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Saint Denis, 22Sep2023  
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**EUROCAE WG-119 Plenary Meeting #13 “Radar Altimeter” /  
RTCA SC-239 Plenary Meeting #13 “Low Range Radar Altimeter”**

**DATE:** 22 Sep 2023

**TIME:** 9 – 11 AM EDT (USA)

**PLACE:** Hybrid (RTCA – Washington D.C. / Online)

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**AGENDA**

1. Welcome and Introductions
2. EUROCAE/RTCA presentations (Administrative Reminders – Rebecca/Mark)
3. Validation of the previous Plenary MoM (Sai)
4. DO-399/ED-310 Consider Motion to close FRAC/OC
6. Review of MOPS Schedule and Status
5. MOPS Sub-Group Reports (Timo, Dave, Eddie, Kim, Miles)
7. Future Meetings
8. Other Business
9. Review of Action Items
10. Adjourn

## PARTICIPANTS –

<b>Display Name</b>	<b>Organization</b>
Nicholas Shrout	ASRI
Ahmad Armand	T-Mobile
Andrew Roy	ASRI
Barbara Clark	FAA
Behlul Poonawalla	Freeflight systems
Dave Redman	AVSI
Donny Morrow	ALPA
Doug Hyslop	CTIA
Ed Hahn	ALPA
Eddie Straub	Garmin
Hussain Al-Sadi	Boeing
JD Gomaz	L3-Harris
Janet Young	FCC
Jean-Luc Robin	Airbus
Kambiz Rahnvardy	FCC
Kim Kolb	Boeing
Matt Harris	Boeing
Mark Watson	Eurocae
Mauro Pagliarini	EASA
Paul Dunlap Airbus Helicopters, Inc.	Airbus Helicopters, Inc.
Pierpaolo Vallese	Qualcomm
Rajah Castillo	Sensor Systems
Rebecca Morrison	RTCA
Ricardo Hisano	TCCA
Richard AMY	DGAC France
Rodrigo Machado	ANAC
Roland Smith	Ericsson
Sai Kalyanaraman	Collins Aerospace
Sergio Machado	ANAC
Seth Frick	Honeywell
Shunichi Futatsumori ENRI	ENRI, Japan
Stéphane Tallet	Thales
Tlmo Warns	Airbus
Ted Peterson	Collins
Torben Themsen	GSMA
Tuck Poon	Nokia

### **Agenda Item 1: Welcome, Introductions and Administrative Remarks**

Seth welcomes the group and the group did a round of introductions.

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

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

### **Agenda Item 3. Validation of the previous Plenary MoMs**

Sai presented minutes for the previous plenaries and obtained approval from the group. One minor update to the minutes was requested by Timo Warns to reflect the cadence of SG6 as monthly vs weekly since Jan 1, 2023.

### **Agenda Item 4: DO-399/ED-310 Status**

SC-239 leadership indicated that the group is 100% focused on the new MOPS development effort. They also indicated that an ad-hoc group has been formed to perform an independent review and recommend a process for handling the DO-399 dissent received and closing of the FRAC/OC. Pursuant to the ad-hoc group's review, the RTCA / Eurocae leadership will provide direction to SC-239 to help disposition comments and address closing FRAC/OC for DO-399 (as applicable).

Nic Shroul proposed a motion to table Agenda Item 4 and carry it forward as an action item until direction is received from the RTCA/EUROCAE Secretariates. This was seconded by Dave Redman. Janet Young sought additional clarification on the reasons to take the item off the agenda and pursuant to further discussion, opposed the motion with the following rationale: "Action on the disposition of public comments should be done in public meetings".

### **Agenda Item 6: MOPS Schedule**

Two dedicated in-person meetings dedicated to SG4 were organized during the summer by Garmin in Kansas. An additional meeting dedicated to SG5 (RFI tolerance) is planned for the week of 6 November 2023 hosted by AVSI at Texas A&M with a goal to finalize the ITM requirements. Initial draft ITM requirements have been developed.

Torben Thomsen asked if the reviewers can have a longer FRAC period given the holiday schedule in July in Europe. It was indicated that FRAC/OC is at least 45 days and that Comments can only be fully dispositioned after the commenting period ends. It was indicated that the group was not changing any of the commenting process. Going with a longer FRAC process would take this activity into August and that will drive more delays when it comes to addressing FRAC comments. Resolving and dispositioning of comments is targeted before the end of Sep 2024. Torben indicated that if FRAC/OC starts at the beginning of July, at least CEPT will have a problem as parts will be on holidays in July and other parts in August.

Barbara Clark mentioned that no changes to fundamental process is expected (the adhoc will perhaps address how OC/FRAC resolution is done). She added that we don't know what the confines of the adhoc's scope is, and that they (the adhoc) usually are not restricted and are given latitude to come up with recommendations (based on other places / cases where one such effort has been undertaken). Further agenda item 6 discussions ensued and Seth mentioned that Sub-group leads have been tasked with generating requirements burn-down lists to track progress. As thing stood, the MOPS Schedule was on time for Sep 2024 and the SC-239 leads expect to request an

out-of-cycle PMC review. Additional discussions ensued on RAC entry criteria determination and an updated requirements tagging structure was proposed.

#### **Agenda item 5 : SG Status and Presentations**

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. SG2 continues to trace and identify the global RF environment on either side of the rad alt band and provide additional descriptions and information on the evolving list of 5G C Band plans.

Torben mentioned that there was “bad news” and indicated that there was a mandate in Europe for 3.8 – 4.2 GHz. He added that there is an EU mandate on Low and Medium Power Local Area Network using (at the moment DECT and IMT but technology neutral) in the 3.8 to 4.2 GHz band with power up to 51 dBm/100 MHz.

In addition, Doug Hyslop from CTIA stated “Regarding the RF environment, in the United States, we are working on spectrum pipeline bands to meet future traffic demand. In the next five to ten years to work with satellite incumbents to refarm 4000-4200 MHz for IMT, and work with the federal government on the 4400-4940 MHz band. To ensure a forward-looking view, the RF interference environment should consider similar 62 dBm/MHz emitters in spectrum much closer to the RA band.” At this point, Andrew Roy from ASRI cautioned the group against formally accounting for proposals from individual organizations until we have more details and regulatory recognition of the same. Kim thanked Doug for the information and stated that the group is aware of the 3GPP bands and are keeping an eye on proposals and proceedings globally. However, as Andy stated, the group looks to leverage regulatory recognition to help determine the plans for bands around the radio altimeter.

Miles Bellman, chair of SG3 presented the next update. He mentioned that SG3 was on hiatus earlier in the year due to resource constraints and that biweekly meetings were to pick back up from 11 Oct 23. SG3 was looking to address a more stringent transmitter mask (derived from ITU-R guidance) versus the current FCC part 87 mask. SG3 also had an action to determine if compatibility with Fixed Satellite Stations (FSS) receivers in 4.0-4.2 GHz drives a more stringent transmit mask. Further activities included development of a test procedure in support of the Tx mask requirements.

Eddie Straub presented an update on SG4 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) and Data Security (SG6). He added that the technical challenges that lay ahead include the Development, evaluation, & validation of new, higher-fidelity RF loop-loss model, Completion of remaining requirement values (accuracy, time constant, noise, recovery/reacquisition, etc.) and definition and establishment of consensus on the new MOPS classes. He also added that risks to the current set of activities were a combination of technical, schedule and resource driven factors. He provided the plenary a high-level brief on the SG4 activities since the previous plenary.

Dave Redman provided the SG5 update. Scope of SG5 activity is to define RFI tolerance for future rad alt solutions pursuant to additional input from other SG's. The deliverable from SG5 is intended to be based on consensus around achievable, testable RFI resiliency reqs. He indicated

that the SG5 schedule was consistent with that of the larger SC-239 group's timeline. He added that recent activity included regular weekly meetings and that there was an initial proposal on the table to help drive ITM discussions. Further planned activities include working through the process of defining interference tolerance requirements that push tolerance levels (ITMs) to the highest consensus level possible. The next in person SG5 meeting was planned for 6-9 Nov 2023 at Texas A&M University.

Timo Warns (chair of SG6) presented an SG6 schedule overview. He indicated that SG6 planned to have bimonthly meetings and that current focus is on security performance requirements. The summary of the overall status indicated that there was draft material available to address the Security assurance reqs and was it was ready for inclusion in the draft MOPS. He added that a complete set of security performance requirements were drafted and there was progress within the SG (re: converging on these reqs). Next steps included the finalization of proposed set of security requirements for RAC and the initiation of security test procedure drafting.

### **Agenda Item 7: Future Meetings**

1. In-person meeting at TAMU: SG5 – 6-9 Nov 2023.
2. In-person meeting and plenary at Cologne at EASA: 6-9 Feb 2024.
3. In-person meeting and plenary at Hamburg (Targeting entry into FRAC): 11-14 June 2024.
4. Potential virtual plenary – 1 day – In the first 2 weeks of Sep 2024 with a target to take actions based on FRAC comments.
5. In person meeting and plenary in DC (ahead of the PMC meeting) 23 Sep 2024 with a target to fully disposition all FRAC comments.

### **Agenda item 8: Other Business**

None

### **Agenda item 9: Action Items:**

In the previous plenary, a request was made of SC-239/WG-119 leads to present the MOPS development status at the upcoming ICAO FSMP in Aug 2023. Anna and Rebecca had an action item to help determine how to share material in support of the above with ICAO FSMP. This has been completed and the status was provided as an information paper into ICAO FSMP in Aug 2023. At this point Andy Roy (chair ICAO FSMP) added that the FSMP will be working on the Rad Alt SARPS and that there was a paper in the works at FSMP that outlines the framework for the SARPS.

#### *Action:*

- 1) provide a copy of the Rad Alt SARPS framework paper to SC-239/WG-119 and provide feedback to FSMP on the same. Andy Roy and Rebecca to work together on this item.
- 2) Agenda item 4 to be tabled and carried as an action that will be captured (by Sai) in an Action item register.
- 3) Provide RAC Process and Entry criteria – Jean Luc and Seth Frick

**Agenda item 10: Adjourn.**

The meeting was adjourned (at 9:44 AM US ET) shortly after discussion of the action item indicated above.