AEEC

Together "We Set the Standard."

To	FOS	**Date**	July 13, 2021
From	Scott L. Smith smitty@sae-itc.org tel +1 443-221-8372	**Reference**	21-999/SMA-231 lth

Subject **Meeting Announcement**
Fiber Optics Subcommittee (FOS)

Chairman Robert Nye, The Boeing Company

Host ARINC Industry Activities

When **July 21, 2021**

Meeting Times	US Pacific	US Eastern	Central European
Start	0800	1100	1700
Adjourn	1000	1300	1900

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 **July 16, 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

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.

New Business

The FOS will review a draft APIM on the airlines' desire for interchangeability of airborne equipment that require equivalency in the optoelectronics to promote optimal operation, as well as ease of maintainability.

cc CSS, KSAT, SAI Subcommittees

Attachment 1

Attachment 1

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project APIM #: 21-XXX

Fiber Optics 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: Boeing

Suppliers:

Others:

2.3 Commitment for Drafting and Meeting Participation (as verified)

Airlines: American Airlines

Airframe Manufacturers: Boeing

Suppliers:

Others:

2.4 Recommended Coordination with other groups

None foreseen

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. **ARINC Report 803:** *Fiber Optic Design Guidelines*
    b. **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 5 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
Supp 5 to ARINC 803	*15*	*15*	*11/2021*	*05/2023*
Supp 5 to ARINC 803	*15*	*15*	*11/2021*	*05/2023*

The # of meetings/days noted are virtual meetings.

6.0 Comments

The FOS is working on 2 APIMs:

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

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

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