

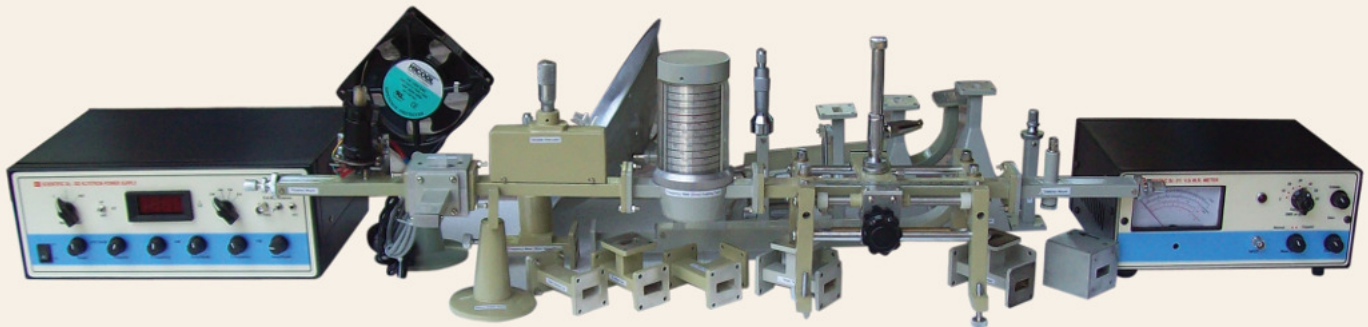
SCIENTIFIC SE

ISO 9001:2008 Certified Company

Microwave Test Benches

High Quality & Reliability
Unmatched Support
High Finish
All bands including X-band
(8.2-12.4GHz)

The Microwave Training Benches are precision made microwave systems, which use standard type wave-guide components to illustrate the essential elements of this field of study.



The equipment consists of :

- a selection of wave-guide components
- the power supply for the microwave source
- a detector
- a meter, which monitors the detector output.

These Training Benches are completely self-contained and provide the means to allow students to carry out practical work at extremely low cost. A comprehensive manual containing extensive microwave theory is supplied with the Trainer.

Experimental Topics :

- Study of Reflex Klystron, Gunn Oscillator
- SWR, Reflection Coefficient Measurement
- Radiation Pattern of Antennas
- Dielectric Measurement of Solids/Liquids
- Study of E-Plane, H-Plane, Magic Tees, Bend
- Study of Fixed/Variable Attenuator
- Frequency, GuideWavelength Measurement
- Impedence Measurement
- Measurement of Gain of Antennas
- Phase Shift Measurement
- Study of Directional Couplers
- Study of Isolator's Circulators

Sample Copy

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SCIENTIFIC ENTERPRISES

POST BOX NO:1951,VYTTILA,

COCHIN - 682 019,

TEL/ FAX: 2306954,2306461

E-mail : seqcochin@gmail.com

ONE STOP SHOP FOR ALL LAB NEEDS

			Required Quantity for Benches									Required Quantity for Benches					
Sl.No	Code	Description	SE310A	SE310B	SE310C	SE310D	SE310E	SE310F	Sl.No	Code	Description	SE310A	SE310B	SE310C	SE310D	SE310E	SE310F
1	X - BPF	Band Pass filter			2			1	31	X - 1118	Parabolic Dish Antenna			1			
2	X - 117	Cooling Fan	1	1	1	1	1	1	32	X - PS	Phase Shifter				1		
3	X - 3172	Cross Directional Coupler 20dB					1		33	X - PHA	Pick Up Horn Antenna			1			
4	X - 4151	Detection Mount	1	1	1	1	1	1	34	X - 1861	Pin Modulator		1		1		1
5	X - DA	Detection Antenna			1				35	X - 752 B	Precision Movable Short				1		
6	X - 927	E-H Tee							36	X - 1116	Pyramidal Horn			1			1
7	X -1235E	E-Plane Bend 90					1	2	37	X - RPT	Radiation Pattern Turn Table			1			
8	X - EPH	E-Plane Sectional Horn			1				38	X - 921	Slide Screw Tuner (S.S Tuner)	1	1			1	1
9	X - 924	E-Plane Tee					1		39	X - SBW	Slotted Board Wall			1			
10	X - 116-10	Fixed Attenuator 10 dB					1	1	40	X - SNW	Slotted Narrow Wall			1			
11	X - 116-03	xed Attenuator 3 dB					1		41	X - 3252	Slotted Section	1	1		1	1	1
12	X - 116-06	Fixed Attenuator 6 dB					1		42	X - 59	Solid Dielectric Cell				1		
13	X - FS	Fixed Short	1	1			1		43	X - 302	Solid State Klystron Power Supply	1		1		1	
14	X - 751	Frequency Meter (Direct Readout)	1	1	1	1	1	1	44	X - SGH	Standard Gain Horn Antenna			1			1
15	X - 113	Frequency Meter (Micro Meter Type)							45	X - 556T	Three Port T Circulator						1
16	X - 842	Gunn Oscillator 10mW		1		1		1	46	X - 556Y	Y Circulator						1
17	X - 301	Gunn Power Supply		1		1		1	47	X - 3251	Tunable Probe	1	1		1	1	1
18	X -1235H	H-Plane Bend 90					1	1	48	X - 114	Variable Attenuator 20 dB	1	1	1	1	1	1
19	X - HPH	H-Plane Sectional Horn			1				49	X - 211/411	VSWR Meter	1	1	1	1	1	1
20	X - 925	H-Plane Tee					1		50	X - 777	Wave Guide Stand	4	4	2	4	4	4
21	X - 1119	Helical Antenna							51	X - 1241	Wave Guide Twist 90			1			
22	X - 1051	Isolator	1	1	1	1	1	1	52	X - 51	Wave Guide Cavity Resonator				1		1
23	X - 111	Klystron Mount with Tube	1		1		1		53	X - 121	BNC Cable	2	2	2	2	2	2
24	X - 55	Liquid Dielectric Cell				1			54	X - CNN	Coaxial Cable N to N			1			1
25	X - 926	Magic Tee					1	1	55	X - UM	User Manual	1	1	1	1	1	1
26	X - 755	Matched Termination	1	1			2	1	56	X - MC	Mains Cord	2	2	2	2	2	2
27	X - 752	Movable Short	1	1			1	1	57	X - SC	Smith Chart	1	1		1	1	1
28	X - 3171 - 10	Multi Hole Directional Coupler 10 dB					1	1	58	X - SDS	Teflon, Nylon, Ebonite, Perspex, Wax In				1 set		
29	X - 3171 - 03	Multi Hole Directional Coupler 3 dB					1				10, 20, 30 mm length each (S.Dielectric)						
30	X - 3171 - 06	Multi Hole Directional Coupler 6 dB															

TECHNICAL SPECIFICATION:

Klystron Power Supply

Klystron Power Supply, is a state-of-the-art solid state, regulated power supply for operating low power Klystrons.

It has following features :

- Regulated Beam Supply and Repeller Supply voltages.
- Overload TRIP protection for Beam Supply output.
- LED Digital metering for Beam Voltage, Current & Repeller voltage.
- Stand-by mode.
- Ultra compact and Reliable.
- Modular construction for easy maintenance.

In addition to AM and FM modulation of Beam current, a provision for externally modulating the Klystron supply with desired signal waveform has been provided. It utilizes quality components, rugged construction and ergonomic designed front panel. A careful handling of the instrument will provide years of trouble free service.



SPECIFICATIONS:

Input Voltage : 230 VAC; $\pm 10\%$, 50 Hz
 Beam Supply : Voltage : 240 - 420 VDC,
 Variable Current : 50 mA
 Regulation: 0.5% for 10% I/P variation
 Ripple : < 5mv RMS
 Repeller Supply : 10-270 VDC, Variable
 Regulation 0.25% for 10% I/P variation
 Filament Supply : 6.3 VDC
 Over-load Trip Current : 65mA
 Modulation : A M (Square) FM (Saw-tooth)
 Frequency Range 500 - 2500 Hz 150 - 300 Hz
 Amplitude 0 - 110 V 0 - 65 V
 External Through external Modulating Signal
 Display : Digital display for (a) Beam voltage,
 (b) Beam current, (c) Repeller voltage
 Standby Mode : Only Heater Supply ON
 Connectors : (a) 8-Pin Octal Socket,
 (b) BNC for External Modulation

Gunn Power Supply

Gunn Power Supply comprises of an electronically regulated DC power supply and a square wave generator, designed to operate Gunn-Oscillator and PIN Modulator simultaneously. The DC voltage is variable from 0 to 10 Volts. The front-panel meter monitors the Gunn voltage and the current drawn by the Gunn Diode. The frequency of square wave can be continuously varied from 900 to 1100Hz. The power supply has been so designed to protect Gunn diode from reverse voltage application, over voltage and transient low frequency oscillations.



SPECIFICATIONS :

Voltage Range : 0 to 10 V
 Current : 0 to 750 mA (Max.)
 Regulation : 0.2% for $\pm 10\%$ mains Variation.
 Ripple : 2mV (rms)
 Modulation. Frequency : 900 - 1100 Hz, Square wave
 Modulation Amplitude : 0 - 10.0 V (peak to peak) .
 Output connector : BNC (F) for Gunn-bias and Pin-mod.
 Mains : 230 V, 50 Hz, 25 watts approx.
 Standard Accessories : Main Cable, BNC to BNC,
 Spare Fuse & Manual

VSWR Meter



Specification: VSWR Meter

Bandwidth	1000 Hz adjustment approx. 10%.
Sensitivity	20Hz or 100 Hz
Noise	0.2V for full scale deflection at maximum
Input	At least 6 dB below full scale at maximum terminated in 100/500 ohm
Input Connector	: Unbiased, optimised crystals with a source impedance 2-10 Kohm
Range	: BNC female
Adjustment	: 70 dB in 6 steps of 1 dB & 10 dB
Accuracy	: Variable by at least 10dB by coarse control approx 0.5 dB by fine control
Meter Scale	: 0.1 % dB/10 step max. cumulative error between any two 10 dB steps
Temperature Range	: 0.05 db when switching NORMAL EXPAND
Power	: Calibrated for square law detectors
	: 1-4/3.2-10 . (NORMAL)
	: 1-1.3 (EXPANDED)
	: DB 0-10 (NORMAL)
	: 0-0.25 (EXPANDED)
	: 0-50 deg . C
	: 230 VAC 10% 50 Hz

Sample Copy

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Detector Mount



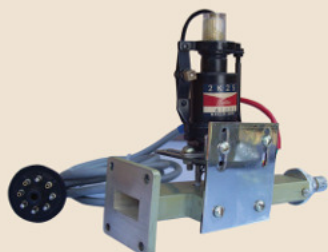
Magic Tee



E Plane Tee



Variable Attenuator



Klystron Mount with Tube



Aixed Attenuator



Isolator



Tunable Probe



Solid Dielectric Cell



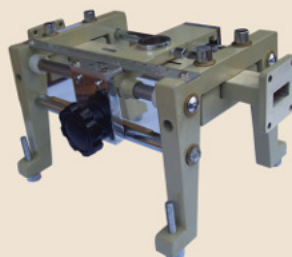
Liquid Dielectrical Cell



Frequency Meter



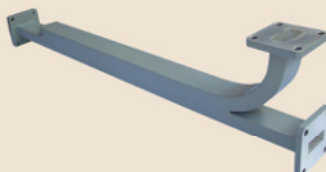
Movable Short



Slotted Section



Horn Antennas



Multihole Direction Coupler



Direct Reading Frequency Meter

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