Detected Resonant Frequencies (0-200 Hz):
16
120
188

Estimated Damping Ratios:
Mode near 16.00 Hz → ζ = 0.1250
Mode near 120.00 Hz → ζ = 0.0417

Normalized Mode Shapes (0-200 Hz):

Mode at 16.00 Hz:
X: 0.026∠176.5°
Y: 0.106∠17.7°
Z: 1.000∠169.8°

Mode at 120.00 Hz:
X: 0.044∠-84.7°
Y: 0.037∠64.0°
Z: 1.000∠87.9°

Mode at 188.00 Hz:
X: 0.209∠-86.3°
Y: 0.851∠-67.4°
Z: 1.000∠-27.1°
=== Modal Parameter Summary (0-200 Hz) ===

Freq_Hz	Damping	Phi_X	Phi_Y	Phi_Z
16	0.125	-0.025807+0.0015896i	0.10062+0.032033i	-0.98428+0.17662i
120	0.041667	0.0040692-0.043792i	0.016043+0.032872i	0.036756+0.99932i
188	NaN	0.013334-0.20867i	0.32682-0.78538i	0.88992-0.45612i

Detected Resonant Frequencies (0-200 Hz):
16
120
188

Estimated Damping Ratios:

0.1250

0.0417

NaN

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

Mode 1: f=16.00 Hz, Damping=0.1250, k_dyn_X=8847928.13 N/m, k_dyn_Y=2166521.11 N/m, k_dyn_Z=228771.98 N/m

Mode Shape (X,Y,Z): 0.026∠176.5°, 0.106∠17.7°, 1.000∠169.8°

Mode 2: f=120.00 Hz, Damping=0.0417, k_dyn_X=125997272.74 N/m, k_dyn_Y=151494712.06 N/m, k_dyn_Z=5541382.14 N/m

Mode Shape (X,Y,Z): 0.044∠-84.7°, 0.037∠64.0°, 1.000∠87.9°

Mode 3: f=188.00 Hz, Damping=NaN, k_dyn_X=414155926.58 N/m, k_dyn_Y=101800298.09 N/m, k_dyn_Z=86597865.13 N/m

Mode Shape (X,Y,Z): 0.209∠-86.3°, 0.851∠-67.4°, 1.000∠-27.1°