Detected Resonant Frequencies (0-200 Hz):

16

80

120

124

150

Estimated Damping Ratios:

Mode near 16.00 Hz → ζ = 0.1250

Mode near 80.00 Hz → ζ = 0.0250

Mode near 120.00 Hz → ζ = 0.0500

Mode near 124.00 Hz → ζ = 0.0484

Mode near 150.00 Hz → ζ = 0.0533

Normalized Mode Shapes (0-200 Hz):

Mode at 16.00 Hz:

X: 0.129∠-15.3°

Y: 0.455∠-5.3°

Z: 1.000∠167.0°

Mode at 80.00 Hz:

X: 1.000∠-157.0°

Y: 0.175∠-128.6°

Z: 0.970∠70.0°

Mode at 120.00 Hz:

X: 0.080∠-93.1°

Y: 1.000∠-91.3°

Z: 0.769∠83.5°

Mode at 124.00 Hz:

X: 0.087∠-124.9°

Y: 1.000∠-128.1°

Z: 0.891∠47.3°

Mode at 150.00 Hz:

X: 0.149∠-159.6°

Y: 0.950∠-153.1°

Z: 1.000∠12.6°

=== Modal Parameter Summary (0-200 Hz) ===

Freq_Hz Damping Phi_X Phi_Y Phi_Z

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16 0.125 0.12486-0.034234i 0.45278-0.041985i -0.97423+0.22555i
80 0.025 -0.92064-0.39041i -0.10915-0.13678i 0.3323+0.91083i
120 0.05 -0.0043097-0.080017i -0.021839-0.99976i 0.086793+0.76456i
124 0.048387 -0.049634-0.071255i -0.617-0.78697i 0.60361+0.65509i
150 0.053333 -0.14002-0.052182i -0.84716-0.4307i 0.97578+0.21876i

Detected Resonant Frequencies (0-200 Hz):
16
80
120
124
150

Estimated Damping Ratios:
0.1250
0.0250
0.0500
0.0484
0.0533

=== Modal Summary (0-200 Hz) ===
Mode 1: f=16.00 Hz, Damping=0.1250, k_dyn_X=2128092.94 N/m, k_dyn_Y=605904.94 N/m, k_dyn_Z=275518.29 N/m
Mode Shape (X,Y,Z): 0.129∠-15.3°, 0.455∠-5.3°, 1.000∠167.0°
Mode 2: f=80.00 Hz, Damping=0.0250, k_dyn_X=12971967.05 N/m, k_dyn_Y=74129870.31 N/m, k_dyn_Z=13379248.90 N/m
Mode Shape (X,Y,Z): 1.000∠-157.0°, 0.175∠-128.6°, 0.970∠70.0°
Mode 3: f=120.00 Hz, Damping=0.0500, k_dyn_X=181630918.87 N/m, k_dyn_Y=14554593.29 N/m, k_dyn_Z=18915155.87 N/m
Mode Shape (X,Y,Z): 0.080∠-93.1°, 1.000∠-91.3°, 0.769∠83.5°
Mode 4: f=124.00 Hz, Damping=0.0484, k_dyn_X=195563610.00 N/m, k_dyn_Y=16982302.96 N/m, k_dyn_Z=19064430.40 N/m

Mode Shape (X,Y,Z): 0.087∠-124.9°, 1.000∠-128.1°, 0.891∠47.3°

Mode 5: f=150.00 Hz, Damping=0.0533, k_dyn_X=473612729.85 N/m, k_dyn_Y=74465394.95 N/m, k_dyn_Z=70768929.27 N/m

Mode Shape (X,Y,Z): 0.149∠-159.6°, 0.950∠-153.1°, 1.000∠12.6°