BARRA

Horizontal Planar Array Passive Localisation Sonobuoy
Barra Type SSQ 981E

- High performance passive directional sonobuoy for littoral and deep water operations
- Broadband passive detection and tracking, and narrowband analysis
- Multistatic active reception from <1kHz to >4kHz
- Adaptive digital signal processing optimises SNR in real-life non-ideal conditions (e.g. near shipping)
- High dynamic range for operation in high and low ambient noise levels
- Strong rejection of out-of-band acoustic jamming
- Designed for internal carriage and release with 2-event safety criteria
- Global Positioning System (GPS) available as an option

Features

This latest generation Barra sonobuoy fully exploits the acoustic performance of its large horizontal planar array sensor.

Performance is optimised by using a fully digital programmable architecture, from 16 bit sampling of each hydrophone, via digital signal processing, to digitally synthesised phase-coherent telemetry.

Other innovative features include three selectable sensor depths, 99 RF channel operation, Sea-State 7 survivability, and the availability of GPS and CFS.

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Adaptive in-buoy processing optimises acoustic signal-to-noise ratio, and ensures reliable processor lock, under all acoustic conditions. Phase-shading of hydrophone signals optimises DI and bearing accuracy at low frequencies, for improved narrowband tracking.

A very high dynamic range telemetry option, optimises the buoy as a multi-static receiver for use with electro-acoustic sources.

Operation

The SSQ 981E can be launched from fixed-wing aircraft or helicopters (and by hand, if desired).

After release from the aircraft a parachute limits the rate of descent to approximately 30 m/s. On water entry, a surface float is deployed, containing a VHF antenna for transmission of telemetry. The sensor array descends to its pre-selected depth, where it deploys to its full size.

Safety mechanisms are included to prevent activation or deployment until the parachute has deployed, and the buoy has entered the water.

Specification SSQ 981E BARRA

Description

Horizontal planar array, passive localisation and multistatic receive sonobuoy

Dimensions

'A' size

Length:	914mm (36 in)
Diameter:	124mm (4.875ins)
Mass:	9.1kg (20lb)

Deployment

Altitude:	180 to 30,000 feet, speed 50 to 375 kts

Operating Depth

22m, 60m, and 120m

Deployment Time

60s, 90s, 180s (fully stabilised)

Operating Life

1, 2, 3, 4, 5 and 6 hours. Automatic Scuttle.

RF Frequency

99 Channels, 136 MHz to 173.5 MHz, 375 kHz spacing

VHF Radiated Power and low elevation polar pattern

≥ 1 Watt EIRP
≥ -13 dB re 1 Watt EIRP at 0.5° elevation angle
≥ -3 dB re 1 Watt EIRP at 3.0° elevation angle

Modulation

Phase Coherent Continuous-Phase FSK.

Sensor

25 hydrophone planar array

Dynamic Range

Max ambient / Min ambient = 60 dB

Acoustic Bandwidth

Wideband:	10 Hz – 2.0 kHz
Narrowband:	any 400 Hz band within 10 Hz – 4.5 kHz

Compass Accuracy

+/- 2.5°

Temperature Range

Seawater operating:	-2°C to +35°C
Un-packaged non-operating:	-20°C to +55°C
Packaged:	-50°C to +70°C

Sea State

Operate:	Sea State 5
Survive:	Sea State 7

Seawater Salinity

1.5% to 3.6% by weight

Storage Life

Packaged:	7 Years
Un-packaged:	90 days

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