



KEYWAY

Keyway Testing Technology (Guangdong) Co., Ltd

Room 2102, Building 6, Dongyi Intelligent Equipment New Energy Vehicle Park, No.30 of Tangxia District, Dongshen Road, Tangxia Town, Dongguan, 523710, People's Republic of China

RF Conducted Test - appendix III Bluetooth_(Class Bluetooth)_Test data.

E.U.T:	Bluetooth decoder
Model Number:	ZEN Air Blue 2
Sample ID	33000261270
Sample(s) Status:	Engineer sample
Date of Receipt:	2026.01.07
Date of Test:	2026.01.07 ~ 2026.04.09
FCC ID:	2A5QJZENAIRBLUE2
Report No.	2026030993157593-00
Tester	Hugh Zhang

A.1 CONDUCTED OUTPUT POWER

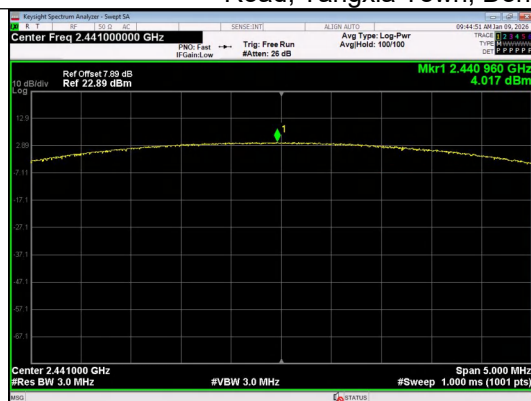
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Max. Avg. Power (dBm)	Limit (dBm)	Result
GFSK	DH1	0	1.29	1.35	None	≤30	PASS
		39	3.10	2.04	None		PASS
		78	4.22	2.64	None		PASS
π/4DQPSK	2-DH1	0	4.22	2.64	None		PASS
		39	4.02	2.52	None		PASS
		78	5.04	3.19	None		PASS
8DPSK	3-DH1	0	4.92	3.10	None		PASS
		39	4.66	2.92	None		PASS
		78	5.77	3.77	None		PASS

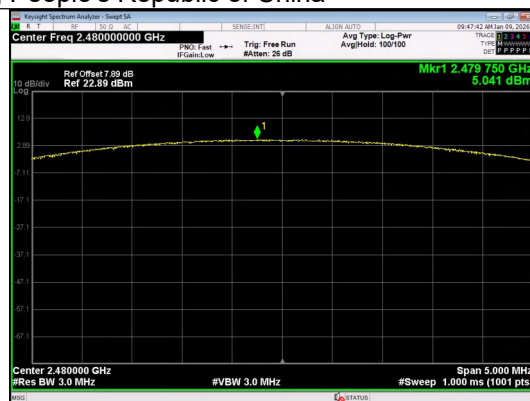
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Power Limit (dBm)	ISED EIRP (dBm)	ISED EIRP Limit (dBm)	Max. Avg. Power (dBm)	Result
GFSK	DH1	0	1.29	≤30	1.290	≤36.02	None	PASS
		39	3.10	≤30	3.102	≤36.02	None	PASS
		78	4.22	≤30	4.217	≤36.02	None	PASS
π/4DQPSK	2-DH1	0	4.22	≤30	4.218	≤36.02	None	PASS
		39	4.02	≤30	4.017	≤36.02	None	PASS
		78	5.04	≤30	5.041	≤36.02	None	PASS
8DPSK	3-DH1	0	4.92	≤30	4.915	≤36.02	None	PASS
		39	4.66	≤30	4.655	≤36.02	None	PASS
		78	5.77	≤30	5.766	≤36.02	None	PASS

Test Graphs

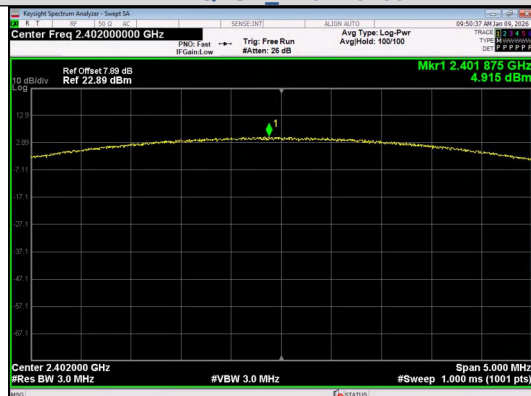




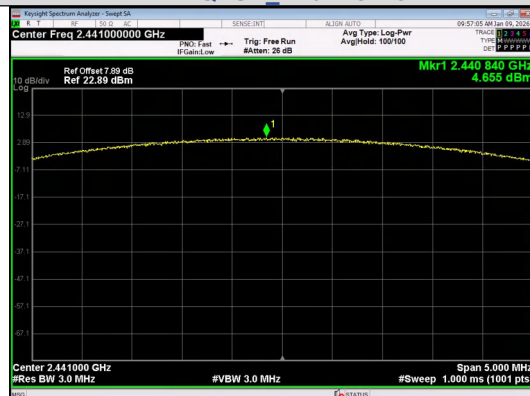
**Peak Output Power
 $\pi/4$ DQPSK_Channel 39**



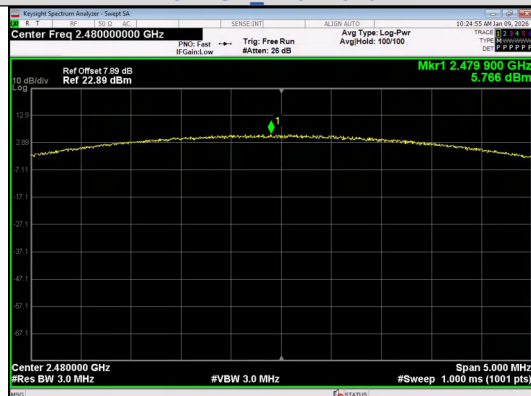
**Peak Output Power
 $\pi/4$ DQPSK_Channel 78**



**Peak Output Power
8DPSK_Channel 0**



**Peak Output Power
8DPSK_Channel 39**



**Peak Output Power
8DPSK_Channel 78**

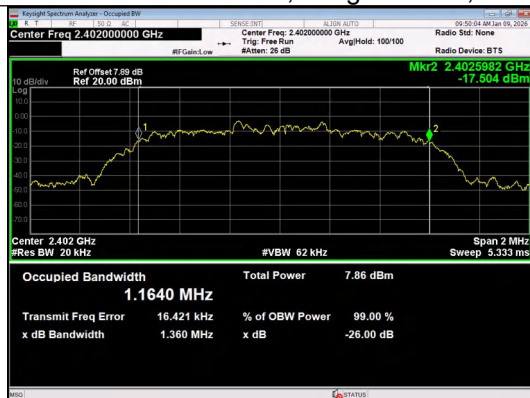
A.2 99% BANDWIDTH

Test Result

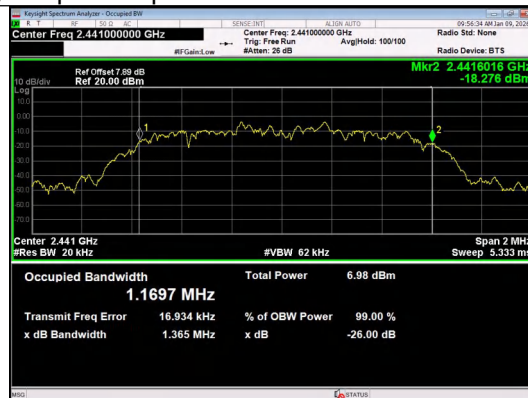
Modulation	Channel	Center Frequency (MHz)	99% BW (MHz)
GFSK	0	2402	0.84201
	39	2441	0.85516
	78	2480	0.84813
π /4DQPSK	0	2402	1.1724
	39	2441	1.1699
	78	2480	1.1750
8DPSK	0	2402	1.1640
	39	2441	1.1697
	78	2480	1.1639

Test Graphs

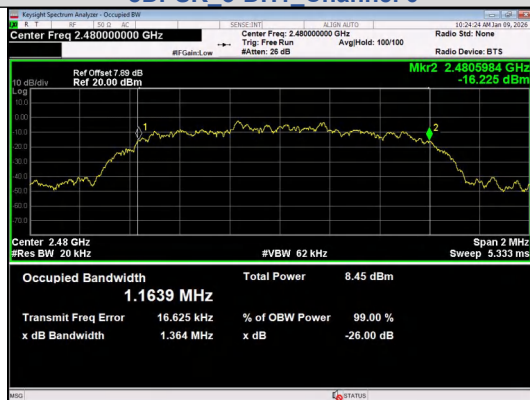




8DPSK_3-DH1_Channel 0



8DPSK_3-DH1_Channel 39



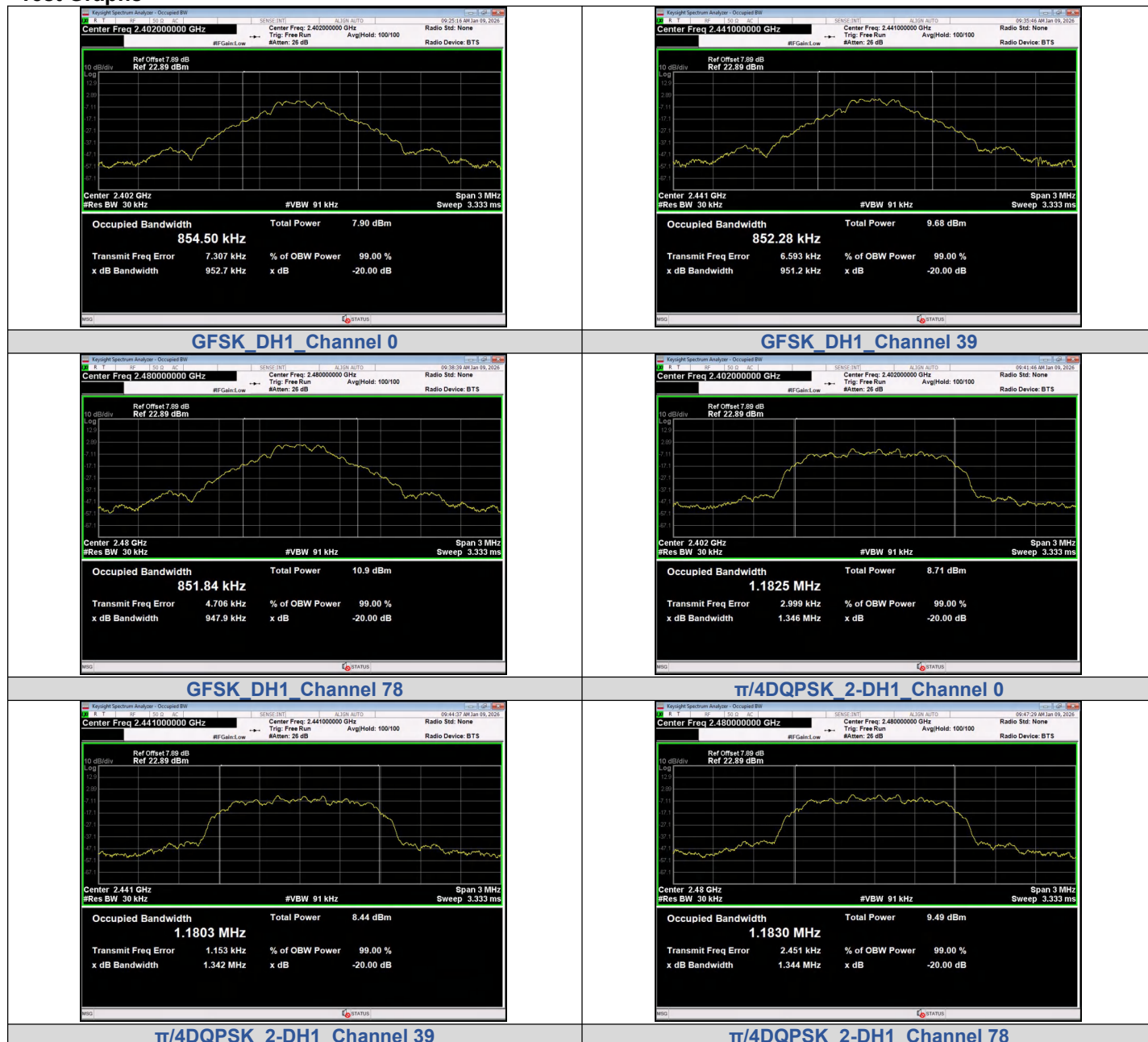
8DPSK_3-DH1_Channel 78

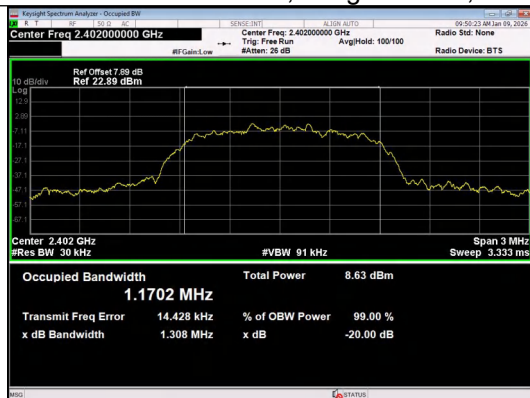
A.3 20DB BANDWIDTH

Test Result

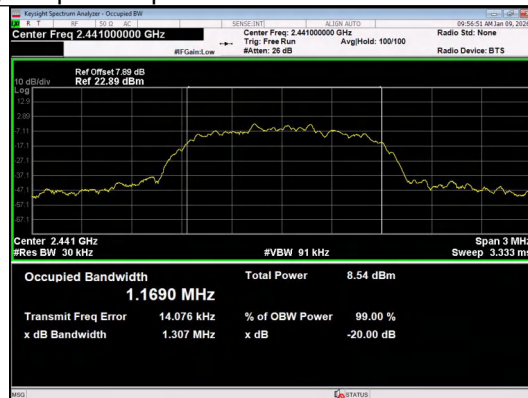
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9527
	39	2441 MHz	0.9512
	78	2480 MHz	0.9479
$\pi/4$ DQPSK	0	2402 MHz	1.346
	39	2441 MHz	1.342
	78	2480 MHz	1.344
8DPSK	0	2402 MHz	1.308
	39	2441 MHz	1.307
	78	2480 MHz	1.308

Test Graphs

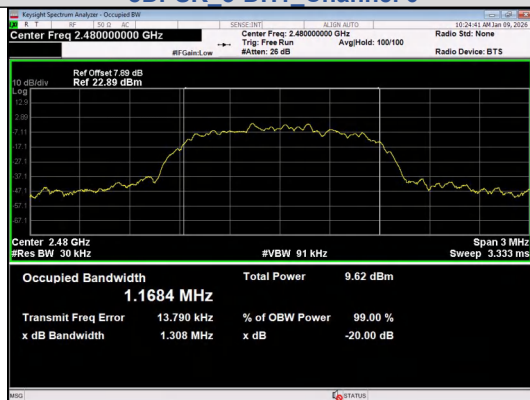




8DPSK_3-DH1_Channel 0



8DPSK_3-DH1_Channel 39



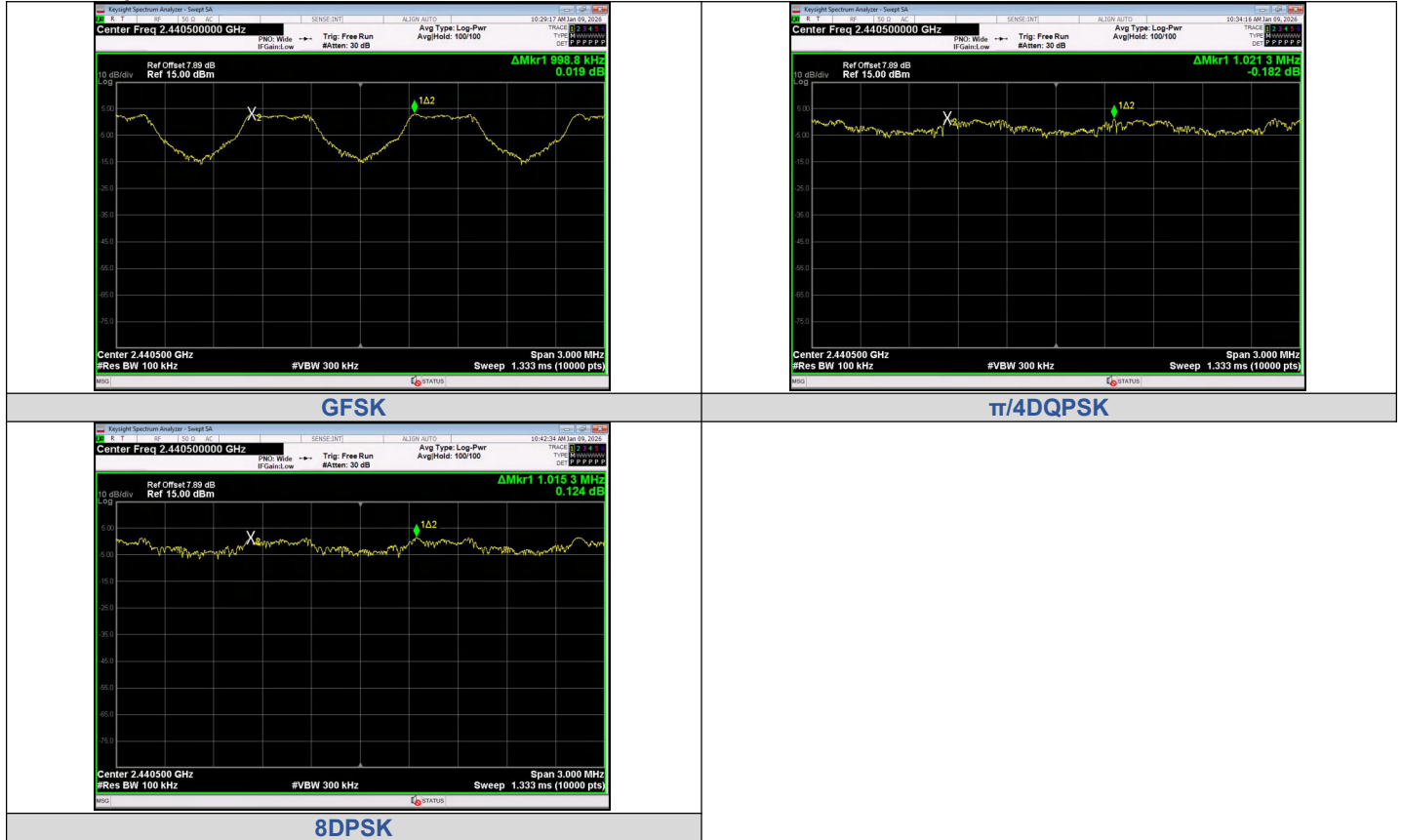
8DPSK_3-DH1_Channel 78

A.4 CARRIER FREQUENCIES SEPARATION

Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH1	2439.8341	2440.8329	0.9988	0.953	PASS
$\pi/4$ DQPSK	2-DH1	2439.8344	2440.8557	1.0213	0.897	PASS
8DPSK	3-DH1	2439.8281	2440.8434	1.0153	0.872	PASS

Test Graphs



A.5 CONDUCTED SPURIOUS & BAND EDGE EMISSION

Test Result
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH1	0	89.93	-52.469	-18.63	-33.839	PASS
			2400.00	-51.196	-18.63	-32.566	PASS
			4804.26	-63.595	-18.63	-44.965	PASS
			7205.13	-64.070	-18.63	-45.440	PASS
			9607.24	-67.132	-18.63	-48.502	PASS
		39	89.93	-52.706	-17.03	-35.676	PASS
			4881.67	-59.664	-17.03	-42.634	PASS
			7322.49	-67.017	-17.03	-49.987	PASS
			9764.55	-66.797	-17.03	-49.767	PASS
		78	2483.50	-52.993	-15.9	-37.093	PASS
			4959.70	-57.475	-15.9	-41.575	PASS
			7439.22	-66.996	-15.9	-51.096	PASS
			9920.62	-64.822	-15.9	-48.922	PASS
$\pi/4$ DQPSK	2-DH1	0	2400.00	-51.187	-18.44	-32.747	PASS
			4803.02	-63.073	-18.44	-44.633	PASS
			7205.75	-66.005	-18.44	-47.565	PASS
			9607.24	-66.124	-18.44	-47.684	PASS
			21136.5	-52.541	-18.44	-34.101	PASS
		39	4882.30	-60.686	-18.73	-41.956	PASS
			7323.11	-66.968	-18.73	-48.238	PASS
			9763.93	-68.176	-18.73	-49.446	PASS
			21158.4	-52.183	-18.73	-33.453	PASS
		78	2483.50	-54.674	-17.71	-36.964	PASS
			4960.33	-58.461	-17.71	-40.751	PASS
			7440.47	-66.016	-17.71	-48.306	PASS
			9920.62	-64.159	-17.71	-46.449	PASS
8DPSK	3-DH1	0	2400.00	-50.245	-18.3	-31.945	PASS
			4803.64	-61.933	-18.3	-43.633	PASS
			7205.75	-65.171	-18.3	-46.871	PASS
			9607.87	-66.612	-18.3	-48.312	PASS
			21144.0	-52.657	-18.3	-34.357	PASS
		39	4882.30	-57.106	-18.58	-38.526	PASS
			7323.74	-66.388	-18.58	-47.808	PASS
			9763.31	-68.049	-18.58	-49.469	PASS
			21582.2	-52.401	-18.58	-33.821	PASS
		78	2483.50	-54.275	-17.49	-36.785	PASS
			4959.70	-59.388	-17.49	-41.898	PASS
			7440.47	-67.484	-17.49	-49.994	PASS
			9919.37	-64.887	-17.49	-47.397	PASS
			21131.5	-52.251	-17.49	-34.761	PASS

Note: input compensation coefficient (dB)= Cable Loss (dB)

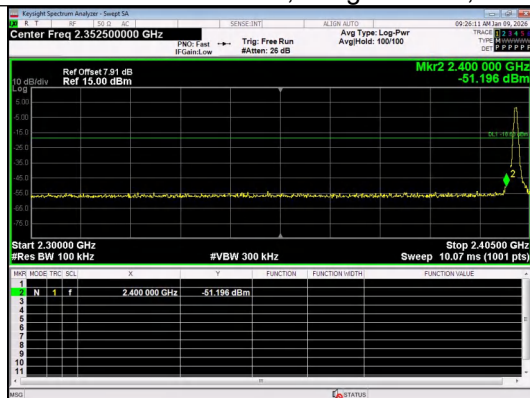
Test Graphs



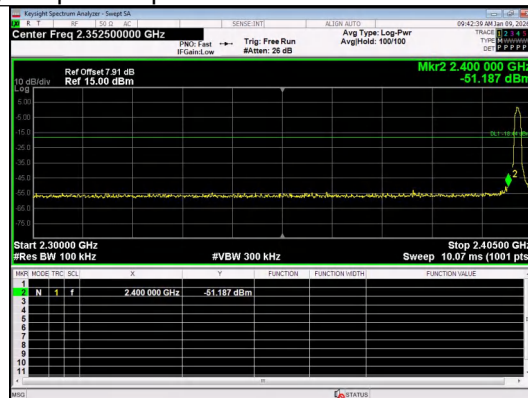
In-Band Reference Level
GFSK_DH1_Channel 0



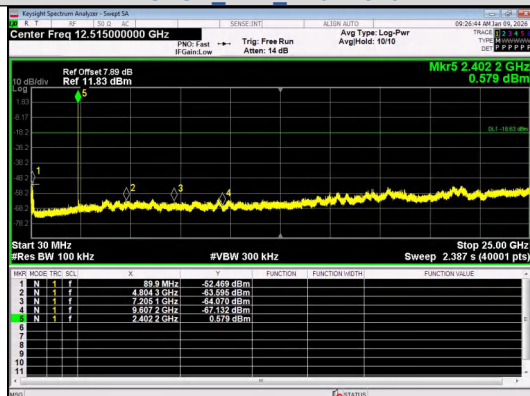
In-Band Reference Level
 $\pi/4$ DQPSK_2-DH1_Channel 0



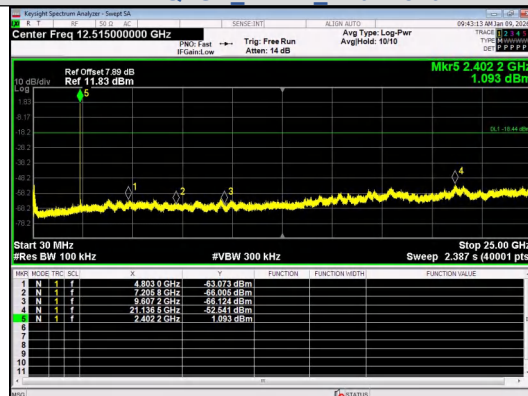
Out Of Band Emission
GFSK_DH1_Channel 0



Out Of Band Emission
 $\pi/4$ DQPSK_2-DH1_Channel 0



30.0 MHz - 25000.0 MHz
GFSK_DH1_Channel 0



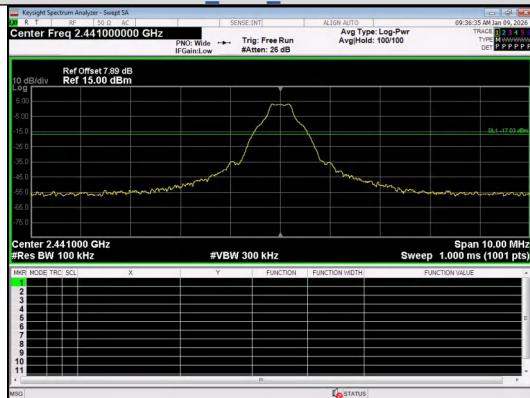
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH1_Channel 0



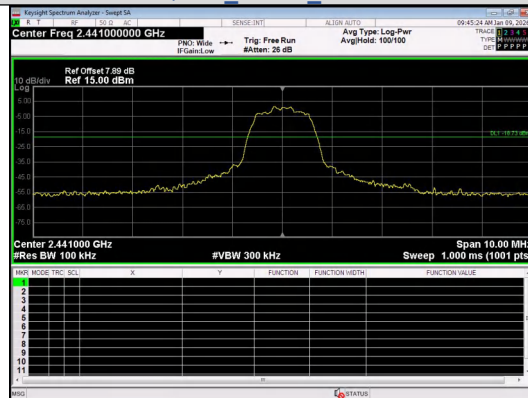
In-Band Reference Level
GFSK_DH1_Channel 39



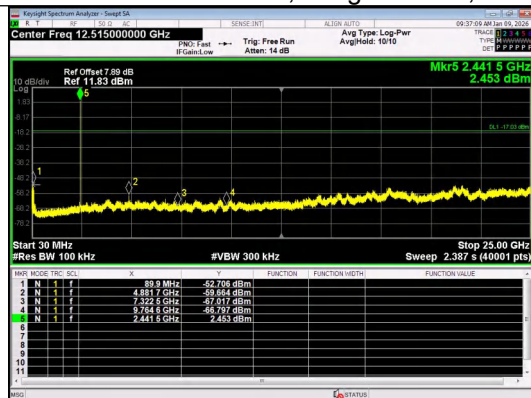
In-Band Reference Level
 $\pi/4$ DQPSK_2-DH1_Channel 39



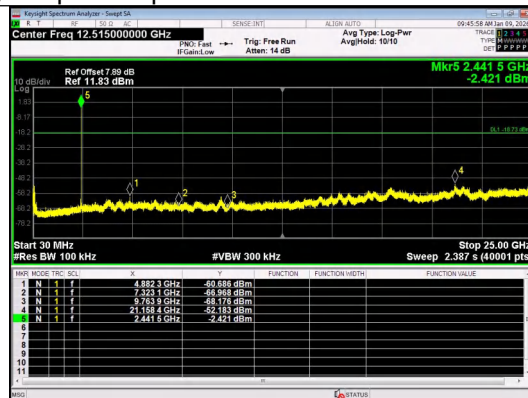
Out Of Band Emission
GFSK_DH1_Channel 39



Out Of Band Emission
 $\pi/4$ DQPSK_2-DH1_Channel 39



30.0 MHz - 25000.0 MHz
GFSK DH1 Channel 39



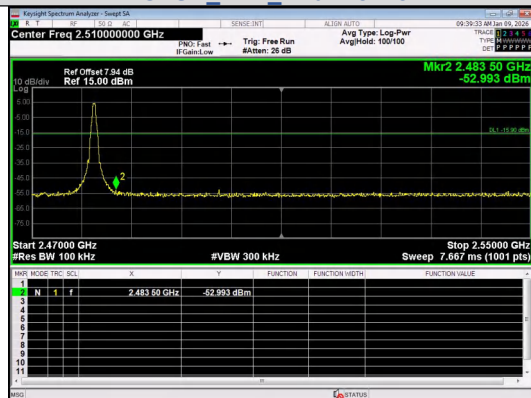
30.0 MHz - 25000.0 MHz
π/4DQPSK 2-DH1 Channel 39



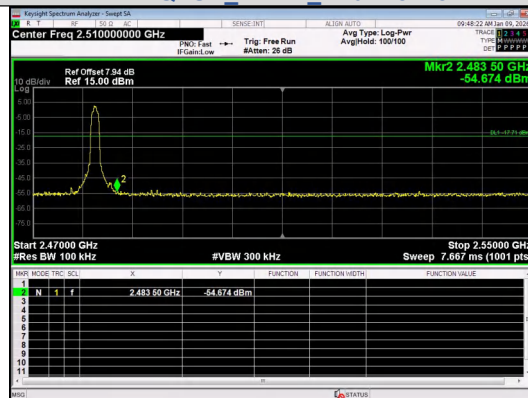
In-Band Reference Level
GFSK DH1 Channel 78



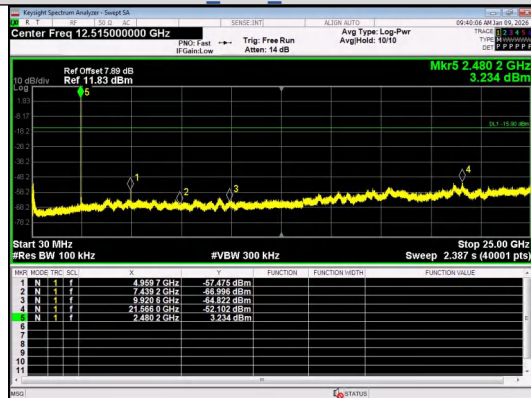
In-Band Reference Level
 $\pi/4$ DQPSK 2-DH1 Channel 78



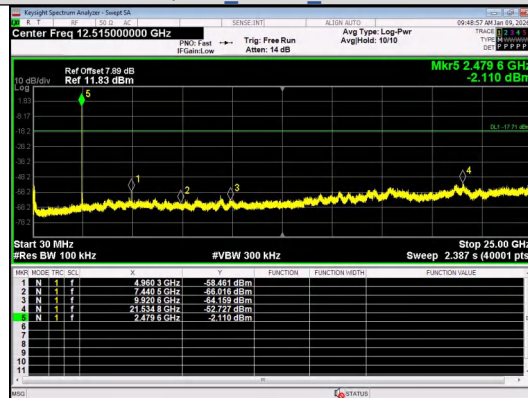
Out Of Band Emission GFSK_DH1_Channel 78



Out Of Band Emission
π/4DQPSK 2-DH1_Channel 78



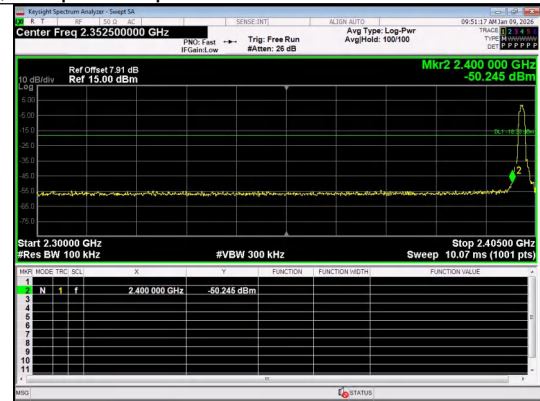
30.0 MHz - 25000.0 MHz
GFSK DH1 Channel 78



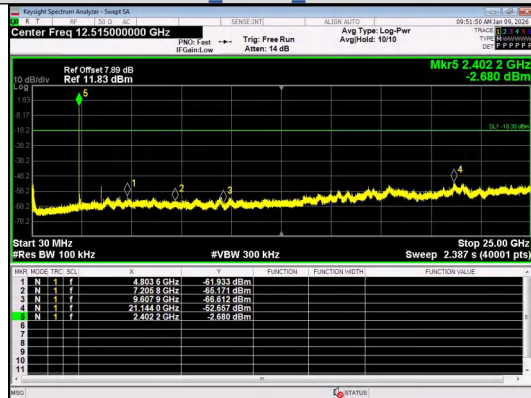
30.0 MHz - 25000.0 MHz
π/4DQPSK 2-DH1 Channel 78



In-Band Reference Level
8DPSK 3-DH1 Channel 0



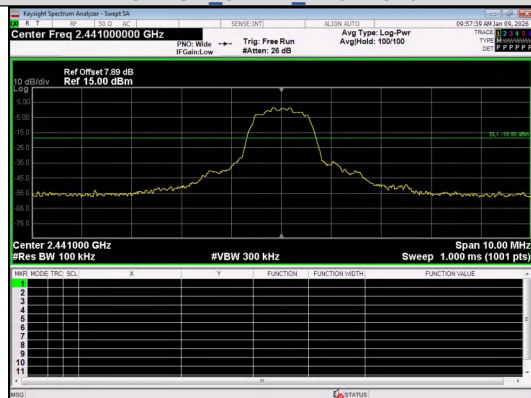
Out Of Band Emission
8DPSK 3-DH1 Channel 0



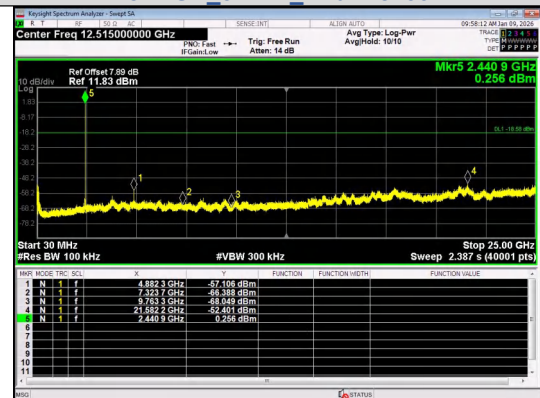
30.0 MHz - 25000.0 MHz
8DPSK 3-DH1 Channel 0



In-Band Reference Level
8DPSK 3-DH1 Channel 39



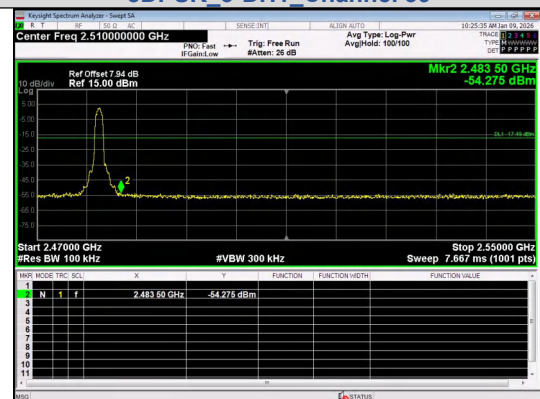
Out Of Band Emission
8DPSK 3-DH1 Channel 39



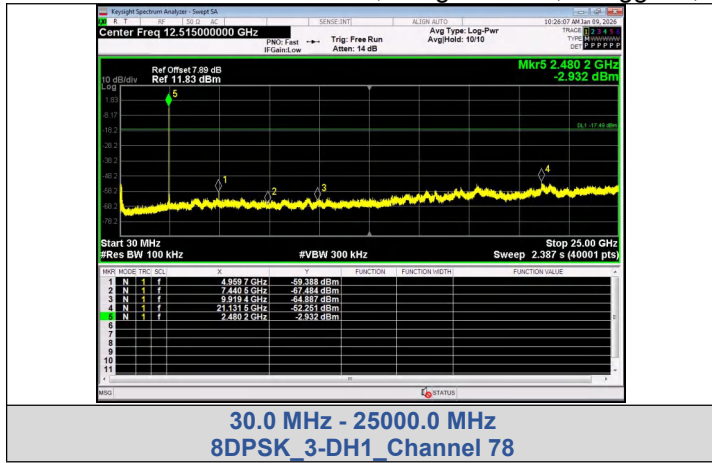
30.0 MHz - 25000.0 MHz
8DPSK 3-DH1 Channel 39



In-Band Reference Level
8DPSK 3-DH1 Channel 78



Out Of Band Emission
8DPSK 3-DH1 Channel 78



A.6 DUTY CYCLE

Test Result

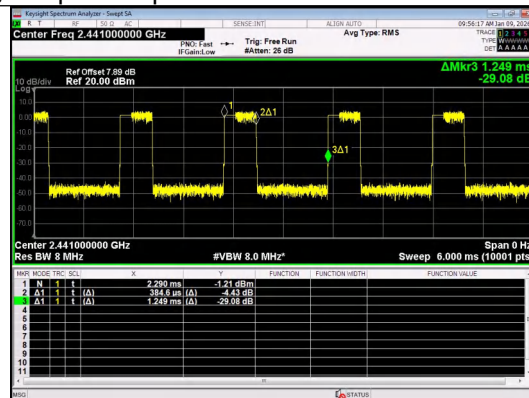
Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH1	0	0.382	1.250	30.58	0.3058	5.1456	2.6178
		39	0.382	1.249	30.60	0.3060	5.1428	2.6178
		78	0.382	1.250	30.58	0.3058	5.1456	2.6178
$\pi/4$ DQPSK	2-DH1	0	0.385	1.250	30.77	0.3077	5.1187	2.5974
		39	0.385	1.249	30.79	0.3079	5.1159	2.5974
		78	0.385	1.249	30.79	0.3079	5.1159	2.5974
8DPSK	3-DH1	0	0.385	1.250	30.77	0.3077	5.1187	2.5974
		39	0.385	1.249	30.79	0.3079	5.1159	2.5974
		78	0.385	1.250	30.77	0.3077	5.1187	2.5974

Test Graphs

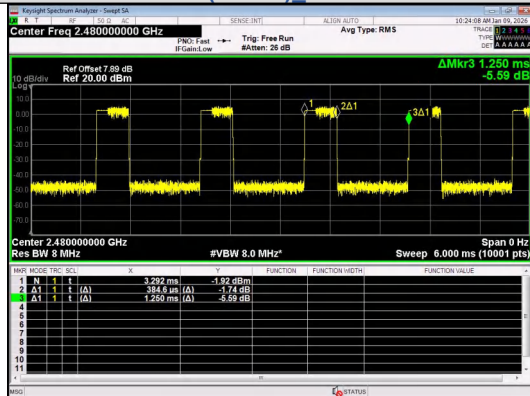




8DPSK(3-DH1)_Channel 0



8DPSK(3-DH1)_Channel 39



8DPSK(3-DH1)_Channel 78

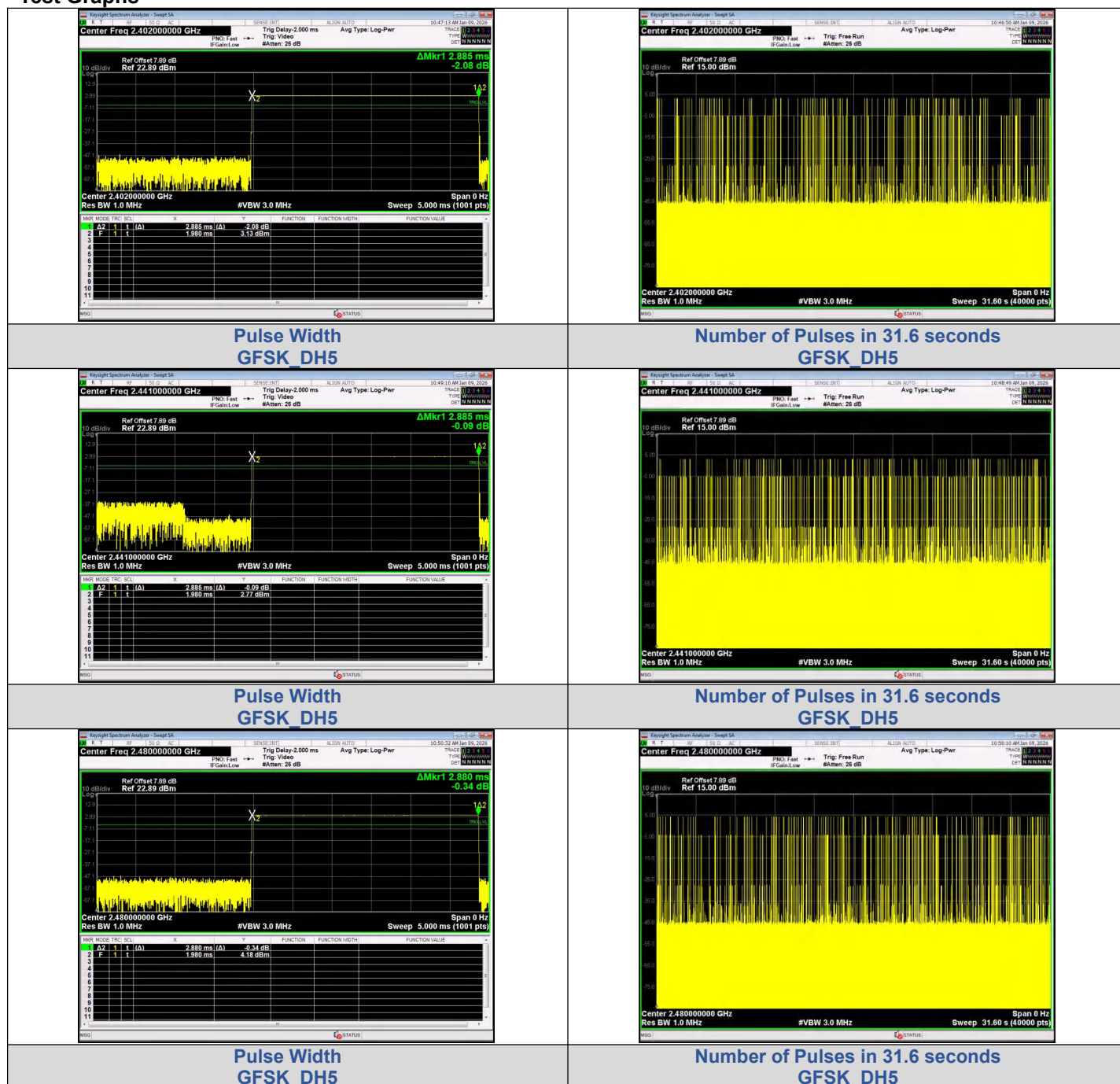
A.7 DWELL TIME

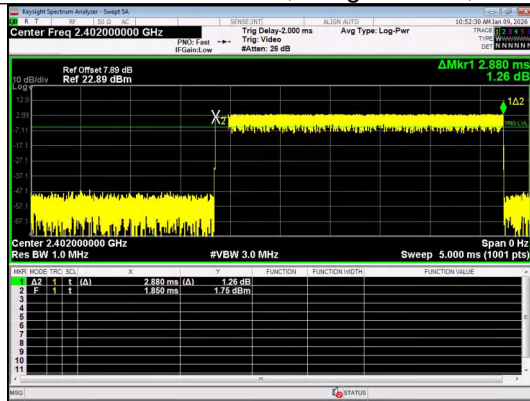
Test Result

Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	Hopping	2.885	119	343.32	< 400	PASS
	DH5		2.885	99	285.62		PASS
	DH5		2.880	124	357.12		PASS
$\pi/4$ DQPSK	2-DH5		2.880	107	308.16		PASS
	2-DH5		2.890	102	294.78		PASS
	2-DH5		2.880	110	316.8		PASS
8DPSK	3-DH5		2.885	114	328.89		PASS
	3-DH5		2.880	102	293.76		PASS
	3-DH5		2.890	103	297.67		PASS

Note: Dwell time= Pulse time(ms)*Number of Pulses in 31.6 seconds

Test Graphs

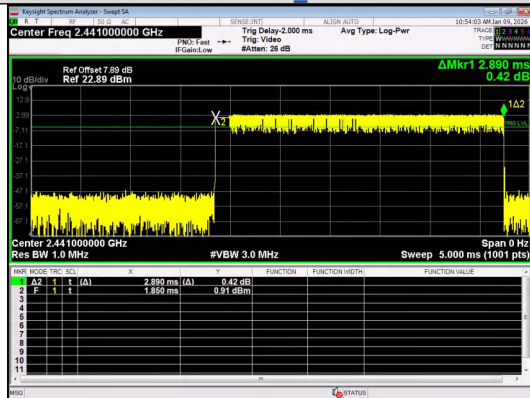




Pulse Width
 $\pi/4$ DQPSK_2-DH5



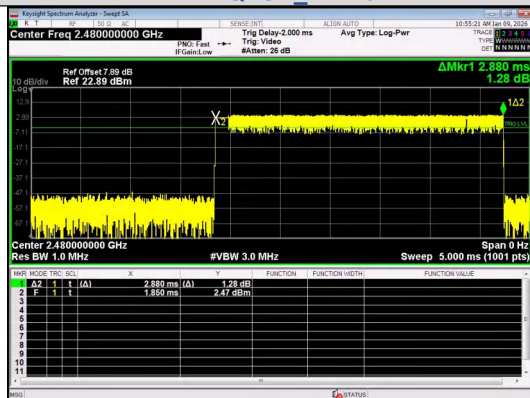
Number of Pulses in 31.6 seconds
 $\pi/4$ DQPSK_2-DH5



Pulse Width
 $\pi/4$ DQPSK_2-DH5



Number of Pulses in 31.6 seconds
 $\pi/4$ DQPSK_2-DH5



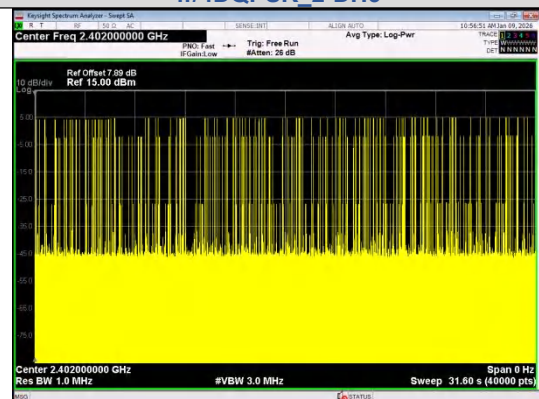
Pulse Width
 $\pi/4$ DQPSK_2-DH5



Number of Pulses in 31.6 seconds
 $\pi/4$ DQPSK_2-DH5



Pulse Width
8DPSK_3-DH5



Number of Pulses in 31.6 seconds
8DPSK_3-DH5



**Pulse Width
8DPSK 3-DH5**



**Number of Pulses in 31.6 seconds
8DPSK 3-DH5**



**Pulse Width
8DPSK 3-DH5**



**Number of Pulses in 31.6 seconds
8DPSK 3-DH5**

A.8 NUMBER OF HOPPING CHANNEL

Test Result

Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH1	79	15	PASS
$\pi/4$ DQPSK	2-DH1	79	15	PASS
8DPSK	3-DH1	79	15	PASS

Test Graphs

