

AEEC Project Initiation/Modification (APIM)

- 1.0 Name of Proposed Project** **APIM 07-008C**
Standardization of Ku-Band and-Ka Band Broadband Satellite System
Installation and Equipment Interfaces.
- 2.0 Subcommittee Assignment and Project Support**
The effort would define Ku-Band and Ka-Band SatCom equipment, installation and necessary interfaces to cabin equipment. Airlines, aircraft manufacturers, avionics suppliers, IFE suppliers, cabin communication suppliers and service providers with an interest in providing this equipment and services are invited to participate in these activities.
It is recommended that the scope of this activity be expanded to include Supplement 1 to ARINC Characteristic 791, Part 1. The purpose of this supplement is to incorporate clarifications and corrections that have been identified by industry while implementing the standard. Clarification and corrections will include cabling and connectors, Ethernet domain names, equipment form factor drawings, parameters for antenna control, and lightning protection.
- 2.1 Identify AEEC Group**
Ku/Ka Band Satellite Subcommittee
- 2.2 Support for the activity**
Airlines: American, Delta, Lufthansa
Airframe Manufacturers: Boeing Commercial Airplanes, Airbus
Suppliers: Panasonic Avionics, Thales, Gogo, ITS Electronics, EMS, TECOM, Rockwell Collins, Cobham, Com Dev, CMC Electronics, Intelsat, Inmarsat, Qest, iJet Onboard, Viasat, Wavestream
Others:
- 2.3 Commitment for resources (Identify each company by name)**
Airlines: Delta, Lufthansa
Airframe Manufacturers: Boeing Commercial Airplanes, Airbus
Suppliers: Gogo, ITS Electronics, Panasonic Avionics, Thales, EMS, TECOM, Rockwell Collins, Cobham. Com Dev, CMC Electronics, Inmarsat, Intelsat, Qest, iJet Onboard, Viasat, Wavestream
Others:
- 2.4 Chairman: (Recommended name of Chairman)**
Peter Lemme
- 2.5 Recommended Coordination with other groups**
Air/Ground Communications Systems (AGCS) Subcommittee
AGIE/MAGIC Subcommittee
Cabin Systems Subcommittee (CSS)
Network Infrastructure and Security (NIS) Subcommittee
Systems Architecture and Interfaces (SAI) Subcommittee

3.0 Project Scope (why and when standard is needed)

The popularity of the ConneXion by Boeing™ system has shown that broadband passenger connectivity in air is a viable service offering.

The airlines have shown continued interest and need for these services in the absence of the ConneXion by Boeing™ system and multiple suppliers are beginning to offer Ku-band and Ka-band satellite off-board broadband systems e.g., Panasonic, Aircell, Row 44. Their systems all differ in hardware installation and electrical/electronic interface requirements.

In addition, in August 2010, Inmarsat announced that it had ordered 3 Ka Band geostationary mobile satellites from Boeing and that these would be launched in 2013 and 2014, thus providing a worldwide (except polar) Ka Band mobile satellite service. Consequently, in September 2010 the Ku Band TWG recommended that the scope of the group be expanded to also include Ka Band.

To simplify and lower the cost of installation and interconnection of these Ku Band and Ka Band satellite systems in new and retrofit airplanes, it is recommended that standards be developed for these systems airframe hardware installation and electrical/electronic integration with the airplane systems. It is expected that the aircraft provisions would be the same for Ku and Ka Band systems.

3.1 Description

This project would standardize the broadband satellite equipment hardware and electrical/electronic installation interfaces onto all commercial airplanes.

3.2 Planned usage of the envisioned specification

New aircraft developments planned to use this specification yes no

 Airbus: A350

 Boeing: 747-8

Modification/retrofit requirement yes no

 Airbus: A318-321, A330, A340, A380

 Boeing: 737, 747, 767, 777

Needed for airframe manufacturer or airline project yes no

 Airbus: A380, A350

 Boeing: 787, 747-8

Mandate/regulatory requirement yes no

 Program and date:

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

 ARINC Project Paper 791

When is the ARINC standard required? October 2012

What is driving this date? Development of the 747-8 and A350

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

 If NO please specify solution: _____

Are Patent(s) involved? yes

 If YES please describe, identify patent holder: _____

3.3 Issues to be worked

- **Definition of System Maintenance and Control Interfaces**
- **Definition of System Network Security**
- **Definition of IF and Non-IF System Interfaces**
- **Definition of Maintenance and Control Interfaces and Protocols**
- **Definition of Ethernet Interfaces and Protocols**
- **Definition of System Interfaces with ARINC 429 and ARINC 629 Buses**
- **Incorporate clarifications and corrections that have been identified by users and operators while implementing ARINC Characteristic 791 Part 1**

4.0 Benefits

Lower airplane design and installation costs, lower system design cost for multiple airplanes, and also lower airline acquisition 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: _____

Product offered by more than one supplier yes no

Identify: Panasonic Avionics, AirCell, Row 44, Inmarsat

4.2 Specific project benefits

Simplify and lower the cost of installation and interconnection of these Ku band and Ka band satellite systems in new and retrofit airplanes

4.3 Benefits for Airlines

Lowers acquisition cost of these systems for new and retrofit airplanes. Standardized equipment will also lower maintenance and spares costs across the airlines multiple airplane models.

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.

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

Supplement 1 to ARINC Project Paper 791, Part 1, *Physical Installation and Aircraft Interfaces*, October **2012**

ARINC Project Paper 791, Part 2, *Electrical Interfaces*, October 2012

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 791, Part 1, Supplement 1	2	6**	1/2011	10/2012
ARINC 791, Part 2	4	8 12	11/2010	10/2012

*In addition, monthly web conferences will be scheduled.

**** The work will be accomplished in the expanded Subcommittee schedule shown as 12 meeting days.**

6.0 Comments

None

For IA Staff use only:	
Date Received: 30 Sept 2010	IA Staff Assigned: T. Munns
Potential impact: New aircraft/system and retrofit	
Forwarded to: AEEC	Date Forwarded: 30Sept 2010
Resolution: Approved	Date of Resolution: 06Oct 2010
Assigned to Subcommittee: Ku/Ka Band Subcommittee	