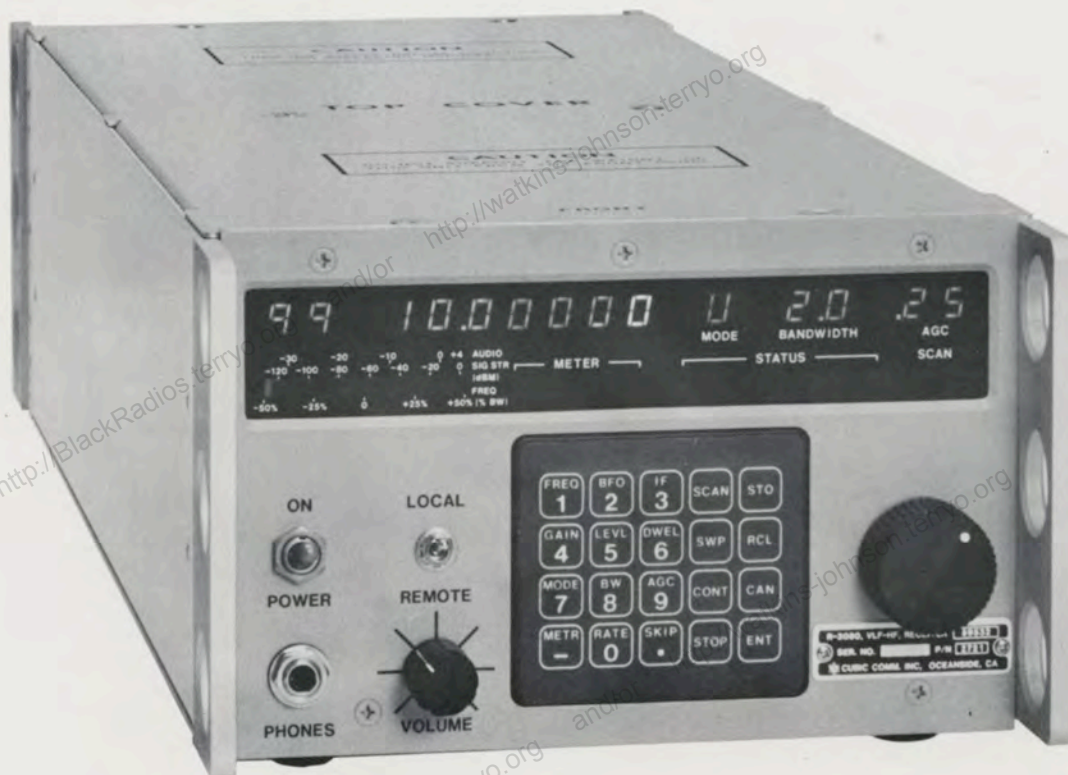


## VLF/LF/MF/HF Receiver



**The R-3080 VLF/LF/MF/HF  
Surveillance Receiver provides  
today's cost-effective solution to  
tomorrow's operational  
requirements.**

State-of-the-art circuit design and innovative packaging techniques allow the half-rack R-3080 to address the specific operational problem areas of SIZE, WEIGHT, POWER CONSUMPTION, RELIABILITY and MAINTAINABILITY while giving the user the unparalleled capability of full software control.

The modular design of the receiver allows for a multitude of user-defined features, either factory installed or directly accessible from the front panel keypad or the rear panel IEEE-488 data bus. In addition, by using individually shielded modules throughout, the EMI/EMC characteristics of the receiver are excellent, a significant advantage over older, open card-cage design technology.

Each module has built-in fault detection circuitry with an LED indicator and front panel annunciator to alert the user to a fault condition. As a result, faults can be quickly identified and isolated. Repairs require only removal of the receiver's top cover and replacement of the faulty module, both of which can normally be done in two minutes or less.

Six IF filter bandwidths and 100 channels of memory storage, each with 11 user-programmed signal parameters, provide for sophisticated search patterns via scan and sweep functions. IF monitor outputs can be fed to spectrum processing and analysis equipment, opening up endless possibilities in the ESM/ECM environment.

Whatever your surveillance needs may be in the 5 kHz to 30 MHz band, the R-3080 half-rack receiver is undoubtedly the most cost-effective solution available today. Contact Cubic Communications for more details and a comprehensive demonstration.

### KEY FEATURES:

- Modular, half-rack construction
- Automatic module fault indication
- Low MTTR - 15 minutes
- High MTBF - 5000 hours
- 5 kHz - 30 MHz frequency coverage
- LSB/USB/CW/AM/FM modes
- 100 multi-parameter memory channels
- Indefinite memory storage
- Multi-function keypad and display
- Numerous data bus and IF monitor options



# R-3080 TECHNICAL SPECIFICATIONS

## FREQUENCY:

Range: 5 kHz - 30 MHz

Resolution: 10 Hz

### Stability (Internal Standard):

- 1 ppm over temperature range:
- .01 ppm per week aging

### Tuning Modes:

- 1. manual, optical shaft encoder
- 2. keypad
- 3. remote control

Display: 7 digit LED

**Power Interrupt:** stores memory channel data for up to 5 years. Upon power restoration, receiver returns to previously tuned channel or frequency

## MODES:

LSB, USB, AM, CW, FM

## RF SECTION:

Input: 50 ohms, BNC

VSWR: less than 3:1

Sensitivity: for 10 db SINAD

- (above 50 kHz)
- AM (8 kHz BW): -110 dBm
- 90% modulation
- CW (500 Hz BW): -127 dBm
- SSB (2 kHz BW): -121 dBm

Noise Figure: 13 dB (maximum above 50 kHz)

Protection: up to 100 volts RMS from 50 ohm source without damage; automatic reset

Preselection: automatically selected filter, 10 frequency bands, 8 one-half octave bands between 1.6-30 MHz, 2 bands from 5 kHz to 1.6 MHz

### Gain Control:

- Type: automatic and manual
- AGC Range: 120 dB minimum
- AGC threshold: 0.5 $\mu$ V
- Fast attack, selectable hold, fast release
- Hold time (locally or remotely selectable):
  - Zero: 15 ms nominal
  - Short: 50 ms nominal
  - Medium: 250 ms nominal
  - Long: 3 seconds nominal
  - Off: manual gain control only
- Release Time: 50 ms nominal
- Manual Gain Control: 0 to 127 dB gain reduction

## IF SECTION:

First IF: 40.455 MHz

Second IF: 455 kHz

### First IF Bandwidth:

- 10 kHz at -6 dB
- 20 kHz at -60 dB

### Second IF Bandwidths (Selectable):

- a. 500  $\pm$  50 Hz at -6 dB
- 4 kHz max. at -60 dB
- b. 1000  $\pm$  50 Hz at -6 dB
- 5 kHz max. at -60 dB
- c. 2000  $\pm$  100 Hz at -6 dB
- 5 kHz max. at -60 dB
- d. 4000  $\pm$  200 Hz at -6 dB
- 10 kHz max. at -60 dB
- e. 8000  $\pm$  400 Hz at -6 dB
- 20 kHz max. at -60 dB

## INTERFERENCE IMMUNITY:

IF Rejection: 100 dB minimum

Image Rejection: 90 dB minimum

**Cross Modulation:** unmodulated wanted signal of 100 $\mu$ V together with a modulated (30% at 1 kHz) unwanted signal of 250 $\mu$ V spaced 100 kHz apart will produce less than 10% cross modulation of unwanted signal

**Blocking:** attenuation of wanted RF signal at 50 $\mu$ V and caused by an unmodulated signal of 1 V spaced 100 kHz away will be less than 3 dB

**Oscillator Re-radiation:** 1  $\mu$ V maximum from antenna connector into 50 ohms

**Spurious Responses:** -123 dBm equivalent or less for -50 dBm input signals

**Generated Spurious:** -123 dBm input equivalent or less, 2 to 30 MHz

**Intermodulation Distortion:** third order intermodulation products resulting from two input signals at -20 dBm each are less than -120 dBm

## INPUT/OUTPUT:

### Outputs:

- First IF (Wideband): 40.455 MHz with 1 MHz minimum bandwidth, 50 ohms at approximately 0 dB gain from input (BNC female)
- Second IF: 455 kHz at selected bandwidth and nominal 0 dBm level, 0  $\pm$  3 dB over range (BNC female)
- Synthesizer Reference: 0 dBm, 50 ohm output for receiver daisy chain operation, 10 MHz (BNC female)

### Audio:

- LSB, USB, AM, CW: 0  $\pm$  3 dBm over dynamic range
- Frequency: 0.5 V/kHz AC coupled (4 V p-p maximum) 600 ohms balanced pair contacts on AUDIO connector

Headphones or Speaker: 0 to 12 V p-p 15 ohm source impedance

FM Video (always present): 1 V per kHz (positive sense, DC coupled) on AUDIO connector

Signal Strength: digital format on bus (8 bit) (on bus connector), analog format on AUDIO connector

### Inputs:

- Synthesizer Reference: 10 MHz, 0 dBm, 50 ohms (BNC female)
- Antenna: BNC female

## GENERAL DATA:

**Power Requirements:** 35 watts, maximum, 95-135 VAC or 190-270 VAC (internally selectable), 47-420 Hz

### Dimensions:

8.50" W x 5.22" H x 23" D (to rear handles)

Weight: 25 lbs.

## ENVIRONMENTAL DATA:

Temperature Range: -20 to +60°C

Relative Humidity: per MIL-STD-810D (method 507.2)

Vibration: Sinusoidal: per MIL-STD-167-1  
Random: per MIL-STD-810D (method 514.3)

Shock: per MIL-STD-810C

## FEATURES:

### Standard:

- 100 memory channels
- Preselector
- BFO  $\pm$  9.99 kHz (10 or 100 Hz steps)
- Built-in fault detection
- Multi-function keypad
- LSB, USB, AM, CW and FM modes
- 0.5, 1, 2, 4, 8 kHz bandwidths
- Multi-function LED meter
- Signal strength
- Audio level
- Frequency shift display
- FM video output
- 10, 100 or 1000 Hz tuning steps
- IF shift tuning  $\pm$  9.99 kHz (10 of 100 Hz steps)
- RF input over voltage protection up to 100 V RMS from 50 ohm source
- IEEE-488 data bus

### Optional:

- RS-232 data bus
- MIL-STD-188 data bus
- Special data bus
- Customer-specified bandwidths (up to 6 bandwidths available)
- Customer-specified IF monitor outputs

