



RTCA Paper No. 042-22/SC223-120  
 EUR046-22/WG108-38

Washington D.C. & Saint Denis, 5 February 2022

**MINUTES OF JOINT RTCA SC-223 (PLENARY # 49) /  
 EUROCAE WG-108 (MEETING #20) / JOINT MEETING #13**  
**“Internet Protocol Suite (IPS)”**

<b>Date</b>	<b>January 18 - 21, 2022</b>
<b>Time</b>	<b>10am – 3pm EDT, 16h-21h CEST, 7am-noon PDT Tuesday – Friday</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 72 or <a href="mailto:abinaya.kannan@eurocae.net">abinaya.kannan@eurocae.net</a>

Attendees:

<b>Name</b>	<b>Role</b>	<b>Affiliation</b>
Chen, David	Member	FEDERAL AVIATION ADMINISTRATION (FAA)
d'Humieres, Francois	Member	FREQUENTIS A.G.
Dlouhy, Ron	Member	COLLINS AEROSPACE
Graefe, Jonathan	Member	COLLINS AEROSPACE
Grafu, Florin	Member	ROMATSA
Henzl, Martin	Member	HONEYWELL
Haindl, Bernhard	Member	FREQUENTIS A.G.

Huang, Bill	Guest	CONCEPTS BEYOND
Jaron, Zdenek	Member	HONEYWELL INTERNATIONAL, INC.
Kannan, Abinaya	Technical Programme Manager	EUROCAE
Kilbourne, Todd	Member	MOSAIC ATM
Kolek, Kirk	Guest	COLLINS AEROSPACE
Kopman, Ashley	Guest	CONCEPTS BEYOND
Ladron, Daniel	Member	BOEING
Leonardon, Laurent	Guest	COLLINS AEROSPACE
Maiolla, Vaughn	Member	ICAO
Morrison, Rebecca	Program Director	RTCA, INC.
Muraca, Peter	Member	FEDERAL AVIATION ADMINISTRATION (FAA)
Nepute, Brandon	Member	BOEING
Niraula, Madhu	Member	COLLINS AEROSPACE
Nisbet, David	Member	THALES GROUP
Olive, Mike	Member	HONEYWELL
Patterson, Patrick	Guest	CARILLON INFORMATION SECURITY
Pelleschi, Stephane	WG-108 Chair	COLLINS AEROSPACE
Phillips, Brent	Government Authorized Representative	FEDERAL AVIATION ADMINISTRATION (FAA)
Prisaznuk, Paul	Member	SAE ITC
Popescu, Liviu	Member	EUROCONTROL
Hawkins, Richard	Member	WIMAX FORUM
Roy, Alope	SC-223 Chair	HONEYWELL
Saccone, Greg	Member	BOEING
Secen, Albert	Member	RTCA
Segers, Robert	Member	FEDERAL AVIATION ADMINISTRATION (FAA)
Soléry, Michel	Member	DSNA
Stouffer, Virginia	Guest	AURA NETWORK SYSTEMS
Tamalet, Stephane	Member	AIRBUS
Varkonyi, Bela	Member	FREQUENTIS A.G.
Warns, Timo	Member	AIRBUS
Zeng, Dongsong	SC-223 Secretary	THE MITRE CORPORATION

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

Alope 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, and Abinaya Kannan, Technical Programme Manager, EUROCAE, presented the RTCA/EUROCAE antitrust, proprietary and membership policy statements. All participants agreed on the statements and no issues were raised.

**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.

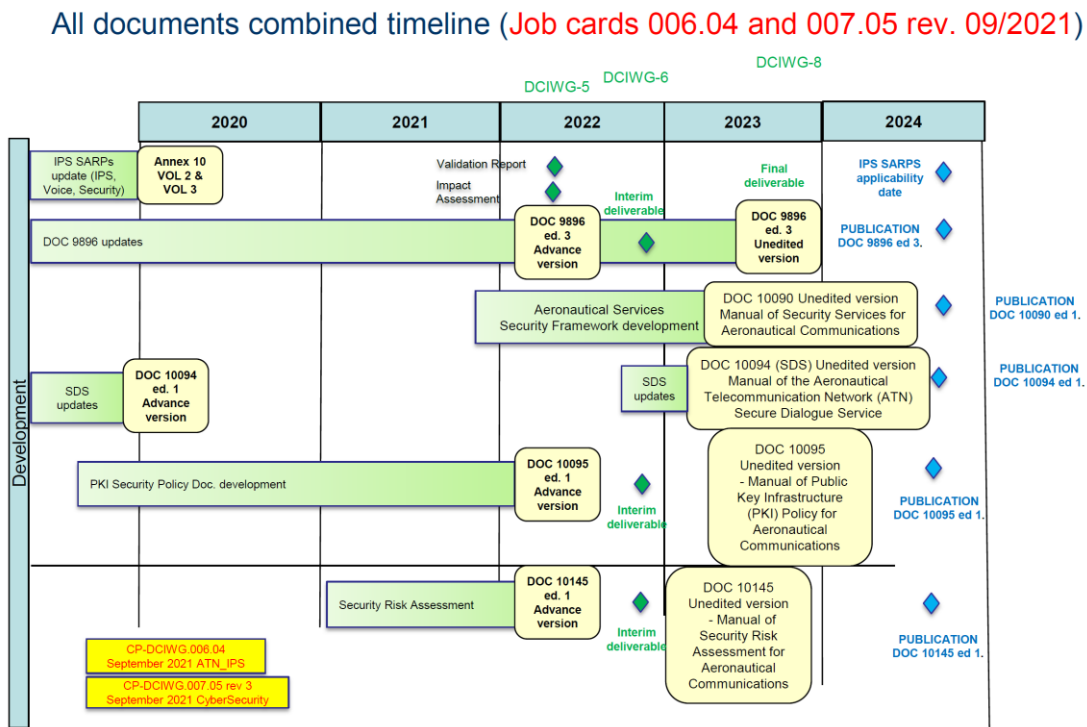


Figure 1. ICAO IPS SARP and Docs Timeline

**Action 1.** Liviu Popescu to coordinate with RTCA, EUROCAE and AEEC to ensure smooth flow down of WG-I decisions.

**5b. ARINC IPS Subcommittee**

Greg Saccone, Boeing, and Mike Olive, Honeywell, reported that the ARINC858 development is progressing on schedule.

### **5c. ICAO TFSG**

Robert Segers, FAA, briefed the group on the latest progress made by ICAO Trust Framework Study Group (TFSG). The Certificate Policy document is expected to be completed in March 2022 timeframe.

Ashley Kopman, Concepts Beyond, and Robert Segers, FAA, presented a conceptual paper titled “Server-based Certificate Validation Protocol (SCVP) Stapling,” which proposes to extend TLS/DTLS 1.2 and 1.3 to include SCVP stapling for IPS certificate validation in a cross-certified international aviation domain. Ashley Kopman, Robert Segers and their team plan to draft a new RFC of the proposed TLS/DTLS extension with SCVP stapling and submit it to IETF for approval in the near future.

**Action 2.** Robert Segers and his team to develop typical SCVP operation scenarios and collect/estimate the SCVP performances for those scenarios.

**Action 3.** Laurent Leonardon to provide information on alternative approaches for SCVP.

**Action 4.** Robert Segers and Patrick Patterson to identify the submittal date of the draft RFC with SCVP stapling extension.

### **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**

Bela Varkonyi, Frequentis, reported that SESAR is validating AGMI with Inmarsat network under FCI Solution 77. More results will come out around June or July time frame.

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

No update on ESA IRIS was received during the meeting.

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

Aloke Roy, Honeywell, and Albert Secen, RTCA, provided an update on the SC-228 activities. The architecture of ATS communications over C2Link, i.e., either Ground-Ground architecture or relay architecture, is still an open issue although many members from UAS community prefer the relay architecture.

Stephane Pelleschi, Collins Aerospace, reported that he had initiated a coordination meeting with WG-105 about C2Link requirements. WG-108 will keep coordinating with WG-105 on IPS MASPS development and may invite WG-105 to review MASPS relevant sections in the future if needed.

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

Stephane Pelleschi, Collins Aerospace, reported that SC-214 VDLSG/WG-92/DLK are jointly developing revisions to VDL2 standards to improve the VDL2 operational performance and support the emerging IPS technology. Regarding IPS support, the committee is evaluating three VDL2 candidate options, and the consensus of final solution has not been reached.

Dongsong Zeng, MITRE, added that SC-214 and WG-78 are working jointly to develop ATS data comm SPR and Interop standards revision B and a new verification test standard by April 2023.

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

No other relevant activities were reported.

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

#### **7a. MASPS Development Progress Overview**

Stephane Pelleschi, Collins Aerospace, provided an overview of the MASPS development progress.

#### **7b. Review Progress on MASPS actions items**

Stephane Pelleschi, Collins Aerospace, updated the status of the outstanding MASPS action items.

#### **7c. MASPS Security Team Discussion**

Timo Warns, Airbus, presented an information paper titled “IPS PKI CA Availability vs. Certificate/CRL Validity,” which provides some draft requirements on ground certificate lifetime, CRL lifetime, and IPS PKI CA availability aiming to support IPS RCP. The group discussed the proposal and would like to give it more thought.

**Action 5.** Performance focus group to review IPS CA performance requirements proposed by Timo Warns and check whether the proposed requirements are sufficient to meet the RCPs.

**Action 6.** Madhu Niraula and Stephane Pelleschi to investigate EST over COAP.

#### **7d. Performance requirements team**

Bela Varkonyi, Frequentis, presented his slides on “IPS Network Performance Measurements.” The presentation consists of the following 10 parts:

- Operational Performance Assessment,
- Performance Data Collection,
- Latency Measurement Optimization,
- Performance Targets for Multi-Link,
- DiffServ Impacts,
- Latency Measurement Challenges,
- Availability Verification,
- Continuity Verification,
- Integrity Verification, and
- OPA Reporting and Compliance Evidence.

The group reviewed the slides and would like to give them more thought.

### **7e. OSED & OPA**

Aloke Roy, Honeywell, presented an information paper titled “IPS Control Items for Performance and Functional Requirements considerations,” which includes security control items, mobility and multilink control items, and name and address resolution control items. The group discussed the paper and made Decision 1.

**Decision 1.** The group agreed that the OSA and OPA from DO-350A/ED-228A are adequate for IPS to adopt. Need to assess IPS critical components, i.e., PKI and mobility, to ensure the completeness of hazard coverage.

Madhu Niraula, Collins Aerospace, presented an information paper on potential IPS operational performance issues due to PKI and security.

**Decision 2.** It is not necessary to allocate performance requirements at IPS component level. However, sufficient guidance must be provided for implementations with architectural variances including PKI impacts on system continuity, availability and integrity.

### **7f. Verification Methods**

Dongsong Zeng, MITRE, provided a draft editorial update of MASPS Chapter 5 Delay Performance Requirement Verification Method (File name: Sec 5 Updates\_IPS MASPS 220114\_DZ.docx). The proposed update will be incorporated into the next version of MASPS draft.

### **7g. Operational Safety Assessment**

Aloke Roy, Honeywell, presented his input paper on IPS safety requirements. The group discussed the paper and provided comments. The updated paper with comments is documented in “IPS Safety Requirements\_DZ\_AR-Jan2022.docx.”

### **Agenda Item 8. Profiles Update**

Mike Olive, Honeywell, pointed out the title discrepancy between DO-379 and ED-262, i.e.,

DO-379 title is “Internet Protocol Suite Profiles,” while

ED-262 title is “Technical Standard of Aviation Profiles for ATN/IPS.”

[Decision 3](#). Change DO-379 title to align with ED-262.

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

SC-223 P50 / WG-108, March 14 - 18, 2022, Virtual.

SC-223 P51 / WG-108, June 13 - 17, 2022, EUROCAE (room reserved).

SC-223 P52 / WG-108, September 26 - 30, 2022, RTCA (room reserved)

SC-223 P53 / WG-108, December 5 - 9, 2022, EUROCAE (room reserved)

### **Monthly telecons**

10:00 am – 12:00 pm EST, third Wednesday every month through the end of this year.

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

Aloke Roy, Honeywell, presented slides titled “IPS Coordination across Standards Development Organizations.” Albert Secen and Rebecca Morrison, RTCA, Abinaya Kannan, EUROCAE, and the committee discussed the topic and agreed on the following copyright guidelines:

1. When possible, the group will reference existing documents with the format:
  - DOCUMENT NAME NUMBER () is a general version place holder. The exact version is specified in the reference section. A note can be made to require applying the latest available version of the referenced document if needed.
  - If a specific version is needed, that version will need to have been published.
2. RTCA and EUROCAE will work with the SDOs to capture correct copyright wording when a figure or other system overview description material will be produced in multiple documents, but publication may be offset from the publication date. It is possible for different SDOs to have joint copyright over some common materials.
3. EUROCAE and RTCA will support a meeting after the June plenary going step by step through information that will be needed to be reviewed for copyright after the MASPS and Profiles are ready for a final review and content.
4. WG-108/SC-223 will identify in the RAC version all content that needs to have copyright worked out. (If you don't mark it for us, RTCA and EUROCAE will assert sole copyright together.)

### **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, January 21, 2022.



### List of Action Items

Action Item #	Action Content	Responsible	Due Date	Status
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 9/27/2021 – keep open 11/24/2021 – keep open. Stephane will provide an update in the next meeting. 01/18/2022 – 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. 9/27/2021 – Closed.
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. 9/27/2021 – keep open. 11/24/2021 – Closed. RCTP discussion is ongoing in SC-214/WG-78/OPDLWG. Additional materials will be provided in MASPS Chapter 5.
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. 9/27/2021 – Closed. On-going activity.
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.)? 9/27/2021 – Closed. Paper submitted to DCIWG. The action is moved to WG-I.
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. 9/27/2021 – keep open. 11/24/2021 – Closed. Bela will provide a whitepaper for inclusion into MASPS Chapter 5.
P42-5	Explore possibilities for performance measurement.	All members	June 7, 2021	6/14/2021 – keep open. 9/27/2021 – Closed. Merged with P42-4.
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	Sept. 20, 2021	9/27/2021 – Closed.

		Abinaya Kannan		
P44-2	Work with ICAO and AEEC regarding the copyright of the glossary.	Rebecca Morrison and Abinaya Kannan	Sept. 20, 2021	9/27/2021 – Closed
P44-3	Prepare an update on TFSG and PKI CP	Stephane Pelleschi and Jonathan Graefe	Sept. 20, 2021	9/27/2021 – keep open. 11/24/2021 – keep open. 01/18/2022 – closed. Rob will provide input.
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	9/27/2021 – keep open 11/24/2021 – keep open. PKI and CA requirement discussion on going. 01/18/2022 – keep open. Timo will provide inputs.
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	9/27/2021 – Closed. Coordination is ongoing.
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	9/27/2021 – Closed. Coordination is ongoing.
P44-7	Address security risks and mitigation and provide guidance for ANSP.	SC-223/WG-108	Sept. 20, 2021	9/27/2021 – Closed. On-going activity.
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	9/27/2021 – Closed. Proposal is subject to review.
P44-9	Coordinate with Thomas Mustach on the performance issues and report back at the next meeting.	Madhu Niraula	Sept. 20, 2021	9/27/2021 – Closed. Coordination is ongoing.
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	9/27/2021 – Closed.
P47-1	Connect Stephane Pelleschi with EUROCAE WG-105 UAS cellular C2Link MOPS subgroup.	Abinaya Kannan	Jan. 11, 2022	11/24/2021 – Closed.
P47-2	Coordinate with Luc and Greg on whether to include ARINC658 in MASPS.	Stephane Pelleschi	Jan. 11, 2022	11/24/2021 – keep open. AEEC IPS may not want to maintain ARINC 658. 01/18/2022 – closed. Stephane and Greg will provide inputs.
P47-3	Discuss and coordinate with Solution 77 OSA team on IPS safety/security assessment (Bela to check with Solution 77 and find out who from Solution 77 side should attend this meeting, 10am – 12pm EST, Oct. 22)	IPS safety focus group	Oct. 22, 2021	11/24/2021 – Closed. A new POC of Solution 77 will be identified.
P49-1	Coordinate with RTCA, EUROCAE and AEEC to ensure smooth flow down of WG-I decisions.	Liviu Popescu	March 7, 2022	

P49-2	Develop typical SCVP operation scenarios and collect/estimate the SCVP performances for those scenarios.	Robert Segers and his team	March 7, 2022	
P49-3	Provide information on alternative approaches for SCVP.	Laurent Leonardon	March 7, 2022	
P49-4	Identify the submittal date of the draft RFC with SCVP stapling extension.	Robert Segers and Patrick Patterson	March 7, 2022	
P49-5	Review IPS CA performance requirements proposed by Timo Warns and check whether the proposed requirements are sufficient to meet the RCPs.	Performance focus group	March 7, 2022	
P49-6	Investigate EST over COAP.	Madhu Niraula and Stephane Pelleschi	March 7, 2022	

-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