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This document was created to make public non-proprietary data contained in Special Conditions, Equivalent Safety Findings and Deviations that are part of the applicable Certification Basis as recorded in TCDS EASA.A.084.

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**Abbreviations**

<b>TCDS</b>	Type Certificate Data Sheet
<b>SC</b>	Special Condition
<b>DEV</b>	Deviation
<b>ESF</b>	Equivalent Safety Finding



SPECIAL CONDITION	D7 (SC) Lightning protection indirect effects
APPLICABILITY:	ATR 42-400/-500 /models ATR 72-101/-102/-201/-202/-211/-212/-212A models
REQUIREMENTS:	JAR 25.x899 new paragraph (f)
ADVISORY MATERIAL:	N/A

### Special Condition

#### Add to JAR 25.x899 new paragraph (f):

(f) 1. Each system whose failure to function properly would prevent the continued, safe flight and landing of the airplane, must be designed and installed to ensure that the airplane operation is not affected during and after exposure to lightning.

(f) 2. Each system whose failure to function properly would reduce the capability of the airplane or the *ability* of the flight crew to cope with adverse operating conditions, must be designed and installed to ensure that it can perform its intended function after exposure to lightning.

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<b>SPECIAL CONDITION</b>	<b>F3 (SC) Effect of external radiations upon aircraft systems</b>
APPLICABILITY:	ATR 42-400/-500 /models ATR 72-101/-102/-201/-202/-211/-212/-212A models
REQUIREMENTS:	JAR 25.1431 new paragraph (d)
ADVISORY MATERIAL:	---

### Special Condition

#### Add to JAR 25.1431 new paragraph (d)

d) 1. Each system whose failure to function properly would prevent the continued safe flight and landing of the airplane. must be designed and installed to ensure that the airplane operation is not affected during and after exposure to external radiations.

(d) 2. Each system whose failure to function properly would reduce the capability of the airplane or the ability of the flight crew to cope with adverse operating conditions, must be designed and installed to ensure that it can perform its intended function after exposure to external radiations.

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Special Condition	F-18 (SC) HIRF Protection (ATR modification 5948)
APPLICABILITY:	ATR 42-500/72-212A w/ Major Change Num. 5948 Avionics Suite Upgrade “Glass Cockpit”
REQUIREMENTS:	CS 25
ADVISORY MATERIAL:	JAA INT/POL 25/2 Issue 2, Protection from the Effects of HIRF

**Statement of Issue:**

The basic concern for better identification and protection from High Intensity Radiated Fields has arisen for the following reasons:

- Operation of modern aeroplanes is increasingly dependent upon electrical/electronic systems, which can be responsive to electromagnetic interference.
- The increasing use of non metallic materials like carbon or glass fibre in the construction of the aeroplane reduces their basic shielding capability against the effects of radiation from external emitters.
- Those emitters are increasing in number and in power. They include ground based systems (communication, television, radio, radars and satellite uplink transmitters), as well emitters on ships or other aircraft.

JAA have developed in co-operation with the FAA, a regulatory project for HIRF. This project was co-ordinated by the FAA/JAA Electromagnetic Effects Harmonisation Working Group based on work conducted by EUROCAE WG 33, in co-operation with SAE-AE4R.

The objective of the project was the issuance of an NPA (Notice of Proposed Amendment) in parallel with an FAA NPRM leading to a final rule and associated advisory material (Advisory Material Joint, and Users Guide). The Electromagnetic Effects Harmonisation Working Group adopted a set of HIRF environment levels in November 1998 together with a proposed NPA/NPRM, which were agreed upon by FAA, JAA and industry working group participants. The environment levels recommended by this working group are included in JAA Interim Policy INT/POL 25/2 which was subsequently revised to issue 2.

EASA has not yet amended CS-25 to take into account these environment levels, it is proposed to apply a special condition to the “Glass Cockpit” Avionics Suite post TC design change on ATR42-500 / ATR72-212A, in accordance with IR 21A.16B(a)(3).

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Special Condition	F-1018 (SC) HIRF Protection (ATR modification 5977)
APPLICABILITY:	ATR 72 -212A w/ Major Change No. 5977 installed.
REQUIREMENTS:	CS / JAR 25
ADVISORY MATERIAL:	JAA INT/POL 25/2 Issue 2, Protection from the Effects of HIRF

### Special Condition

#### Statement of Issue:

The basic concern for better identification and protection from High Intensity Radiated Fields has arisen for the following reasons:

- Operation of modern aeroplanes is increasingly dependent upon electrical/electronic systems, which can be responsive to electromagnetic interference.
- The increasing use of non-metallic materials like carbon or glass fibre in the construction of the aeroplane reduces their basic shielding capability against the effects of radiation from external emitters.
- Those emitters are increasing in number and in power. They include ground-based systems (communication, television, radio, radars and satellite uplink transmitters), as well emitters on ships or other aircraft.

JAA have developed in co-operation with the FAA, a regulatory project for HIRF. This project was co-ordinated by the FAA/JAA Electromagnetic Effects Harmonisation Working Group based on work conducted by EUROCAE WG 33, in co-operation with SAE-AE4R.

The objective of the project was the issuance of an NPA (Notice of Proposed Amendment) in parallel with an FAA NPRM leading to a final rule and associated advisory material (Advisory Material Joint, and Users Guide). The Electromagnetic Effects Harmonisation Working Group adopted a set of HIRF environment levels in November 1998 together with a proposed NPA/NPRM, which were agreed upon by FAA, JAA and industry working group participants. The environment levels recommended by this working group are included in JAA Interim Policy INT/POL 25/2 which was subsequently revised to issue 2. EASA has not yet amended CS-25 to take into account these environment levels. For Mod 5977 FCU on ATR72-212A, ATR on an elect to comply with basis has requested to show compliance with HIRF requisites included in JAA Interim Policy INT/POL 25/2 rather than with original DGAC-F CRI F3. Therefore, the following EASA special condition is proposed to be applied to the ATR Mod 5977 post TC design change on ATR72-212A, in accordance with IR 21A.16B(a)(3).

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Special Condition	H-1: Instructions for Continued Airworthiness for EWIS
APPLICABILITY:	ATR 42-200/-300/-320/-400/-500 /models ATR 72-101/-102/-201/-202/-211/-212/-212A models
REQUIREMENTS:	PART 21A.16(b)(3), 21A.21(c)(3), CS 25.1529 & Appendix H
ADVISORY MATERIAL:	EASA CS25.1729 amendment 5, AMC appendix H25.5 paragraphs 1 and 6.

### APPENDIX to CRI H-01

ICA on EWIS

Special Condition H-01

#### **Add to: Appendix H Instructions for Continued Airworthiness**

#### **H25.5 Electrical Wiring Interconnection Systems Instructions for Continued Airworthiness**

The applicant must prepare Instructions for Continued Air worthiness (ICA) applicable to Electrical Wiring Interconnection System (EWIS) as defined below that include the following:

Maintenance and inspection requirements for the EWIS developed with the use of an enhanced zonal analysis procedure (EZAP) that includes:

- a. Identification of each zone of the aeroplane.
- b. Identification of each zone that contains EWIS.
- c. Identification of each zone containing EWIS that also contains combustible materials.
- d. Identification of each zone in which EWIS is in close proximity to both primary and back-up hydraulic, mechanical, or electrical flight controls and lines.
- e. Identification of —
  - Tasks, and the intervals for performing those tasks, that will reduce the likelihood of ignition sources and accumulation of combustible material, and
  - Procedures, and the intervals for performing those procedures, that will effectively clean the EWIS components of combustible material if there is not an effective task to reduce the likelihood of combustible material accumulation.
- f. Instructions for protections and caution information that will minimize contamination and accidental damage to EWIS, as applicable, during the performance of maintenance, alteration, or repairs.

The ICA must be in the form of a document appropriate for the information to be provided, and they must be easily recognizable as EWIS ICA.



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For the purpose of this Appendix H25.5, the following EWIS definition applies:

- (a) Electrical wiring interconnection system (EWIS) means any wire, wiring device, or combination of these, including termination devices, installed in any area of the aeroplane for the purpose of transmitting electrical energy, including data and signals between two or more intended terminating points. Except as provided for in the subparagraph (c) of this paragraph, this includes:
- (1) Wires and cables
  - (2) Bus bars
  - (3) The termination point on electrical devices, including those on relays, interrupters, switches, contactors, terminal blocks, and circuit breakers and other circuit protection devices.
  - (4) Connectors, including feed-through connectors.
  - (5) Connector accessories.
  - (6) Electrical grounding and bonding devices and their associated connections.
  - (7) Electrical splices.
  - (8) Materials used to provide additional protection for wires, including wire insulation, wire sleeving, and conduits that have electrical termination for the purpose of bonding.
  - (9) Shields or braids.
  - (10) Clamps and other devices used to route and support the wire bundle.
  - (11) Cable tie devices.
  - (12) Labels or other means of identification.
  - (13) Pressure seals.
- (b) The definition in subparagraph (a) of this paragraph covers EWIS components inside shelves, panels, racks, junction boxes, distribution panels, and back-planes of equipment racks, including, but not limited to, circuit board back-planes, wire integration units and external wiring of equipment.
- (c) Except for the equipment indicated in subparagraph (b) of this paragraph, EWIS components inside the following equipment, and the external connectors that are part of that equipment, are excluded from the definition in subparagraph (a) of this paragraph:
- (1) Electrical equipment or avionics that is qualified to environmental conditions and testing procedures when those conditions and procedures are –
    - (i) Appropriate for the intended function and operating environment, and
    - (ii) Acceptable to the Agency.
  - (2) Portable electrical devices that are not part of the type design of the aeroplane. This includes personal entertainment devices and laptop computers.
  - (3) Fibre optics.

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- END OF TCDS EXPLANATORY NOTE EASA.A.084 -



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