# Applies to all Inertial Sensors -- Application Note 1009E

Ultrasonic Cleaning of MEMs parts

Sparton’s line of inertial systems contains MEMs accelerometers, gyroscopes and magnetometers.

When subjected to vibrations of specific frequencies the internal structure of the MEMs can become damaged. While some MEMs manufacturers do not mention this, Sparton has found that almost all MEMs structures can be damaged by the frequencies associated with Ultrasonic Cleaning. Prolonged exposure to ultrasonic frequencies (>20 kHz) may be detrimental to the internal components depending on frequency and intensity. Potential failure mechanisms due to prolonged ultrasound exposure include accelerometer failure resulting in loss of calibration or stiction of the accelerometers and/or loss of calibration and high drift rate for the gyroscopes.

Sparton products have been tested for shock to 1,500 g, 1 ms half-sine wave, and 0.06dB Power Spectral Density, 9.26 g RMS, for vibration meeting Mil-Std-202G – Method 214A Test Condition 1/C. Sparton does not test at frequencies beyond these requirements, and does not guarantee performance or survivability beyond the specified testing parameters.

Sparton’s sensors do not specifically state that Ultrasonic cleaning is prohibited but the Environmental Testing we perform does non-implicitly prohibit these frequencies from our datasheet and warranty.

**Want to know more?**

* Check it out here: [spartonnavex.com](http://www.thedigitalcompass.com)
* Questions or support issues can be directed to [productsupport@sparton.com](mailto:productsupport@sparton.com)