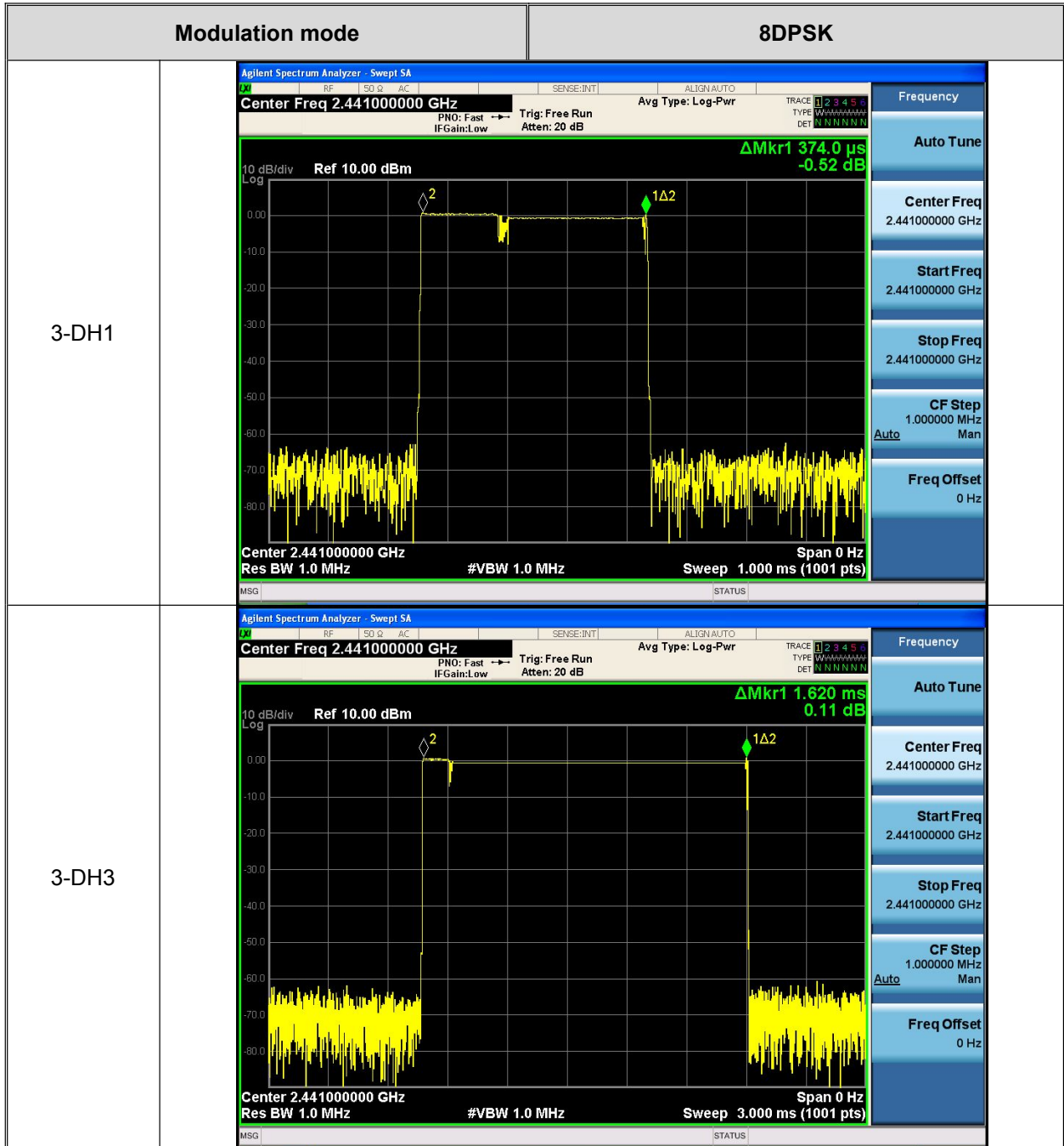




ATA Testing Technology Service Co., Ltd.

Report No.: ATA150921013F

Page: 41 of 57





ATA Testing Technology Service Co., Ltd.

Report No.: ATA150921013F

Page: 42 of 57

