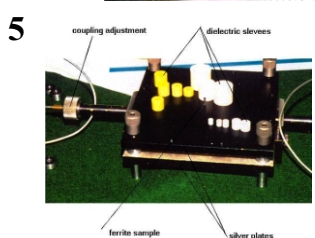
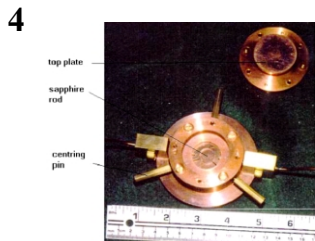


# QWED

## hardware



### Resonators for Precise Material Measurements

Examples of resonators successfully used by our customers worldwide:

1. **Split post dielectric resonators** for permittivity & loss tangent measurements at 1 GHz .. 35 GHz.  
Typical uncertainty of permittivity measurement: 0.5%;  
Resolution of loss tangent measurement:  $5 \times 10^{-5}$
2. **Re-entrant cavities** for permittivity & dielectric loss tangent measurements of dielectrics at 50MHz .. 1.2 GHz  
Typical uncertainty of permittivity measurement: 1%  
Resolution of loss tangent measurement:  $5 \times 10^{-5}$
3. **Dielectric resonators** for permittivity and dielectric loss tangent measurement of low loss dielectrics, at 1 .. 10 GHz.  
Typical uncertainty of permittivity measurement: 0.3%  
Resolution of loss tangent measurement:  $5 \times 10^{-6}$
4. **Sapphire resonators** for measurements of surface resistance of metals and superconductors at frequencies 15-25 GHz
5. **Dielectric resonators** for complex permeability measurements of low loss ferrites .

### High-Power Solid-State Sources

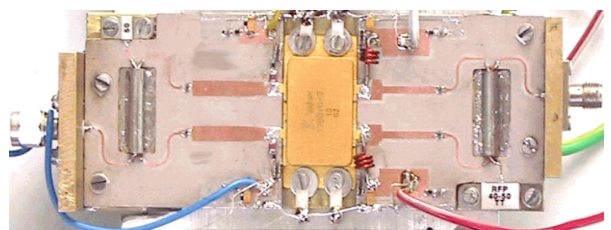
New high power microwave sources, based on solid-state amplifiers in GaAs MESFET CW AB-class attain perfect control of frequency and amplitude. Prototypes developed to date show:

- output power levels up to 200W, controlled within 20dB range,
- efficiency better than 50%,
- output frequency from 2.3..2.6 GHz range, set by a microcontroller with 1MHz accuracy,
- operation in either single fixed-frequency regime, or with self-tuning for best matching, with reflections as weak as  $-1\text{dB}$  accurately measured,
- feeding by 12V DC supply.

The new sources open up many new applications of microwave power, e.g.:

- microwave-driven chemical reactions,
- precise measurements of material parameters under high-power conditions,
- biological effects under controlled radiation,
- applications where high voltage or high magnetic fields are prohibited.

#### 120 W ISM band GaAs MESFET amplifier



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