Paonhc RF Low Power Meter.
20171221

Properties.

This sensitive device measures **r.m.s. RF power,** by measuring the voltage at an internal 50 Ohms load. This design is free of adjustments, as long as the stated components and values are used.
If R1 and R2 are replaced by one resistor of 22 kOhms, the input impedance rises to ca. 220 Ohms. Using a simple high ohmic attenuator / series resitor, it then could indicate the output of short wave driver stahes and RF power amplifiers too. The very small PCB and the DC output makes installation at an amplifier stage easy.

The following specifications should still be confirmd by laboratory equipment.

The max. measurable power is +6dBm (3.9 mW / 0.44 Vrms @ 50 Ohms).
The minimum accurately readable power is only 1uW (-30 dBm) with only -1dB error.
The measuring range is therefore 36dB.

The frequency range with low error is expected to be 32kHz to 800 MHz at VSWR <= 1.1 .
The expected measuring error is at 2.5 GHz abt. -2.5 dB, with a input VSWR of abt. 1.4 .
The frequency range can simply be widened downwards by adding 1uF in parallel with C1/2/8.
Errors due to the use of standard component values should be less than 1dB.

Power supply (3.5 to 5.0 Vdc) are 3 pieces AAA batteries, delivering 3 to 8 mA.

Special PCB design.

To make this double sided PCB optimal for very high frequencies, SMD parts are used, and *all mass connections at components are connected to top and copper by "via's"*.

Special attention is paid to short routed power supply decoupling of IC1. Stray impedances are as low as possible.

The specified type BNCbus MUST be soldered directly onto the PCB for widest frequency range and good VSWR up to very high frequencies.

A coax connection between BNC bus and PCB is not advisable. The dedicated PCB is designed for a maximal wide frequency range..