

Northern Bus Garage

Noise, Vibration, and Dust Monitoring Report (June 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 June 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. Mic 1 recorded the highest noise levels of any location after work hours and on weekends. In addition, Mic 1, Mic 3, and Mic 5 were similar to one another with 54%, 57%, and 55% of the exceedances coming outside of working hours, respectively. Mic 4 had its loudest recorded exceedance outside 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 June.

1. VM1 – Exceedance on the Vertical channel with a reading of 1.02 in/sec on 6/21 at 08:45.
 - o Due to an employee installing silt socks next to the monitoring station.
2. VM2 – Exceedance on the Vertical channel with a reading of 0.30 in/sec on 6/14 at 12:04
 - o Due to excavation work adjacent to the 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 6-11.

DM1 – Exceedance of the PM_{2.5} limit with readings of 64 µg/m³ on 6/4 at 13:39 and an exceedance of the PM₁₀ limit with readings of 103 µg/m³ on 6/4 at 13:39.

- Caused by wind gust.

DM1 – Exceedance of the PM_{2.5} limit with a reading 45 µg/m³ on 6/6 at 09:54 and Exceedance of the PM₁₀ limit with readings of 67 µg/m³ on 6/6 on 09:54.

- Occured during a windy day.

Figure 1: Vibration and Noise Monitor Location Plan

16/06/2023, 13:43:04

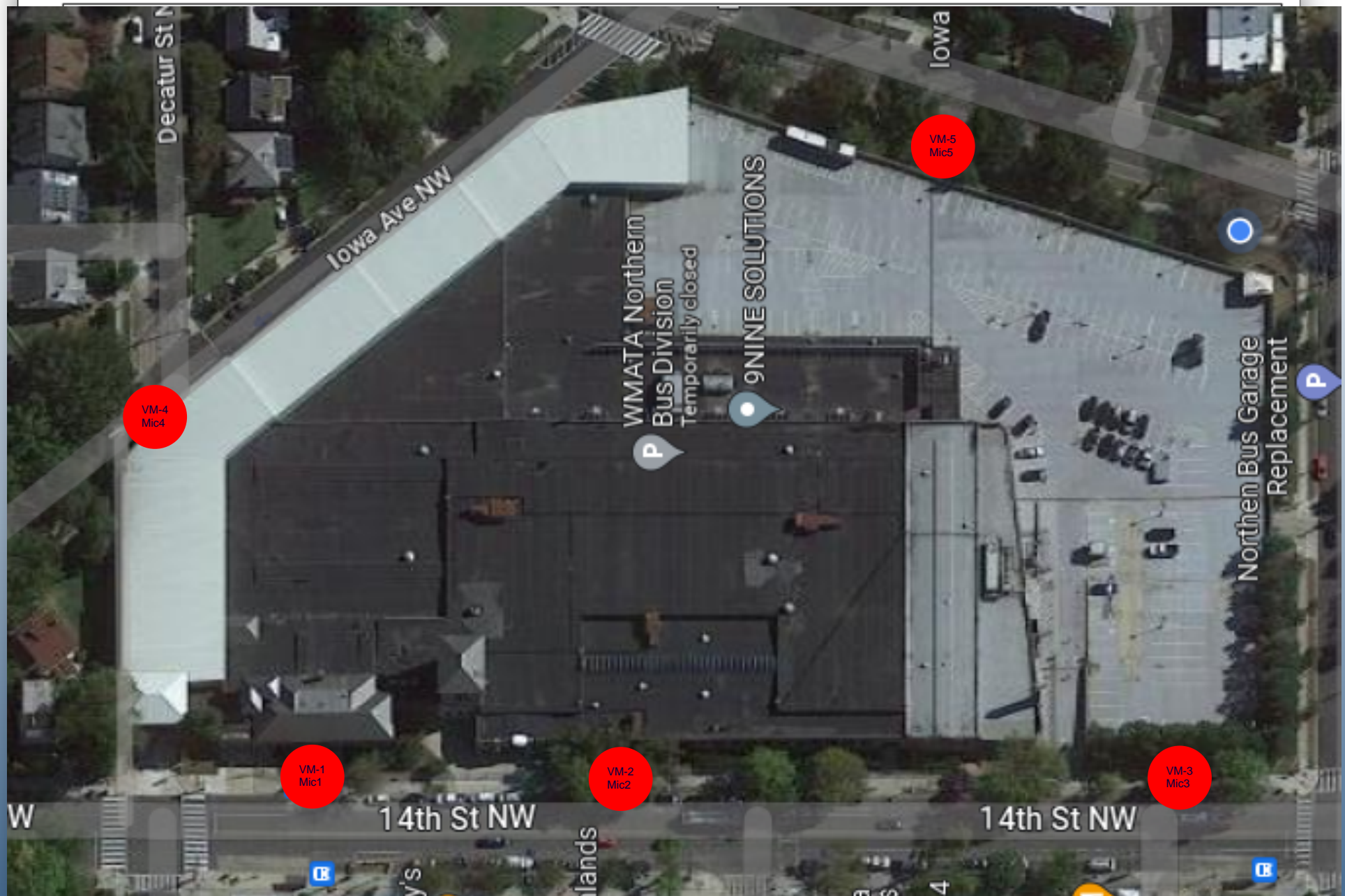


Figure 2: Dust Monitor Location Plan

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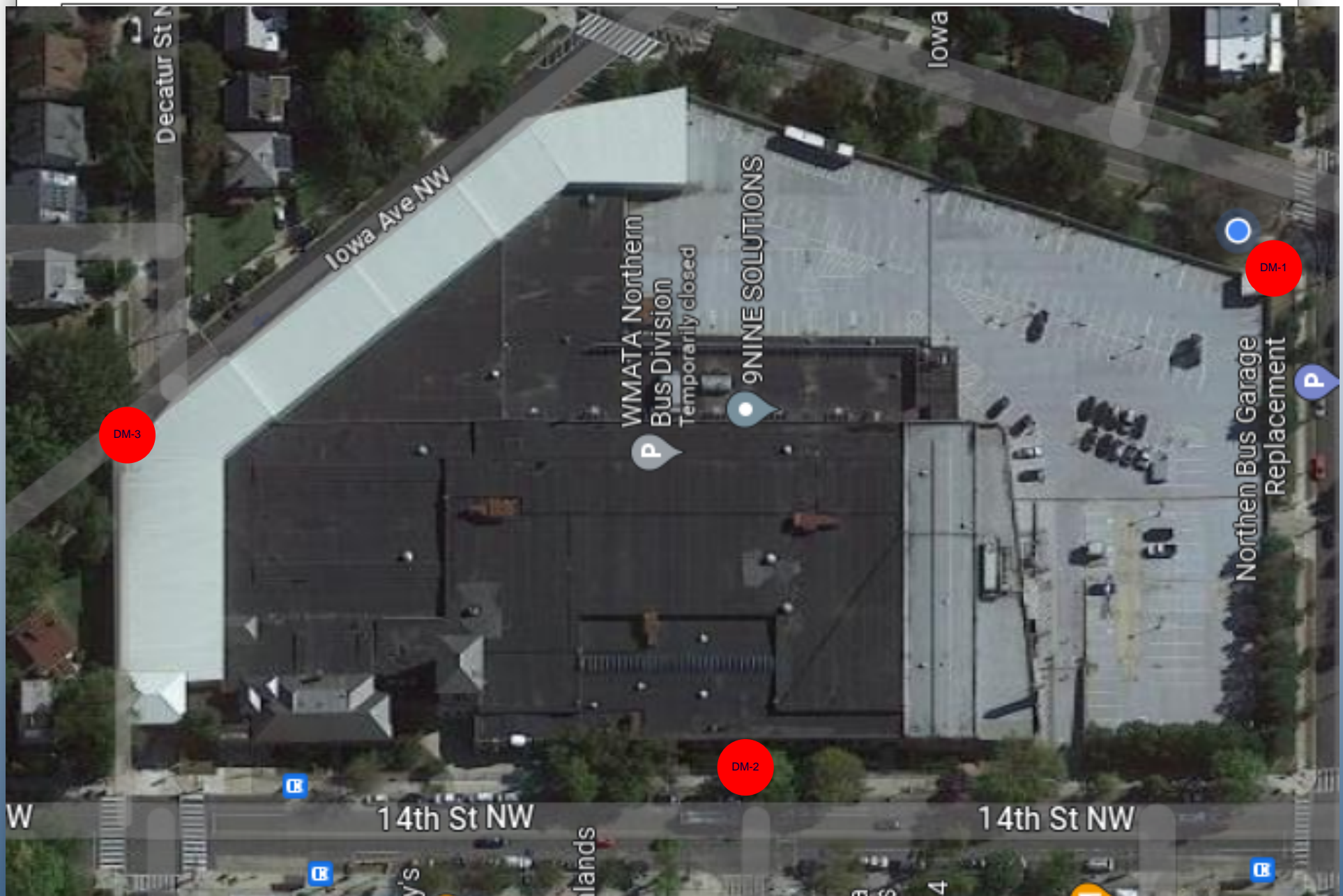


Table 1: Noise Summaries

VM1-MIC		
	Exceedance	Percentage
Work hours	631	46.47%
After hours	355	26.14%
Weekends	372	27.39%
Total	1358	100%

VM1-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	116.1	119.7	117.7
Lmin (dBA)	69	54.9	74.3
L10 (dBA)	93	74	78
L90 (dBA)	78	60	77
Leq (dBA)	87.6	88.8	86.4

VM2-MIC		
	Exceedance	Percentage
Work hours	305	51.00%
After hours	160	26.76%
Weekends	133	22.24%
Total	598	100%

VM2-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	117.4	114.7	110.7
Lmin (dBA)	67.9	55.2	54.2
L10 (dBA)	82	73	81
L90 (dBA)	69	59	62
Leq (dBA)	86.4	85.4	79.5

VM3-MIC		
	Exceedance	Percentage
Work hours	541	43.18%
After hours	407	32.48%
Weekends	305	24.34%
Total	1253	100%

VM3-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	109.3	117.1	112.3
Lmin (dBA)	64.6	55.8	55.3
L10 (dBA)	82	74	76
L90 (dBA)	69	58	60
Leq (dBA)	80.7	83.5	81.2

VM4-MIC		
	Exceedance	Percentage
Work hours	218	84.17%
After hours	23	8.88%
Weekends	18	6.95%
Total	259	100%

VM4-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	110.5	111	104.3
Lmin (dBA)	89.9	45	47.9
L10 (dBA)	103	62	59
L90 (dBA)	94	49	50
Leq (dBA)	98.9	80.4	73

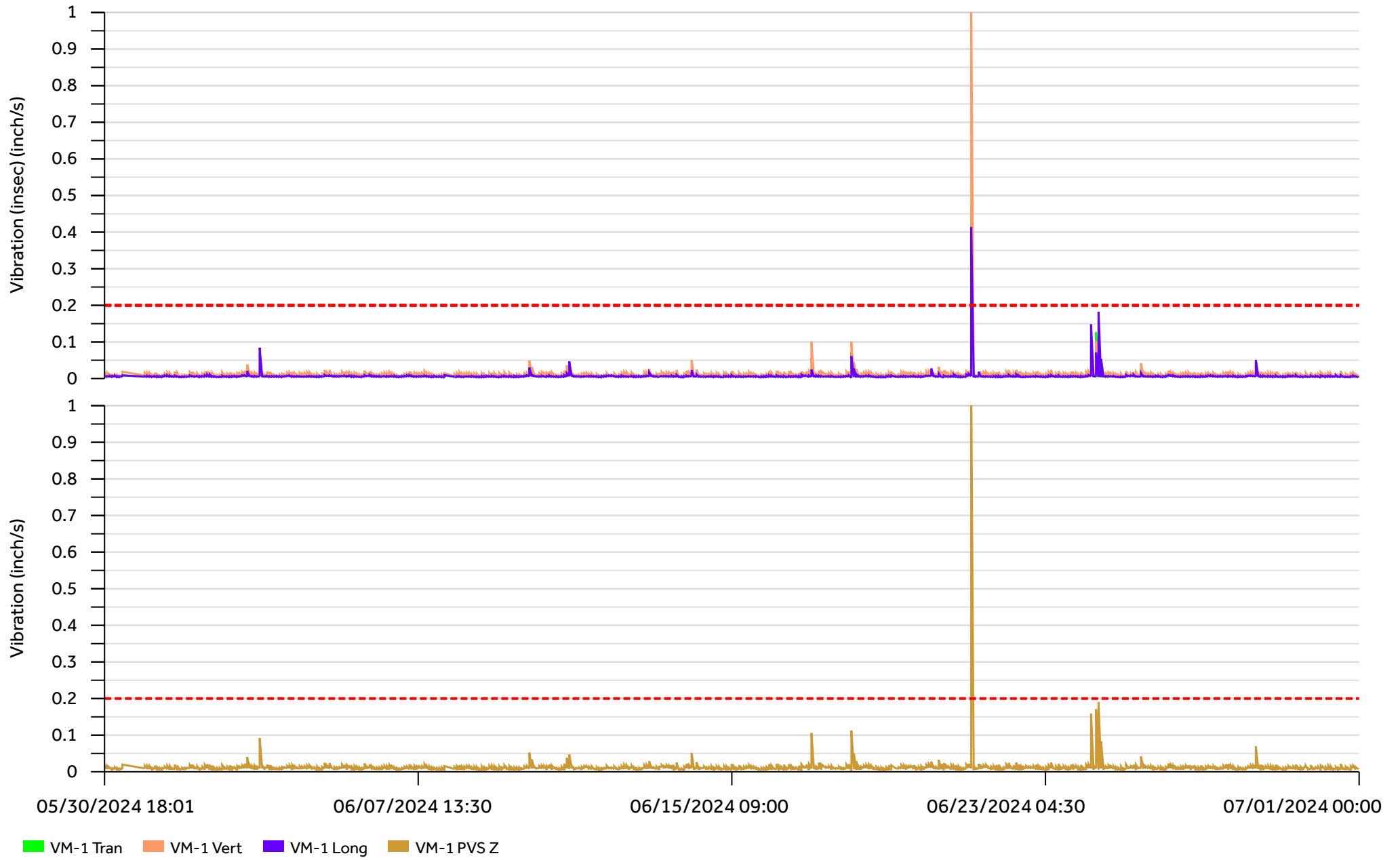
VM5-MIC		
	Exceedance	Percentage
Work hours	112	44.98%
After hours	55	22.09%
Weekends	82	32.93%
Total	249	100%

VM5-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	106.7	109	105.1
Lmin (dBA)	57.1	54.8	55.2
L10 (dBA)	70	69	70
L90 (dBA)	60	57	57
Leq (dBA)	77.7	79.1	75.5

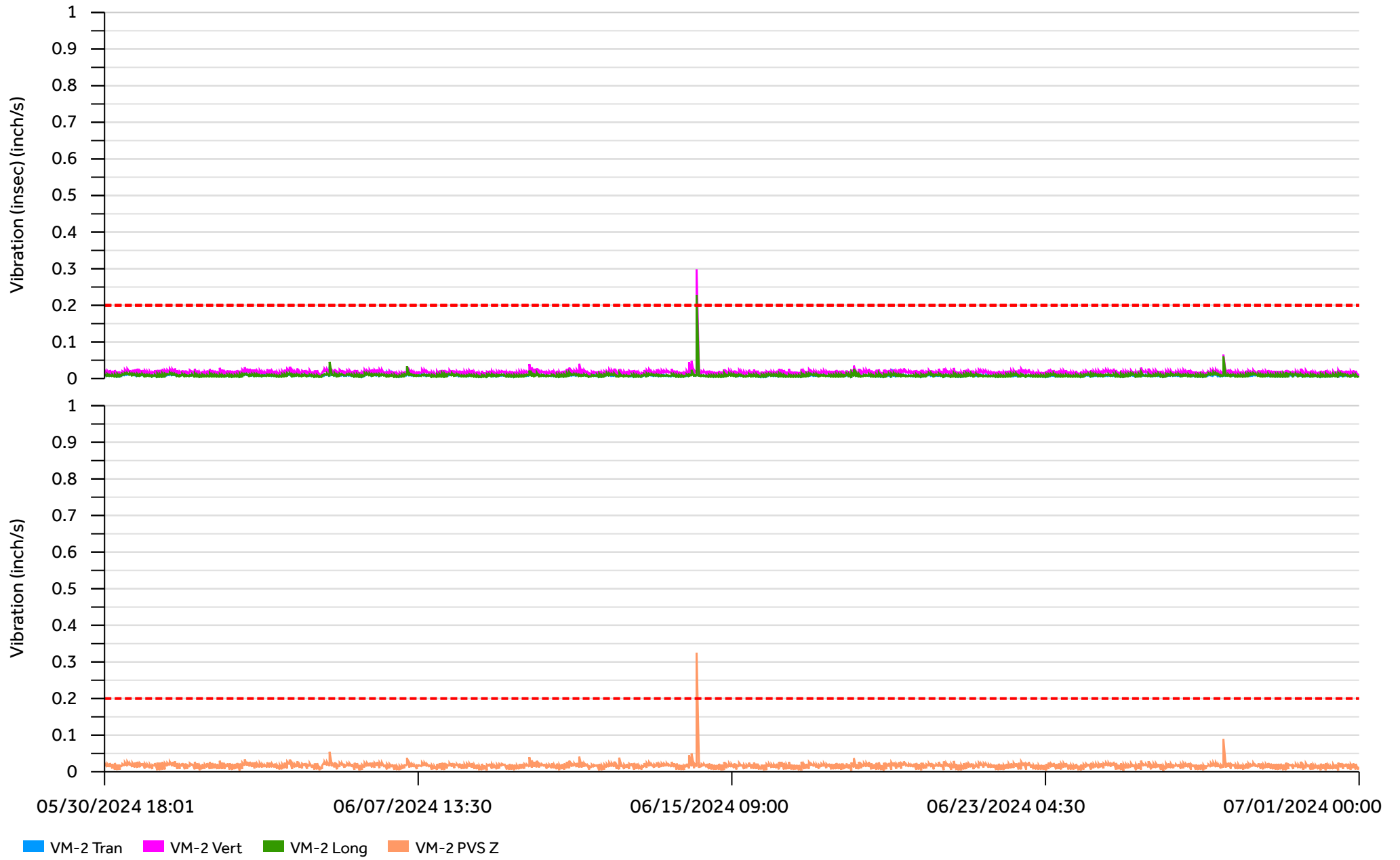
Summary tables contain values for working hours, after hours, and weekend time periods:

- 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.

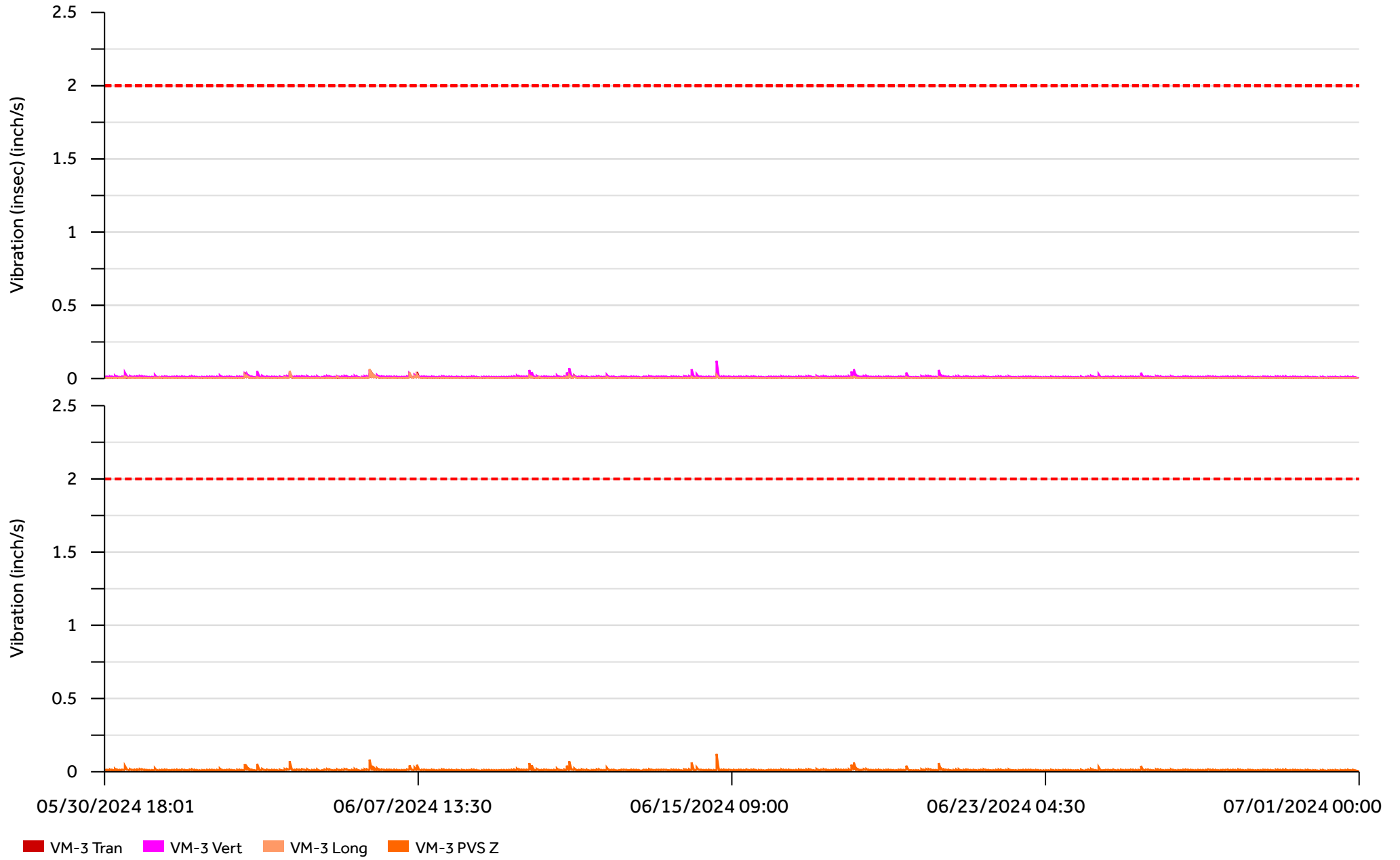
VM-1 - Vibration Monitor



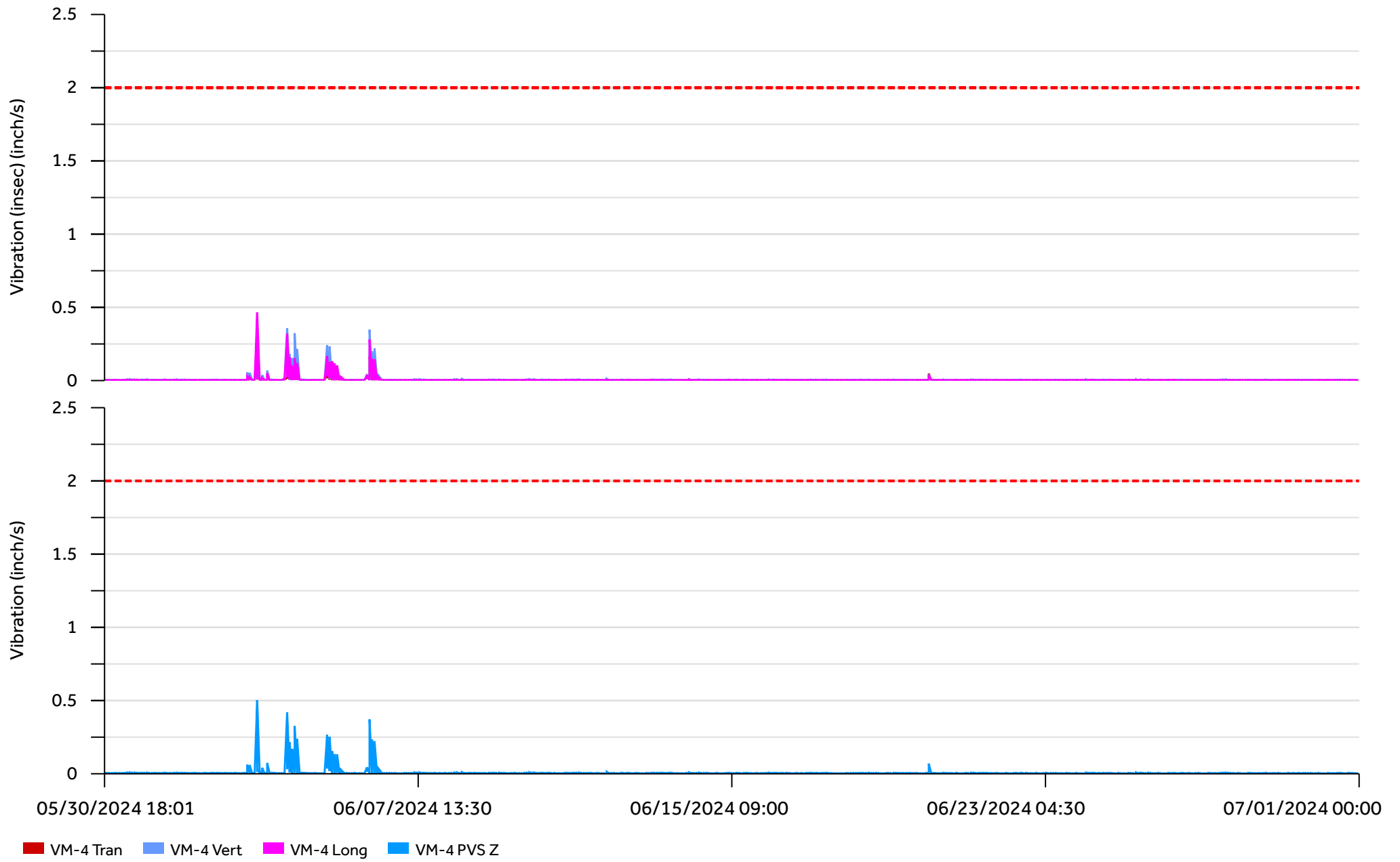
VM-2- Vibration Monitor



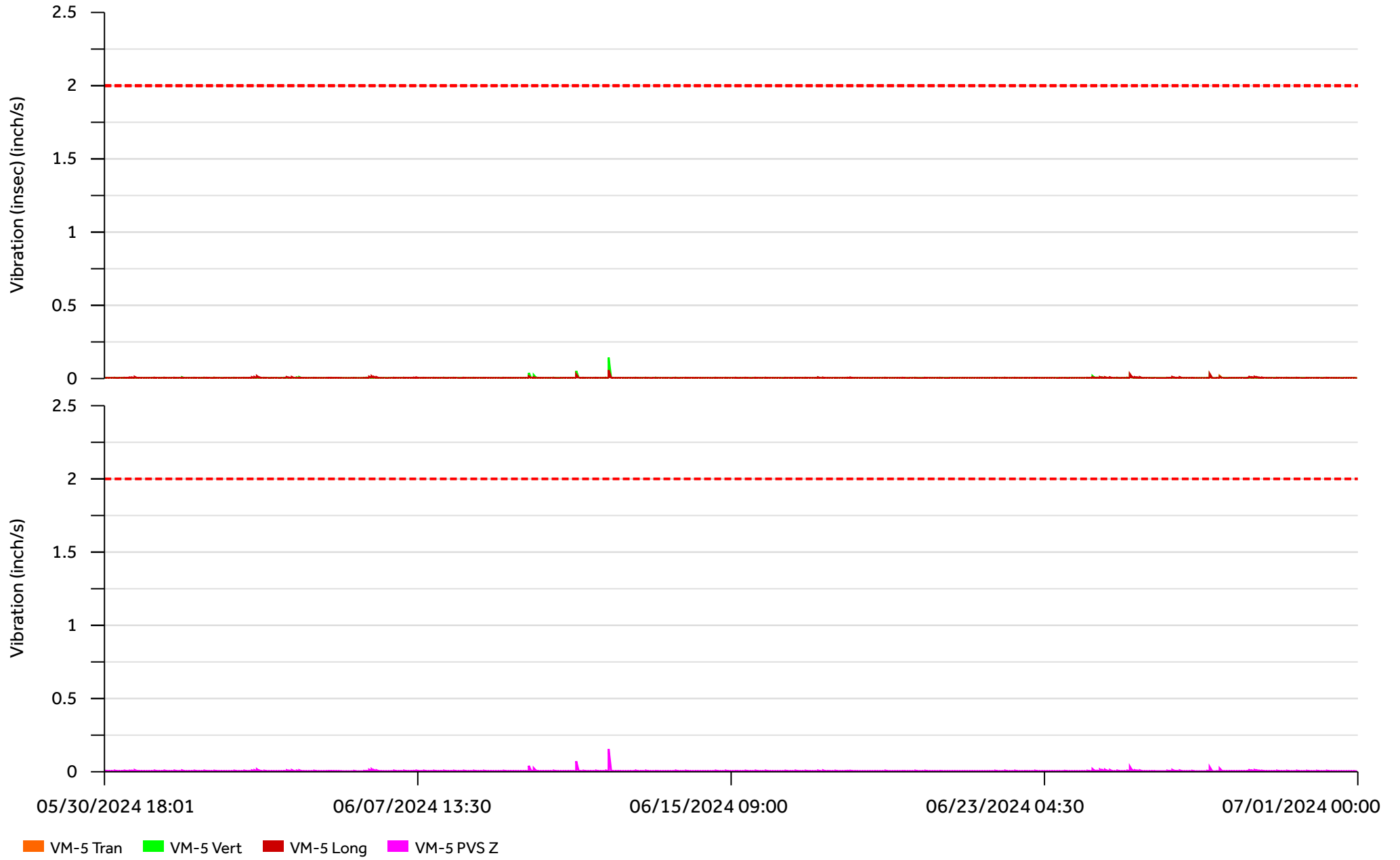
VM-3- Vibration Monitor



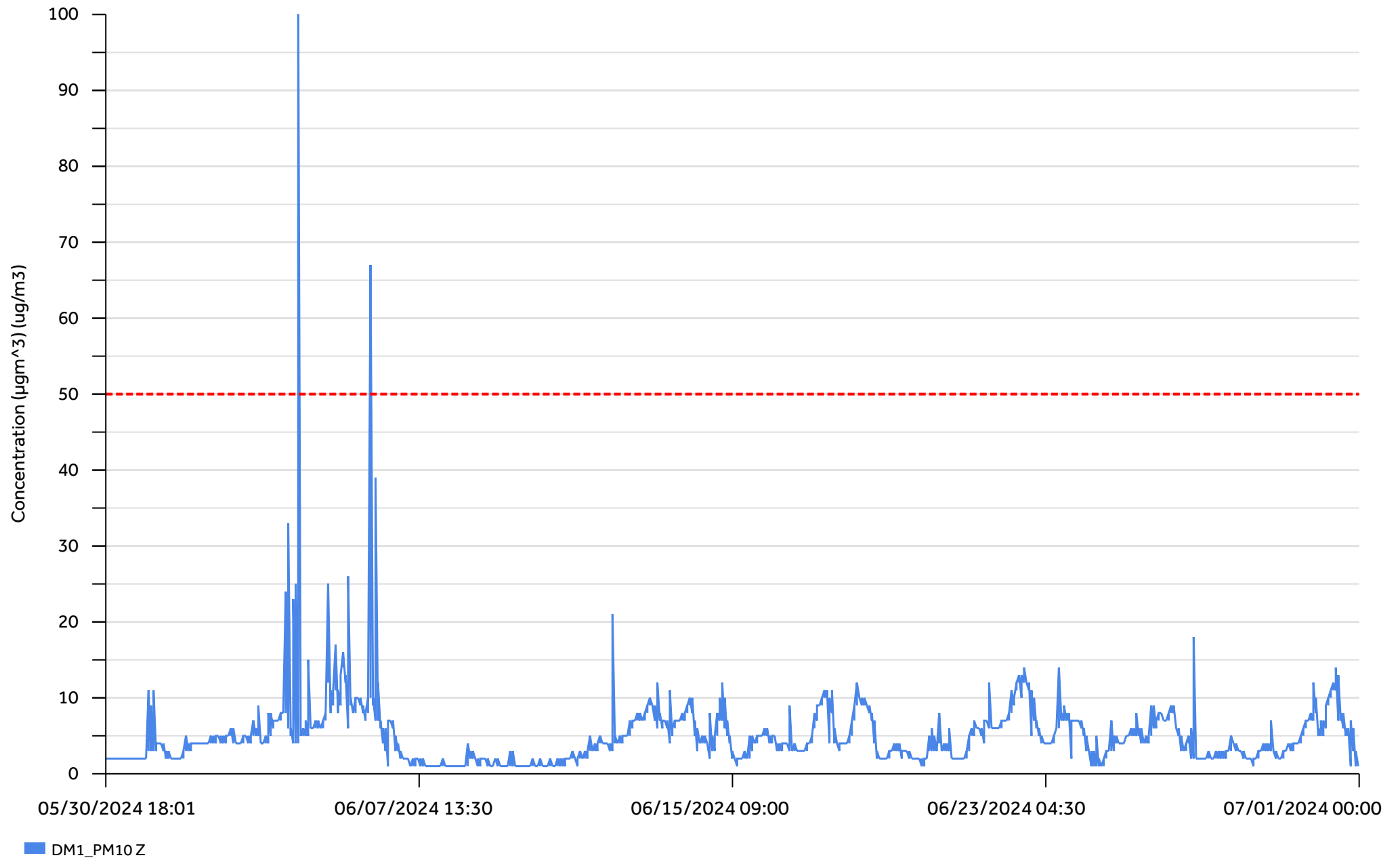
VM-4- Vibration Monitor



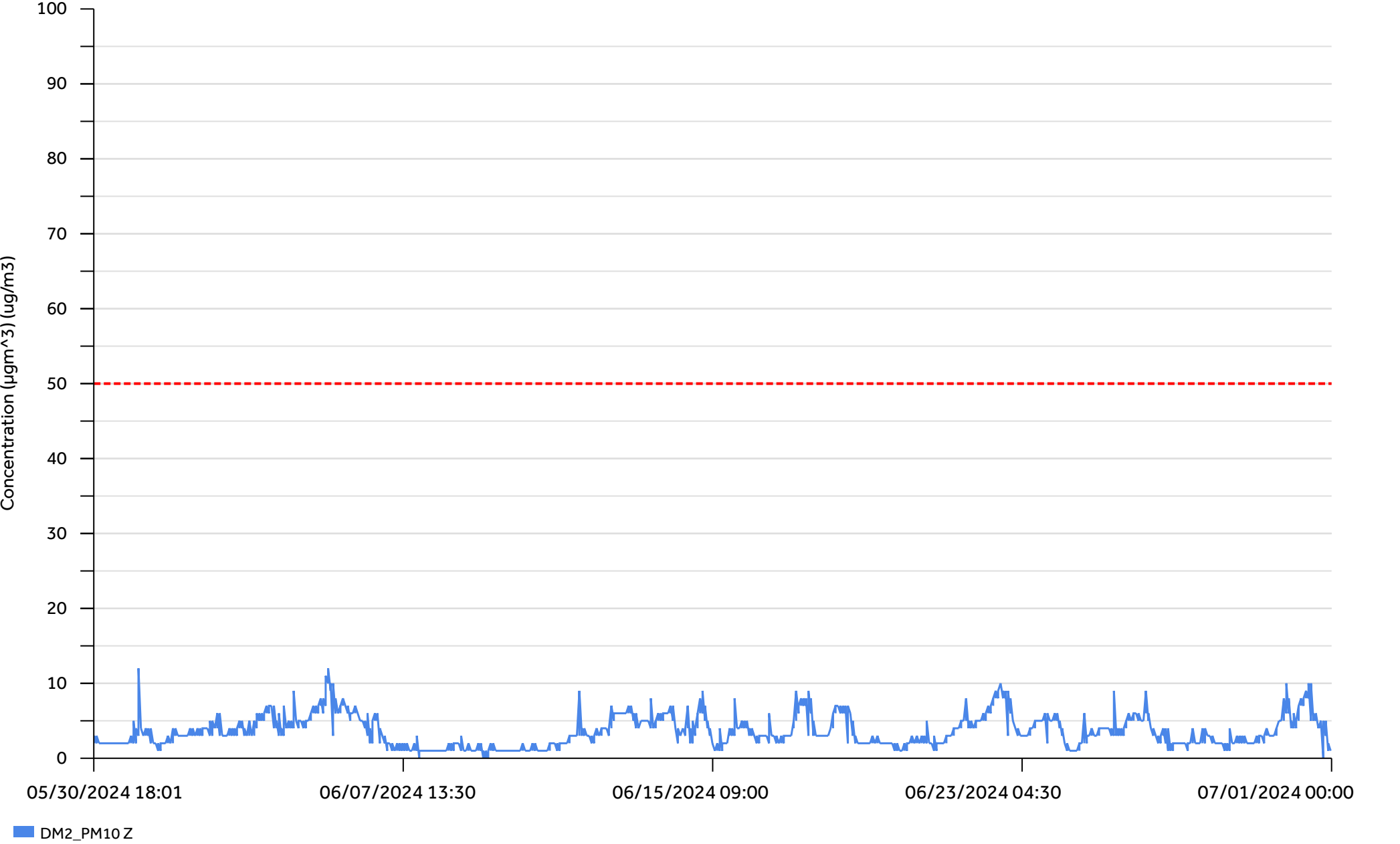
VM-5- Vibration Monitor



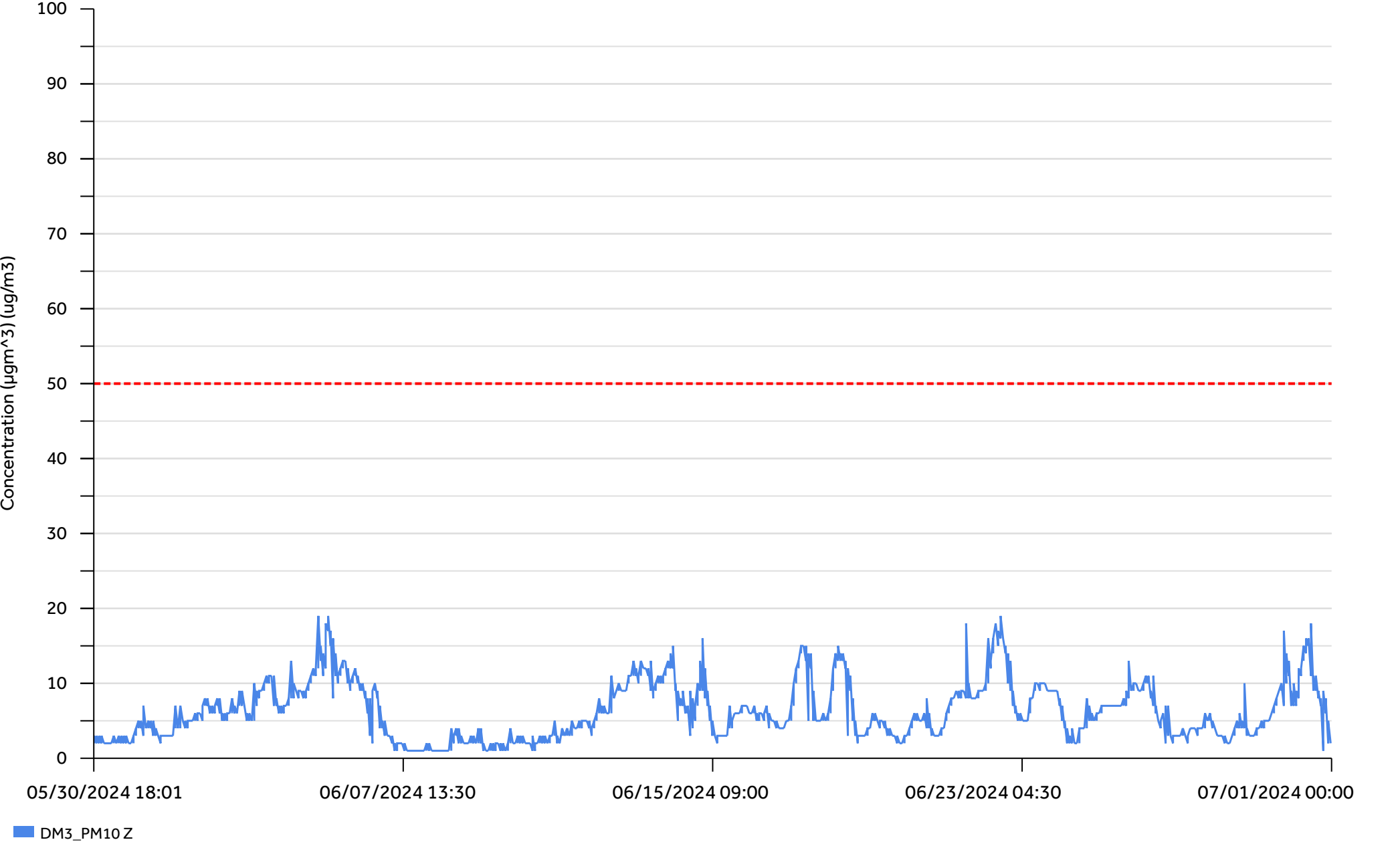
DM1 - PM10



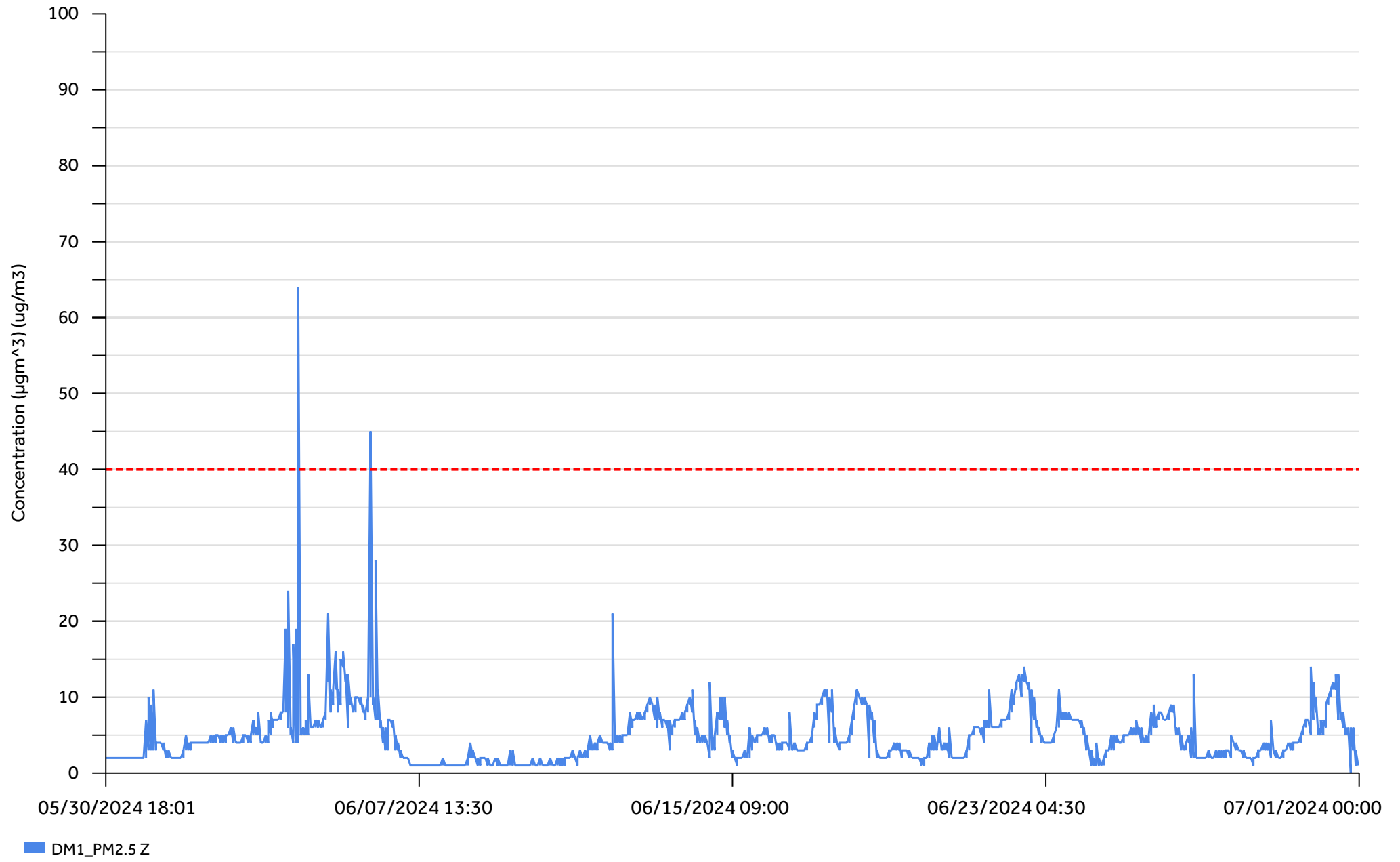
DM2-PM10



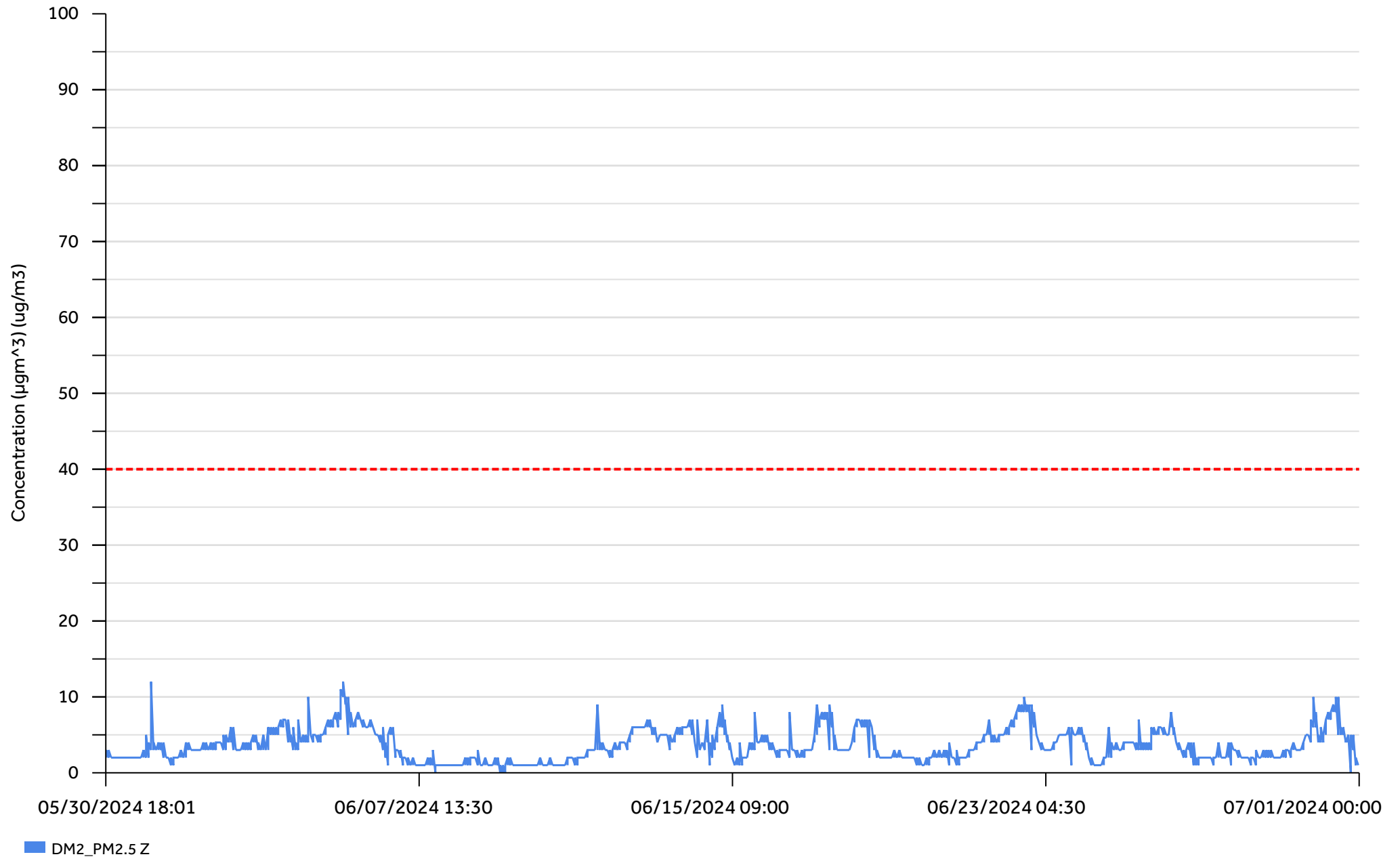
DM3-PM10



DM1-PM2.5



DM2-PM2.5



DM3-PM2.5

