

APPENDIX REPORT

Project No.	SHT2207009001EW	Radio Specification	Bluetooth EDR
Test sample No.	YPHT22070090009	Model No.	HL60-L-GP-ZX
Start test date	2022-07-13	Finish date	2022-07-13
Temperature	24.9℃	Humidity	34%
Test Engineer	Xiaoqin Li	Auditor	Xiaodong Zhuo

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

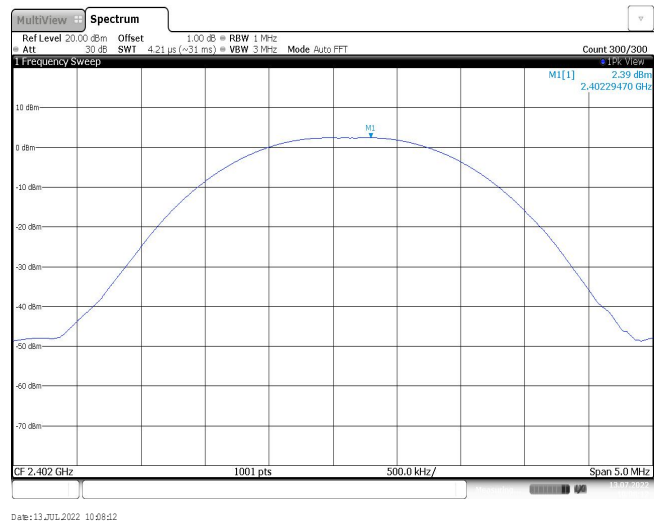
Appendix A: Peak Output Power

Modulation type	Channel	Peak Output power (dBm)	Average Output power (dBm)	Limit (dBm)	Result
GFSK	00	2.39	2.38	≤ 30.00	Pass
	39	3.05	3.04		
	78	3.30	3.27		
$\pi/4$ DQPSK	00	4.58	4.07	≤ 21.00	Pass
	39	5.20	4.65		
	78	5.54	4.98		
8DPSK	00	4.29	3.88	≤ 21.00	Pass
	39	5.48	4.75		
	78	5.87	5.14		

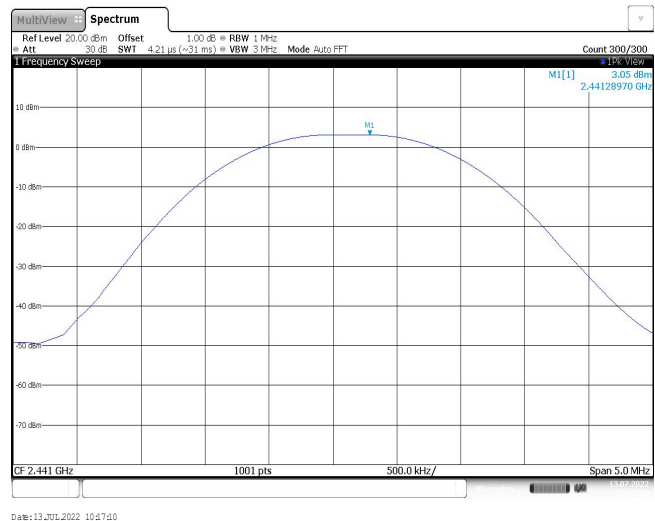
Modulation Type:

GFSK

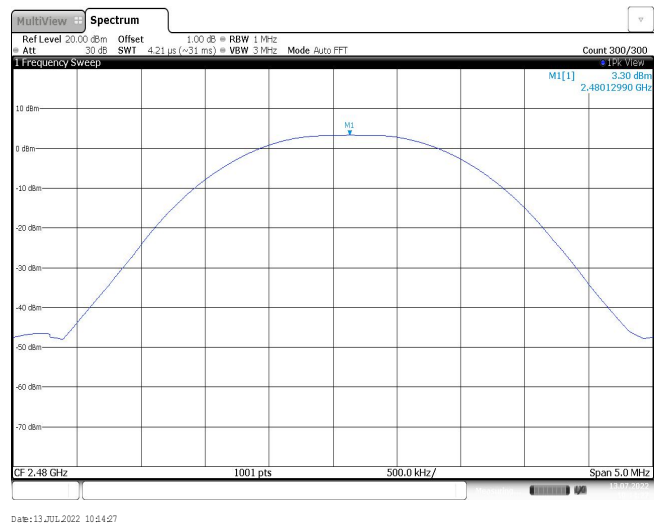
CH00



CH39



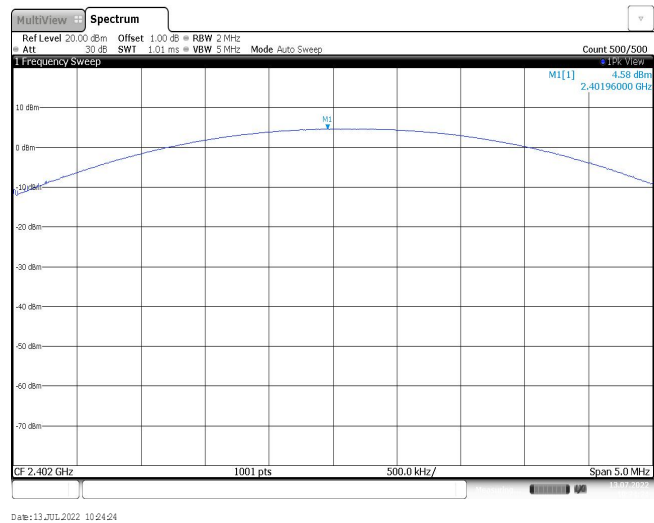
CH78



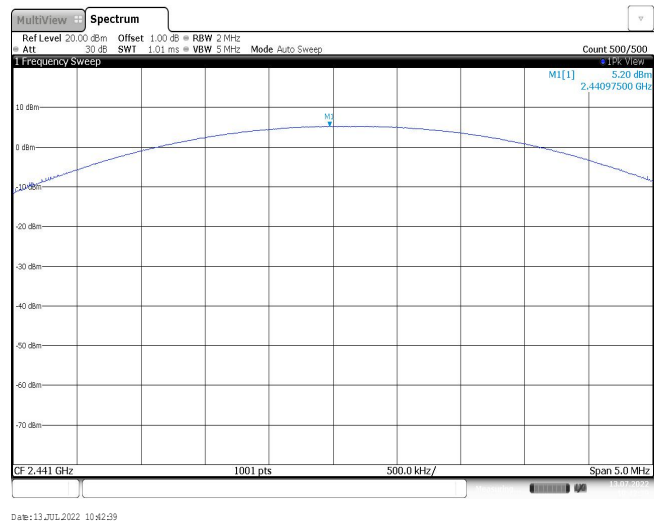
Modulation Type:

 $\pi/4$ DQPSK

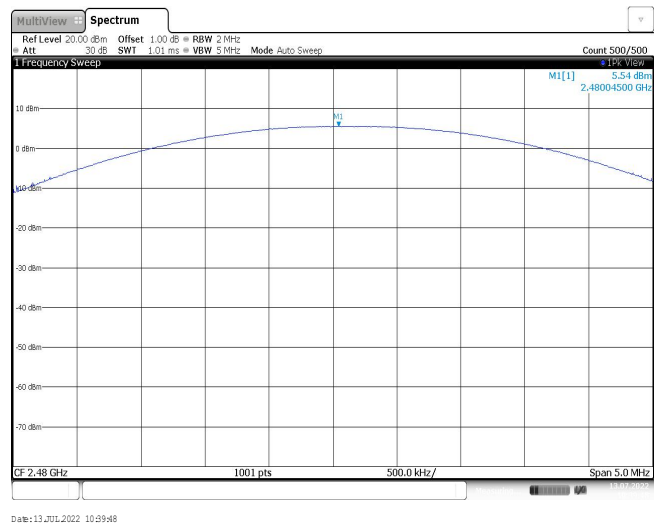
CH00



CH39



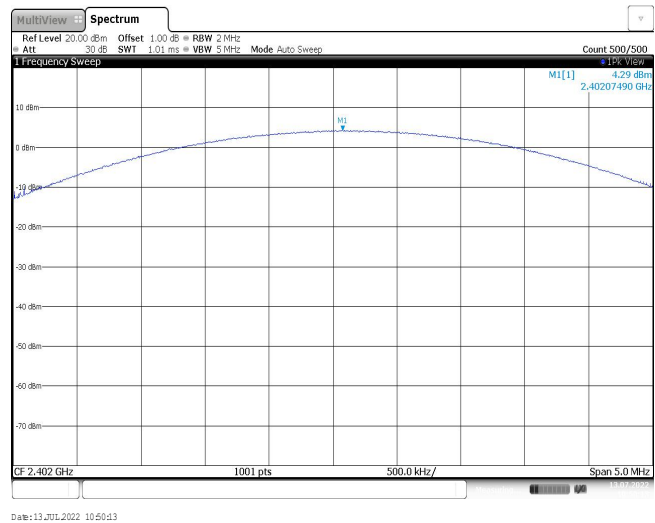
CH78



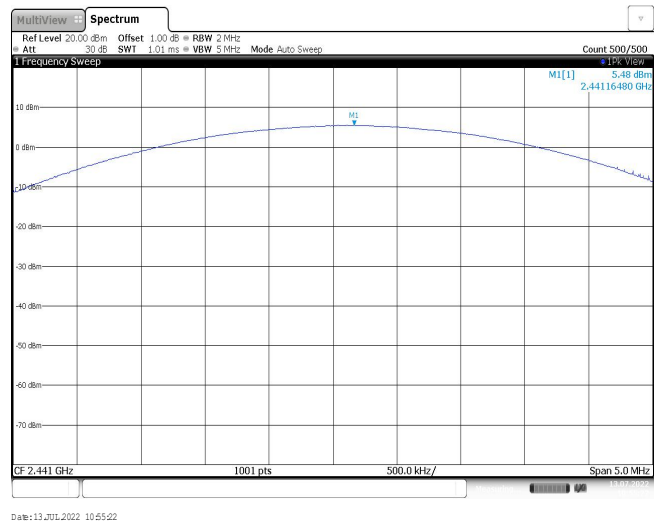
Modulation Type:

8DPSK

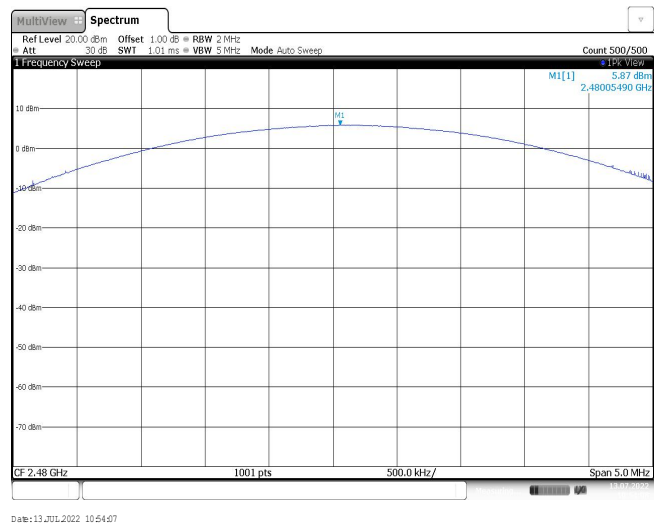
CH00



CH39



CH78



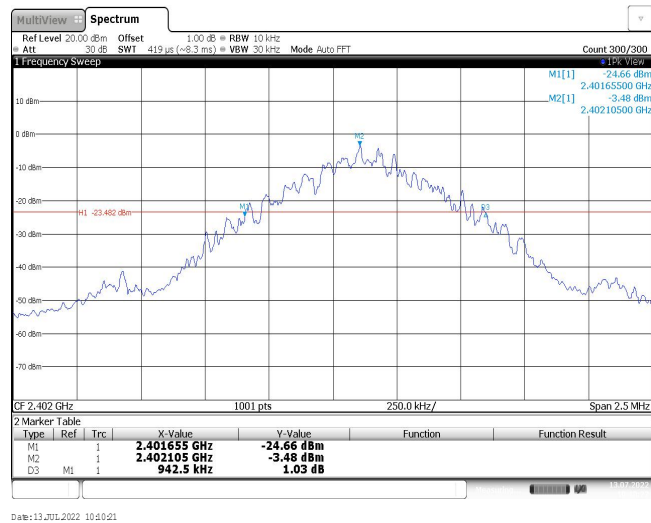
Appendix B : 20 dB Bandwidth

Modulation type	Channel	20 dB Bandwidth (kHz)	Limit (kHz)	Result
GFSK	00	942.50	-	Pass
	39	945.00		
	78	937.50		
$\pi/4$ DQPSK	00	1362.50	-	Pass
	39	1362.50		
	78	1362.50		
8DPSK	00	1352.50	-	Pass
	39	1350.00		
	78	1350.00		

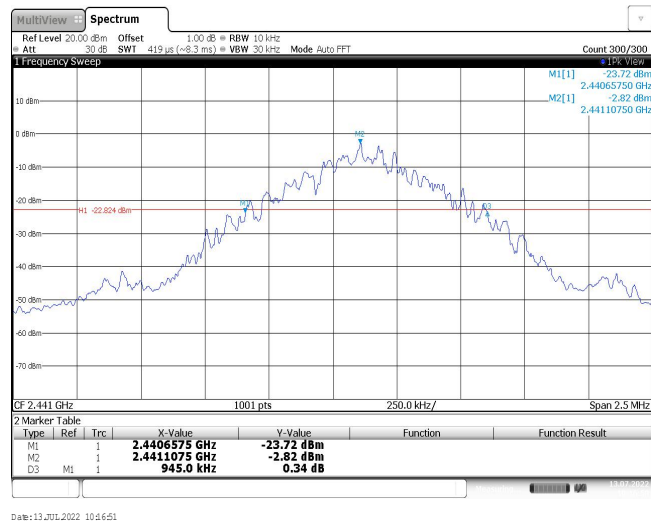
Modulation Type:

GFSK

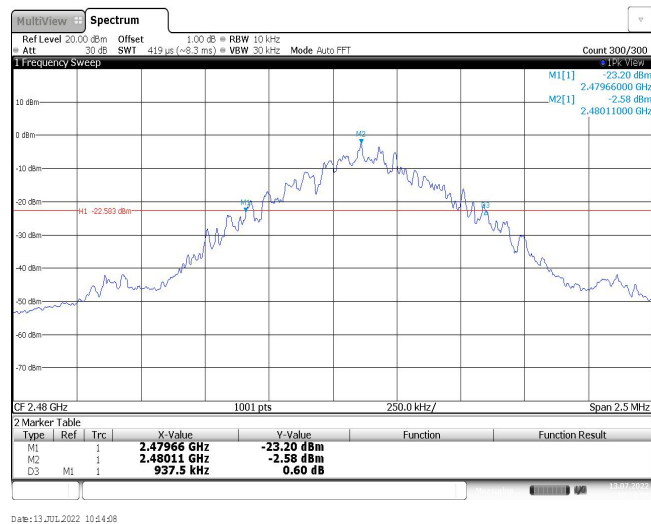
CH00



CH39



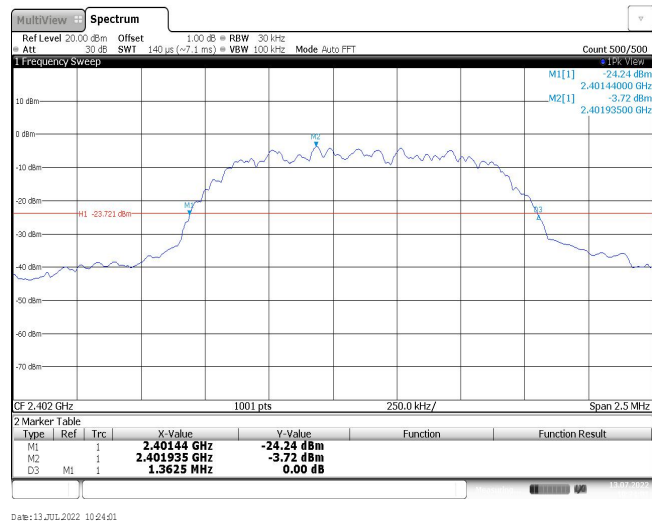
CH78



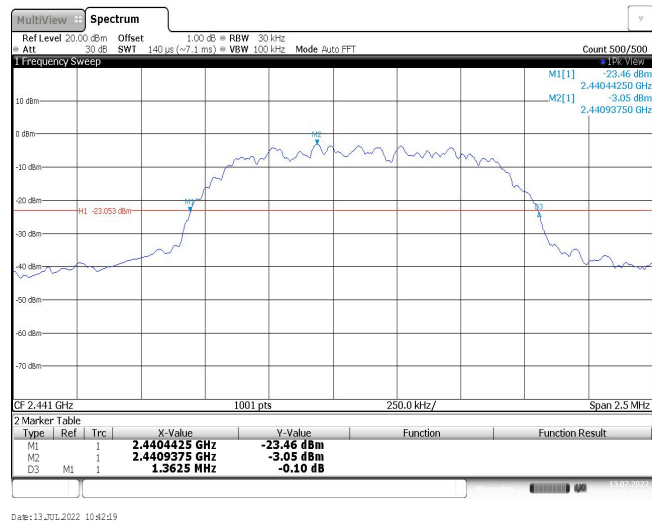
Modulation Type:

 $\pi/4$ DQPSK

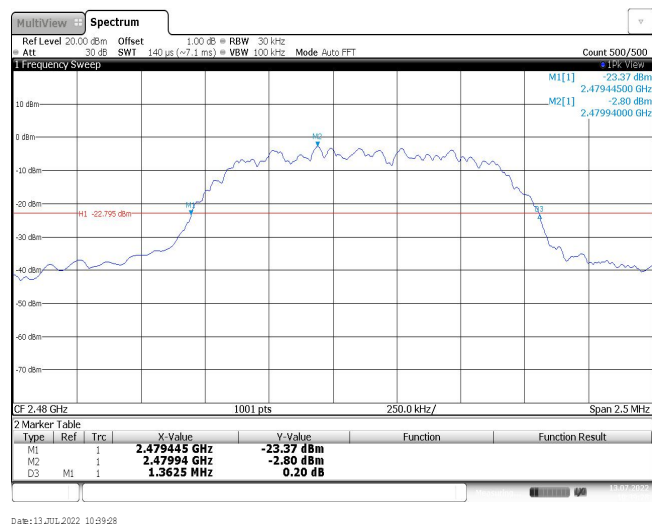
CH00



CH39



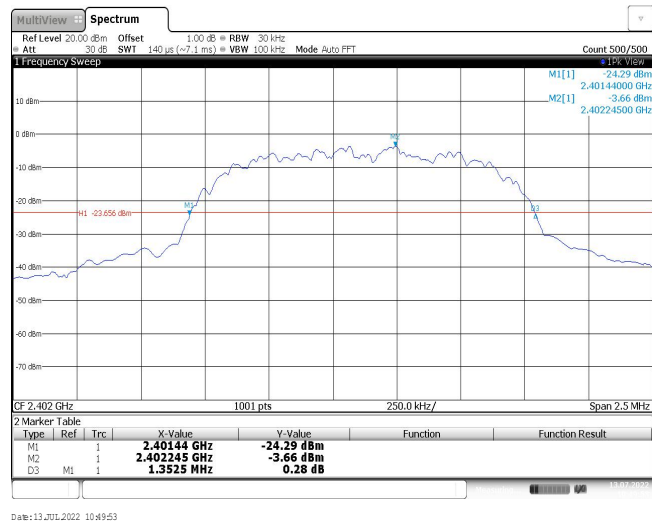
CH78



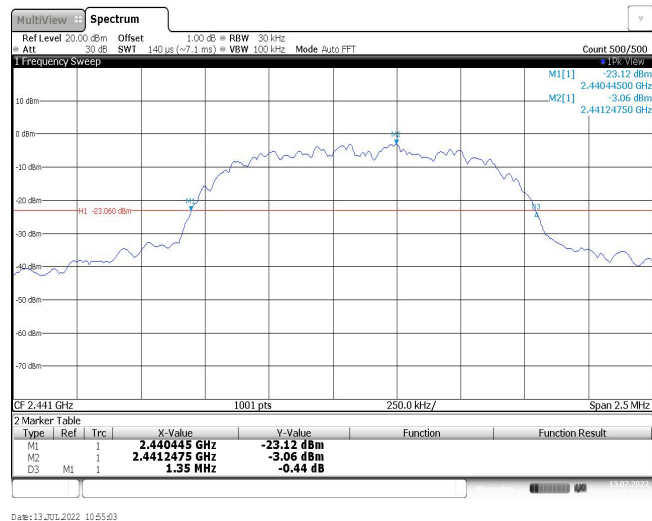
Modulation Type:

8DPSK

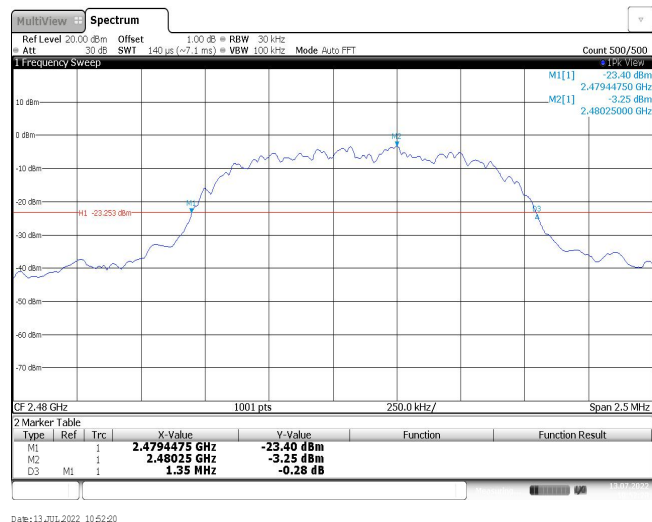
CH00



CH39



CH78



Appendix C: 99% Occupied Bandwidth

Modulation type	Channel	99% Occupied Bandwidth (MHz)	Limit (MHz)	Result
GFSK	00	0.91	-	Pass
	39	0.92		
	78	0.92		
$\pi/4$ DQPSK	00	1.20	-	Pass
	39	1.20		
	78	1.20		
8DPSK	00	1.20	-	Pass
	39	1.21		
	78	1.21		

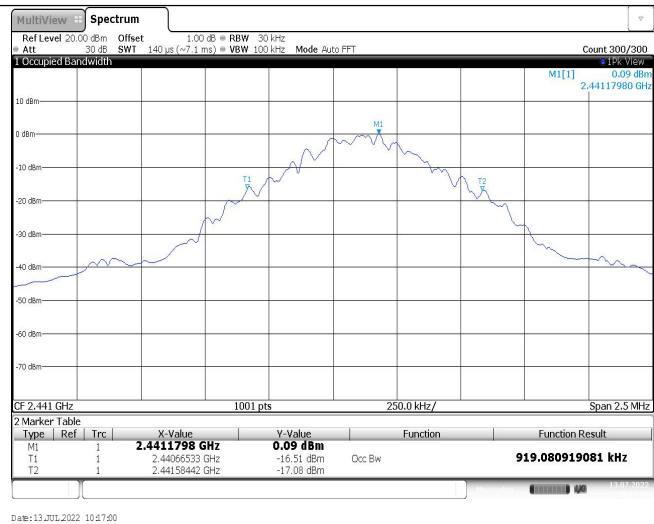
Modulation Type:

GFSK

CH00



CH39



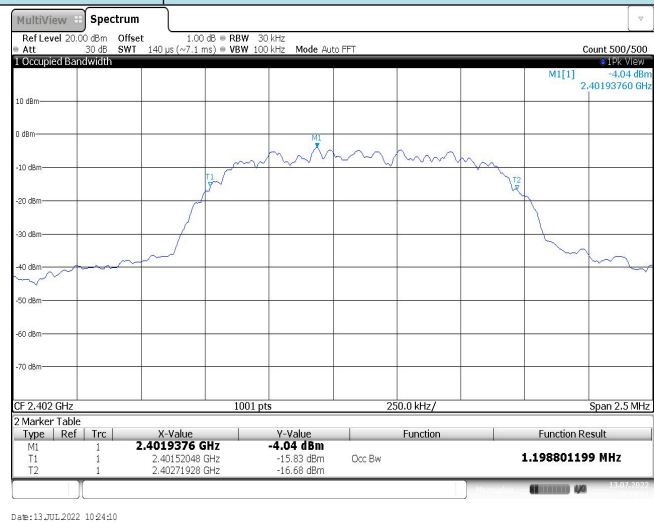
CH78



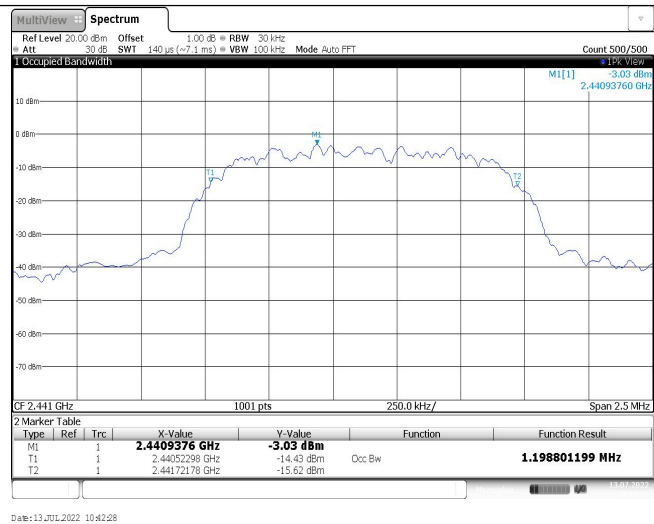
Modulation Type:

 $\pi/4$ DQPSK

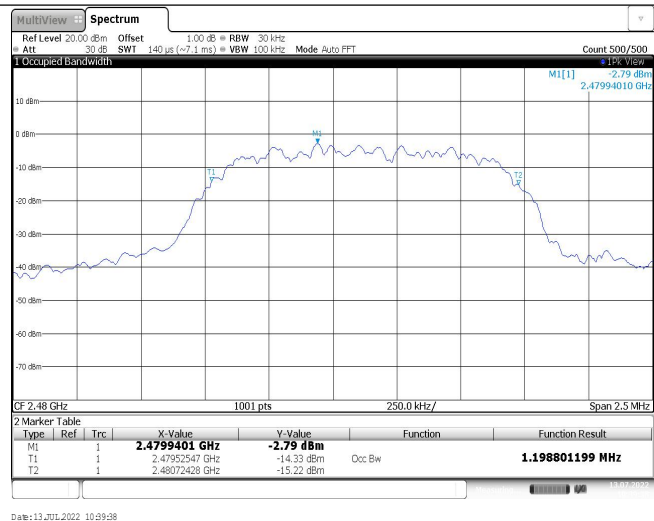
CH00



CH39



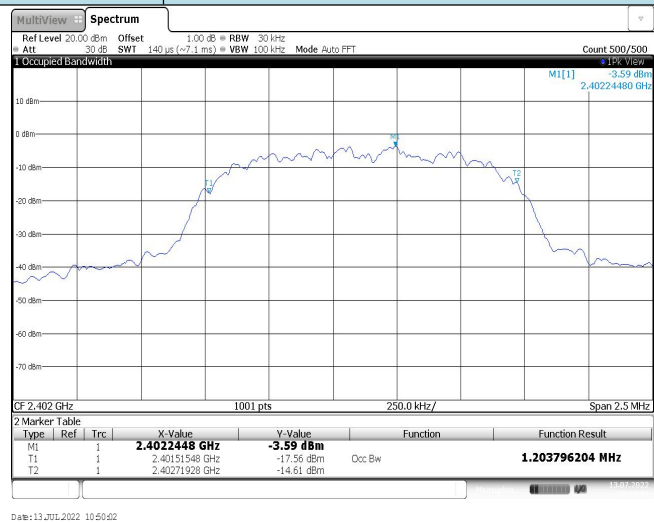
CH78



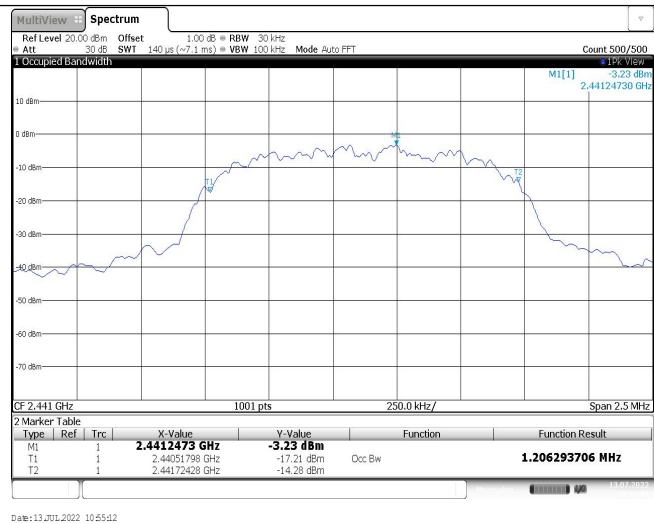
Modulation Type:

8DPSK

CH00



CH39



CH78



Appendix D: Carrier Frequencies Separation

Modulation type	Channel	Carrier Frequencies Separation (MHz)	Limit (kHz) *	Result
GFSK	39	1.00	≥945.00	Pass
π/4DQPSK	39	1.00	≥908.33	Pass
8DPSK	39	1.00	≥901.67	Pass

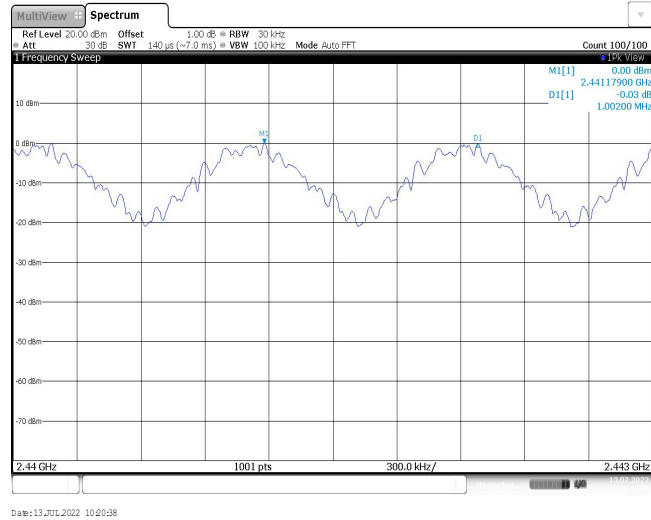
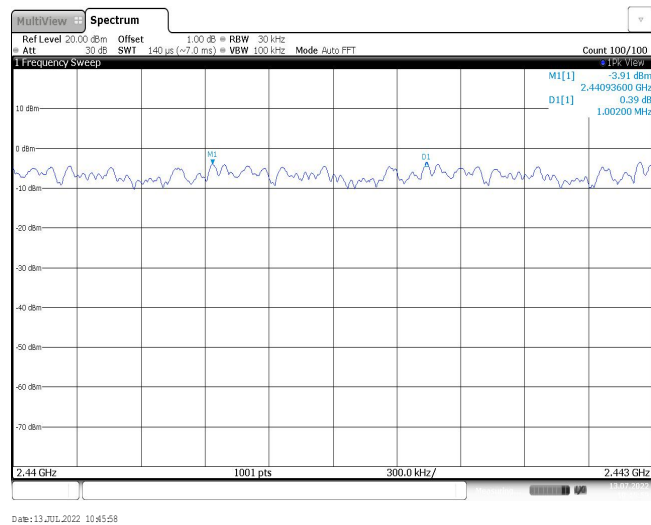
Note:

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

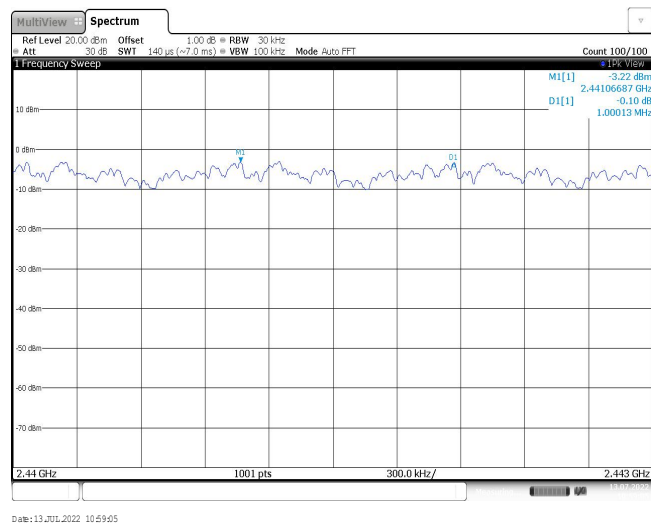
π/4DQPSK limit = $\frac{2}{3}$ * The maximum 20 dB Bandwidth for π/4DQPSK modulation on the appendix B.

8DPSK limit = $\frac{2}{3}$ * The maximum 20 dB Bandwidth for 8DPSK modulation on the appendix B

GFSK

 $\pi/4$ DQPSK

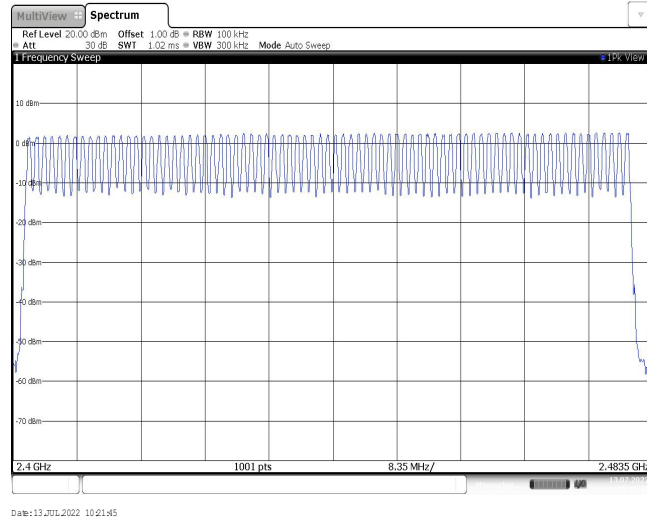
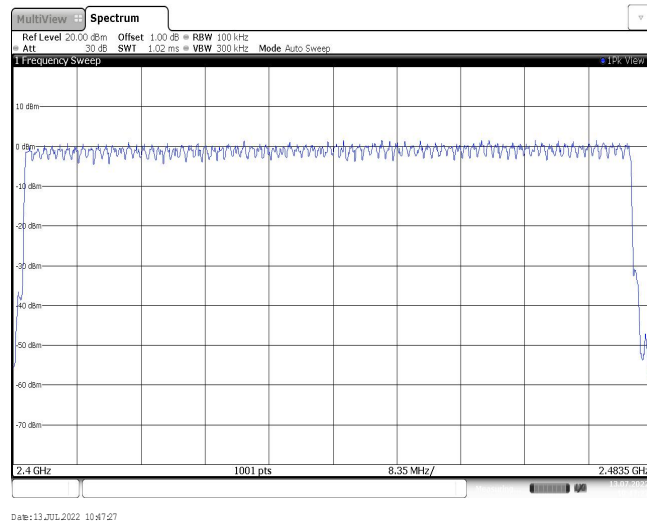
8DPSK



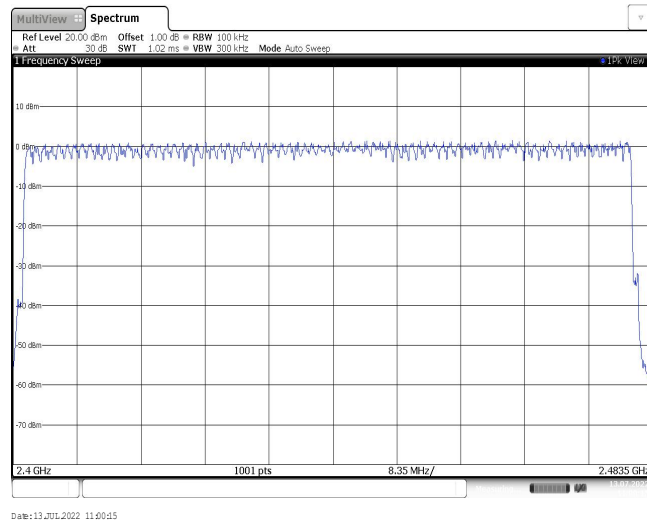
Appendix E: Hopping Channel Number

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

GFSK

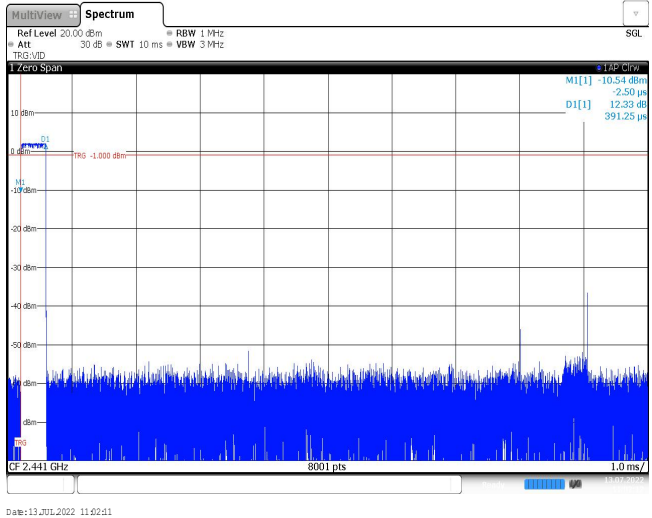
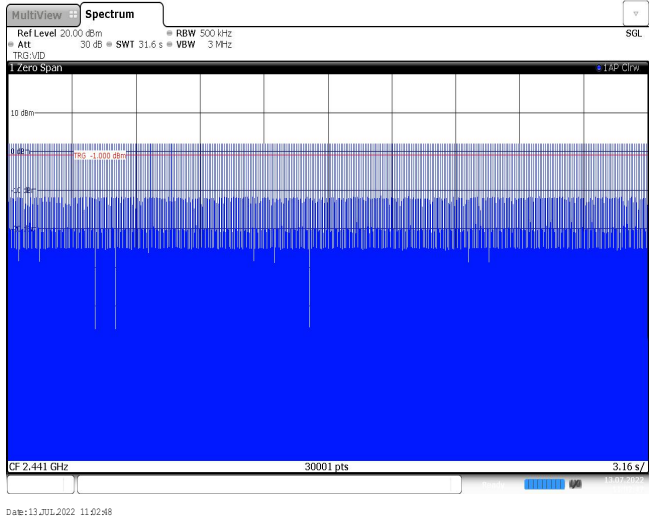
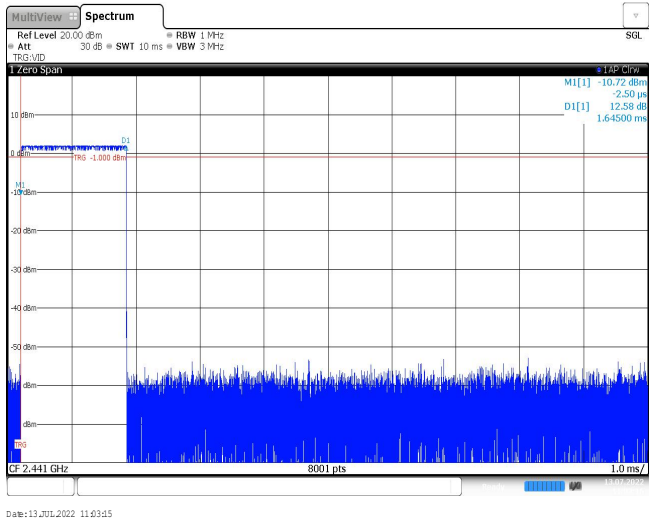
 $\pi/4$ DQPSK

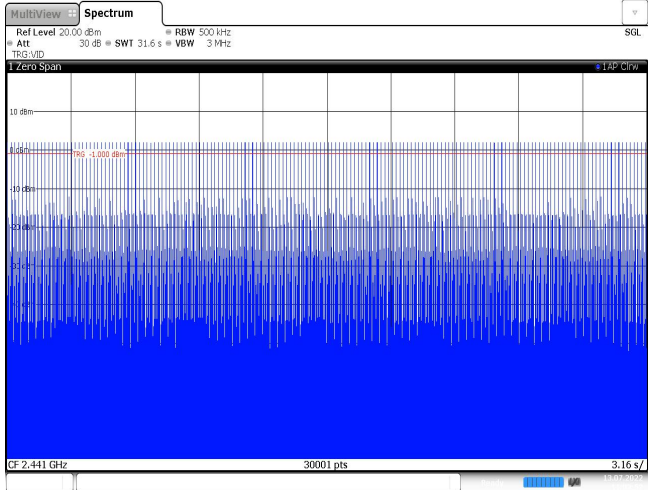
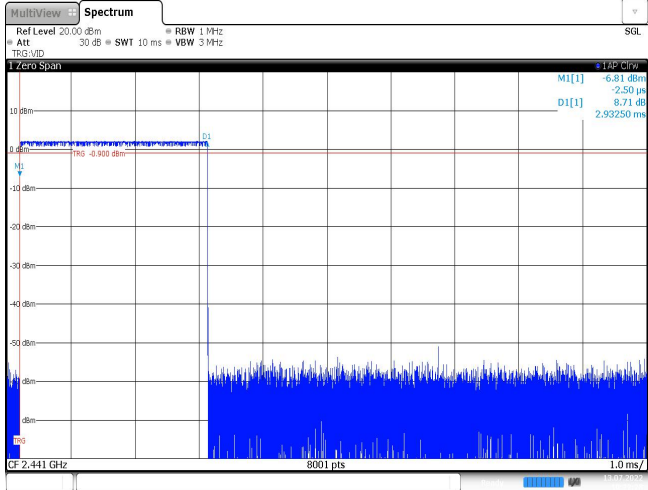
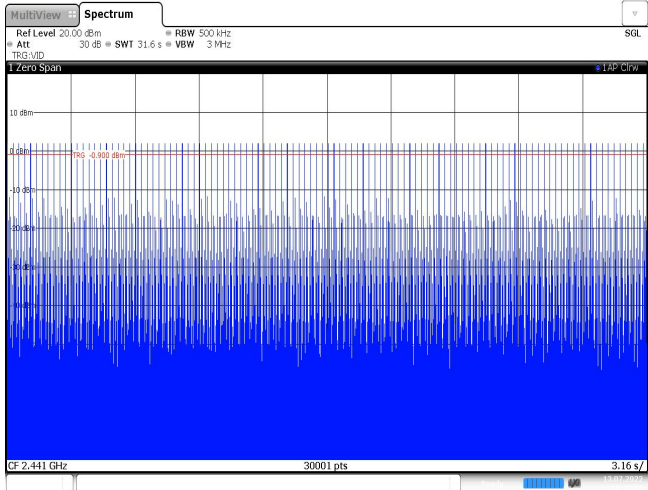
8DPSK



Appendix F: Dwell Time

Modulation type	Packet	Burst Width [ms]	Total Hops[hop*ch]	Dwell time (Second)	Limit (Second)	Result
GFSK	DH1	0.39	373	0.15	≤ 0.40	Pass
	DH3	1.65	170	0.28		
	DH5	2.93	110	0.32		
$\pi/4$ DQPSK	2DH1	0.39	373	0.15	≤ 0.40	Pass
	2DH3	1.66	170	0.28		
	2DH5	2.92	110	0.32		
8DPSK	3DH1	0.39	373	0.15	≤ 0.40	Pass
	3DH3	1.65	170	0.28		
	3DH5	2.91	110	0.32		

Modulation Type: GFSK	
DH1 Burst width	 Ref Level 20.00 dBm Att 30 dB RBW 1 MHz SWT 10 ms VBW 3 MHz TSG V/D SGL 1 Zero Span M1[1] -10.54 dBm D1[1] -2.50 dBm 12.33 dB 391.25 dBm CF 2.441 GHz 8001 pts 1.0 ms/ Date: 13 JUL 2022 11:02:11
DH1 Burst number	 Ref Level 20.00 dBm Att 30 dB RBW 500 kHz SWT 31.6 s VBW 3 MHz TSG V/D SGL 1 Zero Span CF 2.441 GHz 30001 pts 3.16 s/ Date: 13 JUL 2022 11:02:48
DH3 Burst width	 Ref Level 20.00 dBm Att 30 dB RBW 1 MHz SWT 10 ms VBW 3 MHz TSG V/D SGL 1 Zero Span M1[1] -10.72 dBm D1[1] -2.50 dBm 12.58 dB 1.64500 ms CF 2.441 GHz 8001 pts 1.0 ms/ Date: 13 JUL 2022 11:03:45

DH3 Burst number	 The screenshot shows a spectrum analyzer interface with the title 'Spectrum'. The y-axis represents power in dBm, ranging from -50 to 10. The x-axis represents frequency in GHz, centered at 2.441 GHz. The plot shows a dense, noisy signal across the entire frequency range. The status bar at the bottom indicates 'CF 2.441 GHz', '30001 pts', and a date of '13 JUL 2022 11:03:52'.
DH5 Burst width	 The screenshot shows a spectrum analyzer interface with the title 'Spectrum'. The y-axis represents power in dBm, ranging from -50 to 10. The x-axis represents frequency in GHz, centered at 2.441 GHz. The plot shows a dense, noisy signal across the entire frequency range. The status bar at the bottom indicates 'CF 2.441 GHz', '8001 pts', and a date of '13 JUL 2022 10:22:28'.
DH5 Burst number	 The screenshot shows a spectrum analyzer interface with the title 'Spectrum'. The y-axis represents power in dBm, ranging from -50 to 10. The x-axis represents frequency in GHz, centered at 2.441 GHz. The plot shows a dense, noisy signal across the entire frequency range. The status bar at the bottom indicates 'CF 2.441 GHz', '30001 pts', and a date of '13 JUL 2022 10:23:03'.