

Appendix A of data

A1.Maximum Peak Conducted Output Power

Test Result

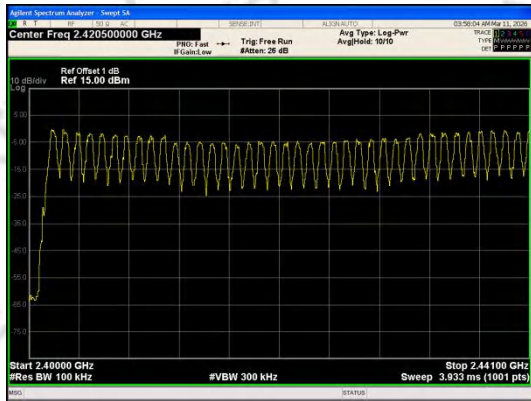
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	3.79	2.39	≤21	PASS
		39	3.56	2.27		PASS
		78	4.63	2.90		PASS
π/4DQPSK	2-DH5	0	0.69	1.17		PASS
		39	0.99	1.26		PASS
		78	0.17	1.04		PASS
8DPSK	3-DH5	0	0.62	1.15		PASS
		39	1.39	1.38		PASS
		78	-2.42	0.57		PASS

A2.Number of Hopping Frequencies

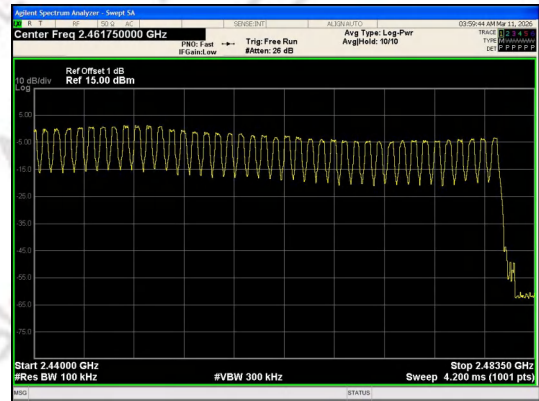
Test Result

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

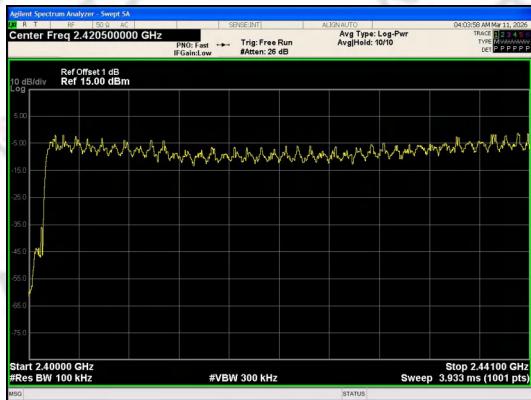
Test Graphs



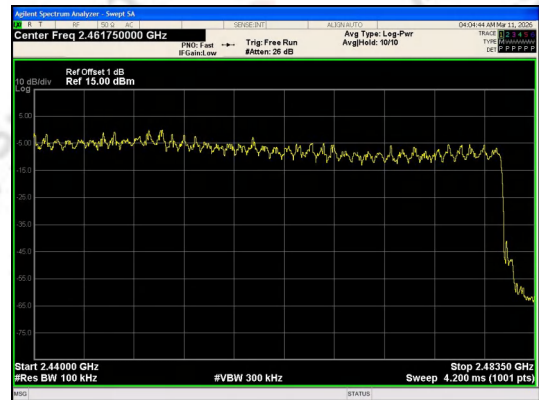
Low End Spectrum Channel Hopping Plot
GFSK



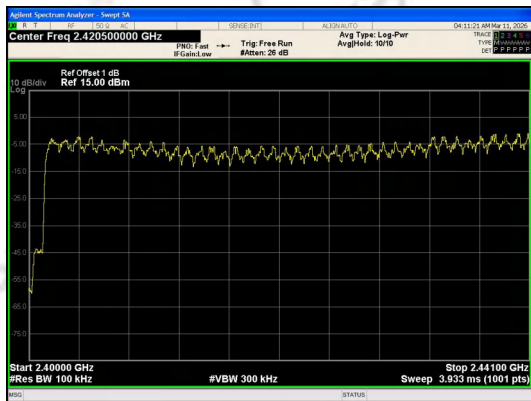
High End Spectrum Channel Hopping Plot
GFSK



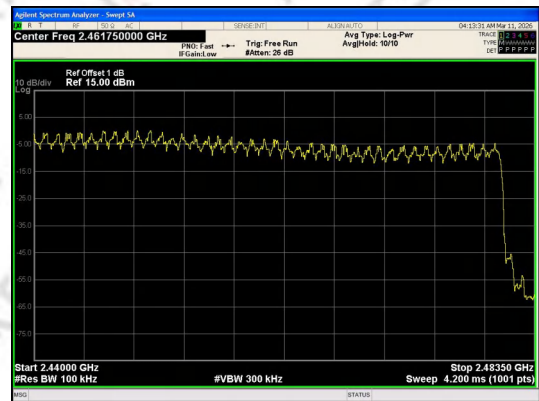
Low End Spectrum Channel Hopping Plot
 $\pi/4$ DQPSK



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



Low End Spectrum Channel Hopping Plot
8DPSK



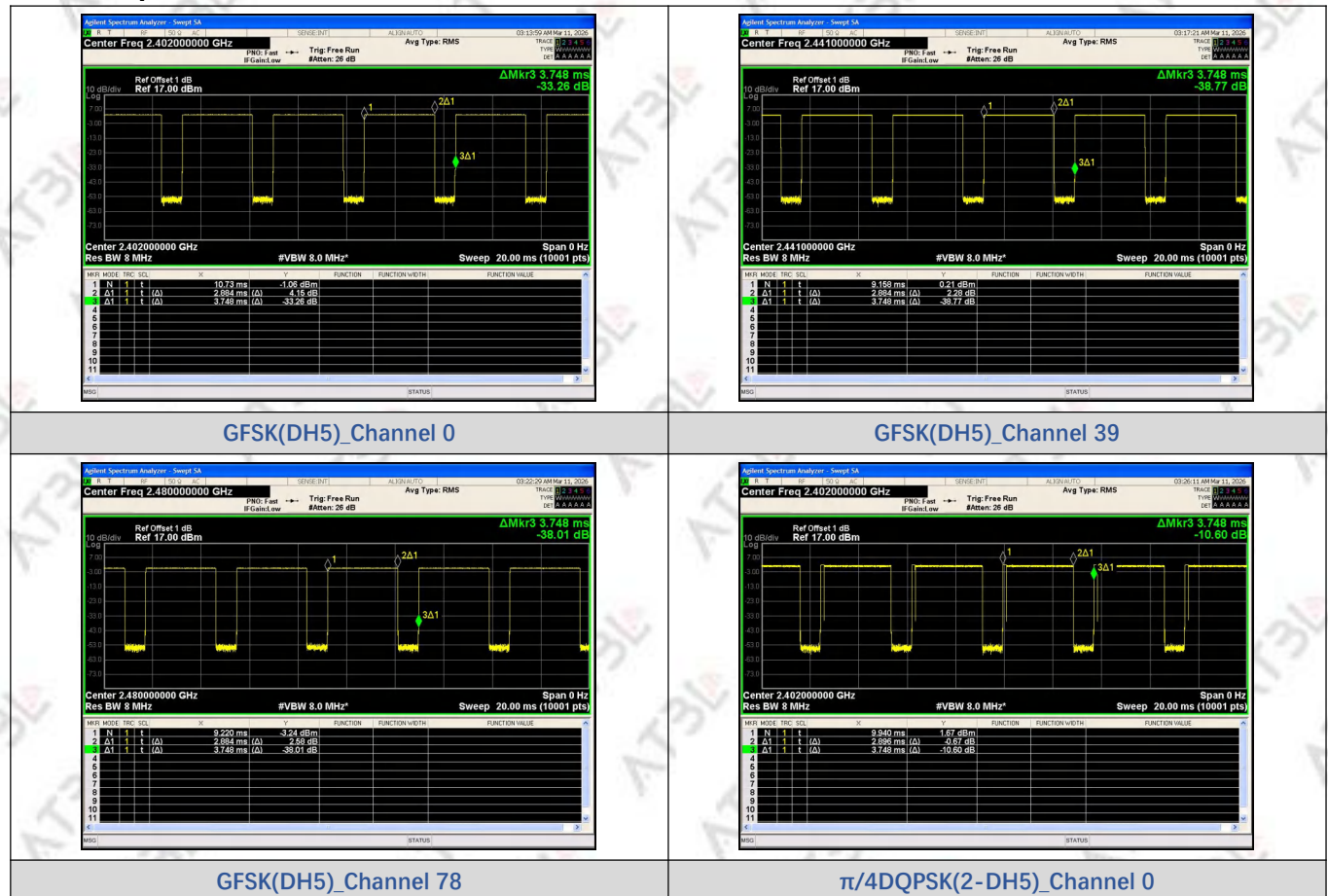
High End Spectrum Channel Hopping Plot
8DPSK

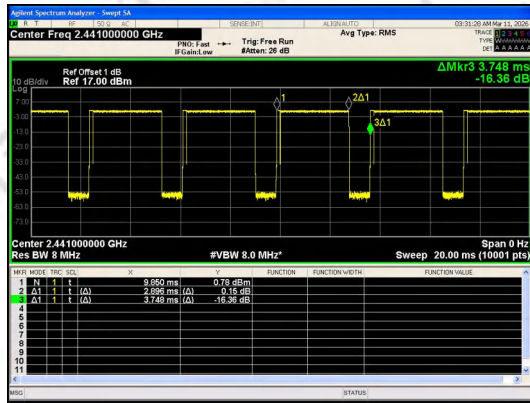
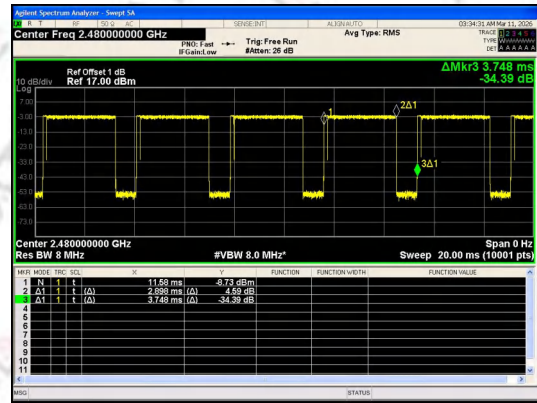
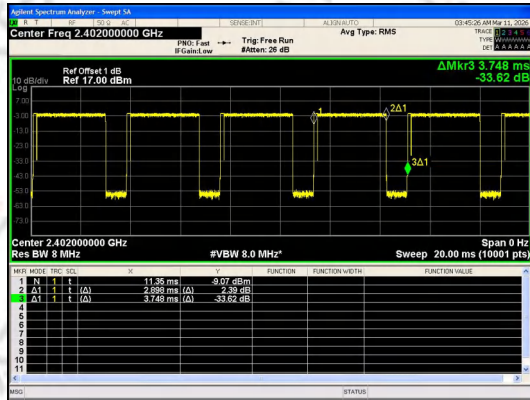
A3.Duty Cycle and Dwell Time

Duty Cycle Test Result

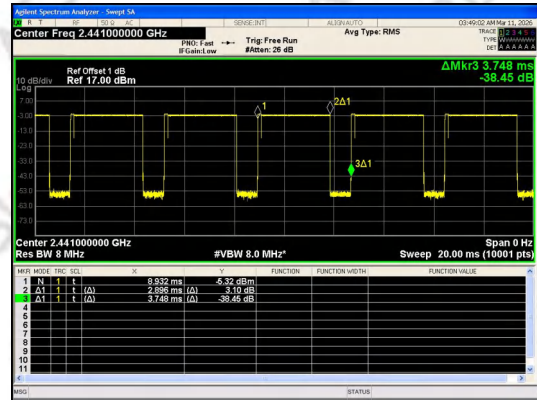
Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)
GFSK	DH5	0	2.884	3.748	76.95	0.7695	1.1379
		39	2.884	3.748	76.95	0.7695	1.1379
		78	2.884	3.748	76.95	0.7695	1.1379
$\pi/4$ DQPSK	2-DH5	0	2.896	3.748	77.27	0.7727	1.1199
		39	2.896	3.748	77.27	0.7727	1.1199
		78	2.898	3.748	77.32	0.7732	1.1171
8DPSK	3-DH5	0	2.898	3.748	77.32	0.7732	1.1171
		39	2.896	3.748	77.27	0.7727	1.1199
		78	2.896	3.748	77.27	0.7727	1.1199

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



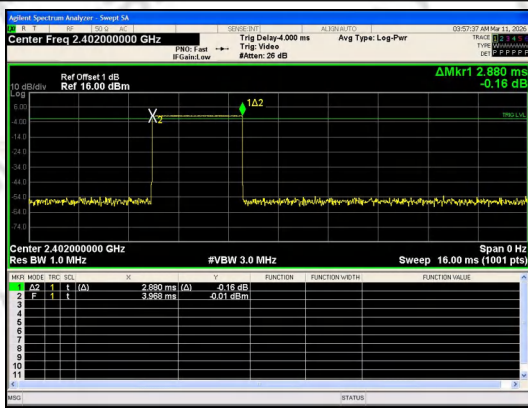
8DPSK(3-DH5)_Channel 78

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	2.880	104	299.52	< 400	PASS
$\pi/4$ DQPSK	2-DH5	0	2.896	107	309.87		PASS
8DPSK	3-DH5	0	2.896	105	304.08		PASS

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

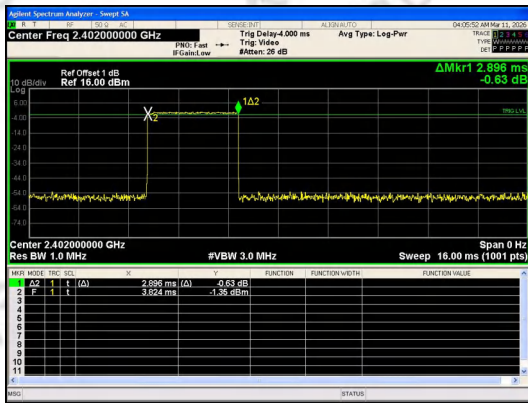
Test Graphs



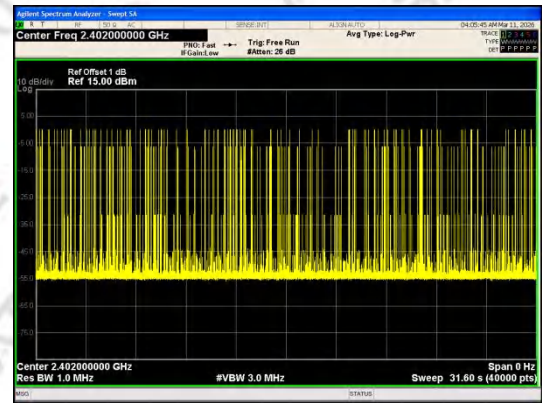
Pulse Width
GFSK_DH5



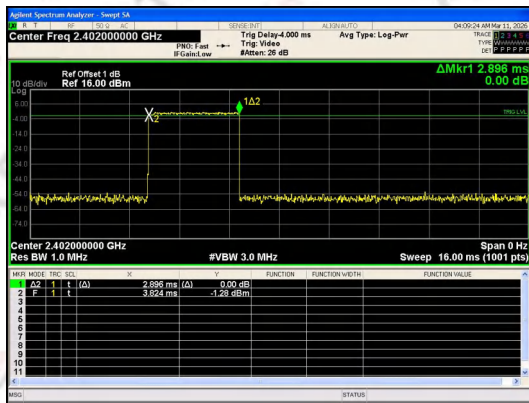
Number of Pulses in 31.6 seconds
GFSK_DH5



Pulse Width
 $\pi/4$ DQPSK_2-DH5



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



Pulse Width
8DPSK_3-DH5



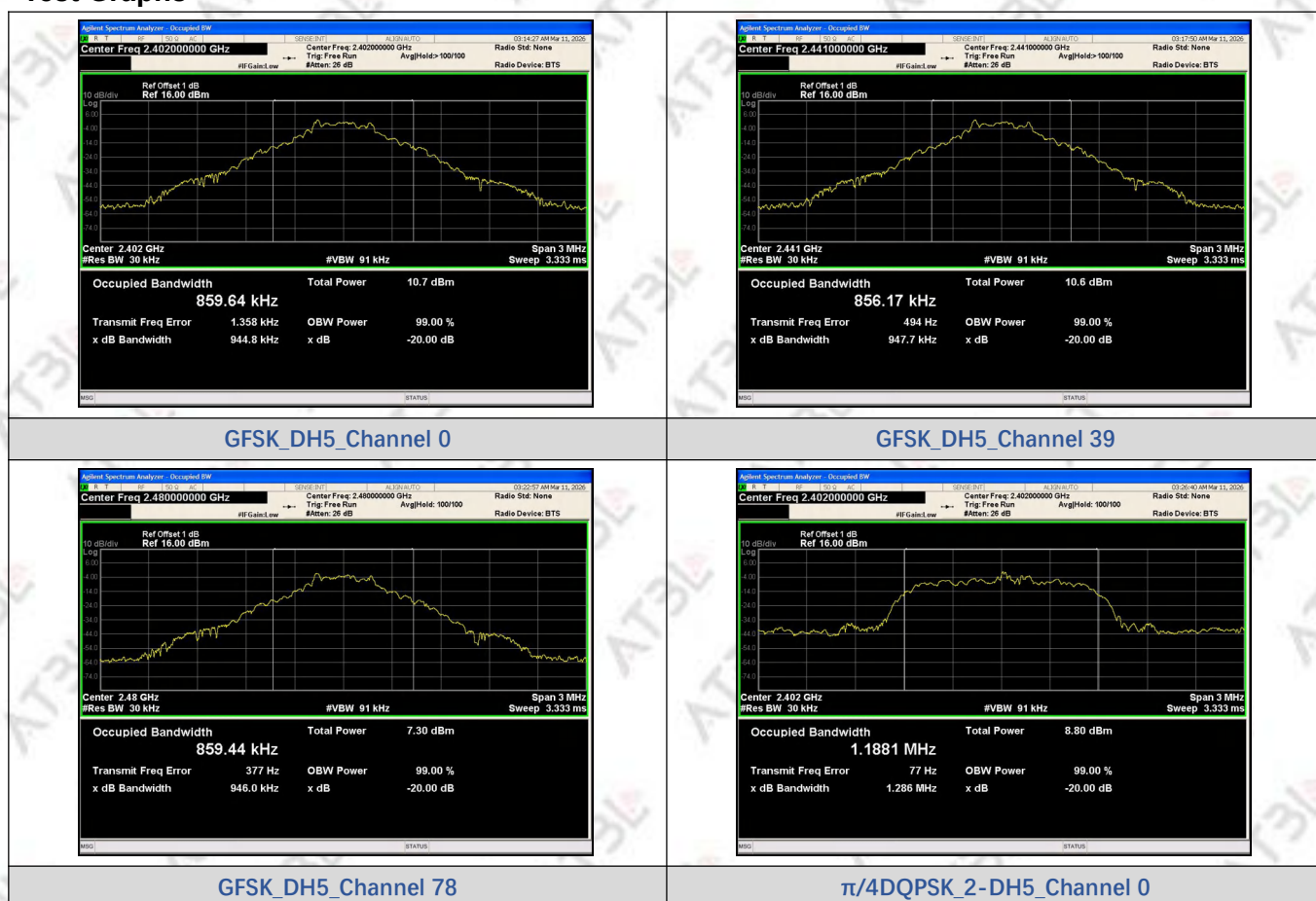
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

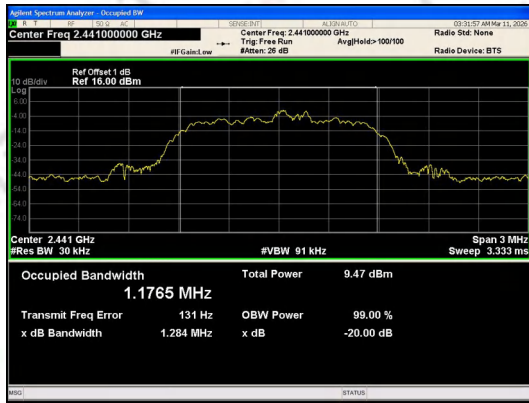
A4.20dB Bandwidth

Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9448
	39	2441 MHz	0.9477
	78	2480 MHz	0.9460
$\pi/4$ DQPSK	0	2402 MHz	1.286
	39	2441 MHz	1.284
	78	2480 MHz	1.286
8DPSK	0	2402 MHz	1.297
	39	2441 MHz	1.299
	78	2480 MHz	1.299

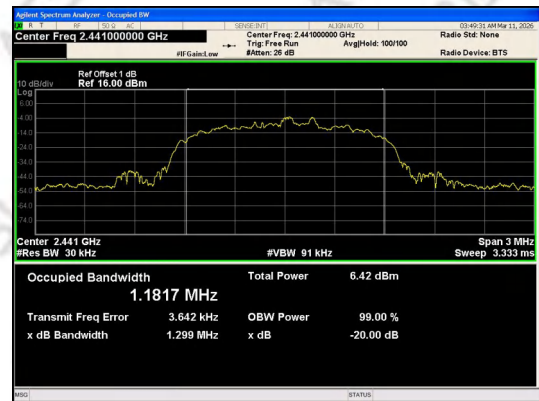
Test Graphs




 $\pi/4$ 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	2439.8296	2440.8359	1.0063	0.632	PASS
$\pi/4$ DQPSK	39	2440.0156	2441.1677	1.1521	0.856	PASS
8DPSK	39	2440.0411	2441.1734	1.1323	0.866	PASS

Test Graphs



A6.Conducted Spurious & Band Edge Emission

Non-Hopping

Modulation	Packets	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Cable Loss (dB)	OOB Emission Level Final Measurement (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-59.535	N/A	-59.535	-16.8	-42.735	PASS
			24868.9	-50.768	1.36	-49.408	-16.8	-32.608	PASS
		39	24965.7	-50.556	1.36	-49.196	-17.05	-32.146	PASS
		78	2483.50	-59.530	N/A	-59.530	-15.61	-43.92	PASS
			24842.1	-49.168	1.36	-47.808	-15.61	-32.198	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-57.586	N/A	-57.586	-20.1	-37.486	PASS
			24950.7	-50.255	1.36	-48.895	-20.1	-28.795	PASS
		39	24846.4	-49.056	1.36	-47.696	-20.99	-26.706	PASS
		78	2483.50	-60.664	N/A	-60.664	-21.65	-39.014	PASS
			24907.6	-49.134	1.36	-47.774	-21.65	-26.124	PASS
8DPSK	3-DH5	0	2400.00	-57.694	N/A	-57.694	-21.58	-36.114	PASS
			24689.1	-50.376	1.36	-49.016	-21.58	-27.436	PASS
		39	24786.5	-50.453	1.36	-49.093	-20.96	-28.133	PASS
		78	2483.50	-62.359	N/A	-62.359	-24.64	-37.719	PASS
			24883.9	-49.094	1.36	-47.734	-24.64	-23.094	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 2.36 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	2395.97	-57.783	-14.48	-43.303	PASS
			2400.00	-58.635	-14.48	-44.155	PASS
			2483.50	-60.736	-19.79	-40.946	PASS
π/4DQPSK	2-DH5		2400.00	-51.740	-15.65	-36.090	PASS
			2483.50	-59.571	-21.29	-38.281	PASS
8DPSK	3-DH5		2400.00	-50.580	-15.53	-35.050	PASS
			2483.50	-59.131	-20.77	-38.361	PASS

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

Test Graphs

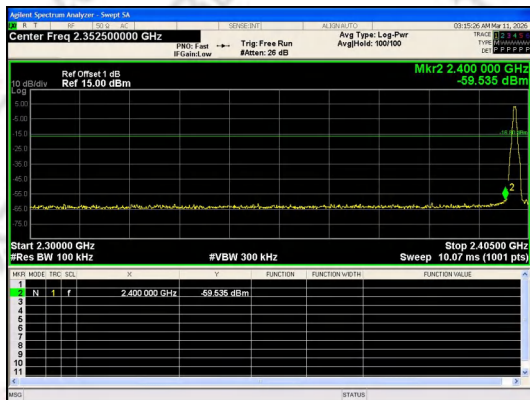
Non-Hopping



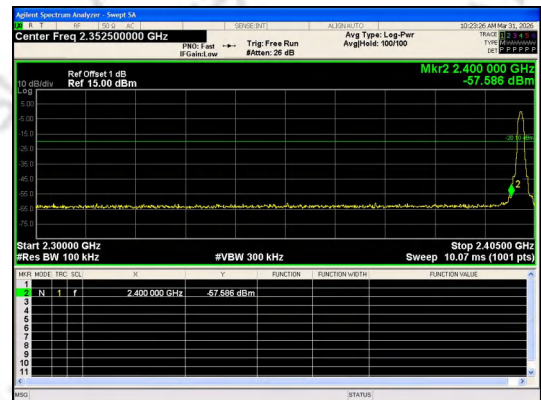
In-Band Reference Level
GFSK_DH5_Channel 0



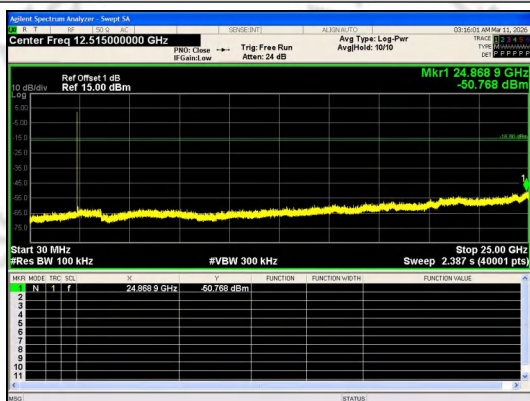
In-Band Reference Level
 $\pi/4$ DQPSK_2-DH5_Channel 0



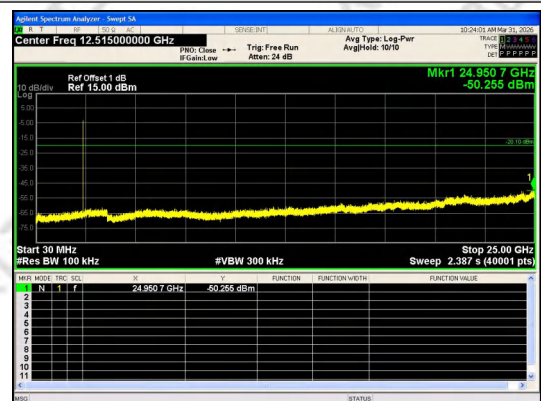
Out Of Band Emission
GFSK_DH5_Channel 0



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



30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



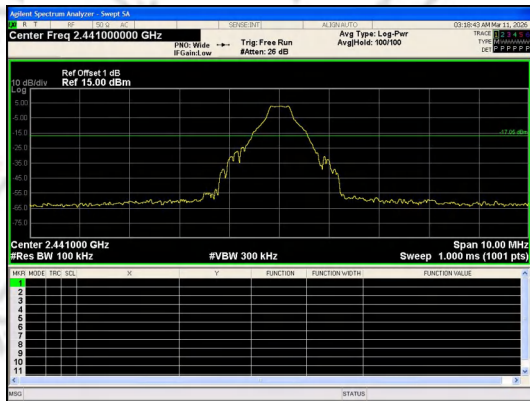
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0



In-Band Reference Level
GFSK_DH5_Channel 39



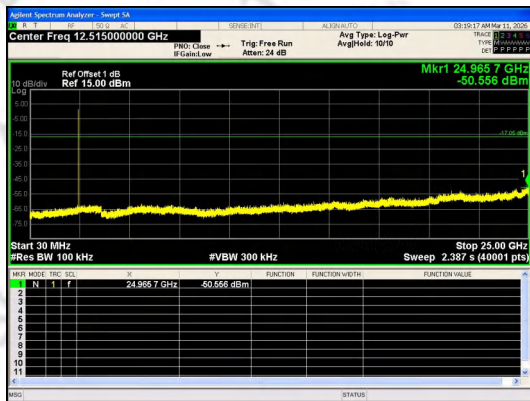
In-Band Reference Level
 $\pi/4$ DQPSK_2-DH5_Channel 39



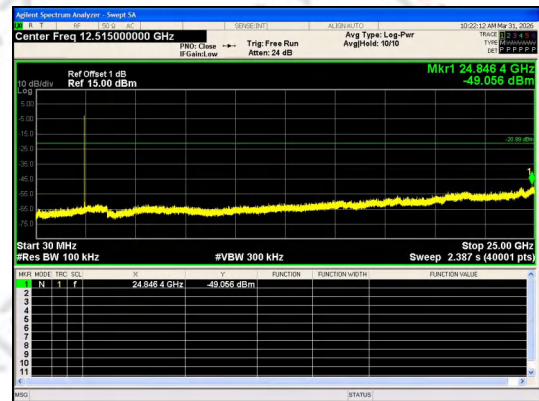
Out Of Band Emission
GFSK_DH5_Channel 39



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



30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39

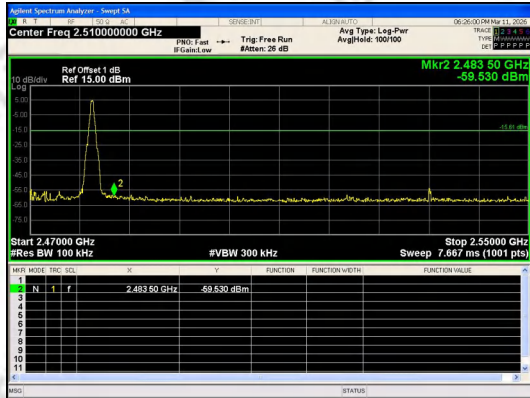


30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39

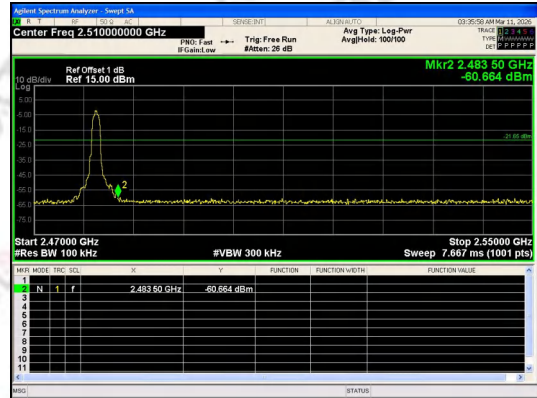


In-Band Reference Level

GFSK_DH5_Channel 78

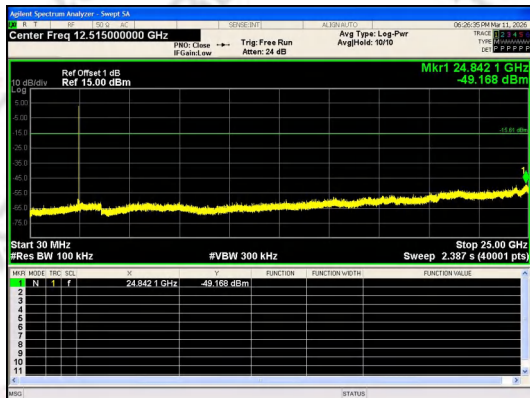


In-Band Reference Level

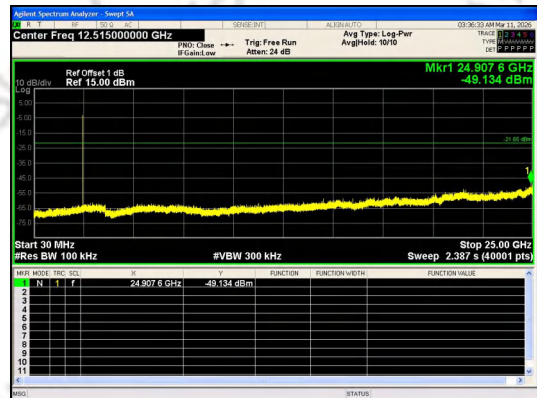
 $\pi/4$ DQPSK_2-DH5_Channel 78


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

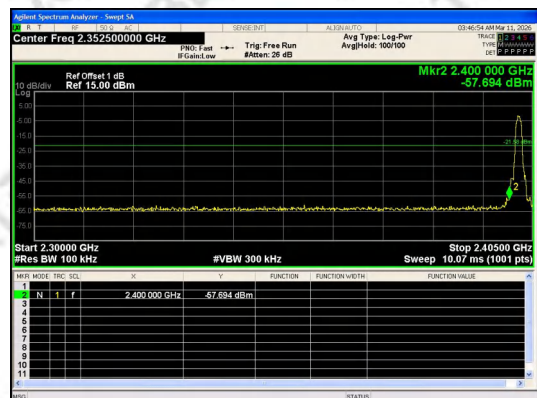
GFSK_DH5_Channel 78

30.0 MHz - 25000.0 MHz

 $\pi/4$ DQPSK_2-DH5_Channel 78

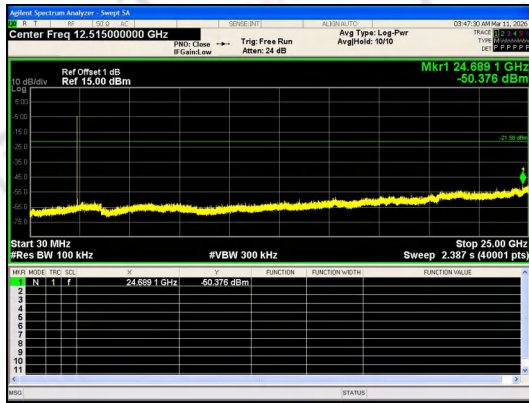

In-Band Reference Level

8DPSK_3-DH5_Channel 0



Out Of Band Emission

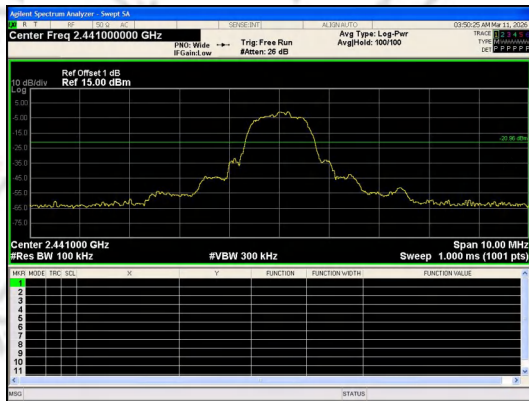
8DPSK_3-DH5_Channel 0



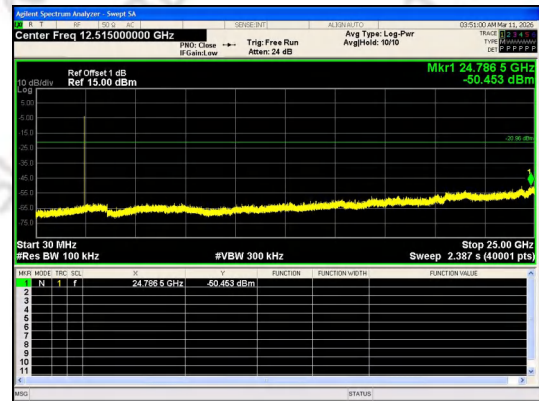
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



In-Band Reference Level
8DPSK_3-DH5_Channel 39



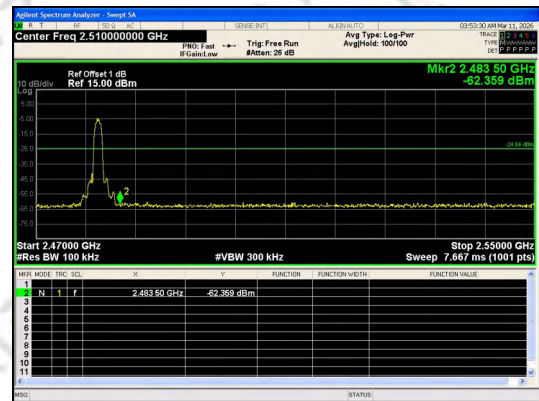
Out Of Band Emission
8DPSK_3-DH5_Channel 39



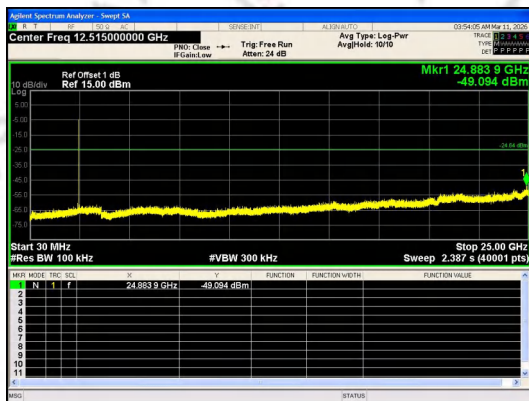
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



In-Band Reference Level
8DPSK_3-DH5_Channel 78



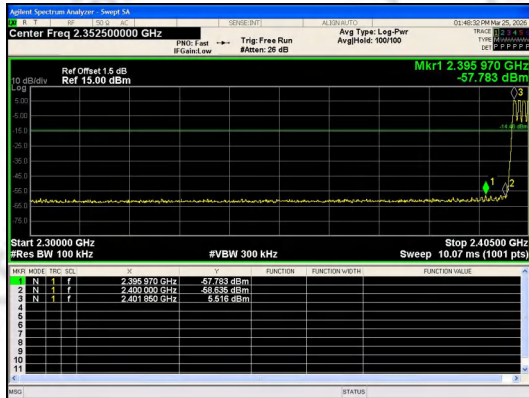
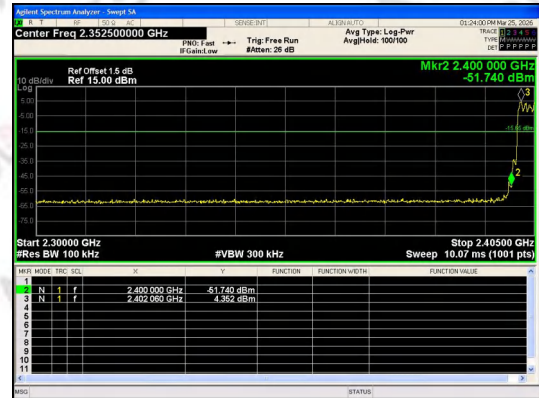
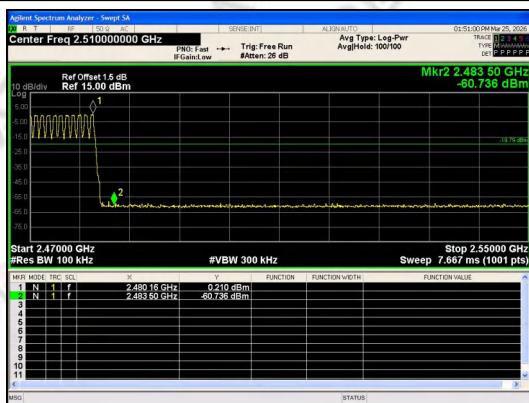
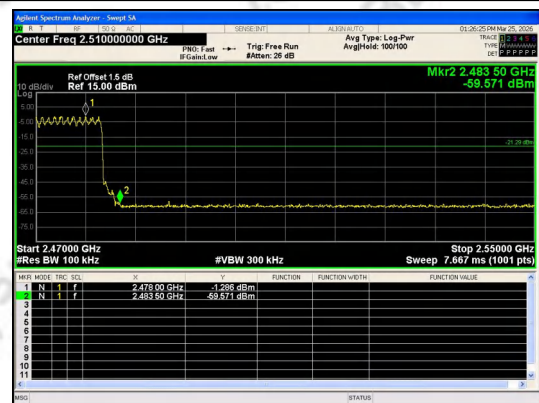
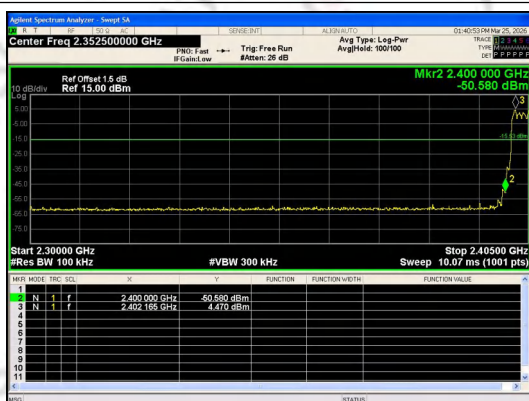
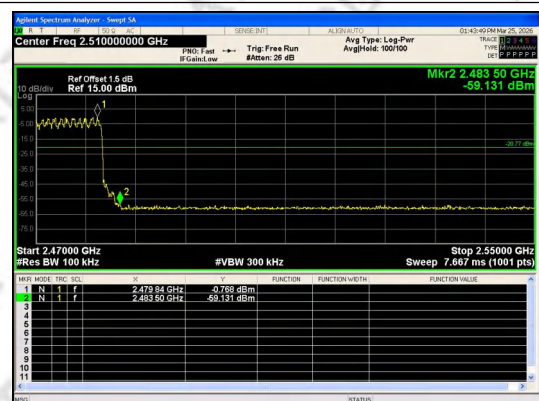
Out Of Band Emission
8DPSK_3-DH5_Channel 78



30.0 MHz - 25000.0 MHz

8DPSK_3-DH5_Channel 78

Hopping


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

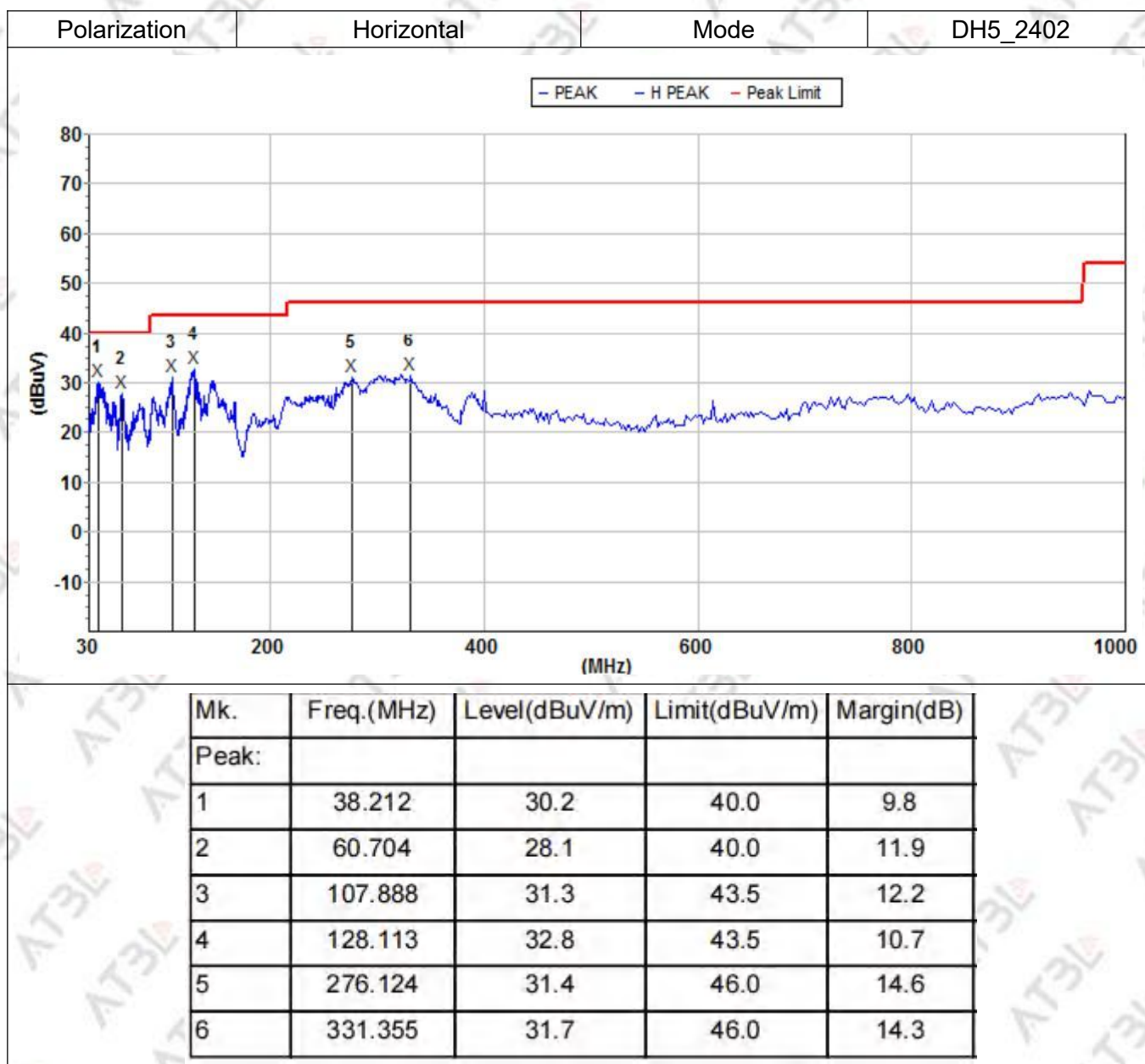
For 9 kHz ~ 30 MHz

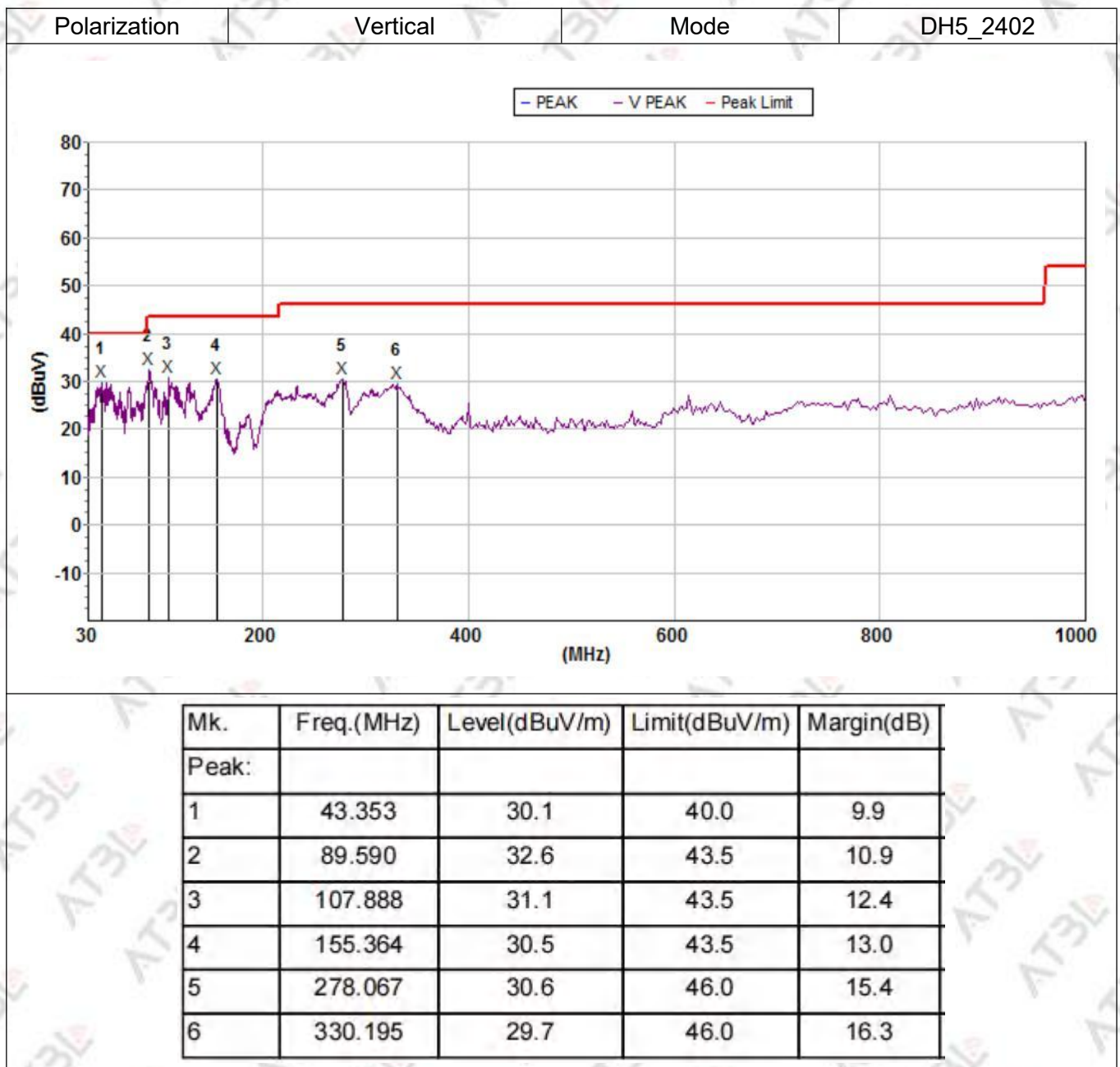
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

For 30 MHz ~ 1 GHz:

Note:

- 1.All modes have been tested, only worst mode(DH5_2402MHz) 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.

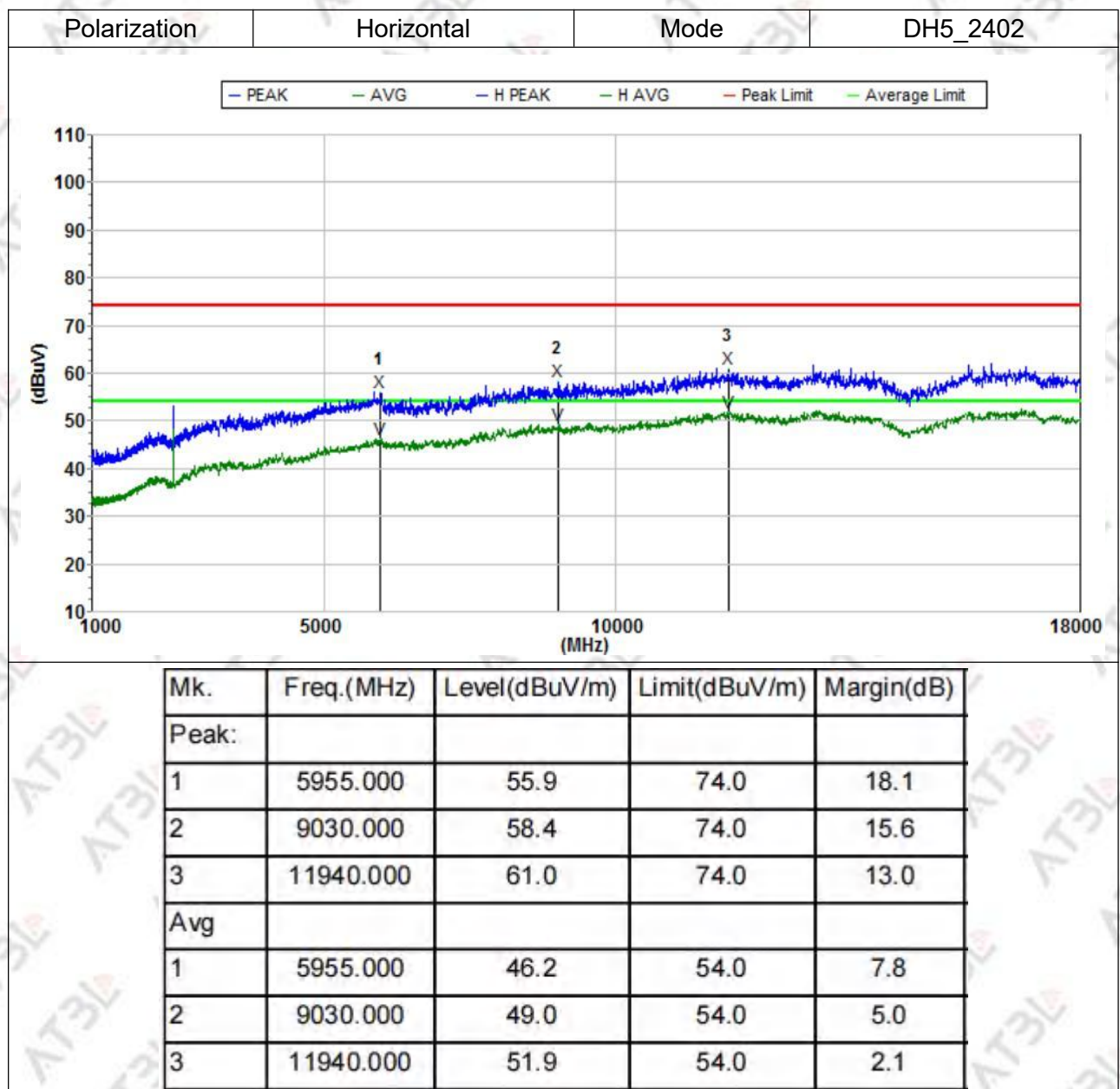


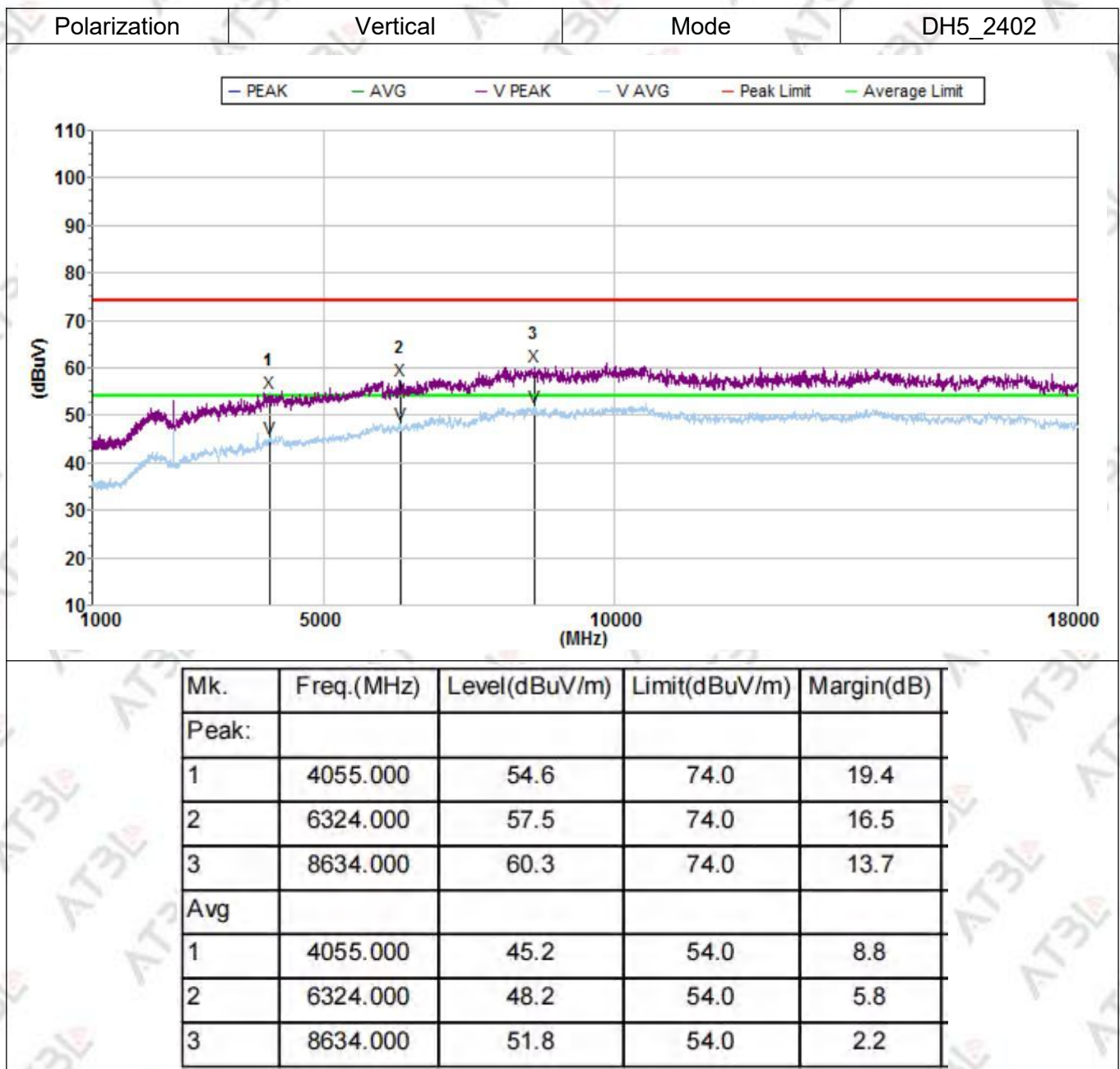


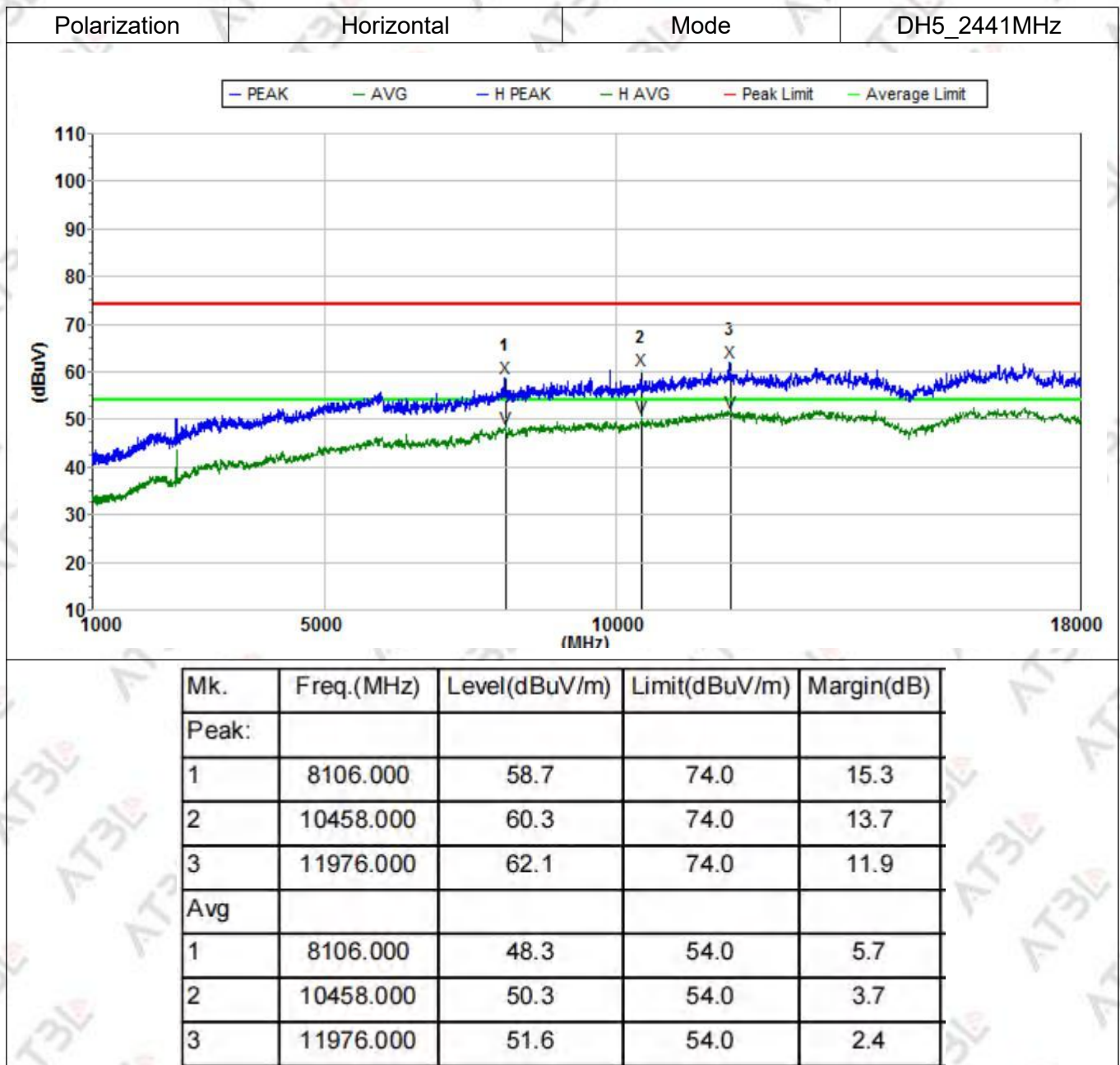
For 1 GHz ~ 18GHz:

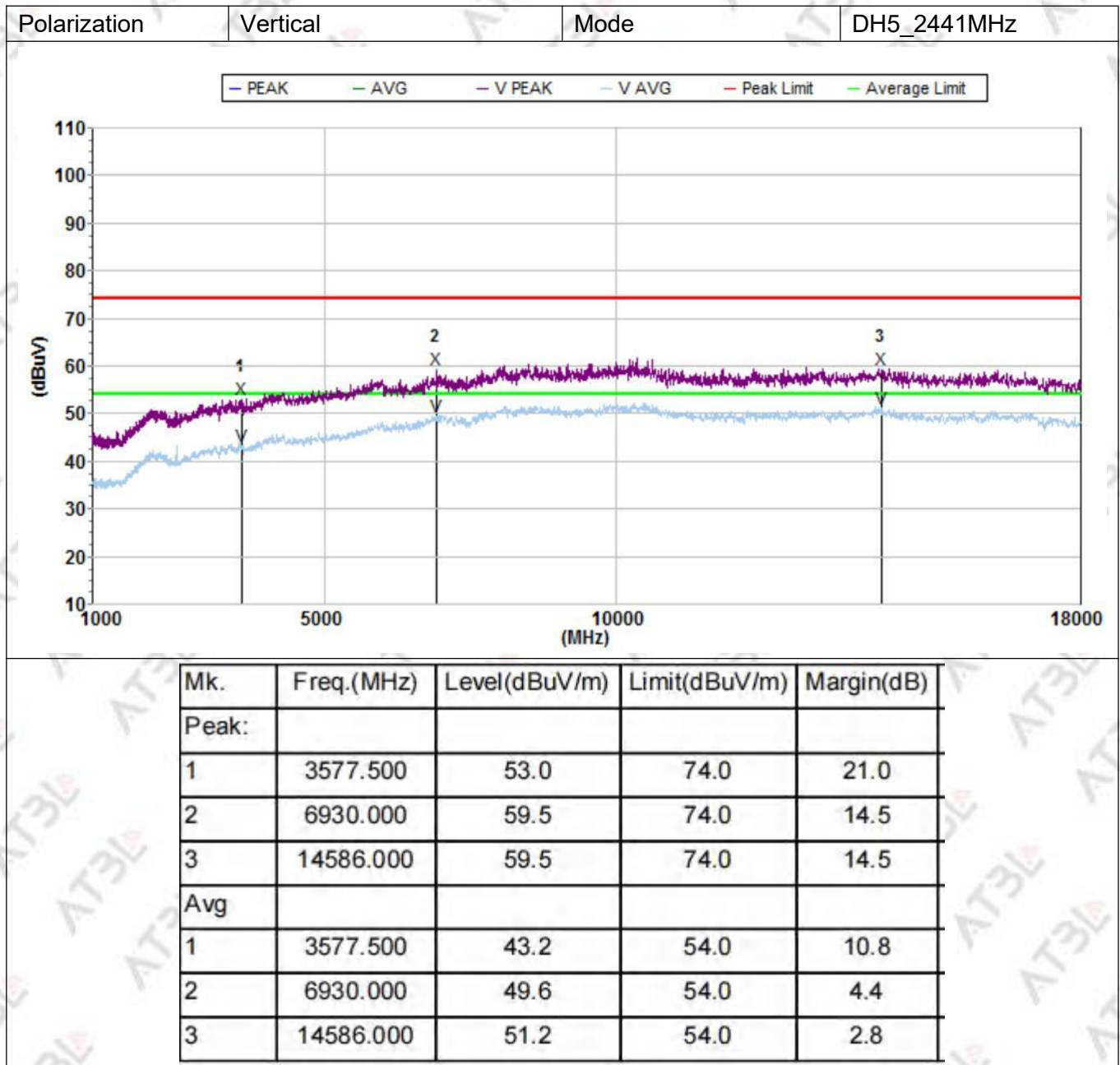
Note:

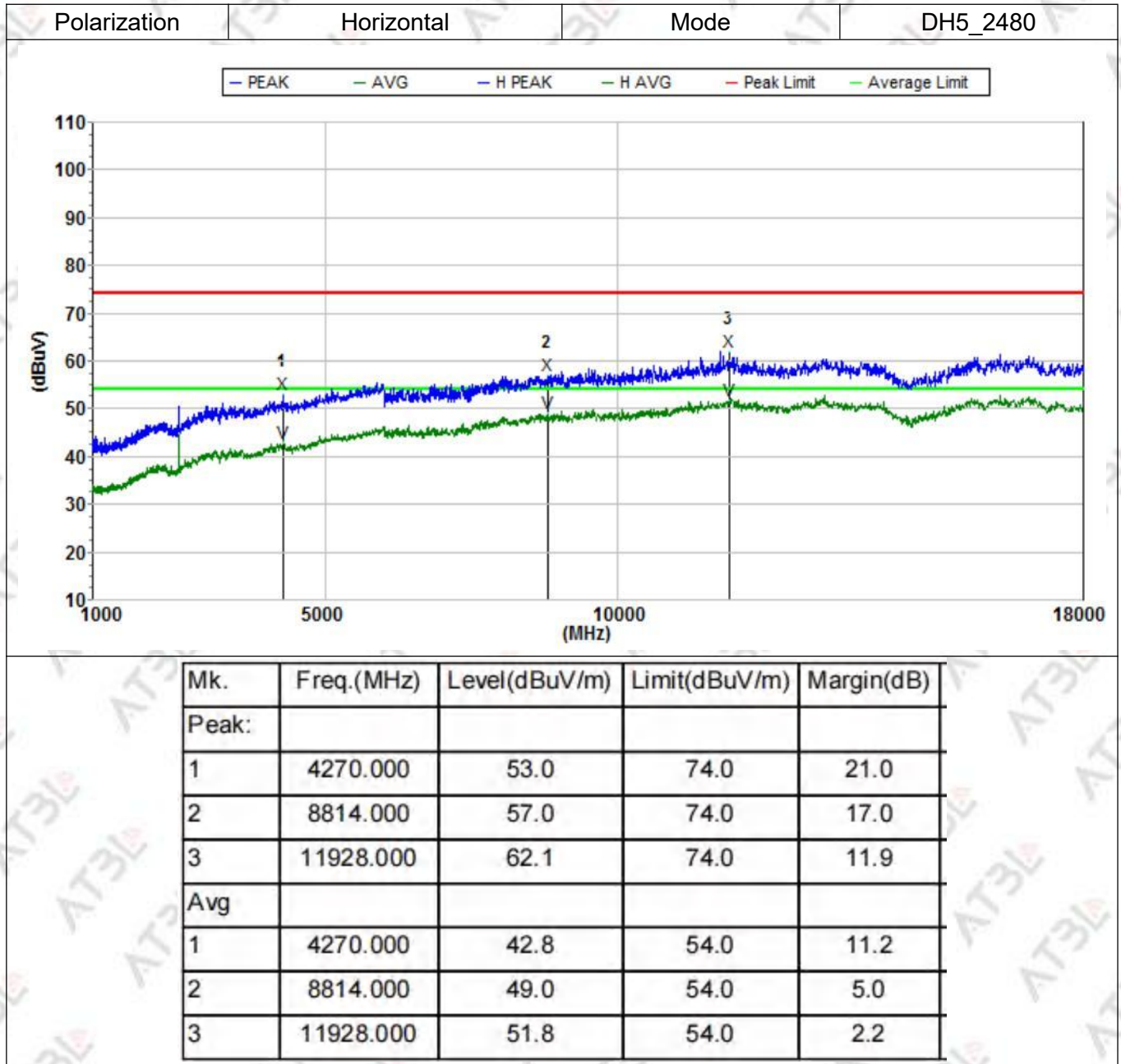
1. In frequency ranges 18 ~25GHz no any other harmonic emissions detected which are tested to compliance with the limit. No recording in the test report. No any other emissions level which are attenuated less than 20dB below the limit. No recording in the test report.
2. We used the filter to test and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

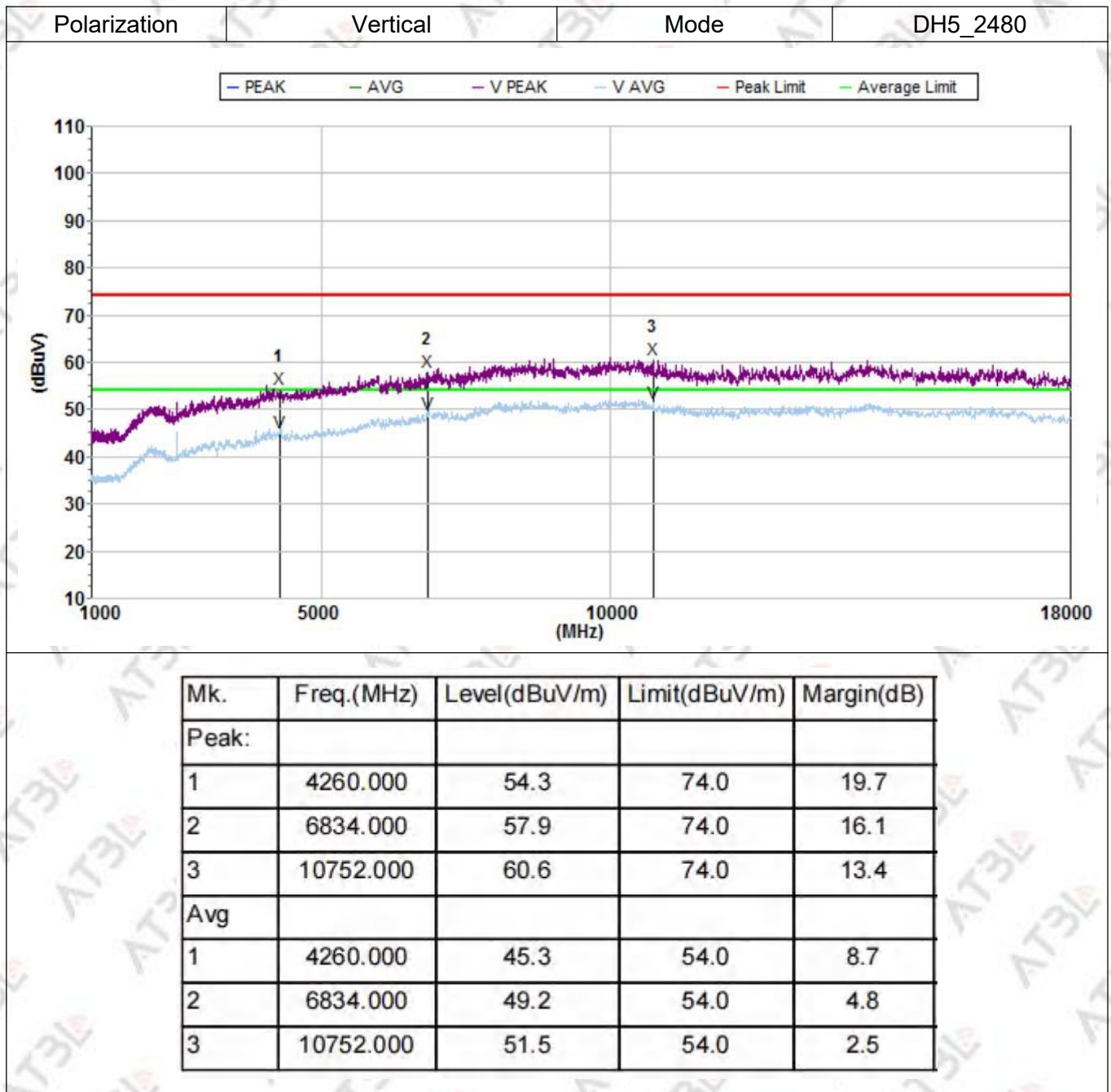








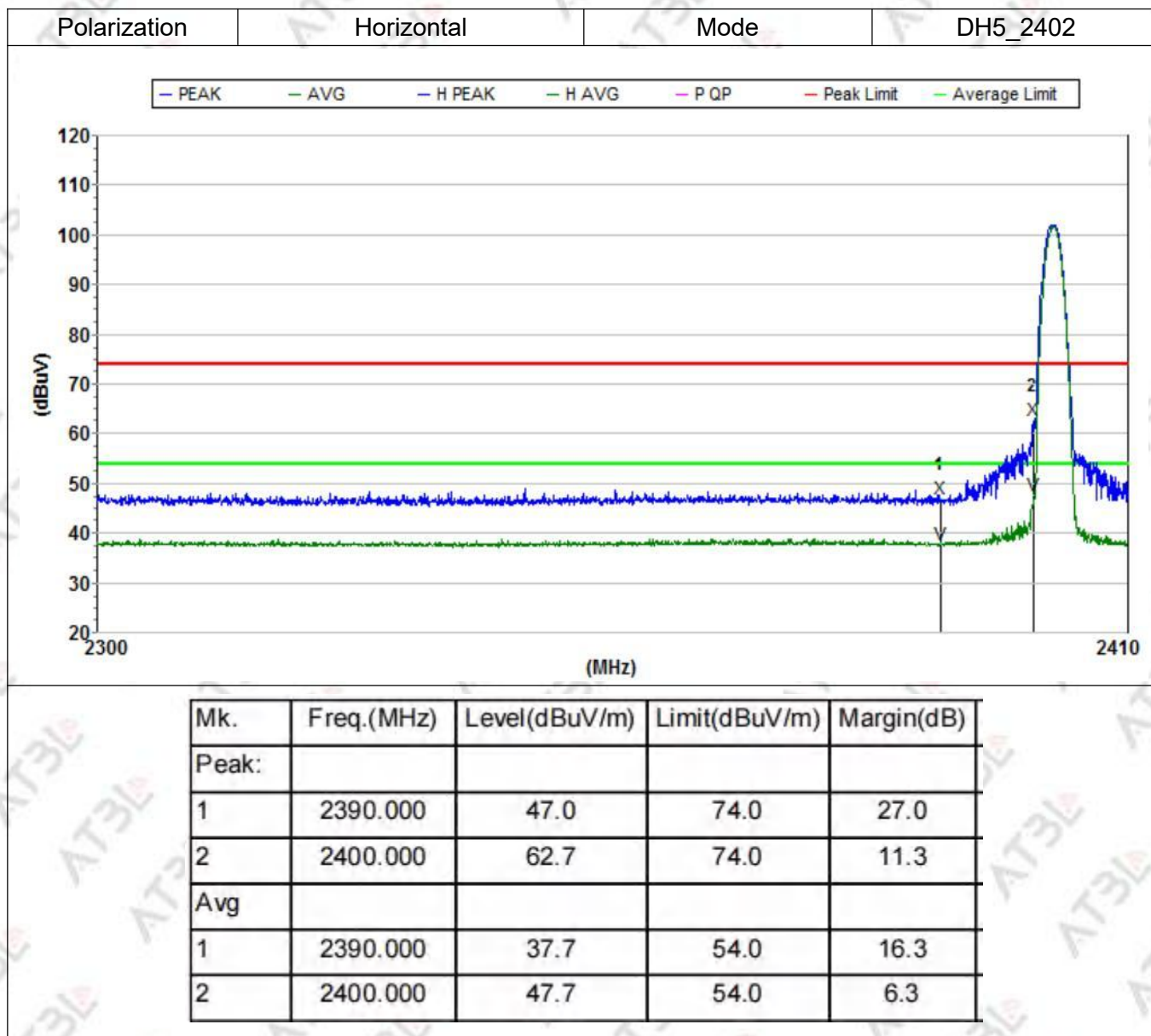


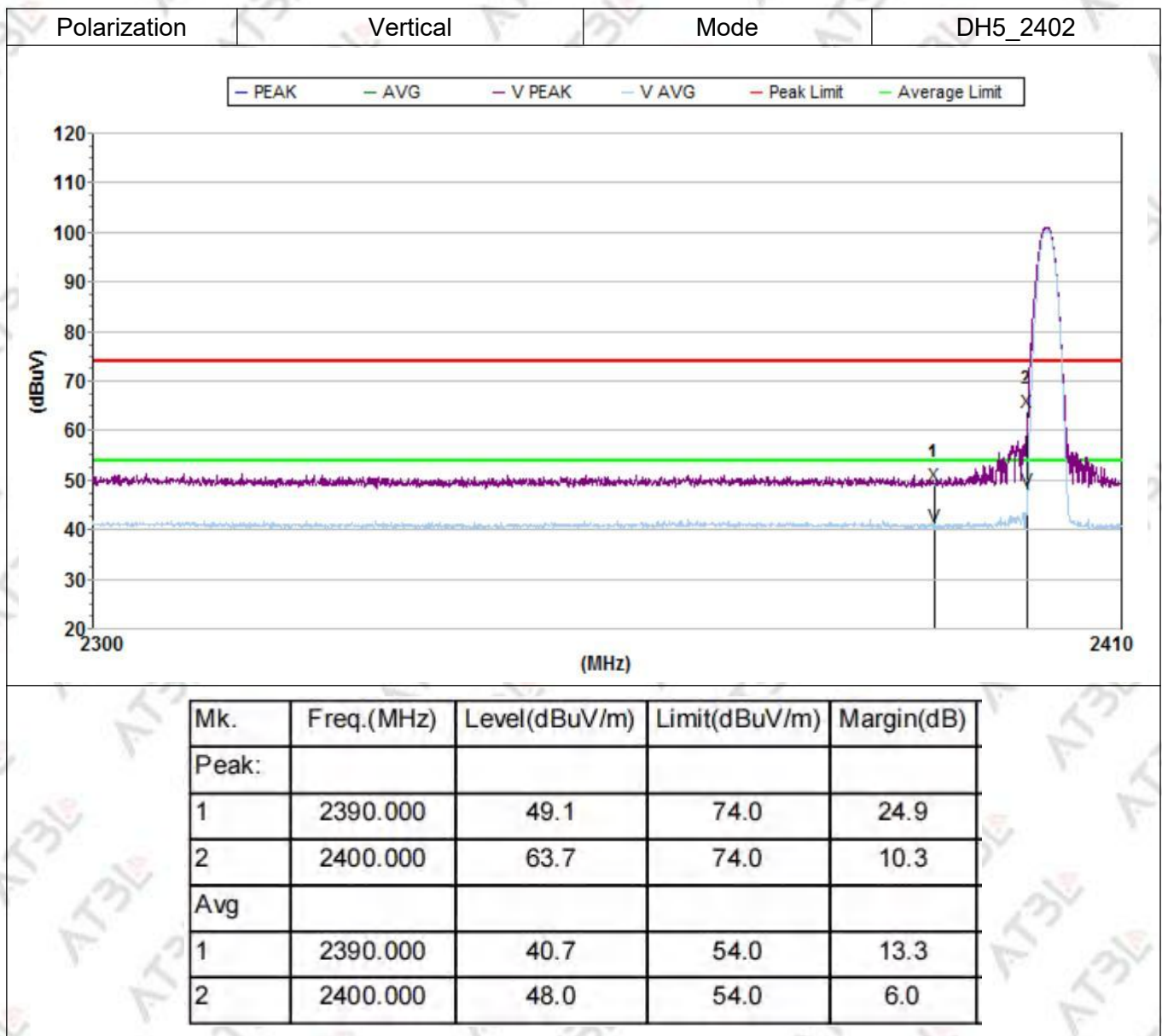


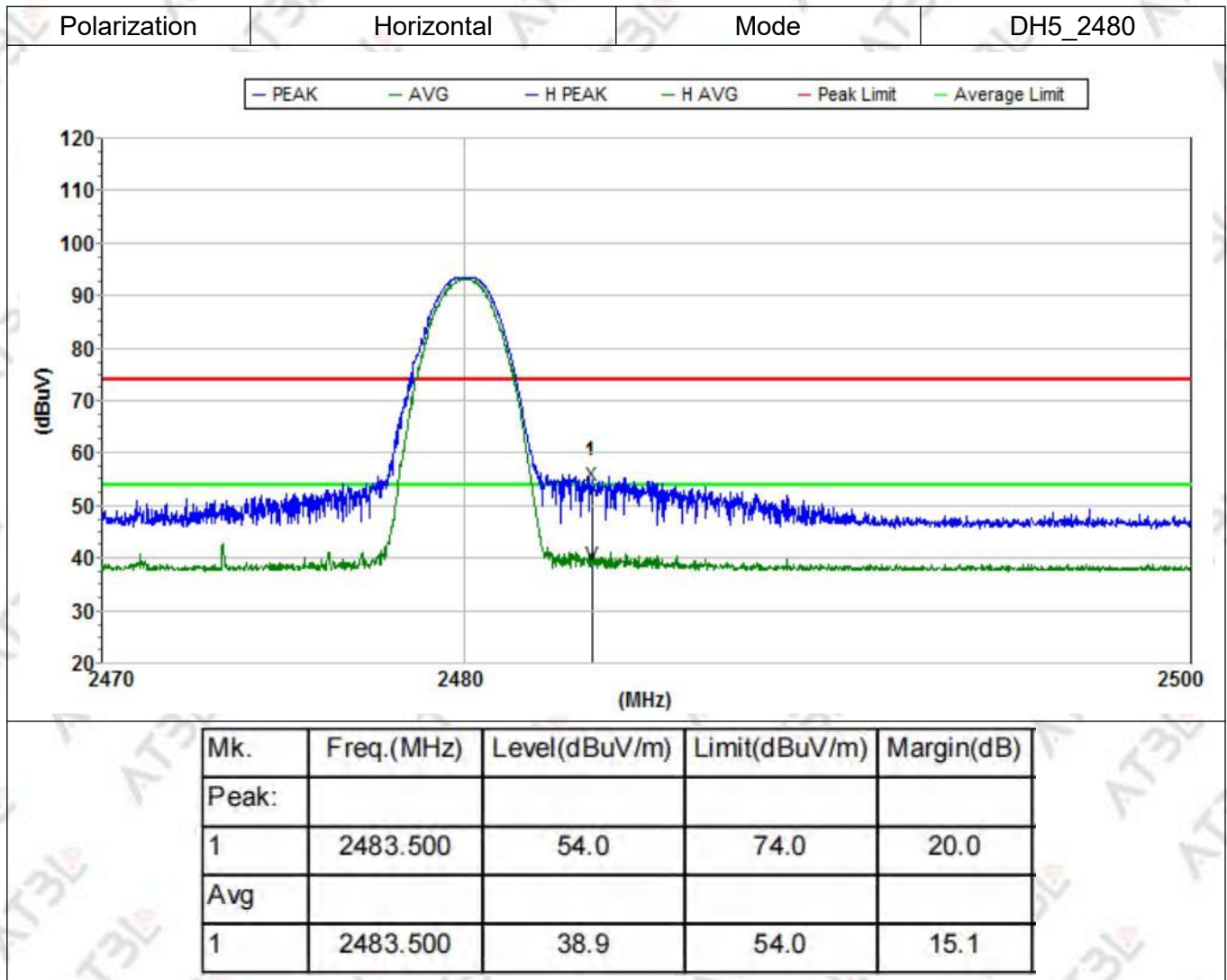
Test Result of Restricted Band

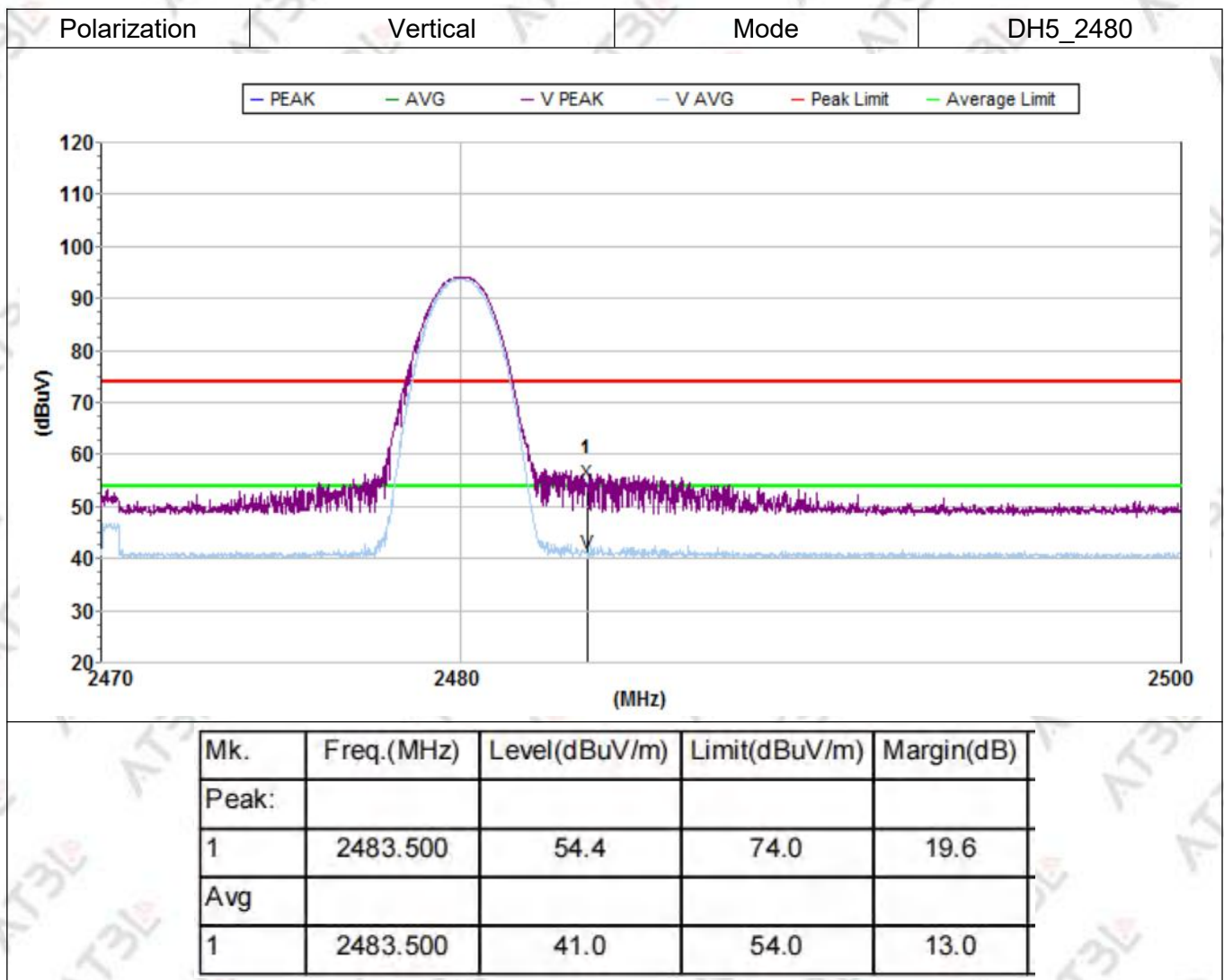
Note:

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





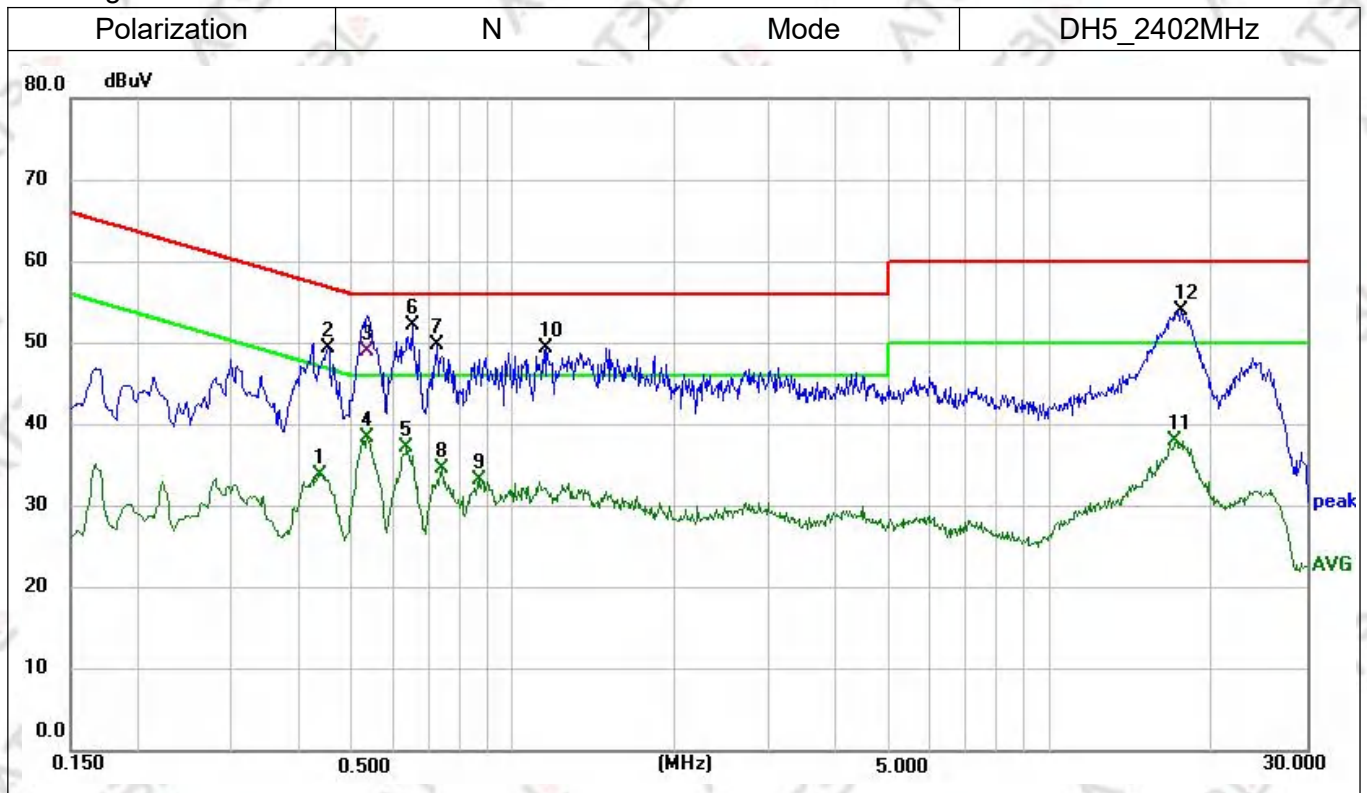




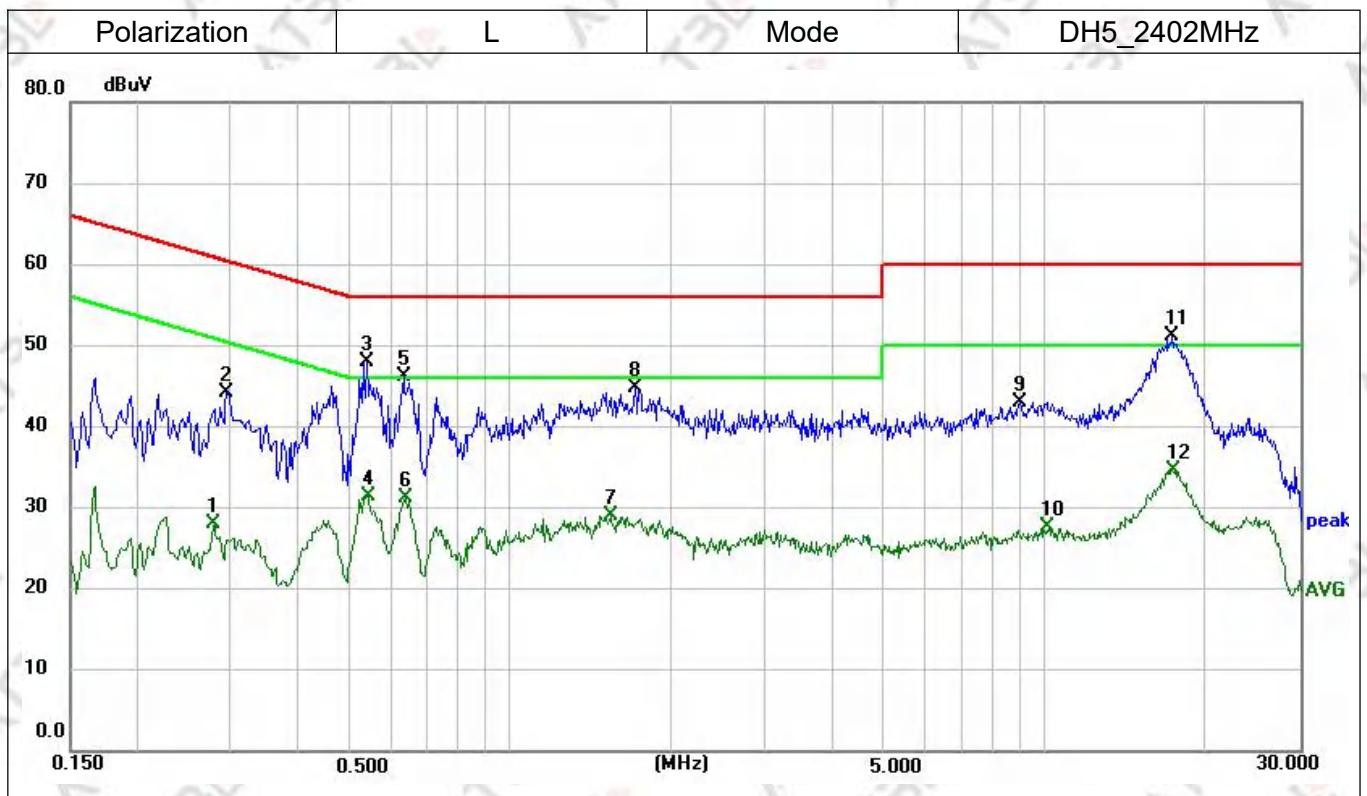
A7.AC Power-Line Conducted Emission

Note:

- 1.All modes have been tested, only worst case(DH5_2402MHz)mode 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).
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	0.4380	14.23	19.65	33.88	47.10	-13.22	AVG
2	0.4500	29.83	19.63	49.46	56.88	-7.42	peak
3	0.5340	29.44	19.58	49.02	56.00	-6.98	QP
4	0.5340	18.81	19.58	38.39	46.00	-7.61	AVG
5	0.6340	17.59	19.68	37.27	46.00	-8.73	AVG
6 *	0.6500	32.38	19.70	52.08	56.00	-3.92	peak
7	0.7220	30.03	19.75	49.78	56.00	-6.22	peak
8	0.7380	14.85	19.75	34.60	46.00	-11.40	AVG
9	0.8660	13.50	19.75	33.25	46.00	-12.75	AVG
10	1.1580	29.49	19.81	49.30	56.00	-6.70	peak
11	17.1259	15.75	22.26	38.01	50.00	-11.99	AVG
12	17.4860	31.48	22.39	53.87	60.00	-6.13	peak



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2779	8.35	19.77	28.12	50.88	-22.76	AVG
2	0.2940	24.46	19.79	44.25	60.41	-16.16	peak
3 *	0.5380	28.09	19.87	47.96	56.00	-8.04	peak
4	0.5420	11.61	19.87	31.48	46.00	-14.52	AVG
5	0.6300	26.18	19.91	46.09	56.00	-9.91	peak
6	0.6380	11.28	19.92	31.20	46.00	-14.80	AVG
7	1.5380	9.13	19.99	29.12	46.00	-16.88	AVG
8	1.7100	24.69	20.05	44.74	56.00	-11.26	peak
9	8.9940	22.46	20.61	43.07	60.00	-16.93	peak
10	10.2299	6.88	20.68	27.56	50.00	-22.44	AVG
11	17.3779	28.27	22.85	51.12	60.00	-8.88	peak
12	17.5459	11.75	22.91	34.66	50.00	-15.34	AVG

*****END*****