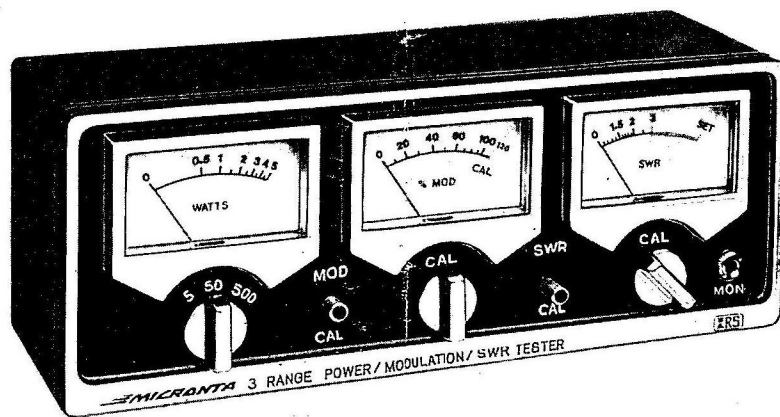


**MICRONTA<sup>®</sup>**

# POWER/MODULATION/ SWR TESTER



Catalog Number: 21-522

CUSTOM MANUFACTURED FOR RADIO SHACK  A DIVISION OF TANDY CORPORATION

This piece of Micronta Test Equipment is designed for use with CB and Ham Transceivers. It will be very helpful in determining if your transmitter and antenna system are operating properly.

**POWER Function** — There are three ranges of power: from 0 to 5 watts (for CB) and 0–50 and 0–500 for Ham and business-type transceivers. The switch below the WATTS Meter selects the power range.

NOTE: The Power Meter readings will be accurate only with 50/52 ohm antenna systems (or 50/52 ohm dummy loads). Also, keep in mind that this is not a *precision* piece of test equipment — it is intended as a monitoring tester, to indicate the performance of your transceiver.

**MODULATION Function** — Modulation is the process by which voice information is added to the radio-frequency signal to produce a useful signal. It is important to be able to check and/or measure modulation, because the **useful** power in a radio-frequency transmission depends on the percentage of modulation. You can have a full 4 watts of output on the CB band, but if you have no modulation, you won't be able to communicate with anyone.

Only at 100% modulation will you be transmitting the maximum intelligence. Naturally, the percentage of modulation varies directly with how loud you speak and how close you hold the mic to your mouth. At anything less than 100% modulation, the range and efficiency of your transmission will be reduced. Thus it is important to be able to measure the percentage of modulation so you get the most useful output signal. However, it is *possible* to over-modulate — that is, to modulate over 100%. This results in distortion and "splatter". The center % MOD Meter is calibrated from 0 to 100, with a red portion over 100 (up to 120) which indicates over-modulation.

### NEVER ALLOW YOUR TRANSMITTER SYSTEM TO OVER-MODULATE.

When you use the modulation function while talking, the meter will probably register between 30 and 60% most of the time. This is normal. If you want to check for full modulation capabilities, hum or whistle a constant tone into the mic and check your readings.

**SWR Function** — Standing Wave Ratio (SWR) measurements are very important for any transmitter-antenna system. SWR is a measurement of mismatch between the transceiver and the antenna system. For maximum efficiency, the SWR must be as low as possible — this means that all of the power from the transmitter is being radiated from the antenna. A high SWR means there is a mismatch and that some (or even most) of the transmitter's power is not being radiated by the antenna, but is being "returned" to the transmitter.

You can read SWR directly on the SWR meter. It is calibrated from 1 to 3, with a red line above 3. When the meter reads 1, the antenna system is perfectly matched to the transmitter and you have an SWR of "1" — or to be more accurate, 1 to 1 (SWR is a ratio). If your reading is more than 3, you should correct the mismatch between the transmitter and antenna system.

NOTE: If you are interested in learning more about SWR, we recommend that you spend some time in your local public library in the technical section (the ARRL HANDBOOK is particularly helpful).

**MONitor Function** — The Jack at the right (MON) is for monitoring the signal's modulation. Plug in a crystal or magnetic type earphone and you'll be able to hear the audio modulation on any RF signal being processed through the Tester.

## CONNECTION

Connections are very simple.

1. Disconnect the Antenna cable from the back of the Transceiver.
2. Connect the Antenna cable to the **ANT** connector on one end of the Pick Up Box.
3. Use a short piece of coaxial cable and connect between the **TRANS** connector on the other end of the Pick Up Box and the back of your Transceiver.

NOTE: A "jumper" coax cable such as noted above can be obtained from your local Radio Shack store.

**IMPORTANT NOTE:** POWER and SWR readings will be accurate only when used with antenna and transmission lines which have an impedance of 50/52 ohms.

To Monitor the modulation information on an RF signal, plug an Earphone into the MON jack.

**NOTE:** All state-of-the art CB Transceivers have built-in modulation limiters and thus it is impossible to overmodulate with today's CB units. However, some older units may not have such limiting circuitry — and many Ham units may not have such provisions.

**SWR:** To measure Standing Wave Ratios, set **SWR/CAL** switch to **CAL** position. Press the Push-to-talk button on your Mic. Adjust the **CAL** control directly under the SWR Meter for a reading to the SET mark on the Meter. Return the SWR/CAL switch to **SWR** position and read your SWR on the Meter.

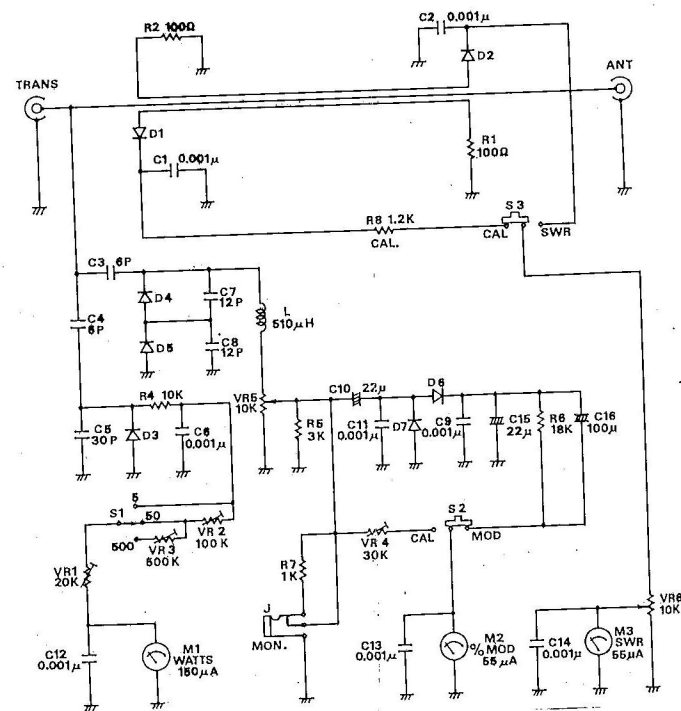
If you have a reading of 1.5 or lower, you have a very efficient antenna system. If the reading is between 1.5 and 3, you may want to try lowering it (although in most cases, an SWR of 3 or less will be acceptable). If you have a reading of over 3, you should check your antenna system and make adjustments as required to obtain a lower reading.

Adjustments for reducing SWR will depend entirely on your antenna system. We can only give you a few general pointers. Be sure you are using a 50/52 ohm antenna system and cable. Be sure all connectors are secure. Be sure your cables are good (no shorts or deterioration of the cable). If your antenna can be adjusted (see the instructions which come with the antenna), adjust it in small increments. If it is a mobile installation, check to be sure all mechanical connections have been made correctly. Make sure the antenna is vertical; move it away from metal bodies (if possible). For mobile installations, sometimes just a minor change in the positioning or location of the antenna can greatly improve the SWR.

**MONITORING:** To Monitor your modulated signal, just plug an Ear-phone into the **MON** jack.

## SPECIFICATIONS

RF Power:	0 to 5, 0 to 50, 0 to 500 Watts
% Modulation:	10% to 120%
SWR:	Calibrated from 1:1 to 1:3
Impedance:	For 50/52 ohm systems only
Frequency Range:	3 to 30 MHz
Connectors:	Coaxial PL-259 (accepts SO-239)
Dimensions:	3-3/8" x 8-1/4" x 4-1/2" (8.5 x 21.0 x 11.5cm) (HWD)
Weight:	25.75 oz (730g)



SCHEMATIC

### RADIO SHACK LIMITED WARRANTY

This equipment is warranted against defects for 90 days from date of purchase. Within this period, we will repair it without charge for parts and labor. Simply bring your sales slip as proof of purchase date to any Radio Shack store. Warranty does not cover transportation costs. Nor does it cover equipment subjected to misuse or accidental damage.

This Warranty gives you specific legal rights and you may also have other rights which vary from state to state.

*We Service What We Sell*

**RADIO SHACK**  **A DIVISION OF TANDY CORPORATION**

**U.S.A.: FORT WORTH, TEXAS 76102**

**CANADA: BARRIE, ONTARIO, L4M 4W5**

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