ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project

APIM 17-010A

Supplement 19 to ARINC Specification 429: Digital Information Transfer System (DITS) Part 1 and,
Supplement 17 to ARINC Specification 429: Digital Information Transfer System (DITS) Part 2, Discrete Word Data Standards

1.1 Name of Originator and/or Organization

AEEC Executive Secretary

2.0 Subcommittee Assignment and Project Support

2.1 Suggested AEEC Group and Chairman

Group: SAI Subcommittee - Staff activity using email and internet coordination

2.2 Support for the activity

Airlines: (AEEC ExCom Approved – October 18, 2018)
Airframe Manufacturers: TBD
Suppliers: TBD
Others: TBD

2.3 Commitment for Drafting and Meeting Participation

Airlines: TBD
Airframe Manufacturers: TBD
Suppliers: TBD
Others: TBD

2.4 Recommended Coordination with other groups

AeroMACS, AGCS, DLK, GNSS, others as determined by new ARINC 429 labels

3.0 Project Scope

3.1 Description

ARINC 429 is the most widely used data transfer medium in aviation. The first version of ARINC 429 was released in 1977 as the so-called “digital aircraft” emerged in the front lines of service. ARINC 429 is a unidirectional bus; two bus pairs comprise a typical ARINC 429 data bus. The bus is viewed to be highly-reliable and relatively easy to implement in all types of avionics equipment.

ARINC receives a steady flow of requests to add new ARINC 429 labels and the associated word formats. These requests typically come from airframe and avionics suppliers. They tend to be related to new airplane development
programs and retrofit programs. These changes are considered normal expansion of the standard. These changes do not change the fundamental protocol, the clocking, or any physical layer characteristic related to ARINC 429 interoperability.

3.2 Planned usage of the envisioned specification

New aircraft developments planned to use this specification

Specify: Future aircraft

Modification/retrofit requirement

Specify: future retrofit

Needed for airframe manufacturer or airline project

Specify: Airbus, Boeing and other airplane programs

Mandate/regulatory requirement

Program and date: No mandate

Is the activity defining/changing an infrastructure standard?

When is the ARINC Standard required? 2018

What is driving this date? The desire for clear communication with industry

Are 18 months (min) available for standardization work?

If NO, please specify solution: Not applicable

Are Patent(s) involved?

If YES please describe, identify patent holder: Not applicable

3.3 Issues to be worked

Update of ARINC Specification 429 is an AEEC staff activity:

- Collect and organize industry inputs from ARINC website and email
- Consider Global Aircraft Tracking (GAT) inputs as well as inputs from related ARINC Standards
- Include GAT Discrete Word Definitions for ADT Trigger (Label 202) and Distress Transmitter Status (Label 201)
- Survey ARINC Standards produced since the last update to Part 2 (2004) for Discrete Words that should be captured in ARINC 429
- Determine the appropriateness of requests.
  - Avoid ARINC 429 label duplication
  - Check word formats, bit assignments, LSBs, MSBs, etc. for accuracy
  - Cross-check with ARINC 700-series documents
- Arrange new material in the existing ARINC 429 document structure
- Post drafts to ARINC website and coordinate with industry
- Circulate final draft for comment in advance of the AEEC General Session and solicit comments
 Resolve any final comments over web conference and/or email coordination
 No in-person meetings necessary

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: Not applicable
Is this a software interface and protocol standard? yes ☒ no ☐
Specify: ARINC 429
Product offered by more than one supplier yes ☒ no ☐
Identify: TBD

4.2 Specific project benefits (Describe overall project benefits.)

4.2.1 Benefits for Airlines
The benefits to airlines are visible in the form of a standardized avionics data bus interface. This benefit is evident in new aircraft development and in retrofit.

4.2.2 Benefits for Airframe Manufacturers
Airframe manufacturers’ benefit from standardized interwiring in the production of aircraft.

4.2.3 Benefits for Avionics Equipment Suppliers
The benefit to avionics equipment suppliers is to re-use a standardized bus interface on a multitude of avionics products and systems.

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.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Mtgs</th>
<th>Mtg-Days (Total)</th>
<th>Expected Start Date</th>
<th>Expected Completion Date</th>
</tr>
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<tbody>
<tr>
<td>Supp 19 to ARINC 429 Part 1</td>
<td>0</td>
<td>0</td>
<td>Oct 2017</td>
<td>April 2018</td>
</tr>
<tr>
<td>Supp 17 to ARINC 429 Part 2</td>
<td>0</td>
<td>0</td>
<td>Oct 2018</td>
<td>Apr 2019</td>
</tr>
</tbody>
</table>

6.0 Comments
None

6.1 Expiration Date for the APIM
October 2019

*Completed forms should be submitted to the AEIC Executive Secretary and Program Director, Paul J. Prisaznuk (pjp@sae-itc.org)*