

Rotational Force on Transmitter Feasibility

Telemetry Life Cycle:

- Rotational Forces?
 - Max Acceleration Limit Spec: 500g
 - $a = v^2/r$
 - Max Rotational speed of Shaft: 150 RPM
 - Shaft Radius ≈ 1 in = 0.0254 m
 - Transmitter Dimensions: 74 mm x 79 mm x 21 mm
 - Max acceleration at outer surface of transmitter
 - $v = (150 \text{ rpm}) * (2\pi(0.0254 \text{ m} + 0.0021 \text{ m})) * \left(\frac{1 \text{ s}}{60 \text{ min}}\right) = 0.43 \text{ m/s}$
 - $\Rightarrow a = \frac{(0.43 \text{ m/s})^2}{0.0254 \text{ m} + 0.0021 \text{ m}} * \left(\frac{1 \text{ g}}{9.81 \text{ m/s}^2}\right) = \mathbf{0.69 \text{ g}}$
 - 0.69 g < 500 g