

Appendix A of data

A1.Maximum Peak Conducted Output Power

Test Result

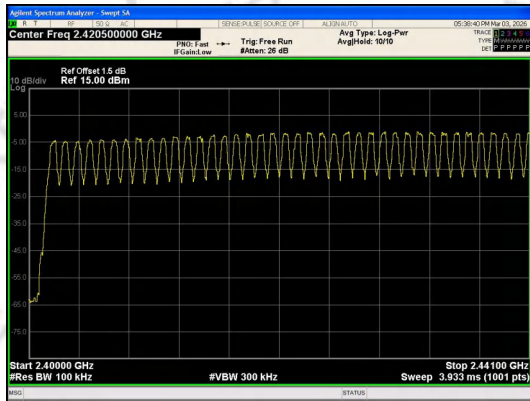
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	-1.07	0.78	≤21	PASS
		39	-0.66	0.86		PASS
		78	0.82	1.21		PASS
π/4DQPSK	2-DH5	0	0.77	1.19		PASS
		39	1.05	1.27		PASS
		78	-0.32	0.93		PASS
8DPSK	3-DH5	0	-1.68	0.68		PASS
		39	1.48	1.41		PASS
		78	0.08	1.02		PASS

A2.Number of Hopping Frequencies

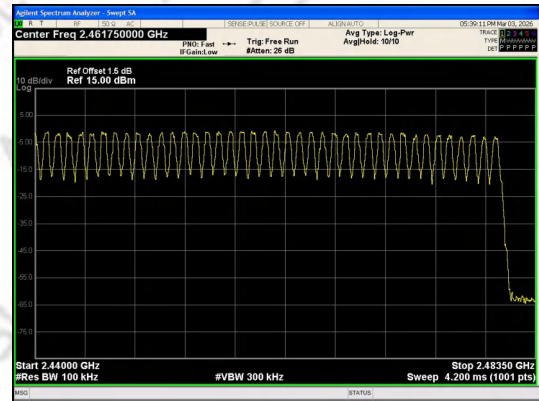
Test Result

Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

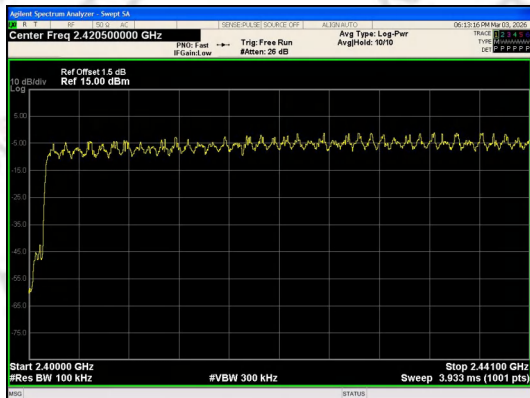
Test Graphs



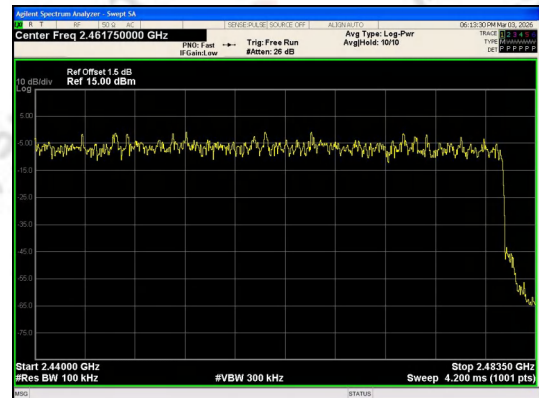
Low End Spectrum Channel Hopping Plot
GFSK



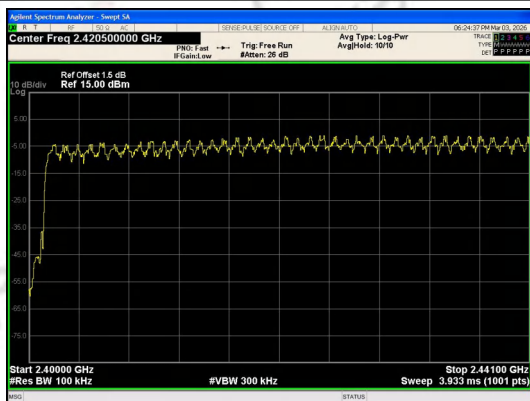
High End Spectrum Channel Hopping Plot
GFSK



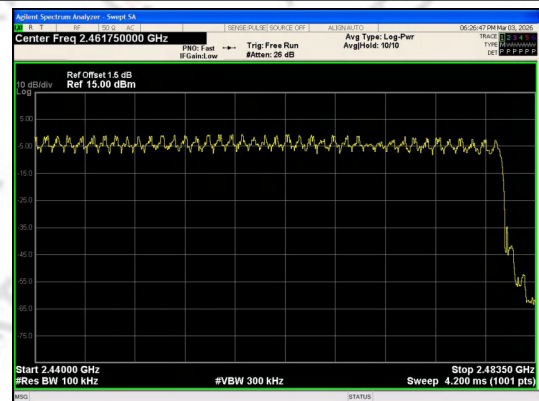
Low End Spectrum Channel Hopping Plot
 $\pi/4$ DQPSK



High End Spectrum Channel Hopping Plot
 $\pi/4$ DQPSK



Low End Spectrum Channel Hopping Plot
8DPSK



High End Spectrum Channel Hopping Plot
8DPSK

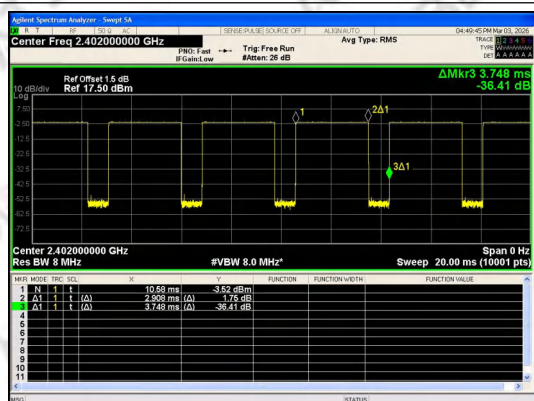
A3.Duty Cycle and Dwell Time

Duty Cycle

Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)
GFSK	DH5	0	2.908	3.748	77.59	0.7759	1.1019
		39	2.908	3.748	77.59	0.7759	1.1019
		78	2.908	3.748	77.59	0.7759	1.1019
$\pi/4$ DQPSK	2-DH5	0	2.898	3.748	77.32	0.7732	1.1171
		39	2.896	3.748	77.27	0.7727	1.1199
		78	2.898	3.748	77.32	0.7732	1.1171
8DPSK	3-DH5	0	2.896	3.748	77.27	0.7727	1.1199
		39	2.896	3.748	77.27	0.7727	1.1199
		78	2.896	3.748	77.27	0.7727	1.1199

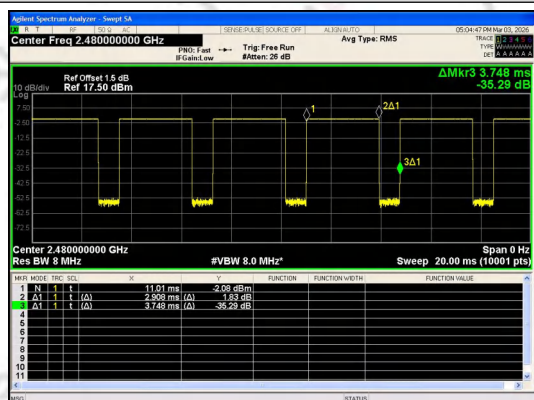
Test Graphs



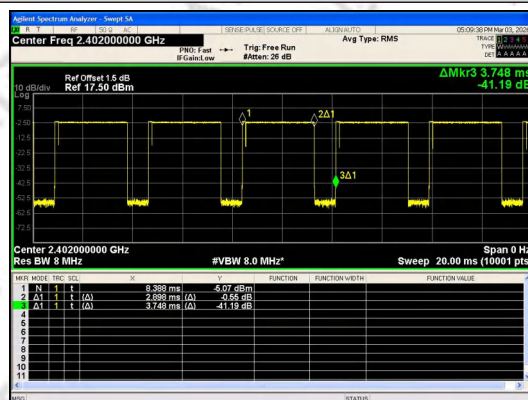
GFSK(DH5)_Channel 0



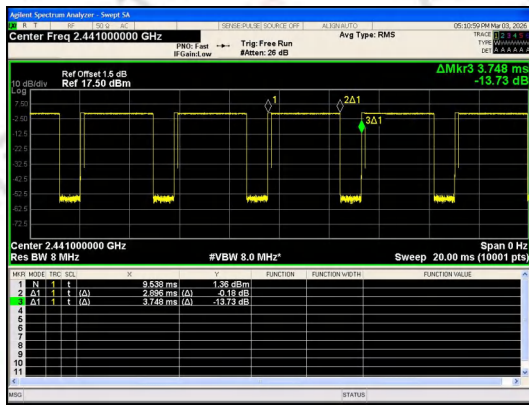
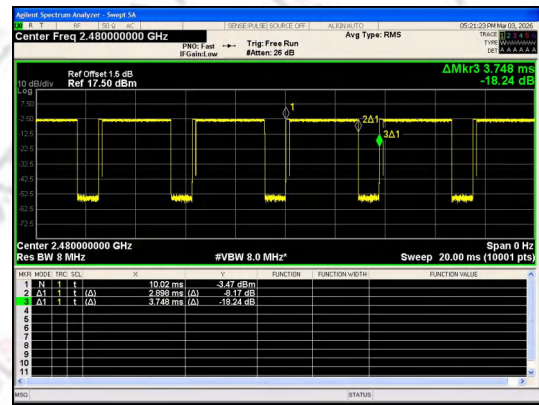
GFSK(DH5)_Channel 39



GFSK(DH5)_Channel 78



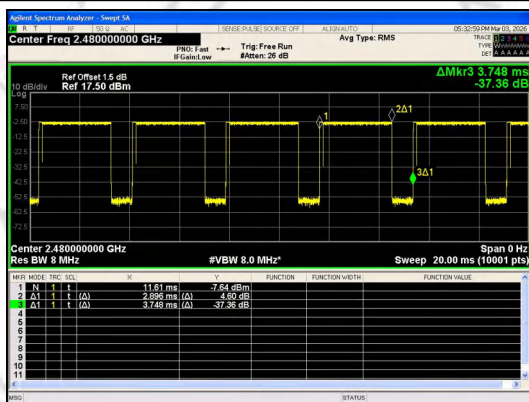
$\pi/4$ DQPSK(2-DH5)_Channel 0


 $\pi/4$ DQPSK(2-DH5)_Channel 39

 $\pi/4$ DQPSK(2-DH5)_Channel 78


8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



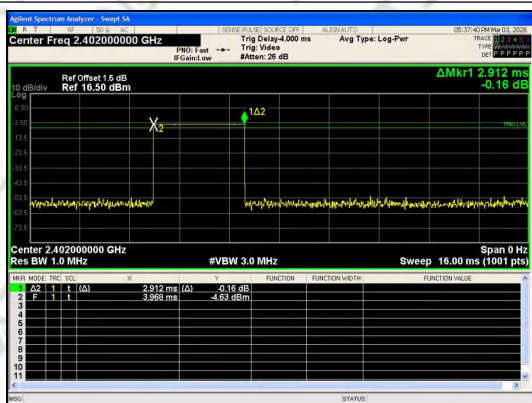
8DPSK(3-DH5)_Channel 78

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	0	2.912	95	276.64	< 400	PASS
$\pi/4$ DQPSK	2-DH5	0	2.896	101	292.5		PASS
8DPSK	3-DH5	0	2.896	100	289.6		PASS

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

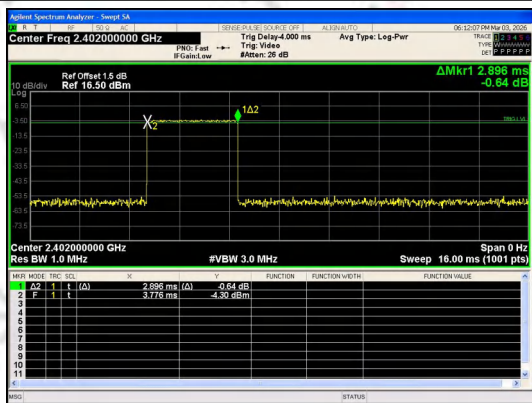
Test Graphs



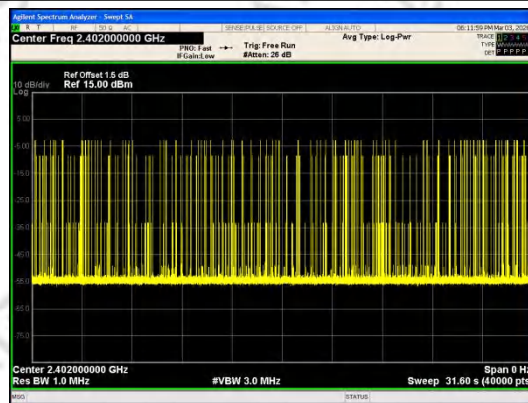
Pulse Width
GFSK_DH5



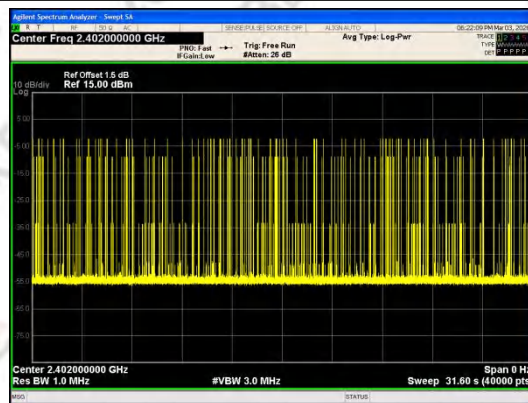
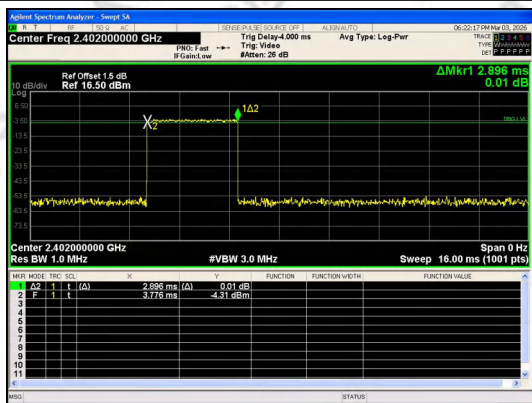
Number of Pulses in 31.6 seconds
GFSK_DH5



Pulse Width
 $\pi/4$ DQPSK_2-DH5



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



Pulse Width
8DPSK_3-DH5

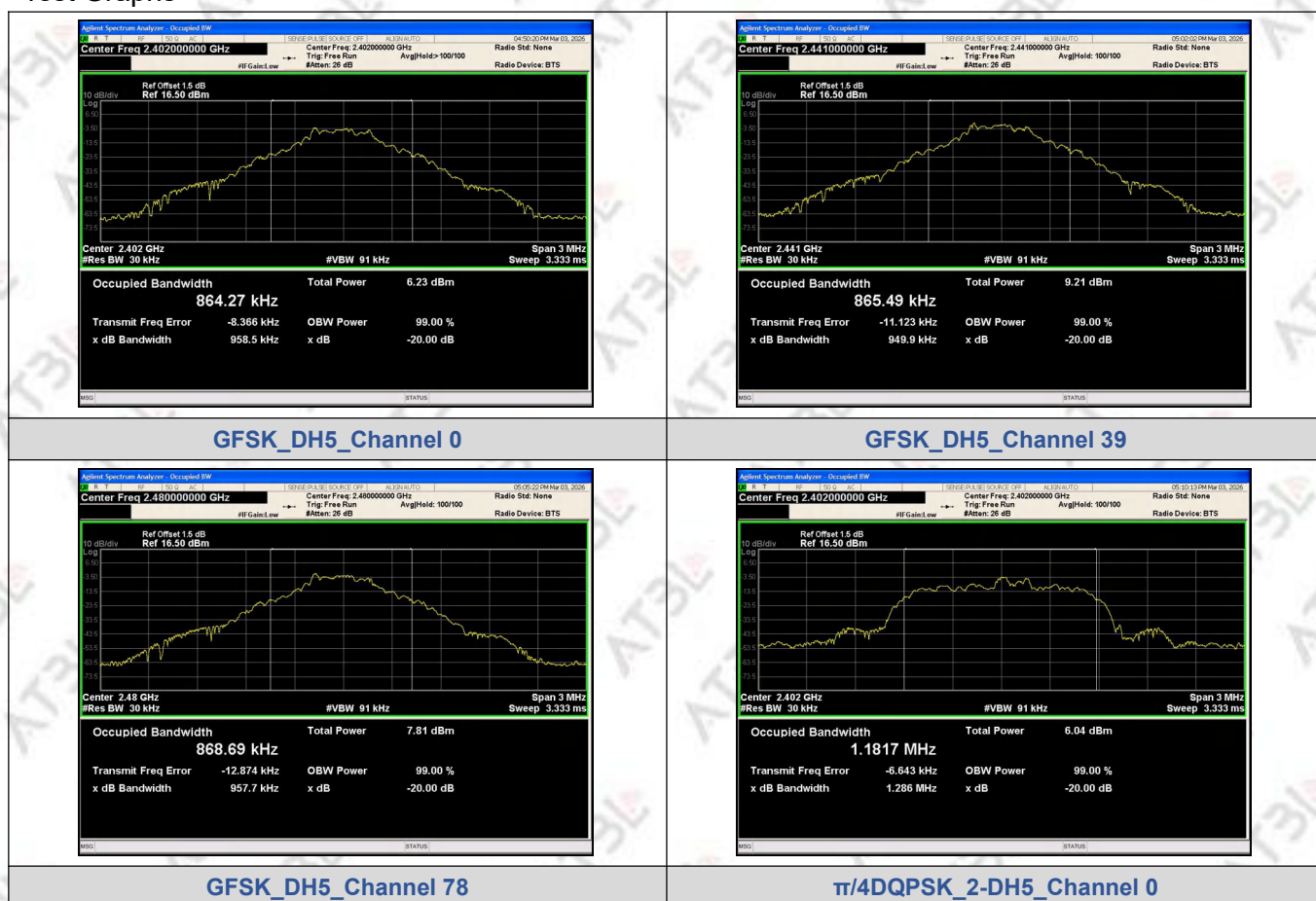
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

A4.20dB Bandwidth

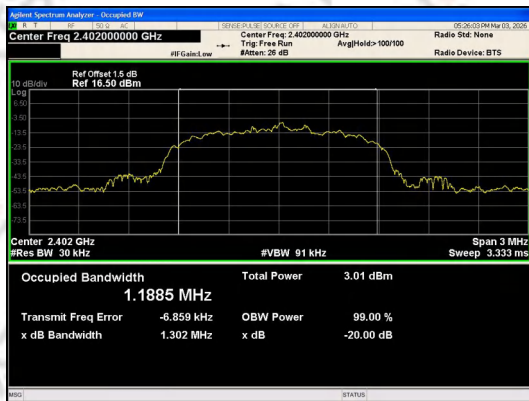
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9585
	39	2441 MHz	0.9499
	78	2480 MHz	0.9577
$\pi/4$ DQPSK	0	2402 MHz	1.286
	39	2441 MHz	1.288
	78	2480 MHz	1.285
8DPSK	0	2402 MHz	1.302
	39	2441 MHz	1.298
	78	2480 MHz	1.303

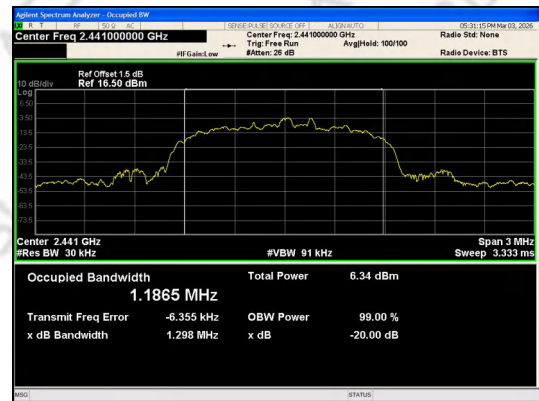
Test Graphs




 $\pi/4$ DQPSK_2-DH5_Channel 39

 $\pi/4$ DQPSK_2-DH5_Channel 78


8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



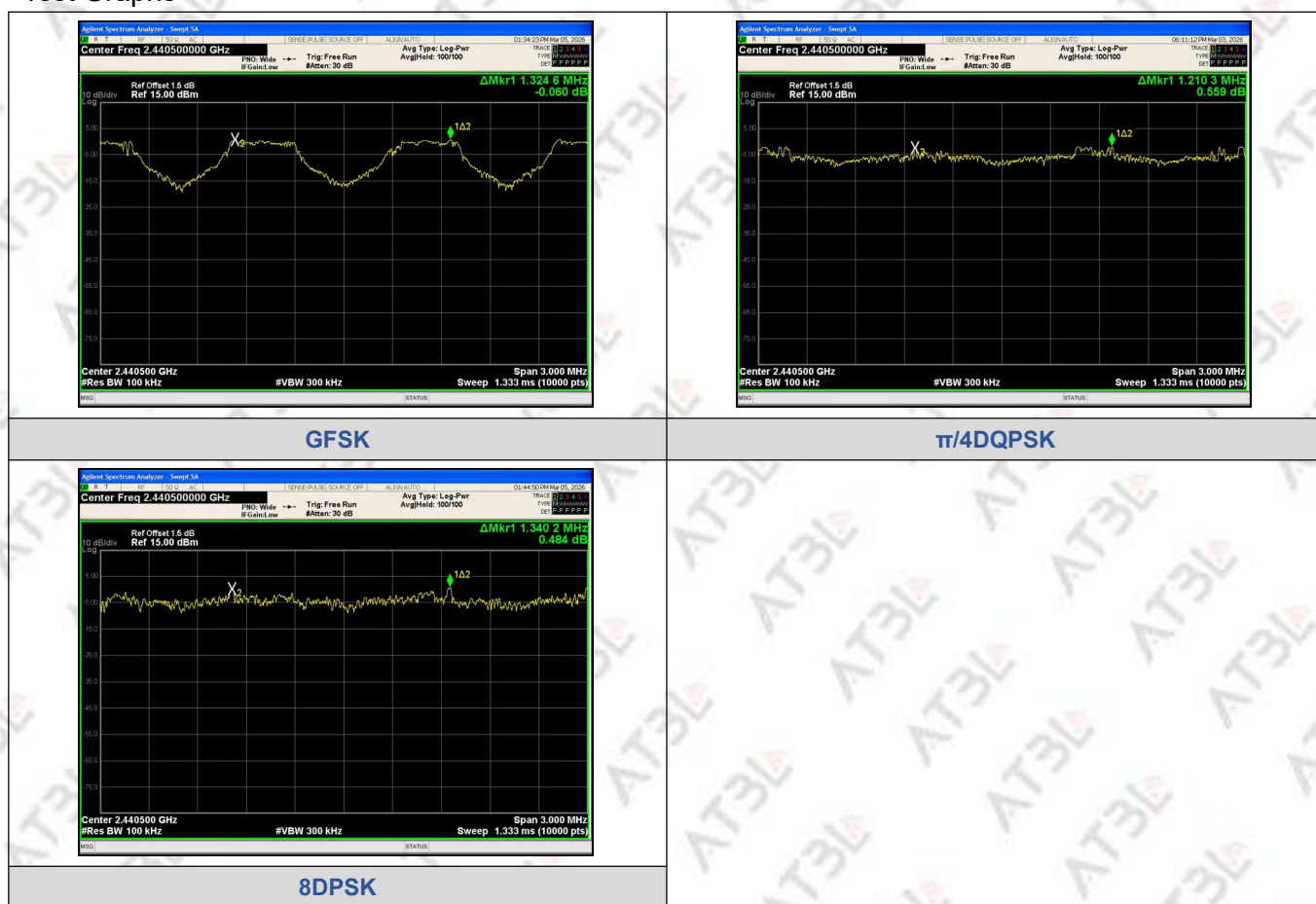
8DPSK_3-DH5_Channel 78

A5.Carrier Frequencies Separation

Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Minimum Limit (MHz)	Result
GFSK	DH5	2439.8314	2441.156	1.3246	0.639	PASS
$\pi/4$ DQPSK	2-DH5	2439.9667	2441.177	1.2103	0.858	PASS
8DPSK	3-DH5	2439.8122	2441.1524	1.3402	0.868	PASS

Test Graphs



A6.Conducted Spurious & Band Edge Emission

Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Cable Loss (dB)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2383.68	-61.014	N/A	-24.12	-36.894	PASS
			2400.00	-61.84	N/A	-24.12	-37.72	PASS
			24932.0	-50.236	1.36	-24.12	-26.116	PASS
		39	24834.0	-50.329	1.36	-20.77	-29.559	PASS
		78	2483.50	-61.253	N/A	-22.15	-39.103	PASS
			24681.0	-50.675	1.36	-22.15	-28.525	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-58.595	N/A	-24.28	-34.315	PASS
			24874.5	-50.431	1.36	-24.28	-26.151	PASS
		39	24962.5	-50.024	1.36	-20.87	-29.154	PASS
		78	2483.50	-61.517	N/A	-22.29	-39.227	PASS
			24889.5	-49.923	1.36	-22.29	-27.633	PASS
8DPSK	3-DH5	0	2400.00	-56.705	N/A	-24.08	-32.625	PASS
			24947.6	-50.419	1.36	-24.08	-26.339	PASS
		39	24930.1	-50.101	1.36	-20.76	-29.341	PASS
		78	2483.50	-59.977	N/A	-22.14	-37.837	PASS
			24884.5	-50.223	1.36	-22.14	-28.083	PASS

Note:

1.input compensation coefficient (dB)= Cable Loss (dB)

2.30MHz~25GHz OOB Emission Level final result cable loss was added. maximum cable Loss is 2.86 dB (When the frequency reaches 25GHz, add an additional compensation of 1.36dB for Cable Loss.)

Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2320.37	-60.998	-23.96	-37.038	PASS
			2400.00	-62.778	-23.96	-38.818	PASS
			2483.50	-62.353	-21.57	-40.783	PASS
π/4DQPSK	2-DH5		2400.00	-59.535	-23.96	-35.575	PASS
			2483.50	-62.489	-21.38	-41.109	PASS
8DPSK	3-DH5		2400.00	-59.803	-24.11	-35.693	PASS
			2483.50	-61.624	-21.39	-40.234	PASS

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

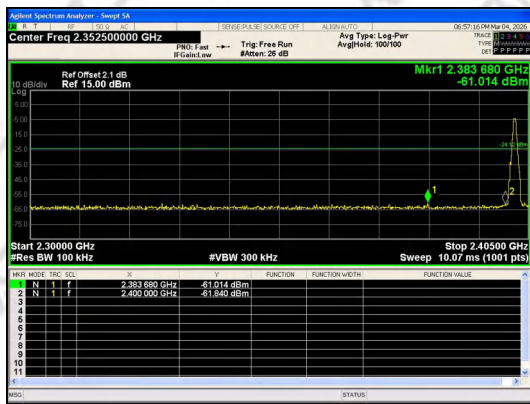
Test Graphs



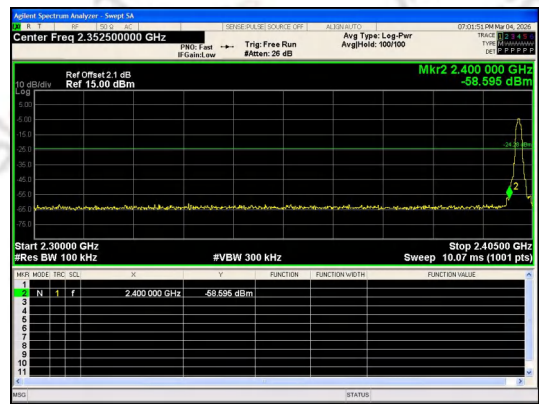
In-Band Reference Level
GFSK_DH5_Channel 0



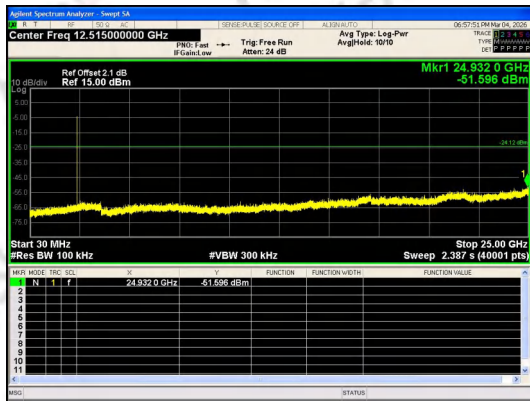
In-Band Reference Level
 $\pi/4$ DQPSK_2-DH5_Channel 0



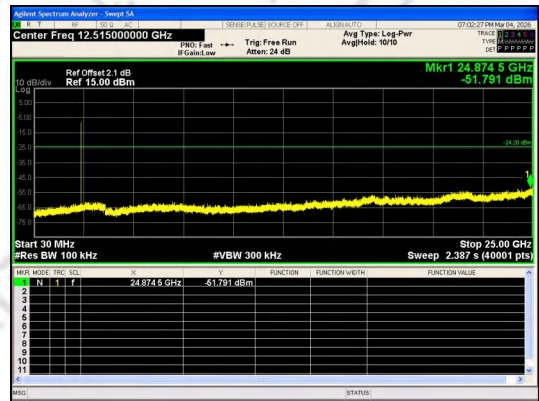
Out Of Band Emission
GFSK_DH5_Channel 0



Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0



30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



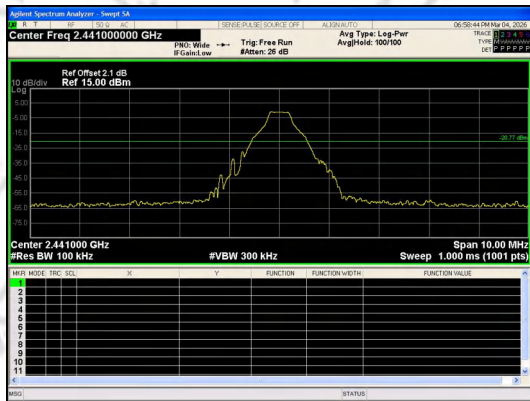
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0



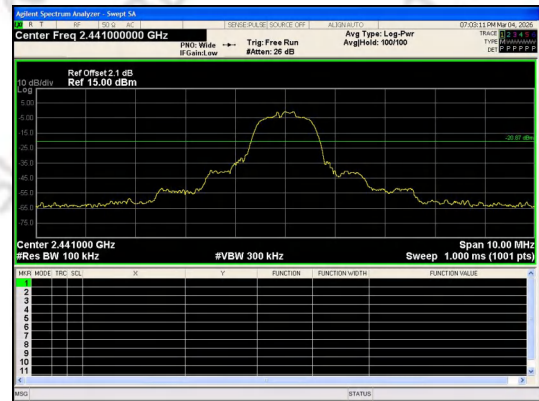
In-Band Reference Level
GFSK_DH5_Channel 39



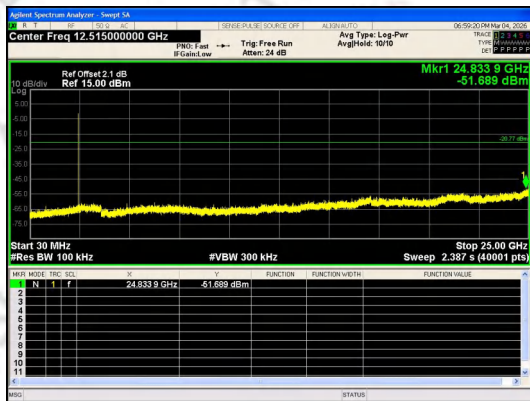
In-Band Reference Level
 $\pi/4$ DQPSK_2-DH5_Channel 39



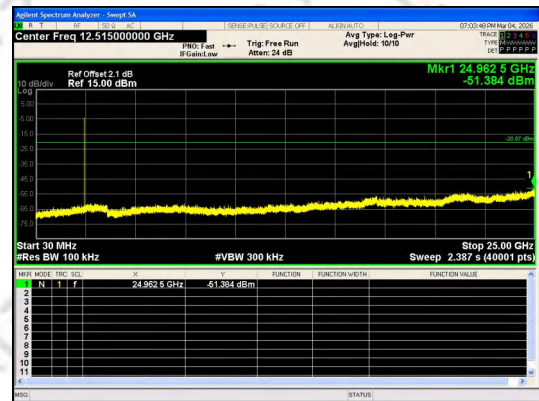
Out Of Band Emission
GFSK_DH5_Channel 39



Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



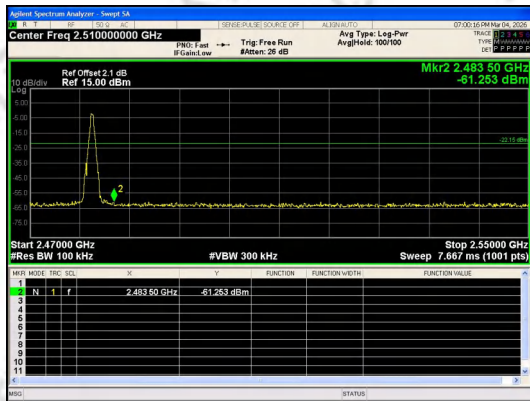
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



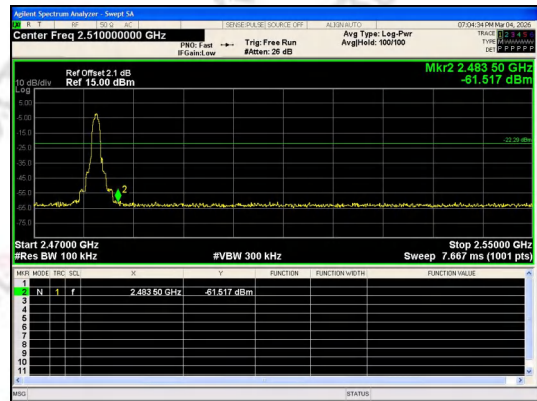
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



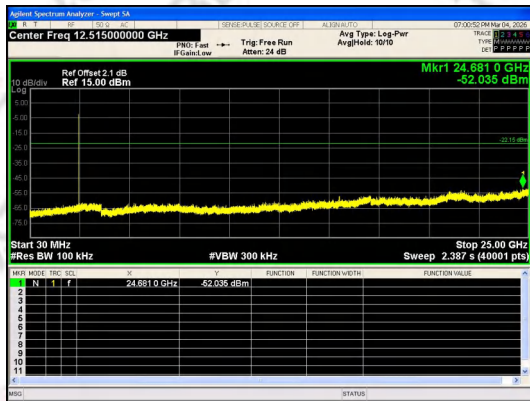
In-Band Reference Level GFSK_DH5_Channel 78



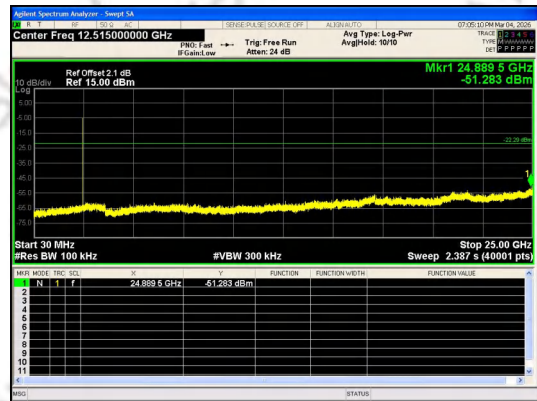
In-Band Reference Level $\pi/4$ DQPSK_2-DH5_Channel 78



Out Of Band Emission GFSK_DH5_Channel 78



Out Of Band Emission $\pi/4$ DQPSK_2-DH5_Channel 78

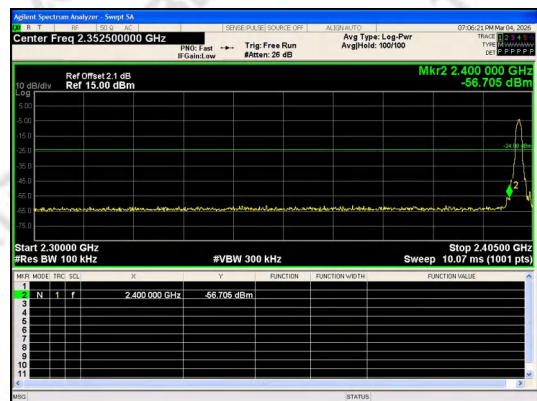


30.0 MHz - 25000.0 MHz GFSK_DH5_Channel 78

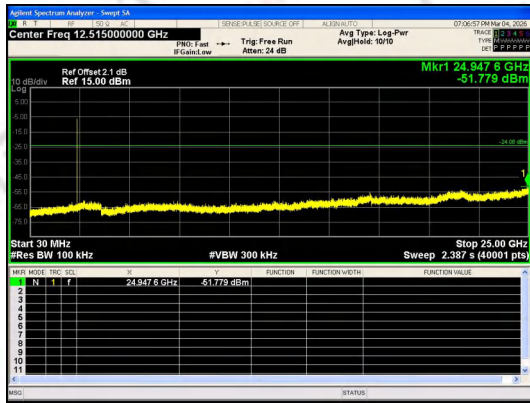
30.0 MHz - 25000.0 MHz $\pi/4$ DQPSK_2-DH5_Channel 78



In-Band Reference Level 8DPSK_3-DH5_Channel 0



Out Of Band Emission 8DPSK_3-DH5_Channel 0



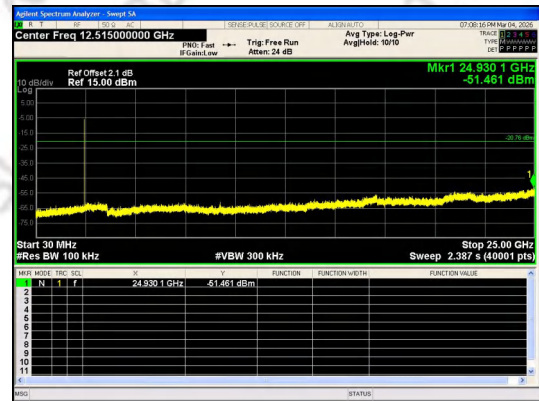
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



In-Band Reference Level
8DPSK_3-DH5_Channel 39



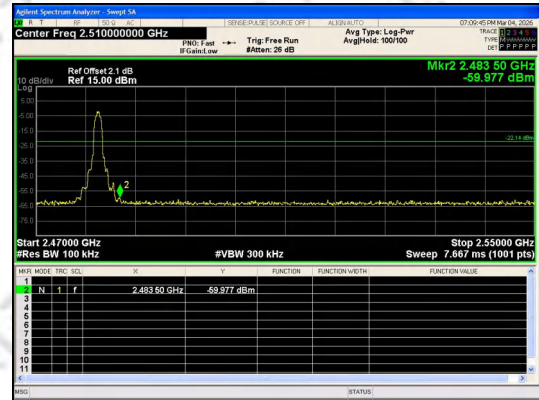
Out Of Band Emission
8DPSK_3-DH5_Channel 39



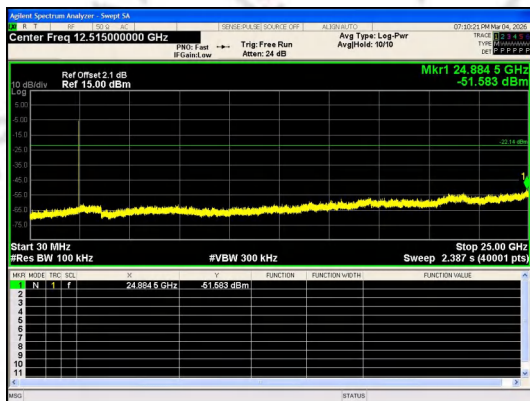
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



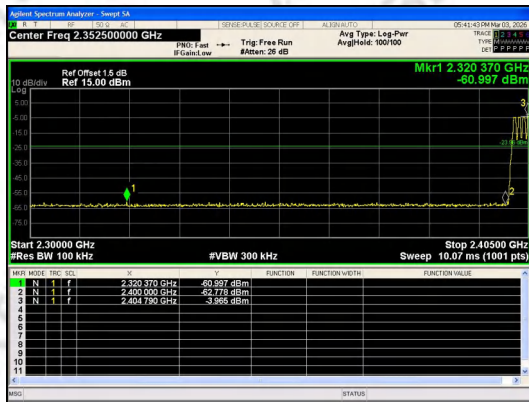
In-Band Reference Level
8DPSK_3-DH5_Channel 78



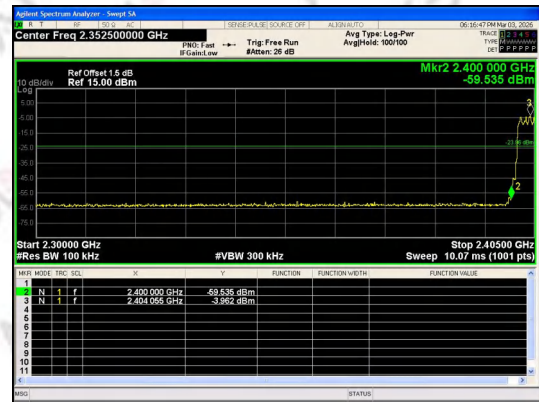
Out Of Band Emission
8DPSK_3-DH5_Channel 78



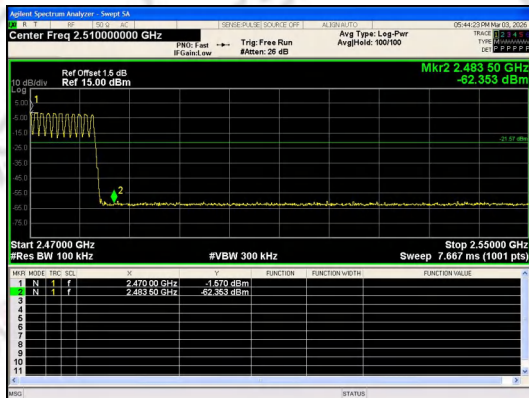
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



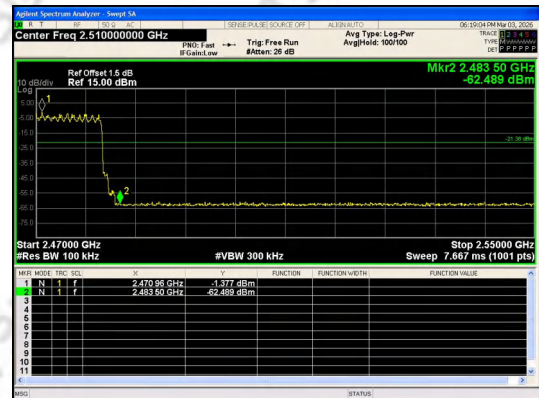
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



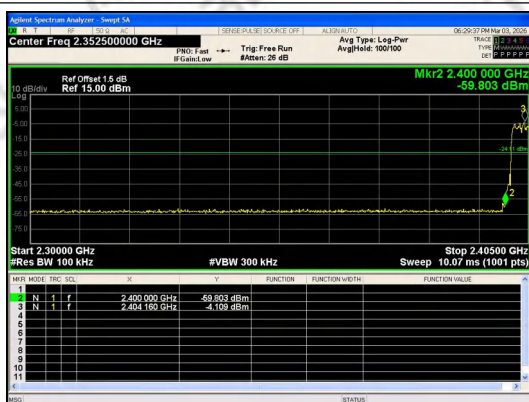
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



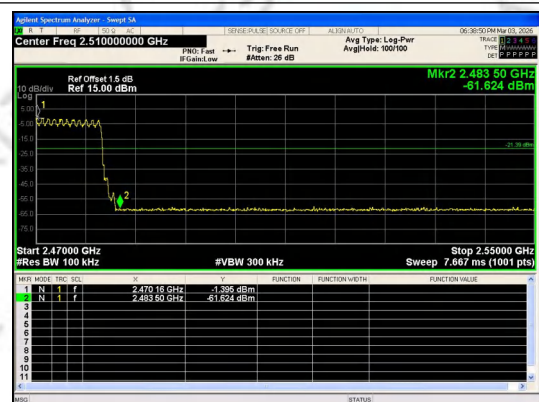
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



Out Of Band Emission(Right)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



Out Of Band Emission(Left)
8DPSK_3-DH5_Channel Hopping



Out Of Band Emission(Right)
8DPSK_3-DH5_Channel Hopping

A6.Radiated Spurious Emission and Restricted Band

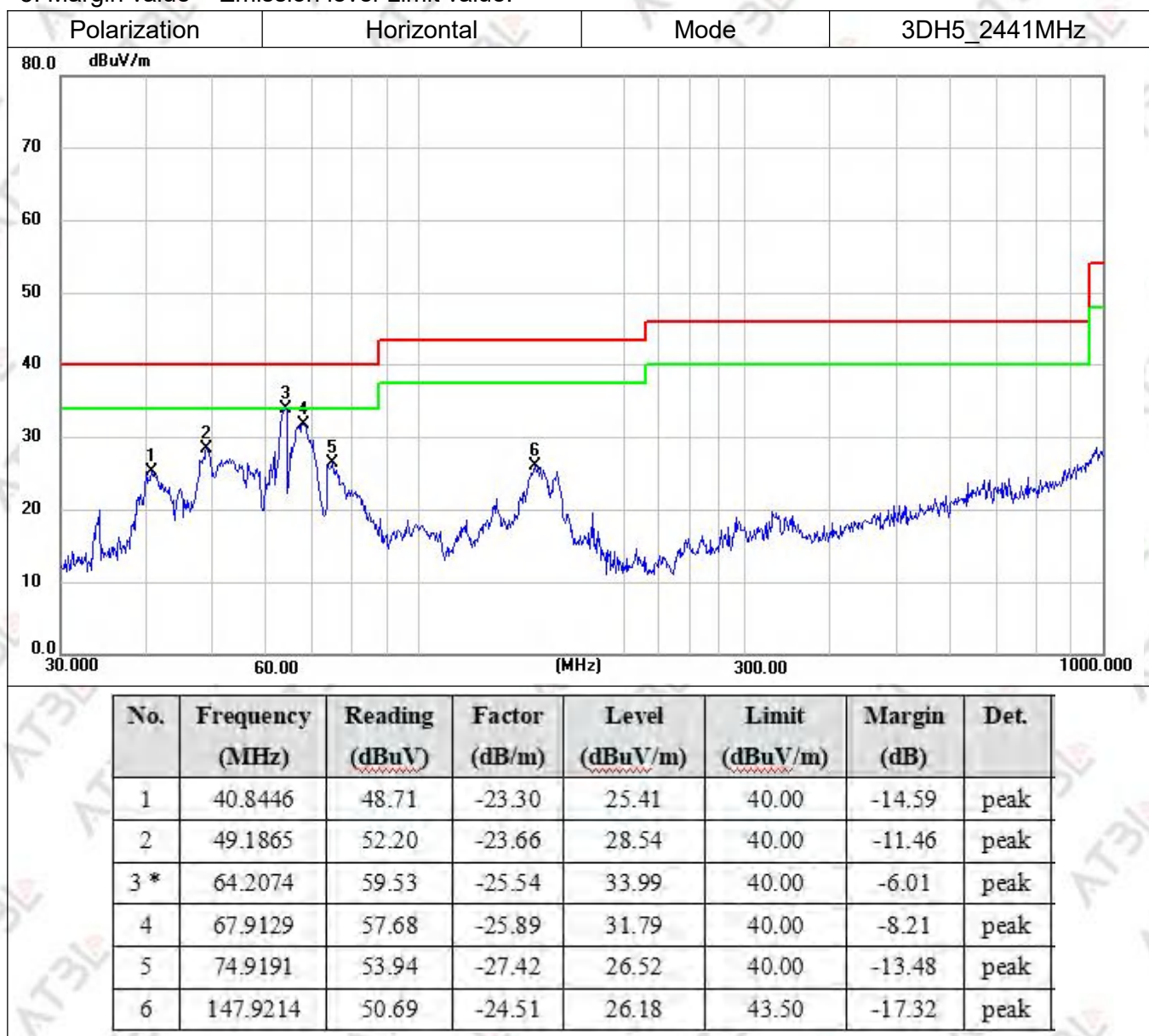
For 9 kHz ~ 30 MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

For 30 MHz ~ 1 GHz:

Note:

- 1.All modes have been tested, only worst mode(3DH5_2441MHz) was recorded in the test report.
- 2.Emission Level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
3. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)-Amplifier Gain.
4. The emission levels of other frequencies were less than 20dB margin against the limit.
5. Margin value = Emission level-Limit value.

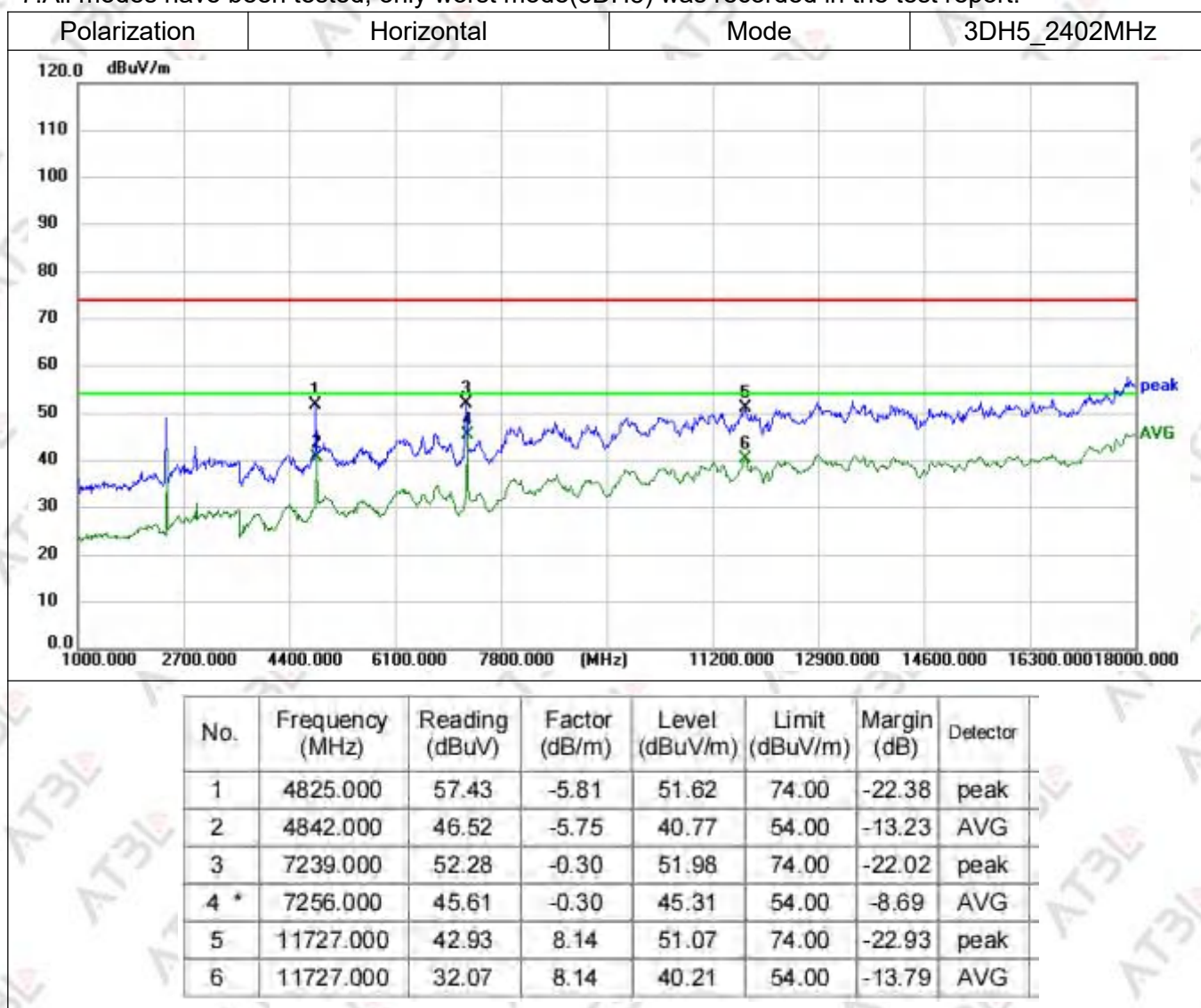


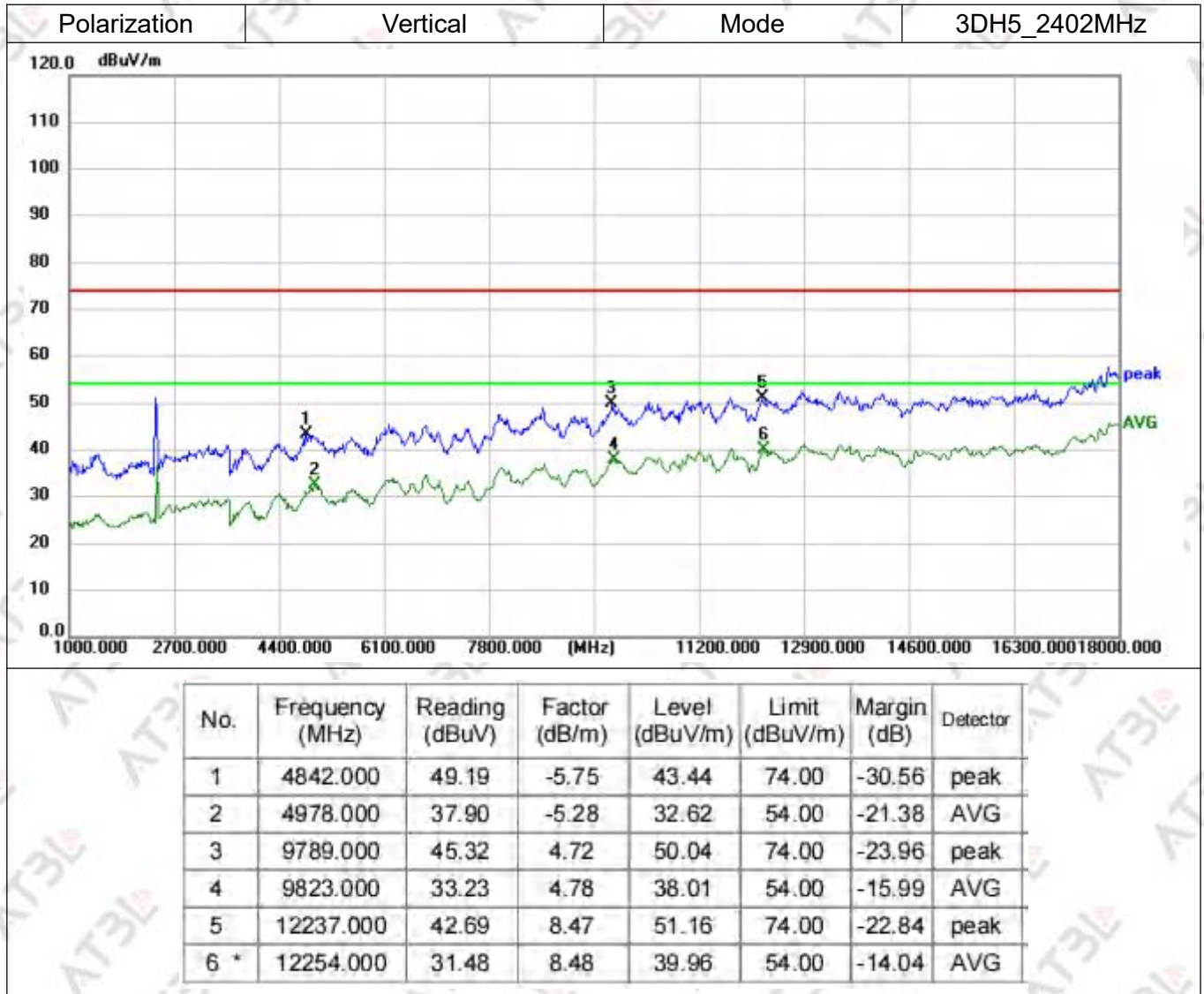


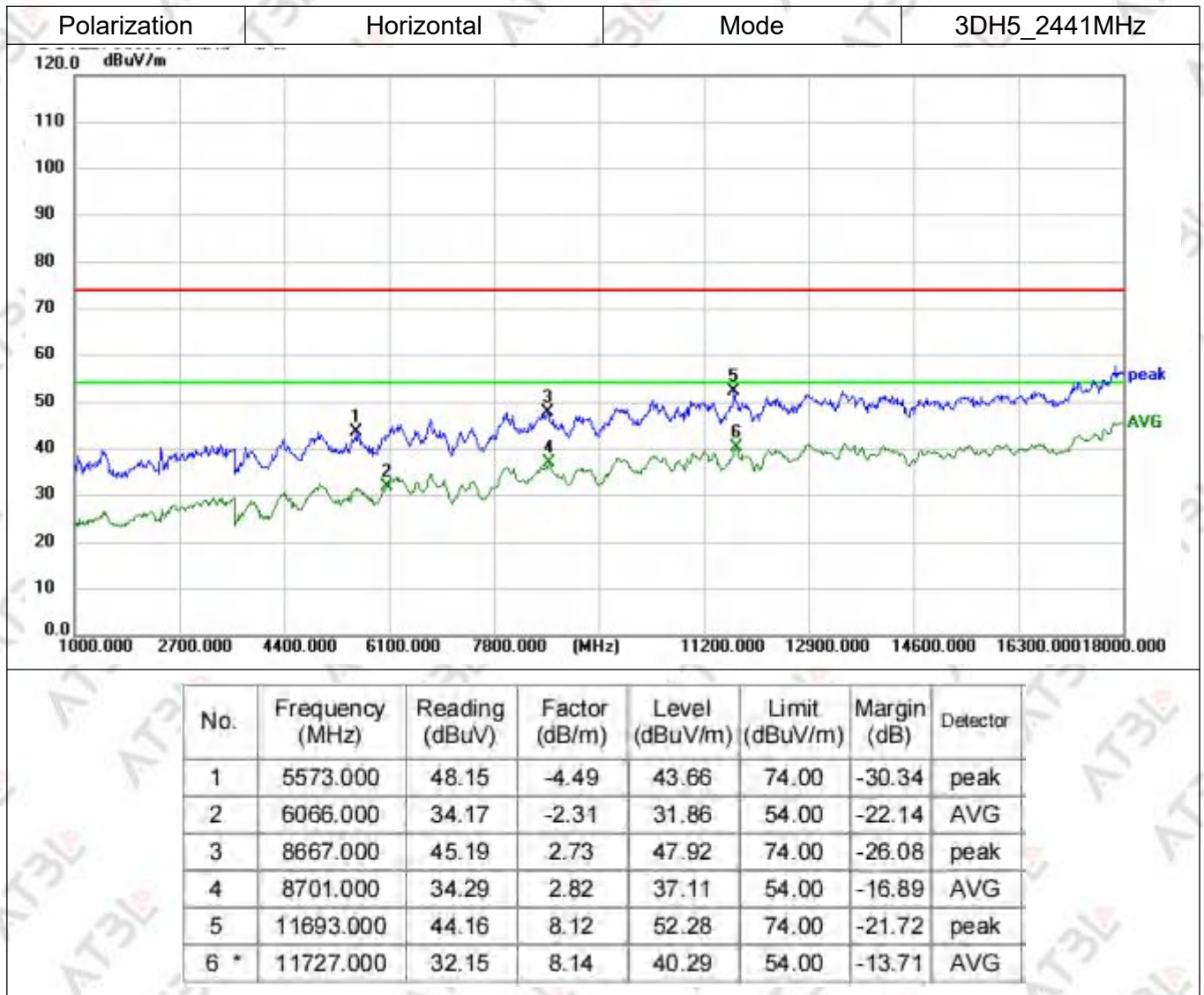
For 1 GHz ~ 18GHz:

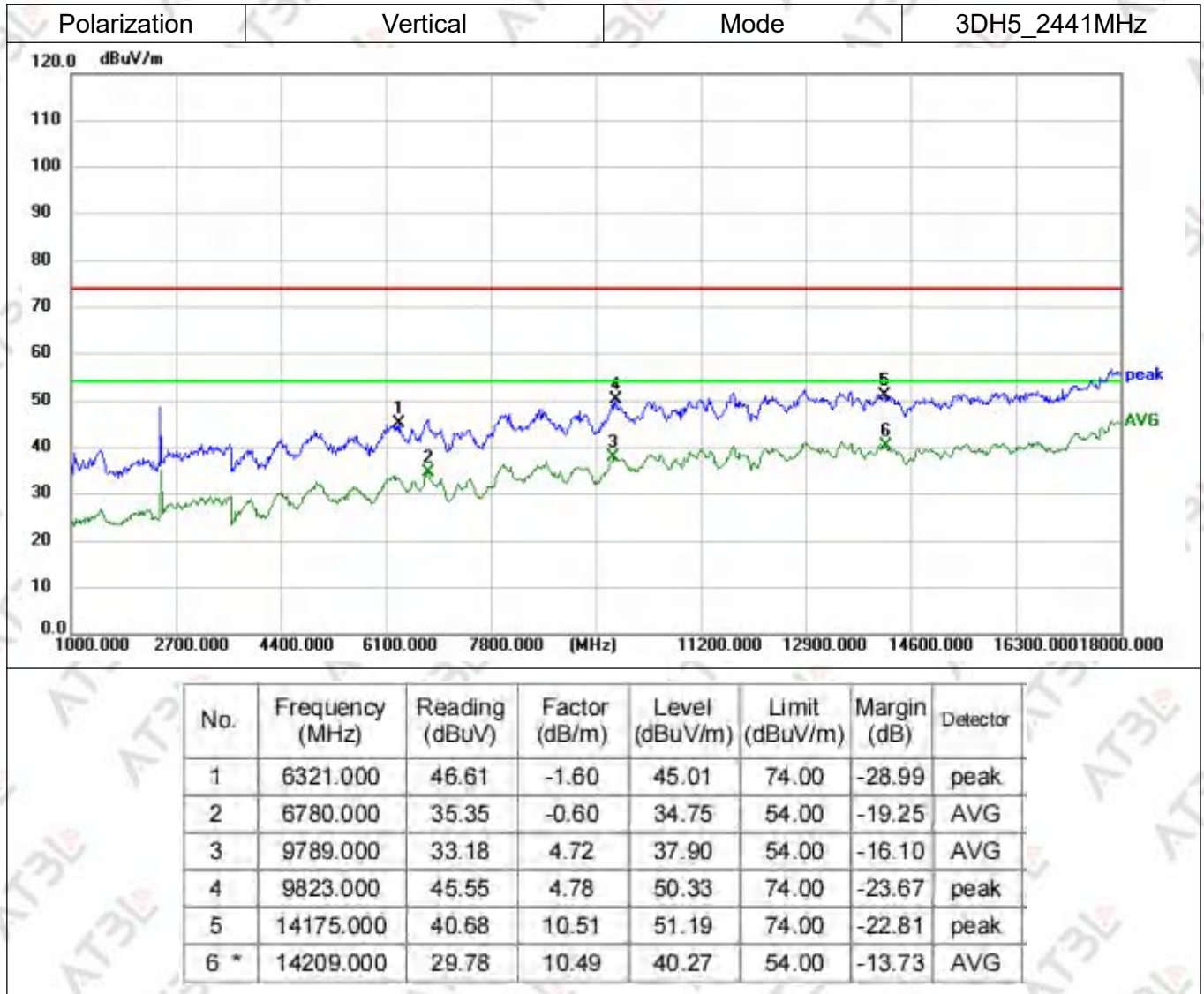
Note:

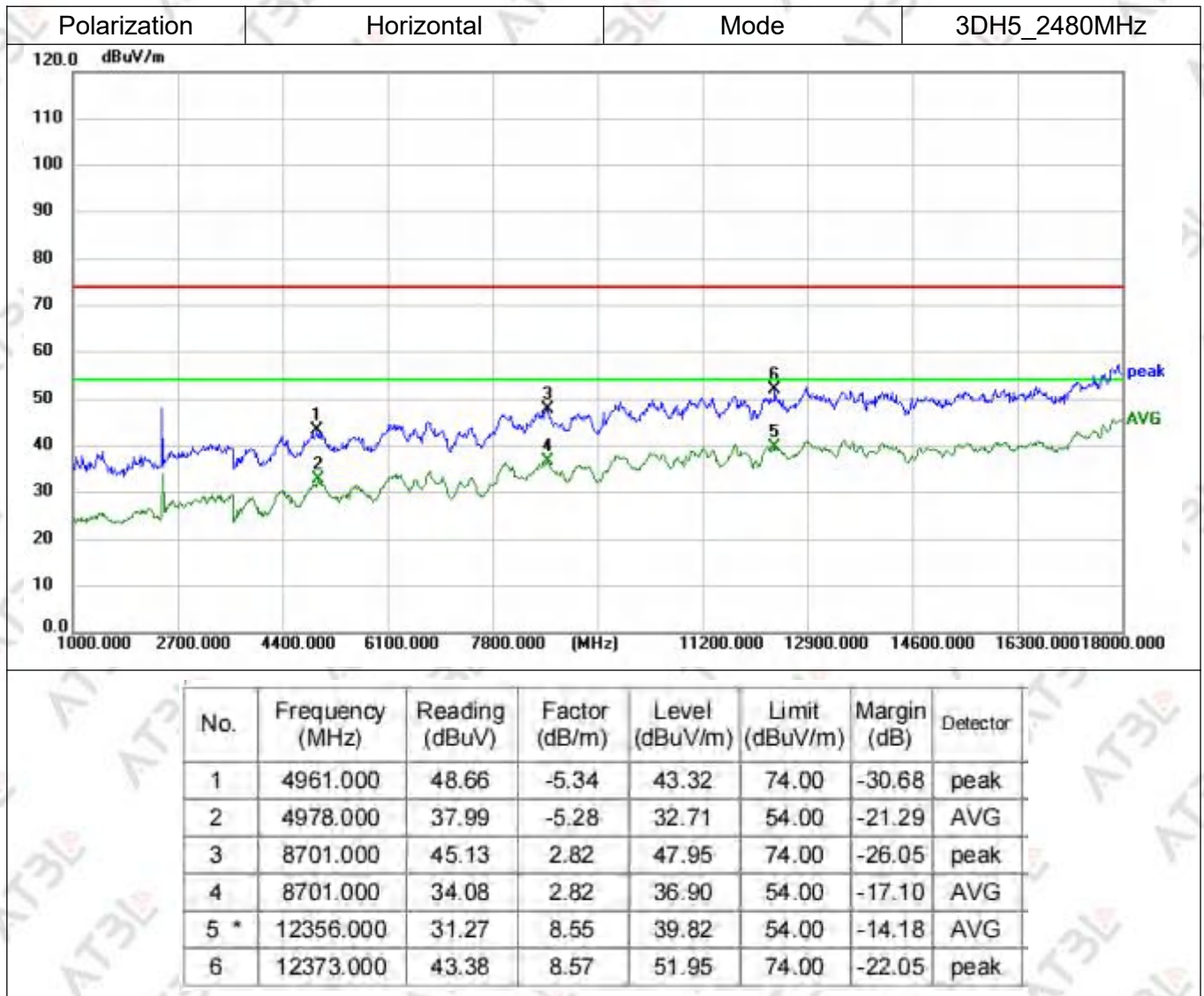
1. In frequency ranges 18 ~25GHz no any other harmonic emissions detected which are tested to compliance with the limit. No recording in the test report. No any other emissions level which are attenuated less than 20dB below the limit. No recording in the test report.
2. We used the filter to test and the main frequency was filtered out.
3. Emission Level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
4. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)-Amplifier Gain.
5. The emission levels of other frequencies were less than 20dB margin against the limit.
6. Margin value = Emission level-Limit value.
7. All modes have been tested, only worst mode(3DH5) was recorded in the test report.

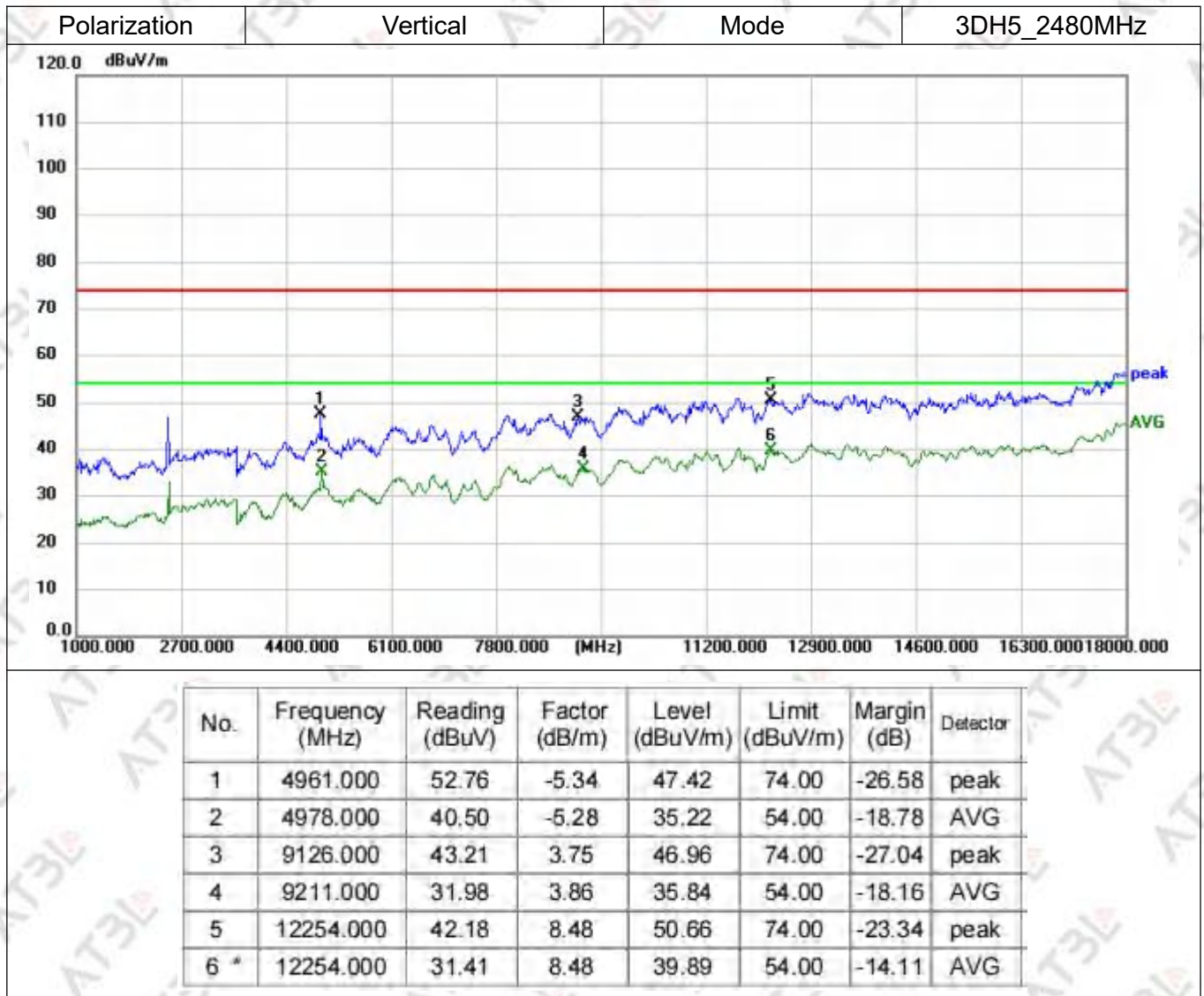








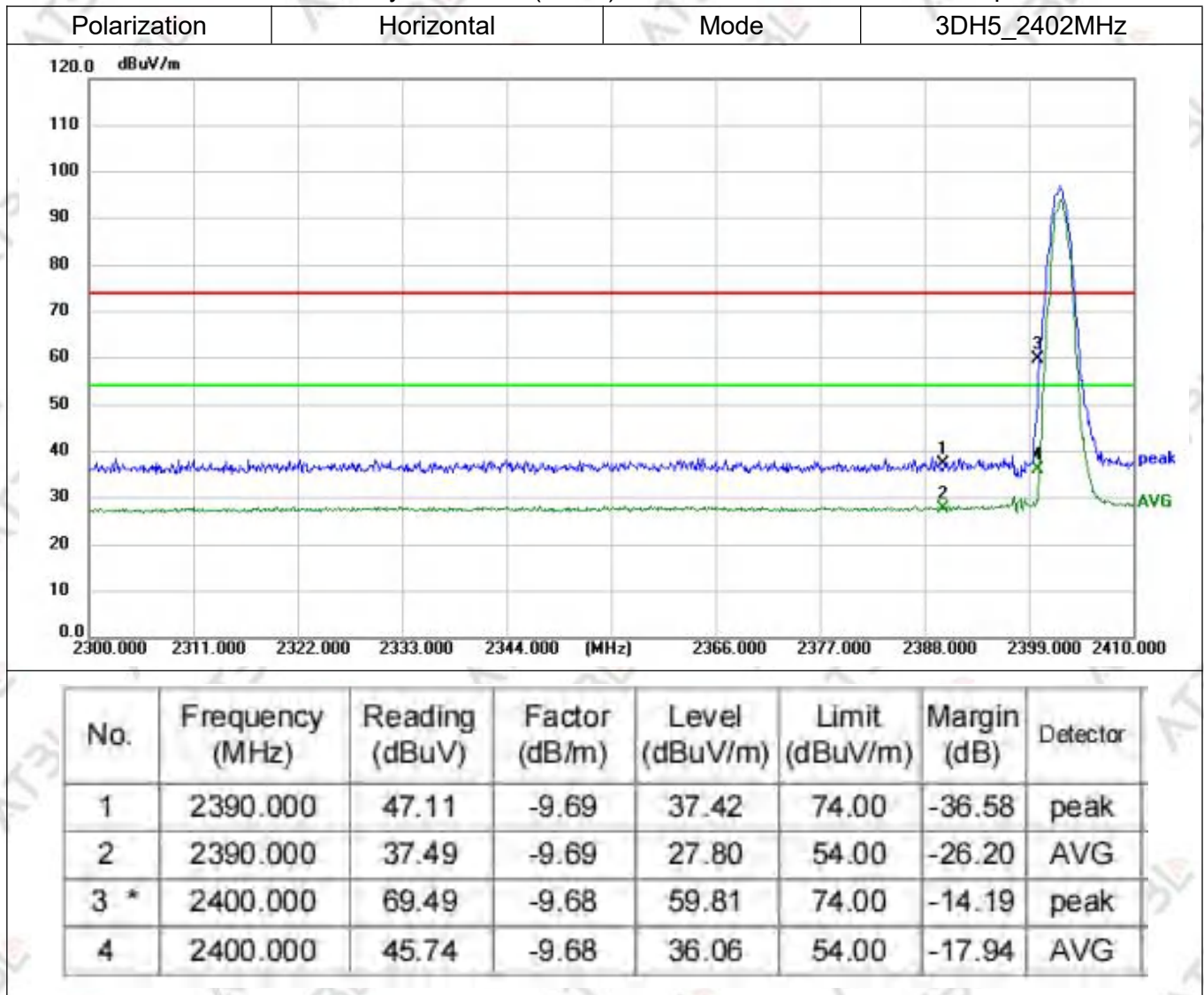


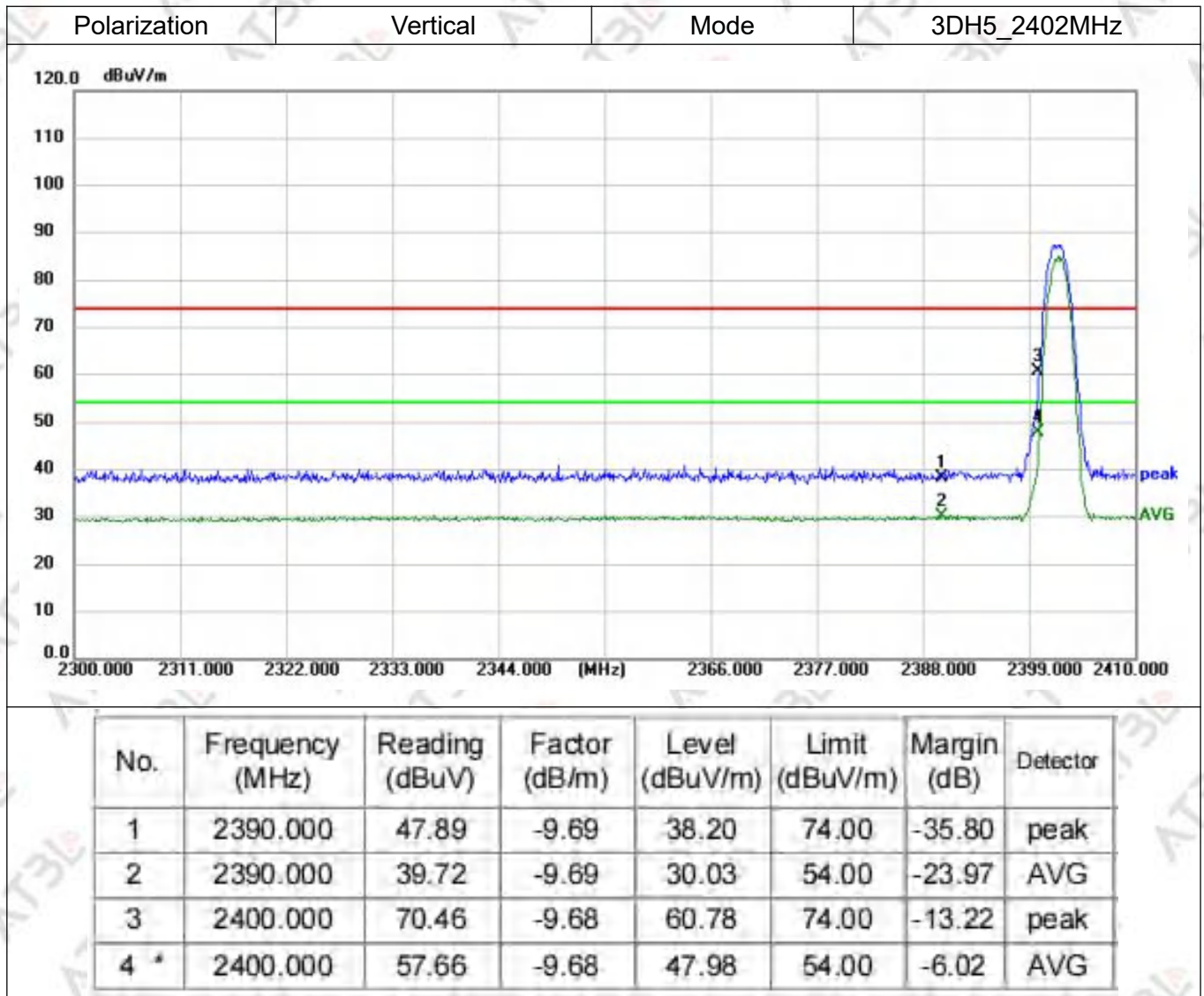


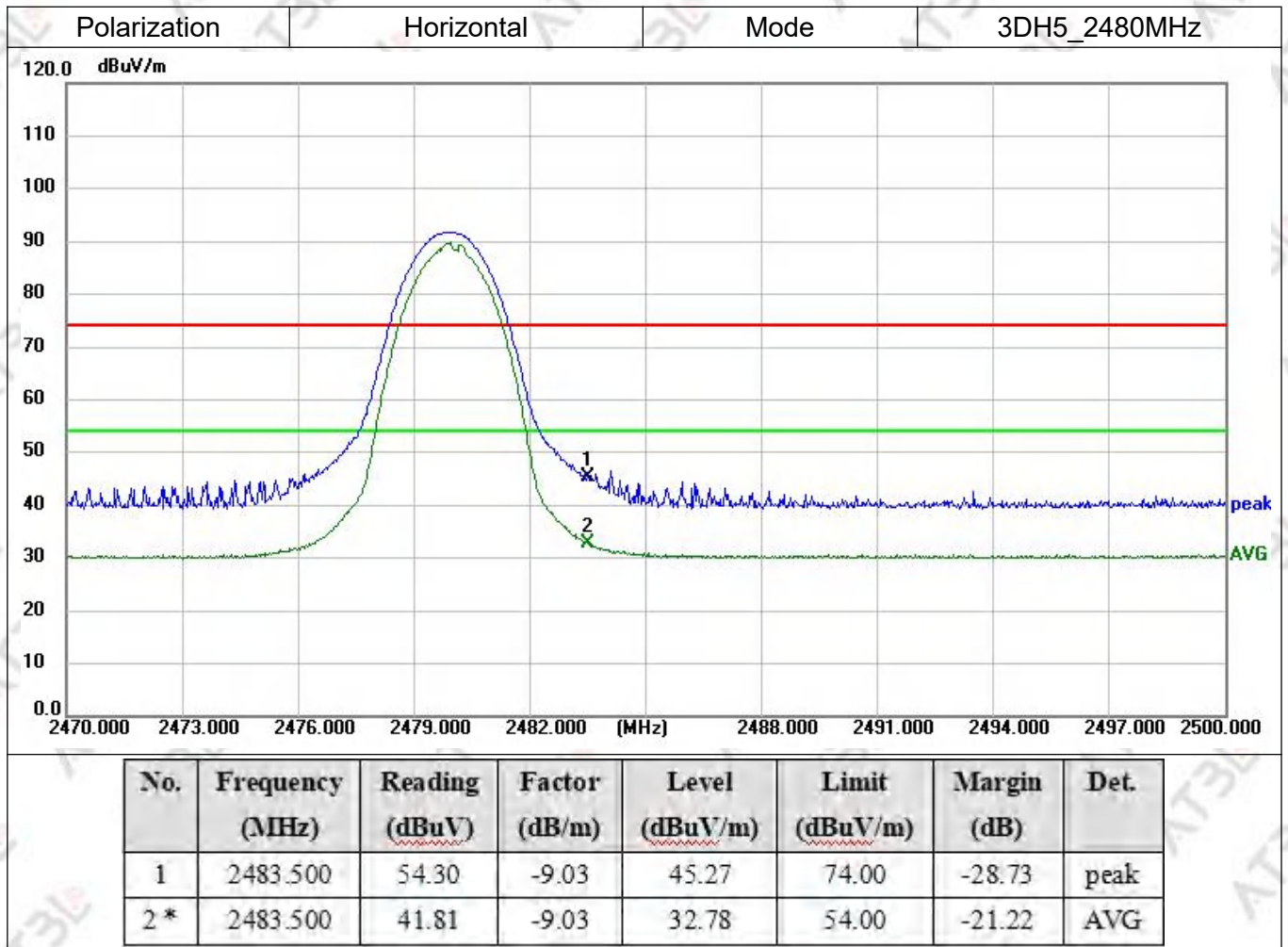
Test Result of Restricted Band

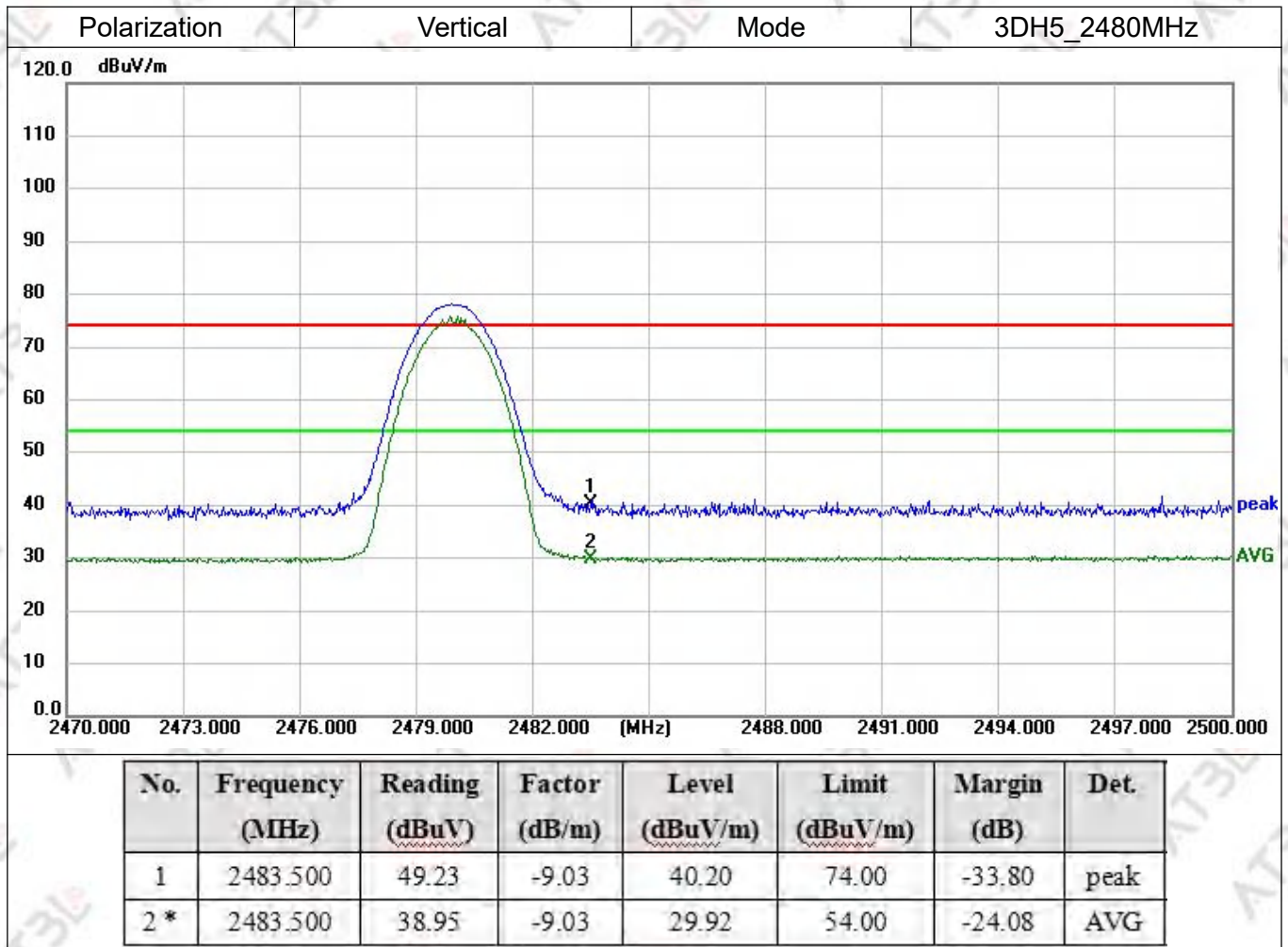
Note:

All modes have been tested, only worst case(3DH5)mode was recorded in the test report.





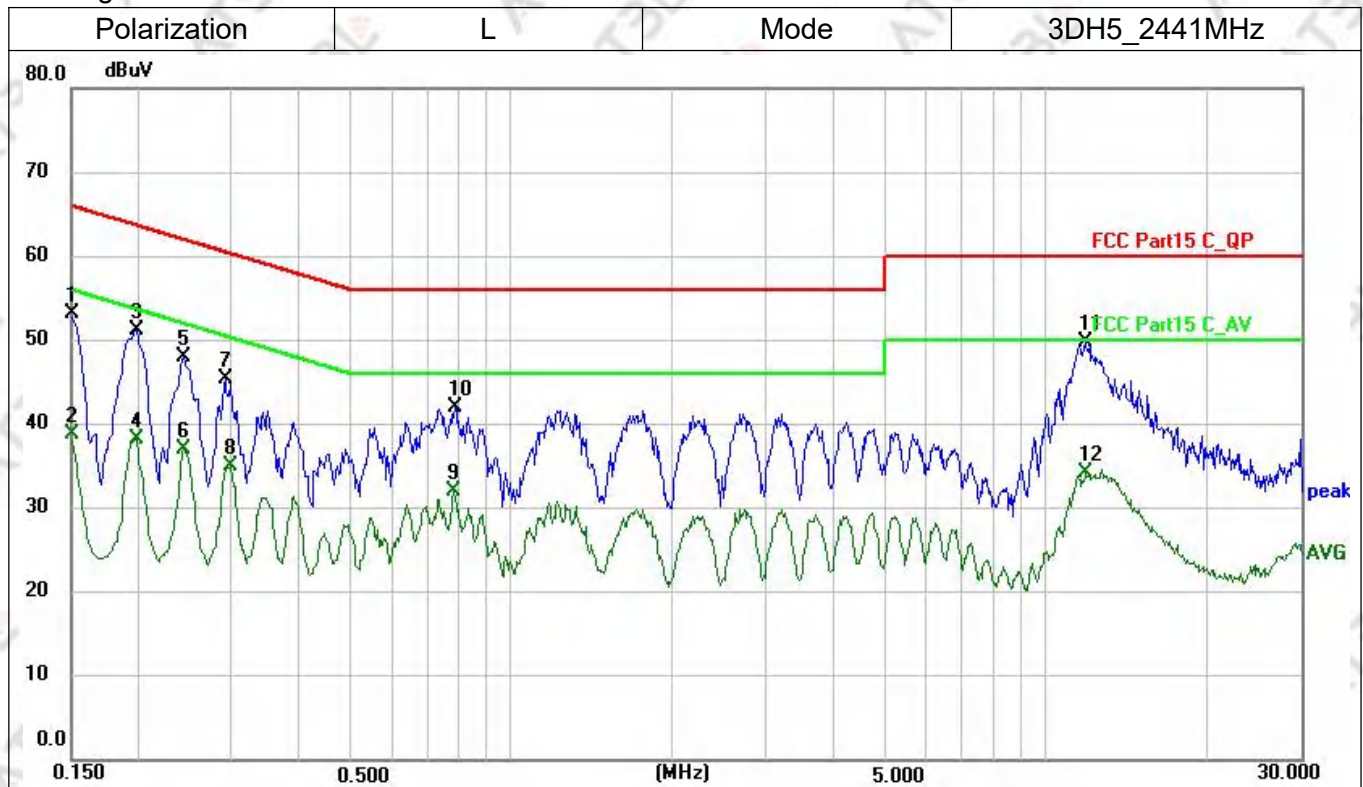




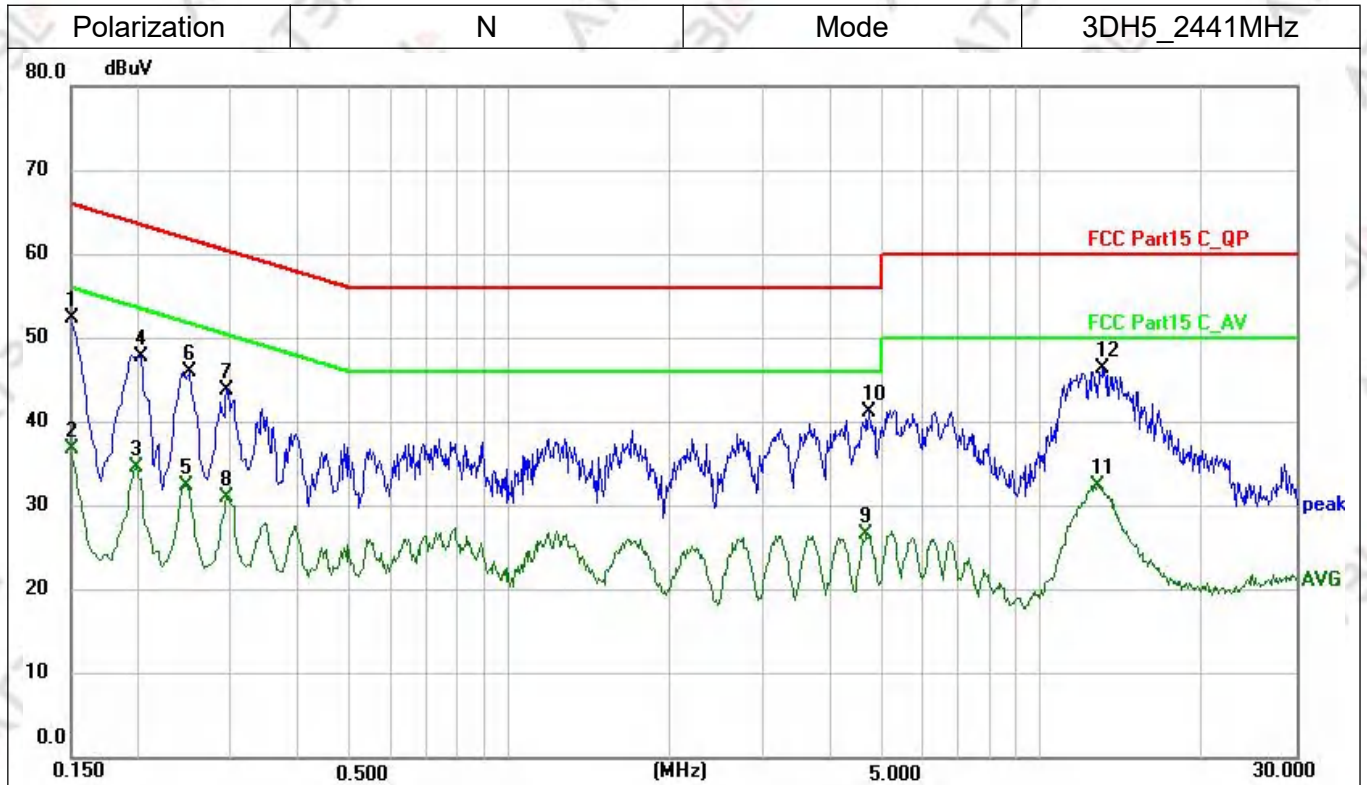
A7.AC Power-Line Conducted Emission

Note:

- 1.All modes have been tested, only worst case(3DH5_2441MHz)mode was recorded in the test report.
- 2.Emission Level= Reading Value+ Correction Factor.
- 3.Correction Factor= Insertion loss+ Cable Factor.
- 4.The emission levels of other frequencies were less than 20dB margin against the limit.
- 5.Margin value = Emission level-Limit value.



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	33.39	19.75	53.14	66.00	-12.86	peak
2	0.1500	19.14	19.75	38.89	56.00	-17.11	AVG
3	0.1980	31.23	20.01	51.24	63.69	-12.45	peak
4	0.1980	18.27	20.01	38.28	53.69	-15.41	AVG
5	0.2420	28.12	19.95	48.07	62.03	-13.96	peak
6	0.2420	17.07	19.95	37.02	52.03	-15.01	AVG
7	0.2900	25.40	19.90	45.30	60.52	-15.22	peak
8	0.2980	15.03	19.90	34.93	50.30	-15.37	AVG
9	0.7820	12.21	19.75	31.96	46.00	-14.04	AVG
10	0.7860	22.32	19.75	42.07	56.00	-13.93	peak
11 *	11.8500	28.61	21.08	49.69	60.00	-10.31	peak
12	11.9180	13.06	21.09	34.15	50.00	-15.85	AVG



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	32.60	19.75	52.35	66.00	-13.65	peak
2	0.1500	17.14	19.75	36.89	56.00	-19.11	AVG
3	0.1980	14.90	19.72	34.62	53.69	-19.07	AVG
4	0.2020	28.08	19.72	47.80	63.53	-15.73	peak
5	0.2460	12.77	19.74	32.51	51.89	-19.38	AVG
6	0.2500	26.19	19.74	45.93	61.76	-15.83	peak
7	0.2940	24.02	19.79	43.81	60.41	-16.60	peak
8	0.2940	11.33	19.79	31.12	50.41	-19.29	AVG
9	4.6860	6.27	20.36	26.63	46.00	-19.37	AVG
10	4.7380	20.84	20.36	41.20	56.00	-14.80	peak
11	12.7380	11.08	21.40	32.48	50.00	-17.52	AVG
12 *	13.0540	24.98	21.49	46.47	60.00	-13.53	peak

*****END*****