

Appendix A of data

A1.Maximum Peak Conducted Output Power

Test Result

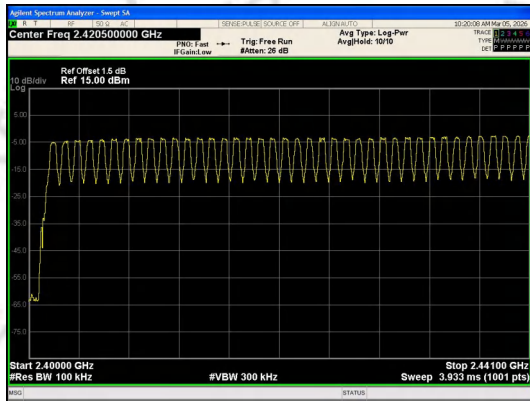
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	-1.00	0.794	≤ 21	PASS
		39	1.50	1.413		PASS
		78	0.47	1.114		PASS
$\pi/4$ DQPSK	2-DH5	0	0.75	1.189		PASS
		39	-0.25	0.944		PASS
		78	-1.26	0.748		PASS
8DPSK	3-DH5	0	1.12	1.294		PASS
		39	0.21	1.050		PASS
		78	-0.81	0.830		PASS

A2.Number of Hopping Frequencies

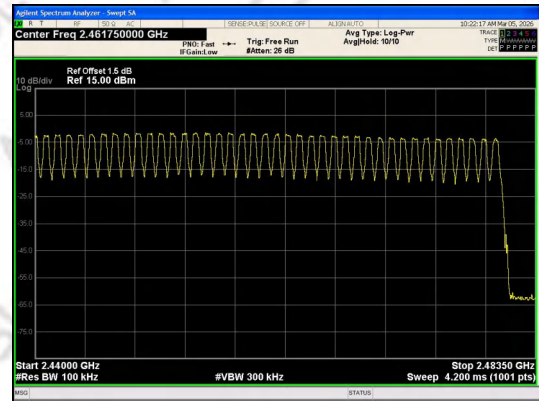
Test Result

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

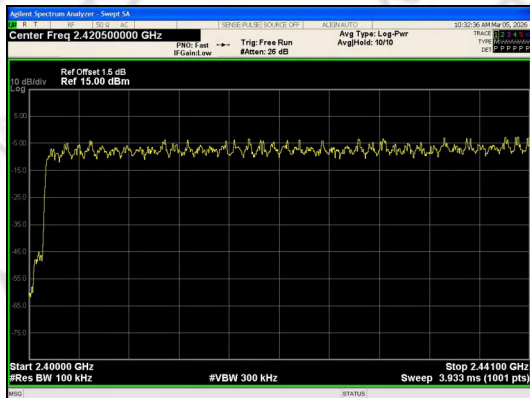
Test Graphs



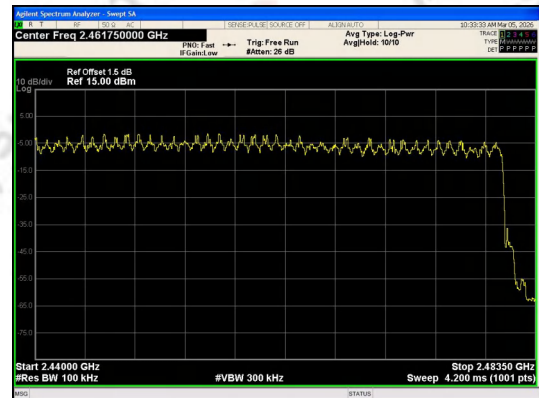
Low End Spectrum Channel Hopping Plot
GFSK



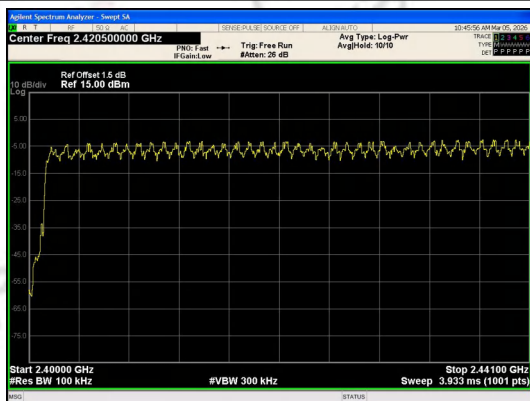
High End Spectrum Channel Hopping Plot
GFSK



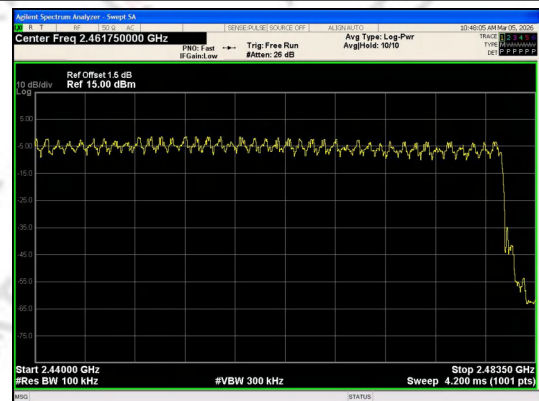
Low End Spectrum Channel Hopping Plot
 $\pi/4$ DQPSK



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

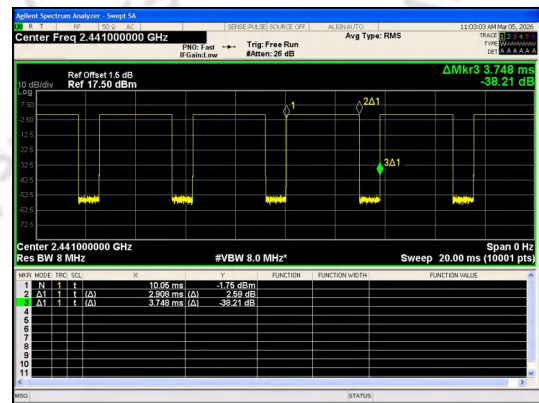
Duty Cycle Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)
GFSK	DH5	0	2.910	3.748	77.64	0.7764	1.0991
		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	2.898	3.748	77.32	0.7732	1.1171
		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

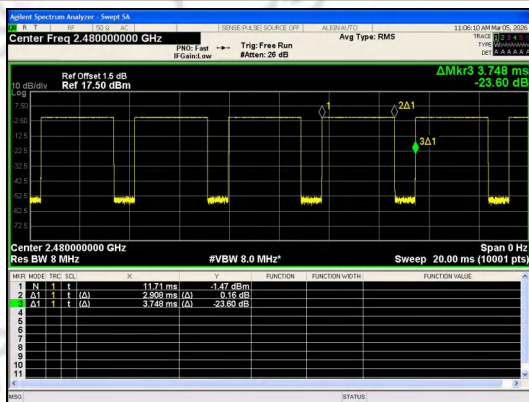
Test Graphs



GFSK(DH5)_Channel 0

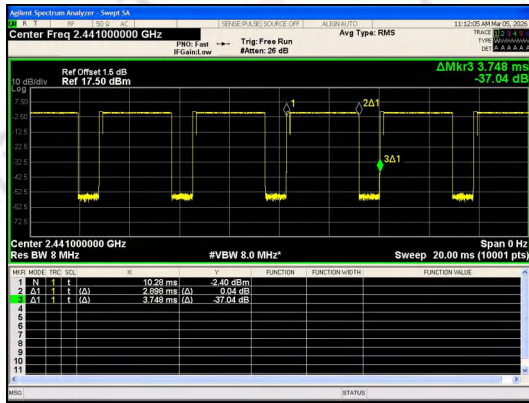


GFSK(DH5)_Channel 39

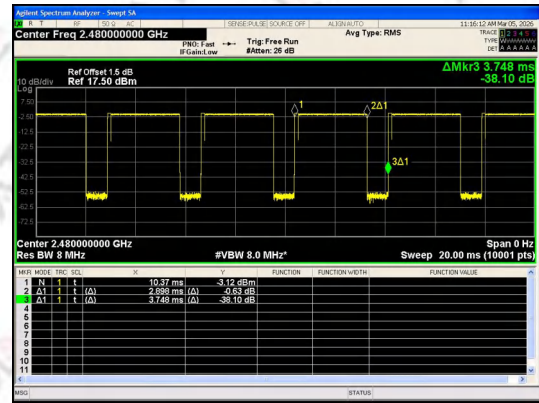


GFSK(DH5)_Channel 78


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



π/4DQPSK(2-DH5)_Channel 39



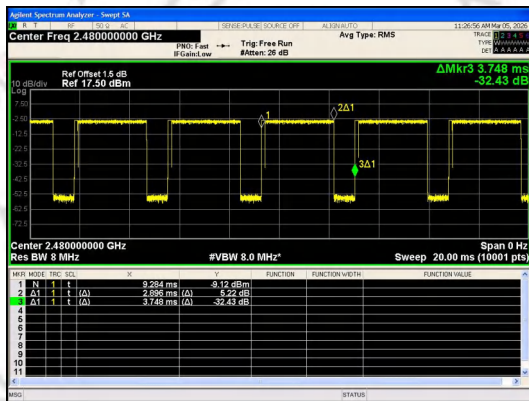
π/4DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39

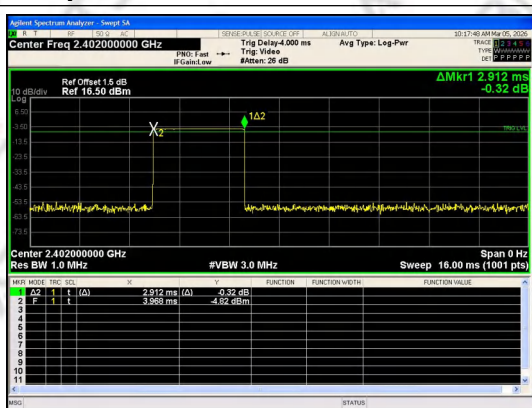


8DPSK(3-DH5)_Channel 78

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	105	305.76	< 400	PASS
π/4DQPSK	2-DH5	0	2.896	100	289.6		PASS
8DPSK	3-DH5	0	2.896	112	324.35		PASS
Note: Dwell time=Pulse time(ms)*Number of Pulses in 31.6 seconds							

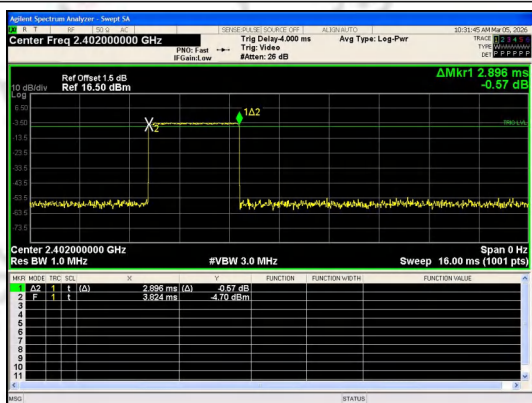
Test Graphs



**Pulse Width
GFSK_DH5**



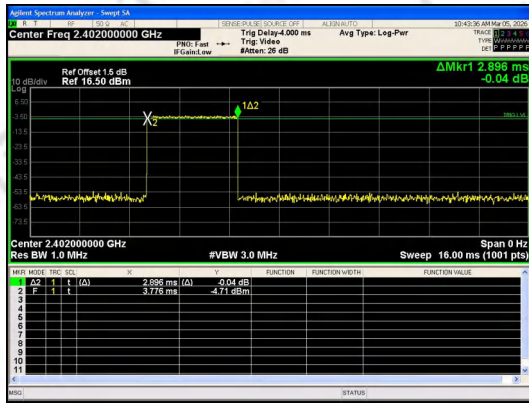
**Number of Pulses in 31.6 seconds
GFSK_DH5**



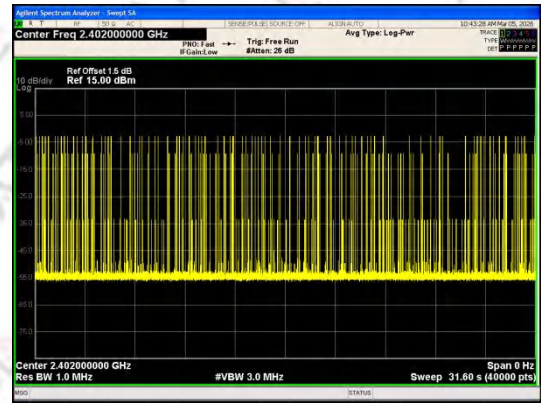
**Pulse Width
 $\pi/4$ DQPSK_2-DH5**



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



Pulse Width
8DPSK_3-DH5



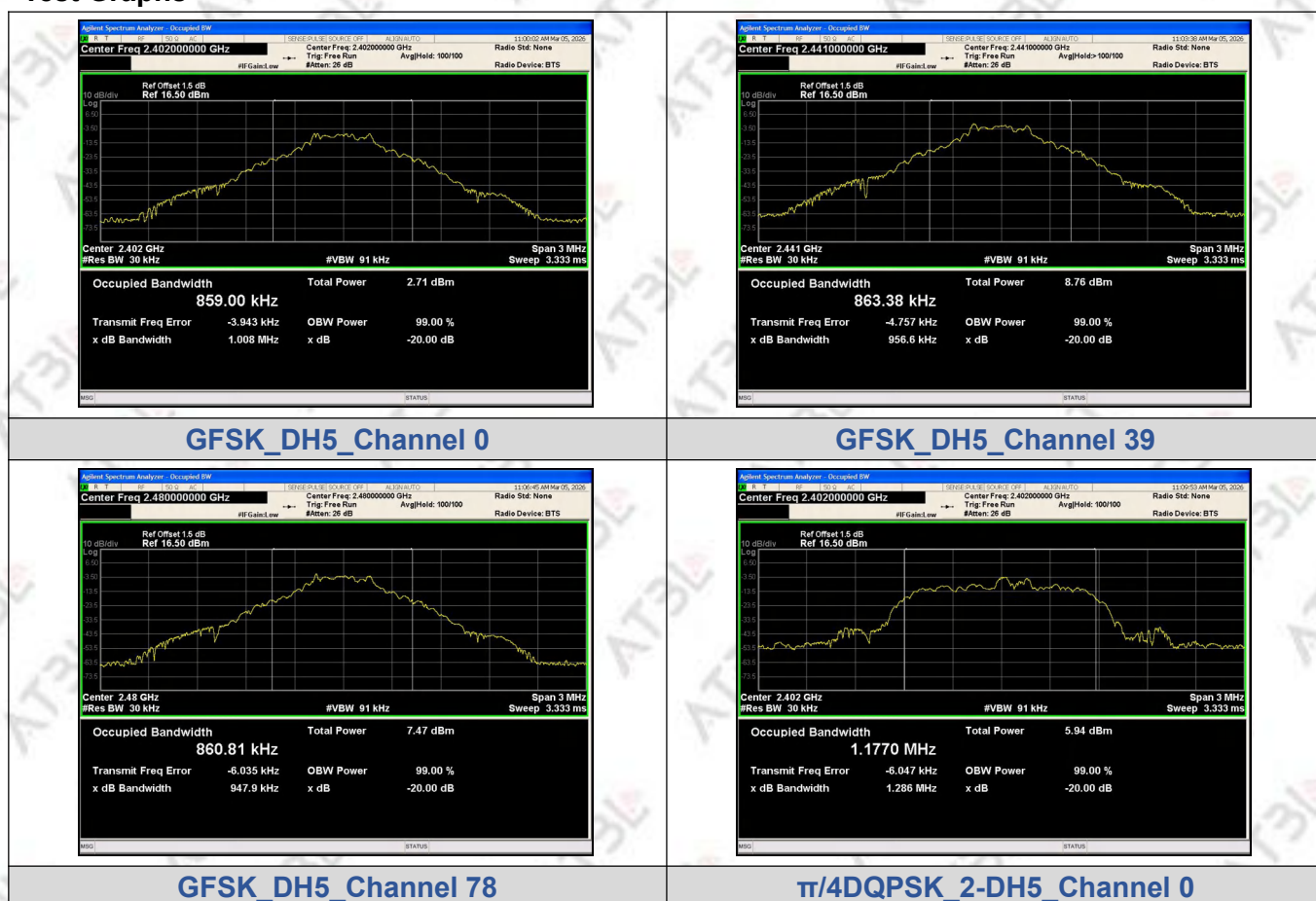
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

A4.20dB Bandwidth

Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.008
	39	2441 MHz	0.9566
	78	2480 MHz	0.9479
$\pi/4$ DQPSK	0	2402 MHz	1.286
	39	2441 MHz	1.286
	78	2480 MHz	1.287
8DPSK	0	2402 MHz	1.301
	39	2441 MHz	1.301
	78	2480 MHz	1.302

Test Graphs

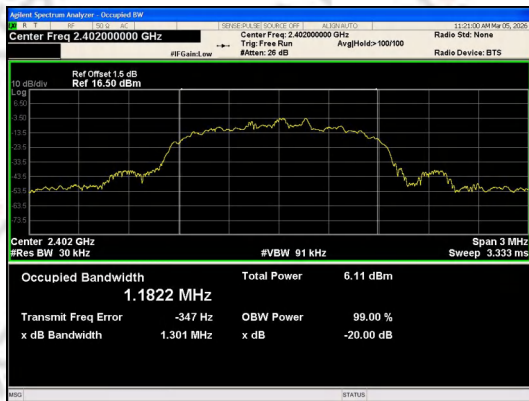




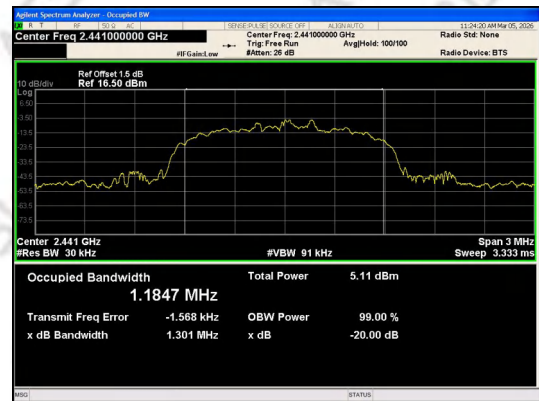
$\pi/4$ DQPSK_2-DH5_Channel 39



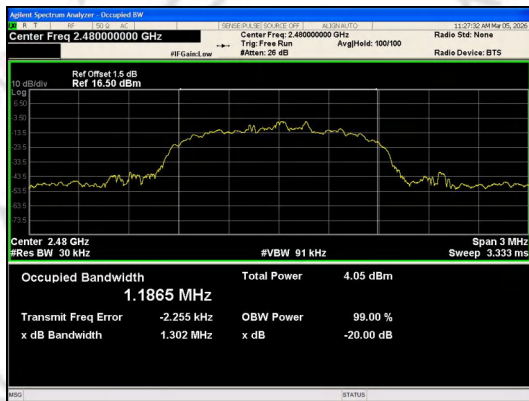
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



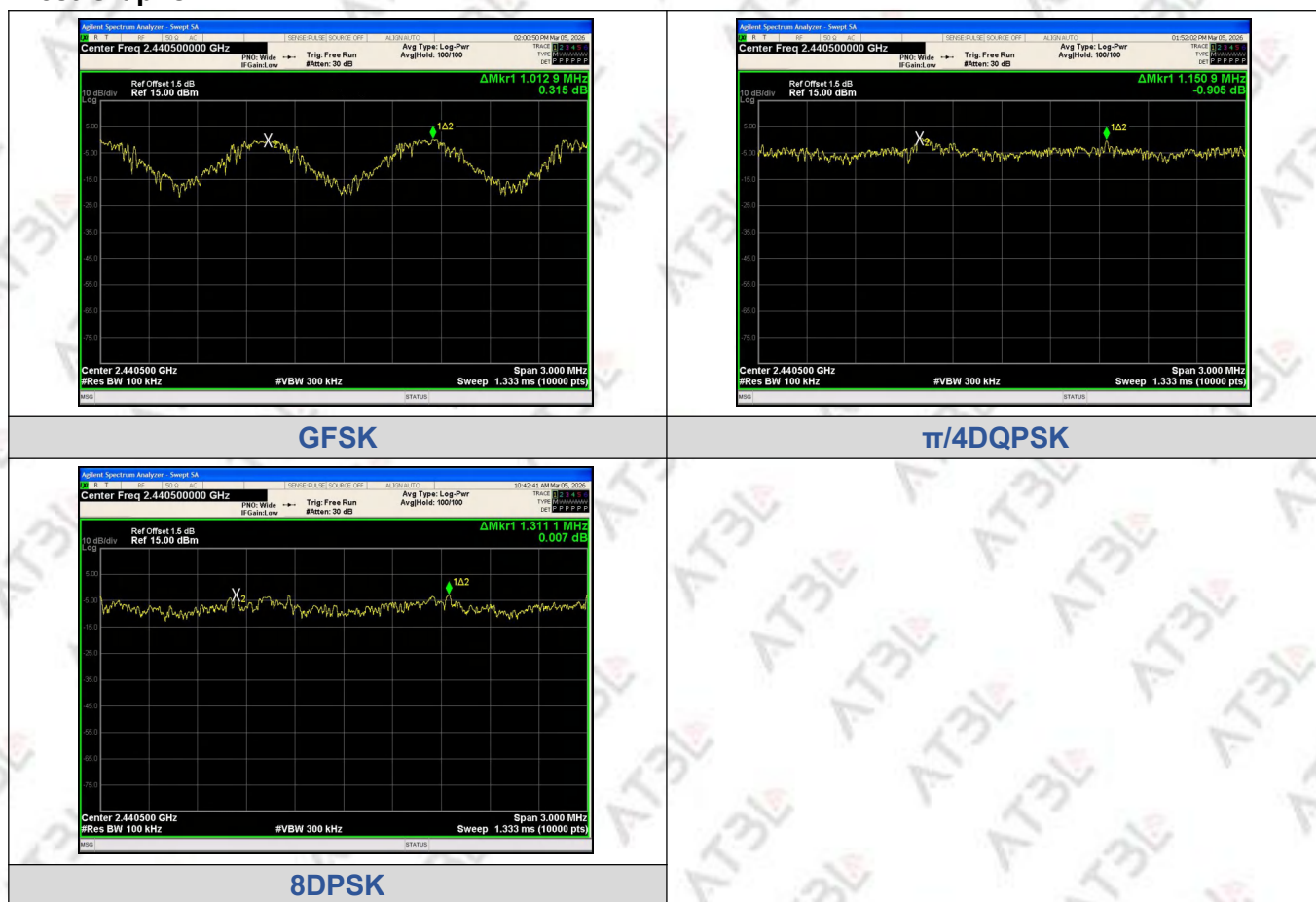
8DPSK_3-DH5_Channel 78

A5.Carrier Frequencies Separation

Test Result

Modulation	Channel	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Minimum Limit (MHz)	Result
GFSK	39	2440.0336	2441.0465	1.0129	0.672	PASS
$\pi/4$ DQPSK	39	2439.9922	2441.1431	1.1509	0.858	PASS
8DPSK	39	2439.8359	2441.147	1.3111	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	2389.88	-61.739	N/A	-24.83	-36.909	PASS
			2400.00	-62.832	N/A	-24.83	-38.002	PASS
			24944.4	-49.693	1.6	-24.83	-24.863	PASS
		39	24850.2	-50.786	1.6	-18.98	-31.806	PASS
		78	2483.50	-62.192	N/A	-20.01	-42.182	PASS
			24858.9	-51.244	1.6	-20.01	-31.234	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-55.079	N/A	-21.56	-33.519	PASS
			24968.8	-50.823	1.6	-21.56	-29.263	PASS
		39	24951.9	-49.743	1.6	-22.59	-27.153	PASS
		78	2483.50	-59.921	N/A	-20.11	-39.811	PASS
			24765.3	-50.554	1.6	-20.11	-30.444	PASS
8DPSK	3-DH5	0	2400.00	-52.758	N/A	-21.47	-31.288	PASS
			24943.2	-50.821	1.6	-21.47	-29.351	PASS
		39	24960.7	-50.174	1.6	-22.43	-27.744	PASS
		78	2483.50	-62.551	N/A	-23.47	-39.081	PASS
			24955.0	-51.102	1.6	-23.47	-27.632	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	2328.66	-60.539	-24.1	-36.439	PASS
			2400.00	-63.303	-24.1	-39.203	PASS
			2483.50	-62.905	-23.39	-39.515	PASS
$\pi/4$ DQPSK	2-DH5		2400.00	-59.492	-23.98	-35.512	PASS
			2483.50	-62.073	-23.37	-38.703	PASS
8DPSK	3-DH5		2400.00	-59.742	-24.02	-35.722	PASS
			2483.50	-61.920	-23.3	-38.620	PASS

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

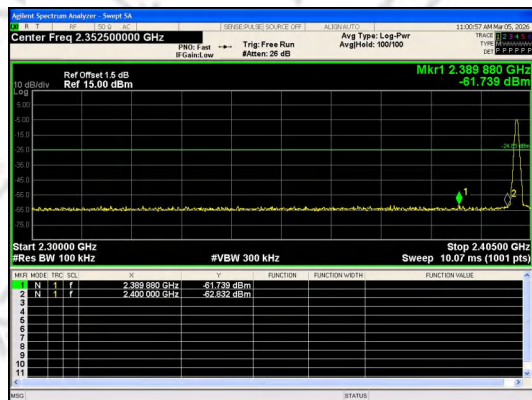
Test Graphs



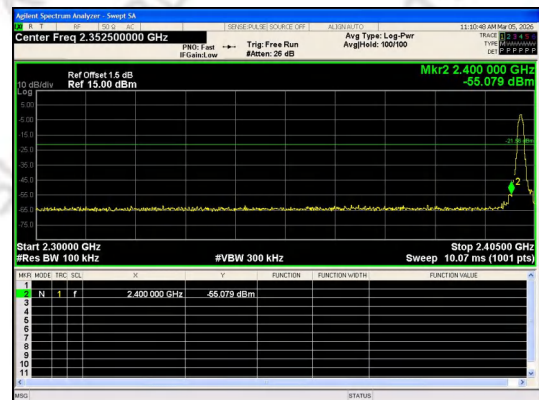
In-Band Reference Level
GFSK_DH5_Channel 0



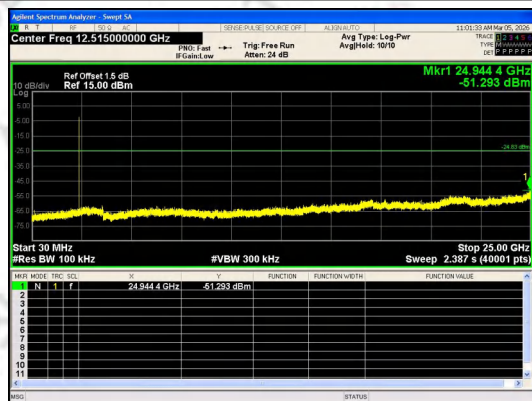
In-Band Reference Level
 $\pi/4$ DQPSK_2-DH5_Channel 0



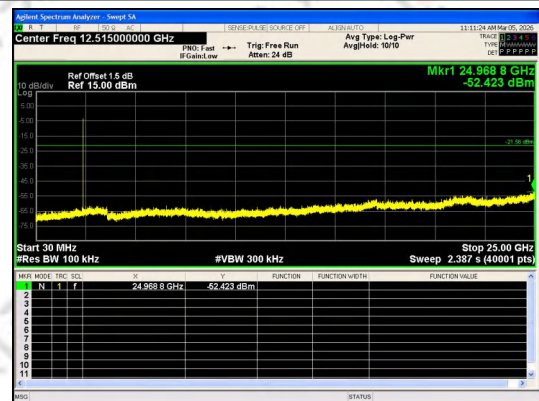
Out Of Band Emission
GFSK_DH5_Channel 0



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



30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0

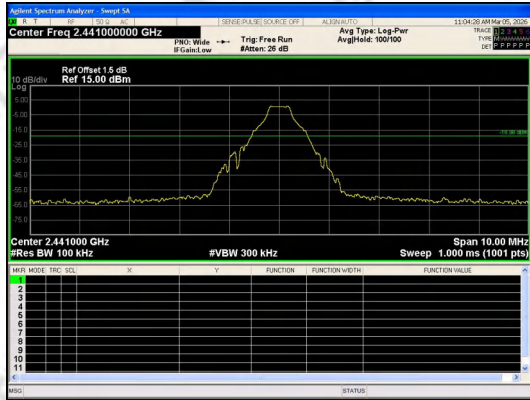


30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0

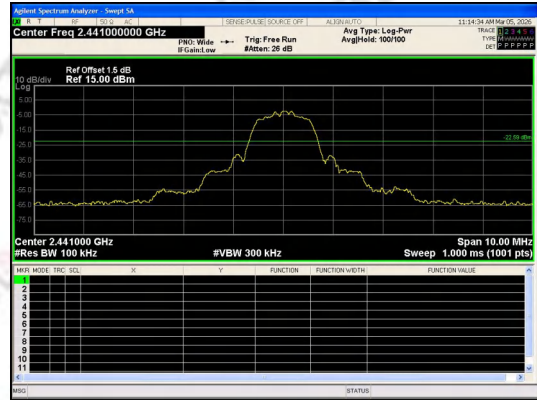


In-Band Reference Level

GFSK_DH5_Channel 39

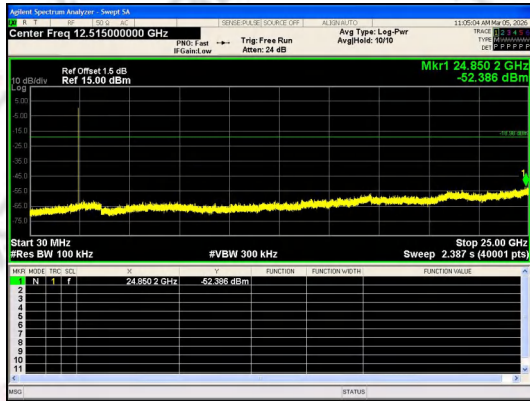


In-Band Reference Level

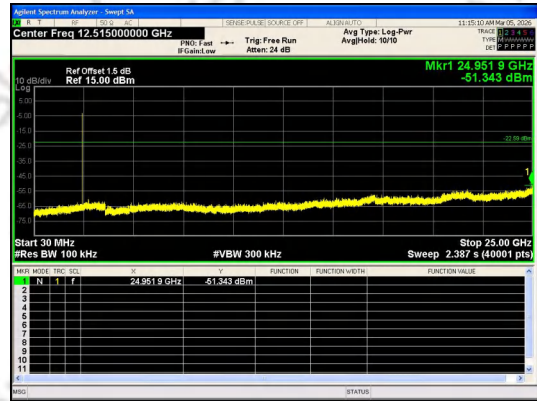
 $\pi/4$ DQPSK_2-DH5_Channel 39


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

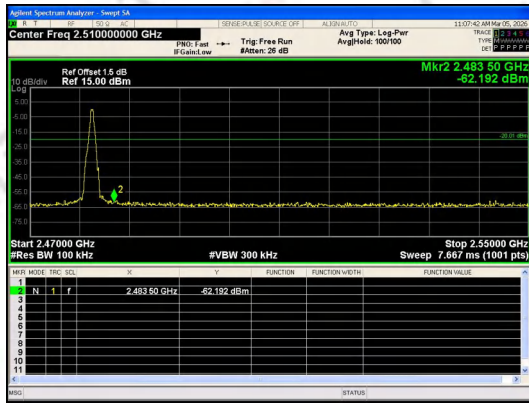

In-Band Reference Level

GFSK_DH5_Channel 78

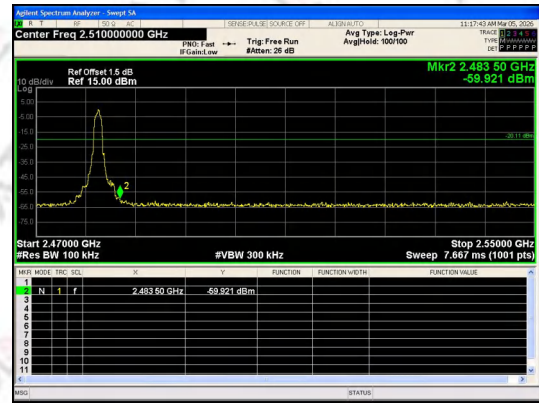


In-Band Reference Level

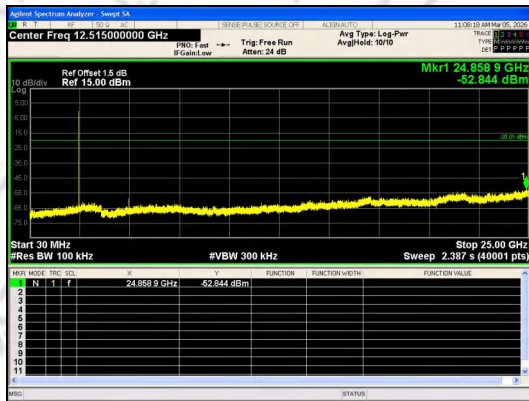
 $\pi/4$ DQPSK_2-DH5_Channel 78

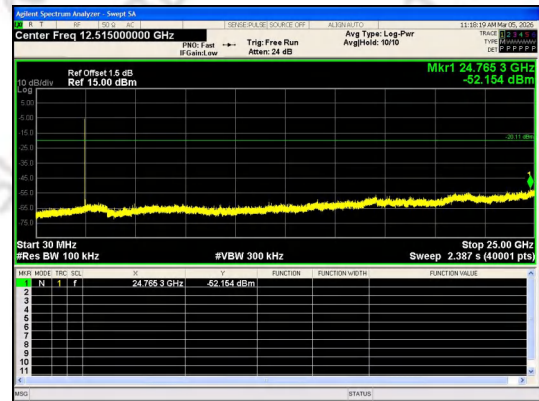
Out Of Band Emission
GFSK_DH5_Channel 78



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



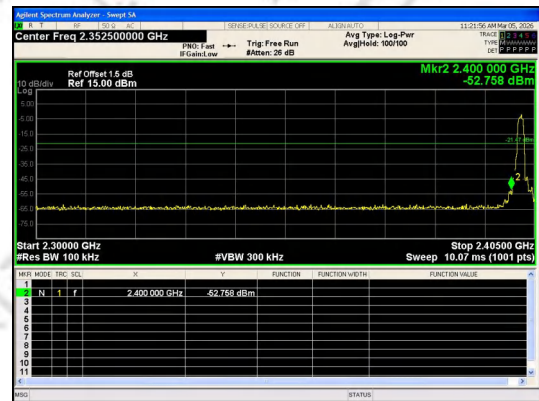
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



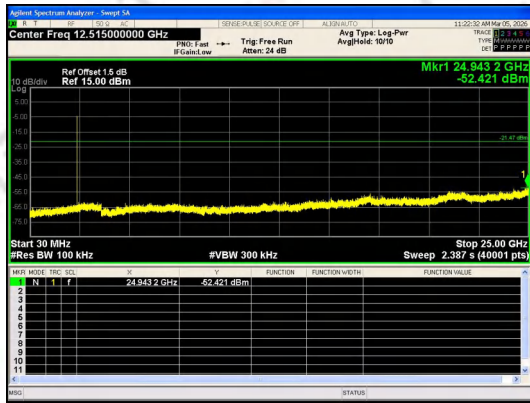
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



In-Band Reference Level
8DPSK_3-DH5_Channel 0



Out Of Band Emission
8DPSK_3-DH5_Channel 0



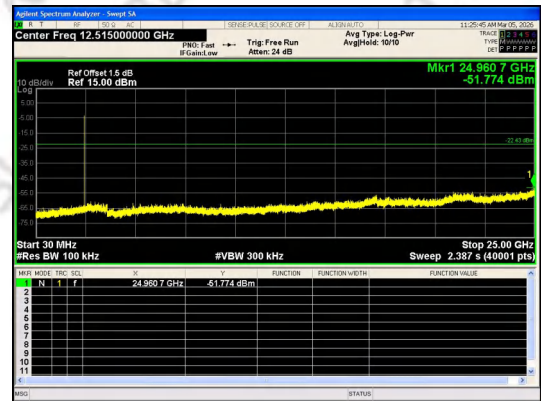
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



In-Band Reference Level
8DPSK_3-DH5_Channel 39



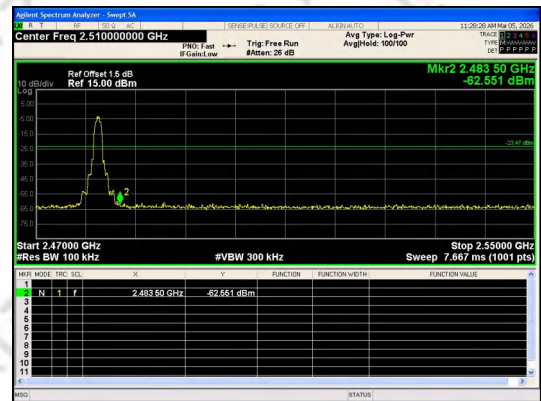
Out Of Band Emission
8DPSK_3-DH5_Channel 39



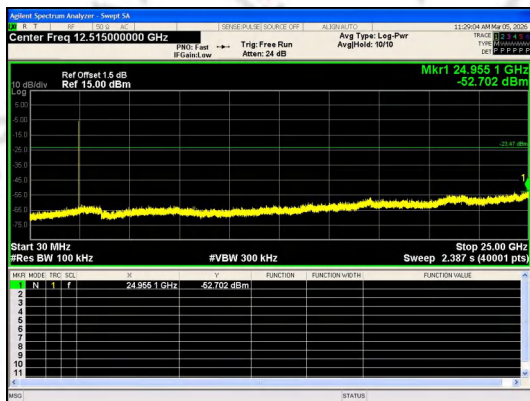
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



In-Band Reference Level
8DPSK_3-DH5_Channel 78

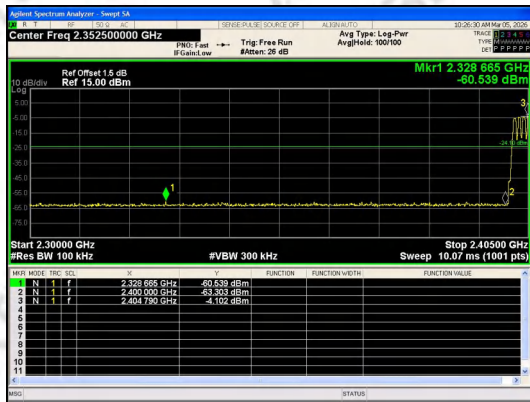


Out Of Band Emission
8DPSK_3-DH5_Channel 78

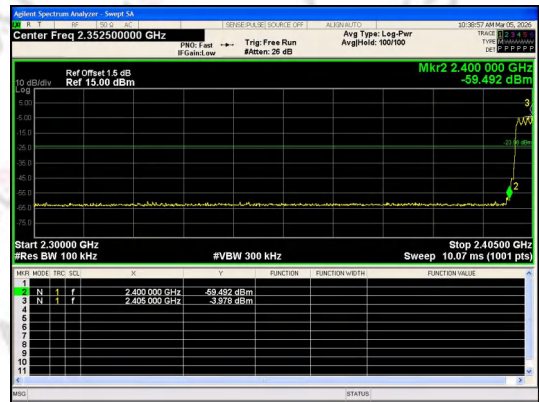


30.0 MHz - 25000.0 MHz

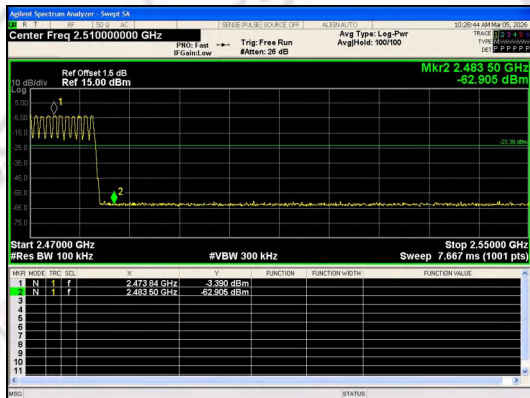
8DPSK_3-DH5_Channel 78



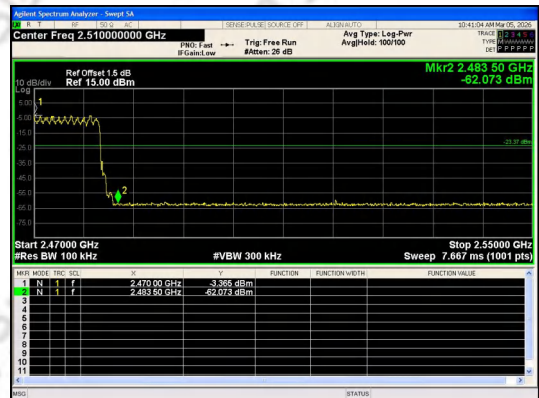
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



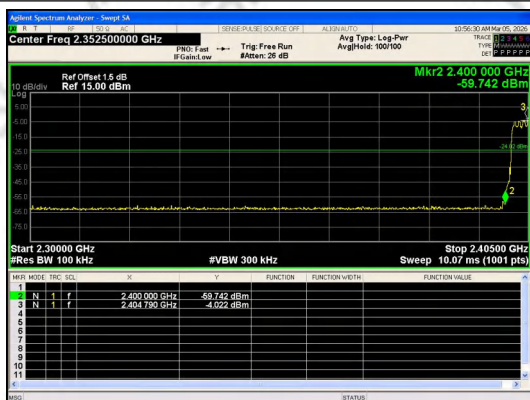
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



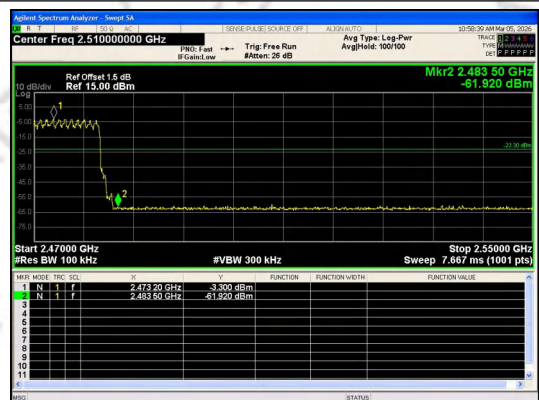
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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

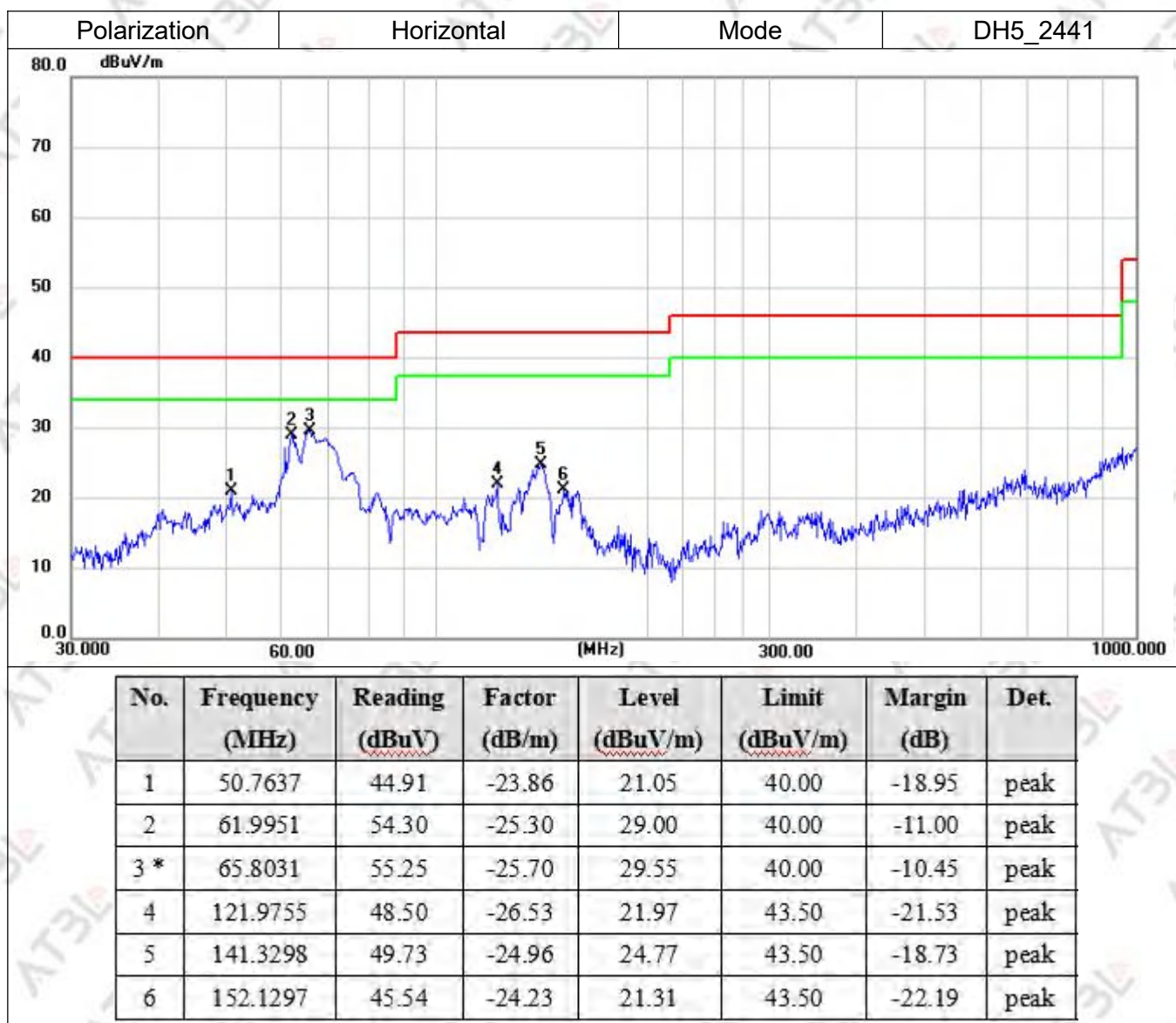
For 9 kHz ~ 30 MHz

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(DH5_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.

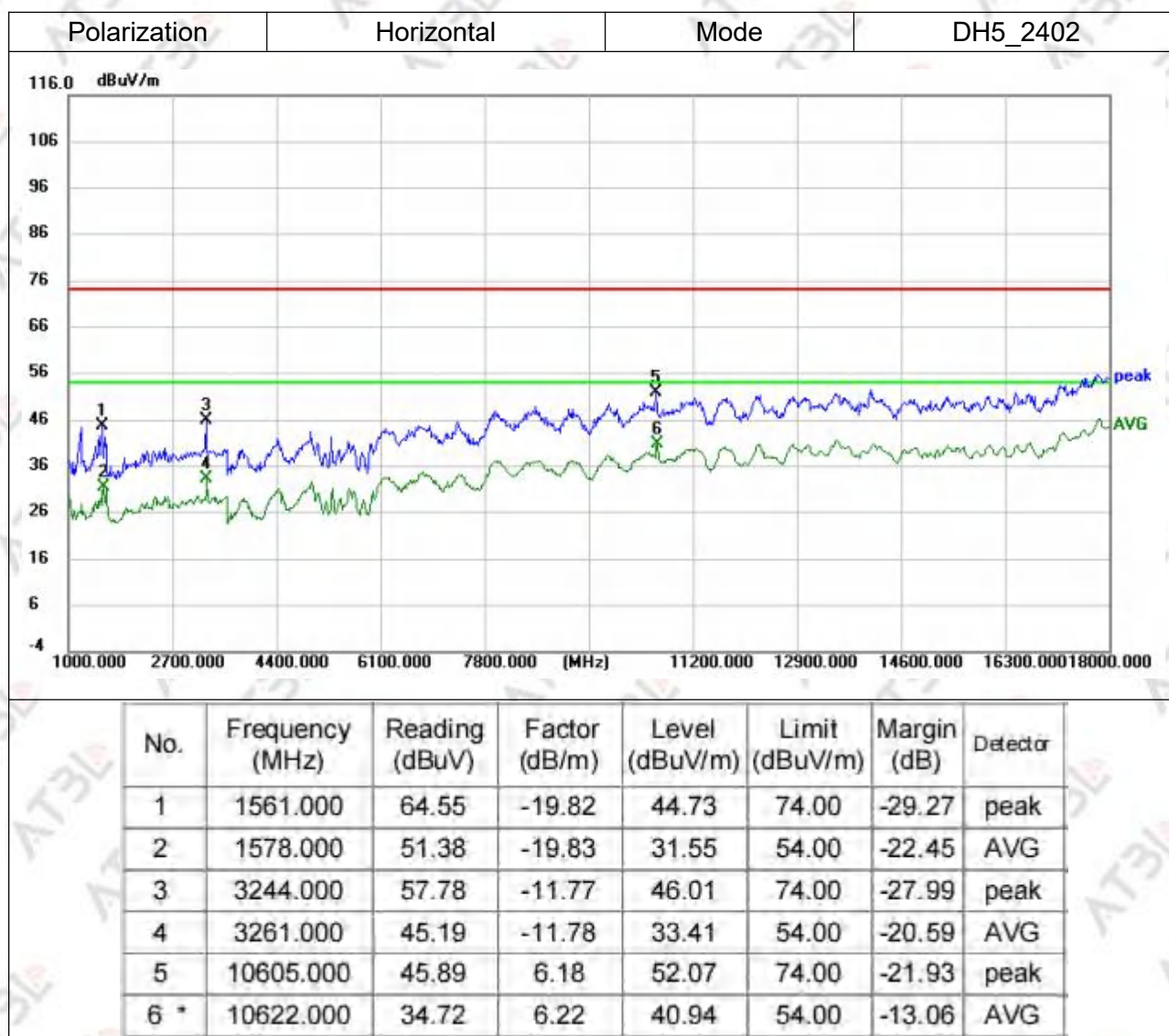


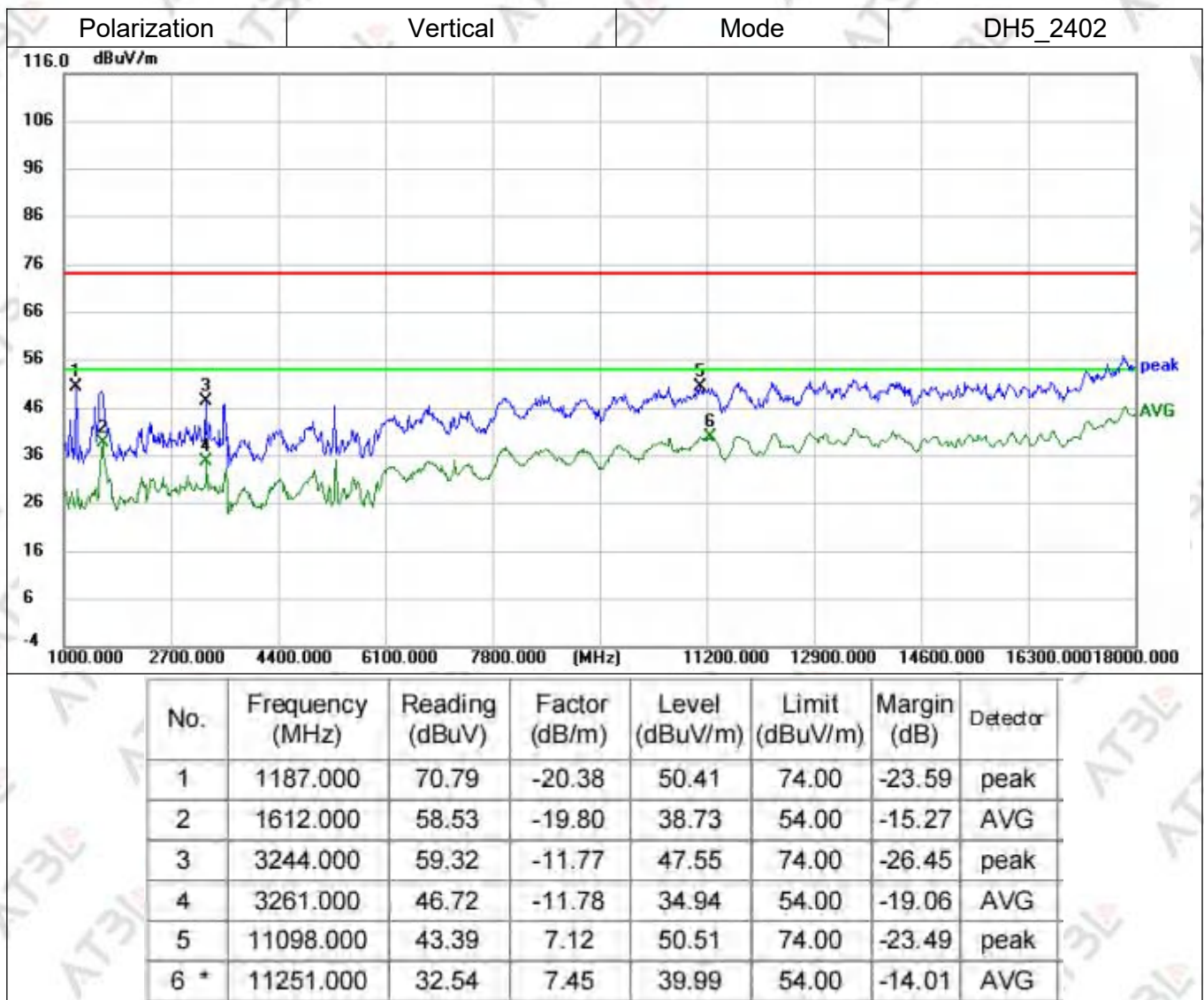


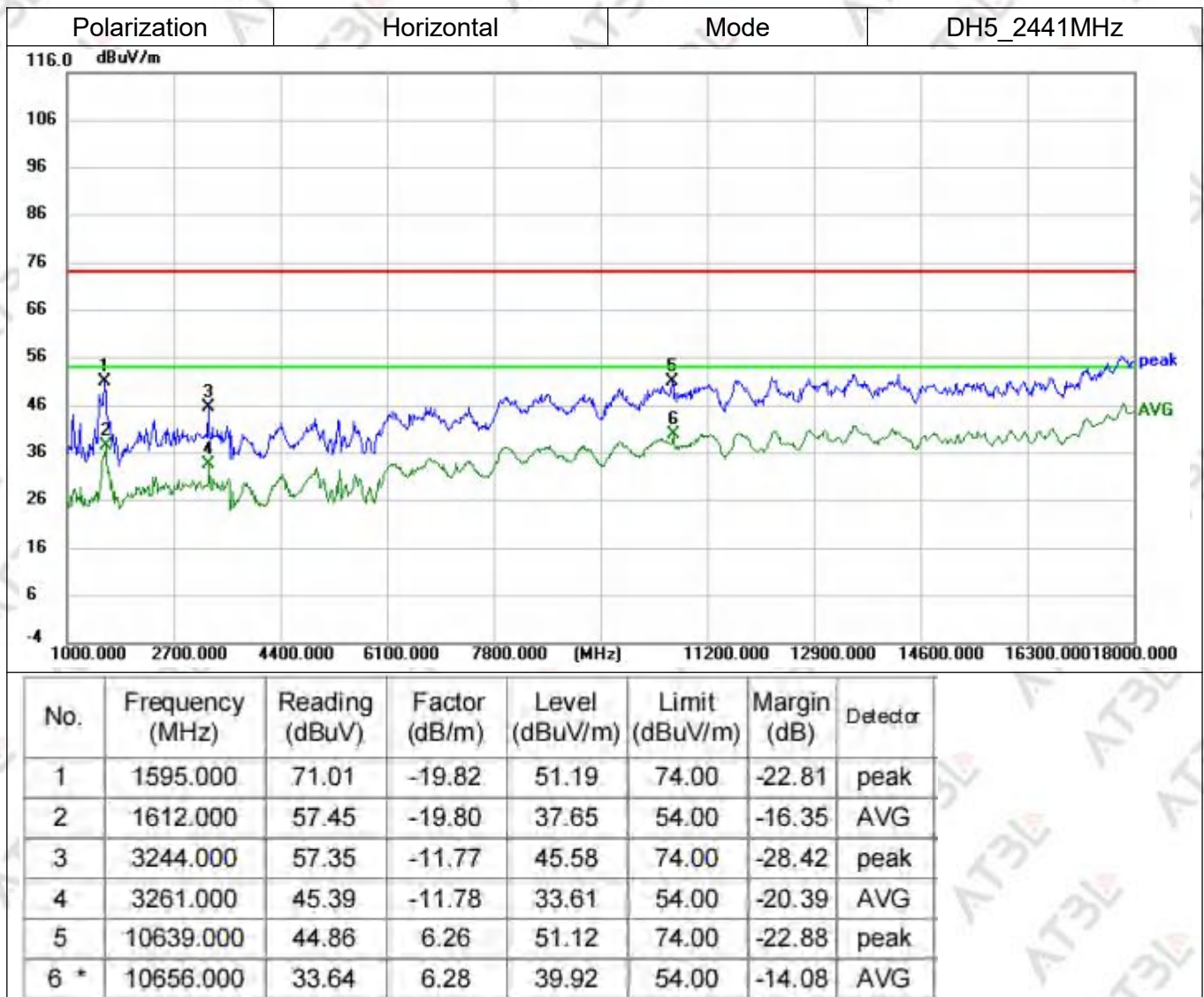
For 1 GHz ~ 18GHz:

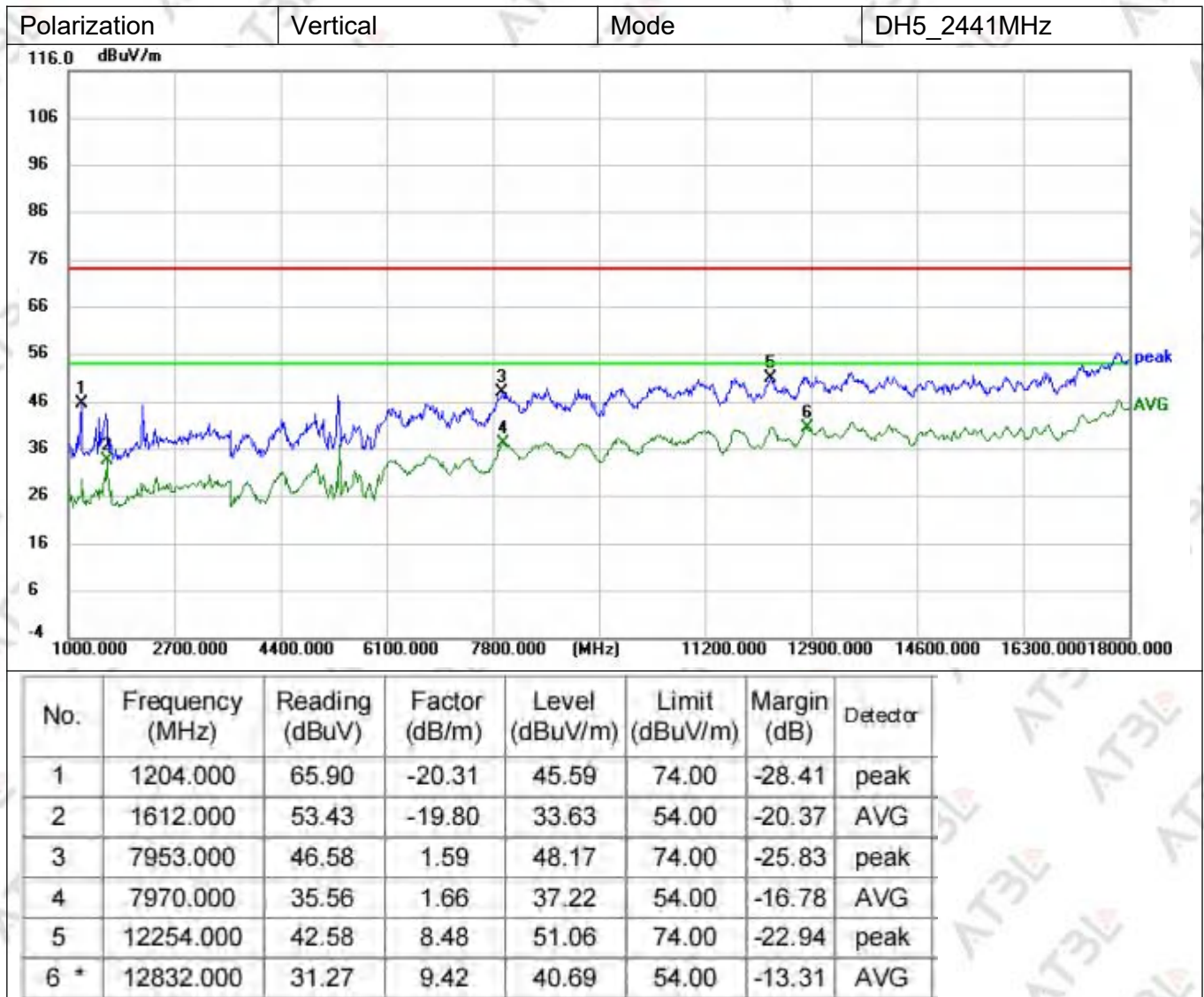
Note:

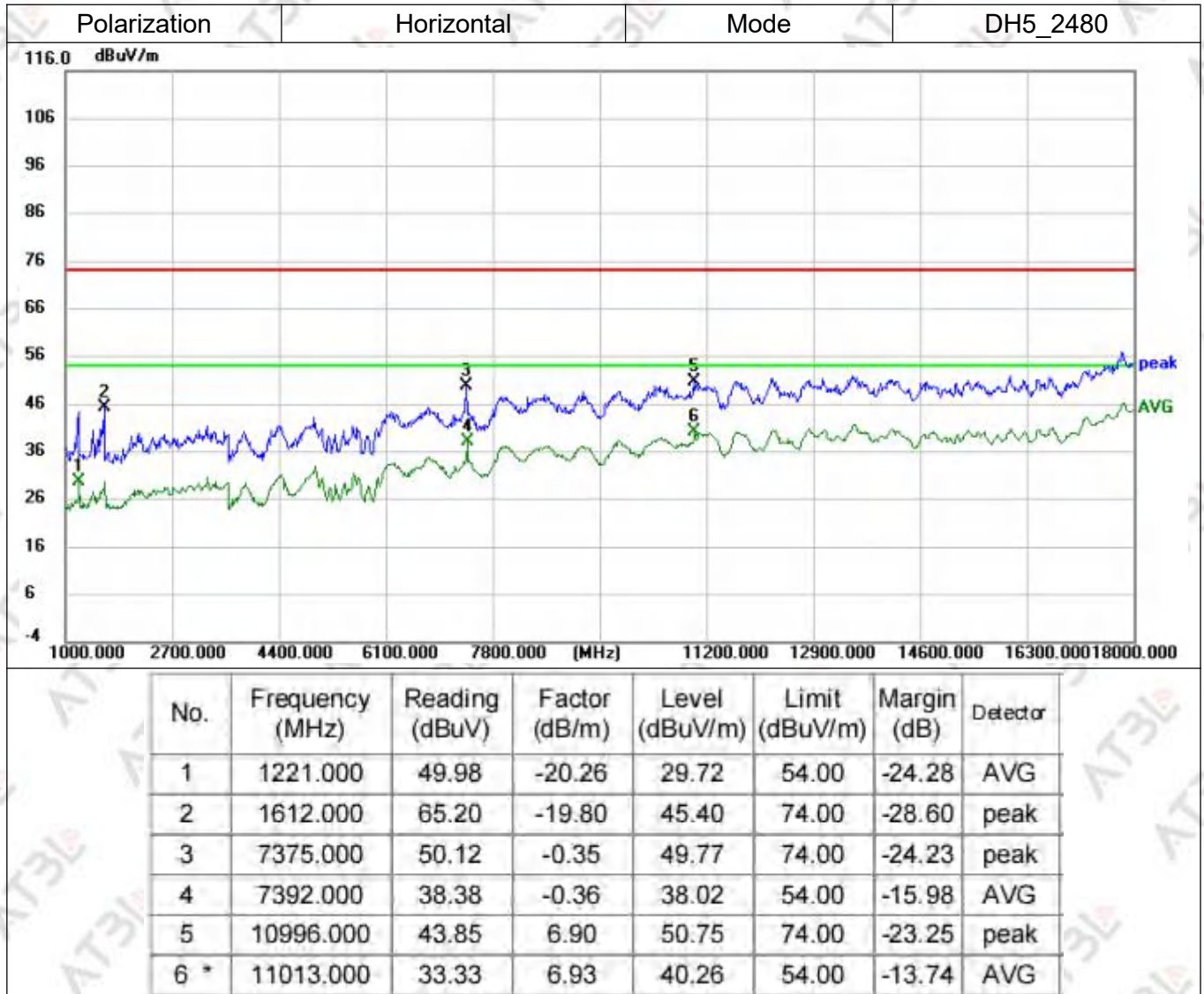
1. In frequency ranges 18 ~25GHz no any other harmonic emissions detected which are tested to compliance with the limit. No recording in the test report. No any other emissions level which are attenuated less than 20dB below the limit. No recording in the test report.
2. We used the filter to test and 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(DH5) was recorded in the test report.

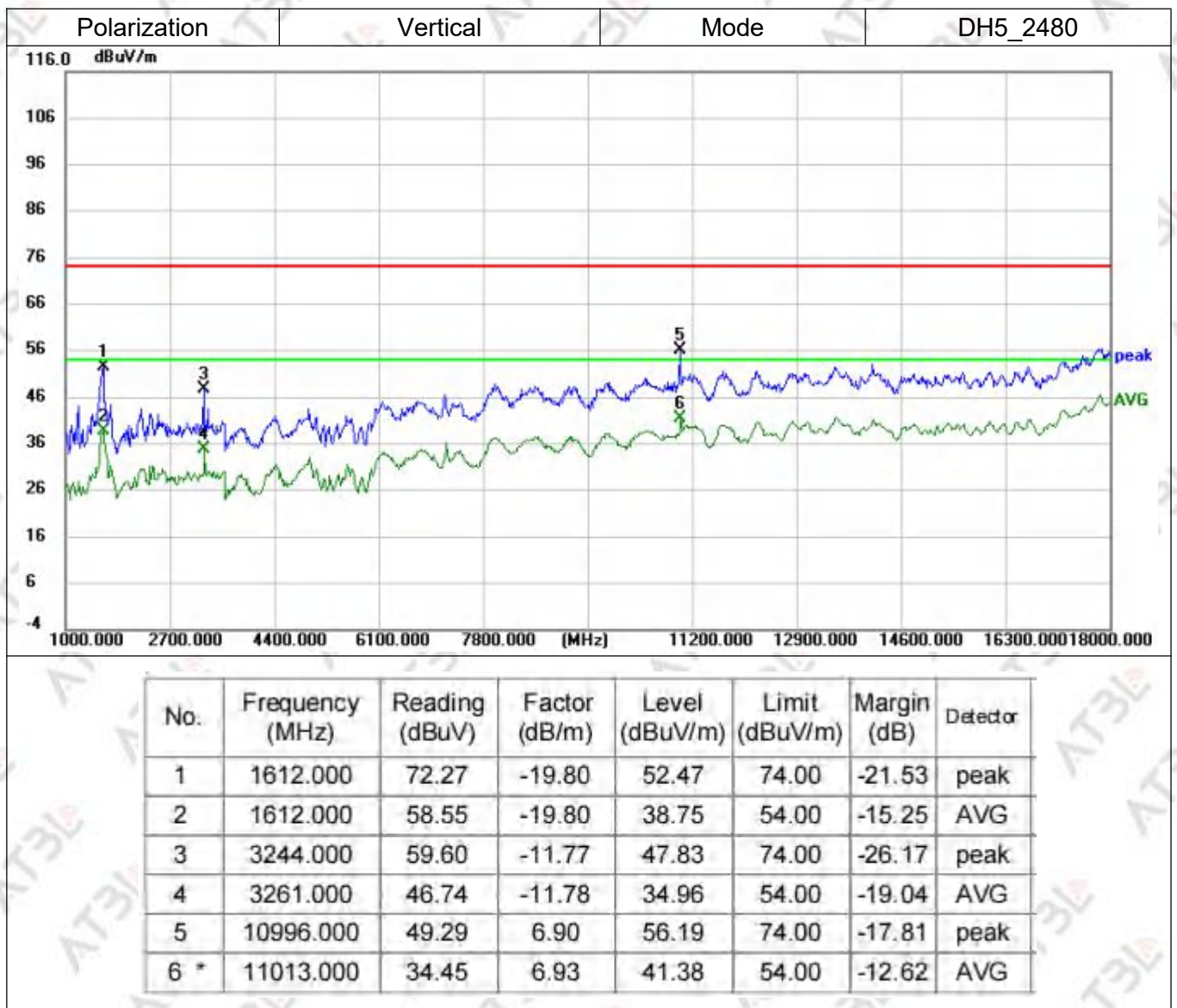








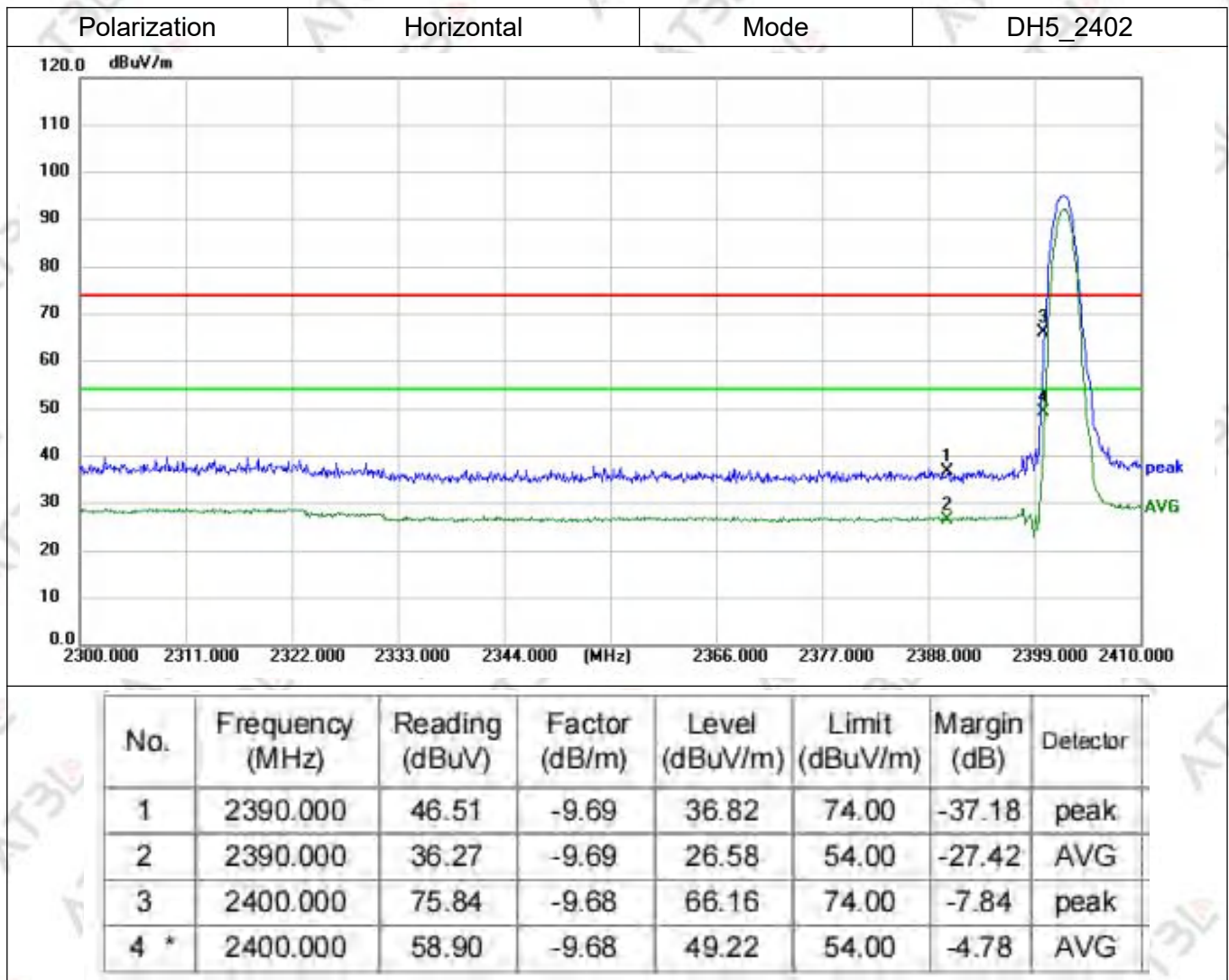


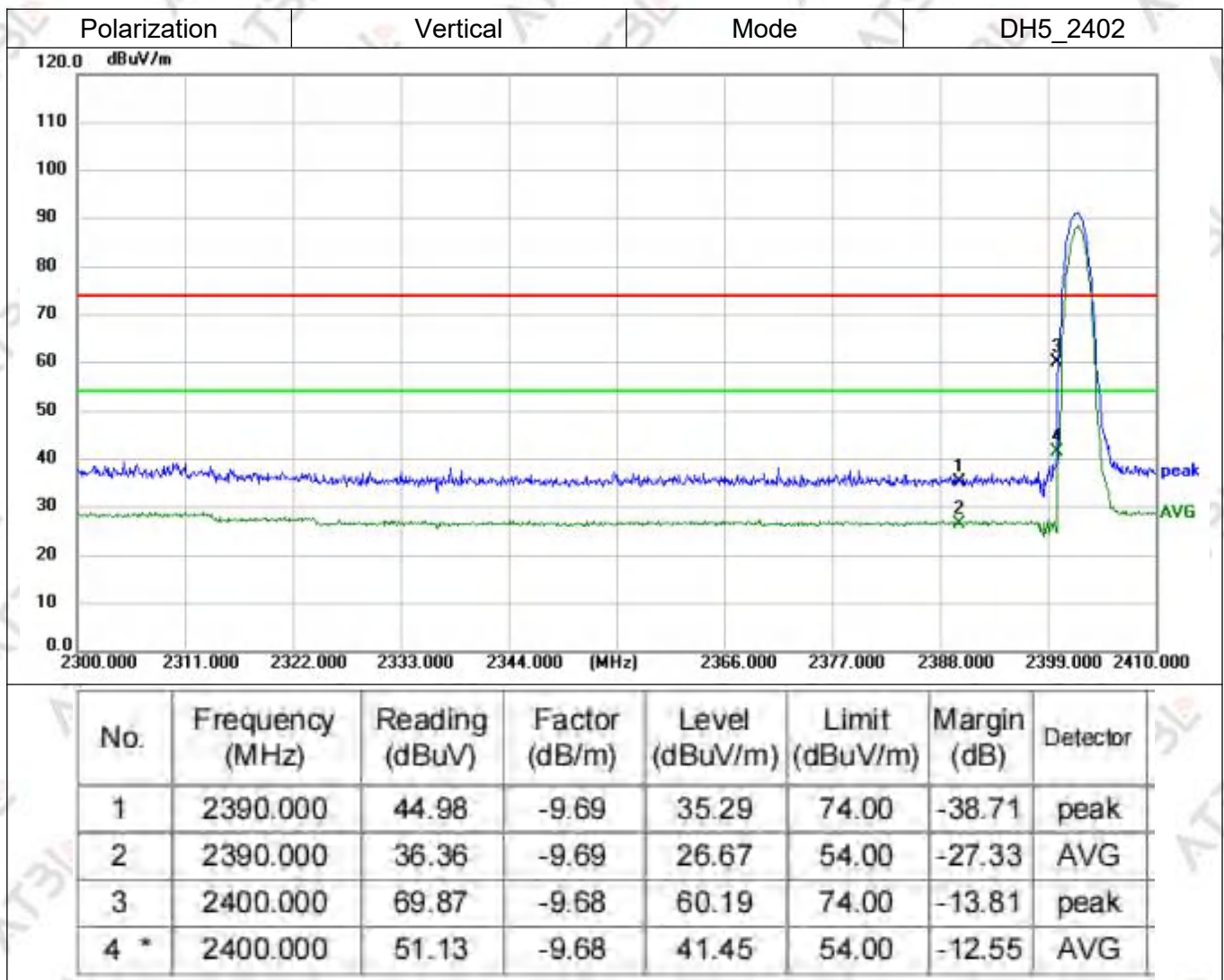


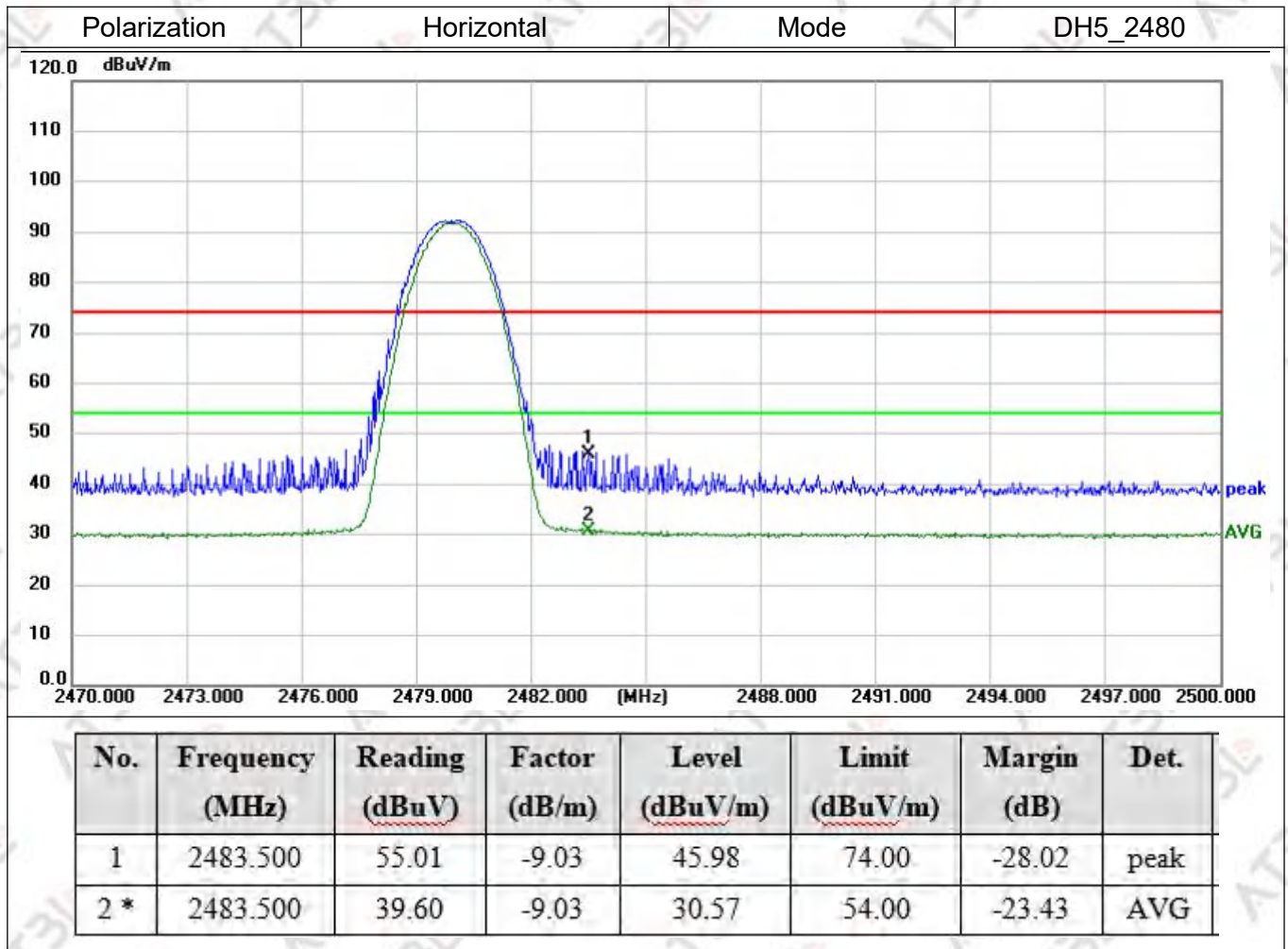
Test Result of Restricted Band

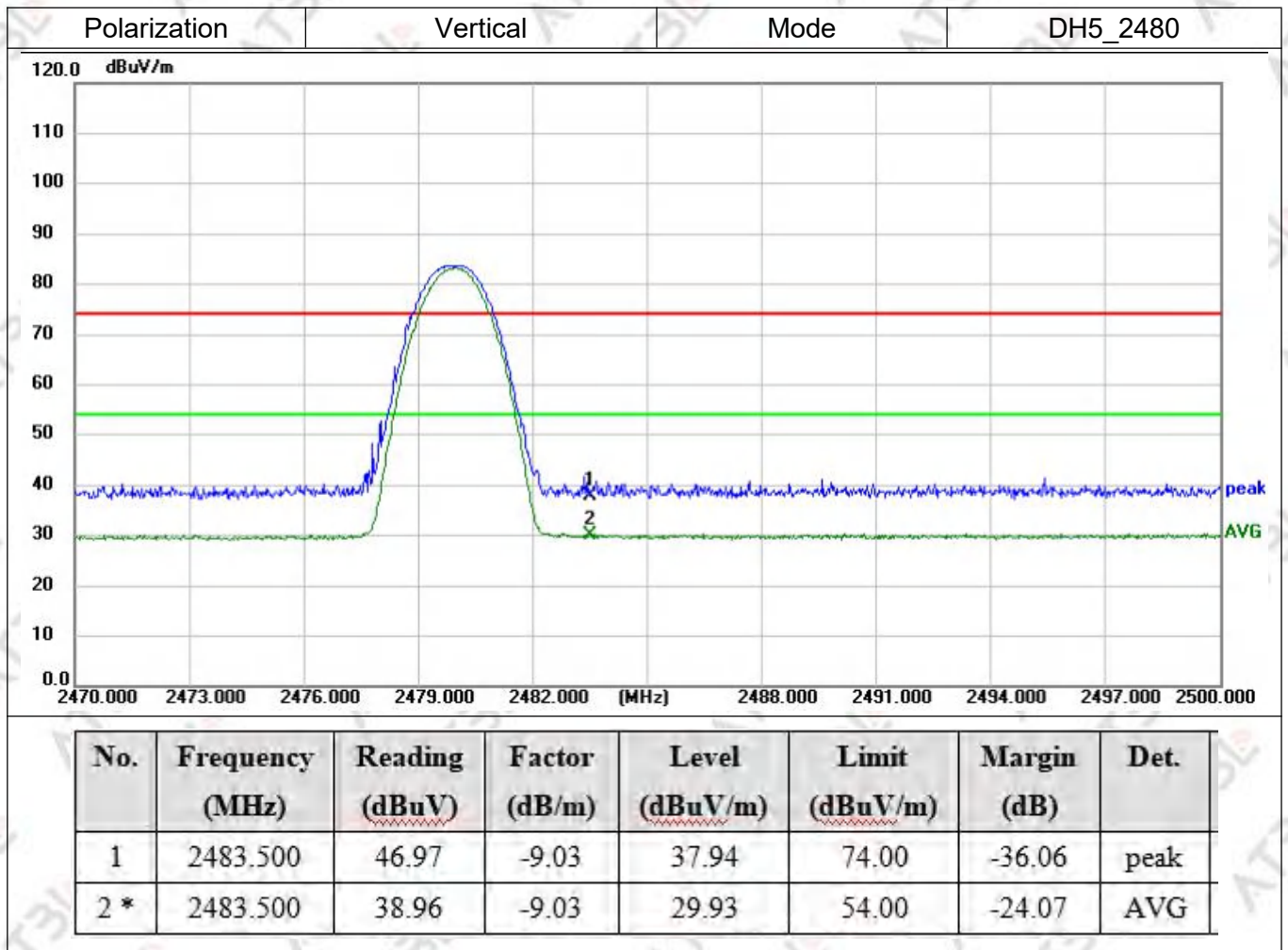
Note:

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





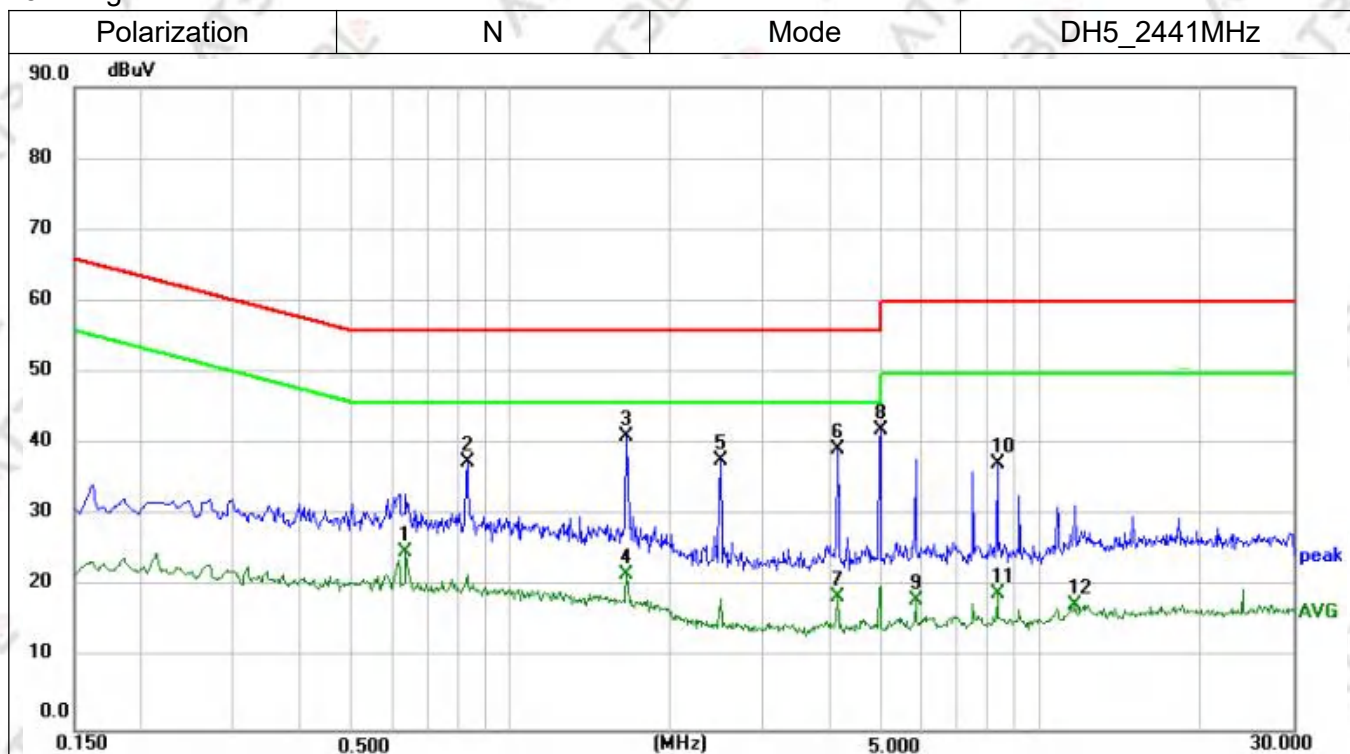




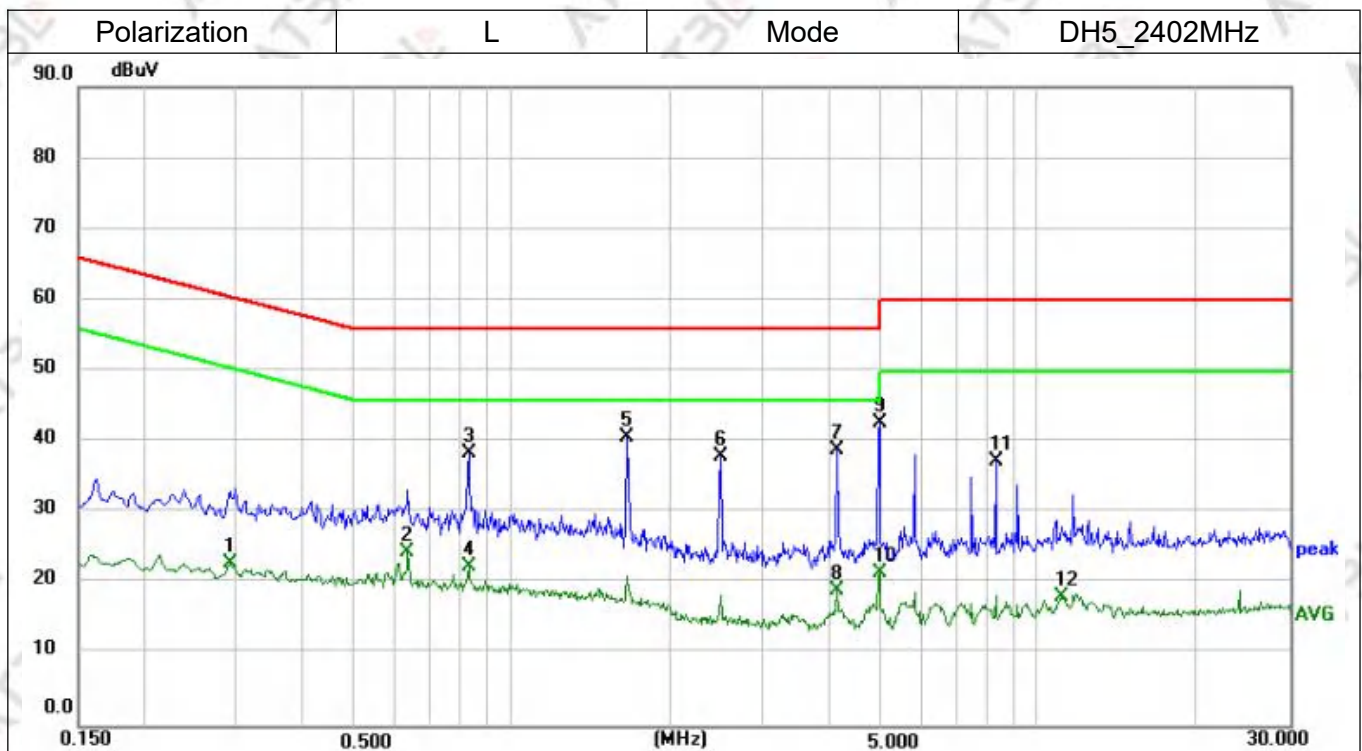
A7.AC Power-Line Conducted Emission

Note:

- 1.All modes have been tested, only worst case(DH5_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	0.6340	5.53	19.52	25.05	46.00	-20.95	AVG
2	0.8300	18.11	19.51	37.62	56.00	-18.38	peak
3	1.6620	21.65	19.57	41.22	56.00	-14.78	peak
4	1.6620	2.31	19.57	21.88	46.00	-24.12	AVG
5	2.4900	18.23	19.62	37.85	56.00	-18.15	peak
6	4.1500	19.51	19.77	39.28	56.00	-16.72	peak
7	4.1500	-1.00	19.77	18.77	46.00	-27.23	AVG
8	4.9820	22.20	19.85	42.05	56.00	-13.95	peak
9	5.8140	-1.63	19.92	18.29	50.00	-31.71	AVG
10	8.3020	17.23	20.15	37.38	60.00	-22.62	peak
11	8.3020	-0.93	20.15	19.22	50.00	-30.78	AVG
12	11.6220	-2.81	20.53	17.72	50.00	-32.28	AVG



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2900	3.48	19.44	22.92	50.52	-27.60	AVG
2	0.6340	5.14	19.52	24.66	46.00	-21.34	AVG
3	0.8300	18.92	19.51	38.43	56.00	-17.57	peak
4	0.8300	3.05	19.51	22.56	46.00	-23.44	AVG
5	1.6620	21.21	19.57	40.78	56.00	-15.22	peak
6	2.4900	18.36	19.62	37.98	56.00	-18.02	peak
7	4.1500	19.10	19.77	38.87	56.00	-17.13	peak
8	4.1500	-0.64	19.77	19.13	46.00	-26.87	AVG
9	4.9820	22.93	19.85	42.78	56.00	-13.22	peak
10	4.9820	1.80	19.85	21.65	46.00	-24.35	AVG
11	8.3020	17.31	20.15	37.46	60.00	-22.54	peak
12	11.0620	-2.08	20.45	18.37	50.00	-31.63	AVG

*****END*****