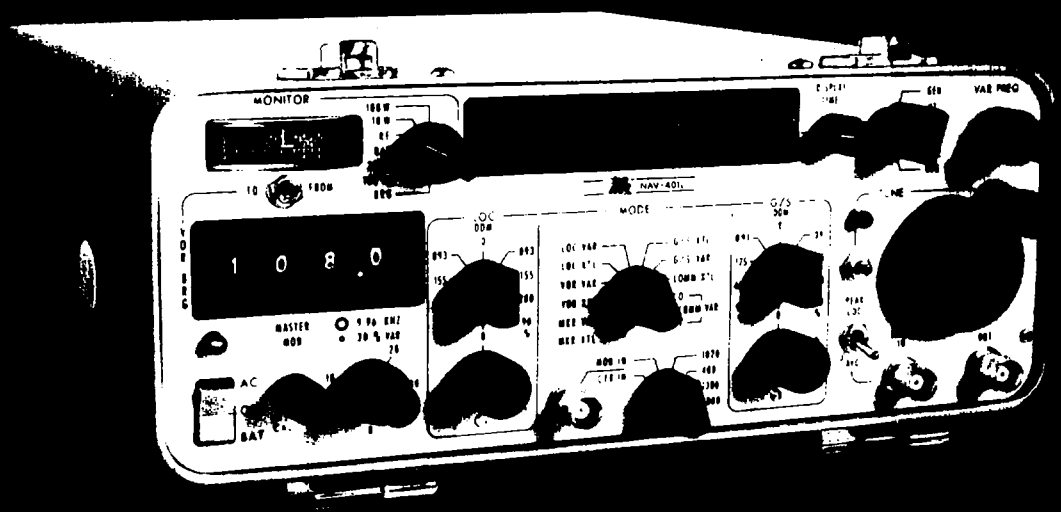
Precision Simulators from... ifr



NAV-401L

MKR/NAV/COMM RAMP AND BENCH TEST SET

The NAV-401L Test Set is a completely self-contained unit designed for functional testing and calibration of MKR, VOR, LOC, G/S, and COMM avionics.

- Signal generator for MKR, VOR, LOC, G/S, and COMM systems with both XTAL and VAR frequency modes
- VOR bearing selectable in 0.1 degree steps, accuracy ±0.1 degree
- Built-in 90 degree bearing monitor of VOR output
- Built-in modulation monitors, 0-30% and 0-100%
- Simultaneous LOC-G/S output
- RF power meter for COMM XMTR power 0-10 W and 0-100 W
- Built-in counter for display of generator frequency, COMM XMTR frequency, or 0 dBm external frequencies from 1 MHz to at least 300 MHz
- Built-in battery and charger supply
- Two-year limited warranty

NAV-401L / MKR/NAV/COMM RAMP AND BENCH TEST SET

GENERAL:

The NAV-401L Test Set is designed to meet the functional testing and calibration requirements of CAT II ILS systems. It includes a modulated signal generator for MKR, VOR, LOC, G/S and COMM tests and a variable output attenuator. Maximum output on any band is −7 dBm (0.1 V). Output range is from −7 dBm to −110 dBm.

One crystal frequency is supplied in each band, and variable frequency modes allow all frequencies of all bands to be used. All bands are frequency phase-locked at 25 kHz intervals except G/S. G/S is phase-locked at 50 kHz intervals.

A separate internal localizer transmitter with an output of approximately −18 dBm at the generator output jack is provided for simultaneous radiation of LOC and G/S signals in G/S XTL mode with LOC switch on.

The set includes a counter to measure **1)** the RF frequency of the signal generator in any band, **2)** the frequency of any COMM transmitter, **3)** any 0 dBm external frequency from 1 MHz to at least 300 MHz, or **4)** the selected VOR bearing as a check on the VOR BRG. Counter time base is derived from a 10 MHz clock oscillator with an accuracy of ±0.002% from 0 to 50° C.

A power meter is included to measure COMM transmitter power 0-10 W or 0-100 W. A peak or average power switch allows COMM XMTR modulation checks, and a rear panel jack permits viewing or listening to the modulation.

A percentage of modulation monitor accurately indicates modulation levels on any band 0-30% or 0-100%.

The NAV tones for modulation are digitally derived from a 2.16 MHz crystal oscillator.

The 90 Hz and 150 Hz tones utilized for LOC and G/S modulation are phase-locked with an accuracy of 0.1 degree. By pressing a front panel switch the relative phases between the 90 and 150 Hz tones can be varied in 5 degree steps, relative to the 30 Hz Ref signal, for a 1 degree selected step on the VOR BRG selector.

LOC and G/S centering may be calibrated from the front panel.

The battery charging system will permit continuous charging without damage to the battery. The AC supply permits operation on 115 V/230 V, 50 Hz to 500 Hz.

SPECIFICATIONS:

SIGNAL GENERATOR

Frequency Ranges: 72-78 MHz, 107-156 MHz, 327-337 MHz

Signal Output: 0.7 μV to 100,000 μV. (−7 to −110 dBm)

Crystal Control:* 75 MHz, 108.0 MHz, 108.1 MHz, 126.9 MHz, 334.7 MHz. Tolerance ±0.005%. These are the normal FAA test facility assigned frequencies.

**Note: Any frequency may be chosen in each band at time of test set order.*

Variable Mode: Continuously tunable on all bands or phase-locked at 25 kHz intervals on each band except G/S. (50 kHz G/S phase-lock) ±0.002%

Modulating Signal: 1020, 400, 1300, 3000 Hz Tones, ±1% accuracy.

95% modulation on MKR ±5%	VOR signal, see below
30% modulation on LOC, VOR, COMM ±2%	LOC and G/S signals, see below

(These are modulation levels with the Master Mod control in Cal position.)

TEST SIGNAL ACCURACY

VOR: 3600 digitally derived courses, selectable in 0.1 degree increments. Course accuracy better than ±0.1 degree. 30 Hz ±0.02%, 9.96 kHz ±0.02% (Deviation ±480 Hz ±25 Hz). Modulation % of each signal 30 (±2)%. TO-FROM switch added for convenience

LOC-G/S: 90, 150 Hz ±0.02%
Modulation: LOC — 20 (±2)% each tone
G/S — 40 (±2)% each tone

DDM-LOC: 0.093, 0.155, 0.200 DDM and tone delete for flag tests
Accuracy: ±0.0013 DDM (±1.3 μA)
Variable Control: ±0.4 DDM

DDM-G/S: 0.091, 0.175, 0.400 DDM and tone delete for flag tests
Accuracy: ±0.0024 DDM (±2.0 μA)
Variable Control: ±0.8 DDM

BATTERY OPERATION

The 2.0 AH battery system will permit ramp operation for approximately 2 hours with counter off. To conserve battery life, the set will automatically turn itself off after 10 minutes. Also, when on batteries, the counter will operate only while the counter activate button is turned on. The battery will charge as long as the set is plugged in, whether turned on or off.

OPTIONS: Dual 10 turn frequency Pot.
A-100 Option — 20 dB RF Amplifier

NOTE: Counter On/Off switch becomes Phase-Lock On/Off switch.

PHYSICAL CHARACTERISTICS:

The Test Set is housed in an 11.4" (29.0cm) wide, 5.1" (13.0cm) high, 16.1" (41.0cm) deep portable case. Weight with 2 AH NICAD battery supply and AC charger supply is 18 lbs (8.1 kg) approximately.