

## Roseville Anglican College Sports & Wellbeing Centre

### Noise and Vibration Monitoring Report 3

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**SYDNEY**

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## TABLE OF CONTENTS

<b>1</b>	<b>INTRODUCTION .....</b>	<b>4</b>
<b>2</b>	<b>SITE DESCRIPTION .....</b>	<b>4</b>
<b>3</b>	<b>PROJECT CRITERIA .....</b>	<b>6</b>
<b>3.1</b>	<b>VIBRATION CRITERIA .....</b>	<b>6</b>
3.1.1	Structure Borne Vibrations (Building Damage Criteria) .....	6
<b>3.2</b>	<b>NOISE MANAGEMENT LEVELS .....</b>	<b>7</b>
3.2.1	To Active Recreational Receivers and Classrooms.....	7
<b>4</b>	<b>VIBRATION MONITORING .....</b>	<b>8</b>
<b>4.1</b>	<b>MEASUREMENT EQUIPMENT .....</b>	<b>8</b>
<b>4.2</b>	<b>MEASUREMENT LOCATIONS .....</b>	<b>8</b>
<b>5</b>	<b>NOISE MONITORING .....</b>	<b>10</b>
<b>5.1</b>	<b>MEASUREMENT EQUIPMENT .....</b>	<b>10</b>
<b>5.2</b>	<b>MEASUREMENT LOCATIONS.....</b>	<b>10</b>
<b>6</b>	<b>MONITORING RESULTS .....</b>	<b>11</b>
<b>6.1</b>	<b>VIBRATION MONITORING RESULTS.....</b>	<b>11</b>
<b>6.2</b>	<b>NOISE MONITORING RESULTS.....</b>	<b>11</b>
<b>7</b>	<b>CONCLUSION.....</b>	<b>12</b>
	<b>APPENDIX 1: DAILY GRAPHS M7713 HERITAGE (FRONT).....</b>	<b>13</b>
	<b>APPENDIX 2 :DAILY GRAPHS M7427 HERITAGE (REAR).....</b>	<b>14</b>
	<b>APPENDIX 3 : DAILY GRAPHS M7715 (RESIDENTIAL BUILDING) .....</b>	<b>15</b>
	<b>APPENDIX 4: UNATTENDED NOISE MONITORING DAILY GRAPHS (N1).....</b>	<b>16</b>
	<b>APPENDIX 5: UNATTENDED NOISE MONITORING DAILY GRAPHS (N2).....</b>	<b>17</b>
	<b>APPENDIX 6 : UNATTENDED NOISE MONITORING DAILY GRAPHS (N3).....</b>	<b>18</b>

## **1 INTRODUCTION**

Acoustic Logic (AL) has been engaged to conduct construction noise and 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 19<sup>th</sup> July 2022*).

This report covers the monitoring period between Saturday 1<sup>st</sup> October 2022 to Monday 31<sup>st</sup> October 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 <sup>-1</sup> )			
		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 19<sup>th</sup> July 2022) is presented below.

**Table 2 – Summarised Noise Management Levels - Residential**

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

<b>Receivers</b>	<b>Noise Management Level dB(A)<math>L_{eq(15min)}</math></b>
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.

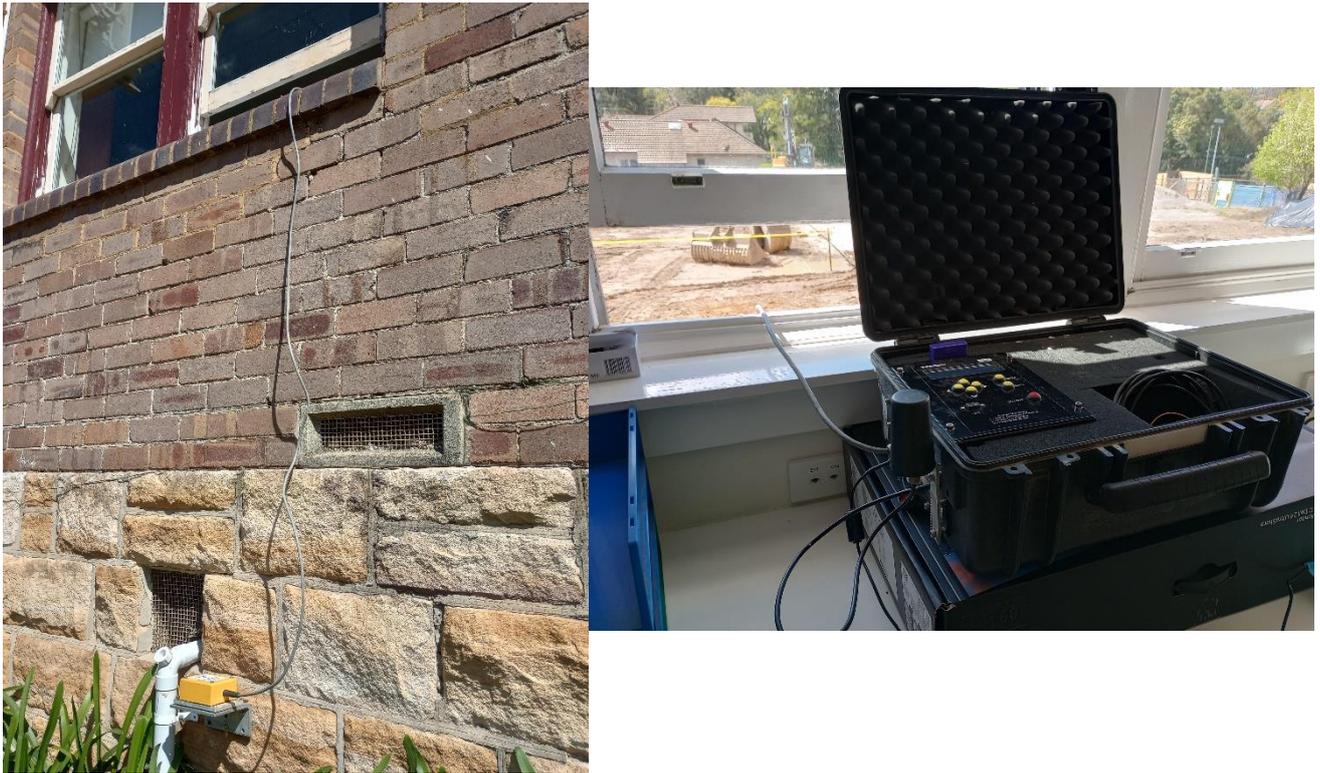
### 4.2 MEASUREMENT LOCATIONS

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

Unattended noise monitoring was conducted using with Acoustic Research Laboratories noise monitors set on A-weighted fast response mode. All monitors were calibrated before and after the measurements using a Rion Type NC-73 calibrator. No significant drift was recorded.

### 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

### 6.1 VIBRATION MONITORING RESULTS

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

- M7427 did not measure any exceedances during this monitoring period.
- M7713 measured exceedances on the 15<sup>th</sup>, 21<sup>st</sup> and 28<sup>th</sup> October 2022. Project team was notified, and we were informed that piling works were being undertaken along the front of the heritage building. We note that the exceedances on the days mentioned above were a single event and not continuous. Upon receiving exceedance notification, construction methodologies were reviewed, and no further exceedance events were measured. For the rest of the monitoring period, measured vibration levels were below the DIN4150-03 criteria.
- M7715 measured exceedances on the 7<sup>th</sup> and 10<sup>th</sup> October 2022. Project team was notified, and we were informed that excavation and piling works were still being undertaken near to the geophone sensor along the residential receiver. Notwithstanding, due to the proximity of works to the monitor, the vibration levels to the nearest residential 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 (use of excavator and piling rigs) 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.
- Notwithstanding, in the event that the school has raised an issue with regards to the construction noise, construction methodologies are to be reviewed and modified to prevent or mitigate the likelihood of recurrence.

## 7 CONCLUSION

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

This report presents the noise and vibration results for the monitoring period Saturday 1<sup>st</sup> October 2022 to Monday 31<sup>st</sup> October 2022.

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

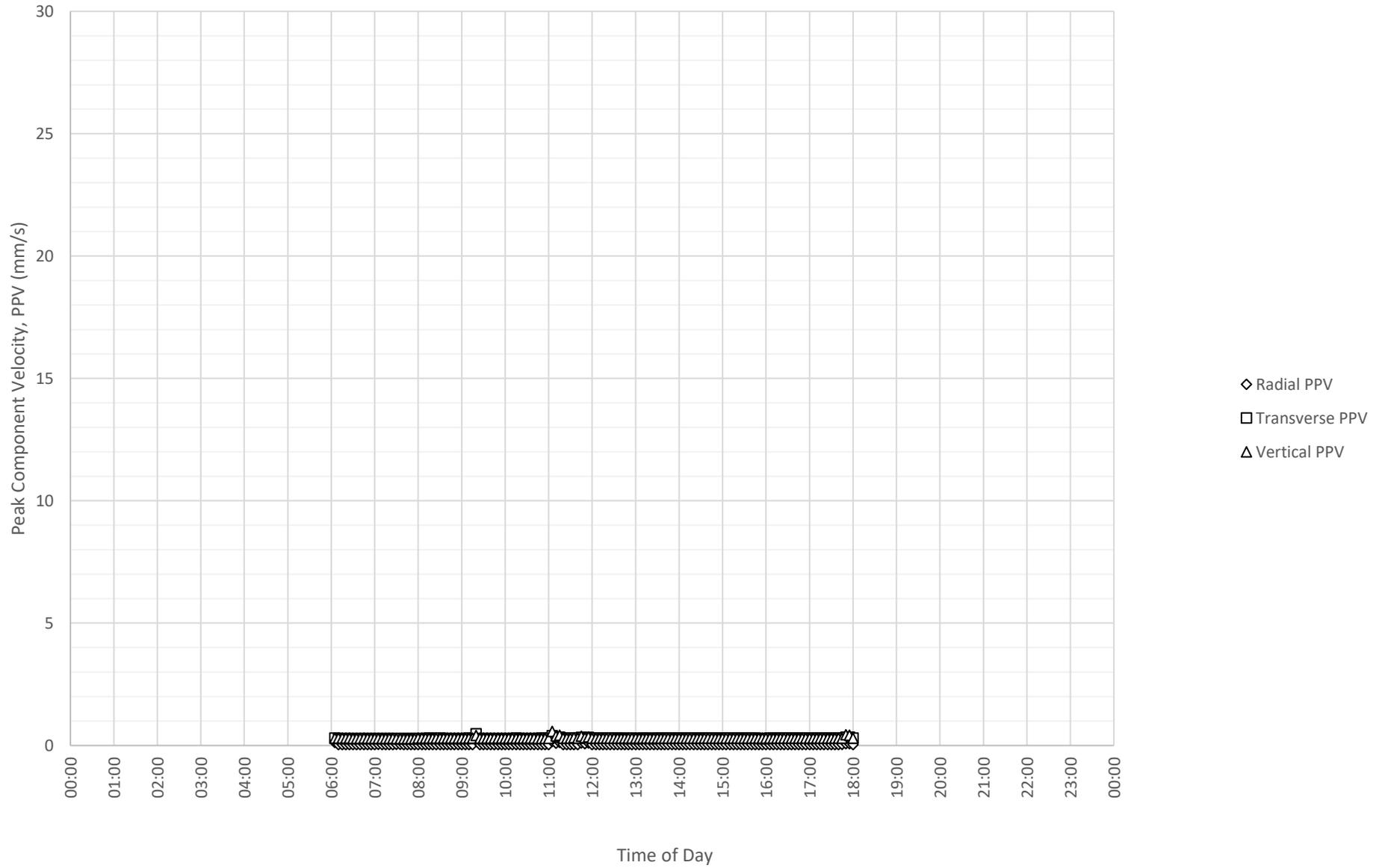
Yours faithfully,

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

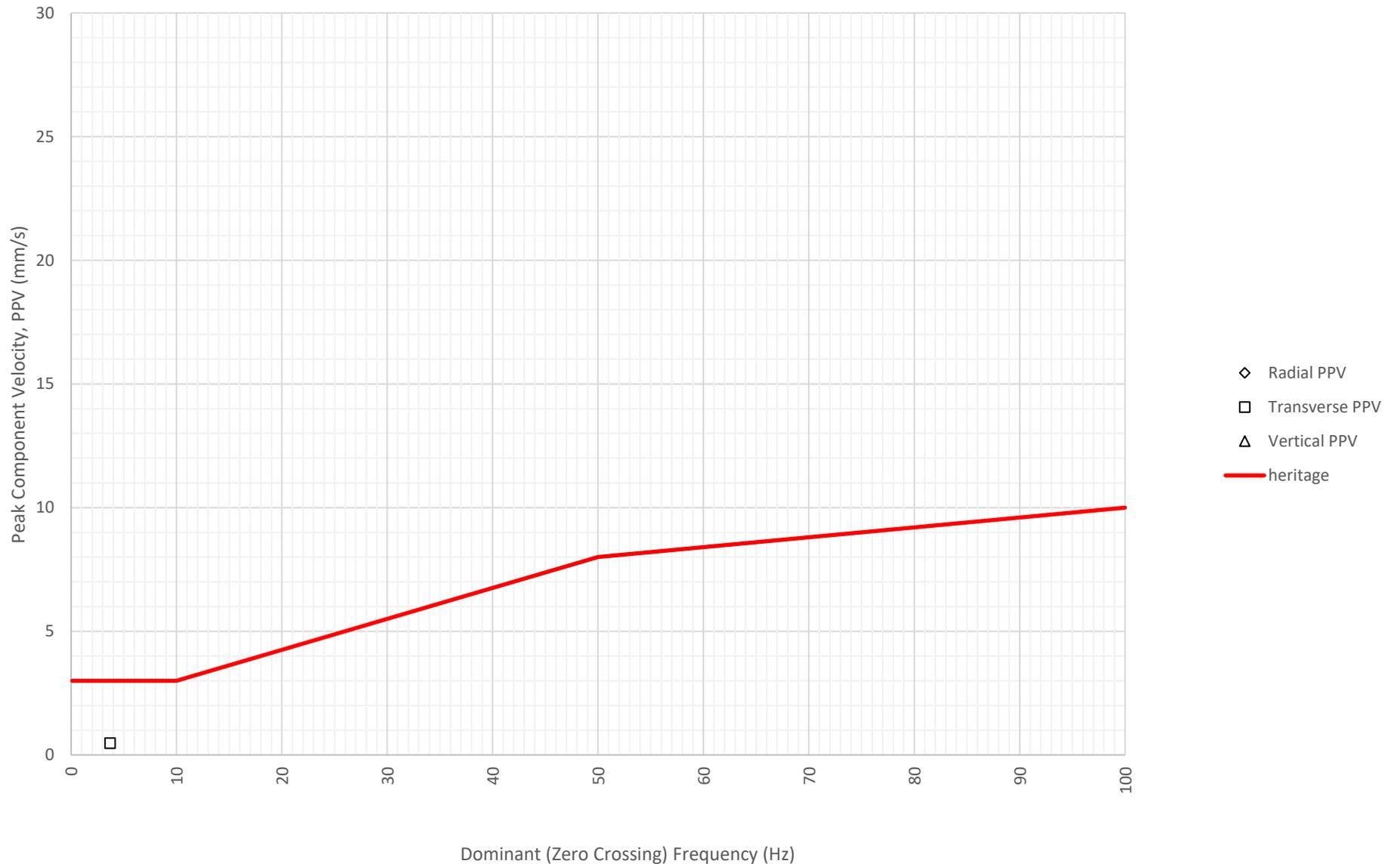
Acoustic Logic Pty Ltd  
Samantha Wong

## **APPENDIX 1: DAILY GRAPHS M7713 HERITAGE (FRONT)**

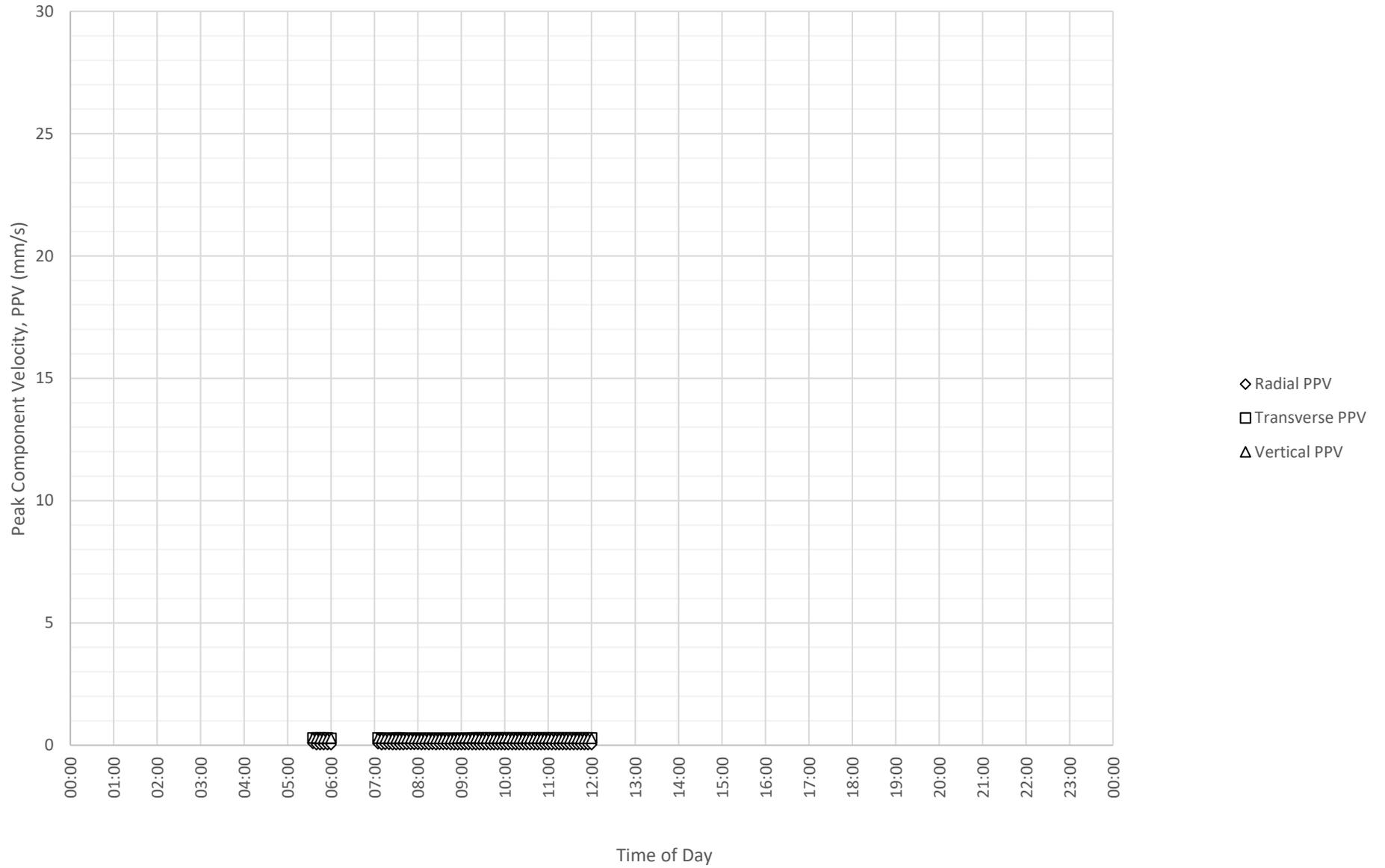
Daily Monitored Vibration Levels at M7713 Heritage (front) on 1-10-2022



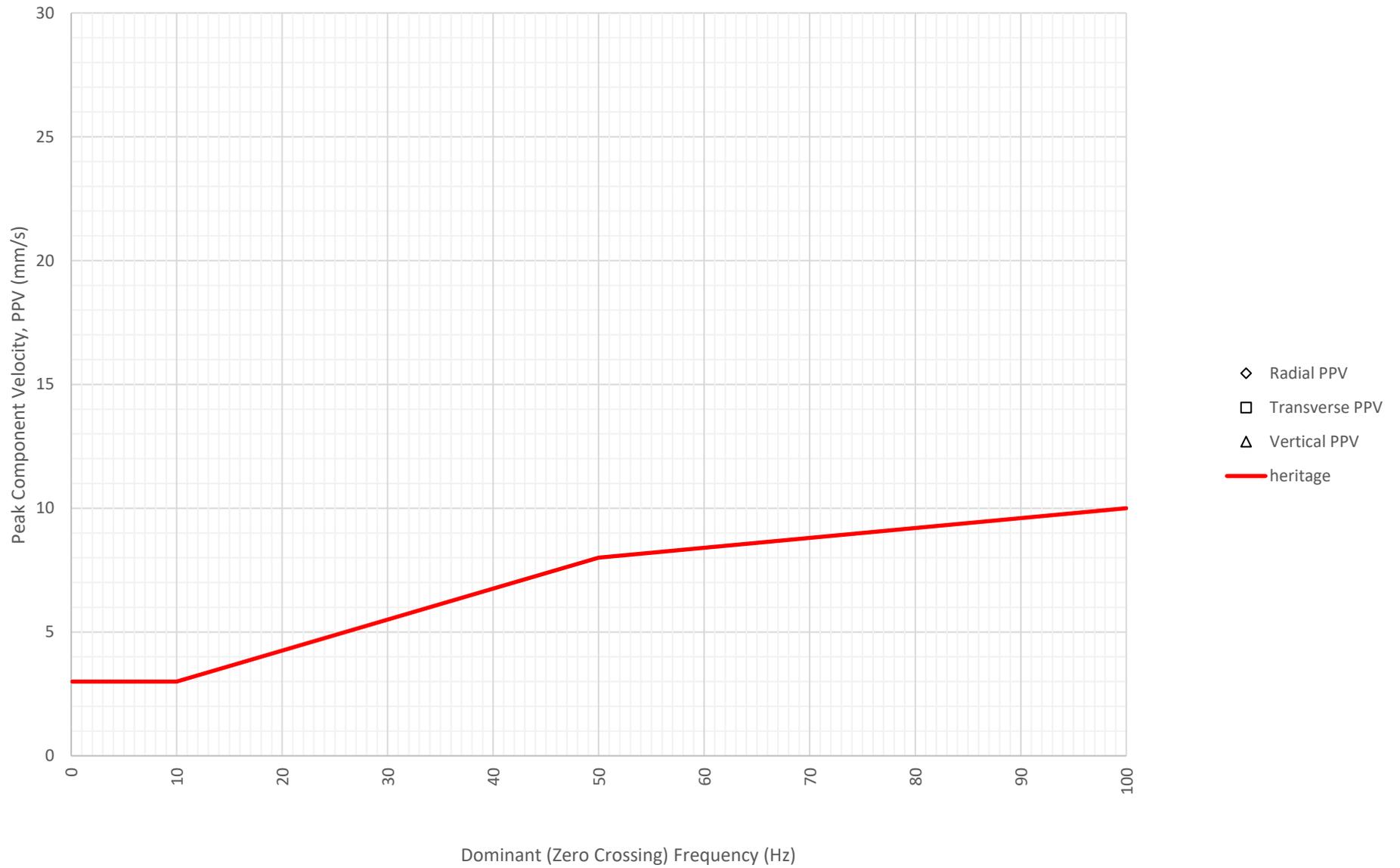
Frequency Content of Vibration Levels at M7713 Heritage (front) on 1-10-2022



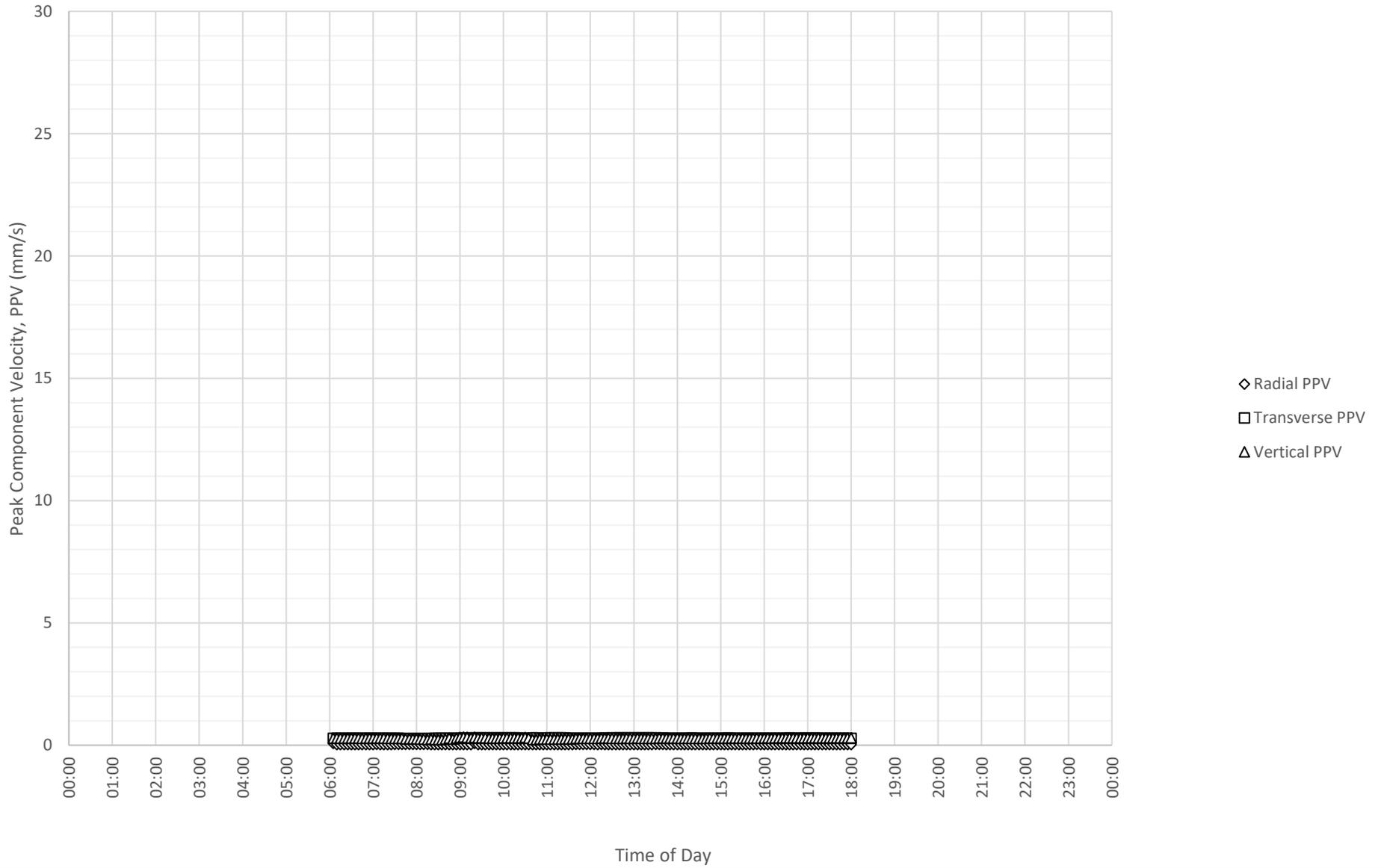
Daily Monitored Vibration Levels at M7713 Heritage (front) on 2-10-2022



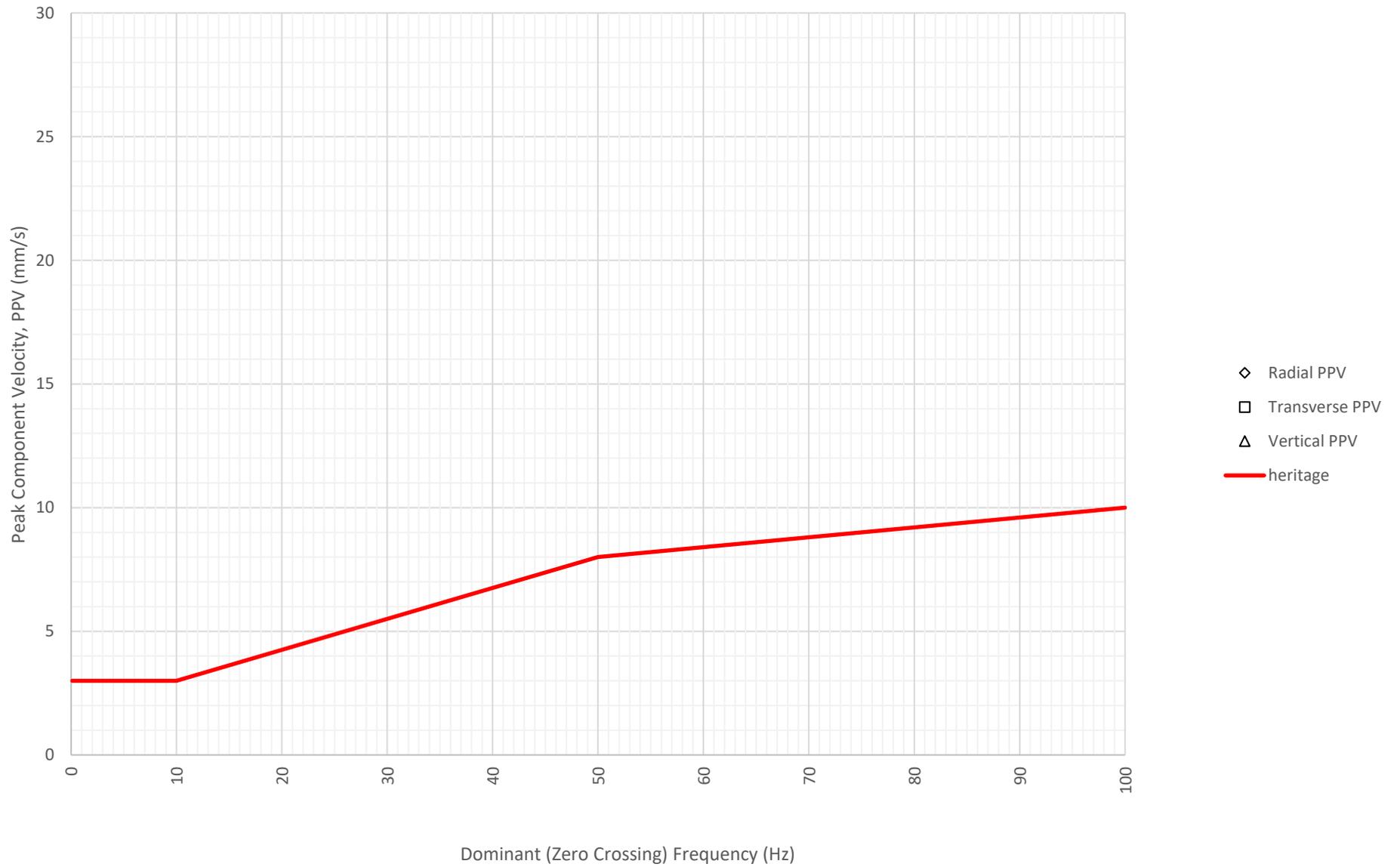
Frequency Content of Vibration Levels at M7713 Heritage (front) on 2-10-2022



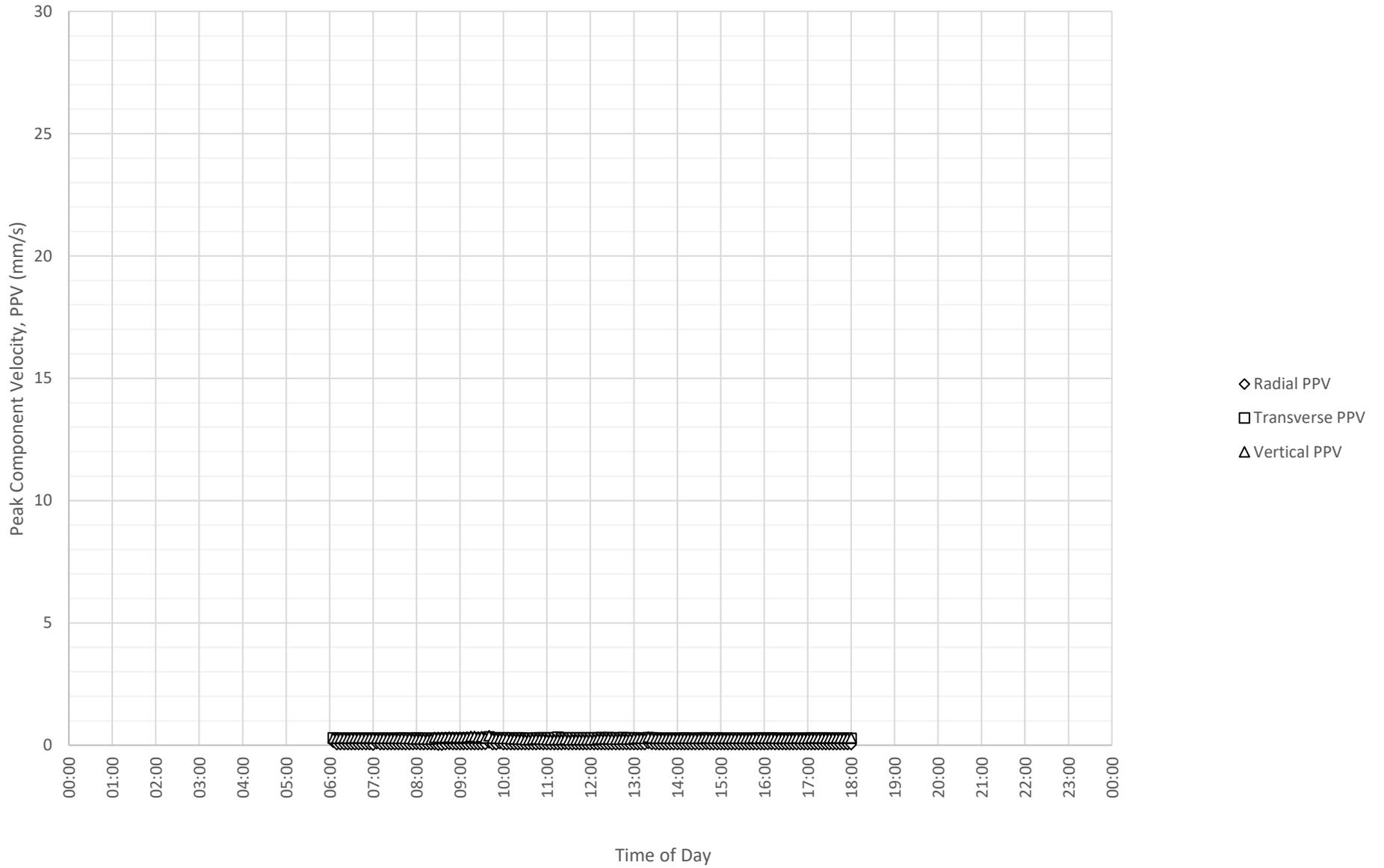
Daily Monitored Vibration Levels at M7713 Heritage (front) on 3-10-2022



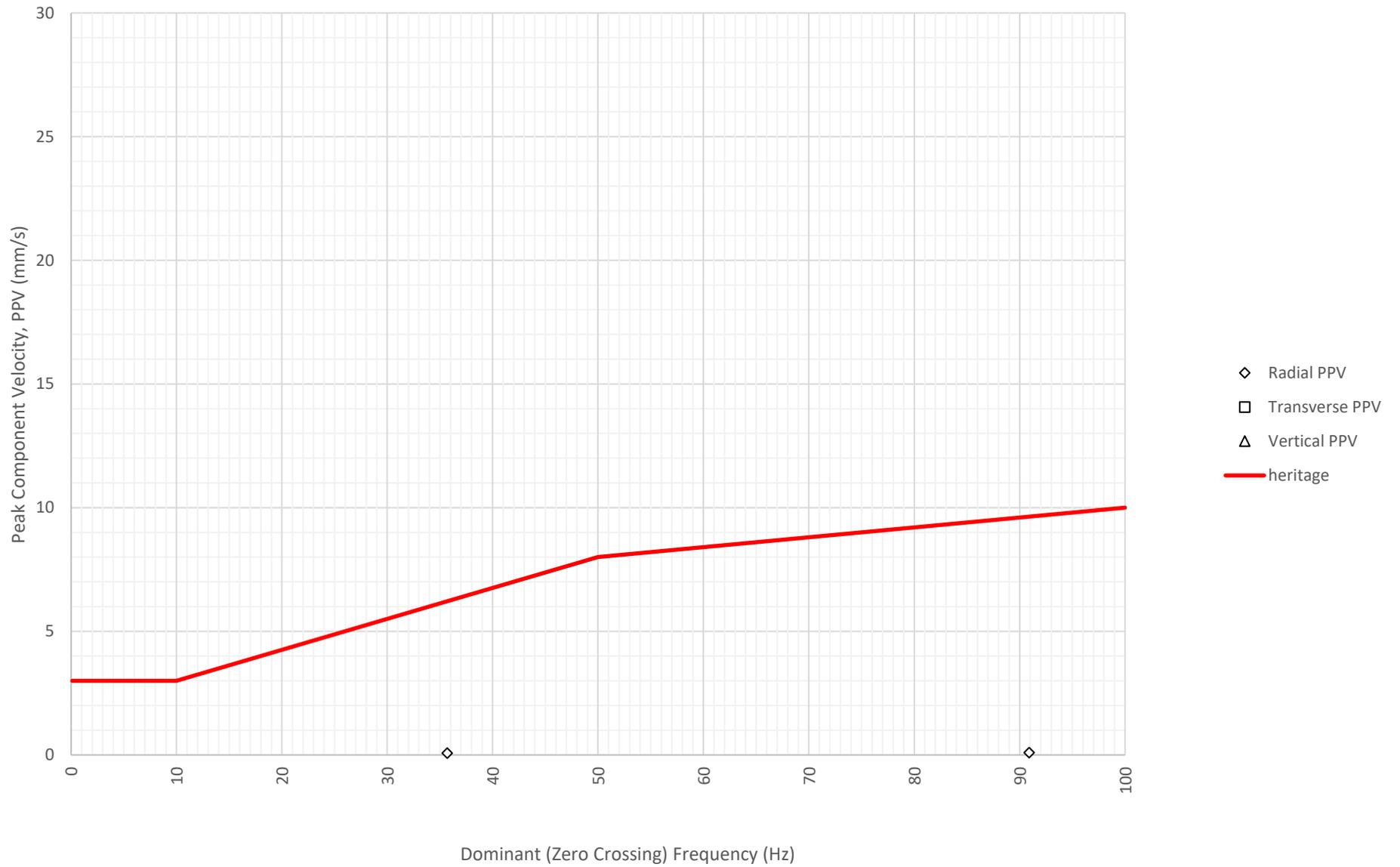
Frequency Content of Vibration Levels at M7713 Heritage (front) on 3-10-2022



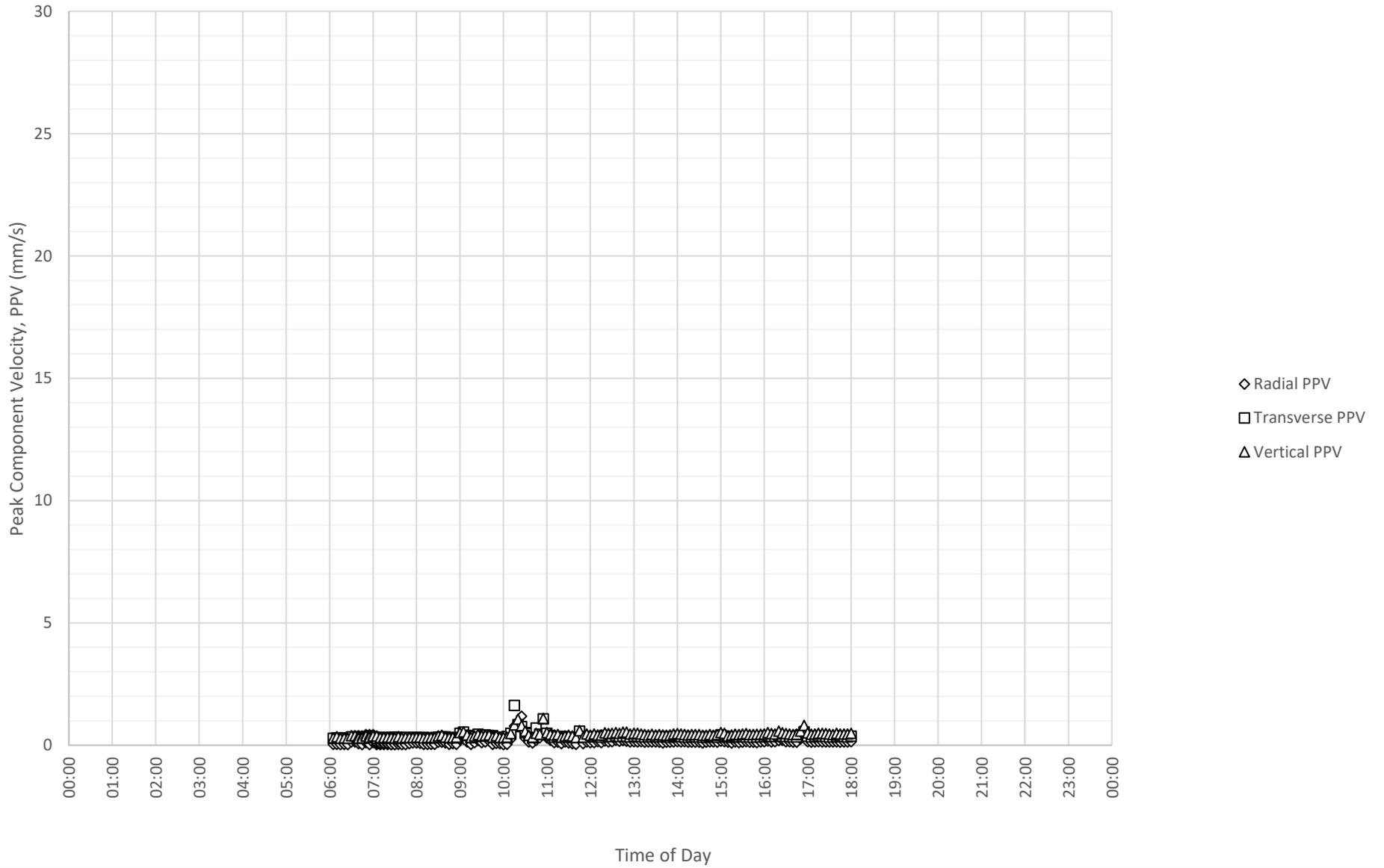
Daily Monitored Vibration Levels at M7713 Heritage (front) on 4-10-2022



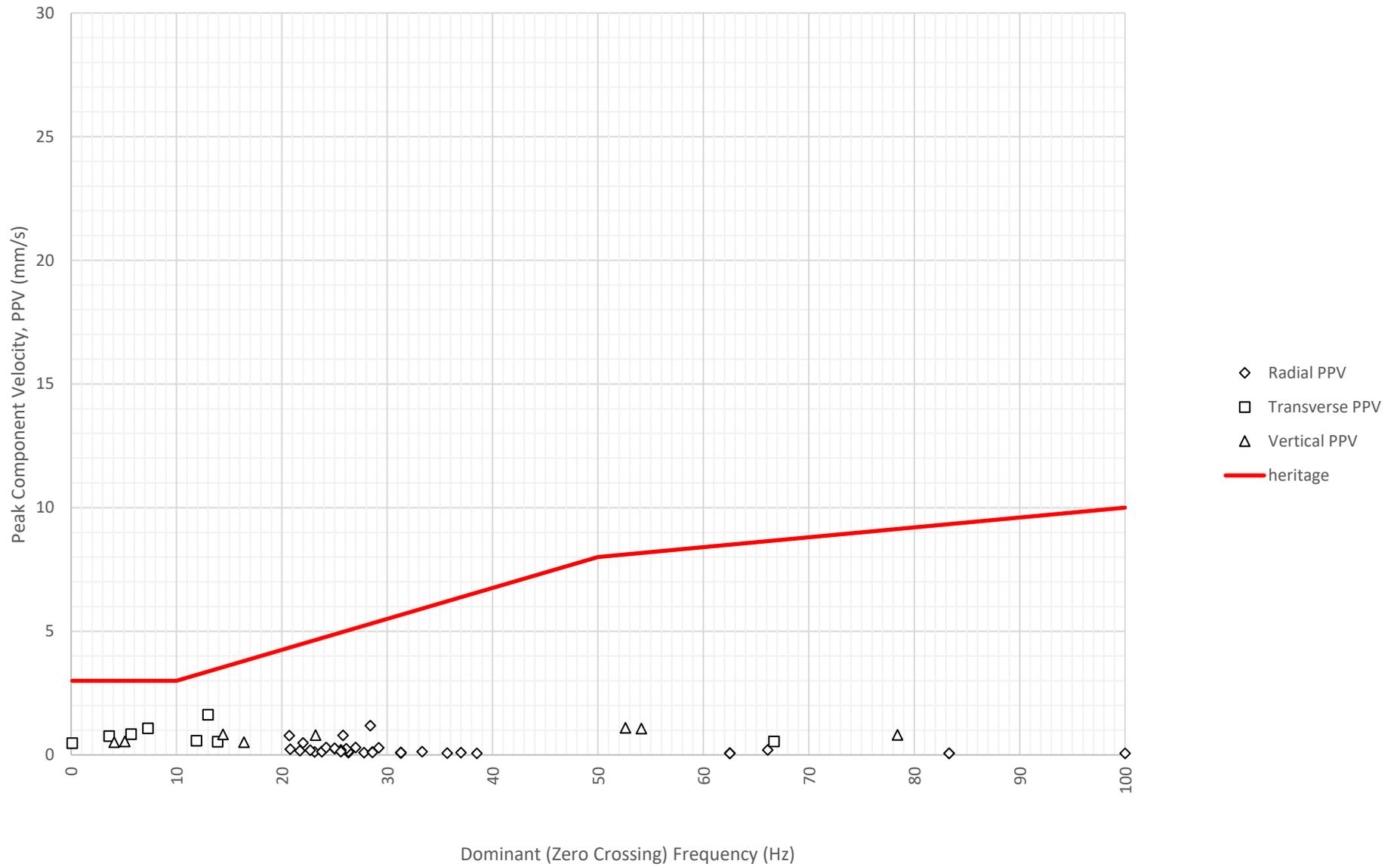
Frequency Content of Vibration Levels at M7713 Heritage (front) on 4-10-2022



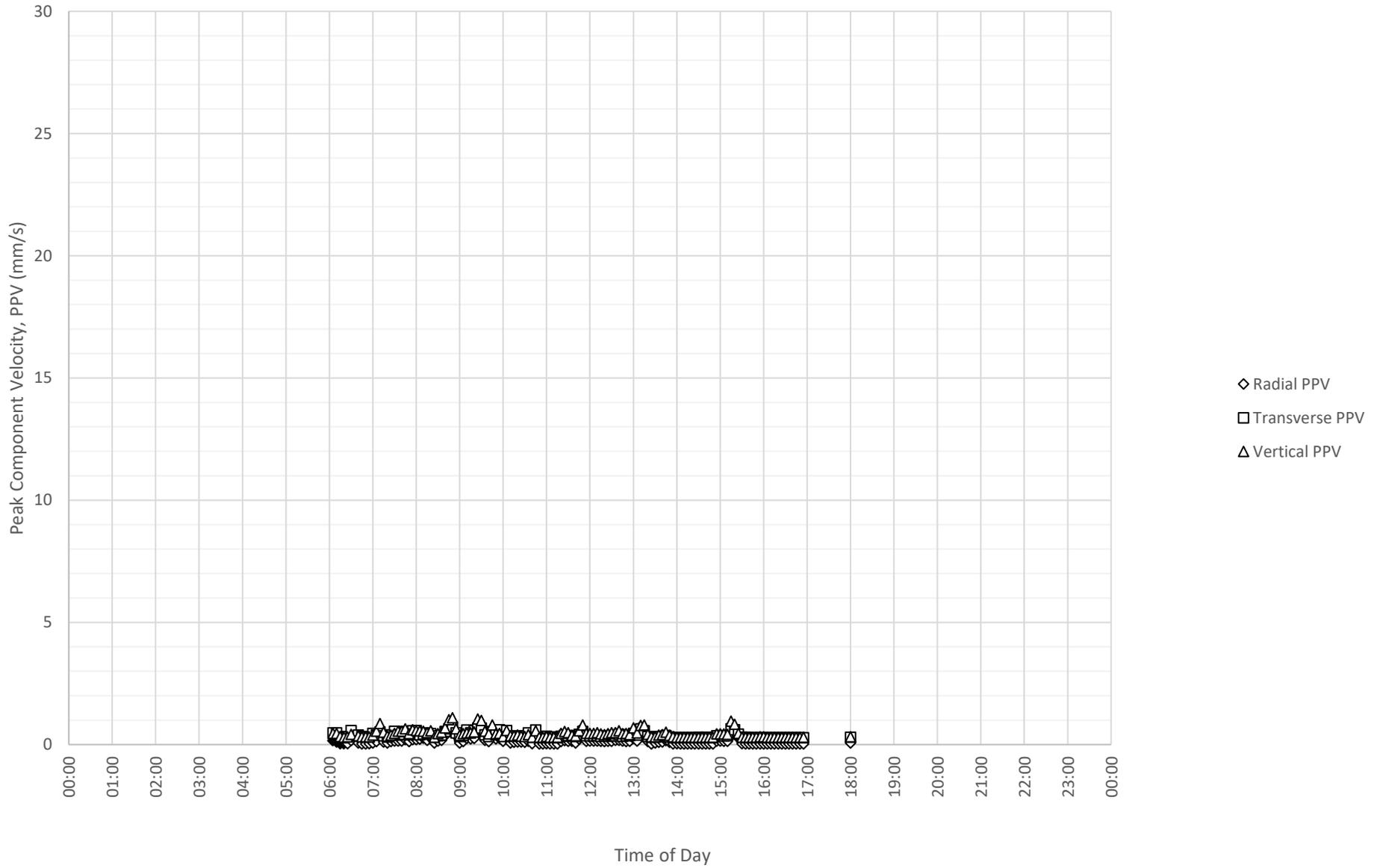
Daily Monitored Vibration Levels at M7713 Heritage (front) on 5-10-2022



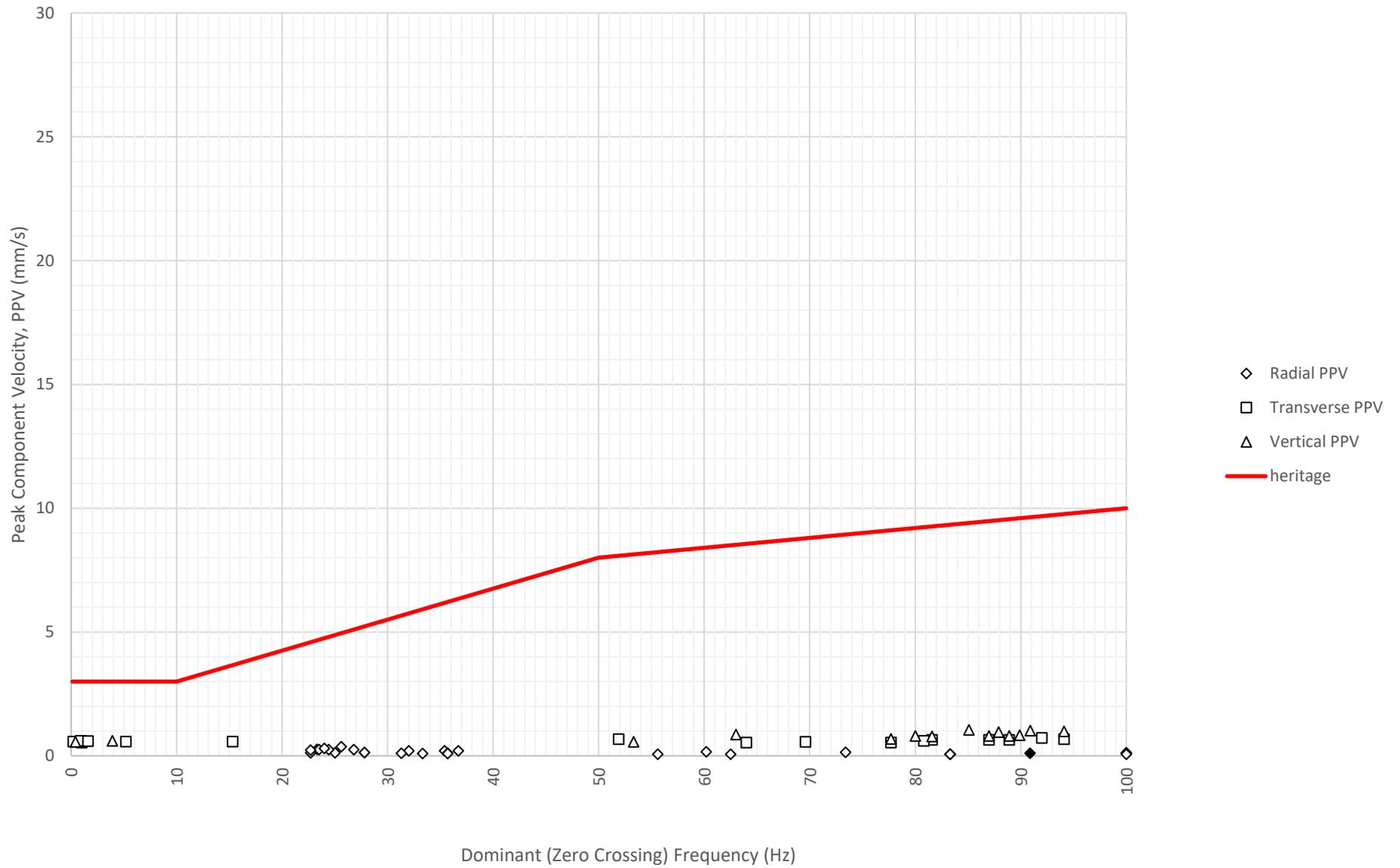
Frequency Content of Vibration Levels at M7713 Heritage (front) on 5-10-2022



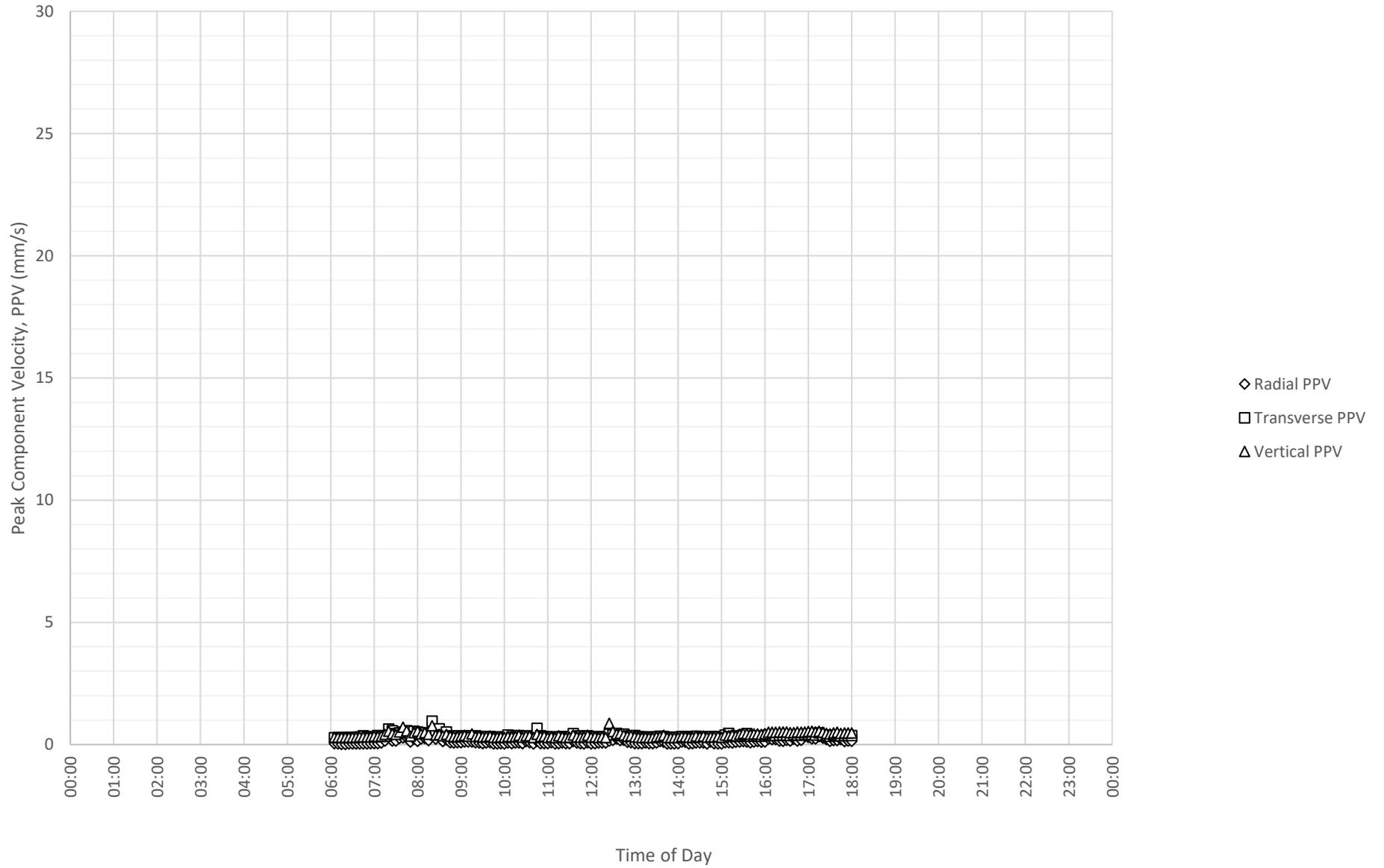
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 6-10-2022



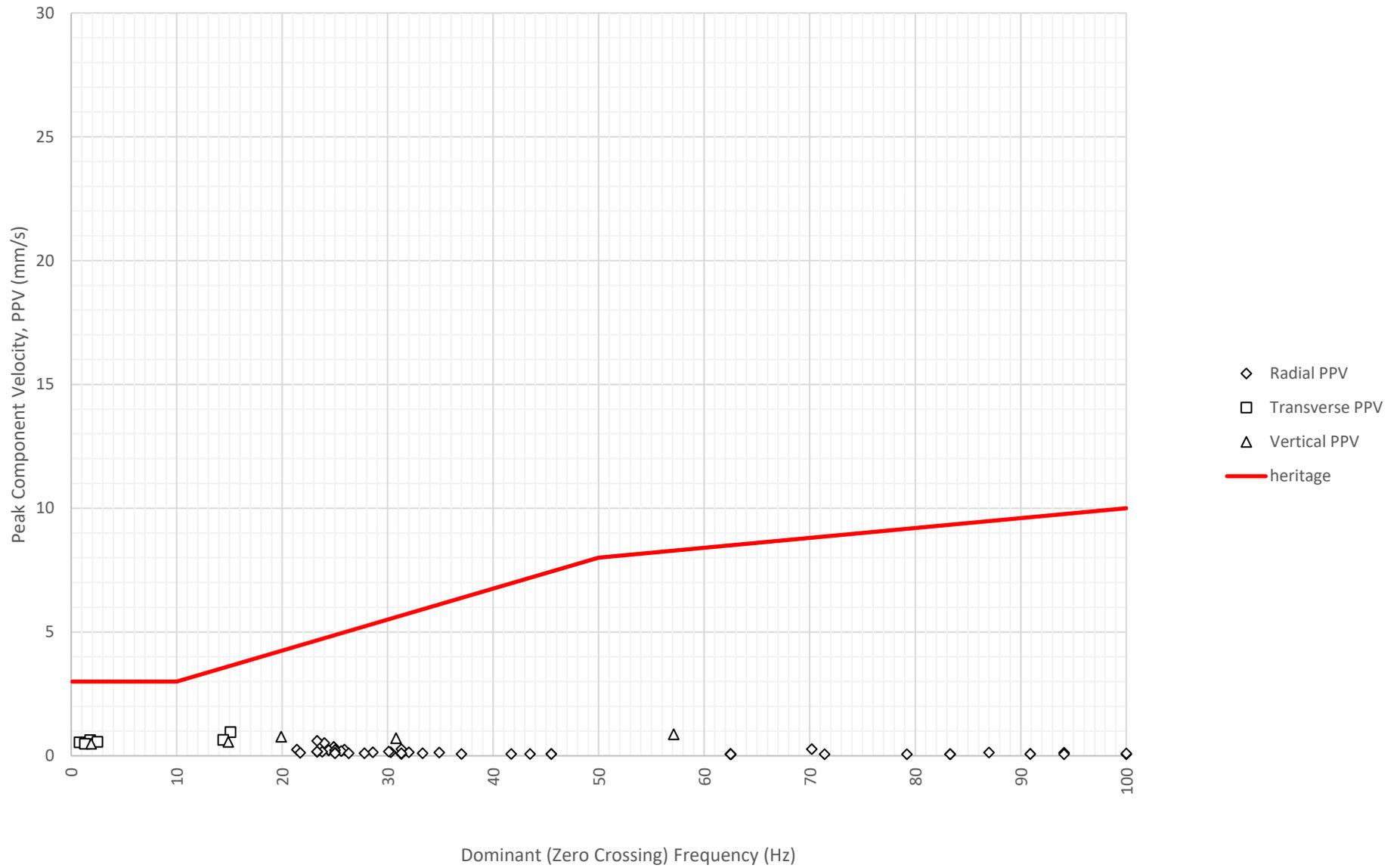
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 6-10-2022



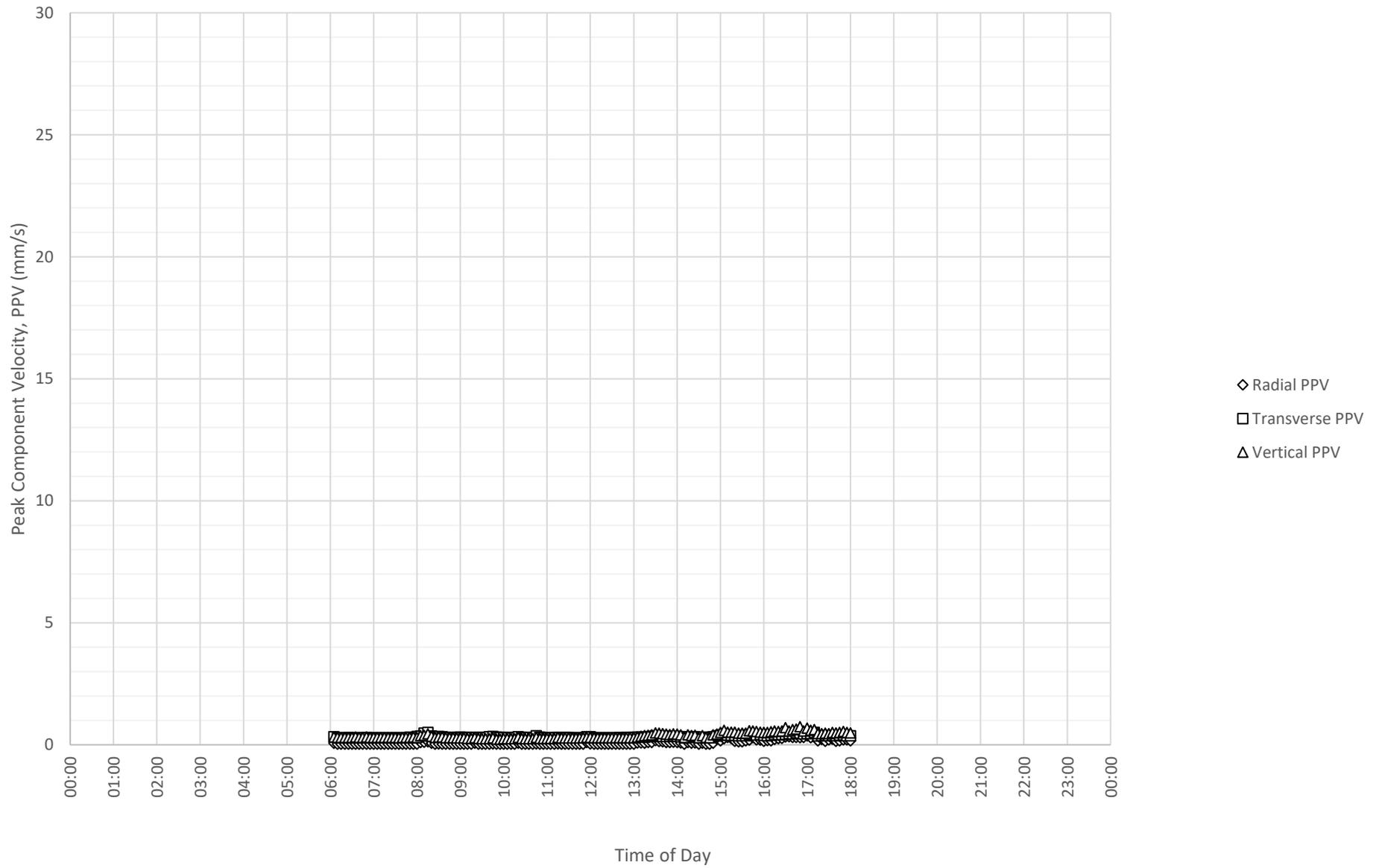
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 7-10-2022



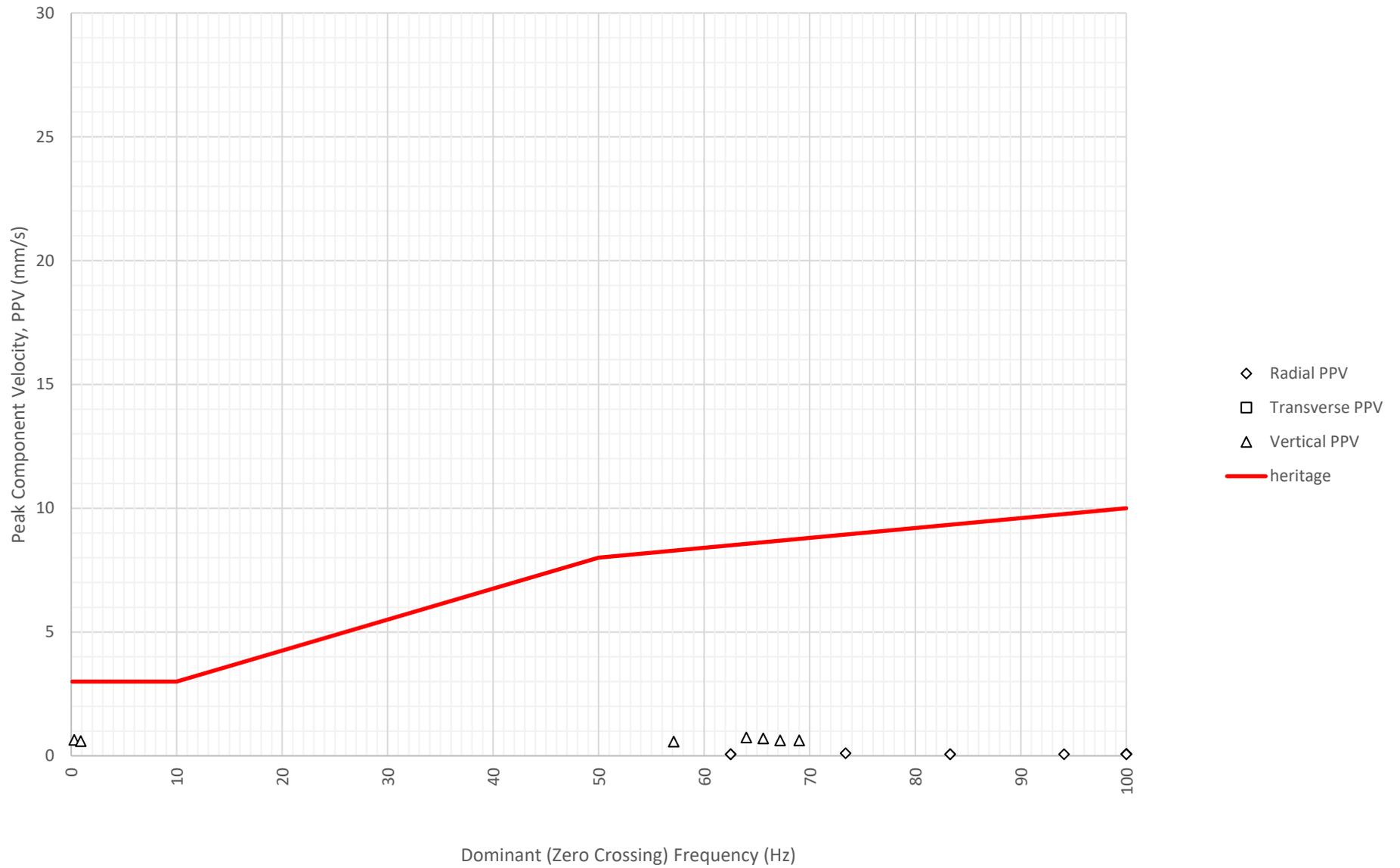
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 7-10-2022



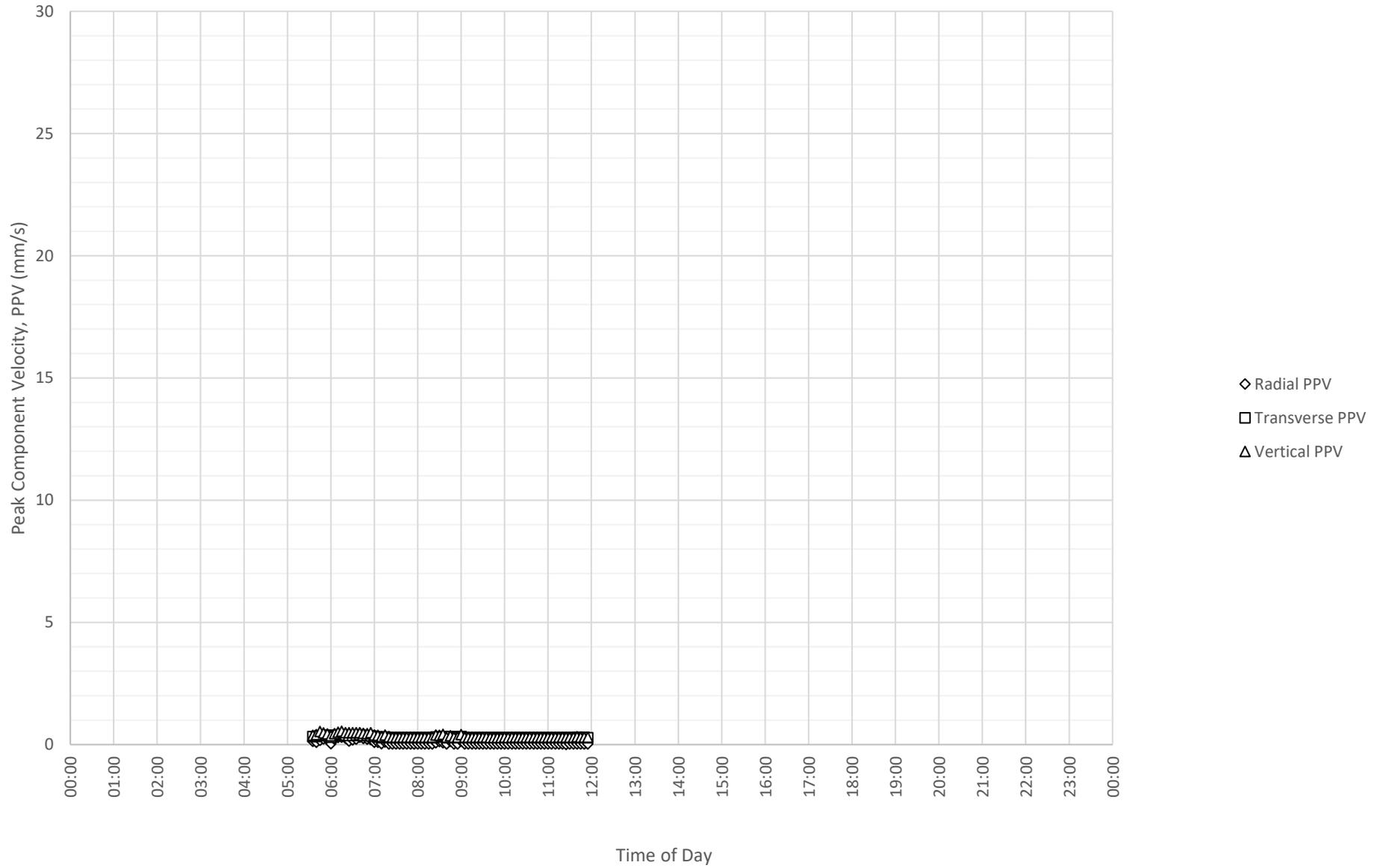
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 8-10-2022



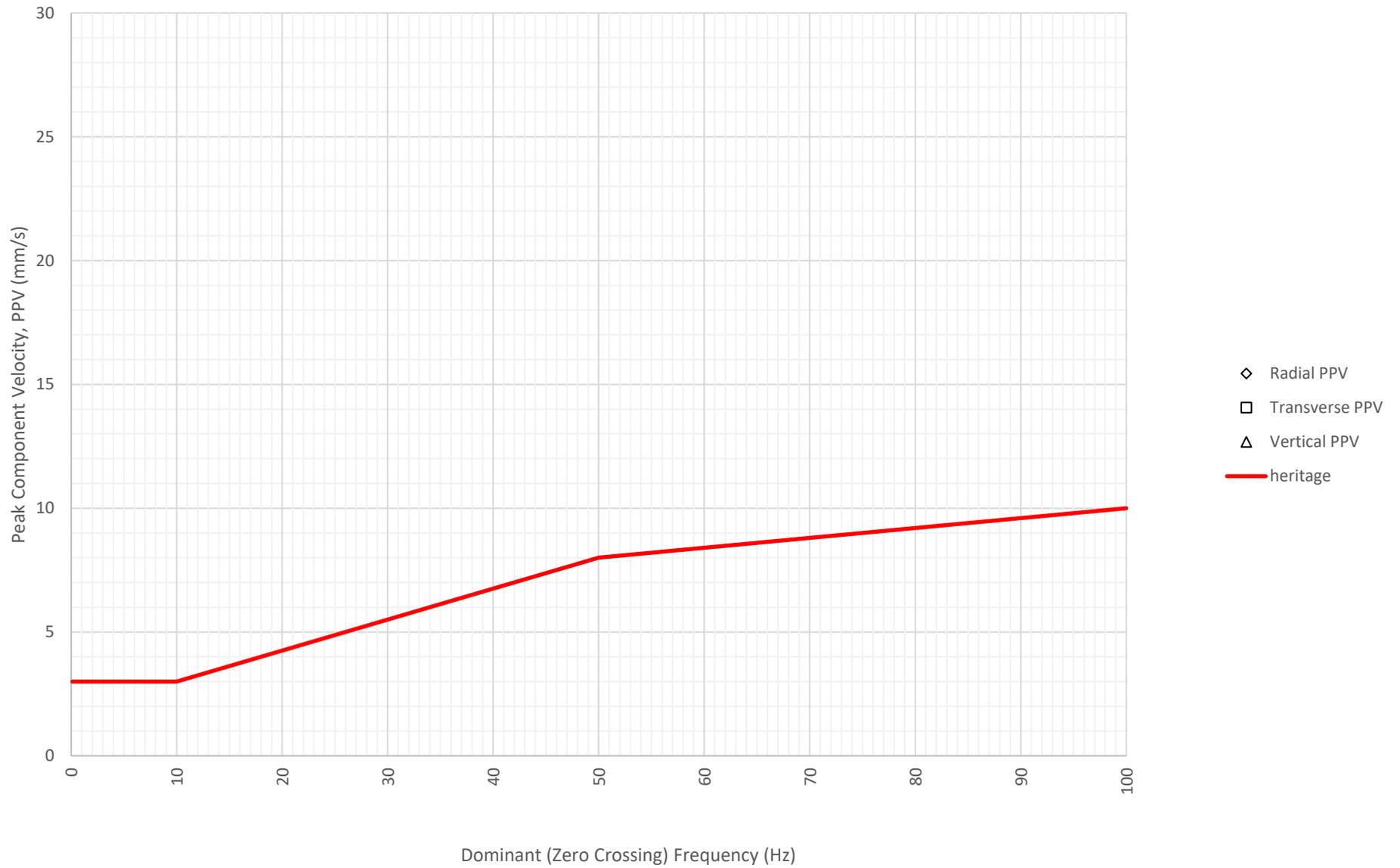
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 8-10-2022



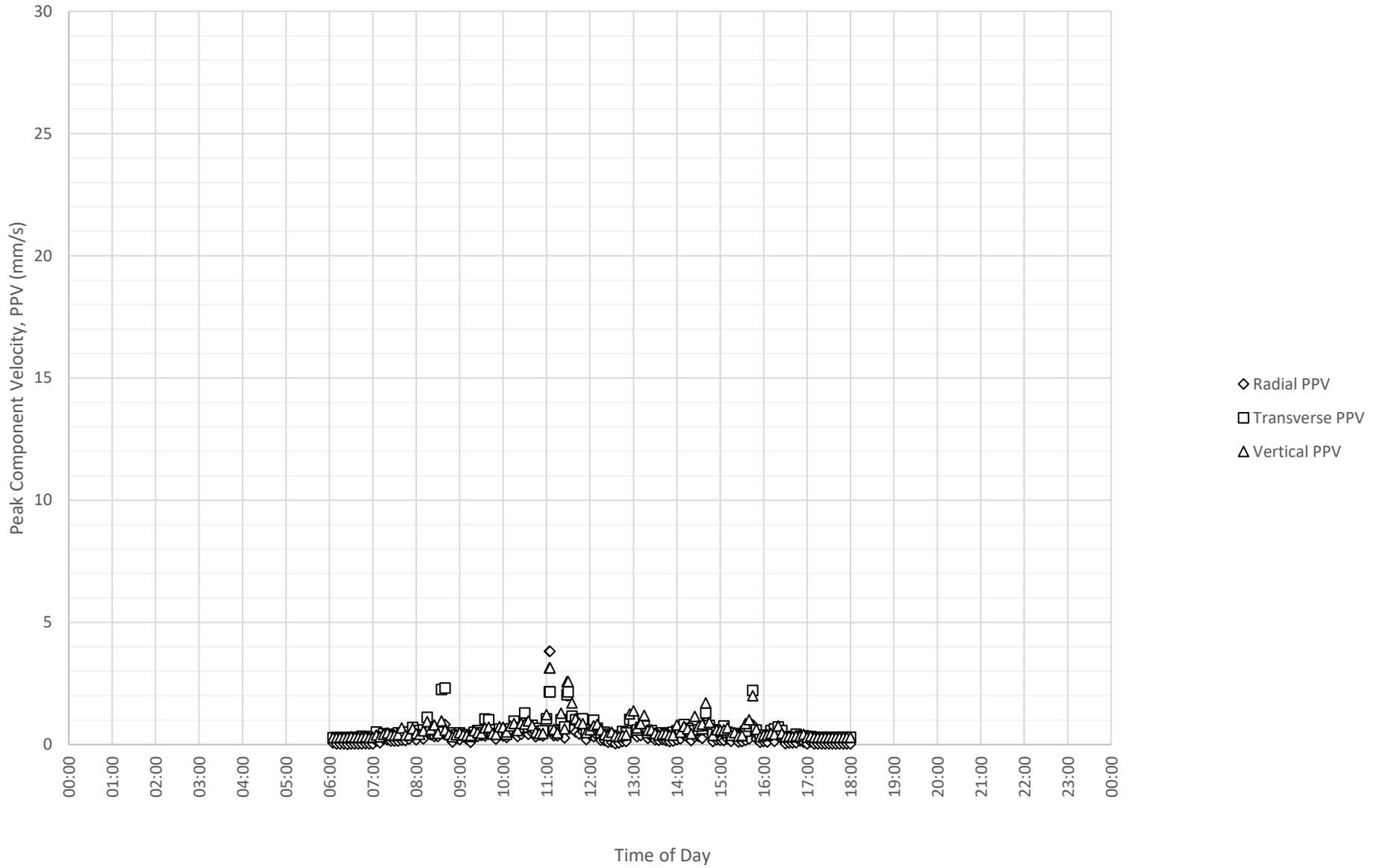
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 9-10-2022



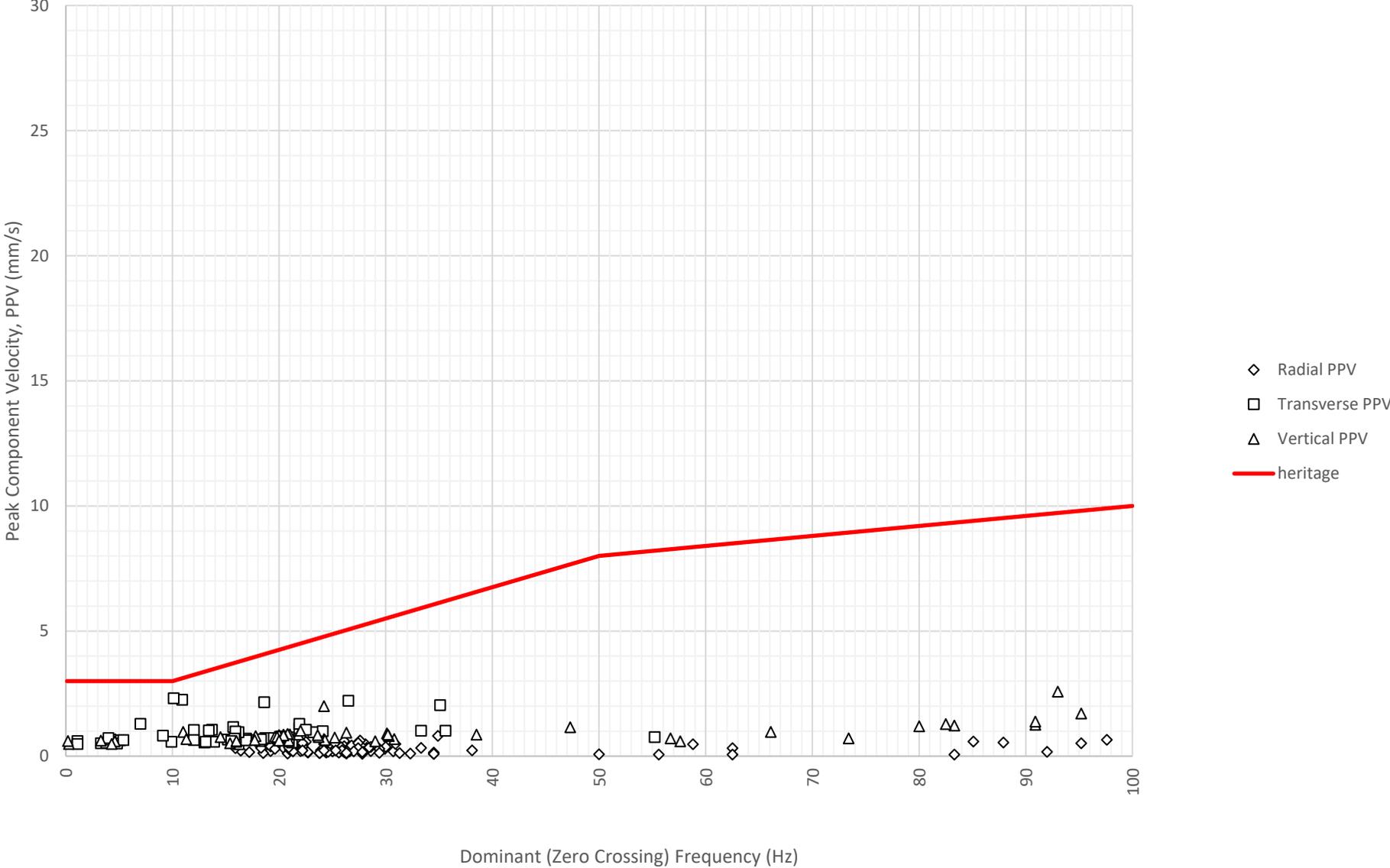
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 9-10-2022



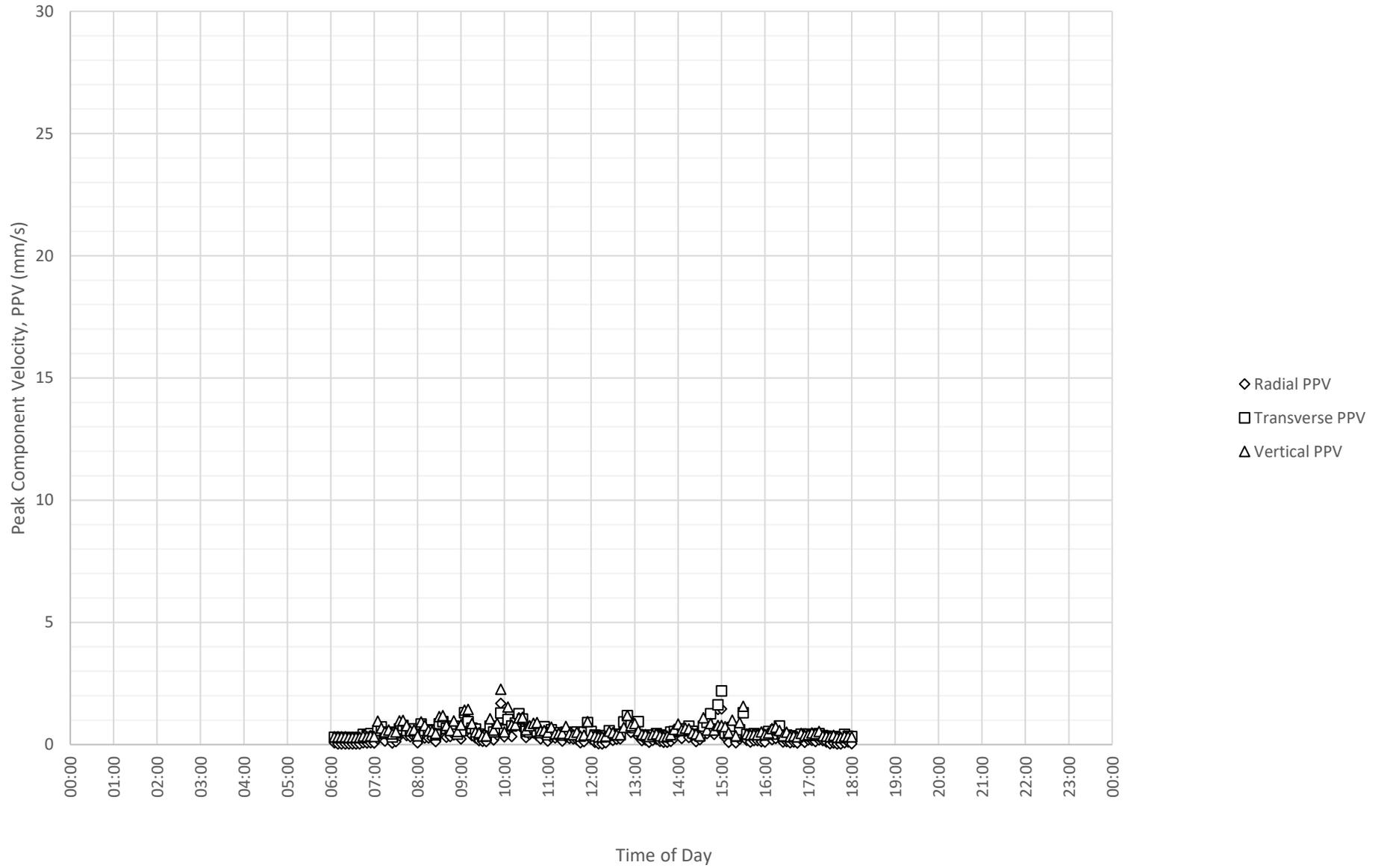
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 10-10-2022



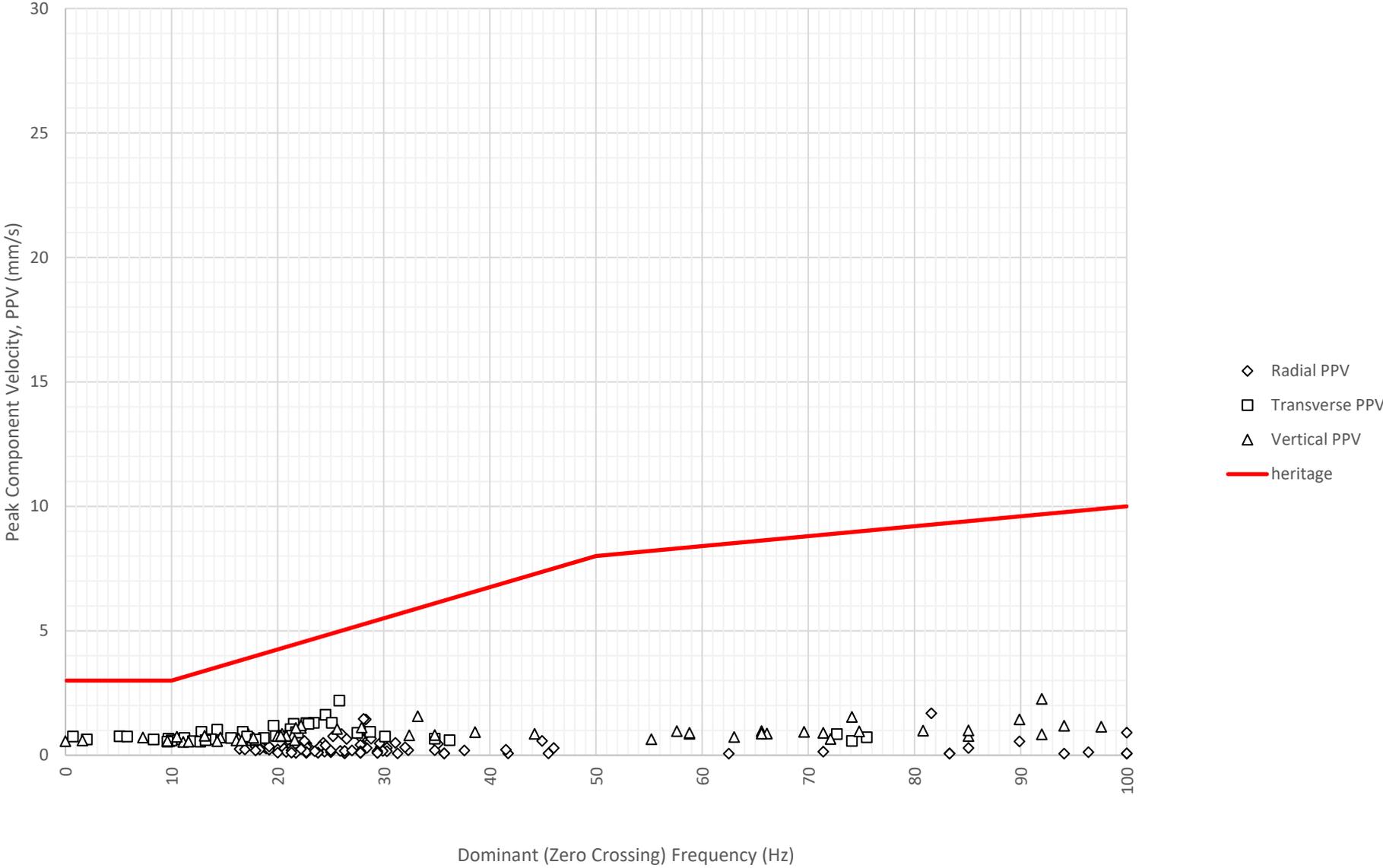
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 10-10-2022



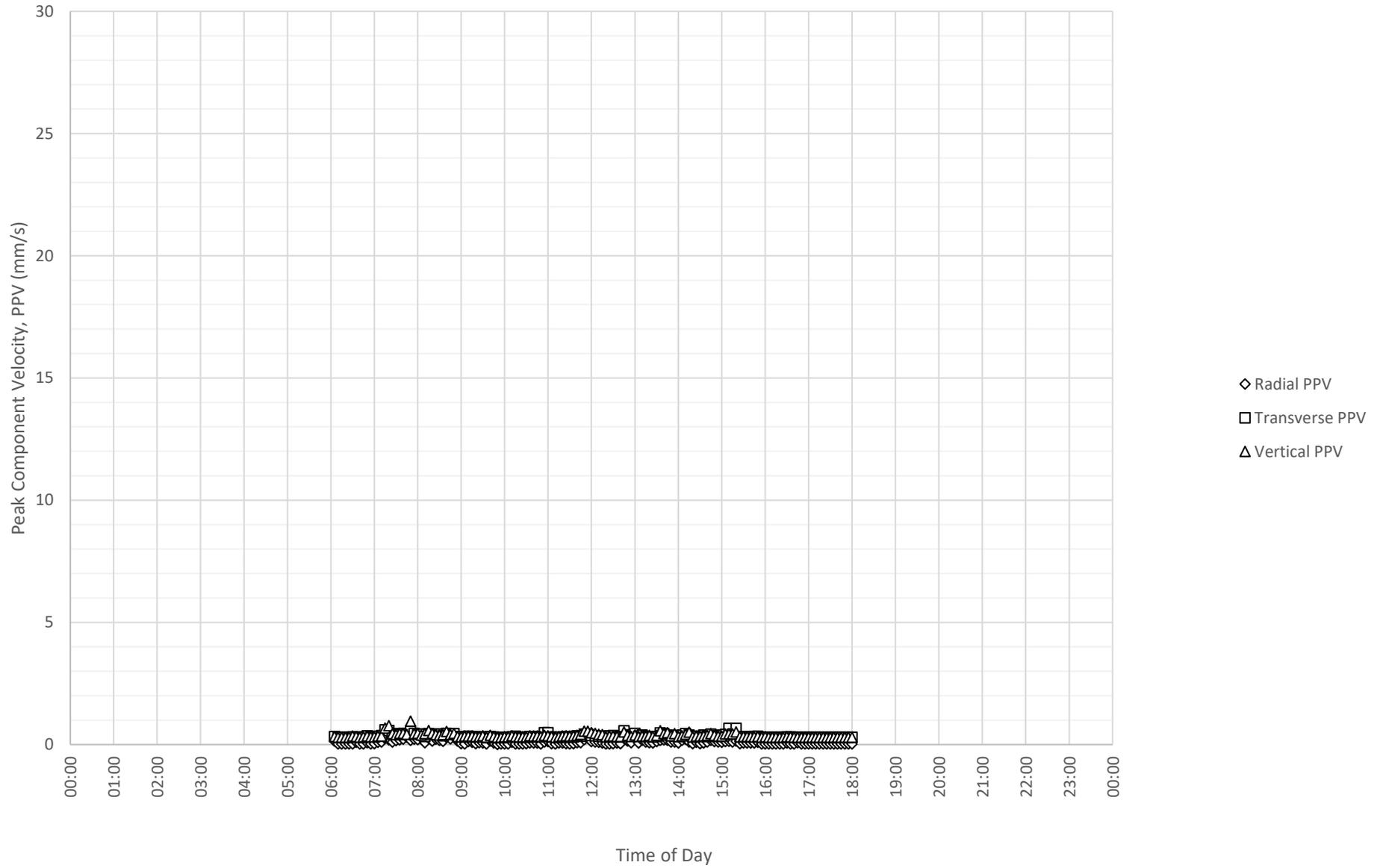
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 11-10-2022



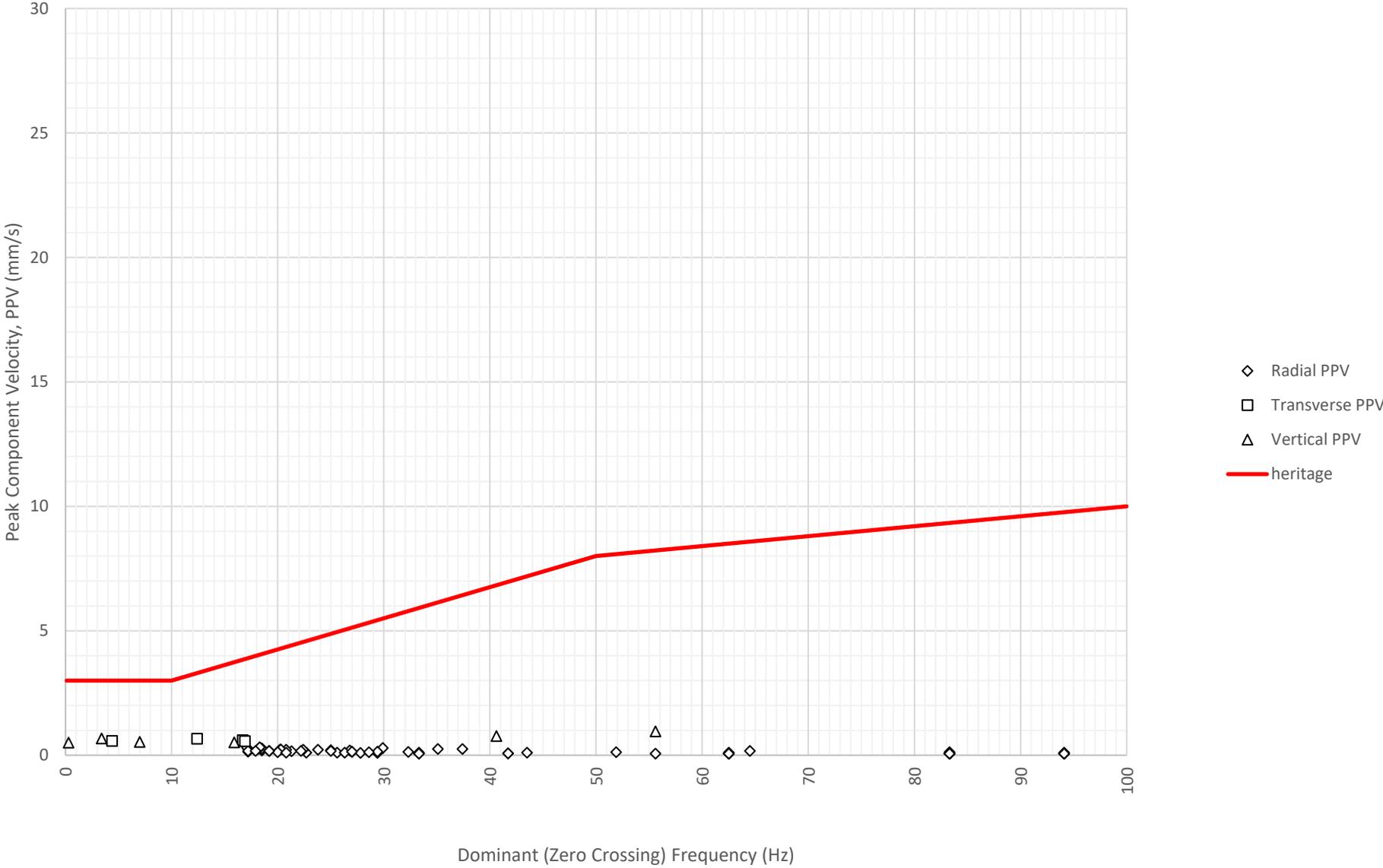
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 11-10-2022



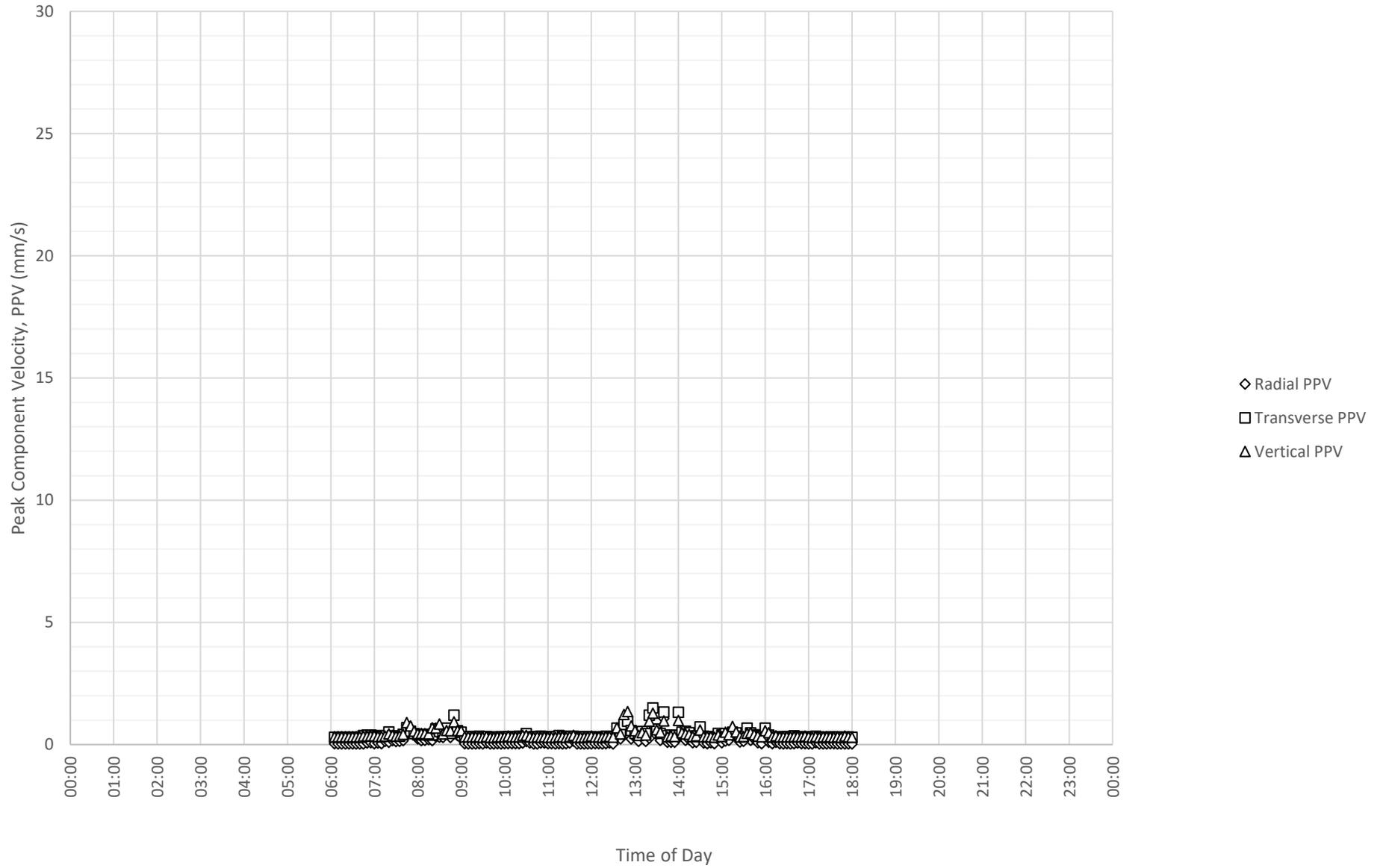
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 12-10-2022



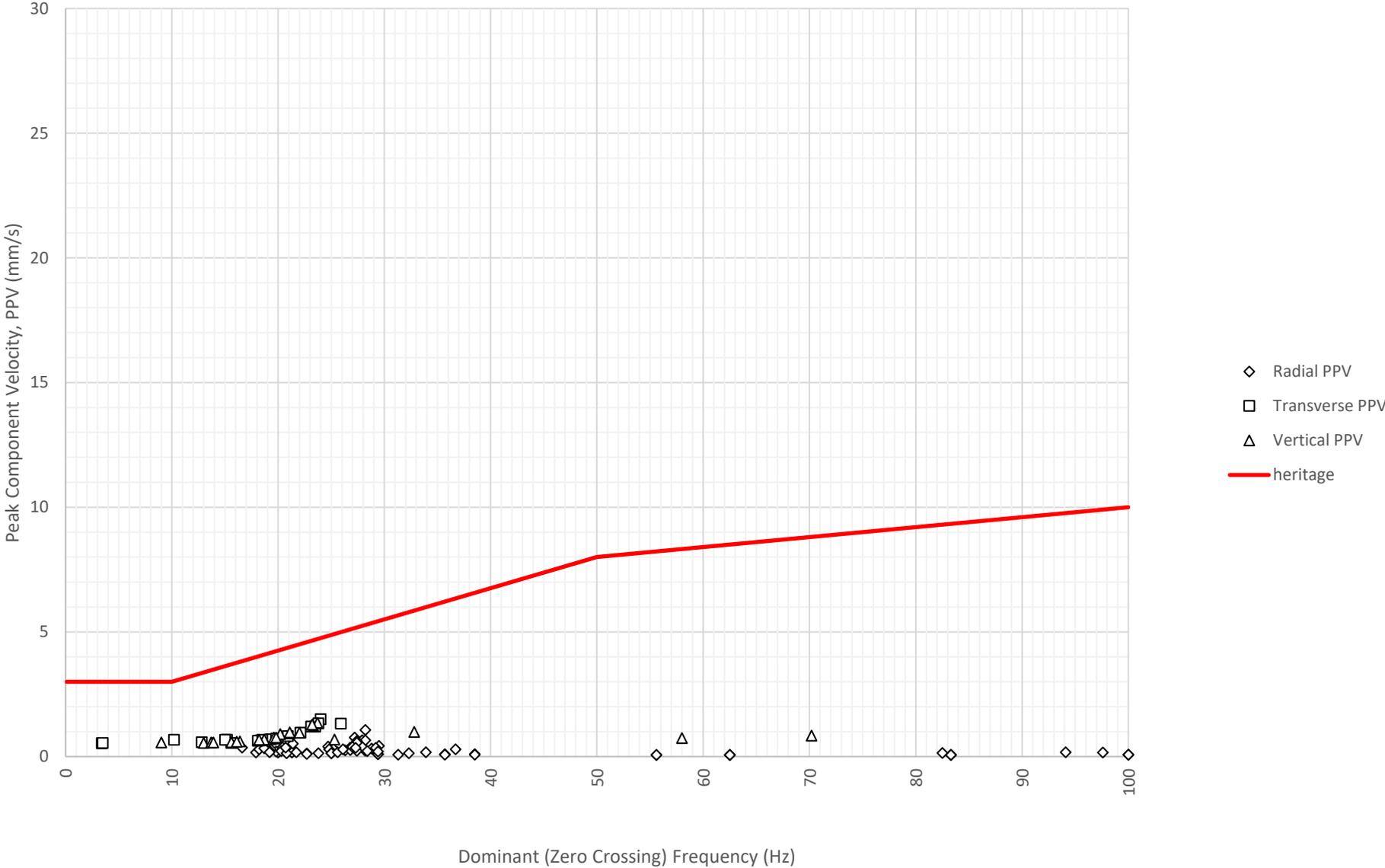
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 12-10-2022



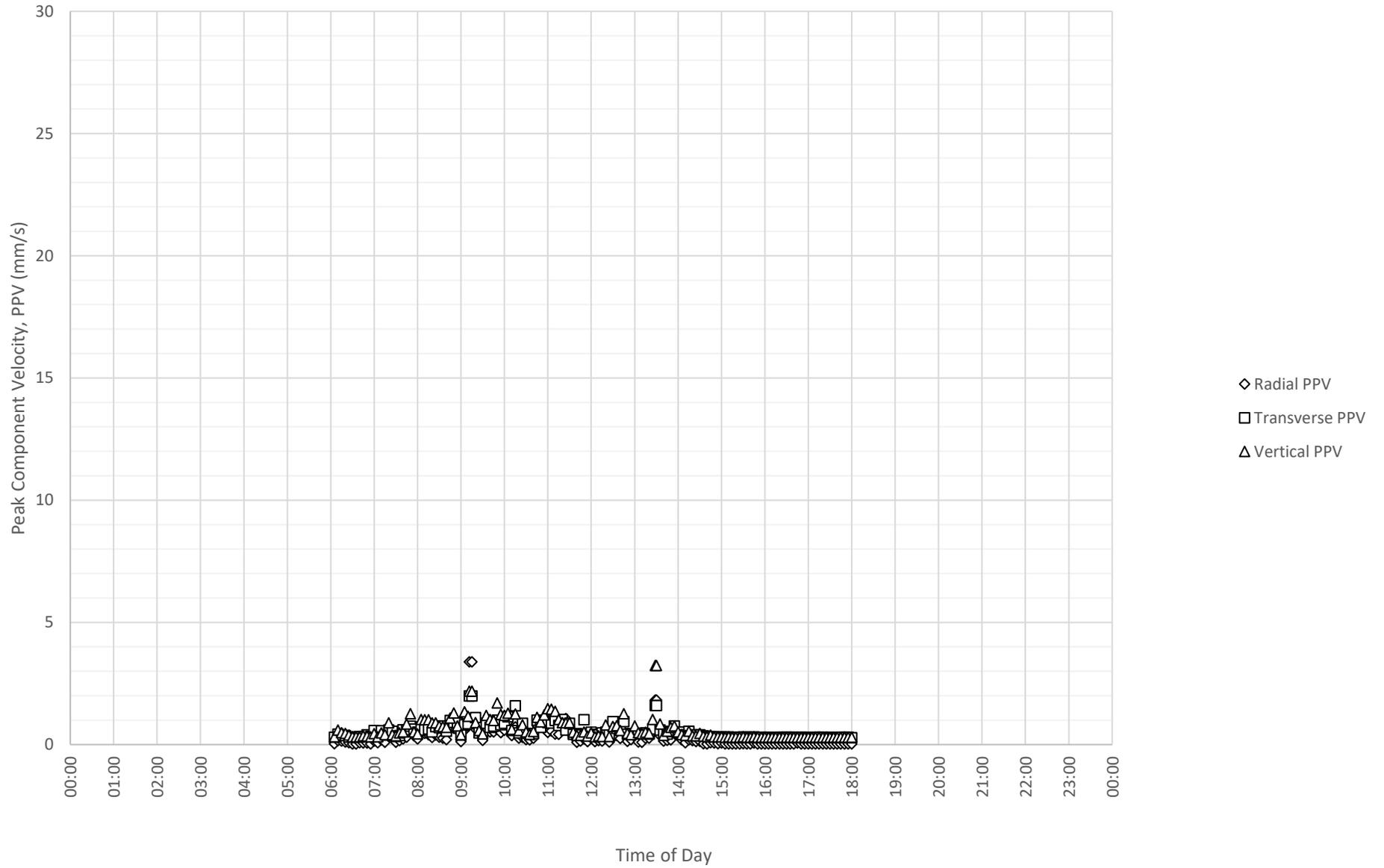
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 13-10-2022



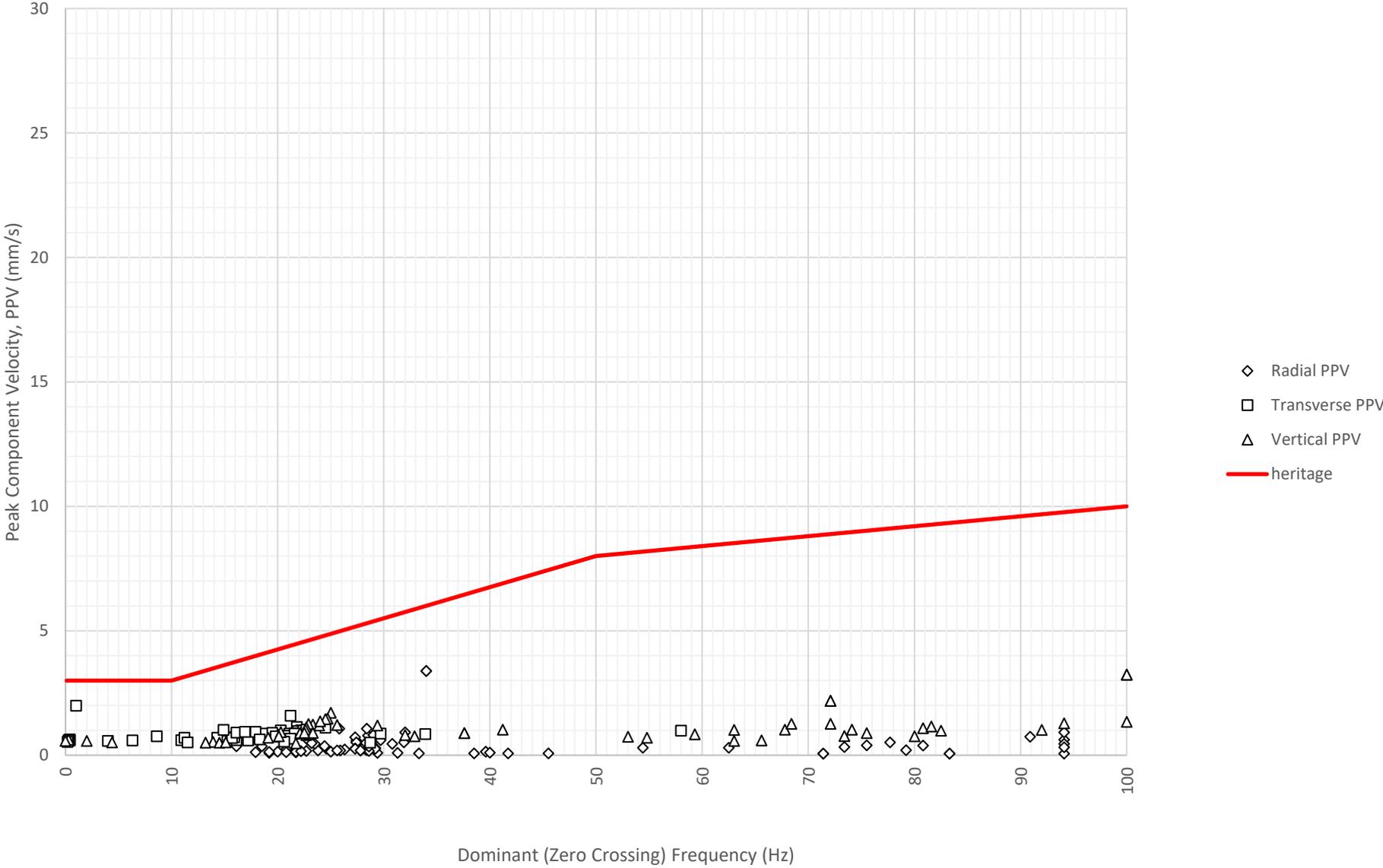
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 13-10-2022



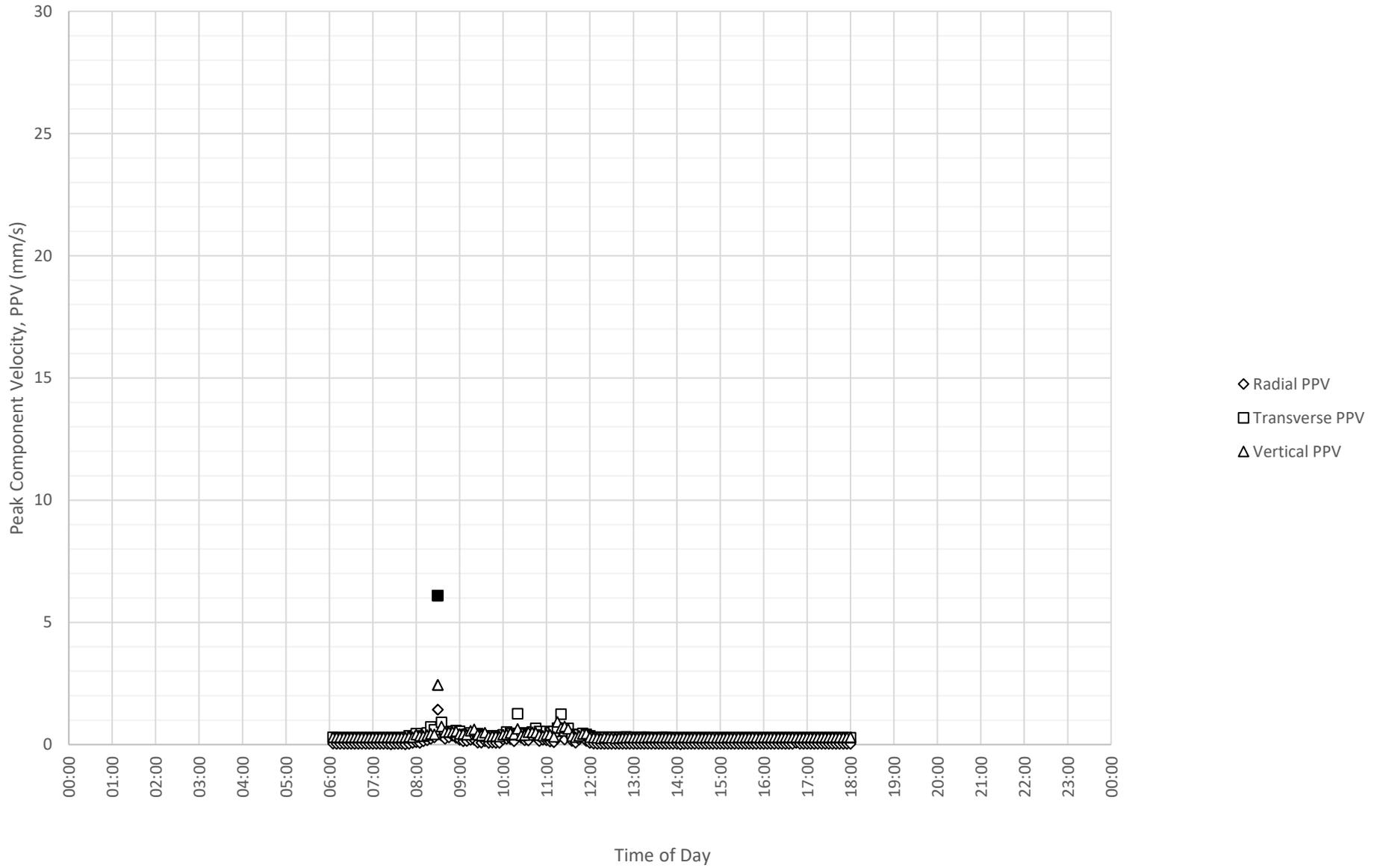
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 14-10-2022



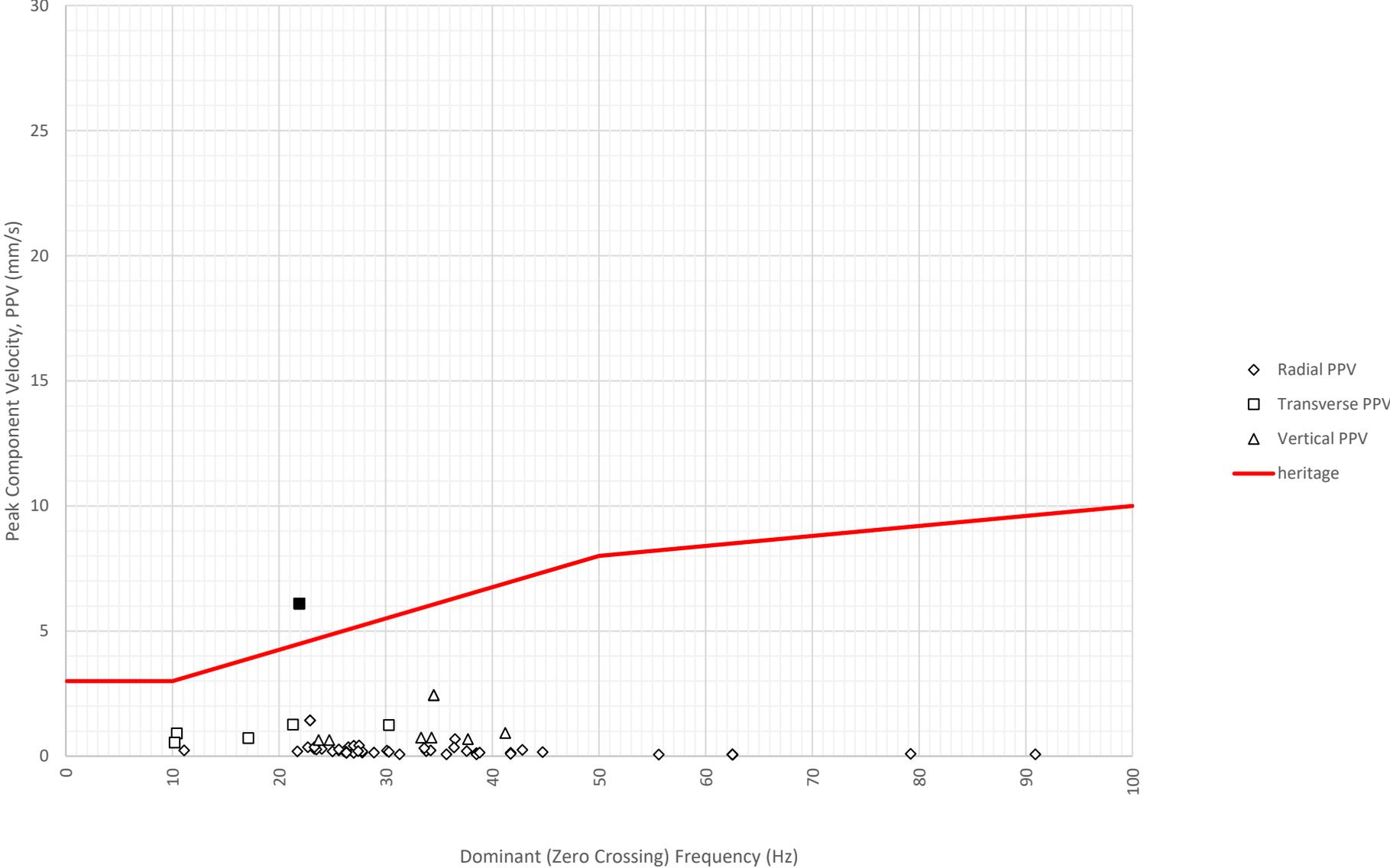
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 14-10-2022



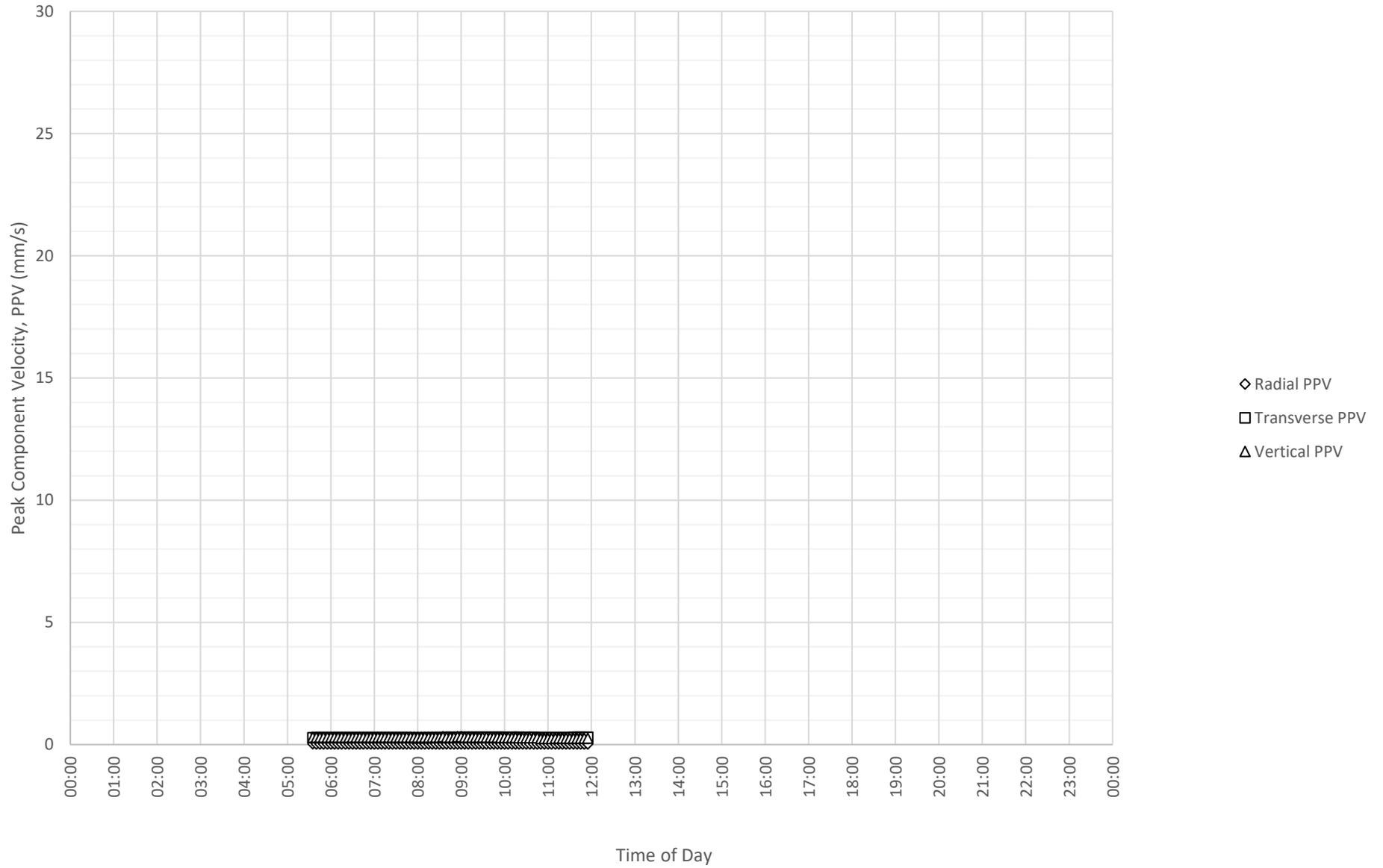
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 15-10-2022



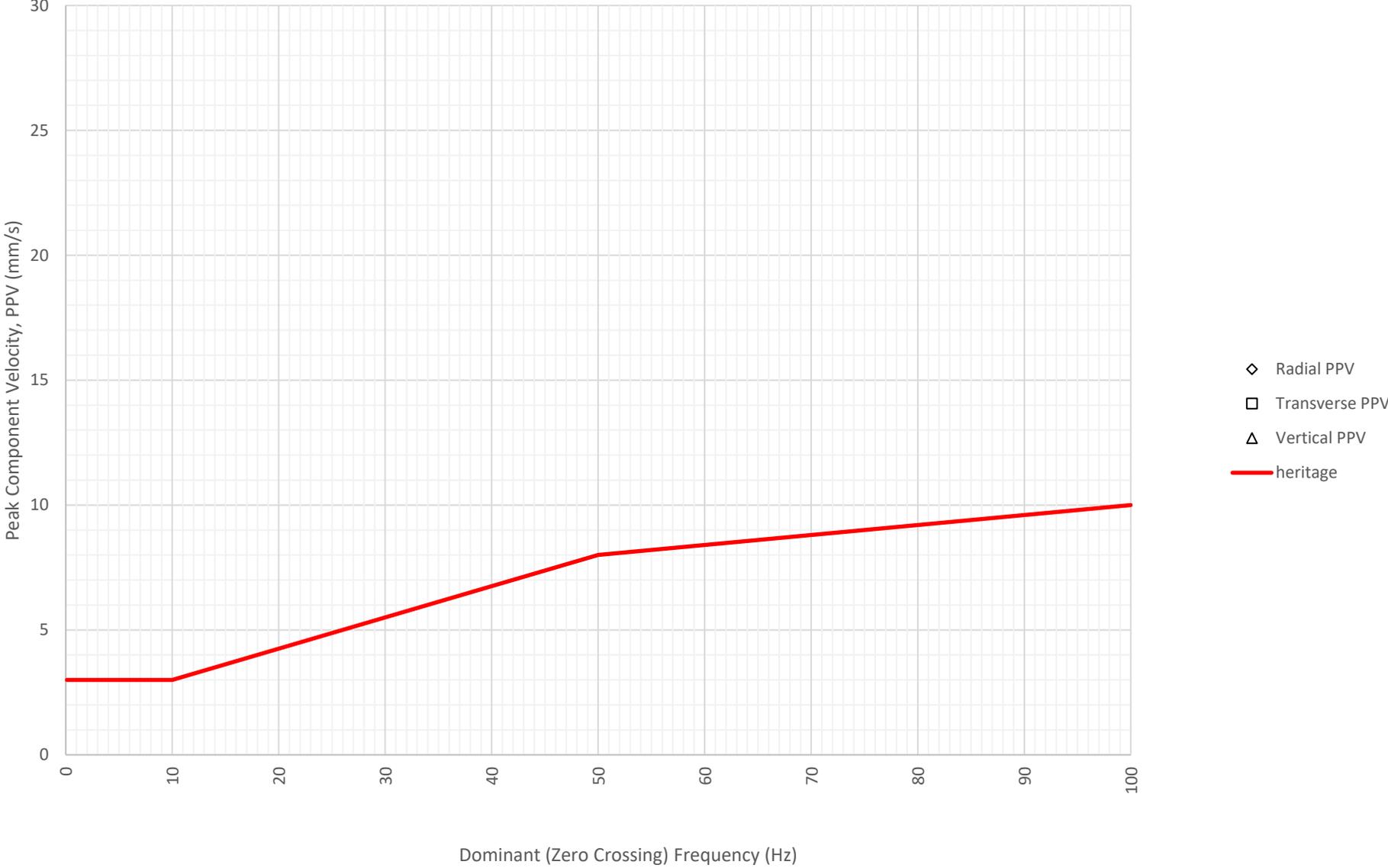
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 15-10-2022



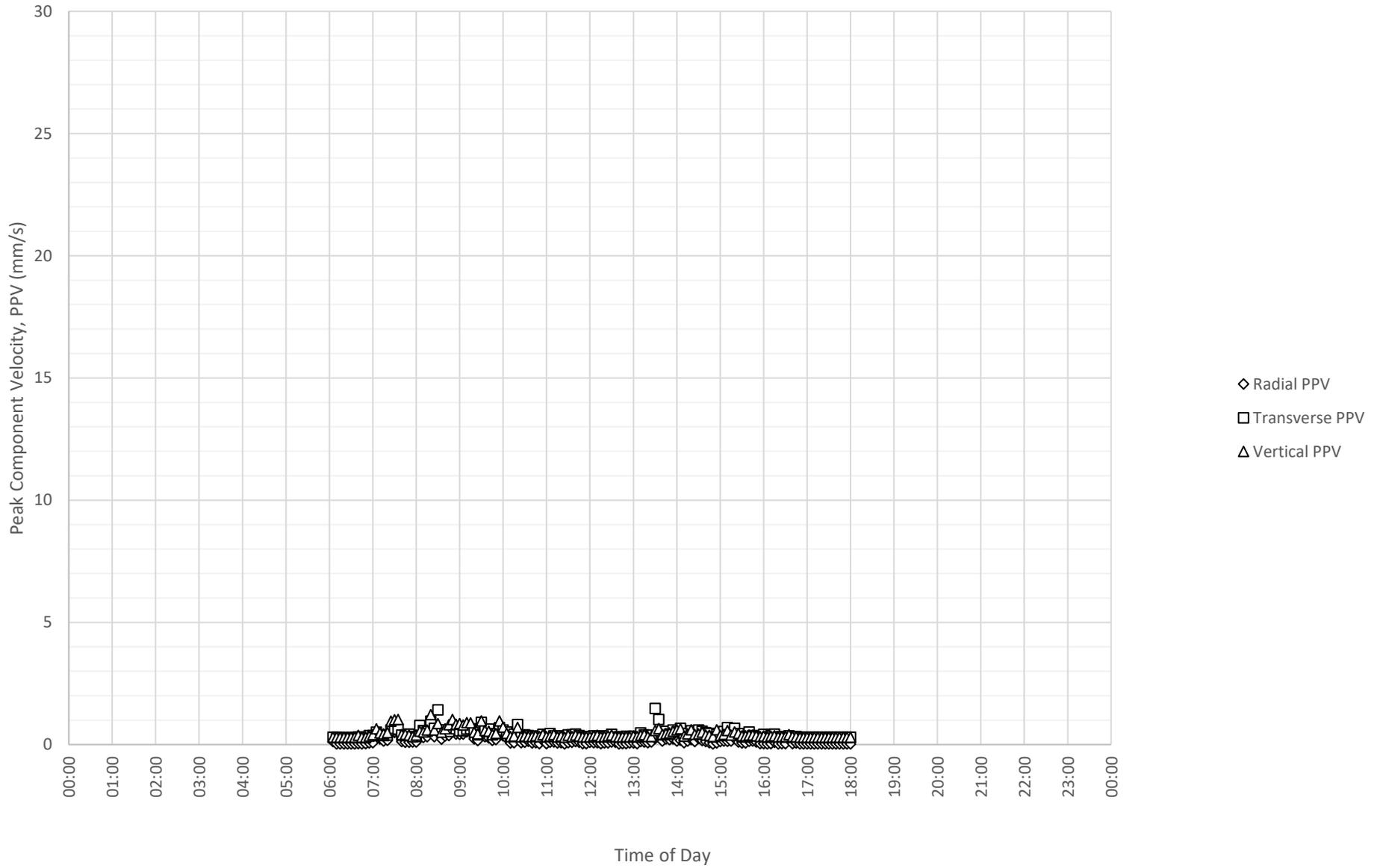
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 16-10-2022



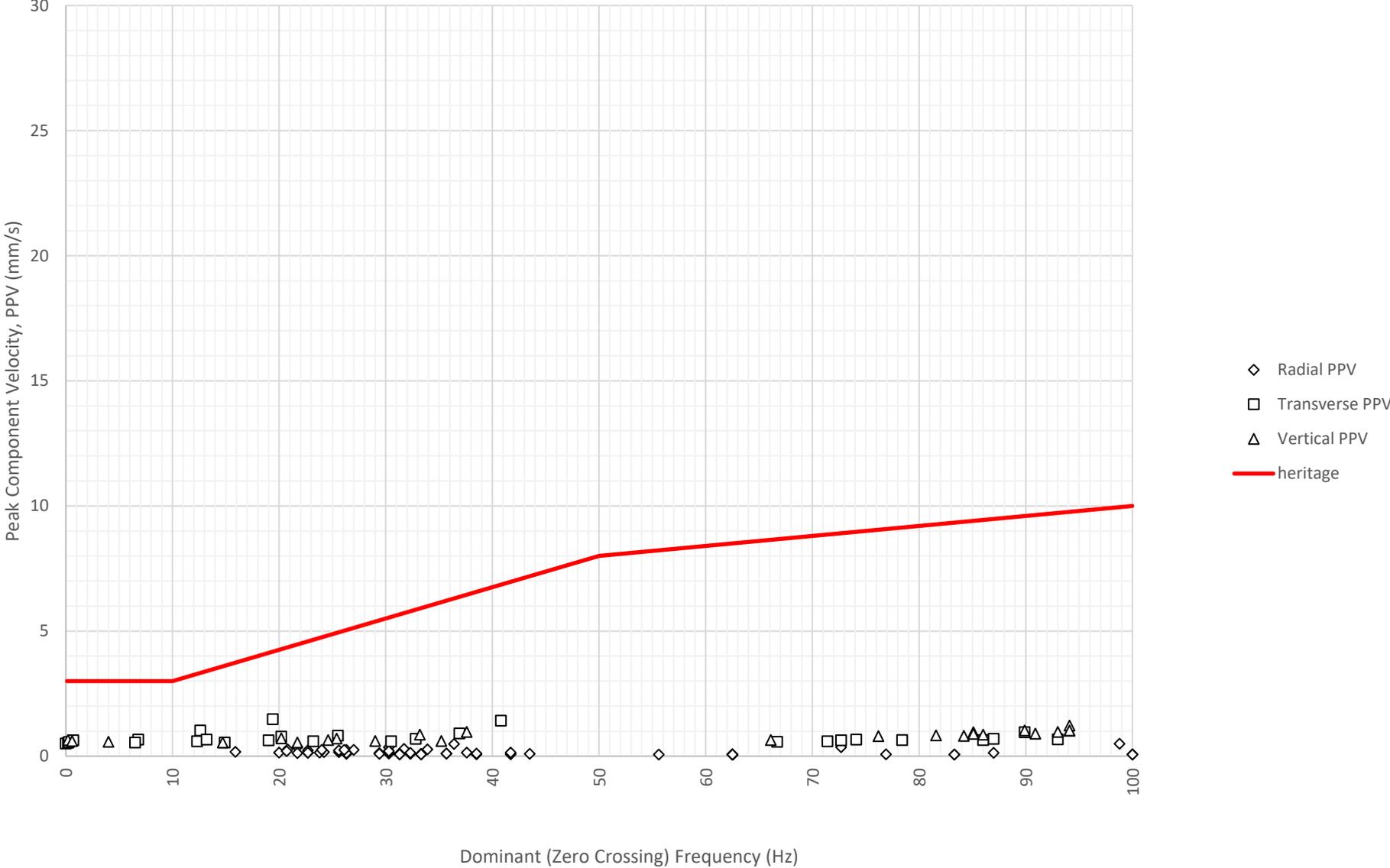
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 16-10-2022



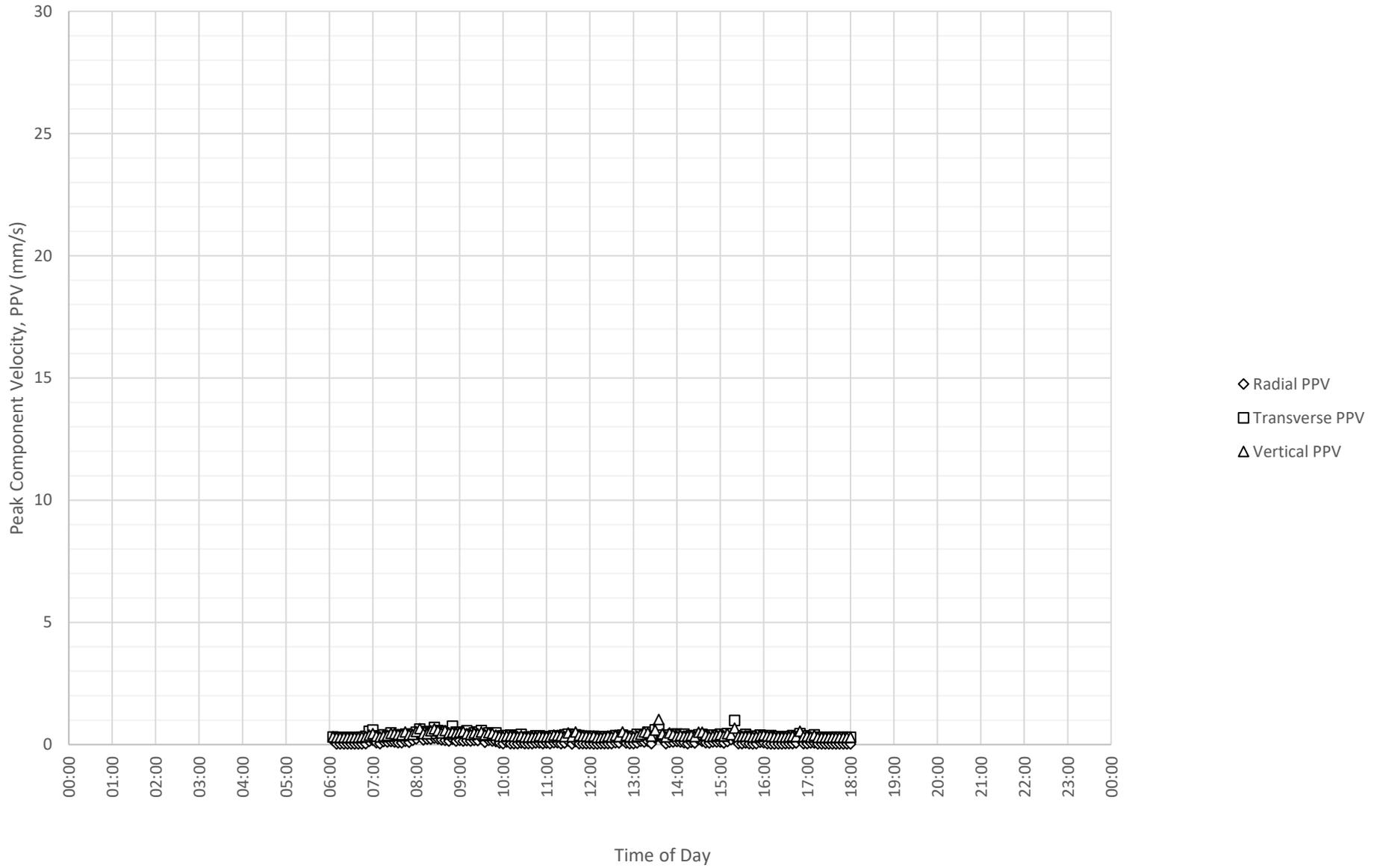
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 17-10-2022



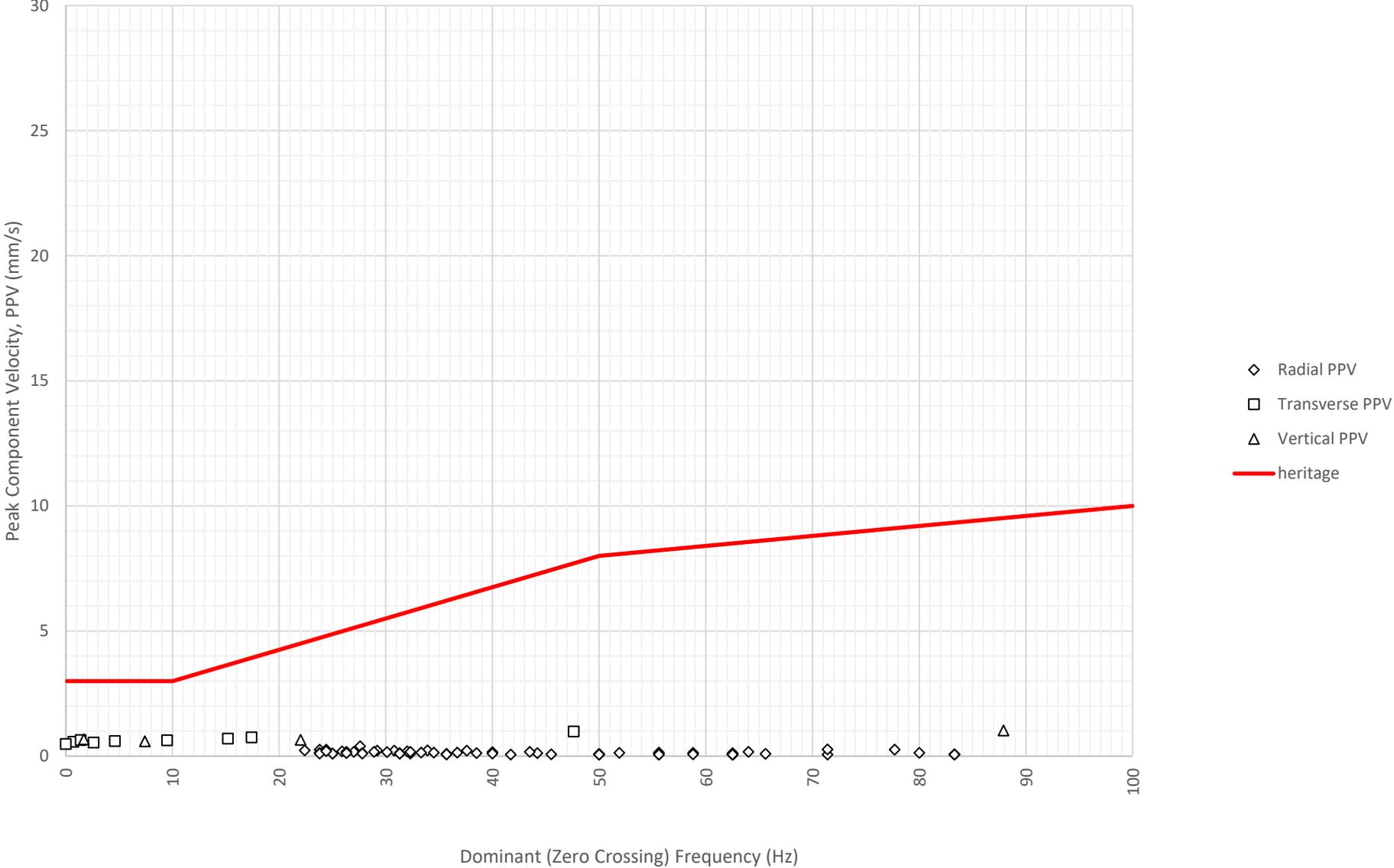
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 17-10-2022



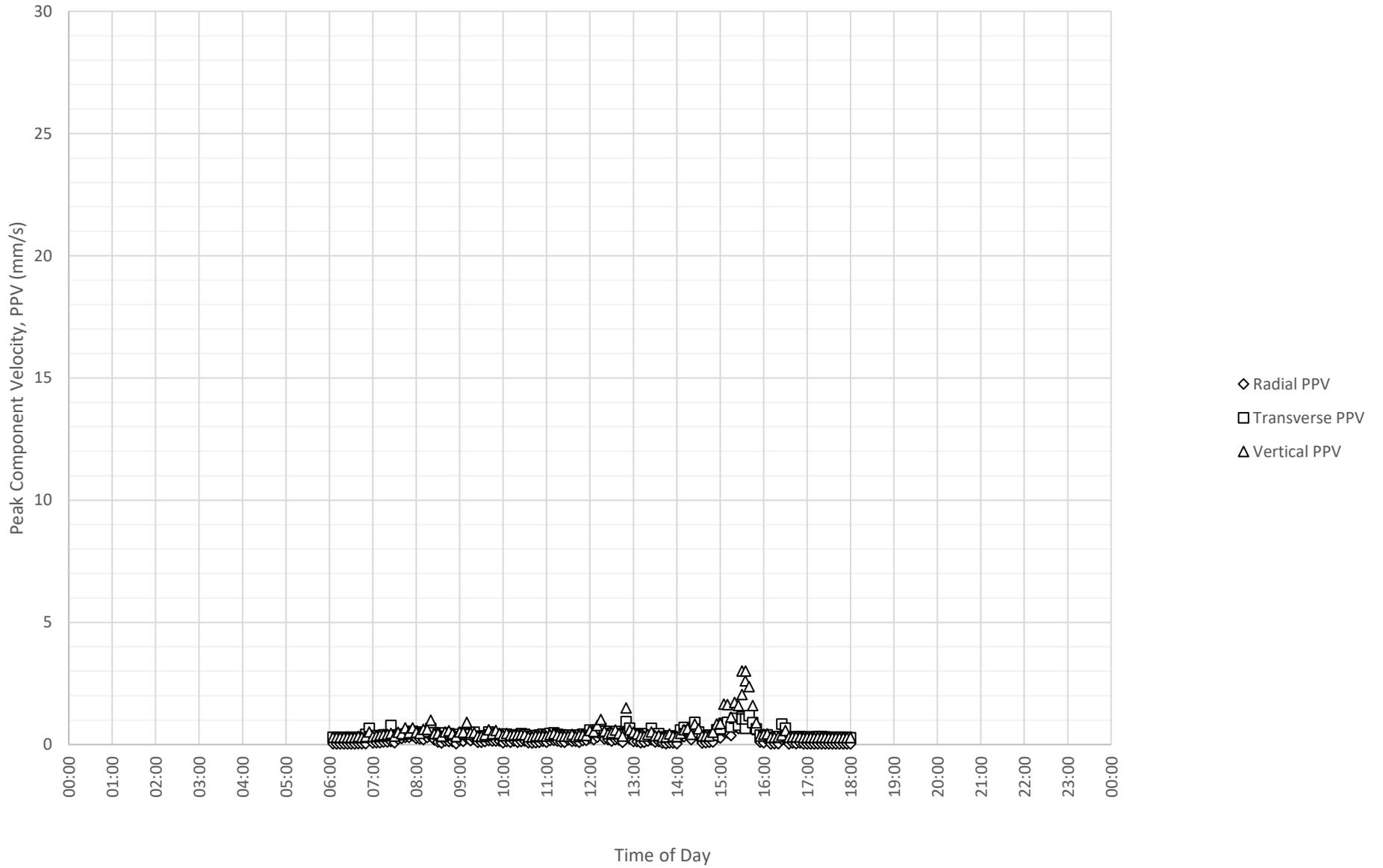
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 18-10-2022



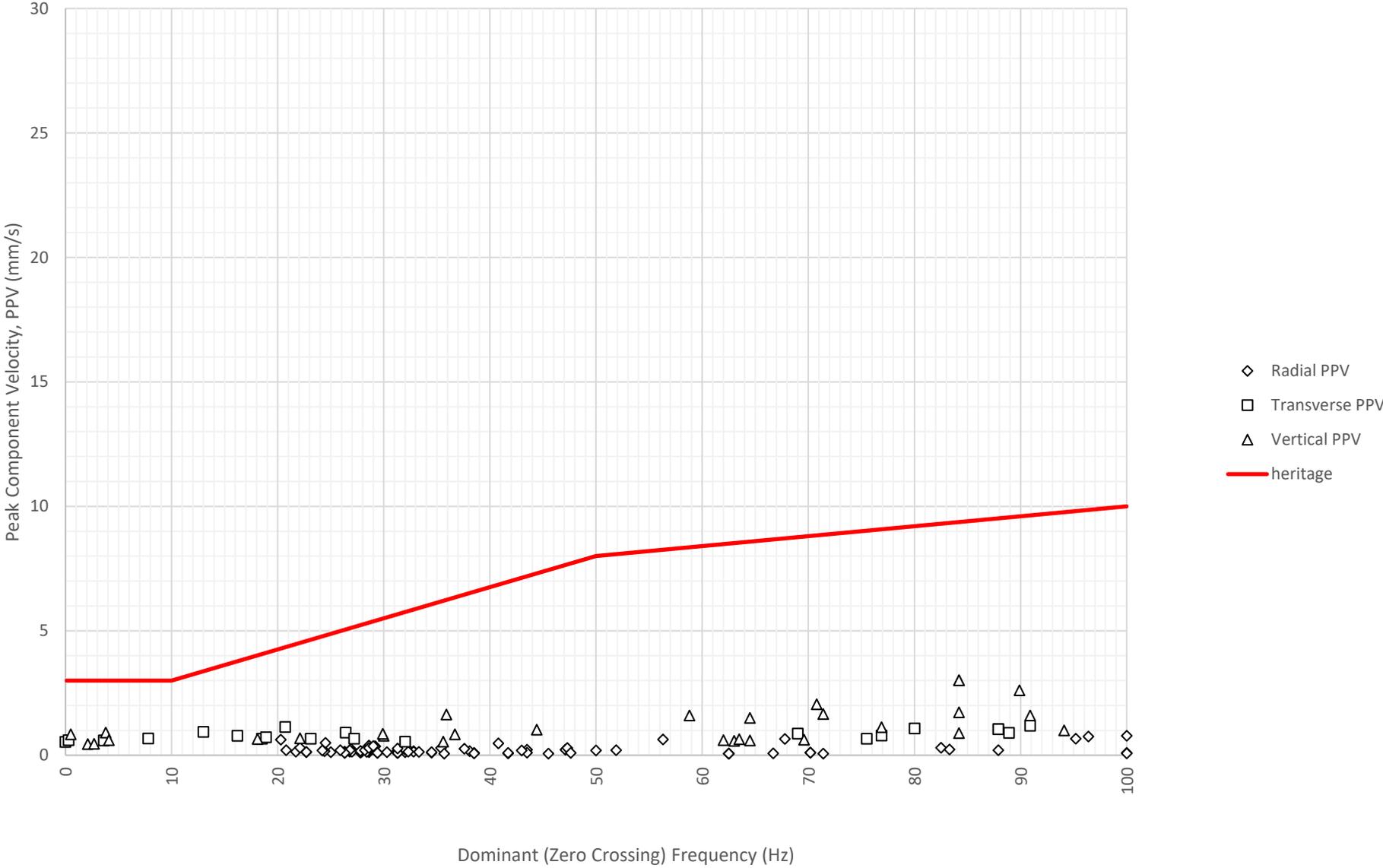
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 18-10-2022



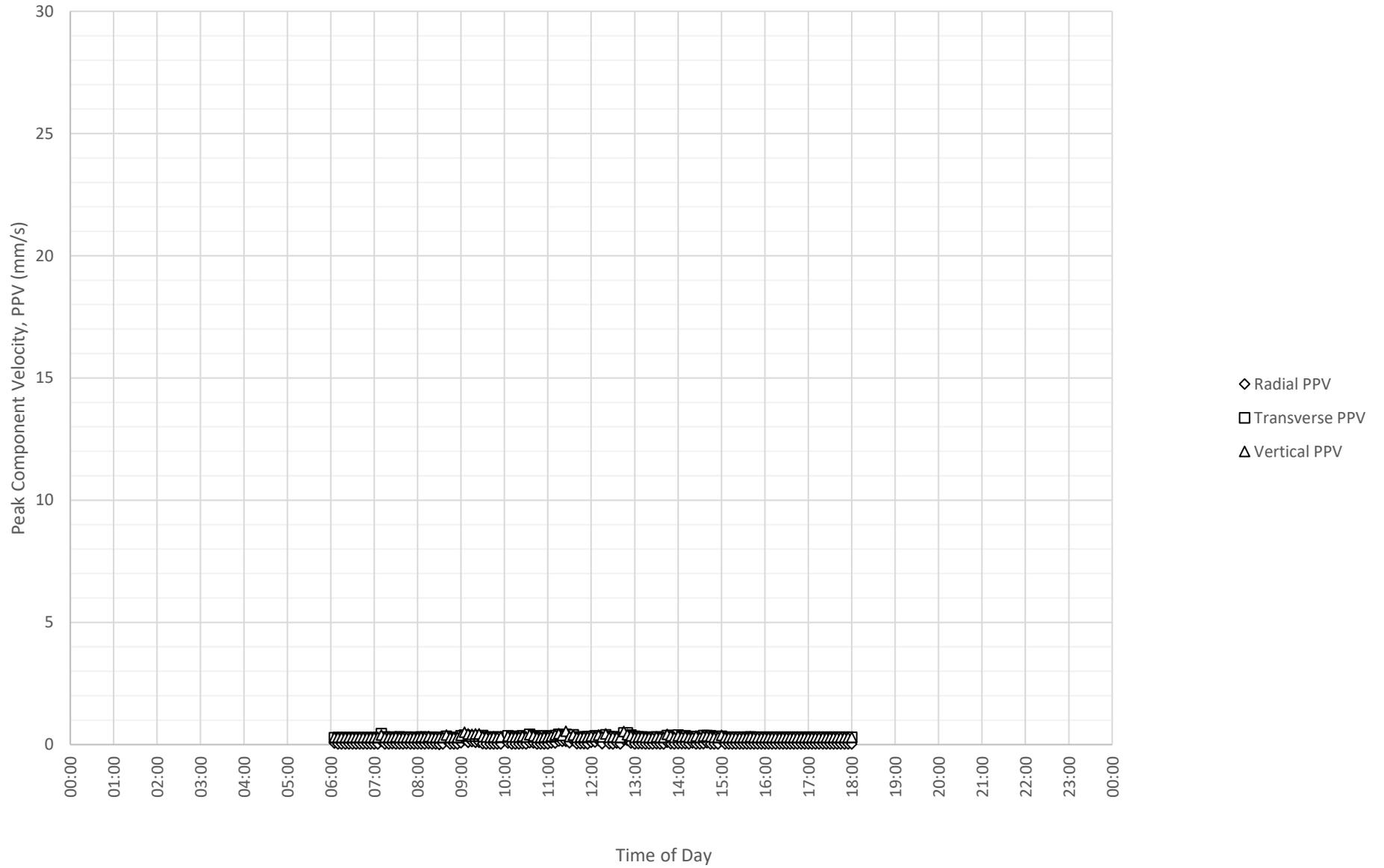
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 19-10-2022



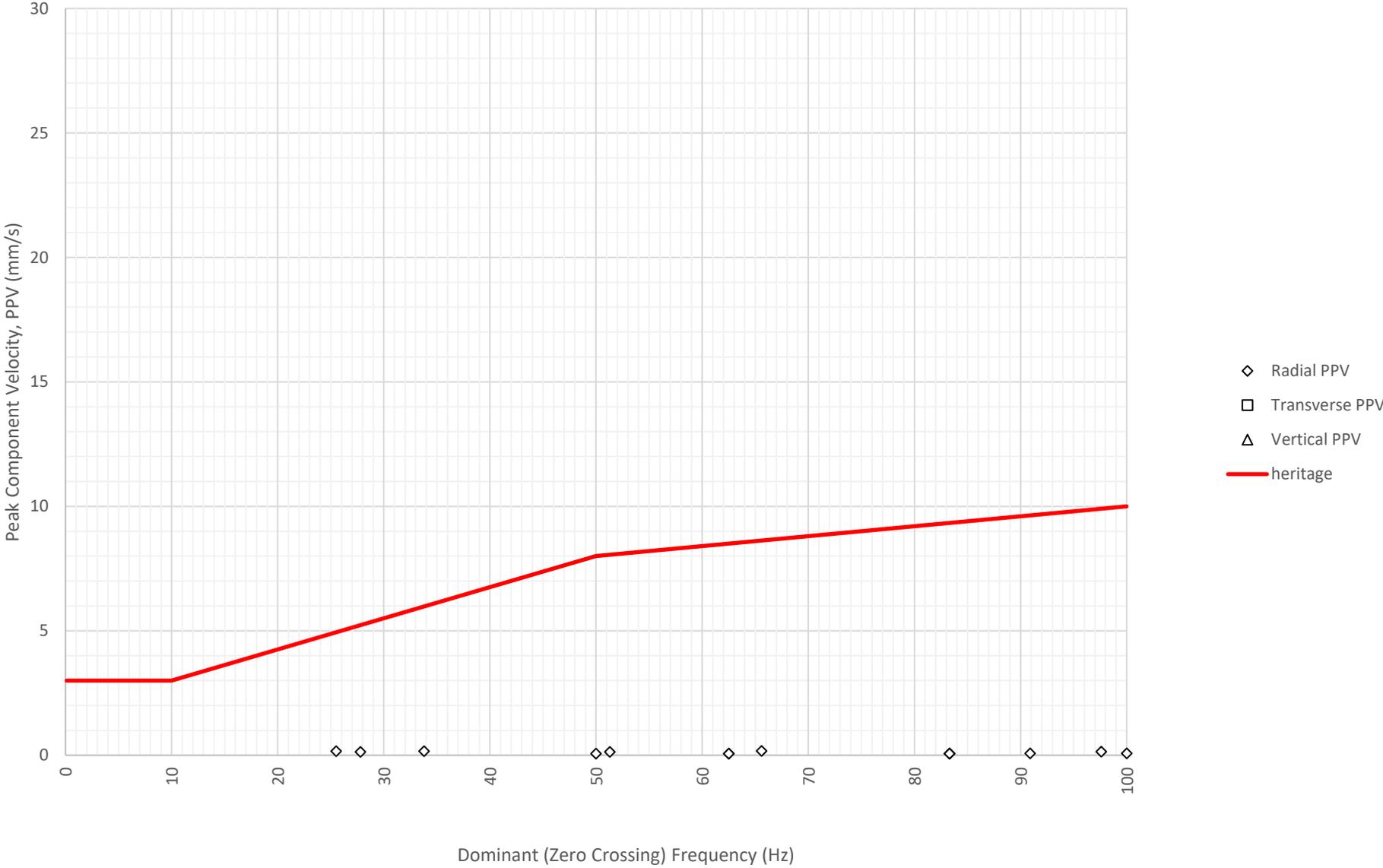
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 19-10-2022



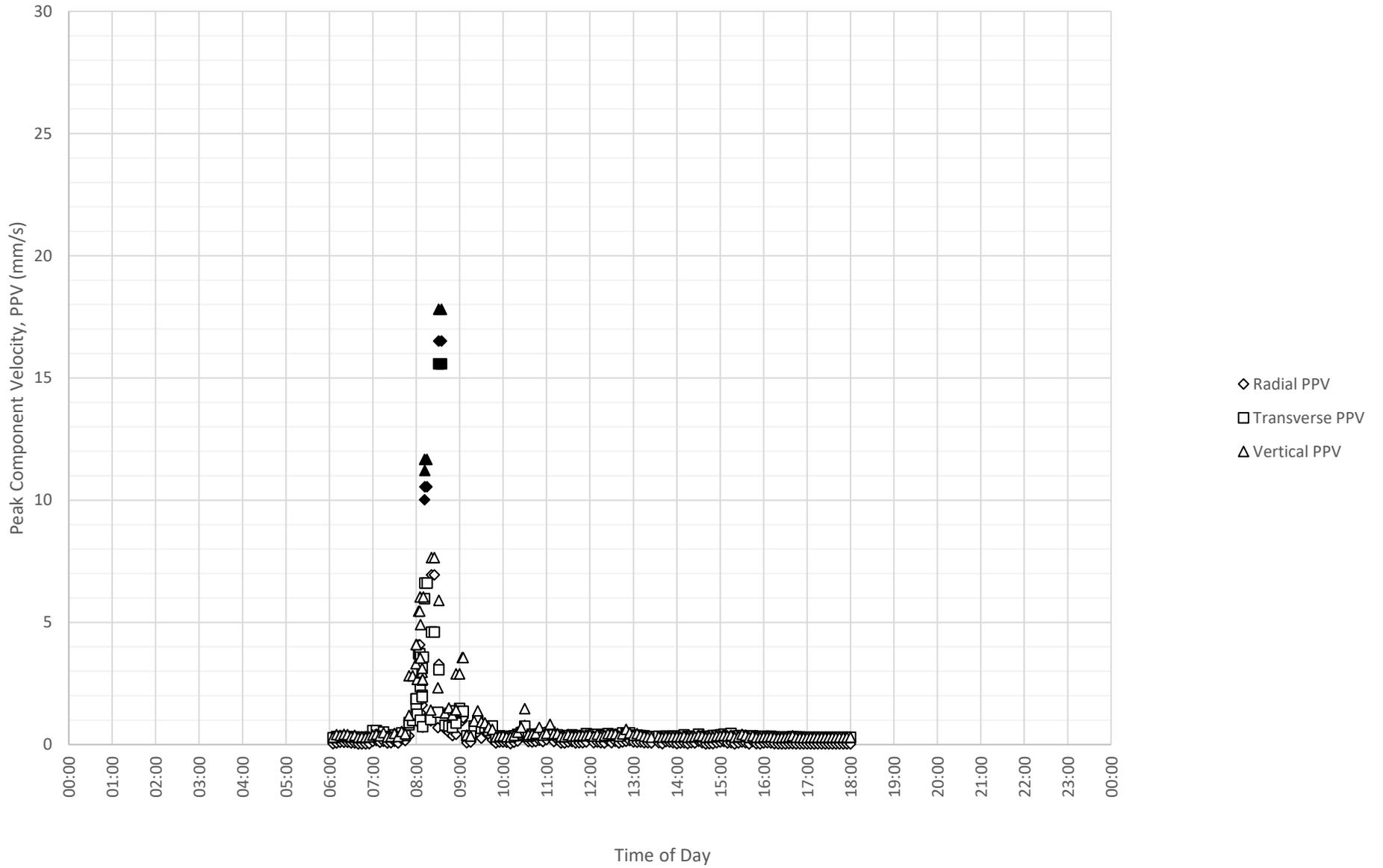
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 20-10-2022



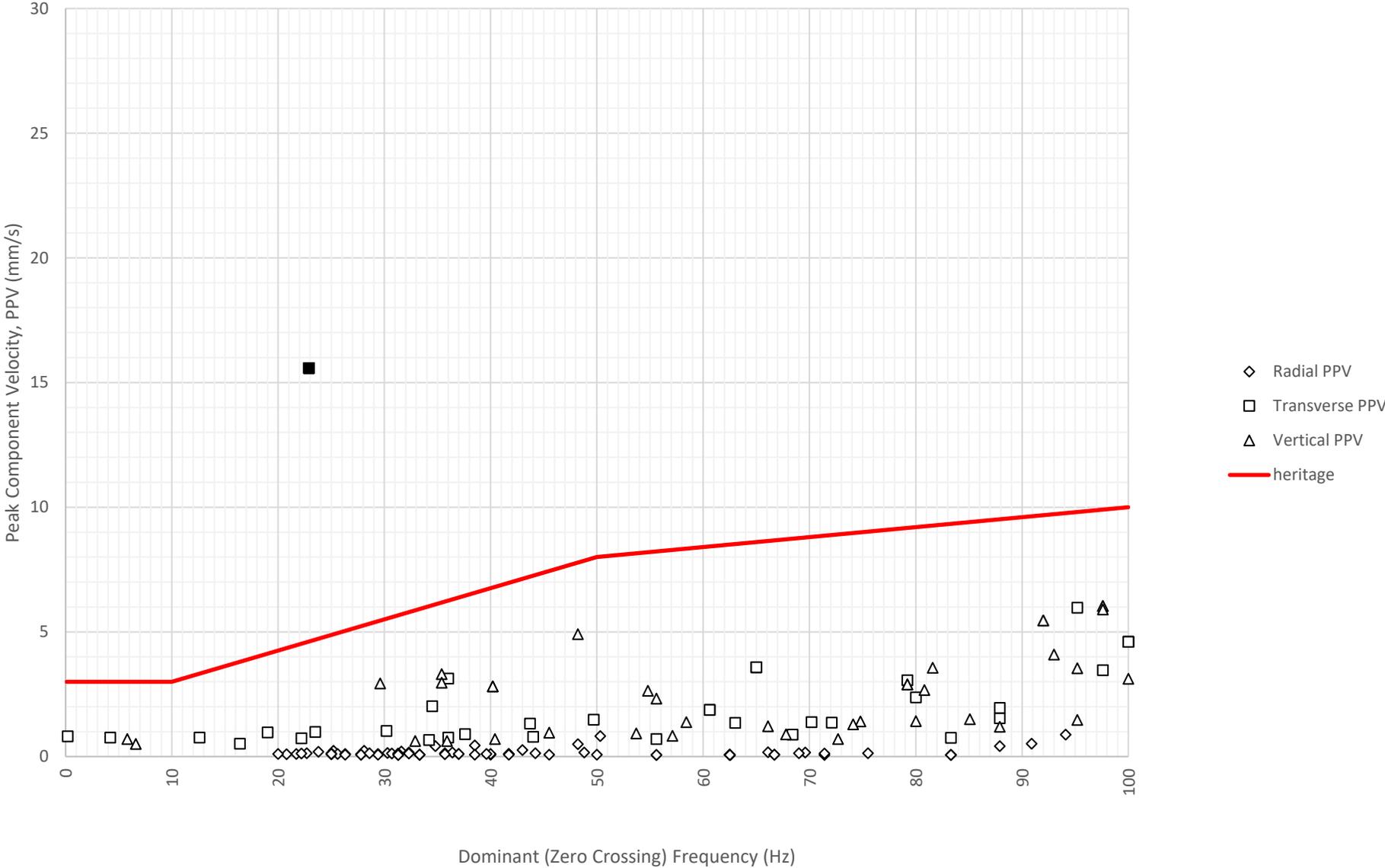
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 20-10-2022



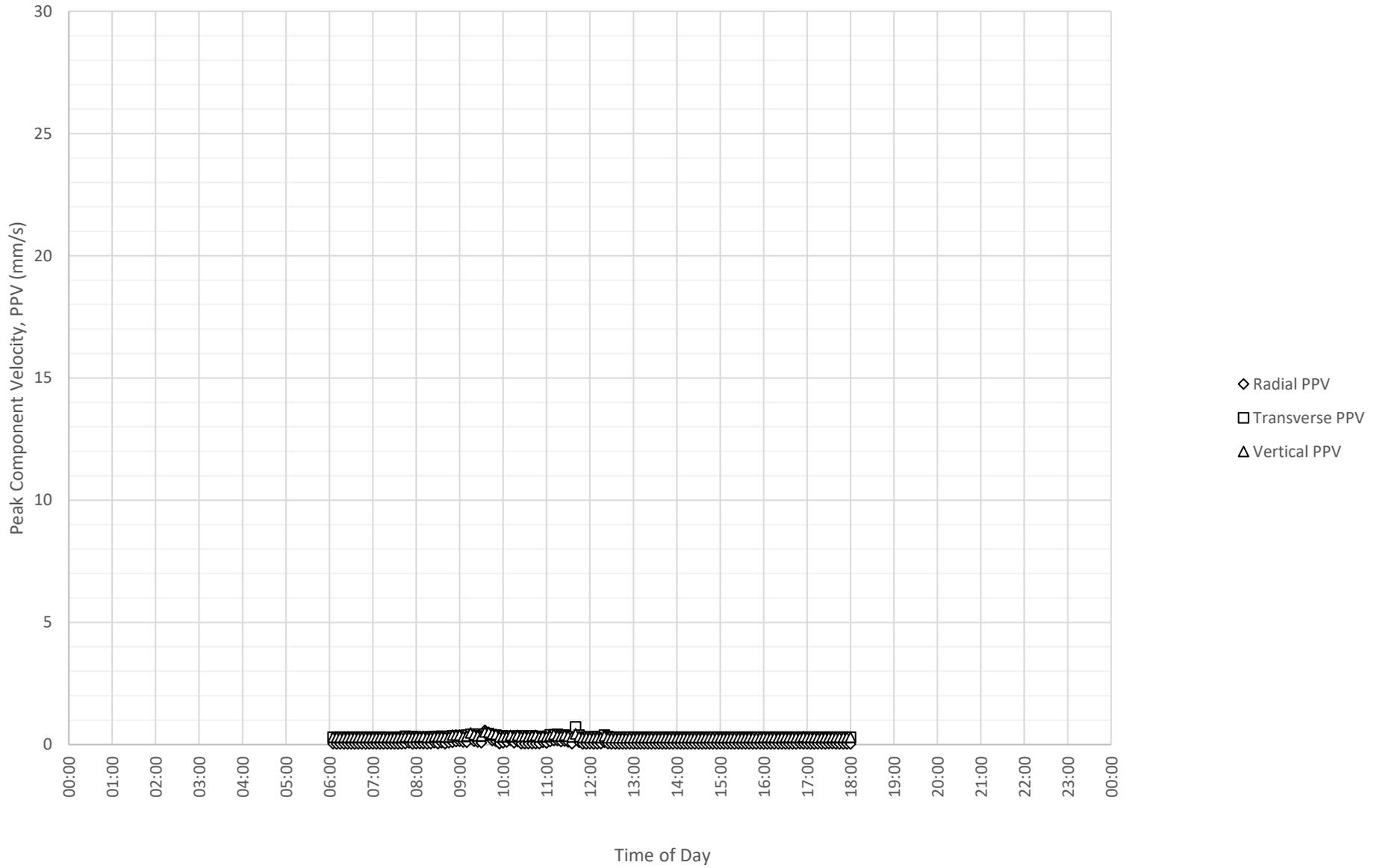
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 21-10-2022



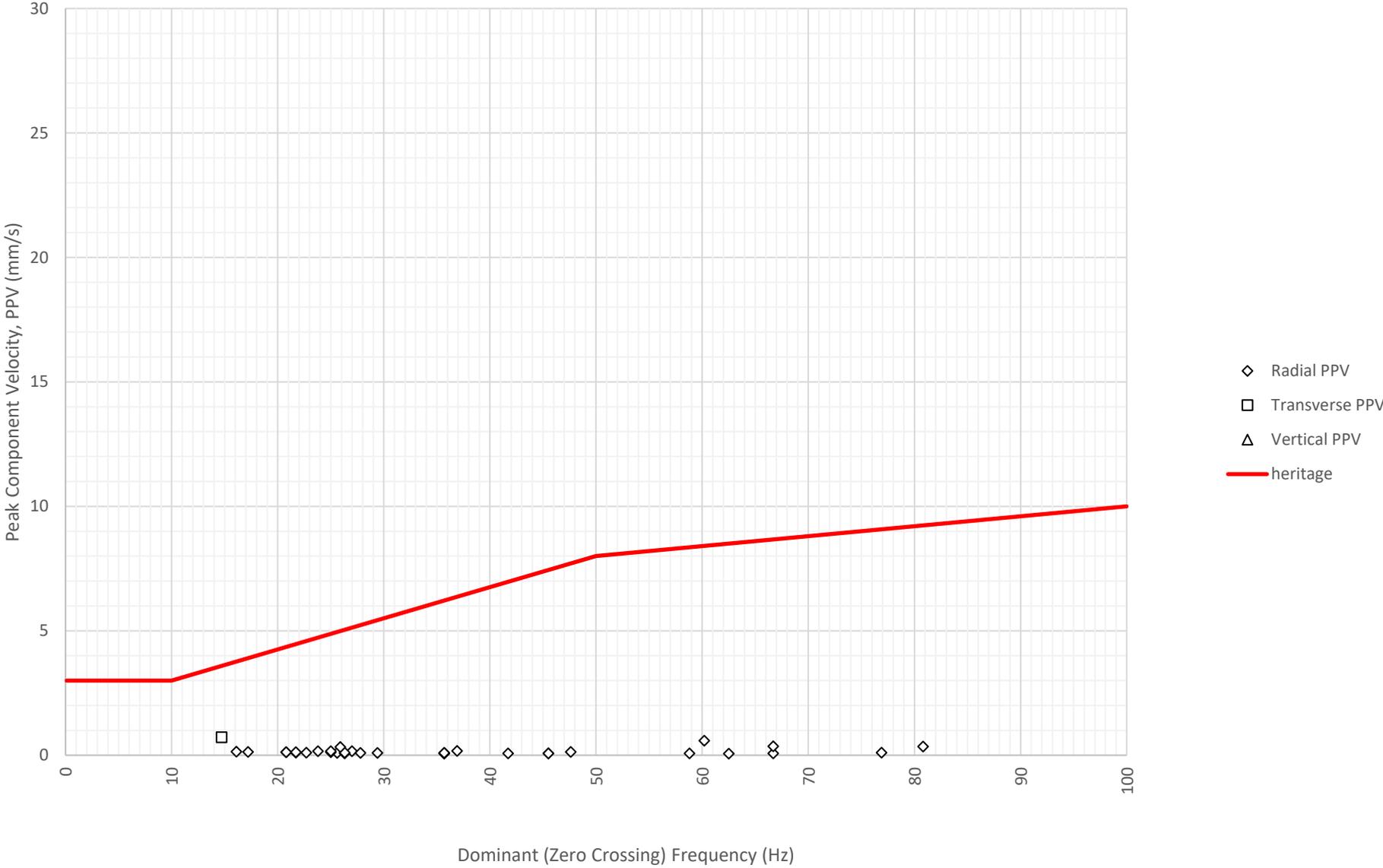
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 21-10-2022



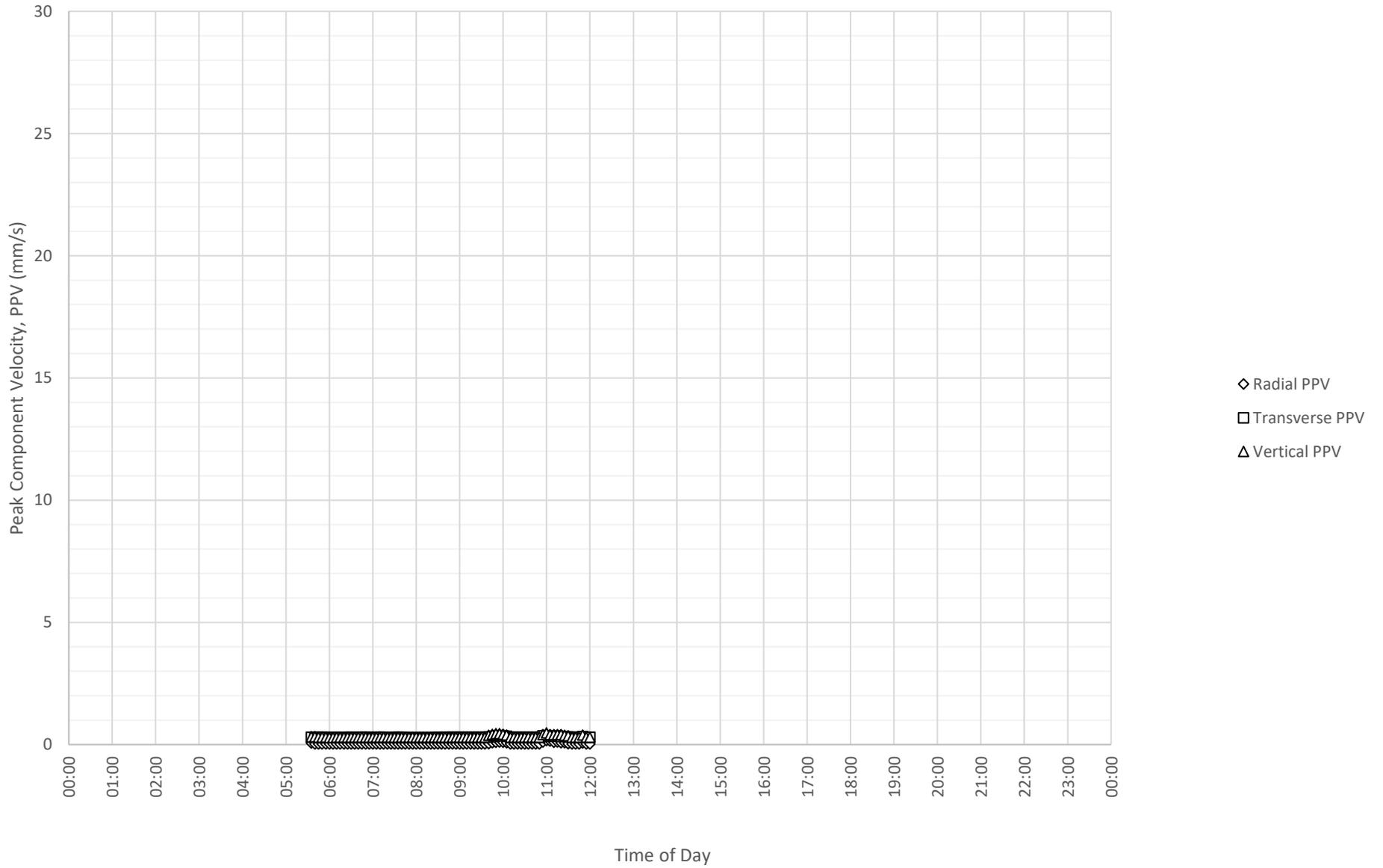
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 22-10-2022



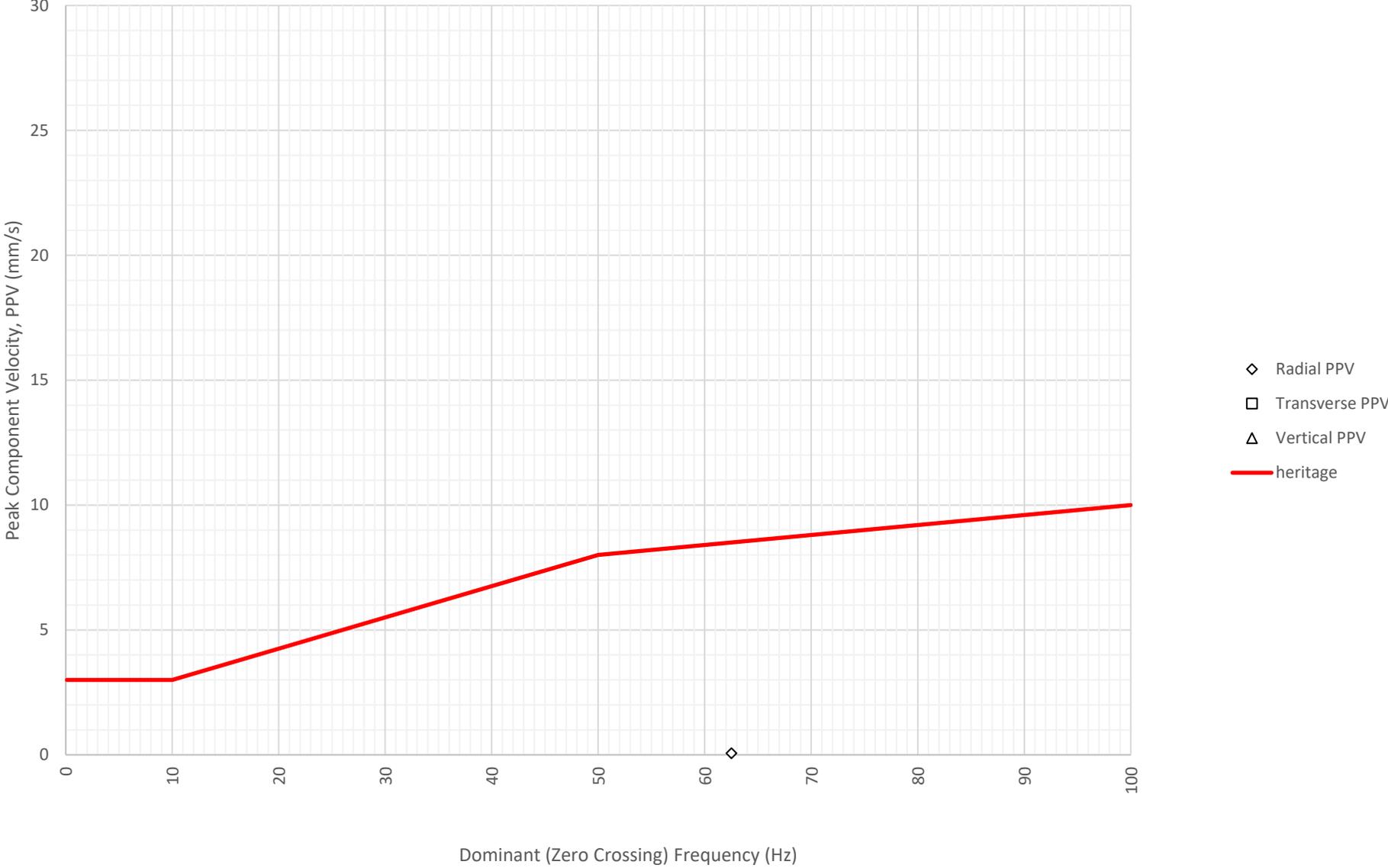
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 22-10-2022



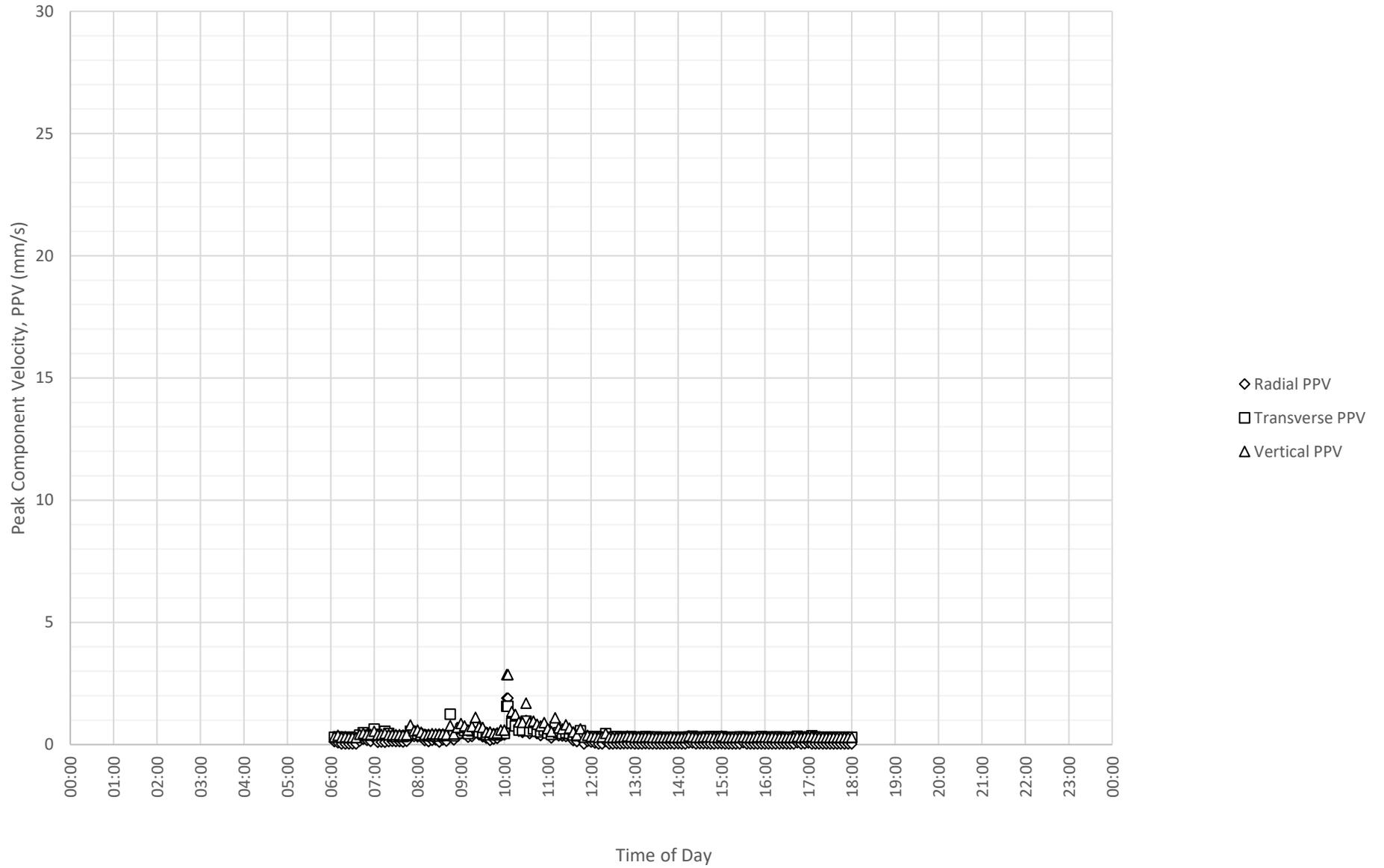
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 23-10-2022



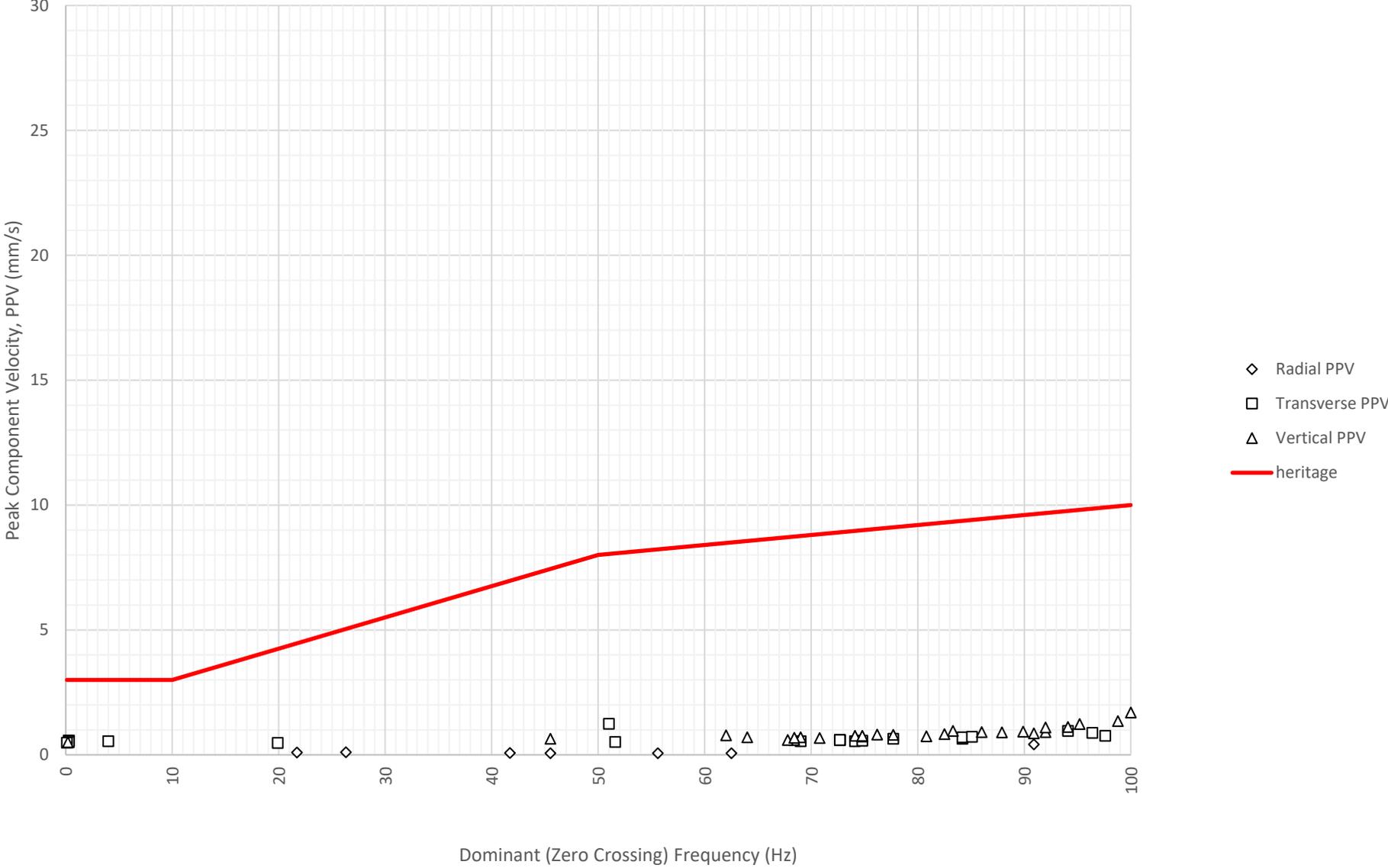
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 23-10-2022



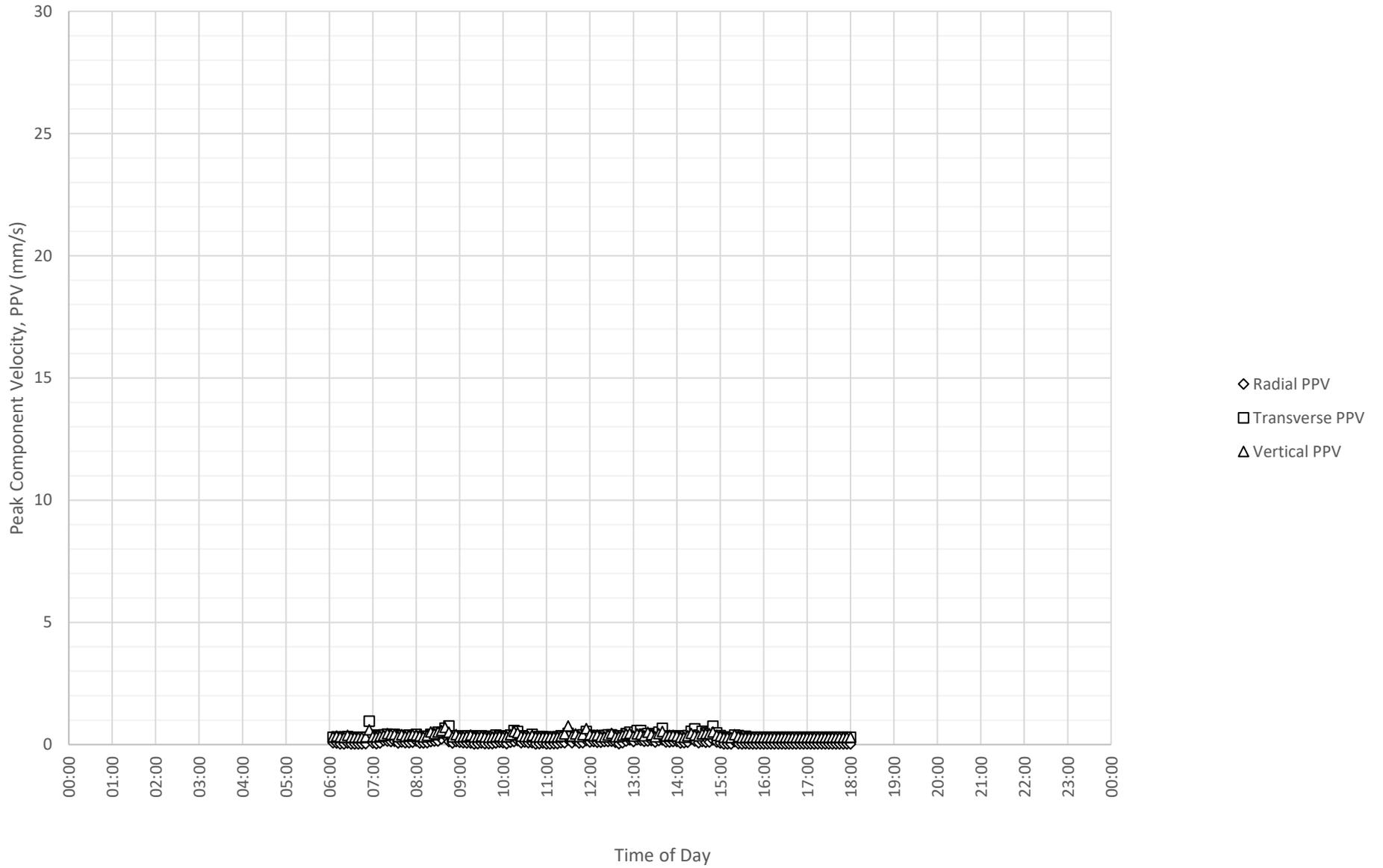
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 24-10-2022



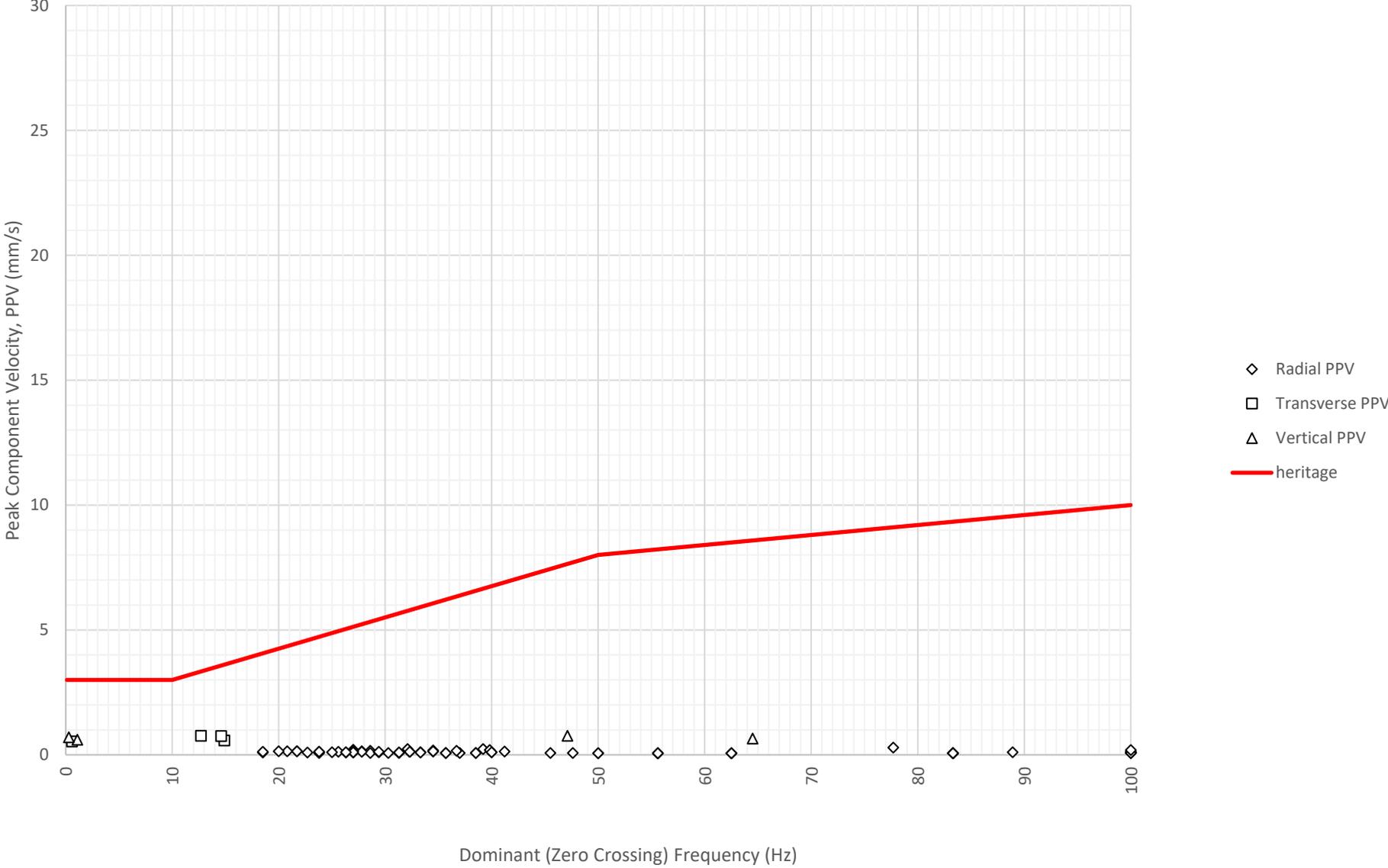
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 24-10-2022



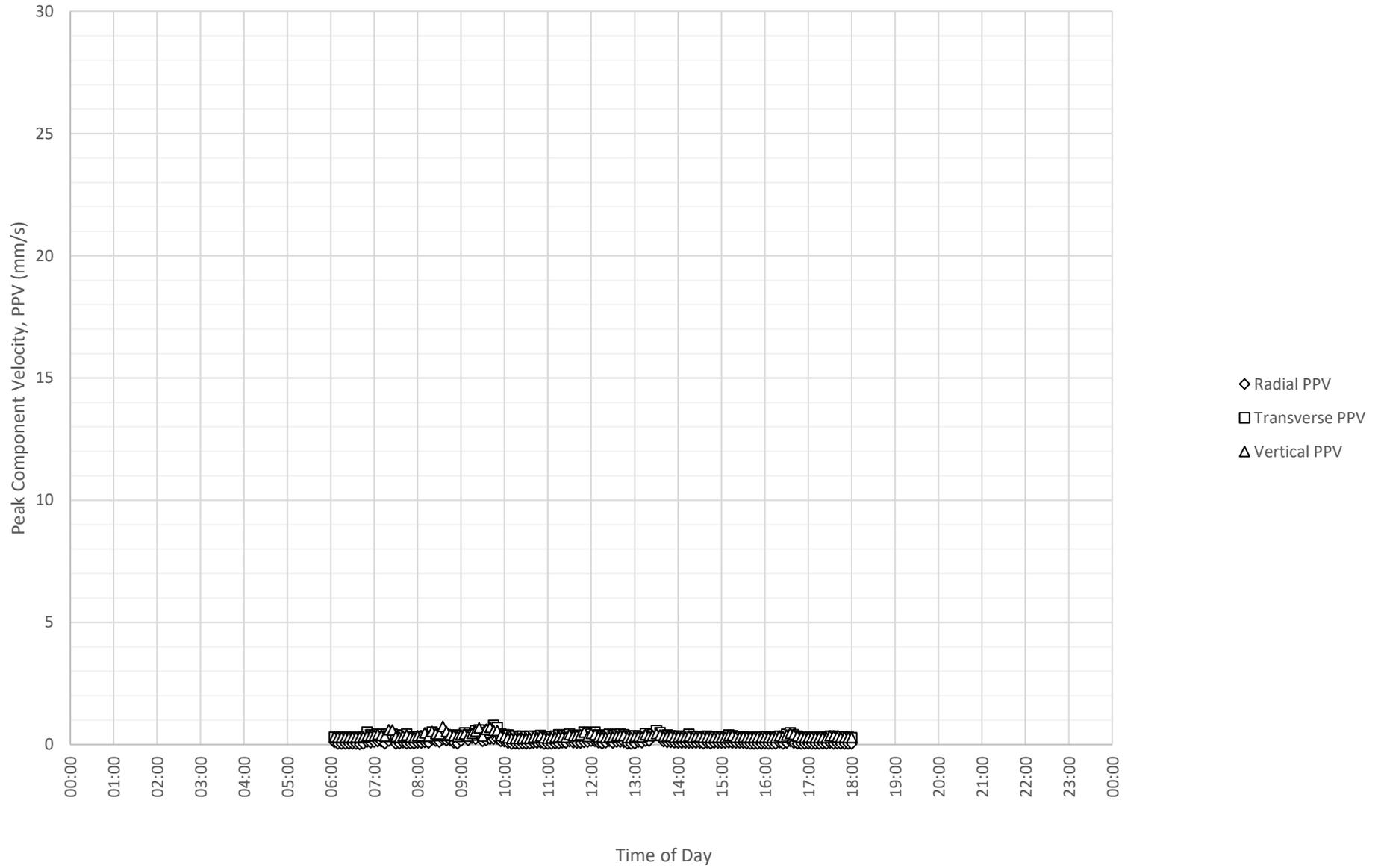
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 25-10-2022



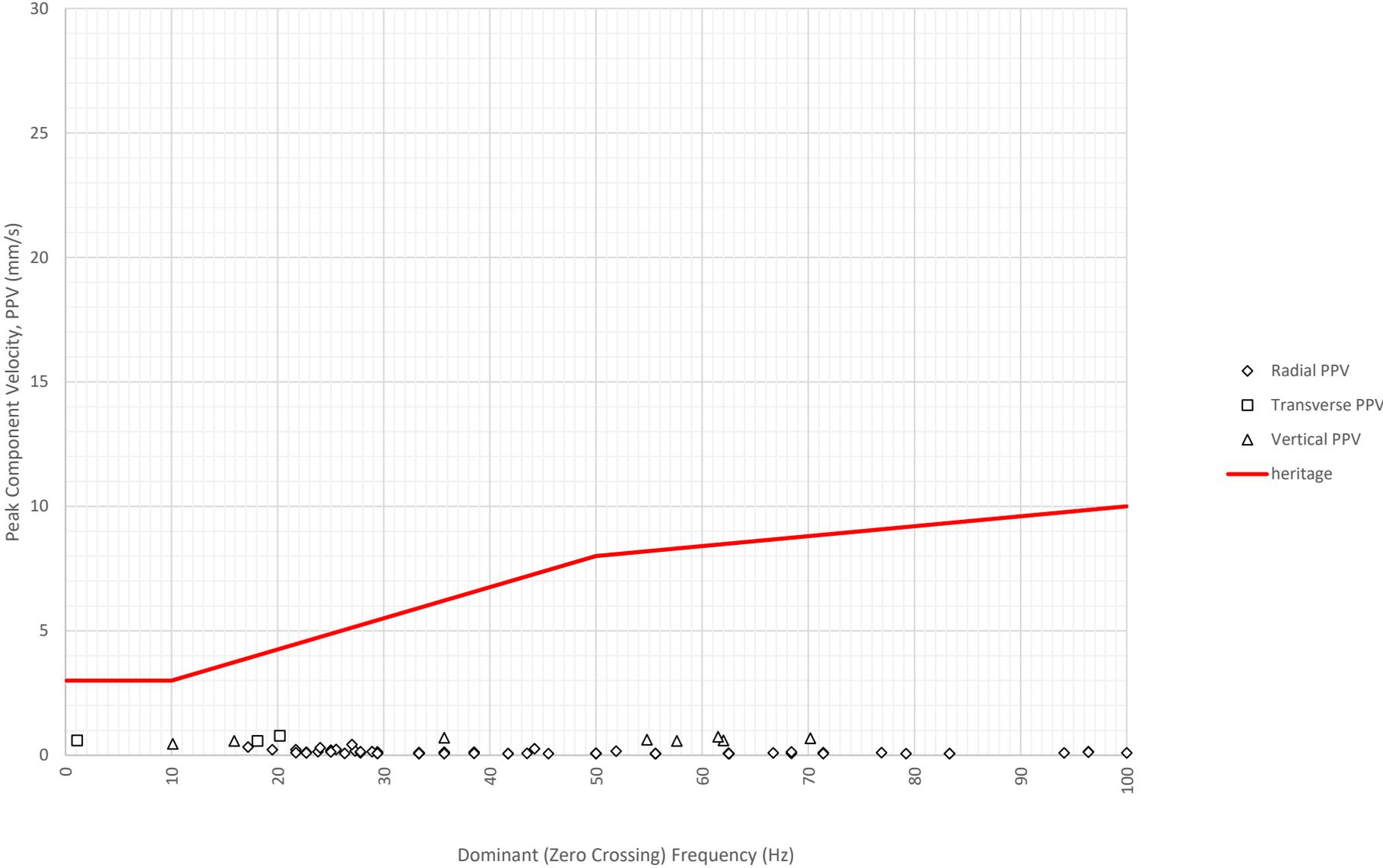
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 25-10-2022



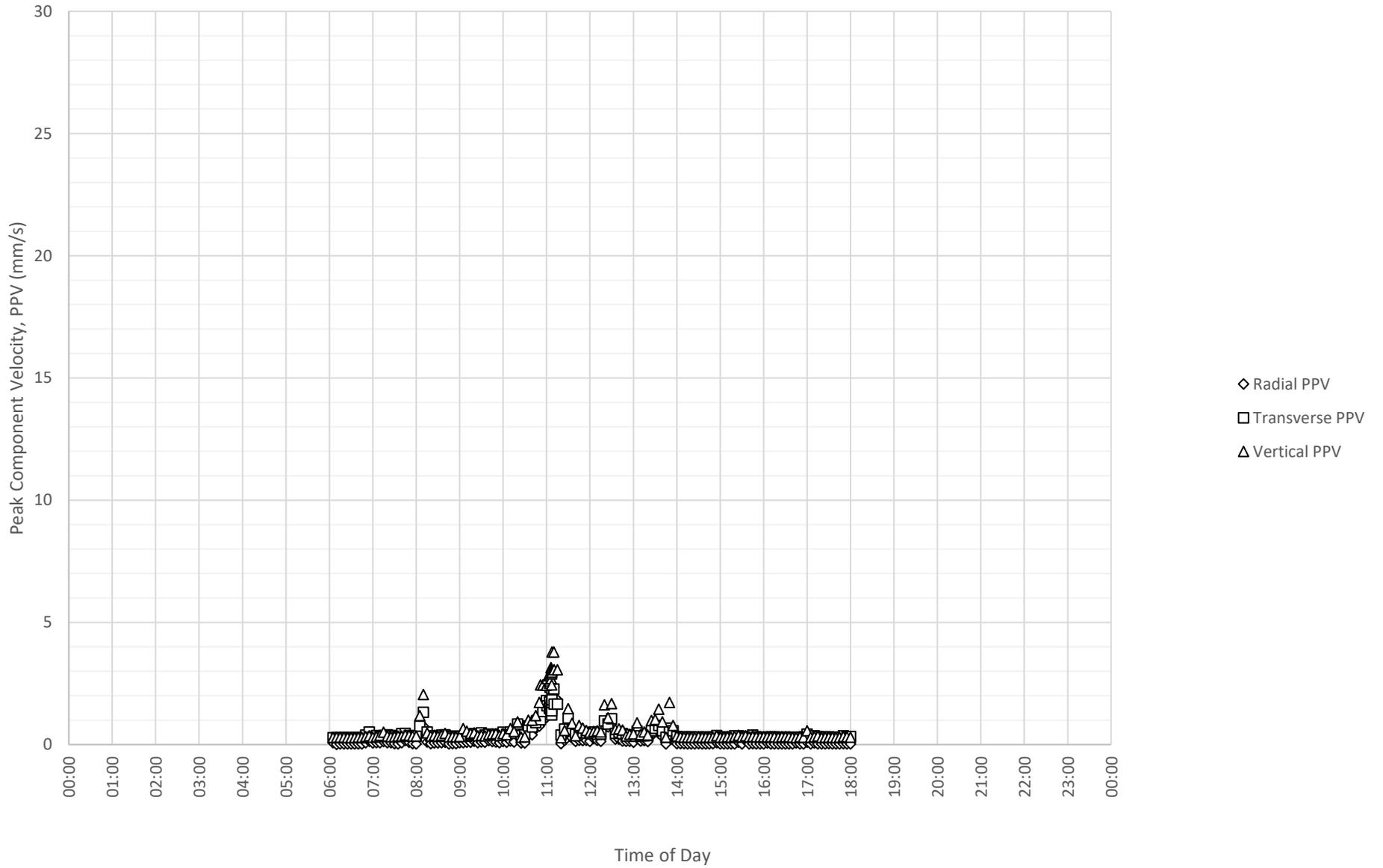
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 26-10-2022



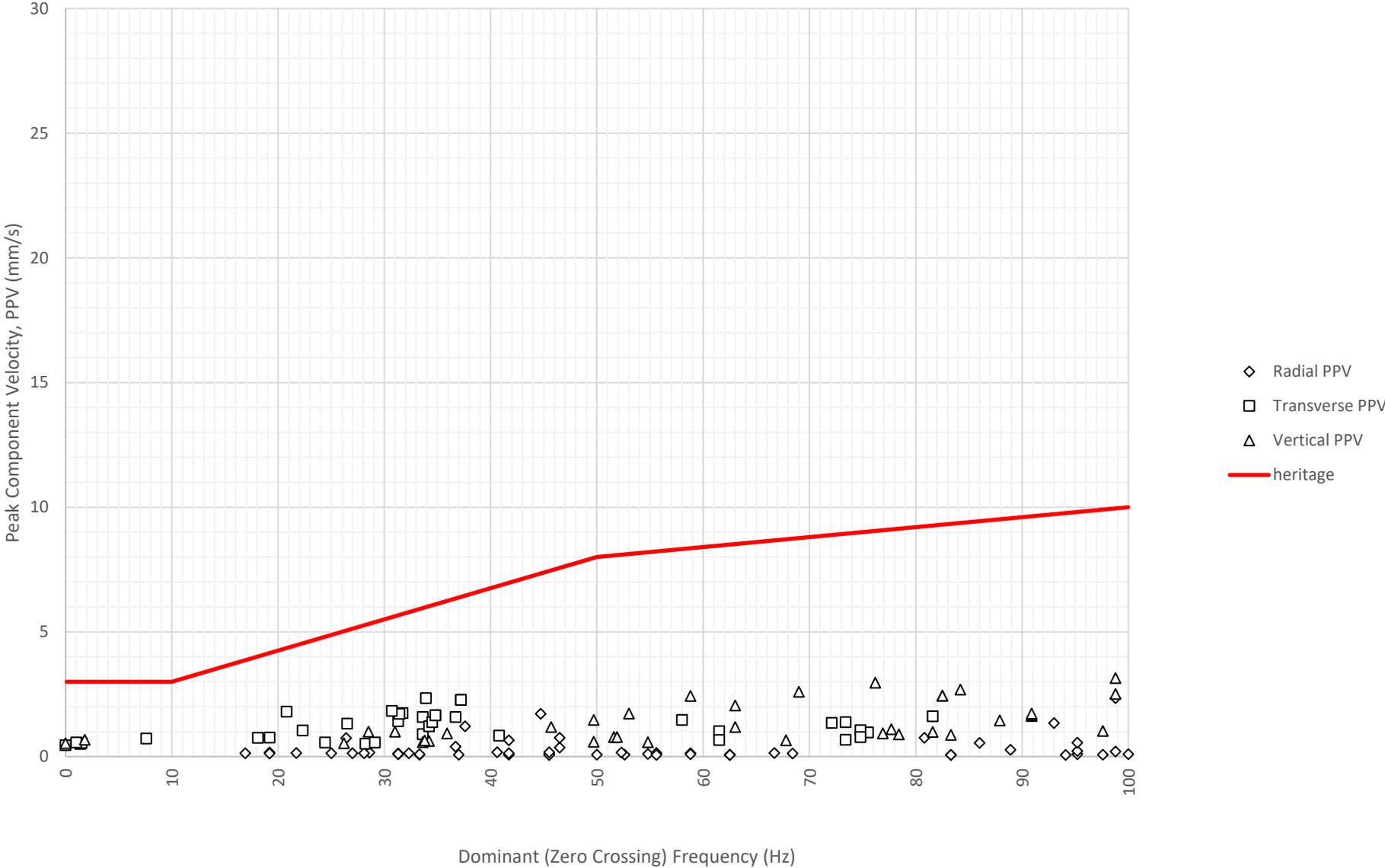
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 26-10-2022



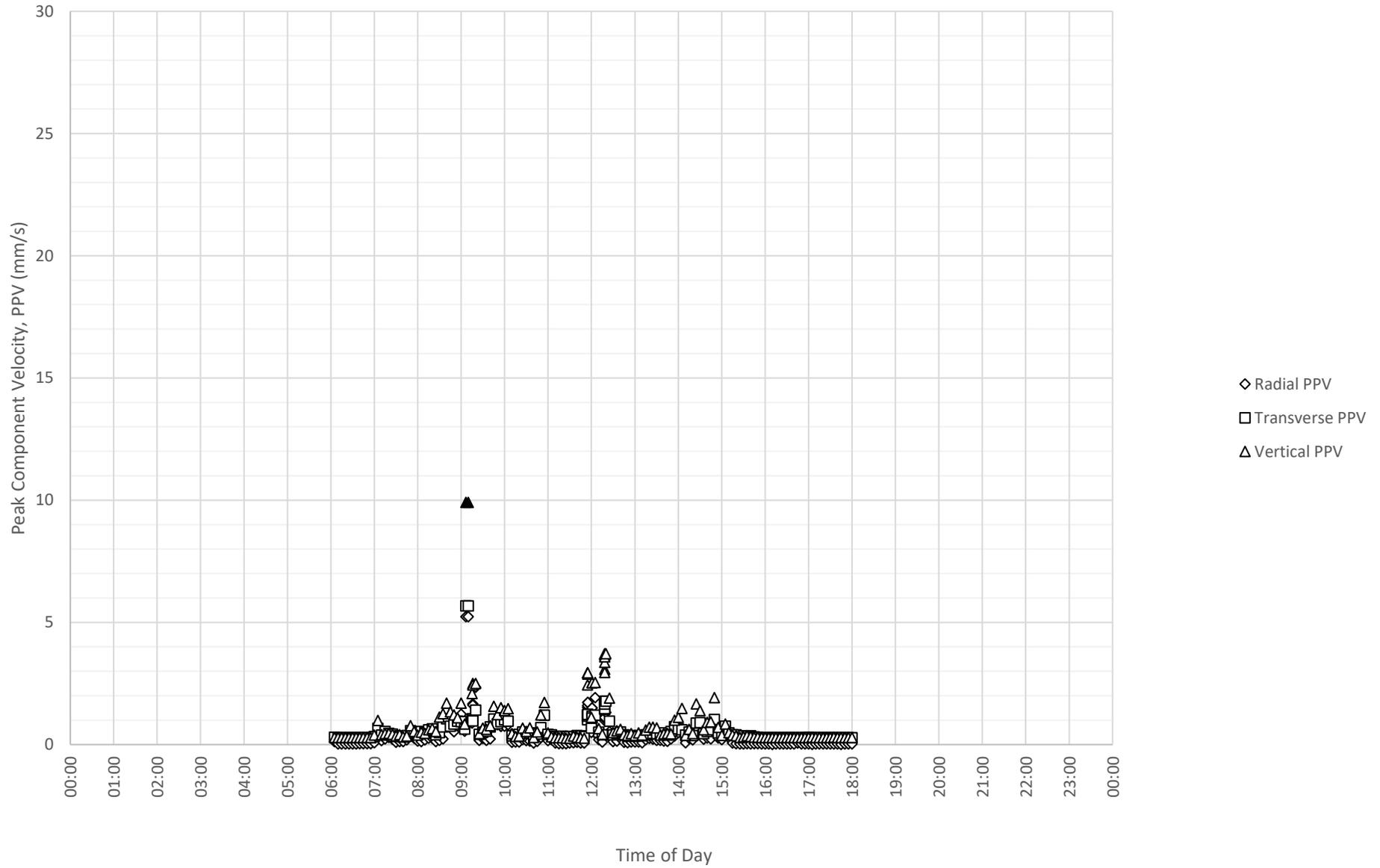
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 27-10-2022



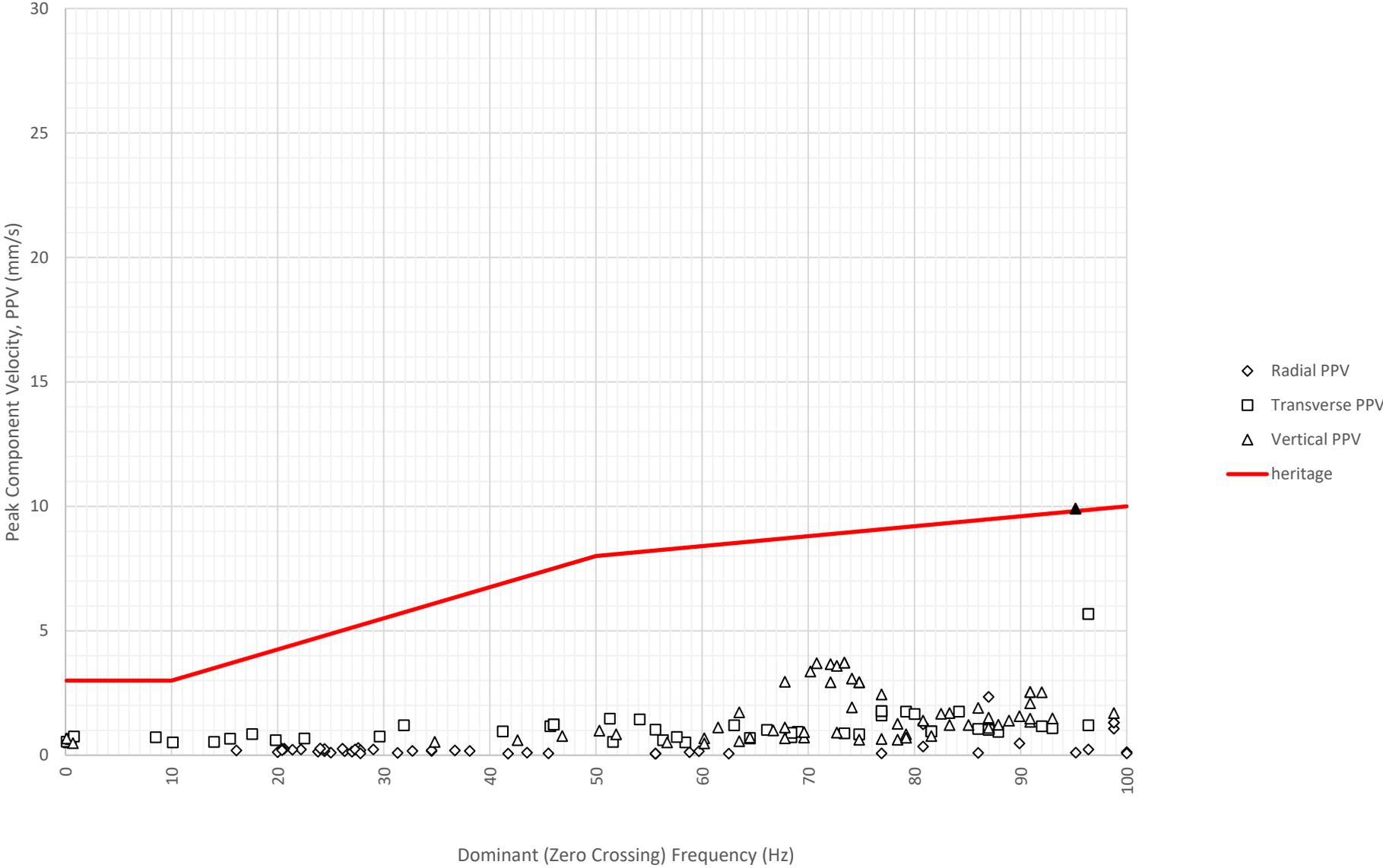
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 27-10-2022



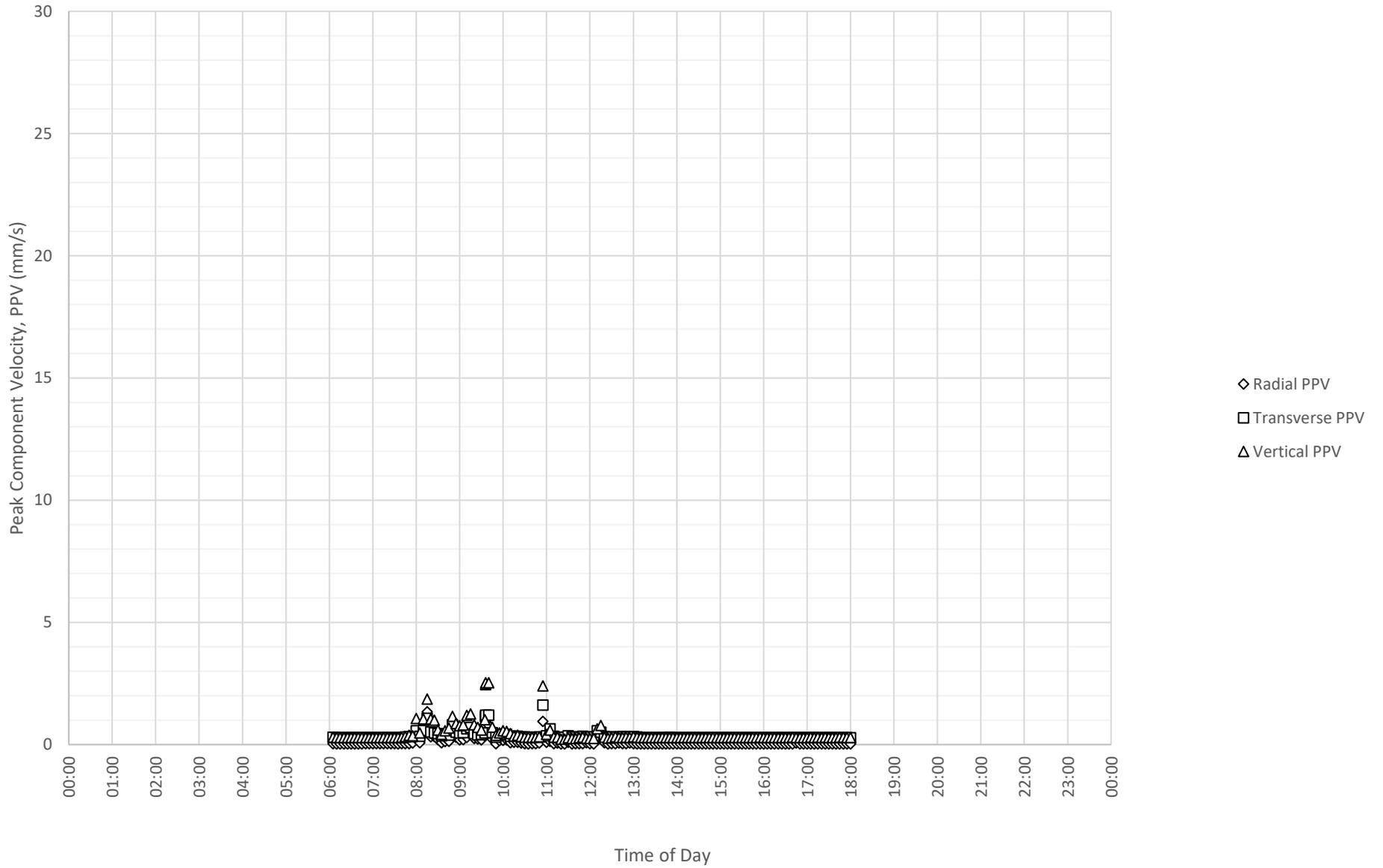
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 28-10-2022



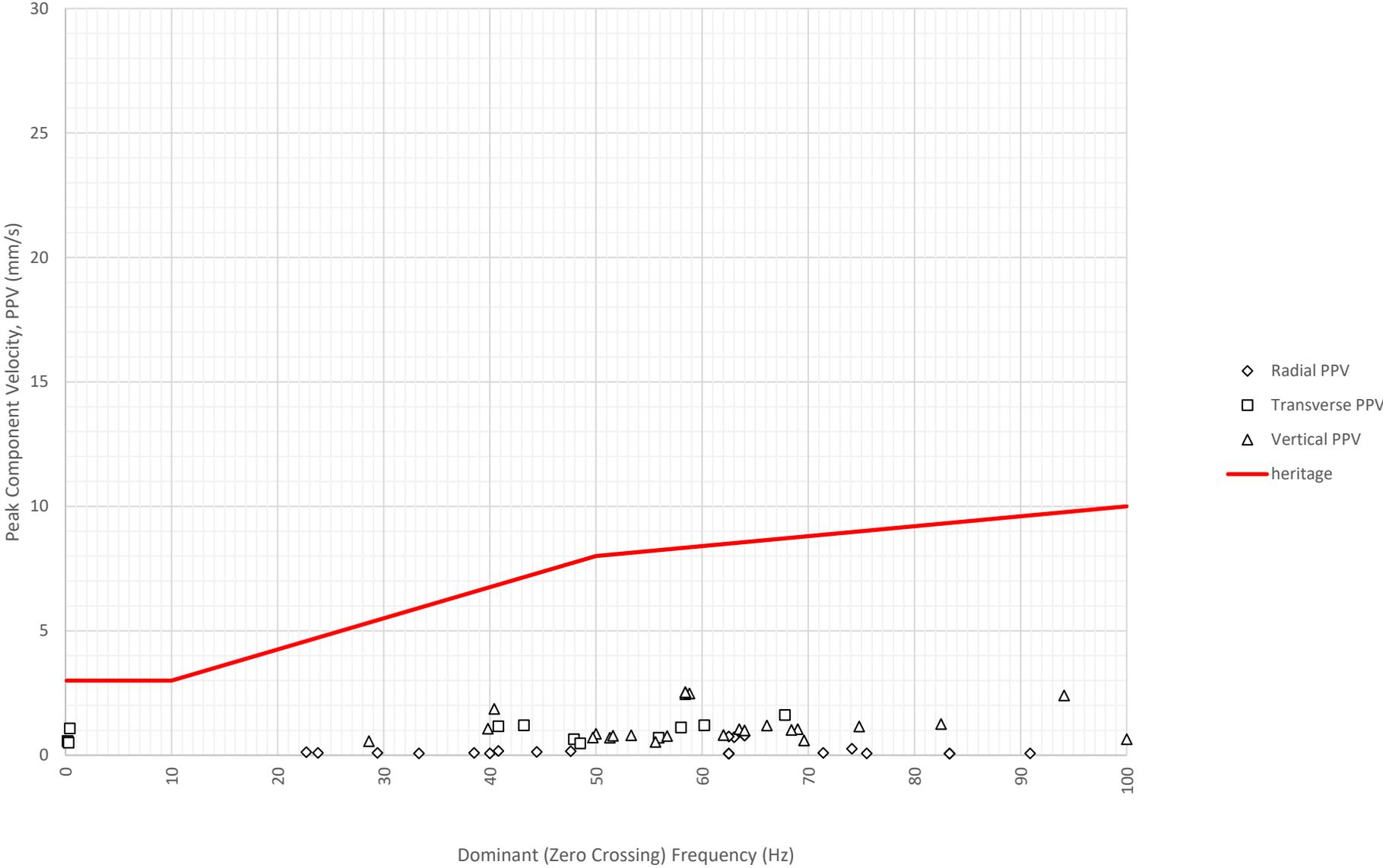
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 28-10-2022



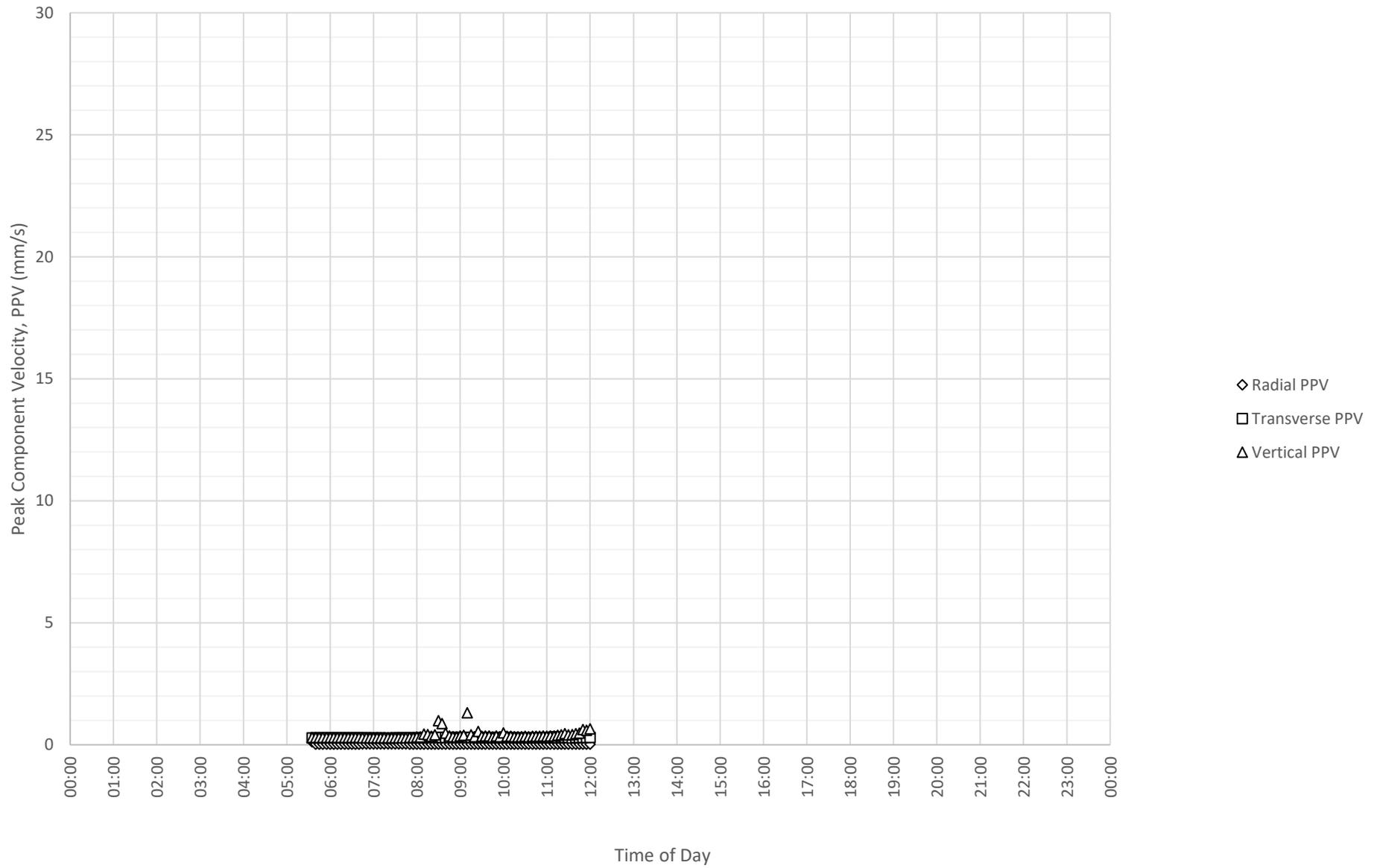
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 29-10-2022



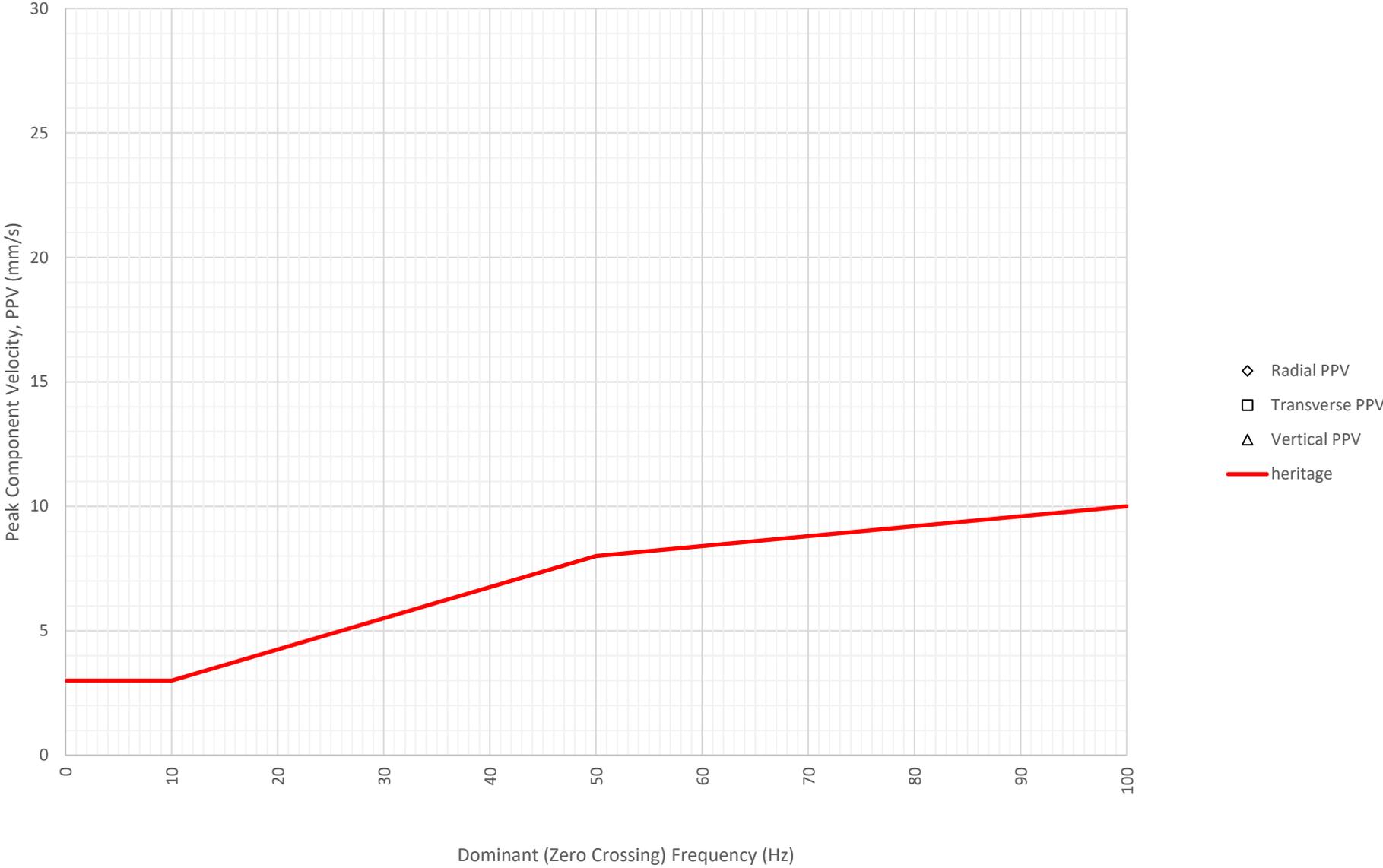
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 29-10-2022



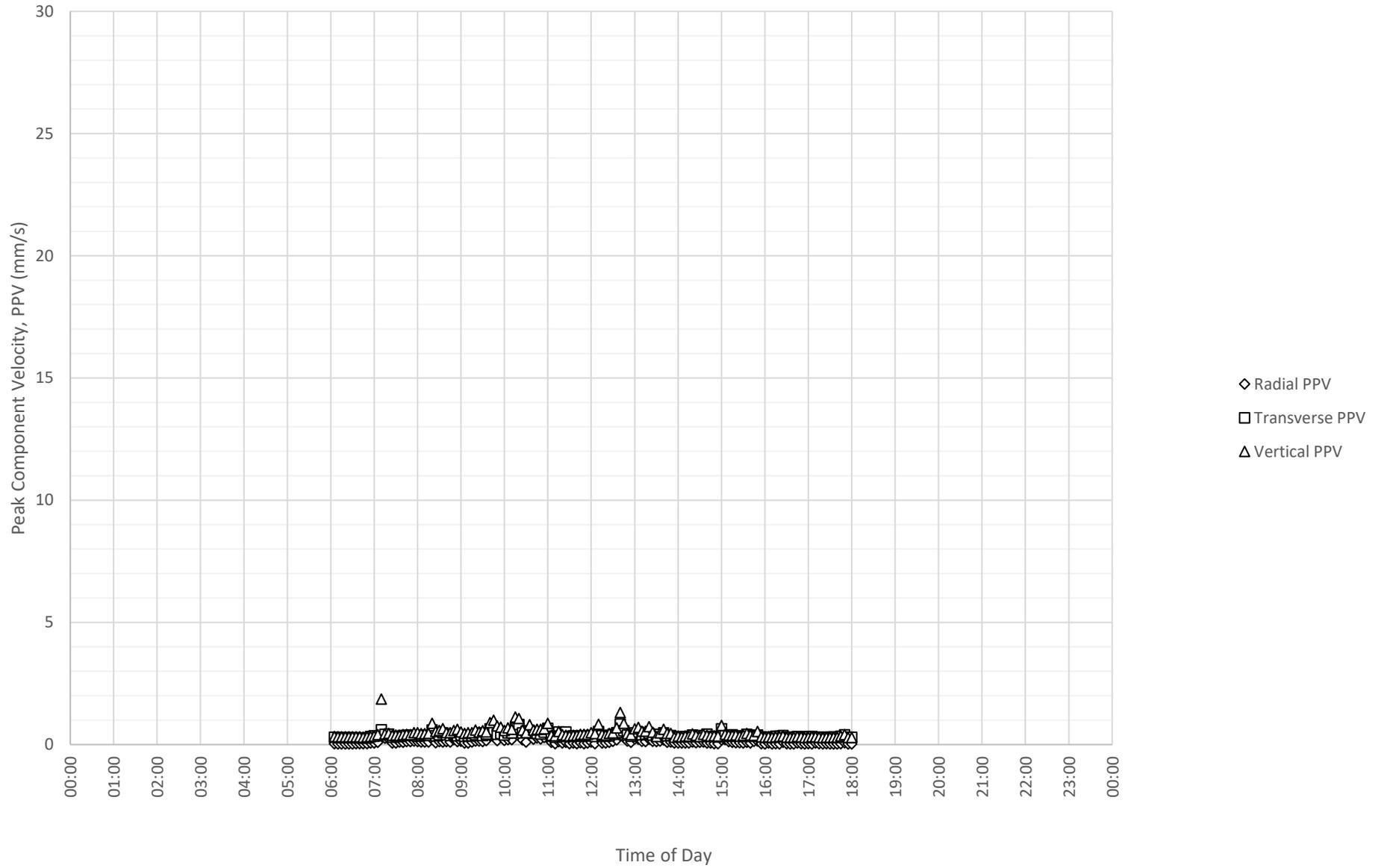
Daily Monitored Vibration Levels at M7713 Heritage (Front) on 30-10-2022



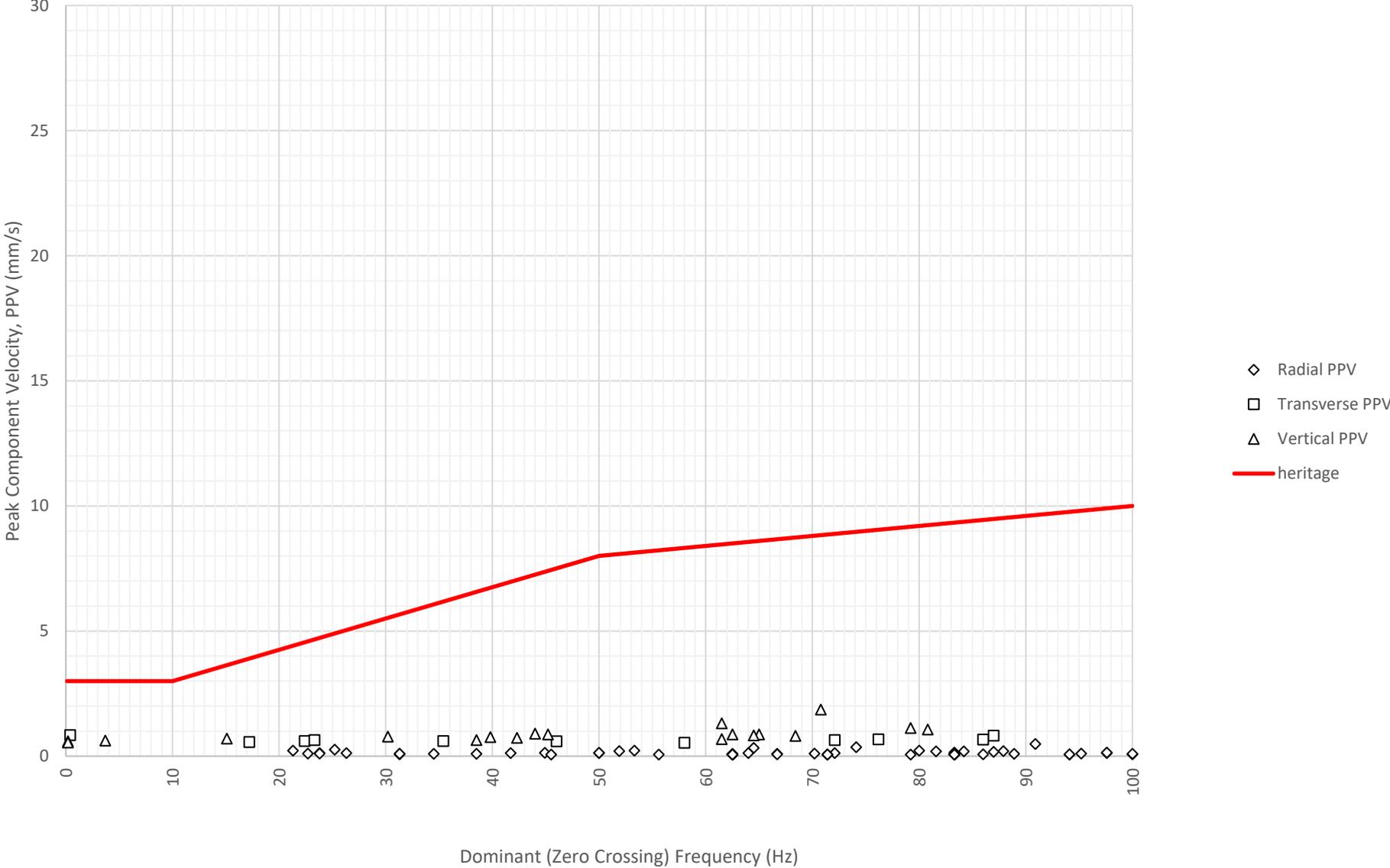
Frequency Content of Vibration Levels at M7713 Heritage (Front) on 30-10-2022



Daily Monitored Vibration Levels at M7713 Heritage (Front) on 31-10-2022

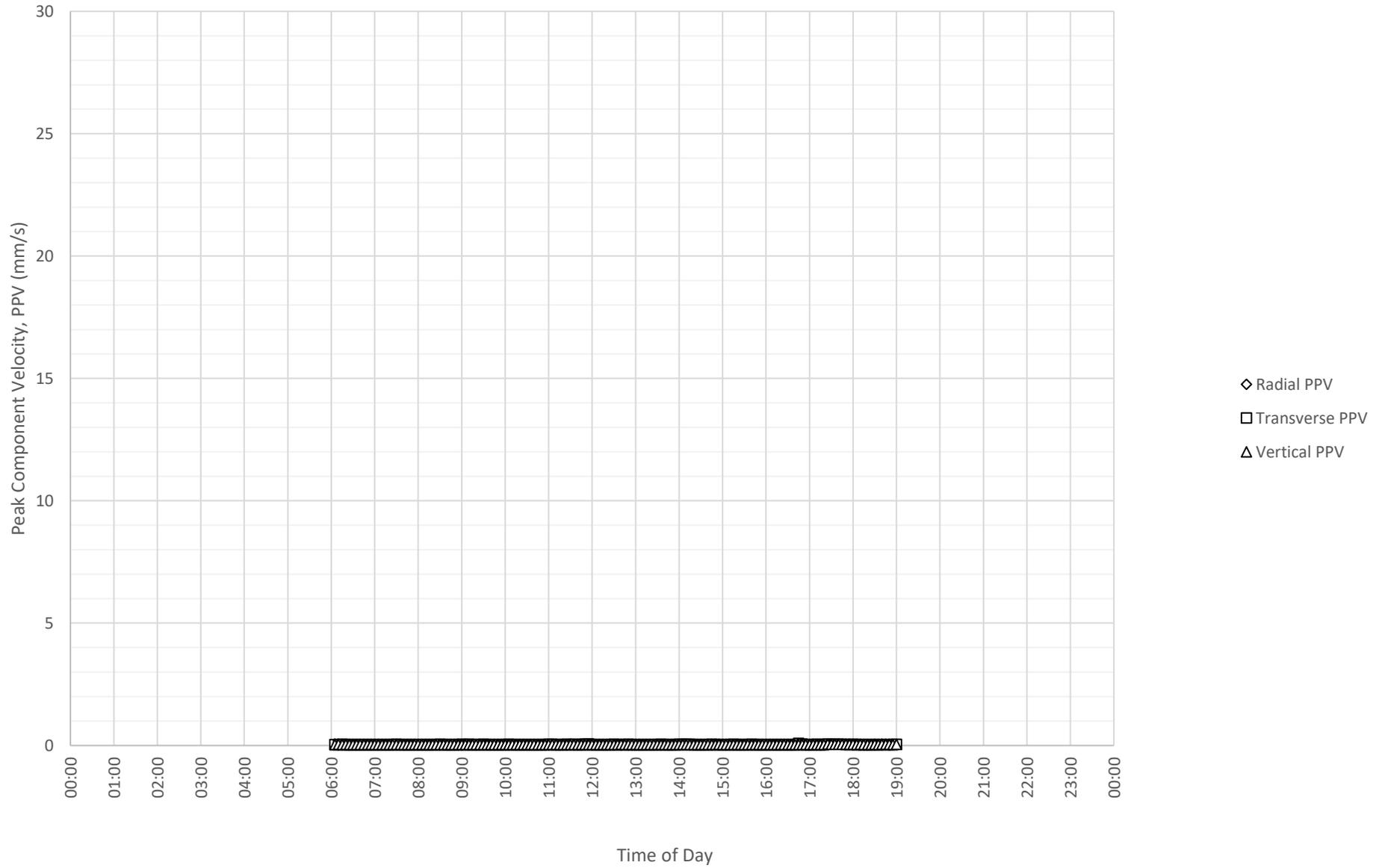


Frequency Content of Vibration Levels at M7713 Heritage (Front) on 31-10-2022

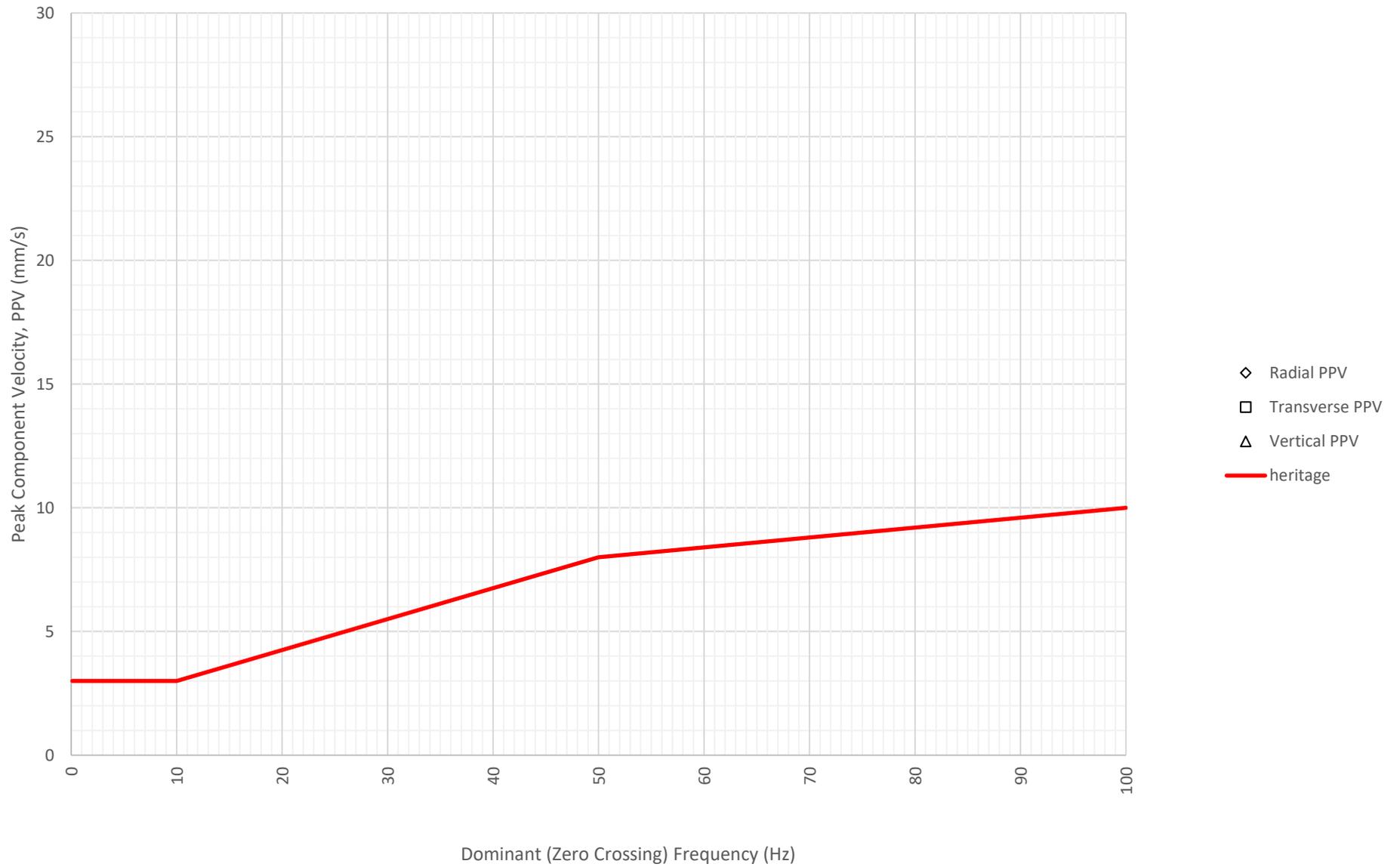


## **APPENDIX 2 :DAILY GRAPHS M7427 HERITAGE (REAR)**

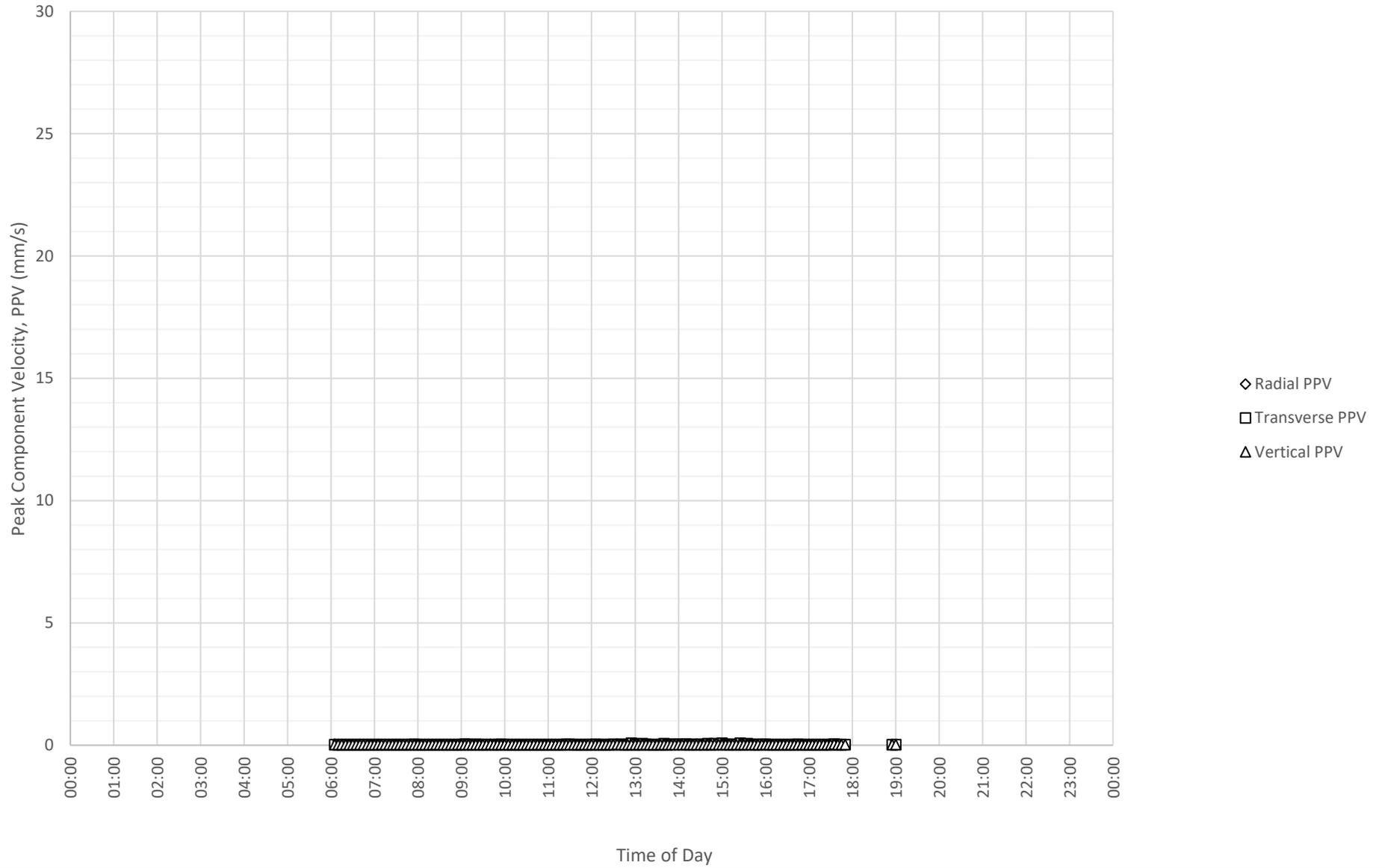
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 1-10-2022



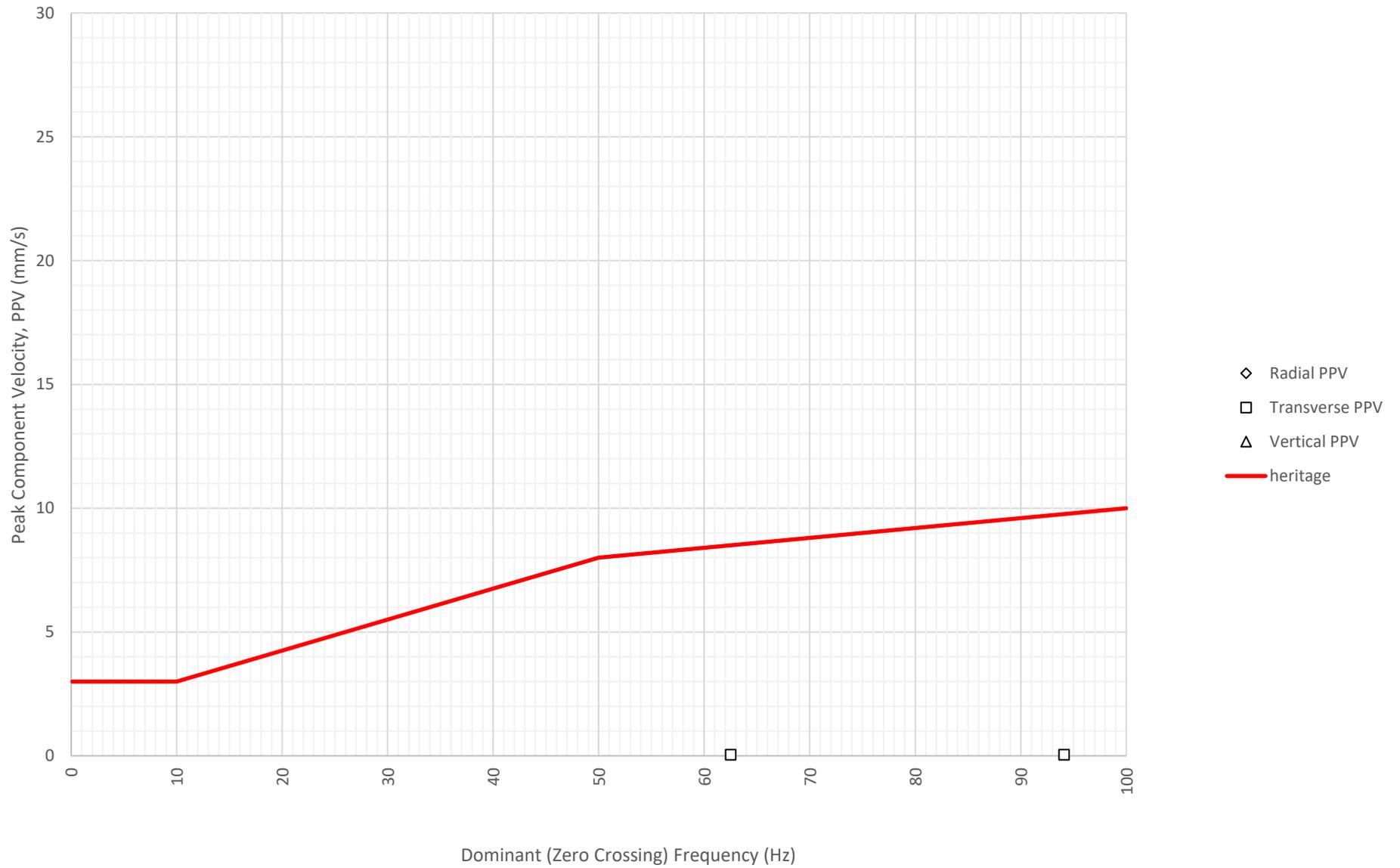
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 1-10-2022



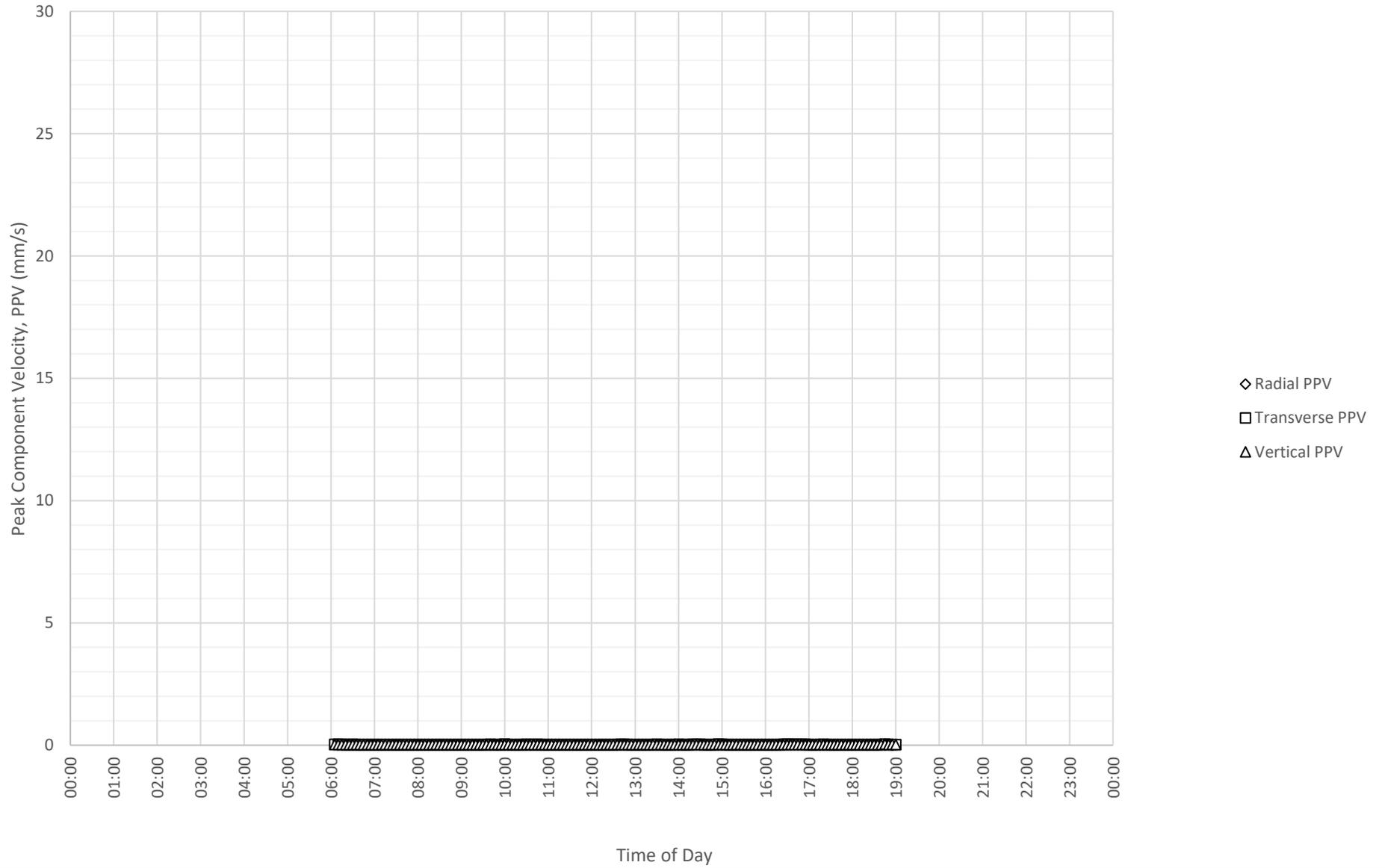
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 2-10-2022



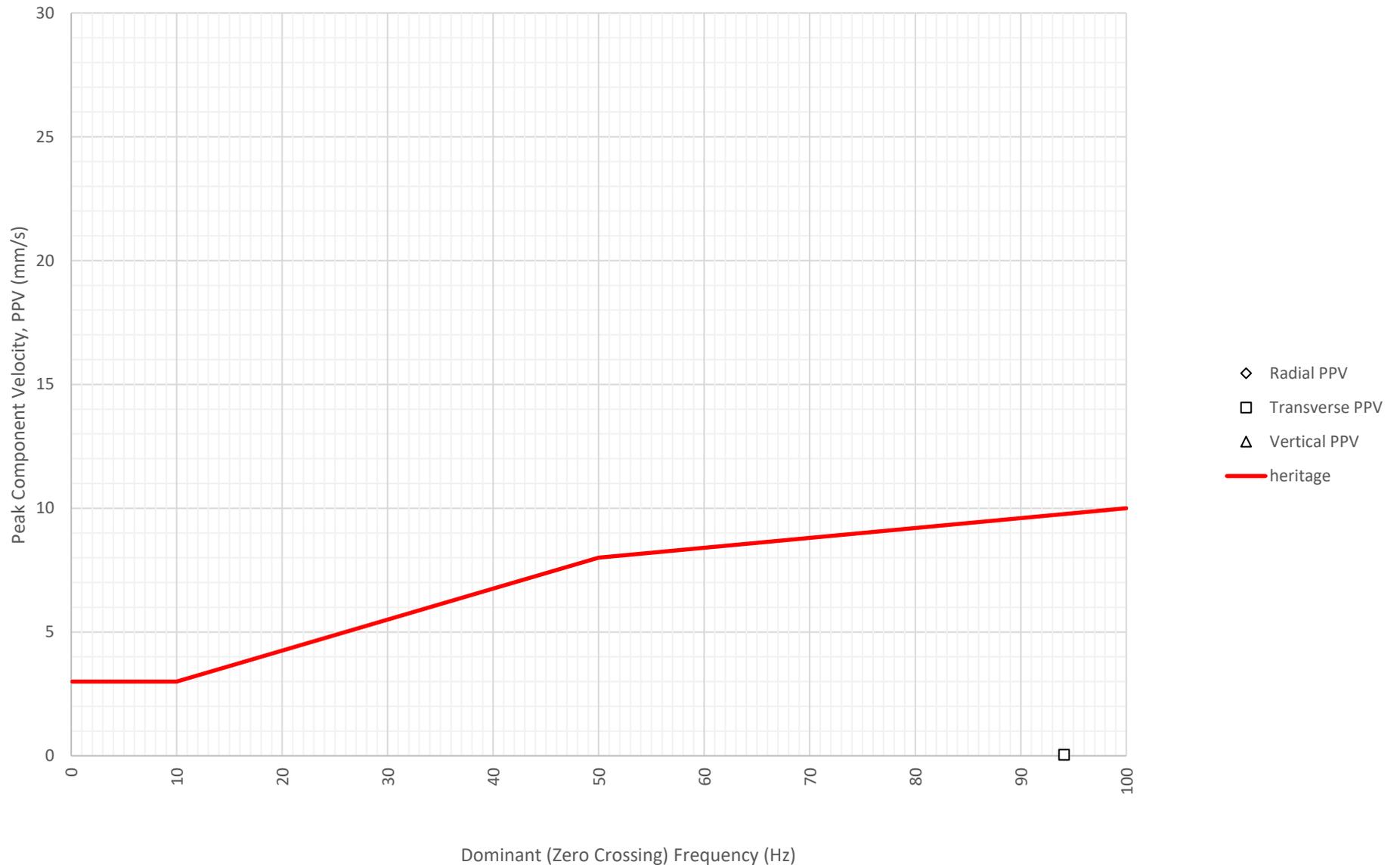
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 2-10-2022



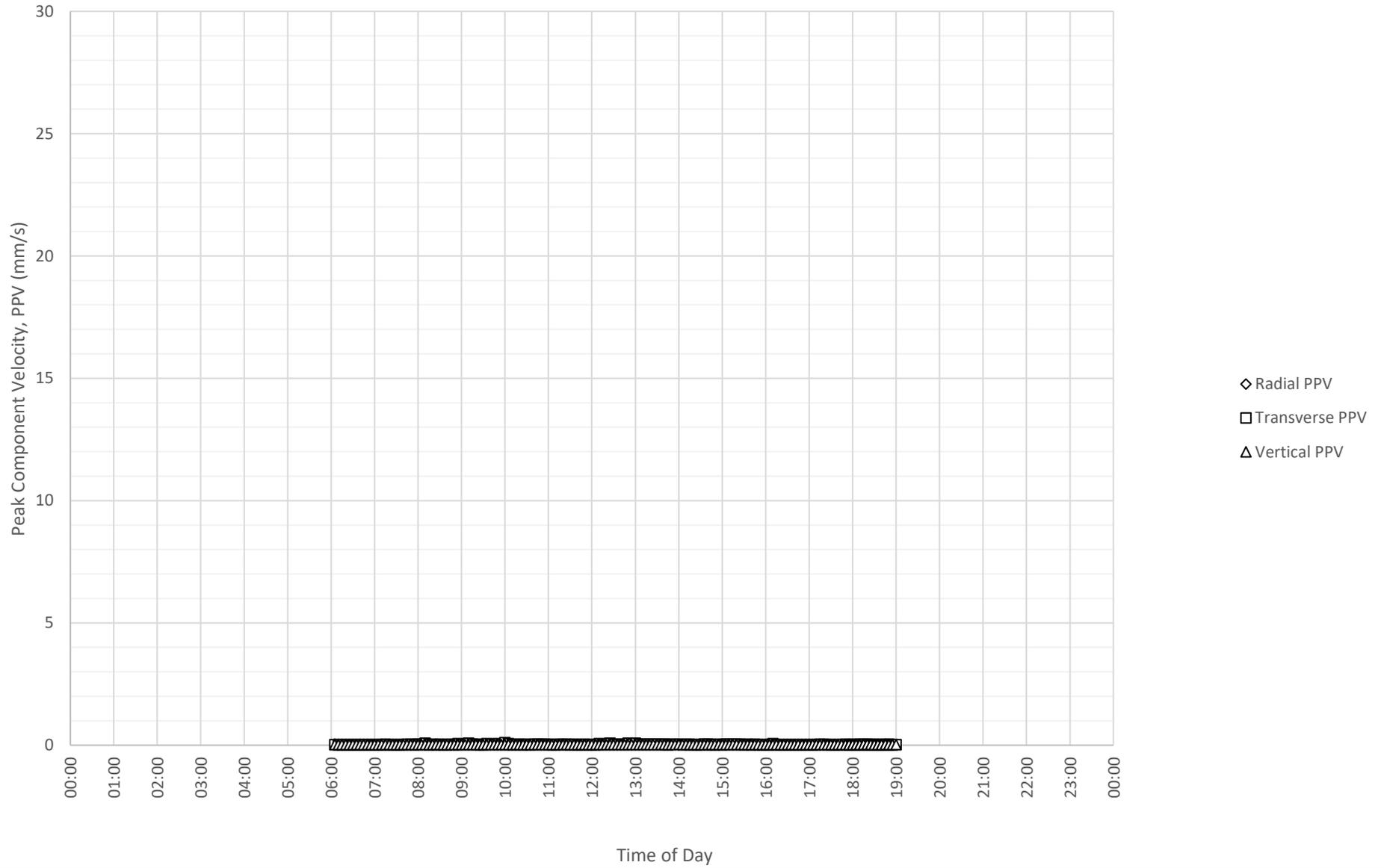
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 3-10-2022



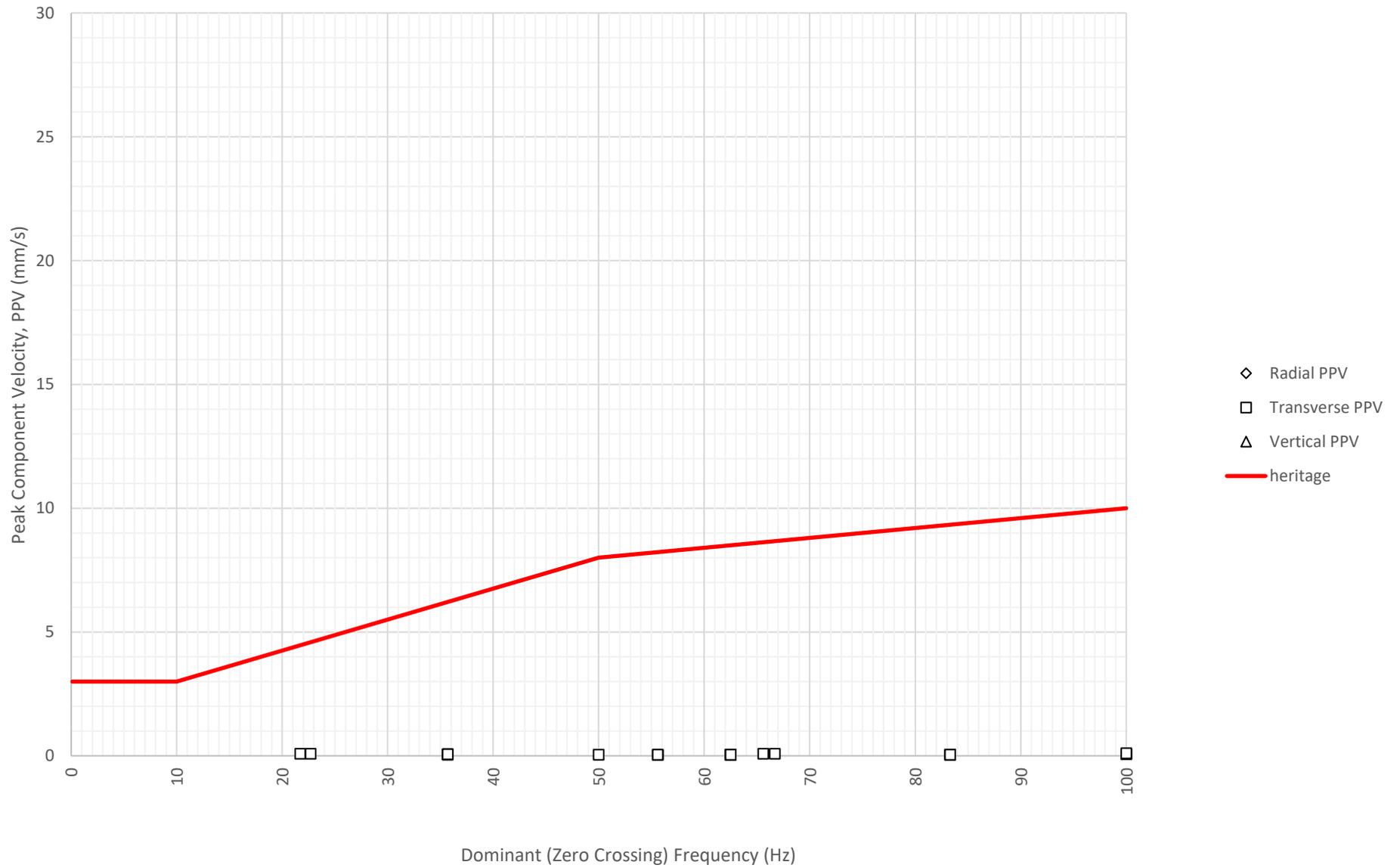
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 3-10-2022



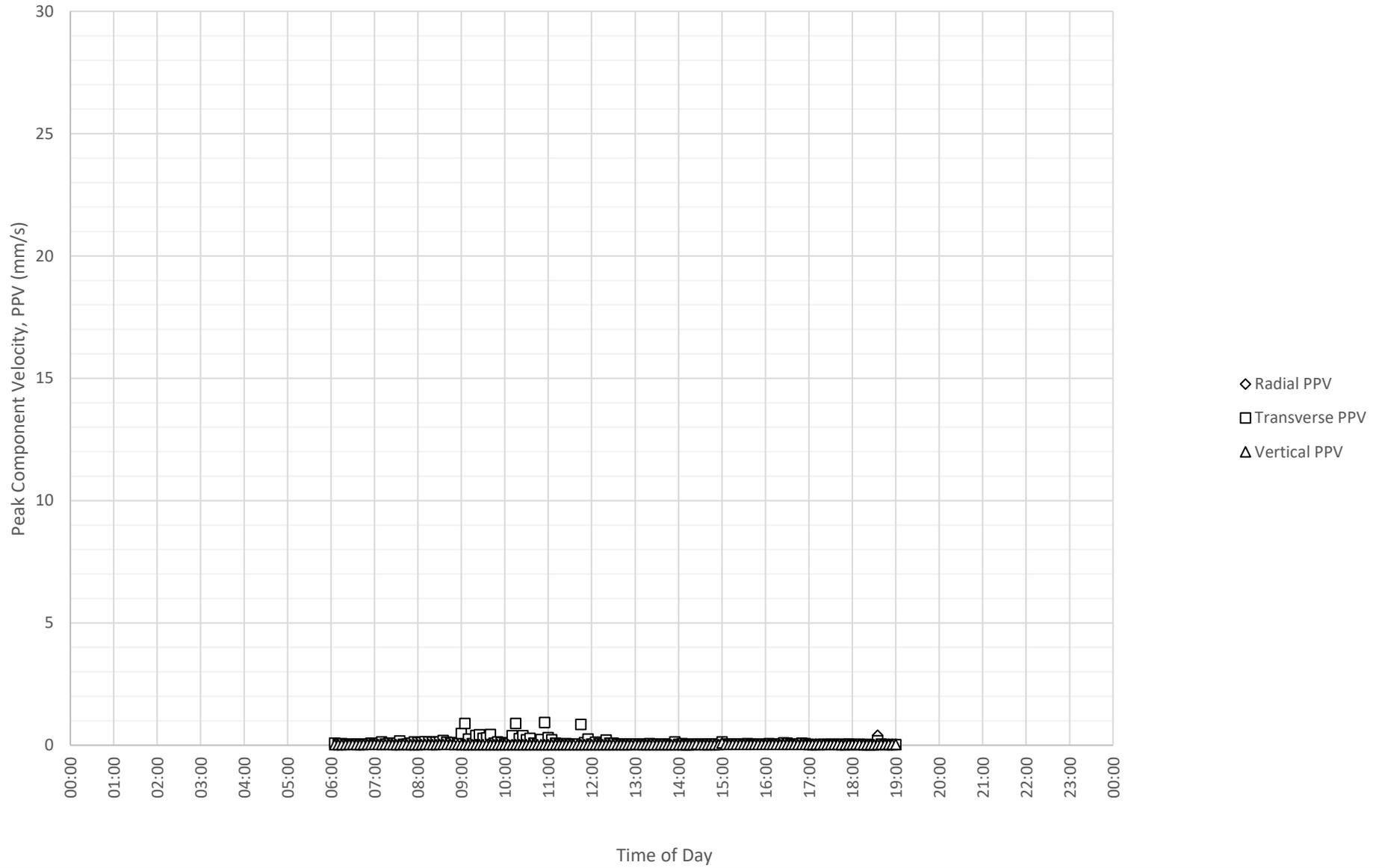
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 4-10-2022



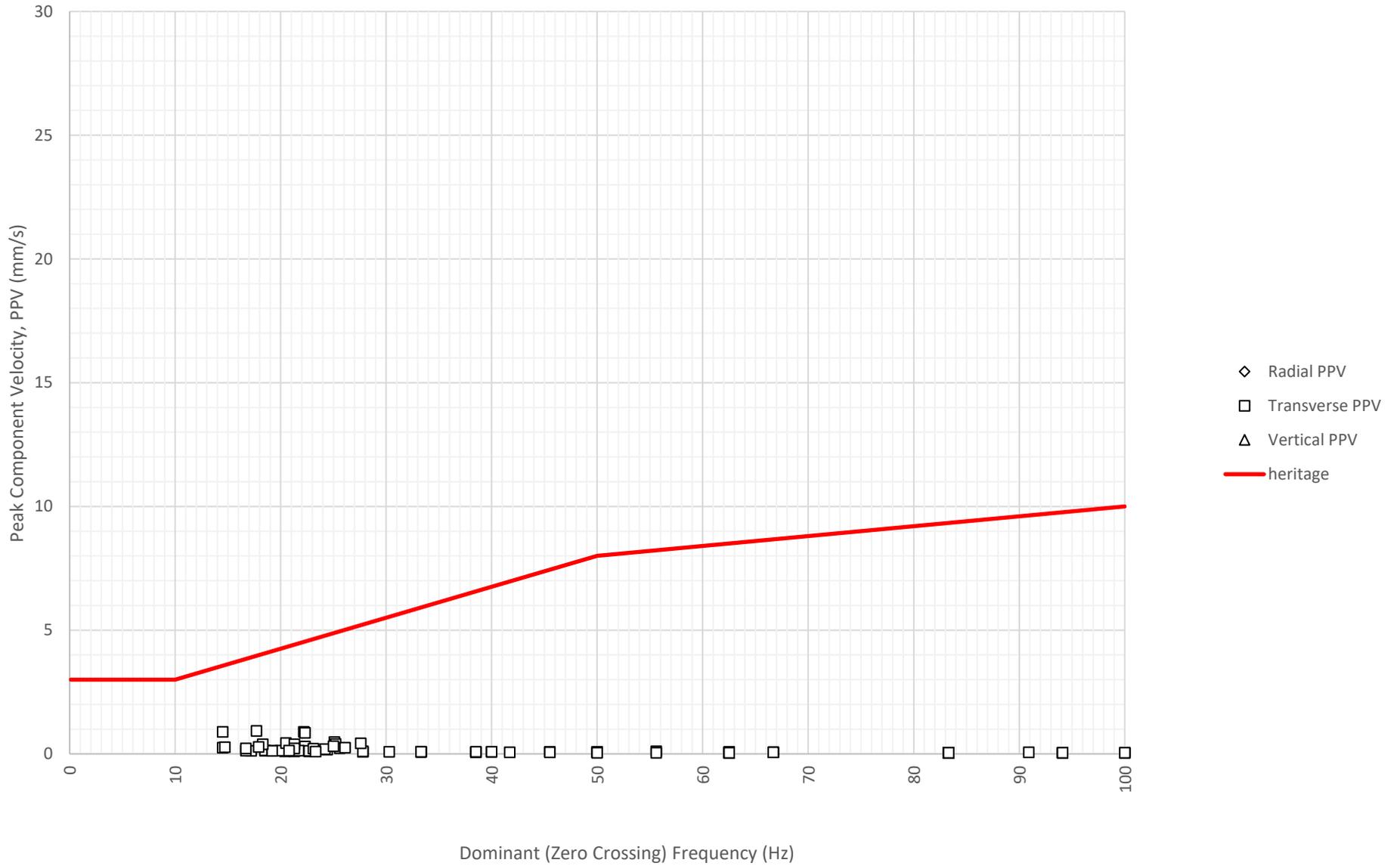
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 4-10-2022



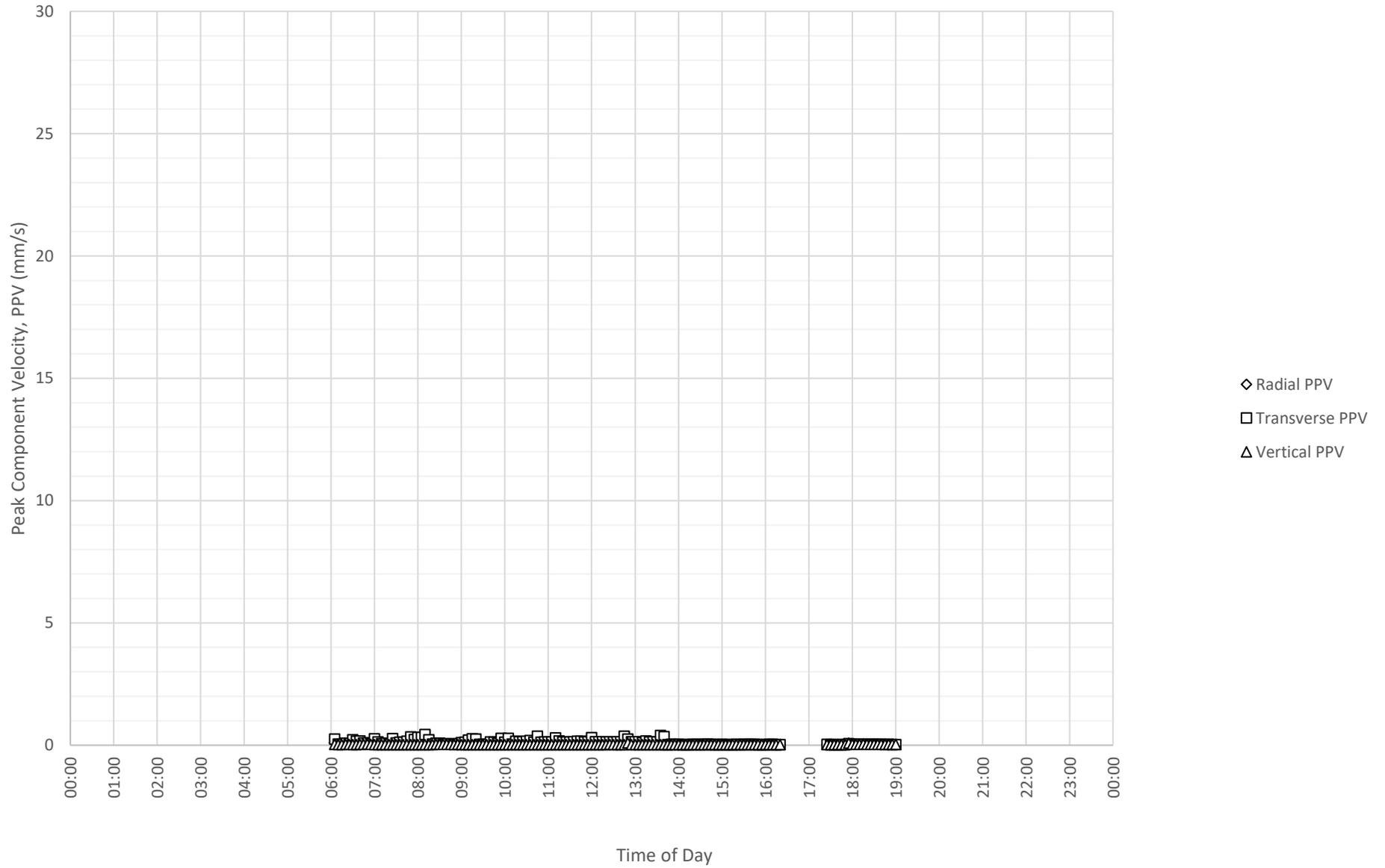
Daily Monitored Vibration Levels at M7427 Heritage (rear) on 5-10-2022



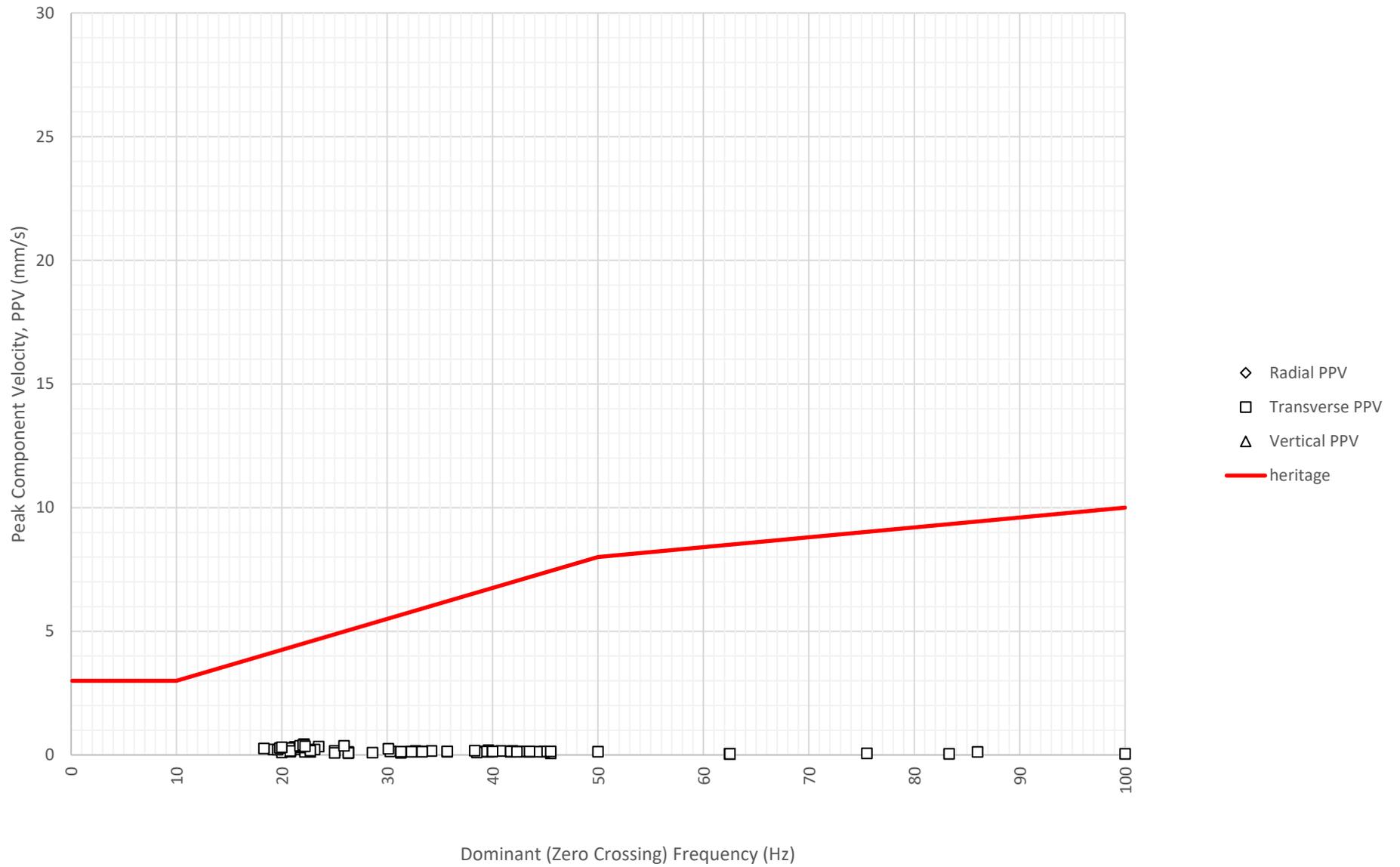
Frequency Content of Vibration Levels at M7427 Heritage (rear) on 5-10-2022



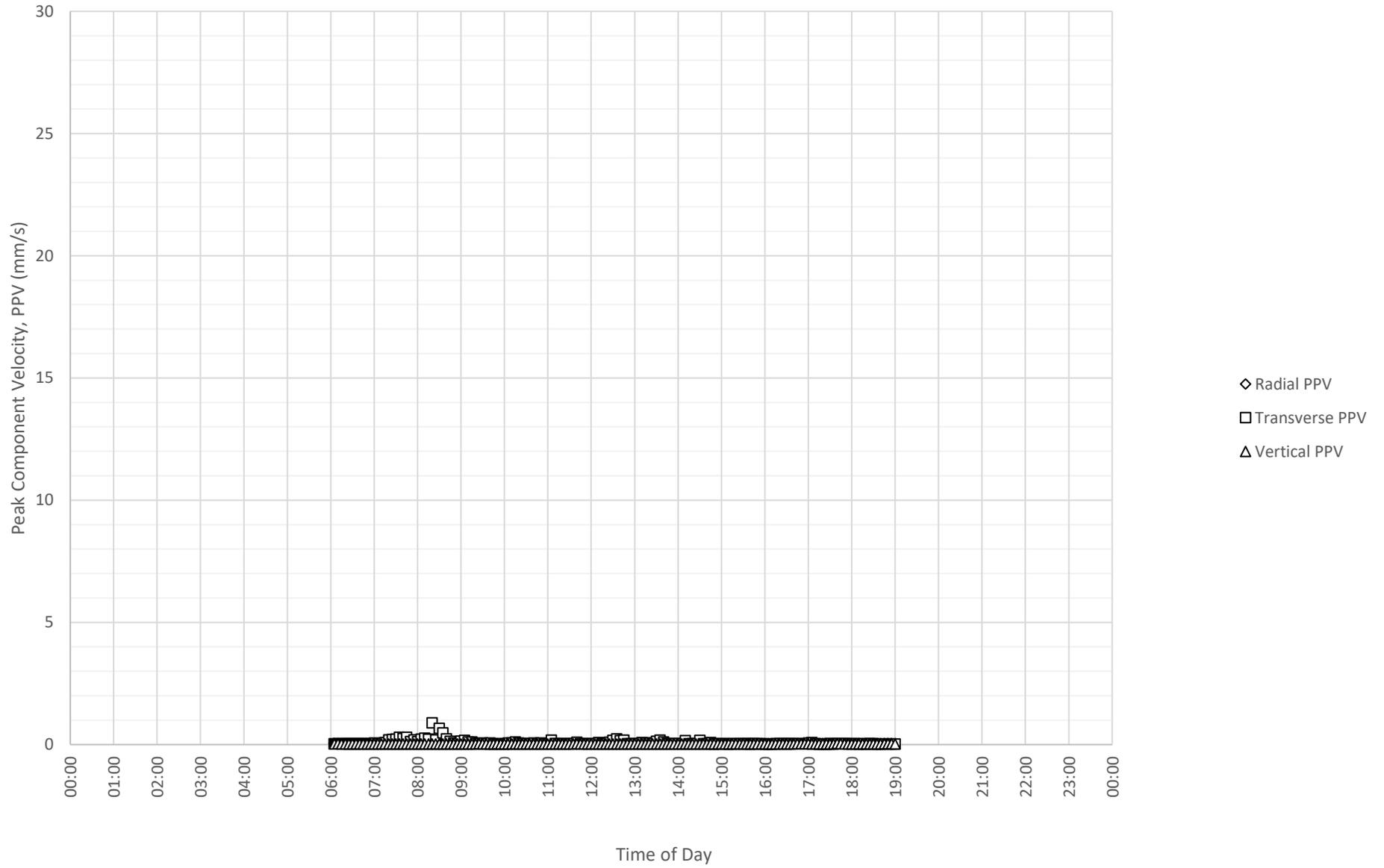
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 6-10-2022



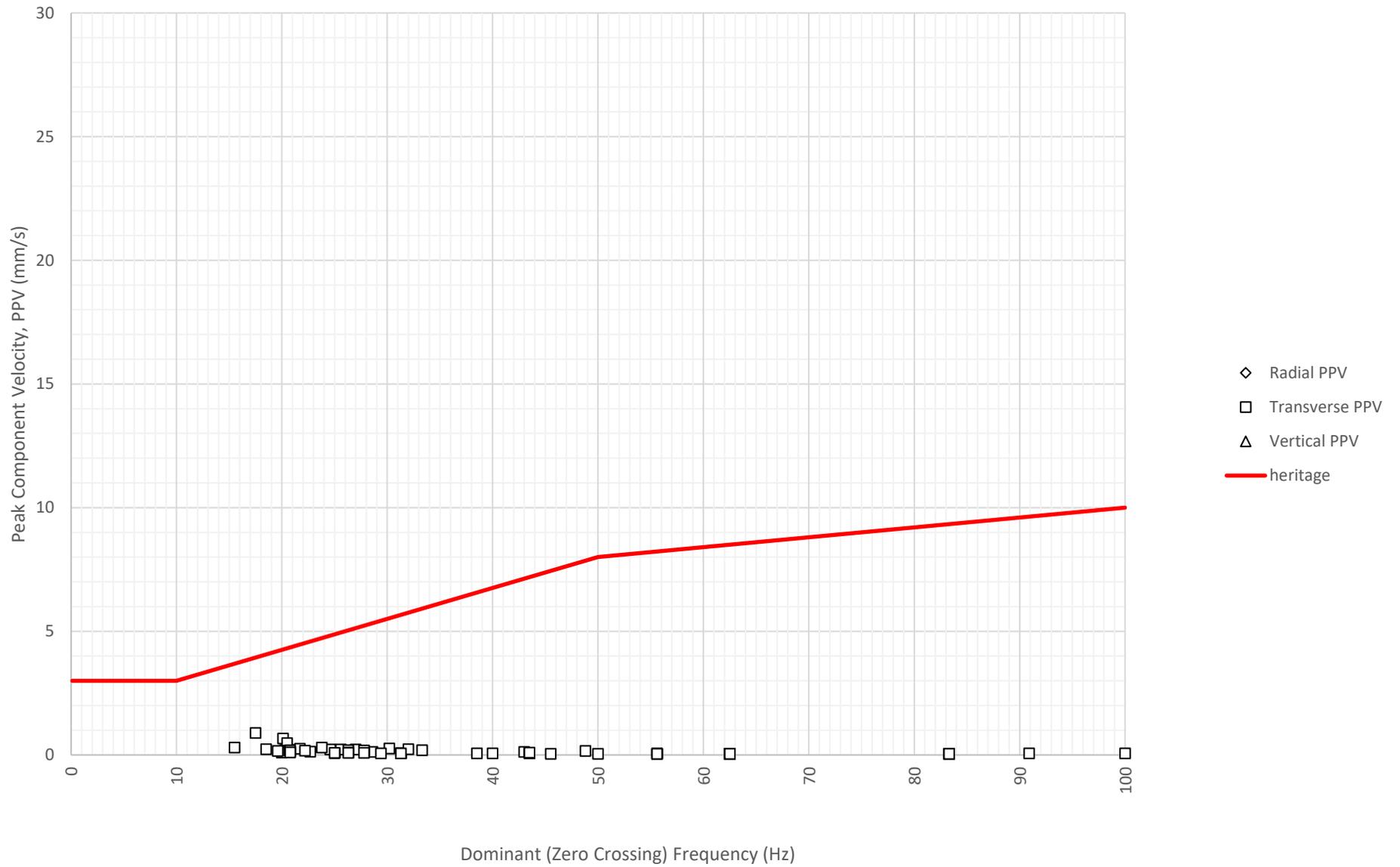
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 6-10-2022



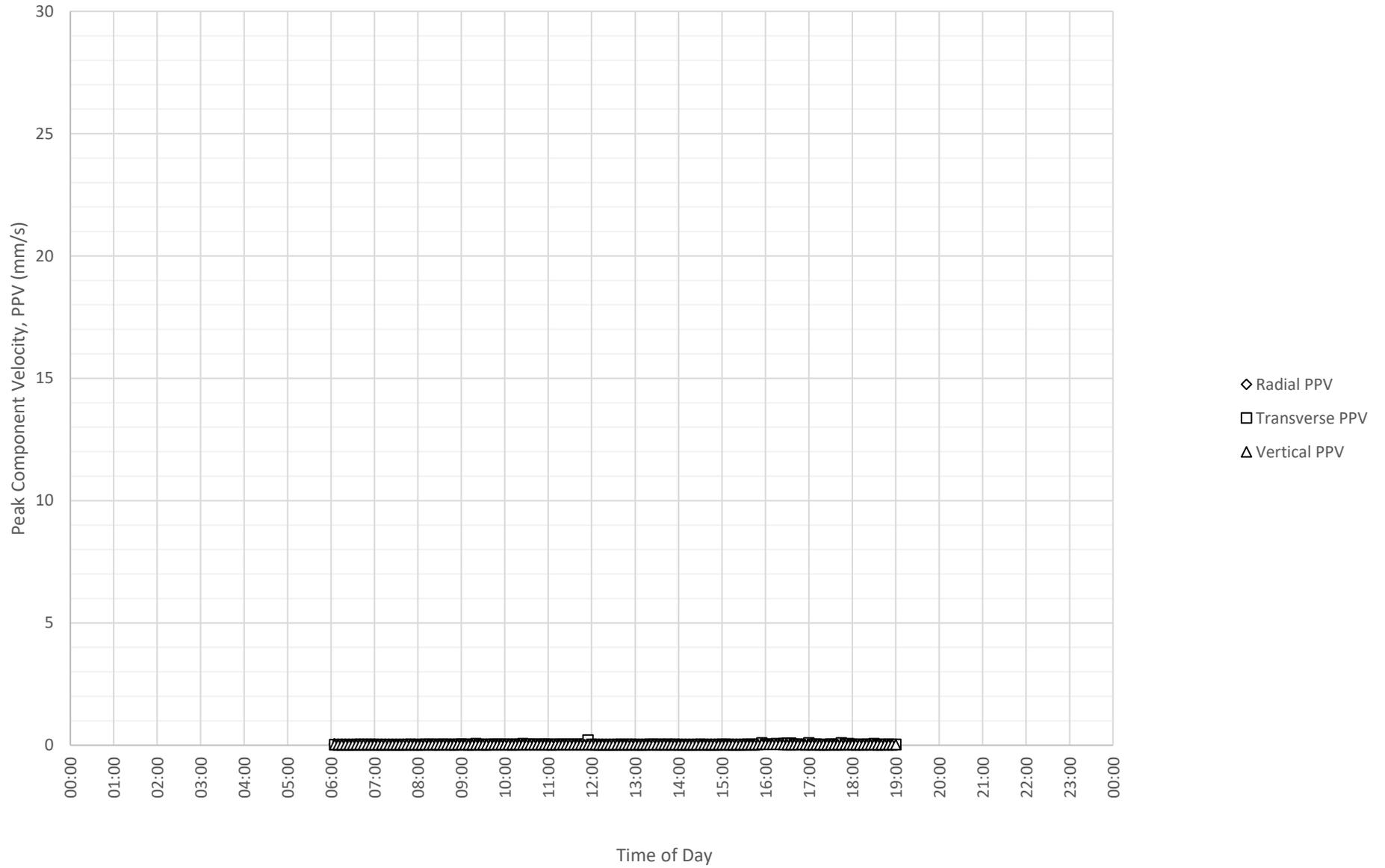
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 7-10-2022



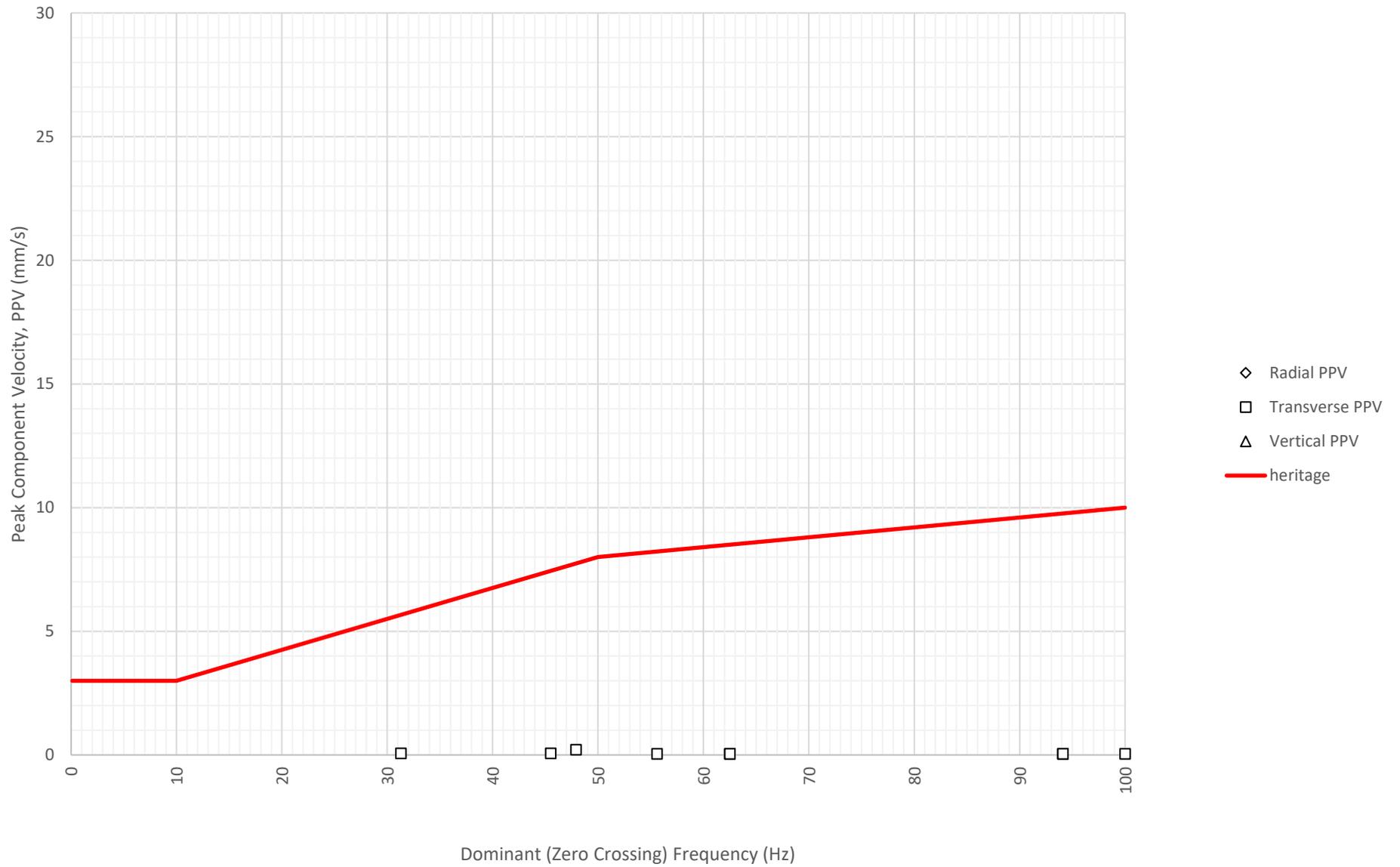
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 7-10-2022



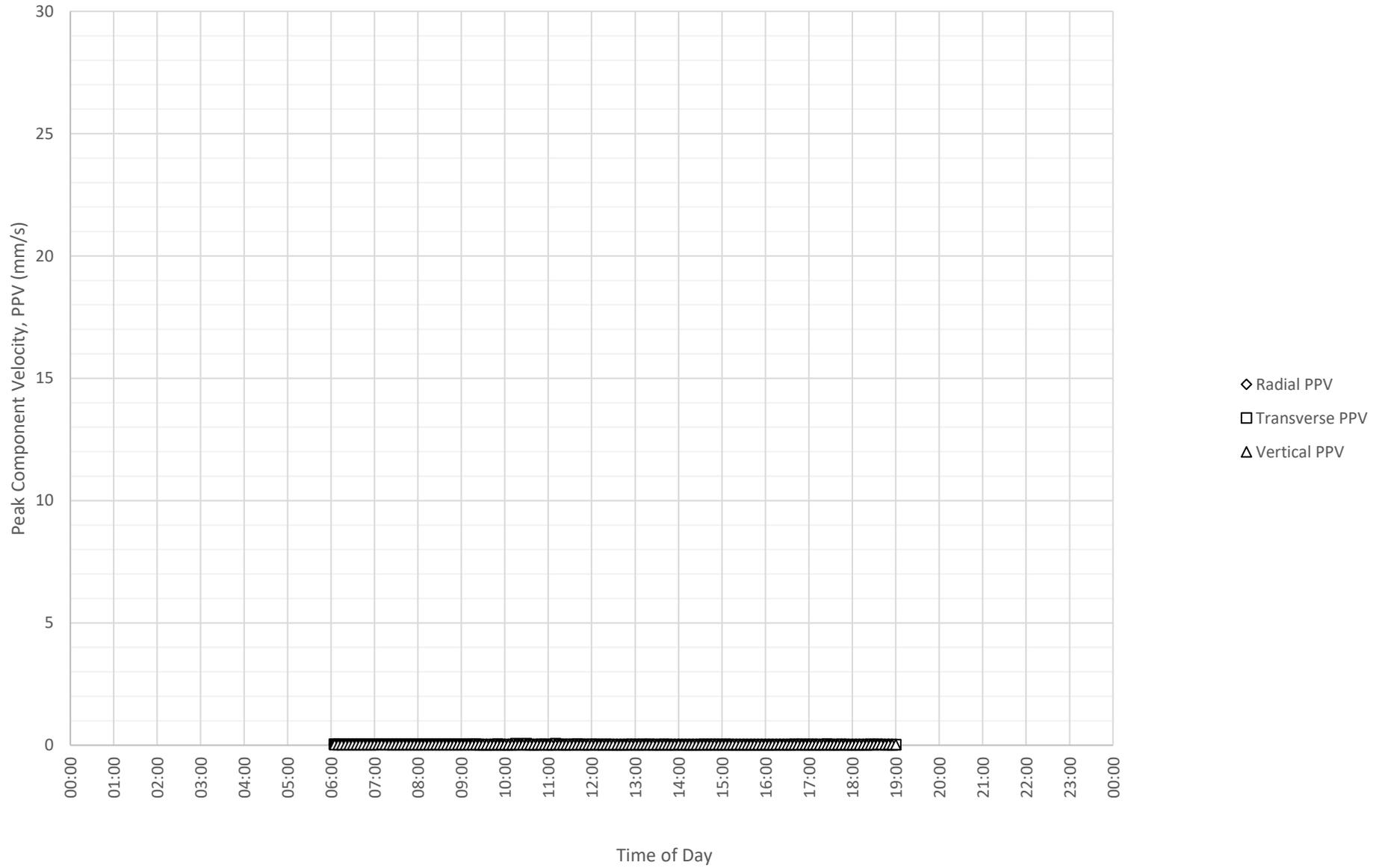
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 8-10-2022



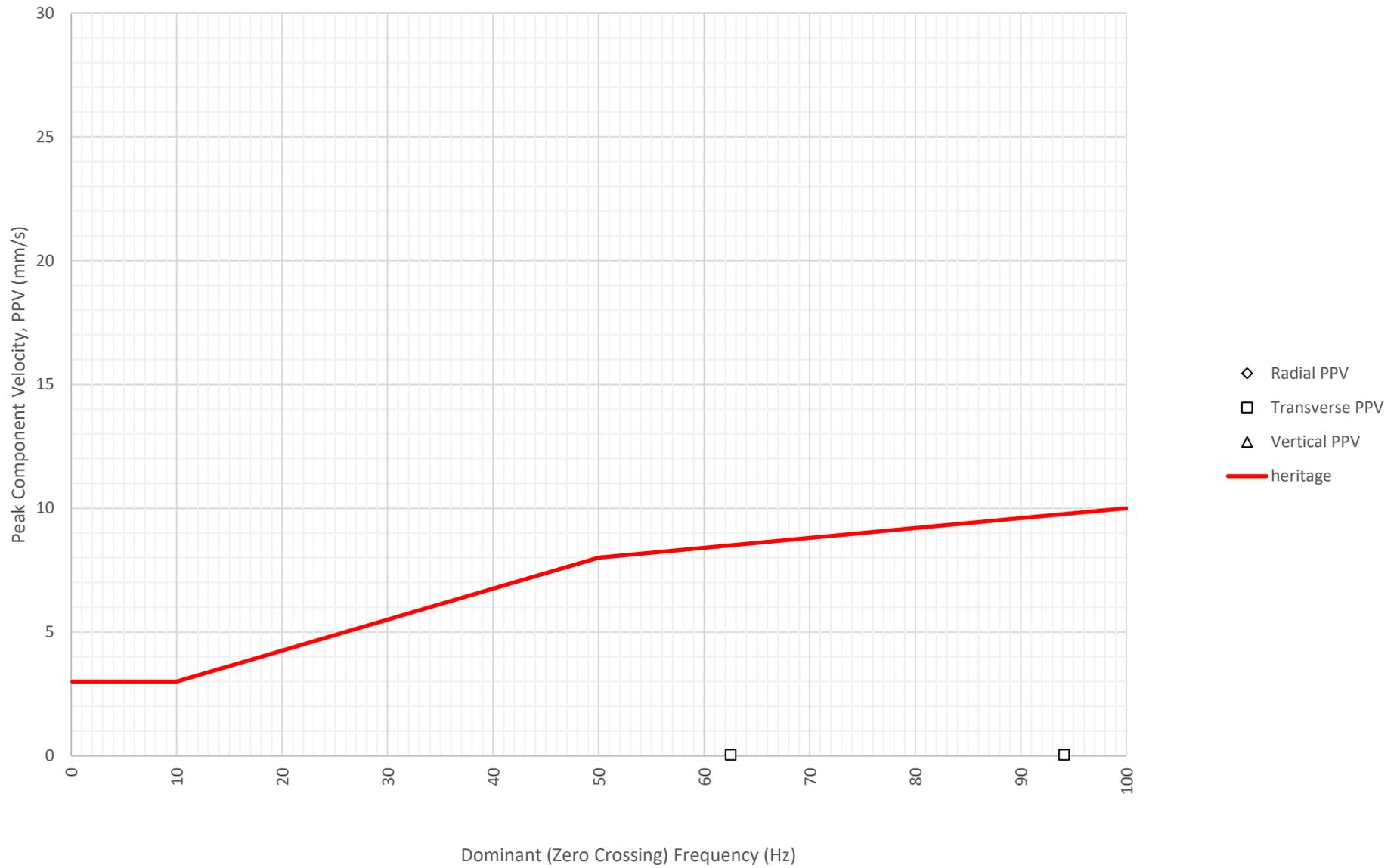
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 8-10-2022



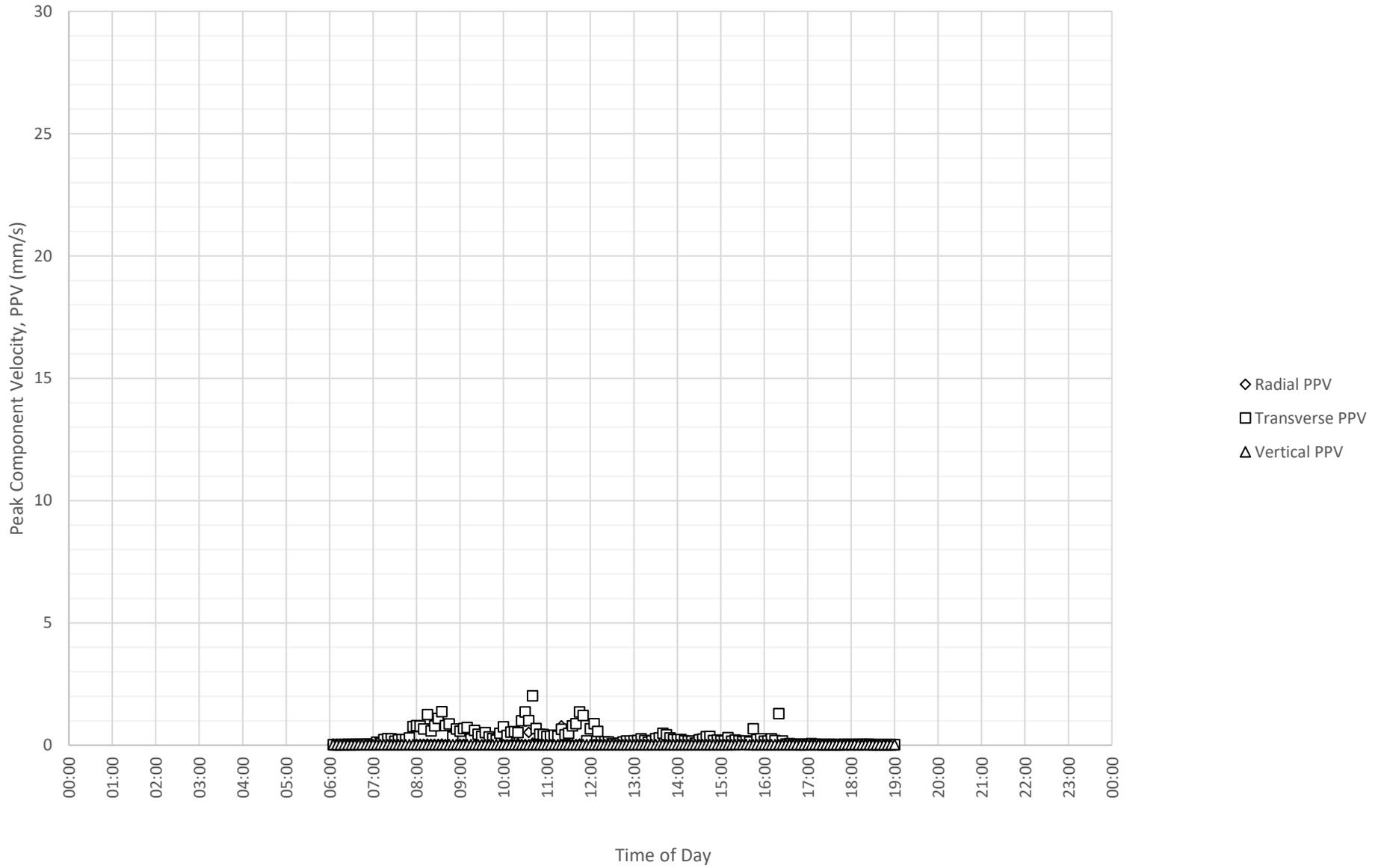
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 9-10-2022



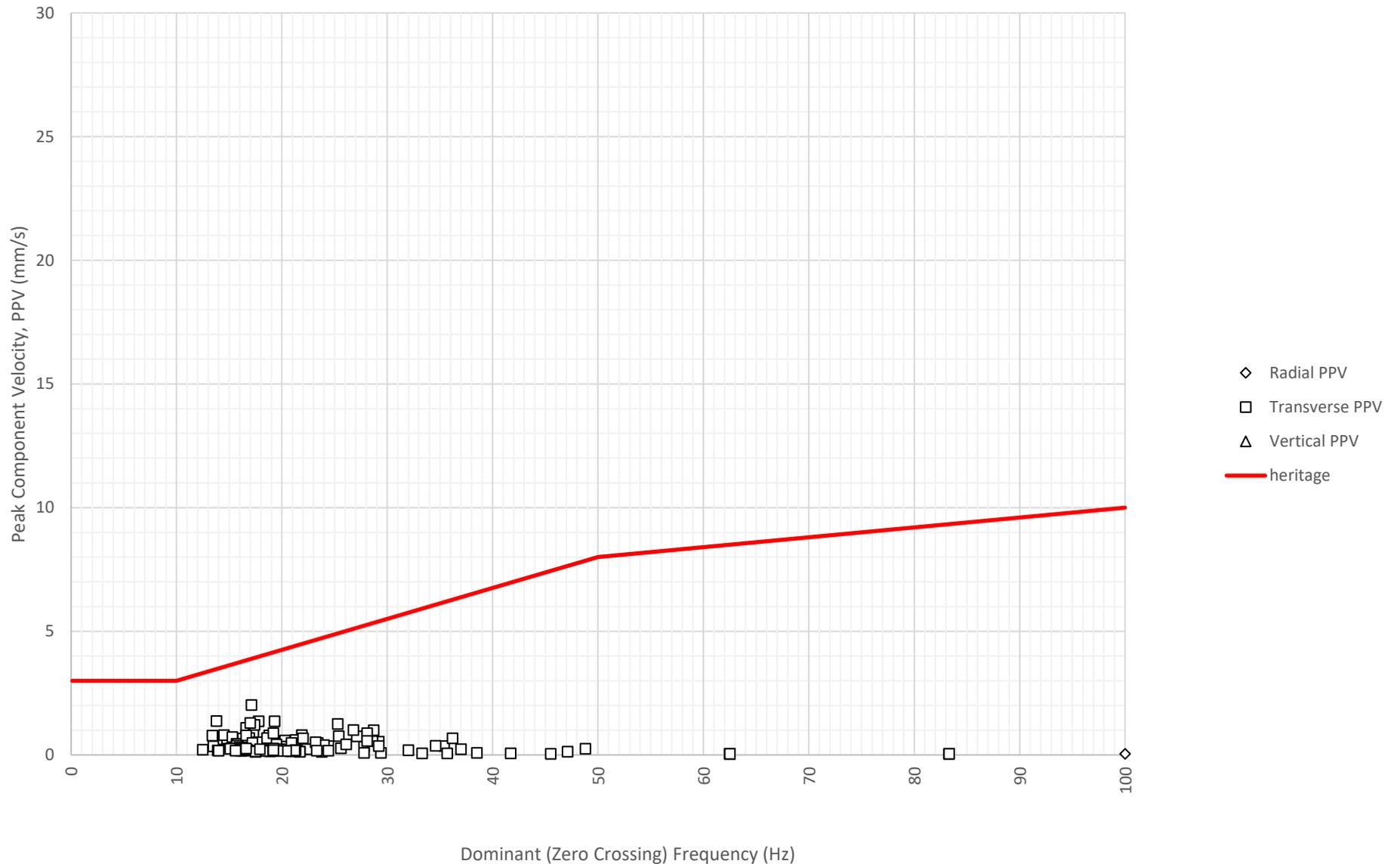
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 9-10-2022



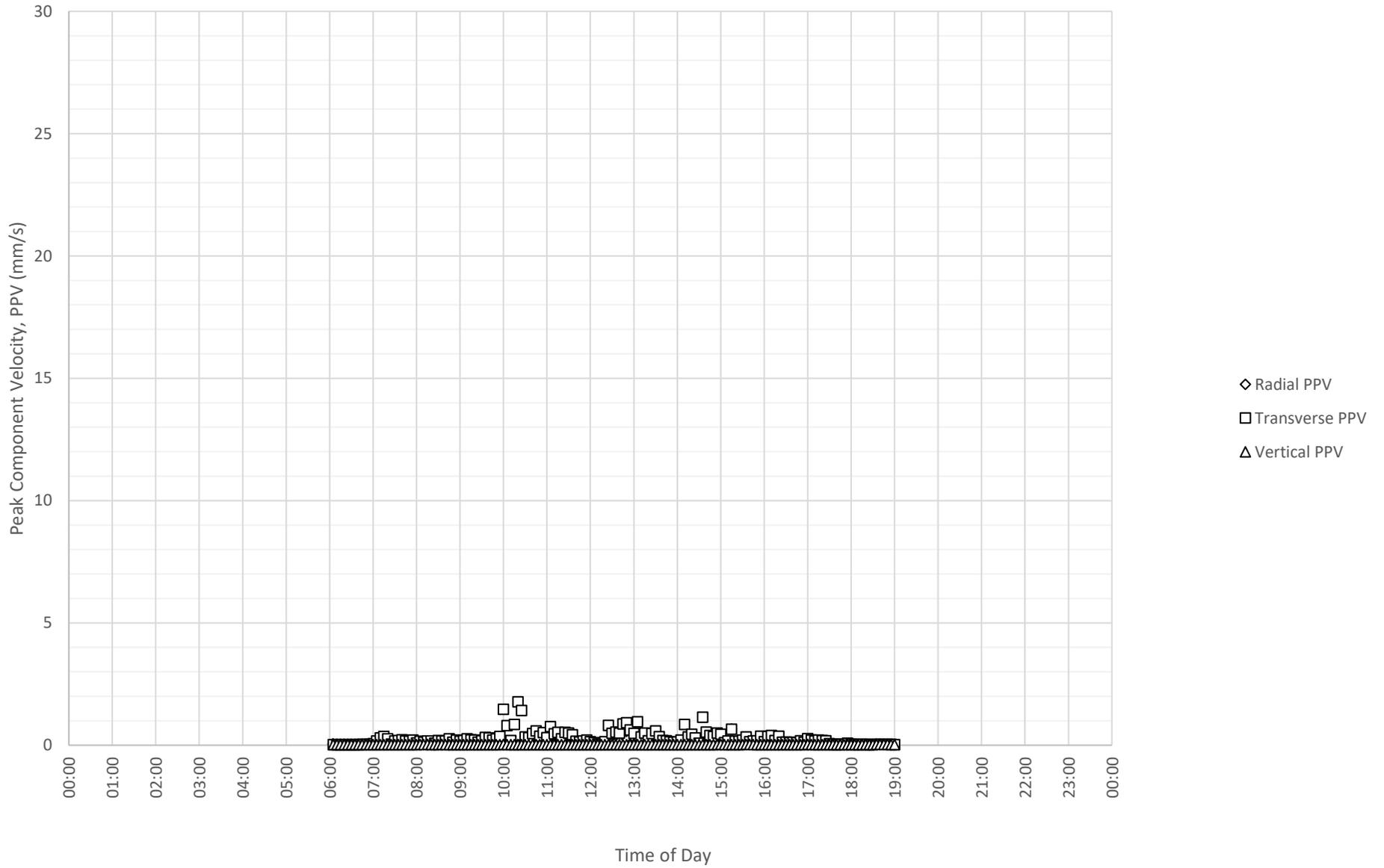
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 10-10-2022



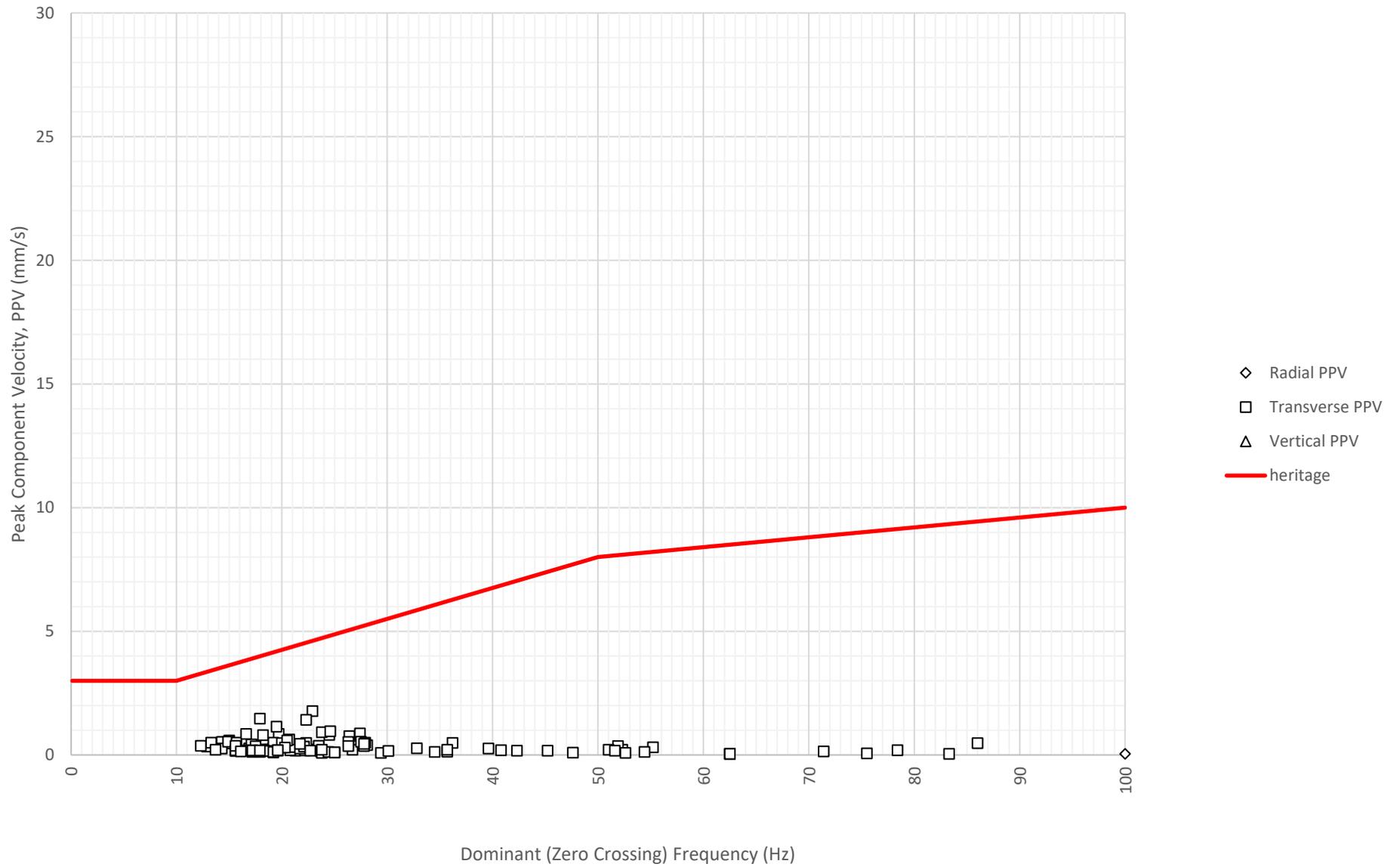
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 10-10-2022



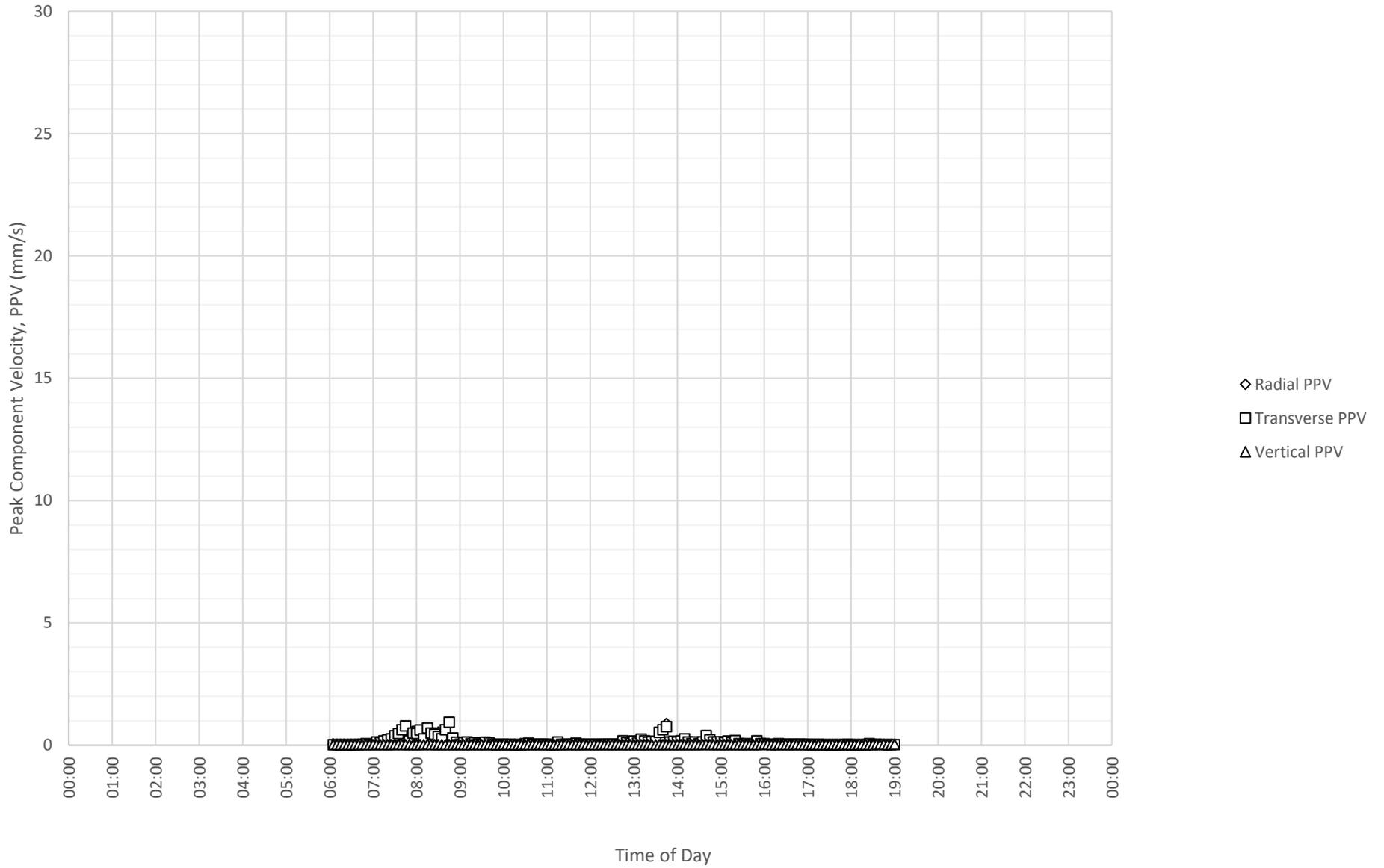
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 11-10-2022



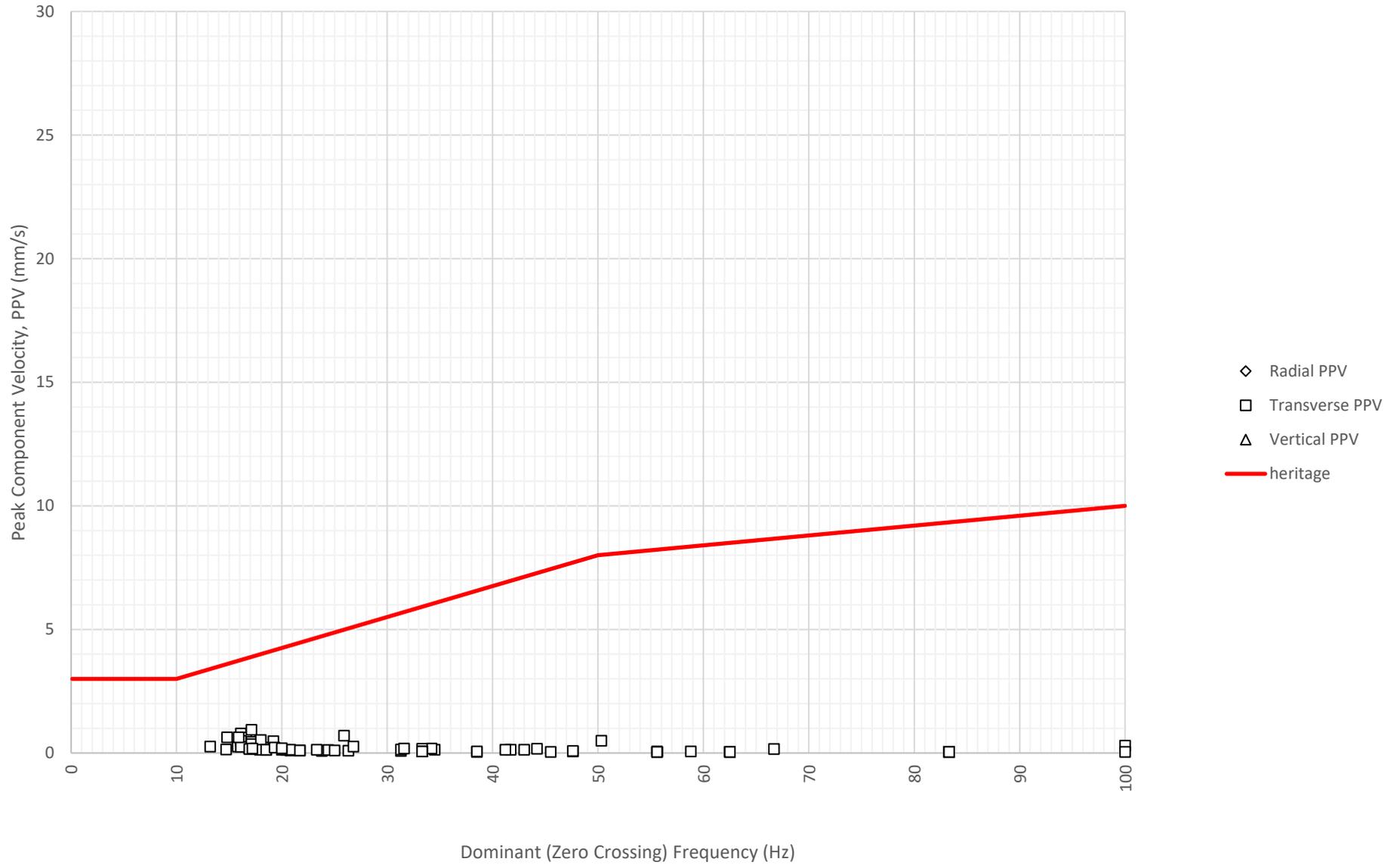
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 11-10-2022



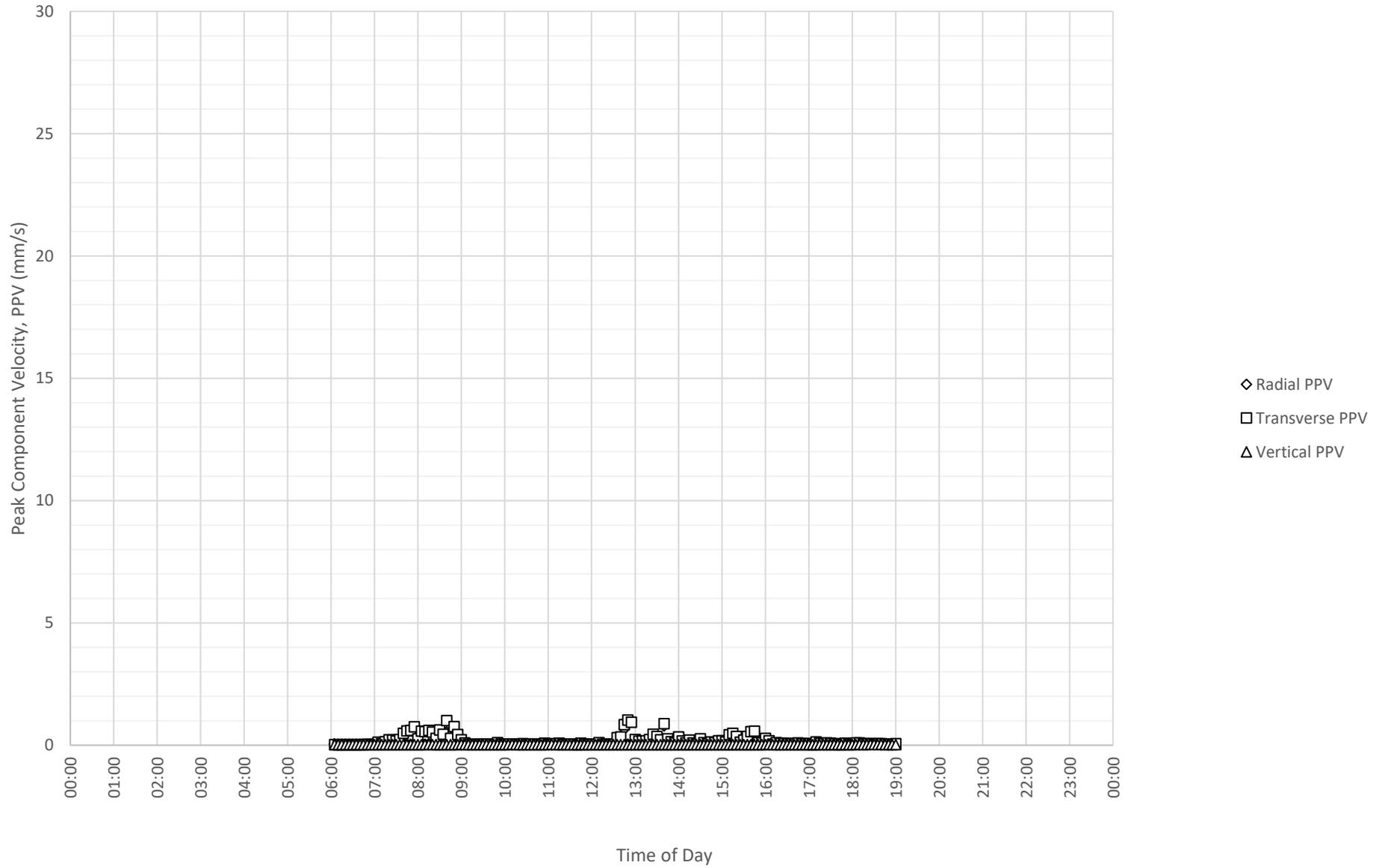
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 12-10-2022



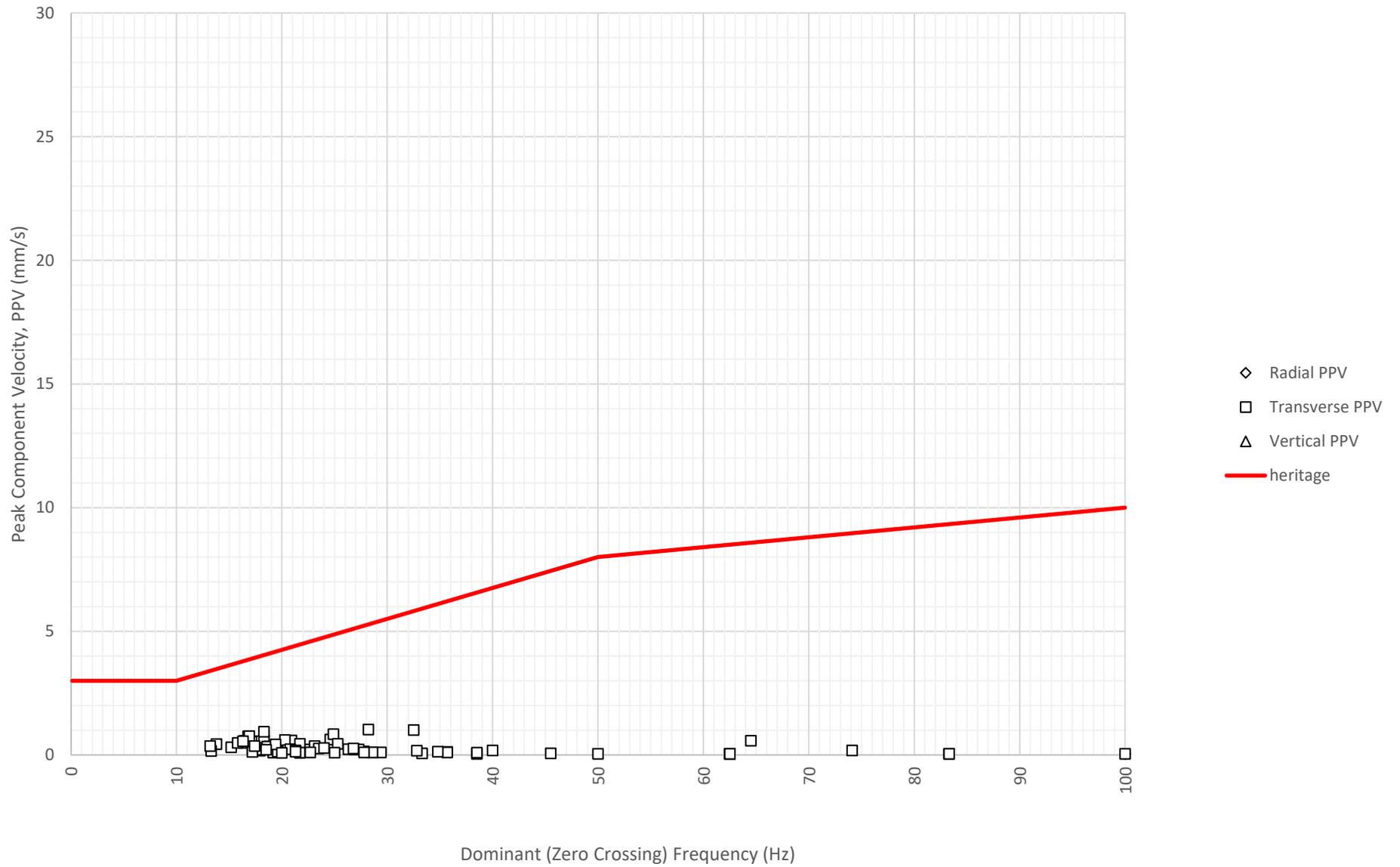
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 12-10-2022



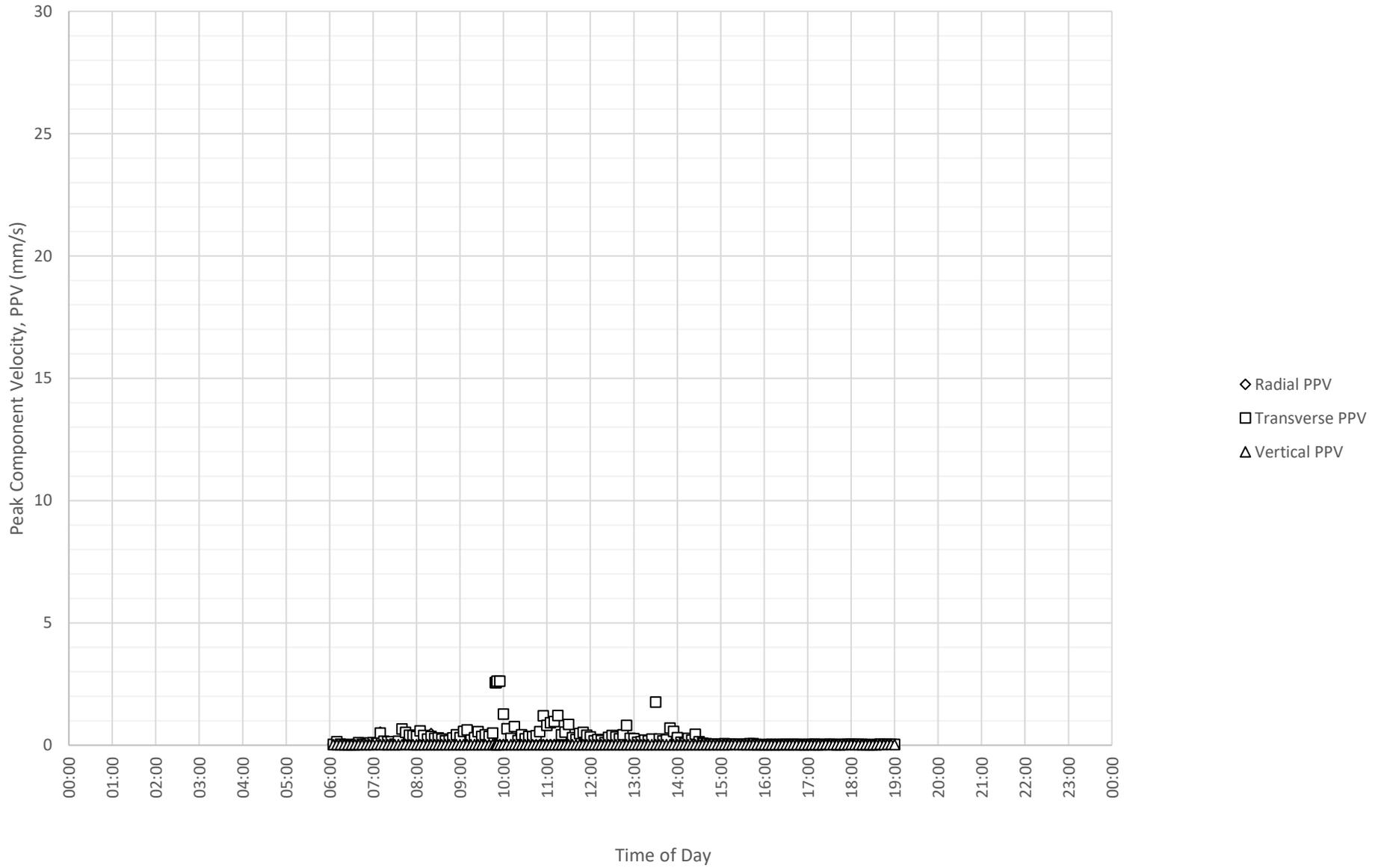
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 13-10-2022



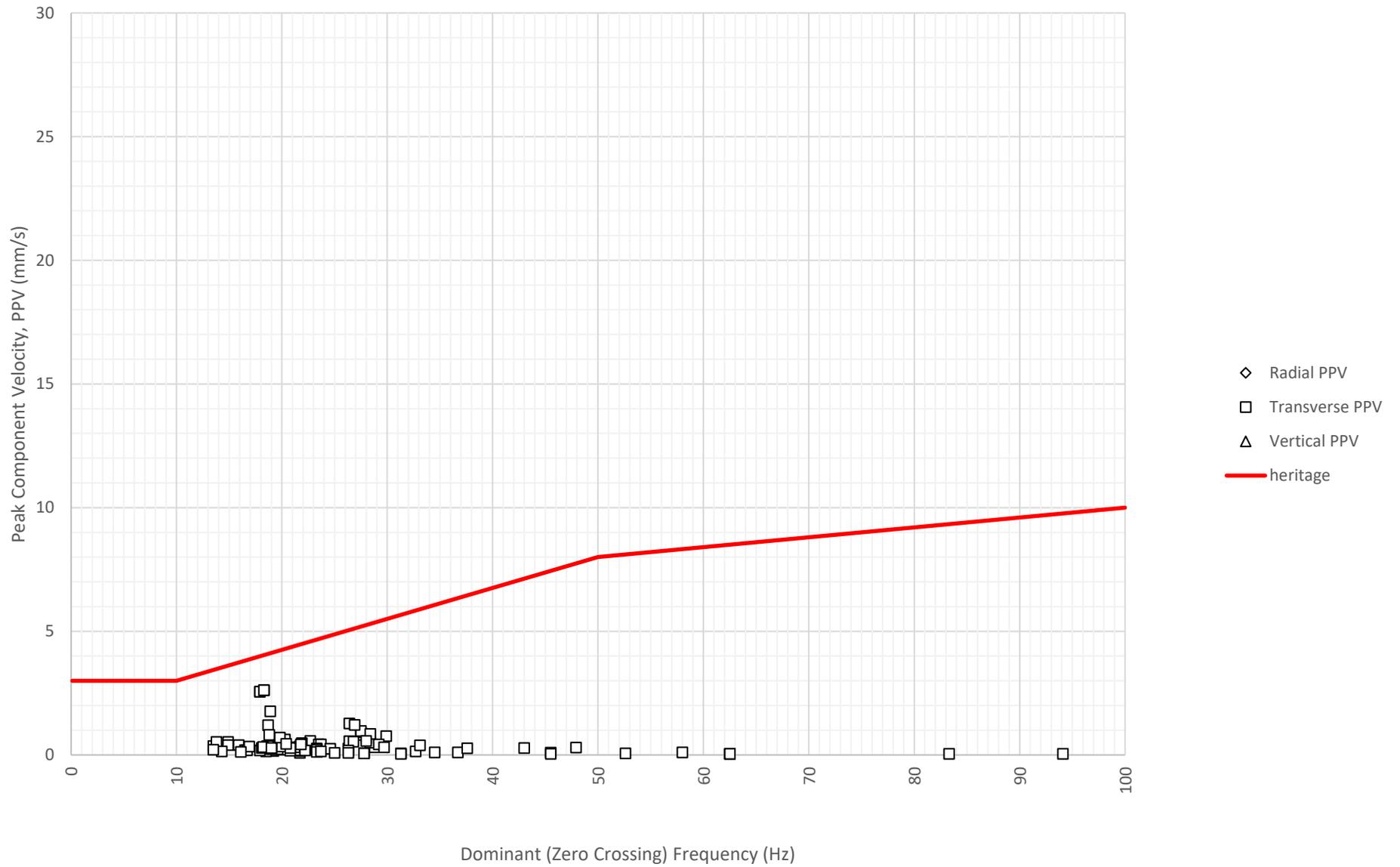
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 13-10-2022



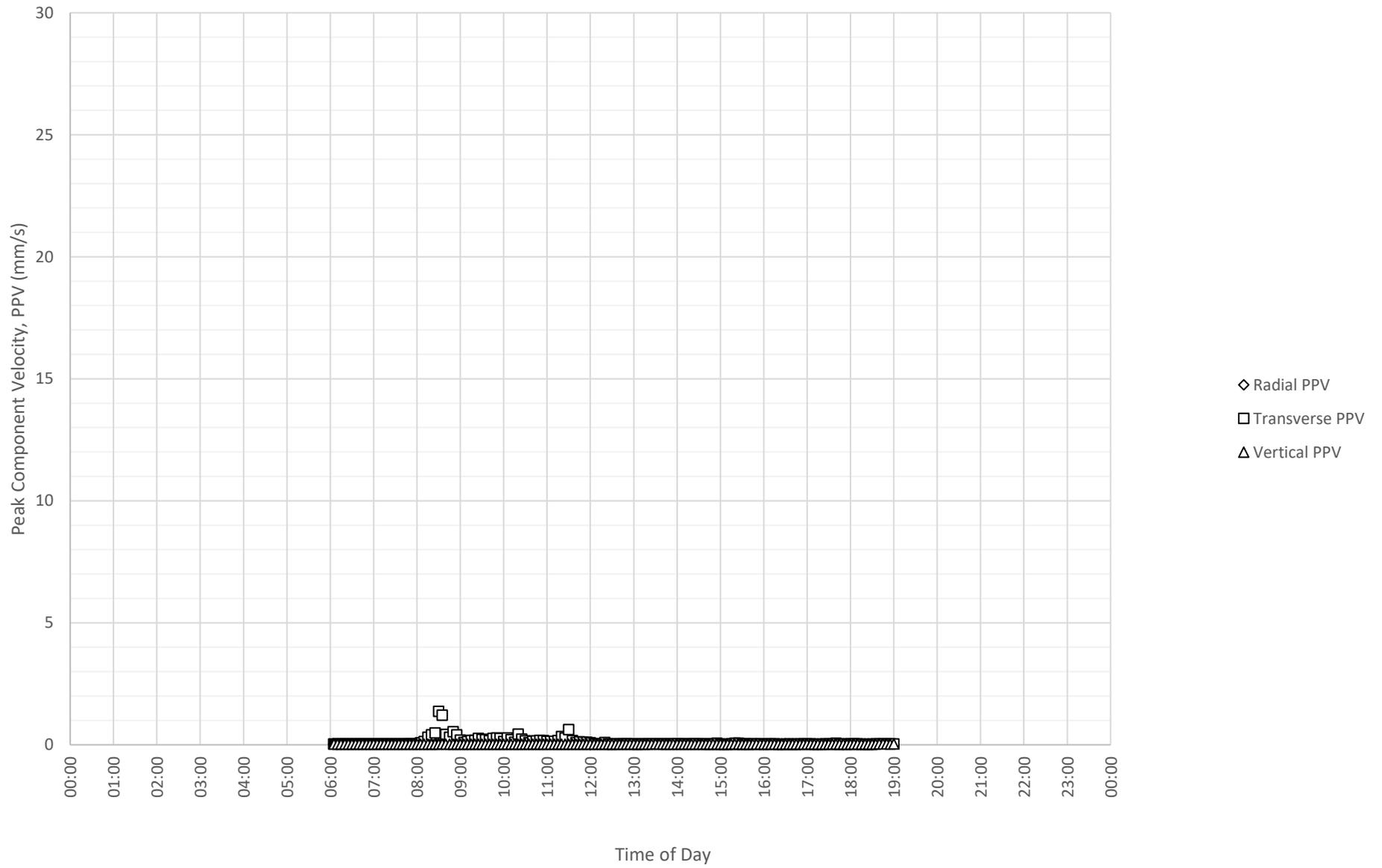
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 14-10-2022



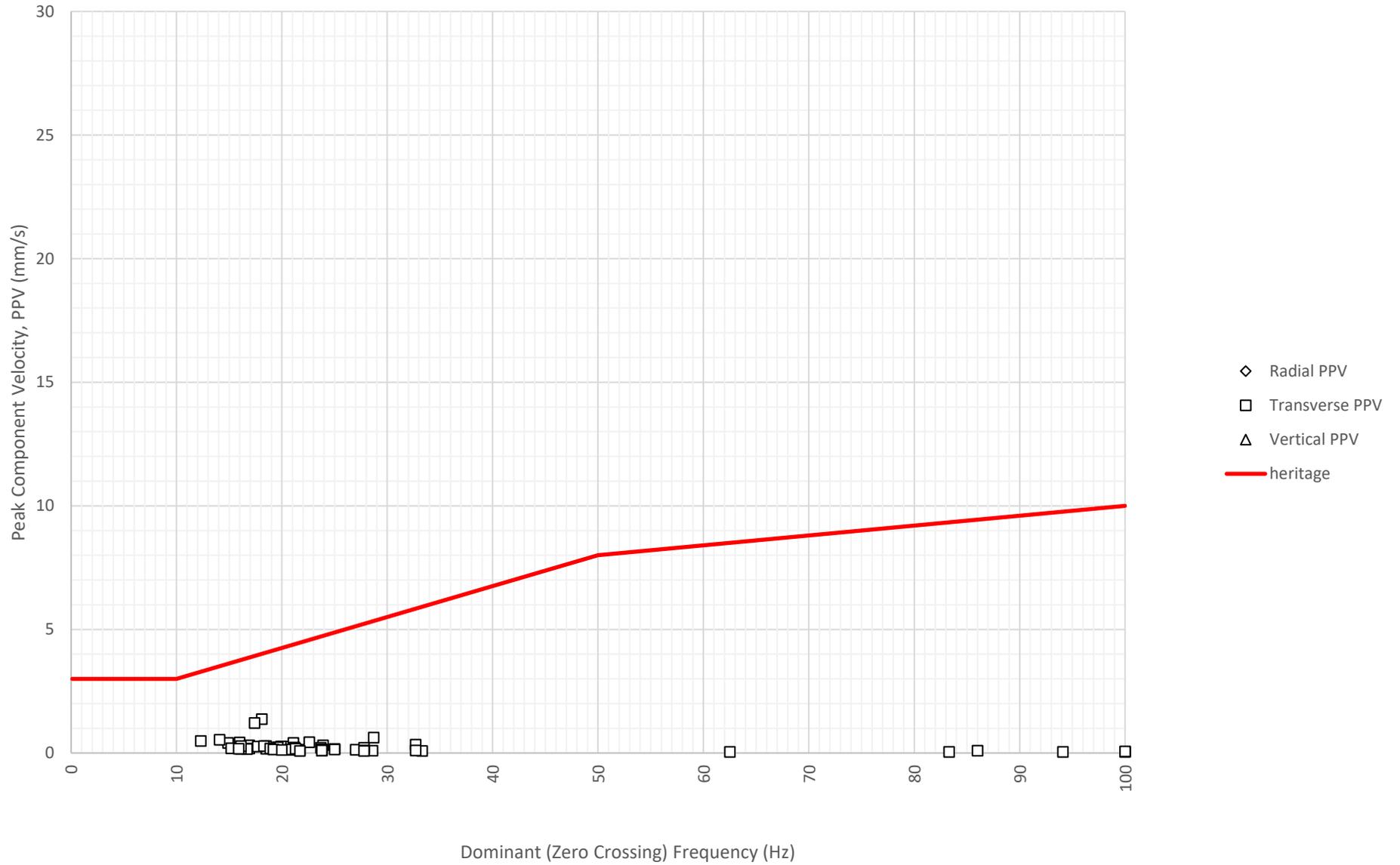
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 14-10-2022



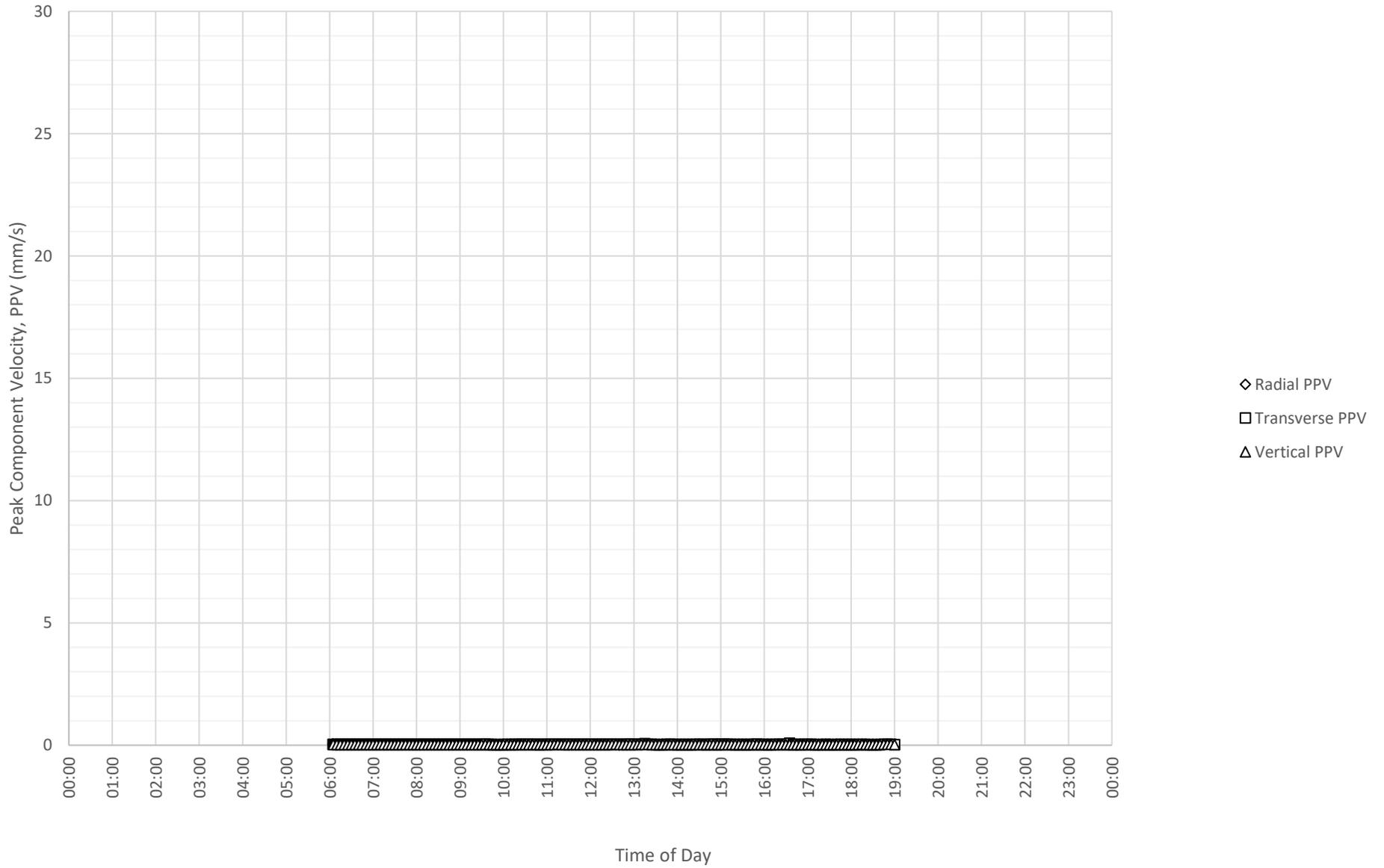
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 15-10-2022



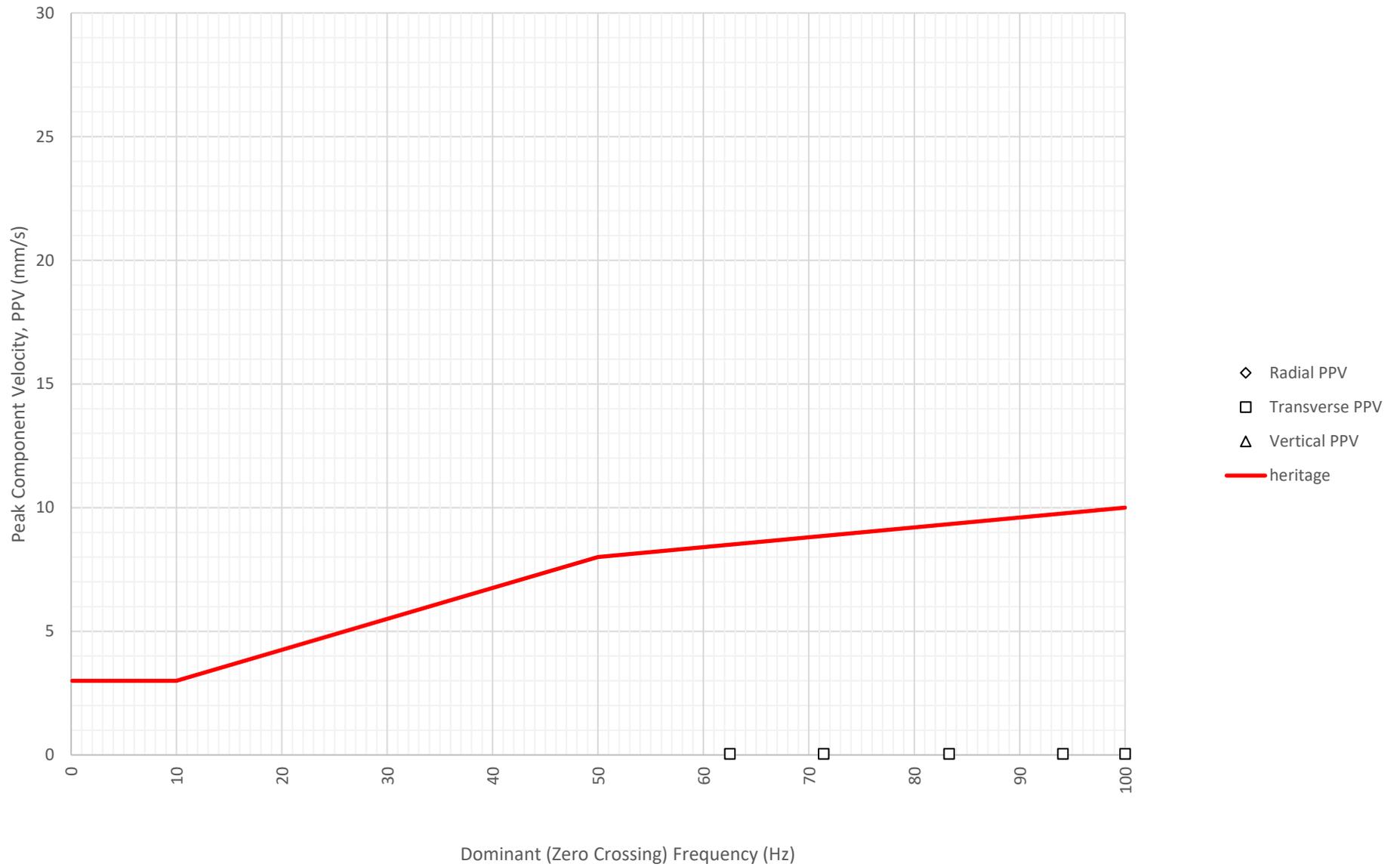
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 15-10-2022



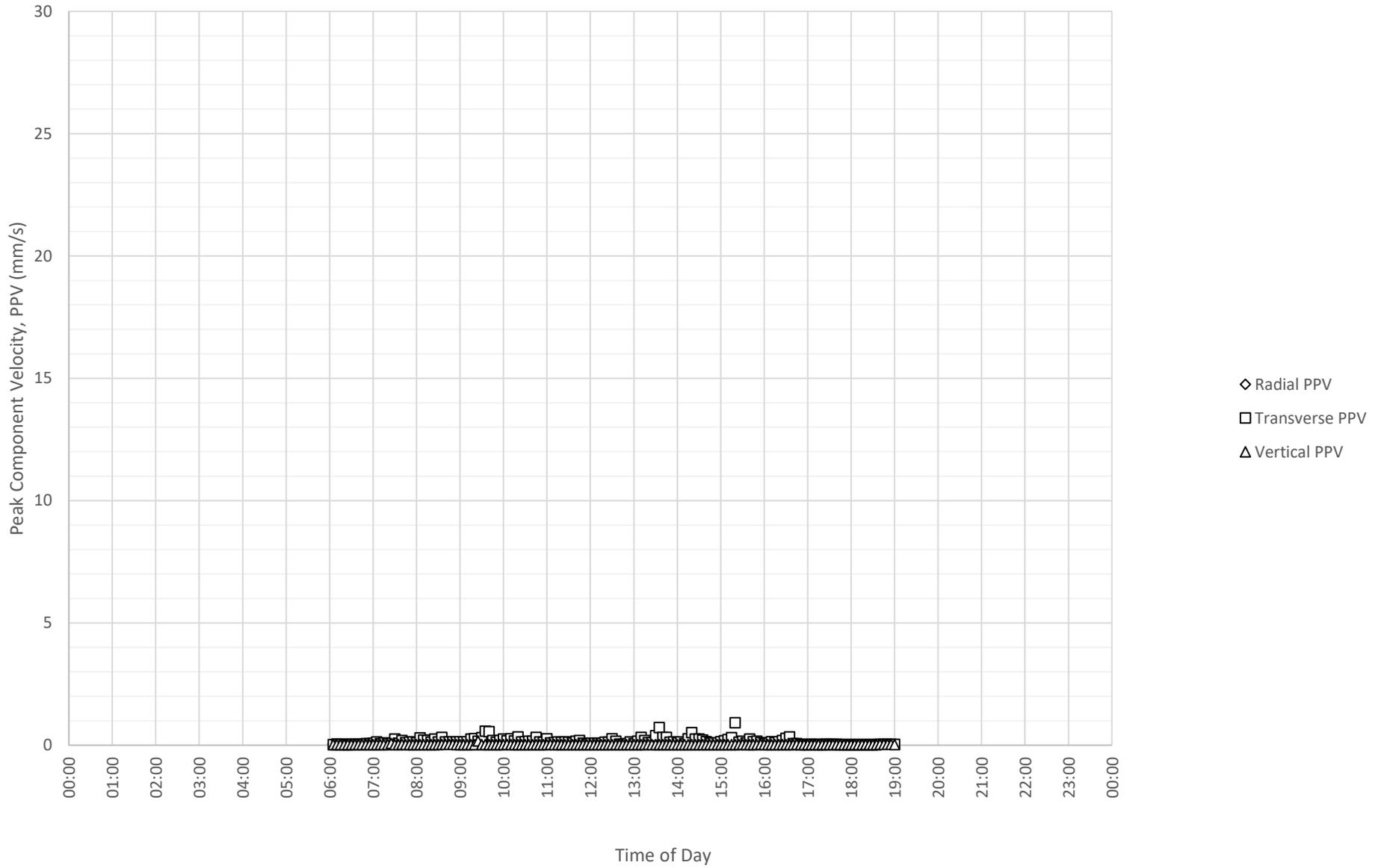
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 16-10-2022



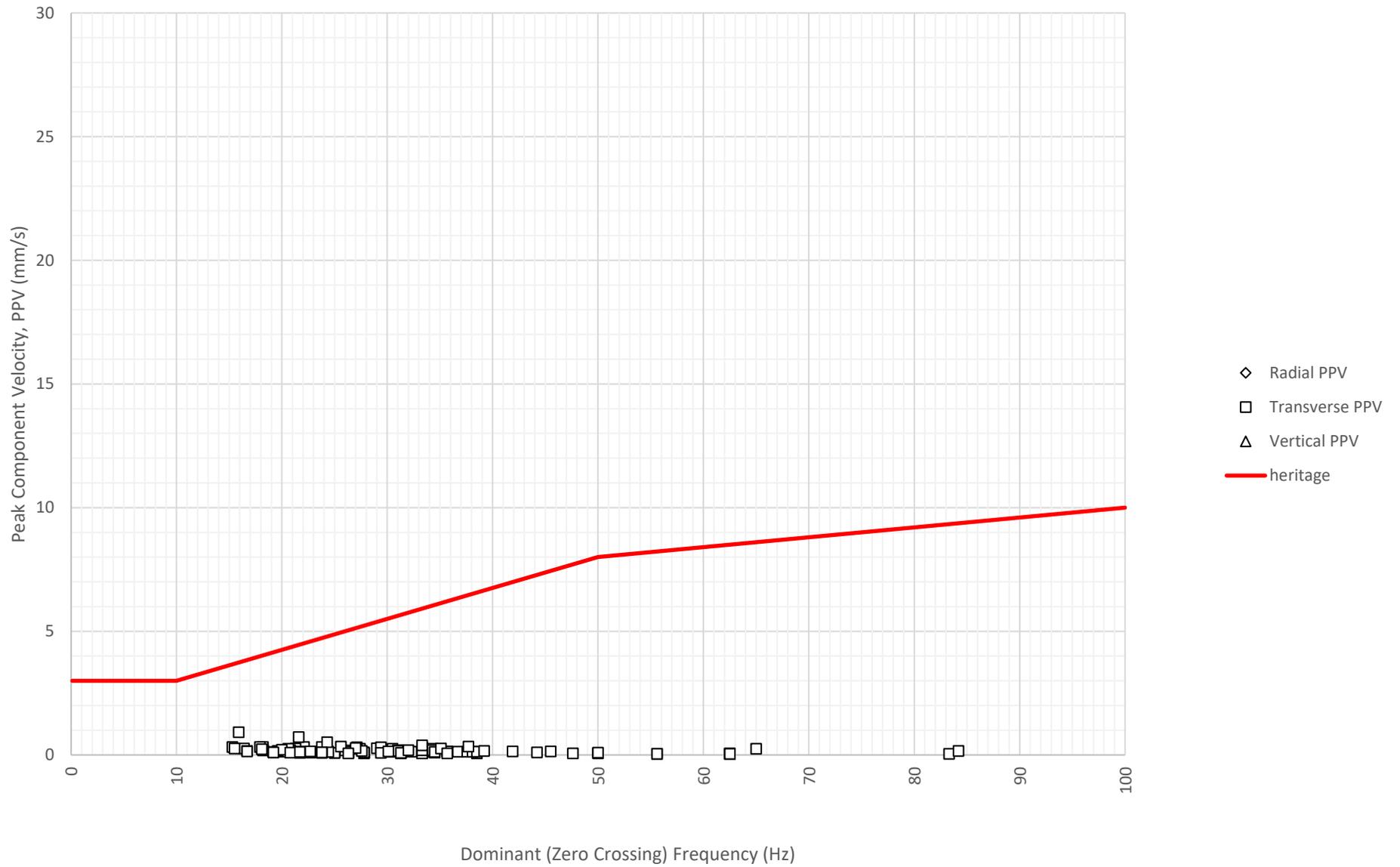
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 16-10-2022



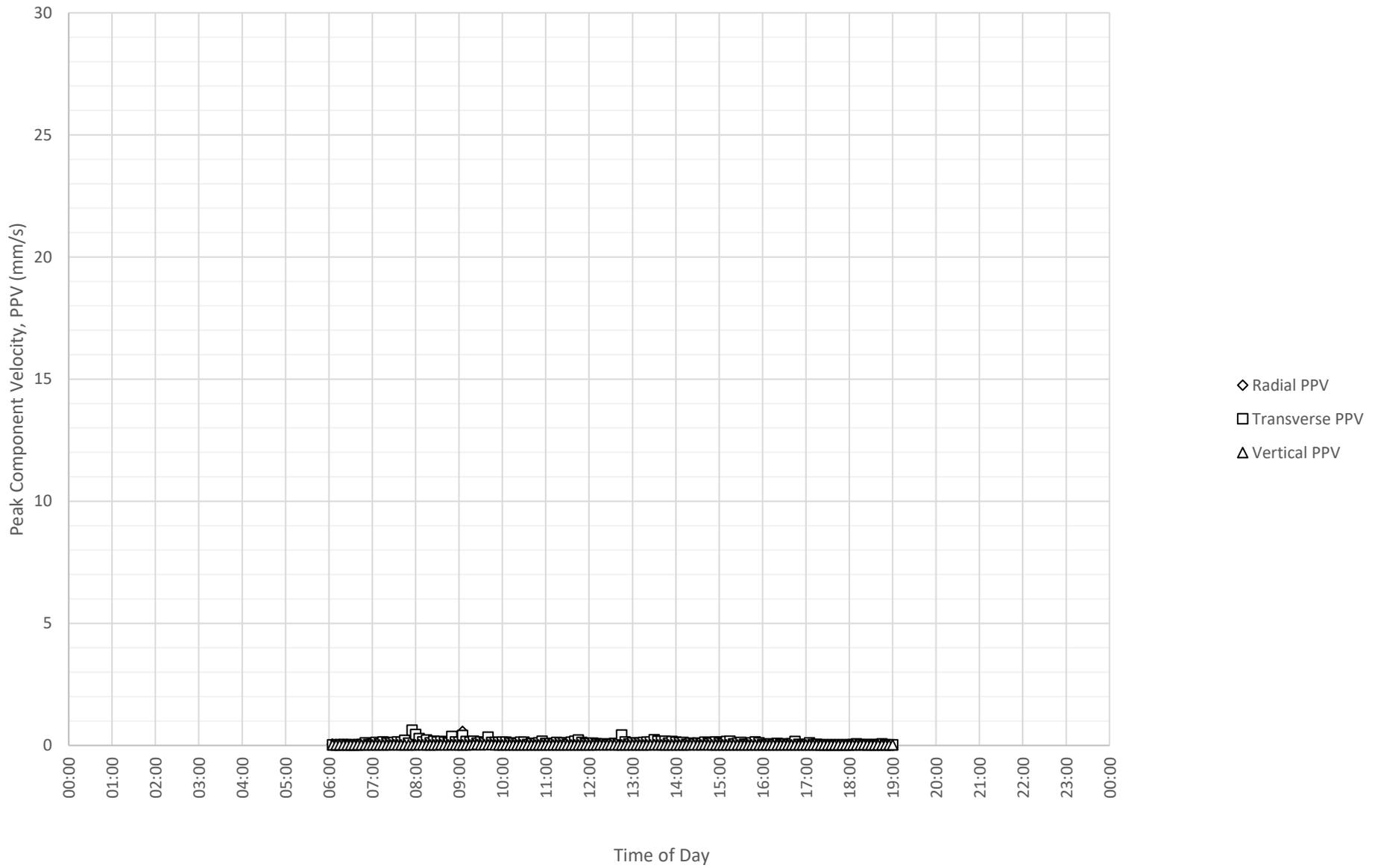
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 17-10-2022



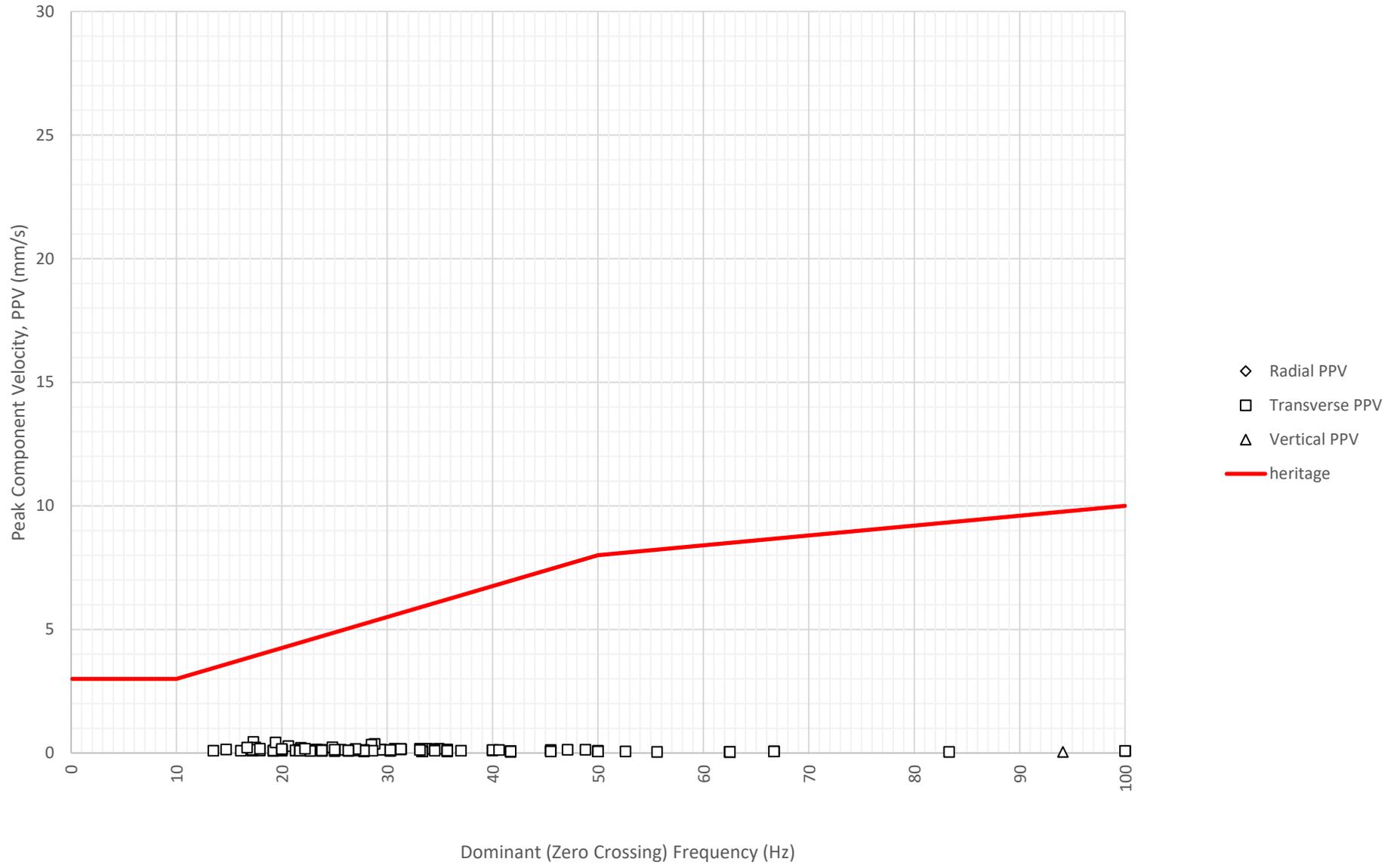
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 17-10-2022



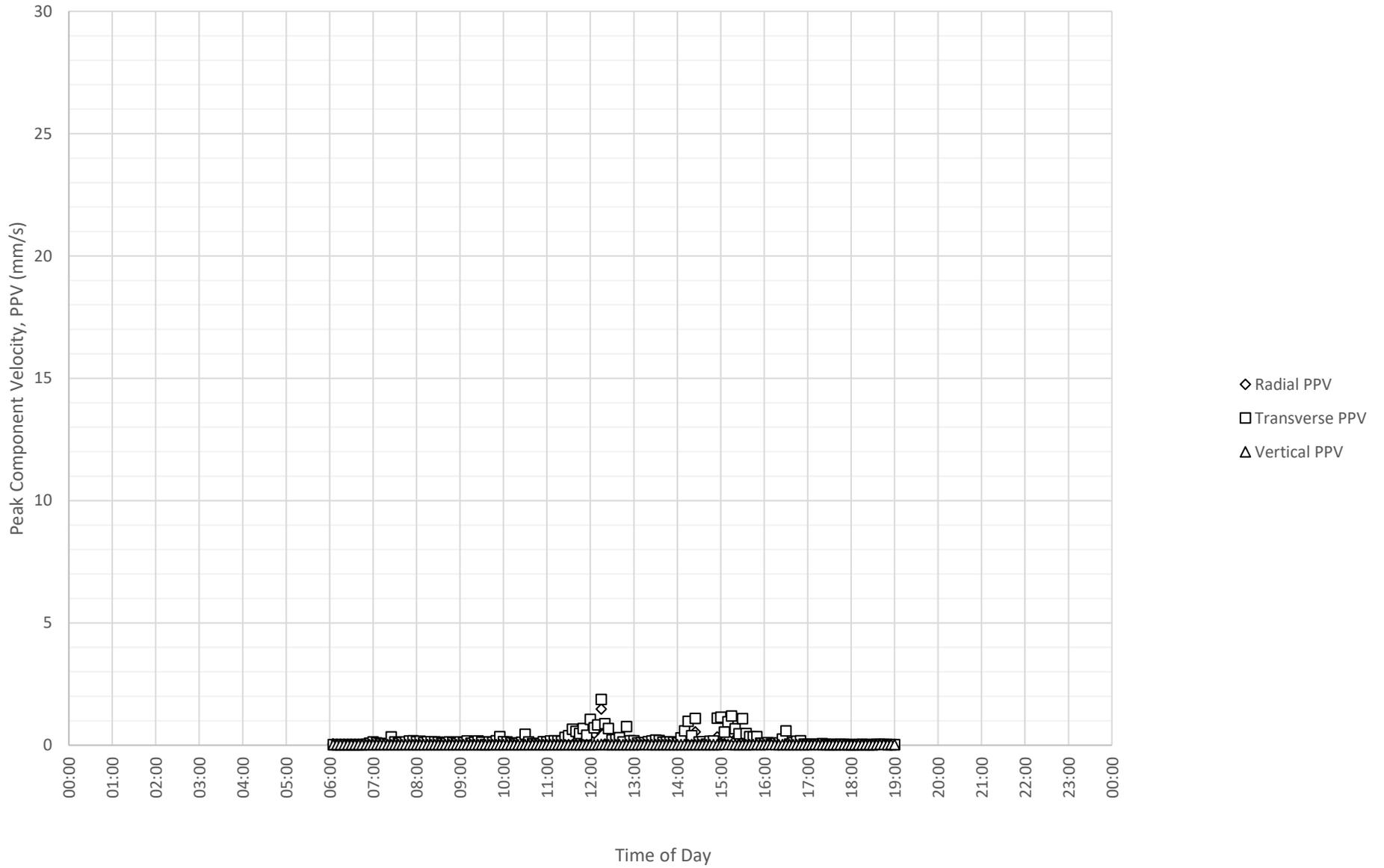
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 18-10-2022



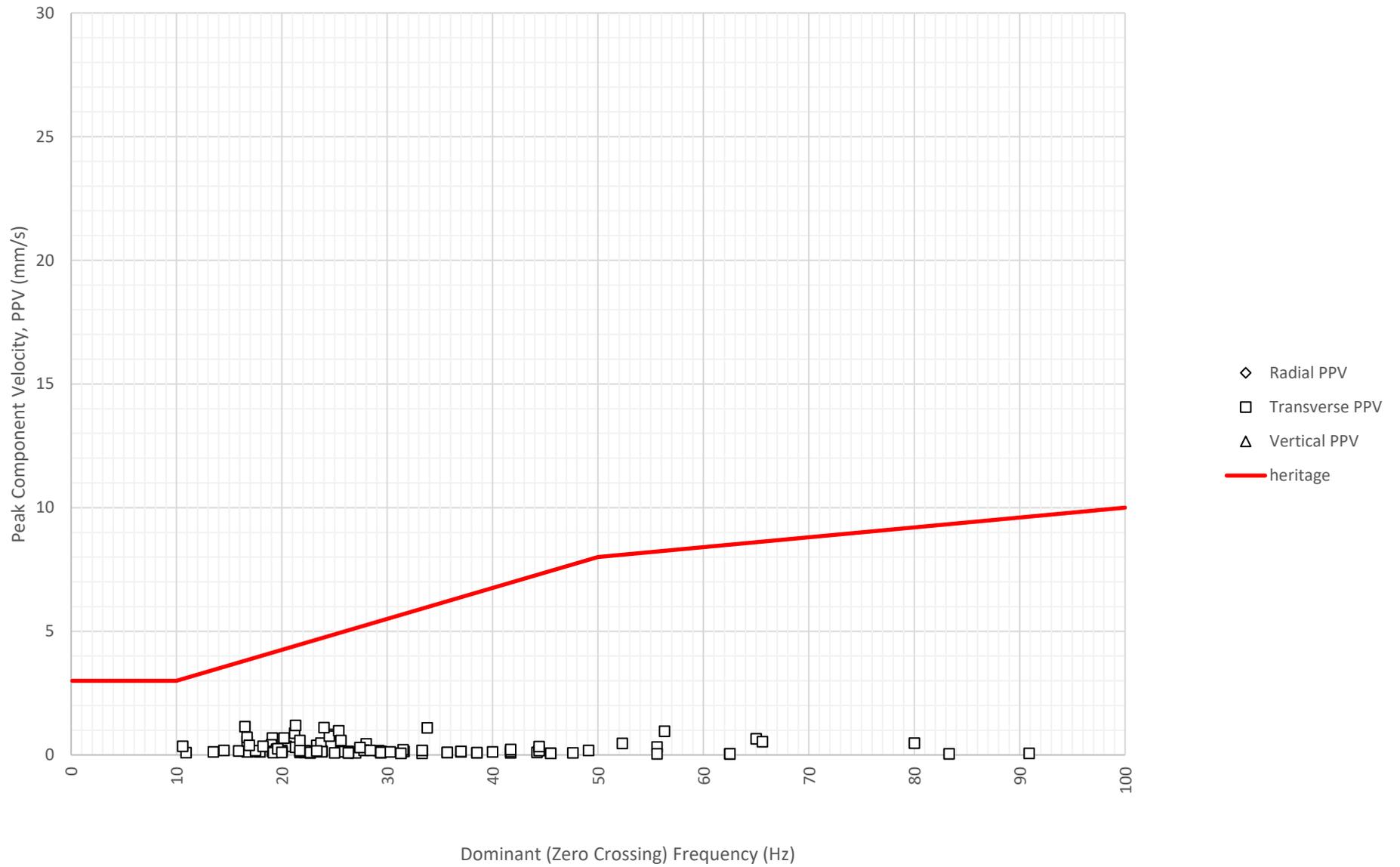
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 18-10-2022



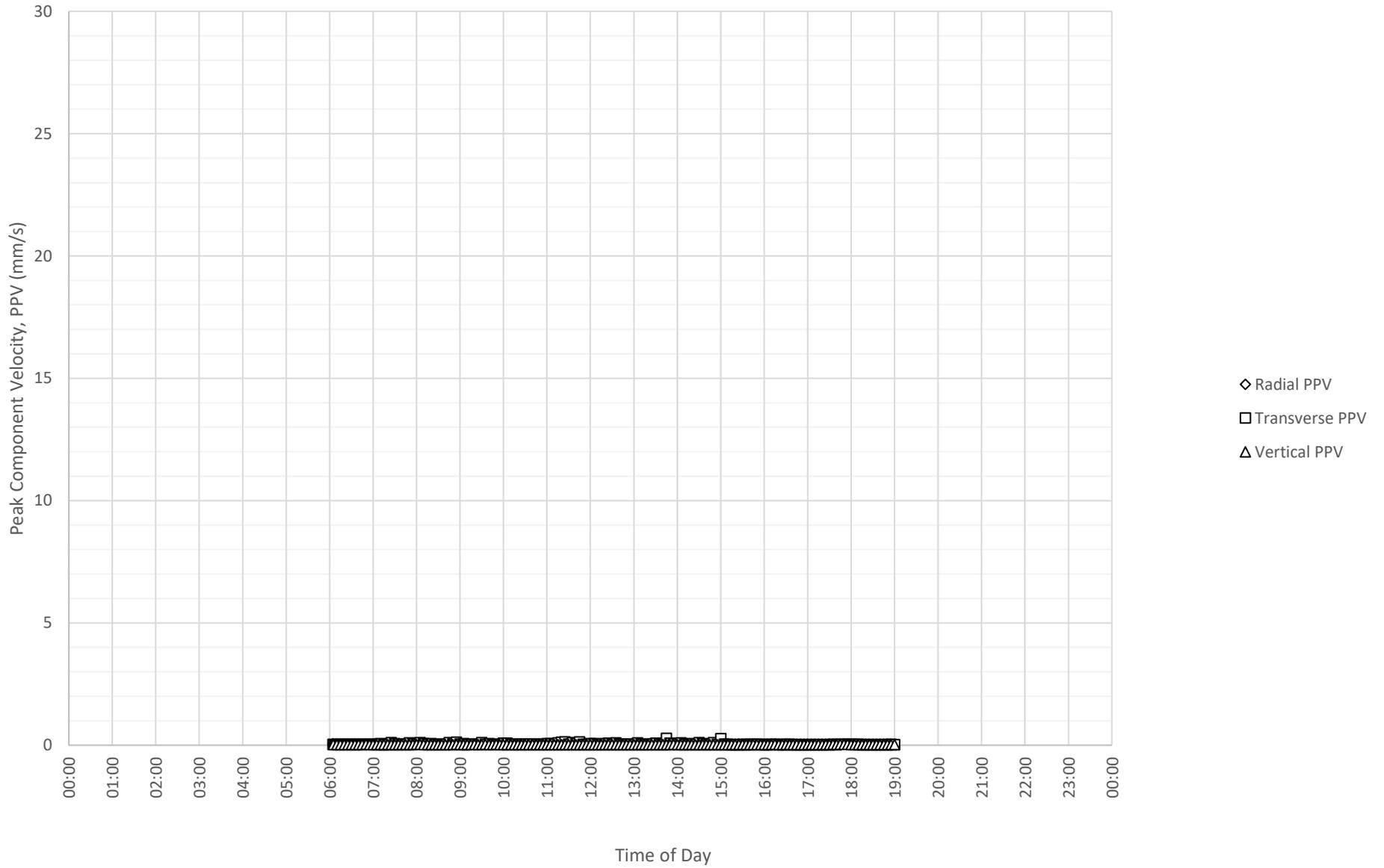
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 19-10-2022



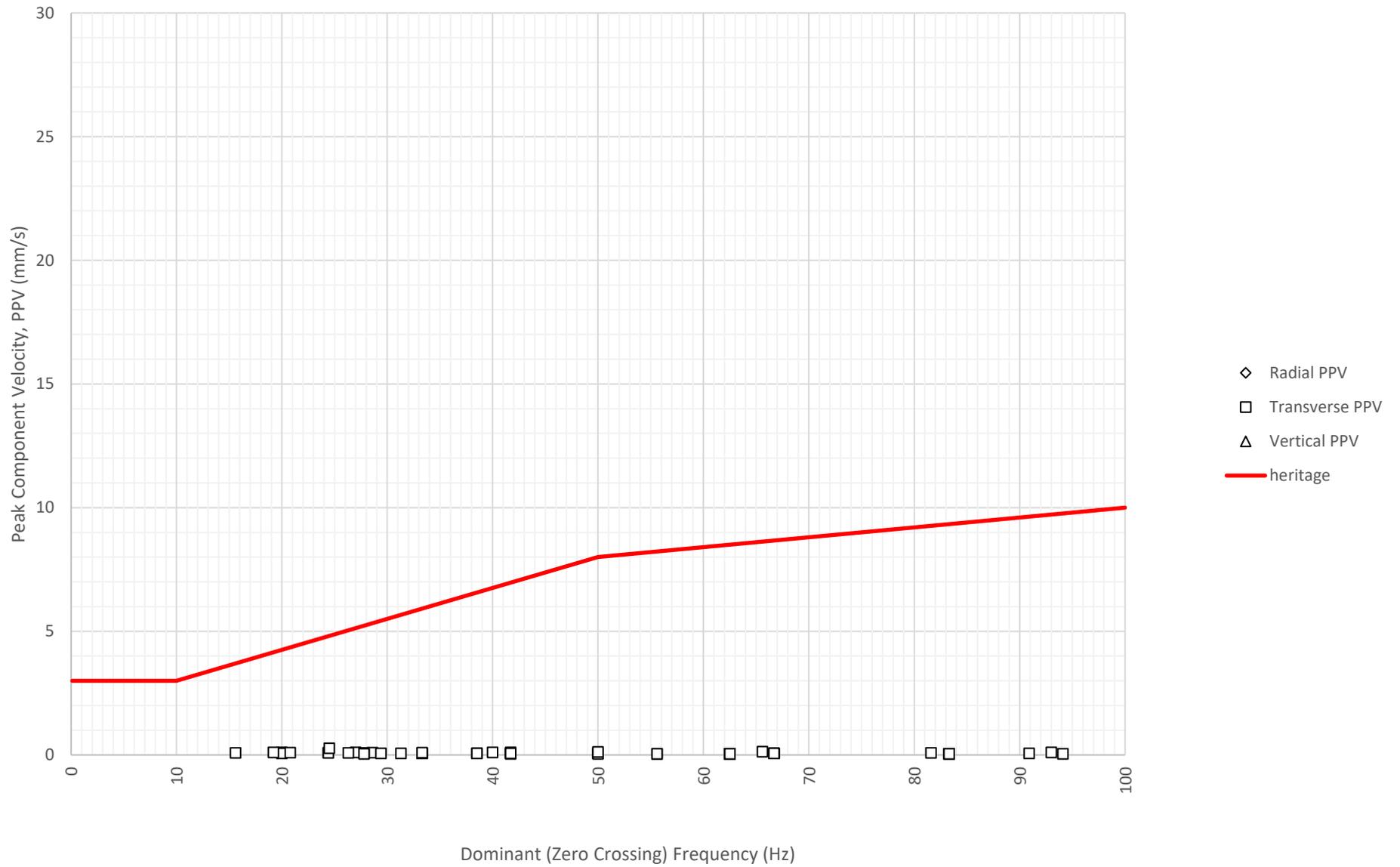
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 19-10-2022



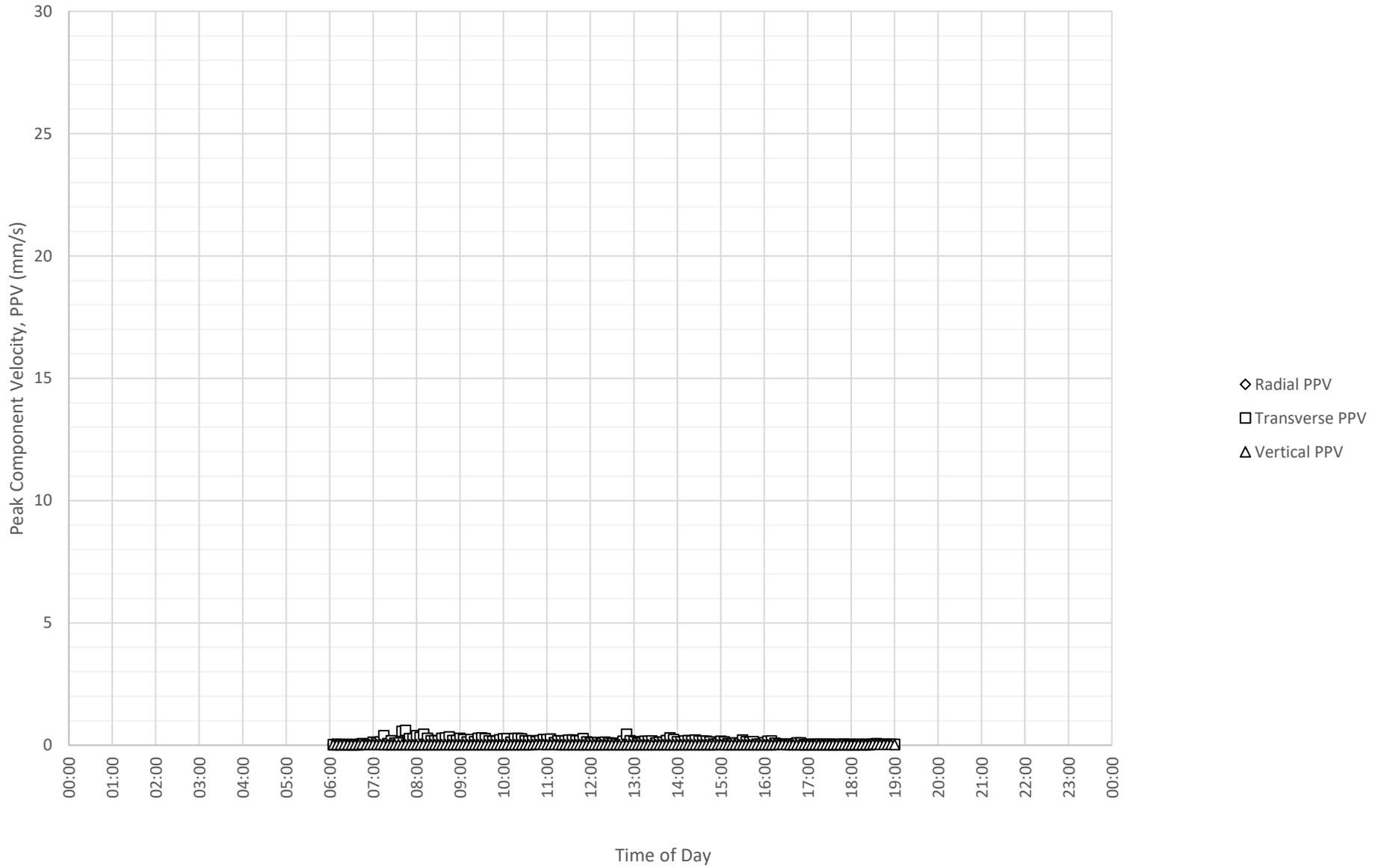
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 20-10-2022



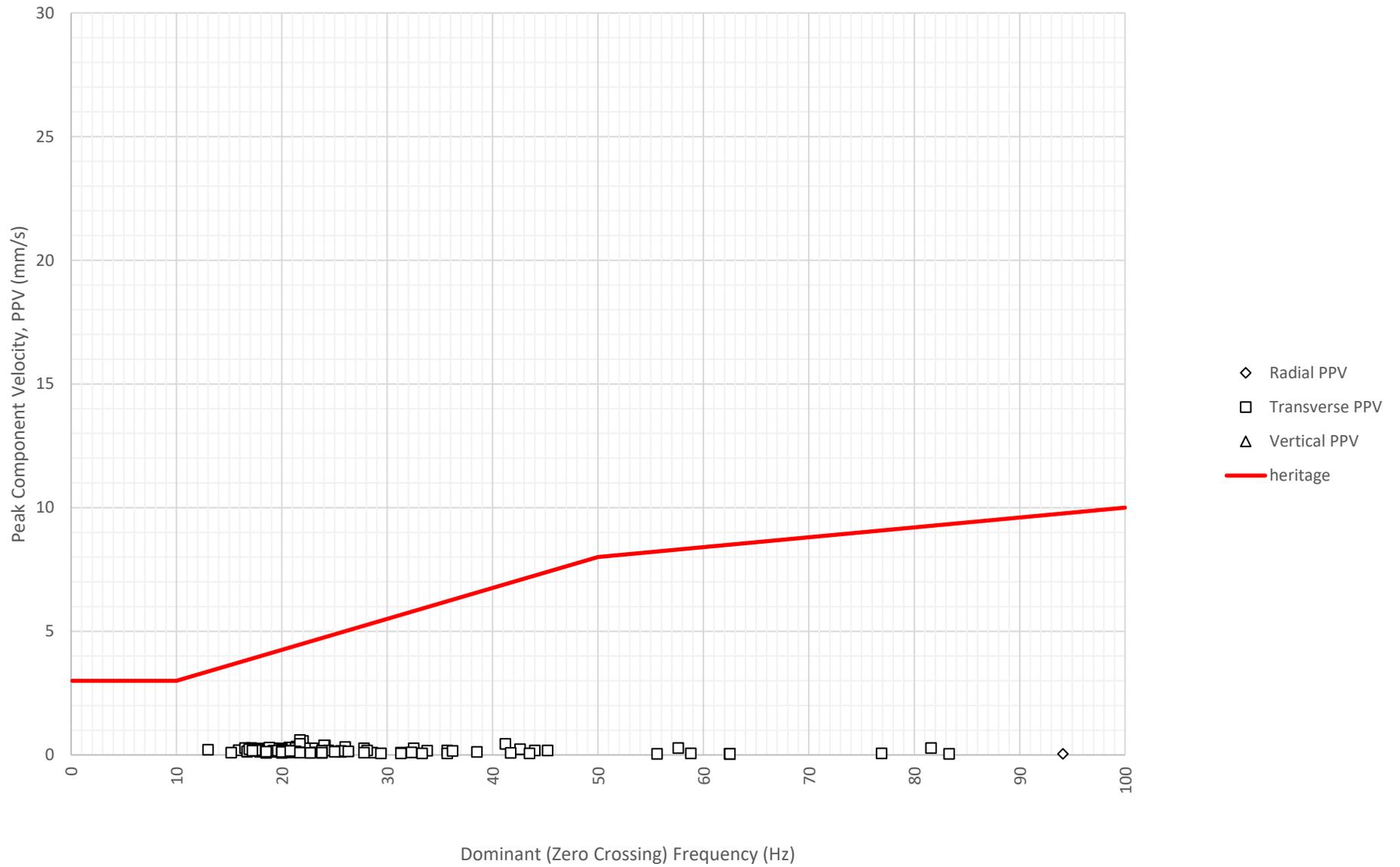
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 20-10-2022



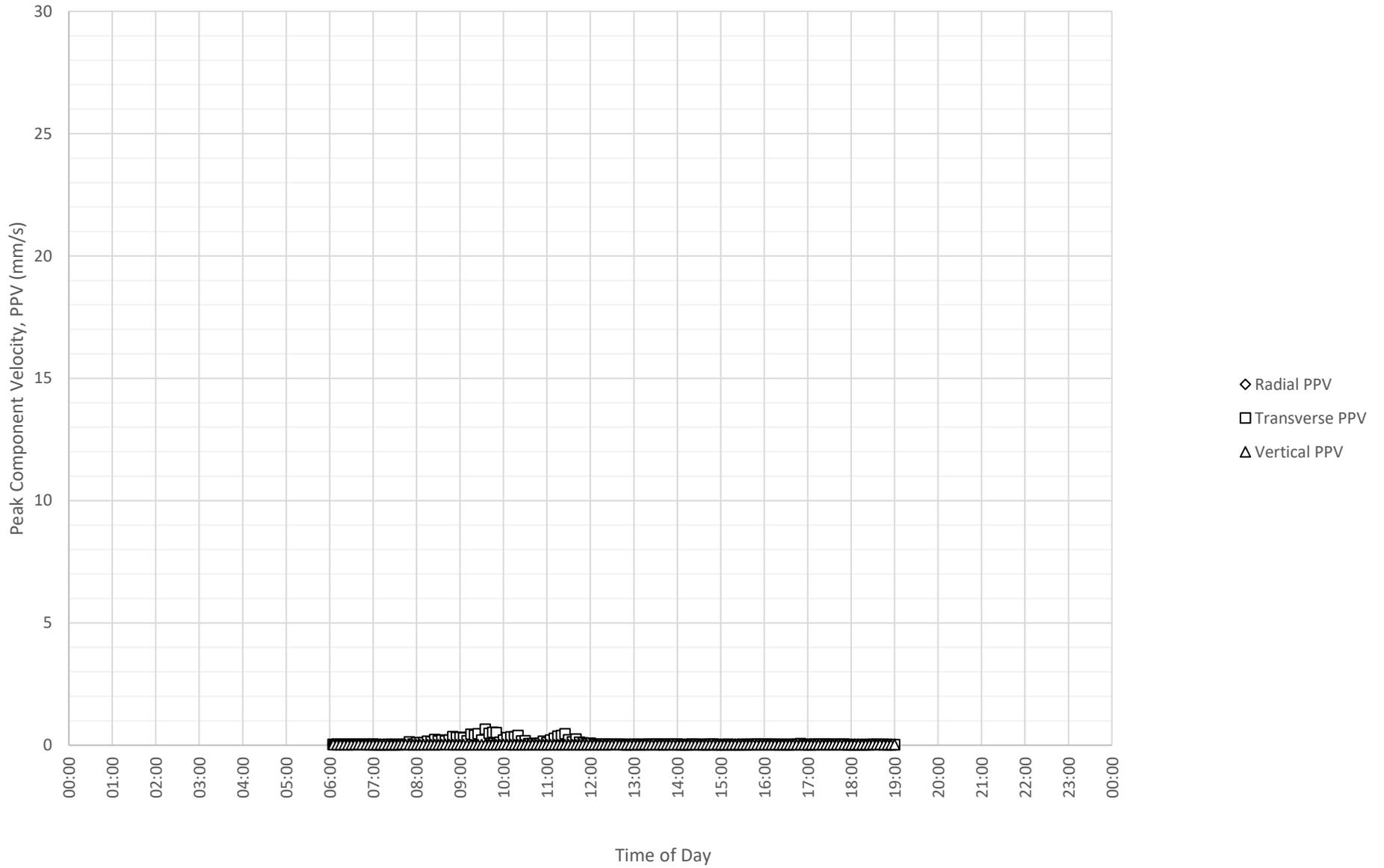
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 21-10-2022



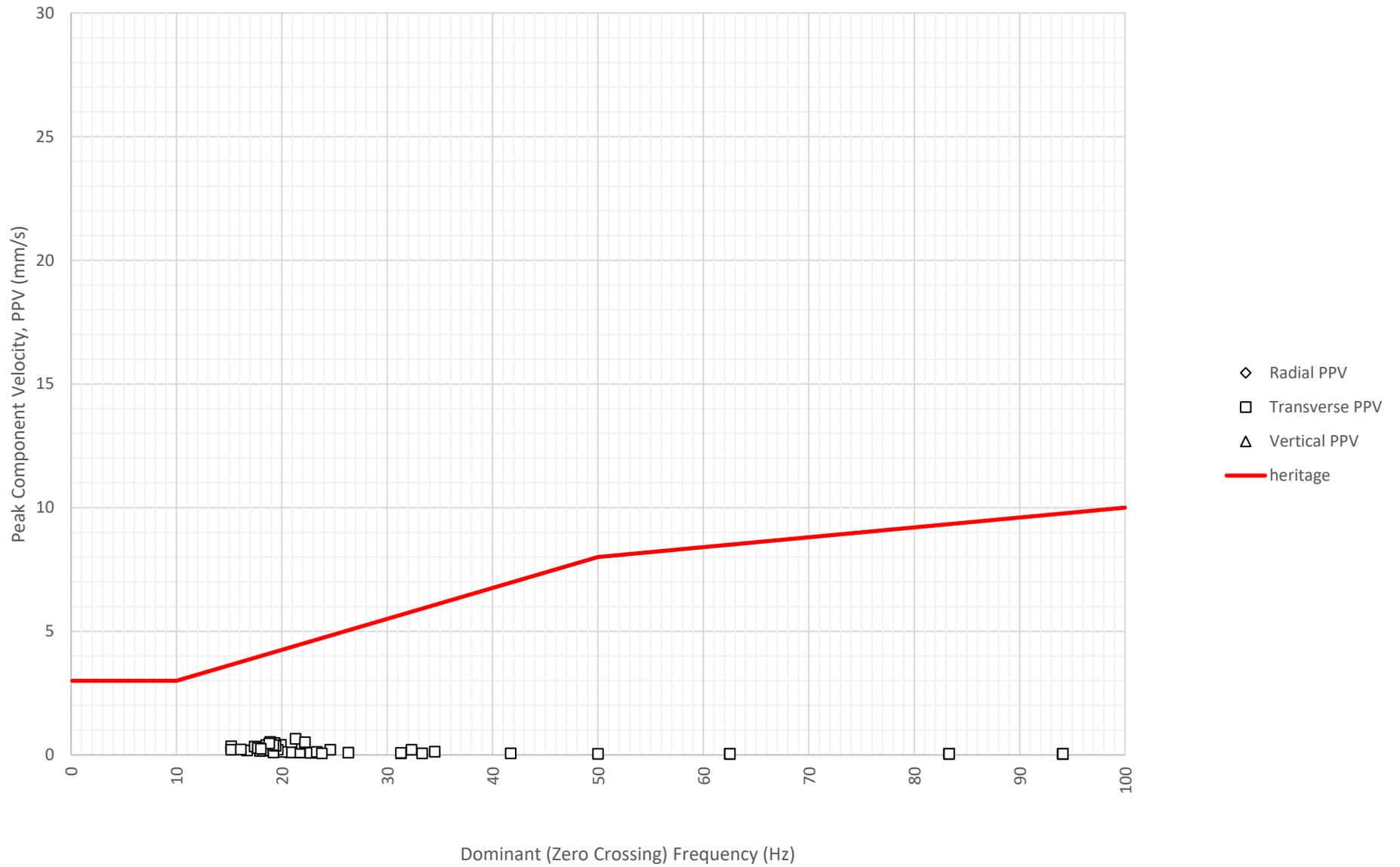
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 21-10-2022



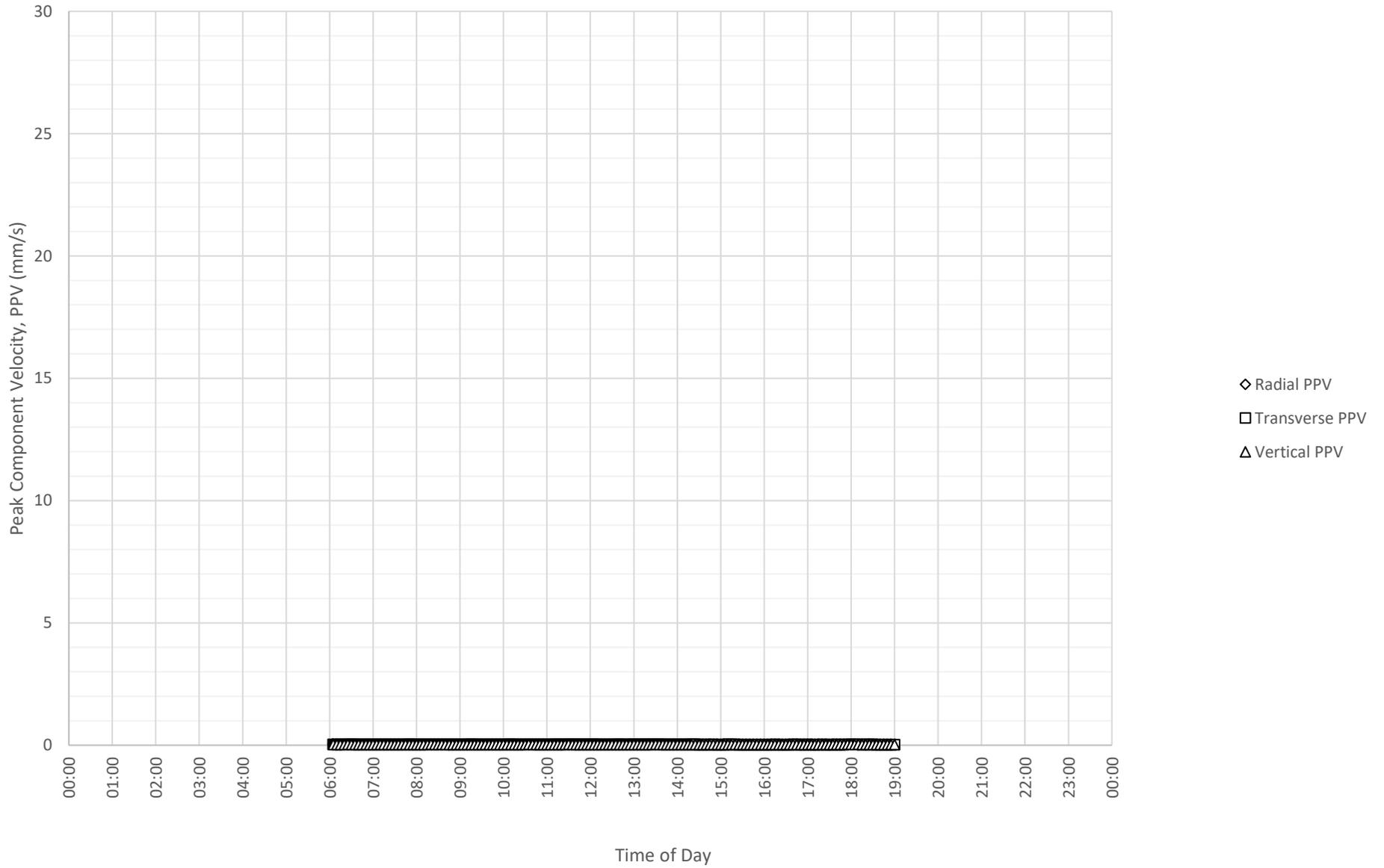
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 22-10-2022



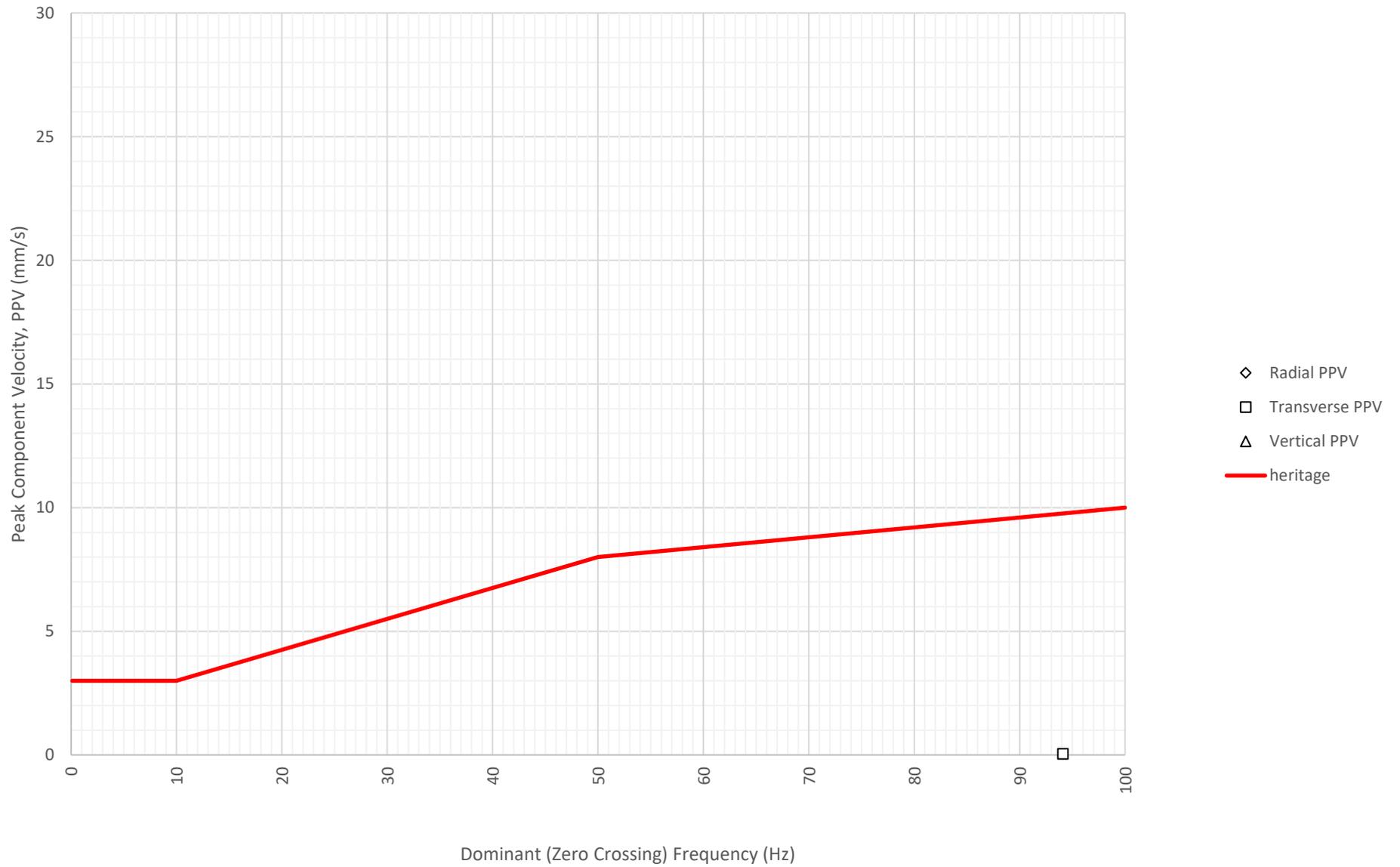
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 22-10-2022



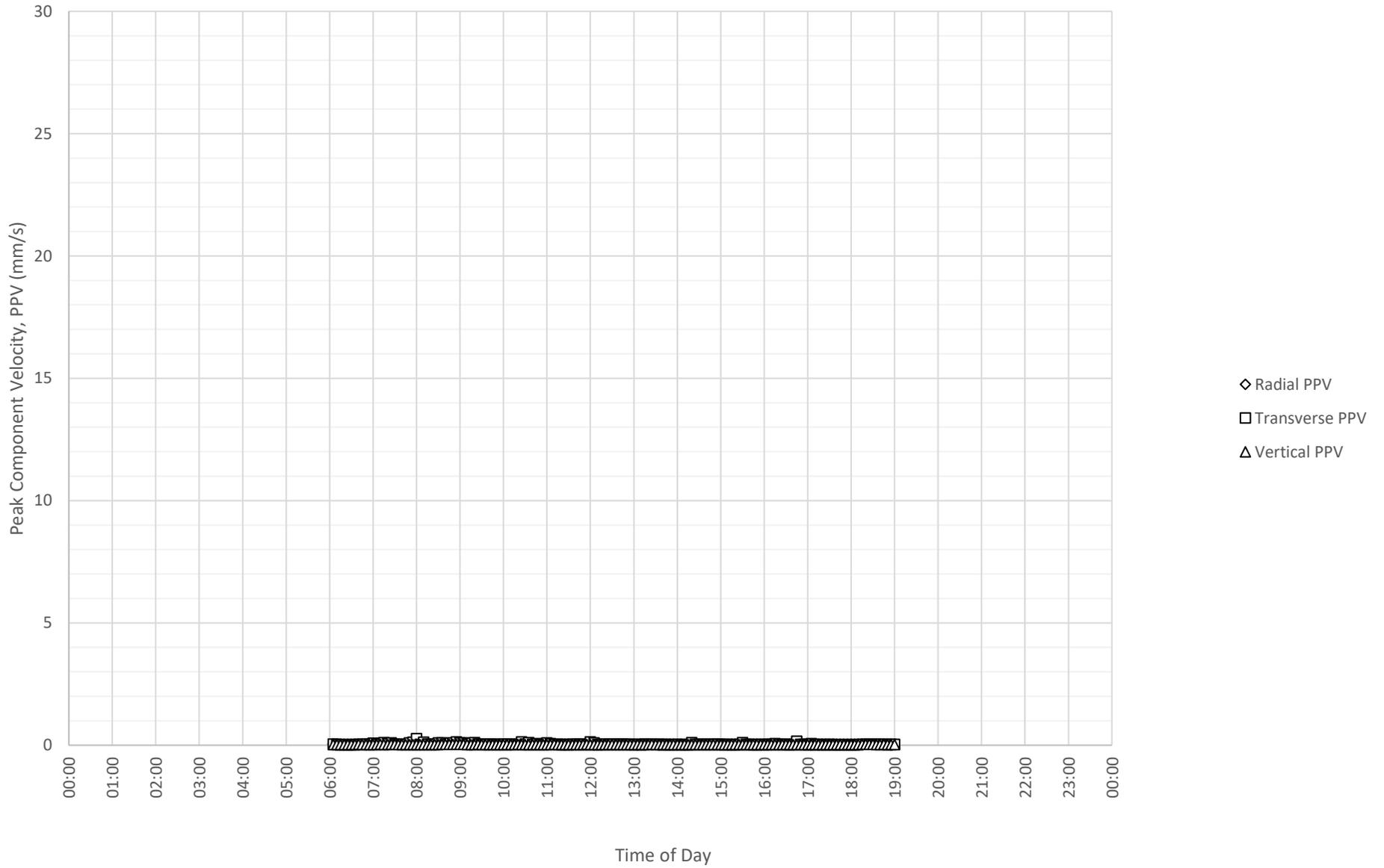
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 23-10-2022



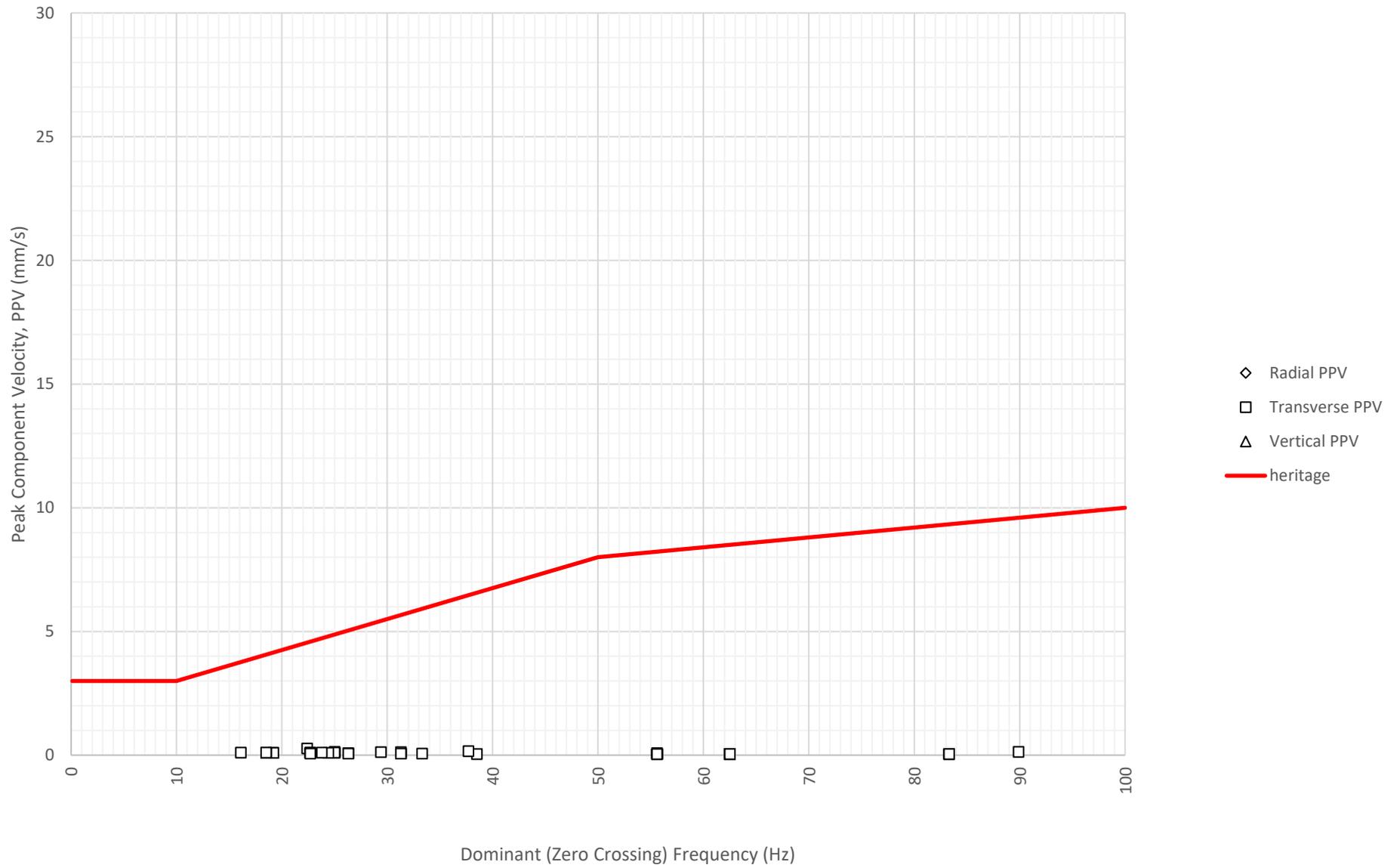
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 23-10-2022



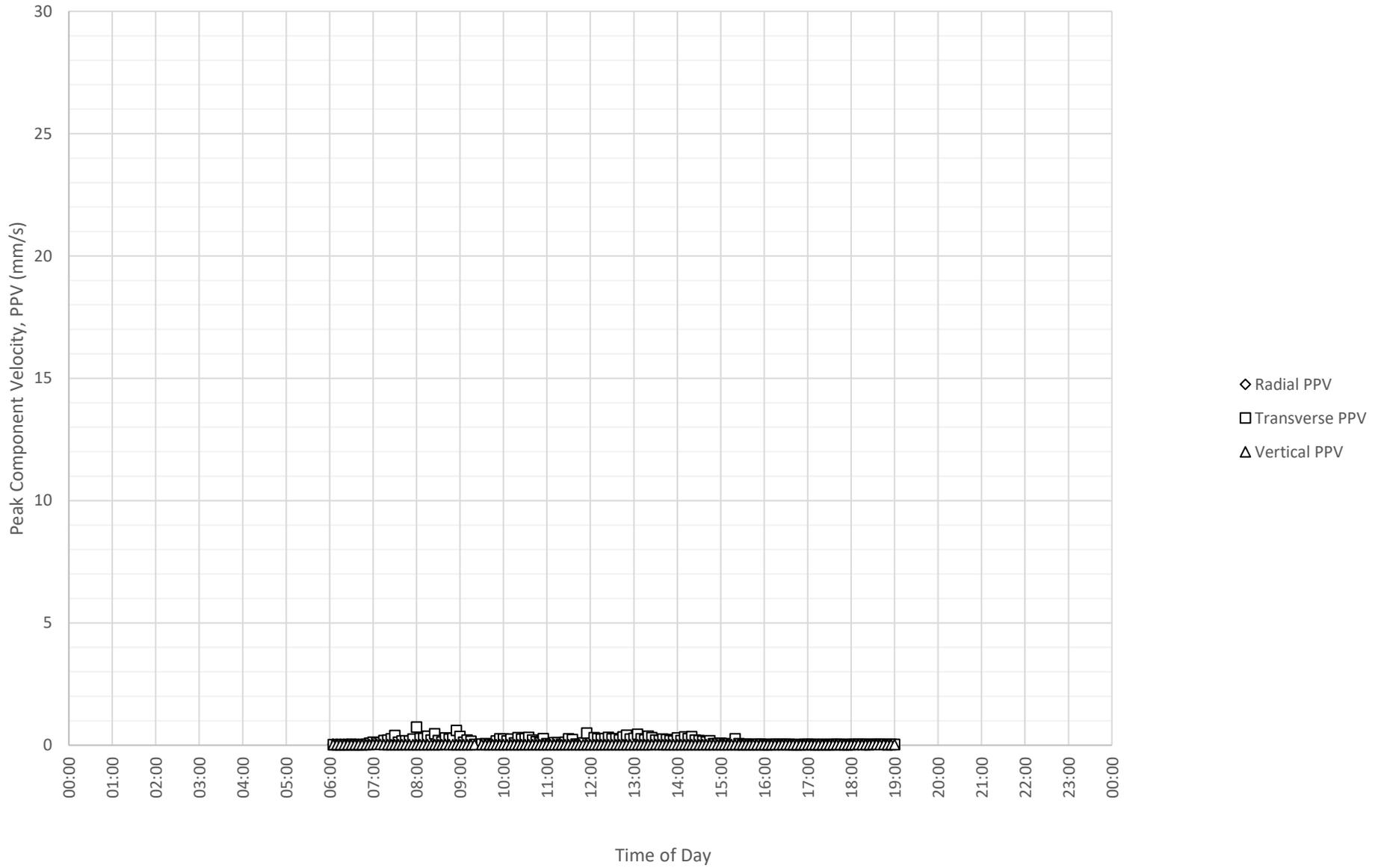
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 24-10-2022



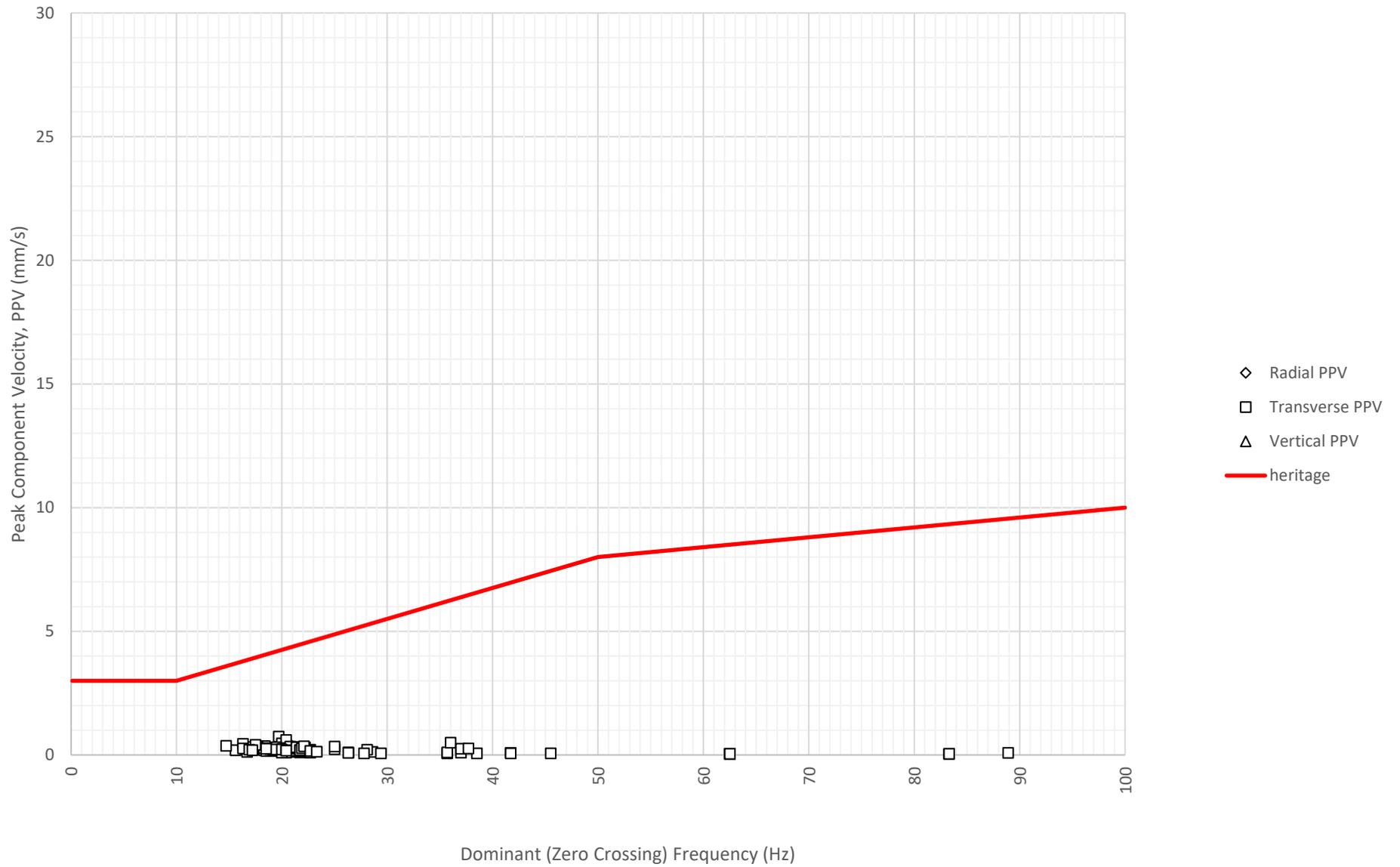
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 24-10-2022



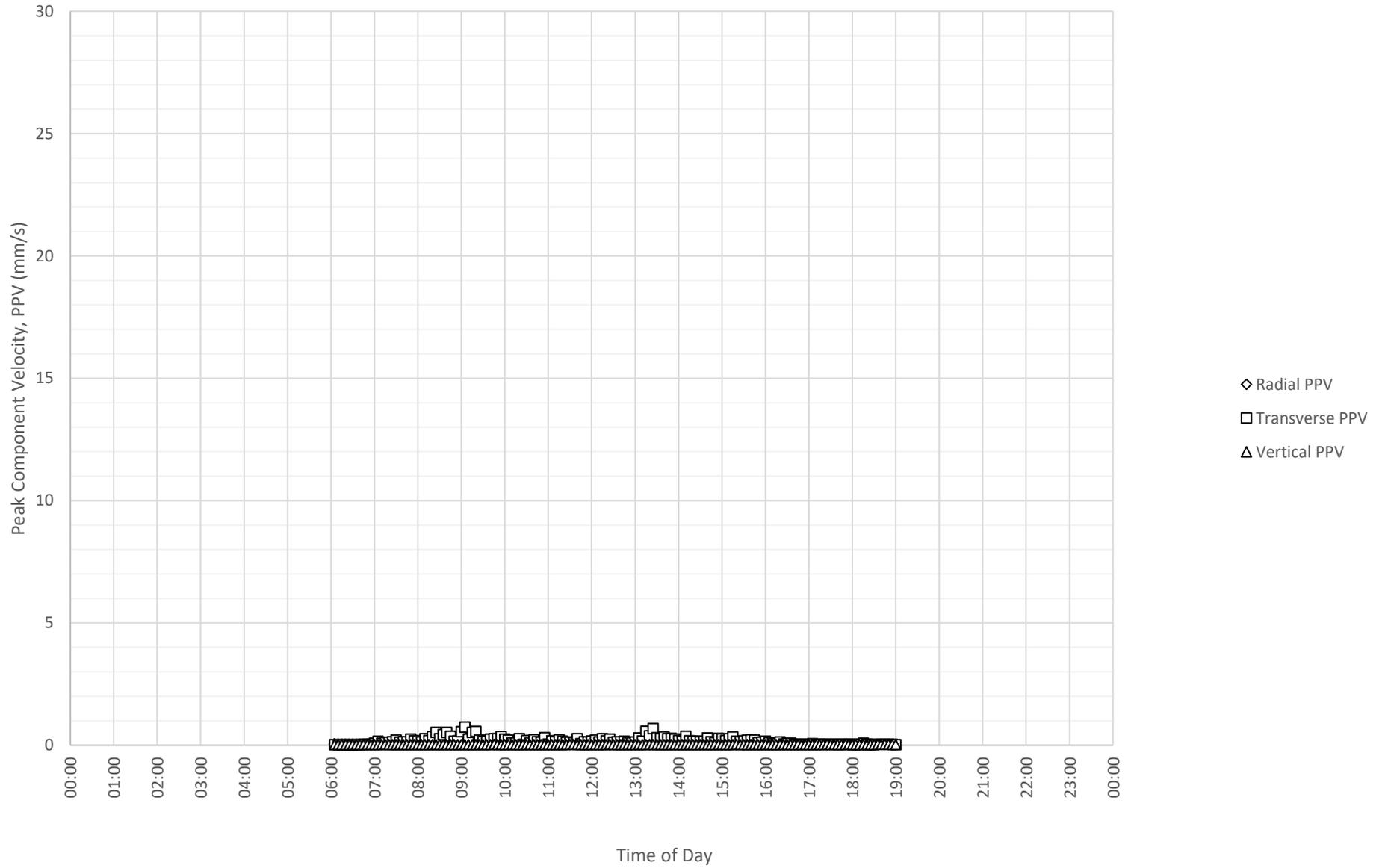
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 25-10-2022



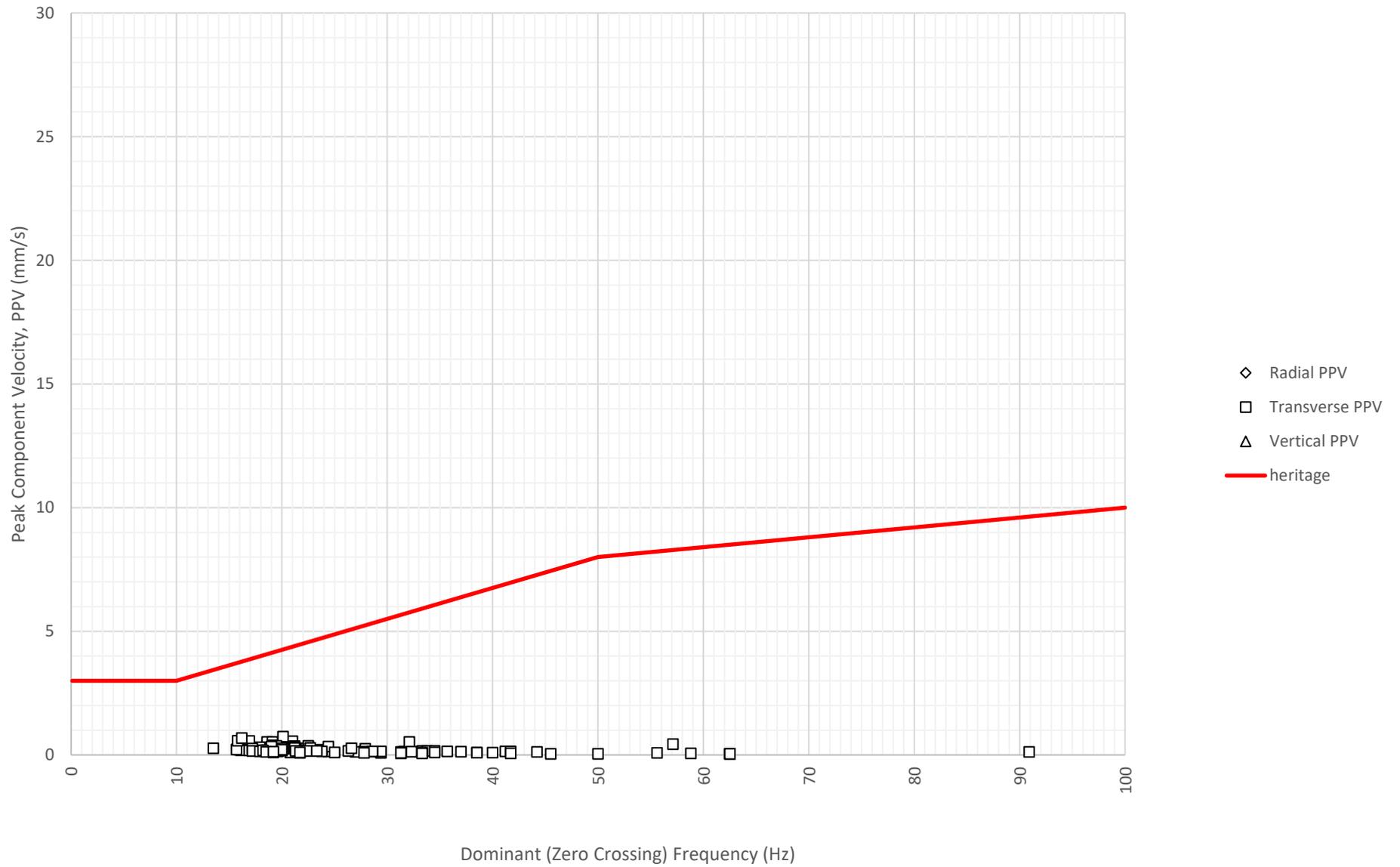
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 25-10-2022



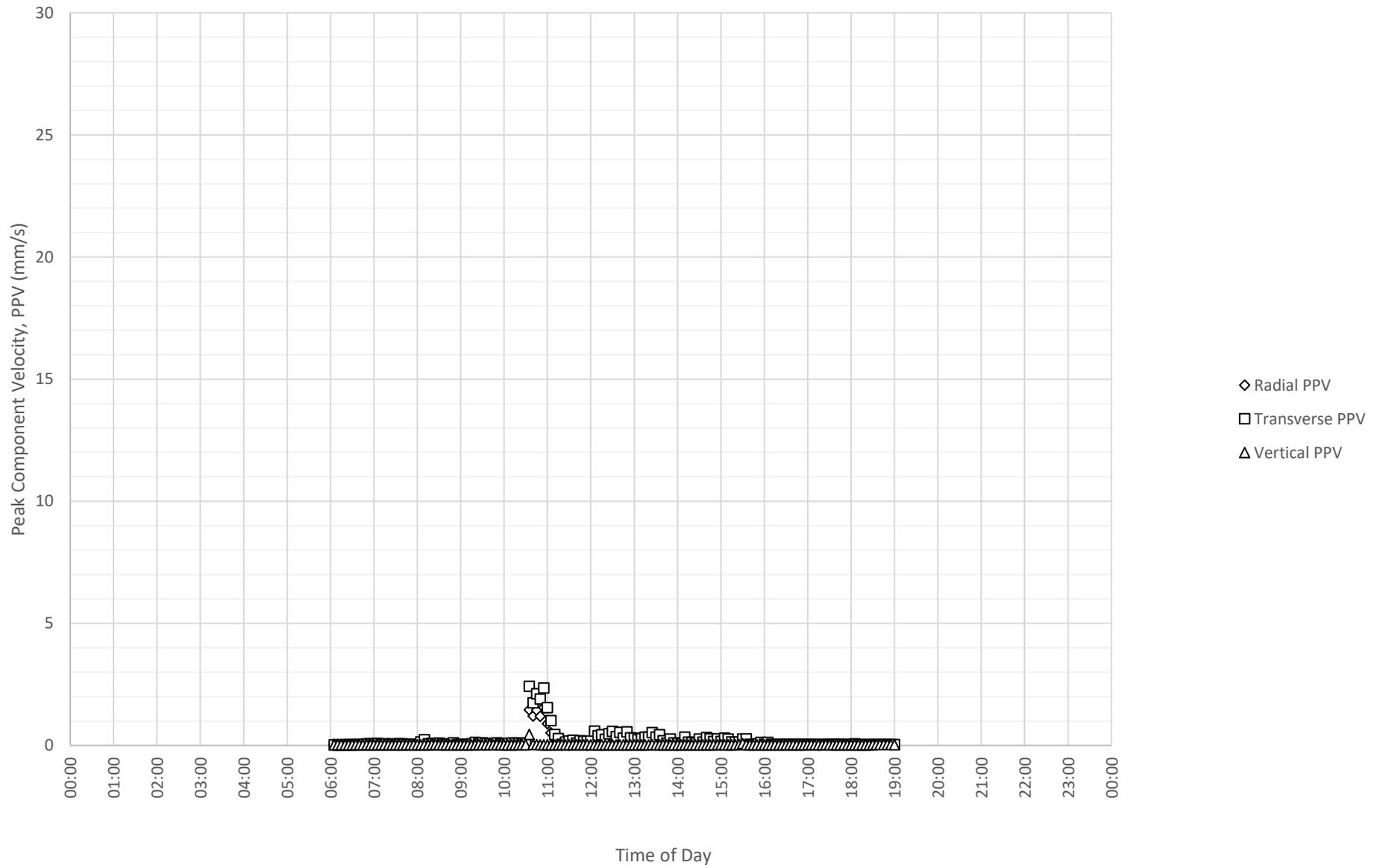
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 26-10-2022



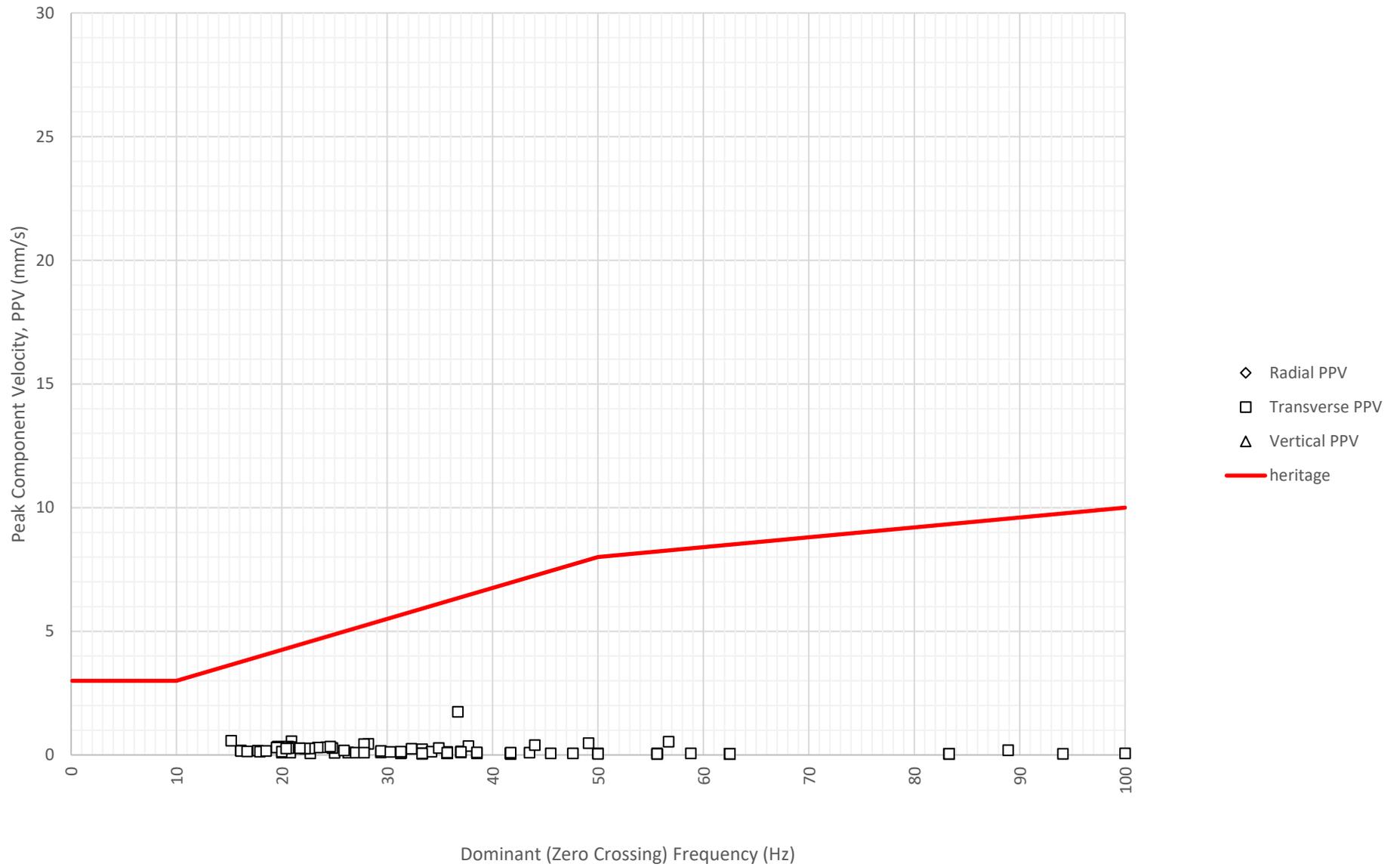
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 26-10-2022



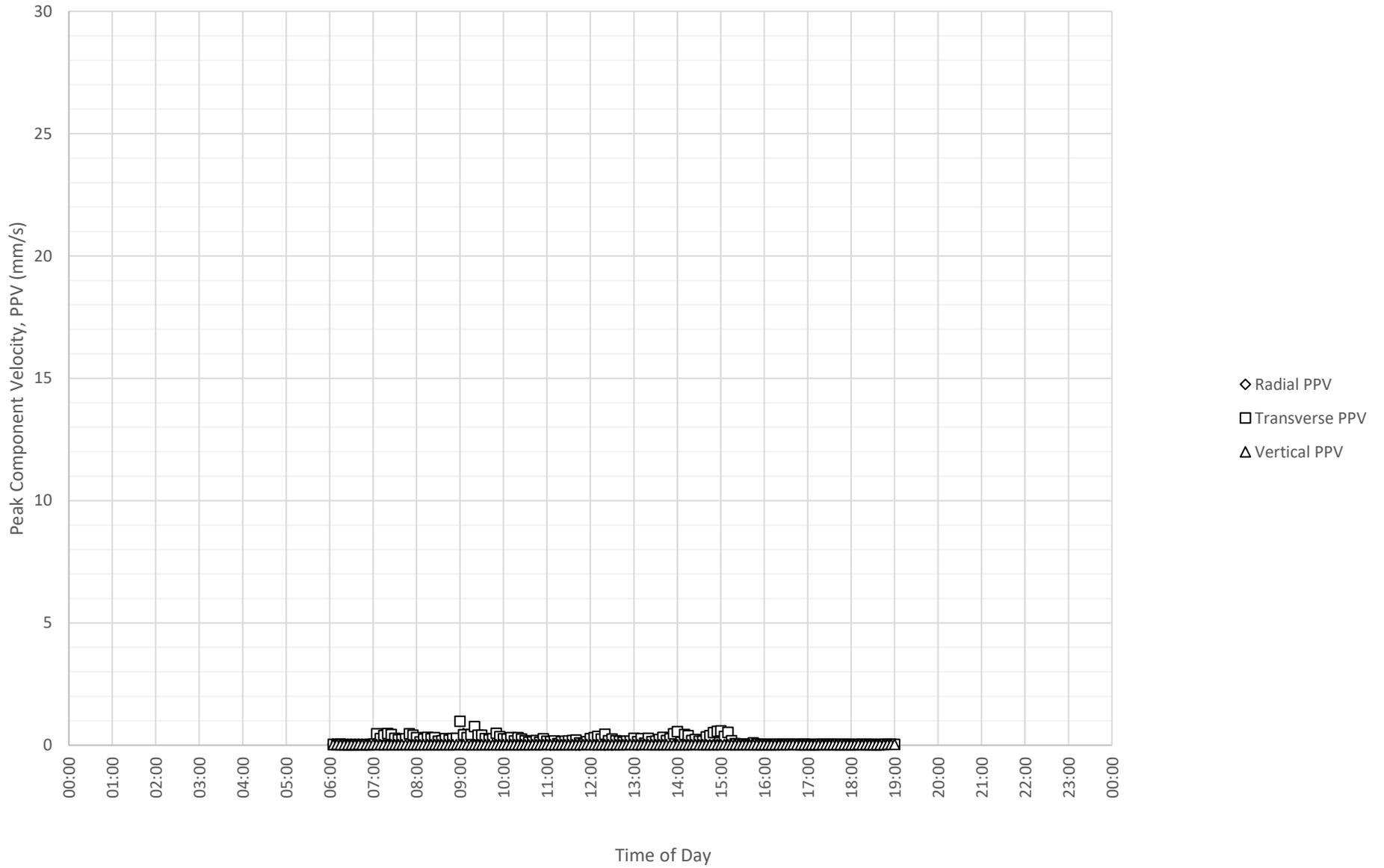
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 27-10-2022



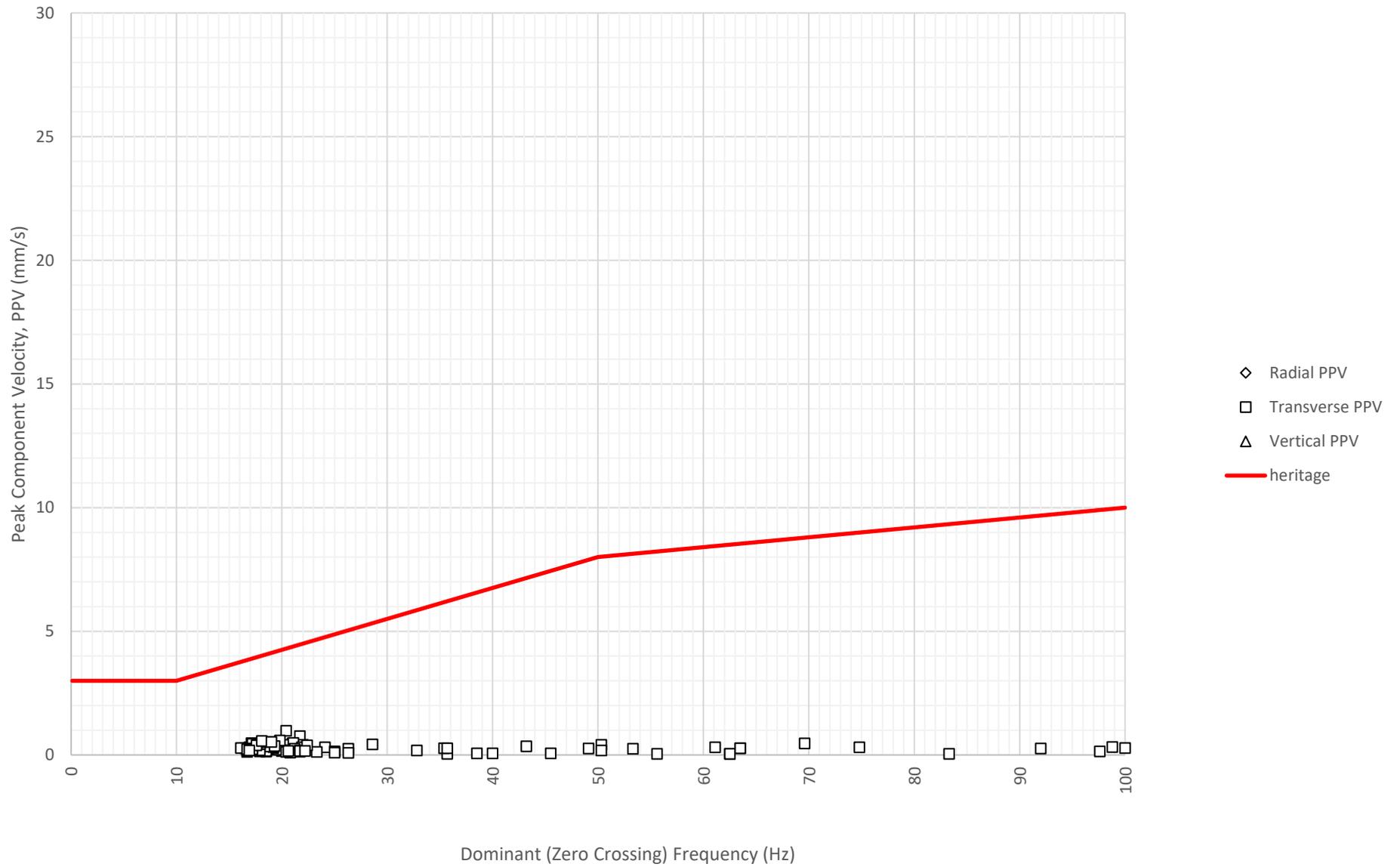
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 27-10-2022



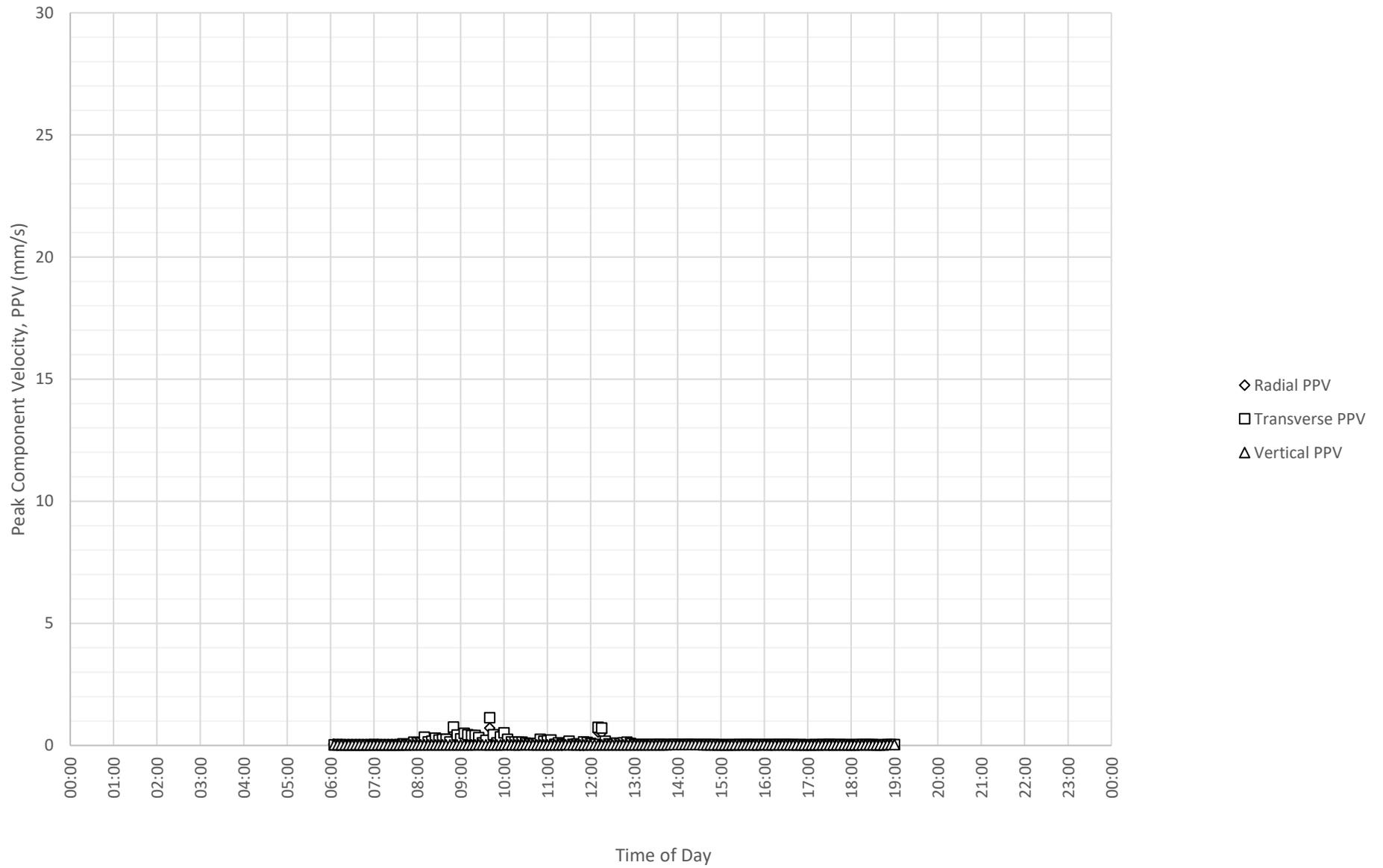
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 28-10-2022



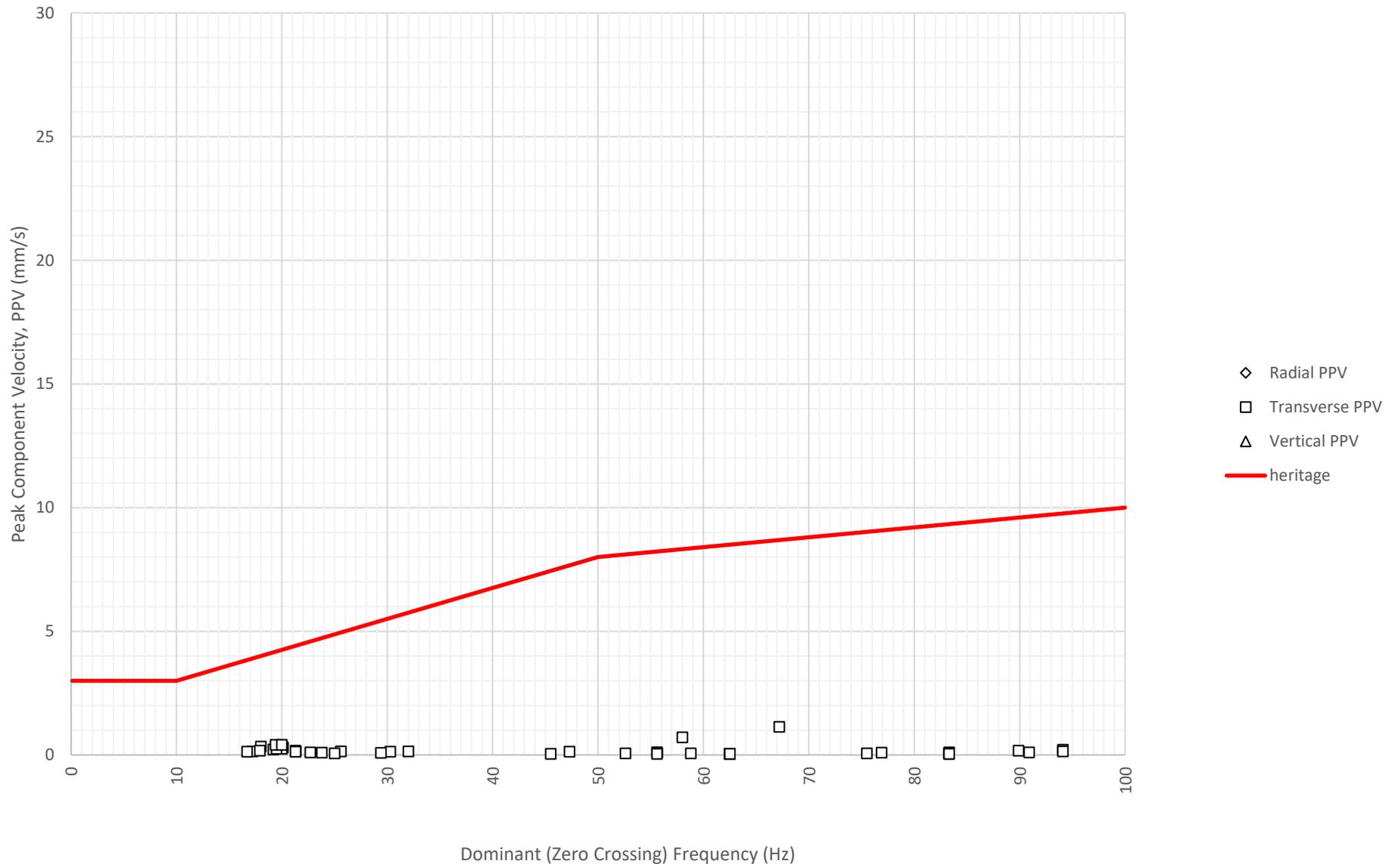
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 28-10-2022



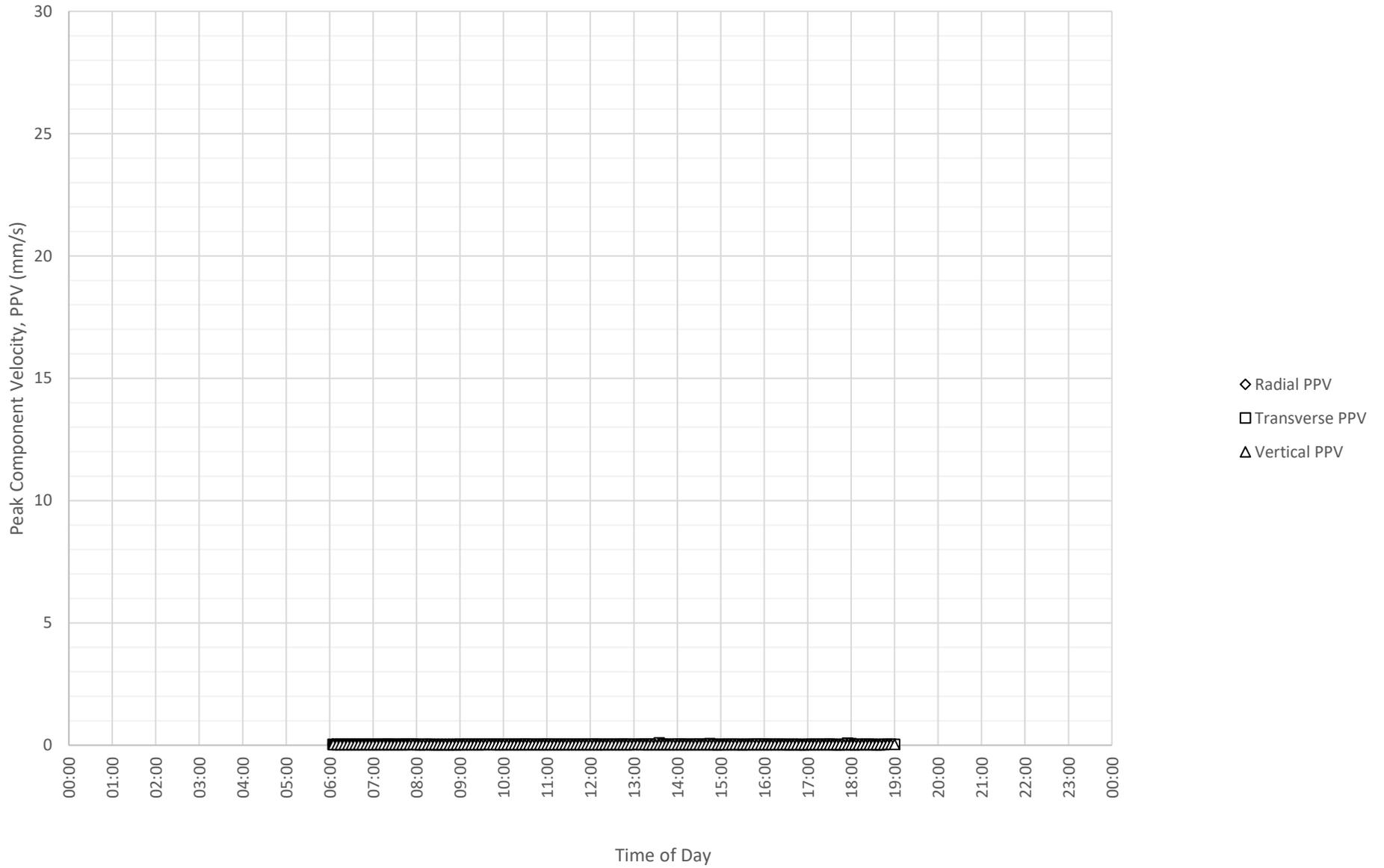
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 29-10-2022



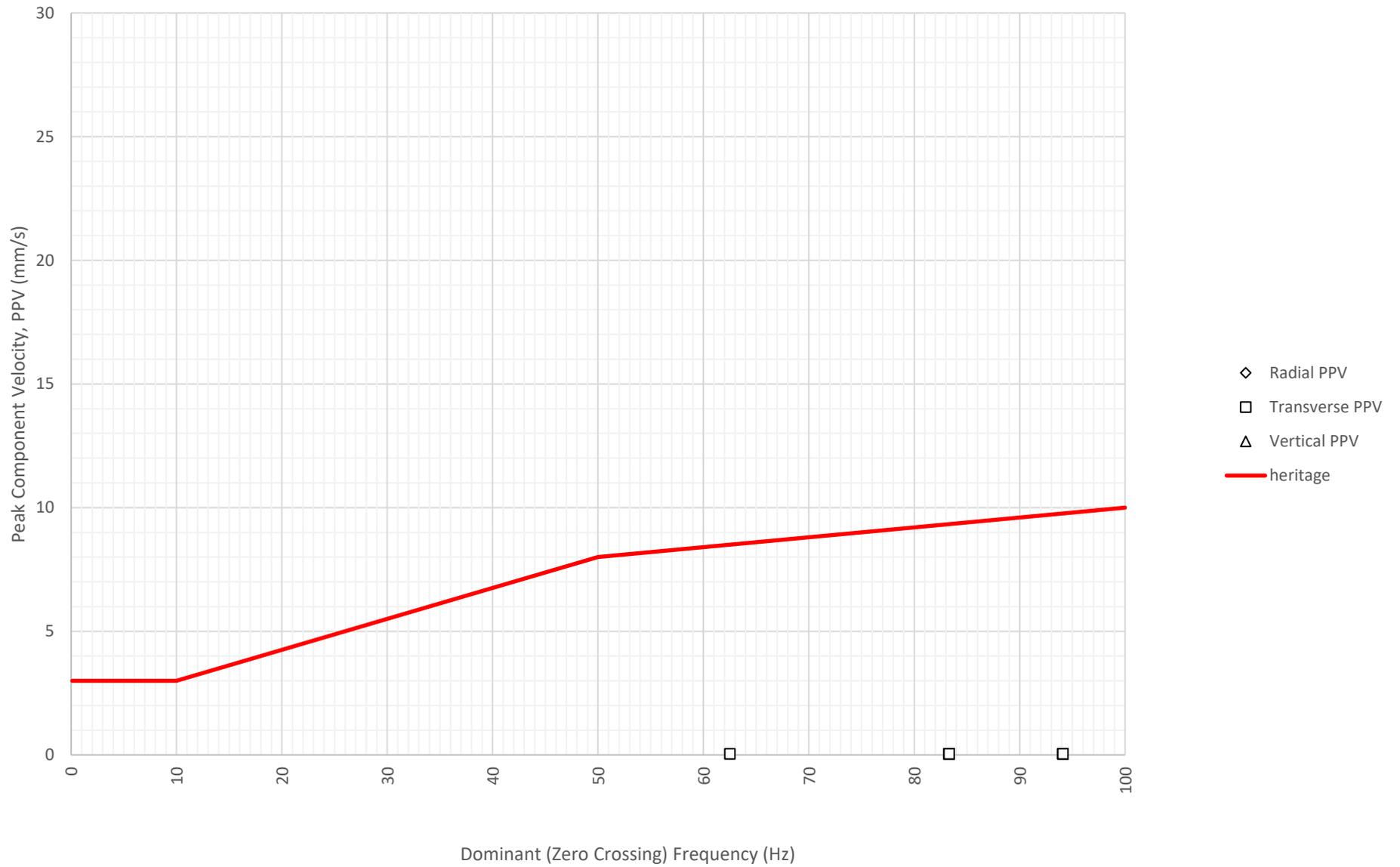
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 29-10-2022



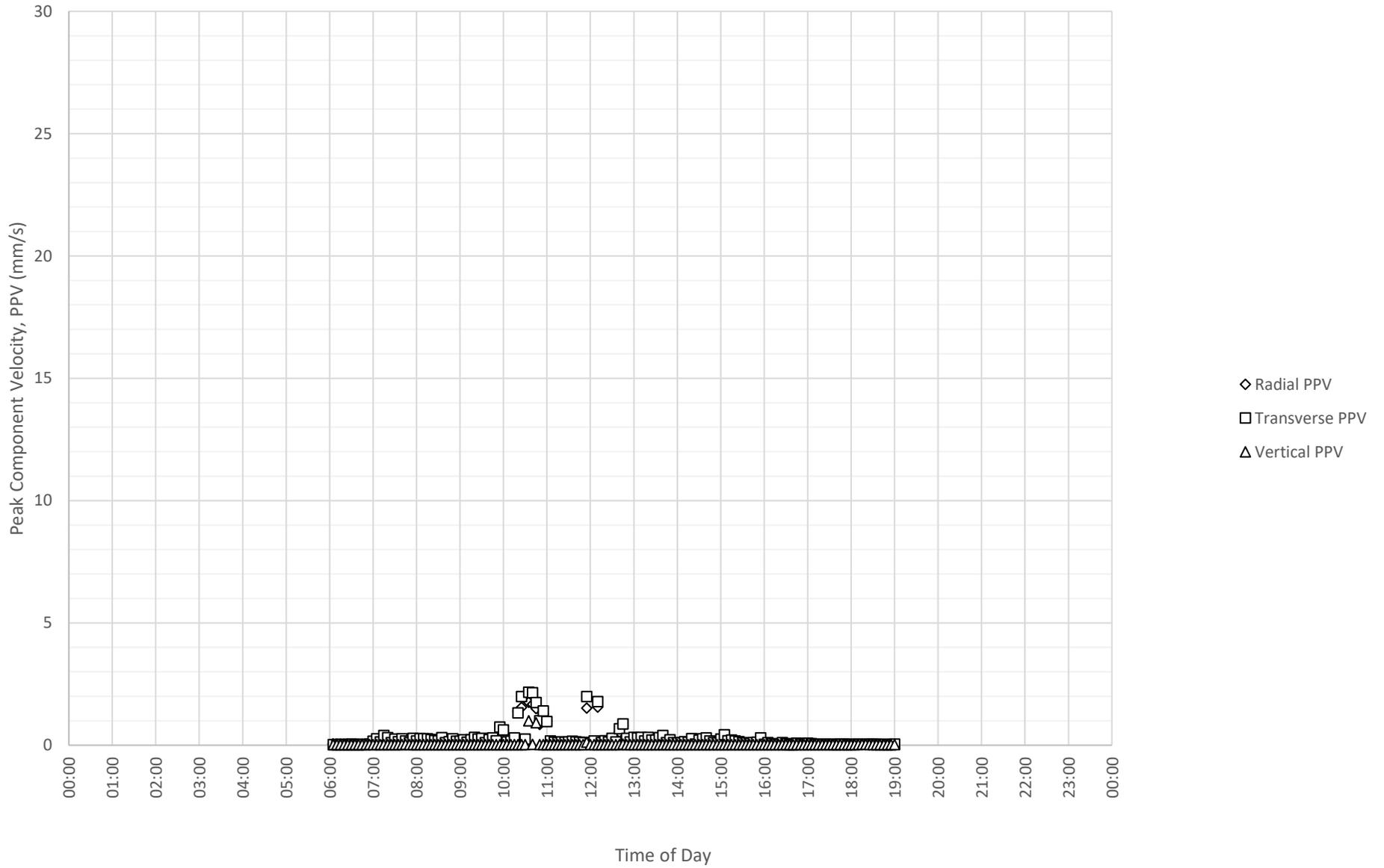
Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 30-10-2022



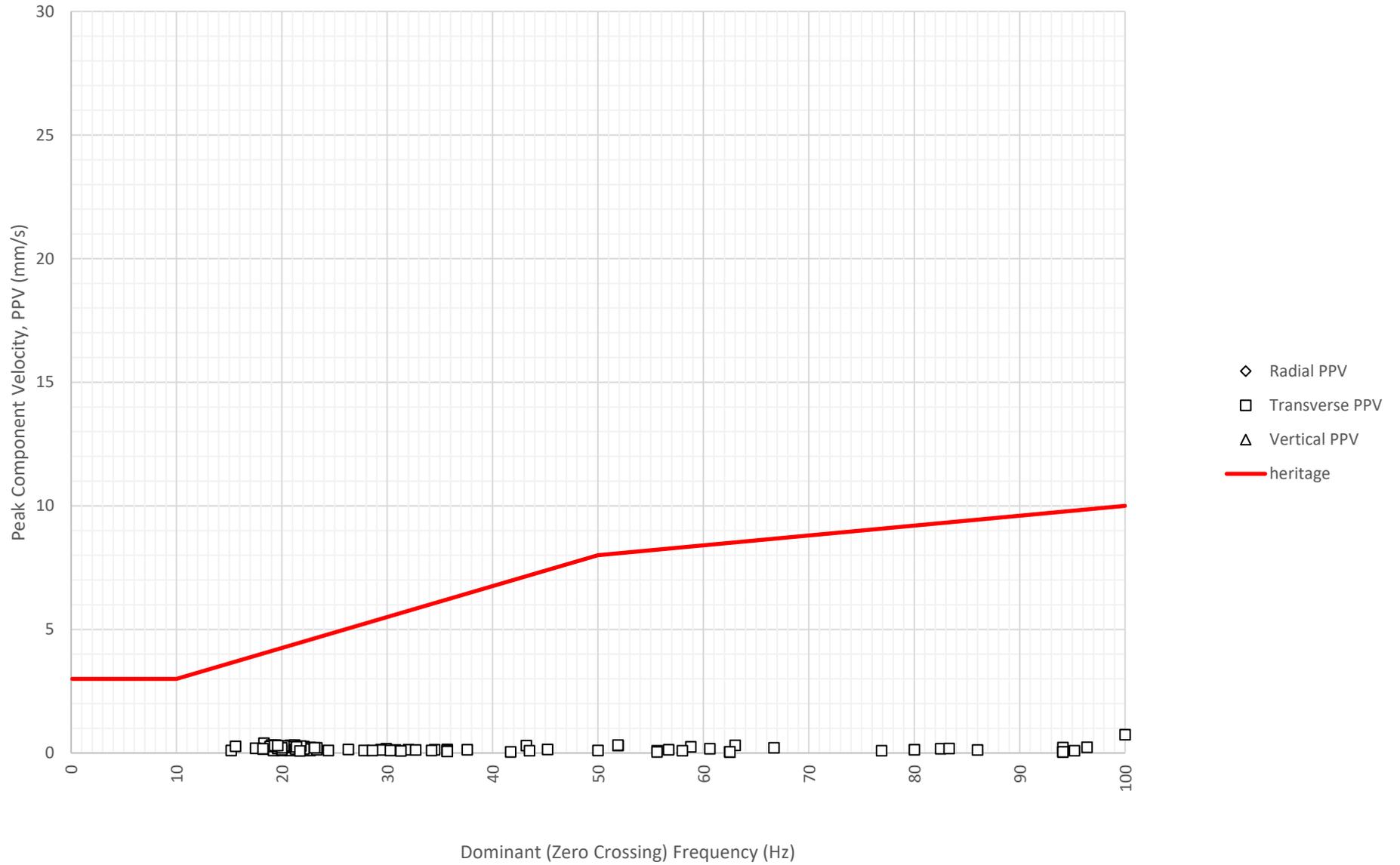
Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 30-10-2022



Daily Monitored Vibration Levels at M7427 Heritage (Rear) on 31-10-2022

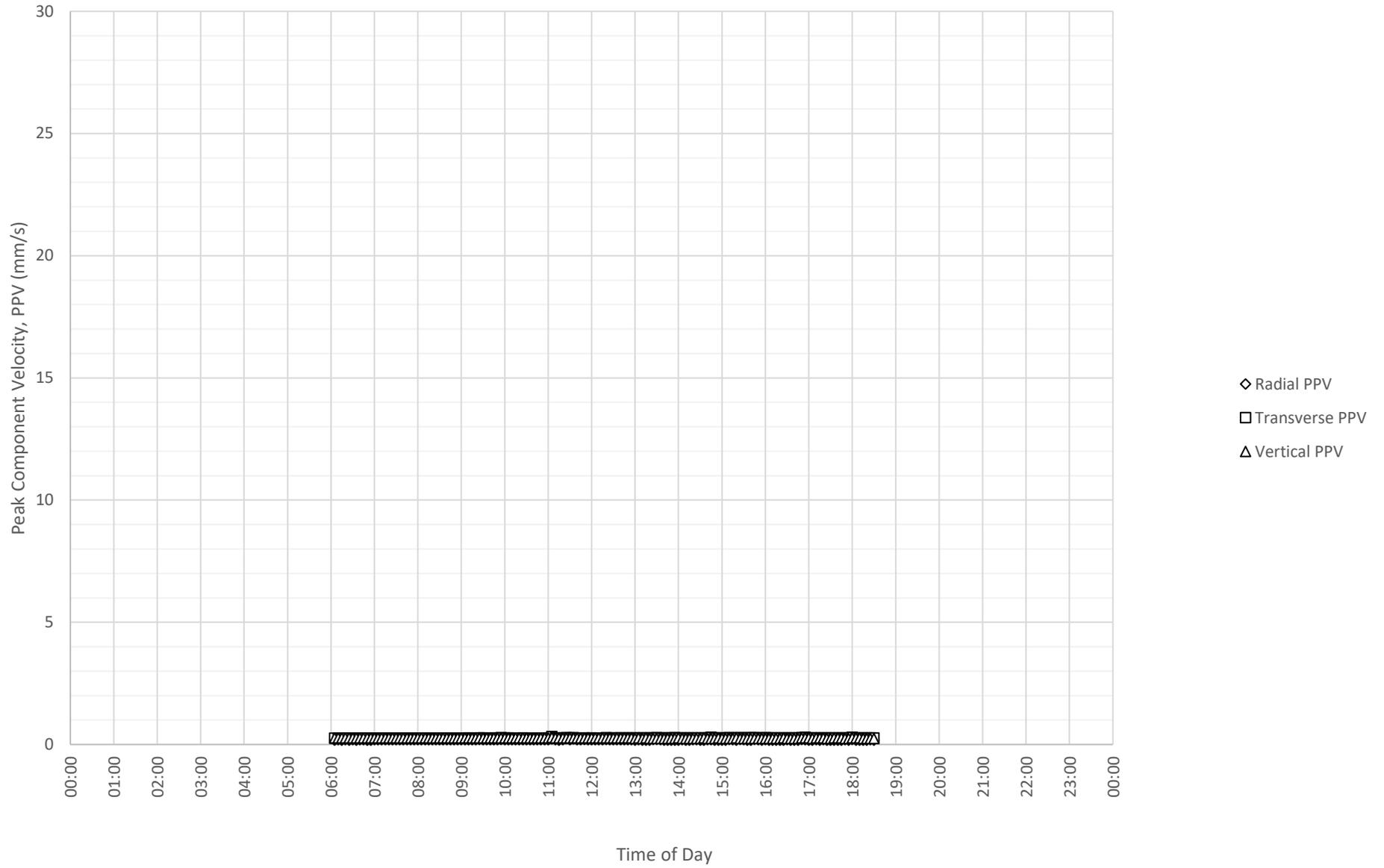


Frequency Content of Vibration Levels at M7427 Heritage (Rear) on 31-10-2022

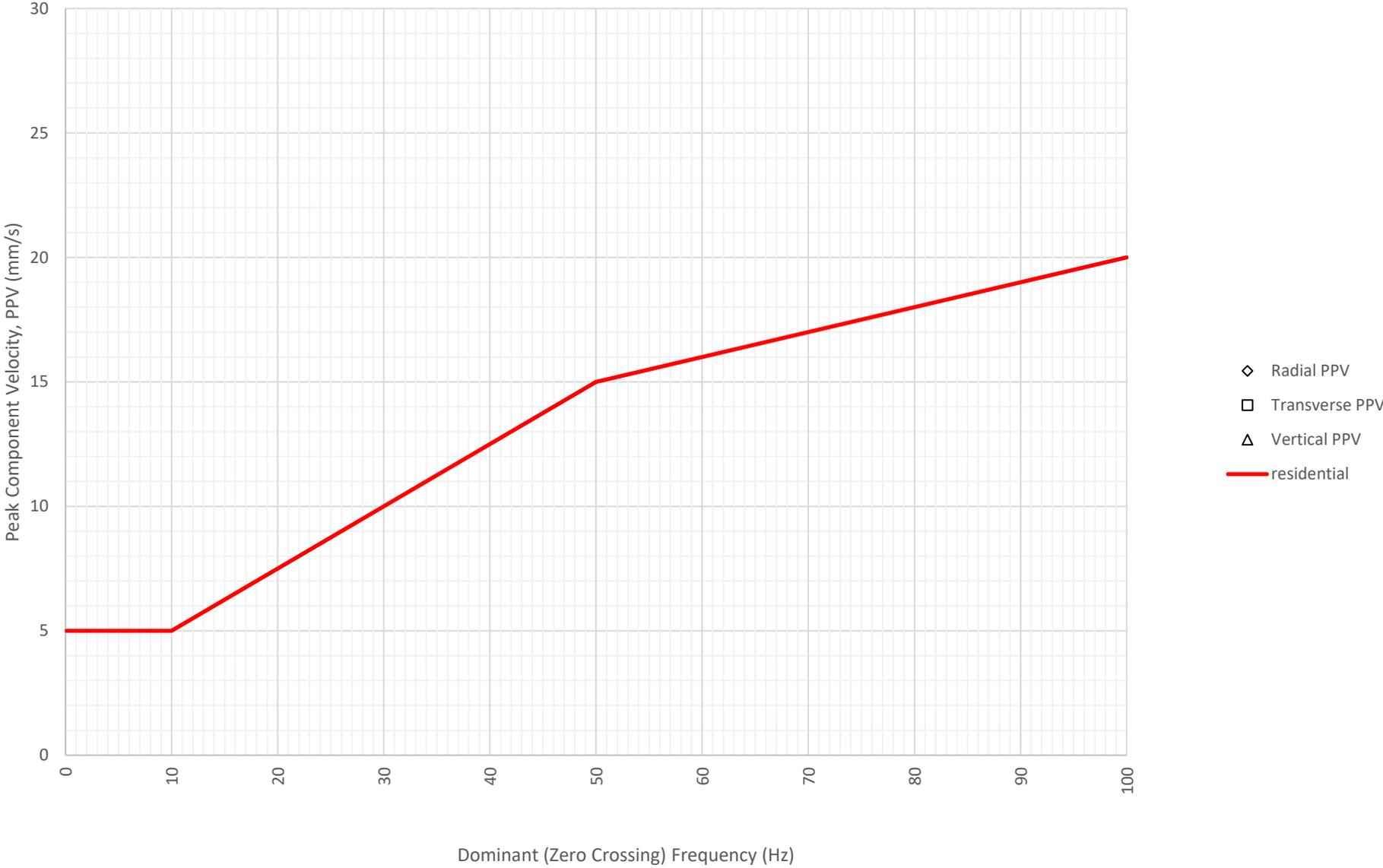


## **APPENDIX 3 : DAILY GRAPHS M7715 (RESIDENTIAL BUILDING)**

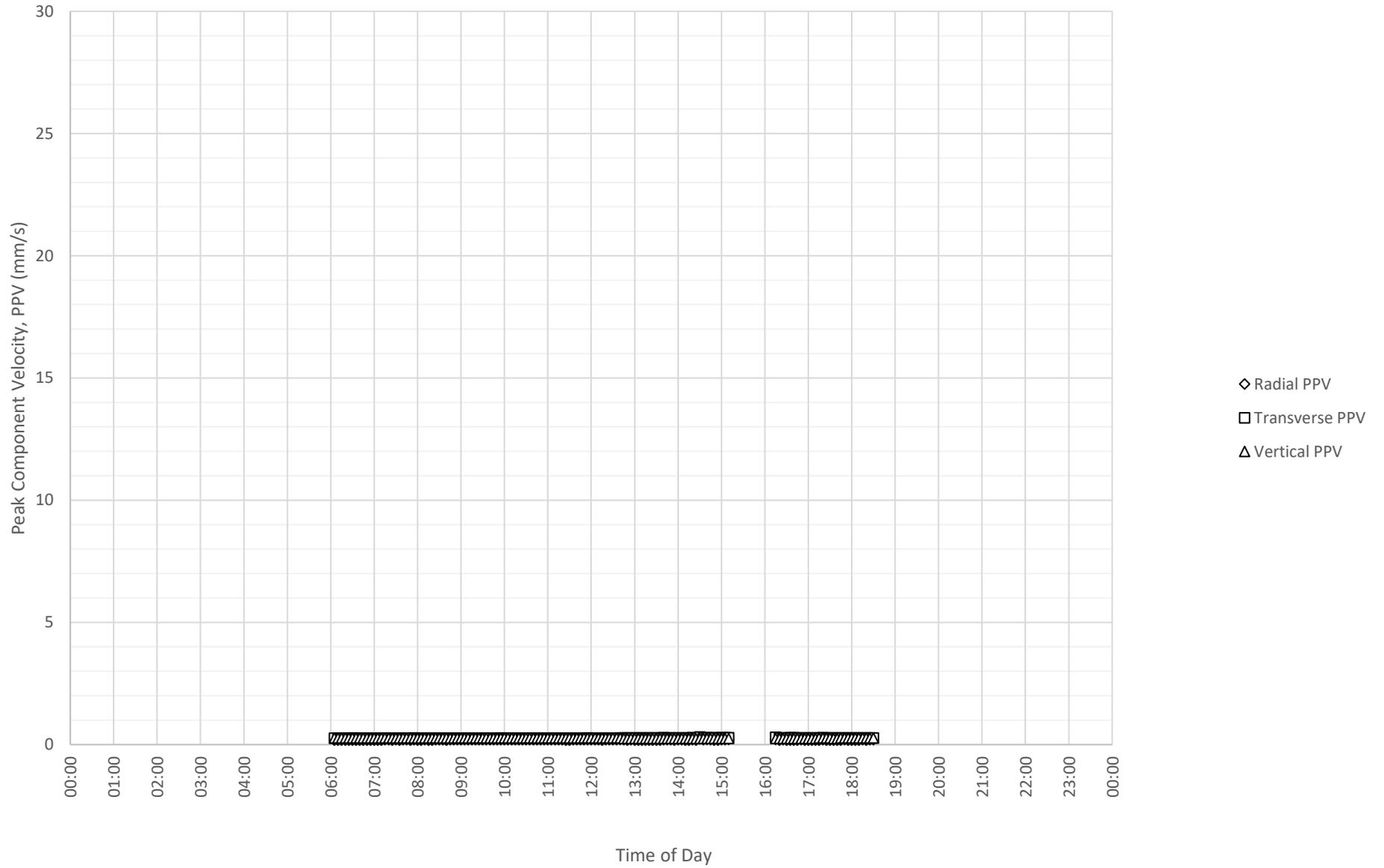
Daily Monitored Vibration Levels at M7715 Residential (east) on 1-10-2022



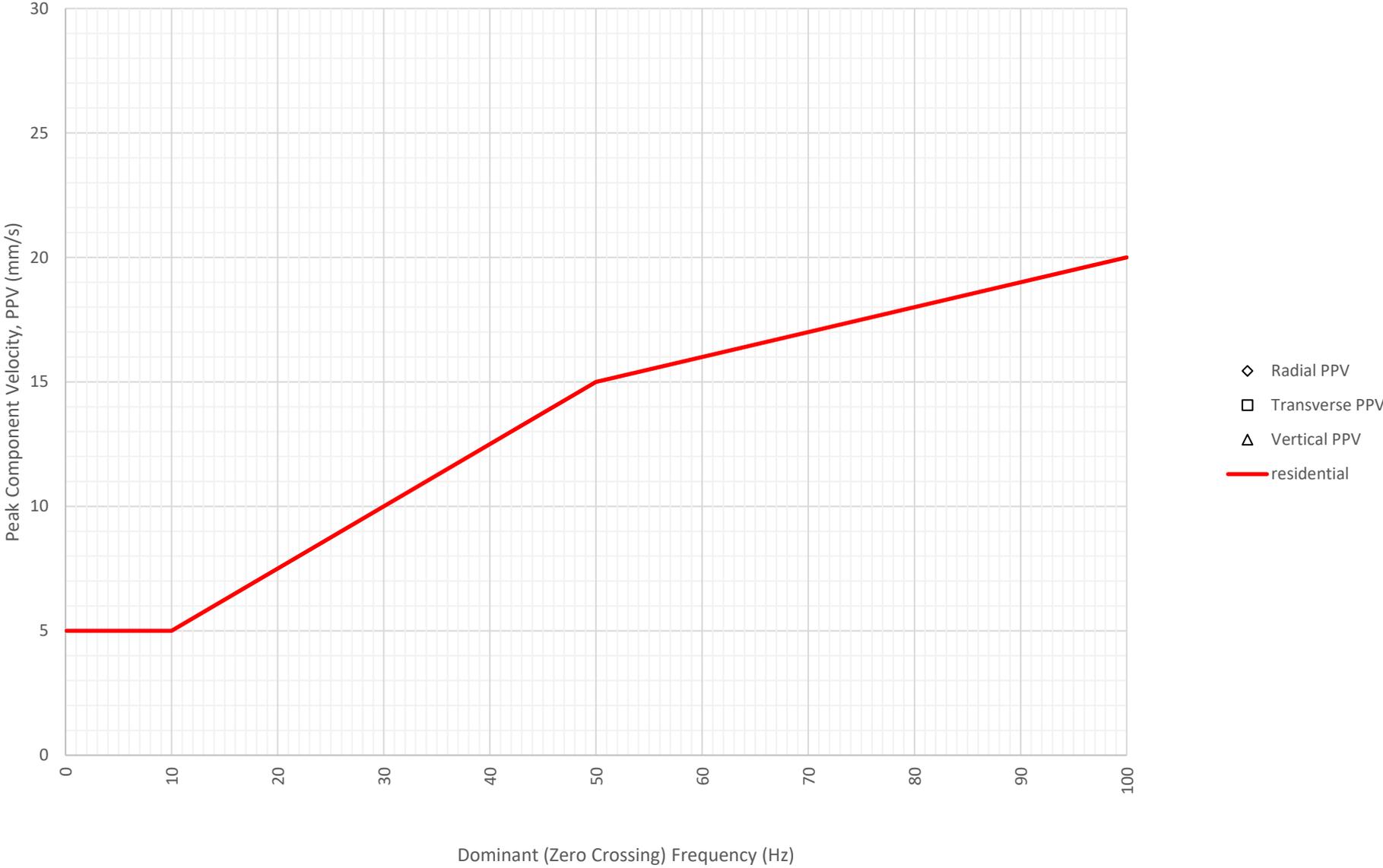
Frequency Content of Vibration Levels at M7715 Residential (east) on 1-10-2022



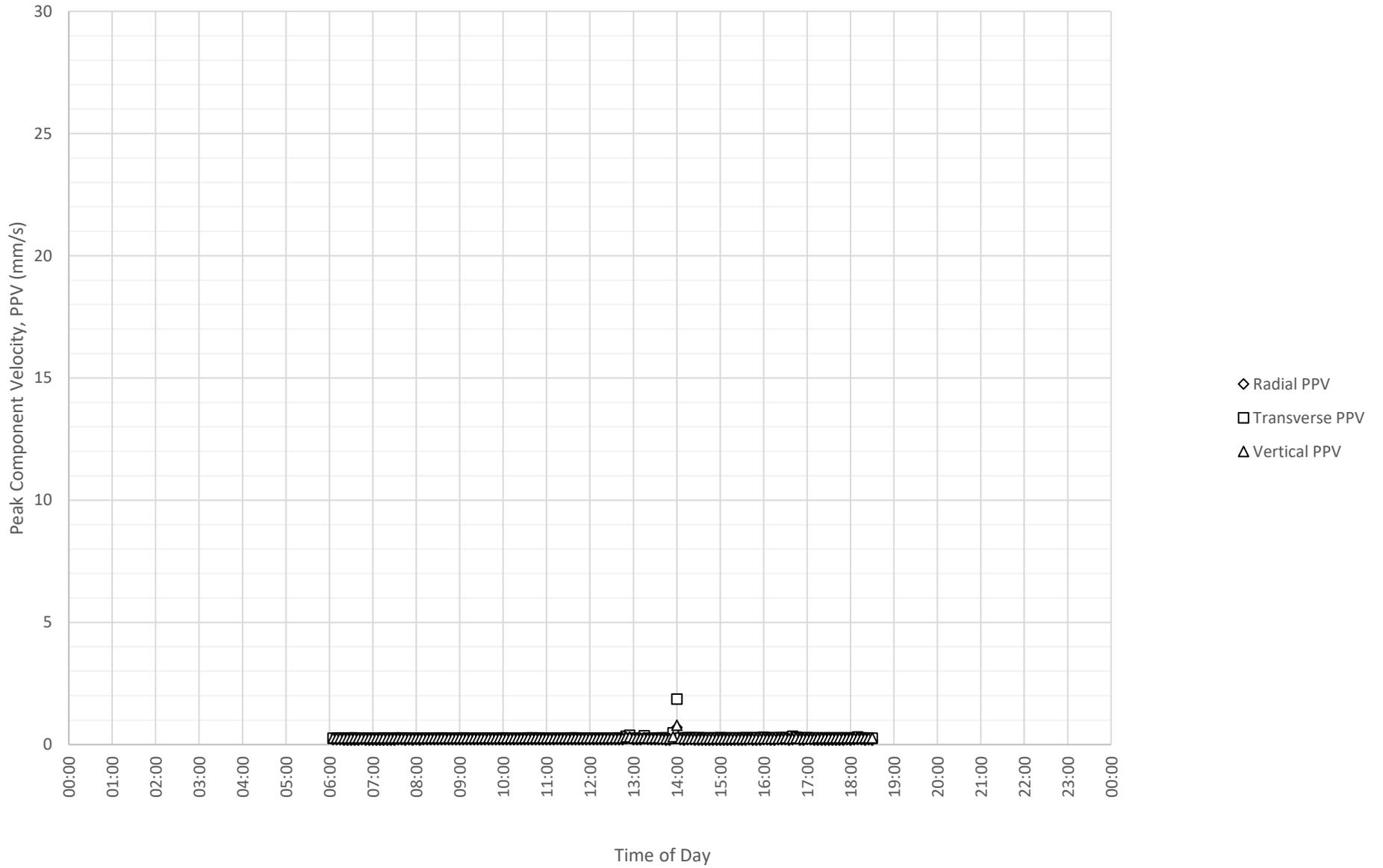
Daily Monitored Vibration Levels at M7715 Residential (east) on 2-10-2022



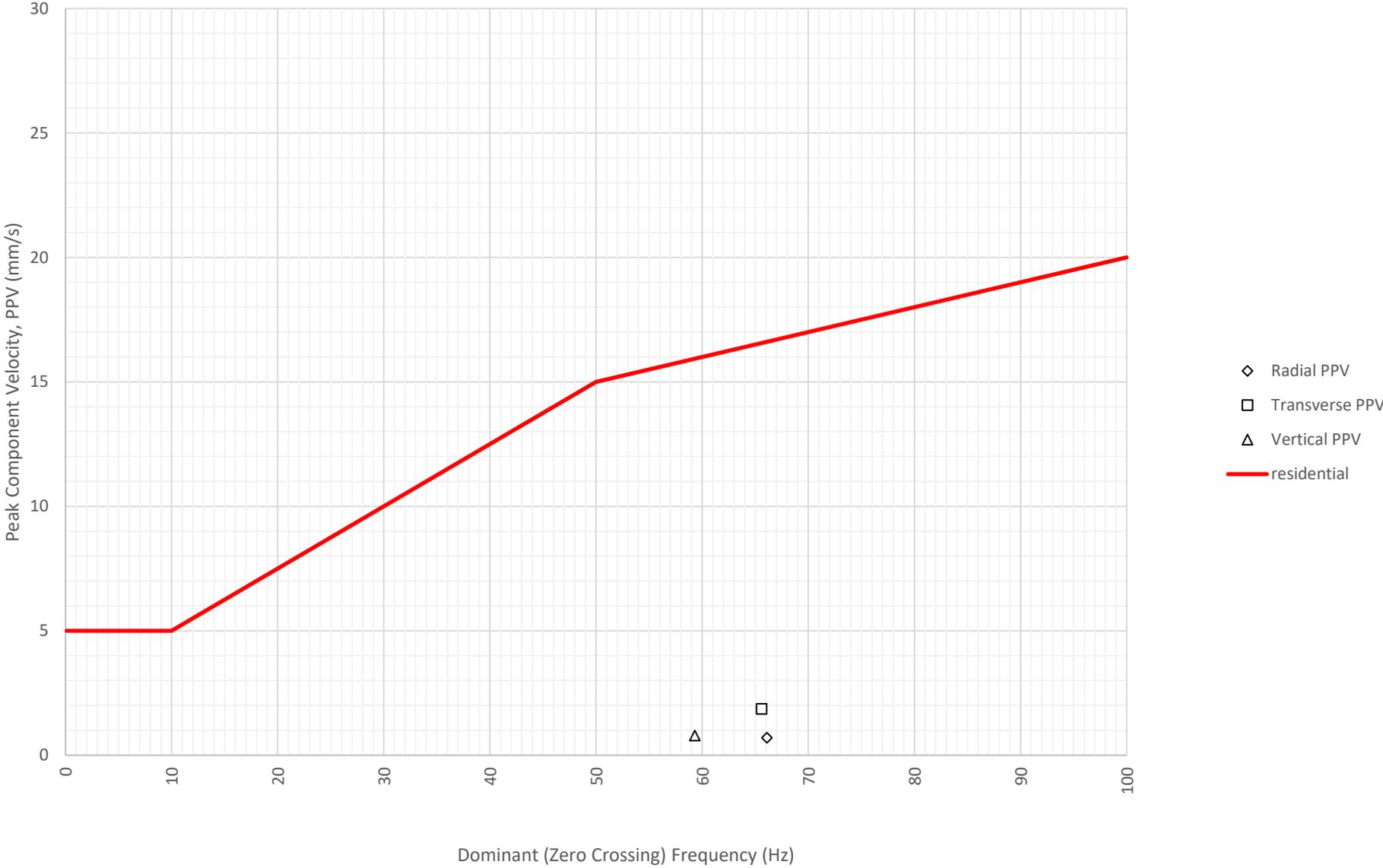
Frequency Content of Vibration Levels at M7715 Residential (east) on 2-10-2022



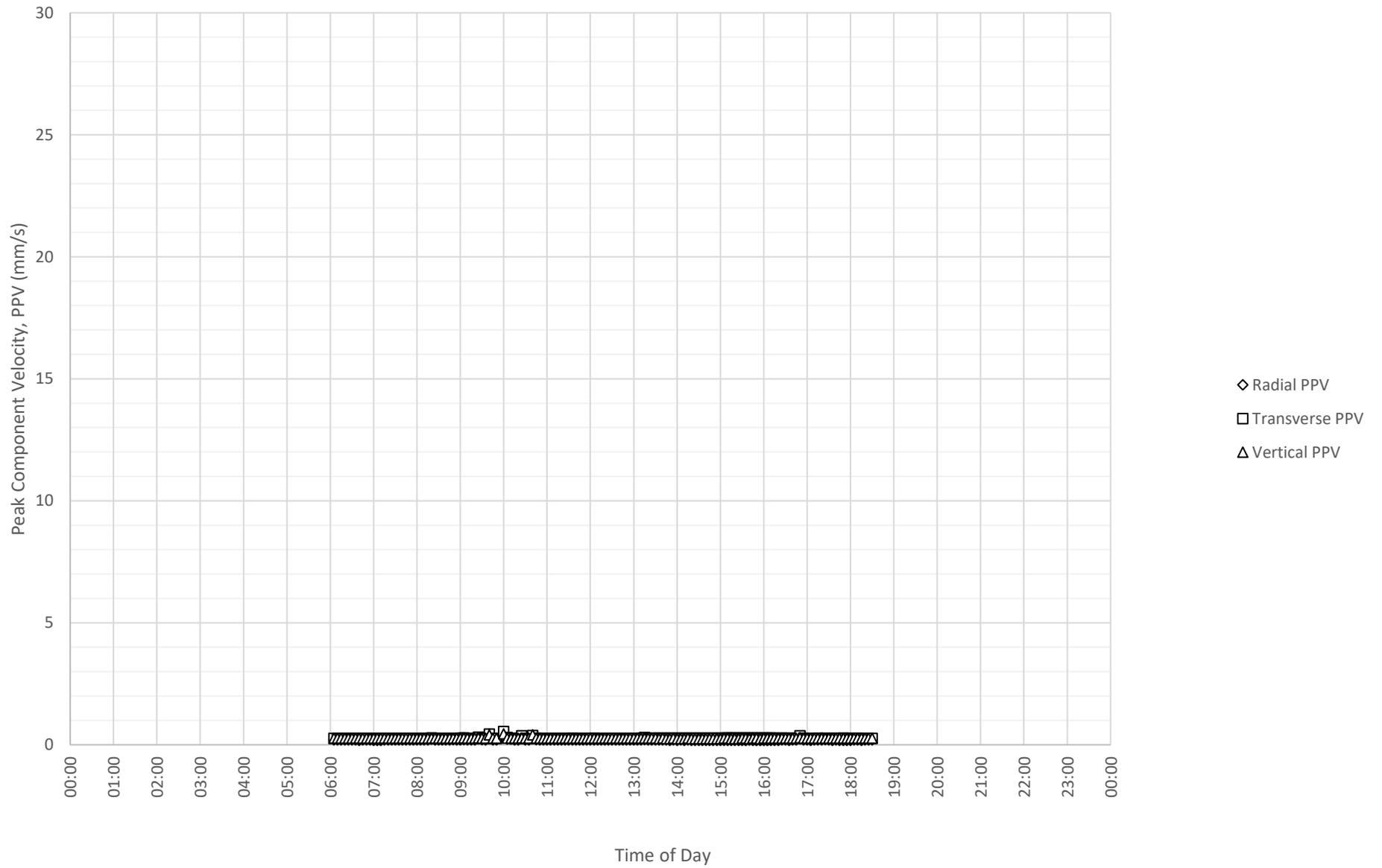
Daily Monitored Vibration Levels at M7715 Residential (east) on 3-10-2022



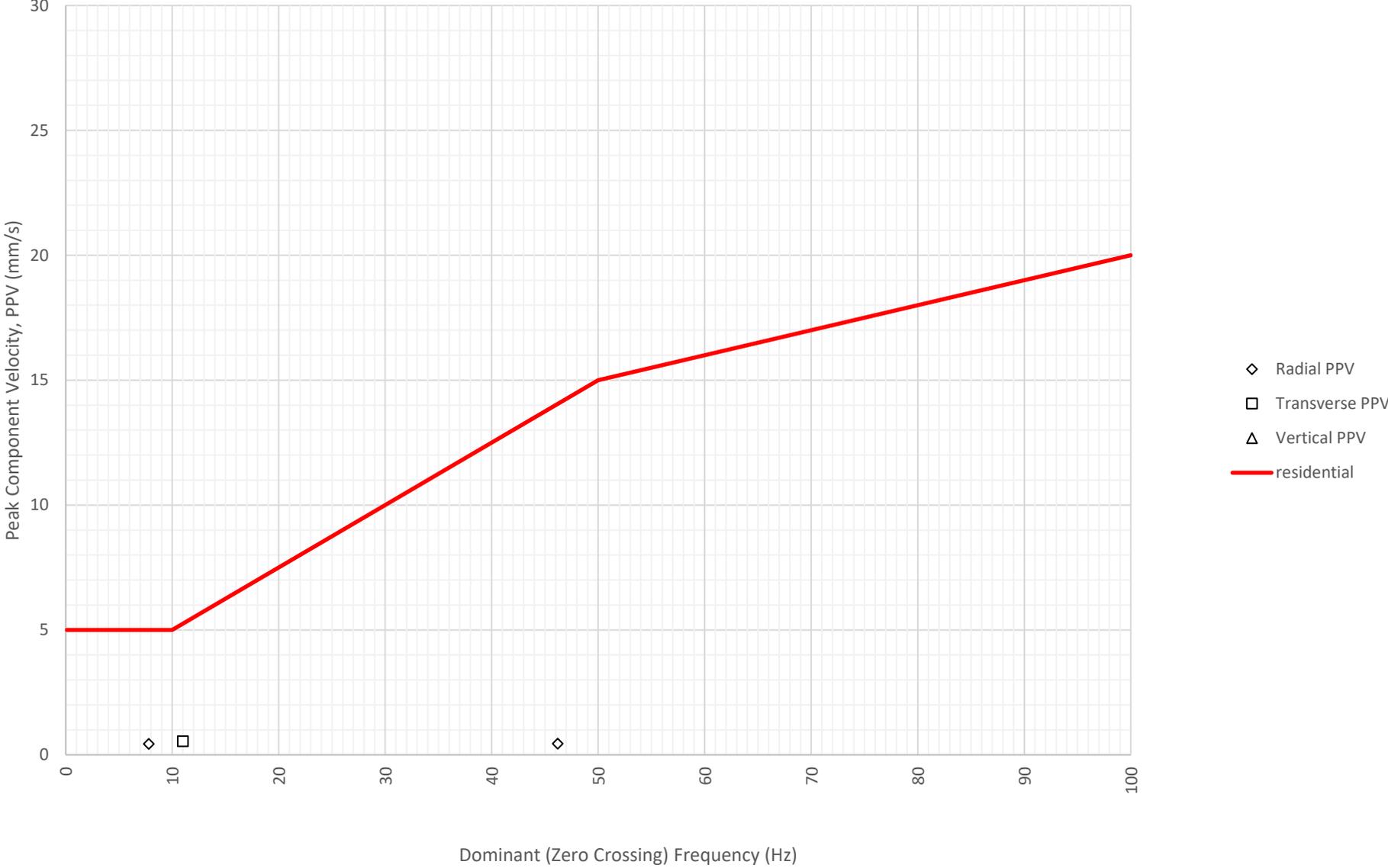
Frequency Content of Vibration Levels at M7715 Residential (east) on 3-10-2022



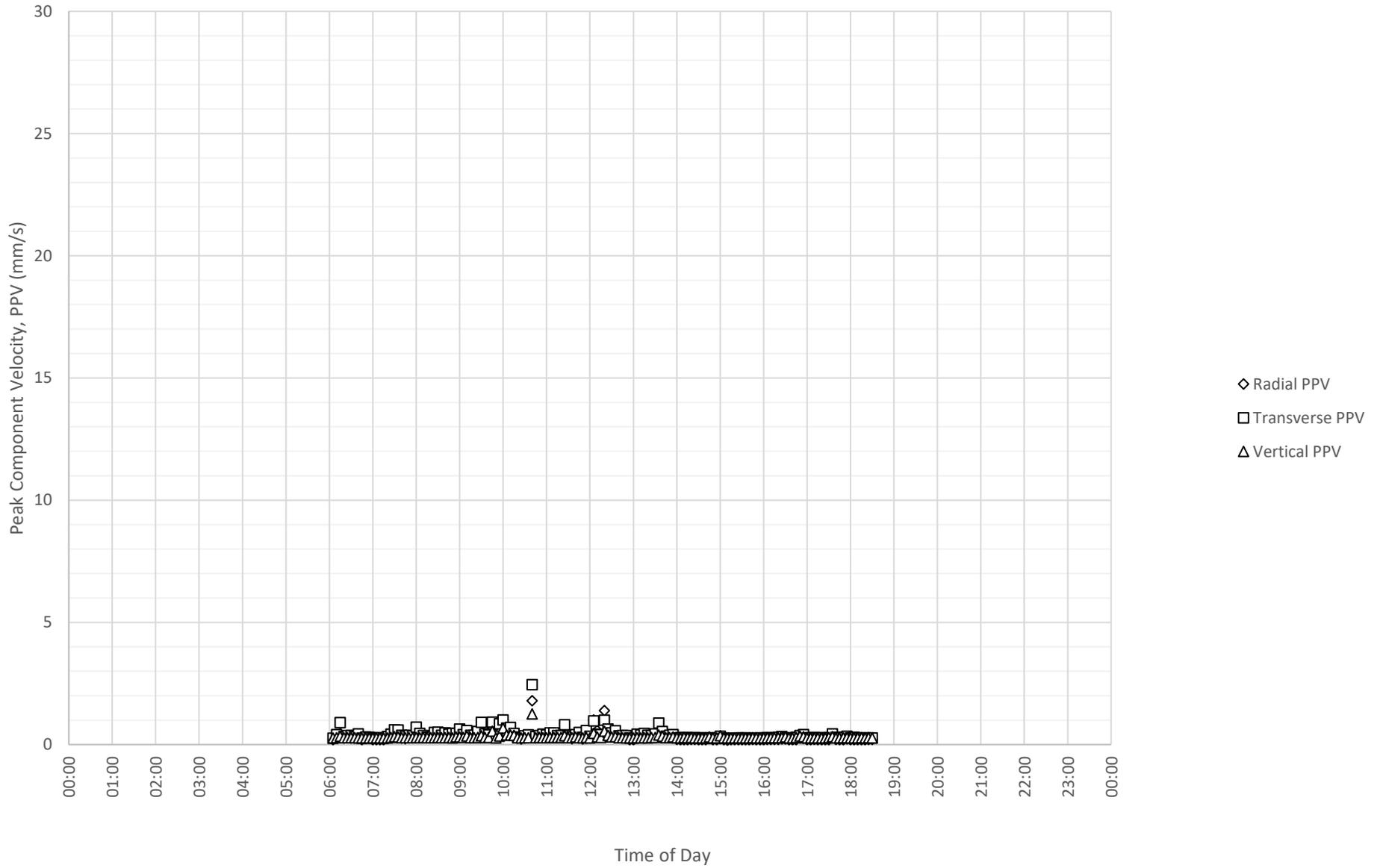
Daily Monitored Vibration Levels at M7715 Residential (east) on 4-10-2022



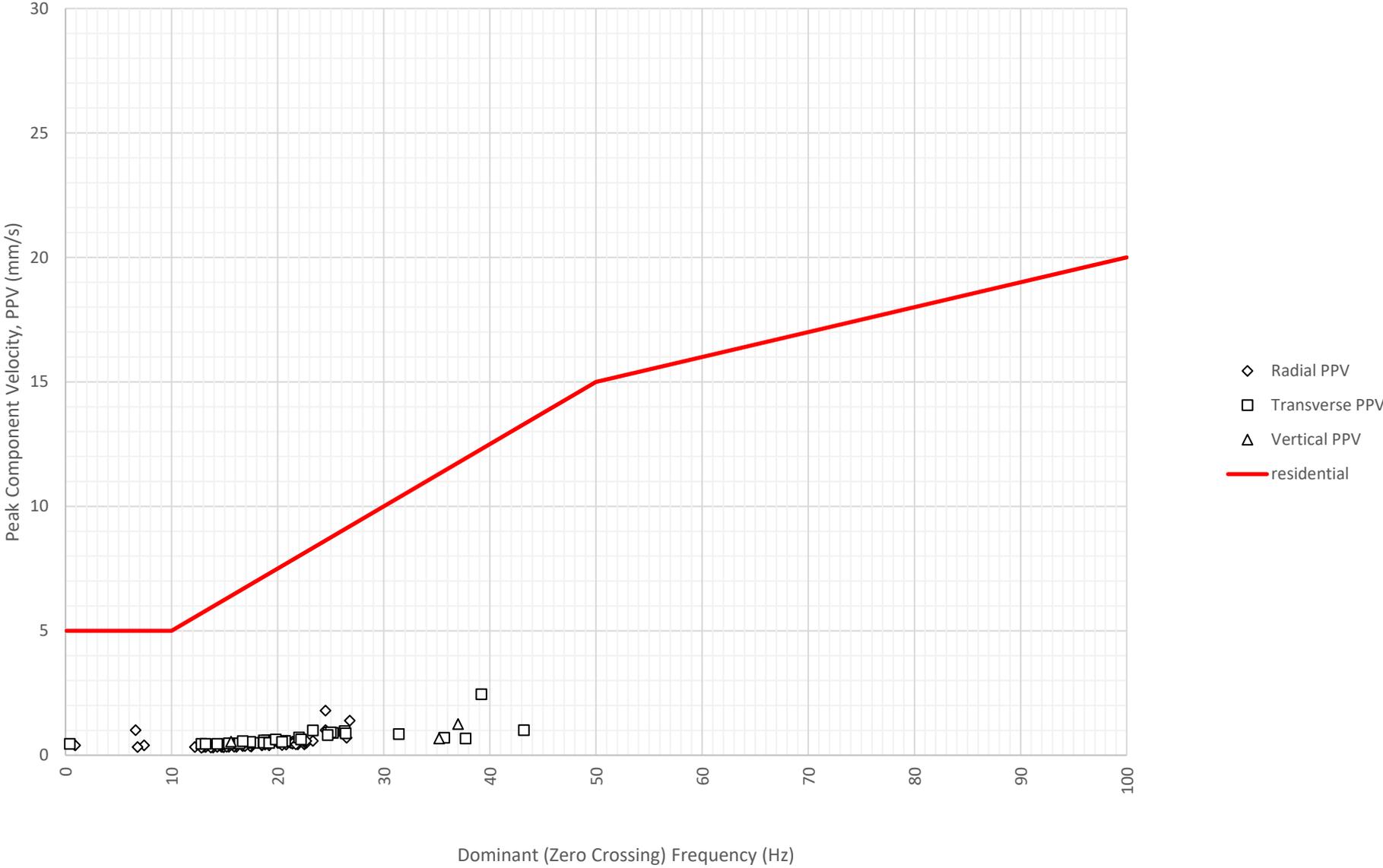
Frequency Content of Vibration Levels at M7715 Residential (east) on 4-10-2022



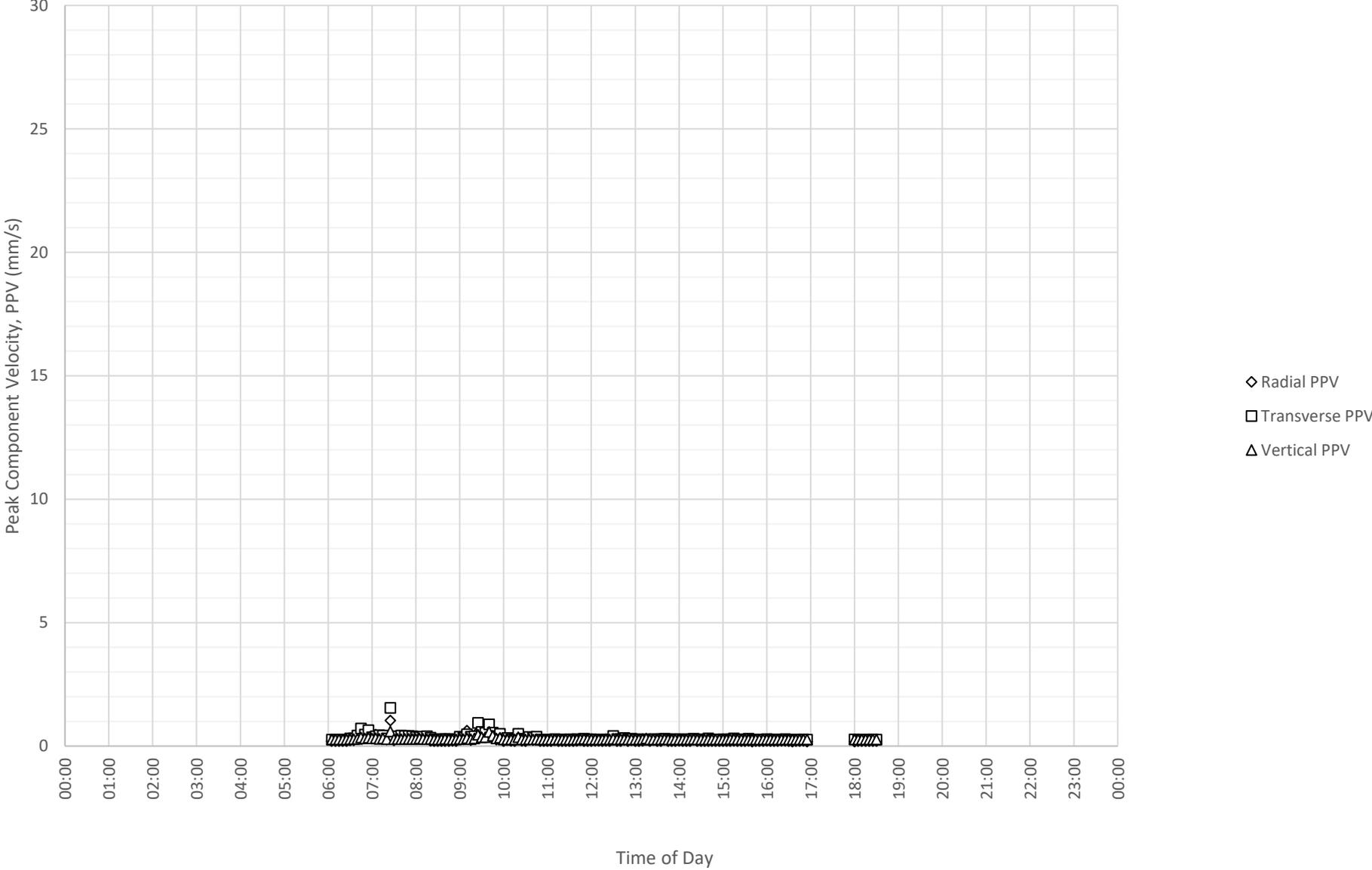
Daily Monitored Vibration Levels at M7715 Residential (east) on 5-10-2022



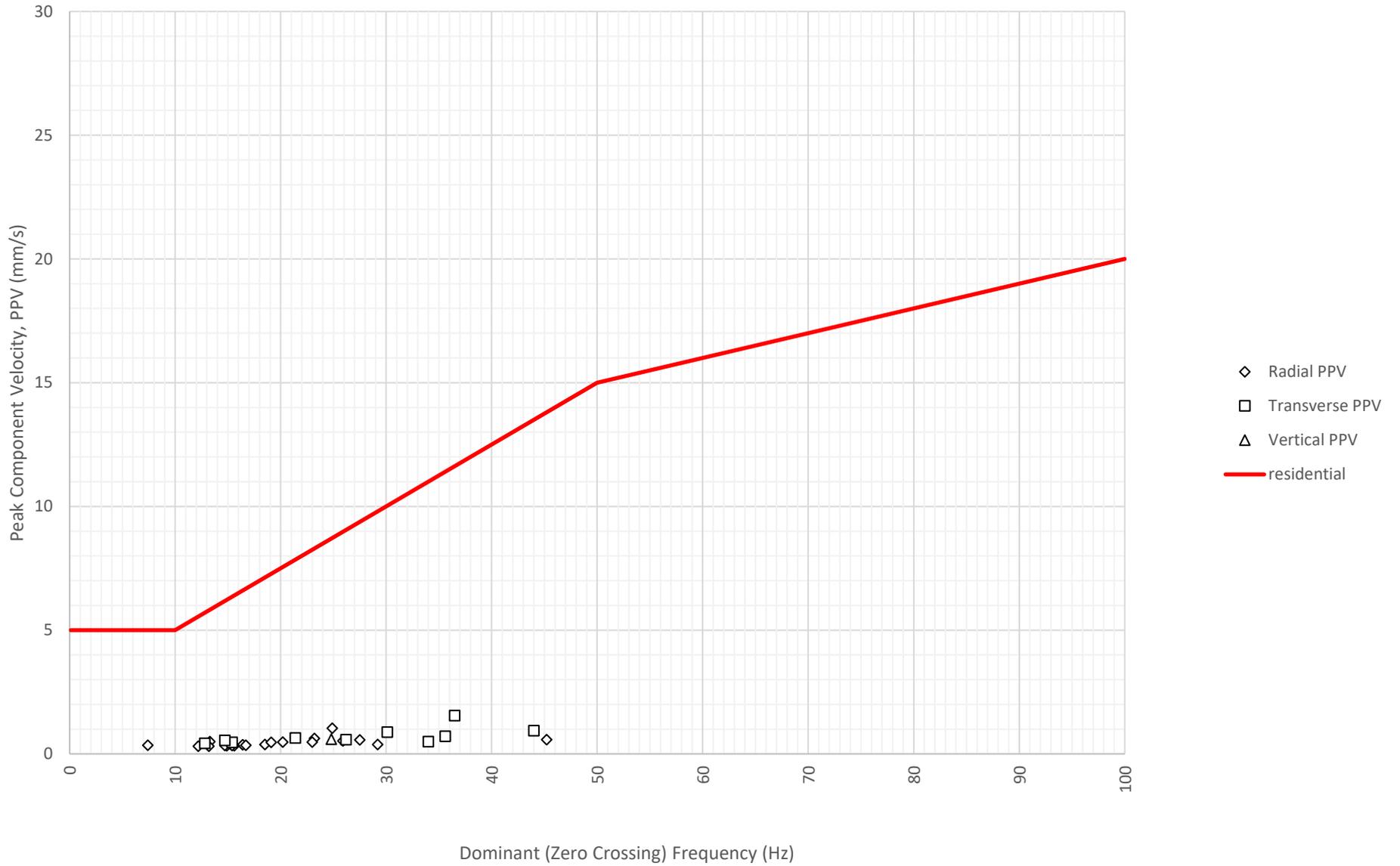
Frequency Content of Vibration Levels at M7715 Residential (east) on 5-10-2022



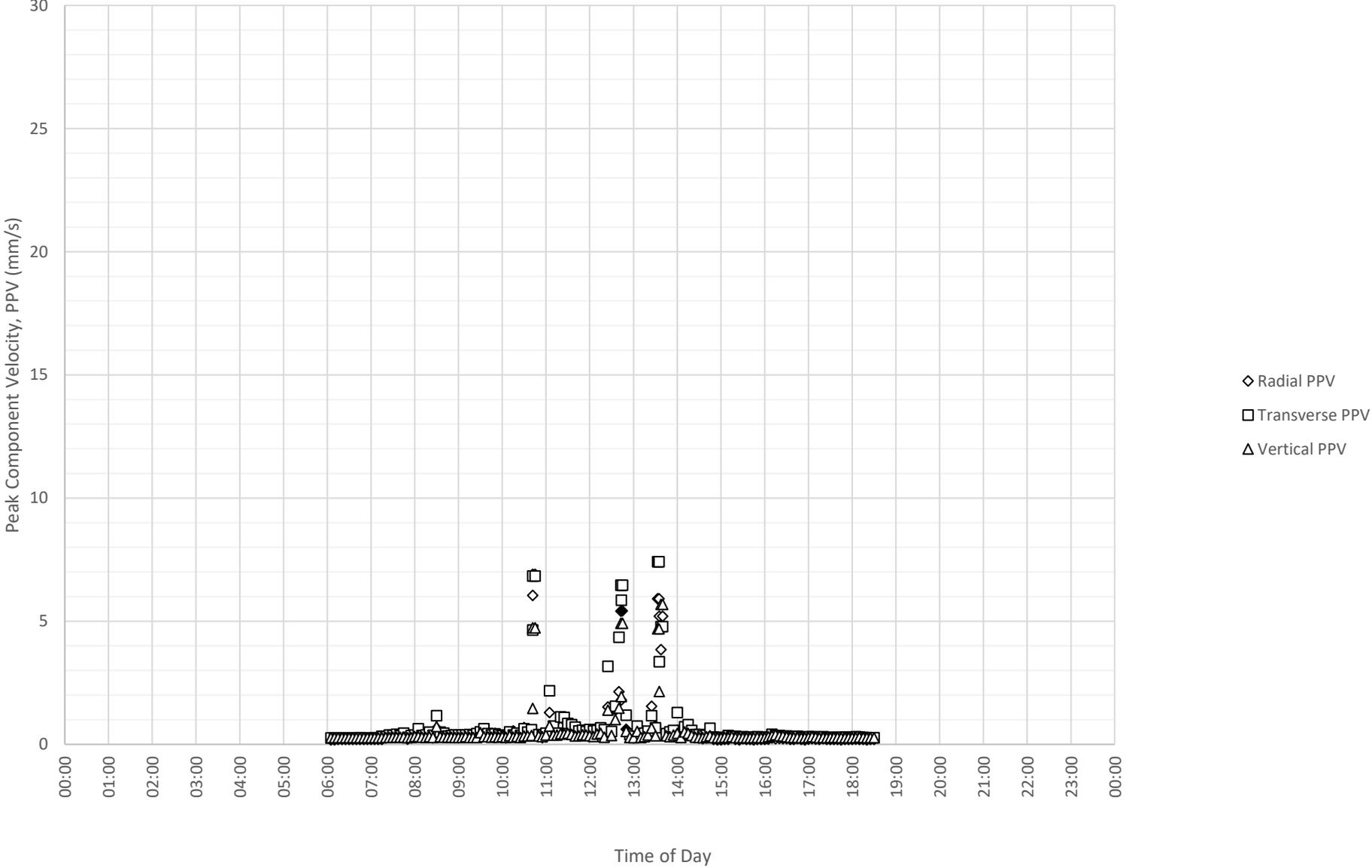
Daily Monitored Vibration Levels at M7715 Residential on 6-10-2022



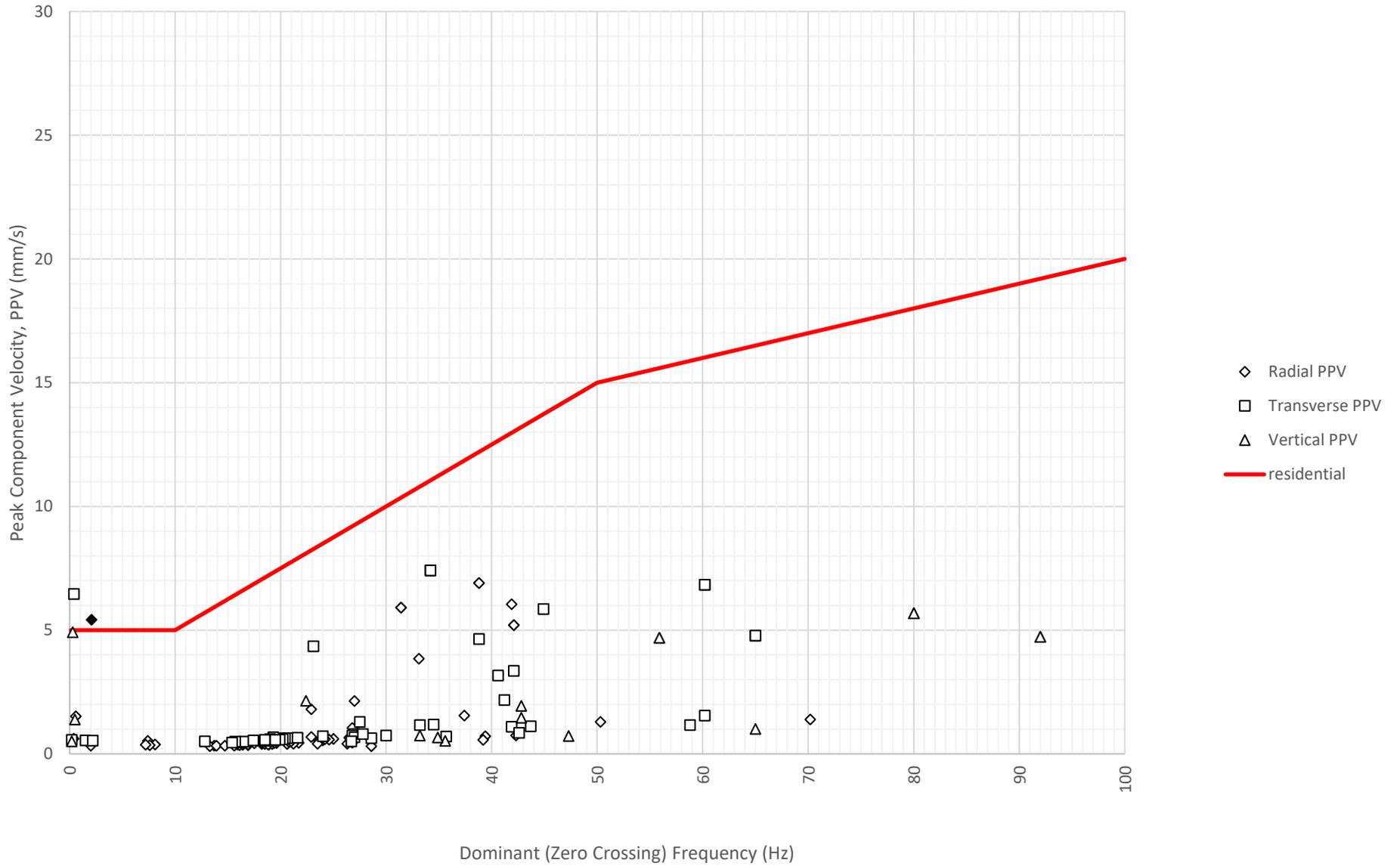
Frequency Content of Vibration Levels at M7715 Residential on 6-10-2022



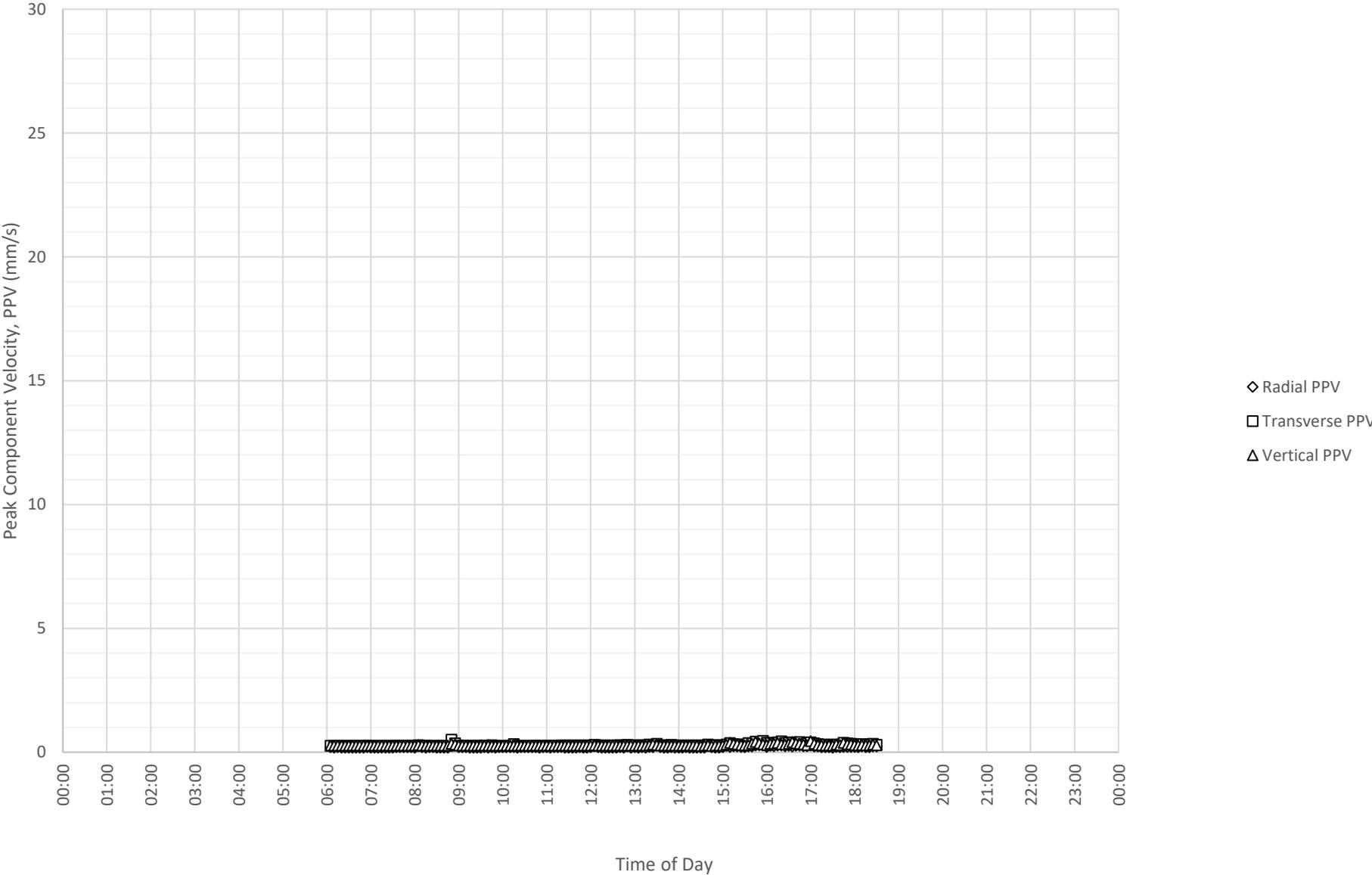
Daily Monitored Vibration Levels at M7715 Residential on 7-10-2022



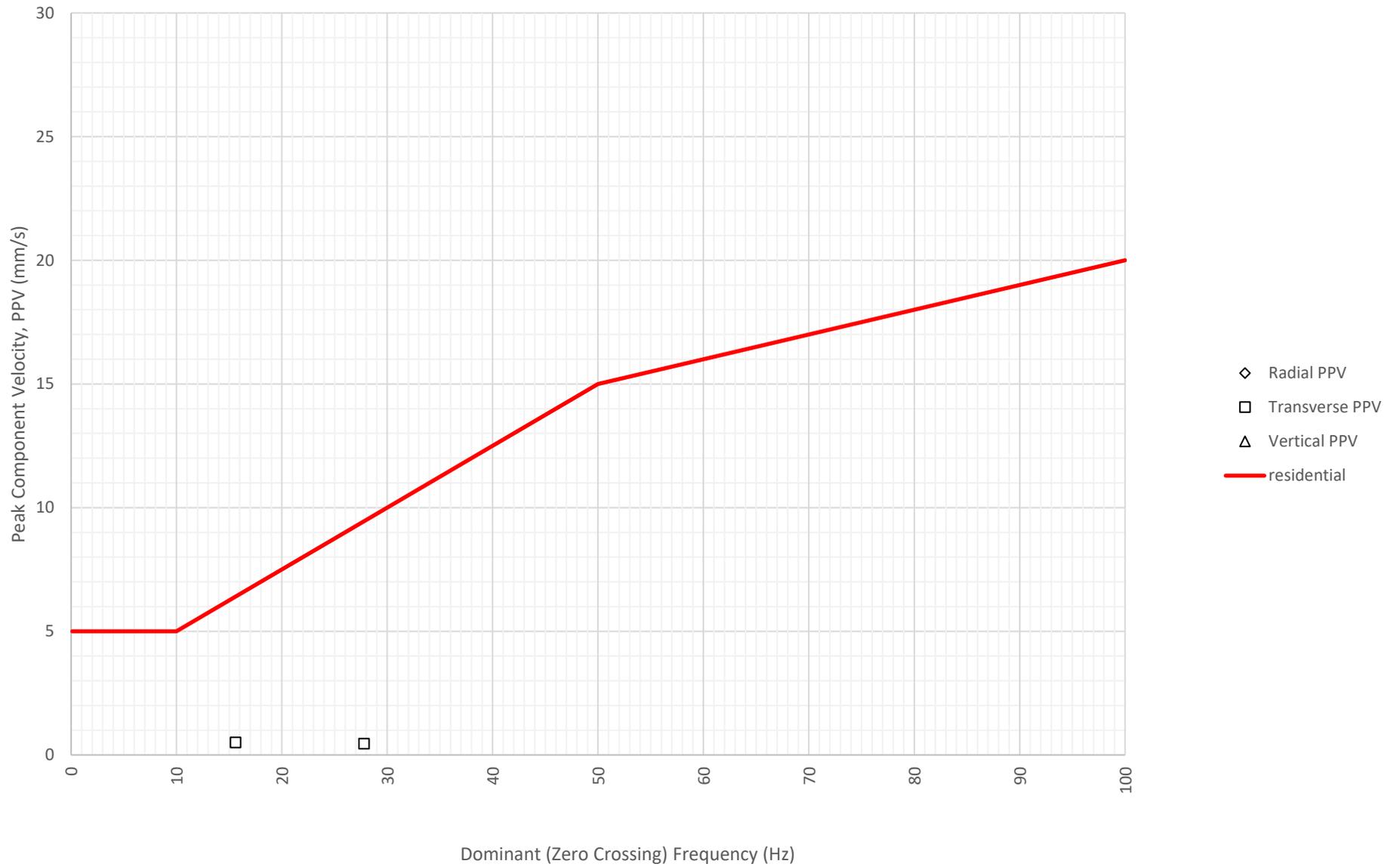
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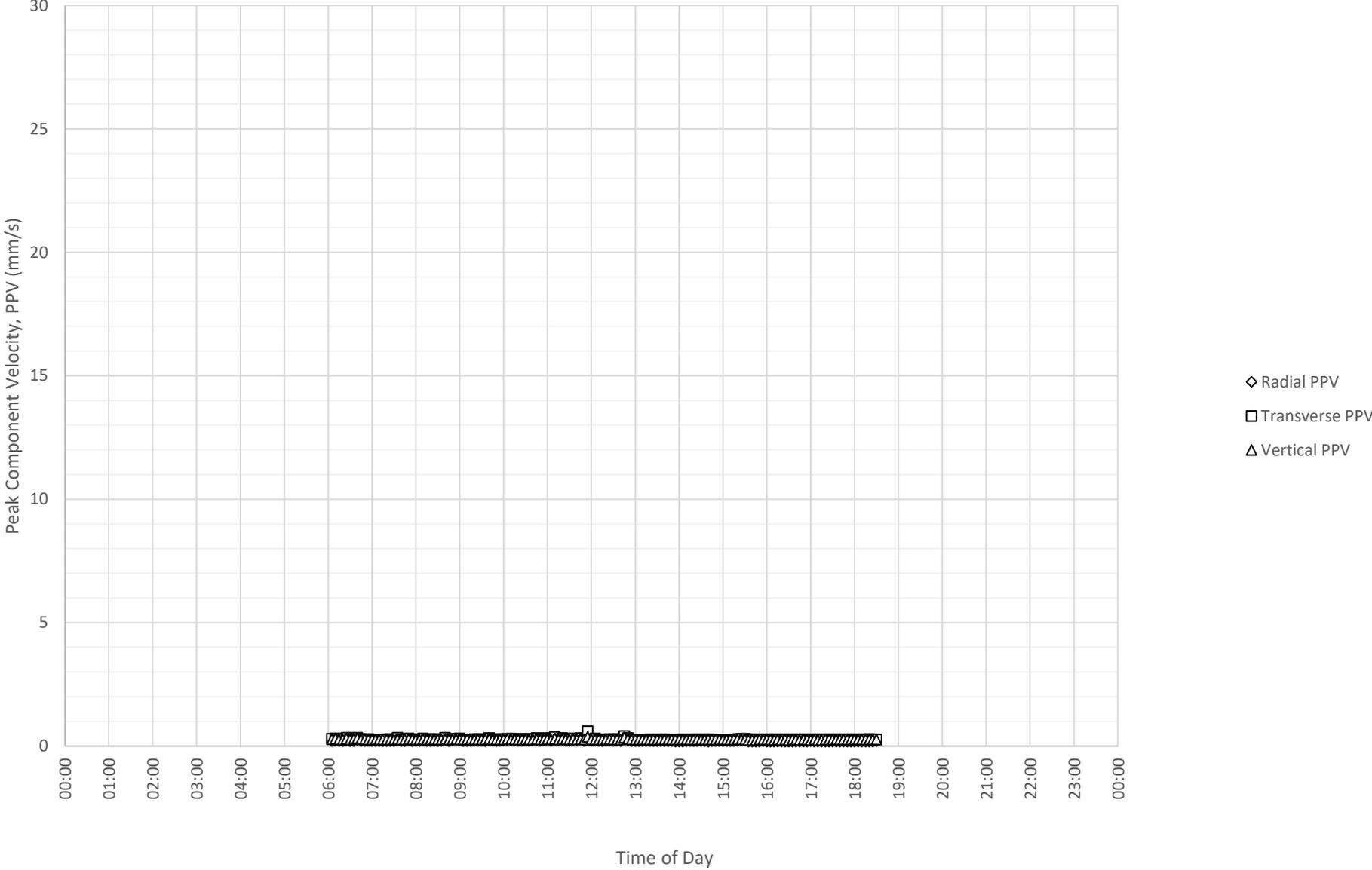
Daily Monitored Vibration Levels at M7715 Residential on 8-10-2022



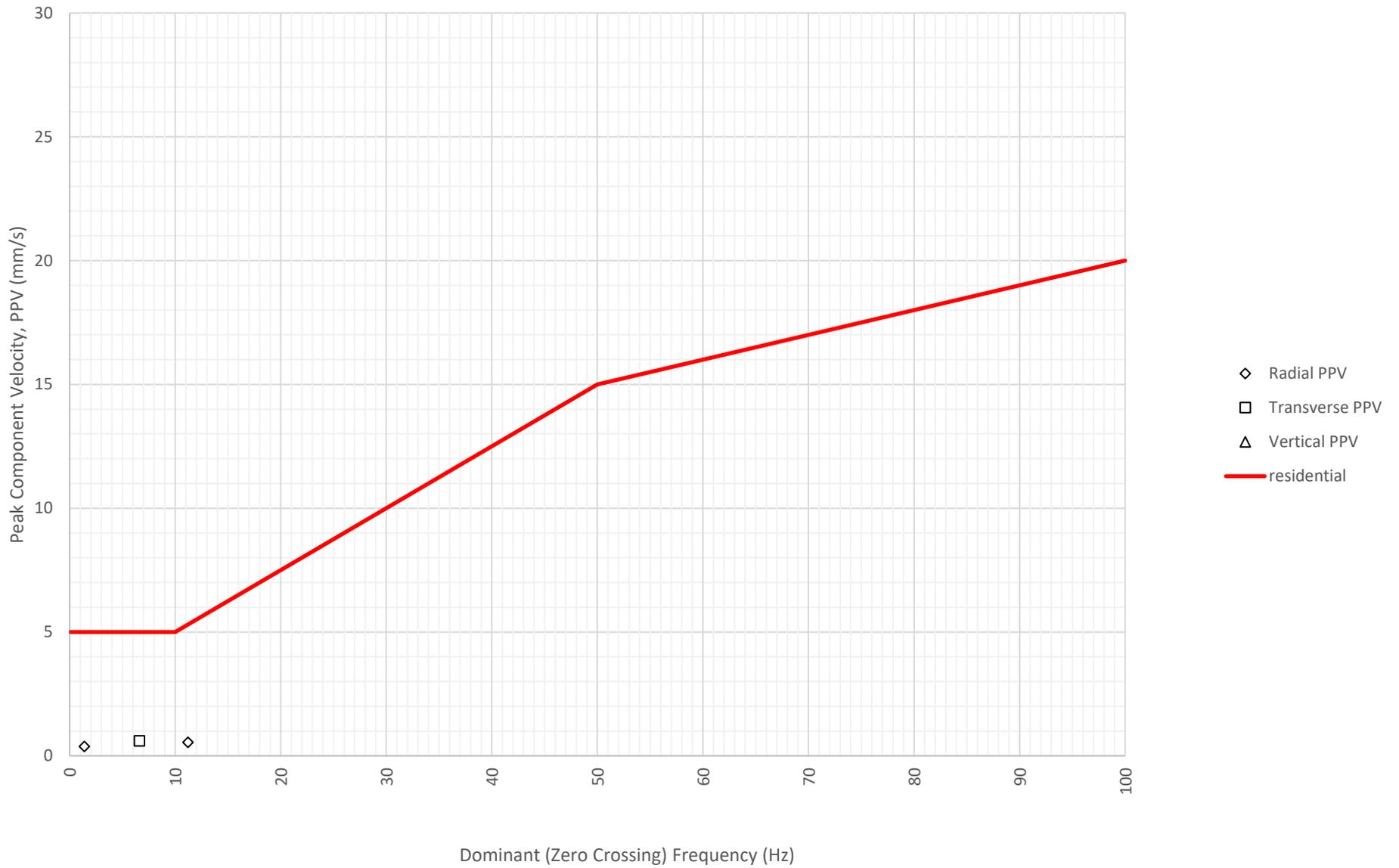
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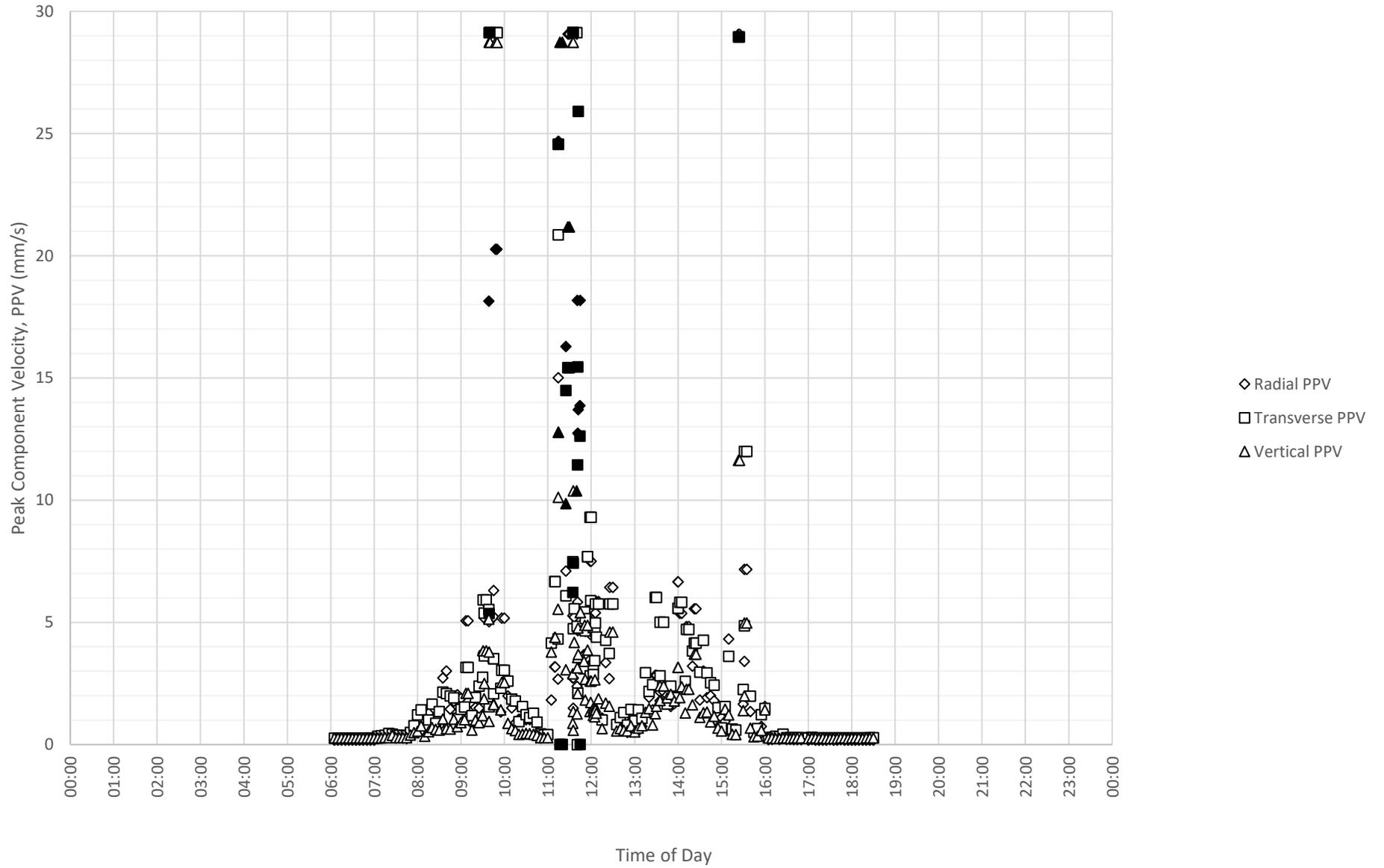
Daily Monitored Vibration Levels at M7715 Residential on 9-10-2022



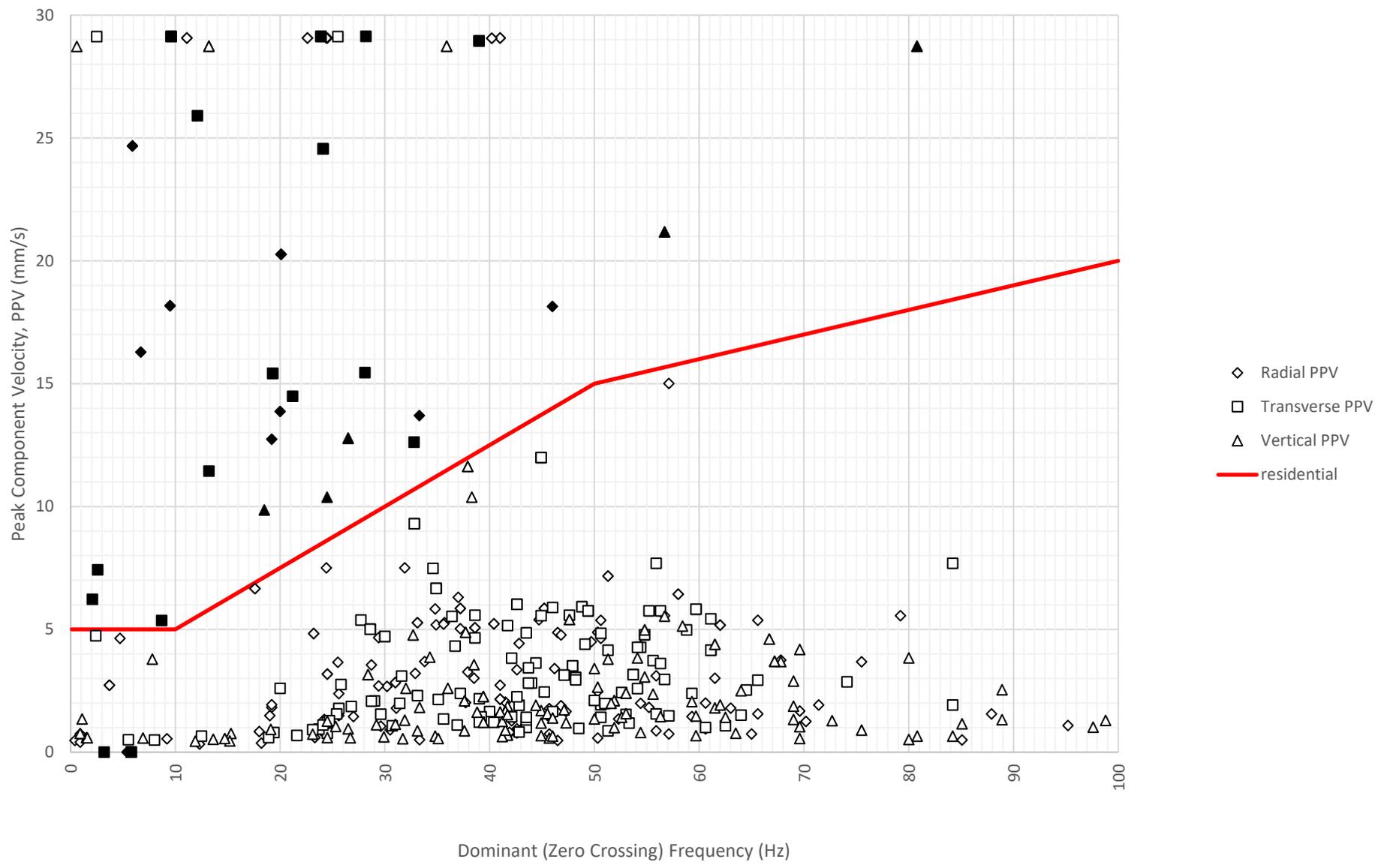
Frequency Content of Vibration Levels at M7715 Residential on 9-10-2022



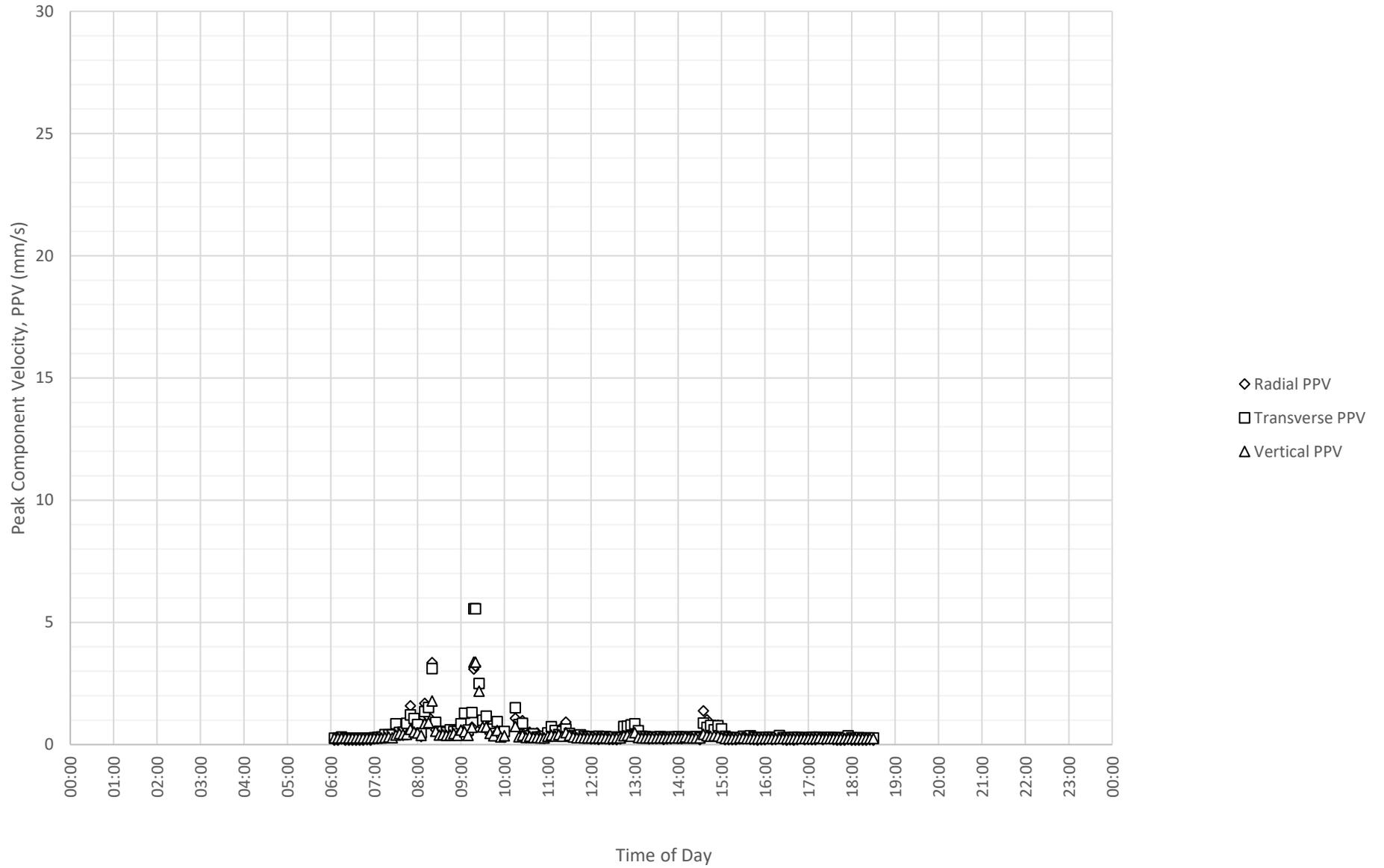
Daily Monitored Vibration Levels at M7715 Residential on 10-10-2022



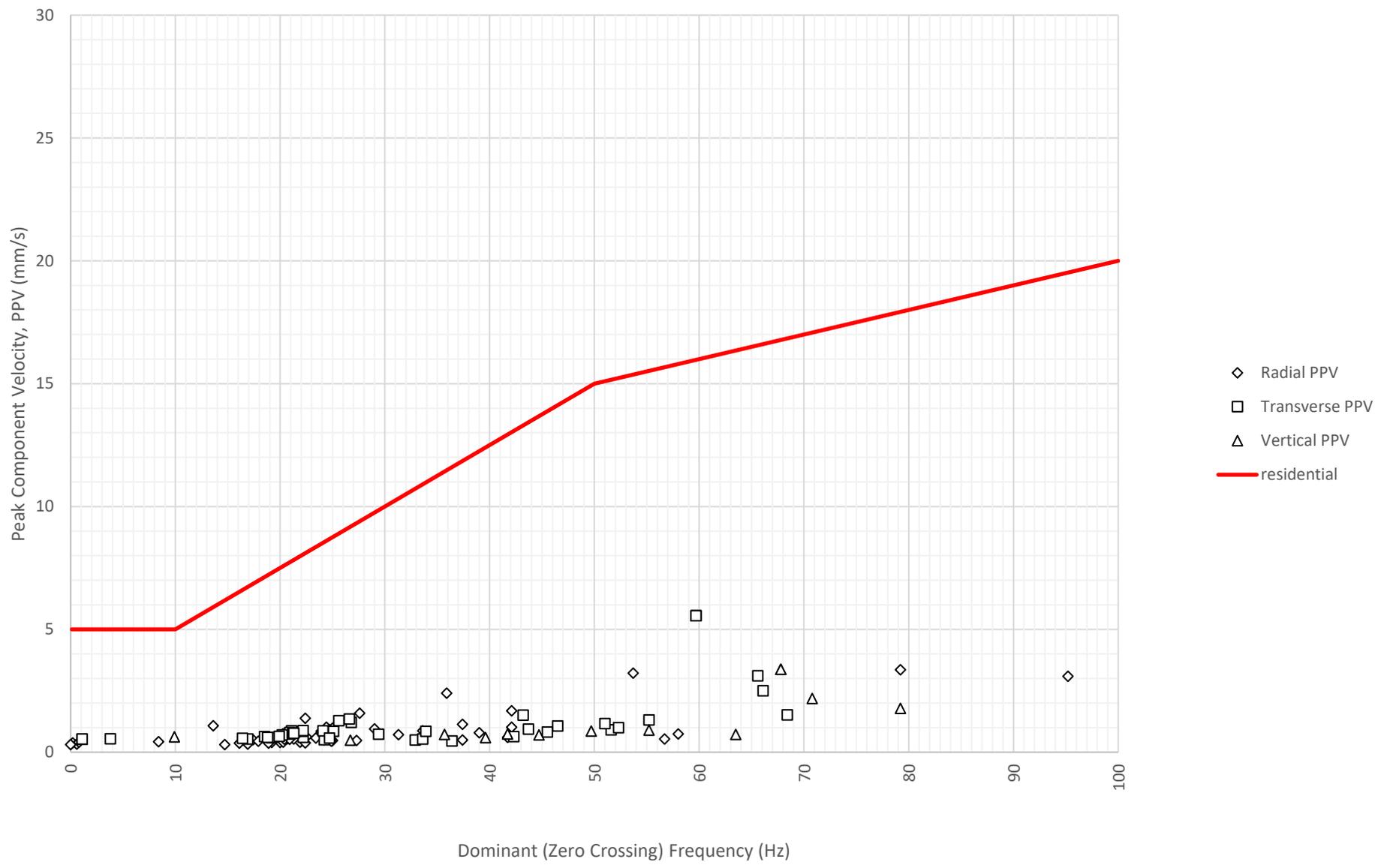
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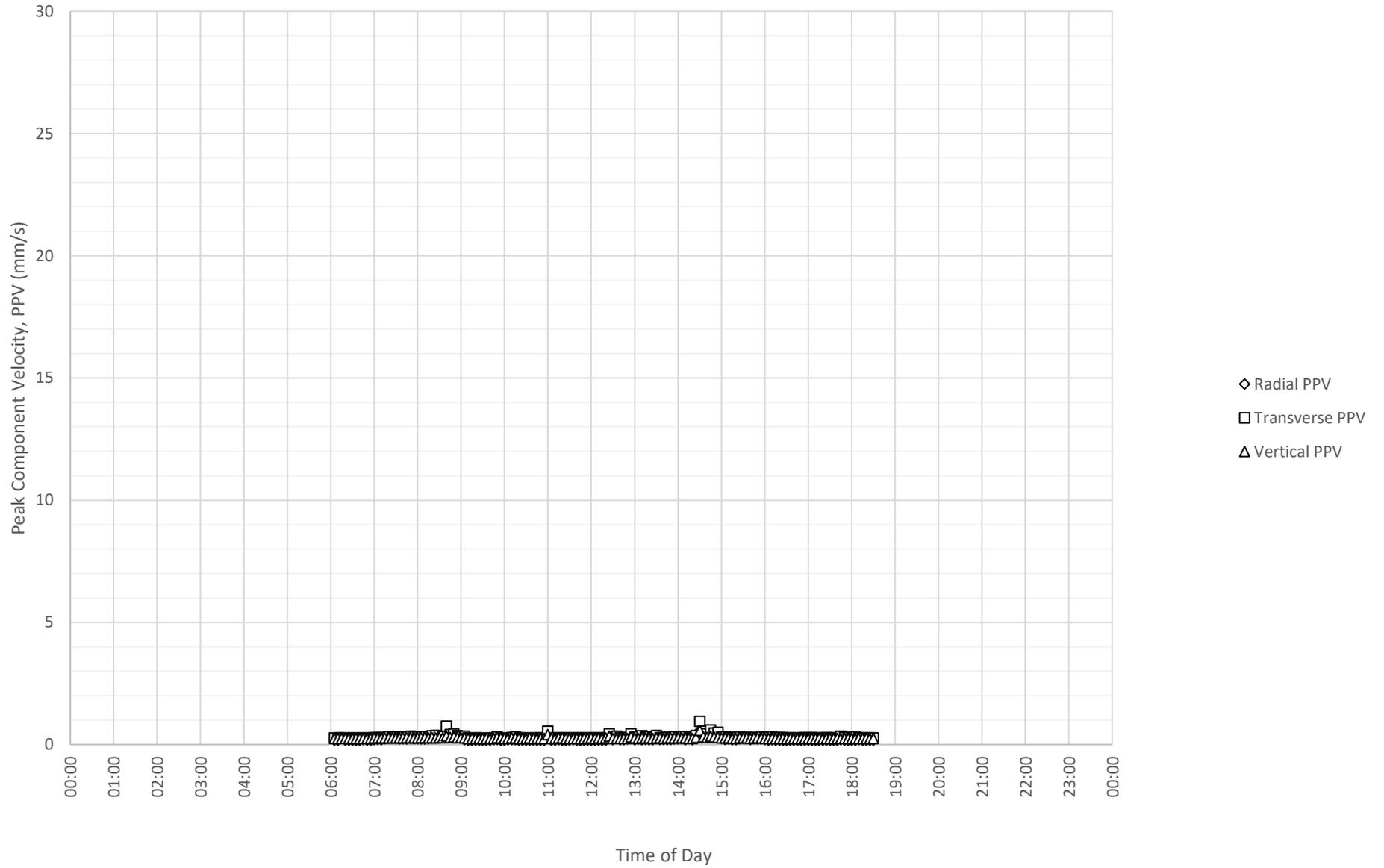
Daily Monitored Vibration Levels at M7715 Residential on 11-10-2022



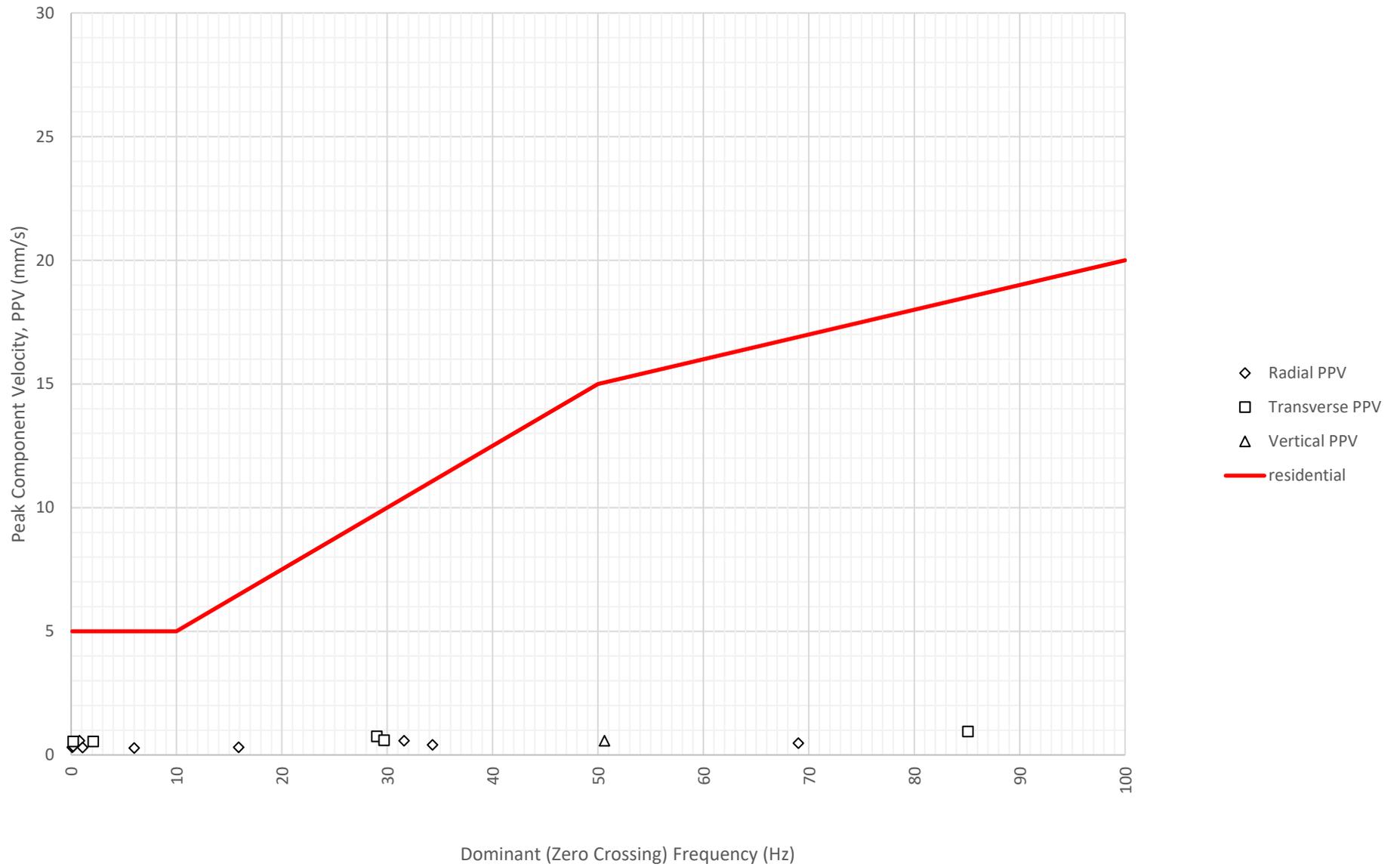
Frequency Content of Vibration Levels at M7715 Residential on 11-10-2022



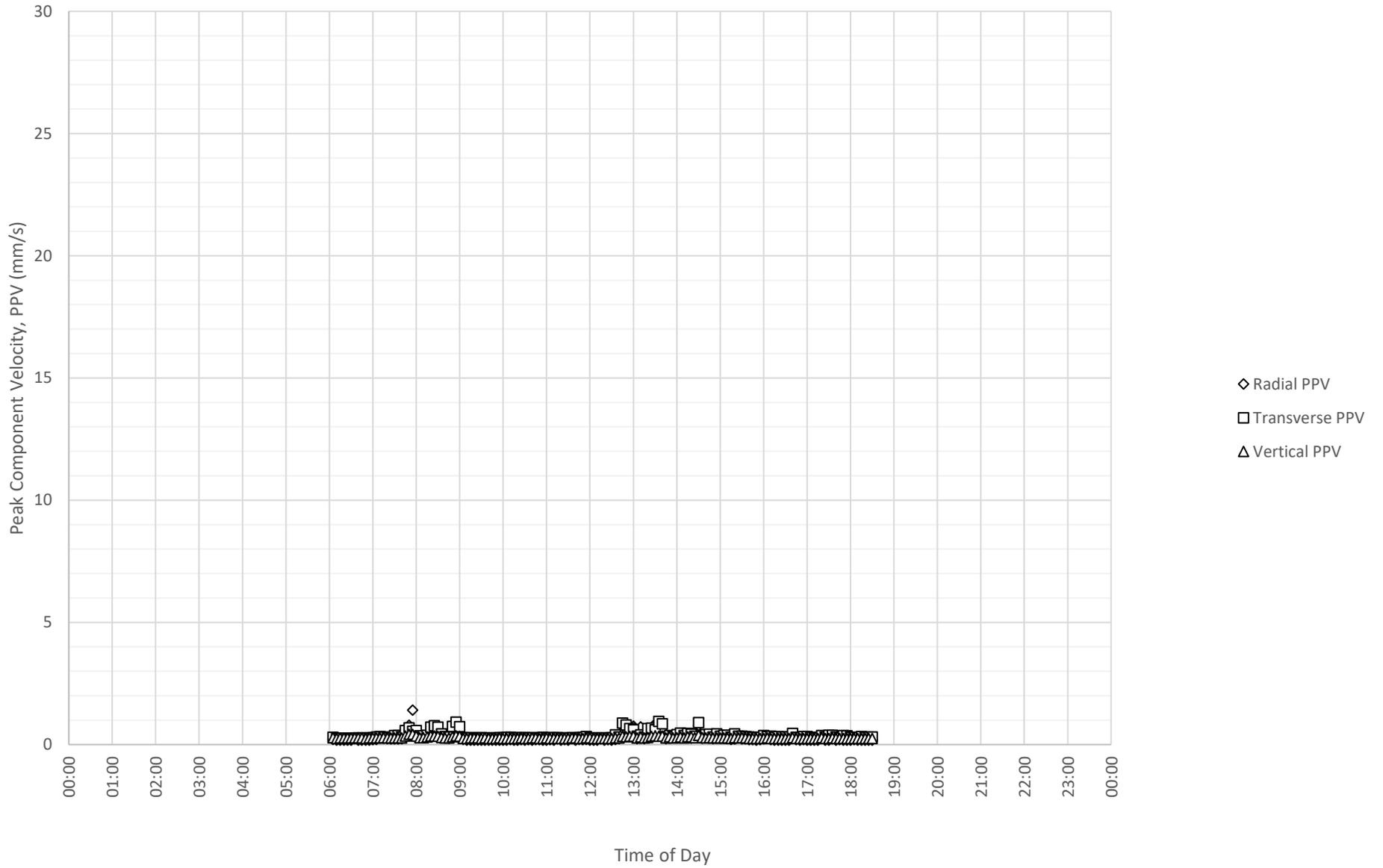
Daily Monitored Vibration Levels at M7715 Residential on 12-10-2022



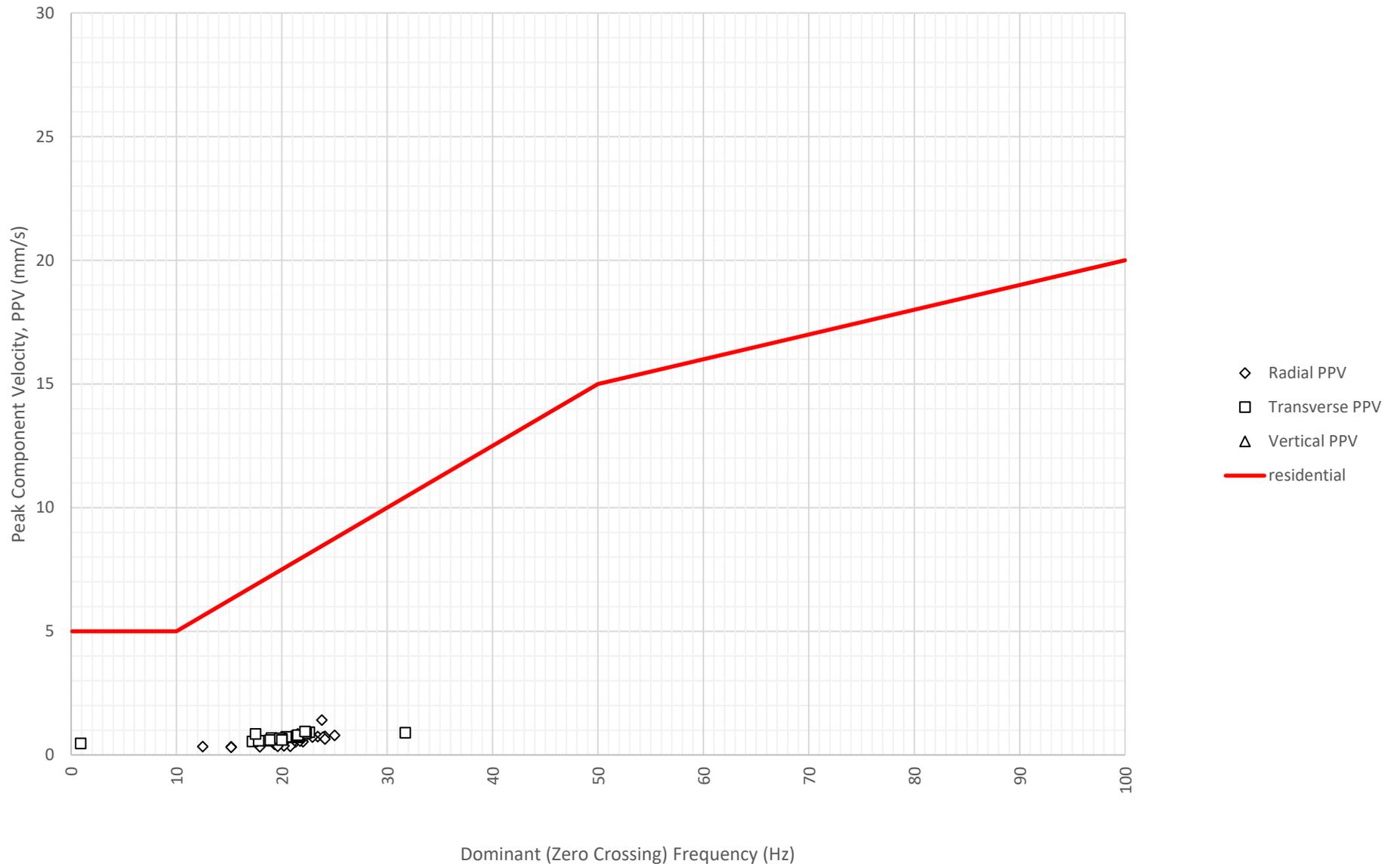
Frequency Content of Vibration Levels at M7715 Residential on 12-10-2022



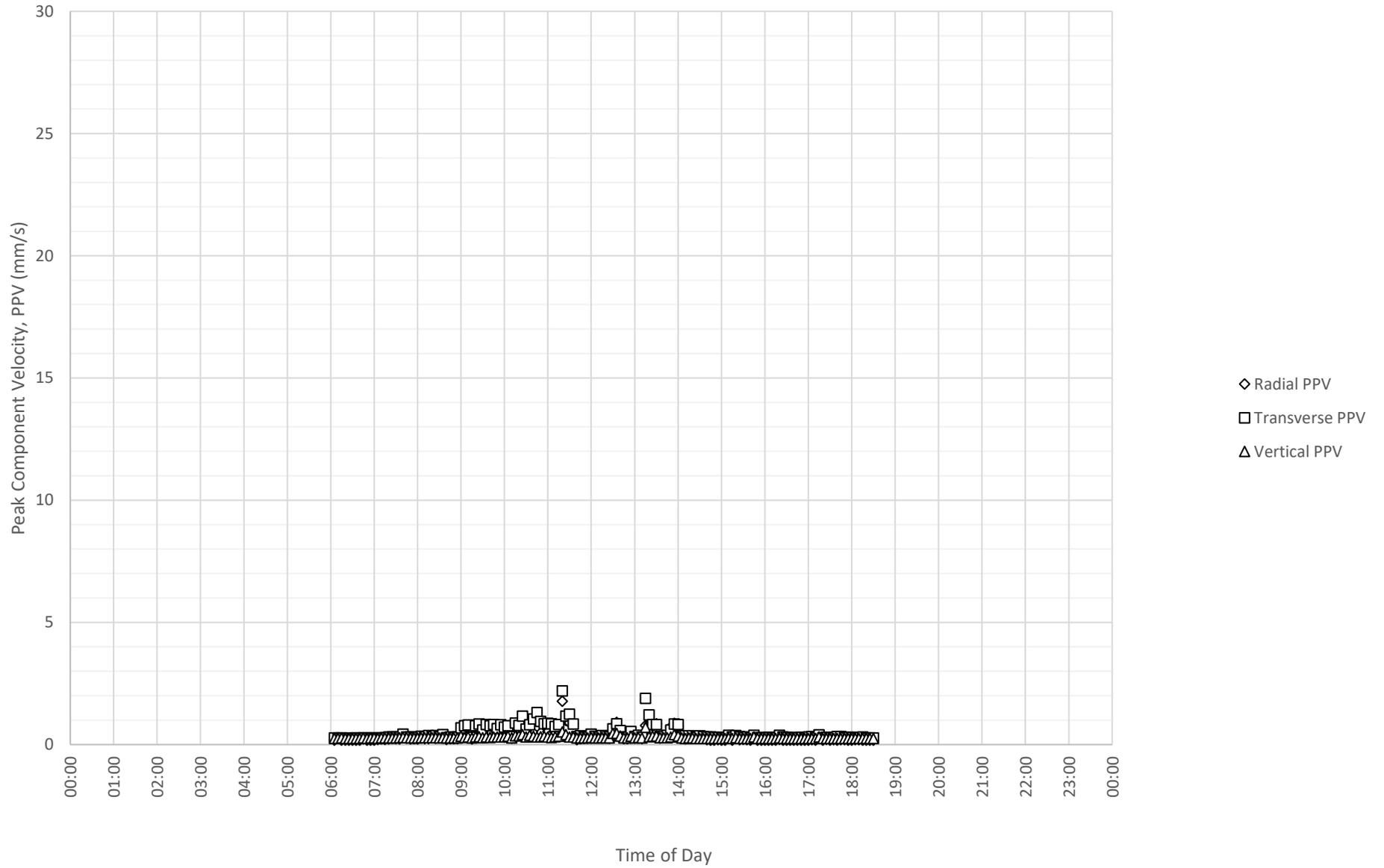
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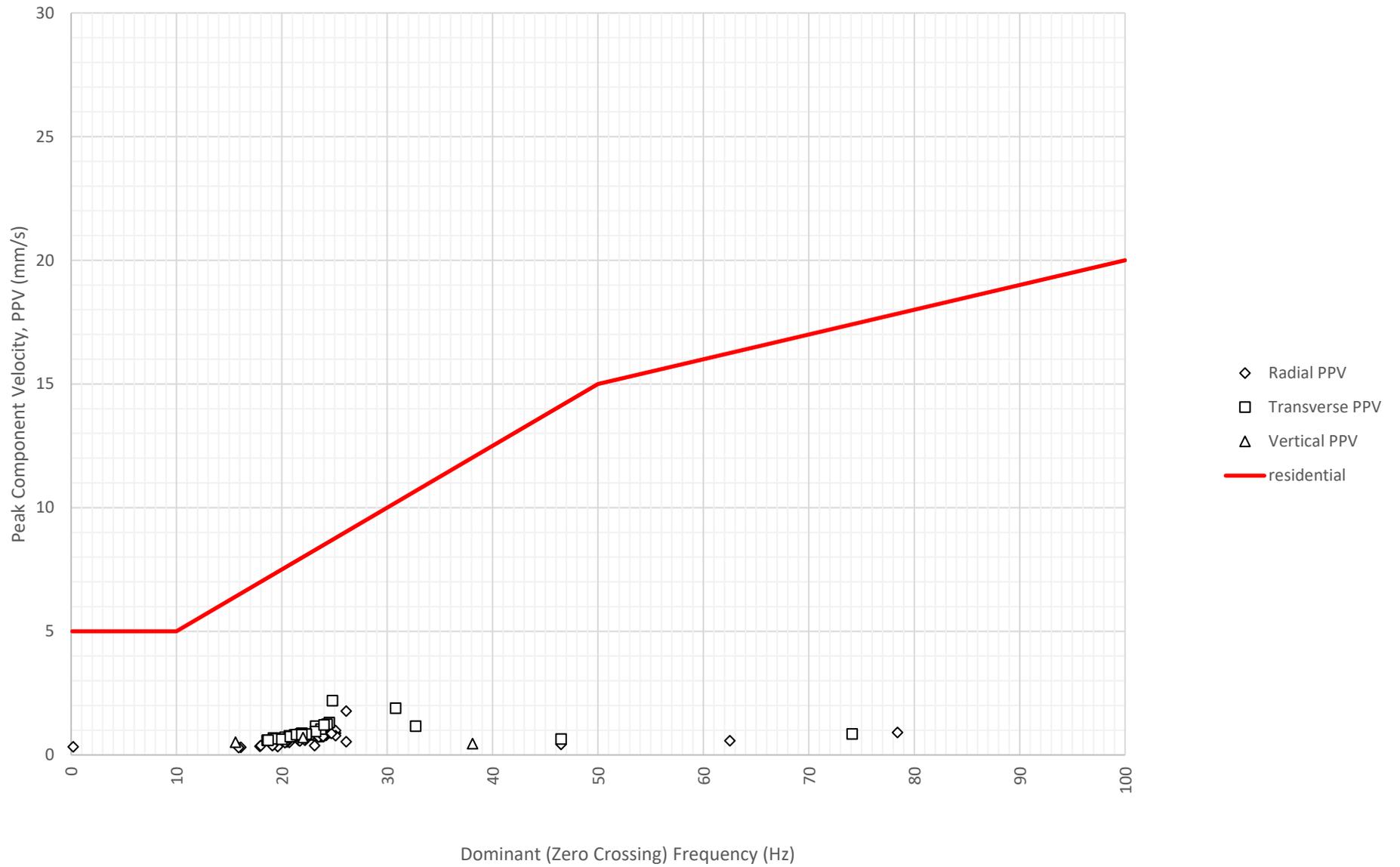
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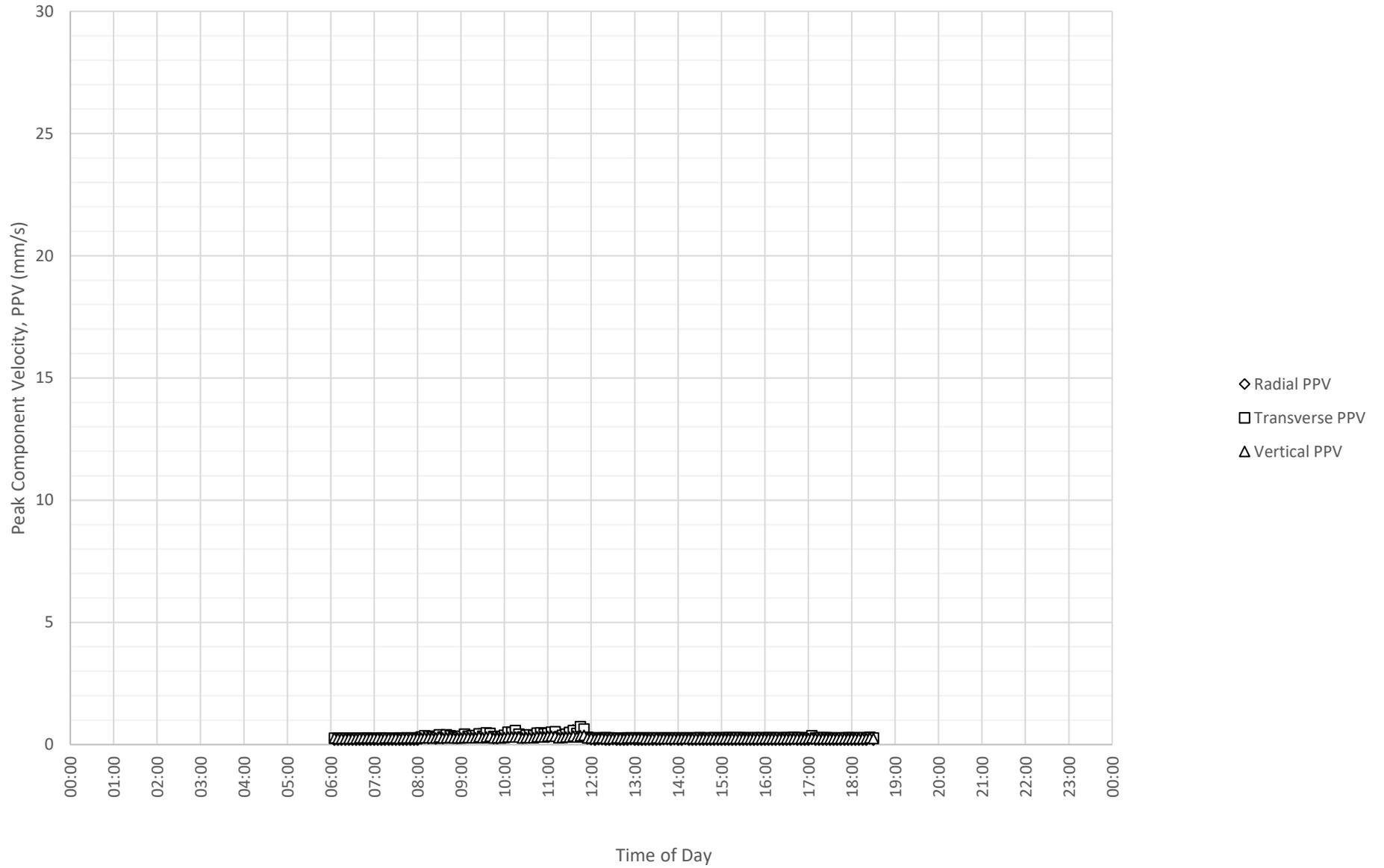
Daily Monitored Vibration Levels at M7715 Residential on 14-10-2022



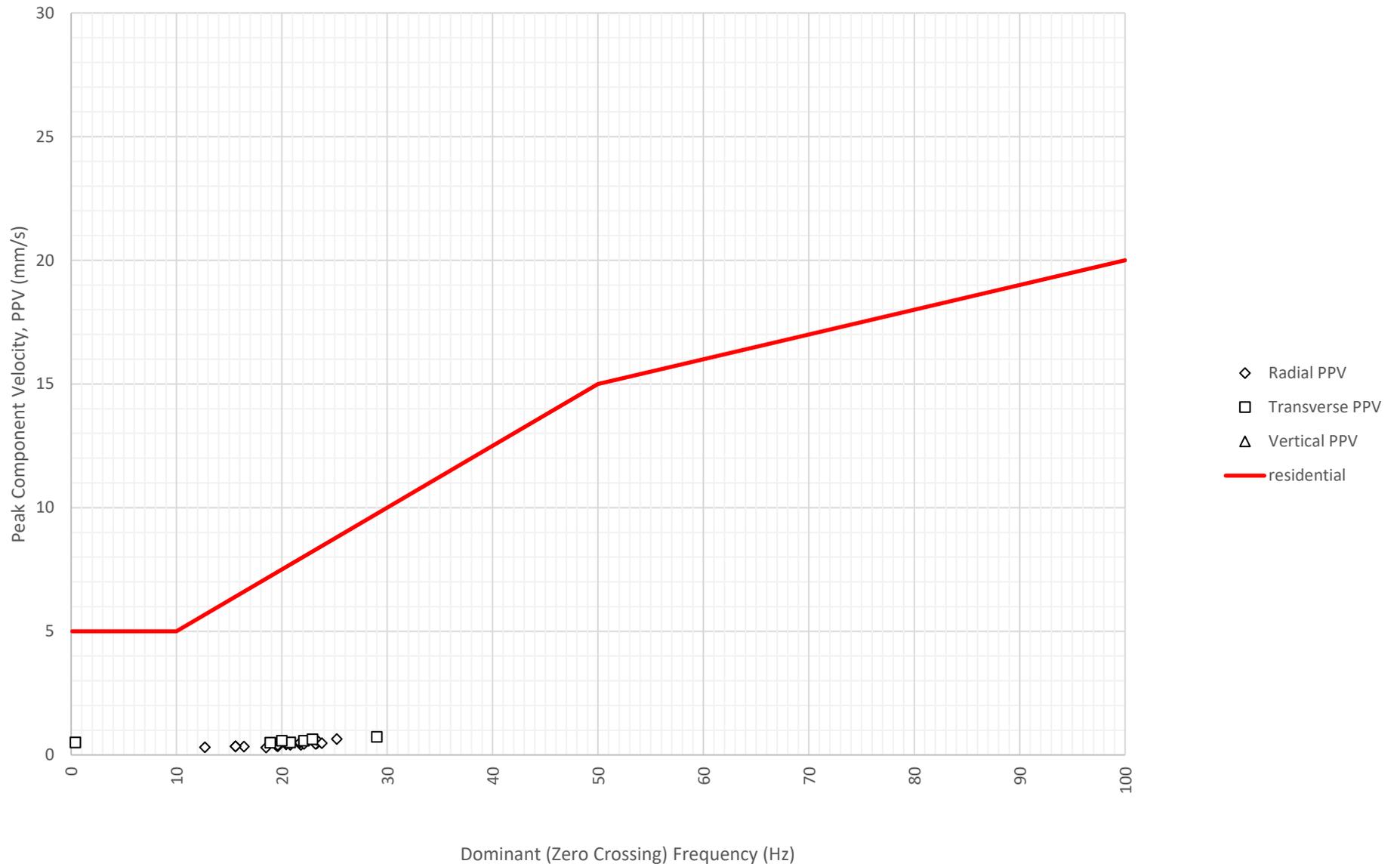
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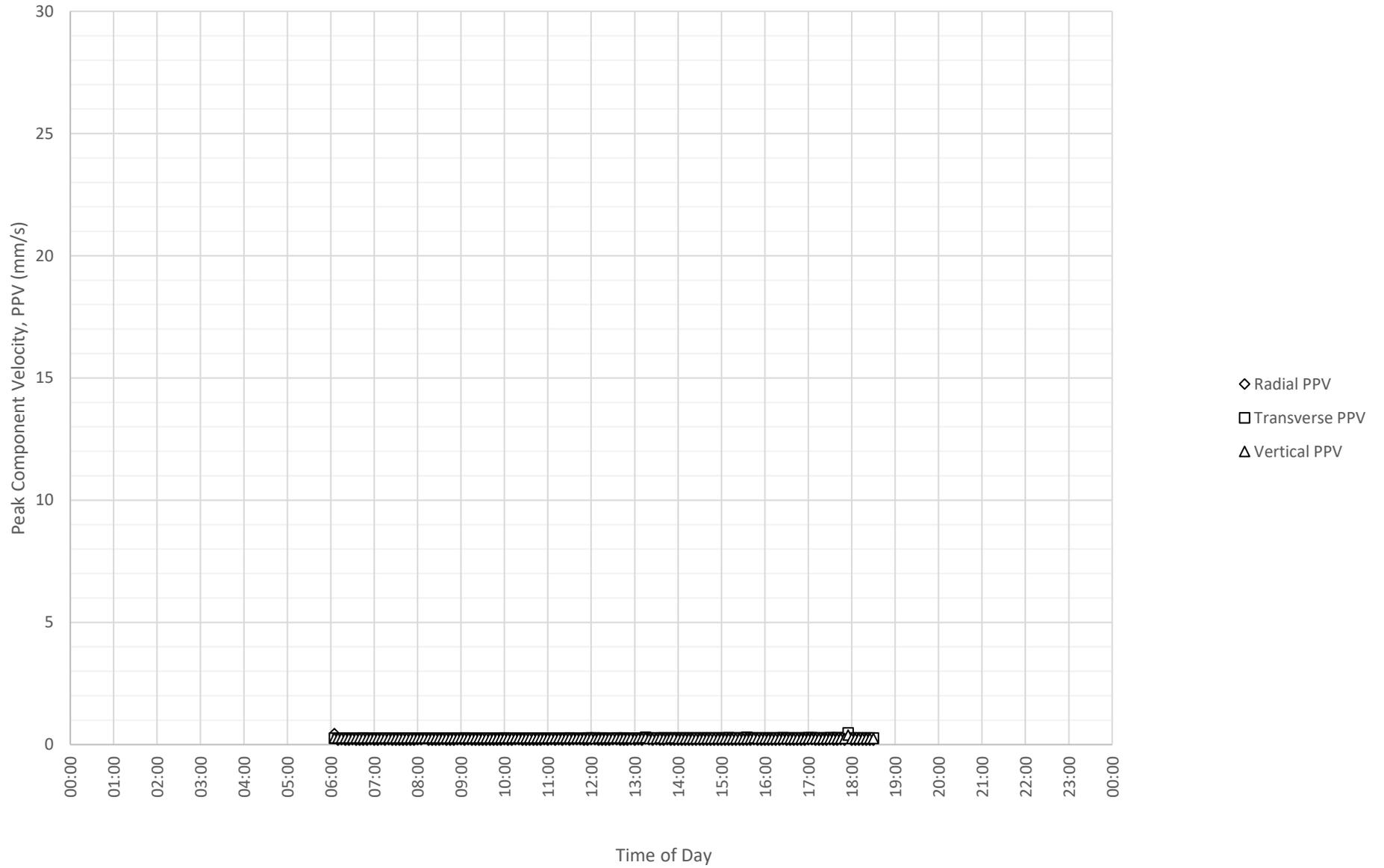
Daily Monitored Vibration Levels at M7715 Residential on 15-10-2022



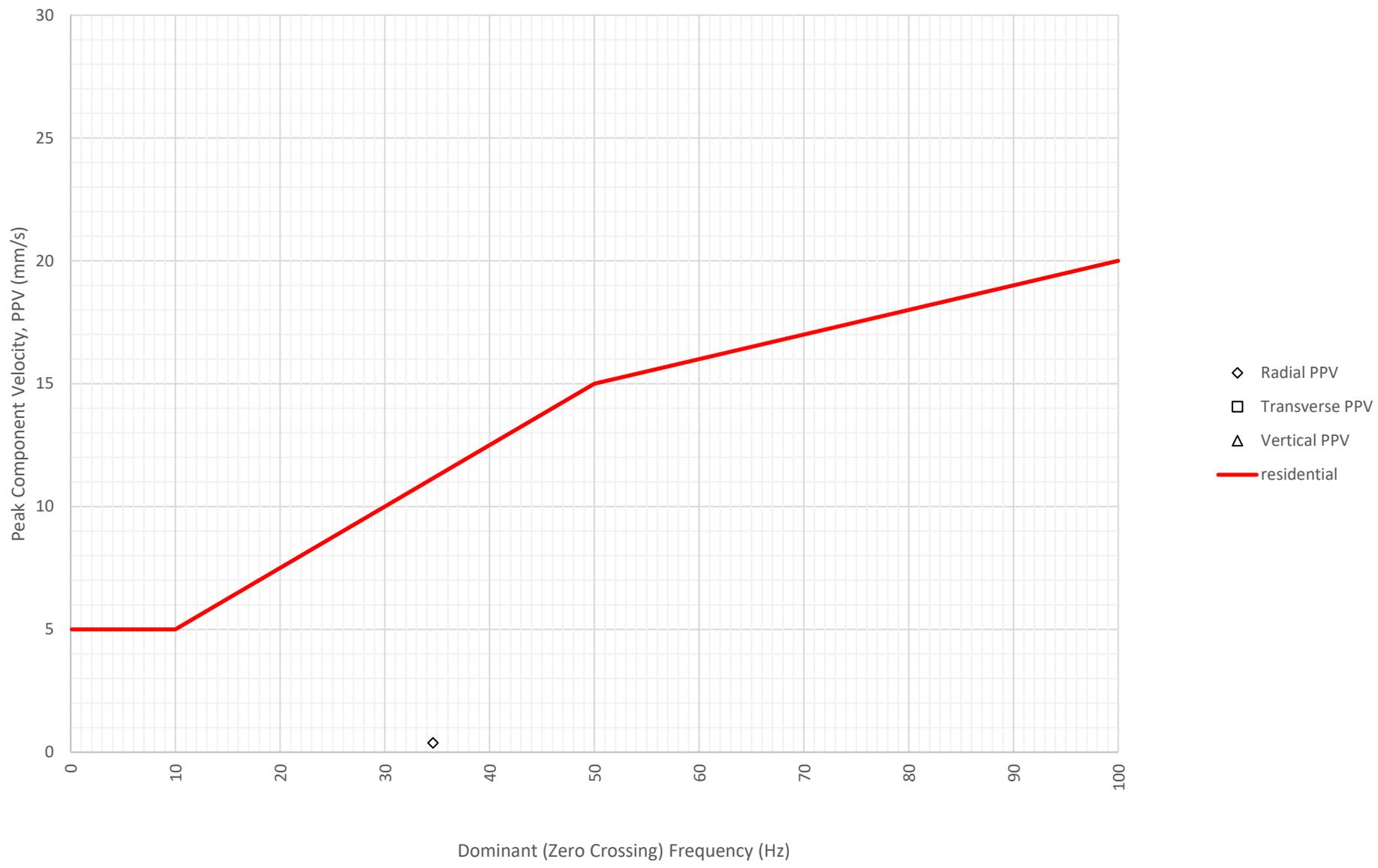
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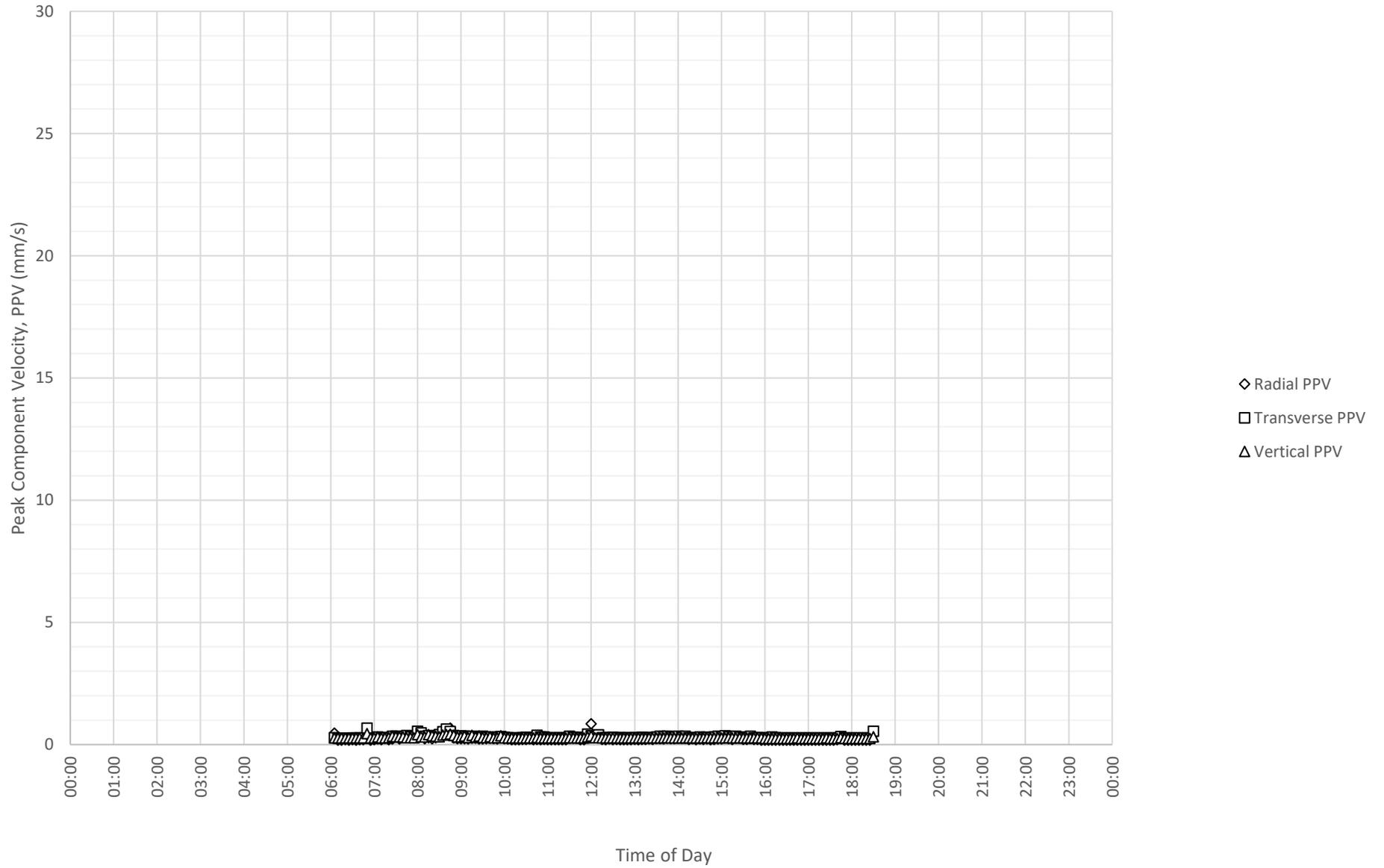
Daily Monitored Vibration Levels at M7715 Residential on 16-10-2022



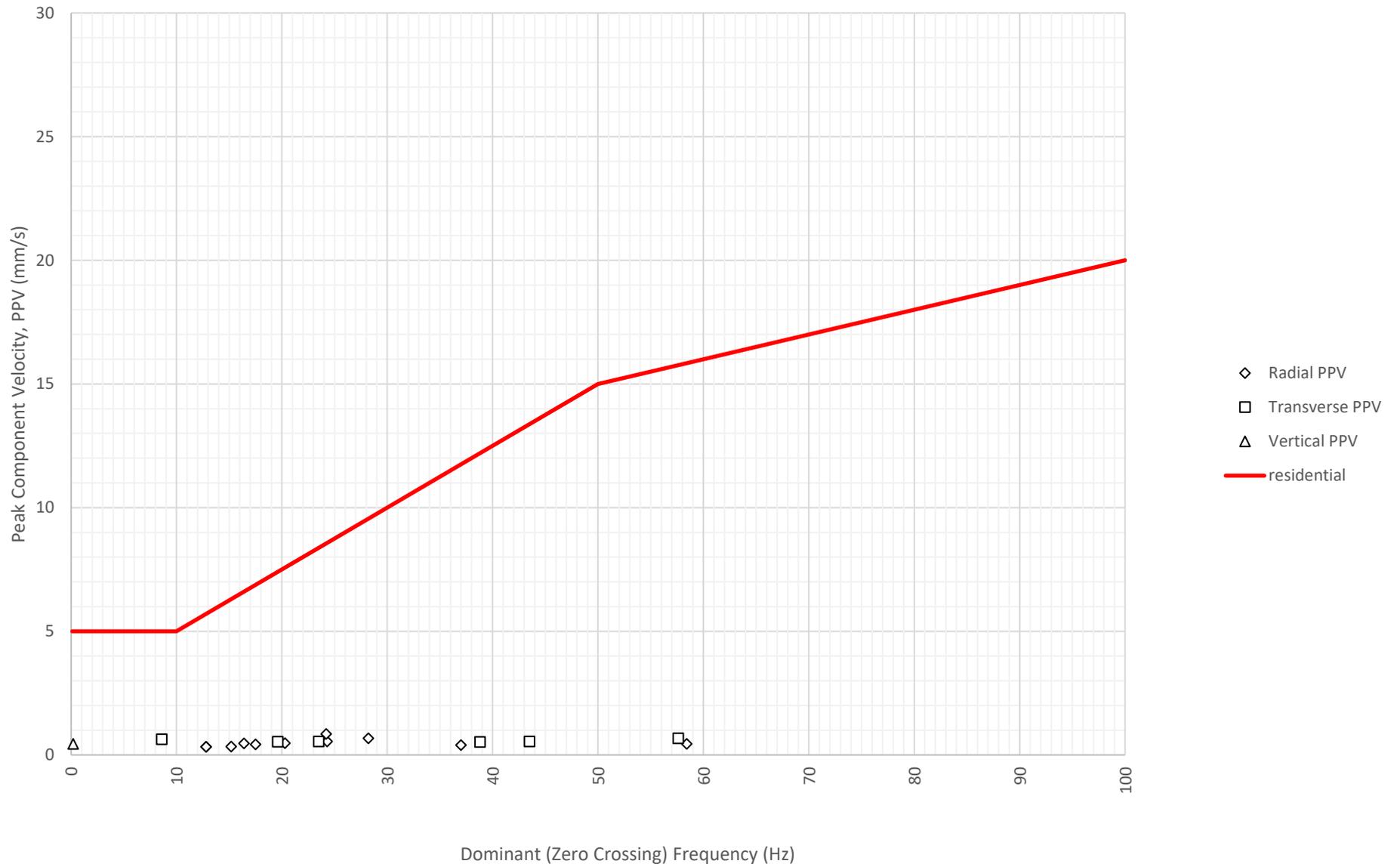
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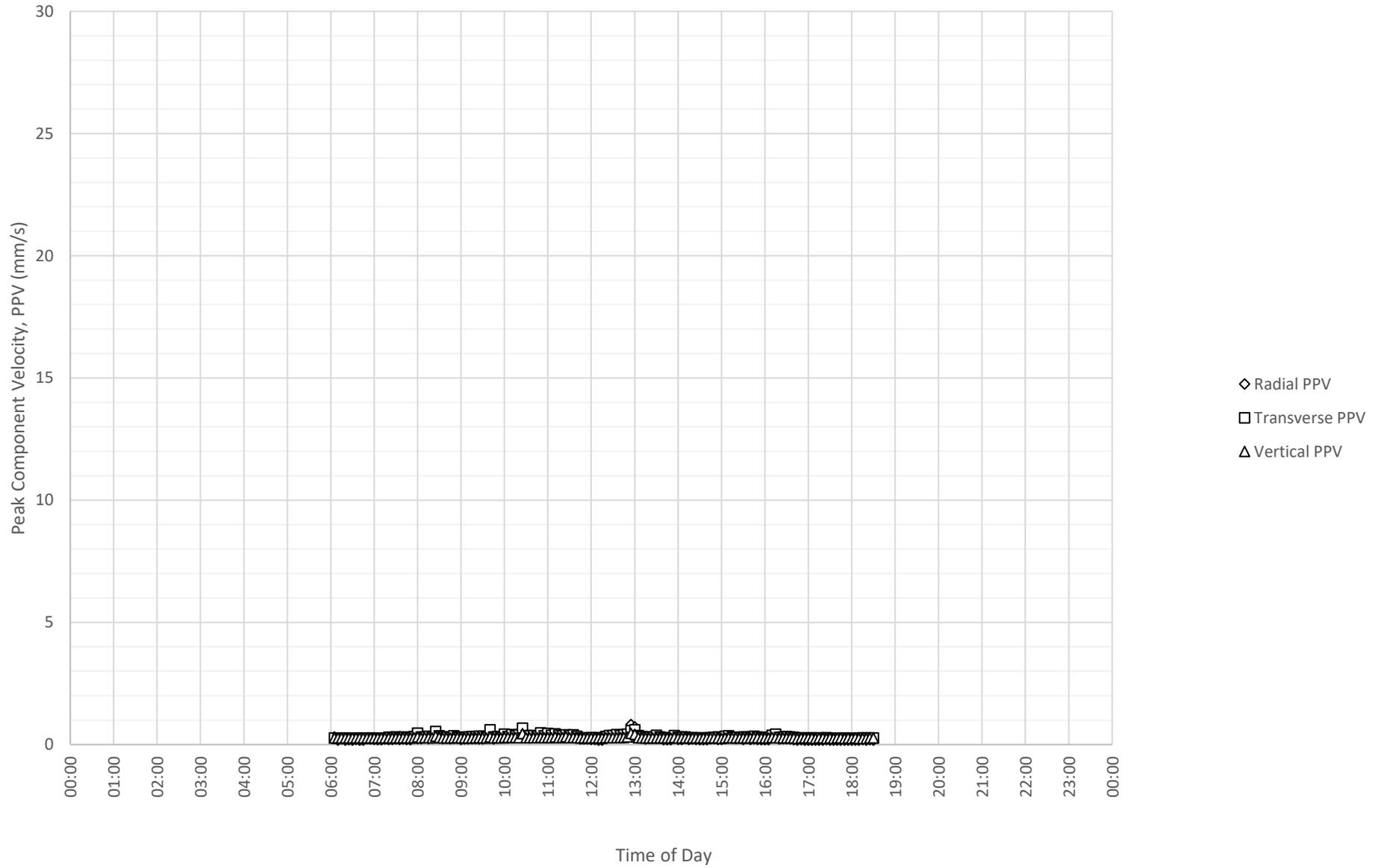
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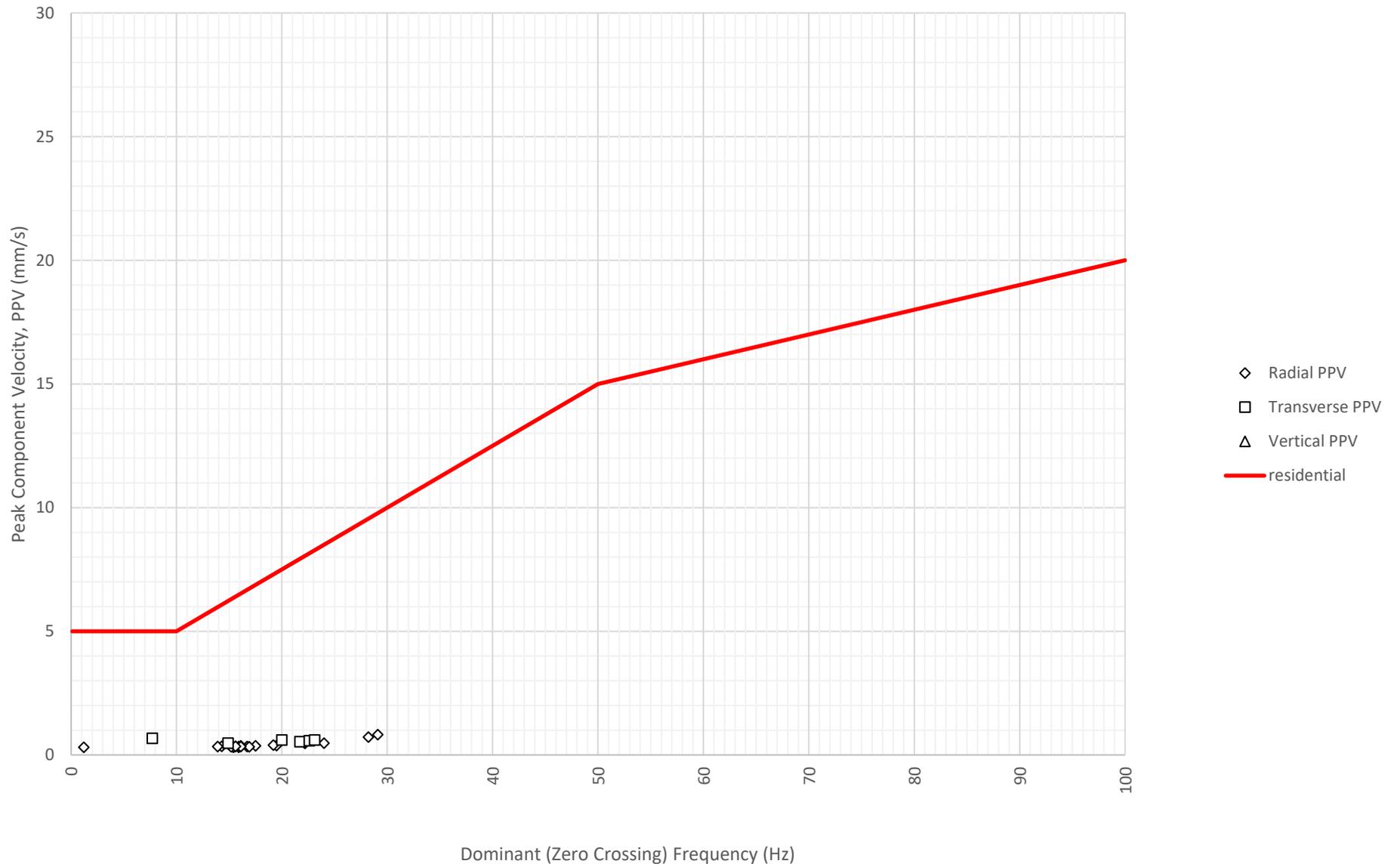
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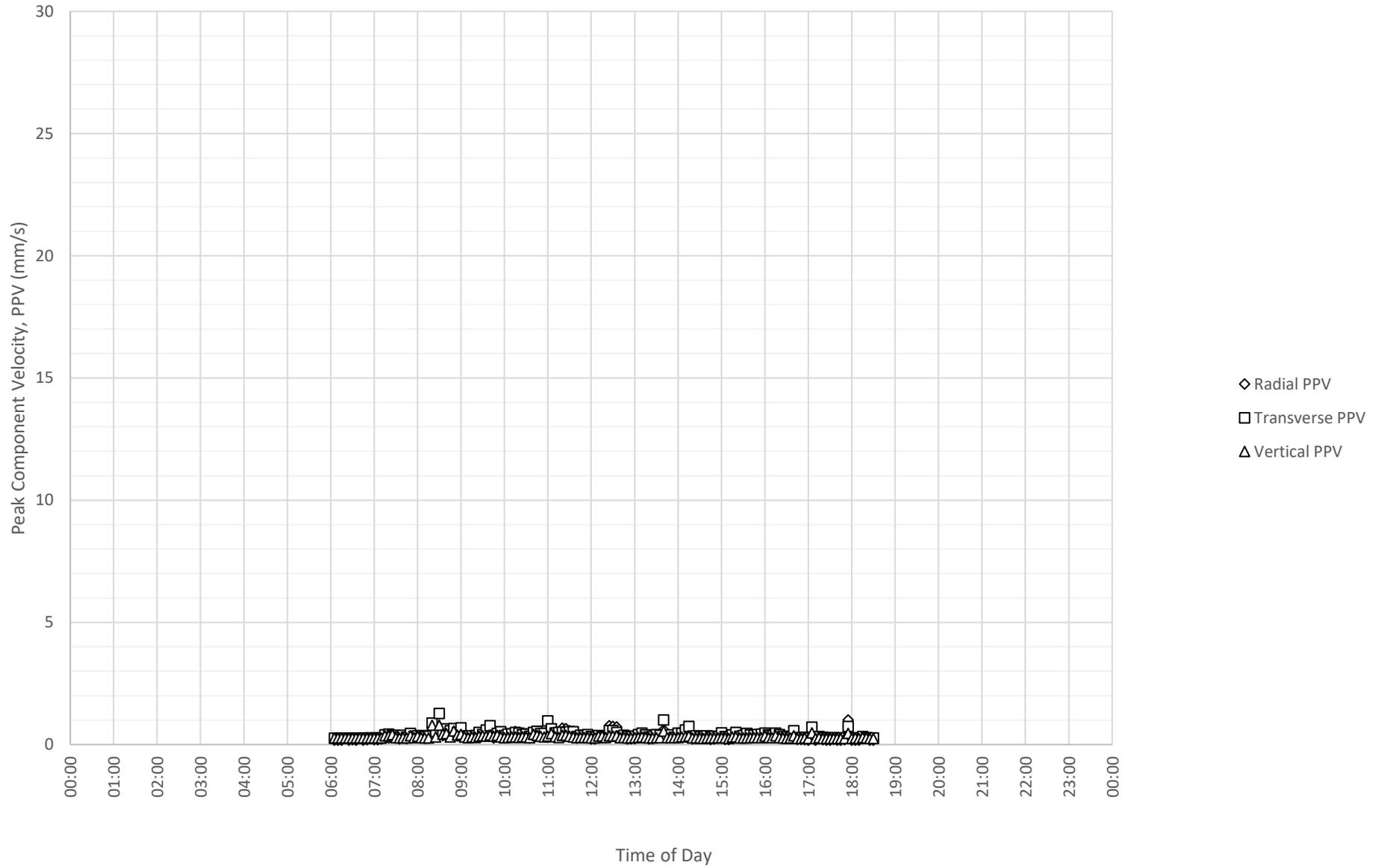
Daily Monitored Vibration Levels at M7715 Residential on 18-10-2022



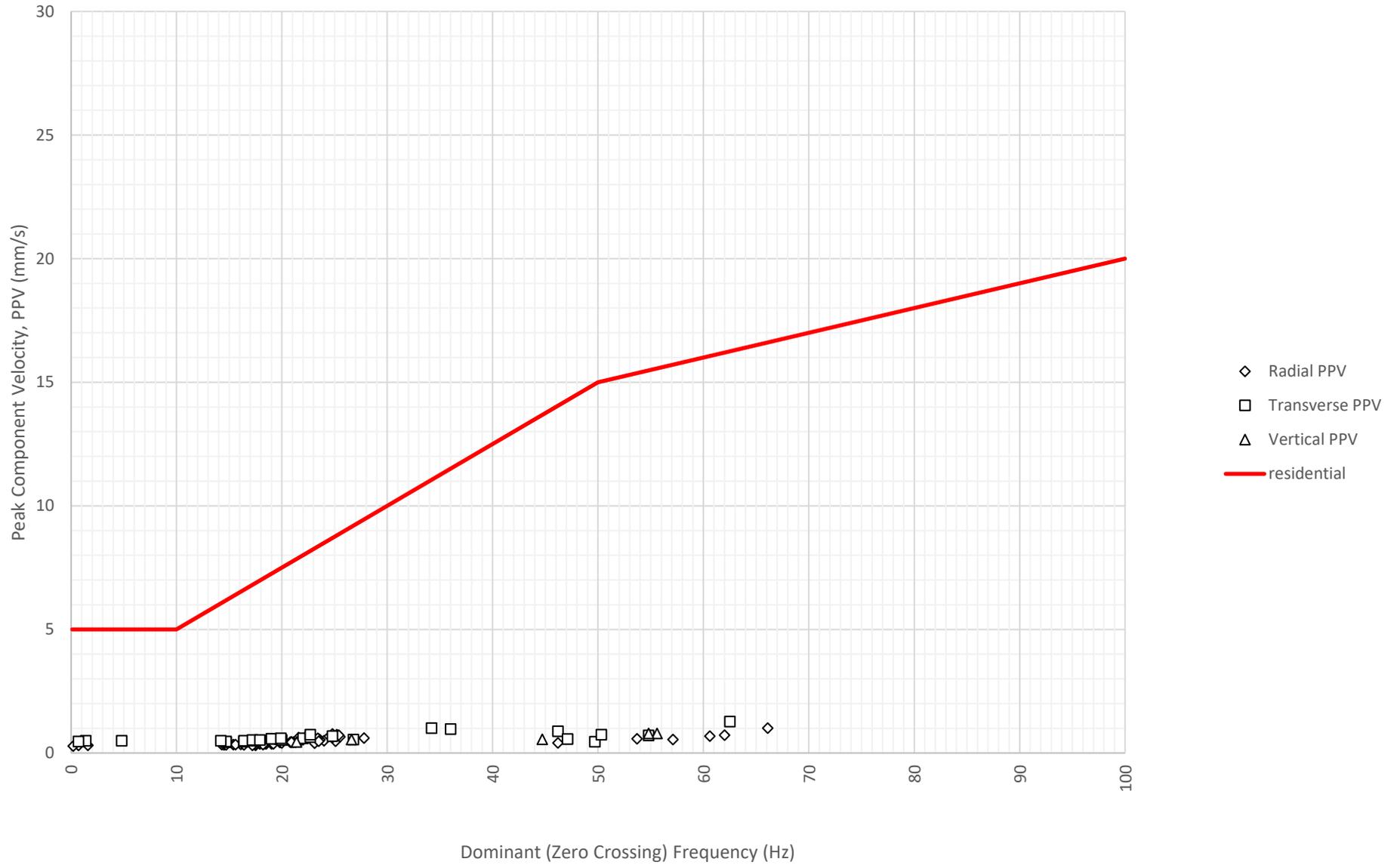
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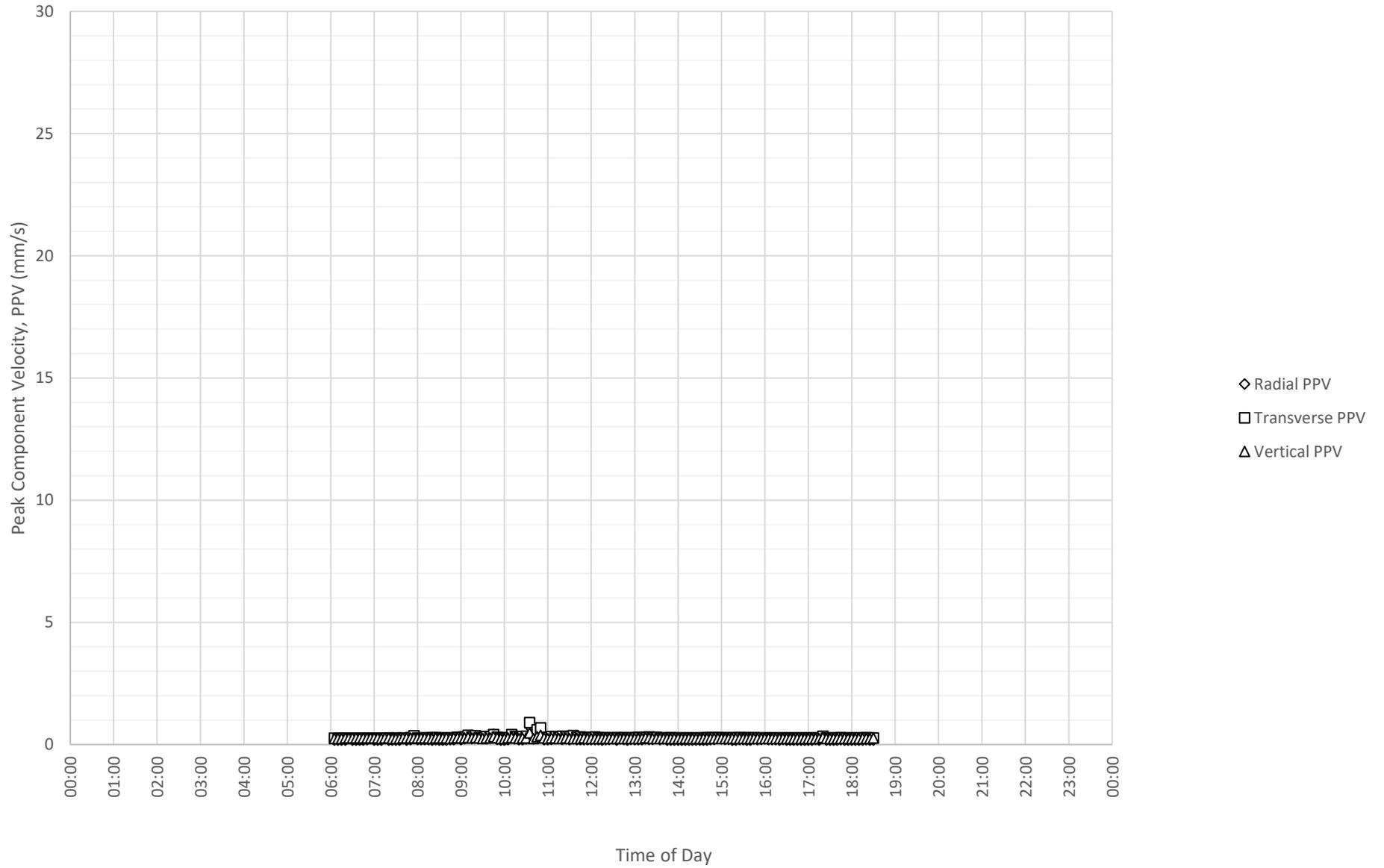
Daily Monitored Vibration Levels at M7715 Residential on 19-10-2022



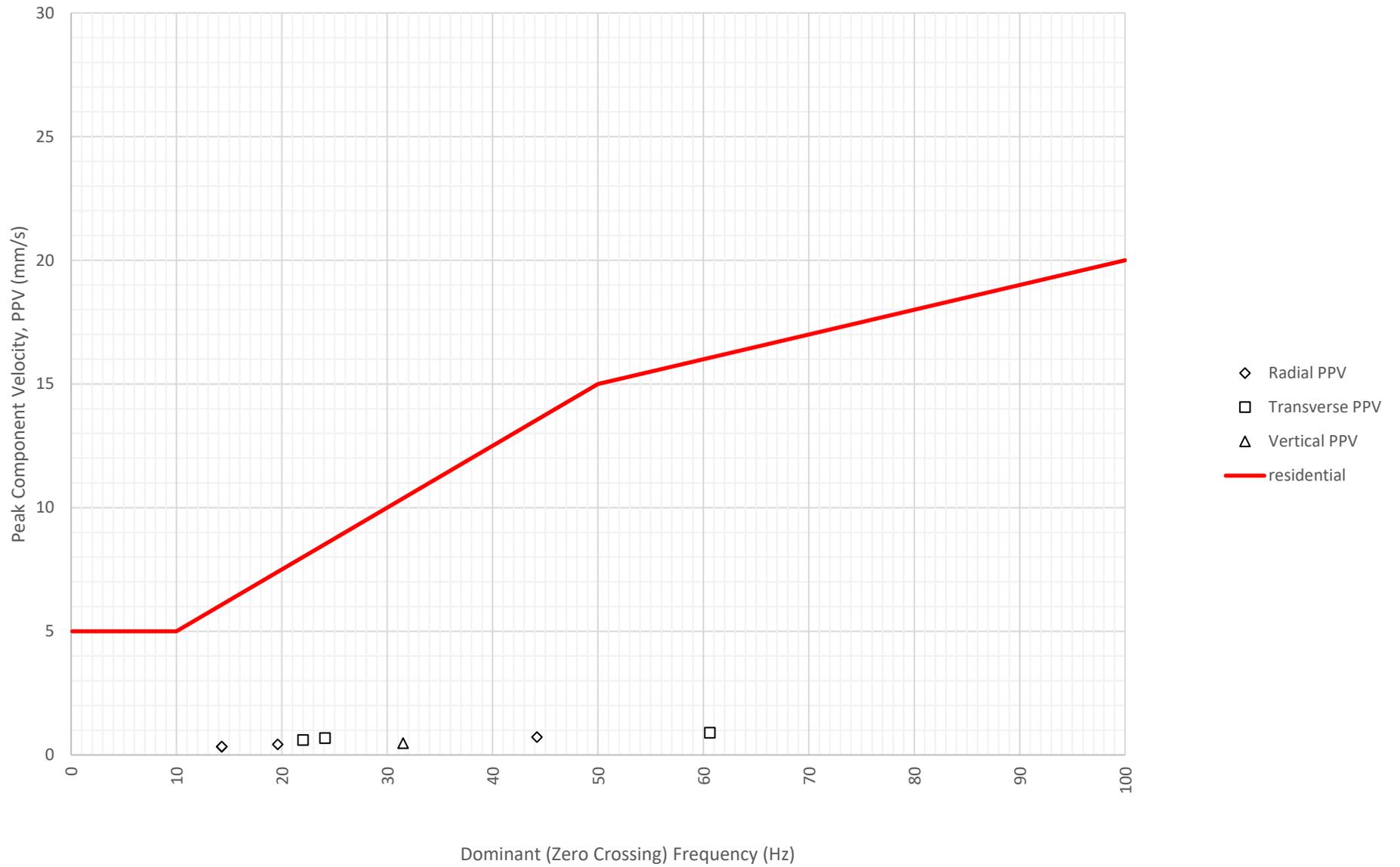
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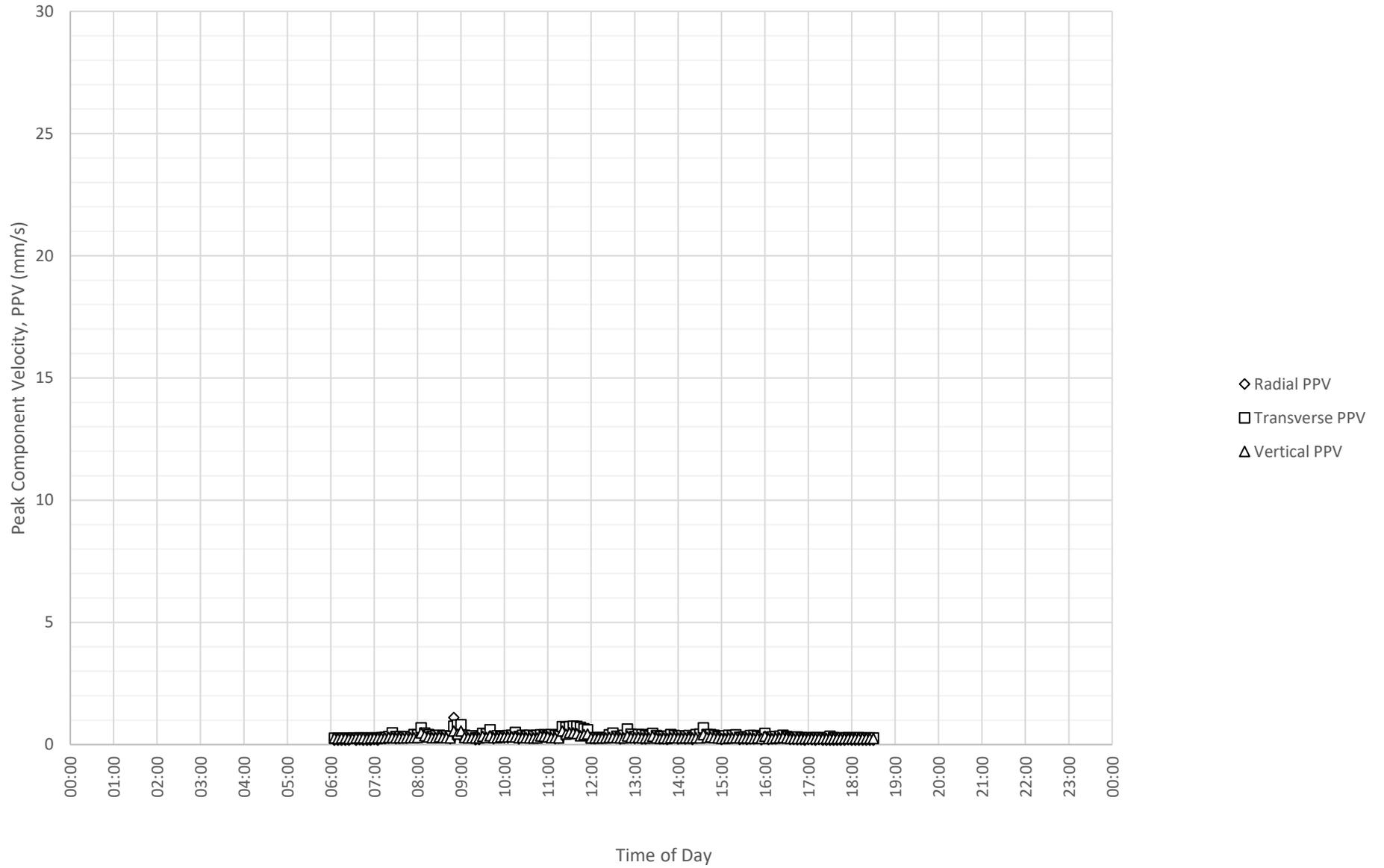
Daily Monitored Vibration Levels at M7715 Residential on 20-10-2022



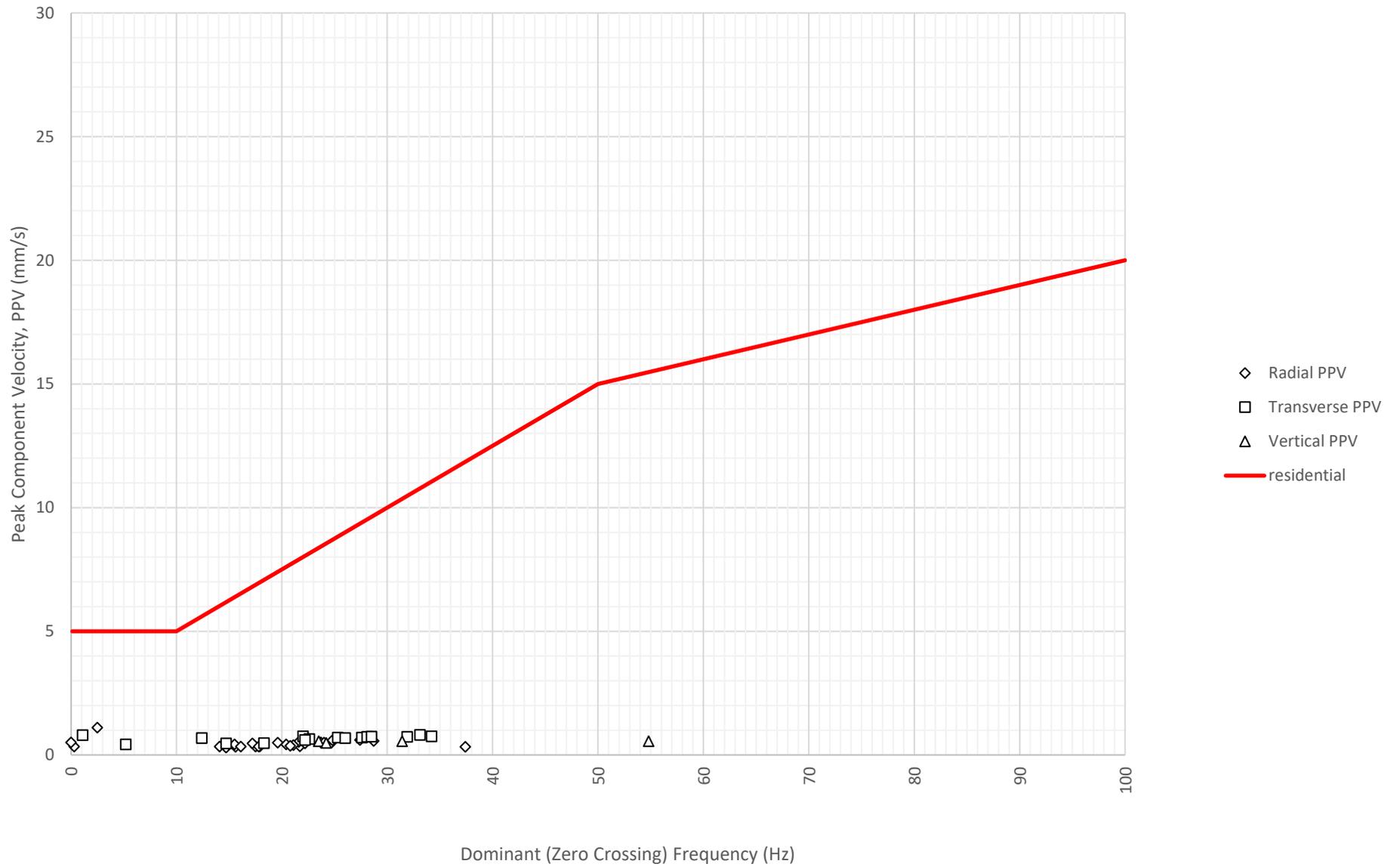
Frequency Content of Vibration Levels at M7715 Residential on 20-10-2022



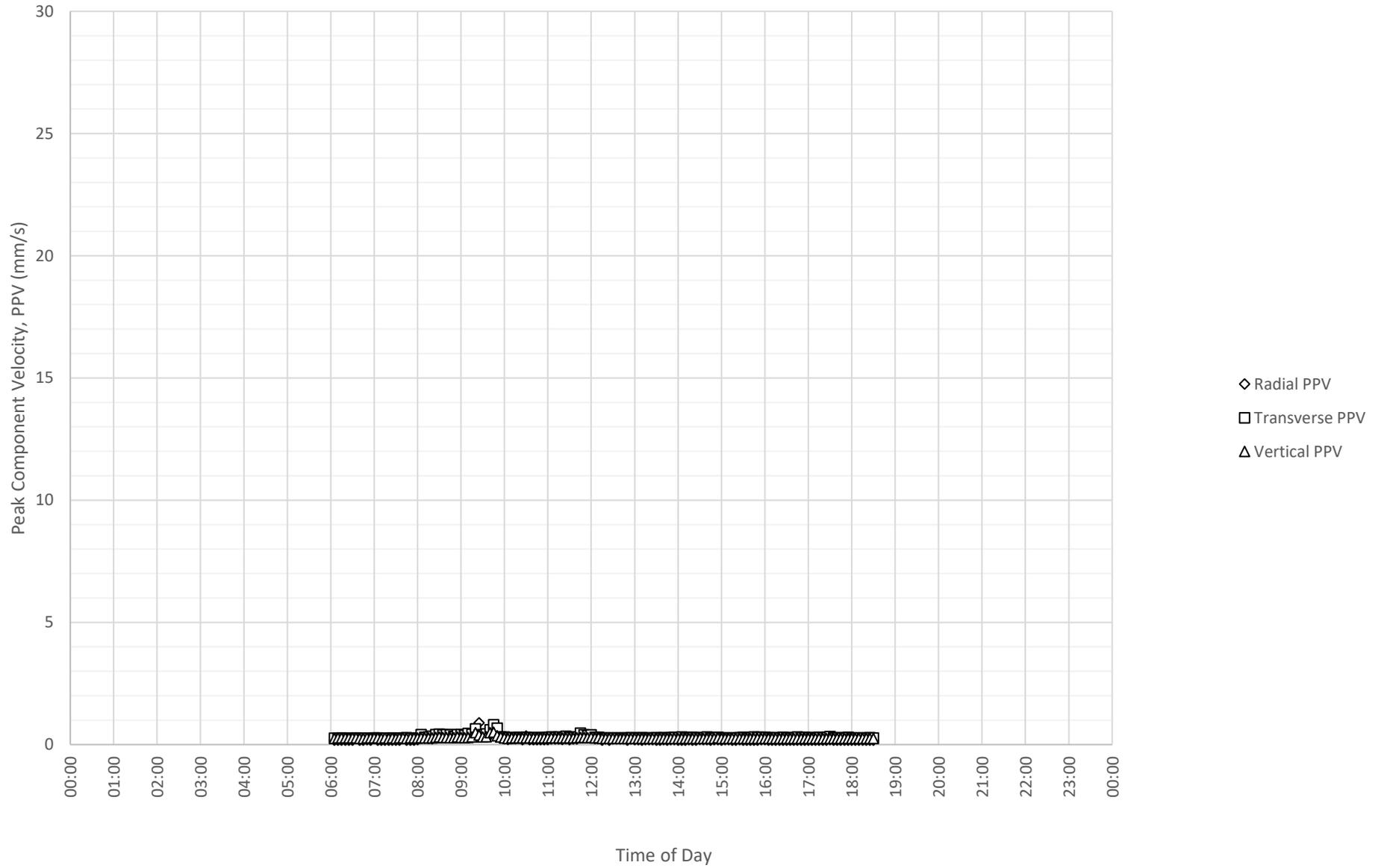
Daily Monitored Vibration Levels at M7715 Residential on 21-10-2022



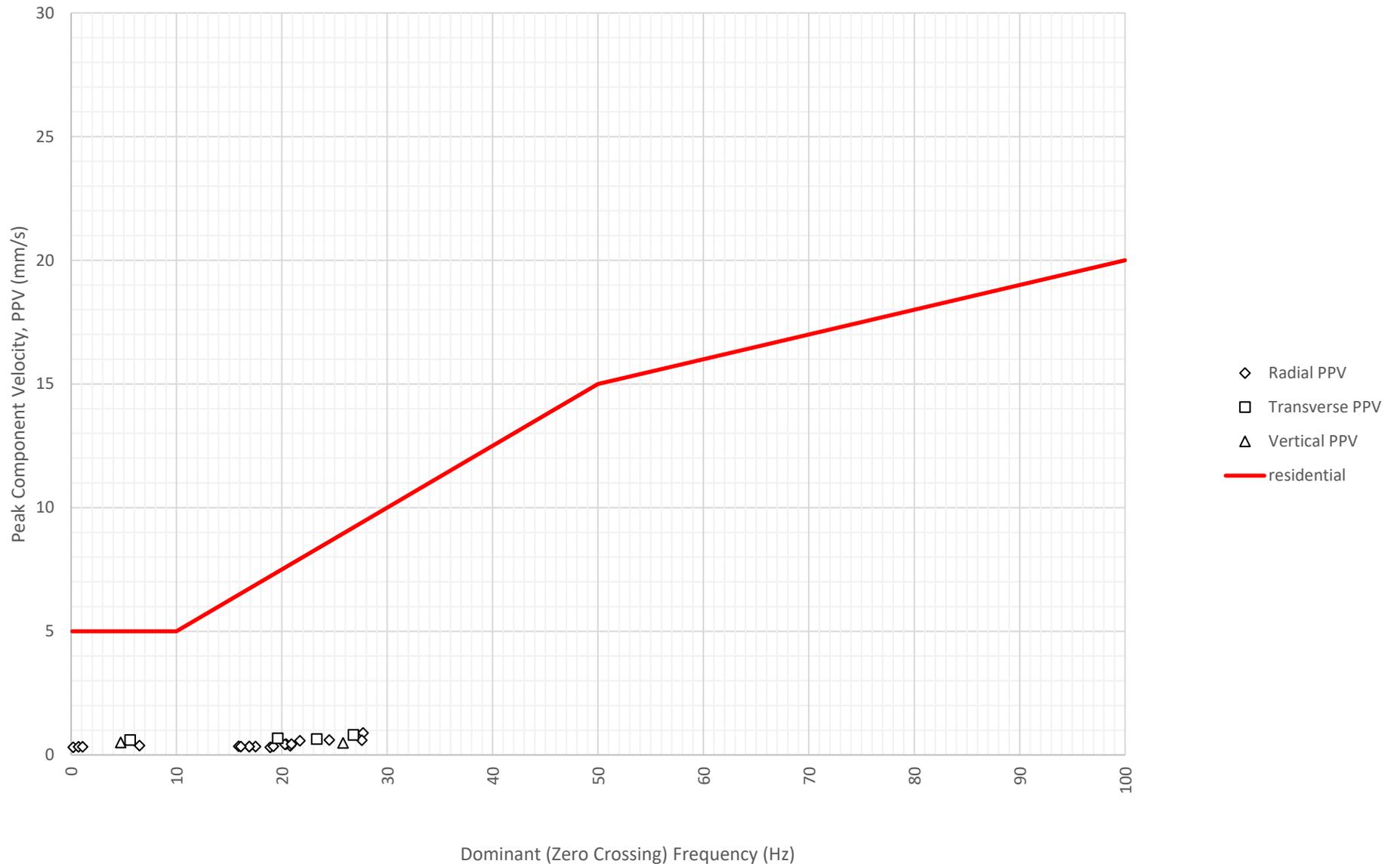
Frequency Content of Vibration Levels at M7715 Residential on 21-10-2022



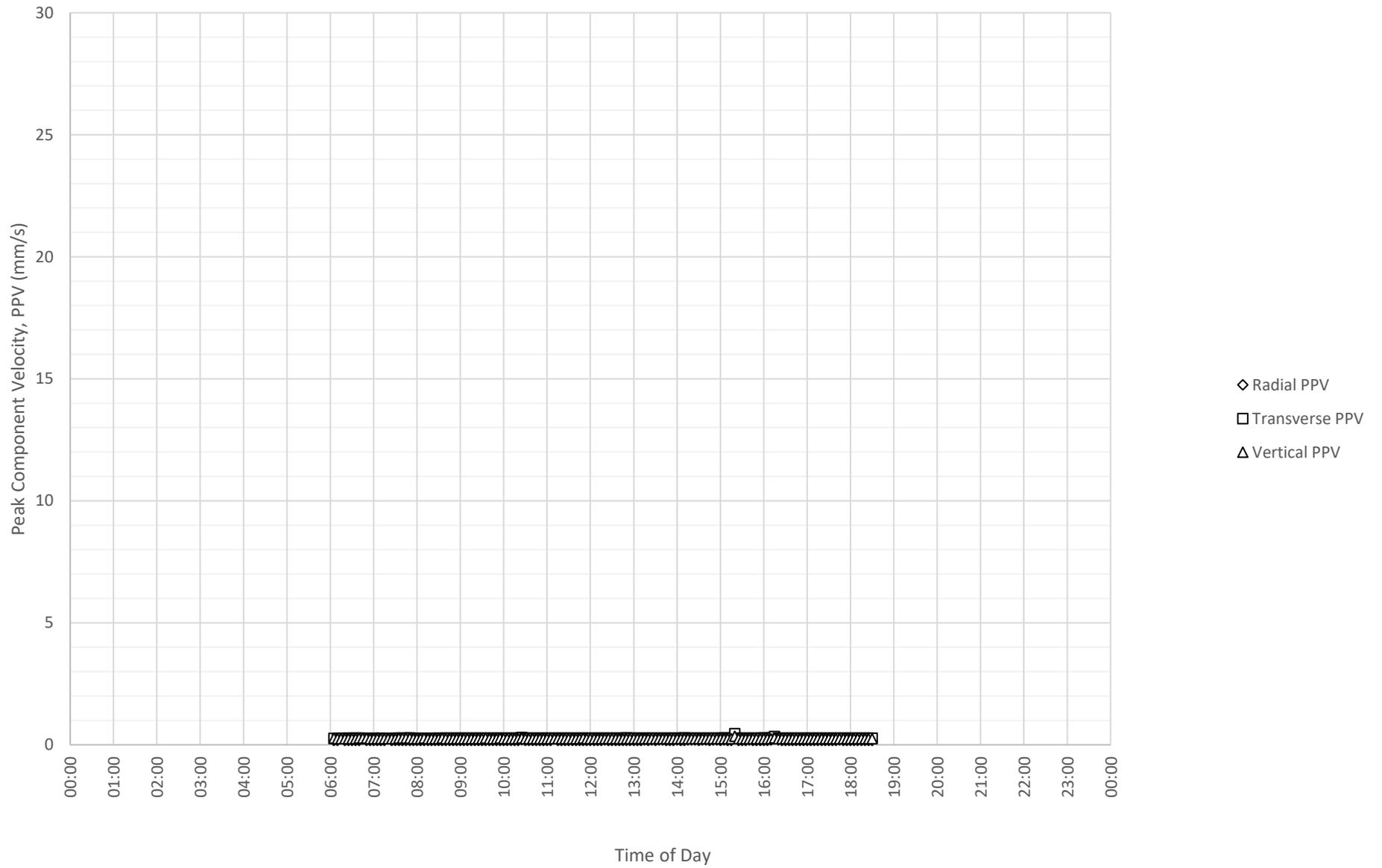
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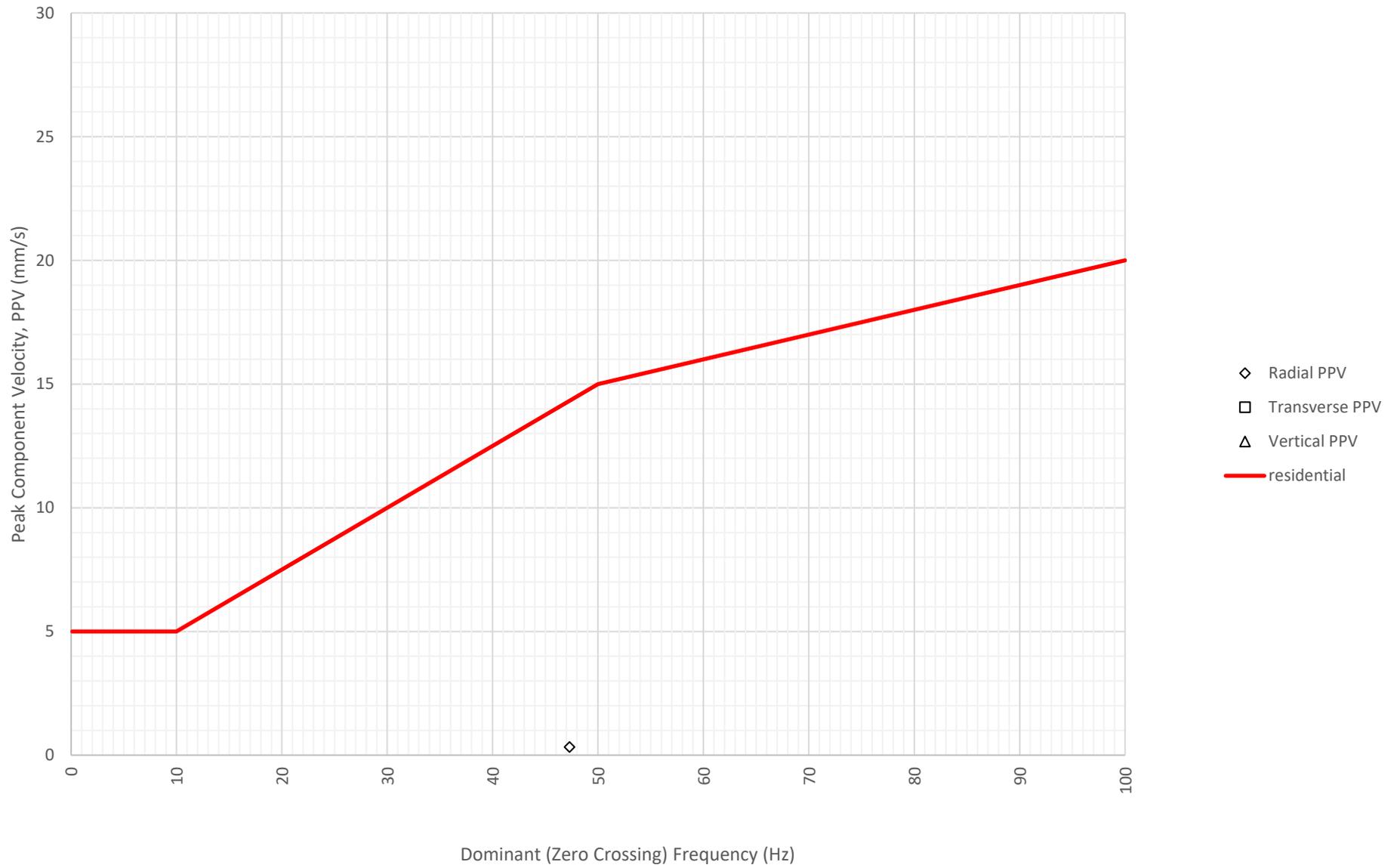
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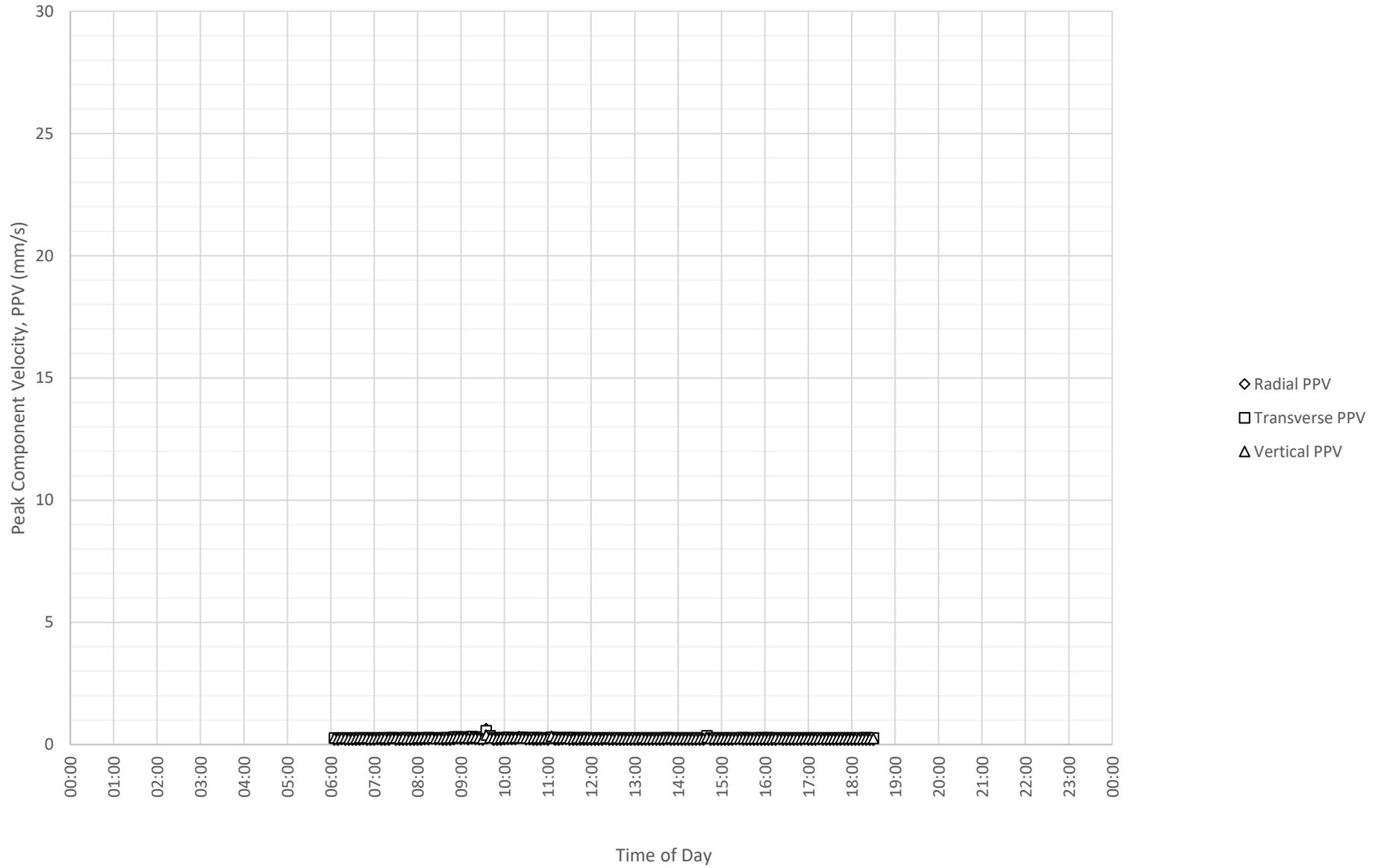
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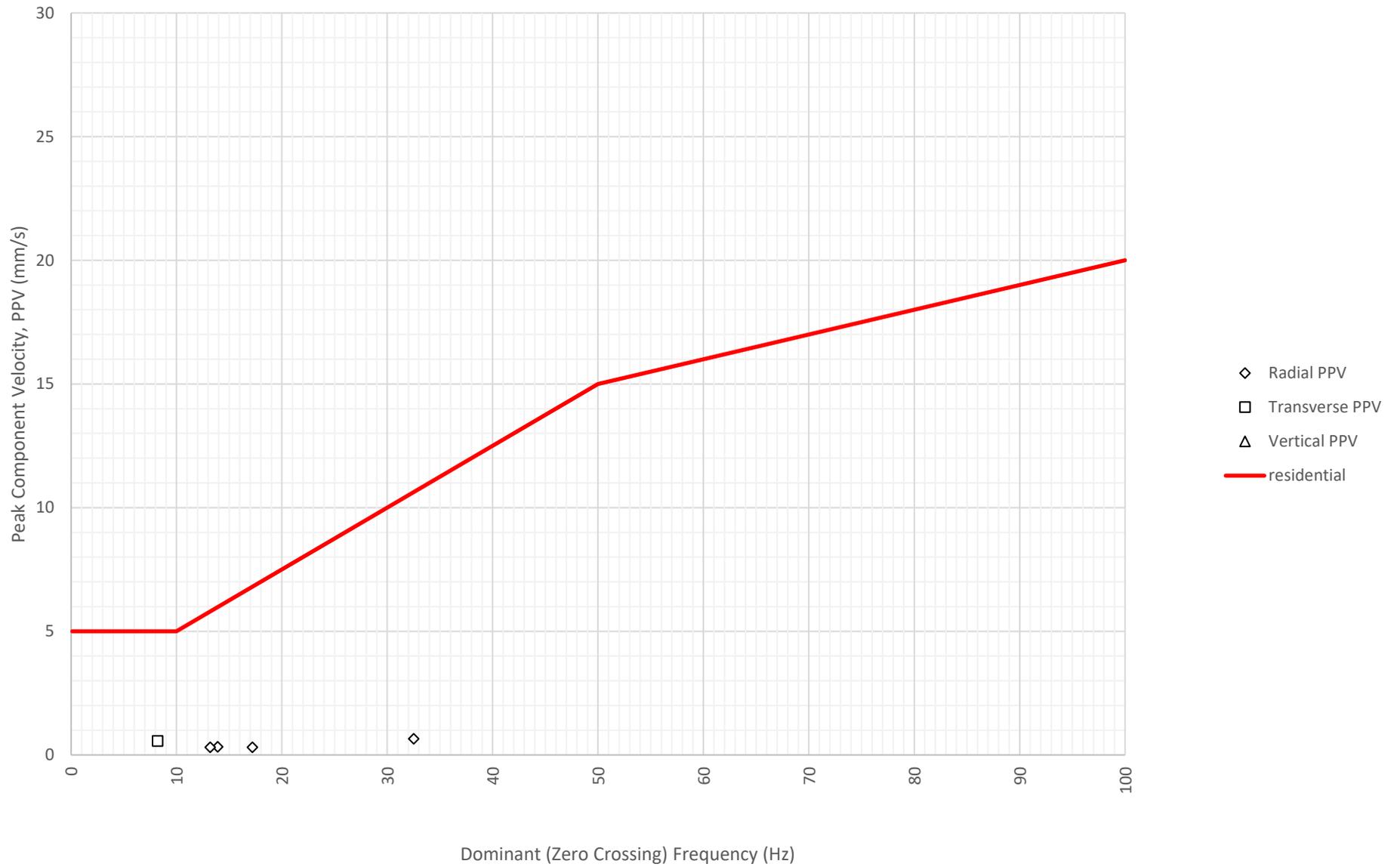
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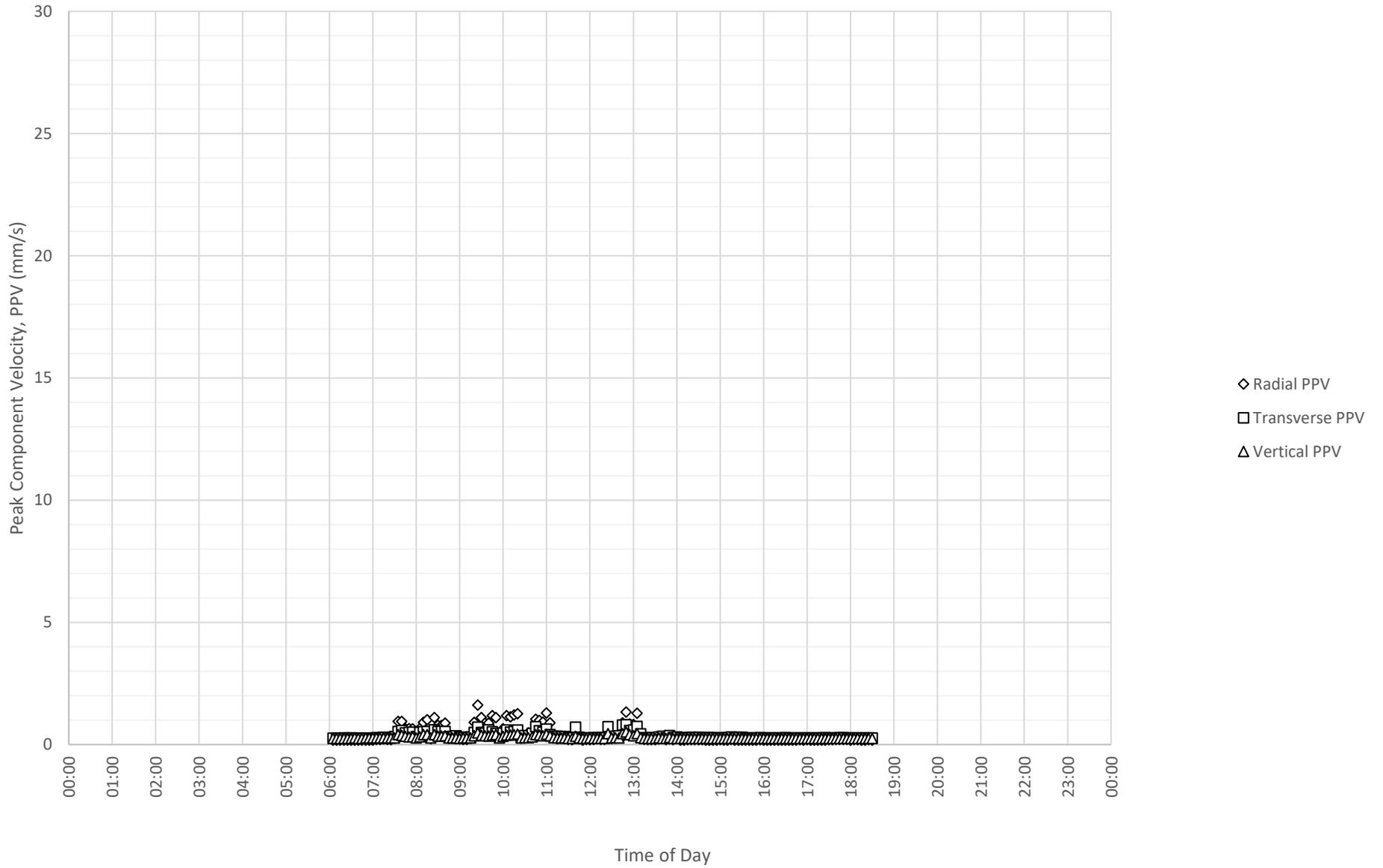
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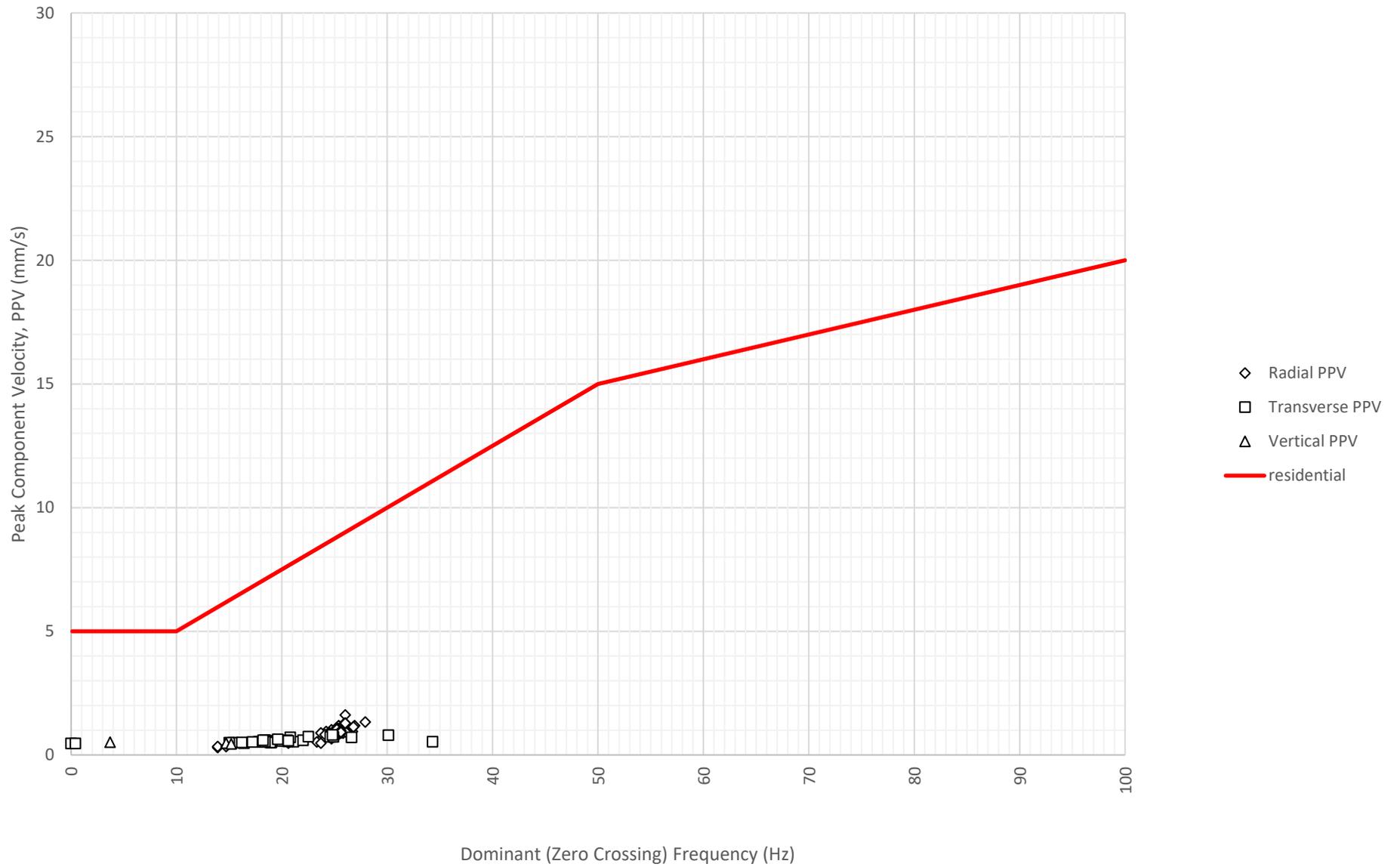
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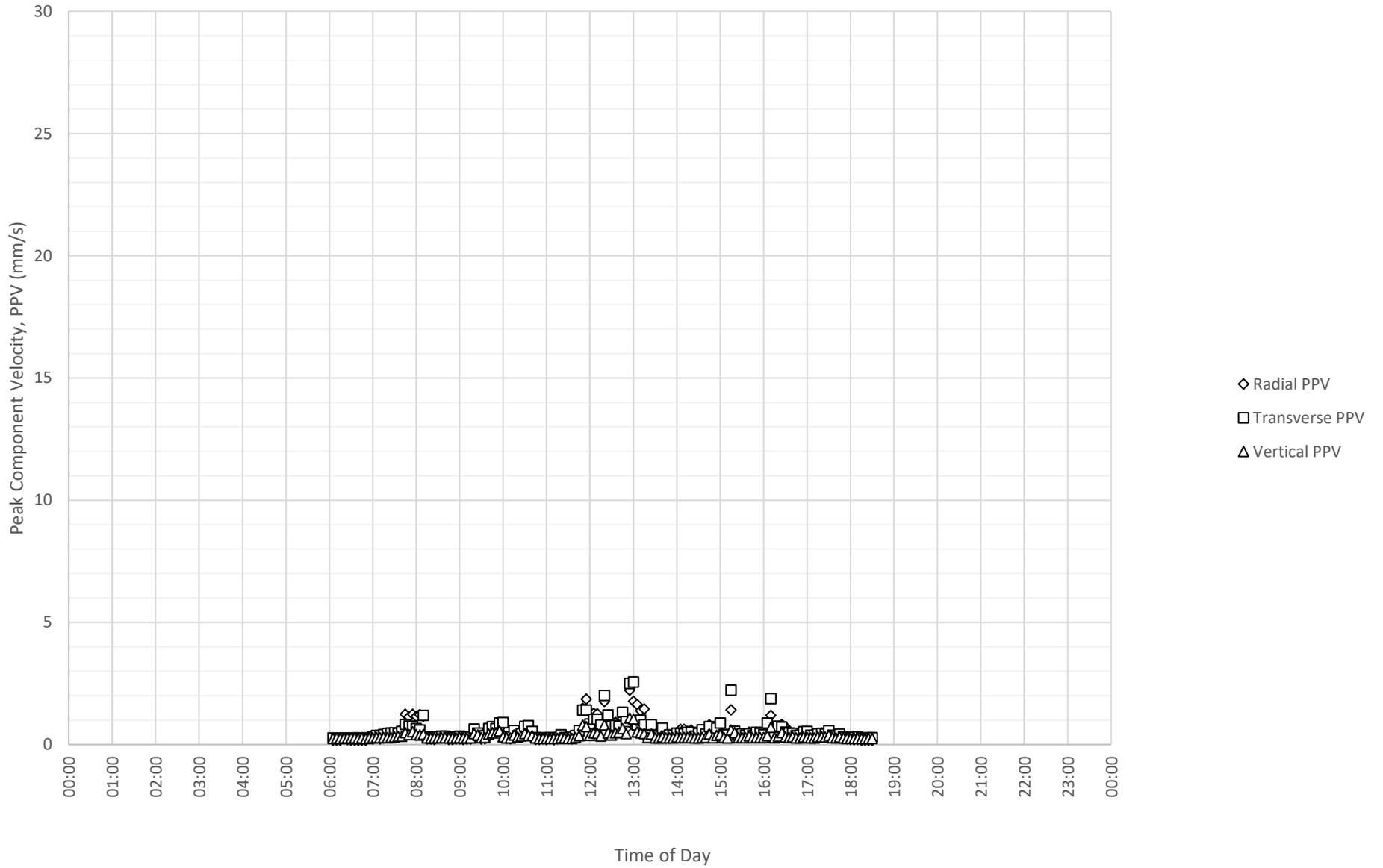
Daily Monitored Vibration Levels at M7715 Residential on 25-10-2022



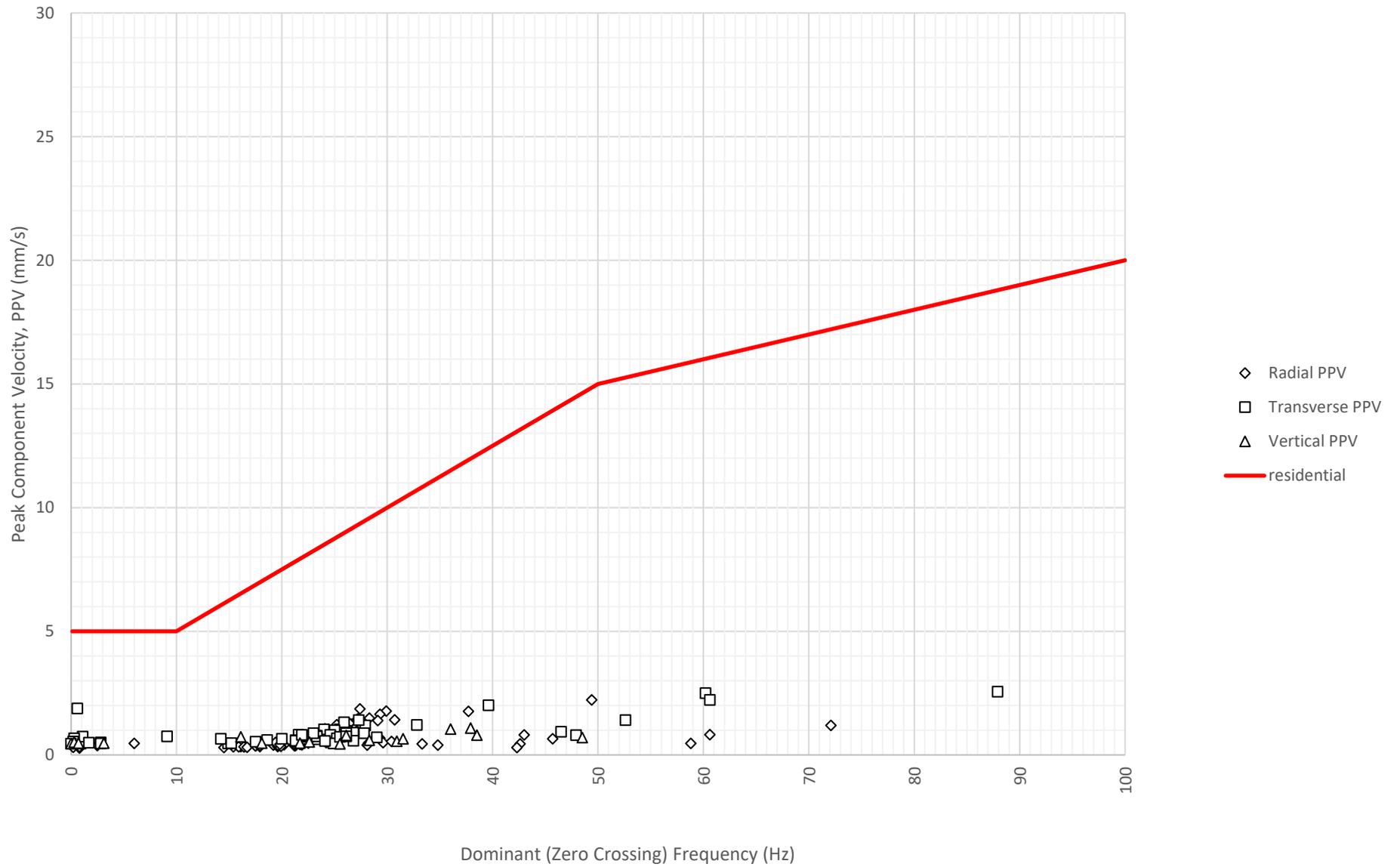
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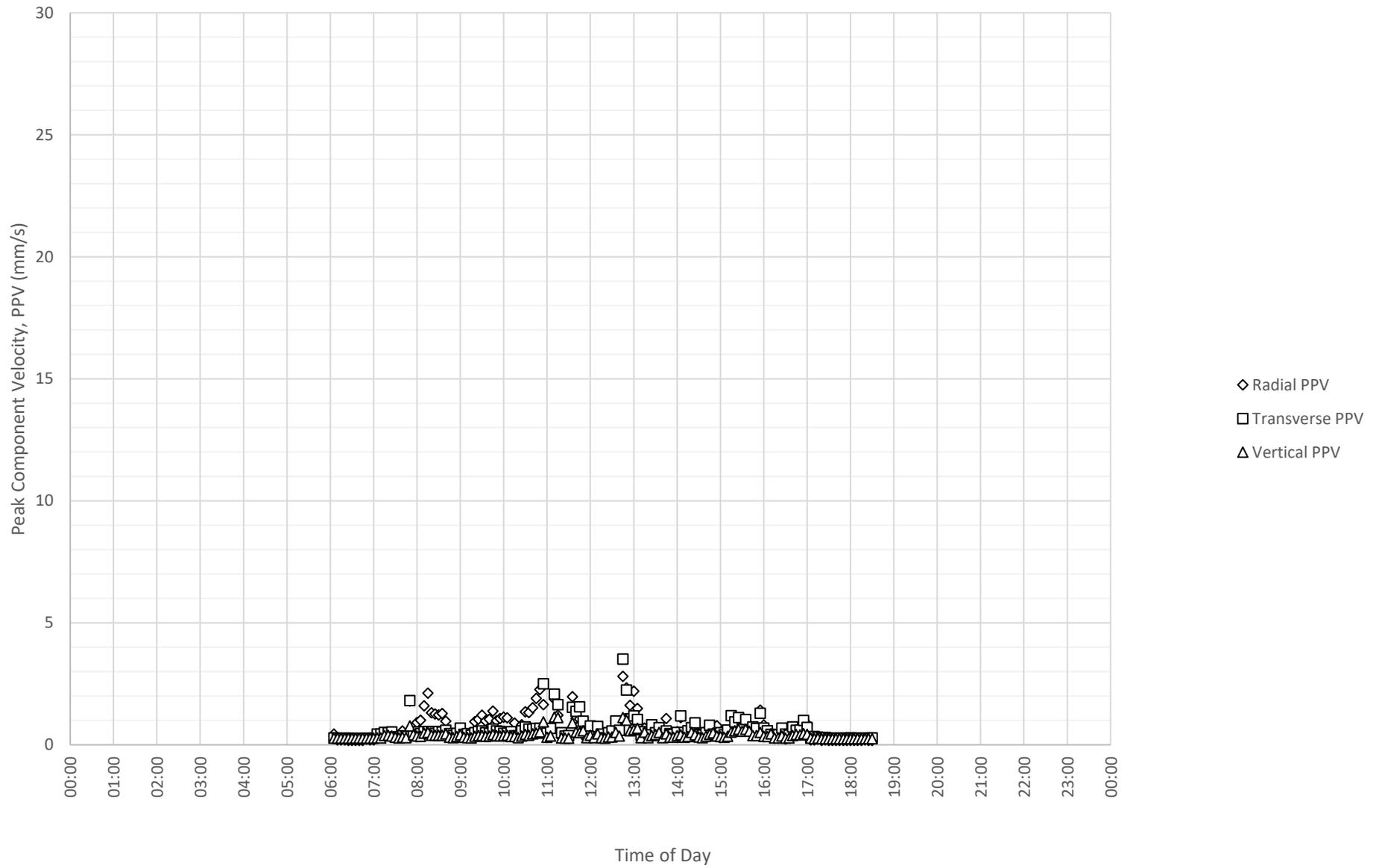
Daily Monitored Vibration Levels at M7715 Residential on 26-10-2022



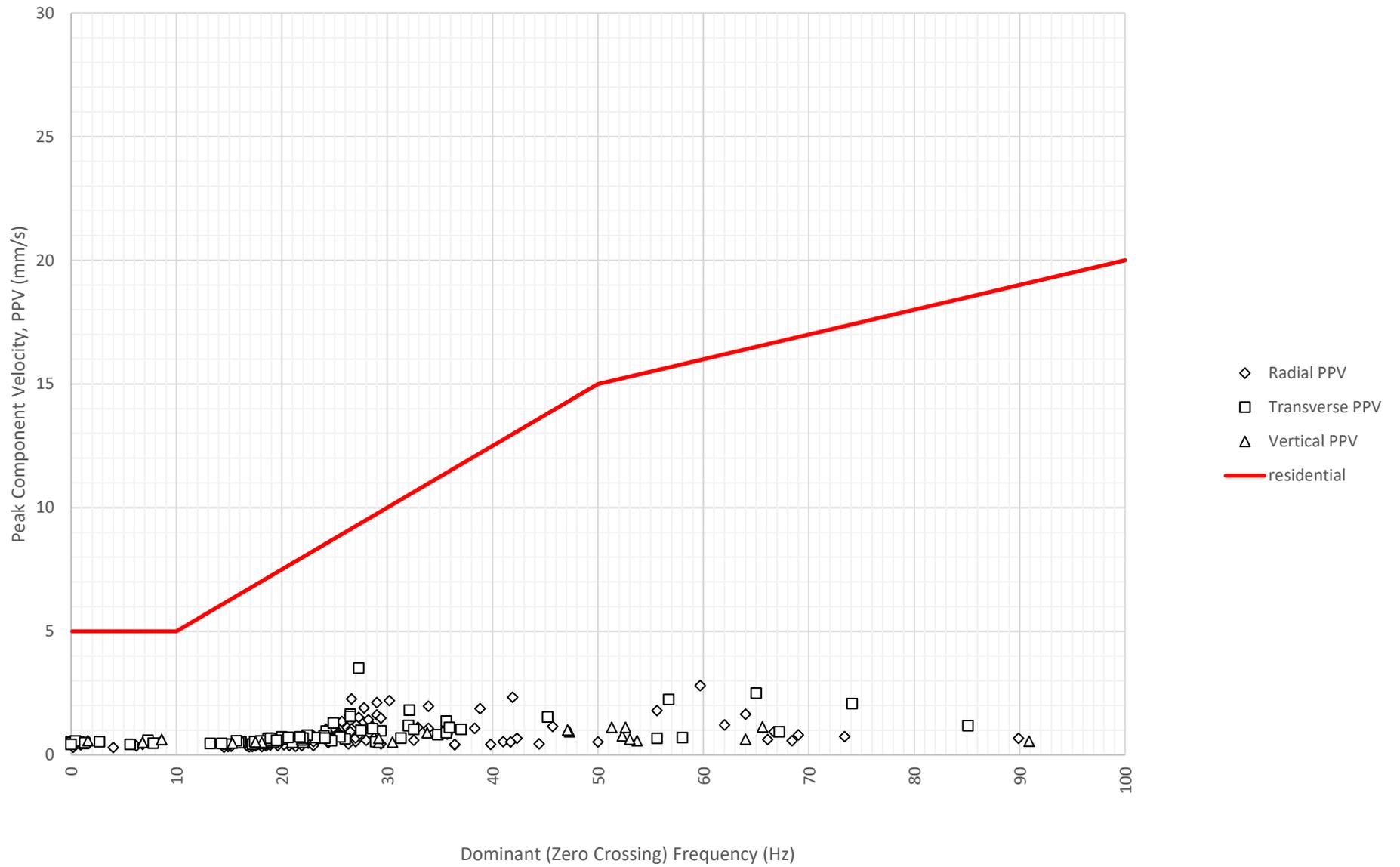
Frequency Content of Vibration Levels at M7715 Residential on 26-10-2022



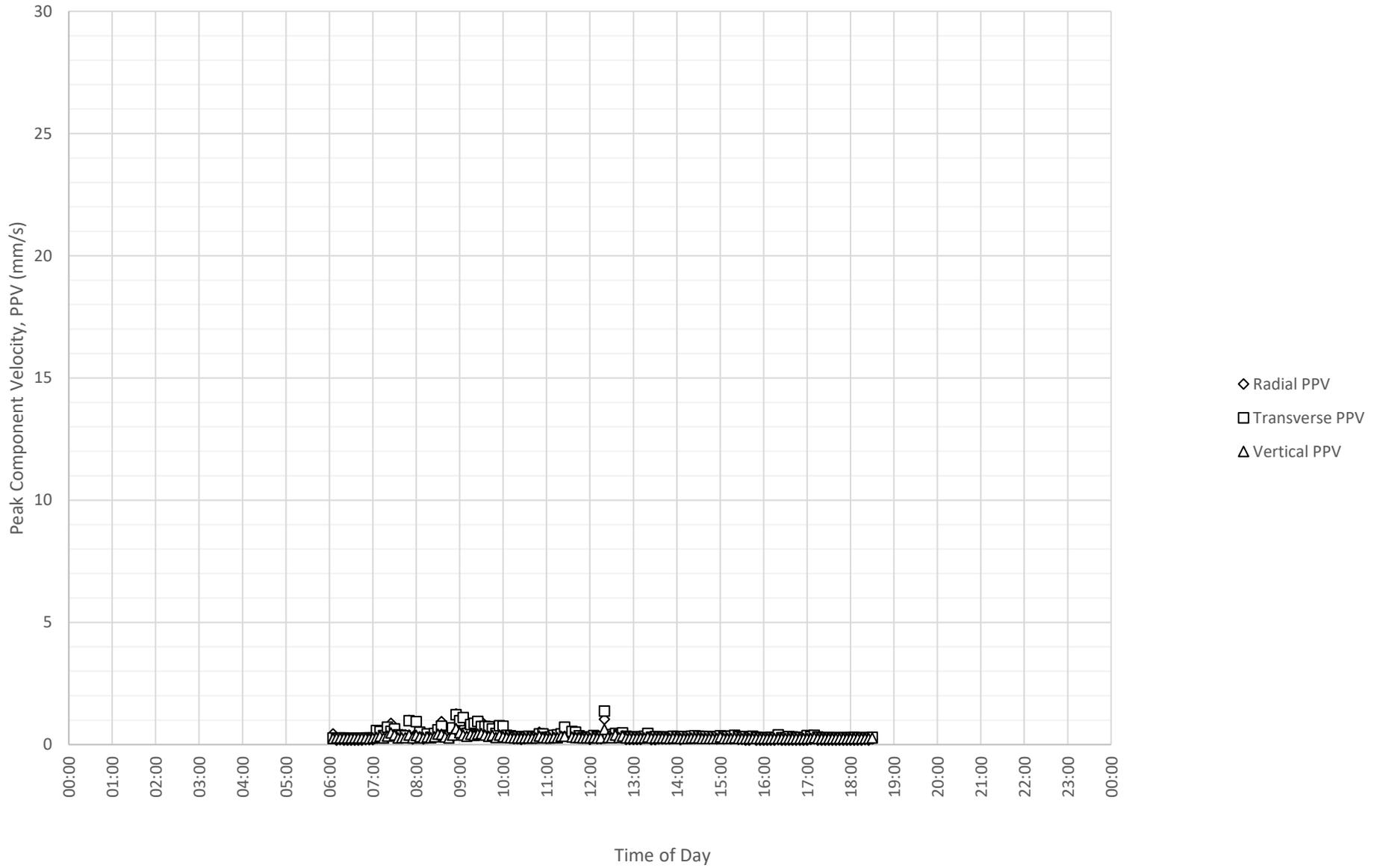
Daily Monitored Vibration Levels at M7715 Residential on 27-10-2022



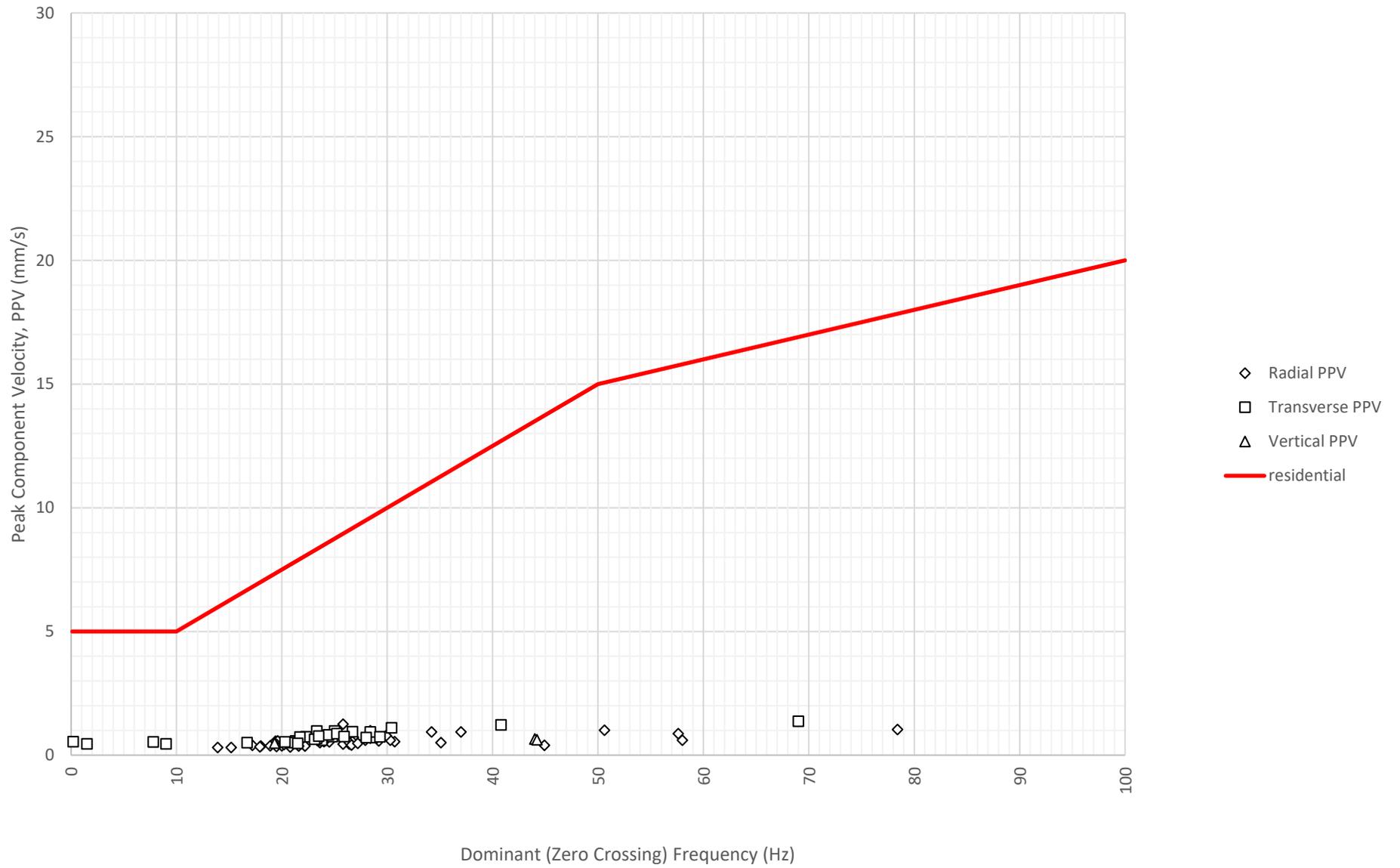
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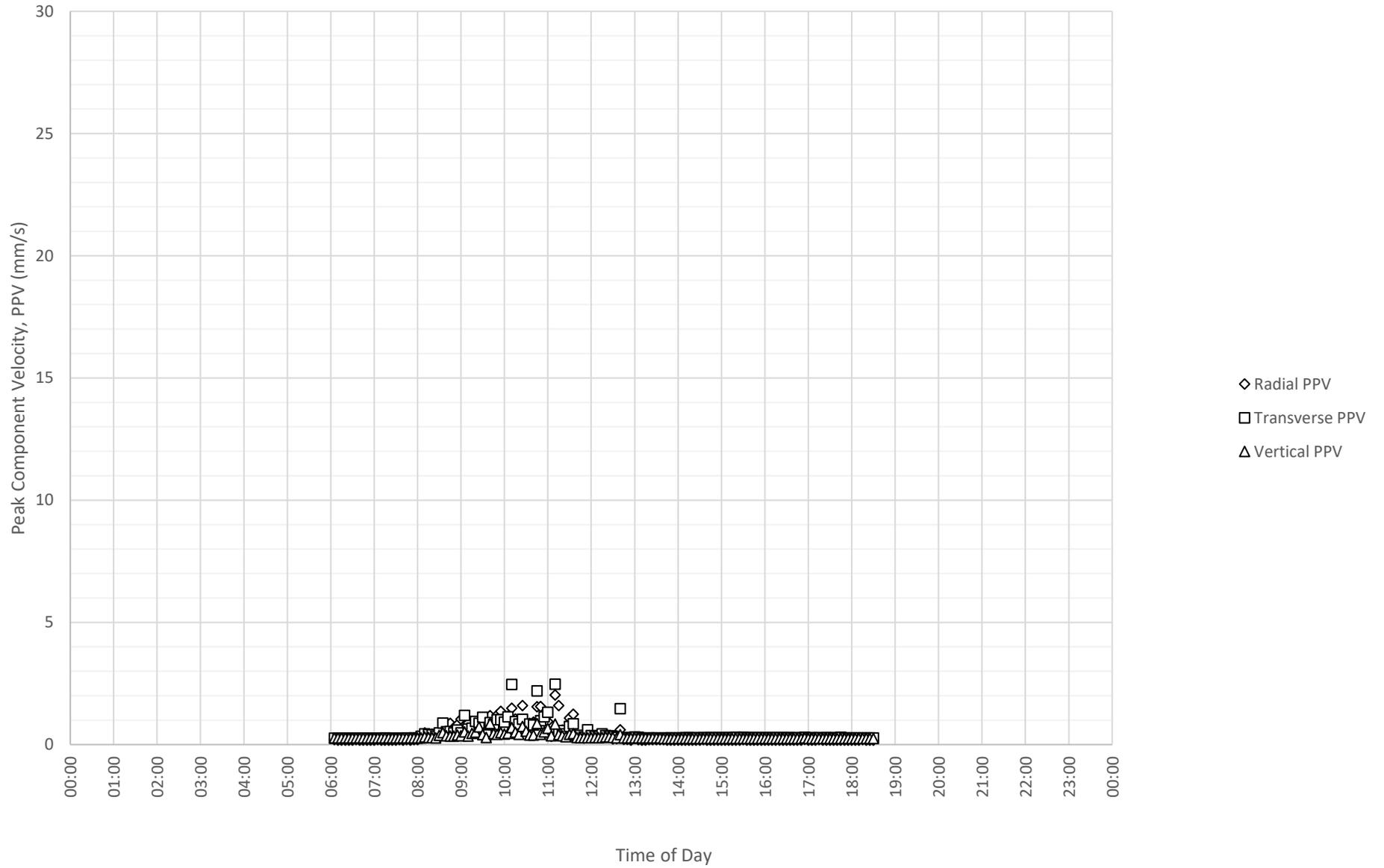
Daily Monitored Vibration Levels at M7715 Residential on 28-10-2022



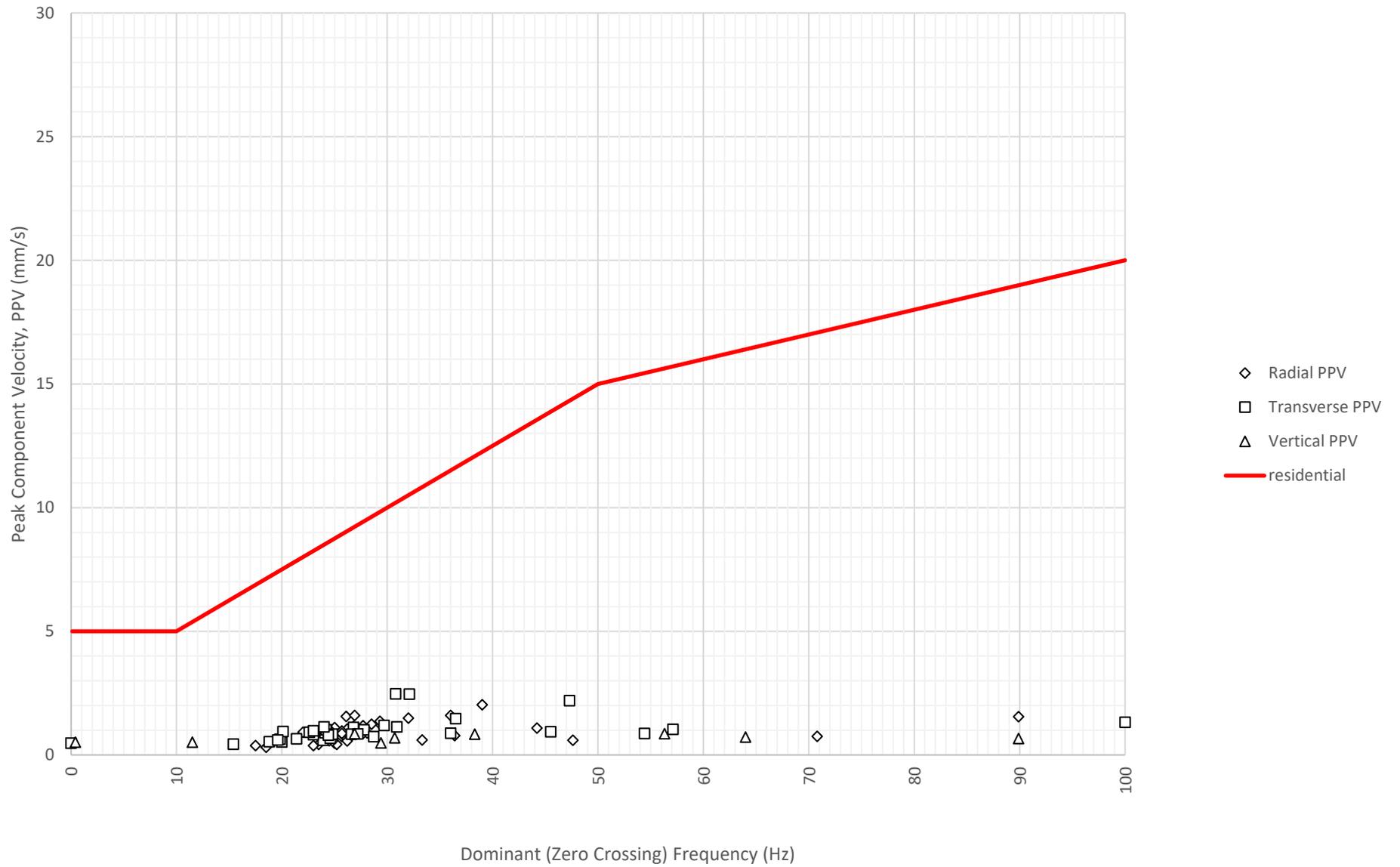
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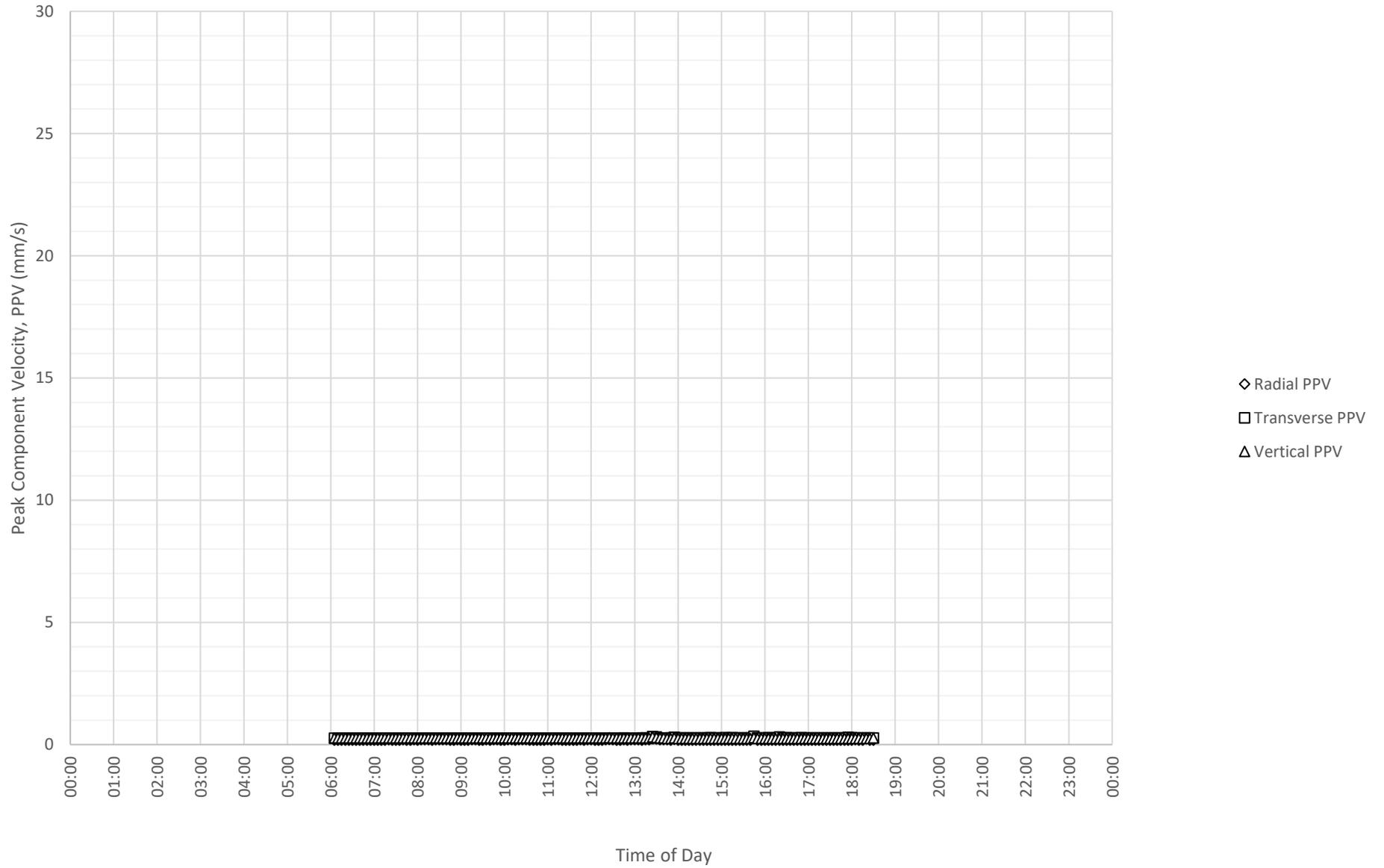
Daily Monitored Vibration Levels at M7715 Residential on 29-10-2022



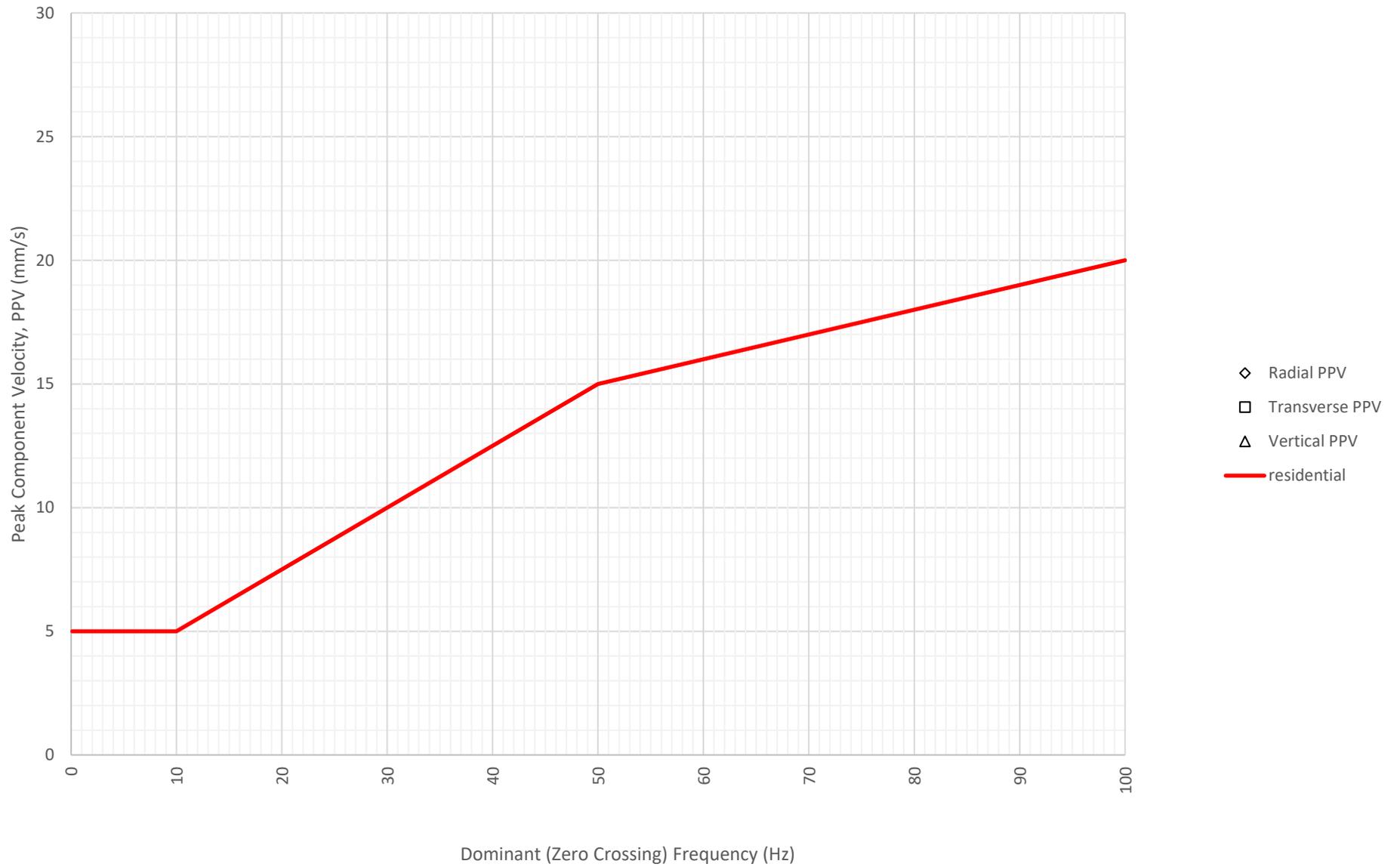
Frequency Content of Vibration Levels at M7715 Residential on 29-10-2022



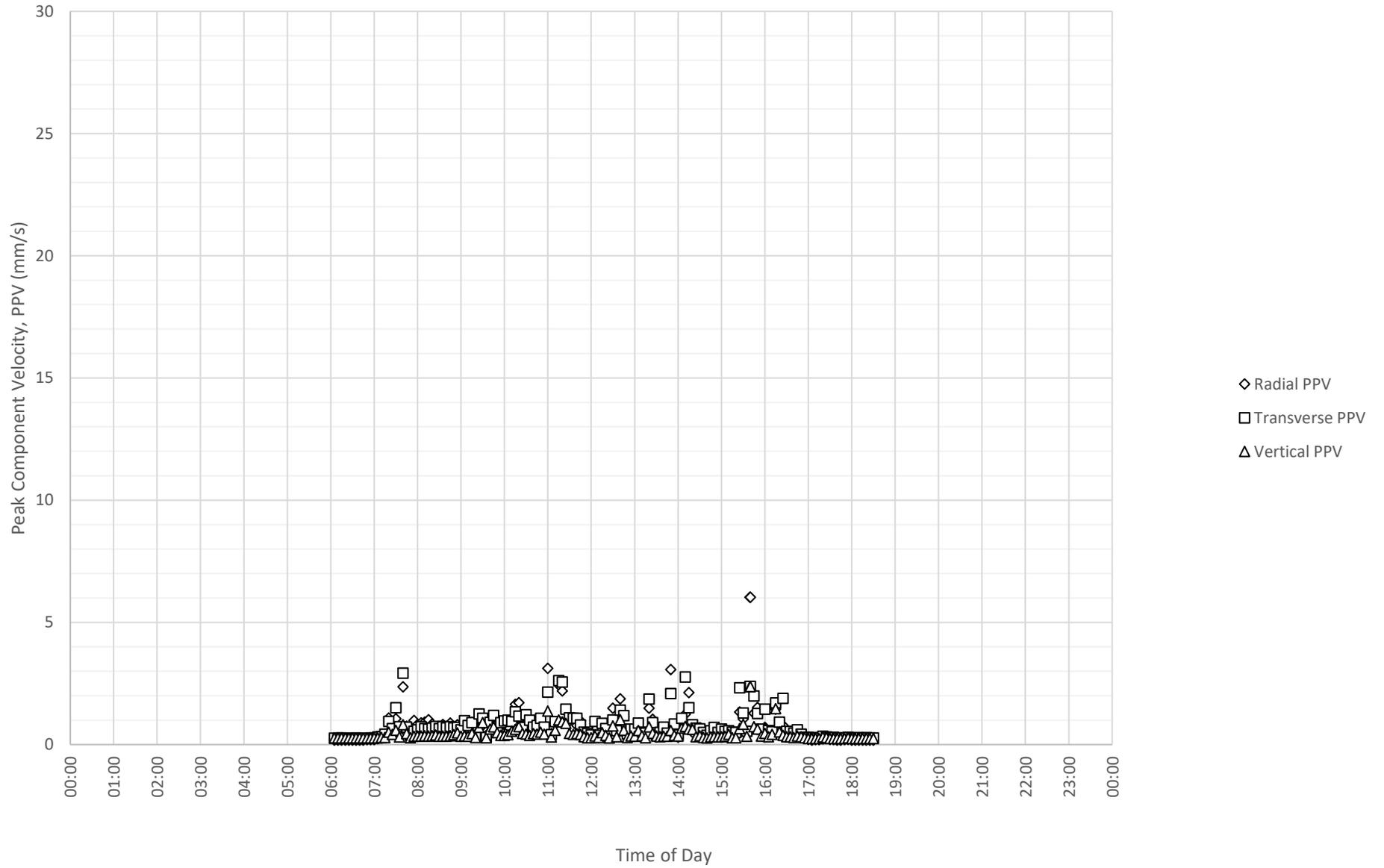
Daily Monitored Vibration Levels at M7715 Residential on 30-10-2022



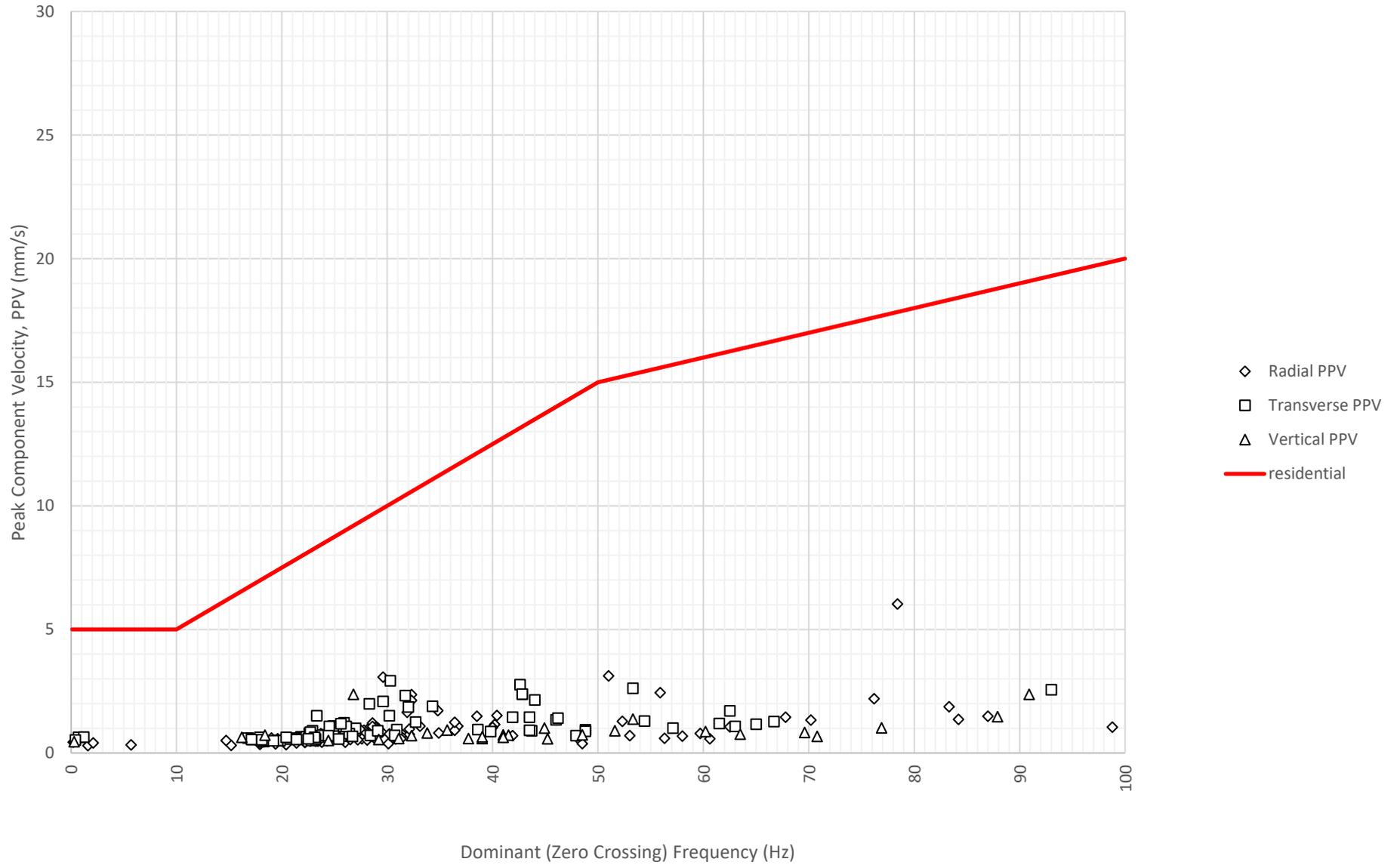
Frequency Content of Vibration Levels at M7715 Residential on 30-10-2022



Daily Monitored Vibration Levels at M7715 Residential on 31-10-2022



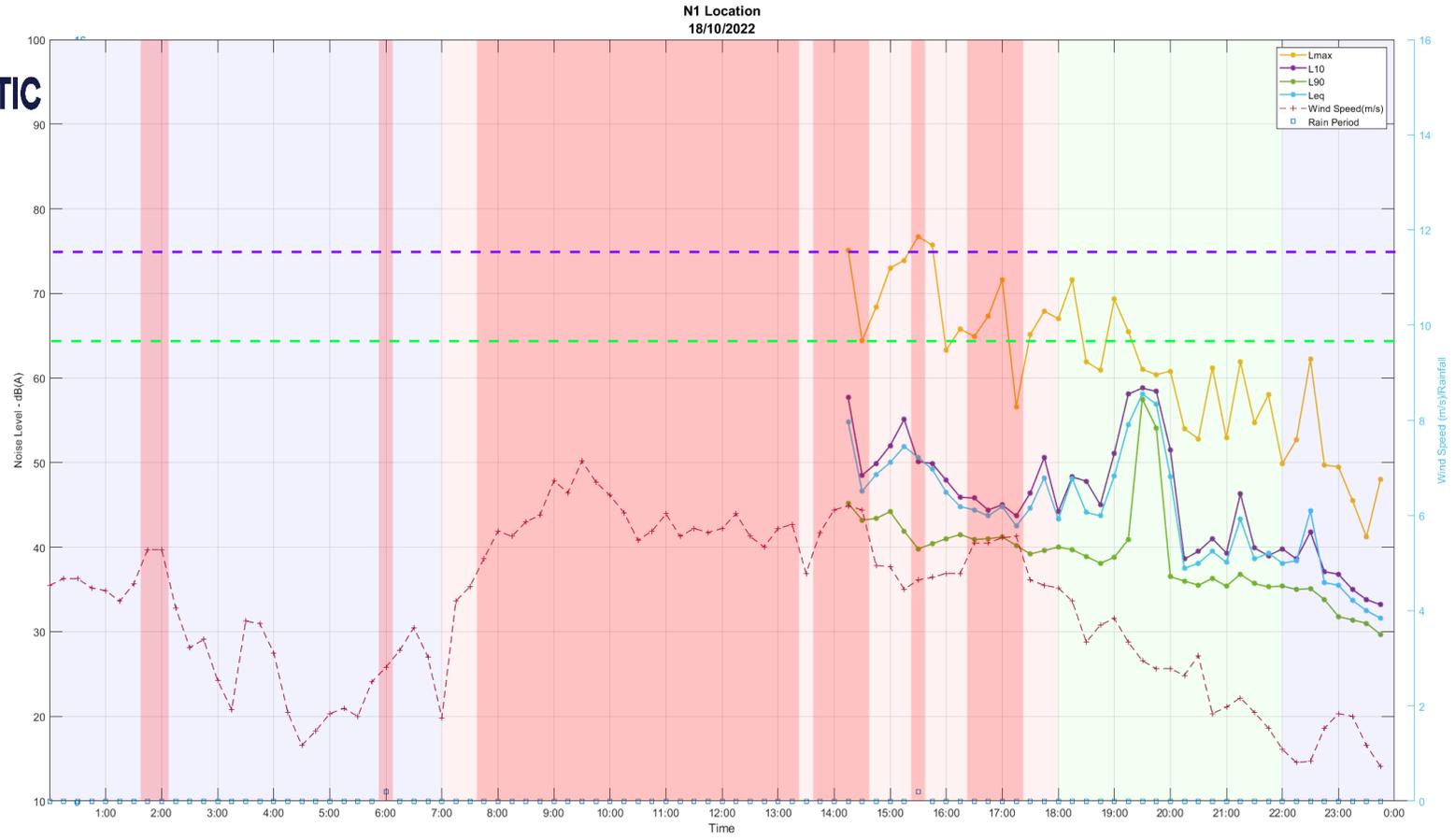
Frequency Content of Vibration Levels at M7715 Residential on 31-10-2022



## **APPENDIX 4: UNATTENDED NOISE MONITORING DAILY GRAPHS (N1)**

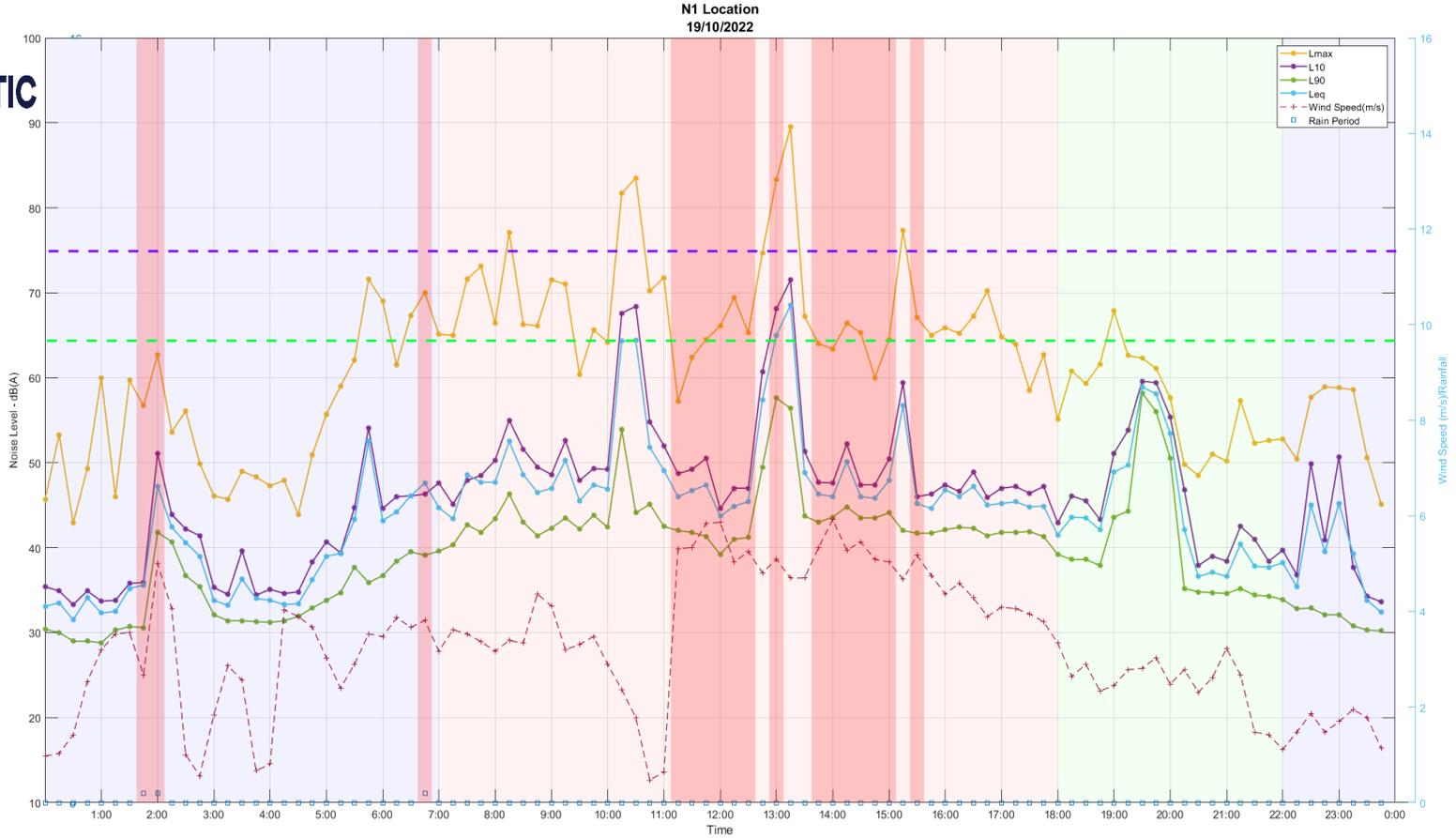


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - - -





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 - - - - -



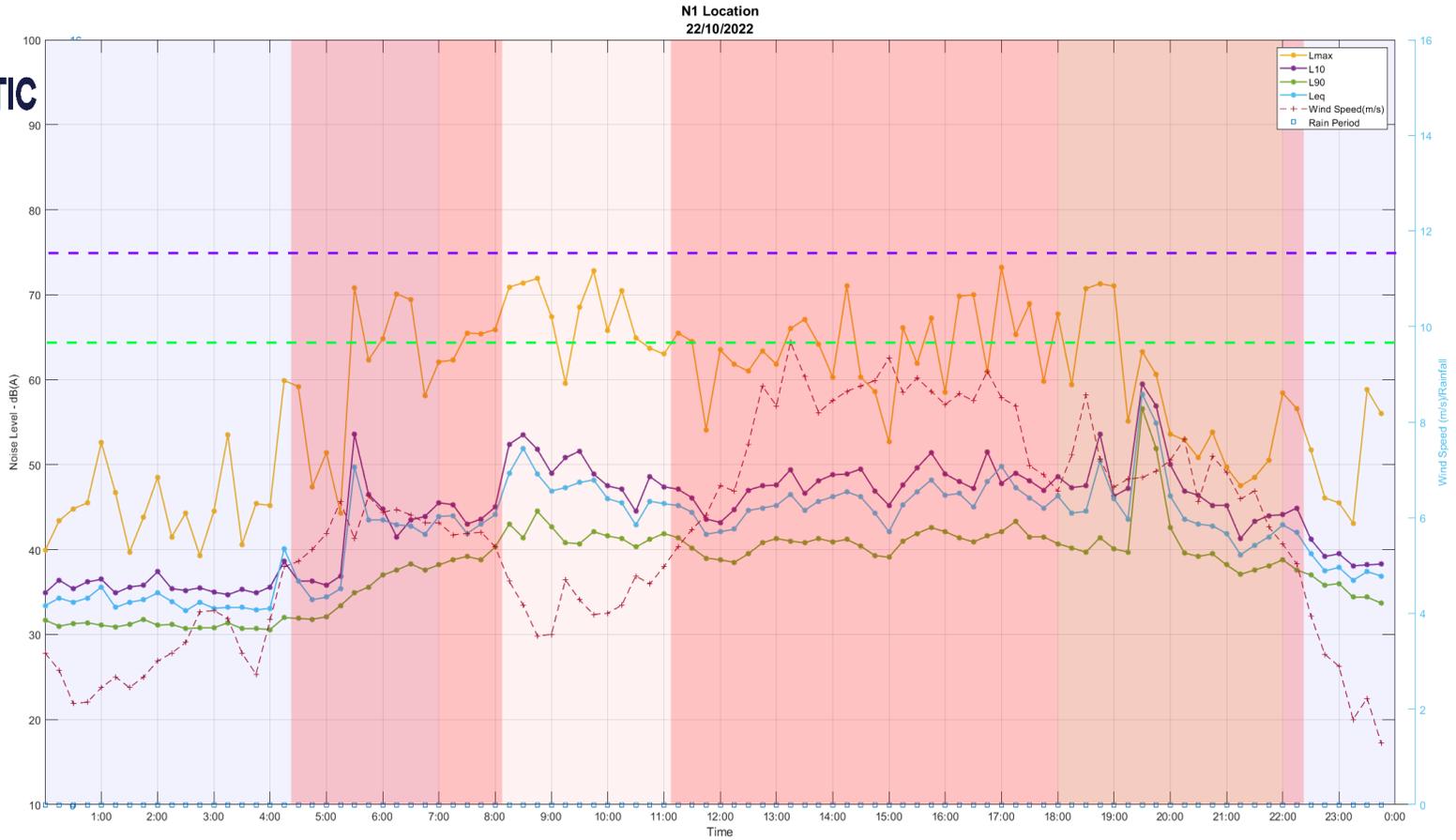


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -



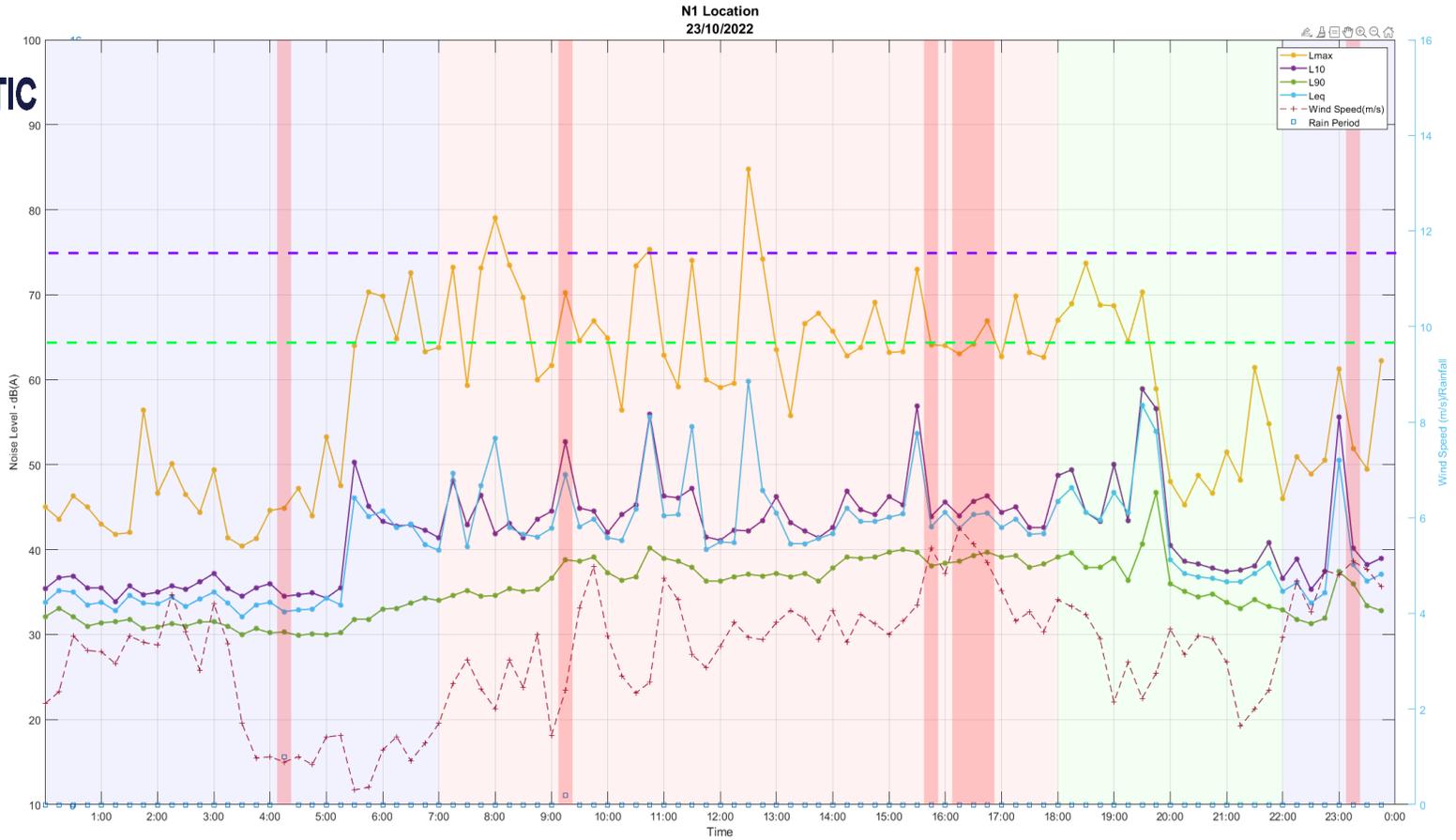


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - - -



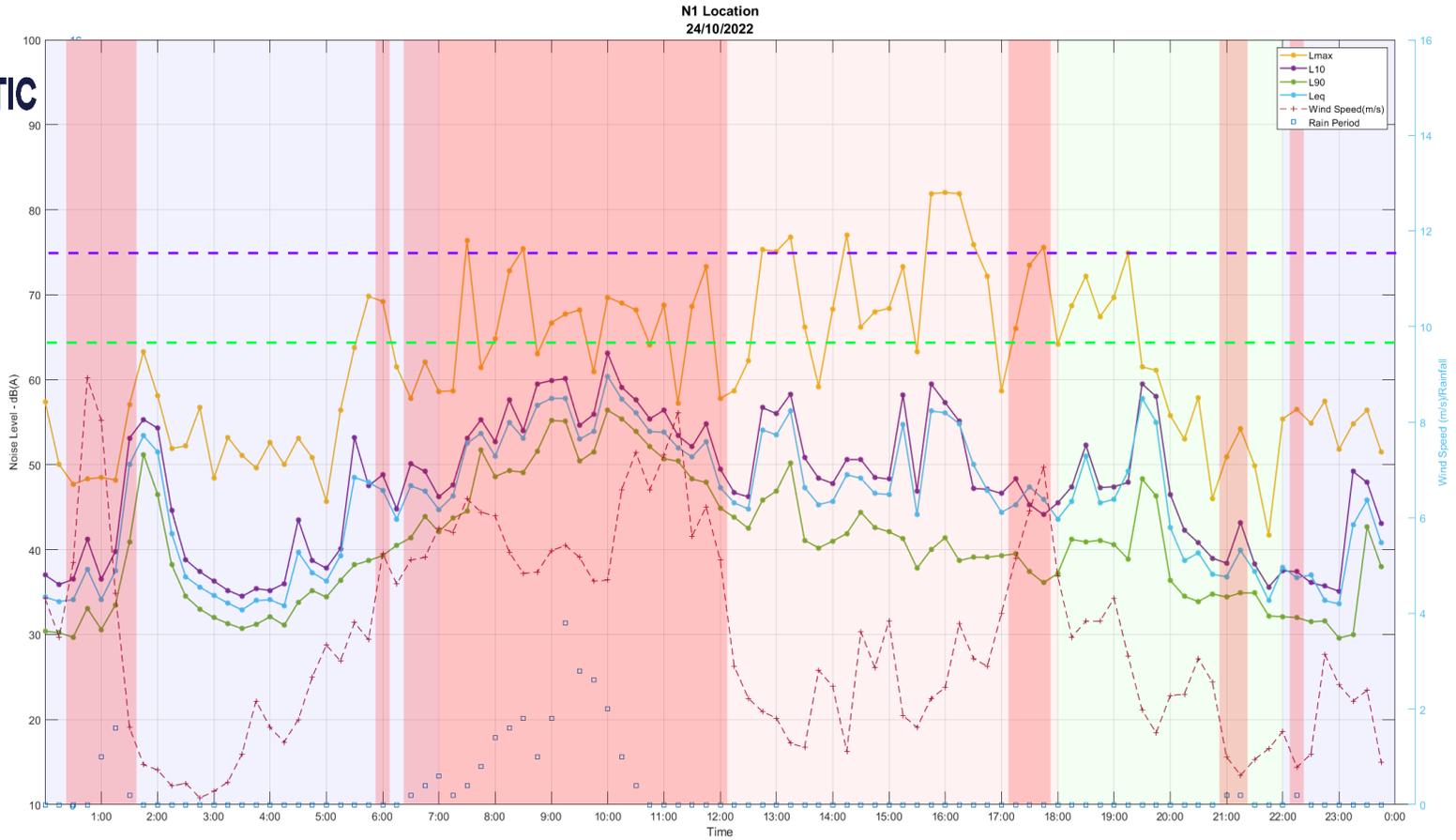


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -



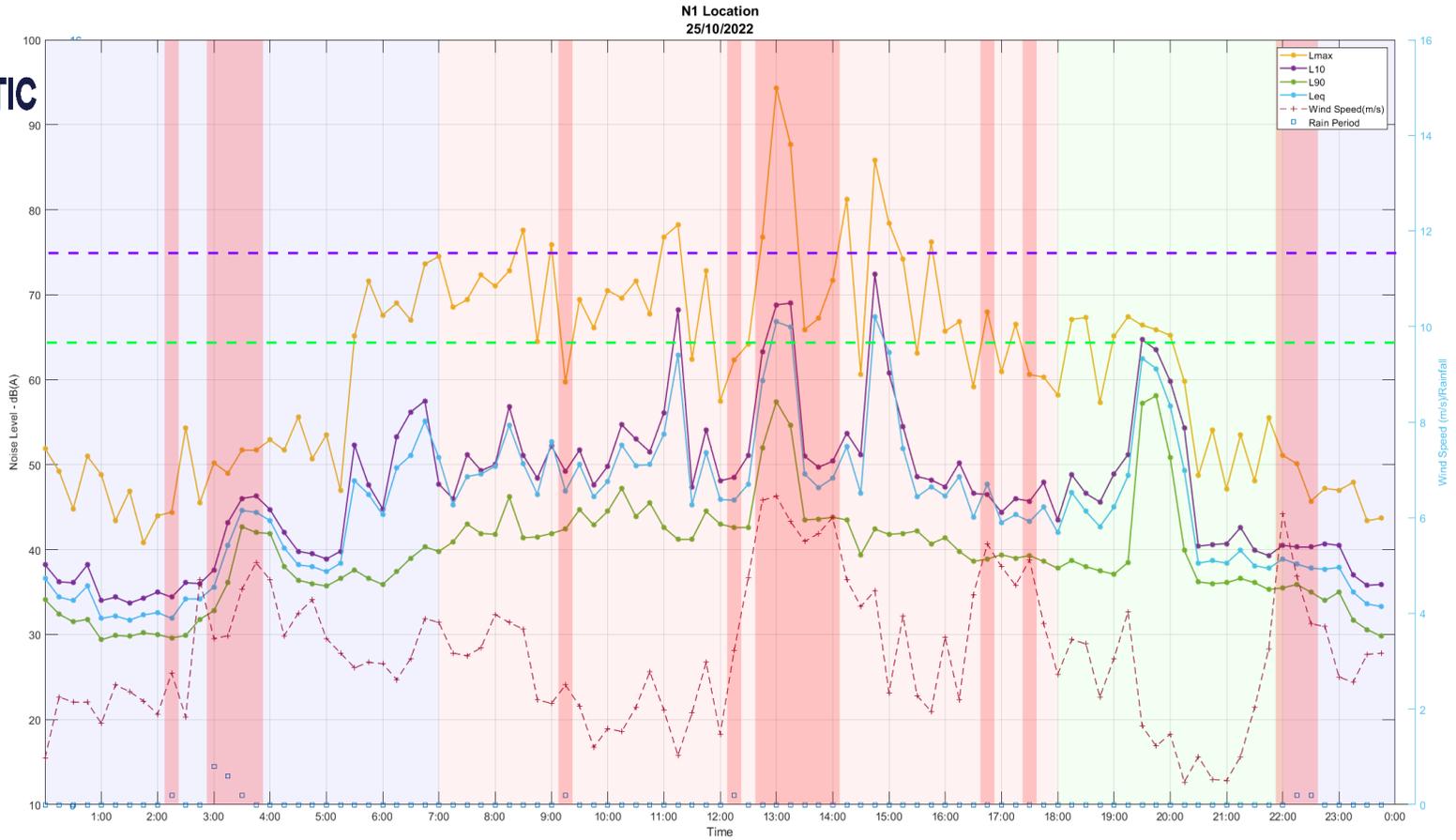


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -



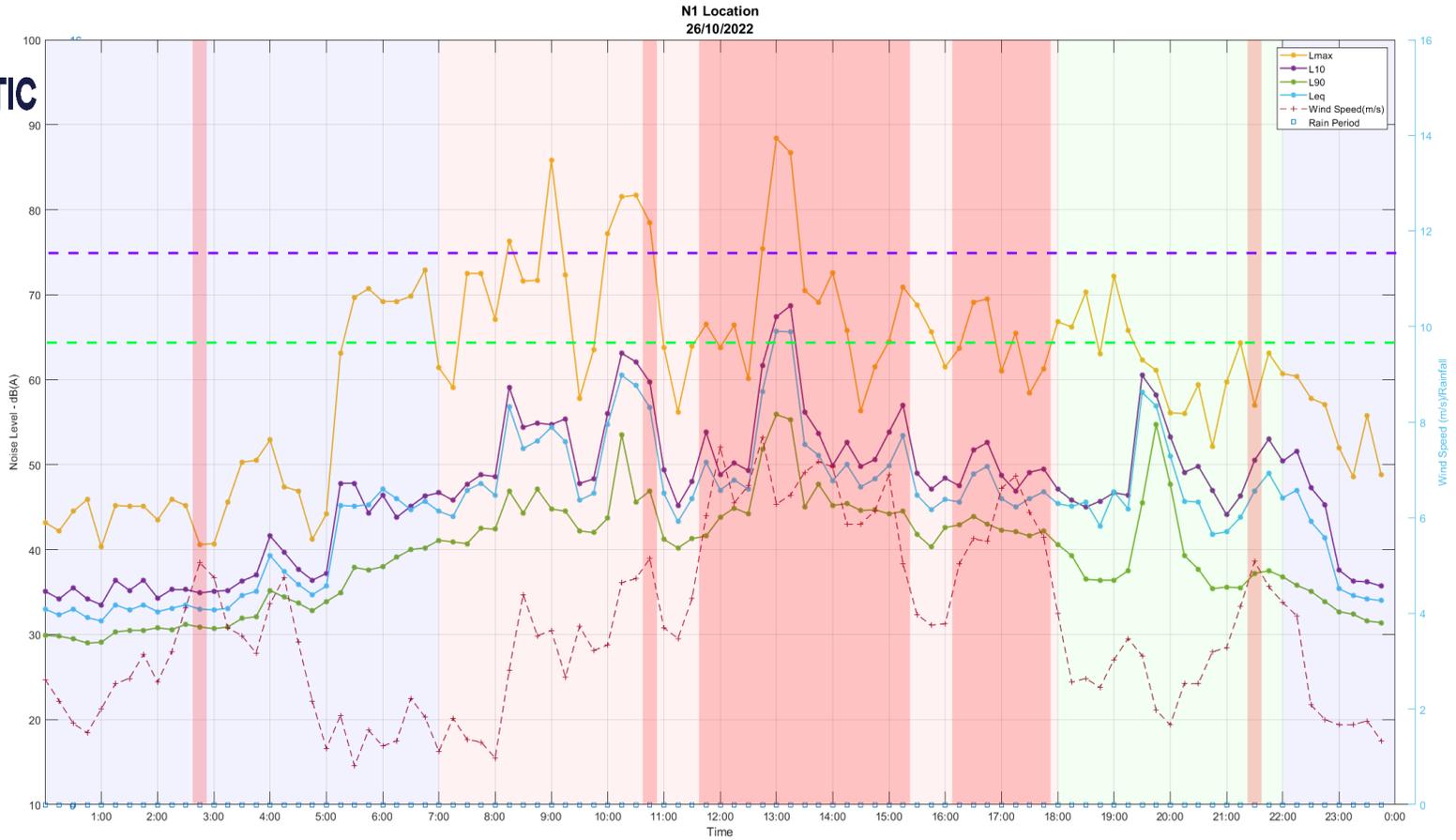


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -





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



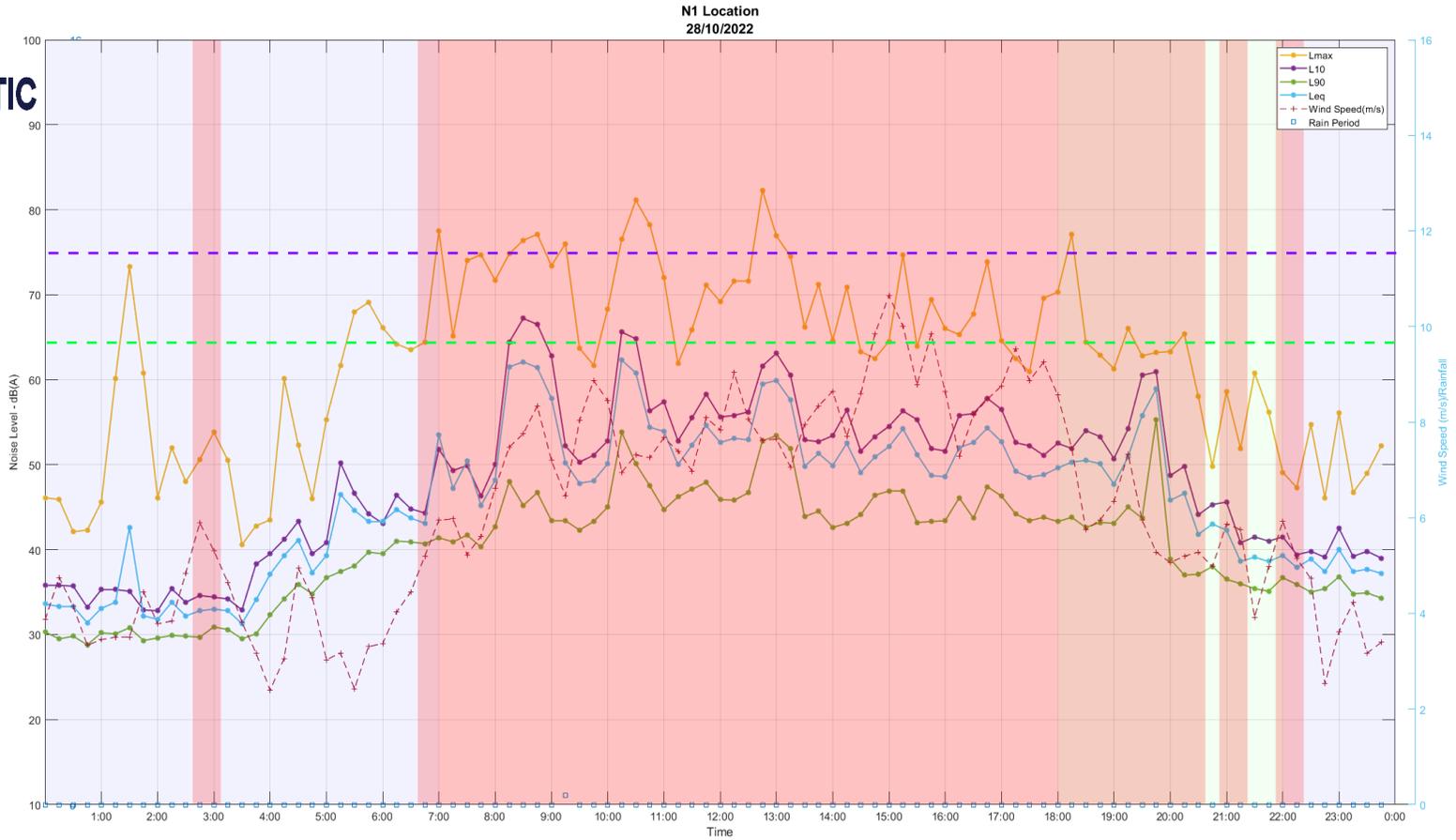


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -





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



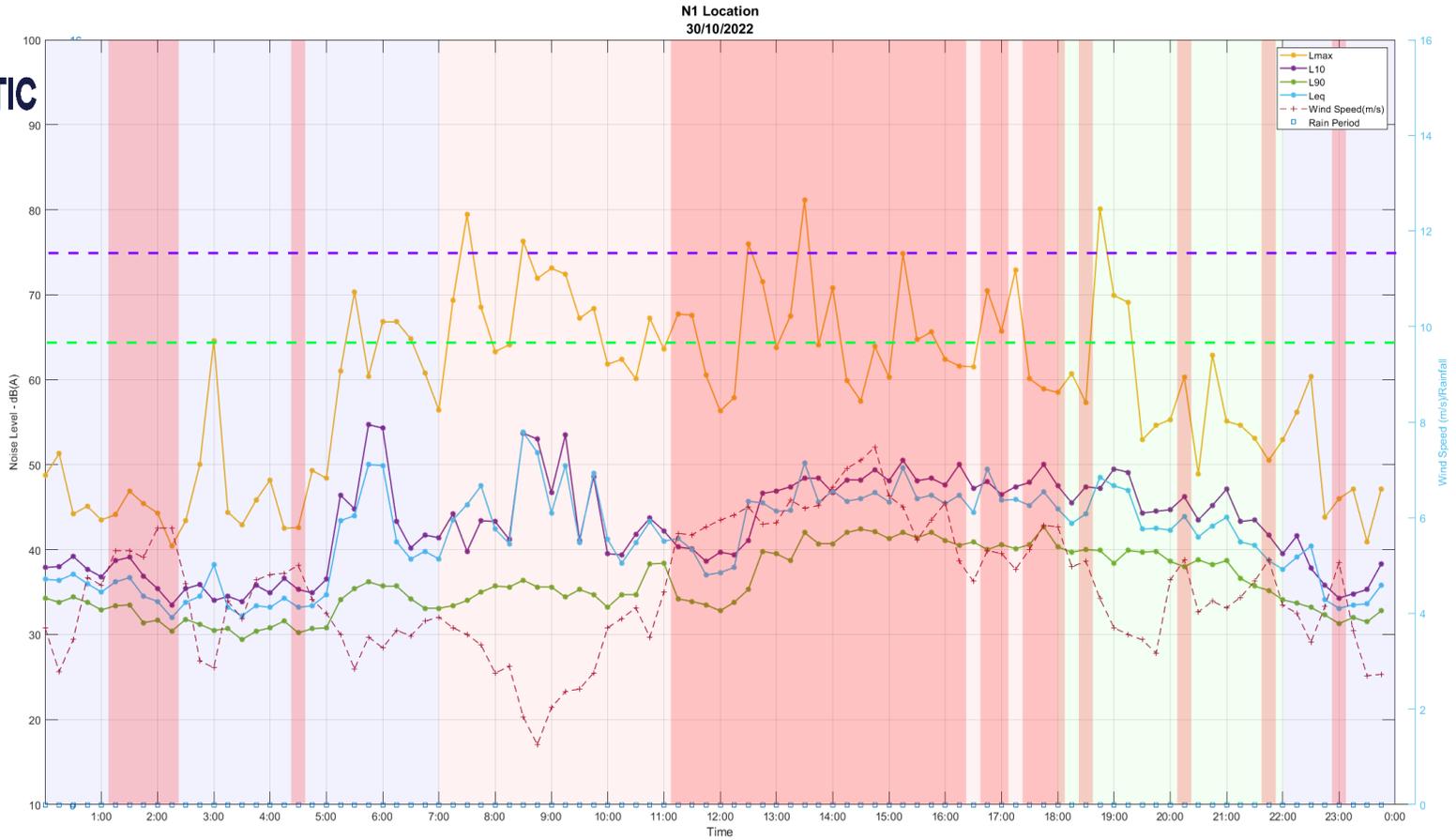


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - - -





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



Noise Management Levels

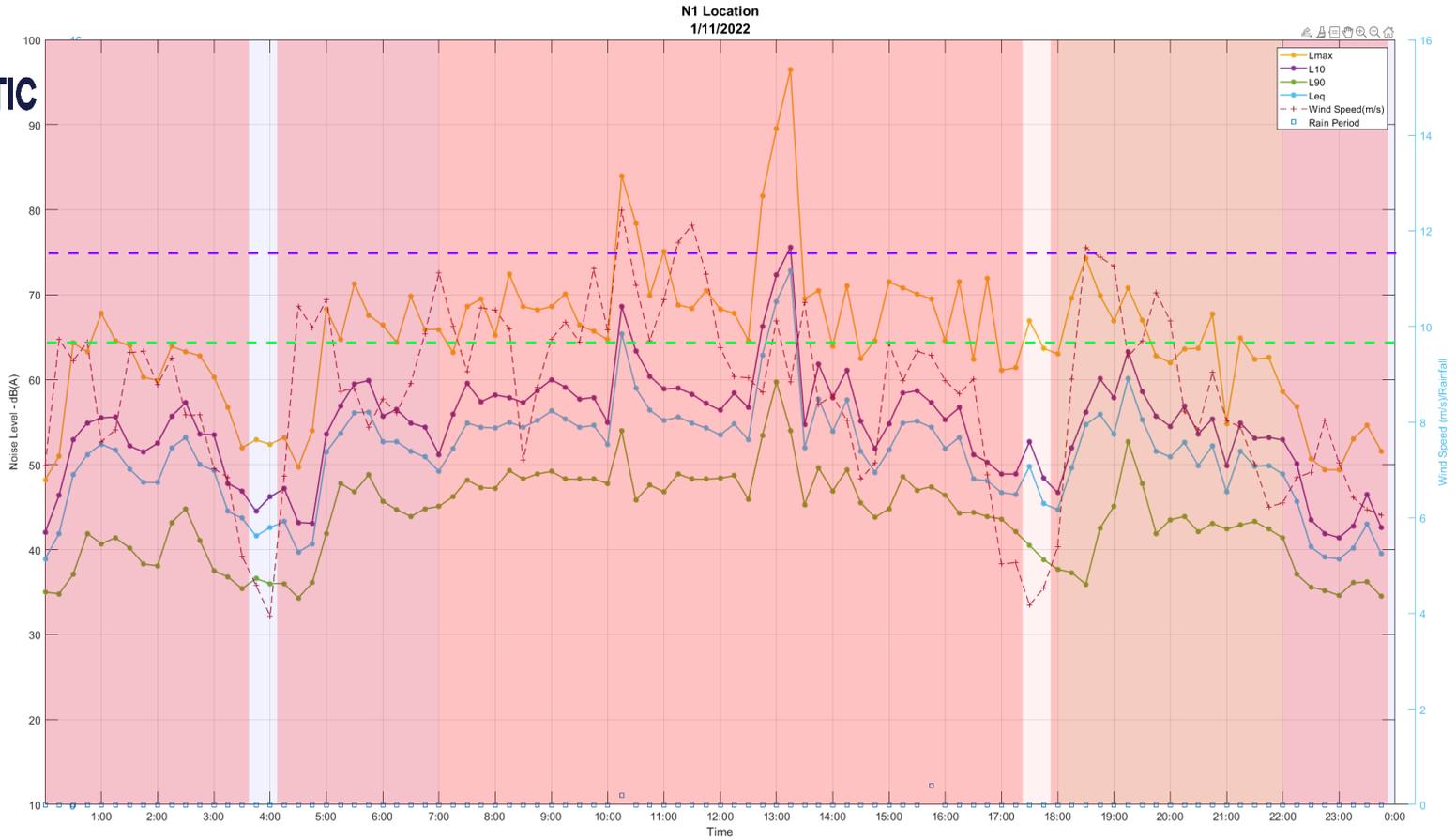
Active Recreation Areas - 65 dB(A)Leq - - - - -

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



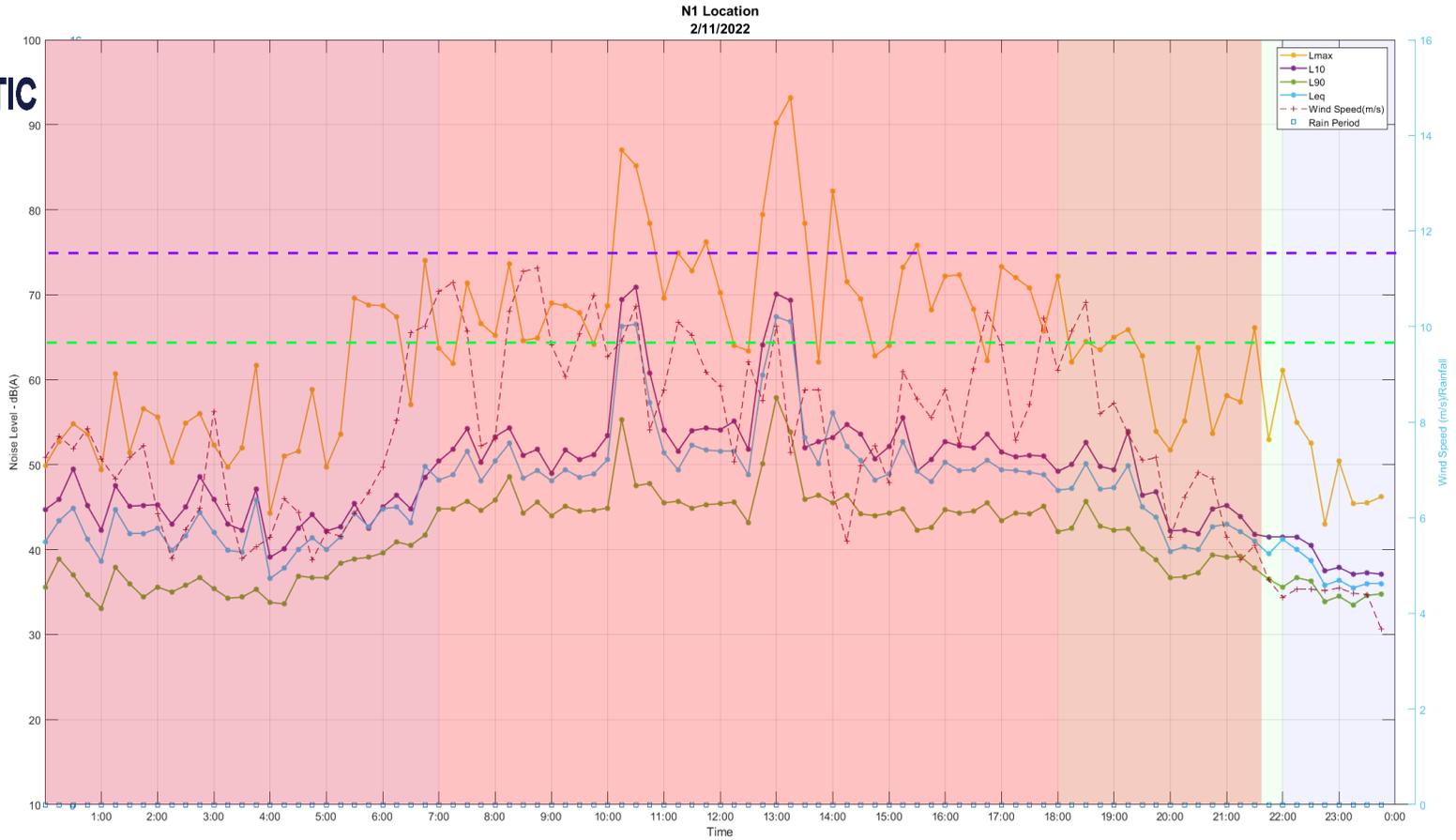


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -



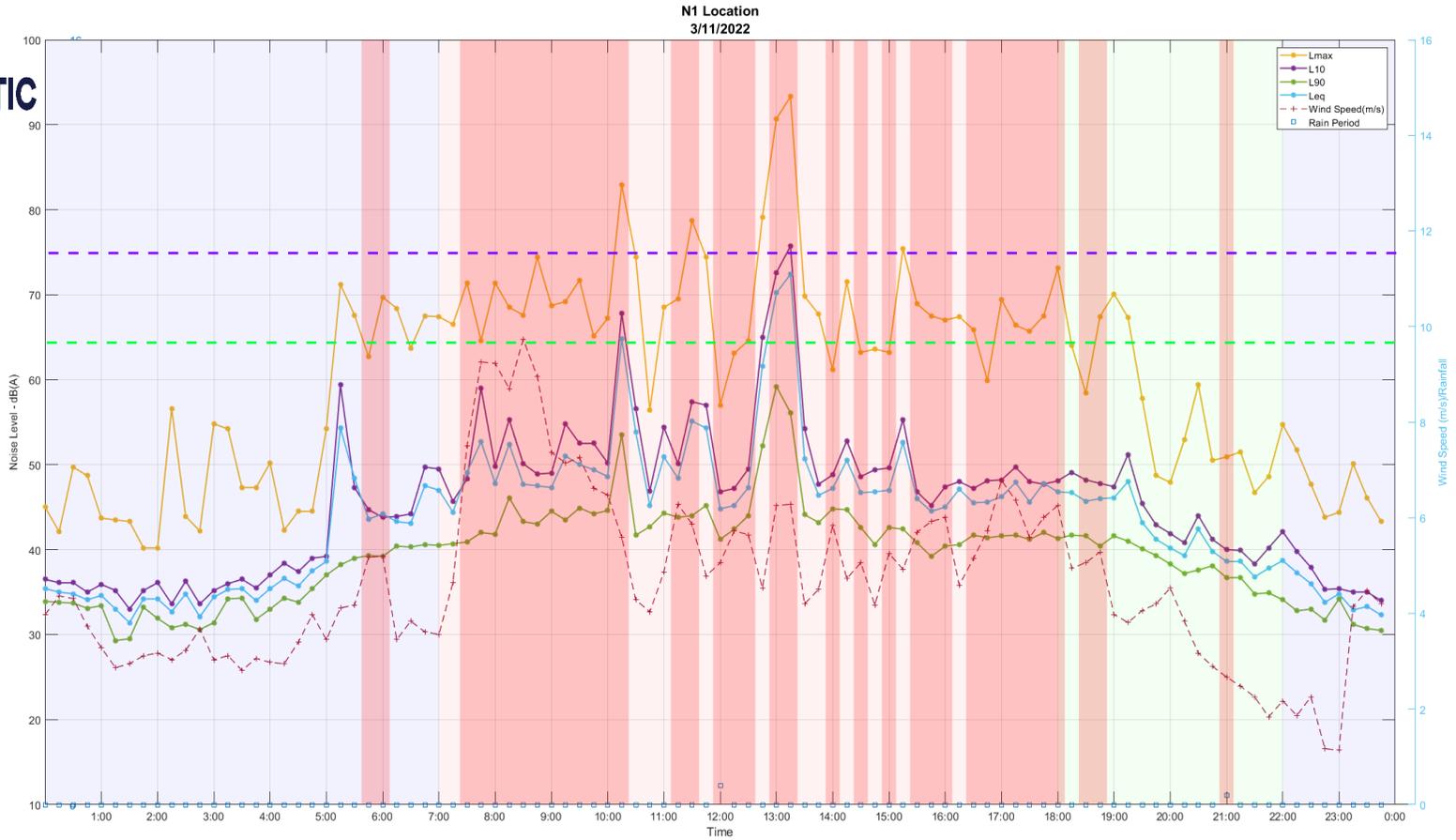


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -



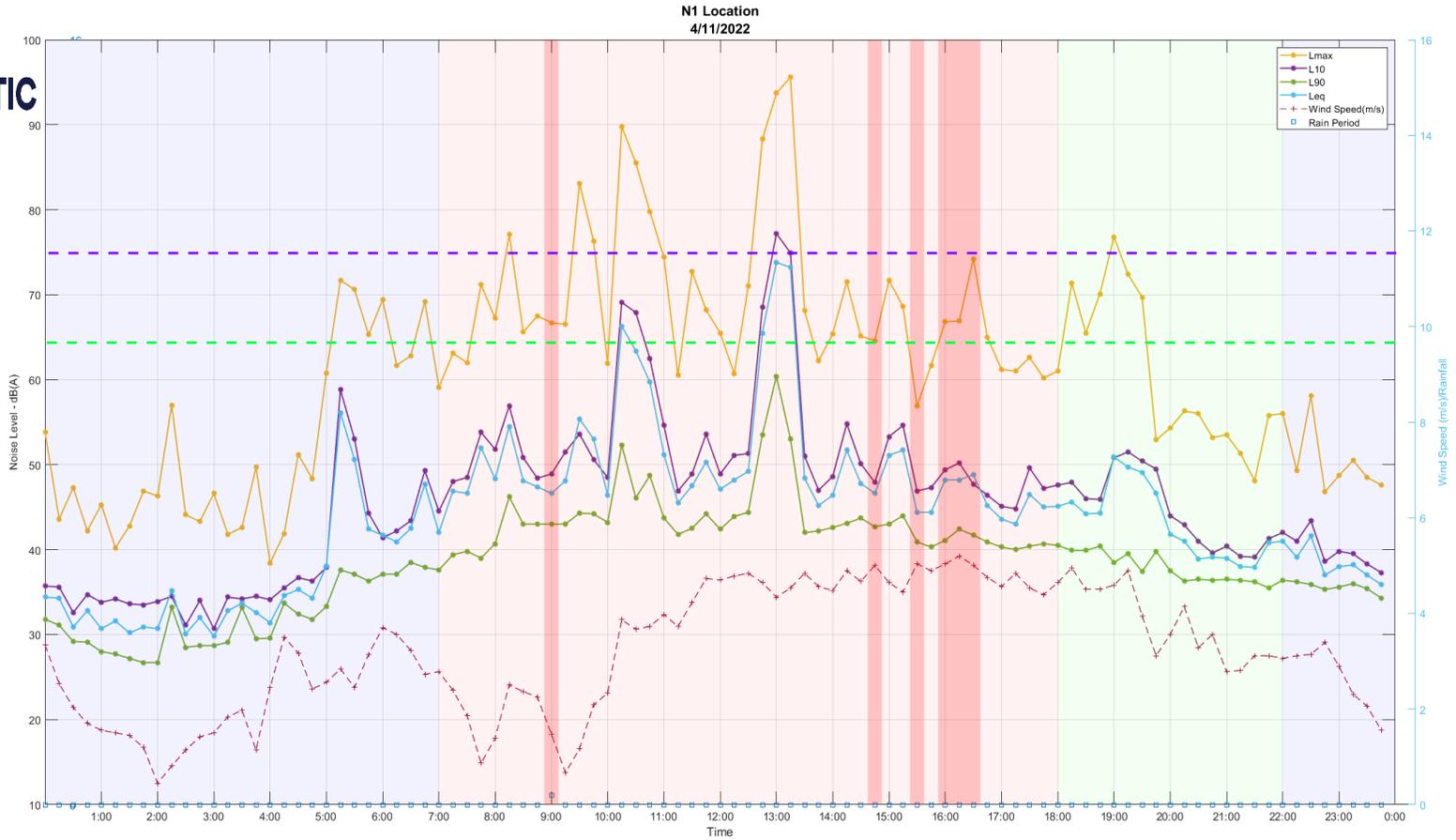


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -





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



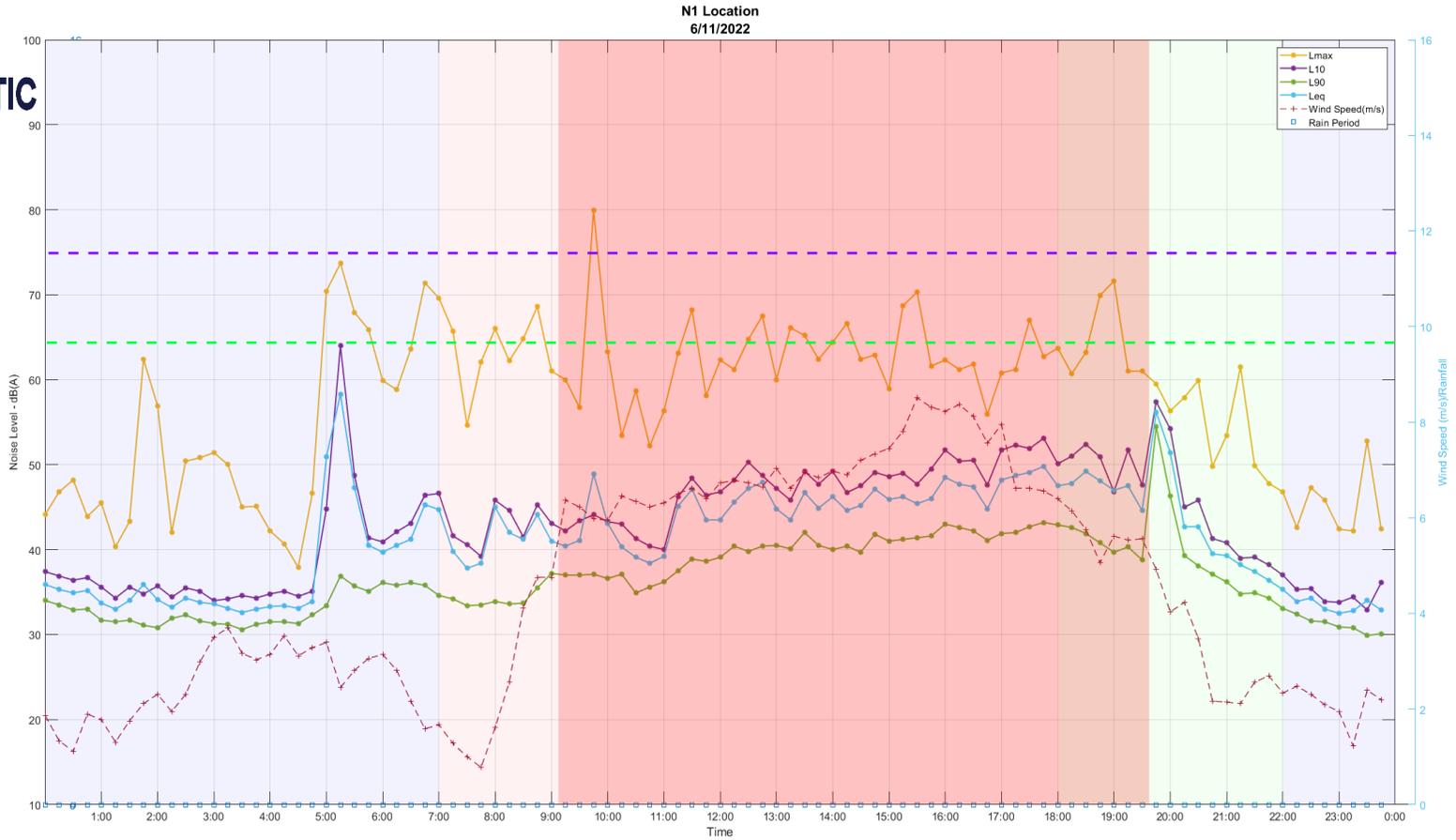


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -





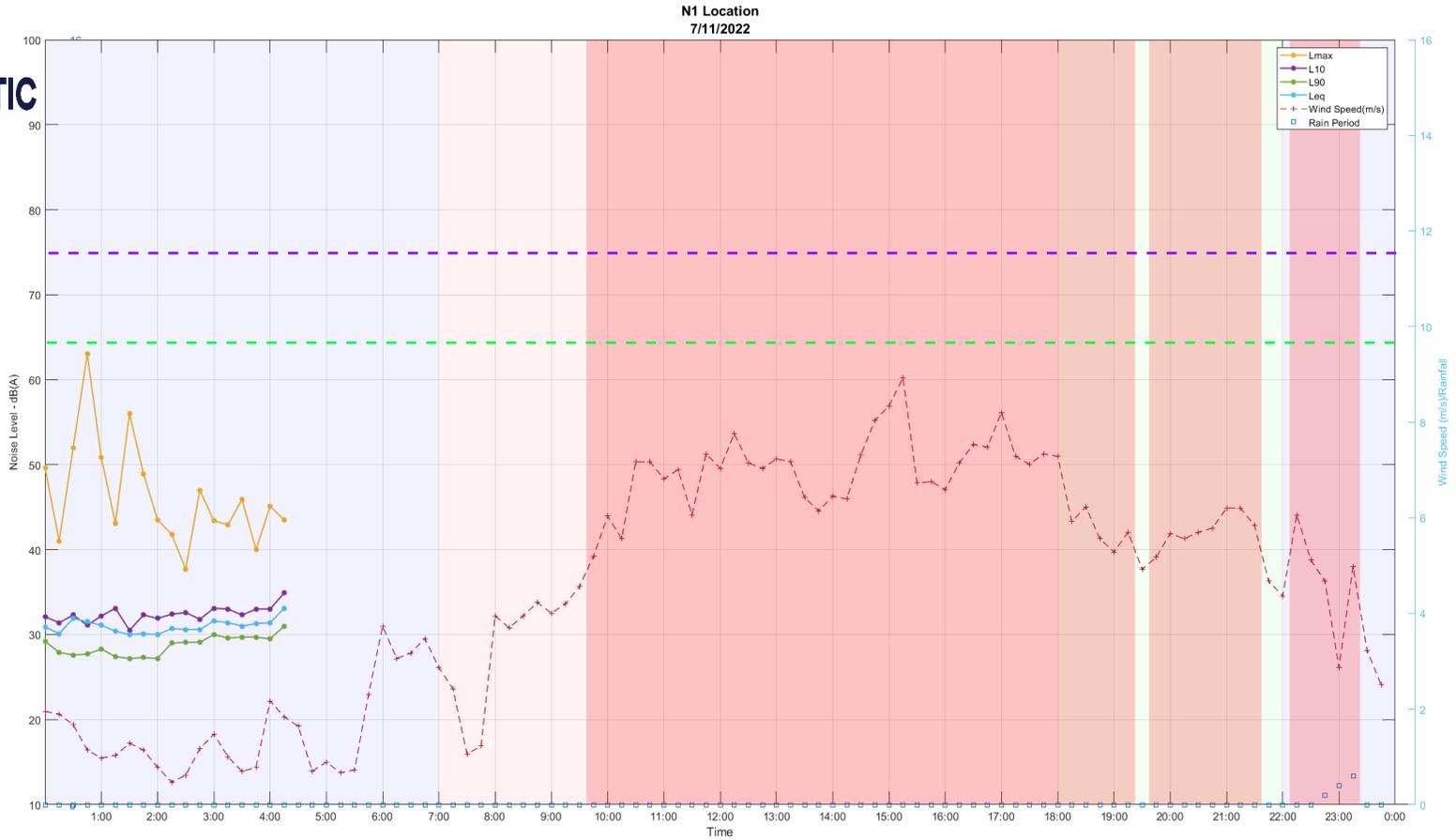
Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -



Noise Management Levels

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

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



## APPENDIX 5: UNATTENDED NOISE MONITORING DAILY GRAPHS (N2)



N2 Location  
18/10/2022

### Noise Management Levels

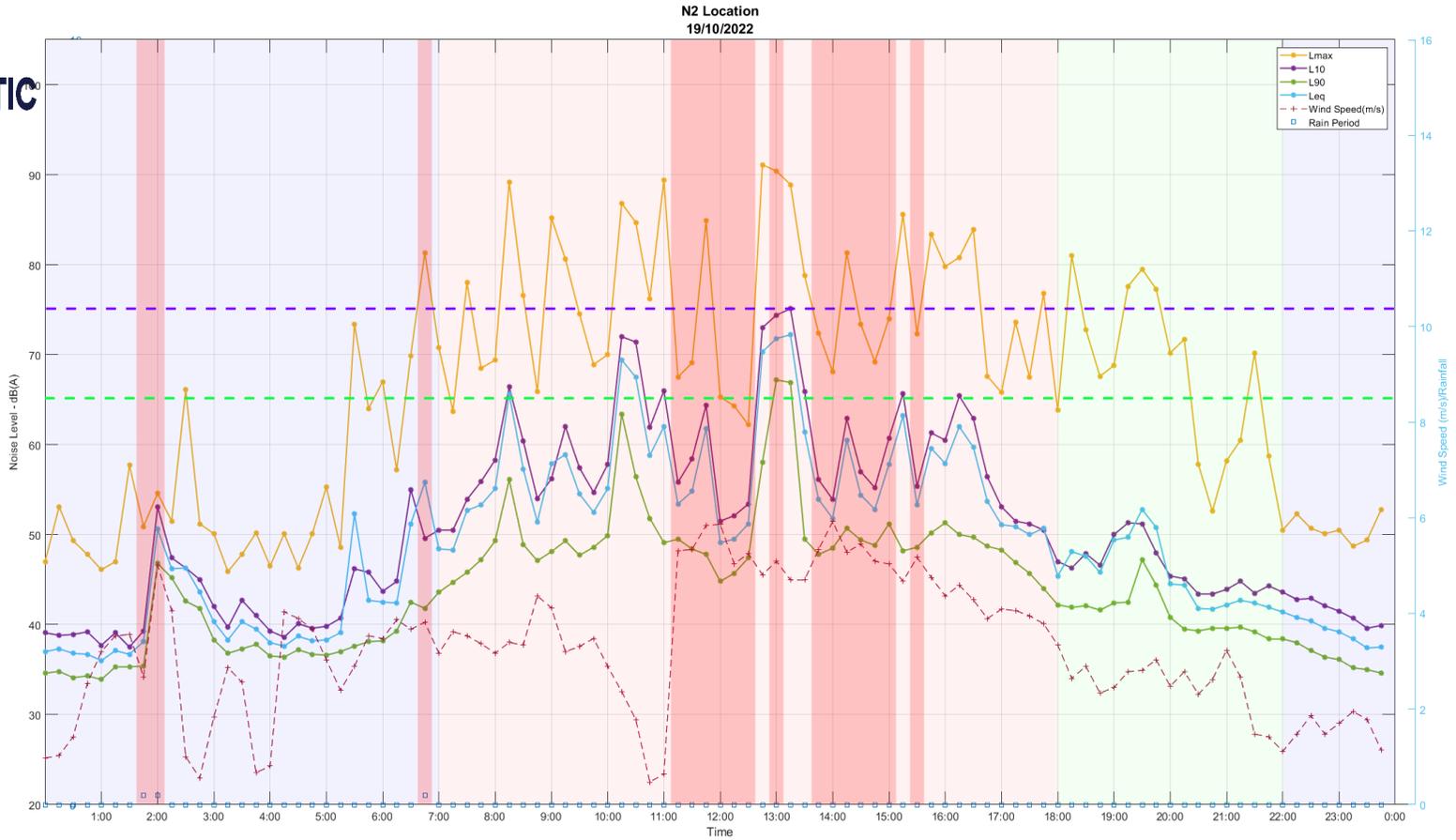
Active Recreation Areas - 65 dB(A)Leq

Highly Noise Affected Level- 75 dB(A)Leq





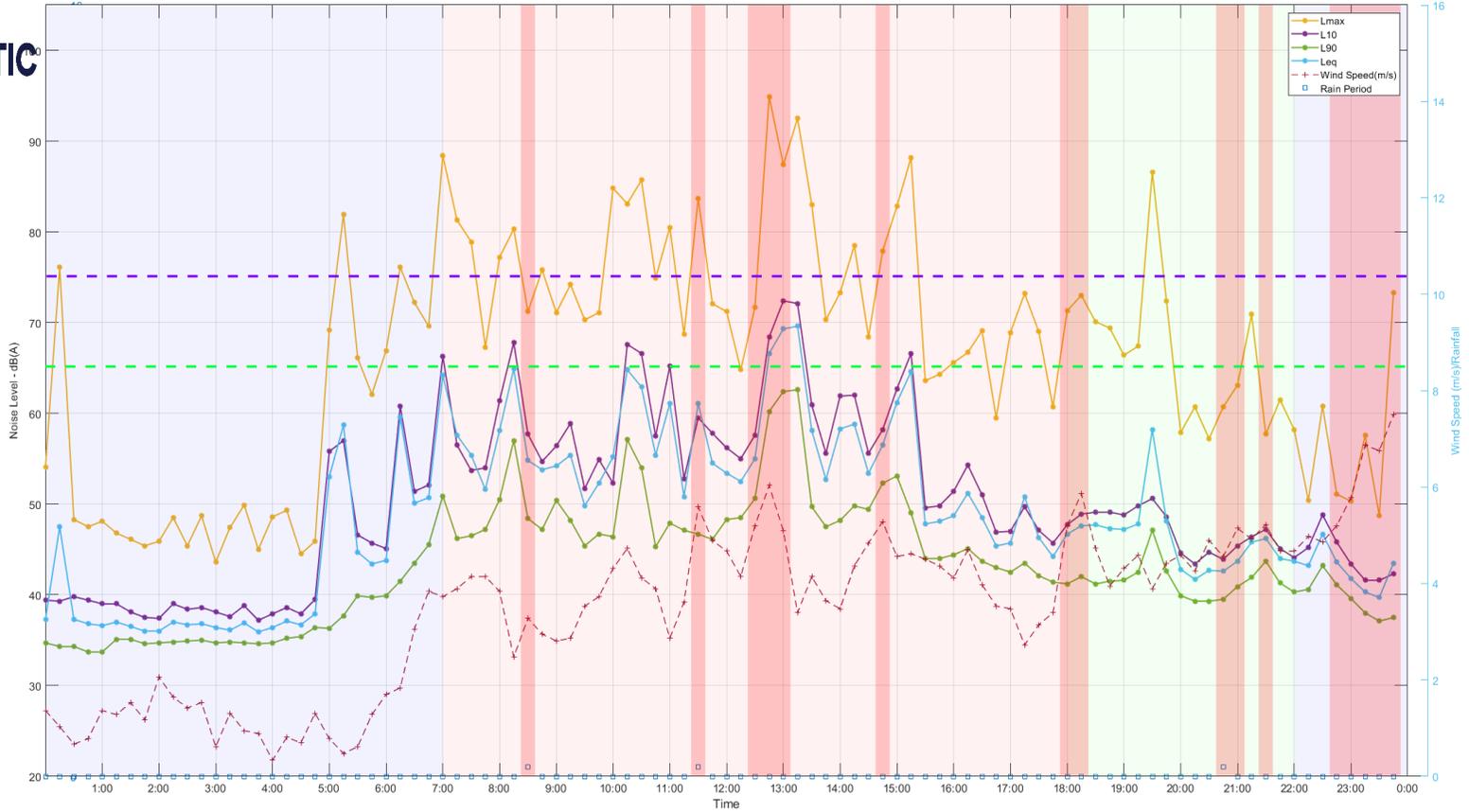
Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -





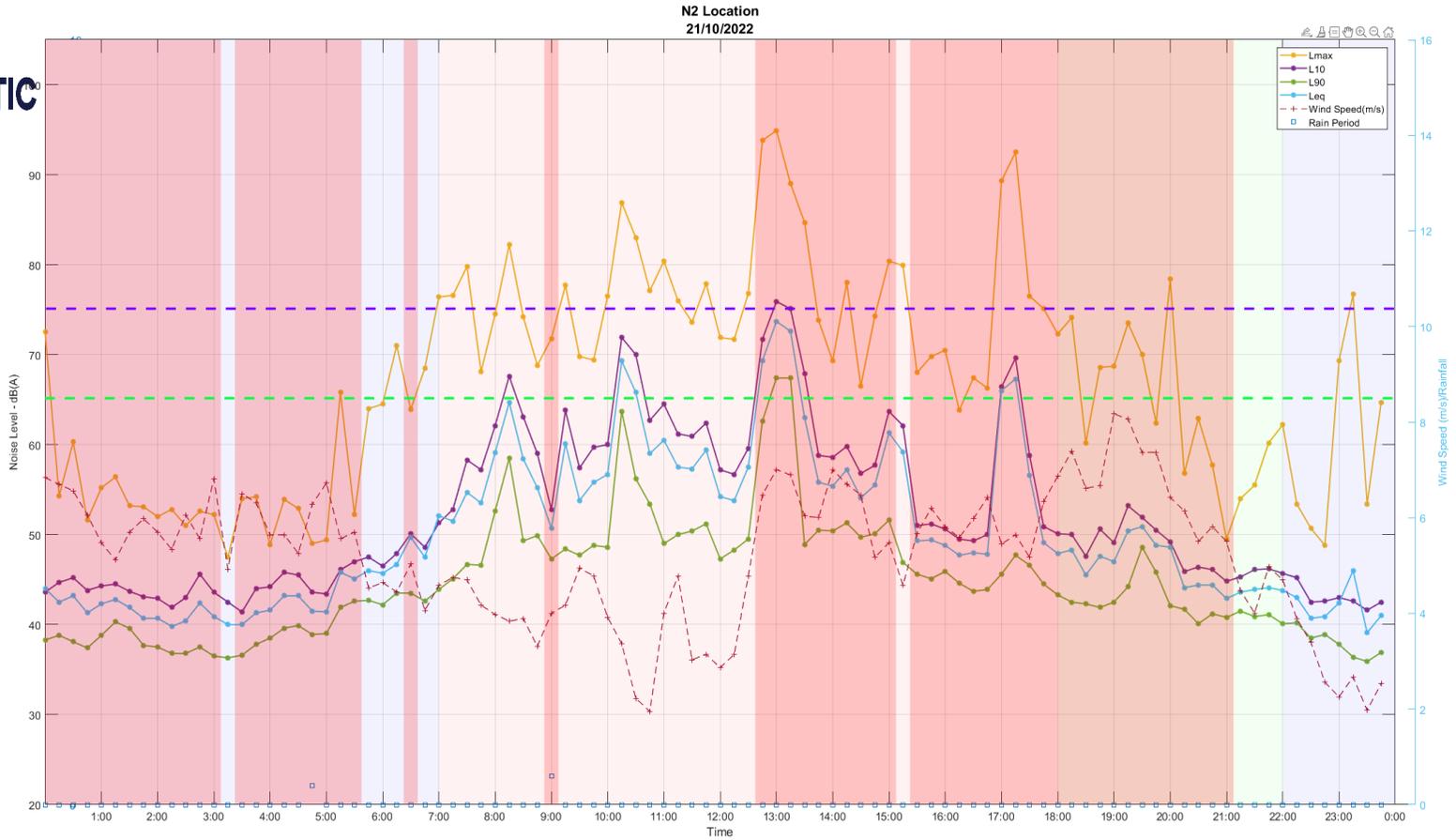
Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -

N2 Location  
20/10/2022



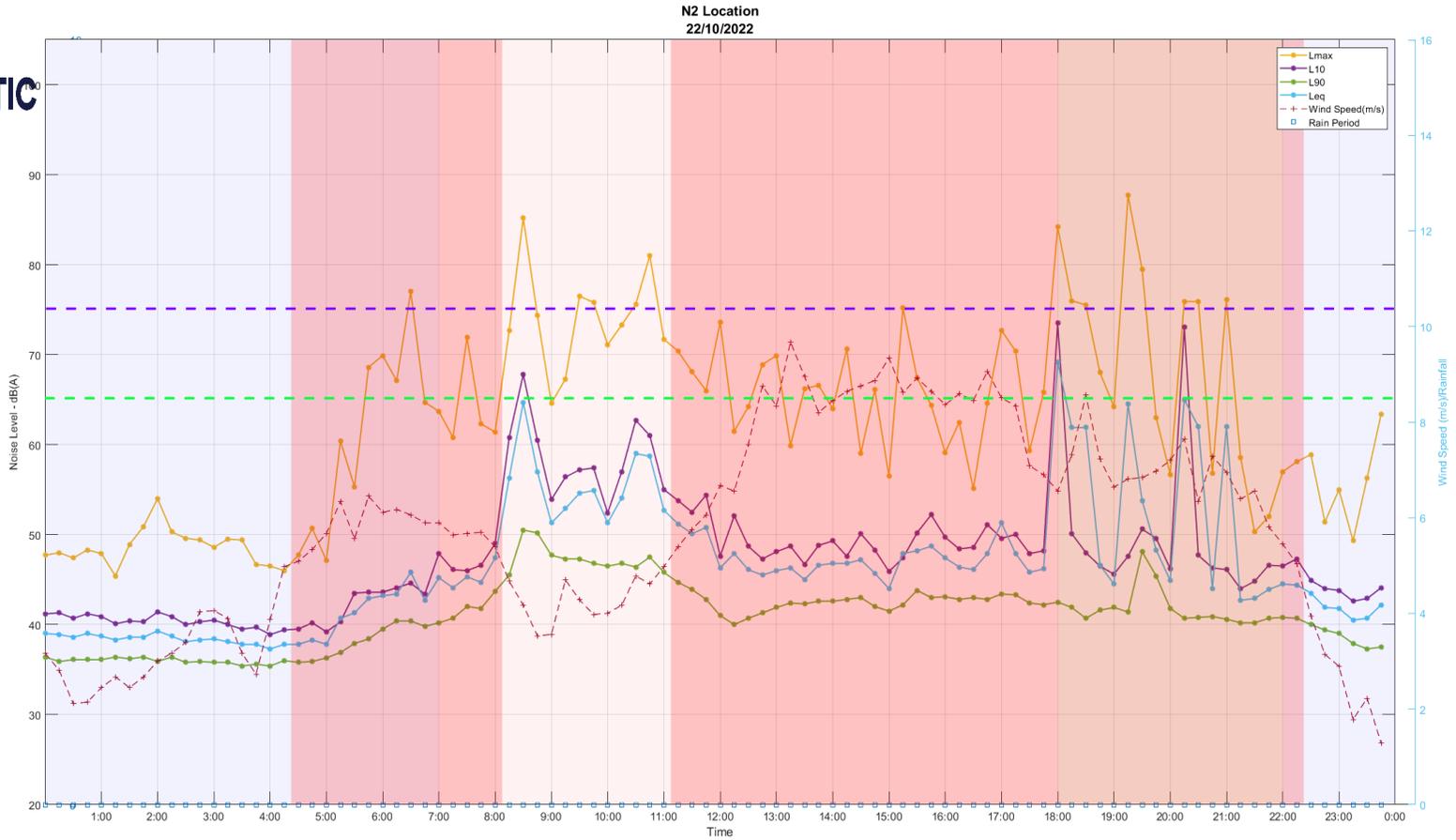


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -





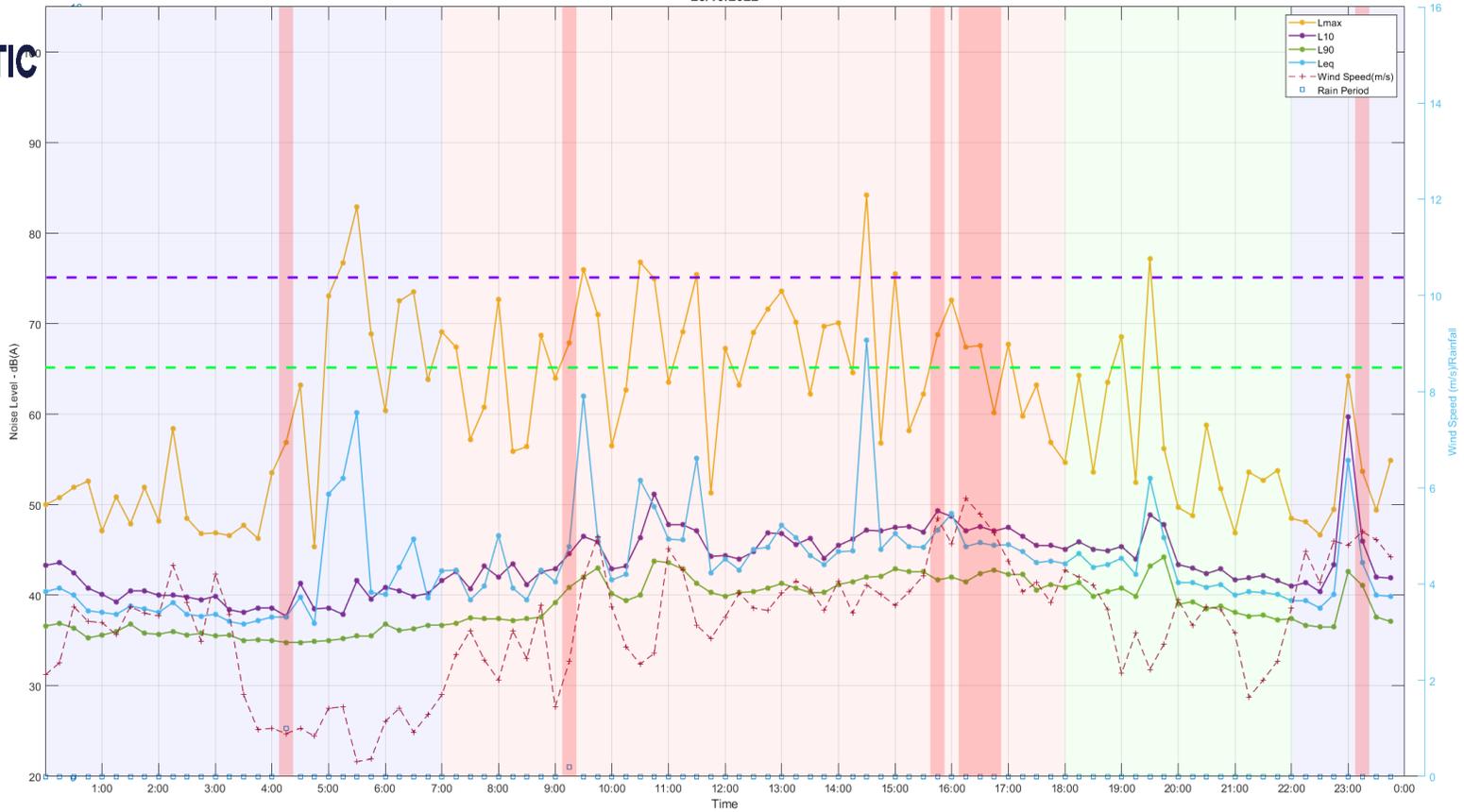
Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -





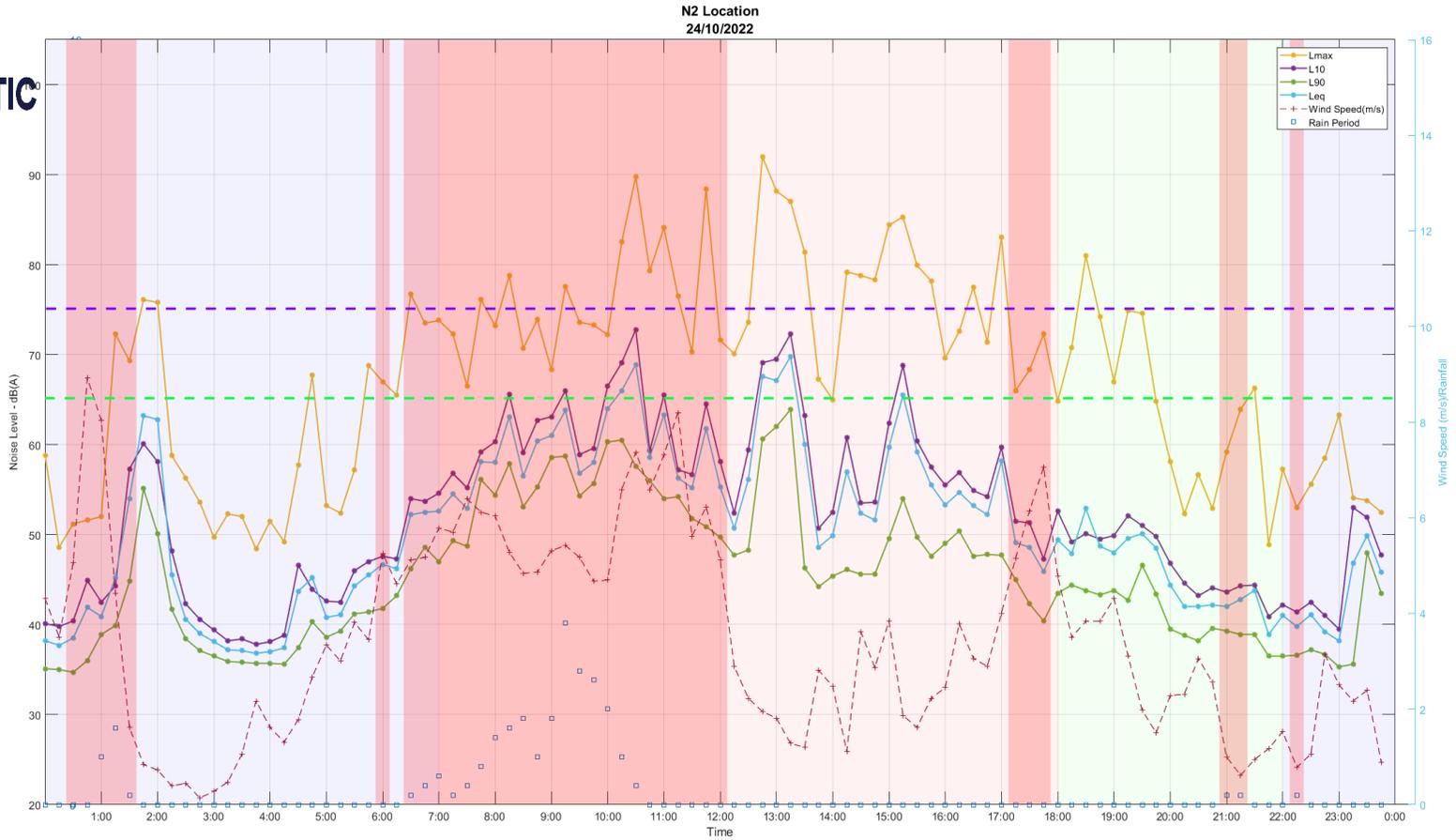
Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq  
Highly Noise Affected Level- 75 dB(A)Leq

N2 Location  
23/10/2022



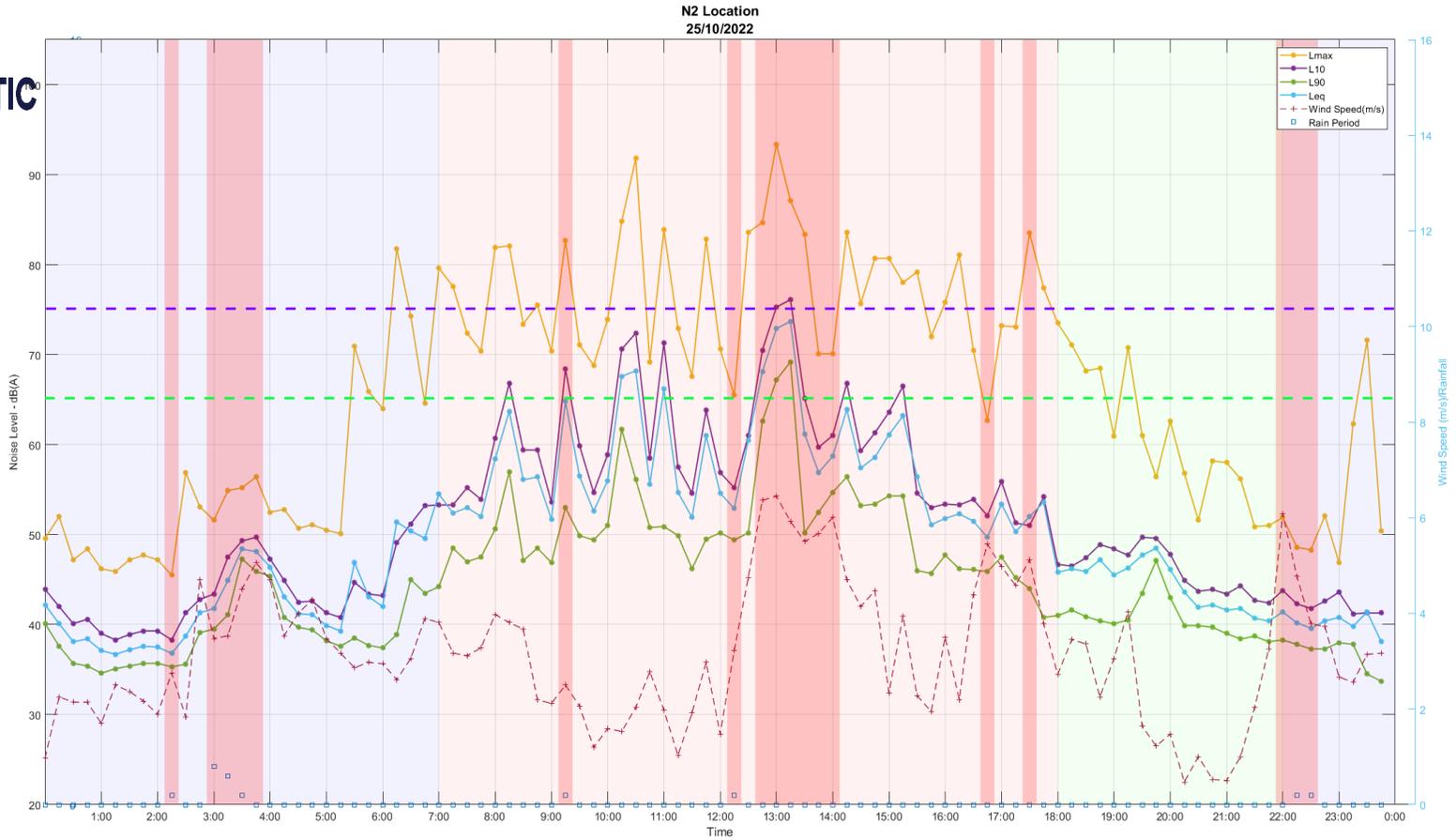


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq  
Highly Noise Affected Level- 75 dB(A)Leq





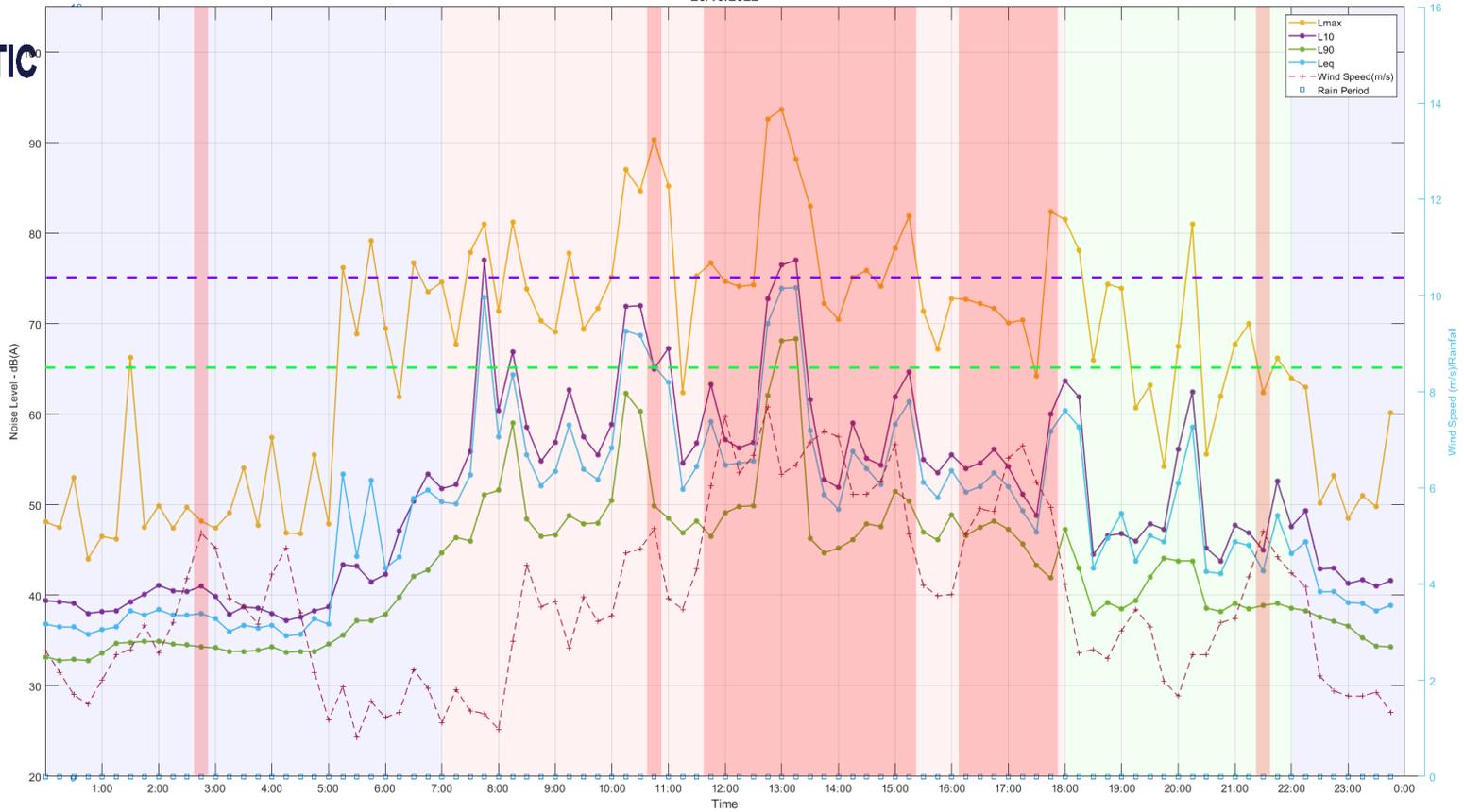
Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -





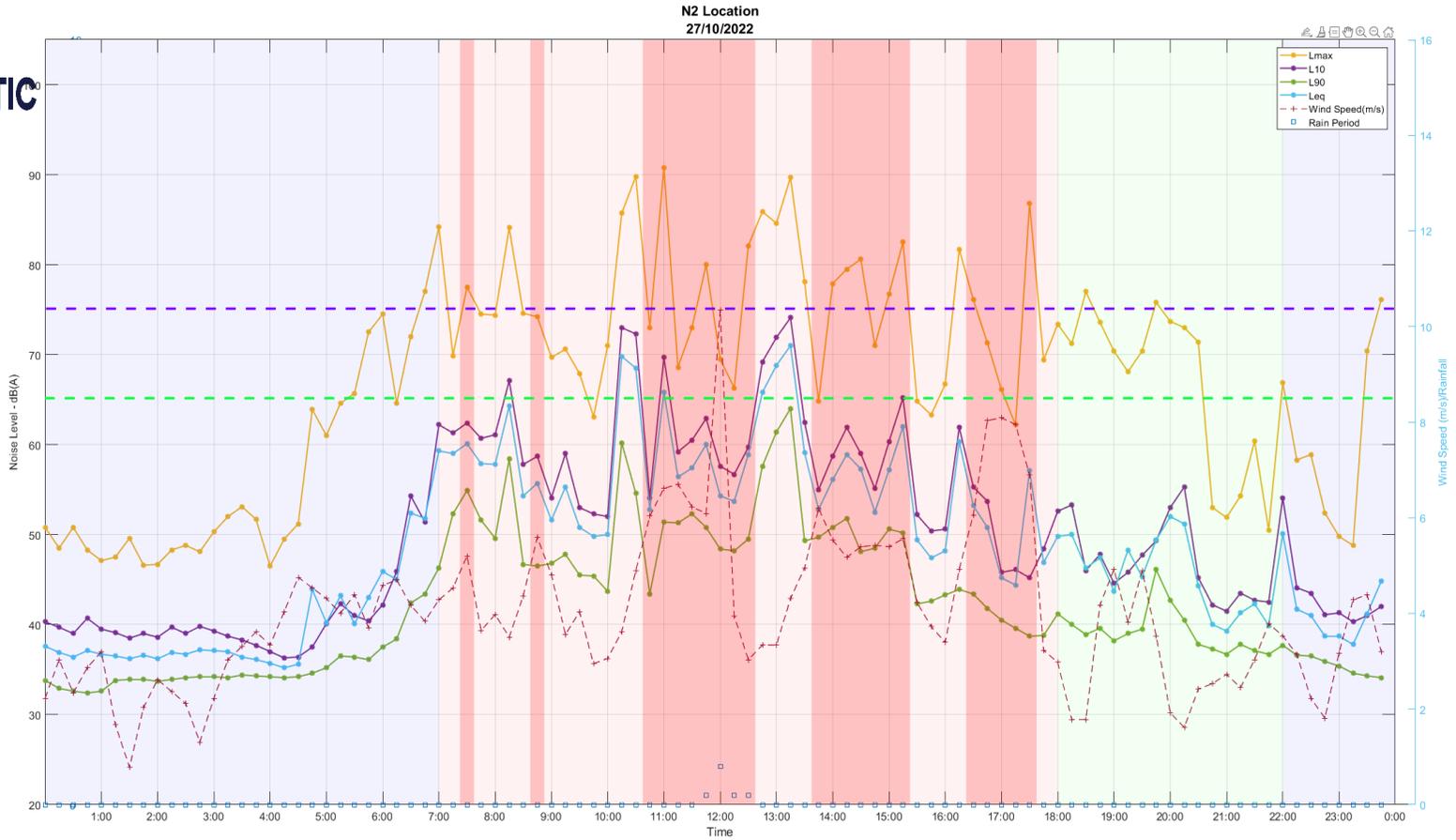
Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -

N2 Location  
26/10/2022





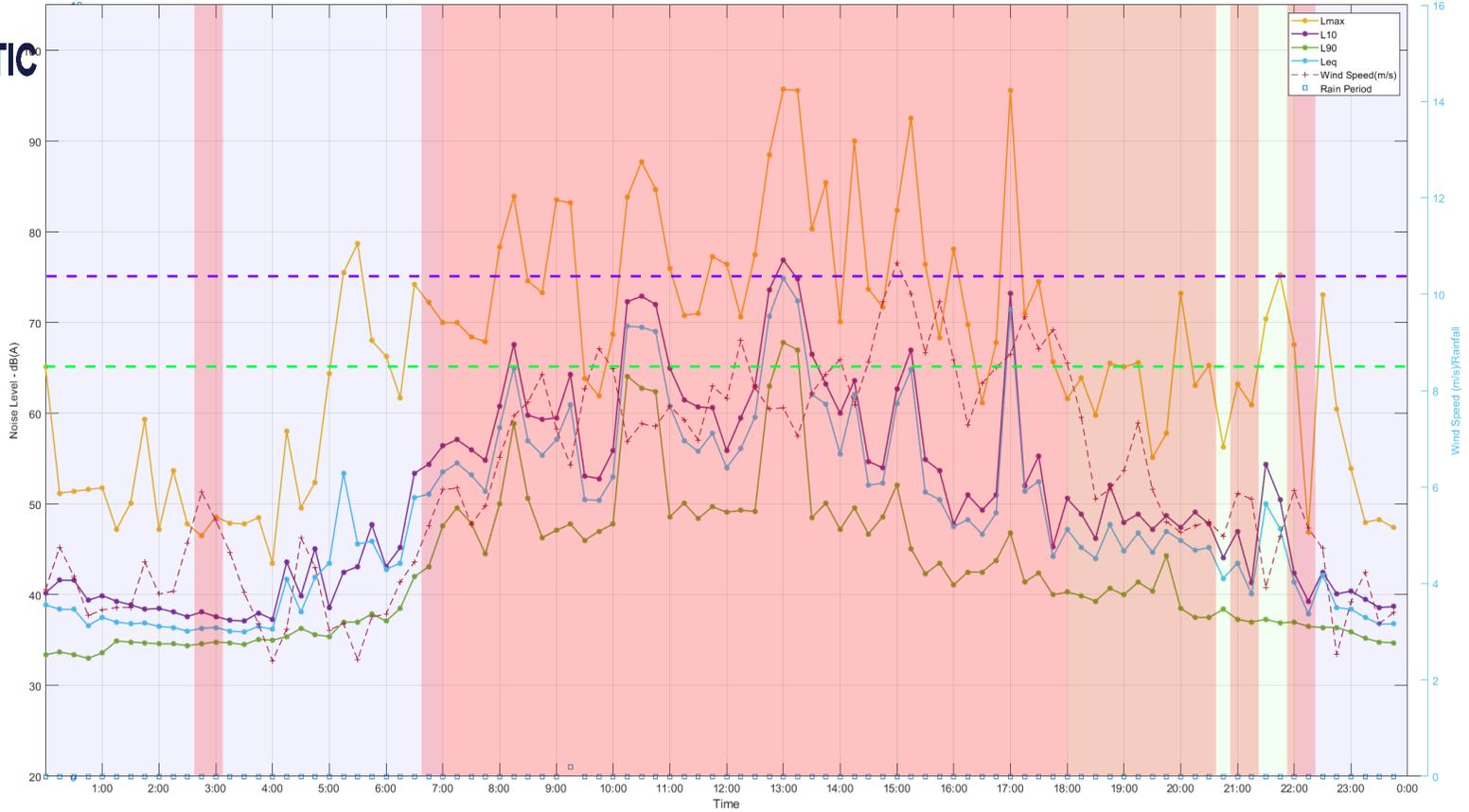
Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq  
Highly Noise Affected Level- 75 dB(A)Leq





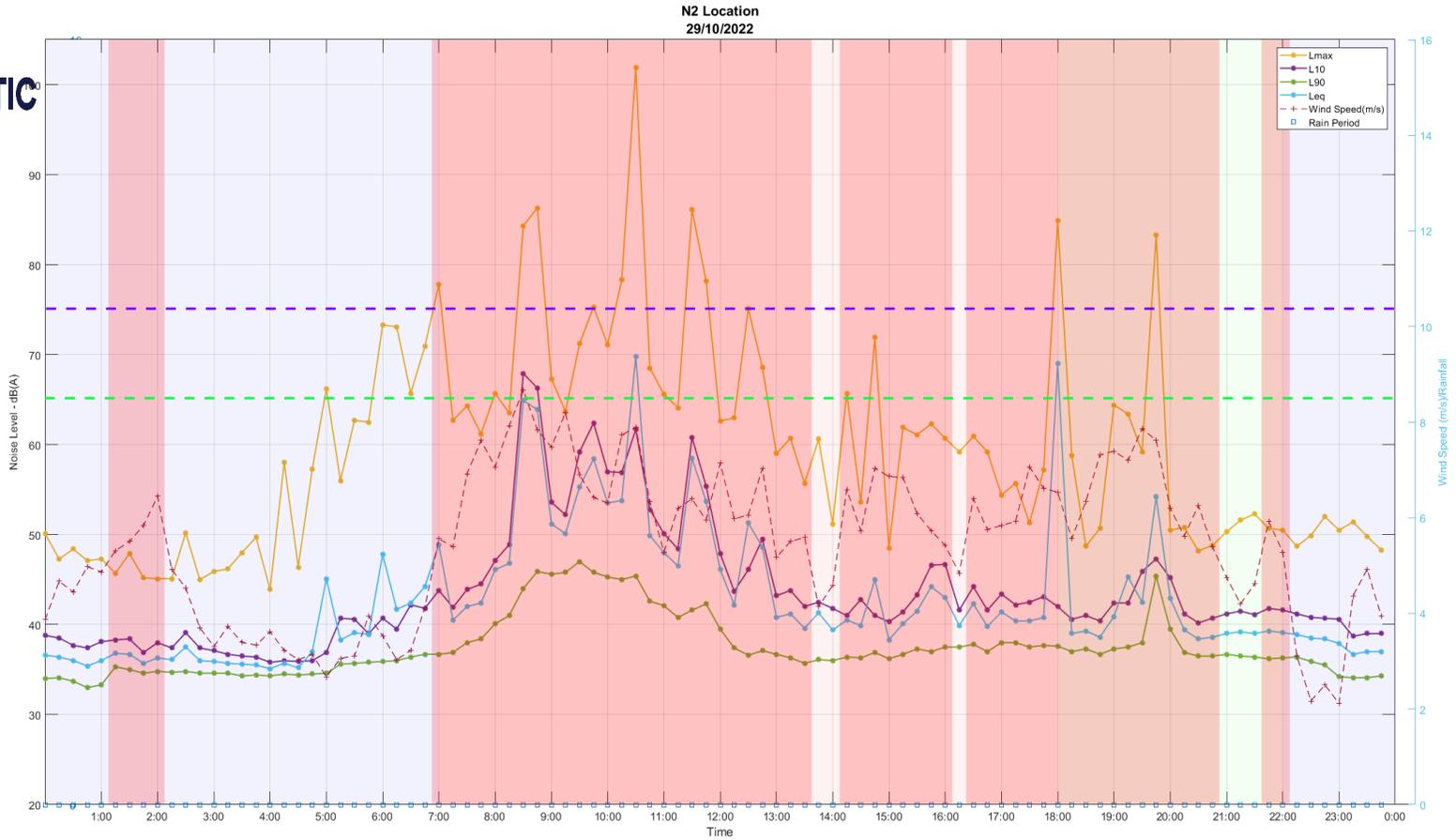
Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -

N2 Location  
28/10/2022





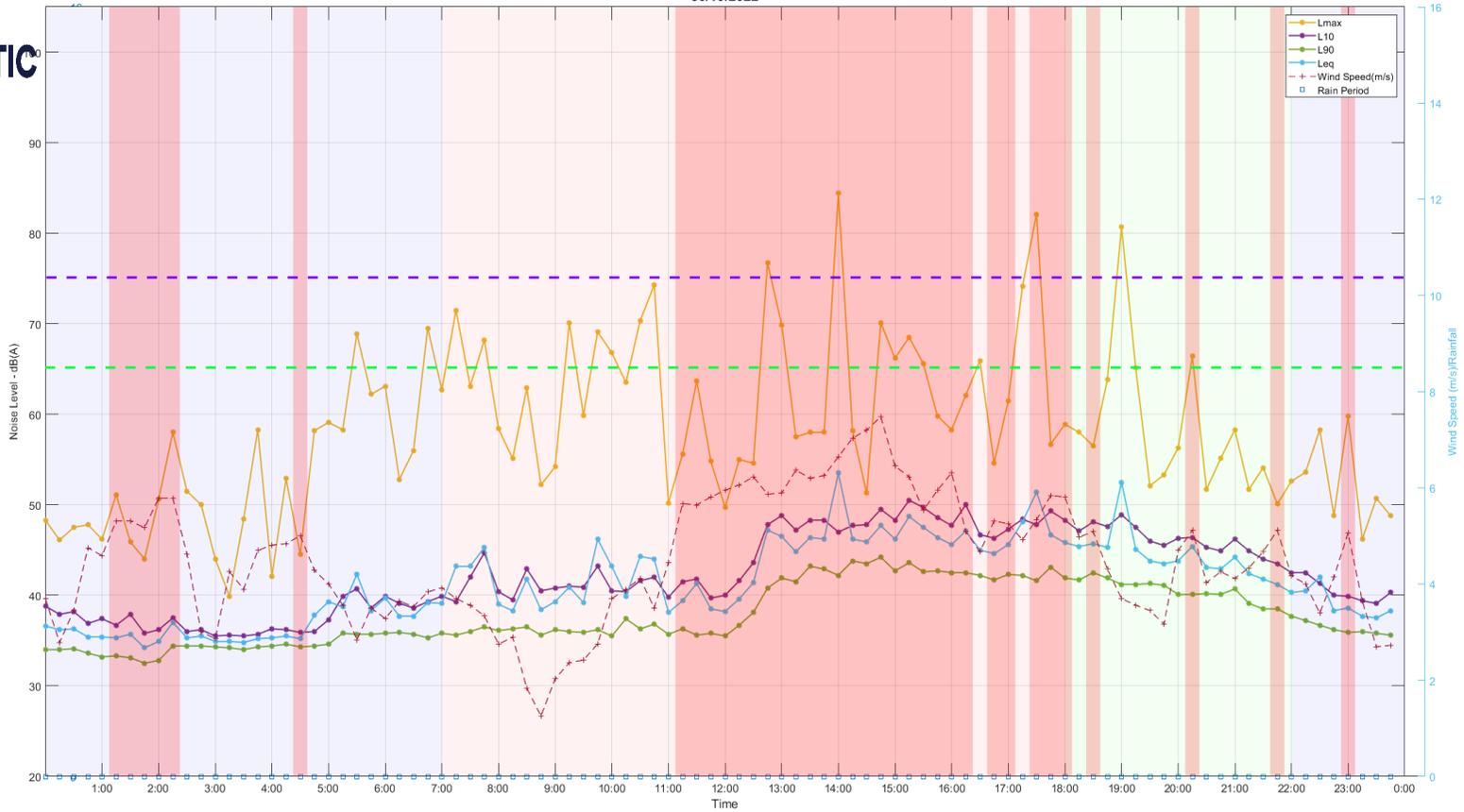
Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -





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

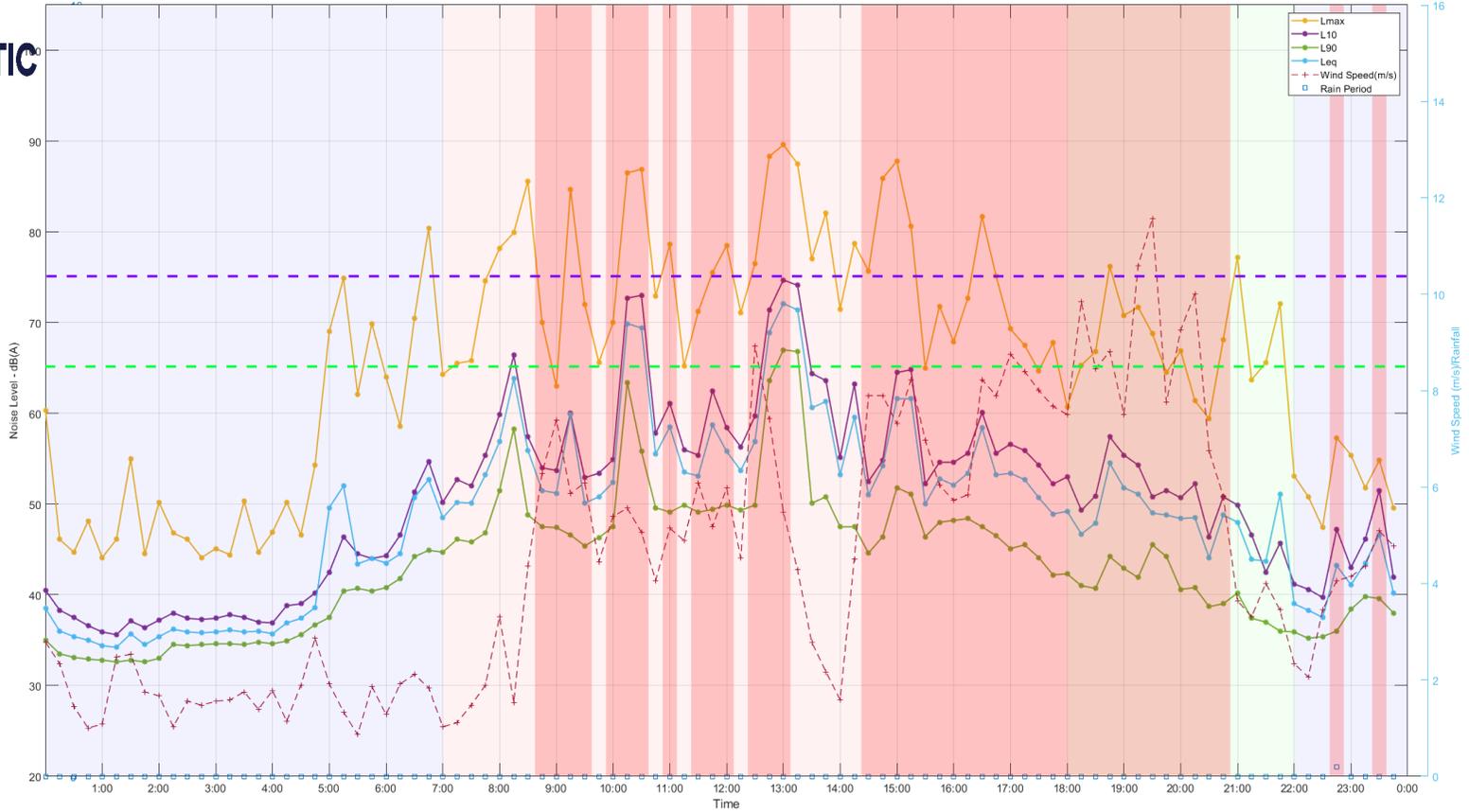
N2 Location  
30/10/2022





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

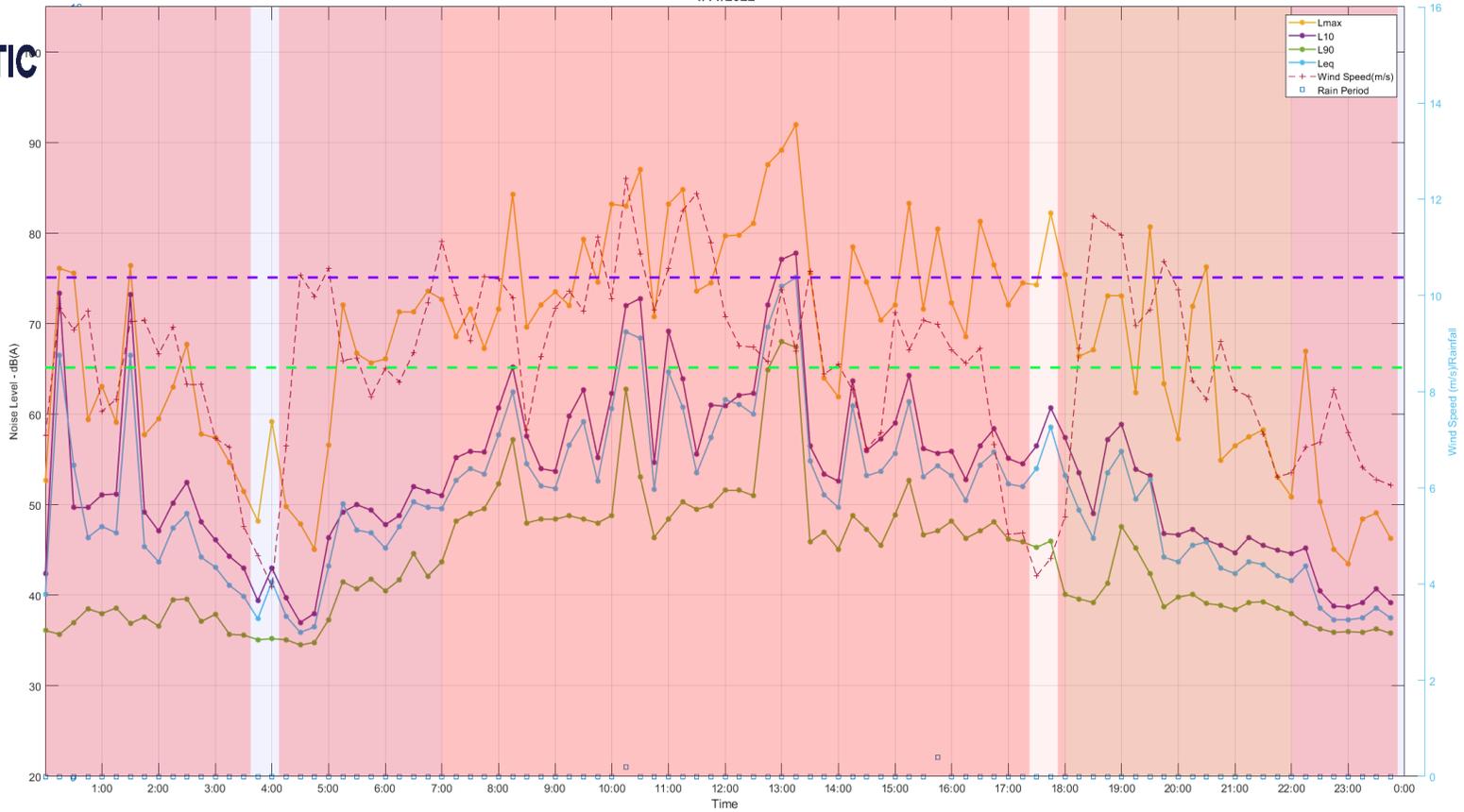
N2 Location  
31/10/2022





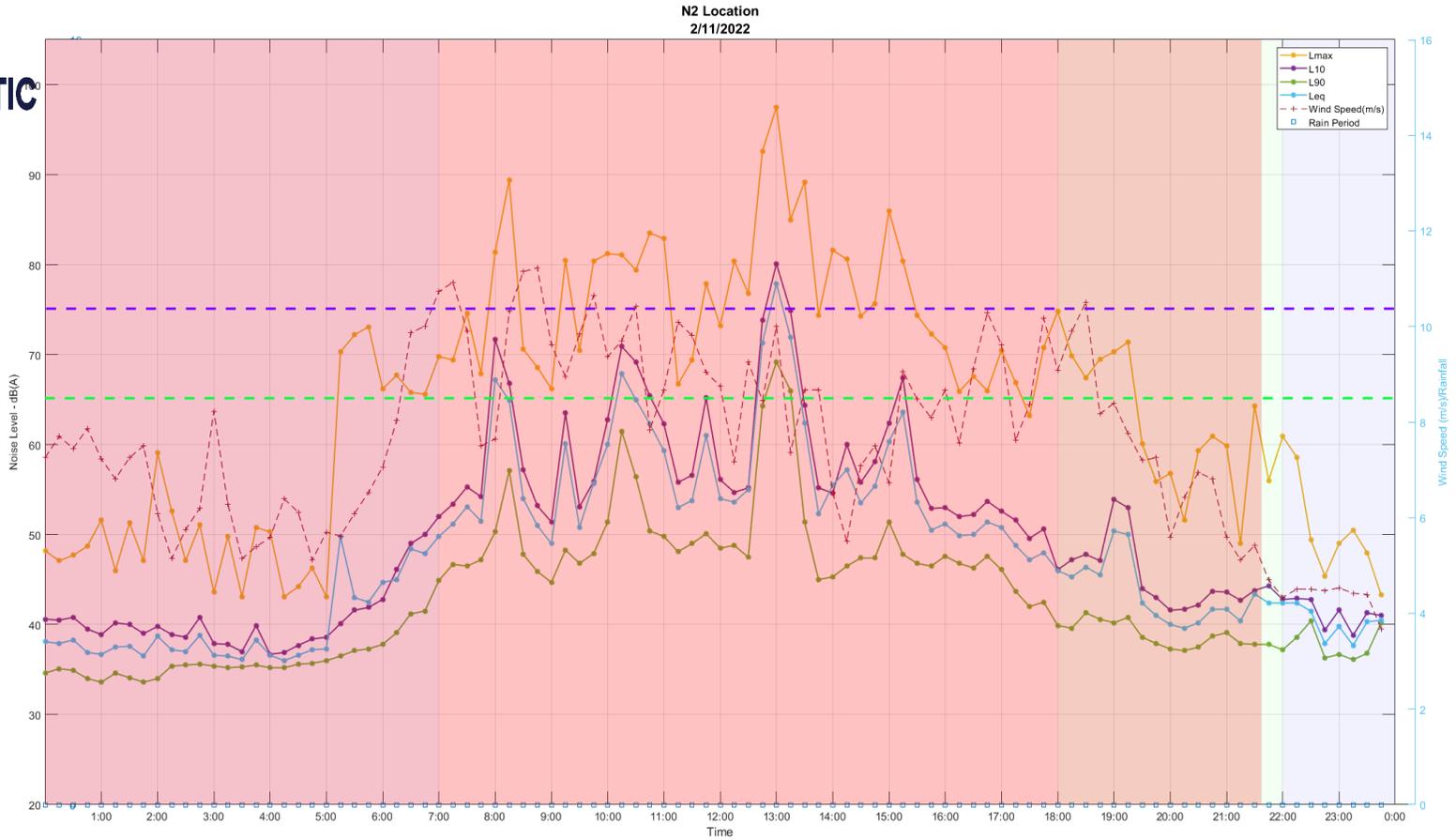
Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -

N2 Location  
1/11/2022



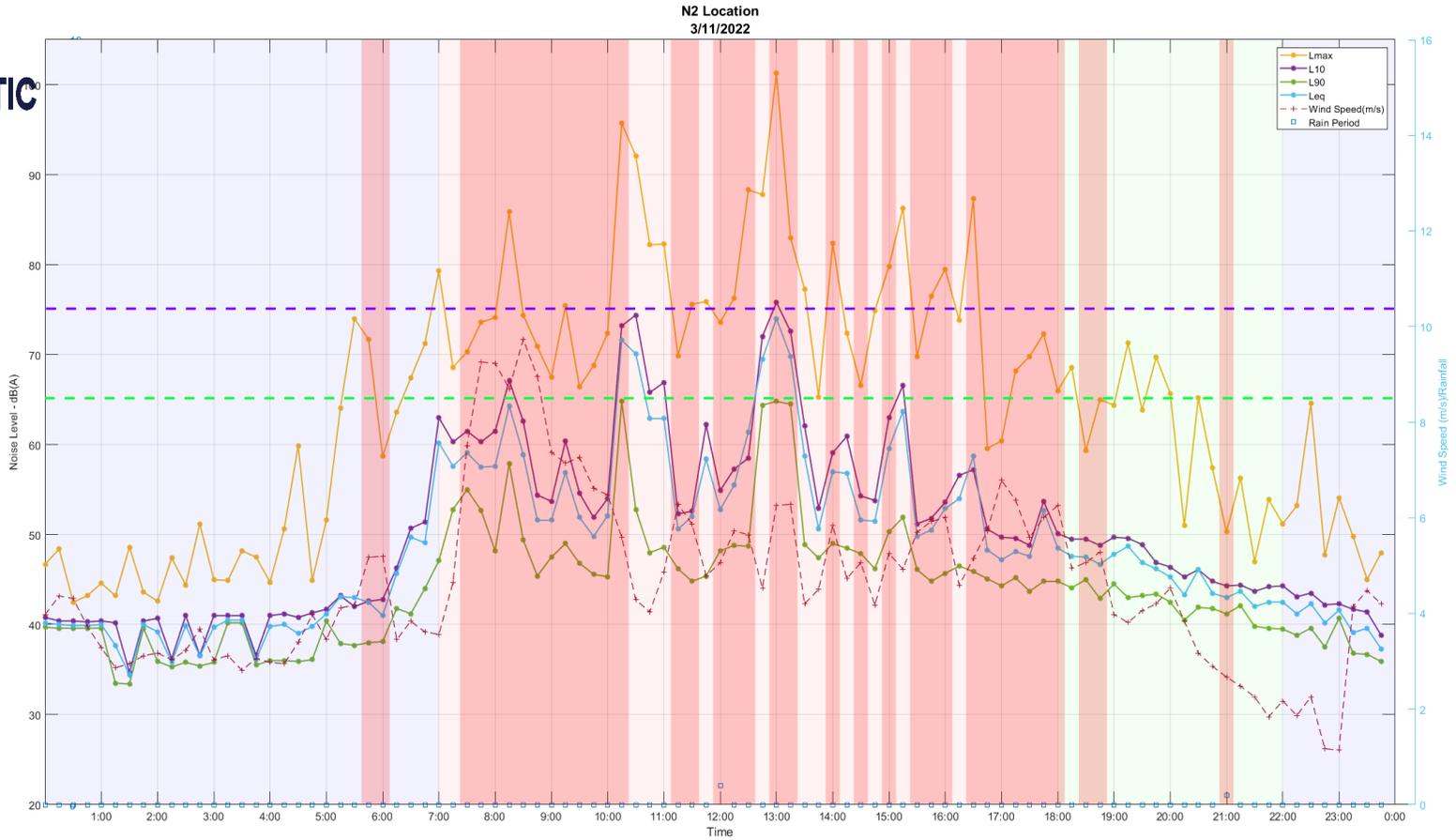


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -



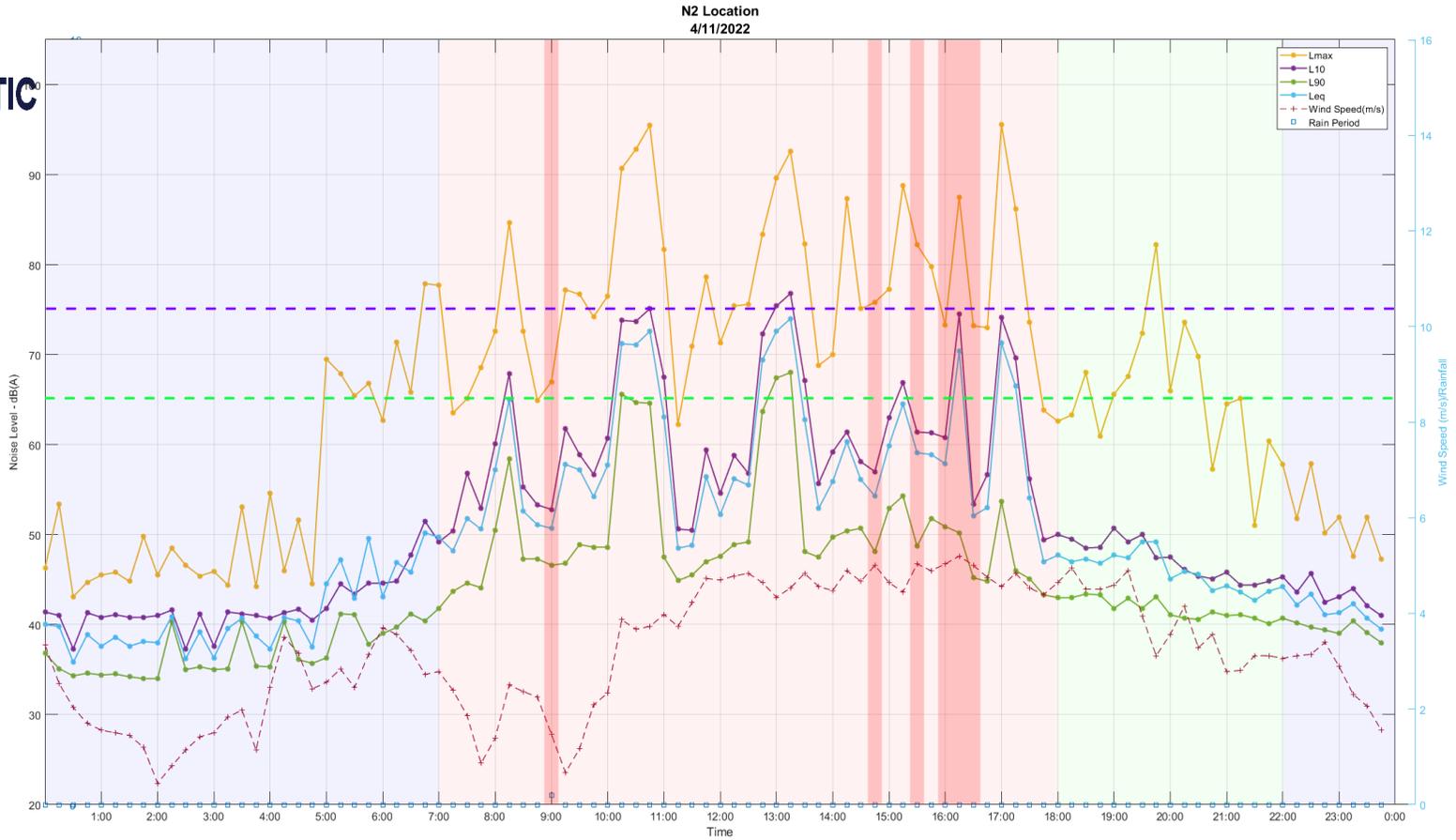


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq  
Highly Noise Affected Level- 75 dB(A)Leq





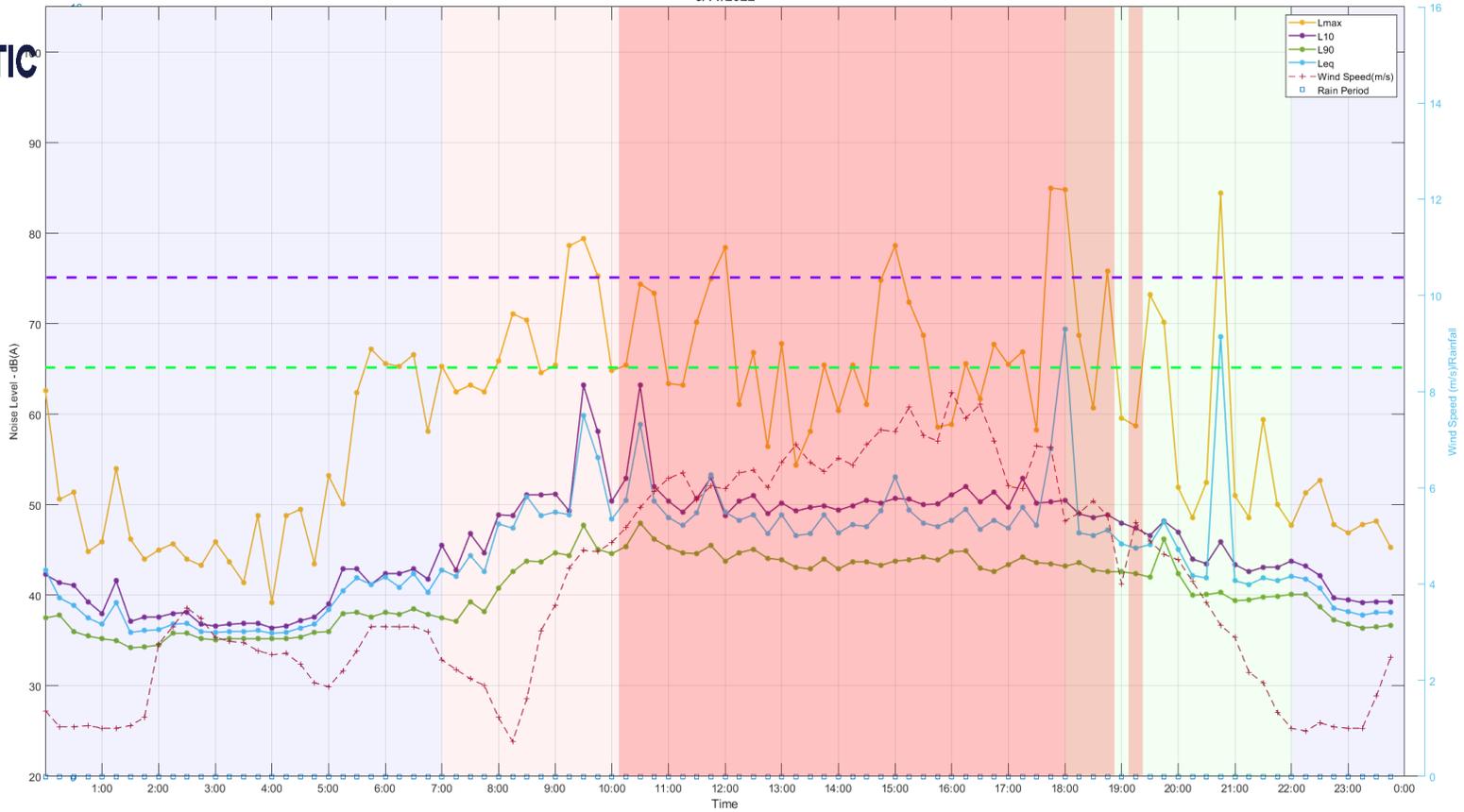
Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -





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

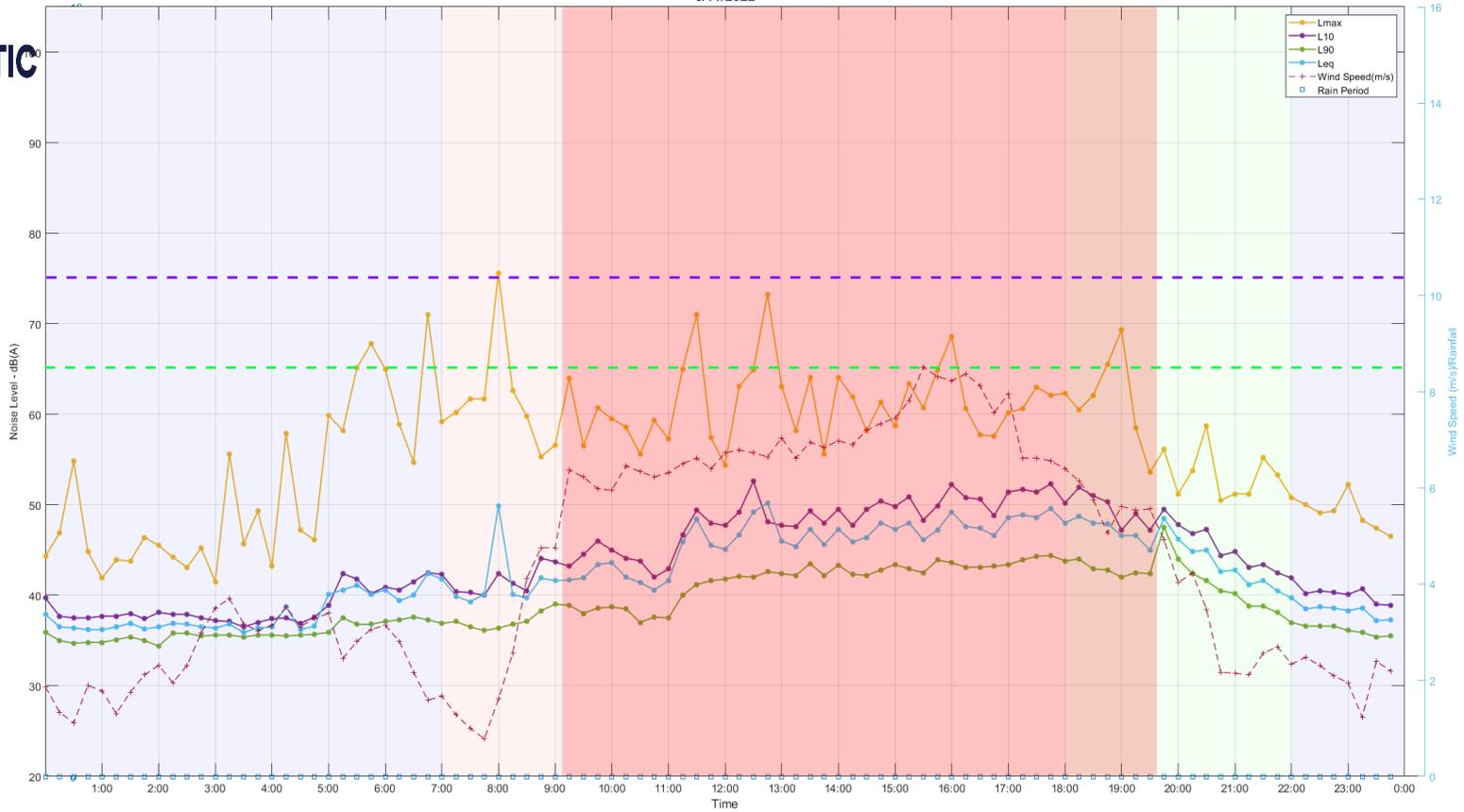
N2 Location  
5/11/2022





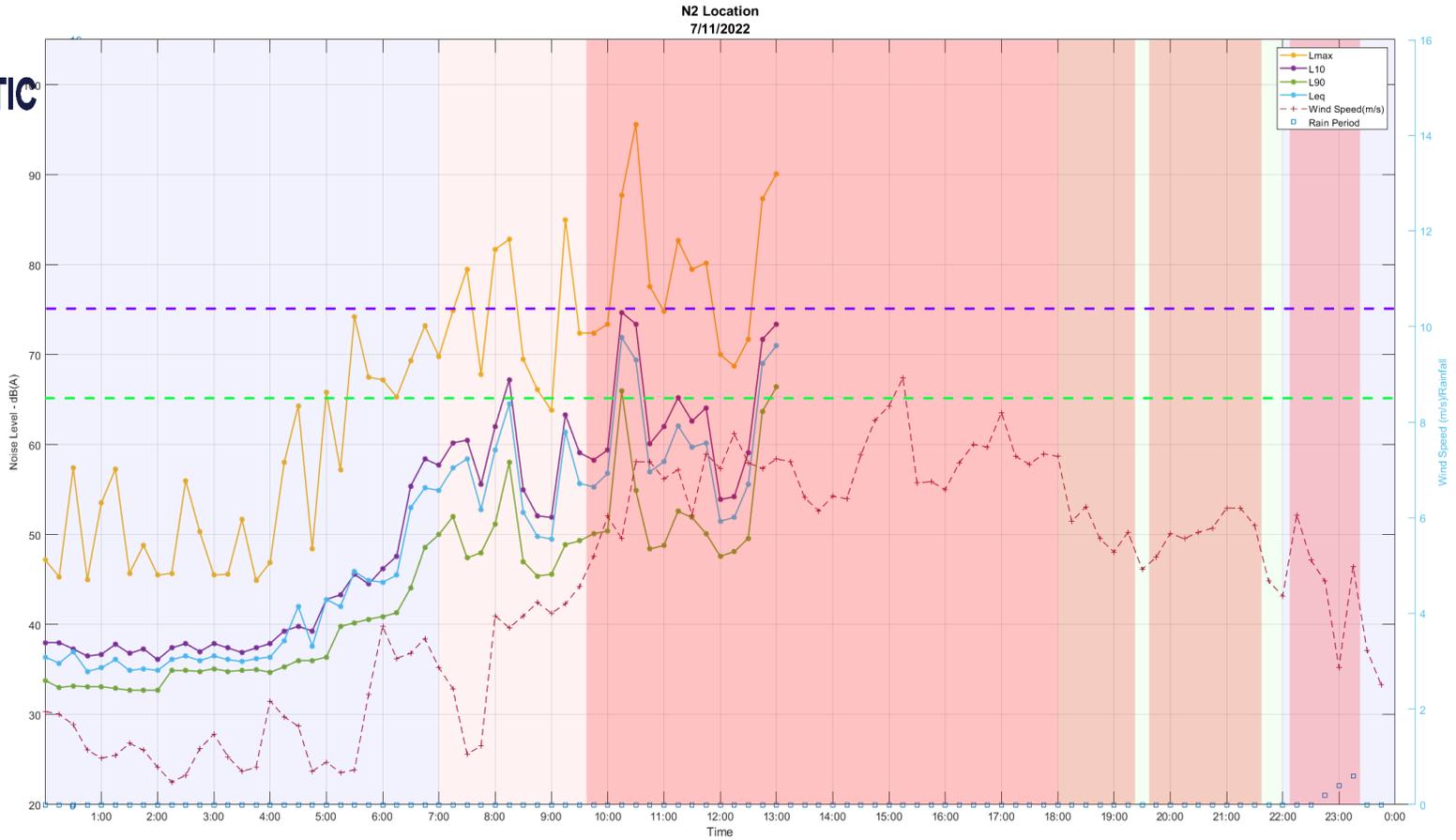
Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq  
Highly Noise Affected Level- 75 dB(A)Leq

N2 Location  
6/11/2022





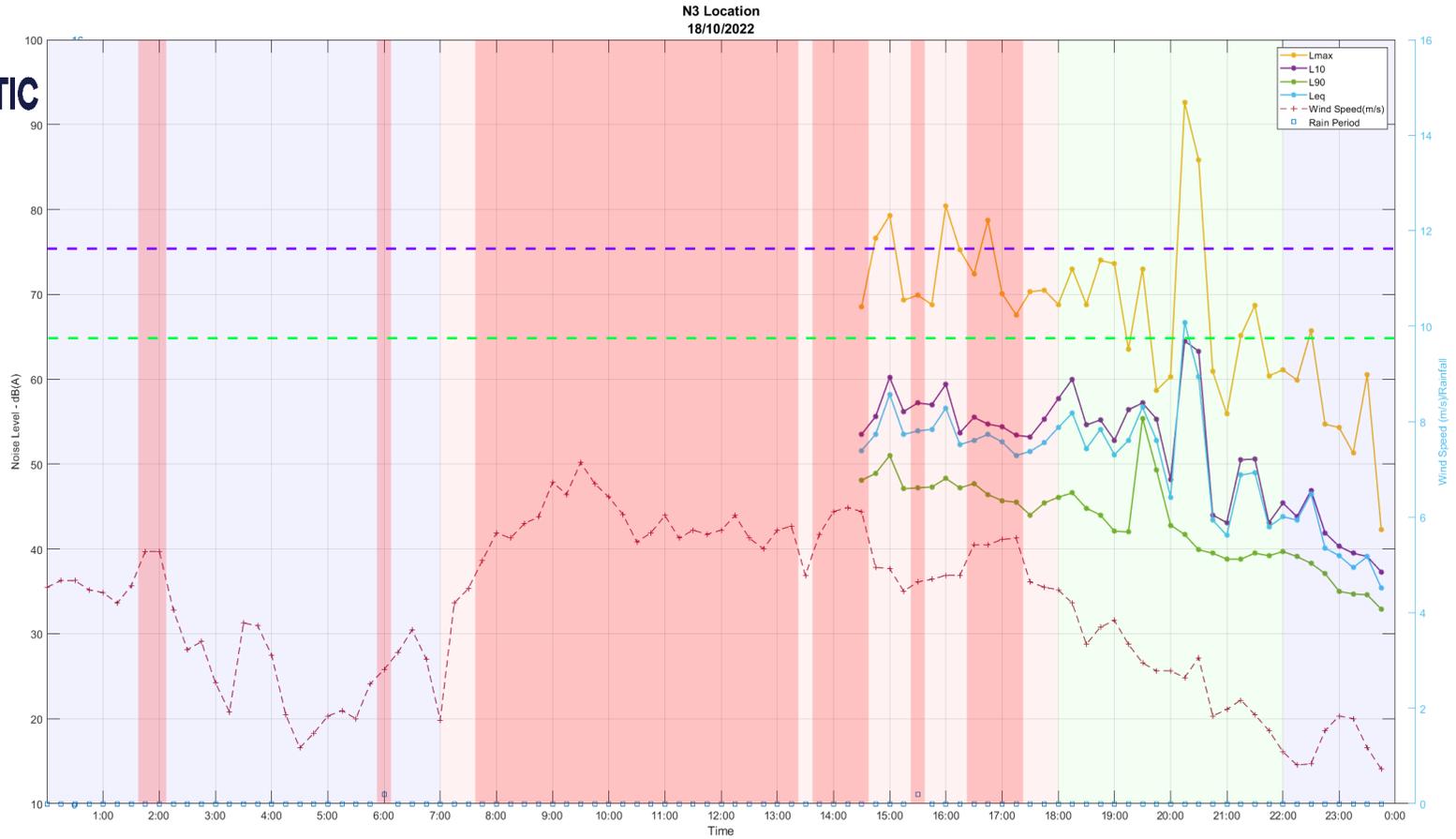
Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq  
Highly Noise Affected Level- 75 dB(A)Leq



## APPENDIX 6 : UNATTENDED NOISE MONITORING DAILY GRAPHS (N3)

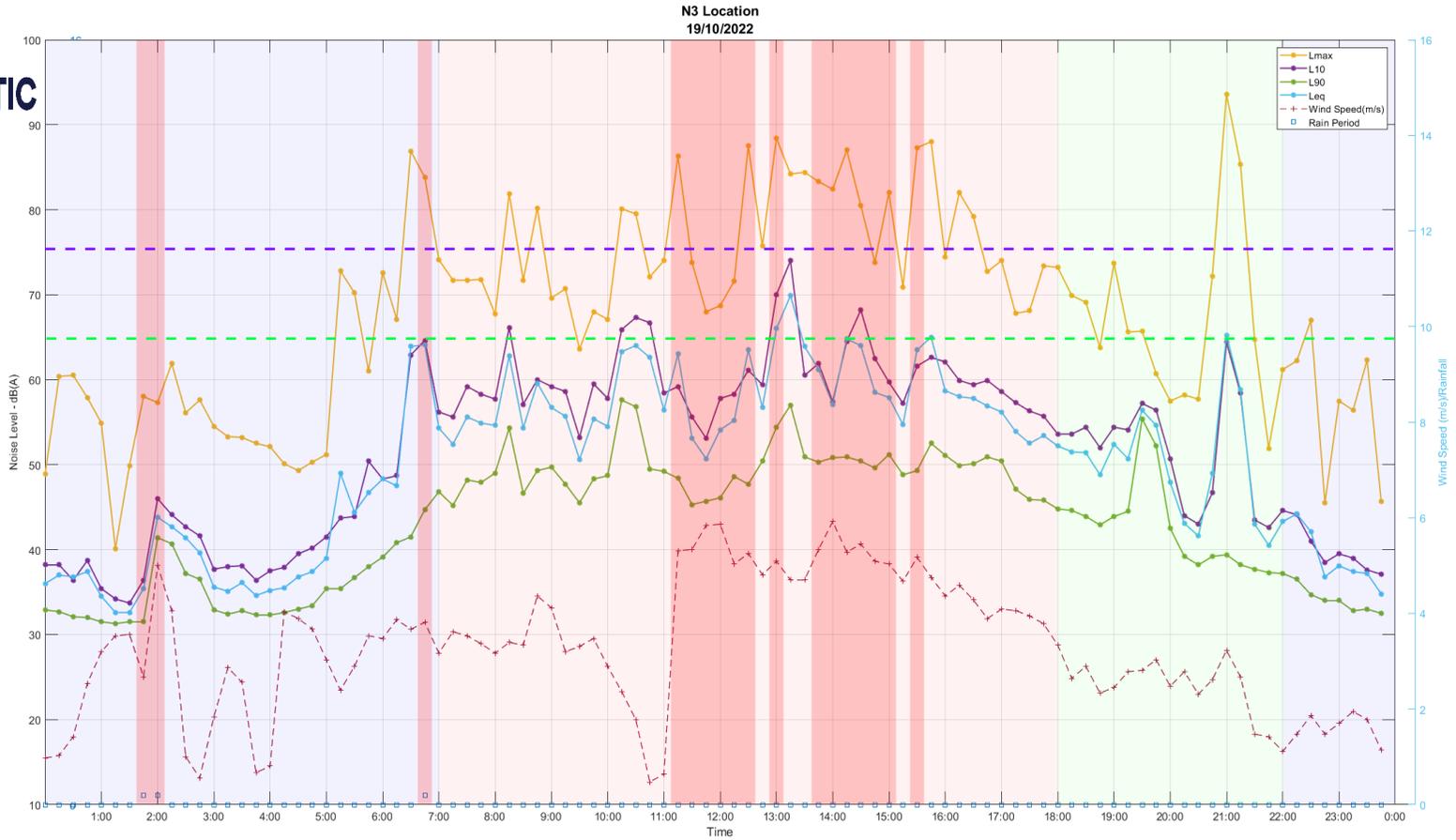


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq  
Highly Noise Affected Level- 75 dB(A)Leq





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 - - - -



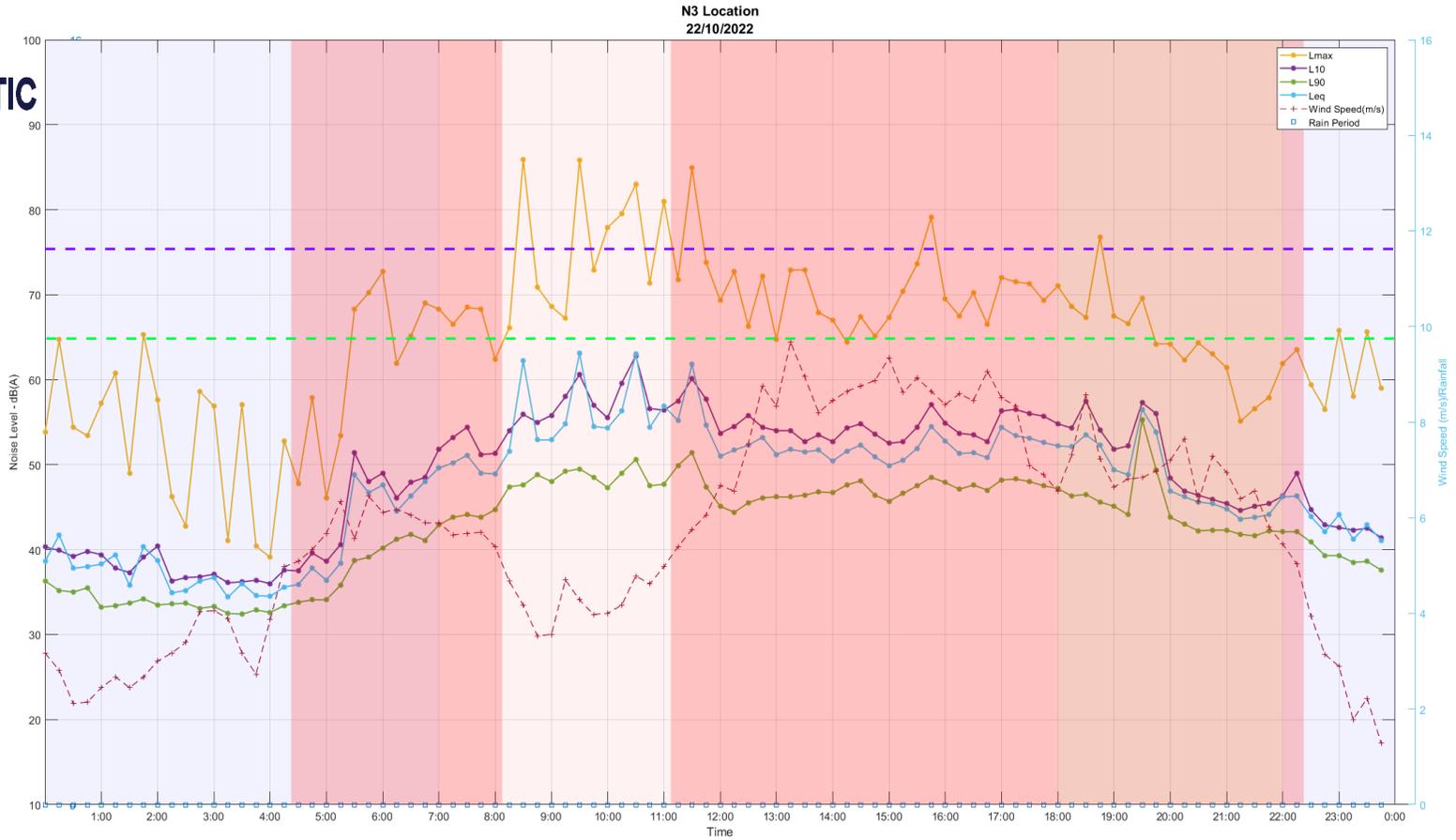


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -



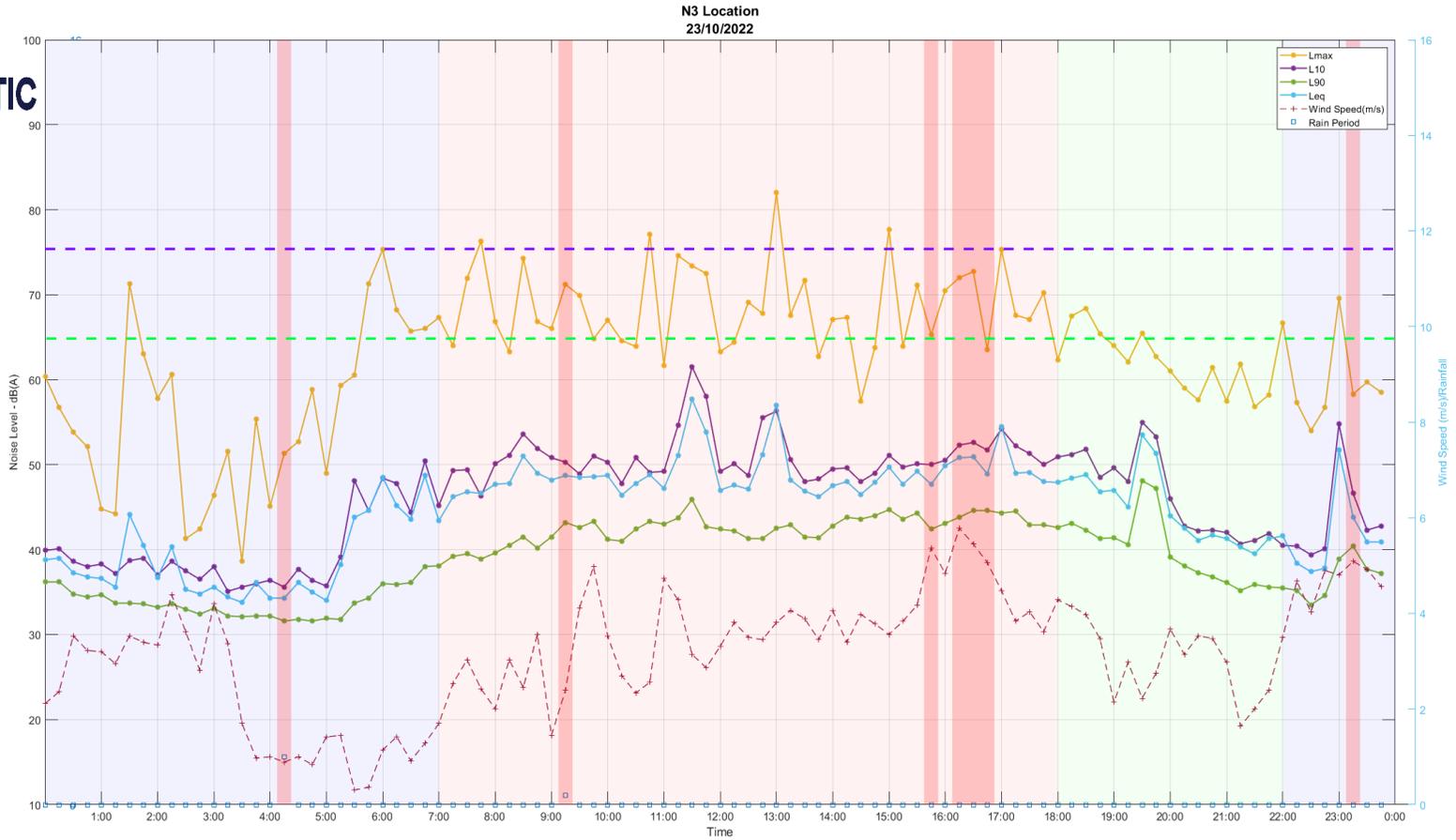


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -



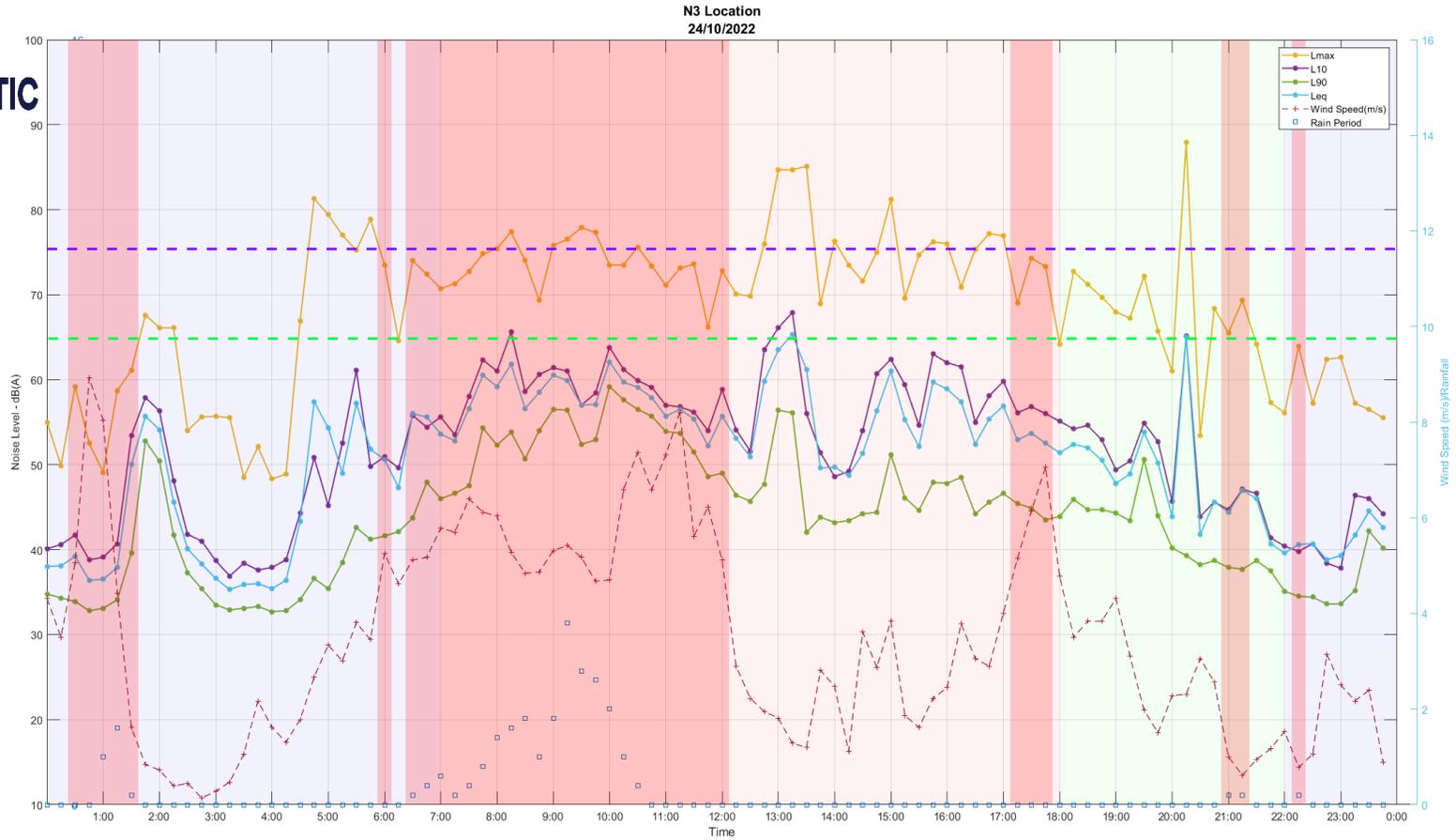


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -



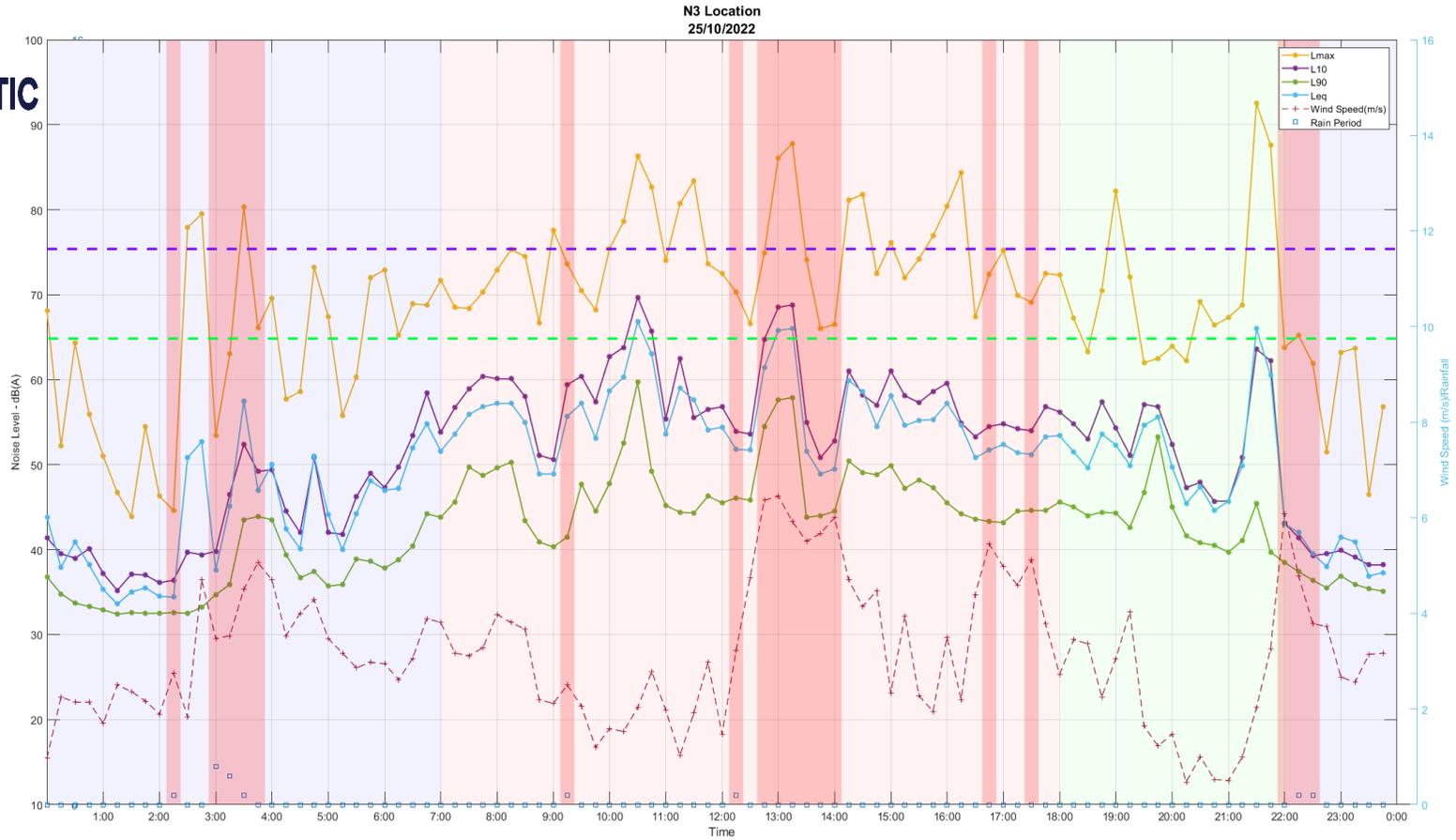


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -



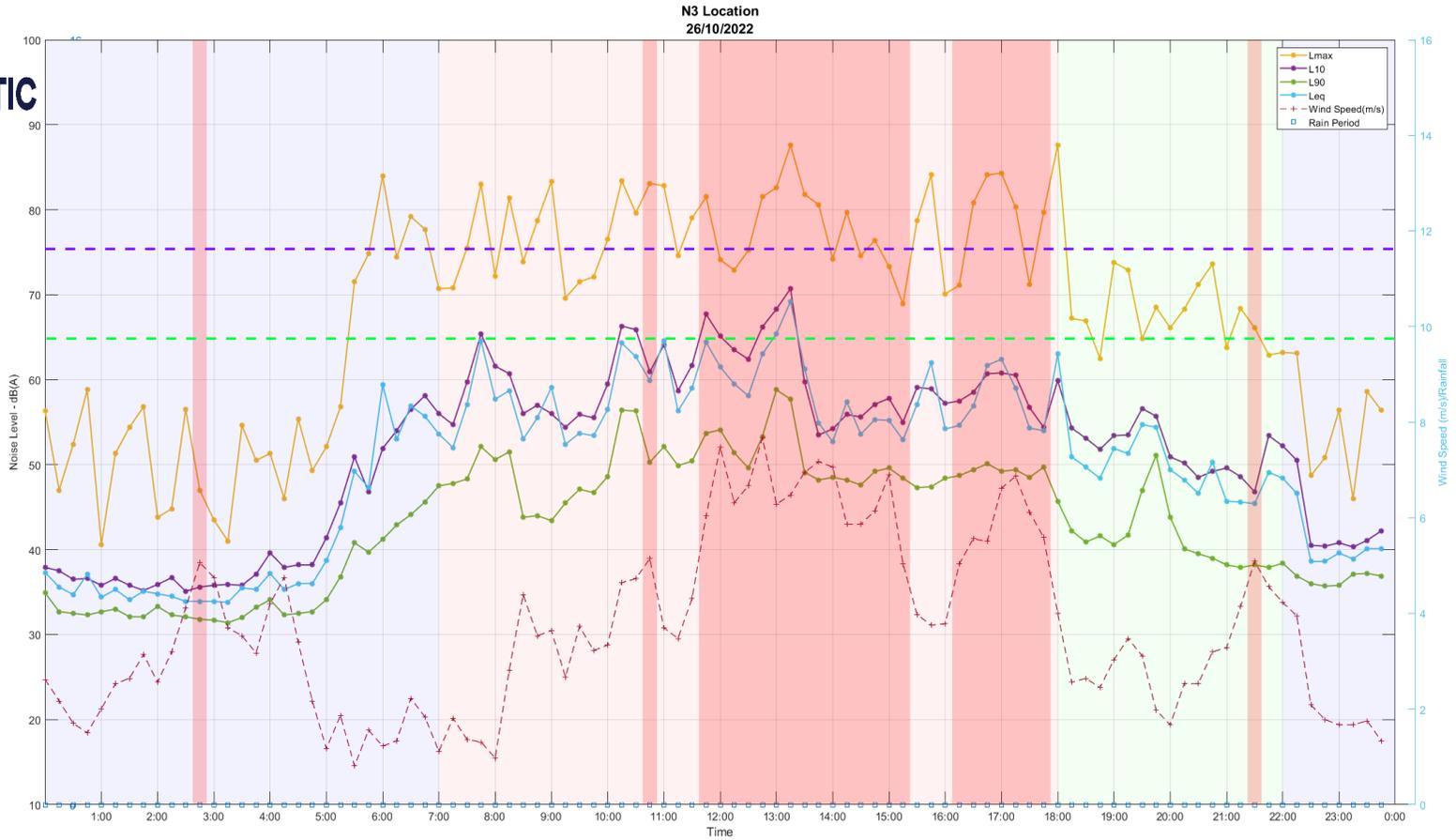


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -



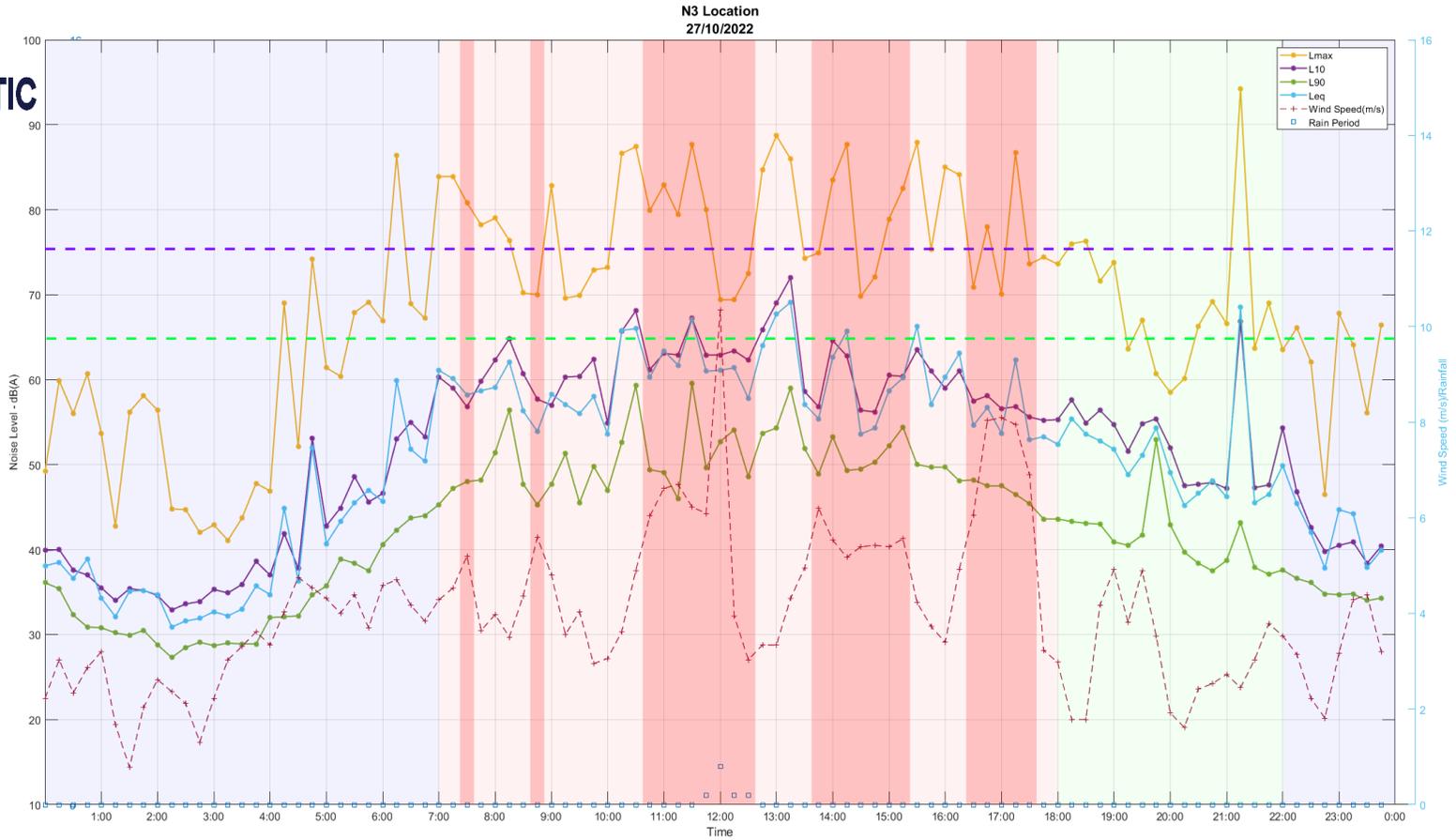


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -



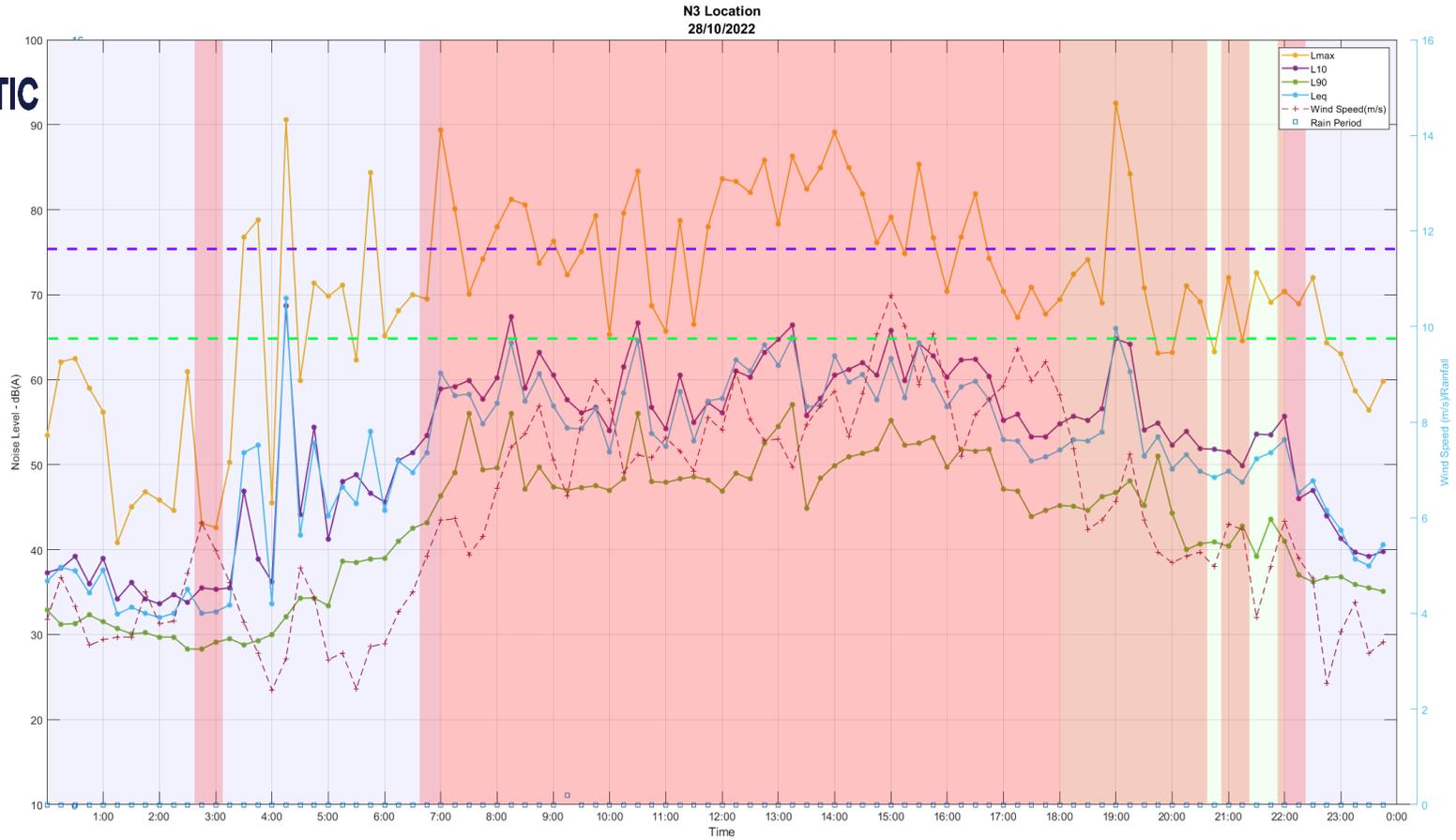


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq  
Highly Noise Affected Level- 75 dB(A)Leq





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



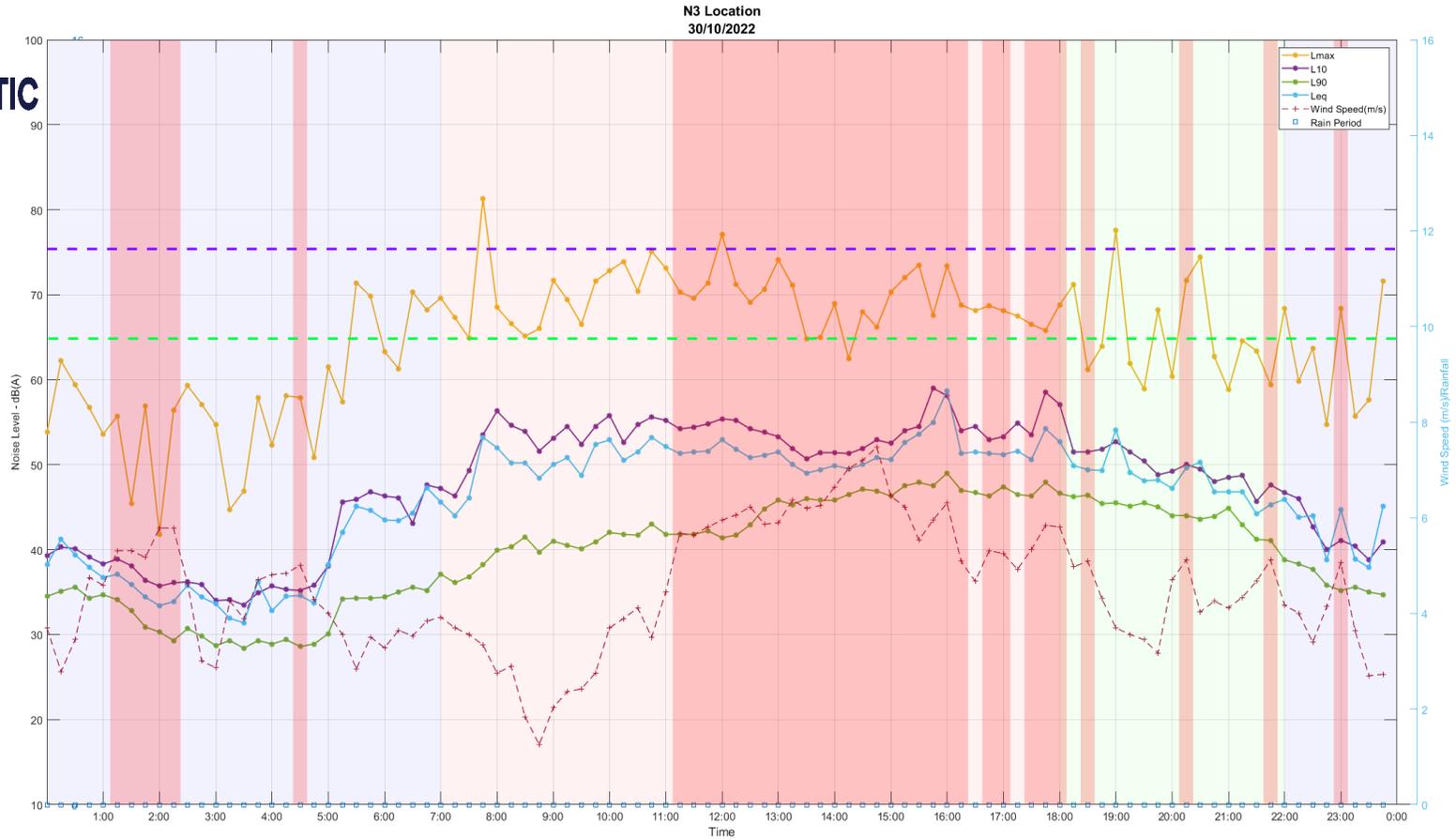


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -



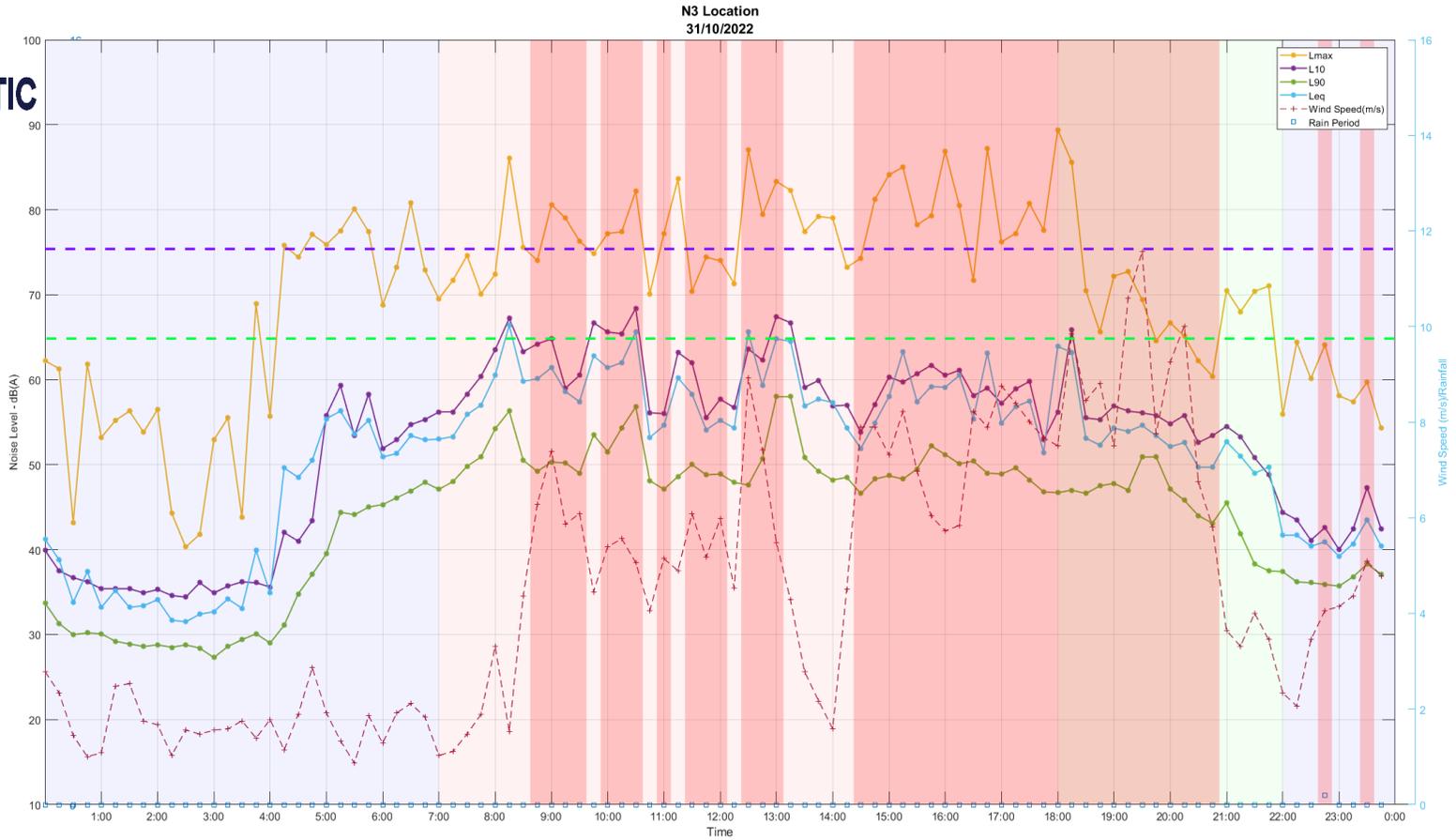


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -



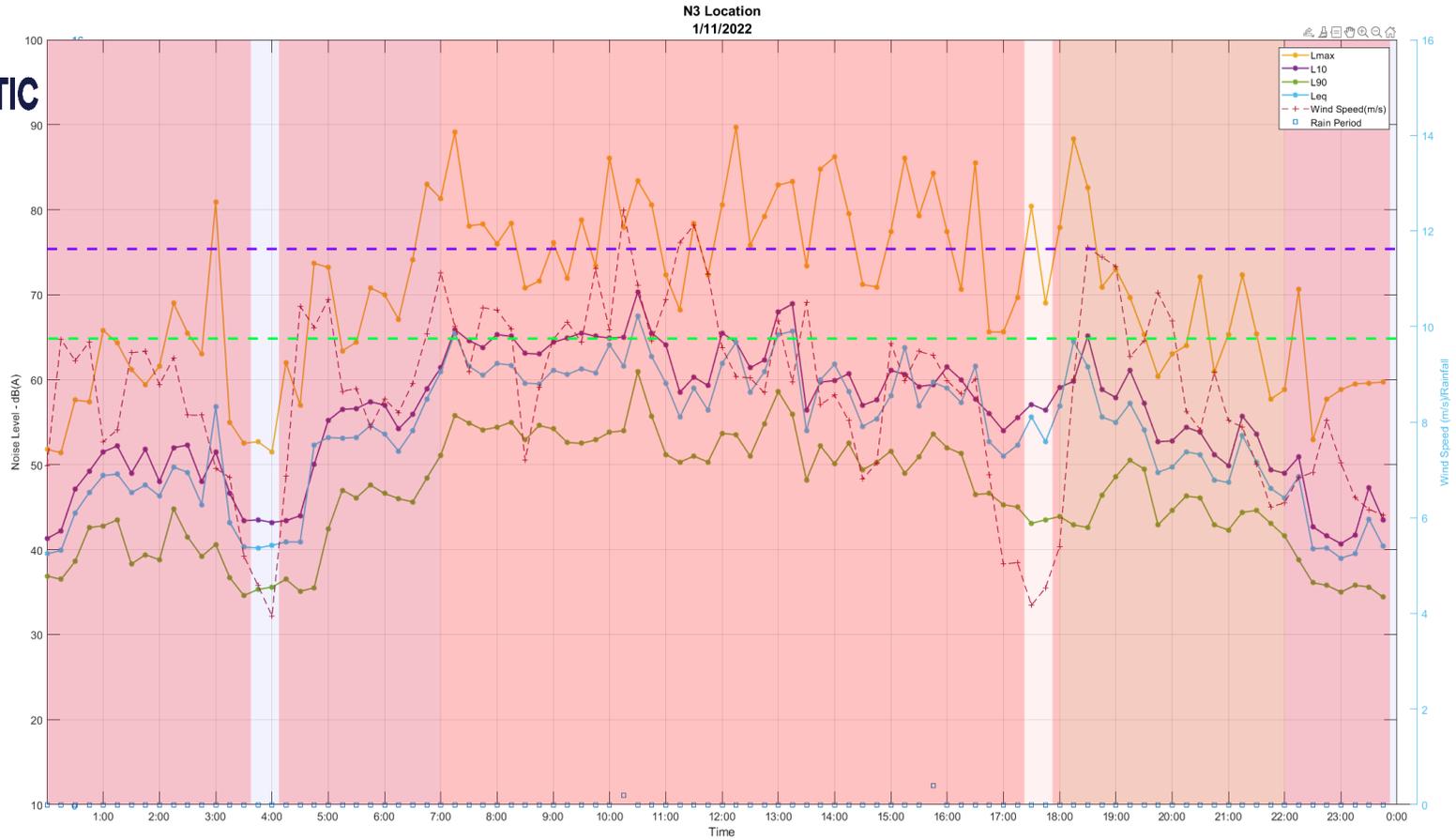


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -



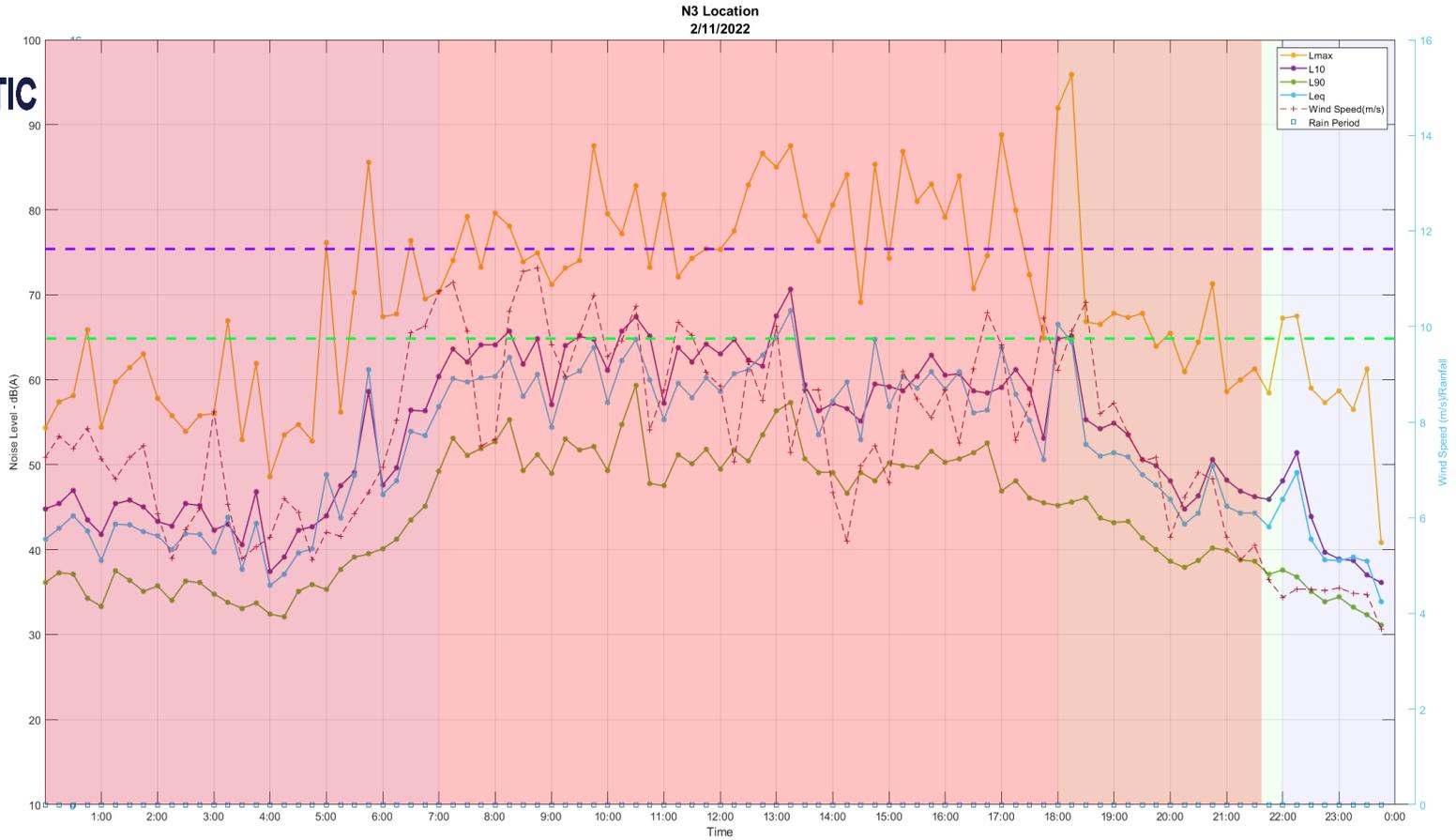


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -



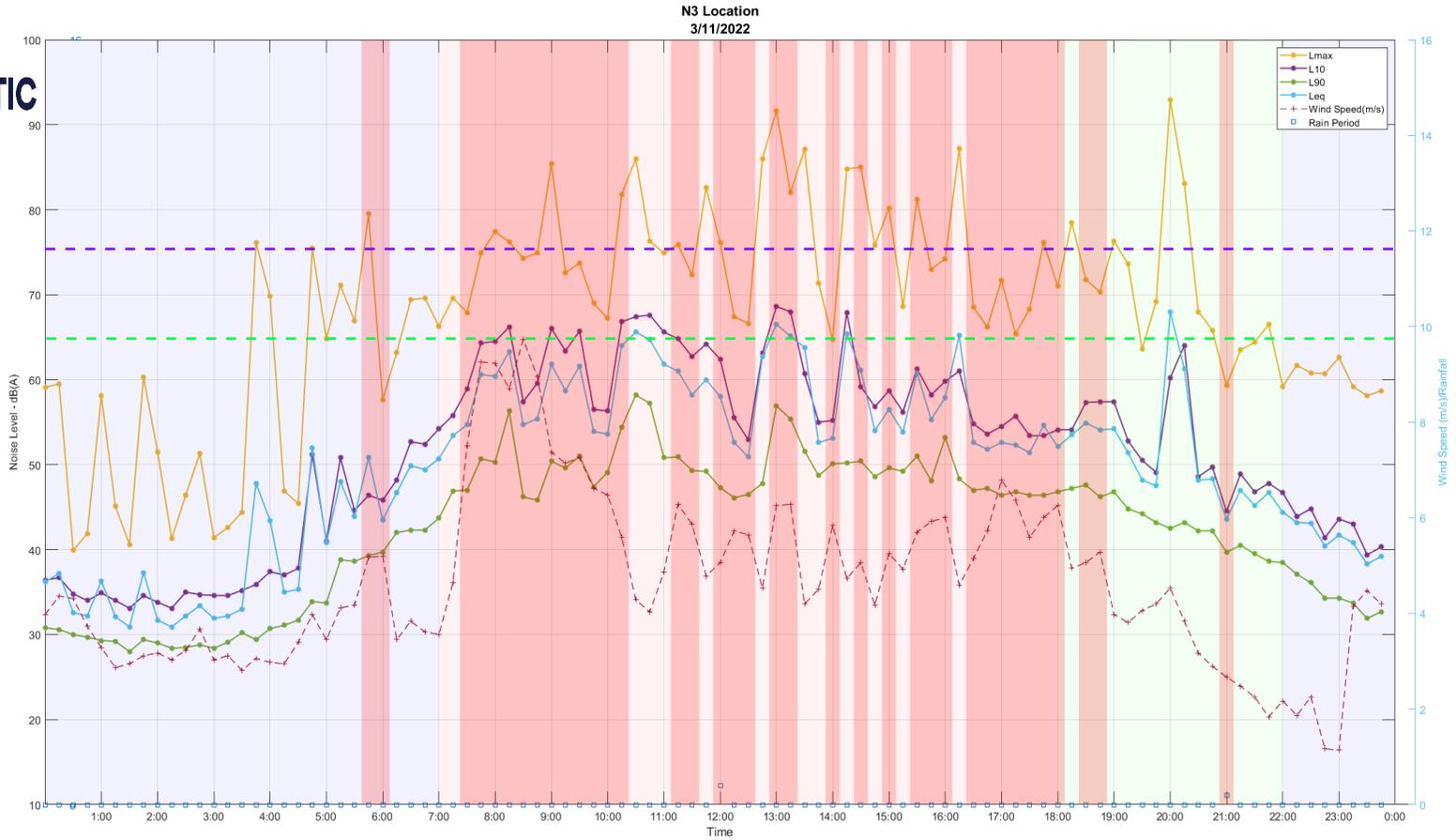


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -



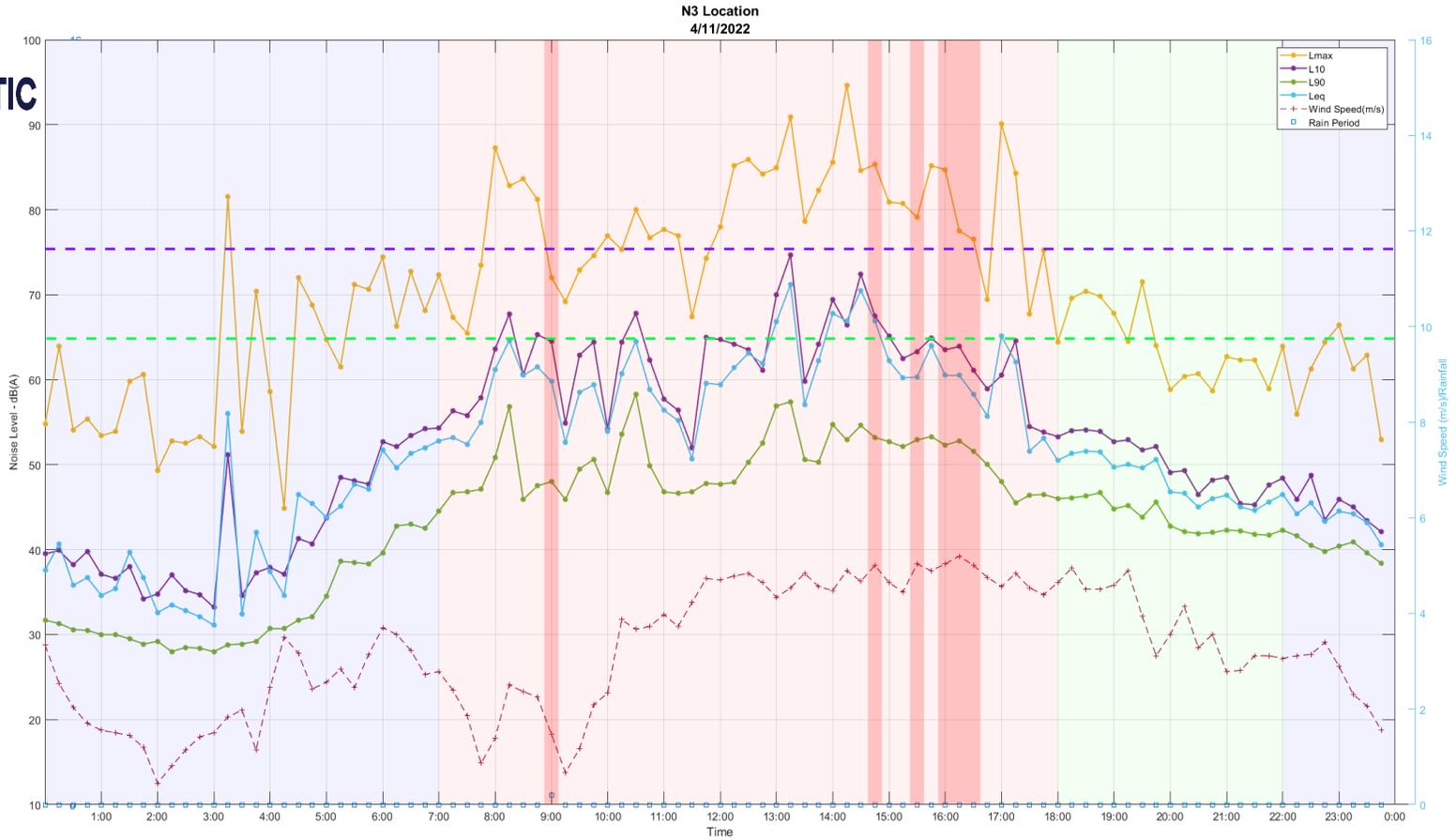


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -



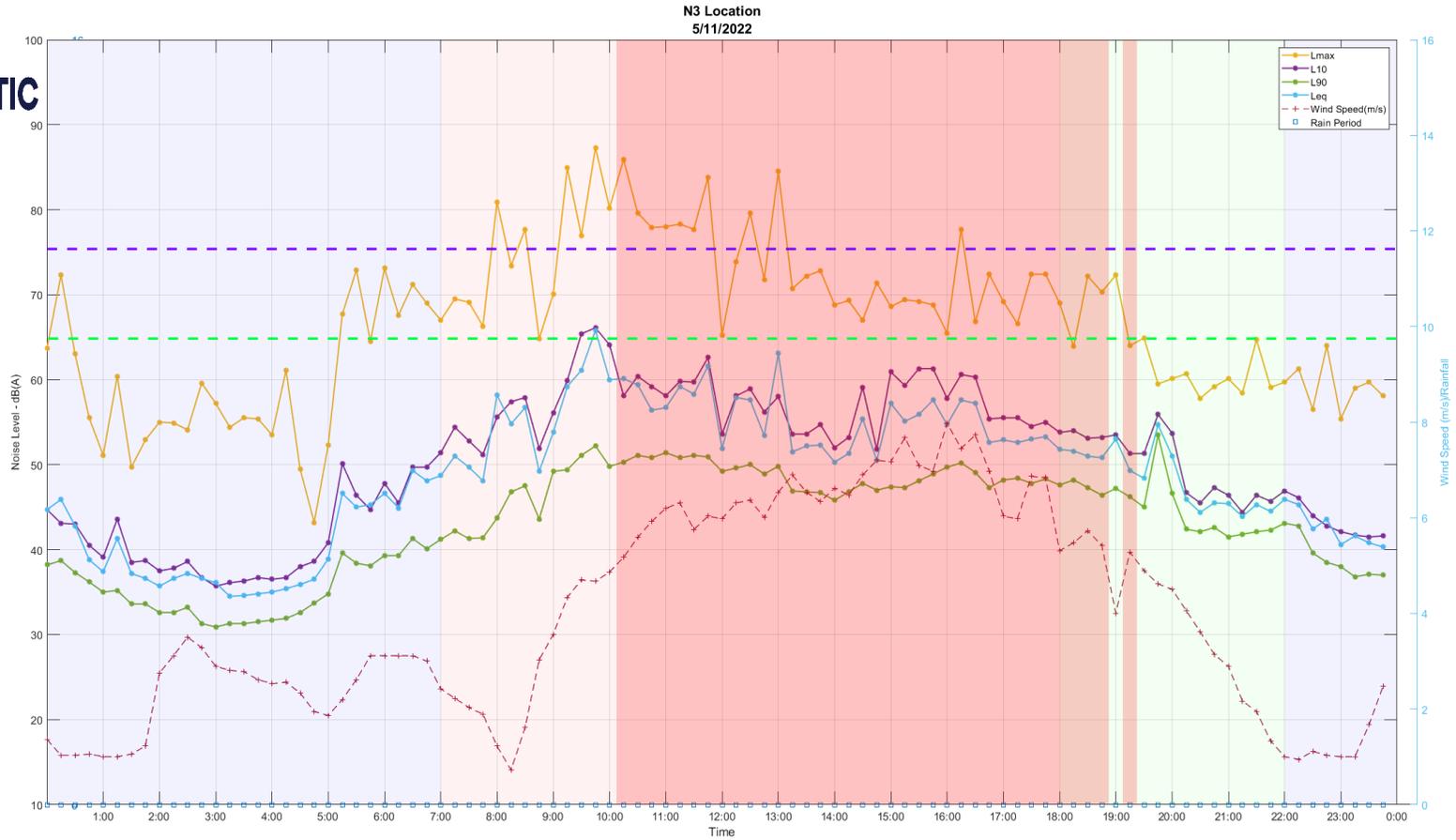


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq  
Highly Noise Affected Level- 75 dB(A)Leq



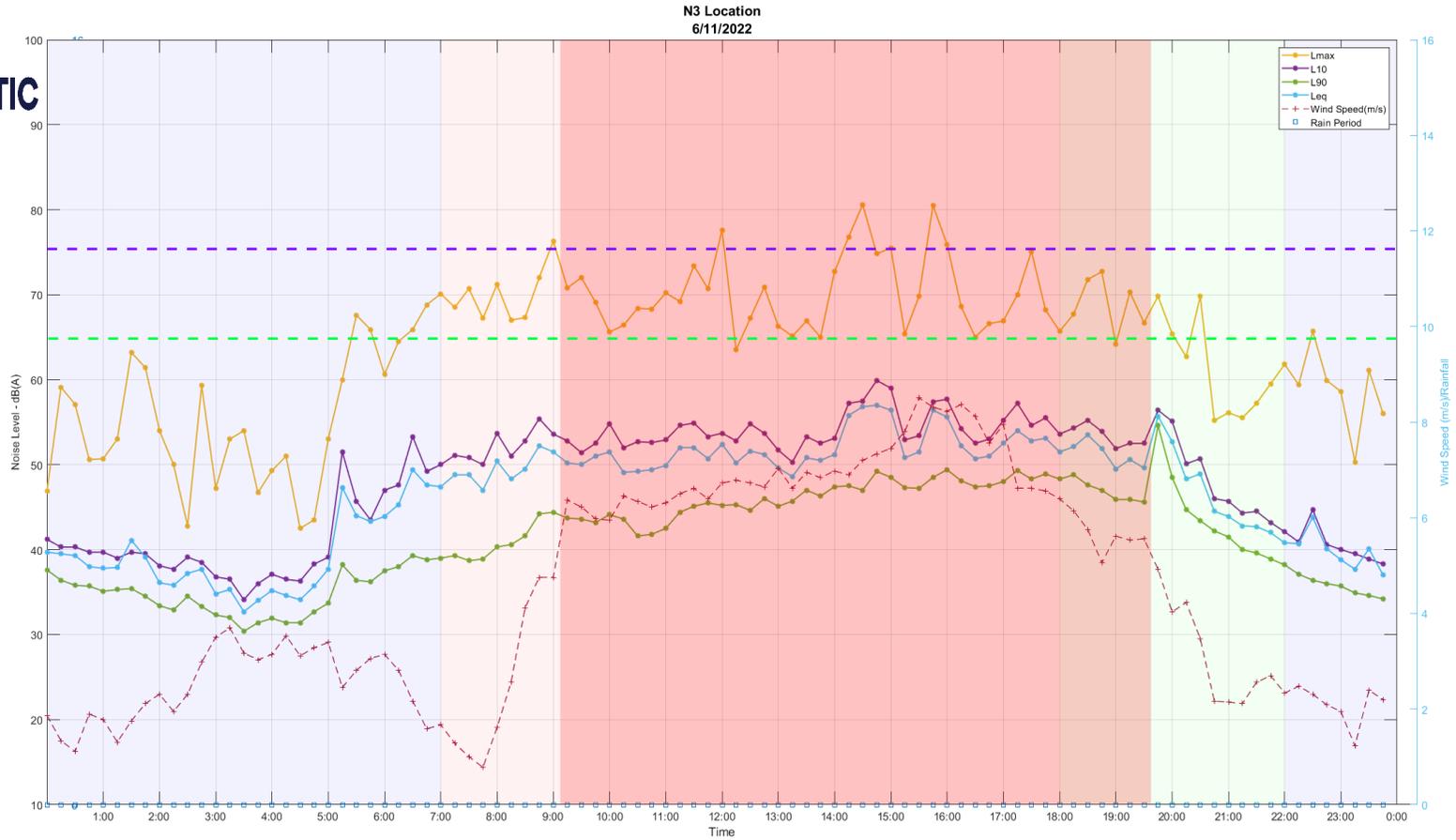


Noise Management Levels  
Active Recreation Areas - 65 dB(A)Leq - - - -  
Highly Noise Affected Level- 75 dB(A)Leq - - - -





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

