

Detected Resonant Frequencies (0-200 Hz):

52

82

124

146

186

Estimated Damping Ratios:

Mode near 52.00 Hz $\rightarrow \zeta = 0.0577$

Mode near 82.00 Hz $\rightarrow \zeta = 0.0366$

Mode near 124.00 Hz $\rightarrow \zeta = 0.0484$

Mode near 146.00 Hz $\rightarrow \zeta = 0.0274$

Mode near 186.00 Hz $\rightarrow \zeta = 0.0376$

Normalized Mode Shapes (0-200 Hz):

Mode at 52.00 Hz:

X: $0.072\angle-138.4^\circ$

Y: $0.040\angle36.1^\circ$

Z: $1.000\angle34.0^\circ$

Mode at 82.00 Hz:

X: $0.133\angle-118.5^\circ$

Y: $0.035\angle-107.6^\circ$

Z: $1.000\angle-128.7^\circ$

Mode at 124.00 Hz:

X: $0.070\angle-145.4^\circ$

Y: $0.104\angle50.1^\circ$

Z: $1.000\angle-132.0^\circ$

Mode at 146.00 Hz:

X: $0.101\angle-135.2^\circ$

Y: $1.000\angle-63.2^\circ$

Z: $0.718\angle-145.2^\circ$

Mode at 186.00 Hz:

X: $0.274\angle166.5^\circ$

Y: $0.640\angle134.2^\circ$

Z: $1.000\angle 152.6^\circ$

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

Freq_Hz Damping Phi_X Phi_Y Phi_Z

Freq_Hz	Damping	Phi_X	Phi_Y	Phi_Z
52	0.057692	-0.053543-0.047564i	0.032438+0.023631i	0.82859+0.55985i
82	0.036585	-0.063379-0.11668i	-0.010432-0.032965i	-0.6247-0.78087i
124	0.048387	-0.057491-0.039686i	0.066447+0.079408i	-0.66861-0.74361i
146	0.027397	-0.071823-0.071425i	0.45097-0.89254i	-0.5898-0.40991i
186	0.037634	-0.26636+0.063717i	-0.44623+0.45877i	-0.8879+0.46004i

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0.0577

0.0366

0.0484

0.0274

0.0376

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

Mode 1: f=52.00 Hz, Damping=0.0577, k_dyn_X=35875137.23 N/m, k_dyn_Y=64020797.02 N/m, k_dyn_Z=2569322.03 N/m

Mode Shape (X,Y,Z): $0.072\angle -138.4^\circ, 0.040\angle 36.1^\circ, 1.000\angle 34.0^\circ$

Mode 2: f=82.00 Hz, Damping=0.0366, k_dyn_X=52577512.79 N/m, k_dyn_Y=201907161.86 N/m, k_dyn_Z=6981200.86 N/m

Mode Shape (X,Y,Z): $0.133\angle -118.5^\circ, 0.035\angle -107.6^\circ, 1.000\angle -128.7^\circ$

Mode 3: f=124.00 Hz, Damping=0.0484, k_dyn_X=133340371.74 N/m, k_dyn_Y=89964023.67 N/m, k_dyn_Z=9314976.07 N/m

Mode Shape (X,Y,Z): $0.070\angle -145.4^\circ, 0.104\angle 50.1^\circ, 1.000\angle -132.0^\circ$

Mode 4: f=146.00 Hz, Damping=0.0274, k_dyn_X=443624737.76 N/m, k_dyn_Y=44935678.33 N/m, k_dyn_Z=62562402.44 N/m

Mode Shape (X,Y,Z): $0.101\angle -135.2^\circ, 1.000\angle -63.2^\circ, 0.718\angle -145.2^\circ$

Mode 5: f=186.00 Hz, Damping=0.0376, k_dyn_X=546162749.70 N/m,
k_dyn_Y=233720003.30 N/m, k_dyn_Z=149579716.95 N/m
Mode Shape (X,Y,Z): 0.274∠166.5°, 0.640∠134.2°, 1.000∠152.6°