DAEIL SYSTEMS

ACTIVE VIBRATION ISOLATION SYSTEM INSTALLATION REPORT

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Work Completed, Jan 23, 2020

Contents

1. Measurement Details

- **Measurement Date**

  January 13, 2020

- **Measurement Devices**

  1. LAN-XI Data Acquisition Hardware
     - Brüel & Kjær 3050-B-040
  2. Data Analysis Software
     - Brüel & Kjær PULSE LAB SHOP 14
  3. Sensors
     - PCB Accelerometer
     - Model: 393B05

- **Location**

  1st Floor

- **Irregular Event**

  The installation site is located near a subway station within 3 m.

2. Equipment Information

- **Manufacturer**

  ZEISS

- **Model**

  Gemin FESEM

- **Vibration Specification**

  Allowable horizonal vibration values

  up to 10 Hz : less than 5 μm/s rms (VC-E)

  10 – 60 Hz : less than 10 μm/s rms (VC-D)

  above 60 Hz : less than 14 μm/s rms (VC-C)

  Allowable vertical vibration values

  up to 10 Hz : less than 4 μm/s rms (VC-E)

  10 – 60 Hz : less than 14 μm/s rms (VC-C)

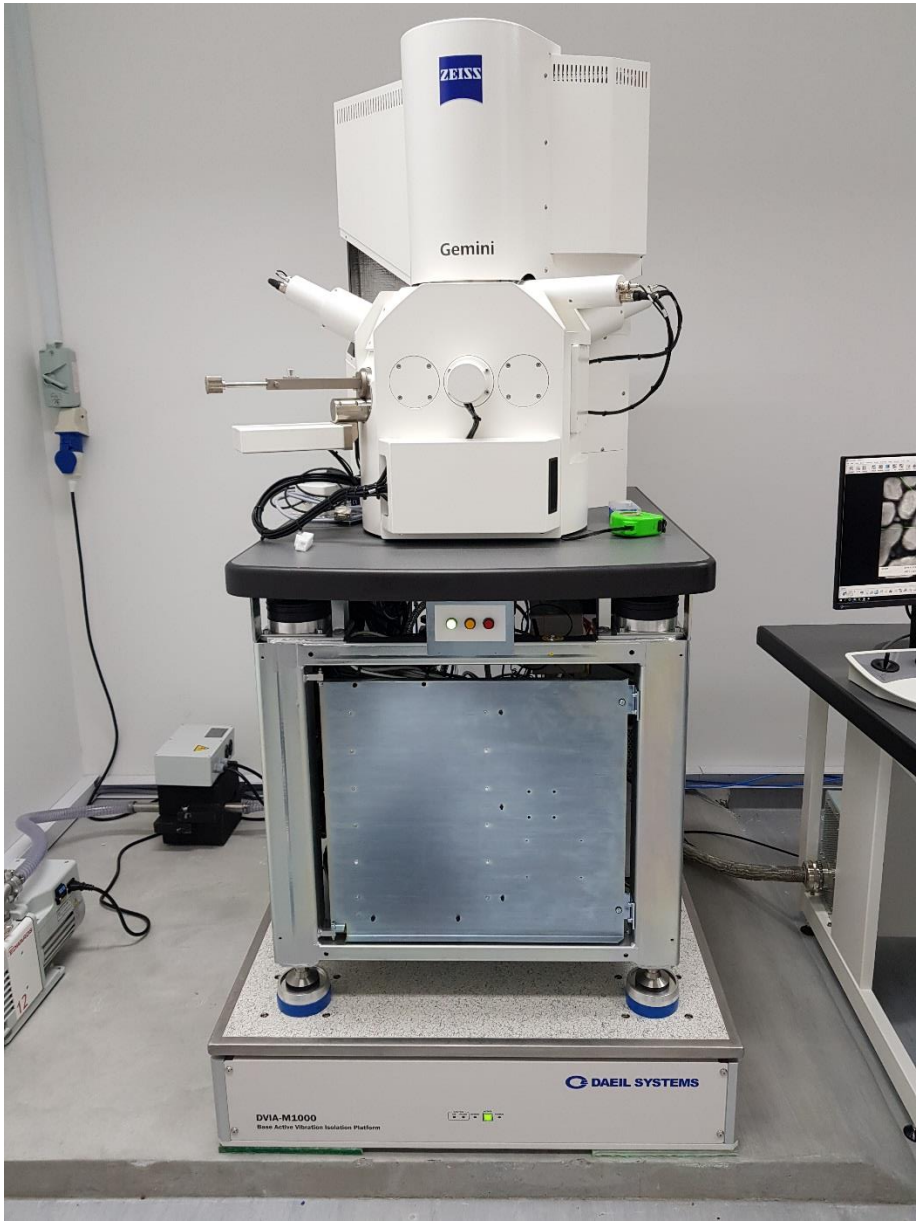
  above 60 Hz : less than 20 μm/s rms (VC-C)

3. Vibration Isolation System

Model: DVIA-MB1000

Platform Dimensions		1140 x 910 x 224 mm
Load Capacity		500 - 1700 kg
Actuator		Electromagnetic Actuator
Maximum Actuator Force		Vertical: 40N, Horizontal: 20 N
Degrees of Freedom		6 degrees
Active Isolation Range		0.5 - 100 Hz
Vibration Isolation at 2 Hz		≥90%
Vibration Isolation at 10 Hz		≥99%
Input Voltage (V)		AC100 - 240V / 50 - 60 Hz / 1A
Power Consumption (W)		Maximum 110W, <50 W in normal operation
Operating Range	Temperature (°C)	5 - 50 °C
	Humidity (%)	20 - 90%
Required Air Pressure		≥ 0.5 MPa (5 bar)

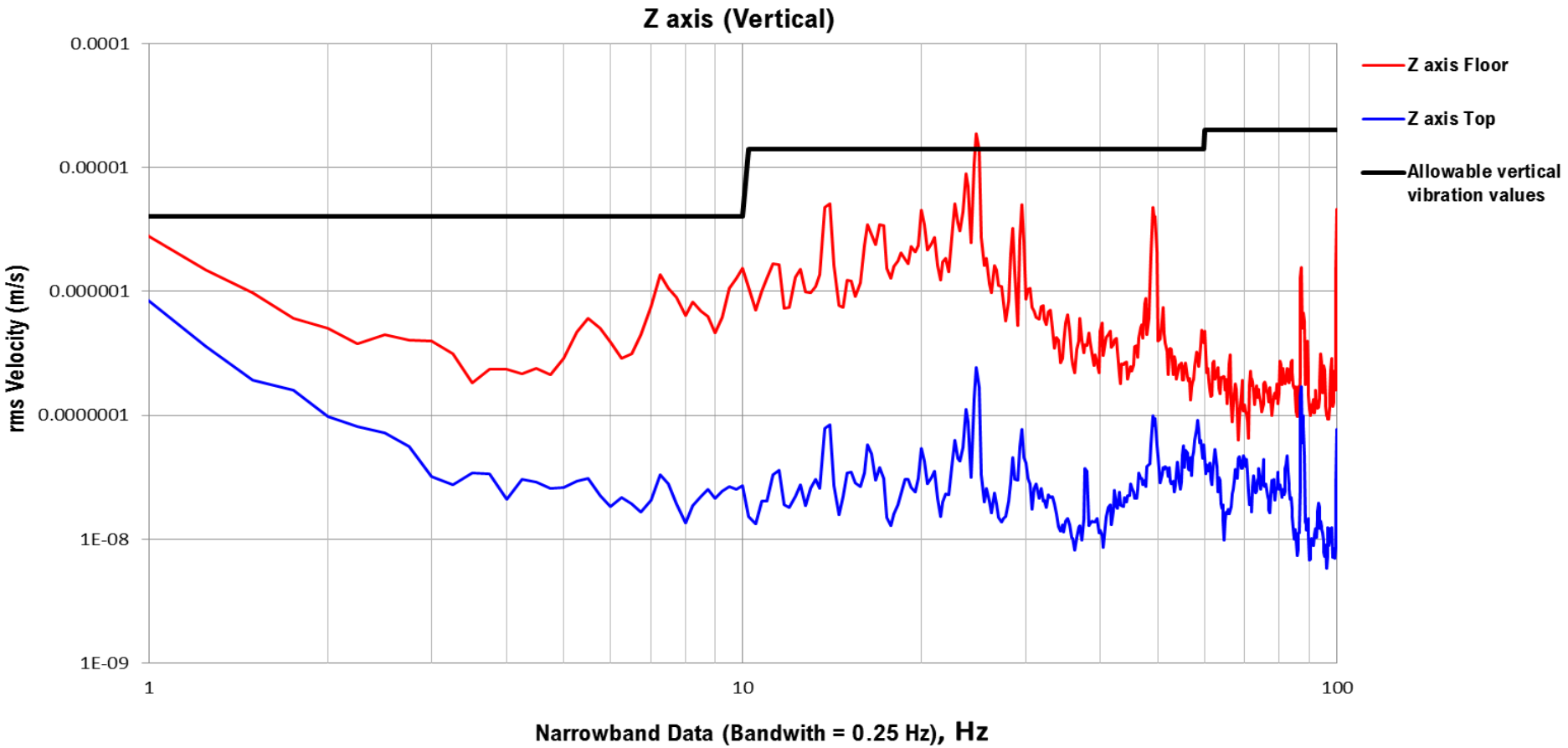
4. Installation Photo



5. Summary

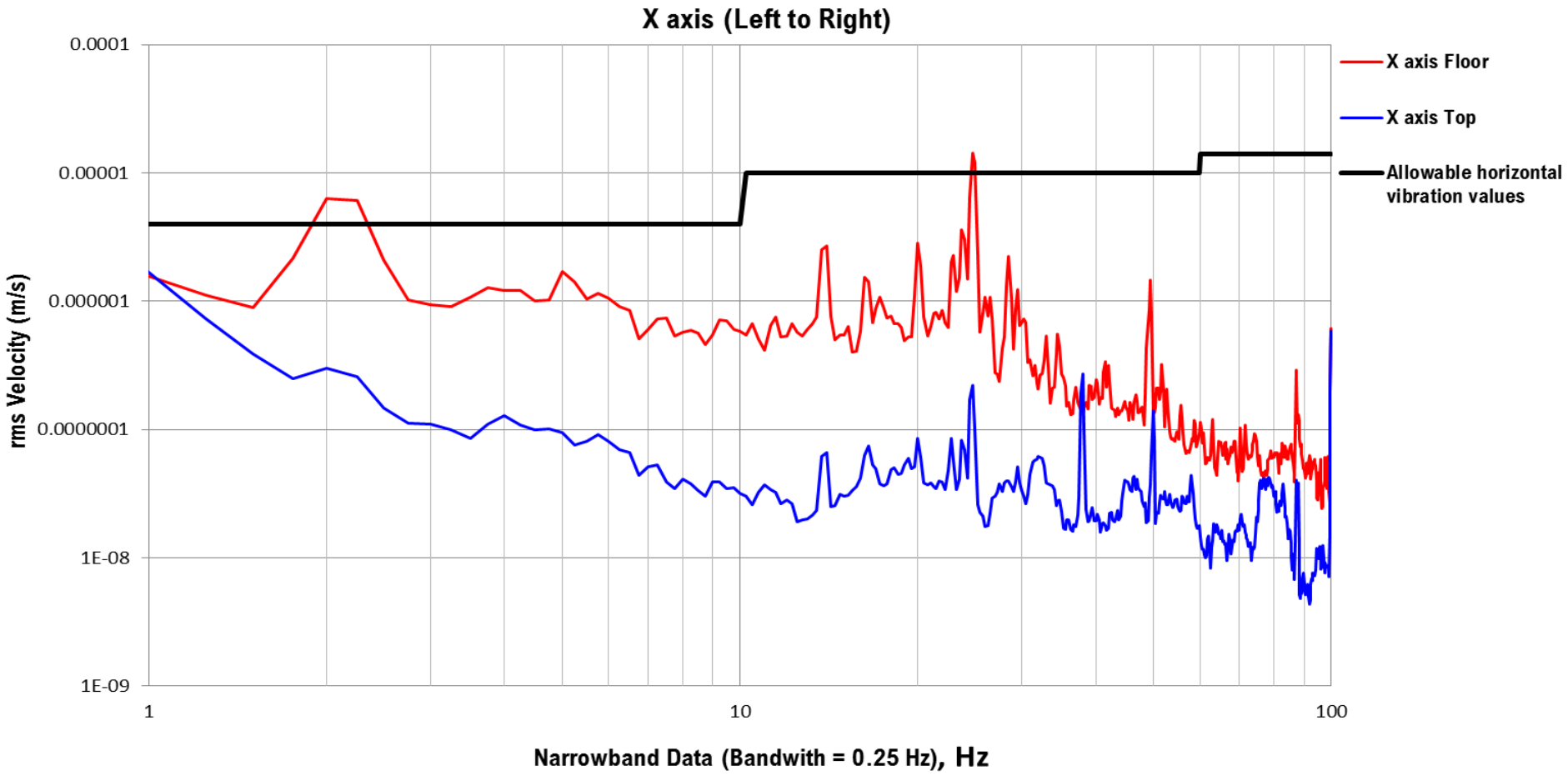
The installation site is located near a subway station, caused the low frequency floor vibration in vertical and horizontal axis that the measured floor vibration levels did not meet the ZEISS Gemini SEM vibration specification. DAEIL SYSTEMS's active vibration isolation system reduced the floor vibrations in Z, X and Y axis, succeeded in meeting the vibration specification.

6. Results – Z axis (Vertical)



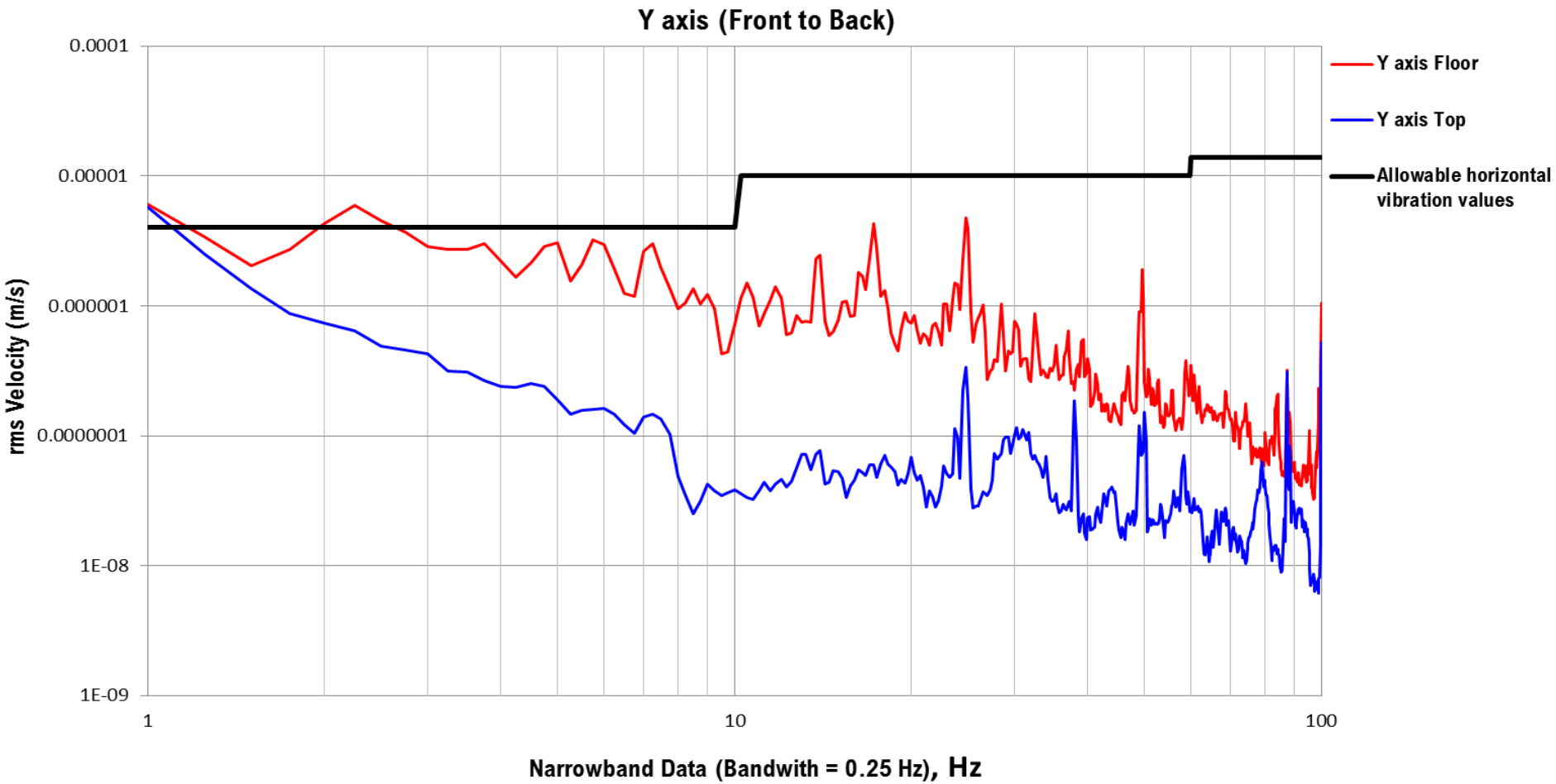
The subway trains caused a significant amount of vibration in Z axis at 25 Hz, at which point the floor vibration exceeded the allowable vertical vibration values for ZEISS Gemini SEM. Our active vibration isolation system reduced the 25 Hz floor vibration, meeting the vertical vibration specification.

6. Results – X axis (Left to Right)



The subway trains caused floor vibration at 2 Hz and 25 Hz in x axis, which exceeded the horizontal allowable vibration values. Our active vibration isolation system reduced the floor vibration from VC-D to VC-G, meeting the electron microscope's vibration specification.

6. Results – Y axis (Front to Back)



The subway trains caused floor vibration at 2.25 Hz in y axis, which exceeded the horizontal allowable vibration values. Our active vibration isolation system reduced the floor vibration from VC-D to VC-G, meeting the electron microscope's vibration specification.