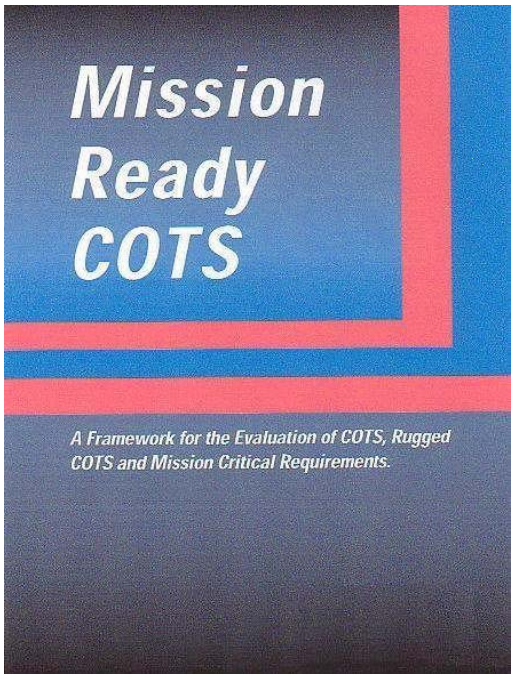


This is an example of an Industry Guide & Workbook, which is a signature piece. It was developed to be the lead in an overall Campaign targeted, at the Defense and Military Market. This uniquely qualified the Client company, as an expert, positioned them, as a serious Life-Cycle Partner compared to the rest of the competitive landscape and resulted in spawning key design-wins. The Guide Book set the tone for COTS Supportability Seminars that were focused on specific Government Agencies, Program Offices and selected Defense Contractors that were critical to the Company's business strategy and success.

Mission Ready COTS: The Guide

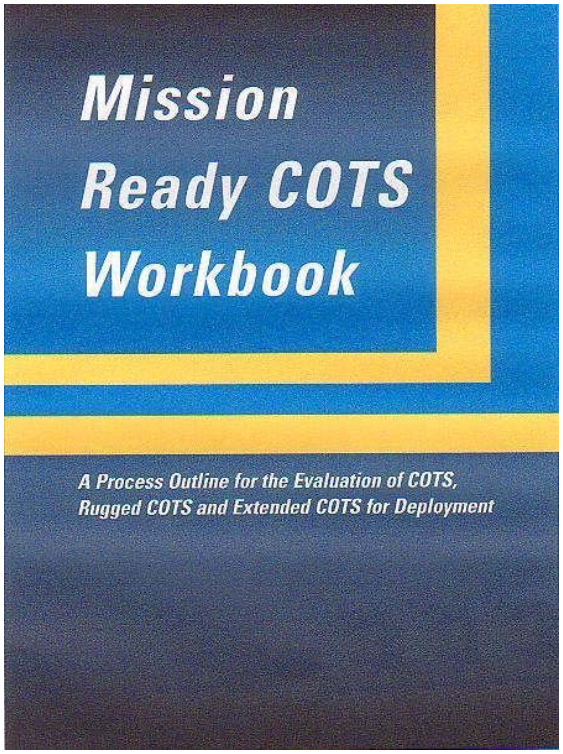

Mission platforms such as attack helicopters present specialized packaging requirements for COTS systems.

Some applications demand environmental survivability that goes beyond commercial level modules. Beyond naval, wide bodied subsonic aircraft, and rubber tired vehicles, COTS for deployment is a much more complex problem. Supersonic aircraft, helicopters, and armored vehicles each present a unique set of challenges to COTS equipment: challenges that must be clearly defined by the integrator. For each of the environmental requirements (air flow, shock and vibration levels, and operating and non-operating temperatures) there is a continuum of solutions that range from standard COTS, to rugged COTS, to repackaged or extreme COTS that will achieve the program objectives.

The operating temperature range for a module is generally characterized by the COTS vendor, and in some cases, there is significant design margin beyond the standard specifications built into the product. COTS modules are generally verified as operating with a certain inlet air temperature at a certain barometric pressure. It is very likely that the platform being designed does not match these exact conditions, so an analysis of the cooling capacity available in the target platform must be performed. For modules that are air cooled, the overall cooling strategy becomes part of the analysis.

For some applications such as armored vehicles, the difficulty in supplying clean, cool, pressurized air for an electronic module is a critical issue. Air-cooled modules and NBC (nuclear, biological, chemical) decontamination procedures do not mix, so either conduction cooling, or a sealed/filtered cooling air supply will be required. In any case, a clear definition of how cooling air will be supplied to the COTS module is required. In addition to mitigating the air flow issues, conduction cooled COTS modules are also inherently more resistant to shock and vibration than air cooled, since the modules tend to be stiffer and have higher natural resonant frequencies.

Shock and vibration are significant factors in very harsh environments. The standard most quoted by COTS vendors that supply rugged products is MIL-STD-810. This specification is invaluable in providing insights on test procedures and typical

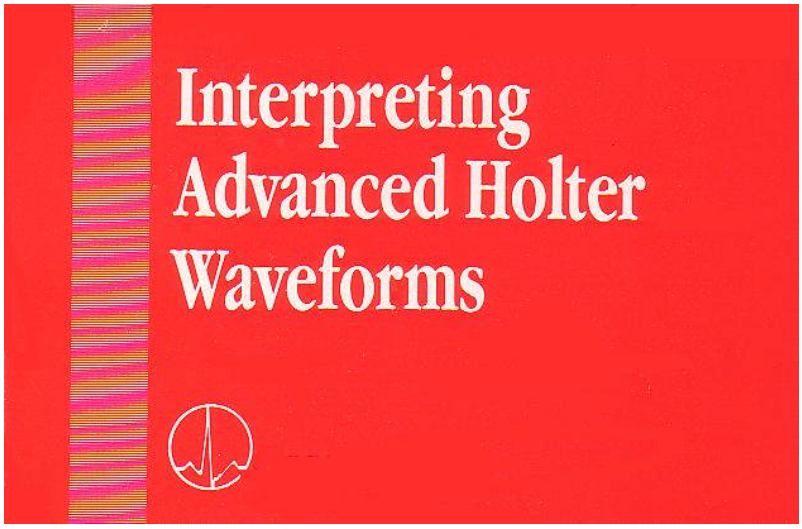


Evaluating Vendors for Repackaging

There are only a couple of vendors willing to repackage products beyond their standard form factors, or who are willing to share their intellectual property. An important element in vendor selection is choosing the supplier(s) who do this as their standard of doing business, as does, not just as an exception. The following check list of packaging capabilities identifies the critical competencies that must be present either with the COTS vendor or with the integrator undertaking the work. Each vendor should provide background for these critical areas:

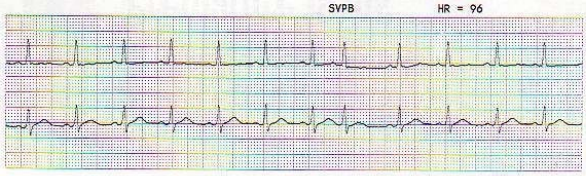
- **Component Selection:** Does the COTS vendor understand how to select and utilize wide temperature range components?
- **Thermal Management:** Thermal management is a science, does the COTS vendor have this expertise?
- **Component Placement:** How does the vendor build systems that will survive the resonant frequency of the printed circuit assemblies, and the consequent movement of the boards under vibration loads?
- **Component Retention:** Does the COTS vendor have the expertise to determine the survivability of the modules?
- **Thermal Coefficients:** How does the COTS supplier address this issue?
- **Connectors/Cabling:** What are the connector selection and cabling solutions?
- **Test Procedures:** Will the vendor test until failure or just to HALT or HAAS defined tolerances?
- **Derating:** How does the vendor maximize first pass success results?
- **Engineering and Re-engineering Focus:** What is the vendor's skill in this area?

This is an example of an Industry Guide for a program that focused on the Medical Diagnostic Market. The Guide was actually utilized, by Cardiologists and Holter Technicians to do interpretations, based on Waveform Analysis that identified life-threatening arrhythmias and other related heart conditions. This guide distinguished the company from its competition and established them, as the expert in their field. This guide was an element of a Major Product Introduction Program that generated $1.9 Million in new sales.



Contents

Supraventricular Premature Beat (SVPB)



Definition

An SVPB is a beat which is initiated by an irritable focus in one of the atria. The beat looks normal in morphology (with perhaps a slight difference in the P-wave morphology), occurs early compared to the normal sinus rhythm preceding it, and resets the SA Node so that the R-R interval following it is slightly longer than the normal sinus rate.

Approach

An early beat (at least 10% early compared to the preceding rhythm) that either is normal in morphology or matches a morphology that the technician has determined is supraventricular in origin will be called an SVPB. The prematurity requirement can be varied (10, 20, or 30%) depending on the prematurity of the supraventricular ectopic and the regularity of the rhythm.