

APPENDIX REPORT

Project No.	SHT2207088501EW	Radio Specification	Bluetooth EDR
Test sample No.	YPHT22070885003	Model No.	Smart K
Start test date	2022-08-01	Finish date	2022-08-01
Temperature	26.5°C	Humidity	31%
Test Engineer	Xiaoxiao Li	Auditor	<i>Xiaodong Zhe</i>

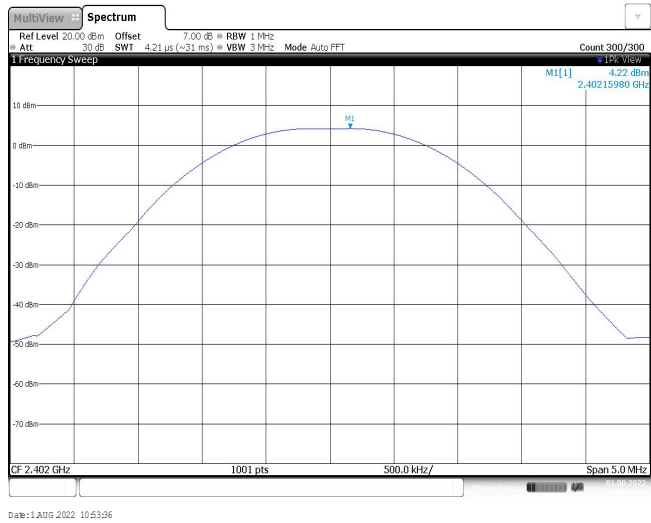
Appendix clause	Test item	Result
A	Peak Output Power	PASS
B	20 dB Bandwidth	PASS
C	99% Occupied Bandwidth	PASS
D	Carrier Frequencies Separation	PASS
E	Hopping Channel Number	PASS
F	Dwell Time	PASS
G	Duty Cycle Correction Factor (DCCF)	PASS
H	Band edge and Spurious Emissions(coducted)	PASS

Appendix A: Peak Output Power

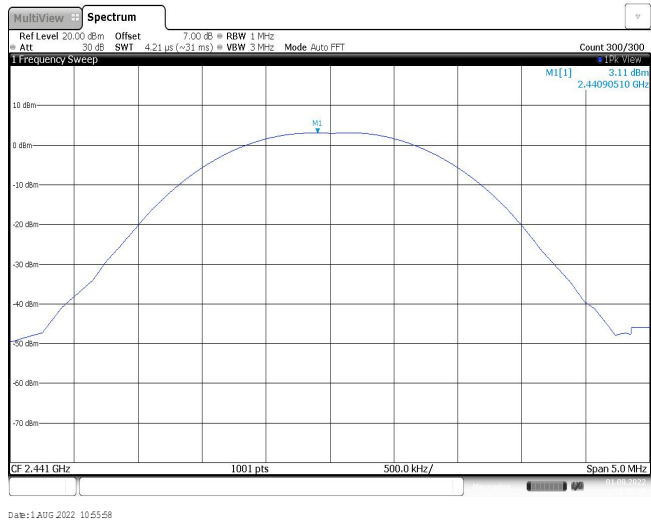
Modulation type	Channel	Peak Output power (dBm)	Average Output power (dBm)	Limit (dBm)	Result
GFSK	00	4.22	4.21	≤ 30.00	Pass
	39	3.11	3.10		
	78	3.64	3.63		
π/4DQPSK	00	4.34	3.83	≤ 21.00	Pass
	39	3.99	3.50		
	78	3.58	3.07		
8DPSK	00	4.44	3.91	≤ 21.00	Pass
	39	4.13	3.62		
	78	3.75	3.15		

Modulation Type: GFSK

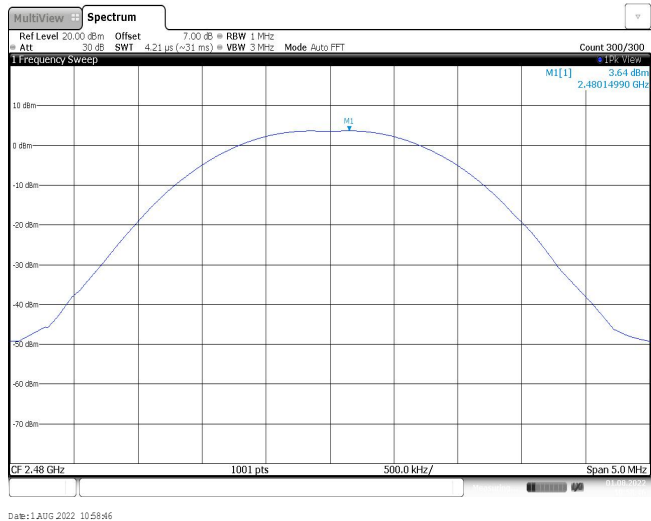
CH00



CH39

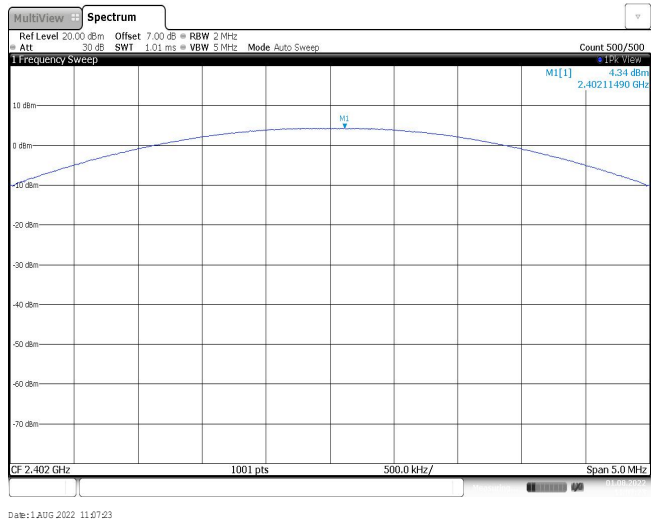


CH78

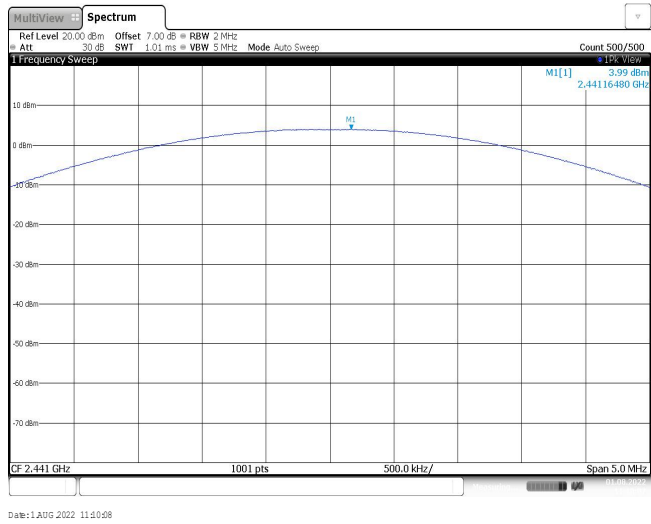


Modulation Type: $\pi/4$ QPSK

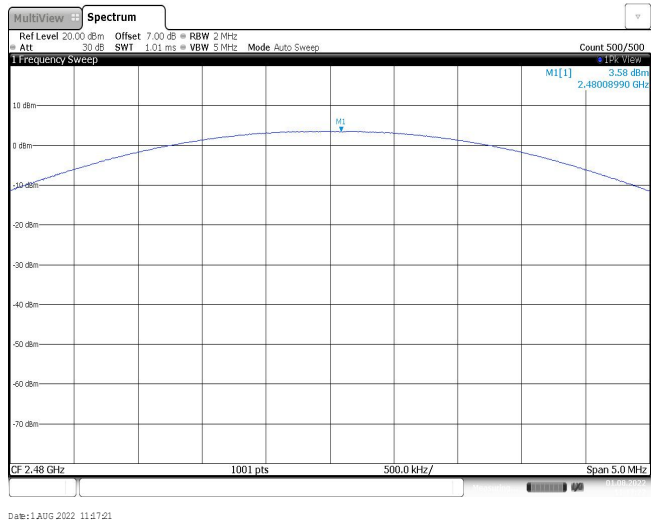
CH00



CH39



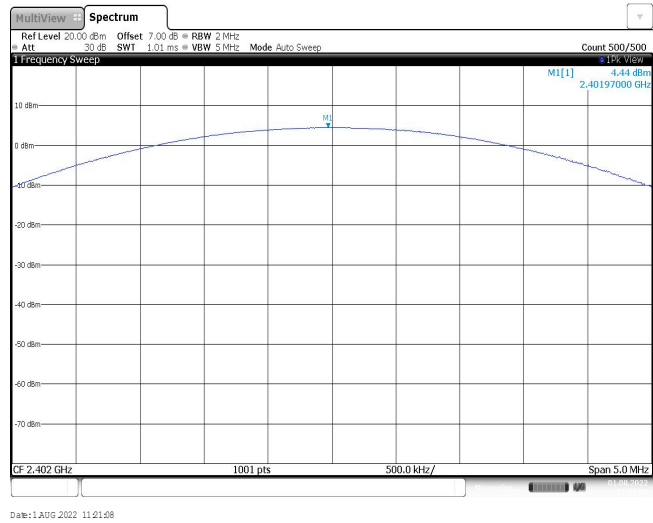
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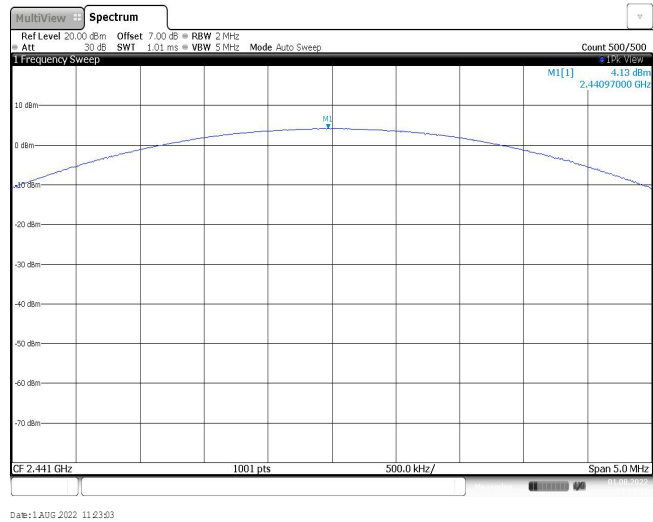
Modulation Type:

8DPSK

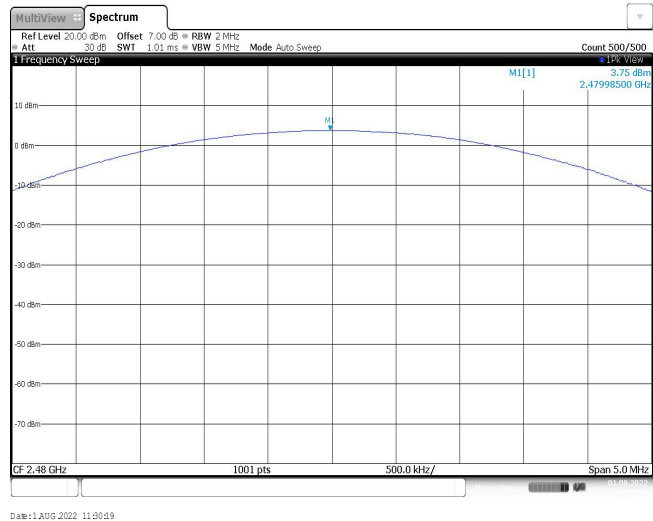
CH00



CH39



CH78



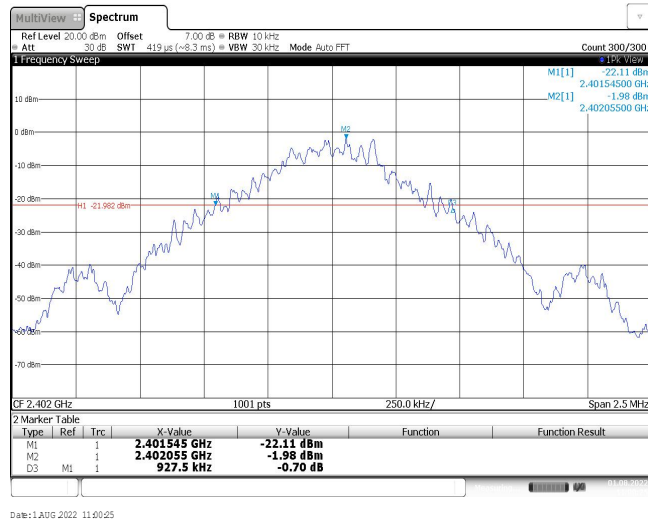
Appendix B : 20 dB Bandwidth

Modulation type	Channel	20 dB Bandwidth (kHz)	Limit (kHz)	Result
GFSK	00	927.50	-	Pass
	39	927.50		
	78	927.50		
$\pi/4$ DQPSK	00	1285.00	-	Pass
	39	1285.00		
	78	1282.50		
8DPSK	00	1292.50	-	Pass
	39	1300.00		
	78	1295.00		

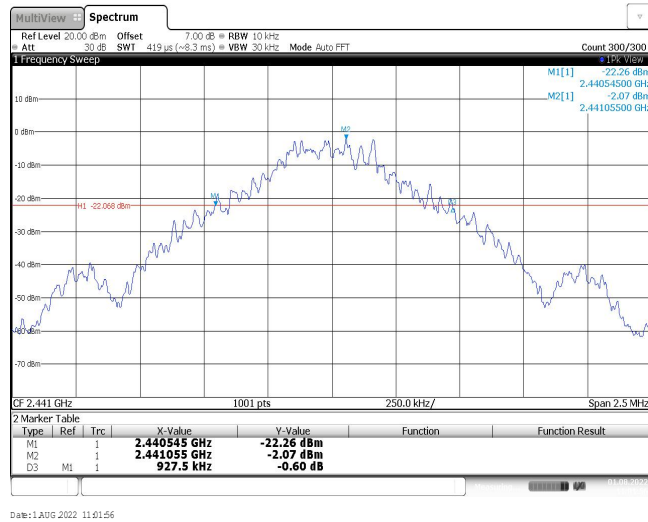
Modulation Type:

GFSK

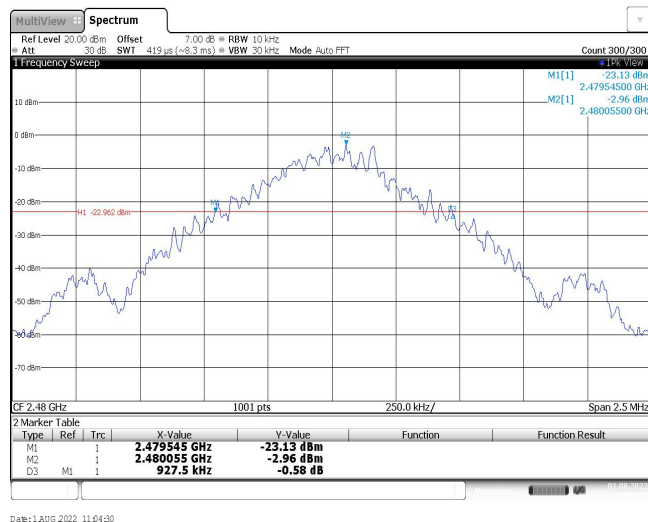
CH00



CH39



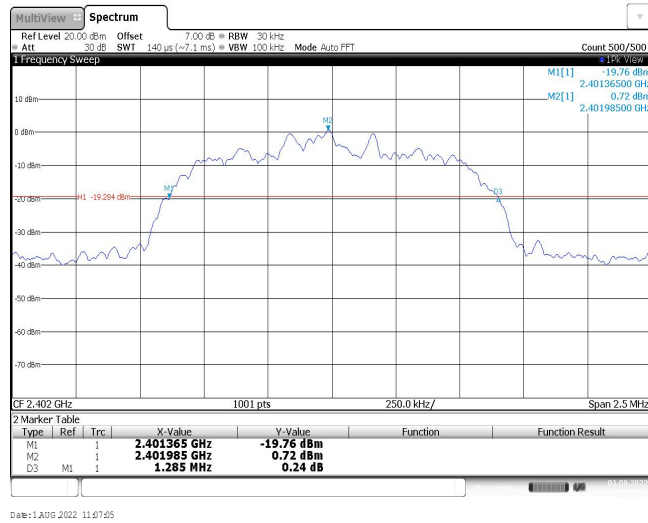
CH78



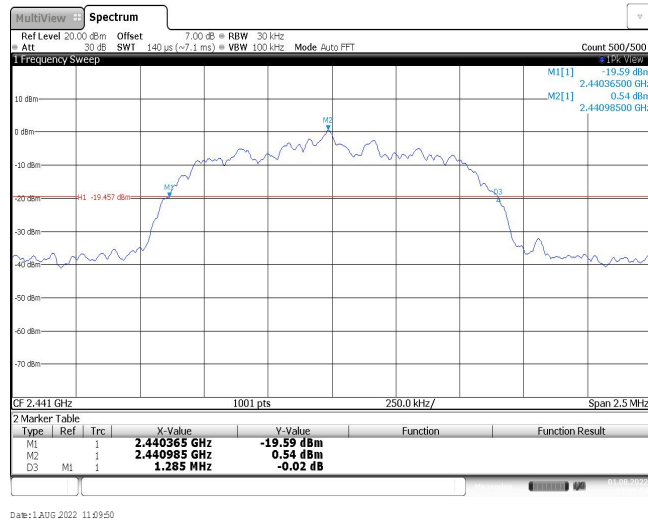
Modulation Type:

$\pi/4$ DQPSK

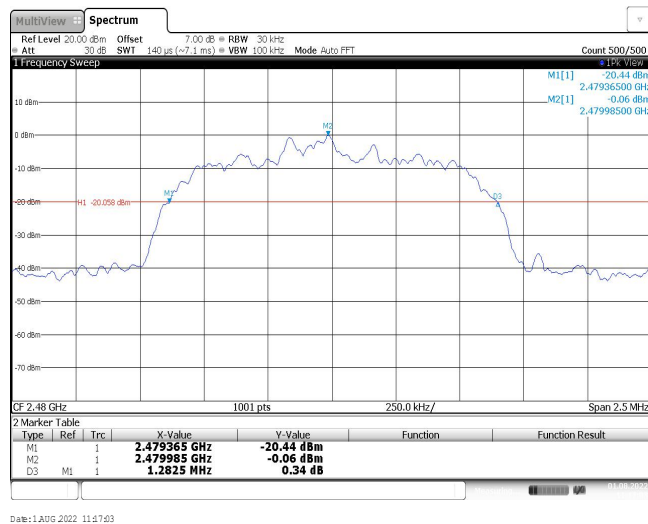
CH00



CH39



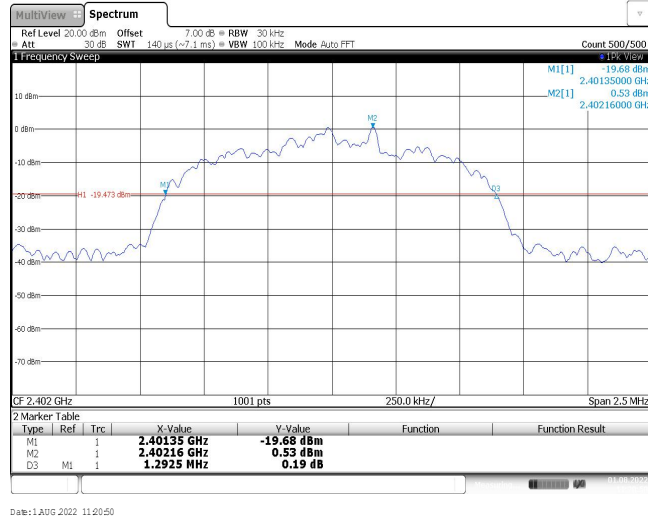
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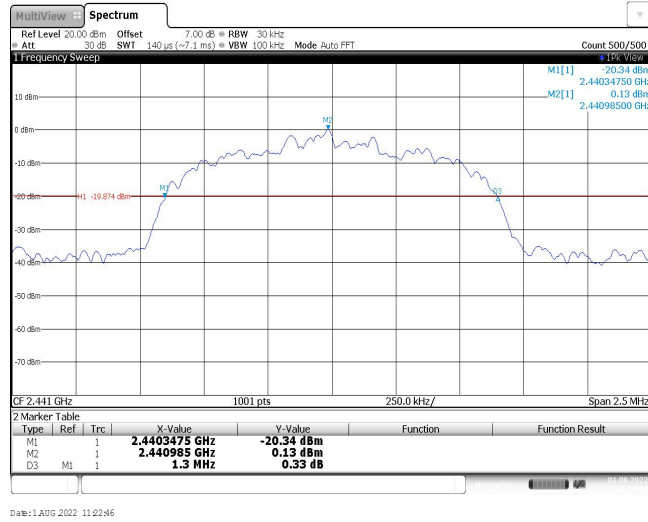
Modulation Type:

8DPSK

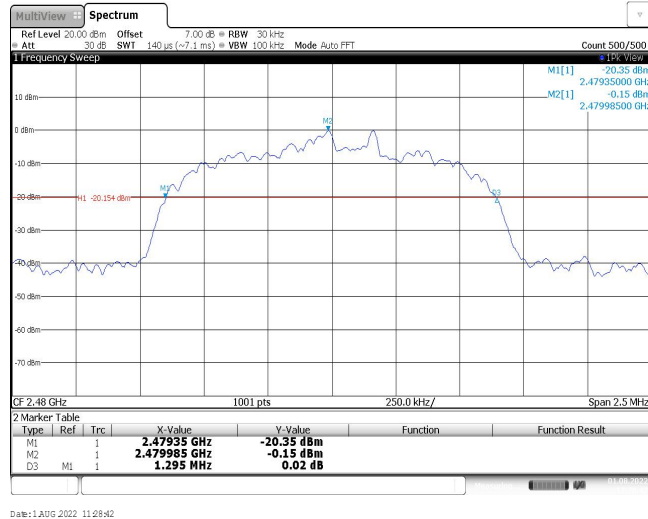
CH00



CH39



CH78



Appendix C: 99% Occupied Bandwidth

Modulation type	Channel	99% Occupied Bandwidth (MHz)	Limit (MHz)	Result
GFSK	00	0.90	-	Pass
	39	0.90		
	78	0.90		
$\pi/4$ DQPSK	00	1.18	-	Pass
	39	1.18		
	78	1.18		
8DPSK	00	1.18	-	Pass
	39	1.18		
	78	1.19		

Modulation Type: GFSK																													
CH00	<p>1 Occupied Bandwidth</p> <p>CF 2.402 GHz 1001 pts 250.0 kHz/ Span 2.5 MHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>2.4020549 GHz</td> <td>1.30 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>2.40154793 GHz</td> <td>-15.34 dBm</td> <td>Occ BW</td> <td>901.598401598 kHz</td> </tr> <tr> <td>T2</td> <td>1</td> <td></td> <td>2.40244955 GHz</td> <td>-16.93 dBm</td> <td></td> <td></td> </tr> </tbody> </table> <p>Date: 1 AUG 2022 11:40:33</p>	Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.4020549 GHz	1.30 dBm			T1	1		2.40154793 GHz	-15.34 dBm	Occ BW	901.598401598 kHz	T2	1		2.40244955 GHz	-16.93 dBm		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																							
M1	1		2.4020549 GHz	1.30 dBm																									
T1	1		2.40154793 GHz	-15.34 dBm	Occ BW	901.598401598 kHz																							
T2	1		2.40244955 GHz	-16.93 dBm																									
CH39	<p>1 Occupied Bandwidth</p> <p>CF 2.441 GHz 1001 pts 250.0 kHz/ Span 2.5 MHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>2.4410549 GHz</td> <td>1.25 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>2.44055043 GHz</td> <td>-15.27 dBm</td> <td>Occ BW</td> <td>896.603396604 kHz</td> </tr> <tr> <td>T2</td> <td>1</td> <td></td> <td>2.44144705 GHz</td> <td>-17.34 dBm</td> <td></td> <td></td> </tr> </tbody> </table> <p>Date: 1 AUG 2022 11:42:04</p>	Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.4410549 GHz	1.25 dBm			T1	1		2.44055043 GHz	-15.27 dBm	Occ BW	896.603396604 kHz	T2	1		2.44144705 GHz	-17.34 dBm		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																							
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T1	1		2.44055043 GHz	-15.27 dBm	Occ BW	896.603396604 kHz																							
T2	1		2.44144705 GHz	-17.34 dBm																									
CH78	<p>1 Occupied Bandwidth</p> <p>CF 2.48 GHz 1001 pts 250.0 kHz/ Span 2.5 MHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>2.4801598 GHz</td> <td>0.53 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>2.47954795 GHz</td> <td>-16.34 dBm</td> <td>Occ BW</td> <td>904.095904096 kHz</td> </tr> <tr> <td>T2</td> <td>1</td> <td></td> <td>2.48045205 GHz</td> <td>-17.51 dBm</td> <td></td> <td></td> </tr> </tbody> </table> <p>Date: 1 AUG 2022 11:44:39</p>	Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.4801598 GHz	0.53 dBm			T1	1		2.47954795 GHz	-16.34 dBm	Occ BW	904.095904096 kHz	T2	1		2.48045205 GHz	-17.51 dBm		
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T2	1		2.48045205 GHz	-17.51 dBm																									

Modulation Type:

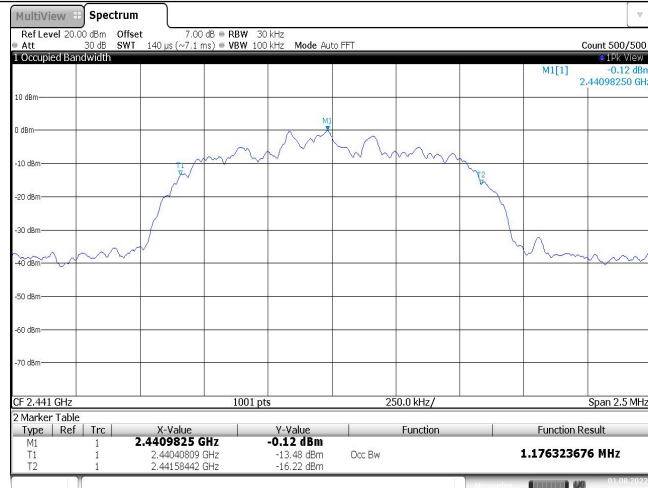
$\pi/4$ DQPSK

CH00



Date:1.AUG.2022 11:07:14

CH39



Date:1.AUG.2022 11:09:59

CH78



Date:1.AUG.2022 11:47:12

Modulation Type:

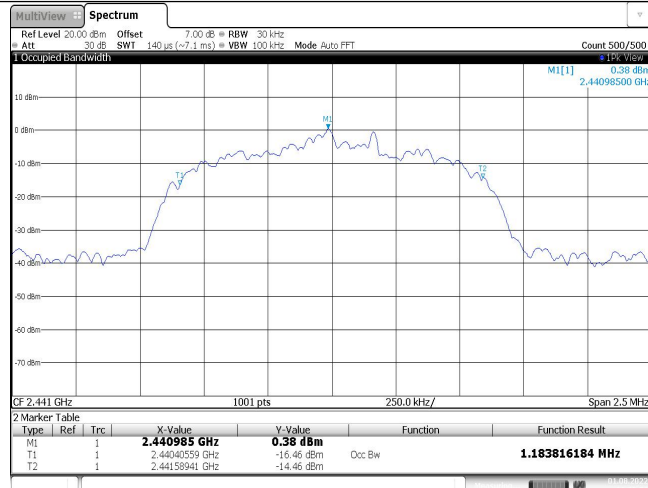
8DPSK

CH00



Date:1.AUG.2022 11:20:59

CH39



Date:1.AUG.2022 11:22:54

CH78



Date:1.AUG.2022 11:28:50

Appendix D: Carrier Frequencies Separation

Modulation type	Channel	Carrier Frequencies Separation (MHz)	Limit (kHz) *	Result
GFSK	39	1.00	≥927.50	Pass
π/4DQPSK	39	1.00	≥856.67	Pass
8DPSK	39	1.00	≥866.67	Pass

Note:

*: GFSK limit = The maximum 20 dB Bandwidth for GFSK modulation on the appendix B.

π/4DQPSK limit = 2/3 * The maximum 20 dB Bandwidth for π/4DQPSK modulation on the appendix B.

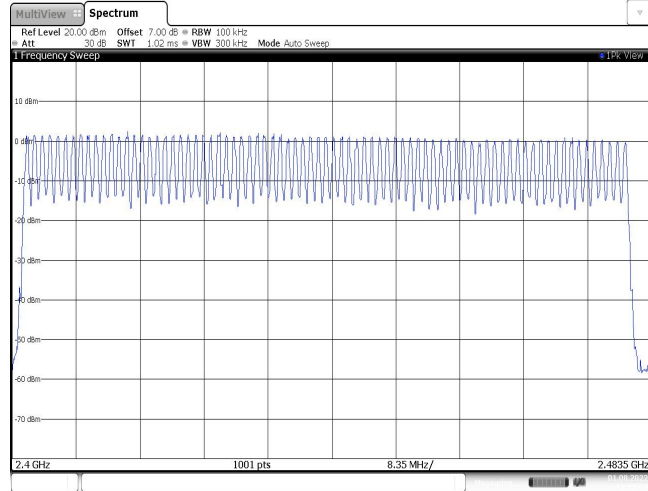
8DPSK limit = 2/3 * The maximum 20 dB Bandwidth for 8DPSK modulation on the appendix B

<p style="text-align: center;">GFSK</p>	<p style="text-align: center;">Date: 1 AUG 2022 17:00:19</p>
<p style="text-align: center;">$\pi/4$DQPSK</p>	<p style="text-align: center;">Date: 1 AUG 2022 17:02:08</p>
<p style="text-align: center;">8DPSK</p>	<p style="text-align: center;">Date: 1 AUG 2022 13:53:10</p>

Appendix E: Hopping Channel Number

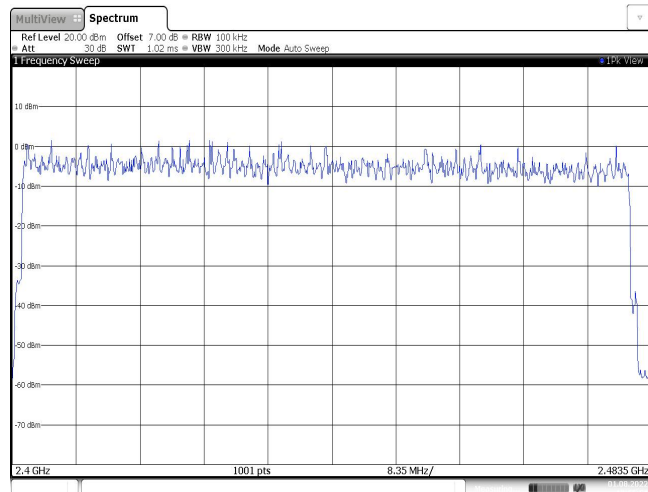
Modulation type	Channel number	Limit	Result
GFSK	79	≥15.00	Pass
π/4DQPSK	79		
8DPSK	79		

GFSK



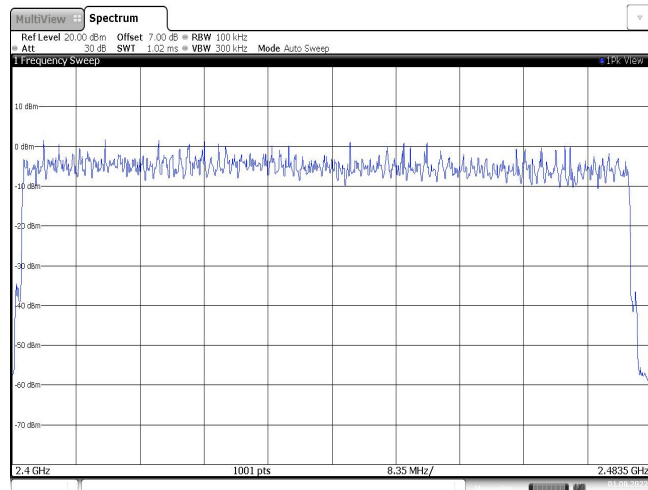
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$\pi/4$ DQPSK



Date:1 AUG 2022 13:56:54

8DPSK



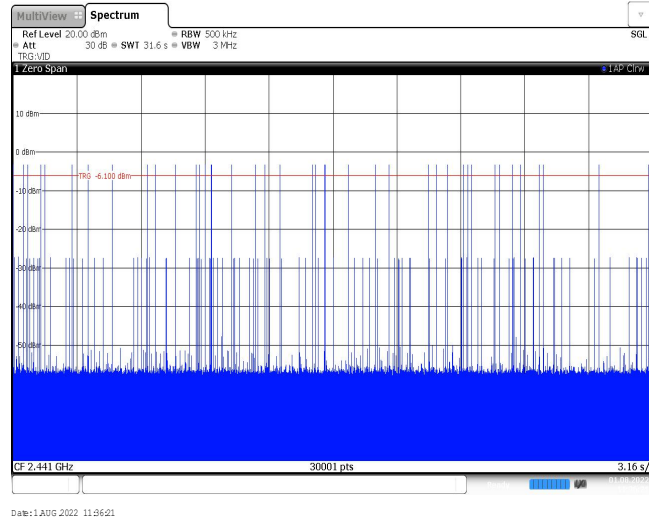
Date:1 AUG 2022 13:58:29

Appendix F: Dwell Time

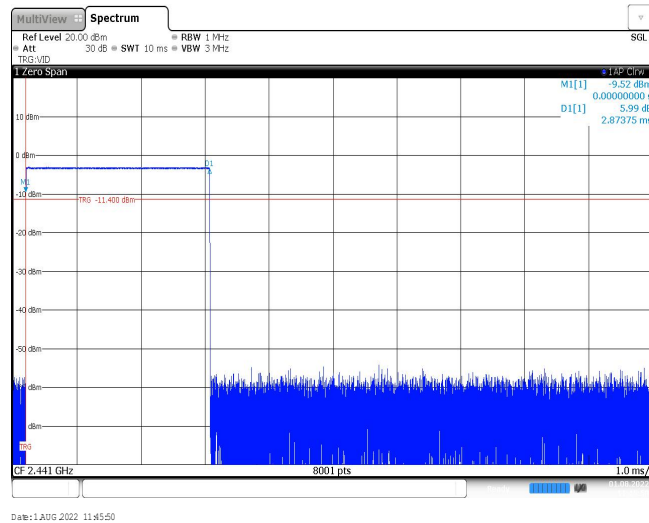
Modulation type	Packet	Burst Width [ms]	Total Hops[hop*ch]	Dwell time (Second)	Limit (Second)	Result
GFSK	DH1	0.37	105	0.04	≤ 0.40	Pass
	DH3	1.63	39	0.06		
	DH5	2.87	32	0.09		
π/4DQPSK	2DH1	0.38	103	0.04	≤ 0.40	Pass
	2DH3	1.63	42	0.07		
	2DH5	2.88	36	0.10		
8DPSK	3DH1	0.38	105	0.04	≤ 0.40	Pass
	3DH3	1.63	45	0.07		
	3DH5	2.88	29	0.08		

Modulation Type: GFSK	
DH1 Burst width	
DH1 Burst number	
DH3 Burst width	

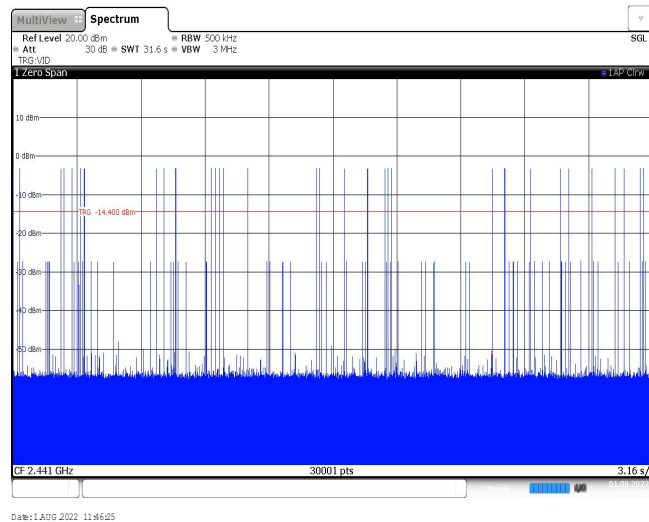
DH3
Burst number



DH5
Burst width

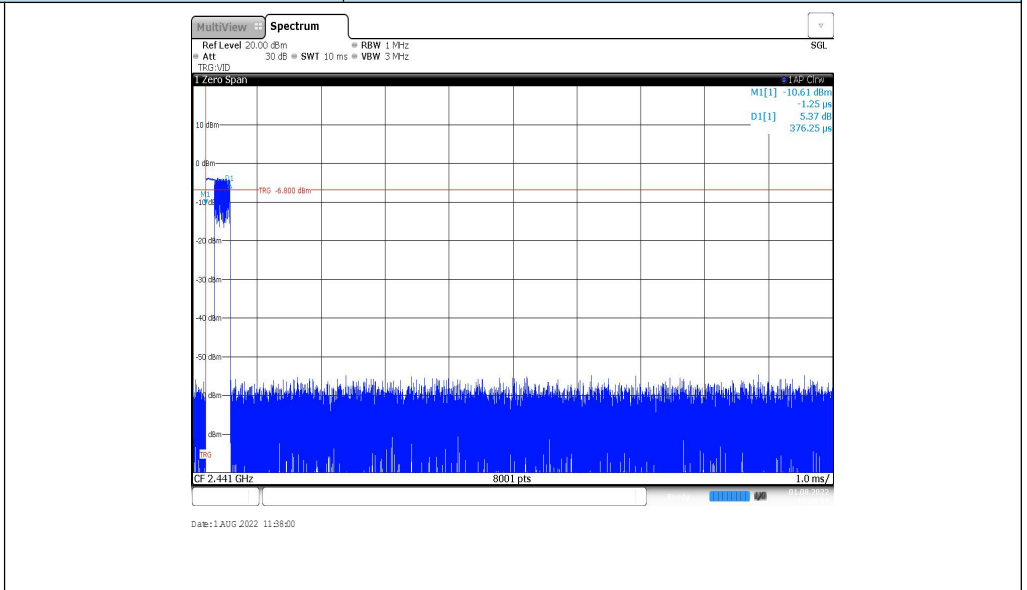


DH5
Burst number

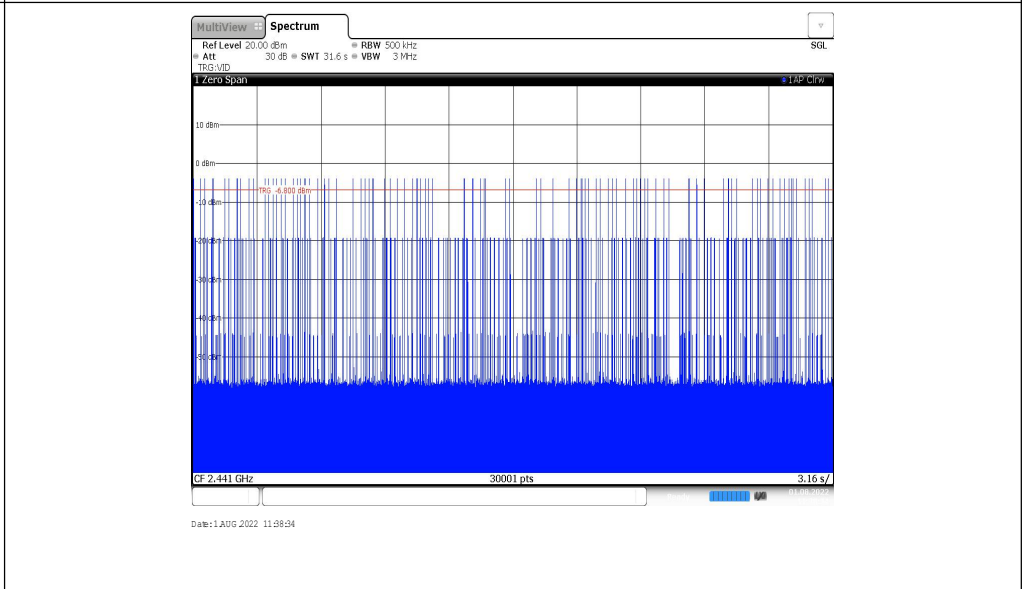


Modulation Type: **$\pi/4$ DQPSK**

2DH1
Burst width



2DH1
Burst number



2DH3
Burst width

