

**easat**<sup>®</sup>  
RADAR SYSTEMS

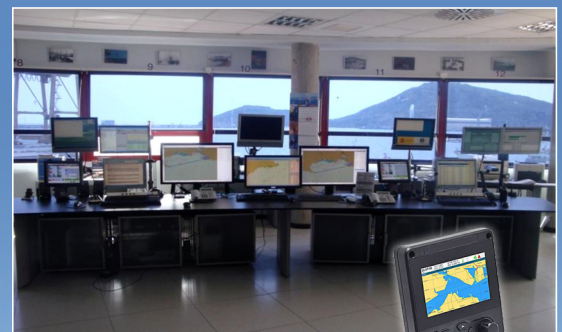
# 7.5M REFLECTOR COASTAL SURVEILLANCE RADAR SYSTEMS

S-BAND, X-BAND OR COMBINED  
S & X-BAND COASTAL

**The Easat 7.5m Reflector Coastal Surveillance Radar System is bespoke designed to meet and exceed the modern requirements of vessel traffic systems and coastal surveillance.**

The Easat 7.5m Reflector Coastal Surveillance Radar System is Long-Range System that includes a Solid-State Dual Redundant S-Band, X-Band or combined S & X-Band Transceiver, a High Gain Antenna and has been designed to provide High Performance and a Cost-Effective Life-Time Solution for Coastal Surveillance, Vessel Traffic Systems, Border Security, Law Enforcement, and Search and Rescue applications. X-Band, or combine X & S band in severe weather conditions.

- Shaped Reflector Design
- High Gain & Low Side-Lobes
- Inverse Cossec<sup>2</sup> or Pencil Beam Elevation Patterns
- Fixed Linear or Circular Polarisation with option of Switchable
- Option of S-Band, X-Band or Combined S & X-Band
- High Reliability
- Low Cost of Ownership
- Can be integrated with a range of Plot Extractors
- Can be integrated with a range of Vessel Tracking Software Systems



AIS INTEGRATION

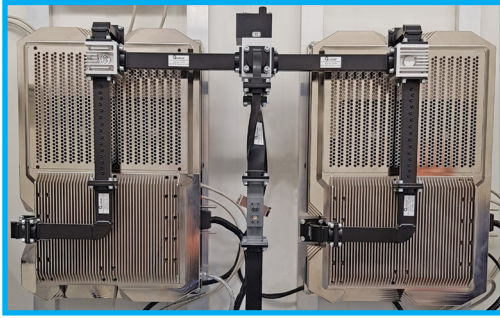
H.M. COASTGUARD DOVER



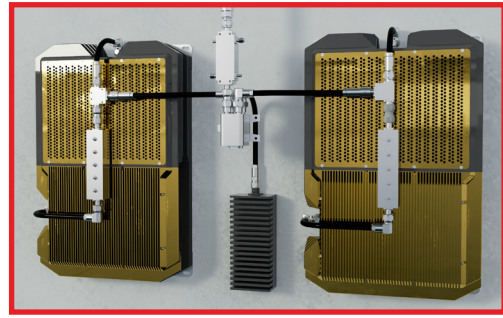
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Easat Solid-State, Dual Redundant  
350 Watt X-Band Transceiver



Easat Solid-State, Dual Redundant  
800 Watt S-Band Transceiver



## General & Mechanical\*

Type	Shaped reflector
Nominal Dimensions (m)	7.5 x 1
Total Weight (incl. Turning Gear & Motor) (kg)	< 2,000
Height incl. Pedestal & Stand (m)	2.35
Max Swept Radius (m)	4.1
Rotation Rate (Typical)	Up to 22 RPM

## Environmental\*

Maximum Wind Speed	160 KPH (100 MPH) Operational 240 KPH (150 MPH) Survival
Temperature	-30°C to +70°C (-22°F to + 158°F) inc. Solar Gain
Humidity	Up to 100%
Altitude	Sea Level to 2,500m
Protection	Suitable for Coastal Environment
Design Life	20 Years

## System Electrical Specification\*

Beam Characteristics	'X' Band - Pencil Beam Operating in Frequency Range 9.0 – 9.5 GHz	'S' Band - Pencil Beam Operating in Frequency Range 2.9 - 3.1 GHz
Gain	46 dBi	35.5 dBi
VSWR at Transceiver	≤ 1.5:1	≤ 1.5:1
Azimuth 3dB Beam-Width	0.32°	1.1°
Azimuth Side-Lobes (Peak)	≤ -26 dB	≤ -28 dB
Polarisation	Circular or Switchable	Fixed Circular

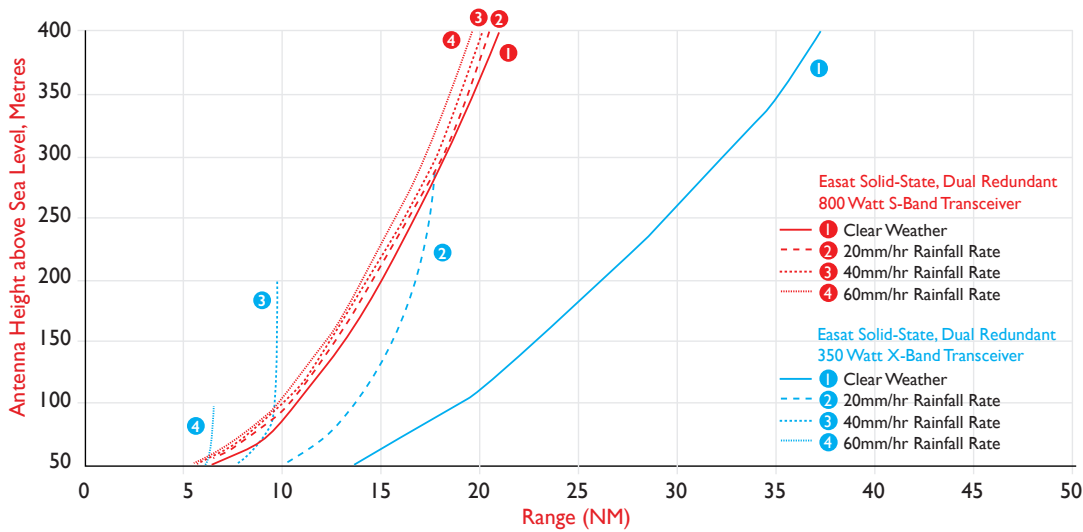
Options: Dual Redundant Motors, Single or Dual 4,096 or 8,192 Count Encoders, Dual 'S' and 'X' Variants.

# PERFORMANCE DATA

## SEA DETECTION

Easat 7.5m Reflector X & S Band Coastal Surveillance System Sea Detection Performance in Clear & Various Rainfall Rates:

**Target Type 1\*** ( $RCS_{X\text{-band}} = 1m^2$ ,  $RCS_{S\text{-band}} \ll 1m^2$  at Target Height of 1m Above Sea Level, Typical of Small Fibreglass, Wood or Rubber Open Boats)

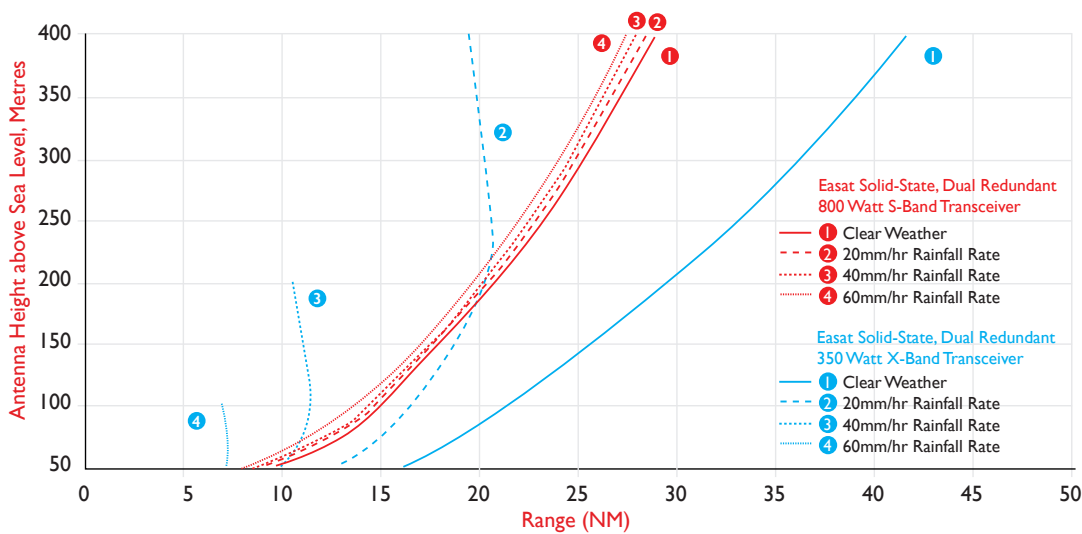


Sea surface target detection range versus antenna height above sea level for IALA Target Type 1 ( $RCS_{X\text{-band}} = 1m^2$ ,  $RCS_{S\text{-band}} \ll 1m^2$  at Target Height of 1 m Above Sea Level, Typical of Small Fibreglass, Wood or Rubber Open Boats) for both clear weather plus a variety of rainfall rates.

In clear weather X-band provides the greatest range, however the X-band range reduces quickly in rain conditions. The S-band range is largely unaffected in all rainfall conditions.

Easat 7.5m Reflector X & S Band Coastal Surveillance System Sea Detection Performance in Clear & Various Rainfall Rates:

**Target Type 2\*** ( $RCS_{X\text{-band}} = 3m^2$ ,  $RCS_{S\text{-band}} = 1m^2$  at Target Height of 2m Above Sea Level, Typical of In-shore Fishing Vessels, Sailing Boats and Speedboats)

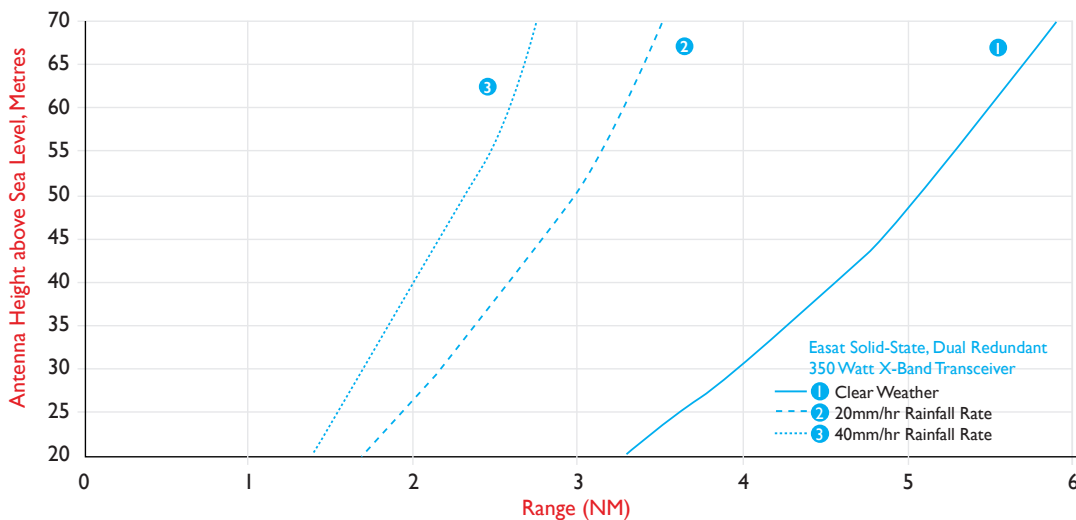


Sea surface target detection range versus antenna height above sea level for IALA Target Type 2 ( $RCS_{X\text{-band}} = 3m^2$ ,  $RCS_{S\text{-band}} = 1m^2$  at Target Height of 2m Above Sea Level, Typical of In-shore Fishing Vessels, Sailing Boats and Speed Boats) for both clear weather plus a variety of rainfall rates.

In clear weather X-band provides the greatest range, however the X-band range reduces quickly in rain conditions. The S-band range is largely unaffected in all rainfall conditions.

Easat 7.5m Reflector X & S Band Coastal Surveillance System Sea Detection Performance in Clear & Various Rainfall Rates:

**RCS = 0.05m<sup>2</sup>** Target Height of 0.2m Above Sea Level\*, Typically Representing a Human in Water



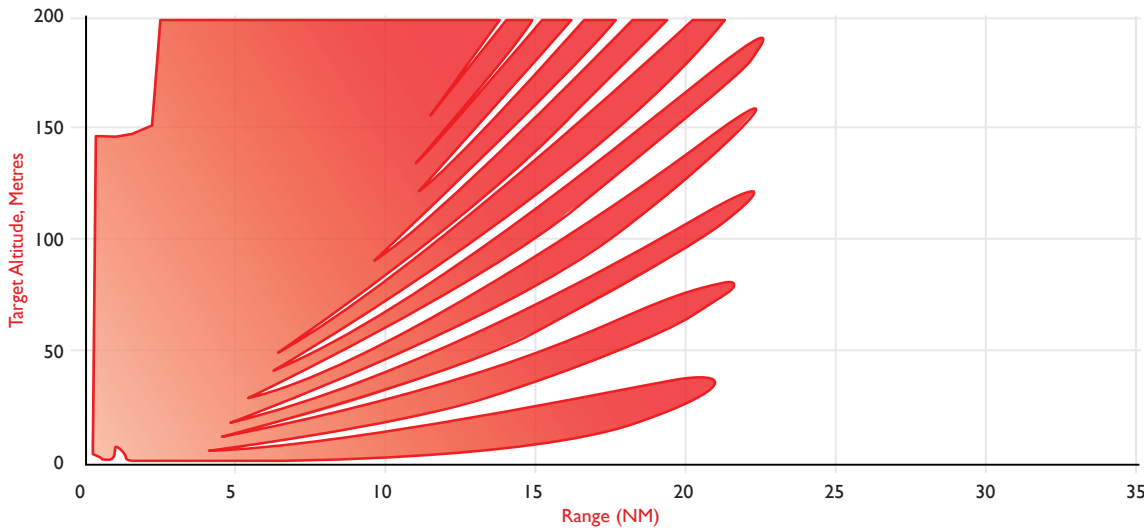
X-band Sea surface target detection range versus antenna height above sea level for very small target size ( $RCS = 0.05 m^2$  at target height of 0.2 m above sea level, representing a human in water) for both clear weather plus a variety of rainfall rates. It can be seen that the Easat 7.5 m Reflector Coastal Surveillance System can detect very small targets at a range exceeding 5 NM.

# PERFORMANCE DATA

## AIR DETECTION

Easat 7.5m Reflector S-Band Coastal Surveillance System Small Target

**RCS = 0.05m<sup>2</sup>** Typical of Small Drone - Air Detection Performance in Clear Weather\*

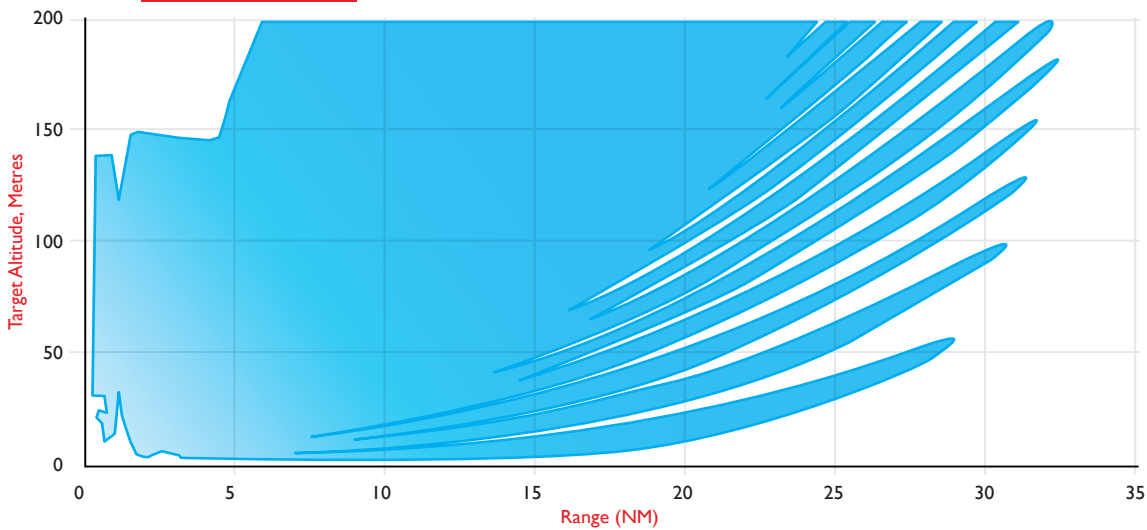


Air Target Detection Range versus Target Altitude above Sea Level for a very Small Target Size (RCS = 0.05m<sup>2</sup> based on a 75m Tower Height, with P<sub>d</sub> = 70%) in Clear Weather.

It can be seen that the Easat Coastal Surveillance System can Detect very Small Targets at an Altitude exceeding 200m at a Range of 12 NM.

Easat 7.5m Reflector X-Band Coastal Surveillance System Small Target

**RCS = 0.05m<sup>2</sup>** Typical of Small Drone - Air Detection Performance in Clear Weather\*

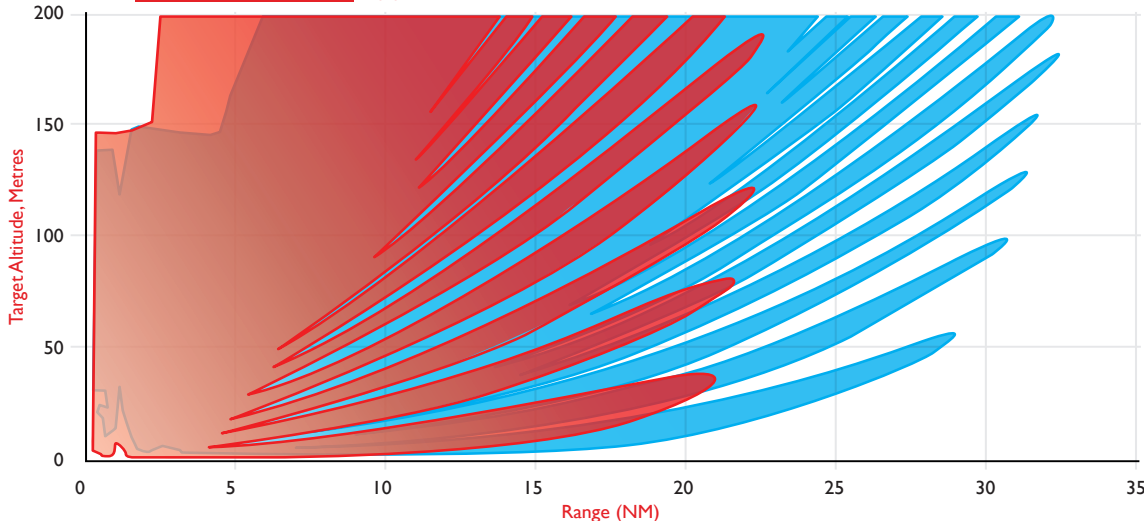


Air Target Detection Range versus Target Altitude above Sea Level for a very Small Target Size (RCS = 0.05m<sup>2</sup> based on a 75m Tower Height, with P<sub>d</sub> = 70%) in Clear Weather.

It can be seen that the Easat Coastal Surveillance System can Detect very Small Targets at an Altitude of 200m out to a Range of 22 NM

Easat 7.5m Reflector Combined X & S-Band Coastal Surveillance System Small Target

**RCS = 0.05m<sup>2</sup>** Typical of Small Drone - Air Detection Performance in Clear Weather\*



Air Target Detection Range versus Target Altitude above Sea Level for a very Small Target Size (RCS = 0.05m<sup>2</sup> based on a 75m Tower Height, with P<sub>d</sub> = 70%) in Clear Weather.

Due to the high gain 7.5m reflector and high power solid state transceiver the system can see very small targets down to 200 sq/mm even in extreme rain and closer ranges.