

# TECHNIS

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## CERTIFICATE of RELIABILITY and FUNCTIONAL SAFETY

This is to certify that

The BExBG05D&E, BExBG10D&E, BExBG15D&E and GNEx B1&B2 range of Beacons provided by European Safety Systems, Impress House, Mansell Road, London W3 7QH UK. has been assessed and is considered suitable for use in a low demand safety function:

- As an unvoted item (ie hardware fault tolerance of 0) at SIL 2

This claim is in respect of random hardware failures and architectural constraints (ie safe failure fraction). The assessment was based on the assumptions, proven-in-use data provided, and recommendations given in Technis Report T727 (Issue 1.0). The product was assessed against the failure modes:

- Failure respond to an input by lighting a beacon
- Spurious light output despite no input

Integrity in respect of failure to release	SIL 2
Total Failure Rate	0.37 pmh
"hazardous" failure rate (revealed)	0.297 pmh
"hazardous" failure rate (unrevealed)	0.003 pmh
"safe" failure rate (revealed)	0.006pmh
"safe" failure rate (unrevealed)	0
Diagnostic Coverage	99%
System Type	B
Hardware Fault Tolerance	0
Safe Failure Fraction	>99%
PFD (hazardous failure)	$3.8 \times 10^{-5}$
Proof Test Interval	Up to 1 year

The products include the following:

- BExBG05D&E, BExBG10D&E, BExBG15D&E and GNEx B1&B2

The assessment was carried out having regard to the guidance in IEC 61508 [2010] and the related body of guidance in respect of:

- Random Hardware Failures and Architectural Constraints [route 1<sub>H</sub>]

Signed:  (Certificate No T727-008) – 2 May 2014)

Dr David J. Smith BSc, PhD, CEng, FIEE, FIQA, HonFSaRS, MIGasE

*This certificate does not warrant fitness for any specific applications related purpose and is based on probabilistic and statistical assessment*