LAMPKIN MODEL 109 COMMUNICATION SERVICE MONITOR

The Model 109, less options, is comprised of a Frequency Meter and Signal Generator covering the range of 20 to 32 MHz, an AM Modulation Meter and a Counter with an eight LED display useable from 50 Hz to 35 MHz for external signals. Signal generator output level is calibrated from 50 millivolts to 0.1 microvolts with its frequency displayed on the counter. An internal oscillator produces metered 0-100% modulation of the output with tone frequencies variable from 50 Hz to 8000 Hz. In addition to RF, the counter will display internal tone frequencies or those derived from carrier modulation.

The Model 109, as shipped, includes the necessary switches, cabling and controls to add all options in the field without factory modification. Up to seven additional RF Band Cards may be plugged in, each covering any 12 MHz band from 50 KHz to 512 MHz.

A Frequency ERROR meter and FM deviation meter function may be added. This includes a DC coupled scope jack permitting viewing the demodulated wave form along with carrier shift. An optional plug-in Sweep Card will provide up to 1 MHz sweep of the output enabling an oscilloscope spectrum display for band pass and filter characteristics.

The Model 109 is all solid state, instant-on and ready for immediate use. Power requirement is 115 VAC, 50-400 Hz, 25 watts.

SIGNAL GENERATOR

Attach cabling from Model 109 RF connector through the 20 db fused pad directly to the receiver input.

Set Mod Level to zero.

Press desired frequency band button.

Set function switch to GEN.

Set counter switch to RF and count time to 0.1. Adjust frequency control knob for counter display of desired frequency.

Adjust attenuation for desired output level. The in-line 20 db fused pad reduces the db panel display by a factor of ten.

OUTPUT MODULATION

AM or FM modulation of the output signal may be added as desired. Frequency of the internal modulation is counter displayed by switching counter lever to Audio.

AM percentage modulation of the output may be set by placing modulation lever to AM, pressing AM up or down, and adjusting Mod Level control for the desired percent.

FM deviation level of the output may be set by placing modulation lever switch to FM, pressing a 2 KHz or 6 KHz button and adjusting MOD LEVEL control to the required KHz level on the meter scale.

MODEL 109 - OPERATING INSTRUCTIONS

TRANSMITTER FREQUENCY AND MODULATION MEASUREMENTS

Three methods may be used:

A. Direct counter readout of frequency 50 Hz to 35 MHz.

B. Adjust the Model 109 frequency for an audible heterodyne tone from the carrier and read frequency on the counter. AM percent modulation on the meter.

C. Using FM/ERROR meter. Set in carrier channel on counter. Read transmitter frequency error on ERROR meter. Measure FM deviation or percent modulation simultaneously.

Method (A) Direct counter readout of frequency, 50 Hz to 35 Mhz.

Attach antenna or input signal to Counter IN.

Place Counter lever to EXT.

Read frequency on Counter display.

Method (B) Attach antenna to RF input connector.

Place four lever switches full up.

Set in zero attenuation. The 14 db and three db switches up, variable attenuator to 10 mv.

Press desired frequency band switch. Turn volume control up.

Adjust variable frequency control near to channel frequency as displayed on counter. Key transmitter and listen for audible beat tone. Use fine control for exact zero beat null.

Read out transmitter frequency directly on counter display.

Method (B) continued:

To Read Modulation Percent

Set MOD LEVER to AM, MOD LEVEL to zero.

Press AM CAR button, key transmitter, and adjust attenuators for at least red line on meter.

Press AM UP or DOWN.

Modulate transmitter and read percent on 0-100% scale.

FM Deviation of the transmitter may be read by pressing the 2 or 6 KHz button, Mod Lever on FM, modulate transmitter and read deviation KHz on proper scale.

Method (C) With FM/ERROR Meter (Method B may also be used)

Attach antenna to RF connector.

Set Function Lever to MON.

Counter lever to RF.

Modulation lever to AM or FM for desired modulation metering.

Mod Level control to zero.

Adjust frequency control to exact desired channel frequency on counter display.

Set Error Meter to zero using CAL switch and ERROR knob.

Key carrier and read frequency error on meter using 0-1 KHz or 0-5 KHz range.

Simultaneous readout of transmitter FM deviation may be made by pressing 2 KHz or 6 KHz button, plus or minus.

Modulate transmitter and read deviation on appropriate scale.

Transmitter tone frequencies will appear on counter with lever on audio.

AM percent may be read by pressing AM CAR button. With transmitter keyed, adjust attenuation to at least red line on meter.

Press AM up or down and modulate transmitter.

Read percent on 0-100% scale.