



RTCA Paper No. 235-19/SC222-073  
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Washington, 19 Sept 2019  
 St Denis, 19 Sept 2019

**Minutes of EUROCAE  
 WORKING GROUP 82 (WG-82) (Meeting #38) and RTCA SPECIAL COMMITTEE 222  
 (SC-222) (Meeting #35)  
 “New Air-Ground Data Link Technologies”  
 related to SATCOM**

<b>Date</b>	<b>19-20 September 2019</b>
<b>Place</b>	<b>Virtual Meeting</b>
<b>Venue</b>	<b>EUROCAE – Webex</b>
<b>Hosted by</b>	<b>EUROCAE</b>

**Participants:**

Name	Company	24 <sup>th</sup>	25 <sup>th</sup>
Andrew Ives	INMARSAT	X	X
Daniel Tesfagaber	INMARSAT		X
Steven Lepage	SKYTRAC		X
Sachin Chhibber	Ligado	X	X
Rebecca Morrison	RTCA		X
Karan Hofmann	RTCA (SC-222 PD)	X	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
Alan Schuster-Bruce	INMARSAT	X	X
Gary Colledge	INMARSAT	X	
Chuck LaBerge	LaBerge Engineering (Chair SC-222)	X	X
Dave Robinson	IRIDIUM	X	
Luke Sienkiewicz	IRIDIUM		
Darrell Andregg	Collins Aerospace	X	X
Vaughn Maiolla	ICAO	X	
Martina Angelone	ESA	X	X
Nigel Silverthorn	Honeywell	X	X

Rainer Koll	Stellar Aerospace	X	X
Ayaz Nemat	Thales		X
Arnaud Tonnerre	Thales	X	
Rafael Apaza	NASA	X	

## DOCUMENTS

Agenda Item	Title	File name
1	Calling Notice and Agenda	SC-222 (35) and WG-82 (38) Calling Notice.pdf
2	Meeting Minutes of last Meeting	222_35_WG-82_Meeting_38_Minutes_final.pdf
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
8	MOPS on SBB	DO-262D_draft6.docx
6	MOPS DO-210D	Change Note 5_draft_5.docx
7	SC-222 Iridium Working Group	EFCLEA0165 Iridium WGW Sept 2019

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.

## **1 Welcome, Introductions, Administrative Remarks by Special Committee Leadership**

Armin Schlereth (DFS) welcomed the group.

Karan Hofmann from RTCA informed about the anti-trust policy, IPR policy call and participation membership for RTCA and ERUOCAE working groups.

## **2 APPROVAL OF THE AGENDA**

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

### **19-20 September 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. Review/Approve prior Plenary Meeting Summary – (action item status)
3. Coordination with other GROUPs (EUROCAE, RTCA, SESAR, AEEC)
4. SC-228 ISRA Discussion
5. 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;
6. Summary of Iridium MOPS/MASPS Progress from Sept 12-13 Meeting
7. 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;
8. SATCOM MOPS DO210D update
9. Industry Presentations
10. Update Work Plan for SC-222 and WG-82
11. Establish Agenda, Date and Place for next meeting
12. Review of Action Items
13. Adjourn – Plenary meeting

## **3 Minutes of last meeting**

The minutes of the last meeting were approved after taking into account comments from the group. The action item list has been reviewed focusing on the open actions and updating their status. The updated action item list is outlined at the end of the present minutes.

#### **4 Coordination with other GROUPs**

##### **EUROCAE**

No input provided at the meeting.

##### **ICAO**

As Nikos Fistas, Rapporteur of CP PT-S of ICAO, could not join the meeting, Armin outlined a summary of the work status within PT-S. The chairman reported that the PT-SAT group had a meeting in September where they have agreed on a new planning for the SARPs completion. Voice is planned to be finalized in mid-October at the Voice subgroup meeting.

Inputs by EUROCE/RTCA, AEEC etc. working groups will be asked for end of January 2020 with the target to have a final draft end of May and to be able to finalize the SARPs by September 2020. Approval of the SARPs would then be possible at the COM Panel (DCIWG) in October 2020.

SATCOM manual work is planned to be completed early / mid 2021

##### **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.

#### **5 SC-228 ISRA Discussion**

It has been agreed, that the coordination work will be re-visited after having finalized the actual SATCOM MASPS and MOPS update early next year, which currently has highest priority within RTCA SC-222 and EUROCAE WG-82. See also the comments on the according action items attached.

#### **6 SATCOM MASPS DO-343B/ED-242A updates related to Inmarsat SBB**

Andrew Ives (INM) proposes to go through the delta changes w.r.t. last meeting (document DO-343B Attachment-Avionica-Inmarsat edits.docx).

In line with the agreement of last meetings, sections for Voice 4.2.41 and 4.2.42 were updated adding the Air to ground direction and with additional tests cases related to priority levels for the voice calls (especially for non-CS-capable AES).

It was agreed to maintain list of changes to the MASPS merging the ATC and PS Voice SBB and distribute it for review before next meeting (see action item A38-02) to collect comments

timely for the FRAC/OC preparation meeting in November. Target deadline for comments is 8<sup>th</sup> of November.

The floor then passed to Sachin Chibber (Ligado) who went through the changes to the DO34B attachment Ligado document. Among these, attention was posed on received frequency (item g Table B-2): Ligado passed from two channels at 1550 and 1531 MHz to one channel at 1531 MHz.

ATC spectral characteristics, DLNA spectral characteristics were presented.

A discussion started following Chuck Laberge request for clarification in relation to the EIRP value of 9.8 dBW with the doubt that EIRP has not been limited sufficiently to protect aviation bands. It was answered that power has been reduced close to the airport (table B3) 7.8 dBW. The higher values represent the worst case which should meet anyway the BTS PDF at Aircraft limits (item 19 TAB B7).

It has been indicated that a similar contribution to the Iridium MOPS might be required (see action item A38-01).

## **7 Summary of Iridium MOPS/MASPS Progress from Sept 12-13 Meeting**

The Iridium MOPS and MASPS have been reviewed last week, on September 12<sup>th</sup> and 13<sup>th</sup>. It was reported that the progress was not sufficient. In particular the maturity of the interference model is quite low and need to be included in the MASPS.

In that context Iridium is currently reviewing the Inmarsat SBB-Iridium Block 1 model from the Appendix to the Inmarsat SBB attachment as a first step toward developing the SBB-Certus model. There is some doubt as to whether this model can be ready for FRAC/OC review.

## **8 SATCOM MOPS DO-262D/ED-243A updates related to Inmarsat SBB**

The Inmarsat MOPS updates have been presented by Richard Tapp (Honeywell ), identifying the delta on the document DO- 262D.

Discussion covered items like E.g. Table E2-1, Diplexer types, interference cases for type DJ DLNA, type DF DLNA;

An overview of the diplexer tests (spectral regrowth, phase noise) was presented, followed by an overview of the test cases for the blocking signals and related frequencies and other equipment performance verification (section 2.4).

The cross-reference mapping between tests requirements and equipment was reviewed. It was agreed to target 8<sup>th</sup> of November as deadline for the group feedback on NG MOPS.

The MOPS without the HNS table notes will be circulated by September 27<sup>th</sup> as requested by Armin. An updated version with the HNS table notes will be provided afterwards

## **9 SATCOM MOPS (DO-210D) Updates to classic aero**

### **LTE/ATCt aspects**

Richard Tapp (Honeywell) presented Change Note 5. An introduction to the Change Note 5 was inserted clarifying the scope of the document and the targeted IMT base stations (LTE/ATCt). The various items have been discussed.

Clarification on the applicability/authority of the content of this document has been added as well in the introduction. The table summarizing the changes was commented clarifying the link to the previous change notes affecting the same section in to DO2210D.

It was agreed to have an updated version of the Change Note 5 to the classic aero MOPS by 27<sup>th</sup> of September and circulate it to the group for review with deadline 8<sup>th</sup> of November in preparation of the next Plenary meeting, which intends to start FRAC/OC afterwards.

## 10 Industry presentations

Martina Angelone (ESA) announced the co-shared ESA-SESAR Deployment Manager event which will take place in Brussels on 2 of October, aiming at presenting Iris and its deployment to all the stakeholders. More details and registration info can be found at this link:

<https://mailer.sesardeploymentmanager.eu/t/ViewEmail/j/72AC21234B3858112540EF23F30FEDED/078E23850CFB9290A4A88C2FAEAC43DE>

## 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:

- **17 and 18 October, 9:00 – 4:00 EST SC-222 Meeting (WG-82**  
welcome to participate)

*Note: This meeting is planned to have IRIDIUM documentation for approval by SC-222.*

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

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

- **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.**

## 11 Adjourn – Plenary meeting

## Action items

### RTCA-SC222 / EUROCAE WG-82 30<sup>th</sup> 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"> <li>1) Support of 2000 UA</li> <li>2) 10 – 100 kbps per UA (Peak!)</li> <li>3) Voice latency of 390 millisecond maximum</li> <li>4) Use of protected spectrum (L-Band)</li> </ol> <p><b>Discussion at WG-82#31:</b> Chuck will provide a response on it asap.</p> <p><b>Discussion at WG-82/#32:</b> 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><b>Discussion at WG-82/#33:</b> MASPS on C2 link support by SATCOM expected Q1/2019.</p> <p><b>Discussion at WG-82/#34:</b> Status unchanged.</p> <p><b>Discussion at Plenary June 2019:</b> Status unchanged.</p> <p><b>Discussion at Plenary July 2019:</b> Current priority on MASPS and MOPS actual documents. Status unchanged.</p> <p><b>Status Plenary Sept 2019:</b> Status unchanged. Current publication schedule has higher approval.</p>	Chuck	asap	Open

### RTCA-SC222 / EUROCAE WG-82 31<sup>st</sup> 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><b>Discussion at WG-82/#33:</b> e-mail from Laurent (AIRBUS) → Chuck will respond asap on the numbers provided.</p> <p><b>Discussion at WG-82/#34:</b> In context of IRIDIUM review will take care of it soon.</p> <p><b>Discussion at WG-82/#35:</b> Still open.</p> <p><b>Discussion at Plenary June 2019:</b> Status unchanged.</p>	Chuck	end of 2018	Closed

A31-02	<p>Coordinate with EUROCAE WG-62 on GNSS issues (sensitivity level etc.)</p> <p><b>Discussion at WG-82/#33:</b> Follow activities of A31-01</p> <p><b>Discussion at WG-82/#34:</b> Status unchanged.</p> <p><b>Discussion at WG-82/#35:</b> Still open.</p> <p><b>Discussion at Plenary June 2019:</b> 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><b>Discussion at WG-82/#34:</b> Still open. Armin to take care of it soon.</p> <p><b>Discussion at WG-82/#35:</b> Still open.</p> <p><b>Discussion at Plenary June 2019:</b> Status unchanged.</p> <p><b>Discussion at Plenary July 2019:</b> Current priority on MASPS and MOPS actual documents. Status unchanged.</p> <p><b>Status Plenary Sept 2019:</b> 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 <sup>th</sup> April 2019	Closed
A35-02	<p>Armin to clarify with Chuck on the need to update interference simulation results IRIDIUM versus SBB.</p> <p><b>Discussion at WG-82/#35:</b> Armin's view that IRIDIUM has to take the lead on this item to further process. Armin will contact IRIDIUM.</p> <p><b>Discussion at Plenary July 2019:</b> Covered in current review process within RTCA SC-222.</p>	Armin	end of May 2019	Closed



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

<b>Action#</b>	<b>Content</b>	<b>Responsible</b>	<b>Deadline</b>	<b>Status</b>
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	Closed
A36-02	Armin to organize a WEBEX specifically dedicated to Performance Class A planning in October/November 2019 timeframe.	Armin	beginning of October 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.  <b>Status Plenary July 2019:</b> Armin to ask Nikos on this matter.  <b>Status Plenary Sept 2019:</b> ICAO PT-S plans to provide the draft SARPs for EUROCAE/RTCA review and comments in January 2020.	Nikos Fistas	End January 2020	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 sheet as in the past.  Remark: Harmonization with ARINC 781 required!  <b>Status Plenary July 2019:</b> Excel-sheet not yet available.  <b>Status Plenary Sept 2019:</b> Excel-sheet now available. Actual status of comments?	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 sheet as in the past.  <b>Status Plenary July 2019:</b> 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.  <b>Status Plenary July 2019:</b> Excel-sheet not yet available.  <b>Status Plenary Sept 2019:</b> 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.  <b>Status Plenary July 2019:</b> 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.  <b>Status Plenary July 2019:</b> Excel-sheet not yet available.  <b>Status Plenary Sept 2019:</b> Excel-sheet now available.	Sachin Chhibber	for July 2019 meeting	<b>Closed</b>

**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	<b>Closed</b>
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 <sup>nd</sup> September 2019	<b>Closed</b>
A37-03	Distribute DO210-D change Note 5 with all required input to SC-222 and WG-82 for final review	Richard Tapp	2 <sup>nd</sup> September 2019	<b>Closed</b>
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 <sup>nd</sup> September	<b>Closed</b>
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 <sup>nd</sup> September 2019	<b>Closed</b>
A37-06	IRIDUM MOPS Update	Luke	2 <sup>nd</sup> September 2019	<b>Open</b>
A37-07	IRIDIUM MASPS Update	Dave	2 <sup>nd</sup> September 2019	<b>Open</b>

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

<b>Action#</b>	<b>Content</b>	<b>Responsible</b>	<b>Deadline</b>	<b>Status</b>
A38-01	Consider Ligado potential interference issue on the Iridium MOPS in the Iridium Working Group session	Chuck Laberge	October Meeting of SC-222	<b>Open</b>
A38-02	Merge ATCt and PS Voice SBB MASPS Attachment and distribute asking for comments.	Andrew Ives	27.09.2019	<b>Open</b>
A38-03	SC—222/WG-82 to review SBB MASPS material	all	8.11.2019	<b>Open</b>
A38-04	Circulate the SBB NG MOPS (without the HNS table notes)	Richard Tapp	27.09.2019	<b>Open</b>
A38-05	SC—222/WG-82 to review SBB NG MOPS material	all	8.11.2019	<b>Open</b>
A38-06	Clarify open points on HNS table notes	Richard Tapp	8.11.2019	<b>Open</b>
A38-07	INM SDM and MTR references to be updated	Richard Tapp	8.11.2019	<b>Open</b>
A38-08	Consolidate and update the Change Note 5 to MOPS-DO-210/D and distribute to the group	Richard Tapp	27.09.2019	<b>Open</b>
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	<b>Open</b>