LASER WARNING RECEIVER FLIGHT TRIALS

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1. INTRODUCTION

Laser sources can now be seen as a real threat for aircraft operating in the interdiction and close-air-support roles. An increasing number of both artillery and missile anti-aircraft systems, with medium-short range capability, which use electro-optics tracking devices together with a laser source acting as target designator or more often target range-finder, is in fact being developed
With the current avionics fits aircrew have no chance at all to detect any laser associated threat in time to initiate a successful evasive manoeuver. In fact, since no radar emission is present, Radar Warning Receivers are useless, while Missile Launch Warner equipments are still in the development phase, are prone to false alarms, particurarly when operating over land, and can not provide any warning against AAA systems.
A Laser Warning Receiver (L.W.R.), which can detect laser emissions in the near or far infrared regions and determine the source bearing, is therefore the only way to provide the aircrew with a warning which would allow them to timely execute the appropriate evasive manoeuver or to effectively operate a countermeasure system (if available). Such a system was developed by MARCONI ITALIANA under the terms of a research and development contract for the Italian MOD. The system was successfully flight-tested on a PD-808 aircraft of the IAF Flight Test Center (Reparto Sperimentale Volo - R.S.V.).

2. SYSTEM DESCRIPTION

The MARCONI ITALIANA Laser Warning Receiver is designed to detect all laser emissions that could be associated with potential threats. It can provide aircrew with a real time warning, both acoustic and visual, and with an indication of the bearing of the laser source. Furthermore, taking into account the detected waveform characteristics in terms of Pulse Recurrence Frequency, the equipment can classify the threat type (range finder, target marker, missile guidance).
The system (Figure 1) is composed of:

- receiver;
- display unit;
- optical sensor.

The optical sensor is made of 8 detectors arranged in such a way to provide a 360° azimuth coverage. They capture the incoming laser radiation transferring it by a fiber optic