ARINC IA Project Initiation/Modification (APIM)

1.0 Name of Proposed Project APIM: 14-007

ARINC Project Paper 792: *Small Form Factor Ku/Ka-band Satcom*

2.0 Subcommittee Assignment and Project Support

2.1 Identify AEEC Group

KSAT Subcommittee

2.2 Support for the activity

Airlines: Delta, Norwegian Air Shuttle

Airframe Manufacturers: Boeing, Bombardier

Suppliers: EMTEC, Kymeta, GoGo, ThinKom, Nordam, Comdev, Inmarsat, Carlisle, Hughes, W. L. Gore, Armstrong, L-3, ViaSat

Others:

2.3 Commitment for resources

Airlines: Delta, Norwegian Air Shuttle

Airframe Manufacturers: Boeing, Bombardier

Suppliers: EMTEC, Kymeta, GoGo, ThinKom, Nordam, Comdev, Inmarsat, Carlisle, Hughes, W. L. Gore, Armstrong, L-3, ViaSat

Others:

2.4 Chairman:

Chairman: Peter Lemme, Totaport

2.5 Recommended Coordination with other groups

AGCS, CSS, NIS (Network Security)

3.0 Project Scope

ARINC Characteristic 791 defined Ku-Band and Ka-Band satellite communication (satcom) equipment, installation and necessary interfaces to aircraft systems. Airlines, aircraft manufacturers, avionics suppliers, IFE suppliers, cabin communication suppliers and service providers with an interest in providing this equipment and services have participated in these activities.

Technology developments are emerging, with near- to mid-term availability, that have the potential to reduce airline costs through weight reduction, antenna profile reduction (i.e., drag reduction), and system simplification. Potentially, these improvements would be realized while maintaining, or even improving, system performance by accommodating much larger apertures.

ARINC 791 Part 1 antenna installation is based on an agreed set of fitting locations and bulkhead penetrations. An abstracted antenna installation will be developed that offers a simplified antenna mounting standard independent from the underlying airplane fittings or penetrations. This modular approach permits each airplane installation to be developed uniquely while presenting a common mounting base for the antenna aperture and its components.

3.1 Description

This effort will define Ku-band and Ka-band systems in a modular manner that take advantage of technology improvements to reduce cost, weight, and complexity while enhancing performance of connectivity systems. This definition will be included in a new ARINC Characteristic.

3.2 Planned usage of the envisioned specification

New aircraft developments planned to use this specification yes ☒ no ❑

Boeing: 777X, 737MAX

Modification/retrofit requirement yes ☒ no ❑

Airbus: A318-321, A330, A340, A350, A380

Boeing: 737, 747, 767, 777, 787

Needed for airframe manufacturer or airline project yes ☒ no ❑

Boeing: 777X, 737MAX

Support to continued airline connectivity projects

Mandate/regulatory requirement yes ❑ no ☒

Program and date:

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

When is the ARINC standard required? April 2017

What is driving this date? Continued implementation in forward fit and retrofit applications.

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

- Modular, abstracted antenna mounting standard with independence from fittings, penetrations, or radome.
- Flat panel antennas
- Receive-only antennas
- Integrated position and attitude sensors
- Multiple apertures and dissimilar radio integration
- Alternative configurations
- System simplification
- Compatibility with 791 Part 1 (e.g., structural provisions, wiring)

4.0 Benefits

The goal is to reduce satcom equipment design and installation costs and to reduce system acquisition costs for airline customers while accommodating larger apertures with enhanced performance and lower operational costs.

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: Leverage ARINC 791 Part 2 protocols

Product offered by more than one supplier yes ☒ no ❑

Identify: _____

4.2 Specific project benefits

Simplify and lower the cost of installation and interconnection of these Ku-band and Ka-band satellite communication systems in new and retrofit airplanes while accommodating larger apertures in a modular manner.

4.3 Benefits for Airlines

Lowers acquisition cost of these systems for new and retrofit airplanes. Reduces antenna profile, lowers weight, and simplifies system configurations. Increases overall communications performance and lowers operational costs.

4.4 Benefits for Airframe Manufacturers

Simplifies the design for installation of these systems, lowering the cost of installation and interconnection which ultimately lowers the acquisition cost. Airplane operational performance benefits from low profile antennas.

Accommodate airframe manufacturer preferences by abstracting the antenna installation from the underlying fittings or penetrations.

4.5 Benefits for Avionics Equipment Suppliers

Avionics suppliers are able to design standard equipment applicable to multiple airplane manufacturers and models decreasing their design effort and cost.

5.0 Documents to be Produced and Date of Expected Result

ARINC Project Paper 792 will be produced to define next-generation Ku/Ka-band satcom systems. It is expected that a mature document will be submitted for adoption consideration at the 2017 AEEC General Session.

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
ARINC Project Paper 792	6	18*	Jan 2015	Apr 2017

*In addition, monthly web conferences will be scheduled.

6.0 Comments

None

6.1 Expiration Date for this APIM

April 2017