

Roseville Anglican College Sports & Wellbeing Centre

Vibration Monitoring Report 1

SYDNEY
9 Sarah St
MASCOT NSW 2020
(02) 8339 8000

ABN 98 145 324 714
www.acousticlogic.com.au

The information in this document is the property of Acoustic Logic Pty Ltd 98 145 324 714 and shall be returned on demand. It is issued on the condition that, except with our written permission, it must not be reproduced, copied or communicated to any other party nor be used for any purpose other than that stated in particular enquiry, order or contract with which it is issued.

Project ID	20220917.5
Document Title	Vibration Monitoring Report 1
Attention To	Taylor Construction Group Pty Ltd

Revision	Date	Document Reference	Prepared By	Checked By	Approved By
0	12/10/2022	20220917.5/1210A/R0/SW	SW		TA

TABLE OF CONTENTS

1	INTRODUCTION.....	4
2	SITE DESCRIPTION.....	4
3	VIBRATION CRITERIA.....	6
3.1.1	Structure Borne Vibrations (Building Damage Criteria)	6
4	MEASUREMENT EQUIPMENT AND LOCATIONS.....	7
4.1	MONITORING PERIOD	7
4.2	MEASUREMENT EQUIPMENT	7
4.3	MEASUREMENT LOCATIONS	7
5	VIBRATION MONITORING RESULTS	8
5.1	M7427 HERITAGE BUILDING (WESTERN BOUNDARY).....	8
5.1.1	Discussion.....	8
5.2	M7715 RESIDENTIAL RECEIVERS (EASTERN BOUNDARY)	9
5.2.1	Discussion.....	9
6	CONCLUSION.....	10
	APPENDIX: DAILY GRAPHS M7427 (HERITAGE BUILDING)	11
	APPENDIX: DAILY GRAPHS M7715 (RESIDENTIAL BUILDING)	12

1 INTRODUCTION

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

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.

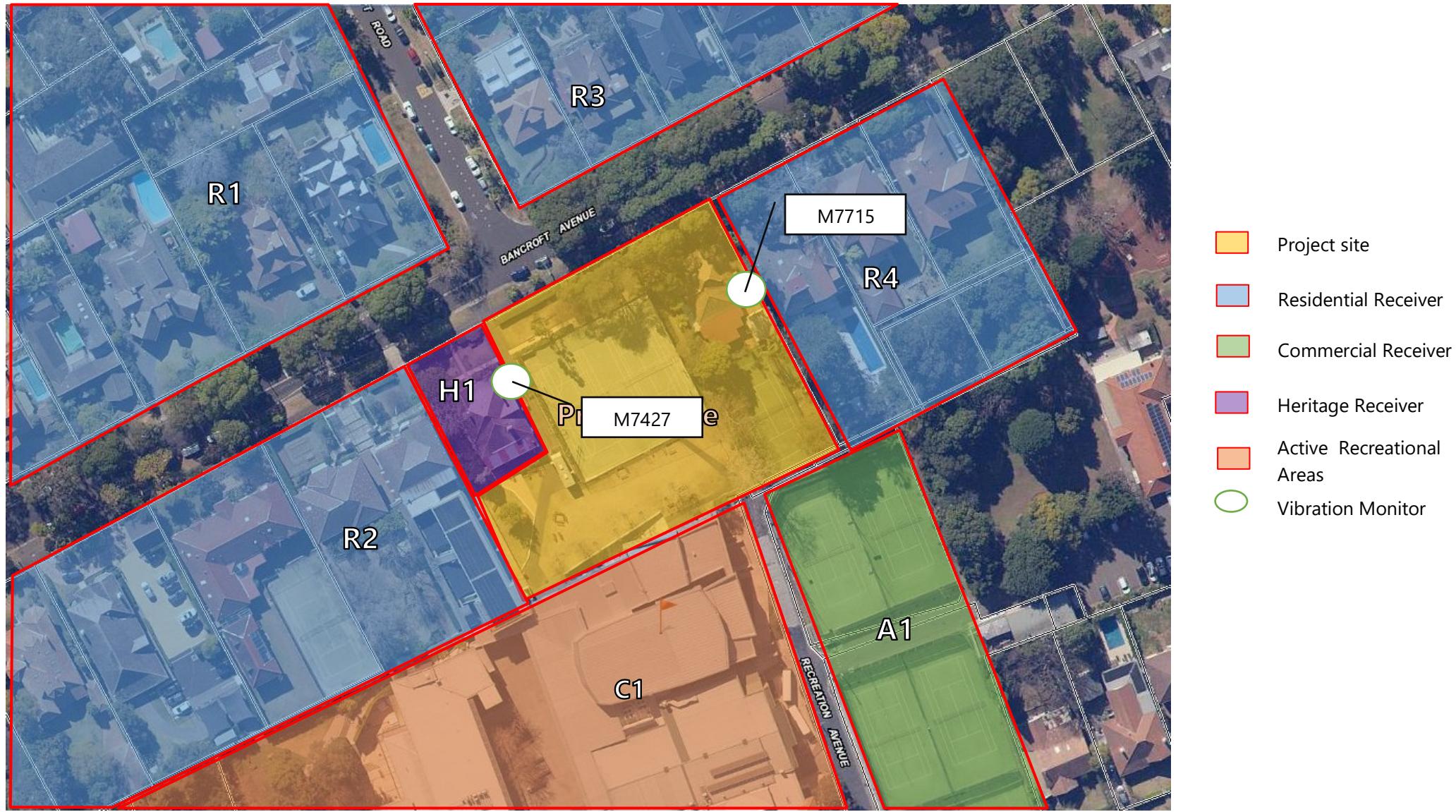


Figure 1: Aerial view of the project site and the sensitive receivers (Sourced : SixMaps)

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

TYPE OF STRUCTURE		PEAK PARTICLE VELOCITY (mms^{-1})			
		At Foundation at a Frequency of			Plane of Floor of Uppermost Storey
		< 10Hz	10Hz to 50Hz	50Hz to 100Hz	
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.

4 MEASUREMENT EQUIPMENT AND LOCATIONS

4.1 MONITORING PERIOD

This report covers the monitoring period between Thursday 17th August 2022 to Wednesday 30th August 2022.

4.2 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.

4.3 MEASUREMENT LOCATIONS

A total of two (2) 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: M7427(left) on the Heritage building on the western boundary of the project site & M7715(right) on the eastern boundary of the project site

5 VIBRATION MONITORING RESULTS

The tables below presents the vibration monitoring results for the monitoring period.

5.1 M7427 HERITAGE BUILDING (WESTERN BOUNDARY)

Date	Measured Vector Sum Max PPV Component (mm/s)	Recommended Vibration Monitoring Criteria	Compliance
Wednesday 17/08/2022	<2mm/s	3 mm/s (< 10 Hz) 3 to 8 mm/s (10- 50Hz) 8 to 10 mm/s (50 - 100 Hz)	Yes
Thursday 18/08/2022	<2mm/s		Yes
Friday 19/08/2022	8.41mm/s at 98Hz.		Yes
Saturday 20/08/2022	<2mm/s		Yes
Sunday 21/08/2022	No Works		Yes
Monday 22/08/2022	24mm/s at 62.5Hz		See section 5.1.1 for discussion
Tuesday 23/08/2022	<2mm/s		Yes
Wednesday 24/08/2022	3.26mm/s at 21.7Hz		Yes
Thursday 25/08/2022	<2mm/s		Yes
Friday 26/08/2022	<2mm/s		Yes
Saturday 27/08/2022	<2mm/s		Yes
Sunday 28/08/2022	No Works		Yes
Monday 29/08/2022	<2mm/s		Yes
Tuesday 30/08/2022	<2mm/s		Yes

5.1.1 Discussion

An isolated exceedance was measured on the 22nd August 2022 between the hours of 10:45am to 11:00am. It was informed by the site manager the event was due to materials and equipment's were being moved along western boundary of the project site near the monitor and not due to excavation and piling works.

No other exceedances were measured during this monitoring period . Refer to Appendix for the daily graphs.

5.2 M7715 RESIDENTIAL RECEIVERS (EASTERN BOUNDARY)

Date	Measured PPV Component (mm/s)	Recommended Vibration Monitoring Criteria	Compliance
Thursday 18/08/2022	<4mm/s	5 mm/s (<10 Hz) 5 to 15 mm/s (10- 50Hz) 15 to 20 mm/s (50 - 100 Hz)	Yes
Friday 19/08/2022	29.13mm/s at 10Hz		See section 5.2.1 for discussion
Saturday 20/08/2022	<4mm/s		Yes
Sunday 21/08/2022	No Works		Yes
Monday 22/08/2022	21.5mm/s at 11Hz		See section 5.2.1 for discussion
Tuesday 23/08/2022	<4mm/s		Yes
Wednesday 24/08/2022	27.7mm/s at 25Hz		See section 5.2.1 for discussion
Thursday 25/08/2022	<4mm/s		Yes
Friday 26/08/2022	<4mm/s		Yes
Saturday 27/08/2022	<4mm/s		Yes
Sunday 28/08/2022	No Works		Yes
Monday 29/08/2022	<4mm/s		Yes
Tuesday 30/08/2022	<4mm/s		Yes

5.2.1 Discussion

Monitoring on the residential boundary commenced on 18th August 2022.

Exceedances was measured on the following days:

- 19th August 2022 9:00am to 9:30am.
- 22nd August 2022 between 7:00am to 7:30am.
- 24th August 2022 between 2:30pm to 3:00pm.

These isolated short-term exceedances were assessed with Taylor Construction and were due to demolition works being undertaken in the immediate location of monitor, which is offset from the residential property by approximately 5m. As a result, the localised demolition immediately adjacent to the monitor resulted in the artificial inflation of measured results. Notwithstanding, a visual inspection of the residential property is recommended, in addition to investigating the feasibility of relocating the monitor to the exact boundary of the residential premises. No other exceedances from the demolition works were measured for the rest of the monitoring period.

6 CONCLUSION

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

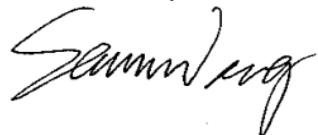
This report presents the vibration results for the monitoring period Wednesday 17th August 2022 to Tuesday 30th August 2022. The result of this report concludes:

- M7427 measured one (1) exceedance during this monitoring period.
- M7715 measured three (3) exceedances during this monitoring period.

Analysis of the exceedances and subsequent recommendations are presented in Section 5.2.1.

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

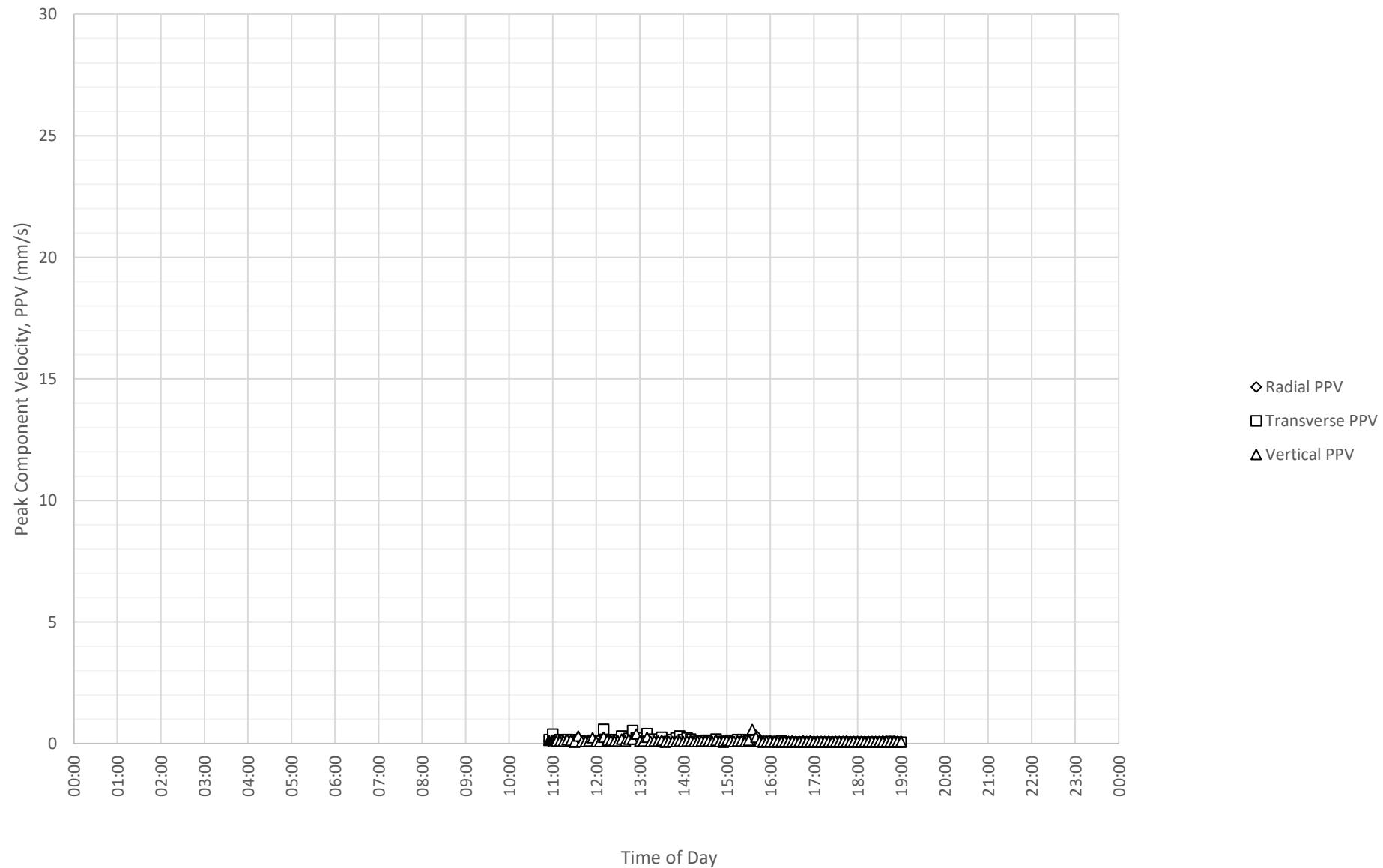
Yours faithfully,



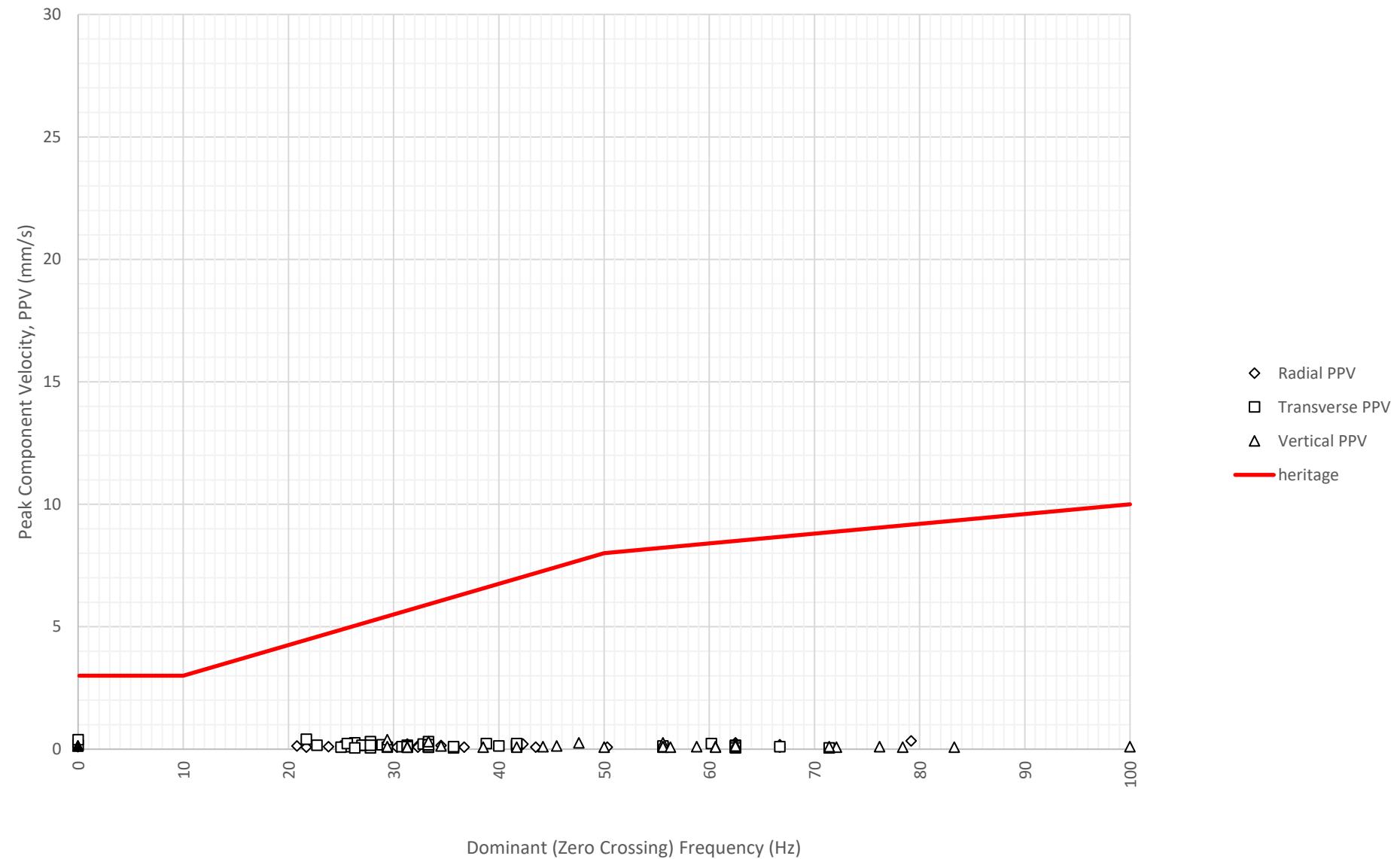
Acoustic Logic Pty Ltd
Samantha Wong

APPENDIX: DAILY GRAPHS M7427 (HERITAGE BUILDING)

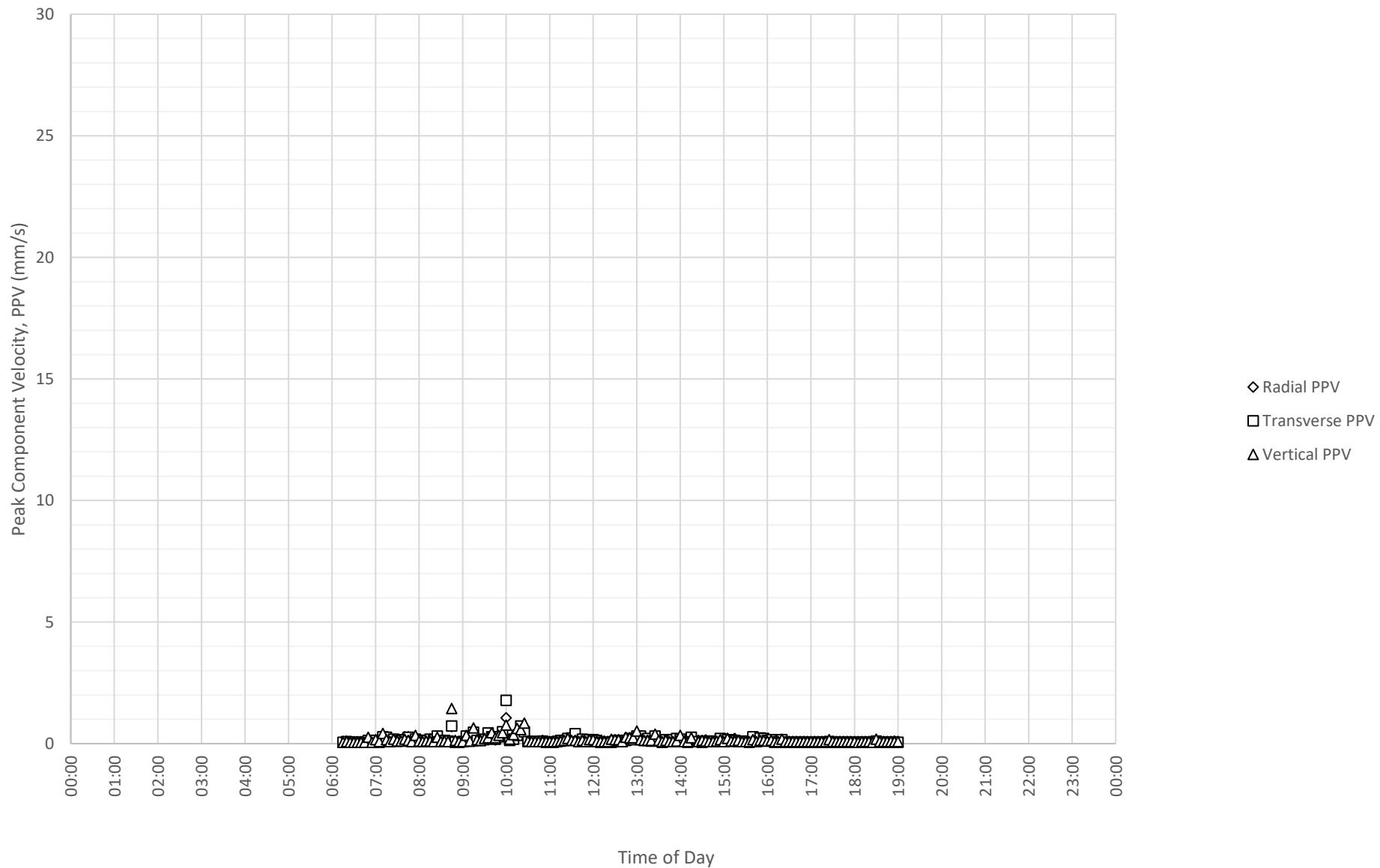
Daily Monitored Vibration Levels at M7427 Heritage on 17-08-2022



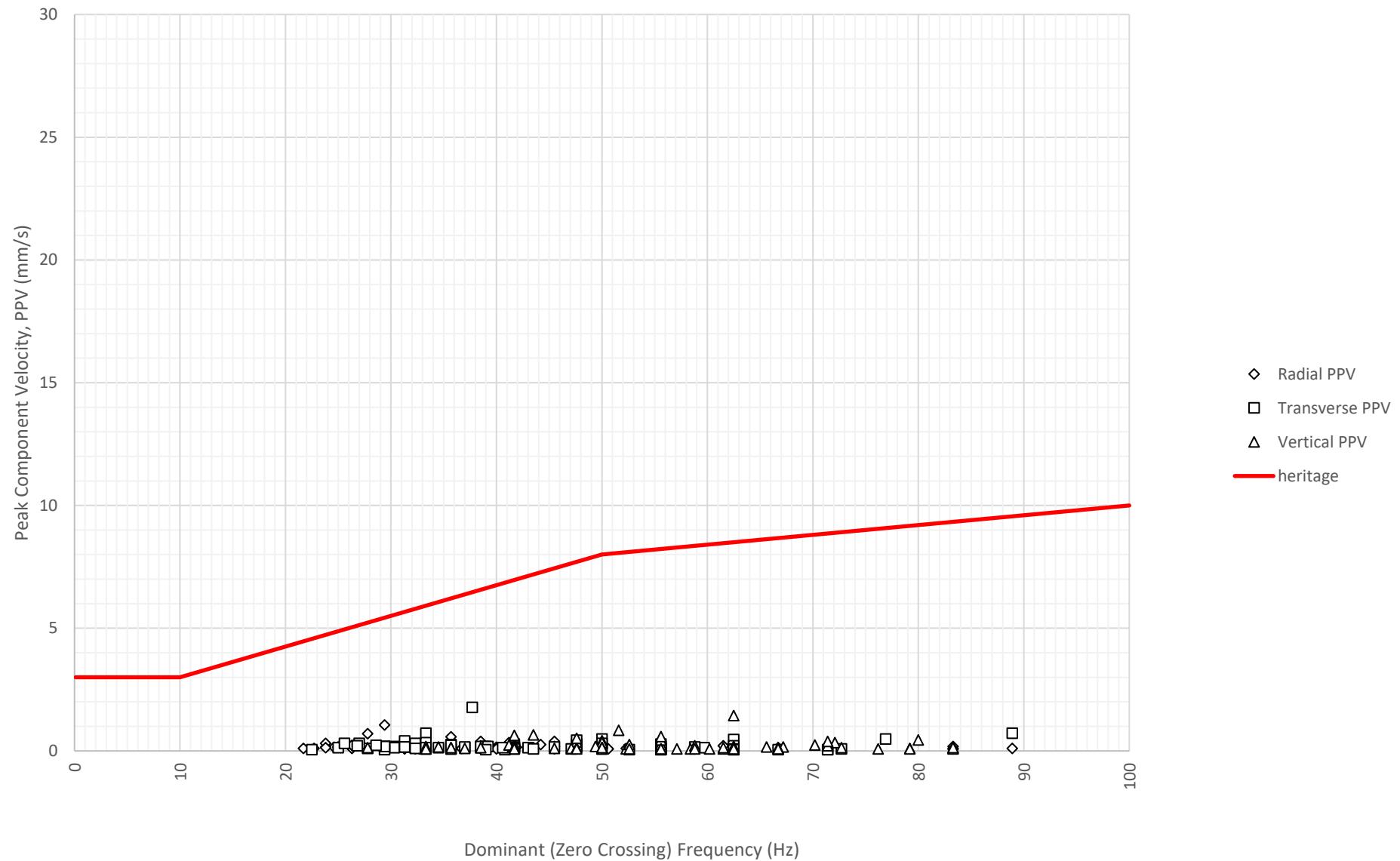
Frequency Content of Vibration Levels at M7427 Heritage on 17-08-2022



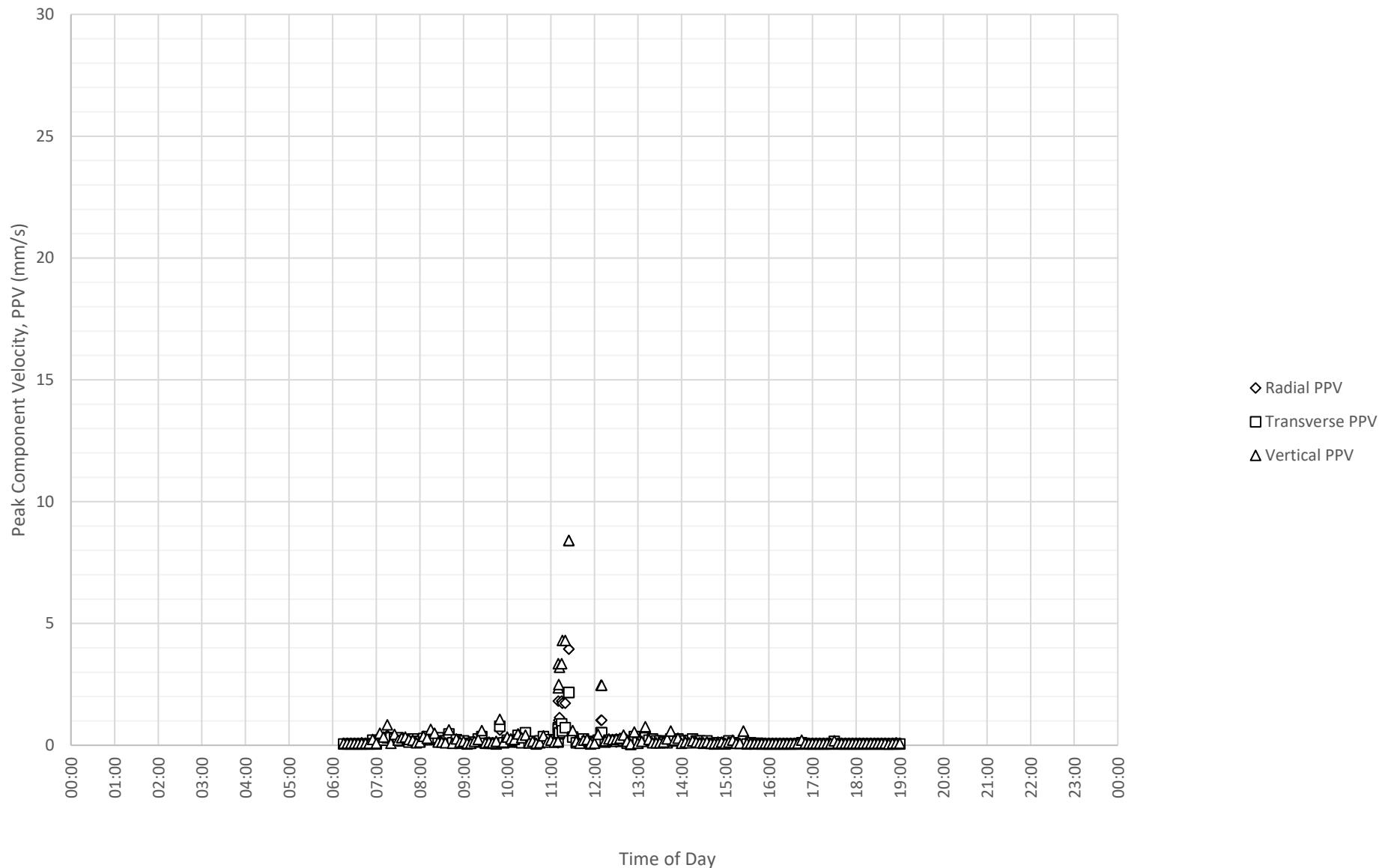
Daily Monitored Vibration Levels at M7427 Heritage on 18-08-2022



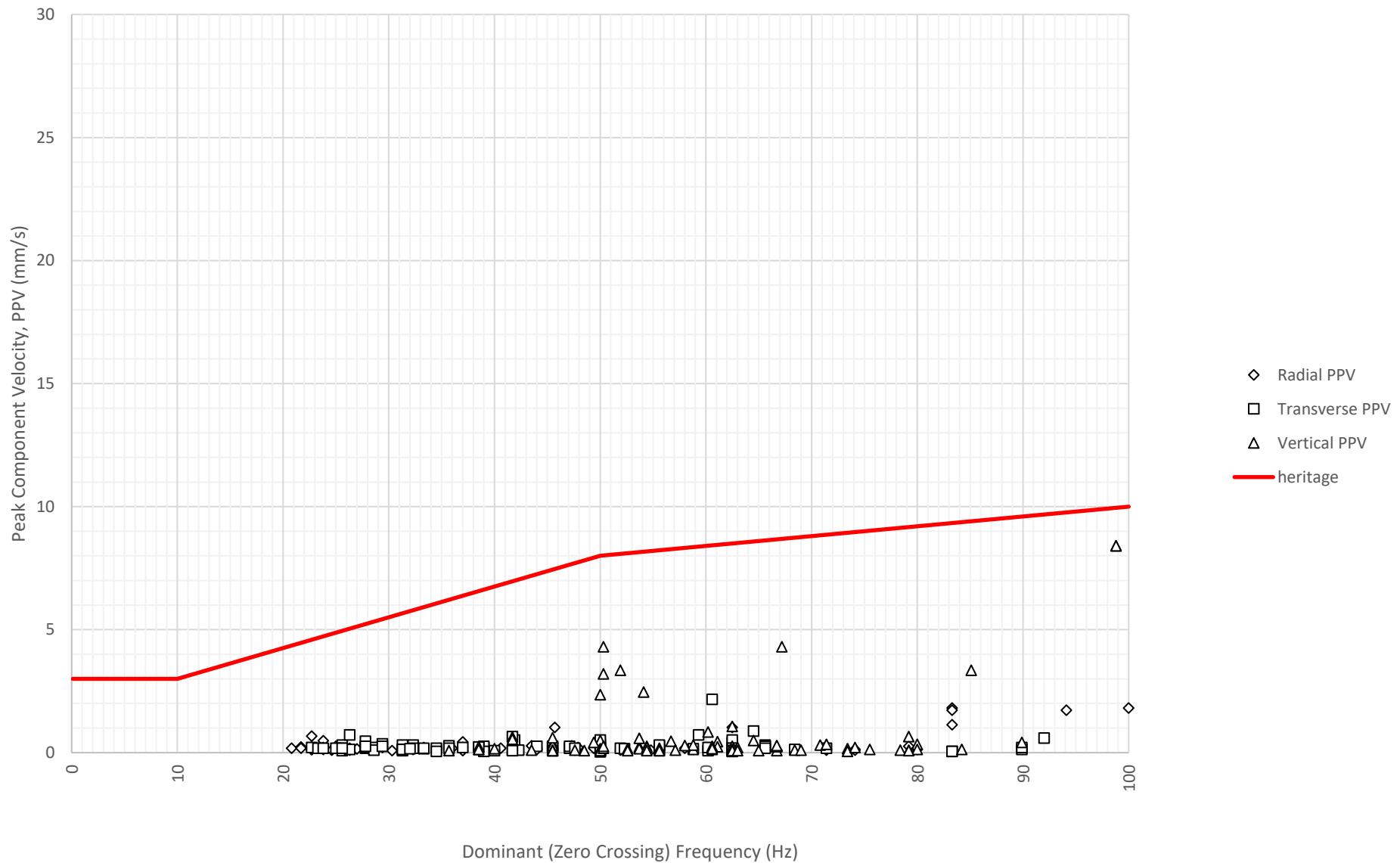
Frequency Content of Vibration Levels at M7427 Heritage on 18-08-2022



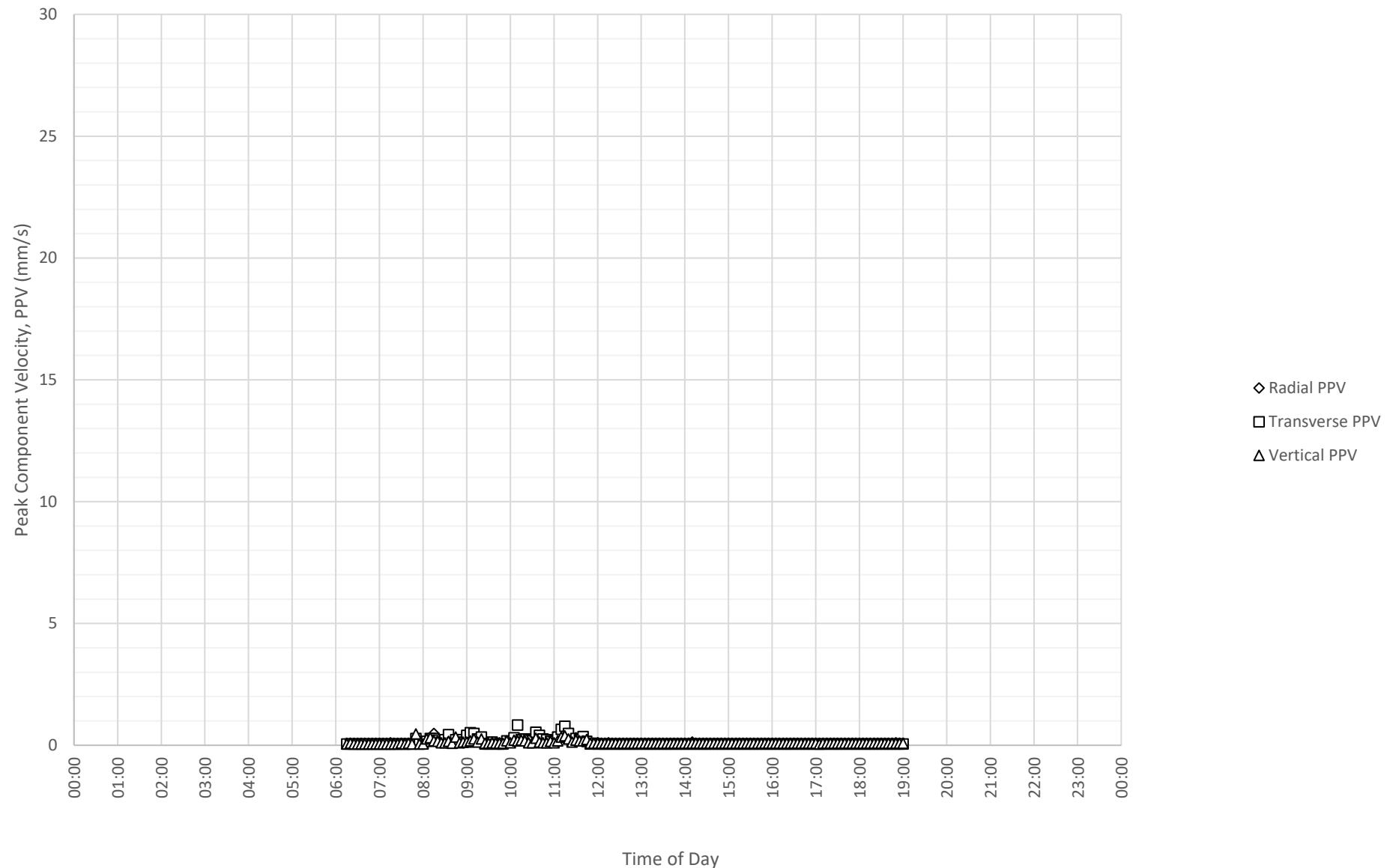
Daily Monitored Vibration Levels at M7427 Heritage on 19-08-2022



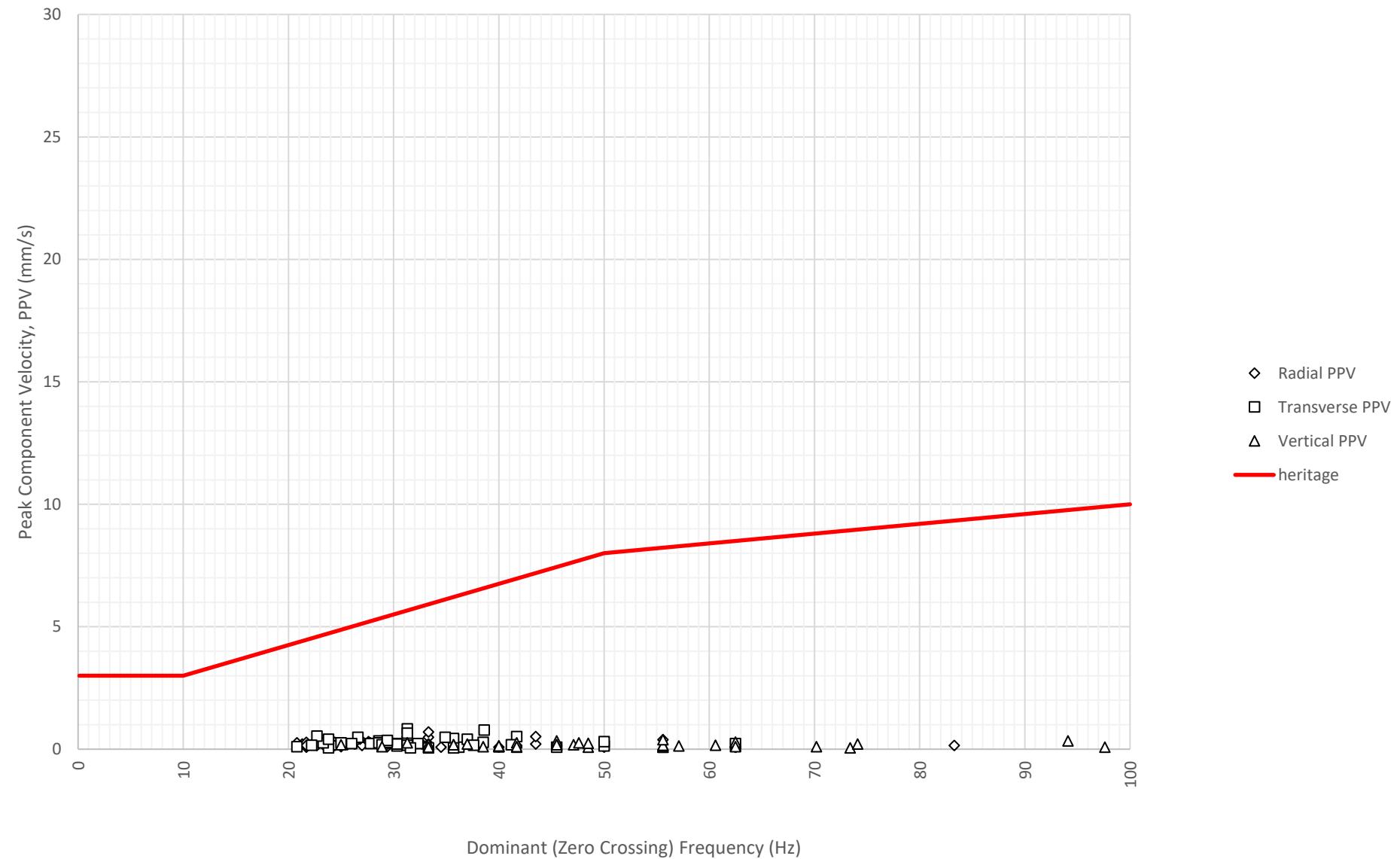
Frequency Content of Vibration Levels at M7427 Heritage on 19-08-2022



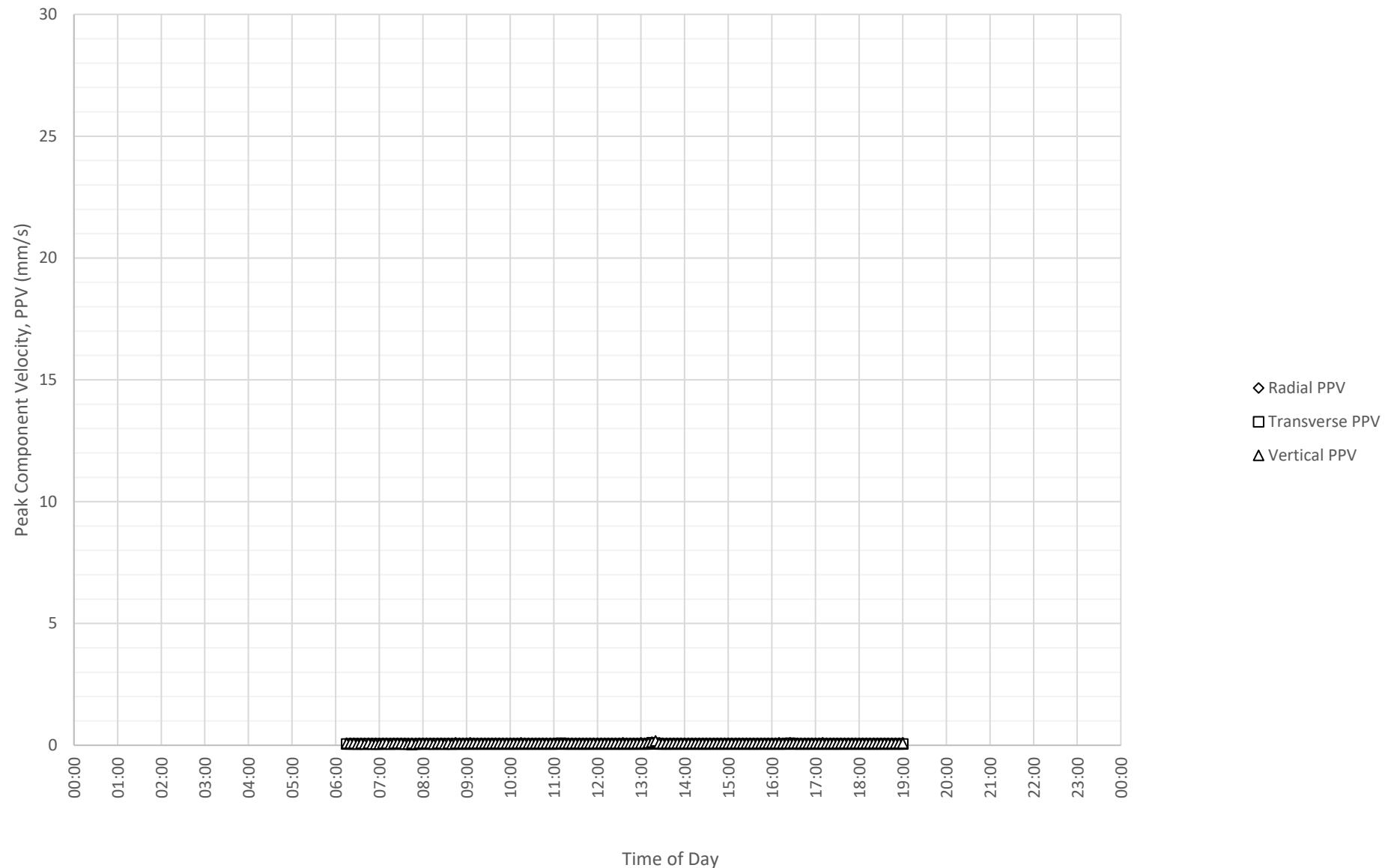
Daily Monitored Vibration Levels at M7427 Heritage on 20-08-2022



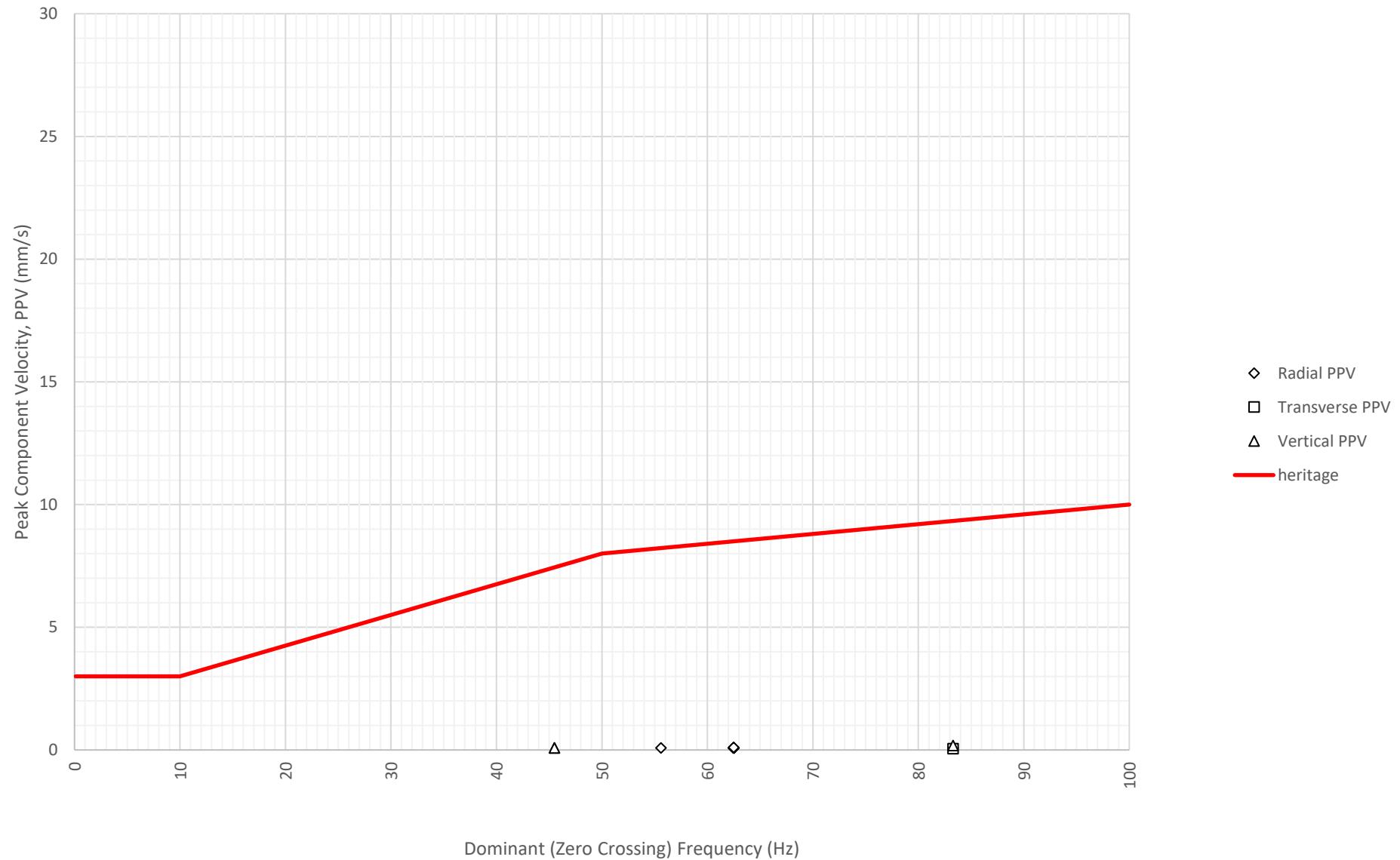
Frequency Content of Vibration Levels at M7427 Heritage on 20-08-2022



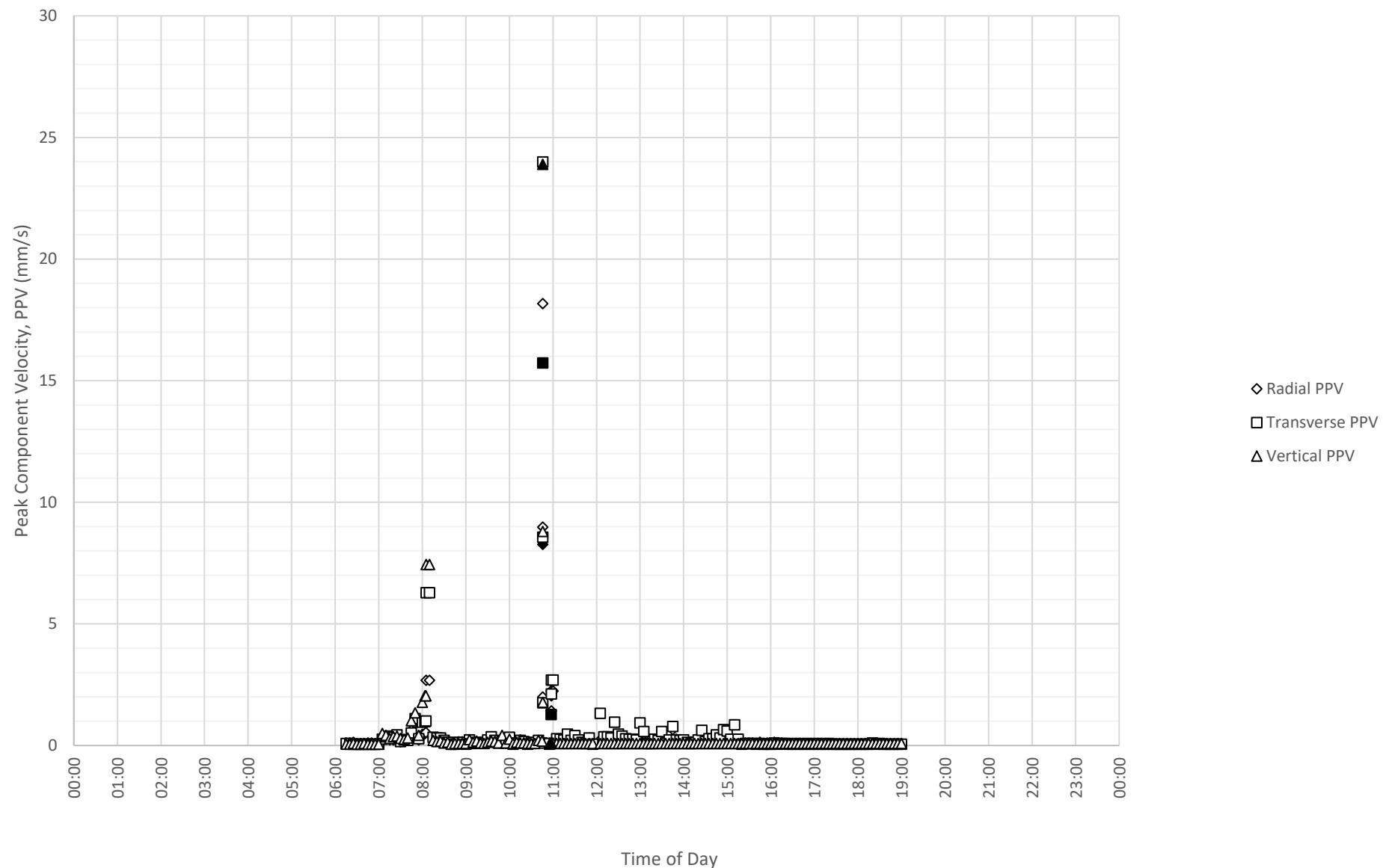
Daily Monitored Vibration Levels at M7427 Heritage on 21-08-2022



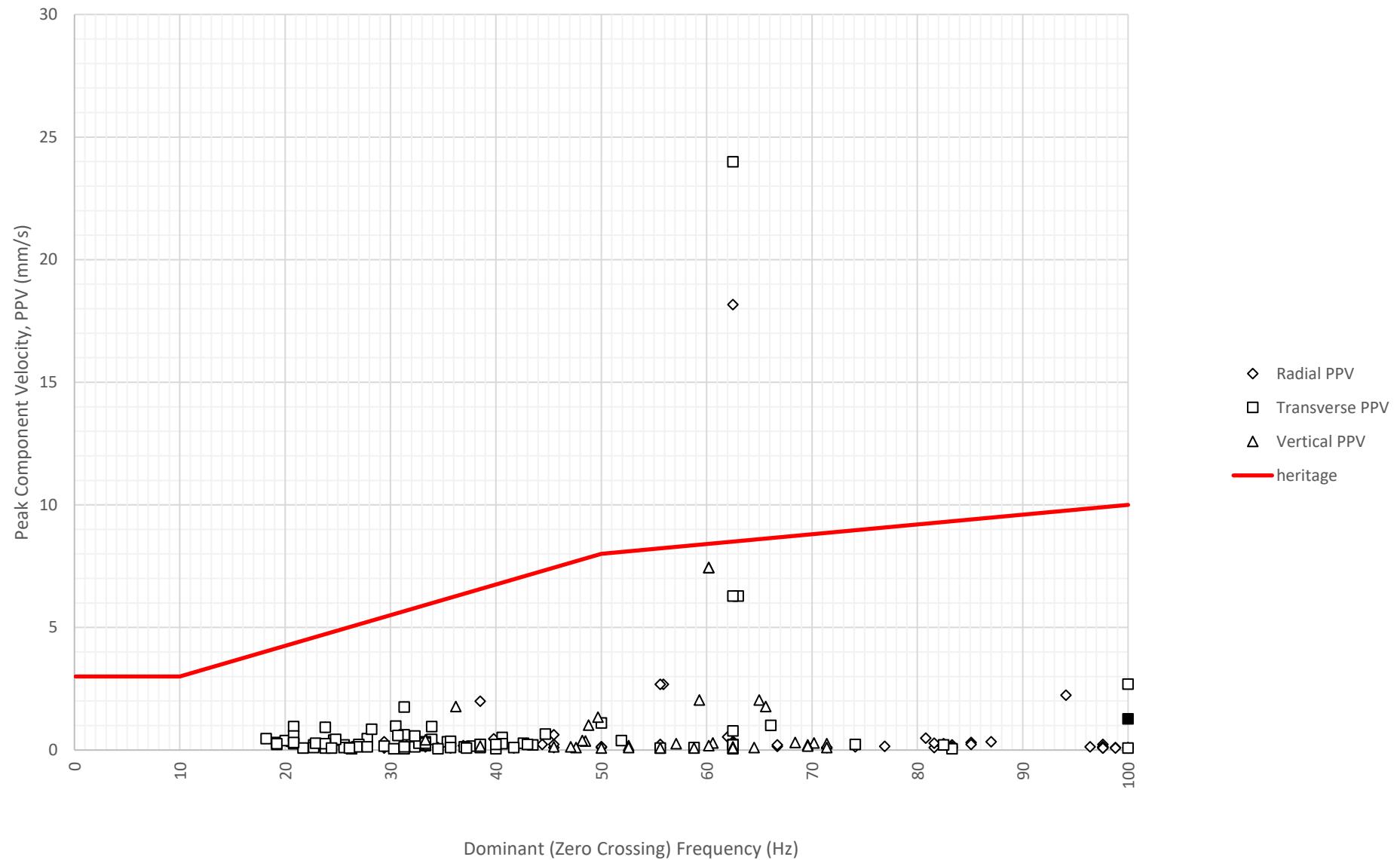
Frequency Content of Vibration Levels at M7427 Heritage on 21-08-2022



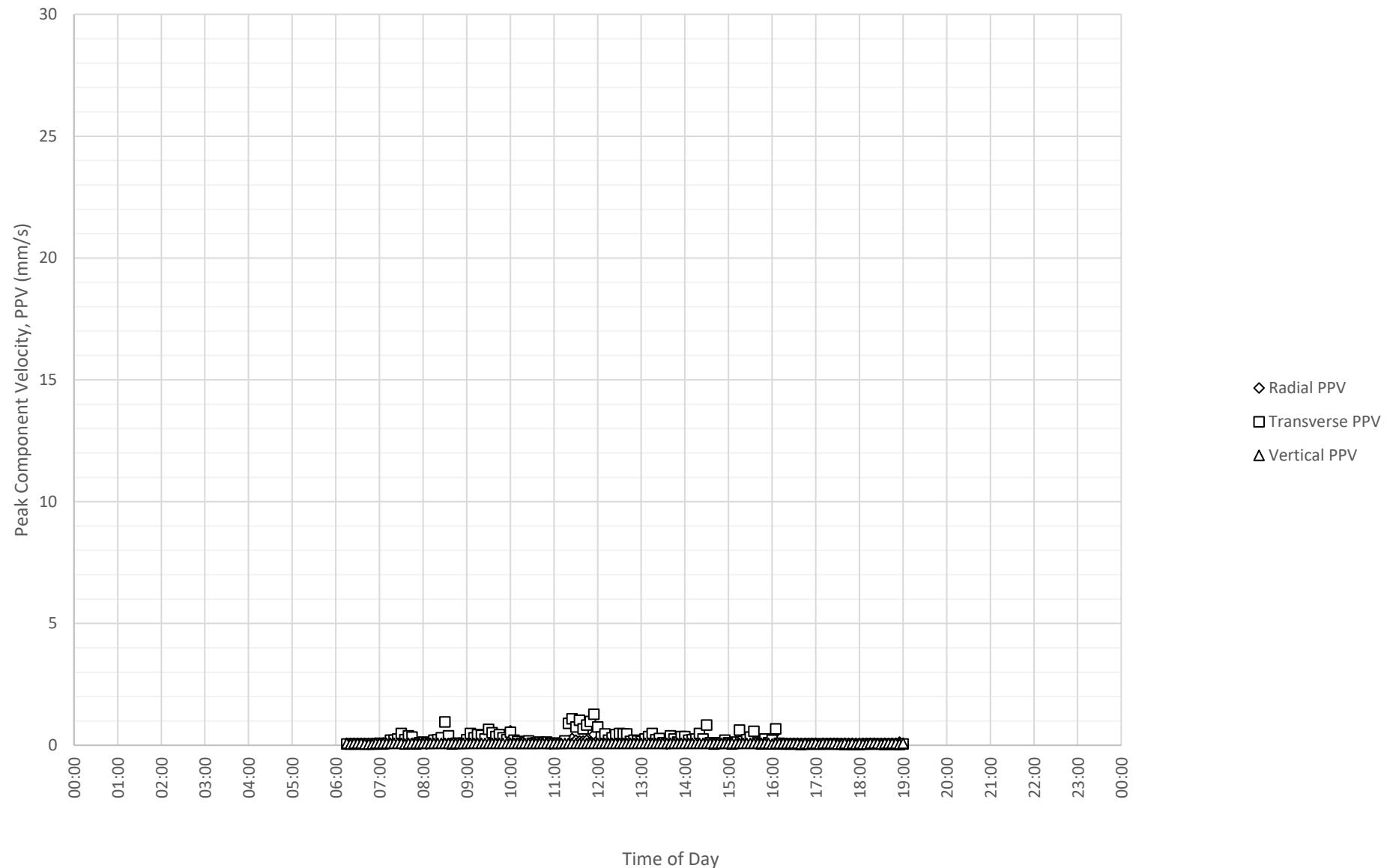
Daily Monitored Vibration Levels at M7427 Heritage on 22-08-2022



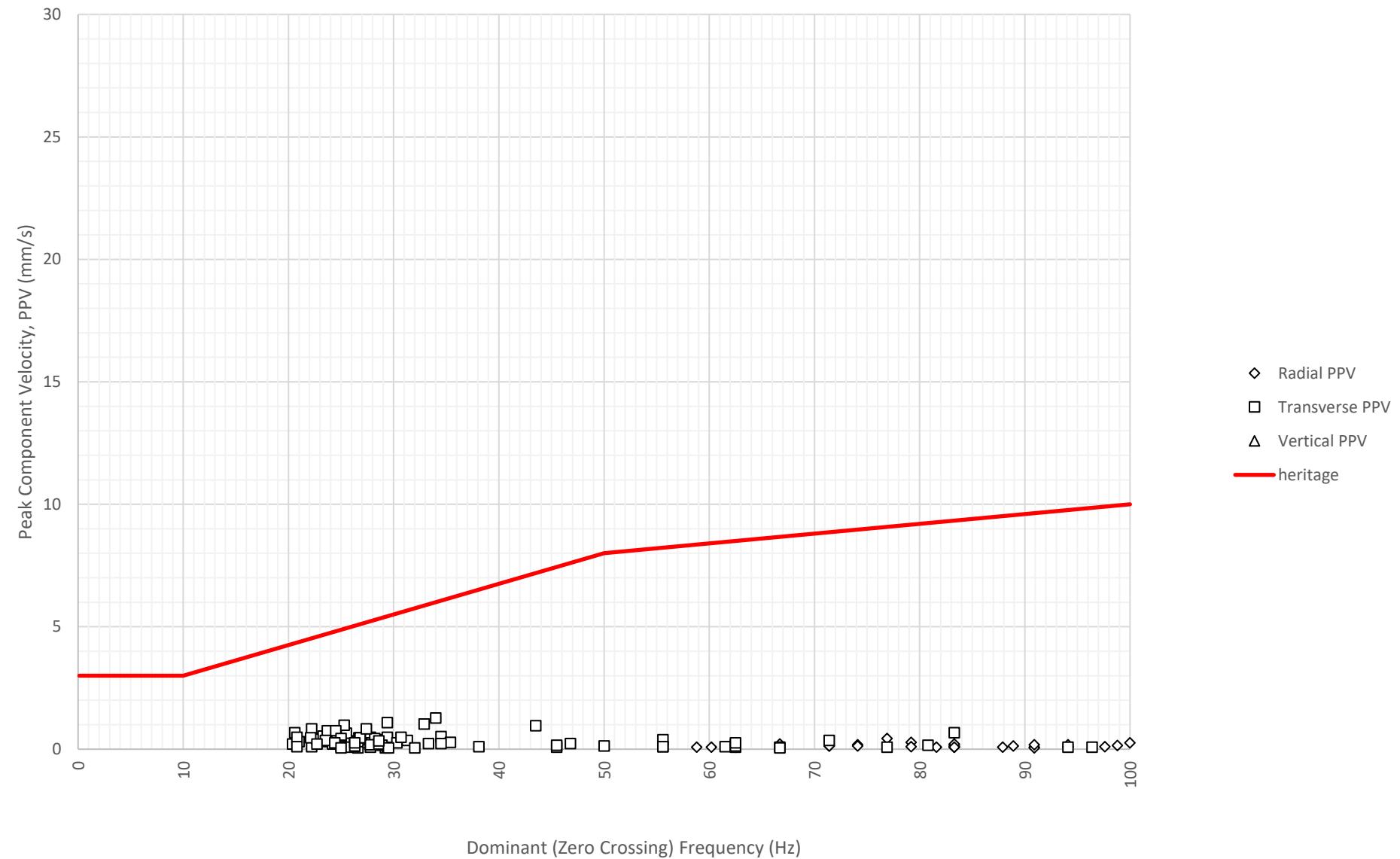
Frequency Content of Vibration Levels at M7427 Heritage on 22-08-2022



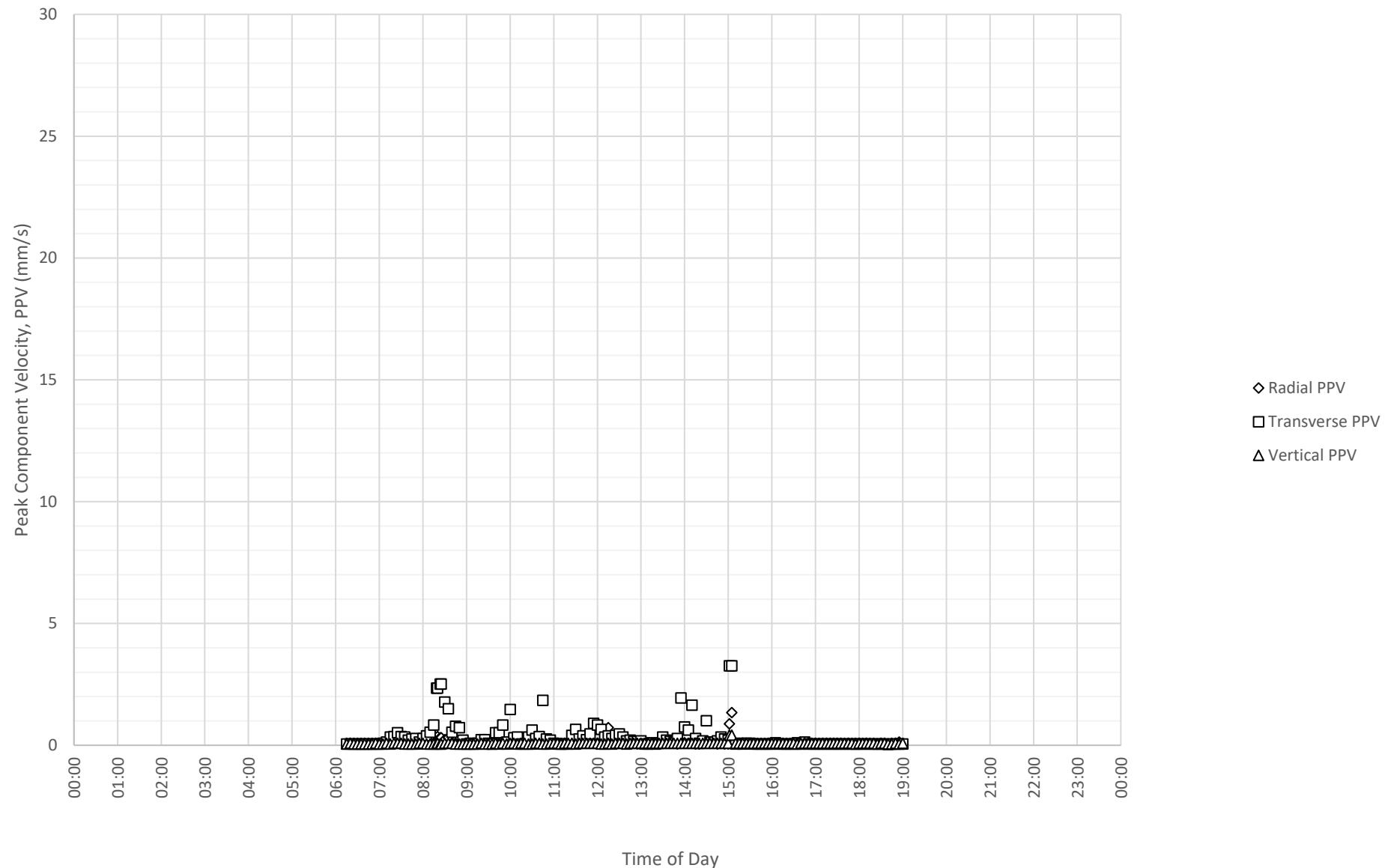
Daily Monitored Vibration Levels at M7427 Heritage on 23-08-2022



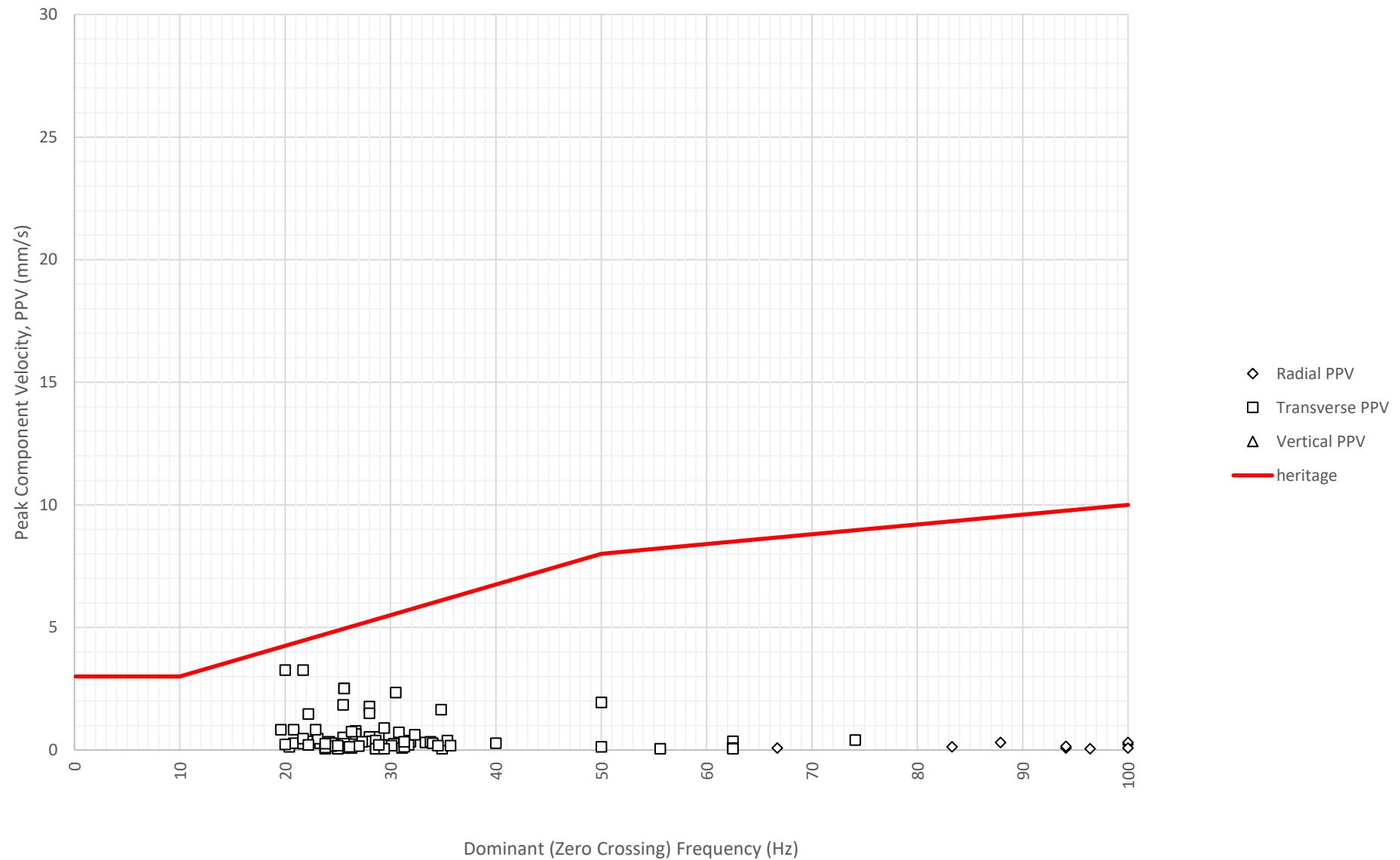
Frequency Content of Vibration Levels at M7427 Heritage on 23-08-2022



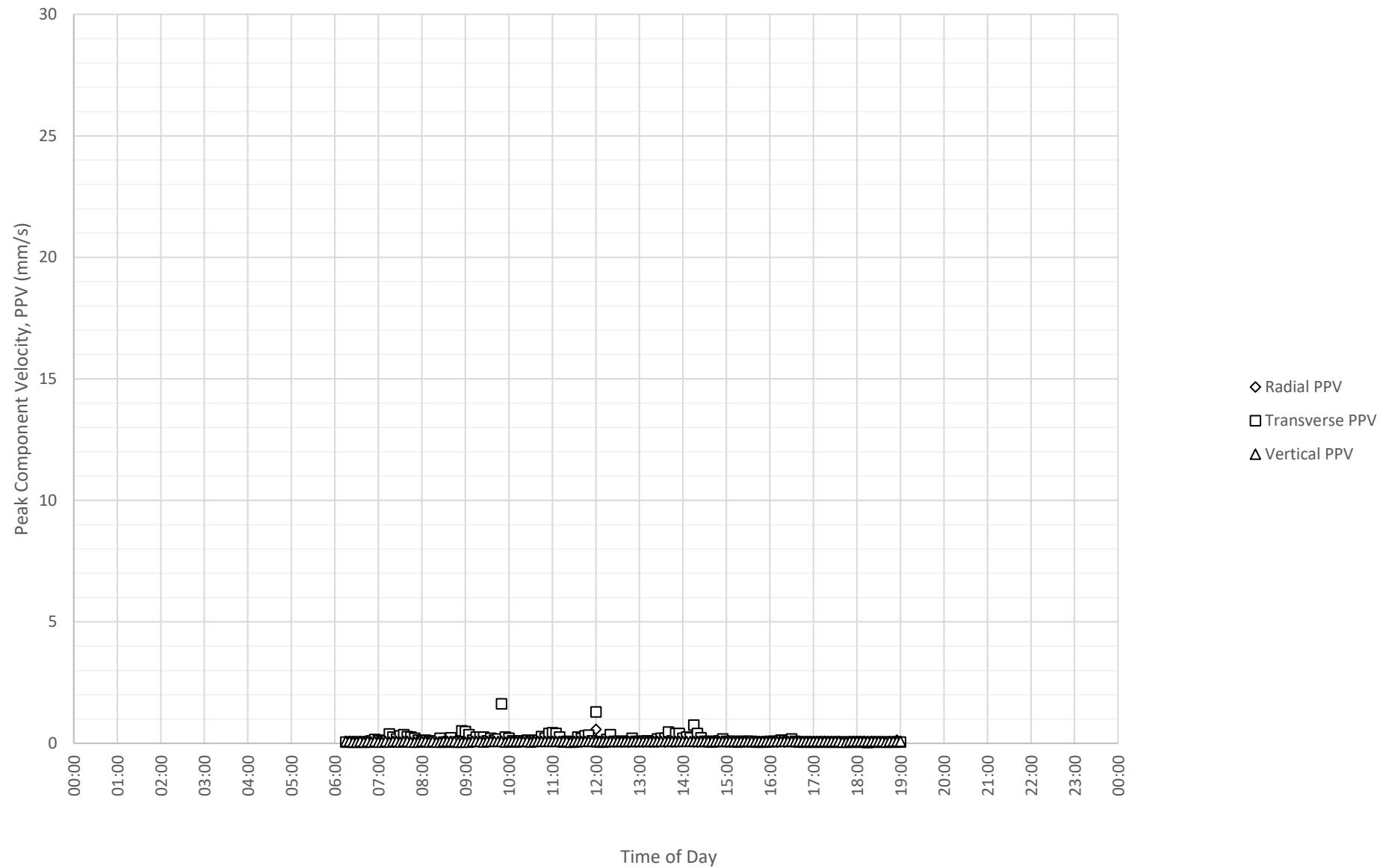
Daily Monitored Vibration Levels at M7427 Heritage on 24-08-2022



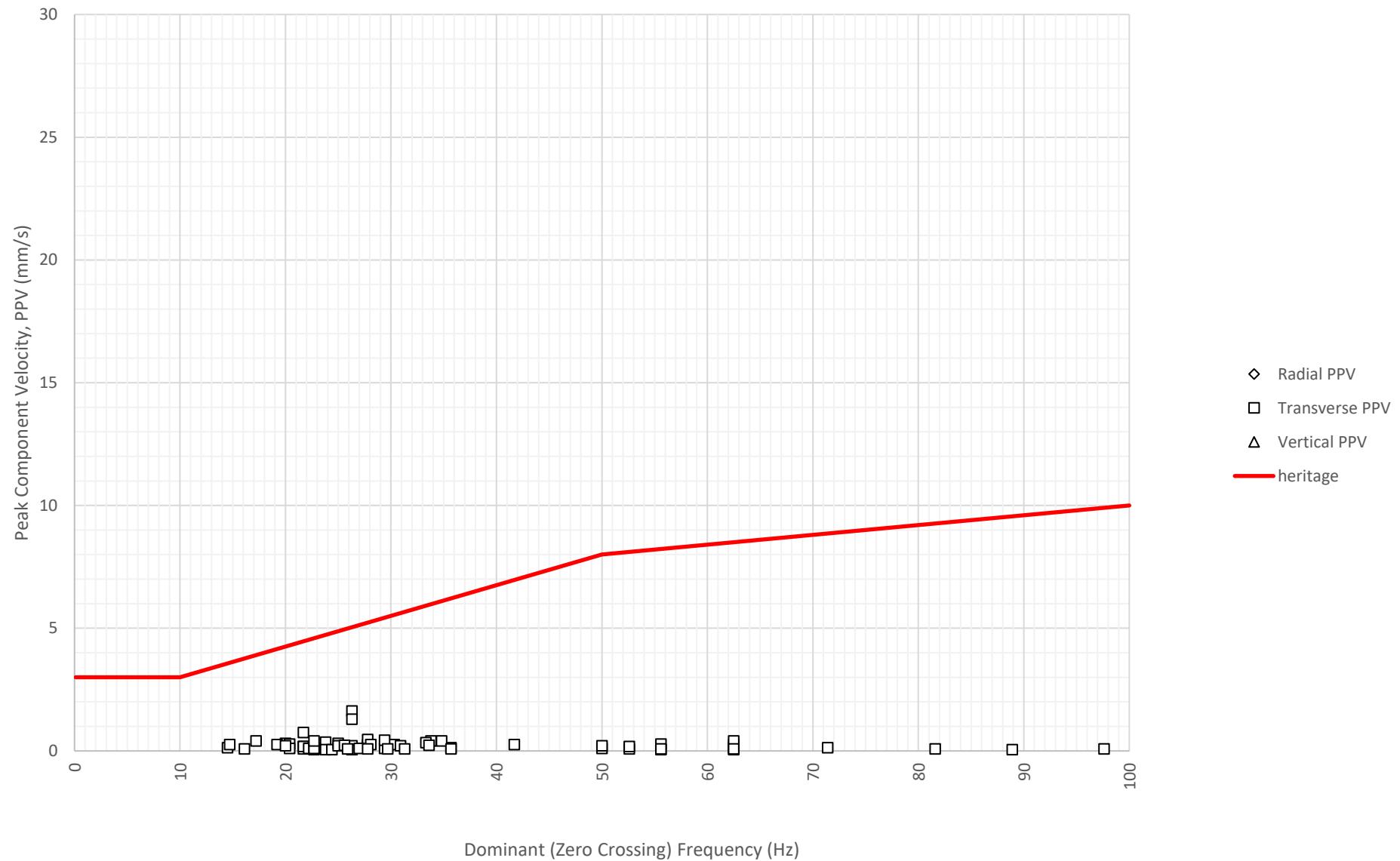
Frequency Content of Vibration Levels at M7427 Heritage on 24-08-2022



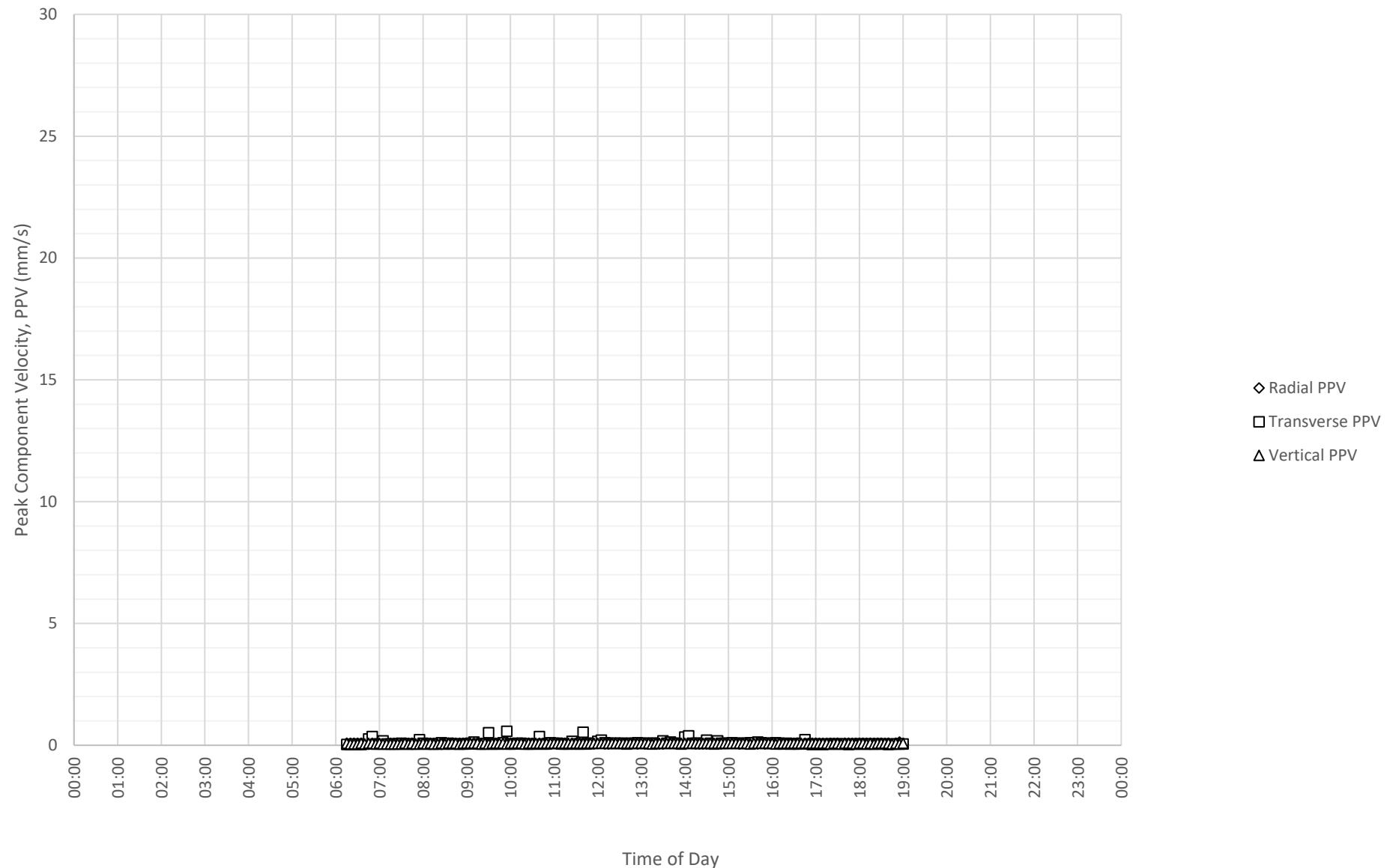
Daily Monitored Vibration Levels at M7427 Heritage on 25-08-2022



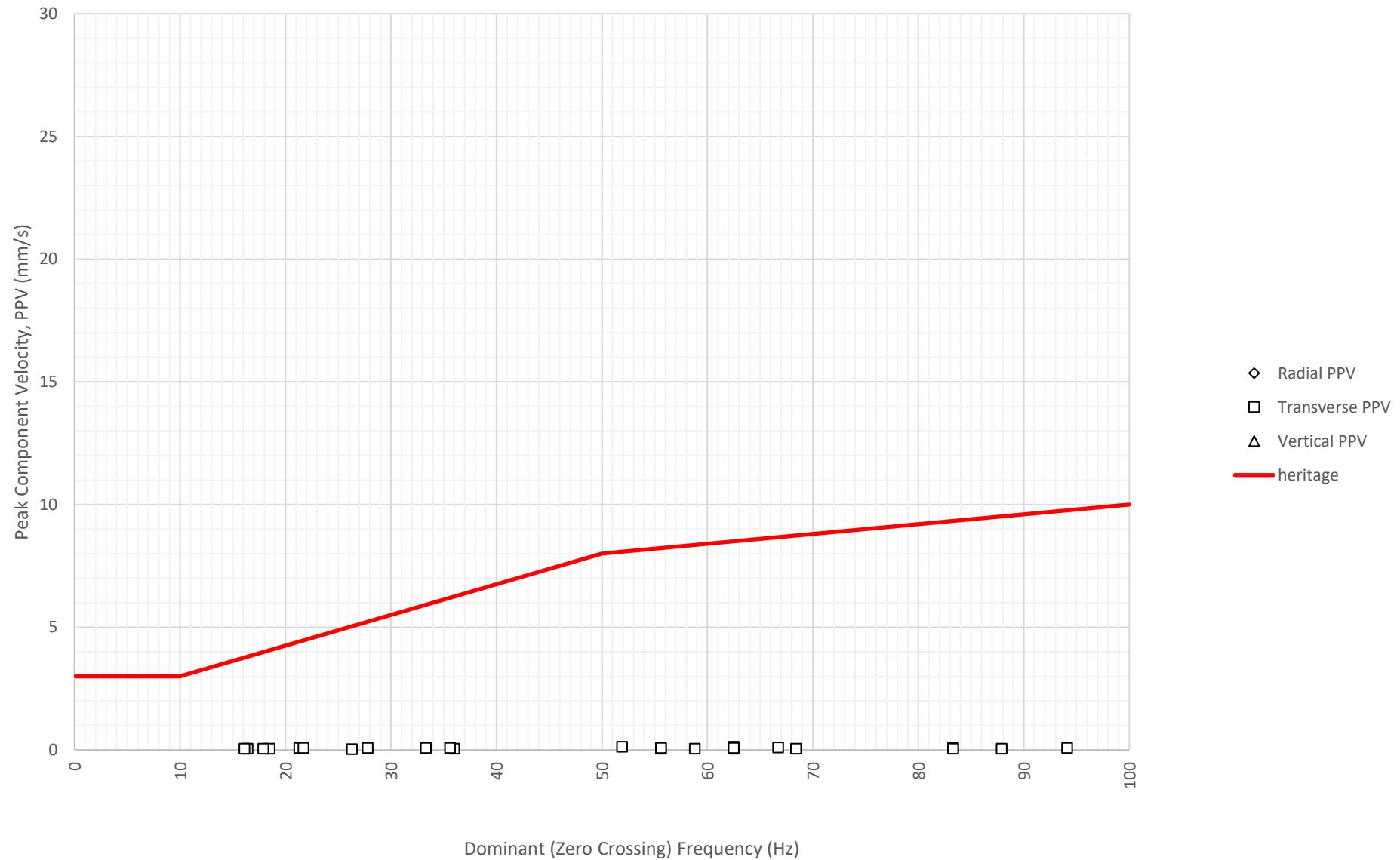
Frequency Content of Vibration Levels at M7427 Heritage on 25-08-2022



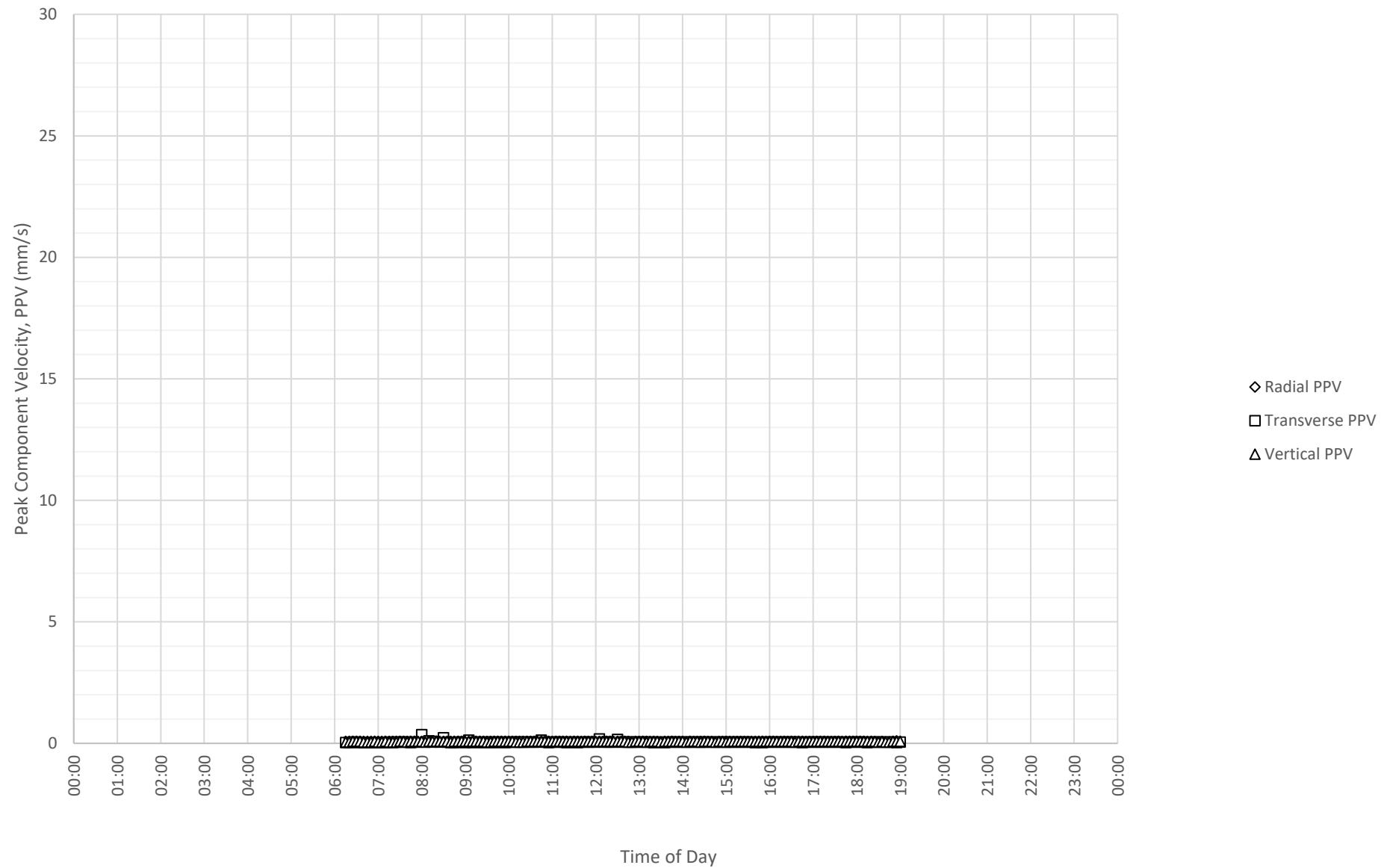
Daily Monitored Vibration Levels at M7427 Heritage on 26-08-2022



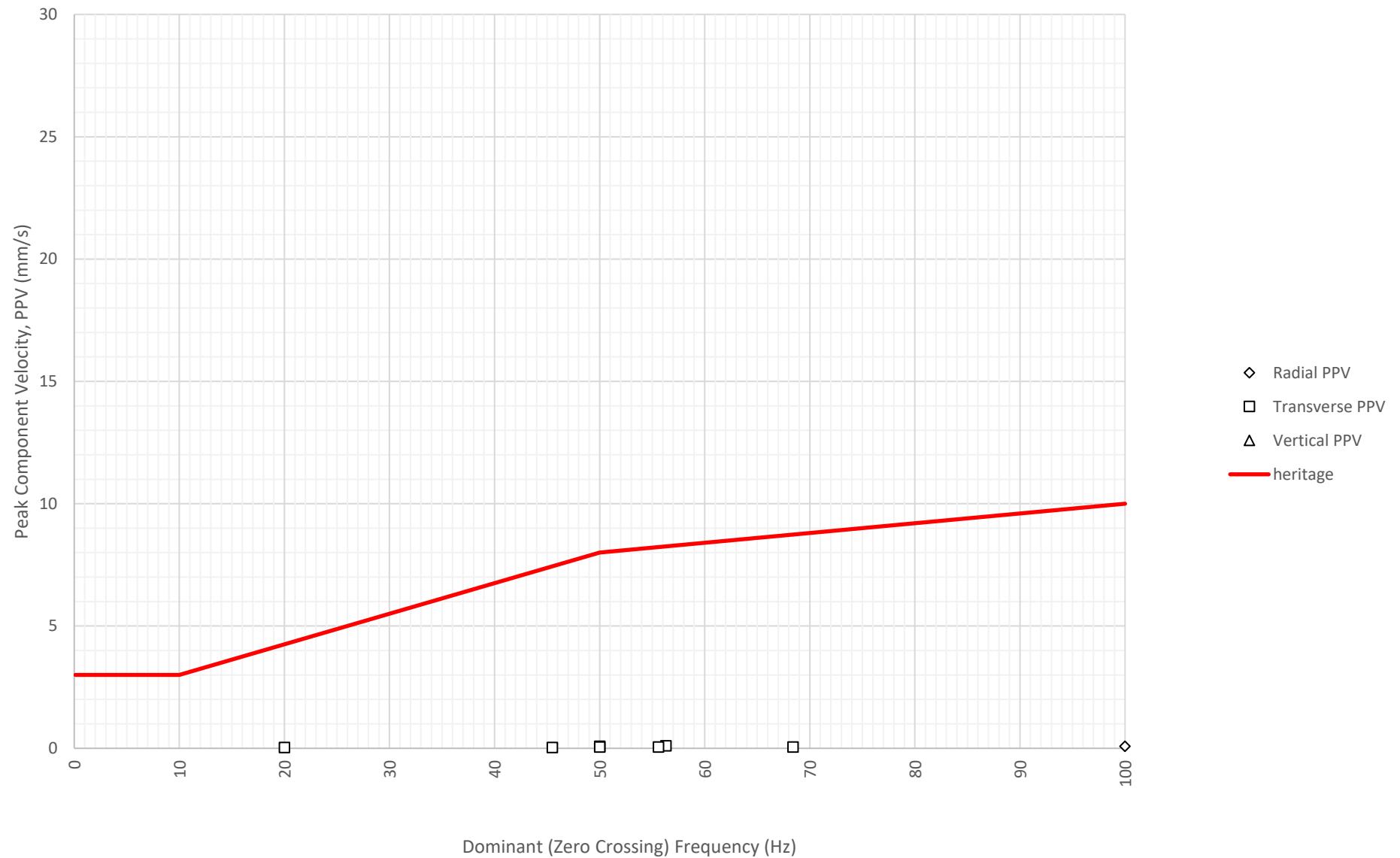
Frequency Content of Vibration Levels at M7427 Heritage on 26-08-2022



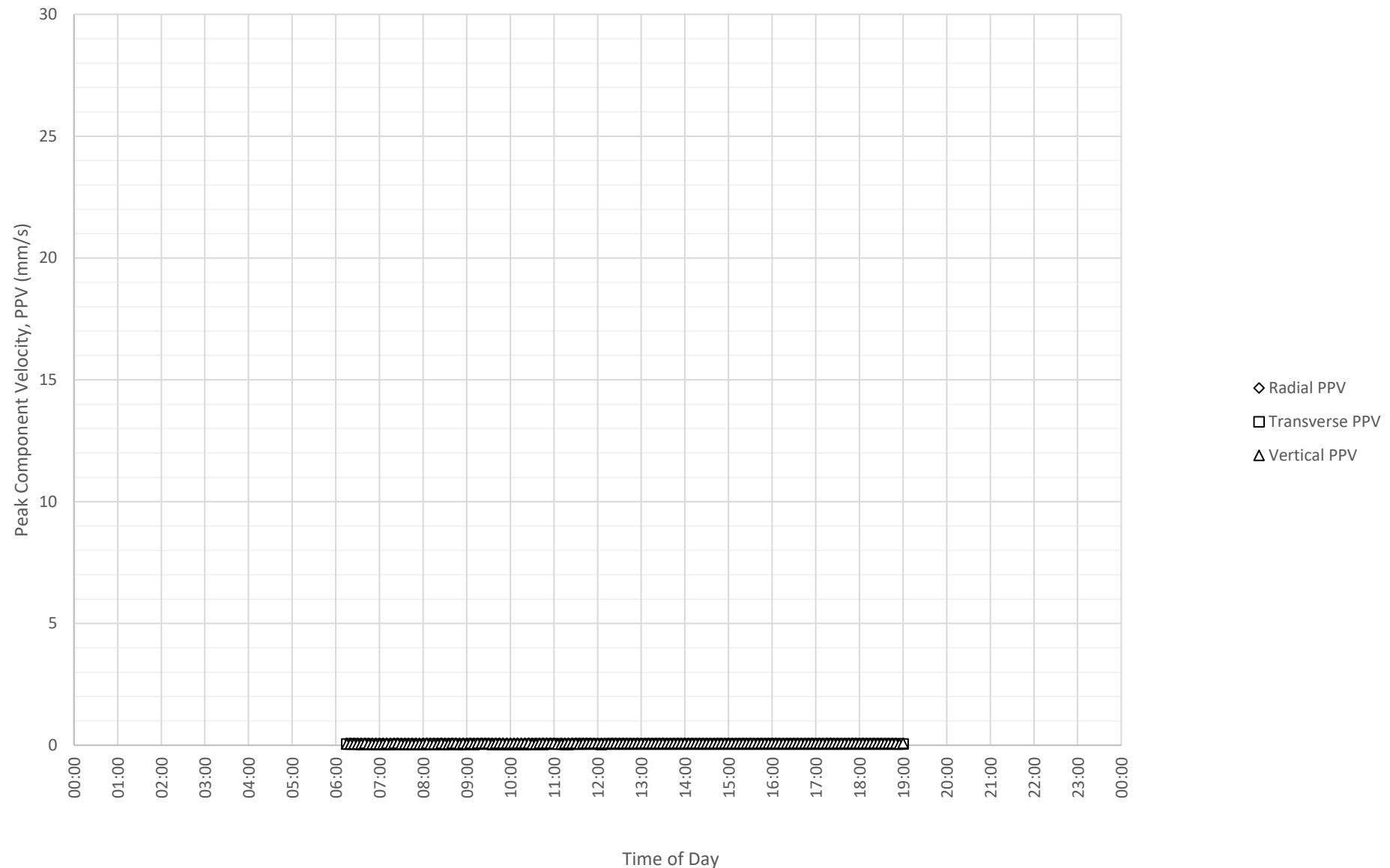
Daily Monitored Vibration Levels at M7427 Heritage on 27-08-2022



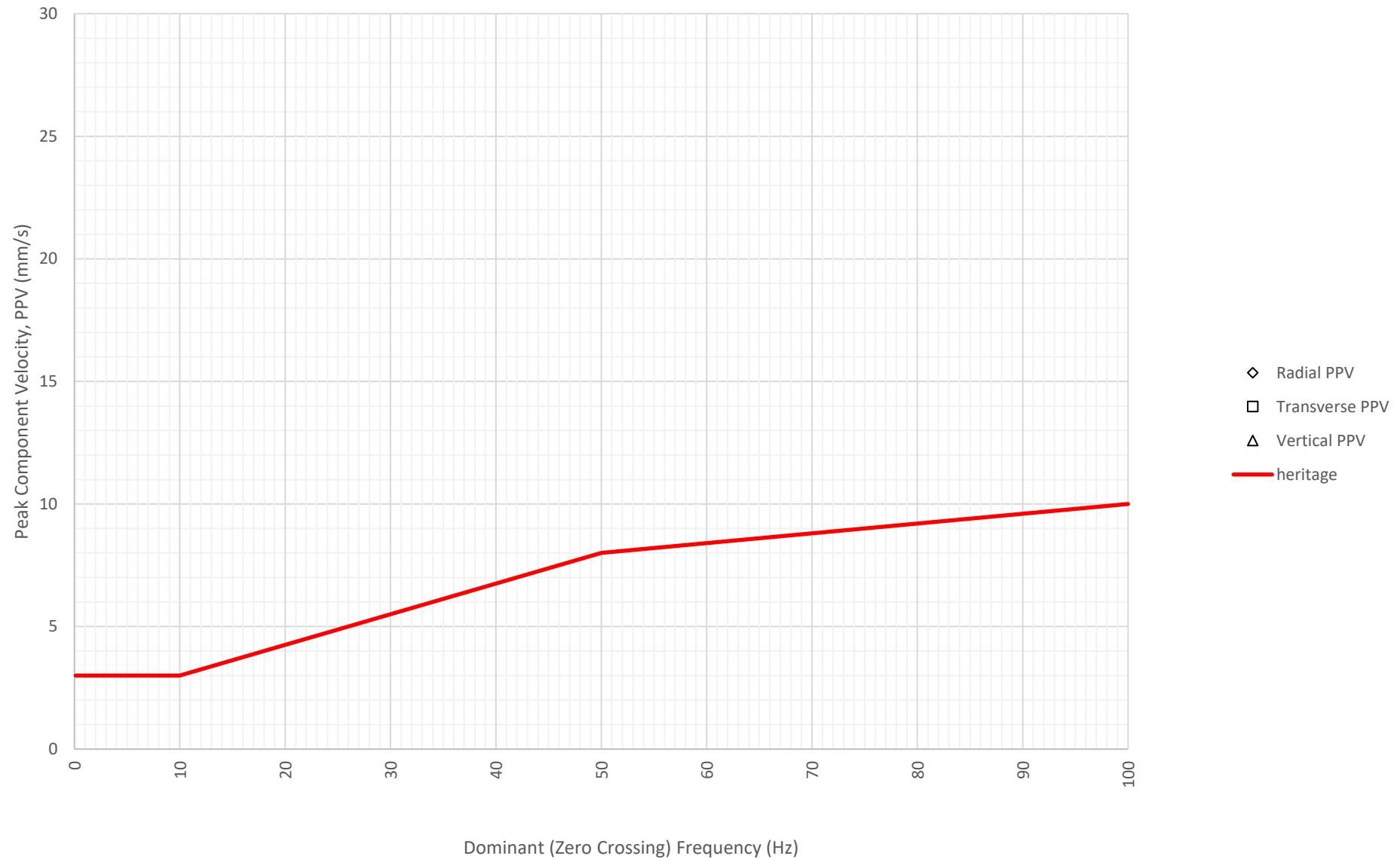
Frequency Content of Vibration Levels at M7427 Heritage on 27-08-2022



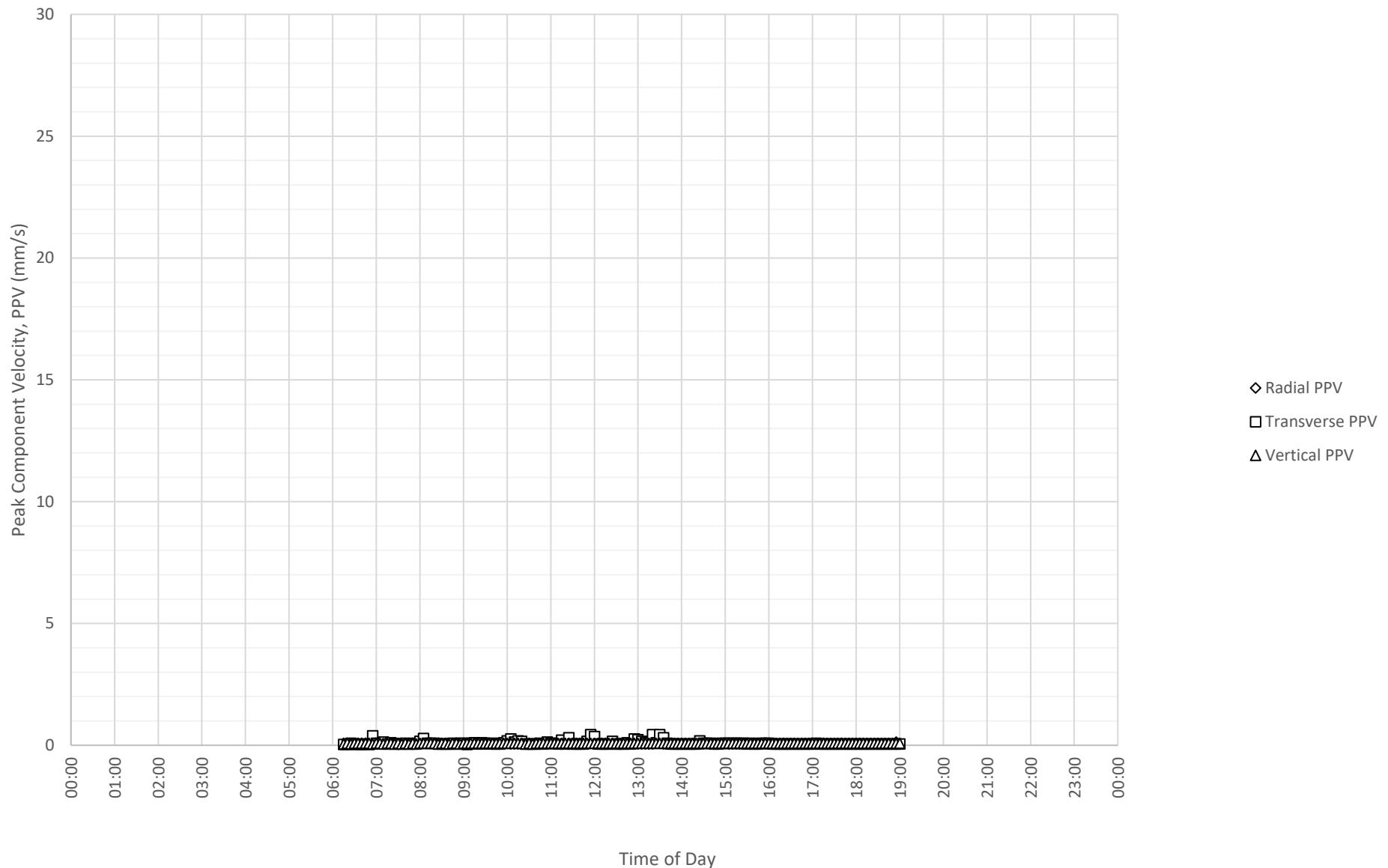
Daily Monitored Vibration Levels at M7427 Heritage on 28-08-2022



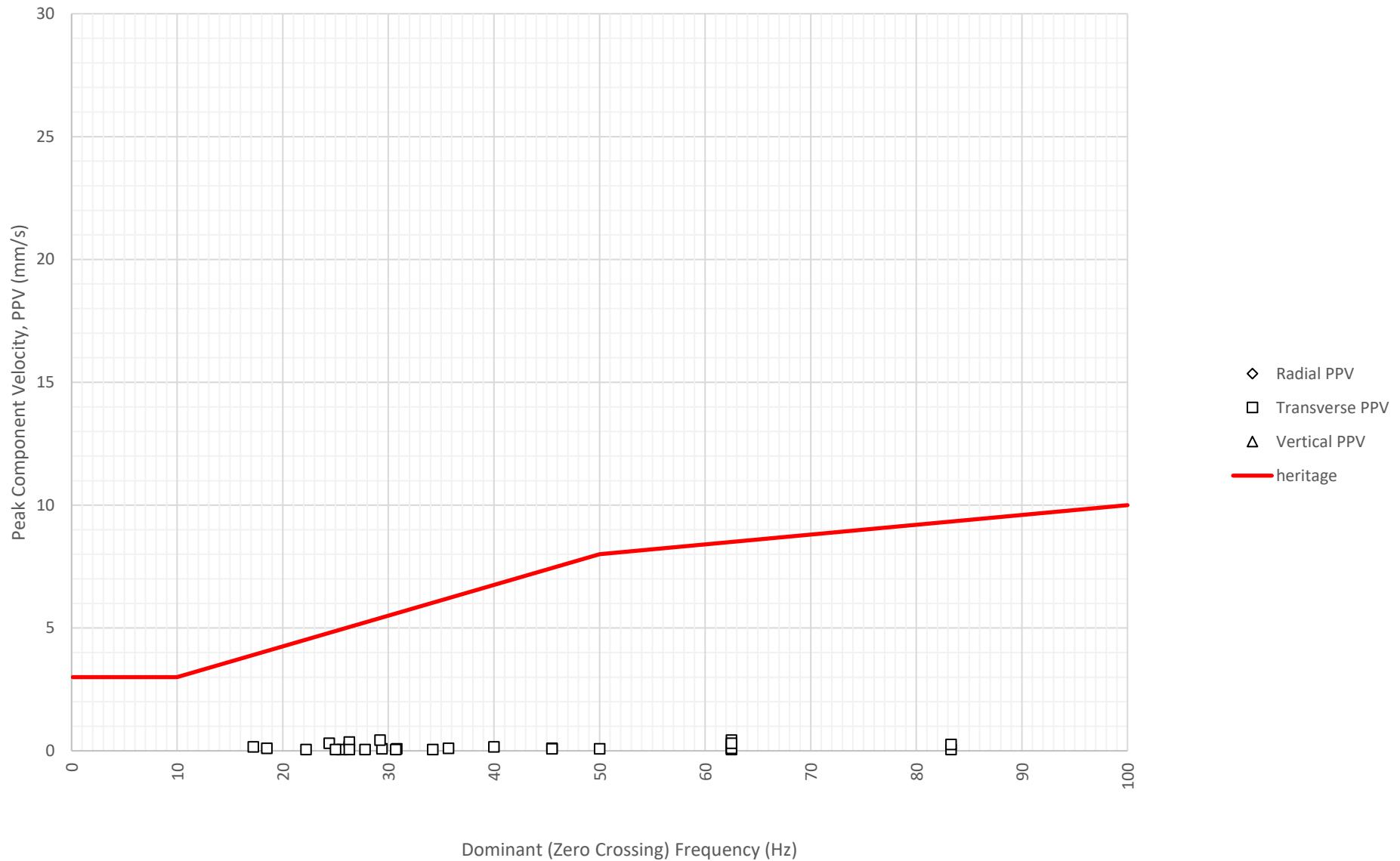
Frequency Content of Vibration Levels at M7427 Heritage on 28-08-2022



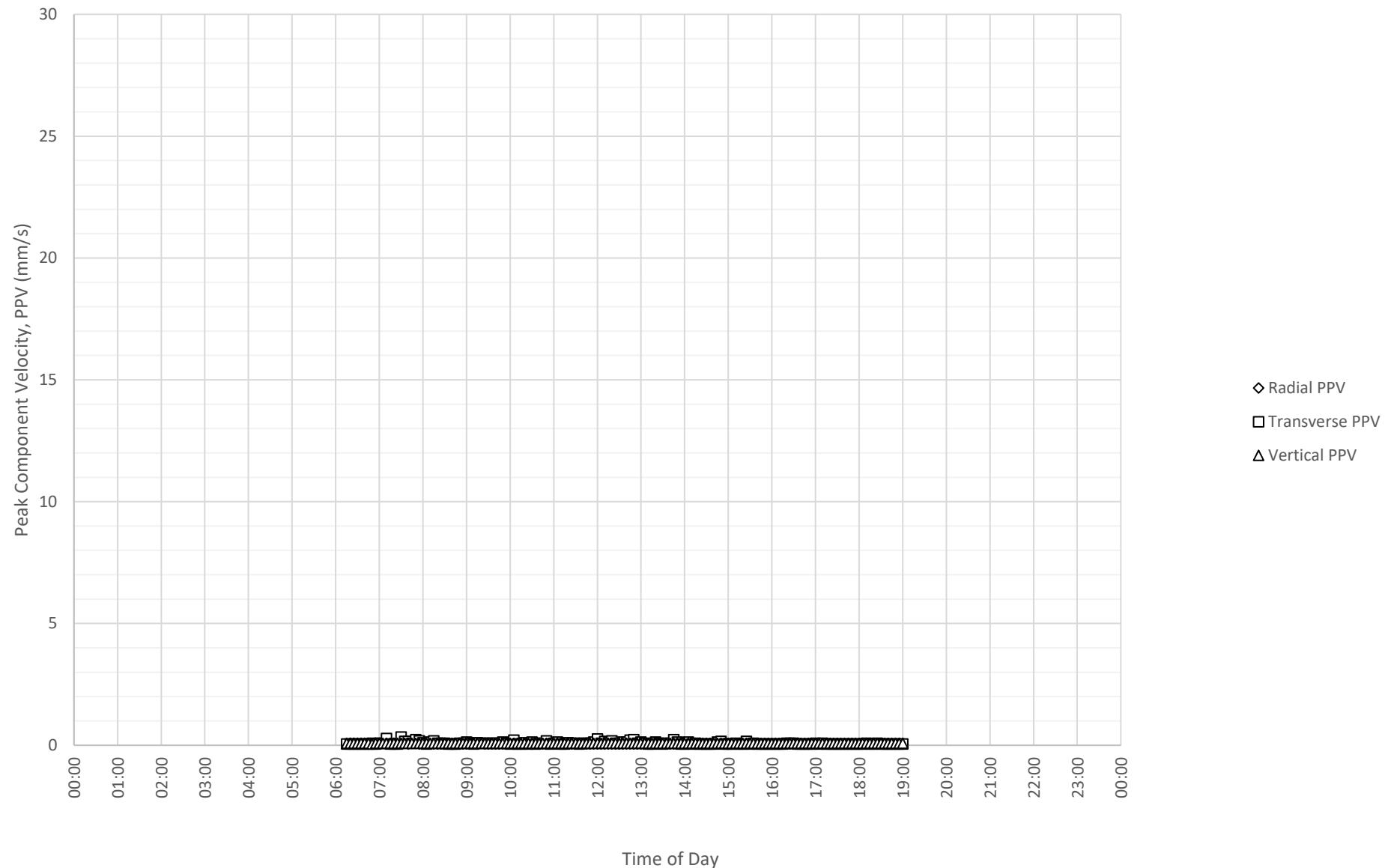
Daily Monitored Vibration Levels at M7427 Heritage on 29-08-2022



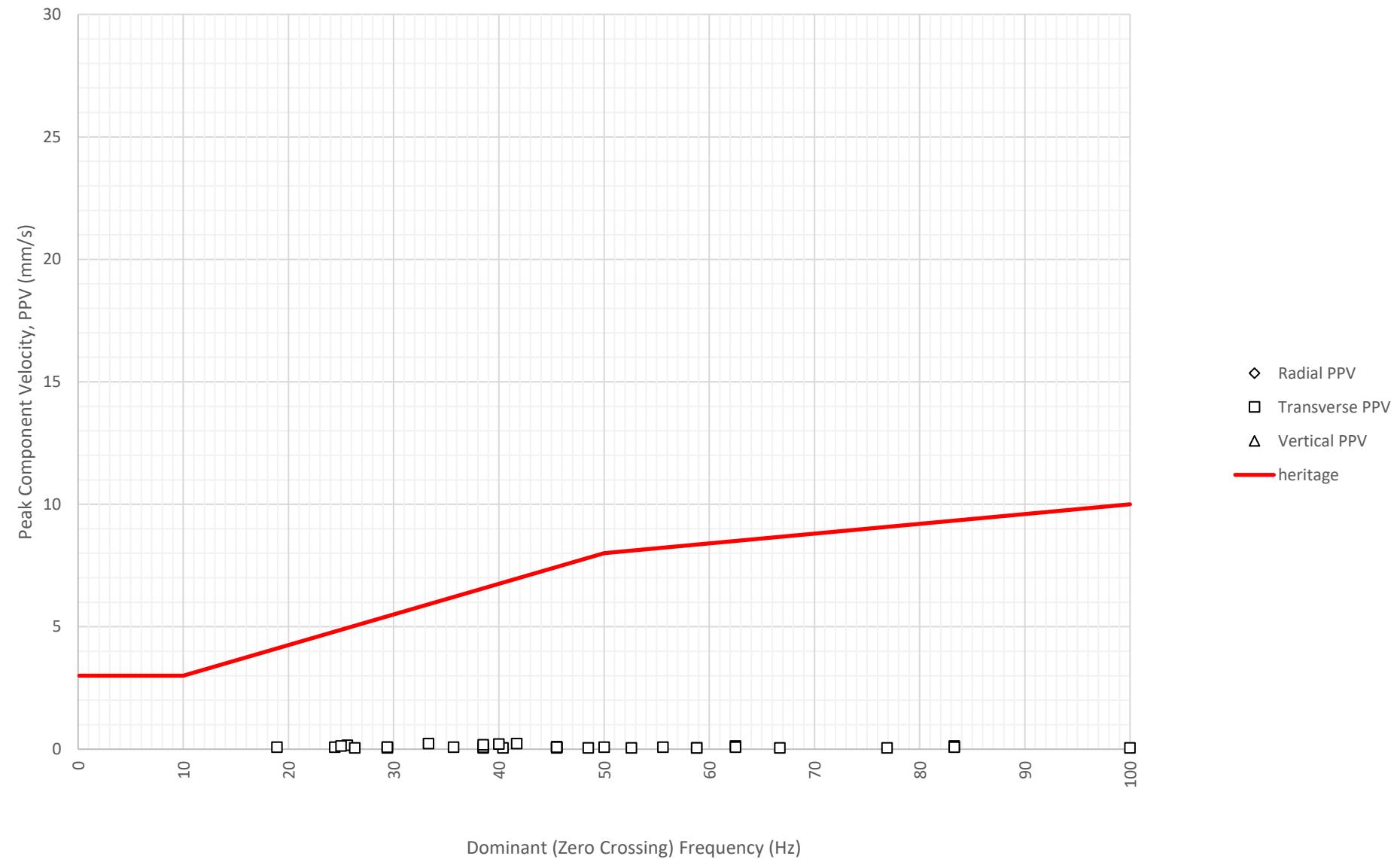
Frequency Content of Vibration Levels at M7427 Heritage on 29-08-2022



Daily Monitored Vibration Levels at M7427 Heritage on 30-08-2022

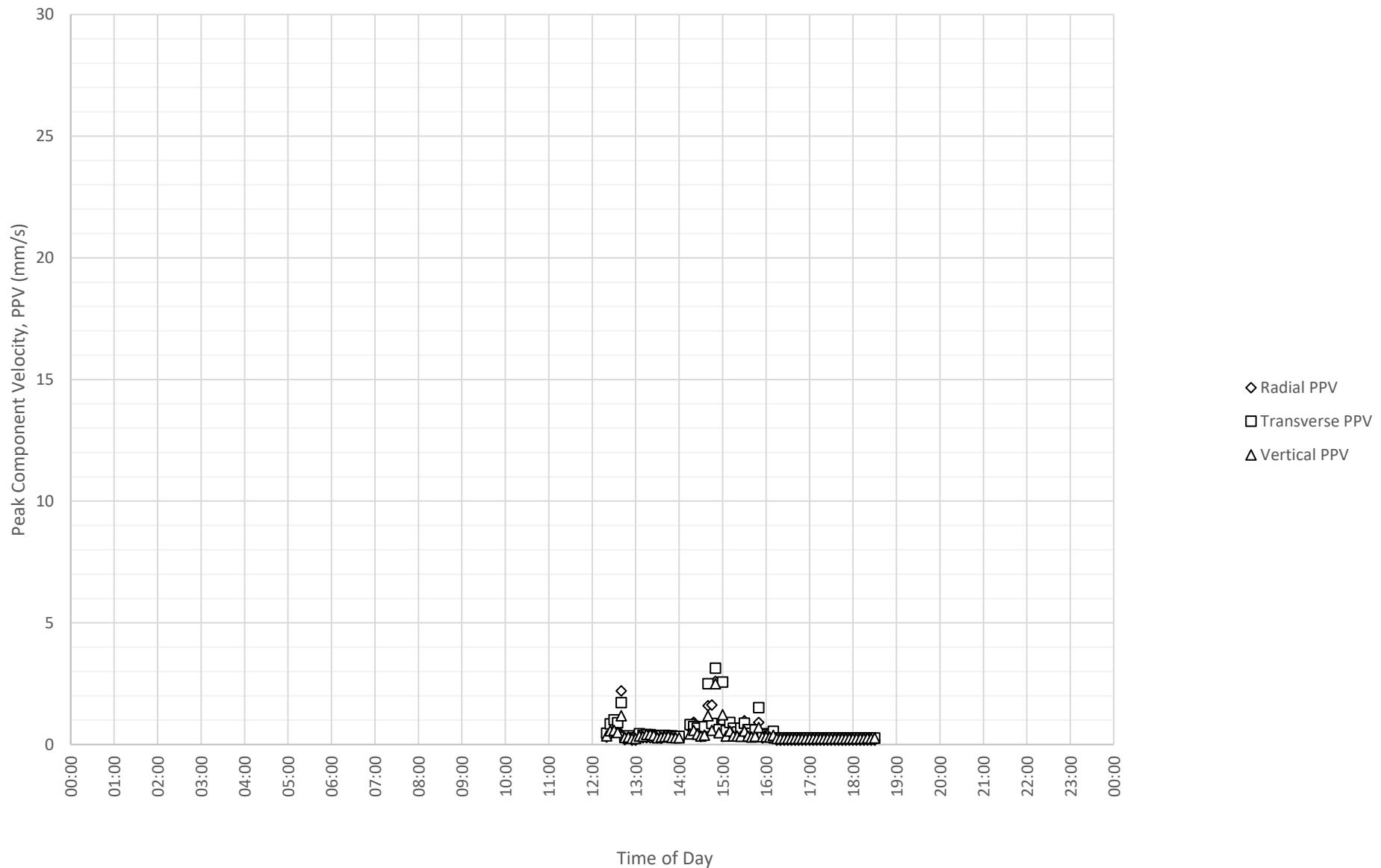


Frequency Content of Vibration Levels at M7427 Heritage on 30-08-2022

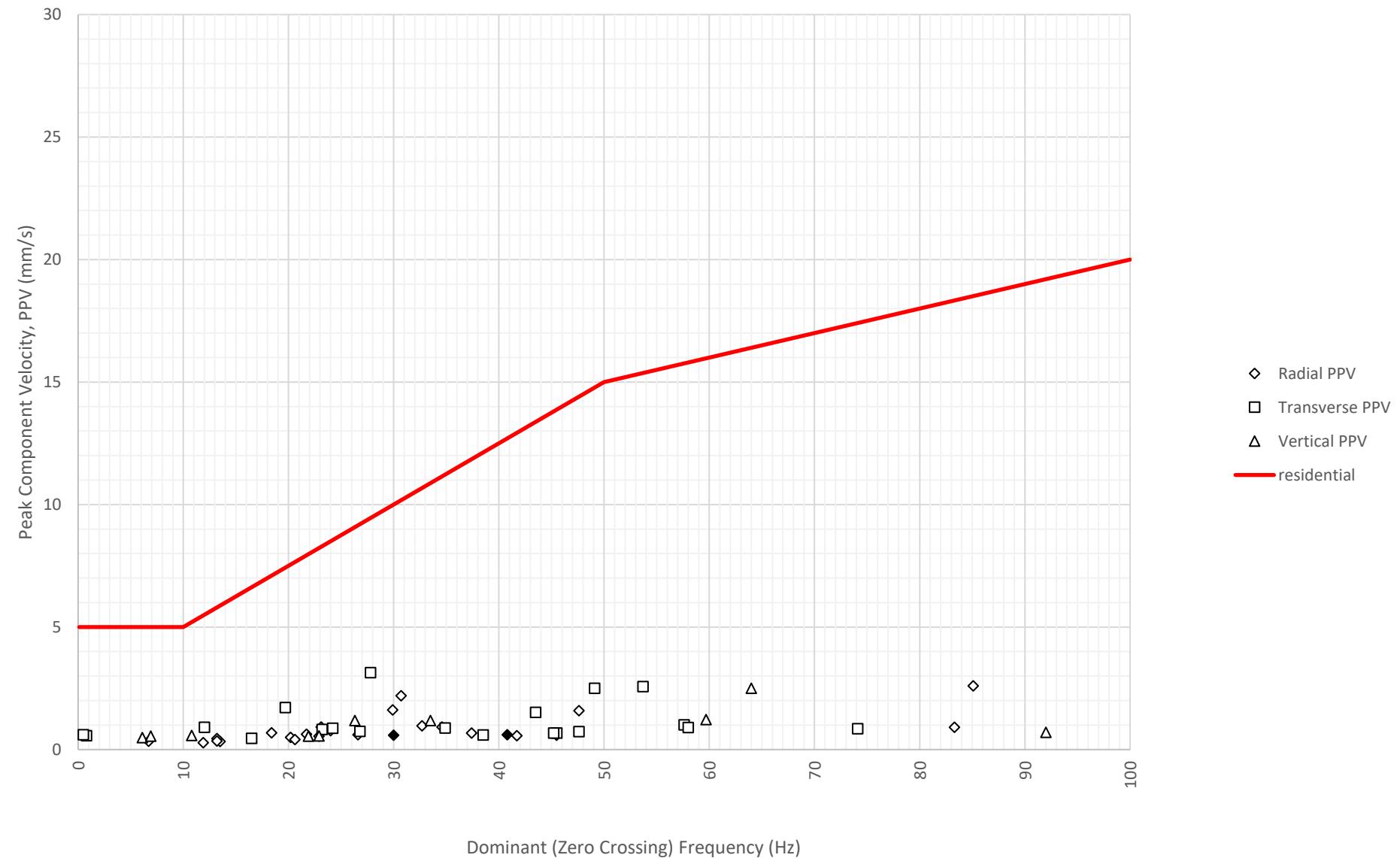


APPENDIX: DAILY GRAPHS M7715 (RESIDENTIAL BUILDING)

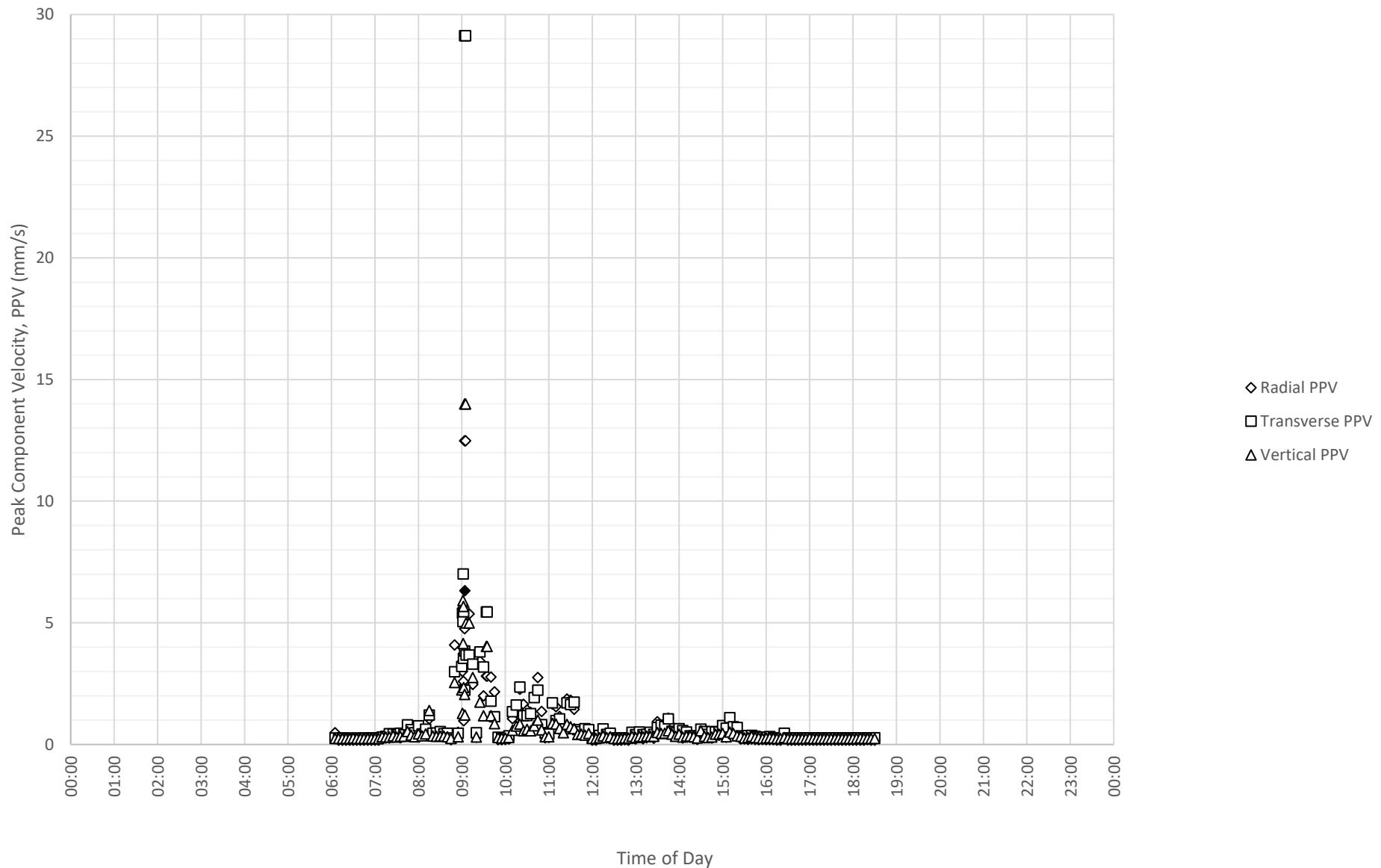
Daily Monitored Vibration Levels at M7715 on 18-08-2022



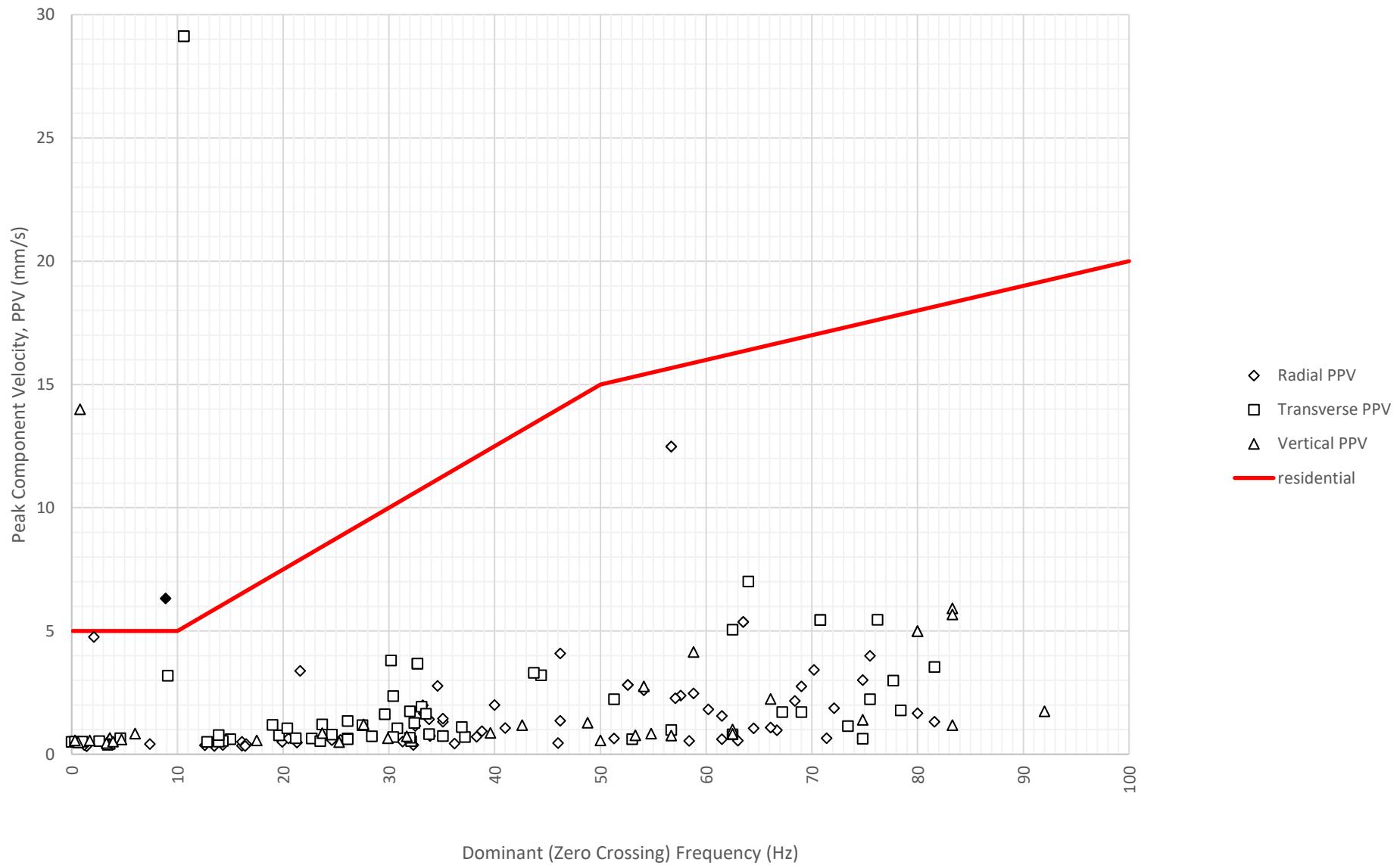
Frequency Content of Vibration Levels at M7715 on 18-08-2022



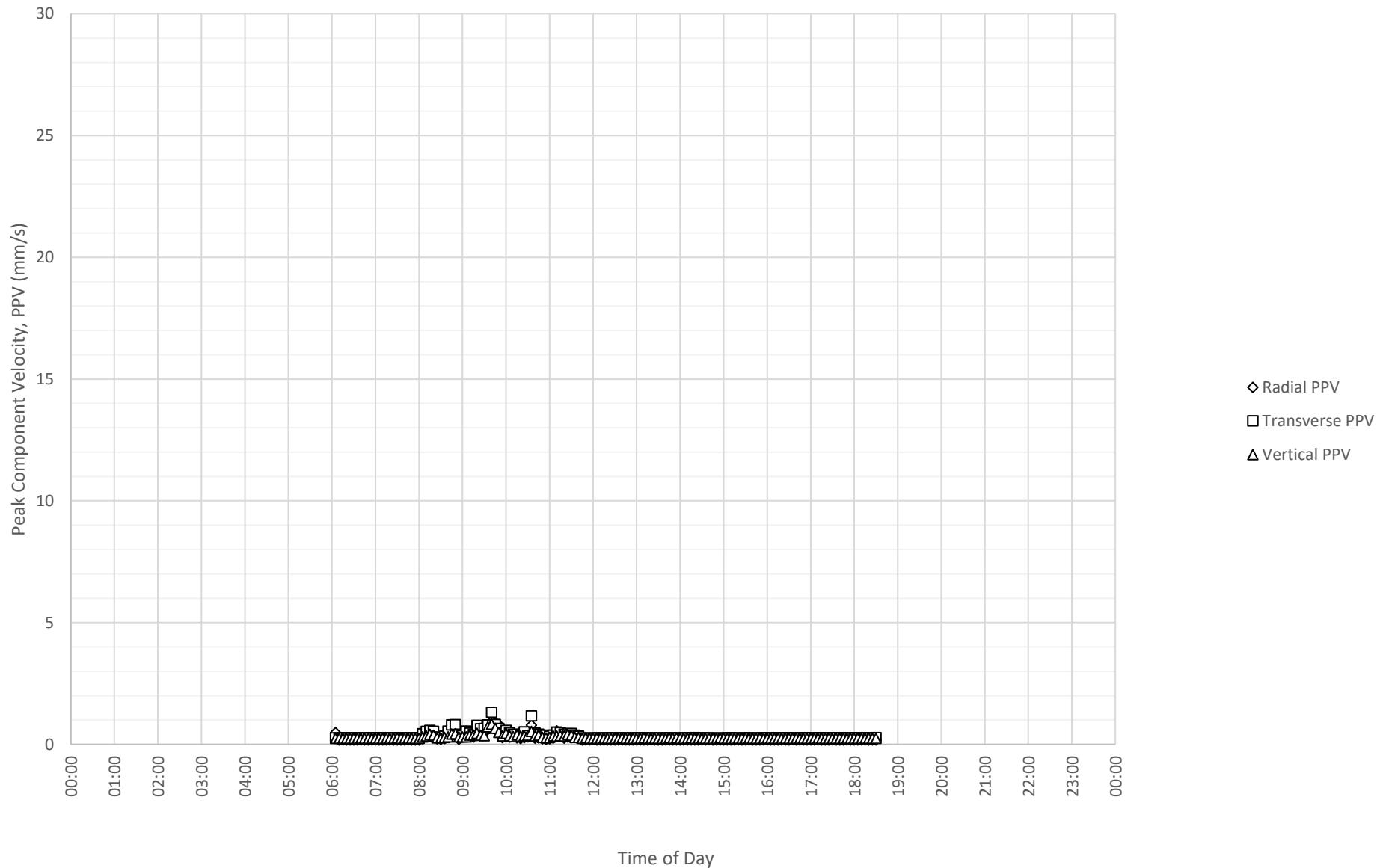
Daily Monitored Vibration Levels at M7715 on 19-08-2022



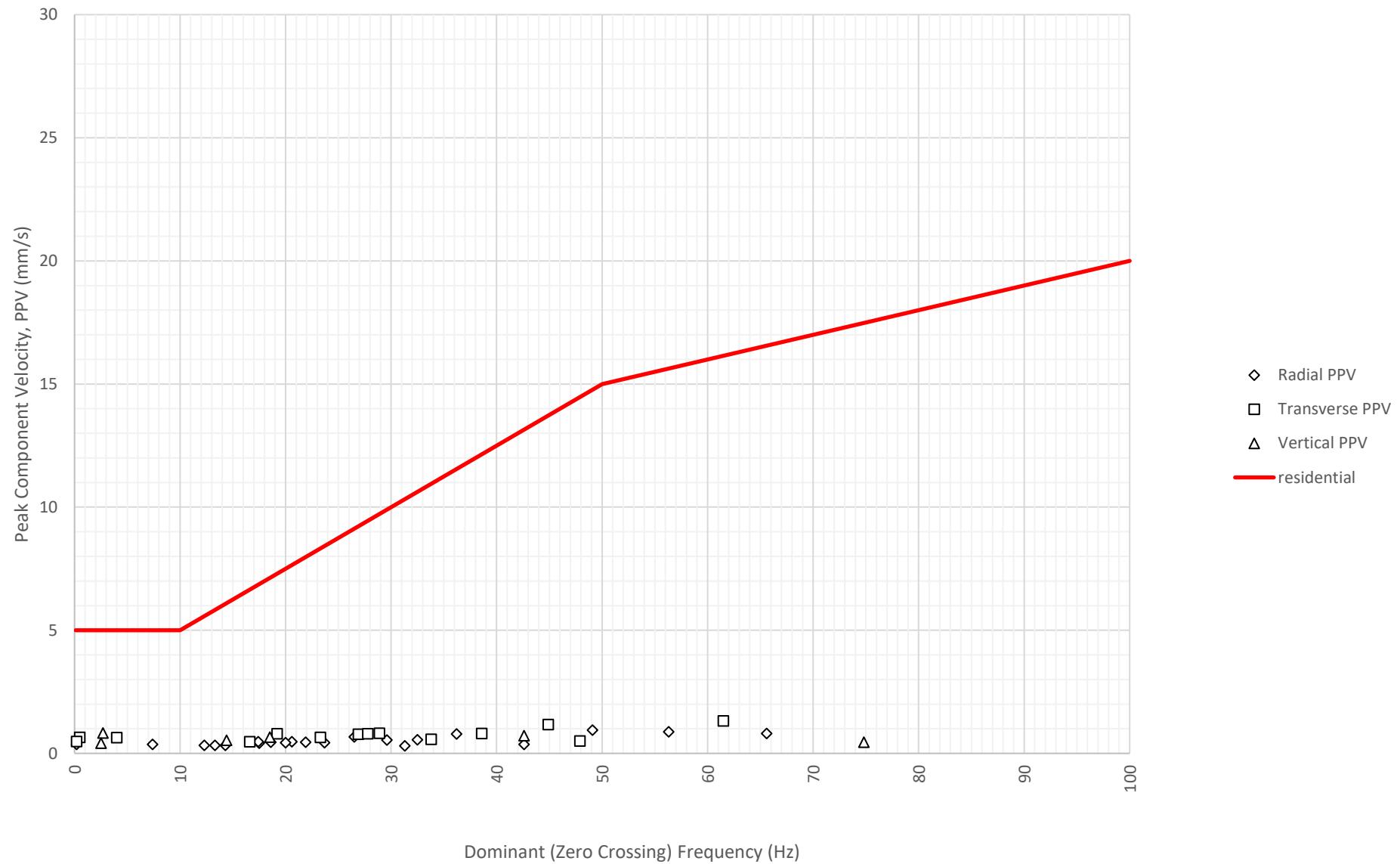
Frequency Content of Vibration Levels at M7715 on 19-08-2022



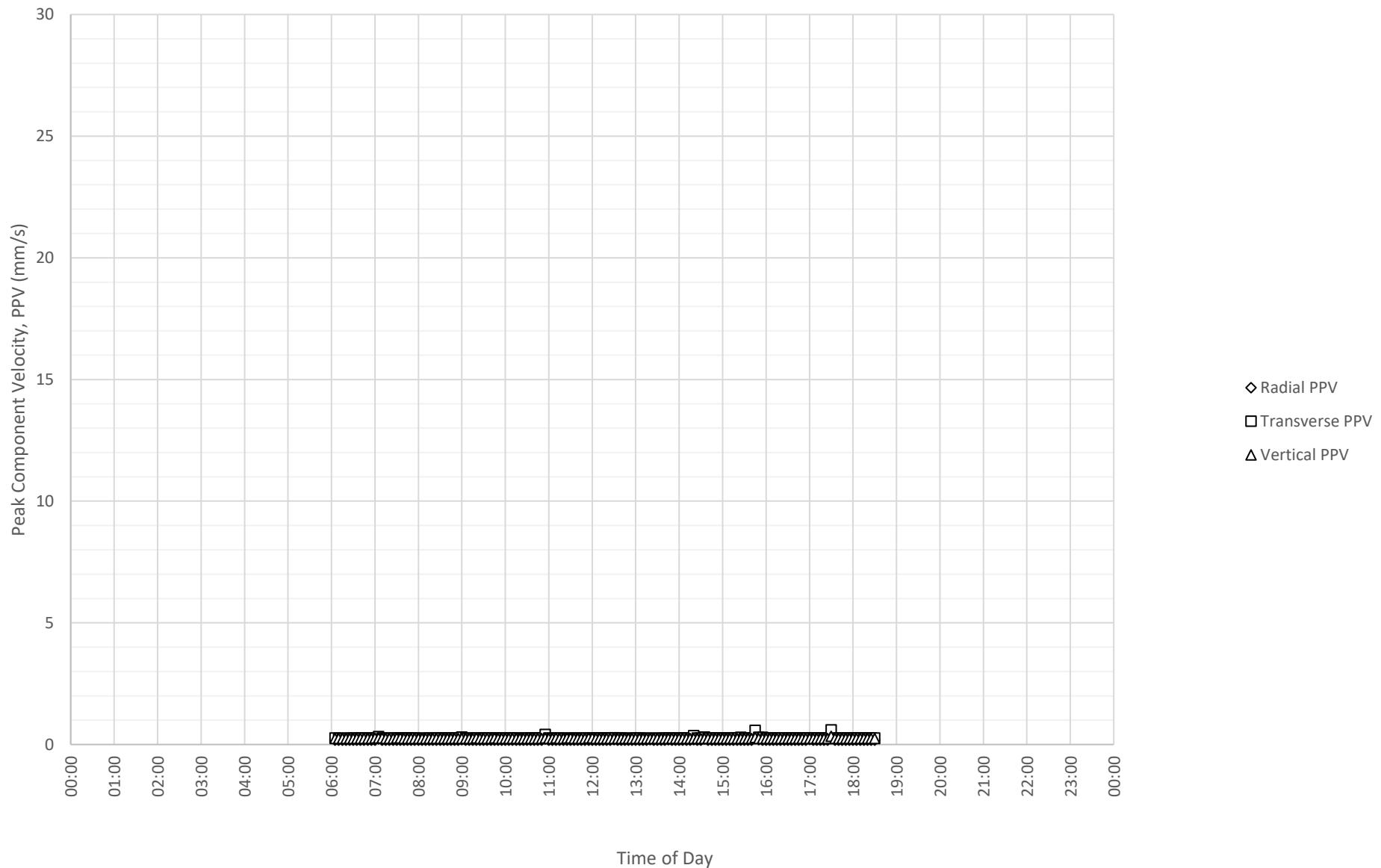
Daily Monitored Vibration Levels at M7715 on 20-08-2022



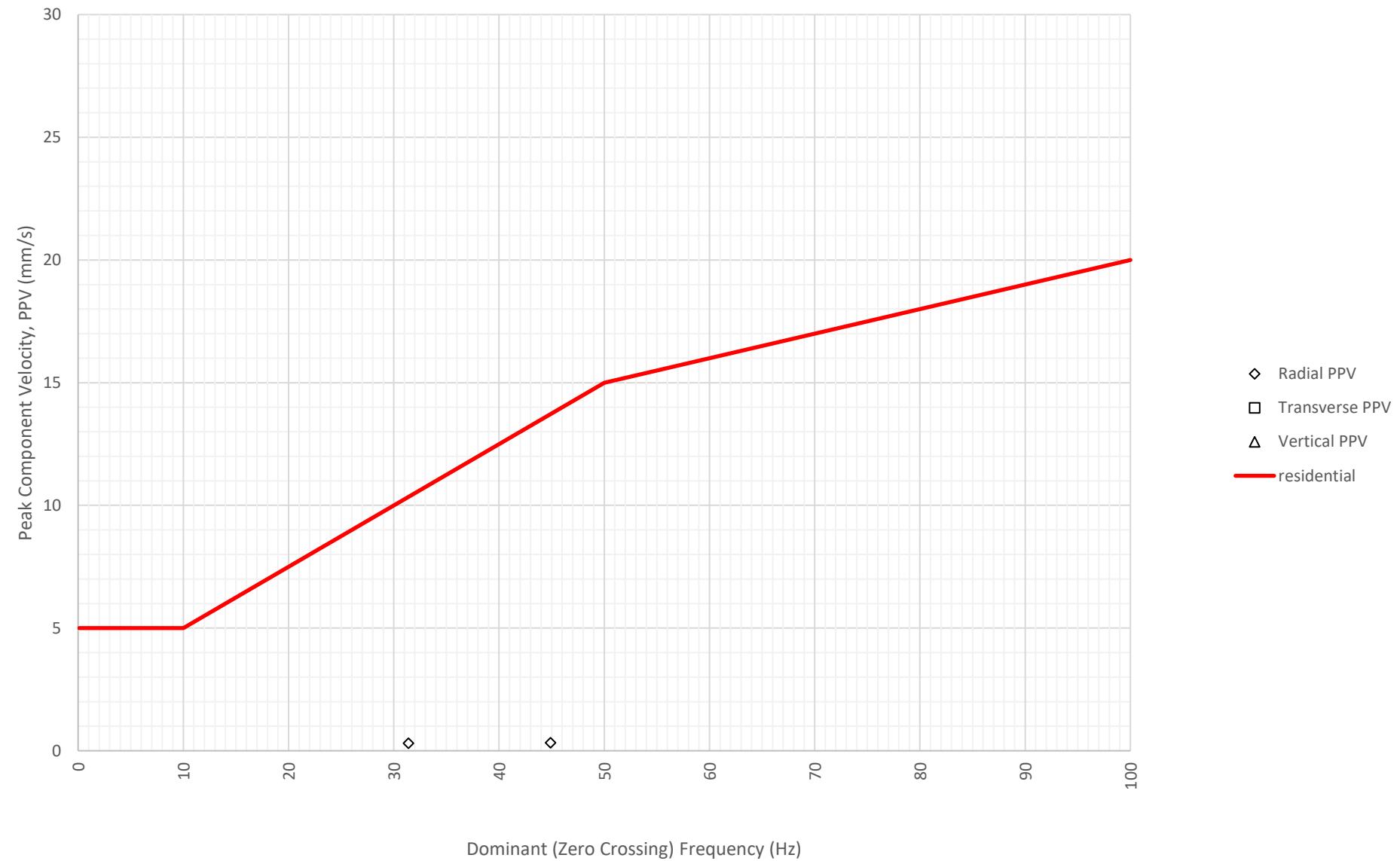
Frequency Content of Vibration Levels at M7715 on 20-08-2022



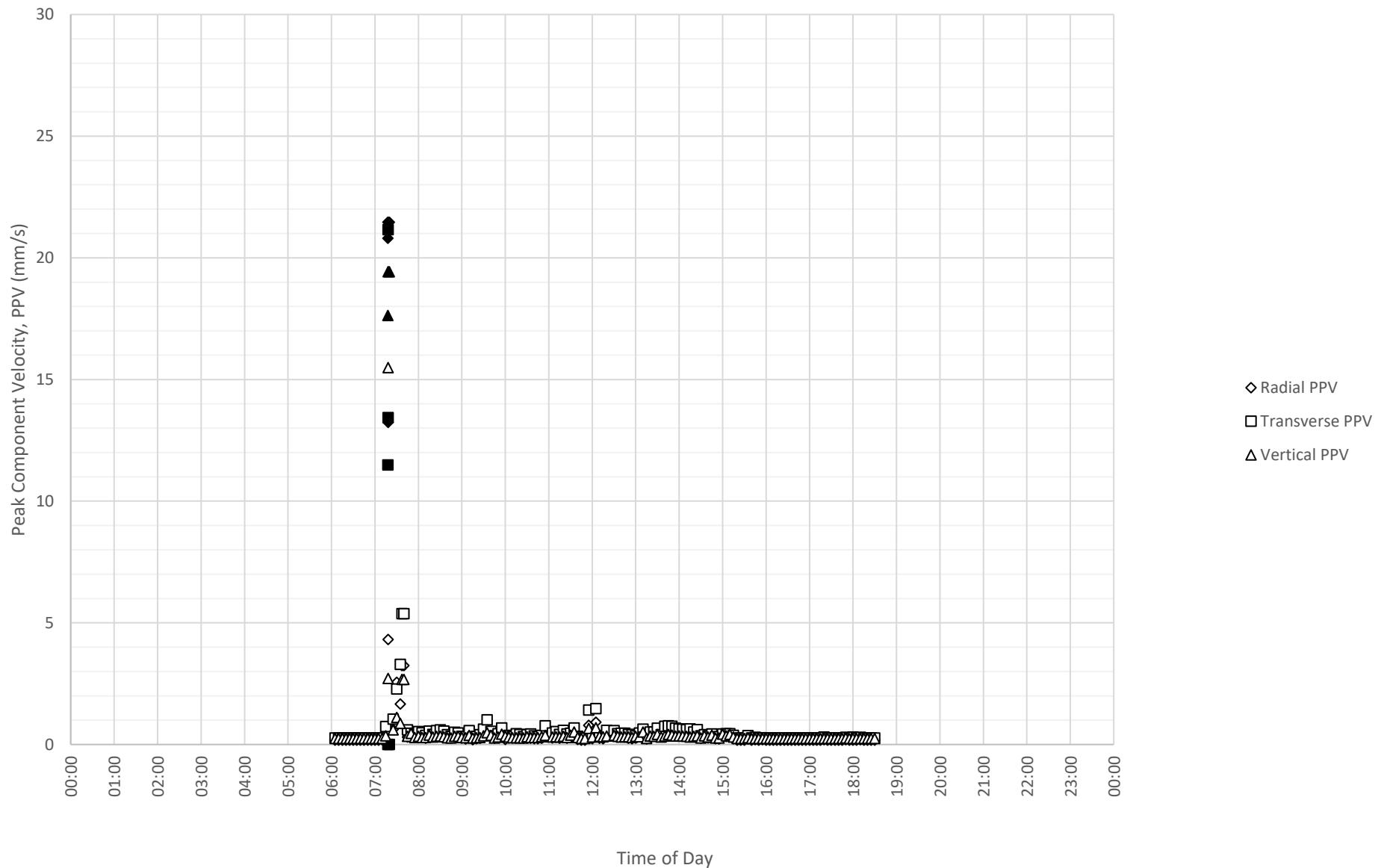
Daily Monitored Vibration Levels at M7715 on 21-08-2022



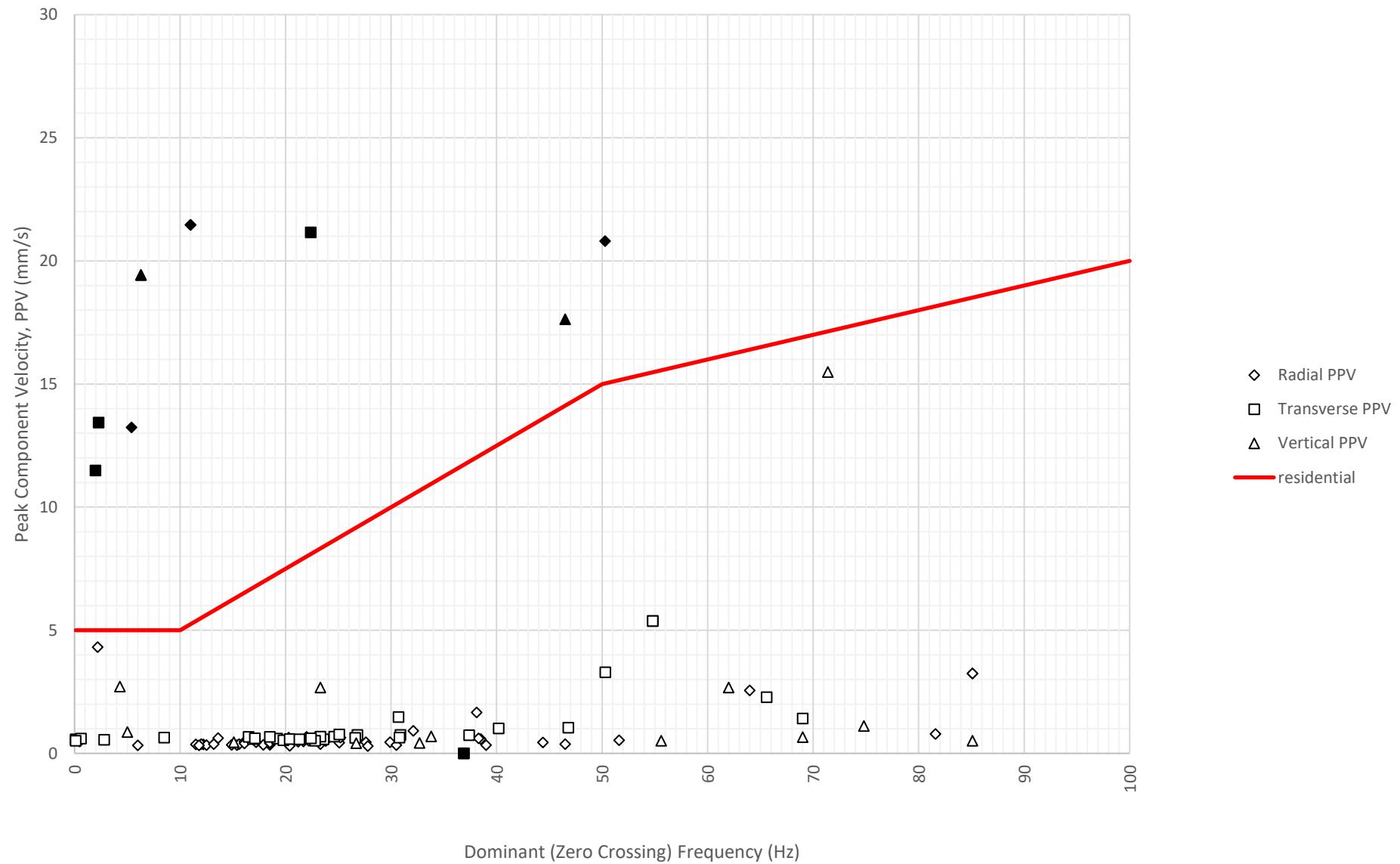
Frequency Content of Vibration Levels at M7715 on 21-08-2022



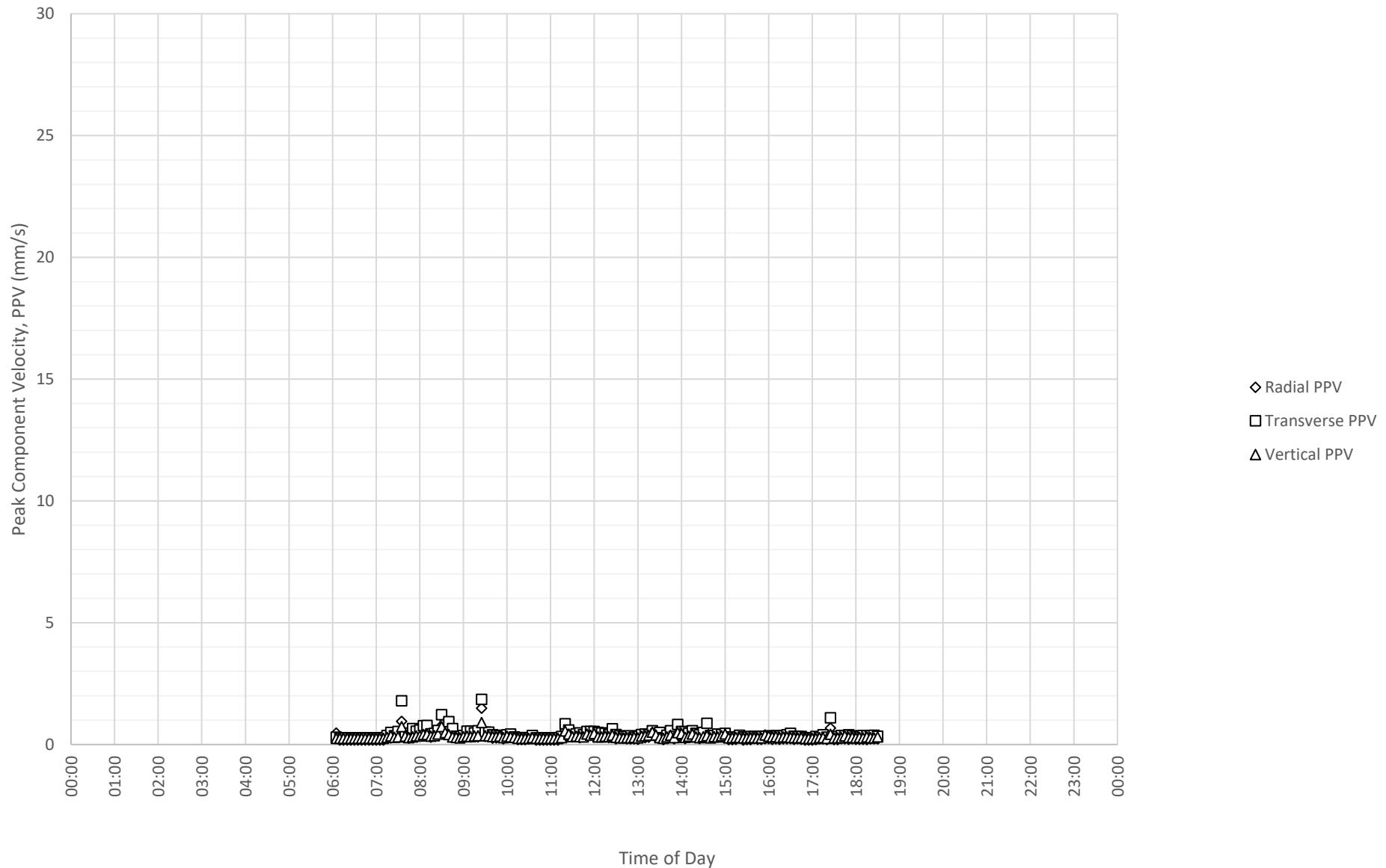
Daily Monitored Vibration Levels at M7715 on 22-08-2022



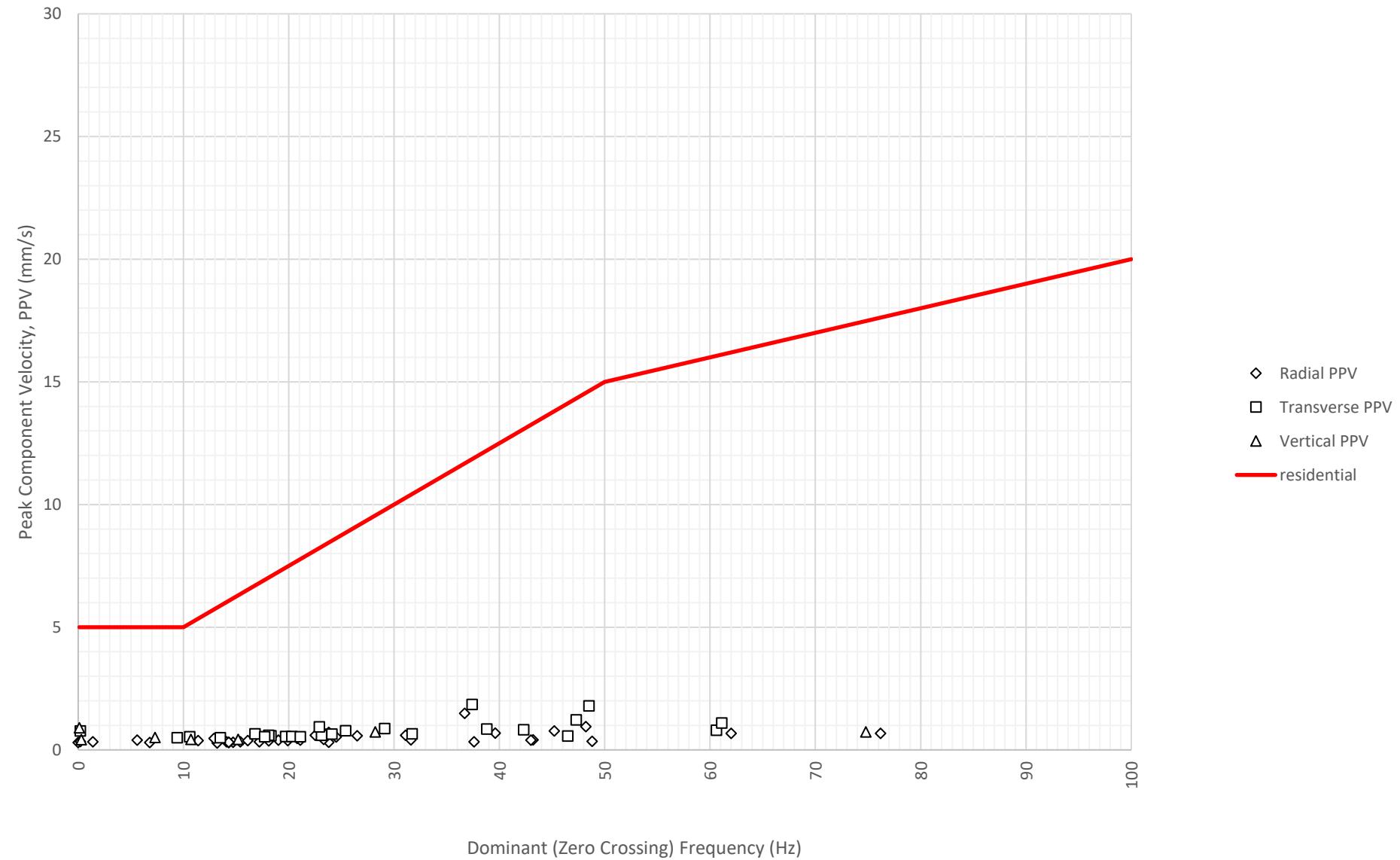
Frequency Content of Vibration Levels at M7715 on 22-08-2022



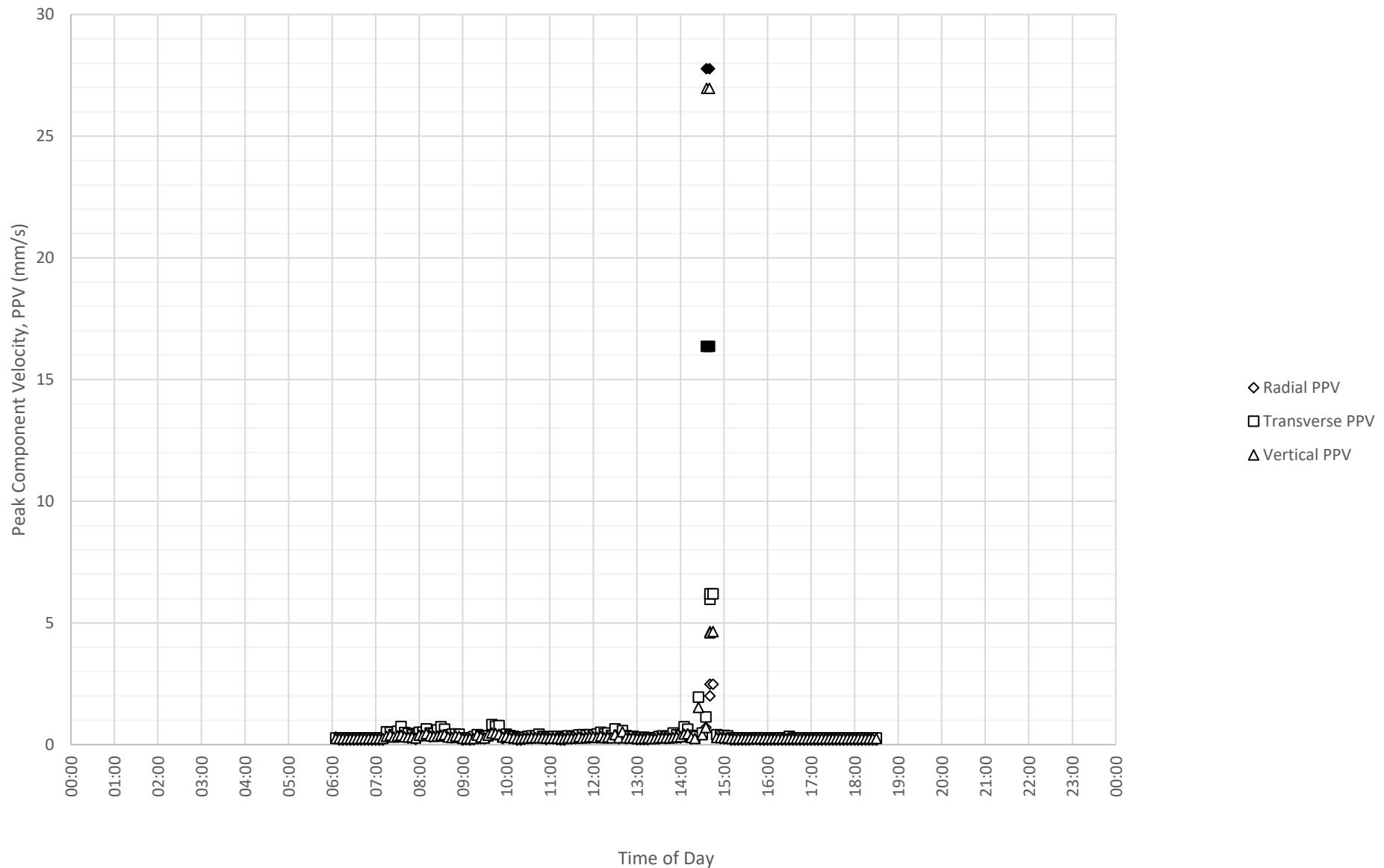
Daily Monitored Vibration Levels at M7715 on 23-08-2022



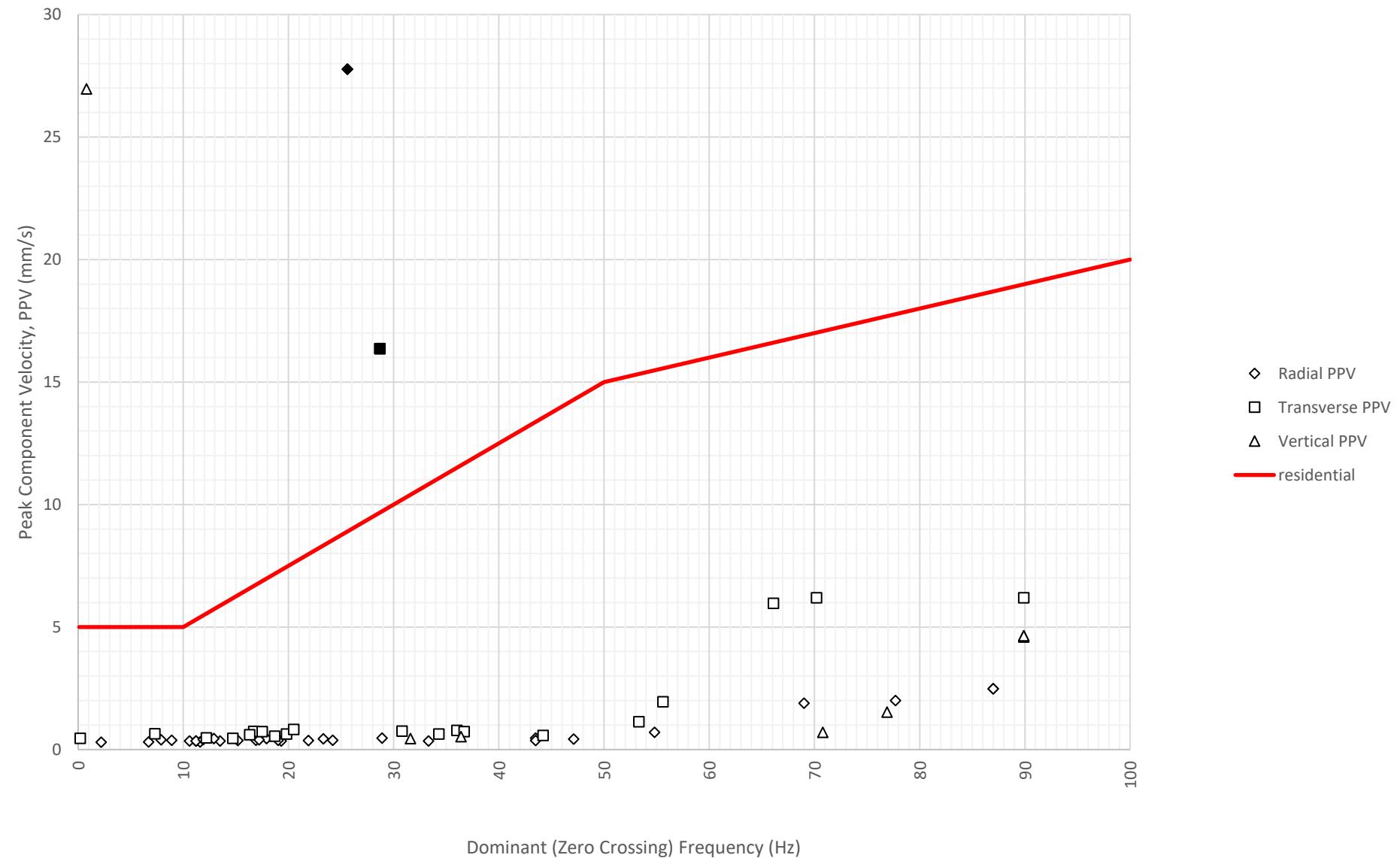
Frequency Content of Vibration Levels at M7715 on 23-08-2022



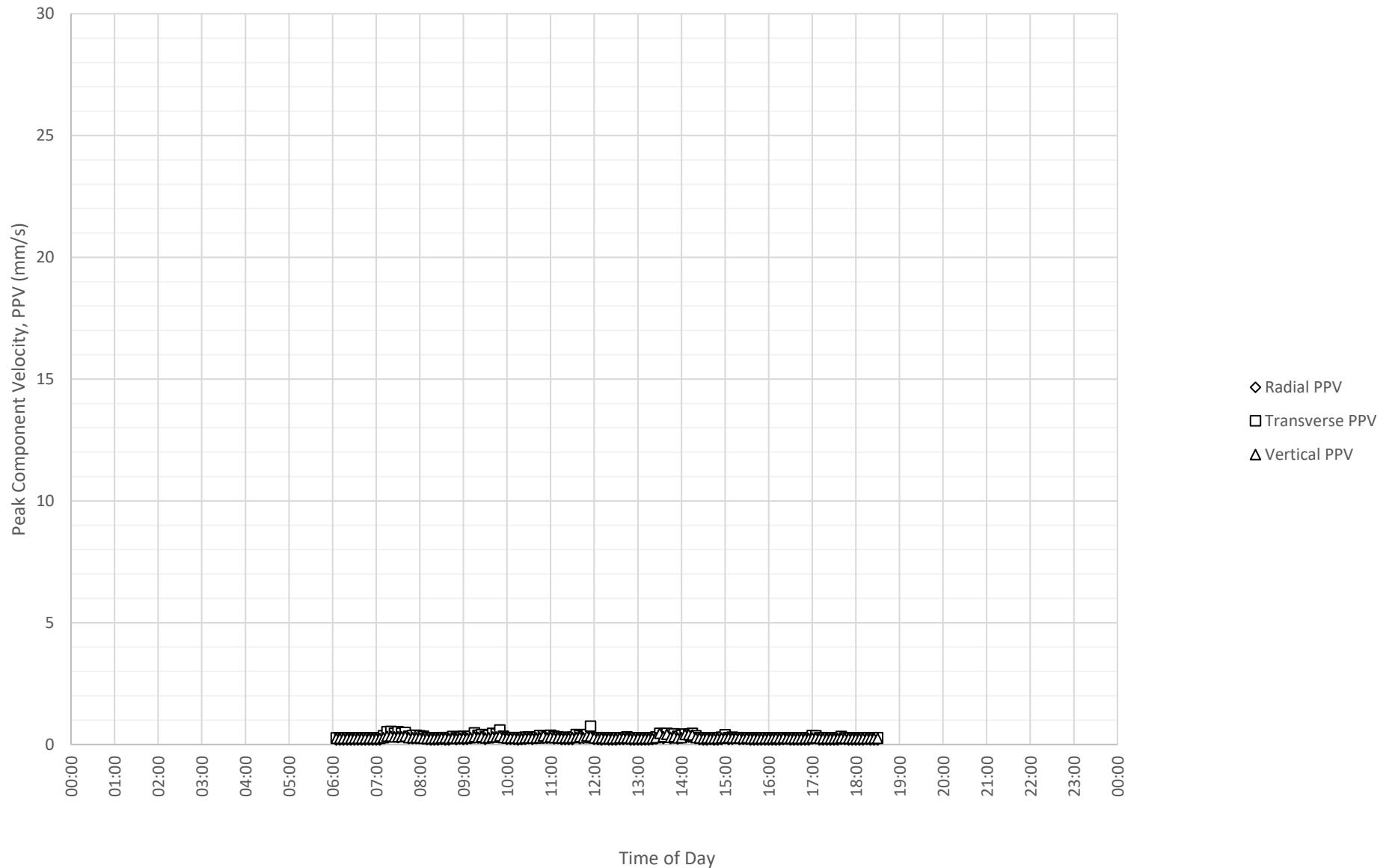
Daily Monitored Vibration Levels at M7715 on 24-08-2022



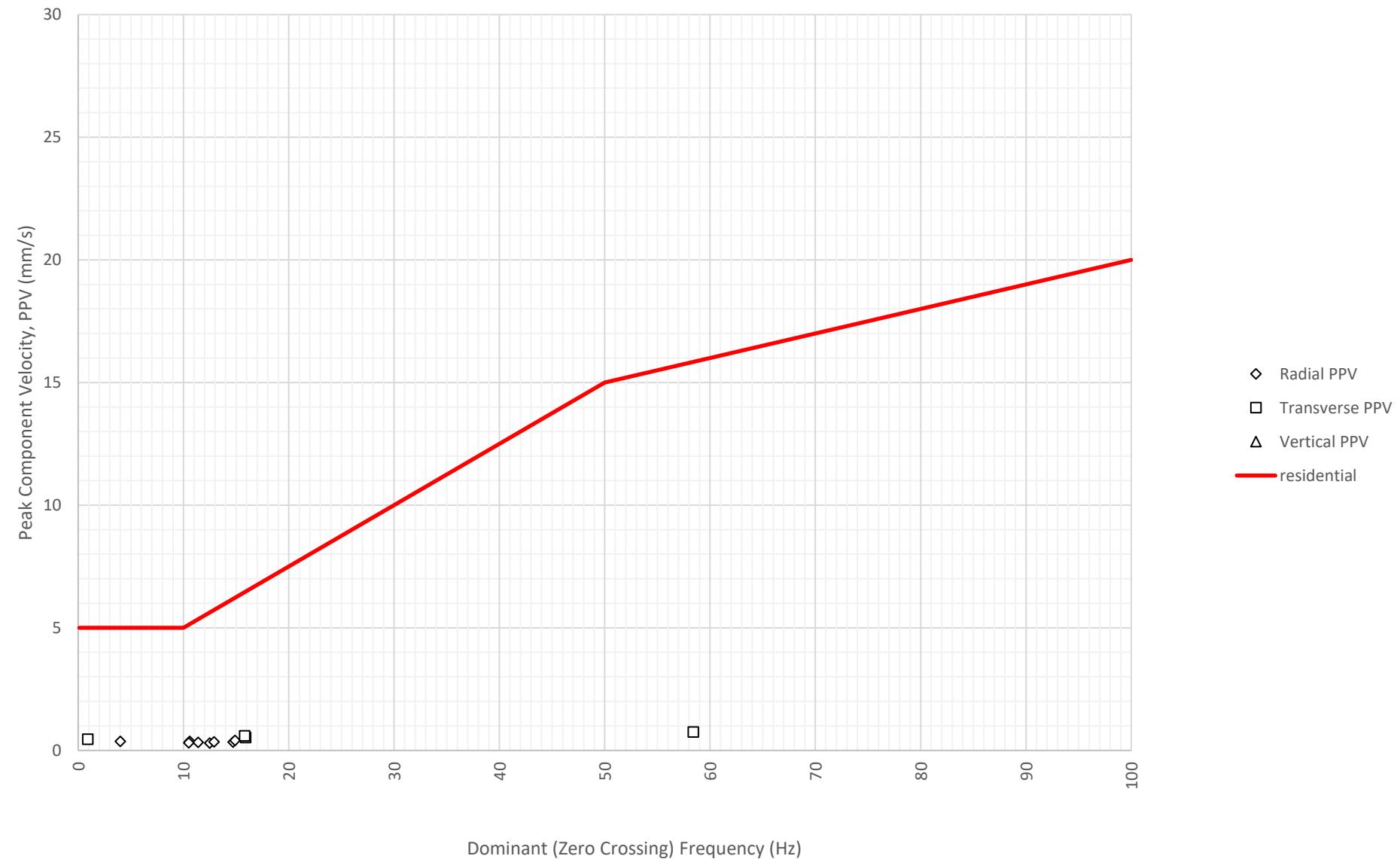
Frequency Content of Vibration Levels at M7715 on 24-08-2022



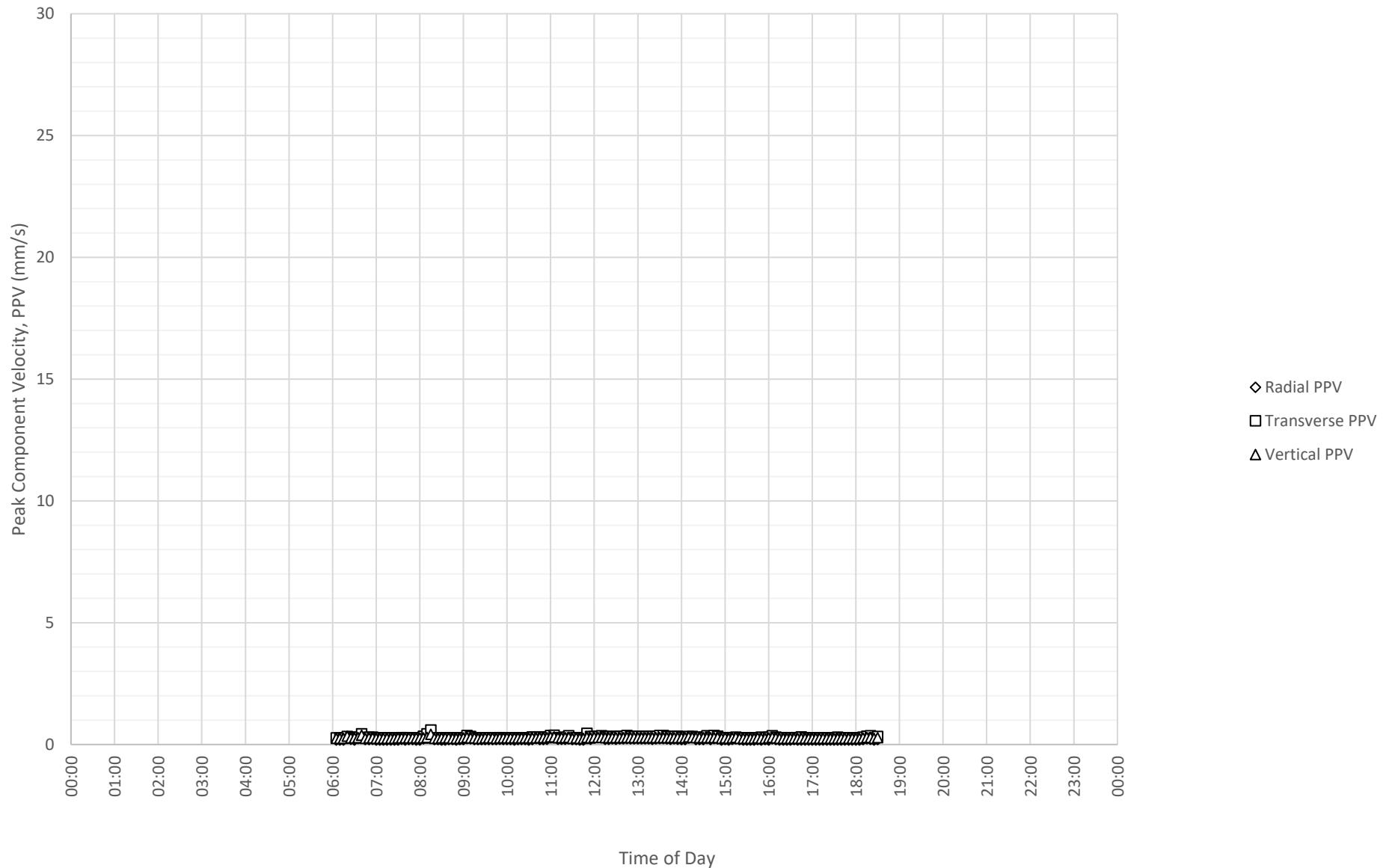
Daily Monitored Vibration Levels at M7715 on 25-08-2022



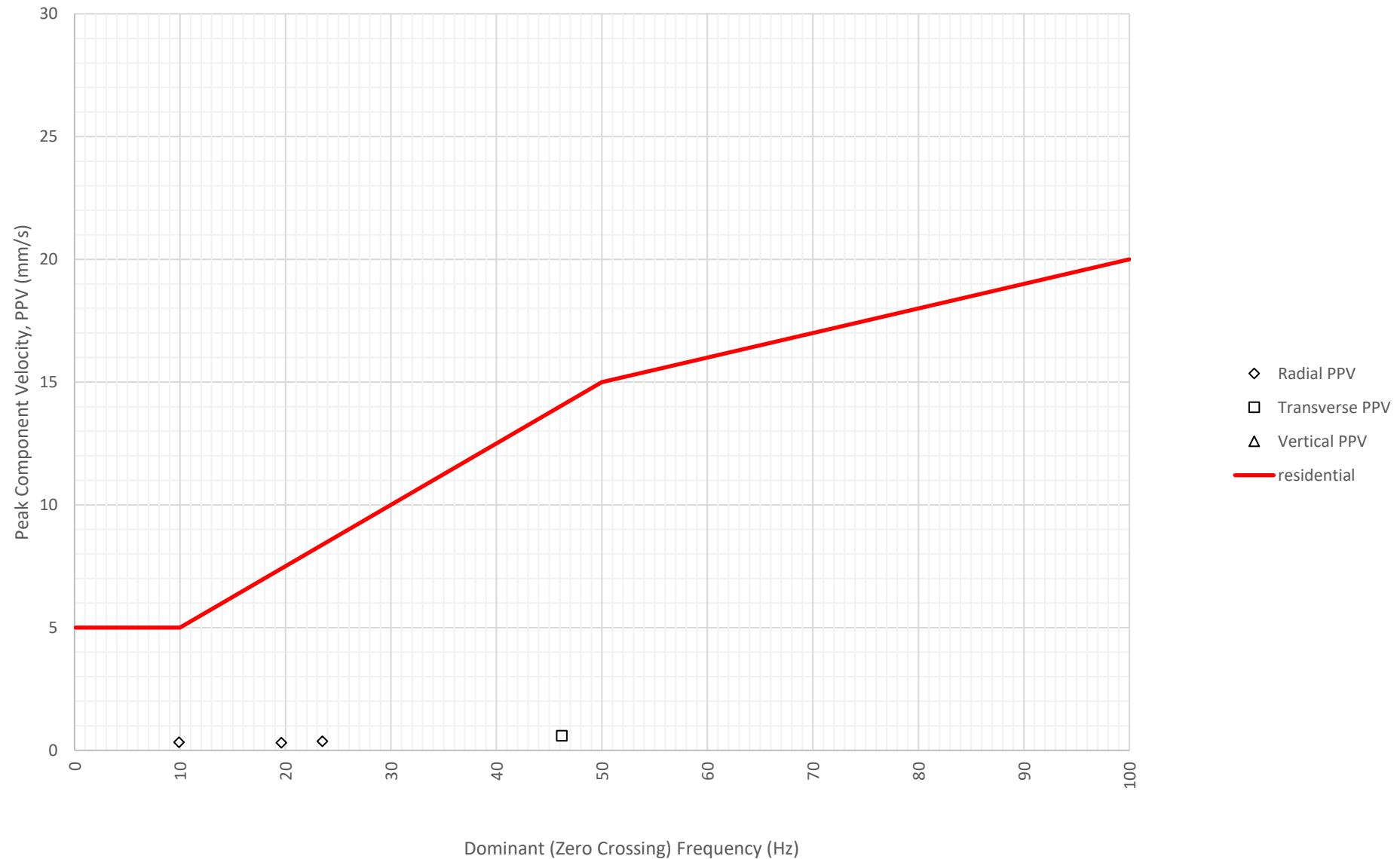
Frequency Content of Vibration Levels at M7715 on 25-08-2022



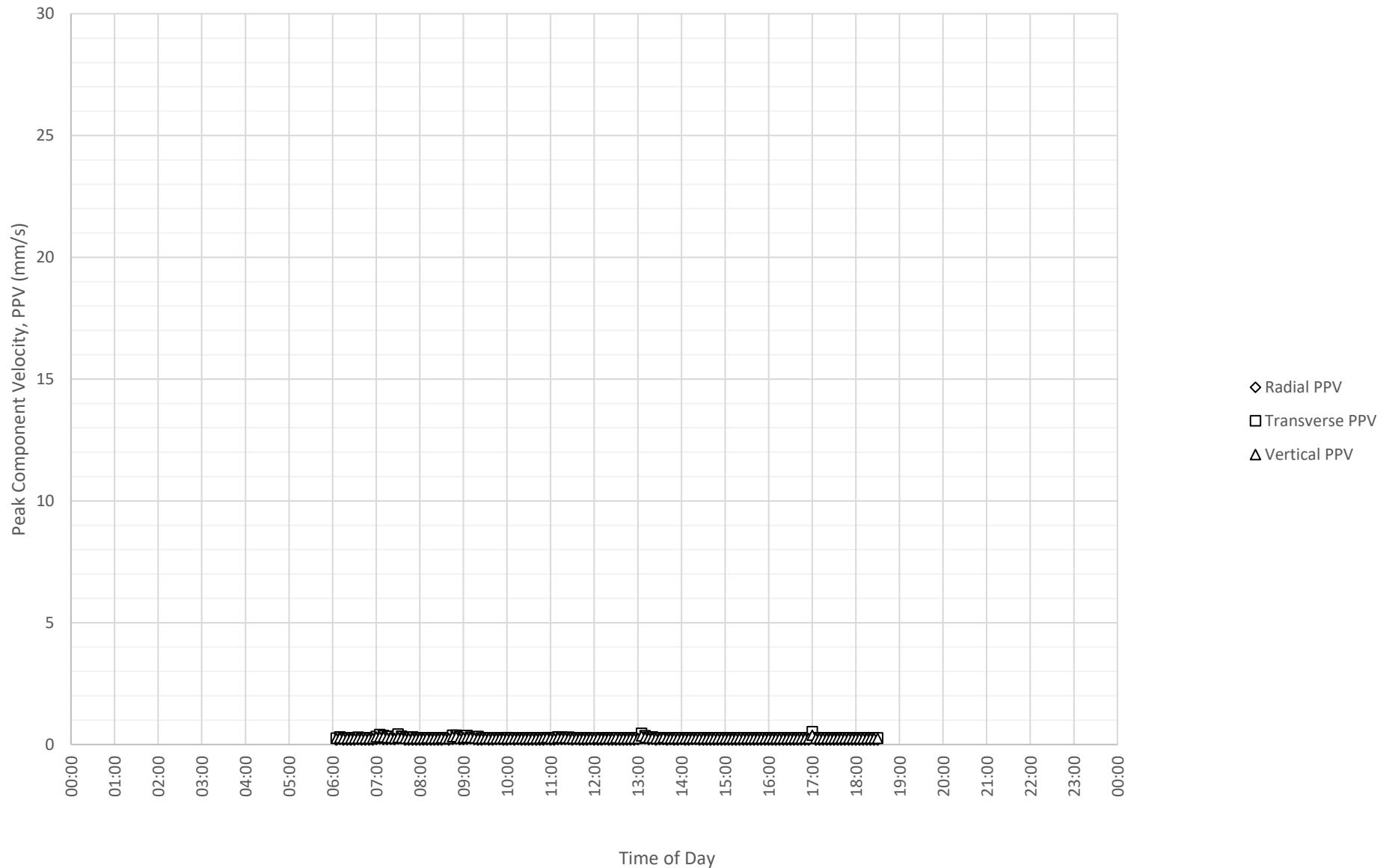
Daily Monitored Vibration Levels at M7715 on 26-08-2022



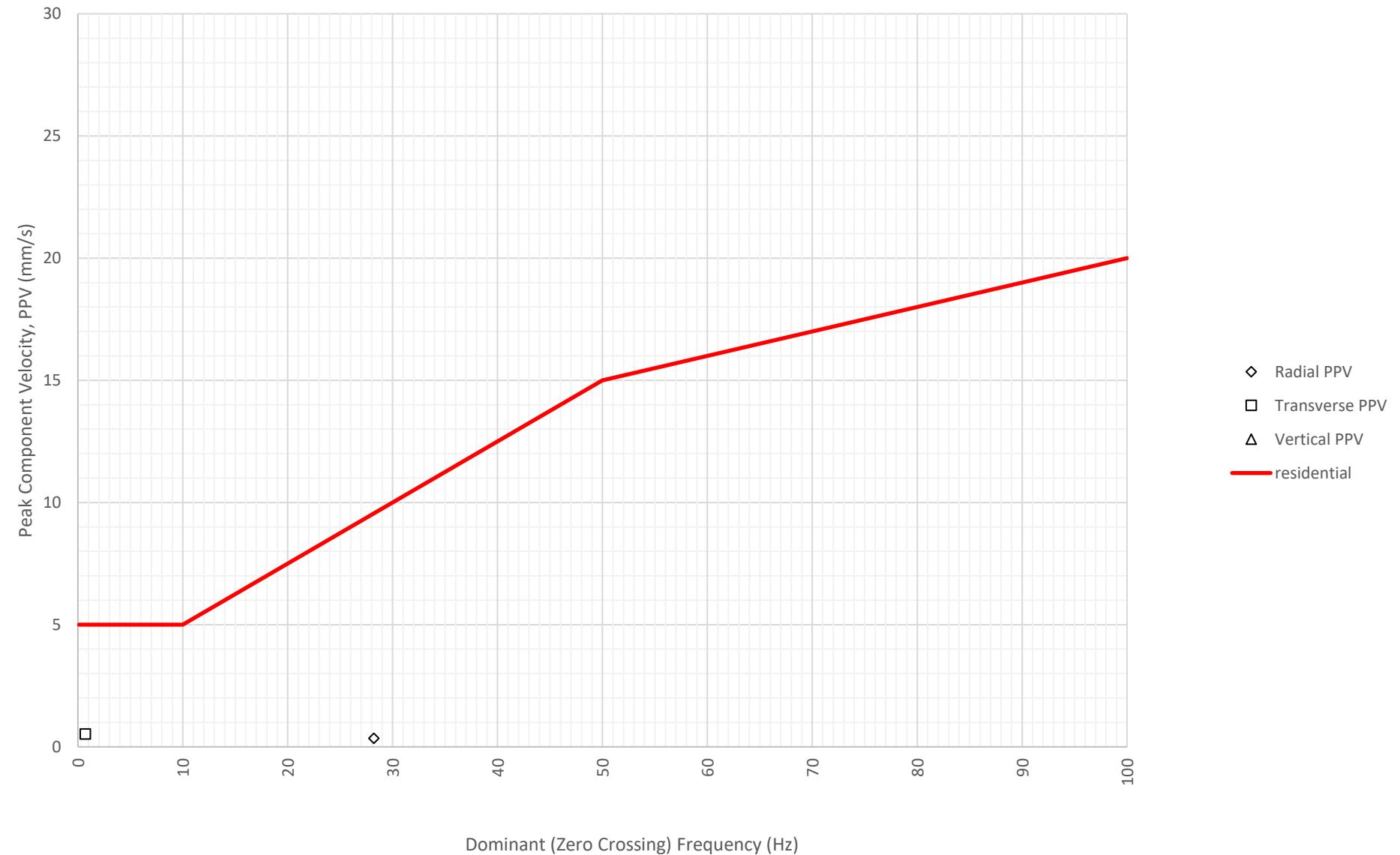
Frequency Content of Vibration Levels at M7715 on 26-08-2022



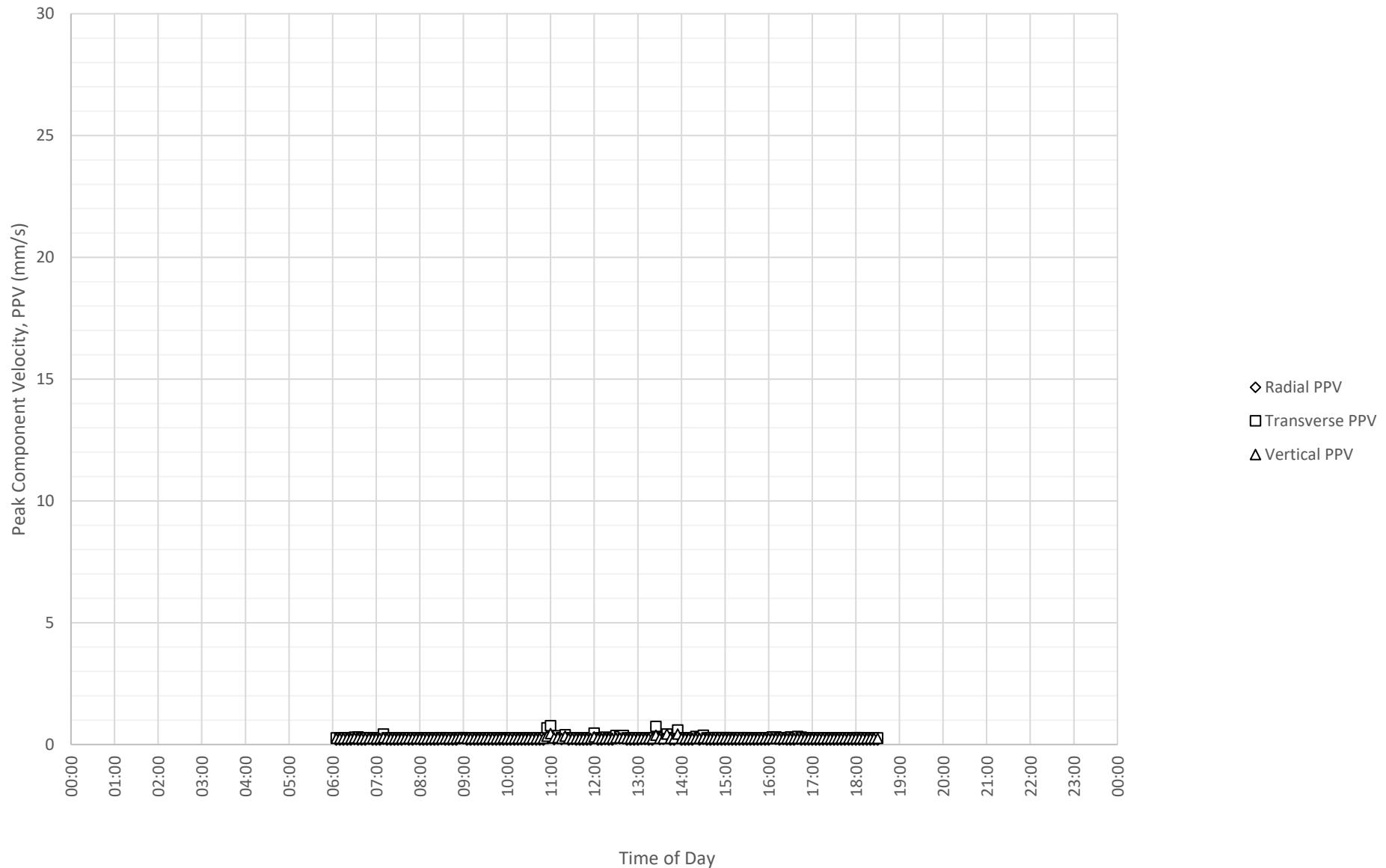
Daily Monitored Vibration Levels at M7715 on 27-08-2022



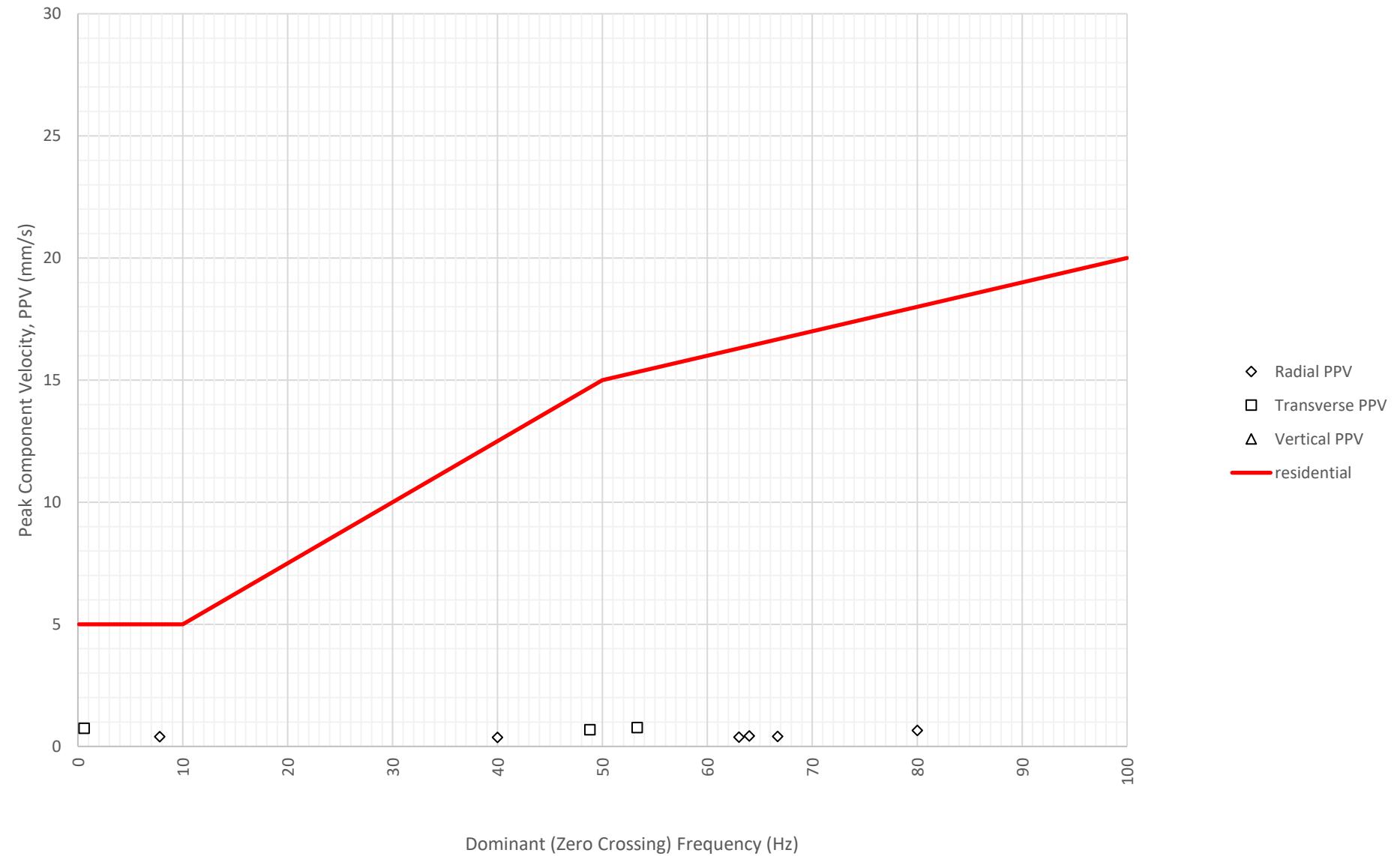
Frequency Content of Vibration Levels at M7715 on 27-08-2022



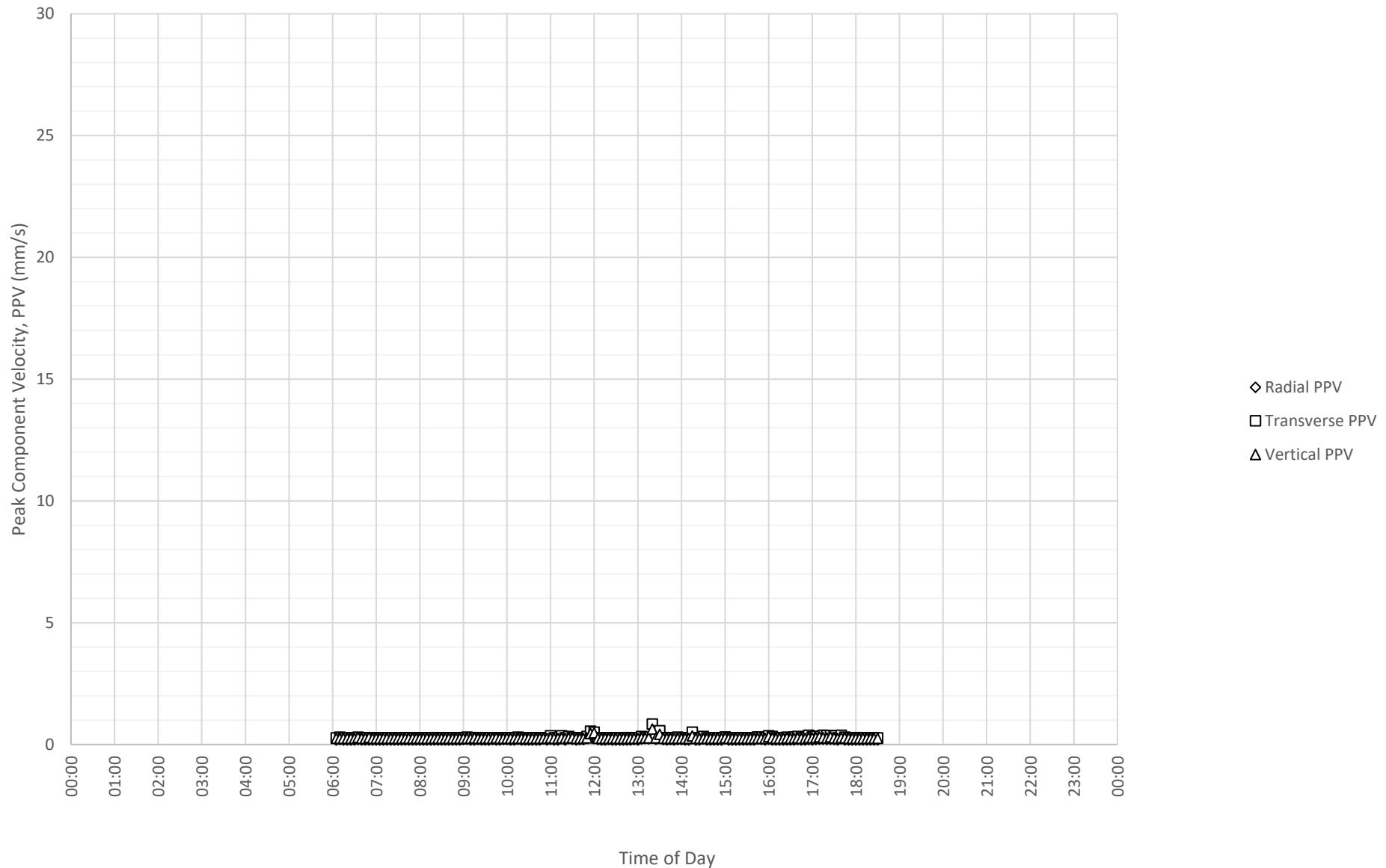
Daily Monitored Vibration Levels at M7715 on 28-08-2022



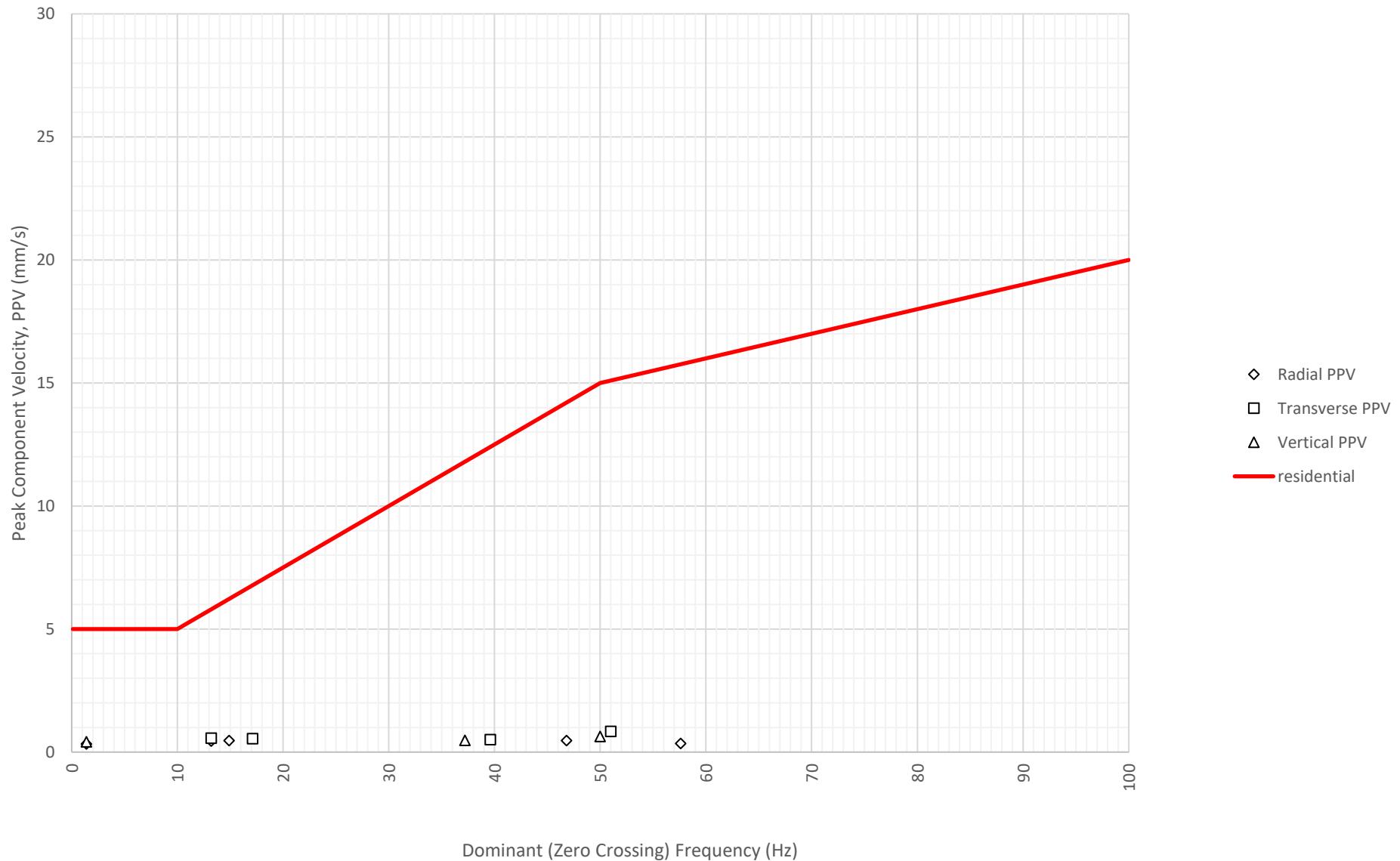
Frequency Content of Vibration Levels at M7715 on 28-08-2022



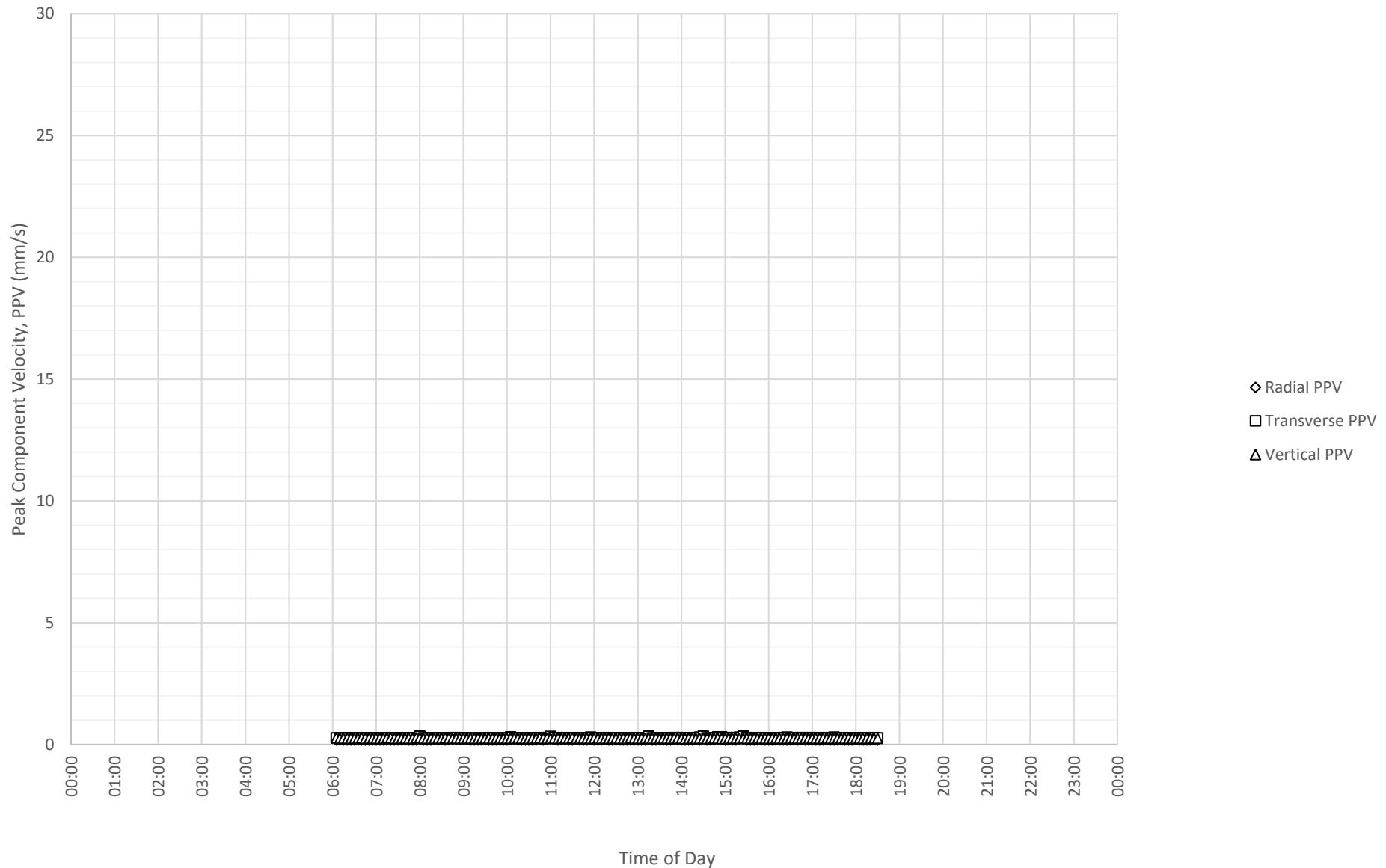
Daily Monitored Vibration Levels at M7715 on 29-08-2022



Frequency Content of Vibration Levels at M7715 on 29-08-2022



Daily Monitored Vibration Levels at M7715 on 30-08-2022



Frequency Content of Vibration Levels at M7715 on 30-08-2022

