



EUR 50-20 / WG96-63
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18 June 2020

Minutes of Meeting
EUROCAE WG-96 / RTCA SC-236 Joint Meeting #17
Standards for Wireless Avionics Intra-Communication (WAIC) Systems
within 4200 - 4400 MHz

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| Plenary Session | Thursday February 13, 2020 |
| Place | Texas A&M University, College Station, TX 77843, USA |
| Host | RTCA |
| Contact Persons EUROCAE RTCA | Anna Guégan <i>anna.guegan@eurocae.net</i> <i>Phone: +33 1 40 92 79 31</i> And Rebecca Morrison <i>rmorrison@rtca.org</i> <i>Phone: +1 202-330-0654</i> |

AGENDA

1. Welcome/Administrative Duties/EUROCAE and RTCA Policy Statements
2. IPR / Membership Call-Out and Introductions
3. Review and Approval of the Minutes from the 15th and 16th Joint Meetings
4. Review of the TOR dates and Work Plan
5. Review of the MOPS Content and Assignments
6. Reports from the Sub-working groups
7. Consider a motion to initiate Open Consultation/Final Review and Comment on Revision A of DO-378 (WAIC MASPS)
8. New Business
9. Review Plan for Next Meeting
10. Review Action Items
11. Adjourn

• **Attachments:**

- Attachment A: Attendance List
 - Attachment B: Action List (SC-236, WG-96 WAIC) – status February 2020
 - Attachment C: Comment to minutes from DGAC
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Minutes of Meeting: Start on Thursday February 13th (8:46 local time)

Agenda Item 1. Welcome/Administrative Duties/EUROCAE and RTCA Policy Statements

Steve Rines (RTCA Co-Chair) welcomes the group to the Plenary Meeting.

Robin Davies (EUROCAE Co-Chair) and Anna Guégan (EUROCAE) are attending the meeting remotely, via WebEx. Rebecca Morrison (RTCA) is attending the meeting in person.

Rebecca Morrison reads the RTCA Anti-Trust policy and asks the meeting participants if there are any questions to the policy. There are no questions.

Rebecca Morrison reads the RTCA Proprietary Policy.

Anna Guégan reads the EUROCAE IPR Policy.

Rebecca Morrison asks the joint committee to verify that no proprietary information is included in the updated ED-260/DO-378 document.

Rebecca Morrison reads the RTCA Committee Participation Membership Policy.

Anna Guégan presents the EUROCAE Participation Policy.

Agenda Item 2. Membership Call-Out and Introductions

There are no introductions during the plenary, as those already happened during the sub-working group sessions earlier in the week. The complete list of plenary attendees (direct and via WebEx) is provided in Attachment A.

Agenda Item 4. Review of the TOR dates and Work Plan

Rebecca Morrison presents the timeline for the committee deliverables and the corresponding due dates. ED-260A/DO-378A need to be delivered to RTCA in May 2020. The implied RTCA PMC approval date is September 2020. The preceding PMC meeting is on 11 June 2020, which may be difficult to meet. This September deadline agrees with the EUROCAE date of Q3 2020.

A completed MOPS draft is due to RTCA and EUROCAE in October 2021, for PMC and TAC approval in December 2021.

David Redman asks if these dates are available on SC-236 workspace. They are not posted there yet, but they are included in the current TOR. Rebecca Morrison takes an action to put the timeline on the workspace.

Steve Rines summarizes the meeting agenda and says that the highest priority is to put the updated MASPS into OC/FRAC.

Agenda Item 5. Review of the MASPS and MOPS Content and Assignments

Uwe Schwark starts reviewing the changes to the MASPS document that SWG1 made earlier in the week. The modified document is posted on the workspace. There were only a few substantial edits, and one diagram was modified. The changes reflect the requests from DGAC to modify WAIC SARPs. There were also minor changes throughout the document to clean up its language.

Uwe Schwark asks how to proceed with the review process: whether to review the whole document, or only the main substantive changes. Robin Davies says the meeting should focus on main DGAC-related changes. There is no need to review minor editorial changes.

Uwe Schwark reviews in detail the paragraph 3.4.1.2. PR#1 now consists of two parts: PR#1a and PR#1b. PR#1a is essentially identical with the old PR1. The only significant difference is that the hemisphere is now

replaced with a sphere for power evaluation purposes. PR#1b is added with a geometrical pattern for total radiation. The old PR#1 still stands, but the total power cannot exceed the limits from PR#1b.

Robin Davies ask how the attenuation pattern looks from the side, rather than from the front. Uwe Schwark explains that the pattern is rotationally symmetric with respect to the vertical axis. It looks the same from the side. Radek Zakrzewski suggests to add another picture showing an aircraft from the side.

Radek Zakrzewski asks how power levels are defined between the points in the table. What kind of interpolation is used? Uwe Schwark says this is not clear. The justification for these numbers is unclear and such justification has to be provided, preferably by DGAC (see [Attachment C](#)). Steve Rines says this should be addressed at the SARP's Correspondence Group. There should be some traceability for these numbers. We should ask DGAC how they would justify the table.

Uwe Schwark says it is unclear if the table should be interpolated in linear power domain or in logarithmic (dB) domain. Steve Rines says because we do not know the origin of the numbers in the table it is unclear how the interpolation should be done. Uwe Schwark says this question should be answered in SARP's instead of MASPS, as MASPS is only intended to provide means of compliance with SARP's.

David Redman asks if DGAC drew the line for the power levels in the figure. Uwe Schwark says DGAC only gave 11 points with desired attenuation values. The line in the figure is just a spline for graphing – there is no closed form solution. David Redman says the simplest way would be to use piece-wise linear interpolation. Steve Rines says DGAC needs to confirm if this method is appropriate.

Steve Rines says the numbers in the table need to be validated before we publish it. There needs to be a description about the origin of the attenuation numbers. Uwe Schwark offers to raise this issue at the next SARP's Correspondence Group meeting.

David Redman asks about the weekly SARP's call and who will be leading the Correspondence Group. Radek Zakrzewski says he will no longer be able to lead the group. David Redman offers to take over the leadership of the group. He will notify Loftur Jonasson and Mike Biggs.

Uwe Schwark resumes reviewing MASPS. Section 5.1.1 is modified to account for PR#1b. The text is now generalized to refer to overall power in order to make the procedure applicable to PR#1a and PR#1b.

A new sentence was added to account for spatial locations of WAIC transmitters. This was added to address PMC comment from Garmin that was made in June 2019. Steve Rines suggests reconfiguring the sentence to make it more readable. Uwe Schwark explains the sentence came directly from Garmin. Steve Rines agrees to leave the sentence as is in order to fully address PMC's concerns.

Uwe Schwark says that the "aggregate" term was removed from this section. It was redundant because a WAIC system denotes all transmitters on a single airframe. There were two aggregation concepts – across all devices and also across spectrum. Therefore the "aggregate" term is no longer needed.

Uwe Schwark notes that an entire bullet about maximum duration was deleted. It was a duplicate of an earlier bullet. Measurement of maximum power is already specified in this section.

Uwe Schwark says that an additional pass–fail criterion is added for PR#1b, similar to PR#1a.

Steve Rines summarizes the status of the document. There are two action items to resolve with DGAC: the origin of the table with power levels, and the method to interpolate the table. When this is resolved, the document will be ready for FRAC.

Rebecca Morrison cautions the committee not to share the Word or PDF document with DGAC, as they are proprietary to EUROCAE/RTCA. Radek Zakrzewski says that only an updated SARP's draft should be shared, with changes reflecting the modified MASPS. Steve Rines says that only screenshots of portions of MASPS associated with test procedures should be shared with DGAC.

Rebecca Morrison summarizes the options the committee has how to proceed with the updated MASPS. There are three options. Option 1 is to approve the draft as is at this plenary, in its current form. Option 2 is to accept an updated draft after the Correspondence Group meeting with DGAC next Monday, 17 February, with possible further modifications to accommodate DGAC. That future version would be approved by individual members via email. Option 3 is to hold a separate virtual plenary at a later date to approve a modified draft.

Rebecca Morrison recommends Option 1: approve the document as is. After the draft enters OC/FRAC, any new comments or requests from DGAC may be a part of the OC/FRAC process, and may be resolved at the next plenary. The added benefit of this approach is that the approved document will now become a part of the OC/FRAC process and will be publicly available, which obviates the restrictions about not sharing internal drafts with DGAC.

Uwe Schwark asks who should enter future comments from DGAC. Steve Rines observes that it is unlikely that DAGC may enter OC/FRAC comments. DGAC is concerned only about the SARPs process. Rebecca Morrison says it should be a person who sits on both groups. Somebody needs to communicate the outcome of the SARPs process to SC-236/WG-96.

Robin Davies asks about the distinction about power spectral density vs. power density. Uwe Schwark says this could be put in a glossary section. Robin Davies suggests to add two footnotes to explain the difference between the two notions. Radek Zakrzewski proposes text for the two footnotes. The meeting agrees to add these two footnotes. The new paragraph wording addresses Robin Davies's concerns.

This concludes review of the new MASPS document.

Agenda Item 7. Consider a motion to initiate Open Consultation/Final Review and Comment on Revision A of DO-378 (WAIC MASPS)

Robin Davies enters a motion to accept the updated document and move it to OC/FRAC. David Redman seconds the motion. There are no objections. Steve Rines says the document is moved to OC/FRAC.

Rebecca Morrison says the new document will be posted on Friday. The version that goes into OC/FRAC will be clean, will all changes accepted.

Agenda Item 3. Review and Approval of the Minutes from the 15th and 16th Joint Meetings

Steve Rines asks the meeting whether everybody had a chance to review the minutes of the last two meetings as posted on the workspace. There are no comments.

Steve Rines enter a motion to accept the minutes of the 15th and 16th joint meetings. David Redman seconds the motion. There are no objections. Steve Rines says the minutes are approved.

Agenda Item 6. Reports from the Sub-working groups

Steve Rines summarizes sub-working group status. Sub-working group 1 (SWG1) moves now to define radio specifications such as channelization, modulation etc. and will figure out how to define testing against those requirements. Sub-working groups 2, 3, and 4 (SWG2-4) will work on requirements that are not radio-specific.

Uwe Schwark says that Steffen Mersch prepared a good assessment of how DGAC's reduced power requirements affect WAIC implementation, i.e. how many channels may be practically utilized. This will have significant impact on system design.

Steffen Mersch reviews his WAIC impact assessment based on DGAC power limits. It shows how many narrowband channels could be operated simultaneously to satisfy PR#1b. Only 2.5% utilization of the frequency resource would be allowed. This is 97.5% decrease in spectrum utilization. Options to increase

channel utilization include decreasing transmit power to -6dBm per link, which would decrease range below 5m. Other options include meshing, window shielding, or directional antennas.

Radek Zakrzewski says it would be helpful to show this assessments to DGAC. Steve Rines notes that it has never been quantified how DGAC proposal makes WAIC implementation very difficult. Presenting this assessment to DGAC will substantiate our opposition to their proposals. Uwe Schwark says that sharing this assesment with DGAC is not likely to help at all. However, it will not hurt either. Limiting the channel use to just 2.5% of the band dramatically decreases the value of WAIC. If we could convince DGAC to use the false attitudes criterion, instead of the desentization criterion, this would give us additional 10dB of power. This would mean 25% utilization of spectrum as oposed to 2.5%.

Steve Rines comments on the list of tasks for SWG1. All MOPS-related tasks are still pending. Onboard coexistence with ownship altimeters is the most difficult task. Transmit power limits for WAIC need to be known first before onboard coexistence can be addressed. For this we need to know what comes out of the FSMP SARPs process. Our timeline is difficult and depends on DGAC.

For SWG2-4 Steve Rines says he is currenty writing requirements for interoperability. SWG3 work is nearly finished with Kanwal Reen's input from last week. For SWG4 it is not certain what the timeline is, but there is not a lot of there to be done.

Agenda Item 9. Review Plan for Next Meeting

Rebecca Morrison says that the next teleconference on 18 February is not needed. The next touch-base for committee as a whole will be on 17 March. SWG2-4 will continue meeting every week on Wednesdays as Steve Rines makes progress. SWG1 will not meet separately until after the 17 March meeting. If any sub-working group needs to set up a WebEx, please send an email to Rebecca Morrison and she will provide it.

Steve Rines says the next 18th joint plenary meeting is now confirmed in May in Cologne, hosted by EASA. The 19th plenary is not yet decided. There is a possibility in August to hold a joint meeting with ARINC CSS with one day overlap.

Steffen Mersh notes that the next FSMP meeting in Montreal is the same dates as ARINC CSS. This creates a conflict. Uwe Schwark proposes to hold the 19th plenary in August one week prior to FSMP. Then a part of the committee may stay for ARINC CSS and a part may travel to FSMP. Steve Rines says he will check if Saffran may host in Seattle at that time. Paul Siegmund is also checking if FAA could host. Rebecca Morrison notes that there needs to be a breakout area for the committee and non-escorted movements should be allowed, including restrooms. This may limit the FAA feasibility as a host. Prospective hosts should send emails to Rebecca Morrison.

Steve Rines says that ARINC CSS is meeting 18-20 August. SC-236/WG-96 could meet the week before or the week after, i.e. 10-14 August or 24-28 August. Robin Davies says he may not be able to attend 10-14 August. Radek Zakrzewski says FSMP meetings are longer than one week – FSMP will likely extend to week of 24-28 August.

Uwe Schwark says it would be best to hold the 19th plenary directly before or after FSMP. Rebecca Morrison suggests the week of 31 August. This is before the Labor Day in US this year. There are conference rooms available at RTCA in DC in that time frame. Steve Rines may set up a meeting in a hotel in the DC area.

The tentative agreement is to hold the 19th plenary the week of 31 August in Washington, DC. This will be confirmed in Cologne.

Agenda for the 18th plenary in Cologne will be prepared by Steve Rines after this plenary. The plan is to have three days of sub-working group meetings and one day for the official plenary.

Agenda Item 8. New Business

Radek Zakrzewski says he cannot continue as the Secretary and needs to resign. Steve Rines asks for violunteers to take over as the Secretary.

David Redman volunteers to become the new Secretary. Steve Rines thanks him and accepts him as a candidate. Robin Davies says he agrees. David Redman is the official candidate for the position. He will also take over as the SARPs Correspondence Group chair.

Steve Rines says that the committee faces problems due to diminishing participation. Timely completion of MOPS maybe affected by this. The commiitee needs to address this problem.

Agenda Item 10. Review Action Items

Rebecca Morrison has two action items for publications deadlines. She will put those dates on the calendar.

Agenda Item 11. Adjourn

Steve Rines moves to adjourn the meeting. There are no objections. Meeting adjourned at 11:11 local time.

Attachment C: Comment to the Minutes from DGAC

In order to go forward, Airbus, Thales and DGAC took two decisions on January the 24th:

- DGAC, Thales and Airbus agreed to keep the desensitization criteria (I/N of -6 dB) to protect radio altimeters from WAIC interferences on other aircraft. Due to the fact, that we are controlling the RF environment in the frequency band 4.2-4.4 GHz, we also agreed not to use an additional safety margin (like the 6 dB commonly used).
- DGAC, Thales and Airbus agreed to defined an envelope emission based on the one provided in the ITU-Report M.2319. This envelope will cover both inside and outside WAIC and will be cut by 5 dB (35 dB attenuation instead of 40 dB).

The envelope emission is defined in the Report ITU-R M.2319 as follows:

TABLE A-1.7
Angle-dependent maximum tolerable e.i.r.p. reference values

| Parameter | Values | | | | | | | | | | | Units |
|-----------|--------|----|----|-----|-----|-----|-----|-----|-----|-----|------|--------|
| Angle | >120 | 90 | 75 | 69 | 35 | 0 | 325 | 291 | 285 | 270 | <240 | degree |
| e.i.r.p. | 20 | 3 | -2 | -15 | -17 | -20 | -17 | -15 | -2 | 3 | 20 | dBm |

It was agreed to cut by 5 dB at 0° and to read the value of -15 dBm between 69° and 291°. Therefore, it is important to be known by the group, that the changes are not from DGAC but from the common decision of Airbus, Thales and DGAC. It also has to be noted that the value of 29 dBm at >120°, is not coming from the Report ITU-R M.2319, neither from Airbus, Thales and DGAC decision. DGAC is only supporting values containing in the Report ITU-R M.2319 with the 5dB cut between 69° and 291° which is in line with the common decision of January 24th.