

Northern Bus Garage

Noise, Vibration, and Dust Monitoring Report (October 2024)

Noise, Vibration, and Dust levels were monitored as part of the reconstruction of Northern Bus Garage, 4615 14th Street, NW, Washington, DC, for the month of October 2024.

The following memorandum identifies the monitoring points and instruments, presents the data, and provides a brief analysis of the results per monthly monitoring report attached by Geo Instruments for Clark Construction. The report is organized by medium: noise, vibration, and dust. Figures and graphs are attached. The red dashed line on each of the graphs represents the monitoring thresholds, which are summarized below for each instrument.

Noise Monitoring

Five noise monitors are positioned around the perimeter of the project site. (See Figure 1) Under DC regulations, the regulatory standard is 80 dBA, measured 25 ft from the property line (20 DCMR 2802.1). Because the noise monitoring devices are placed on the property line (rather than a 25 ft offset), the monitoring threshold for site activities is adjusted to 85 dBA (assuming the noise level will dissipate). Noise levels and vibration levels were measured automatically with Micromate and Geophone Instrument.

No operating issue with the monitoring instruments was identified.

Numerous noise level exceedances at all hours of the day and all days of the week. Mic3 and Mic5 recorded their loudest exceedances outside of working hours. Mic3 also recorded over half of its exceedances out of working hours. Please see table 1 (The "Work Hours" category includes all weekend shifts and evening shifts that were worked during the month).

Vibration Monitoring

Five vibration monitors are positioned around the perimeter of the project site. (See Figure 1) Vibration thresholds are based the WMATA Design Criteria. Monitors VM-1 and VM-2 are set at a lower vibration threshold due to their proximity to the historic façade, which is more sensitive to any movement. Noise levels and vibration levels were measured automatically with Micromate and Geophone Instrument.

Table 2

Instrument Type	Monitoring Threshold
Vibration Monitor (VM-1)	0.2 in/sec
Vibration Monitor (VM-2)	0.2 in/sec
Vibration Monitor (VM-3)	2.0 in/sec
Vibration Monitor (VM-4)	2.0 in/sec
Vibration Monitor (VM-5)	2.0 in/sec

No operating issue with the monitoring instruments was identified.

Graphs showing monitoring results are presented in Graphs 1 to 5.

There were two (2) vibration exceedances in the month of October.

- VM1 – Exceedance with a reading of 0.30 in/sec on October 28 at 13:37.
 - Utility contractor was operating equipment next to monitoring station.
- VM1 – Exceedance with a reading of 0.21 in/sec on October 28 at 14:18.
 - Utility contractor was operating equipment next to monitoring station.

Dust Monitoring Threshold Values and Exceedances:

Three dust monitors are positioned at the project site. (See Figure 2) EPA regulatory thresholds are based on a 24-hour monitoring period; the project has adopted thresholds to monitor site levels and provide an indication of when EPA standards might be exceeded. (See Table 3) Dust measurements were monitored using Aeroqual Dust Sentry Pro.

Table 3

Dust Monitoring Measurement	Monitoring Threshold
Particulates (PM2.5)	40 µg/m ³
Particulates (PM10)	50 µg/m ³

No operating issue with the monitoring instruments was identified.

Graphs showing monitoring results are presented in Graphs 6 to 11.

There were five (5) Air Quality exceedances in the month of October.

- DM3 – Exceedance of the PM10 limit on 10/10 at 11:02 with a reading of $61 \mu\text{g}/\text{m}^3$.
 - Weather history shows wind gusts of 23MPH during this period.
- DM2 – Exceedance of the PM2.5 limit on 10/20 at 18:04 with a reading of $41 \mu\text{g}/\text{m}^3$.
 - Weather history shows sustained wind during this period.
 - Site was also closed at this time.
- DM2 – Exceedance of the PM2.5 limit on 10/22 at 08:49 with a reading of $41 \mu\text{g}/\text{m}^3$.
 - Weather history shows sustained wind during this period.
- DM3 – Exceedance of the PM2.5 limit on 10/24 at 07:47 with a reading of $61 \mu\text{g}/\text{m}^3$.
 - Weather history shows wind gust of 26MPH during this period.
- DM3 – Exceedance of the PM10 limit on 10/24 at 07:47 with a reading of $65 \mu\text{g}/\text{m}^3$.
 - Weather history shows wind gust of 26MPH during this period.

Figure 1: Vibration and Noise Monitor Location Plan

16/06/2023, 13:4

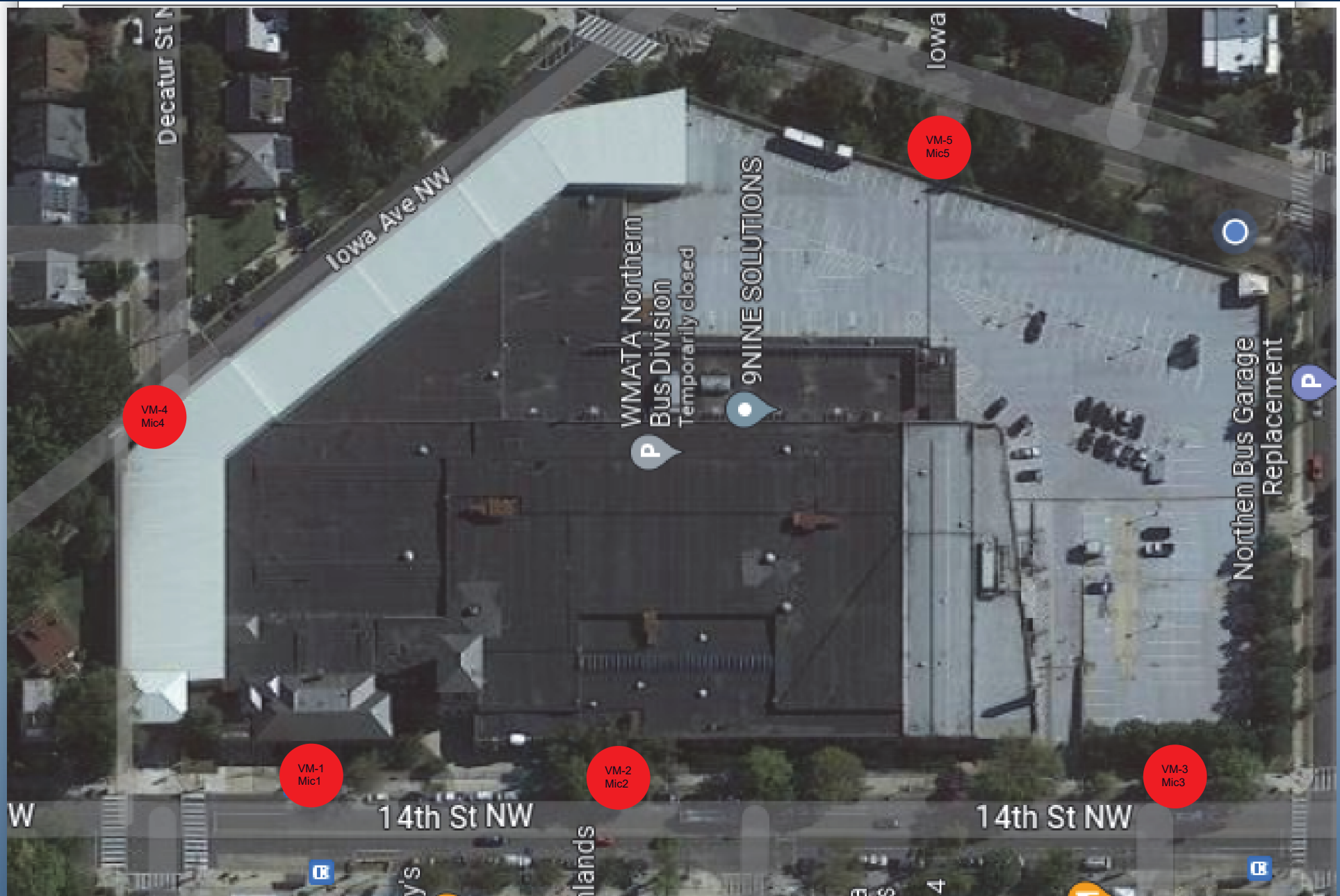


Figure 2: Dust Monitor Location Plan

16/06/2023, 13:4

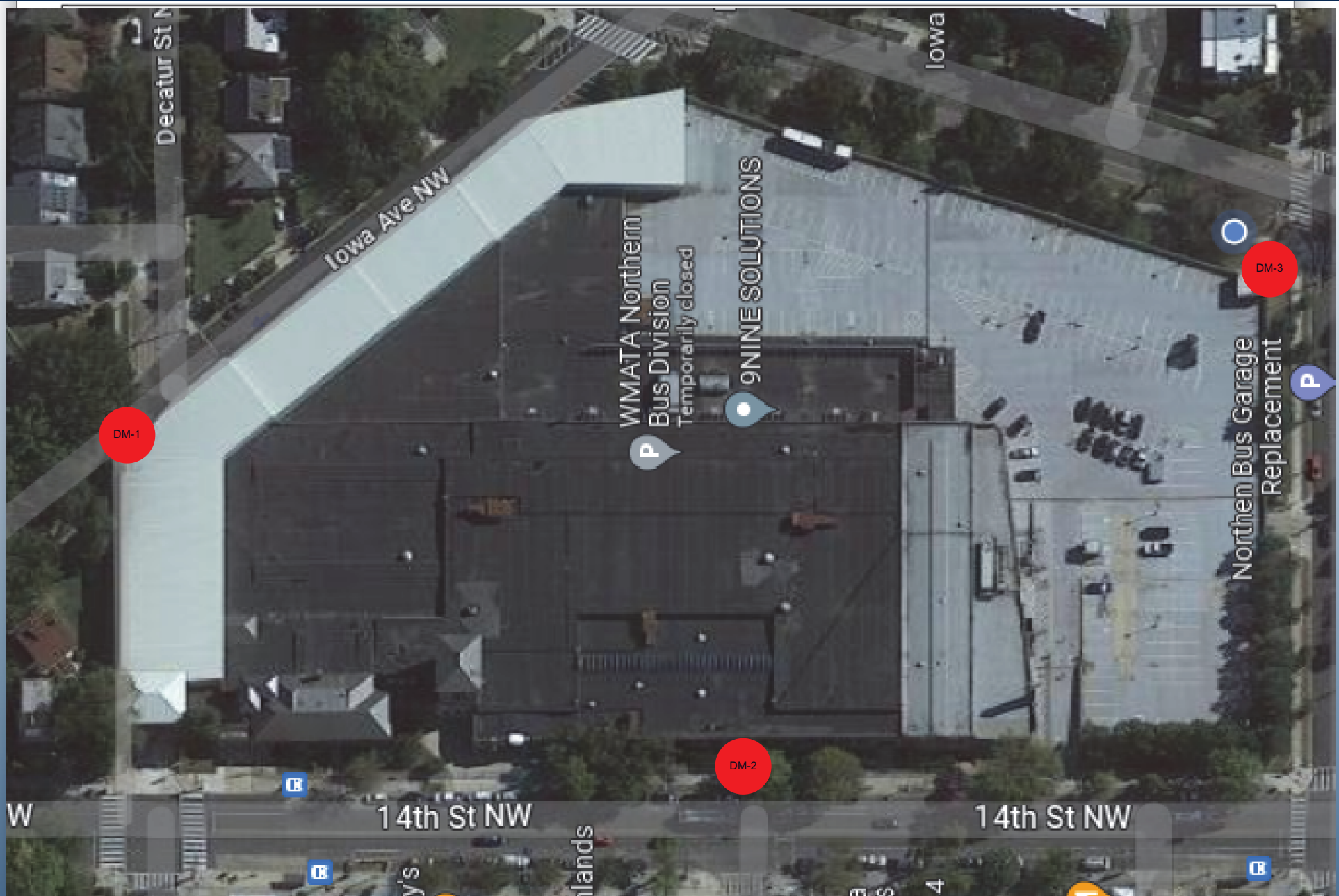


Table 1: Noise Summaries

VM1-MIC		
	Exceedance	Percentage
Work hours	492	55.91%
After hours	200	22.73%
Weekends	188	21.36%
Total	880	100%

VM1-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	119.4	108.6	108.1
Lmin (dBA)	76.7	52.4	62.5
L10 (dBA)	111	77	78
L90 (dBA)	81	56	64
Leq (dBA)	108.2	76	78.1

VM2-MIC		
	Exceedance	Percentage
Work hours	338	59.82%
After hours	126	22.30%
Weekends	101	17.88%
Total	565	100%

VM2-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	117.8	111.4	109.3
Lmin (dBA)	72.3	55.2	50.1
L10 (dBA)	110	71	73
L90 (dBA)	81	64	56
Leq (dBA)	105	82.4	78.7

VM3-MIC		
	Exceedance	Percentage
Work hours	545	49.28%
After hours	307	27.76%
Weekends	254	22.97%
Total	1106	100%

VM3-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	109.3	110	111.1
Lmin (dBA)	69.6	61.7	67.3
L10 (dBA)	86	75	79
L90 (dBA)	72	63	69
Leq (dBA)	80.8	78.1	78.8

VM4-MIC		
	Exceedance	Percentage
Work hours	437	89.37%
After hours	30	6.13%
Weekends	22	4.50%
Total	489	100%

VM4-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	104.3	95.6	100.2
Lmin (dBA)	69.9	47	46.7
L10 (dBA)	87	64	64
L90 (dBA)	74	50	50
Leq (dBA)	83.5	69.4	72.1

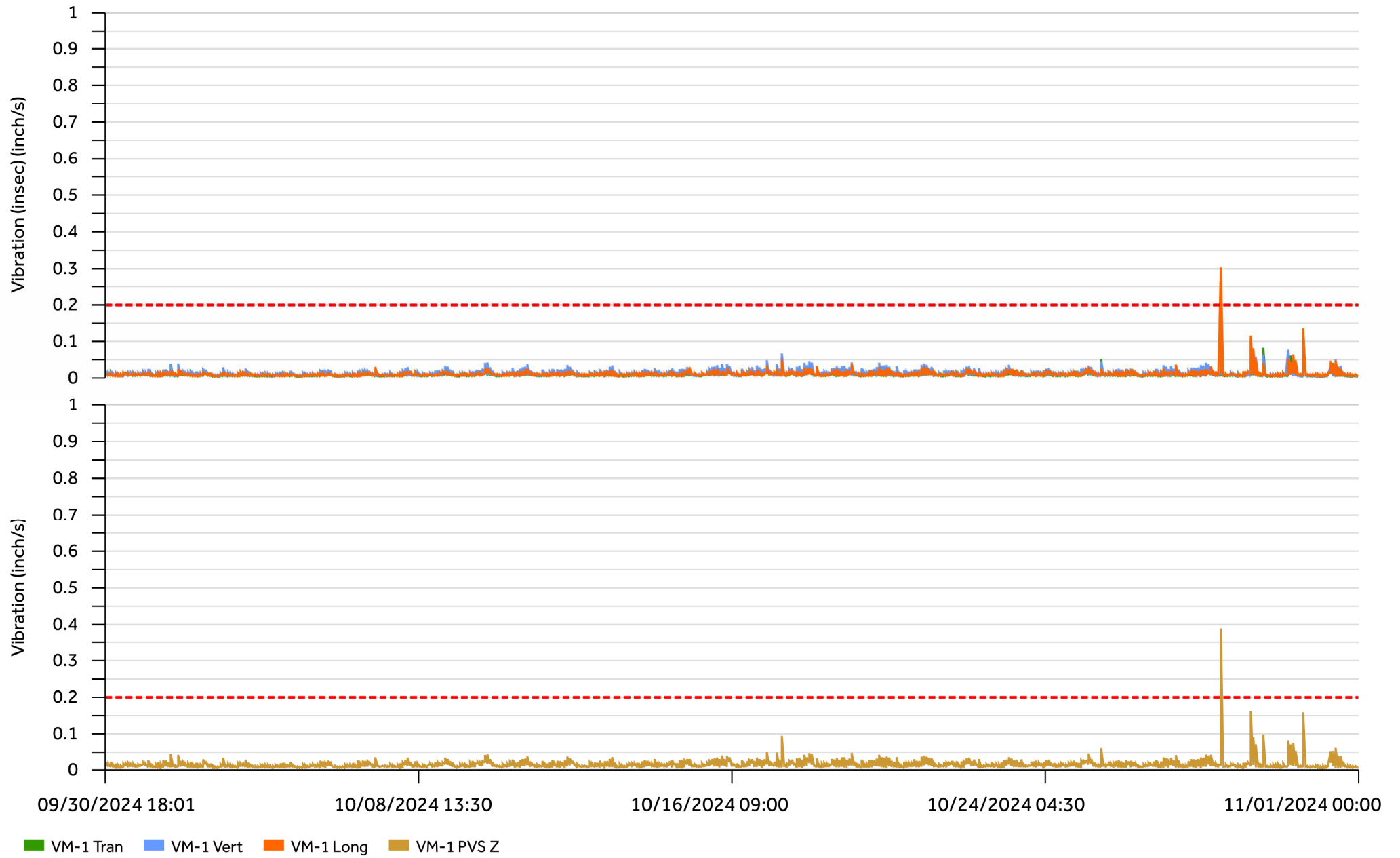
VM5-MIC		
	Exceedance	Percentage
Work hours	161	55.52%
After hours	72	24.83%
Weekends	57	19.66%
Total	290	100%

VM5-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	107.6	105	110.7
Lmin (dBA)	63.5	47.7	44.4
L10 (dBA)	84	65	65
L90 (dBA)	64	53	51
Leq (dBA)	84.7	74.6	82

Summary tables contain values for working hours, after hours, and weekend time periods:

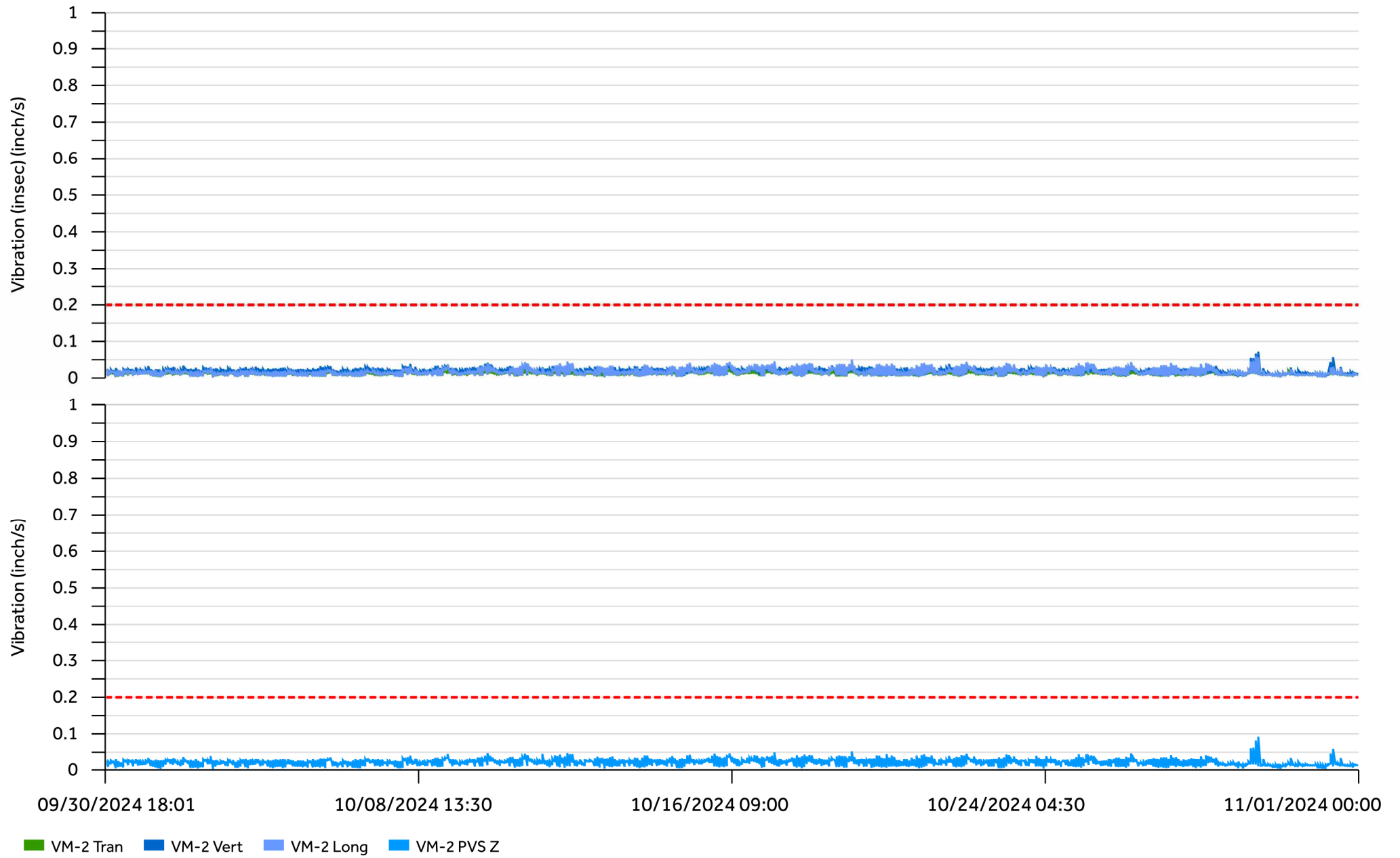
- Lmax: Highest Maximum Noise Level recorded for the month, in dBA.
- Lmin: Highest Minimum Noise Level recorded for the month, in dBA.
- L10: Highest noise level that was exceeded 10% of the time of all recording periods this month, in dBA.
- L90: Highest noise level that was exceeded 90% of the time of all recording periods this month, in dBA.
- Leq: Highest Equivalent Continuous Sound Level, or 'average' of all recording periods this month, in dBA.

Graph 1
VM-1 - Vibration Monitor



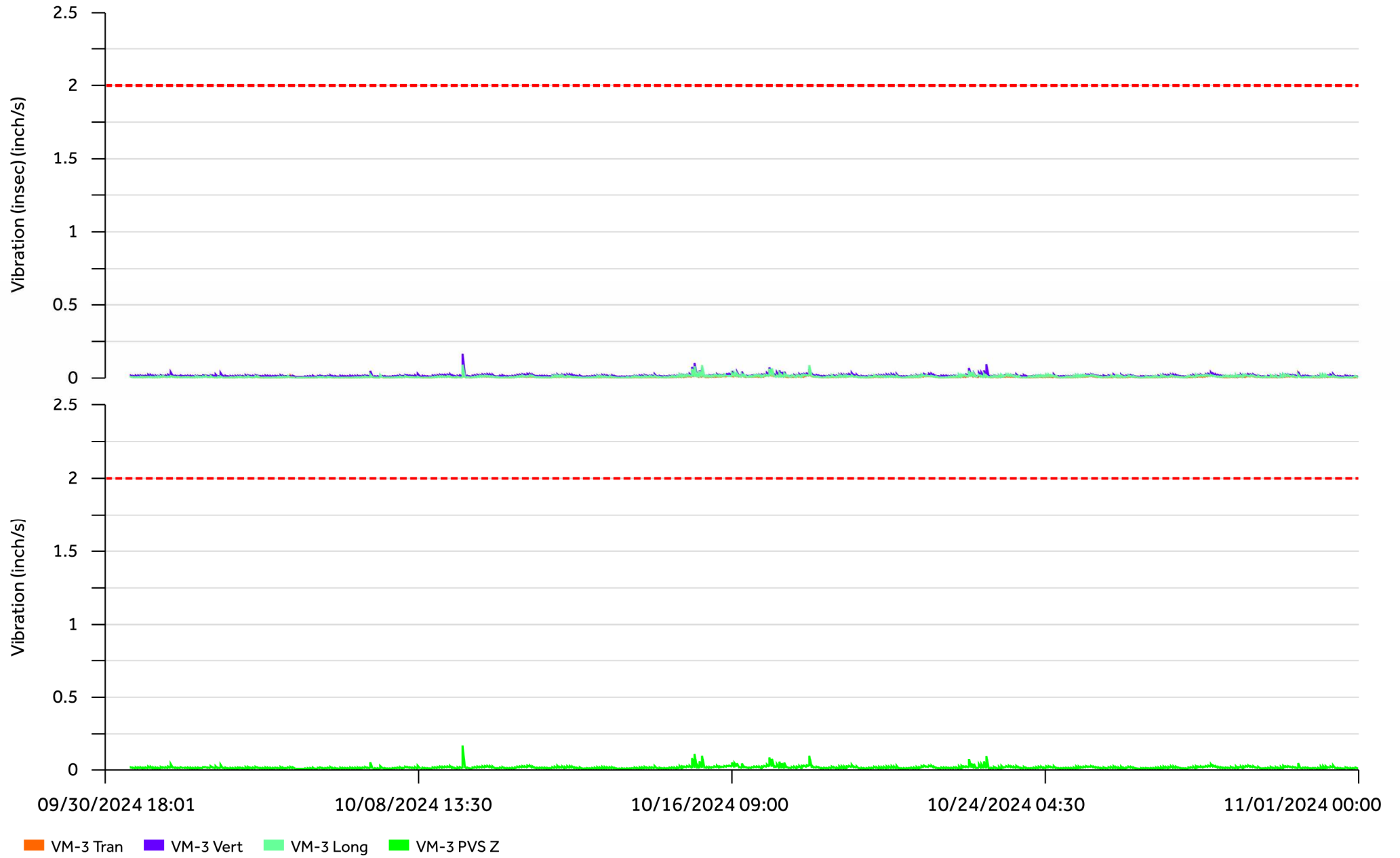
Graph 2

VM-2- Vibration Monitor



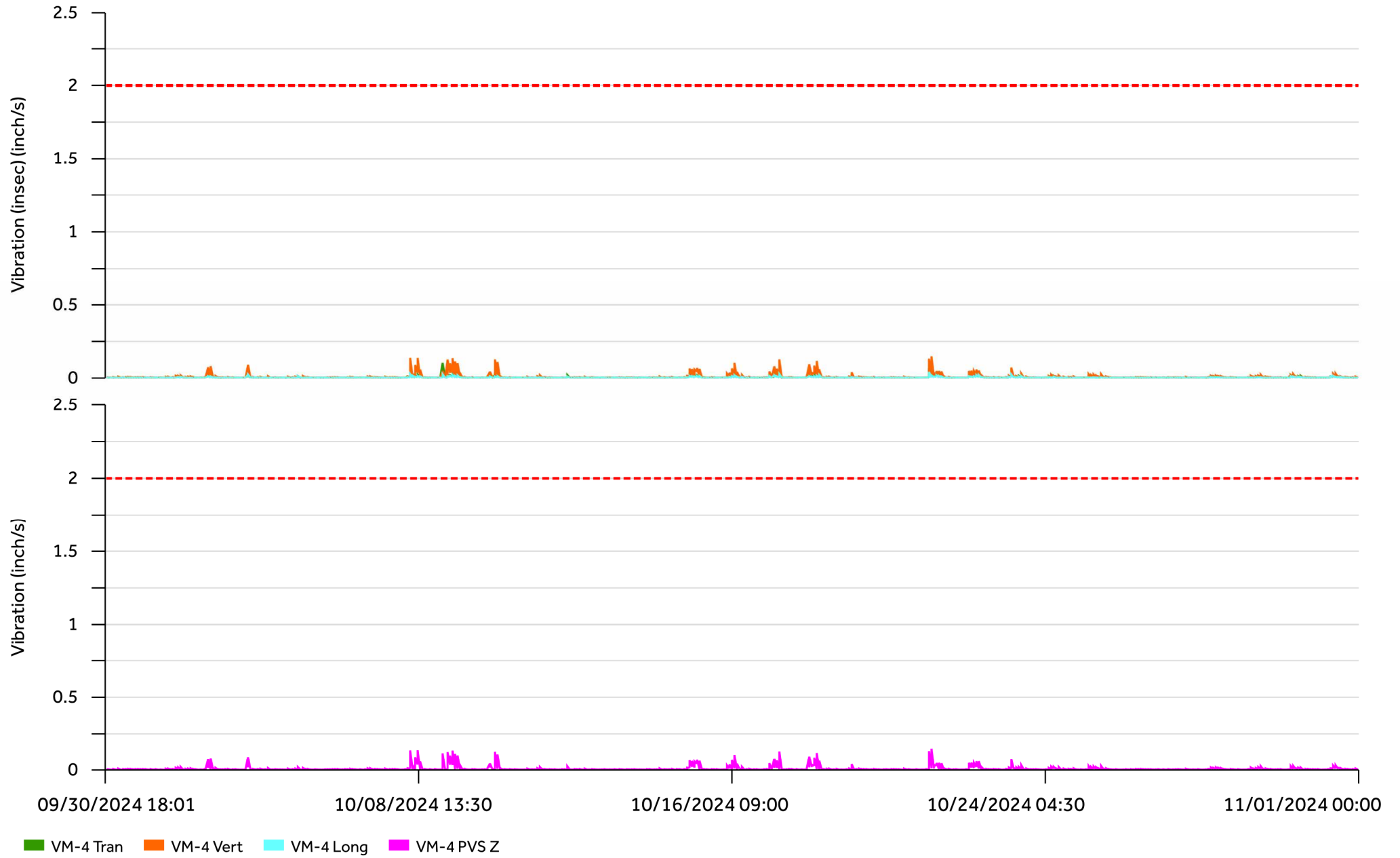
Graph 3

VM-3- Vibration Monitor

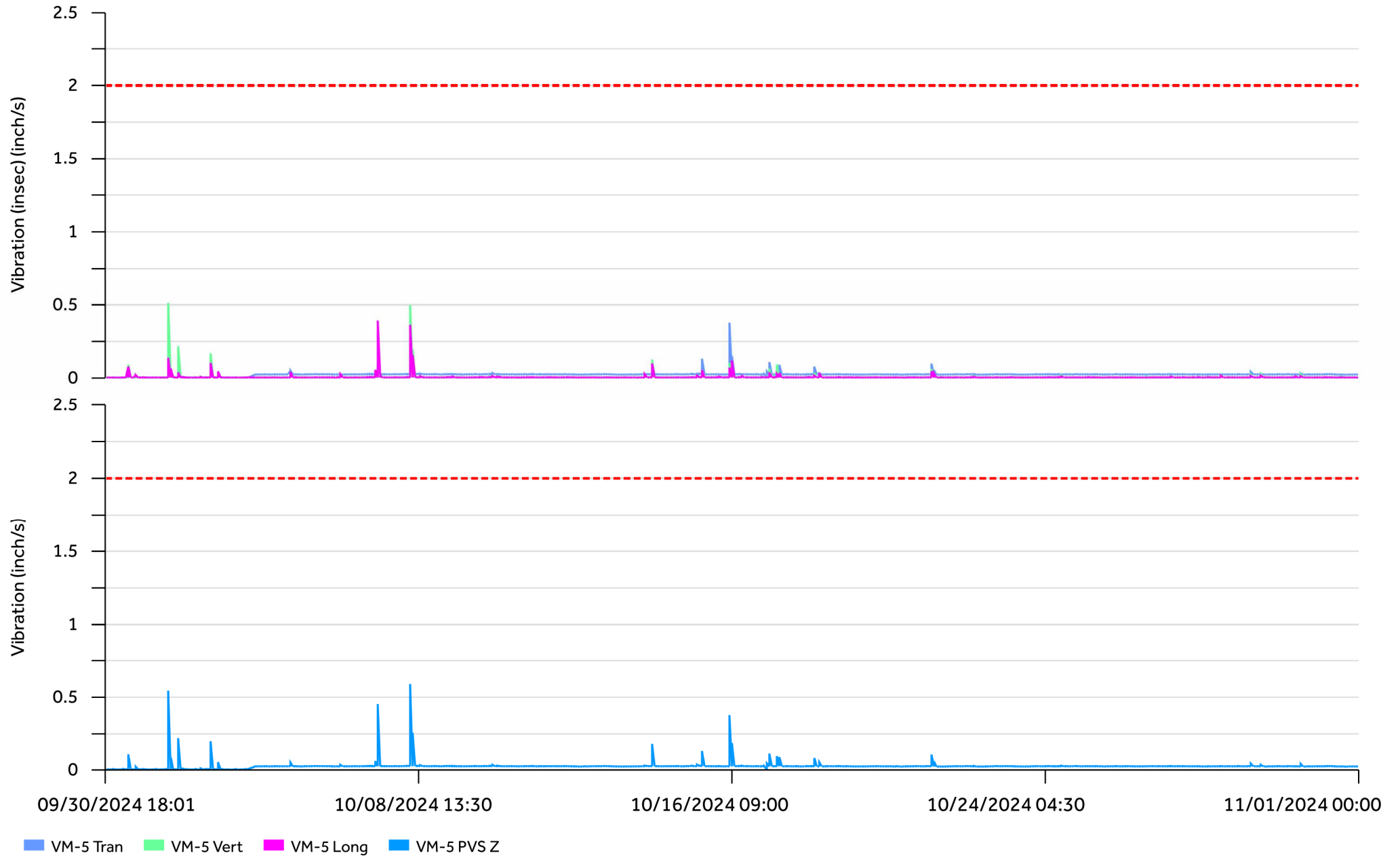


Graph 4

VM-4- Vibration Monitor

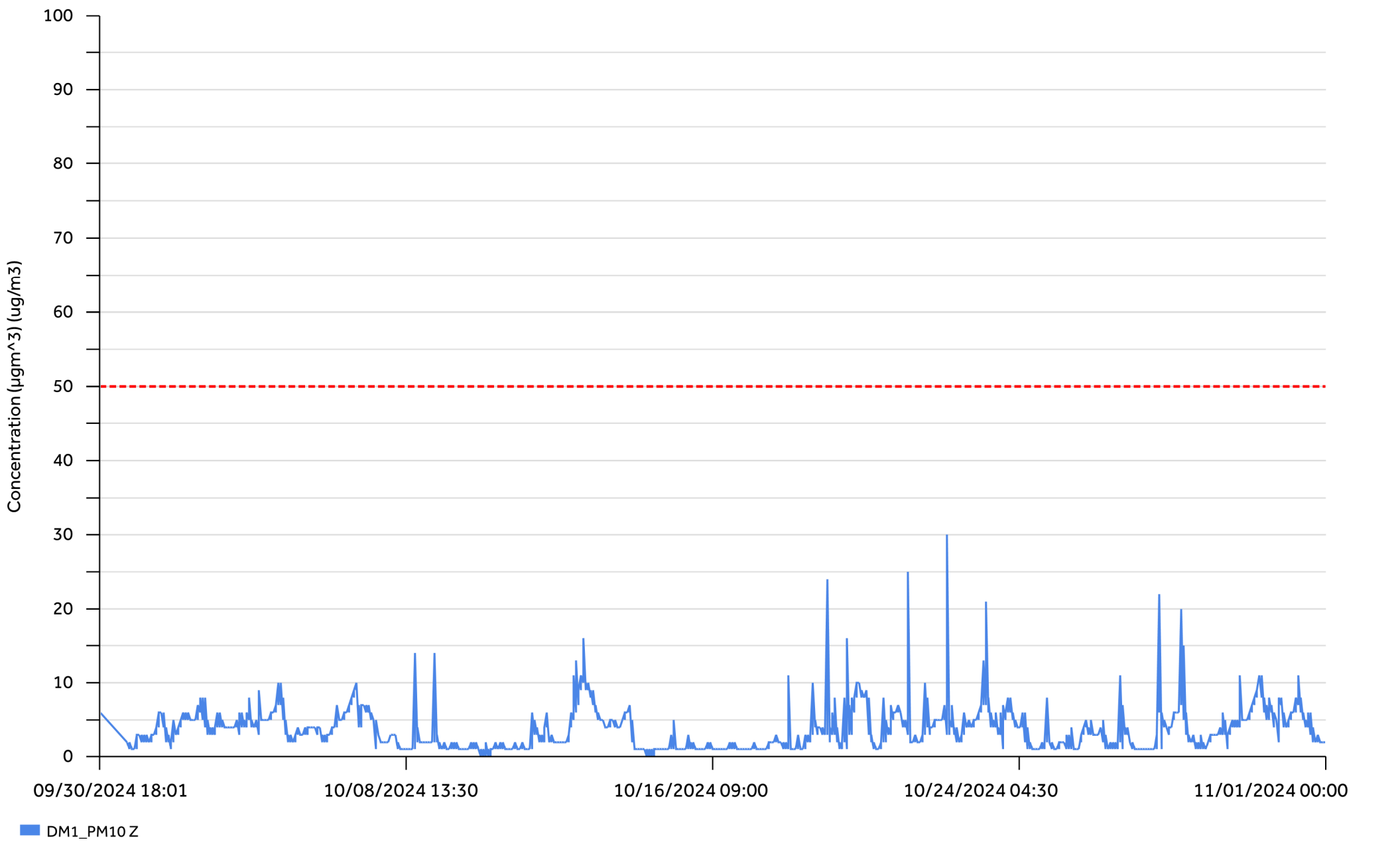


Graph 5
VM-5- Vibration Monitor



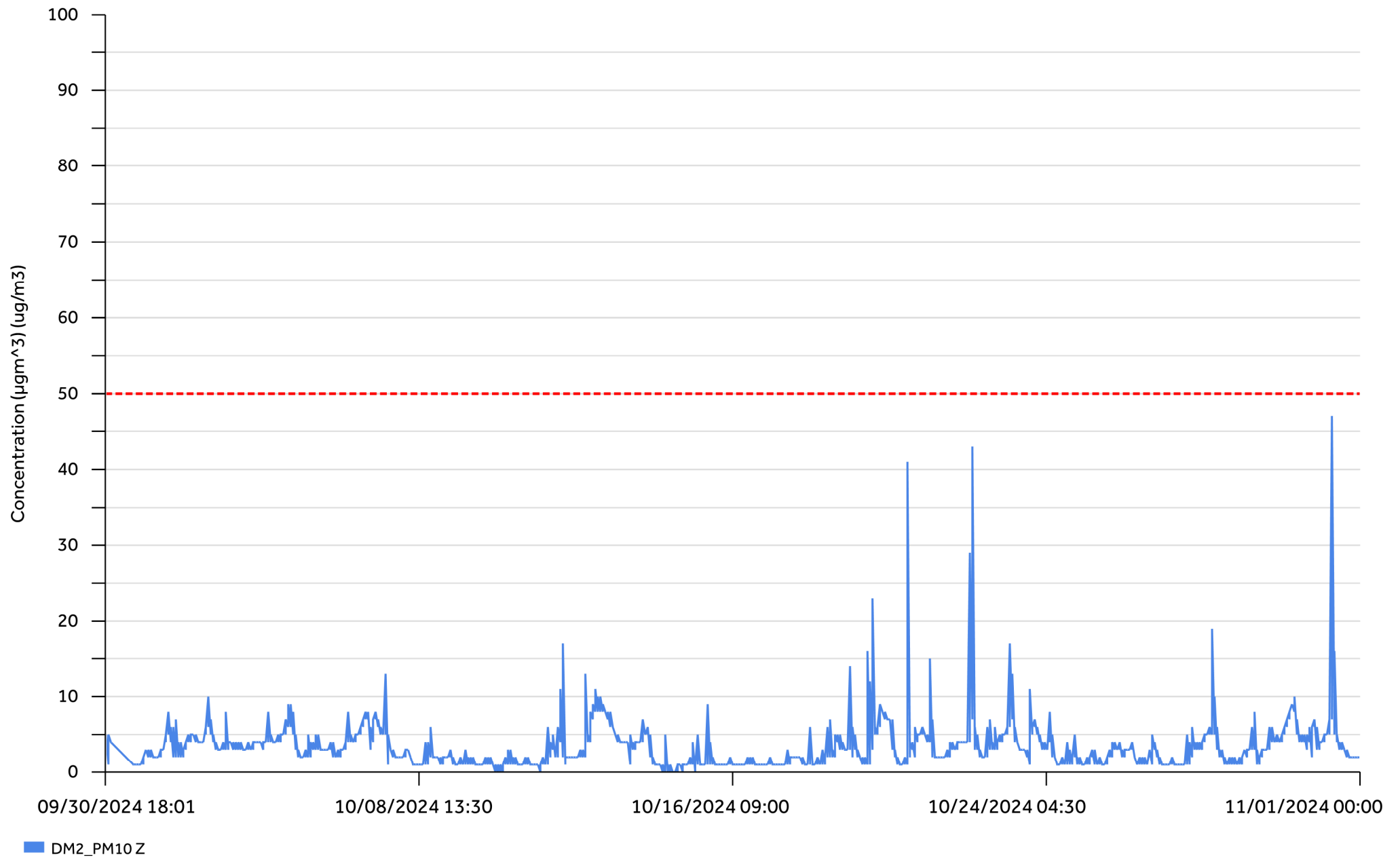
Graph 6

DM1 - PM10



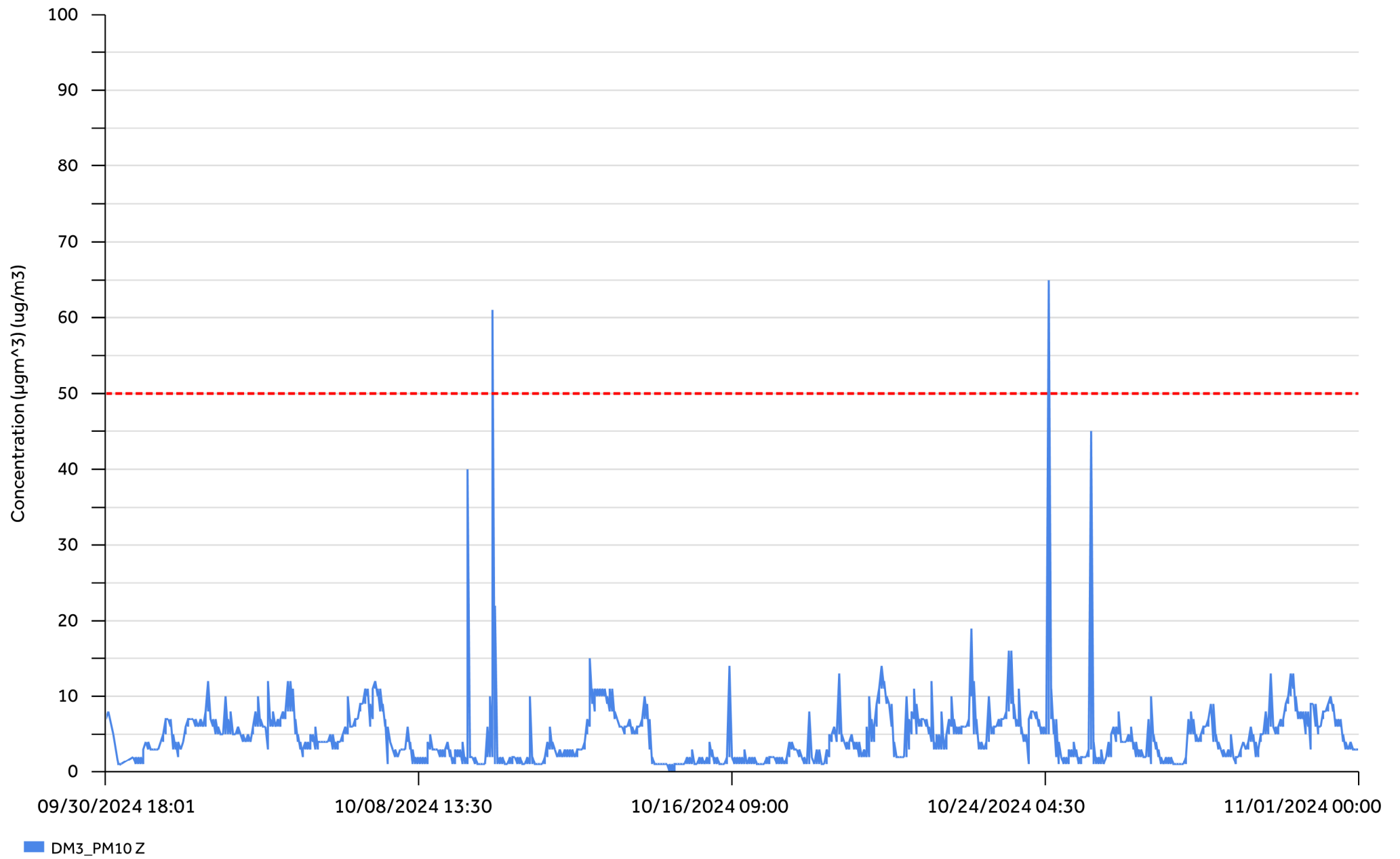
Graph 7

DM2-PM10



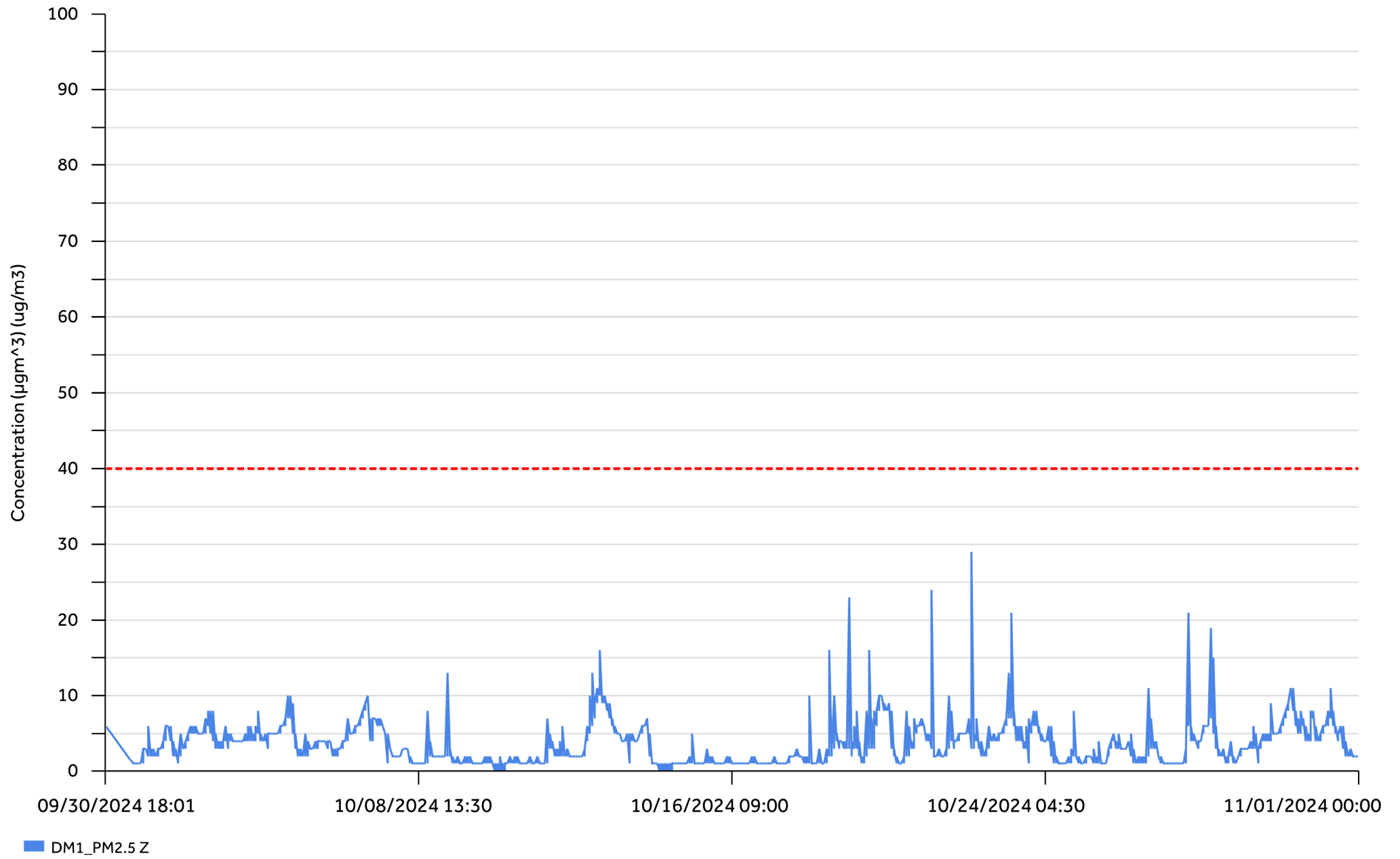
Graph 8

DM3-PM10



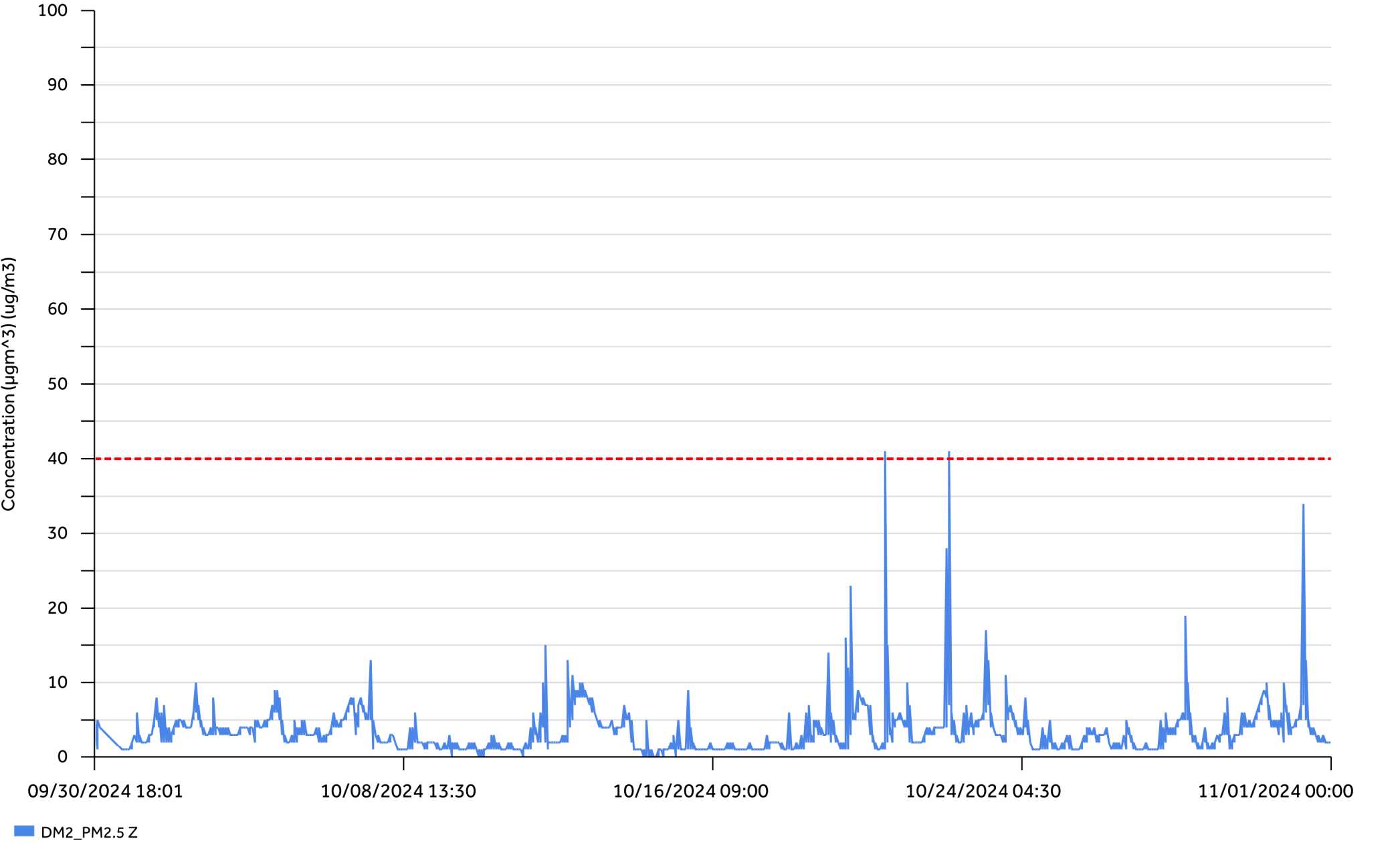
Graph 9

DM1-PM2.5



Graph 10

DM2-PM2.5



Graph 11

DM3-PM2.5

