EASA MOC Light-UAS-2511-01 Comment Response Document

General comments

Explanatory Note 1:

Based the number of comments received on section 2 and the complexity added by this section, and with the aim to simplify the document and make it useful for declaration, Section 2 has been removed.
Section 1 is now limited to identify the performance of the UAS, equipped with the FTS, in terms of probability of exit from the ground buffer / FH (10^-5 / FH when operation is in SAIL II)
SAIL II is where it is urgent to adopt this FTS MoC, as declarative toward the NAA (no need of EASA Design Verification unless where the NAA decides otherwise)

Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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1	SAFRAN	General comment	N/A		This MoC applies to SC Light-UAS.2511(b) - so for UAS operated at SAIL III or IV. However, by its content, it seems to rather address SAIL II compliance with SORA Step 9 (Enhanced Containment) (baseline rate of loss of control of 10-2/FH) , which stems from Operational requirements - not design. So it is not clear if it is a MoC for SC Light-UAS Medium Risk or for an AMC/ GM for Implementing Regulation (EU) 2019/947 and thus it is not easy to do relevant comments. => it should it be renamed MoC for SORA Step 9 (IR 2019/947) for SAIL II? Alternatively this MoC could be split in 2 separate documents: * one as AMC and GM to Implementing Regulation (EU) 2019/947, re-using Section 2 (maximum population density in adjacent area, complemented with actual pop. density in adj. area), * one as an AMC to SC Light-UAS.2511(b), re-using Section 3, with clear explanation of the context (an FTS compliant with these reqs. si considered to have a FR < 1E-2/FH).	Recommended	Noted	SC Light-UAS is applicable to medium risk (SAIL III and IV). It contains however 2 requirements, 2511 (containment) and 2512 (mitigation means linked with design), which are not driven by the SAIL. Such requirements are therefore applicable for any SAIL. Text in note of MoC has been added to address this. See also explanatory note 1
2	Alliance for new Mobility Europe (AME)	General comment	N/A	The proposed MoC utilises the term 'flight termination system' ('FTS'), which is not aligned with the terminology used in Implementing Regulation (EU) 2019/947 or Delegated Regulation (EU) 2019/945, incl. the draft standard prEN 4709-006 under development by ASD-STAN. Referring, instead, to 'means to terminate the flight' would also reduce the level of [HW] prescription of this MoC proposal.	Replace "FTS" with "means to terminate the flight".		Not accepted	The MoC is prescriptive by nature as its intention is to provide with a simple solution valid for a declaration without the need to apply for a design verification to the Agency. The selected naming convention FTS has been clarified in the introduction.
3	Alliance for new Mobility Europe (AME)	General comment	N/A	It is not clear what is meant by "independent FTS" - is it a plug-in solution or is it a UAS compliant with the "no single failure" criterion/principle? Both possibilities should be explicitly allowed	Clarify the scope of the MoC based on the work being done within ASD-STAN for the future harmonised standard on the means to terminate the flight for classes C5 and C6		Partially accepted	The mention to "independent FTS" has been removed. The segregation requirements are still applicable for this MoC. This is not however the only option to comply with SC Light UAS 2511 and as suggested in the comment the "no single failure" criteria could be used to demonstrate compliance with the requirement. But this demonstration is outside the scope of the present MoC which aims for a simple solution of an FTS valid for declaration.

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4	Alliance for new Mobility Europe (AME)	General comment	N/A	There are several areas in the proposed MoC which directly deviates from the currently published EASA AMC1 to Article 11 of Implementing Regulation (EU) 2019/947 and Part 16 of the Annex to Delegated Regulation (EU) 2019/945: ➔ Section 1 adds a P_exit of 10E-4/FH which is neither consistent with the published SORA Step #9 nor with the text of the SC Light-UAS.2511(b) itself; ➔ Section 2 seems to add new requirements when an “enhanced containment” applies, making Part 16 of the Annex to Delegated Regulation (EU) 2019/945 unusable	See detailed comments		Partially accepted	This MoC is tailored and designed to credit the FTS with a probability of failure per FH of 10-2. Changes have been introduced to reflect this and section 2 has been removed from the document (see explanatory note 1)

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5	AZUR DRONES	General comment		The topic of “Containment” is currently under review within JARUS WG-SRM - Industry, together with EASA Member States, are working hard to create consensus around an updated requirement that is harmonised internationally and consistent with all other SORA updates (e.g. Annex F on Quantitative Methods for Ground Risk). Although the MoC does include some of the principles discussed within JARUS WG-SRM, it was done in an uncoordinated manner and it is neither consistent with the current version of JARUS SORA as recognised by EASA through AMC1 to Article 11 of Implementing Regulation (EU) 2019/947 nor with its future updates (SORA 2.5 is currently under JARUS internal consultation). This uncoordinated approach to the topic of containment is generating a significant although unnecessary increase of workload to all JARUS members that see their work within WG-SRM taken out of context and re-utilised sometimes in an erroneous/misleading manner in an EASA MoC. And despite the fact that an MoC is intended to provide acceptable means of compliance to an existing rule, the proposed EASA MoC incorporates changes which should be the object of rulemaking (see detailed comments below). In addition, there is no evidence provided by EASA that any of the severely restrictive additional requirements included in this proposal are needed due to any safety concern emerging from already approved operations (e.g. French standard scenario S3 or Spanish national STS-ES). In summary, the MoC as proposed is not justified by any operational safety concern, not coordinated and aligned with current or future JARUS SORA versions, and not technically consistent with EASA AMC1 to Article 11 of Implementing Regulation (EU) 2019/947.	We suggest the MoC to be fully coordinated with JARUS, the European drone associations and the SDOs (e.g. Eurocae WG-105) before publication. In the case, the content of the MoC is substantially changed after this pre-consultation, we suggest that a second public consultation is organised before final publication by EASA.	Requested	Accepted	The MoC has been reassessed before publication with the NAAs who commented it. New comments have been collected and taken into account (as far as possible and considering different positions)

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6	AZUR DRONES	General comment	N/A	The proposed MoC utilises the term 'flight termination system' ('FTS'), which is not aligned with the terminology used in Implementing Regulation (EU) 2019/947 or Delegated Regulation (EU) 2019/945, including the draft standard prEN 4709-006 under development by ASD-STAN. On top, referring instead to 'means to terminate the flight' would avoid giving the feeling that this MoC prescribes a given and unique system. As a way of illustration, two examples of different means to terminate the flight that manufacturers can implement in a given UAS are provided next. First, the execution of a combination stick command (CSC) by the remote pilot on the command unit, which, through the C2 link, activates the electronic braking of the rotors. Second, an on-board sensor detects that the tilt limit is exceeded for X seconds and subsequently triggers the interruption of the power supply to the motors, which, in some architectures, could trigger on top the ejection of a parachute.	Replace FTS with "means to terminate the flight"	Requested	Not accepted	The MoC is prescriptive by nature as its intention is to provide with a simple solution valid for a declaration without the need to apply for a design verification to the Agency. The selected naming convention FTS has been clarified in the introduction.
7	AZUR DRONES	General comment	N/A	Segregated FTS The proposed MoC refers several times to a "segregated FTS from the UAS flight control system architecture" and uses as well the term "independence". Considering these terms are not being defined in the document, it is not clear what is meant by EASA when using the term "segregated FTS". For instance, is it a plug-in solution with a rather low reliability (probability of loss at 10-2/FH) as suggested during informal discussions with Eurocae WG-105 members or is it a UAS compliant with the "no single failure" criterion? It is suggested that EASA clarify the scope of applicability of the proposed MoC. Note: the assumption made to develop the rest of the comments is that it can be both.	Clarify the scope of applicability of the the proposed MoC	Requested	Accepted	The term "segregated" has been clarified. The proposed solution can be considered a "plug-in" solution (for declaration, and this is written now). In coherence it is written "This MoC defines a simple set of prescriptions…"

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8	AZUR DRONES	General comment	N/A	There are several areas in the proposed MoC which directly deviates from the currently published EASA AMC1 to Article 11 of Implementing Regulation (EU) 2019/947 and Part 16 of the Annex to Delegated Regulation (EU) 2019/945: ➔ Section 1 which is adding a P_exit of 10E-4/FH which is neither consistent with the published SORA Step #9 nor with the text of the SC Light-UAS.2511(b) itself; ➔ Section 2 which seems to add new requirements when an "enhanced containment" applies (this makes Part 16 of the Annex to Delegated Regulation (EU) 2019/945 unusable). This is addressed by detailed comments below but are considered of paramount importance for EASA to address.	See detailed comments	Requested	Partially accepted	This MoC is tailored and designed to credit the FTS with a probability of failure per FH of 10-2. Changes have been introduced to reflect this and section 2 has been removed from the document (see explanatory note 1). It is clarified that for SAIL II the application of the MoC substantiates PUAexitGB < 10-5 /FH. The approach is pragmatic: A UAS, with a FTS declared using this MoC, may be operated up to SAIL II operations when enhanced containment is triggered. Emergency procedures should triggering the FTS when the UA reaches the outer perimeter of the operational volume The approach will be re-evaluated if necessary depending on the step 9 discussion finalization within JARUS See also explanatory note 1
9	COIAE	General comment	N/A	The proposed MoC utilises the term 'flight termination system' ('FTS'), which is not aligned with the terminology used in Implementing Regulation (EU) 2019/947 or Delegated Regulation (EU) 2019/945, incl. the draft standard prEN 4709-006 under development by ASD-STAN. Referring, instead, to 'means to terminate the flight' would also reduce the level of [HW] prescription of this MoC proposal.	Replace "FTS" with "means to terminate the flight".	Requested	Not accepted	The MoC is prescriptive by nature as its intention is to provide with a simple solution valid for a declaration without the need to apply for a design verification to the Agency. The selected naming convention FTS has been clarified in the introduction.
10	COIAE	General comment	N/A	It is not clear what is meant by "independent FTS" - is it a plug-in solution or is it a UAS compliant with the "no single failure" criterion/principle? Both possibilities should be explicitly allowed.	Clarify the scope of the MoC, making clear whether an independent FTS can be both a part of the UAS that complies with the no single failure criterion and an [external] add-on as in the direct remote identification systems.	Requested	Accepted	The MoC is prescriptive and describes a system which would fit better with the interpretation of a "plug-in" while keeping flexibility to allow for different solutions. The single failure criteria while being valid as demonstration of SC Light UAS it is not under the scope of this MoC as it would require different demonstration. The intention of the MoC is to be useful for declaration. The term "segregated" has been clarified. The proposed solution can be considered a "plug-in" solution (for declaration, as now written). In coherence it is written "This MoC defines a simple set of prescriptions…"

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11	COIAE	General comment	N/A	There are several areas in the proposed MoC which directly deviates from the currently published EASA AMC1 to Article 11 of Implementing Regulation (EU) 2019/947 and Part 16 of the Annex to Delegated Regulation (EU) 2019/945: - Section 1 adds a P_exit of 10E-4/FH which is neither consistent with the published SORA Step #9 nor with the text of the SC Light-UAS.2511(b) itself; - Section 2 seems to add new requirements when “enhanced containment” applies, making Part 16 of the Annex to Delegated Regulation (EU) 2019/945 unusable.	See detailed comments.	Recommended;	Partially accepted	This MoC is tailored and designed to credit the FTS with a probability of failure per FH of 10-2. Changes have been introduced to reflect this and section 2 has been removed from the document (see explanatory note 1). It is clarified that for SAIL II the application of the MoC substantiates PUAexitGB < 10-5 /FH. The approach is pragmatic: A UAS, with a FTS declared using this MoC, may be operated up to SAIL II operations when enhanced containment is triggered. Emergency procedures should trigger the FTS when the UA reaches the outer perimeter of the operational volume. The approach will be re-evaluated if necessary depending on the step 9 discussion finalization within JARUS See also explanatory note 1
12	COIAE	General comment	N/A	During the last meeting it was discussed that this MoC was going to be declarative.	If considered "Enhanced Containment" it shall be reviewed and verified by a competent third party. There is no difference then between Containment and Enhanced Containment regarding the Level of Assurance.	Requested	Partially accepted	The MoC has been simplified with the intention to make it simple and easy to use for a potential declaration. The possibility to apply for a design verification remains. More complex methods of showing compliance are not appropriate for declaration.
13	Nathanel Apter (UASolutions)	General comment	N/A	The definition of an adjacent area and/or acceptable criterion to define it are not clear or specified in the document or other reference documents (i.e., Implementing Regulation (EU) 2019/947 and Delegated Regulation (EU) 2019/945).There is no clear guidance on how adjacent areas and airspaces are actually defined and what they should account for which leads to various inconsistencies in the best practices in this regard in the different member states. Would it be possible to obtain some guidance on how to calculate adjacent areas and airspaces in order to ensure a correct scope of this MoC?	Include clearer and more specific definitions or acceptable means to define it. For instance, adjacent areas are the distance that the UAS could realistically do accounting for: 1. The autonomy of the UAS and its cruise speed (matters in order to know which distance the UAS could actually do in a worst case scenario) 2. The altitude and the terrain (depending on the altitude and on the terrain the UAS might actually crash after a few seconds/minutes. 3. The ability of the crew to perform ERP actions in a timely manner (inform the local police and ATC in order to mitigate the emergency). 4. The situations in which containment could realistically fail (e.g.: human error while planning the mission, loss of specific sensors, erratic behaviour of specific systems, etc.) and their direct consequences. A graphical representation showing adjacent areas and airspaces would help a lot in the EASA AMC 1 to Article 11 .	Recommended;	Partially accepted	The quantitative approach of section 2 has been removed (as it would have required more guidance on adjacent areas as mentioned by the comment) . The definition of when enhanced containment is triggered still relays on what currently written in the AMC to article 11 (SORA). JARUS WG6 is addressing a quantitative definition of adjacent areas and EASA does not anticipate in this MoC WG6 possible outcome.
14	Nathanel Apter (UASolutions)	General comment	N/A	It is not clear what is meant by “independent FTS” - is it a plug-in solution or is it a UAS compliant with the “no single failure” requirement? Both possibilities should be explicitly allowed.	Clarify the scope of the MoC, making clear whether an independent FTS can be both a part of the UAS that complies with the no single failure criterion and an [external] add-on as in the direct remote identification systems.	Recommended;	Partially accepted	The term "independent FTS" have been removed and the scope of the document has been clarified. It is however the aim of the MoC to provide a simple and easy to implement solution without making any assumption regarding the integration of the FTS (this MoC is declarative)

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15	AustroControl	General comment		Definition of FTS was not found in the current MOC.	Propose to add the definition of a FTS to better distinguish the functionality difference between M2 mitigation and FTS. Consider definition given in the JARUS Glossary of terms, ANNEX I		Accepted	FTS definition included as part of the introduction
16	Delair	General comment	N/A	Delair agrees and supports all DGAC comments	Take into account all DGAC comments	Recommended;	Noted	All DGAC comments have been takien into consideration. Please refer to any particular comment for further information.
17	Alejandro del Estal (Rigi Technologies SA)	General comment	N/A	The definition of an adjacent area and/or acceptable criterion to define it are not clear or specified in the document or other reference documents (i.e., Implementing Regulation (EU) 2019/947 and Delegated Regulation (EU) 2019/945).There is no clear guidance on how adjacent areas and airspaces are actually defined and what they should account for which leads to various inconsistencies in the best practices in this regard in the different member states. Would it be possible to obtain some guidance on how to calculate adjacent areas and airspaces in order to ensure a correct scope of this MoC?	Include clearer and more specific definitions or acceptable means to define it. For instance, adjacent areas are the distance that the UAS could realistically do accounting for: 1. The autonomy of the UAS and its cruise speed (matters in order to know which distance the UAS could actually do in a worst case scenario) 2. The altitude and the terrain (depending on the altitude and on the terrain the UAS might actually crash after a few seconds/minutes. 3. The ability of the crew to perform ERP actions in a timely manner (inform the local police and ATC in order to mitigate the emergency). 4. The situations in which containment could realistically fail (e.g.: human error while planning the mission, loss of specific sensors, erratic behaviour of specific systems, etc.) and their direct consequences. A graphical representation showing adjacent areas and airspaces would help a lot in the EASA AMC 1 to Article 11 .	Recommended;	Partially accepted	The quantitative approach of section 2 has been removed (as it would have required more guidance on adjacent areas) . The definition of when enhanced containment is triggered still relays on what currently written in the AMC to article 11 (SORA). JARUS WG6 is addressing a quantitative definition of adjacent areas and EASA does not anticipate in this MoC WG6 possible outcome.
18	Alejandro del Estal (Rigi Technologies SA)	General comment	N/A	It is not clear what is meant by “independent FTS” - is it a plug-in solution or is it a UAS compliant with the “no single failure” criterion/principle? Both possibilities should be explicitly allowed.	Clarify the scope of the MoC, making clear whether an independent FTS can be both a part of the UAS that complies with the no single failure criterion and an [external] add-on as in the direct remote identification systems.	Recommended;	Partially accepted	The term "independent FTS" have been removed and the scope of the document has been clarified. It is however the aim of the MoC to provide with a simple and easy to implement solution without making any assumption regarding the integration of the FTS
19	FlyingBasket (Thomas Markert - HO Operations / Marta Cejuela - HO AW&Safety Manager)	General comment		The document gives no defintion of adjacent area / airspace and has also no reference to a definition. However, a clear understanding of adjacent area / airpsace is essential for the understanding of this document.	Add definition of adjacent area and airspace to this document. In order to be consitent with the AMC1 to Article 11 of IR (EU) 2019/947, section 2.5.3 (c), the adjancent area definition should be updated for a common clear understanding.	Requested	Partially accepted	The quantitative approach of section 2 has been removed (as it would have required more guidance on adjacent areas) . The definition of when enhanced containment is triggered still relays on what currently written in the AMC to article 11 (SORA). JARUS WG6 is addressing a quantitative definition of adjacent areas and EASA does not anticipate in this MoC WG6 possible outcome.

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20	PL CAA	General comment	N/A	Significant changes and deviation to the SORA requirements and incoming SORA 2.5 from JARUS may cause to problems to operators and competent authorities in EU. Excesive technical requirements for FTS (testing, DVR) are unable to comply for most of operators due to costs and lack of market solutions. Additionally the MOC for Light-UAS.2511 is referencing to a wrong requirement. The requirement referenced should be (EU) 947/2019 AMC1 Article 11 chapter 2.5.3 (c) “Enhanced Containment” additionally the ground risk buffer definition from Section 3 should be in AMC not in MoC.			Accepted	The MoC has been deeply revised to address this and similar comments; testing of the FTS is necessary, however end to end tests are now much more contained. DRV is not required for this MoC. "SORAstp9" has been added (considered a sufficient reference known to all stakeholders, although not fully formal). It is considered correct to provide prescriptions also for ground risk buffer sizing as they are linked with the specific means used by this MOC
21	RPAS Finland ry	General comment	N/A	The high degree of complexity of the (EU) 2019/947 regulation for the specific category has already slowed down innovation in the drone ecosystem. Any MOC proposed should be in addition to being performance- and risk-based, be simple to understand and straight-forward to comply with using commonly available technical solutions, and requiring operating procedures that are effective and efficient.	Ensure that the MOC is: - Easy to understand (considering the educational level of a large number of drone operators, including single-person operators) - Does not require operational procedures that de-facto reduce safety by being dis-proportionately cumbersome, slow or costly	Recommended;	Partially accepted	The MoC has been simplified and adapted based on all comments received.
22	RPAS Finland ry	General comment	N/A	Scope of MOC. The introductory text explains in passing, that the need for MOC has arisen from operations "When the risk associated with the adjacent areas on ground or adjacent airspace is significantly higher than the risk associated with the operational volume including the ground buffer". This is not very clear from the overall text, and it is not clear whether the MOC should be considered for _any_ enhanced contained case or not?	Clarify what the intended scope of the MOC is: only applicable when D_adj_max > D_max, or generally?	Recommended;	Partially accepted	Section 2 has been deleted, considerations on population density have been deleted, the scope of the MoC has been clarified in section 1 of the document. (see explanatory note 1)
23	RPAS Finland ry	General comment	N/A	The proposal uses population density limits that are not in line with JARUS SORA 2.5	Align methodology with JARUS SORA 2.5	Requested	Accepted	Considerations on population density have been deleted. In addition, see explanatory note 1
24	RPAS Finland ry	General comment	N/A	The MoC doesn't make clear whether it should be used as a demonstration of enhanced containment to EASA for obtaining a DVR, or whether it can be directly used as a demonstration of compliance with Step 9 of the SORA to NAA without having to obtain a DVR from EASA.	Clarify	Recommended;	Accepted	It is now written that the MoC can be sued for declaration directly toward the NAA

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25	RPAS Finland ry	General comment	N/A	The use of 'flight termination system' is prescriptive, and would be better phrased as 'means to terminate the flight', which would be performance-based. This distinction is especially important when operating at altitude below ca. 30 meters, below which parachutes are seldom effective as a means to safely terminate a flight, and where other means, for example forcing motors to stop and plummet to the ground under VLOS, become viable alternatives.	Recommend to change terminology from FTS to 'means to terminate the flight'	Recommended;	Not accepted	The MoC is prescriptive by nature as its intention is to provide with a simple solution valid for a declaration without the need to apply for a design verification to the Agency. The selected naming convention FTS has been clarified in the introduction.
26	Abionica Solutions	General comment	N/A	If the MoC is considered "Enhanced Containment" it shall be reviewed and verified by a competent third party. There is no difference then between Containment and Enhanced Containment regarding the Level of Assurance.	The MoC is meant to be declarative, but should be verified.	Requested	Not Accepted	The MoC is deliberately based on a set of simple design checklist and tests so that it can be used for declaration of compliance with SC Light UAS 2511 without the need to apply to the Agency for a DVR. The declarative approach has been discussed with NAAs.
27	BOREAL SAS	General comment		GENERAL. BOREAL supports the Agency in the introduction of much-needed MOCs for the design verification and believe a quantitative approach will be the standard in the future. Nevertheless, the introduction of a quantitative approach for certification/verification potentially create a conflict if operational authorizations are given on the base of a qualitative assessment, especially if adjacent areas and the associated population density are not clearly defined. Notably, some operations could be compliant with the current SORA but not with a design verification report's limitations issued using the proposed MOC. As a consequence, in its current form the proposed MOC might have a strong impact on current and near-future operations. BOREAL therefore proposes some means for harmonising the two approaches.			Partially accepted	The issue with the quantitative approach has been recognised and therefore all considerations to population density have been removed from the document. In addition, please refer to explanatory note 1
28	BOREAL SAS	General comment		GENERAL. This MOC seems intended for low risk operations that need to meet enhanced containment requirements. In fact, posing the probability of leaving the GRC area (Pexit) equal to the probability of loss of control (lamba_LOC) for a SAIL IV seems of no use for a SAIL IV design verifications. Namely, a UAS could be authorised in SAIL IV to fly over 1000hab/km2 areas and limited to have 100hab/km2 in the adjacent areas. If SAIL I/II is the intended use for this MOC it should be clearly stated at the beginning of the MOC.			Accepted	The intended use of the MoC is to demonstrate compliance with SC Light UAS 2511 for operations classified up to SAIL II. The applicability of the MoC has been modified accordingly.

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29	BOREAL SAS	General comment		GENERAL. Without further guidance on the definition of the adjacent areas they could be defined by the maximum range of the UAS. Due to the generally high population density in Europe, limiting the adjacent area population density to 100 hab/km² would substantially forbid any specific operation with a UAS capable of flying more than a few dozen kilometers. While limiting the population density is possible for the operational volume, it is extremely rare if not impossible, to find a land area of several kilometer squared, free of obstacles (e.g. high mountains) where the population density is below 100hab/km². Therefore operation with a UAS with a characteristic lenght above 1m without M2 mitigations would be de-facto forbidden.	Please introduce a clarification on the definition/extent of adjacent areas and its population density.		Partially accepted	The issue with the quantitative approach has been recognised and therefore all considerations to population density have been removed from the document. In addition, please refer to explanatory note 1
30	BOREAL SAS	General comment		SORA Step#9b is triggered when the adjacent areas have a significant higher intrinsic risk than the surface under the iGRC volume. Under the SORA methodology, only a qualitative estimation of the ground risk assessment for the iGRC volume is required. A quantitative approach used exclusively for the adjacent areas seems not consistent with that: a higher population desity for the iGRC volume is potetially allowed compared to the adjacent areas population density. That seems paradoxically making the enhanced containment, hence this proposed MOC, not applicable.	Remove quantitative values for population density. Replace with the possibility to have populated areas.		Partially accepted	The issue with the quantitative approach has been recognised and therefore all considerations to population density have been removed from the document. In addition, please refer to explanatory note 1
31	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	General comment	N/A	It is highly appreciated that EASA is drafting an MoC on this topic, since it has been a bit of a wild west. Generally, this it really good proposal which can also help to advance FTS commercially.			Noted	No comment

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32	Skydio, Inc.	General comment	N/A	The proposed MoC utilises the term 'flight termination system' ('FTS'), which is not aligned with the terminology used in Implementing Regulation (EU) 2019/947 or Delegated Regulation (EU) 2019/945, including the draft standard prEN 4709-006 under development by ASD-STAN. On top, referring instead to 'means to terminate the flight' would avoid giving the feeling that this MoC prescribes a given and unique system. As a way of illustration, two examples of different means to terminate the flight that manufacturers can implement in a given UAS are provided next. First, the execution of a combination stick command (CSC) by the remote pilot on the command unit, which, through the C2 link, activates the electronic braking of the rotors. Second, an on-board sensor detects that the tilt limit is exceeded for X seconds and subsequently triggers the interruption of the power supply to the motors, which, in some architectures, could trigger on top the ejection of a parachute.	Replace FTS with "means to terminate the flight"	Requested	Not accepted	The MoC is prescriptive by nature as its intention is to provide with a simple solution valid for a declaration without the need to apply for a design verification to the Agency. The selected naming convention FTS has been clarified in the introduction.
33	Skydio, Inc.	General comment	N/A	There are several areas in the proposed MoC which directly deviates from the currently published EASA AMC1 to Article 11 of Implementing Regulation (EU) 2019/947 and Part 16 of the Annex to Delegated Regulation (EU) 2019/945: - Section 1 which is adding a P_exit of 10E-4/FH which is neither consistent with the published SORA Step #9 nor with the text of the SC Light-UAS.2511(b) itself; - Section 2 which seems to add new requirements when an "enhanced containment" applies (this makes Part 16 of the Annex to Delegated Regulation (EU) 2019/945 unusable).		Requested	Partially accepted	This MoC is tailored and designed to credit the FTS with a probability of failure per FH of 10-2. Changes have been introduced to reflect this and section 2 has been removed from the document (see explanatory note 1). It is clarified that for SAIL II the application of the MoC substantiates PUAexitGB < 10-5 /FH. The approach is pragmatic: A UAS, with a FTS declared using this MoC, may be operated up to SAIL II operations when enhanced containment is triggered. Emergency procedures should trigger the FTS when the UA reaches the outer perimeter of the operational volume. The approach will be re-evaluated if necessary depending on the step 9 discussion finalization within JARUS See also explanatory note 1.

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34	Skydio, Inc.	General comment	N/A	The proposed MoC utilises the term 'flight termination system' ('FTS'), which is not aligned with the terminology used in Implementing Regulation (EU) 2019/947 or Delegated Regulation (EU) 2019/945, including the draft standard prEN 4709-006 under development by ASD-STAN. On top, referring instead to 'means to terminate the flight' would avoid giving the feeling that this MoC prescribes a given and unique system. As a way of illustration, two examples of different means to terminate the flight that manufacturers can implement in a given UAS are provided next. First, the execution of a combination stick command (CSC) by the remote pilot on the command unit, which, through the C2 link, activates the electronic braking of the rotors. Second, an on-board sensor detects that the tilt limit is exceeded for X seconds and subsequently triggers the interruption of the power supply to the motors, which, in some architectures, could trigger on top the ejection of a parachute.	Replace FTS with "means to terminate the flight"	Requested	Not accepted	The MoC is prescriptive by nature as its intention is to provide with a simple solution valid for a declaration without the need to apply for a design verification to the Agency. The selected naming convention FTS has been clarified in the introduction.
35	THALES	General comment	N/A	Thales thanks EASA for this proposal and the consultation opportunity. As introduced by EASA, this proposal is a MoC and not the only MoC but it will become a reference for future possible alternatives that will be proposed by applicants to comply with LUAS.2511 airworthiness standard. That's why we encourage EASA to take into account following comments and in particular the comments about maximum population density of adjacent areas and Pexit 10-4 consideration outside the ground risk buffer that are for us potential blocking points for on-going operations.			Noted	No comment

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36	Wing Aviation	General comment	N/A	The topic of “Containment” is currently under review within JARUS WG-SRM - Industry, together with EASA Member States, are working hard to create consensus around an updated requirement that is harmonised internationally and consistent with all other SORA updates (e.g. Annex F on Quantitative Methods for Ground Risk). Although the MoC does include some of the principles discussed within JARUS WG-SRM, it was done in an uncoordinated manner and it is neither consistent with the current version of JARUS SORA as recognised by EASA through AMC1 to Article 11 of Implementing Regulation (EU) 2019/947 nor with its future updates (SORA 2.5 is currently under JARUS internal consultation). This uncoordinated approach to the topic of containment is generating a significant although unnecessary increase of workload to all JARUS members that see their work within WG-SRM taken out of context and re-utilised sometimes in an erroneous/misleading manner in an EASA MoC. And despite the fact that an MoC is intended to provide acceptable means of compliance to an existing rule, the proposed EASA MoC incorporates changes which should be the object of rulemaking (see detailed comments below). In addition, there is no evidence provided by EASA that any of the severely restrictive additional requirements included in this proposal are needed due to any safety concern emerging from already approved operations (e.g. French standard scenario S3 or Spanish national STS-ES). In summary, the MoC as proposed is not justified by any operational safety concern, not coordinated and aligned with current or future JARUS SORA versions, and not technically consistent with EASA AMC1 to Article 11 of Implementing Regulation (EU) 2019/947.	We suggest the MoC to be fully coordinated with JARUS, the European drone associations and the SDOs (e.g. Eurocae WG-105) before publication. In the case, the content of the MoC is substantially changed after this pre-consultation, we suggest that a second public consultation is organised before final publication by EASA.		Accepted	The MoC has been reassessed before publication with the NAAs who commented it. New comments have been collected and taken into account (as far as possible and considering different positions).

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37	Wing Aviation	General comment	N/A	The proposed MoC utilises the term 'flight termination system' ('FTS'), which is not aligned with the terminology used in Implementing Regulation (EU) 2019/947 or Delegated Regulation (EU) 2019/945, including the draft standard prEN 4709-006 under development by ASD-STAN. On top, referring instead to 'means to terminate the flight' would avoid giving the feeling that this MoC prescribes a given and unique system. As a way of illustration, two examples of different means to terminate the flight that manufacturers can implement in a given UAS are provided next. First, the execution of a combination stick command (CSC) by the remote pilot on the command unit, which, through the C2 link, activates the electronic braking of the rotors. Second, an on-board sensor detects that the tilt limit is exceeded for X seconds and subsequently triggers the interruption of the power supply to the motors, which, in some architectures, could trigger on top the ejection of a parachute.	Replace FTS with "means to terminate the flight"		Not accepted	The MoC is prescriptive by nature as its intention is to provide with a simple solution valid for a declaration without the need to apply for a design verification to the Agency. The selected naming convention FTS has been clarified in the introduction.
38	Wing Aviation	General comment	N/A	Segregated FTS The proposed MoC refers several times to a "segregated FTS from the UAS flight control system architecture" and uses as well the term "independence". Considering these terms are not being defined in the document, it is not clear what is meant by EASA when using the term "segregated FTS". For instance, is it a plug-in solution with a rather low reliability (probability of loss at 10-2/FH) as suggested during informal discussions with Eurocae WG-105 members or is it a UAS compliant with the "no single failure" criterion? It is suggested that EASA clarify the scope of applicability of the proposed MoC. Note: the assumption made to develop the rest of the comments is that it can be both.	Clarify the scope of applicability of the the proposed MoC		Accepted	The term "segregated" has been clarified. The proposed solution can be considered a "plug-in" solution (for declaration, and this is written now). In coherence it is written "This MoC defines a simple set of prescriptions…"

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39	Wing Aviation	General comment	N/A	There are several areas in the proposed MoC which directly deviates from the currently published EASA AMC1 to Article 11 of Implementing Regulation (EU) 2019/947 and Part 16 of the Annex to Delegated Regulation (EU) 2019/945: ➔ Section 1 which is adding a P_exit of 10E-4/FH which is neither consistent with the published SORA Step #9 nor with the text of the SC Light-UAS.2511(b) itself; ➔ Section 2 which seems to add new requirements when an "enhanced containment" applies (this makes Part 16 of the Annex to Delegated Regulation (EU) 2019/945 unusable). This is addressed by detailed comments below but are considered of paramount importance for EASA to address.	See detailed comments		Partially accepted	This MoC is tailored and designed to credit the FTS with a probability of failure per FH of 10-2. Changes have been introduced to reflect this and section 2 has been removed from the document (see explanatory note 1). It is clarified that for SAIL II the application of the MoC substantiates PUAexitGB < 10-5 /FH. The approach is pragmatic: A UAS, with a FTS declared using this MoC, may be operated up to SAIL II operations when enhanced containment is triggered. Emergency procedures should triggering the FTS when the UA reaches the outer perimeter of the operational volume The approach will be re-evaluated if necessary depending on the step 9 discussion finalization within JARUS See also explanatory note 1
40	Maurizio Bernard (Leonardo)	General comment		TBD maximum flight hours if not bounded . Declaration of reliability cost/gain.			Noted	No comment
41	Drone Alliance Europe	General comment		We have significant concerns with the document's consistency with the work being done by the Joint Authorities for Rulemaking on Unmanned Systems (JARUS), particularly JARUS SORA 2.5, which is now in internal consultation, EUROCAE WG-10 (ED-280), ASD-STAN, and, indeed, in some respects, the European Commission's Implementing Regulation (EU) 2019/947 and Delegated Regulation (EU) 2019/945 (i.e., AMC 1 to Article 11 of the Implementing Regulation and Part 16 of the Annex to the Delegated Regulation).	We recommend that EASA consult with JARUS, EUROCAE WG-105 and ASD-STAN, and recirculate a revised Consultation Paper based on this consultation		Accepted	The MoC has been reassessed before publication with the NAAs who commented it. New comments have been collected and taken into account (as far as possible and considering different positions). EUROCAE and ASD-STAN have been kept in the loop of the MoC evolution after it was published for consultation.

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42	Drone Alliance Europe	General comment		With respect to specific concerns with the current draft, the Drone Alliance Europe concurs with the comments submitted by Wing. In particular, the term “flight termination system” is not used in either the Implementing or Delegated Regulation and connotes something more than the concept of the means of terminating a flight. Additionally, Section 2 of the guidance contains some discrepancies with AMC 1 to Article 11, which explains when “enhanced containment” applies. The guidance requires segregation of the FTS from the flight control system. The concept EASA is addressing is more one of independence, the capability or means of terminating a flight even when the flight control system is down. EASA should clarify its guidance accordingly. DAE also believes the guidance in several respects is prescriptive rather than performance-based (e.g., section 3.3)	In sum, DAE recommends that EASA consult with JARUS, EUROCAE, ASD-STAN, as well as review AMC 1 to Article 11 of the Implementing Regulation, and revise this guidance to ensure consistency and avoid duplication of current guidance		Accepted	The MoC has been reassessed before publication with the NAAs who commented it. New comments have been collected and taken into account (as far as possible and considering different positions). EUROCAE and ASD-STAN have been kept in the loop of the MoC evolution after it was published for consultation.
43	Schweizerische Bundesbahnen SBB	General comment		• In the Footer on Page one it is stated that the Probability of fatality on the Ground shall be limited to 10^-6. As we have been researching the Internet we could not find a single report of fatalities on the ground due to civil used Drones ever worldwide. What is the reason to reduce a Risk which, to our knowledge, is currently empirically inexistent? We recognize that drones pose a major risk to aviation and do not deny that there have been several incidents between drones and manned aviation in the past. In such a context, we basically see potential in such a system			Noted	This footnote has been eliminated.
44	Schweizerische Bundesbahnen SBB	General comment		• Since 2015 I have been building my own private Drones and I have also participated in the PX4 OpenSource Autopilot Project. I have witnessed a few Drones crashes and I have also investigated the very few Crashes we had at SBB. In no case there was a failure in the Drivetrain or the primary Functions of the Flight Controller. Most incidents happened due to misconfiguration or compass interference. This led the Drone to Fallback in a Altitude Hold Mode or cause a Outer Position Controller Runaway (usually called “Fly away”). In ALL Cases the Flight Controller maintained the stabilization Functions and the Radio Connection was unaffected. Some Flight Controllers already now allow for a “Flight Termination” Action in case of a GeoFence violation. If this “inner” (Attitude) Loop of a Flighcontroller does no longer work, usually a Drone (Multirotor) will not be able to maintain a stable Flight a crash in any case.			Noted	The integration of an FTS system is an option for the UAS operator in order to demonstrate compliance with the applicable requirements for containment in SC-Light UAS. This is not the only solution or means of compliance.

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45	Schweizerische Bundesbahnen SBB	General comment		• In all Cases where we observed a Crash or “Fly Away” a manual Flighttermination and/or automatic Termination by the primary Flightcontroller with FTS on GeoFence violation would have worked.			Noted	(not fully clear what is meant with “violation” in this context). No comment
46	Schweizerische Bundesbahnen SBB	General comment		• We consider a reliable Postion Estimation a major task. To enable a separate system to calculate the position reliably, additional sensors (IMU and/or GNSS) must be present. These sensors are subject to the same interference as those of the flight controller. The software of this system must also be robust in order not to initiate a false flight termination			Noted	As the FTS is segregated, it is considered that the step9 requirement regarding SW is achieved.
47	Schweizerische Bundesbahnen SBB	General comment		• Developing, testing, certifying and having such a system installed is a major undertaking and will only be possible with very large drones due to the additional weight and space requirements. It will not be possible to retrofit this later on "off the shelf" drones and, in our opinion, it will only play a role in the CERTIFIED category , if at all			Not accepted	The installation of a segregated FTS is feasible also on small drones, EASA has several applications where this is done.
48	Schweizerische Bundesbahnen SBB	General comment		• In our Opinion it will be hard to build such a system that would be "bullet-proof" i.e. against malicious attacks like GNSS-Spoofing, Hacking the Radio and trigger the FTS etc			Noted	The system is not meant to be bullet-proof but a simple solution to terminate the flight when necessary and only as an emergency measure.
49	Schweizerische Bundesbahnen SBB	General comment		• Generally spoken we assume this System to only provide any additional safety value for Multirotors. In the Case of Fixed Wings and/or VTOL to cut the Power may even lead to a prolonged violation of the Airspace as the Aircraft may glide on and can’t be controlled anymore.			Noted	Appropriate ground and air risk buffers cater also for fixed wing
50	Schweizerische Bundesbahnen SBB	General comment		To Summarize: We see little to no benefit in deploying such a system. On the contrary we assume that integrating those additional components will lead to a reduction of UAS reliability due to false triggering, misconfiguration or technical defects with such systems. We also assume that the system will be prohibitively expensive to be deployed			Not accepted	The integration of an FTS system is an option selected by many UAS operators that is already deployed and functioning.
51	AESA	General comment	All document	Along the document is written "An FTS"	Modify "An FTS" by "A FTS".	Recommended;	Not accepted	The use of the article a or an before and acronym relates to how the first letter of the acronym is pronounced. If it sounds like a vocal then the right article to use is "an" before the acronym.
52	AESA	General comment	All document	In the page 2 "Ac" is defined as expected crash area but in the footnote 15 is called crash area.	AESA recommends to use the same term throughout the document	Recommended;	Accepted	References to crash area have been eliminated from the document.
53	AESA	General comment	All document	Does FH mean Flight Hours?	AESA recommends to include a footnote with the meaning of FH.	Recommended;	Partially accepted	Yes, FH is used to flight hours and it is a very common acronym used

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54	AESA	General comment	All document	The requirements established in this document and its application are difficult to justify by a common UAS operator. A UAS operator does not own design data to justify the required levels of robustness. Therefore, technical standards for software verification should be developed (e.g. DO-178) to increase the capacity of the products introduced in the market for obtaining products with appropriate levels of robustness.		Recommended;	Noted	The MoC aims at providing a simple solution to comply with containment requirements under certain conditions. The MoC is based on testing of the FTS to be installed in the UAS and on the segregation of the FTS from the UAS. It is feasible to design/install such a device in an existing UAS and comply with the MoC by testing the system. As a matter of fact, this is already the case for several applications in Europe.
55	LBA (NAA) Germany	general		The introduction of the MoC mentions, that it has been created to support "Design Verification Projects". However, in EASA-NAA webinars, it was desribed to be used as an alternative to a DVP. This document does not explain at all, if this is supposed to part of a DVP or an alternative to an DVP.	Better express the intent and how it integrates with applicable rules and AMC/GM.	Requested	Accepted	It is now clarified that the MoC can be used for declaration without need to request DVR (however the NAA can still decide for any reason to request a DVR)
56	LBA (NAA) Germany	general		This is MoC is proposed to meet compliance to SC Light UAS.2511, while the actual requirements for enhanced containment are in Step#9 of AMC1 to Article 11 2019/947. This is very confusing, as there is no requirement in SORA that would force applicants to use drones that have been designed to SC-Light UAS. What is neccessary however to comply with SORA requirements in general is a list of acceptable standards or acceptable MoC to these requirements. This may very well be achieved with a MoC like this document, but it should be tied to the right requirement source.	This MoC should be used to comply with SORA Step#9 Enhanced Containment and should not be tied to SC-Light UAS at all.	Requested	Noted	EASA provides evidence of compliance with technical OSOs by means of the SC Light UAS. Apart from the specific step#9 case, it has been explained that the SC Light UAS provides a better granularity for EASA to check UAS design. Industry, through EUROCAE, is engaged, in the driving seat, in definiing MoCs to SC Light UAS requirememts. For the particualr case of 2511 and 2512, EASA is in charge. Also in these cases, EASA approach is to go through SC Light UAS. Note that a traceability matrix has been publsihed to link OSOs (and step#9, and M2) to SC Light UAS requirements.

Introductory note and identification of issue

Explanatory Note 1: use of CS23/CS27/SC

Based the number of comments received on section 2 and the complexity added by this section, and with the aim to simplify the document and make it useful for declaration, Section 2 has been removed.
Section 1 is now limited to identify the performance of the UAS, equipped with the FTS, in terms of probability of exit from the ground buffer / FH (10^-5 / FH when operation is in SAIL II)
SAIL II is where it is urgent to adopt this FTS MoC, as declarative toward the NAA (no need of EASA Design Verification unless where the NAA decides otherwise)

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57	SAFRAN	Introductory note and identification of issue	1	MoC reads: "However, if the probability of exit from the ground buffer ensures that the overarching quantitative target level of safety (TLOS) 2 is still met in adjacent areas, an FTS should be considered an acceptable means to demonstrate compliance with Light-UAS 2511 (b)" Note 2: Probability of fatality on ground < 10-6 / FH, as defined by JARUS SORA	Pending the availability of a MoC for LUAS.2510, possibly the overarching TLOS (with value) should be recalled in the main body rather than in a note.	Recommended;	Noted	The overarching TLOS is mentioned in this MoC as support material while not being directly linked with the main objective of the MoC. The MoC is designed to credit an FTS with a 10-2 probability of failure per FH which would imply a probability of exiting the ground buffer of 10-5 for SAIL II. This has been further substantiated and clarified in the revised section 1 of the document.
58	SAFRAN	Introductory note and identification of issue	1	MoC reads: "Several of these applications leverage flight termination as method to avoid breach in adjacent areas. For this reason the need has been identified to establish a means of compliance to Light-UAS.2511 purely based on a flight termination system (FTS). An FTS is by its nature an emergency measure, which is not intended as a standard contingency measure. Its triggering should not be assumed to lead to a crash within the operational volume1. However, if the probability of exit from the ground buffer ensures that the overarching quantitative target level of safety (TLOS) 2 is still met in adjacent areas, an FTS should be considered an acceptable means3 to demonstrate compliance with Light-UAS 2511 (b)."	The subject § explains the underlying reason for this MoC. With its current wording, it could be perceived as an example - whereas it in fact describes the applicability frame of this MoC. It should be then clearly stated that this MoC applies for SAIL II UAS, with an FTS used to demonstrate compliance with LUAS.2511 (b) / SORA Step 9 (Enhanced Containment).	Recommended;	Accepted	The scope and applicability of the MoC have been clarified in section 1 of the document making clear that the MoC is intended for application as a declarative MoC for operations classified up to SAIL II.
59	SAFRAN	Introductory note and identification of issue	1		it should be recalled, as usual, that this MoC is one possibility but not the only one to demonstrate compliance with Light-UAS.2511 (b). Also UAS for which the rate of loss of control is better than 1E-4/FH would not need to integrate an FTS as per Section 3 - but compliance with Enhanced Containement could still be demonstrated with the considerations of Section 2.	Recommended;	Noted	The MoC is an alternative for those UAS with the intention to make use of an FTS under the limitations of the document. Compliance with containment requirement by other means is possible but outside the scope of this MoC. Changes has been introduced to make clear that present MoC is meant for declaration. Other MoC are possible.
60	Wingcopter	Introductory note and identification of issue	1	"Light-UAS-2511 Containment" is still talking about "significantly higher than…"	Define the term "Significant" in this context	Requested	Noted	All considerations on population density related to the risk posed to adjacent areas have been removed from the document. See explanatory note 1

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61	Nathanel Apter (UASolutions)	Introductory note and identification of issue	1	It would probably make sense to provide guidance on how to demonstrate standard containment since this is not completely clear for now as well.	For instance: No probable failures leading to operations outside of the operational volume should be proven by means of a analysis of the potential failure (loss of C2 link, loss of navigation means etc.) and the identified mitigation means	Recommended;	Noted	The MoC is focused on providing a simple solution, adequate for a declaration, for enhanced containment. This MoC is not the only possible MoC.
62	DGAC	Introductory note and identification of issue	1	The MoC doesn't make clear whether it should be used as a demonstration of enhanced containment to EASA for obtaining a DVR, or whether it can be directly used as a demonstration of compliance with Step 9 of the SORA to NAA without having to obtain a DVR from EASA. According to EASA, the latest seems to be the intention so it should be stressed more clearly in the document.	Add a sentence explaining the intent of the document.	Recommended;	Accepted	It is now clarified that the MoC can be used for declaration without need to request DVR (however the NAA can still decide for any reason to request a DVR)
63	DGAC	Introductory note and identification of issue	1	If considerations on the density of population are kept, adjacent airspace should be defined, with regards to the characteristics of the UAS (likelihood that it will maintain a stable trajectory in case of fly-away, endurance of the UAS). Depending on the dimensions of the adjacent airspace, the average density of population may greatly vary.	Either delete considerations on the density of population in the adjacent areas, either provide guidance material on the way to compute it, including the dimensions of the adjacent airspace that should be considered.	Requested	Accepted	Considerations on density have been deleted
64	Alejandro del Estal (Rigi Technologies SA)	Introductory note and identification of issue	1	Providing guidance on how to comply with enhanced containment would also make sense. It would probably make sense to provide guidance on how to demonstrate standard containment	For instance: No probable failures leading to operations outside of the operational volume should be proven by means of a analysis of the potential failure (loss of C2 link, loss of navigation means etc.) and the identified mitigation means	Recommended;	Not accepted	This MoC presents one solution (an FTS) that could be applicable for demonstration of containment. It is not under the scope of the document to cover other means of compliance with containment requirements. Other means are still possible.
65	Latvian CAA	Introductory note and identification of issue	1	As the “Enhanced containment” is applicable to every SAIL score, while Light-UAS.2511 is for UAS operated in SAIL III and IV (medium risk), it is unclear if and why this MoC should be considered for demonstration of compliance with “Enhanced containment” requirements also for SAIL I and II (low risk) operations.	Clarification of the applicability of this MoC is required	Requested	Accepted	SC Light-UAS is applicable to medium risk (SAIL III and IV). It contains however 2 requirements, (containment) 2511 and 2512 (mitigation means linked with design), which are not driven by the SAIL. (while mitigation means drive the SAIL, the opposite is not true). Such requirements are therefore applicable unchanged for any SAIL. Also note that EASA has published a traceability matrix OSO-SC Light UAS which would allow to determine which requirements would be applicable in case a DVR would be requested for SAIL II. This has not been formalized but the exercise has already been performed for one project. Text in note of MoC has been added o address the comment.

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66	Latvian CAA	Introductory note and identification of issue	1	Depending on the SAIL level and ConOps, the proposed MoC might be disproportionate to actual risks and safety gain. Modification of well working UAS design just to provide compliance with requirements of independent FTS might actually reduce the safety level. It is especially critical in cases of ConOps with small UA (>500g, but less than 2kg). Also, the inconsistency with the approach on the risk posed by a loss of control of the operation, resulting in an infringement of the adjacent areas on the ground and/or adjacent airspace between Open category and similar low risk Specific category operations is not well accepted.	Develop more clear guidance on how to comply with the "Basic containment" to assure that the possibility of fly-away situations is decreased at the acceptable level and/or consider specific characteristics of UA and/or operational limits as a trigger for (or exemption from) the "Enhanced containment".	Not requested;	Not accepted	The aim of this MoC is basic: provide a simple solution for enhanced containment by means of a segregated FTS , with a MoC that it is sufficiently simple to be used for pure declaration with no EASA design verification needed (no use of safety assessment methods implying FHA, failure conditions categorizations, fault tree, ...). This MoC is not the only MoC. EASA may develop further MoC after this, and any applicant can propose a MoC.
67	Miguel Aguilera	Introductory note and identification of issue	1	The 'Introductory note and identification of the issue' section of the document reads: For this reason the need has been identified to establish a means of compliance to Light-UAS.2511 purely based on a flight termination system (FTS). Besides, Part 17 (UAS Class 6) of the Annex to the Delegated Regulation (EU) 2019/945 amended by Regulation (EU) 2020/1058, requires both a geo-caging system and a FTS system (traced to points 4 are 5, respectively) in order to prevent the UA from breaching the limits of the operational volume. In the case of UAS Class 6 operating under STS2, what is the allocation of the 10^-4/FH containment requirement between the geo-caging and the FTS function?	Please add a clarification in the document.		Partially accepted	The MoC is designed to credit an FTS with a 10-2 probability of failure per FH which would imply a probability of exiting the ground buffer of 10-5 for SAIL II. The document have been amended to clearly reflect this. No relation with UAS classes per regulation is pursued here.
68	SEG	Introductory note and identification of issue	1	What means "adjacent areas on ground or adjacent airspace is significantly higher", clarification needed.	"significantly higher for adjacent areas": a difference of GRC of at least 2 appear adequate for "significant" "significantly higher for adjacent airspace": a difference of ARC of at least 2 categories appears adequate for "significant"	Requested	Noted	Considerations on populations density have been removed to focus in the MoC to grant an FTS with a 10-2/FH probability of failure.
69	SEG	Introductory note and identification of issue	1	.....leverage flight termination as method to avoid breach in adjacent areas. Does Adjacent areas mean both adjacent ground areas and adjacend airspace??	clarification needed	Recommended;	Noted	The flight termination function is in most scenarios meant to avoid the UAS to leave the ground risk buffer. It could be, however, used to avoid breaching in adjacent airspace with the necessary adjustments to the CONOPS.

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70	SEG	Introductory note and identification of issue	1	……..Several of these applications leverage flight termination as method…… A FTS doesnt need to be necessarily "UAS system independent" as explained later in the document. UAS system inherent mechanism to safely terminate the flight, are also adequate according to our experience.	clarification needed	Recommended;	Noted	The MoC does not specify on these topics. The FTS could be as well a UAS system however compliant with the segregation requirements included in the MoC. The MoC is aim to provide with a simple solution which would provide limited performance.
71	Dronus	Introductory note and identification of issue	1	A definition for "adjacent" isn't indicated within the document. It would be important overall for adjacent airspace. If a geographical zone is present, how can an operator/pilot decide if it is adjacent or not? Note that the containment has to be guaranteed even in vertical direction. If the UAV is flying in a geographical zone in which the altitude limit is for example 60 m AGL, is 61 meters adjacent airspace?	Explicit a definition of adjacent	Reccomended	Noted	Adjacent area and adjacent airspace are indirectly defined in AMC 1 to article 11 of regulation (EU) 2019/947
72	Wingcopter	Introductory note and identification of issue	1	"Light-UAS-2511 Containment" is still talking about "significantly higher than…"	Define the term "Significant" in this context	Requested	Not accepted	The MoC does not intend to allow for changes to the SC-Light UAS. At this time there is no quantitative elements to define "significant" and therefore this would be subject to agreement between the manufacturer/operator and the authorizing authority.
73	senseFly	Introductory note and identification of issue	1	It is not clear if this MoC can be used to demonstrate compliance with the step 9 or if a DVR from the EASA is still required.	We suggest clarifying this point in the introduction.	Recommended;	Partially accepted	The MoC could be used to demonstrate compliance with SC Light UAS 2511 without the need to apply for a DVR from the Agency. The authority authorising the operation could for any reason still request a DVR from the Agency. The text have been clarified to clearly declare this statement.
74	senseFly	Introductory note and identification of issue	1	We support comment number 6 from FOCA	The sentence should be reformulated	Recommended;	Noted	No comment as this could not be linked with the referenced comment.
75	JEDA	Introductory note and identification of issue	1	The MoC doesn't make clear whether it should be used as a demonstration of enhanced containment to EASA for obtaining a Design Verification Report (DVR) or whether it can be directly used as a demonstration of compliance with Step 9 of theSORA to NAA without having to obtain a DVR from EASA. According to EASA, the latest seems to be the intention so it should be stressed moreclearly in the document.	Add a sentence clarifying that the MoC is applicable: A) when a TC for the UAS is required (SAIL V and VI or certified category) B) when DVR by EASA is required (SAIL III & IV), or C) when the matter can be dealt only at national level by the competent authority (SAIL I or II)	Required	Accepted	It is now clarified that the MoC can be used for declaration without need to request DVR (however the NAA can still decide for any reason to request a DVR)
76	JEDA	Introductory note and identification of issue	1	While the Special Condition is clearly scenario based, it does not allow to clearly identify criteria for obtaining the certification for the application as the result of the respective DVP.	Add explanation accordingly	recommended	Not accepted	It is not the intention of this MoC to provide details about the process to follow to obtain a design verification report or certification but to provide with a simple solution of an FTS which could be opted for by the operator to demonstrate compliance with the SC requirement.

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Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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77	JEDA	Introductory note and identification of issue	1	There are further activities in the same context of this document currently undertaken by Standard Development Organisations (SDO) which may influence the conclusions and the methodology provided by this document and the Special Condition in general. In particular prEN 4709-06 under development by ASD-STAN. Tasked by CEN following mandate M567 by DG-GROW.When industry standards are available, using the performance-based approach (e.g. issue 5 of CS- 23) EASA should abstain from directly publishing detailed specifications, limiting its role to listing consensus-based industry standards, considered valid AMCs.	Add a remark saying that this MoC will be revised, once CEN 4709-06 will have been published	recommended	Not accepted	The Agency is following to the extent possible all developments in other forums/organizations with relation to UAS standardisation material. When industry standards are developed, published and considered acceptable by the Agency to demonstrate compliance to certain elements of the SC Light UAS, the Agency may publish this information. In the frame of a design verification project, industry/operators could propose any standards to the Agency to be used as means of compliance. An agreement with the Agency should be sought in these cases.
78	JEDA	Introductory note and identification of issue	1	If considerations on the density of population are kept, adjacent areas should be defined, with regards to the characteristics of the UAS (likelihood that it will maintain a stable trajectory in case of fly-away, endurance of the UAS). Depending on the dimensions of the adjacent area, the average density of population may greatly vary.	Either delete considerations on the density of population in the adjacent areas or provide guidance material on the way to compute it.	Requested	Accepted	All considerations to population density have been removed from the document. See explanatory note 1
79	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	Introductory note and identification of issue	1	The containment is listed as necessary when "risk associated with the adjacent areas on ground or adjacent airspace is significantly higher than the risk associated with the operational volume". There may be some merit in containment regardless of the adjacent area simply because we do not like to have flyaways.	Omit the mentioning of the increased risk in adjacent area to accommodate use of containment methods for cases, where the risk in adjacent areas is more or less the same.		Not accepted	The mention to the increased risk in adjacent areas is derived directly from the SC Light UAS text and only reproduced in the MoC for clarity. Containment is not only necessary when the risk associated with the adjacent areas is higher, the SC Light UAS 2511 is still applicable for any SAIL.
80	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	Introductory note and identification of issue	1	It is not immediately clear that this MoC is solely for ground risk and does not address air risk. In fact, the first sentence indicates that this MoC also addresses adjacent airspace, when it in fact does not.	This should be clearly stated in the beginning.		Not accepted	Even though the majority of applications are associated with the ground risk, the air risk could also be considered. The aim of this MoC is to cover only a potential FTS that could be used to demonstrate compliance with the containment requirement. With the appropriate adjustments the air risk could also be addressed with the use of an FTS but maybe not very useful from an operational point of view.
81	Skydio, Inc.	Introductory note and identification of issue	1	This proposed MoC does not seem to address/enumerate the "standards or methodologies accepted by the Agency" to which the software and airborne electronic hardware whose development error(s) could directly lead to operations outside the ground risk buffer must be developed.	List the standard(s) or methodology(ies).	Requested	Not accepted	This MoC is mainly focused on testing the FTS developed by the manufacturer/operator and installed in an UAS. No requirement is requested related to the software or electronic hardware apart from the testing defined in the MoC. Therefore, the performance granted to this basic FTS is limited (probability of failure 10-2/FH)
82	Volocopter	Introductory note and identification of issue	1	The MOC deos not provide any means of compliance for the point (b)(3) of Light-UAS.2511.	Please provide guidance on (b)(3) when using the FTS as an MoC to Light-UAS.2511.		Not accepted	This MoC is mainly focused on testing the FTS developed by the manufacturer/operator and installed in an UAS. No requirement is requested related to the software or electronic hardware apart from the testing defined in the MoC. Therefore, the performance granted to this basic FTS is limited (probability of failure 10-2/FH)

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Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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83	FPDC	Introductory note and identification of issue	1	The MoC doesn't make clear whether it should be used as a demonstration of enhanced containment to EASA for obtaining a Design Verification Report (DVR) or whether it can be directly used as a demonstration of compliance with Step 9 of the SORA to NAA without having to obtain a DVR from EASA. According to EASA, the latest seems to be the intention so it should be stressed more clearly in the document.	Add a sentence clarifying that the MoC is applicable: A) when a TC for the UAS is required (SAIL V and VI or certified category) B) when DVR by EASA is required (SAIL III & IV), or C) when the matter can be dealt only at national level by the competent authority (SAIL I or II)	Required	Accepted	It is now clarified that the MoC can be used for declaration without need to request DVR (however the NAA can still decide for any reason to request a DVR)
84	FPDC	Introductory note and identification of issue	1	While the Special Condition is clearly scenario based, it does not allow to clearly identify criteria for obtaining the certification for the application as the result of the respective DVP.	Add explanation accordingly	recommended	Not accepted	It is not the intention of this MoC to provide details about the process to follow to obtain a design verification report or certification.
85	FPDC	Introductory note and identification of issue	1	There are further activities in the same context of this document currently undertaken by Standard Development Organisations (SDO) which may influence the conclusions and the methodology provided by this document and the Special Condition in general. In particular prEN 4709-06 under development by ASD-STAN. Tasked by CEN following mandate M567 by DG-GROW. When industry standards are available, using the performance-based approach (e.g. issue 5 of CS- 23) EASA should abstain from directly publishing detailed specifications, limiting its role to listing consensus-based industry standards, considered valid AMCs.	Add a remark saying that this MoC will be revised, once CEN 4709-06 will have been published	recommended	Not accepted	The Agency is following to the extent possible all developments in other forums/organizations with relation to UAS standardisation material. When industry standards are developed, published and considered acceptable by the Agency to demonstrate compliance to certain elements of the SC Light UAS, the Agency may publish this information. In the frame of a design verification project, industry/operators could propose any standards to the Agency to be used as means of compliance. An agreement with the Agency should be sought in these cases.
86	FPDC	Introductory note and identification of issue	1	If considerations on the density of population are kept, adjacent areas should be defined, with regards to the characteristics of the UAS (likelihood that it will maintain a stable trajectory in case of fly-away, endurance of the UAS). Depending on the dimensions of the adjacent area, the average density of population may greatly vary.	Either delete considerations on the density of population in the adjacent areas or provide guidance material on the way to compute it.	Requested	Accepted	All considerations to population density have been removed from the document. See explanatory note 1
87	EUSC-IT	Introductory note and identification of issue	1	The MoC doesn't make clear whether it should be used as a demonstration of enhanced containment to EASA for obtaining a Design Verification Report (DVR) or whether it can be directly used as a demonstration of compliance with Step 9 of theSORA to NAA without having to obtain a DVR from EASA. According to EASA, the latest seems to be the intention so it should be stressed moreclearly in the document.	Add a sentence clarifying that the MoC is applicable: A) when a TC for the UAS is required (SAIL V and VI or certified category) B) when DVR by EASA is required (SAIL III & IV), or C) when the matter can be dealt only at national level by the competent authority (SAIL I or II)	Required	Accepted	It is now clarified that the MoC can be used for declaration without need to request DVR (however the NAA can still decide for any reason to request a DVR)
88	EUSC-IT	Introductory note and identification of issue	1	While the Special Condition is clearly scenario based, it does not allow to clearly identify criteria for obtaining the certification for the application as the result of the respective DVP.	Add explanation accordingly	recommended	Not accepted	It is not the intention of this MoC to provide details about the process to follow to obtain a design verification report or certification.

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Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
NR	Author	Section	Page					
89	EUSC-IT	Introductory note and identification of issue	1	There are further activities in the same context of this document currently undertaken by Standard Development Organisations (SDO) which may influence the conclusions and the methodology provided by this document and the Special Condition in general. In particular prEN 4709-06 under development by ASD-STAN. Tasked by CEN following mandate M567 by DG-GROW. When industry standards are available, using the performance-based approach (e.g. issue 5 of CS- 23) EASA should abstain from directly publishing detailed specifications, limiting its role to listing consensus-based industry standards, considered valid AMCs.	Add a remark saying that this MoC will be revised, once CEN 4709-06 will have been published	recommended	Not accepted	The Agency is following to the extent possible all developments in other forums/organizations with relation to UAS standardisation material. When industry standards are developed, published and considered acceptable by the Agency to demonstrate compliance to certain elements of the SC Light UAS, the Agency may publish this information. In the frame of a design verification project, industry/operators could propose any standards to the Agency to be used as means of compliance. An agreement with the Agency should be sought in these cases.
90	EUSC-IT	Introductory note and identification of issue	1	If considerations on the density of population are kept, adjacent areas should be defined, with regards to the characteristics of the UAS (likelihood that it will maintain a stable trajectory in case of fly-away, endurance of the UAS). Depending on the dimensions of the adjacent area, the average density of population may greatly vary.	Either delete considerations on the density of population in the adjacent areas or provide guidance material on the way to compute it.	Requested	Accepted	All considerations to population density have been removed from the document. See explanatory note 1
91	UAAI	Introductory note and identification of issue	1	The MoC doesn't make clear whether it should be used as a demonstration of enhanced containment to EASA for obtaining a Design Verification Report (DVR) or whether it can be directly used as a demonstration of compliance with Step 9 of the SORA to NAA without having to obtain a DVR from EASA. According to EASA, the latest seems to be the intention so it should be stressed more clearly in the document.	Add a sentence clarifying that the MoC is applicable: A) when a TC for the UAS is required (SAIL V and VI or certified category) B) when DVR by EASA is required (SAIL III & IV), or C) when the matter can be dealt only at national level by the competent authority (SAIL I or II)	Required	Accepted	It is now clarified that the MoC can be used for declaration without need to request DVR (however the NAA can still decide for any reason to request a DVR)
92	UAAI	Introductory note and identification of issue	1	While the Special Condition is clearly scenario based, it does not allow to clearly identify criteria for obtaining the certification for the application as the result of the respective DVP.	Add explanation accordingly	Recommended	Not accepted	It is not the intention of this MoC to provide details about the process to follow to obtain a design verification report or certification.
93	UAAI	Introductory note and identification of issue	1	There are further activities in the same context of this document currently undertaken by Standard Development Organisations (SDO) which may influence the conclusions and the methodology provided by this document and the Special Condition in general. In particular prEN 4709-06 under development by ASD-STAN. Tasked by CEN following mandate M567 by DG-GROW. When industry standards are available, using the performance-based approach (e.g. issue 5 of CS-23) EASA should abstain from directly publishing detailed specifications, limiting its role to listing consensus-based industry standards, considered valid AMCs.	Add a remark saying that this MoC will be revised, once CEN 4709-06 will have been published	Recommended	Not accepted	The Agency is following to the extent possible all developments in other forums/organizations with relation to UAS standardisation material. When industry standards are developed, published and considered acceptable by the Agency to demonstrate compliance to certain elements of the SC Light UAS, the Agency may publish this information. In the frame of a design verification project, industry/operators could propose any standards to the Agency to be used as means of compliance. An agreement with the Agency should be sought in these cases.

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94	UAAI	Introductory note and identification of issue	1	If considerations on the density of population are kept, adjacent areas should be defined, with regards to the characteristics of the UAS (likelihood that it will maintain a stable trajectory in case of fly-away, endurance of the UAS). Depending on the dimensions of the adjacent area, the average density of population may greatly vary.	Either delete considerations on the density of population in the adjacent areas or provide guidance material on the way to compute it.	Requested	Accepted	All considerations to population density have been removed from the document. See explanatory note 1
95	LBA (NAA) Germany	Introductory note and identification of issue	1	"Its triggering should not be assumed to lead to a crash within the operational volume" It is generally expected, that the FTS is triggered when exiting the operational volume. Depending on the FTS method descend mode (ballistic vs. parachute) and taking account environmental conditions (wind drift), the landing/impact may very well occur inside the operational volume. The ground risk buffer is however sized for the majority of likely outcomes for the landing spot. When after FTS activation due to a containment breach the drone lands inside the operational volume, this still is compliant with the SORA semantic model and does not affect the overall level of safety.	delete the statement, as it is misleading.	Requested	Accepted	Reference has been removed from the document
96	LBA (NAA) Germany	Introductory note and identification of issue	1	The MoC cites part of SORA Step #9 enhanced containment in the introduction. It says: "(1) the probability of leaving the operational volume must be demonstrated to be acceptable with respect to the risk posed by a loss of containment;" This is not in compliance with the current AMC 1 to Article 11 of IR (EU) 2019/947, where it says that: "the probability of the UA leaving the operational volume should be less than 10-4/FH;"	Adjust the phrase to the actual definition as currently included in the regulation.	Requested	Not accepted	The reference mentioned in the comment refers to the SC Light UAS 2511 (which was drafted and adopted without a numerical requirement, left to the MoC to determine) and not to the AMC 1 to article 11 of the regulation. The MoC provides compliance in its limited scope (UAS under 3 m) and according to EASA communications to NAAs “The approach is pragmatic: A UAS, with a FTS declared using this MoC, may be operated up to SAIL II operations when enhanced containment is triggered. Emergency procedures should trigger the FTS when the UA reaches the outer perimeter of the operational volume. The approach will be re-evaluated if necessary depending on the step 9 discussion finalization within JARUS” See also explanatory note 1
97	LBA (NAA) Germany	Introductory note and identification of issue	1	MoC: Footnote 4. : Comment: An FTS is not directly a part of a requirement for PDRA S01 and PDRA S02, which are parts of IR (EU) 2019/947. AMC 4 (PDRA S01) and AMC 5 (PDRA S02) of Article 11 of IR (EU) 2019/947 refer to Parts 16 and 17 of DR (EU) 2019/945 for technical details of the UAS. The phrase: "Provide means for the remote pilot [...] its powered horizontal displacement" is largely a citation of Parts 16 of DR (EU) 2019/945. However, this regulation is not mentioned in the MoC.	Reword and clearly state the requirements for an FTS for C5 and C6 drones is provided in DR (EU) 2019/945 and the pure FTS requirement itself is not part of a PDRA.	Recommended;	Partially accepted	Changes have been introduced in the text and the footnotes to clarify the relationship between the PDRAs and the FTS and their interrelation with the present MoC.

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98	LBA (NAA) Germany	Introductory note and identification of issue	1	Footnote 4. The last sentence of footnote 4 is cut off.	Include the missing part.	Recommended;	Accepted	The footnote has been reworded and the full text is included
99	LBA (NAA) Germany	Introductory note and identification of issue	2	MoC: First paragraph of page 2. Comment: According to SORA, the determination of the allowed maximum population density is not part of technical means to show compliance with enhanced containment. Enhanced containment was introduced into SORA for cases where adjacent areas pose significantly higher ground or air risk, than compared to the operational volume with the surrounding ground risk buffer. Defining maximum population densities as requirements for certain methods to show enhanced containment, is completely against the logic of SORA. This should not be part of this MoC. If so, the MoC would change aspects of AMC 1 to Article 11 of IR (EU) 2019/947 (EASA SORA) and should go through the regular rule making process. It is not acceptable that changes to an AMC are introduced via a MoC.	The MoC has direct consequences for AMC 1 to Article 11 of IR (EU) 2019/947, and should go through the regular rule making process. It is not acceptable that such changes are introduced via a technical MoC.	Requested	Accepted	The MoC has no intention to modify existing regulation but to provide an option for applicants to comply with 2511 requirement included in SC Light UAS. All references to population density has been eliminated as section 2 has been removed. Section 1 has been reformulated to clarify the scope of the MoC.

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1. Structure of the document and general approach

Explanatory Note 1: use of CS23/CS27/SC

Based the number of comments received on section 2 and the complexity added by this section, and with the aim to simplify the document and make it useful for declaration, Section 2 has been removed.
Section 1 is now limited to identify the performance of the UAS, equipped with the FTS, in terms of probability of exit from the ground buffer / FH (10^-5 / FH when operation is in SAIL II)
SAIL II is where it is urgent to adopt this FTS MoC, as declarative toward the NAA (no need of EASA Design Verification unless where the NAA decides otherwise)

Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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100	SAFRAN	1. Structure of the document and general approach	2-3	MoC reads: "If enhanced SORA step 9 is triggered, it is possible to apply this method proceeding through the following steps:"	This presentation in steps may be a bit misleading: the final step, step 5, consisting in the application of the MoC on the FTS of the UAS is obviously part of the design process of the UAS - not something that can be closed within hours, contrary to steps 1-4. Possibly it could be reworded as follows: "If enhanced SORA step 9 is triggered for an UAS with an FTS complying with Section 3, it is possible to apply this method proceeding through the following steps:"	Recommended;	Partially accepted	Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).
101	SAFRAN	1. Structure of the document and general approach	2-3	MoC reads: "If enhanced SORA step 9 is triggered, it is possible to apply this method proceeding through the following steps:"	Would propose to reword either as "SORA Step 9", "enhanced containment", "SORA Step 9 (enhanced containment)" instead of "enhanced SORA step 9".	Recommended;	Partially accepted	Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).
102	SAFRAN	1. Structure of the document and general approach	3	MoC reads: "Ensure that Dop-adj9 for the operation is below Dpop-adj-max as determined in step 3. If it is not, change or adjust the area of operation, recheck assumptions, or do not apply this MoC and refer to the competent authority." Note 9: "This refers to the “at risk” population in adjacent areas. If the MTOM is below 25 Kg, sheltering assumption could be possible, as long as they are agreed with the authority authorizing the operation. This document does not provide further guidance to determine the “at risk” Dpop-adj. Such guidance could be derived from future JARUS WG6 proposals regarding SORA “step 9”. Until this guidance will be published in the AMC and GM to Regulation 2019/947, EASA will be available for discussion / consultations with competent authorities and operators."	During WG-105 / SG-4 meeting mid-december 21, there was some discussion regarding the methodology to apply for the evaluation of the density of population in the adjacent area. The method to assess the actual density of population in adjacent area is the final key parameter to this MoC; in asbence of an agreed method, the MoC is incomplete. It is proposed that this MoC includes recommendations for this assessment i.e. average density of population within the endurance range of the UAS.	Recommended;	Noted	All considerations to population density have been removed from the document and section 2 has been removed. See explanatory note 1

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Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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103	Alliance for new Mobility Europe (AME)	1. Structure of the document and general approach	2	Section 1 introduces a P_exit, probability to breach the containment, of 10E-4/FH as a MoC to SC Light-UAS.2511(b); it is not understood how this requirement/MoC is derived from the current wording of SC Light-UAS.2511(b), which specifies: ➔ the probability of exiting the operational volume in point (b)(1); and ➔ a no single failure criterion in point (b)(2).	In order to stay consistent with AMC1 to Article 11 of Implementing Regulation (EU) 2019/947, section 2.5.3(c), published by EASA in December 2020, redefinition of P_exit as the probability to exit the operational volume is requested.		Partially accepted	The MoC is designed to credit an FTS with a 10-2 probability of failure per FH which would imply a probability of exiting the ground buffer of 10-5 for SAIL II. Section 1 has been reformulated to provide further clarification.
104	AZUR DRONES	1. Structure of the document and general approach	2	Section 1 introduces a P_exit, probability to breach the containment, of 10E-4/FH as a MoC to SC Light-UAS.2511(b); it is not understood how this requirement/MoC is derived from current wording of SC Light-UAS.2511(b) which specifies: - the probability of exiting the operational volume in point (b)(1); and - a no single failure criterion in point (b)(2).	In order to stay consistent with AMC1 to Article 11 of Implementing Regulation (EU) 2019/947, section 2.5.3(c), published by EASA in December 2020, redefinition of P_exit as the probability to exit the operational volume is requested.	Requested	Partially accepted	The MoC is designed to credit an FTS with a 10-2 probability of failure per FH which would imply a probability of exiting the ground buffer of 10-5 for SAIL II. Section 1 has been reformulated to provide further clarification.
105	AZUR DRONES	1. Structure of the document and general approach	3	Comment related to the last paragraph: “Regarding the operation of multiple UA in the same airspace, although these operations (in particular “drone swarms”10) are not in the scope of SORA11 , some Member States are gaining operational experience. Therefore it is proposed to consider them included in the scope of this MoC (focused on enhanced containment) as long as the UA maximum dimension is below 1 m. The limitation in dimension could be re-address in further revisions of the MoC.” This risk introduced by simultaneous UA operations in the same volume/portion of airspace for people on the ground is not specific to adjacent areas, thus not specific to containment requirements (SORA Step #09). It is thus not understood why the proposed MoC would be limited to multiple UA operations of UA with a maximum dimension below 1 m.	Delete the paragraph	Requested	Accepted	Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).
106	COIAE	1. Structure of the document and general approach	2	Section 1 introduces a P_exit, probability to breach the containment, of 10E-4/FH as a MoC to SC Light-UAS.2511(b); it is not understood how this requirement/MoC is derived from the current wording of SC Light-UAS.2511(b), which specifies: - the probability of exiting the operational volume in point (b)(1); and - a no single failure criterion in point (b)(2).	In order to stay consistent with AMC1 to Article 11 of Implementing Regulation (EU) 2019/947, section 2.5.3(c), published by EASA in December 2020, redefinition of P_exit as the probability to exit the operational volume is requested.	Requested	Partially accepted	The MoC is designed to credit an FTS with a 10-2 probability of failure per FH which would imply a probability of exiting the ground buffer of 10-5 for SAIL II. Section 1 has been reformulated to provide further clarification.

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107	COIAE	1. Structure of the document and general approach	2	The definition of an adjacent area and/or acceptable criterion to define it are not clear or specified in the document or other reference documents (i.e., Implementing Regulation (EU) 2019/947 and Delegated Regulation (EU) 2019/945).	Include clearer and more specific definitions or acceptable means to define it.	Requested	Not accepted	It is not the aim of the document to present different scenarios but to provide with a simple solution for an FTS which could be used to demonstrate compliance with the applicable requirement. Adjacent areas are indirectly defined in AMC 1 to article 11 of regulation (EU) 2019/947.
108	Nathanel Apter (UASolutions)	1. Structure of the document and general approach	2	Determination of the maximum allowed density of population on adjacent areas. The operators have difficulties to gather the information about the density of population in adjacent areas for all countries of the MS, and for each operation. Even if this MOC is not directly implied to provide such information, there is a lack of homogeneity in the MS in terms of population density data. The problem is even more complex if there is more than one different country within adjacent areas and airspaces.	Currently, the operators are investigating the density of population of the adjacent areas using websites from different countries that may be not-official or out-of-date or represent the population density based on census data. In order to ease the task of gathering information about the density of population, it is suggested that EASA provides official data sources (internal website or in collaboration with the MSs) to provide a clear depiction of the density of population for the adjacent areas and for the ground risk class.	Recommended;	Noted	All considerations to population density have been removed from the document. See explanatory note 1. The comment is not anymore applicable.
109	Nathanel Apter (UASolutions)	1. Structure of the document and general approach	2	Dpop-adj-max is not well defined and leads to a certain amount of confusion as whether this is the maximum acceptable population density in adjacent areas or the average as stated in Natale's Email	Could you clarify	Requested	Partially accepted	All considerations to population density have been removed from the document. See explanatory note 1
110	Nathanel Apter (UASolutions)	1. Structure of the document and general approach	3	The footnote 8 mentions: "the single failure criteria is considered met by means of the segregated FTS". The MoC seems to focus a lot on the first two requirements of Light-UAS.2511 but there are no information available concerning the way to comply with software and airborne electronic hardware whose development error could directly lead to operations outside the ground risk buffer and their development to an accepted standard. Independent FTS for instance mostly rely on the Electronic Speed Controllers (ESC) and it is not very clear how and if this is considered a hardware whose development error could lead to operations outside the ground risk buffer.	Generally speaking the MoC for the third requirement of Light-UAS.2511 should be clarified and especially whether the current MoC also covers compliance with this requirement.	Requested	Accepted	The MoC now clarifies this.
111	Nathanel Apter (UASolutions)	1. Structure of the document and general approach	3	4. mentions "Dop-adj" and footnote 9 "Dpop-adj". This is not consistent	Use only Dpop-adj or Dop-adj to avoid confusion	Requested	Noted	All considerations to population density have been removed from the document. See explanatory note 1
112	Nathanel Apter (UASolutions)	1. Structure of the document and general approach	3	Is Dop-adj the average population density or the entire amount of people at risk? It would not be consistent to compare the entire amount of people at risk in adjacent areas with a threshold per km2. Footnote 9 seem rather confusing here.	Amend footnote 9 to specify that this is the average density of people at risk in the adjacent areas.	Requested	Partially accepted	All considerations to population density have been removed from the document. See explanatory note 1

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113	AustroControl	1. Structure of the document and general approach	2	Footnote 5: P(loss of containment/FH) was not used in the formulas.	Suggest to change P(loss of containment/FH) into Pexit as Pexit was used in chapter 1.		Noted	Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1). The referenced formula has been removed
114	AustroControl	1. Structure of the document and general approach	2	Suggest to provide clarification, where the probability target value of TLOS (10^-6/FH) is derived. For most applicants, the source of the quantitative probability target may not be clear.	Suggest to add the source in footnote.		Noted	Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1). The SORA TLOS of 10^-6/FH is not mentioned anymore
115	AustroControl	1. Structure of the document and general approach	2	Please provide clarification, how enhanced containment can implicitily be assumed to be fulfilled, if the UAS is certified to operate in SAIL IV, considering that OSO10,12 still have some conditions that have to be met in order to lead to the requirements of SC Light UAS.2511. Does the applicant have to show compliance with all of SC Light UAS, even if the SORA does not necessitate it?			Noted	The MoC is only intended for demonstration of compliance of the FTS as a solution to achieve a satisfactory maximum probability per FH of the UAS, equipped with such an FTS, to exit from the ground buffer. This MOC has limited scope and it is not related with OSO10 and 12.
116	AustroControl	1. Structure of the document and general approach	2	The definition of "special infrastructure" need to be specified.	Propose to further define "special infrastructure" in detail. E.g. Nuclear Powerplant. Also consider the work done in the WG to overflight of moving vehicles in this subject.		Noted	Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1). Infrastructure is not mentioned anymore
117	AustroControl	1. Structure of the document and general approach	2	Point 2: Please use common used definitions.	Propose to change ground buffer into ground risk buffer.		Accepted	changed in all the document
118	AustroControl	1. Structure of the document and general approach	2	The approach of assuming that 10e-4/FH is only applicable to an operation leaving the ground risk buffer is not consistent with the EASA published AMC1 to Article 11 2019/947. A MoC (to a special conditions) should not allow for such significant deviations from the AMC material. Please reconsider the approach taken and consult with experts from JARUS and colleagues from EASA.			Accepted	The comment mentions "colleagues from EASA" as if the MoC had been issued by one expert or a small group of people: the commenter should consider that no MoC is issued by EASA without internal consultation with approval of the involved panels. Regarding the 10^-4, if it refers to "Pexit is the target value of this MoC (10^-4/FH)", we would like to highlight that this performance value was deliberately chosen as a target performance for this (specific) MoC, it should not have been interpreted as a deviation. However, the comment can be considered accepted: the MoC is now focused on the FTS performance and, from this, deduces the overall performance in terms of breaching in adjacent areas. Note that this is the performance reached by this specific MoC (it is not a requirement)
119	AustroControl	1. Structure of the document and general approach	3	"Therefore it is proposed to consider them included in the scope of this MoC (focused on enhanced containment) as long as the UA maximum dimension is below 1 m." A maximum dimension of 1m will exclude a large majority of applicants which aim to apply for enhanced containment. As such the practical usability of this MoC stands to question. Consider allowing operators with UAS of up to 3m or removing the char. dimension limitation all together.			Accepted	The scope of the MoC have been adapted to allow for UAS of less than three (3) meters of maximum characteristic dimension

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120	AustroControl	1. Structure of the document and general approach	2	The determination of the adequate population density of the adjacent area may be difficult, due to the fact, that the population density in certain areas, are not homogeneously distributed. As the assessment of the population density will be done by EASA in this process, some guidance on the practical implementation may be of use to operators and NAAs.	A guideline should be provided how to determine the actual adjacent population density of the envisaged operation stemming from a defined adjacent area geometry or a general adjacent area population density.		Noted	Other comments have requested that EASA would not anticipate considerations regarding what adjacent areas are and how population density is computed. In any case the section has been completely revised. See explanatory note 1
121	DGAC	1. Structure of the document and general approach	2	"If such risk is possible, the operator should refer to the competent authority for operational authorization." This is unclear. An operational authorization is always issued by the competent authority (except maybe in the case of a LUC) : the Moc is applicable to SC Light UAS, which are used only for certification or issuing operational authorizations. (The specifications for UAS used in STS are defined in regulation (UE 2019/945).	Proposal : "If such risk is possible, the operator should address it in the operational risk assesment defined in Article 11."	Requested	Noted	See explanatory note 1 (sentence is not anymore included)
122	DGAC	1. Structure of the document and general approach	2	"Check that the adjacent airspace is such that a breach of the UA beyond the ground buffer with a probability of 10-4 / FH can be considered acceptable by the competent authority issuing the operational authorisation. If considered acceptable8, proceed to step 3. If not acceptable refer to the competent authority issuing the operational authorization." This paragraph seems to imply that an authority may refuse the value of 10-4/FH based on undefined criteria. The objective of this MoC being an harmonized, one may wonder whether this possibility should be left to NAA.	Explicit more clearly the criteria that may be used by the NAA to reject the value 10-4/FH.	Recommended;	Noted	The revised MoC reaches now a performance in terms of P(exit from the ground risk buffer) of 10^-5 for SAIL II operations and 10^-6 for SAIL III operations. According to EASA communications to NAAs “The approach is pragmatic: A UAS, with a FTS declared using this MoC, may be operated up to SAIL II operations when enhanced containment is triggered. Emergency procedures should trigger the FTS when the UA reaches the outer perimeter of the operational volume. The approach will be re-evaluated if necessary depending on the step 9 discussion finalization within JARUS”
123	DGAC	1. Structure of the document and general approach	3	"Ensure that Dop-adj"	Editorial : Dpop-adj"	Recommended;	Noted	See explanatory note 1
124	Alejandro del Estal (Rigi Technologies SA)	1. Structure of the document and general approach	2	Determination of the maximum allowed density of population on adjacent areas. It has been detected a problem for the operators to gather the information about the density of population in adjacent areas for all countries of the MS, and for each operation. Even if this MOC is not directly implied to provide such information, there is a lack of homogeneity in the MS in terms of depict the population density. The problem is yet harder to solve if there is more than one different country within adjacent areas and airspaces.	Currently, the operators are investigating the density of population of the adjacent areas using websites from different countries that may be not-official or out-of-date. In order to ease the task of gathering information about the density of population, it is suggested that EASA provides official data sources (internal website or in collaboration with the MSs) to provide a clear depiction of the density of population for the adjacent areas. That would be a powerful tool to facilitate the compliance, not only with this MOC, but with many others.	Requested	Noted	All considerations to population density have been removed from the document. See explanatory note 1

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125	Alejandro del Estal (Rigi Technologies SA)	1. Structure of the document and general approach	2	Dpop-adj-max is not well defined and leads to a certain amount of confusion as whether this is the maximum acceptable population density in adjacent areas or the average as stated in Natale's Email	Could you clarify	Requested	Noted	All considerations to population density have been removed from the document. See explanatory note 1
126	Alejandro del Estal (Rigi Technologies SA)	1. Structure of the document and general approach	3	The footnote 8 mentions: "the single failure criteria is considered met by means of the segregated FTS". The MoC seems to focus a lot on the first two requirements of Light-UAS.2511 but there are no information available concerning the way to comply with software and airborne electronic hardware whose development error could directly lead to operations outside the ground risk buffer and their development to an accepted standard. Independent FTS for instance mostly rely on the Electronic Speed Controllers (ESC) and it is not very clear how and if this is considered a hardware whose development error could lead to operations outside the ground risk buffer.	Generally speaking the MoC for the third requirement of Light-UAS.2511 should be clarified and especially whether the current MoC also covers compliance with this requirement.	Requested	Noted	The MoC does not provide for compliance with any subpart of requirement SC Light UAS 2511 but provide with an option to comply with the whole requirement by means of an FTS. Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).
127	Alejandro del Estal (Rigi Technologies SA)	1. Structure of the document and general approach	3	4. mentions "Dop-adj" and footnote 9 "Dpop-adj". This is not consistent	Use only Dpop-adj or Dop-adj to avoid confusion	Requested	Noted	All considerations to population density have been removed from the document. See explanatory note 1
128	Alejandro del Estal (Rigi Technologies SA)	1. Structure of the document and general approach	3	Is Dop-adj the average population density or the entire amount of people at risk? It would not be consistent to compare the entire amount of people at risk in adjacent areas with a threshold per km2. Footnote 9 seem rather confusing here.	Amend footnote 9 to specify that this is the average density of people at risk in the adjacent areas.	Requested	Noted	All considerations to population density have been removed from the document. See explanatory note 1
129	Latvian CAA	1. Structure of the document and general approach	2	Step 2 states "Check that the adjacent airspace is such that a breach of the UA beyond the ground buffer [..].". However, according to SORA semantic model (paragraph 1.4.1 of AMC1 Article 11 to Regulation (EU) 2019/947) Adjacent Airspace is not directly related with Ground Risk Buffer - it starts directly next to the operational volume or might start beyond the optional air risk buffer.	Replace "ground buffer" with "operational volume and ground risk buffer"	Recommended;	Noted	Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).
130	Miguel Aguilera	1. Structure of the document and general approach	2	The document defines Pexit as the probability that the UA breaches the adjacent areas or, in other words, leaving the buffer areas surrounding the operational volume (per FH). Additional, it reads: Pexit is the target value of this MoC (10 -4 / FH) Can you please clarify where this figure (10^-4/FH) comes from?	Please include additional information on how the requirement of 10^-4/FH probability of leaving the buffer area is calculated or where it comes from. If any, please clarify the relationship of this requirement with the requirement for enhanced containment (probability of 10^-4/FH of leaving the operational volume)		Accepted	Section 1 has been completely and fundamentally changed and clarification has been provided on the elements mentioned in the comment.

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131	SEG	1. Structure of the document and general approach	2	The flight geographie is smaller than the operational volume in both ground and airspace aspects. The optional Air Risk Buffer is not considered as adjacent airspace. The Ground Risk Buffer is not considered as adjacent ground area.	verify if understood correctly	Requested	Noted	The operational volume includes the flight geography and the contingency volume. The optional air risk buffer (when included) would not be considered adjacent airspace but the airspace outside the buffer. The ground risk buffer once determined would not be considered as adjacent area.
132	SEG	1. Structure of the document and general approach	2	Determination of the maximum allowed density of population in adjacent areas, i.e. Dpop-adj-max (chapter 2) There are no objective and common source data for Dpop available	Definition of objective criteria for all UAS operators is necessary.	Requested	Partially accepted	All considerations to population density have been removed from the document. Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).
133	Delivrone	1. Structure of the document and general approach	2	This MOC is higly based on the definition of " adjacent areas". The AMC1 Article 11 from ED Decision 2020/022/R provides a very qualitative definition of adjacent area (page 56 of Easy Access Rules for Unmanned Aircraft Systems) which is not practical to use, especially for long range UAS . It is unpracticable to consider adjacent areas at autonomy-range from the volume of operation. It would be helpful to have quantitative means to better define "adjacent areas", possibly per UAS type (Max UAS characteristics dimension and Typical kinetic energy expected) which is, by design, related to autonomy and range.	Provide quantitative criteria regarding "adjacent areas" definition.	Requested	Not accepted	Adjacent areas cannot be quantified as it would be all area outside the external boundaries of the UAS operation after considering the flight geography the contingency volume and the risk buffers.
134	Delivrone	1. Structure of the document and general approach	3	When considered "Dpop-adj" is over "Dpop-adj-max", the MOC suggest to "adjust the area of operation or do not apply this MOC". However, when it is not feasible and with no other available MOC, tighter FTS criteria and reliability might be defined to overcome the Dpop-adj-max to some extent (proportionally to the FTS standards criteria).	Considering the definition for the probability of loss of containment per flight hour, P(loss of containment/FH) ≤ TLOS / (Dpop-adj-max*Ac), the formula could be used to require a P(loss of containment/FH) for any Dpop-adj (to a certain extent) and become: Required P(loss of containment/FH) ≤ TLOS / (Dpop-adj*Ac). A P(loss of containment/FH) lower than 10-4/FH might require more end-to-end activation tests (with proportionality to the probability)	Requested	Partially accepted	Section 1 have been fundamentally changed and provide clarification on the different assumptions and probabilities. In addition, see explanatory note 1
135	FlyingBasket (Romain Clement de Givry - Design)	1. Structure of the document and general approach	2	What is the appropriate method for determining the Maximum population density in adjacent areas (D_pop-adj-max)? Do we have to pick the absolute maximum density in the set of reachable crash locations? If yes at which granularity do we measure this density?	N/A	Not requested	Noted	All considerations to population density have been removed from the document. See explanatory note 1

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136	FlyingBasket (Thomas Markert - HO Operations / Marta Cejuela - HO AW&Safety Manager)	1. Structure of the document and general approach	2	Assuming the maximum population density instead of the average population density of the adjacent area is inconsistent with the probabilistic approach to determine the ground risk. Using maximum instead of the average implies the most conservative approach (worst case) where the UA would always tend to fly towards the most densely populated areas in case of a loss of control and breach into adjacent areas. The event of exist on the adjacent areas has random direction.	Replace maximum population density by average population density. In order to be consitent with the IR (EU) 2019/947, several paragraph should be updated to keep consistent with the new approach: - Article 11 section 4 (a) (ii) - AMC 1 to Article 11 does not have a limit of population density for the adjacent area.	Recommended	Noted	All considerations to population density have been removed from the document. See explanatory note 1
137	FlyingBasket (Thomas Markert - HO Operations)	1. Structure of the document and general approach	2	The assumption to calculate the fatality rate based on the crash area and the population density of area implies that the average population is exposed to a UA crash. Considering the fact that the population, particularly in urban areas in Europe, is most of the time within a building they are not or exposed to a crashing light UAS. Consequently, a too conservative Pexit is calculated to fulfil the TLOS of 10^-6/FH requirement for a given area. Of course, M1 could be used to account for that only a small share of population is exposed to crashing UAs but the fact of the average population being in a building most of the time is true for the vast majority of ConOps in urban areas in Europe and hence should be considered from the beginning when assessing the ground risk.	It is suggested to add a factor on population density that reflects the exposure of the population to crashing UAs.	Recommended	Noted	All considerations to population density have been removed from the document. See explanatory note 1
138	FlyingBasket (Marta Cejuela - HO AW&Safety Manager)	1. Structure of the document and general approach	2	In order to ensure that the SORA TLOS is achieved on adjacent areas, several factors to be taken into account to determine the extension of the adjacent area include, but are not limited to, the Concept of Operations (CONOPS), the UA endurance range, and the failure modes which may lead to the exit of the UA from the operational volume.	It is suggested to add a guidance to determine the extension of the adjacent area considering the UA endurance range.	Recommended	Not accepted	Adjacent areas cannot be quantified as it would be all area outside the external boundaries of the UAS operation after considering the flight geography the contingency volume and the risk buffers.
139	FlyingBasket (Thomas Markert - HO Operations)	1. Structure of the document and general approach	3	What are the criteria for the airspace that a breach of the UA beyond the ground buffer with a probability of 10-4 is acceptable?	Please provide guidance and examples for acceptable and not acceptable cases.	Recommended	Partially accepted	The MoC provides for an option to comply with 2511 requirement with an FTS which after demonstration will be granted with limited performance of 10-2/FH. Considerations associated to this for probabilities have been clarified. Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).

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140	senseFly	1. Structure of the document and general approach	2	"Check that the adjacent airspace is such that a breach of the UA beyond the ground buffer with a probability of 10-4 / FH can be considered acceptable by the competent authority issuing the operational authorisation. If considered acceptable, proceed to step 3. If not acceptable refer to the competent authority issuing the operational authorization." This paragraph implies that an authority may refuse the value of 10-4/FH based on undefined criteria.	Explicit clearly the criteria that may be used by NAA to reject the value 10-4/FH.	Recommended;	Noted	Refer to comment 122
141	RPAS Finland ry	1. Structure of the document and general approach	2	Footnote 5: "It is assumed that, once containment has been lost, it will not be re-gained and the UA will finally crash outside the ground buffer in the adjacent areas." The assumption is invalid and not performance-based. In case of loss of positioning system, an operation may temporarily end up outside the operational volume for any reason, but be possible to be bring back. In case a UAV encounters a failure of both positioning source and C2 link, many UAV's will make a controlled landing straight down (drifting with the wind) without necessarily crashing.	Allow an applicant to reason for the impact on TLOS of likely alternative flight termination scenarios of which a crash is only one.	Requested	Noted	Other means of compliance with SC Light UAS 2511 are possible. This MoC provides for an option including an FTS. Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).
142	RPAS Finland ry	1. Structure of the document and general approach	3	"[…] the authority could still require that the activation of the FTS is performed sufficiently before the outer perimeter of the operational volume is reached, such that termination would lead to a crash within the operational volume." The SORA methodology is clear, that in contingency volume, the flight objective is to get the operation back in control. That is the purpose of the contingency volume. Outside the operation volume, the objective is to as safely and quickly possible terminate the flight in side the ground risk buffer, as is the requirement of Light-UAS.2511 Containment (b)(2). The proposed text is unacceptable.	Rephrase as "the authority could require the operational volume to be reduced so that the activation of the FTS will end the fight inside the ground risk buffer".	Requested	Partially accepted	The MoC provides for an option to comply with 2511 requirement with an FTS which after demonstration will be granted with limited performance of 10-2/FH. Considerations associated to this for probabilities have been clarified. Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).

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143	JEDA	1. Structure of the document and general approach	2	"Check that the adjacent airspace is such that a breach of the UA beyond the ground buffer with a probability of 10-4 / FH can be considered acceptable by the competent authority issuing the operational authorisation. If considered acceptable, proceed to step 3. If not acceptable refer to the competent authority issuing the operational authorization." This paragraph seems to imply that an authority may refuse the value of 10-4/FH based on undefined criteria. The objective of this MoC being a harmonized, one may wonder whether this possibility should be left to NAA.	Explicit more clearly the criteria that may be used by the NAA to reject the value 10-4/FH, or better, standardise this value at EU level.	Recommended;	Partially accepted	Refer to comment 122
144	ONERA	1. Structure of the document and general approach	2	Pexit is the probability that the UA breaches in adjacent areas" i.e loss of containment. "Pexit target value of this MOC (10E-4/FH)^note6 note6: It should be noted that this target value is provided implicitly by a SAIL IV, with no need of additional containment means. " Comment: It is not clear where the 10E-4/FH comes from. In SORA Annex F under consultation, SAIL IV associates a probability target of 10-4 to the loss of control, and not to the loss of containment.	Give the source to justify note 6	Requested	Partially accepted	The MoC provides for an option to comply with 2511 requirement with an FTS which after demonstration will be granted with limited performance of 10-2/FH. Considerations associated to this for probabilities have been clarified. Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).
145	ONERA	1. Structure of the document and general approach	2	"Pexit is the target value of this MOC (10E-4/FH) Comment: This value apparently seems not consistent with: a public EASA document (Easy Access Rules for Unmanned Aircraft Systems (Regulation (EU) 2019/947 and Regulation (EU) 2019/945 page 56)) (cf also note 8 of this document)	Justify the choice of this Pexit target value. Alternatively, it would be interesting to define a MOC for assessing Dpop-adj-max and the acceptable Pexit target accordingly	Requested	Partially accepted	The MoC provides for an option to comply with 2511 requirement with an FTS which after demonstration will be granted with limited performance of 10-2/FH. Considerations associated to this for probabilities have been clarified. Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).
146	ONERA	1. Structure of the document and general approach	2	The choice of Pexit < 10E-4/FH leads to very pessimistic operational constraint (see Dpop-adj-max computation results) Moreover the experience return seems to be more encouraging. For those reasons the value taken into account for Pexit seems unrealistically pessimistic by many orders of magnitude.	Investigate definition of classes of Pexit according to experience returns	Recommended;	Partially accepted	The MoC provides for an option to comply with 2511 requirement with an FTS which after demonstration will be granted with limited performance of 10-2/FH. Considerations associated to this for probabilities have been clarified. Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).

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147	BOREAL SAS	1. Structure of the document and general approach	2	The SORA Step#9 enhanced containment requires a 10^-4/FH probability of leaving the operational volume, hence not considering the FTS. (This can be seen as 10^-4/FH probability of triggering the FTS). The Pexit in the MOC is defined as the probability of the UA reaching adjacent areas (hence beyond the Ground Risk Buffer). Since the GRB is defined as the area of possible crash, this means that the 10^-4/FH objective considers the failure of the 'basic' geofencing AND the FTS at the same time, hence allowing a higher basic containment failure rate. It shall be noted that, differently from the SORA Step 9, according to a JARUS document under internal consultation the area that needs to be technically contained is the iGRC area.	Please harmonize.		Partially accepted	The MoC provides for an option to comply with 2511 requirement with an FTS which after demonstration will be granted with limited performance of 10-2/FH. Considerations associated to this for probabilities have been clarified. Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).
148	BOREAL SAS	1. Structure of the document and general approach	2	Note 6 is not clear.	Could you please explain how/where is implicitly defined for SAIL IV operations?		Partially accepted	The MoC provides for an option to comply with 2511 requirement with an FTS which after demonstration will be granted with limited performance of 10-2/FH. Considerations associated to this for probabilities have been clarified. Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).
149	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	1. Structure of the document and general approach	02-Jan	Pexit is not a probability, but a rate. It is slightly confusing to use P when it is not a probability.	Replace Pexit with Rexit, and specifically call it a rate instead of probability / PH on page 2 (but of course keep the unit 1 / FH).		Not accepted	Probability is the word the community has been using for this.
150	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	1. Structure of the document and general approach	2	It is not clear why SAIL IV is used as target level for Pexit.	Describe the reasoning behind this to aid users of the MoC to understand and apply it.		Partially accepted	The MoC provides for an option to comply with 2511 requirement with an FTS which after demonstration will be granted with limited performance of 10-2/FH. Considerations associated to this for probabilities have been clarified. Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).
151	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	1. Structure of the document and general approach	2	"enhanced SORA"	I am not familiar with this term. It would be good with an explanation.		Partially accepted	Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).
152	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	1. Structure of the document and general approach	2	"peculiar"	Should probably be "particular"?		Partially accepted	Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).

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153	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	1. Structure of the document and general approach	2	Step 2 says "Check that the adjacent airspace is such that a breach of the UA beyond the ground buffer with a probability of 10-4 / FH ...". It is not clear how this relates to the FTS, i.e. whether this is with or without FTS. If this value is inherited from step #9, it is without FTS, in which case one would wonder if the FTS would not decrease this probability with the same factor as for the ground risk, which in turn means that this item 2 should be adapted to that.	Rephrase item 2 to clarify how the FTS relates to it.		Accepted	The MoC provides for an option to comply with 2511 requirement with an FTS which after demonstration will be granted with limited performance of 10-2/FH. Considerations associated to this for probabilities have been clarified. Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).
154	Skydio, Inc.	1. Structure of the document and general approach	2	Section 1 introduces a P_exit, probability to breach the containment, of 10E-4/FH as a MoC to SC Light-UAS.2511(b); it is not understood how this requirement/MoC is derived from current wording of SC Light-UAS.2511(b) which specifies: - the probability of exiting the operational volume in point (b)(1); and - a no single failure criterion in point (b)(2).	In order to stay consistent with AMC1 to Article 11 of Implementing Regulation (EU) 2019/947, section 2.5.3(c), published by EASA in December 2020, redefinition of P_exit as the probability to exit the operational volume is requested.	Requested	Accepted	Section 1 has been completely revised. Probabilities and their relationship with the FTS performance are being clarified.
155	Skydio, Inc.	1. Structure of the document and general approach	3	This risk introduced by simultaneous UA operations in the same volume/portion of airspace for people on the ground is not specific to adjacent areas, thus not specific to containment requirements (SORA Step #09). It is thus not understood why the proposed MoC would be limited to multiple UA operations of UA with a maximum dimension below 1 m.	Delete the paragraph.	Requested	Accepted	The MoC is limited for operations below SAIL II and for UAS of certain characteristics (the new version is up to 3 m). It is limited as compliance with this basic FTS would grant limited performance to the system. Section 1 has been completely revised addressing to the best extend possible all comments received.
156	THALES	1. Structure of the document and general approach	2	Foot note 6 says that a Pexit of 10-4/FH is "implicitely provided by a SAIL IV with no need of additional containment means". This is not so implicit.	Please provide more explanation on this statement	Requested	Partially accepted	The MoC provides for an option to comply with 2511 requirement with an FTS which after demonstration will be granted with limited performance of 10-2/FH. Considerations associated to this for probabilities have been clarified. Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).
157	THALES	1. Structure of the document and general approach	2	"2. Check that the adjacent airspace is such that a breach of the UA beyond the ground buffer with a probability of 10-4 / FH can be considered acceptable by the competent authority issuing the operational". Why beyond the ground buffer when in SORA Step#9C this probability is for a breach beyond the operational volume?	Replace "ground buffer" by "operational volume"	Requested	Partially accepted	Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).
158	THALES	1. Structure of the document and general approach	3	Foot note 8: Requiring activation of the FTS so that the crash will occur within the operational volume is equivalent to consider that the ground risk buffer is inside the operational volume. This is in contradiction with current definitions and brings confusion	Remove this foot note	Requested	Partially accepted	Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).

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159	Wing Aviation	1. Structure of the document and general approach	2	Section 1 introduces a P_exit, probability to breach the containment, of 10E-4/FH as a MoC to SC Light-UAS.2511(b); it is not understood how this requirement/MoC is derived from current wording of SC Light-UAS.2511(b) which specifies: - the probability of exiting the operational volume in point (b)(1); and - a no single failure criterion in point (b)(2).	In order to stay consistent with AMC1 to Article 11 of Implementing Regulation (EU) 2019/947, section 2.5.3(c), published by EASA in December 2020, redefinition of P_exit as the probability to exit the operational volume is requested.		Partially accepted	Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).
160	Wing Aviation	1. Structure of the document and general approach	2	Comment related to the last paragraph: “Regarding the operation of multiple UA in the same airspace, although these operations (in particular “drone swarms”10) are not in the scope of SORA11 , some Member States are gaining operational experience. Therefore it is proposed to consider them included in the scope of this MoC (focused on enhanced containment) as long as the UA maximum dimension is below 1 m. The limitation in dimension could be re-address in further revisions of the MoC.” This risk introduced by simultaneous UA operations in the same volume/portion of airspace for people on the ground is not specific to adjacent areas, thus not specific to containment requirements (SORA Step #09). It is thus not understood why the proposed MoC would be limited to multiple UA operations of UA with a maximum dimension below 1 m.	Delete the paragraph		Partially accepted	Refer to comment 122
161	FPDC	1. Structure of the document and general approach	2	"Check that the adjacent airspace is such that a breach of the UA beyond the ground buffer with a probability of 10-4 / FH can be considered acceptable by the competent authority issuing the operational authorization. If considered acceptable, proceed to step 3. If not acceptable refer to the competent authority issuing the operational authorization." This paragraph seems to imply that an authority may refuse the value of 10-4/FH based on undefined criteria. The objective of this MoC being a harmonized, one may wonder whether this possibility should be left to NAA.	Explicit more clearly the criteria that may be used by the NAA to reject the value 10-4/FH, or better, standardise this value at EU level.	Recommended;	Accepted	Refer to comment 122

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162	EUSC-IT	1. Structure of the document and general approach	2	"Check that the adjacent airspace is such that a breach of the UA beyond the ground buffer with a probability of 10-4 / FH can be considered acceptable by the competent authority issuing the operational authorisation. If considered acceptable, proceed to step 3. If not acceptable refer to the competent authority issuing the operational authorization." This paragraph seems to imply that an authority may refuse the value of 10-4/FH based on undefined criteria. The objective of this MoC being a harmonized, one may wonder whether this possibility should be left to NAA.	Explicit more clearly the criteria that may be used by the NAA to reject the value 10-4/FH, or better, standardise this value at EU level.	Recommended;	Accepted	Refer to comment 122
163	UAAI	1. Structure of the document and general approach	2	"Check that the adjacent airspace is such that a breach of the UA beyond the ground buffer with a probability of 10-4 / FH can be considered acceptable by the competent authority issuing the operational authorisation. If considered acceptable, proceed to step 3. If not acceptable refer to the competent authority issuing the operational authorization." This paragraph seems to imply that an authority may refuse the value of 10-4/FH based on undefined criteria. The objective of this MoC being a harmonized, one may wonder whether this possibility should be left to NAA.	Explicit more clearly the criteria that may be used by the NAA to reject the value 10-4/FH, or better, standardise this value at EU level.	Recommended;	Accepted	Refer to comment 122
164	ESG	1. Structure of the document and general approach	2	"Not to exceed probability of fatality on ground: 10-6 / FH" It might be useful to provide the original reference (e.g. JARUS AMC RPAS 1309 scoping paper)	It might be useful to provide the original reference (e.g. JARUS AMC RPAS 1309 scoping paper)		Partially accepted	Section 1 has been completely and fundamentally changed following the decision to eliminate section 2 (see explanatory note 1).
165	AESA	1. Structure of the document and general approach	3	Note 9: This refers to the “at risk” population in adjacent areas. If the MTOM is below 25 Kg, sheltering assumption could be possible, as long as they are agreed with the authority authorizing the operation. This document does not provide further guidance to determine the “at risk” Dpopadj. Such guidance could be derived from future JARUS WG6 proposals regarding SORA “step 9”. Until this guidance will be published in the AMC and GM to Regulation 2019/947, EASA will be available for discussion / consultations with competent authorities and operators.	Considerations to calculate Dpop_adj_max should be defined and key points should be included in AMC or GMs, otherwise the same authorization could not be valid in different countries. (For example considering the maximum range of the UAS after taking off and the average population in circle around….)	Recommended;	Noted	See explanatory note 1, there no reference anymore to calculations of densities in the revised MoC.

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166	LBA (NAA) Germany	1. Structure of the document and general approach	2	MoC: 1. Structure of the document and general approach: e.g. "Determination of the maximum allowed density of population in adjacent areas, i.e. Dpop-adj-max (chapter 2)" and, "Check that the operation may not entail a peculiar ground risk in adjacent areas whose nature is not captured by this MoC7.", General comment: Including the characteristics of the adjacent area is not a technical mean to comply with enhanced containment, and nowhere to be found in AMC 1 to Article 11 of IR (EU) 2019/947. This directly changes the SORA process and affects AMC 1. This should go through the regular process of rulemaking and cannot be included in a technical MoC. A technical MoC should not be dependent on the population density in adjacent areas, or the nature of this adjacent area. This is completely mission-specific. The restrictions in applicability in section 2 of the MoC make it inelgibile for use in many cases, although technically speaking, as long as the MoC is compliant with the requirement, the adjacent population does not make a difference.	The MoC has direct consequences for AMC 1 to Article 11 of IR (EU) 2019/947, and should go through the regular rule making process. It is not acceptable that such changes are introduced via a technical MoC. We suggest deleting section 2, as this document should be focused on the means to satisfy the requirements of SORA enhanced containment. A further restriction is not necessary nor practical.	Requested	Accepted	The MoC has no intention to modify existing regulation but to provide an option for applicants to comply with 2511 requirement included in SC Light UAS. All references to population density has been eliminated as section 2 has been removed. Section 1 has been reformulated to clarify the scope of the MoC. See also reply to comment 96.
167	LBA (NAA) Germany	1. Structure of the document and general approach	2	MoC: Footnote 5 Comment: Such an important formula should not be part of a footnote and directly be implemented in the text.	Inlcude Formula in main text.	Recommended;	Accepted	All references to population density have been eliminated as section 2 has been removed. Section 1 has been reformulated to clarify the scope of the MoC. Therefore, the formula has been also removed from the document.
168	LBA (NAA) Germany	1. Structure of the document and general approach	2	"Pexit is the target value of this MoC (10E-4/FH)" is defined as the probability of breaching into the adjacent area. However, according to SORA (AMC1 to Article 11) the 10E-4/FH is assigned to leaving the operational volume, which is bordered by the ground risk buffer. According to the SORA semantic model, activation of an FTS can only happen, when the operational volume has been left in an effort to contain the flight operation to the ground risk buffer. Since the FTS can thus only be activated, when you have left the Operational Volume which has to be shown with a P_exit_OV of 10E-4, the resulting P_exit of the overall containment architecture must be considerably better than that value. With a target of Pexit=10E-4/FH this MoC cannot meet the requirement of enhanced containment.	The MoC needs to be improved in order satisfy the actual requirement of the AMC1 to Article 11 (2019/947).	Requested	Accepted	Section 1 has been totally reformulated to provide clarity on all aspects related to the probability of exiting both the operational volume and the ground buffer. See also answer to comment 96.

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169	LBA (NAA) Germany	1. Structure of the document and general approach	2	"Check that the adjacent airspace is such that a breach of the UA beyond the ground buffer with a probability of 10-4 / FH can be considered acceptable by the competent authority issuing the operational" In SORA Enhanced Containment only req 1) plays a role for air risk. The 10E-4 requirement for staying inside the operational volume was considered to be acceptable for all adjacent airspaces by JARUS WG4, when the requirement was created. This does not need to be checked again.	remove, as this should always be true anyways.	Requested	Accepted	Section 1 has been totally reformulated to provide clarity on all aspects related to the probability of exiting both the operational volume and the ground buffer See also answer to comment 96
170	LBA (NAA) Germany	1. Structure of the document and general approach	3	MoC: Regarding the operation of multiple UA in the same airspace, although these operations (in particular “droneswarms”10) are not in the scope of SORA11, some Member States are gaining operational experience. Therefore it is proposed to consider them included in the scope of this MoC (focused on enhanced containment) as long as the UA maximum dimension is below 1 m. The limitation in dimension could be re-address in further revisions of the MoC. Comment: Mid-air collisions of two or more UAS are not part of SORA. Why is this paragraph included and why is the scope of this MoC for multiple UAS limited to UAS <1m ? Containment might be shown for each UAS individually. The specific risks of multiple UAS operations should be covered by the NAA .	Consider deleting	Recommended;	Accepted	Section 1 has been totally reformulated to provide clarity on all aspects related to the probability of exiting both the operational volume and the ground buffer See also answer to comment 96

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2. Assessment of ground risk posed to adjacent areas (plus 2.1. and 2.2)

Explanatory Note 1: use of CS23/CS27/SC

Based the number of comments received on section 2 and the complexity added by this section, and with the aim to simplify the document and make it useful for declaration, Section 2 has been removed.
Section 1 is now limited to identify the performance of the UAS, equipped with the FTS, in terms of probability of exit from the ground buffer / FH (10^-5 / FH when operation is in SAIL II)
SAIL II is where it is urgent to adopt this FTS MoC, as declarative toward the NAA (no need of EASA Design Verification unless where the NAA decides otherwise)

Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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171	SAFRAN	2. Assessment of ground risk posed to adjacent areas	3	Imagining an UAS operated under SAIL IV, fitted with an FTS as per MoC §3 - or with better reliability: the maximum density of population in adjacent area could be further increased compared to what is defined per Methods 1 or 2.	The MoC should clarify how to handle such case.	Recommended;	Noted	See explanatory note 1
172	Wingcopter	2. Assessment of ground risk posed to adjacent areas	3	quote: "… as method 2 explicitly incorporates the determination of the specific Ac of the UA" (2.) Determine the crash are of the UA on adjacent areas: Ac (2.2)	- explain a method to determine Ac (see also comments on SC Light-UAS)	Requested	Noted	See explanatory note 1
173	Alliance for new Mobility Europe (AME)	2. Assessment of ground risk posed to adjacent areas	3	It is not understood how the proposal in Section 2 has been derived, since the approved population density does not seem to be taken into account. The approach in SORA is that there is no maximum for the population density in the adjacent area, but in some cases, where, for instance, it contains assemblies of people, additional requirements apply: enhanced containment.	There is no need for current content of Section 2; instead, the MoC may refer to the criteria defined in AMC1 to Article 11 of Implementing Regulation (EU) 2019/947, section 2.5.3(c), published by EASA in December 2020, detailing when “enhanced containment” applies.		Noted	See explanatory note 1
174	Alliance for new Mobility Europe (AME)	2. Assessment of ground risk posed to adjacent areas	3	Current AMC1 to Article 11 of Implementing Regulation (EU) 2019/947, section 2.5.3(c), published by EASA in December 2020, does not have a limit of population density for the adjacent area. Hence, the proposed Section 2 triggers a deviation from such published EASA AMC1, which should only be modified through the ordinary rulemaking process	This is another argument to delete the current content of Section 2.		Noted	See explanatory note 1
175	Alliance for new Mobility Europe (AME)	2. Assessment of ground risk posed to adjacent areas	3	It looks like EASA is proposing to use the MAXIMUM adjacent population density, not the AVERAGE. This does not seem to be the appropriate approach since there will almost always be localized larger population densities and it does not seem reasonable to treat an UAS operation that is surrounded by a city with the same risk level as another UAS operation that has one small highly populated town in its adjacent area at the very outskirts.	Explicitly specify in the MoC that the consideration of adjacent population density in AMC1 to (EU) 2019/947 Article 11 published by EASA in December 2020, section 2.5.3(c) should be the AVERAGE value (not the MAXIMUM one).		Noted	See explanatory note 1

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176	AZUR DRONES	2. Assessment of ground risk posed to adjacent areas	3	General comment It is not understood how the proposal in section 2 has been derived, since the approved population density does not seem to be taken into account. The approach in SORA is that: ➔ if a UA is approved to operate above x people/km^2, then there is no need to request compliance with enhanced containment if the adjacent areas have the same pop density (the risk is equivalent, there's no need for extra containment); and, therefore, ➔ If a UA is approved to operate above 15k/km2 people, there should not be a need to force an FTS to operate next to 1,5k/km2 people because it would not make sense to impose a system forcing it to crash above the higher population density area to protect the lower population density.	There is no need for current content of Section 2; instead the MoC may refer to the criteria defined in AMC1 to Article 11 of Implementing Regulation (EU) 2019/947, section 2.5.3(c), published by EASA in December 2020, detailing when “enhanced containment” applies	Requested	Noted	See explanatory note 1
177	AZUR DRONES	2. Assessment of ground risk posed to adjacent areas	3	Current AMC1 to Article 11 of Implementing Regulation (EU) 2019/947, section 2.5.3(c), published by EASA in December 2020, does not have a limit of population density for the adjacent area. Hence, the proposed Section 2 triggers a deviation from such published EASA AMC1, which should only be modified through the ordinary rulemaking process.	This is another argument to delete the current content of section 2	Requested	Noted	See explanatory note 1
178	AZUR DRONES	2. Assessment of ground risk posed to adjacent areas	3	General comment It looks like EASA is proposing to use the MAXIMUM adjacent population density, not the AVERAGE. This does not seem to be the appropriate approach since there will almost always be localized larger population densities and it does not seem reasonable to treat a UAS operation that is surrounded by a city with the same risk level as another UAS operation that has one small highly populated town in its adjacent area at the very outskirts.	Explicit in the MoC that the consideration of adjacent population density in AMC1 to (EU) 2019/947 Article 11 published by EASA in December 2020, section 2.5.3(c) should be an AVERAGE approach (not a MAXIMUM approach)	Requested	Noted	See explanatory note 1

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179	COIAE	2. Assessment of ground risk posed to adjacent areas	3	It is not understood how the proposal in Section 2 has been derived, since the approved population density does not seem to be taken into account. The approach in SORA is that: - if a UA is approved to operate above X people/km^2, then there is no need to request compliance with enhanced containment if the adjacent areas have the same population density (since the risk is equivalent, there's no need for enhanced containment); and, therefore, - If a UA is approved to operate above 15k/km2 people, there should not be a need to force an FTS to operate next to 1,5k/km2 people because it would not make sense to impose a system forcing to crash above the higher population density area to protect the lower population density area.	There is no need for current content of Section 2; instead the MoC may refer to the criteria defined in AMC1 to Article 11 of Implementing Regulation (EU) 2019/947, section 2.5.3(c), published by EASA in December 2020, detailing when “enhanced containment” applies.	Requested	Noted	See explanatory note 1
180	COIAE	2. Assessment of ground risk posed to adjacent areas	3	Current AMC1 to Article 11 of Implementing Regulation (EU) 2019/947, section 2.5.3(c), published by EASA in December 2020, does not have a limit of population density for the adjacent area. Hence, the proposed Section 2 triggers a deviation from such published EASA AMC1, which should only be modified through the ordinary rulemaking process.	This is another argument to delete the current content of Section 2.	Recommended;	Noted	See explanatory note 1
181	COIAE	2. Assessment of ground risk posed to adjacent areas	3	Dpop-adj-max can increase if M2 mitigations are applicable. However, no references are made to M1 mitigations. The text leads to interpretations where M1 mitigations cannot be applied to increase Dpop-adj-max, which is contradictory with the information given by EASA during the meeting with EUROCAE, where the possibility to reduce Dpop-adj with, for example, sheltering, was commented.	Include the possibility to use strategic mitigations to increase Dpop-adj-max or, in parallel, reduce Dpop-adj.	Requested	Noted	See explanatory note 1
182	Nathanel Apter (UASolutions)	2. Assessment of ground risk posed to adjacent areas	3	Dpop-adj-max can increase if M2 mitigations are applicable. However, no references are made to M1 mitigations. The text leads to interpretations where M1 mitigations cannot be applied to increase Dpop-adj-max…	Include the possibility to use M1 strategic mitigations to increase Dpop-adj-max or, in parallel, reduce Dpop-adj.	Requested	Noted	See explanatory note 1
183	Nathanel Apter (UASolutions)	2. Assessment of ground risk posed to adjacent areas	4	The assessment of the adjacent areas and airspaces account for the population density on the ground but does not account for ARC-d as specified in Step 9 (enhanced containment when adjacent to ARC-d). What about the air risk and the evaluation of ARC-d in adjacent airspaces?	Amend the MoC to make it a comprehensive assessment and include ARC-d in the evaluation criteria	Recommended;	Noted	See explanatory note 1 and also answer to comment 122.

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184	AustroControl	2. Assessment of ground risk posed to adjacent areas	4	The methods of calculation do not provide any basis to judge it upon. As such, commenting in detail seems not possible. While a JARUS document may be considered as "state-of-the-art" by EASA, this proposed MoC has large implications for the subject of enhanced containment, which is seen as a critical issue in EASA MS, and AMC1 to Art.11 in general. As such, please provide justification or a basis of calculation, which can be commented on in further detail.			Noted	See explanatory note 1 (the mentioned method of calculation has been removed)
185	DGAC	2. Assessment of ground risk posed to adjacent areas	3	It can be argued than if the UAS crashes in the adjacent areas, it means than the enhanced containment will have failed (either due to loss of C2 link or malfunction of the FTS). Depending on the architecture of the UAS and dependence to the FTS and/or C2 link, the M2 mitigation means may be negatively impacted in the same way and could not be used as a mitigation means for the adjacent areas.	Provide additional guidance material on the situations where a M2 can be used as a risk mitigation when the UAS has left the buffer area.	Recommended;	Noted	An implicit reference to M2 is where a threshold of 900 grams is indicted to carry out fly tests. It has been indicated that 180 Joules pre-impact may imply a 30% probability of AIS3+. Such 180 J could be associated with a 900 grams typical drone impacting with (typical) terminal speed. See also explanatory note 1
186	Alejandro del Estal (Rigi Technologies SA)	2. Assessment of ground risk posed to adjacent areas	3	Dpop-adj-max can increase if M2 mitigations are applicable. However, no references are made to M1 mitigations. The text leads to interpretations where M1 mitigations cannot be applied to increase Dpop-adj-max, which is contradictory with the information given by EASA during the meeting with EUROCAE, where the possibility to reduce Dpop-adj with, for example, sheltering, was commented.	Include the possibility to use strategic mitigations to increase Dpop-adj-max or, in parallel, reduce Dpop-adj.	Requested	Noted	See explanatory note 1
187	Alejandro del Estal (Rigi Technologies SA)	2. Assessment of ground risk posed to adjacent areas	4	The assessment of the adjacent areas and airspaces account for the population density on the ground but does not account for ARC-d as specified in Step 9 (enhanced containment when adjacent to ARC-d). What about the air risk and the evaluation of ARC-d in adjacent airspaces?	Amend the MoC to make it a comprehensive assessment and include ARC-d in the evaluation criteria	Recommended;	Noted	See explanatory note 1
188	SEG	2. Assessment of ground risk posed to adjacent areas	4	the transition from the resulting Dpop-adj max from method 1 to method 2 with respect to the charactersitic dimension (<3m >3m) of the ac is not porportionate	seamless transition from method 1 to method 2 would be appreciated. A heavy impact to Dpop-adj max, at the characterstic aircraft dimension <3m and just above, should be avoided.	Requested	Noted	See explanatory note 1
189	Wingcopter	2. Assessment of ground risk posed to adjacent areas	3	quote: "… as method 2 explicitly incorporates the determination of the specific Ac of the UA" (2.) Determine the crash are of the UA on adjacent areas: Ac (2.2)	- explain a method to determine Ac (see also comments on SC Light-UAS)	Requested	Noted	See explanatory note 1

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Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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190	senseFly	2. Assessment of ground risk posed to adjacent areas	3	A clear definition of adjacent area and how to calculate its size are missing.	We suggest adding a graph and a definition in the MoC.	Recommended;	Noted	See explanatory note 1
191	senseFly	2. Assessment of ground risk posed to adjacent areas	3	We support comment number 5 from FOCA	Section 2 should be deleted	Requested	Accepted	See explanatory note 1
192	PL CAA	2. Assessment of ground risk posed to adjacent areas	3	General approach about using maximum people density instead average density can lead to problems with interpretation. It`s also strong deviation from SORA requirements. Sending operator for DVR due to maximum people density is very costly, time consuming and not adequet to scale of risk in operation.	Remove Section 2.		Accepted	See explanatory note 1
193	RPAS Finland ry	2. Assessment of ground risk posed to adjacent areas		It is not understood how the proposal in section 2 has been derived, since the approved population density does not seem to be taken into account. The approach in SORA is that: ➔ if a UA is approved to operate above x people/km^2, then there is no need to request compliance with enhanced containment if the adjacent areas have the same pop density (the risk is equivalent, there's no need for extra containment); and, therefore, ➔ If a UA is approved to operate above 15k/km2 people, there should not be a need to force an FTS to operate next to 1,5k/km2 people because it would not make sense to impose a system forcing it to crash above the higher population density area to protect the lower population density.	There is no need for current content of Section 2; instead the MoC may refer to the criteria defined in AMC1 to Article 11 of Implementing Regulation (EU) 2019/947, section 2.5.3(c), published by EASA in December 2020, detailing when “enhanced containment” applies	Recommended;	Noted	See explanatory note 1
194	RPAS Finland ry	2. Assessment of ground risk posed to adjacent areas		It looks like EASA is proposing to use the MAXIMUM adjacent population density, not the AVERAGE. This does not seem to be the appropriate approach since there will almost always be localized larger population densities and it does not seem reasonable to treat a UAS operation that is surrounded by a city with the same risk level as another UAS operation that has one small highly populated town in its adjacent area at the very outskirts	Explicit in the MoC that the consideration of adjacent population density in AMC1 to (EU) 2019/947 Article 11 published by EASA in December 2020, section 2.5.3(c) should be an AVERAGE approach (not a MAXIMUM approach)	Requested	Noted	See explanatory note 1

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195	RPAS Finland ry	2. Assessment of ground risk posed to adjacent areas		Comment related to the first paragraph: “If M2adj = 0 - UAdim14 ≤ 1 m and cruise speed ≤ 25 m/s15: Dpop-adj-max = 1500 people / Km2 - UAdim ≤ 3 m and cruise speed ≤ 35 m/s: Dpop-adj-max = 100 people / Km2” This does not seem consistent with the published STS-01 for which no credit from M2 has been taken credit of. Moreover, there is no requirement for adjacent area max. population density in STS0x, PDRA-S0X, or SORA itself. Accepting the proposed numbers would question the acceptability of STS-01 which is a VLOS scenario in urban environment, derived from the French S3 scenario which has been proven to be safe.	Deleting current content of Section 2 would allow it to stay consistent with the experience acquired in France with Scenario S3 and standardised by EASA through STS-01 and some Member States through their national STS (e.g. STS-ES-01).	Requested	Noted	See explanatory note 1
196	JEDA	2. Assessment of ground risk posed to adjacent areas	3	It can be argued than if the UAS crashes in the adjacent area, it means that the enhanced containment has failed (either due to loss of C2 link or malfunction of the FTS). Depending on the architecture of the UAS and dependanceto the FTS and/or C2 link, the M2 mitigation means may be negatively impacted in the same way and could not be used as a mitigation means for the adjacent areas.	Provide additional guidance material on the situations where M2 can be used or not as a risk mitigation when the UAS has left the buffer area.	Recommended;	Noted	See reply to comment 185
197	JEDA	2. Assessment of ground risk posed to adjacent areas	3	To reduce KE also a parachute might be used, based on ASTM F3322-18 Standard Specification for Small Unmanned Aircraft System (sUAS) Parachutes	Mention the possibility of a parachute and the related industry standard	required	Noted	See explanatory note 1
198	BOREAL SAS	2. Assessment of ground risk posed to adjacent areas	4	The proposed methods 1 and 2 do not keep into the account systems with a Pexit>10^-4/FH (as currently defined in the MOC). Since the objective is to meet the TLOS also in adjacent areas the reduced risk of exiting the GRC area should be compensated by an increase in the limit population density of the adjacent areas.	Introduce the possibility to increase by an order of magnitude the adjacent area's population density limit for each order of magnitude of system reliability beyond 10^-4/FH. Possibly, modify the equation for Dpop-adj-max of Method 2.		Noted	See explanatory note 1
199	BOREAL SAS	2. Assessment of ground risk posed to adjacent areas	4	Method 2 requires to calculate the critical area but no method is explicitly suggested. Would operational experience and/or simulation be acceptable to the Agency?			Noted	See explanatory note 1

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200	BOREAL SAS	2. Assessment of ground risk posed to adjacent areas	2	Footnote 5 imposes to the containment system the same reliabilty objective posed to the entire UAS (probability of Loss of Control, LOC) as per the JARUS document under consultation (over which the GRC calculation of the current SORA is based). Since the containment function is part of the UAS, the loss of containment should be considered a possible way of LOC. Nevertheless, adding to a part of the UAS the same requirement imposed to the entire UAS would impose a disproportionate level of safety for SAIL III/IV operations, possibly superior to that of commercial aviation. This concept could have a strong impact on a full design verification.			Noted	See explanatory note 1
201	Skydio, Inc.	2. Assessment of ground risk posed to adjacent areas	3	It is not understood how the proposal in Section 2 has been derived, since the approved population density does not seem to be taken into account. The approach in SORA is that: - if a UA is approved to operate above x people/km^2, then there is no need to request compliance with enhanced containment if the adjacent areas have the same pop density (the risk is equivalent, there's no need for extra containment); and, therefore, - if a UA is approved to operate above 15k / km^2 people, there should not be a need to force an FTS to operate next to 1,5k / km^2 people because it would not make sense to impose a system forcing it to crash above the higher population density area to protect the lower population density.	There is no need for current content of Section 2; instead the MoC may refer to the criteria defined in AMC1 to Article 11 of Implementing Regulation (EU) 2019/947, section 2.5.3(c), published by EASA in December 2020, detailing when “enhanced containment” applies	Requested	Noted	See explanatory note 1
202	Skydio, Inc.	2. Assessment of ground risk posed to adjacent areas	3	Current AMC1 to Article 11 of Implementing Regulation (EU) 2019/947, section 2.5.3(c), published by EASA in December 2020, does not have a limit of population density for the adjacent area. Hence, the proposed Section 2 triggers a deviation from such published EASA AMC1, which should only be modified through the ordinary rulemaking process.	This is another argument to delete the current content of Section 2	Requested	Noted	See explanatory note 1
203	Skydio, Inc.	2. Assessment of ground risk posed to adjacent areas	3	It looks like EASA is proposing to use the MAXIMUM adjacent population density, not the AVERAGE. This does not seem to be the appropriate approach since there will almost always be localized larger population densities and it does not seem reasonable to treat a UAS operation that is surrounded by a city with the same risk level as another UAS operation that has one small highly populated town in its adjacent area at the very outskirts.	Make clear in the MoC that the consideration of adjacent population density in AMC1 to (EU) 2019/947 Article 11 published by EASA in December 2020, section 2.5.3(c) should be an AVERAGE approach (not a MAXIMUM approach)	Requested	Noted	See explanatory note 1

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204	THALES	2. Assessment of ground risk posed to adjacent areas	3	During the presentation of this MoC on 16th of December Webex, EASA precised that the Moc is based on FTS with 1E-2 reliability rate. With more reliable FTS solutions, Dpop-adj-max defined in section could be augmented.	This precision should be added in the document	Requested	Noted	See explanatory note 1
205	Volocopter	2. Assessment of ground risk posed to adjacent areas	3	Assessment of ground risk posed to adjacent areas (calculation of Dpop-adj-max) may impact operational approval described on the CONOPS. The MOC refers to SORA terminology and concepts from the future revisions of SORA/ annexes of SORA which are not yet pusblished.	Please clarify where the methodolody for risk assessment for ground risk in adjacent areas fits with the SORA methodology as described in AMC1 Artcile 11 (EU) 2019/947.		Noted	See explanatory note 1
206	Wing Aviation	2. Assessment of ground risk posed to adjacent areas	3	General comment It is not understood how the proposal in section 2 has been derived, since the approved population density does not seem to be taken into account. The approach in SORA is that: ➔ if a UA is approved to operate above x people/km^2, then there is no need to request compliance with enhanced containment if the adjacent areas have the same pop density (the risk is equivalent, there's no need for extra containment); and, therefore, ➔ If a UA is approved to operate above 15k/km2 people, there should not be a need to force an FTS to operate next to 1,5k/km2 people because it would not make sense to impose a system forcing it to crash above the higher population density area to protect the lower population density.	There is no need for current content of Section 2; instead the MoC may refer to the criteria defined in AMC1 to Article 11 of Implementing Regulation (EU) 2019/947, section 2.5.3(c), published by EASA in December 2020, detailing when “enhanced containment” applies		Noted	See explanatory note 1
207	Wing Aviation	2. Assessment of ground risk posed to adjacent areas	3	Current AMC1 to Article 11 of Implementing Regulation (EU) 2019/947, section 2.5.3(c), published by EASA in December 2020, does not have a limit of population density for the adjacent area. Hence, the proposed Section 2 triggers a deviation from such published EASA AMC1, which should only be modified through the ordinary rulemaking process.	This is another argument to delete the current content of section 2		Accepted	See explanatory note 1
208	Wing Aviation	2. Assessment of ground risk posed to adjacent areas	3	General comment It looks like EASA is proposing to use the MAXIMUM adjacent population density, not the AVERAGE. This does not seem to be the appropriate approach since there will almost always be localized larger population densities and it does not seem reasonable to treat a UAS operation that is surrounded by a city with the same risk level as another UAS operation that has one small highly populated town in its adjacent area at the very outskirts.	Explicit in the MoC that the consideration of adjacent population density in AMC1 to (EU) 2019/947 Article 11 published by EASA in December 2020, section 2.5.3(c) should be an AVERAGE approach (not a MAXIMUM approach)		Noted	See explanatory note 1

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209	FPDC	2. Assessment of ground risk posed to adjacent areas	3	It can be argued than if the UAS crashes in the adjacent area, it means that the enhanced containment has failed (either due to loss of C2 link or malfunction of the FTS). Depending on the architecture of the UAS and dependance to the FTS and/or C2 link, the M2 mitigation means may be negatively impacted in the same way and could not be used as a mitigation means for the adjacent areas.	Provide additional guidance material on the situations where M2 can be used or not as a risk mitigation when the UAS has left the buffer area.	Recommended;	Noted	See reply to comment 185
210	FPDC	2. Assessment of ground risk posed to adjacent areas	3	To reduce KE also a parachute might be used, based on ASTM F3322-18 Standard Specification for Small Unmanned Aircraft System (sUAS) Parachutes	Mention the possibility of a parachute and the related industry standard	required	Noted	See explanatory note 1
211	EUSC-IT	2. Assessment of ground risk posed to adjacent areas	3	It can be argued than if the UAS crashes in the adjacent area, it means that the enhanced containment has failed (either due to loss of C2 link or malfunction of the FTS). Depending on the architecture of the UAS and dependanceto the FTS and/or C2 link, the M2 mitigation means may be negatively impacted in the same way and could not be used as a mitigation means for the adjacent areas.	Provide additional guidance material on the situations where M2 can be used or not as a risk mitigation when the UAS has left the buffer area.	Recommended;	Noted	See reply to comment 185
212	EUSC-IT	2. Assessment of ground risk posed to adjacent areas	3	To reduce KE also a parachute might be used, based on ASTM F3322-18 Standard Specification for Small Unmanned Aircraft System (sUAS) Parachutes	Mention the possibility of a parachute and the related industry standard	required	Noted	See explanatory note 1
213	UAAI	2. Assessment of ground risk posed to adjacent areas	3	It can be argued than if the UAS crashes in the adjacent area, it means that the enhanced containment has failed (either due to loss of C2 link or malfunction of the FTS). Depending on the architecture of the UAS and dependance to the FTS and/or C2 link, the M2 mitigation means may be negatively impacted in the same way and could not be used as a mitigation means for the adjacent areas.	Provide additional guidance material on the situations where M2 can be used or not as a risk mitigation when the UAS has left the buffer area.	Recommended;	Noted	See reply to comment 185
214	UAAI	2. Assessment of ground risk posed to adjacent areas	3	To reduce KE also a parachute might be used, based on ASTM F3322-18 Standard Specification for Small Unmanned Aircraft System (sUAS) Parachutes	Mention the possibility of a parachute and the related industry standard	required	Noted	See explanatory note 1
215	AESA	2. Assessment of ground risk posed to adjacent areas	3	Both methods assume that operation is not lost at a rate higher than 10-2 /FH	In some cases UA systems without the FTS has a probability of loss of containment better than 10-2, and therefore Dpopmax could be higher after including the FTS. This option may be included.	Recommended;	Noted	See explanatory note 1

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216	LBA (NAA) Germany	2. Assessment of ground risk posed to adjacent areas	3-4	MoC. Whole chapter 2.1: Comment: Taking into account M2 as part of this MoC is completely against the logic of SORA, and breaches AMC 1 to Article 11 of IR (EU) 2019/947. M2 is a mean to mitigate the effects of the ground impact and can be used to reduce the GRC. It does not have anything to do with Step #9. A parachute may be used for M2 to reduce the kinetic energy at ground impact, and may or may not be part of an FTS. However, these are two very different aspects and cannot be mixed. If M2 is used to lower the GRC for the flight area, this will effectively reduce the likelihood of a fatality after a loss of control resulting in a lower SAIL. However, the same mitigation will achieve the same reduction in risk by the same order of magnitude when the UAS looses control in an adjacent area. Therefore whether this is used or not will not have an effect on TLOS, as the UAS using no M2 will have a higher SAIL and be less likely to loose control, making a crash in the adjacent area equally less likely. Currently, there is no check of the population density for Ste#9 included in AMC1 to Article 11 of IR (EU) 2019/947. This MoC is therefore not compliant with the current regulations. The proposed population density in terms of ppl/km² match the ones proposed in the SORA 2.5 main body. However, the new main body is currently only in internal JARUS consultation, not even in the public consultation and not adapted as AMC by EASA. This MoC should not just take aspects from an unreleased new SORA main body.	The MoC has direct consequences for AMC 1 to Article 11 of IR (EU) 2019/947 and should go through the regular rule making process. It is not acceptable that such changes are introduced via a technical MoC. We propose deleting chapter 2 altogether.	Requested	Accepted	Section 2 has been removed from the document.
217	LBA (NAA) Germany	2. Assessment of ground risk posed to adjacent areas	4	"Dpop-adj-max not limited (it has been proved that the statement “it can be reasonably assumed that a fatality will not occur” from Annex B to SORA is applicable also on adjacent areas)" It should be noted, that while this section uses values and logic of SORA 2.5 including Annex F, the above mentioned statement is no longer a part of Annex B of SORA in version 2.5".		Requested	Accepted	Section 2 has been removed from the document.

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218	LBA (NAA) Germany	2. Assessment of ground risk posed to adjacent areas	4	General comment: Step #9 was introduced to increase the safety in cases where the adjacent areas show higher risks than the area within the operational volume. In terms of ground risks, this usually means that the population density in the adjacent area is significantly larger than within the operational volume. In such, there is no need for enhanced containment (from ground risk perspective), when the average population density within the operational volume is higher than in the adjacent area. Introducing a maximum population density here is not meaningful. There will be cases where UAS are authorized to operate over higher population densities, but to make this MoC applicable, the population density of the adjacent areas must be lower. This makes no sense.	We propose deleting chapter 2 altoghether.	Requested	Accepted	Section 2 has been removed from the document.
219	Alliance for new Mobility Europe (AME)	2.1 Method 1 to derive Dpop-adj-max	4	“If M2adj = 0 - UAdim14 ≤ 1 m and cruise speed ≤ 25 m/s15: Dpop-adj-max = 1500 people / Km2 - UAdim ≤ 3 m and cruise speed ≤ 35 m/s: Dpop-adj-max = 100 people / Km2” This does not seem consistent with the published STS-01 for which no credit from M2 has been taken credit of. Moreover, there is no requirement for adjacent area max. population density in STS0x, PDRA-S0X, or SORA itself. Accepting the proposed numbers would question the acceptability of STS-01 which is a VLOS scenario in urban environment, derived from the French S3 scenario which has been proven to be safe.	Deleting current content of Section 2 would allow to stay consistent with the experience acquired in France with Scenario S3 and standardised by EASA through STS-01 and some Member States through their national STS (e.g., STS-ES-01 in Spain).		Noted	See explanatory note 1

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220	AZUR DRONES	2.1 Method 1 to derive Dpop-adj-max	4	Comment related to the first paragraph: “If M2adj = 0 - UAdim14 ≤ 1 m and cruise speed ≤ 25 m/s15: Dpop-adj-max = 1500 people / Km2 - UAdim ≤ 3 m and cruise speed ≤ 35 m/s: Dpop-adj-max = 100 people / Km2” This does not seem consistent with the published STS-01 for which no credit from M2 has been taken credit of. Moreover, there is no requirement for adjacent area max. population density in STS0x, PDRA-S0X, or SORA itself. Accepting the proposed numbers would question the acceptability of STS-01 which is a VLOS scenario in urban environment, derived from the French S3 scenario which has been proven to be safe.	Deleting current content of Section 2 would allow it to stay consistent with the experience acquired in France with Scenario S3 and standardised by EASA through STS-01 and some Member States through their national STS (e.g. STS-ES-01).	Requested	Noted	See explanatory note 1
221	AZUR DRONES	2.1 Method 1 to derive Dpop-adj-max	4	Comment related to the footnote #16: “A small drone UA of, e.g., 30 cm maximum dimension, should be able to gain a “-1”” Please clarify what is implied by this statement and how it is justified (critical area? use of a parachute?)	Clarify what is implied by this statement if current content of Section 2 is maintained		Noted	See explanatory note 1
222	COIAE	2.1 Method 1 to derive Dpop-adj-max	4	“If M2adj = 0 - UAdim14 ≤ 1 m and cruise speed ≤ 25 m/s15: Dpop-adj-max = 1500 people / Km2 - UAdim ≤ 3 m and cruise speed ≤ 35 m/s: Dpop-adj-max = 100 people / Km2” This does not seem consistent with the published STS-01 for which no credit from M2 has been taken credit of. Moreover, there is no requirement for adjacent area max. population density in STS0x, PDRA-S0X, or SORA itself. Accepting the proposed numbers would question the acceptability of STS-01 which is a VLOS scenario in urban environment, derived from the French S3 scenario which has been proven to be safe.	Deleting current content of Section 2 would allow to stay consistent with the experience acquired in France with Scenario S3 and standardised by EASA through STS-01 and some Member States through their national STS (e.g. STS-ES-01 in Spain).	Recommended;	Noted	See explanatory note 1
223	AustroControl	2.1 Method 1 to derive Dpop-adj-max	4	It is not clear how the Dpop-adj-max is calculated. A guideline for explanation should be provided. How is the Ac determined? Further, the 100 people/km² seems a very low value for <3 m UAS characteristic dimension, without being able to verify the calculations done in detail.	Consider defining how the Ac is calculated and what parameters was taken into account.		Noted	See answer to question #113 and explanatory note 1

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224	DGAC	2.1 Method 1 to derive Dpop-adj-max	4	These values are very conservative, and in practice, would prevent the use of this MoC. For instance, drone light shows are always performed relatively near assemblies of people (outside of the buffer areas though) and they would rely only on this FTS solution, since it is the only economically viable solution. The same can apply for long range operations that use UAS with high endurances, and that will likely have a densely populated area within its range, even if it is far from the planned trajectory (see also comment #2) Furthermore, these values are also inconsistent with other categories of operations with much higher volumes of FH than the operations under OA : - there is no constraint on the density of population in adjacent areas for operations in STS-01 which can be performed over controlled ground areas in densely populated urban areas, - no FTS is required for OPEN.A3 while they can be performed at 150m from a densely populated area, which can arguably be defined as "adjacent". France has an experience of more than one million of hours of operations using such FTS solutions, whether in standard scenarios or under OA, and in various conditions (urban and non urban areas). We received only one major notification of fly-away, with no consequence. This discrepancy is most likely due to to the fact that Pexit of a UAS equipped with an independent FTS is most likely much inferior than 10-4, although it is very hard to prove.	We would advocate for a more pragmatic approach, in line the experience of the MS, and with the containment conditions and volumes of hours of operation of the OPEN category and standard scenarios, with much less stringent conditions of density of population in adjacent areas. This can be further refined with safety experience.	Requested	Accepted	See explanatory note 1
225	Alejandro del Estal (Rigi Technologies SA)	2.1 Method 1 to derive Dpop-adj-max	4	The determination of Dpop-adj-max is binary in terms of the limits of the dimension of the UAV. For UAVs with cruise speed much slower than the lower limit = 25 m/s (e.g., 16 m/s) but slightly higher dimension than the lower limit = 1 m (e.g., 1.2 m), the Dpop-adj-max is 100 people / km2.	It is suggested to follow a proportional approach to determine the Dpop-adj-max as it is very restrictive to classify an UAV in a higher risk classification for only 20cm when the next limit is 3m, and the Dpop-adj-max penalty is about 10 times more restrictive. It is deemed that the proportional approach is fairer and it could be done by simple linear approximation or by means of a table with more data (dimensions and cruise speeds).	Requested	Noted	See explanatory note 1

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226	FlyingBasket (Thomas Markert - HO Operations)	2.1 Method 1 to derive Dpop-adj-max	4	The resulting maximum population density in the adjacent area is for many UAS far lower than sparsely populated areas (NPA 2020-07 section 2.3.3. refers to European Commission WP01/2014, where the urban cluster Dpop at least is 300pp/sqkm) Consequently, applying the provided methods the maximum population density in the adjacent area of a UAS complying with the MoC for EC, it is even lower than the population density in the operational volume for many SAIL II operations authorised today. The assumptions for deriving the maximum population density are too conservative and should be reviewed.	P_exit = 10^-5 would lead to results that are in line with current operational authorsations in SAIL II (Possible values of M2adj-ke: 0, -1)	Recommended	Noted	See explanatory note 1
227	FlyingBasket (Marta Cejuela - HO AW&Safety Manager)	2.1 Method 1 to derive Dpop-adj-max	4	Dpop-adj-max can increase if M2 mitigations are applicable. However, no references to M1 mitigations. During the EUROCAE WG105 SG4 DP002 meeting #3, EASA explained that the M1 (sheltering) mitigation could be applied, therefore the Dpop could be incresed.	Include the possibility to use strategic mitigations as M1 to increase Dpop-adj	Recommended	Noted	See explanatory note 1
228	Laurent PERCHAIS (Dronisos)	2.1 Method 1 to derive Dpop-adj-max	4	Given cruise speed are far too high compared to standard speeds (8m/s) and given Uadim is far too big given to our standard dimensions (0.3m)	Add a case with cruise speed below 10m/s ad bUAdim <0,5 more realistic Give a related Dpop-adj-max = 1 5000 people / km2	Requested	Noted	See explanatory note 1
229	senseFly	2.1 Method 1 to derive Dpop-adj-max	4	There is no explanation where the values 1500/100/15000 people/km2 come from.	We suggest adding explanations to better understand those thresholds and EASA's way of thinking.	Recommended;	Noted	See explanatory note 1
230	RPAS Finland ry	2.1 Method 1 to derive Dpop-adj-max	4	Footnote #16 “A small drone UA of, e.g., 30 cm maximum dimension, should be able to gain a “-1”"	Please clarify what this means?	Recommended;	Noted	See explanatory note 1

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Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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231	JEDA	2.1 Method 1 to derive Dpop-adj-max	4	These values are very conservative, and in practice, would greatly penalise UAS operations. For instance, drone light shows are always performed relatively near assemblies of people (outside of the buffer areas though) and they would rely only on this FTS solution, since it is the only economically viable solution. The same can apply for BVLOS operations that use UAS with high endurance, and that will likely have a densely populated area within its range, even if it is far from the planned trajectory (see also comment #2) Furthermore, these values are also inconsistent with other categories of operations with much higher volumes of FH than the operations under OperationalAuthorisation(OA) in the specific category: - there is no constraint on the density of population in adjacent areas for operations in STS-01 which can be performed over controlled ground areas in densely populated urban areas, - no FTS is required for OPEN.A3 while they can be performed at 150m from a densely populated area, which can arguably be defined as "adjacent". Several States have experience of several millions of hours of operations using such FTS	JEDA would advocate for a more pragmatic approach, in line the experience of several MS, and with the containment conditions and volumes of hours of operation of the OPEN category andstandard scenarios, with much less stringent conditions of density of population in adjacent areas. This can be further refined with safety experience. Since the criteria for obtaining OA in the specific category are more stringent that in the open category, the dimensions of the adjacent area should be smaller, not larger.	Requested	Noted	See explanatory note 1
232	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	2.1 Method 1 to derive Dpop-adj-max	4	The pop density limits given under 2.1 are fixed, while the pop density in ops volume and GRB are not fixed (but given by the choice of geographical area). This is odd insofar the expected gain from the FTS seems to be 10^-2 (which can be derived from the first sentence on top of page 4). Consequently, this would allow for the same TLOS if the pop density in adjacent area is two "magnitudes" higher" than in ops volume. As an example, if the pop density in ops volume is 5 ppl/km^2, when the adjacent should be max 500 ppl/km^2 (possible adjusting for the factor 1.5 introduced in the new version of the SORA that increase 1.000 ppl to 1.500 ppl). However, according to the MoC, it is either 1500 or 100.	Instead of given fixed pop density values, the max pop density should be determined by the pop density in the ops volume multiplied with the FTS risk reduiction (in exactly the same fashion as the M1 and M2 does). That is, if the FTS can be quailified to provide a factor 10 reduction, the operator should be allowed a -1, which then through the iGRC table translates into an appropriate change in pop density (but for the adjacent area), which removes the need for spelling it out in the MoC. Similarly, if the FTS can provide a factor 100, then the operator gets a -2 in the adjacent area.		Noted	See explanatory note 1
233	Skydio, Inc.	2.1 Method 1 to derive Dpop-adj-max	4	This method #1 does not seem consistent with the published STS-01 for which no credit from M2 has been taken credit of. Moreover, there is no requirement for adjacent area max. population density in STS0x, PDRA-S0X, or SORA itself. Accepting the proposed numbers would question the acceptability of STS-01 which is a VLOS scenario in urban environment, derived from the French S3 scenario which has been proven to be safe.	Deleting current content of Section 2 would allow it to stay consistent with the experience acquired in France with Scenario S3 and standardised by EASA through STS-01 and some Member States through their national STS (e.g. STS-ES-01).	Requested	Noted	See explanatory note 1

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Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
NR	Author	Section	Page					
234	Skydio, Inc.	2.1 Method 1 to derive Dpop-adj-max	4	Footnote #16 Please clarify what is implied by this statement and how it is justified (critical area? use of a parachute?)	Clarify what is implied by this statement if current content of Section 2 is maintained.	Requested	Noted	See explanatory note 1
235	THALES	2.1 Method 1 to derive Dpop-adj-max	4	During the presentation of this MoC on 16th of December Webex, EASA precised that Dpop-adj-max is the maximum of the average density.	This precision should be added in the document	Recommended;	Noted	See explanatory note 1
236	THALES	2.1 Method 1 to derive Dpop-adj-max	4	The method proposed is too restrictive. The values are too conservative. By applying this methodology, a lot of BVLOS long range operations cannot be conducted. In current AMC to Article 11, adjacent areas density is only considered for Step9C as a criteria to apply enhanced containment requirements when presence of assemblies of people is confirmed in these adjacent areas. For the GRC determination, including the assessment of mitigation means, only the populatio density of the operational volume and the ground risk buffer were considered in current AMC to Article 1. The fact that the proposed MoC extend such consideration to the adjacent areas is confusing and becomes very limiting for on-going and future BVLOS operations in medium risk.	Remove the proposed methodologies to compute maximum density of population in the adjacent areas and limit the MoC to the performance of the FTS	Requested	Noted	See explanatory note 1
237	Wing Aviation	2.1 Method 1 to derive Dpop-adj-max	4	Comment related to the first paragraph: “If M2adj = 0 - UAdim14 ≤ 1 m and cruise speed ≤ 25 m/s15: Dpop-adj-max = 1500 people / Km2 - UAdim ≤ 3 m and cruise speed ≤ 35 m/s: Dpop-adj-max = 100 people / Km2” This does not seem consistent with the published STS-01 for which no credit from M2 has been taken credit of. Moreover, there is no requirement for adjacent area max. population density in STS0x, PDRA-S0X, or SORA itself. Accepting the proposed numbers would question the acceptability of STS-01 which is a VLOS scenario in urban environment, derived from the French S3 scenario which has been proven to be safe.	Deleting current content of Section 2 would allow it to stay consistent with the experience acquired in France with Scenario S3 and standardised by EASA through STS-01 and some Member States through their national STS (e.g. STS-ES-01).		Accepted	See explanatory note 1
238	Wing Aviation	2.1 Method 1 to derive Dpop-adj-max	4	Comment related to the footnote #16: “A small drone UA of, e.g., 30 cm maximum dimension, should be able to gain a “-1”” Please clarify what is implied by this statement and how it is justified (critical area? use of a parachute?)	Clarify what is implied by this statement if current content of Section 2 is maintained		Noted	See explanatory note 1

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Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
NR	Author	Section	Page					
239	FPDC	2.1 Method 1 to derive Dpop-adj-max	4	These values are very conservative, and in practice, would greatly penalize UAS operations. For instance, drone light shows are always performed relatively near assemblies of people (outside of the buffer areas though) and they would rely only on this FTS solution, since it is the only economically viable solution. The same can apply for BVLOS operations that use UAS with high endurance, and that will likely have a densely populated area within its range, even if it is far from the planned trajectory (see also comment #2) Furthermore, these values are also inconsistent with other categories of operations with much higher volumes of FH than the operations under OperationalAuthorisation(OA) in the specific category: - there is no constraint on the density of population in adjacent areas for operations in STS-01 which can be performed over controlled ground areas in densely populated urban areas, - no FTS is required for OPEN.A3 while they can be performed at 150m from a densely populated area, which can arguably be defined as "adjacent". Several States have experience of several millions of hours of operations using such FTS	FPDC would advocate for a more pragmatic approach, in line the experience of several MS, and with the containment conditions and volumes of hours of operation of the OPEN category and standard scenarios, with much less stringent conditions of density of population in adjacent areas. This can be further refined with safety experience. Since the criteria for obtaining OA in the specific category are more stringent that in the open category, the dimensions of the adjacent area should be smaller, not larger.	Requested	Noted	See explanatory note 1
240	EUSC-IT	2.1 Method 1 to derive Dpop-adj-max	4	These values are very conservative, and in practice, would greatly penalise UAS operations. For instance, drone light shows are always performed relatively near assemblies of people (outside of the buffer areas though) and they would rely only on this FTS solution, since it is the only economically viable solution. The same can apply for BVLOS operations that use UAS with high endurance, and that will likely have a densely populated area within its range, even if it is far from the planned trajectory (see also comment #2) Furthermore, these values are also inconsistent with other categories of operations with much higher volumes of FH than the operations under OperationalAuthorisation(OA) in the specific category: - there is no constraint on the density of population in adjacent areas for operations in STS-01 which can be performed over controlled ground areas in densely populated urban areas, - no FTS is required for OPEN.A3 while they can be performed at 150m from a densely populated area, which can arguably be defined as "adjacent". Several States have experience of several millions of hours of operations using such FTS	EUSC-IT would advocate for a more pragmatic approach, in line the experience of several MS, and with the containment conditions and volumes of hours of operation of the OPEN category andstandard scenarios, with much less stringent conditions of density of population in adjacent areas. This can be further refined with safety experience. Since the criteria for obtaining OA in the specific category are more stringent that in the open category, the dimensions of the adjacent area should be smaller, not larger.	Requested	Noted	See explanatory note 1

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Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
NR	Author	Section	Page					
241	UAAI	2.1 Method 1 to derive Dpop-adj-max	4	These values are very conservative, and in practice, would greatly penalise UAS operations. For instance, drone light shows are always performed relatively near assemblies of people (outside of the buffer areas though) and they would rely only on this FTS solution, since it is the only economically viable solution. The same can apply for BVLOS operations that use UAS with high endurance, and that will likely have a densely populated area within its range, even if it is far from the planned trajectory (see also comment #2) Furthermore, these values are also inconsistent with other categories of operations with much higher volumes of FH than the operations under Operational Authorisation (OA) in the specific category: - there is no constraint on the density of population in adjacent areas for operations in STS-01 which can be performed over controlled ground areas in densely populated urban areas, - no FTS is required for OPEN.A3 while they can be performed at 150m from a densely populated area, which can arguably be defined as "adjacent". Several States have experience of several millions of hours of operations using such FTS	UAAI would advocate for a more pragmatic approach, in line the experience of several MS, and with the containment conditions and volumes of hours of operation of the OPEN category and standard scenarios, with much less stringent conditions of density of population in adjacent areas. This can be further refined with safety experience. Since the criteria for obtaining OA in the specific category are more stringent that in the open category, the dimensions of the adjacent area should be smaller, not larger.	Requested	Noted	See explanatory note 1
242	AESA	2.1 Method 1 to derive Dpop-adj-max	4	Does this method apply to swarms considering the Uadim of a single UA?	AESA recommends to include a note clarifying if this method can be applied to swarms considering the maximum dimension of a single UA.	Recommended;	Noted	This MoC applies to swarms as it does not contain restrictions on the number of UA operated.
243	LBA (NAA) Germany	2.1 Method 1 to derive Dpop-adj-max	4	It is not described how one should determine the crash area of the UA. This is part of Annex F of JARUS SORA which is not published by JARUS and has not yet been accepted as AMC. IN general, even with SORA 2.5 and Annex F available in the future, applicants are not supposed to use Annex F math in their applications as a standard tool. Annex F will provide the rational on how the look up tables of the main body have been derived and should only be directly applied by OEM and operators when the UAS configuration is unusual and is thus incorrectly assessed by the iGRC table.	When preparing MoC, it is suggested to keep in mind the ease of use for both applicants and authority alike.	Requested	Noted	All relevant information available and published at the present moment has been considered. The crash area calculations are considered not relevant for this MoC prepared for declaration and only an estimation of such has been included for fixed wing UAS

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244	LBA (NAA) Germany	2.1 Method 1 to derive Dpop-adj-max	4	MoC:Footnote 16 Comment: Why is it stated here, that a small UAS below 30cm, is expected to achieve an M2 -1. It is a very general question if small UAS might achieve this mitigation, just by having a very small mass . However, an MoC is not the right place to make such a statement. This should be part of the description of AMC 1 of Article 11 of IR (EU) 2019/947 and also coordinated with JARUS.	Delete the footnote, consider adding this note to EASA SORA. Alternatively, propose to add an additional column to the GRC table with lower GRC values, as it would achieve the same effect, but would be easier to understand.	Requested	Accepted	Section 2 has been removed from the document.
245	DGAC	2.2 Method 2 to derive Dpop-adj-max	4	Determine the crash area of the UA on adjacent areas: Ac	Clarify unit (m2 ?)	Recommended;	Noted	See explanatory note 1
246	senseFly	2.2 Method 2 to derive Dpop-adj-max	4	The Dpop-adj-max formula includes the term "Ac" (Crash area of the UA on the adjacent area) but there is no information on how to determine this value. Does it come from the SORA Annex F which is not public?	Provide guidance/formula to determine Crash Area	Requested	Noted	See explanatory note 1
247	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	2.2 Method 2 to derive Dpop-adj-max	4	Method 2 is incomprehensible. A reduction in KE is not related to a reduction in AC, so it is not clear at all why the operator needs to calculate AC. AC relates to pop density only and depends largely on horizontal impact velocity, while KE depends on total velocity squared and does not relate to pop density at all (only to lethality/fatality rate)	Clarify whether the method is intended for KE or AC, and adjust accordingly. Also, write out the method in plain English and not just in keywords and bullet points.		Noted	See explanatory note 1
248	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	2.2 Method 2 to derive Dpop-adj-max	4	The equation for Dpop-adj-max confuses the units (there are bot m^2 and km^2 in the same equation).	Write the correct equation (or change the units).		Noted	See explanatory note 1
249	AESA	2.2 Method 2 to derive Dpop-adj-max	4	Does this method apply to swarms considering the AC of a single UA?	AESA recommends to include a note clarifying if this method can be applied to swarms considering the crash area of a single UA.	Recommended;	Noted	This MoC applies to swarms as it does not contain restrictions on the number of UA operated.

3. Introduction

Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
NR	Author	Section	Page					
250	SAFRAN	3. Introduction	5	MoC reads: "The following chapters provide the prescriptions for an FTS system considered adequate to provide, for the UA, a Pexit ≤ 10 -4 / FH."	It could be clarified that this MoC does not apply when the TLOS in adjacent areas is otherwise demonstrated or when the reliability of the FTS or the probability of loss of control are demonstrated at a sufficient level through different means (i.e. P(FTS failure) better than 1E-2/FH; P(loss of control of UA) better than 1E-2/FH). Based on the above understanding, we would propose to reword, for example as follows: “The following chapters provide the prescriptions for an FTS system considered adequate to provide, for an UA operated in SAIL II, a Pexit ≤ 10 -4 / FH. These prescriptive requirements do not apply when the TLOS in adjacent areas is otherwise demonstrated or when the reliability of the FTS or the probability of loss of control are demonstrated at a sufficient level through different means.”		Partially accepted	The MoC is designed to credit the FTS with a probability of failure/FH of 10-2. The implications of this on the probabilities and the application of such an FTS for a SAIL II have been clarified in the amended section 1 of the MoC. It is intended as a simple solution to be used for declaration. Other means of compliance with the enhance containment requirements are always possible and could be proposed by the applicants.
251	AZUR DRONES	3. Introduction		This is a general comment related to the proposed MoC and based on the assumption made in comment #3 that the proposed MoC would apply to a plug-in system or not. The proposed MoC seems prescriptive (e.g. in section 3.3) while not opening the door to a structured safety assessment approach. It is considered that an approach as the one currently proposed by ASD-STAN or relying on EUROCAE’s standard ED-280 (FMEA-like approach) complemented by CMA and consideration for latent failures should be an acceptable alternative.	Add as alternative MoC the demonstration of the no single failure criterion based, for instance, on FMEA + CMA + consideration of latent failures.	Requested	Partially accepted	The MoC is designed to credit the FTS with a probability of failure/FH of 10-2. The implications of this on the probabilities and the application of such an FTS for a SAIL II have been clarified in the amended section 1 of the MoC. It is intended as a simple solution to be used for declaration. Other means of compliance with the enhance containment requirements are always possible and could be proposed by the applicants.
252	Boeing	3. Introduction	5	The wording of this section implies that having an FTS system equates to a Pexit of less then 10-4/FH. In the MOC section, reliability targets of the system to back up that probability are not provided, nor is there a requirement to provide, either by analysis or test, any reliabilty data on the FTS system.	Suggest adding a requirement that shows compliance via analysis or test that the addition of the FTS system satisfies a target Pexit of less than 10-4/FH.		Partially accepted	The MoC is designed to credit the FTS with a probability of failure/FH of 10-2. The implications of this on the probabilities and the application of such an FTS for a SAIL II have been clarified in the amended section 1 of the MoC. It is intended as a simple solution to be used for declaration. Other means of compliance with the enhance containment requirements are always possible and could be proposed by the applicants.

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253	AustroControl	3. Introduction	5	Care should be given on failure conditions that would lead to a flight outside the ground risk buffer (failure condition which is triggered by the UAS). The probability of this failure condition (e.g.: navigation malfunction) should be combined by the predicted probability of failure of the FTS. Therefore, an adequate method should be established to verify the different levels of robustness of FTS. This is in line with the JARUS comments on the possible different performance requirements of the FTS, depending on the difference of the population densities within and outside the operational volume.			Noted	The MoC is deliberately based on a set of simple design checklist and tests so that it can be used in declarative way, and in consequence it credits the FTS with limited performances (10-2 / FH). Different performance requirements for the FTS are outside the scope of the present MoC and can still be addressed with other MoCs.
254	DGAC	3. Introduction	5	Although the 10-4 value refers to the Step 9 of the SORA, this value is most likely not consistent with the actual probability of fly away of a UAS equipped with a FTS. Even for a SAIL II operation (the vast majority of BVLOS operations), and/or for a commercial UAS, the global probability of crash is 10-2 and most of this crashes occur inside the operation area. It is not unreasonable to consider that a "standard" probability of fly away is rather 10-3. Combined with an independent FTS with a probability of failure of 10-2, Pexit would rather be 10-5. This argument could be used to alleviate the constraints on the density of population that appear in section 2, if the section is kept.	Consider a value of 10-5 for Pexit.	Recommended;	Accepted	The suggestion has been fully implemented. See also the detailed discussion provided for you comment "Explicit more clearly the criteria that may be used by the NAA to reject the value 10-4/FH."
255	DGAC	3. Introduction	5	Other standards for FTS exist that could be directly used as means of compliance with the safety objectives of the SORA : Eurocae ED280, ASTM3309. These standards could be added to the MoC so that an operator equipping its UAS with a FTS compliant with these standards could declare its compliance with the MoC without additional demonstration.	Consider accepting internationally recognized standards as acceptable means of demonstrating compliance with this MoC.	Recommended;	Not accepted	This MoC has been designed for declaration purposes. Other MoC are still possible and can be issued by EASA or proposed by applicants and include use of more complex analytical methods (not considered appropriate for pure declaration).
256	PL CAA	3. Introduction	5	Testing market drones it`s very difficult to achieve without manufacturer support. Operators which use market drones are afraid about losing guarantee by adding equipment not provided by the manufacturer. Adding FTS to ready to fly drones also leads to change in described parameters in manual. The MoC does not provide guidance on how to demonstrate independency and reliability of the FTS, but only imposes a requirement without instruction how to test FTS solutions without crashing a UAS (also on ground test instructions needed).	Adjust Section 3 to real situation on FTS and proceed in line with SORA step 9 requirements. Add solutions other than excessive mandatory testing and DVR. Operators must be able to comply with requirements (costly and technical).		Partially accepted	Section 3 has been reformulated and adapted based on technical comments received on this section. DVR is not required for this MOC.

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257	RPAS Finland ry	3. Introduction		Other standards for FTS exist that could be directly used as means of compliance with the safety objectices of the SORA : Eurocae ED280, ASTM3309. These standards could be added to the MoC so that an operator equipping its UAS with a FTS compliant with these standards could declare its compliance with the MoC without additional demonstration.	Consider accepting internationally recognized standards as acceptable means of demonstrating compliance with this MoC.	Recommended;	Not accepted	Refer to comment 255
258	JEDA	3. Introduction	5	Although the 10-4 value refers to Step 9 of SORA, this value is most likely not consistent with the actual probability of fly away of a UAS equipped with an FTS. Even for a SAIL II operation(the vast majority of BVLOS operations), and/or for a commercial UAS operation, the global probability experienced so far of crash is 10-2 and most of these crashes occur inside the operation area. It is not unreasonableto consider that a "standard" probability of fly away is rather 10-3. Combined with an independent FTS with a probability of failure of 10-2, Pexit would rather be 10-5. This argument could be used to alleviate the constraints on the density of population that appear in section 2, ifthe section is kept.	Consider a value of 10-5 for Pexit.	Recommended;	Accepted	Refer to comment 254
259	JEDA	3. Introduction	5	Other standards for system safety assessment, including credit for FTS, exist that could be directly used as means of compliance with the safety objectives of the SORA: E.g. Eurocae ED280,ASTM3309. These standards could be added to the MoC so that an operator equipping its UAS with a FTS compliant with these standards coulddeclare its compliance with the MoC without additional demonstration.	Based on the official policy of performance- based regulation, in turn enshrined by ICAO Assembly Resolution A39-22, EASA should accept internationally recognized standards as acceptable means of demonstrating compliance with this MoC. And consequently, mention them explicitly	Required	Not accepted	This MoC is an option for the applicant to demonstrate compliance with Light-UAS.2511(b). As mentioned in footnote 3 in the first page of the document "other means are still possible".
260	JEDA	3. Introduction	5	This detailed requirements from EASA should be replaced by suitable industry standards as soon as available, such as EN 4709-006	State that in the future, when specific industry standards would be available, the need for this section will be reconsidered by EASA	Recommended	Not accepted	This MoC is an option for the applicant to demonstrate compliance with Light-UAS.2511(b). As mentioned in footnote 3 in the first page of the document "other means are still possible". In addition, at the time of issuing this MoC the mentioned standard is still in draft and not published yet.
261	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	3. Introduction	5	"The following chapters provide the prescriptions for an FTS system considered adequate to provide, for the UA, a Pexit ≤ 10 -4 / FH." This is a bit confusing. I would have thought that the purpose of chapter 3 would be to characterize how to achieve a factor 100 reduction in a flyaway, not to achieve a specific exit rate, since this depends on the initial TLOS (which is irrelevant for the requirement imposed on the FTS).	Remove the Pexit reference and state what the actual target value for the FTS is, i.e. probably that it should prevent a flyaway in 99 out of a 100 cases.		Partially accepted	The text has been adapted to remove confusion.

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262	Skydio, Inc.	3. Introduction	5	The proposed MoC seems prescriptive (e.g. in section 3.3) while not opening the door to a structured safety assessment approach. It is considered that an approach as the one currently proposed by ASD-STAN or relying on EUROCAE's standard ED-280 (FMEA-like approach) complemented by CMA and consideration for latent failures should be an acceptable alternative.	Add as alternative MoC the demonstration of the no single failure criterion based, for instance, on FMEA + CMA + consideration of latent failures.	Requested	Not accepted	This MoC is an option for the applicant to demonstrate compliance with Light-UAS.2511(b). As mentioned in footnote 3 in the first page of the document "other means are still possible".
263	Wing Aviation	3. Introduction	5	This is a general comment related to the proposed MoC and based on the assumption made in comment #3 that the proposed MoC would apply to a plug-in system or not. The proposed MoC seems prescriptive (e.g. in section 3.3) while not opening the door to a structured safety assessment approach. It is considered that an approach as the one currently proposed by ASD-STAN or relying on EUROCAE's standard ED-280 (FMEA-like approach) complemented by CMA and consideration for latent failures should be an acceptable alternative.	Add as alternative MoC the demonstration of the no single failure criterion based, for instance, on FMEA + CMA + consideration of latent failures.		Not accepted	This MoC is declarative and therefore constituted by a simple set of prescriptions and tests. An option for the applicant to demonstrate compliance. As mentioned in footnote 3 in the first page of the document "other means are still possible".
264	FPDC	3. Introduction	5	Although the 10-4 value refers to Step 9 of SORA, this value is most likely not consistent with the actual probability of fly away of a UAS equipped with an FTS. Even for a SAIL II operation(the vast majority of BVLOS operations), and/or for a commercial UAS operation, the global probability experienced so far of crash is 10-2 and most of these crashes occur inside the operation area. It is not unreasonableto consider that a "standard" probability of fly away is rather 10-3. Combined with an independent FTS with a probability of failure of 10-2, Pexit would rather be 10-5. This argument could be used to alleviate the constraints on the density of population that appear in section 2, if the section is kept.	Consider a value of 10-5 for Pexit.	Recommended;	Accepted	Refer to comment 254
265	FPDC	3. Introduction	5	Other standards for system safety assessment, including credit for FTS, exist that could be directly used as means of compliance with the safety objectives of the SORA: E.g. Eurocae ED280,ASTM3309. These standards could be added to the MoC so that an operator equipping its UAS with a FTS compliant with these standards could declare its compliance with the MoC without additional demonstration.	Based on the official policy of performance- based regulation, in turn enshrined by ICAO Assembly Resolution A39-22, EASA should accept internationally recognized standards as acceptable means of demonstrating compliance with this MoC. And consequently, mention them explicitly	Required	Not accepted	This MoC is an option for the applicant to demonstrate compliance with Light-UAS.2511(b). As mentioned in footnote 3 in the first page of the document "other means are still possible".

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Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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266	FPDC	3. Introduction	5	This detailed requirements from EASA should be replaced by suitable industry standards as soon as available, such as EN 4709-006	State that in the future, when specific industry standards would be available, the need for this section will be reconsidered by EASA	Recommended	Not accepted	This MoC is an option for the applicant to demonstrate compliance with Light-UAS.2511(b). As mentioned in footnote 3 in the first page of the document "other means are still possible". In addition, at the time of issuing this MoC the mentioned standard is still in draft and not yet published.
267	EUSC-IT	3. Introduction	5	Although the 10-4 value refers to Step 9 of SORA, this value is most likely not consistent with the actual probability of fly away of a UAS equipped with an FTS. Even for a SAIL II operation(the vast majority of BVLOS operations), and/or for a commercial UAS operation, the global probability experienced so far of crash is 10-2 and most of these crashes occur inside the operation area. It is not unreasonableto consider that a "standard" probability of fly away is rather 10-3. Combined with an independent FTS with a probability of failure of 10-2, Pexit would rather be 10-5. This argument could be used to alleviate the constraints on the density of population that appear in section 2, ifthe section is kept.	Consider a value of 10-5 for Pexit.	Recommended;	Accepted	Refer to comment 254
268	EUSC-IT	3. Introduction	5	Other standards for system safety assessment, including credit for FTS, exist that could be directly used as means of compliance with the safety objectives of the SORA: E.g. Eurocae ED280,ASTM3309. These standards could be added to the MoC so that an operator equipping its UAS with a FTS compliant with these standards coulddeclare its compliance with the MoC without additional demonstration.	Based on the official policy of performance- based regulation, in turn enshrined by ICAO Assembly Resolution A39-22, EASA should accept internationally recognized standards as acceptable means of demonstrating compliance with this MoC. And consequently, mention them explicitly	Required	Not accepted	This MoC is an option for the applicant to demonstrate compliance with Light-UAS.2511(b). As mentioned in footnote 3 in the first page of the document "other means are still possible".
269	EUSC-IT	3. Introduction	5	This detailed requirements from EASA should be replaced by suitable industry standards as soon as available, such as EN 4709-006	State that in the future, when specific industry standards would be available, the need for this section will be reconsidered by EASA	Recommended	Not accepted	This MoC is an option for the applicant to demonstrate compliance with Light-UAS.2511(b). As mentioned in footnote 3 in the first page of the document "other means are still possible". In addition, at the time of issuing this MoC the mentioned standard is still in draft and not yet published.
270	UAAI	3. Introduction	5	Although the 10-4 value refers to Step 9 of SORA, this value is most likely not consistent with the actual probability of fly away of a UAS equipped with an FTS. Even for a SAIL II operation (the vast majority of BVLOS operations), and/or for a commercial UAS operation, the global probability experienced so far of crash is 10-2 and most of these crashes occur inside the operation area. It is not unreasonable to consider that a "standard" probability of fly away is rather 10-3. Combined with an independent FTS with a probability of failure of 10-2, Pexit would rather be 10-5. This argument could be used to alleviate the constraints on the density of population that appear in section 2, if the section is kept.	Consider a value of 10-5 for Pexit.	Recommended;	Accepted	Refer to comment 254

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271	UAAI	3. Introduction	5	Other standards for system safety assessment, including credit for FTS, exist that could be directly used as means of compliance with the safety objectives of the SORA: E.g. Eurocae ED280, ASTM3309. These standards could be added to the MoC so that an operator equipping its UAS with a FTS compliant with these standards could declare its compliance with the MoC without additional demonstration.	Based on the official policy of performance-based regulation, in turn enshrined by ICAO Assembly Resolution A39-22, EASA should accept internationally recognized standards as acceptable means of demonstrating compliance with this MoC. And consequently, mention them explicitly	Required	Not accepted	When the applicant elects to apply different standards to comply as part of a design verification project/TC project, they should agree with the Agency on the means of compliance they would like to apply. The published MoC is not the only means of compliance with the requirements and as mentioned in footnote 3 "other means are still possible".
272	UAAI	3. Introduction	5	This detailed requirements from EASA should be replaced by suitable industry standards as soon as available, such as EN 4709-006	State that in the future, when specific industry standards would be available, the need for this section will be reconsidered by EASA	Recommended	Not accepted	This MoC is an option for the applicant to demonstrate compliance with Light-UAS.2511(b). As mentioned in footnote 3 in the first page of the document "other means are still possible". In addition, at the time of issuing this MoC the mentioned standard is still in draft and not yet published.
273	AESA	3. Introduction	1	Light-UAS.2511 Containment. (b) When the risk associated with the adjacent areas on ground or adjacent airspace is significantly higher than the risk associated with the operational volume including the ground buffer: (1) the probability of leaving the operational volume must be demonstrated to be acceptable with respect to the risk posed by a loss of containment;	This sentence is not included in the step 9c of the current AMCs, if is applicable from SAIL I, it should be included or referenced in step 9c	Not requested;	Noted	The SC Light UAS is used by EASA to substantiate SORA OSOs, step 9 and M2. EASA as published a traceability matrix between OSOs/M2/step 9 to SC Light UAS requirements. Step 9 is linked to 2511. The SORA is not modified according to the SC. Apart from 2511 (step9) and 2512 (M2), the SC provides more granularity than the SORA to assess compliance with requirements
274	AESA	3. Introduction	2	Is adjacent airspace understood as all the volume of airspace that the UA is able to fly based on its autonomy and speed?	AESA recommends to establish a definition of the concept “adjacent airspace”.	Recommended;	Not accepted	Other comments and discussions with JARUS have required that EASA refrain from providing such definitions and leaves those definitions to JARUS.

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275	LBA (NAA) Germany	3. Introduction	5	"The following chapters provide the prescriptions for an FTS system considered adequate to provide, for the UA, a Pexit ≤ 10 -4 / FH" According to SORA Enhanced Containment requirements this should say: Pexit_operational volume <= 10E-4/FH, with an additional requirement that no single failure may lead to a breach of ground risk buffer. It should be noted, that the SORA requirements are holistic, and are supposed to be met by the total combination of technical means, operational measures and crew training. SORA enhanced containment is based on the SORA semantic model, where FTS is a possible means to achieve this requirement. As Pexit is prescribed for the operational volume and FTS is gernerally activated outside that volume (over the beginning of the GR buffer), FTS activation for the sake of containment may only be activated not more often than 10E-4/FH. Therefore the second and third requirement of Enhanced Containment depend on this difference between boundaries (limits of OV and GR buffer being different!) in order to achieve the intended performance.	Section 3 should be revised to better meet the requirements of SORA Step#9 enhanced containment. A clear distinction of which system requirement applies to the operational volume limit or the ground risk buffer limit is necessary for this to have the intendend containment performance. The role of operational and crew training meets should also be highlighted more in this chapter, as they play a major role to reach the Operational Volume containment requirement which has to be achieved without FTS activation.	Requested	Partially accepted	The relation between the operational volume and the ground risk buffer have been explained in the reviewed section 1. The new presented MoC will credit an FTS with a probability of failure of 10-2/FH valid for declaration.

3.1 General requirements

Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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276	SAFRAN	3. Introduction	5	MoC reads: "The following chapters provide the prescriptions for an FTS system considered adequate to provide, for the UA, a Pexit ≤ 10 -4 / FH."	It could be clarified that this MoC does not apply when the TLOS in adjacent areas is otherwise demonstrated or when the reliability of the FTS or the probability of loss of control are demonstrated at a sufficient level through different means (i.e. P(FTS failure) better than 1E-2/FH; P(loss of control of UA) better than 1E-2/FH). Based on the above understanding, we would propose to reword, for example as follows: “The following chapters provide the prescriptions for an FTS system considered adequate to provide, for an UA operated in SAIL II, a Pexit ≤ 10 -4 / FH. These prescriptive requirements do not apply when the TLOS in adjacent areas is otherwise demonstrated or when the reliability of the FTS or the probability of loss of control are demonstrated at a sufficient level through different means.”		Partially accepted	The MoC is designed to credit the FTS with a probability of failure/FH of 10-2. The implications of this on the probabilities and the application of such an FTS for a SAIL II have been clarified in the amended section 1 of the MoC. It is intended as a simple solution to be used for declaration. Other means of compliance with the enhance containment requirements are always possible and could be proposed by the applicants.
277	AZUR DRONES	3.1 General requirements	5	Comment related to the sentence: “The FTS must be segregated from the UAS flight control system architecture. Such segregation needs to be simply verifiable and comply with the following paragraphs.” Independency could be proven using the methodology proposed in (draft) ASD STAN FTS standard, or using an approach based on Eurocae ED-280 complemented by a CMA following the guidance of ASTM F3309/F3309-20.		Requested	Noted	This MoC is an option for the applicant to demonstrate compliance with Light-UAS.2511(b). As mentioned in footnote 3 in the first page of the document "other means are still possible".
278	AZUR DRONES	3.1 General requirements	5	Following the comment above, prescribing “full”, “simply verifiable”, “clear”, etc. segregation is not considered adequate - a technology-agnostic, performance-based approach should be followed and, therefore, reliance on structured safety assessment(s) should be allowed and promoted by the proposed MoC.	Add as alternative MoC the demonstration of the no single failure criterion based, for instance, on FMEA + CMA + consideration of latent failures.	Requested	Noted	This MoC is an option for the applicant to demonstrate compliance with Light-UAS.2511(b). As mentioned in footnote 3 in the first page of the document "other means are still possible".
279	ABedmar	3.1 General requirements	5	"The FTS can be manually or automatically activated. In the case of manual activation, the system will include a ground and an air (i.e.: on-board) segment."	Communication loss should always be considered, so there should be always the capability to trigger FTS automatically. It is requested to replace "or" by "and", and "can" by "shall".	Requested	Not accepted	The communication loss risk does not imply the need to develop an FTS manually "and" automatically deployable. Manual or automatic could also suffice to demonstrate compliance with this MoC which provides with an FTS probability of failure of 10-2/FH while ensuring performance elements are demonstrated.

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280	ABedmar	3.1 General requirements	5	Independence requirement in order to comply with no single failure.	If independence is the only way to assure no single failure, other systems onboard shall at least implement similar functions to comply with this, such as geocaging (performed by the Pilot using the Flight Control System) and FT. It is requested to state that "Containment Function" would be implemented by at least another system to avoid single failure.	Requested	Not accepted	It is not the intention of the MoC to cover the complete SC Light-UAS 2511 requirements but only paragraph (b) of the SC and this with a particular solution named FTS (could be others). It is therefore not intended to include reference to other systems.
281	COIAE	3.1 General requirements	5	"The unit(s) utilized to trigger the FTS should be fully segregated from the Command Unit (CU) utilized for UA control during normal operation. The segregation should be such that, if CU operation would be lost or function erroneously, the FTS would be fully unaffected."	The system defined (geocaging) is not flight-critical. It is critical to comply with CONOPS retrictions. Besides, it is defined as an independent system. It is suggested to allow the definition of this system as independent from the rest of the UA, such as an Addon or future ETSO. Light UAS.2511 could specify integration and compatibility of the Containment system in the UAS when the system is an addon.	Recommended;	Not accepted	The MoC is not making reference to geo-caging but to FTS. This is only one MoC and other solutions could be always presented to demonstrate compliance with the requirements.
282	AustroControl	3.1 General requirements	5	The FTS can be manually and/or automatically activated.	Propose to add "and/or" instead of "or" only.		Accepted	The suggested flexibility has been introduced in the text.
283	DGAC	3.1 General requirements	5		Add : "The pilot should have a means to detect that the FTS is not available (low battery, low signal) and in that case the flight shall be interrupted."	Recommended;	Accepted	Changes introduced in final text
284	Alejandro del Estal (Rigi Technologies SA)	3.1 General requirements	5	The FTS can be manually or automatically activated. In the case of manual activation, the system will include a ground and an air (i.e.: on-board) segment.	Communication loss should always be considered, so there should be always the capability to trigger FTS automatically in BVLOS. It is requested to add: " In BVLOS, the activation shall be manual and automatic"	Requested	Not accepted	The communication loss risk does not imply the need to develop an FTS manually "and" automatically deployable. Manual or automatic could also suffice to demonstrate compliance with this MoC which provides with an FTS probability of failure of 10-2/FH while ensuring performance elements are demonstrated.
285	Latvian CAA	3.1 General requirements	5	Instead of full segregation, redundancy of individual critical elements should be considered and more highly valued. E.g. redundant GNSS system with multiple and dissimilar sensors (whose signals are compared to detect failure) should provide more reliability than independent single sensor dedicated to the FTS. Also, a clear requirement and logic behind fail-safe for CU could be as an alternative to the utilization of two independent CU.	Do not require segregation over redundancy for all elements of FTS	Recommended;	Noted	It is not the intention of this MoC to provide all alternative options to comply with requirements. this specific MoC has been kept simple on purpose with the intention to be valid for its use for declaration (based on a quick design checklist and tests). Redundancy and safety assessment methods could be used, however with no segregation additional system analysis would be required to assess performances.

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286	SEG	3.1 General requirements	5	Quote.... The FTS must be segregated from the UAS flight control system architecture; The FTS can be manually or automatically activated ....unquote Remark: A certain information exchange between the UAS architecture and the FTS architecture appears very worth. This could cover at lease the following technical aspect. => The FTS should be designed "Fail Safe", respective, if the FTS fails it should not cause the AV to crash. => In order to make the flight crew able to initiate emergency procedure, like mission abort, land as soon as possible", the FTS should indicate the health status of the FTS to the UAS-CU.	clarification needed	Requested	Partially accepted	A requirement to provide the remote pilot with means to detect the availability of the FTS has been introduced. Information exchange between UAS and FTS is not prohibited by the MoC and the segregation requirement.
287	FlyingBasket (Marta Cejuela - HO AW&Safety Manager)	3.1 General requirements	5	A Safety Process will be used as part of the design verification process	The qualitative safety assessment allow to identify any probable failures of the UAS or external systems supporting the operation that may lead to operation outside the operational volume. - Analysis substantiates how independence, separation and redundant design and installation features exist in the UAS design to mitigate the probable failure and no single failure exists. - An FHA of the containment system identifies the sub-systems, functions and items that could lead to loss of containment - A simple fault tree allocates probabilities of failure to the contributing elements. Proof that the elements comply to the required probabilities will be by provided through analysis, test and adding the posibility for applicant to take credit on the service history with supporting evidence.	Recommended	Noted	It is not the intention of this MoC to provide with all alternative options to comply with the requirement at hand. Redundancy and safety assessment methods could be used to avoid full segregation. However, this specific MoC has been kept simple on purpose with the intention to be valid for its use in perspective of a declaration (based on a quick design checklist and tests)

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288	RPAS Finland ry	3.1 General requirements	5	"Segregated FTS" is prescriptive. SORA talks about the impact of separation, independence and redundance to ensure sufficient reliability of systems.	The 'means to terminate the flight' need to exhibit the required separation, independence and redundance, so that 'no single failure of the UAS or of any external system supporting the operation lead to its operation outside the ground risk buffer'. Being segregated from the UAS flight control system architecture is considered to fulfill the separation, independence and redundance requirements, but other combinations of separation, independence and redundance may also be acceptable. Add as alternative MoC the demonstration of the no single failure criterion based, for instance, on FMEA + CMA + consideration of latent failures. And consider that Independency could be proven using the methodology proposed in (draft) ASD STAN FTS standard, or using an approach based on Eurocae ED-280 complemented by a CMA following the guidance of ASTM F3309/F3309-20.	Requested	Noted	It is not the intention of this MoC to provide with all alternative options to comply with the requirement at hand. Redundancy and safety assessment methods could be used to avoid full segregation. However, this specific MoC has been kept simple on purpose with the intention to be valid for its use in perspective of a declaration (based on a quick design checklist and tests)
289	Abionica Solutions	3.1 General requirements	5	"The FTS can be manually or automatically activated. In the case of manual activation, the system will include a ground and an air (i.e.: on-board) segment."	Communication loss should always be considered, so there should be always the capability to trigger FTS automatically. It is requested to replace "or" by "and", and "can" by "shall".	Requested	Not accepted	The communication loss risk does not imply the need to develop a FTS manually "and" automatically deployable. Manual or automatic could also suffice to demonstrate compliance while ensuring elements of 3.5 are demonstrated.
290	Abionica Solutions	3.1 General requirements	5	Independence requirement in order to comply with no single failure.	If independence is the only way to assure no single failure, other systems onboard shall at least implement similar functions to comply with this, such as geocaging (performed by the Pilot using the Flight Control System) and FT. It is requested to state that "Containment Function" would be implemented by at least another system to avoid single failure.	Requested	Not accepted	It is not the intention of this MoC to provide with all alternative options to comply with the requirement at hand. Redundancy and safety assessment methods could be used to avoid full segregation. However, this specific MoC has been kept simple on purpose with the intention to be valid for its use in perspective of a declaration (based on a quick design checklist and tests)
291	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	3.1 General requirements	5	Completely agree.			Noted	No comment
292	Skydio, Inc.	3.1 General requirements	5	Independency could be proven using the methodology proposed in (draft) ASD STAN FTS standard, or using an approach based on Eurocae ED-280 complemented by a CMA following the guidance of ASTM F3309/F3309-20.		Requested	Not accepted	It is not the intention of this MoC to provide with all alternative options to comply with the requirement at hand. Redundancy and safety assessment methods could be used to avoid full segregation. However, this specific MoC has been kept simple on purpose with the intention to be valid for its use in perspective of a declaration (based on a quick design checklist and tests)

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293	Skydio, Inc.	3.1 General requirements	5	Following the comment above, prescribing “full”, “simply verifiable”, “clear”, etc. segregation is not considered adequate - a technology-agnostic, performance-based approach should be followed and, therefore, reliance on structured safety assessment(s) should be allowed and promoted by the proposed MoC.	Add as alternative MoC the demonstration of the no single failure criterion based, for instance, on FMEA + CMA + consideration of latent failures.	Requested	Not accepted	It is not the intention of this MoC to provide with all alternative options to comply with the requirement at hand. Redundancy and safety assessment methods could be used to avoid full segregation. However, this specific MoC has been kept simple on purpose with the intention to be valid for its use in perspective of a declaration (based on a quick design checklist and tests)
294	Wing Aviation	3.1 General requirements	5	Comment related to the sentence: “The FTS must be segregated from the UAS flight control system architecture. Such segregation needs to be simply verifiable and comply with the following paragraphs.” Independency could be proven using the methodology proposed in (draft) ASD STAN FTS standard, or using an approach based on Eurocae ED-280 complemented by a CMA following the guidance of ASTM F3309/F3309-20.			Not accepted	This MoC is declarative and based on a simple set of prescriptions and tests. It is not the only possible way of complying with enhanced containment.
295	Wing Aviation	3.1 General requirements	5	Following the comment above, prescribing “full”, “simply verifiable”, “clear”, etc. segregation is not considered adequate - a technology-agnostic, performance-based approach should be followed and, therefore, reliance on structured safety assessment(s) should be allowed and promoted by the proposed MoC.	Add as alternative MoC the demonstration of the no single failure criterion based, for instance, on FMEA + CMA + consideration of latent failures.		Not accepted	See answer to previous comment.

3.2 Segregation of the air segment

Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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296	EWA	3.2 Segregation of the air segment	5	MoC reads: "If the FTS is automatically activated, its activation should be triggered by systems which are not utilized for the control of the UA operation within the operational volume. For example, positioning information utilized to trigger the FTS should be provided by different systems with respect to the ones utilized during normal operation of the UA."	A similar requirements should be defined for manually-only activated FTS: the RP will need adequate information to decide to activate the FTS (typically position information or absence of it). Also it is not only about position acquisition: the position needs to be compared with the flight plan for a decision to be taken - so the flight plan data and positioning algorithm need to be segregated as well. As mentioned in comment #9 above, when the level of safety is demonstrated to be sufficient to meet the TLOS, strict segregation of the FTS or its activation is not necessary.		Partially accepted	The indication to the pilot of the operational status of the FTS has been included as a requirement. If other means of compliance are being elected for containment requirements, then this MoC would not be applicable. Other means of compliance are always possible.
297	AustroControl	3.2 Segregation of the air segment	5	The proposed chapter is very much tailored to a simple, manual FTS, which is only triggered manualy by the remote pilot. In regards to a FTS which will be triggered automatically, is the any consideration in the near future? Further, a consideration of the activation (manually or automatically) for VLOS or BVLOS scenarios should be added. An automatic triggering FT function is relying on reliable input of sensors. How should the separation be managed? Basically, an FTS is a whole system consisting input (sensors) -> logic -> output (trigger, etc.). Do EASA plan to consider the assurance of these functions in the near future? The FTS separation requirements are very tough in terms of hardware but the current MOC did not consider software and hardware (e.g. where the SW is embedded) requirements (e.g. SW integrity), which seems inconsistent.			Noted	Both options, manual and automatic activation of the FTS, are part of the MoC. The segregation requirement for the automatic system applies as well.
298	SEG	3.2 Segregation of the air segment	5	Quote.....If the FTS is automatically activated ....For example, positioning information utilized to trigger the FTS should be provided by different systems.....unquote If the AV`s position in the operational volume is provided by GNSS, is a.) GPS and GLONASS considered as different system? or b.) is there other technology for position indication, like LTE 5G expected	clarification needed	Requested	Accepted	For an automatic FTS activation, the main requirement is segregation of the systems. There is however no prescription in the technologies to use (two segregated GPS would be acceptable). The text has been modified to provide clarification.

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299	Laurent PERCHAIS (Dronisos)	3.2 Segregation of the air segment	5	Air segment of the FTS shall be segragated. But communication betwen FTS air segment and UAV Firmare can be useful to reinforce safety (peer monitoring). Exchanging data betwen shall be possible ; exchanging orders shall not possible.	Architecture allowing communication between the FTS air segment and UAV Firmware is possible as soon as it cannot affect Kill orders coming from UAV Firmware or Ground FTS	Recommended;	Noted	Segregation of all elements of the FTS system must be ensured. Communication between FTS system and other UAS systems is not envisaged but also not forbidden while segregation is ensured.
300	senseFly	3.2 Segregation of the air segment	5	The sentence "If the FTS is automatically activated, its activation should be triggered by systems which are not utilized for the control of the UA operation within the operational volume." implies redundoncy on GNSS, alimentation, battery etc... This would add significant weight to very light UA.	The FTS manufacturer should have the possibility to prove the proper FTS functionning without redundancy by test to avoid extra weight.	Requested	Not accepted	A FTS is only one means of compliance for requirement Light-UAS.2511(b). Manufacturers have the possibility to demonstrate compliance with the requirements with other means, even without developing an FTS.
301	ONERA	3.2 Segregation of the air segment	5	"If the FTS is activated from ground, the receiver of the FTS signal installed on-board should be independent from the receiver utilized for command and control." The rationale & benefit for this design choice is not clear : which safety need is really ensured by this proposal ? which safety needs are created by this proposal ?	Clarify the applicability scope of this design constraint.	Requested	Not accepted	The MoC is not intended to provide rationale on the design but to provide with an acceptable means of compliance for an FTS. As the FTS is an emergency measure, it would be triggered once other failures had occurred which prevents the recovery of control of the aircraft. The independency requirement aims to ensure that the FTS system is not affected by the failure/s leading to the loss of control.
302	ONERA	3.2 Segregation of the air segment	5	"If the FTS is activated from ground, the receiver of the FTS signal installed on-board should be independent from the receiver utilized for command and control." It is not clear whether this requirement is always meaningful when FTS can be engaged both by ground and board by segrefated activation paths.	Provide alternative recommandations for other applicability scope such as "No single failure leads to the loss of FTS activation and the loss of flight control"	Recommended;	Not accepted	This MoC is meant to provide a simple solution that could be easy and quick to implement and thus avoiding the need for a design verification
303	ONERA	3.2 Segregation of the air segment	5	"If the FTS is activated from ground, the receiver of the FTS signal installed on-board should be independent from the receiver utilized for command and control." It is not clear how this design choice solution will handle a malfunctioning of the FTS receiver leading to a loss of FTS link.	Provide complementary requirement to prevent latent failure of FTS e.g. "FTS availability should be monitored"	Recommended;	Partially accepted	The requirement to have means to detect the serviceability of the FTS have been introduced under the general requirements of the FTS.
304	ONERA	3.2 Segregation of the air segment	5	"If the FTS is automatically activated, its activation should be triggered by systems which are not utilized for the control of the UA operation within the operational volume. For example, positionning information utilized to trigger the FTS should be provided by différent systems with respect to the ones utilized during the normal operation of the UA" The requirement does not cover common cause failure of two similar systems. e.g loss of two GPS using the same positionning technology.	Provide complementary requirement to prevent usual common cause of system failures	Recommended;	Not accepted	While the rational of potential common failure is shared, the intention of this MoC is to provide with a simple solution. This could be maybe not applicable for more complex situations. The main requirement is the segregation of the systems.

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305	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	3.2 Segregation of the air segment	5	Good to see the exemption of a failure that will lead to a crash anyways.			Noted	No comment
306	ESG	3.2 Segregation of the air segment	5	"positioning information utilized to trigger the FTS should be provided" Is this position information the processed data or the position sensor (GNSS antenna and receiver)?	Clarify		Noted	All elements of the FTS should be segregated from other systems and therefore both interpretations (processed data or position sensor) could be valid while being segregated from the other UAS system elements.
307	LBA (NAA) Germany	3.2 Segregation of the air segment	5	MoC: In such a case erroneous operation of onboard power supply (out of range voltage, inverted polarity) should be demonstrated to not result in loss of containment and loss of the FTS. Comment: This statement is against the common logic in aviation regulation and certification. An erroneous human operation of an aircraft may indeed lead to a catastrophic event. In manned aviation, the human in the loop is considered an important aspect to reach the target level of safety. It is assumed that pilots react to technical failures and defuse the situation. However, an erroneous operation of a pilot may lead to a catastrophic event.	It may be considered a design goal of the FTS architecture to reduce the potential for human error.	Requested	Partially accepted	The section has been reviewed to provide clarity.
308	LBA (NAA) Germany	3.2 Segregation of the air segment	5	MoC: For example, positioning information utilized to trigger the FTS should be provided by different systems with respect to the ones utilized during normal operation of the UA. Comment: Does that also refer to GNSS? Take a case where a UAS has two separate GPS receivers, one for flight control and one for FTS. Jamming GPS, however, leads to erroneous positions of both systems. Does that imply the need for a second independent GNSS system for FTS like Galileo, GLONASS or any other means of positioning system?	Clarification required, see comment.	Requested	Accepted	Clarification has been provided in the reviewed version. The need for technology diversity has not been considered proportionate with the limited performance credited to the FTS based on this MoC.

3.3 Segregation of the ground segment

Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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309	Nathanel Apter (UASolutions)	3.3 Segregation of the ground segment	5	Full segregation of the ground segment is required which is not in line with the 2511 high level requirements. Full segragation is not necessary to ensure that there are no single failures that lead to the operation outside of the operational volume, that the reliability in 10-4/FH or that there are no hardware or software errors leading to operation outside of the operational volume e.g. the battery of the indepedant ground segment could be shared by the remote control and the independant ground segment without a breach of the compliance to the enhanced containment requirements.	It is suggested to provide more flexibility to implement the ground segment. Probably a complete segregation of the ground segment is not needed, especially if a system function is not relevant for a breach of containment or if such failures are covered by automation of a different subsystem. For instance in the case of loss of battery of the ground segment, the UAS could be automated to land on spot since this failure is not critical for the command and control of the UAS.	Requested	Not accepted	Intention of the MoC is to provide a simple a solution adequate for a declaration.
310	Alejandro del Estal (Rigi Technologies SA)	3.3 Segregation of the ground segment	5	Segregation definition of the ground segment is not clear. Is it required a full segregation (i.e., independent battery, SW, device, frequency from the CU)? There are manufacturers that have additional means in place to prevent the drone of leaving the operational volume. Full segragation is not necessary to ensure that there are no single failures that lead to the operation outside of the operational volume e.g. the battery of the indepedant ground segment could be shared by the remote control and the independant ground segment without a breach of the compliance to the enhanced containment requirements.	It is suggested to provide more flexibility to implement the ground segment. Probably a complete segregation of the ground segment is not needed, especially if a system function is not relevant for a breach of containment or if such failures are covered by automation of a different subsystem. For instance in the case of loss of battery of the ground segment, the UAS could be automated to automatically land on spot.	Requested	Not accepted	The solution proposed by this MoC is not the only approach that could be taken to demonstrate compliance with 2511. Other means are always possible. However it is the intention of the MoC to keep it as simple solution as possible so it could be used for declaration without the need for a design verification
311	senseFly	3.3 Segregation of the ground segment	5	This section implies the development of an external device on the ground to trigger the FTS. There will be development cost, production cost, certification cost, etc… Also, this section should only applies to manually activated FTS.	Test should be possible to prove that even if the FTS is not segregated from the CU, it is possible to trigger the FTS. You should write that this section is applicable only to manually activated FTS.	Requested	Not accepted	The solution proposed by this MoC is not the only approach that could be taken to demonstrate compliance with 2511. Other means are always possible. However it is the intention of the MoC to keep it as simple solution as possible so it could be used for declaration without the need for a design verification. An automatic FTS does not imply that the ground segment is only for manually activated FTS. Automatic FTS solutions could be proposed with elements of the system on the ground segment.
312	senseFly	3.3 Segregation of the ground segment	5	The term "fully segragate" is not clear.	Clarify what "fully" means or delete	Recommended;	Accepted	Adjective "fully" removed from document

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313	ONERA	3.3 Segregation of the ground segment	5	3.3 (whole paragraph). The rationale for this design choice is not clear, in other words it is not clear how this design choice could possibly increase the safety of the operations. More into the details: 1. It is not clear which hazard is being assessed. 2. It is not clear how this design choice solution will handle a malfunctioning of the FTS control unit. Moreover, supervising a second independent CU may increase the workload for the remote pilot and endanger his/her situation awareness on the overall system state.	As for 3.2 : clarify the applicability scope and the needed requirements	Requested	Noted	The MoC is not enforcing any design choice but providing a set of requirements to be fulfilled to credit the FTS for containment purposes.
314	Abionica Solutions	3.3 Segregation of the ground segment	5	"The unit(s) utilized to trigger the FTS should be fully segregated from the Command Unit (CU) utilized for UA control during normal operation. The segregation should be such that, if CU operation would be lost or function erroneously, the FTS would be fully unaffected."	The system defined (geocaging) is not flight-critical. It is critical to comply with CONOPS retrictions. Besides, it is defined as an independent system. It is suggested to allow the definition of this system as independent from the rest of the UA, such as an Addon or future ETSO. Light UAS.2511 could specify integration and compatibility of the Containment system in the UAS when the system is an addon.	Recommended;	Not accepted	This sentence is not referring to geo-caging but to the HW/SW elements used for triggering the FTS.
315	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	3.3 Segregation of the ground segment	5	Completely agree.			Noted	No comment
316	Skydio, Inc.	3.3 Segregation of the ground segment	5	"The segregation should be such that, if CU operation would be lost or function erroneously, the FTS would be fully unaffected." In the context of single point of failure, a command unit would have to fail at the same time as some other emergency failure condition in order for flight termination to be required; with automated system contingencies in the event of lost communications, this seems counter to "single point of failure" language to drive segregated redundancy.	Add as alternative MoC the demonstration of the no single failure criterion based, for instance, on FMEA + CMA + consideration of latent failures.	Requested	Not accepted	The solution proposed by this MoC is not the only approach that could be taken to demonstrate compliance with 2511. Other means are always possible. However it is the intention of the MoC to keep it as simple solution as possible so it could be used for declaration without the need for a design verification
317	ESG	3.3 Segregation of the ground segment	5	is "fully" segregated more than "segregated" or less? Suggest to remove "fully".	Suggest to remove "fully"		Accepted	Adjective "fully" removed from document
318	ESG	3.3 Segregation of the ground segment	5	"FTS would be fully unaffected" The FTS function is to ensure the prevention of unintended leaving. Triggering flight termination in the event of a loss of CU would not affect (=negativelky impact on) FTS function.			Noted	Clarification has been introduced to this sentence. The intention is to complement the segregation requirement ensuring that failures of other systems would not result in the inability of FTS triggering.

3.4 Frequency and frequency diversity

Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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319	AZUR DRONES	3.4 Frequency and frequency diversity		Comment related to the sentence: “or it should be proven that in such a case no interference would be possible such to cause erroneous FTS activation.” This probably should state exactly the opposite. Given the adjacent area is of higher risk, false positives (erroneous activation) is not a safety issue (as long as they aren't too large). On the contrary, it is not ok to have a false negative/unable to activate.	Reword as follows: “or it should be proven that in such a case no interference would be possible such to prevent FTS activation.”	Requested	Accepted	Proposal has been accepted and change introduced in the text.
320	COIAE	3.4 Frequency and frequency diversity	5	The frequency and frequency diversity requirements seem incompatible with the use of cellular network technologies, which was confirmed by EASA during the meeting with EUROCAE.	Include examples of technologies considered acceptable by EASA in the context of this MoC and/or explicit mentions to technologies out of the scope of this MoC.	Recommended;	Not accepted	The MoC aims to be technology agnostic. It would not be however acceptable under this MoC to use the same frequency used to command the UAS to initiate the activation of the FTS.
321	Nathanel Apter (UASolutions)	3.4 Frequency and frequency diversity	5	The frequency and frequency diversity requirements seem incompatible with the use of cellular network technologies.	Include examples of technologies considered acceptable by EASA in the context of this MoC and/or explicit mentions to technologies out of the scope of this MoC.	Requested	Not accepted	The MoC aims to be technology agnostic. It would not be however acceptable under this MoC to use the same frequency used to command the UAS to initiate the activation of the FTS.
322	DGAC	3.4 Frequency and frequency diversity	6	"The FTS frequency should also not be superimposed with frequencies intensely utilized in the area of operation, or it should be proven that in such case no interference would be possible such to cause erroneous FTS activation." This is a very delicate matter to prove, and no guidance on how an applicant should prove this is provided	Either delete this requirement, either provide guidance material on how to prove it.	Requested	Accepted	Only superimposition with high power radio frequencies has been kept on this element of the MoC
323	Alejandro del Estal (Rigi Technologies SA)	3.4 Frequency and frequency diversity	5	The frequency and frequency diversity requirements seem incompatible with the use of cellular network technologies, which was confirmed by EASA during the meeting with EUROCAE.	Include examples of technologies considered acceptable by EASA in the context of this MoC and/or explicit mentions to technologies out of the scope of this MoC.	Requested	Not accepted	The MoC aims to be technology agnostic. It would not be however acceptable under this MoC to use the same frequency used to command the UAS to initiate the activation of the FTS.
324	Alejandro del Estal (Rigi Technologies SA)	3.4 Frequency and frequency diversity	5	Similar as the previous question comment #17, there is a too restrictive measure to impose different frequencies for the UA control from the FTS. If there are frequency anti-jamming mechanisms in place, this measure could be further developed.	It is suggested to provide additional means to avoid having frecuency diversity when there are an-jamming mechanisms in place. More development of this paragraph is suggested.	Recommended;	Not accepted	This MoC aims to be simple and easy to use. The introduction of anti-jamming systems and other alternative means would create complexity and would potentially be subject of other MoCs in the future.
325	FlyingBasket (Thomas Markert - HO Operations)	3.4 Frequency and frequency diversity	5	The requirement to not use intensily used frequencies for the FTS control is very subjective and should be replaced by clear/prescriptive requirements.	- the correct function of the radio link must be monitored during the operation and the flight must aborted in case of a loss of the radio link to the FTS - the FTS radio link shall be robust against interference and interference shall not trigger the FTS inadvertently	Recommended	Accepted	Only superimposition with high power radio frequencies has been kept on this element of the MoC

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326	senseFly	3.4 Frequency and frequency diversity	5	Most of the C5/C6, low/medium SAIL level uses the ISM frequency band (2.4/5.8GHz) for the C2 link. Those bands are internationaly available and harmonized. This section forces the manufacturers to use a different frequency band for the FTS. Lower frequency like 433MHz/868MHz/915MHz are not always internationaly harmonised. Moreover, for drone using telecom frequency, it might be difficult to find another long range technology. For example, satellite communications are very expensive.	We suggest removing this requirement or allow robust technologies (like FHSS (Frequency Hopping Spread Spectrum)). Guidance material on how to prove there is no interference is necessary.	Requested	Partially accepted	Only superimposition with high power radio frequencies has been kept on this element of the MoC in addition to the separated frequency between control unit and FTS
327	RPAS Finland ry	3.4 Frequency and frequency diversity		Comment related to the sentence: “or it should be proven that in such a case no interference would be possible such to cause erroneous FTS activation.” This probably should state exactly the opposite. Given the adjacent area is of higher risk, false positives (erroneous activation) is not a safety issue (as long as they aren't too large). On the contrary, it is not ok to have a false negative/unable to activate.	Reword as follows: “or it should be proven that in such a case no interference would be possible such to prevent FTS activation.”		Accepted	Sentence reworded as suggested
328	JEDA	3.4 Frequency and frequency diversity	6	"The FTS frequency should also not be superimposed with frequencies intensely utilized in the area of operation, or it should be proven that in such case no interference would be possible such to cause erroneous FTS activation." This is a very delicate matter to prove, and no guidance on how an applicant should prove this is provided	Either delete this requirement, either provide guidance material on how to select appropriate frequency bands.	Requested	Accepted	Only superimposition with high power radio frequencies has been kept on this element of the MoC
329	Skydio, Inc.	3.4 Frequency and frequency diversity	6	“or it should be proven that in such a case no interference would be possible such to cause erroneous FTS activation.” This probably should state exactly the opposite. Given the adjacent area is of higher risk, false positives (erroneous activation) is not a safety issue (as long as they aren't too large). On the contrary, it is not ok to have a false negative/unable to activate.	Reword as follows: “or it should be proven that in such a case no interference would be possible such to prevent FTS activation.”	Requested	Accepted	Sentence reworded as suggested
330	Wing Aviation	3.4 Frequency and frequency diversity	5	Comment related to the sentence: “or it should be proven that in such a case no interference would be possible such to cause erroneous FTS activation.” This probably should state exactly the opposite. Given the adjacent area is of higher risk, false positives (erroneous activation) is not a safety issue (as long as they aren't too large). On the contrary, it is not ok to have a false negative/unable to activate.	Reword as follows: “or it should be proven that in such a case no interference would be possible such to prevent FTS activation.”		Accepted	Sentence reworded as suggested

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331	FPDC	3.4 Frequency and frequency diversity	6	"The FTS frequency should also not be superimposed with frequencies intensely utilized in the area of operation, or it should be proven that in such case no interference would be possible such to cause erroneous FTS activation." This is a very delicate matter to prove, and no guidance on how an applicant should prove this is provided	Either delete this requirement, either provide guidance material on how to select appropriate frequency bands.	Requested	Accepted	Only superimposition with high power radio frequencies has been kept on this element of the MoC
332	EUSC-IT	3.4 Frequency and frequency diversity	6	"The FTS frequency should also not be superimposed with frequencies intensely utilized in the area of operation, or it should be proven that in such case no interference would be possible such to cause erroneous FTS activation." This is a very delicate matter to prove, and no guidance on how an applicant should prove this is provided	Either delete this requirement, either provide guidance material on how to select appropriate frequency bands.	Requested	Accepted	Only superimposition with high power radio frequencies has been kept on this element of the MoC
333	UAAI	3.4 Frequency and frequency diversity	6	"The FTS frequency should also not be superimposed with frequencies intensely utilized in the area of operation, or it should be proven that in such case no interference would be possible such to cause erroneous FTS activation." This is a very delicate matter to prove, and no guidance on how an applicant should prove this is provided	Either delete this requirement, either provide guidance material on how to select appropriate frequency bands.	Requested	Accepted	Only superimposition with high power radio frequencies has been kept on this element of the MoC
334	LBA (NAA) Germany	3.4 Frequency and frequency diversity	5	Moc: The FTS frequency should also not be superimposed with frequencies intensely utilized in the area of operation, or it should be proven that in such case no interference would be possible such to cause erroneous FTS activation. Comment: 2.4GHz is often used for smaller UAS as C2 link frequency. However, it is also used everywhere for WiFi in urban environments. Does that mean that normal 2.4GHz communication should not be used for the FTS?	Clarification required, see comment.	Requested	Accepted	This element of the MoC has been clarified to ensure that segregation between frequency used by the FTS and the UAS control is ensures as well as potential sources of high-power emitters are avoided.

3.5 FTS Performance

Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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335	Wingcopter	3.5 FTS Performance	6	FTS initial test: The MoC does not provide enough details on the expected laboratory tests to be performed. This may range from simple functional tests performed under laboratory conditions up to laboratory tests with large efforts according to aerospace standards. This variety should be reduced by further guidance of the MoC.	Provide reference to test standards and / or kind of tests that shall be performed, e.g. EMC tests, vibration tests etc. or standards describing specific test procedures. Furthermore, provide information if internal laboratories or only accredited labs shall be used for testing.	Requested	Partially accepted	The initial tests are to be carried out on the uninstalled FTS. A minimum number of 10 tests have been introduced
336	Wingcopter	3.5 FTS Performance	6	Flight test: Flight test description for means of compliance are very generic and do not provide a proper set of information to perform flight tests. MoC shall contain more information about flight test conditions like speed (range), expected environmental / weather condition, payload used / not used, flight segment etc.	Provide more information about conditions in which flight tests shall be performed like speed (range), expected environmental / weather condition, payload used / not used, flight segment etc. or refer to existing standard that shall be used for tests. In addition, describe if one or more tests are required.	Requested	Noted	In principle it is not required to take environmental conditions and other elements into consideration for these flight tests which are only envisaged for testing the proper functioning of the FTS.
337	Wingcopter	3.5 FTS Performance	6	End-to-end activation tests: For flight tests it is specified that electronic means can be used instead of real FTS activation to ensure non-desctructive testing. Although it is written that the same UA shall be used for tests, it is unclear if the same eletronic / digital means can be used for these ground tests as well. In addition, details on the required environment / test labs are missing.	Please provide further guidance if electronic / digital means can be used for FTS activation testing as described for flight tests. In addition, please provide additional information which kind of laboratory is expected to be used for the tests.	Requested	Noted	Digital means for the flight tests are introduced to allow for non-destructive tests. On ground there is no risk (under testing conditions) to damage the testing unit and therefore digital means are in principle not expected for the end-to-end activation tests.
338	Alliance for new Mobility Europe (AME)	3.5 FTS Performance	6	This section addresses specifically the FTS performance although this performance is not expressed. Therefore, it is advised to come back to the TLOS / probability of exiting the operational volume lower than 10-4/FH and to request its demonstration this at a UAS level, not at the FTS one			Partially accepted	The performance expected for the FTS itself by this MoC has been clearly referred as a probability of failure of 10-2/FH
339	AZUR DRONES	3.5 FTS Performance	6	This section addresses specifically the FTS performance although this performance is not expressed. It is advised to express the expected performance to be demonstrated by the applicant by referring to the TLOS / probability of exiting the operational volume (which should be lower than 10-4/FH) and requesting a demonstration at UAS level (not at the FTS level).	Explicit the expected performance to be demonstrated by the applicant by referring to the TLOS / probability of exiting the operational volume (which should be lower than 10-4/FH) and requesting a demonstration at UAS level (not at the FTS level)	Requested	Partially accepted	The MoC is focused on the FTS as one system to demonstrate compliance with enhanced containment requirement. The testing is therefore focused on the performance of the FTS and does not require demonstration on the whole UAS. The performance expected for the FTS itself by this MoC has been clearly referred as 10-2/FH
340	AZUR DRONES	3.5 FTS Performance	6	It seems that the FTS performance is requested to be demonstrated by test, although it may make sense for automated systems to take credit of simulations with proven representativeness for the intended purpose.	Add the possibility of taking credit of representative simulations to demonstrate the performance of the FTS	Requested	Not accepted	This MoC is meant to be used for declaration and therefore needs to be kept simple. Simulations and other complex means of compliance would probably require a design verification.

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341	AZUR DRONES	3.5 FTS Performance	6	Comment related to the sentence: “During the tests, all geometries UA – ground antenna expected during operation would need to be tested at the maximum expected distance.” It does not seem reasonable to expect that “all geometries" are tested. Suggest to focus on the most conservative configurations.	Revise the criteria to ask flight tests to consider the most conservative configurations	Requested	Accepted	All geometries have been substituted with the aim to cover a representative number of scenarios.
342	AZUR DRONES	3.5 FTS Performance	6	Comment related to the sentence: “The FTS should never be subject to inadvertent activation.” This is not practical and not risk appropriate; given the adjacent area is higher risk, false positives should be an overall improvement of the safety case (as long as they aren't too large).	Delete this sentence	Requested	Accepted	Sentence removed from text
343	AZUR DRONES	3.5 FTS Performance	6	Comment related to the sentence: “The number of activations (triggering of the termination means and observation of proper operation) should be equal to the number of expected operations of the UAS for its entire life (accounting for pre-flight checks, maintenance check, return to service check) multiplied by a scattering factor of 2.” The number of activations should not have to equal the number of expected life cycles of the UA since such means will not be triggered in EVERY flight - a reasonable number should be proposed instead. In addition, stating that the same UA for flight test needs to be tested here will not be practical in a large number of cases.	Propose a reasonable number instead of equaling the expected life cycles of the UA (e.g. draft ASD-STAN prEN 4709-006 is currently proposing 299 tests)	Requested	Partially accepted	The MoC is requesting to have a pre-flight check of the FTS before the first flight of the day. This implies that the FTS is activated at least once every time the UAS is being operated. The end-to-end tests have been reformulated to provide clarity and the number is now contained (the scatter factor has not been considered necessary)
344	AZUR DRONES	3.5 FTS Performance	6	Comment related to the sentence: “The tests should be carried out utilizing the UA that has been subject to flight tests (when such tests have been carried out) with FTS installed, utilizing the same FTS activated in flight.” It is not clear why EASA is asking to use the same UA as for flight tests and we are concerned that it may not always be practical. It would be useful to get EASA’s rationale for such a requirement and we would like to propose replacing “should” by “may” to be able to adapt to individual situations.	Advise explicating rationale for such a requirement and replace “should” by “may” to be able to adapt to individual situations	Requested	Partially accepted	This section has been amended to reflect the possibility to use different units while the configuration is maintained.

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345	Boeing	3.5 FTS Performance	6	Under the "Flight Test" sub section, it mentioned that a flight test is not considered necessary for very small UAS (900 grams is referened as a reference). It is agreed that a very small UAS has a low ground risk and probably does not need to show compliance via a flight test. The reasoning for not requireing a flight test is being called into question, particularly the reference to antenna masking effects. While physical size plays a part in antenna masking, the material make up of the UAS plays a larger part and a small drone of 900 g weight could be made out of a material (carbon fiber) that would mask the FTS antenna.	Suggest removing the reference to antenna masking effects from the flight test section and adding a note about conducting ground integration checks in various attitudes and azimuths to check for antenna masking.		Accepted	Reference to antenna masking removed.
346	COIAE	3.5 FTS Performance	6	This section addresses specifically the FTS performance although this performance is not expressed.	Therefore, it is advised to come back to the TLOS / probability of exiting the operational volume lower than 10-4/FH and to request its demonstration this at a UAS level, not at the FTS one.	Recommended;	Partially accepted	The performance expected for the FTS itself by this MoC has been clearly referred as a probability of failure of 10-2/FH
347	COIAE	3.5 FTS Performance	6	Among other technical requirements, the MoC requires that "the FTS should never be subject of inadvertent activation". No indications on how to test this requirement are given explicitly. However, according to EASA, during the meeting with EUROCAE, this claim is considered satisfied if no inadvertent activations happen during the whole test campaign.	Include explicit indications that this requirement is considered satisfied if no inadvertent failures happen during the whole test campaign.	Requested	Noted	Sentence removed from text
348	COIAE	3.5 FTS Performance	6	"End-to end activation tests performed in laboratory"	These tests proposed do not cover "automatic activation". Given that HW/SW is not qualified, notice that its malfunction may mislead pilot decisions, trigger unintentionaly FTS apart from unnannuncaited loss of the function. It is requested that the call for tests regarding the "automatic activation" are explicitly included in the MoC. The only ones stated are to test manual mode.	Requested	Noted	Despite the HW/SW not being qualified as part of this MoC the end-to end tests are still applicable for the automatic activation and it is still expected that those tests are conducted to demonstrate the proper functioning of the FTS throughout the expected life of the UAS.
349	COIAE	3.5 FTS Performance	6	"End-to end activation tests performed in laboratory"	External positioning services and communications and their criticality, such as GNSS signal, normally used to provide geo-caging (performed by the Pilot) functionality and Containment are not considered in this MoC. It is requested to demand annunciated failure detection and degradation of the positioning system and communications; and manual and automatic contingency plans as part of the Containment strategy (user's manual) implemented in the independent system.	Requested	Noted	Despite the HW/SW not being qualified as part of this MoC the end-to end tests are still applicable for the automatic activation and it is still expected that those tests are conducted to demonstrate the proper functioning of the FTS throughout the expected life of the UAS.

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350	Nathanel Apter (UASolutions)	3.5 FTS Performance	6	Among other technical requirements, the MoC requires that "the FTS should never be subject of inadvertent activation".	Include explicit indications that this requirement is considered satisfied if no inadvertent failures happen during the whole test campaign. Additionally, if not possible for this revision, prepare an update of the MoC in order to accept communications based on cellular network technologies.	Requested	Partially accepted	Sentence removed from text. Inadvertent activations should be recorded.
351	AustroControl	3.5 FTS Performance	6	FTS initial tests: Please provide clear definition of "proper" (e.g. proper functioning, proper procedure, etc.). The test should verify a defined set of requirements (qualitative or quantitative). Critically, applicants may not be able to judge the scope of this process as regards time and costs.			Accepted	The section has been reworded to better define the tests to be expected here.
352	AustroControl	3.5 FTS Performance	6	flight test: 900g limit should only be written as “GM”, even a 2kg device has a relatively low chance of causing considerable damage to involved persons. Also consider that the people in close proximity may be sheltered.			Noted	A typical UAS of 900g has a pre-impact KE of about 180 Joules and such energy has been associated with 30% AIS3+. The danger for third parties is therefore contained. EASA has retained 900 grams to have a quantitative justification.
353	AustroControl	3.5 FTS Performance	6	General comment on the use of "never" on the flight testing process: It does not seem appropriate to set the limit of inadvertent activations or other items at "never". Consider that the system may be still in development or an external influence, which may not mirror the conditions to be expected during actual operation could lead to failure of the system. The limited amount of tests to be undertaken would result in a (too) small sample size, which may not give sufficient proof of safe/unsafe operation. Also consider that inadvertent activation may be acceptable if the FTS is linked with a parachute system.			Accepted	Sentence removed from text

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354	DGAC	3.5 FTS Performance	6	The sentence “The number of activations (triggering of the termination means and observation of proper operation) should be equal to the number of expected operations of the UAS for its entire life” in itself could be misinterpreted as a requirement to simulate operation of the FTS, as if it was triggered in flight (i.e. with full electrical load, pyrotechnic activation if any, etc…), for as many times the UAS is expected to be operated for its entire life, i.e. the number of expected flights (+ scatter factor of 2). This would be very severe as it corresponds to simulating in flight activation of the FTS for every flight. Fortunately, the text in parenthesis clarifies that the intent is to simulate the normal operation of the FTS (pre-flight checks, maintenance checks) as expected for the entire life of the UAS + scatter factor of 2.	We suggest to slightly rephrase for better clarity.	Recommended;	Accepted	The sentence has been modified and it is now clear that the number of tests is contained.
355	Alejandro del Estal (Rigi Technologies SA)	3.5 FTS Performance	6	Among other technical requirements, the MoC requires that "the FTS should never be subject of inadvertent activation".	Include explicit indications that this requirement is considered satisfied if no inadvertent failures happen during the whole test campaign. Additionally, if not possible for this revision, prepare an update of the MoC in order to accept communications based on cellular network technologies.	Requested	Accepted	Sentence removed from text
356	FlyingBasket (Marta Cejuela - HO AW&Safety Manager)	3.5 FTS Performance	6	Adequate performance of the FTS should be checked by test as in the following FTS initial tests Ground integration tests after installation of the FTS on the UA Flight test End-to end activation tests performed in laboratory	Provide a guidance / recommendation in terms of number of expected test to comply with the FTS reliabiilty data and the conversion of any subset of ground, flight and laboratory test	Recommended	Partially accepted	In order to allow the MoC to be used for declaration, the tests section has been modified to explicitly refer to a minimum number of tests to be carried out (bench, integration, flight and end-to-end). No conversion of subset of tests is anymore expected.
357	Dronus	3.5 FTS Performance	6	«The number of activations (triggering of the termination means and observation of proper operation) should be equal to the number of expected operations of the UAS for its entire life (accounting for pre-flight checks, maintenance check, return to service check) multiplied by a scattering factor of 2». It is not so clear why the capability of the termitation means is linked with the number of operations of the UAS.	Explicit why the termination means capability is linked with the number of UAS operations.	Reccomended	Partially accepted	The MoC is requesting to have a pre-flight check of the FTS before the first flight of the day. This implies that the FTS is activated at least once every time the UAS is being operated. The end-to-end tests have been reformulated to provide clarity and the number is now contained (the scatter factor has not been considered necessary)

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358	Dronus	3.5 FTS Performance	6	«The number of activations (triggering of the termination means and observation of proper operation) should be equal to the number of expected operations of the UAS for its entire life (accounting for pre-flight checks, maintenance check, return to service check) multiplied by a scattering factor of 2». Assuming an MTBF = 105 hours, and a mission on average of 20 minutes, this means 3 x 105 expected operations, so 6 x 105 activations. This would be very severe.	Explain with an example how to derive the number of tests.	Requested	Partially accepted	The text was modified to clarify the number of tests to be linked to the number of expected activations of the FTS and not linked anymore to the number of FH of the UAS.
359	Dronus	3.5 FTS Performance	6	«The number of activations (triggering of the termination means and observation of proper operation) should be equal to the number of expected operations of the UAS for its entire life (accounting for pre-flight checks, maintenance check, return to service check) multiplied by a scattering factor of 2». If the manufacturer assumes a certain number of flights and termination means is consequently tested, when the UAV reaches in its operative life such number of flight, it can't flight anymore. Is this correct ?	Explain what happens if the number of actual operations is bigger than the number of assumed ones.	Requested	Noted	The expected maximum number of FTS activations should be reflected in the FTS-UAS documentation and a maintenance action (i.e. FTS replacement) should take place if that condition is reached. The MoC has been revised to clarify these elements.
360	Wingcopter	3.5 FTS Performance	6	FTS initial test: The MoC does not provide enough details on the expected laboratory tests to be performed. This may range from simple functional tests performed under laboratory conditions up to laboratory tests with large efforts according to aerospace standards. This variety should be reduced by further guidance of the MoC.	Provide reference to test standards and / or kind of tests that shall be performed, e.g. EMC tests, vibration tests etc. or standards describing specific test procedures. Furthermore, provide information if internal laboratories or only accredited labs shall be used for testing.	Requested	Partially accepted	The initial tests have been renamed as "bench" test to better capture the nature and purpose pursued here. No need for consideration of EMC tests or vibration, the MoC aims for a simple solution which would credit for "only" 10-2 probability of failure of the FTS.
361	Wingcopter	3.5 FTS Performance	6	Flight test: Flight test description for means of compliance are very generic and do not provide a proper set of information to perform flight tests. MoC shall contain more information about flight test conditions like speed (range), expected environmental / weather condition, payload used / not used, flight segment etc.	Provide more information about conditions in which flight tests shall be performed like speed (range), expected environmental / weather condition, payload used / not used, flight segment etc. or refer to existing standard that shall be used for tests. In addition, describe if one or more tests are required.	Requested	Accepted	The flight test section has been amended to specify the number and conditions of tests needed. In principle, weather, payload or other considerations have not being considered necessary for these tests.
362	Wingcopter	3.5 FTS Performance	6	End-to-end activation tests: For flight tests it is specified that electronic means can be used instead of real FTS activation to ensure non-desctructive testing. Although it is written that the same UA shall be used for tests, it is unclear if the same eletronic / digital means can be used for these ground tests as well. In addition, details on the required environment / test labs are missing.	Please provide further guidance if electronic / digital means can be used for FTS activation testing as described for flight tests. In addition, please provide additional information which kind of laboratory is expected to be used for the tests.	Requested	Noted	There is no intention to imply that end to end tests might have to be destructive. Laboratory and instrumentation is left to the responsibility of the company. It should be noted that such information should be tracked and, where a pure declaration would not be accepted, it would be checked.

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363	Laurent PERCHAIS (Dronisos)	3.5 FTS Performance	6	End To End activation Test is adapted to UAV flying few operations a year. Our case each UAV probably flies 50 times a year for 3 years making the number of test hit almost 1000 for each UAV among our fleet of 3000 UAV…	set a limit to 50 tests per FTS on the Ground	Recommended;	Partially accepted	The MoC is requesting to have a pre-flight check of the FTS before the first flight of the day. This implies that the FTS is activated at least once every time the UAS is being operated. The end-to-end tests have been reformulated to provide clarity and the number is now contained (the scatter factor has not been considered necessary)
364	senseFly	3.5 FTS Performance	6	The term "laboratory" is not clear. We don't know if it can be a test campain realized by the manufacturer or if an external laboratory or a notified body has to be used.	It should be clarified and FTS manufacturer should have the possibility to prove it by internal testing.	Requested	Accepted	The term "laboratory" has been substituted by "bench" tests. The intention was that the tests were performed previously to be installed in the UAS in a controlled environment.
365	senseFly	3.5 FTS Performance	6	Footnote 19# A threshold has been set at 900g to request flight test. Clarification on this threshold would be helpful. If it is for injury risk. Heavier drone with frangible design or drone with M2 mitigation (-1, -2) shoud be exempted from flight testing as well.	We suggest modifying this note according to the comment.	Requested	Noted	The threshold for 900g is based on evidence available that the energy transferred by such small UAS would not cause a fatality. The consideration of mitigations is not within the scope of this MoC and other MoCs are being prepared for these elements.
366	RPAS Finland ry	3.5 FTS Performance	6	This section addresses specifically the FTS performance although this performance is not expressed. It is advised to express the expected performance to be demonstrated by the applicant by referring to the TLOS / probability of exiting the operational volume (which should be lower than 10-4/FH) and requesting a demonstration at UAS level (not at the FTS level).	Explicit the expected performance to be demonstrated by the applicant by referring to the TLOS / probability of exiting the operational volume (which should be lower than 10-4/FH) and requesting a demonstration at UAS level (not at the FTS level)		Partially accepted	Compliance with the MoC will credit the FTS with a 10-2/FH performance.
367	RPAS Finland ry	3.5 FTS Performance	6	It seems that the FTS performance is requested to be demonstrated by test, although it may make sense for automated systems to take credit of simulations with proven representativeness for the intended purpose	Add the possibility of taking credit of representative simulations to demonstrate the performance of 'means to end the flight'		Not accepted	The aim of the MoC is to have a simple solution which could be the basis for a declaration. Including simulations would not go in line with this objective. The need to prove that the model used for the simulation would replicate the real reliability of the FTS would be far beyond a declarative MoC.
368	RPAS Finland ry	3.5 FTS Performance	6	Comment related to the sentence: “During the tests, all geometries UA – ground antenna expected during operation would need to be tested at the maximum expected distance.” It does not seem reasonable to expect that “all geometries" are tested. Suggest to focus on the most conservative configurations.	Revise the criteria to ask flight tests to consider the most conservative configurations		Accepted	All geometries have been substituted with the aim to cover a representative number of scenarios.
369	RPAS Finland ry	3.5 FTS Performance	6	Comment related to the sentence: “The FTS should never be subject to inadvertent activation.” This is not practical and not risk appropriate; given the adjacent area is higher risk, false positives should be an overall improvement of the safety case (as long as they aren't too large).	Delete the sentence	Requested	Accepted	Sentence removed from text

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370	RPAS Finland ry	3.5 FTS Performance	6	Comment related to the sentence: “The number of activations (triggering of the termination means and observation of proper operation) should be equal to the number of expected operations of the UAS for its entire life (accounting for pre-flight checks, maintenance check, return to service check) multiplied by a scattering factor of 2.” The number of activations should not have to equal the number of expected life cycles of the UA since such means will not be triggered in EVERY flight - a reasonable number should be proposed instead. In addition, stating that the same UA for flight test needs to be tested here will not be practical in a large number of cases.	Propose a reasonable number instead of equaling the expected life cycles of the UA (e.g. draft ASD-STAN prEN 4709-006 is currently proposing 299 tests)		Partially accepted	The wording has been revised.
371	RPAS Finland ry	3.5 FTS Performance	6	Comment related to the sentence: “The tests should be carried out utilizing the UA that has been subject to flight tests (when such tests have been carried out) with FTS installed, utilizing the same FTS activated in flight.” It is not clear why EASA is asking to use the same UA as for flight tests and we are concerned that it may not always be practical. It would be useful to get EASA’s rationale for such a requirement and we would like to propose replacing “should” by “may” to be able to adapt to individual situations.	Advise expliciting rationale for such a requirement and replace “should” by “may” to be able to adapt to individual situations		Partially accepted	The text has been rephrased to reflect that these tests should be carried out using the same FTS-UAS combination subject to previous tests.

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372	JEDA	3.5 FTS Performance	6	The sentence “The number of activations (triggering of the termination means and observation of proper operation) should be equal to the number of expected operations of the UAS for its entire life” in itself could be misinterpreted as a requirement to simulate operation of the FTS, as if it was triggered in flight (i.e., with full electrical load, pyrotechnic activation if any, etc.…), for as many times the UAS is expected to be operated for its entire life, i.e., the number of expected flights (+ scatter factor of 2). This would be very severe as it corresponds to simulating in flight activation of the FTS for every flight. Fortunately, the text in parenthesis clarifies that the intent is to simulate the normal operation of the FTS (pre-flight checks, maintenance checks) as expected for the entire life of the UAS + scatter factor of 2. The sentence “The number of activations (triggering of the termination means and observation of proper operation) should be equal to the number of expected operations of the UAS for its entire life” in itself could be misinterpreted as a requirement to simulate operation of the FTS, as if it was triggered in flight (i.e., with full electrical load, pyrotechnic activation if any, etc.…), for as many times the UAS is expected to be operated for its entire life, i.e., the number of expected flights (+ scatter factor of 2). This would be very severe as it corresponds to simulating in flight activation of the FTS for every flight. Fortunately, the text in parenthesis clarifies that the intent is to simulate the normal operation of the FTS (pre-flight checks, maintenance checks) as expected for the entire life of the UAS + scatter factor of 2.	We suggest to slightly rephrase for better clarity, taking into account that, based on experience, FTS is not in reality activated more than once every 50 flights.	Recommended;	Accepted	Refer to comment 354
373	Abionica Solutions	3.5 FTS Performance	6	"End-to end activation tests performed in laboratory"	These tests proposed do not cover "automatic activation". Given that HW/SW is not qualified, notice that its malfunction may mislead pilot decisions, trigger unintentionally FTS apart from unnannuncaited loss of the function. It is requested that the call for tests regarding the "automatic activation" are explicitly included in the MoC. The only ones stated are to test manual mode.	Requested	Noted	Despite the HW/SW not being qualified as part of this MoC the end-to end tests are still applicable for the automatic activation and it is still expected that those tests are conducted to demonstrate the proper functioning of the FTS throughout the expected life of the UAS.

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374	Abionica Solutions	3.5 FTS Performance	6	"End-to end activation tests performed in laboratory"	External positioning services and communications and their criticality, such as GNSS signal, normally used to provide geo-caging (performed by the Pilot) functionality and Containment are not considered in this MoC. It is requested to demand annunciated failure detection and degradation of the positioning system and communications; and manual and automatic contingency plans as part of the Containment strategy (user's manual) implemented in the independent system.	Requested	Noted	Consideration to geo-caging or any other containment functionalities are outside the scope of the present MoC focused on demonstration of containment with the use of an FTS. Other MoC are still possible.
375	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	3.5 FTS Performance	6	Agree on FTS initial test and ground integration test.			Noted	No comment
376	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	3.5 FTS Performance	6	It is not clear why 900 g drones should be exempted from testing. Antenna masking and other issues may be as much present on smaller drones as larger drones. It depents on the antenna, materials, etc, and does not really relate to the size of the aircraft. Also, the same FTS may be used on drone of varying sizes.	No exemption for smaller aircraft.		Not accepted	An UAS of less than 900g is considered "harmless" as the impact energy which could be achieved with typical speeds has been demonstrated not to reach the potential thresholds to cause any fatality.
377	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	3.5 FTS Performance	6	Under flight test, it says "During the tests, all geometries UA – ground antenna expected during operation would need to be tested at the maximum expected distance". It is not clear what this means. Also, the FTS may be designed independely of the aircraft, and thus cannot be tested for all UA geometries (whatever it is).	If I am understanding the intention correctly, I would suggest something like "For in-flight testing, any allowed configuration of the onboard antenna as well as any allowed configuration of the ground antenna should be demonstrated to allow for maximum distance of activation".		Partially accepted	The reference to "all geometries" was unfortunate and it has been replaced by specific set of flight positions to be tested.
378	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	3.5 FTS Performance	6	"The FTS should never be subject of inadvertent activation". This effectively renders any FTS useless, since no FTS can comply with that.	Revise to "Rate of malfunction that leads to unintended flight termination should be less than 10^-6. This must be quantified through a design appraisal of the FTS."		Partially accepted	Sentence removed from text
379	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	3.5 FTS Performance	6	It is not clear if this MoC allows the FTS to be tested on one type of aircraft and then later used on another type of aircraft. My reading is that this is allowed (which it definitely should be if reliable FTS's are to be developed).	Add a clarifying statement that the FTS can be applied to any type of drone for which the FTS can reasonable be expected to work (i.e. if designed for fixed wing with two motors and a parachute, then it can be used on any fixed with with two motors and a parachute).		Not accepted	This MoC intends to substantiate the FTS when installed on a specific UAS.

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380	Skydio, Inc.	3.5 FTS Performance	6	This section addresses specifically the FTS performance although this performance is not expressed. It is advised to express the expected performance to be demonstrated by the applicant by referring to the TLOS / probability of exiting the operational volume (which should be lower than 10-4/FH) and requesting a demonstration at UAS level (not at the FTS level).	Make the expected performance to be demonstrated by the applicant clear by referring to the TLOS / probability of exiting the operational volume (which should be lower than 10-4/FH) and requesting a demonstration at UAS level (not at the FTS level)	Requested	Partially accepted	Compliance with the MoC will credit the FTS with a 10-2/FH performance.
381	Skydio, Inc.	3.5 FTS Performance	6	It seems that the FTS performance is requested to be demonstrated by test, although it may make sense for automated systems to take credit of simulations with proven representativeness for the intended purpose.	Add the possibility of taking credit of representative simulations to demonstrate the performance of the FTS	Requested	Not accepted	The intention of the MoC is to have a simple and easy to implement solution that could be used for declaration. Allowing simulations as means of compliance would not be in line with the final objective to avoid a design verification by the Agency.
382	Skydio, Inc.	3.5 FTS Performance	6	It does not seem reasonable to expect that “all geometries" are tested. Suggest to focus on the most conservative configurations.	Review the criteria to ask flight tests to consider the most conservative configurations	Requested	Accepted	All geometries have been substituted with the aim to cover a representative number of scenarios.
383	Skydio, Inc.	3.5 FTS Performance	6	“The FTS should never be subject to inadvertent activation.” This is not practical and not risk appropriate; given the adjacent area is higher risk, false positives should be an overall improvement of the safety case (as long as they are not too large).	Delete this sentence	Requested	Accepted	Sentence removed from text
384	Skydio, Inc.	3.5 FTS Performance	6	The number of activations should not have to equal the number of expected life cycles of the UA since such means will not be triggered in EVERY flight - a reasonable number should be proposed instead. In addition, stating that the same UA for flight test needs to be tested here will not be practical in a large number of cases.	Propose a reasonable number instead of equaling the expected life cycles of the UA (e.g. draft ASD-STAN prEN 4709-006 is currently proposing 299 tests)	Requested	Partially accepted	The text has been revised.
385	Skydio, Inc.	3.5 FTS Performance	6	It is not clear why EASA is asking to use the same UA as for flight tests and we are concerned that it may not always be practical. It would be useful to get EASA’s rationale for such a requirement and we would like to propose replacing “should” by “may” to be able to adapt to individual situations.	The rationale behind such a requirement is requested and it is suggested replacing “should” by “may” to be able to adapt to individual situations	Requested	Partially accepted	The text has been rephrased to reflect that these tests should be carried out using the same FTS-UAS combination subject to previous tests.
386	THALES	3.5 FTS Performance	6	"If the FTS, during real operation, is activated from the ground, ground test should be such to...in the real operational case": In practical, this will probably be not feasable in most cases and will therefore be tested in Flight.	Remove this sentence	Recommended;	Accepted	Sentence removed from text

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387	Wing Aviation	3.5 FTS Performance	6	This section addresses specifically the FTS performance although this performance is not expressed. It is advised to express the expected performance to be demonstrated by the applicant by referring to the TLOS / probability of exiting the operational volume (which should be lower than 10-4/FH) and requesting a demonstration at UAS level (not at the FTS level).	Explicit the expected performance to be demonstrated by the applicant by referring to the TLOS / probability of exiting the operational volume (which should be lower than 10-4/FH) and requesting a demonstration at UAS level (not at the FTS level)		Partially accepted	Compliance with the MoC will credit the FTS with a 10-2/FH performance. Refer also to answer to comment 122.
388	Wing Aviation	3.5 FTS Performance	6	It seems that the FTS performance is requested to be demonstrated by test, although it may make sense for automated systems to take credit of simulations with proven representativeness for the intended purpose.	Add the possibility of taking credit of representative simulations to demonstrate the performance of the FTS		Not accepted	The aim of the MoC is to have a simple solution which could be the basis for a declaration. Including and accepting simulations would not go in line with this objective. Other means of demonstration of compliance with 2511 are possible and could be proposed by any organization.
389	Wing Aviation	3.5 FTS Performance	6	Comment related to the sentence: “During the tests, all geometries UA – ground antenna expected during operation would need to be tested at the maximum expected distance.” It does not seem reasonable to expect that “all geometries" are tested. Suggest to focus on the most conservative configurations.	Revise the criteria to ask flight tests to consider the most conservative configurations		Accepted	All geometries have been substituted with the aim to cover a representative number of scenarios.
390	Wing Aviation	3.5 FTS Performance	6	Comment related to the sentence: “The FTS should never be subject to inadvertent activation.” This is not practical and not risk appropriate; given the adjacent area is higher risk, false positives should be an overall improvement of the safety case (as long as they aren't too large).	Delete this sentence		Accepted	Sentence removed from text
391	Wing Aviation	3.5 FTS Performance	6	Comment related to the sentence: “The number of activations (triggering of the termination means and observation of proper operation) should be equal to the number of expected operations of the UAS for its entire life (accounting for pre-flight checks, maintenance check, return to service check) multiplied by a scattering factor of 2.” The number of activations should not have to equal the number of expected life cycles of the UA since such means will not be triggered in EVERY flight - a reasonable number should be proposed instead. In addition, stating that the same UA for flight test needs to be tested here will not be practical in a large number of cases.	Propose a reasonable number instead of equaling the expected life cycles of the UA (e.g. draft ASD-STAN prEN 4709-006 is currently proposing 299 tests)		Accepted	The wording has been revised.

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392	Wing Aviation	3.5 FTS Performance	6	Comment related to the sentence: “The tests should be carried out utilizing the UA that has been subject to flight tests (when such tests have been carried out) with FTS installed, utilizing the same FTS activated in flight.” It is not clear why EASA is asking to use the same UA as for flight tests and we are concerned that it may not always be practical. It would be useful to get EASA’s rationale for such a requirement and we would like to propose replacing “should” by “may” to be able to adapt to individual situations.	Advise explicating rationale for such a requirement and replace “should” by “may” to be able to adapt to individual situations		Partially accepted	The text has been rephrased to reflect that these tests should be carried out using the same FTS-UAS combination subject to previous tests.
393	FPDC	3.5 FTS Performance	6	The sentence “The number of activations (triggering of the termination means and observation of proper operation) should be equal to the number of expected operations of the UAS for its entire life” in itself could be misinterpreted as a requirement to simulate operation of the FTS, as if it was triggered in flight (i.e., with full electrical load, pyrotechnic activation if any, etc.…), for as many times the UAS is expected to be operated for its entire life, i.e., the number of expected flights (+ scatter factor of 2). This would be very severe as it corresponds to simulating in flight activation of the FTS for every flight. Fortunately, the text in parenthesis clarifies that the intent is to simulate the normal operation of the FTS (pre-flight checks, maintenance checks) as expected for the entire life of the UAS + scatter factor of 2.	We suggest to slightly rephrase for better clarity, taking into account that, based on experience, FTS is not in reality activated more than once every 50 flights.	Recommended;	Accepted	Refer to comment 354
394	Maurizio Bernard (Leonardo)	3.5 FTS Performance	6	"utilizing the UA that has been subject to flight tests" in section "End-to end activation tests performed in laboratory" Conditions for interchangeability of FTS and UA should be better explained.	A proposed necessary condition could be that (i) both FTS and UA have passed flight tests (therefore assessing proper function in real conditions) [ii] the FTS and UA configuration used for laboratory tests have previously passed the ground integration tests after installation (configuration specific validation)		Partially accepted	The text has been rephrased to reflect that these tests should be carried out using the same FTS-UAS combination subject to previous tests.
395	Maurizio Bernard (Leonardo)	3.5 FTS Performance	6	"multiplied by a scattering factor of 2." in section "End-to end activation tests performed in laboratory" When tests are carried out to demonstrate reliability of an item for its life cycle, the number of successful tests to be performed is based on the target reliability figures, usually expressed in terms of probability and confidence level.	Factor 2 should be better justified.		Partially accepted	The intention of these tests is to assess the proper functioning of the FTS throughout the life of the UAS. It is therefore not expected that these tests are carried out with different units but one reaching the necessary number of activations. The tests have been clarified and the number of activations expected is now contained.

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396	Maurizio Bernard (Leonardo)	3.5 FTS Performance	6	"maximum expected distance" in section "flight tests" Besides free space loss effect in nominal conditions, the worst case for link performance might occur at a distance that is different than maximum range, which is the target condition used for optimization of antenna features and integration.	Distances of 3/4 and/or 3/5 of maximum range should also be tested in order to address possible non uniform performance related to different wave harmonics. This could also be used to address a different performance level at maximum distance, which is not a recurring operational condition, therefore not the most representative of intended use.		Accepted	Specific flight tests introduced as per proposal.
397	Maurizio Bernard (Leonardo)	3.5 FTS Performance	6	"all geometries UA – ground antenna expected during operation" in section "flight tests" considers UA attitude and UA-CU relative positions	Geometries relevant for link (in case of manual FTS activation) and for dynamics following FTS activation should be further specified. Possible geometries shall address off-nominal conditions, because FTS activation is an emergency feature and no credit from flight envelope can be accepted.		Partially accepted	The reference to "all geometries" has been replaced by specific set of flight positions to be tested.
398	Maurizio Bernard (Leonardo)	3.5 FTS Performance	6	"The FTS should never be subject of inadvertent activation" in section "flight tests" is excessive and non-proportionate. Fail criteria should be defined including tolerance. Fail criterion and reliability for inadvertent activation might be different (lower) wrt FTS activation, given the specific scenarios (e.g. controlled ground areas in operational volume).	A safety analysis should define the reliability figures for the event of inadvertent activation of FTS (assumed low in controlled ground areas, that typically induce enhanced containment requirements, as per STS-01). Fail criterion should be specified.		Accepted	The reference to "inadvertent activation" of the FTS has been removed from the MoC.
399	Maurizio Bernard (Leonardo)	3.5 FTS Performance	6	Section "FTS initial tests". This test phase is optional and could be performed directly on the UA integrated FTS.	Add the proposed sentence to allow the option of performing ground integration tests directly, with no deviation from the acceptable procedure.		Not accepted	It is considered necessary to perform a minimum qualification of the equipment by bench test before installation/integration.
400	EUSC-IT	3.5 FTS Performance	6	The sentence “The number of activations (triggering of the termination means and observation of proper operation) should be equal to the number of expected operations of the UAS for its entire life” in itself could be misinterpreted as a requirement to simulate operation of the FTS, as if it was triggered in flight (i.e., with full electrical load, pyrotechnic activation if any, etc.…), for as many times the UAS is expected to be operated for its entire life, i.e., the number of expected flights (+ scatter factor of 2). This would be very severe as it corresponds to simulating in flight activation of the FTS for every flight. Fortunately, the text in parenthesis clarifies that the intent is to simulate the normal operation of the FTS (pre-flight checks, maintenance checks) as expected for the entire life of the UAS + scatter factor of 2.	We suggest to slightly rephrase for better clarity, taking into account that, based on experience, FTS is not in reality activated more than once every 50 flights.	Recommended;	Partially accepted	The MoC is requesting to have a pre-flight check of the FTS before the first flight of the day. This implies that the FTS is activated at least once every time the UAS is being operated. The end-to-end tests have been reformulated to provide clarity and the number is now contained (the scatter factor has not been considered necessary)

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401	UAAI	3.5 FTS Performance	6	The sentence “The number of activations (triggering of the termination means and observation of proper operation) should be equal to the number of expected operations of the UAS for its entire life” in itself could be misinterpreted as a requirement to simulate operation of the FTS, as if it was triggered in flight (i.e., with full electrical load, pyrotechnic activation if any, etc.…), for as many times the UAS is expected to be operated for its entire life, i.e., the number of expected flights (+ scatter factor of 2). This would be very severe as it corresponds to simulating in flight activation of the FTS for every flight. Fortunately, the text in parenthesis clarifies that the intent is to simulate the normal operation of the FTS (pre-flight checks, maintenance checks) as expected for the entire life of the UAS + scatter factor of 2.	We suggest to slightly rephrase for better clarity, taking into account that, based on experience, FTS is not in reality activated more than once every 50 flights.	Recommended;	Accepted	Refer to comment 354
402	ESG	3.5 FTS Performance	6	Flight tests How many? Would for an initial assessment by the manufacturer 90% reliability with 68% confidence (1-sigma) =14 flights (tbc) be sufficient? Can those flight tests be done with a fleet?	Clarify		Accepted	The flight test section has been amended to specify the number and conditions of test needed. In principle, considerations of weather, payload, or other conditions have not been considered necessary for these tests.
403	ESG	3.5 FTS Performance	6	End-to end activation tests performed in laboratory How man? Would for an initial assessment by the manufacturer 99% reliability with 95% confidence (3-sigma) = 299 flights (tbc) be sufficient? Can those be done with several samples in parallel? What should be the spread of conditions / ensembles?	Clarify		Partially accepted	The intention of these tests is to assess the proper functioning of the FTS throughout the life of the UAS. It is not expected that these tests are carried out with different units but one reaching the necessary number of activations.
404	LBA (NAA) Germany	3.5 FTS Performance	6	General comment: A description on how one can determine the given amount of tests based on system reliability and the target level of safety for the SORA process is missing.	-	Recommended;	Accepted	The comment has been taken into consideration and the sections reflecting the different tests do now reflect the expected number of tests to be carried out for the demonstration.

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405	LBA (NAA) Germany	3.5 FTS Performance	6	MoC: If the FTS, during real operation, is activated from ground, ground test should be such to already test the maximum operational distance of the UA from the antenna transmitting the command of flight termination. Comment: Pure ground tests are not meaningful to determine the maximum operational distance between the ground equipment for FTS and the UAS. The distance measured on the ground will be much lower than with the UAS in flight. This is usually caused by obstacles or reflections on the ground. The FTS system should work when the UAS is flying and the maximum operational distance should be measured in flight. How should such tests be conducted? Does EASA support here in any way? Does a member state need to issue an operational authorization to the manufacturer for an area where no enhanced containment is necessary, so that the manufacturer can test enhanced containment?	Propose to rephrase and recommend flight tests to determine the maximum operational range of the FTS.	Requested	Accepted	The test sections have been reformulated to include the number of tests to be carried out for each section.
406	LBA (NAA) Germany	3.5 FTS Performance Flight test	6	MoC: Flight tests are not considered necessary for very small UAS 19, since in this case ground risk is anyway contained and antenna masking effects are not expected. Footnote 19: A threshold of 900 g is proposed. Comment: We neither agree with the proposal that flight tests are not necessary for small UAS, nor with the footnote that defines a threshold for small UAS of 900g. This mass was likely taken from the subcategory A1 in the open category, that partially allows operation over uninvolved persons (explicitly allowed only below 250g). However, this is not relevant here as enhanced containment is a general requirement of the SORA process and does not distinguish between small and large UAS. There are also cases where very small UAS pose a significant ground risk, like operations over assemblies of people (not allowed in the open category). In compliance with the SORA ground risk table, operating a small UAS over assemblies of people is a high risk operation (GRC=7 or 8, SAIL VI or certified category without mitigations). The description here is contradictive, as it imposes that ground risk of small UAS is negligible.	Propose to rephrase and make flight tests also necessary for small UAS. Delete footnote 19.	Requested	Not accepted	A typical UAS of 900g has a pre-impact KE of about 180 Joules and such energy has been associated with 30% AIS3+. The danger for third parties is therefore contained. It should be noted that other comments take a different direction, advocating higher weight threshold to not require flight tests. In that case, EASA did not agree to increase the threshold.

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407	LBA (NAA) Germany	3.5 FTS Performance End-to end activation tests performed in laboratory	6	MoC: These tests address the capability of the termination means to ensure its potential operation for the life cycle of the UA. The number of activations (triggering of the termination means and observation of proper operation) should be equal to the number of expected operations of the UAS for its entire life (accounting for pre-flight checks, maintenance check, return to service check) multiplied by a scattering factor of 2. Comment: This phrase states that two end-to-end activation tests of the FTS should be conducted for each expected operation of the UAS. This implies that on average, the FTS would be triggered more than once in each flight. The FTS is an emergency system and SORA Step #9 enhanced containment already requests that the probability of leaving the operational volume is below 10^-4/FH. That means that the FTS system would only be triggered once every 10,000 FH. For a typical lifetime of a UAS, the FTS system might never be triggered at all. Requesting two end-to-end activation tests per expected operation of the UAS is highly exaggerated.	Reduce the required number of tests to a value that takes into account the probability of FTS activation, and the operational life of the UAS.	Requested	Accepted	This section has been corrected so that the probability of FTS activation is taken into consideration.
408	LBA (NAA) Germany	3.5 FTS Performance End-to end activation tests performed in laboratory	6	MoC: The tests should be carried out utilizing the UA that has been subject to flight tests (when such tests have been carried out) with FTS installed, utilizing the same FTS activated in flight. Comment: One might reasonably expect that after a flight test of the FTS, either the UAS, or the FTS, or both are severely damaged or destroyed. It is not meaningful to use the same UAS with the same FTS for laboratory end-to-end activation tests after the flight tests. Parts of the FTS and/or UAS might not function properly after a crash. The possible damage to the UAS and FTS will bias the laboratory tests and make the results unusable.	Rephrase: The tests should be carried out utilizing the same UA model that was subject to flight tests (when such tests have been carried out) with FTS installed, utilizing the same FTS model as activated in flight.	Recommended;	Partially accepted	The text has been rephrased to reflect that these tests should be carried out using the same FTS-UAS combination subject to previous tests.
409	LBA (NAA) Germany	3.5 FTS Performance End-to end activation tests performed in laboratory		"The FTS should never be subject of inadvertent activation." Actually, activating FTS is considered an emergency and also a loss of control of operation state in the SORA semantic model. The total activation rate of FTS should be in the same order of magnitude as the loss of control expectation for the SAIL. Advertent or inadvertent activation has no negative safety effect as long as the total activation rate is sufficiently low.	"The FTS should be designed to reduce the possibility of inadvertent activation to an appropriate rate with respect to the SAIL of the operation."	Requested	Partially accepted	It has been preferred to request the recording during operation of the un-commanded activations, as track of in-service reliability

3.6 Flight manual procedure

Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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410	AZUR DRONES	3.6 Flight manual procedure		Comment related to the sentence: “At least one on-ground test of the FTS installed on the UAS needs to be carried out before each UAS operation" This is a very prescriptive requirement, which in the case of the use of a parachute could have severe counter safety effects. In the case of a parachute, this would indeed mean having to repack the parachute before every flight; this introduces the risk of human/operator errors and is most probably not economically viable for many operations (repacking a parachute and QA checks could take a significant amount of time). Also, this would mean that the remote pilot puts all the controls in a command crash state, left in this configuration, it may result in accident activation. There should be checks that the system is operational (but it could be very simple/easy, like a link check vs. a forced activation).	Replace with the need to have means to check that the system is operational	Requested	Partially accepted	The need for the remote pilot to have means to detect if the FTS is not available has been introduced. The necessary check for dormant failure (pre-flight check) is still maintained.
411	Nathanel Apter (UASolutions)	3.6 Flight manual procedure	7	"At least one on-ground test of the FTS installed on the UAS needs to be carried out before each UAS operation, with method and timing as indicated by the flight manual." Some UAS have a flight time of about 10 min and take-off and land frequently in normal operation (for instance in agriculture). A usage of the FTS every 10 min leads to 6 activation an hour and 600 for a hundred flight hours which is disproportionate to ensure a correct functionality of 1E-2/FH. Furthermore such frequent testing might affect the ESC and motors of the UAS and decrease the reliability of those components. Some manufacturer provide a LED system on the ground element to monitor the battery status of the command and the signal reception from the air segment which should be sufficient to perform a pre-flight check. To ensure a reliability of 1E-2/FH, testing of the functionality every 10 hours should be sufficient.	Amend the text as follow: " At least one on-ground test of the FTS installed on the UAS needs to be carried in a periodic maintenance as defined by the manufacturer or at least every 10 flight hours." This text could also just be included in 3.7 Maintenance Instructions and removed from 3.6.	Requested	Partially accepted	The text has been amended to request "At least one pre-flight test (on-ground) of the FTS installed on the UAS needs to be carried out before the first flight of the day on a given site of operation".
412	AustroControl	3.6 Flight manual procedure	7	Flight manual procedure: While testing directly before the flight makes sense, questions arise in the reversibility of some FTSs (e.g. parachute systems with detonators / parts that have to be exchanged after deployment / parts that need careful maintenance after activation).			Accepted	When the FTS is associated with means to reduce impact dynamics (i.e. a parachute), the deployment of such means should be avoided for the pre-flight check provided that all elements contributing to proper functioning of the FTS are tested.

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413	DGAC	3.6 Flight manual procedure	7		Include management of FTS loss (low battery or low signal)	Recommended;	Accepted	The need for the remote pilot to have means to detect if the FTS is not available has been introduced. This element in combination with the pre-flight check should cover the situation presented.
414	Alejandro del Estal (Rigi Technologies SA)	3.6 Flight manual procedure	7	"At least one on-ground test of the FTS installed on the UAS needs to be carried out before each UAS operation, with method and timing as indicated by the flight manual." Some UAS have a flight time of about 10 min and take-off and land frequently in normal operation (for instance in agriculture). A usage of the FTS every 10 min leads to 6 activation an hour and 600 for a hundred flight hours which is disproportionate to ensure a correct functionality of 1E-2/FH. Furthermore such frequent testing might affect the ESC and motors of the UAS and decrease the reliability of those components. Some manufacturer provide a LED system on the ground element to monitor the battery status of the command and the signal reception from the air segment which should be sufficient to perform a pre-flight check. To ensure a reliability of 1E-2/FH, testing of the functionality every 10 hours should be sufficient.	Amend the text as follow: " At least one on-ground test of the FTS installed on the UAS needs to be carried in a periodic maintenance as defined by the manufacturer or at least every 10 flight hours." This text could also just be included in 3.7 Maintenance Instructions and removed from 3.6.	Requested	Partially accepted	The text has been amended to request "At least one pre-flight test (on-ground) of the FTS installed on the UAS needs to be carried out before the first flight of the day on a given site of operation".
415	RPAS Finland ry	3.6 Flight manual procedure		Comment related to the sentence: “At least one on-ground test of the FTS installed on the UAS needs to be carried out before each UAS operation" This is a very prescriptive requirement, which in the case of the use of a parachute could have severe counter safety effects. In the case of a parachute, this would indeed mean having to repack the parachute before every flight; this introduces the risk of human/operator errors and is most probably not economically viable for many operations (repacking a parachute and QA checks could take a significant amount of time). Also, this would mean that the remote pilot puts all the controls in a command crash state, left in this configuration, it may result in accident activation. There should be checks that the system is operational (but it could be very simple/easy, like a link check vs. a forced activation).	Replace with the need to have means to check that the system is operational		Partially accepted	The text have been amended to request "At least one pre-flight test (on-ground) of the FTS installed on the UAS needs to be carried out before the first flight of the day on a given site of operation". When the FTS is associated with means to reduce impact dynamics (i.e. a parachute), the deployment of such means should be avoided for the pre-flight check provided that all elements contributing to proper functioning of the FTS are tested. The need for the remote pilot to have means to detect if the FTS is not available has been introduced.
416	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	3.6 Flight manual procedure	7	Agree			Noted	No comment

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Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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417	Skydio, Inc.	3.6 Flight manual procedure	7	“At least one on-ground test of the FTS installed on the UAS needs to be carried out before each UAS operation" This is a very prescriptive requirement, which in the case of the use of a parachute could have severe counter safety effects. In the case of a parachute, this would indeed mean having to repack the parachute before every flight; this introduces the risk of human/operator errors and is most probably not economically viable for many operations (repacking a parachute and QA checks could take a significant amount of time). Also, this would mean that the remote pilot puts all the controls in a command crash state, left in this configuration, it may result in accident activation. There should be checks that the system is operational (but it could be very simple/easy, like a link check vs. a forced activation).	Replace with the need to have "means to check that the system is operational"	Requested	Partially accepted	The text have been amended to request "At least one pre-flight test (on-ground) of the FTS installed on the UAS needs to be carried out before the first flight of the day on a given site of operation". When the FTS is associated with means to reduce impact dynamics (i.e. a parachute), the deployment of such means should be avoided for the pre-flight check provided that all elements contributing to proper functioning of the FTS are tested. The need for the remote pilot to have means to detect if the FTS is not available has been introduced.
418	Wing Aviation	3.6 Flight manual procedure	6	Comment related to the sentence: “At least one on-ground test of the FTS installed on the UAS needs to be carried out before each UAS operation" This is a very prescriptive requirement, which in the case of the use of a parachute could have severe counter safety effects. In the case of a parachute, this would indeed mean having to repack the parachute before every flight; this introduces the risk of human/operator errors and is most probably not economically viable for many operations (repacking a parachute and QA checks could take a significant amount of time). Also, this would mean that the remote pilot puts all the controls in a command crash state, left in this configuration, it may result in accident activation. There should be checks that the system is operational (but it could be very simple/easy, like a link check vs. a forced activation).	Replace with the need to have means to check that the system is operational		Partially accepted	The text have been amended to request "At least one pre-flight test (on-ground) of the FTS installed on the UAS needs to be carried out before the first flight of the day on a given site of operation". When the FTS is associated with means to reduce impact dynamics (i.e. a parachute), the deployment of such means should be avoided for the pre-flight check provided that all elements contributing to proper functioning of the FTS are tested. The need for the remote pilot to have means to detect if the FTS is not available has been introduced.
419	Maurizio Bernard (Leonardo)	3.6 Flight manual procedure	7	"At least one on-ground test of the FTS installed on the UAS needs to be carried out before each UAS operation," It is not clear if it is necessarily a pre-flight test (to be repeated before each flight, at start location) or it can be performed only once before first flight.	It should be clarified if the intent is validating a UA-FTS configuration before entry into operation. This can be performed way before flight activity, soon after FTS-UA integration. In this case it should be specified that ground test is to be repeated in case of major events or maintenance. If this test is meant as a pre-flight test, it should be more clearly specified. In this case, limitations related to one-time-activation FTS should be addressed (e.g. single shot battery/capacitor, not reversible mechanical features).		Partially accepted	The text have been amended to request "At least one pre-flight test (on-ground) of the FTS installed on the UAS needs to be carried out before the first flight of the day on a given site of operation". When the FTS is associated with means to reduce impact dynamics (i.e. a parachute), the deployment of such means should be avoided for the pre-flight check provided that all elements contributing to proper functioning of the FTS are tested. The need for the remote pilot to have means to detect if the FTS is not available has been introduced.

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Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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420	LBA (NAA) Germany	3.6 Flight Manual Procedure	7	MoC: At least one on-ground test of the FTS installed on the UAS needs to be carried out before each UAS operation, with method and timing as indicated by the flight manual. This test is dedicated to minimize the possibility of latent failures. If the test fails the FTS needs to be replaced before next flight, and re-tested. Comment: This is highly exaggerated for an emergency component, and unrealistic from an operational point of view. Take a case where an FTS uses an add-on parachute. One would need to shoot the parachute before each operation, repack and reinstall it. This poses a significant amount of work on the operator, will decrease the overall lifetime of the FTS, and result in much higher costs. For several systems, this might not be possible at all. Take parachute systems that are launched pneumatic as an example. They usually need to be sent to the manufacturer for repacking. How should an operator test the system before each operation?	Propose to delete the paragraph and recommend regular maintenance of the FTS as part of the UAS maintenance program.	Requested	Partially accepted	There is a need to identify dormant failures of the FTS. Anyway, clarity has been provided on how to implement the pre-flight checks specially when linked to means to reduce the impact enegy such as a parachute.

3.7 Maintenance instruction

Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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421	SAFRAN	3.7 Maintenance Instruction	7	MoC reads: "The check consists in the application of the formula below whenever an FTS failure during operation is observed: (Number of FTS failure at fleet level) x 4.718 x (Average operation time) / (Fleet total flight time) < 1E-2"	For information, is there some reference material for this formula?		Partially accepted	The maintenance instructions section has been reformulated. The formula has been substituted by the need to record a series of events.
422	SAFRAN	3.7 Maintenance Instruction	7	MoC reads: "In case the above condition is not met at any point in time of the fleet life, this needs to be reported to the authorizing authority as the FTS would not feature the expected performance."	For this monitoring to be representative, this check should then be performed by the FTS manufacturer, using in-service occurrences collected from operators. Is there an obligation for UAS manufacturers to account for in-service occurences to the EASA (when it is not a DOA)?		Partially accepted	The maintenance instructions section has been reformulated. The formula has been substituted by the need to record a series of events.
423	AZUR DRONES	3.7 Maintenance Instruction		Which is the “authorizing authority” mentioned in the last paragraph?	Please specify.	Requested	Noted	The authorizing authority mentioned in this paragraph is the authority issuing the operational authorisation. This sentence has been removed from the document.
424	AustroControl	3.7 Maintenance Instruction	7	Maintenance Instruction: The formula is interesting but will likely suffer from the law of small numbers. Propose to include a passus so that EASA can either release or include a statistical method compared with a representative sample criteria.			Accepted	The maintenance instructions section has been reformulated. The formula has been substituted by the need to record a series of events.
425	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	3.7 Maintenance Instruction	7	The term "FTS failure" is unclear. Does this include a turned off radio during pre-flight testing etc, or only in-flight failures where either a termination occurred inadvertantly or no termination occurred when requested. It should be the latter, since for instance loss of ground radio for the FTS is not a safety hazard.	Insert a footnote that clarifies that "FTS failure" means either that termination occurred when it was not requested, or that no termination occurred when requested.		Partially accepted	The maintenance instructions section has been reformulated. The formula has been substituted by the need to record a series of events.
426	Skydio, Inc.	3.7 Maintenance Instruction	7	Which is the “authorizing authority” mentioned in the last paragraph?	Please specify.	Requested	Noted	The authorizing authority mentioned in this paragraph is the authority issuing the operational authorisation. This sentence has been removed from the document.
427	Volocopter	3.7 Maintenance Instruction	7	Section 3.7 while referring to maintenance instructions also talks about system reliability and tracking FTS failures across the fleet. However this is a separate topic and should be detailed more specifically on what failures need to be tracked and how they should be tracked.	Revise the MOC to clarify how and which failures should be tracked for the FTS (e.g., ground test, scheduled maintenance).		Partially accepted	The maintenance instructions section has been reformulated. The formula has been substituted by the need to record a series of events.

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Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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428	Wing Aviation	3.7 Maintenance Instruction	7	Which is the “authorizing authority” mentioned in the last paragraph?	Please specify.		Noted	The authorizing authority mentioned in this paragraph is the authority issuing the operational authorisation. This sentence has been removed from the document.
429	DROTEK	3.7 Maintenance Instruction	7	the footnote number in formula page 7 is confusing: can mislead to 4.7^20			Partially accepted	The maintenance instructions section has been reformulated. The formula has been substituted by the need to record a series of events.
430	Maurizio Bernard (Leonardo)	3.7 Maintenance Instruction	7	« (Number of FTS failure at fleet level) x 4.720 x (Average operation time) / (Fleet total flight time) < 1E-2 » This formula seems to account for failures per single flight, not per flight hour.	Clarification and confirmation that the intended meaning does not address failure rate per flight hour.		Partially accepted	The maintenance instructions section has been reformulated. The formula has been substituted by the need to record a series of events.
431	Maurizio Bernard (Leonardo)	3.7 Maintenance Instruction	7	"record the in-service reliability of the FTS" It should be specified that a FTS dedicated logcard should be used, that could not be the same of UA flightlog, accounting for configuration changes or items substitutions.	Explain that maintenance instructions should specify how to manage the FTS logcard in relation to the UA flight log, in order to properly account for flight hours, number of flights, intended and unintended FTS activations, configuration changes and FTS or UA maintenance activities.		Partially accepted	The maintenance instructions section has been reformulated. The formula has been substituted by the need to record a series of events.
432	ESG	3.7 Maintenance Instruction	7	"(Number of FTS failure at fleet level) x 4.720 x (Average operation time) / (Fleet total flight time) < 1E-2" Should not use numerical footnotes in formulas; looks like an exponent. Where is 4.7 coming from and is this the same scatter factor of "2"?			Partially accepted	The maintenance instructions section has been reformulated. The formula has been substituted by the need to record a series of events.

3.8 Prescriptions for ground buffer definition

Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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433	Nathanel Apter (UASolutions)	3.8 Prescriptions for ground buffer definition	7	The combined assumption of maximum velocity with worst wind conditions and with a velocity vector oriented perpendicularly to the operational volume at a maximum height is extermely conservative and in most cases of FCU malfunction, the probability is high that such conditions are not fulfilled and that the UA just crashes within the operational volume or does not fly-away perpendicularly to the border of the operational volume and not at the maximum altitude. We could even say qualitatively and conservatively that the probability of each of those assumptions is 0.1/ fly away (each for maximum speed, maximum height and perpendicular) as well which means that such a scenario has a probability of 10^-3/fly away situations to happen and so a probability of 10^-4* 10^-3 =10^-7/FH to happen. Those assumptions are so too conservative for the SORA (TLOS =10^-6).	In order to be based on a realistic scenario, I sugest to consider the cruise speed instead of the maximum velocity while keeping the assumption of a perpendicular flight path to the operational volume and the maximum height (of the flight geography and not of the contingency volume). Those assumptions are per se conservative but more realistic and cover well the potential ground risk buffers. The most conservative assumptions would not reflect any potential realistic scenarios.	Requested	Partially accepted	Maximum cruise speed or maximum speed declared as part of the operational authorization complemented by possible acceleration due to FCS failure are the basis for a conservative and simple calculation of the ground buffer. A final sentence has been added to provide for flexibility.
434	AustroControl	3.8 Prescriptions for ground buffer definition	7	The sizing of the ground risk buffer is not in-line with AMC1 Art.11, where you would only need to size it up acc. to the 1:1 rule. If flight tests would have to be done, this would lead to a sizing of the ground risk buffer in acc. with the glide ratio. A definition of flight test scenarios or guidance seems to be needed. As it stands, the sizing of the ground risk buffer acc. to the proposed MoC could lead to multiples of the ground risk buffer, which would be needed acc. to the SORA process. Additionally, the question of dynamics of the UAS is open. Can the operator assume unstable flight characteristics while sizing the ground risk buffer?			Not accepted	The 1:1 rule indicated in AMC 1 to article 11 of regulation 2019/947 leads to a ground risk buffer of "at least a 1:1 rule". This is the minimum and therefore the scenario presented in the MoC for the FTS is coherent with the regulation
435	DGAC	3.8 Prescriptions for ground buffer definition	7	Computation of ground buffer. The UAS may accelerate during the 3 seconds (case of a failure/inversion of magnetometre for instance : the correction is erroneously in the same direction as the movement).	Consider whether an acceleration should be taken into account during the human and system latencies	Recommended;	Accepted	The potential for acceleration in the mentioned timeframe has been considered in the velocity.
436	DGAC	3.8 Prescriptions for ground buffer definition	7	The case where a parachute triggered shall be covered: - ballistic distance during the time necessary for full deployment of the parachute ? - D2 = max wind speed x Hterm / vertical speed under parachute			Accepted	Consideration has been given to the parachute case modifying the text of the MoC accordingly.

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Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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437	Alejandro del Estal, Antonio Pascual and Nathanel Apter	3.8 Prescriptions for ground buffer definition	7	No indications on how to test this requirement are given explicitly. However, according to EASA, during the meeting with EUROCAE, this claim is considered satisfied if no inadvertent activations happen during the whole test campaign.	In order to be based on a realistic scenario, I sugest to consider the cruise speed instead of the maximum velocity while keeping the assumption of a perpendicular flight path to the operational volume and the maximum height (of the flight geography and not of the contingency volume). Those assumptions are per se conservative but more realistic and cover well the potential ground risk buffers. The most conservative assumptions would not reflect any potential realistic scenarios.	Requested	Partially accepted	Maximum cruise speed or maximum speed declared as part of the operational authorization complemented by possible acceleration due to FCS failure are the basis for a conservative and simple calculation of the ground buffer.
438	FlyingBasket (Romain Clement de Givry - Design)	3.8 Prescriptions for ground buffer definition	7	Is the calculation of D2 applied considering features of the operational area or simply assuming flat ground? Please clarify that the ballistic/glide trajectory does not consider terrain features and assumes flat ground.	N/A	Not requested	Partially accepted	D2 has been modified to refer to “projection on ground”. This is to be interpreted as projection on flat ground with no complications introduced into the calculations due to terrain features.
439	Laurent PERCHAIS (Dronisos)	3.8 Prescriptions for ground buffer definition	7	Considering 3 sec as reaction time is long compared to our on field testing where reaction time is below 2 seconds	Set T to 2 seconds	Recommended;	Not accepted	The time of 3 seconds have been considered including human and system latencies. The intention is to provide with a simple calculation. The separation between these latencies and potential implications would add unnecessary complexity to the MoC.
440	Laurent PERCHAIS (Dronisos)	3.8 Prescriptions for ground buffer definition	7	Maximum Velocity in worst expected wind conditions is not simple to infer. It is not as simple as adding the wind speed to the operational maximum speed	Maximum Velocity can be infered from tests by monitoring absolut UAV speed with various wind conditions	Recommended;	Noted	The reference for maximum speed is the maximum speed achievable by the UAS without any consideration of the wind to simplify the calculations.
441	senseFly	3.8 Prescriptions for ground buffer definition	7	Using maximum speed might be too conservative as there can be a high difference between the values.	We suggest using cruise speed to be more realistic. This would also be more similar to the standard scenario (STS) and SORA ground risk calculation.	Requested	Partially accepted	Maximum cruise speed or maximum speed declared as part of the operational authorization complemented by possible acceleration due to FCS failure are the basis for a conservative and simple calculation of the ground buffer.
442	JEDA	3.8 Prescriptions for ground buffer definition	7	Computation of ground buffer. The UAS may accelerate during the 3 seconds (case of a failure/inversion of magnetometer for instance: the correction is erroneously in the same direction as the movement). 3 seconds for the reaction by the remote pilot are an enormous time. 1.5 seconds would be more realistic for the average response time	Reducing the pilot reaction time to 1.5 s	Recommended;	Not accepted	The time of 3 seconds have been considered including human and system latencies. The intention is to provide with a simple calculation. The separation between these latencies and potential implications would add unnecessary complexity to the MoC.
443	ONERA	3.8 Prescriptions for ground buffer definition	7	Second use of D2 definition is incomplete	Modify the original sentence: D2 to be determined on the base of the trajectory after termination As follow: D2 to be determined on the base of the trajectory after termination is effectively triggered onboard.	Recommended;	Accepted	Proposal has been considered and the text modified accordingly.

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444	ONERA	3.8 Prescriptions for ground buffer definition	7 and 8	The ballistic projection of debris is not mentioned.	Explicitly mention that in the frame of this MOC the dispersion of the debris is considered not relevant for the computation of the ground risk buffer.	Recommended;	Partially accepted	The dispersion of the debris on the crash area is not considered in the text. However, an increase in the ground buffer have been introduced for fixed wing drones.
445	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	3.8 Prescriptions for ground buffer definition	7	T = 3 sec seems unrealistic. No operator can be on 3 seconds alert for any length of time when the potentially complete loss of the aircraft is at stake. I do not believe anyone will push the button after just 3 seconds of flyaway.	10 seconds should be absolute minimum unless it can be demonstrated that the operator is closely watching the aircraft telemetry and constantly hovering his hand over the red button.		Not accepted	The time of 3 seconds have been considered including human and system latencies.
446	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	3.8 Prescriptions for ground buffer definition	7	Exclusion of drag for rotorcraft can have pretty significant consequences.	Allow any operator able to determine the trajectory based on drag to do so. It can shave of 100's of meters for operations at 3-500 meter altitude.		Accepted	The option to account for drag in the simplified calculation has been included with certain conditions.
447	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	3.8 Prescriptions for ground buffer definition	7	It would be useful to separate the human latency and the system latency into two variables. This would comply with the M1 medium mitigation description in Annex B of the SORA, where these two are separately listed.	T1 should be human latency, and T2 system latency (transmission time from ground to air, which may be significant if for instance satellite is used, PLUS deployment time onboard the aircraft).		Not accepted	The time of 3 seconds have been considered including human and system latencies. The intention is to provide with a simple calculation. The separation between these latencies and potential implications would add unnecessary complexity to the MoC.
448	Anders la Cour-Harbo Aalborg University, DK Advisor to JARUS, member of ground and air risk groups	3.8 Prescriptions for ground buffer definition	7	It is possible to write the full formula for the width of the ground risk buffer, instead of formulating it with words.	The equation is GRB_width = (T1 + T2) * (V_no + V_wind) + D2, where V_no is the recommend speed to use in the new version of the SORA (here called maximum velocity declared).		Partially accepted	Ground buffer formula has been explicitly indicated as D1+D2.
449	THALES	3.8 Prescriptions for ground buffer definition	7	The computation method for the ground buffer definition does not take into account the position accuracy.	Add the position accuracy in the proposed formula	Recommended;	Not accepted	The prescriptions for ground buffer calculations are conservative enough. Adding position accuracy would result in more complex considerations which are not considered necessary for this MoC.
450	Volocopter	3.8 Prescriptions for ground buffer definition	7	Prescriptions for ground buffer definition presents a different formula to the one presented on the Regulation (EU) 2019/947 (the associated ground risk buffer with at least a 1:1 rule). The MOC refers to SORA terminology and concepts from the future revisions of SORA/ annexes of SORA which are not yet published.	Please clarify where the methodology for ground buffer definition fits in with the SORA methodology as described in AMC1 Article 11 (EU) 2019/947.		Not accepted	The 1:1 rule indicated in AMC 1 to article 11 of regulation 2019/947 leads to a ground risk buffer of "at least a 1:1 rule". This is the minimum and therefore the scenario presented in the MoC for the FTS is coherent with the regulation.

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451	FPDC	3.8 Prescriptions for ground buffer definition	7	Computation of ground buffer. The UAS may accelerate during the 3 seconds (case of a failure/inversion of magnetometer for instance: the correction is erroneously in the same direction as the movement). 3 seconds for the reaction by the remote pilot are an enormous time. 1.5 seconds would be more realistic for the average response time	Reducing the pilot reaction time to 1.5 s	Recommended;	Not accepted	The time of 3 seconds have been considered including human and system latencies. The intention is to provide with a simple and conservative calculation. The separation between these latencies and its potential implications would add unnecessary complexity to the MoC.
452	DROTEK	3.8 Prescriptions for ground buffer definition	7	In case of a certified enhanced containment system that automatically triggers the FTS, the latencies of the system may be significantly reduced. It has a reaction time with an order of magnitude around the milli-seconds.	Conservatively and as a simple solution: - T = 3 sec in case of manually triggered FTS - OR T equal of system latency in case of automatically triggered FTS		Not accepted	The time of 3 seconds have been considered including human and system latencies. The intention is to provide with a simple and conservative calculation. The separation between these latencies and its potential implications would add unnecessary complexity to the MoC.
453	DROTEK	3.8 Prescriptions for ground buffer definition	7	The ballistic equation with no drag shall be used to compute D2 for multicopter. For some operations that require a restricted ground area, the smallest meter can allow or not an operation in some places. When the appropriate ballistics tests have been done, we recommend that the equation with drag can be used to compute D2. This distance may reduce slightly, following a more realistic scenario.	For rotorcrafts / multirotors: ballistic trajectory with no drag considered • D2 projection of the ballistic trajectory on ground, perpendicular to the operational volume, with no drag • OR projection of the ballistic trajectory on ground, perpendicular to the operational volume, with drag derived from tests carried out in safe scenario		Partially accepted	The option to account for drag in the simplified calculation has been included with certain conditions.
454	Maurizio Bernard (Leonardo)	3.8 Prescriptions for ground buffer definition	7	"For fixed wing, the distance travelled after termination should be derived as far as possible from tests (carried out in safe scenario) and never be smaller than the one that would be calculated for rotorcraft / multicopters" The worst case for fixed wing is based on aerodynamic efficiency in unpropelled configuration, if no further justification is provided (and this leads to excessively high D2/height ratios). Worst case wind drift effect is unlikely addressed by test and can be easily computed by analyses.	Analyses shall be provided to determine the worst case aerodynamic efficiency, accounting for UA stability after termination (including possible effects of parachute or other FTS triggered functionalities like control fail safe positions or structural changes). Flight tests can be used to support these analyses. Aerodynamic efficiency based on aspect ratio can be used as a conservative value. Wind drift effect shall be added to the analyses and to flight tests results, considering maximum expected wind (that may be beyond nominal flight envelope) and wind direction/intensity during flight test		Partially accepted	The option to consider glide trajectory calculation as an alternative to testing has been introduced in this section of the MoC
455	Maurizio Bernard (Leonardo)	3.8 Prescriptions for ground buffer definition	7	"ballistic trajectory with no drag considered" is a worst case for ballistic trajectory in still air but shall not allow neglecting wind drift effects, especially in case of low ballistic coefficient configurations (especially when a parachute is deployed)	Specify that the transport effect of wind drift shall be computed by analyses as worst case and added to D2 computation in still air or by test.		Partially accepted	Worst expected wind conditions are included in the velocity used for the calculation. The option to consider the drag for rotorcraft/multirotor has been included.

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456	Maurizio Bernard (Leonardo)	3.8 Prescriptions for ground buffer definition		"worst expected wind conditions" might be beyond UA flight envelope or operational limitations, considering flight duration and distance (possibly mitigated by meteo information services and wind estimation features). Excessive wind encountered during flight can be a primary cause of flight termination and must be therefore accounted for.	ADD "worst expected wind conditions shall be defined based on operational limitations and the conditions for flight termination that are directly related to wind intensity/direction". Guidance material might provide examples of using (i) wind threshold defined as single cause for flight termination (defined either in FM or operational authorization); (ii) wind threshold defined for flight termination within nominal flight geography (as single cause), but subtracting contingency distance from D2 (iii) any defined combination of acceptable wind (if measurable-detectable-acknowledge during flight in UA position) and position in the operational volume (higher tolerance at lower height, far from boundary, upwind...)		Not accepted	The worst expected wind conditions it is understood as being based on the concept of operations and therefore when the operator defines certain limitations in terms of wind conditions these should be also considered when calculating the maximum speed to be used for ground buffer considerations. A clarification on this aspect was not considered necessary.
457	Maurizio Bernard (Leonardo)	3.8 Prescriptions for ground buffer definition	7	“D1=V*T” and “V = maximum velocity declared” Assumes nominal conditions but in the transient phase for FTS decision/actuation, an emergency condition is likely in place.	An acceleration should be considered in this phase to account for worst case attitude (90° bank) and thrust (maximum when control is lost). A non-conservative but reasonable assumption could be 1g lateral acceleration. This term is very important in case of low speed limited VTOL with higher thrust to weight ratio.		Partially accepted	It has been considered for this MoC that maximum UAS velocity or maximum velocity declared as part of the operational authorization complemented by possible acceleration due to FCS failure are the basis for a conservative and simple calculation of the ground buffer. This MoC is meant for SAIL II and below and for declaration therefore combination of failures or emergency conditions were not addressed with the exception of a potential acceleration before the activation of the FTS.
458	Maurizio Bernard (Leonardo)	3.8 Prescriptions for ground buffer definition	7	“V = maximum velocity declared” As already discussed for D1, in this case the V used for D2 computation is addressed.			Partially accepted	It has been considered for this MoC that maximum UAS velocity or maximum velocity declared as part of the operational authorization complemented by possible acceleration due to FCS failure are the basis for a conservative and simple calculation of the ground buffer.
459	Maurizio Bernard (Leonardo)	3.8 Prescriptions for ground buffer definition	7	“Velocity at termination: V (as above)” This conservative assumption does not consider the effect of means to reduce speed (e.g. parachute deployment distance).	Coordination with ASD-STAN SG7 dealing with FTS for C5 and C6 class marking is recommended. C5 or C6 UAS might also be used in specific scenarios (not STS-01 and STS-02) and use this MoC.		Partially accepted	Consideration has been given to the parachute case modifying the text of the MoC accordingly.
460	EUSC-IT	3.8 Prescriptions for ground buffer definition	7	Computation of ground buffer. The UAS may accelerate during the 3 seconds (case of a failure/inversion of magnetometer for instance: the correction is erroneously in the same direction as the movement). 3 seconds for the reaction by the remote pilot are an enormous time. 1.5 seconds would be more realistic for the average response time	Reducing the pilot reaction time to 1.5 s	Recommended;	Not accepted	The time of 3 seconds have been considered including human and system latencies. The intention is to provide with a simple and conservative calculation. The separation between these latencies and its potential implications would add unnecessary complexity to the MoC.

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461	UAAI	3.8 Prescriptions for ground buffer definition	7	Computation of ground buffer. The UAS may accelerate during the 3 seconds (case of a failure/inversion of magnetometer for instance: the correction is erroneously in the same direction as the movement). 3 seconds for the reaction by the remote pilot are an enormous time. 1.5 seconds would be more realistic for the average response time	Reducing the pilot reaction time to 1.5 s	Recommended;	Not accepted	The time of 3 seconds have been considered including human and system latencies. The intention is to provide with a simple and conservative calculation. The separation between these latencies and its potential implications would add unnecessary complexity to the MoC.
462	LBA (NAA) Germany	3.8 Prescriptions for ground buffer definition	7	MoC: Whole subchapter 3.8 Comment: The requirements for defining a ground risk buffer are something that belongs in the SORA main body and not in a technical MoC. This might be discussed with JARUS SRM, as such new definitions might have significant effect on the whole process. It says in the proposed subchapter, that: "[...] any termination event would end with the crash of the UA within the ground buffer and not outside." However, the proposed formulation uses a pure ballistic trajectory for multirotors and rotorcrafts. The use of parachutes as a means of FTS is not considered here. This is incorrect, especially given the fact that the M2 mitigation (often realised with a parachute) is part of the proposed method to show compliance with this MoC. Only considering a ballistic trajectory will result in much too small ground risk buffers when a parachute is used as an FTS.	In case a parachute is used for FTS, one would need to consider the descent rate of the parachute and the wind drift for computing a ground risk buffer of an adequate size.	Recommended;	Accepted	Considerations have been given to the parachute case to modify the text accordingly.

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3.9 FTS Manual

Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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463	Wingcopter	3.9 FTS Manual	8	FTS Manual: MoCs are only referring to the manual of the FTS, although required information could be shared in UAS manuals to provide simpler use of documents for the operator.	Update MoC 3.9 by: "Limits and conditions should be reflected either in the operations / maintenance manual of the FTS or in the UAS operations / maintenance manual."	Requested	Accepted	The suggestion has been considered and the text changed accordingly.
464	Wingcopter	3.9 FTS Manual	8	FTS Manual: MoCs are only referring to the manual of the FTS, although required information could be shared in UAS manuals to provide simpler use of documents for the operator.	Update MoC 3.9 by: "Limits and conditions should be reflected either in the operations / maintenance manual of the FTS or in the UAS operations / maintenance manual."	Requested	Accepted	The suggestion has been considered and the text changed accordingly.
465	Maurizio Bernard (Leonardo)	3.9 FTS Manual	8	The cases of standalone FTS (COTS LRU) or self-contained UAS should be considered.	Add ", that could be either a stand-alone document or included in the UAS flight manual"		Accepted	The suggestion has been considered and the text changed accordingly.

4 Means to reduce impact dynamics (optional)

Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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466	Maurizio Bernard (Leonardo)	4. Means to reduce impact dynamics (optional)	8	The overall functionality of flight termination with reduction of impact dynamics may be implemented with different architectures, ranging from (i) the extreme cases of a fully UAS integrated feature (anyways addressing necessary independence and dissimilarity), as far as (ii) completely separated line replaceable units LRUs for flight termination triggering (FTS), kinetic energy reduction (KER) e.g. deployable parachute, and UA itself.	Further guidance should be provided in order to address the split of responsibilities for different LRUs qualification (input to design verification) and maintenance (see 3.7). The management of UA-KER-FTS configurations for testing and during service lifecycle should also be addressed.		Noted	This MoC is meant to provide with a simple solution (based on an FTS) to comply with the containment requirement with limited performance. It is out of the scope of the MoC to elaborate this element of reduction of impact dynamics, it was introduced to provide an input for consideration.
467	Maurizio Bernard (Leonardo)	4. Means to reduce impact dynamics (optional)	8	"it should be ensured that they do not negatively impact the safety of the operation" and "During the test campaign it should be proved that the means have never been inadvertently activated." These sentences might happen to be in contrast. Inadvertent activation of KE reduction functionalities (most probably implying flight termination anyways) is expected to have a safety impact that is lower than containment breach, therefore allowing for higher tolerance. This possibility is based on the fact that (i) KE reduction provides M2 mitigation; (ii) enhanced containment requirement is especially important when ground (or air) risk is way lower within operational volume, where undesired activation is assumed (e.g. STS-01).	Inadvertent activation during tests (and recorded during life cycle as per 3.7) shall be addressed with specific fail criteria. These are based on the specific safety impact of the inadvertent activation, *in case it is demonstrated to be lower than FTS reliability addressed by the applicable LightUAS.2511 requirement		Partially accepted	An inadvertent activation of the FTS would result in the termination of the flight in the operational volume or within the boundaries of the ground buffer. The sentence has been removed from the MoC.
468	Maurizio Bernard (Leonardo)	4. Means to reduce impact dynamics (optional)	8	"During the test campaign it should be proved that the means have never been inadvertently activated." This sentence implies an unproportionate 0% probability with 100% confidence that is unreasonable and not related to the safety objective.	Target failure rate of inadvertent activation should be defined according to a dedicated safety analysis and could result in higher tolerance wrt containment requirement itself (see previous point).Pass/fail criteria should be defined on a probabilistic level, according to target probability and confidence level. Management of inadvertent activation or failure need to be specified: on one end (i) a higher number of successful tests can justify a failure, on a probabilistic base; conversely (ii) allowing for test repetition without considering the effect of failed test would undermine test reliability		Partially accepted	An inadvertent activation of the FTS would result in the termination of the flight in the operational volume or within the boundaries of the ground buffer. The sentence has been removed from the MoC.

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Comment				Comment	Suggested resolution	From the commenter point of view a modification of the published text is:	EASA comment disposition	EASA response
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469	LBA (NAA) Germany	4. Means to reduce impact energy		MoC: Regarding their performance in terms of capability of reducing kinetic energy, where the objective is the increase of Dpop-adj-max, it is taken into account in chapter 2 (assuming it can be demonstrated that these means operate even when the FTS has not worked appropriately). Specific performance objectives in the PDRA frame, if any, are not herein addressed. Comment: It is unclear what is meant with this paragraph. Means to reduce the kinetic impact energy are considered as a M2 mitigation in the SORA process. This does not have anything to do with the population density or the geographical details of the adjacent areas of a UAS operation. Why are PDRAs here named explicitly? Means to reduce the kinetic impact energy are not PDRA specific.	Delete the paragraph.	Requested	Not accepted	The paragraph intends to preserve the integrity of the FTS (object of the MoC) when it includes / integrate a further means to reduce KE (not object of the MoC)