



EUROCAE Reference No. 292/23 WG92-86
 RTCA Paper No. 179-23/SC214-152.

St Denis & Washington, July 10, 2023

**Joint EUROCAE WG-92 “VDL Mode 2” / RTCA SC-214 SG-3 / AEEC DLK
 “Standards for Air Traffic Data Communications Services” Meeting Minutes**

DATE: June 27-30, 2023
TIME: Tuesday through Friday (from 0900 to 1700)
 The plenary session is on Thursday, 1330-1700.

PLACE: EUROCAE Headquarters
 9-23 rue Paul Lafargue
 “Le Triangle” building
 93200 Saint-Denis,
 France

CONTACTS:

- Brandi Teel, RTCA Program Director, bteel@rtca.org, +1 202-330-0671
- Alexander Engel, EUROCAE Technical Programme Manager,
alexander.engel@eurocae.net, +32 (0)2 729 33 55
- Claire Robinson, SC-214 Chair, CRobinson@UASC.com, +1 773-590-1231
- Dongsong Zeng, SC-214 SG-3 Secretary, dzeng@mitre.org, +1 703-983-6470
- Thomas Mustach, SC-214 GAR, Thomas.Mustach@faa.gov, +1 206-231-3238
- Stephane Pelleschi, WG-92 Chair, stephane.pelleschi@collins.com, +33 5 61 41 88 66
- Robert Holcomb, AEEC DLK Systems Subcommittee Co-Chair,
robert.holcomb@aa.com, +1 918-292-4106
- Joseph Westbrook, AEEC DLK Systems Subcommittee Co-Chair,
jdwestbrook@fedex.com, +1 901-224-4682
- José Godoy, AEEC DLK Systems Subcommittee Secretary, jose.godoy@sae-itc.org, +1
 443-534-8925)

PARTICIPANTS

Name	Company
ROBINSON, Claire	SC-214 Chair, UNIVERSAL AVIONICS

ZENG, Dongsong	SC-214 SG-3 Secretary, THE MITRE CORPORATION
MUSTACH, Thomas	SC-214 GAR, THE FAA
PELLESCHI, Stephane	WG-92 Chair, COLLINS AEROSPACE
GODOY, José	AEEC DLK Systems SC Secretary, SAE ITC / ARINC IA
TEEL, Brandi	Program Manager, RTCA
WATSON, Mark	Technical Programme Manager, EUROCAE
ABID, Ramsey	COLLINS AEROSPACE
ANDREGG, Darrell	COLLINS AEROSPACE
AYARI, Rami	THE BOEING COMPANY
BLOMME, Sébastien	AIRBUS
BONECKER, Craig	AIR LINE PILOTS ASSOCIATION
CAGIDEMETRIO, Anna	EUROCONTROL
DLOUHY, Ron	COLLINS AEROSPACE
EMBERGER, Luc	AIRBUS
FERNANDEZ PINAS, David	ESA
GARDE, Jason	HONEYWELL
GORMAN, Edward	AVIONICA, LLC
GRAEFE, Jonathan	COLLINS AEROSPACE CAS (The CSP)
HOPPENBROUWER, Jeroen	AVIONICA, LLC
INAHARA, Noah	THE BOEING COMPANY
JASIUKAJC, Zbigniew	SITAONAIR
KYNARD, Richard	GARMIN
LEGER, Steve	COLLINS AEROSPACE
LEFEBVRE, Corinne	SITA
LEONARDON, Laurent	COLLINS AEROSPACE
MATCHETT, John	L3HARRIS TECHNOLOGIES, INC.
MCMENAMY, Vincent	THE FAA
MICHELL, James	COLLINS AEROSPACE
MCGUFFIN, Tom	THE BOEING COMPANY
PRUVOT, Stephane	SITA
RODRIGUEZ, Langué	HONEYWELL
STEVENSON, Mark	COLLINS AEROSPACE
VISEE, Christophe	EUROCONTROL
WARNS, Timo	AIRBUS
WEST, Stewart	HONEYWELL
WESTBROOK, Joseph	FedEx
WITT, Nick	EUROCONTROL
WOLLERT, Matthew	L3HARRIS TECHNOLOGIES, INC.
YOUNG, Chris	COLLINS AEROSPACE

1. Introductions, Administrative Remarks and Agenda Review

José Godoy announced ARINC IA's Intellectual Property (IP) policies and membership statements. All participants agreed on the statements and no issues were raised.

After a round-table introduction, Claire Robinson, Stephane Pelleschi, and José Godoy welcomed the participants and started the meeting.

The group reviewed and approved the meeting agenda.

2. Review of Previous Meeting Report

The minutes of the last group meeting were uploaded to both RTCA and EUROCAE workspace but due to lack of time, the group was unable to review and approve them during the meeting. The group is hoping to have a telecon in the future to discuss and approve the minutes.

3. VDL2 Radio Receiver Interference Resolution

Honeywell and Collins Aerospace both gave their opinions on the research paper written by Zbigniew Jasiukajc from SITAONAIR, titled "Comparison of the impact of different channel busy detection algorithms on VDL Mode 2 radio operation". The group reviewed the comments and provided their feedback. The group agreed that VLD2 interference is a major issue, however, there is still quite a bit of concern that changing channel busy detection logic could adversely impact the network.

Given those concerns, the group agreed that a comprehensive validation exercise is required for any proposed change. The necessary steps were discussed and agreed to as:

- Today, performance analysis looks at packet loss and message delays
 - Need to quantify the % of current traffic events that would be impacted by potential changes
- Complete the tables discussed and add additional scenarios
- Assess the impact of mixed fleet environment
 - This may require estimating the % of radios that implement a change
- Assessment of potential for impact on Link Budget, if any

To complete this evaluation, the leadership agreed to setup recurring meetings to discuss the topic. By the September 2023 meeting, the table should be completed and a single proposal selected for additional validation work.

Dongsong Zeng, MITRE, presented an information paper titled "Thoughts on Demodulation Based Channel Sensing Approaches for VDL2 Interference Mitigation," which suggested taking into account two considerations when evaluating demodulation-based channel idle-to-busy detection methods:

1. Detection Delay Impact of Demodulation-based Channel Sensing Method, and
2. Collision Capture Effect.

The group discussed the information paper and would like to further consider the information provided.

4. VDL2 Standard Revision Update

Requirements Tagging

RTCA and EUROCAE MASPS templates require using requirement tags to reference each requirement for new documents. Legacy documents, such as the VDLM2 MASPS and MOPS, are not required to update to use requirement tags. During the February meeting, the group agreed to a proposal for adding requirement tags to the new sections of the MASPS/MOPS. However, the PMC did not approve this proposal. Claire Robinson (Universal) presented three PMC-approved options to the group for requirement tags:

1. Use a formatting style in MS WORD to number the sentences. This method is used by SC-223, SC-228 and others
2. Use a numbering scheme directly with the shall statement. This method has been used by SC-217, SC-231 and others
3. Remove the text from the TOR that says they will number shalls in the next revision of the document. EUROCAE's TOR does not address numbering shalls, and RTCA only requires committees to number shalls for new documents

After some discussion, the group agreed on option 3, requiring an SC-214 ToR update.

MASPS Update

Tom McGuffin, Boeing, presented the following information papers regarding potential MASPS update:

- MASPS 3.4-3.11 rev E,
- MASPS Section 3 in regard to ARINC618 AOA, and
- VDL2 Part MASPS draft.

Tom McGuffin, Boeing, presented slides titled "MASPS AOA Concerns," which discussed the following AOA concerns:

- Future changes to ARINC 618 AOA requirements will in affect be MASPS changes since we are referencing ARINC 618
 - The group discussed which portions of the ARINC 618 AOA requirements should be captured in the MASPS. The group agreed to a general approach to include AOA content that is unique to VDLM2 and to omit the ACARS protocol portions that are common to POA.
- Hidden factory (i.e., deliberate deviations from ARINC618 and MASPS are found in some avionics and ground implementations)
- Style issues: negative requirements, multiple shalls in one sentence
 - The group agreed that sentences should only contain one shall
- Legacy text: ATN only
- Many MASPS requirements ("shalls") in section 3.2.x are not listed in DO-281, therefore no MOPS test.
 - The group agreed that all "shalls" need a corresponding MOPS test. "Shalls" without tests should be changed or a test needs to be added.
- Testing by code inspection vs MOPS test?
- Multiblock uplink timers: discrepancy between 618 and DSP implementations with regard to GT2, GT3 and VAT4
 - The group agreed that an update should be made but still needs to select a specification to update.
- Nested uplinks and downlinks

MOPS Discussion

Thomas Mustach, FAA, presented slides titled “VDL M2 MOPS Verification Test,” in which he suggested that Airspace Simulation Tester (AST) steps should be added in order to simulate what could be encountered in an Operational Airspace within the MOPS, thus making the testing of the Equipment Under Test (EUT) more comprehensive.

The group agreed that the MOPS should be comprehensive, but there were many questions about how to define the Airspace Simulation Tester to achieve this goal.

VDL2 Security

Dongsong Zeng, MITRE, presented slides titled “The Dilemma of Fail Safe and Fail Secure for Safety Systems,” which highlighted the fact that security measures can both reduce the missed detection rate, yet also increase the false alarm rate in a safety system. Dongsong recommended that if the false alarm rate remains too high to meet the safety availability requirements, further steps must be taken to mitigate the risk, including re-evaluating the fail safe approach recommended in DO-356A/DO-393.

Timo Warns of Airbus raised the question of whether the integrity requirements should take precedence over the availability requirements, due to the more serious nature of the integrity hazard. Dongsong Zeng, however, maintained that both the integrity and availability requirements should be equally regarded in order to ensure the VDL2 subnetwork meets both criteria.

Stephane Pelleschi, Collins Aerospace, gave a presentation on “A823 vs. DTLS,” in which the overheads of A823 and DTLS session establishments were compared side by side. While both have similar overheads, DTLS may still be a preferable choice due to its cost-effective commercial offerings.

Collins agreed to proceed with DTLS for the IPS prototype efforts.

AEEC Standards

Jeroen Hoppenbrouwers of Avionica presented an information paper titled “Improving the (downlink) throughput of ACARS over Iridium SBD.” In the paper, he suggested a downlink pre-ack method as a means to improve the network throughput of ACARS running over Iridium SBD. The downlink pre-ack method will only require an update of the SDU software.

5. Resolution of FAA Data Comm and European DLS Operational Issues

Tom McGuffin from Boeing presented a document titled "More Ack and Toss Scenarios", which outlines potential situations that could lead to "Ack and Toss" and provides proposed solutions to address them. After reviewing the paper, the group gave their feedback.

6. TOR Update Discussion

The group discussed two ToR updates:

1. Removing the statement about adding requirement tags (SC-214 only).
2. Changing the publication date of DO-224E/ED-YYY and DO-281D/ED-92D from December 2023 to December 2024 (both SC-214 and WG-92).

Claire Robinson, Universal, made a motion that the completion date of both MOPS and MASPS next revision is moved from December 2023 to December 2024. Stephane Pelleschi and Thomas Mustach seconded the motion. The motion passed without objection. Claire Robinson will bring the resulting SC-214 TOR rev 19 to the upcoming PMC for approval in September. Stephane Pelleschi plans to update WG-92 TOR accordingly and get it approved by the EUROCAE Tech Council in the near future.

7. Update Action Items

José Godoy, ARINC IA / SAE ITC, reviewed and updated the action item list with the group, resulting in a revised version of action item list: VDL Standards Group - Action Items List _ 1July2023.xlsx.

8. Schedule and Future Meetings

- Next Joint SC-214 SG3/WG-92/DLK Working Group meeting, September 28-29, 2023 in Brussels, Belgium hosted by EUROCONTROL.

9. Other Business

Nick Witt of EUROCONTROL proposed draft amendments to Doc 9880 in order to improve the handling of 8208 resets. His proposal was documented in an information paper titled “Resolution of Interoperability Issues in Handling of VDL 8208 Reset Events.” The group reviewed the proposal and recommended taking the proposal to ICAO WG-M for Doc9880 revision.

10. Adjourn

The meeting adjourned around 12:00 pm local time, June 27, 2023.