This document is a supplement to InFO 13010.

Information for Operators (InFOs) may be found at the following link:
http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/info/all_infos/

Effective Date:
June 9, 2014

SUBJ: FAA Aid to Operators for the Expanded Use of Passenger PEDS

Purpose
This document is intended to be an aid for operators which outline issues that should be addressed when implementing a policy that allows an expanded use of passenger supplied portable electronic devices (PEDs) throughout various phases of flight.

Applicability and Scope
This aid to operators is applicable to Title 14 of the Code of Federal Regulations (14 CFR) part 119 certificate holders and 91 subpart K (91K) program managers. When followed, it provides an acceptable method of compliance for 14 CFR part 91 section (§) 91.21, part 121 § 121.306, part 125 § 125.204, or part 135 § 135.144, as applicable, when allowing expanded use of PEDs various phases of flight. The use of the terms “aircraft operator(s)” and “operator” throughout this document is applicable to operations conducted under 14 CFR parts 91K, 121, 125 and 135.

Instructions
Each aircraft make and model must be evaluated when expanding PED use. An operator may document a single evaluation that addresses their entire fleet (may be multiple aircraft make and models) or may use separate evaluations for each make and model. When significant differences or variations exist, separate assessment should be done. First, the assessment goes through a technical evaluation of the aircraft to determine eligible PED usage and then provides a checklist to ensure the necessary changes to an operator’s policies, manuals, crew training and/or authorizations have been addressed.

Process Overview:

Contact
Flight Standards has designated a group of experts from the Air Transportation Division, AFS-200 and the Aircraft Maintenance Division, AFS-300; who are familiar with the work of the PED ARC, to assist with implementation of PEDs throughout various phases of flight. FAA Certificate Holding District Office and Regional Offices will be able to consult with this group during the review and approval process.

1. AIRCRAFT PED IMMUNITY:

1.1. Back Door Interference Assessment

Describe HIRF certification basis and/or subsequent PED immunity demonstration. Check if YES. See appendix B for detailed process.

PED Tolerance Qualification	☐	1. Aircraft that meet RTCA/DO-307 Section 3 *Aircraft system tolerant to Intentionally transmitting PEDs, Back Door Coupling*	No further back-door analysis required.
	☐	2. PED tolerance demonstration per standard Transport Directorate Issue Paper associated with the installation of a wireless local area network - or - similar capability. • At installation, other systems may have received additional testing beyond that of a Hazard Classification of Catastrophic, but the documentation was not required for certification. • Back-door interference tolerance is provided for the frequency ranges tested. Significantly different frequency ranges require additional testing.	No further back-door analysis required.
	☐	3. PED tolerance demonstration testing and analysis done using other acceptable methods. Test must be comprehensive and operator must have data to support the testing. • PED testing in support of previous PED use allowance determination, such as WiFi system or cell phone testing done to support inflight use, may be acceptable. Must be supported by assessment of critical systems in the expanded phase of flight to ensure the previous testing covered these systems. • Back-door interference tolerance is provided for the frequency ranges tested. Significantly different frequency ranges require additional testing.	No further back-door analysis required.
HIRF Qualification	☐	4. Aircraft Type Certificated or system installed that meet FAA or EASA HIRF Regulations. (Follow decision flow chart in Appendix B) *Meeting HIRF specifications, Special Conditions (e.g., 25-302-SC), or regulations* • *Catastrophic* systems have been tested at a minimum. • *Operational Required* equipment has not been tested. • At certification, other systems may have received additional testing but the documentation was not required.	No further back-door analysis required.
	☐	5. Aircraft Type Certificated or system installed prior to HIRF Regulatory Specifications in effect in 1987. *Aircraft certified prior to 1987 do not have verified RF immunity.* • *Compliance to DO-307 has not been met.* • *At certification, other systems may have received additional testing but the documentation was not required.*	Back door tolerance not demonstrated. Additional assessment or test required

1.2. Front Door Interference Assessment

The ARC report, Appendix F - Functional Hazard Risk Assessment (FHRA), contains a safety risk assessment for operators to assess the avionics configuration of their fleet, and the failure modes associated with different types of communications and navigation equipment with respect to electromagnetic interference. The assessment outlines mitigations and controls that the operator needs to adopt to expand PED use into various phases of flight.

☐	1. Aircraft that Meet FAA RTCA/DO-307 Section 4 *Aircraft systems tolerant to unintentional emissions from PEDs, Front Door Coupling*	No further front-door analysis required.
☐	2. Aircraft system function with Catastrophic, Hazardous or Major failure condition (see risk assessment, "Hazard Class" column) documented to meet the interference path loss requirements of DO-307/DO-294. *Documented system tolerance to unintentional emissions from PEDs, Front Door Coupling*	No further front-door analysis required.
☐	3. Aircraft system function with Catastrophic, Hazardous or Major failure condition (see risk assessment) **NOT** documented to meet the interference path loss requirements of DO-307/DO-294.	Must mitigate and apply controls. Risk assessment actions for required catastrophic.

2. ANALYSIS AND MITIGATION

The table below applies the results of the assessment of both front door and back door PED tolerance and determines the phases of flight where PEDs can remain on and be used.

STEP 1: Back-Door Tolerance Which rows in Section 1.1, Back Door Interference, are checked Yes?		**STEP 2: Front Door Tolerance** Which rows in Section 1.2, Front Door Interference, are checked Yes?		**STEP 3. Acceptable Phases of Flight** Tally the results. A 'YES" in STEP 1 and a "YES" in STEP 2means that this phase of operations is permitted. See notes if your aircraft results in either a 'NO' or 'LIMITED'. **Check permitted phases below:**	
A 'YES' to any of the Questions 1 – 4 results in a YES, below for all phases of operation:	A 'Yes' to ONLY Question 5 will require additional assessment or testing for certain phases of operation:	A 'YES' to Questions 1 or 2 results in a YES, below:	A 'Yes' to ONLY Question 3 will require risk assessment, and mitigations / controls.		
Yes	Yes	Yes	Yes	**Parked:** Passenger boarding and seating to door close.	1
Yes	Yes	Yes	Yes	**Taxi Out:** Push back, taxi from gate to (but not including on) the runway.	2
Yes	NO [1]	Yes	Yes	**Take-off & Departure**. Take-off transition to climb altitude/or gear-up	3
Yes	Yes	Yes	Yes	**Climb:** From 'transition to climb altitude' and/or gear retraction to through 10,000 ft AGL and onto cruise altitude.	4
Yes	Yes	Yes	Yes	**Cruise:** (currently authorized)	5
Yes	Yes	Yes	LIMITED [2]	**Descent:** From top of descent through 10,000 ft AGL to IAF and or/flaps	6
Yes	NO [1]	Yes	LIMITED [2]	**Approach:** From IAF to visual reference or landing.	7
Yes	Yes	Yes	Yes	**Landing & Taxi to Gate:** Begins at airplane touchdown, and concludes when airplane is parked for passenger unloading.	8

[1] **NO**:

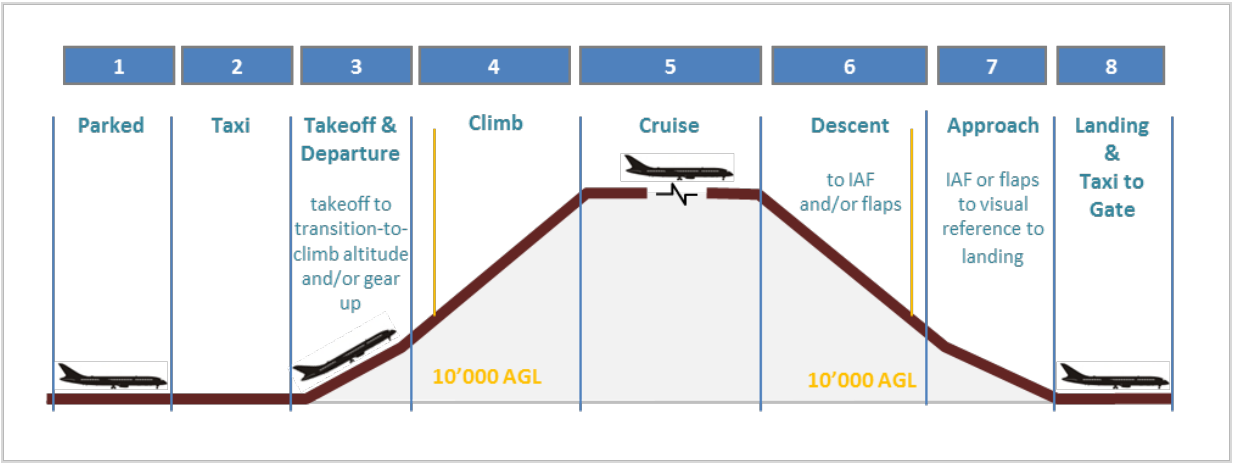
Additional analysis and/or testing of avionics or electrical systems that have major, hazardous or catastrophic failure effects as certified must be done to address back-door PED tolerance.

[2] **LIMITED:**

Examine the ARC report, Appendix F, specifically the tables starting on page F-37.

1. Reference the 'Phase of Flight' column and look for a '6' or '7', 'Descent' or 'Approach' respectively.
2. Identify the Avionics Systems, the failure modes that have been presented with respect to EMI. Apply the necessary mitigations and controls as indicated, at a minimum for those items with a "Hazard Class" at certification of 'Catastrophic', 'Hazardous' or 'Major'.
3. For operations (such as CAT II or CAT III), where the Hazard Classification is 'Catastrophic', the listed Mitigations and Controls are mandatory.

PHASE OF FLIGHT DIAGRAM



3. ESTABLISH EXPANDED PED USE

3.1. Document Permitted PED Use

1. Phases of operation (from section 2.) List the phases of flight where PED use is **permitted**:

_____

_____

3.2. Document Prohibited PED Use

The following, as compiled from sections 1 and 2, provides a list of key elements that should be present in an operator's policy and procedures in order to safely implement expanded use of PEDs.

1. Phases of flight: (from section 2.) List the phases of flight where PED use is **prohibited**:

_____

_____

2. List any specific flight operations where PED use is **prohibited**:

_____

_____

3. Current FCC regulations prohibit the use of cellular services in flight. Cellular services must be turned off (Airplane mode) while in flight but other wireless services, such as WiFi or blue tooth may be used if system is installed in aircraft to provide that service. List phases of flight where other (non-cellular) wireless services may be used.

_____

_____

_____

4. OPERATIONAL POLICY AND PROCEDURES

This checklist provides a list of key elements that, if not currently covered, should be present in an operator's policy and procedures in order to safely implement the expanded use of PEDs. These elements should address the PED use expansion details provided in section 3.

It is acceptable to provide a temporary revision, insert or other methods of communication that an operator normally uses to convey urgent information as an interim method until the documents can be revised. These could include inserts, temporary document changes, stickers, etc.

1.	EXPANDED PASSENGER PED USE IN U.S. AND INTERNATIONAL AIRSPACE Operator has addressed in their policy expanded passenger PED use within U.S. airspace and outside U.S. airspace. Operators may expand the passenger use of portable electronic devices on domestic and international flights while within U.S. airspace (which includes the airspace over the CONUS, Alaska, Hawaii, U.S. territories and possessions, and U.S. territorial waters) and international airspace (over the high seas). Each operator may allow the expanded use of portable electronic devices when in the airspace of another country if doing so is consistent with the operating rules of that country. If a foreign country has adopted a more restrictive rule on PED use, the operator is bound by that regulation while in that country's airspace.	☐ Complete
2.	CREW COMMUNICATIONS: (See also Appendix A) Operator has updated procedural and communications checklists as required for Normal, Abnormal and Emergency operations. This should include guidance for when PEDs can be used, and when they must be turned off or when and what type of wireless services can be used.	☐ Complete
3.	Pre-departure safety briefing. Operator has addressed the expanded use of PEDs by Passengers during the safety briefing. There should be adequate emphasis that the pre-departure briefing is important to safe operations and to minimize PED distractions during the safety briefing.	☐ Complete
4.	Operator has updated procedural and communications checklists as appropriate for any changes associated with expanded passenger PED use.	☐ Complete
5.	PED SECURING AND STOWAGE (See also Appendix C) During take-off, landing and other critical phases of flight as appropriate, the operator has policy and procedure to ensure PEDs are properly secured and stowed.	☐ Complete
6.	RISK MITIGATION: Suspected or Confirmed EMI event Operational procedures exist for a crew to recognize, respond and report transient or intermittent problem, suspected or confirmed EMI events. Note: At minimum, record the time, effect on aircraft, aircraft location and phase of flight, suspected PED make, model, location, actions taken, and effect of action taken.	☐ Complete
7.	SAFETY PROGRAM DATA COLLECTION AND REPORTING Operator has policy and procedure related to the reporting of events or anomalies associated with passenger PED use. Reportable items include but are not limited to passenger disruption, suspected or confirmed electromagnetic interference, and PED unit or battery failure that produced smoke or fire. Note: Standard practices ensure that these reports will also benefit the industry: This may be performed through the operator's existing FAA approved ASAP program or via a standard NASA form.	☐ Complete

5. PILOT AND FLIGHT ATTENDANT TRAINING PROGRAM CHECKLIST

This checklist provides a list of key elements, if not currently covered, that should be present in an operator's training program in order to safely implement the expanded use of PEDs.

It is acceptable to provide written or verbal briefings or other methods of communication that an operator normally uses to convey urgent information as an interim method until the training programs can be revised.

1.	SUSPECTED OR CONFIRMED EMI EVENT: Brief crew to ensure aircraft problems, including transient or intermittent problems should be reported.	☐ Complete
2.	CREW COORDINATION AND COMMUNICATION: Explain how the crew will coordinate to manage passenger PED use as explained in Section 3. See also Appendix A for additional information * Ensure instructions are provided to place passenger PEDs in "Airplane mode" to disable cellular service while airborne. Note: When 10,000 feet is referenced in bulletins, manuals and other publications, "above ground level" (AGL) should be appended as referenced in the PED ARC report.	☐ Complete
3.	PASSENGER CARE AND RESPONSE: Describe the communications methods used to teach the passengers about the new policy.	☐ Complete
4.	PASSENGER CARE AND RESPONSE: Explain how the passengers will be informed about when it is OK to use PEDs and when/how they should secure or stow them appropriately.	☐ Complete
5.	PASSENGER CARE AND RESPONSE: Describe techniques that may be used to deal with passengers that are using their PEDs in a disruptive or unsafe way (use of PED speakers instead of headphones, loud voice communications, etc.)	☐ Complete
6.	NON-ROUTINE, ABNORMAL OR EMERGENCY PROCEDURES: Describe how to manage scenarios such as suspected or confirmed electromagnetic interference (see above), PED unit or battery smoke or fire, or other scenarios.	☐ Complete

Appendix A: Crew Communications & Passenger PEDs

This appendix is intended to aid an operator that has opted to allow the expanded use of passenger supplied and operated PEDs. This policy change introduces a need to assess and amend crew coordination and communications procedures as outlined below.

Variables in Communications Methods and Policy

Passenger PED communication needs and methods vary. Communications for routine and normal operations may differ for an abnormal or enforcement situation, often depending upon the perceived severity of the situation and its risk.

- Routine or low risk communications needs translate to minimal or no communication/enforcement. Lower workload communication methods may be more appropriate (such as simple published procedures per passenger briefing cards, in-flight magazine/materials or cabin visual/aural annunciations).

- Non-Routine or higher risk situations require a greater degree of communication, management, and/or enforcement. An oral brief by the crew or personal interaction with a particular passenger may be required.

What situations or variables are ideal, lower risk and require less communication and management and represent minimal crew workload?

- Generally aircraft demonstrated to be 'PED tolerant' will have less restrictions to certain phases of flight, and require less crew supervision and communication. Ideally, these aircraft will be able to participate in a gate to gate 'PEDs OK' environment, leaving only traditional passenger care considerations.

What situations or variables are either non-routine or higher risk, subsequently requiring more communications and management and potentially drive a crew workload increase?

- Generally, older aircraft built to pre-HIRF standards that have not been demonstrated to be PED tolerant will continue to have limitations in certain phases of flight, and require appropriate crew management/communication.
- It's reasonable to expect that until the use of DO-307 and other related 'PED tolerant' testing/shielding methods mature, that there will be some variation between operators/aircraft fleets. This, in itself will drive a need to communicate and educate the flying public due to the variations of policy among operators.
- If PED use restrictions apply, narrowing the window of PED restriction to only certain minimum phases of flight may make PEDs-off compliance more challenging the closer it is to take off and landing; for example, it may not be a viable practice to walk up and down the aisle to enforce policy during steeper angles of climb and descent. A reasonable alternative may be to establish the expectation that the passengers comply with a verbal instruction from the crew to turn PEDs OFF.
- On an extremely rare basis, the flight crew may require the flight attendants to coordinate and check for compliance to ensure that all devices are turned off (e.g. potentially harmful interference noted with flight instruments). Operators should have written procedures in place to address this scenario. A suggested announcement would be: The Captain has detected potential interference from a portable electronic device. He has asked the flight attendant to instruct all passengers to turn off their portable electronic devices. Safety is everyone's responsibility.

Appendix B: Background – Aircraft PED Tolerance to Back-door Interference

Transmitting PEDs (T-PEDs) are widespread among passengers and crewmembers, take many forms, and have many functions. In many cases the transmitting radio is embedded in a T-PED so that the operation of the radio transmitter is not apparent to the T-PED user. These T-PEDs operate in many frequency bands and with a wide range of transmitted RF power. Common T-PEDs and transmitted RF power include:

Table 1: Common T-PEDs and Associated Power

COMMON T-PEDS AND ASSOCIATED POWER	
Device	**Transmitted RF Power**
Handheld mobile phones	500 mW to 2 W
Wireless RF network transceivers	10 mW to 1 W
Consumer handheld walkie-talkies	500 mW to 5 W
Wireless personal digital assistants	500 mW to 2 W
Handheld amateur radio transmitters	500 mW to 7 W
Automobile keyless entry controllers	50 mW or less
Airline operations handheld radios	1 W to 6 W

The aircraft RF environment produced by T-PEDs differs from the aircraft RF environment associated with High Intensity Radiated Fields (HIRF). The major differences are:

- Transmitting PEDs may operate very close to airplane systems and wiring, within the aircraft cockpit, cabin, and baggage areas, while HIRF transmitters operate some distance outside the aircraft.
- Airplanes fly through the maximum HIRF RF levels in a few seconds, while the T-PEDs operate within the airplane over a relatively long time frame.

HIRF transmitters are typically very high power transmitters in specific geographic locations outside the aircraft, while T-PEDs may be operated in many locations within the aircraft, including the cabin, cockpit and baggage or cargo compartments.

What methods that can be applied to address HIRF, PED and T-PED threats?

- The existing FAA regulations for high intensity radiated fields (HIRF), 14 25 CFR 23.1308, 25.1317, 27.1317 and 29.1317 were released in 2007. Current HIRF rules, apply to systems that have potential failure conditions of Major, Hazardous and Catastrophic.
- The HIRF requirement is based on transmitters located outside the airplane. Previous HIRF special conditions only applied to systems whose failure or malfunction would prevent continued safe flight and landing of the aircraft. It should be noted, however, that the majority of aircraft certified since 1989, also were certified to the JAA/EASA special conditions, which required compliance to Major, Hazardous and Catastrophic failure conditions, in similar fashion to the existing rule.

- For the past several years, the FAA has provided TC/STC applicants with an Issue Paper that is intended to address the Radio Frequency Susceptibility Requirements for airplane systems exposed to Transmitting Portable Electronic Devices (T-PEDs). These issue papers have been transferred into a draft policy letter PS-ANM-25-13.
- "DO-307: Aircraft Design and Certification for Portable Electronic Device (PED) Tolerance" has been released by the RTCA and has been accepted by the FAA for usage in the certification of PED tolerance and is referenced by AC 20-164 "Designing and Demonstrating Aircraft Tolerance to Portable Electronic Devices".

Demonstrated aircraft systems PED tolerance to back door effects show that the installed electrical/electronic systems that perform Required, Major, Hazardous and/or Catastrophic functions are able to perform their intended functions in the presence of RF environment created by T-PEDs, during all non-critical phases of flight. This would allow for operators to treat T-PEDs the same as they would treat non-transmitting PEDs, in accordance with AC 91-21-1B.

Assessment of Aircraft PED Tolerance to Back-door Interference:
RTCA DO-307 provides guidance that if the aircraft electrical and electronic systems and wiring are separated from potential locations of T-PEDs by 1 meter or more, then RF susceptibility tests on the equipment or systems performed in accordance with RTCA/DO-160E Section 20 Category R, are considered acceptable procedures and test levels for this demonstration. If the aircraft electrical and electronic systems and wiring are separated from potential locations of T-PEDs by less than 1 meter, then RF susceptibility tests on the equipment or systems performed in accordance with RTCA/DO-160E Section 20 Category W, are considered acceptable procedures and test levels for this demonstration. The tests may exclude test frequencies above 8 GHz.

The following table is taken directly from DO-307, Section 3, and provides the Back Door effects test requirements, based upon system criticality.

Table 2: DO-307 Section 3 Aircraft System RF Radiated Susceptibility Test Recommendations

Classification of system	Distance between T-PED and system LRU > 20 cm	Distance between T-PED and system LRU < 20 cm
Catastrophic	ED-14E / DO-160E, Section 20, Cat. R	ED-14E/DO-160E Section 20, Cat. W, limited to 8 GHz
Hazardous	ED-14E / DO-160E, Section 20, Cat. R	ED-14E / DO-160E, Section 20, Cat. R
Major	ED-14E / DO-160E, Section 20, Cat. R	ED-14E / DO-160E, Section 20, Cat. R
Required by regulation	ED-14E / DO-160E, Section 20, Cat. R	ED-14E / DO-160E, Section 20, Cat. R

Section 3 of DO-307 discusses the relationship between HIRF protection requirements and PED Tolerance to Back Door interference effects. PED tolerance is accomplished by ensuring that all equipment that performs functions that are listed in the "Classification of system" column of the above table have been qualified by test/analysis to the requirements, given in second and third column. Both DO-160 and the HIRF User's Guide[1] provide procedures that can be utilized for these types of tests.

[1] HIRF User's Guide, "Guide to Certification of Aircraft in a High-Intensity Radiated Field (HIRF) Environment" is available in SAE ARP 5583a. http://www.sae.org/technical/standards/ARP5583A

How do I find out what level of HIRF protection has been applied to my aircraft?

1. **Find the type certificate data sheet (TCDS)**[2] for the make and model aircraft being assessed.

2. Check the Type Certification basis for your aircraft make and model. **Does it include Amendment Nos. 23–57, 25–122, 27–42, or 29–49** (by aircraft certification part as applicable)? Is the associated amendment number captured in a "through" statement? (e.g., 25-109 through 25-124) *(See example 1, next page)*

   a. **YES** - The aircraft has incorporated the necessary HIRF certification levels. No further review necessary. **Done.**

   b. **NO** – Proceed to **step 3**

   ***Tip** – Use the search function in Adobe to help locate the necessary requirements. We suggest that you look for key words such as "basis" or (25-122) to locate the text in the document. Once located, check the section's applicability to ensure the associated aircraft is addressed.*

3. **Search the TCDS for HIRF special conditions.** Is there one listed for your make and model? *(See example 2, next page)*

   a. **YES** – Record the special condition number. **Done, verify.** Look-up the special condition[3]. Review the special condition to ensure it covers electrical and electronic systems. **If not**, go to **step 5**.

   b. **NO** – Proceed to **step 4**.

   ***Tip** – Use the search function in Adobe to help locate the necessary requirements. We suggest that you look for key words such as "high" or "lightning" to locate the text in the document. Once located, check the section to ensure the associated aircraft is addressed.*

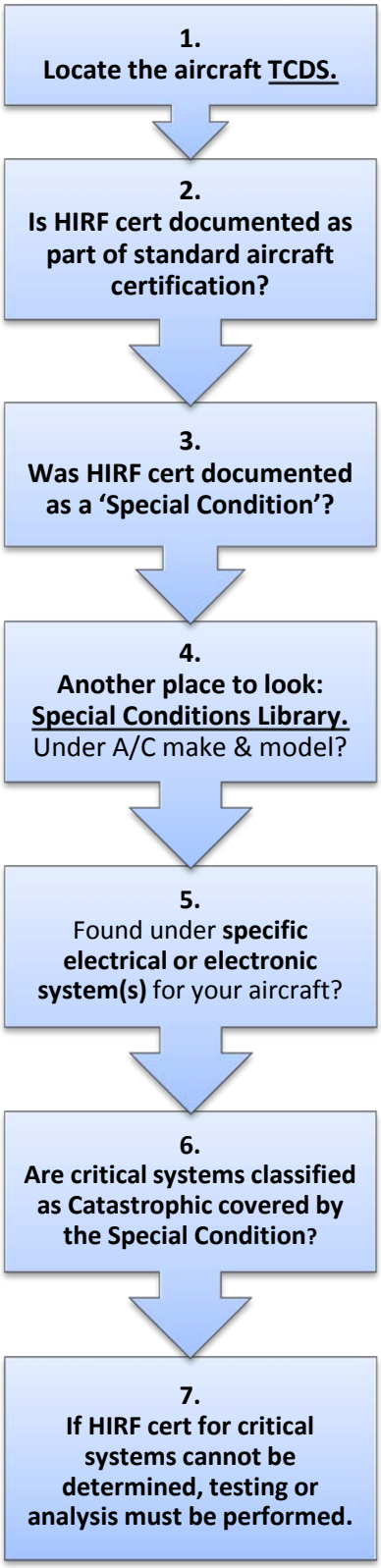
   ***Tip** - Special conditions that cover these systems have also been called "Protection From Lightning and Unwanted Effects of Radio Frequency (RF) Energy" If a HIRF search fails, try this approach*

4. Is there a HIRF Special Condition applicable to aircraft electrical and electronic systems for your make and model aircraft? (use same search tips)

   a. **YES** - Record the special condition number and return to the TCDS for your make and model. Search the TCDS to **verify** that the special condition is listed for your aircraft.

   b. **NO** – Proceed to **step 5**.

OVERVIEW



[2] TCDS Link: http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgMakeModel.nsf/MainFrame?OpenFrameSet
[3] Special Conditions Link: http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgSC.nsf/MainFrame?OpenFrameSet

5. Is there a HIRF Special Condition applicable to specific critical electrical or electronic systems on your make and model aircraft? (use same search tips)

   a. **YES** – record special condition number(s) and the system(s) covered. Proceed to **step 6**.

   b. **NO** – Proceed to **step 7**

6. Review your critical aircraft systems to determine if any electrical or electronic systems were certified with a Hazard Class (failure condition) of 'catastrophic'.
   Does a special condition cover your critical system(s)?

   a. **YES** – The critical systems are adequately covered for PED tolerance to back-door interference. **Done.**

   b. **No** – Proceed to **step 7**.

   Tip *– Some special conditions are applicable for a change to the type certificate when it is revised to include another model incorporating the same novel or unusual design feature. If your TCDS lists a special condition and the language of the special condition does not specify your model, look for language in the special condition that applies it to future changes. (See example 3, page 13)*

7. The critical systems for your aircraft cannot be determined to be PED tolerant to back door interference based on HIRF certification. Testing and analysis for critical systems (those certified with a catastrophic failure effect) to ensure PED tolerance to back-door interference must be (or have been) accomplished.

Aircraft Make/Model Examples:

Example 1: HIRF as part of standard aircraft certification basis:
TDCS Excerpt, Gulfstream VI. Link[4]

Certification Basis:	14 CFR part 25, Airworthiness Standards: Transport Category Airplanes, effective February 1, 1965, including Amendments 25-1 through 25-120 and 25-122, 25-124, and 25-132

Example 2: HIRF addressed as a Special Condition:
TCDS Excerpt, certain Boeing 737 series aircraft:

Special Conditions:

Special Conditions were proposed, in accordance with §21.16. The Special Conditions for the following subjects were issued in Renton, Washington, September 17, 1997. Their effectivity was the same day as issuance:

25-ANM-132, published in the Federal Register on September 17, 1997 for 737-600/-700/-800 airplanes and applicable to later amendments of the 737 model that incorporate the same novel or unusual design feature:

- High Intensity Radiated Fields
- Limit Engine Torque Loads for Sudden Engine Stoppage

Link to Special Conditions No. 25-ANM-132[5]:
Excerpt: *"Model 737-600, -700, -700C, -800, and -900 as of the effective date of these special conditions."*

[4] http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgMakeModel.nsf/0/92fadb614112af7686257bcf0057bccd/$FILE/T00015AT_Rev_4.pdf

[5] Link to example Special Condition:
http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgSC.nsf/0/139AA0B66F69B63D86256BE30069EC41?OpenDocument&Highlight=25-anm-132

Example 3: HIRF addressed as a Special Condition:
TCDS excerpt from 25-ANM-109 that shows it applicable to future changes:

As discussed above, these special conditions would be applicable initially to the Model CL-600-2B16 (CL-604 Variant). Should Canadair apply at a later date for a change to the type certificate to include another model incorporating the same novel or unusual design feature, these special conditions would apply to that model as well, under the provisions of Sec. 21.101(a)(1).

Appendix C: Securing and Stowing Passenger PEDs

1. PED - Stowed vs. Secured:

There is an important distinction that needs to be made between "stowing" and "securing" PEDs. If a PED is "stowed", it must be placed into an approved carry-on stowage location. These locations have been designed and certified to comply with the requirements for retention of articles of mass during emergency landings. Approved carry-on stowage locations have specific weight and size limitations. When a PED is "secured", it is restrained by a method which may not have been certified for retention of articles of mass to the emergency landing load limits. The following elements from the PED ARC stowage policy subcommittee identify several considerations for inclusion in an operator's policy for stowing and securing PEDs (including any M-PEDs air carriers have included in their carry-on baggage programs and/or personal items policies).

a. Large PEDs (such as full-size laptops) must be safely stowed in an approved carry-on stowage location, and not present an undue hazard in the event of severe turbulence, crash forces or emergency egress. Larger PEDs are those the operator has determined weigh more than 2 pounds or are of a size that would impede egress.

b. Small PEDs must be secured (not loose) during surface movement, take-off, descent, approach and landing. Passengers should be encouraged to secure small PEDs on their person by placing them in an armband or garment pocket. Passengers may also secure small PEDs by placing them in the seat pocket. PEDs should not be left unsecured in an adjacent empty seat. Passengers can hold small PEDs as a means to secure, but this method is not preferable.

Seat back pockets generally are designed to hold a maximum of 3 pounds. The passenger safety card, magazines, other literature and air sickness bag account for approximately 1 pound. When an operator conducts a safety risk assessment to determine an acceptable weight limit for the seat pocket, these items should be taken into account. As a general "rule of thumb", small PEDs and other personal items placed in the seat back pocket should not exceed a total of 2 pounds and not protrude to the point of impeding egress. Additional guidance may be found in FAA InFO 09018.

One method of passenger safety communication is to define size parameters of small PEDs which could be safely secured in the seat pocket. Because some large laptops and other devices weigh less than 2 pounds but would be too large to be secured within the seat pocket adoption of language similar to the following may help eliminate conflict or confusion:

Small PEDs are defined as devices that do not exceed the following maximum dimensions or weight:

- X inches width
- X inches height
- X inches depth
- 2 pounds or less

See PED ARC report for additional information on small PED size and weight parameters.

http://www.faa.gov/about/initiatives/ped/

c. PED cords or accessories are not to impede emergency egress.

d. PED policy should discourage passengers from getting up out of their seats to access the overhead bins or other stowage areas at a point in time that would present a hazard to themselves or the passengers around them.

e. Many operators have adopted a list of PEDs and personal items that should not be used at any time onboard aircraft. If an operator chooses to establish such a list, here are some examples of items that have been identified:

- Other transmitting PEDs – PED tolerance may not address all transmitters so some devices should be prohibited unless additional analysis or testing is done to allow their use. These include:
    - Radio controlled toys
    - Transmitters (amateur, citizens band (CB), two-way (i.e. walkie talkies), 49 MHZ)
- E-cigarettes – FAA policy (see 14 CFR §121.306 and FAA Notice N8900.240)
- Other commonly prohibited PEDs – current policy would not prohibit the use of these but some carriers have chosen to do so.
    - Portable radios
    - Television receivers
    - Personal air purifiers
    - VHF scanner receivers

2. Medical Portable Electronic Devices (M-PED):

Each airline must determine that its aircraft are PED tolerant to avoid evaluation of each specific PED make and model. A determination of aircraft PED tolerance with respect to passenger PEDs includes M-PEDs. The FAA believes that sufficient risk mitigation can occur to allow for safe operation of M-PEDs during critical phases of flight.
The FAA does not have a safety regulation that would prevent M-PEDs from being voluntarily included in an airline's carry-on baggage program and/or personal items policy as part of the general class of passenger supplied and operated PEDs. The FAA encourages airlines to include M-PEDs in their carry-on baggage program and/or personal items policy in order to increase accessibility in air travel for people with disabilities. Some M-PEDs are life sustaining, like a ventilator, and cannot be turned off at any time during flight. M-PEDs have safely been in use during all phases of flight for decades, as part of Emergency Medical Service (EMS) and commercial operations. An airline's risk assessment and crewmember procedures would need to address proper stowage of larger M-PEDs and the inability to turn off certain types of these devices during aircraft operations. As addressed in section (1) of this Appendix, small M-PEDs must be secured (not loose) during surface movement, take-off, descent, approach and landing. Passengers should be encouraged to secure small M-PEDs on their person by placing them in an armband or garment pocket.

The agency further notes that air carriers should be aware of Department of Transportation requirements in 14 CFR part 382 - *Nondiscrimination on the Basis of Disability in Air Travel*, that address the use of certain M-PEDs. More information on part 382 can be found at the link below:

http://airconsumer.dot.gov/SA_Disability.htm

3. Portable Oxygen Concentrators (POC):

While part 382 requires air carriers in the U.S. to accommodate passengers with disabilities, there is no regulation requiring airlines to provide medical oxygen during flights. Compressed and liquid oxygen is considered to be a hazardous material, and airlines will not allow passengers to carry it onto an airplane. Airlines may, however, allow passengers to bring portable oxygen concentrators (POCs) onto airplanes, as explained in Federal Aviation Administration (FAA) Advisory Circular Number 120-95 and Special Federal Air Regulation (SFAR) No. 106. These documents spell out the acceptance criteria for POCs and explain what air carriers may and may not require from passengers who need supplemental medical oxygen during all or part of their flights.

All POCs listed in SFAR 106 meet FAA requirements for M-PEDs.

To help air carriers obtain positive testing results for POCs listed in SFAR No. 106, the FAA posts the results of the RTCA DO-160 category M section 21 testing on its website. The FAA makes these documents available at the link below as they are received.

http://www.faa.gov/about/initiatives/cabin_safety/portable_oxygen/