

AIRCRAFT AND NAVIGATIONAL WARNING LIGHTS

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PURPOSE AND SCOPE

The Civil Aviation Authority (CAA) requires that obstacles exceeding a specified height or within proximity of an operational airfield shall be equipped with warning lights. This document defines the functional and performance requirements for aircraft and navigational warning lights, including power supplies, to be installed on transmission towers forming part of the National Grid Electricity Transmission system.

PART 1 – PROCEDURAL

1 GENERAL REQUIREMENTS

1.1 Design Requirements

Aircraft warning lights shall meet the requirements of CAA CAP 168, CAA CAP 637, PS(T) 011, PS(T) 064 and the additional requirements of this specification.

Equipment used for activities other than those associated with the transmission business shall be designed, manufactured, installed and maintained in accordance with recognised standards and quality procedures.

Warning lights shall be of a light emitting diode (LED) design, and shall be powered by single or multiple batteries. The colour, beam coverage and light intensity of the warning lights shall be as specified in CAA CAP 168 & CAA CAP 637. The batteries shall be augmented with solar panels, the number and size of which shall be determined by the power consumption of the lights and the prevailing meteorological conditions at the tower location.

The effects from any additional imposed mechanical loading on a tower resulting from the installation of warning lights on that tower should be assessed against TGN (E) 179. Results from that review does not permit mechanical overloading of the tower or that any restrictions are imposed on future transmission conductor reconfigurations.

For locations where the limitation imposed by TGN (E) 179 would not provide sufficient backup a combination of solar panels and wind turbines shall be used.

The warning light and it's associated power supply shall be designed to minimise maintenance requirements. Design of individual modules shall also consider manual handling issues.

The total system shall have a design life of 20 years with the maximum possible period between service/maintenance activities. The system including individual components shall carry a minimum 5 year guarantee.

The location and number of LED lights shall be as specified in CAA CAP 168 & CAA CAP 637 and as reasonably practicable not hindering access to the tower peak for routine maintenance of the transmission equipment.

Location of solar panels, wind turbines, batteries and associated equipment on the tower shall be by agreement with National Grid.

The controller shall be located above the anti-climbing device.

The method of attachment of any part of the installation to the tower shall avoid the need to drill the tower steelwork.

Due to the isolated location the system must be capable of operation at temperatures between -20°C and +40°C.

All bolts, clamps etc., shall be hot dip galvanised high tensile steel. All threaded fasteners shall be locked to ensure that slackening does not occur due to vibration in service. Where possible fasteners and small components shall be captive. Ferrous components shall be hot dip galvanised in accordance with BS EN ISO 1461, or by other means giving equal protection.

1.2 Isolation of the System

All power supplies must have individual points of isolation to enable work to be carried out on individual supplies without total loss of power to the LED. There shall be a further point of isolation which will enable all power supplies to be isolated from the LED at one point.

All points of isolation must have the capability of being both electrically and physically isolated and shall be clearly identified.

The box that houses these points of isolation shall be able to be “Locked and Cautioned” (in accordance with NSI 12).

An electrical plan of the system shall be stored in the control box on site. This must include a suitable contact name and number.

1.3 Drawings/Documentation and Calculations

The supplier is required to submit all design calculations to support the selection of solar panels/wind turbines for the specific location and to demonstrate compliance with TGN (E) 179.

The supplier shall provide installation, maintenance and replacement procedures.

The supplier shall provide full installation drawings. These drawings shall include:

- a) location of all components on the tower;
- b) electrical diagrams, including all points of isolation;
- c) weight of components.
- d) a reference to the specific Tower No it is to be installed on.

Any agreed modifications arising during installation shall subsequently be incorporated on the drawings and re-submitted as a record of the as-built installation.

2 PERFORMANCE REQUIREMENTS

All equipment shall be in accordance with IP 66 (EN 60529)

2.1 Warning Lights

The light is required to operate during the hours of darkness only.