

**MICROWAVE TEST BENCH  
GUNN BASED TRAINER  
SET-UP NO. 4  
OMEGA TYPE ES-504**



**OMEGA TYPE ES-504** uses low power reflex klystron along with its klystron power supply and klystron mount, as a microwave single source along with other standard high quality components and VSWR meter, enables to perform under mentioned experiments in the laboratory. The waveguide components are based on rectangular waveguide equipped with rectangular plain flanges.

The set up is complete in all respect and requires only CRO. Practical experience on this set up carries great educative value for Science and Engineering Students.

**OBJECTS:**

- 01 To study the V-I characteristics of Gunn Diode
- 02 To study the following characteristics of Gunn Diode  
- Output power and frequency as a function of voltage  
- Square wave modulation through Pin Diode
- 03 To determine the frequency & wavelength in a rectangular waveguide working on TE<sub>10</sub> mode
- 04 To determine the standing wave ratio and reflection coefficient
- 05 To study the square law behaviour of a microwave crystal detector
- 06 To study the resonant cavity
- 07 Measurements of Dielectric constant. (Solid and liquid)  
- Low-loss solid dielectrics - Liquid dielectrics or solutions
- 08 To study the phase shift measurements by using phase shifter
- 09 To study the variable attenuator
- 10 To study the voice communication by using microwave test bench

**COMPONENTS:**

The complete Experimental Set-up consists of the following items

- |    |   |        |          |
|----|---|--------|----------|
| 01 | Detector Mount Wave Guide   | -----1 | ES-539   |
| 02 | Ferrite Isolator  | -----1 | ES-534   |
| 03 | Frequency Meter Direct Reading  | -----1 | ES-535   |
| 04 | Gunn Oscillator 10mW  | -----1 | ES-531   |
| 05 | Gunn Power Supply   | -----1 | GPS-795  |
| 06 | H-Plane Tee   | -----1 | ES-552   |
| 07 | Liquid Dielectric Cell  | -----1 | ES-567   |
| 08 | Matched Termination   | -----1 | ES-542   |
| 09 | Movable Short   | -----1 | ES-540   |
| 10 | Phase Shifter   | -----1 | ES-568   |
| 11 | Pin Modulator   | -----1 | ES-532   |
| 12 | Precision Movable Short   | -----1 | ES-565   |
| 13 | Slide Screw Tuner (S.S. Tuner)  | -----1 | ES-550   |
| 14 | Slotted Section with probe carriage   | -----1 | ES-537   |
| 15 | Solid Dielectric Cell   | -----1 | ES-566   |
| 16 | Tunable Probe   | -----1 | ES-538   |
| 17 | Variable Attenuator 20db  | -----1 | ES-536   |
| 18 | VSWR Meter  | -----1 | VSWR-796 |
| 19 | Wave Guide Stand  | -----4 | ES-543   |
| 20 | Waveguide Cavity X Band   | -----1 | ES-564   |
| 21 | BNC to BNC Cable  | -----2 |          |
| 22 | Teflon, Nylon, Ebonite, Perspex,<br>Wax in 10, 20, 30mm length each (S. Dielectrics)....1Set  |        |          |
| 23 | Weight : 25 Kg. (Approx.)   |        |          |
| 24 | Strongly supported by detailed Operating Instructions,<br>giving details of Object, Theory, Design procedures, Report<br>Suggestions and Book References. |        |          |

**OTHER APPARATUS REQUIRED :**

- 01 Cathode Ray Oscilloscope 20MHz.

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