



RTCA Paper No. 044-21/SC222-090  
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Washington, 30 March 2021  
 St Denis, 30 March 2021

**Minutes of EUROCAE  
 WORKING GROUP 82 (WG-82) (Meeting #46) and RTCA SPECIAL COMMITTEE 222  
 (SC-222) (Meeting #41)  
 “New Air-Ground Data Link Technologies”  
 related to SATCOM**

<b>Date</b>	<b>9<sup>th</sup> and 11<sup>th</sup> February 2021</b> <b>Extension as WG on 18<sup>th</sup> and 23<sup>rd</sup> February 2021</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	9 <sup>th</sup> (Plenary)	11 <sup>th</sup> (Plenary)	18 <sup>th</sup> (WG)	23 <sup>rd</sup> (WG)
Adam Sarhage	GARMIN	X	X	X	X
Ajay Parikh	LIGADO	X	X	X	X
Alan Schuster Bruce	INMARSAT	X	X	X	X
Alden Fuchs	IRIDIUM	X	X		X
Andy Morin	IRIDIUM	X	X	X	X
Angelo Rossi	MITRE	X	X	X	
Anna Guegan	EUROCAE	X	X	X	X
Armin Schlereth	DFS	X	X	X	X
Ayaz NEMAT	THALES	X	X	X	
Barbara Clark	THALES		X		
Ben Huang	IRIDIUM	X	X	X	X
Brandon Hinton	FAA		X		
Catherine Gandolfi	EASA		X		
Chris Hegarty	Wiley		X		
Chuck LaBerge	LaBerge Engineering	X	X	X	X
Darrell Andregg	Rockwell Collins	X	X	X	X
Ding Qun	CETC Northwest Group Co.			X	X
Fan Liu	LaBerge Engineering		X		
Florin Grafu	ROMATSA	X	X	X	X

Guillaume de bony de Lavergne	AIRBUS			X	
Frederic BELTRANDO	Airbus		X		
George Ligler	GTL Associates		X		
Gonzalo Prieto	ESSP	X	X		
Hamza Abduselam	FAA		X		
Hans TRAUTENBERG	EASA	X	X	X	
Hiroshi OKOCHI JRANSA	JRANSA	X	X		X
Jeff Bull	IRIDIUM	X	X	X	X
Jeff Knickelbein	COBHAM			X	
Jila Rainer Koll	Stellar Solutions	X	X	X	
Jim Williams	JHW Unmanned Solutions	X	X		
Joe Darden	IRIDIUM	X	X	X	X
Joel Wichgers	Rockwell Collins		X		
Johan Gericke	COBHAM	X	X	X	X
John Barry	FAA		X		
Jose Godoy	ARINC Incorporated			X	
Karan Hofmann	RTCA	X	X	X	X
Keith Howland	THALES		X		
Lee Nguyen	FAA			X	
Luke Sienkiewicz	IRIDIUM	X	X	X	X
Maqbool Aliani	Ligado	X		X	
Mark Insley	LATITUDE-TECH	X	X	X	X
Martina Angelone	ESA	X	X		X
Matt Harris	BOEING		X		
Michael Hooper	IRIDUM	X	X	X	X
Michele Raimondo	ENAV		X		
Nkululeko Thembinkosi Ntombela	ATNS	X	X	X	
Radek Zaruba	Honeywell		X		
Ravi Jain	FAA	X	X	X	X
Richard Tapp	HONEYWELL	X	X	X	X
Ryan Mustoe	BOEING	X	X	X	X
Sachin Chhibber	Ligado	X	X	X	
Sai Kalyanaraman	Rockwell Collins		X		
Sam Weich	Ligado		X	X	
Santanu Dutta	Ligado	X	X	X	X
Stephen Van Trees	FAA	X	X		
Thomas Jessett	BOEING		X		

## DOCUMENTS

Agenda Item	Title	File name
1	Calling Notice and Agenda	222WP330_SC-222 (44) and WG-82 (46) Calling Notice Meeting.pdf
2	Meeting Minutes of last Meeting	222_40_WG-82_Meeting_45_final minutes_v2.pdf
4	Iridium MASPS	DO-343D_ED-242C MSAPS FRAC OC.pdf

4	EXCEL Frac MASPS Comments Sheet <i>Remark: Status at the end of the meeting</i>	Certus MASP Working Comments sheet 030821.xlsx
6	Iridium MOPS	DO-262F_ED243C MOPS FRAC OC.pdf
6	EXCEL Frac MOPS Comments Sheet <i>Remark: Status at the end of the meeting</i>	210308_FRAC_IridiumCompile_Bulk_Comments DO-262F_ED-243C.exe
6	Iridium MOPS Annex F	210223_DO262F_ED-243C MOPS_Appendix F FRAC_OC.docx

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

## PRESENTATIONS

Agenda Item	Title	File name

There were no presentations given at the meeting.

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

Chuck LaBerge (chair SC-222) welcomed the group. He led through the whole remaining meeting.

Karan Hofmann and Anna Guégan informed about the anti-trust policy, IPR policy, and call and participation membership policies for RTCA Special Committees (SC) and EUROCAE Working Groups.

### **1. APPROVAL OF THE AGENDA**

After a round table, Chuck LaBerge introduced the proposed agenda of the RTCA SC-222/ EUROCAE WG-82 Plenary meeting. Due to work amount on the material the meeting has been extended twice from originally planned dates 9<sup>th</sup> and 11<sup>th</sup> February with additional meeting as Working Group of the Whole (WGW) on the 18<sup>th</sup> and 23<sup>rd</sup> February 2021. The final agreed (simplified) agenda looks as follows:

### **AGENDA**

#### **9, 11, 18, 23 February 2021 (9:00 am – 5:00 pm ET) – (15:00 – 23:00 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. Review Agenda
2. Review Minutes and Actions
3. Review of activities in related groups (ICAO, ARINC, etc.)

4. Review/Resolution of SATCOM MASPS DO-343D/ED-242C Iridium-specific Final Review and Comment / Open Consultation (FRAC / OC) Comments
5. Decision to approve release and presentation of DO-343D/ED-242C TO PMC and Council
6. Review/Resolution of SATCOM MOPS DO-262F/ED-243C Iridium-specific FRAC / OC Comments
7. Decision to approve release and presentation of DO-262F/ED-243C to PMC and Council
8. Other Discussion as needed
9. Agreement on Actions
10. Agreement on Meeting Schedule (further revision of WP316D.)
11. Adjourn

## **2. Review Minutes and Actions**

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

## **3. Review of activities in related groups (ICAO, ARINC, etc.)**

There were not presentations or input provided at the meeting.

## **4. Review/Resolution of SATCOM MASPS DO-343D/ED-242C Iridium-specific Final Review and Comment / Open Consultation (FRAC / OC) Comments**

Mike Hooper from Iridium led the meeting through a discussion of comments on MASPS material. Comments received in the FRAC/OC process includes also comments on INMARSAT material, e.g. on the use of dual SATCOM as LRCS part of the document. All comments have been covered so far and could be closed.

For the actual status of the comments see the updated EXCEL Comments Sheet on the RTCA SC-222 repository.

Due to the high number of changes to the FRAC/OC version it has been agreed to get an updated Draft MASPS with all comments covered and included for final review of the Plenary on the 30<sup>th</sup> March 2021. This meeting is planned to be used for final approval of the SATCOM MASPS.

## **5. Decision to approve release and presentation of DO-343D/ED-242C TO PMC and Council**

Decision has been deferred to Plenary meeting scheduled for 30<sup>th</sup> March 2021.

## **6. Review/Resolution of SATCOM MOPS DO-262F/ED-243C Iridium-specific FRAC / OC Comments**

Luke Sienkiewicz from Iridium led the meeting through a discussion of comments on MOPS material. All comments have been covered so far and most of them could be closed. Major open items are with GPS and GLONASS interference.

### ***18<sup>th</sup> February 2021 Update on GPS/GLONASS issue (WGW):***

*With input from SC-159 leadership (Chris Hegarty and George Ligler), the committee discussed the necessity of a formal ISRA with SC-159 to facilitate closing the various issues*

*with GPS and GLONASS. The consensus was that the ISRA process is made for situations where one committee is asking for specific work to be done by another committee or has a specific question for that committee. The ISRA process, as currently defined, does not seem to address the type of close cooperation needed in this case. Therefore, with the agreement of the SC-159 participants to work as part of the small subgroup set up to address this issue, the committee decided that no formal ISRA was required.*

*C. Hegarty, G. Ligler and K. Hofmann agreed that it might be time to revisit and update the ISRA process, and solicited comments and suggestions from the committee members.*

In order to be able to more efficiently deal with the open GPS and GLONASS issues 2 subgroups have been setup by the Plenary:

- Subgroup to deal with GPS interference issues (led by Luke Sienkiewicz);
- Subgroup to deal with GLONASS interference issue (led by Luke Sienkiewicz).

Both subgroups are planned to start work in the week of the 22<sup>nd</sup> February to provide draft material until 19<sup>th</sup> March 2021 as input for the SC-159 plenary meeting scheduled for 26<sup>th</sup> March 2021.

### **23<sup>rd</sup> February 2021 Update (WGW)**

With respect to the subgroup working the GPS/GLONASS issues, Luke reported on technical consultations between Iridium, Collins (including SC-159 members), and Boeing. This sub-subgroup has agreed on high-level calculation process. Luke reported that this agreement will be briefed with FAA and EIASA representatives in a scheduled meeting on Wednesday, Feb 24. The plan is to present the current growing consensus to the entire working group the week of March 1. There were no questions from the Feb 23 attendees regarding the status.

### **General status after the meeting**

Due to the high number of changes to the FRAC/OC version it has been agreed to get an updated Draft IRIDIUM CERTUS MOPS with all comments covered and included for final review of the Plenary on the 13<sup>th</sup> and 15<sup>th</sup> of April 2021. This meeting is scheduled for final approval of the SATCOM MOPS only.

For the outcome of the discussion at the end of the meeting see the updated EXCEL Comments Sheet on the RTCA SC-222 repository.

#### **7. Decision to approve release and presentation of DO-262F/ED-243C to PMC and Council**

Decision has been deferred to Plenary meeting scheduled for 13<sup>th</sup> and 15<sup>th</sup> April 2021.

#### **8. Other discussions as needed**

No other items have been discussed at the meeting.

#### **9. Agreement on actions**

Chuck and Armin went through the action items of the meeting. The final version is attached to the minutes.

#### **10. Agreement on Meeting Schedule (ref. 222WP316C)**

The Plenary agreed on the following time planning:

19.03.2021: Subgroup on GPS and GLONASS to have draft ready for discussion at SC-159 Plenary on 26.03.2021

- 26.03.2021: SC-159 Plenary
- 15.03.2021: Updated Draft MASPS available to SC-222/WG-82 (2 weeks before PLENARY)
- 30.03.2021: PLENARY SC-222/WG-82 for final FRAC/OC resolution on MASPS**
- 31.03.2021: Updated Draft MOPS available to SC-222/WG-82 (2 weeks before PLENARY)
- 01.04.2021: Final draft of GPS and GLONASS material for discussion within SC-222/WG-82
- 13.04./15.04.: PLENARY SC-222/WG-82 for final FRAC/OC resolution on MOPS**
- 26.04.2021: Delivery of final MASPS AND MOPS documents to RTCA secretariat
- 10.05.2021: Delivery of MASPS and MOPS to PMC
- 17.06.2021: PMC meeting

**11. Establish Agenda, Date and Place for next meeting**

RTCA SC-222 and EUROCAE WG-82 have agreed on the following next meetings:

**WEBEX's:**

- **30.03.2021 WG-82/RTCA SC-222: Plenary WEBEX from 3pm to 11pm CET** (WEBEX will be organized by RTCA)  
*Note: This WEBEX is intended as the final resolution meeting of the FRAC/OC review process on the SATCOM MASPS.*
- **13.04.2021 and 15.04.2021 WG-82/RTCA SC-222: Plenary WEBEX from 3pm to 11pm CET** (WEBEX will be organized by RTCA)  
*Note: This WEBEX is intended as the final resolution meeting of the FRAC/OC review process on the SATCOM MOPS.*

**Physical Meetings:**

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

**12. Adjourn – Plenary meeting**

Chuck and Armin thanked the group for the lively discussion.

## 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 LaBerge 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> <p><b>Status Plenary Nov 2019/Jan 2020:</b> Status unchanged. Current publication schedule has higher approval</p> <p><b>Discussion at Plenary June 2020:</b> Status unchanged.</p> <p><b>Discussion at Plenary Nov 2020:</b> Early 2021 SC-228 finishing RPAS MASPS. Restart coordination then.</p> <p><b>Discussion at Plenary Jan 2021:</b> Early 2021 SC-228 finishing RPAS MASPS. Restart coordination then.</p> <p><b>Discussion at Plenary Feb 2021:</b> Early 2021 SC-228 finishing RPAS MASPS. Restart coordination then.</p> <p><b>Discussion at Plenary March 2021:</b> Report expected to be available in May 2021.</p>	Chuck LaBerge	asap	Open

**RTCA-SC222 / EUROCAE WG-82 31<sup>st</sup> meeting: 26.06.2018 and 28.06.2018**

<b>Action#</b>	<b>Content</b>	<b>Responsible</b>	<b>Deadline</b>	<b>Status</b>
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 Schlereth 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> <p><b>Status Plenary Sept 2019/Jan 2020:</b> Status unchanged. Current publication schedule has higher approval.</p> <p><b>Discussion at Plenary June 2020:</b> Status unchanged.</p> <p><b>Discussion at Plenary Nov 2020:</b> Early 2021 SC-228 finishing RPAS MASPS. Restart coordination then.</p> <p><b>Discussion at Plenary Feb 2021:</b> Early 2021 SC-228 finishing RPAS MASPS. Restart coordination then.</p> <p><b>Discussion at Plenary March 2021:</b> Report expected to be available in May 2021.</p>	Armin Schlereth	asap	<b>Open</b>

**RTCA SC-222/EUROCAE WG-82 Plenary meeting: 10.11. and 12.11.2020**

<b>Action#</b>	<b>Content</b>	<b>Responsible</b>	<b>Deadline</b>	<b>Status</b>
A42-02	Clarify on trade mark usage on MASPS/MOPS cover page with Karan.	Chuck	12.11.2020	Closed
A42-06	Manufacturer to test 150ms Voice Latency requirement during FRAC. Present results at FRAC resolution meeting	Darrell	FRAC/OC resolution meeting	Closed

**RTCA SC-222/EUROCAE WG-82 Plenary meeting: 13.01. and 14.01.2021**

<b>Action#</b>	<b>Content</b>	<b>Responsible</b>	<b>Deadline</b>	<b>Status</b>
A45-01	Clarify open items (e.g. Table 8-F) on MOPS between Luke and Armin offline.	Luke/Armin	22.01.2021	Closed



A45-02	Chuck to facilitate comments on WP317B if any with SC-159. In case not possible within FRAC/OC deadline on 1 <sup>st</sup> February e-mail exchange until 8 <sup>th</sup> February proposed.  Plenary Feb 2021: Part of the discussion according the updated agenda.	Chuck	22.01.2021	Closed
A45-03	Anna Guegan to contact WG-62 on the GLONASS interference issue outlined in WP317B (refer to action item A45-02)  Covered in Plenary Feb 2021.	Anna	22.01.2021	Closed

**RTCA SC-222/EUROCAE WG-82 Plenary and WGW meeting: 09.02. , 11.02., 18.02. and 23.02.2021**

Action#	Content	Responsible	Deadline	Status
A46-01	Setup a subgroup to deal with the open items on <b>GPS vs. IRIDIUM Certus</b> interference scenarios.  <i>Remark: It is planned that the subgroup provides draft material solving the open items identified until 19th March 2021 in preparation of the SC-159 Plenary on 26<sup>th</sup> March 2021.</i>	Luke	18.02.2021	<b>Closed</b>
A46-02	Setup a subgroup to deal with the open items on <b>GLONASS vs. IRIDIUM Certus</b> interference scenarios.  <i>Remark: It is planned that the subgroup provides draft material solving the open items identified until 19th March 2021 in preparation of the SC-159 Plenary on 26<sup>th</sup> March 2021.</i>	Luke	18.02.2021	<b>Closed Open</b>
A46-03	Chuck to provide text for the minutes to explain conclusion on cooperation between SC-159 and SC-222 on GPS and GLONASS issues.  <i>Remark: Text is outlined in the minutes above written in italics.</i>	Chuck	18.02.2021	Closed
A46-04	F.2.4.3.1.2.2.3 Rejection of Signals outside NGSS Rx band:  Propose new text to reduce amount of test time. Currently it would consume about one day of test effort.	Adam Sarhage	12.04.2021	<b>Open</b>
A46-05	F.1.3.5.5/F.1.3.5.6 Text and Table F-5 about "half" data rate. Propose new text and coordinate with Alan and Armin via e-mail.	Luke	08.03.2021	<b>Open</b>
A46-06	F.2.2.3.1.3.2.7: Explain what KPI's are meant. Luke to propose new text.	Luke	08.03.2021	<b>Open</b>

A46-07	Iridium & manufacturers to address Alan Schuster-Bruce comment on F2.2.3.1.3.1.13 and Hans T. verbal concerns and suggest wording that accounts for assurance of OOB emission in GNSS bands during environmental tests.	Luke	08.03.2021	<b>Open</b>
A46-08	EFCL to e-mail result of this meetings action to SC-222/WG-82 members for concurrence. E-mail send by 10.03.2021.	Chuck	10.03.2021	<b>Closed</b>