European Union Aviation Safety Agency

Cargo Tracking Devices

Disclaimer:

This publication provides recommendations and examples, further to the applicable regulation, certification specifications, and AMCs. They have no legal value and are only advisory.

What are the regulatory conditions to use a Tracker / Cargo Tracking Device on board commercial flights?

Answer

As per Regulation (EU) 965/2012 on air operations (requirement CAT.GEN.MPA.140), it is the operator's responsibility to authorize the use of PED on board an aircraft, after having ensured that it has no impact on the safe operations of the aircraft.

The technical criteria to support that decision are spelled out in AMC1 CAT.GEN.MPA.140. The following paragraphs apply more specifically to trackers:

(d)(3) Alternative EMI assessment of cargo tracking devices

(e) Operational conditions of C-PEDs and cargo tracking devices

(f) Batteries in C-PEDs and cargo tracking devices

GM3 CAT.GEN.MPA.140 provides guidance on safety assessment standards, HIRF certification, and FMEA.

Note: AMC1 and GM3 to CAT.GEN.MPA.140 are amended by Annex III to ED Decision 2019/008/R (see below). These changes will be applicable on 09/07/2019.

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09/04/2019

Link:

https://www.easa.europa.eu/en/faq/95255

What are the changes to AMC1 CAT.GEN.MPA.140 made in 2019 (ED Decision 2019/008/R)?

Answer

AMC1 CAT.GEN.MPA.140 is amended by ED Decision 2019/008/R. In addition to various clarifications, (d)(3) is simplified as follows:

- Deletion of the requirement regarding short transmission time,
- Deletion of the requirement to provide a FMEA.

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https://www.easa.europa.eu/en/faq/95258

What are the differences between the three different methods of AMC1 CAT.GEN.MPA.140 (d)(3)? Does my device need to deactivate the radio functions in flight?

Answer

Method (i) is an aircraft type-specific safety assessment and relies on an appropriate design assurance level of the cargo tracking device. It is seldom used in practice.

Method (ii) takes credit from the HIRF certification of aircraft to mitigate the risk associated to backdoor interferences. This is the method to follow to authorise cargo tracking devices using GSM/3G/LTE technologies. The various conditions are detailed in the AMC, the main one being the presence of an automated radio suspension in flight. The absence of front door interferences should be demonstrated by showing compliance with DO-160() Section 21 Cat. H criteria and by the use of (EN) compliant transmitters.

Method (iii) is dedicated to devices with low-powered emissions (EIRP < 100 mW). Those devices do not require a radio suspension in flight, since it is considered that the risk of backdoor interferences can be neglected. However, as they will be active in all phases of flight, a successful DO-160() Section 21 Cat. H evaluation is still needed.

Criteria regarding device maintenance and lithium batteries (paragraphs (e) and (f)) apply independently from the chosen EMI method.

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When using method (ii), how many "test flights" are needed?

Answer

There is no exact figure regarding how many test flights are needed. The operator should be satisfied that the tests demonstrate that the device and its radio suspension mode is working correctly. In case the radio suspension algorithm is based on aircraft-dependent criteria (e.g. takeoff acceleration), it is recommended to test the correct behaviour of the function on board different aircraft types.

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When using method (ii), what does "multiple modes of redundancy" mean regarding the radio suspension in flight?

Answer

Multiple modes of redundancy means that the device is designed with a minimum of two independent means to turn it off completely, turn off the cellular or mobile functions, or a combination of both when airborne. These independent methods should use different sources to identify that the aircraft is in flight, for example, a cargo-tracking device may be designed to sense rapid altitude changes and acceleration to determine when to turn off cellular transmissions. Redundant sources of the same information, such as two vertical accelerometers, should not be considered independent.

The different sensors / detection means should be used in a conservative architecture. This means that the radio suspension should be activated if any of the source/means senses that the aircraft is in flight (logical OR gate). Conversely, the radio suspension should not be deactivated unless all sensors/means identify that the aircraft is on ground (logical AND gate).

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Can I use the GPS sensor of my device to detect a flight condition when using method (ii)?

Answer

The use of GPS parameters is not considered to be reliable for the purpose of detecting flight. GPS reception may be random inside an aircraft fuselage.

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In what operational mode should the device be during the DO-160 section 21 laboratory tests?

Answer

It is recommended to make the assessment in all operational modes, but it is necessary to at least evaluate the device when it is transmitting.

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[Must/Should/Can] EASA [certify/approve/evaluate] my cargo tracking device?

Answer

EASA does neither certify nor approve cargo tracking devices. There are no requirement to obtain a certificate from EASA to operate these devices.

EASA has proposed in the past a service on a voluntary basis to evaluate the compliance of cargo tracking devices against the technical criteria mentioned above. However, in view of the simplification of AMC1 CAT.GEN.MPA.140, this service will be discontinued in 2019. As before, operators remain responsible to authorise the use of PEDs on board their aircraft.

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