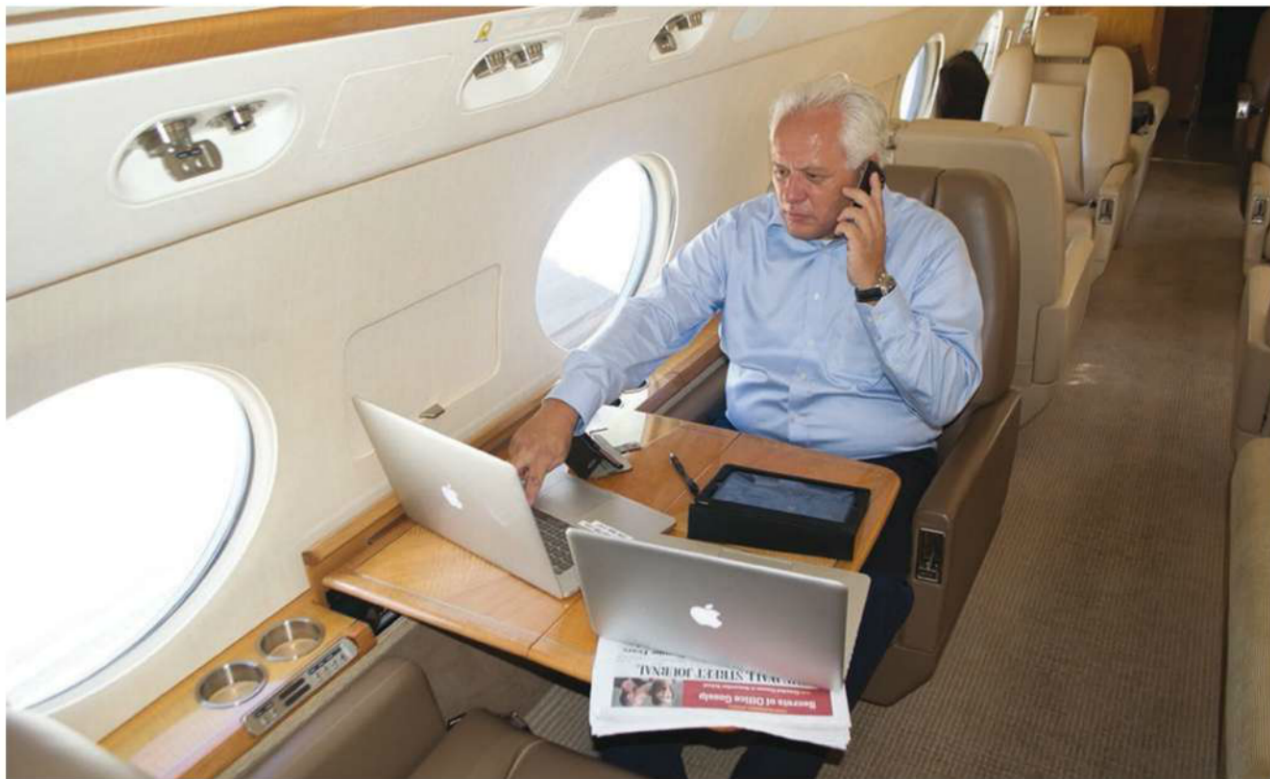


Saying Yes to Portable Electronic Devices

Your answer may not be well received if it is based on regulations that are nearly **50 years out of date**



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Do you allow your passengers to use portable electronic devices (PEDs) below 10,000 ft.? Should you? Try these two scenarios on for size:

Scenario One: You are about to depart on an FAR Part 91 trip with the person who signs your paycheck. “Mr. Big is working on a very important spreadsheet,” you hear from the cabin crew. “He insists we take off right away, but he will not be putting his computer away.”

Scenario Two: You are flying a Part 135 charter with a family on a two-week vacation that will net your company a cool quarter million dollars in revenue.

While taxiing for the first flight of the trip, the flight attendant reports two of the three teenage passengers refuse to stow their portable music players and the other is using a handheld game. When told to put these away, the parents asked why it was OK on American Airlines but not in your fancy Gulfstream 650.

What will you do? If you are flying for a commercial operator, your response should be automatic and scripted by your company manuals. These rules, however, could be harsher than they need to be. If you are flying under 14 CFR 91, it is up to you, the pilot in command. Chances are

your response will not be harsh enough. In either case, your answer may not be well received if it is based on regulations that are nearly 50 years out of date.

PEDs and Aviation: A Brief History

The first U.S. PED policy was enacted in 1966. An obscure statement in each regulation (Part 91.21, 121.306, 125.204 and 135.144) said hearing aids, pacemakers, portable voice recorders and shavers were OK, but anything else had to

be approved by the operator. In Part 91 operations the PIC, with or without any technical knowledge, made the call. For commercial operators, it was up to a company with possibly less expertise than the pilot.

In 2006, things got a little better with the publication of Advisory Circular 91-21.1B, which allows most non-cellular PEDs, provided everything is shut off below 10,000 ft. This appears to be the most popular policy in business aviation today.

In late 2013, an Aviation Rulemaking Committee (ARC) published a groundbreaking report investigating expanded PED usage. The FAA appeared to endorse many of the ARC's recommendations with Information for Operators (InFO) 13010.

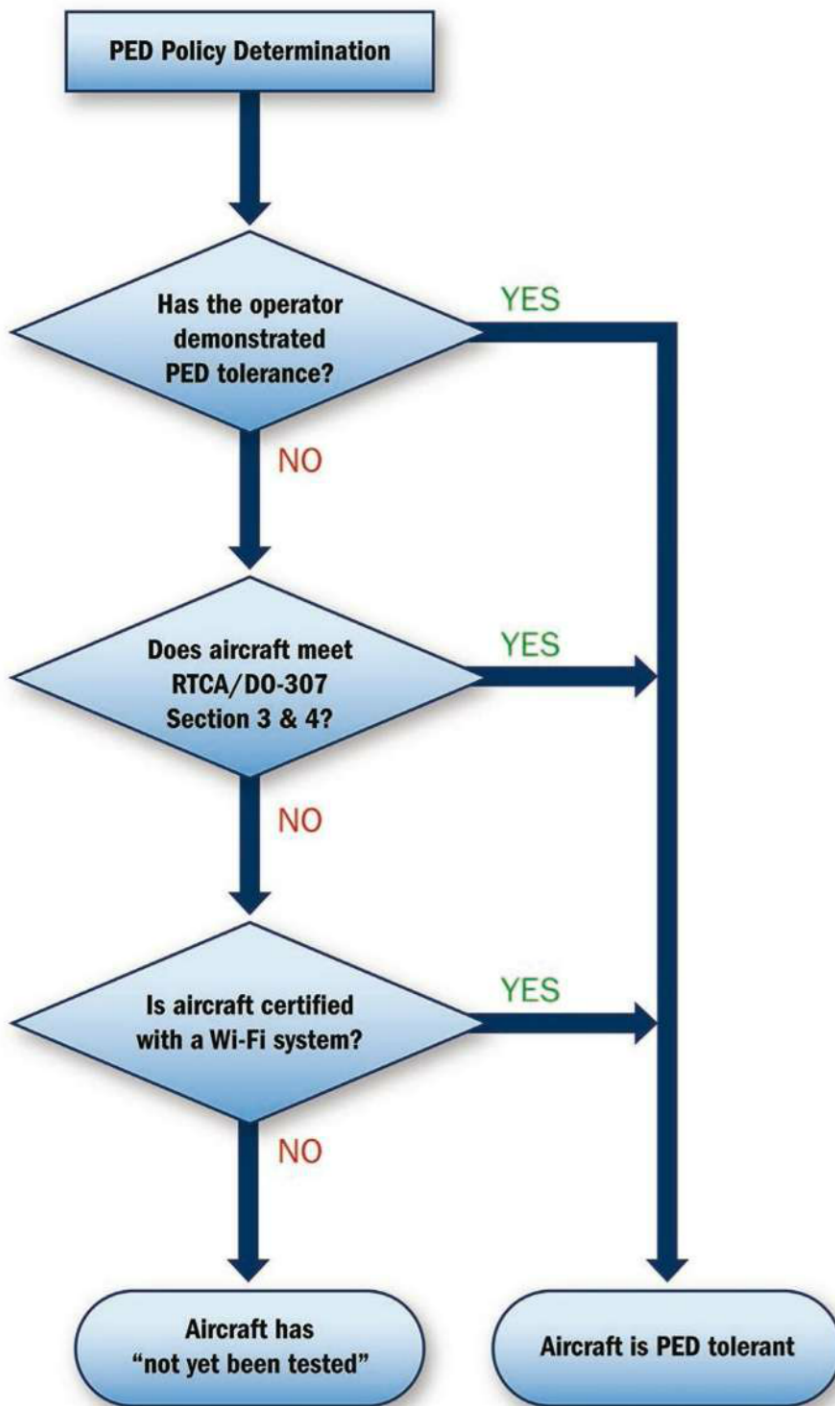
The ARC report is available at http://www.faa.gov/about/initiatives/ped/media/PED_ARC_FINAL_REPORT.pdf but makes for 222 pages of confusing reading. Between the ARC report and InFO 13010, however, it is possible to plot a course that allows expanded PED usage on many business and commercial aircraft. You have to prove your aircraft is PED-tolerant, mitigate certain risks and institute policies that protect passengers from PEDs that could become projectiles or hinder egress. Once you've done all that, you can expand the use of PEDs to additional phases of flight while staying in compliance with 14 CFR 91.21, 121.306, 125.204, or 135.144.

Those CFRs are what we tend to call Federal Aviation Regulations. A CFR from the Federal Communications Commission, 47 CFR 22.925, prohibits the use of cellular services while in flight to protect against interference to systems on the ground. Nothing in the ARC report or InFO 13010 relieves us of this restriction. We are still required to place our PEDs in "Airplane Mode" (cellular transmitters off) from the time the aircraft takes off until it lands.

Of course all of this has been true since 2006 when the so-called 10,000-ft. rule took hold. To expand permitted PED operations, you must first demonstrate your aircraft's "PED tolerance."

PED Tolerance

Is your aircraft PED-tolerant? Back when a 1961 study concluded that VHF Omni Range (VOR) navigation systems were susceptible to interference, the primary concern was interference with radio receivers that could throw an aircraft off course or leave crews unable to communicate. Now we must also be concerned



Source: code777.com

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PED Notes

A portable electronic device (PED) is a lightweight, electrically or battery-powered piece of equipment. These devices are typically consumer electronic devices capable of communications and data processing, such as a tablet, e-reader or handheld computer games. Please note that mobile phones are not considered PEDs in this context and thus may be used only when the boarding door is open and during taxi to the gate after landing.

Approved PEDs now may be used from boarding to disembarking on all flights operating within the U.S. The following PEDs are approved from boarding to disembarking:

- ▶ AM/FM or satellite radios
- ▶ Calculators
- ▶ Digital and video cameras
- ▶ DVD players*
- ▶ e-readers
- ▶ Electric shavers
- ▶ Electronic/digital watches
- ▶ Global positioning system (GPS) receivers
- ▶ Handheld computer games
- ▶ Headphones
- ▶ Laptop computers*
- ▶ Medical devices**
- ▶ Noise reduction headphones
- ▶ Pagers
- ▶ Portable media players*
- ▶ Smartphones***
- ▶ Tablets and wireless keyboards or mouse

*DVD players, laptop computers, and other devices that exceed 2 lb. must be stowed for taxi, takeoff and landing.

**Medical devices including the following items may be used during all phases of flight: hearing aids, heart monitors, heart pacemakers and other implanted medical devices, insulin pumps, nebulizers/vaporizers, approved portable oxygen concentrators, approved respirators/ventilators, approved sleep apnea machines.

***Smartphones and any device with cellular network service must be turned off or in airplane mode.

PED use on the ground and during takeoff and landing should be limited to small, lightweight devices less than 2 lb. These devices should be of a size that could easily be secured and not impede emergency egress to the aisle.

The following devices cannot be used: e-cigarettes, personal air purifiers, remote control toys, televisions, transmitters (amateur, citizens band [CB], two-way radios or walkie-talkies), VHF scanner receivers and any device with cellular network service enabled. *Please note:* Mobile phones may be used only when the boarding door is open and during taxi in to the gate after landing.

Cameras (digital, film and video) may be used during all phases of flight if they do not exceed the size/weight restrictions. Devices that exceed size/weight must be stowed for taxi, takeoff and landing.

When flying outside the U.S., usage of these PEDs must be discontinued from taxi to takeoff until 10,000 ft., and then again from 10,000 ft. until landing. The captain may also announce other times when PED usage must be discontinued, depending on the airport navigation facilities and weather.

with interference with fly-by-wire controls, electronic displays and computerized aircraft systems that control everything from pressurization to engine operation. It is no wonder commercial and private operators have been reluctant to tackle this problem even as PEDs began to proliferate forward and aft of the cockpit door. The 2013 ARC report, fortunately, has made it easier for some of us.

A supplement to InFO 13010 identifies two major categories of electronic interference: “Backdoor coupling” is interference with aircraft systems; “front-door coupling” is interference with avionics receivers.

Aircraft systems that comply with the design tolerance requirements established in Radio Technical Commission for Aeronautics (RTCA) DO-307 are deemed PED-tolerant. The ARC report also notes that aircraft tested during certification of wireless system installations may use that testing in lieu of DO-307 certification for backdoor coupling. InFO 13010 states that “aircraft equipped with wireless systems have been tested to ensure that they will not interfere with the aircraft’s avionics,” which covers front-door coupling.

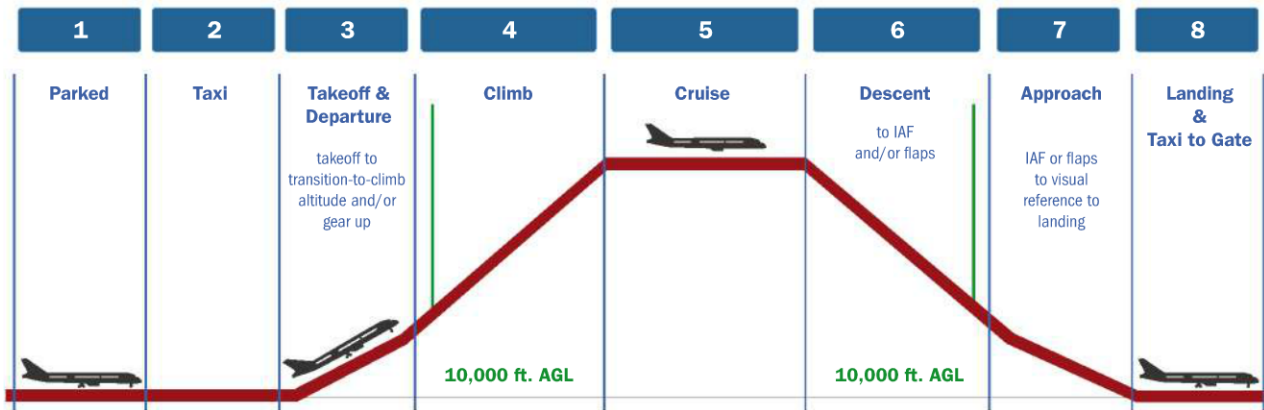
So there are two easy answers for modern aircraft: If your aircraft was certified to comply with RTCA/DO-307 or has a certified Wi-Fi system, it is PED-tolerant.

Eligible Phases of Flight

The ARC report strives for consistent application of expanded PED use policies across the aviation industry to reduce passenger confusion and encourages operators to adopt standard usage policies across flight phases. PED-tolerant aircraft should be able to allow expanded PED usage while parked, during taxi, after landing and taxi to parking. Usage can be allowed from takeoff to landing if a qualitative safety risk assessment is accomplished and controls and mitigations are in place. The report has done much of this work for you.

The ARC report finds that ADF, HF voice, HF data link, marker beacons, radio altimeters and weather radar are sufficiently protected from PED emissions and that errors in GPS, DME, transponder systems and TCAS are extremely unlikely. It also found that any issues with VHF communications are minor.

The report noted that VOR receivers are susceptible to interference and that there are risks involved with a non-precision VOR approach in the weather. The



Source: Aviation Rulemaking Committee/code777.com

If your aircraft is not PED-tolerant you will have to revert to the Advisory Circular 91-21.1B 10,000-ft. rule.

crew could unknowingly lose accurate information near the ground. If you are flying such an approach without a GPS backup, you might consider disallowing the use of PEDs during the approach and landing.

The report did not assess Instrument Landing Systems (ILS) under low-visibility conditions but says PED usage during ILS approaches can be permitted if the operator mitigates the risk. The report suggests an acceptable mitigation for a Category I ILS would be to require the crew to cross check the radio altimeter at glideslope intercept, use EGPWS-based alerting and cross check the ILS with FMS and/or GPS for the desired lateral track.

Using these mitigation strategies, an operator could allow PED usage from “gate to gate” with the provision that flight crews will inform all passengers to discontinue PED usage when flying a VOR-only approach in instrument conditions, when flying a Category II or III ILS approach below Category I minimums or at any time the level of cross check is below what they deem acceptable.

Physical Impacts

If you permit PED usage during ground operations, takeoff, approach and landing, you must consider their adverse impact on emergency egress and the potential for injury if they become airborne projectiles. It is up to the operator to come up with a PED size and weight limit and much of the focus in this area addresses approved carry-on baggage programs and the size of seat pockets.

An FAA Civil Aerospace Medicine

Institute study in 2013 stresses the importance of immediately accessible PED stowage provisions, such as a seatback pocket, to mitigate evacuation delays. The study also warns that “items of mass” can become projectiles during a sudden deceleration that could be experienced during a rejected takeoff, turbulence or a hard landing. The study implies that PEDs should be small enough to fit into seat pockets and weigh less than the seat pocket limit of 3 lb. given in FAA InFO 9018.

All of this leaves an operator of aircraft without typical airline style seats deprived of specific guidance. Leaving the studies aside, the bottom line is the PED should be small enough that it will not block an aisle during an emergency egress and light enough so that a passenger will not lose control of it during turbulence or sudden deceleration.

A common sense solution would be to allow the use of “handheld” PEDs weighing no more than 2 lb. during ground operations, including takeoff and landing. The use of larger PEDs, such as laptop computers, would be restricted to flight above 10,000 ft. or when permitted by announcement from the flight deck.

Two Courses of Action

If your aircraft is PED-tolerant, you can expand PED usage provided you establish the necessary risk mitigations for each phase of flight. Remember that these expanded rules apply only in the U.S. While flying over foreign territory, you must comply with host nation rules. International rules are evolving and most U.S. air carriers have elected to enforce the 10,000-ft. rule for now.

If your aircraft is not PED-tolerant you will have to revert to the Advisory Circular 91-21.1B 10,000-ft. rule.

Passenger Announcements

Passengers should be informed of the rules early and reminded when larger PEDs must be stowed. A passenger information card can answer many questions before they are asked.

Any briefings should mention that PED usage could be terminated at the flight crew’s discretion (when shooting a VOR-only approach to minimums, for example): “This aircraft tolerates emissions from electronic devices for all phases of flight. Please note, however, that the pilot is authorized to restrict use of electronic devices as necessary to ensure safe operation of the flight.”

If the airplane is not PED-tolerant, the briefing should mention the reason why: “This aircraft has not yet been assessed to tolerate emissions from electronic devices. Please power them off until an announcement is made that it is OK to turn them back on again.”

Saying Yes

We, as professional flight crews, have long suspected the 10,000-ft. PED restriction was overkill. From 2002 to 2013, the NASA Aviation Safety Reporting System (ASRS) recorded 56 instances of PED-related incidents. Since 2008, there have been no reports of suspected or confirmed electronic interference. Of the categories of incidents, only PED battery smoke, fire or fumes continues with at least one report every year.

Now, thanks to the work of the 2013 report from the Portable Electronic Devices Aviation Rulemaking Committee to the FAA, many of us have the option to expand PED usage on our aircraft. If your investigation reveals your aircraft is PED-tolerant, you too can finally say yes to expanded PED usage. **B&CA**