



RTCA Paper No. 164-19/SC222-070
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Washington, 3 July 2019
 St Denis, 3 July 2019

**Minutes of EUROCAE
 WORKING GROUP 82 (WG-82) (Meeting #36) and RTCA SPECIAL COMMITTEE 222
 (SC-222) (Meeting #33)
 “New Air-Ground Data Link Technologies”
 related to SATCOM**

Date	Wednesday 12th June and Thursday 13th June 2019
Place	Virtual Meeting
Venue	EUROCAE – Webex
Hosted by	EUROCAE

Participants:

Name	Company	12 th	13 th
Andrew Ives	INMARSAT	X	
Bruce Eckstein	FirebirdSE LLC	X	
Delphine Marsan	INMARSAT	X	
Sachin Chhibber	Ligado	X	X
Maqbool Aliani	Ligado	X	
Rebecca Morrison	RTCA	X	X
Karan Hofmann	RTCA (SC-222 PD)	X	
Anna Guegan	EUROCAE (WG-82 TPM)	X	
Jeroen Hoppenbrouwers	Avionica	X	X
Johan Gericke	COBHAM SATCOM	X	X
Armin Schlereth	DFS (Chair WG-82)	X	X
Richard Tapp	Honeywell	X	X
Radek Zaruba	Honeywell	X	
Adam Sarhage	Garmin	X	X
David Green	Collins Aerospace	X	
Alan Schuster-Bruce	INMARSAT	X	
Gary Colledge	INMARSAT	X	X
Chuck LaBerge	LaBerge Engineering (Chair SC-222)	X	X
Dave Robinson	IRIDIUM	X	X
Luke Sienkiewicz	IRIDIUM	X	X
Darrell Andregg	Collins Aerospace	X	X
Alessia Miglietta	TAS-I, SESAR Pj 14.2.2	X	X
Stefano la Barbera	TAS-I, SESAR Pj 14.2.2		X
Michael Gertsman	Squarepeg	X	X

Vaughn Maiolla	ICAO	X	
Stephen Kraus	Thales	X	
Glenn Torgerson	The Boeing Company	X	
Rafael Apaza	NASA	X	
Steve Van Trees	FAA (SC-222 GAR)	X	X
Ravi Jain	FAA	X	X
Nikos Fistas	EUROCONTROL	X	X
Nigel Sliverthorn	Honeywell	X	X
Arnaud Tonnerre	Thales	X	X
Ayaz Nemat	Thales	X	X
Charles Gibson	Bombardier	X	
Sam Barrett	Honeywell	X	

DOCUMENTS

Agenda Item	Title	File name
6	UAS C2 data link L band SATCOM MOPS ISRA dialogue between SC-222 and SC-228	222WP254 SC228 ISRA.docx
8	IRIDIUM COMMUNICATIONS NORMATIVE REQUIREMENTS FOR IRIDIUM AMS(R)S	Iridium Certus DO-262E Appendix CLEAN – Draft 060319.pdf
8	Iridium NEXT DO343B Attachment 2 Iridium Specific Material	DO-343C-Iridium MASP Appendix – Draft 060419.pdf

Documents related to SBB are available on the EUROCAE WG-82 SharePoint.

Documents related to IRIDIUM are available on the RTCA SC-222 Workspace.

PRESENTATIONS

Agenda Item	Title	File name
2	Inclusion of Dual PS Voice in MASPS and MOPS	RTCA SC-222 Webex 12 June 2019, Inclusion of Dual PS Voice in MASPS and MOPS v1.0.pdf
2	No title	Update for Dual PS Voice – MOPS and MASPS Sections to Change.pdf
9	UPDATES TO DO262D/ED-243B	MOPS_update_NG.pptx
10	UPDATES TO DO-210D	MOPS_update_DO210.pptx
11a	SESAR 2020 PJ 14.2.2 “Future Satellite Communications Data Link” Solution Overview	SESAR2010 PJ14.2.2 EUROCAE WG82 12-13 June 2019-TAS-I_final.pdf

All presentations are available on the EUROCAE WG-82 SharePoint and RTCA SC-222 Workspace.

1 Welcome, Introductions, Administrative Remarks by Special Committee Leadership

Chuck Laberge (CLAS) welcomed the group.

After a round table introduction Rebecca Morrison from RTCA and Anna Guegan from EUROCAE secretariat informed about the IPR and participation statement for RTCA and EUROCAE working groups.

2 APPROVAL OF THE AGENDA

The final agenda of the EUROCAE WG-82 meeting looked as follows:

12-13 June 2019 (9:00 am – 12:00 pm ET)

Welcome, Introductions, Administrative Remarks by Special Committee Leadership

- Government Authorized Representative (GAR): Steve Van Trees
- Chair RTCA SC-222: Dr. Chuck LaBerge, LaBerge Engineering
- Chair EUROCAE WG-82: Dr. Armin Schlereth, DFS

1. Agenda Overview
2. Dual PS Voice on SBB
3. Review/Approve prior Plenary Meeting Summary – (action item status)
4. Coordination with other GROUPs (EUROCAE, RTCA, SESAR, AEEC)
5. Discuss proper designations for documents and possible TOR Revisions
6. SC-228 ISRA Discussion
7. SATCOM MASPS DO-343B/ED-242A updates related to Inmarsat SBB
 - a. Review of discussion papers on changes;
 - b. Outline agreement on form of changes to be made;
 - c. Initial allocation of section updates;
8. Discuss draft MOPS Material for Iridium CERTUS (1 – 5 PM 12 June)
9. SATCOM MOPS DO-262D/ED-243A updates related to Inmarsat SBB
 - a. Review of discussion papers on changes;
 - b. Outline agreement on form of changes to be made;
 - c. Initial allocation of section updates;
10. SATCOM MOPS DO210D update
11. Industry Presentations
 - a. SESAR PJ14.02.02 Future SATCOM Datalink- Solution Overview
12. Update Work Plan for SC-222 and WG-82
13. Establish Agenda, Date and Place for next meeting
14. Review of Action Items
15. Adjourn – Plenary meeting

3 Minutes of last meeting

For the minutes of the last meeting minutes of the last EUROCAE WG-82 meeting was used as reference. This is because all action items and time planning aspects reflect the most recent status for both RTCA SC-222 and EUROCAE WG-82. All open items and comments

could be solved and the action item list has been discussed and updated. Additional action items coming from this meeting are added as well at the end of the minutes.

4 Coordination with other GROUPs

EUROCAE

No input provided at the meeting.

ICAO

Nikos Fistas from EUROCONTROL chairing ICAO PT-S provided input about the actual status. Current Draft SARPS material only covers SATCOM Performance Class B. Next week is a meeting of PT-S discussing the first 2 days SATCOM voice matters and the rest of the week about SATCOM Draft SARPS.

Status regarding the publication dates for SARPs and Manual are unchanged since last WG-82 meeting.

SARPS are planned to be completed September/October 2019. Manual will be completed one year later in 2020. The applicability is likely for 2022 considering 2 years ICAO update cycle.

Nikos will distribute actual draft SARPS to RTCA and EUROCAE for review.

RTCA

Steve Van Trees outlined that RTCA SC-228 MASPS have been approved at March PMC meeting. Chuck will work on it and coordinate with SC-228 on the open items as outlined in the attached action item list of SC-222/WG-82.

AEEC

Alan Schuster-Bruce informed the meeting that AGCS became dormant as all work program items are now complete.

SESAR

See input from PJ14.2.2 project under agenda item 11a of the meeting.

IRIS-IOC

See also material on coordination between SESAR project 14.2.2 and IRIS IOC under agenda item 11a of the meeting.

5 Discuss proper designations for documents and possible TOR revisions

Karan Hofmann from RTCA explained that there seems to be a mis-match between TOR of SC-222 and WG-82 on the next MASPS and MOPS publication cycle planned. This also affects the designations for the documents. Armin explained that there has been an update on the EUROCAE TOR at the beginning of the year with a new intermediate step for publication at Q4/2019 as Revision B and shifting the planned publication end of 2010 to Revision C then. With this information both agree that there is no longer a mis-match regarding the publication cycle on RTCA and EUROCAE side.

6 SC-228 ISRA Discussion

Steve Van Trees presented a short flimsy summarizing items relevant for the coordination work between SC-228 and SC-222. One item on the DAL (Development Assurance Level)

impact for the SATCOM system used to support the command and control link for RPAS led to a discussion within the groups as this is quite an issue when increasing the actual DAL just for this application. Further discussion on this subject is required.

5 Dual PS Voice on SBB

Andrew Ives from INMARSAT gave a presentation on inclusion of Dual PS voice to the SBB part. In the end two configuration would be possible. One with one CS voice channel and one PS voice channel and a second configuration with two PS voice channels. In a second presentation he showed the sections, which require changes on the actual MASPS and MOPS material. Andrew volunteered to take the lead on the changes required for Dual PS voice for both documents. Armin will send him the Excel change forms to be used for it.

6 Updates to MASPS of SBB part

Sachin Chhibber informed the group that no new material compared to the presentation given at the last WG-82 meeting is available. This presentation already showed the required changes to the MASPS. Sachin together with Chuck will work on the ATCt interference model appendix and will present the material at the upcoming July meeting of SC-222 and WG-82. This presentation will include the document with track changes as well. Andrew Ives (Inmarsat) will take over lead to draft to MASPS update coordinating with Ligado for the ATCt content.

7 Discussion of Draft Material of IRIDIUM CERTUS

The attendance for this part of the meeting was members of the Iridium team and Iridium partners, plus Chuck LaBerge, SC-222 Chair and Steve Van Trees, FAA GAR.

Luke Sienkiewicz presented an overview for Iridium, as Mike Hooper was otherwise occupied. There have been regular weekly or bi-weekly meetings of Iridium team members to develop the MOPS. Similar meetings are planned after this week to develop the MASPS. Iridium is still working on a strategy for developing the interference model, equivalent to Appendix C of the Swift Broadband-specific MASPS material.

Chuck LaBerge presented a strawman schedule leading to MASPS approval at the March 26, 2020 PMC meeting. Options of a late submission/approval of an interference model appendix were discussed and rejected.

Luke Sienkiewicz presented the MOPS. No line-by-line review has been done at the meeting. Chuck LaBerge presented seven specific concerns with the current content. Some were editorial, some were just questions about the approach, some were technical and might be significant. Luke took note for follow up in future working meetings.

David Robinson took the lead on the MASPS. There were a few editorial items and the formal review has been started.

8 Updates to SBB part of NG MOPS

LTE/ATCt aspects

Richard Tapp presented slides summarizing the major points related to LTE/ATCt compatibility issues. This presentation has been already discussed at the last WG-82 meeting and two decisions regarding the MOPS changes have to be made. On one side it has to be decided about the DLNAs to be used (original proposal was Type J) and secondly blocking signal and test frequencies aspects requires a decision whether sensitivity loss of 1 dB or 3 dB has to be considered. The group's decision is summarized in table below. Regarding the second item on sensitivity loss it was decided that decision shall not contradict to ARINC 781 material. Therefore, Richard will present justification form any deviation from ARINC781 and propose a resolution to the July meeting.

DLNA	Include in MOPS?	Reason
Type F	No	No protection to either case
Type F-LTE	Yes	Useful if in-band case doesn't apply
Type MA	No	No protection to either case
Type MA-LTE	Yes	Useful if in-band case doesn't apply
Type J	Yes	Protects against both cases

Regarding the test cases it was decided to only update environmental test cases. In that context Richard will identify the required environmental test cases affected (e.g. temperature tests only except vibration tests also for Type J).

Finally, Richard showed items which are leftovers from the last activities on SBB material to be covered during the actual work program as well (e.g. clarification HNS tables). Richard agreed to keep the lead for MOPS update and will coordinate with Inmarsat on VOIP updates (which they will undertake with Avionica).

9 Updates to classic aero MOPS

LTE/ATCt aspects

Richard Tapp presented slides summarizing the major points related to LTE/ATCt compatibility for classic aero of DO210-D. It turned out the further discussion with INMARSAT is required on this subject before getting to a final conclusion. Update of DO210-D will be covered in a change 5.

Steve van Trees and Chuck will work on harmonization of change 5 with the TSO on the testing procedures proposed on the last slide of Richard's presentation. The point is that it is not easy to break out individual components in an already available TSO. Results will be presented at the July meeting.

10 Industry Presentations

Alessia Miglietta and Stefano la Barbera gave a presentation on the actual status of SESAR 2020 PJ14.2.2. This presentation covers the following items:

- SESAR 2020 COM Solutions
- SESAR PJ 14.2.2 Overview and Status
- SESAR PJ 14.2.2 SATCOM Class B and Class A Validation SESAR PJ 14.2.2 Coordination with ESA/Iris Programme
- SESAR PJ 14.2.2 Support to standardization

Chuck LaBerge from RTCA SC-222 thanked Alessia and Stefano for their very good presentation to summarize the actual status and planning especially with respect to SATCOM Performance Class A. He pointed out that SC-222 only monitors this activity according to the TOR of SC-222. Dave Robinson from IRIDIUM stated that it would also be of interest for

IRIDIUM to handle Performance Class A applications in the future. IRIDIUM Certus should be able to support it. He will further coordinate on it internally.

Armin also thanked Alessia and Stefano for the comprehensive presentation on PJ14.2.2 activities and its relation to the work within IRIS. He outlined that activities within WG-82 have to be triggered by these activities. He therefore proposed an October/November 2019 WEBEX for WG-82 to do the proper planning of activities in order to be able to meet the deadline of Q4/2020 for MOPS and MASPS update (WG-82 TOR).

11 Establish Agenda, Date and Place of next meeting

For RTCA SC-222 and EUROCAE WG-82 the planning of next steps has been discussed. The following next meetings have been agreed on.

WEBEX's:

- **24 and 25 July, 15:00-18:00 CEST SC-222/WG-82 WEBEX Meeting**
- **24 July, 13:00-16:00 EDT SC-222 Iridium working session**
(WG-82 welcome to participate)

Note 1: Expectation is to have mature draft MASPS and classic MOPS and a first draft for the SBB MOPS part.

Note 2: In the SC-222 dedicated session IRIDIUM material will be further discussed.

RTCA to set up webex

- **19 and 21 November, 15:00-18:00 CEST SC-222/WG-82 Plenary Meeting**

Note: This meeting is planned to have IRIDIUM and SBB plenary review before starting the FRAC and OC process.

RTCA to set up webex

- **27 January 2020, 15:00-18:00 CEST SC-222/WG-82 Plenary Meeting (to be confirmed)**

Note: This meeting is planned as FRAC and OC resolution review meeting.

Physical Meetings:

- **No next physical meeting(s) are planned.**

Action items

RTCA-SC222 / EUROCAE WG-82 30th meeting: 6.02.2018 and 7.02.2018

Action#	Content	Responsible	Deadline	Status
A30-09	<p>Review of SC-228 slides and material (ITU M.2127) to provide feedback on the following items:</p> <ol style="list-style-type: none"> 1) Support of 2000 UA 2) 10 – 100 kbps per UA (Peak!) 3) Voice latency of 390 millisecond maximum 4) Use of protected spectrum (L-Band) <p>Discussion at WG-82#31: Chuck will provide a response on it asap.</p> <p>Discussion at WG-82/#32: Values might change in the MASPS for UAS. MASPS are available end of the year. So no activities required by WG-82/SC-222 until availability of MASPS.</p> <p>Discussion at WG-82/#33: MASPS on C2 link support by SATCOM expected Q1/2019.</p> <p>Discussion at WG-82/#34: Status unchanged.</p> <p>Discussion at Plenary June 2019: Status unchanged.</p>	Chuck	asap	Open

RTCA-SC222 / EUROCAE WG-82 31st meeting: 26.06.2018 and 28.06.2018

Action#	Content	Responsible	Deadline	Status
A31-01	<p>Coordinate with RTCA SC-159 on GNSS issues (sensitivity level etc.)</p> <p>Discussion at WG-82/#33: e-mail from Laurent (AIRBUS) → Chuck will respond asap on the numbers provided.</p> <p>Discussion at WG-82/#34: In context of IRIDIUM review will take care of it soon.</p> <p>Discussion at WG-82/#35: Still open.</p> <p>Discussion at Plenary June 2019: Status unchanged.</p>	Chuck	end of 2018	Open

A31-02	<p>Coordinate with EUROCAE WG-62 on GNSS issues (sensitivity level etc.)</p> <p>Discussion at WG-82/#33: Follow activities of A31-01</p> <p>Discussion at WG-82/#34: Status unchanged.</p> <p>Discussion at WG-82/#35: Still open.</p> <p>Discussion at Plenary June 2019: Status unchanged.</p>	Armin	end of 2018	Open
A31-03	<p>Contact EUROCAE WG-105 (RPAS) to ask for requirements on SATCOM Performance Class A</p> <p>Discussion at WG-82/#34: Still open. Armin to take care of it soon.</p> <p>Discussion at WG-82/#35: Still open.</p> <p>Discussion at Plenary June 2019: Status unchanged.</p>	Armin	asap	Open

RTCA-SC222 / EUROCAE WG-82 planning meeting: 6.03.2019

Action#	Content	Responsible	Deadline	Status
A35-01	<p>Provide input material (working papers) for the May meeting of WG-82 to cover draft SATCOM MASPS, classic MOPS (DO210D) and draft NG MOPS.</p>	all	26 th April 2019	Closed
A35-02	<p>Armin to clarify with Chuck on the need to update interference simulation results IRIDIUM versus SBB.</p> <p>Discussion at WG-82/#35: Armin's view that IRIDIUM has to take the lead on this item to further process. Armin will contact IRIDIUM.</p>	Armin	end of May 2019	Open

EUROCAE WG-82 meeting: 7.05.2019

Action#	Content	Responsible	Deadline	Status
A35-03	<p>Provide input material (working papers) for the May meeting of WG-82 to cover draft SATCOM MASPS, classic MOPS (DO210D) and draft NG MOPS.</p>	all	4 th June 2019	Closed
A35-04	<p>Feedback by the group on Richard Tapp's proposal for DLNA Option 1 (Type J) and sensitivity loss value (either 1dB or 3dB)</p>	all	4 th June 2019	Closed
A35-05	<p>Material from Sachin Chhibber on MASPS update related to ATCt interference as presented at the meeting to be send to Armin.</p>	Sachin	10.05.2019	Closed
A35-06	<p>Rainer Koll to send his summary on the ICAO PT-S work status to Armin</p>	Rainer	10.05.2019	Closed

RTCA SC-222/EUROCAE WG-82 meeting: 12.06. and 13.06.2019

Action#	Content	Responsible	Deadline	Status
A36-01	Distribute Excel sheets to indicate required changes and comments to SATCOM MOPS and MASPS to SC-222 and WG-82. Remark: From now on all changes and comments shall be documented in these specific Excel-sheets to be able to provide a comprehensive view on the work of the groups to RTCA and Secretary for preparation of FRAC and OC later on.	Chuck/Armin	14 June 2019	Open
A36-02	Armin to organize a WEBEX specifically dedicated to Performance Class A planning in October/November 1019 timeframe.	Armin	end July 2019	Open
A36-03	Clarify changes on classic aero TSO. Harmonize planned change 5 for DO210-D with actual TSO.	Steve van Trees/Chuck	for July 2019 meeting	Open
A36-04	Distribute Draft ICAO SATCOM SARPS to Armin and chuck for further distribution within SC-222 and WG-82. Review by both groups appreciated.	Nikos Fistas	end of June 2019	Open
A36-05	Prepare NG MOPS material for July meeting with documents including track changes related to LTE/ATCt issue. Include the changes also in the Excel sheets as in the past. Remark: Harmonization with ARINC 781 required!	Richard Tapp	for July 2019 meeting	Open
A36-06	Prepare classic aero MOPS material for July meeting with documents including track changes related to LTE/ATCt items. Include the changes also in the Excel sheets as in the past.	Richard Tapp	for July 2019 meeting	Open
A36-07	Prepare NG MOPS material for July meeting with documents including track changes related to Dual PS Voice issue. Include the changes also in the Excel sheets as in the past.	Andrew Ives	for July 2019 meeting	Open
A36-08	Prepare classic aero MOPS material for July meeting with documents including track changes related to Dual PS Voice item. Include the changes also in the Excel sheets as in the past.	Andrew Ives	for July 2019 meeting	Open
A36-09	Prepare SATCOM MASP changes related to ATCt issues with document including track changes for review.	Sachin Chhibber	for July 2019 meeting	Open