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A Guideline for Application of RF Photonics to Aerospace Platforms

FOREWORD

This document was developed by the SAE AS-3A-2 RF/Analog Technology Task Group under AS-3 Fiber Optics and Applied Photonics and AS-3A Applications. The formation of this task group was approved at the fall meeting of the SAE AS-3 committee in October 2002. While RF photonics technology can potentially provide enormous benefits to future aerospace platforms, the technology is significantly different from conventional RF technology and requires engineers to think in somewhat new terms and adapt to the peculiarities of the medium. Establishment of guidelines for the application of RF photonics technology will assist avionics systems suppliers and customers in the design, development, and testing of future systems which incorporate photonics networks that include analog RF signal transmission. This document is dedicated to that goal. There are many contributors to be recognized for their efforts in developing this document and the AS-3 Fiber Optics and Applied Photonics Committee is grateful for everyone's contributions. Unfortunately we cannot list the names of individuals in this document.

The intended audience for this work is new engineering graduates, experienced engineers who are new to fiber optics and managers who are new to fiber optics or have been away from day-to-day exposure to fiber optics for a while. Realizing that the SAE is an international organization and that information published by the SAE is available worldwide, the information contained herein is limited to that which is also available independently from the various companies which provided it. This document only serves to gather and collate the information from the many various sources to facilitate the understanding and utilization of RF/Analog signals transmitted over fiber-optic networks.

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This task group was formed with an open invitation to professionals in government and at major platform developers and suppliers of photonics systems and components. Beginning with a few contacts from SAE and existing programs, the call went out: who do you know with RF photonics expertise? From these new contacts: who do you know? So I call this task group the “who do you know, who do you know group”. These are professionals known by their piers as experts in the field of RF photonics technology. They have worked on a volunteer basis with the support of their company or organization to develop a document that defines the current art of RF photonics. I am indebted to them and their organizations for their dedication to this effort.

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