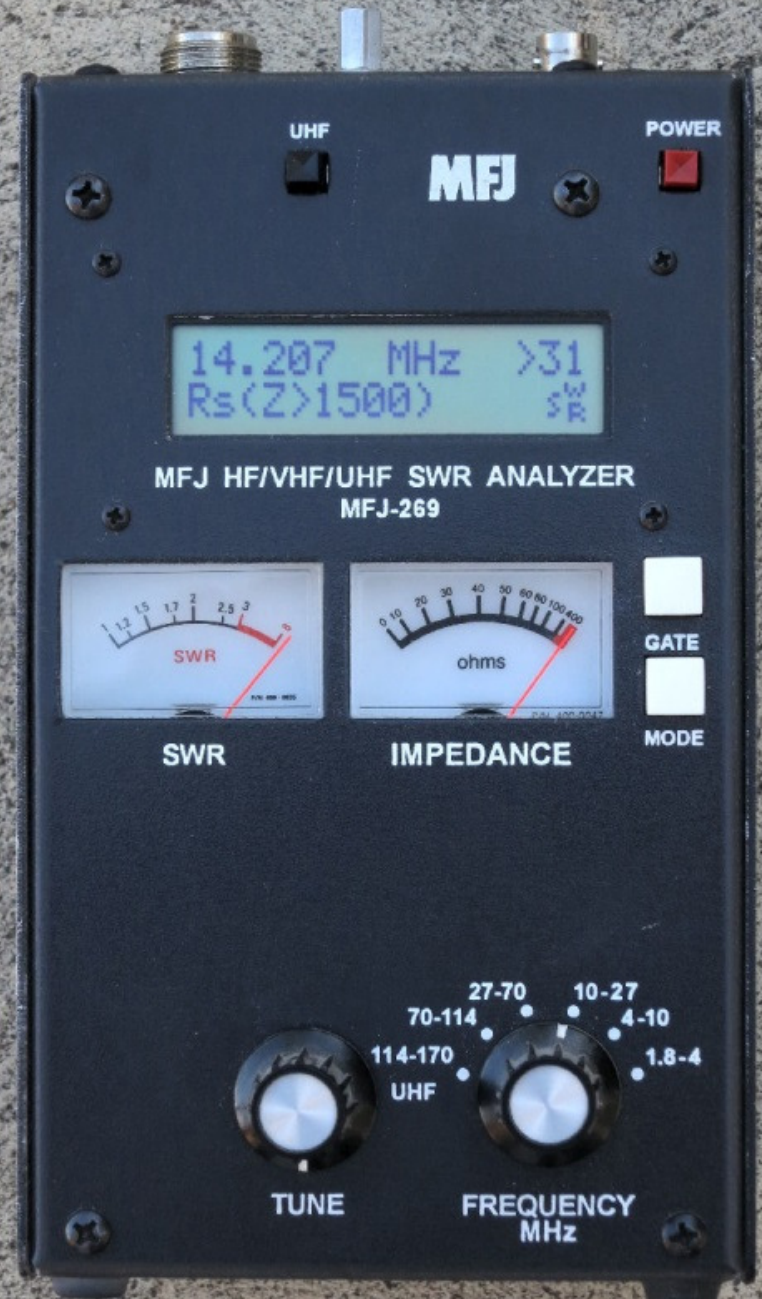


MFJ-269

Antenna Analyzer



How it works

- Crude 5 milliwatt signal generator
1.8-170 MHz plus 415-470 MHz
Manual tuning: 7 “bands”, 4-turn tuning knob
- ***RF bridge*** measures *complex impedance* (R,X) of the connected cable + antenna.
- *Analog meters*: SWR, Impedance (Z)
LCD display: Frequency, SWR, R, X
- Powered by 10 AA batteries or external 12V

Complex Impedance

Complex Impedance $Z = R + jX$

R = DC resistance, relatively constant

X = reactance, proportional to frequency

Reactance

- Reactance is essentially “AC resistance”
- Two types:

Inductive Reactance $X_L = 2 \pi f L$

Capacitive Reactance $X_C = \frac{1}{2 \pi f C}$

5 Main Modes

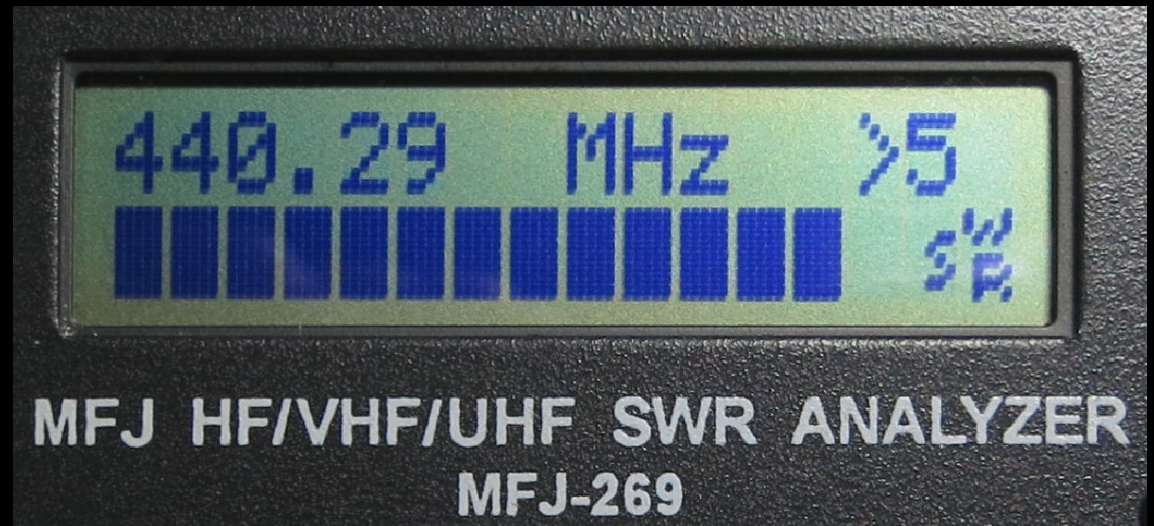
- SWR and Impedance (R, X)
- Cable Loss
- Inductance
- Capacitance
- Frequency Counter

UHF measurements

- 415-470 MHz
- Two modes:

SWR

Cable Loss



- Accuracy limited by internal wire length
- Does *not* measure R, X, L, or C

Advanced Modes

- Magnitude and phase of load impedance
- Series and parallel equivalent impedances
- Return loss and reflection coefficient
- Tune for resonance (displays reactance on the impedance meter)
- Match efficiency
- Distance to fault
- Cable length in degrees

Limitations

- RF Bridge is *broad band*:
Cannot measure the test signal if another signal is stronger.
- Cannot determine if reactance is capacitive or inductive.

Other Antenna Analyzers



Autek Research RF-1
\$140 30 MHz



Autek Research RF-5
\$200 35-500 MHz



iPortable IP60z
\$250 54 MHz



RigExpert AA-54
\$265 54 MHz