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RTCA Paper No: 015-22/SC236-48

December 8, 2021

Minutes of Meeting
EUROCAE WG-96 RTCA SC-236 23rd Joint Meeting
Standards for Wireless Avionics Intra-Communication System (WAIC)
within 4200-4400 MHz

Date	<i>Thursday December 8, 2021</i> <i>16h – 18h CET (9am – 11am EDT)</i>
Hosted by	<i>RTCA and EUROCAE</i>
Place	<i>Virtual Meeting</i>
Contact Person	EUROCAE WG-96: Anna Guégan anna.Guégan@eurocae.net Phone: + 33 1 49 46 19 67 And RTCA SC-236: Rebecca Morrison rmorrison@rtca.org +1 202-330-0654

AGENDA

1. Welcome/Administrative Duties/EUROCAE and RTCA Policy Statements.
2. IPR/Membership Call-Out and Introductions.
3. Approved minutes from February 2021.
4. Review and Approval of the Minutes from September 2021.
5. Review of status of WAIC MOPS.
6. Review of current status of WAIC MASPS in ICAO FSMP.
7. Review updates to ToR required to relaunch WAIC activity.
8. Agree on revised dates for MOPS and MASPS in ToR.
9. New Business.
10. Review Plan for Next Meeting.
11. Review Action Items.

EUROCAE WG-96 RTCA SC-236 23rd Joint Meeting
Minutes of Meeting

SC-236 Chair Steve Rines started the meeting at 9:06 AM EDT.

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

Rebecca Morrison introduced herself and read the RTCA policy statements.

Anna Guégan introduced herself and read the EUROCAE policy statements.

Agenda Item 2: IPR/Membership Call-Out and Introductions

The group went through introductions. Attendance is captured in Attachment A.

Uwe Schwark was introduced as the new Chair of WG-96 and thanked the EUROCAE committee members for accepting his nomination.

Agenda Item 3: Approved minutes from February 2021

Dave Redman reviewed the minutes from the February 2021 meeting, noting that they had been reviewed and accepted during the September 2021 meeting with the caveat that there had been insufficient time for all committee members to review them. Rebecca pointed out that there was an action to allow additional comments corrections to the minutes by email after the meeting. Dave noted that no additional corrections had been received. Steve asked moved to accepted the minutes as reviewed. All agreed and the minutes from the 21st Joint Meeting held February 11, 2021 were approved.

Agenda Item 4: Review and Approval of the Minutes from September 2021

Dave next reviewed the minutes from the 22nd Joint Meeting held September 2, 2021. Several corrections were noted and corrected. The Committee agreed to circulate the updated minutes and approve them by electronic ballot.

Agenda Item 5: Review of status WAIC MOPS. Agree on plan to restart committee activities.

Steve provided an update of the status of the WAIC MOPS. Most of the activity since has been related to the systems/security issues that had previously been addressed by subgroups 2-4 while the impasse on the RF implementation was still be worked out in concert with the ICAO SARPs. Steve noted that the ARINC committee working on CSMIM (secure messaging) should have draft document to review in a couple of weeks. Work remains to define a clear interface in the WAIC MOPS to the interoperability concepts that will be covered in the new ARINC standard.

It was noted that the RF compatibility sections of the MOPS still need considerable work, but will be a bit more tractable once consensus transmitted power levels are fixed. Discussion of the RF requirements in the MOPS will continue under subgroup 1, which Uwe will reconvene.

Agenda Item 6: Review of status of WAIC MASPS in ICAO FSMP

Uwe gave a presentation on the status of ED-260 Rev A / DO-178 Rev A, given that it is held up in FRAC pending resolution of the maximum transmitted power levels issue that led to several non-concurs in the last FRAC comment resolution session. Uwe noted that there has not been any material update to the MASPS text since May 2020. He noted that the majority of the FRAC comments that still need to be resolved will likely be address by accepting the ICAO recommended aircraft-level

total power limit of -20 dBm. Rebecca noted that there was one comment concerning environmental requirements that still needs to be resolved and a volunteer is needed to track this down.

Uwe asked if we need to restart FRAC due to the proposed changes to the MASPS. Rebecca noted that the current FRAC is still open and needs to be completed, but the Committee can re-FRAC if they deem it necessary. There was general consensus that we would like to avoid restarting another FRAC cycle if possible.

Uwe gave an update of the status of the ICAO FSMP SARPs, as this document is strongly linked to the content of the MASPS. He reviewed changes to the draft SARPs proposed by ICCAIA that accepted the -20 dBm total power level and made several other modifications intending to address comments raised in the FSMP with the previous draft. The proposal was presented in Working Paper [FSMP-WG12-WP16 WAIC SARPS](#). One of the important changes was that rather than defining out-of-band emissions (OOBE) based on a definition of the “necessary bandwidth” (NB) derived from a channelized, narrow-band WAIC implementation, it was recommended that NB be provided as an input parameter to define WAIC system OOBE based on the implementation. This would, for example, allow a wide-band implementation to define more accurate requirements for OOBE that are traceable to ITU-R recommendations. The relevant ITU-R documents include

- ITU-R M.1541-6 (for OOBE)
- Category B for ITU-R SM.239 (for Spurious Emissions)
- ITU-R SM.1540 (for Unwanted Emissions)

Uwe also discussed the proposal for portion of the SARPs concerning out-of-band interference tolerance of WAIC Receivers. This was based on discussion in the FSMP about how steep a front end pre-select filter roll-off needs to be. It was noted that this problem can be intractable if not properly constrained, since generally spectrum regulators want a brick wall filter at the end of the allocated spectrum so that *nothing* spills in or out. This is not realizable in most practical designs, so proper consideration of reasonable worst-case scenarios must be used to define achievable limits, with a goal of defining specification that is acceptable to ICAO and is not overly restrictive.

Dave asked if there are any other examples of other systems for which definition of OOB tolerance was required, or if WAIC was an exception. He noted that this should be left to the designer and the ITU should define the RF environment by regulating emissions. He did acknowledge however, that current issue with existing radar altimeter susceptibility to OOBI has pointed out that considering emissions alone can constrain reassignment of services and transmission parameters in adjacent frequency bands.

Uwe commented that the FSMP Working Group response to the proposal was generally positive, and that the next step was to get the proposed changes approved through the ICAO FSMP WAIC SARPs Correspondence Group (CG). Dave took an action to work with Uwe and Thomas to get the proposal out to the CG members so that meetings could be scheduled in January to discuss and gain consensus for the proposal, with a goal of CG endorsement for adoption of the SARPs at the next FSMP meeting. Given that the next FSMP Working Party Meeting is scheduled for February 21-25, 2022, the CG will need to achieve consensus on the revised SARPs by the end of January 2022. Uwe noted that the FSMP has a strict policy of submitting documents to be considered in the WP meetings a minimum of two weeks prior to the meeting.

The Committee took a 10 minute break at this point.

Agenda Item 7: Review updates to ToR required to relaunch WAIC activity.

Rebecca presented the latest changes to the ToR. She noted that these need to be accepted today in order to be considered at the RTCA PMC scheduled for December 16, 2021.

The Committee reviewed the proposed changes, which were limited to updating the target publication dates for the MASPS and MOPS, and updating the contact information for the new joint committee co-chair (Uwe).

Agenda Item 8: Agree on revised dates for MOPS and MASPS in ToR.

The Committee discussed appropriate target dates for publication of DO-378 Rev A MASPS and the MOPS. It was agreed that the MASPS will be complete (through FRAC) no later than December 2022. Dave pointed out that there may be some complication due to the need to get some level of approval of the SARPs at the FSMP panel level in order to have a sufficiently stable SARPs on which to base the MASPS, but that the December 2022 should be acceptable.

Concerning completion of the MOPS, Steve pointed out he sees a clear way forward on Section 2, but has questions about the RF requirements sections. It was noted that on-board coexistence requirements, installation, and test procedures still need to be defined. Gregory Cederlind asked if we had a solution to guarantee the -20 dBm total emission limit with unknown number of WAIC transmitters on board a WAIC-equipped aircraft. Defining a finite number of allowed transmitters would not allow flexibility in WAIC configuration and does not necessary address many-to-one and one-to-many sensor configurations. The group agreed that this issue is not trivial to define and will require time to figure out. Thus, the group agreed to set a target date of June 2023 for completion of the MOPS.

Anna noted that these changes are being made too late to present to the EUROCAE TAC scheduled for January 2022, so the next opportunity will be the TAC meeting scheduled for March 2022. It was noted however, that PMC approval of the revised ToR will be sufficient to restart regular committee meetings to make progress on the outstanding technical work. Steve will present the proposed changes to the Tor to the RTCA PMC at their December 16 meeting.

Agenda Item 9: New Business

The only item of new business was when to schedule regular technical meetings to resume work. Steve took an action to review the current MOPS outline and propose a schedule for the combined subgroup 2-3-4 meetings and Uwe took an action to do the same for subgroup 1 to address the RF issues. Dave recommended that we restart with a combined meeting to assess the current state of the MOPS in order to define a completion schedule that will support the target dates in the updated ToR, to which the Committee agreed.

Agenda Item 10: Review Plan for Next Meeting

The next meeting will be a virtual working meeting as suggested above and will be held January 12, 2022. Rebecca will send a notice.

Agenda Item 9: Review Action Items

The following actions were recorded:

- Update and send out minutes from Nov 2020 – Redman
- Develop a summary of the current status of the MOPS for presentation at the next joint working meeting – Rines
- Send out minutes from the 22nd Joint Meeting held September 2, 2021 for comment and electronic ballot. – Redman
- Send/post copies of Uwe's slides – Schwark

The meeting adjourned at 11:35 AM EDT.

Respectfully submitted by David Redman, Secretary SC-236.

Appendix A: Attendance List

	Name	Org
X	Uwe Schwark	Airbus
X	David Redman	AVSI
	Marshall Gladding	Boeing
	Sanjay Bajekal	Collins
	Jeffery Cyr	Former Collins now lorge citizen
X	Eduardo Rojas	ERAU
X	Gregory Cederlind	Crane
	Christian FLEURY	DGAC
	Alexander Guignot	DGAC
	Moisés Bismarck Medina de León	EASA
	Sonia Heemstra de Groot	Eindhoven University of Technology
X	Ingas Niemegeers	Eindhoven University of Technology
X	Shunichi Futatsumori	ENRI
X	Anna Guegan	EUROCAE
X	Rich Adler	FAA
	Shohreh Safarian	FAA
X	John Flores	FAA SEA-AED
X	Kees Nuyten	Fokker Elmo
	Massimiliano D'Aurelio Podrini	Leonardo
	Steffen Mersch	Lufthansa Technik
X	Jaco Verpoorte	NLR
	Kelly Peters	Piper Aircraft
X	Rebecca Morrison	RTCA
X	Steve Rines	Safran
	John Walker	Thales
	Illia Kachan	Volocopter
	Jon Fifield	Astronics AES
	Leonardo Crespim	Volocopter
	Martin Richter	Diehl Aerospace
	Mauro Pagliarini	EASA
X	Peter Walther	Airbus
	Samh Menshawy	Thales
X	Thomas Meyerhoff	Airbus
	Vidyut Patel	FAA
X	Jeff Lamping	

Participants (17)

Search

- DR David Redman
Me
- AG Anna GUEGAN
Host
- SS Steve Rines Safran
- EE Eduardo Rojas ERAU
- GC Gregory Cederlind
- IN Ignas Niemegeers
- JN Jaco Verpoorte NLR
- JL Jeff Lamping
- JS John Flores FAA SEA-AED
- KN Kees Nuyten
- PW Peter Walther
- PA Peter Walther Airbus
- RM Rebecca Morrison
- RF Rich Adler FAA
- SE Shunichi Futatsumori ENRI
- TM Thomas Meyerhoff
- UA Uwe Schwark Airbus