

Roseville Anglican College Sports & Wellbeing Centre

Noise and Vibration Monitoring Report 2

SYDNEY

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Project ID	20220917.5
Document Title	Noise and Vibration Monitoring Report 2
Attention To	Taylor Construction Group Pty Ltd

Revision	Date	Document Reference	Prepared By	Checked By	Approved By
0	28/10/2022	20220917.5/2810A/R0/SW	SW		AW

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1 INTRODUCTION

Acoustic Logic (AL) has been engaged to conduct construction vibration monitoring for the demolition, excavation and piling works undertaken at Roseville Anglican College – Sports & Wellbeing Centre. Monitoring has been conducted in accordance with the Construction Noise and Vibration Plan (CNVMP) by this office (*ref: 20220917.1/1907A/R0/SW dated 19th July 2022*).

This report covers the monitoring period between Wednesday 31st August 2022 to Friday 30th September 2022.

2 SITE DESCRIPTION

The project site is surrounded by existing residential dwellings as well as existing commercial buildings of Roseville College. Refer to Figure 1 for the arial view of the project site and locations of vibration monitors.



Figure 1: Aerial view of the project site and the sensitive receivers (Sourced : SixMaps)

3 PROJECT CRITERIA

3.1 VIBRATION CRITERIA

Vibration caused by construction at any residence or structure outside the subject site must be limited to:

- For structural damage vibration, German Standard DIN 4150-3 *Structural Vibration: Effects of Vibration on Structures*; and
- For human exposure to vibration, the evaluation criteria presented in the British Standard BS 6472:1992 *Guide to Evaluate Human Exposure to Vibration in Buildings (1Hz to 80Hz)* for low probability of adverse comment.

3.1.1 Structure Borne Vibrations (Building Damage Criteria)

German Standard DIN 4150-3 (2016-12) provides vibration velocity guideline levels for use in evaluating the effects of vibration on structures. The criteria presented in DIN 4150-3 (2016-12) are presented in Table 3.

It is noted that the peak velocity is the value of the maximum of any of the three orthogonal component particle velocities as measured at the foundation, and the maximum levels measured in the x- and y-horizontal directions in the plane of the floor of the uppermost storey.

Table 1 – DIN 4150-3 (2016-12) Safe Limits for Building Vibration

TYPE OF STRUCTURE		PEAK PARTICLE VELOCITY (mms ⁻¹)			
		At Foundation at a Frequency of			Plane of Floor of Uppermost Storey
		< 10Hz	10Hz to 50Hz	50Hz to 100Hz	All Frequencies
1	Buildings used in commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
2	Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15
3	Structures that because of their particular sensitivity to vibration, do not correspond to those listed in Lines 1 or 2 and have intrinsic value (e.g. buildings that are under a preservation order)	3	3 to 8	8 to 10	8

The surrounding heritage building would be considered Type 3, educational buildings would be considered a Type 1 structure, whilst residences would be considered a Type 2 structure.

3.2 NOISE MANAGEMENT LEVELS

The summarised noise management levels based on the Construction Noise and Vibration Management Plan prepared by this office (ref: 20220917.1/1907A/R0/SW dated 19th July 2022) is presented below.

Table 2 – Summarised Noise Management Levels - Residential

Receivers	Noise Affected Level – dB(A)$L_{eq(15min)}$ BG + 10	Highly Noise Affected Level – dB(A)$L_{eq(15min)}$
Residential Receivers R1 and R2,	BG(38) + 10 = 48	75
Residential Receivers R3 and R4	BG(36) + 10 = 46	75

If noise levels exceeded the management levels identified in the table above, reasonable and feasible noise management techniques will be reviewed.

3.2.1 To Active Recreational Receivers and Classrooms

In section 4.1.2 of the ICNG outlines the following noise management noise levels to active recreation areas and classrooms at schools and other educational institutions.

Table 3 – Noise Management Level – other receivers

Receivers	Noise Management Level dB(A)$L_{eq(15min)}$
Active Recreational Area A1	65 (external)
Classroom	45 (internal)

4 VIBRATION MONITORING

4.1 MEASUREMENT EQUIPMENT

Vibration monitoring was conducted using Texcel ETM vibration monitors with external Tri-axial Geophones. The monitors are programmed to store statistical vibration data every 5-minute intervals, along with any 'triggered' events that occur throughout the monitoring period.

4.2 MEASUREMENT LOCATIONS

A total of three (3) vibration monitors was installed for this project site along the western and eastern boundary as demolition, excavation and piling works to be undertaken in proximity to these receivers

A detailed measurement locations are presented in Figure 1 above; the following figures shows the vibration monitors that are currently on site.

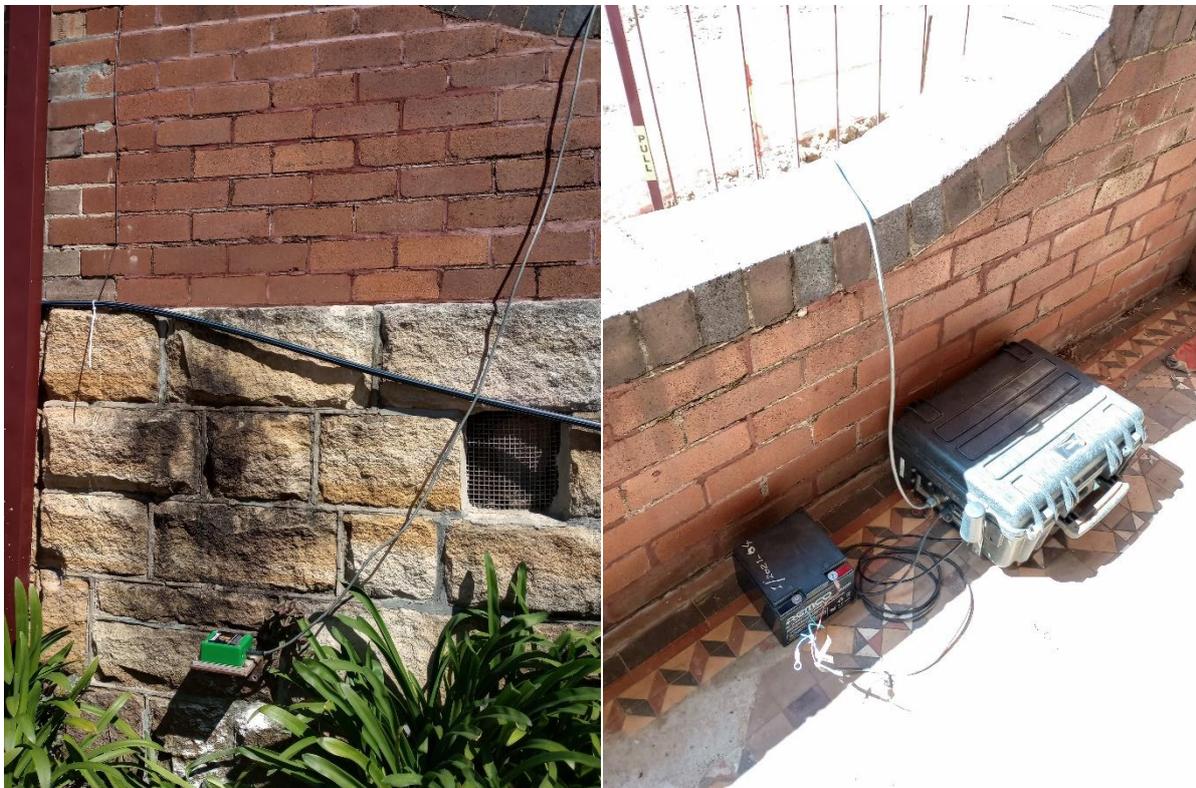


Figure 2: M7713 at the front area of the heritage building

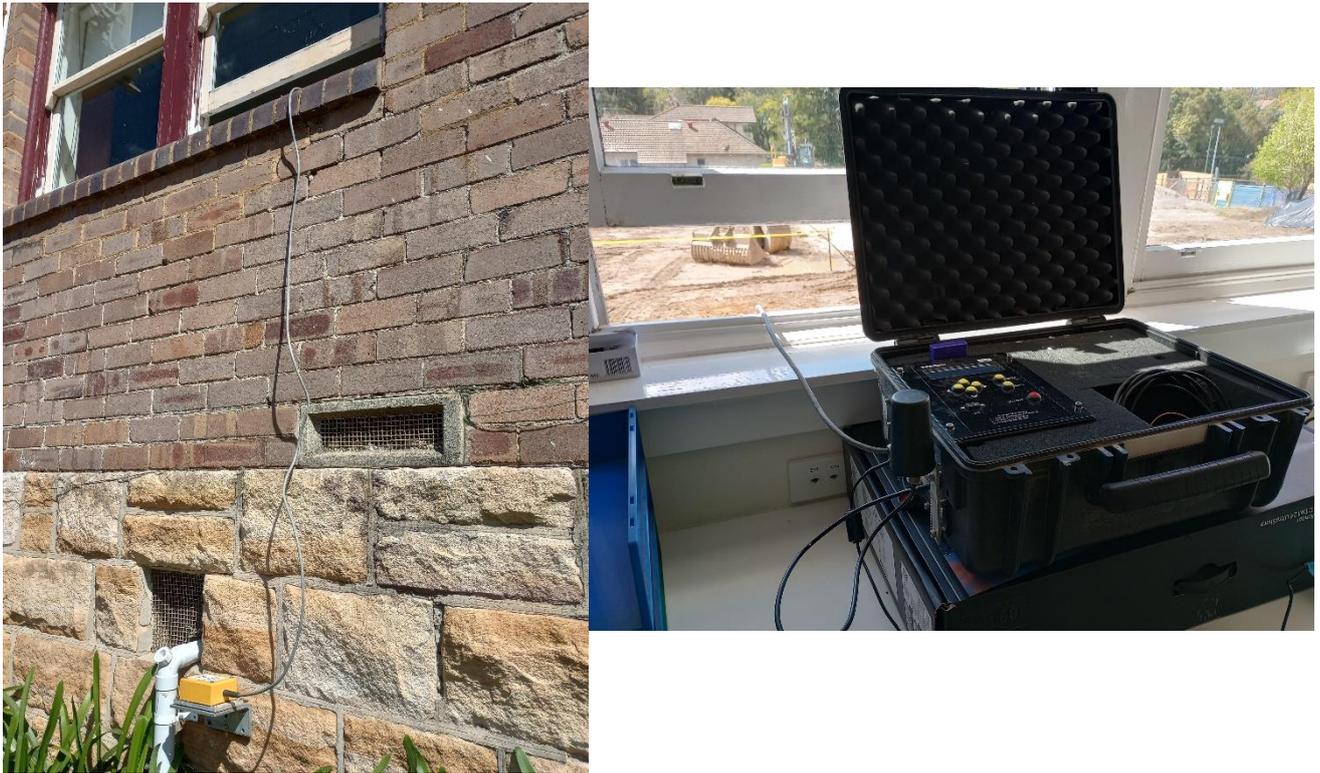


Figure 3: M7427 at the rear end of the heritage building



Figure 4: M7715 at the eastern boundary of the project site

5 NOISE MONITORING

5.1 MEASUREMENT EQUIPMENT

5.2 MEASUREMENT LOCATIONS



Figure 5: (left) noise monitor (N1) at the garden, Auditorium.

(right) noise monitor (N2) in front of JY

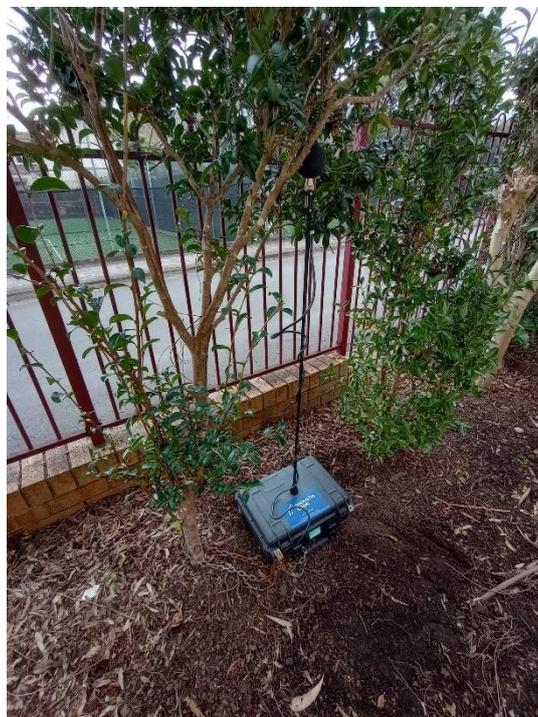


Figure 6: noise monitor (N3) along recreation avenue.

6 MONITORING RESULTS

M7427 was moved from the front to the rear of the Heritage building/office site on Saturday 10th September 2022 and M7713 replaced the front end monitoring of the building.

6.1 VIBRATION MONITORING RESULTS

Appendix 1-3 presents the available vibration results for the monitoring period.

- For M7427 was relocated to the rear end of the heritage building on the 10th September 2022. An additional monitor M7713 was added at the front of the building to provide a wide coverage of monitoring during piling works.
- Exceedances was measured on the 2nd and 13th September 2022 on the front of the heritage building. Acoustic Logic was notified that drilling occurred in close proximity to the monitor, in order to complete required concreting works to support the building prior to piling works. After the foundation support was completed, the vibration levels were returned to normal levels.
- Excavator works were being undertaken in close proximity to M7715 located adjacent to the residential boundary. Event exceedances was measured on the 12th September to 21st September 2022 due to the proximity of piling works to the monitor. Vibration levels to the nearest residence receiver should be less than the measured levels.
- In the event that continuous exceedances are notified via SMS notifications and the construction activities are identified, site practices are to be modified to prevent or mitigate to prevent the likelihood of recurrence.

6.2 NOISE MONITORING RESULTS

Appendix 4-6 presents the available noise results for the monitoring period.

- Noise measurements within and adjacent to school grounds are affected by activity noise within the school, particularly during recess and lunch time periods. As such, the measured noise levels are generally a combination of noise generated by construction, and by the school. With regard to this we note:
 - Elevated noise levels are routinely recorded during scheduled external play times, which are likely to be from school operation rather than construction works.
 - For periods where there is little or no school operation (Saturdays, for example), noise from construction is within the nominated management levels, noting that the same or similar works (piling/excavation) are occurring on all days.
 - Further, sample attended measurements of noise impact from construction works to internal areas of the school have been conducted in multiple locations of the school (*ref: 20220917.8/1310A/R0/SW*) and have confirmed that the noise levels in the classrooms were below the noise management levels.

7 CONCLUSION

Acoustic Logic has undertaken vibration monitoring for the project site at Roseville Anglican College- Sports & Wellbeing Centre.

This report presents the vibration results for the monitoring period Wednesday 31st August 2022 to Friday 30th September 2022.

We trust this information is satisfactory. Please contact us should you have any further queries.

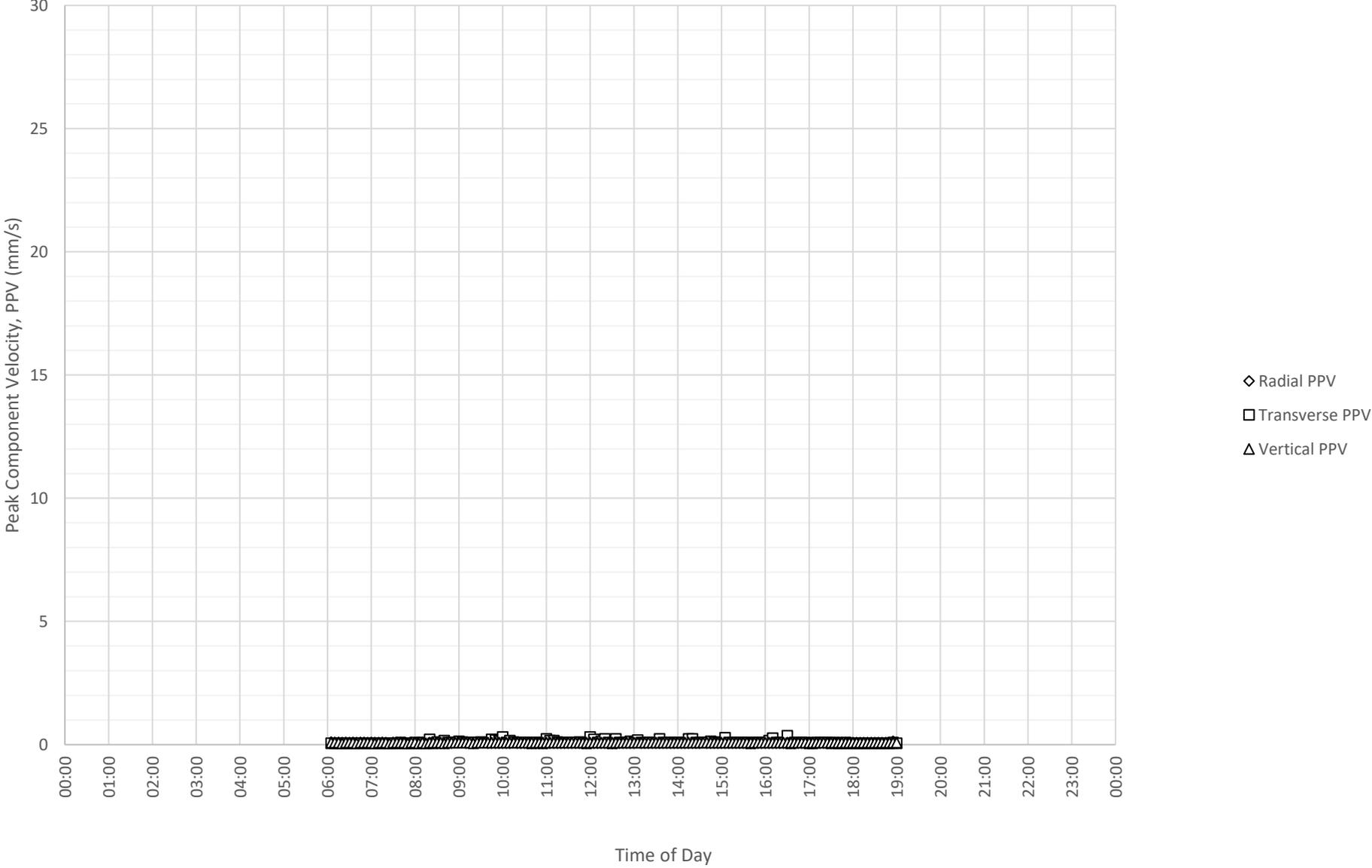
Yours faithfully,

A handwritten signature in black ink, appearing to read 'Samantha Wong', written in a cursive style.

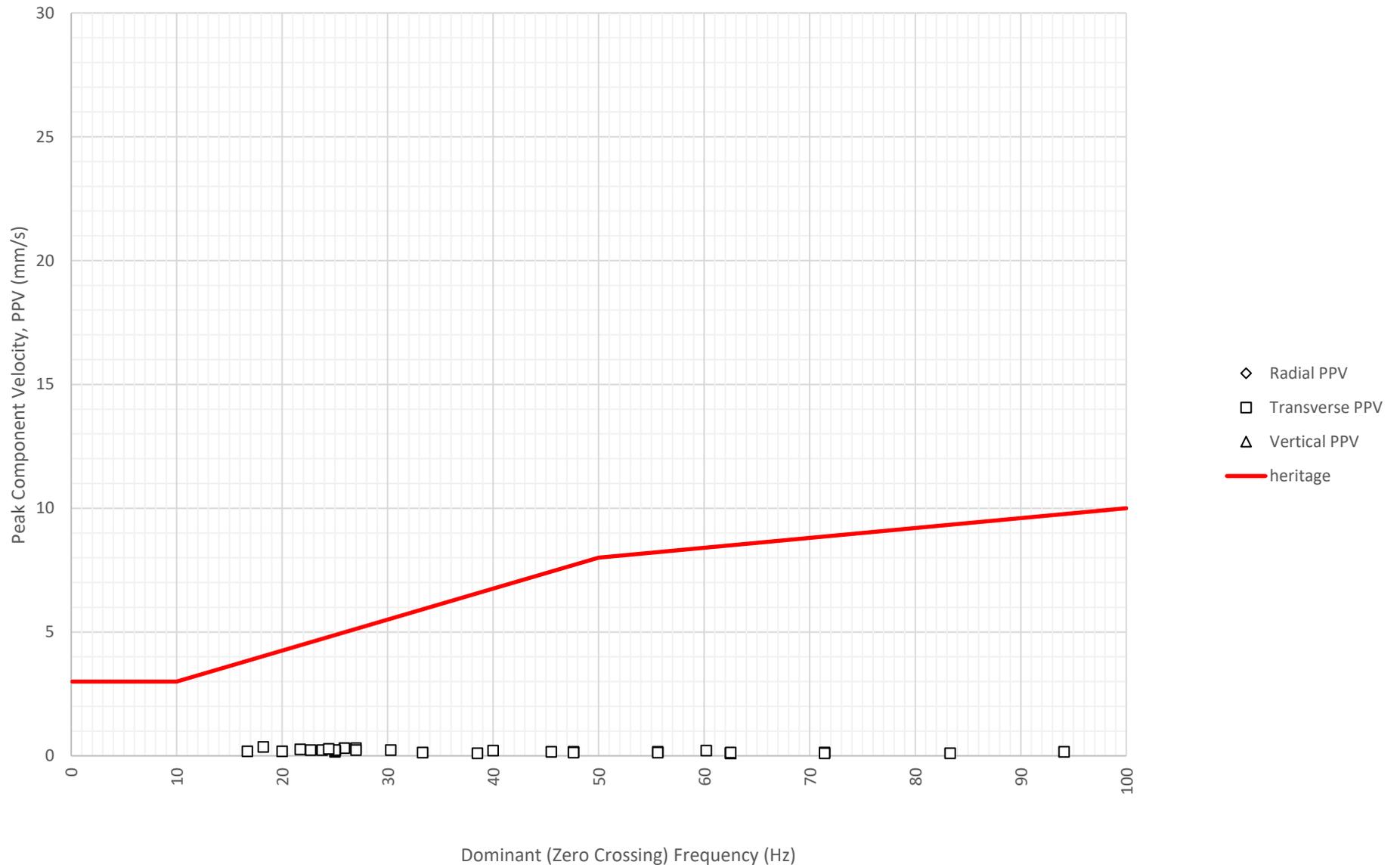
Acoustic Logic Pty Ltd
Samantha Wong

APPENDIX 1: DAILY GRAPHS M7713 HERITAGE (FRONT)

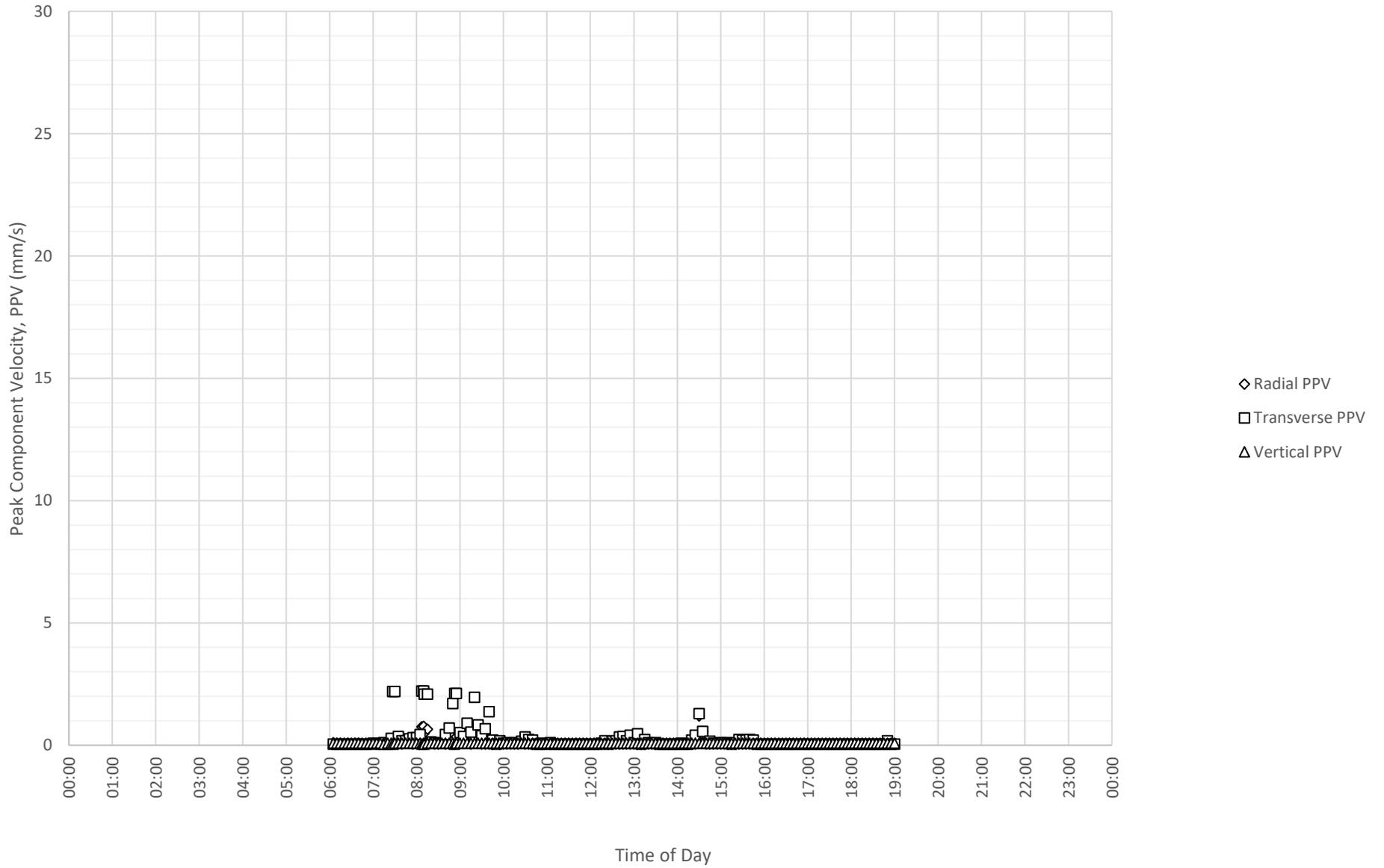
Daily Monitored Vibration Levels at M7713 Heritage (front) on 31-08-2022



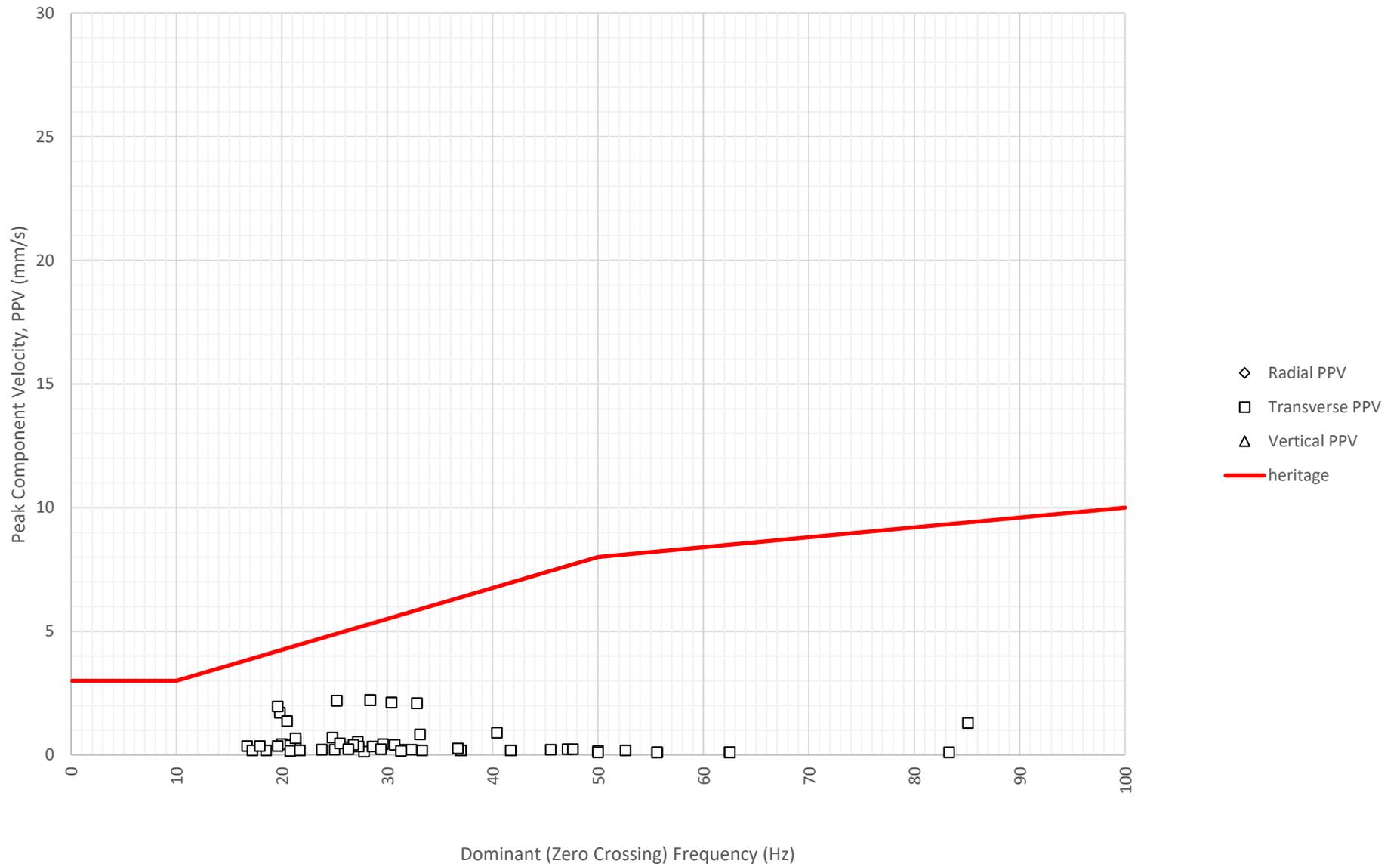
Frequency Content of Vibration Levels at M7713 Heritage (front) on 31-08-2022



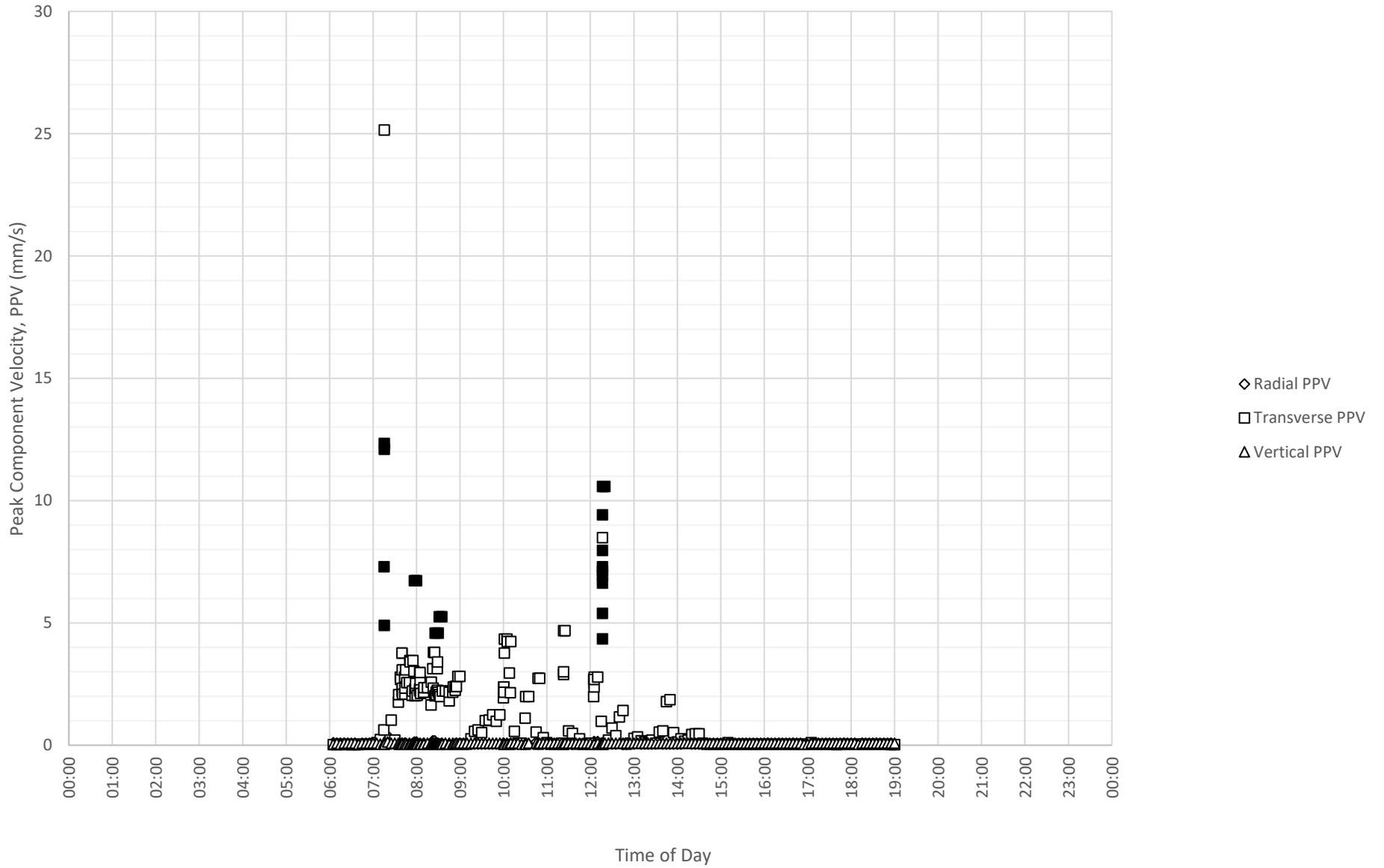
Daily Monitored Vibration Levels at M7713 Heritage (front) on 1-09-2022



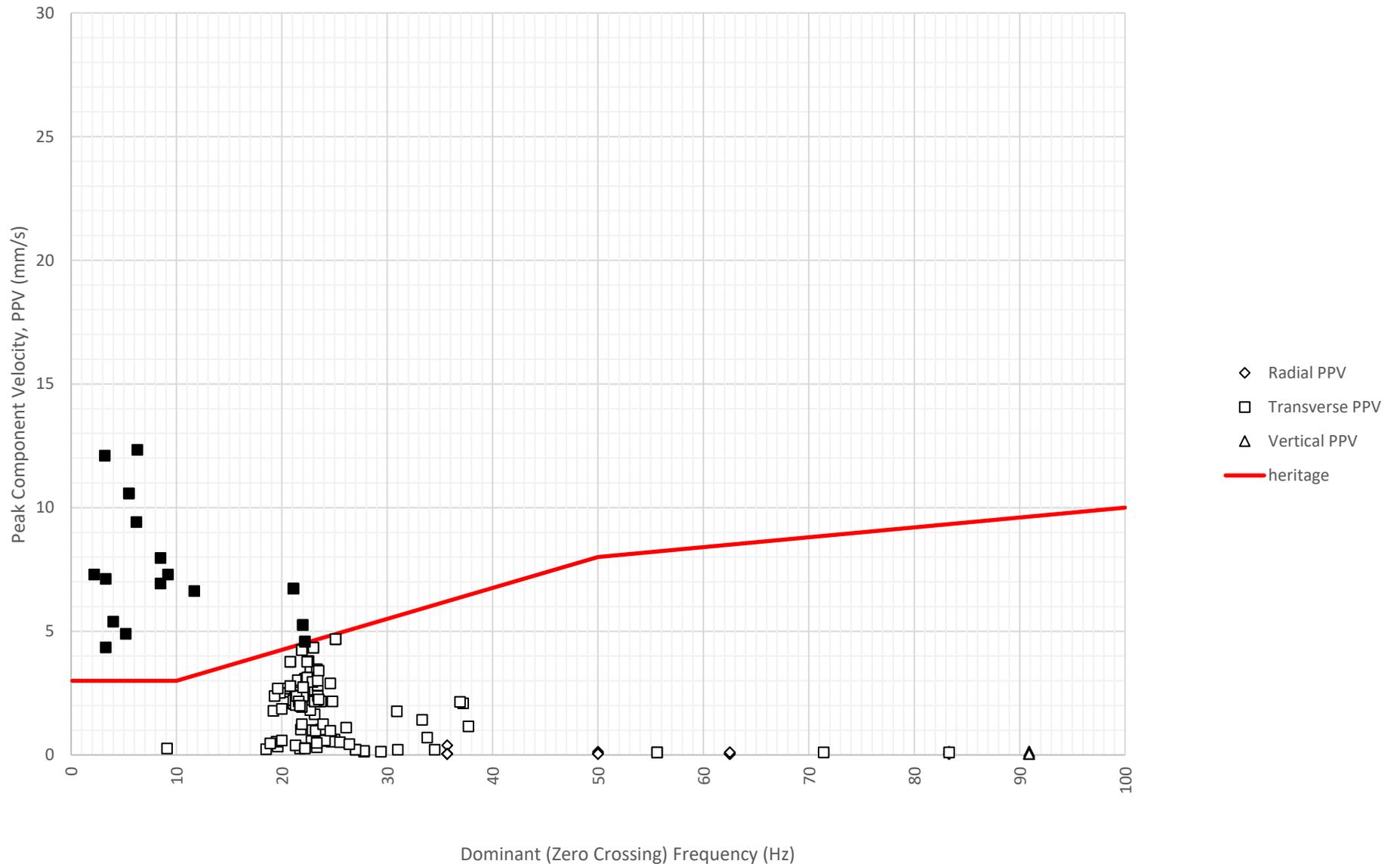
Frequency Content of Vibration Levels at M7713 Heritage (front) on 1-09-2022



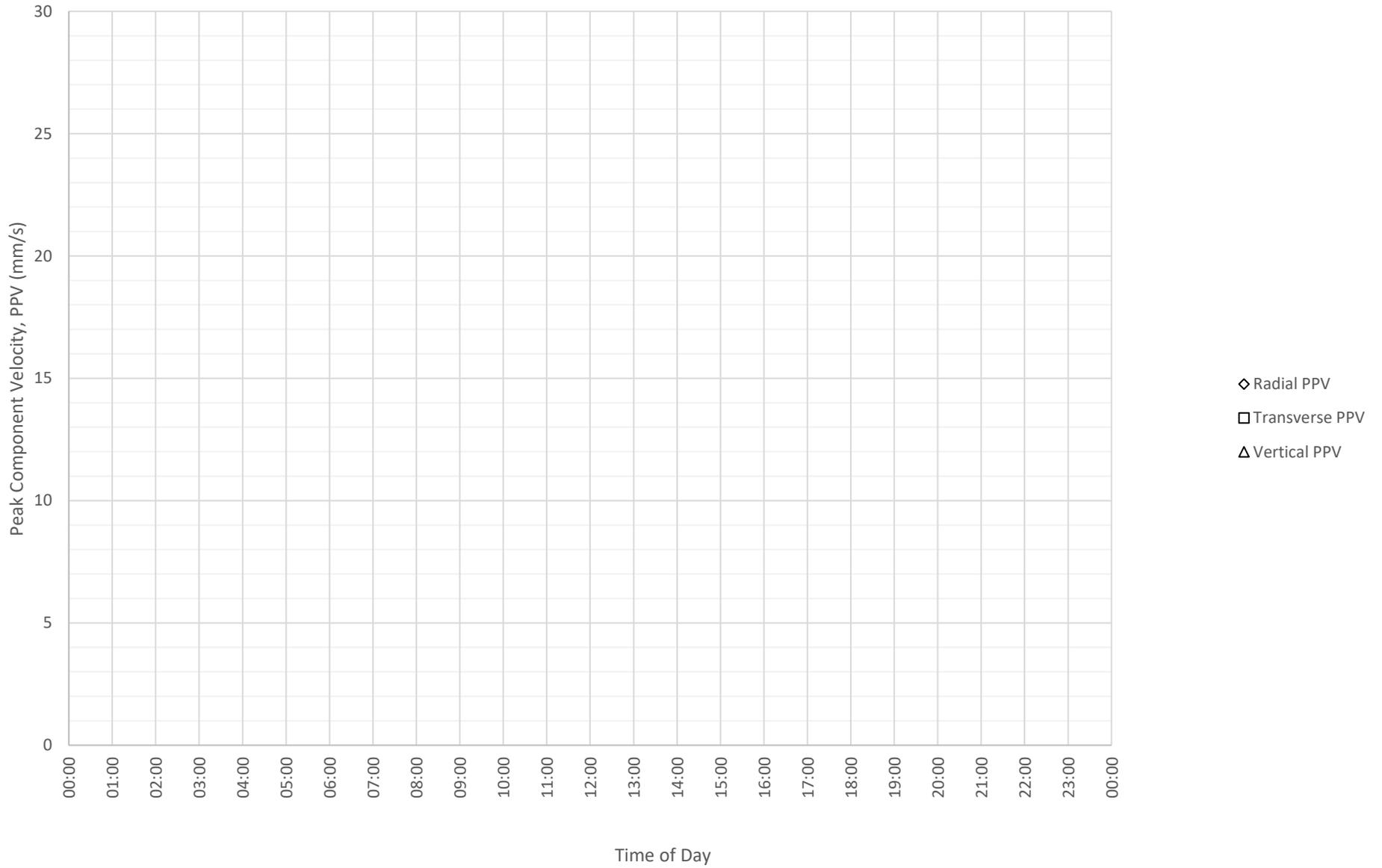
Daily Monitored Vibration Levels at M7713 Heritage (front) on 2-09-2022



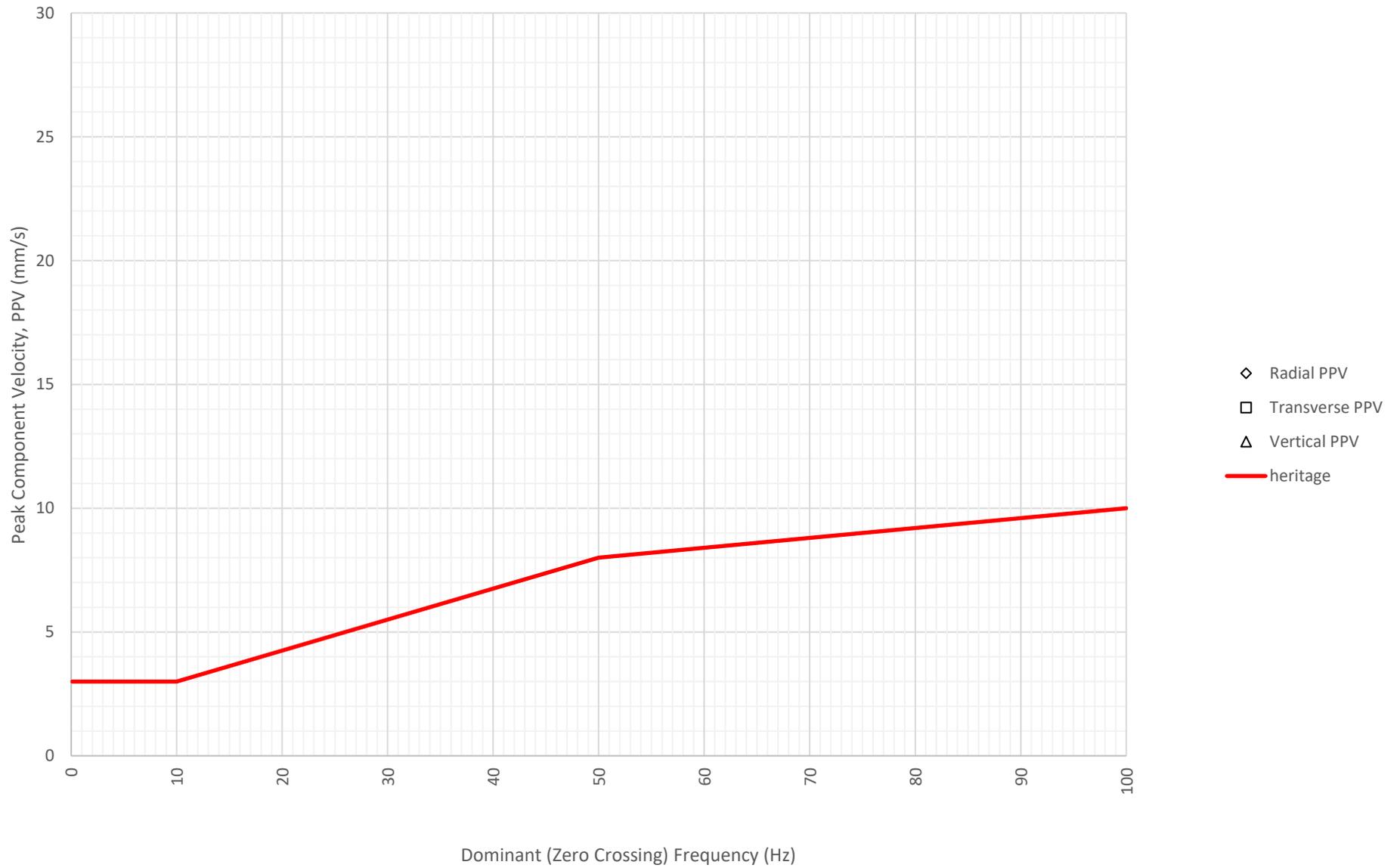
Frequency Content of Vibration Levels at M7713 Heritage (front) on 2-09-2022



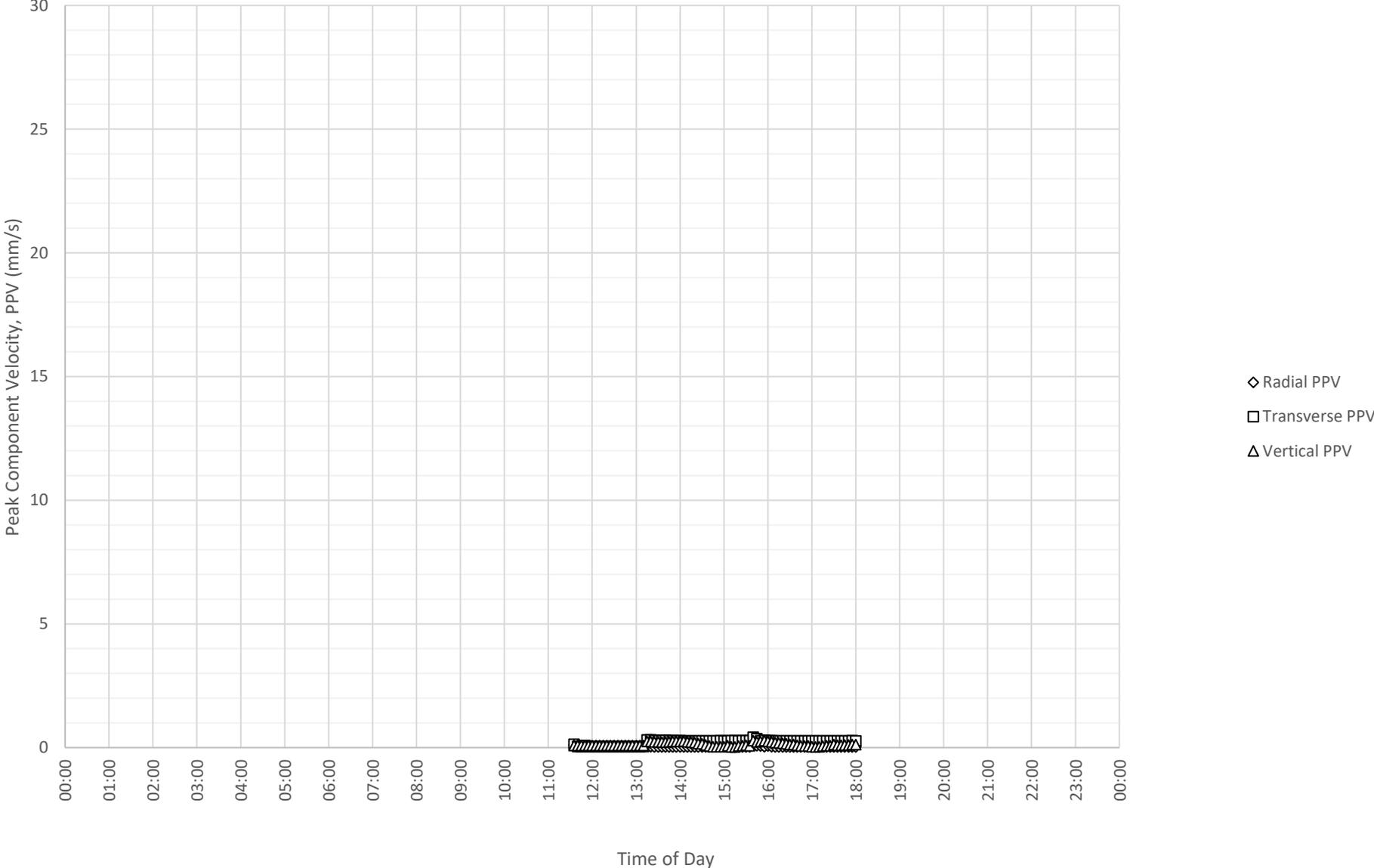
Daily Monitored Vibration Levels at M7713 Heritage (front) on 3-09-2022



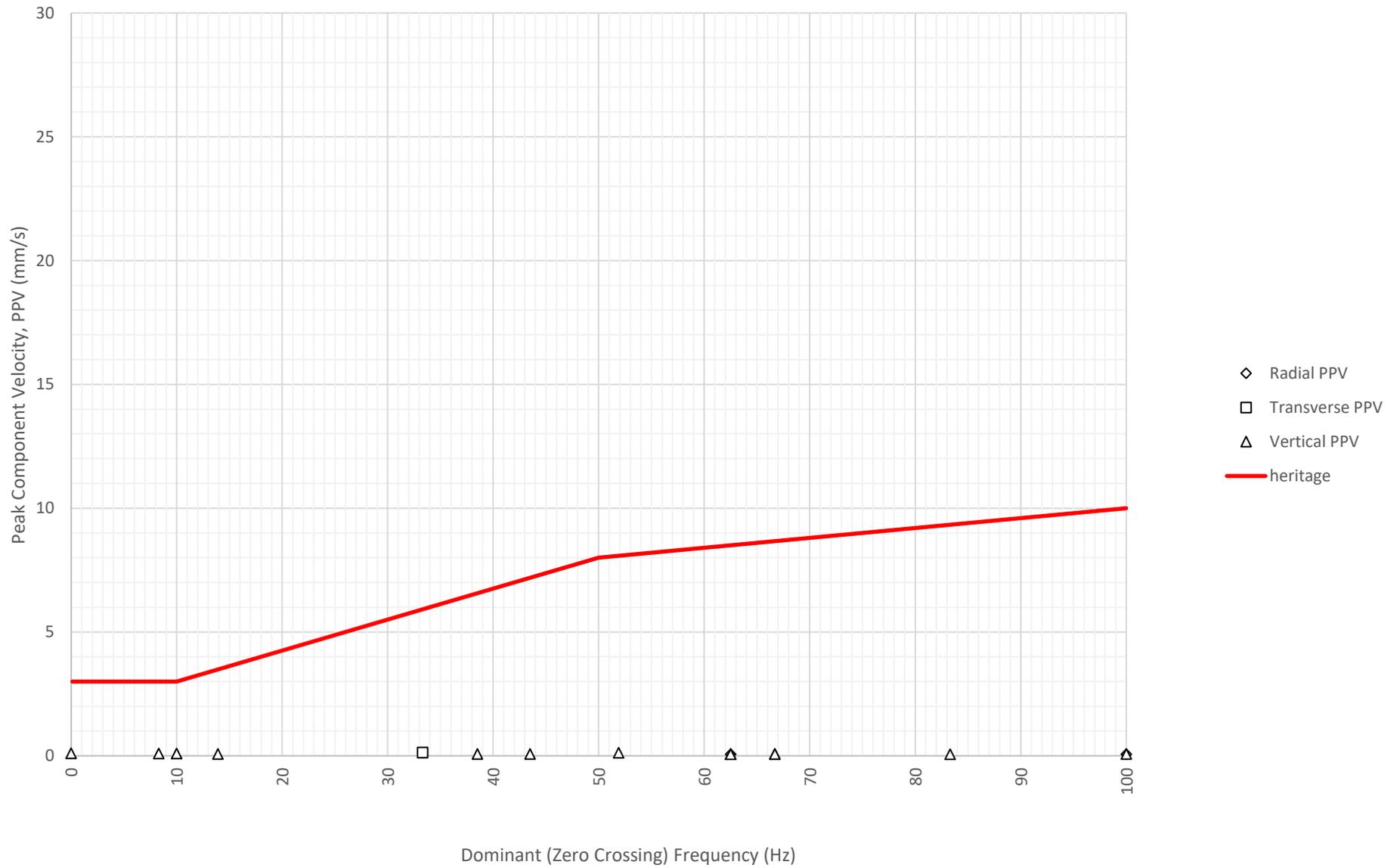
Frequency Content of Vibration Levels at M7713 Heritage (front) on 3-09-2022



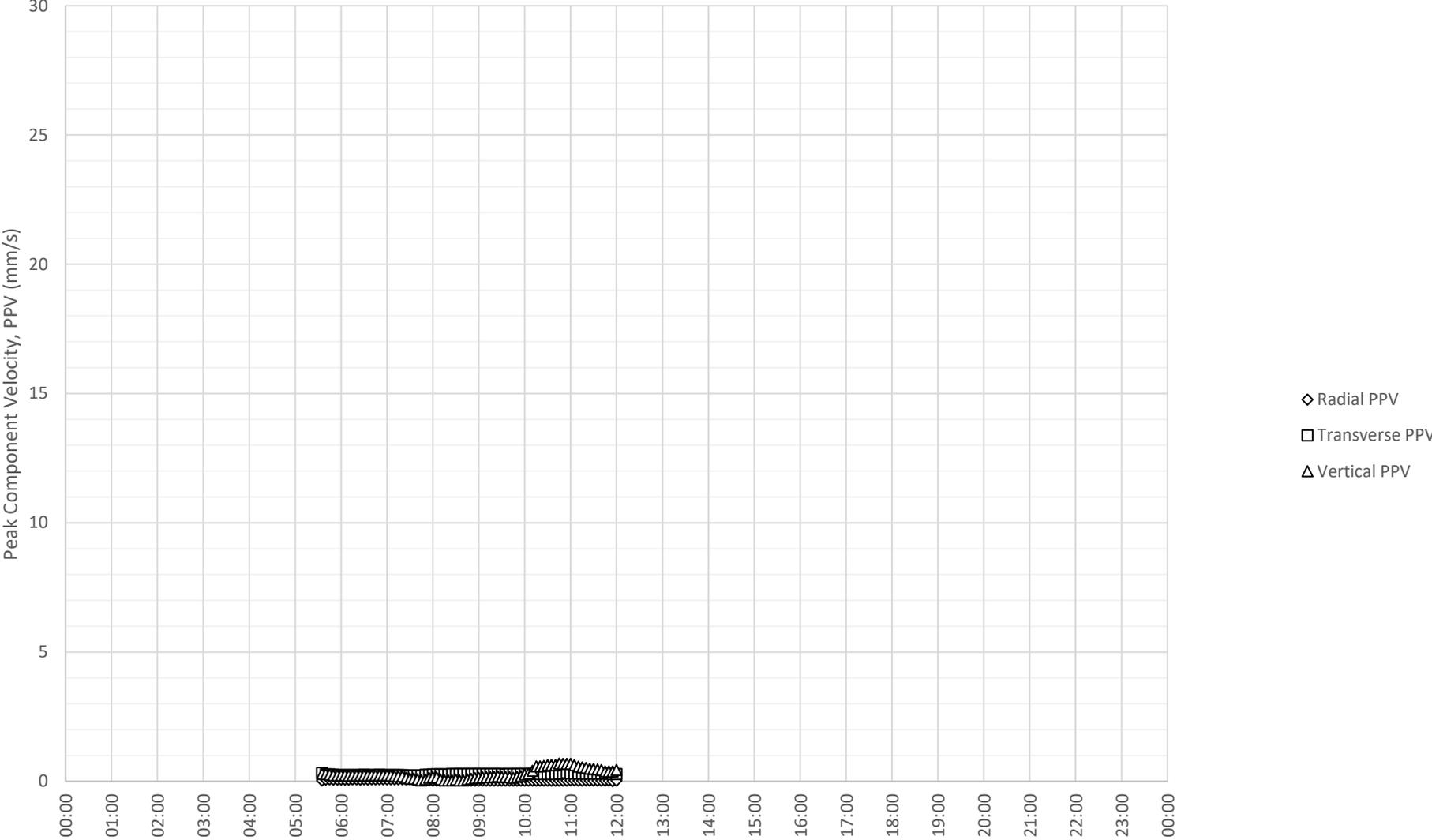
Daily Monitored Vibration Levels at M7713 Heritage (front) on 10-09-2022



Frequency Content of Vibration Levels at M7713 Heritage (front) on 10-09-2022

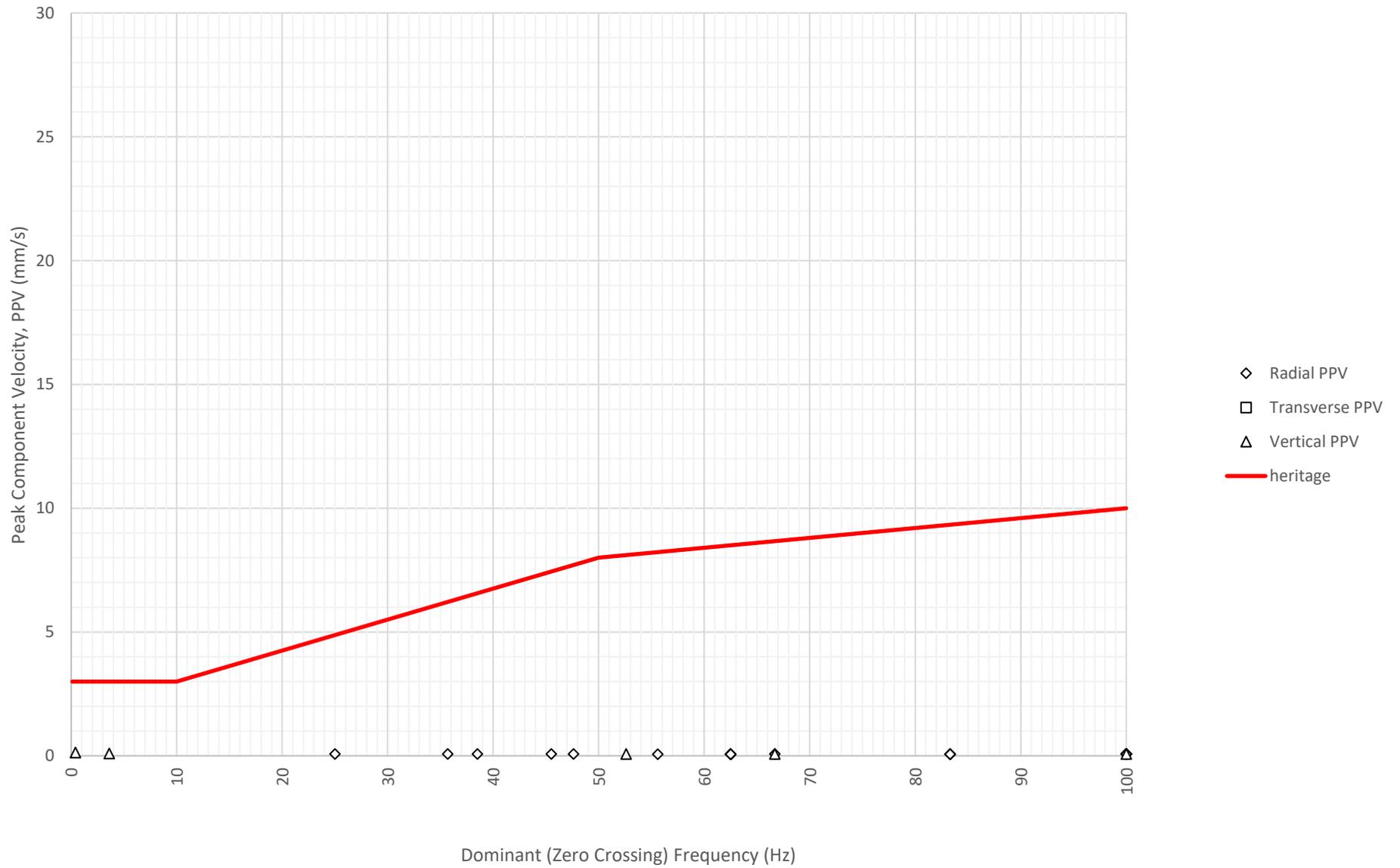


Daily Monitored Vibration Levels at M7713 Heritage (front) on 11-09-2022

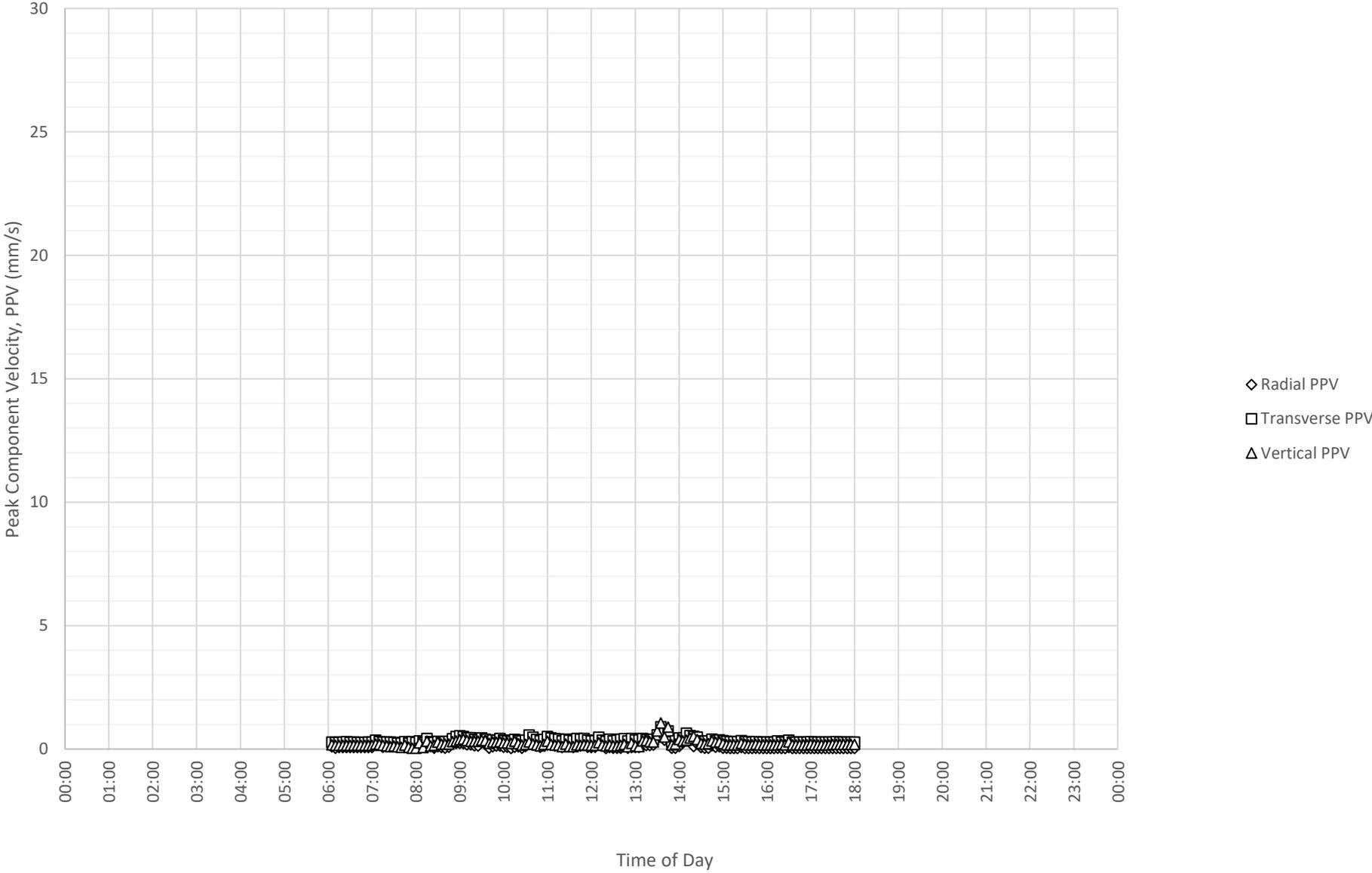


Time of Day

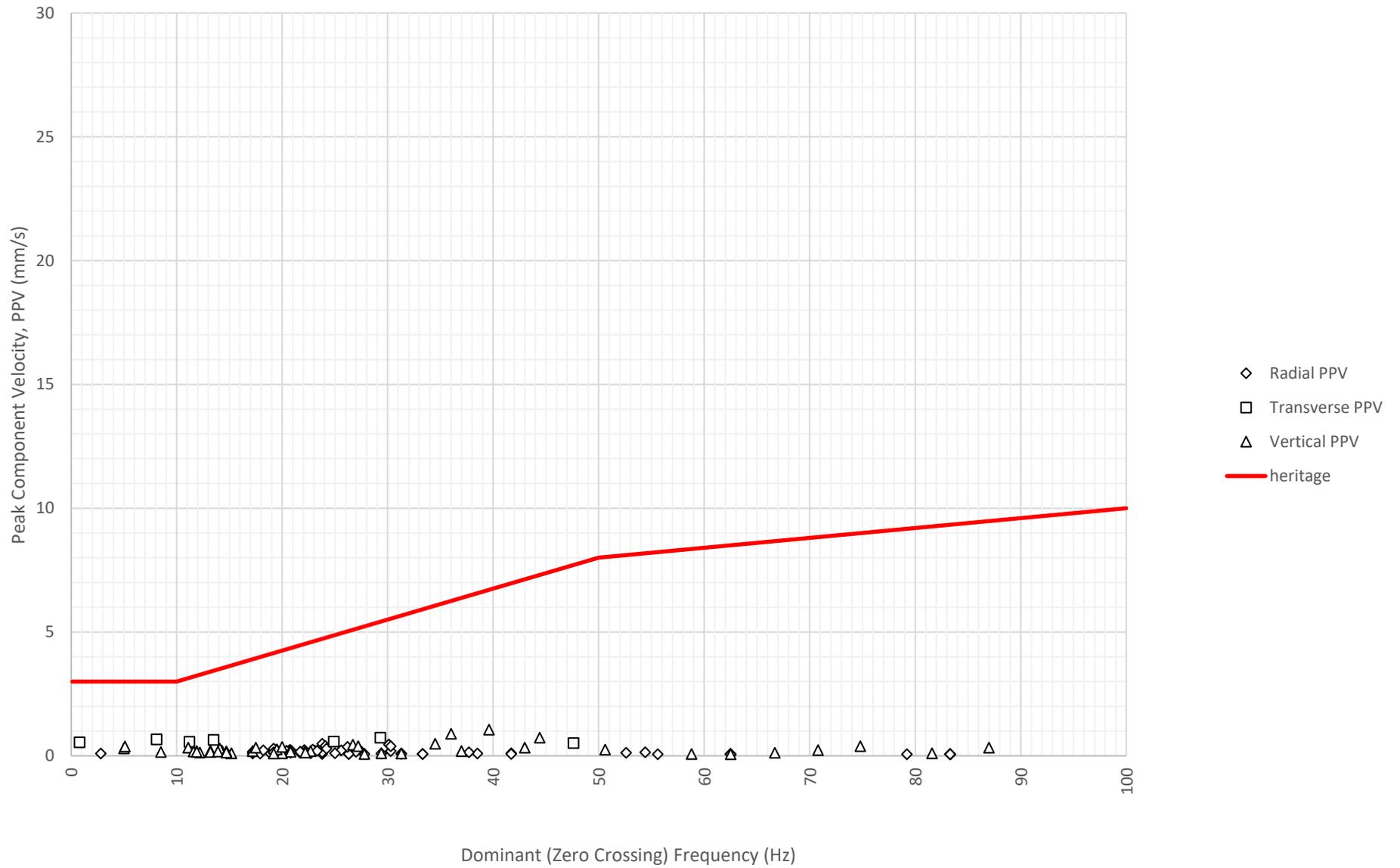
Frequency Content of Vibration Levels at M7713 Heritage (front) on 11-09-2022



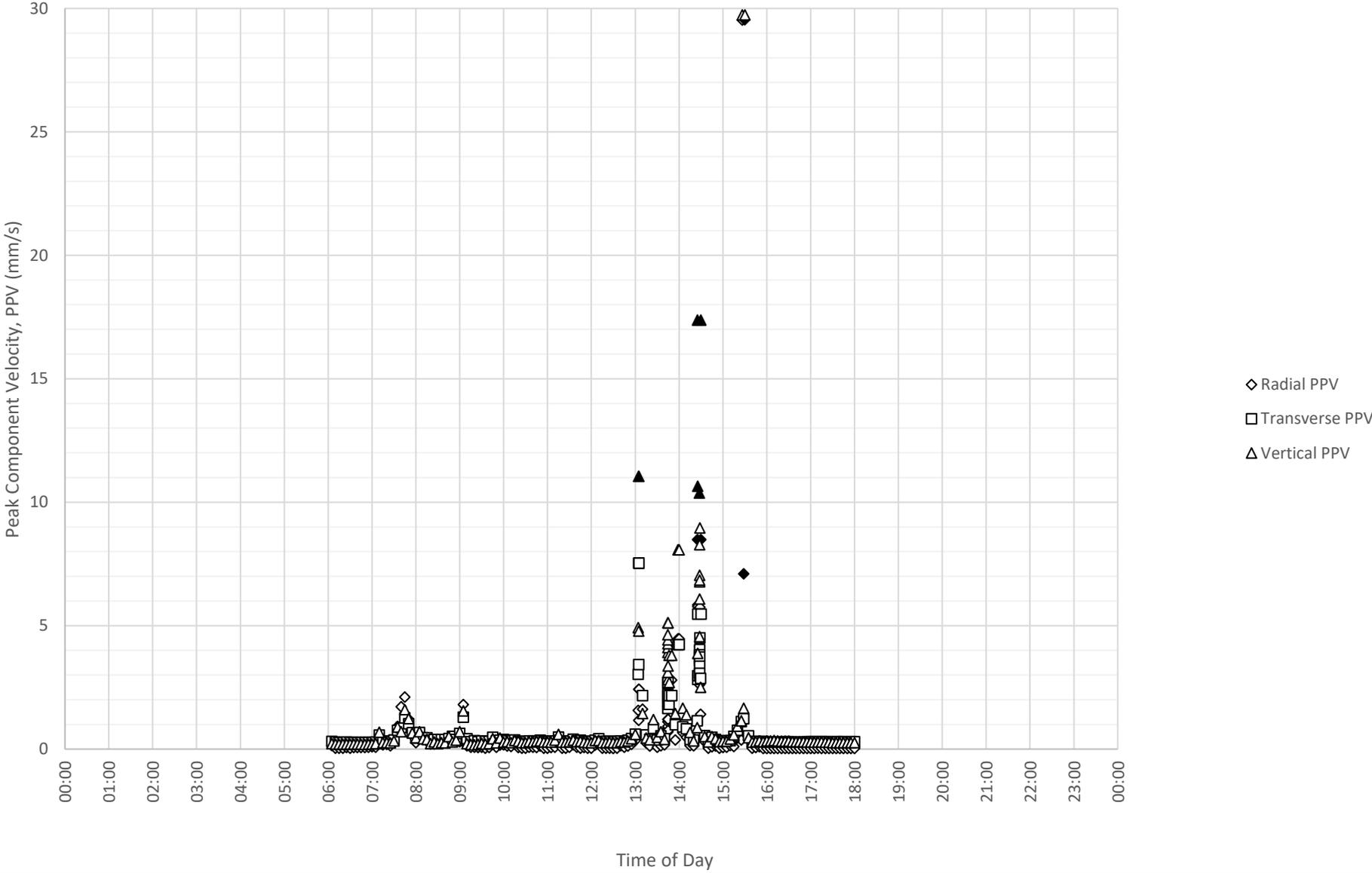
Daily Monitored Vibration Levels at M7713 Heritage (front) on 12-09-2022



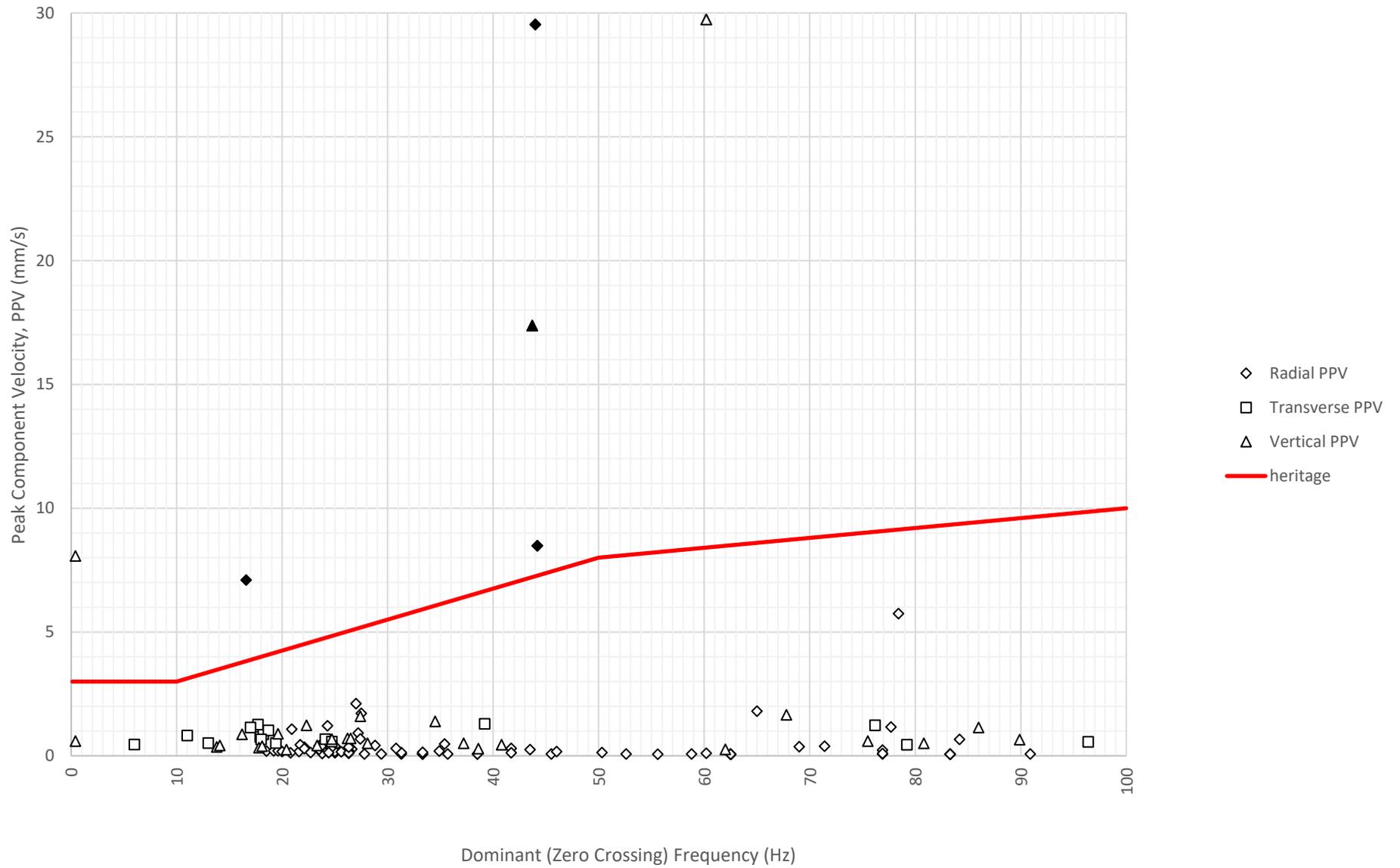
Frequency Content of Vibration Levels at M7713 Heritage (front) on 12-09-2022



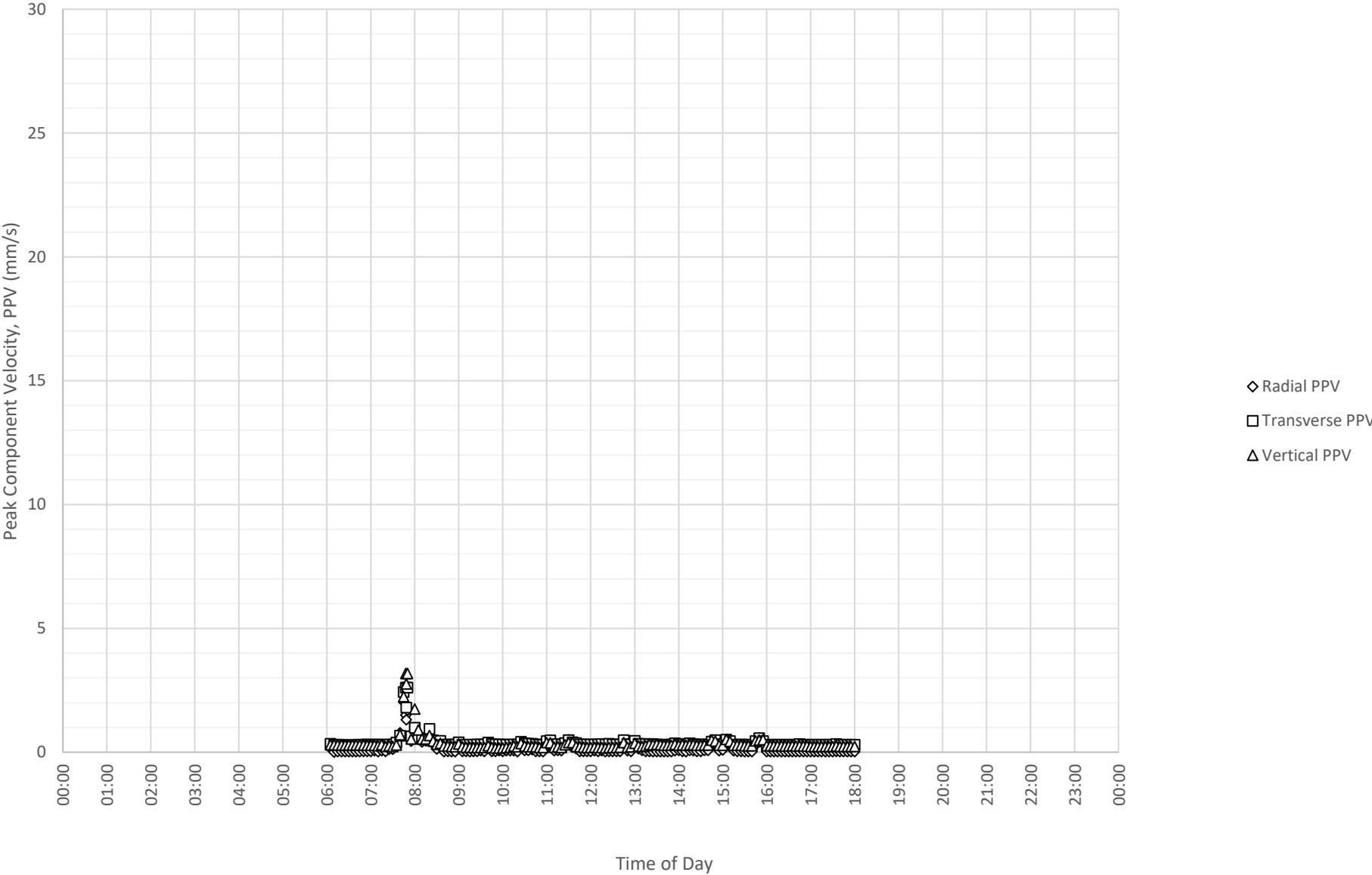
Daily Monitored Vibration Levels at M7713 Heritage (front) on 13-09-2022



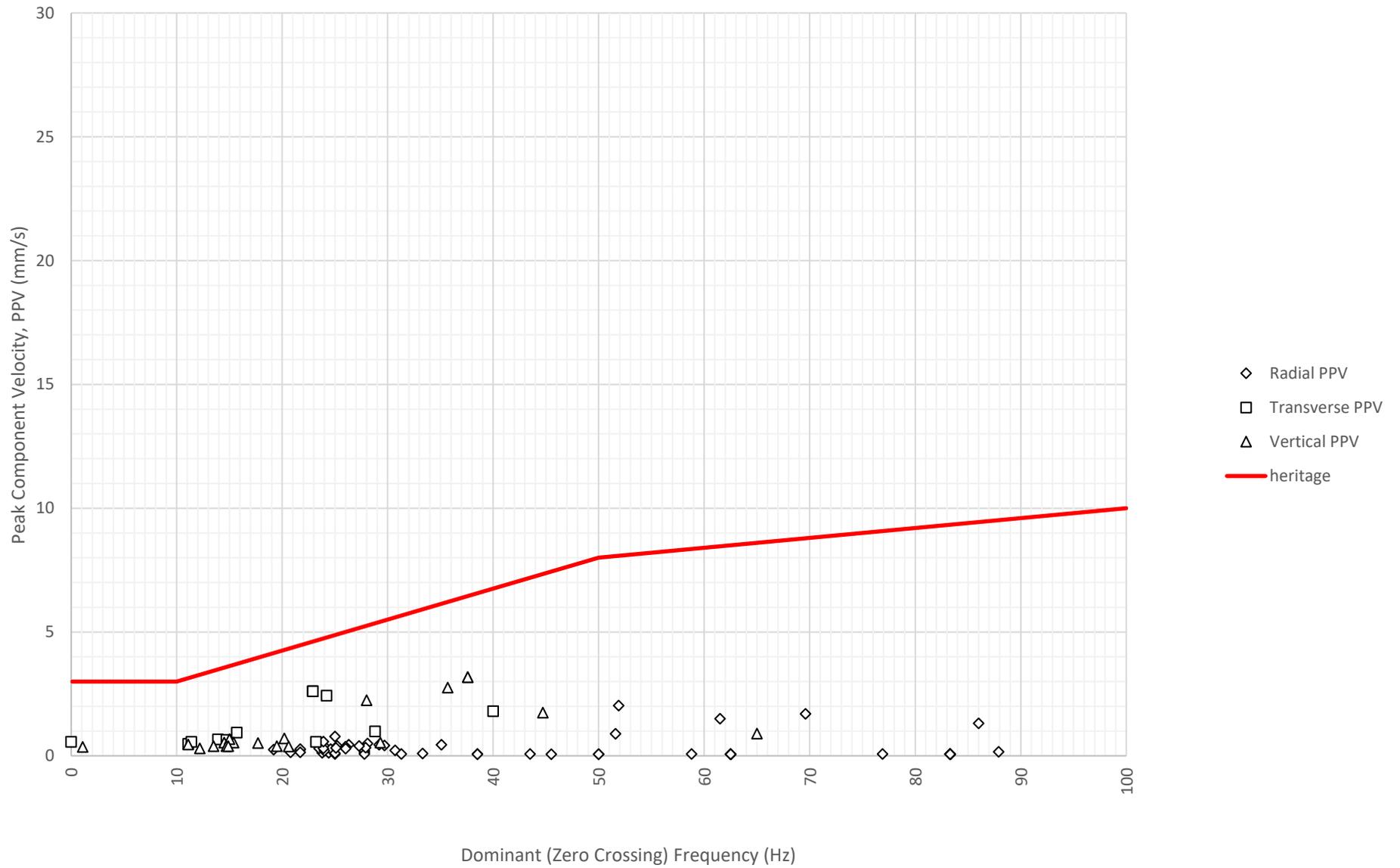
Frequency Content of Vibration Levels at M7713 Heritage (front) on 13-09-2022



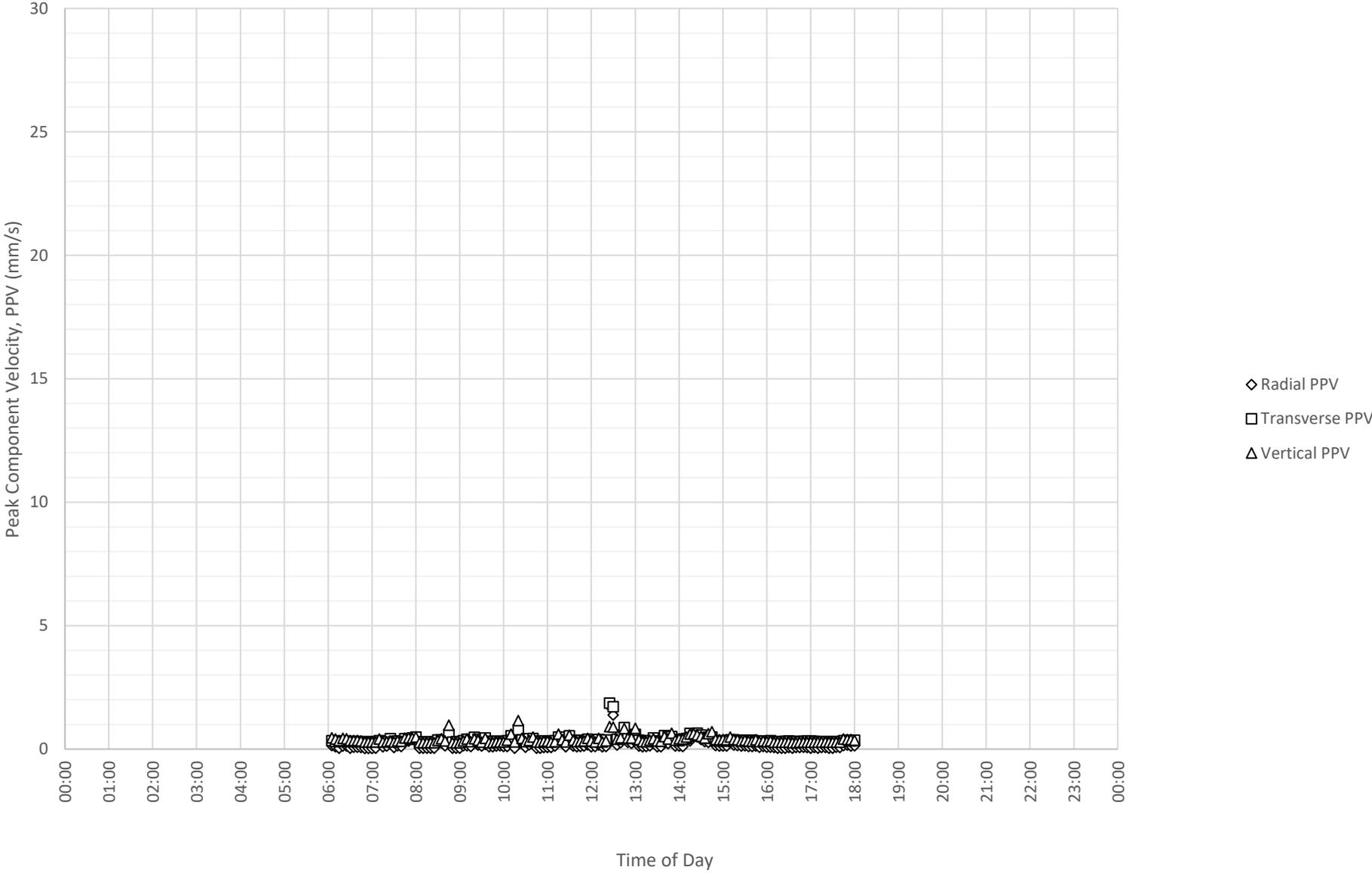
Daily Monitored Vibration Levels at M7713 Heritage (front) on 14-09-2022



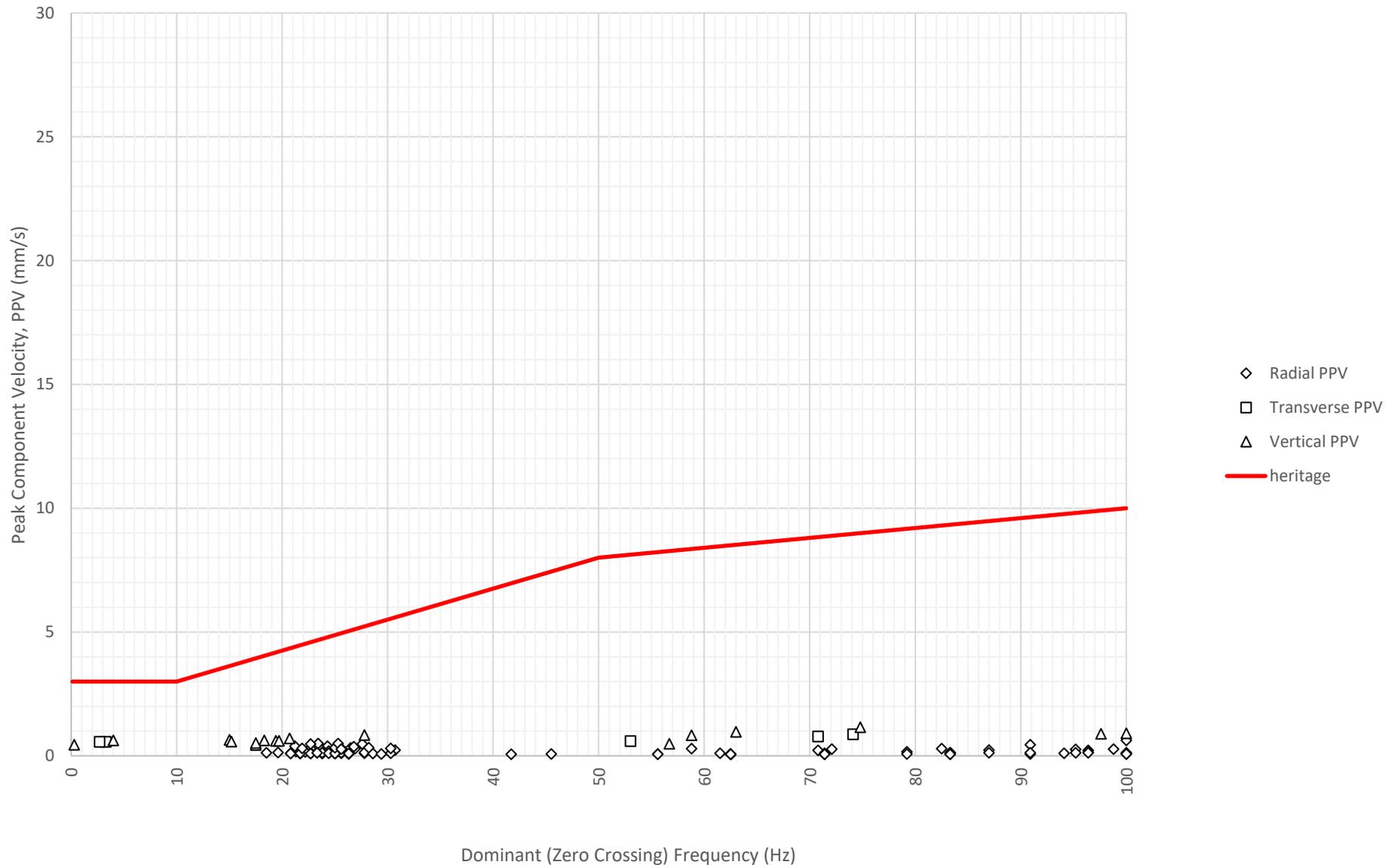
Frequency Content of Vibration Levels at M7713 Heritage (front) on 14-09-2022



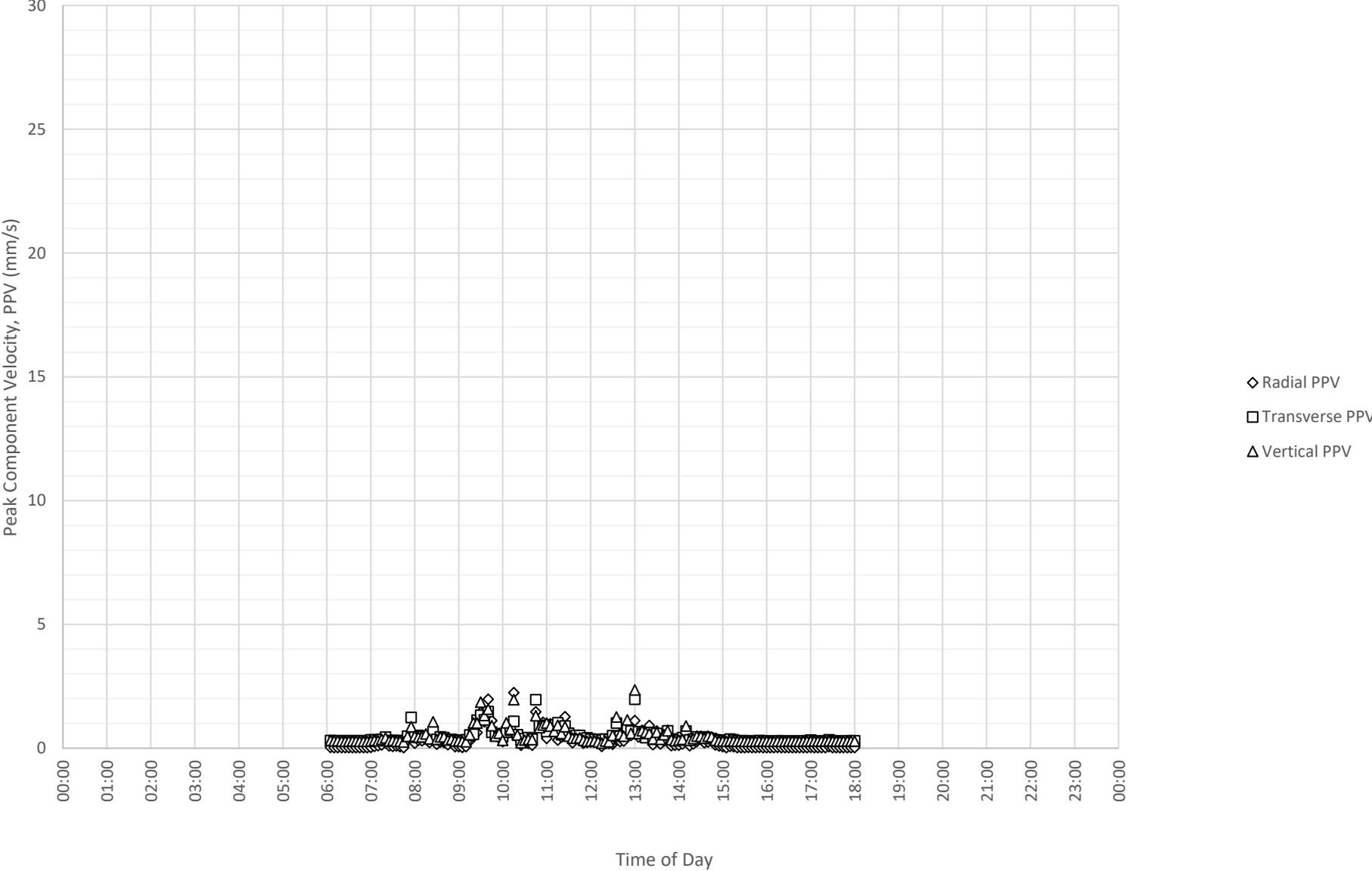
Daily Monitored Vibration Levels at M7713 Heritage (front) on 15-09-2022



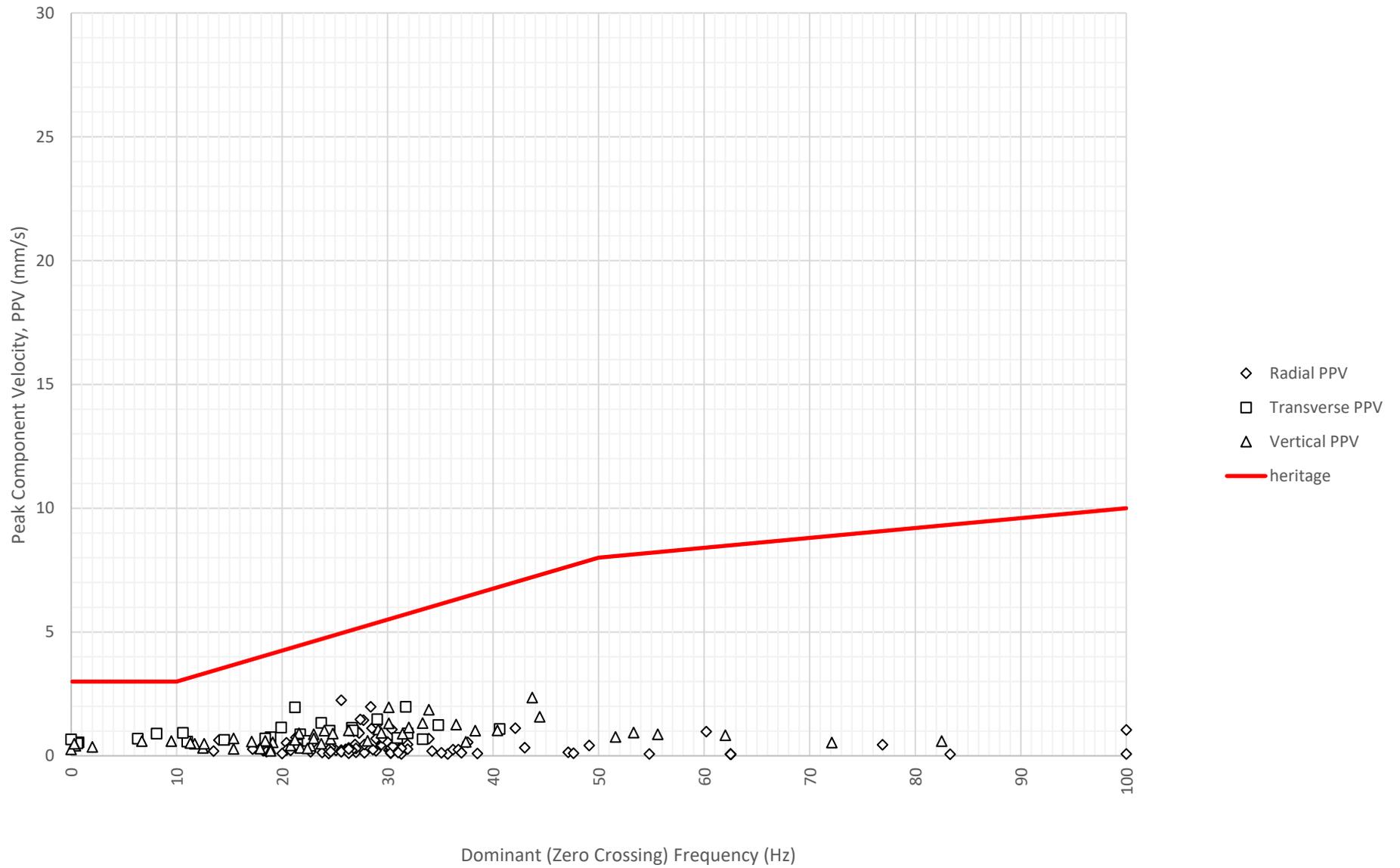
Frequency Content of Vibration Levels at M7713 Heritage (front) on 15-09-2022



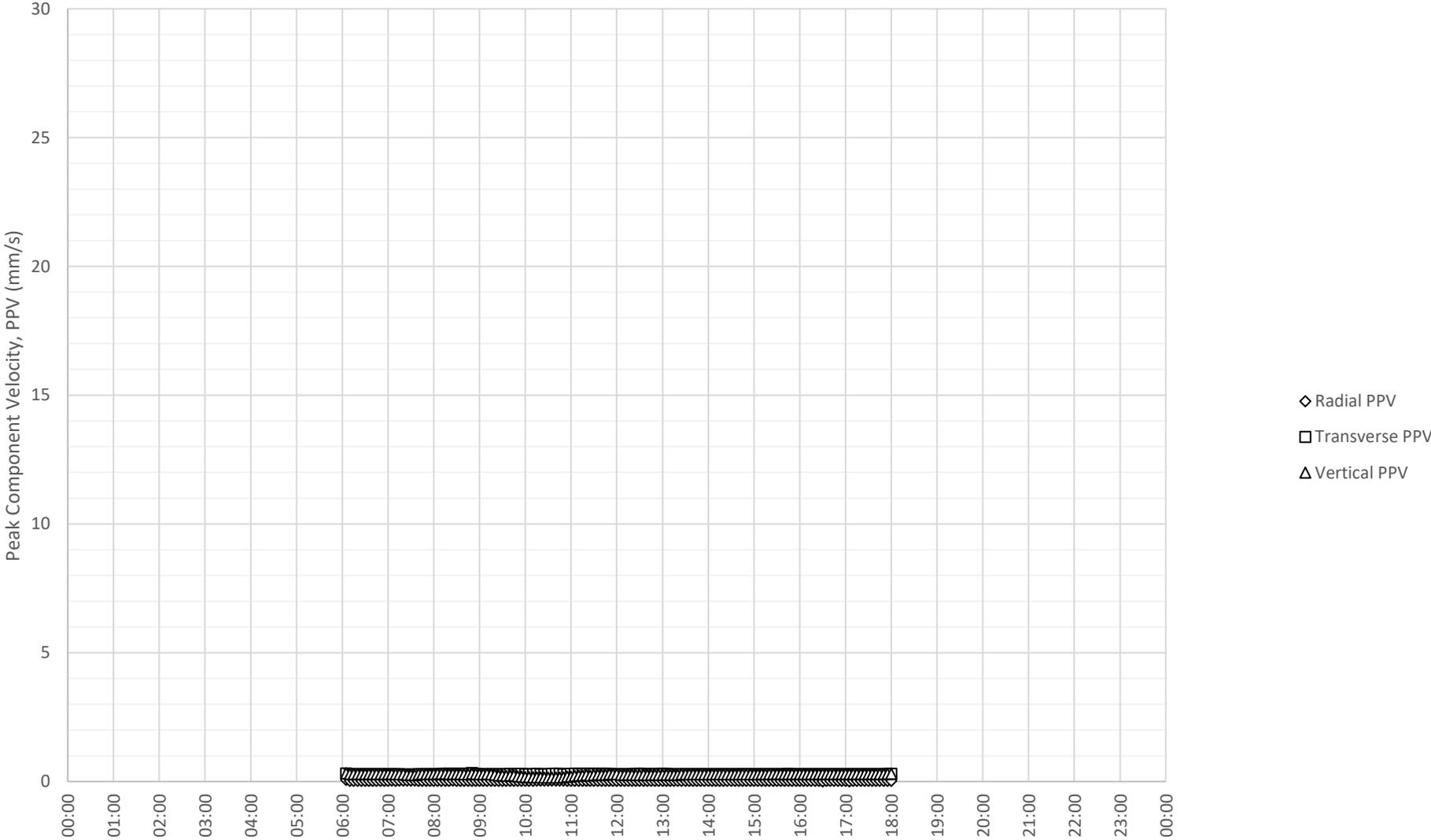
Daily Monitored Vibration Levels at M7713 Heritage (front) on 16-09-2022



Frequency Content of Vibration Levels at M7713 Heritage (front) on 16-09-2022

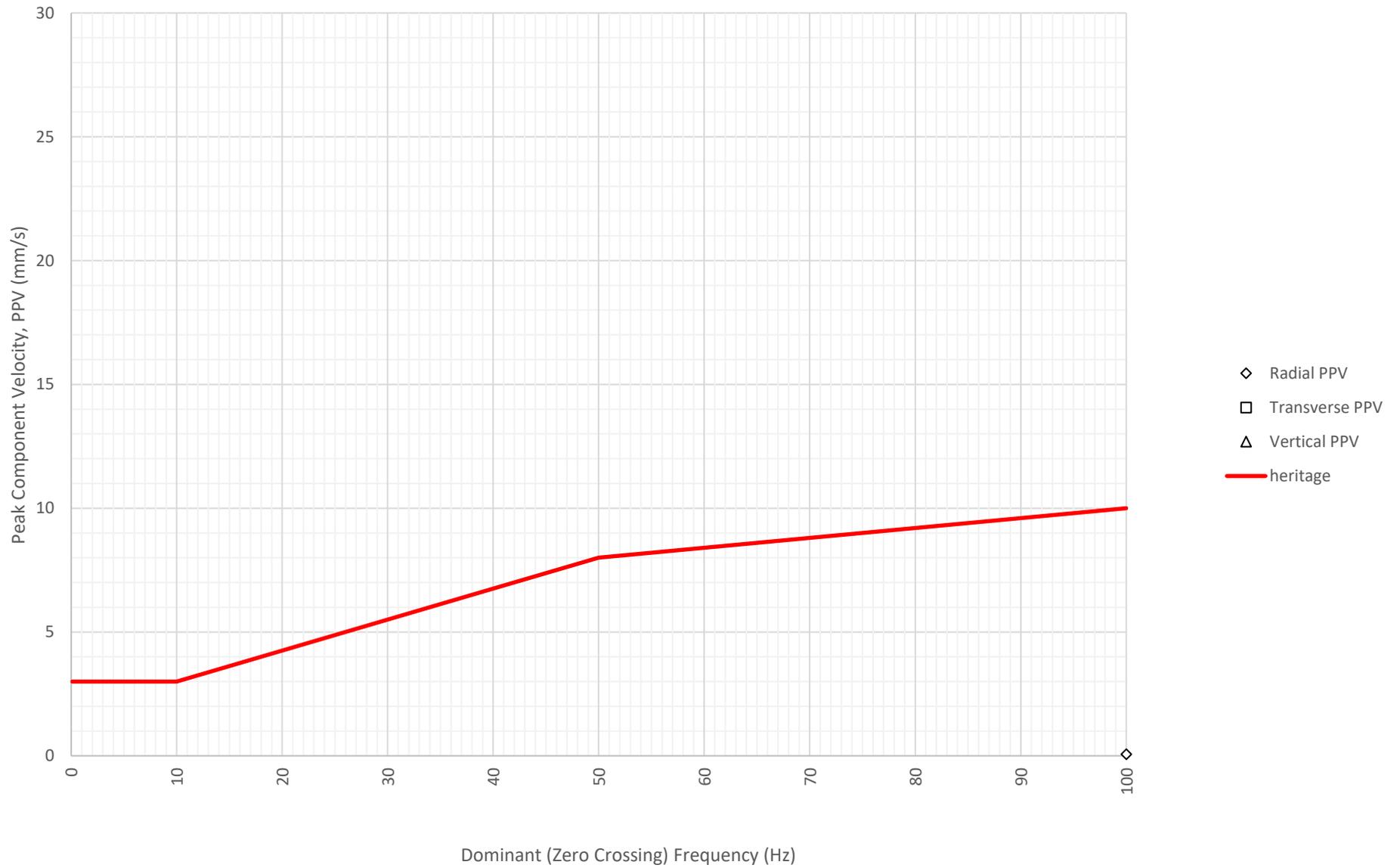


Daily Monitored Vibration Levels at M7713 Heritage (front) on 17-09-2022

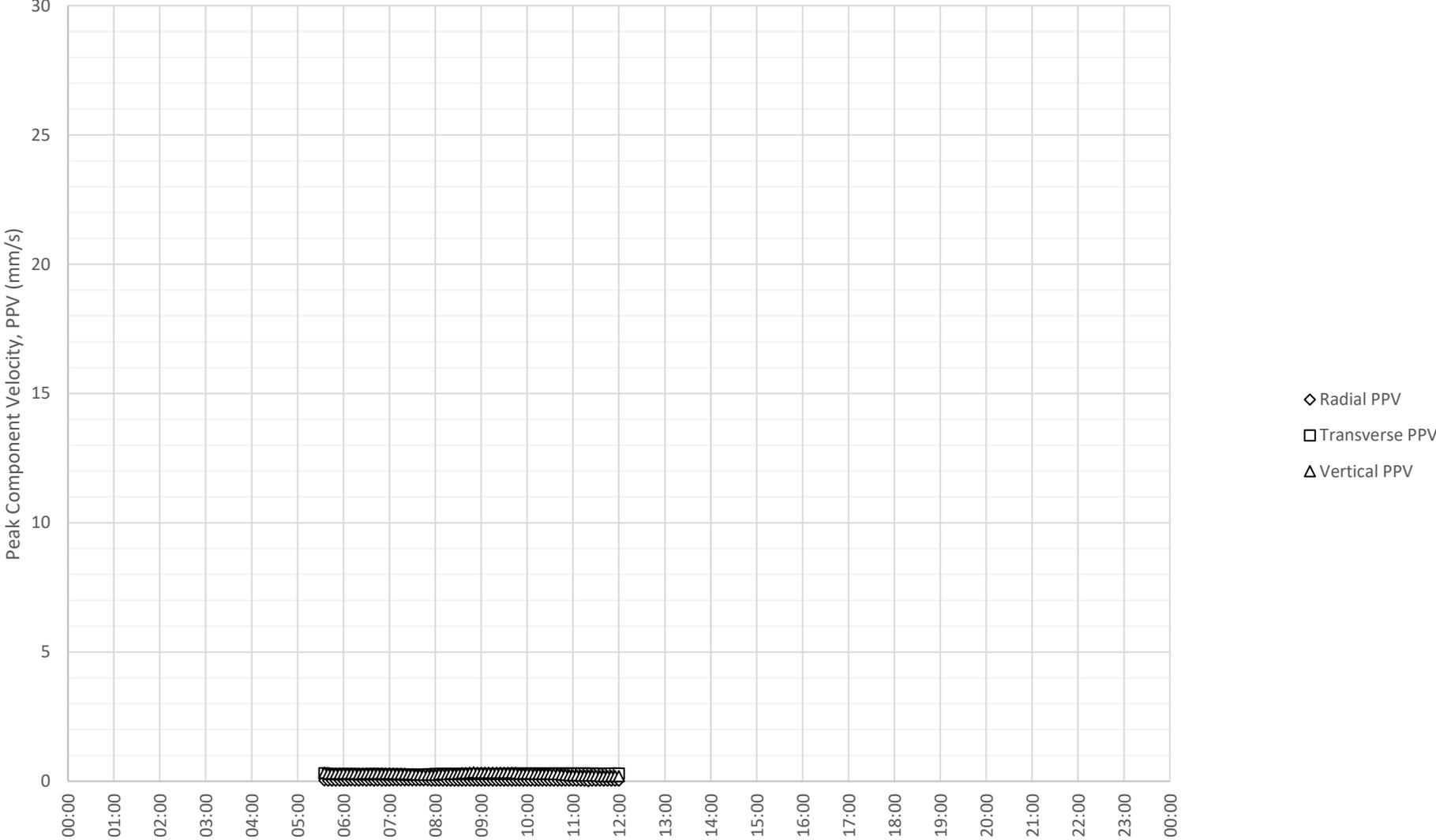


Time of Day

Frequency Content of Vibration Levels at M7713 Heritage (front) on 17-09-2022

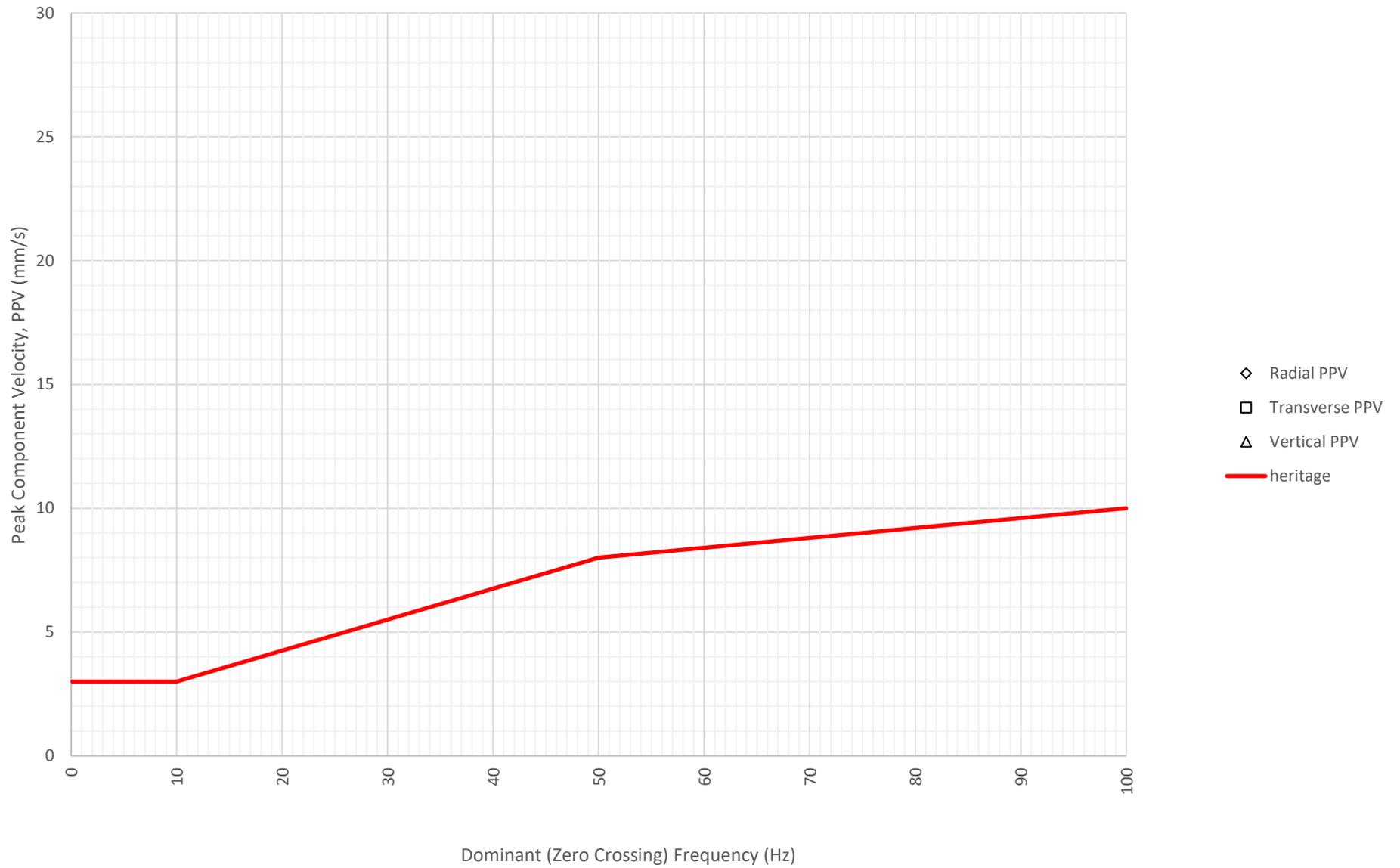


Daily Monitored Vibration Levels at M7713 Heritage (front) on 18-09-2022

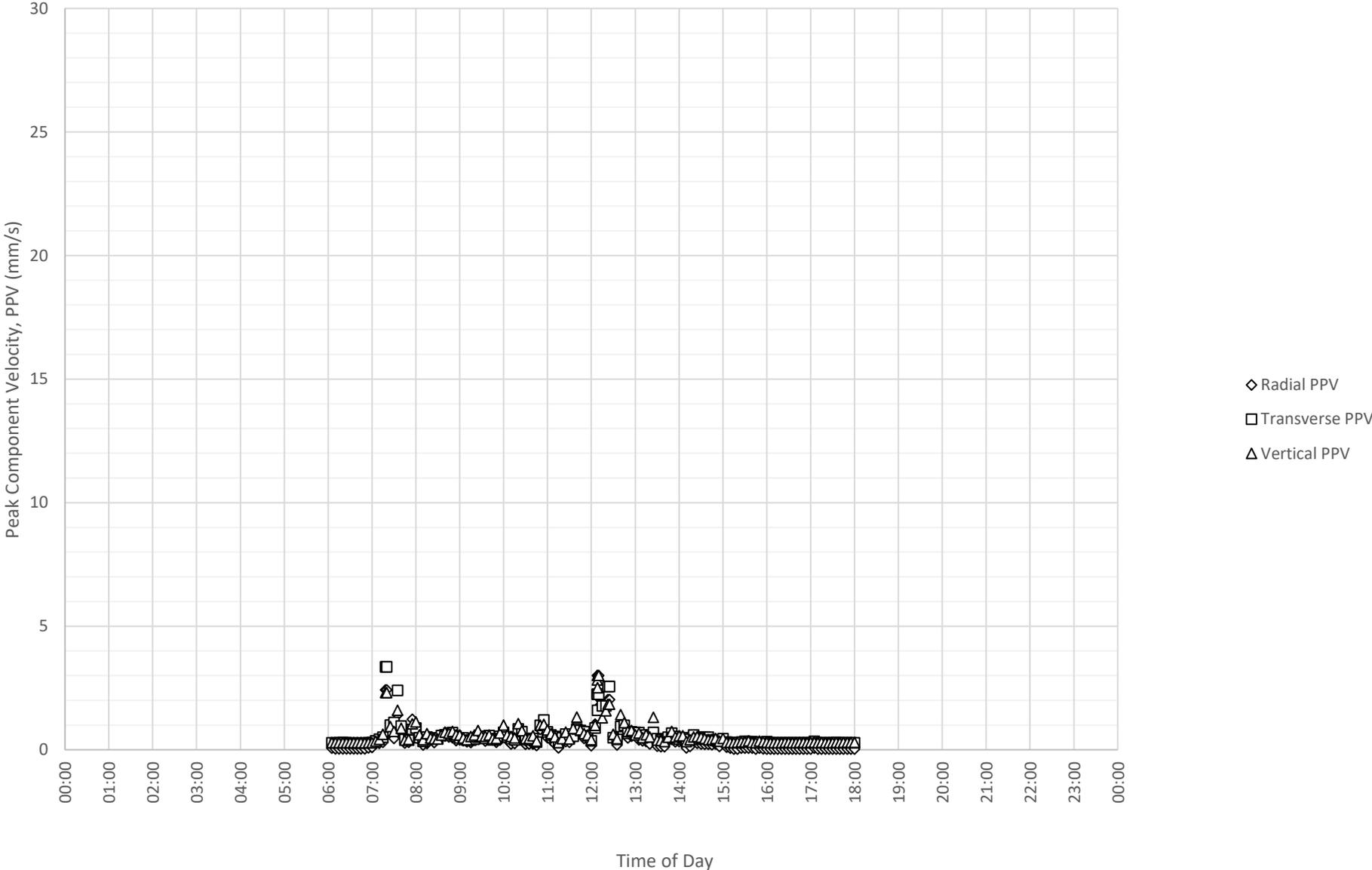


Time of Day

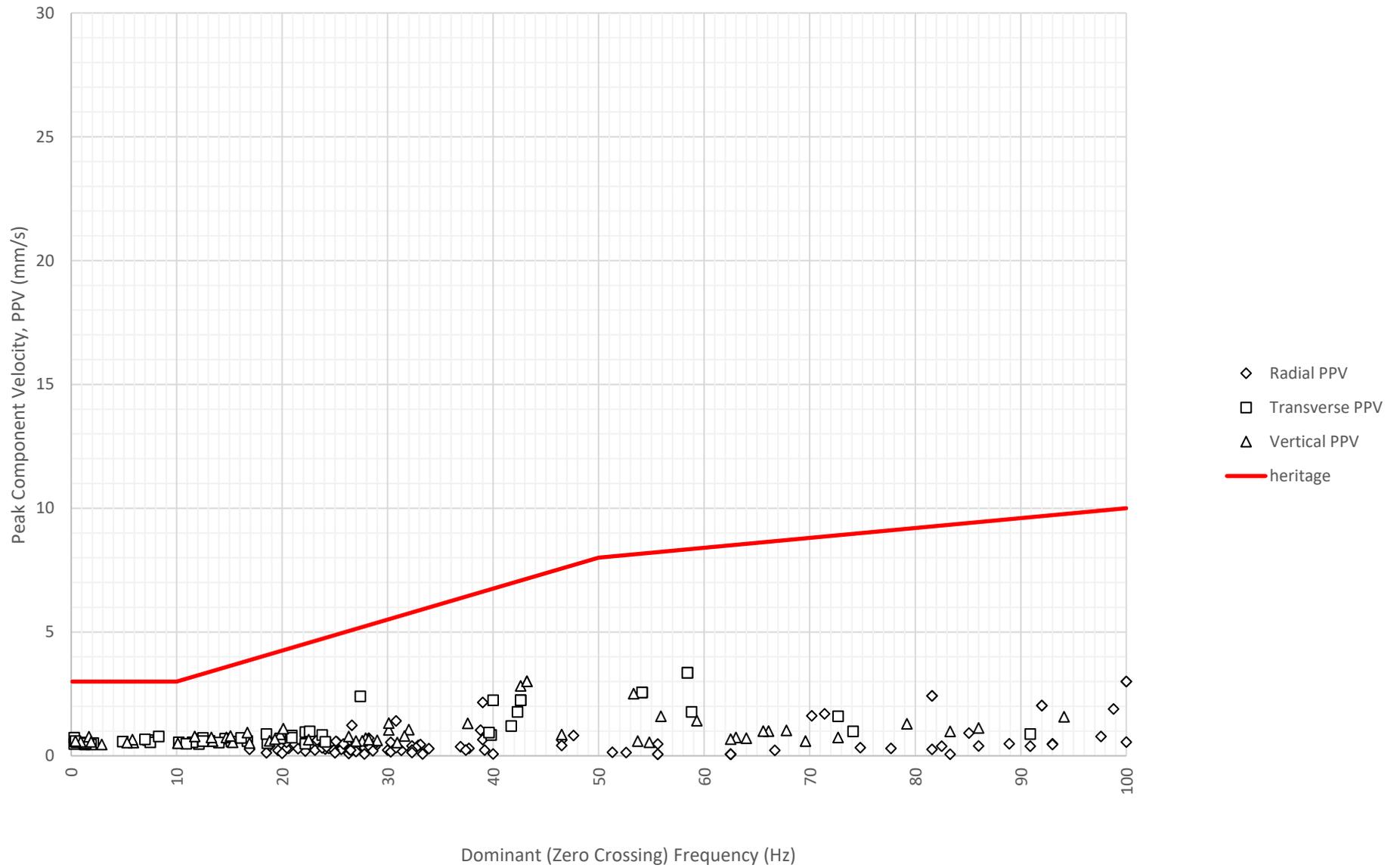
Frequency Content of Vibration Levels at M7713 Heritage (front) on 18-09-2022



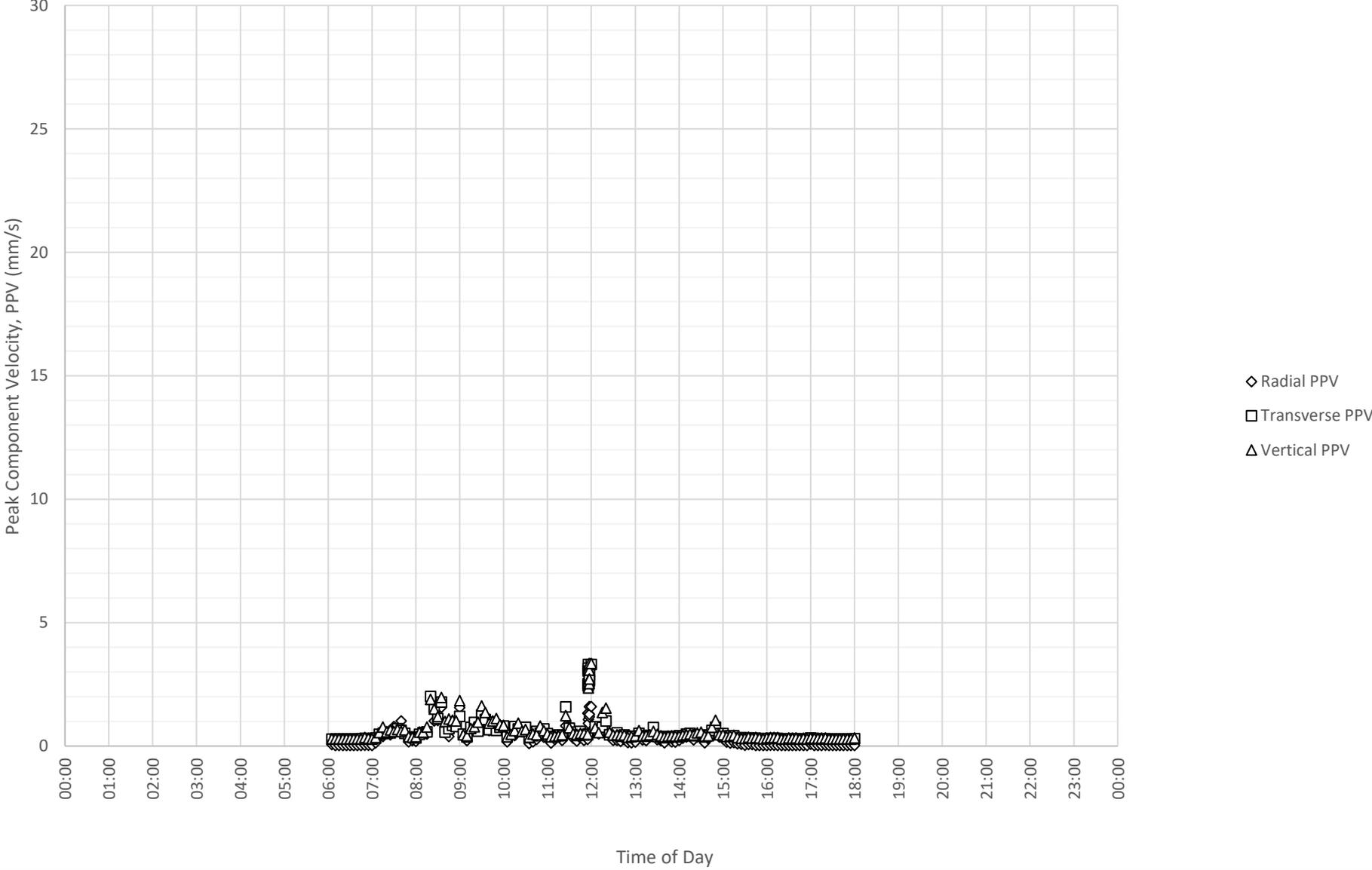
Daily Monitored Vibration Levels at M7713 Heritage (front) on 19-09-2022



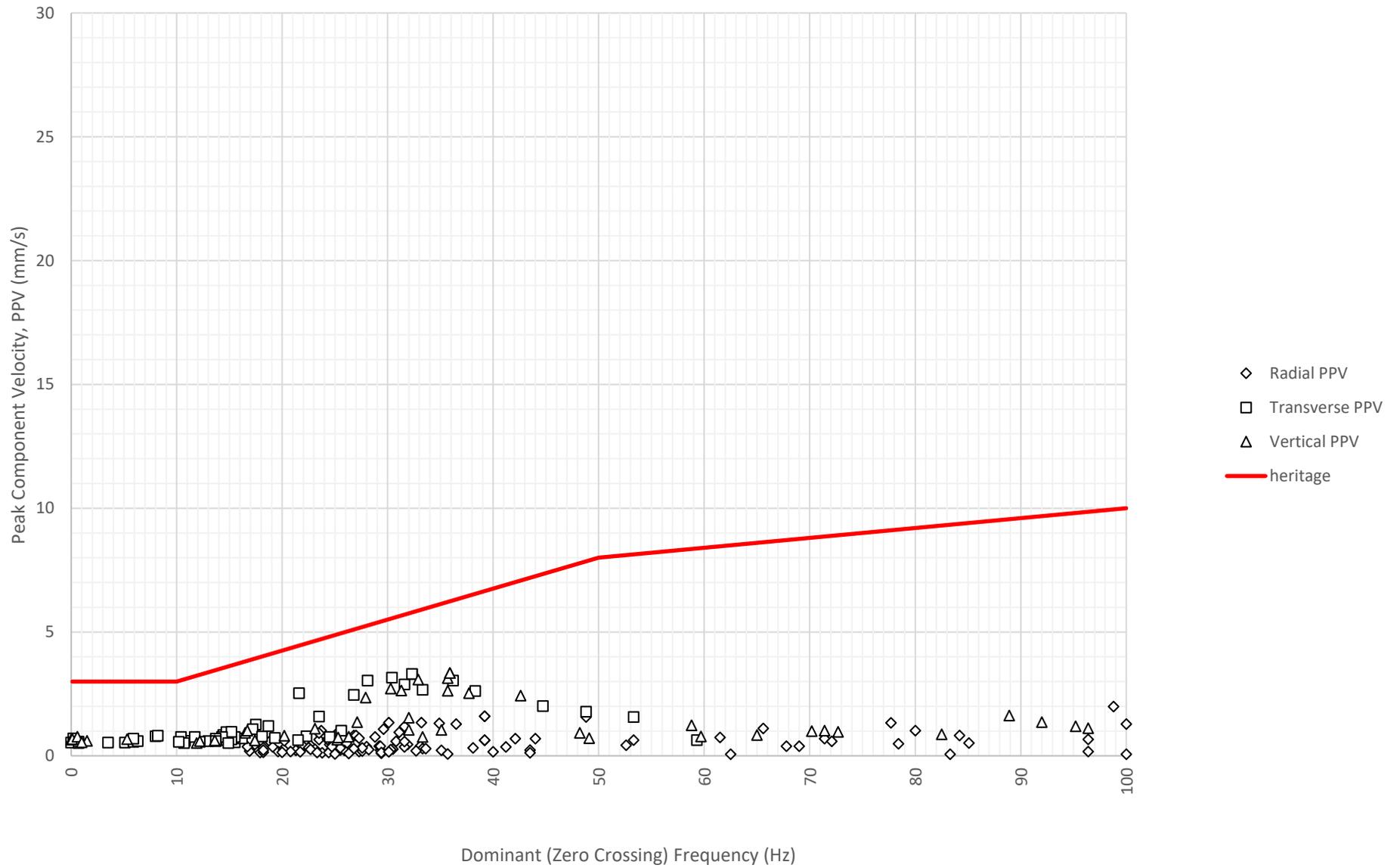
Frequency Content of Vibration Levels at M7713 Heritage (front) on 19-09-2022



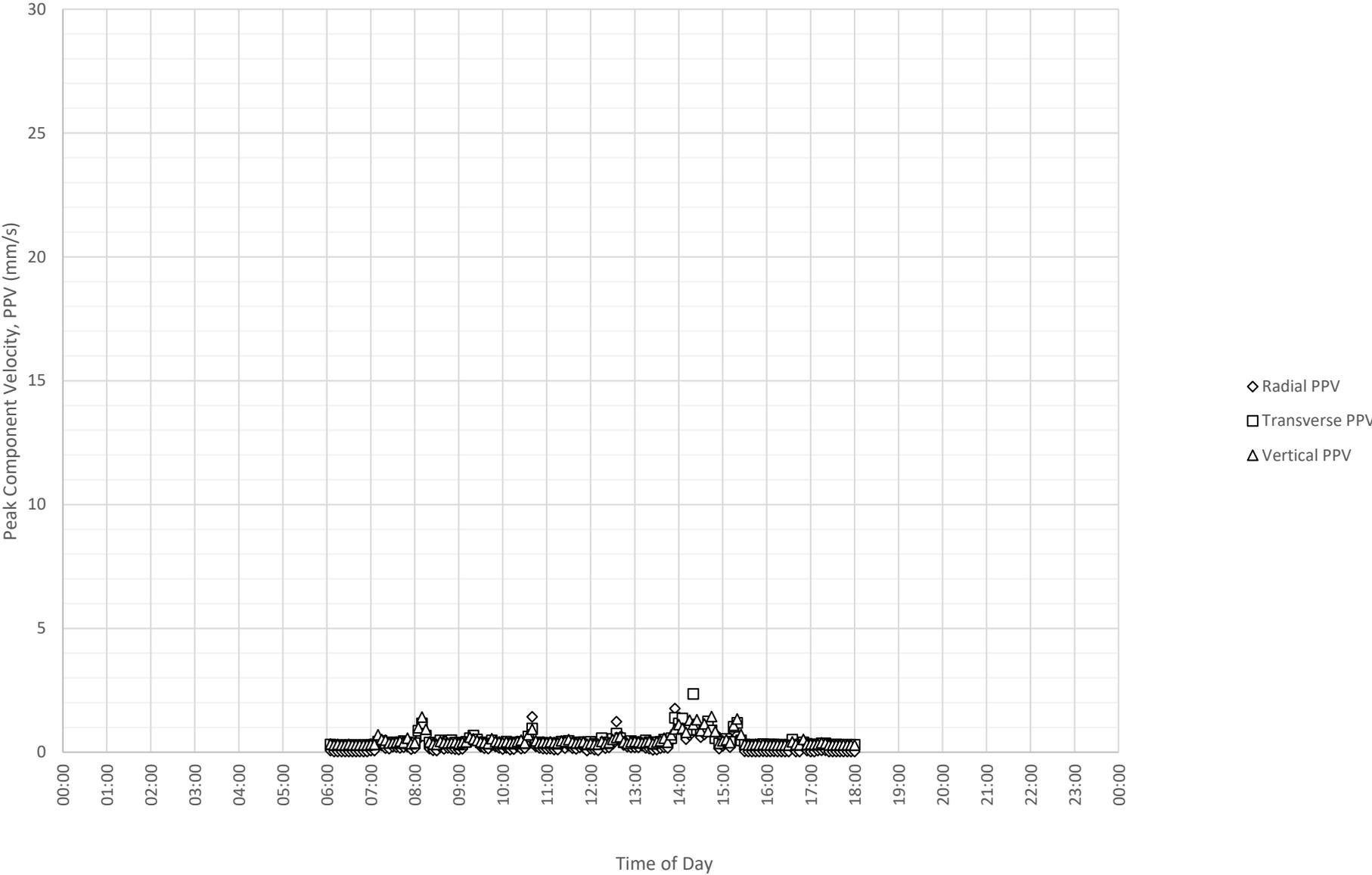
Daily Monitored Vibration Levels at M7713 Heritage (front) on 20-09-2022



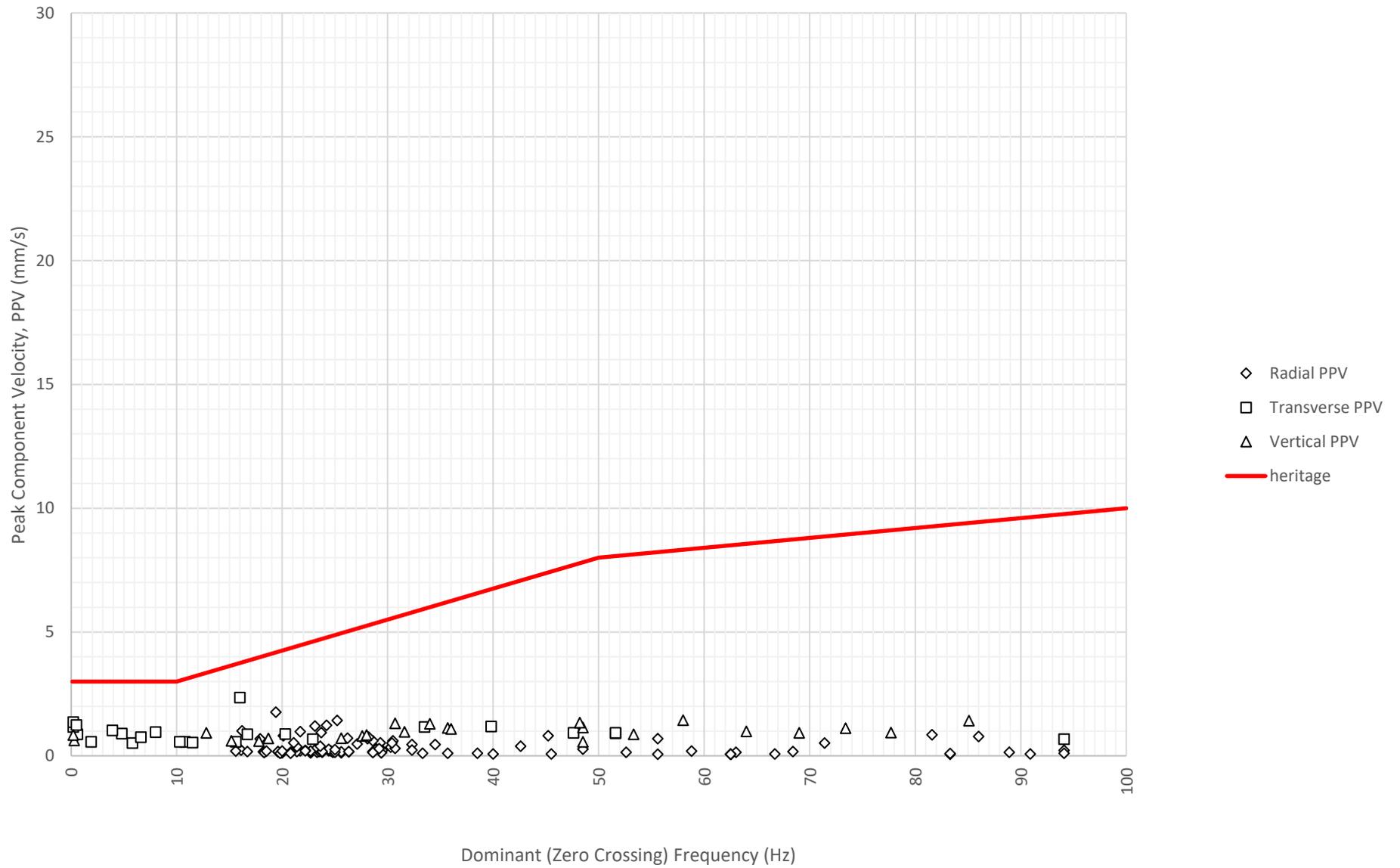
Frequency Content of Vibration Levels at M7713 Heritage (front) on 20-09-2022



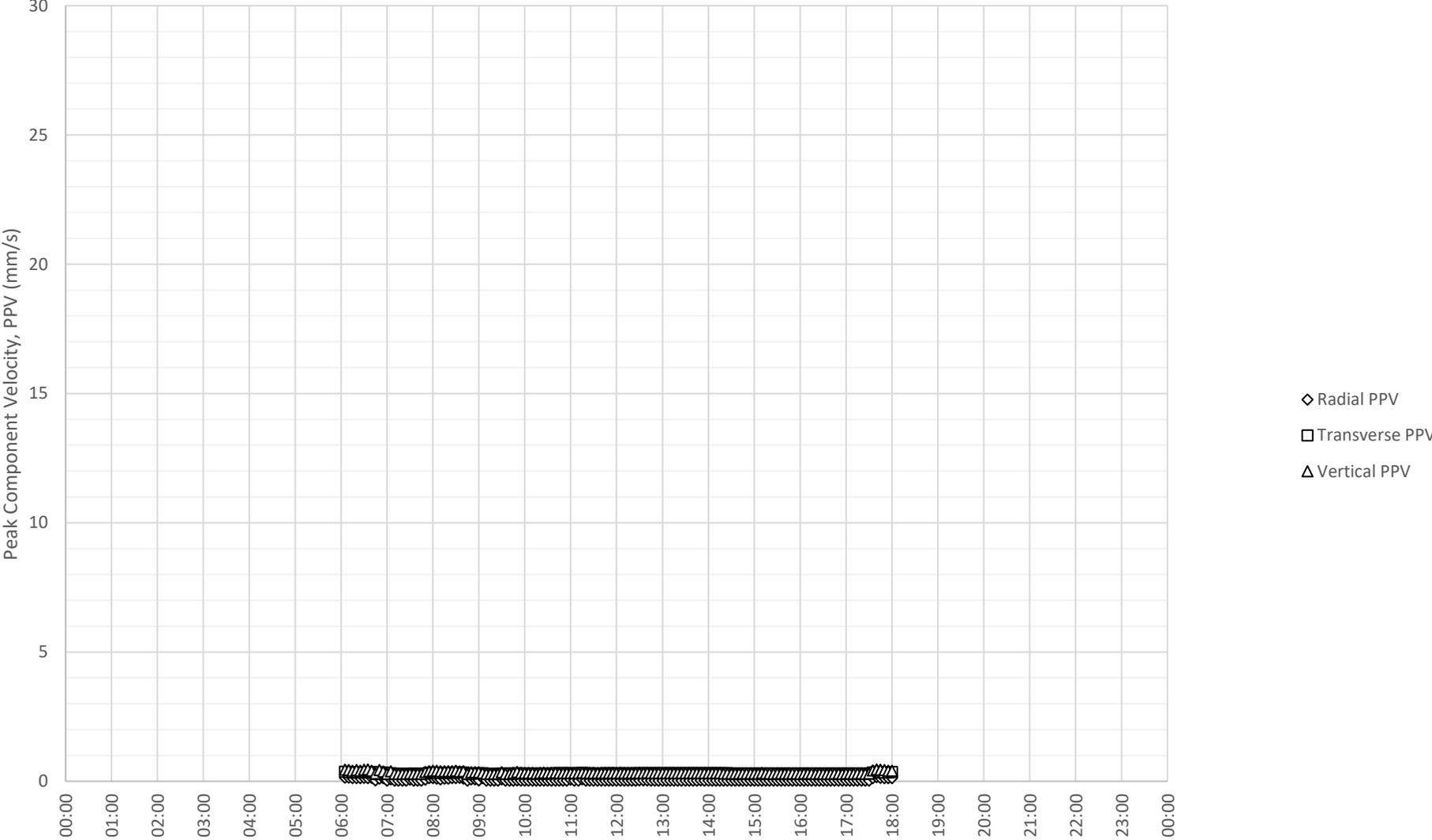
Daily Monitored Vibration Levels at M7713 Heritage (front) on 21-09-2022



Frequency Content of Vibration Levels at M7713 Heritage (front) on 21-09-2022

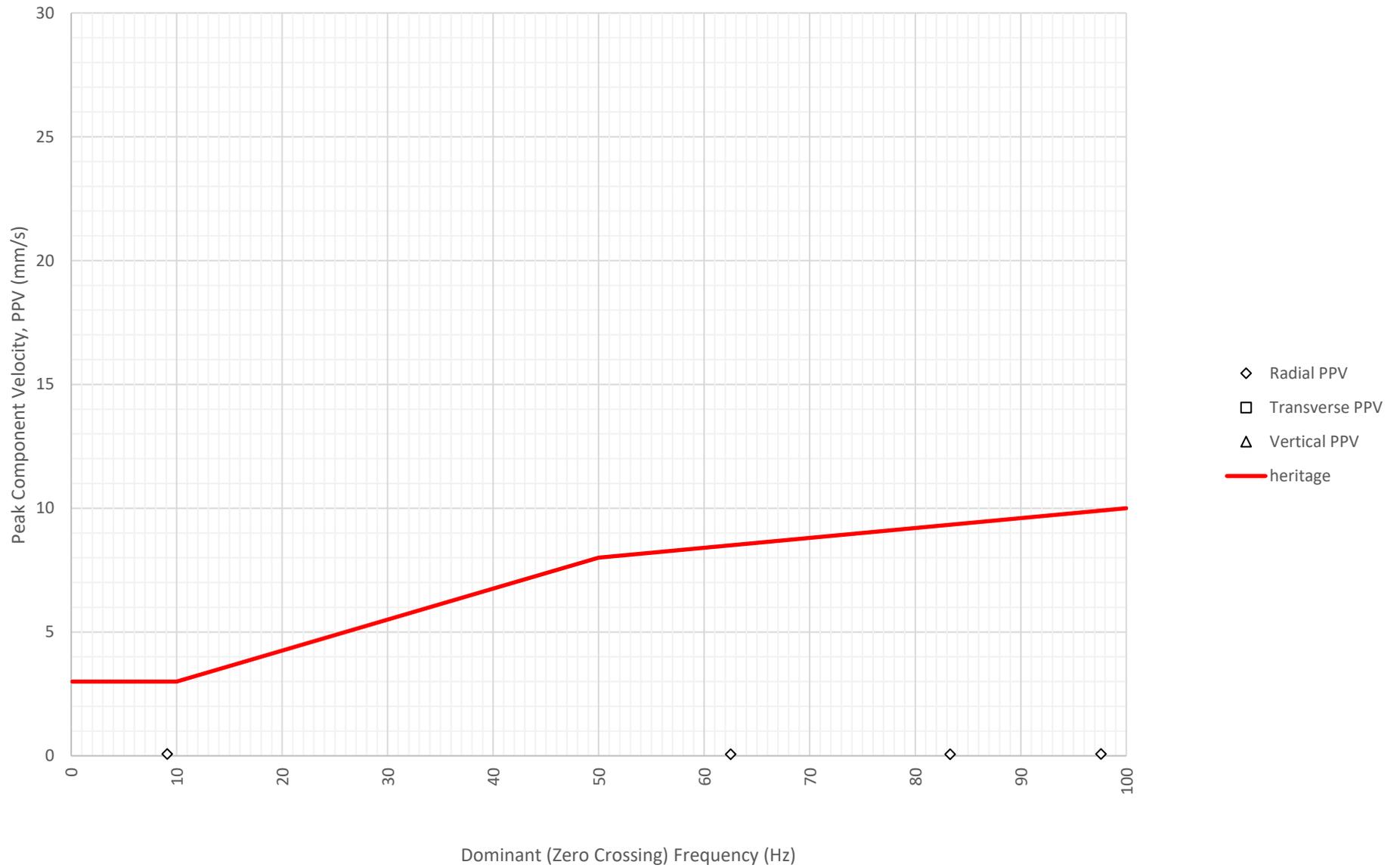


Daily Monitored Vibration Levels at M7713 Heritage (front) on 22-09-2022

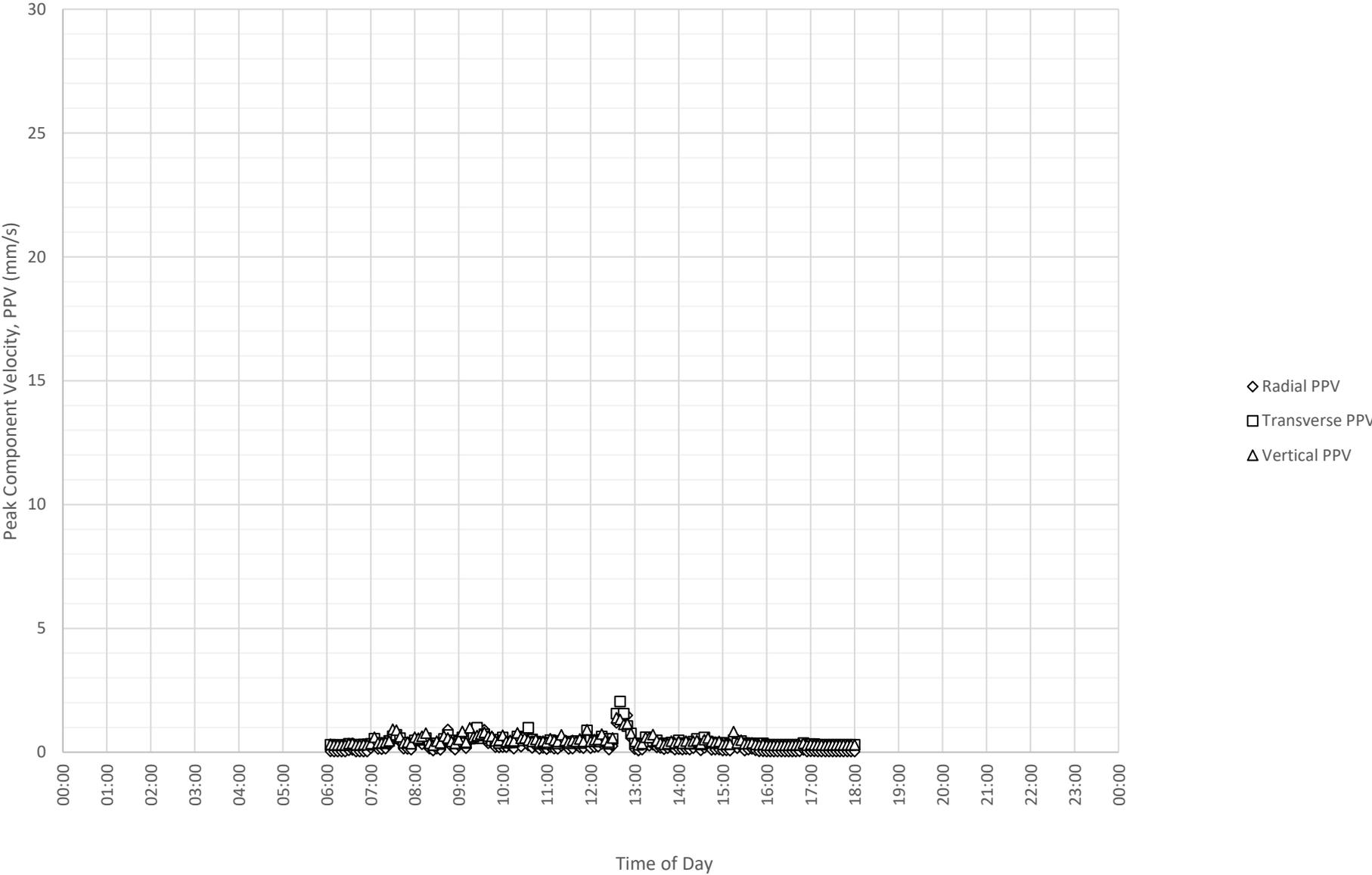


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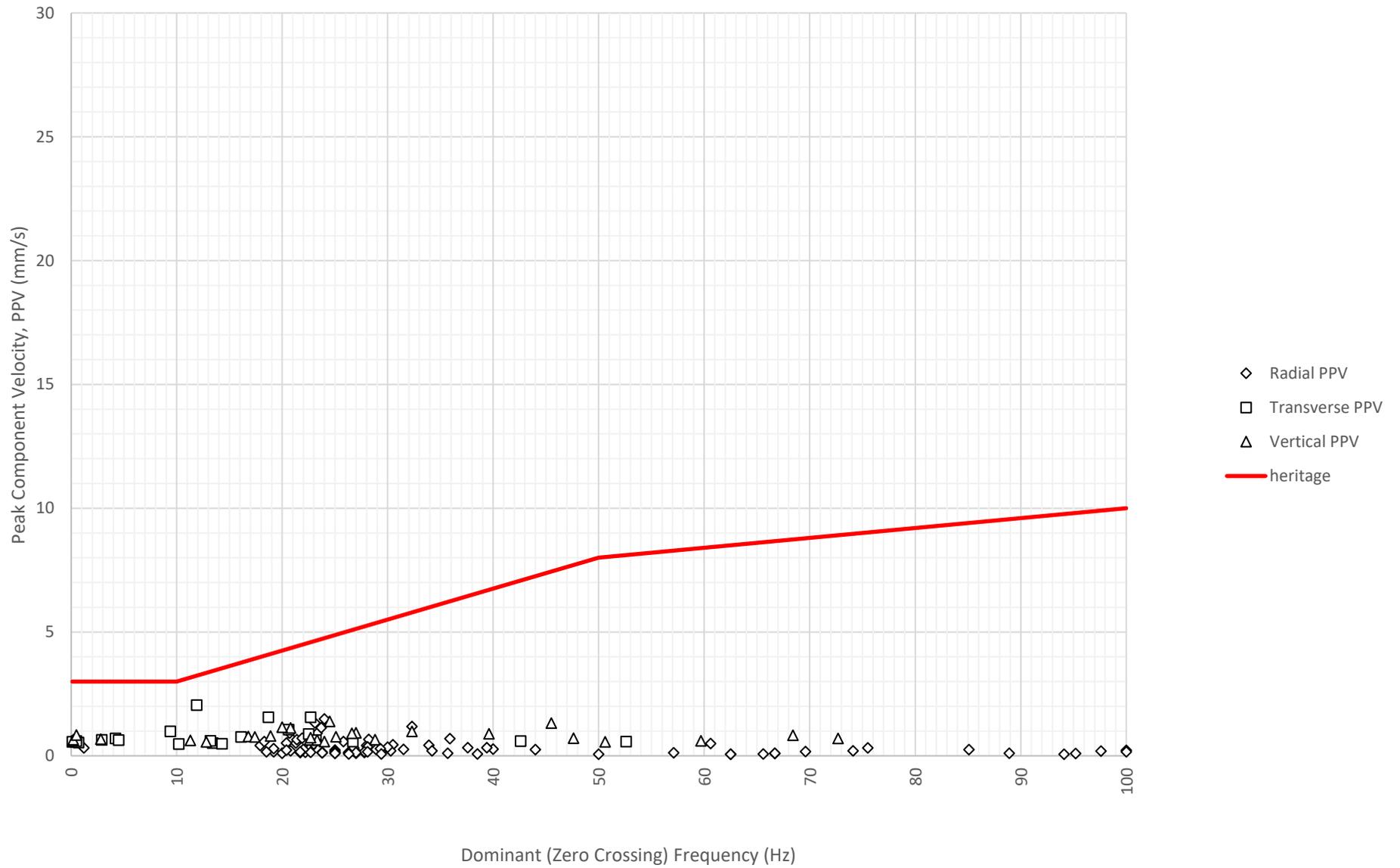
Frequency Content of Vibration Levels at M7713 Heritage (front) on 22-09-2022



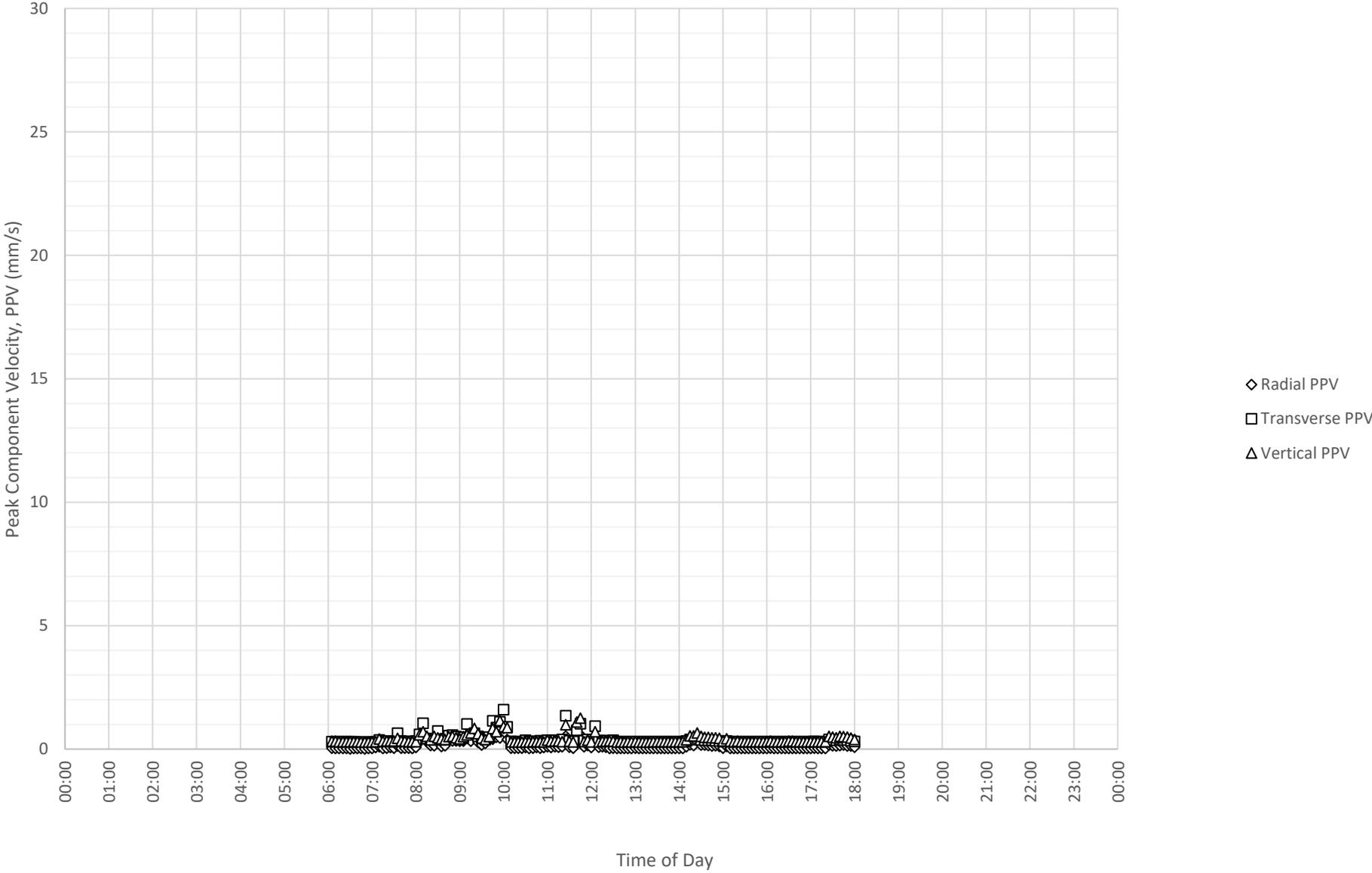
Daily Monitored Vibration Levels at M7713 Heritage (front) on 23-09-2022



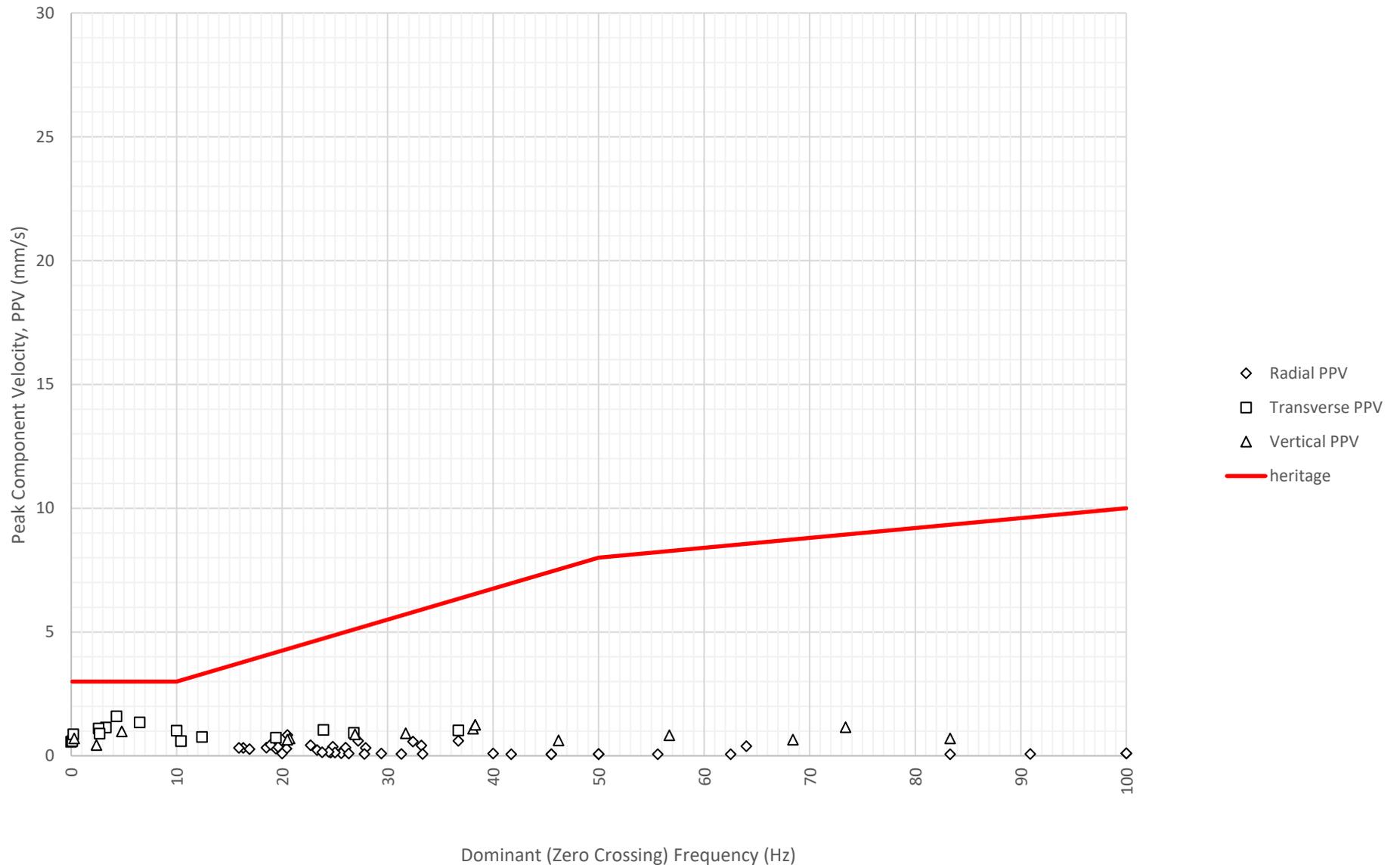
Frequency Content of Vibration Levels at M7713 Heritage (front) on 23-09-2022



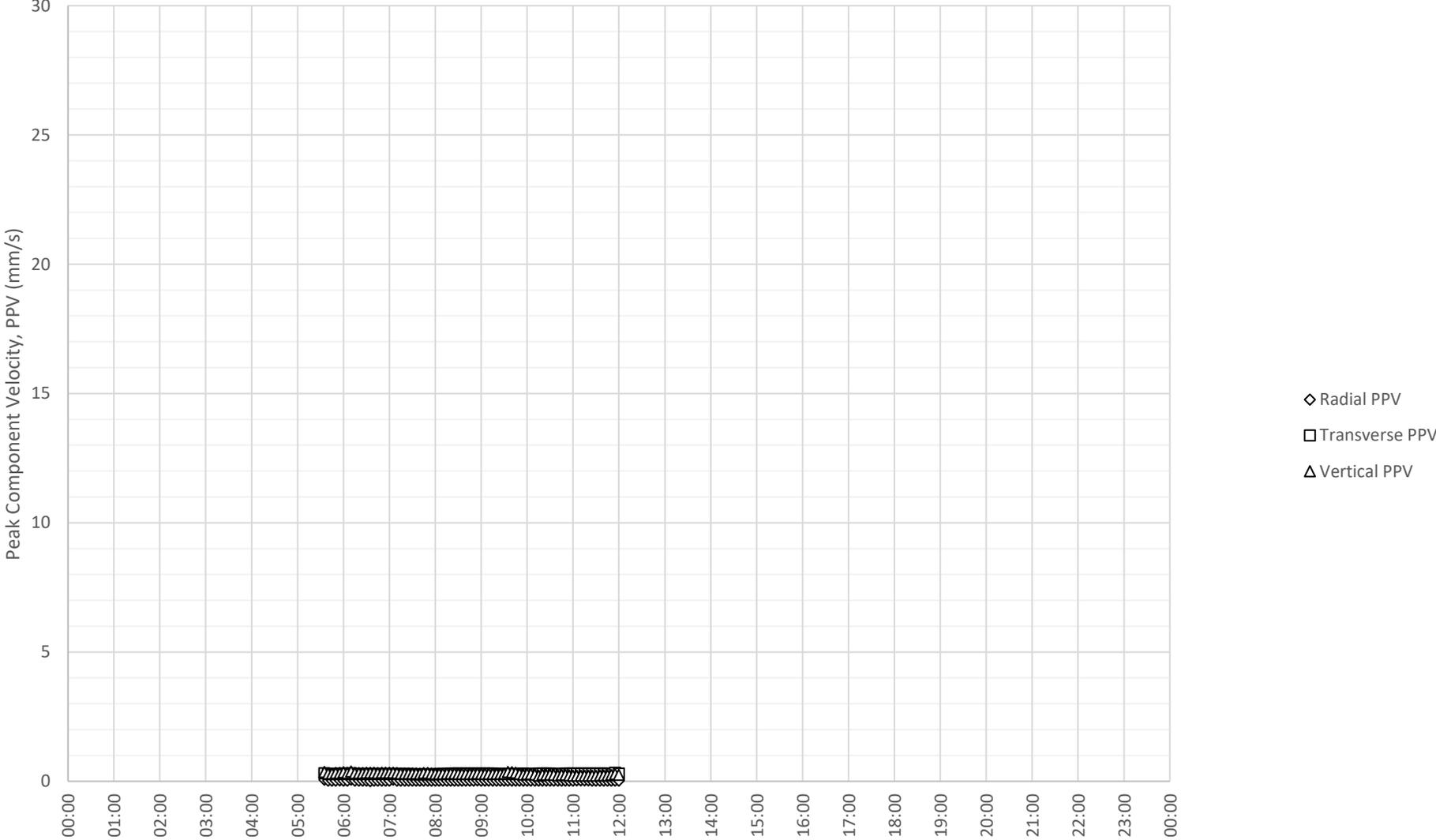
Daily Monitored Vibration Levels at M7713 Heritage (front) on 24-09-2022



Frequency Content of Vibration Levels at M7713 Heritage (front) on 24-09-2022

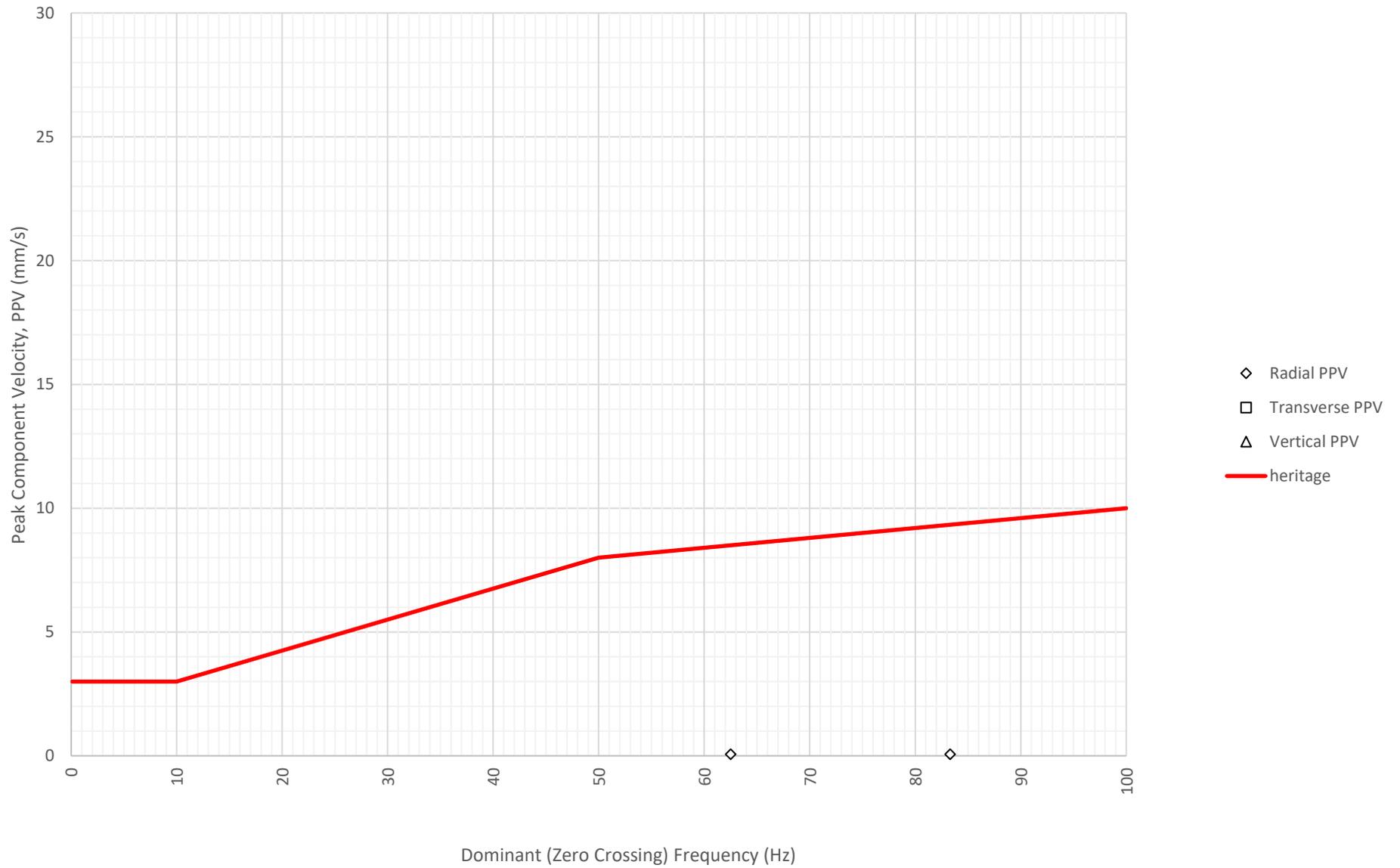


Daily Monitored Vibration Levels at M7713 Heritage (front) on 25-09-2022

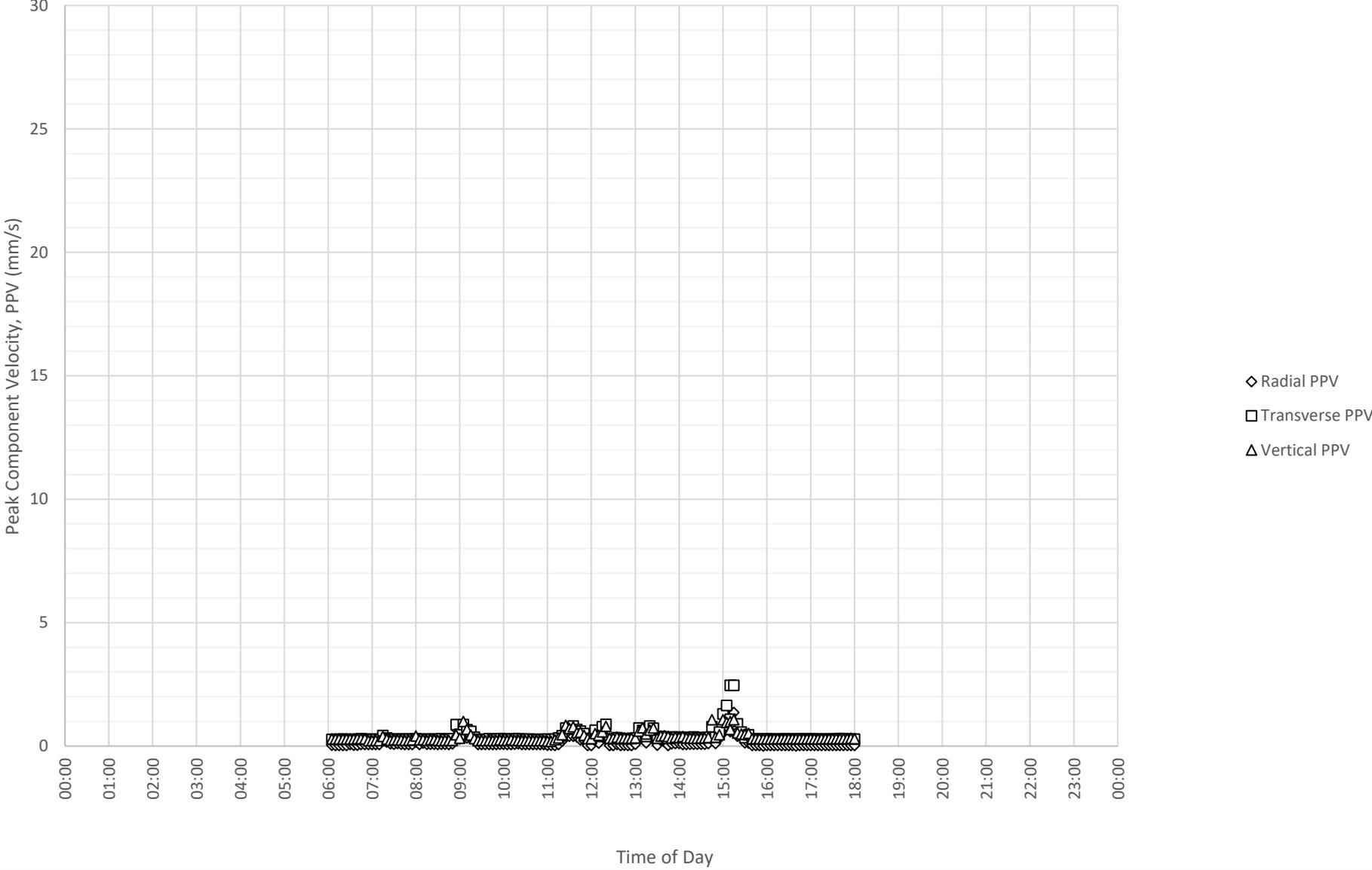


Time of Day

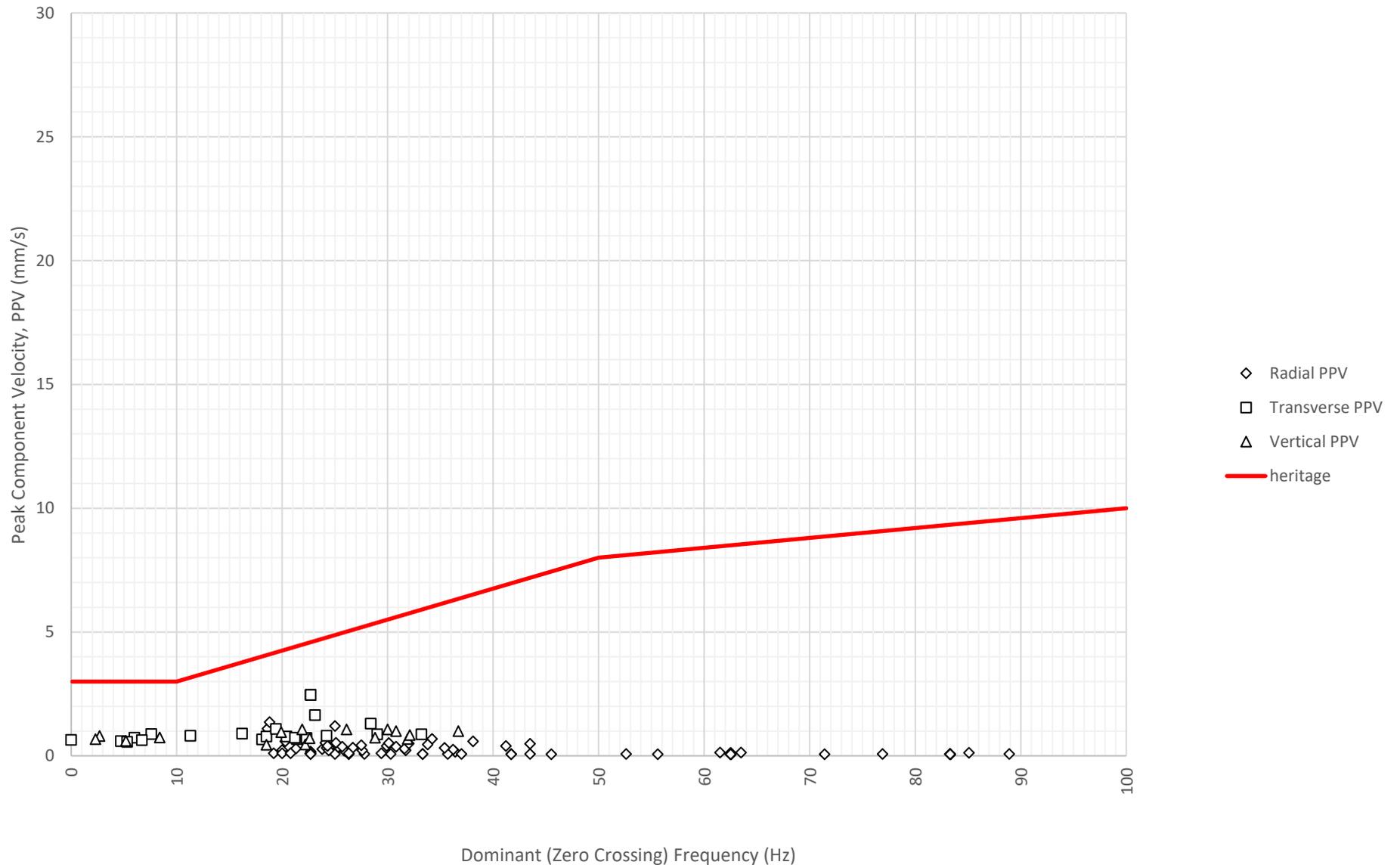
Frequency Content of Vibration Levels at M7713 Heritage (front) on 25-09-2022



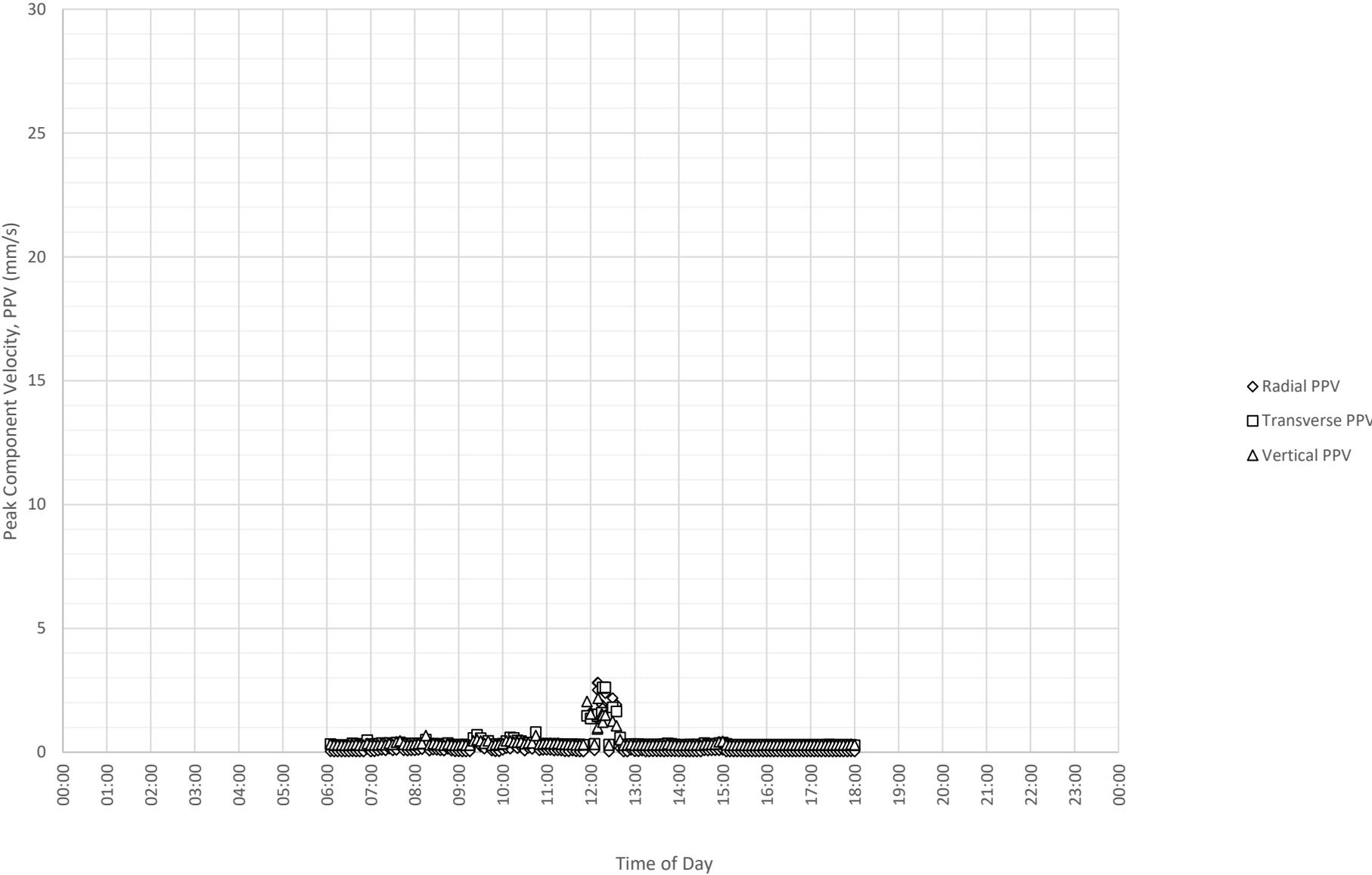
Daily Monitored Vibration Levels at M7713 Heritage (front) on 26-09-2022



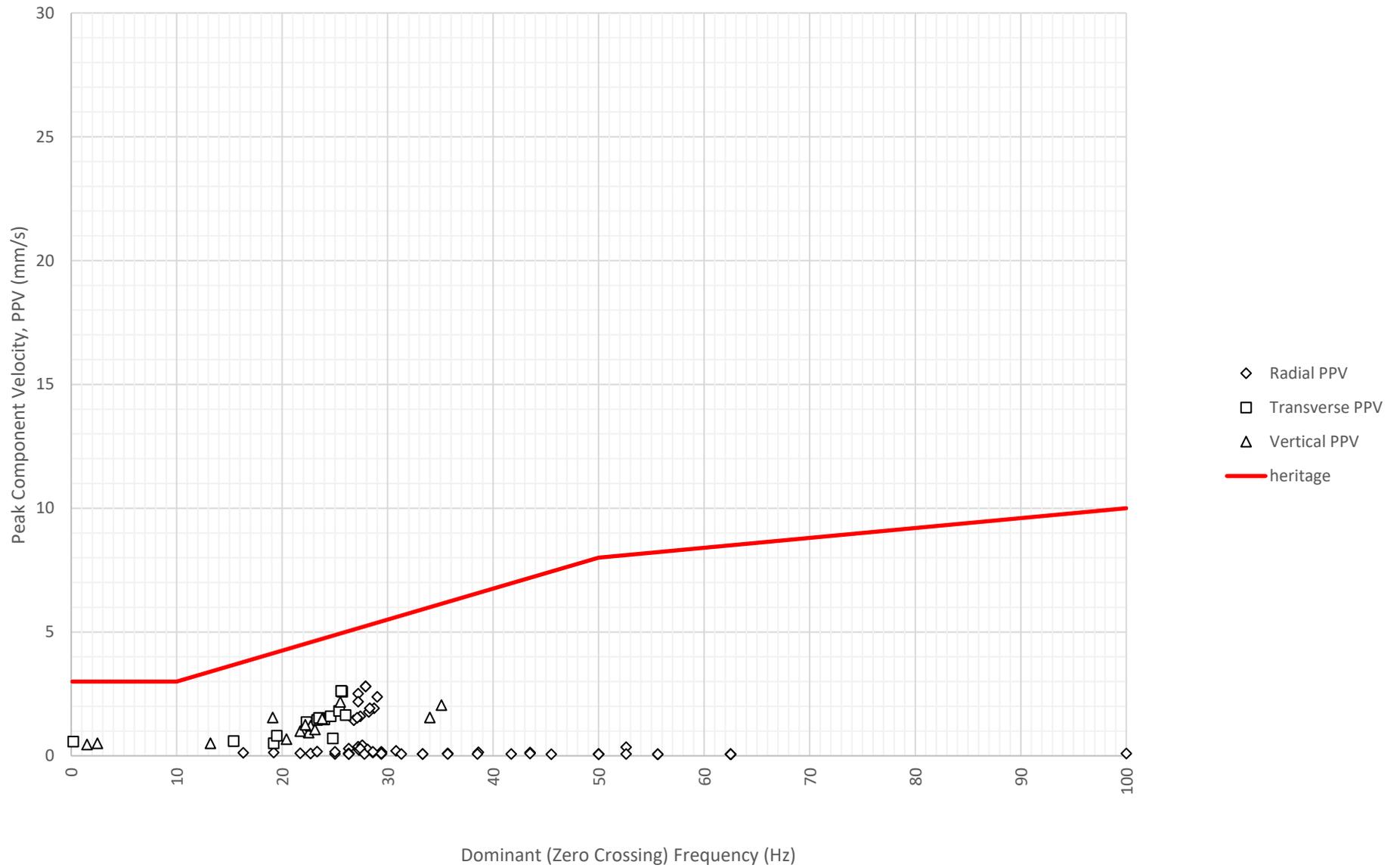
Frequency Content of Vibration Levels at M7713 Heritage (front) on 26-09-2022



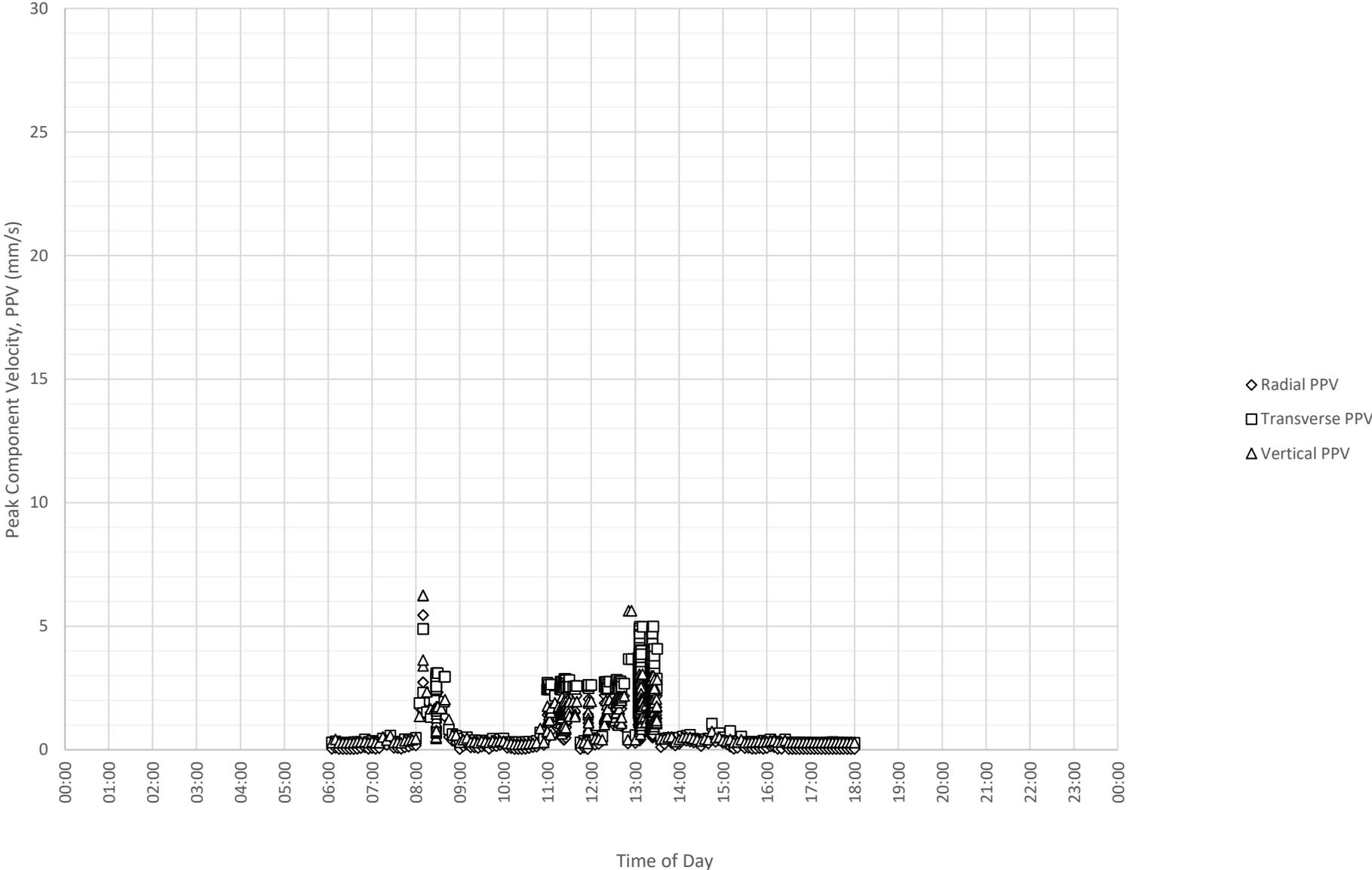
Daily Monitored Vibration Levels at M7713 Heritage (front) on 27-09-2022



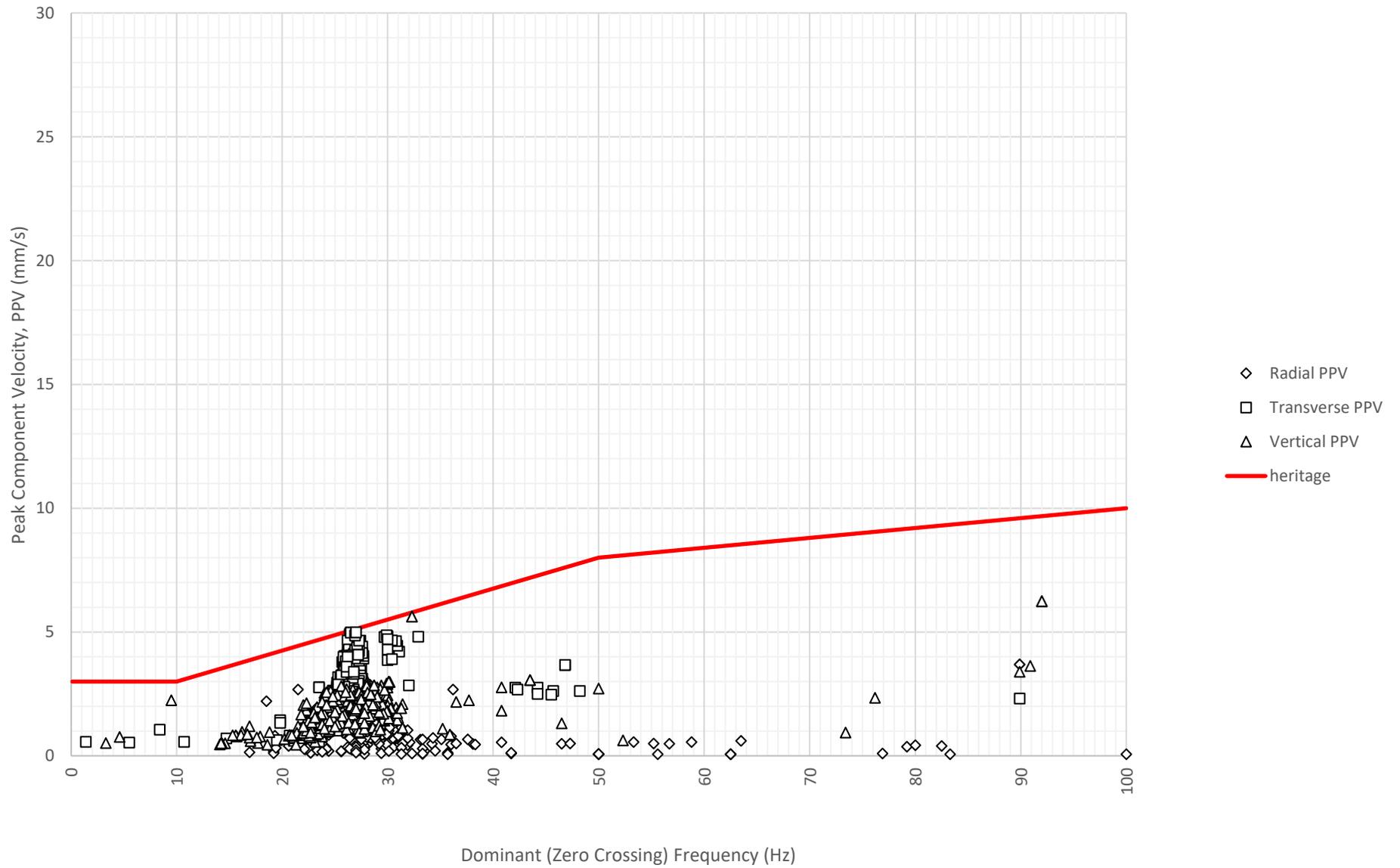
Frequency Content of Vibration Levels at M7713 Heritage (front) on 27-09-2022



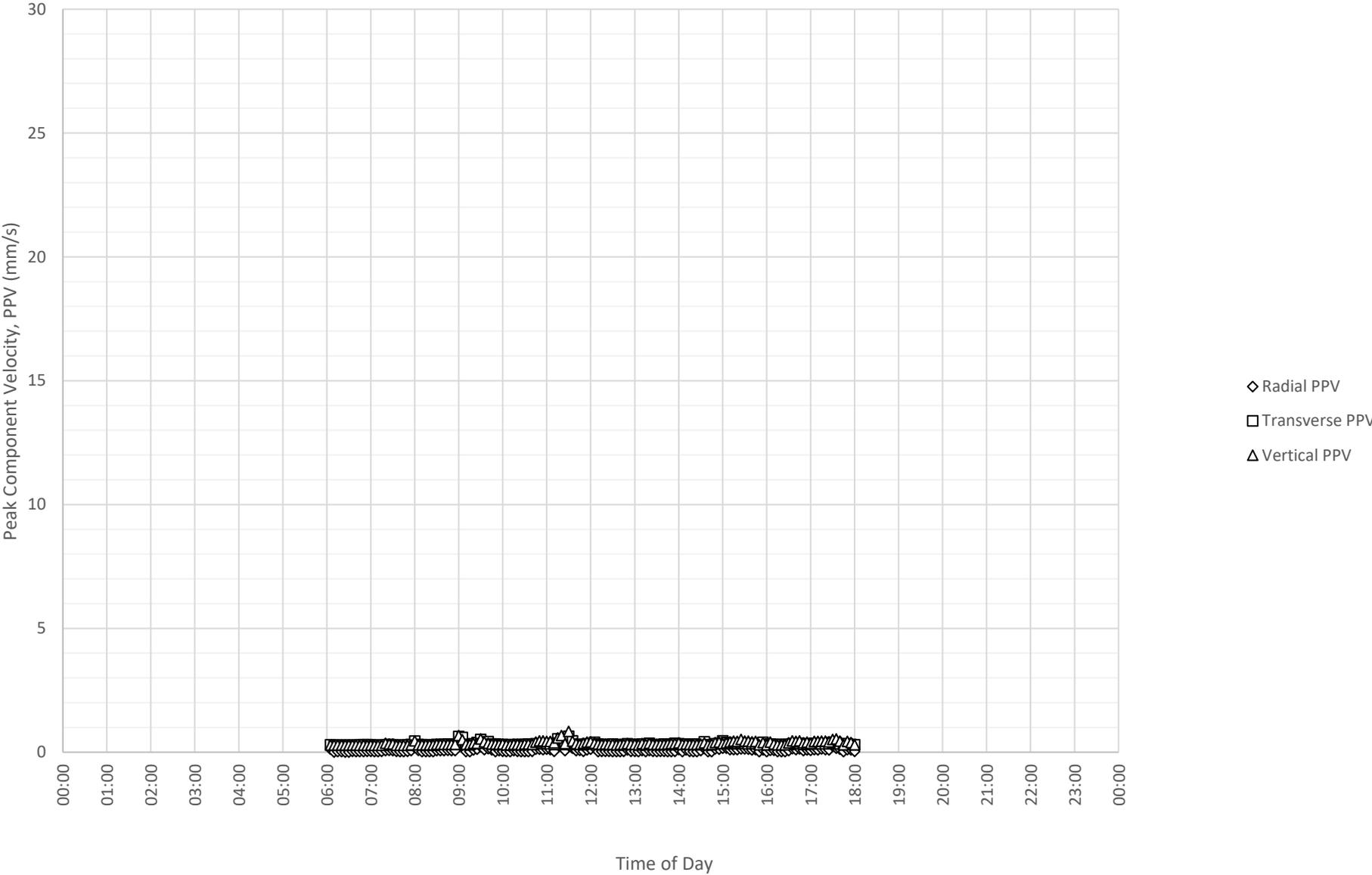
Daily Monitored Vibration Levels at M7713 Heritage (front) on 28-09-2022



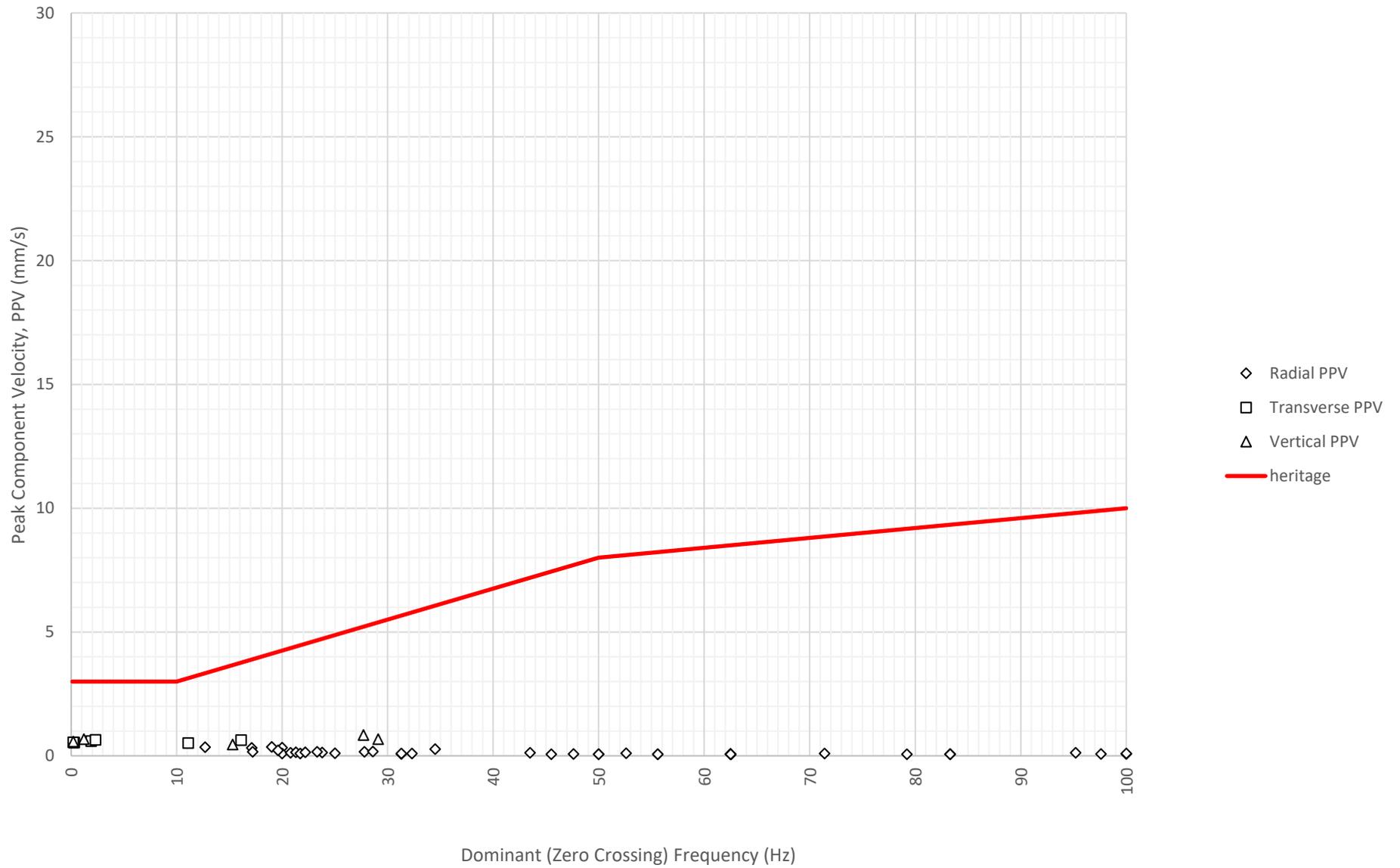
Frequency Content of Vibration Levels at M7713 Heritage (front) on 28-09-2022



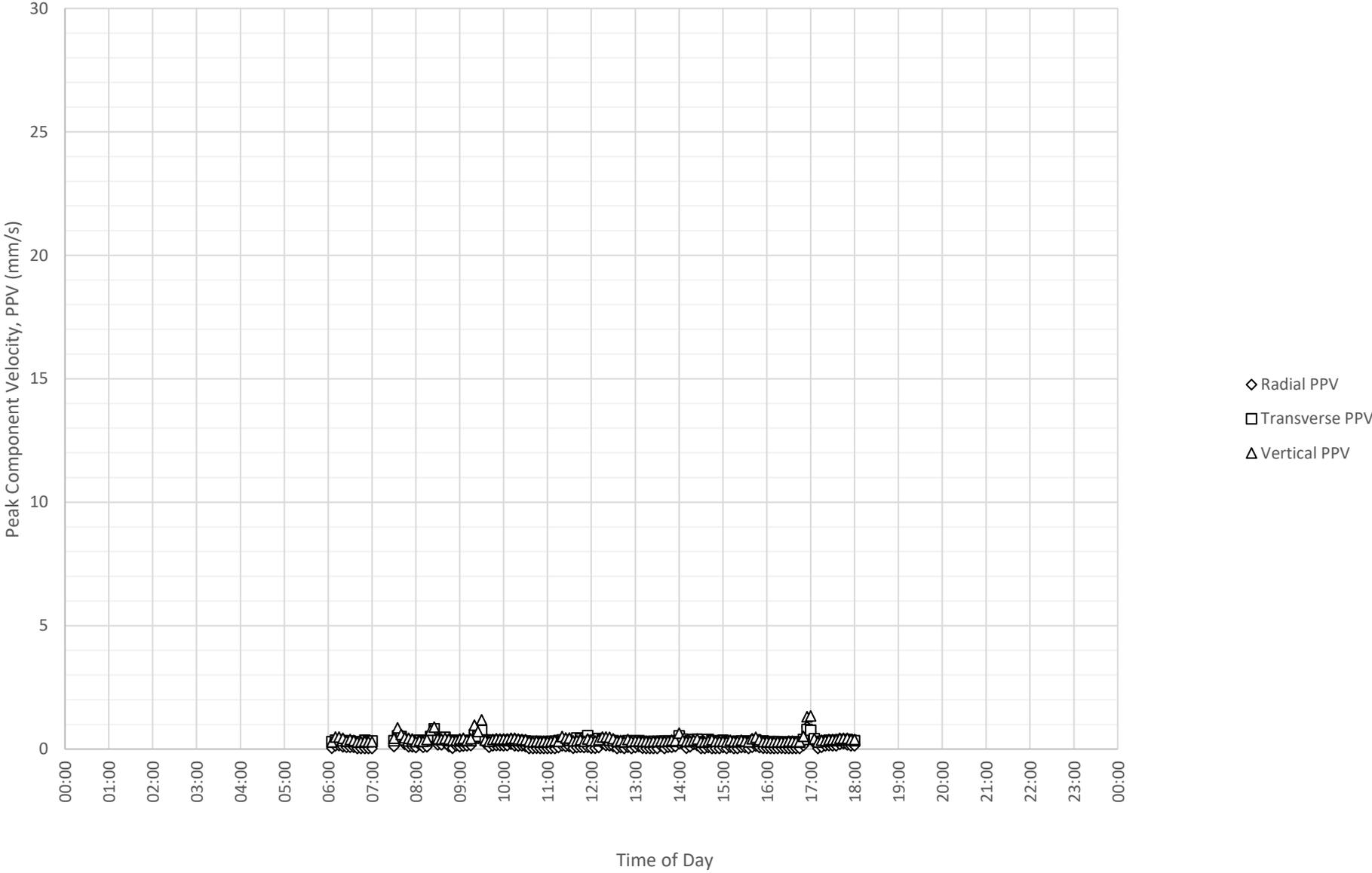
Daily Monitored Vibration Levels at M7713 Heritage (front) on 29-09-2022



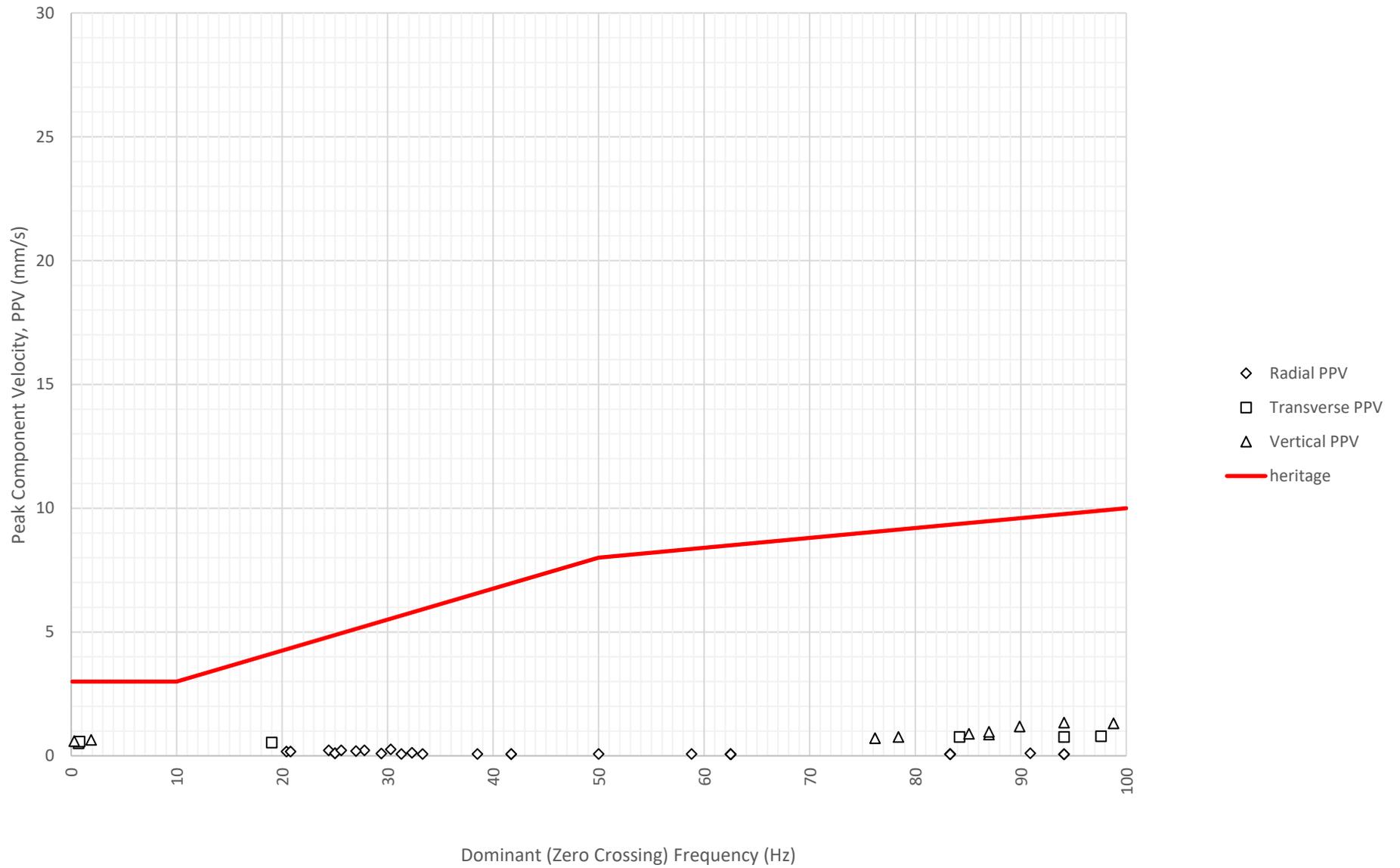
Frequency Content of Vibration Levels at M7713 Heritage (front) on 29-09-2022



Daily Monitored Vibration Levels at M7713 Heritage (front) on 30-09-2022

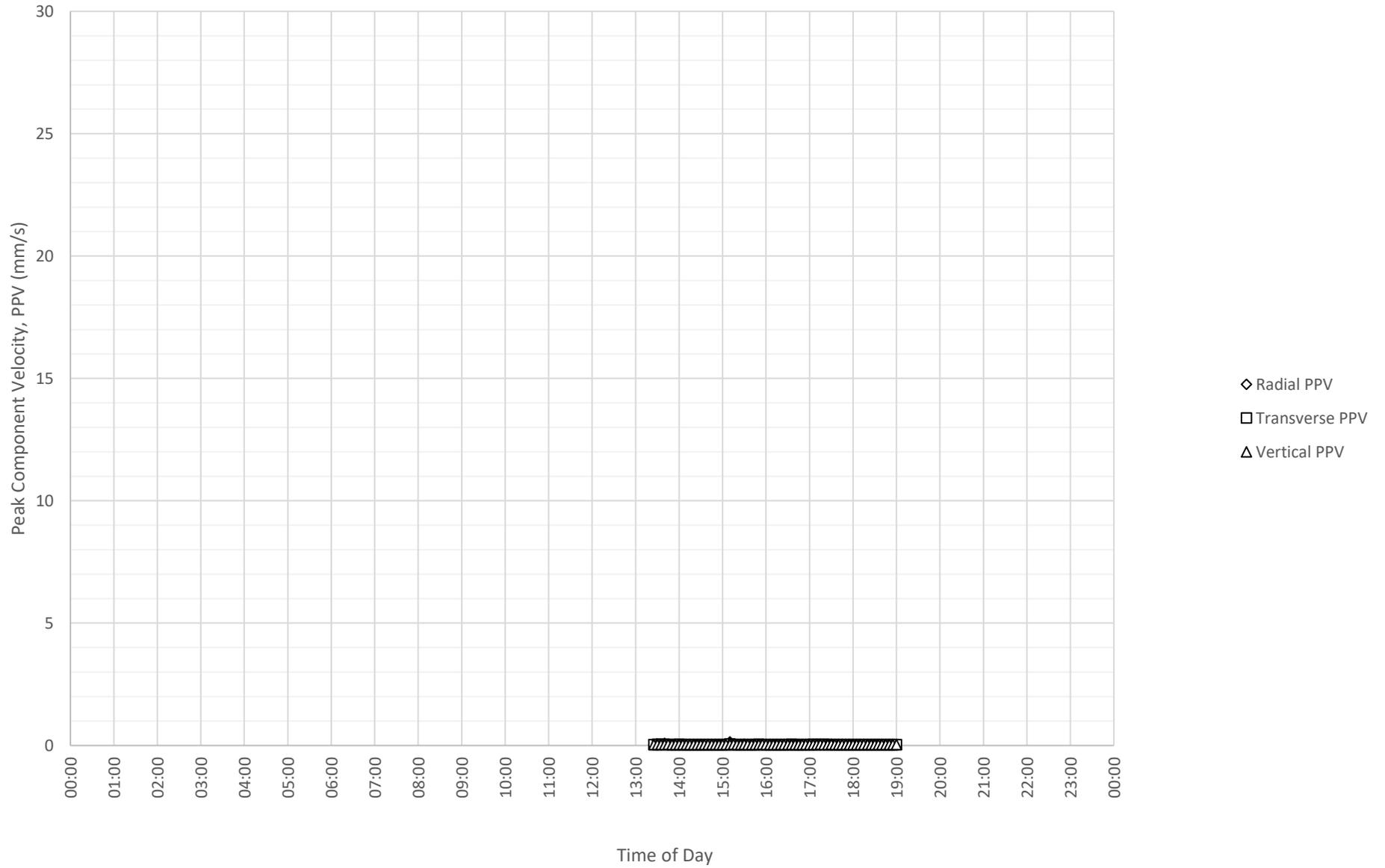


Frequency Content of Vibration Levels at M7713 Heritage (front) on 30-09-2022

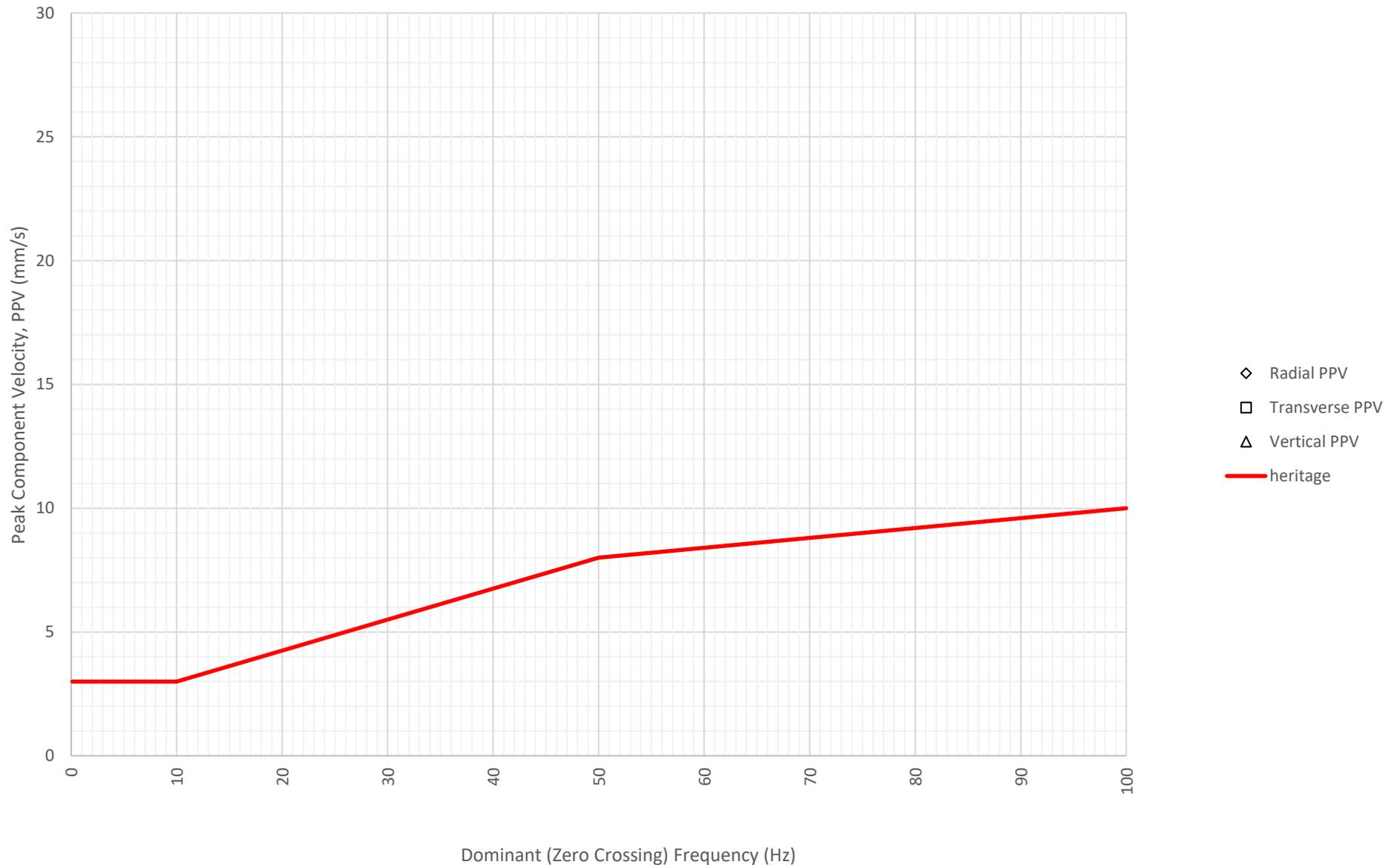


APPENDIX 2 :DAILY GRAPHS M7427 HERITAGE (REAR)

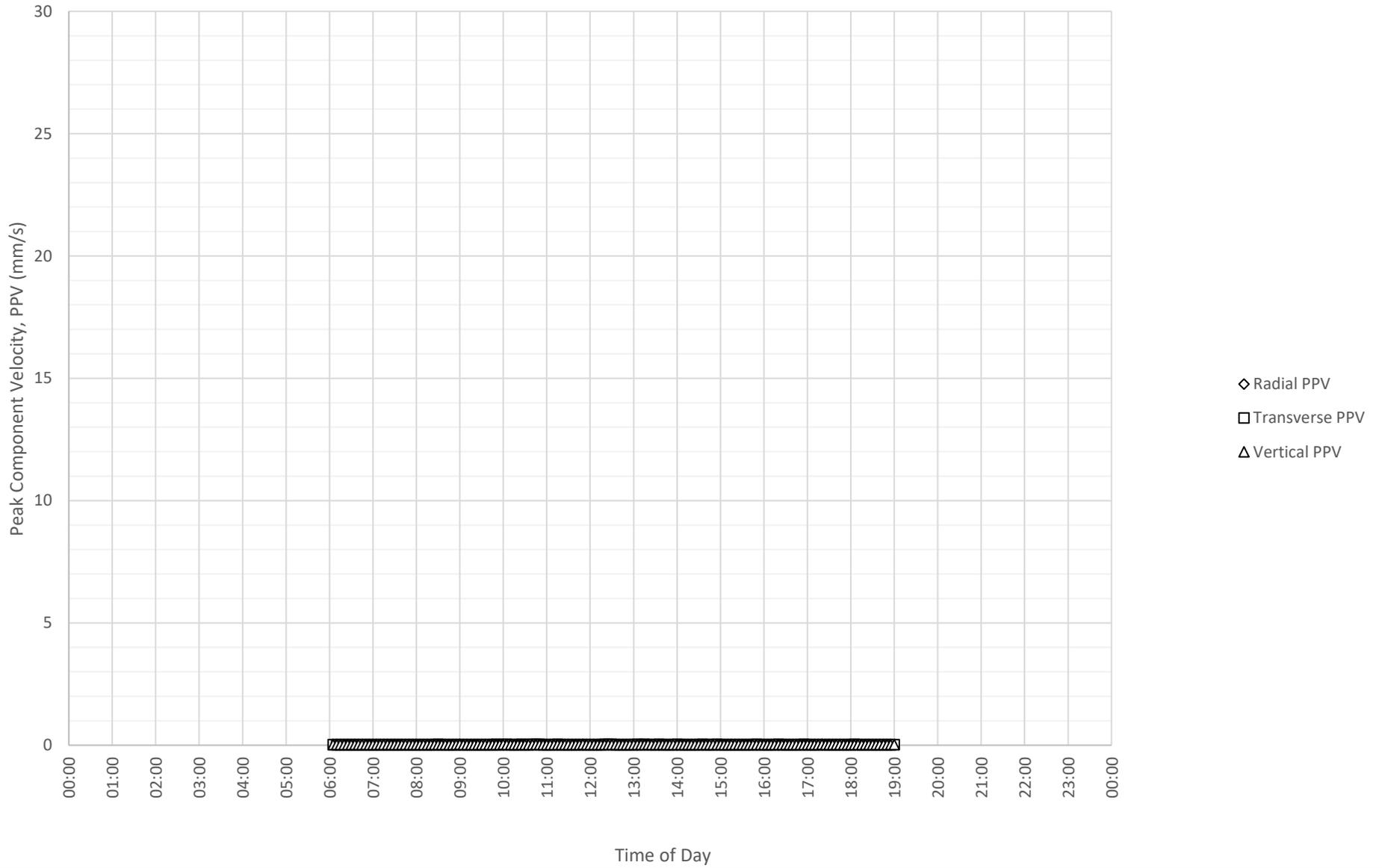
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 10-09-2022



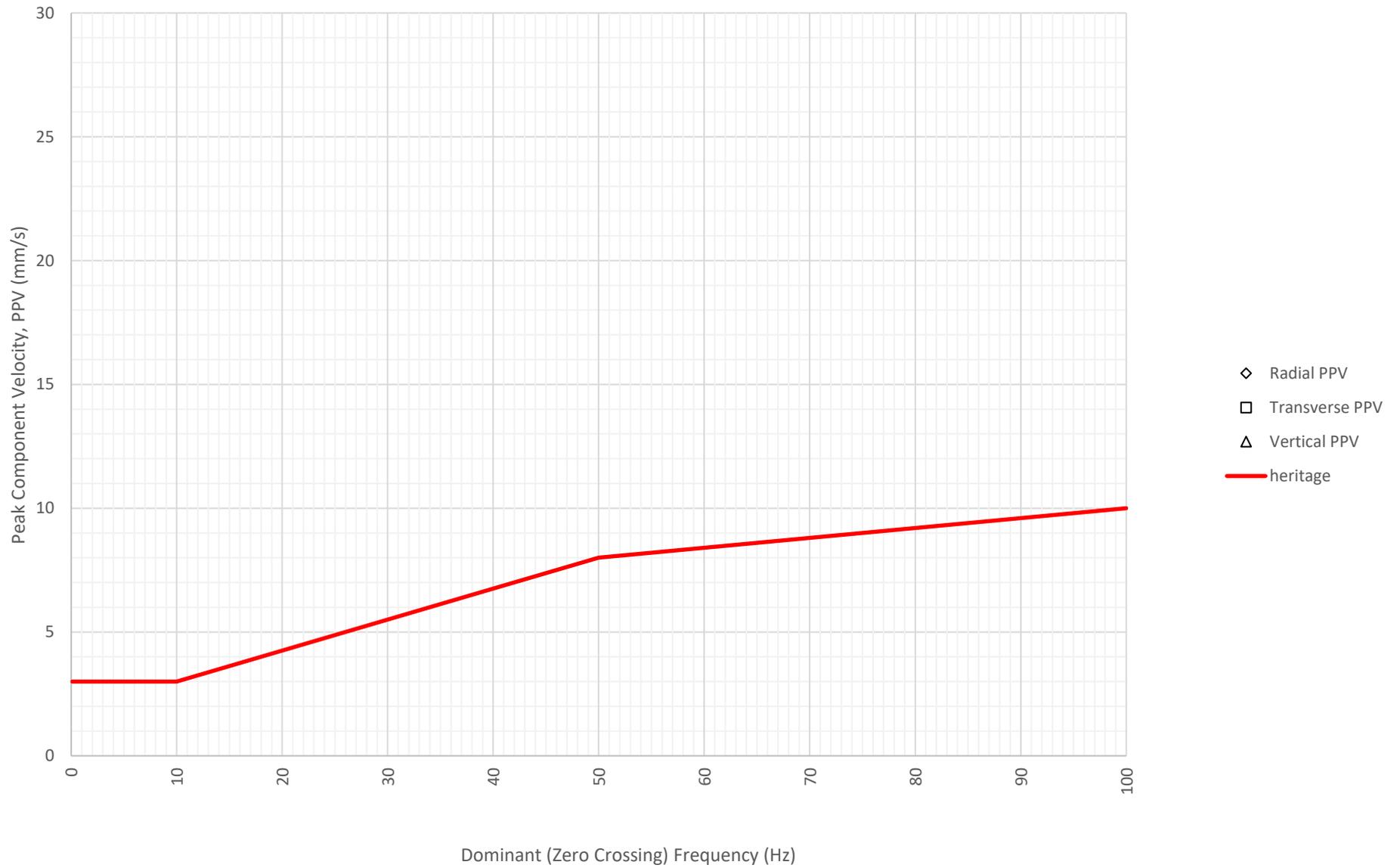
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 10-09-2022



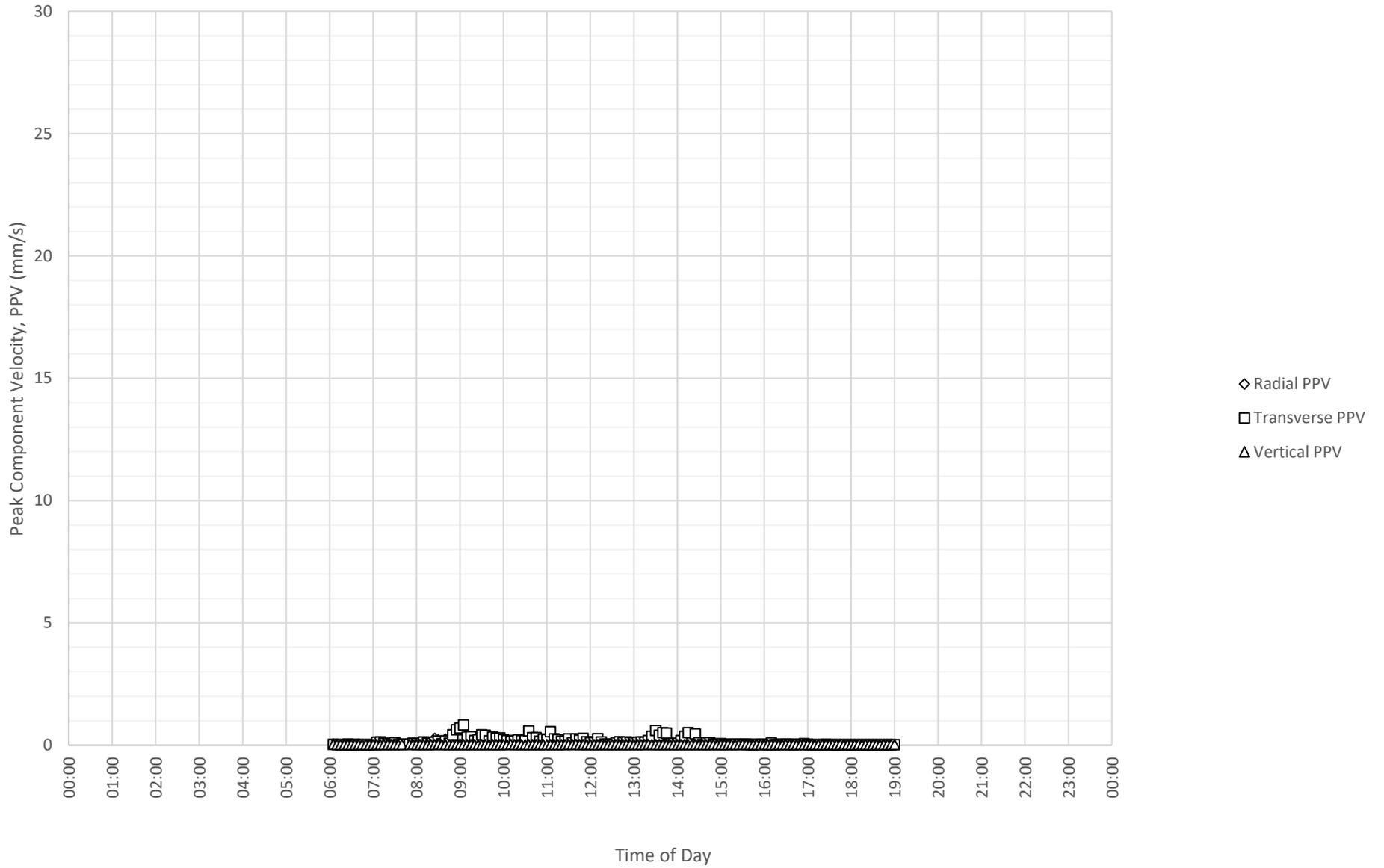
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 11-09-2022



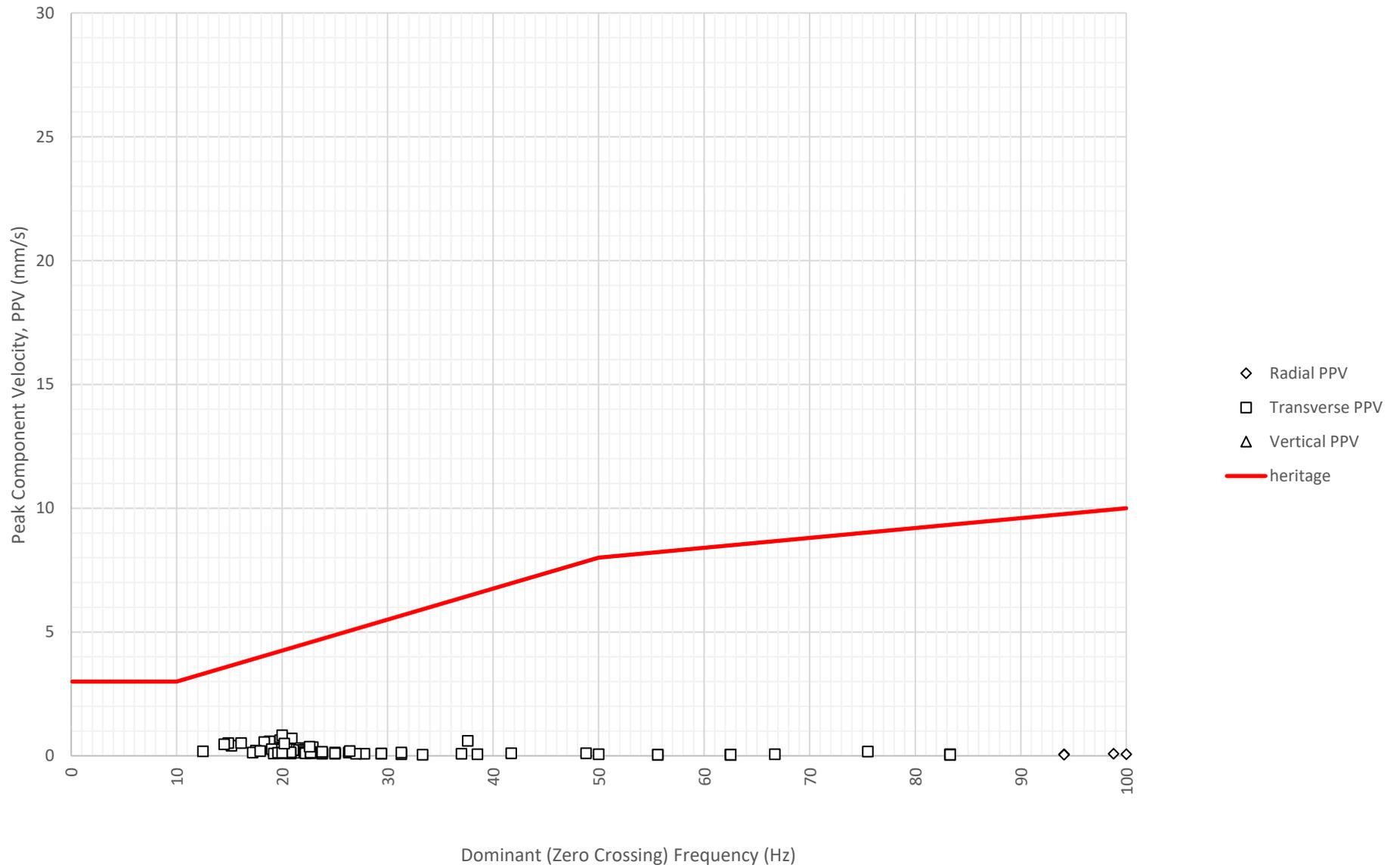
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 11-09-2022



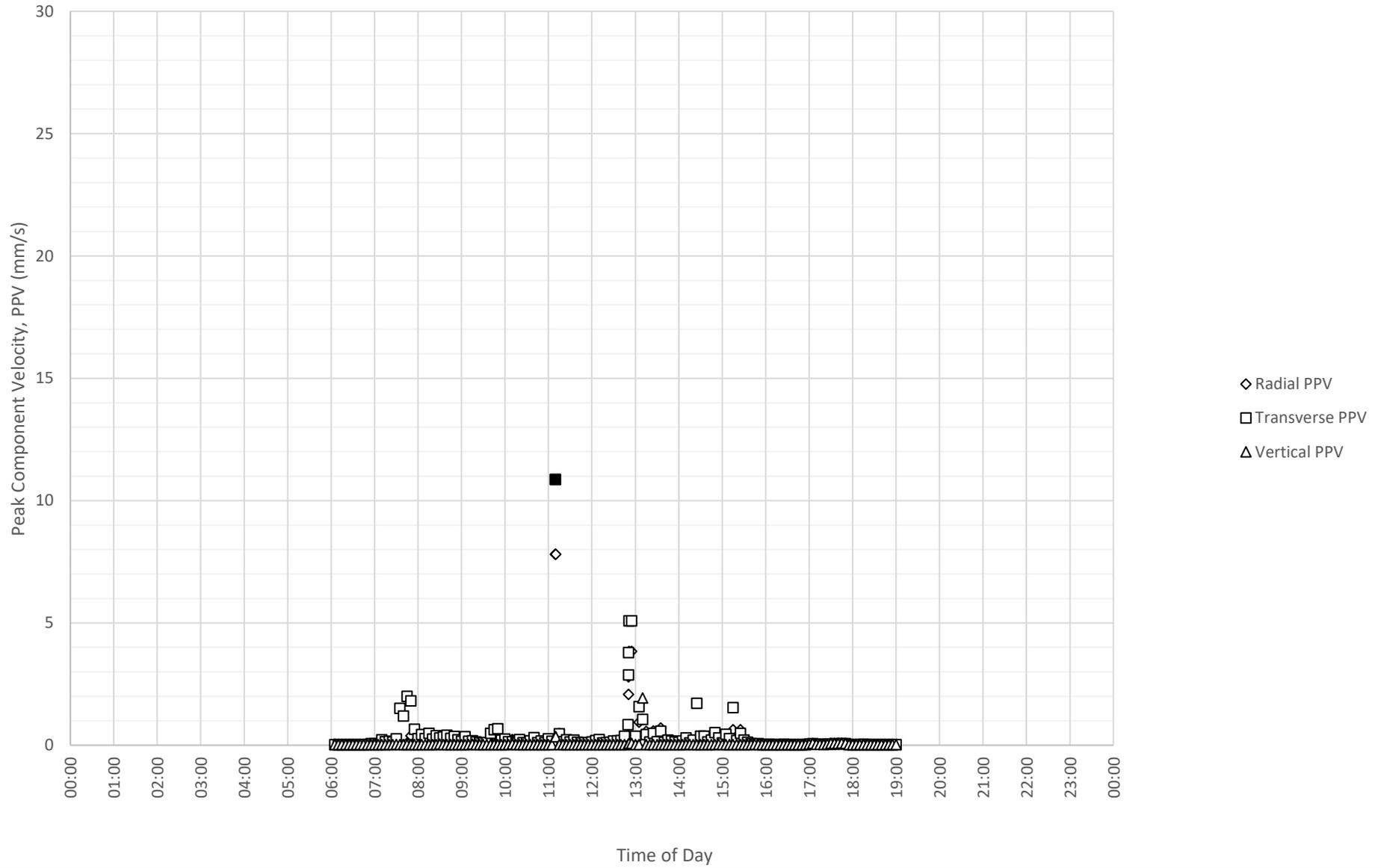
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 12-09-2022



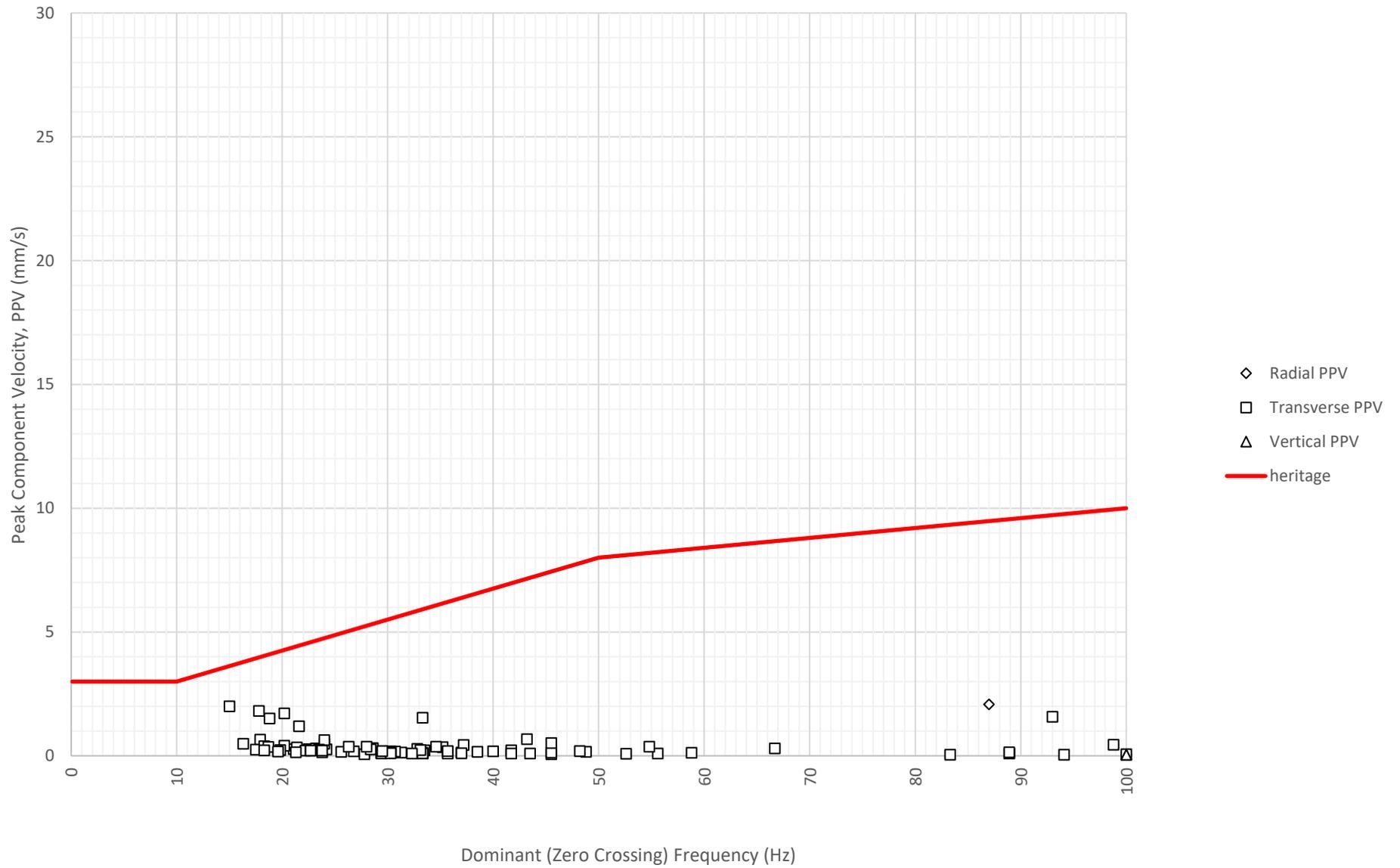
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 12-09-2022



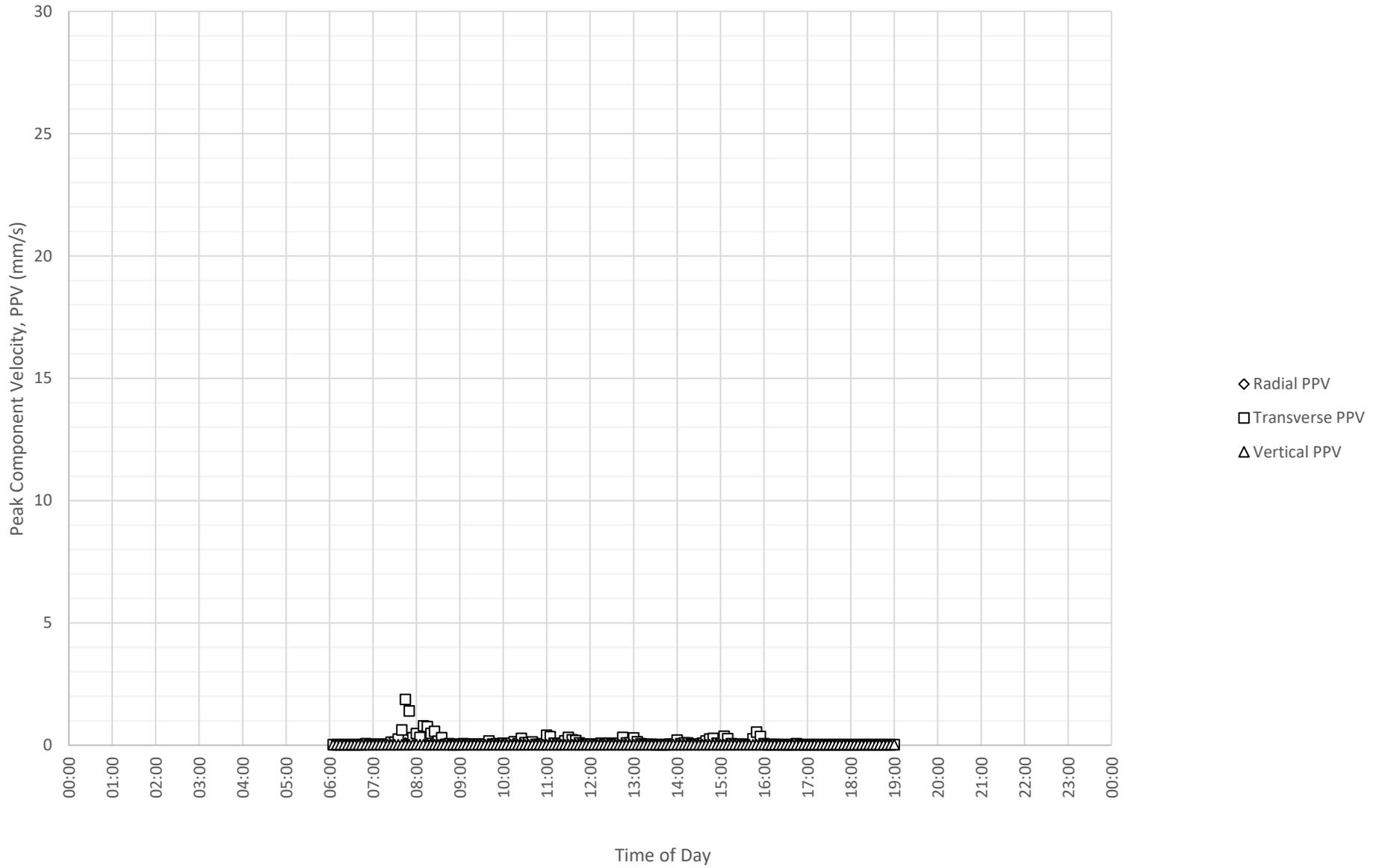
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 13-09-2022



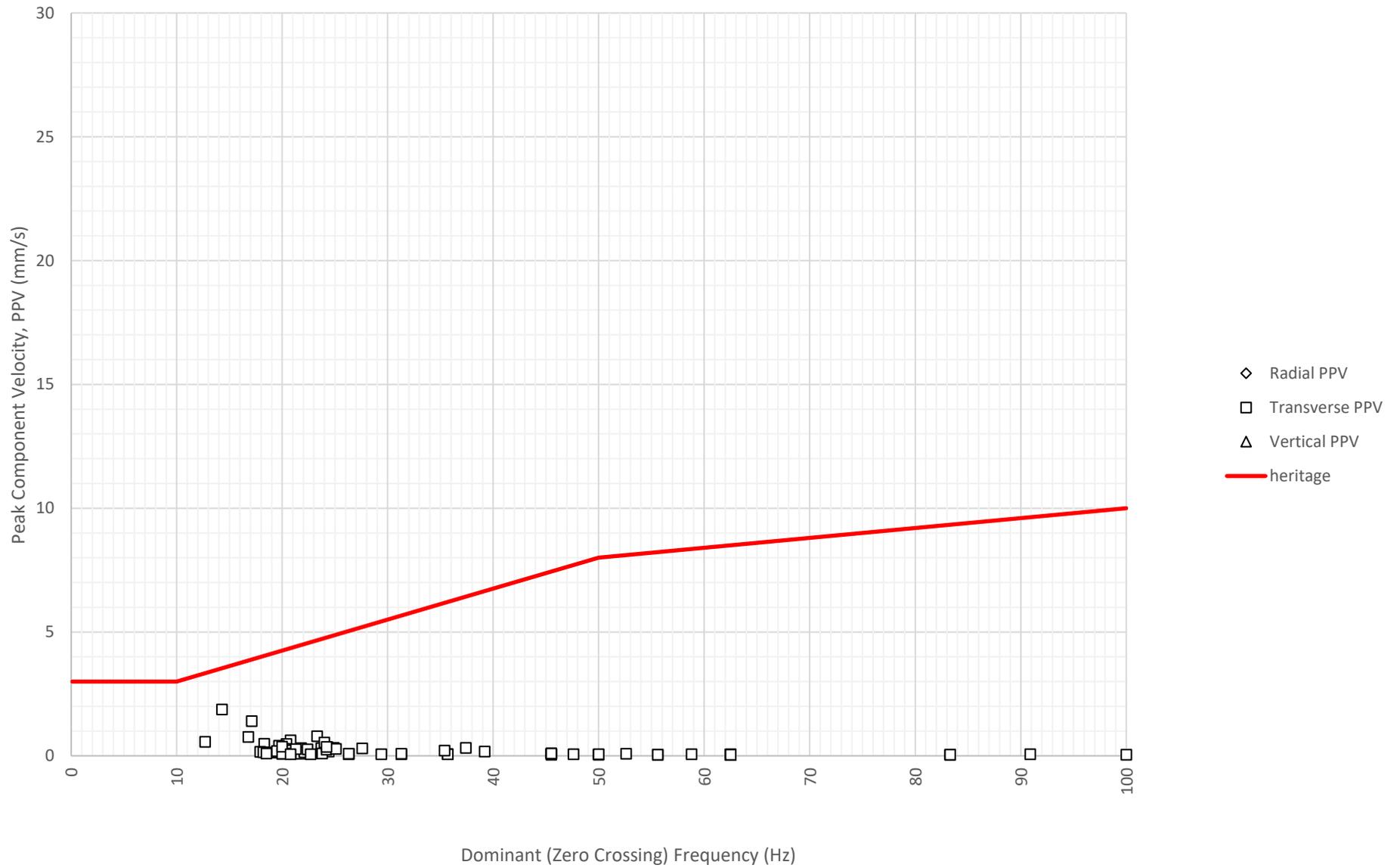
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 13-09-2022



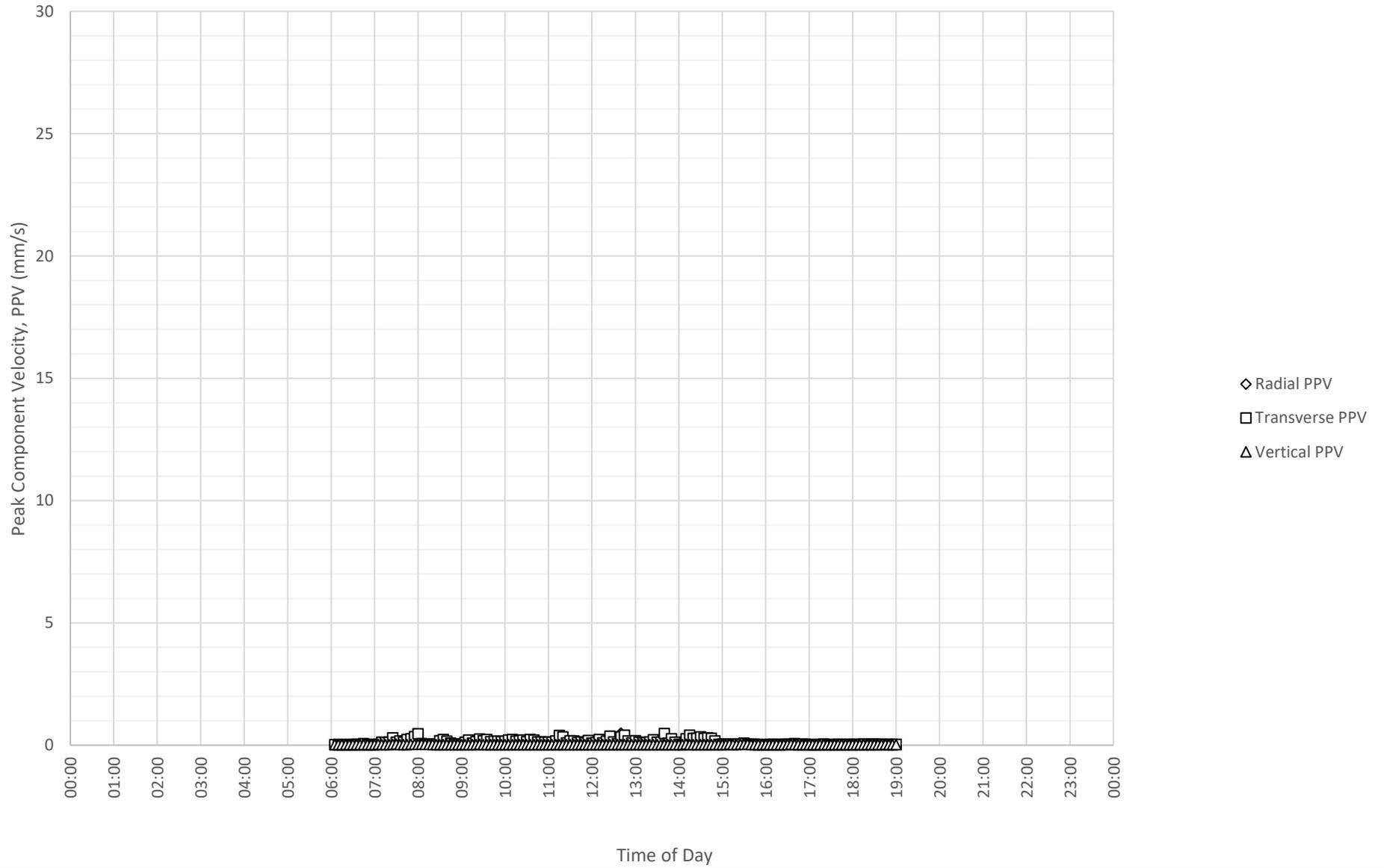
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 14-09-2022



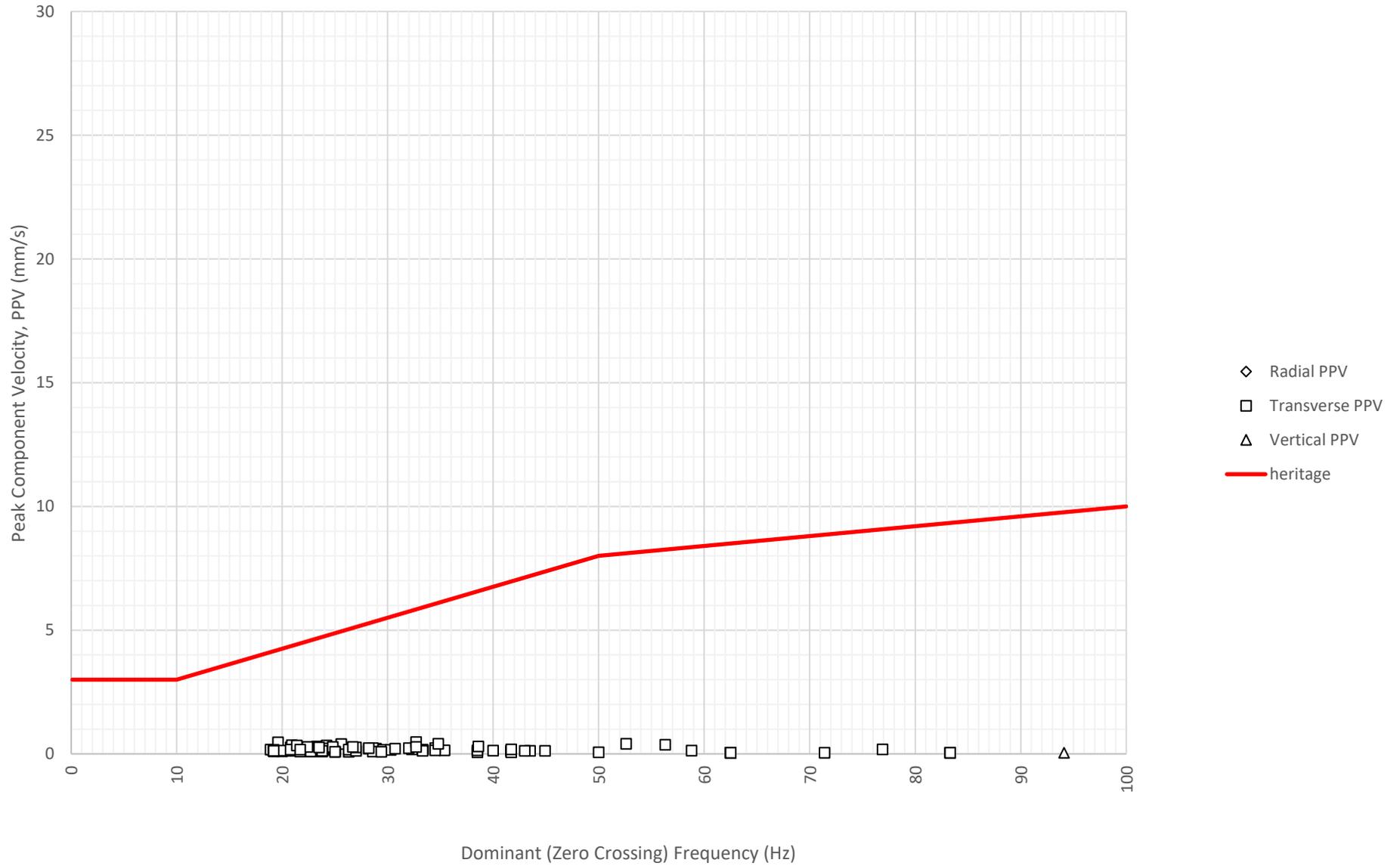
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 14-09-2022



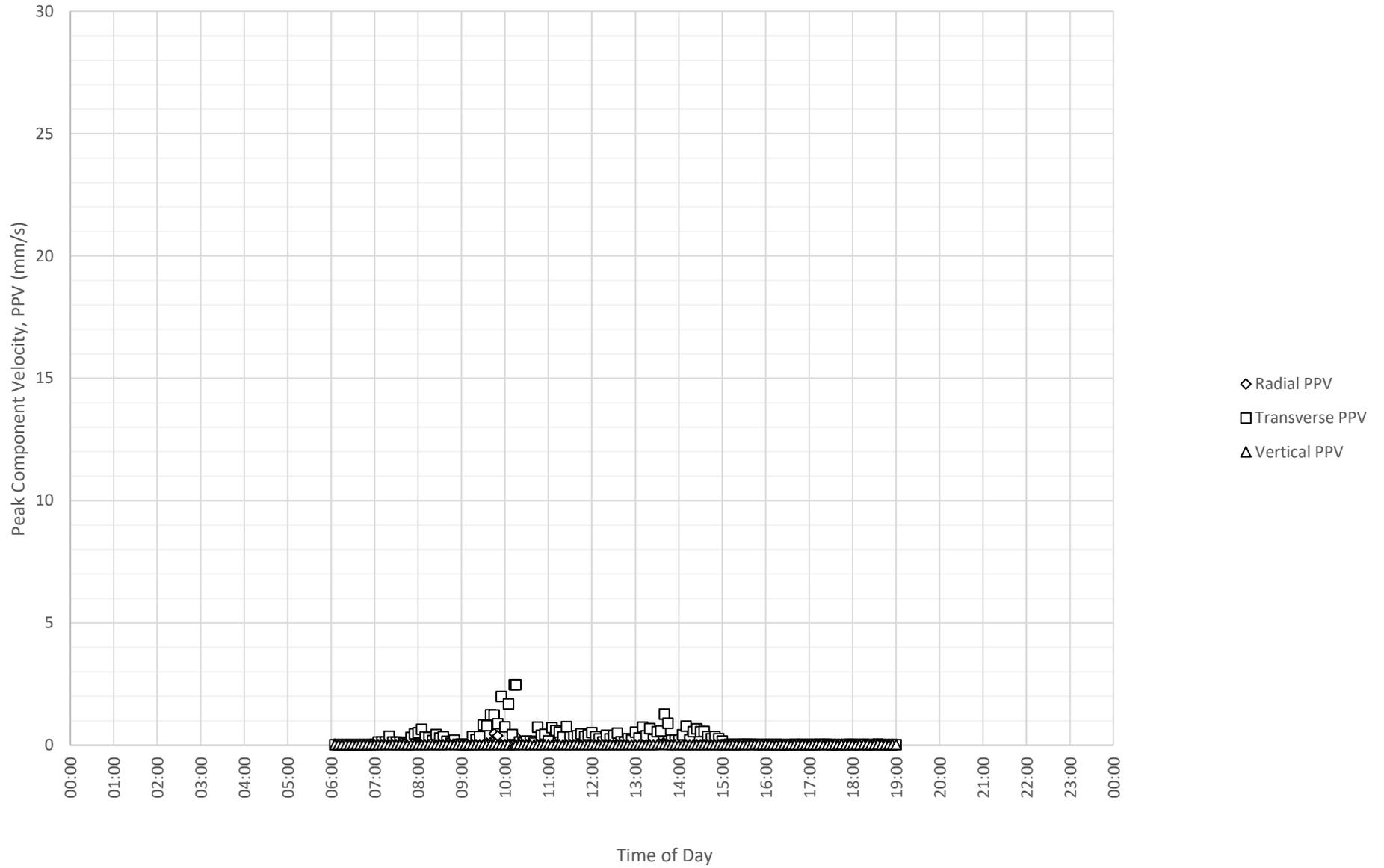
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 15-09-2022



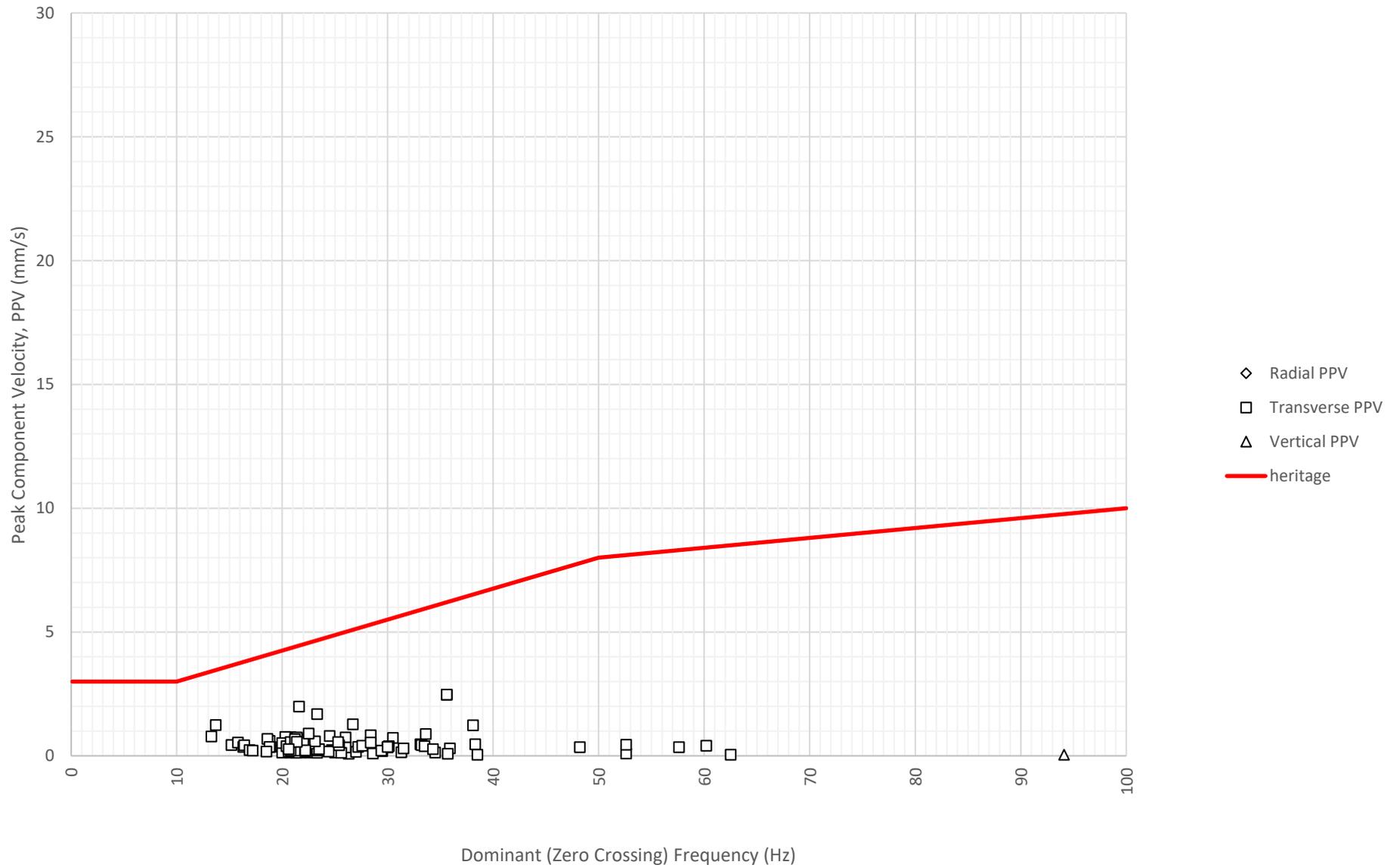
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 15-09-2022



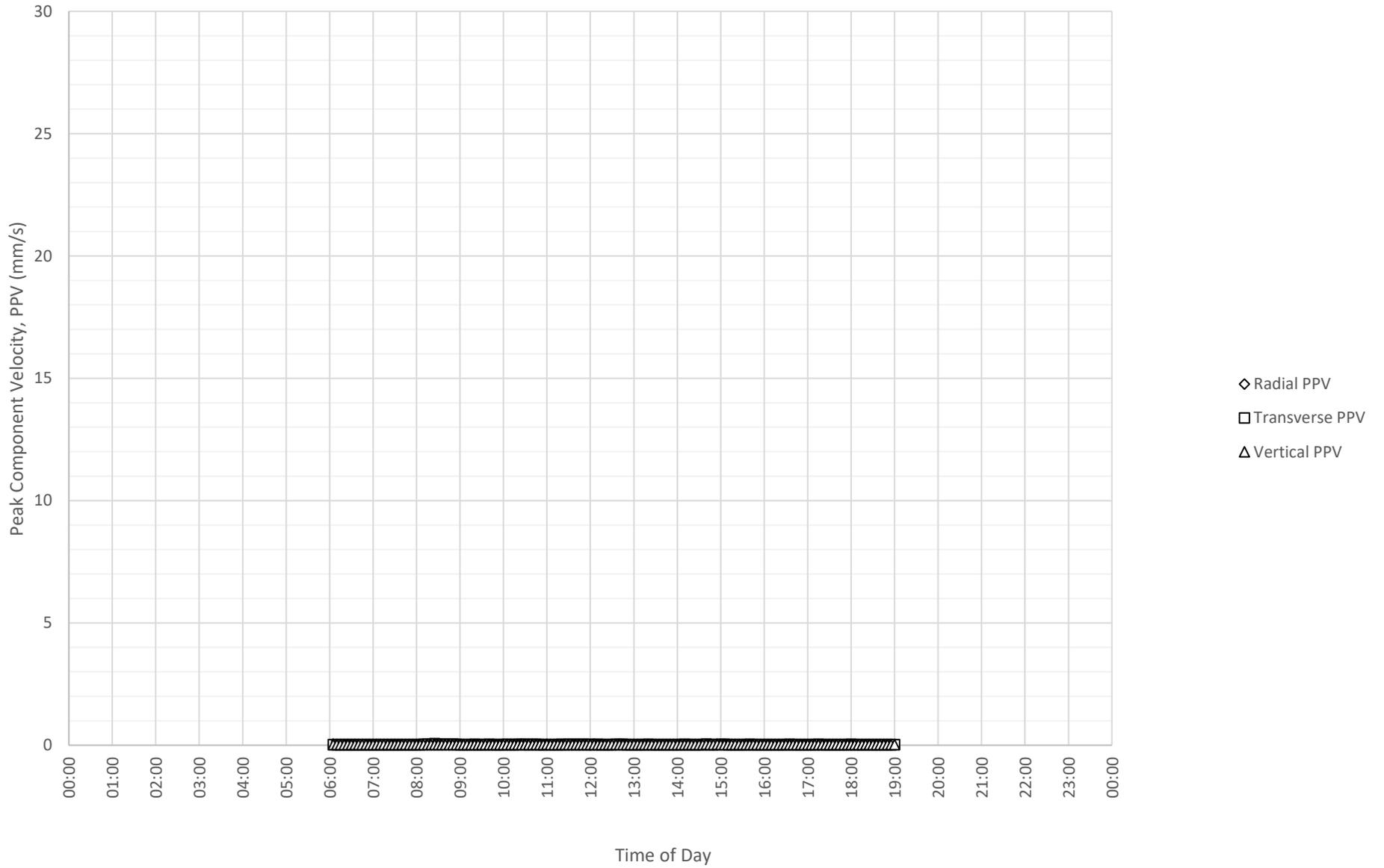
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 16-09-2022



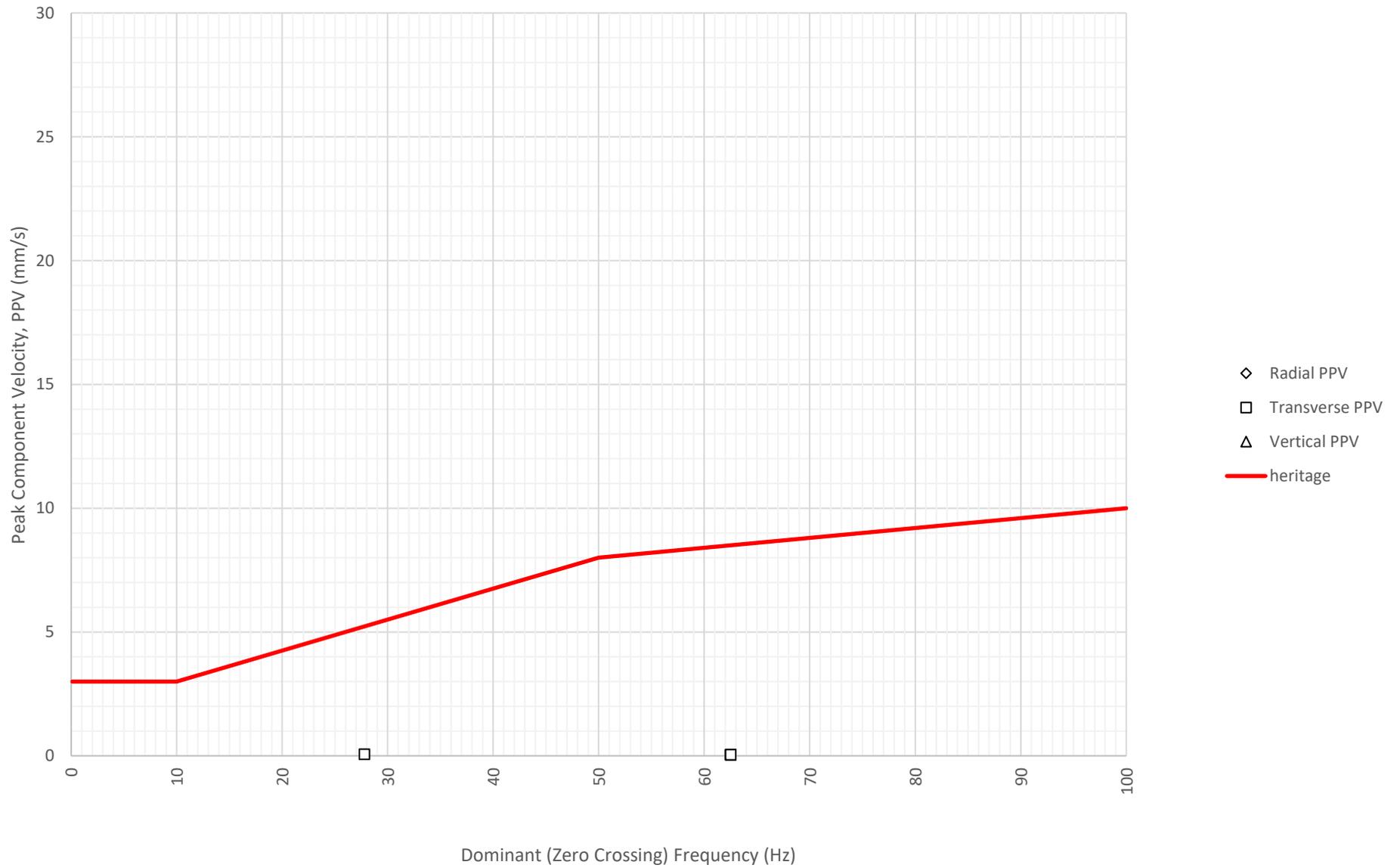
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 16-09-2022



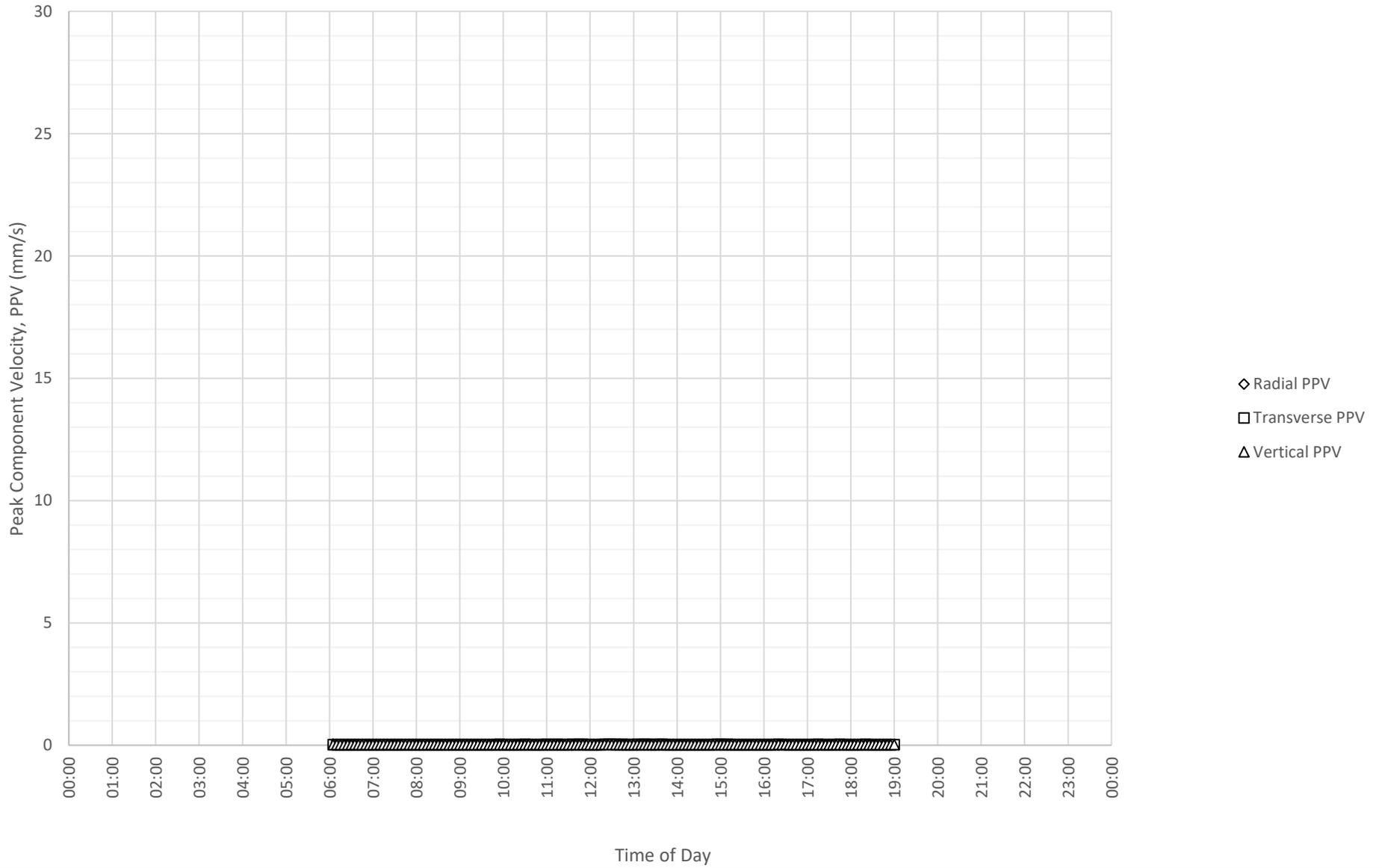
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 17-09-2022



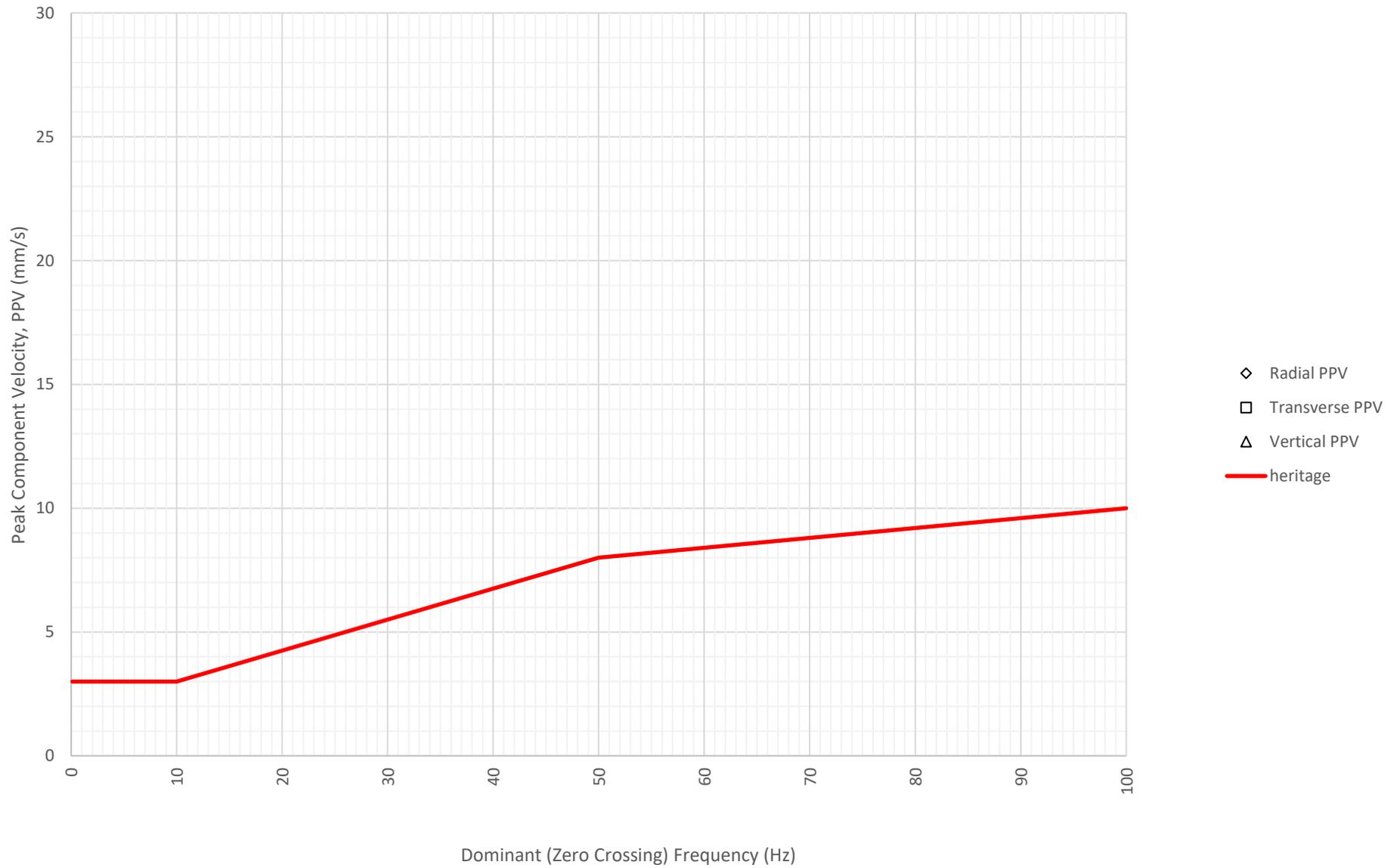
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 17-09-2022



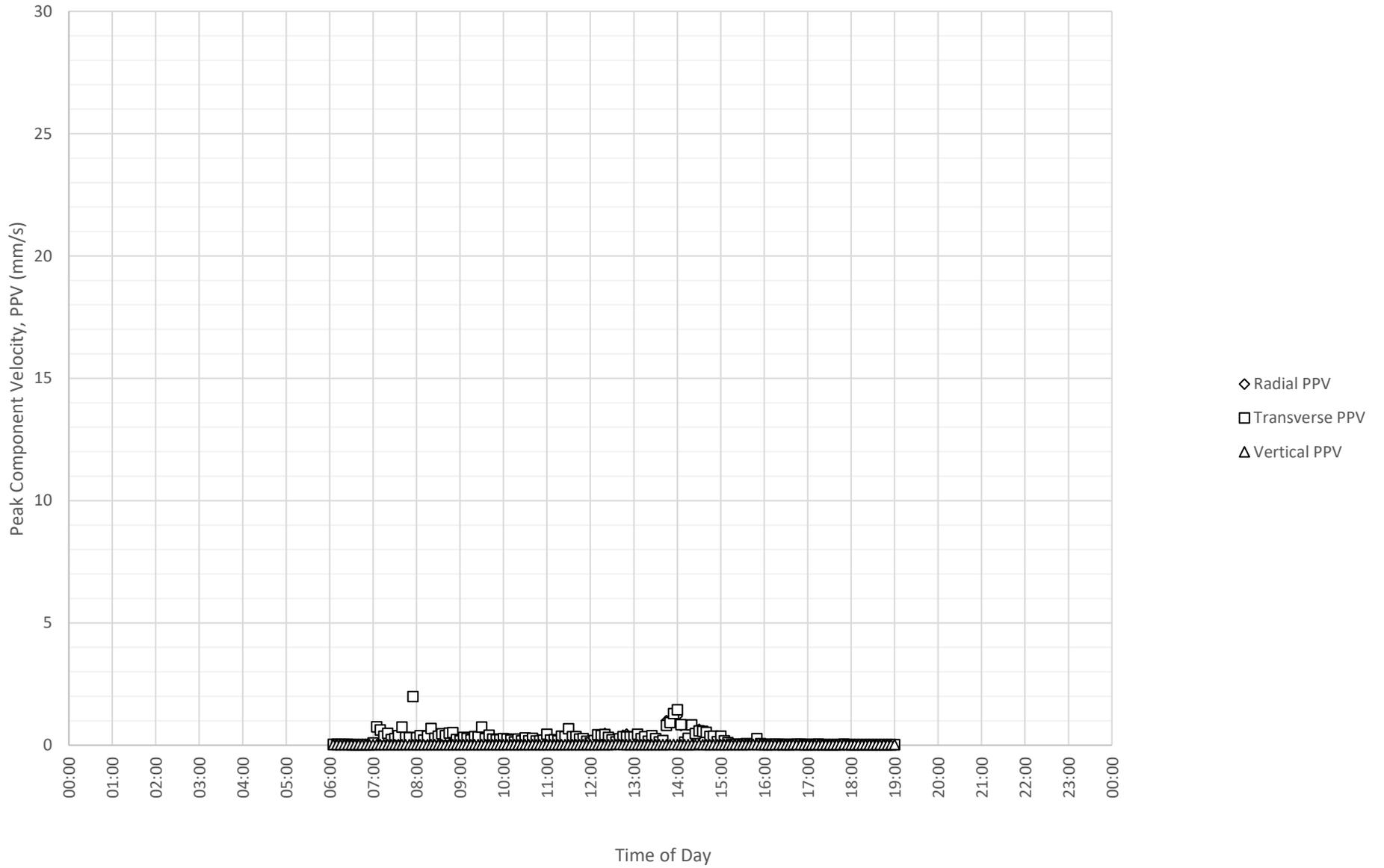
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 18-09-2022



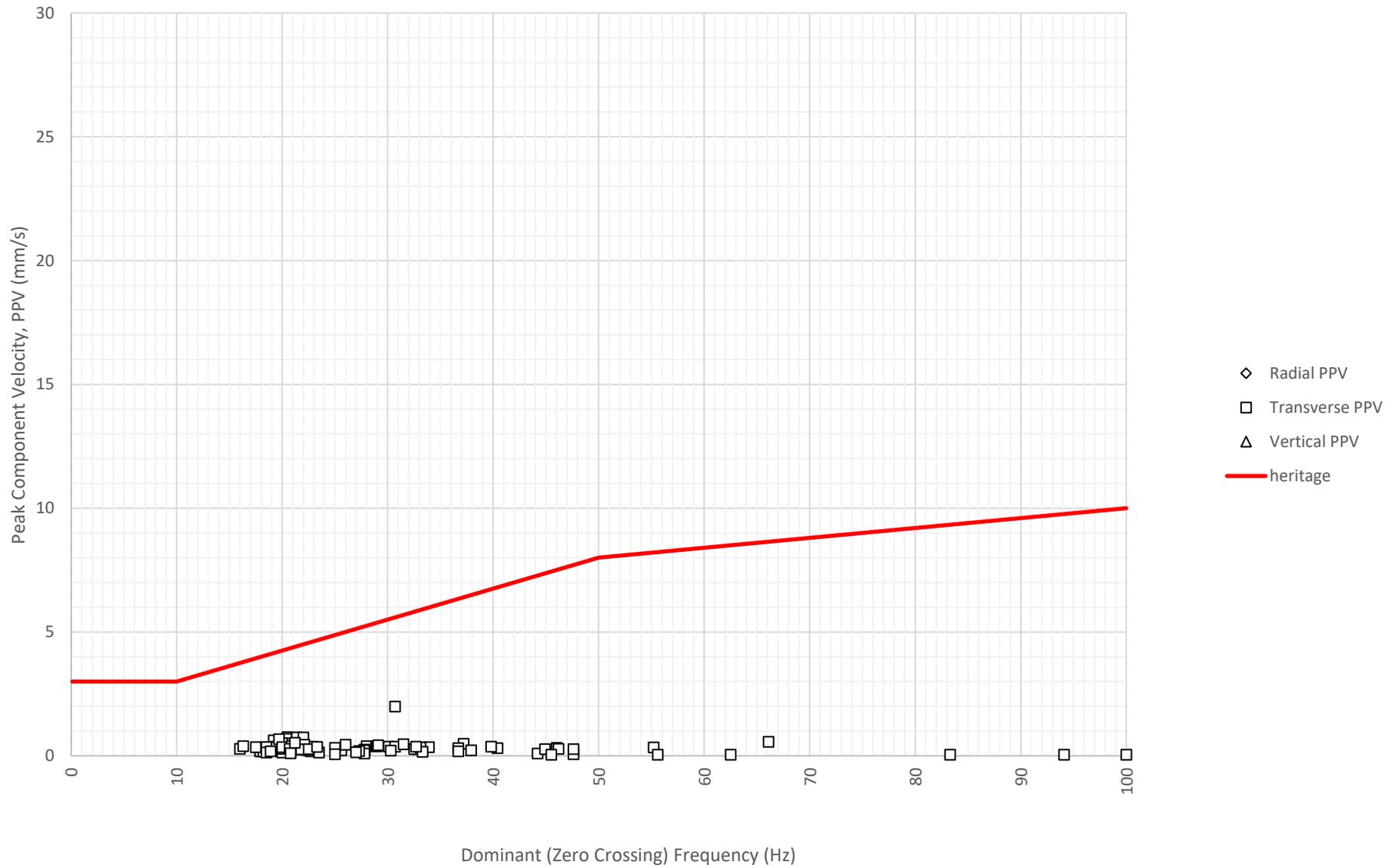
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 18-09-2022



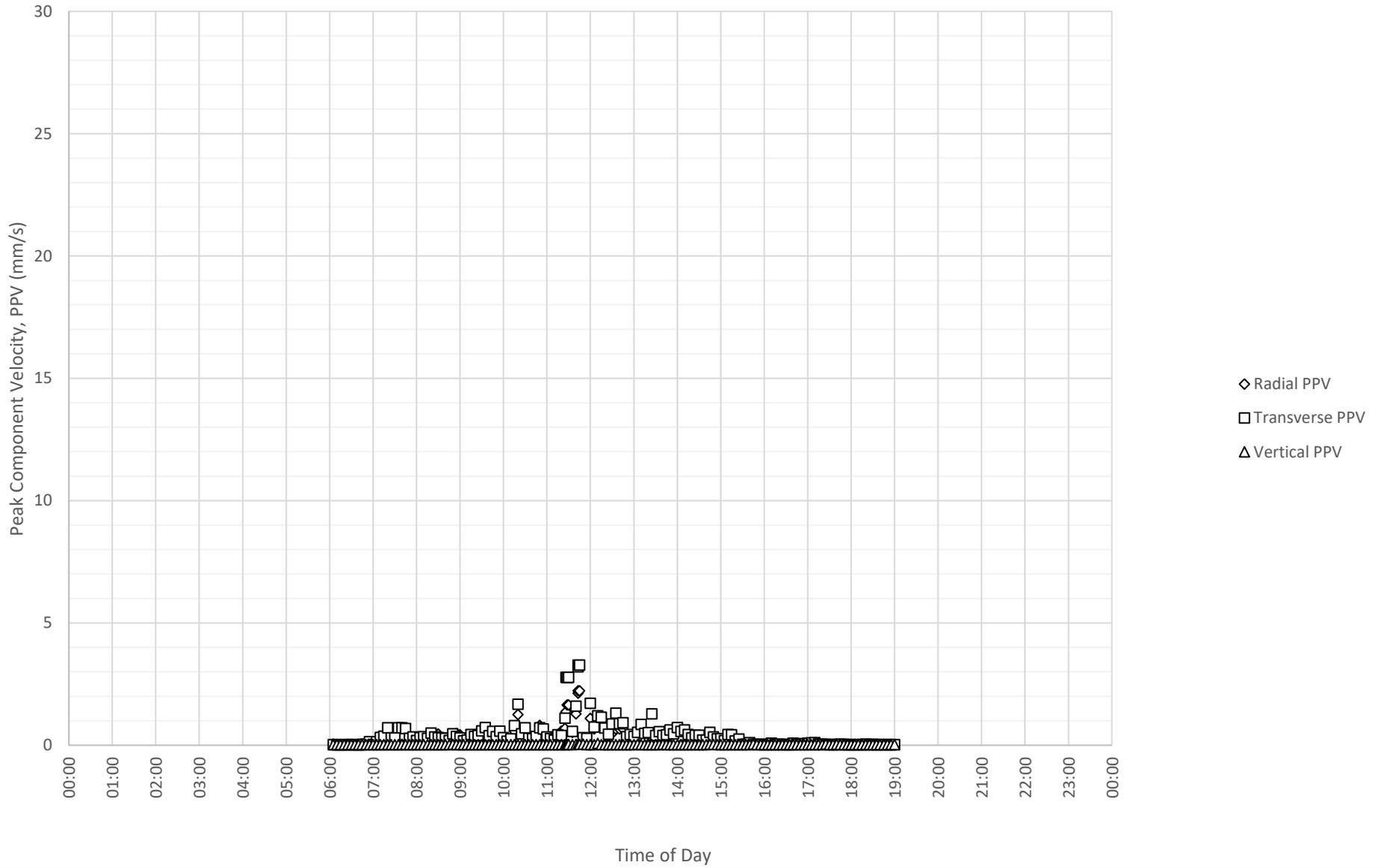
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 19-09-2022



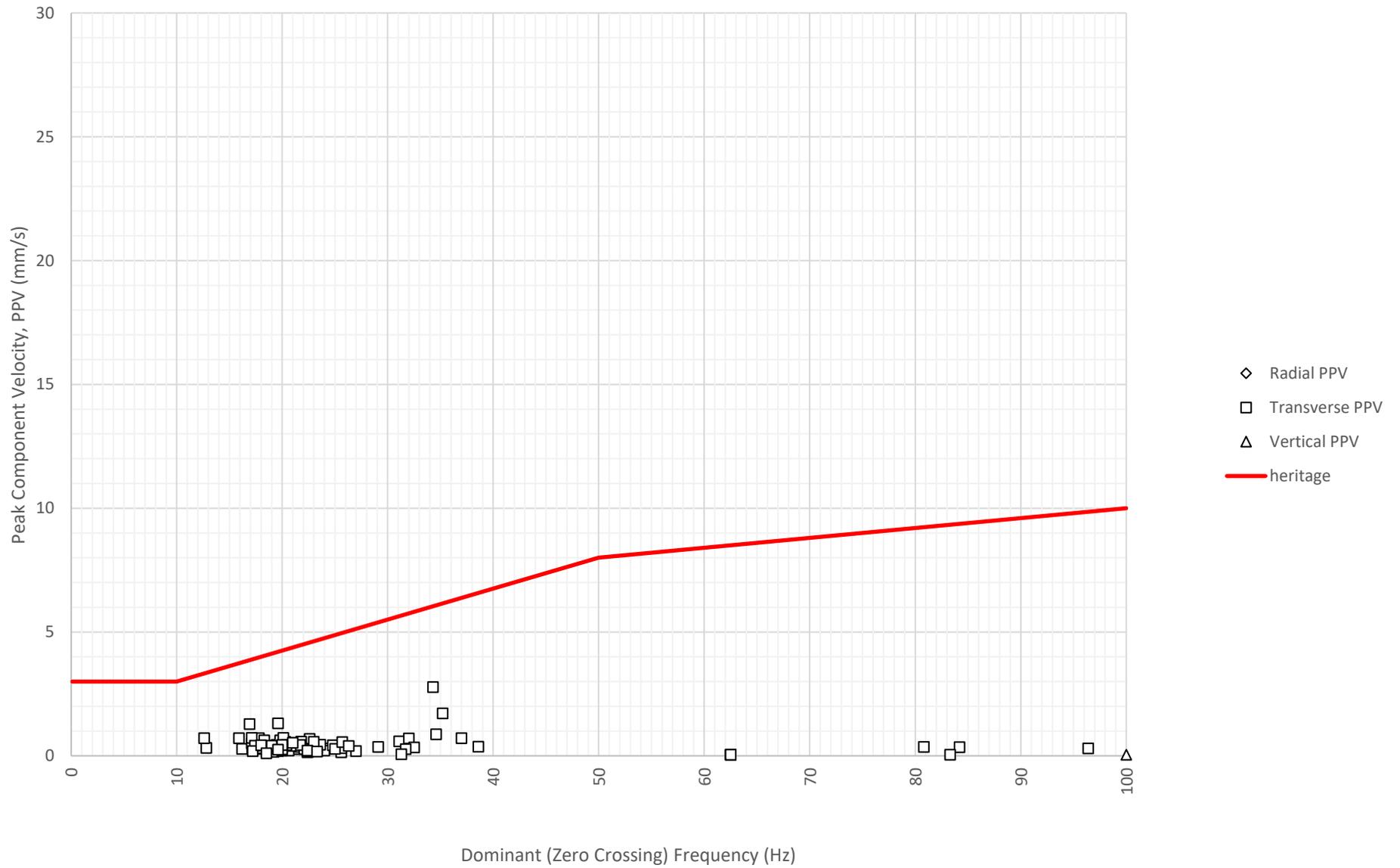
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 19-09-2022



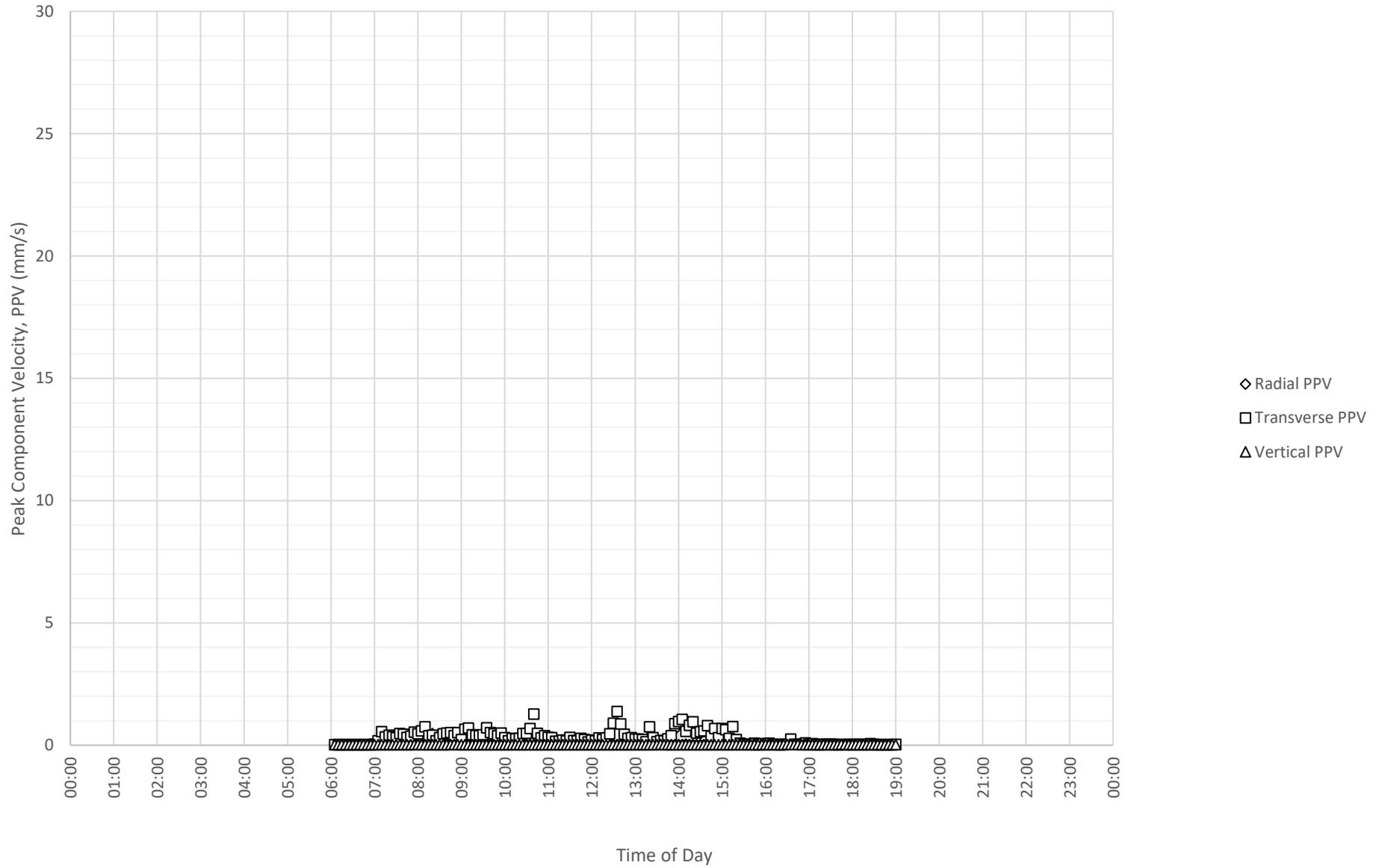
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 20-09-2022



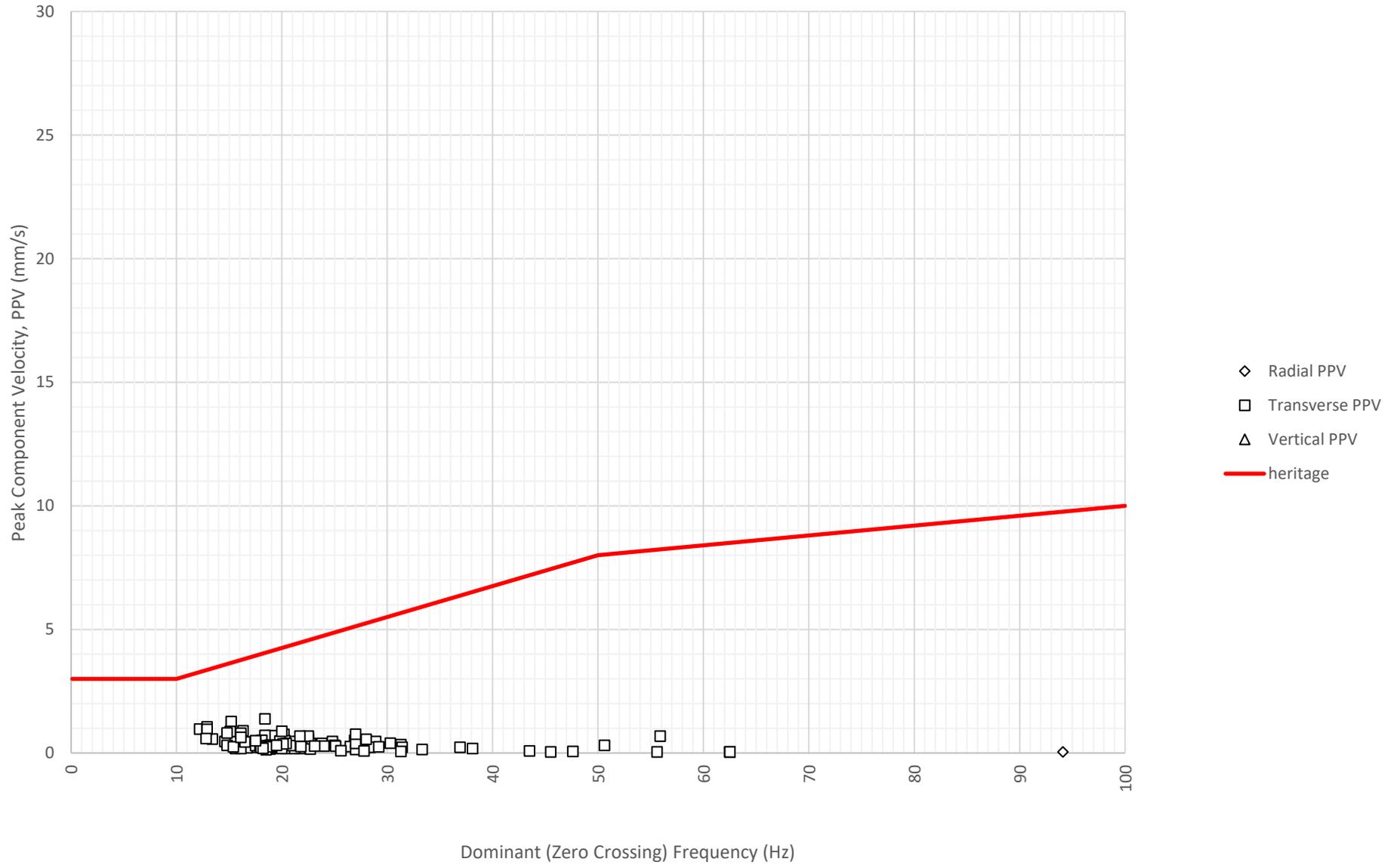
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 20-09-2022



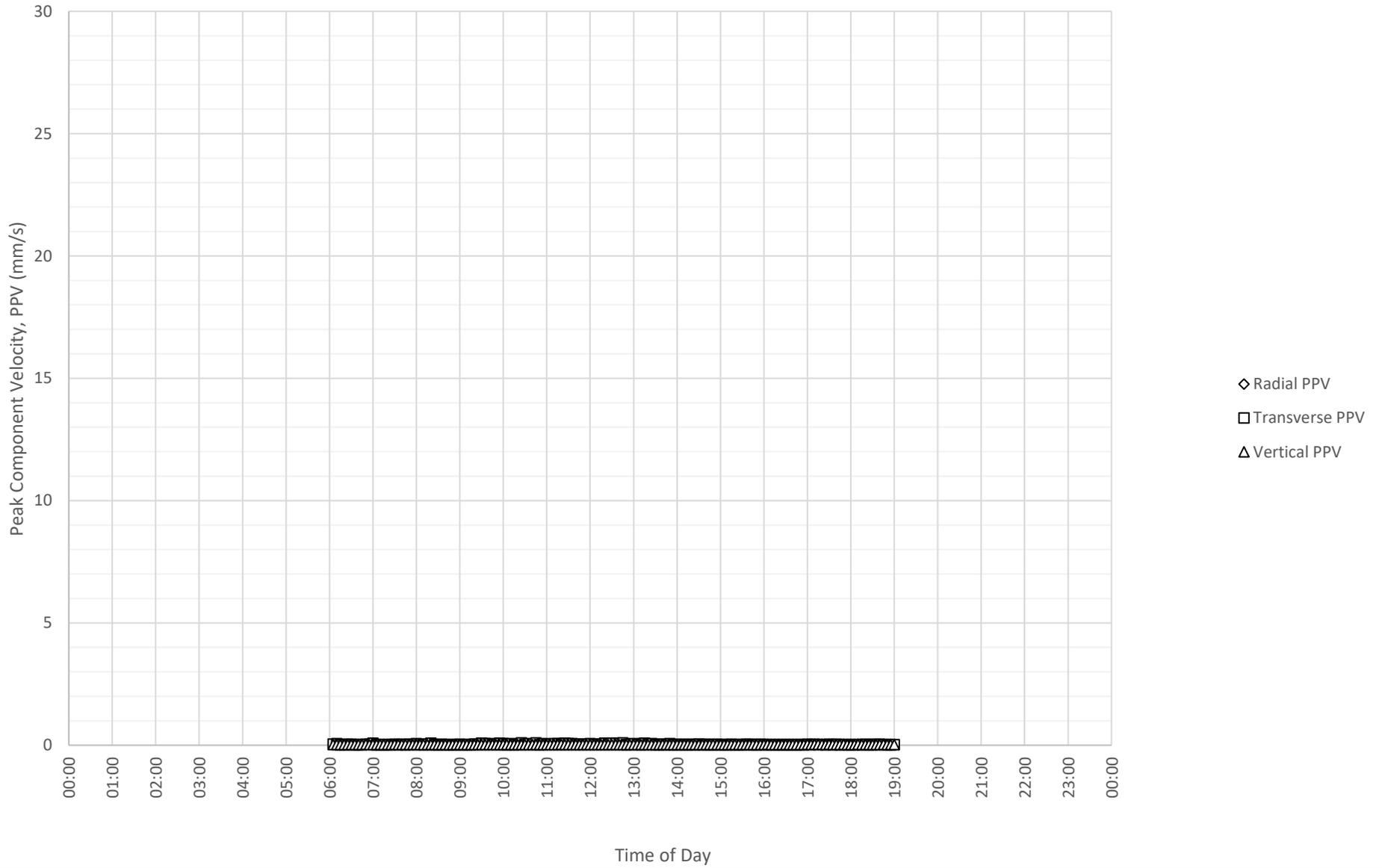
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 21-09-2022



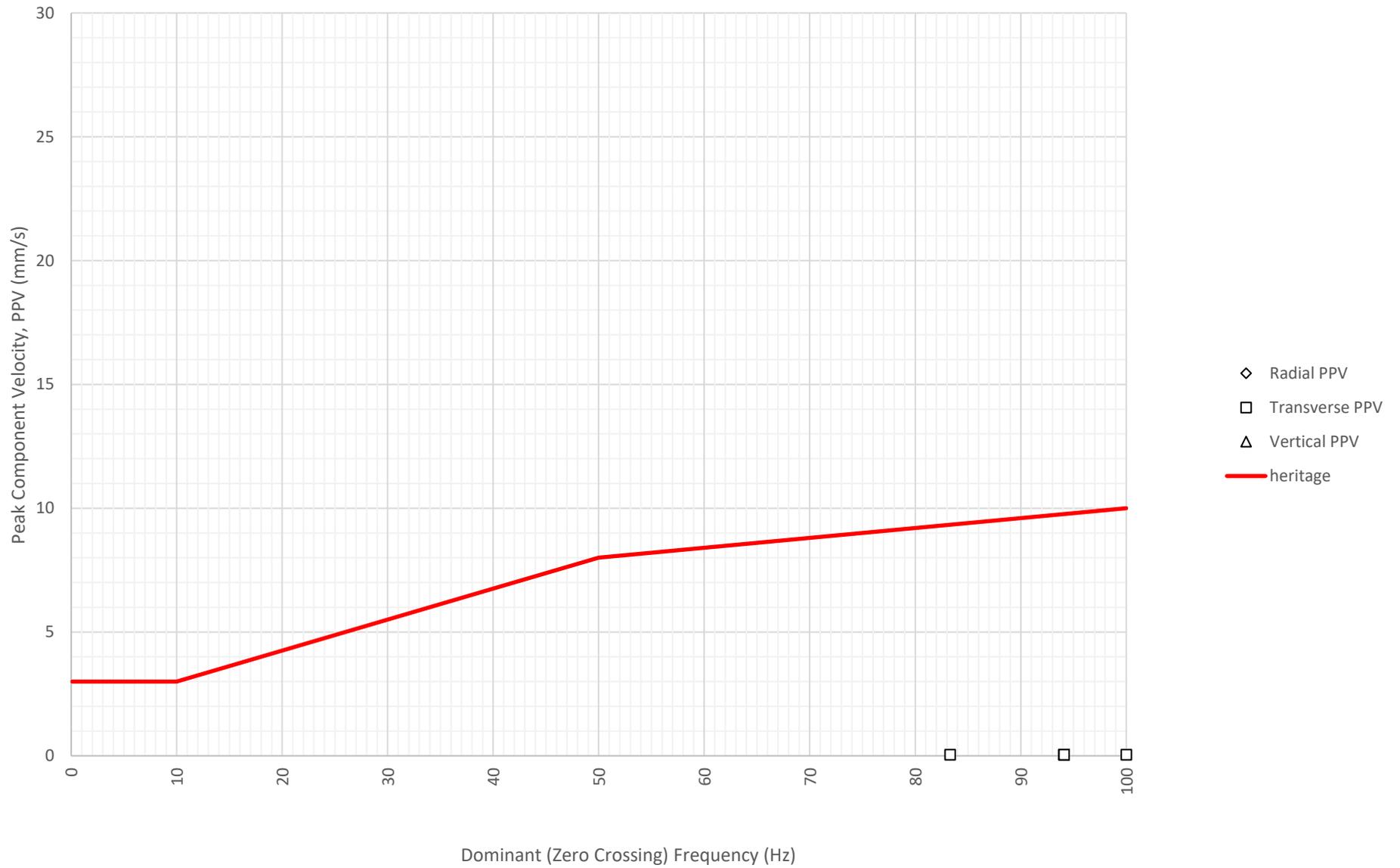
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 21-09-2022



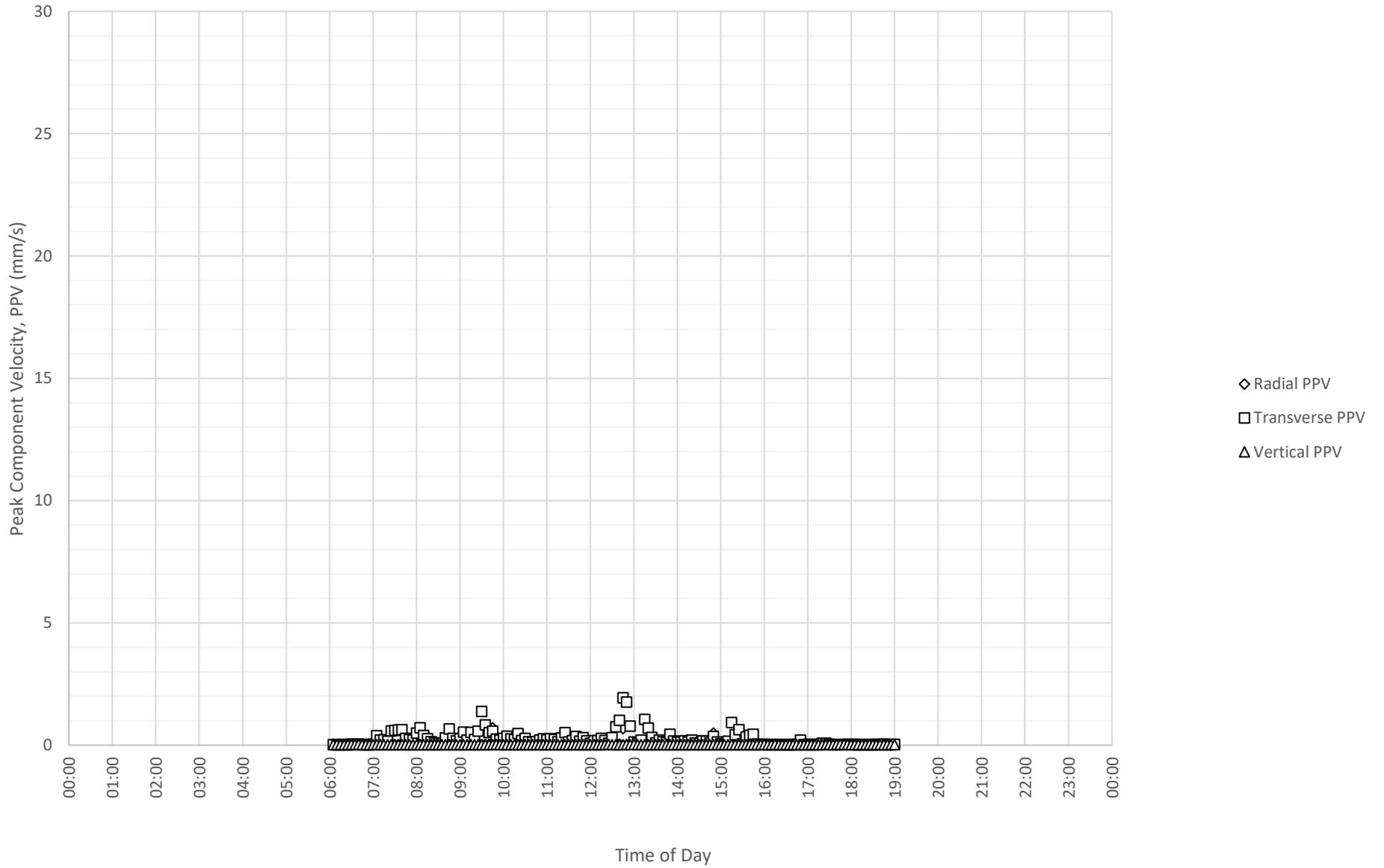
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 22-09-2022



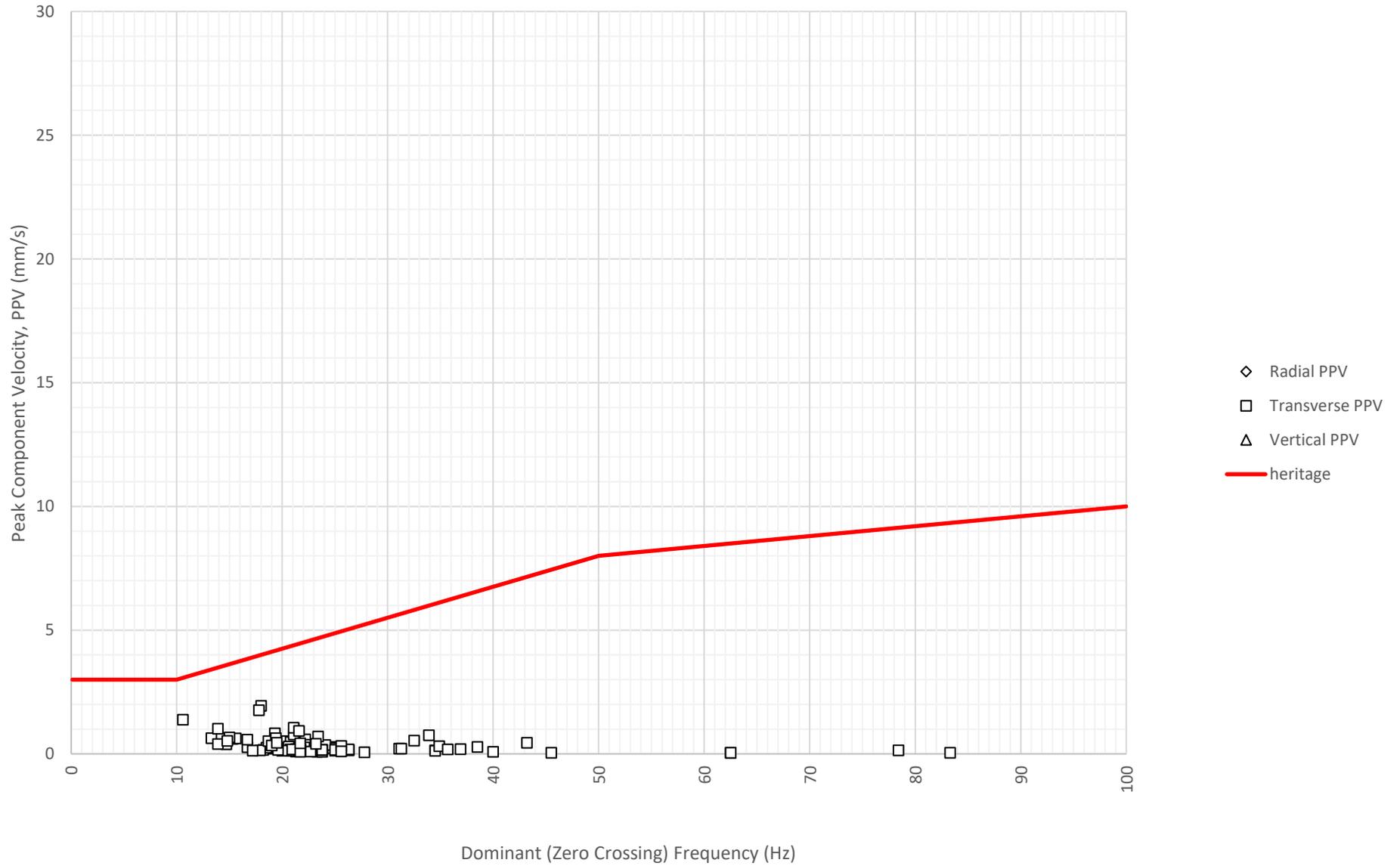
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 22-09-2022



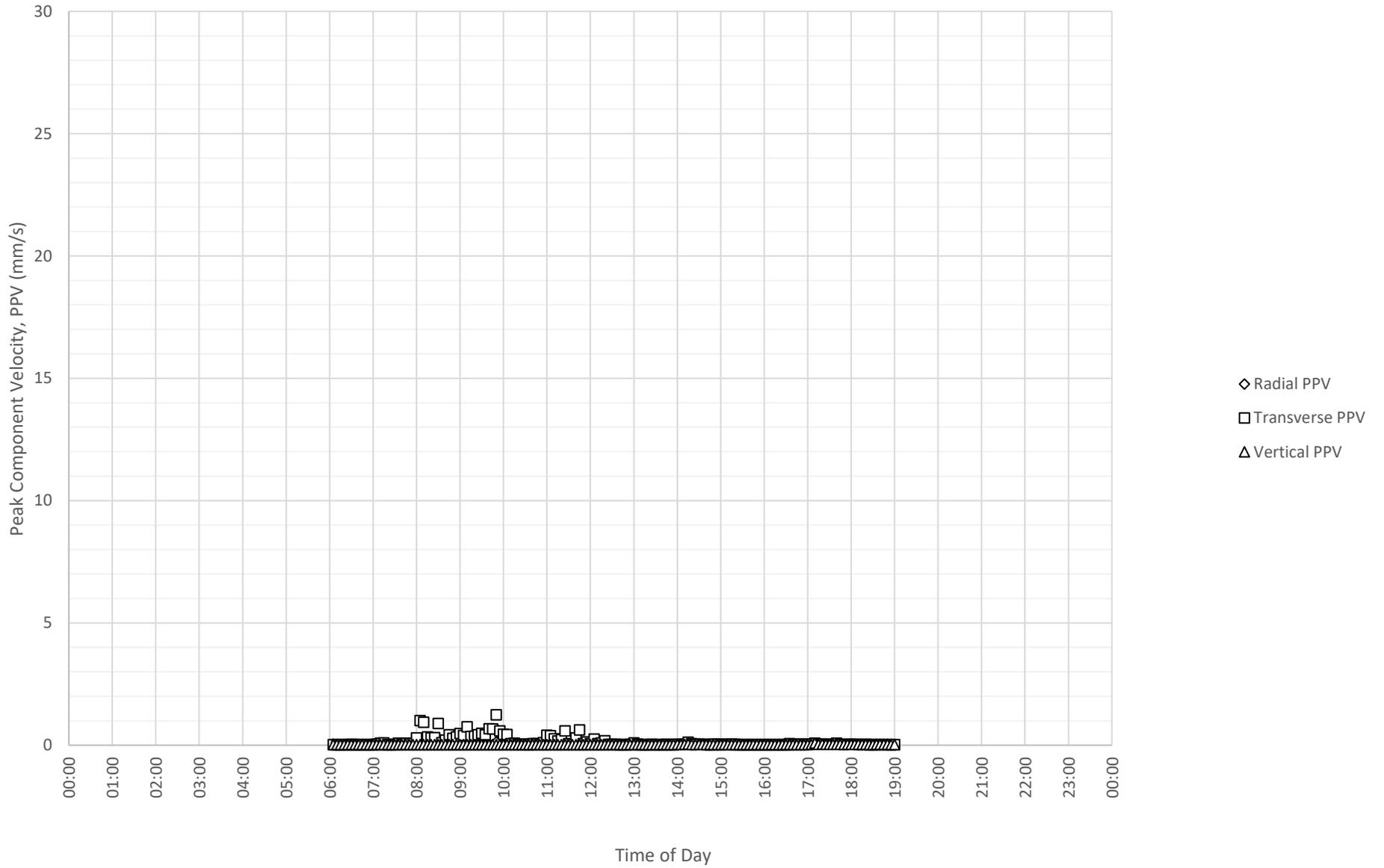
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 23-09-2022



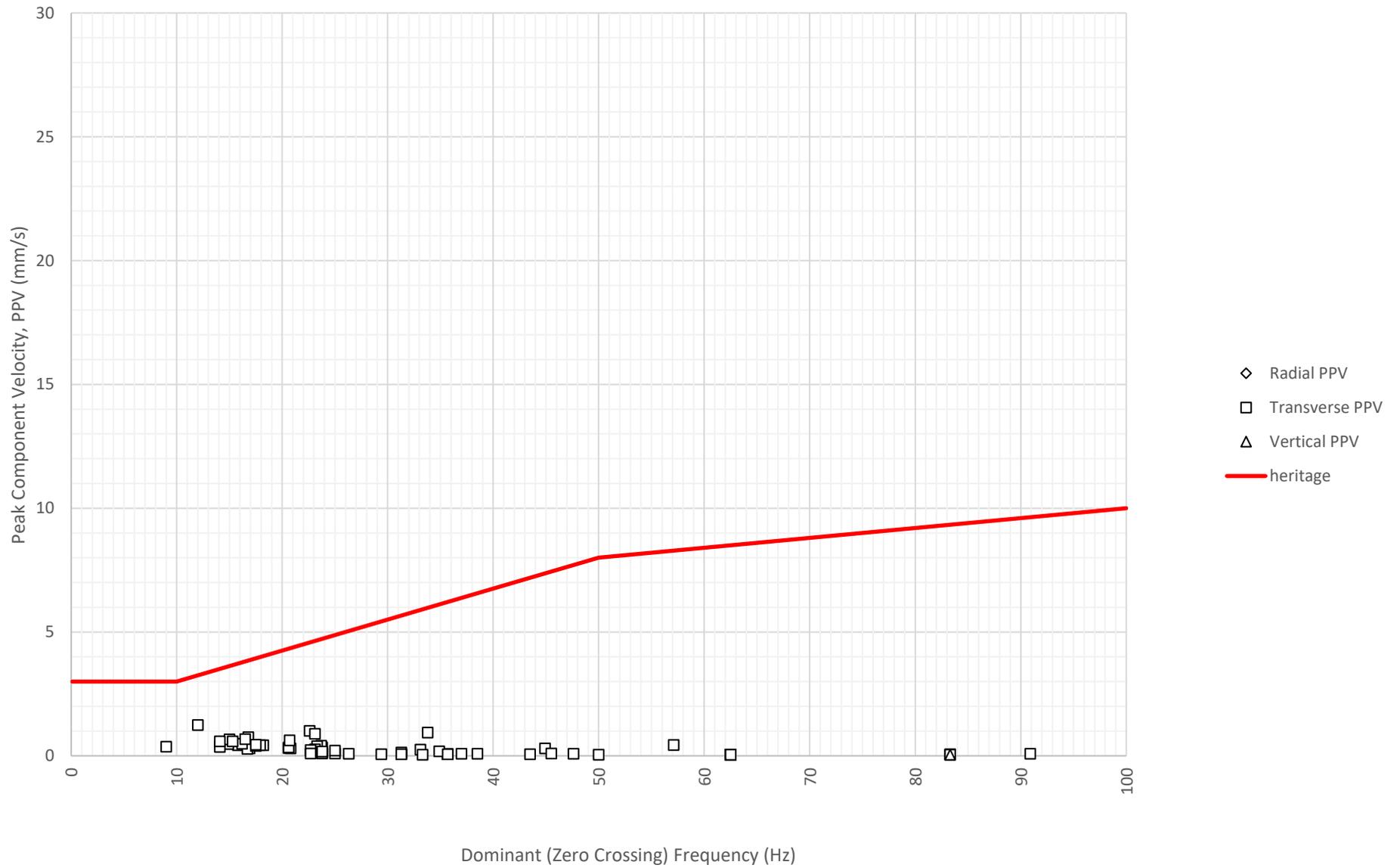
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 23-09-2022



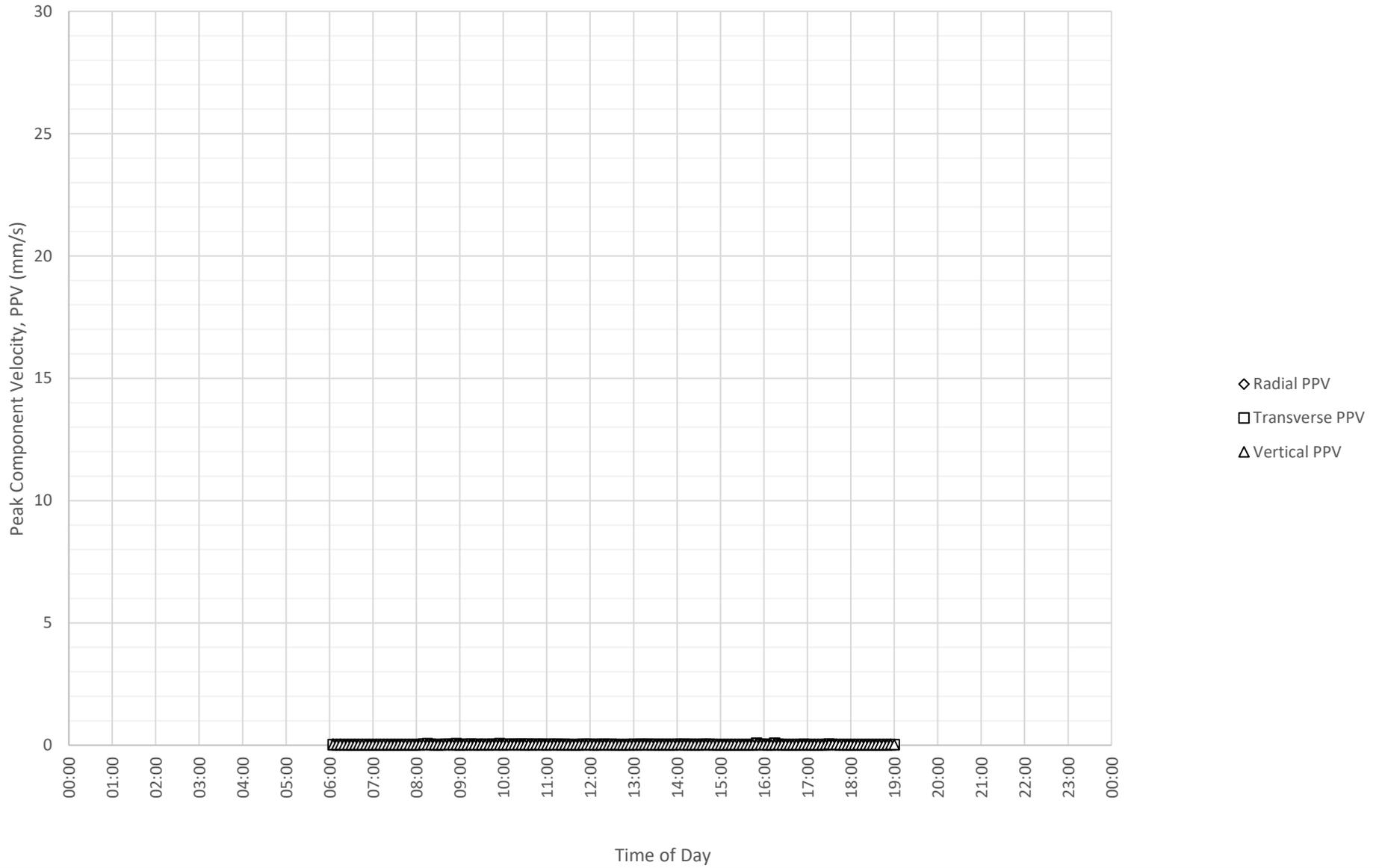
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 24-09-2022



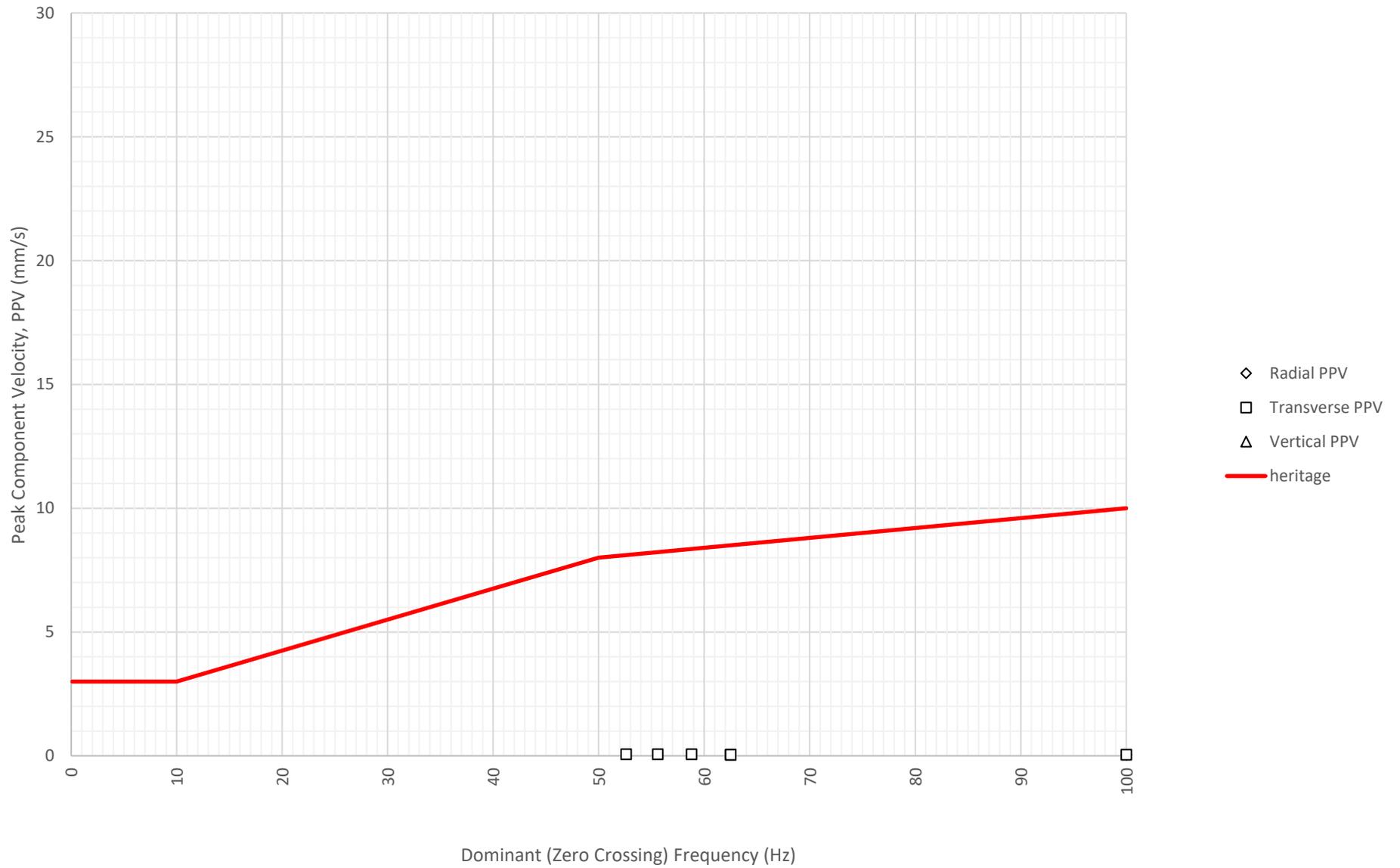
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 24-09-2022



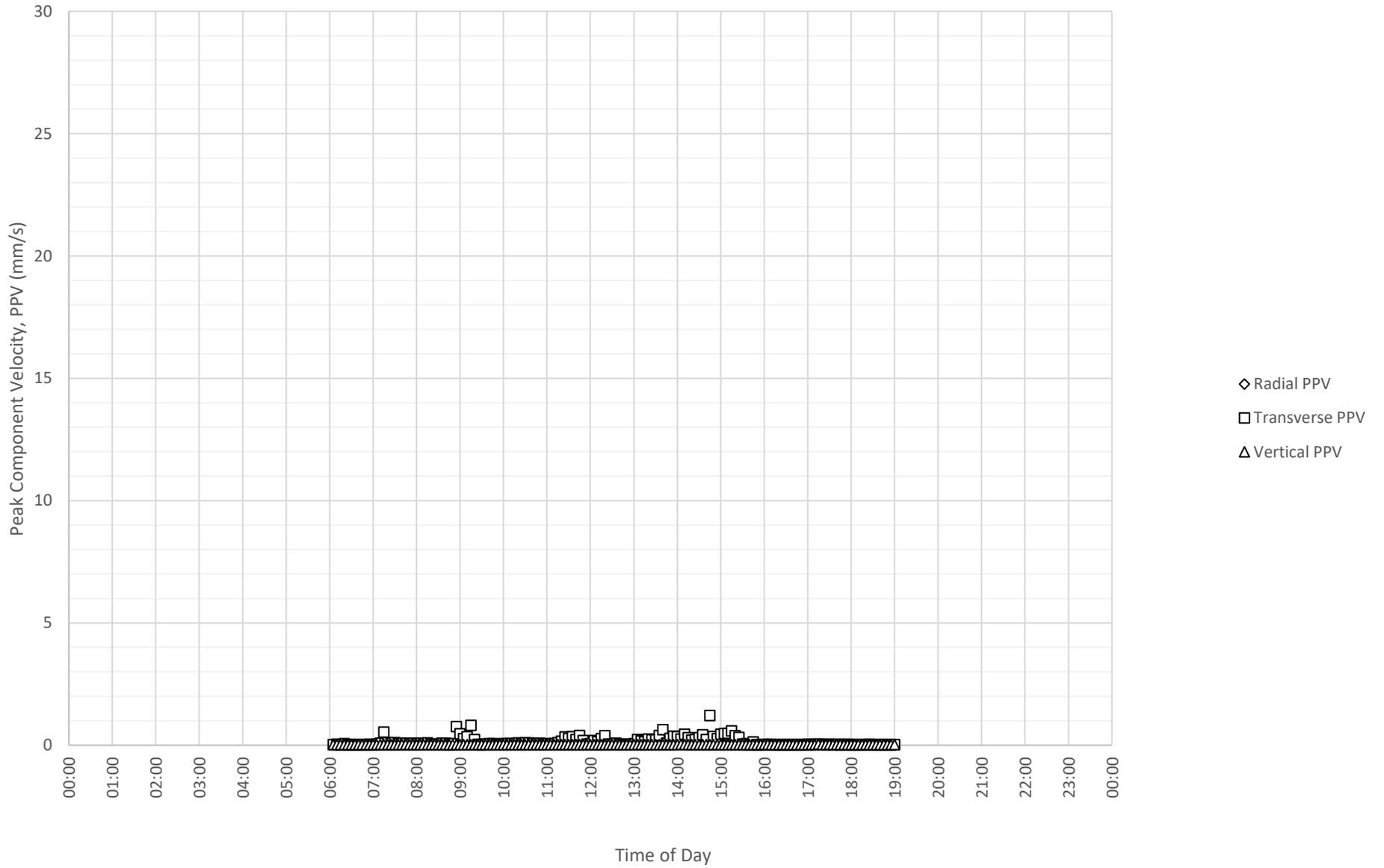
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 25-09-2022



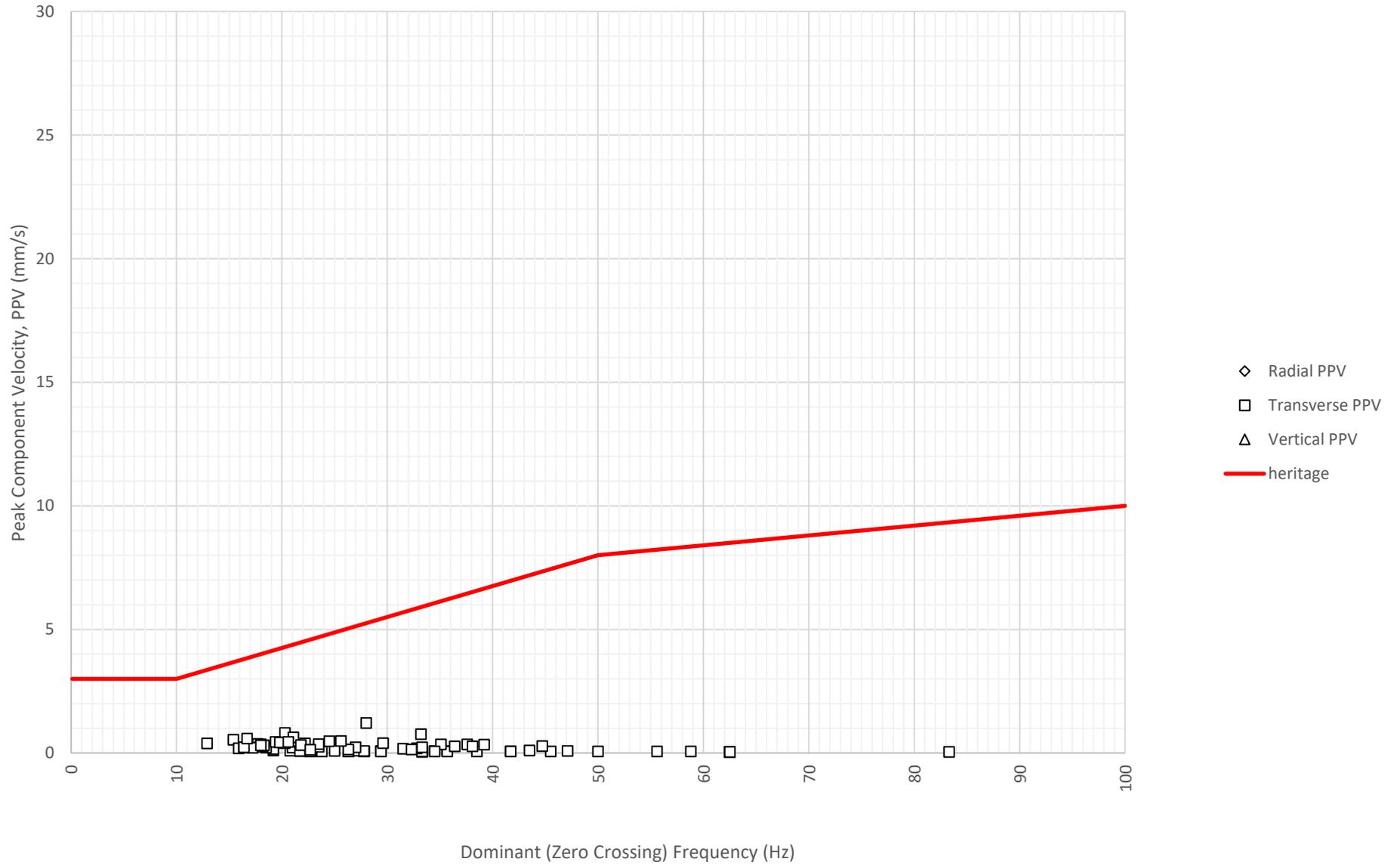
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 25-09-2022



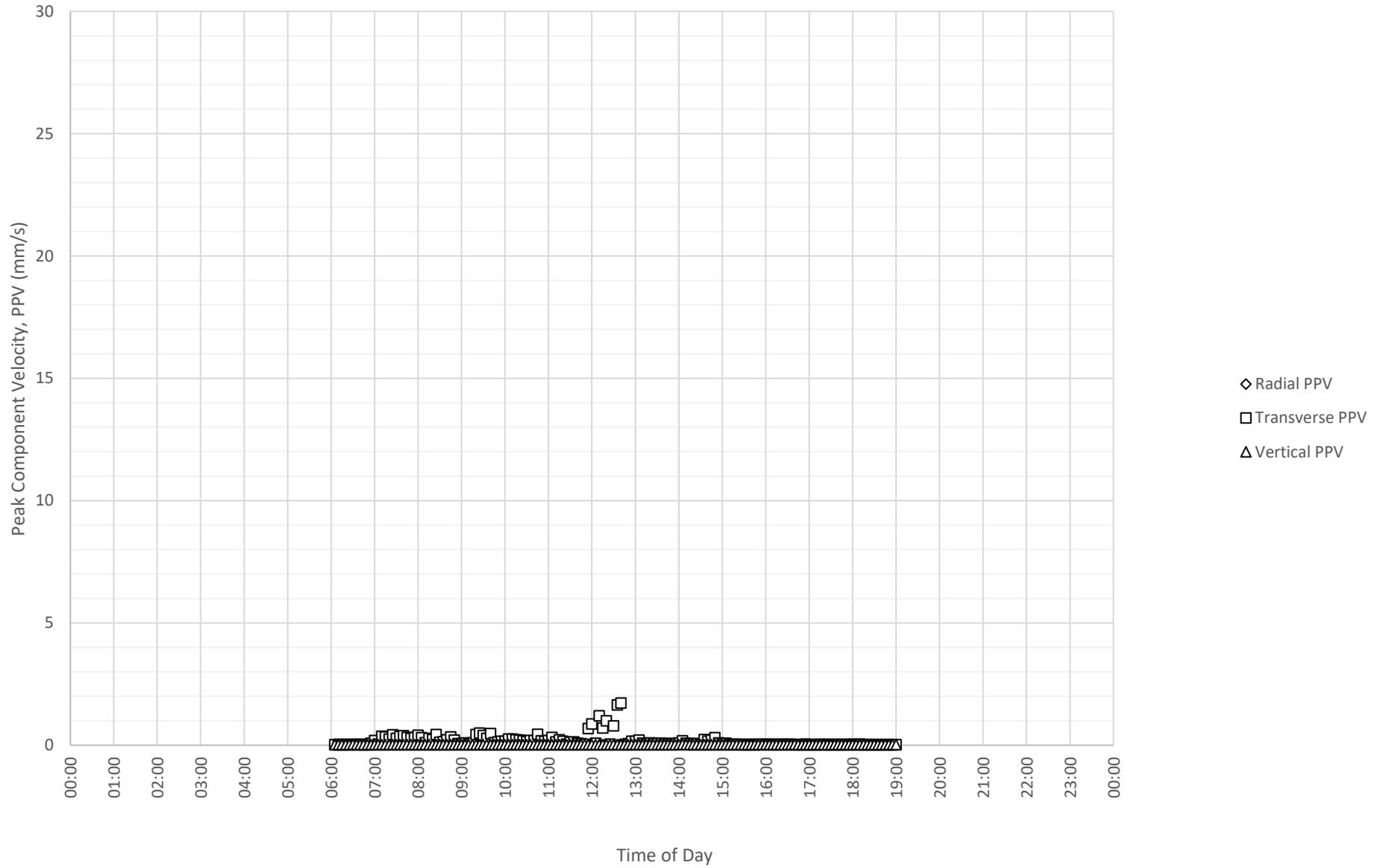
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 26-09-2022



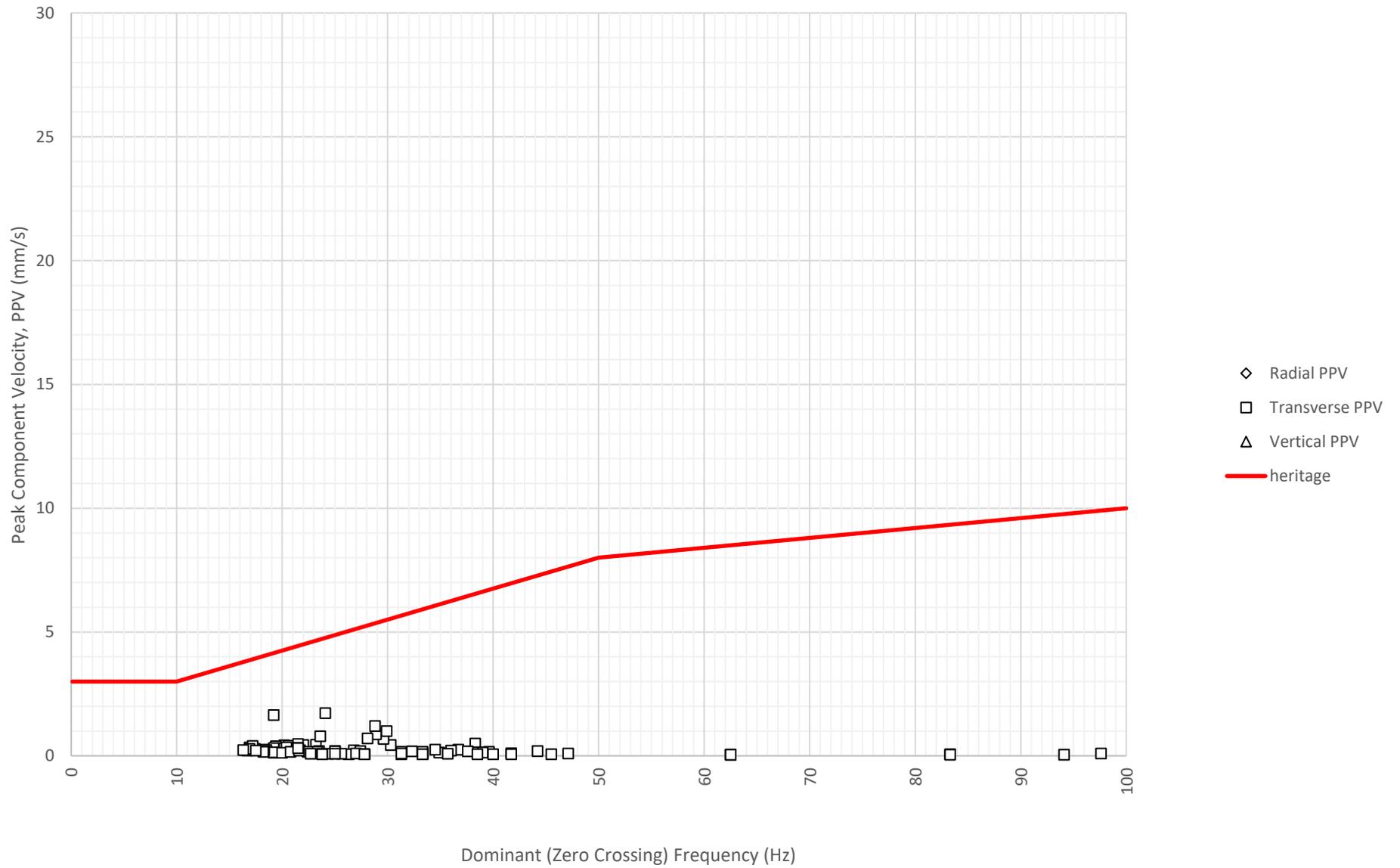
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 26-09-2022



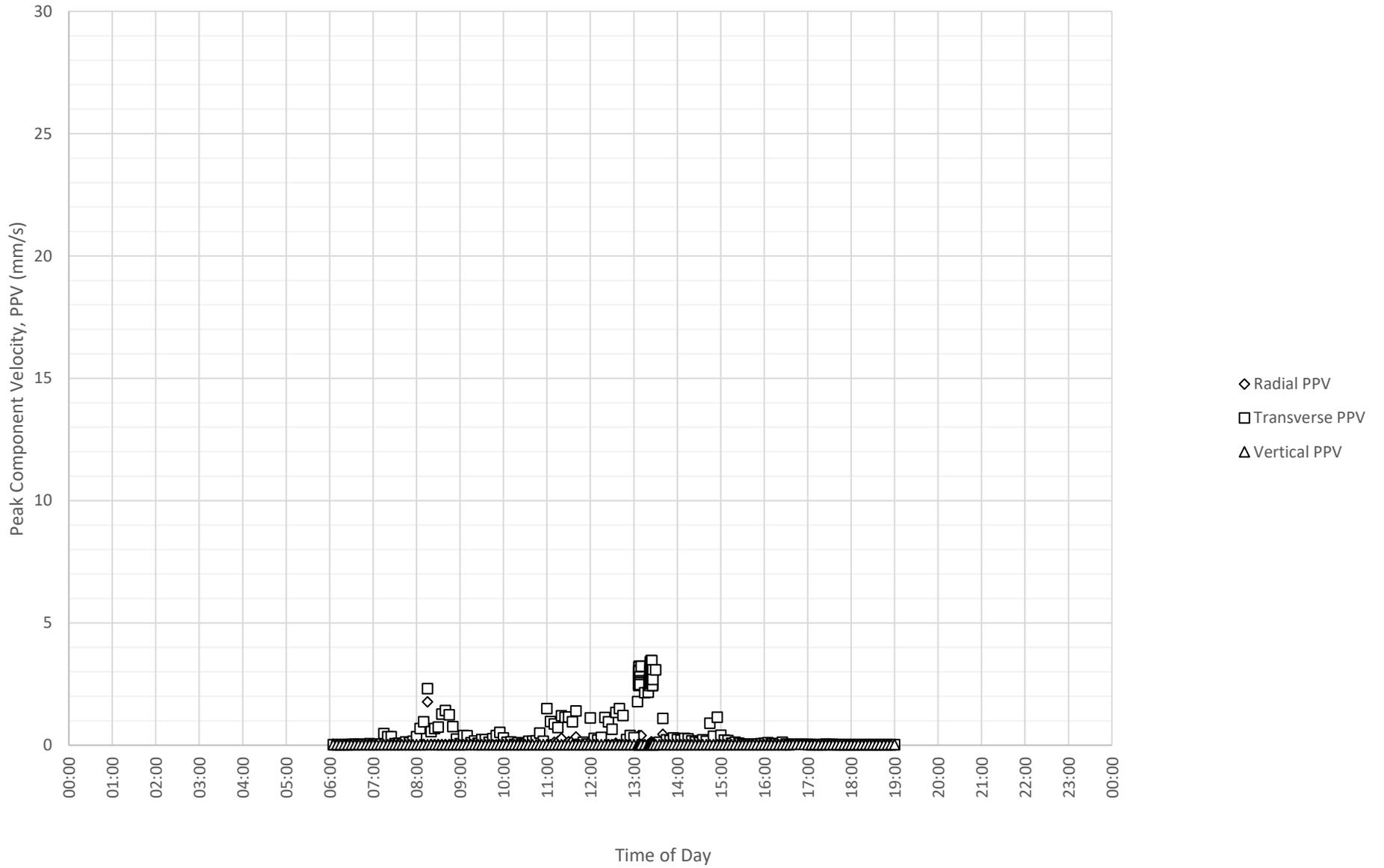
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 27-09-2022



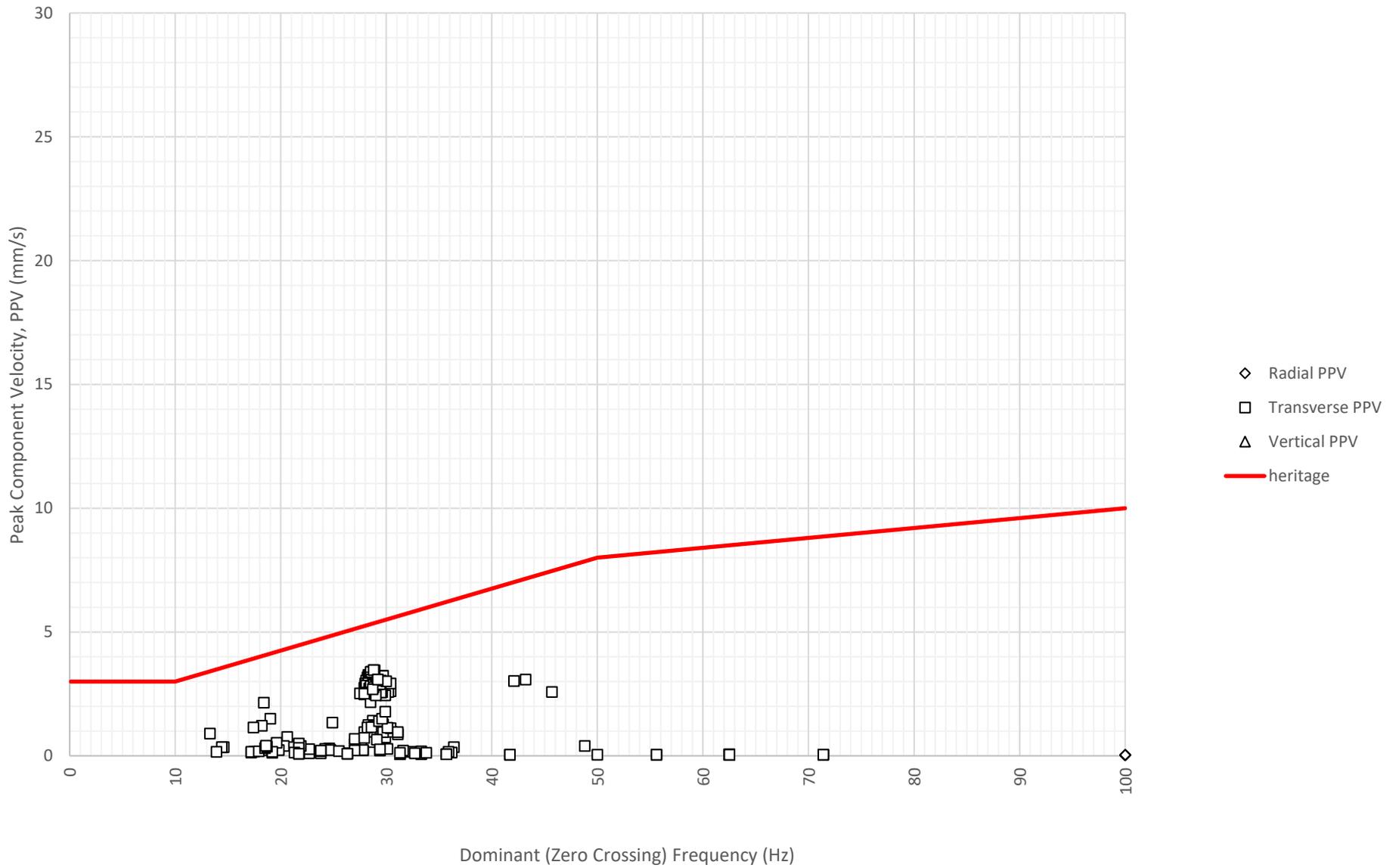
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 27-09-2022



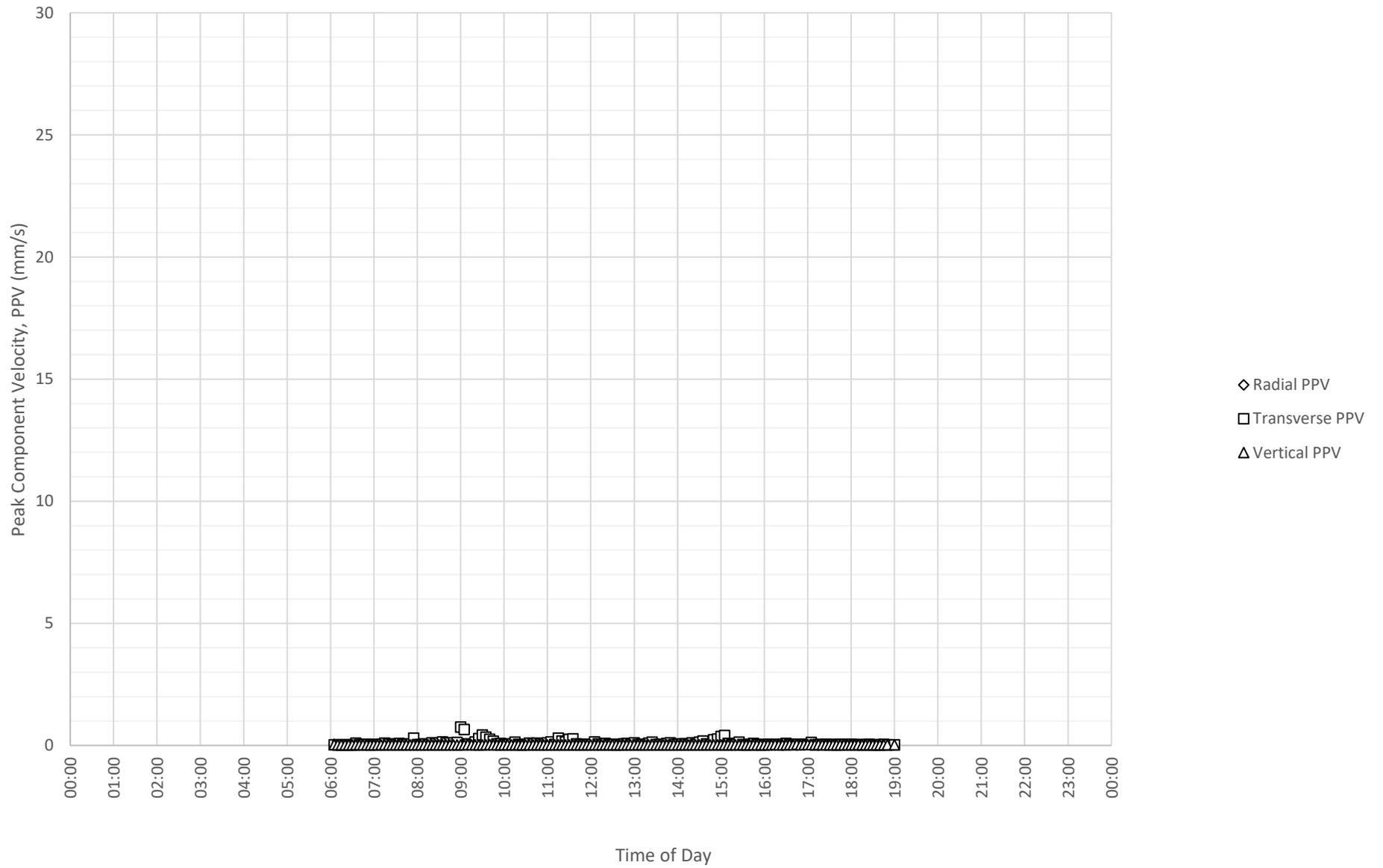
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 28-09-2022



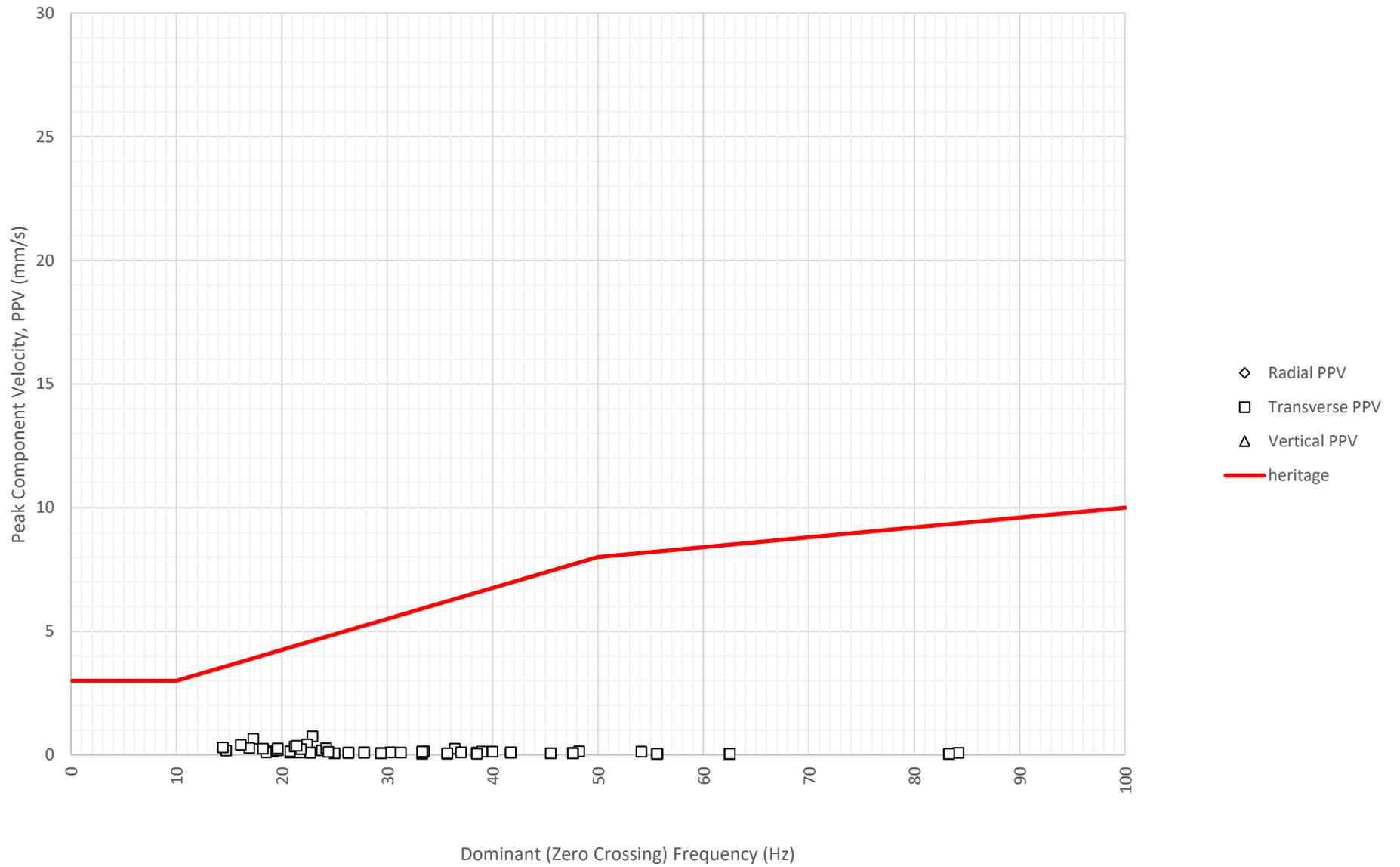
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 28-09-2022



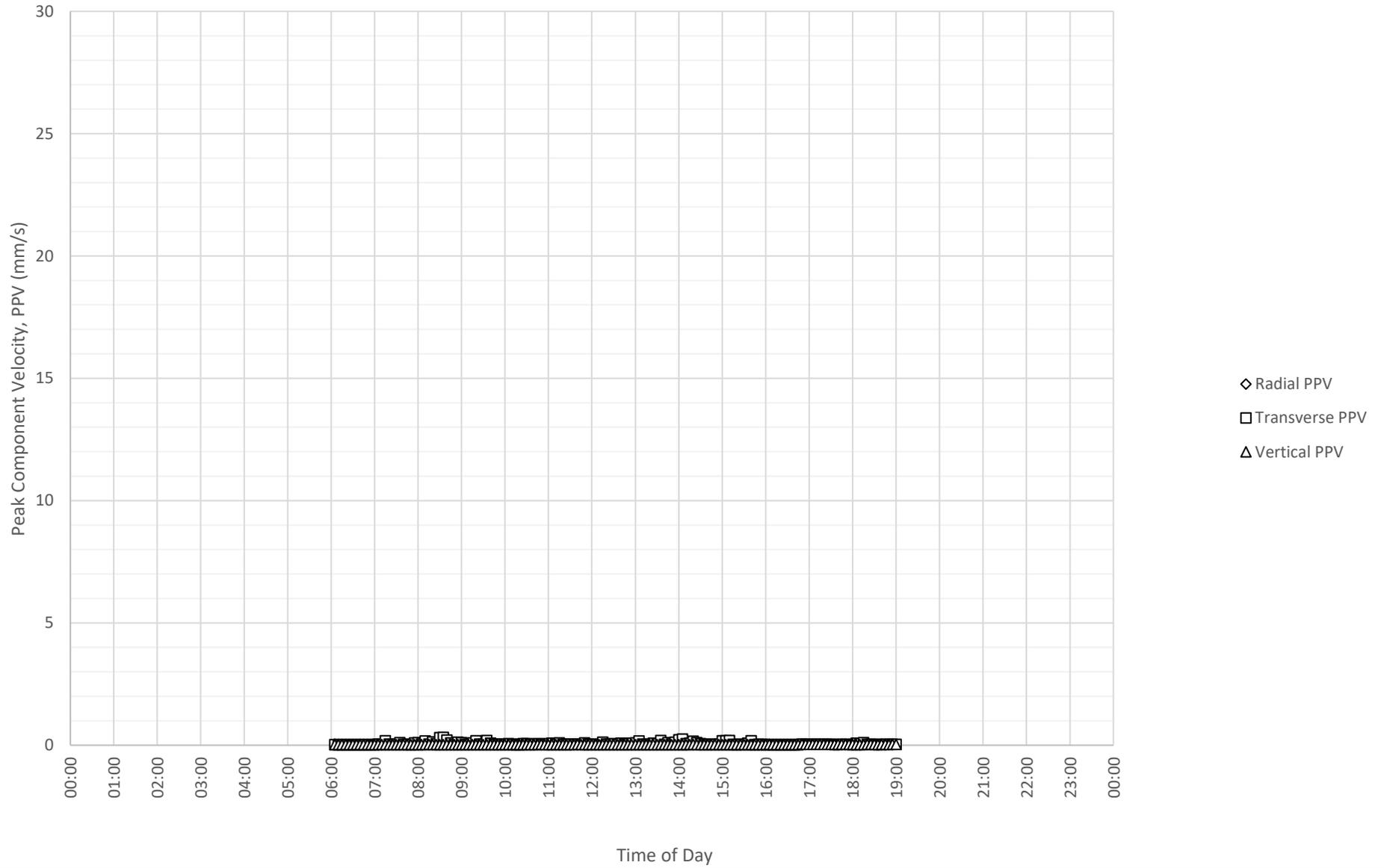
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 29-09-2022



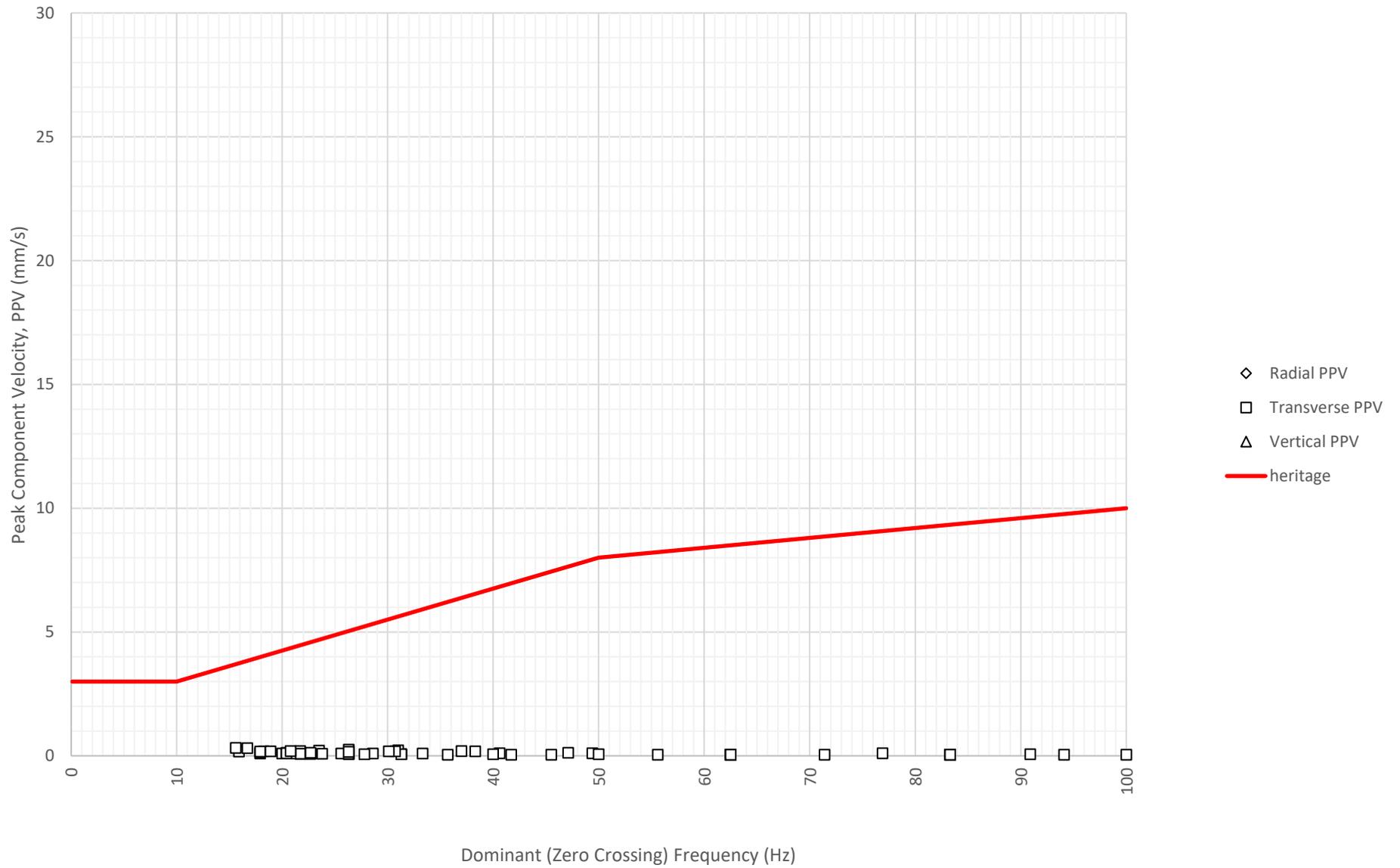
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 29-09-2022



Daily Monitored Vibration Levels at M7427 Heritage (rear) on 30-09-2022

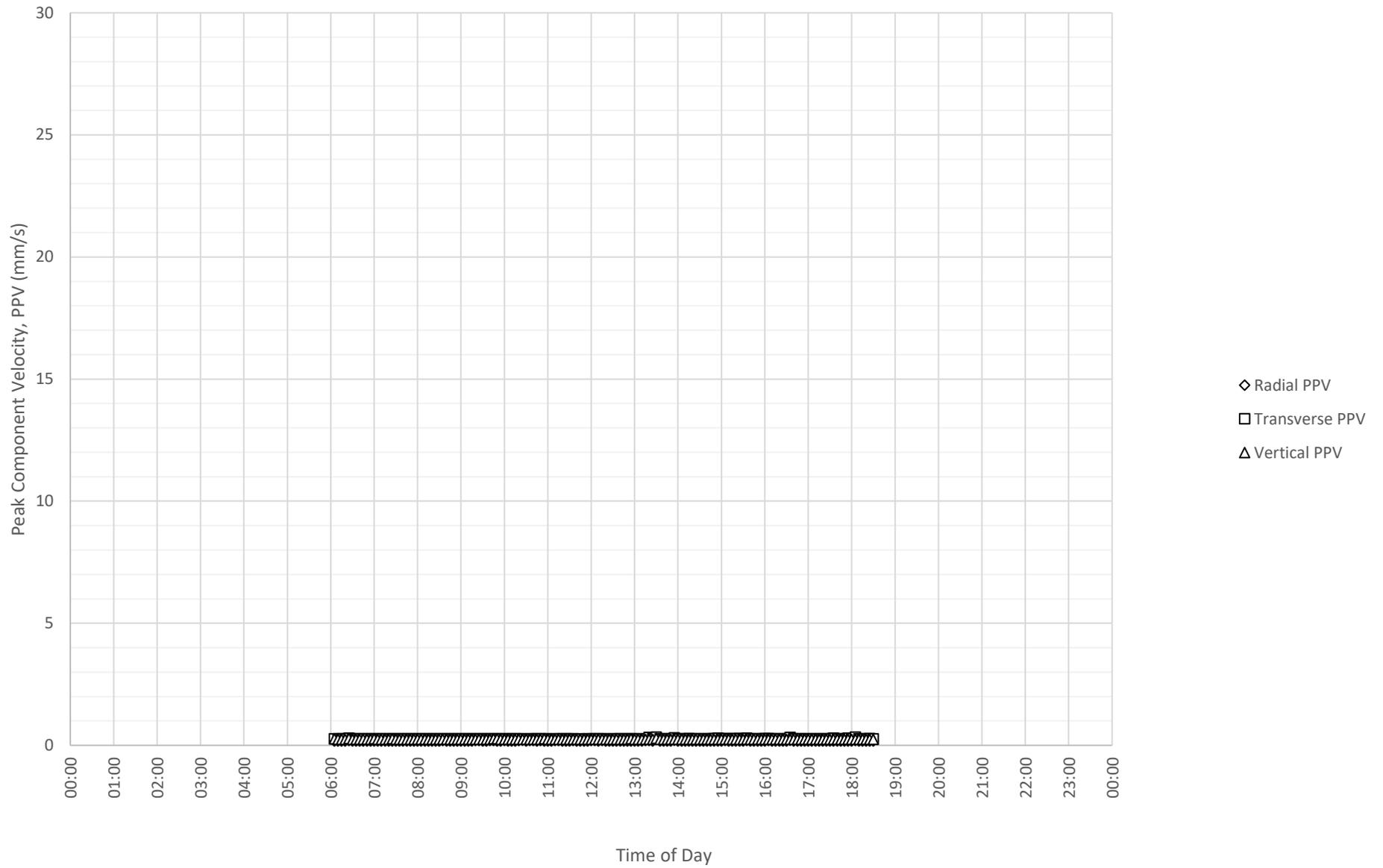


Frequency Content of Vibration Levels at M7427 Heritage (rear) on 30-09-2022

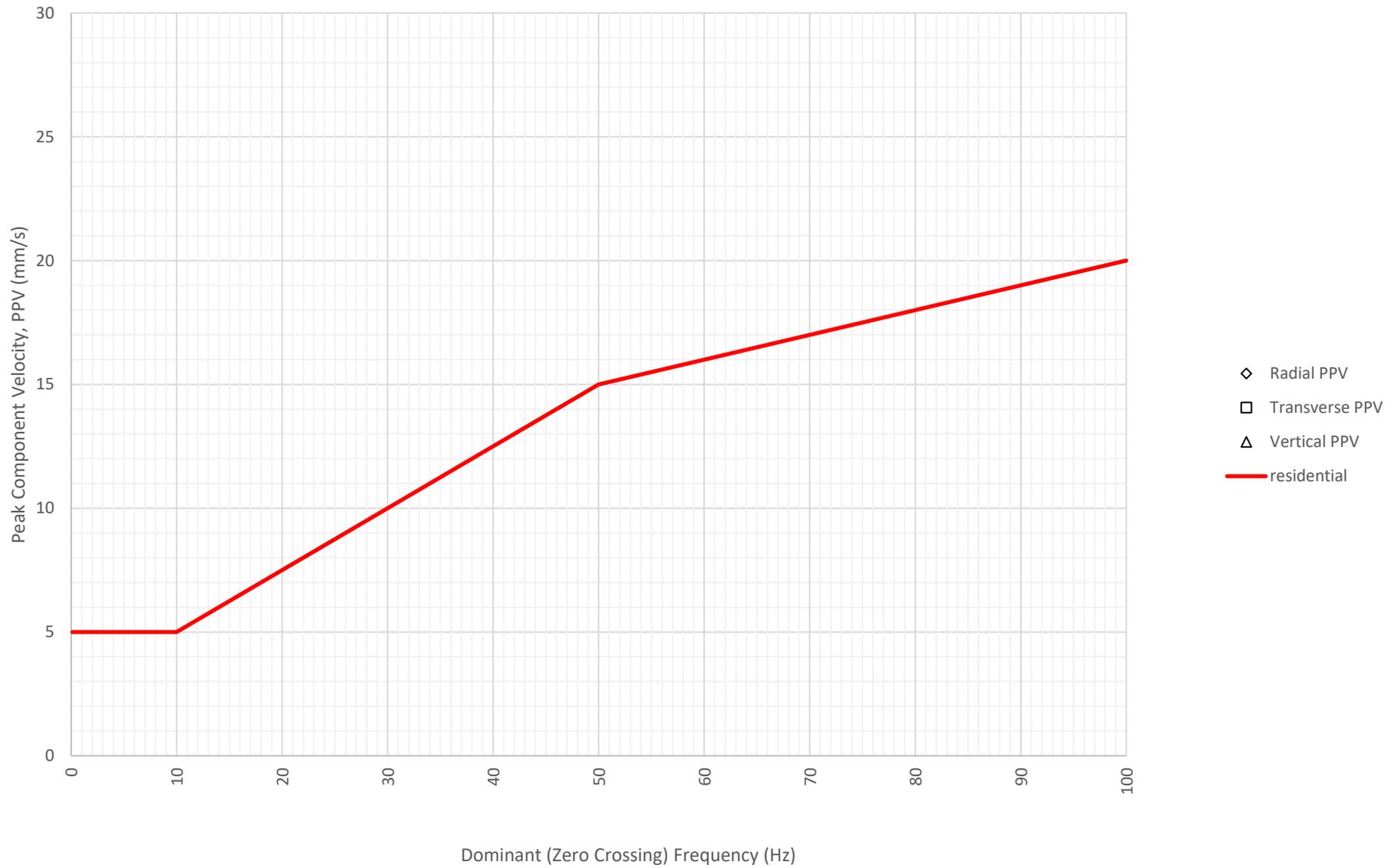


APPENDIX 3 : DAILY GRAPHS M7715 (RESIDENTIAL BUILDING)

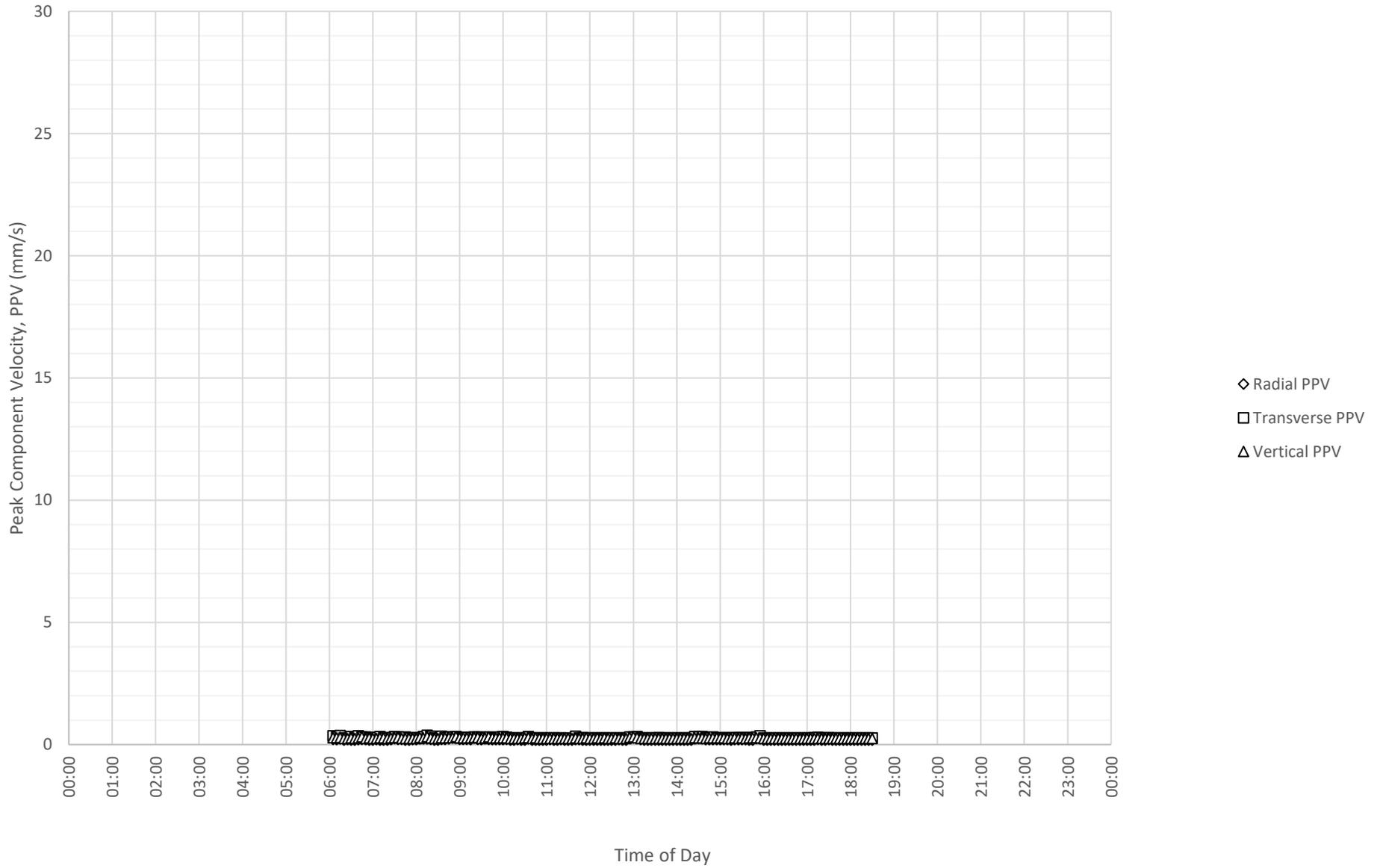
Daily Monitored Vibration Levels at M7715 Residential (east) on 31-08-2022



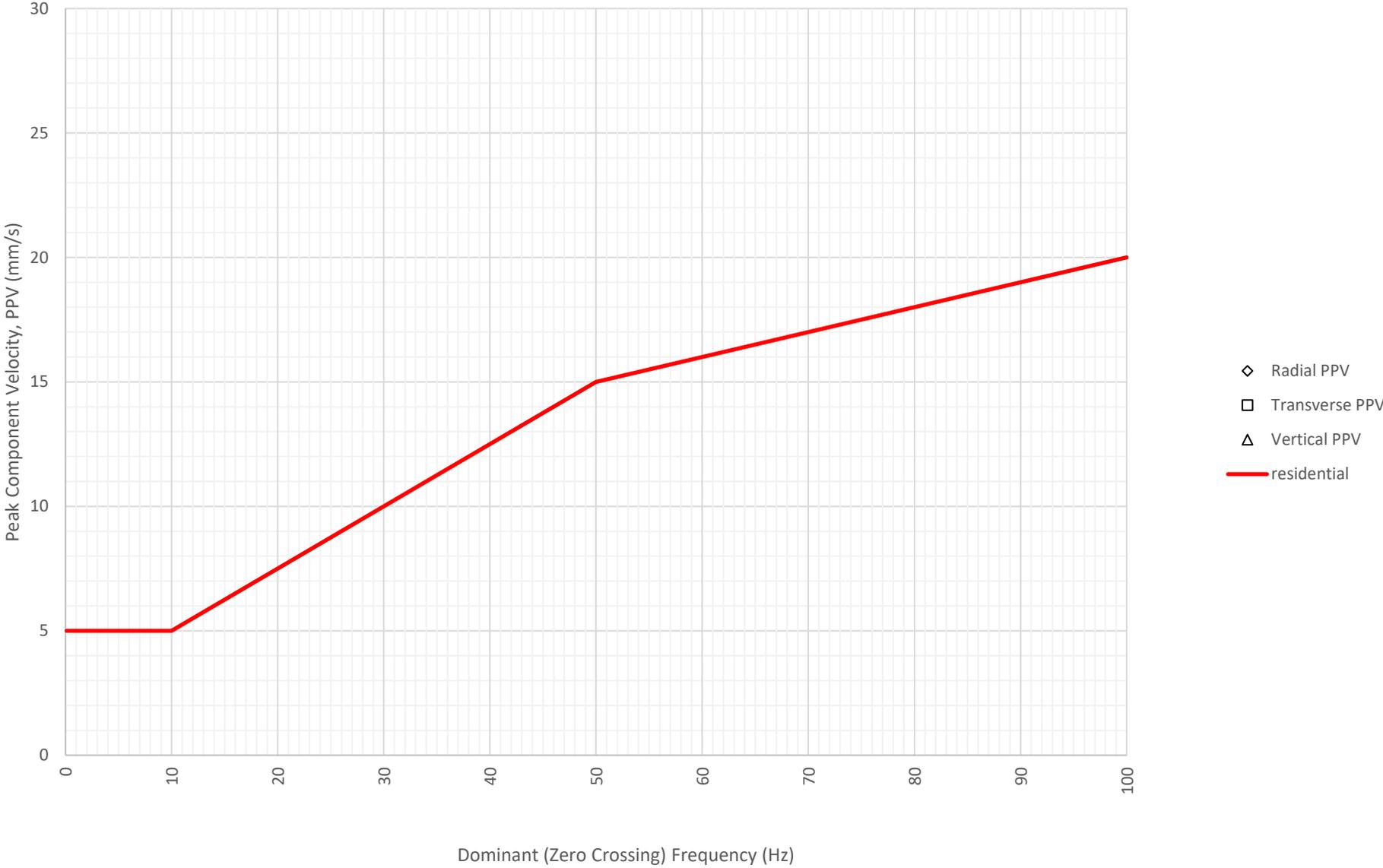
Frequency Content of Vibration Levels at M7715 Residential (east) on 31-08-2022



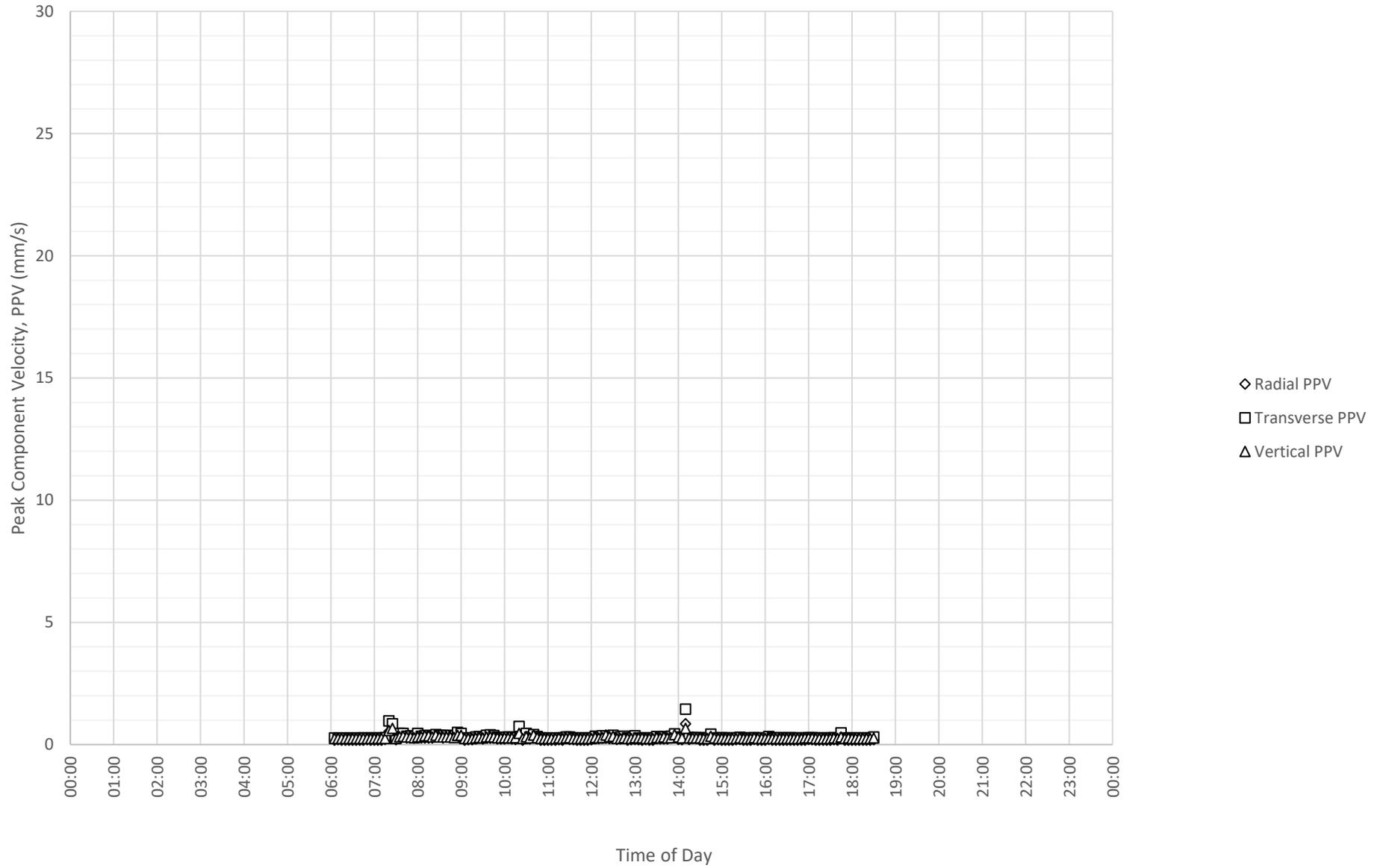
Daily Monitored Vibration Levels at M7715 Residential (east) on 1-09-2022



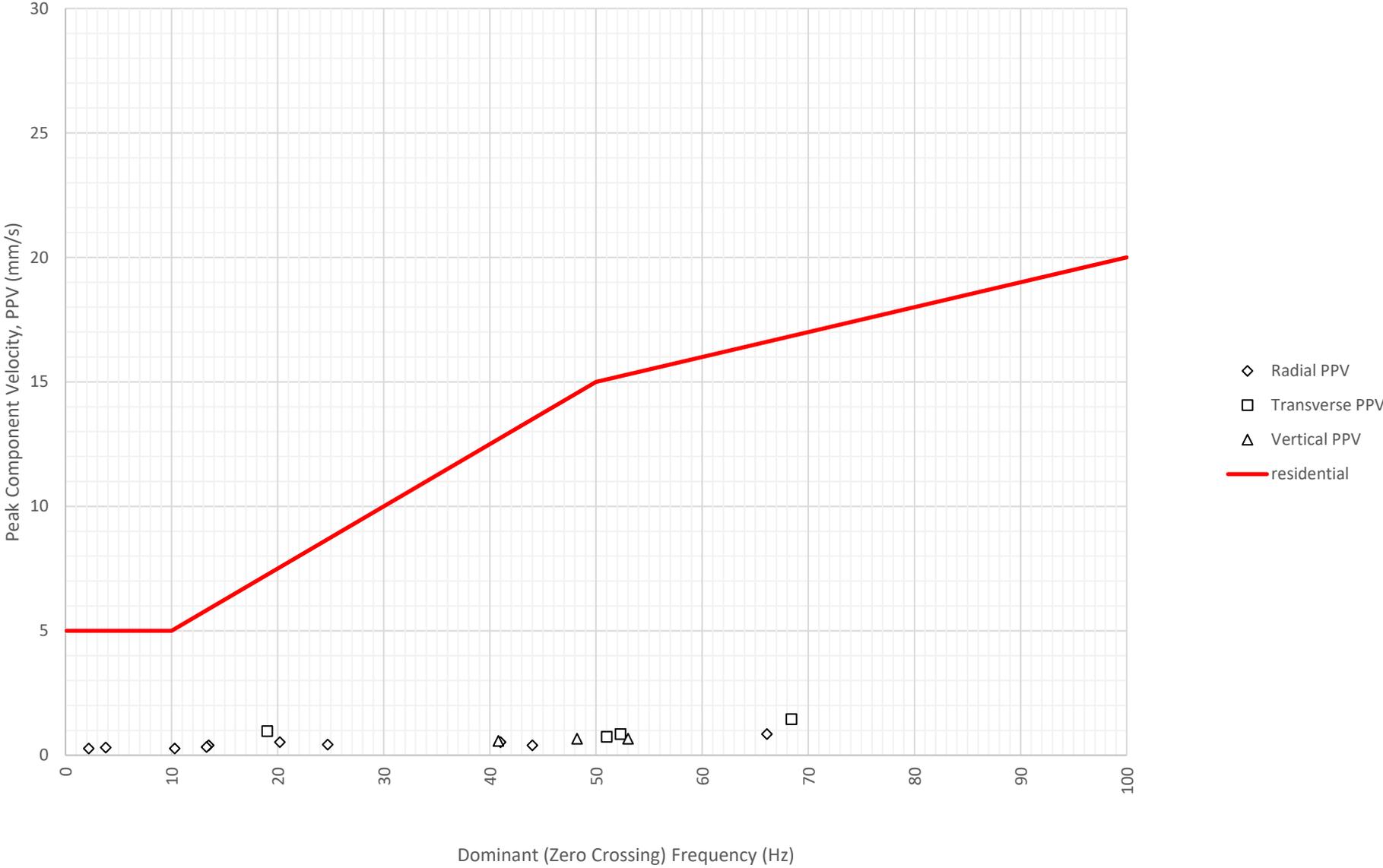
Frequency Content of Vibration Levels at M7715 Residential (east) on 1-09-2022



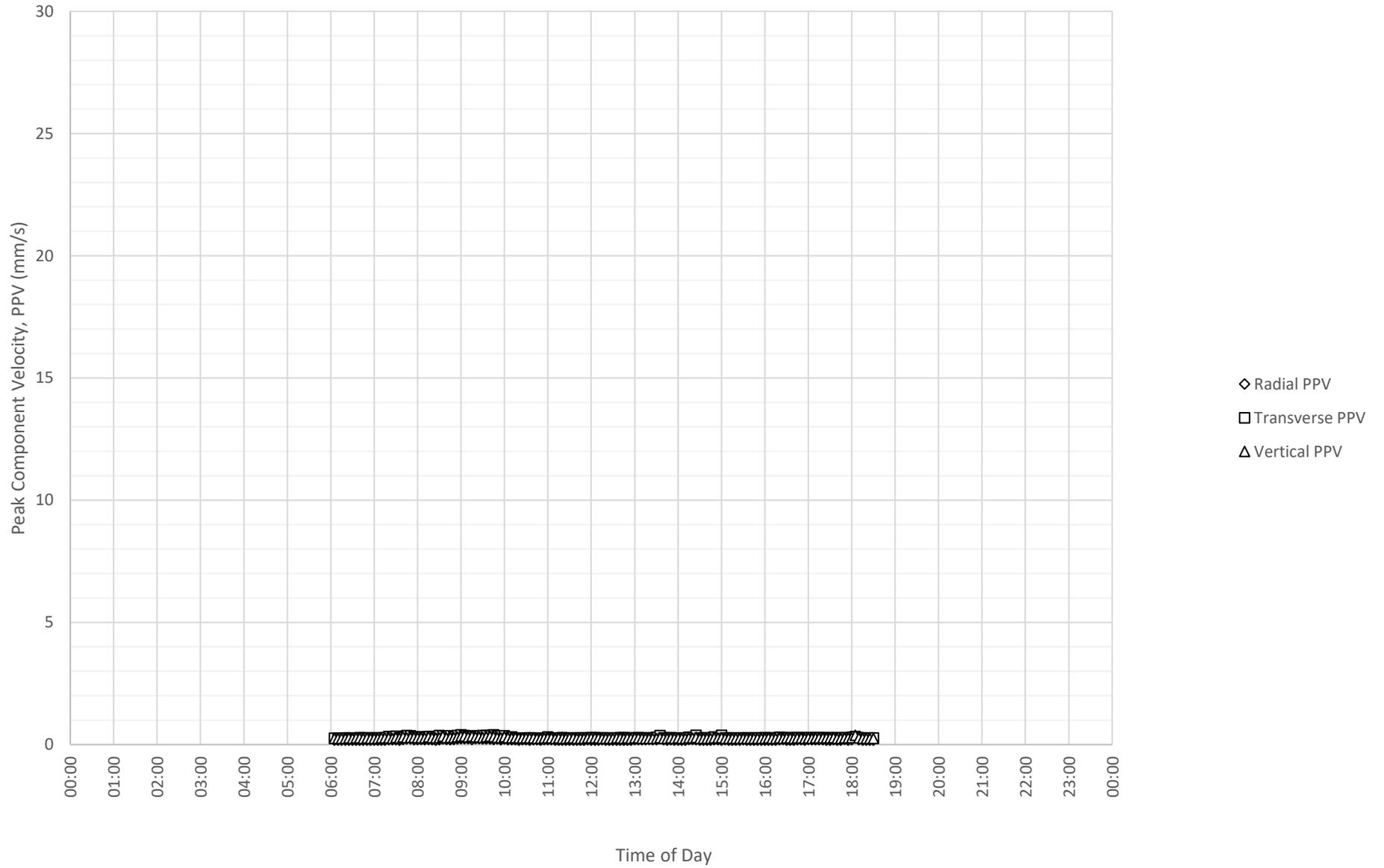
Daily Monitored Vibration Levels at M7715 Residential (east) on 2-09-2022



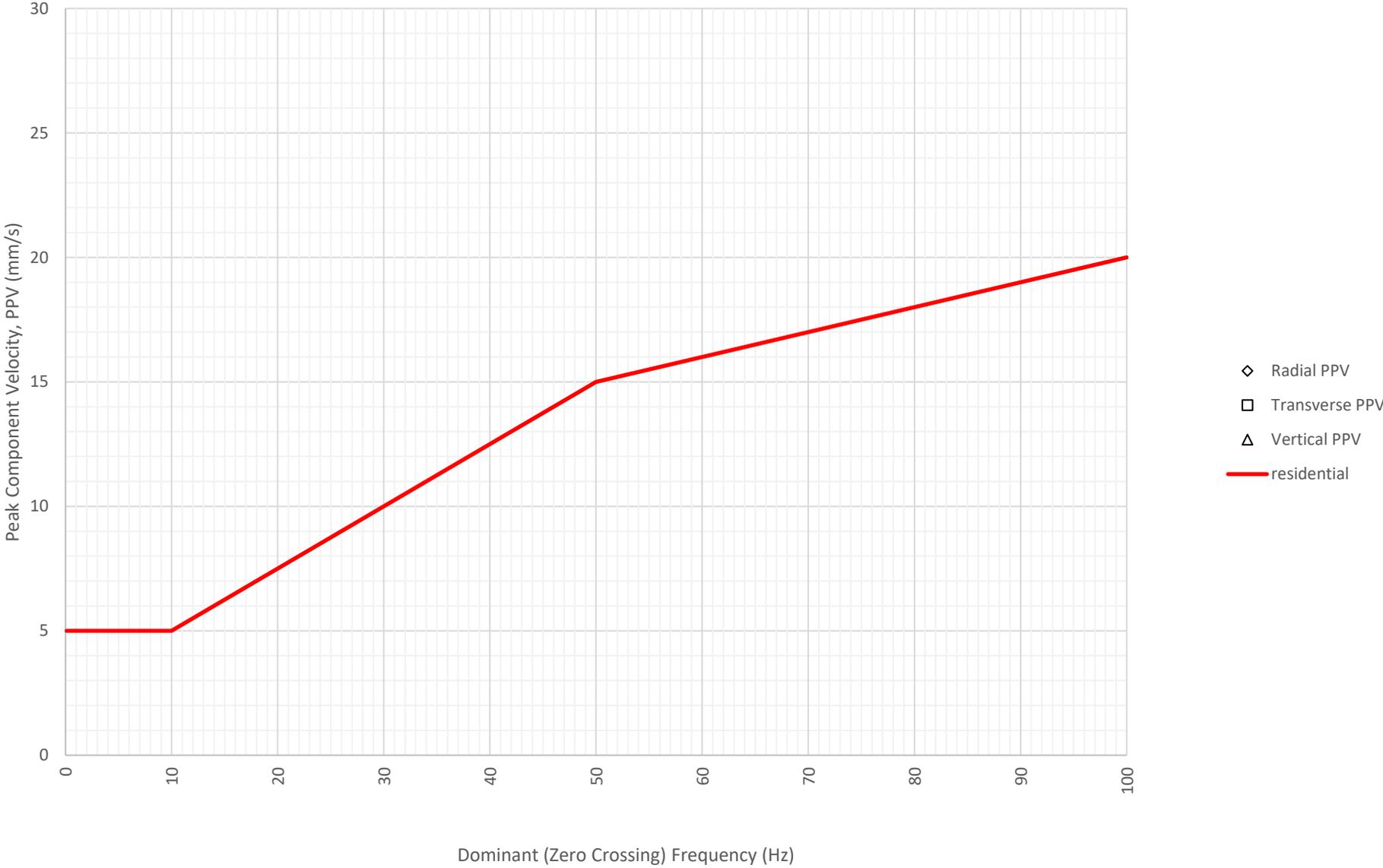
Frequency Content of Vibration Levels at M7715 Residential (east) on 2-09-2022



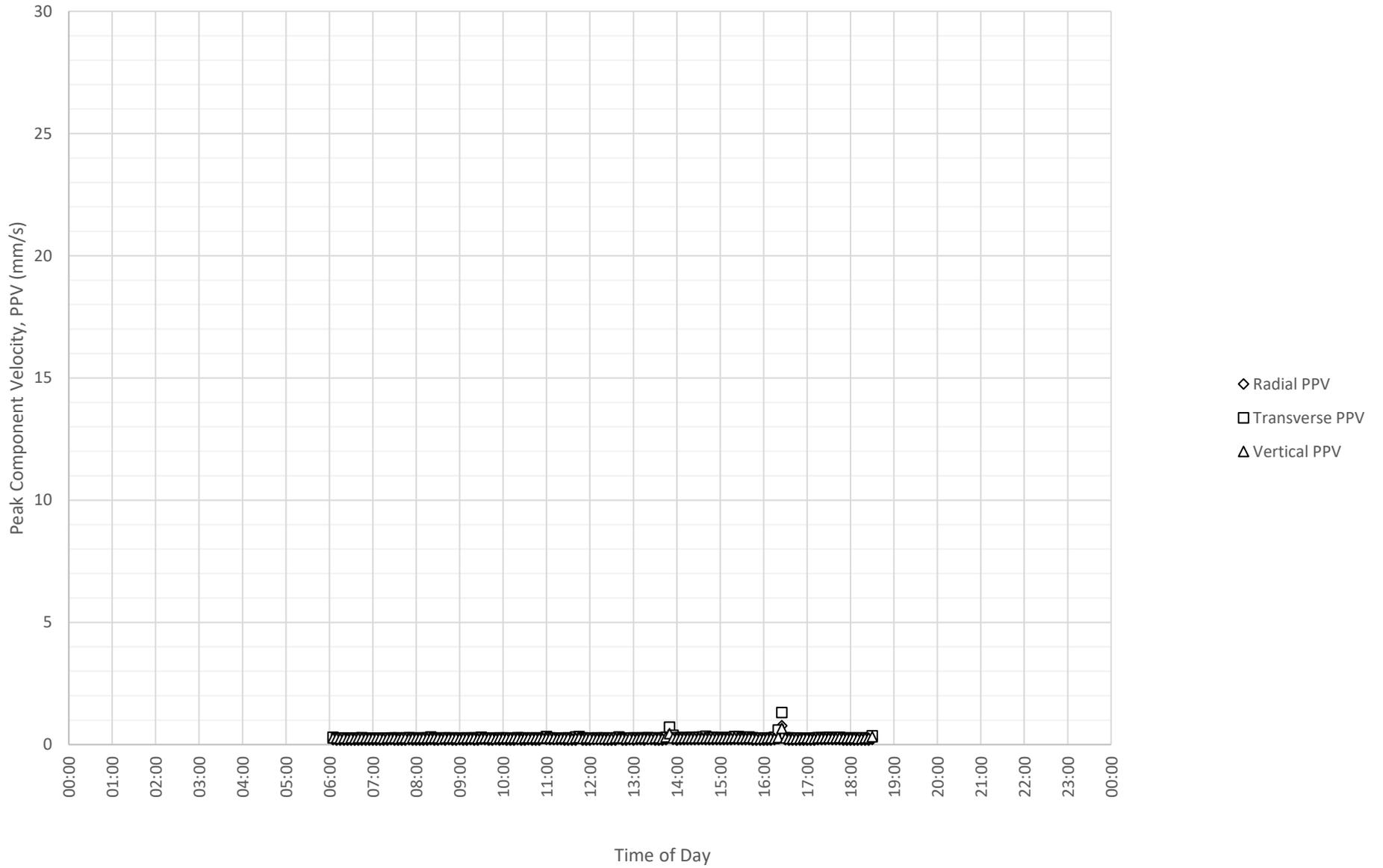
Daily Monitored Vibration Levels at M7715 Residential (east) on 3-09-2022



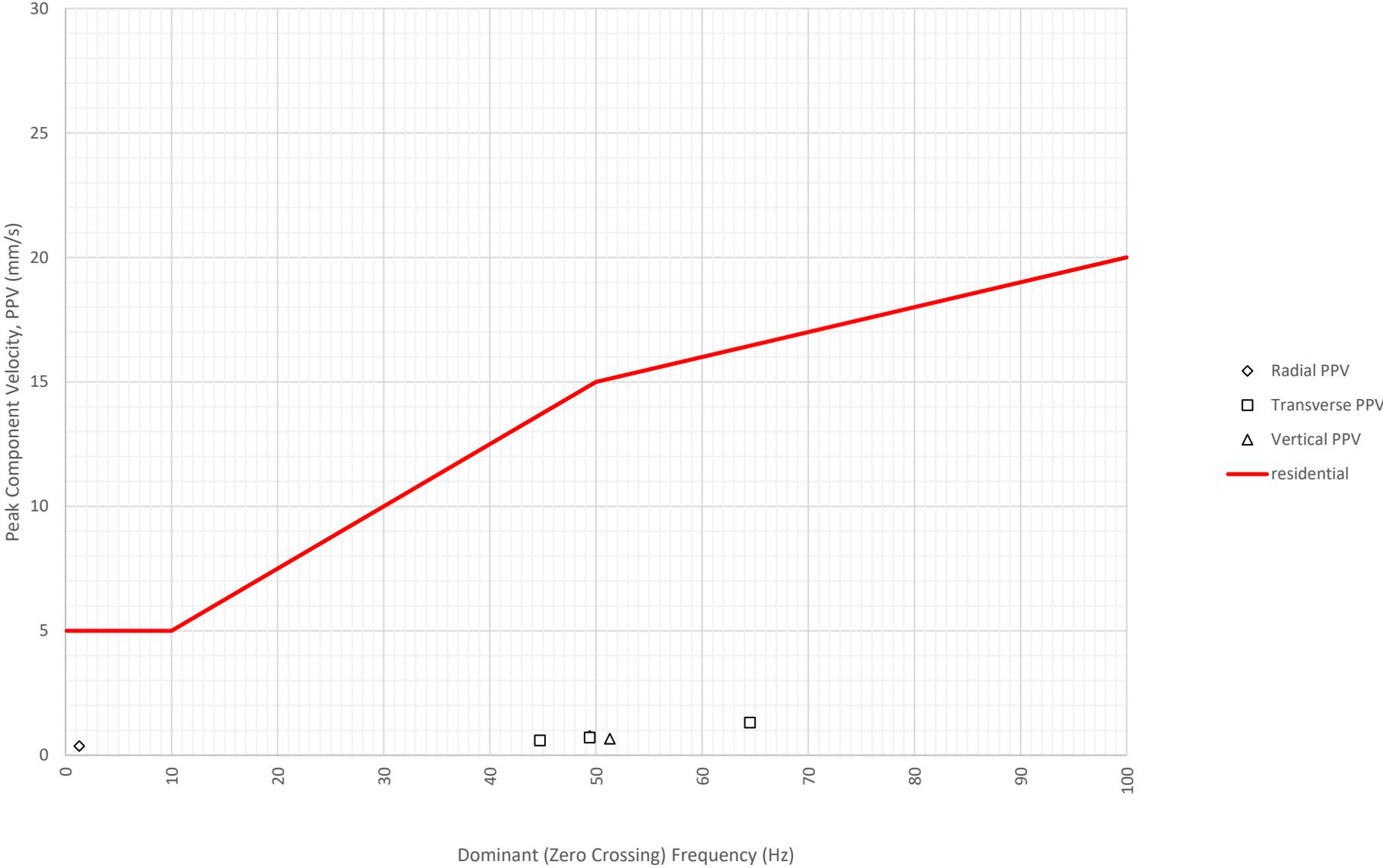
Frequency Content of Vibration Levels at M7715 Residential (east) on 3-09-2022



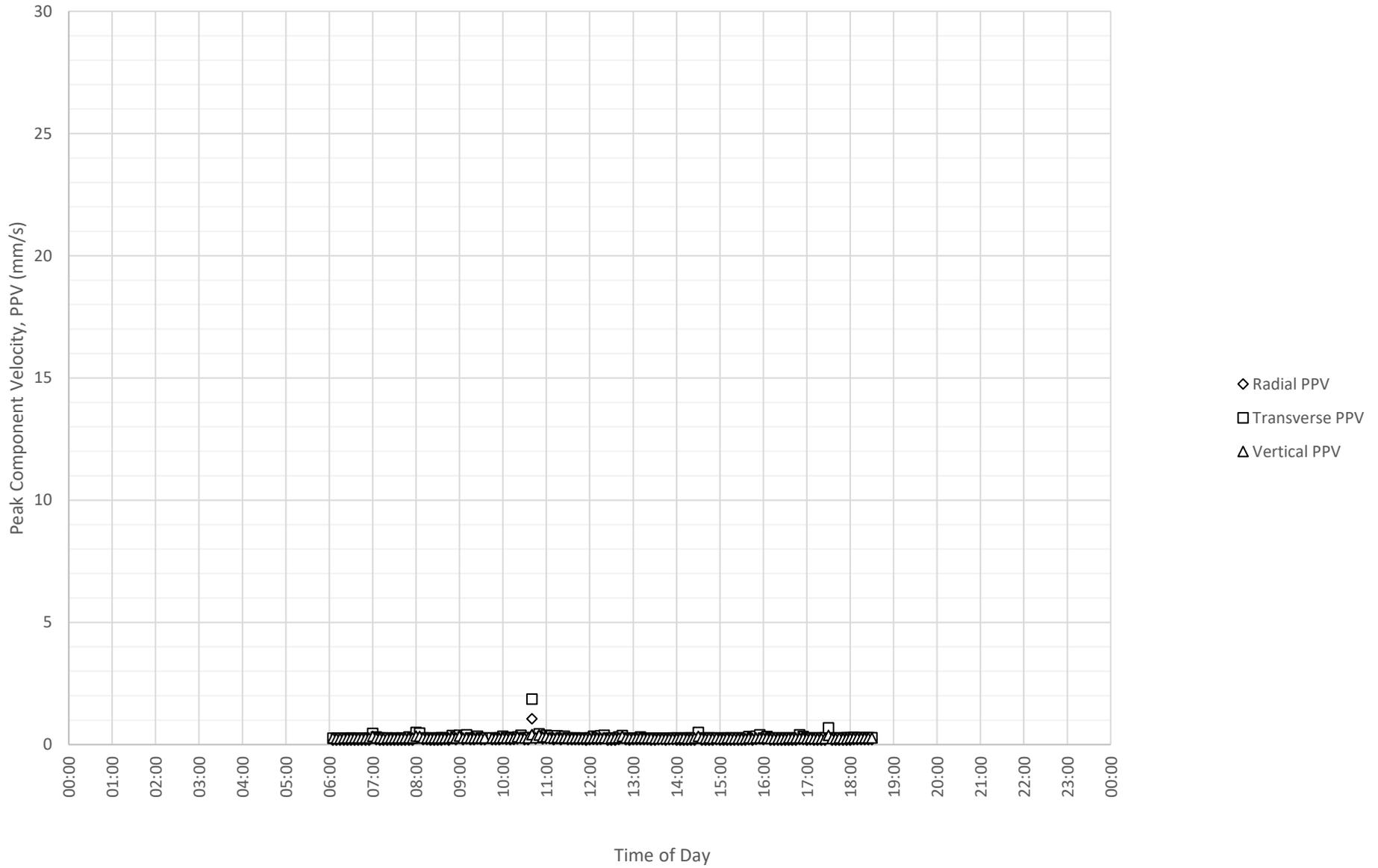
Daily Monitored Vibration Levels at M7715 Residential (east) on 4-09-2022



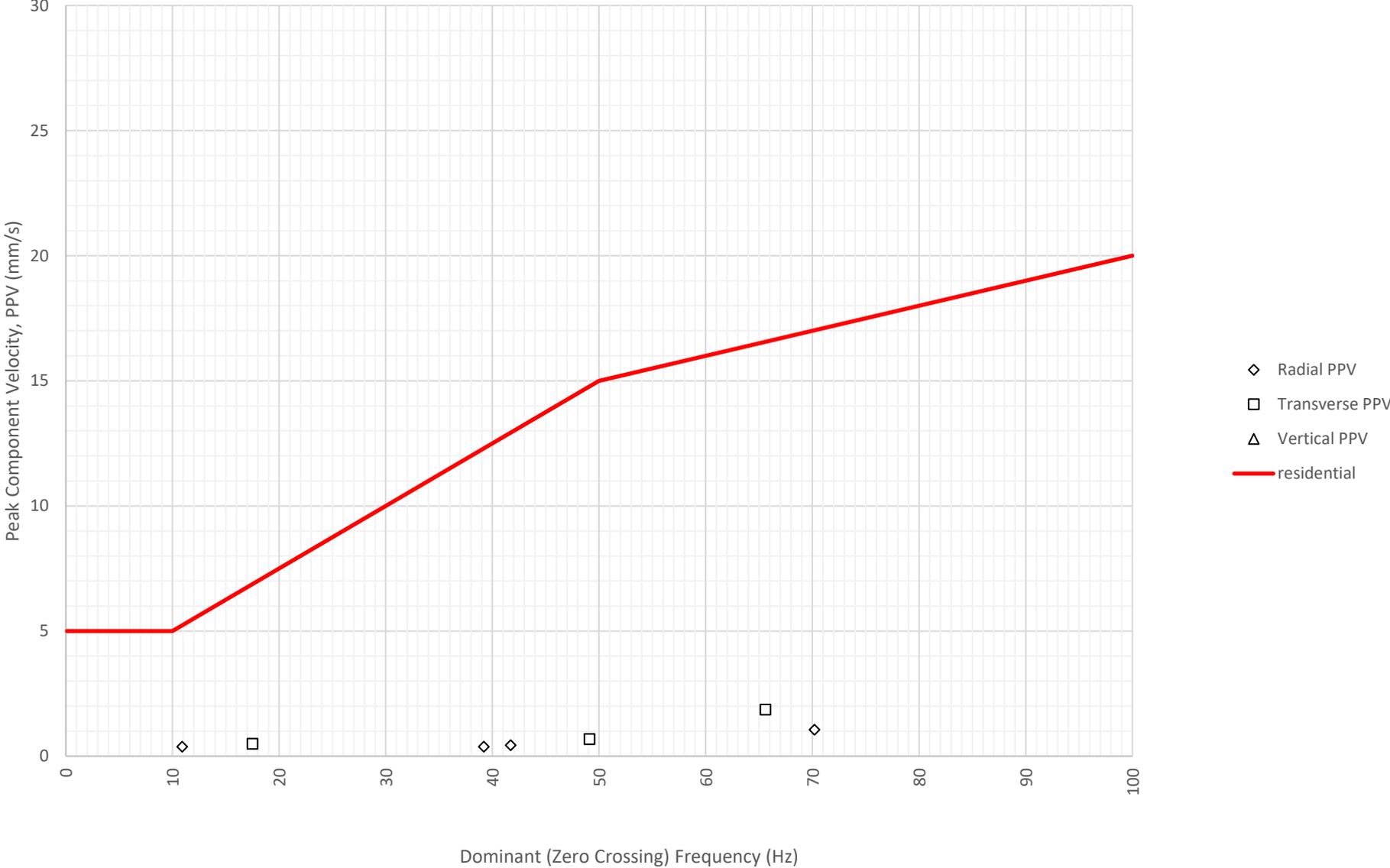
Frequency Content of Vibration Levels at M7715 Residential (east) on 4-09-2022



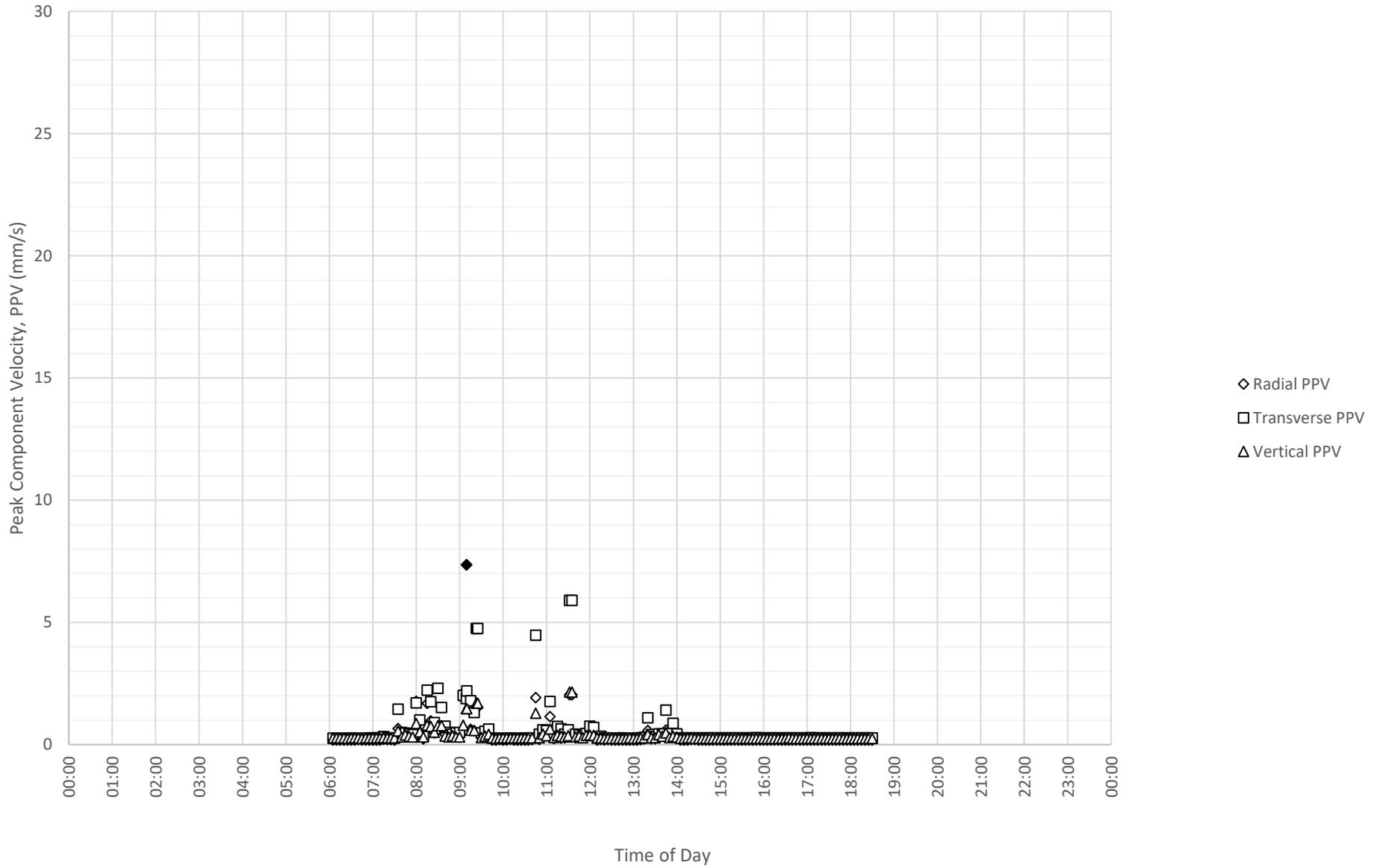
Daily Monitored Vibration Levels at M7715 Residential (east) on 5-09-2022



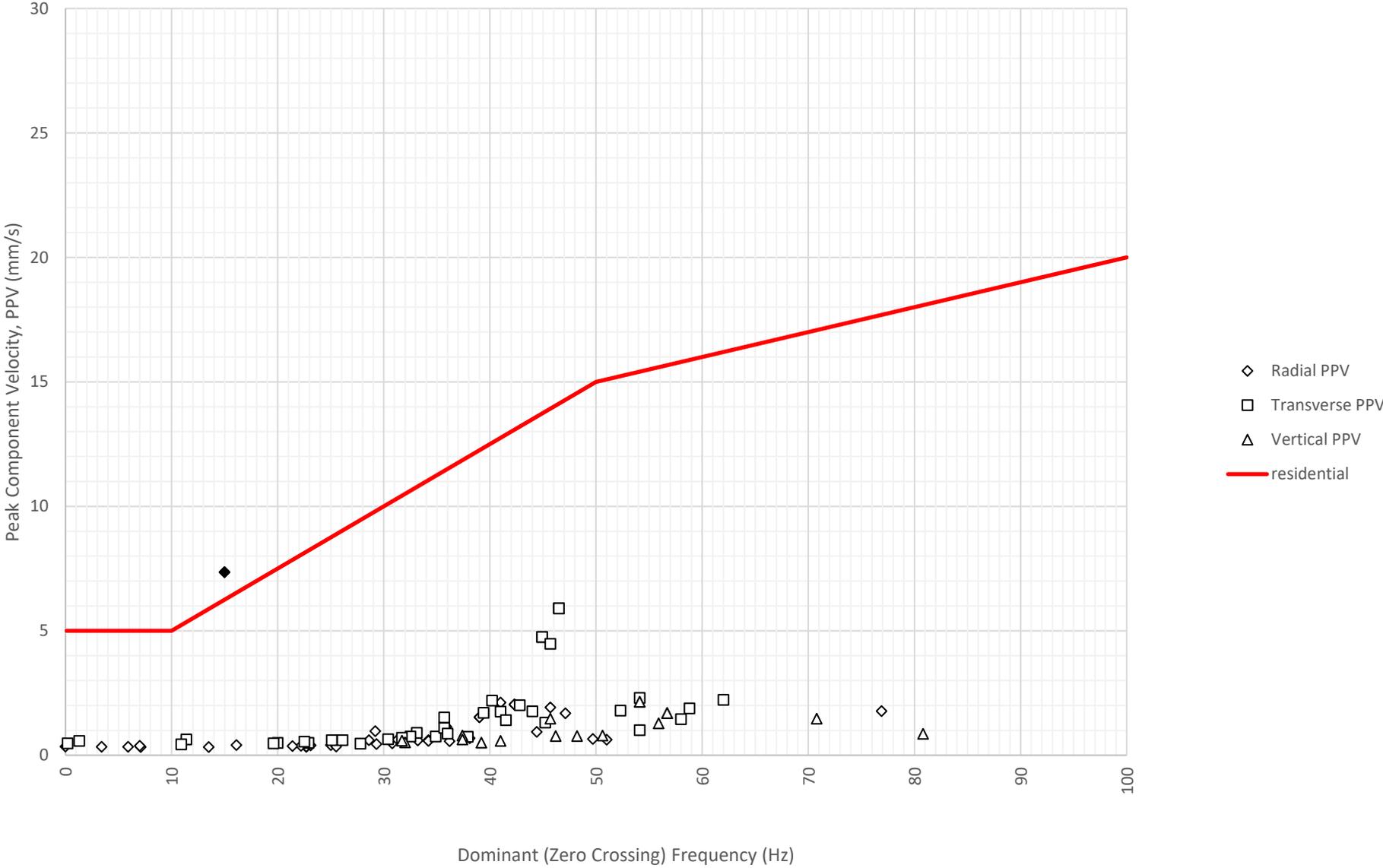
Frequency Content of Vibration Levels at M7715 Residential (east) on 5-09-2022



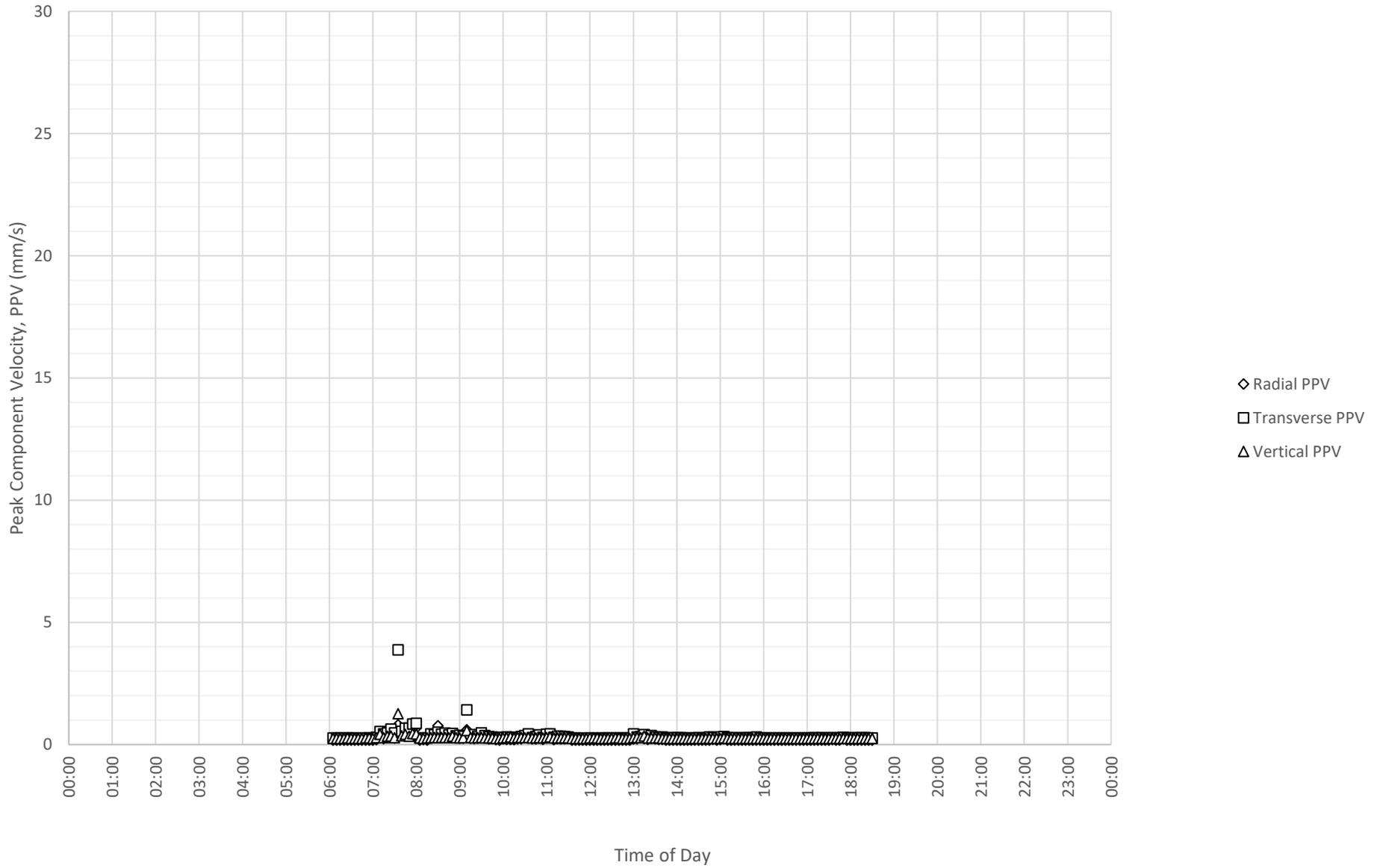
Daily Monitored Vibration Levels at M7715 Residential (east) on 6-09-2022



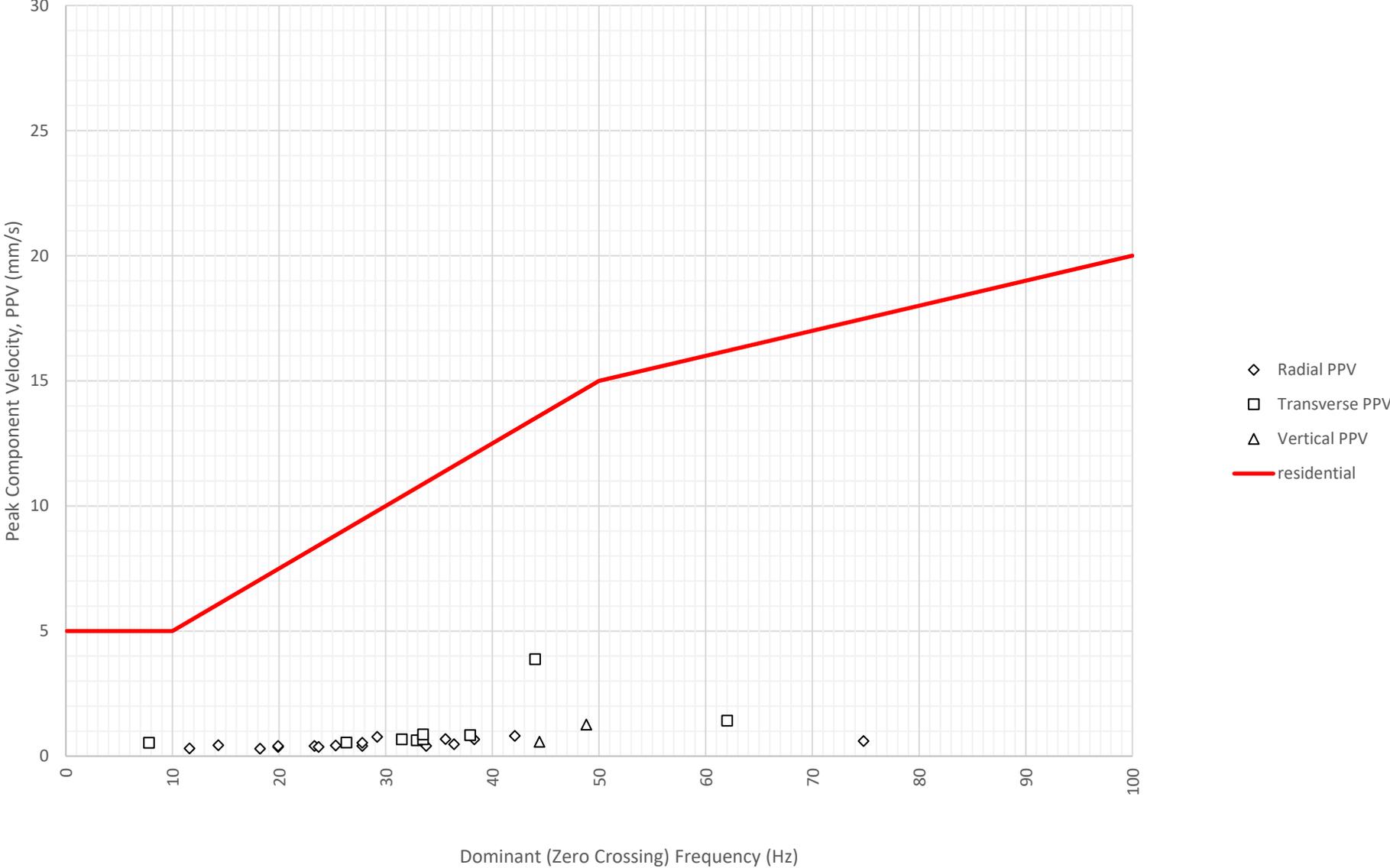
Frequency Content of Vibration Levels at M7715 Residential (east) on 6-09-2022



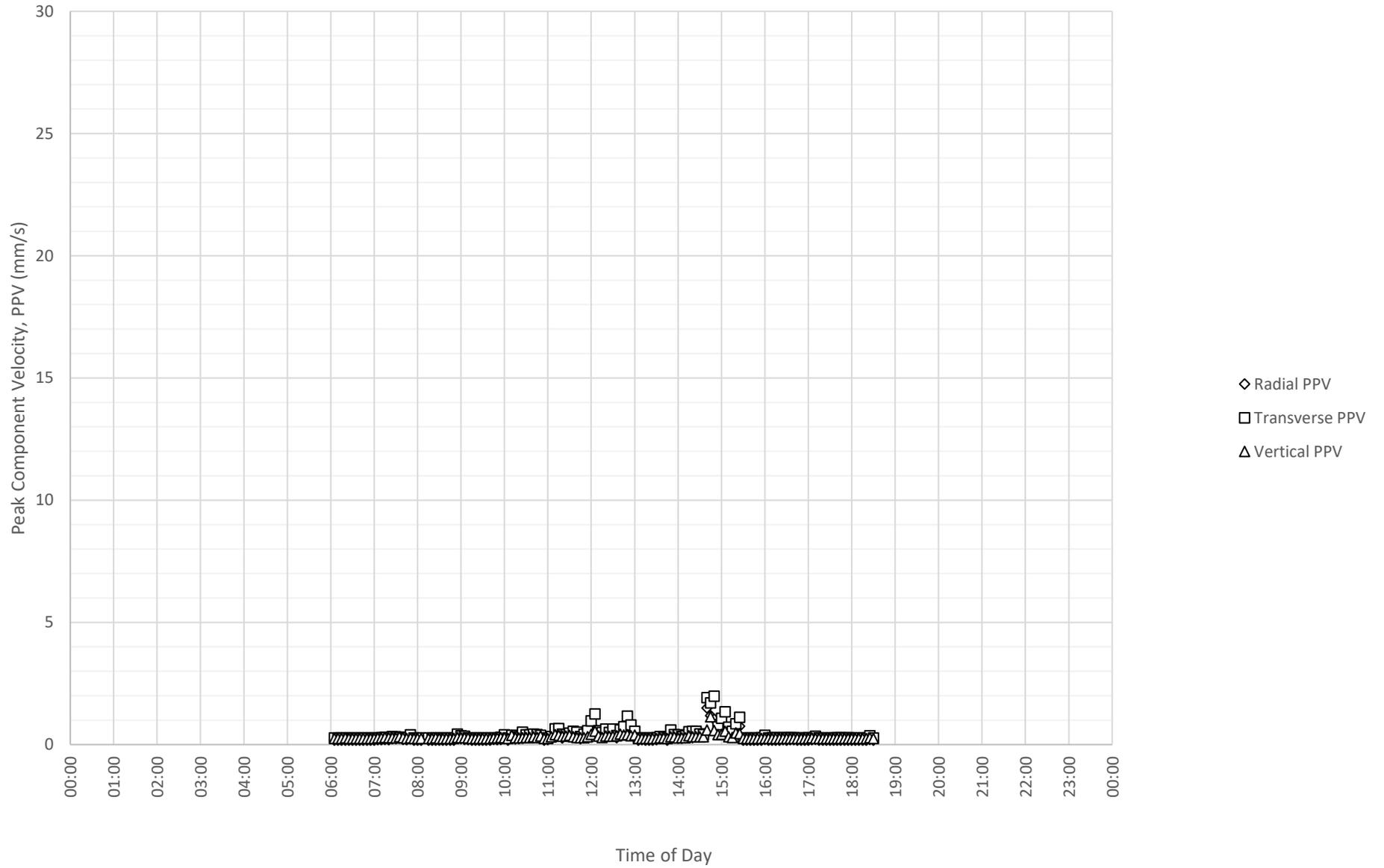
Daily Monitored Vibration Levels at M7715 Residential (east) on 7-09-2022



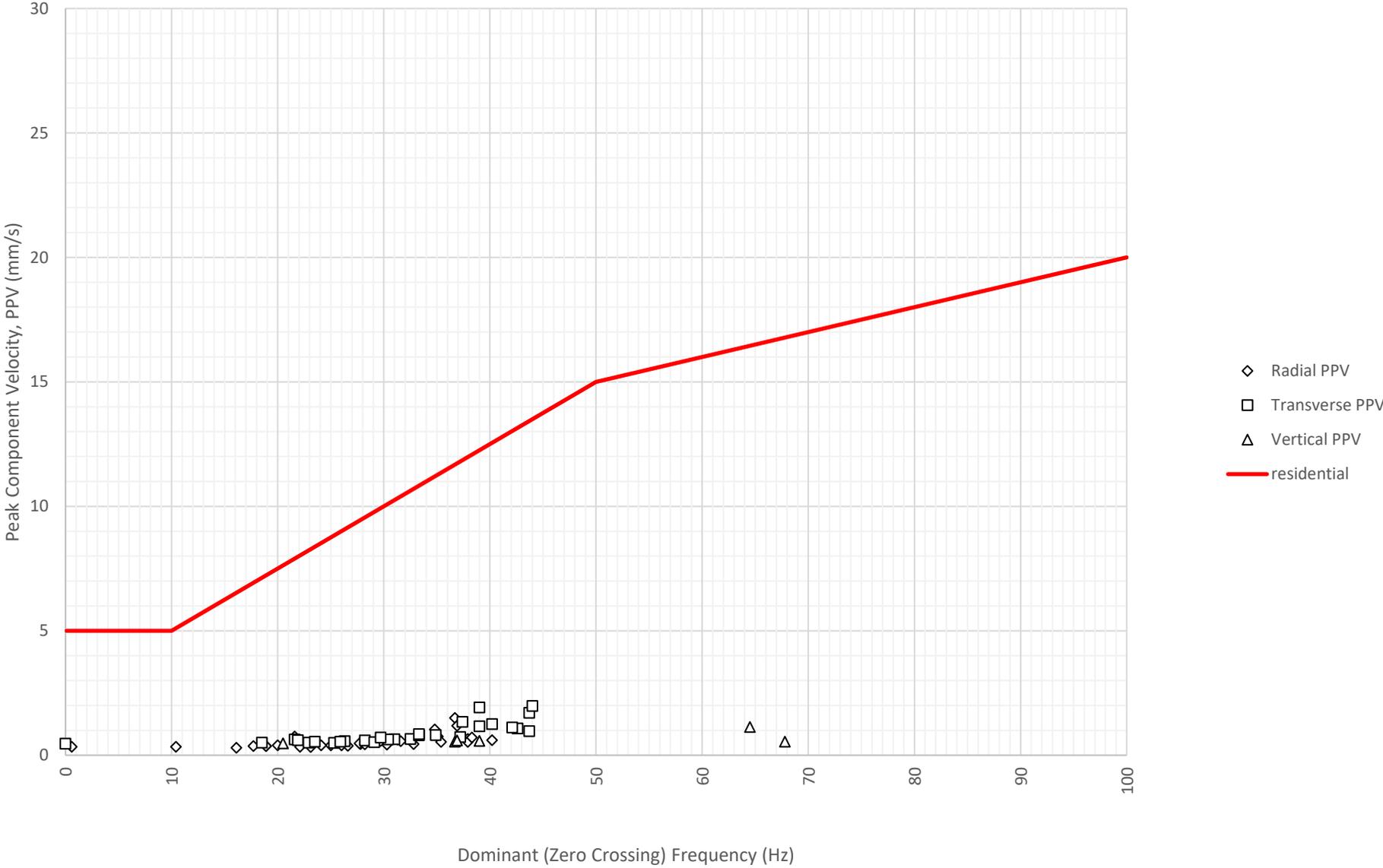
Frequency Content of Vibration Levels at M7715 Residential (east) on 7-09-2022



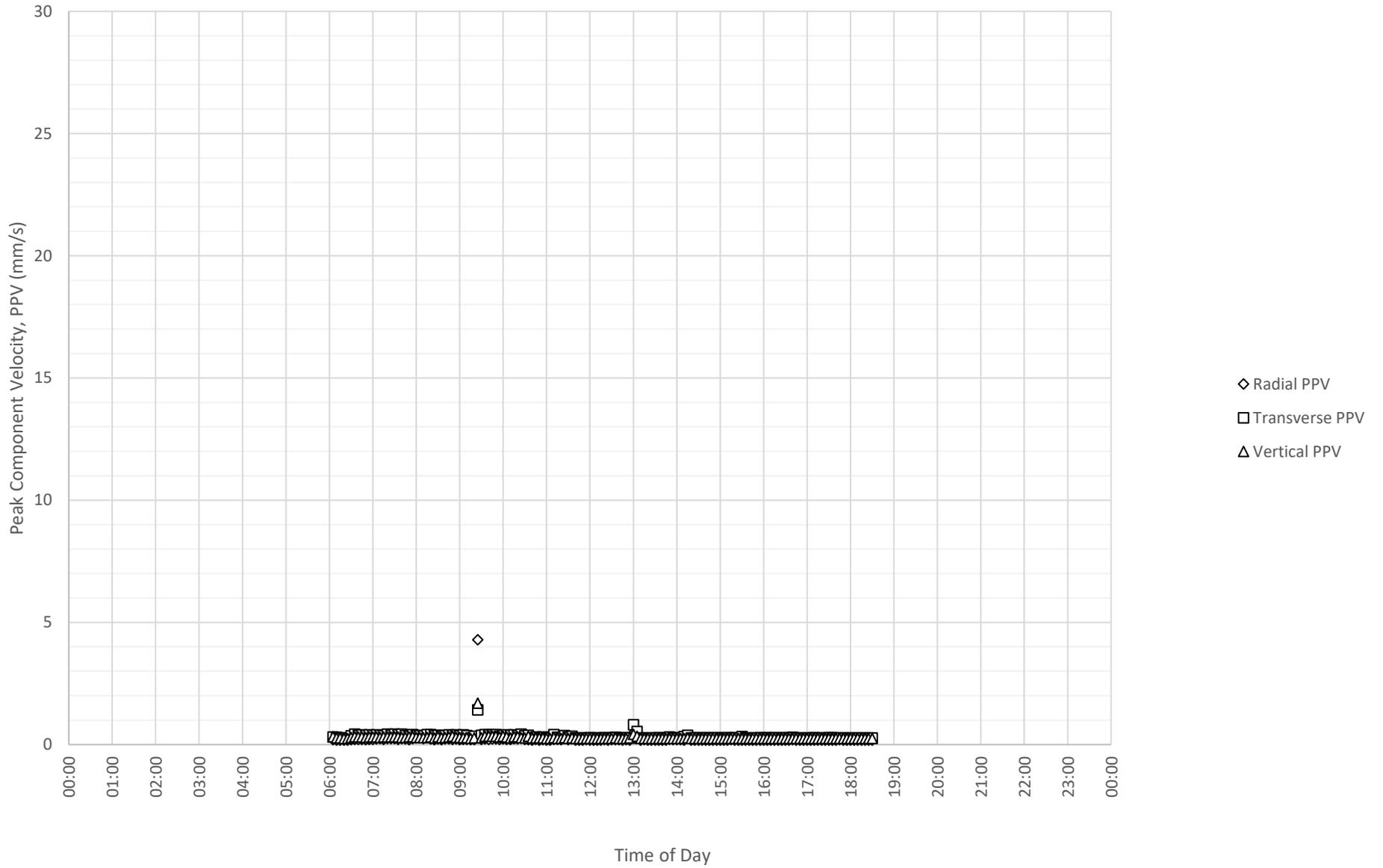
Daily Monitored Vibration Levels at M7715 Residential (east) on 8-09-2022



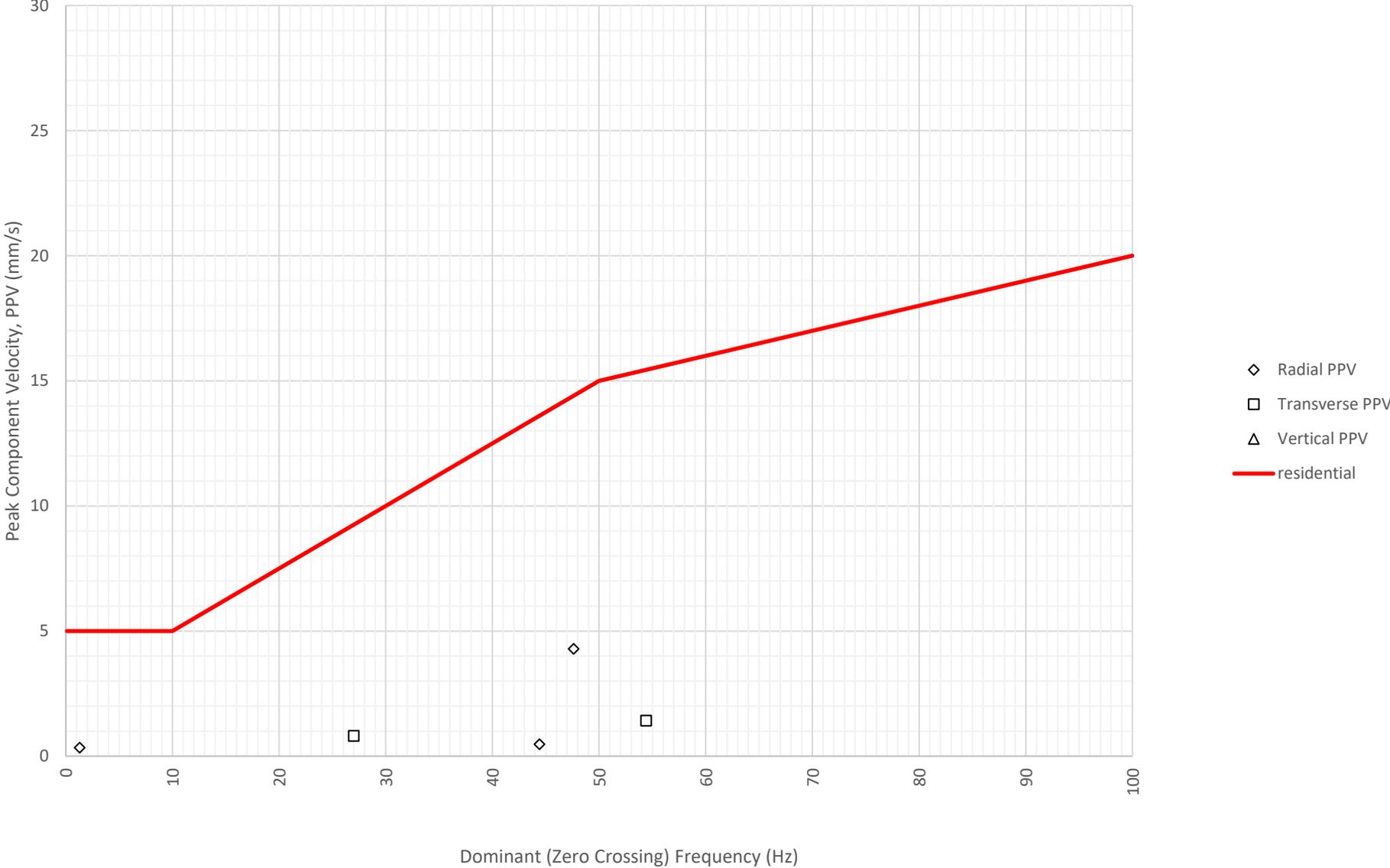
Frequency Content of Vibration Levels at M7715 Residential (east) on 8-09-2022



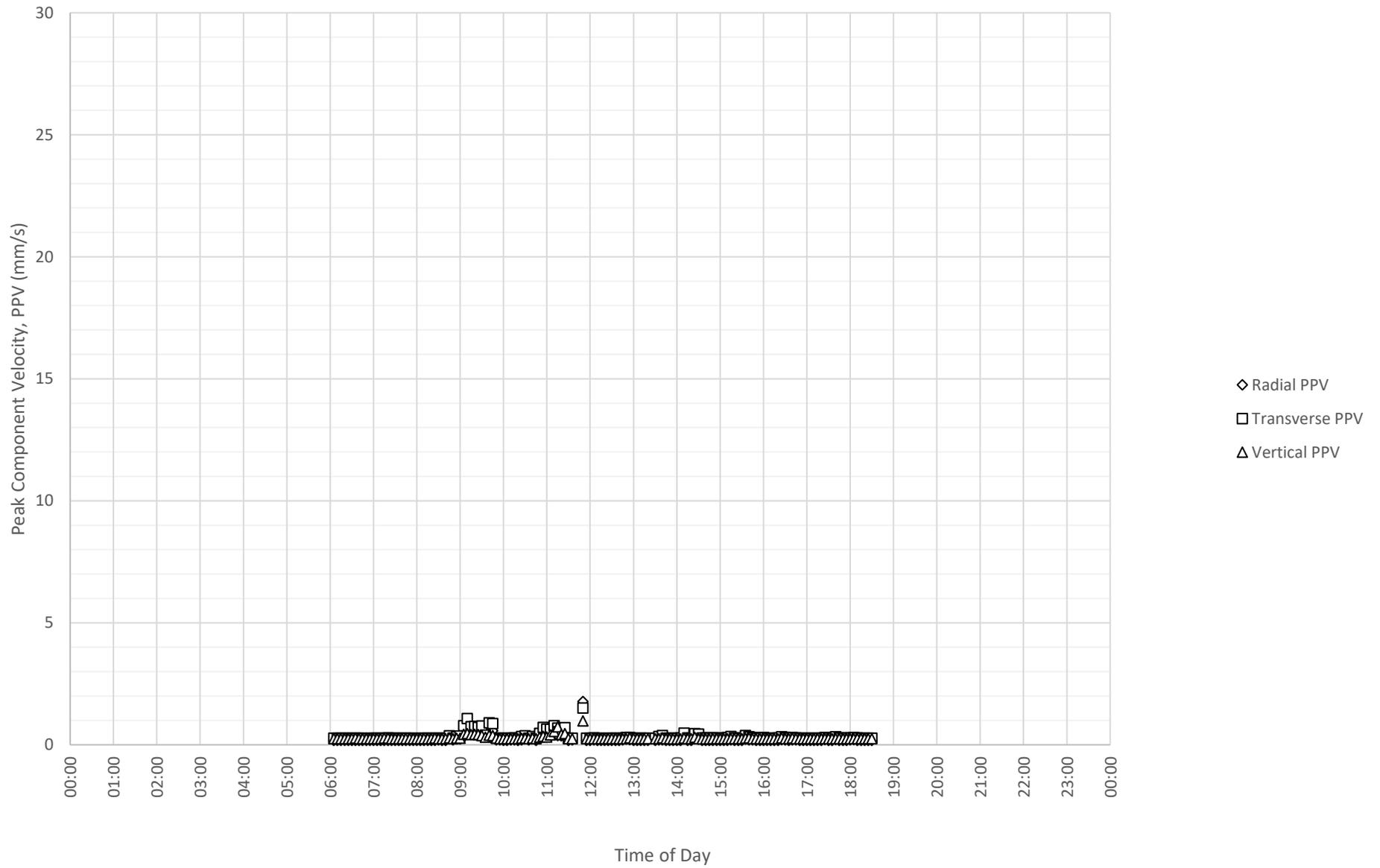
Daily Monitored Vibration Levels at M7715 Residential (east) on 9-09-2022



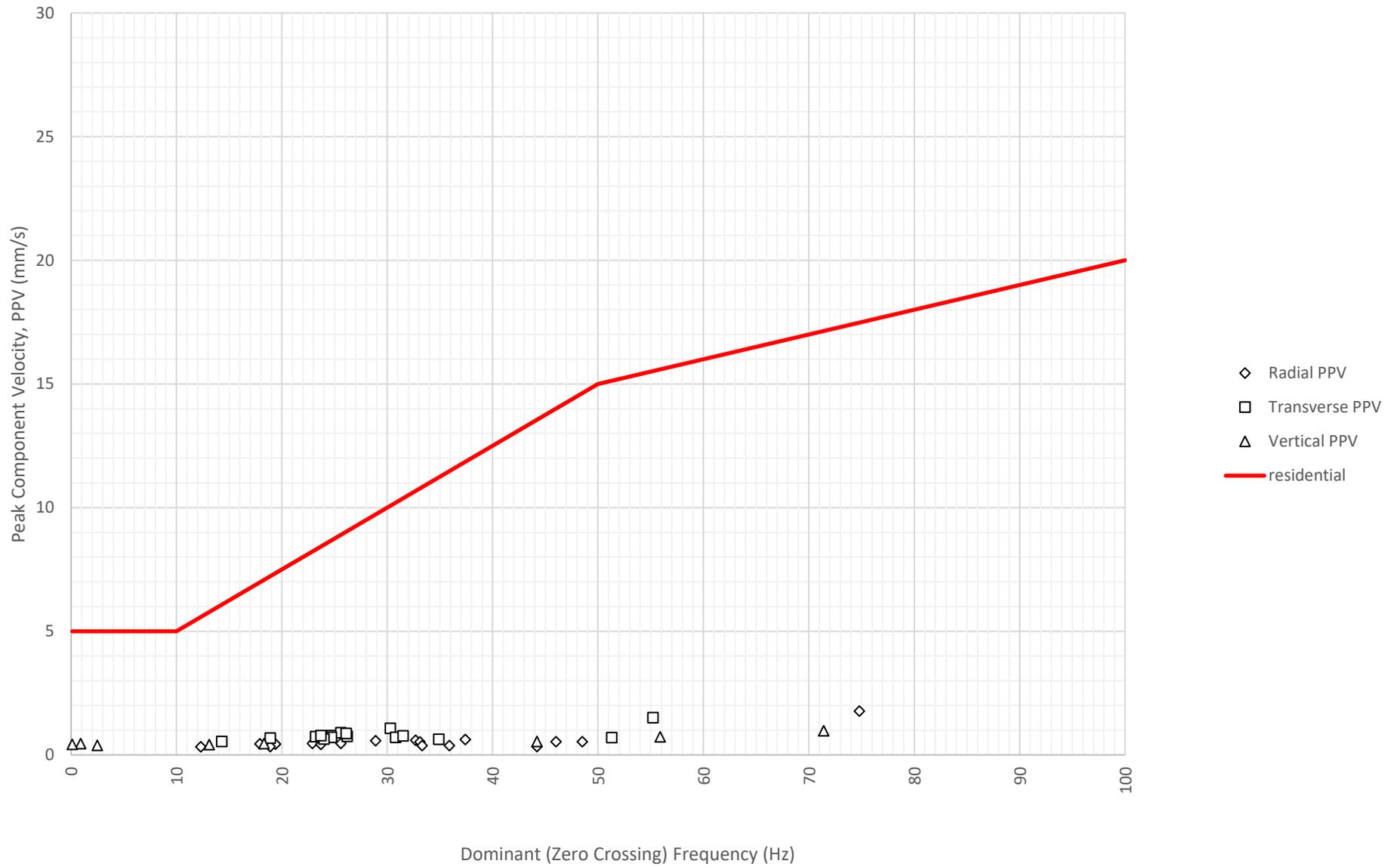
Frequency Content of Vibration Levels at M7715 Residential (east) on 9-09-2022



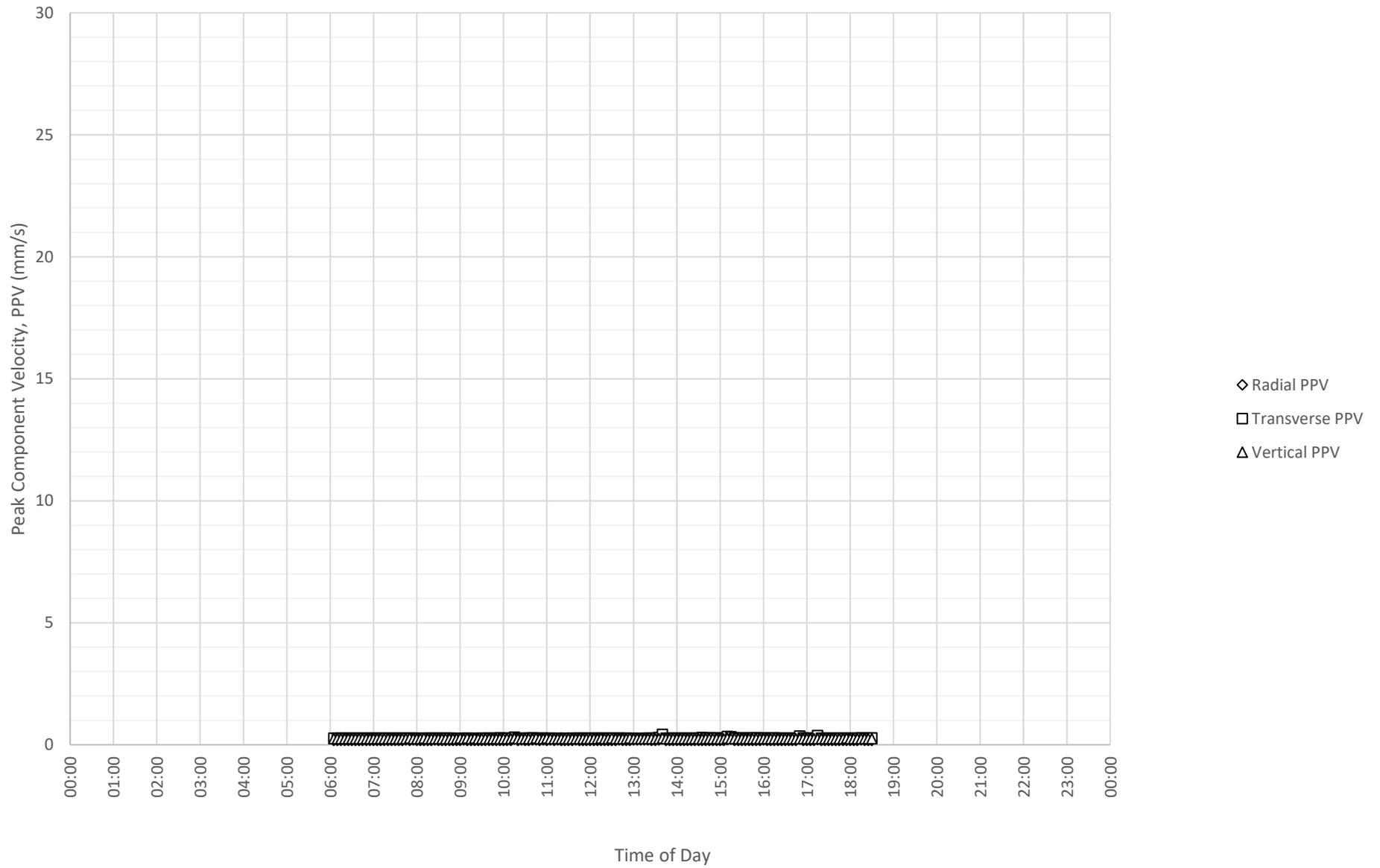
Daily Monitored Vibration Levels at M7715 Residential (east) on 10-09-2022



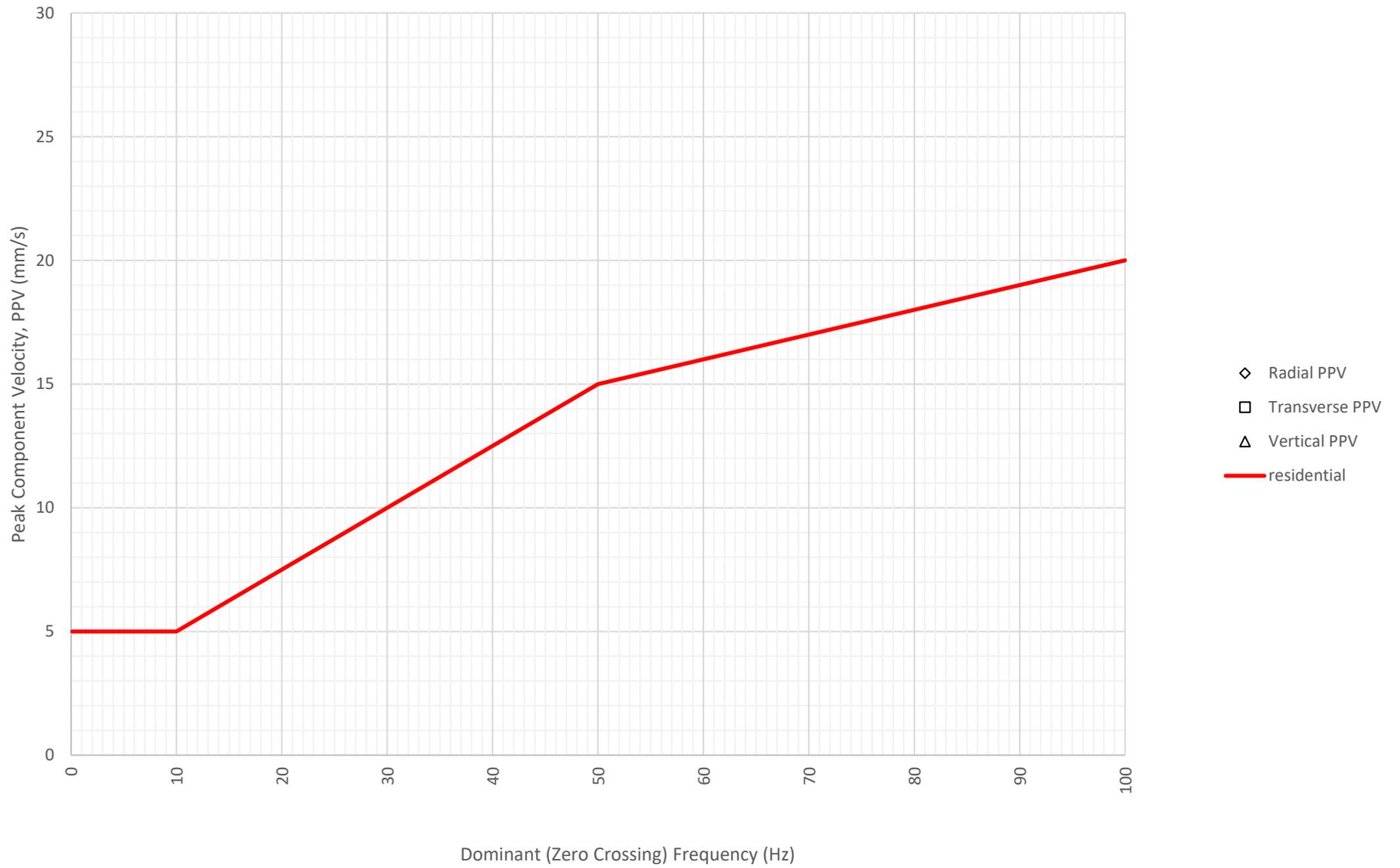
Frequency Content of Vibration Levels at M7715 Residential (east) on 10-09-2022



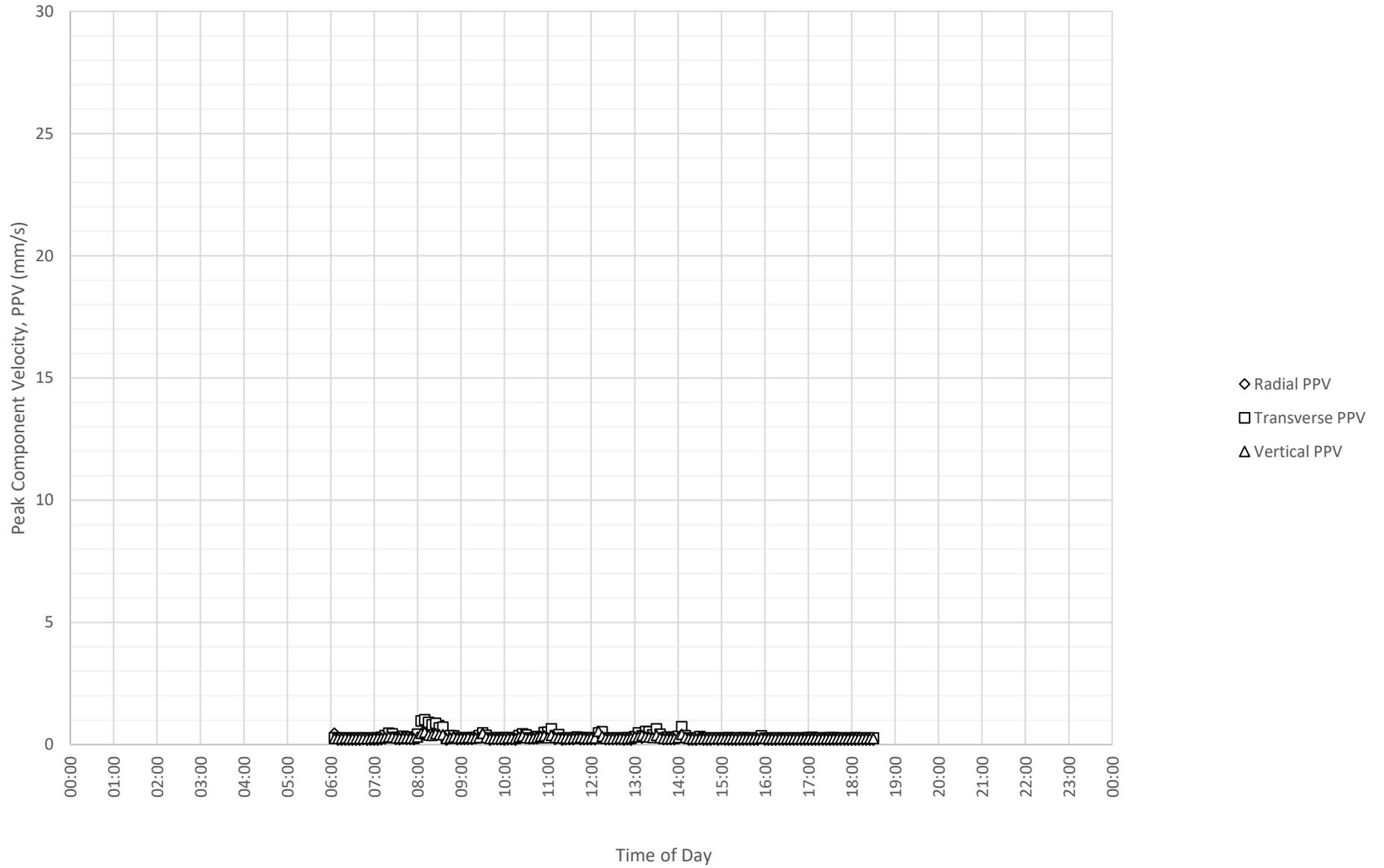
Daily Monitored Vibration Levels at M7715 Residential (east) on 11-09-2022



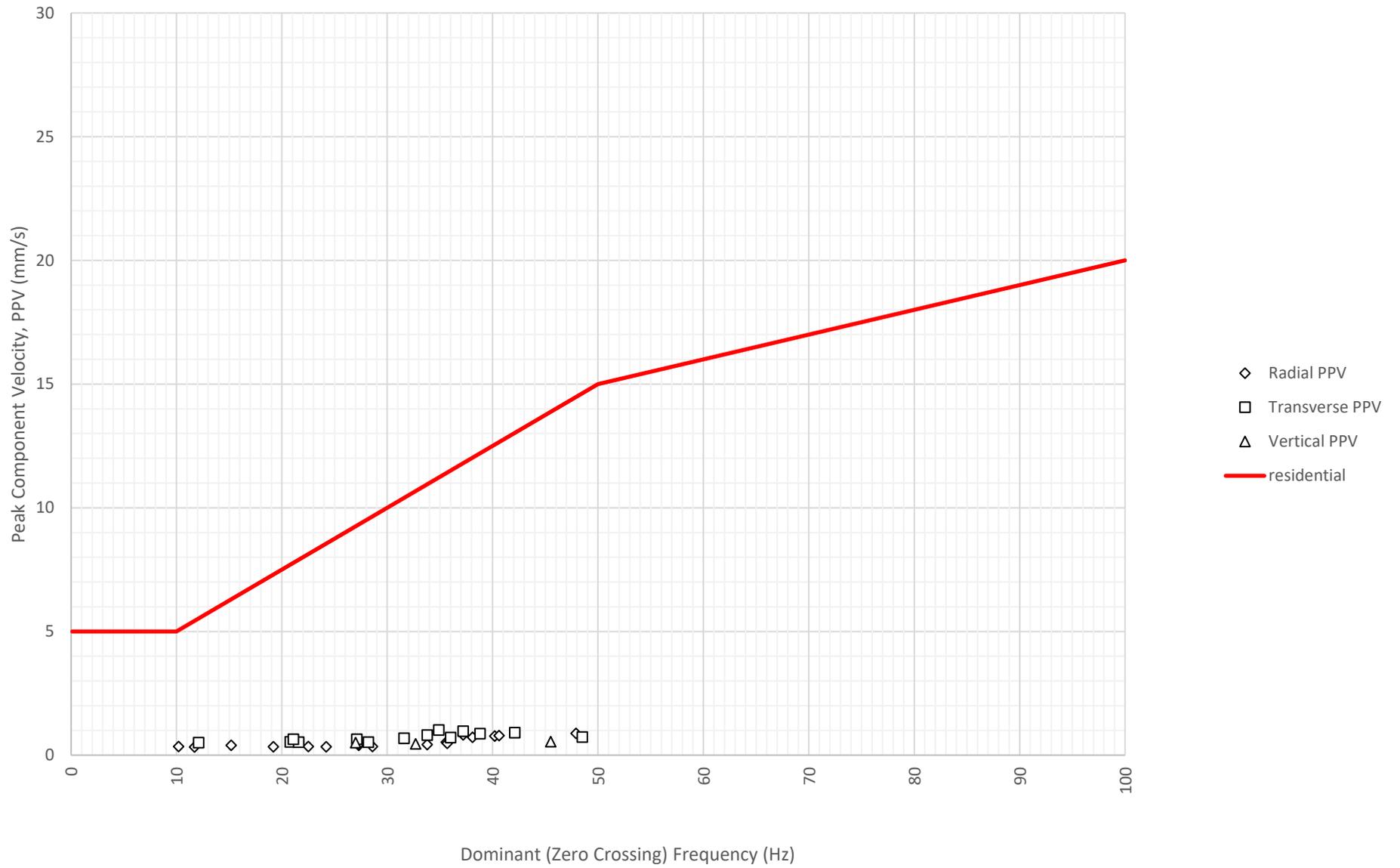
Frequency Content of Vibration Levels at M7715 Residential (east) on 11-09-2022



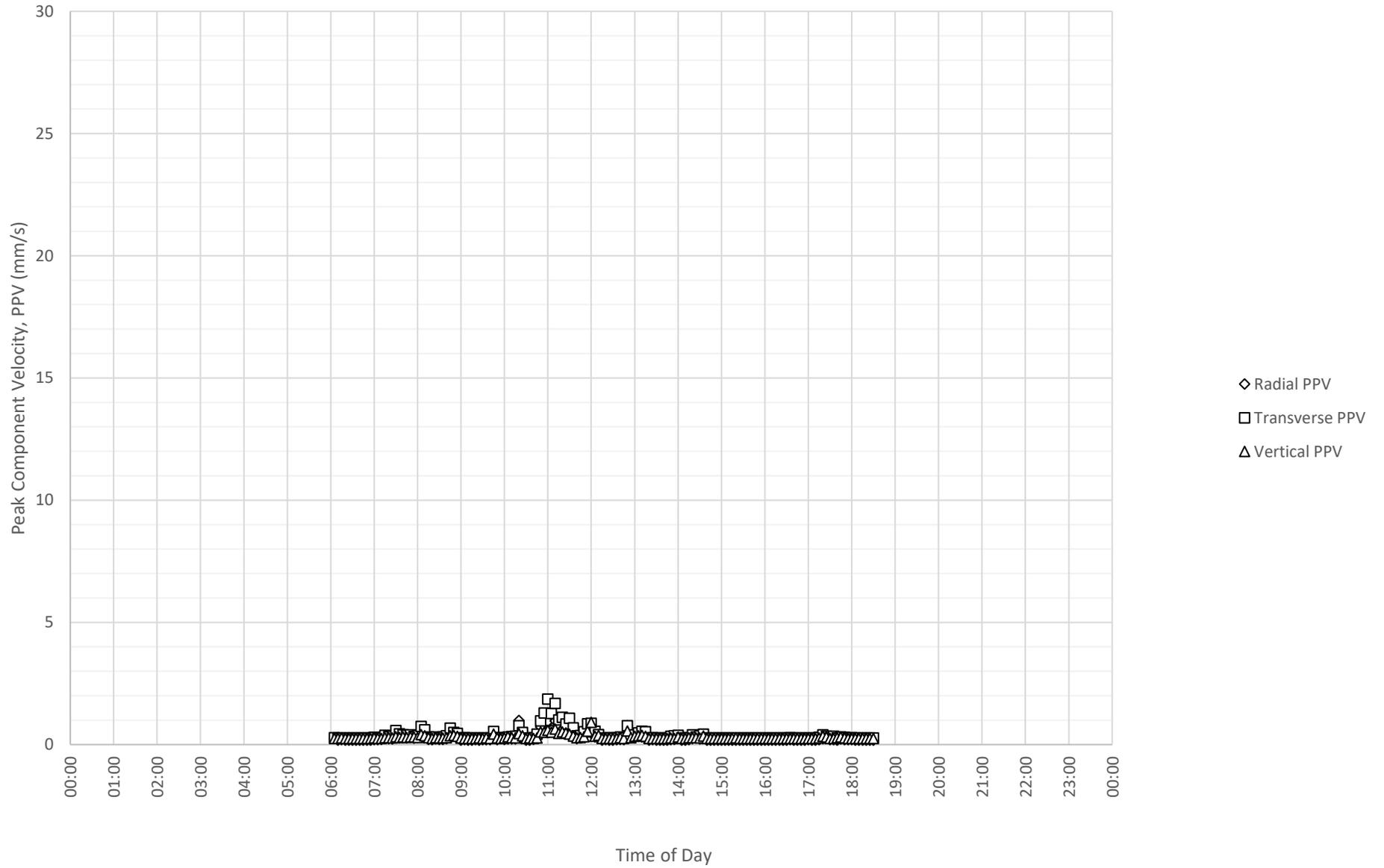
Daily Monitored Vibration Levels at M7715 Residential (east) on 12-09-2022



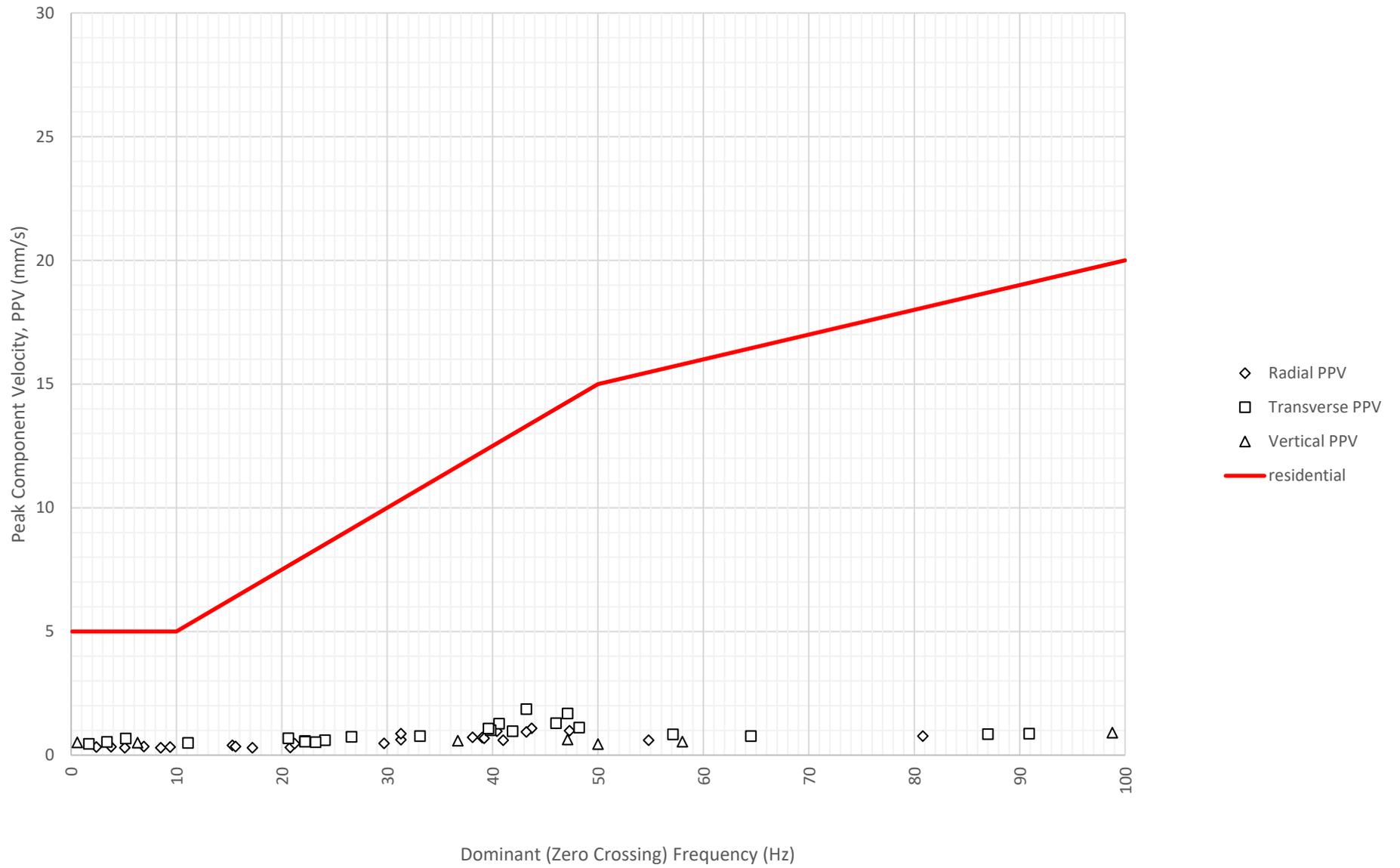
Frequency Content of Vibration Levels at M7715 Residential (east) on 12-09-2022



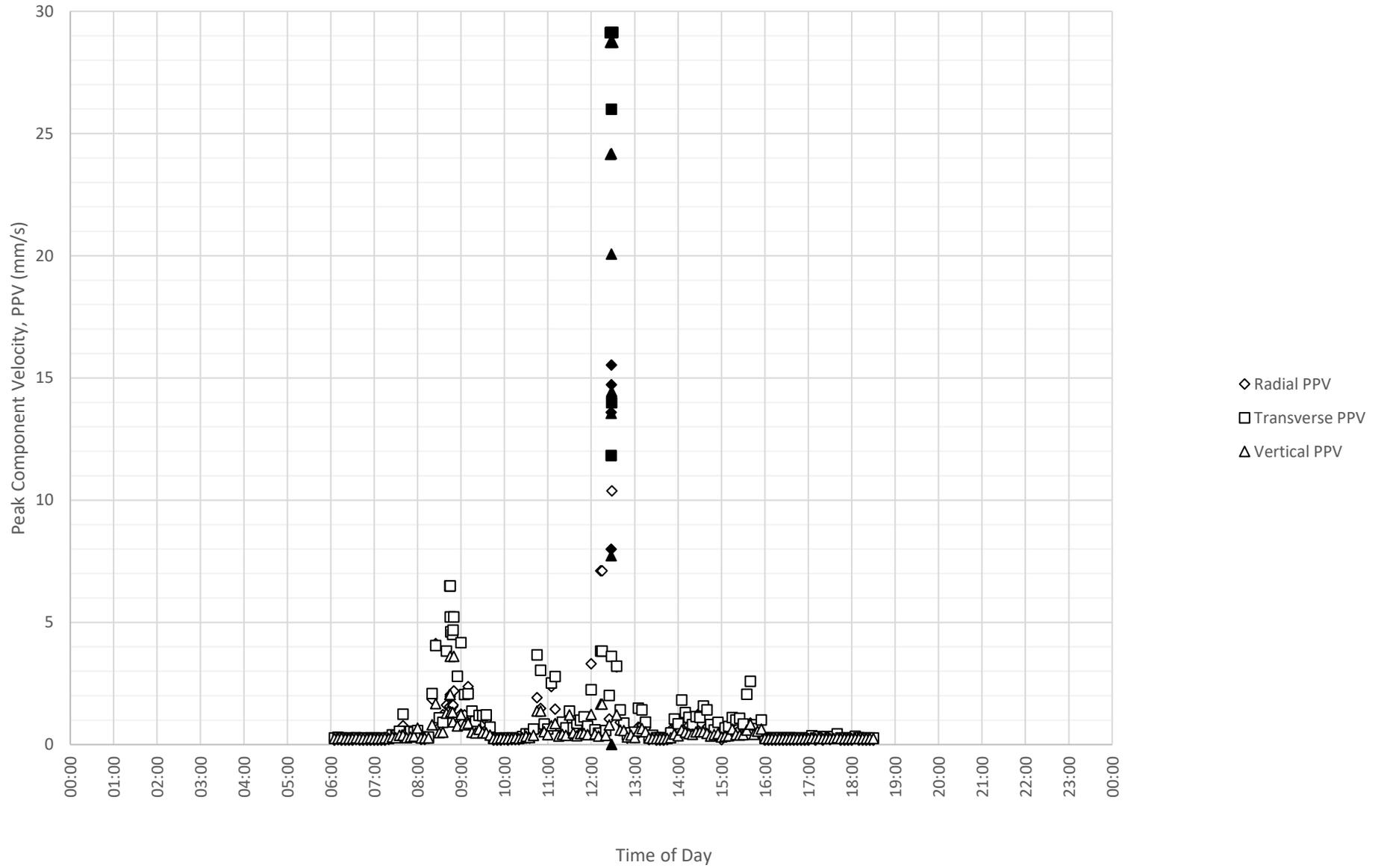
Daily Monitored Vibration Levels at M7715 Residential (east) on 13-09-2022



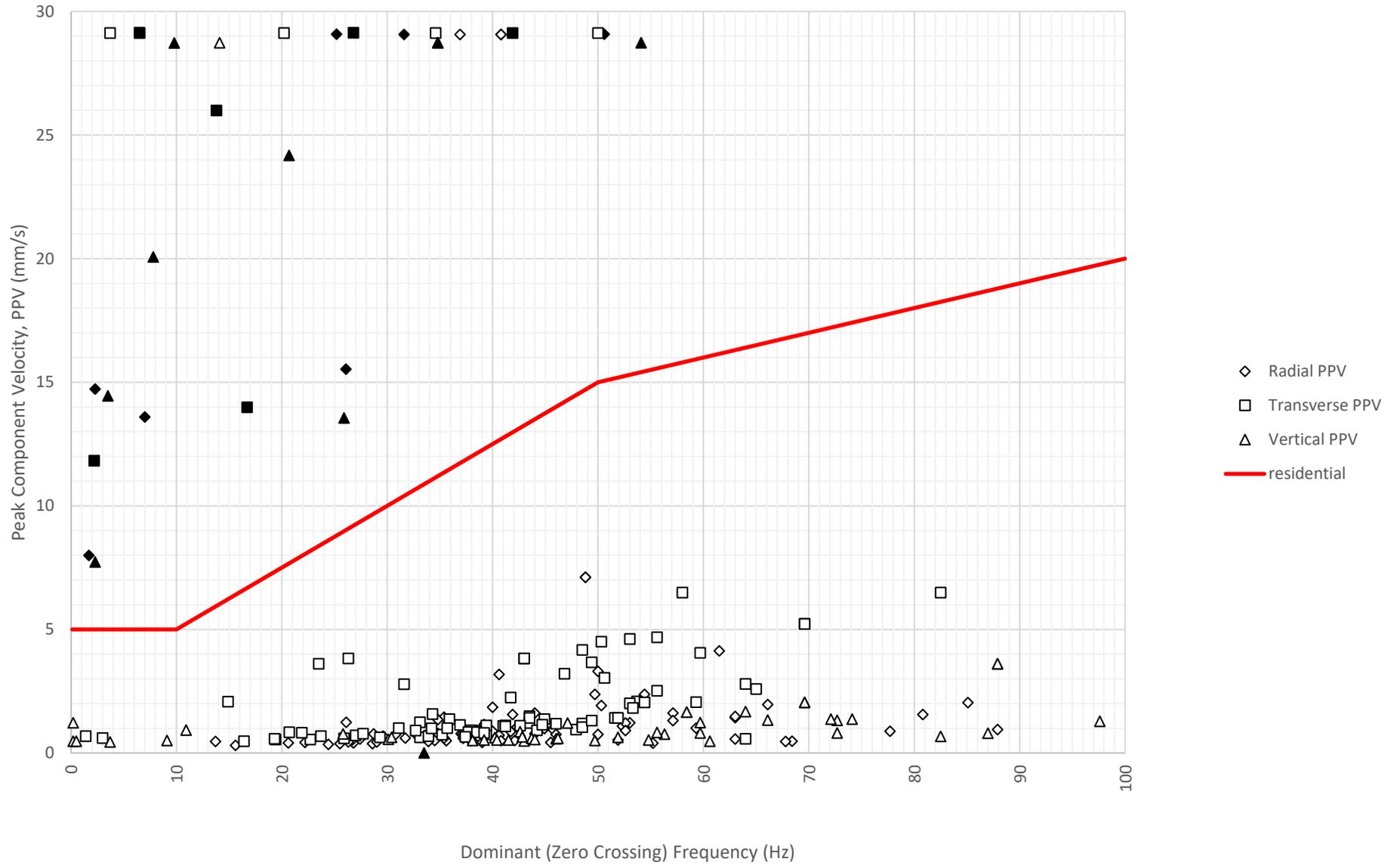
Frequency Content of Vibration Levels at M7715 Residential (east) on 13-09-2022



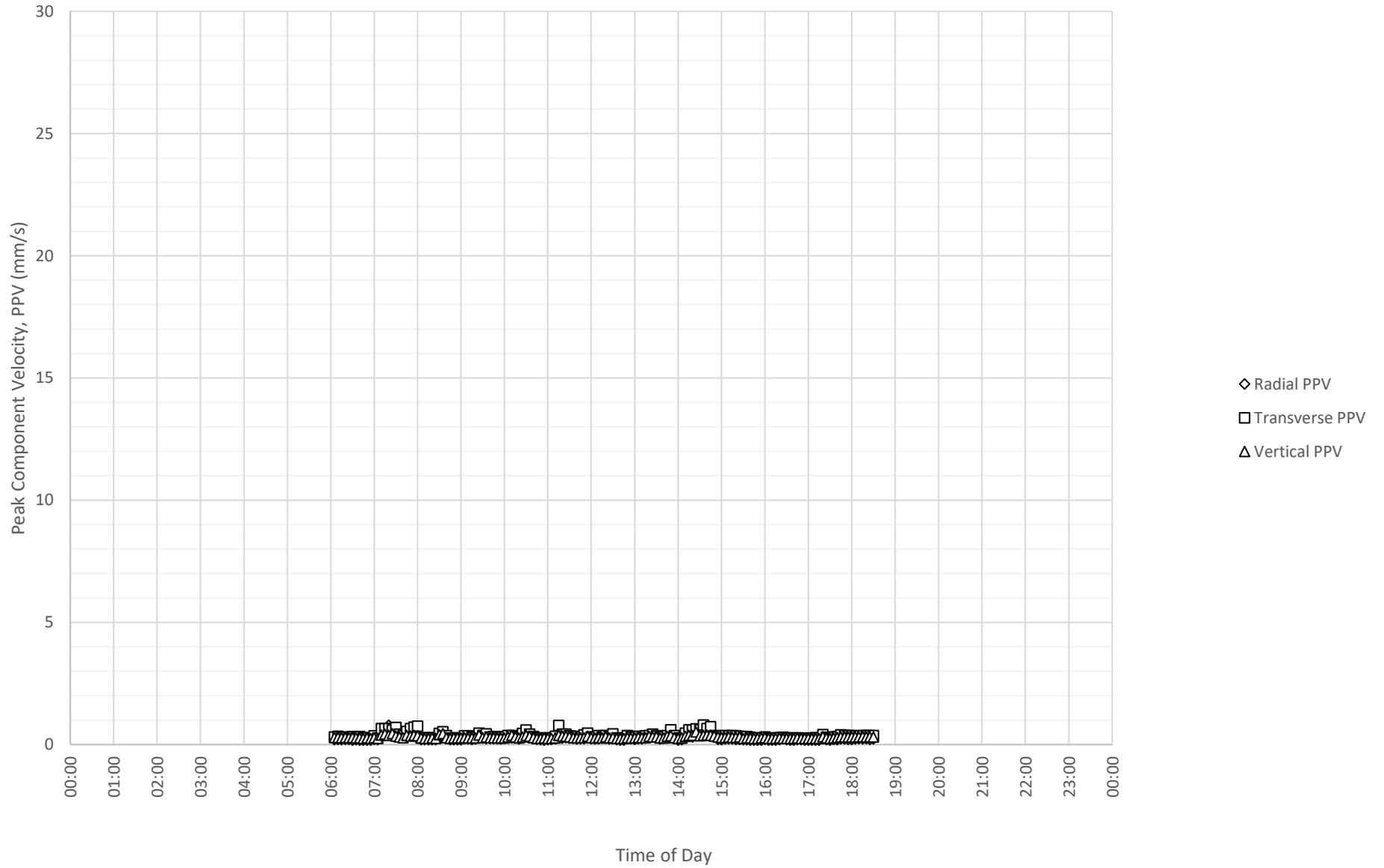
Daily Monitored Vibration Levels at M7715 Residential (east) on 14-09-2022



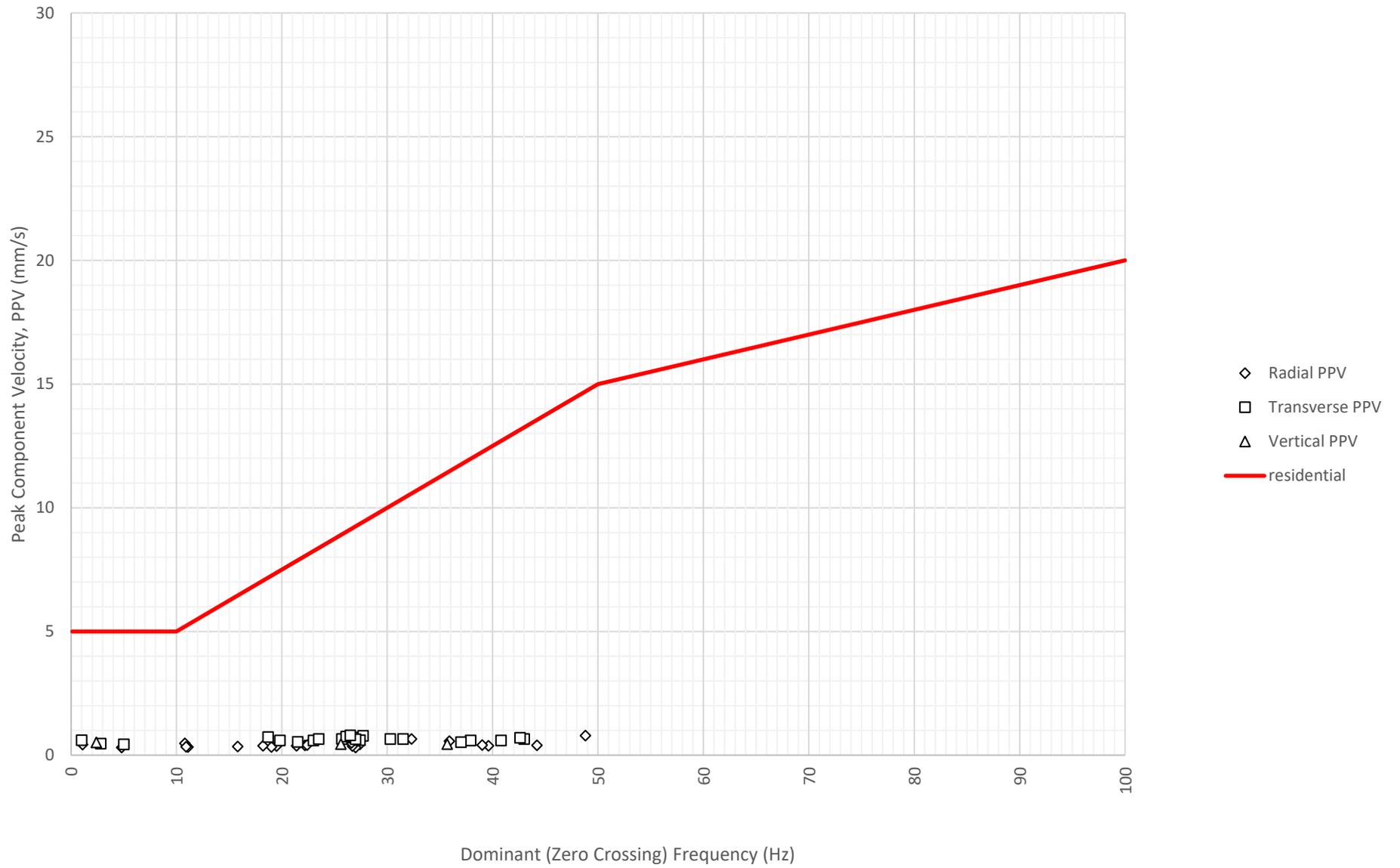
Frequency Content of Vibration Levels at M7715 Residential (east) on 14-09-2022



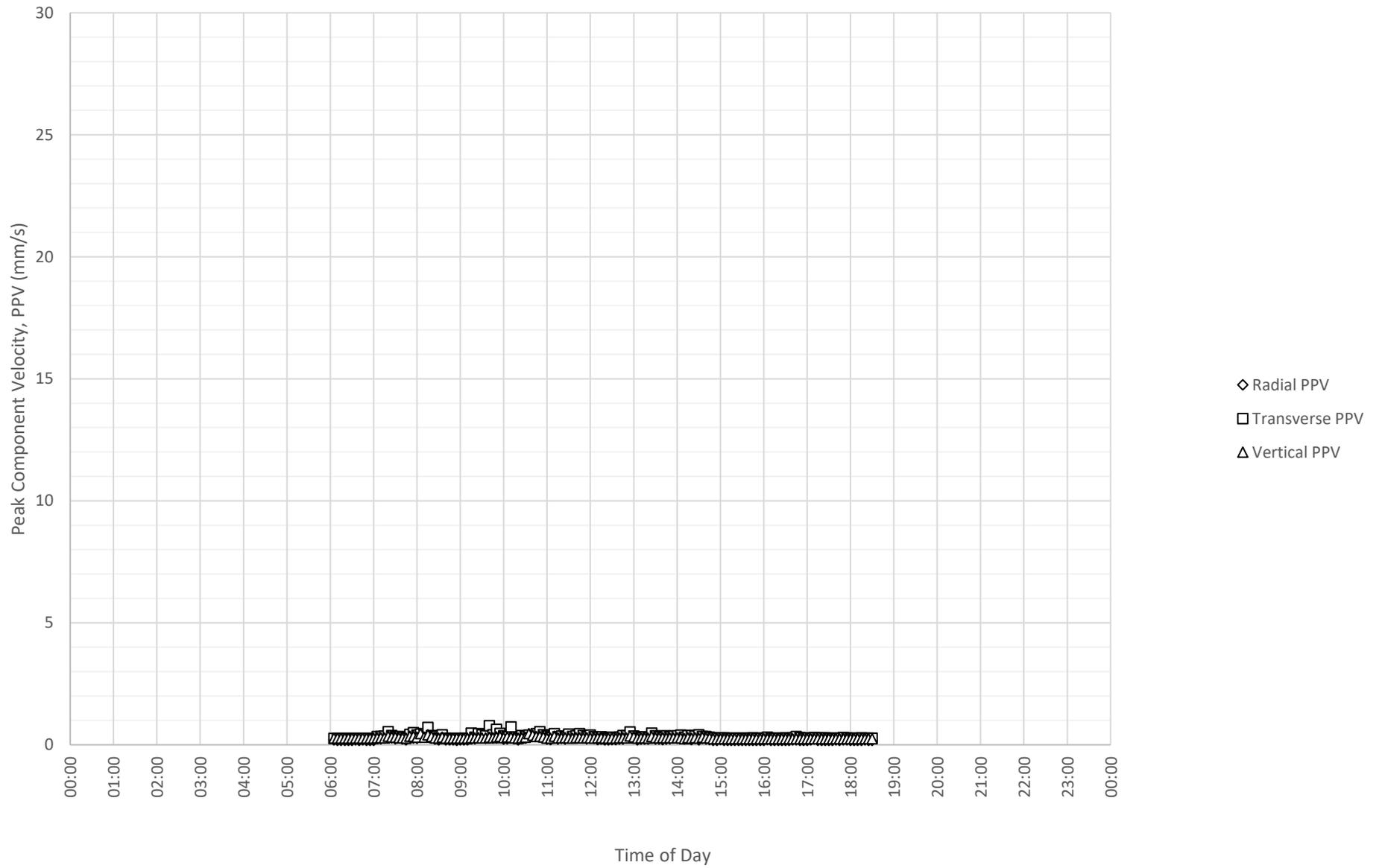
Daily Monitored Vibration Levels at M7715 Residential (east) on 15-09-2022



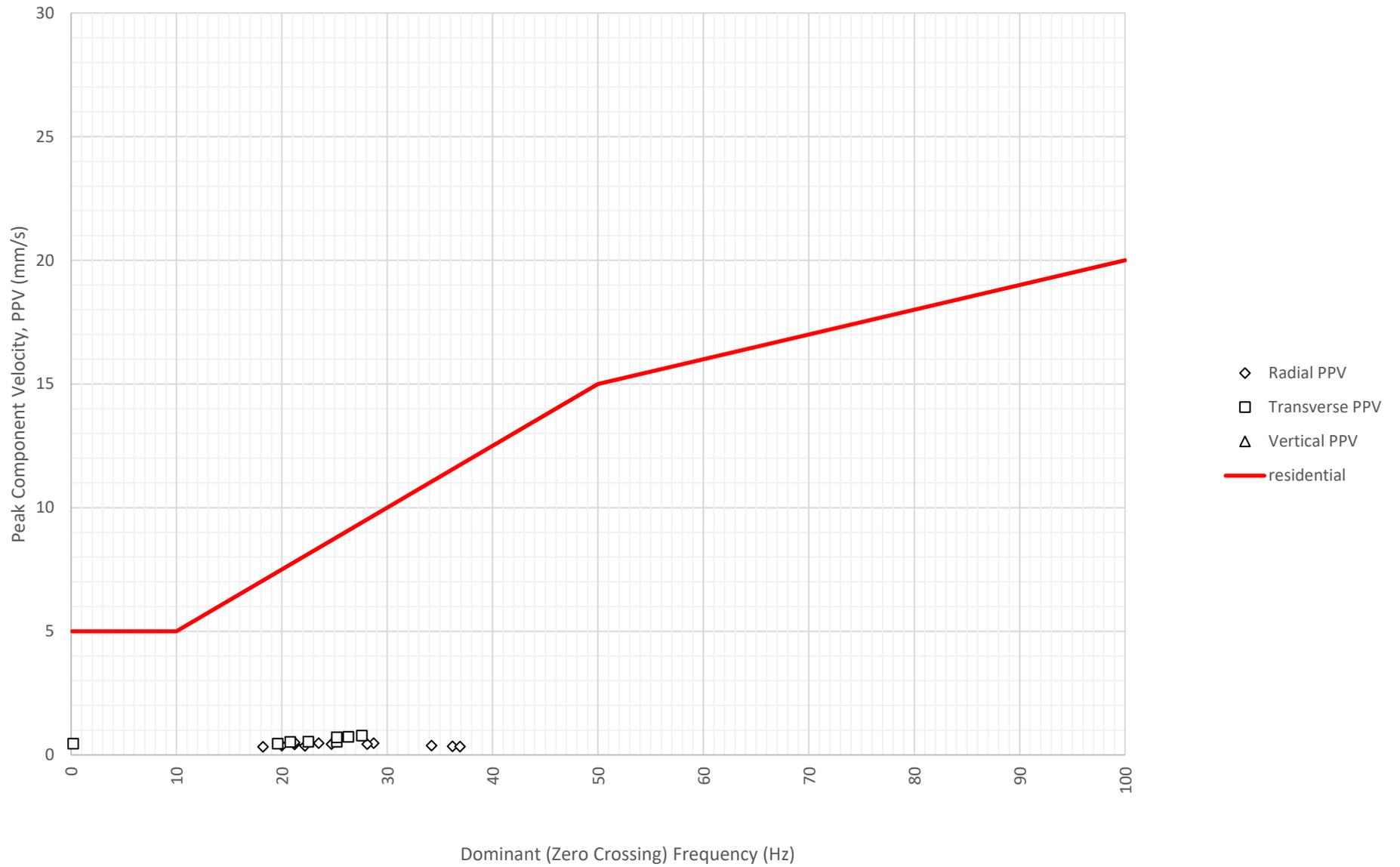
Frequency Content of Vibration Levels at M7715 Residential (east) on 15-09-2022



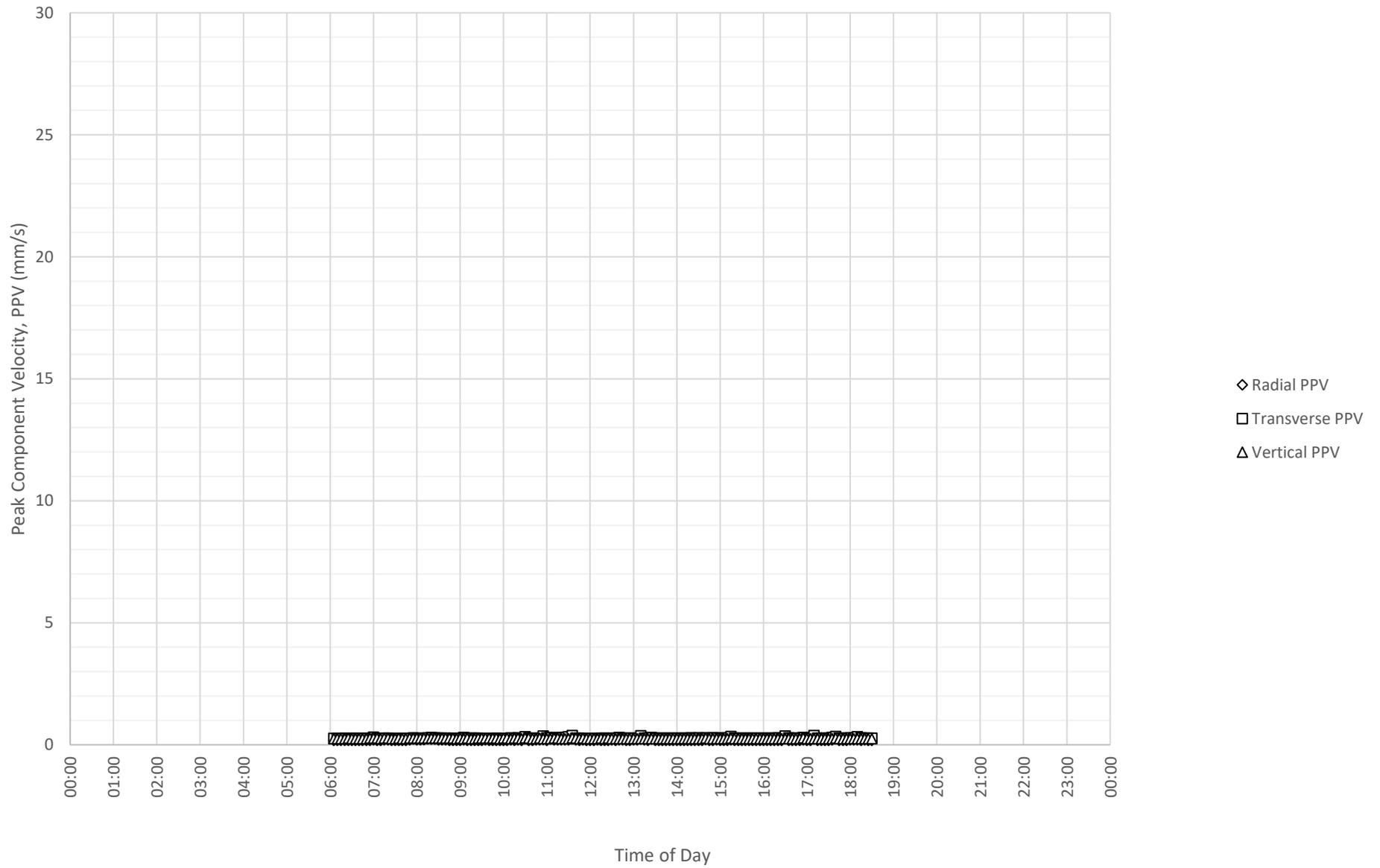
Daily Monitored Vibration Levels at M7715 Residential (east) on 16-09-2022



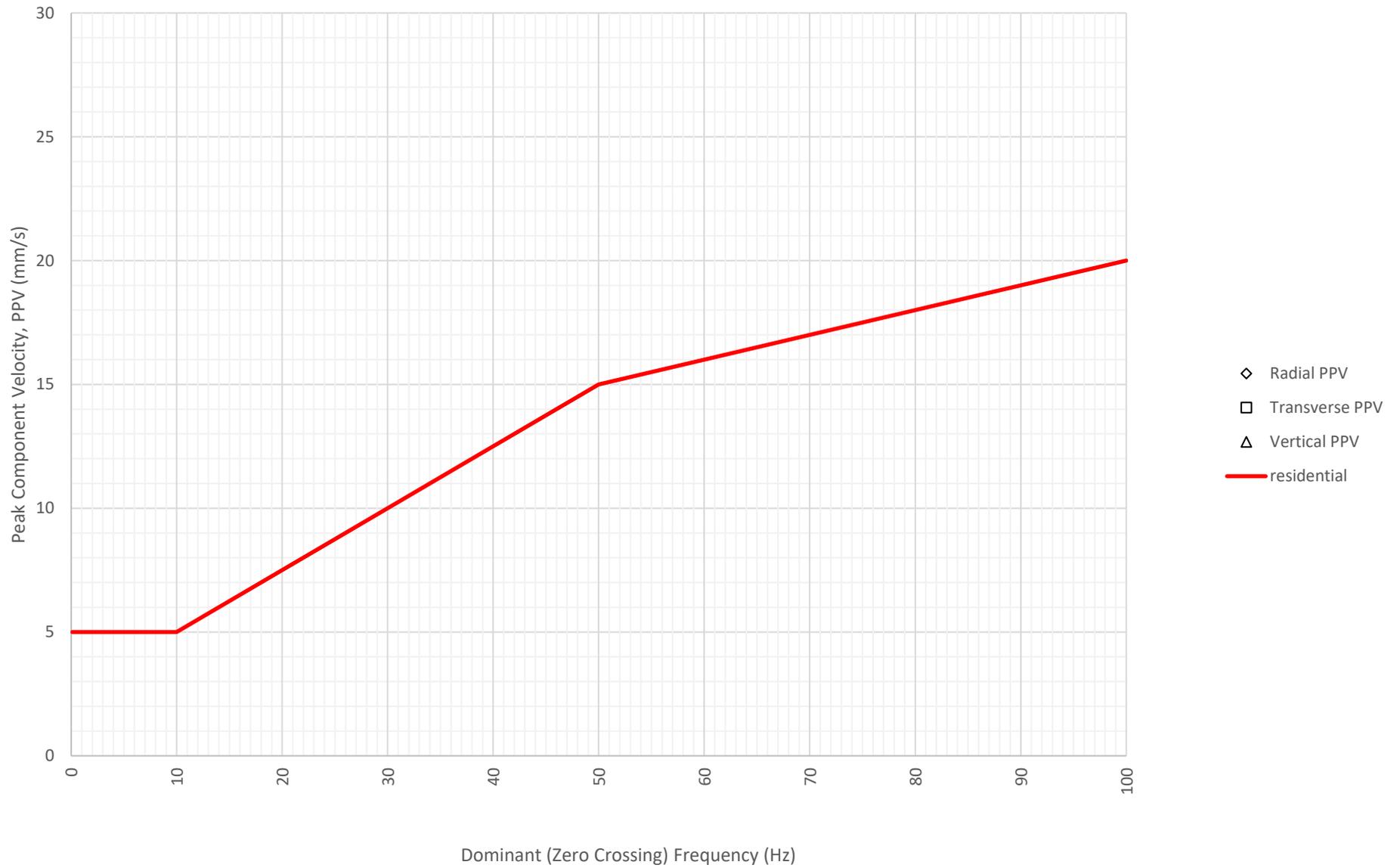
Frequency Content of Vibration Levels at M7715 Residential (east) on 16-09-2022



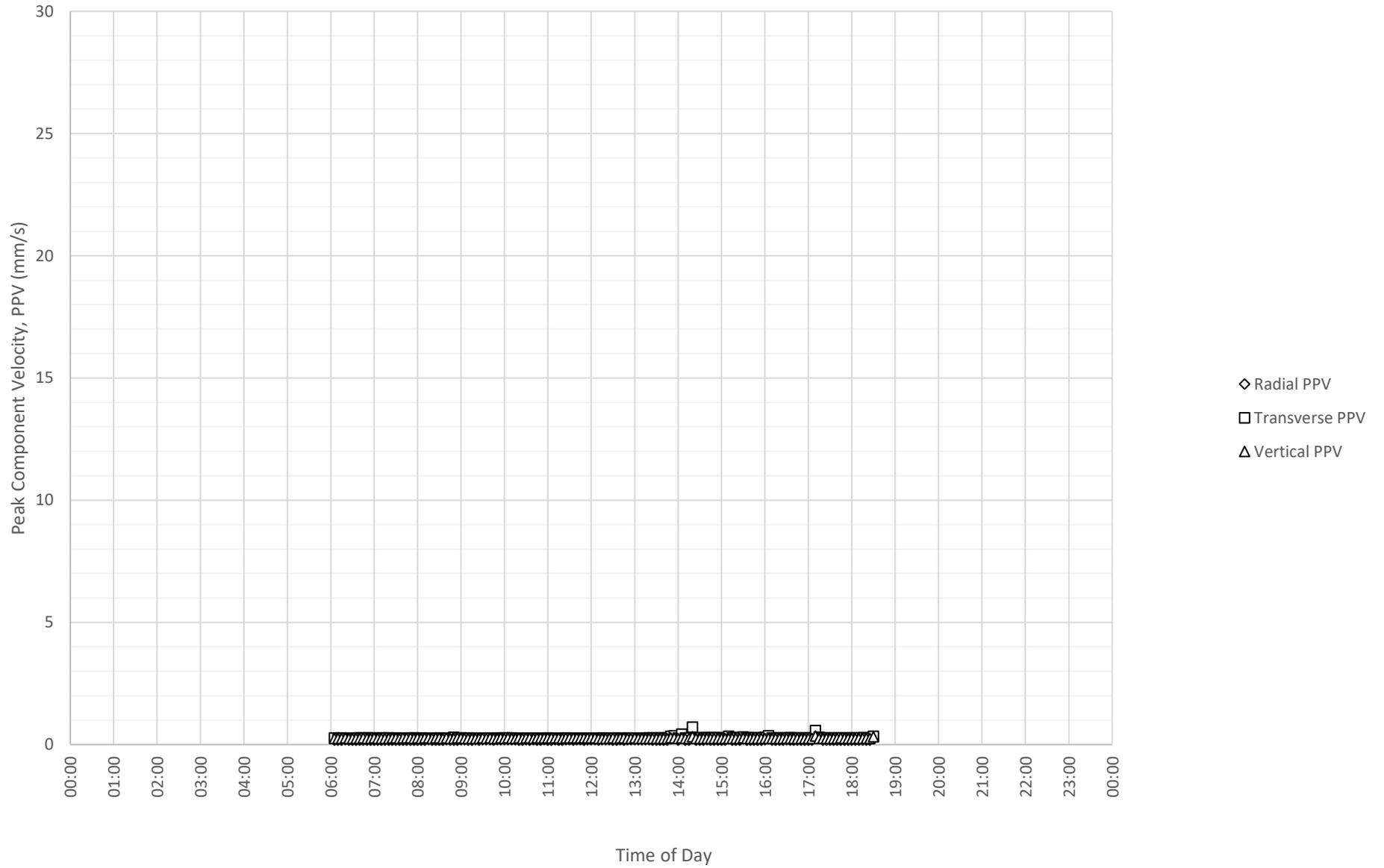
Daily Monitored Vibration Levels at M7715 Residential (east) on 17-09-2022



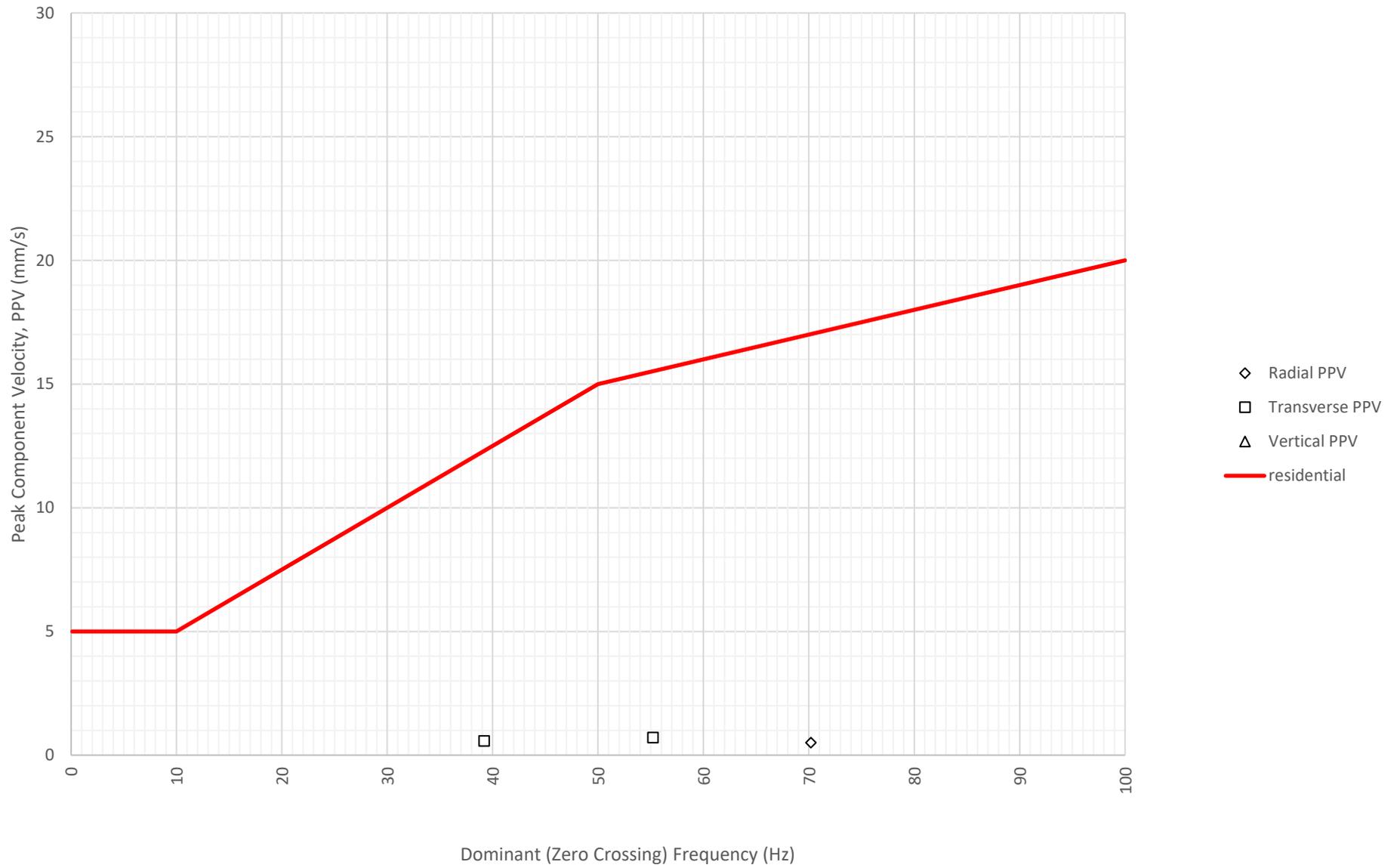
Frequency Content of Vibration Levels at M7715 Residential (east) on 17-09-2022



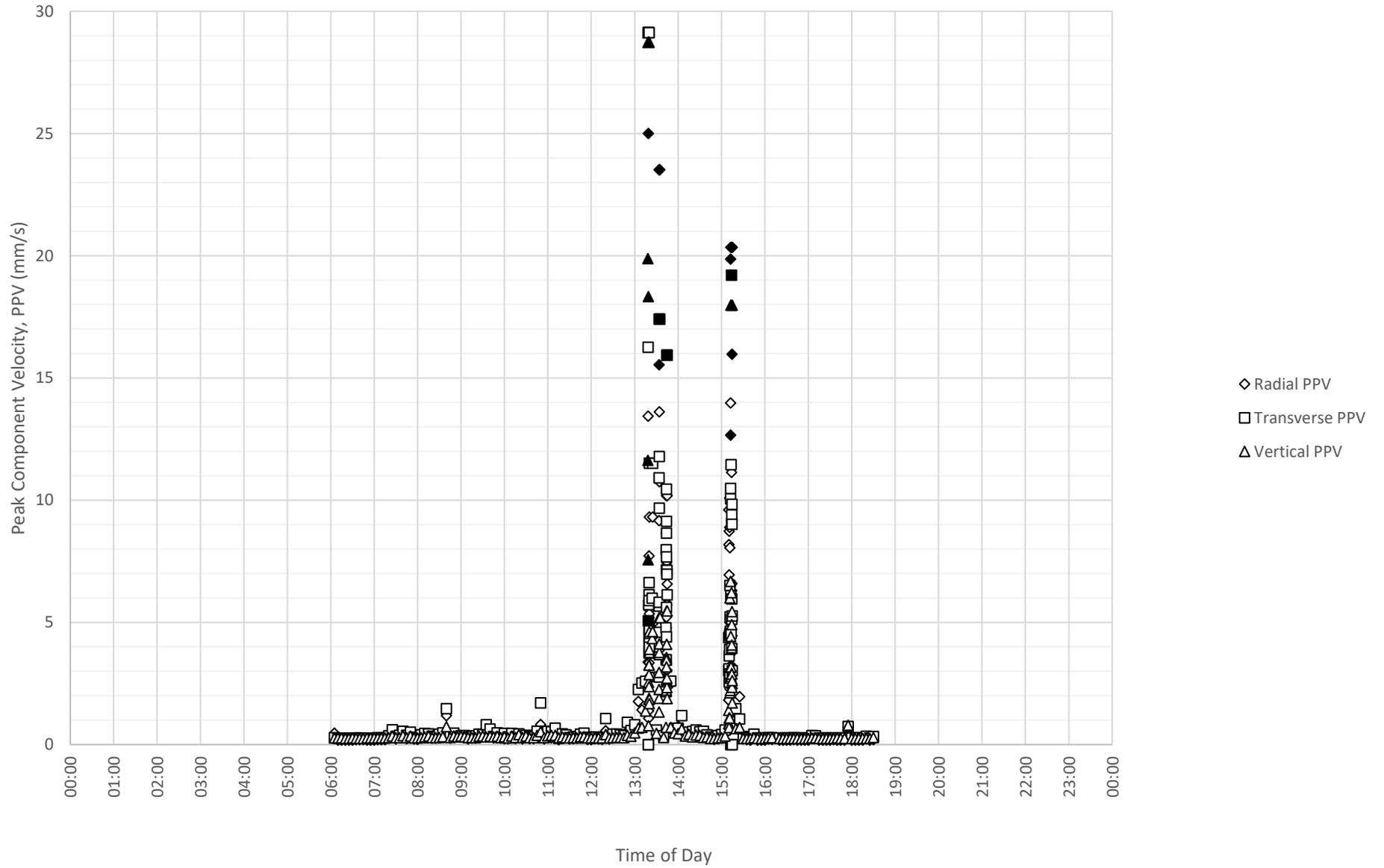
Daily Monitored Vibration Levels at M7715 Residential (east) on 18-09-2022



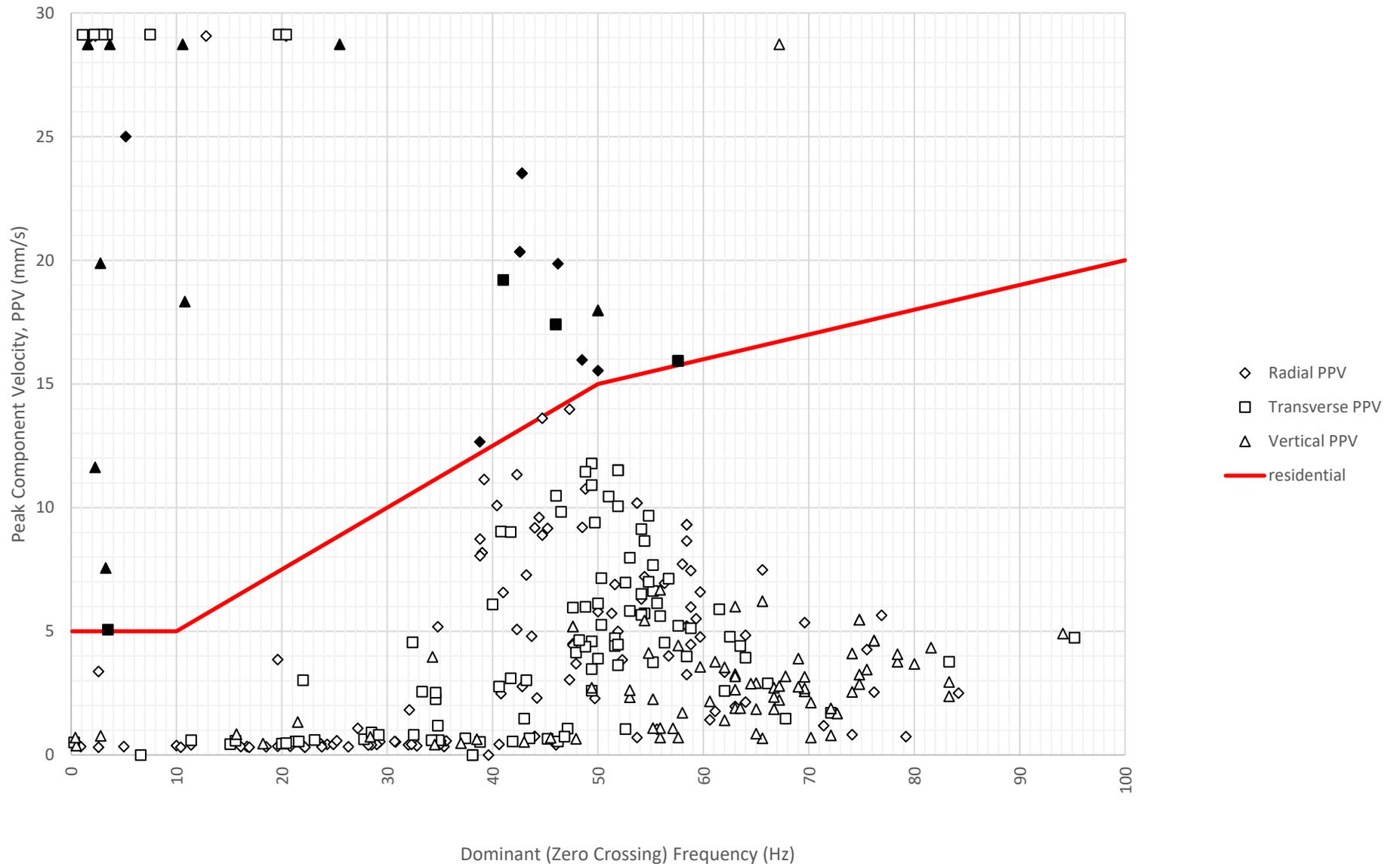
Frequency Content of Vibration Levels at M7715 Residential (east) on 18-09-2022



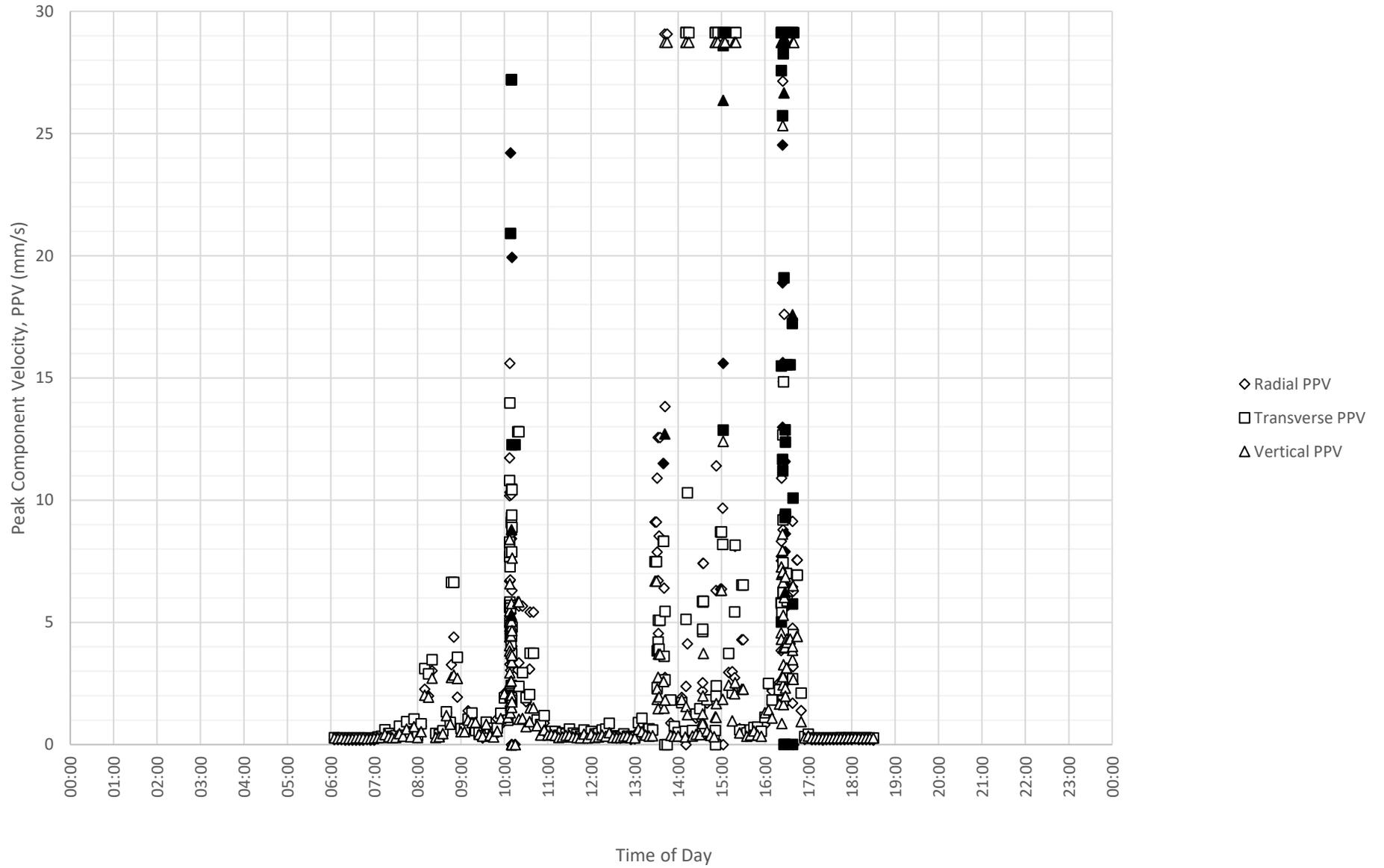
Daily Monitored Vibration Levels at M7715 Residential (east) on 19-09-2022



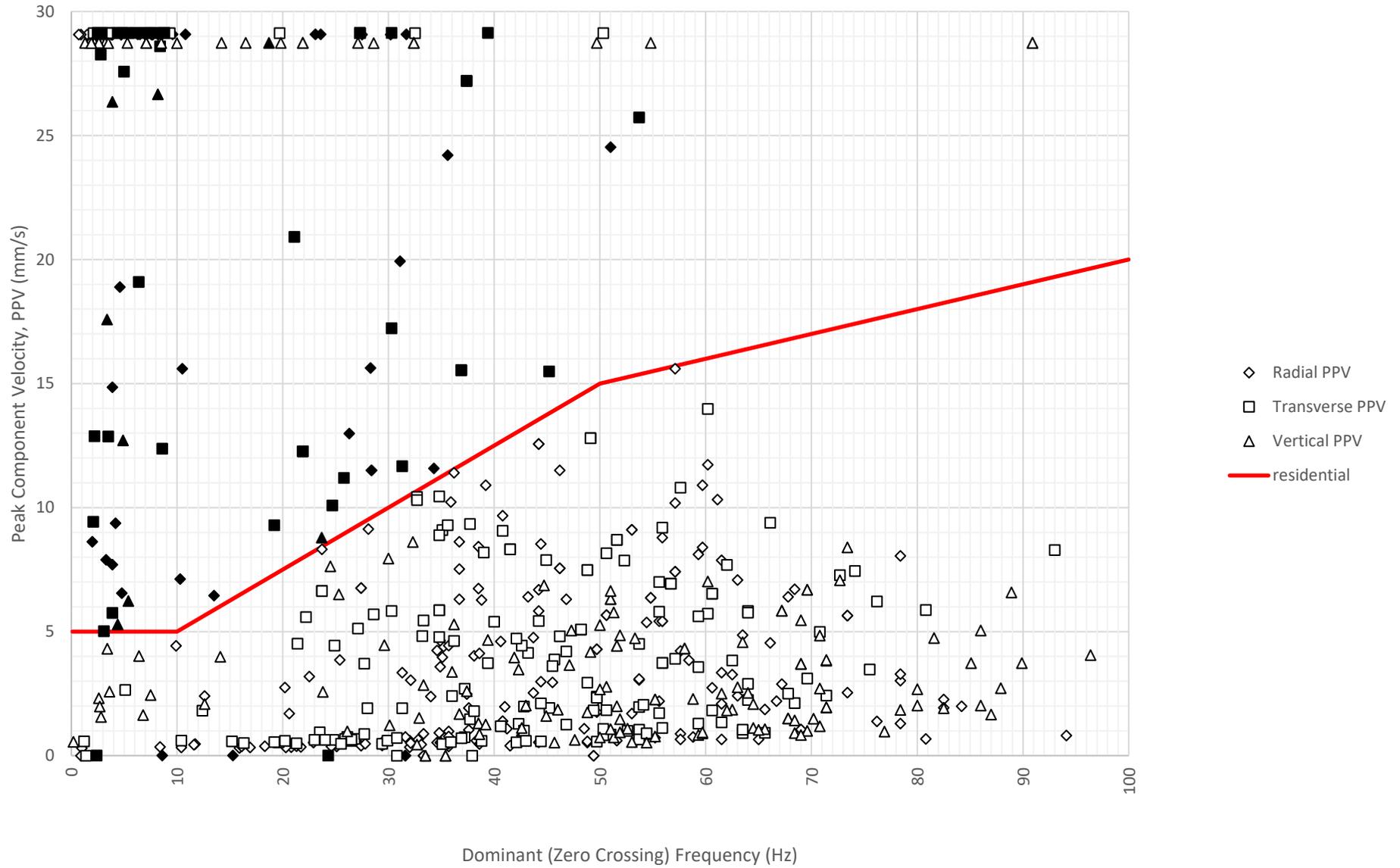
Frequency Content of Vibration Levels at M7715 Residential (east) on 19-09-2022



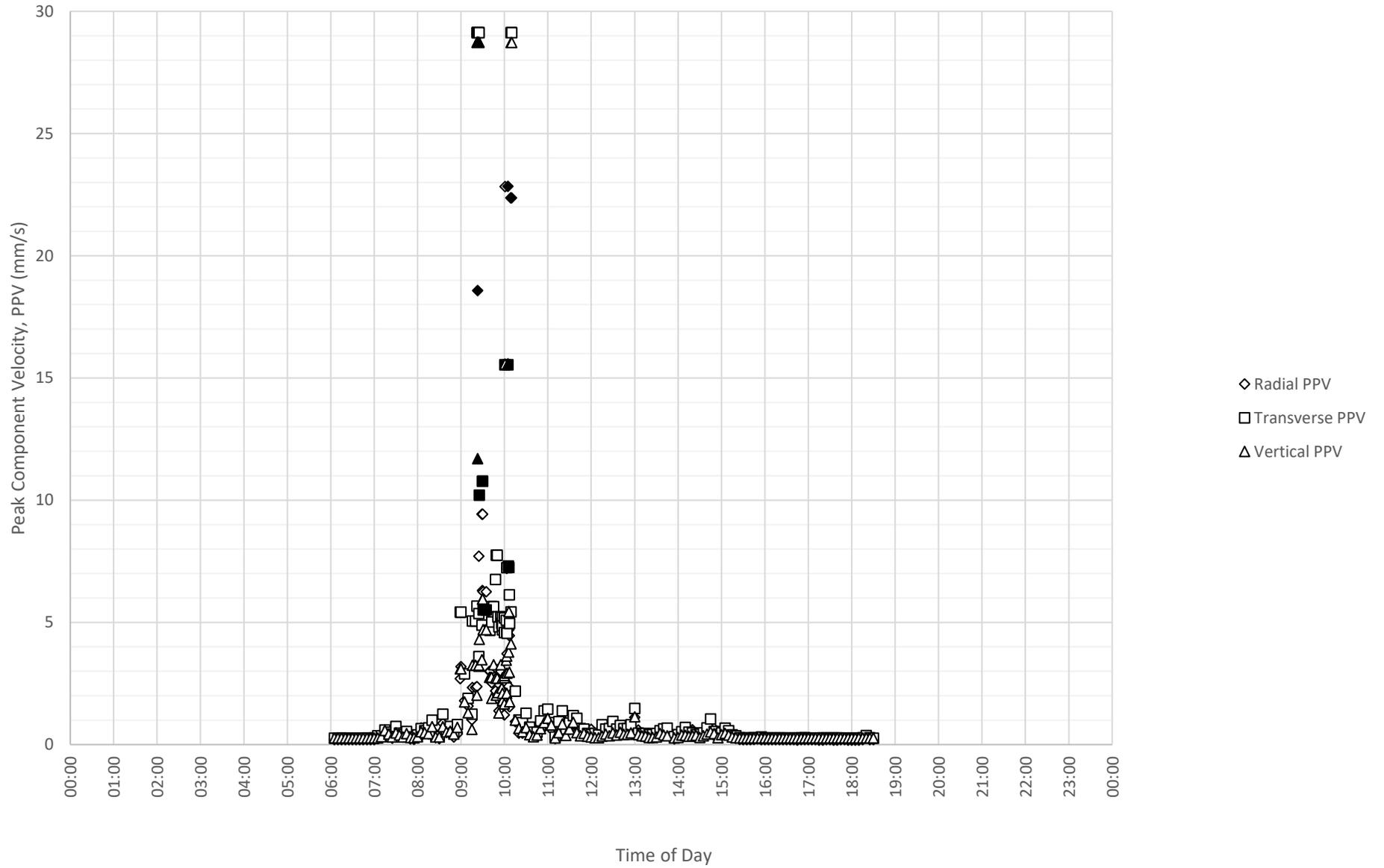
Daily Monitored Vibration Levels at M7715 Residential (east) on 20-09-2022



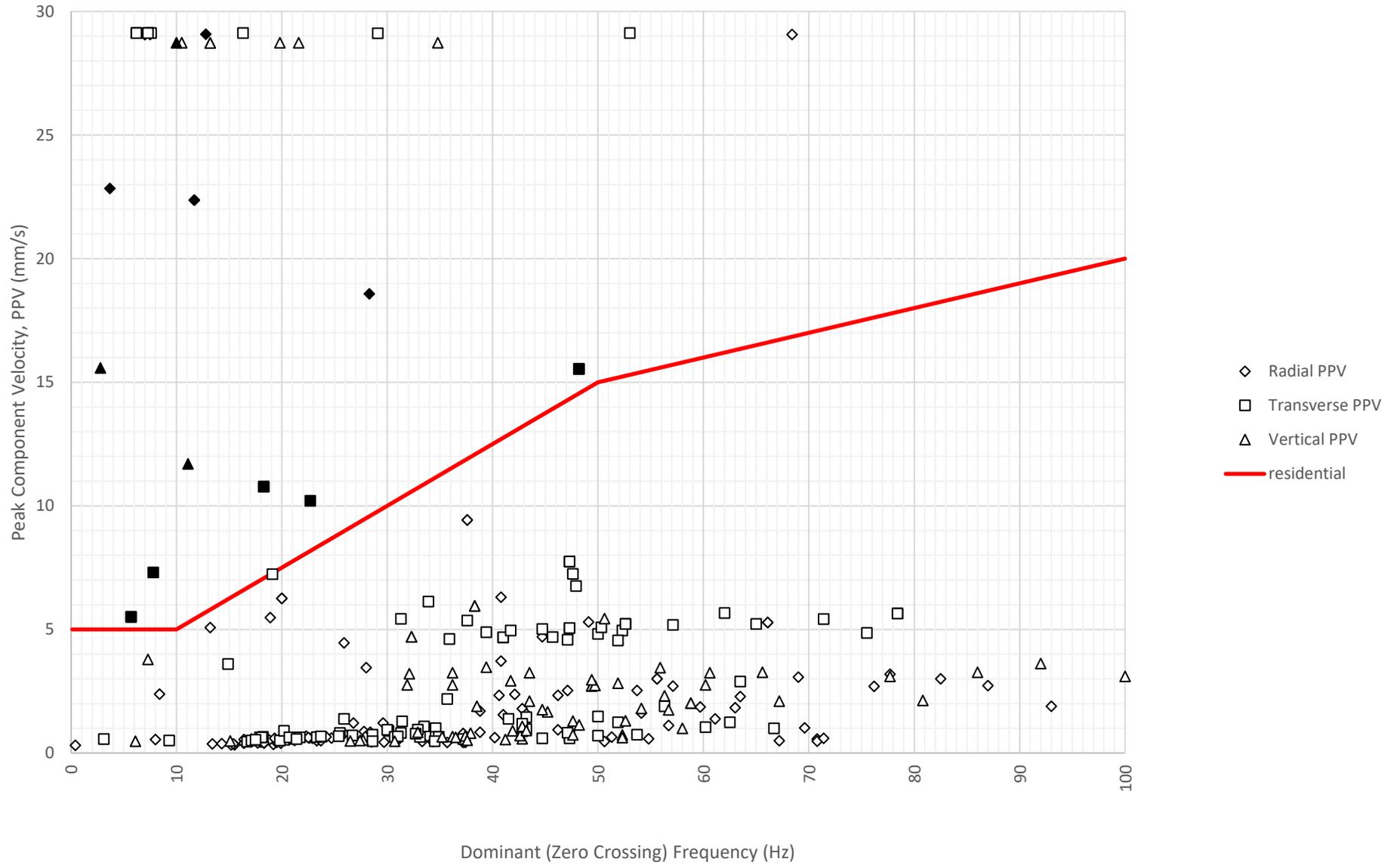
Frequency Content of Vibration Levels at M7715 Residential (east) on 20-09-2022



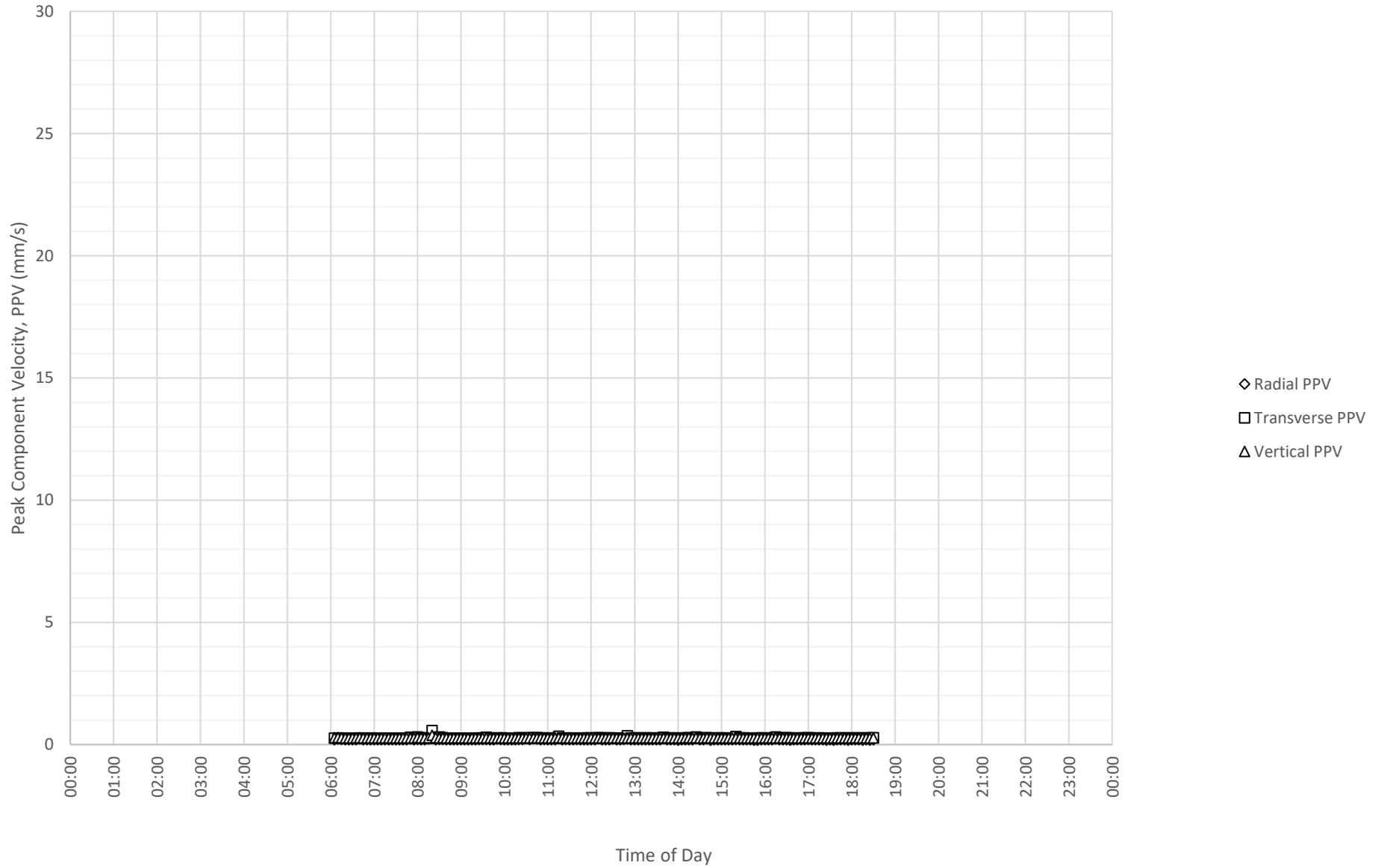
Daily Monitored Vibration Levels at M7715 Residential (east) on 21-09-2022



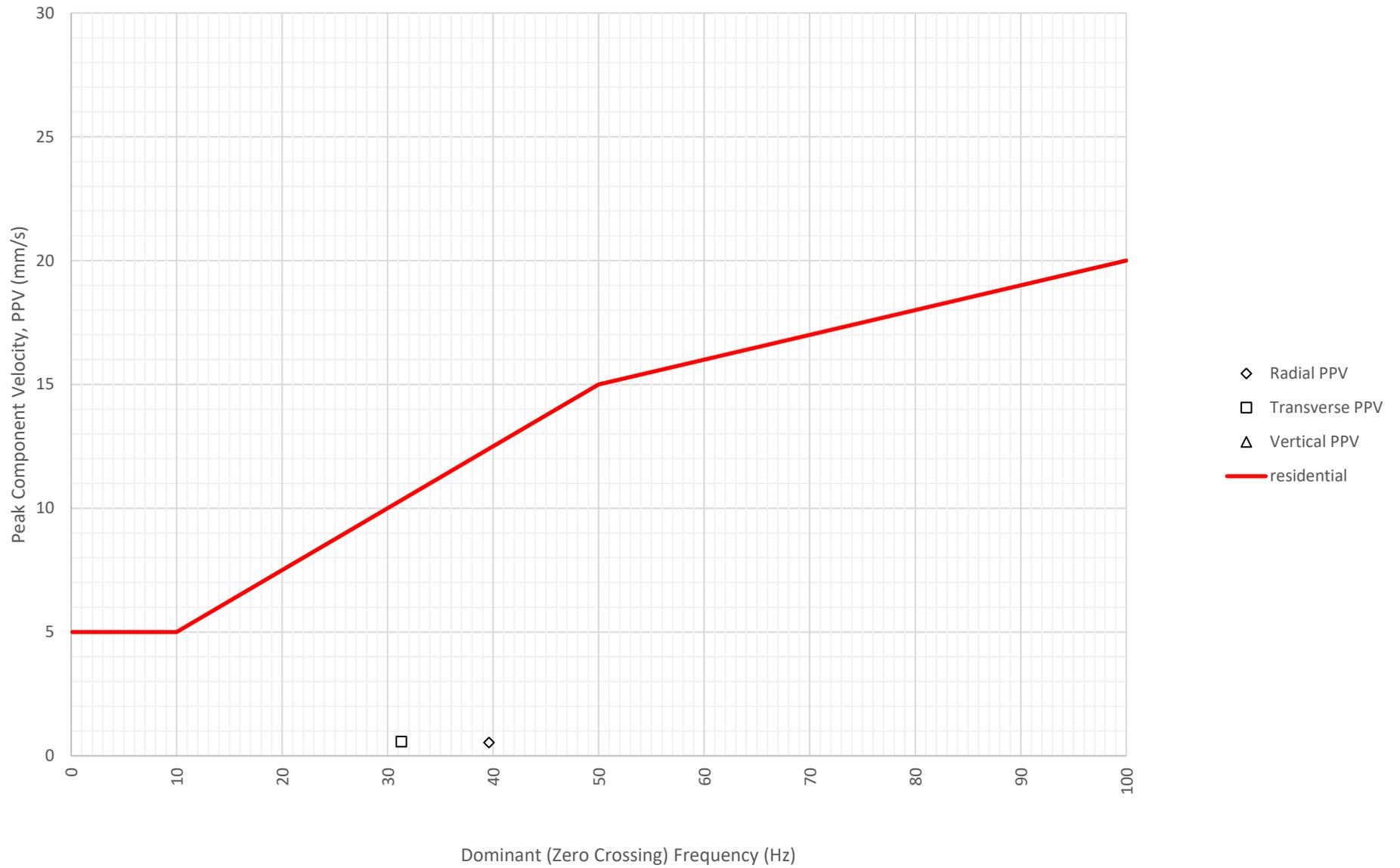
Frequency Content of Vibration Levels at M7715 Residential (east) on 21-09-2022



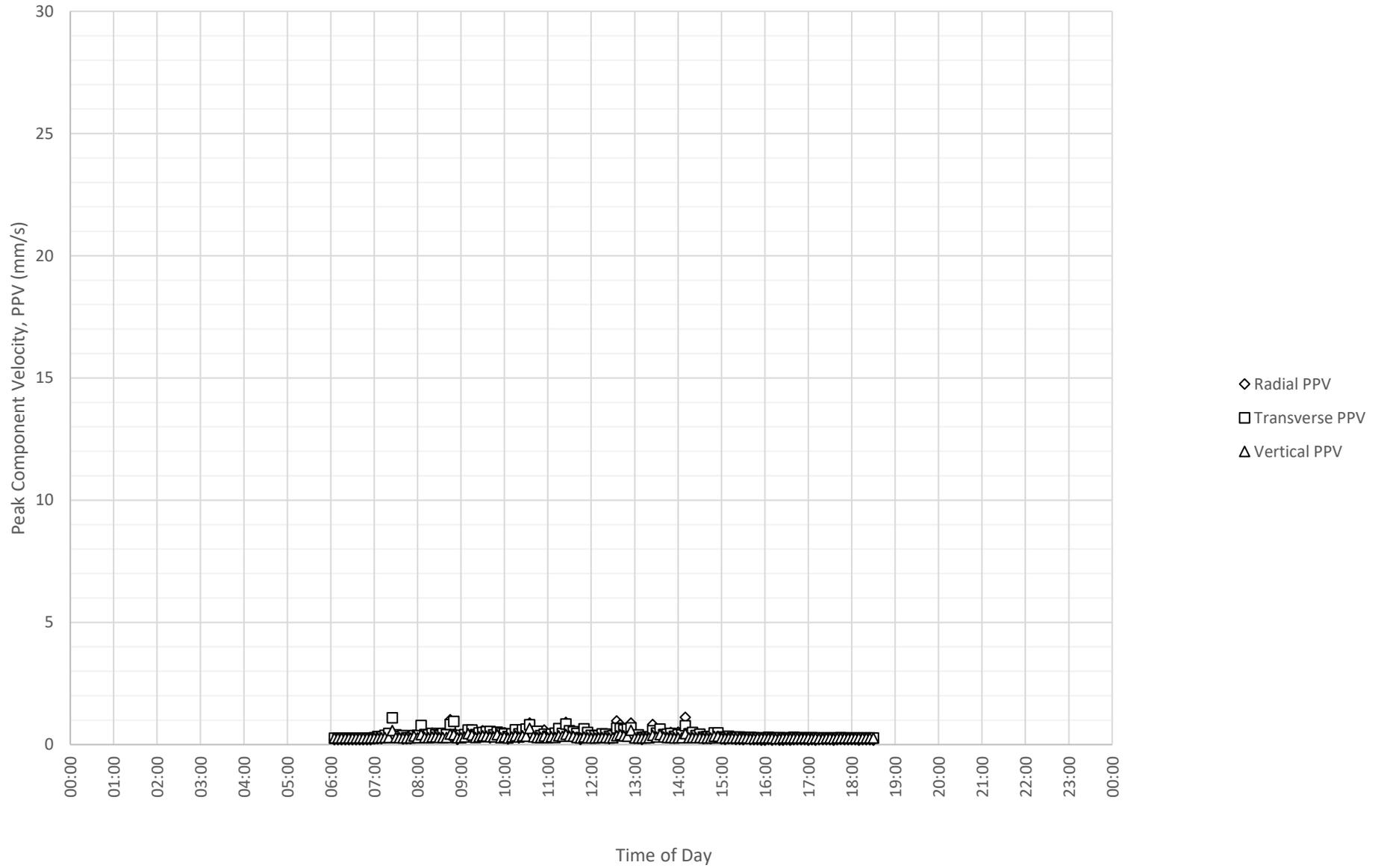
Daily Monitored Vibration Levels at M7715 Residential (east) on 22-09-2022



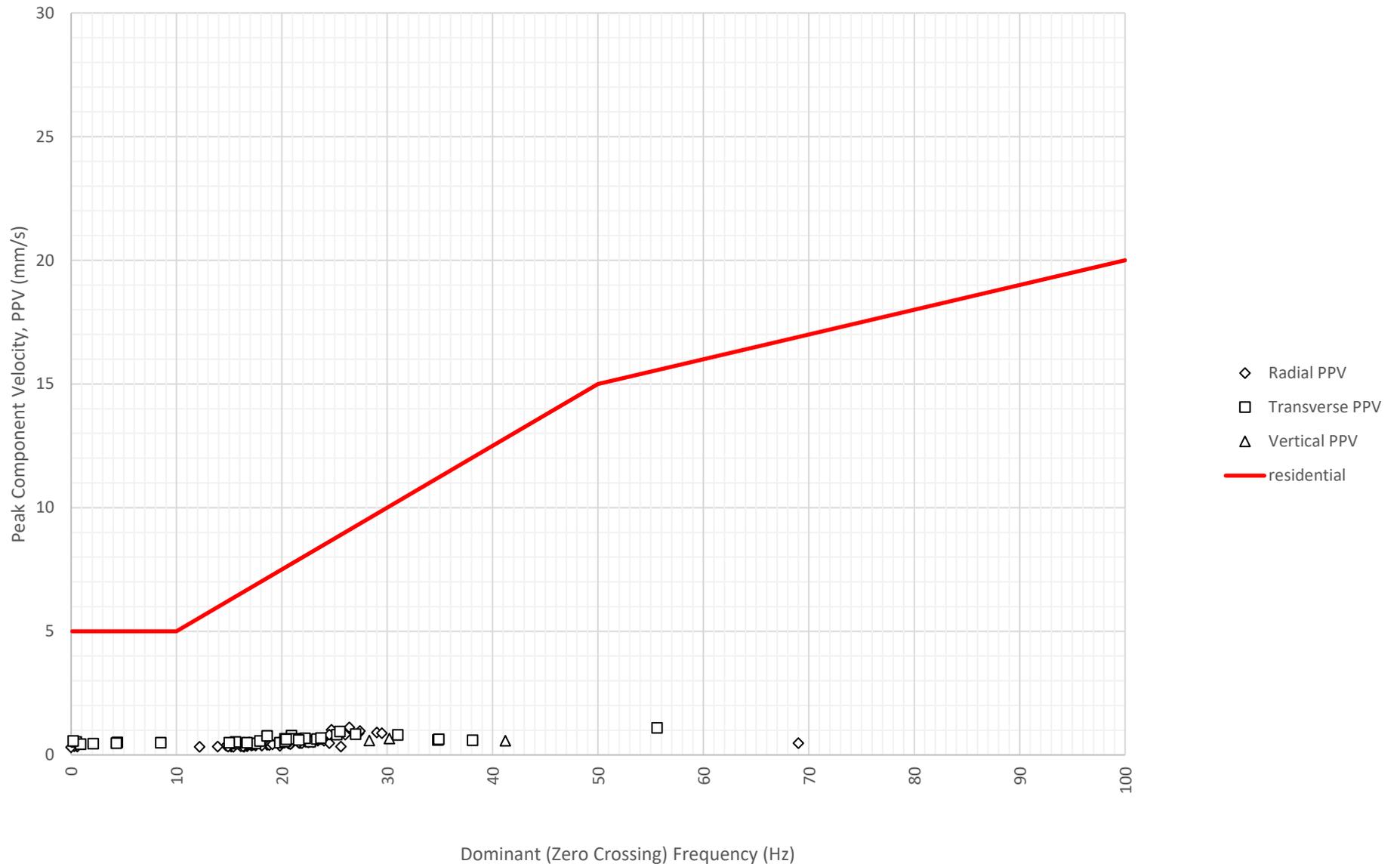
Frequency Content of Vibration Levels at M7715 Residential (east) on 22-09-2022



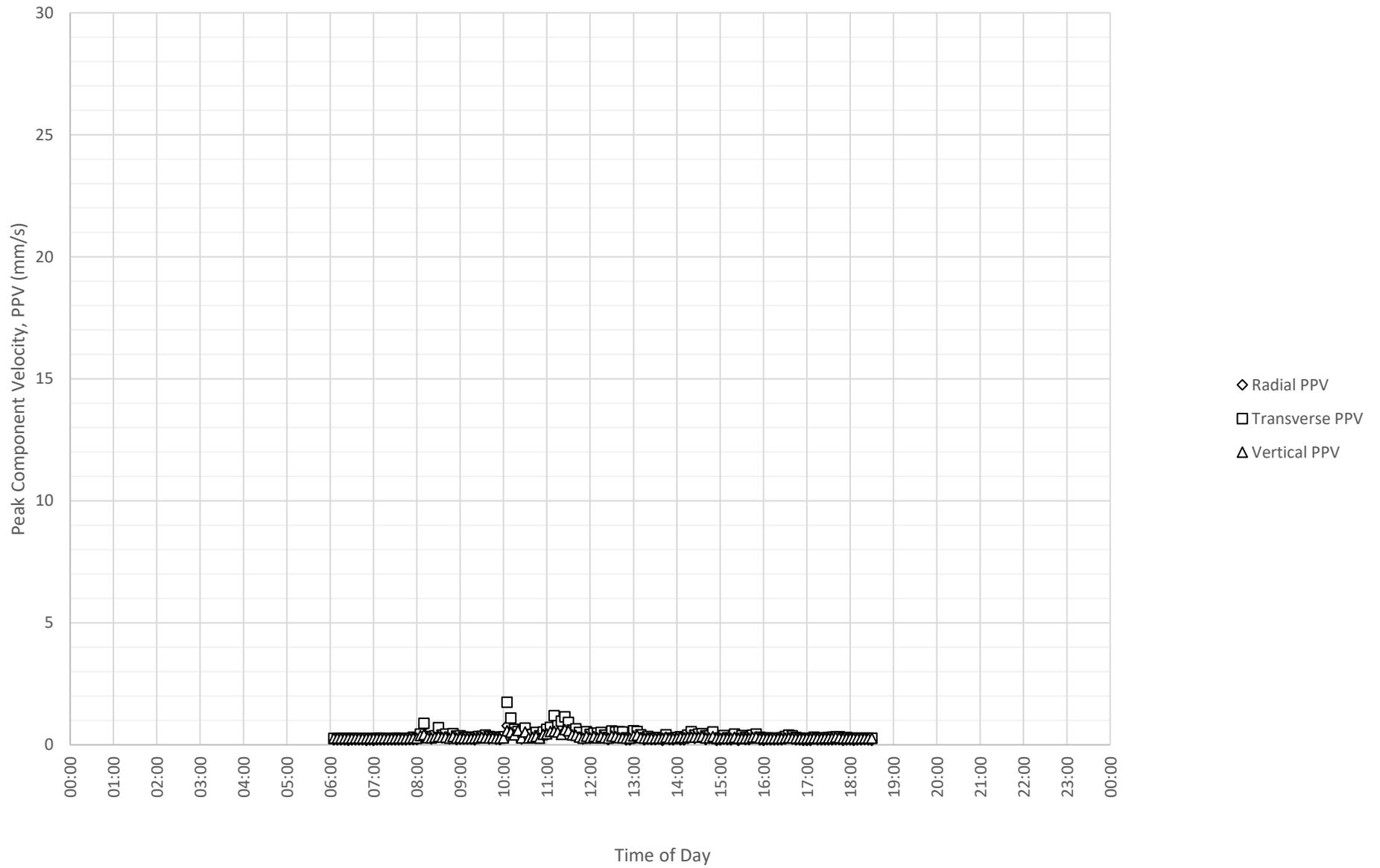
Daily Monitored Vibration Levels at M7715 Residential (east) on 23-09-2022



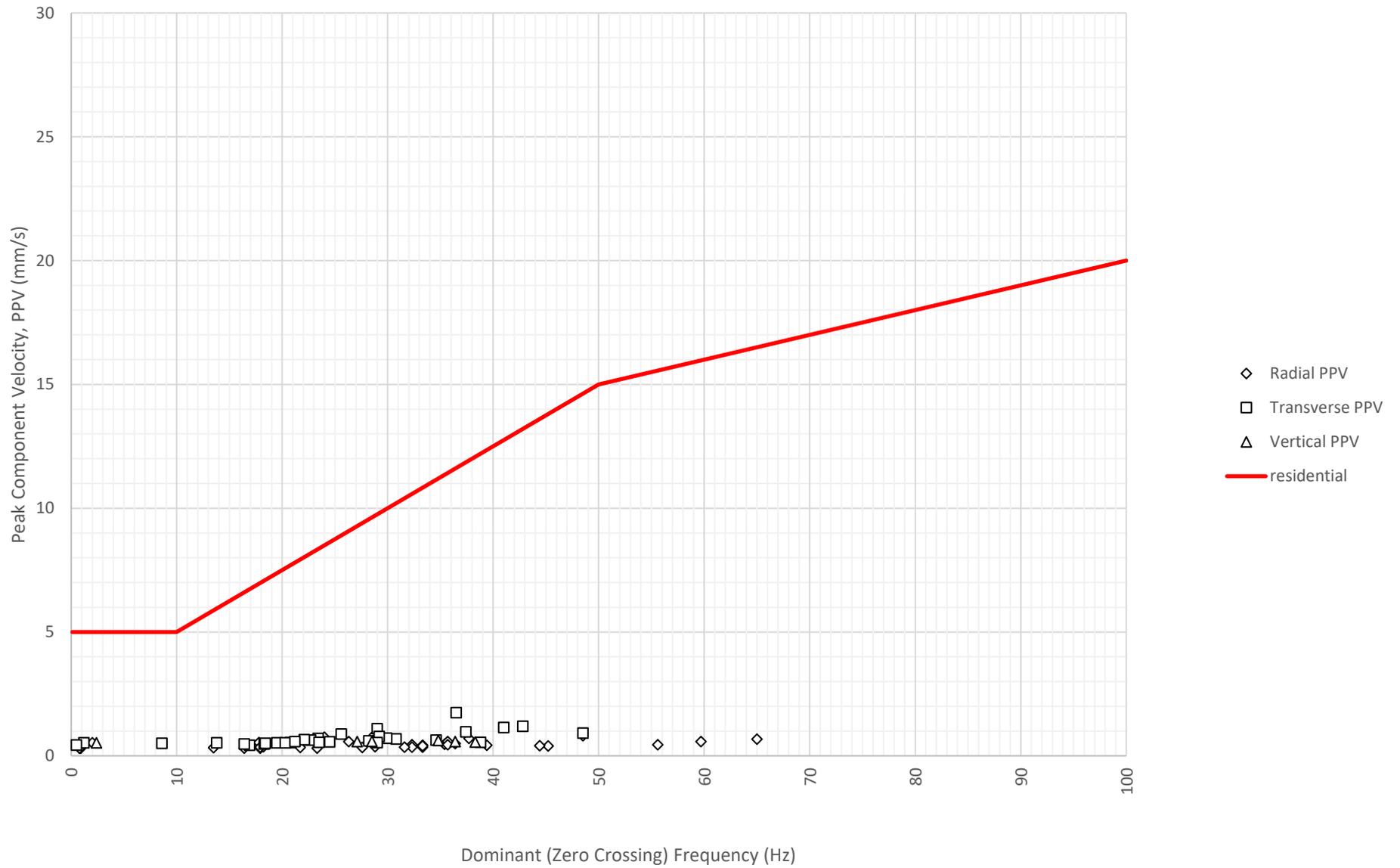
Frequency Content of Vibration Levels at M7715 Residential (east) on 23-09-2022



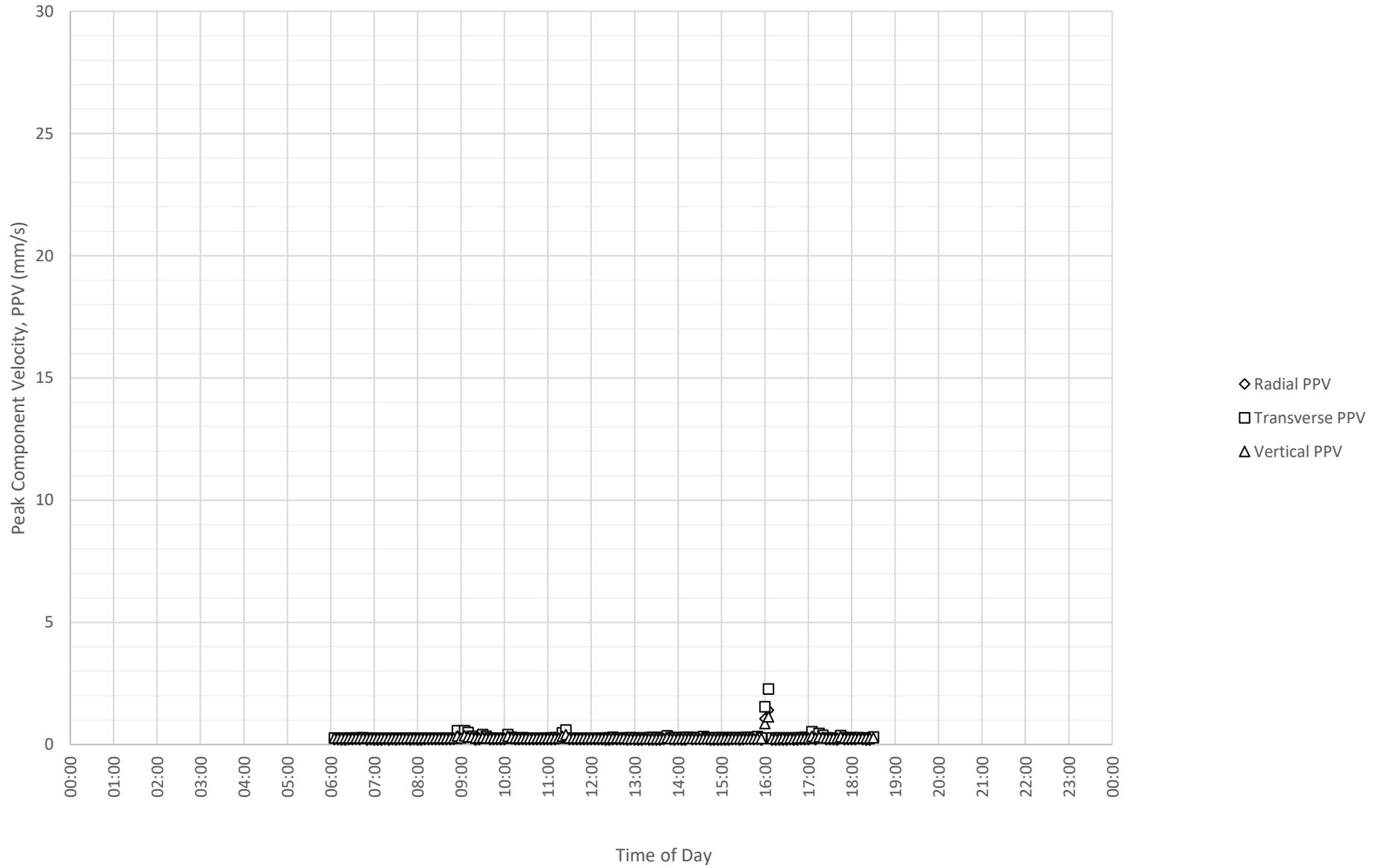
Daily Monitored Vibration Levels at M7715 Residential (east) on 24-09-2022



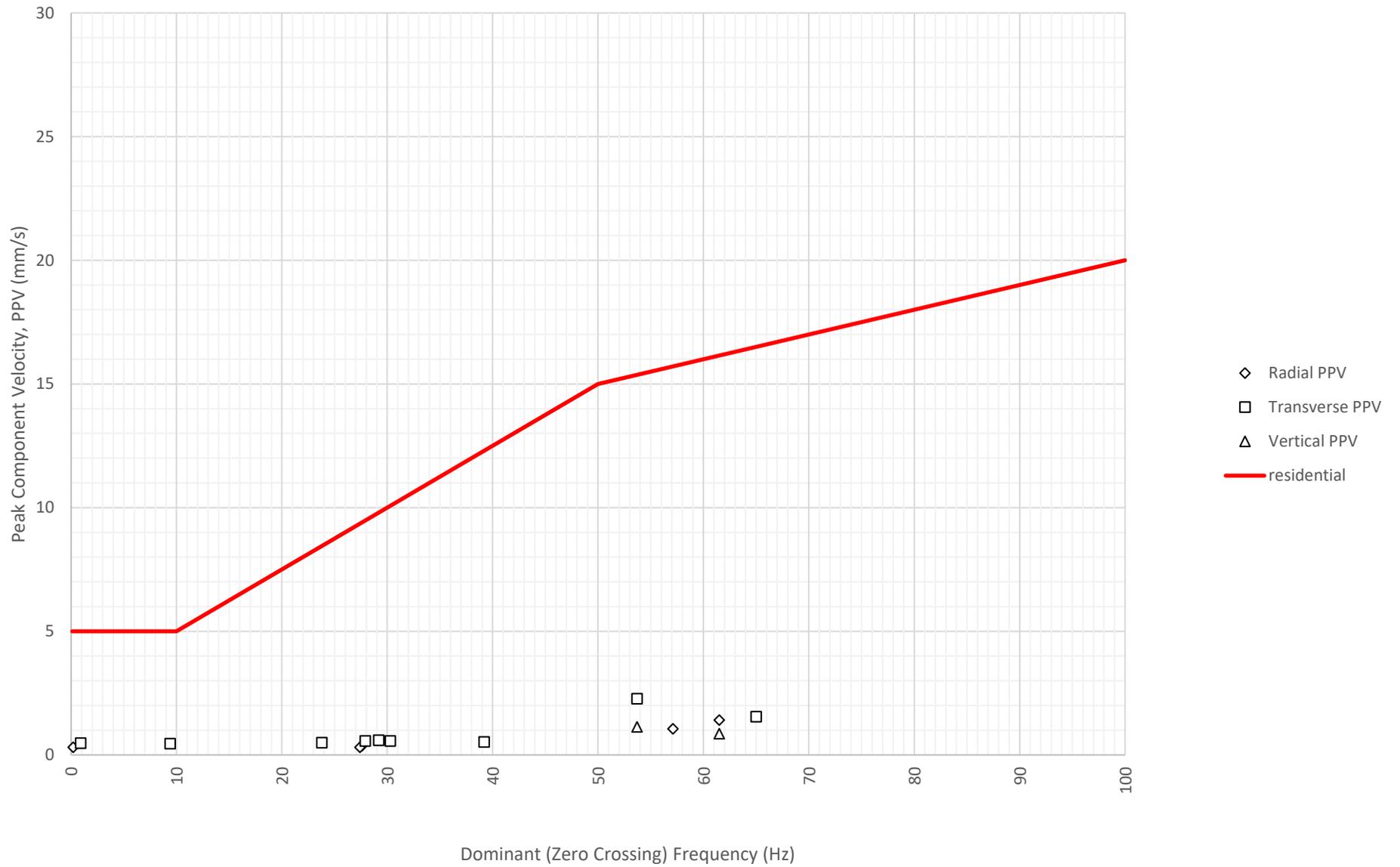
Frequency Content of Vibration Levels at M7715 Residential (east) on 24-09-2022



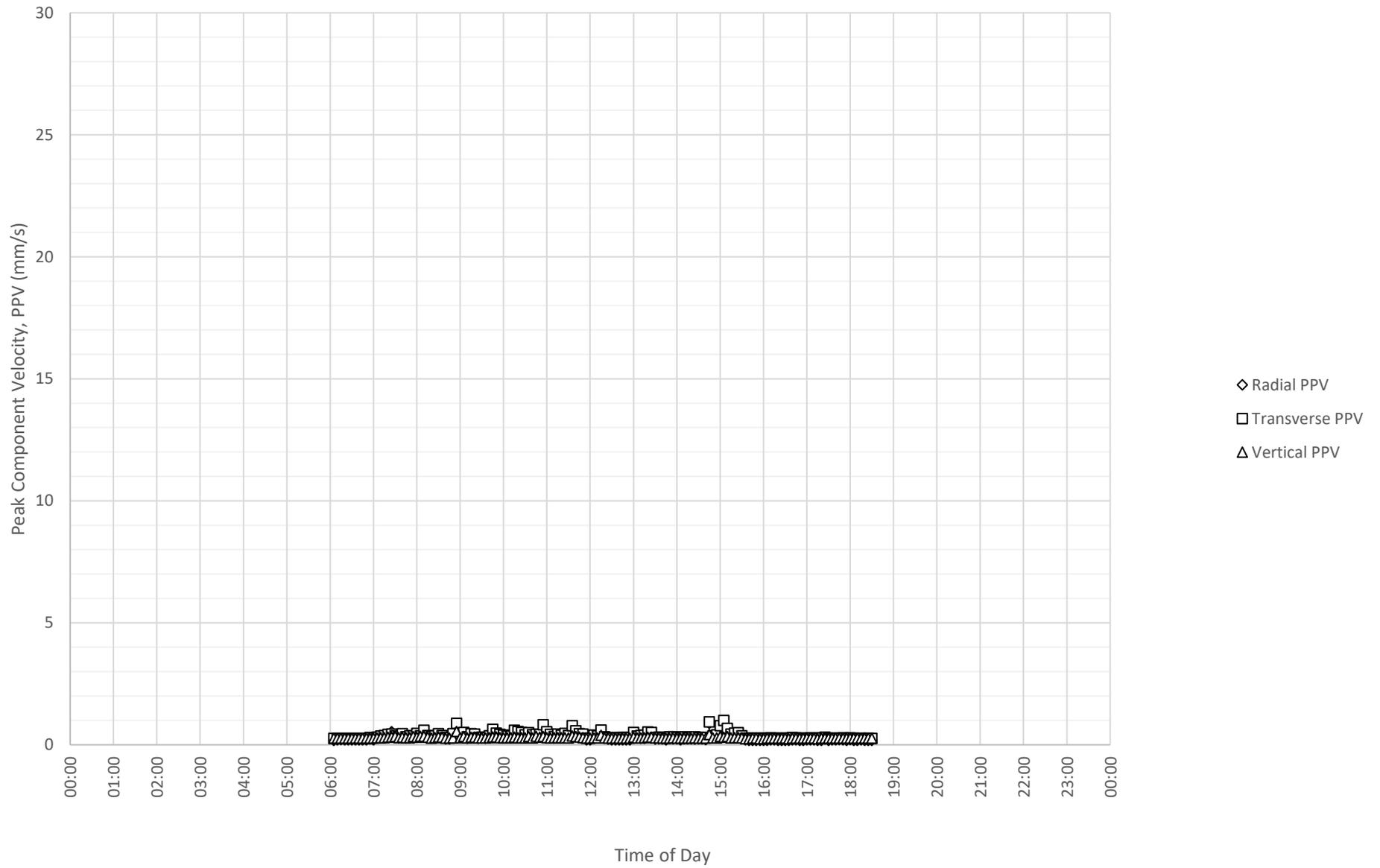
Daily Monitored Vibration Levels at M7715 Residential (east) on 25-09-2022



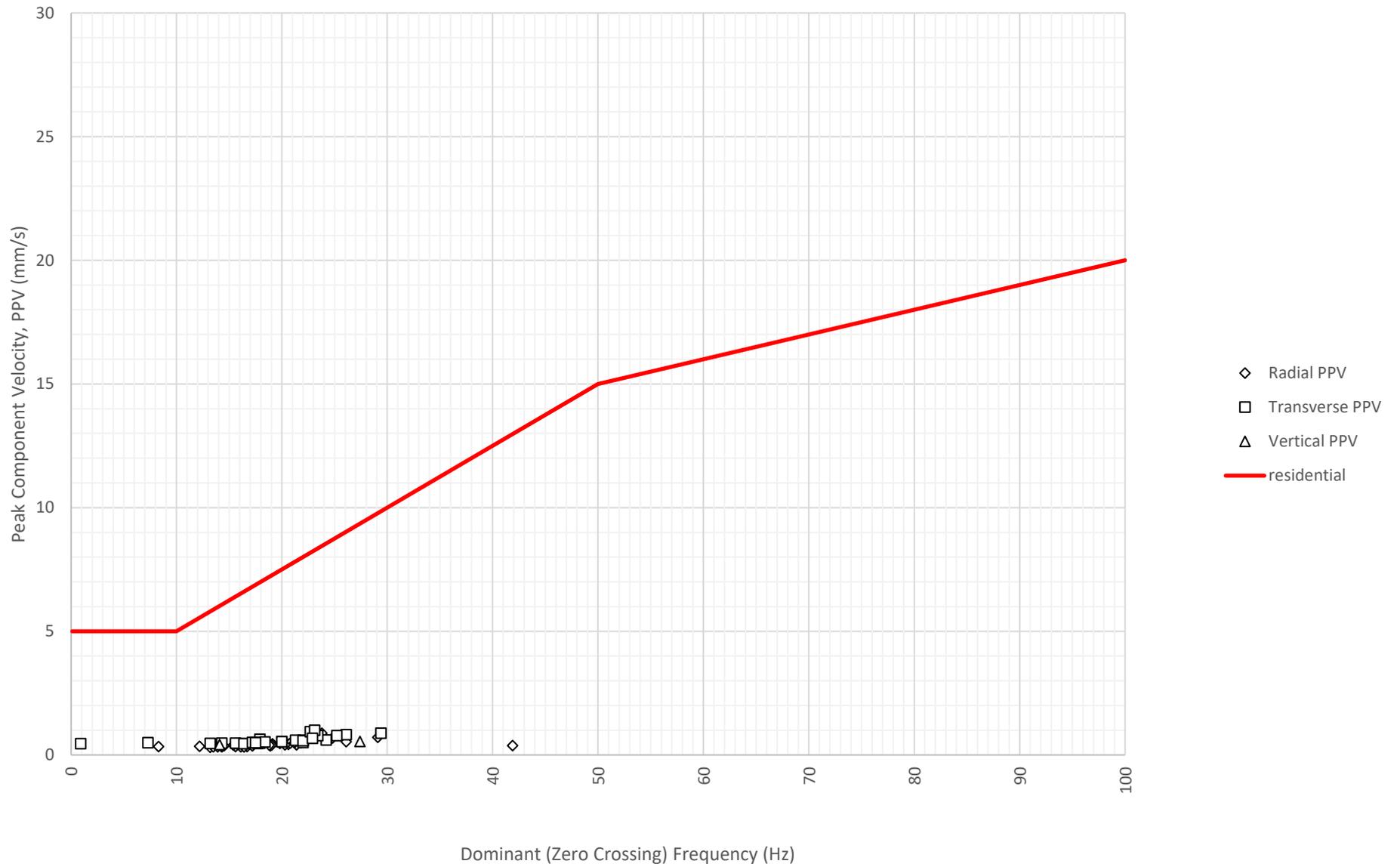
Frequency Content of Vibration Levels at M7715 Residential (east) on 25-09-2022



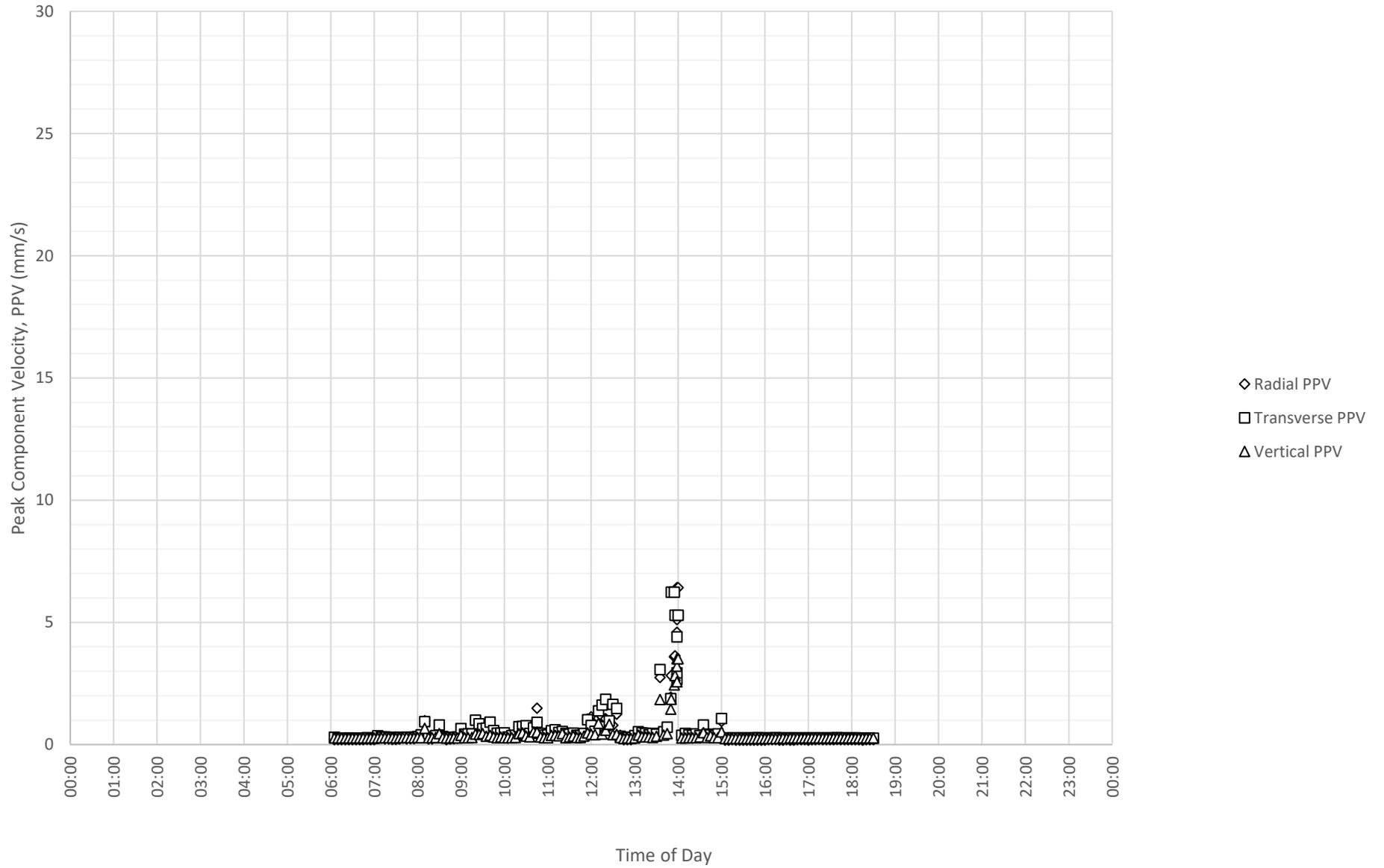
Daily Monitored Vibration Levels at M7715 Residential (east) on 26-09-2022



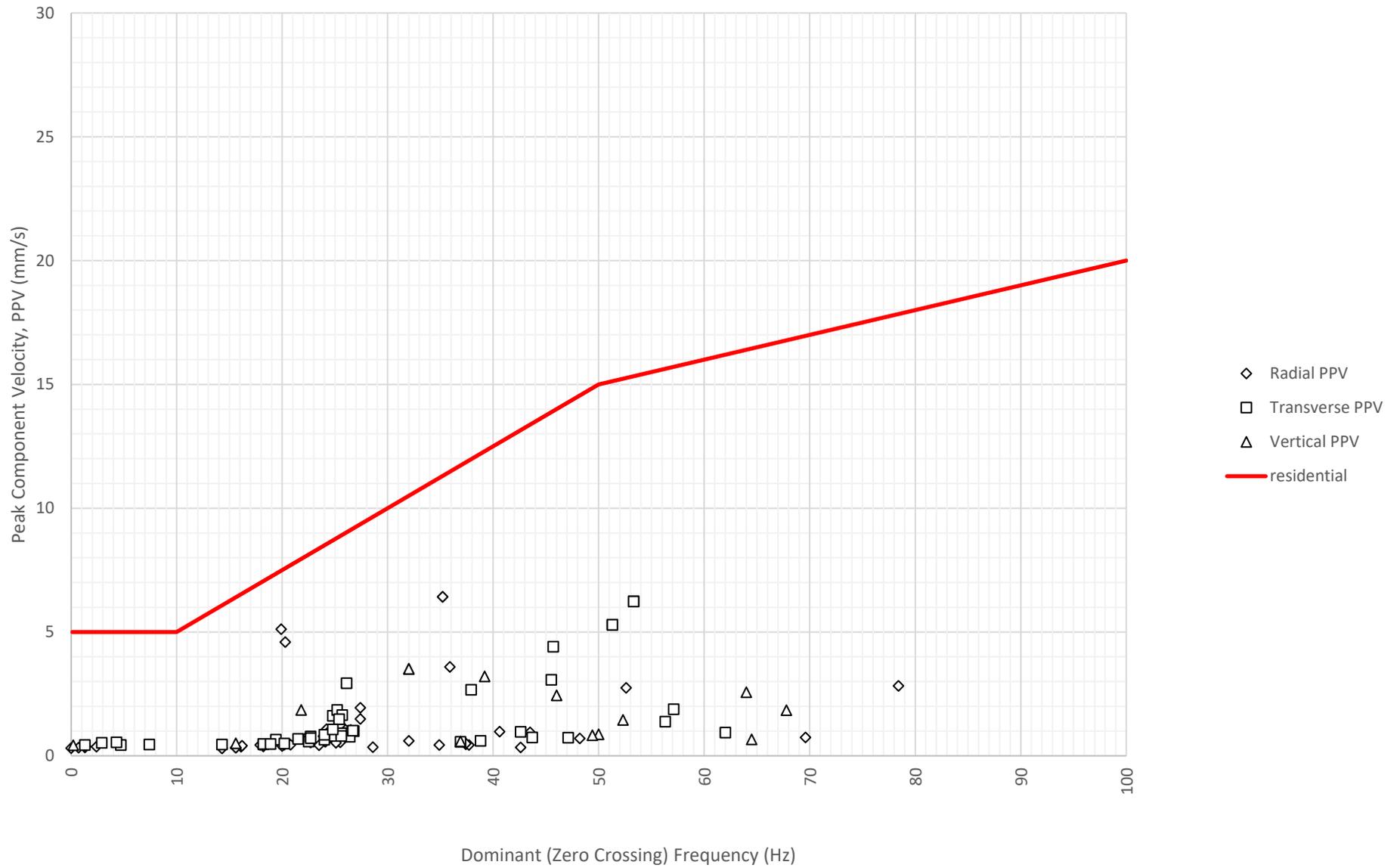
Frequency Content of Vibration Levels at M7715 Residential (east) on 26-09-2022



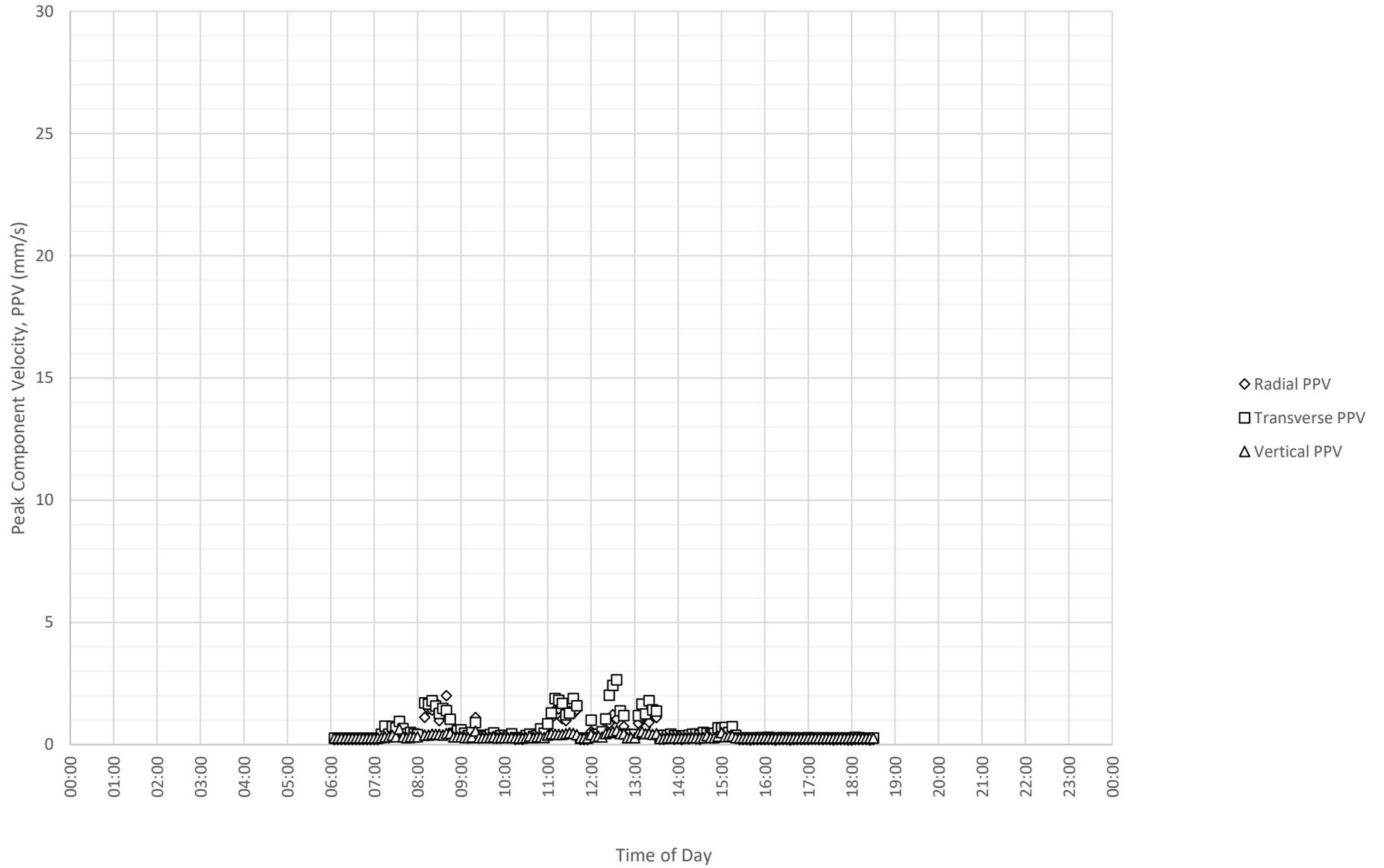
Daily Monitored Vibration Levels at M7715 Residential (east) on 27-09-2022



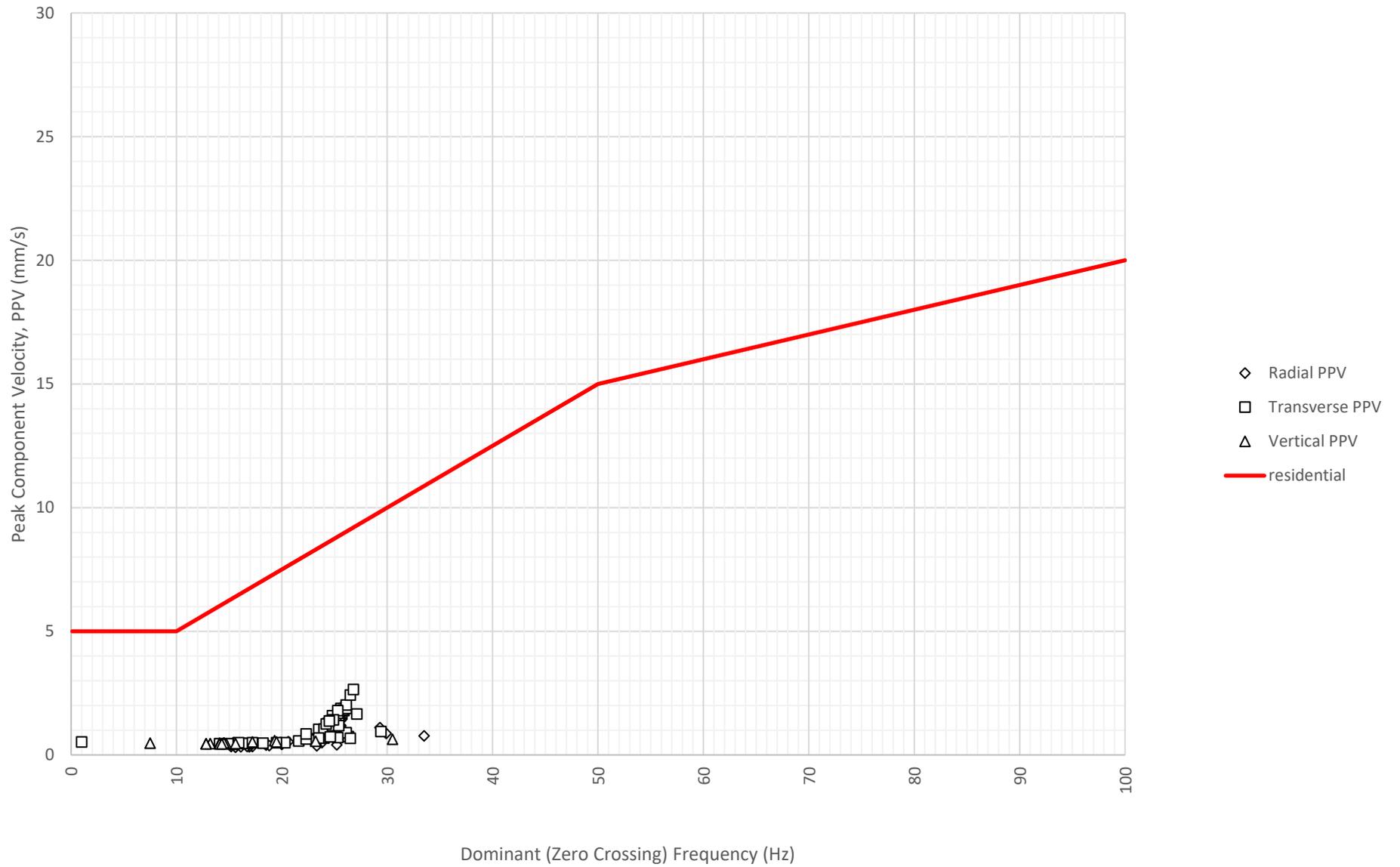
Frequency Content of Vibration Levels at M7715 Residential (east) on 27-09-2022



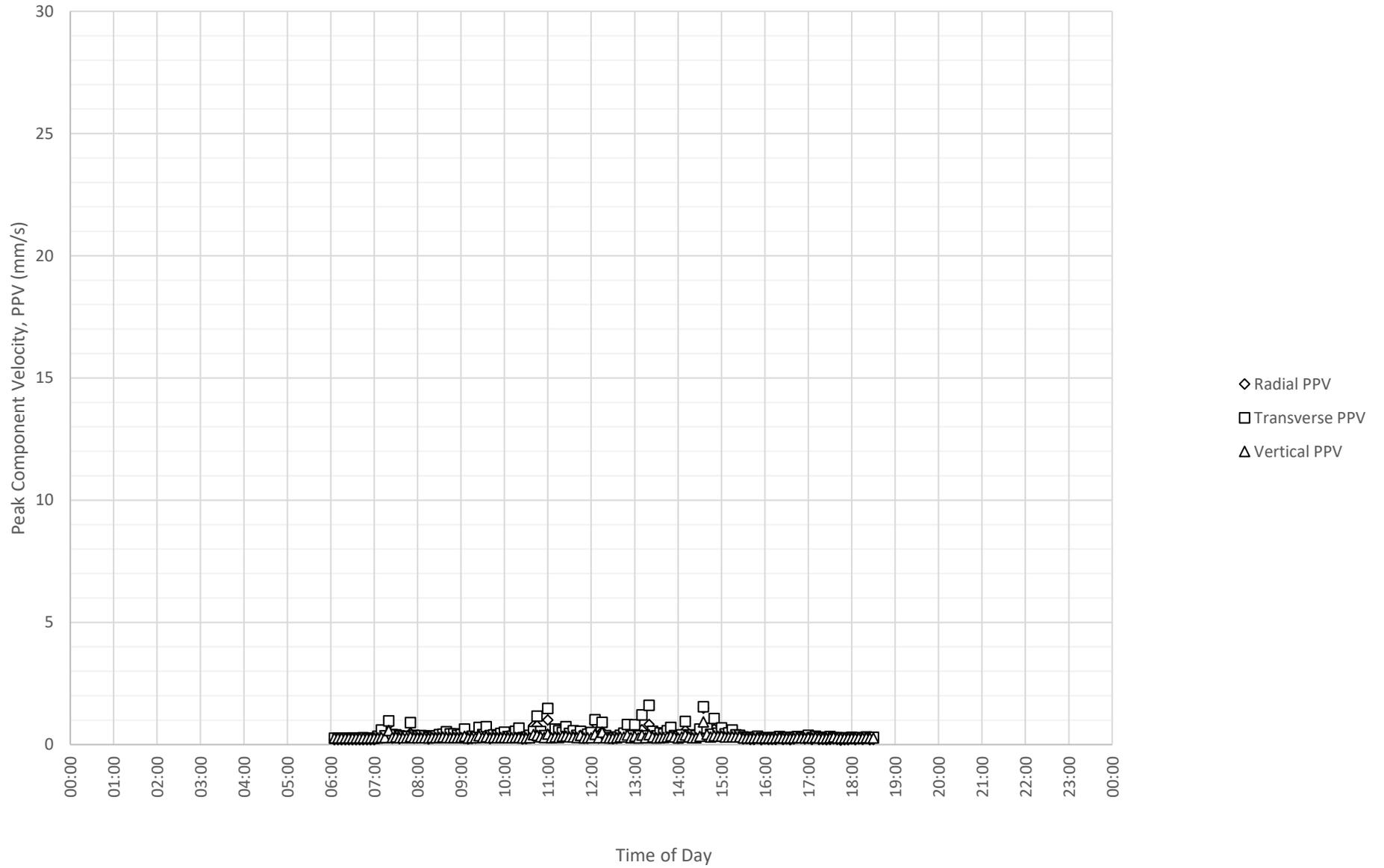
Daily Monitored Vibration Levels at M7715 Residential (east) on 28-09-2022



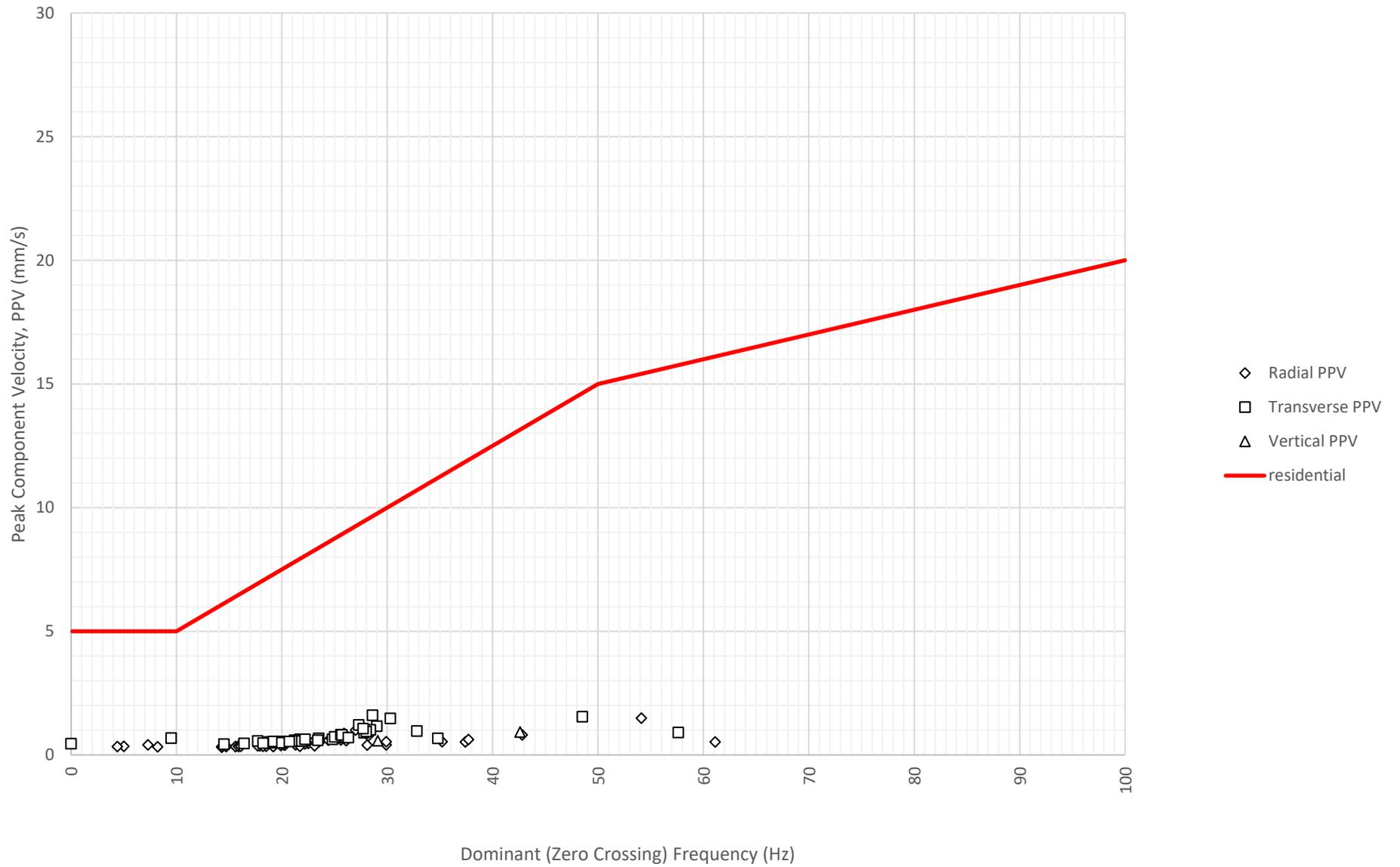
Frequency Content of Vibration Levels at M7715 Residential (east) on 28-09-2022



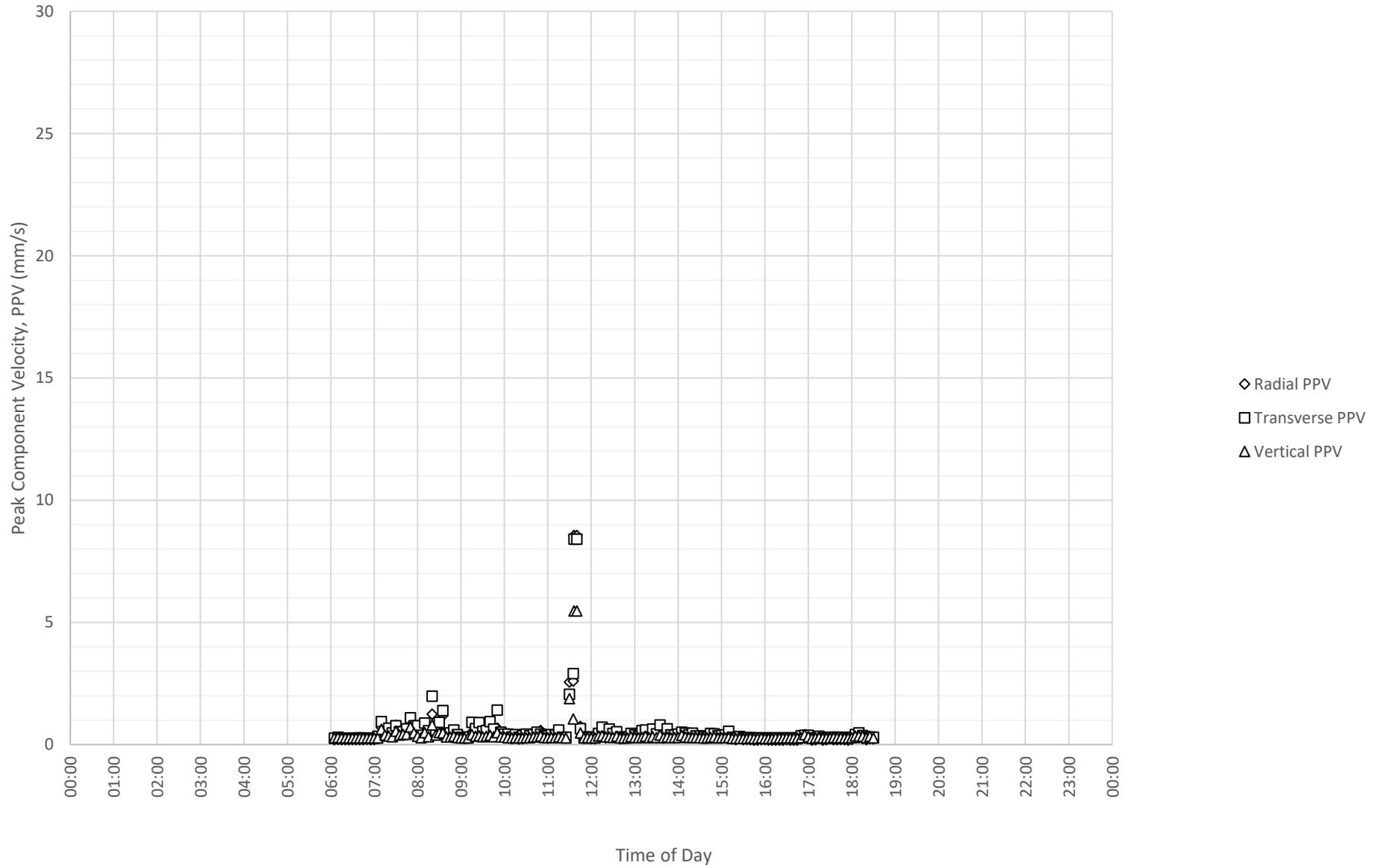
Daily Monitored Vibration Levels at M7715 Residential (east) on 29-09-2022



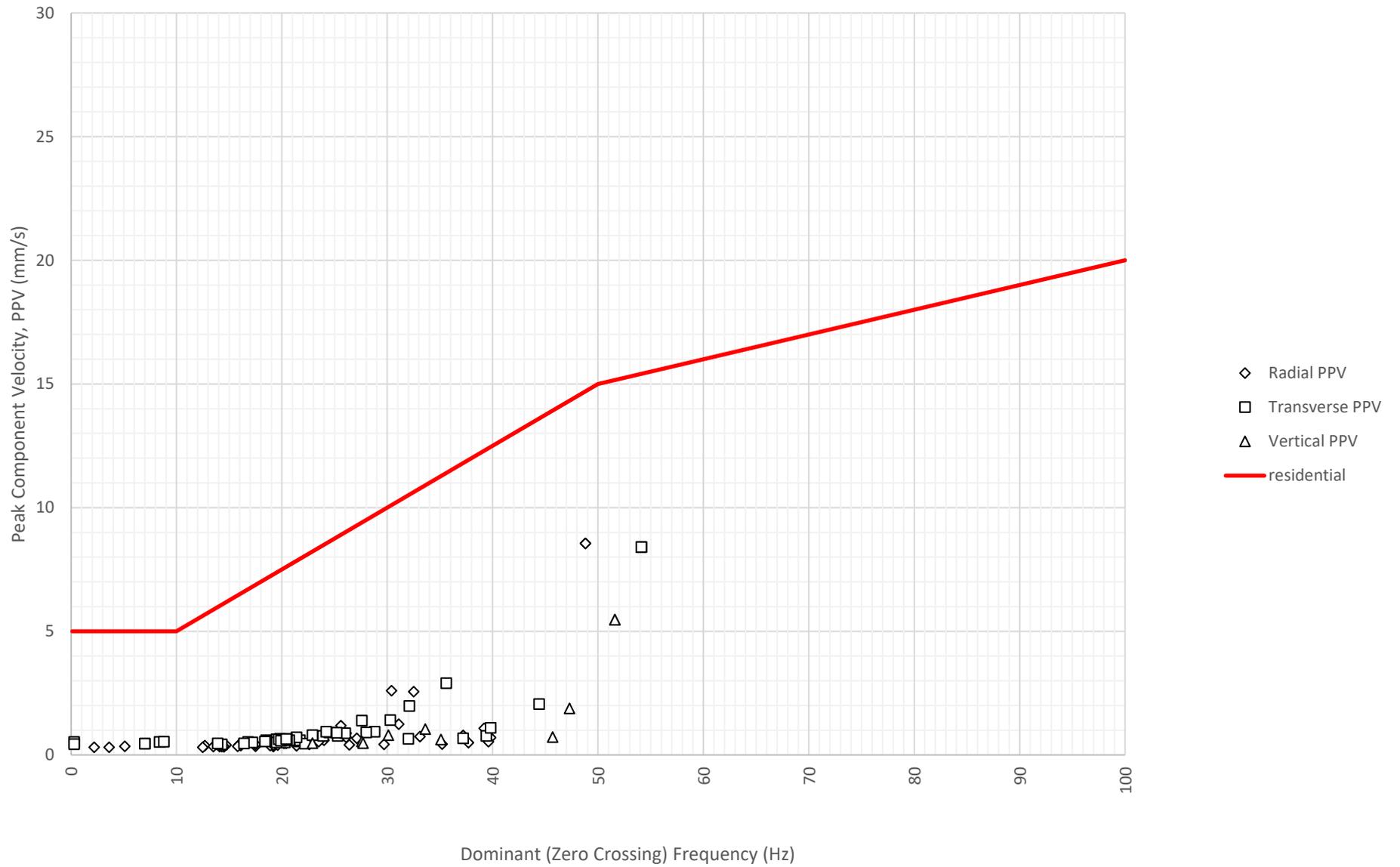
Frequency Content of Vibration Levels at M7715 Residential (east) on 29-09-2022



Daily Monitored Vibration Levels at M7715 Residential (east) on 30-09-2022



Frequency Content of Vibration Levels at M7715 Residential (east) on 30-09-2022



APPENDIX 4: UNATTENDED NOISE MONITORING DAILY GRAPHS (N1)



Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -

Roseville N1 Location
10/09/2022



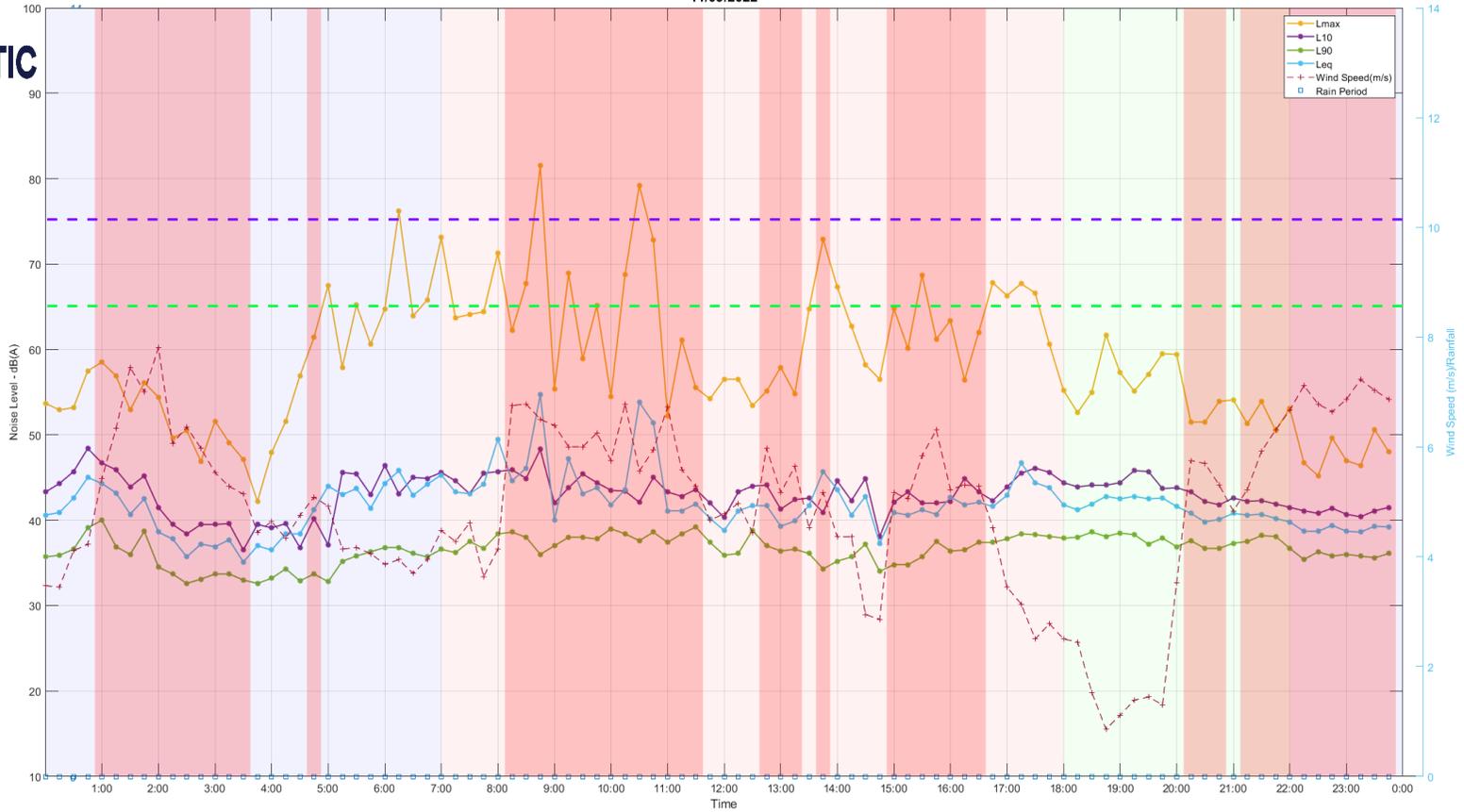
Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -



Roseville N1 Location
11/09/2022



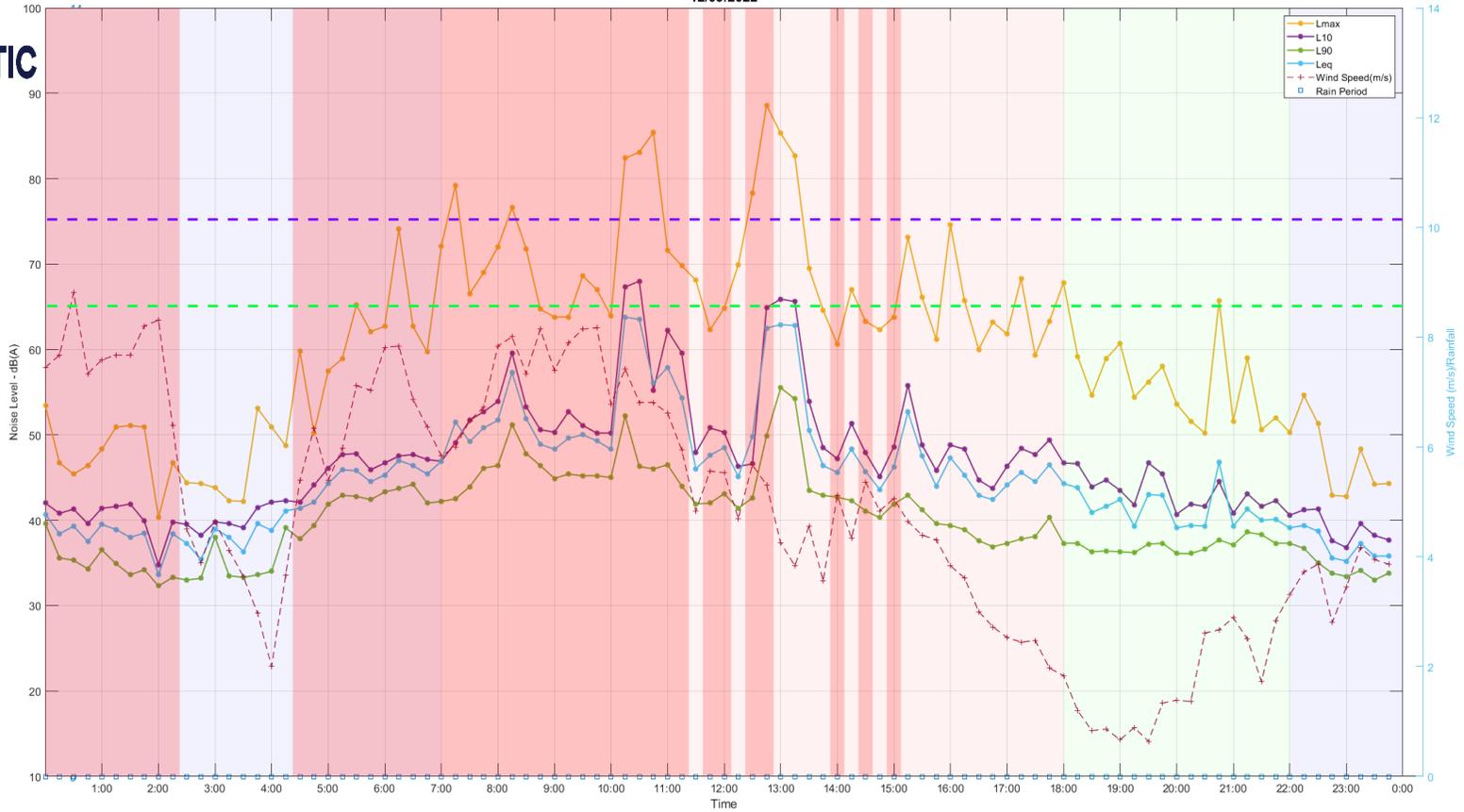
Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -



Roseville N1 Location
12/09/2022



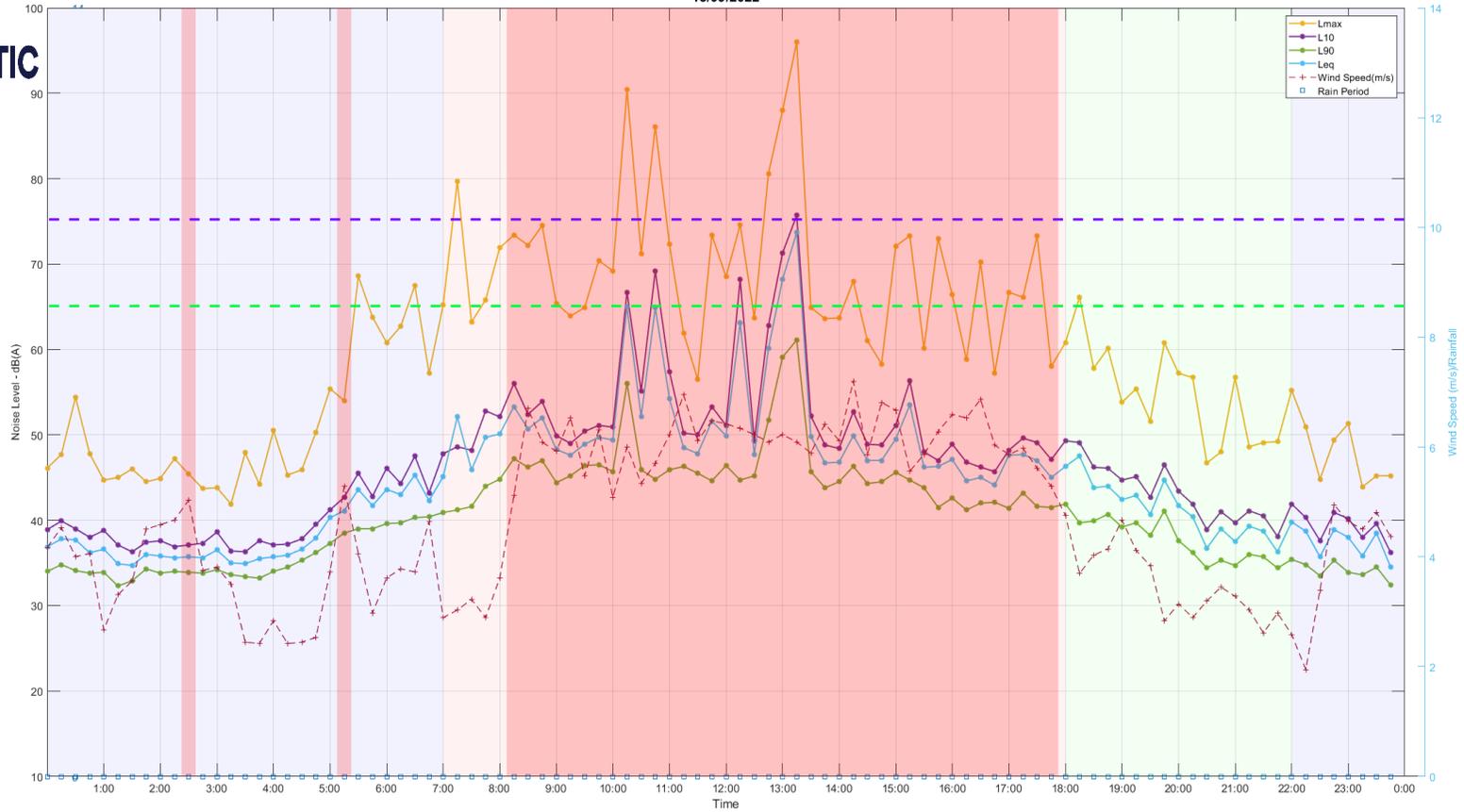


Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -

Roseville N1 Location
13/09/2022



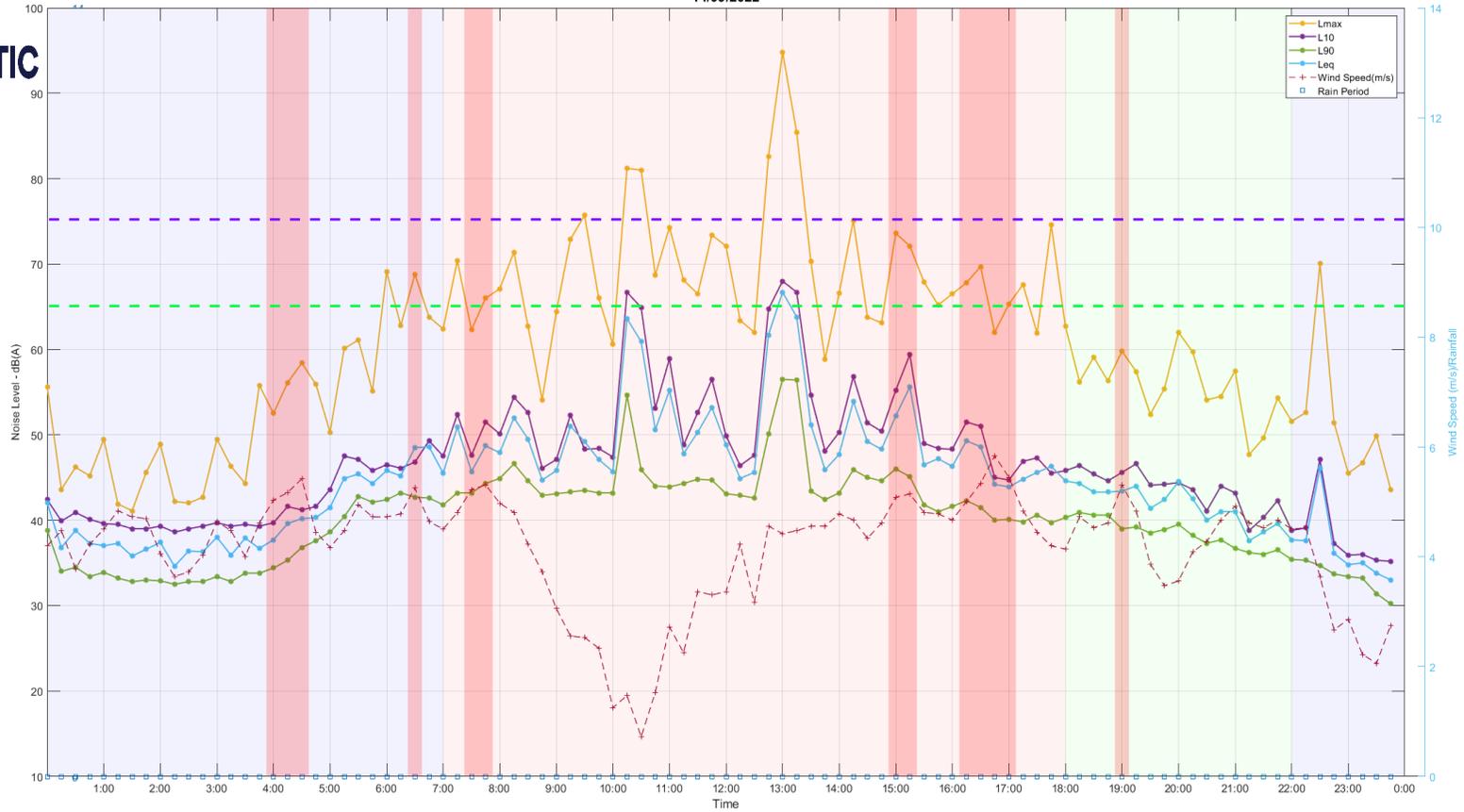


Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -

Roseville N1 Location
14/09/2022

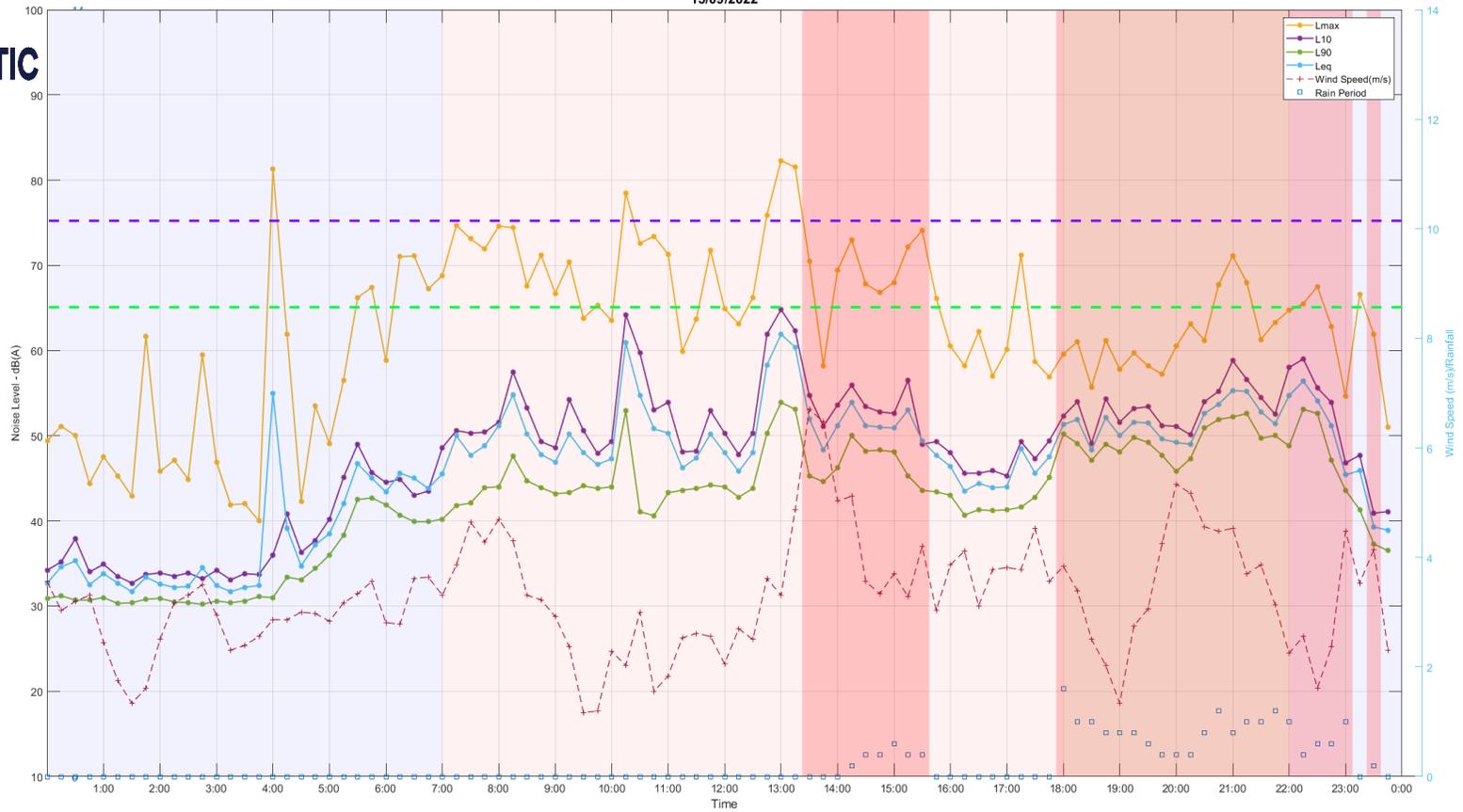


Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -

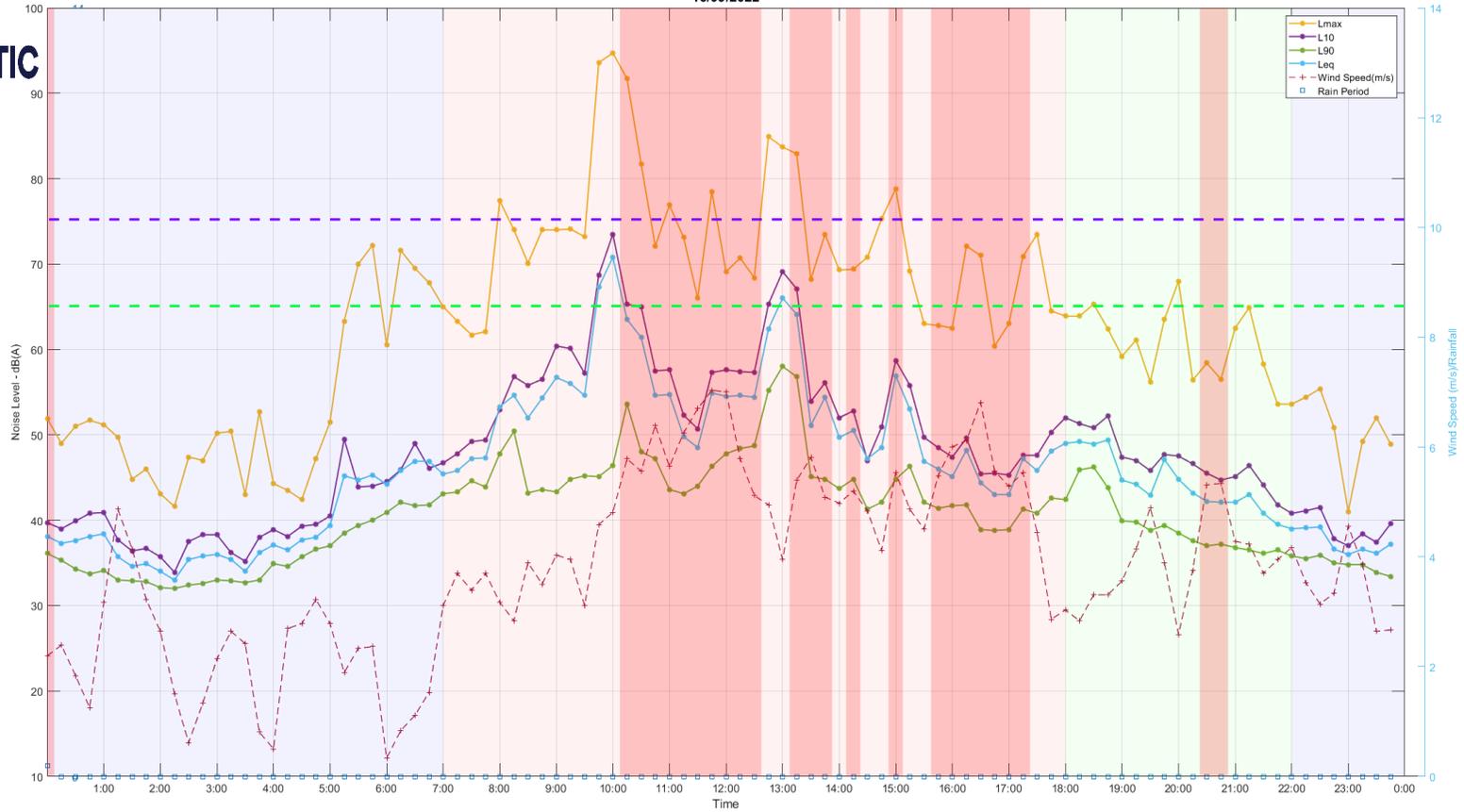
Roseville N1 Location
15/09/2022





Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq
Highly Noise Affected Level- 75 dB(A)Leq

Roseville N1 Location
16/09/2022



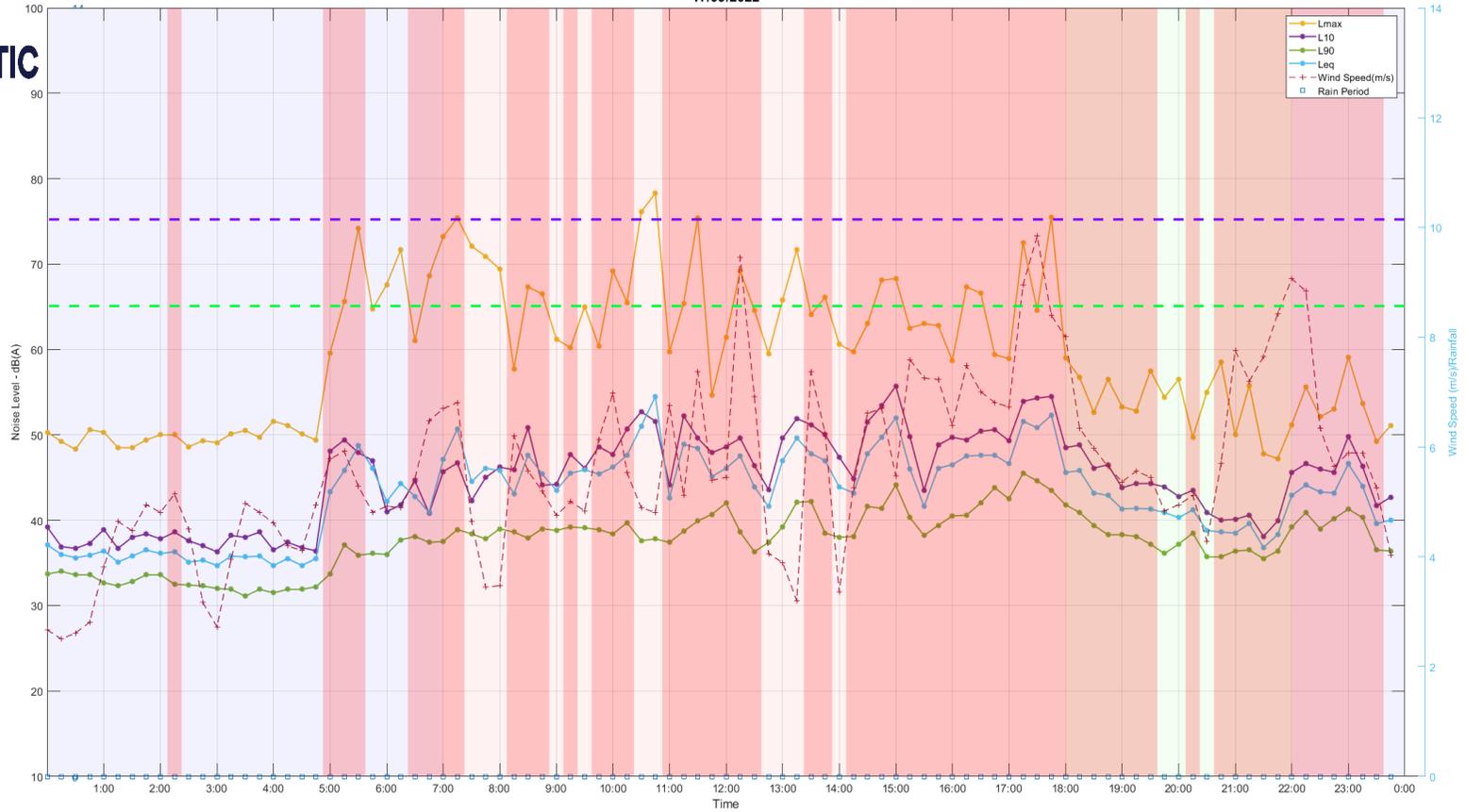
Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -



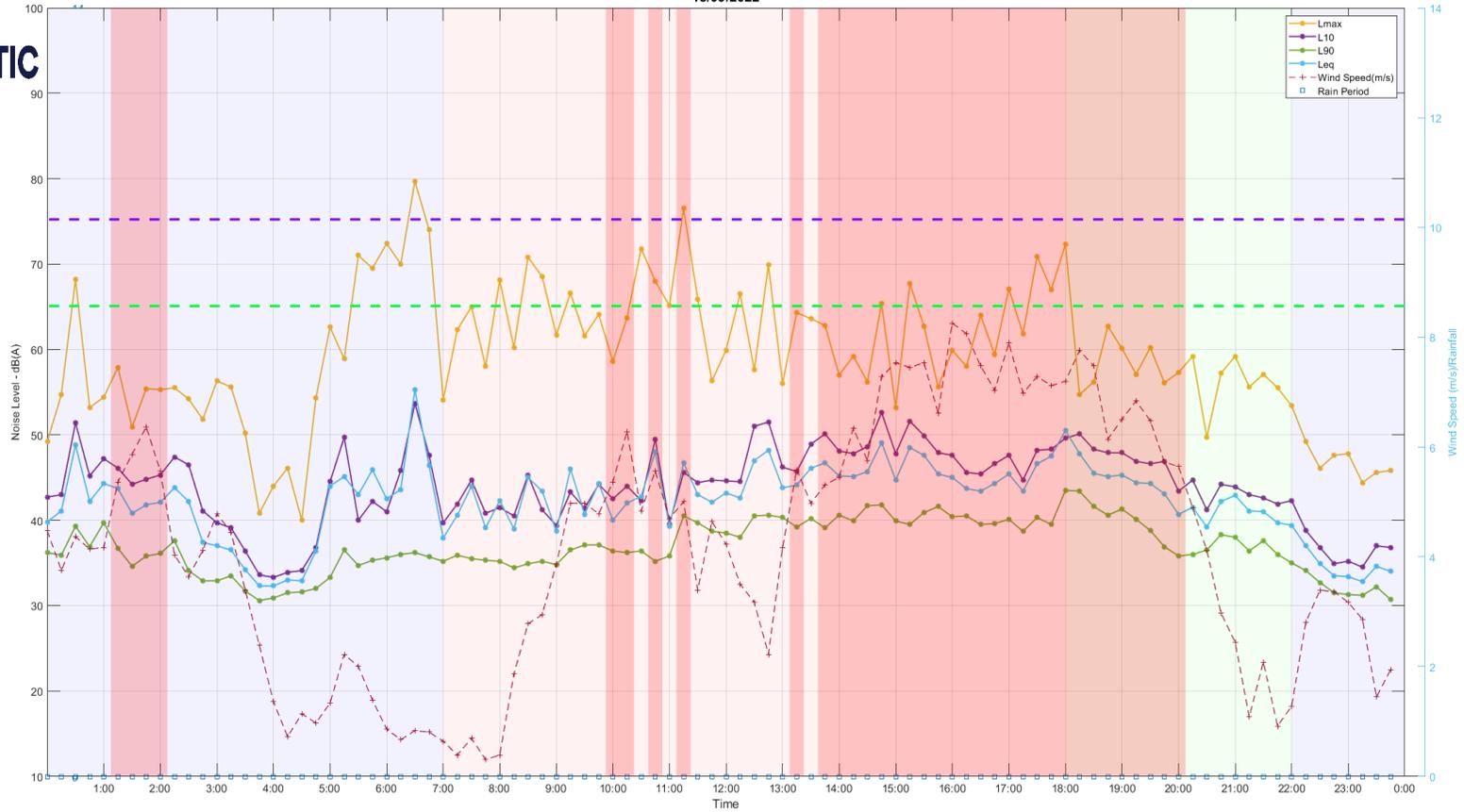
Roseville N1 Location
17/09/2022





Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq
Highly Noise Affected Level- 75 dB(A)Leq

Roseville N1 Location
18/09/2022



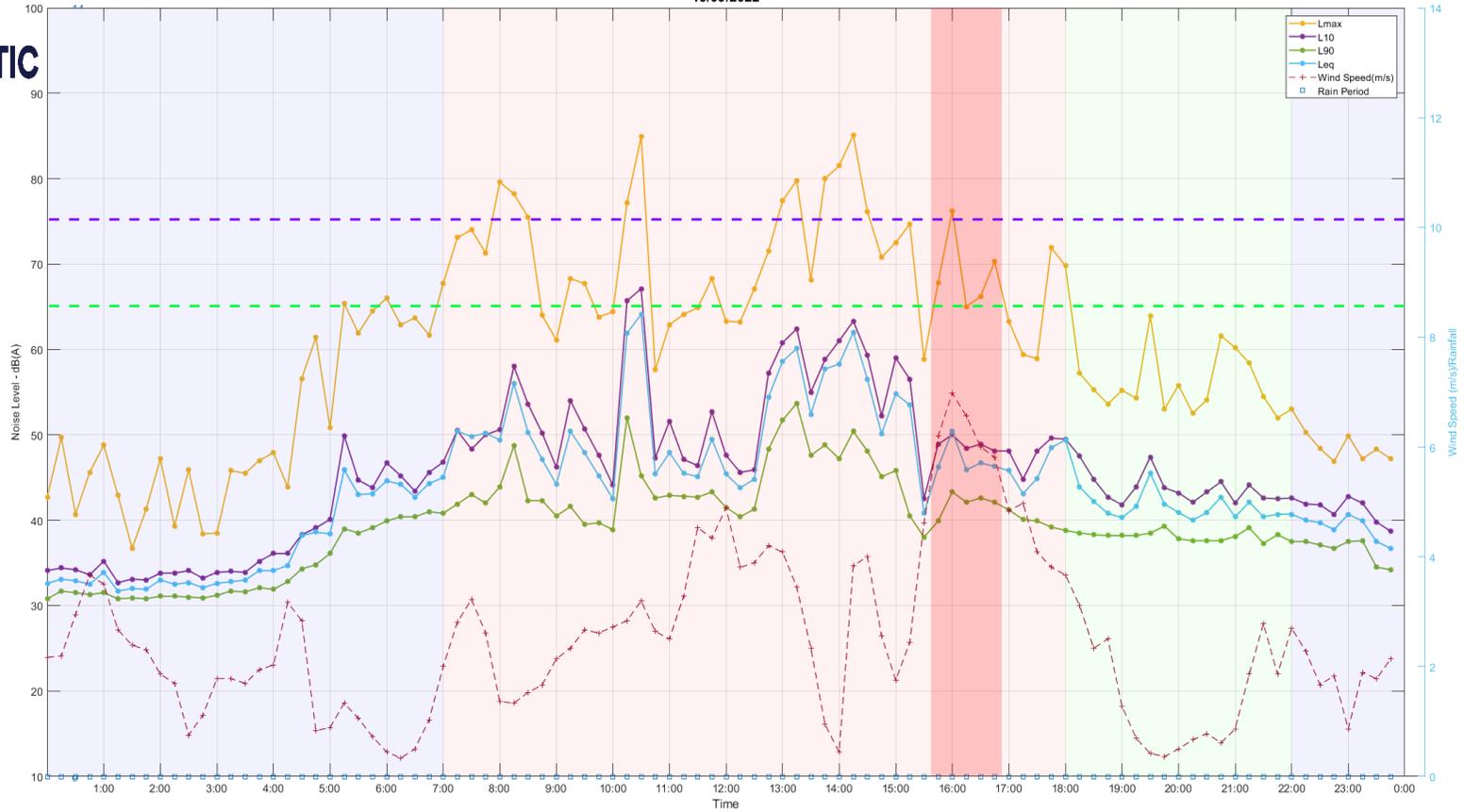


Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -

Roseville N1 Location
19/09/2022



Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -



Roseville N1 Location
20/09/2022



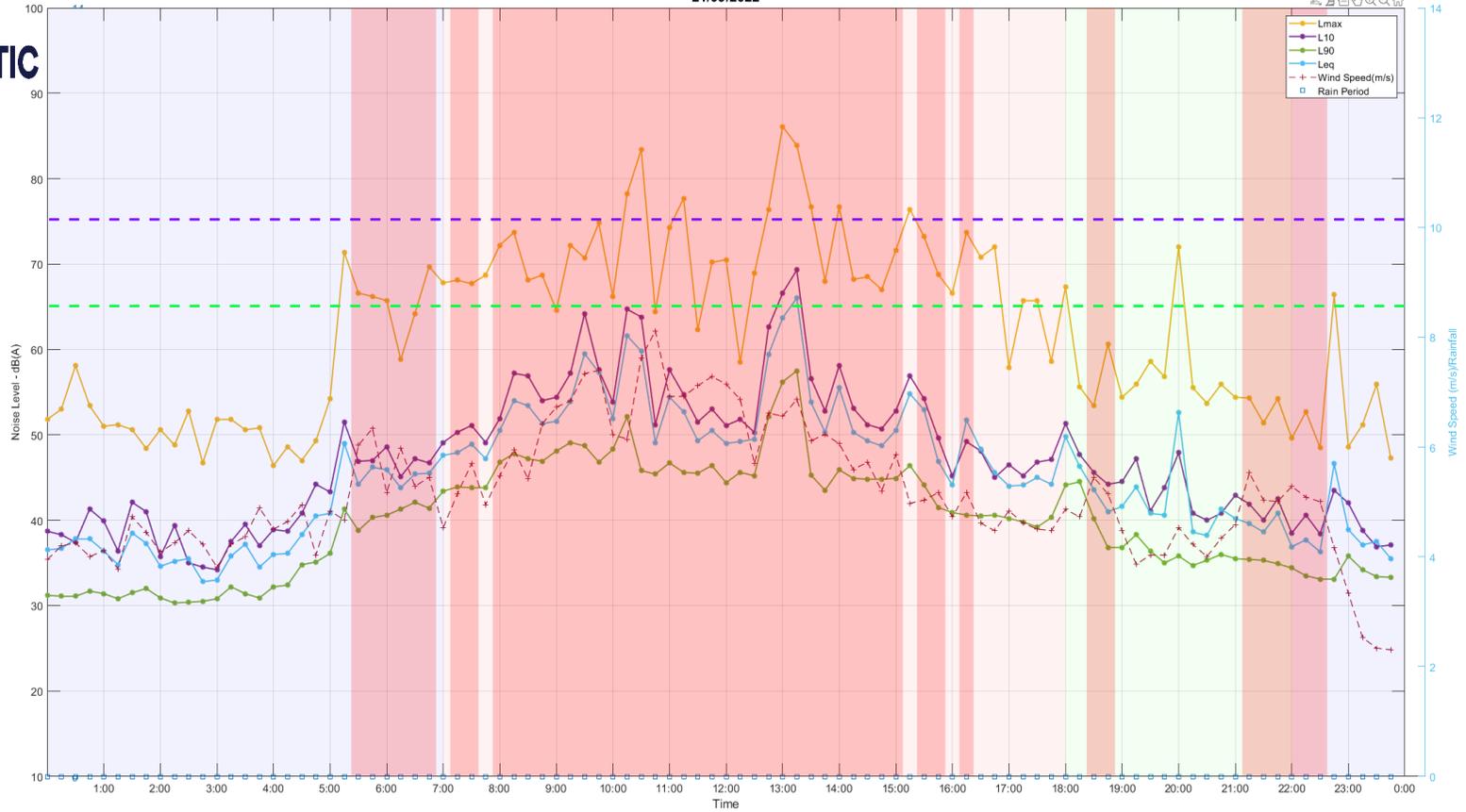
Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq

Highly Noise Affected Level- 75 dB(A)Leq



Roseville N1 Location
21/09/2022



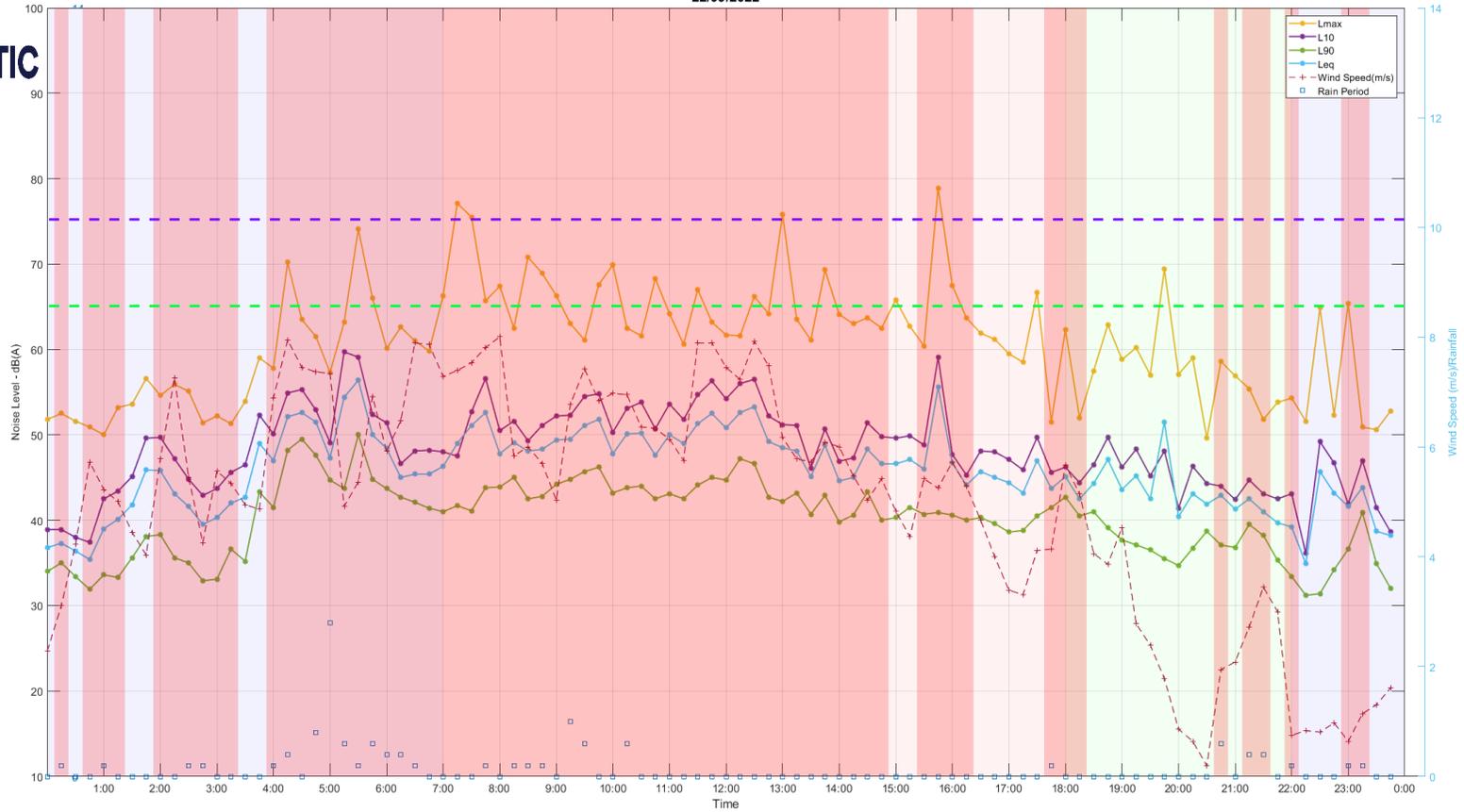


Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -

Roseville N1 Location
22/09/2022

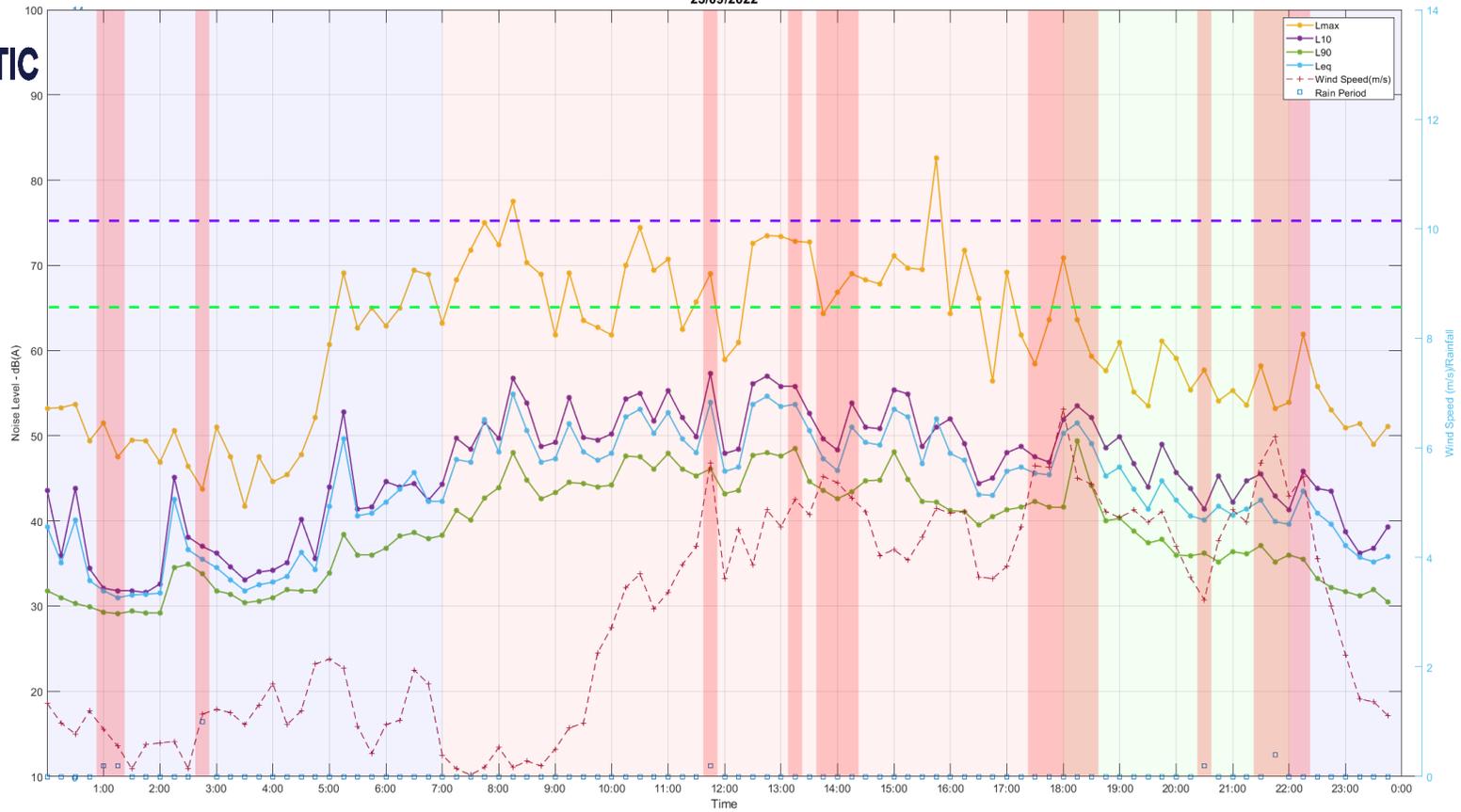


Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -

Roseville N1 Location
23/09/2022

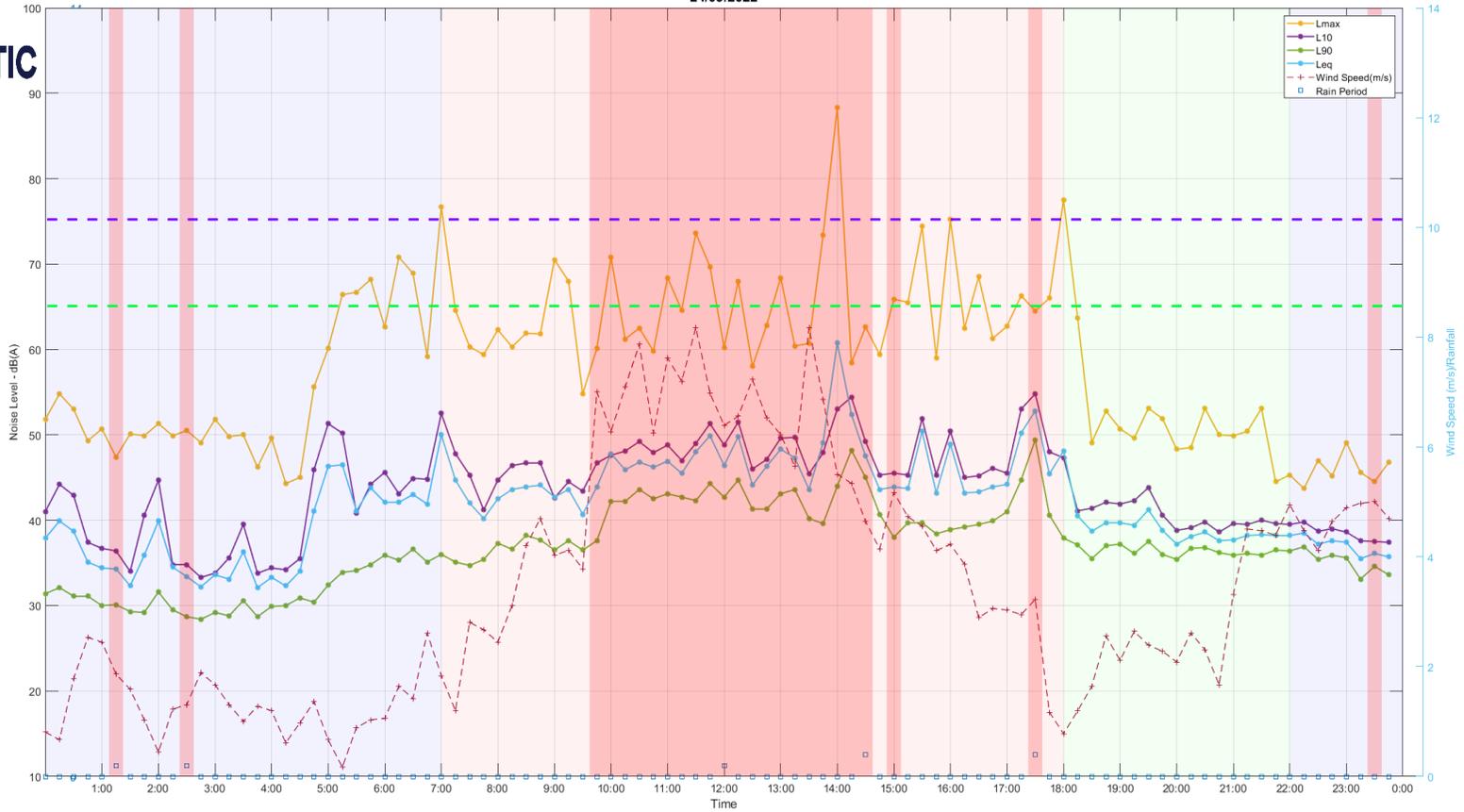




Noise Management Levels

- Active Recreation Areas - 65 dB(A)Leq
- Highly Noise Affected Level- 75 dB(A)Leq

Roseville N1 Location
24/09/2022



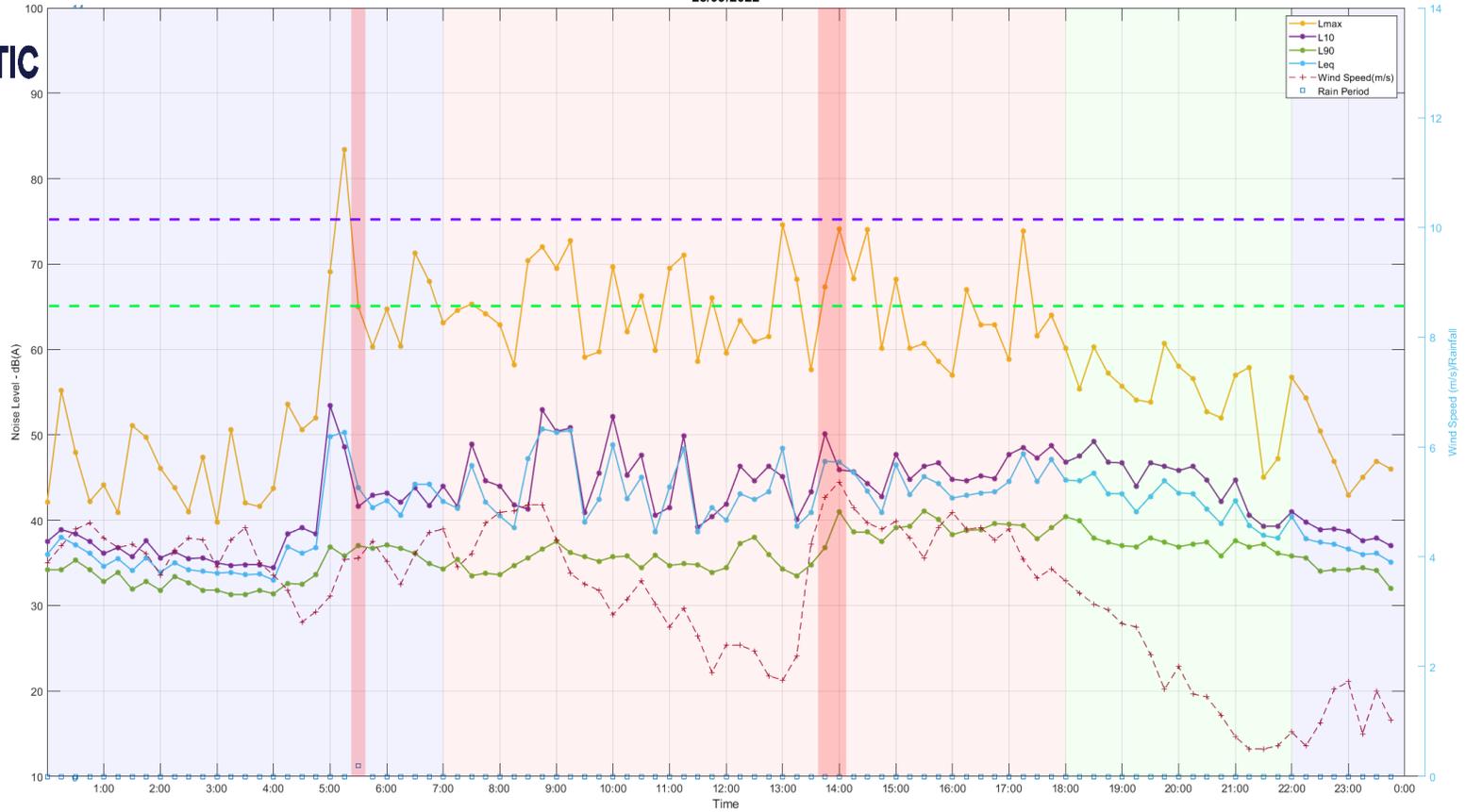


Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -

Roseville N1 Location
25/09/2022



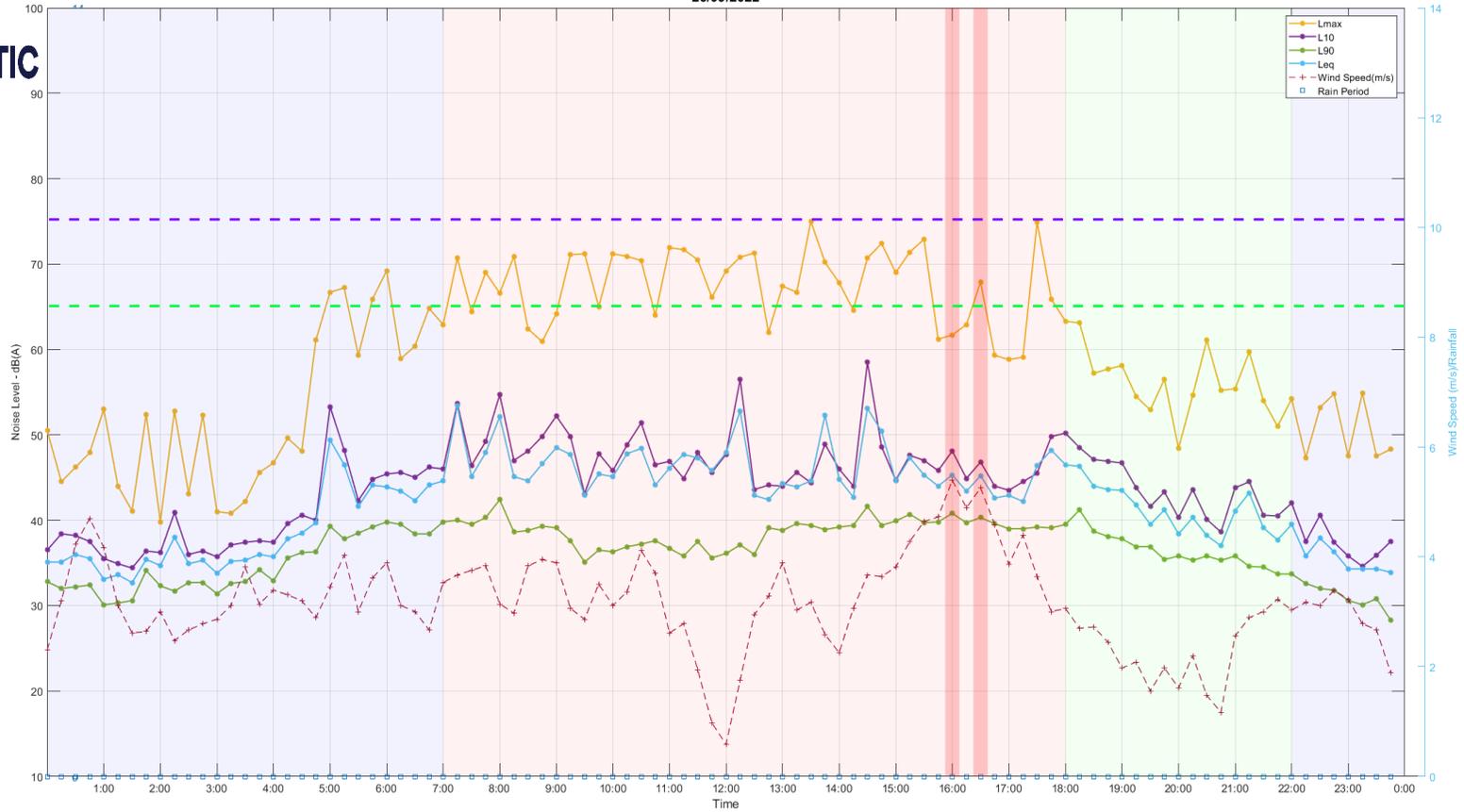


Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -

Roseville N1 Location
26/09/2022



Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -



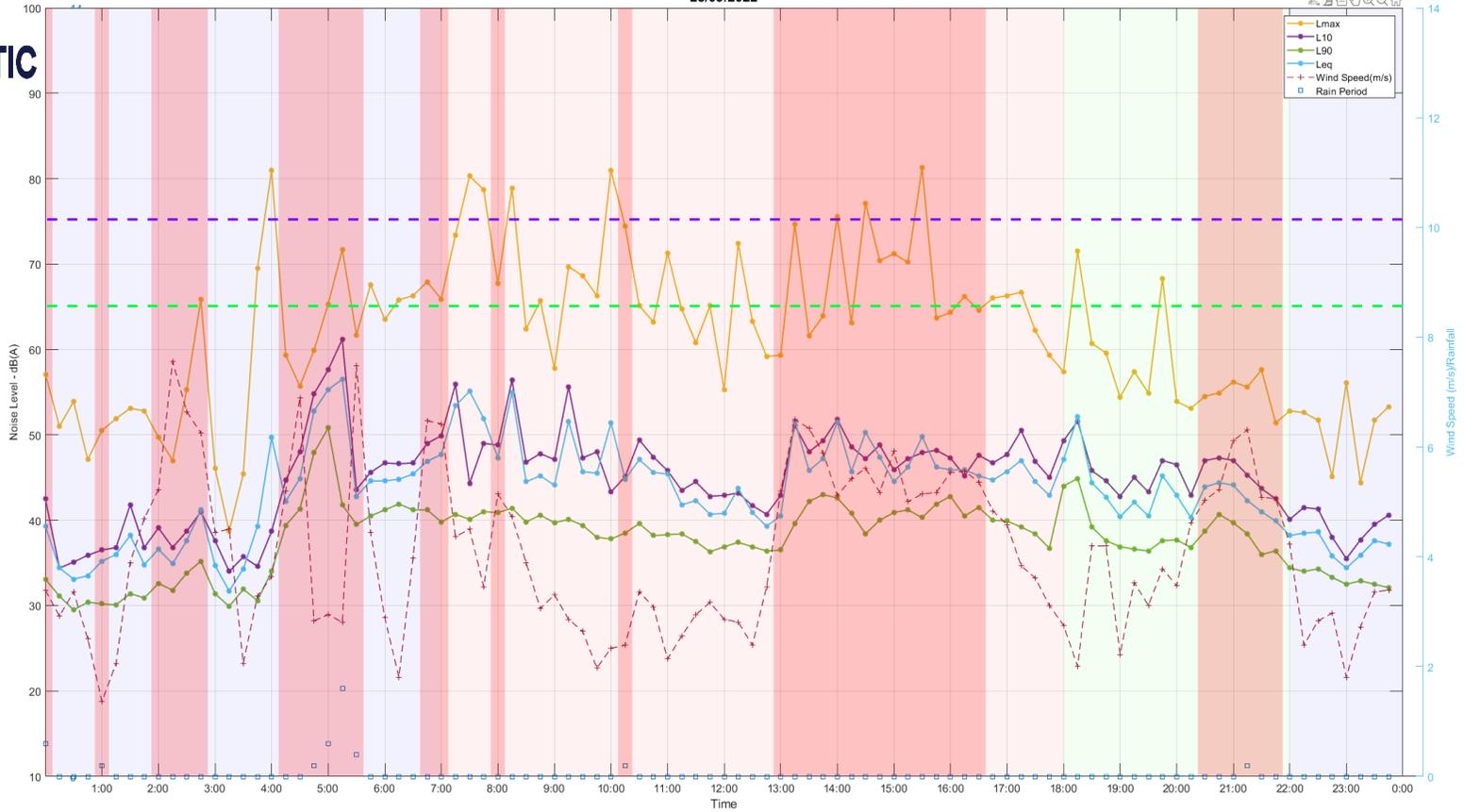
Roseville N1 Location
27/09/2022





Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq
Highly Noise Affected Level- 75 dB(A)Leq

Roseville N1 Location
28/09/2022

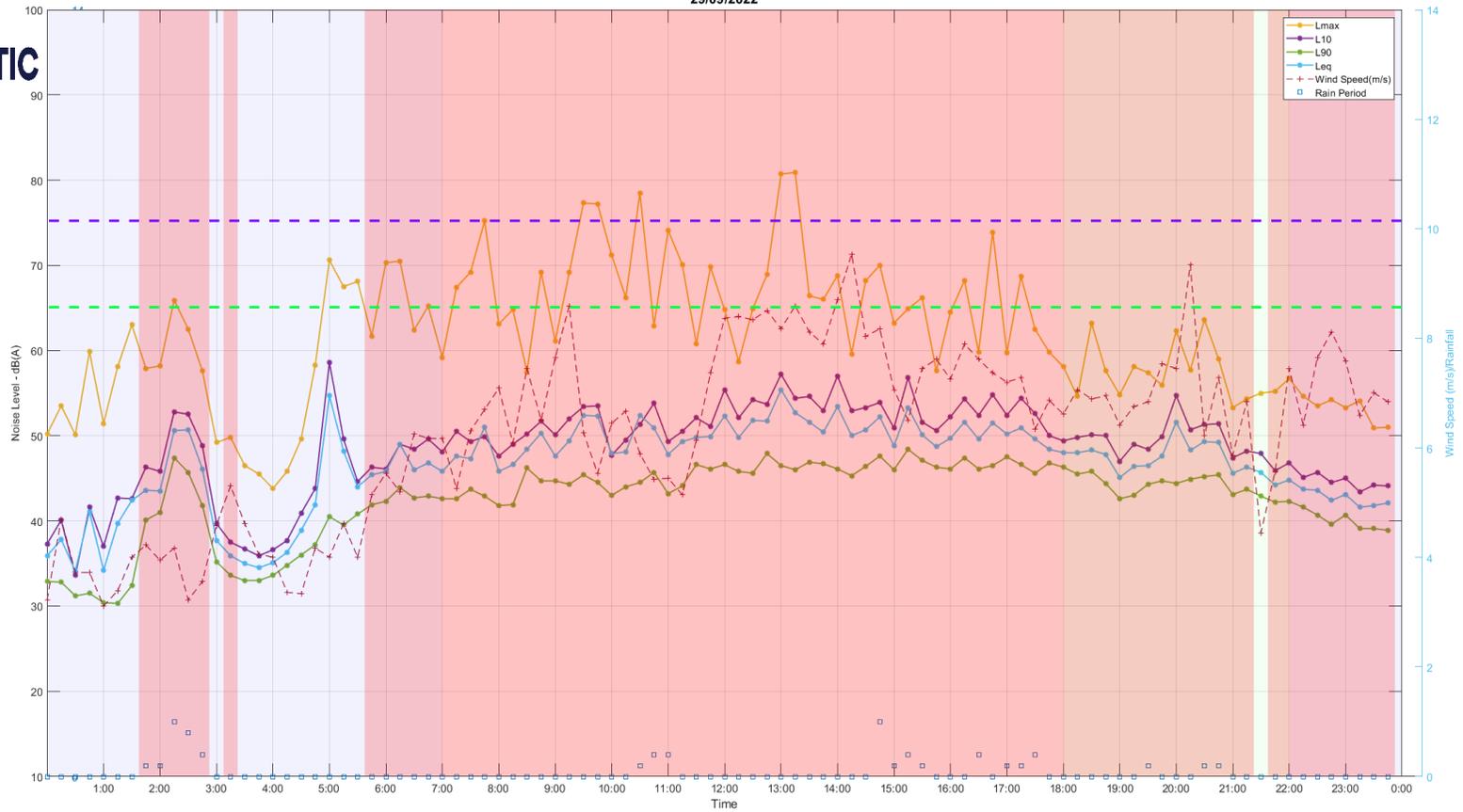


Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -

Roseville N1 Location
29/09/2022

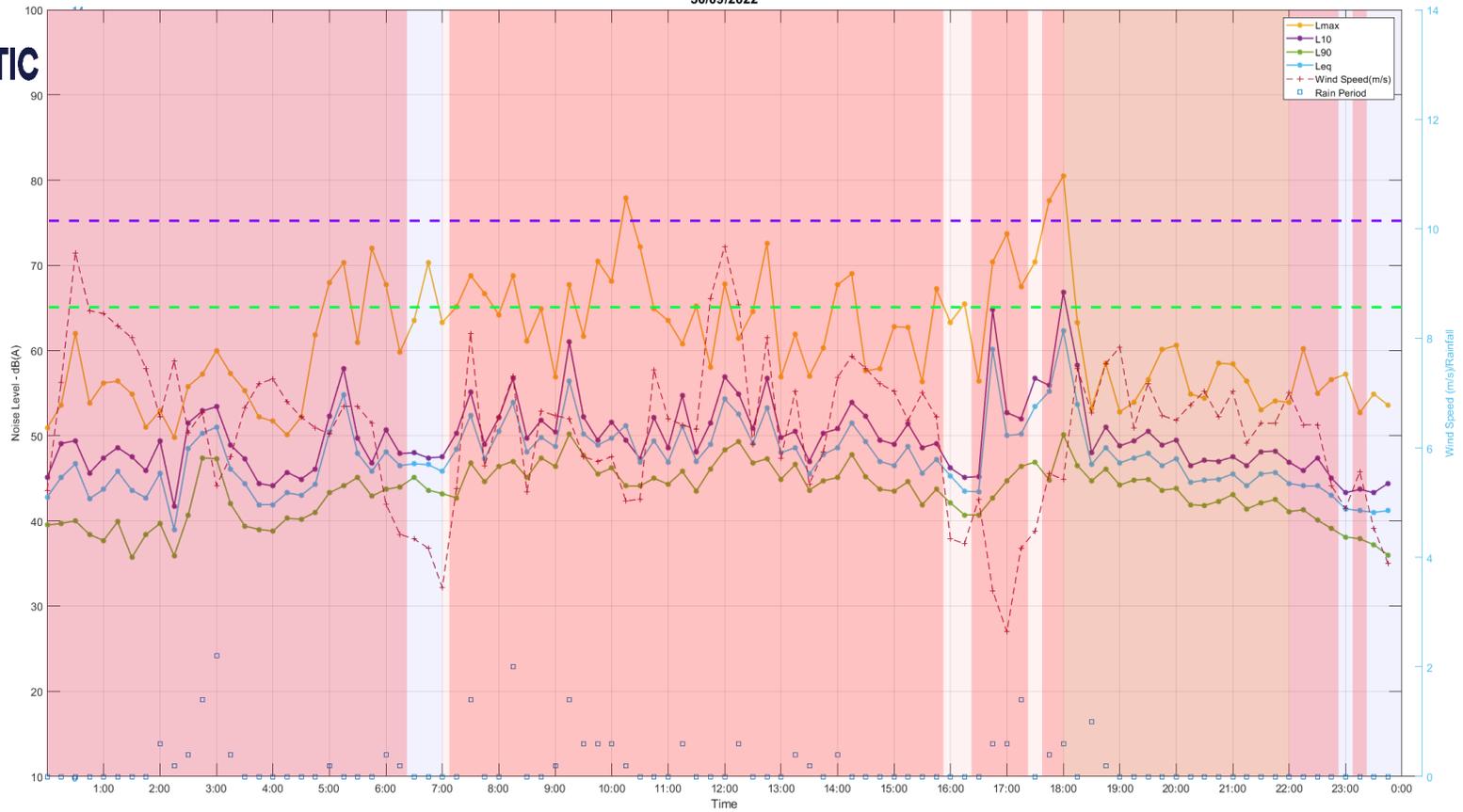


Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - -

Roseville N1 Location
30/09/2022



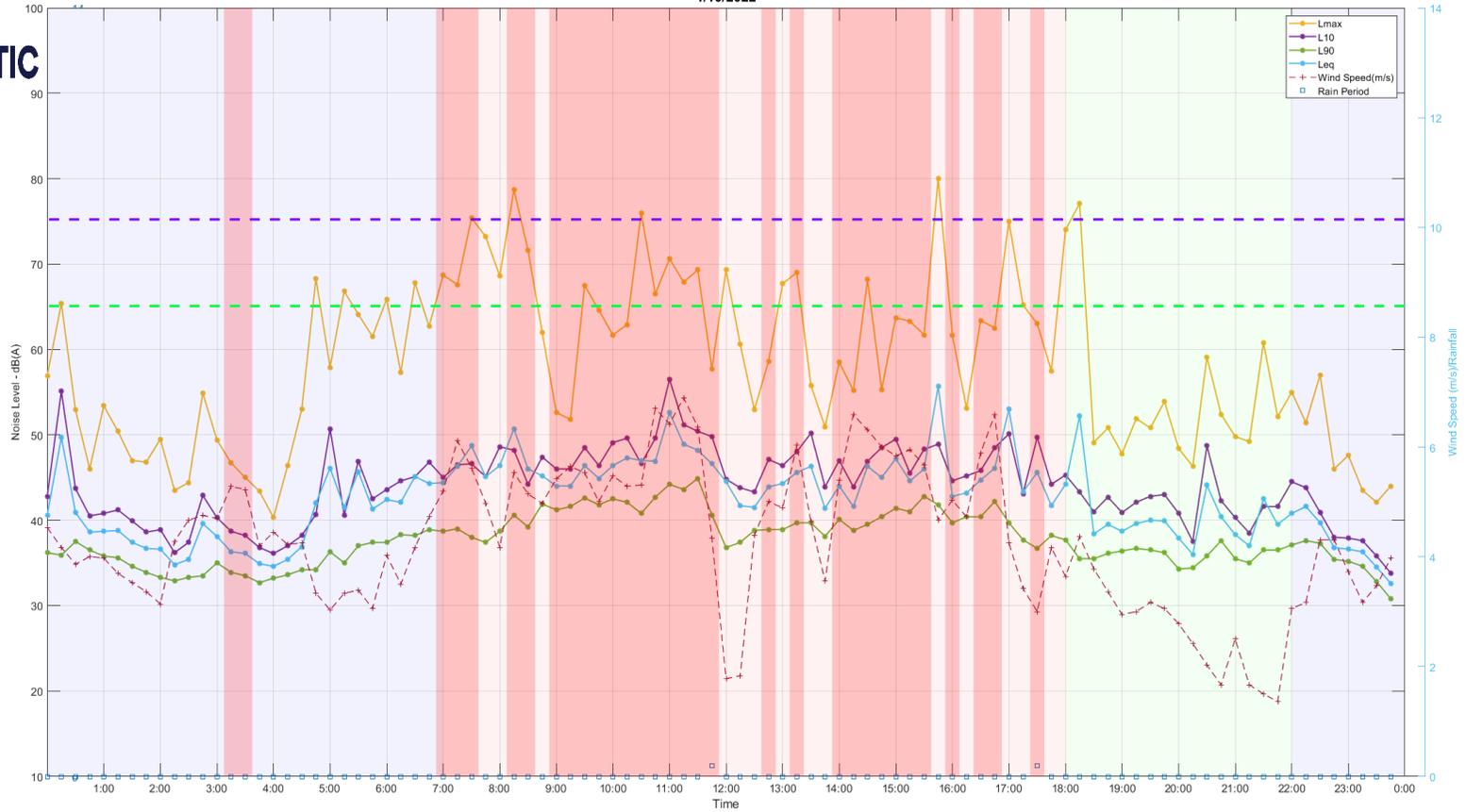
Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -



Roseville N1 Location
1/10/2022



Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -



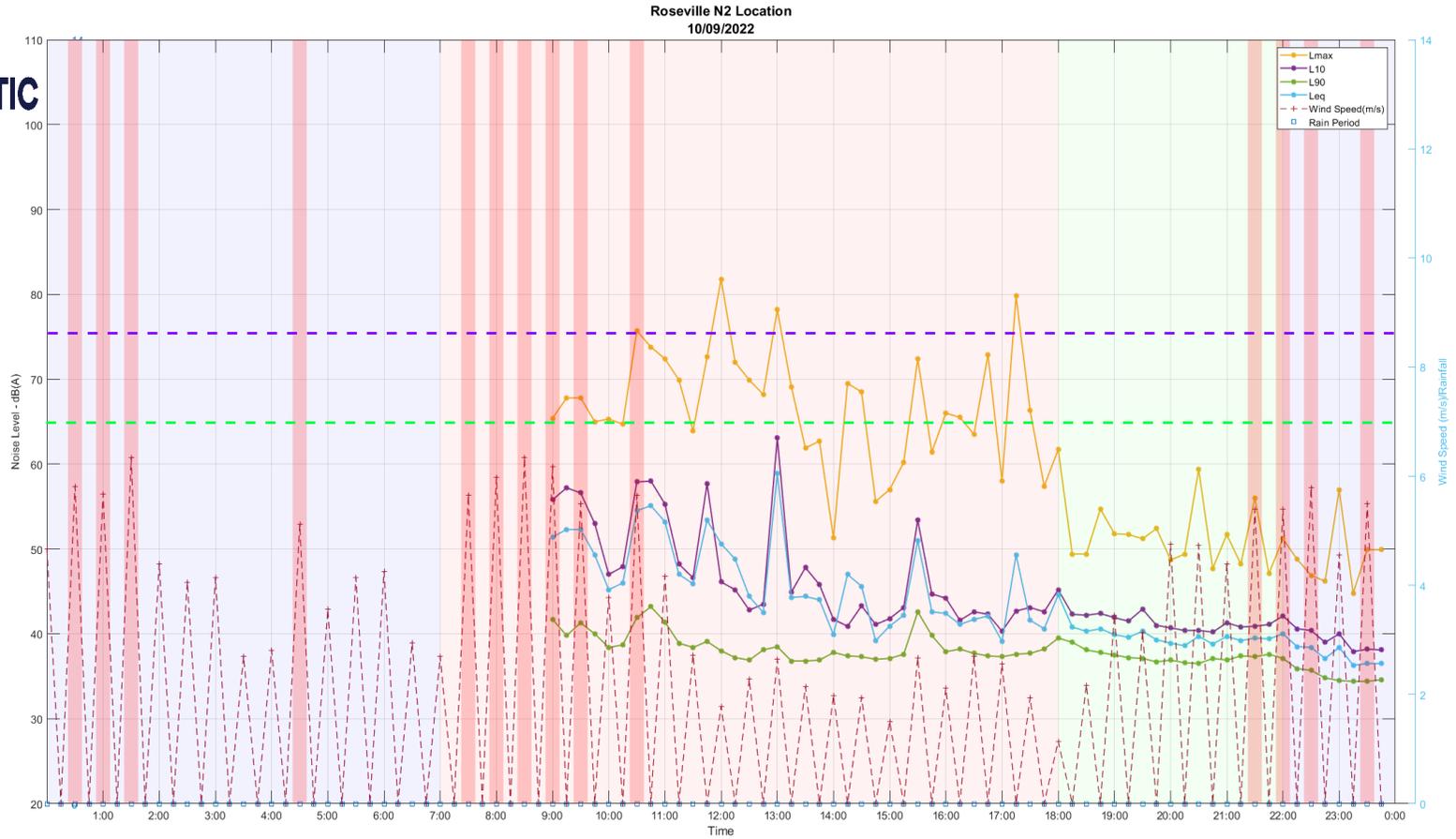
Roseville N1 Location
2/10/2022



APPENDIX 5: UNATTENDED NOISE MONITORING DAILY GRAPHS (N2)

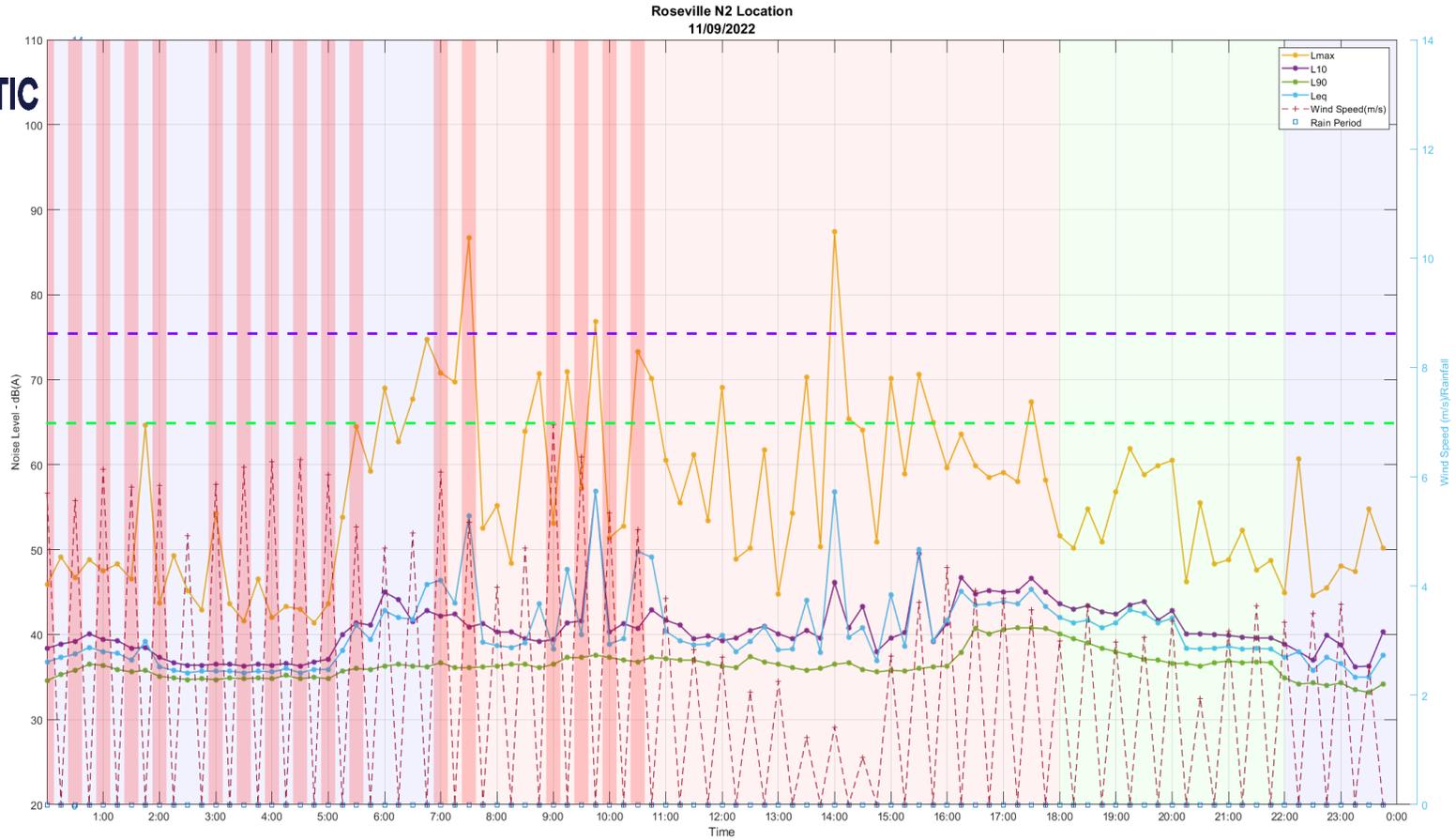


Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq - - - -
Highly Noise Affected Level- 75 dB(A)Leq - - - -



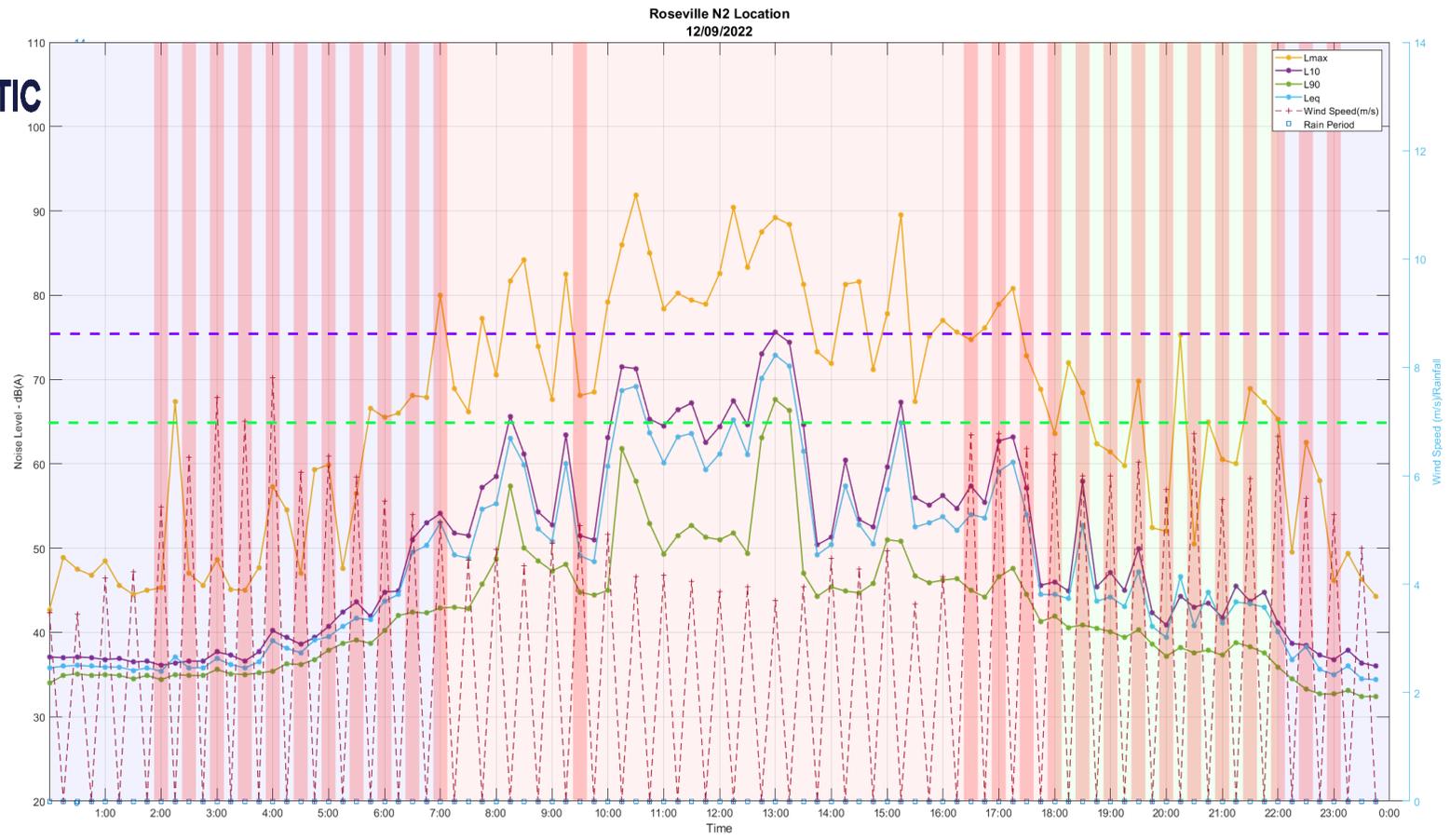


Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq
Highly Noise Affected Level- 75 dB(A)Leq



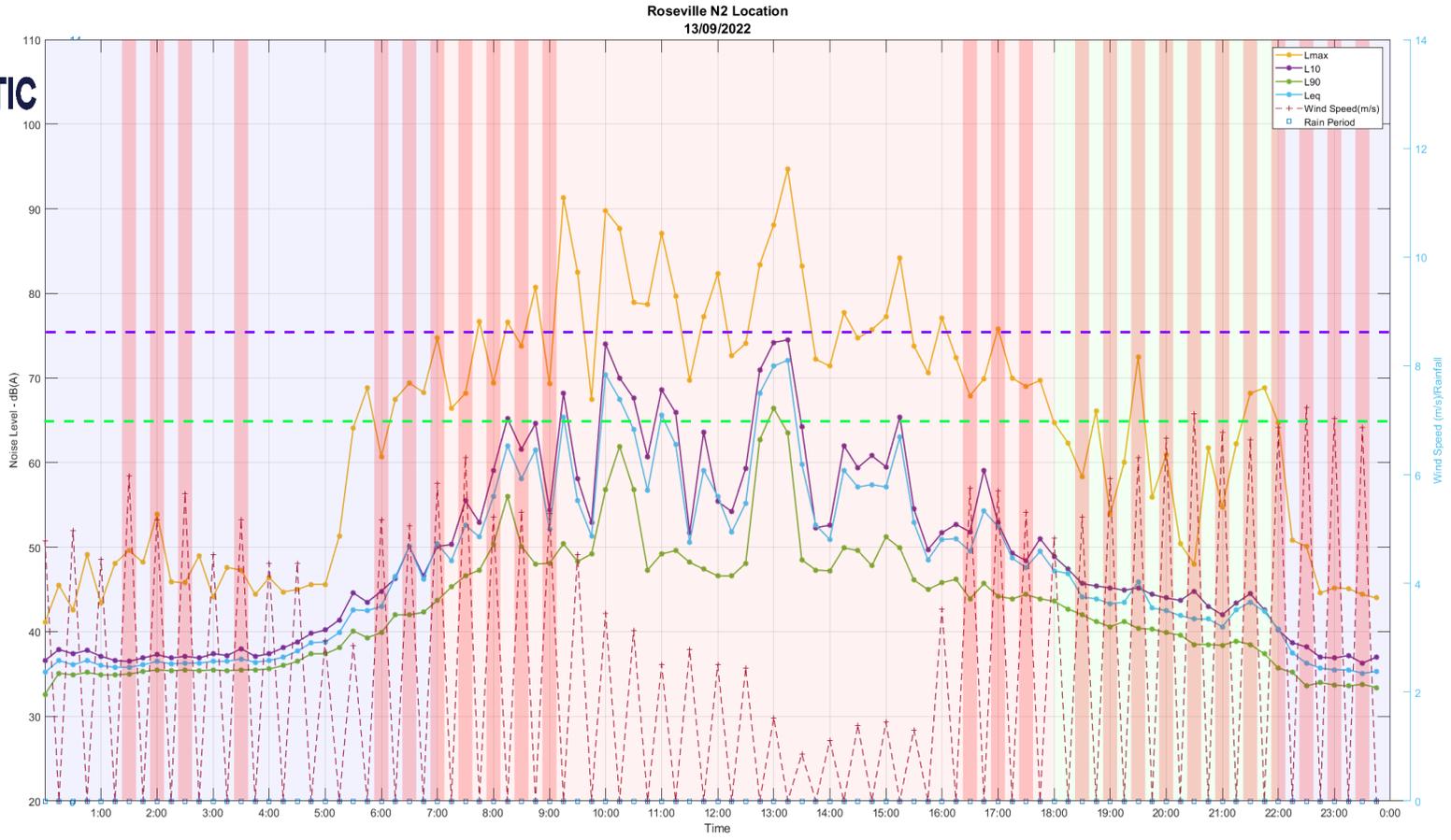


Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq
Highly Noise Affected Level- 75 dB(A)Leq





Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq
Highly Noise Affected Level- 75 dB(A)Leq



Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq

Highly Noise Affected Level- 75 dB(A)Leq



Roseville N2 Location
14/09/2022



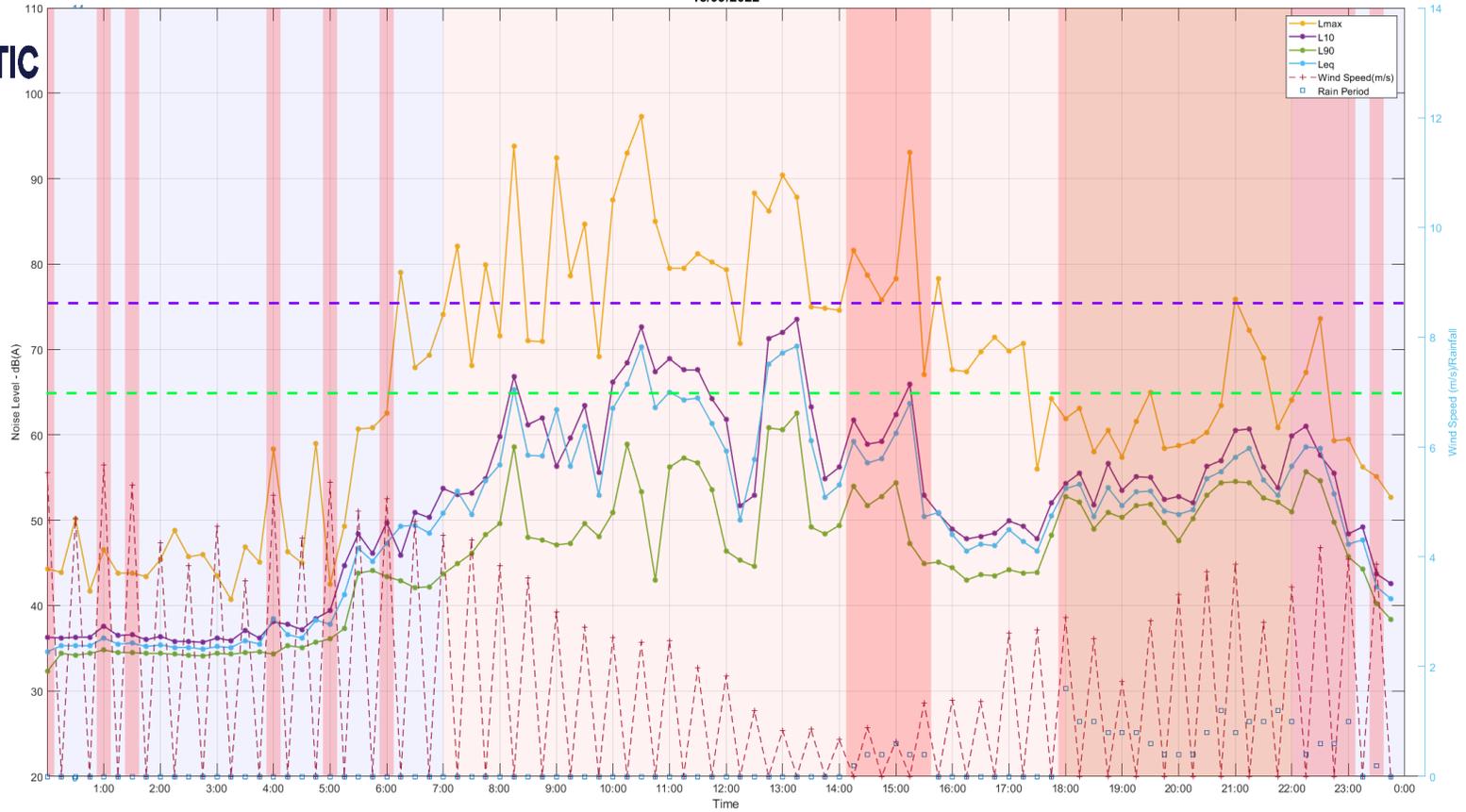


Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

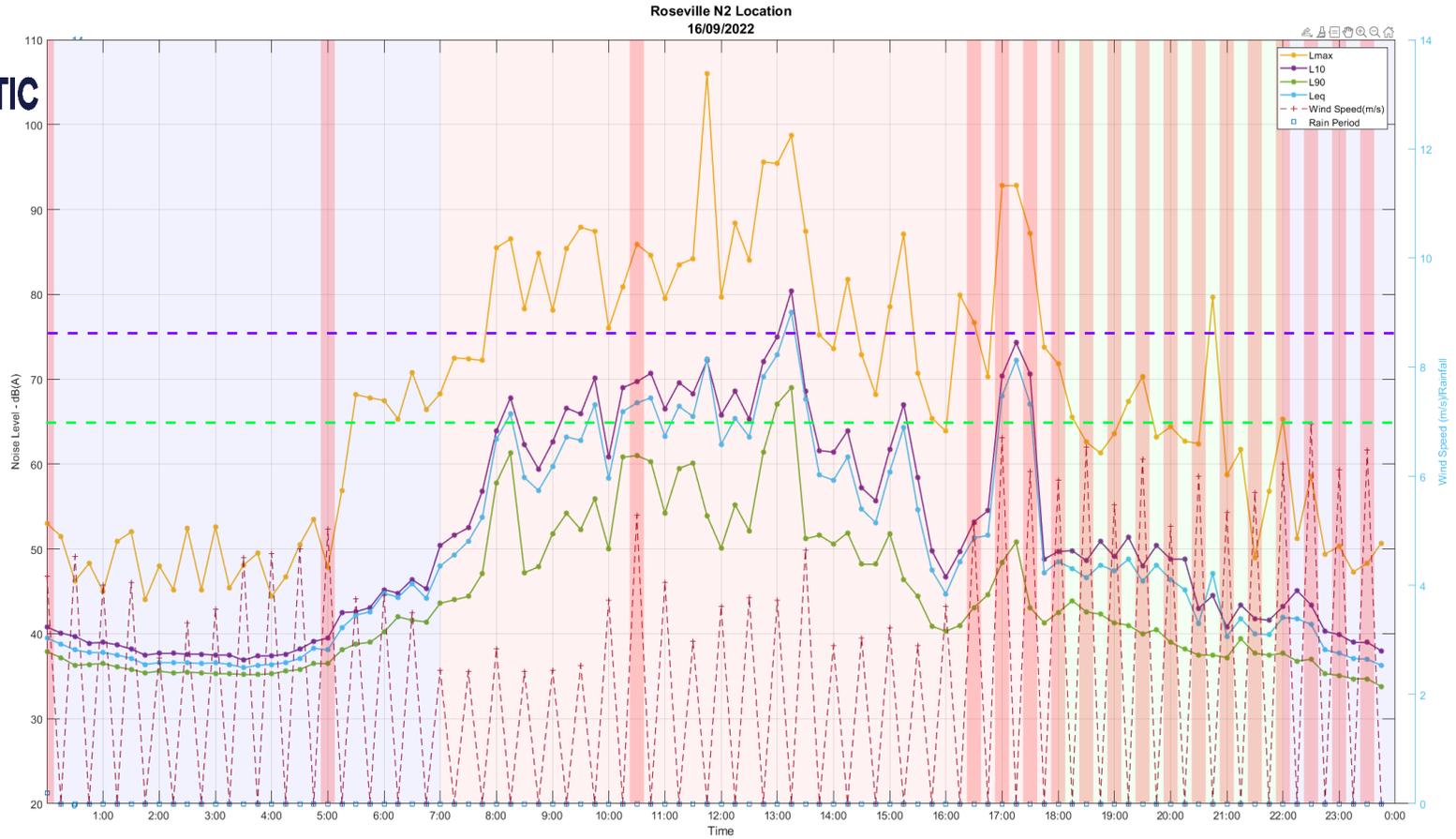
Highly Noise Affected Level- 75 dB(A)Leq - - - - -

Roseville N2 Location
15/09/2022





Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq
Highly Noise Affected Level- 75 dB(A)Leq



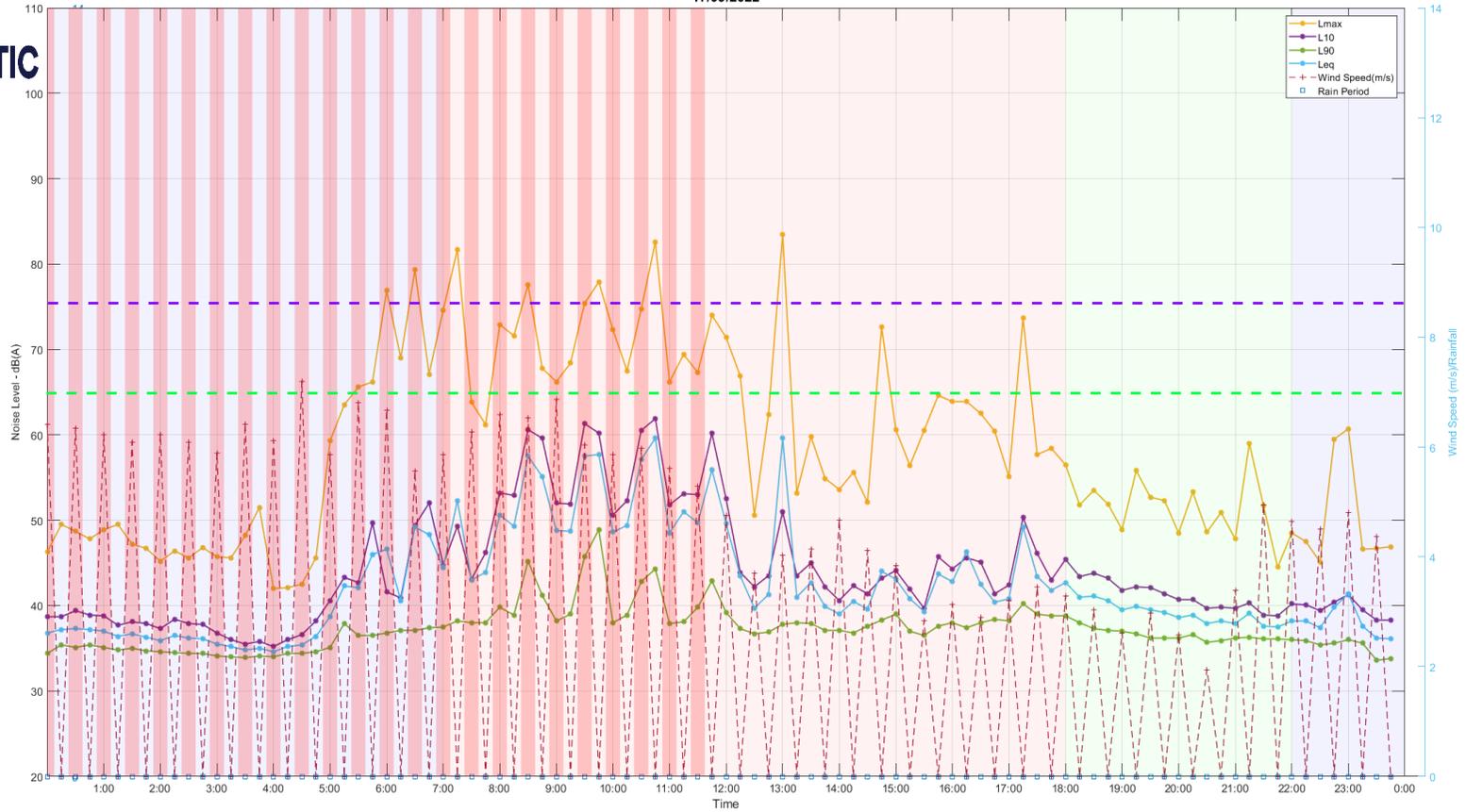


Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

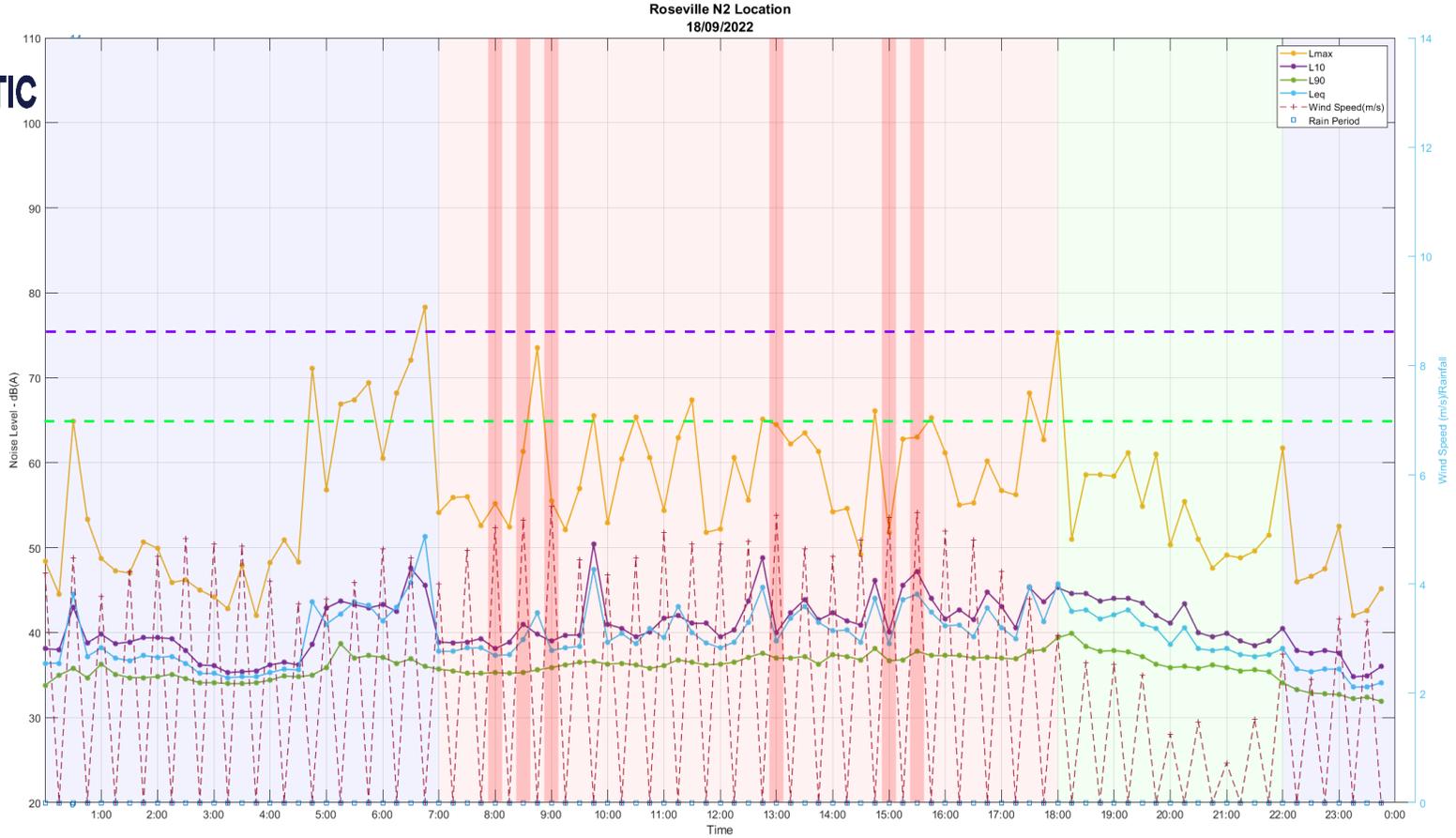
Highly Noise Affected Level- 75 dB(A)Leq - - - - -

Roseville N2 Location
17/09/2022



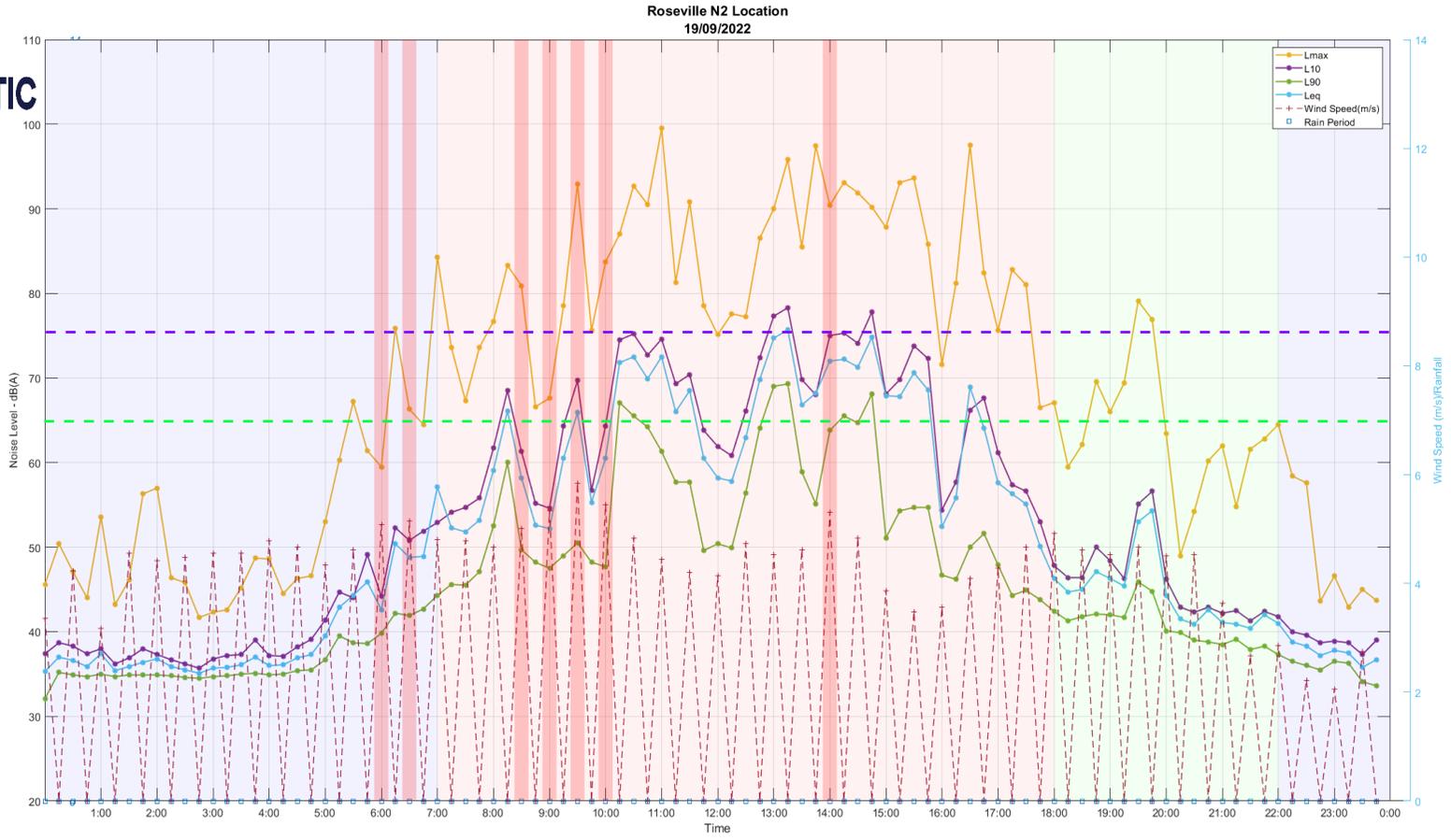


Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq
Highly Noise Affected Level- 75 dB(A)Leq



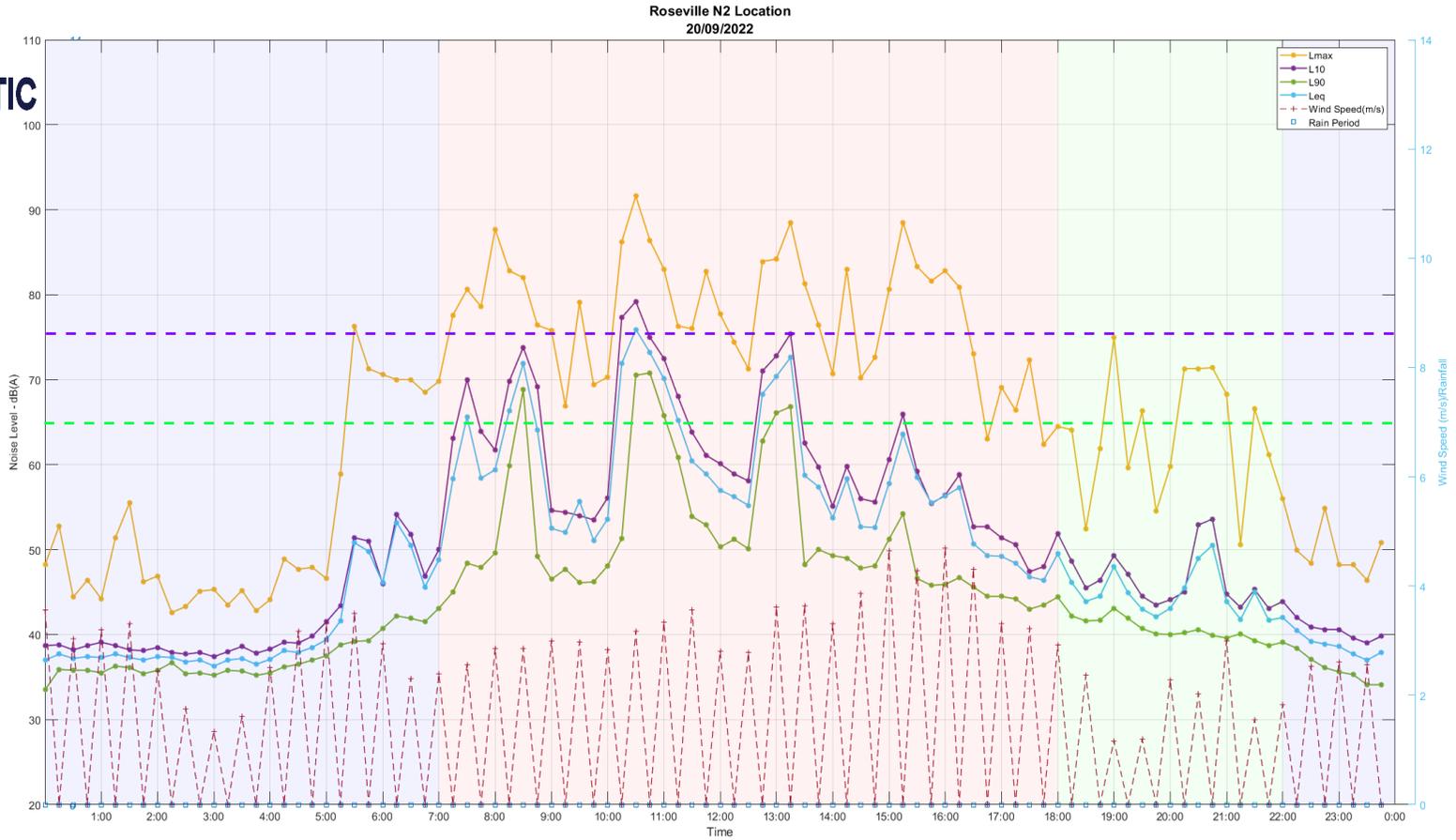


Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq
Highly Noise Affected Level- 75 dB(A)Leq





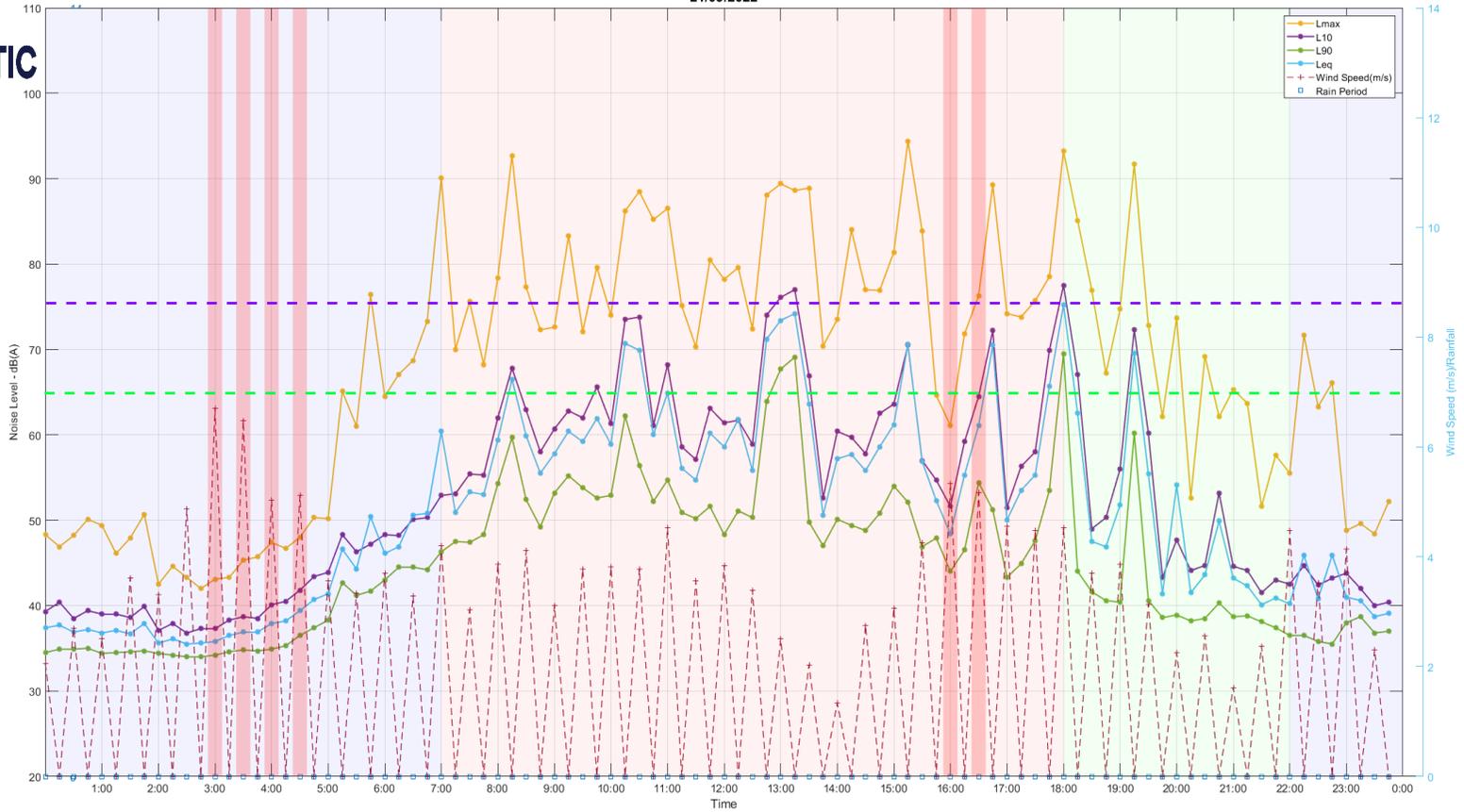
Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq
Highly Noise Affected Level- 75 dB(A)Leq





Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq
Highly Noise Affected Level- 75 dB(A)Leq

Roseville N2 Location
21/09/2022



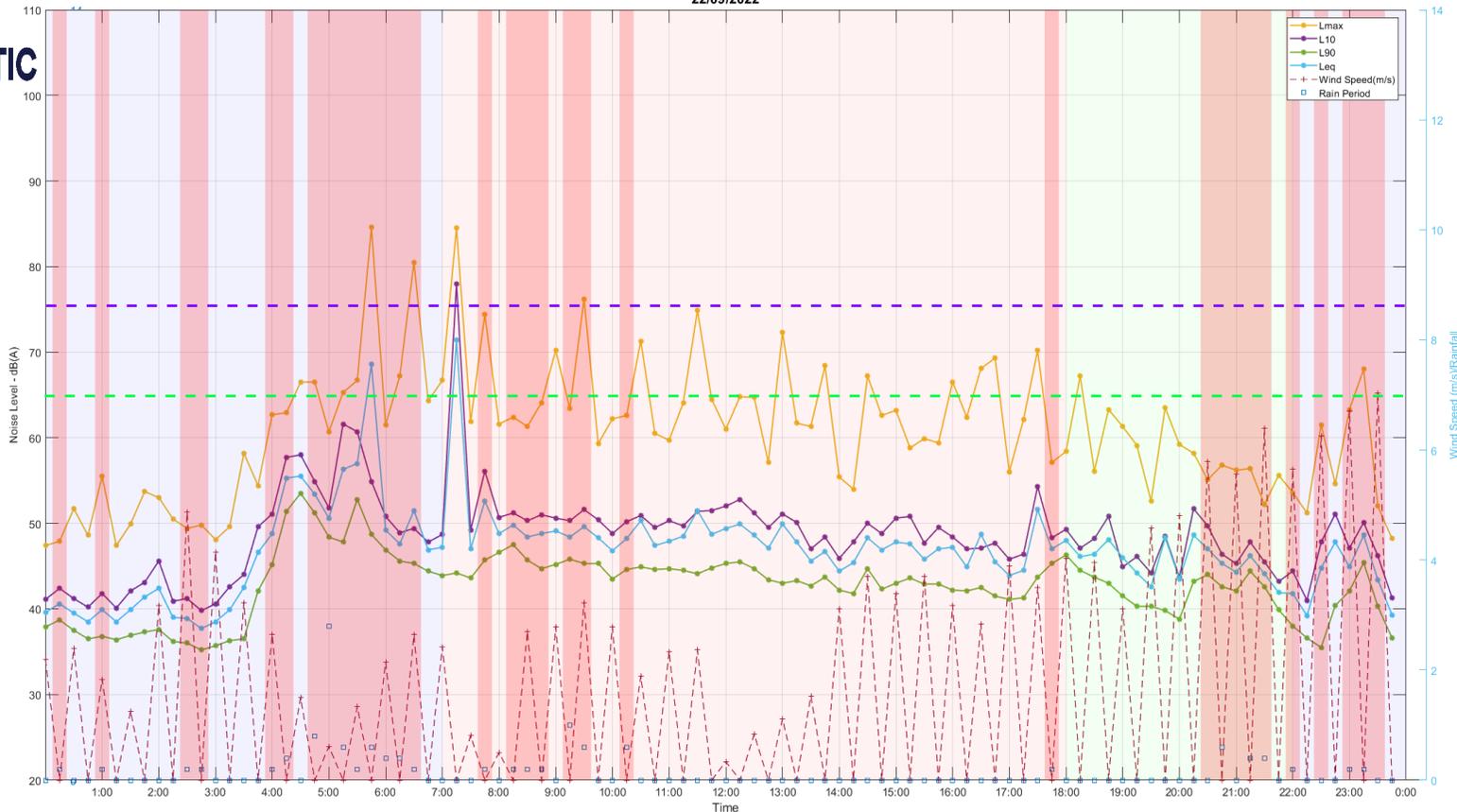
Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -

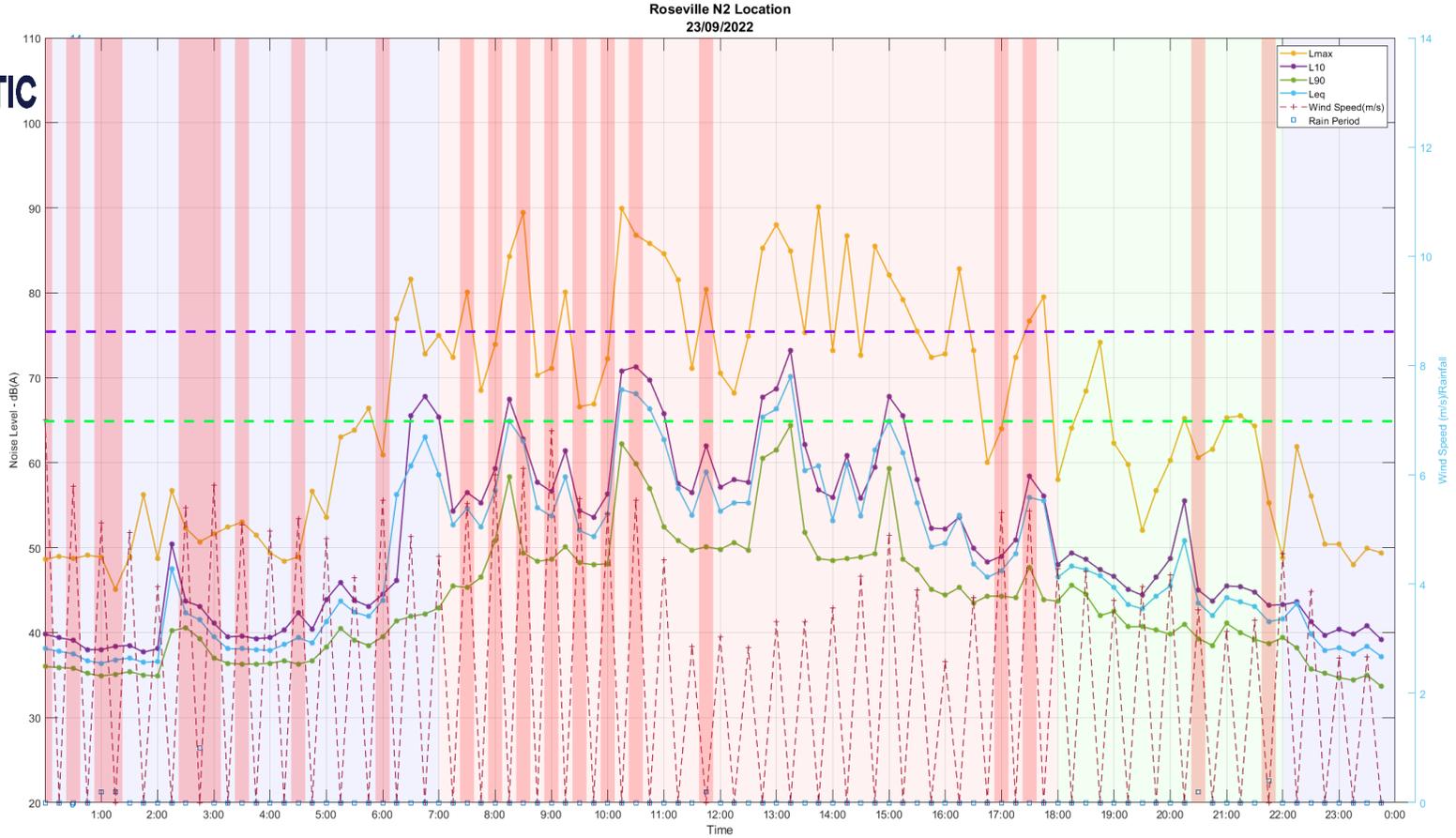


Roseville N2 Location
22/09/2022



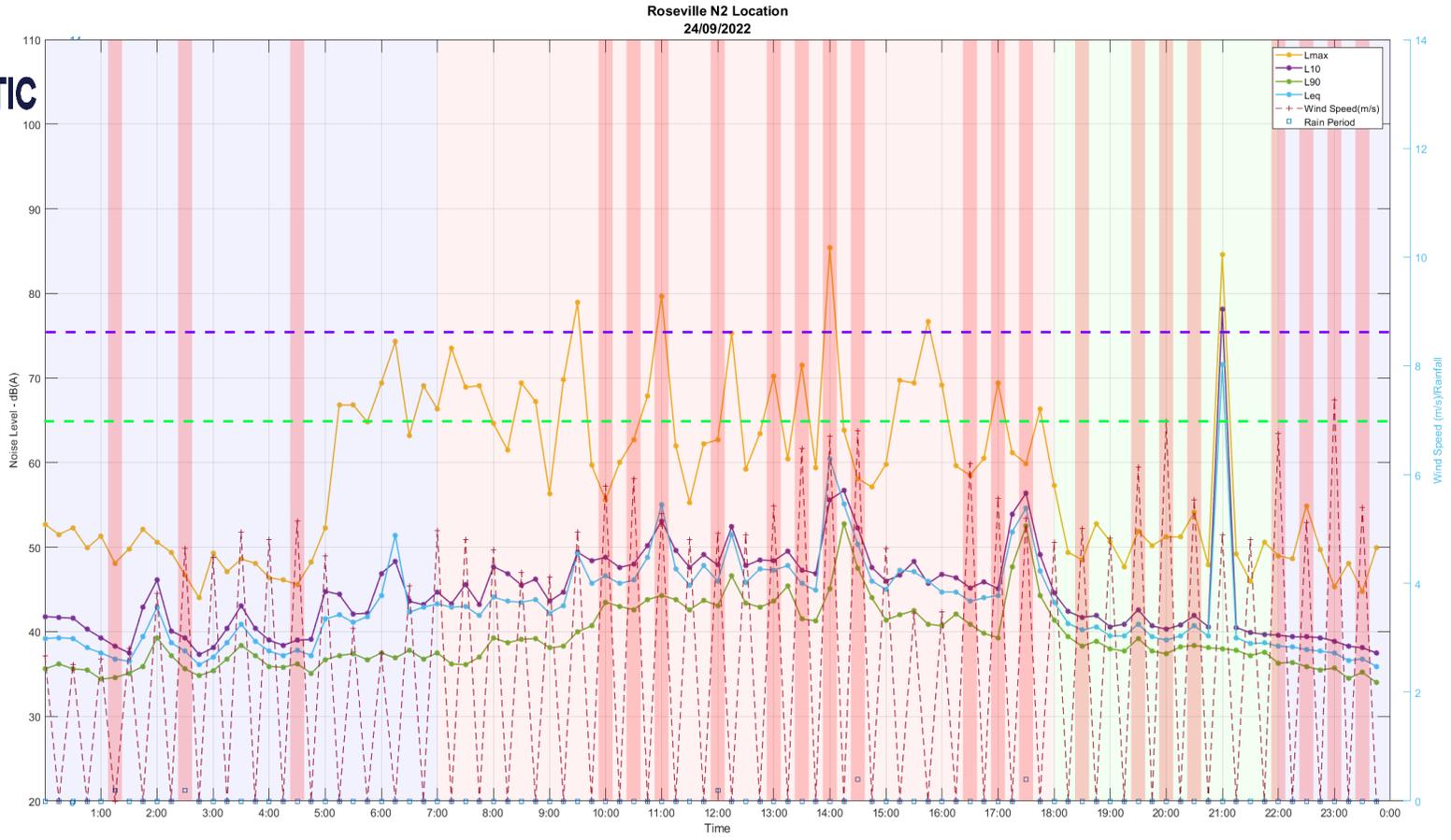


Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq - - - -
Highly Noise Affected Level- 75 dB(A)Leq - - - -





Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq - - - -
Highly Noise Affected Level- 75 dB(A)Leq - - - -



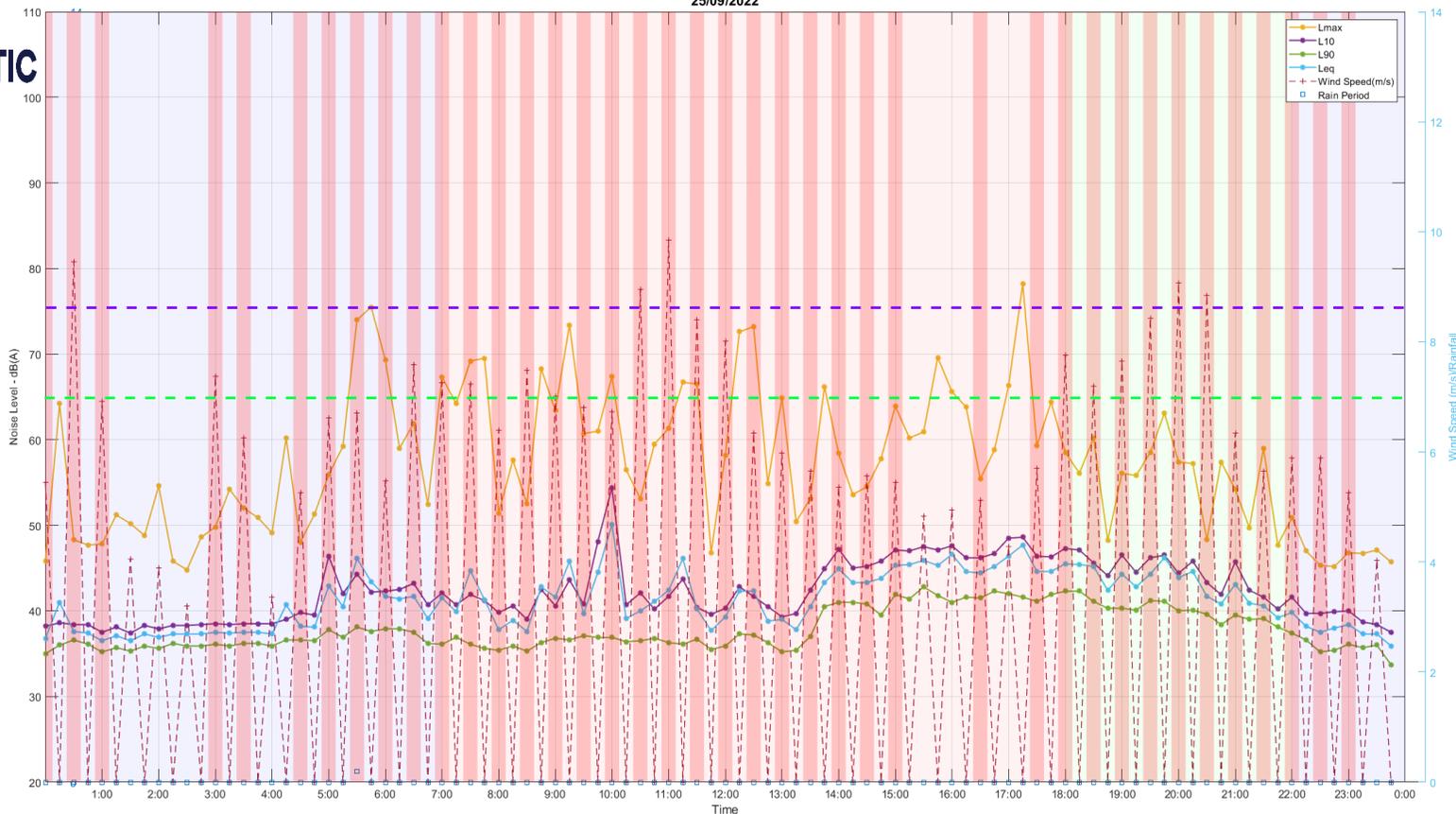
Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq

Highly Noise Affected Level- 75 dB(A)Leq

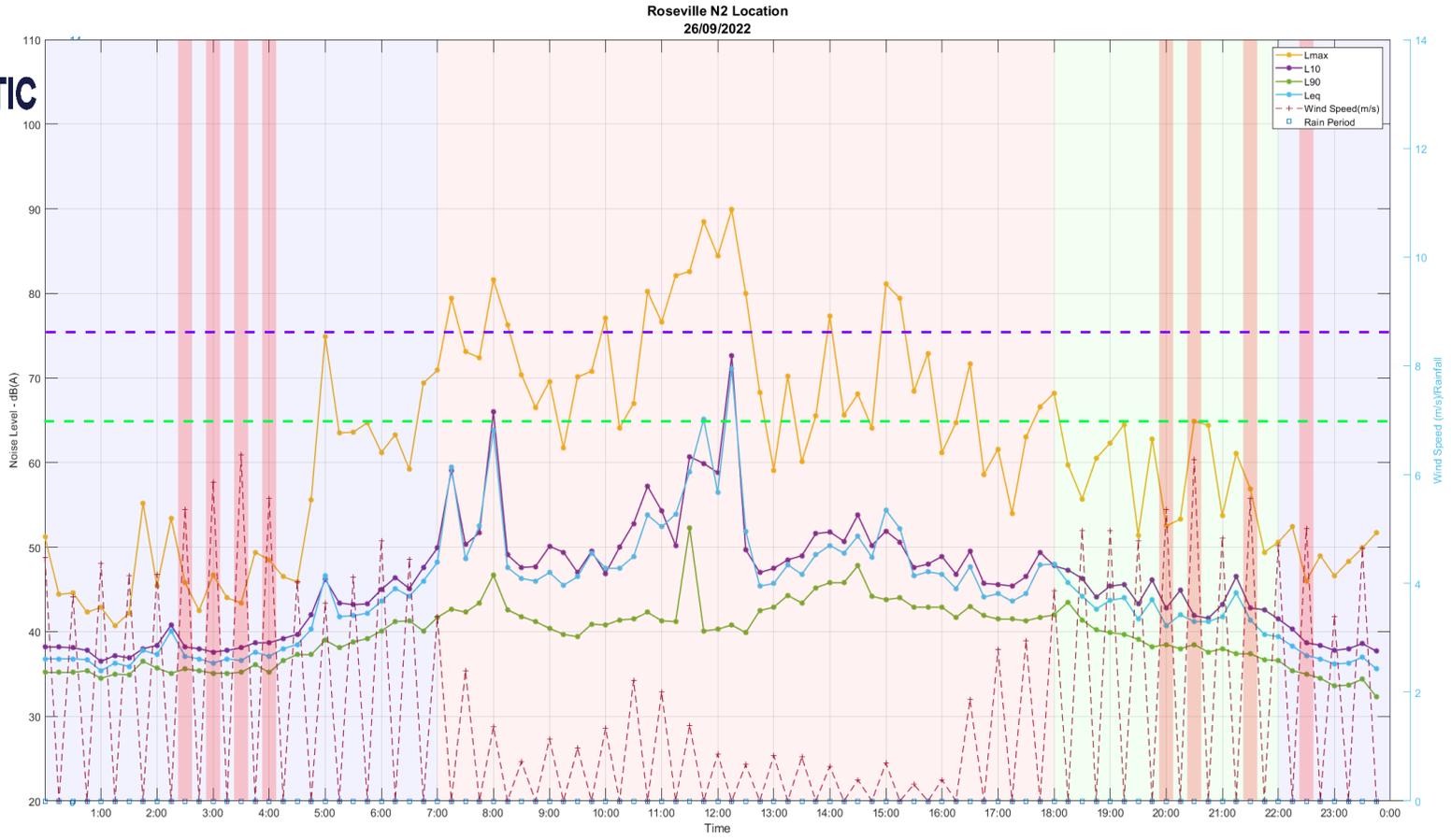


Roseville N2 Location
25/09/2022





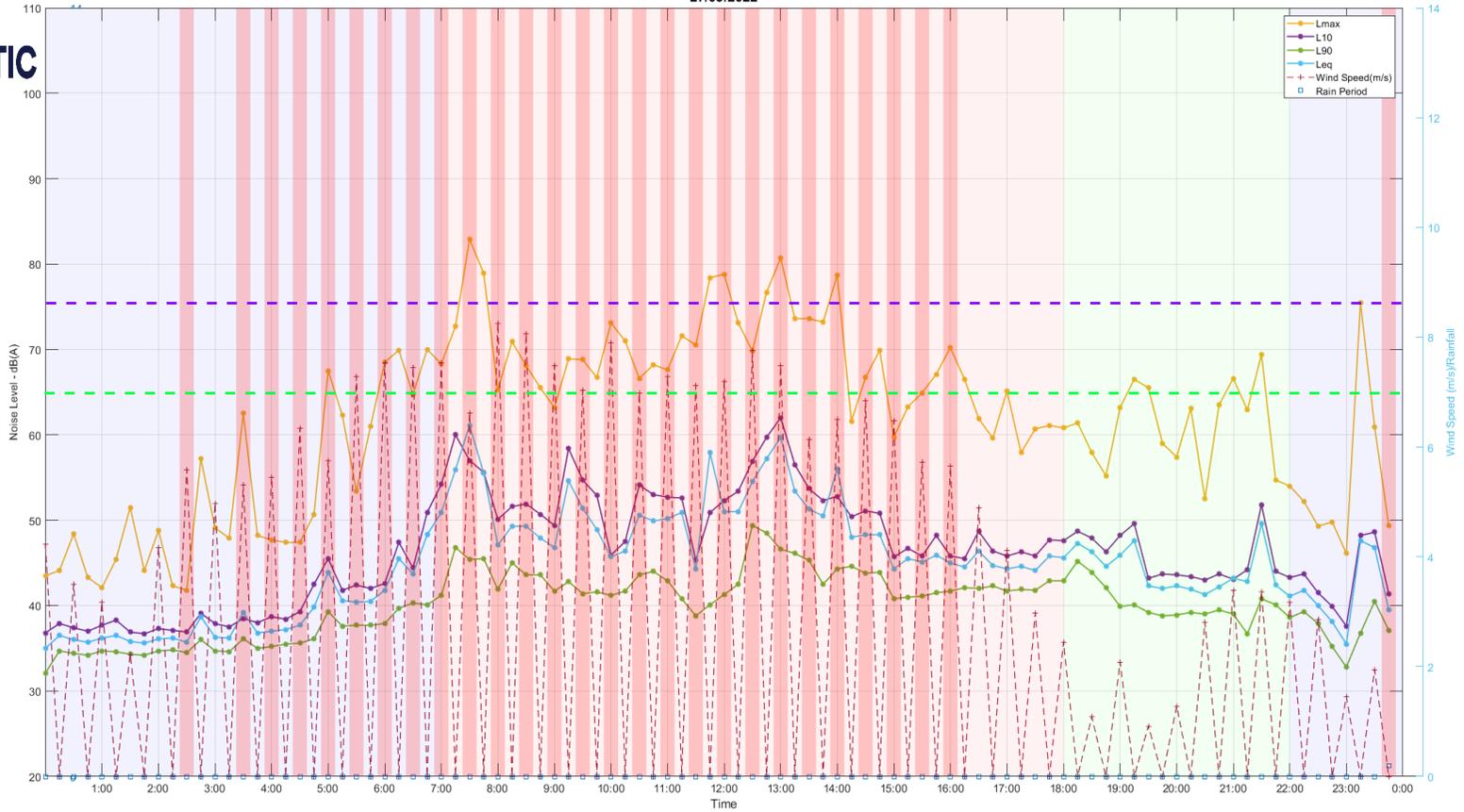
Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq
Highly Noise Affected Level- 75 dB(A)Leq





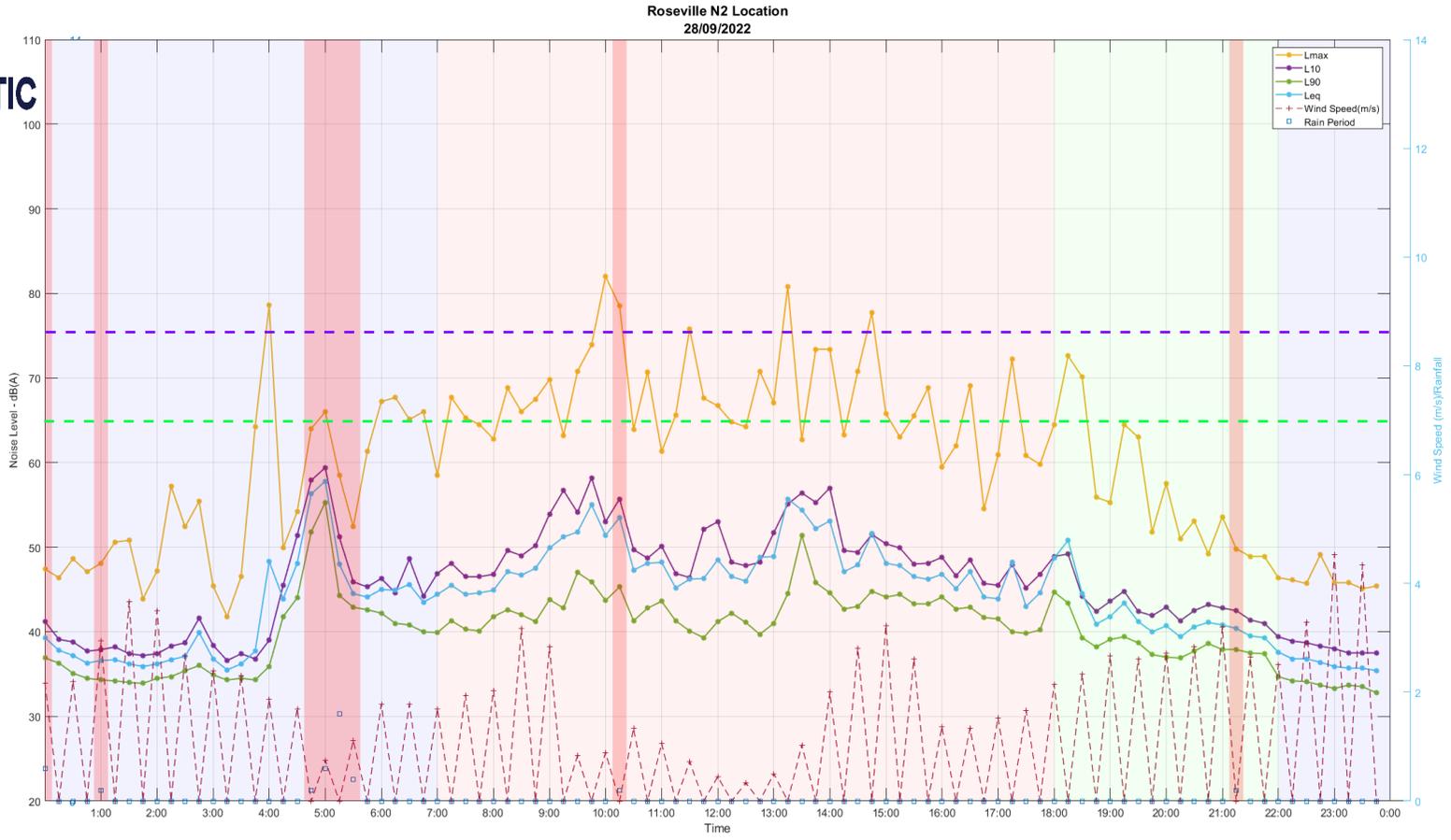
Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq - - - -
Highly Noise Affected Level- 75 dB(A)Leq - - - -

Roseville N2 Location
27/09/2022





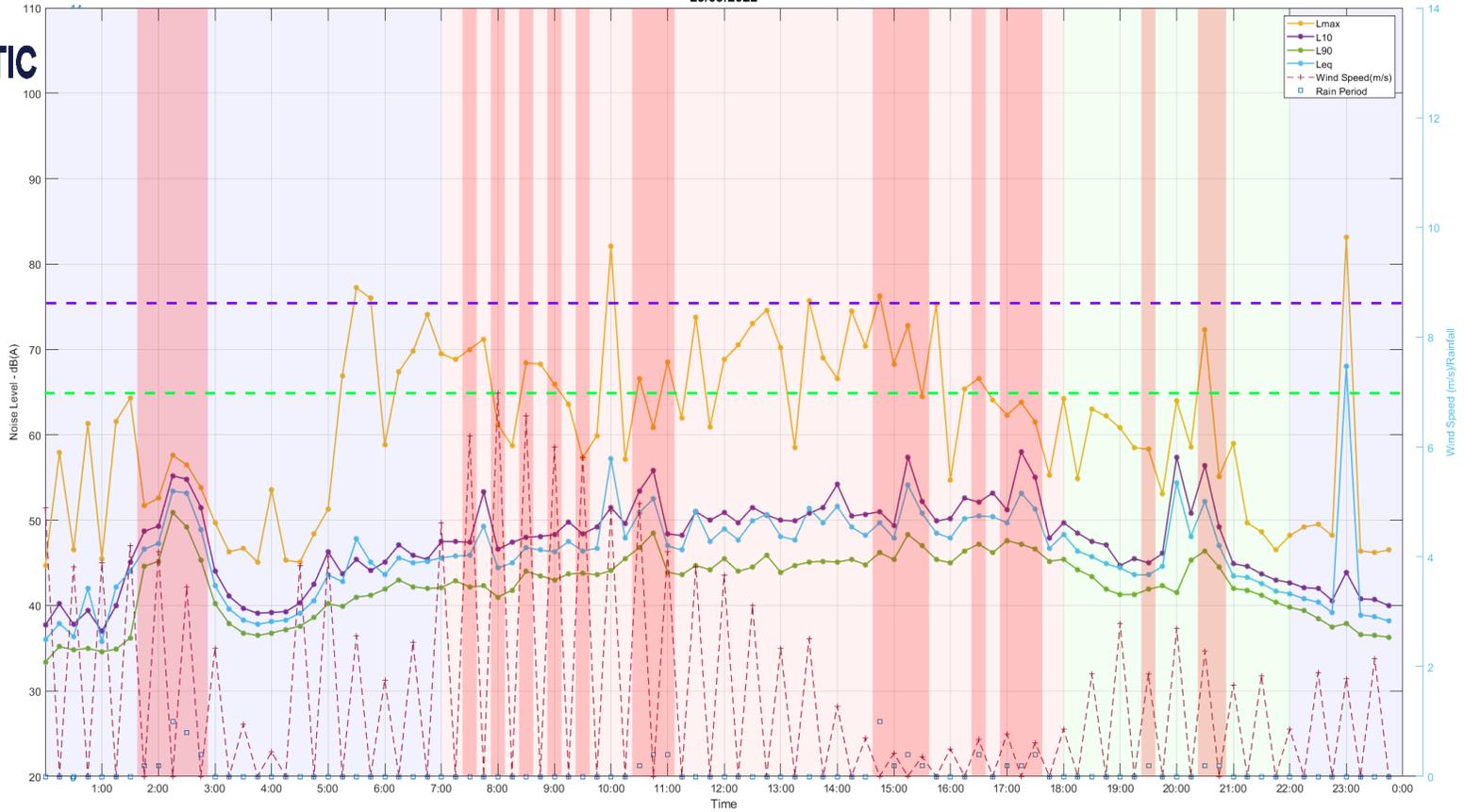
Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq - - - -
Highly Noise Affected Level- 75 dB(A)Leq - - - -





Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq
Highly Noise Affected Level- 75 dB(A)Leq

Roseville N2 Location
29/09/2022



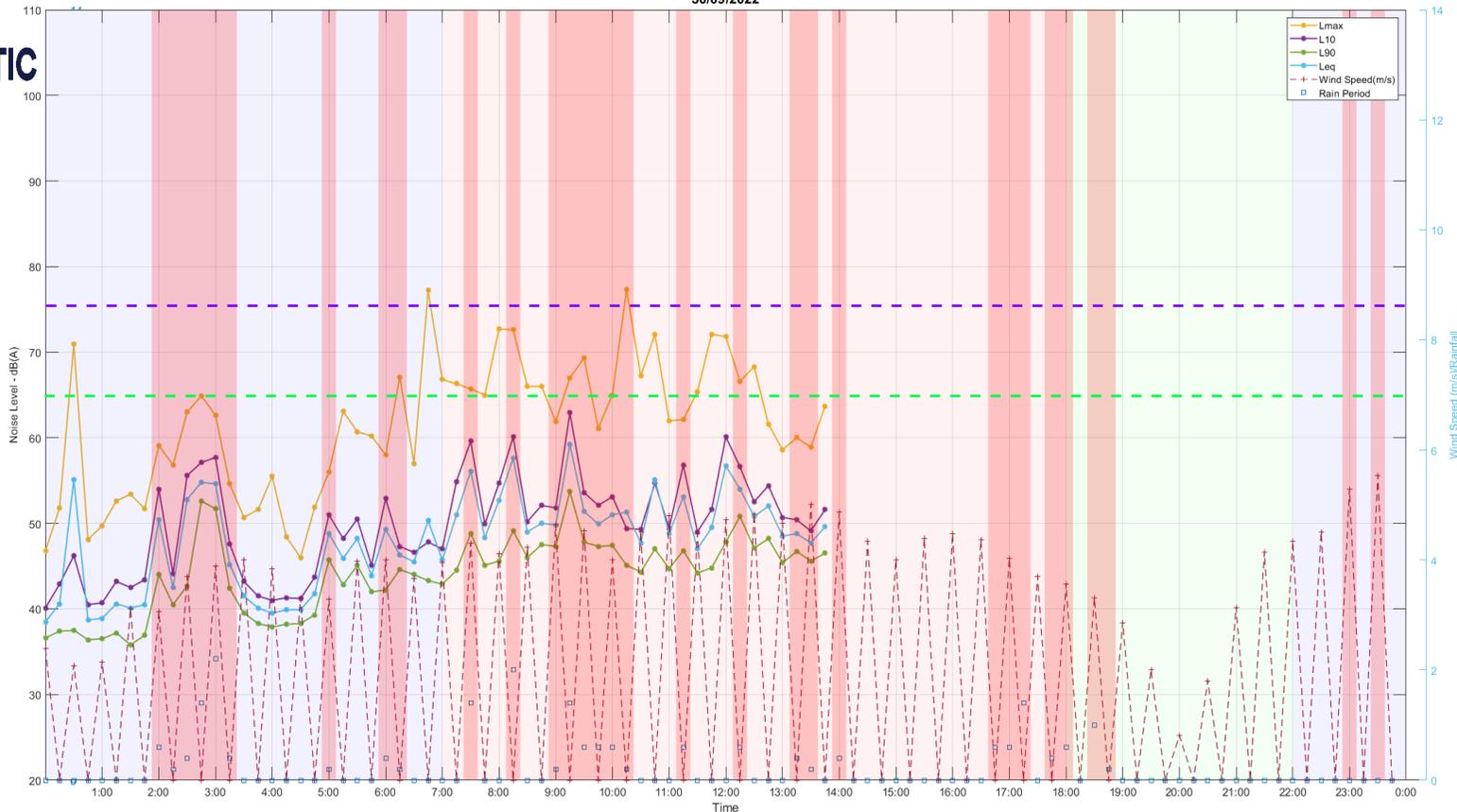
Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq

Highly Noise Affected Level- 75 dB(A)Leq



Roseville N2 Location
30/09/2022



APPENDIX 6 : UNATTENDED NOISE MONITORING DAILY GRAPHS (N3)



Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -

Roseville N1 Location
10/09/2022



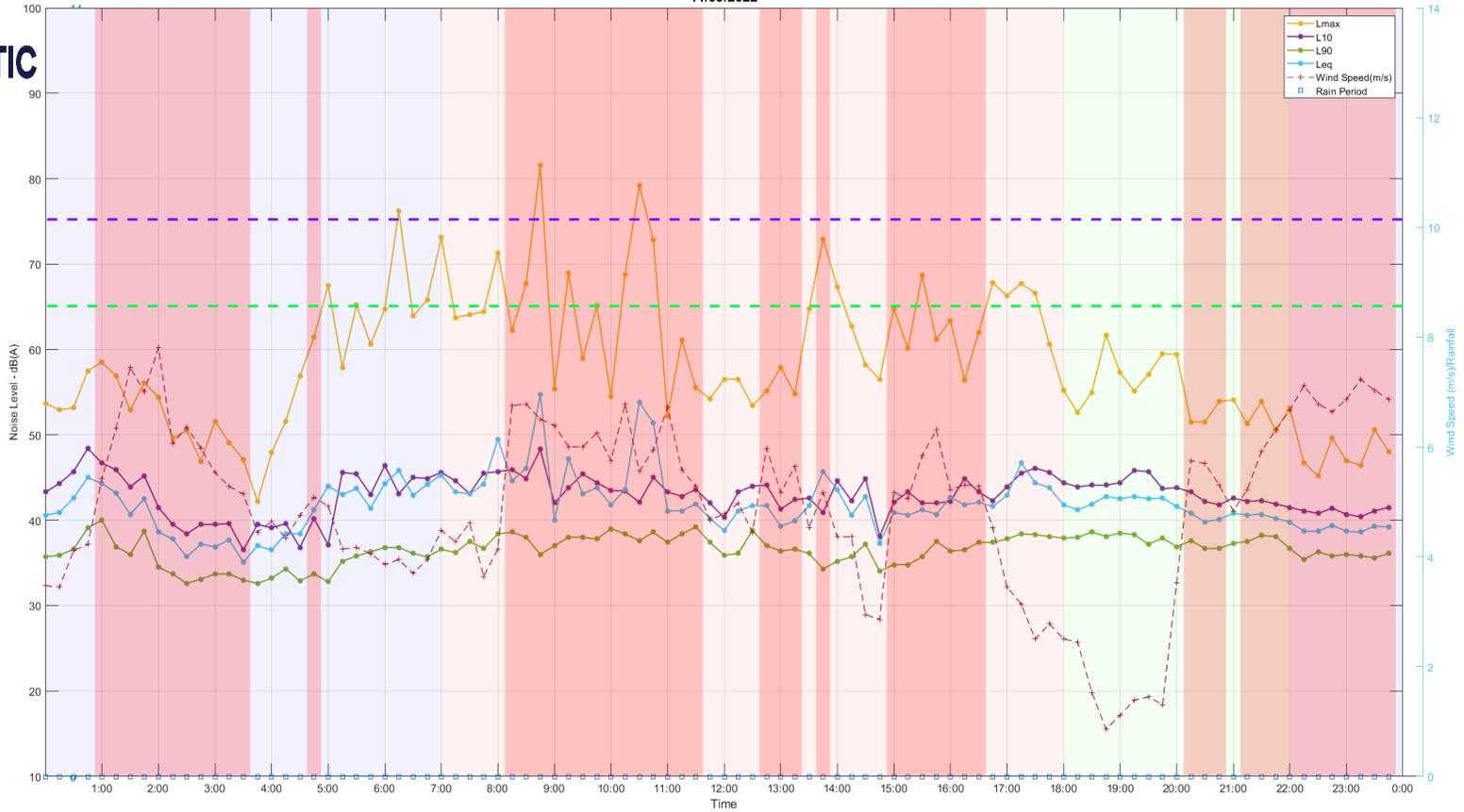
Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -



Roseville N1 Location
11/09/2022



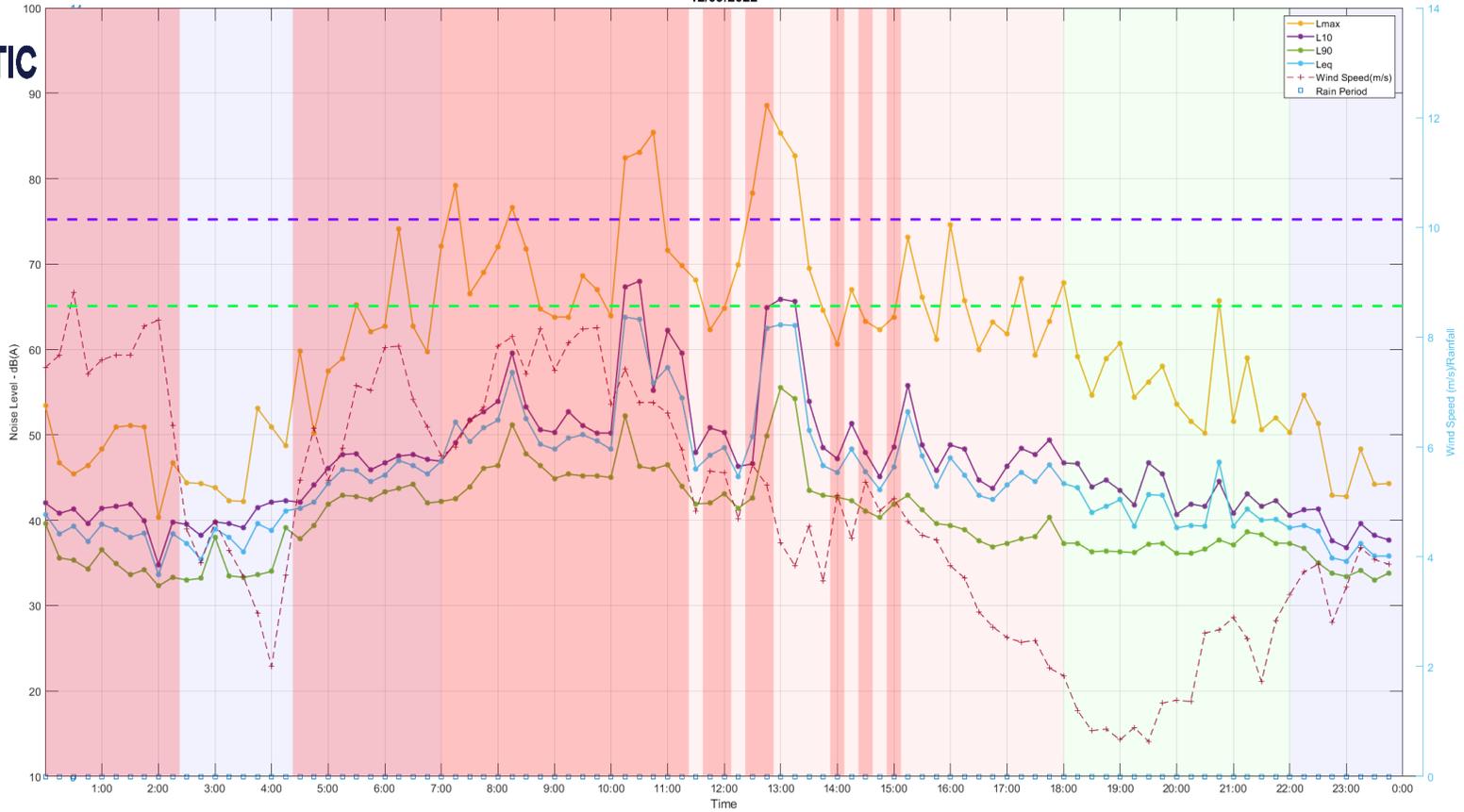
Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -



Roseville N1 Location
12/09/2022



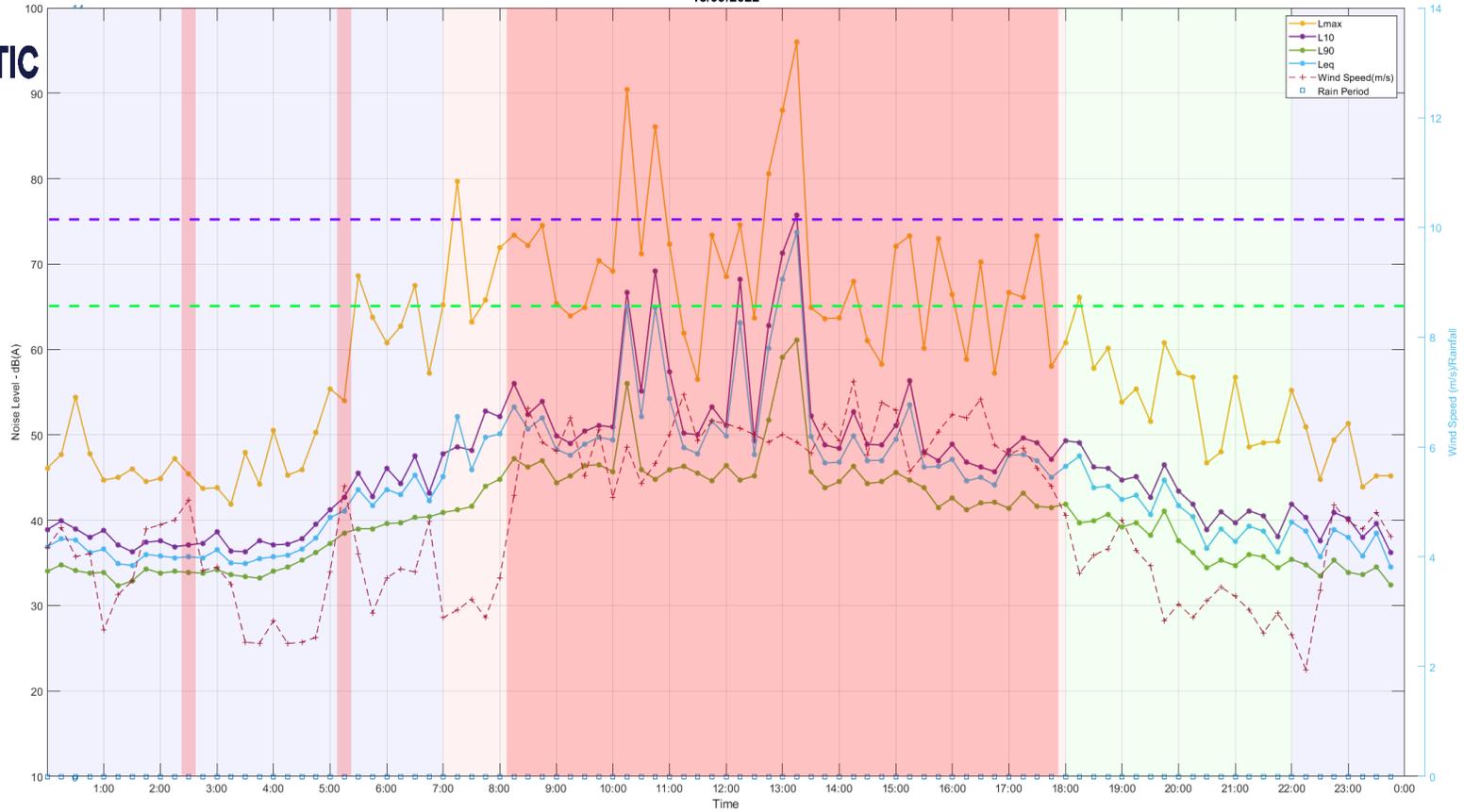


Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -

Roseville N1 Location
13/09/2022





Noise Management Levels

- Active Recreation Areas - 65 dB(A)Leq
- Highly Noise Affected Level- 75 dB(A)Leq

Roseville N1 Location
14/09/2022



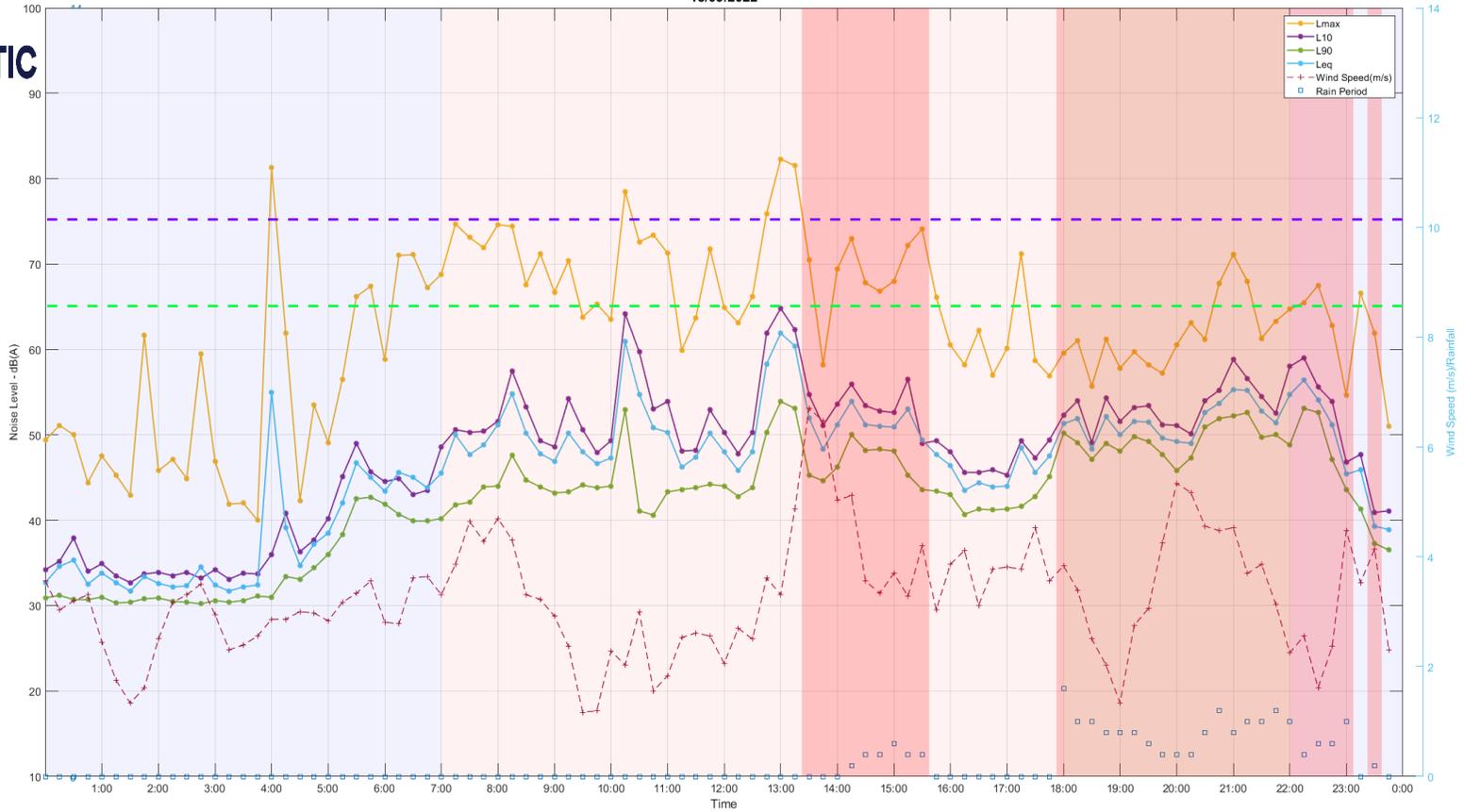
Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -

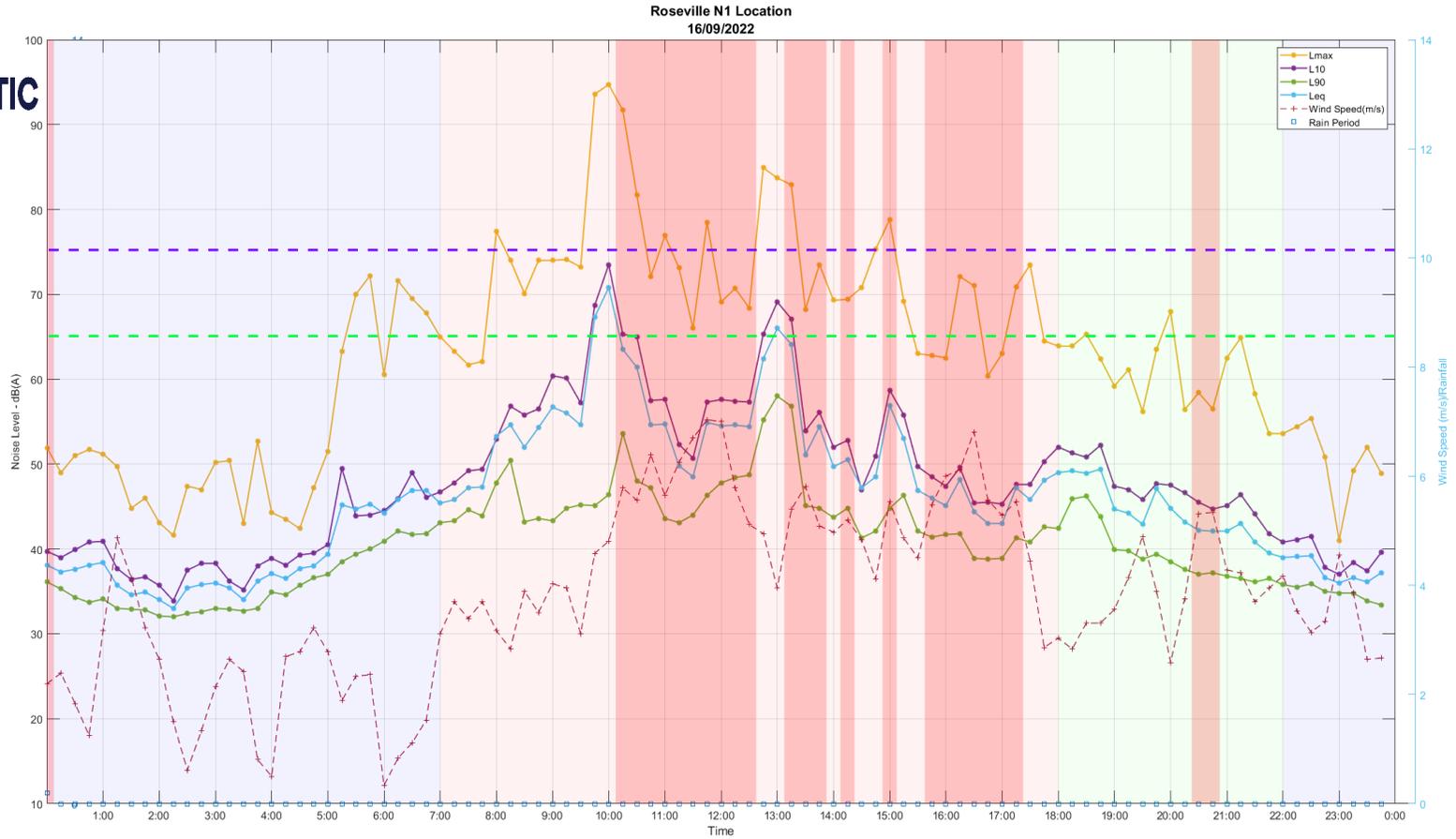


Roseville N1 Location
15/09/2022





Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq
Highly Noise Affected Level- 75 dB(A)Leq



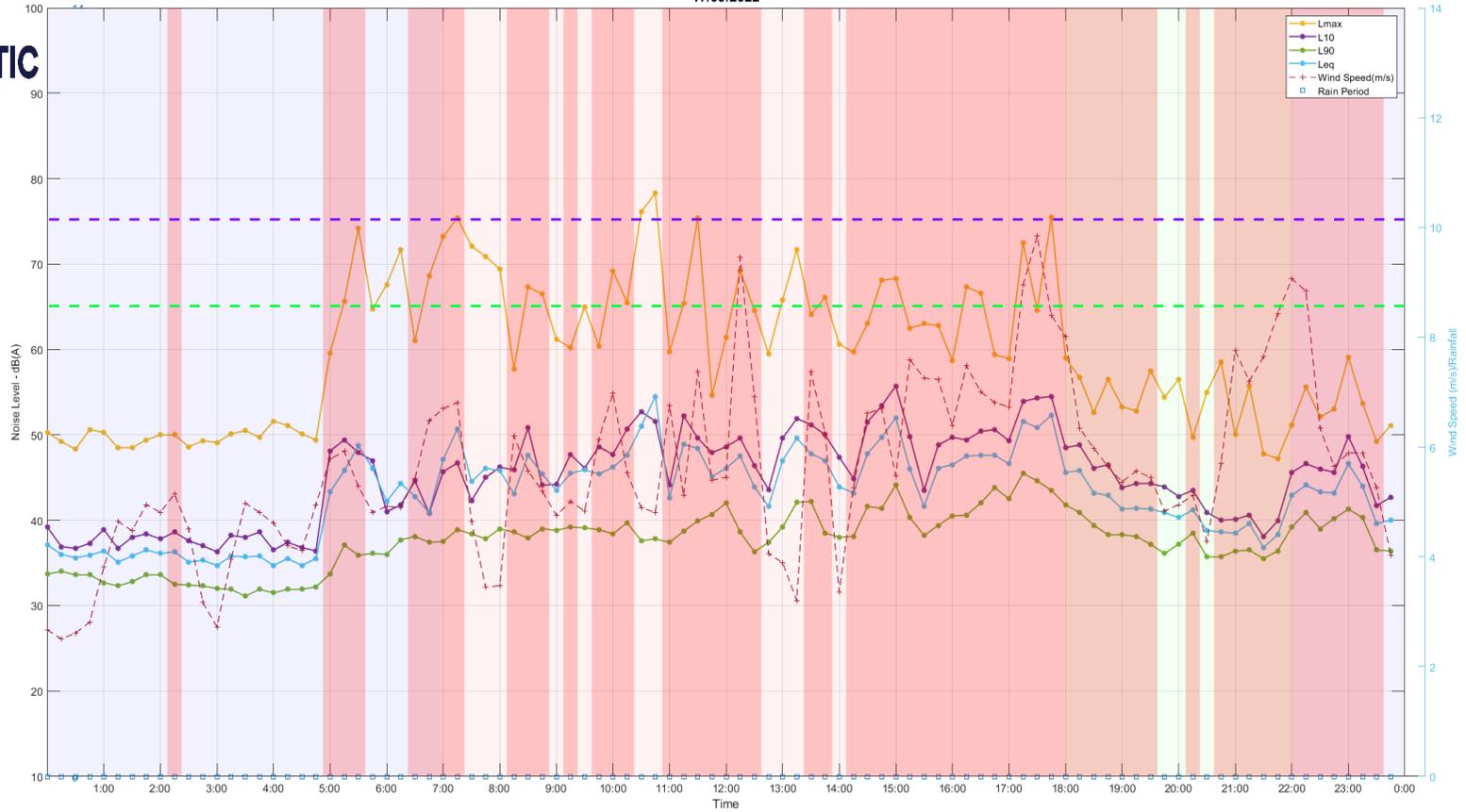
Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -



Roseville N1 Location
17/09/2022



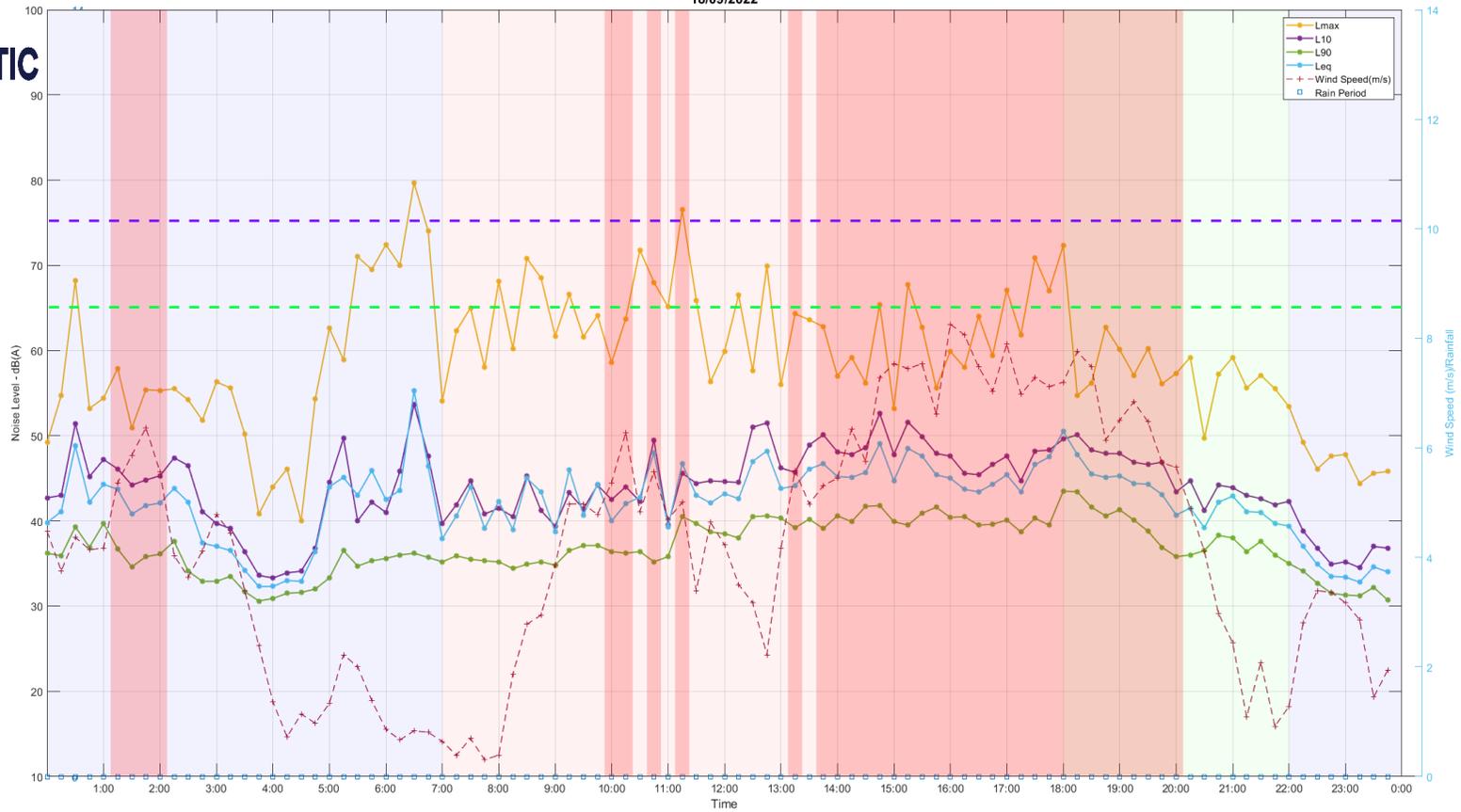


Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -

Roseville N1 Location
18/09/2022



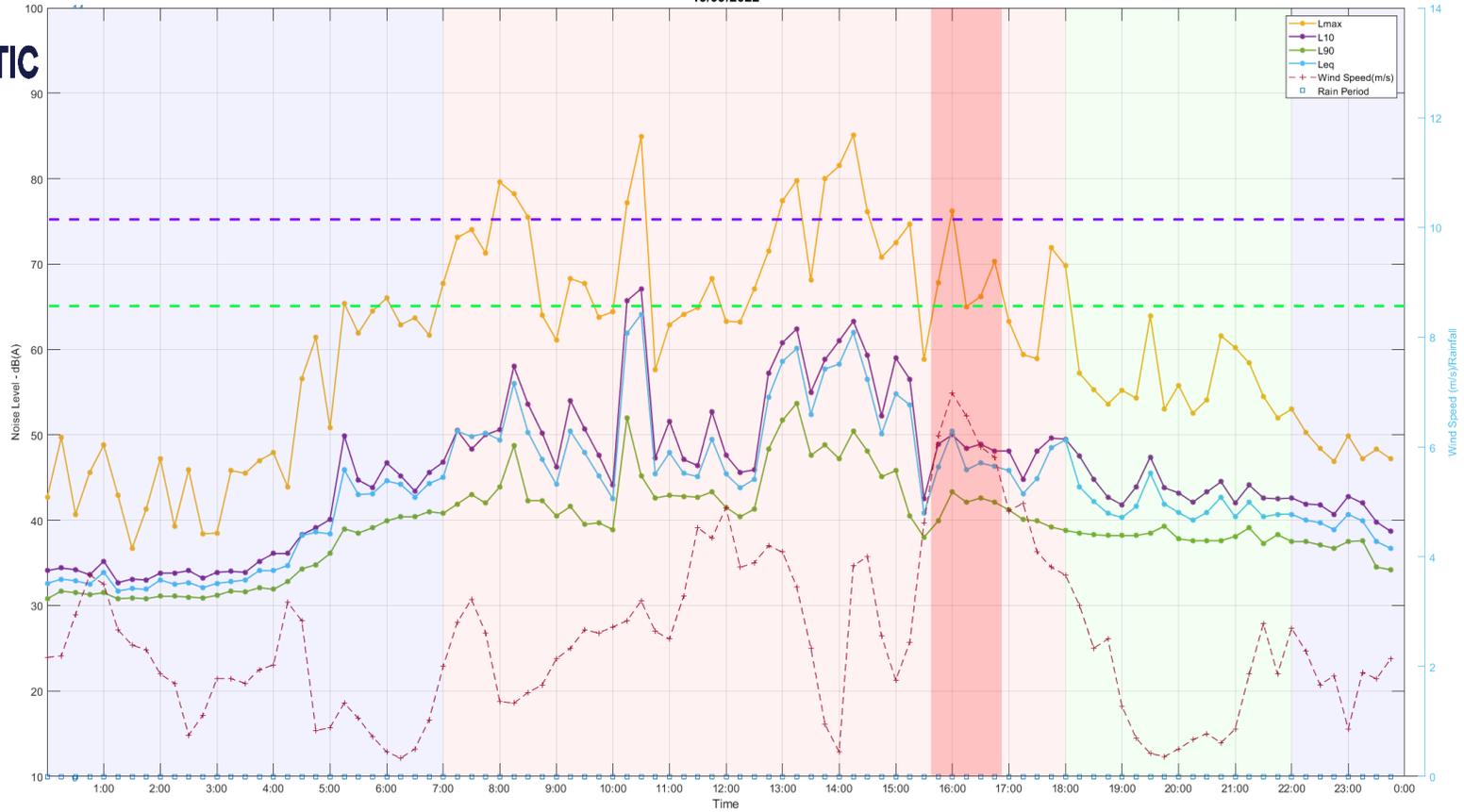


Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -

Roseville N1 Location
19/09/2022



Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -



Roseville N1 Location
20/09/2022



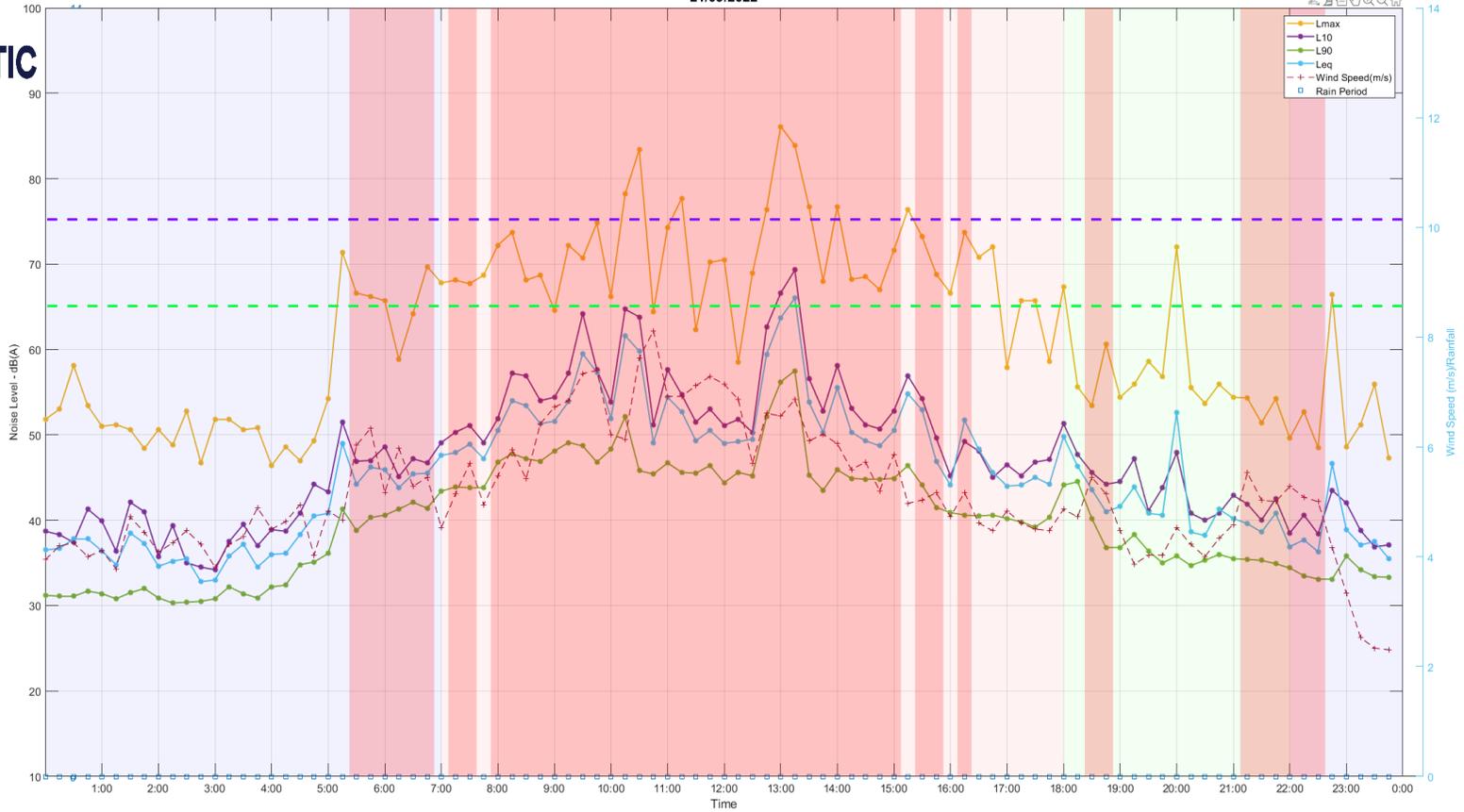
Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -



Roseville N1 Location
21/09/2022



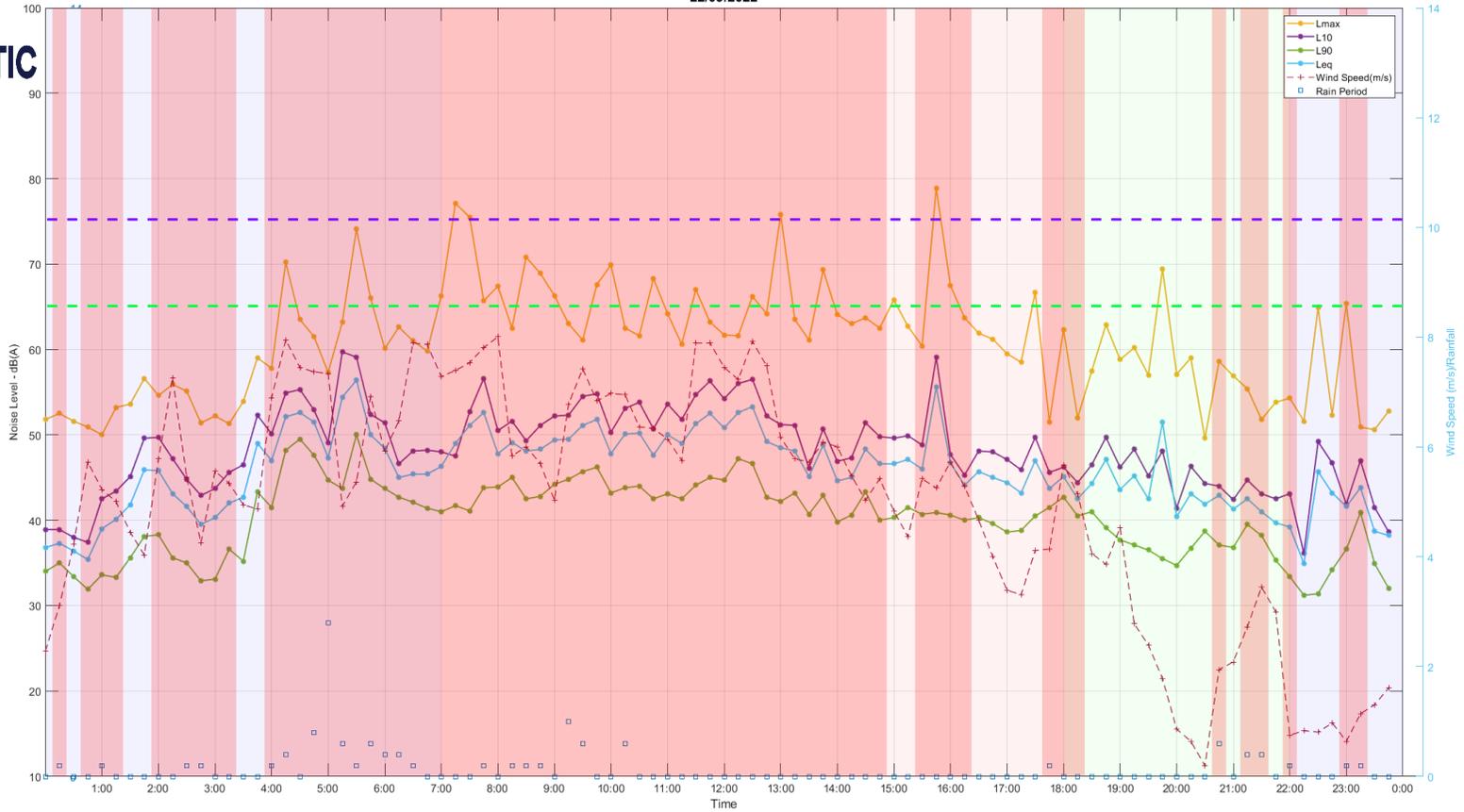
Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -



Roseville N1 Location
22/09/2022

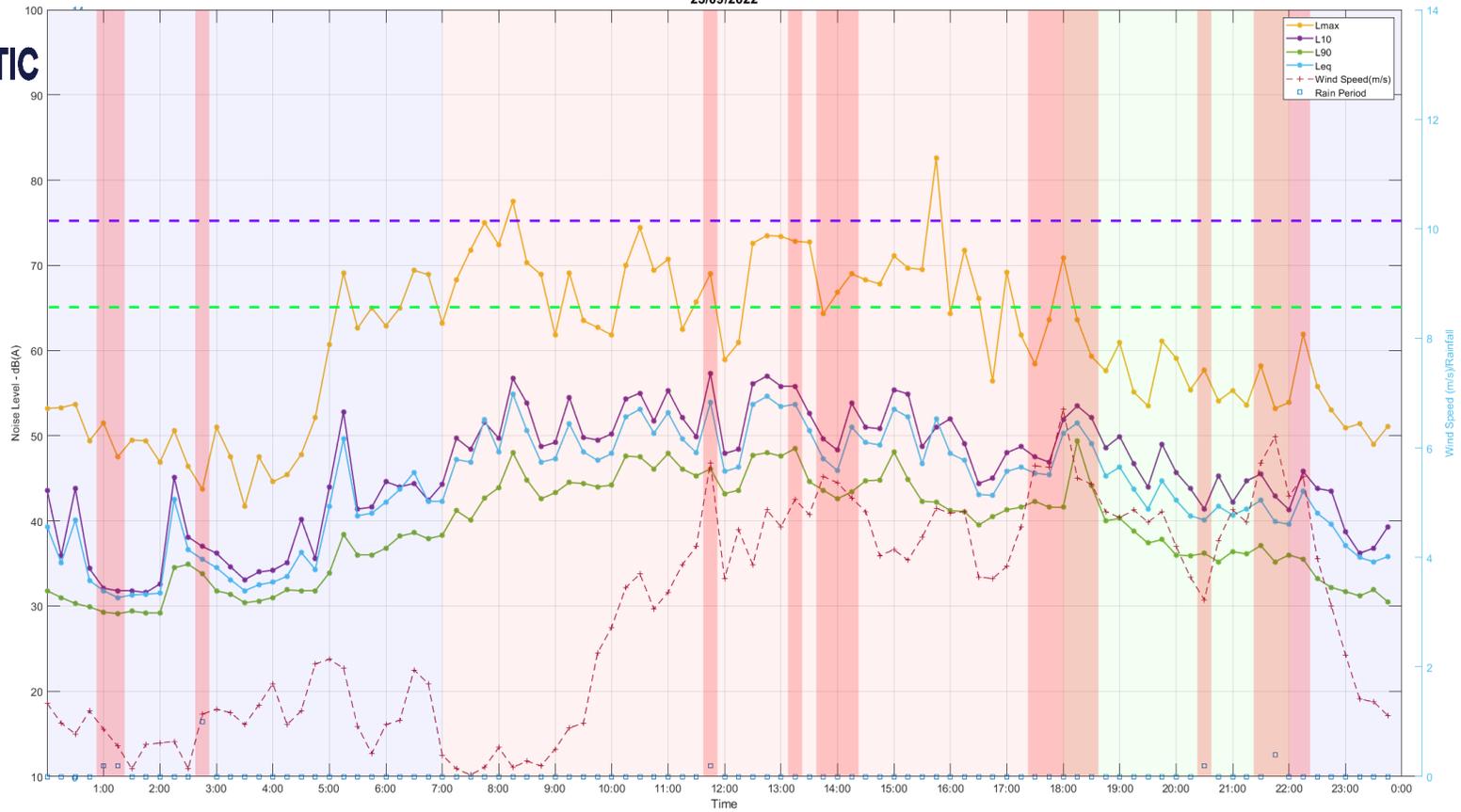


Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq

Highly Noise Affected Level- 75 dB(A)Leq

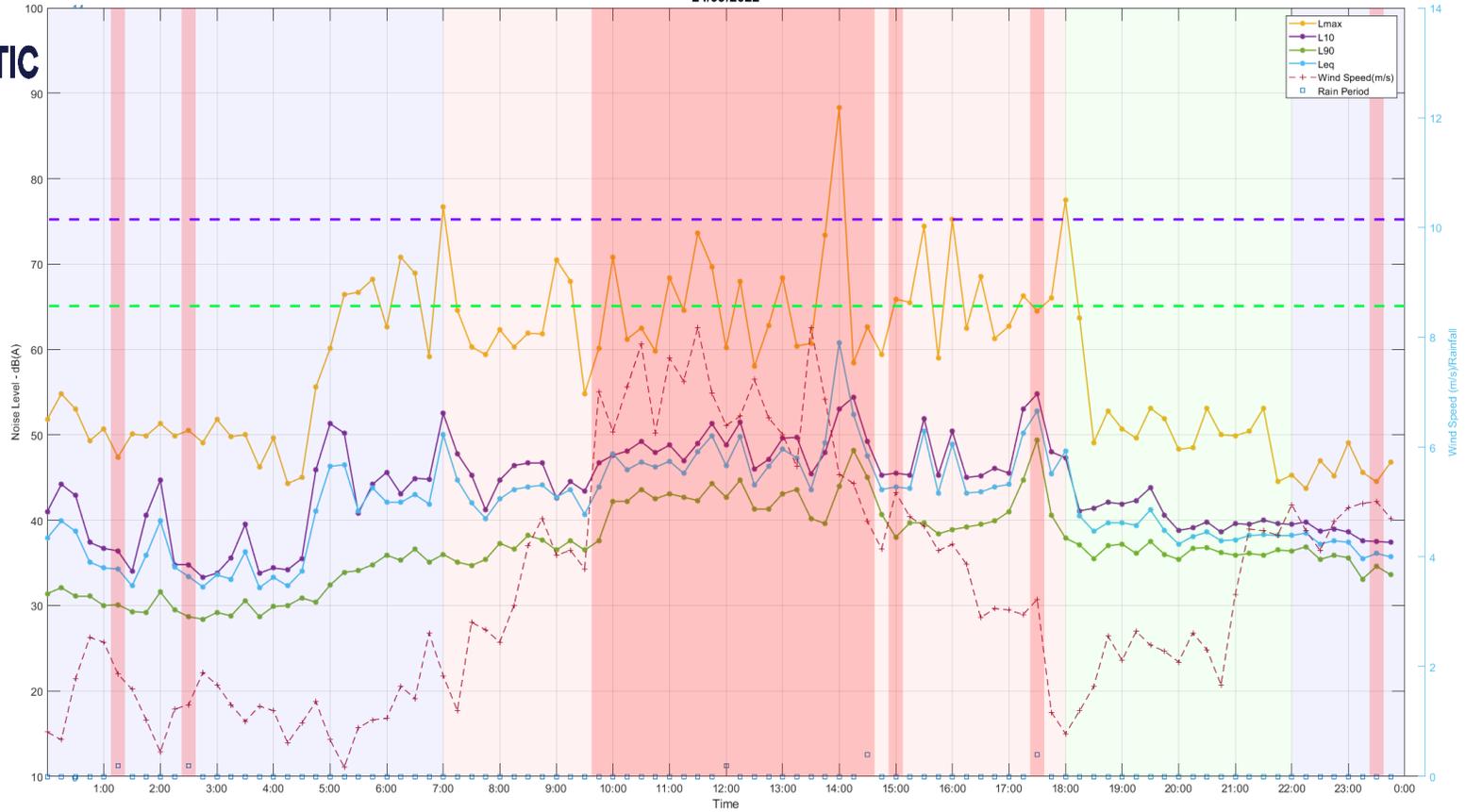
Roseville N1 Location
23/09/2022





Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq
Highly Noise Affected Level- 75 dB(A)Leq

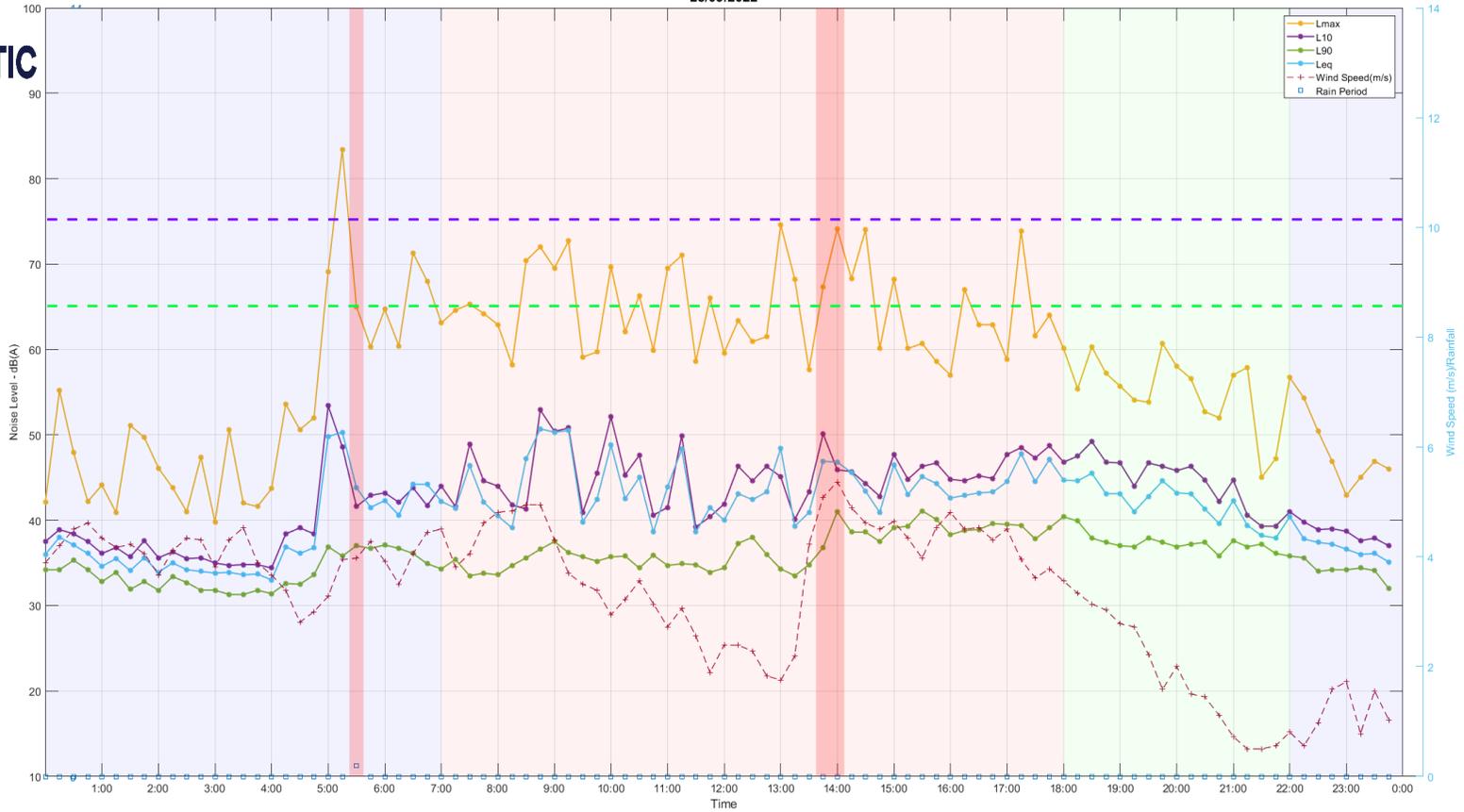
Roseville N1 Location
24/09/2022





Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq
Highly Noise Affected Level- 75 dB(A)Leq

Roseville N1 Location
25/09/2022



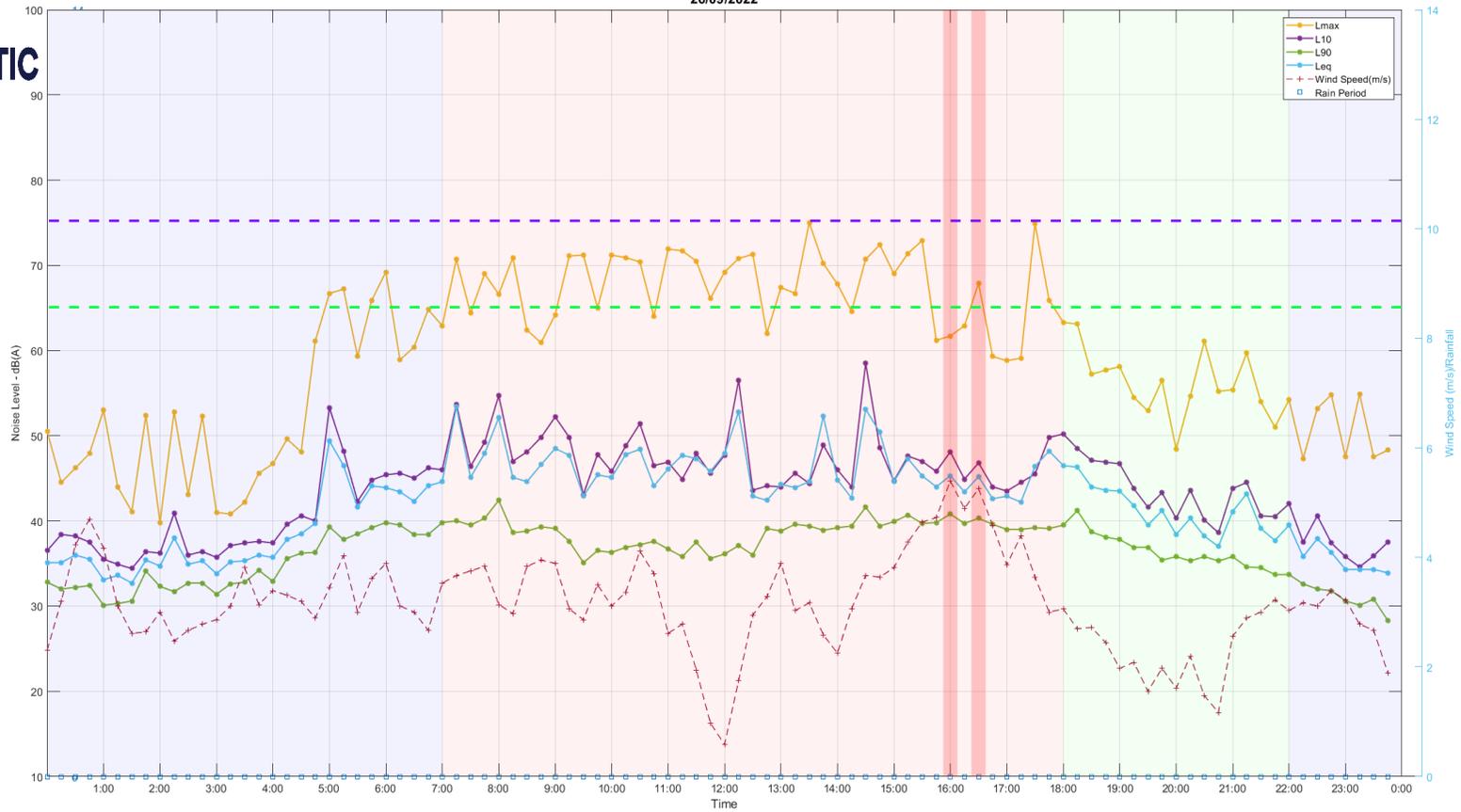


Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -

Roseville N1 Location
26/09/2022



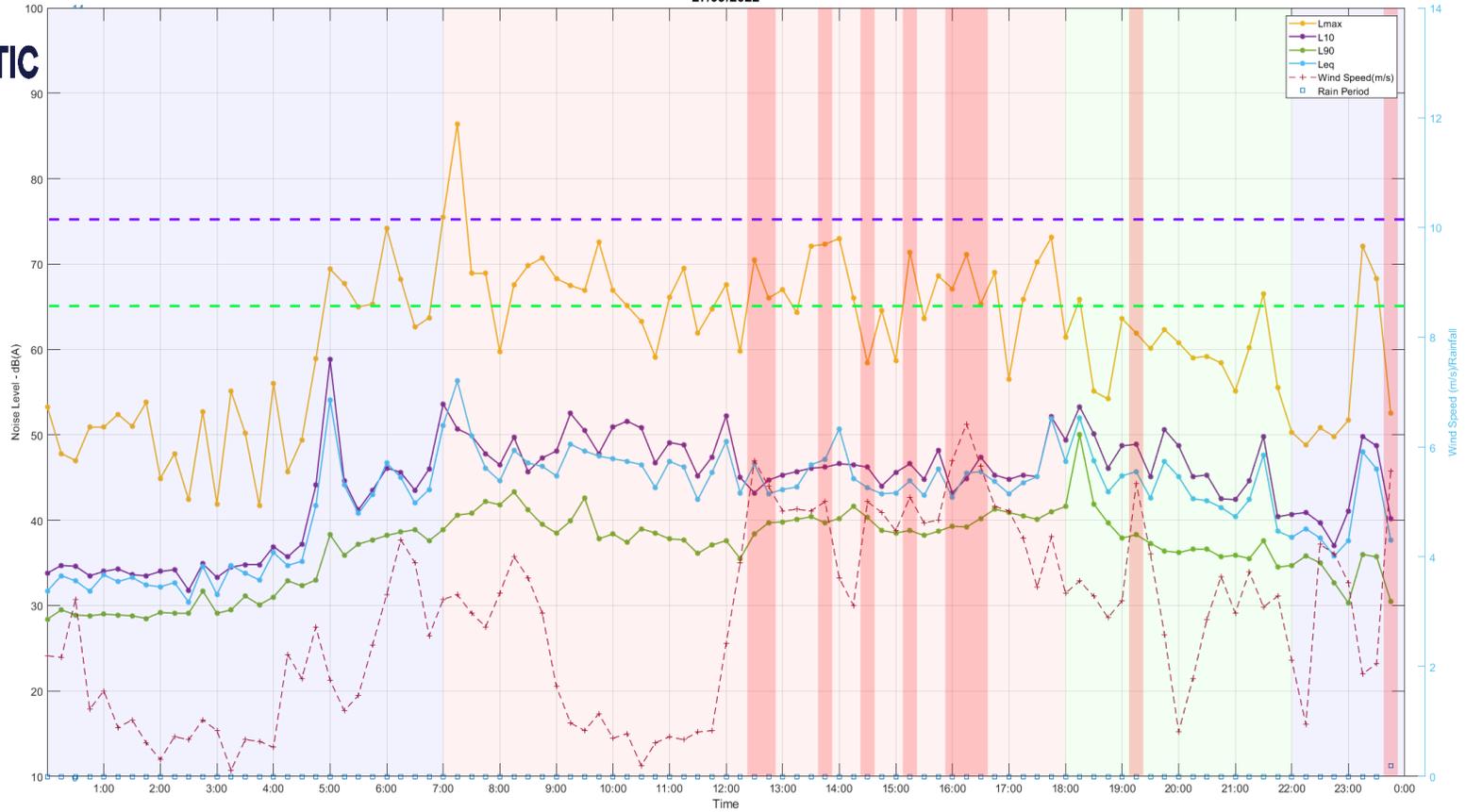
Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq

Highly Noise Affected Level- 75 dB(A)Leq



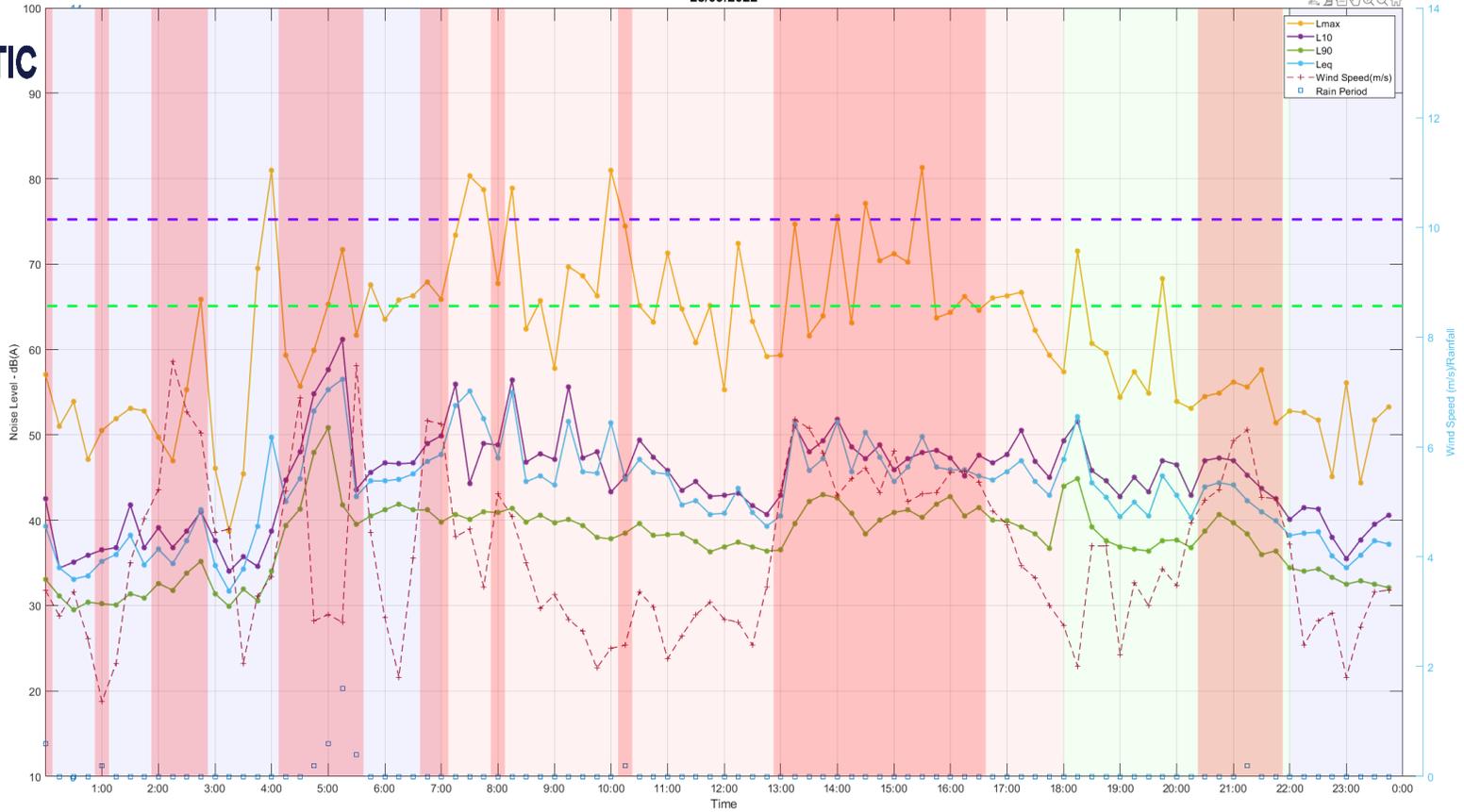
Roseville N1 Location
27/09/2022





Noise Management Levels
Active Recreation Areas - 65 dB(A)Leq
Highly Noise Affected Level- 75 dB(A)Leq

Roseville N1 Location
28/09/2022

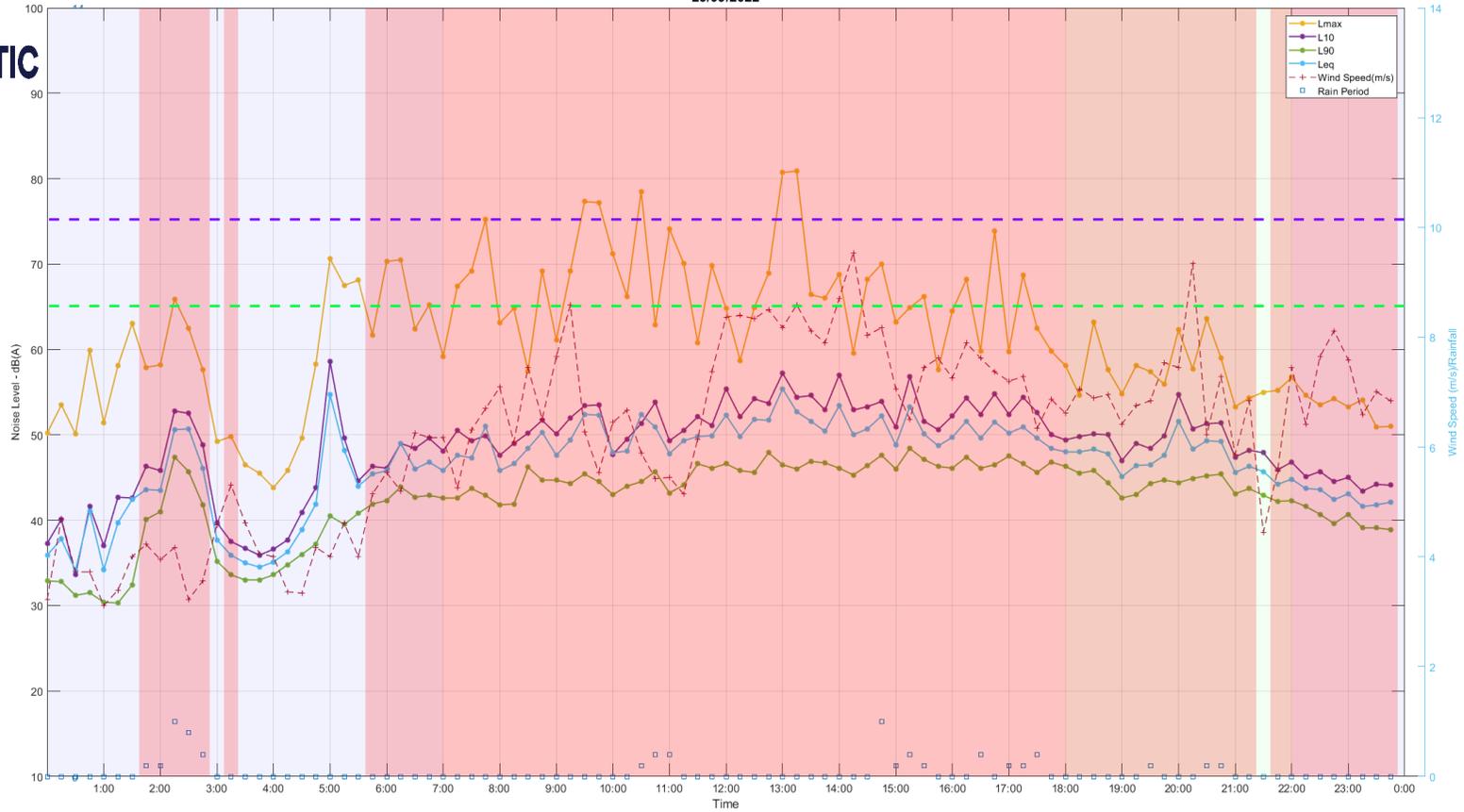


Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -

Roseville N1 Location
29/09/2022



Noise Management Levels

Active Recreation Areas - 65 dB(A)Leq - - - - -

Highly Noise Affected Level- 75 dB(A)Leq - - - - -

Roseville N1 Location
30/09/2022

