



RTCA Paper No. 271-19/SC222-075
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Washington, 6 Jan 2020
 St Denis, 6 Jan 2020

**Minutes of EUROCAE
 WORKING GROUP 82 (WG-82) (Meeting #39) and RTCA SPECIAL COMMITTEE 222
 (SC-222) (Meeting #36)
 “New Air-Ground Data Link Technologies”
 related to SATCOM**

Date	19 and 21 November 2019
Place	Virtual Meeting
Venue	EUROCAE – Webex
Hosted by	EUROCAE

Participants:

Name	Company	19 th	21 st
Andrew Ives	INMARSAT	X	X
Sachin Chhibber	Ligado	X	X
Karan Hofmann	RTCA (SC-222 PD)	X	
Anna Guegan	EUROCAE (WG-82 TPM)	X	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	X
Adam Sarhage	Garmin	X	X
David Green	Collins Aerospace	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
Vaughn Maiolla	ICAO		X
Martina Angelone	ESA	X	X
Nigel Silverthorn	Honeywell	X	X
Ayaz Nemat	Thales	X	
Duncan Mobley	Satcom Direct	X	
Juan Luis Mañas	ESA	X	
David Peilow	ESA		X
Ravi Jain	Federal Aviation Administration	X	X
Jila Rainer Koll	Stellar Aerospace		X

Jose Godoy	ARINC Incorporated	X	X
Sam Weich	Ligado Networks	X	X
Johan Gericke	Cobham	X	X
Maqbool Aliani	Ligado	X	

DOCUMENTS

Agenda Item	Title	File name
1	Calling Notice and Agenda	SC-222 (36) and WG-82 (39) Calling Notice.pdf
2	Meeting Minutes of last Meeting	222_36_WG-82_Meeting_38_Minutes_final
5	MASPS Core Document	DO-343B - Avionica-Inmarsat edits 13-Sep-19.docx
5	MASPS Attachment on SBB	DO-343B Attachment - Avionica-Inmarsat edits 19-Sep-19.docx
5	MASPS Attachment on SBB	222WP272_DO-343B Attachment_Ligado Edits_083019.docx
6	MOPS on SBB	DO-262D_27SEP19.docx
8	MOPS DO-210D	Change Note 5_draft_7.docx Change Note 5_draft_8a.docx
7		

Documents related to SBB are available on the EUROCAE WG-82 SharePoint and on the RTCA SC-222 Workspace.

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

PRESENTATIONS

Agenda Item	Title	File name

No presentations have been given at the meeting.

Welcome, Introductions, Administrative Remarks by Special Committee Leadership

Armin Schlereth (DFS) welcomed the group.

Anna Guegan from EUROCAE informed about the anti-trust policy, IPR policy call and participation membership for RTCA and EUROCAE working groups.

1. APPROVAL OF THE AGENDA

After a round table, Armin Schlereth introduced the final agenda of the EUROCAE WG-82 meeting which looked as follows:

19 November 2019 (9:00 am – 12:00 pm ET) – (15:00 – 18:00 pm CEST)

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. Review/Approve prior Plenary Meeting Summary – (action item status)
3. Coordination with other GROUPs (EUROCAE, RTCA, SESAR, AEEC)
4. Summary of Iridium MOPS/MASPS Progress from 17-18 October Meeting
5. SATCOM MASPS DO-343B/ED-242A updates related to Inmarsat SBB
6. SATCOM MOPS DO-262D/ED-243A updates related to Inmarsat SBB
7. Approve DO-343C/ED-242B and DO-262E/ED-243B releasable for Final Review and Comment / Open Consultation (FRAC / OC)
8. SATCOM MOPS DO-210D updates
9. Approve DO-210D Change 5 releasable for FRAC
10. Industry Presentations
11. Update Work Plan for SC-222 and WG-82
12. Establish Agenda, Date and Place for next meeting
13. Review of Action Items
14. Adjourn – Plenary meeting

2. Minutes of last meeting and action item status

The minutes of the last meeting were reviewed and approved. The action item list has been reviewed focusing on the open actions and their status. The updated action item list is outlined at the end of the present minutes.

3. Coordination with other GROUPs

EUROCAE

No input provided at the meeting.

ICAO

A status report PT-S work on NG Satcom standard has been provided.

The time foresees that the first milestone for material exchange is in January 2020, while September/October 2020 is the target for the SARPs approval in order to have public SARPs in November 2020.

June 2020 is currently targeted for Performance Requirements for Class A draft.

WG 82 has to coordinate with ICAO in order to understand well the process for contribution to the June milestone.

RTCA

No input provided at the meeting.

AEEC

No input provided at the meeting.

SESAR

No input provided at the meeting.

IRIS-IOC

No input provided at the meeting.

4. Summary of Iridium MOPS/MASPS Progress from 17-18 October Meeting

The SC-222 meeting continued in the afternoons of November 19 and 21, with the sole agenda item for both days being to review the MOPS (DO-262) and MASPS (DO-343) material for Iridium Certus, including the required Inmarsat-on-Iridium interference model for continental airspace.

Mike Hooper of Iridium presented the first draft version of the interference model on November 19. There were multiple questions and comments submitted against the document. The most important were discussed during the November 19 session. Mike Hooper committed to a revision, with a spreadsheet detailing the assumptions by the November 21 meeting.

The group discussed the MASPS. There were a significant number of comments on areas ranging from the document organization, to the overall system architecture, to security concerns. Members of the group, particularly Rainer Koll, noted the lack of any detailed analysis indicating that the system performance could actually be realized. There were specific questions about the vocoder qualification process. These discussions consumed the remainder of the November 19 session.

The November 21 session was chaired by Dr. Schlereth, so that Dr. LaBerge could play a more active role in the discussion of the interference model details as provided by Mike Hooper. There were a multitude of questions, and several instances of inconsistent results in the model were identified and discussed. The details provided by Mike Hooper did not include the spatial model currently under development by a third-party contractor for inclusion in the Iridium interference analysis. This model is due to be completed in January 2020, during the FRAC period,

Because the interference model was not yet mature and, in fact, still missing the spatial analysis piece, the Committee felt that it was not ready for FRAC at this time.

The November 21 discussion continued on the MASPS material, continuing the discussion of the November 19 discussion. Given the multitude of substantive comments on the MASPS material and the immaturity of the interference model, which is intended as an appendix to the MASPS material (as in the Inmarsat MASPS), the Committee felt that the MASPS was not ready for FRAC at this time.

The Committee engaged in a cursory review of the MOPS material. Given that the PMC has already indicated that it will not approve a MOPS without a MASPS, there was little enthusiasm for a detailed MOPS review.

During the discussions, Iridium committed to updates of the MOPS and MASPS in early December.

Dr. LaBerge provided a draft schedule for approval of the Iridium documents in conjunction with the revision to the MOPS and MASPS documents already authorized for March 2021 as SC222/WP285. This document is available on the SC-222 workspace.

5. SATCOM MASPS DO-343B/ED-242A updates related to Inmarsat SBB

Andrew Ives (INM) went through the comments provided by ESA to the documents on Inmarsat SBB MASPS (core document and Attachment 1).

The core document has been checked first: all comments have been answered and the agreed resolution implemented in the document.

The Inmarsat SBB specific material (Attachment 1) has been reviewed and open comments were discussed; and agreed modification was directly implemented.

Some comments were raised in order to correct references and diagram labels in section 1.5 of the core document.

Main comments concerned clarifications on the terminology for the VPN connections and some clarification on the path-loss/isolation in section B.2.2.1.1.

The MASPS document has been approved by the group for FRAC.

6. SATCOM MOPS DO-262D/ED-243A updates related to Inmarsat SBB

Richard Tapp went through the DO 262D.

It has been identified an action on INM to update section 1.3.4 Airborne segment implementing comment from Richard.

Table E2-9 AES 6 and 7 for unwanted emission limits has been checked, in order to understand the origin of the numbers; it was agreed that this will be verified at FRAC directly.

The group concluded that NG MOPS are ready for open consultation process.

7. Approve DO-343C/ED-242B and DO-262E/ED-243B releasable for Final Review and Comment / Open Consultation (FRAC / OC)

Both Inmarsat material MASPS and MOPS have been accepted with no objections.

8. SATCOM MOPS DO-210D updates

Richard Tapp presented the latest version of the Change note 5 to DO 210D

No comments were provided to the document apart from a requested correction in the spectral regrowth section, which has been already implemented.

9. Approve DO-210D Change 5 releasable for FRAC

SATCOM MOPS DO-210D updates to Change Note 5 with reference to Spectral regrowth has been approved with no objections for FRAC.

10. Industry Presentations

No industry presentations

12. Establish Agenda, Date and Place for next meeting

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

The confirmed dates for the next meeting are 23rd and 24th of January **2020**

WEBEX's:

- **23 and 24 January 2020,** **15:00-18:00 CET** **SC-222/WG-82** Plenary
Virtual Meeting

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

Post Meeting Note: dates were changed from 27-28 January 2020 to 23-24 January 2020

Physical Meetings:

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

11 Adjourn – Plenary meeting

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> <p>Discussion at Plenary July 2019: Current priority on MASPS and MOPS actual documents. Status unchanged.</p> <p>Status Plenary Sept 2019: Status unchanged. Current publication schedule has higher approval.</p> <p>Status Plenary Nov 2019: Status unchanged. Current publication schedule has higher approval</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	Closed
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	Closed
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> <p>Discussion at Plenary July 2019: Current priority on MASPS and MOPS actual documents. Status unchanged.</p> <p>Status Plenary Sept 2019: Status unchanged.</p> <p>Status Plenary Sept 2019: Status unchanged. Current publication schedule has higher approval.</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> <p>Discussion at Plenary July 2019: Covered in current review process within RTCA SC-222.</p>	Armin	end of May 2019	Closed
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RTCA SC-222/EUROCAE WG-82 meeting: 12.06. and 13.06.2019

Action#	Content	Responsible	Deadline	Status
A36-01	<p>Distribute Excel sheets to indicate required changes and comments to SATCOM MOPS and MASPS to SC-222 and WG-82.</p> <p>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.</p>	Chuck/Armin	14 June 2019	Closed
A36-02	<p>Armin to organize a WEBEX specifically dedicated to Performance Class A planning in October/November 2019 timeframe.</p> <p>Armin to invite also SC-222 as they are monitoring progress on this.</p>	Armin	Q1/2020	Open
A36-03	<p>Clarify changes on classic aero TSO. Harmonize planned change 5 for DO210-D with actual TSO.</p>	Steve van Trees/Chuck	June 2020	Open
A36-04	<p>Distribute Draft ICAO SATCOM SARPS to Armin and chuck for further distribution within SC-222 and WG-82. Review by both groups appreciated.</p> <p>Status Plenary July 2019: Armin to ask Nikos on this matter.</p> <p>Status Plenary Sept 2019: ICAO PT-S plans to provide the draft SARPs for EUROCAE/RTCA review and comments in January 2020.</p>	Nikos Fistas	End January 2020	Open
A36-05	<p>Prepare NG MOPS material for July meeting with documents including track changes related to LTE/ATCt issue. Include the changes also in the Excel sheet as in the past.</p> <p>Remark: Harmonization with ARINC 781 required!</p> <p>Status Plenary July 2019: Excel-sheet not yet available.</p> <p>Status Plenary Sept 2019: Excel-sheet now available. Actual status of comments?</p>	Richard Tapp	for July 2019 meeting	Closed

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 sheet as in the past. Status Plenary July 2019: Decided not to use Excel-sheet for DO210-D.	Richard Tapp	for July 2019 meeting	Closed
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 sheet as in the past. Status Plenary July 2019: Excel-sheet not yet available. Status Plenary Sept 2019: Excel-sheet now available.	Andrew Ives	for July 2019 meeting	Closed
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 sheet as in the past. Status Plenary July 2019: Action not valid as no changes on classic aero MOPS required.	Andrew Ives	for July 2019 meeting	Closed
A36-09	Prepare SATCOM MASPS changes related to ATCt issues with document including track changes for review. Include the changes also in the Excel sheet as in the past. Status Plenary July 2019: Excel-sheet not yet available. Status Plenary Sept 2019: Excel-sheet now available.	Sachin Chhibber	for July 2019 meeting	Closed

RTCA SC-222/EUROCAE WG-82 meeting: 24.06. and 25.07.2019

Action#	Content	Responsible	Deadline	Status
A37-01	Ask ICAO PT-S whether V80 voice requirement will be further discussed in ICAO and might be updated in the future. Requirement is 0.485 sec delay. Actual SBB installation cannot meet it.	Dave Robinson	mid September 2019	Closed
A37-02	Update the DO210-D change Note 5 material: Clarify whether Change 4 when making it a shall requires re-certification of older equipment. Need to coordinate with FAA on it.	Richard Tapp	2 nd September 2019	Closed
A37-03	Distribute DO210-D change Note 5 with all required input to SC-222 and WG-82 for final review	Richard Tapp	2 nd September 2019	Closed
A37-04	SBB SATCOM MASPS: Update and distribute SBB SATCOM MASPS material with agreed changes for final review by SC-222 and WG-82	Andrew Ives	2 nd September	Closed

A37-05	SBB SATCOM MOPS: Update and distribute SBB SATCOM MOPS material with agreed changes for review by SC-222 and WG-82. It shall include changes related to LTE/ATCt interference issue.	Richard Tapp	2 nd September 2019	Closed
A37-06	IRIDUM MOPS Update	Luke	2 nd September 2019	Closed
A37-07	IRIDIUM MASPS Update	Dave	2 nd September 2019	Closed

RTCA SC-222/EUROCAE WG-82 meeting: 19.09. and 20.09.2019

Action#	Content	Responsible	Deadline	Status
A38-01	Consider Ligado potential interference issue on the Iridium MOPS in the Iridium Working Group session Plenary SC-222 and WG-82 Nov 2019: IRIDIUM wants to have it part of the Plenary discussion. Make a new AI out of it. Closed this one!	Chuck Laberge	October Meeting of SC-222	Open
A38-02	Merge ATCt and PS Voice SBB MASPS Attachment and distribute asking for comments.	Andrew Ives	27.09.2019	Closed
A38-03	SC—222/WG-82 to review SBB MASPS material	all	8.11.2019	Closed
A38-04	Circulate the SBB NG MOPS (without the HNS table notes)	Richard Tapp	27.09.2019	Open
A38-05	SC—222/WG-82 to review SBB NG MOPS material	all	8.11.2019	Closed
A38-06	Clarify open points on HNS table notes	Richard Tapp	8.11.2019	Closed
A38-07	INM SDM and MTR references to be updated Plenary SC-222 and WG-82: Updated references expected end of January 2020 at the end of FRAC/OC.	Andrew Ives	8.11.2019	Open
A38-08	Consolidate and update the Change Note 5 to MOPS-DO-210/D and distribute to the group	Richard Tapp	27.09.2019	Closed
A38-09	SC—222/WG-82 to review the Change Note 5 to MOPS-DO-210/D material and provide comments	all	8.11.2019	Closed