



RTCA Paper No. 093-24/SC222-123
EUROCAE EUR. 140-24 WG82-127

Washington, 17th April 2024
St Denis, 17th April 2024

**Minutes of
EUROCAE WORKING GROUP 82 (WG-82) (Meeting #66)
“New Air-Ground Data Link Technologies”
and
RTCA SPECIAL COMMITTEE 222 (SC-222) (Meeting #56)
“Aeronautical Mobile Satellite (Route) Services (AMS(R)S)**

Date	17th April 2024
Place	Virtual Meeting
Venue	RTCA – Webex
Hosted by	RTCA


Participants:

Name	Company
Gary Colledge	Viasat
Hiroshi Okochi	Jransa
Karan Hofmann	RTCA, Inc.
Radek Zaruba	Honeywell
Ravi Jain	FAA
Mike Hooper	Iridium
Adam Sarhage	Garmin
Mark Watson	EUROCAE
Marius du Plessis	Thales
Ryan Mustoe	Boeing
Darrell Andregg	Collins
Shawn Solomon	Collins
Andrew Ives	Viasat
Bernhard Heindl	Frequentis
Ben Huang	Iridium
Spencer Fry	Garmin
Shawn Mason	Collins
Johan Gericke	Thales
Billy Ogunsola	UK CAA

DOCUMENTS

Agenda Item	Title	File name

PRESENTATIONS

Agenda Item	Title	File name
8b	Iridium SC-222 Status, Mike Hooper – Chair RTCA SC-222 April 17, 2024	 SC-222 & WG-82 Iridium Update 0417

All documents and presentations will be uploaded on the according RTCA and EUROCAE repository (in the folder of September Plenary meeting).

Minutes

1) Welcome, Introductions, Administrative Remarks by Leadership

Radek Zaruba welcomed the group and participants briefly introduced themselves.

2) RTCA/EUROCAE Opening Material

Karan Hoffman and Mark Watson presented the RTCA and EUROCAE opening material.

3) APPROVAL OF THE AGENDA

Radek Zaruba introduced the proposed agenda of the RTCA SC-222/ EUROCAE WG-82 joint plenary meeting. The final agreed agenda looks as follows:

AGENDA

Joint SC-222 / WG-82 Plenary

1. Welcome, Introductions, Administrative Remarks by Leadership
2. RTCA/EUROCAE Opening Material
3. Review Agenda
4. Review Minutes from previous meeting and Actions
5. **Review MOPS updates**
6. **Review MASPS updates**
7. **Remaining work and schedule towards FRAC/OC and publication**
8. Any Other Business
 - a. LDACS status and plans – address this item first (right after agenda review) to allow LDACS experts to drop off and not stay for the SATCOM topics.
 - b. Iridium status – to be discussed after LDACS.
 - c. TSO updates
 - d. Hyperconnected ATM
9. Review Actions from this meeting
10. Set Future Meetings
11. Adjourn

4) Review Minutes and Actions

The minutes of the last meeting have been reviewed and the action item list has been updated accordingly. The result is summarized at the end of the present minutes.

The minutes from the previous plenary meeting has been approved.

5) Review MOPS updates

Radek Zaruba presented remaining open issues in the MOPS Appendix E (Inmarsat). The work is mostly completed and there are no major open issues remaining to be addressed. But the Inmarsat SDM and MTR documents referred by the MOPS are yet to be formally updated and released to cover the IPS service. This is only expected in Q3 this year. The MOPS can't be released for FRAC/OC before then.

6) Review MASPS updates

Radek Zaruba presented changes introduced in the MASPS. The changes are mostly related to addition of the IPS service but cover also new RCP-130/RSP-160 allocations approved in the DO-350/ED-228 B2 SPR standards. Additional updates on the ground and space segment description are to be provided by Inmarsat/Viasat.

7) Remaining work and schedule towards FRAC/OC and publication

The FRAC/OC process needs to be completed (including resolution of any comments received) at least 45 days before the PMC where the release of the documents should be approved. The FRAC/OC itself takes another 45 days at least plus the time to resolve comments. The last 2024 PMC is on 12th Dec 2024. To be ready for this PMC, the MOPS and MASPS would have to be approved for FRAC/OC release at a plenary in August. However, considering the holiday season a more appropriate target for the plenary would have to be June or early July. Considering the MOPS and MASPS dependency on the release of updated Inmarsat SDM and MTR documents (see agenda item 6) this target seems very difficult to achieve.

RTCA ToR would allow approval at March 2025 PMC without having to revisit the ToR. The March 2025 PMC is thus more realistic target for MOPS and MASPS approval. This would set the **target to approve MOPS and MASPS for FRAC/OC release at a plenary in October/November 2024.**

The group agreed to still hold a plenary in June to check the status of the documents and confirm the plans.

- Probably week of 17th June, but not Wednesday (US holiday) (but conflicts with OPDLWG).

Action: Radek to Issue a Doodle poll for the next plenary. (Candidates: Week of 17th June except for Wednesday or 1st half of July except for the week around 4th of July.)

MOPS:

Radek and Mike will post pdf version on AerOpus and EUROCAE work space for people to review when it's ready. There will be separate redlined documents with Iridium and Inmarsat changes and the description of the files will clearly explain to reviewers what changes are in which document.

Radek will work with Inmarsat to confirm the release dates for SDM and MTR reference documents.

MASPS

Inmarsat will implement additional changes (ground and space segment description) in Q2 2024. The changes will be aligned with the changes being implemented in AMS(R)S SARPS and Manual under ICAO PT-Sat.

Iridium MASPS changes being prepared by Iridium are rather small, so may combined with Inmarsat changes early on.

Action: Mike and Radek to discuss how to combine the edits in Inmarsat and Iridium parts.

8) Any Other Business

LDACS

LDACS MOPS and MASPS on hold since Q3 last year.

LDACS-transponder compatibility tests performed by Eurocontrol & DLR – preliminary results available. The results will be reflected in the LDACS ICAO SARPS update to be presented to ICAO for approval in June 2024. After this June ICAO meeting WG-82 can discuss how to restart the MOPS and MASPS work, update the ToR and eventually issue new call for participation.

Action: Add LDACS ToR update on the agenda of a WG-82 or a plenary meeting in July-August timeframe.

Iridium update

Iridium working on MOPS updates adding new transceiver classes (8a and 8b) and removing AES10 class. No impact on any other existing classes.

The MOPS update also incorporates previously published Change 1 and 2.

MASPS being updated as well – interference analysis spreadsheets and some other clean up.

Drafts of MOPS and MASPS completed and going through final review at Iridium. Should be available for sharing within the group in ~2 weeks.

TSO

The Inmarsat changes mostly address IPS which by itself is still yet to be deployed.

But Iridium is introducing new classes (8a and 8b) and therefore new TSO would be desirable soon after the MOPS publication to drive adoption. The IPS changes would then be bundled into the same TSO. Iridium would like to see the TSO published few months after the MOPS publication but that timeline may be hard to achieve from FAA perspective.

The TSO will be prepared by FAA only with ad-hoc consultations within this group if/as needed. The TSO would then go to a public review where everybody can comment.

Action: Keep TSO on the agenda for the next meeting. Ravi will present examples of how the group could be involved in TSO work.

Hyperconnected ATM

Radek briefly presented one of the high-level concepts being elaborated under SESAR and Iris programs in Europe. If endorsed, this concept would likely result in new standards for air-ground service (at the level of AMS(R)S or LDACS MOPS and MASPS) and some modifications in the network standards (IPS and eventually ACARS or ATN/OSI). The air-ground standard would likely result in a new task for WG-82. But the full agreement is yet to be reached by the industry.

Action: Radek to provide updates from the EUROCAE symposium and other events where this topic gets discussed.

9) Review actions from this meeting

The actions captured at the meeting were reviewed and agreed.

10) Future Meetings and Next Steps

See agenda item 7.

Action items

RTCA SC-222/EUROCAE WG-82 52th meeting: 28.09.2021

Action#	Content	Responsible	Deadline	Status
A52-02	Inmarsat to provide a presentation on the possible interest in covering UAS C2-link at the next meeting.	Alan Schuster Bruce	Next meeting	Closed
A52-03	Guillaume De Bony De Lavergne (Airbus) to prepare a presentation on the possible impact on MASPS and MOPS of the automated data download for TRFD (Timely Recovery of Flight Data). Discussion at Plenary February 2022: AIRBUS will inform about internal discussion on strategy results when available. April Meeting: Unchanged May/June/July/August/September Meetings: Unchanged April 2023: Alan will check with Airbus if anybody will support RTCA / EUROCAE WG.	Alan Schuster- Bruce	Next meeting	Close

RTCA SC-222/EUROCAE WG-82 55th meeting: 8.02 -09.02.2022

Action#	Content	Responsible	Deadline	Status
A55-01	Present material on MOPS core part items to be updated	Honeywell (Radek Zaruba)	At the next meeting in March 2022	Closed
A55-02	Present details about 3 main items on Inmarsat MOPS (slide 4 on Radek's slide presentation); modifications will be captured in spread sheet for the discussion.	Honeywell (Radek Zaruba)	At next meeting in September 2022	Closed
A55-03	To identify which new material could be relevant for MASPS related to L-band Satcom C2 link. September meeting: Keep it open for next meeting. June 2023: Agreed to have a dedicated discussion on C2 strategy within WG-82/SC-222 and potential impact on MOPS, MASPS and ToR. 5-Oct-2023: Based on the outcomes of the dedicated ad-hoc meeting held on 17-Jul-2023, the group agreed that no C2-related work is to be done by WG-82 / SC-222 at this stage.	Alan Schuster Bruce	Next meeting	Closed
A55-04	Ravi to send an invite on behalf sc-228 for having a discussion on the ISRA topic	Ravi	End of February	Closed

A55-05	To present material on CERTUS MOPS update	Michael Hooper	At the next Meeting in March 2022	Closed
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RTCA SC-222/EUROCAE WG-82 56th meeting: 15.03.2022

Action#	Content	Responsible	Deadline	Status
A56-01	Define UAV service in DO-377 September meeting.: Unchanged. UAV service definition ongoing. Input from SATCOM experts needed. 5-Oct-2023: See A55-03.	Alan Schuster-Bruce/Mike Hooper	Next meeting	closed
A56-02	Coordinate with WG-105 on support of work of SC-228 on UAV C2-link in L-band using SATCOM links. April Meeting: First coordinate between Alan, Mike and Armin about what WG-105 is covering. May/June/July/September meetings: Unchanged August meeting: Wait until Alan is back. 5-Oct-2023: See A55-03.	Armin S.	asap	closed
A56-03	Check whether AMS(R)-S band can be used for C2-link July/September meetings: Unchanged 5-Oct-2023: See A55-03.	Alan Schuster-Bruce	For next meeting	closed
A56-04	Check whether AMS(R)-S band can be used for C2-link July meetings: Unchanged September meeting.: SARPs in final review for C2 link. It clearly defines AMRS frequencies for C2 link. Expect a ICAO paper from Mike to be distributed on this subject. 5-Oct-2023: See A55-03.	Mike Hooper	For next meeting	closed
A56-05	Provide chairman report on decision about UAV C2-link issue to PMC → Update of TOR of SC-222	Alan/Mike	End of April 2022	Closed
A56-06	MOPS: Update Generic Section 1 about wording related to ATN	Radek	Meeting 13 th April	Closed

A56-07	<p>MOPS Core Part: Identify useful material to be kept (section 2 onwards). Especially dependencies to Appendices (D; E, F) have to be identified.</p> <p>July meetings: Unchanged</p> <p>September meeting.: New material on Appendices D and F for next meeting planned to be presented (Mike).</p> <p>June 2023: Agreed to close as there is no appetite to update core part in this update cycle.</p>	Alan Schuster-Bruce/Mike Hooper	Next meeting	Closed
A56-08	Prepare presentation on end-to-end architectures for SATCOM (IP, ATN/IPS etc.)	Radek	Meeting 13 th April	Closed
A56-09	Send presentations provided to Armin for the minutes	Alan/Mike	18 th March	Closed
A56-10	<p>Clarify mix up of ATS traffic (CPDLC), payload/mission traffic and C2-link com on the same satcom equipage level.</p> <p>April Meeting: Current TSO distinguishes between APC and ATS. Further to be considered in the committee.</p> <p>July/September meeting: Unchanged until C2-link issue discussed at next meeting.</p> <p>5-Oct-2023: See A55-03.</p>	Al Malaga	Next meeting	closed
A56-11	<p>Clarify with EUROCAE procedure on Change 1 for MOPS</p> <p>April Meeting: EUROCAE Task Sheets to be updated and require TAC approval.</p>	Karan	asap	Closed

RTCA SC-222/EUROCAE WG-82 57th meeting: 13.04.2022

Action#	Content	Responsible	Deadline	Status
A57-01	Anna Guegan to coordinate on Task Sheet update for MOPS Change 1 to prepare for next TAC	Anna Guegan	21.04.2022	Closed
A57-02	Karan to provide updated working schedule to include MOPS change 1.	Karan Hofmann	14.04.2022	Closed
A57-03	Mike Hooper, to send updated MOPS change 1 material to Alan and Armin	Mike Hooper	14.04.2022	Closed

A57-04	<p>Alan and Armin to upload MOPS change 1 material onto RTCA/EUROCAE workspace.</p> <p>May 2022 Meeting: WG-82: A new document item on change 1 can be added when TAC accepted Change 1 activity described in according Task Sheet. Same for RTCA.</p> <p>May 18th meeting: New folder on EUROCAE side will be created and material being uploaded.</p>	Alan Schuster-Bruce/Armin Schlereth	21.04.2022	Closed
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RTCA SC-222/EUROCAE WG-82 57th bis meeting: 03.05.2022

Action#	Content	Responsible	Deadline	Status
A57-05	Check ETSI Requirements in Table F-18 on lists of Harmonics, Spurious and Noise Reqs for Tx Power limits	Mike Hooper, Johan Gericke, Richard Tapp	Before May Meeting	Closed
A57-06	Change 1 paper Section 6.1: Check -43 dBc and -60 dBc source	Mike Hooper	Before May Meeting	Closed
A57-07	Upload Change 1 paper onto RTCA workspace. Give it a WP number	Mike Hooper	Before May Meeting	Closed
A57-08	<p>MASPS: Annunciation to pilot for PVC voice failure within 90 seconds → Is it end-to-end or only related to the SATCOM system? Some more discussion needed, whether only SSP part or whole end-to-end link. Desirable to keep it within SATCOM system boundary.</p> <p>Some more guidance in MASPS would be desirable. Text like "SATVOICE being available as the sole voice LRCS" required?</p> <p>August meeting: For further discussion wait until Alan is back.</p> <p>September meeting.: Part of the dual SATCOM discussion.</p> <p>April 2023: Currently there is no requirement in ICAO AMS(R)S SARPS draft for voice availability monitoring. Action closed until / unless such requirement arises.</p>	Alan/Mike	At next Meeting	Closed

RTCA SC-222/EUROCAE WG-82 58th bis meeting: 18.05.2022

Action#	Content	Responsible	Deadline	Status
A58-01	Clarify with ETSI about test parameters for in-band blocking characteristics (ETSI 301 473 - Table 22)	Richard Tapp	Until July Meeting	Closed
A58-02	Radek to make a check on the mathematical correctness of the 25 seconds value as part of the proposed RSP160/20 term. July meeting: Proposal was RSP160/15 among several other options presented to SC-214/WG-78. No final decision at SC-214/WG-78 Plenary in June taken. Will be further discussed in SC-214/WG-78.	Radek Zaruba	Before June Meeting of SC-214/WG-82	Closed

RTCA SC-222/EUROCAE WG-82 69th bis meeting: 14and15.09.2022

Action#	Content	Responsible	Deadline	Status
A60-01	Prepare a presentation on outcome of SESAR Solutions 77/107 work	Radek Zaruba	Next meeting	Close
A60-02	Contact AIRBUS on Table E-5 on valid combinations of ACD services provided by an AES. Clarify whether triple stack will be supported by AIRBUS	Radek/Gary Colledge	OBE	Closed
A60-03	Distribute updated MOPS INMARSAT material April 2023: Updated versions provided in September 2022 and March 2023 through AerOpus.	Radek Zaruba	30.09.2022	Closed
A60-04	Comment on distributed updated MOPS INMARSAT material and send it to SC-222 and WG-82 chairs and secretariat.	all	18.11.2022	Closed
A60-05	Send group discussion results related to TAC DP 181 on common MOPS proposal for final review before sending it to Anna Guegan.	Armin	16.09.2022	Closed
A60-06	Review summary of WGs discussion results on TAC DP 181. (TAC proposal to develop new CMU standards.) April 2023: In September 2022 Armin collected feedback from the group and shared it with the TAC.	all	30.09.2022	Closed
A60-07	Invite EASA TAC member for the next meeting April 2023: There may be a joint meeting organized in the future organized by TAC.	Armin	30.09.2022	Closed

A60-08	Radek to prepare short presentation to explain header compression schemes April 2023: Radek Zaruba presented single slide explaining the different types of header compression in SB-S.	Radek	Next meeting	Closed
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RTCA SC-222/EUROCAE WG-82 62nd meeting: 4-April-2023

Action#	Content	Responsible	Deadline	Status
A62-01	Assess impact of the B2 SPR RCP/RSP updates on MASPS and update accordingly.	Radek	EOY 2023	Close
A62-02	Consider removing the “Priority IP” service placeholder from figure E-2 in the MOPS. 5-Oct-2023: Inmarsat OK to remove the service. Action taken over by Radek to assess the impact on MOPS and MASPS and propose revisions.	Radek	EOY 2023	Close
A62-03	Review the MOPS Appendix E changes in the DO-626 working version distributed by Radek.	All	19 th of May 2023	Close

RTCA SC-222/EUROCAE WG-82 working session: 6-June-2023

Action#	Content	Responsible	Deadline	Status
WS-01	Organize dedicated C2 working session to discuss SC-222 / WG-82 strategy towards C2 and potential impact on MOSP, MASPS and ToR. (Propose some dates in July-September timeframe.)	R.Zaruba	End of June	Closed
WS-02	Update MOPS appendix E test procedure sections and address any other remaining “To be done” items in the review sheet. Distribute the redlined MOPS and review sheet to the group for review.	R. Zaruba	End of July	Closed
WS-03	Organize next working session (September / October timeframe) to review MOPS appendix E IPS test procedure changes. (Candidate for FRAC/OC release.) 5-Oct-2023: Superseded by A63-02 below.	R. Zaruba	End of August	Closed

RTCA SC-222 meeting #53 / EUROCAE WG-82 meeting #63: 5-October-2023

Action#	Content	Responsible	Deadline	Status
A63-01	<p>Review WG-82 ToR for the MOPS and MASPS updates and propose changes to reflect:</p> <ol style="list-style-type: none"> 1) Possibly slight delay on Inmarsat IPS updates. (Probably not needed if we don't delay more than 6 months.) 2) No Iridium IPS updates. (Any work content change would require ToR update and approval.) 3) Remove any C2 work. <p>13-Dec 2023 Plenary: EUROCAE ToR don't need to be modified.</p>	Radek Zaruba	EOY 2023	Close
A63-02	<p>Radek to reach out to key participants and agree the date and time for the next working session to review IPS updates in MOPS. (Possible date 9th-November)</p> <p>13-Dec 2023 Plenary: Closed – the meeting was held.</p>	Radek Zaruba	End of October 2023	Closed

RTCA SC-222 meeting #55 / EUROCAE WG-82 meeting #65: 13-December-2023

Action#	Content	Responsible	Deadline	Status
A65-1	<p>Add on the agenda of the future working sessions the consideration on if and how the future TSO updates could reflect the "(Enhanced) Service Sets" supported by the AES.</p>	Radek	Jan-2024	Open
A65-2	<p>Propose WG-82 ToR updates to cover the DO-343F and DO-262H versions planned for March 2026 per SC-222 ToR so that the EUROCAE and RTCA work stays aligned.</p> <p>[17-Apr-2024 plenary] Not to be reflected now – EUROCAE not necessarily looking so far to the future. Will be done once we go for OC with the current updates.</p>	Radek, Mark	Jan 2024	Open
A65-3	<p>Issue a Doodle poll to find a slot for the review working session in the week starting 29th of January (2024).</p> <p>[17-Apr-2024 plenary] Superseded by events.</p>	Radek	EOY 2023	Close

RTCA SC-222 meeting #56 / EUROCAE WG-82 meeting #66: 17-April-2024

Action#	Content	Responsible	Deadline	Status
A66-1	<p>Radek to Issue a Doodle poll for the next plenary. (Candidates: Week of 17th June except for Wednesday or 1st half of July except for the week around 4th of July.)</p>	Radek	Mid May 2024	Open

A66-2	Mike and Radek to discuss how to combine the edits in Inmarsat and Iridium parts.	Mike, Radek	May 2024	Open
A66-3	Add LDACS ToR update on the agenda of a WG-82 or a plenary meeting in July-August timeframe.	Radek	June 2024	Open
A66-4	Keep TSO on the agenda for the next meeting. Ravi will present examples of how the group could be involved in TSO work.	Radek, Ravi	June 2024	Open
A66-5	Radek to provide updates from the EUROCAE symposium and other events where this topic gets discussed.	Radek	June 2024 (next plenary)	Open