

CRYSTAL OSCILLATORS FOR TACTICAL MILITARY APPLICATIONS

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ABSTRACT

A tutorial on crystal oscillators for frequency control and timekeeping applications in tactical military systems will be presented. The numerous factors that affect the suitability of crystal oscillators for tactical applications (e.g. size, power consumption, aging, frequency vs. temperature characteristics, acceleration sensitivity, etc) will be discussed.

The results of a continuing oscillator evaluation program will be summarized. The limitations on the performances of temperature-compensated oscillators (TCXO) and oven-controlled crystal oscillators (OCXO) will be described. A summary of recent developments that promise to result in significant improvements in TCXO's and OCXO's will be presented. The best performance that has been demonstrated in experimental devices will be compared with what can be expected from devices available in production quantities.