



To FOS **Date** November 11, 2021

From Scott L. Smith
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Subject **Meeting Announcement**
Fiber Optics Subcommittee (FOS)

Chairman Robert Nye, The Boeing Company

Host ARINC Industry Activities

When **December 7, 2021**

Meeting Times	US Pacific	US Eastern	Central European
Start	0700	1000	1600
Adjourn	0900	1200	1800

Where This meeting will be 100% virtual. Details to be provided to those who register.

Instructions Please notify the ARINC Industry Activities staff of your intention to attend by registering online at: <https://www.aviation-ia.com/events>.

This meeting is opened to all interested parties. Individuals requesting time on the agenda should contact Scott Smith. Any material intended to be circulated prior to the meeting should be submitted before **December 4, 2021**. The agenda will be finalized one week prior to the meeting.

Activity Scope

The Fiber Optics Subcommittee (FOS) will meet to continue the development of ARINC Fiber Optic Standards used in air transport aircraft and other aircraft with similar requirements. The subcommittee's current work projects include developing a high-density fiber interface for new aircraft cabin and avionics systems.

This project is intended for future aircraft programs as well as the retrofit of existing airframes. Applications for this technology include avionics, in-flight entertainment systems, and other uses.

Meeting Objectives

New Work

The FOS will initiate work on APIM 21-006. The project's focus is to standardize the design and use of optoelectronics for airborne components and transmission systems. Initial guidance may develop into guidance intended for:

- **Supplement 5 to ARINC Report 803:** *Fiber Optic Design Guidelines*
- **Supplement 3 to ARINC Report 804:** *Fiber Optic Active Device Specification*

For more information about this project, see Attachment 1.

Existing Work

The FOS will initiate discussions to support the fiber optic needs from the:

- Cabin Systems Subcommittee (CSS) – APIM 18-001A
- Ku/Ka Band Satellite Subcommittee (KSAT) – APIM 20-001

The CSS is developing a new cabin network utilizing a high-speed, high-density architecture – the Fifth-Generation Cabin Network (5GCN). The CSS has asked the FOS to develop and present fiber-based solutions to satisfy the 5GCN's communications needs. See the [CSS Webpage](#) for more information.

The KSAT is developing **ARINC Project Paper 792A: Multi-Modem Ku/Ka Satcom System with Fiber Optic Interfaces** to define new satcom system interfaces including wiring between the modem LRU/s located inside the pressurized cabin to the Outside Antenna Equipment (OAE) on the surface of the airplane's fuselage. Use of this technology requires digital interfaces and frequency controls that extend beyond the capability of existing coaxial copper interfaces. See the [KSAT Webpage](#) for more information.

cc

CSS, KSAT, SAI Subcommittees

Attachment 1

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project APIM 21-006

Fiber Optics Active Device Interchangeability Guidance

1.1 Name of Originator and/or Organization

Tom Jaeger, American Airlines
Robert Nye, The Boeing Company

2.0 Subcommittee Assignment and Project Support

2.1 Suggested AEEC Group and Chairman

AEEC Fiber Optics Subcommittee (FOS)

2.2 Support for the activity (as verified)

Airlines: American Airlines
Airframe Manufacturers: Airbus, Boeing
Suppliers: Cotsworks, Glenair, Smiths Interconnect, Radiall
Others:

2.3 Commitment for Drafting and Meeting Participation (as verified)

Airlines: American Airlines
Airframe Manufacturers: Airbus, Boeing
Suppliers: Cotsworks, Glenair, Smiths Interconnect, Radiall
Others:

2.4 Recommended Coordination with other groups

SAE AS-3 (Photonic) John Mazurowski

3.0 Project Scope (why and when standard is needed)

3.1 Description

As new aircraft are produced, and older aircraft retrofitted, the use of Fiber Optics (FO) has increased in avionics systems, as well as cabin IFES. While the ARINC FO Standards (ARINC 801-807, 845, 846) have provided guidance on interconnectability for connectors, cables, etc., the standardization of the optoelectronics (transceivers) is also deserving of closer attention.

In order to maintain interoperability of fiber optic data transmission between different vendors and OEMs agreement needs to be reached on frequency usage and transmission standards. If these characteristics are not standardized the Operators will have to source multiple LRUs for their fleets due to network incompatibilities for units which could otherwise be identical.

3.2 Planned usage of the envisioned specification

Note: New airplane programs must be confirmed by manufacturer prior to completing this section.

New aircraft developments planned to use this specification yes no

 Airbus: Modernized systems with FO

 Boeing: Modernized systems with FO

 Other: Modernized systems with FO

Modification/retrofit requirement yes no

 Specify: Modernized/updated systems with FO

Needed for airframe manufacturer or airline project yes no

 Specify: (aircraft & date)

Mandate/regulatory requirement yes no

 Program and date: (program & date)

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

 Specify (e.g., ARINC 429)

When is the ARINC standard required? 2023

What is driving this date? Logical progression of standard preparation

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

1. Identify state of optoelectronics in avionics/airborne systems
2. Identify gaps in existing ARINC Standards for proposed guidance
3. Drafting of consensus-based material for inclusion in ARINC Standards
4. Determine if a new ARINC Standard is required (not likely)
5. Circulate and review draft supplement material
 - a. **Supplement 5 to ARINC Report 803: Fiber Optic Design Guidelines**
 - b. **Supplement 3 to ARINC Report 804: Fiber Optic Active Device Specification**

3.4 Security Scope

Is Cyber Security Impacted (if YES, check box(es) below) yes no

 Aircraft Control Domain yes no

 Airline Information Services Domain yes no

 PAX Information and Entertainment Systems yes no

 Other: yes no

(Discuss the level of cyber security guidance needed, the specific topics to be covered, and whether these topics are covered elsewhere by reference, e.g., ICAO Documents, RTCA/EUROCAE Standards, existing ARINC Standards, or if they need to be defined by a new or revised ARINC Standard.)

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: _____

Product offered by more than one supplier yes no

Identify: (company name)

4.2 Specific project benefits (Describe overall project benefits.)

4.2.1 Benefits for Airlines

Improve interchangeability between airframe and avionics suppliers

Reduce communication errors caused by optoelectronics

4.2.2 Benefits for Airframe Manufacturers

Same as Section 4.2.1

4.2.3 Benefits for Avionics Equipment Suppliers

Same as Section 4.2.1

5.0 Documents to be Produced and Date of Expected Result

Supplement 5 to ARINC Report 803

Supplement 3 to ARINC Report 804

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
<i>Supp 5 to ARINC 803</i>	<i>15</i>	<i>15</i>	<i>11/2021</i>	<i>05/2023</i>
<i>Supp 3 to ARINC 804</i>	<i>15</i>	<i>15</i>	<i>11/2021</i>	<i>05/2023</i>

The number of meetings/days noted are ARINC online meetings.

6.0

Comments

The FOS is preparing fiber optic standards to support Cabin and Ku/Ka Satcom APIMs:

18-001A – Cabin Systems (CSS) work on 5th Gen Seat Networks

20-001 – Ku/Ka Band Satellite (KSAT) work on ARINC 792A

The FOS will also coordinate with subcommittees utilizing the Ethernet interface per ARINC Specification 664 Part 2 and Part 7.

6.1

Expiration Date for the APIM

October 2023

***Completed forms should be submitted to Paul Prisaznuk (pjp@sae-itc.org)
AEEC Executive Secretary & Program Director***