

# A380 Lightning and HIRF Transfer Functions Measurement

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**Abstract:** In the frame of the certification of an airliner, Electro-Magnetic Hazards tests have to be performed on the aircraft and its systems in order to demonstrate positive protection margins regarding lightning strike and High Intensity Radiated Field (HIRF) illumination. As part of the A380 type certification, several EMH test campaigns were conducted:

- at EMC laboratory to determine equipments immunity in accordance with Airbus Directives (ABD 100.1.2) and DO160,
- on test benches and Iron Bird to characterize the global systems behavior,
- on aircraft to assess the induced current or voltage or electromagnetic field levels on equipments.

The aircraft test methods used by AIRBUS to characterize the induced levels on aircraft wiring have evolved since the A300. Some main steps were the STTE study for the definition of a conformity demonstration method for HIRF, the European R&D project MADERE that permitted to develop low level swept frequency test methods, and the A340-600 type certification where swept frequency method was used on wing for lightning and low frequencies HIRF tests.

In 2006, the A380 was certified by using a complete low level swept frequency method with the following benefits :

- Time saving (regarding A320 and A340 test campaign) about 50%
- Cost saving
- Increasing of the number of measurement (zoning, number of routes taken into account).