



EUR Paper No :294-24 / WG-119-34
RTCA Paper No: 237-24/SC239-045

Saint Denis, 13Jun2024
Washington, 13Jun2024

**EUROCAE WG-119 Plenary Meeting #15 “Radar Altimeter” /
RTCA SC-239 Plenary Meeting #15 “Low Range Radar Altimeter”**

DATE: 13 June 2024

TIME: 9 – 11 AM EDT (USA)

PLACE: Hybrid (Airbus - Hamburg, Germany / Online)

CONTACTS:

Jean-Luc Robin (Jean-Luc.robin@airbus.com)
Seth Frick (Seth.Frick@honeywell.com)
Sai Kalyanaraman (Sai.Kalyanaraman@collins.com)
Barbara Clark (Barbara.clark@faa.gov)
Rebecca Morrison (rmorrisson@rtca.org; (202) 330-0654)
Mark Watson (Mark.Watson@eurocae.net)

AGENDA

1. Welcome and Introductions.
2. EUROCAE/RTCA presentations (Administrative Reminders – Rebecca/Mark).
3. Validation of the previous Plenary MoM (14thplenary) (Sai).
4. Working Group Reports (Timo, Dave, Eddie, Kim, Miles, Sophia).
6. Review of Schedule and Scope for MOPS development
7. Review and approve Terms of Reference Change for SC-239.
8. Discussion of Future Meetings.
5. Discussion of information received from members of the public.
9. Other Business.
10. Review of Action Items.
11. Adjourn.

PARTICIPANTS –

<u>Name</u>	<u>Organization</u>
A Chickneas	Guidehouse
Akshay Tripathi	USAF
Andrew Roy	acr@asri.aero
Barbara Clark	FAA
Bill Harokopus	AVSI
Bryan M	Guidehouse Federal
Clay Barber	Garmin
David Redman	Texas A&M University
Donny Morrow	ALPA
Doug Hyslop	CTIA
Ed Hahn	ALPA
Eddie Straub	Garmin
Gary Berz	EuroControl
Hussain Al-Sadi	Boeing
Italo Aguiar	Embraer
James Gilb	General Atomics – ASI
Jared Adams	ALPA
Jean-Luc Robin	Airbus
Jim Williams	JHW Unmanned Solutions
Josep Giné	ATR
Kambiz Rahnvardy	FCC
Kim Kolb	Boeing
KLM Piet van den Berg	KLM
Luis Alves	Embraer
Marie Hogestad	FAA
Mark Racek	Ericsson
Mark Watson	Eurocae
Matt Harris	Boeing
Miles Bellman	FAA Spectrum
Navid M	AT&T
Nic Shrout	ASRI
PAGLIARINI Mauro	EASA
Patrick Welsh	Verizon
Pete Tenerelli	Verizon
Rajah Castillo	Sensor Systems
Rebecca Morrison	RTCA
Rebecca Swaszek	US DoT – Volpe
Rob Steinle	FAA

Sai Kalyanaraman	Collins Aerospace
Sarah Leggin	CTIA
Sathya Venkatasubramanian	Ericsson
Sergio Roberto	ANAC
Seth Frick	Honeywell
Sharukh Virani	Free Flight Systems
Shunichi Futatsumori	ENRI – Japan
Sophia THIZON	Thales Group
Stephane TALLET	Thales Group
Ted Peterson	Collins Aerospace
Timo Warns	Airbus
Torben – GSMA	GSMA
Tuck Poon	Nokia

Agenda Item 1: Welcome, Introductions and Administrative Remarks

Jean-Luc Robin welcomes the group and the group did a round of introductions.

Agenda Item 2. EUROCAE/RTCA presentations (Administrative Reminders)

Rebecca and Mark Watson provided the RTCA and Eurocae policies and administrative reminders.

Agenda Item 3. Validation of the previous Plenary MoMs

Sai presented minutes from the previous plenary and obtained approval from the group on the same.

Agenda item 4 : Working Group Reports

Jean Luc went through the list of SG's with updates to share at this plenary and handed it over to Kim Kolb who leads SG2.

Kim Kolb provided an SG2 status update and shared the envelope of the global emissions mask which was based on the identified RF environment. Although there was a lot of activity in many countries, Kim mentioned that there were no regulatory changes at that time to drive the mask any higher than what was reflected in the envelope. Doug Hyslop from CTIA mentioned that the USN Cooperative engagement capability operates at a high-power level above 4400 MHz and Kim responded that this system does not get used on land. As part of future SG2 activities, the group will track work on future WRC AI's such as the WRC-31 AI to allocation 3.4 – 3.7 GHz for aeronautical use. SG2 will continue to identify the evolving RF environment and track the development of industry standards and provide enhanced descriptions and additional background information to go along with the same.

Miles Bellman, chair of SG3 presented the next update. He indicated that SG3 was working on developing RA transmitter requirements and test procedures. He identified three key transmitter performance requirements that SG3 was looking at (Tx power, Operating free and Emissions spectra) and opined that these are mature requirements and would likely not change till RAC. He

forked out the need to validate the national cert compliance requirements from as many countries as possible. the need to identify the level of requirements in the MOPS vs what is done today in Tx certification process with FCC and other regulators (through 3rd party testing). The approach would be to comply with FCC and ITU regulations plus review other national regulations in case something is more stringent for the areas where the RA equipment will be operated. As part of test procedure development, he indicated that the level of details for the test proc have been scoped and standard test conditions have been identified and drafted. Applicable environmental tests and required test equipment have been identified as well.

Eddie Straub, chair of SG4 presented an update on his SG activities. He indicated that the scope of SG4 was to help develop all performance requirements and test procedures with the exception of those that are specific to the Transmitter (SG3), RF Interference (SG5), Data Security (SG6) and antenna requirements (SG7). He added that the technical challenges that lay ahead included the development and validation of new, higher-fidelity RF loop-loss modeling and the completion and validation of remaining requirements/test procedures (including the flight test procedures). He also added that risks to the current set of activities were a combination of technical, schedule and resource driven factors. He then proceeded to provide the plenary a high-level brief on the SG4 activities since the then previous plenary (08Feb2024) and indicated that during the current SC-239 week (June 2024) SG4 progressed towards completion of the MOPS draft and continued developing the details of the loop loss modeling and validation (for the full altitude range).

Dave Redman provided the SG5 update. He indicated that the scope of SG5 is to develop RF interference requirements and stated that the technical challenges are to define an ITM that fulfils the intent of the ToR whilst allowing practical demonstration of compliance and is robust against known, planned and future uses of adjacent band spectrum. He added that the testable ITM values are dependent on antenna requirements and validation efforts will be based on the performance requirements. HE identified schedule and the challenges behind the requirements validation efforts as potential risks to address. He then proceeded to provide the plenary a high-level brief on the SG5 activities since the then previous plenary (08Feb2024) and indicated that during the current SC-239 week (June 2024) SG4 progressed towards completion of the sections that addressed RFI Tolerance and RFI Tolerance requirements. He added that the SG can draft requirements with proposed ITM values to support RAC, but final ITM values will need to be validated before FRAC.

Timo Warns (chair of SG6) presented an SG6 overview. He indicated that SG6 was having bi-weekly meetings with focused discussions towards maturing security requirements (alignment with SG4 requirements) and align the test procedures with the SG4 approach. The summary of the overall status indicated that the security performance requirements were revised towards getting ready for RAC (pending dependencies on other SG efforts) and the group had identified areas that had insufficient/less mature test procedures and also identified a need to evaluate the need to include environmental test conditions and resultant test procedures to go along with the same. Next steps planned were to address the remaining requirements and converge on test conditions and develop the remaining test procedures in alignment with ongoing SG4 efforts.

Sophia presented the SG7 updates. Challenges identified includes the confirmation of value of the performance of the antenna requirements. As part of this, the group anticipated feedback from RA Antenna Manufacturers (RAAM) on the impacts of the ground plane size on the antenna radiation pattern and other antenna performance characteristics. The expectation from the group is that RAAM's will be able to leverage their simulation and prototyping efforts to establish confidence in their ability to address the antenna requirements. SG7 planned to continue meeting bi-weekly to

progress on antenna requirements and test procedure development and captured specific actions in support of the same.

Ted Peterson asked whether the antenna will be validated by SG7 and Seth Frick mentioned that this will be in the phase after RAC document submission. Sai Kalyanaraman asked if antenna manufacturers will prototype and when that may happen. Rajah Castillo from Sensor said that he is performing simulations and that there is not good data from the same at that time and that they will address prototyping the antenna after the simulations yield results.

Agenda Item 6: Review of Schedule and scope for MOPS development

An overall view of the MOPS schedule and status was provided and the 239 leads indicated that process steps previously outlined for the MOPS development (including RAC and FRAC) will still be followed. They added that the detailed MOPS schedule update is still under development and the committee was working towards providing a consensus ToR update.

Agenda Item 7: Review and approve ToR change for SC-239

The ToR with a new MOPS completion date was proposed by leadership on May 31st and is still under review by committee members. Comments were requested by 20 June 2024. Since feedback already received indicates a lack of committee consensus on the proposed ToR update, no motion will be considered at this time to approve the ToR and recommend it to the PMC. Full committee working meeting is scheduled for June 21st to discuss inputs on the ToR from membership. While the ToR feedback is resolved, the committee will continue to work on the MOPS development according to the established scope of work and process steps. Rebecca Morrisson walked the group through how to comment and vote on the ToR.

Agenda Item 8: Discussion of Future Meetings

1. SC-239 meeting and plenary – Week of Sep 23rd 2024 in Washington D.C.
2. SG5, SG7 meeting – 26-30, Aug 2024 (Location TBD)
3. SC-239 meeting and plenary – Europe – Week of 27 Jan 2025 – location TBD
4. SC-239 meeting and plenary – US - Week of Apr 28th 2025 – location TBD

Agenda item 5: Discussion of Information received from members of the public

RTCA received additional input from CTIA dated April 9th, 2024. This is available to members of SC-239/WG-119 for review in AerOpus. RTCA delivered the technical input to the committee leadership immediately, and per our process, written submissions will continue to be accepted at any time and noted in the following plenary. Committee leadership reviewed the material and determined that there is no direct action required for the MOPS development outside of the current

plan. Other committee members were free to review the material and raise any comments or concerns to the leadership.

Agenda item 9: Other Business

Doug Hyslop from CTIA has requested to speak at this plenary to provide verbal inputs to the committee to supplement the written inputs previously provided. Doug was given the floor to this end and he went on to indicate how his team had setup a RA test bed and used filters that they had obtained and tested to demonstrate adjacent band resiliency. He welcomed inputs from Tuck Pon and Torben Themsen on the same.

Since time is very limited at this plenary, EUROCAE and RTCA decided that they will work with the appropriate SC/WG leadership and CTIA to set up additional technical interchange meetings as applicable.

Agenda item 10: Review of Action Items:

The existing action item register was reviewed for updates and the following new actions are captured and/or tracked in the action item register:

- 1) **Action Item 15-1: New Action Item:** Committee chairs to coordinate receipt of committee member inputs on the ToR and define a plan to discuss and resolve all inputs received prior to the next planned plenary in September.

Agenda item 11: Adjourn.

The meeting was adjourned (at 10:46 AM US ET).