

Technical Note

Subject: **Transmission Licence Application Information for the Blighter B400 Series Radar - Standard Power (SP)**

From: Mark Radford, Director of Security Products , Plextek Ltd

To: cc:

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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.

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.

The Blighter B400 series of radars are:

- The Blighter B402 features a nominal 90° azimuth electronic scan.
- 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.

Model Number	Blighter B400-SP Series (Standard Power)
Manufacturer	Plextek Ltd. London Road, Great Chesterford, Essex, CB10 1NY United Kingdom Tel. +44 1799 533200 Email: blighter@plextek.co.uk Web. www.plextek.com or www.blighter.com
Class of emission – UK	1G50WXN
Class of emission – USA (Wide Band)	1G50WXN
Class of emission – USA (Narrow Band)	1G00WXN

CE Certification (CE Notified Body Option)	Opinion No. RFI-NOTA1-SC76945JD07 Notified Body No: 0889
FCC Certification (Narrow Band) – Main Unit	FCC IDENTIFIER: UFQB400SPNBMAIN Name of Grantee: Plextek Equipment Class: Licensed Non-Broadcast Station Transmitter
FCC Certification (Narrow Band) – Aux Unit	FCC IDENTIFIER: UFQB400SPNBAUX Name of Grantee: Plextek Equipment Class: Licensed Non-Broadcast Station Transmitter
Instrumented range of operation	10 metres to 32000 metres
Frequency of operation (Spectrum Occupancy)	
Narrow Band	16.2 – 17.2 GHz
Wide Band	15.7 – 17.2GHz
Antenna Gain	+19dBi min, +23dBi max. (W20S Antennas) +23dBi min, +26dBi max. (M10S Antennas)
Antenna Beamwidth - Azimuth	3.7° – 5.2° over approx. 90° (B402) & 180° (B422) electronic-scan segment
Antenna Beamwidth - Elevation	±10° about boresight (0°) (W20S Antennas) ±5° about boresight (0°) (M10S Antennas)
Polarisation	Linear Horizontal
Peak Transmitter Power supplied to Antenna	+1dBW = 1.26 Watts
Theoretical Peak Radiated Power (EIRP)	+27dBW (M10S Antennas)
Theoretical Mean Radiated Power (EIRP)	+26.2dBW (M10S Antennas)
Measured Mean Effective Radiated Power (ERP) (For FCC)	251 Watts (M10S Antennas)

1.1.1 Derivations

1.1.1.1 Power

Theoretical Peak Radiated Power (EIRP) = Peak Power (+1dBW) + Maximum Antenna gain (+26dBi)

Theoretical Mean Radiated Power (EIRP) = (Peak Power (+1dBW) + Maximum Antenna gain (+26dBi)) + Duty Cycle ($10\log_{10}(84\%)$)

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

Therefore $\text{ERP(dBW)} = \text{EIRP(dBW)} - 2.14\text{dB}$

Mean Effective Radiated Power (ERP) = Peak Power (+1dBW) + Maximum Antenna gain (+26dBi) + Duty Cycle ($10\log_{10}(84\%)$) - 2.14dB

1.1.1.2 Emission Designator

1G50WXN/1G00WXN where;

First four digits define bandwidth:

1.5GHz = 1G50 (Wide band)

1.0GHz = 1G00 (Narrow band)

Last three digits define emission class:

W - Cases not covered, in which an emission consists of the main carrier modulated, either simultaneously or in a pre-established sequence, in a combination of two or more of the following modes: amplitude, angle, pulse.

X - Cases not covered

N - No information is transmitted