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The Gliding Federation of Australia Inc.

Operations

Operations Advice Notice

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Portable Electronic Devices

Categories of portable electronic devices

Portable electronic devices (PEDs) are any kind of electronic device, typically but not limited to consumer electronics, brought on board the sailplane by any person and that are not included in the approved sailplane configuration. All equipment that is able to consume electrical energy falls under this definition. The electrical energy can be provided from internal sources such as batteries (rechargeable or non-rechargeable) or the devices may also be connected to specific sailplane power sources.

PEDs include the following two categories:

1. Non-intentional transmitters can non-intentionally radiate radio frequency (RF) transmissions, sometimes referred to as spurious emissions. This category includes but is not limited to calculators, cameras, radio receivers, audio and video players, electronic games and toys, when these devices are not equipped with a transmitting function.

2. Intentional transmitters (T-PEDs) radiate RF transmissions on specific frequencies as part of their intended function. In addition, they may radiate non-intentional transmissions like any PED. T-PEDs are transmitting devices such as RF-based remote-control equipment, which may include some toys, two-way radios (sometimes referred to as ‘private mobile radios’), mobile phones of any type, satellite phones, computers with mobile phone data connection, wireless local area network (WLAN) or Bluetooth capability. After deactivation of the transmitting capability, e.g. by activating the so-called ‘flight mode’ or ‘flight safety mode’, the T-PED remains a PED having non-intentional emissions.

Risks posed by portable electronic devices

PEDs can pose a risk of interference with electronically operated sailplane systems. Those systems could range from the electronic engine control, instruments, navigation or communication equipment to any other type of avionic equipment on the sailplane. The interference can result in on-board systems malfunctioning or providing misleading information and communication disturbance. These can also lead to an increased workload for the flight crew.

Interference may be caused by transmitters being part of the PED’s functionality or by unintentional transmissions from the PED. Due to the likely proximity of the PED to any electronically operated sailplane system and the generally limited shielding found in sailplanes,

the risk of interference is to be considered higher than that for larger aircraft with metal airframes.

During certification of the sailplane, when qualifying the sailplane functions, consideration may only have been made of short-term exposure to a high-radiating field, with an acceptable mitigating measure being a return to normal function after removal of the threat. This certification assumption may not be true when operating the transmitting PED on board the sailplane.

It has been found that compliance with electromagnetic compatibility provisions and related standards, as indicated by the CE marking, is not sufficient to exclude the existence of interference. A well-known interference is the demodulation of the transmitted signal from GSM (global system for mobile communications) mobile phones leading to audio disturbances in other systems. Similar interferences are difficult to predict during the PED design, and protecting the sailplane's electronic systems against the full range of potential interferences is practically impossible.

The two types of batteries commonly used to power consumer PEDs brought on sailplanes are lithium batteries (disposable) and lithium-ion batteries (rechargeable). Both these types are capable of ignition and subsequent explosion due to overheating. Overheating results in thermal runaway, which can cause the release of either molten burning lithium or a flammable electrolyte. Once one cell in a battery pack goes into thermal runaway, it produces enough heat to cause adjacent cells to go into thermal runaway. The resulting fire can flare repeatedly as each cell ruptures and releases its contents.

While the potential for an in-flight fire caused by an overheated battery is low, pilots must remain mindful of this fire hazard and the possible risk to the sailplane during both ground or flight phases of operation.

Not operating PEDs on board the sailplane is the safest option, especially as effects may not be identified immediately but under the most inconvenient circumstances.

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