

**RTCA- 228**  
**Summary of Plenary #19- RTCA Paper No. 099-19/SC228-061**  
**Washington, DC**  
**1:00 PM EST, April 18, 2019T**

The nineteenth plenary of RTCA Special Committee 228 was called to order by SC-228 Co-Chair, John Moore at 1:00PM (EST) on April 18, 2019, using Webex audio and web conferencing.

1. Agenda Item #1- Call to Order: Welcome
  - 1.1. John Moore welcomed all attendees and deferred to Al Secen for logistics and administrative remarks.
  - 1.2. John stated the purpose of the meeting was to review status of working groups.
2. Agenda Item #2- Review RTCA meeting guidelines
  - 2.1. Al Secen reviewed the Anti-Trust Policy, the Proprietary Policy and the RTCA Committee Participation Membership Policy.
  - 2.2. Al asked all in attendance to sign in via the roster or provide contact information on the new member sheet.
3. Agenda Item #3- Opening remarks/ Introductions
  - 3.1. Roll Call- the complete list of session participants is listed in Appendix A.
  - 3.2. There are 591 registered members since plenary number one.
4. Agenda Item #4- Approve meeting minutes form Meeting #18
  - 4.1. Reviewed the key points of plenary #18 Minutes as documented. Thank you to Amelia Wilson for taking notes.
  - 4.2. Acceptance of plenary #18 minutes; moved by Jim Williams, seconded by Marvin Hammond. Unanimously approved.
5. Agenda Item #5- WG1 Status Report
  - 5.1. Presented by Don Walker and Ted Lester, WG1 Co-chairs.
  - 5.2. Plan for Final Review and Comment (FRAC) Rev A by September 2019.
  - 5.3. Plan for Rev B by September 2020
  - 5.4. Reviewed DAA operational environments for the two phases
    - 5.4.1. Phase 1 Enroute Well Clear
    - 5.4.2. Phase 2 Terminal area Well Clear and non-cooperative well clear
  - 5.5. Working group has split into nine subgroups
  - 5.6. Current status of Rev A
    - 5.6.1. New participation from Raytheon and Harris
    - 5.6.2. Assessment in work to determine ability to support schedule
    - 5.6.3. DO-365A MOPS received 928 comments from 34 commenters
    - 5.6.4. The remaining items are:

- 5.6.4.1. Terminal are transition point and alerting times
  - 5.6.4.2. Verification procedures and test vectors
  - 5.6.5. Open issue: High Altitude/Endurance Aircraft (HAPS) and small aircraft need an alerting and guidance plan
  - 5.6.6. Upcoming meetings will be in June, July and October.
6. Agenda Item #6- WG2 Status Report
- 6.1. Jim Williams and Steve Van Trees, WG2 Co-Chairs provided status
  - 6.2. ICAO UAS advisory group is aligned to SC-228.
  - 6.3. AIA Spectrum management proposal status provided
    - 6.3.1. C-band for C2 only allowed for experimental purposes, as no FCC rulemaking exists to date.
    - 6.3.2. Negative comments from CTIA, the wireless communications trade association
  - 6.4. Overview of FAA UAS Spectrum and section 374
    - 6.4.1. FAA reauthorization bill requires FAA to determine bands and use thereof, and policy guidance on usage.
    - 6.4.2. FAA could divide bands with C Band for large UAS and L Band for lower altitude UAS.
    - 6.4.3. Question posed: Should DO-362A be revised to adapt to the new L-Band approach?
    - 6.4.4. Much discussion on not using DME frequency, when this great opportunity. The DME rework idea was brought up by Don Walker. There would be much preparatory work that would have to go into addressing it to the PMC. A White Paper could be presented to the PMC and then discussions held with the PMC on if it should be forwarded, unsolicited, to the FAA for consideration Before that can be done, the paper has to be written and reviewed/approved by the committee.
  - 6.5. Progress on DO-362 completion
    - 6.5.1. Four manufacturers activity engaged in updated standard development
    - 6.5.2. Testing and analysis still required on the transmitter noise floor change from -65 dBr to -96 dBr.
    - 6.5.3. The 500 kHz spacing could go higher, but further research required.
    - 6.5.4. WG2 consensus on dynamic frequency allocation to manage C and L Bands
    - 6.5.5. NASA provided testing and plan for further testing on C Band radios
  - 6.6. Progress on DO-377A
    - 6.6.1. WG2 sees no issues on initial RAC to the OSED update
    - 6.6.2. Working continues on OPA and OSA
    - 6.6.3. WG2 requests support from WG1 for DAA expertise at the next face-to face meeting
      - 6.6.3.1. Updates to the OSED, OSA and OPA

- 6.6.3.2. Understanding of DAA system and safety consequences from loss C2 link
- 6.6.3.3. Modeling and Simulation, DAA operational timelines and safety considerations
- 6.6.3.4. Don Walker proposed a joint telecom to determine a solution.
- 6.6.4. KA/KU Satcom use for C2 link plan and budget drafted
  - 6.6.4.1. WG2 would like to add this to DO-377A
  - 6.6.4.2. Draft document change request shared.
- 6.6.5. Additional Presentation Overviews
  - 6.6.5.1. NASA LinQuest Corp C-Band SATCOM research briefing
  - 6.6.5.2. C-Band SATCOM compatibility
  - 6.6.5.3. ICAO RPAS panel
- 7. Agenda Item #7- EUROCAE WG 105 Status Report
  - 7.1. AI Secen provided status.
  - 7.2. The sixth Plenary session is scheduled for June 6<sup>th</sup>, 2019 at EUROCONTROL HQ
  - 7.3. There are 255 members, from more than 100 organizations registered
  - 7.4. Two documents published in 2019
    - 7.4.1. ED-258 OSED for Detect & Avoid [Traffic] in Class D-G airspaces under VFR/IFR
    - 7.4.2. ED-253 OSED for Automation and Emergency Recovery
  - 7.5. Focus Teams
    - 7.5.1. DAA
      - 7.5.1.1. WG review done – Comments resolution in progress. Will coordinate with SESAR JU Project CORUS CONOPS Draft 2
    - 7.5.2. C3S
      - 7.5.2.1. WG MOPS review complete
    - 7.5.3. UTM
      - 7.5.3.1. MOPs in work
    - 7.5.4. ERA
      - 7.5.4.1. MASPS in work
    - 7.5.5. DAW
      - 7.5.5.1. MASPS for Remote Pilot Stations supporting IFR operations into non-segregated airspace internal review on going
    - 7.5.6. SORA
- 8. Agenda Item #8- New Business- Future Plenary Dates
  - 8.1. John Moore led the discussion and provided an open invitation to Jay Merkel.
  - 8.2. WG2 is working a TOR update with a proposed consolidation at the 20<sup>th</sup> Plenary on July 25<sup>th</sup>.
  - 8.3. Proposed Future Meetings
    - 8.3.1. 25 July 2019 20th Plenary

- 8.3.1.1. DAA MOPS Rev A. Enter FRAC
  - 8.3.1.2. Ground Radar MOPS Enter FRAC
  - 8.3.2. 24-25 October 2019 21st Plenary
    - 8.3.2.1. DAA MOPS Rev A Exit FRAC
    - 8.3.2.2. Radar MOPS Exit FRAC
    - 8.3.2.3. C2 Links MASPS Rev A Enter FRAC
  - 8.3.3. 30 January 2020 22nd Plenary
    - 8.3.3.1. C2 Links MASPS Rev A Exit FRAC
9. Agenda Item #9- Adjourn
- 9.1. John Moore adjourned the plenary at 2:35 PM EST.
  - 9.2. Ted Lester called a motion to adjourn and Don Walker seconded. Meeting Adjourned.

Submitted by:  
Christina Westover  
Secretary, RTCA SC-228

CERTIFIED as a true and accurate summary of the meeting.

Name  
Title

**Appendix A- List of SC-228 Plenary Participants**

John Moore	SC-228 Plenary, Co-Chair	Collins Aerospace
Paul McDuffee	SC-228 Plenary, Co-Chair	The Boeing Company
Jonas Trego	SC-228 Plenary, WG1 Secretary	General Atomics- Aeronautical Systems Inc.
Don Walker	SC-228 WG1 for DAA, Co-Group Lead	Honeywell International Inc.
Ted Lester	SC-228 WG1 for DAA, Co-Group Lead	MITRE
Steve Van Trees	SC-228 GAR, WG2 for C2, Co-Group Lead	FAA, AIR-130
Jim Williams	SC-228 WG2 Co-Group Lead	JHW Unmanned Solutions LLC
Al Secen	SC-228 Program Director	RTCA
Christina Westover	SC-228 Plenary, Secretary	The Boeing Company

**ATTENDEES**

<b>Company</b>	<b>Name</b>
ALPA	Mark Reed
ARCON Corp	Dennis Colbert Siva Sivananthan
Boeing Company	Paul McDuffee Amelia Wilson Ian Wilson Christina Westover Jessie Turner Stephen Yun
Calhoun Analytics	Sean Calhoun
Cavan Solutions	Sean Ghazavi
Cobham Aerospace Communications	Jeff Knickelbein
Collins Aerospace	John Moore Randy Jacobson
Electronics and Telecommunications Research Institute (ETRI)	He Wook Kim
FAA	Stephen Van Trees Anthony Long Summer Guerrero Chris Swider Paul Campbell Larry Cowles Lee Nguyen Rose Merchant-Bennett
FirebirdSE LLC	Bruce Eckstein
Garmin Ltd.	Been Peetz
General Atomics Aeronautical Systems, INC	Jonas Trego Tyler Miles
Honeywell Int, Inc	Don Walker Al Malaga
JHW Unmanned Solutions LLC	Jim Williams

Johns Hopkins University	Sam Smearcheck
Kitty Hawk	Nate Fisher
L3Technologies	Rudy Johnson
Ligado Networks	Sam Weich
MIT Lincoln Laboratory	Maria Kuffner
MITRE Corp	Izabela Gheorghisor Ted Lester
NASA	Conrad Rorie Donna Clements Jack Connolly Ty Hoang
Northeast UAS Airspace Integration Research	Ray Young
Northrup Grumman Corp	Lance King
Raytheon	Michael Dubois
Regulus Group	John Paranzino Shelly O'Leary
Technology Providers	Marvin Hammond
Transport Canada	Tom Hastie
UAvionix	Jim Davis