

ARINC IA Project Initiation/Modification (APIM)

1.0 Name of Proposed Project **APIM #: 07-006**
 Prepare new and update existing fiber optic standards

2.0 Subcommittee Assignment and Project Support

2.1 Identify AEEC Group
 Fiber Optic Subcommittee

2.2 Support for the activity
 Airlines: TBD
 Airframe Manufacturers:

- Airbus
- Boeing
- Gulfstream

Suppliers:

AFL
Telecommunications
Agustawestland
Amphenol
Arnprior Aerospace
Cableteq
Carlyle Inc
Cinch
Deutsch UK
EMTEQ
Emteq
FCI
Glenair
Honeywell
ITT-Cannon
Kitco Fiber Optics

Ksaria
Lemo
Luna Innovations
Matsushita
Microflight
Phasoptx
Protokraft, LLC
Radiall-Jerrik
Rockwell-Collins
Smiths Aerospace
Souriau
Stran Technologies
Tempo
Tensolite
Tyco Electronics
Ultra

Others:

NAVAIR

2.3 Commitment for resources

Same as above

2.4 Chairman:

Boeing – Bob Nye

Airbus – John Cotterill (retiring) – will need replacement

2.5 Recommended Coordination with other groups

NIC Subcommittee

ADN Subcommittee

SAI Subcommittee

3.0 Project Scope (*why and when standard is needed*)

3.1 Description

This project will introduce major updates to (ARINC 805) including standardized common optical loss testing of the physical layer of fiber optic systems. The core elements to achieve this will be to define the utilization of Aerospace Measurement Quality Jumpers (AMQJs), fiber optic test equipment, and test procedures. The testing document would be applicable to all areas of commercial aircraft including business and private aircraft incorporating fiber optic technology.

New fiber optics inserts and shells will be introduced in ARINC 801.

At least one new cable will be introduced in ARINC 802.

Fiber optics system design guidelines will be expanded to encompass design for maintenance concepts. A joint effort with the military is expected for the activity in an update to ARINC 803. Also high-speed video requirements need to be completed.

In ARINC 804 high-speed video requirements need to be completed

Maintenance practices (ARINC 806) will be updated to accommodate new fiber optic hardware and general improvements to maintenance equipment.

Initiation of joint work with SAE to develop a specification for a fiber optic based WDM Local Area Network

3.2 Planned usage of the envisioned specification

New aircraft developments planned to use this specification yes no

Airbus: Airbus A350 2009

Boeing: Boeing 787 2008

Other: New aircraft in 2010 timeframe for WDM LAN

Modification/retrofit requirement yes no

Specify: All aircraft upgrading IFE

Needed for airframe manufacturer or airline project yes no

Specify: Gulfstream aircraft updates - current

Mandate/regulatory requirement yes no

Program and date: (program & date)

Is the activity defining/changing an infrastructure standard? yes no

Specify NIC and data buses

When is the ARINC standard required?
 _October_____2009_____

What is driving this date? __Immediate need but time is required to complete

Are 18 months (min) available for standardization work? yes no

If NO please specify solution: _____

Are Patent(s) involved? yes no

If YES please describe, identify patent holder: _____

3.3 Issues to be worked

Identification of evolving testing and maintenance procedures.

Establishing logistics of working with SAE and NAVAIR in partnerships.

Identification of new fiber optic system components.

4.0 Benefits

4.1 Basic benefits

Operational enhancements yes no

For equipment standards:

a. Is this a hardware characteristic? yes no

b. Is this a software characteristic? yes no

c. Interchangeable interface definition? yes no

d. Interchangeable function definition? yes no

If not fully interchangeable, please explain: _____

Is this a software interface and protocol standard? yes no

Specify: An element of WDM LAN standard_____

Product offered by more than one supplier yes no

Identify: All above companies

4.2 Specific project benefits

In general all changes will enhance the benefits of weight, reliability and bandwidth that are already realized with the implementation of fiber optics.

To provide a common platform for testing the physical layer of fiber optic systems and to ensure that all fiber optic cable harness manufacturers are testing to the same standard utilizing the appropriate AMQJs, test equipment and test procedures.

4.2.1 Benefits for Airlines

Broadens choices of hardware and improves selection of manufacturers of that hardware. Improved testing and maintenance techniques.

4.2.2 Benefits for Airframe Manufacturers

Better choices of qualified hardware and consistent methods defined for design and installation.

4.2.3 Benefits for Avionics Equipment Suppliers

Provides the ability to compete fairly in the industry and are presented guidelines for the type of equipment that the users desire.

5.0 Documents to be Produced and Date of Expected Result

5.1 Meetings and Expected Document Completion

The following table identifies the number of meetings and proposed meeting days needed to produce the documents described above.

Activity	Mtgs	Mtg-Days (Total)	Expected Start Date	Expected Completion Date
Supplement to 801	2/year*	8	11/2007	10/2009
Supplement to 802	2/year*	4	11/2007	10/2008
Supplement to 803	2/year*	8	11/2007	10/2009
Supplement to 804	2/year*	4	11/2007	10/2008
Supplement to 805	2/year*	8	11/2007	10/2009
Supplement to 806	2/year*	8	11/2007	10/2009
New Specification for WDM LAN	3/yr**	9	11/2007	10/2009

* Indicate meetings that will address multiple standards together. Some unsupported meetings will also be needed to support the updates to the standards, i.e., technical working group or other ad hoc meetings that do not requiring IA staff support.

**This meeting is expected to be a joint meeting with SAE

6.0 Comments

The current situation is that there are different methods for testing the physical layer of aerospace fiber optic systems. These different test methods are designed for testing specific applications of the fiber optic physical layer; for example active interfaces and passive interfaces. This has led to confusion as to how to properly test the fiber optic cable harness, quality assurance compliance

and system acceptance. In most cases this has led to improper test mythology and therefore it is vital that an aerospace testing standard be prepared to address the increasing use of fiber optic technology.

For IA Staff use

Date Received: _____ **IA Staff Assigned:** _____

Estimated Cost: _____

Potential impact: _____

(A. Safety B. Regulatory C. New aircraft/system D. Other)

Forward to committee(s) (AECC, AMC, FSEMC): _____ **Date Forwarded:** _____

Committee resolution: _____

(0 Withdrawn 1 Authorized 2 Deferred 3 More detail needed 4 Rejected)

Assigned Priority: _____ Date of Resolution: _____

(A High - execute first B Normal - may be deferred.)

Assigned to SC/WG: _____