

Northern Bus Garage

Noise, Vibration, and Dust Monitoring Report (August 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 August 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 Table 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. In addition, Mic 2 and Mic 3 both recorded their loudest exceedances outside of working hours, respectively. Mic 5 recorded approximately 52% of its exceedance noise readings 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 five (5) vibration exceedances in the month of August.

- VM2 exhibited a vibration exceedance of 0.31 in/sec on August 2 at 07:32. Clark notes that a subcontractor was excavating for a water line on 14th Street near the monitoring unit at that time.
- VM2 exhibited a vibration exceedance of 0.52 in/sec on August 2 at 08:59. Clark notes that a subcontractor was excavating for a water line on 14th Street near the monitoring unit at that time.
- VM2 exhibited a vibration exceedance of 0.25 in/sec on August 5 at 07:23. Clark notes that a subcontractor was excavating for a water line on 14th Street near the monitoring unit at that time.
- VM1 exhibited a vibration exceedance of 0.25 in/sec on August 10 at 07:47. Clark notes that a subcontractor was excavating for a water line on 14th Street near the monitoring unit at that time.
- VM1 exhibited a vibration exceedance of 0.25 in/sec on August 10 at 08:46. Clark notes that a subcontractor was excavating for a water line on 14th Street near the monitoring unit at that time.

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 eight (8) Air Quality exceedances in the month of August.

- DM3 – Exceedance of the PM2.5 limit on 8/14 at 14:09 with a reading of 40 µg/m³.
 - Weather history shows gusts ranging from 20-24mph during this time.
- DM3 – Exceedance of the PM10 limit on 8/19 at 20:00 with a reading of 50 µg/m³.
 - Weather history shows gust of 23mph during this time.
 - Exceedance was recorded outside of working hours.
- DM3 – Exceedance of the PM2.5 limit on 8/20 from about 10:30 to 12:15 with readings up to 68 µg/m³.
 - Weather history shows sustained gusts of 24mph during this time.
- DM3 – Exceedance of the PM10 limit on 8/20 from about 10:30 to 12:15 with readings up to 82 µg/m³.
 - Weather history shows sustained gusts of 24mph during this time.
- DM3 – Exceedance of the PM2.5 limit on 8/20 from about 15:15 to 17:15 with readings up to 72 µg/m³.
 - Weather history shows sustained gusts of 24mph during this time.
- DM3 – Exceedance of the PM10 limit on 8/20 from about 15:15 to 17:15 with readings up to 80 µg/m³.
 - Weather history shows sustained gusts of 24mph during this time.
- DM3 – Exceedance of the PM2.5 limit on 8/28 at 07:00 with a reading of 60 µg/m³.
 - Exceedance due to truck traffic on-site, dust control procedures were implemented shortly after.
- DM3 – Exceedance of the PM10 limit on 8/28 at 07:00 with a reading of 60 µg/m³.
 - Exceedance due to truck traffic, dust control procedures were implemented shortly after.

Figure 1: Vibration and Noise Monitor Location Plan

16/06/2023, 13:43:04

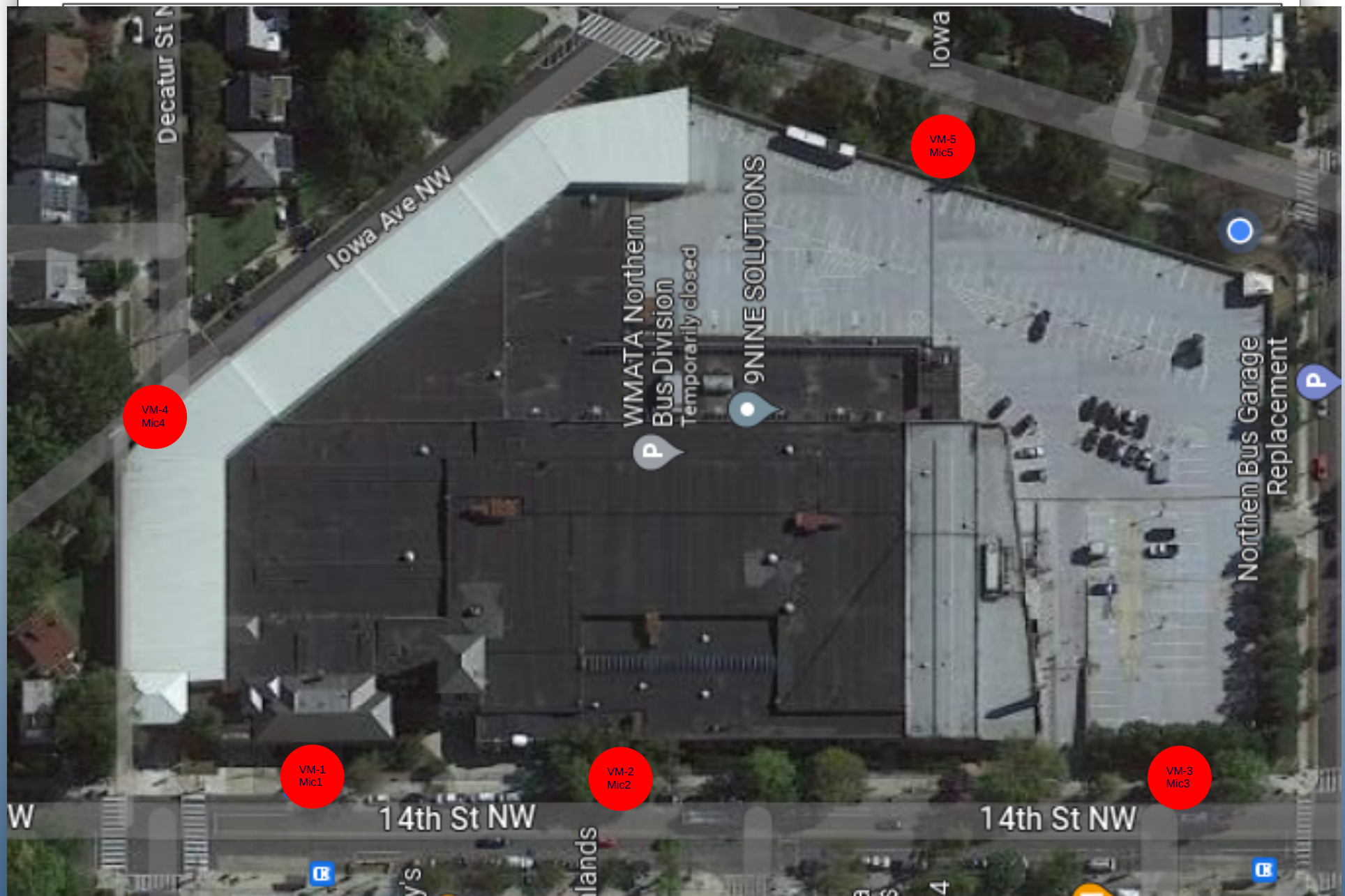


Figure 2: Dust Monitor Location Plan

16/06/2023, 13:43:04

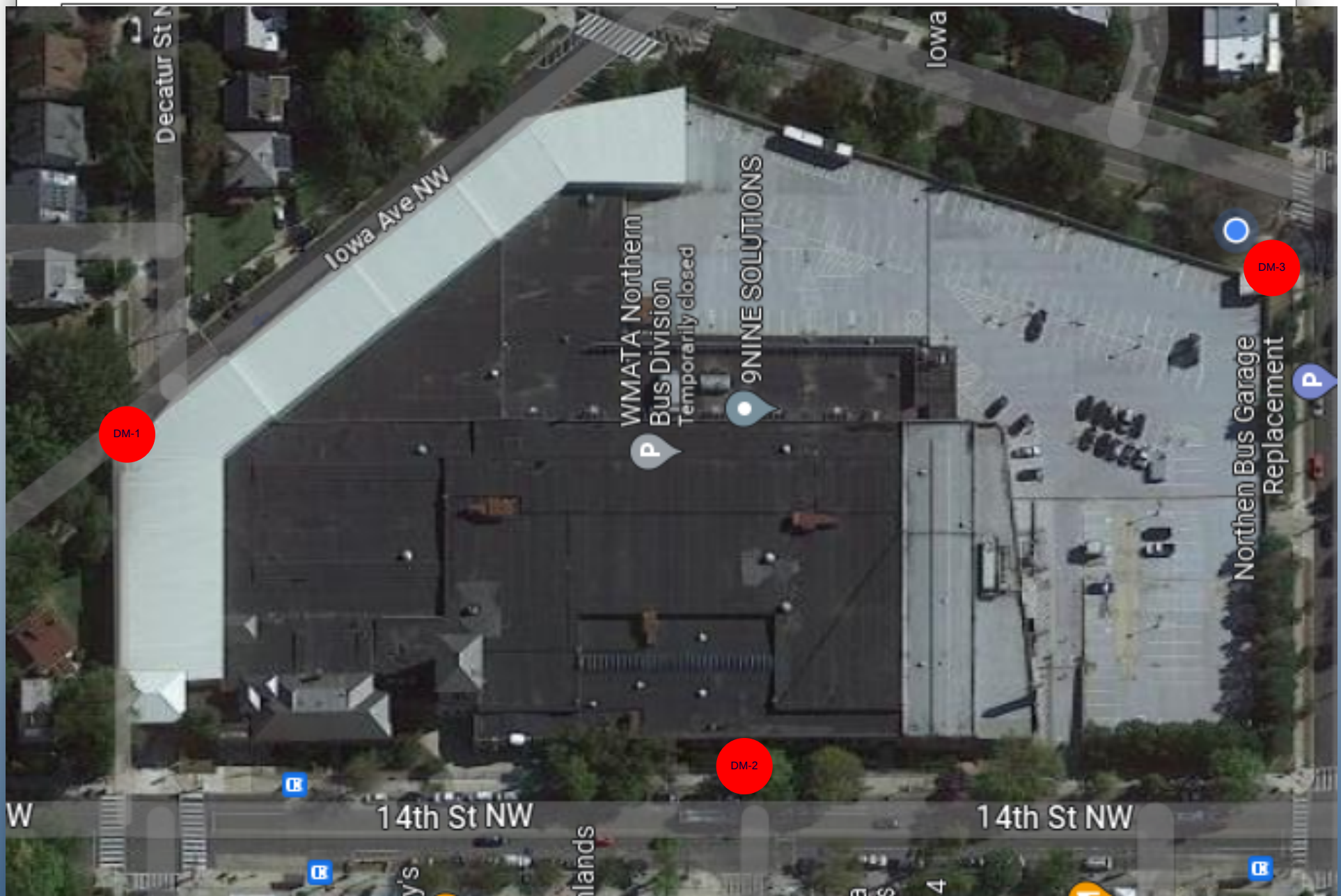


Table 1: Noise Summaries

VM1-MIC		
	Exceedance	Percentage
Work hours	1006	44.57%
After hours	740	32.79%
Weekends	511	22.64%
Total	2257	100%

VM1-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	121.6	118.9	116.5
Lmin (dBA)	77.4	61.9	58.6
L10 (dBA)	97	86	75
L90 (dBA)	79	69	62
Leq (dBA)	91.8	86.2	83.9

VM2-MIC		
	Exceedance	Percentage
Work hours	793	51.39%
After hours	490	31.76%
Weekends	260	16.85%
Total	1543	100%

VM2-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	115.7	120.1	113.3
Lmin (dBA)	71.3	54.5	52.5
L10 (dBA)	89	75	75
L90 (dBA)	73	61	57
Leq (dBA)	84.1	86.1	79.8

VM3-MIC		
	Exceedance	Percentage
Work hours	679	52.80%
After hours	347	26.98%
Weekends	260	20.22%
Total	1286	100%

VM3-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	110.7	111.7	116.8
Lmin (dBA)	68.4	62	57.3
L10 (dBA)	84	74	76
L90 (dBA)	75	66	62
Leq (dBA)	83.7	80.4	85.7

VM4-MIC		
	Exceedance	Percentage
Work hours	136	82.93%
After hours	13	7.93%
Weekends	15	9.15%
Total	164	100%

VM4-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	104.1	93.8	92.6
Lmin (dBA)	66.9	68.4	63.9
L10 (dBA)	78	77	76
L90 (dBA)	71	72	69
Leq (dBA)	75.8	75	73.6

VM5-MIC		
	Exceedance	Percentage
Work hours	122	48.03%
After hours	70	27.56%
Weekends	62	24.41%
Total	254	100%

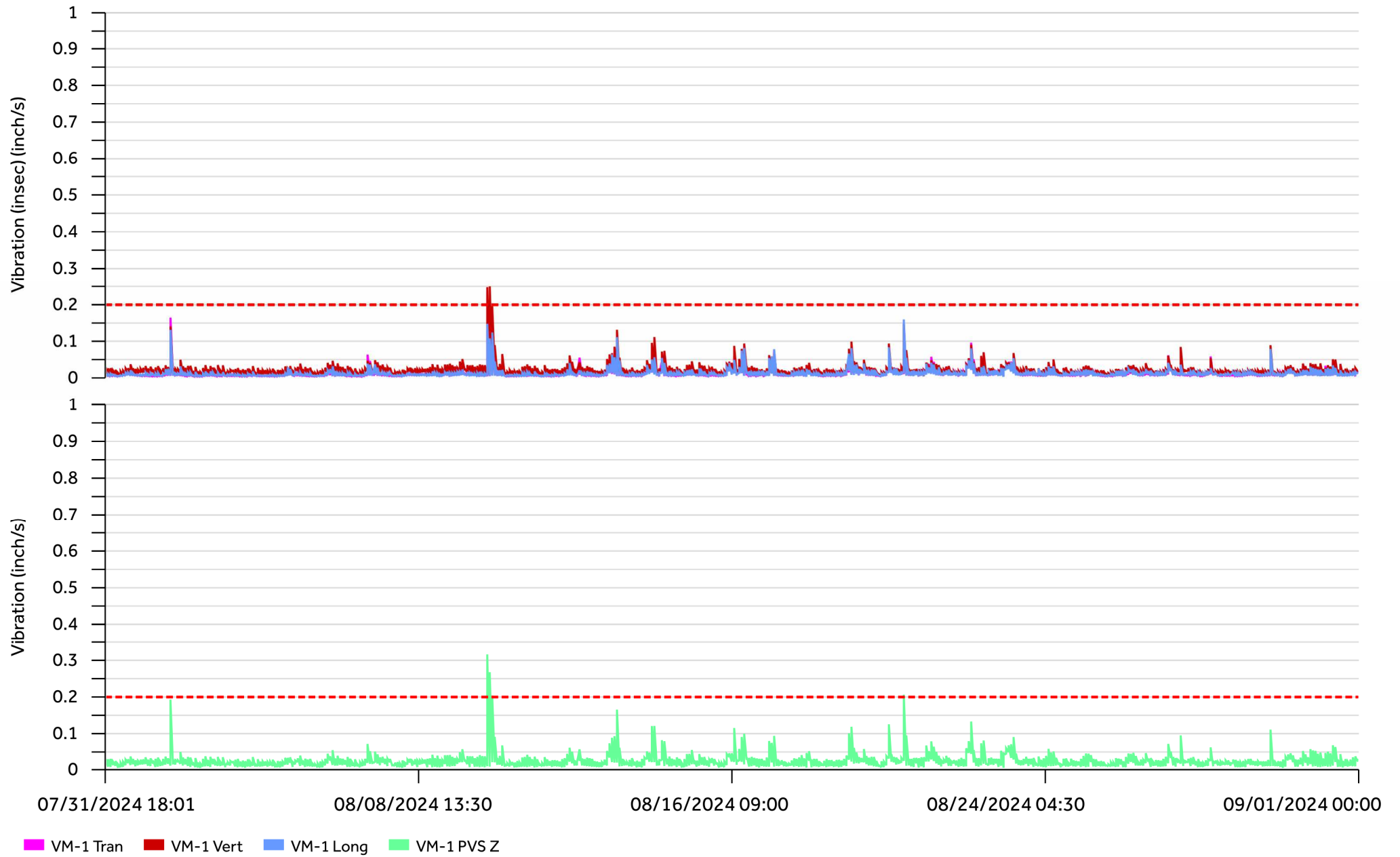
VM5-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	110.5	106.6	106.8
Lmin (dBA)	56.1	56.5	55.2
L10 (dBA)	80	76	73
L90 (dBA)	60	58	61
Leq (dBA)	81	75.4	76.1

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.

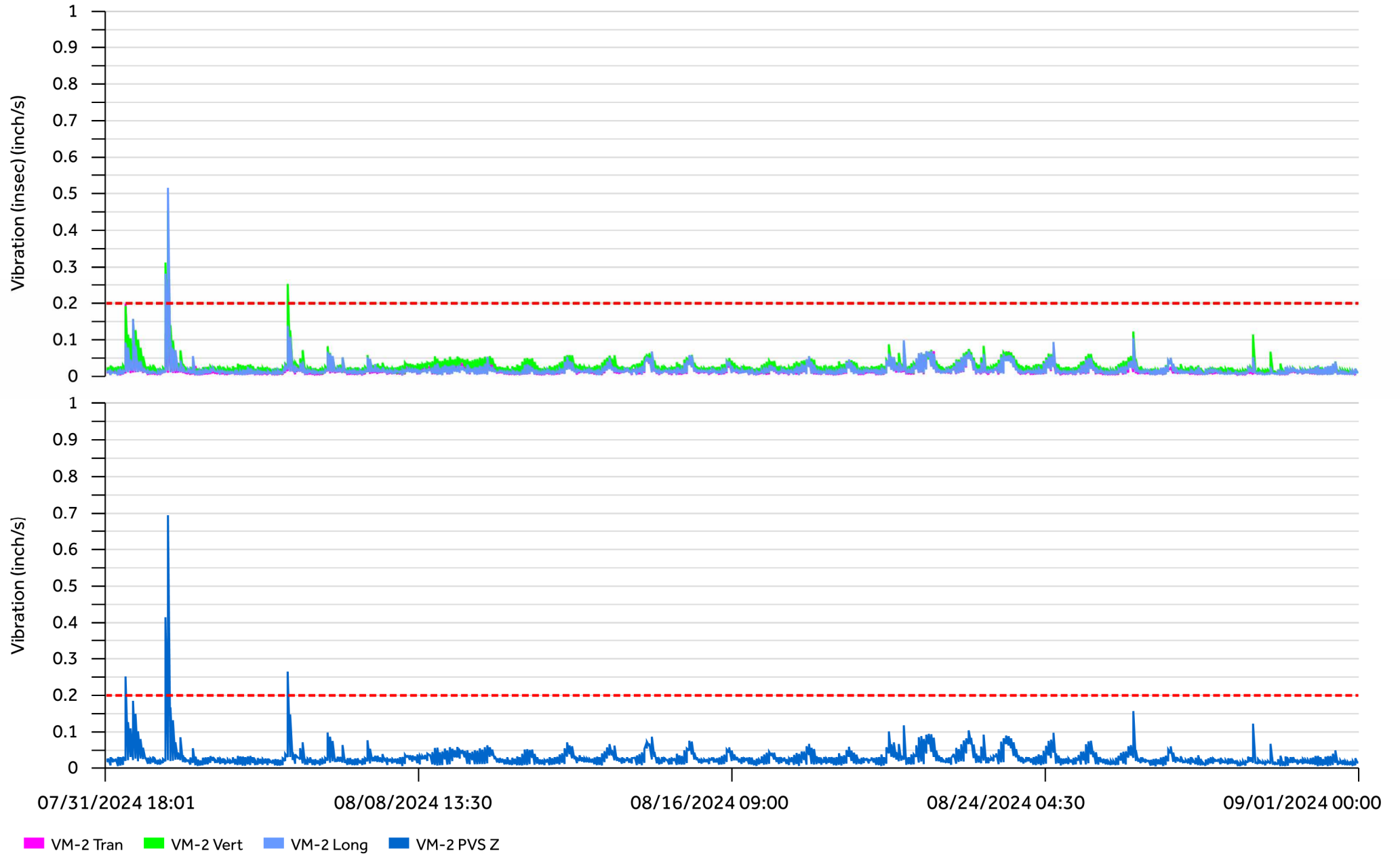
Graph 1

VM-1 - Vibration Monitor



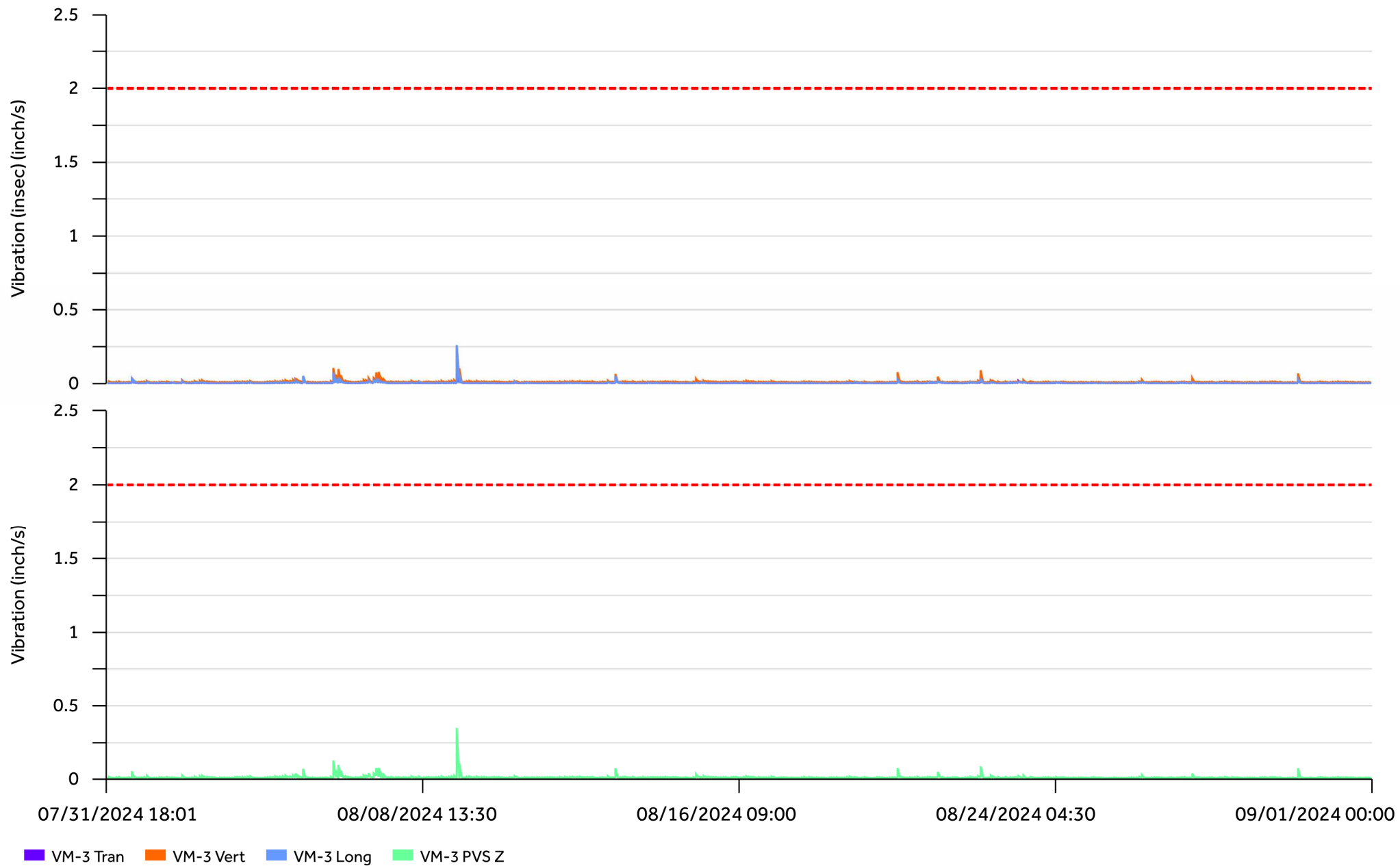
Graph 2

VM-2- Vibration Monitor

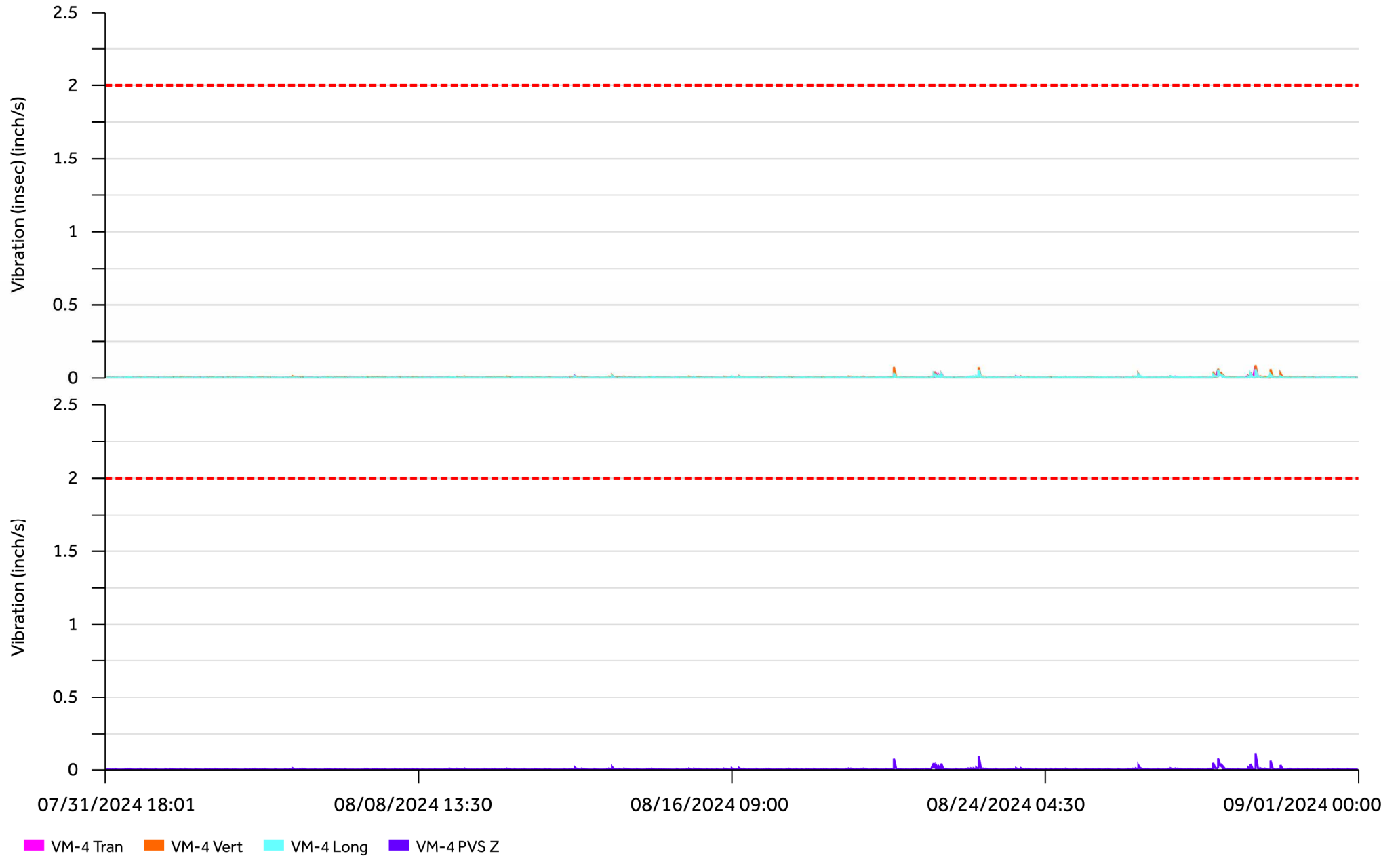


Graph 3

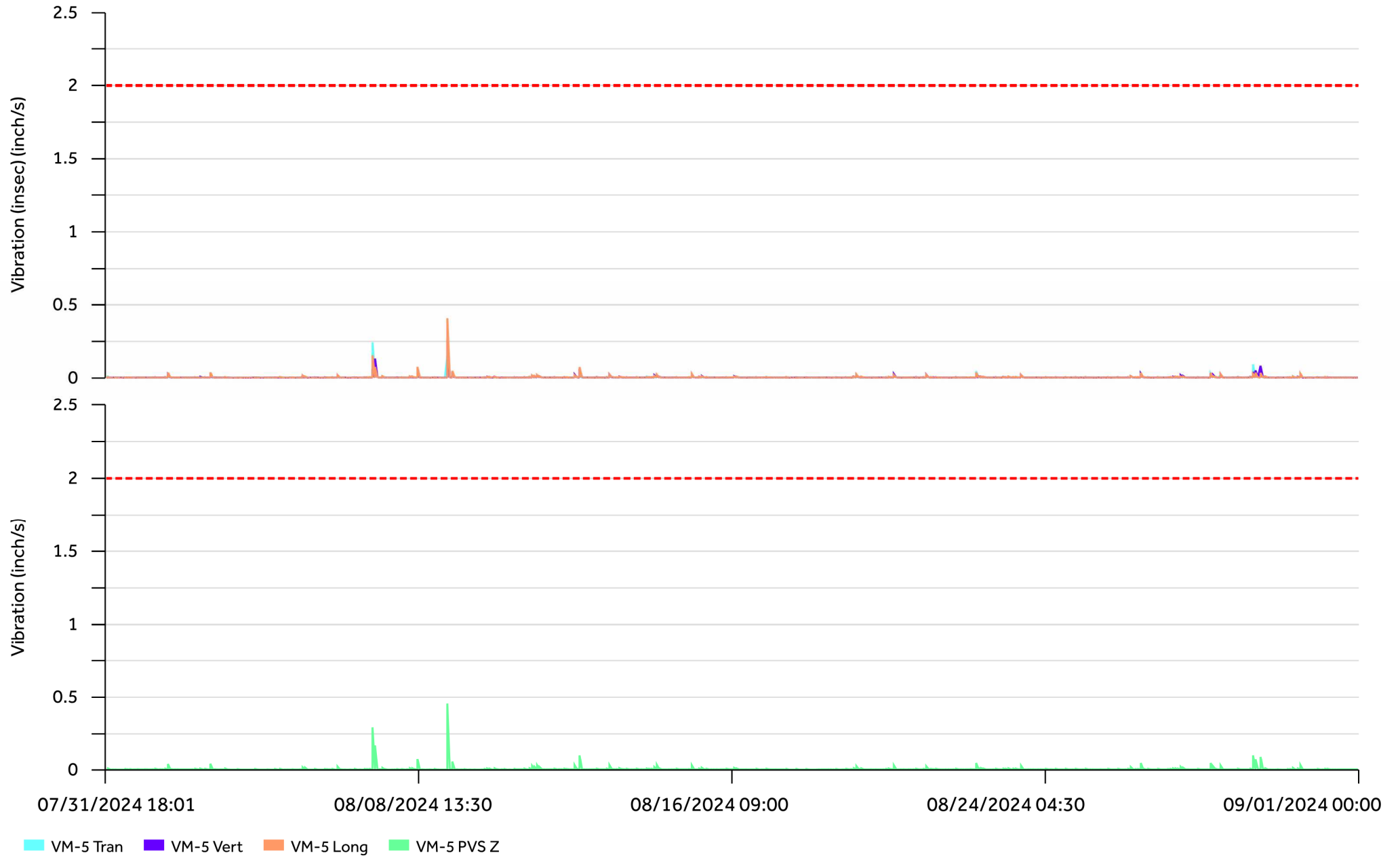
VM-3- Vibration Monitor



Graph 4
VM-4- Vibration Monitor

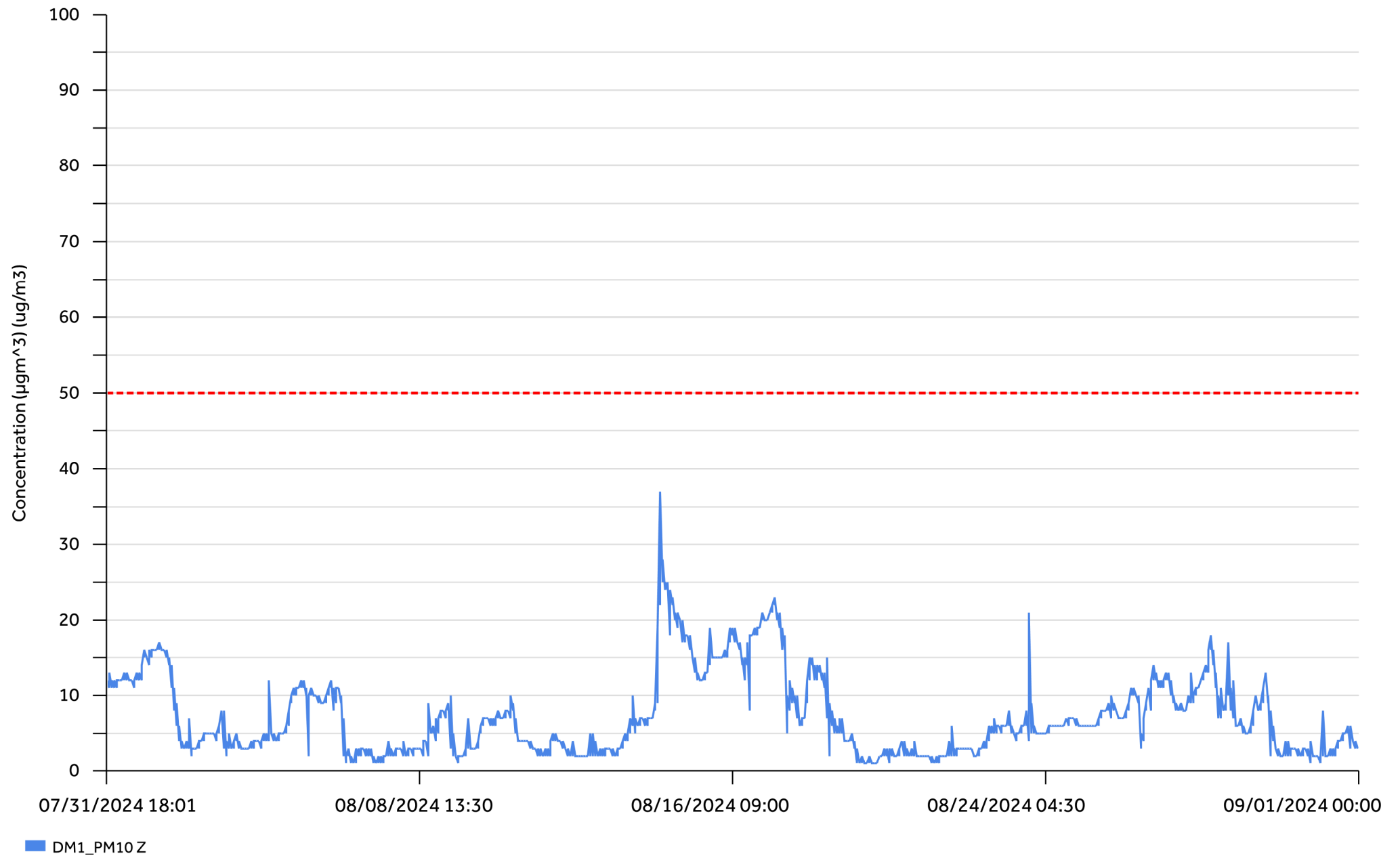


Graph 5
VM-5- Vibration Monitor



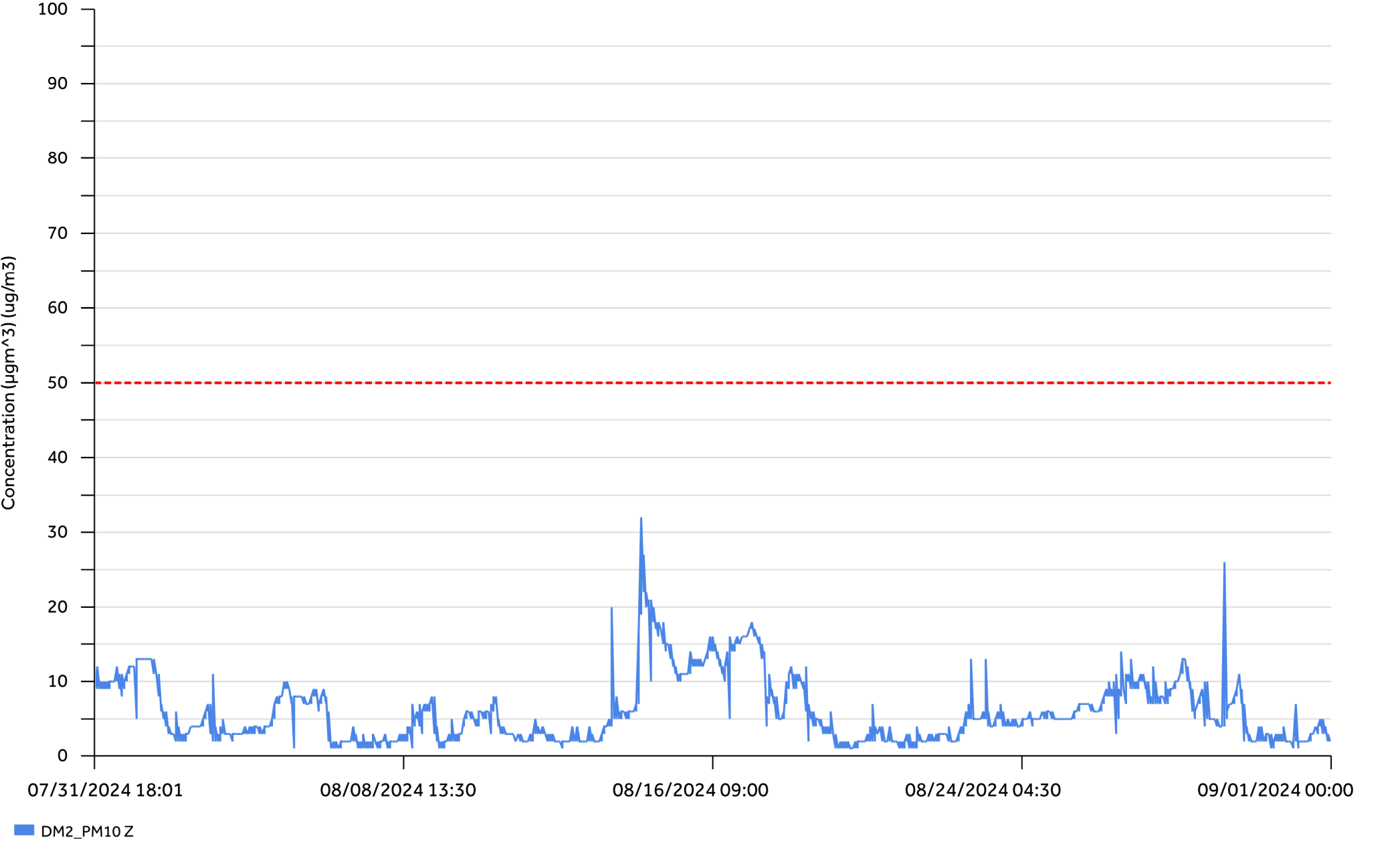
Graph 6

DM1 - PM10



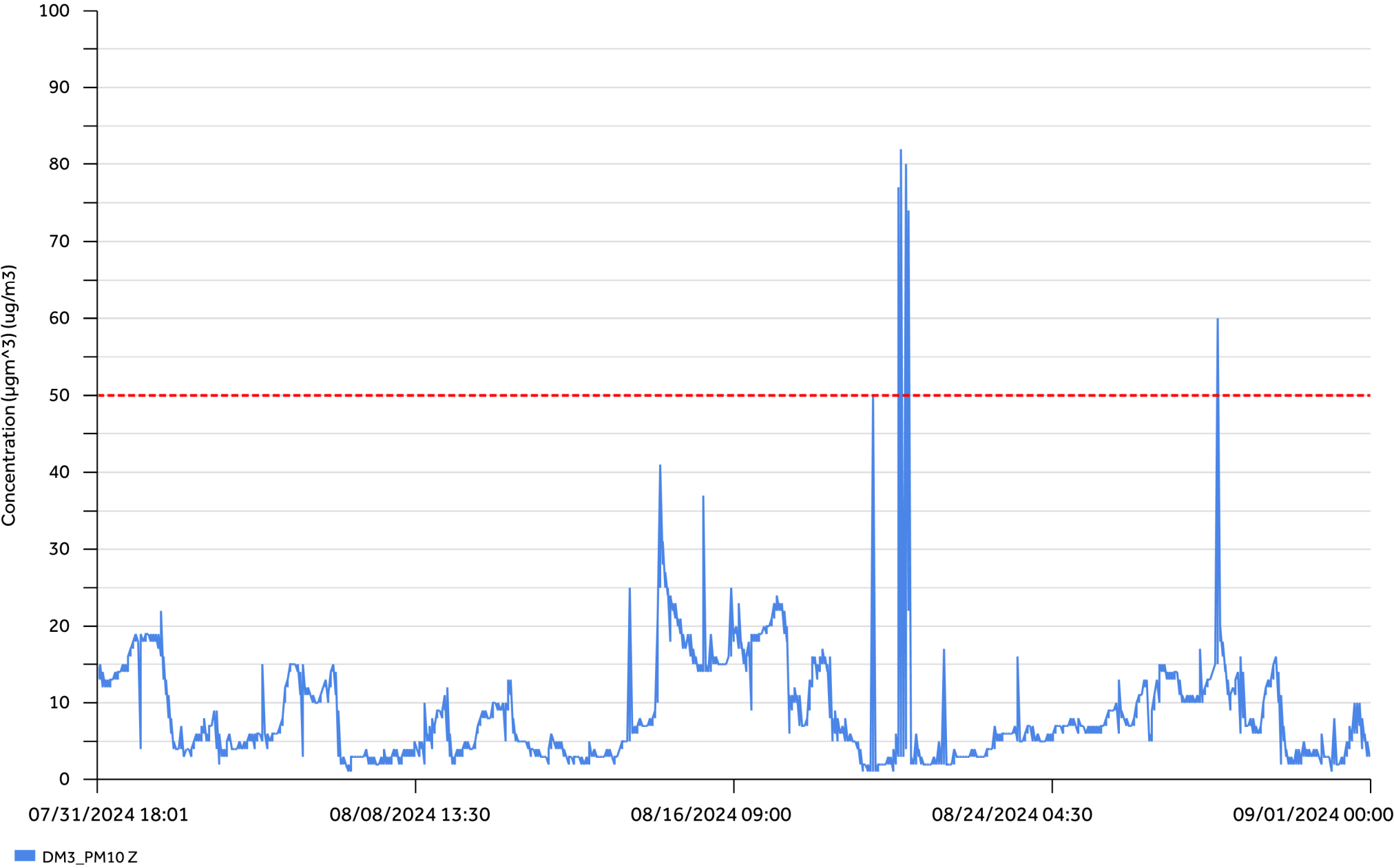
Graph 7

DM2-PM10



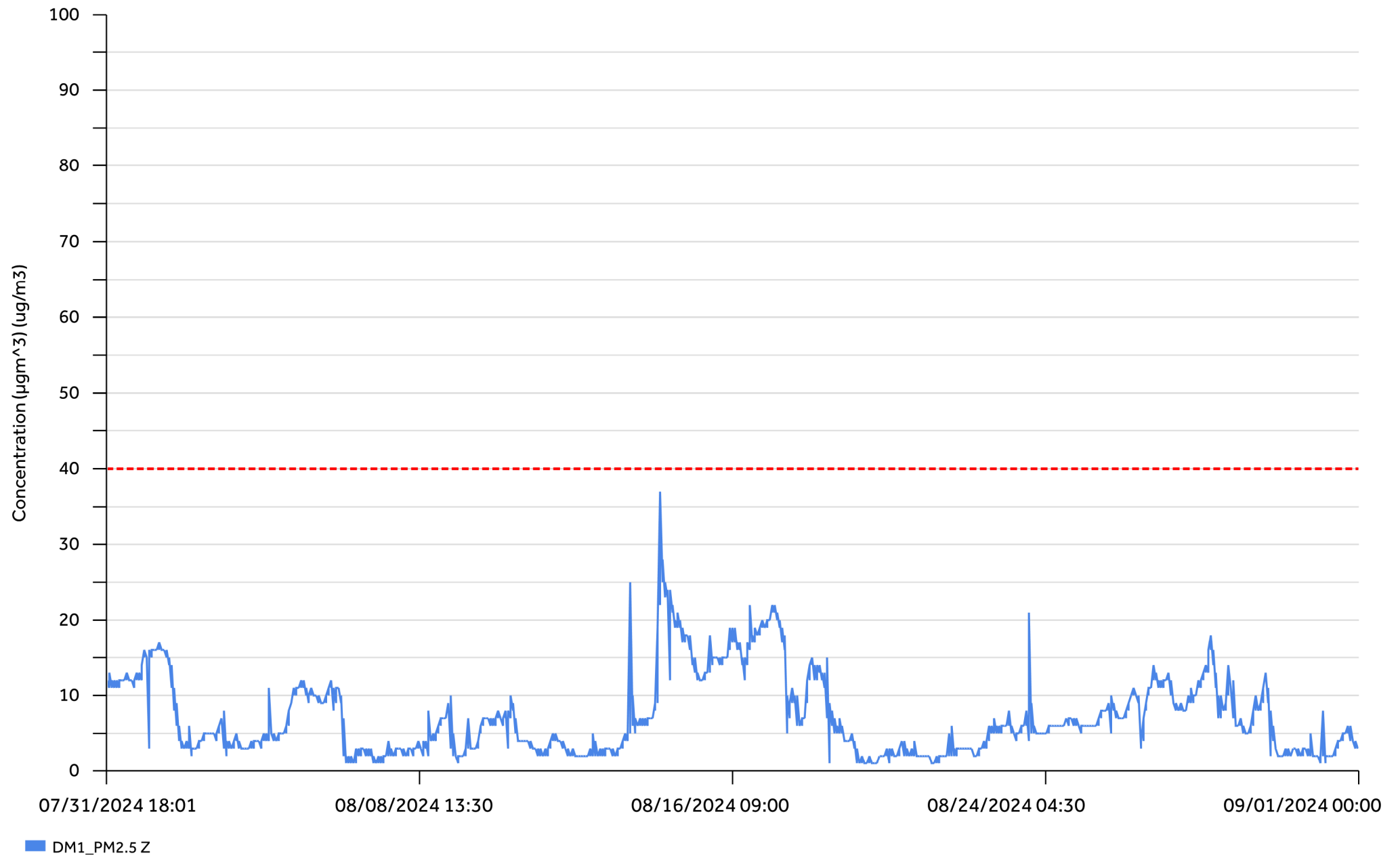
Graph 8

DM3-PM10



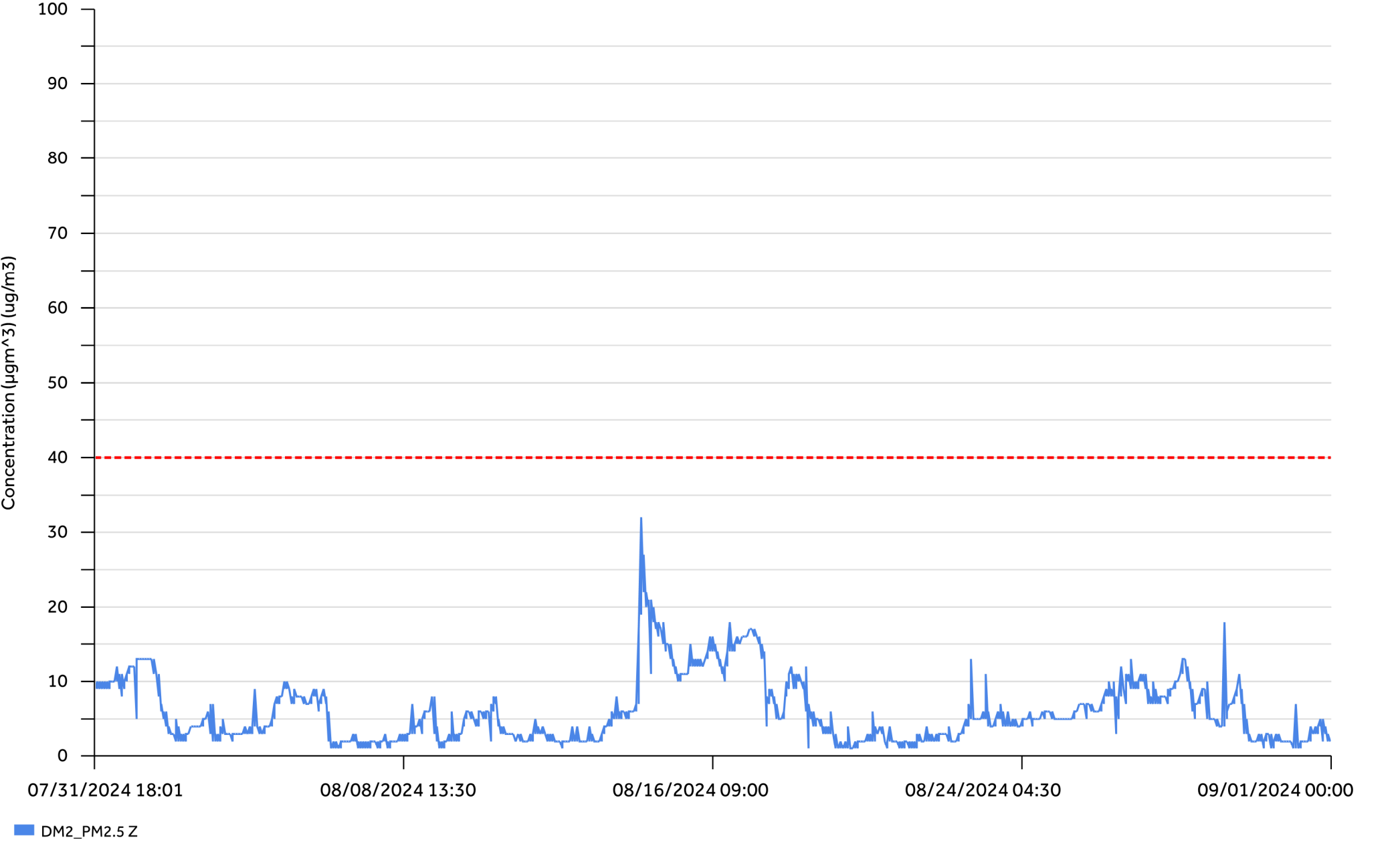
Graph 9

DM1-PM2.5



Graph 10

DM2-PM2.5



Graph 11

DM3-PM2.5

