

Lancair 360, N91CZ In-Flight Vibration Summary

rev3

- Acceleration measurements taken on a bulkhead behind the seat back supporting the battery and hydraulic pump
- Lateral and Vertical accelerations were recorded
- Sample rate: 1kHz
- Propeller Dynamic Balance at 2,450 rpm was 0.02 ips
- Two Flight Phases recorded
 - Initial Climb, WOT, four different engine speeds
 - Cruise, 8500', 21" MP (~1"Hg below WOT), nine different engine speeds

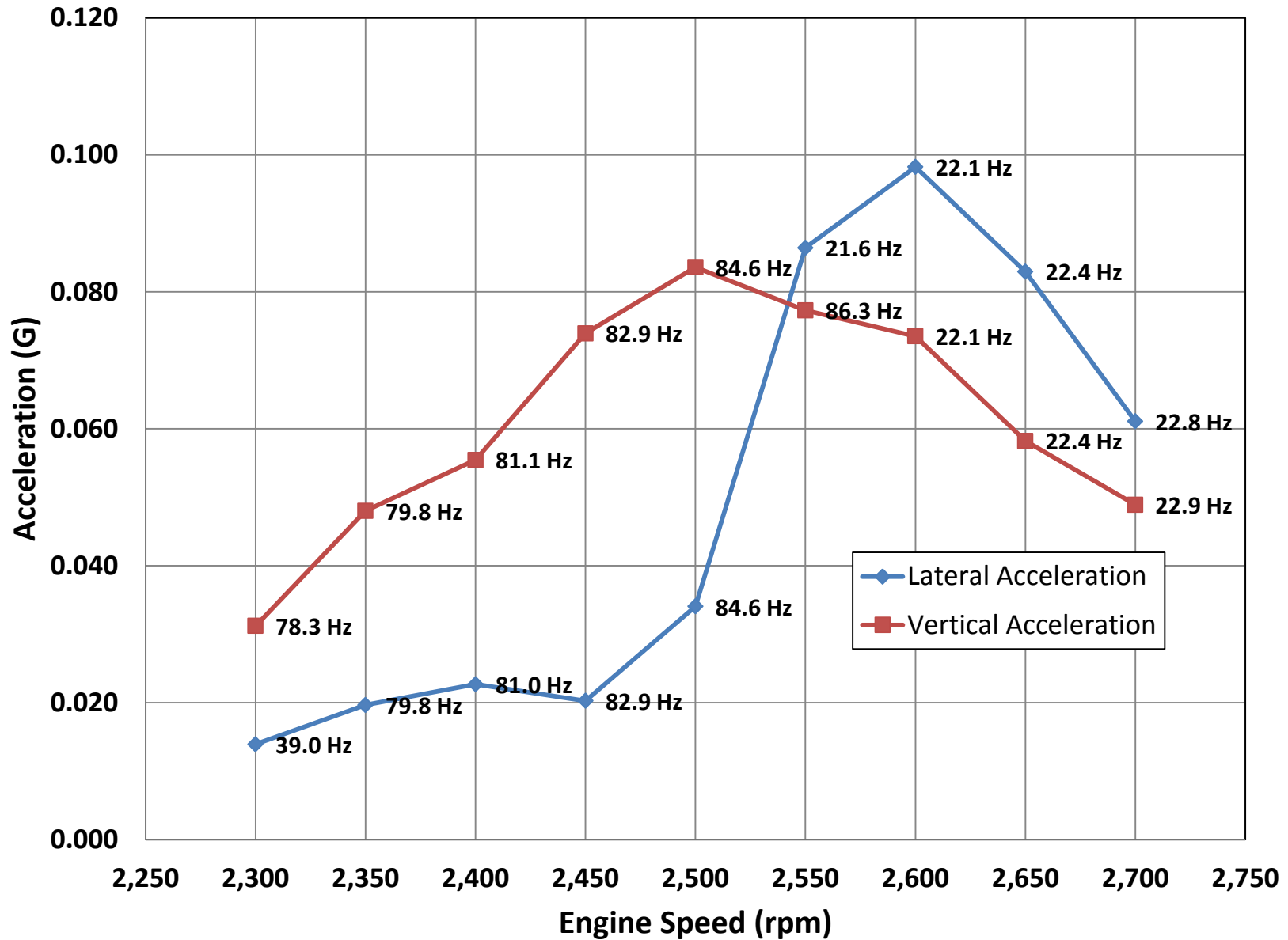
Plots

- Peak G-levels and frequencies from all cruise points
- Peak G-levels and frequencies from all climb points
- Total RMS values for all cruise points
- Total RMS for all climb points
- Magnitude spectrum for Climb @ 2,700 rpm
- Magnitude Spectrum for Cruise @ 2,300 rpm (smoothest cruise)
- Magnitude Spectrum for Cruise @ 2,500 rpm
- Power Spectrum for Climb @ 2,700 rpm
- Power Spectrum for Cruise @ 2,300 rpm (smoothest cruise)
- Power Spectrum for Cruise @ 2,500 rpm
- Velocity Spectrum for Cruise @ 2,500 rpm
- Sample raw data (3)

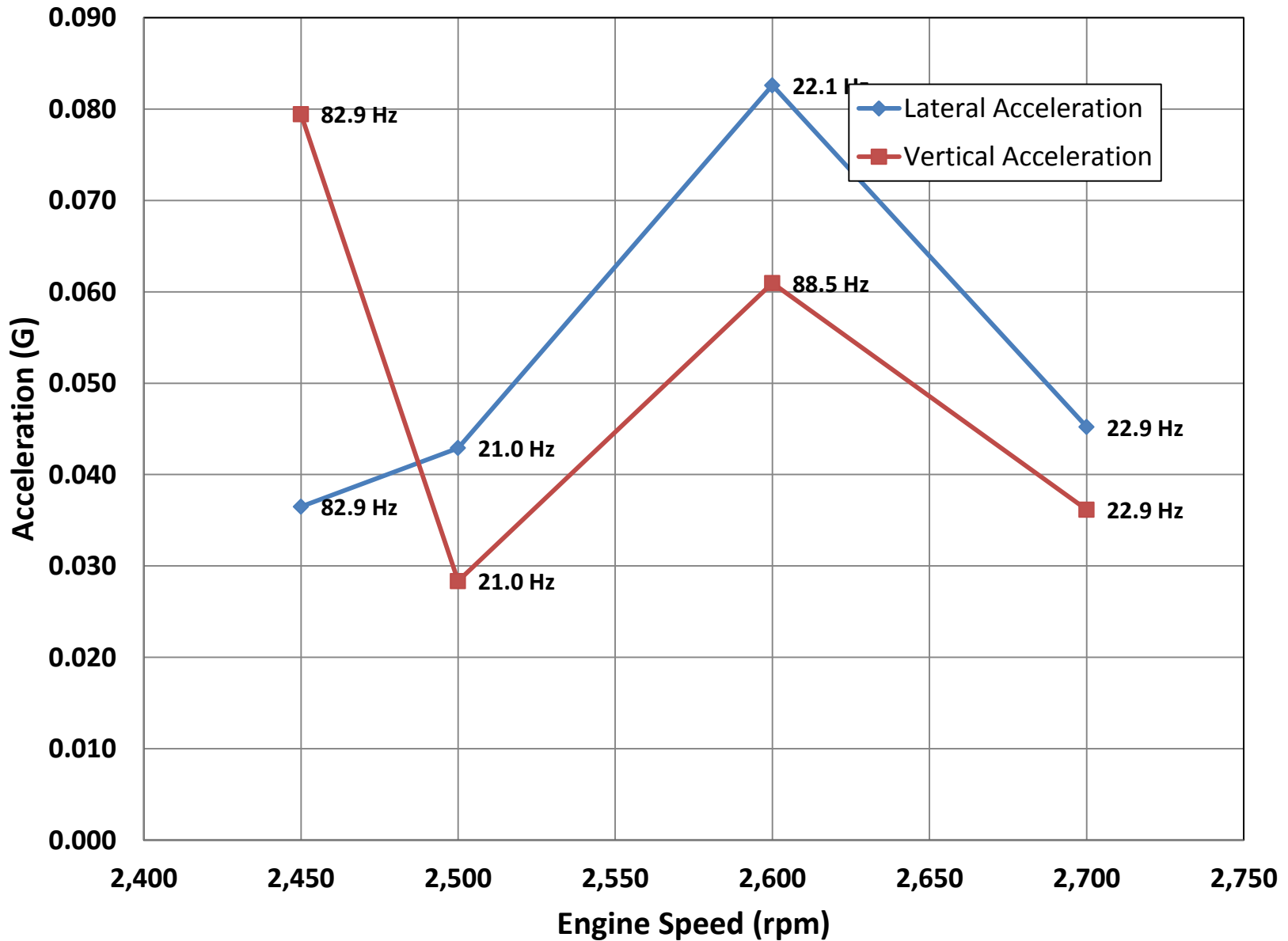
Observations

- Propeller balance is very good
- Dominant frequencies are 2nd and ½ order

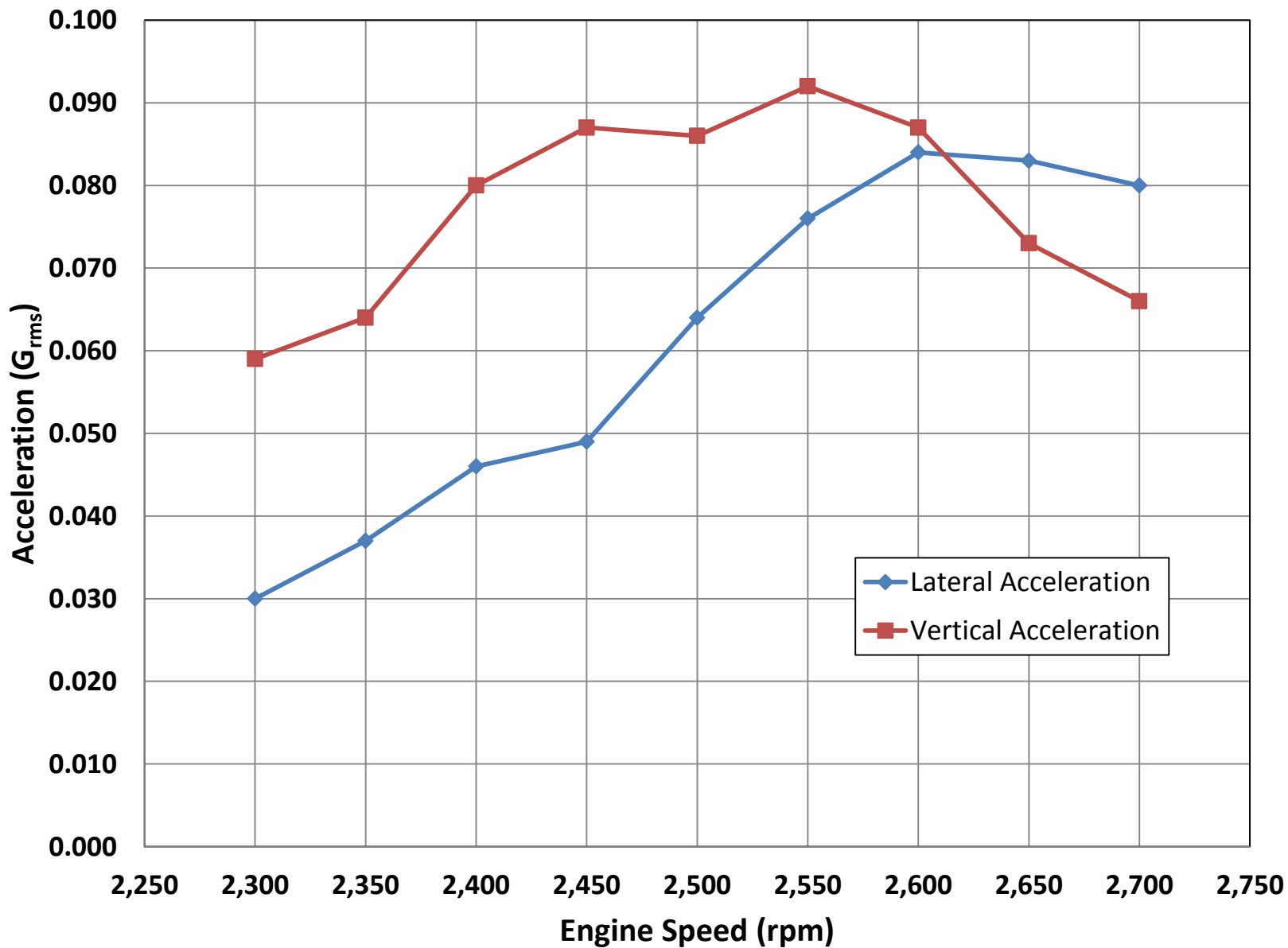
Magnitude Spectrum Peaks during Cruise, 8,500 ft, 21 inHg



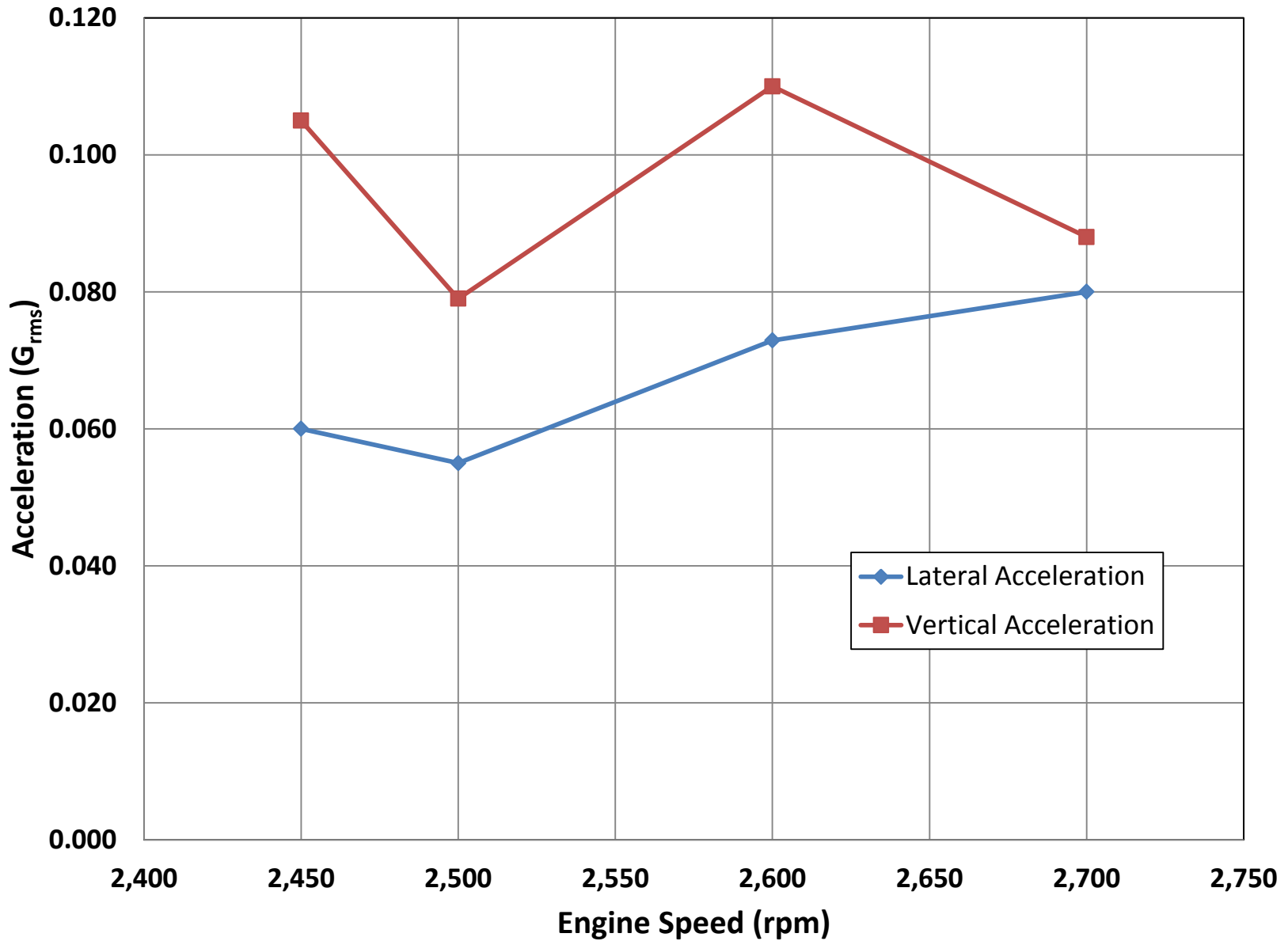
Magnitude Spectrum Peaks during Initial Climb, SL-3,000 ft, WOT



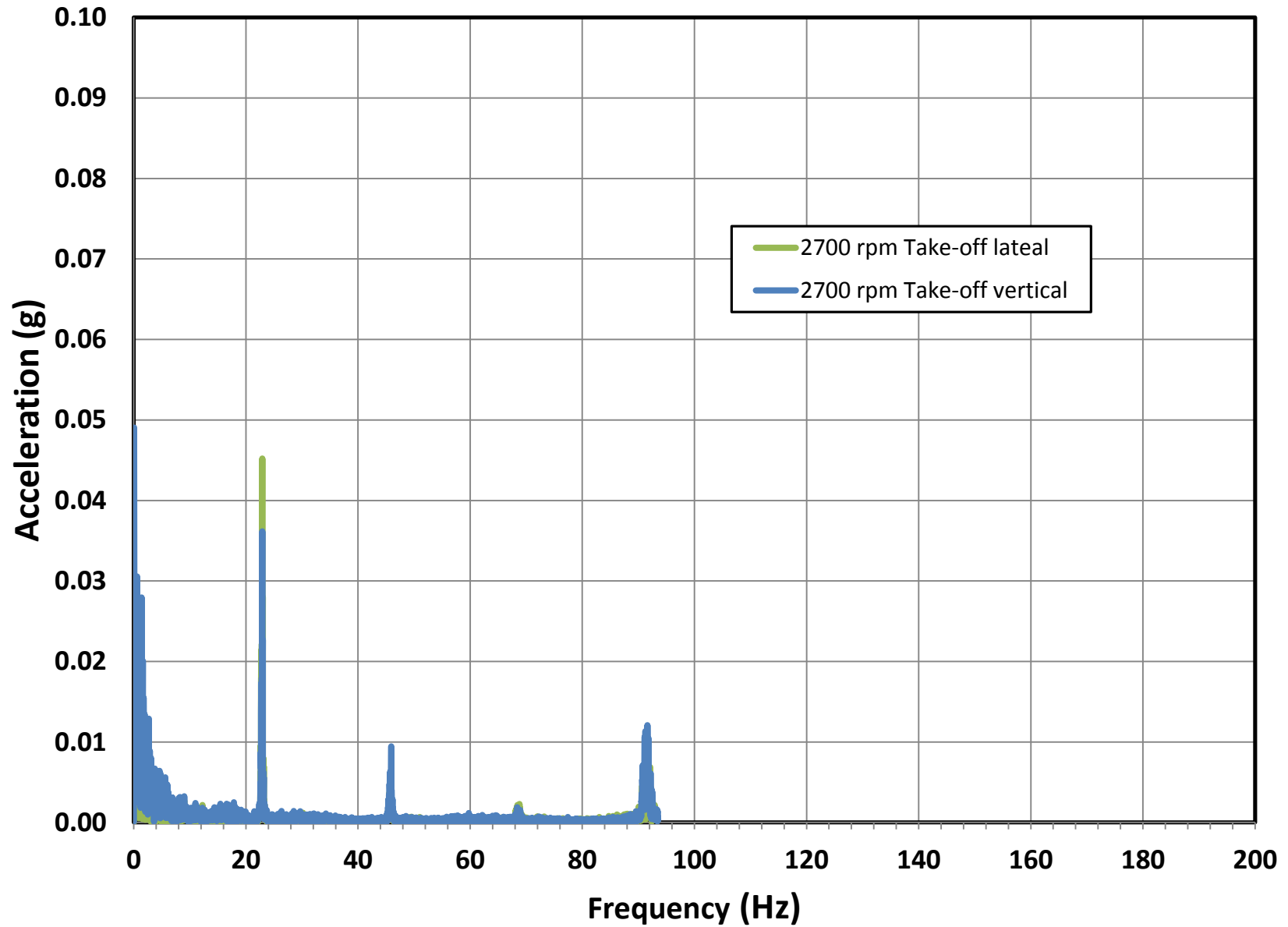
Total RMS Vibration Levels during Cruise, 8,500 ft, 21 inHg



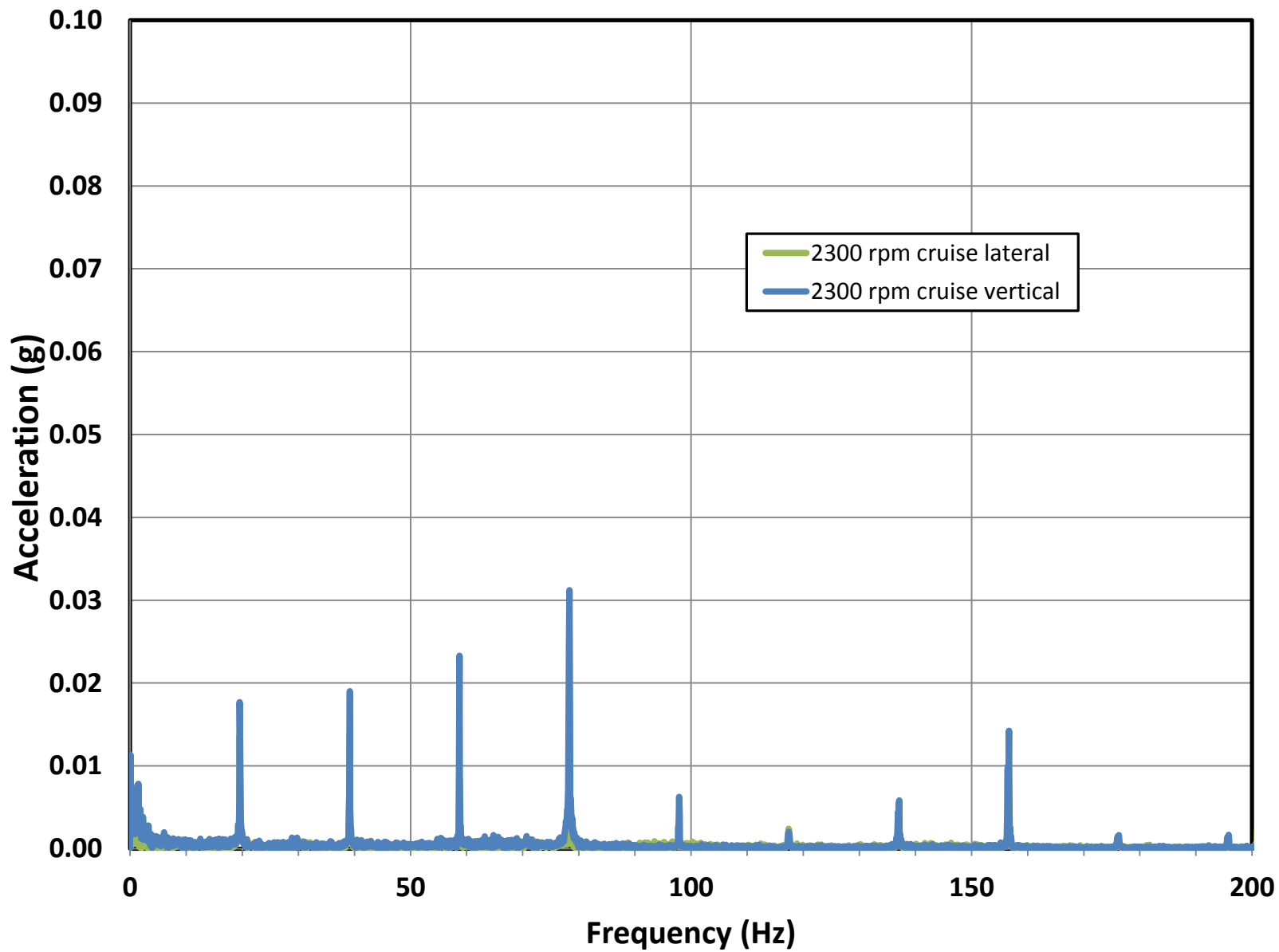
Total RMS Vibration Levels during Initial Climb, SL-3,000 ft, WOT



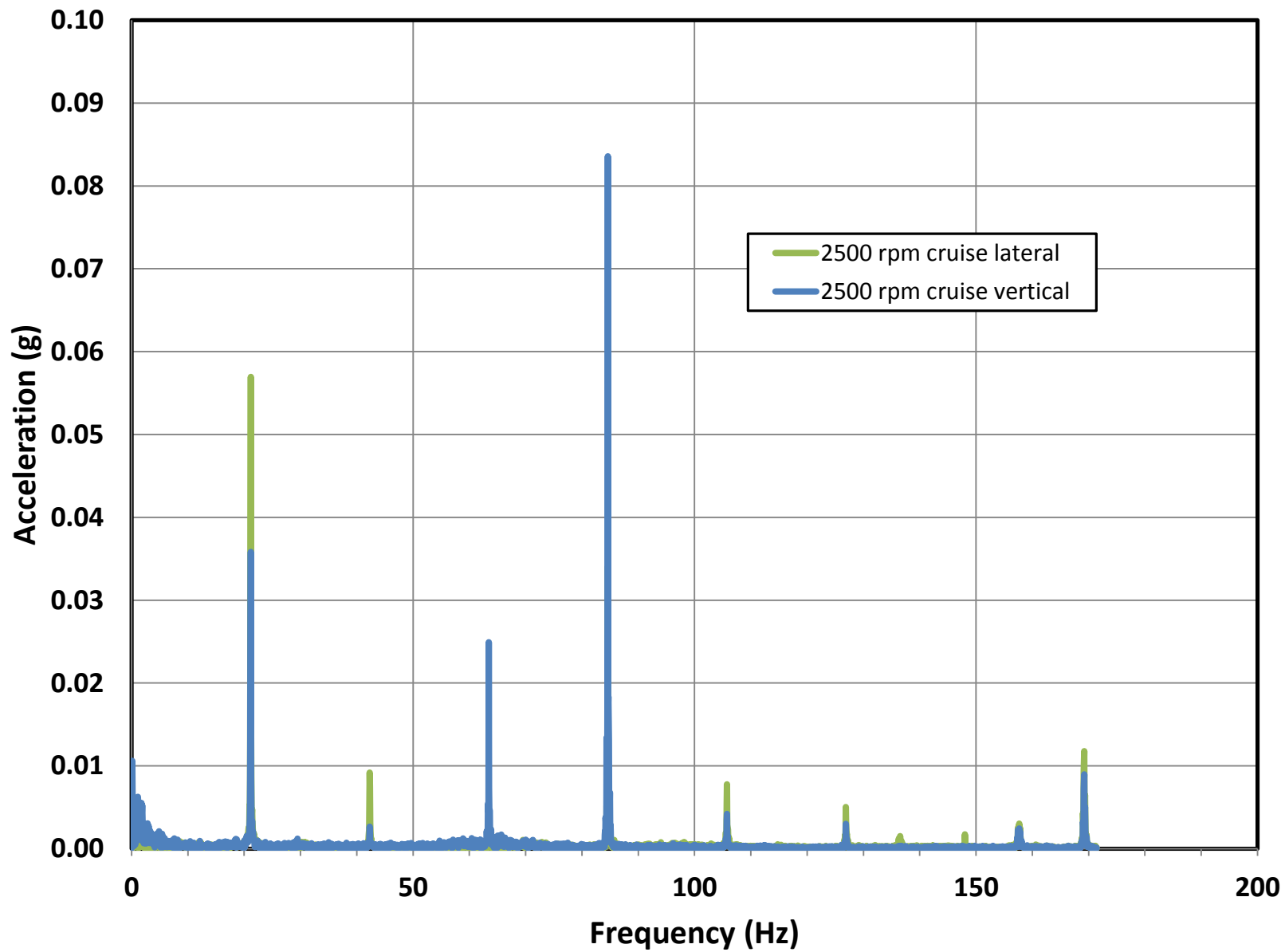
Magnitude Spectrum, Take-Off, 2,700 rpm



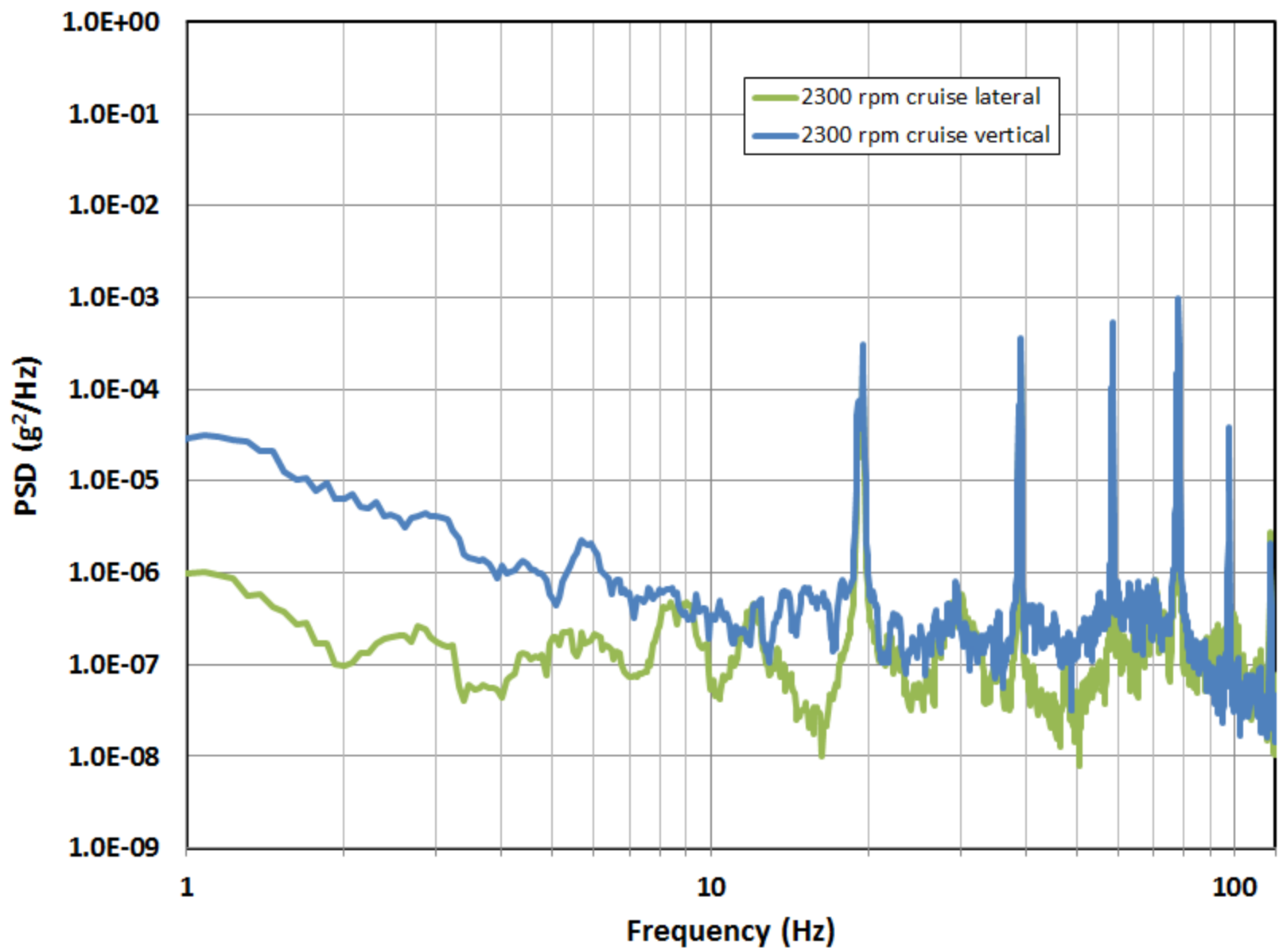
Magnitude Spectrum, Cruise, 2,300 rpm



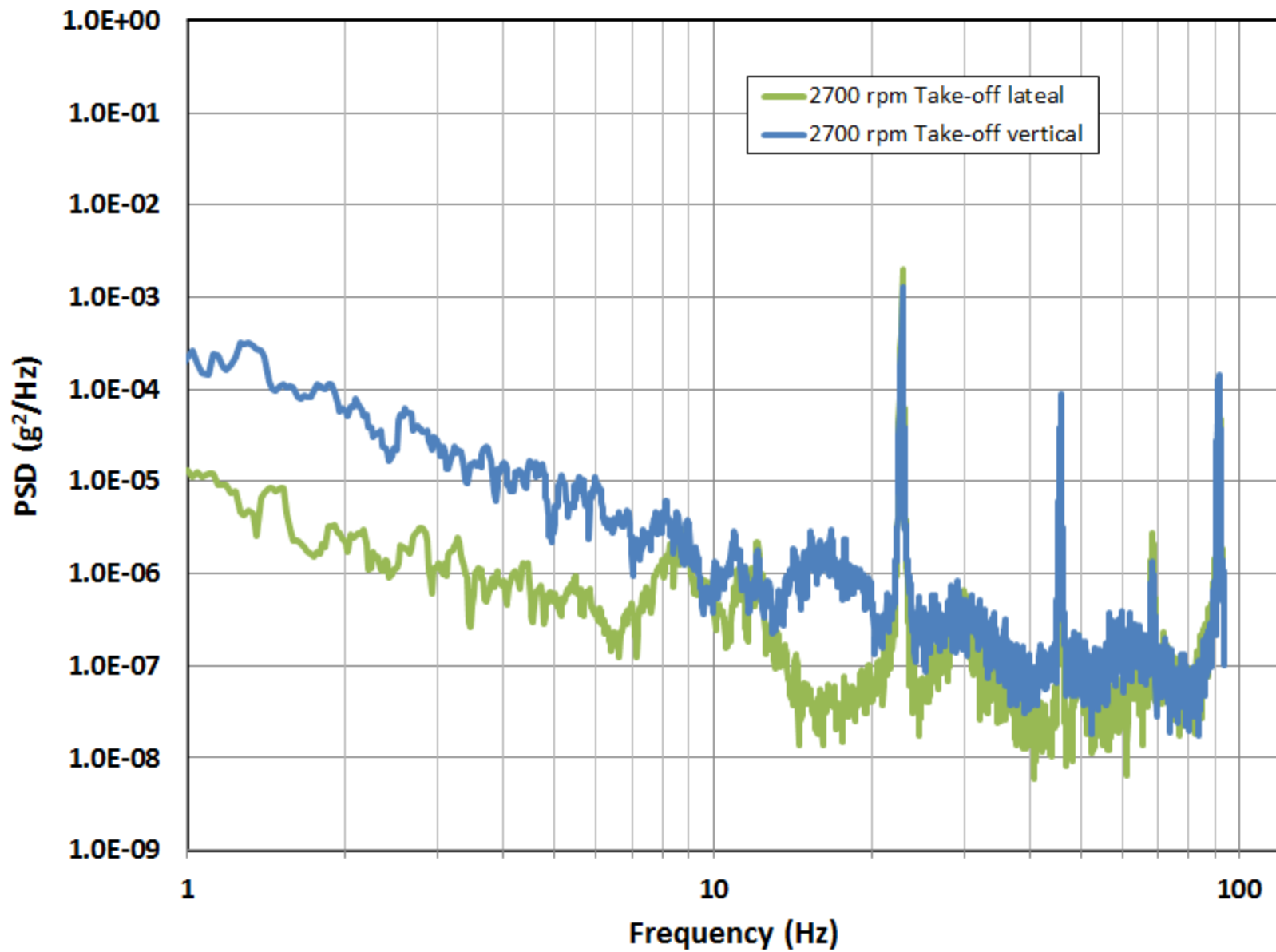
Magnitude Spectrum, Cruise, 2,500 rpm



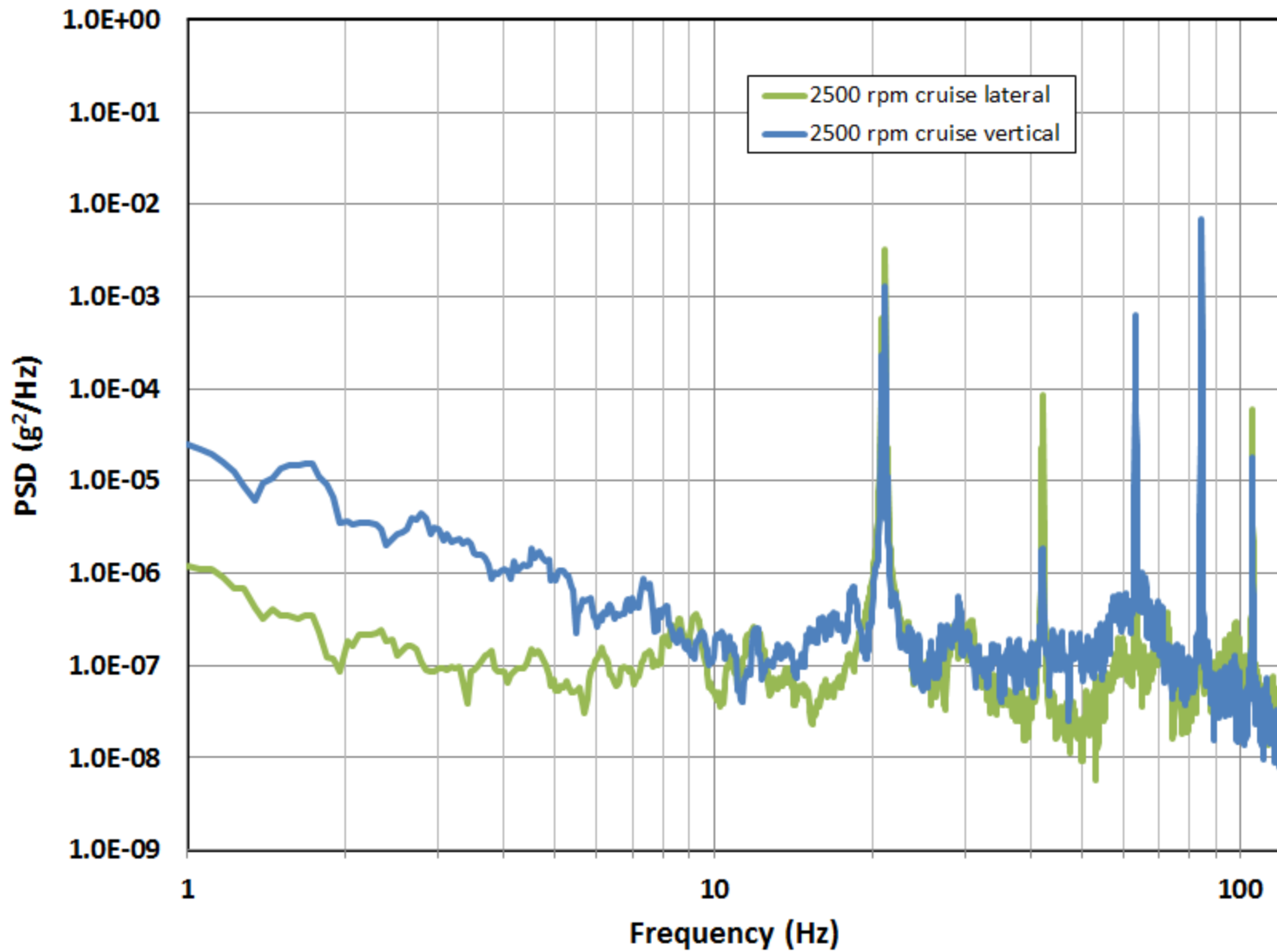
Power Spectrum, Cruise, 2,300 rpm



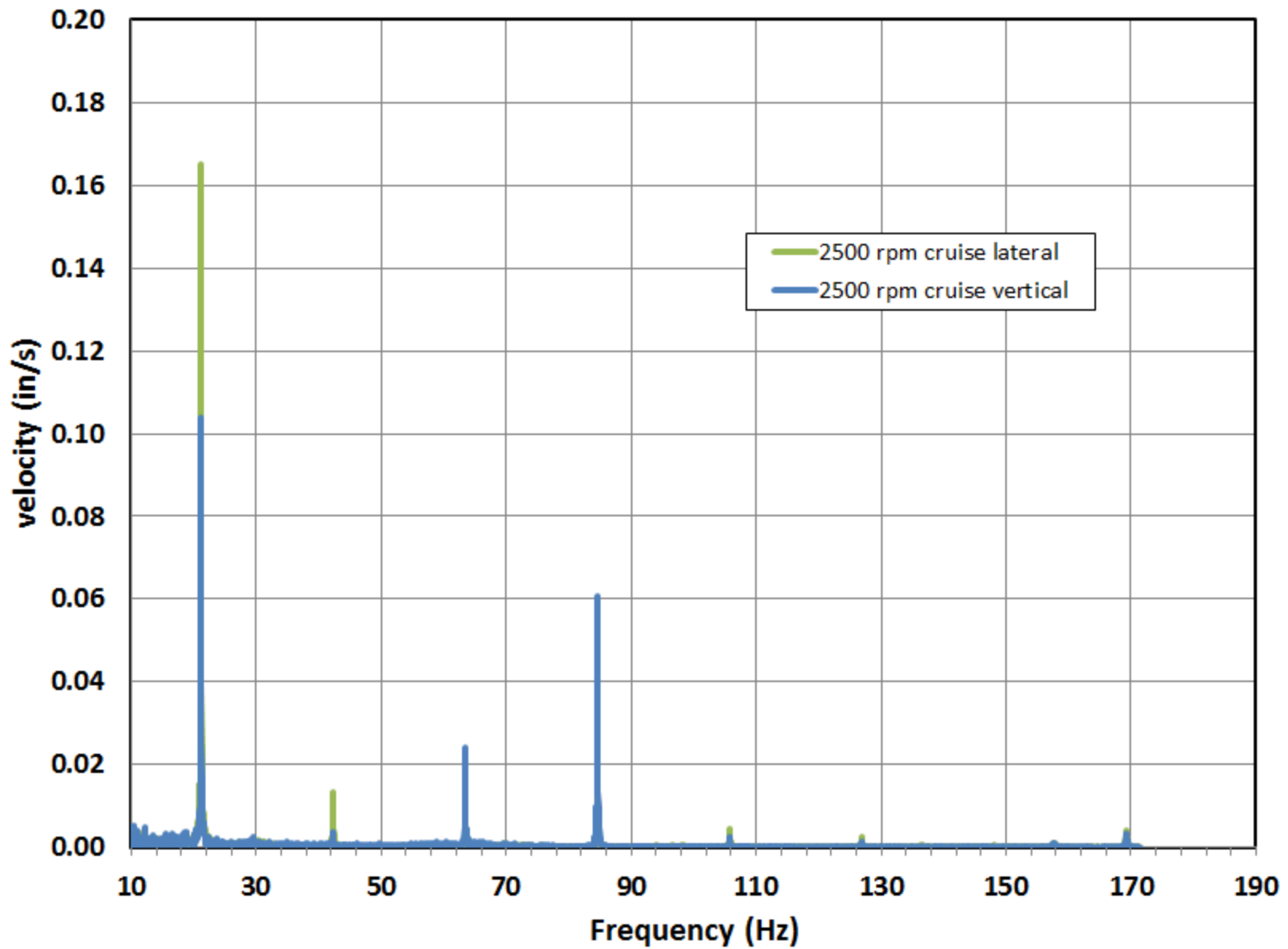
Power Spectrum, Take-Off, 2,700 rpm



Power Spectrum, Cruise, 2,500 rpm



Velocity Spectrum, Cruise, 2,500 rpm



Sample Data: 2,300 rpm Cruise

