

External Public Review Comment Matrix

Originating Office: AIR-6B0	Document Description: TSO-C63f	Project Lead/Reviewer Lee Nguyen	Reviewing Office: AIR-6B0	Date of Review: 14 Dec 2018
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	Commenter	Section # and Page #	Comment	Suggested Change and Rationale	Disposition
1.	Honeywell	General	No comments. The TSO is good.		Thank you.
2.	Embraer S.A.	Par 3, page 4.	Security risk assessment is required for 14 CFR part 23 Class 4, part 25, part 27 and part 29 and to perform this, it is necessary to receive equipment security data.	Consider to include the following text: <i>“h. Security qualification. If the article includes loadable SW/AEH items and there are failure conditions qualification of MAJOR or above a security risk assessment according DO-326A shall be performed to demonstrate that risk level is acceptable.”</i> OEM requires this data to perform the aircraft level security risk assessment.	Not accepted. The FAA will consider adding security risk assessment requirements in TSOs during the next revision of FAA Order 8150.1.
3.	Embraer S.A.	Par 5, item a., page 5.	Equipment with security measures may require specific integration security procedures to avoid compromise during integration to the aircraft.	Consider to include the following text: <i>“(12) Integrator security guidance according DO-326A as required by the security risk assessment results”</i> . OEM can develop production, operation and maintenance documents with this information.	Not accepted. The FAA will consider adding security risk assessment requirements in TSOs during the next revision of FAA Order 8150.1.
4.	Embraer S.A.	Par 5, item f.(1), page 6.	Equipment exposed to attack and subject of a security risk assessment need to identify its threat conditions.	Consider to include the following text: <i>“(1) Description of the non-TSO function(s), such as performance specifications, failure and threat condition classifications, software, hardware, and environmental</i>	Not accepted. The FAA will consider adding security risk assessment requirements in

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				qualification levels.” OEM requires threat conditions to evaluate the aircraft security risk.	TSOs during the next revision of FAA Order 8150.1.
5.	Embraer S.A.	Par 5, page 7.	Equipment exposed to attack and subject of a security risk assessment, it is necessary to define its Plan for Security Aspects of Certification.	Consider to include the following text: “ <i>l. If the article is subject of a security risk assessment, the appropriate documentation defined in RTCA/DO-326A specified in paragraph 3.h of this TSO.</i> ” Once subject to DO-326A, PSecAC is a required activity.	Not accepted. The FAA will consider adding security risk assessment requirements in TSOs during the next revision of FAA Order 8150.1.
6.	Embraer S.A.	Par 7, page 8.	Equipment exposed to attack and subject of a security risk assessment, the non-mitigated vulnerabilities need to be identified.	Consider to include the following text: “ <i>l. If the article is subject of a security risk assessment, include a copy of the vulnerability dossier defined in RTCA/DO-326A.</i> ” Once subject to DO-326A, the vulnerability dossier can be used by OEM to evaluate the aircraft security risk.	Not accepted. The FAA will consider adding security risk assessment requirements in TSOs during the next revision of FAA Order 8150.1.
7.	Garmin	Section 3.b.(4) Page 3	Paragraph. 3.b.(4) includes the statement: Design the system to at least these failure condition classifications. Wording needs to change to allow	Suggest changing to the alternate wording identified in paragraph 3.b. of the TSO Template in Order 8150.1D Appendix G.	Not accepted. The FAA determined including the TSO minimum failure condition classification was appropriate. The same failure condition

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			<p>failure condition to be determined with installation considerations.</p> <p>This statement implies the failure condition classification of an appliance is determined by the TSO regardless of how the appliance is installed in a given aircraft.</p> <p>Unless the Design Assurance Level (DAL) cannot be affected by the installation, the aircraft System Safety Assessment should determine the failure classification and by extension, the DAL requirement. The AFHA/SFHA/PASA/PSSA ultimately determines the DAL requirement for a particular installation. Specifying the DAL at the appliance level without the benefit of the specific AFHA/SFHA/PASA/PSSA means that in some cases the DAL will undoubtedly be higher and more costly than necessary. This will have a chilling effect on the installation of new, safety enhancing technologies since the cost will be greater than necessary. It is possible to build and</p>		<p>classifications were previously implemented in TSO-C63d/e.</p>

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			certify a TSOA appliance that cannot be approved for installation in one or more aircraft types because it does not have the required DAL. Similarly, just because the appliance meets a TSO DAL does not mean it can be approved for installation. We recommend that no failure classification/DAL requirement be included in a TSO when installation considerations or restrictions can affect or mitigate the hazard level and therefore consideration should be given to revising paragraph 3.b in this TSO to the general guidance in the Recommendation column.		
8.	Garmin	Section 7.c Page 8	<p>Section 7.c. includes the following:</p> <p style="padding-left: 40px;">If the article contains software, include one copy of the Open Problem Report (OPR) summary to type certification, supplemental type certification, or amended type certification design approval holders.</p> <p>This is inconsistent with the Order</p>	<p>Garmin applauds the language within this draft TSO as addressing concerns with the Order 8150.1D Appendix G TSO Template identified in the Comment.</p> <p>No change suggested to the draft TSO but suggest updating Order 8150.1D Appendix G TSO Template.</p>	Acknowledged.

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			<p>8150.1D Appendix G TSO Template. However, the TSO Template considers this “furnished data” that is required to be provided to any “entity (such as an operator or repair station)”. Operators and repair stations typically do not have the same capability as a TC/STC design approval holder to make an appropriate assessment of OPR effect. Consequently, it will only serve to cause confusion to require an OPR summary to be provided to operators and repair stations.</p> <p>This same concern has been raised in the context of the FAA/EASA/Industry A(M)C 20-OPR discussions.</p>		
9.	Garmin	General	<p>The text of the document in some places does not align with the TSO Template in Order 8150.1D Appendix G (bold text identifies differences where text is not significantly different between the TSO and the template):</p> <p>Section 1. states “or letter of design approval (LODA)” instead of “or letter</p>	Align the text of the TSO with the TSO Template in Order 8150.1D Appendix G.	<p>Accepted. We updated most instances of differences from Order 8150.1D.</p> <p>The differences in §§ 5.h. and 6.g. provided clearer language and the FAA will incorporate in the next revision of FAA Order</p>

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			<p>of TSO design approval (LODA)”</p> <p>Paragraph 3.e states “Document, DO-178C” instead of “Document RTCA/DO-178C”</p> <p>Paragraph 3.f states “hardware, develop the component” instead of “hardware, then develop the component”</p> <p>Paragraph 3.f includes the date for DO-254 “dated April 19, 2000” which is not part of the template’s reference.</p> <p>Paragraph 3.g states “means of compliance to the criteria” instead of “means of compliance with the criteria”</p> <p>Paragraph 3.g states “deviation under the provision of” instead of “deviation pursuant to”</p> <p>Paragraph 4.a states “legibly with all the information” instead of “legibly with all of the information”</p>		8150.1.

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			<p>Paragraph 4.c states “to identify software or electronic hardware” instead of “to identify software or airborne electronic hardware”</p> <p>Paragraph 5.a states “A Manual(s) containing” instead of “Manuals containing”</p> <p>Paragraph 5.a.(6) states “Describe in detail any deviations” instead of “Detailed description of any deviations”</p> <p>Paragraph 5.a.(7) states “limitations must include a note” instead of “limitations must also include a note”</p> <p>Paragraph 5.a.(11) states “components that make up” instead of “components that makes up”</p> <p>Paragraph 5.c states “and software accomplishment summary” instead of “and a software accomplishment summary”</p>		

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			<p>Paragraph 5.d states “hardware verification plan” instead of “a hardware verification plan”</p> <p>Paragraph 5.f states “functionality contained in” instead of “functionality or performance contained in”</p> <p>Paragraph 5.f.(1) states “non-TSO function(s) don’t interfere” instead of “non-TSO function(s) do not interfere”</p> <p>Paragraph 5.f.(4) states “compliance with the performance data” instead of “compliance with the non-TSO function(s) performance data”</p> <p>Paragraph 5.f.(5) states “verify that performance” instead of “verify that the performance”</p> <p>Paragraph 5.g states “The quality system description” instead of “The quality manual”</p> <p>Paragraph 5.g states “The quality system should” instead of “The</p>		

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			<p>quality system must”</p> <p>Paragraph 5.h states “A document describing how your organization complies with the provisions of § 21.605.” instead of “A description of your organization as required by 14 CFR 21.605.”</p> <p>Paragraph 6.g states “applicable objectives in Annex A, Process Objectives and Outputs by Software Level, of RTCA/DO-178B or RTCA/DO-178C.” instead of “applicable objectives in RTCA/DO-178B, Annex A, Process Objectives and Outputs by Software Level.”</p> <p>Paragraph 6.h states “combination with the design assurance level” instead of “combination with design assurance level”</p> <p>Paragraph 6.h states “the following data:” instead of “the following data are required: “</p> <p>Paragraph 6.i states “make available</p>		

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			<p>items 6.a through 6.h” instead of “make items 6.a through 6.h available.”</p> <p>Paragraph 7.a states “If furnishing” instead of “When furnishing”</p> <p>Paragraph 7.a states “or for continued compliance” instead of “or continued compliance”</p> <p>Paragraph 8.c states “fax: (202) 512-2250” instead of “fax: (202) 512-2104”</p> <p>Paragraph 8.c states “www.access.gpo.gov” instead of “www.gpo.gov”</p>		
10.	Garmin	General	<p>The text of the document in some places does not align with the TSO Template in Order 8150.1D Appendix G (bold text identifies differences where text is not significantly different between the TSO and the template):</p> <p>Paragraph 5.f.(6) states “to verify the</p>	<p>No change suggested to the draft TSO but suggest updating Order 8150.1D Appendix G TSO Template.</p>	<p>Accepted.</p> <p>Note: The name of the Government Printing Office changed to the “Government Publishing Office.” We have submitted this change for the next revision of FAA Order</p>

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			<p>function” instead of “to verify that the function”</p> <p>Paragraph 8.c states “copies of 14 CFR parts 21 and 45” instead of “copies of parts 21 and 45”</p> <p>Paragraph 8.c states “Government Publishing Office” instead of “Government Printing Office”</p>		8150.1.