A Wideband Dummy Load with High Accuracy Wattmeter

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QST-in-Depth
As there is a direct connection from the RF connector to the microstrip input of the flange resistor termination, there is no low frequency limit for this dummy load/wattmeter.

Aliexpress.us is a good source for low cost, flange-mounted power resistors in a wide variety of power levels.

The printed circuit boards were designed in Autodesk Fusion 360 and fabricated by JLCPCB (https://jlcpcb.com). I have used JLCPCB on several projects in the past. With their fast turnaround time of 5 to 7 days, very low cost and excellent product quality, it's become a "no brainer" to have printed circuit boards made in this manner.

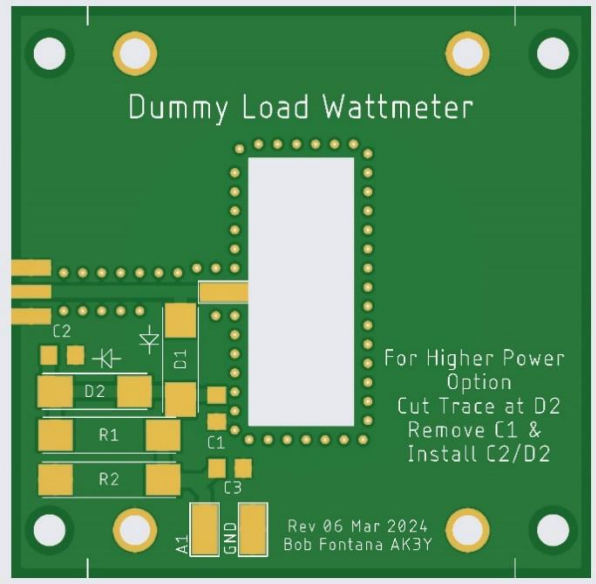

Figure 8 – Dummy Load/Detector PCB

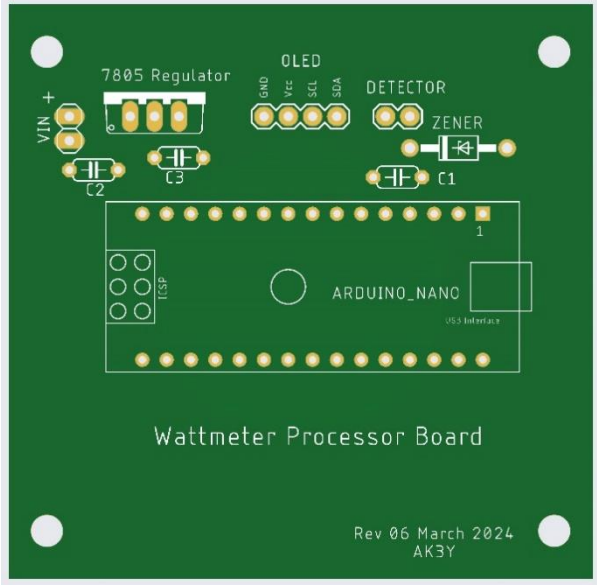

Figure 9 - Arduino Controller PCB

Parts List - Dummy Load Board
SMA PCB edge-mounted connector (RF Input)
Flange-Mounted Power Resistor RFR 50-250 (50Ω 250W) or equivalent
(https://www.aliexpress.us/item/3256805603572821.html)
D1, D2 – 1N5711 Schottky Barrier Diodes (Can use 2 or more diodes in series for higher power levels – see companion documentation)
C1, C2 – 0.01 µF/100V SMD capacitor (see companion documentation)
C3 – 1000 pF SMD capacitor
R1 – 100 kΩ/1/4W carbon composition resistor (see companion documentation)
R2 – 5600 Ω/1/4W carbon composition resistor (see companion documentation)

Heatsink (not shown) 60x45x18 mm (https://www.aliexpress.us/item/3256805661725774.html)

Parts List - Arduino Controller/Display Board

U1 – Arduino Nano 3.0 with
bootloader **(**https://www.aliexpress.us/item/3256805866900355.html)
IC1 – 7805TV regulator (optional, see companion documentation)
C1 – 0.1 µF/16V ceramic capacitor (optional, see companion documentation)
C2 – 0.33 µF/16V ceramic capacitor (optional, see companion documentation)
C3 – 0.1 µF/16V ceramic capacitor
D1 – 5.6V Zener diode (optional, see companion documentation)
0.96 Inch OLED Display Module SSD1306 128X64 (Pin Headers Soldered)
(https://www.aliexpress.us/item/3256804169233174.html)
Four (4) Nylon or metal standoffs (to connect boards together) – shown with 0.8” standoffs tapped for #4 screws