

## VHF TACTICAL RECEIVER MODEL 1810



### Benefits

- Lightweight, sealed, rugged construction.
- Sealed membrane front panel.
- Comprehensive BITE.
- Full remote control.
- Microprocessor controlled.
- 99 Programmable channels.
- Wide operating temperatures.

### Description

The Eddystone 1810 is a synthesised VHF Receiver covering 20-88MHz, designed to meet the present and future tactical requirements of a modern army. Operating from a nominal 12V D.C. supply, it has been designed using State of the Art techniques for high reliability and ease of operation in mobile, portable or fixed station applications. The comprehensive BITE facilities provide the operator with continuous monitoring of all critical parameters as well as performance tests initiated by the operator.



**DATA SUMMARY****Frequency Coverage**

20MHz to 88MHz

**Reception Modes and Bandwidths**

Narrow Band FM	-3dB	15kHz
	-60dB	50kHz
AM (Optional)	-3dB	7.5kHz
	-60dB	20kHz

**Sensitivity**

On Narrow Band FM 0.5uV p.d. into 50ohm with  $\pm 3$ kHz deviation and 400Hz modulation for 15dB SINAD (typically 20dB) at line output in 15kHz bandwidth.

On AM, 1.5uV p.d. into 50ohm with 50% modulation at 1kHz for 12dB SINAD at line output in 7.5kHz bandwidth.

**Image**

80dB.

**IF Rejection**

100dB.

**2nd Order Intercept Point**

+50dBm.

**3rd Order Intercept Point**

+12dBm.

**Frequency Stability**2 parts in  $10^6$  over temperature range.**Antenna Input**

50ohms nominal impedance by BNC connector and terminals.

Overload protection provided for continuous application of 30V rms at input.

**RF Selectivity**

Sub-octave filters.

20-32.8mHz    32.8-53.7mHz    53.7-88mHz.

**Audio Output**

External Loudspeaker: 1.5W maximum into 4 or 8 ohms.

Internal Monitor LS: 150mW maximum.

Line: 10mW maximum into 600ohms.

Headphones: 10mW maximum into Low/Medium impedance.

**Power Supply**

11 to 16 volts D.C. with negative earth at 1 amp.

Protection provided against reverse polarity and over voltage.

**Squelch**

Audio muting derived from the noise level or from a 150Hz tone detector can be selected from the front panel.

**Frequency Tuning**

Frequency tuning by UP/DOWN switches is presettable to 12.5kHz, 50kHz or 100kHz frequency steps by front panel control. Frequency can also be directly entered via numeric keyboard.

**Stored Channels**

Maximum of 99 channel frequencies can be stored. Channel contents can be interrogated and changed without interruption of the signal received. Battery back-up is provided to prevent loss of information in the event of a power failure.

**Scanning**

Any number of the 99 channels can be automatically or manually scanned by selecting the required channels to be in the 'scan table'. The dwell period on each channel can be set 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 'Squelch On' is selected, scanning will stop on an occupied channel and will restart when the signal ceases, after waiting for the hang period selected.

**Sweeping**

Automatic tuning at a preset rate of 12.5kHz, 25kHz, 50kHz, or 100kHz 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 the selected channel upwards or downwards to the frequency in the next highest channel number. If 'Squelch ON' is selected, sweeping will stop on an occupied step and will restart after the signal ceases, after waiting for the hang period selected. As for scanning, sweeping can also be controlled using the up/down tuning buttons.

**BITE (Build-in-Test-Equipment)**

In BITE mode, tests can be made using internally fitted test circuits to aid fault finding, general test and maintenance procedures. Under operating conditions and 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.

**Remote control (Optional)**

Remote Control can be selected, via internal DIL switches to allow operation at 300 or 1200 Baud asynchronous data rates at RS232c level.

**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  $+40^{\circ}\text{C}$

Meets relevant sections of DEF-STAN 07-55, protected against driving sand, snow, rain and dust.

**Dimensions**

Width: 240mm Depth: 305mm Height: 80mm  
Weight: 3.8kg

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# Eddystone Radio



A MARCONI COMMUNICATION SYSTEMS COMPANY.

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## M.F Frequency Synthesiser



### Features

**Thumbwheel selection of frequency**

**Range 500kHz to 1700kHz**

**Built-in power supply**

**Adjustable output level**

### Introduction

The 1740 Frequency Synthesiser provides an output for use as a drive for medium wave transmitters. Any frequency from 500kHz to 1700kHz may be selected by thumbwheel switches mounted on the front panel. The output is adequate for the majority of m.w transmitter drive requirements.

The unit is self-contained with its own built-in power supply and can be supplied for rack mounting or in its own case.

### Description

The Frequency Synthesiser consists of a single loop phase locked oscillator covering 4.0MHz to 5.2MHz in 100Hz steps, mixed with a 3.5MHz oscillator to produce an output of 0.5MHz to 1.7MHz. The output level is adjustable between 2V and 8V r.m.s.



## Data Summary

**Frequency:** 500kHz to 1700kHz

**Resolution:** 100Hz

**Selection:** Thumbwheel switch selection of frequency

**Stability:**  $\pm 5$  p.p.m over  $0^{\circ}\text{C}$  to  $+40^{\circ}\text{C}$  or,  $\pm 0.5$  p.p.m over  $-10^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ , to special order

**Spectral Purity:** Harmonic signals  $-26\text{dB}$

Non-harmonic signals  $-60\text{dB}$

**Output Level:** Externally adjustable between 2V and 8V r.m.s into  $50\Omega$

**Output Level Flatness:** Within 1dB over frequency range

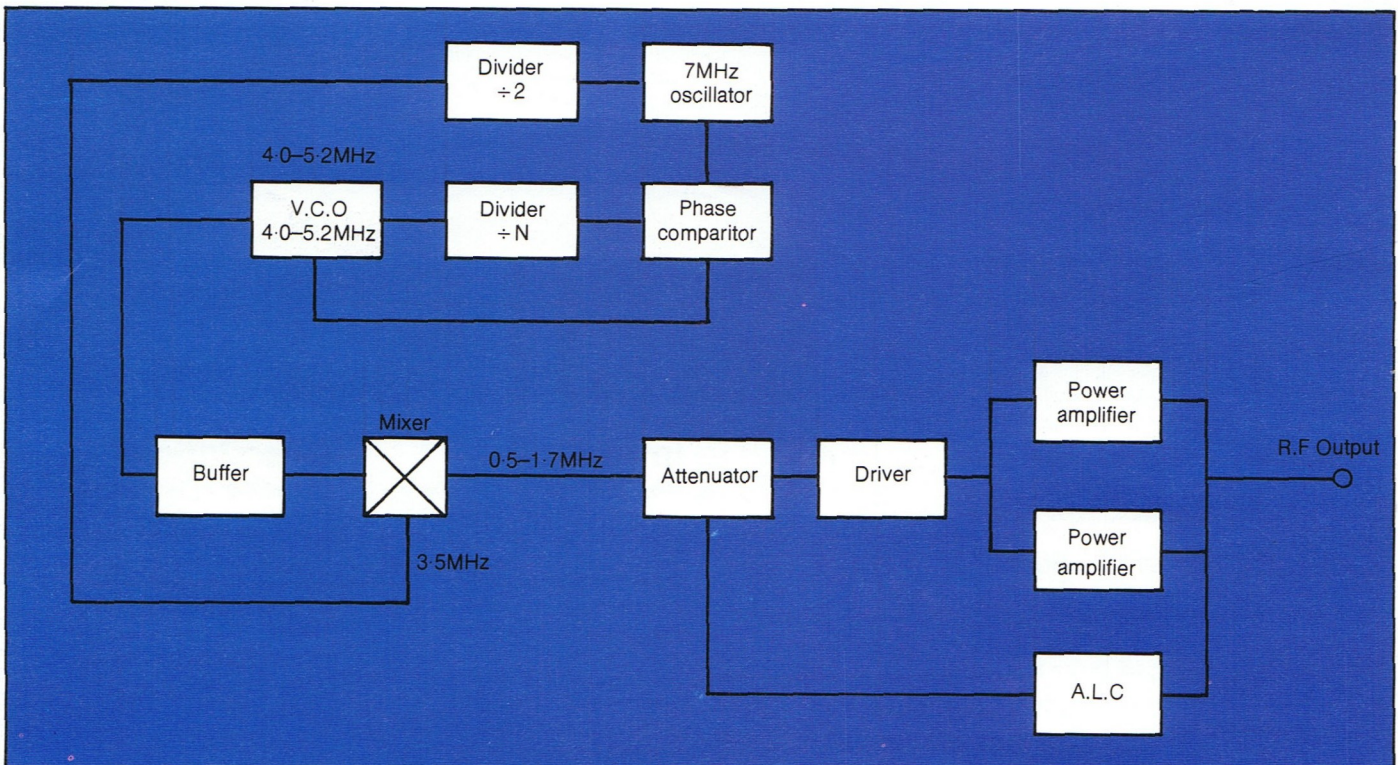
**Power Requirements:** 100V-130V a.c or 200V-260V a.c 40Hz-60Hz at 20VA

**Size:**

Width: 483mm (19in)

Height: 88mm (3½in)

Depth: 152mm (6in) intrusion into rack plus 50mm (2in) for cabling.



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E-1740



## M.F and H.F Channelized Receivers



### Features

- Compact and cost effective
- Self-contained a.c power supply
- Easy to operate and service
- Full remote control
- Suitable for unattended monitoring
- Wide range of customer options

### Description

The 1680 series of receivers provides for reception in the medium and high frequency ranges.

The 1680/1 and /2 are M.F receivers operating in the 400kHz to 535kHz range. They provide for reception of M.C.W (A2A) and C.W (A1A) signals. The /2 has variable B.F.O on C.W, and F.S.K (F1A) with high stability carrier insertion oscillator, and has wide and narrow bandwidth positions.

The 1680/3 and /4 are H.F receivers operating in the 1-6MHz to 30MHz range. Reception facilities for A.M and U.S.B are provided as standard, but reception on L.S.B, C.W with variable B.F.O and F.S.K can also be provided.

Power supply arrangements can be chosen to suit the customers' installation requirement. The standard receiver operates from 40Hz-60Hz A.C supplies and from 24V D.C supply (negative earth). For 12V or floating earth supplies, an external connector can be provided.

Audio outputs provided are for connection to standard 600Ω circuits, output for headset, and 2W to an internal speaker plus 2W to an external speaker.

Audio derived A.G.C is used for S.S.B, C.W and F.S.K reception and I.F derived A.G.C for A.M and M.C.W. A manual R.F gain is provided which can be used in conjunction with or instead of the A.G.C. A fast-acting muting circuit is included which provides 17dB

of noise-quieting in the absence of a signal.

A single conversion circuit design is employed, with an output provided at the 1.4MHz intermediate frequency for connection to ancillary units, and operation in dual diversity is possible.

Remote control of all functions is available.

### Controls:

Aerial attenuator: 3 position providing nominal 0dB, -20dB, -40dB.

A.G.C: On/Off switch combined with aerial attenuator.

R.F gain: Can be used with A.G.C On or Off.

Muting: On/Off control. Muting threshold dependent on R.F gain setting.

A.F Gain: Adjusts audio output to headset and loudspeaker.

Standby: Combined with A.F gain removes H.T from receiver leaving power applied to oven.

Line level: Situated on rear panel.

Indicator l.e.ds for power applied, receiver on, and signal received (i.e mute circuit inoperative).

Remote operation: Control of all functions is possible by grounding the necessary input lines.

B.F.O: 8 lines.

R.F Gain: 5 lines.

A.G.C On/Off: 1 line.

Aerial attenuator: 2 lines.

Muting On/Off: 1 line.

Sensitivity: 1μV for 12dB SINAD.

I.F rejection: Greater than 90dB.

### Audio output:

Line 600Ω balanced or unbalanced: Preset to +10dBm. Headset: 600Ω nominal, output adjusted by A.F gain control to +10dBm.

Loudspeaker: 2W maximum.

### Data Summary

#### Intermediate frequency:

1.4MHz.

Aerial input: 50Ω unbalanced; 30V r.m.s continuously applied will not damage the receiver.

#### Power supplies: a.c

100V/130V and 200V/250V (40Hz-60Hz) standard fitting. 24V d.c with negative earth standard fitting. 12V and 24V d.c with floating earth optional extra. Consumption 25VA.

#### Environmental:

Operational: -10°C to +55°C.

Storage: -40°C to +70°C.

Humidity: 95% at +40°C.

Vibration: Compatible with all marine specifications.

#### Dimensions:

Panel: 483mm×88mm (19in×3.5in).

Intrusion into rack: 282mm (11in) over cover plus 50mm (2in) for cabling.

Weight: 6.5kg.



External loudspeaker: 2W maximum into 8Ω.

**Overall response:** Distortion better than 5%, typically 2%.

**Blocking:** With a wanted signal 60dB above 1μV, an unwanted carrier 10kHz off-tune must be of a level greater than 110dB above 1μV to affect the output by 3dB.

**Cross modulation:** With a wanted carrier 60dB above 1μV adjusted to give standard output at an audio frequency of

1400Hz, an unwanted signal 20kHz off-tune and modulated 30% at 1000Hz must be of a level exceeding 90dB above 1μV to produce an audio output greater than 30dB below standard output.

**Intermodulation (out-of-band):** With a wanted signal 1μV producing standard output, two unwanted signals adjusted to produce a third order intermodulation product at the wanted frequency, must each be

of a level greater than 80dB above 1μV to produce standard output when neither signal is closer than 30kHz to the wanted frequency.

**Intermodulation (in band) 1680/1, /3 and /4:** The third order intermodulation products at 400Hz and 2200Hz produced by two carriers of level 80dB above 1μV tuned to produce outputs of 1000Hz and 1600Hz will be more than 30dB below standard output when the

individual carriers each provide an output equal to standard output.

**Intermodulation (in band)**

**1680/2:** The third order intermodulation products at 600Hz and 1800Hz produced by two carriers of level 80dB above 1μV tuned to produce outputs of 1000Hz and 1400Hz will be more than 30dB below standard output when the individual carriers each provide an output equal to standard output.

	1680/1	1680/2	1680/3	1680/4
Frequency	1 channel, 500kHz Alternative frequencies in range 400kHz–535kHz could be provided to specific customer requirements	7 channels, 400 to 535kHz Frequency range could be extended to specific customer requirements	1 channel 1.6MHz to 30MHz	2 channels 1.6MHz to 30MHz
Reception modes	C.W (A1A) M.C.W (A2A)	C.W (A1A), M.C.W (A2A) F.S.K (F1A) Required audio output to be specified by customer	A.M, S.S.B, in upper sideband L.S.B, C.W or F.S.K can be supplied to specific customer requirements	As /3
Clarifier controls	–	–	Provides fine tune	As /3
B.F.O	Range ±3kHz provided	As /1	If fitted as /1	As /3
Remote	Remote/local selection	Remote/local selection combined with muting control	As /1	As /2
Channel	–	Selects channel 1 to 7	–	Selects channel 1 or 2
Mode selects:	C.W or M.C.W	C.W, M.C.W, F.S.K, with choice of two bandwidths	A.M, S.S.B or other modes if fitted	As /3
Remote operation mode	1 line	2 lines	1 or 2 line(s) depending on modes required	As /3
Channel	–	3 lines	–	1 line
Bandwidth	–	1 line	–	–
Selectivity	±3kHz at –6dB ±7.5kHz at –60dB	Wide ±1.5kHz at +6dB ±3kHz at –60dB Narrow ±150Hz at –6dB ±300Hz at –60dB	S.S.B –6dB –350Hz to +2700Hz –60dB –400Hz to +3400Hz A.M –6dB ±3.0kHz –60dB ±7.5kHz	As /3
Image rejection less than	60dB (typically 70dB)	80dB	50dB above 20MHz 70dB below 20MHz	60dB above 20MHz 70dB below 20MHz
Overall response level within 6dB	300Hz to 3kHz	300Hz to 1.5kHz	300Hz to 2.7kHz	As /3
A.G.C characteristic output changes by	C.W: 3dB for 90dB increase from 2μV M.C.W: 2dB for 90dB increase from 5μV	C.W or F.S.K: <3dB for 100dB increase from 2μV M.C.W: 3dB for 90dB increase from 5μV	S.S.B: <3dB for 100dB increase from 2μV A.M: <3dB for 90dB increase from 5μV	S.S.B: <5dB for 100dB increase from 2μV A.M: As /3
Stability within	–	15Hz, –10°C to 55°C	20Hz, 0°C to 40°C	20Hz, 0°C to 40°C

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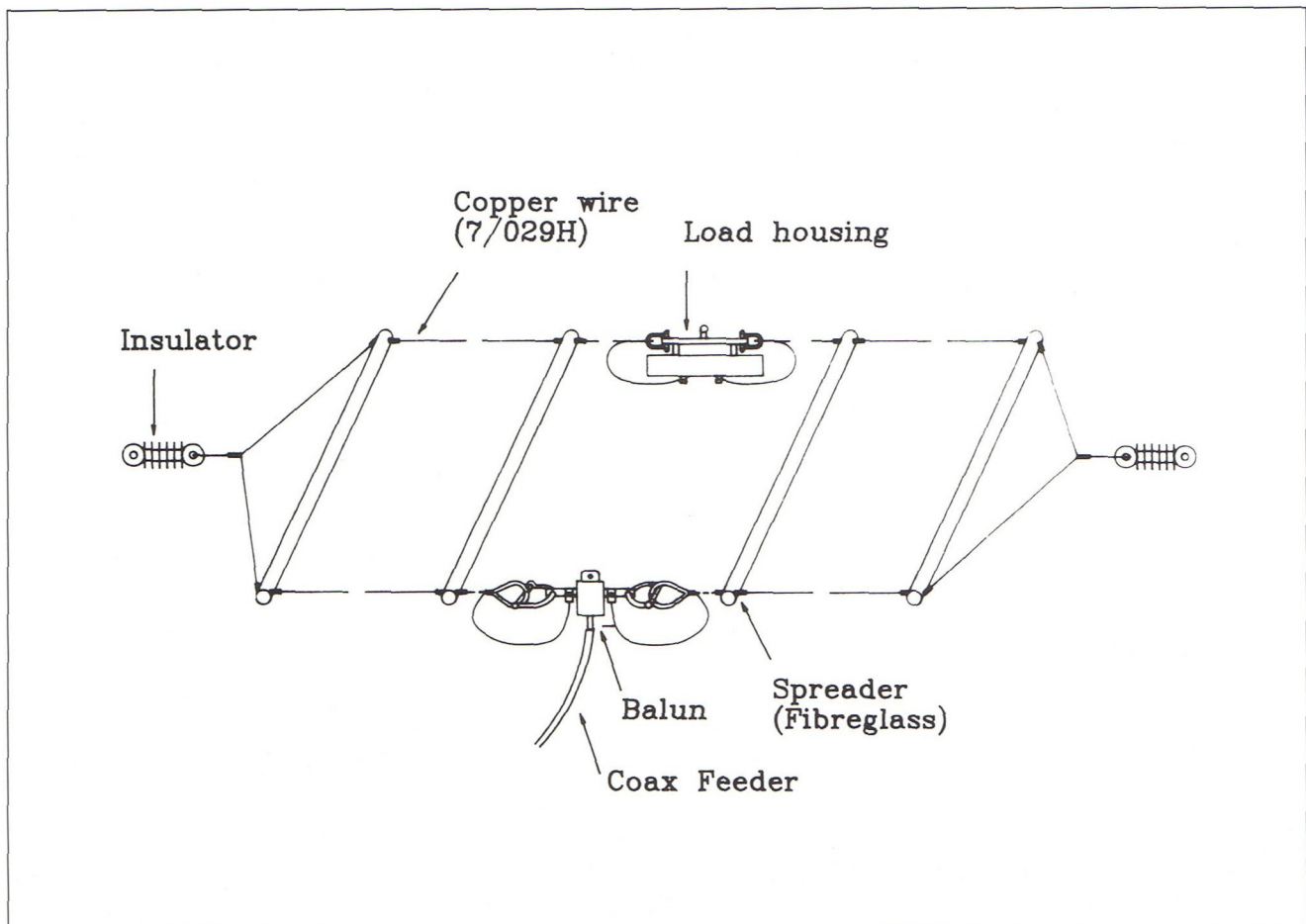
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E-1680

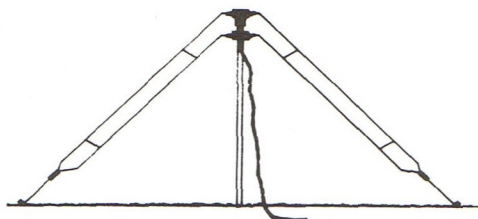


## S1829 BROAD BAND DIPOLE

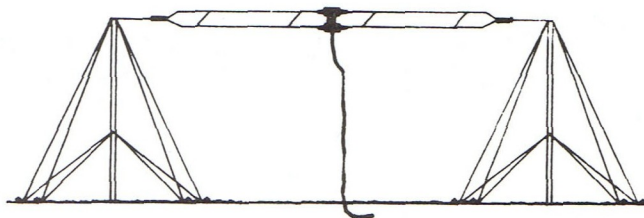
- Ideal for all HF communications
- Frequency Range 2-30 MHz
- Eliminates need for ATU
- Easily deployed for tactical applications or for permanent installation
- Ideal for use with frequency agile equipment
- Fitted with 'N' Type socket as standard and supplied with 30 metres of coax cable



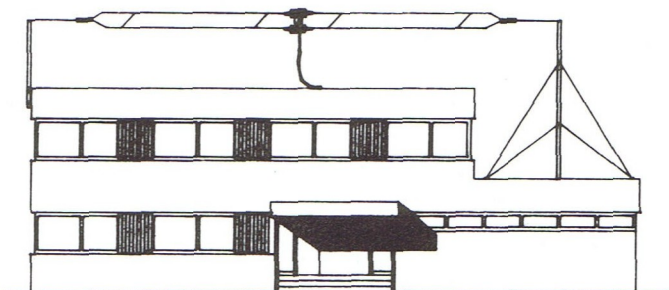




Single mast mounted  
as inverted-V

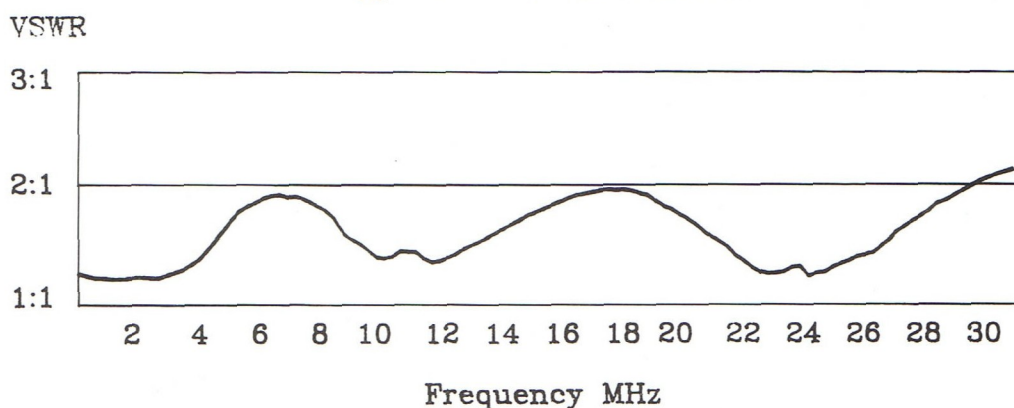


Mast to mast



Typical building installation

### Typical VSWR Characteristic



Model No.	Frequency Range	Overall Length
S1829/1	2.0 - 30MHz	28.5 metres
S1829/2	5.5 - 30MHz	18.5 metres
S1829/3	7.5 - 30MHz	13.5 metres
S1829/4	10 - 30MHz	10.0 metres

Overall width of antenna	:	490mm nominal
Maximum Power Handling	:	250watts
VSWR	:	2:1 maximum
Polar Diagram 'H' Plane	:	Generally omnidirectional
Polarisation	:	Horizontal
Impedance	:	50ohms unbalanced

#### Optional Extras

Cross-arm assembly when the antenna is used on a single mast as an inverted-V.

Halyard kit including 25 metre halyard, pully and support strap.

# Eddystone Radio



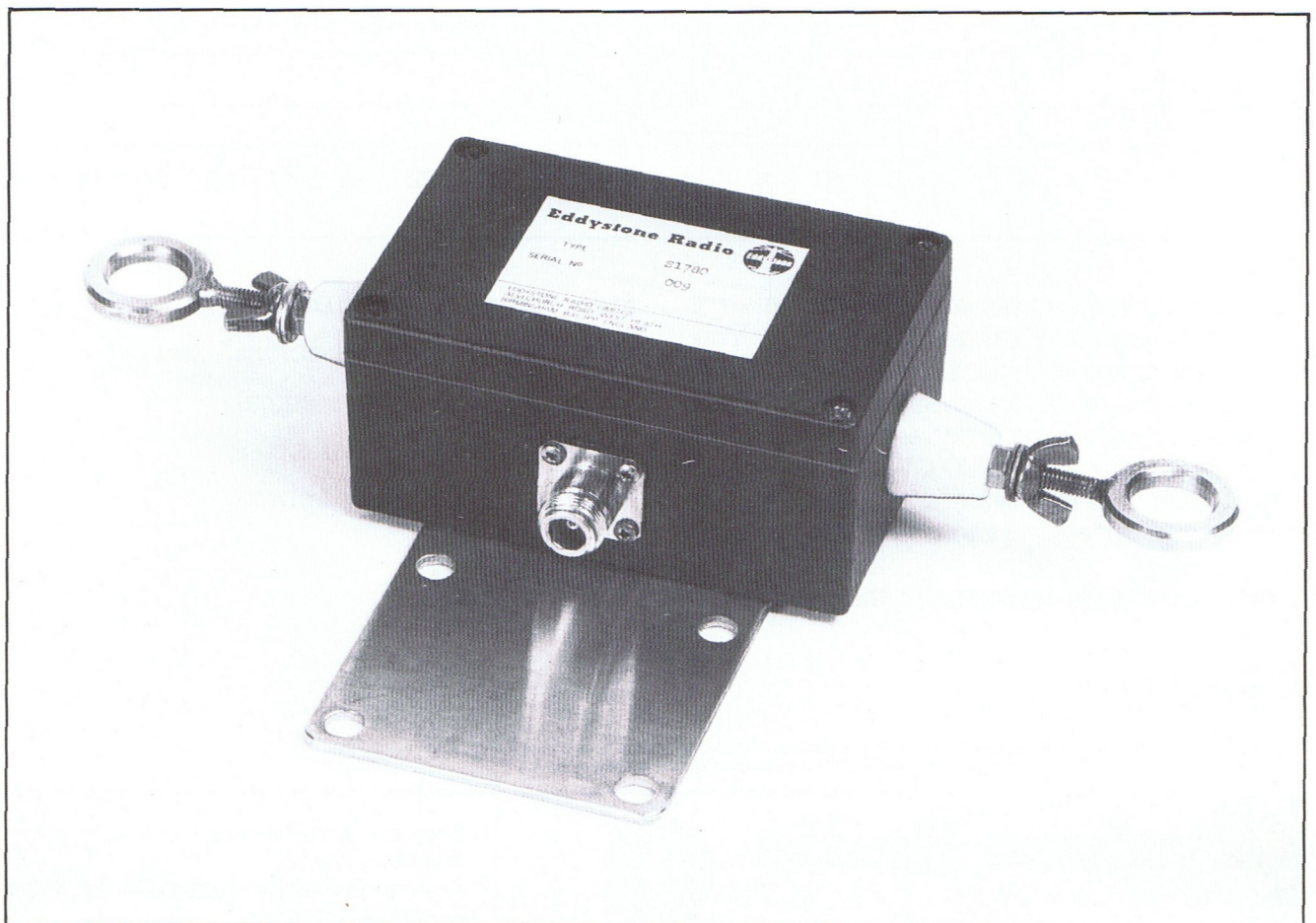
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## S1780 BROAD BAND DIPOLE

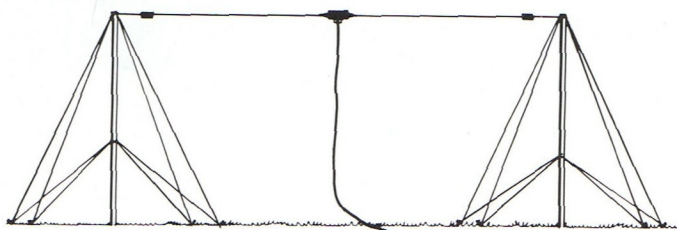
- Ideal for all HF communications
- Matches any wire over 7 metres long in end fed or dipole configurations
- Eliminates needs for ATU
- Easily deployed for tactical applications or for permanent installation
- Supplied with two radiators and ceramic insulators as standard
- Ideal for use with frequency agile equipment
- Fitted with 'N' Type socket as standard



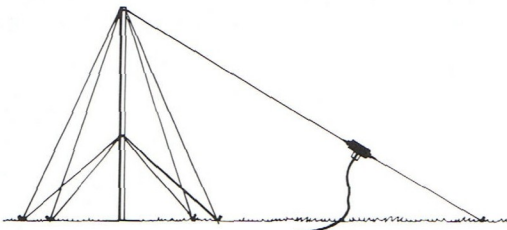




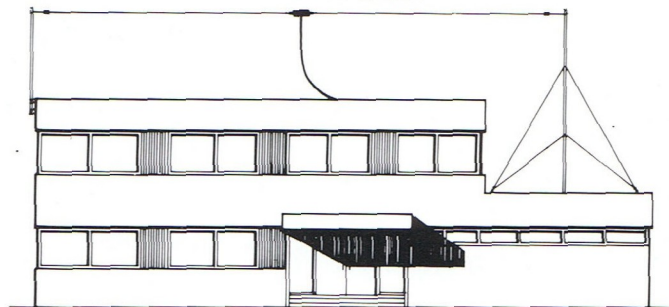
Pole mounted



Mast to mast

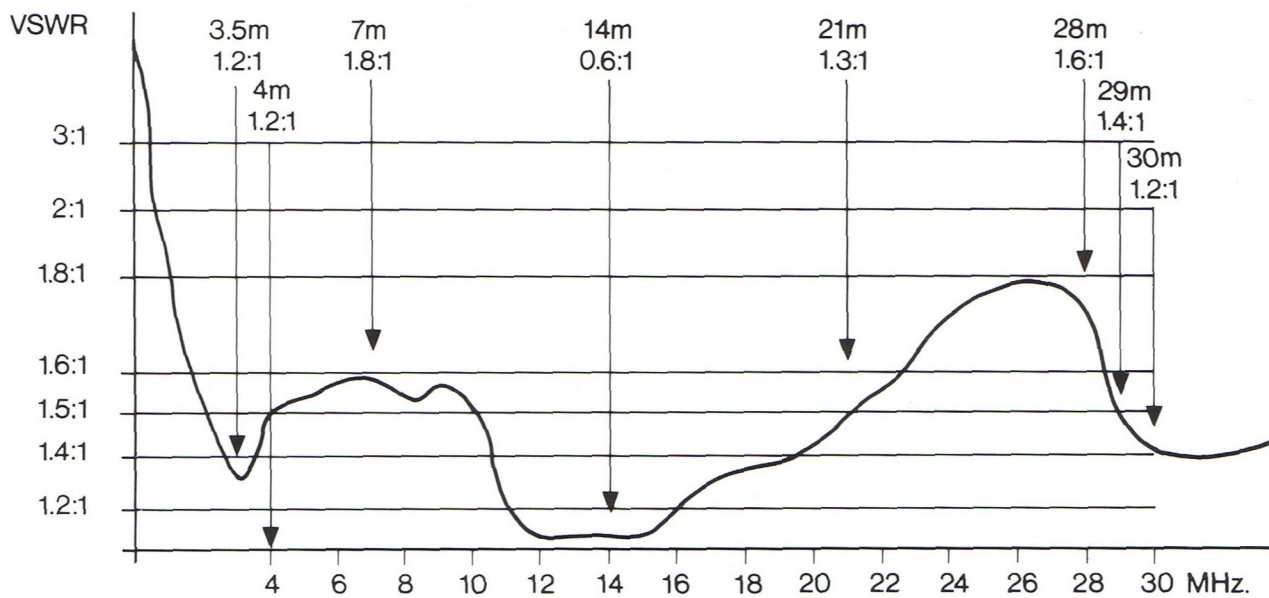


Mast to ground



Typical building installation

The figures above the arrows are the reflectometer reading at frequency stated.



Matches any wire dipole or wire over 7 metres long over frequency range 1.5–30 MHz. The S17 80 centre fed wire dipoles or end fed wires to be fed without the conventional ATU. Fully wideband over stated frequency range and available in 150, 400, or 2000W p.e.p. rating. This device will find wide acceptance with frequency agility equipment ideal for field use and licensing to original equipment manufacturer's for inclusion in their radio's.

**Freq. Range:** 1.5 to 30.0 MHz

**VSWR:** Better than 2.1 across band

**Impedance:** 50 ohms nominal

**Power Rating:** 150 W p.e.p.

**Mass (inc wires):** 2kg approx.

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