



Racal RA 1792 technical specifications



Frequency Range	150 kHz to 30 MHz
Modes of Reception	USB/LSB (R3E, H3E, J3E, R2A, H2A, J2A) AM (A3E) MCW (A2A) CW (A1A) ISB (B8E) optional FM (F3E) Auxiliary - provides demodulated signal centered on optional fixed BFO offset frequency
Tuning	Continuously tunable synthesizer in 10 Hz steps over the entire frequency range. Frequency setting either by numerical keypad or by single tuning knob with continuously variable tuning rate from 1 kHz per turn to approximately 20 kHz per turn, depending on the speed of rotation.
Pre-programmed Channels	EAROM memory unit may be programmed with up to 100 channel frequencies and mode which may be recalled by keypad or tuning control.
Channel Scanning	Automatic scanning of up to ten channels in any decade of the 100 stored channels. Dwell time on each channel variable in ten steps from 0.1 to 10 seconds; pre-selected by numeric keypad.
Frequency Stability	Dependent upon frequency standard used: 1. The following optional internal standard may be supplied: a. Temperature Compensated Crystal Oscillator (TCXO): ± 2 in 10°C from -10°C to +55°C. b. Type 9442: I. Temperature: ± 3 in $10^9/^\circ\text{C}$ II. Long term: ± 3 in 10^9 per day after 3 months continuous operations. 2. External standard input: 1 MHz, 5 MHz, or 10 MHz level OdBm into 50 ohms.
Antenna Input	a. Wideband, 50 ohms to 75 ohms nominal. b. The receiver will withstand without damage input signals of 50 V EMF continuously. c. Re-radiation: I. 0 to 30 MHz: not greater than 10 μ V PD. II. 30 to 100 MHz: not greater than 200 pW.
Sensitivity	a. CW and SSB (A1A, R2A, A3E, R3E, J3E): In a 3 kHz bandwidth, signal-plus-noise to noise ratio is better than: 150 kHz to 1 MHz: 10 dB with 3 μ V (EMF) input, 1 MHz to 30 MHz: 10 dB with 1 μ V (EMF) input. b. AM (A3E): in a 6 kHz bandwidth, signal-to-noise to noise ratio is better than: 150 kHz to 1 MHz: 10 dB with 10 μ V (EMF) input, 70% modulated at 1 kHz, 1 MHz to 30 MHz: 10 dB with 3 μ V (EMF) input, 70% modulated at 1 kHz.
IF Selectivity	USB +250 Hz to +3.2 kHz at -6 dB -400 Hz to -4.3 kHz at -60 dB LSB +250 Hz to +3.2 kHz at -6 dB -400 Hz to -4.3 kHz at -60 dB CW1 300 Hz at -6 dB 3 kHz at -60 dB CW2 1 kHz at -6 dB 6 kHz at -60 dB AM1 3.2 kHz at -6 dB 12 kHz at -60 dB AM2 6.0 kHz at -6 dB 20 kHz at -60 dB AM3 16 kHz at -6 dB 50 kHz at -60 dB Note: a maximum of six filters may be installed, in addition to a 16 kHz bypass.
	With a wanted signal of 1 mV EMF in a 3 kHz bandwidth, an unwanted signal 30% modulated

Cross Modulation	removed not less than 20 kHz, must be greater than 500 mV EMF to produce an output 20 dB below the output produced by the wanted signal.
Reciprocal Mixing	With wanted signal of less than 100µV EMF in a 3 kHz bandwidth, an unwanted signal more than 20 kHz removed is generally greater than 65 dB above the wanted signal level to give a noise level 20 dB below the output produced by the wanted signal.
Blocking	With a wanted signal of 1 mV EMF, an unwanted signal more than 20 kHz removed must be greater than 1 V EMF to reduce the output by 3 dB.
Intermodulation Products	In band: Two 100 mV EMF signals within the IF passband will produce third order intermodulation products not greater than -50 dB relative to the level of either tone at the IF output. Out of band: With two 30 mV EMF signals, separated and removed from the wanted signal by not less than 25 kHz, the third order intermodulation products are not less than 90 dB below either of the interfering signals.
Spurious Responses	External (including image and IF rejection): External signals, removed more than 20 kHz from the wanted frequency, must be greater than +80 dB relative to 1 µV EMF to produce an output equal to that produced by a 1 µV EMF signal at the wanted frequency. Internal: The presence of an internally generated spurious response generally will not degrade the specified receiver sensitivity by more than 3 dB.
AGC	Range: An increase in input level of 110 dB above 2 µV EMF will produce an output change of less than 2 dB. Time constants: Short, medium and long - preset to be automatically selected by mode switching, but can be set independently by pushin-bottons. AGC lines are available at rear of receiver to permit remote control.
IF Gain Control	Control range 110 dB: Gain control may be switched either to manually set receiver gain or AGC threshold.
BFO	a. Variable by main tuning control, ±8 kHz, synthesized in 10 Hz steps b. Pre-selected fixed offset may be selected for use with external demodulator.
Pre-set Operating Conditions	Bandwidth, AGC time constant and BFO offset may be preset for each mode so that they are automatically recalled when the mode is selected. 'Auxiliary' mode may be set up for any mode, bandwidth, AGC constant and BFO offset. In the ISB mode, diferent AGC time constants may be stored for the two sidebands.
1st LO Output	10 dBm ±3 dBm into 50 ohm load, on read panel.
IF Output	455 kHz, nominal 100 mV into 50 ohms.
Muting	60 dB minimum by grounding rear panel connection.
AF Output	1. Line output, 10 mW maximum into 600 ohms balanced, adjustable by internal preset level control. 2. Phone output, 1 mW maximum into 600 ohms unbalanced. 3. 200 mW maximum to internal loudspeaker which may be switched in or out of operation. 4. Connection for external loudspeaker, 200 mW into 16 ohms; 400 mW into 8 ohms.
Metering	Front panel display switched to indicate RF level or AF level output to line
BITE	All measured supply voltages to be within ±20% Varactor line voltage: - 20 MHz Reference Loop: 6 to 11 V DC BFO Synthesizer: 8 V ±0.5 V DC LO Synthesizer: 3.5 to 15 V
Power Supply	AC: Selections for 110, 120, 220 oer 240 V operation; +10% -15%. 45 to 65 Hz DC: Receiver may also be operated from an 18 to 32 V DC source when receiver is equipped with optional DC power supply.
Power Consumption	Approximately 60 VA for AC operation; approximately 40 Watts for DC operation.
Display Illumination	Presettable.
Environmental Conditions	a. The equipment is designed to operate under the following climatic conditions: Operating temperature -10°C to +55°C Storage temperature -40°C to +70°C Relative humidity 95% at +40°C b. The equipment is suitable for mobile operation. c. The equipment is suitable for air transportation in unpressurized conditions and for operation up to altitudes of 3500 metres above the sea level.
Dimensions	Height - 133 mm (5.29 in) Width - 483 mm (19 in.) Depth - 458 mm (18 in.)
Weight	14 kg (31 lbs.)

Radio Emission Codes

Radio Emission Codes are specified using three symbols as shown below:
 First symbol - Type of modulation of main carrier
 Second symbol - Nature of modulating signal
 Third symbol - Nature of transmitted signal

The principal symbols are listed below:

First Symbol	Type of Modulation
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A	Double sideband, AM
B	Independent sideband, AM
C	Vestigial sideband, AM
D	Amplitude/Angle modulation
F	Frequency modulation
G	Phase modulation
H	Single sideband full carrier
J	Single sideband suppressed carrier
K	Pulses, amplitude modulated
L	Pulses, width or duration modulated
M	Pulses, phase or position modulated
N	Unmodulated carrier
P	Pulses, unmodulated
R	Single side band reduced or variable carrier
Second Symbol	Nature of Modulating Signal
0	No modulation signal
1	On/Off modulation (keyed CW)
2	Modulation sub carrier (keyed MCW)
3	Analogue modulation (voice)
7	Two or more channels on one frequency offering keyed telegraphy
8	Two or more channels on one frequency offering telephony (voice)
Third Symbol	Type of Information Being Transmitted
A	Telegraphy for aural reception
B	Telegraphy for automatic reception
C	Facsimile
D	Telemetry
E	Telephony

All data from the original Maintenance Manual of HF Receiver RA 1792 (83000, 82129 and 85830) edited by Racal Communications Limited, Western Road, Bracknell, RG121RG england, Ref TH 3416.