
The Civil Aviation Authority of Thailand

Advisory Circular

Use of Portable Electronic Devices On-board Aircraft

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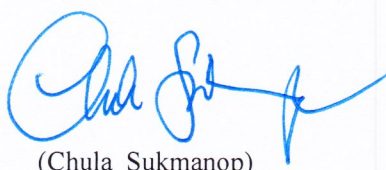
ISSUE APPROVAL

This Advisory Circular provides information and guidance to air operator and maintenance organization on usage of Portable Electronic Devices On-Board to be acceptable to the Authority. It may describe an example of acceptable means, but not only means of demonstrating compliance with regulation and standards.

This is published to assist air operators in the flight operation section and the Civil Aviation Authority of Thailand (CAAT) personnel delegated with the responsibility of certifying Air Operators to comply with all provisions in this Advisory Circular during the certification process.

In addition, this Advisory Circular information in respect of certification which is eligible to conduct by Air Operators to reach the CAAT requirement.

Amendments to this Information and Guidance book will be notified through <http://www.caat.or.th/>



(Chula Sukmanop)

Acting Director General

The Civil Aviation Authority of Thailand

Advisory Circular	CAAT Airworthiness Section	
AC AW-06-PED	Use of Portable Electronic Devices On-board Aircraft	
		Date 1 September 2016
	Advisory Circular Owner: AIR (CAAT)	

**AC AW-06-PED
1 September 2016**

Advisory Circular

Use of Portable Electronic Devices On-board Aircraft

1. GENERAL. Advisory Circulars (ACs) are issued by the Civil Aviation Authority of Thailand and contain information about standards, practices and procedures acceptable to the Authority.

The revision number of the AC is indicated in parenthesis in the suffix of the AC number.

2. PURPOSE. This Advisory Circular (AC) provides AOC holders guidance on the use of portable electronic

Devices (PEDs).

3. APPLICABILITY. This AC applies to all Thailand AOC holders

4. CANCELLATION. This is the first AC issued on this subject.

5. EFFECTIVE DATE. This AC is effective from 20 September 2016.

6. REFERENCES. The following materials were referred to for the development of this AC:

(a) RTCA DO-160, RTCA DO-294 and RTCA DO-307

(b) FAA AC No 91-21B, EUROCAE ED-130

7. INTRODUCTION.

This Advisory Circular provided for information and guidance propose. It may describe an example of acceptable means, but not the only means of demonstrating compliance with regulations and standards.

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8. BACKGROUND

a) Unintentionally Transmitting PEDs

- (1) Unintentionally transmitting PEDs do not intentionally transmit Radio Frequency (RF) signals. However, by virtue of their electrical operation, spurious RF radiation will be unintentionally emitted and these could cause EM interference to aircraft systems.
- (2) These PEDs may include but not limited to, computing equipment, cameras, radio receivers, electronic games and toys and medical portable electronic devices (such as automated external defibrillators (AEDs) and portable oxygen concentrators).

Note: Due to the proliferation of wireless technologies in consumer products, PEDs that were conventionally not wireless enabled were increasingly embedded with such capabilities. For the purpose of this AC, unintentionally transmitting PEDs refers to PEDs with no embedded wireless function, or with their wireless function positively deactivated.

b) Intentionally Transmitting PEDs (T-PEDs)

- (1) Intentionally transmitting PEDs transmit RF signals to accomplish their intended functions. For such PEDs, the primary concern is that the radiated RF energy could induce direct EM interference into aircraft equipment, wiring and components, and compromise safe operation of flight.
- (2) T-PEDs may include but not limited to cellphones, satellite phones, wireless enabled devices (such as laptops and tablets), remote control equipment and two-way radios.

9. OPERATIONAL REQUIREMENTS.

9.1 Use of PEDs on Board Aircraft

a) As specified in the CAAT requirements,

- (1) The operator may allow the use of PEDs on board an aircraft:
 - i) During non-critical phases of flight, i.e. cruise and park/gate;
 - ii) When the aircraft's altitude is above 10,000 ft; or
 - iii) During taxi-in after the aircraft has landed and exited the active runway;

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provided the operator has ascertained the use of such PEDs will not interfere with the performance of the aircraft's systems and equipment, has established procedures and has assigned crewmember responsibilities for ensuring safe use of the PEDs. (refer to paragraph 9.2 for details)

- (2) The use of certain PED may be permitted for all phases of flight if it poses a very low safety risk and has been shown to generate negligible interference. Examples of these are those which use small liquid crystal displays, such as watches and calculators, and other low power consumption equipment, such as heart pacemakers and hearing aids.
- b) For T-PEDs, their usage is prohibited during cruise and above 10,000 ft unless:
- (1) The transmitting function of the T-PEDs is disabled. Some phones and other wireless devices have a special "flight" or "airplane" mode that turns off the transmitting function of the device. These inhibition modes allows the safe use of non-transmitting functions (e.g. games, music or other applications) of the device during cruise; or
 - (2) Approval of the corresponding on board wireless systems has been granted by CAAT. Some operators provide wireless voice and/or data services, such as cellular, wireless broadband and wireless inflight entertainment on board their aircraft. These systems are subjected to EM interference and compatibility tests in accordance of paragraph 10.1, to ensure the usage of T-PEDs do not interfere with aircraft systems.
- c) For medical portable electronic devices (M-PEDs) such as AEDs, portable oxygen concentrators and airborne patient medical telemonitoring equipment, their usage is permitted during all phases of flight if they are designed and tested in accordance of paragraph 10.1.
- d) For guidance on usage of PEDs as Electronic Flight Bag, please refer to AC "Electronic Flight Bags (EFB)".

9.2 PED Policy and Procedures

- a) If the operator permit the use of PEDs on board an aircraft as provided in paragraph 9.1, a risk assessment must be carried out and procedures established in its operations manual to mitigate any hazards associated with the use of PEDs. The procedures should include the following:
 - (1) Inform passengers of the permissible times, conditions and limitations when various PEDs may be used.

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- (2) Locate and terminate the operation of any PED suspected of causing interference to aircraft systems.
- (3) Coordination between flight deck and cabin to deal with suspected interference from PEDs
- (4) Ensure passengers remained seated with their seat belt fastened during taxi-in.
- (5) Report to CAAT any suspected or confirmed EM interference with aircraft systems caused by the use of PEDs.

Notwithstanding any use of PED permitted by the operator, the pilot-in-command has the right to terminate the use of any PED.

- b) The operator is required to train its crew members on the company's policy and procedures for permitting the use of PEDs. The training should include, but is not limited to cabin management of PEDs.
- c) The operator may allow his pilot-in-command of the flight to authorize the use of PEDs during extended wait on the ground such as extended delays before take-off, aircraft returning to parking bay before take-off etc.

10. CRITERIA FOR SAFE OPERATION OF PED.

10.1 Non-Interference Testing

- a) It is the operator's responsibility to determine the operation of the PEDs will not cause interference to installed aircraft systems.
- b) This determination may be based on tests conducted. To assist the operator in the technical demonstration of non EM interference, it is recommended that an appropriate Design Organization Approval (DOA) holder is engaged. CAAT may assist in reviewing the test plans, witnessing the tests and verifying that the results are acceptable.
- c) Medical Portable Electronic Devices (M-PEDs)
 - (1) The use of M-PEDs may be permitted for all phases of flight if they are designed and tested in accordance of RTCA DO-160.
 - (2) Laboratory RF emission test should be performed using procedures detailed in RTCA DO-160 (current edition). Section 21, Category 'M' of the RTCA document should be used to test and establish the RF emission limits. The RF emissions should be measured in all modes of operation.

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- (3) M-PEDs that test within the emission levels may be used on board the aircraft without further testing by the operator.

d) Intentionally Transmitting PEDs (T-PEDs)

- (1) The use of T-PEDs during cruise or above 10,000 ft may be permitted if the aircraft is equipped with onboard wireless system that is approved by CAAT.
- (2) Approval granted by CAAT would normally involve safety assessment, functional tests, EM compatibility tests and EM interference tests. It is recommended that an appropriate DOA holder or equivalent is engaged to assist the operator to apply for the installation of onboard wireless system.
- (3) The technical demonstration to determine the acceptable use of T-PEDs should be performed in accordance with applicable processes set forth in RTCA DO-294 (current edition), EUROCAE ED-130 (current edition) or RTCA DO-307 (current edition).
- (4) This assessment must confirm that there is no interference to aircraft equipment as a result of intentional transmission from the T-PEDs.

10.2 Battery Safety

a) Passenger PEDs

- (1) Batteries installed in PEDs pose a fire hazard and safety concerns include the possibility of explosion caused by failures of the batteries.
- (2) The operator should refer to the ICAO TI for the carriage requirements of PEDs installed with batteries.

b) PED Provided by the Operator

- (1) The operator may provide PEDs to passenger for use as entertainment devices. The batteries contained in these devices pose a fire hazard and the potential large amount of PEDs that the operator may carry on board for this purpose would result in an increased risk of a battery fire.
- (2) To mitigate the risk of battery fire, the following procedures should be adhered to:
 - i) PEDs installed with lithium metal or lithium ion batteries

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- a. The PEDs should be stored in a manner to prevent consecutive thermal runaway.
 - b. The containers, drawers and peripherals used to store the PEDs should be able to contain fire that is generated from PEDs.
 - c. The lithium metal or lithium ion batteries installed in the PEDs must be of the type that meet the requirements of each test of the UN Manual of Test and Criteria, Part III, subsection 38.3 and manufactured under a quality management programme as described in the ICAO TI.
 - d. The capacity of the main and spare lithium metal or lithium ion batteries of the PEDs must be within the watt-hour limitations permitted for passengers and crew as specified in the ICAO TI.
 - e. Spare lithium metal or lithium ion batteries not installed in PEDs must be protected from external short circuit and stored in the cabin only.
- (ii) PEDs installed with other non-spillable batteries
- a. PEDs containing batteries that meet the requirements of special provision A67 stipulated in ICAO TI may be permitted provided the battery must not have a voltage greater than 12 volts and a Watt-hour (Wh) rating of not greater than 100Wh.
 - b. Spare batteries must be protected from external short circuit and stored in the cabin only.

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11. SUMMARY.

11.1 The use of PEDs on Thai-registered aircraft for the different phases of flight is summarized as follows:

Types of PEDs	Use of PEDs							
	Critical Phases of Flight			Non-Critical Phase of Flight	Critical Phases of Flight			Non-Critical Phase of Flight
	Taxi- out	Take-off	Climb	Cruise	Approach	Landin g	Taxi-in	Park/ Gate
Intentionally transmitting (T-PEDs)	Forbidden			Forbidden ¹²	Forbidden			Permitted
Unintentionally transmitting	Forbidden ³			Permitted	Forbidden ³			Permitted
Unintentionally transmitting, with low level of emission	Permitted							

1 May be permitted if the transmitting function of the T-PEDs is dis-abled.

2 May be permitted if the corresponding on board wireless systems has been approved by CAAT

3 M-PEDs may be permitted if tested to RTCA DO-160

11.2 The operator should take into account the contents of this AC when developing or amending procedures related to the use of PEDs onboard the aircraft.

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11.3 The responsibility remains with the operator to ensure that the use of PEDs does not affect the safety of the flight.

12. CONTACT PERSON AND INFORMATION.

12.1 Should you have any queries relating to the above, please contact Flight Standards Bureau, Aircraft Engineering Group.