

# Eddystone Radio



## MODEL 1995 Radio Communication VHF/UHF Receiver



## Features

- Sealed membrane front panel.
- Easy to operate.
- Non volatile memory.
- Rugged construction.
- Built-in test equipment (B.I.T.E.).
- Full band coverage.
- Memory, scan and sweep facilities.
- Remote control facility.

The 1995 Series of VHF/UHF receivers offers the user a combination of high performance and moderate cost, providing versatile and reliable service for surveillance, monitoring, laboratory and general point to point radio communications.

Extensive use of surface mounted components and modular construction techniques has resulted in a highly sophisticated yet compact receiver, and rapid servicing and fault location is aided by a comprehensive BITE system.

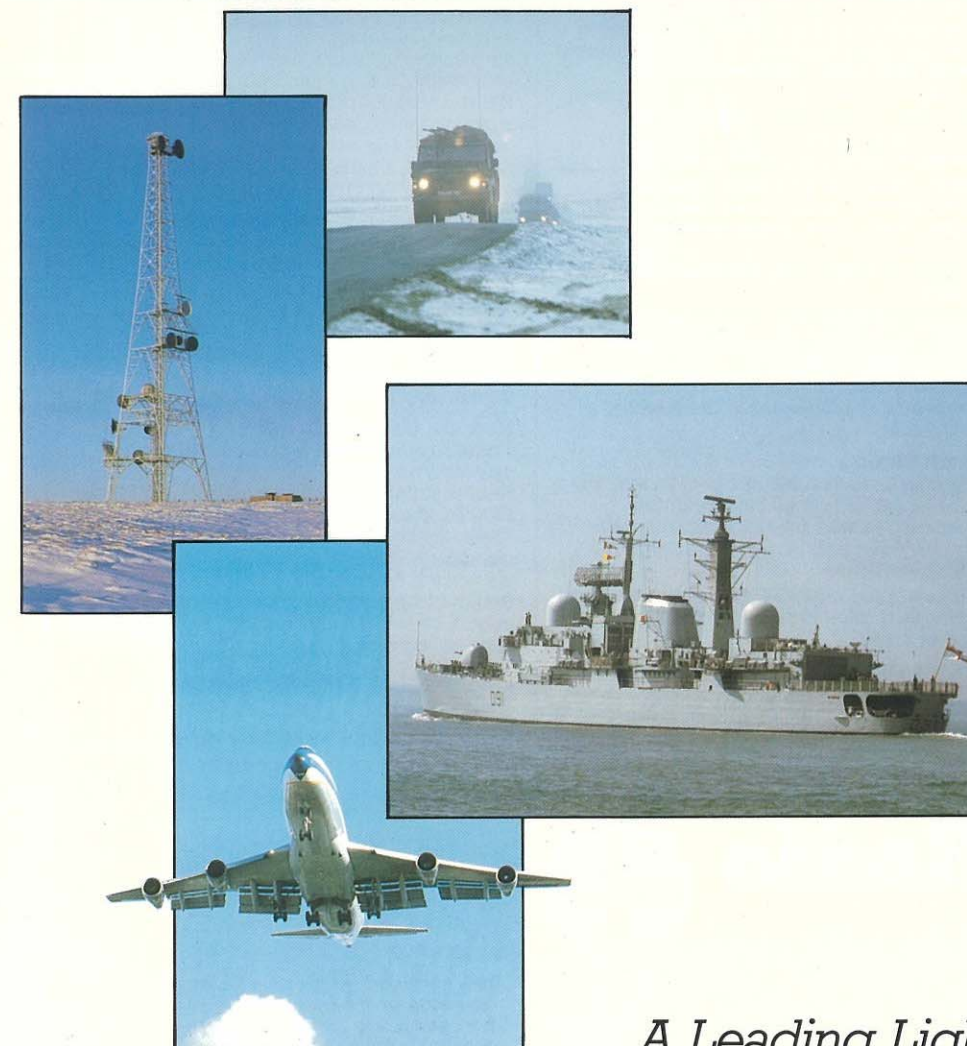
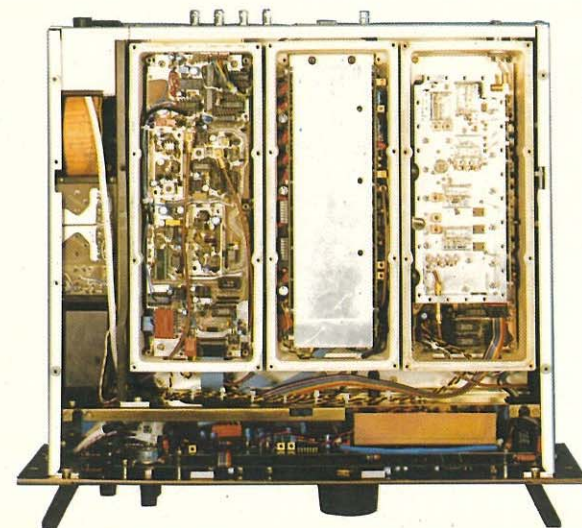
The advanced circuit design uses dual conversion, ensuring an excellent image and I.F. rejection specification, and all synthesiser loops are locked to a high stability internal master oscillator.

Frequency selection is by direct keypad entry, or by rotary tuning knob in 10Hz to 99.99kHz steps across the entire band.

99 channels of user programmable memory are featured, which can be manually or automatically scanned. All or a selected portion of the band can be sweep tuned at programmable speeds. Use of the 1161 Panoramic display with LCD screen makes spectrum surveillance a relatively simple task.

The front panel contains all the operational functions of the receiver, and is formed by a sealed membrane panel, ensuring consistent and trouble free operation.

A diverse range of remote control systems is available, tailored to meet individual customers specific requirements, enabling extended or long distance control of all basic functions by mimic controller or computer based operation.



*A Leading Light in Communications*

## TECHNICAL SPECIFICATION

### Frequency Coverage

Model 1995/1 20MHz to 470MHz continuous  
Model 1995/2 20MHz to 1100MHz continuous

### BFO

100Hz steps over  $\pm 9.9$ kHz derived from master oscillator.

### Antenna Input Impedance

50 ohms

### Image Rejection

80dB

### I.F. Rejection

80dB

### I.F. Output (High Level)

20mV into 50 ohms at 10.7MHz at full AGC.

### I.F. Output (Low Level)

6dB above input level at 10.7MHz.  
1mV into 50 ohms maximum.

### Wideband Detected Output

Separate positive and negative outputs of 500mV P-P at 50/75 ohms at full AGC.  
Response within 3dB from 20Hz to half IF bandwidth selected for DSB signals.

### Peak Detected Output

0 to +12VDC.

### Audio Output

Loudspeaker: 1W maximum to external speaker. (Internal monitor speaker fitted.)  
Line (600 ohms): 10mW pre-set  
Headphones : 10mW maximum: Low/Medium impedance

### AGC Characteristics

Less than 6dB change in output for 90dB increase from threshold.

### Noise Figure

10dB

### 2nd Order Intercept Point

+20dBm typical

### 3rd Order Intercept Point

+5dBm typical 20-470MHz  
0dBm typical 470-1100MHz

### Sensitivity

AM :  $1\mu\text{V}$  p.d. with 50% modulation at 1kHz, for 12dB Sinad at line output, and 7.5kHz selectivity.

SSB :  $0.35\mu\text{V}$  p.d. with 1kHz audio output, for 12dB Sinad at line output, and 3kHz selectivity.

CW :  $0.25\mu\text{V}$  p.d. with 1kHz audio output, for 12dB Sinad at line output, and 3kHz selectivity.

NBFM :  $0.5\mu\text{V}$  p.d. with  $\pm 3$ kHz deviation and 400Hz modulation, for 12dB Sinad at line output, with 15kHz selectivity.

WBFM :  $2.5\mu\text{V}$  p.d. with  $\pm 40$ kHz deviation and 1kHz modulation, and 12dB Sinad at line output, with 250kHz selectivity.

### Intermediate Frequencies

515MHz 1st IF  
10.7MHz 2nd IF

### Reception Modes

AM, FM, USB, LSB, CW, FSK, TELEX.

The high dynamic range of this receiver permits PULSE reception.

### Reception Bandwidth

3kHz, 7.5kHz, 15kHz, 30kHz, 60kHz, 250kHz, 6MHz.

Selected independent of mode.

Alternative bandwidths can be provided for specific customer requirements.

### Stability and Tuning

Tunable with 10Hz resolution with all frequencies derived from standard internal master oscillator.

Tuning rate is variable in 10Hz steps between 10Hz and 99.99kHz per step. Automatic variable rate setting also provided.

Stability 1 part in  $10^7$  over temperature range, with provision for locking to external standard if required. (1 or 5MHz).

### Power Supplies

AC: 100V/130V or 200V/260V

(40Hz-60Hz)

DC: 19-32 VDC negative earth.

OPTIONAL: 10-32 VDC floating earth.

### Environmental

Operational temperature :  $-15^\circ\text{C}$  to  $+55^\circ\text{C}$

Storage temperature :  $-40^\circ\text{C}$  to  $+70^\circ\text{C}$

Relative humidity : 95% at  $+40^\circ\text{C}$

### Mounting Styles

Rack mounting: Including handles and cabling at rear.

Height 133mm (5.25 inches), Depth 490mm (19.29 inches)

Width 483mm (19 inches), Weight 17Kg (37lbs)

Bench mounting: Including feet.

Height 164mm (6.5 inches), Depth 500mm (19.68 inches)

Width 502mm (19.75 inches), Weight 21Kg (46lbs)

### Stored Channels

Maximum of 99 channels can be stored with frequency, mode, bandwidth, BFO, AGC and remote antenna or pre-amplifier selection. Channels can be interrogated and changed without interruption of the signal received. Any number of these channels can be automatically scanned at a rate adjustable in 0.1 second steps between 0.1 and 9.9 seconds from the front panel, with provision for stopping on an occupied channel if required. In this case, a hang time, adjustable in 1 second steps between 0 and 9 seconds, is provided to delay the restart of the scan.

A sweep facility, in selectable frequency increments (eg: 12.5kHz) between any two channel frequencies, is also provided in a similar manner. The frequency increments are adjustable in 10Hz steps, between 10Hz and 99.99kHz.

Scanning and sweeping can be controlled via ancillary equipment, using the rear panel 'hold scan/sweep' input.

Emergency battery back up is provided to prevent loss of information in the event of a power failure.

### Search Tuning

Frequency selection by tuning knob with any step in range 10Hz to 99.99kHz (in 10Hz increments) or with automatic variable rate. Frequency can also be directly entered via numeric keyboard.

Selection of AM, SSB, CW and FM modes with seven selectivities in range 3 to 6000kHz. BFO range of  $\pm 9.9$ kHz.

Selection of manual gain control or automatic gain control with three speeds.

Selection of ten remotely switched units (e.g. antennas, masthead amplifiers etc.) from 1995 front panel.

Selection of digital AFC on FM mode which automatically tunes signal to within 200Hz on NBFM or 10kHz on WBFM.

Audio muting facility derived from carrier level on AM, SSB and CW; derived from noise level on NBFM or noise and tuning point on WBFM.

Carrier level muting can be adjusted from the front panel and also controls the single pole changeover 'carrier operated relay' on all modes including FM. This relay can be used via rear panel links to control ancillary equipment.

### Scanning

Any number of the 99 channels can be automatically scanned by selecting the required channels to be in the 'scan table'. Manual intervention with the knob is possible with full manual control if a dwell period of 0.0 is selected (i.e. tuning by stored channel).

The dwell period on each channel can also be set anywhere in the range 0.1 to 9.9 seconds (0.1 second increments). A hang period of 0 to 9 seconds (one second increments) can also be selected.

If 'Mute On' is selected, scanning will stop on an occupied channel and will restart when the signal ceases, after waiting for the hang period selected. Scanning can also be halted or stepped on by a rear panel control line. External signal detection equipment (e.g. selective calling decoders) can thus be used to stop the scan on the desired channel.

### Sweeping

Automatic tuning at the selected tuning rate (10Hz to 99.99kHz) can be performed, stopping on each step for the selected dwell period (0.1 to 9.9 seconds). The receiver tunes from the frequency of any selected channel upwards or downwards to the frequency in the next highest channel number. Other settings (mode etc.) are taken from the selected channel. For rates 5kHz to 99.99kHz, if 'Mute On' is selected, sweeping will stop on an occupied step and will restart after the signal ceases, after waiting for the hang period selected. If FM mode and AFC are also selected the signal will also need to be within the AFC 'window'. As for scanning, sweeping can also be halted or stepped on by the rear panel control line.

### BITE (built in test equipment)

In BITE mode, tests can be made using internally fitted test equipment to fault-find to module level and to aid general test and maintenance procedures. In all modes, the BITE monitors various parameters and provides immediate indication of a potential fault which can be investigated in BITE mode when convenient. M.T.T.R. is less than 30 minutes.

### Remote Control

Various remote control options can be selected via internal DIL switches. Local or remote priority can be selected as can 300 or 1200 Baud asynchronous data rates. These options allow use of a variety of standard MODEMS, multiplexers and line drivers etc (via external RS232C or RS422A Remote Interface Adaptors) thus providing control over half or full duplex, two or four wire links as required.

# Eddystone Radio



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