

APPENDIX REPORT

Project No.	SHT2404026304W	Radio Specification	Bluetooth BLE
Test sample No.	YPHT24040263007	Model No.	HD-18A
Start test date	2024-09-12	Finish date	2024-09-13
Temperature	24.8℃	Humidity	45%
Test Engineer	Chenxin Ling	Auditor	Xiaodong Zheo

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

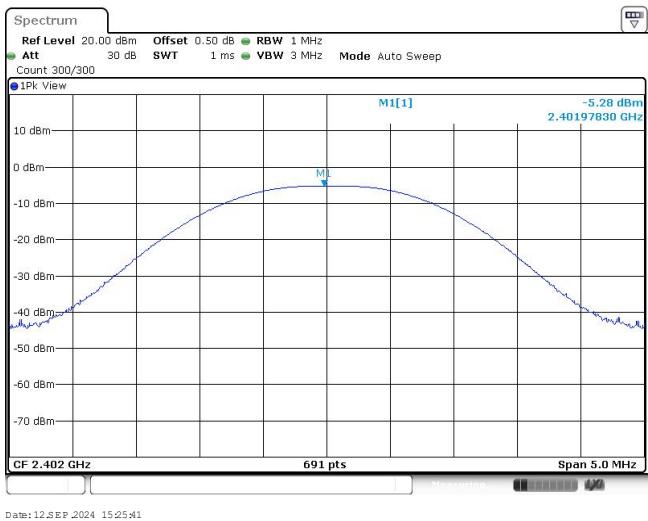
Appendix A: Peak Output Power

Modulation type	Channel	Peak Output power (dBm)	Average Output power (dBm)	Limit (dBm)	Result
GFSK	00	-5.28	-5.42	≤ 30.00	Pass
	39	-5.02	-5.14		
	78	-5.17	-5.29		
$\pi/4$ DQPSK	00	-2.45	-2.57	≤ 21.00	Pass
	39	-2.28	-2.41		
	78	-2.55	-2.66		
8DPSK	00	-2.05	-2.17	≤ 21.00	Pass
	39	-1.91	-2.04		
	78	-1.96	-2.07		

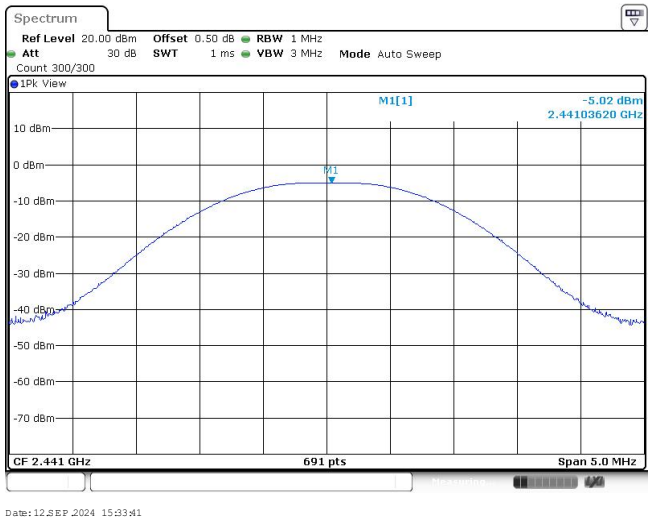
Modulation Type:

GFSK

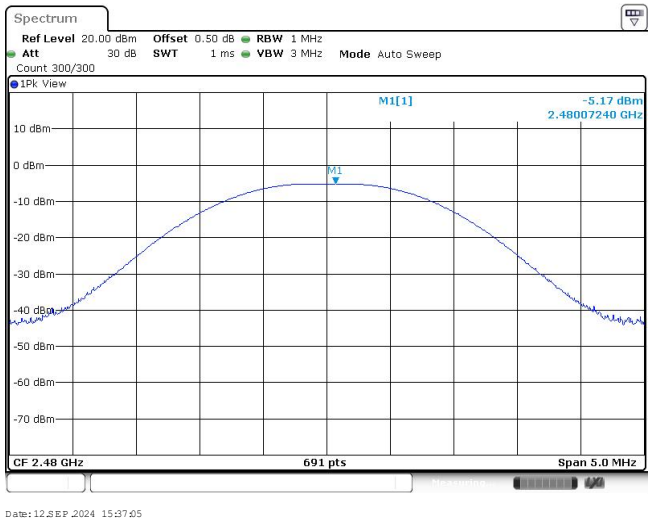
CH00



CH39



CH78



Modulation Type:

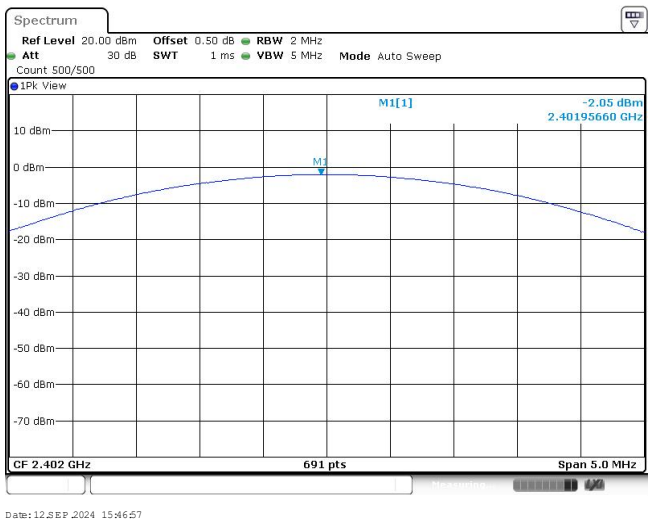
π /4DQPSK

CH00	Spectrum Ref Level 20.00 dBm Att 30 dB Offset 0.50 dB RBW 2 MHz SWT 1 ms VBW 5 MHz Mode Auto Sweep Count 500/500 1Pk View M1[1] -2.45 dBm 2.40189150 GHz M1 CF 2.402 GHz 691 pts Span 5.0 MHz Date: 12 SEP 2024 15:38:57
CH39	Spectrum Ref Level 20.00 dBm Att 30 dB Offset 0.50 dB RBW 2 MHz SWT 1 ms VBW 5 MHz Mode Auto Sweep Count 500/500 1Pk View M1[1] -2.28 dBm 2.44108680 GHz M1 CF 2.441 GHz 691 pts Span 5.0 MHz Date: 12 SEP 2024 15:41:48
CH78	Spectrum Ref Level 20.00 dBm Att 30 dB Offset 0.50 dB RBW 2 MHz SWT 1 ms VBW 5 MHz Mode Auto Sweep Count 500/500 1Pk View M1[1] -2.55 dBm 2.47985530 GHz M1 CF 2.48 GHz 691 pts Span 5.0 MHz Date: 12 SEP 2024 15:45:07

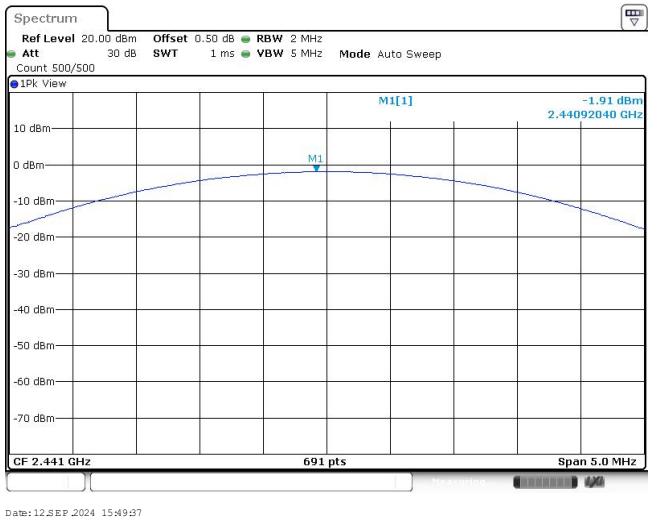
Modulation Type:

8DPSK

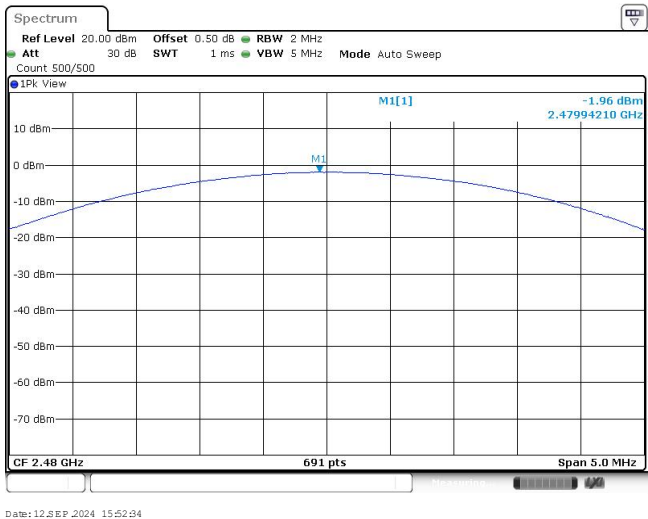
CH00



CH39



CH78



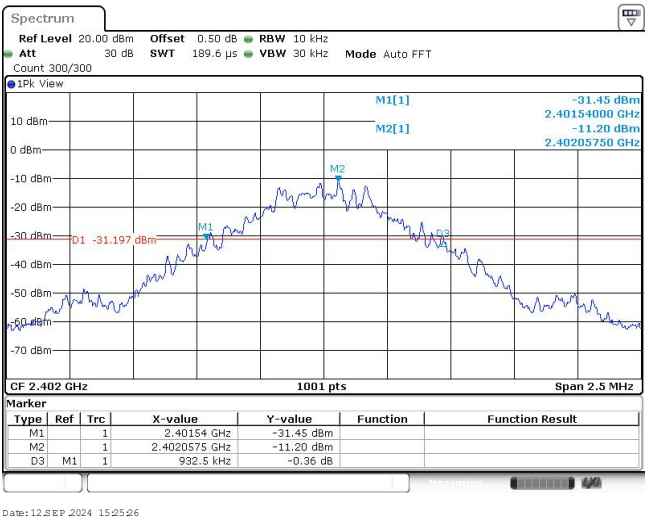
Appendix B : 20 dB Bandwidth

Modulation type	Channel	20 dB Bandwidth (kHz)	Limit (kHz)	Result
GFSK	00	932.00	-	Pass
	39	932.00		
	78	932.00		
$\pi/4$ DQPSK	00	1283.00	-	Pass
	39	1283.00		
	78	1283.00		
8DPSK	00	1285.00	-	Pass
	39	1282.00		
	78	1282.00		

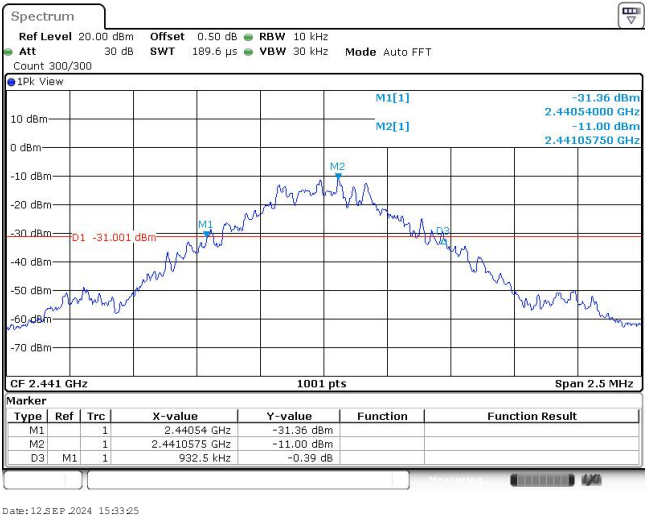
Modulation Type:

GFSK

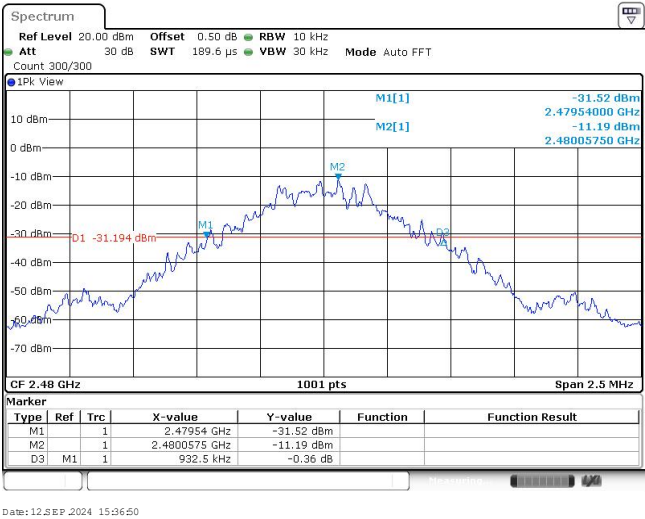
CH00



CH39



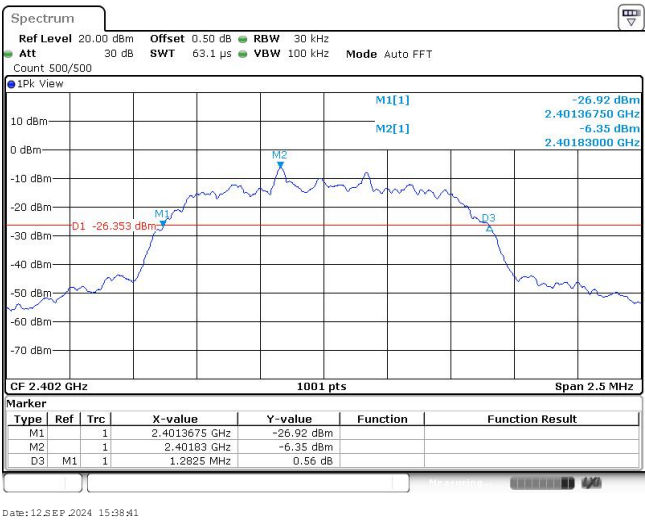
CH78



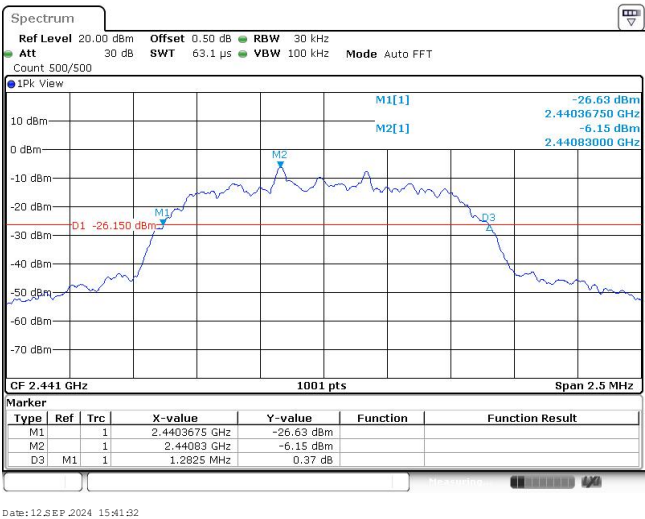
Modulation Type:

$\pi/4$ DQPSK

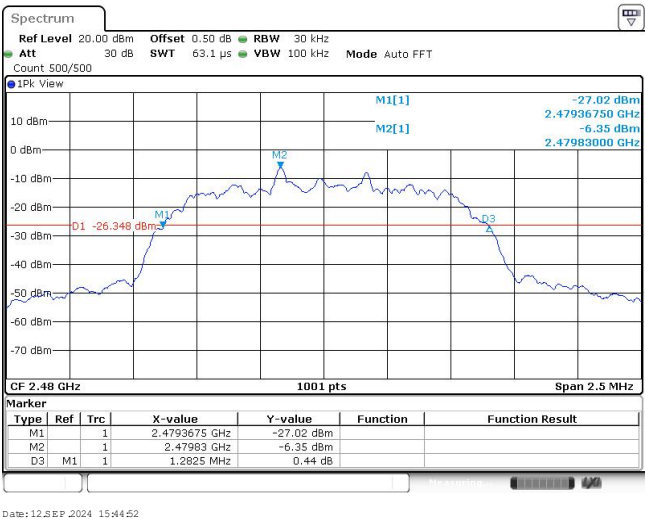
CH00



CH39



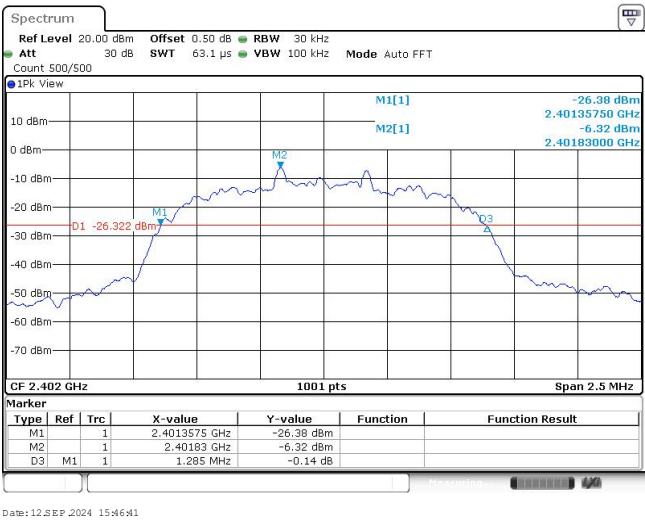
CH78



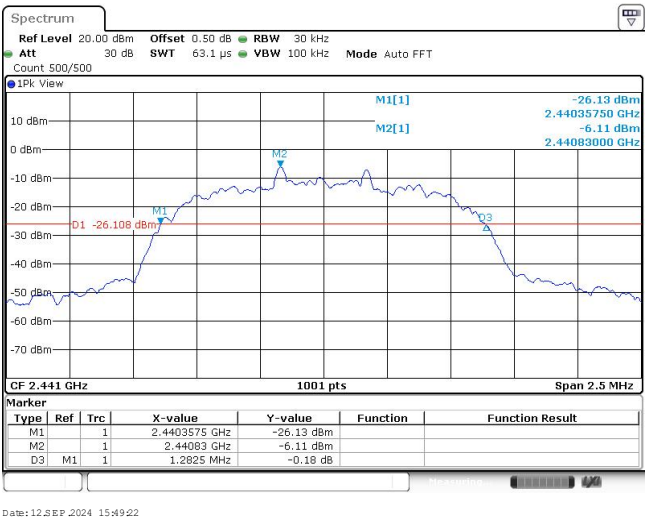
Modulation Type:

8DPSK

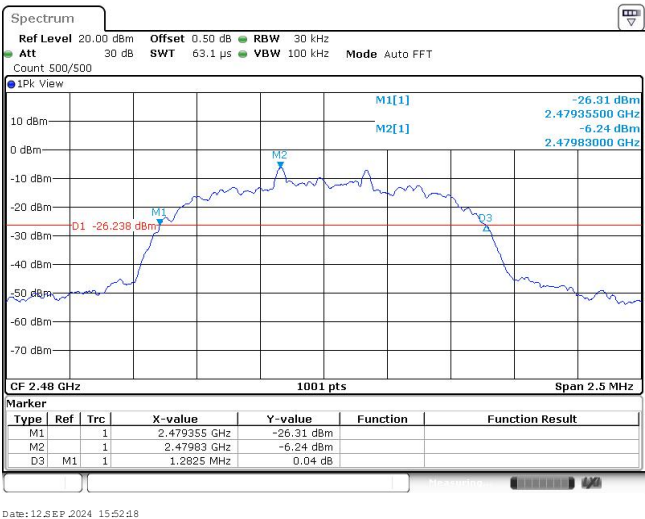
CH00



CH39



CH78



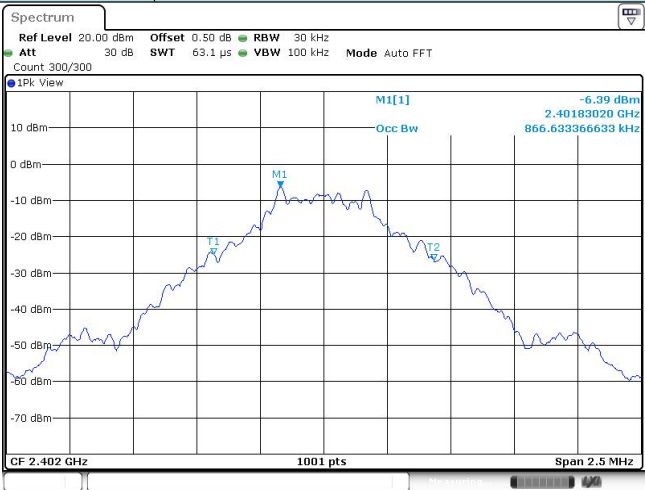
Appendix C: 99% Occupied Bandwidth

Modulation type	Channel	99% Occupied Bandwidth (MHz)	Limit (MHz)	Result
GFSK	00	0.87	-	Pass
	39	0.87		
	78	0.87		
$\pi/4$ DQPSK	00	1.17	-	Pass
	39	1.18		
	78	1.17		
8DPSK	00	1.17	-	Pass
	39	1.17		
	78	1.17		

Modulation Type:

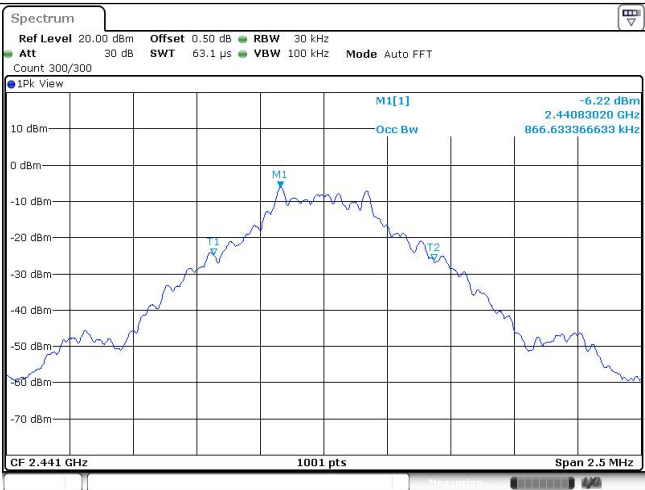
GFSK

CH00



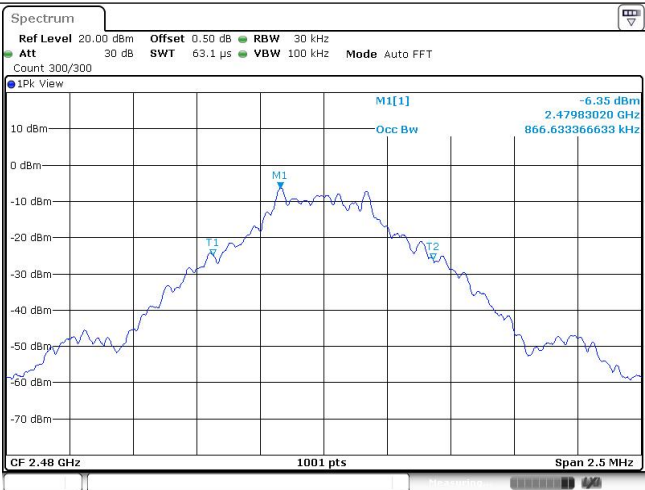
Date: 12 SEP 2024 15:25:33

CH39



Date: 12 SEP 2024 15:33:33

CH78



Date: 12 SEP 2024 15:36:57

Modulation Type:

π /4DQPSK

CH00



Date: 12 SEP 2024 15:38:49

CH39



Date: 12 SEP 2024 15:41:40

CH78



Date: 12 SEP 2024 15:44:59

Modulation Type:

8DPSK

CH00



Date: 12 SEP 2024 15:46:49

CH39



Date: 12 SEP 2024 15:49:29

CH78



Date: 12 SEP 2024 15:52:26

Appendix D: Carrier Frequencies Separation

Modulation type	Channel	Carrier Frequencies Separation (MHz)	Limit (kHz) *	Result
GFSK	39	1.00	≥932.00	Pass
π/4DQPSK	39	1.00	≥853.33	Pass
8DPSK	39	1.00	≥856.67	Pass

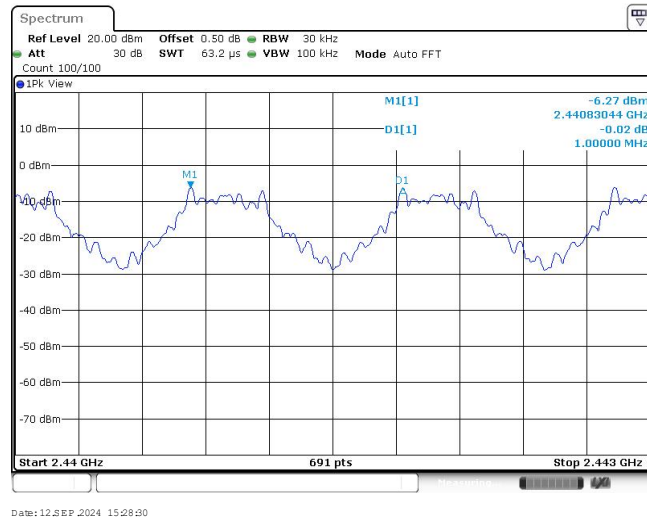
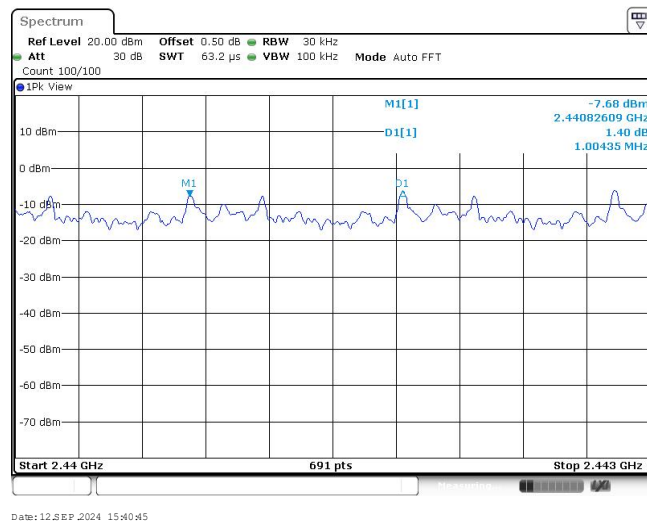
Note:

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

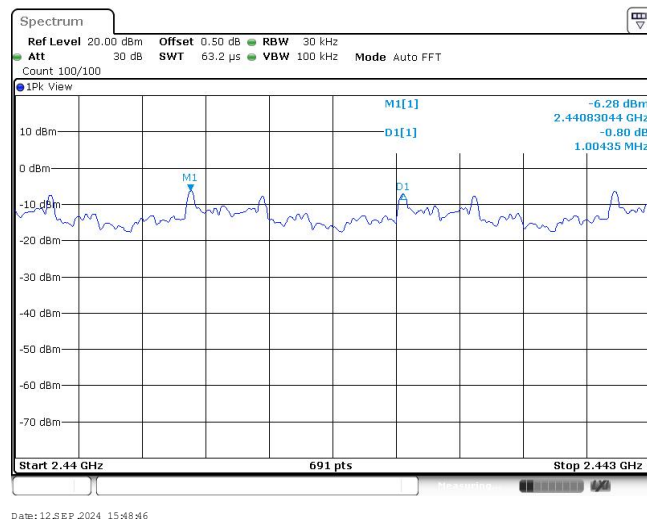
π/4DQPSK limit = $\frac{2}{3}$ * The maximum 20 dB Bandwidth for π/4DQPSK modulation on the appendix B.

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

GFSK

 $\pi/4$ DQPSK

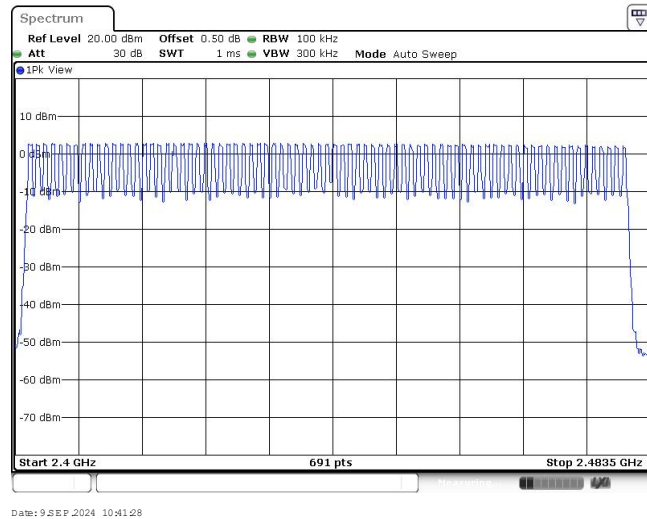
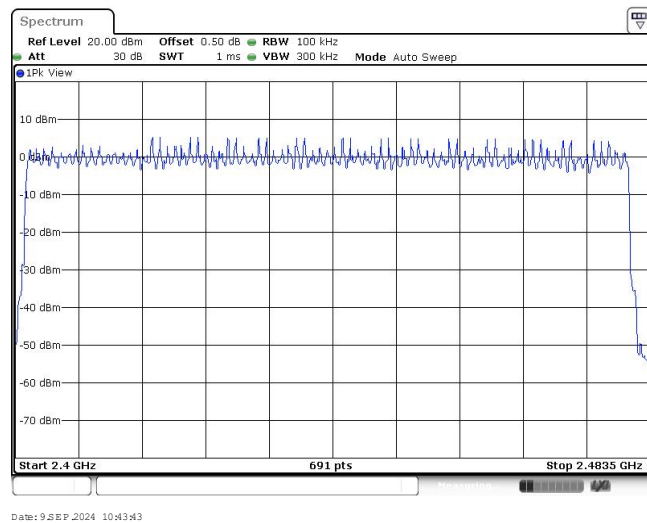
8DPSK



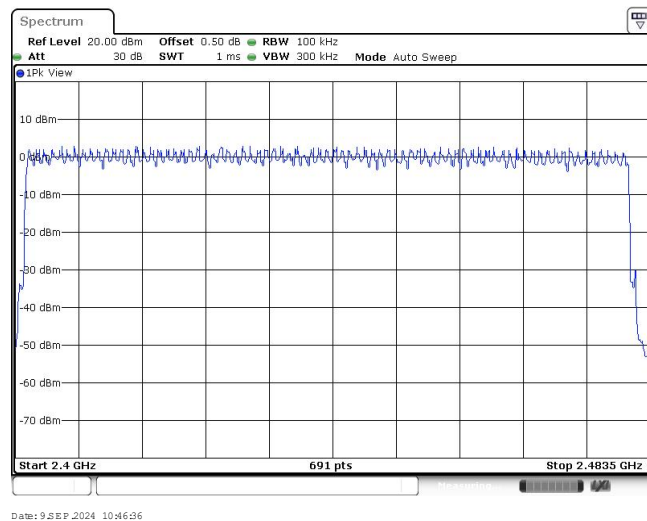
Appendix E: Hopping Channel Number

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

GFSK

 $\pi/4$ DQPSK

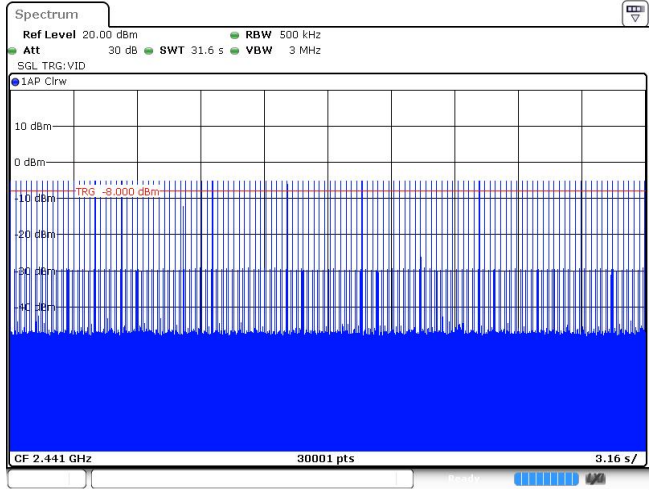
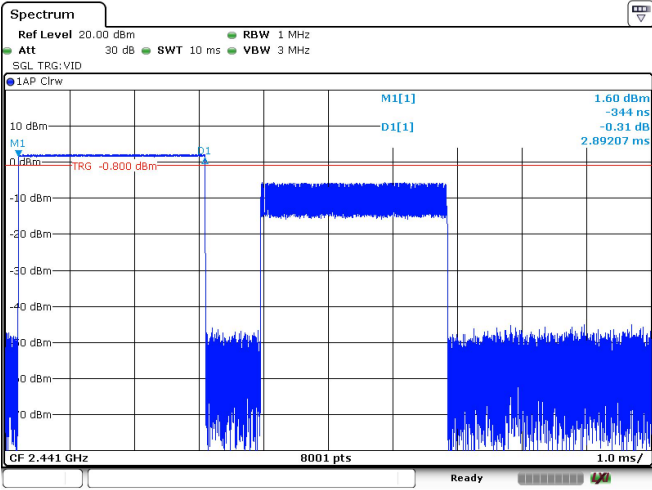
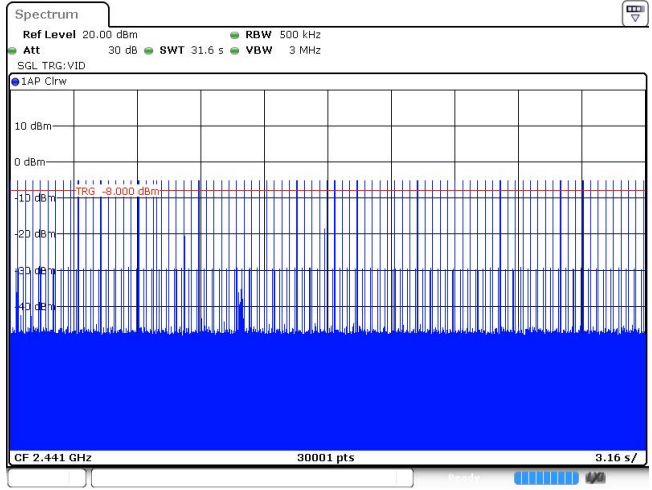
8DPSK



Appendix F: Dwell Time

Modulation type	Packet	Burst Width [ms]	Total Hops[hop*ch]	Dwell time (Second)	Limit (Second)	Result
GFSK	DH1	0.38	202.00	0.08	≤ 0.40	Pass
	DH3	1.62	120.00	0.19		
	DH5	2.89	86.00	0.25		
π/4DQPSK	2DH1	0.39	197.00	0.08	≤ 0.40	Pass
	2DH3	1.63	119.00	0.19		
	2DH5	2.89	85.00	0.25		
8DPSK	3DH1	0.37	187.00	0.07	≤ 0.40	Pass
	3DH3	1.63	119.00	0.19		
	3DH5	2.88	86.00	0.25		

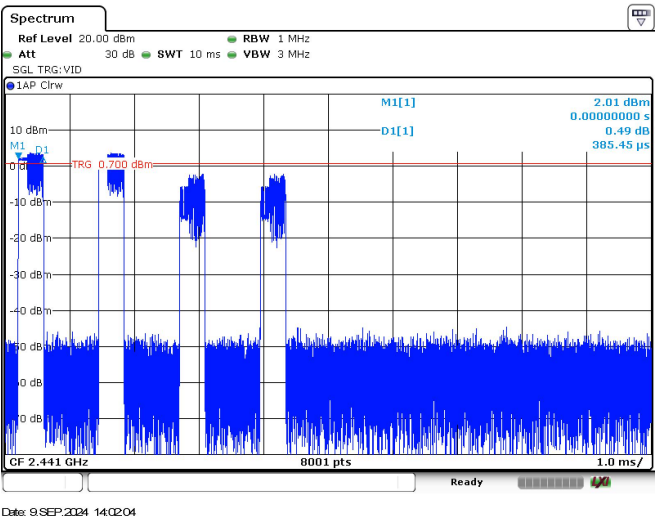
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DH3 Burst number	 The spectrum plot shows a continuous signal across the frequency range. The y-axis represents power in dBm, ranging from -40 to 10. The x-axis represents frequency in GHz, centered at 2.441 GHz. The plot shows a dense signal with a peak level of -8.000 dBm. The RBW is 500 kHz, and the VBW is 3 MHz. The date is 12 SEP 2024 16:50:13.
DH5 Burst width	 The spectrum plot shows a burst of signal. The y-axis represents power in dBm, ranging from -40 to 10. The x-axis represents frequency in GHz, centered at 2.441 GHz. The plot shows a burst of signal with a peak level of -0.31 dBm. The RBW is 1 MHz, and the VBW is 3 MHz. The date is 9 SEP 2024 14:00:23.
DH5 Burst number	 The spectrum plot shows a continuous signal across the frequency range. The y-axis represents power in dBm, ranging from -40 to 10. The x-axis represents frequency in GHz, centered at 2.441 GHz. The plot shows a dense signal with a peak level of -8.000 dBm. The RBW is 500 kHz, and the VBW is 3 MHz. The date is 12 SEP 2024 16:51:52.

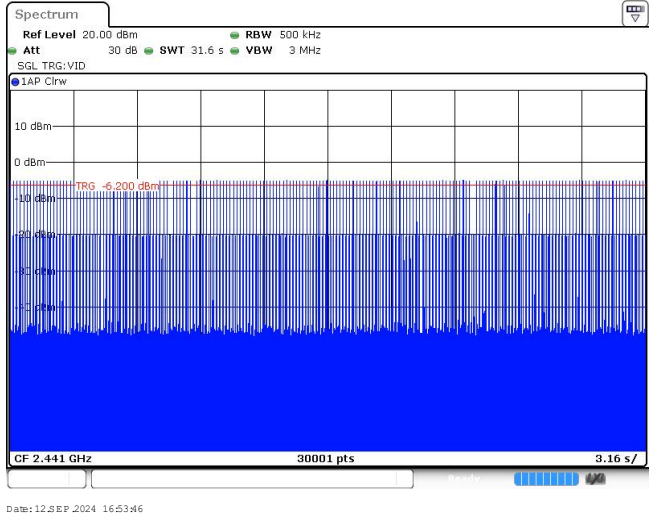
Modulation Type:

$\pi/4$ DQPSK

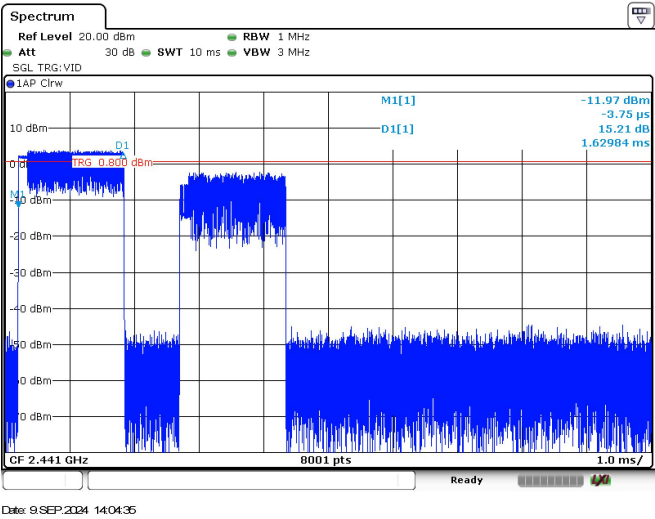
2DH1
Burst width

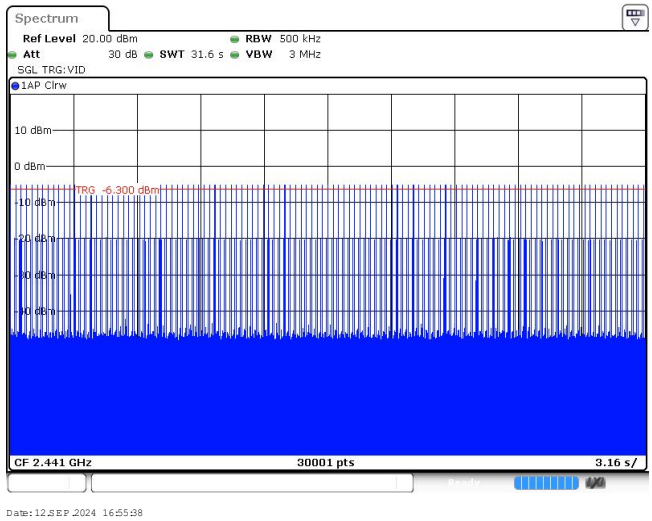
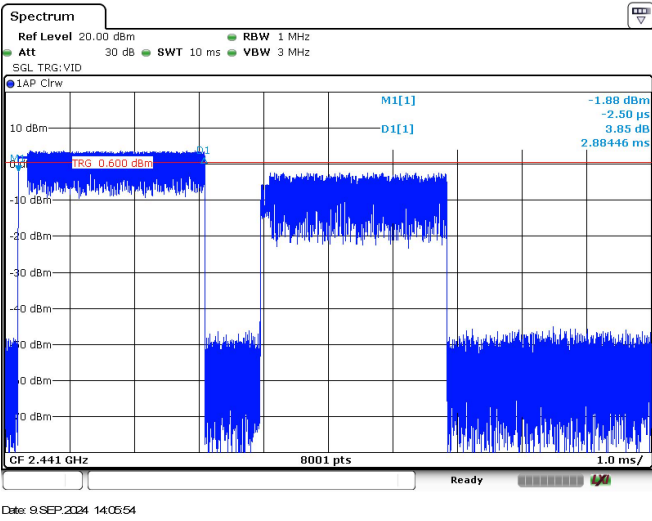
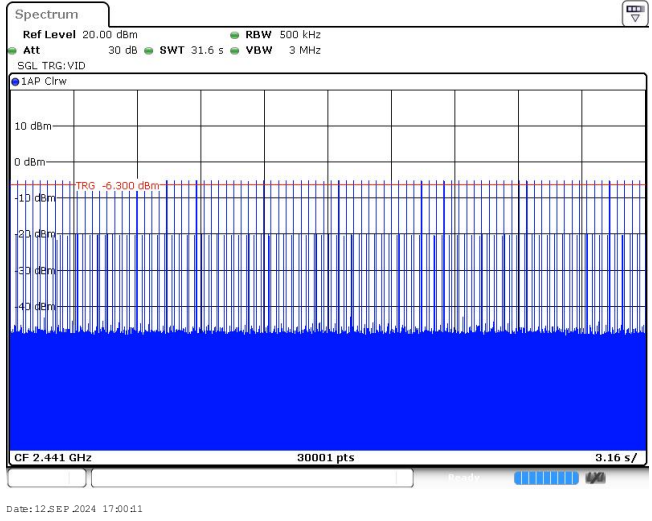


2DH1
Burst number



2DH3
Burst width

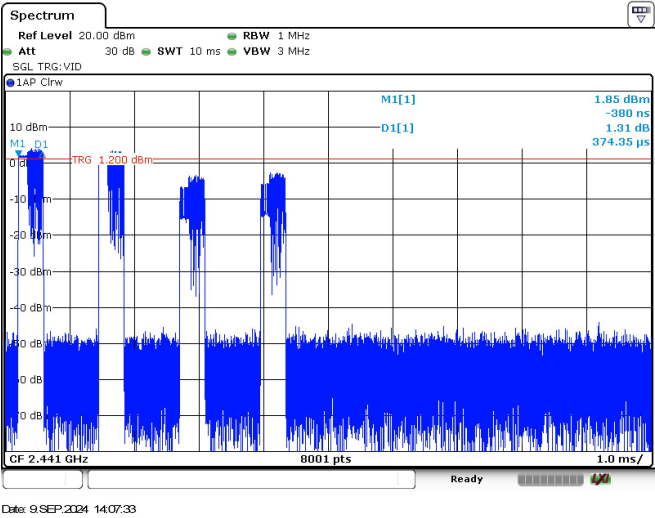


2DH3 Burst number	
2DH5 Burst width	
2DH5 Burst number	

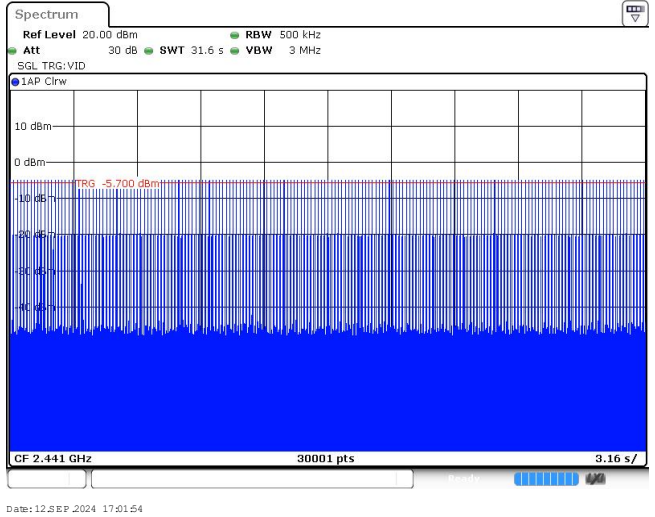
Modulation Type:

8DPSK

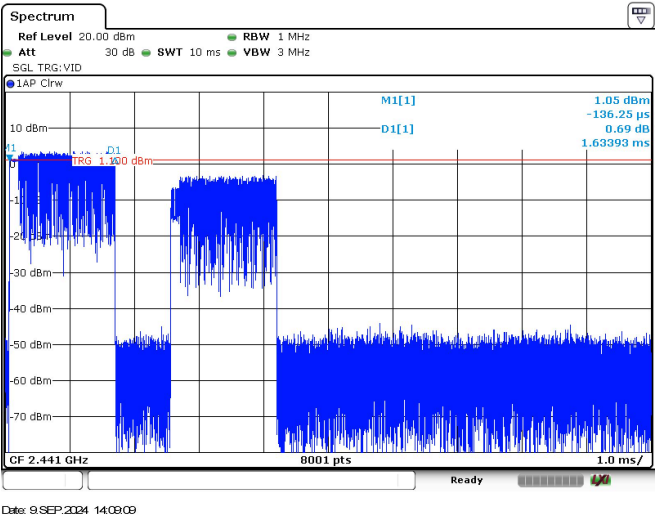
3DH1
Burst width

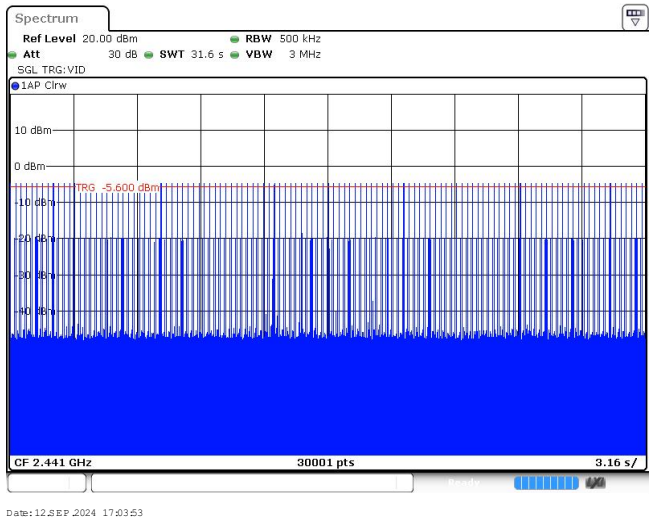
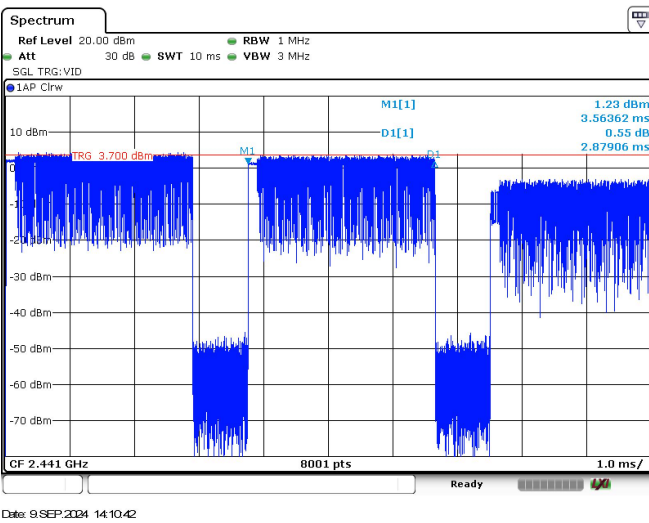


3DH1
Burst number



3DH3
Burst width



3DH3 Burst number	
3DH5 Burst width	
3DH5 Burst number	