TECHNICAL

Blighter®

# Transmission Licence Application Information for the Blighter B400 Series Radar - High Power (HP) Version

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COMMERCIAL IN CONFIDENCE

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Plextek

# 1 Introduction

In most countries it is necessary for the operator of the Blighter radar equipment to acquire a Transmission Licence from the national spectrum management authority. In the UK this is OFCOM and in the USA, the FCC.

Each licensing authority asks for specific characteristics of the transmitting equipment. This document provides the majority of information required by most authorities.

The Blighter B400 series of radars are:

- The Blighter B402 features a nominal 90° azimuth electronic scan (e-scan) angle
- The Blighter B422 features a nominal 180° azimuth e-scan angle
- The Blighter B432 features a nominal 270° azimuth e-scan angle
- The Blighter B442 features a nominal 360° azimuth e-scan angle

Please note that this information must not be freely distributed. It may only be supplied to the relevant licensing authority and wherever possible, the licensing authority should also be asked to restrict the distribution of the information.

# 2 Licence Application Information

| | | |
|---|---|---|
| Model Number | | Blighter B400-HP Series (High Power) |
| Manufacturer | | Plextek Ltd.<br>London Road,<br>Great Chesterford,<br>Essex, CB10 1NY<br>United Kingdom<br>Tel. +44 1799 533200<br>Email: blighter@plextek.co.uk<br>Web: www.plextek.com or www.blighter.com |
| International Emission Designator Code | UK/USA | 26M0Q3N |
| Special case 2km mode emission designator | UK/USA | 30M3Q3N |
| Frequency of operation | UK & Rest of World (-US) | 15.7GHz to 17.2GHz |
| | USA (Wide Band Version) | 15.7GHz to 17.2GHz |
| | USA (Narrow Band Version) | 16.2GHz to 17.2GHz |
| Instrumented range of operation | | 10 metres to 32000 metres |
| Antenna Gain | W20S Antennas | +19dBi min, +23dBi max. |
| | M10S Antennas | +23dBi min, +27dBi max. |
| | N5S Antennas | +24dBi min, +30dBi max. |
| Antenna Azimuth Beamwidth | B402 | 3.7° – 5.2° over approx. 90° electronic-scan segment |
| | B422 | 3.7° – 5.2° over approx. 180° electronic-scan segment |
| | B432 | 3.7° – 5.2° over approx. 270° electronic-scan segment |
| | B442 | 3.7° – 5.2° over approx. 360° electronic-scan segment |
| Antenna Elevation Beamwidth | W20S Antennas | ±10° about boresight (0°) |
| | M10S Antennas | ±5° about boresight (0°) |
| | N5S Antennas | ±2.5° about boresight |
| Polarization | | Linear Horizontal |

| | | | |
|---|---|---|---|
| Peak Transmitter Power supplied to the Antenna | | +7.48dBW | (5.6 Watts) |
| Theoretical Peak Radiated Power (EIRP) | W20S Antennas | +30.5dBW | (1117 Watts) |
| | M10S Antennas | +34.5dBW | (2807 Watts) |
| | N5S Antennas | +37.5dBW | (5614 Watts) |
| Theoretical Mean Radiated Power (EIRP) | W20S Antennas | +29.7dBW | (933 Watts) |
| | M10S Antennas | +33.7dBW | (2344 Watts) |
| | N5S Antennas | +34.7dBW | (4688 Watts) |
| Peak Effective Radiated Power (ERP) | W20S Antennas | +28.3dBW | (676 Watts) |
| (For FCC applications) | M10S Antennas | +32.3dBW | (1698 Watts) |
| | N5S Antennas | +35.3dBW | (3396 Watts) |
| Mean Effective Radiated Power (ERP) | W20S Antennas | +27.6dBW | (562 Watts) |
| (For FCC applications) | M10S Antennas | +31.6dBW | (1413 Watts) |
| | N5S Antennas | +34.6dBW | (2426 Watts) |

# 3 Derivations

## 3.1 Power

Theoretical Peak Radiated Power (EIRP) = Peak Power (+1dBW) + Maximum Antenna gain (+24dBi)

Theoretical Mean Radiated Power (EIRP) = (Peak Power (+1dBW) + Maximum Antenna gain (+24dBi)) + Duty Cycle ($10\log_{10}(84\%)$)

0dBW ERP = +2.14dBW EIRP (ERP radiated power relative to a dipole antenna)

Therefore ERP (dBW) = EIRP (dBW) -2.14dB

Mean Effective Radiated Power (ERP) = Peak Power (+1dBW) + Maximum Antenna gain (+24dBi) + Duty Cycle ($10\log_{10}(84\%)$) – 2.14dB

## 3.2 Emission Designator

26M0Q3N where;

First four digits define the necessary bandwidth:

26.0MHz = 26M0

Last three digits define emission class:

Q - In which the carrier is angle modulated (FM) during the period of the pulse

3 - A single channel containing analogue information

N - No information is transmitted

# 4 Support and Contact Information

For further information or technical support please contact:

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