



RTCA Paper No. 172-21/SC223-109

EUR 210-21 / WG108-34

Washington D.C. & Saint Denis, 30 June 2021

**MINUTES OF JOINT RTCA SC-223 (PLENARY #44) /  
EUROCAE WG-108 (MEETING #17) / JOINT MEETING #12**  
**“Internet Protocol Suite (IPS) and AeroMACS”**

<b>Date</b>	<b>June 14 - 17, 2021</b>
<b>Time</b>	<b>10am – 3pm EST, 16h-21h CET, 7am-noon PST Monday – Thursday</b>
<b>Hosted by</b>	<b>Virtual Meeting</b>
<b>Venue</b>	For Webex, Contact Rebecca or Anna
<b>Contact</b>	<b>Rebecca Morrison</b> , Program Director, RTCA (202) 330-0654 or <a href="mailto:rmorrison@rtca.org">rmorrison@rtca.org</a>  <b>Abinaya Kannan</b> , Technical Programme Manager, EUROCAE +33 1 49 46 19 71 or <a href="mailto:abinaya.kannan@eurocae.net">abinaya.kannan@eurocae.net</a>

Attendees:

<b>Name</b>	<b>Role</b>	<b>Affiliation</b>
Berti, Andrea	Member	FREQUENTIS A.G.
Correas, Antonio	Member	EUROCONTROL
d'Humieres, Francois	Member	FREQUENTIS A.G.
Dlouhy, Ron	Member	COLLINS AEROSPACE
Drasil, Pavel	Member	HONEYWELL INTERNATIONAL, INC.

Emberger, Luc	Member	AIRBUS
Flores, Victor	Member	EUROCONTROL
Haindl, Bernhard	Member	FREQUENTIS A.G.
Jaron, Zdenek	Member	HONEYWELL INTERNATIONAL, INC.
Kannan, Abinaya	Technical Programme Manager	EUROCAE
Lardon, Daniel	Member	THE BOEING COMPANY
Leonardon, Laurent	Guest	COLLINS AEROSPACE
Maiolla, Vaughn	Member	ICAO
Malaga, Alfonso	Member	ADVANTAGE CONSULTING ENGINEERING SERVICES (ACES), INC.
Morrison, Rebecca	Program Director	RTCA, INC.
Niraula, Madhu	Member	COLLINS AEROSPACE
Nisbet, David	Member	THALES GROUP
Pelleschi, Stephane	WG-108 Chair	COLLINS AEROSPACE
Phillips, Brent	Government Authorized Representative	FEDERAL AVIATION ADMINISTRATION (FAA)
Popescu, Liviu	Member	EUROCONTROL
Roy, Aloke	SC-223 Chair	HONEYWELL INTERNATIONAL, INC.
Saccone, Greg	Member	THE BOEING COMPANY
Soléry, Michel	Member	DSNA
Tamalet, Stephane	Member	AIRBUS
Varkonyi, Bela	Member	FREQUENTIS A.G.
Von Groote, Anna	Director Technical Programme	EUROCAE
Warns, Timo	Member	AIRBUS
Zeng, Dongsong	SC-223 Secretary	THE MITRE CORPORATION

## **AGENDA**

1. Welcome address. Meeting Organizational Issues
2. Approval of the Agenda
3. Administrative Remarks
4. Review and Approval of Previous Meeting Notes
5. Current State of Standards
  - a. ICAO WG-I (ICAO Annex 10, DOC 9896 ed 3, DOC 10090, DOC 10094, DOC 10095, DOC 10145)
  - b. AEEC A858
  - c. ICAO TFSG
  - d. Other Relevant Standards

6. Current State of Industry Activities
  - a. SESAR
  - b. ESA IRIS
  - c. RTCA SC-228, UAS C2
  - d. RTCA SC-214 / WG-78 / WG-92
  - e. Any Other Relevant Activities
7. IPS MASPS Development
8. Profiles Update
9. Future Meetings
10. Any Other Business of Interest
11. Review of Meeting Decisions and Actions
12. Adjourn

**Agenda Items 1. Welcome address. Meeting Organizational Issues**

Aloke Roy, Chair of SC-223, and Stephane Pelleschi, Chair of WG-108, welcomed the participants.

**Agenda Item 2. Approval of the Agenda**

The group reviewed and approved the meeting agenda.

**Agenda Item 3. Administrative Remarks**

Rebecca Morrison, Program Director, RTCA, presented the RTCA/EUROCAE antitrust, proprietary and membership policy statements. All participants agreed on the statements and no issues were raised. Anna von Groote, EUROCAE Director Technical Programme, reported that she was assigned to other capacity within EUROCAE; and Abinaya Kannan, EUROCAE, will take over the responsibility of WG-108 Technical Programme Manager. The group thanked Anna von Groote for her tireless support over the past few years and welcomed Abinaya Kannan to the group.

**Agenda Item 4. Review and Approval of Previous Meeting Notes**

The group reviewed and approved the previous meeting notes.

**Agenda Item 5. Current State of Standards**

**5a. ICAO WG-I (ICAO Annex 10, DOC 9896 ed 3, DOC 10090, DOC 10094, DOC 10095, DOC 10145)**

Liviu Popescu, EUROCONTROL, briefed the group on the schedule of ICAO IPS standards development, which is shown in Figure 1.



## IPS SARPs and supporting DOCs development Timeline

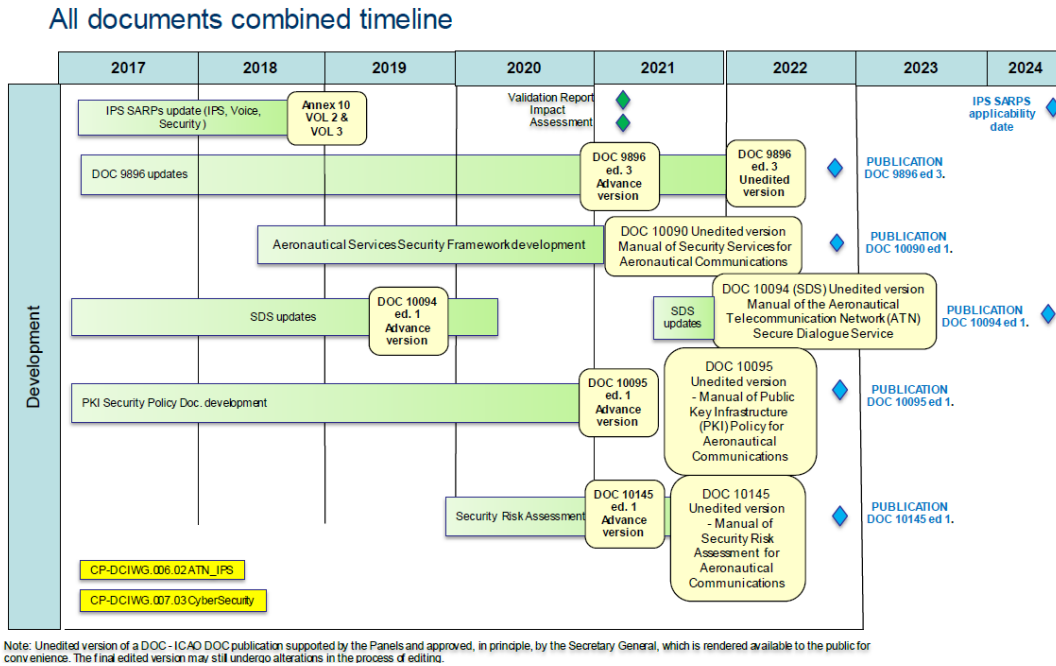


Figure 1. ICAO IPS SARPs and Docs Timeline

### 5b. ARINC858

Greg Saccone, The Boeing Company, and Luc Emberger, Airbus, reported that ARINC 858 has been published by AEEC, and AEEC IPS Subcommittee plans to complete ARINC 858-1 and ARINC 658-1 by the end of 2022.

### 5c. ICAO TFSG

No update on ICAO TFSG. Stephane Pelleschi planned to work with Jonathan Graefe to prepare an update of ICAO TFSG for presentation at the next SC-223/WG-108 meeting.

### 5d. Other Relevant Standards

No other IPS relevant standards were brought up during the meeting.

## Agenda Item 6. Current State of Industry Activities

### 6a. SESAR

Andrea Beri, Frequentis, reported that SESAR Wave 2 progresses well on its FCI validation plan toward achieving TRL6 by August 2021. The key objectives of Wave 2 validation include IPS mobility, multilink, interoperability with OSI, security, and scalability.

#### **6b. ESA IRIS**

No update on ESA IRIS was received during the meeting.

#### **6c. RTCA SC-228, UAS C2**

Aloke Roy, Honeywell, reported that SC-228 released draft DO-377A C2link Systems MASPS Revision A for Final Review and Comment (FRAC) at SC-228 Plenary # 29 meeting on April 15, 2021. The FRAC period ended by June 9, 2021, and now SC-228 is working on the FRAC resolution. It is expected that DO-377A FRAC will be resolved by July 2021.

After completing DO-377A, SC-228 will continue working on DO-377B by April 2023 and develop a new C2 Link MOPS for cellular networks by January 2023.

#### **6d. RTCA SC-214 / WG-78 / WG-92**

Stephane Pelleschi and Dongsong Zeng reported that SC-214/WG-92/DLK are jointly developing revisions to VDL2 standards to improve the VDL2 operational performance and support the emerging IPS network. It was recognized that the VDL2 subnetwork security is dependent on the IPS security risk assessment. Currently SC-214/WG-92/DLK assume VDL2 subnetwork security is required, but this assumption needs to be confirmed by IPS standard committees. Aloke Roy will coordinate with RTCA to find out whether an ISRA between SC-223 and SC-214 is needed.

Dongsong Zeng, MITRE, reported that SC-214 / WG-78 plan to revise ATS data comm SPR and Interop standards and develop new verification test standards by April 2023. The WG-78 TOR was approved by EUROCAE council on June 9, 2021; and SC-214 TOR was approved by the PMC on June 17, 2021.

#### **6e. Any Other Relevant Activities**

No other relevant activities were reported.

### **Agenda Item 7. IPS MASPS Development**

Stephane Pelleschi, Collins Aerospace, updated the status of the outstanding MASPS action items and led the group to review the updated IPS MASPS draft paragraph by paragraph.

During the discussion, the following action items were assigned.

**Action 1.** Rebecca Morrison and Abinaya Kannan to provide rosters of SC-223 and WG-108, to be updated for MASPS publication.

**Action 2.** Rebecca and Abinaya to work with ICAO and AEEC regarding the copyright of the glossary.

**Action 3.** Stephane Pelleschi and Jonathan Graefe to prepare an update on TFSG and PKI CP

**Action 4.** SC-223/WG-108 to analyze the RCP/availability req w.r.t. DO-350A derivation to determine the PKI/CA requirements (availability, certificate/CRL lifetime, etc.) to be added in MASPS and their corresponding validation methods.

**Action 5.** WG-I/SSG: to evaluate req for CA availability of 99% as specified by TFSG CP and decide if stringent req. need for Doc 10095.

**Action 6.** WG-I to assess the impact of security failures in airspace operation w.r.t. ICAO req for servicing all aircraft in airspace and provide guidance for remedial operations.

**Action 7.** SC-223/WG-108 to address security risks and mitigation and provide guidance for ANSP.

**Action 8.** Madhu Niraula, Bela Varkonyi, and Stephane Pelleschi to refine the device class definitions and fix Figure 1-1 and Table 1-2 in the Profiles document.

**Action 9.** Madhu Niraula to coordinate with Thomas Mustach on the performance issues and report back at the next meeting.

**Action 10.** Alope Roy and Brent Phillips to discuss with FAA management about US-EU strategy for large scale IPS demonstration and validation.

#### **Agenda Item 9. Future Meetings**

SC-223 P46 / WG-108, September 27 – October 1, 2021, Virtual. September 28 dedicated to the Profiles discussion.

SC-223 P47 / WG-108, January 18 - 21, 2022, RTCA (room reserved) or EUROCAE.

SC-223 P48 / WG-108, March 14 - 18, 2022, RTCA (room reserved) or EUROCAE.

Monthly telecons

- 10:00 am – 12:00 pm EST, July 28, 2021
- 10:00 am – 12:00 pm EST, August 25, 2021

#### **Agenda Item 10. Any Other Business**

No other businesses were brought up during the meeting.

#### **Agenda Item 11. Review of Meeting Decisions and Actions**

The group reviewed the decisions made and actions created during the meeting.

#### **Agenda Item 12. Adjourn**

The meeting was adjourned around 3:00pm EST, June 17, 2021.

### List of Action Items

Action Item #	Action Content	Responsible	Due Date	Status
P33-1	Update IPS MASPS development schedule.	Dongsong Zeng	Sept. 30, 2019	7/17/2019 – Done.
P33-2	Schedule a telecon to advance IPS security risk assessment.	Madhu Niraula	Sept. 30, 2019	9/30/2019 – Closed. Vic Patel will lead this activity. A telecon with ICAO WG-I SSG is planned on Nov 8, 10AM EST.
P33-3	Coordinate with EASA for participation in SC-223/WG-108 P39 December 2020 meeting for FRAC/OC resolution.	Stephane Pelleschi and Anna von Groote	Sept. 30, 2019	9/30/2019 – keep open. 12/9/2019 – keep open 2/26/2020 – keep open 5/27/2020 – keep open 9/28/2020 – keep open 12/7/2020 – keep open 3/1/2021 – keep open 6/14/2021 - Closed
P33-4	Present DNS concept to ICAO WG-I.	Madhu Niraula	Sept. 30, 2019	9/30/2019 – keep open. In progress. 12/9/2019 – keep open 2/26/2020 – keep open 5/27/2020 – keep open 9/28/2020 – keep open 12/7/2020 – keep open 3/1/2021 – keep open 6/14/2021 – keep open
P33-5	Consolidate inputs to the MASPS moving work-in-progress materials into annexes	Stephane Pelleschi	Sept. 30, 2019	9/30/2019 – Done.
P33-6	Present Collins’ multilink concept to the next ICAO WG-I in September 2019.	Madhu Niraula and Dongsong Zeng	Sept. 30, 2019	9/30/2019 – keep open. 12/9/2019 – keep open 2/26/2020 – Closed
P34-1	Provide an initial MASPS authors list based on SC-223 roster and the group will review and determine the final authors list at the end of the work.	Rebecca Morrison	Dec. 9, 2019	12/9/2019 – Closed and subject to review.
P34-2	Provide instructions of change proposals on the Profile standard.	Rebecca Morrison	Dec. 9, 2019	12/9/2019 – Closed and subject to review.
P34-3	Initiate ISRA between SC-222 and SC-223.	Aloke Roy and David Robinson	Dec. 9, 2019	12/9/2019 – Closed. ISRA drafted by SC-223 but rejected by SC-222. SC-222 will not be able to do anything until August.
P34-4	Coordinate with SC-214 on ISRA between SC-214 and SC-223.	Aloke Roy	Dec. 9, 2019	12/9/2019 – Closed. SC-214 is working to support IPS and no ISRA is needed right now.
P34-5	Coordinate with RTCA WAIC on aviation IPv6 address.	Rebecca Morrison and Aloke Roy	Dec. 9, 2019	12/9/2019 – keep open. 2/26/2020 – keep open 5/27/2020 – keep open 9/28/2020 – Closed. Coordinated with WAIC chair. They don’t have a need for IPv6 address so far.

P34-6	Update IPv6 address format paper, changing platform type to type, changing type bits from 2 to 4, changing subnet ID to 10 bits.	Aloke Roy	Dec. 9, 2019	12/9/2019 – Closed and subject to review.
P34-7	Identify the process of administration and maintenance of IPv6 addresses.	Aloke Roy	Dec. 9, 2019	12/9/2019 – keep open. Also, within the purview of ICAO TFSG/GRAIN. 2/26/2020 – keep open 5/27/2020 – keep open 9/28/2020 – keep open 12/7/2020 – Closed. Paper submitted.
P34-8	Work with PMC to create a special workspace for security information papers storage.	Aloke Roy	Dec. 9, 2019	12/9/2019 – Closed. Security information repository has been decided to move to ICAO.
P34-9	Complete the assigned MASPS sections by next meeting, as assigned in the MASPS progress spreadsheet.	All members	Dec. 9, 2019	12/9/2019 – keep open. 2/26/2020 – keep open 5/27/2020 – keep open 9/28/2020 – keep open 12/7/2020 – Closed.
P34-10	Bring IPS transition and deployment strategy to ICAO DCIWG and request feedbacks from stakeholders of member states.	Aloke Roy and Liviu Popescu	Dec. 9, 2019	12/9/2019 – Closed. Waiting for ICAO action for feedbacks from member states.
P35-1	Talk to Isidore Venetos on IPS SRA by Q2 2020.	Mike Vanguardia	March 9, 2020	2/26/2020 – keep open. Expect an initial draft SRA from Isidore by June 2020 5/27/2020 – keep open 9/28/2020 – Closed. Coordination is going on among CSCAT and other related parties.
P35-2	Present MASPS multilink material to ICAO WG-I MSG in February 2020.	Aloke Roy	March 9, 2020	2/26/2020 – keep open 5/27/2020 – keep open 9/28/2020 – keep open 12/7/2020 – keep open 3/1/2021 – Closed. Inputs provided to SC-223.
P35-3	Prepare slides for convergence of diagrams from different standards and present it to ICAO WG-I.	Stephane Pelleschi	March 9, 2020	2/26/2020 – keep open 5/27/2020 – keep open 9/28/2020 – Closed.
P35-4	Prepare a one-page summary of MASPS structure.	Dongsong Zeng	March 9, 2020	2/26/2020 – Closed. Subject to review
P35-5	Present a multilink paper to ICAO WG-I MSG.	Madhu Niraula and Dongsong Zeng	March 9, 2020	2/26/2020 – keep open 5/27/2020 – Closed
P35-6	Present DSCP QoS mapping to ICAO.	Madhu Niraula and Aloke Roy	March 9, 2020	2/26/2020 – keep open 5/27/2020 – keep open 9/28/2020 – Closed
P35-7	Coordinate with Vaughn Maiolla on how ICAO standards should reference AEEC documents.	Liviu Popescu	March 9, 2020	2/26/2020 – keep open 5/27/2020 – Closed
P35-8	Present AEEC A/G management message section to ICAO.	Madhu Niraula	March 9, 2020	2/26/2020 – keep open 5/27/2020 – keep open 9/28/2020 – keep open 12/7/2020 – keep open 3/1/2021 – Closed.



P35-9	Provide the group feedbacks to SESAR Wave 2 validation recommending align SESAR performance measurements to the architecture that the standard groups are developing.	Francois d'Humieres	March 9, 2020	2/26/2020 – Closed. Action completed.
P37-1	Present the QoS paper to ICAO WG-I meeting.	Madhu Niraula and Alope Roy	Sept. 28, 2020	9/28/2020 – Closed
P37-2	Update the verification paper and send it the industry editor for inclusion to the MASPS draft.	Dongsong Zeng	Sept. 28, 2020	9/28/2020 – Closed
P37-1	Present the QoS paper to ICAO WG-I meeting.	Madhu Niraula and Alope Roy	Sept. 28, 2020	9/28/2020 – keep open 12/7/2020 – Closed.
P37-2	Update the verification paper and send it the industry editor for inclusion to the MASPS draft.	Dongsong Zeng	Sept. 28, 2020	9/28/2020 - Closed.
P37-3	Estimate of line of code for ROHC	Pavel Drasil	Sept. 28, 2020	9/28/2020 - Closed.
P37-4	Provide details on how the ROHC analysis was done	Pavel Drasil	Sept. 28, 2020	9/28/2020 - Closed.
P37-5	Assess whether ROHC at DAL C is reasonably achievable	Collins Aerospace	Sept. 28, 2020	9/28/2020 – keep open 12/7/2020 – keep open 3/1/2021 – keep open. Note: ROHC is optional for UAS C2Link according to DO-377A. 6/14/2021 – Closed, merged with P37-6.
P37-6	Evaluate the impacts of splitting data flows among multiple links with performance-based multilink on ROHC performance. Assess whether ROHC at DAL C is reasonably achievable.	Collins Aerospace (Jon, Madhu and Stephane)	Sept. 28, 2020	9/28/2020 – keep open 12/7/2020 – keep open 3/1/2021 – keep open. 6/14/2021 – keep open
P38-1	Maintain a MASPS action item list.	Stephane Pelleschi	Nov. 16, 2020	12/7/2020 – Closed.
P38-2	Stephane Pelleschi to reach out to Airbus and Alope Roy to reach out to Boeing for co-task-leads of the security task group.	Stephane Pelleschi, Alope Roy	Nov. 16, 2020	12/7/2020 – Closed.
P38-3	Update the IP address paper according to comments received in this meeting	Alope Roy	Nov. 16, 2020	12/7/2020 – Closed. Done.
P41-1	Coordinate with Ravi Jain on Security Management and identity assurance.	Alope Roy	Feb. 22, 2021	3/1/2021 – keep open.
P41-2	Write a standard flow-down chart for MASPS.	Liviu Popescu and Alope Roy	Feb. 22, 2021	3/1/2021 – Closed.
P41-3	Review Stephane Tamalet's input papers on safety requirements and provide feedback on what should be covered in MASPS.	All members	Feb. 22, 2021	3/1/2021 – Closed.
P41-4	Provide FAA generic papers related to aircraft level security assessment.	Madhu Niraula and Lee Nguyen	Feb. 22, 2021	3/1/2021 – Closed. Inputs provided.
P41-5	Provide draft latency allocations for RCTPcsp based on the discussion in the meeting.	Stephane Pelleschi and Madhu Niraula	Feb. 22, 2021	3/1/2021 – Closed. Inputs are subject to group review.
P41-6	Provide a draft outline of security section in MASPS.	Timo Warns	Feb. 22, 2021	3/1/2021 – Closed.

P41-7	Follow up with OPLINK people on PBCS status.	Brent Phillips	Feb. 22, 2021	3/1/2021 – Closed. Coordination is ongoing. Multiple meetings with action plan.
P41-8	Make sure RCTP requirements are adequate for existing/future data services and what RCTP and SLA requirements are used for CSPs.	Brent Phillips, Dongsong Zeng, Pete Muraca, Alope Roy	Feb. 22, 2021	3/1/2021 – keep open. Still need to address operational issues such as security and multilink. 6/14/2021 – keep open. Will be resolved in ISRA.
P41-9	Review ITU-T Y.1542 for performance allocation.	All members	Feb. 22, 2021	3/1/2021 – Closed.
P41-10	Update the CONOPS and bring in C2Link requirements for group consideration.	Alope Roy	Feb. 22, 2021	3/1/2021 – keep open. 6/14/2021 – Closed. Subject to group discussion.
P41-11	Identify MASPS topics for next telecon and remind action owners of their actions.	Stephane Pelleschi	Feb. 22, 2021	3/1/2021 – Closed.
P42-1	Review FCI report and extract additional IPS requirements if necessary.	Stephane Pelleschi	June 7, 2021	6/14/2021 – Closed.
P42-2	Find out potential DO-379 changes including previous FRAC comments.	Madhu Niraula	June 7, 2021	6/14/2021 – keep open.
P42-3	Find out the operational possibility of encryption of ATC messages.	Dongsong Zeng, Alope Roy	June 7, 2021	6/14/2021 – keep open. DTLS AEAD uses both authentication and encryption in the data flow. How would encryption impact the ANSP current operation (e.g., 30-day data recording, etc.)?
P42-4	Craft a whitepaper on RCTP measurement options and potential issues on intermediate nodes.	Bela Varkonyi	June 7, 2021	6/14/2021 – keep open.
P42-5	Explore possibilities for performance measurement.	All members	June 7, 2021	6/14/2021 – keep open.
P42-6	Maintain progress sheet, update MASPS and track actions within MASPS.	Stephane Pelleschi	June 7, 2021	6/14/2021 – Closed. But the action stands until the publication of the MASPS.
P44-1	Provide rosters of SC-223 and WG-108, to be updated for MASPS publication.	Rebecca Morrison and Abinaya Kannan	Sept. 20, 2021	
P44-2	Work with ICAO and AEEC regarding the copyright of the glossary.	Rebecca Morrison and Abinaya Kannan	Sept. 20, 2021	
P44-3	Prepare an update on TFSG and PKI CP	Stephane Pelleschi and Jonathan Graefe	Sept. 20, 2021	
P44-4	Analyze the RCP/availability req w.r.t. DO-350A derivation to determine the PKI/CA requirements (availability, certificate/CRL lifetime, etc.) to be added in MASPS and their corresponding validation methods.	SC-223/WG-108	Sept. 20, 2021	
P44-5	Evaluate req for CA availability of 99% as specified by TFSG CP and decide if stringent req. need for Doc 10095.	WG-I/SSG	Sept. 20, 2021	

P44-6	Assess the impact of security failures in airspace operation w.r.t. ICAO req for servicing all aircraft in airspace and provide guidance for remedial operations.	WG-I	Sept. 20, 2021	
P44-7	Address security risks and mitigation and provide guidance for ANSP.	SC-223/WG-108	Sept. 20, 2021	
P44-8	Refine the device class definitions and fix Figure 1-1 and Table 1-2 in the Profiles document.	Madhu Niraula, Bela Varkonyi, and Stephane Pelleschi	Sept. 20, 2021	
P44-9	Coordinate with Thomas Mustach on the performance issues and report back at the next meeting.	Madhu Niraula	Sept. 20, 2021	
P44-10	Discuss with FAA management about US-EU strategy for large scale IPS demonstration and validation.	Aloke Roy and Brent Phillips	Sept. 20, 2021	

-S-  
Dongsong Zeng  
Secretary

**CERTIFIED** as a true and accurate summary of the meeting.

- S-  
Aloke Roy  
SC-223 Chairman

- S-  
Stephane Pelleschi  
WG-108 Chairman