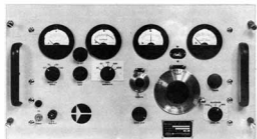


# GENERAL ELECTRONIC LABORATORIES INCORPORATED

## VHF TELEMETRY RECEIVER Type 11B1-B

### AM-FM-CW

With Optional Phase Lock and Predetection Record Playback  
For reception of FM/FM, PDM/FM, PCM/FM, PAM/FM and AM Telemetry Signals



#### FEATURES

- Replaceable tuning head
- VFO/Crystal controlled operation with AFC on second local oscillator
- Low oscillator radiation
- High image rejection
- Wide-band video capability with bandwidth control

#### DESCRIPTION

The GEL Type 11B1-B Telemetry Receiver has been designed in close conformance to the latest IRIG requirements for all types of telemetry signals being used in the VHF region. Functionally, this receiver also meets the specifications for receivers acceptable for use at the Atlantic Missile Range. Further utility is achieved by having the tuning head replaceable, making conversion to other bands possible using heads currently available from GEL.

Noise figures of less than 7 db are achieved over the entire band from 215 to 265 megacycles through the use of two 5842/417 A's in a cascode circuit. A tuned circuit at the input of the cascode amplifier reduces the intermodulation problems frequently encountered in receivers without input pre-selection. In addition, AGC is applied to the RF amplifier which greatly increases the linear operating range of the receiver front end. Reduced interference susceptibility has received considerable attention in the design of these receivers as evidenced by image rejection greater than 60 db and a capture ratio close to unity (approximately 1 db). At the same time interference from the receivers, such as oscillator radiation, has been minimized.

The 11B1-B Telemetry Receiver provides a degree of versatility heretofore unavailable. A front panel switch allows the operator to use the receiver in either crystal-controlled or a continuously-tunable mode of operation. In the crystal position, the tun-

ing dial is set to frequency and a crystal plugged into the front panel socket. With VFO operation the receiver can be tuned using the main tuning dial. In either mode of operation, a vernier frequency adjustment is provided.

Automatic Frequency Control is selectable from the front panel and is achieved by control of the second local oscillator by means of the discriminator output.

Other features included in the 11B1-B receiver are: 1) wide band video with front panel step control of the post-detection bandwidth, 2) combination  $V_u$ /Signal-Level meter with choice of function made from the front panel, 3) rear apron jack for measurement of noise figure and external AGC control, and 4) Audio monitor for both AM and FM functions.

Further flexibility is accomplished through the use of plug-in second IF amplifiers. This enables the user to select the optimum bandwidth for his particular telemetry application. Bandwidths of 100, 300, 500 and 750 kilocycles are standard and cover most conventional needs. The 11B1-B receiver is normally furnished with any two of these bandwidths, chosen by the Customer. In addition, other bandwidths and special response characteristics (e.g. Gaussian) are available on special order.

As optional features the 11B1-B can be furnished with a phase-lock demodulator, as well as predetection recording and playback by means of an integral down/up converter. Recording is normally accomplished at 600 kc.

# GENERAL ELECTRONIC LABORATORIES, INC.

## SPECIFICATIONS TYPE 11B1-B

FREQUENCY RANGE 215 to 265 mc

TYPE OF RECEIVER Double Superheterodyne

NOISE FIGURE Less than 7 db

INPUT IMPEDANCE Operates from 50-ohm source

FIRST LOCAL OSCILLATOR Selectable from front panel:  
Mode 1: Crystal controlled (50,005% stability) using standard MIL CR-33/U crystal without oven  
Mode 2: Continuously tunable oscillator, temperature compensated

SECOND LOCAL OSCILLATOR Tunable over 2150 kc with front panel control. AFC derived from discriminator controlled by front panel switch

IMAGE REJECTION Greater than 60 db

IF REJECTION Greater than 80 db

IF FREQUENCIES First IF: 30 mc; Second IF: 10 mc

IF BANDWIDTH Plug-in IF strips available for bandwidths of 100, 300, 500, 750 kc, 1.0 mc, and 1.5 mc. Receivers are normally supplied with customer's choice of 2 strips

OSCILLATOR RADIATION Meets MIL-1-26600

SELECTIVITY Response has 60-to-6 db ratio of approximately 3.5

DISCRIMINATOR 1% linearity over 2600 kc

FM VIDEO OUTPUT Sensitivity: approximately 0.04 peak volts-peak deviation with a maximum output of 20 volts peak-to-peak

Output Adjustment: front panel control

Output impedance will work into 470-ohm load

Powered by Response 30 cps to 800 kc within 3 db. This rate is measured by a front panel switch in the following steps: 25 kc, 100 kc, 300 kc, 500 kc, and wide band, 6 db/octave roll-off

AM VIDEO OUTPUT Frequency Response: 130 cps to 150 kc

Output load: 10K ohms shunted by 500  $\mu$ fd

OUTPUT FOR FREQUENCY DISPLAY UNIT Provisions for 30-mc Frequency Display Unit (S.K.I. Type 14D1)

OUTPUT FOR PREDETECTION AND ANTENNA TRACKING EQUIPMENT 10 mc output taken before limiter

SIGNAL STRENGTH RECORDING A.T.C. voltage

AURAL MONITORING Built-in audio amplifier, gain control, speaker and phono jack. Monitor Amplifier can be used for either AM or FM output as selected by operator. Insertion of phone plug silences speaker

METERING FACILITIES (a) Tuning meter (b) Frequency deviation meter: 25, 75, 130 and 230 kc full scale. Frequency range of deviation metering circuitry 400 cps to 250 kc between 3 db points.

(c) Combination Vu/Signal-Level meter with function selector made by front panel switch

PHASE LOCK DEMODULATOR (See phase lock data sheet.)

PREDETECTION (See predetection data sheet.)

POWER INPUT 115VAC, 60 cycles, approximately 103 watts, 400 cps operation to order

COOLING Unit includes fan with removable air filter

WEIGHT Approximately 48 lbs

SIZE 8 1/2" x 19" x 15" standard rack construction

SLIDES Provisions for mounting all standard types of chassis slides

PANEL FINISH To customer specifications

HANDLES Normally black oxide, other finishes to customer order

SHOCK MOUNTING Shock mounting frames available for mobile use

INSTRUCTION MANUAL Two per unit