

Radar Training Lab DXR10 Features:

- * Demonstrates the principle of Doppler shift of reflected electro magnetic wave from a moving object
- * Speed, rotation, event counting, contact less vibration measurement
- * Observation and measurements with software
- * Microwave X band operation
- * High gain Parabolic antenna provided for narrow beamwidth and clutter reduction.
- * PC based oscilloscope provided
- * FFT with cursor measurement

1. Microwave Radar Transceiver:



Technical specifications:

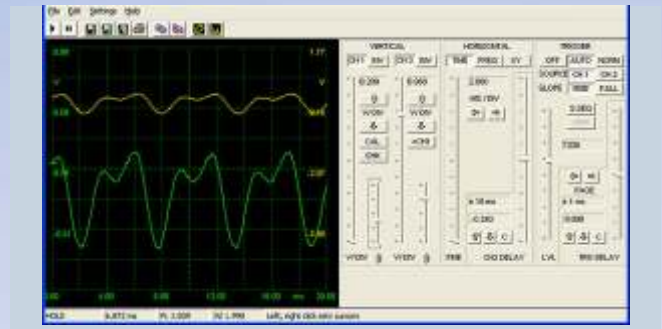
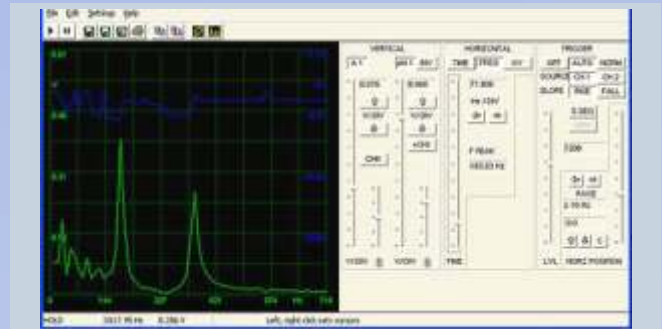
Type: MMIC transceiver with parabolic dish antenna.
 Antenna Size: 25cm dia with f/d 0.25
 Frequency: 10.5 GHz DRO stabilized
 Output Level: +10 dBm typical
 Sensitivity: -85dBm typical
 Output: PC Compatible
 Display: 16X2 backlit LCD
 Rotation: 0-359 degrees with 1 degree resolution
 Angular steps: 1°, 5°, 10°, 45° with automatic rotation
 Memory: 1000 angular position store/recall
 Mode: CW/CCW rotation, Fast Slow speed modes
 Power Supply: 100-240V, 47-63 Hz

2. Radar Jammer



Output Power: +10dBm
 Antenna beamwidth: E Plane 3dB Beam width : 40°
 H Plane 3dB Beamwidth: 80°
 Frequency: 10.5GHz
 Jamming Modulation: AWGN
 Jamming Frequency: Tunable

3. Software



Technical specifications:

Display	:	Responsive real-time up to 50 fps refresh
Mode	:	Single trace, dual trace, and XY (Lissajous)
Bandwidth	:	10 Hz - 20 kHz, AC coupling
Timebase	:	10 us - 5 s
ADC	:	8-bit and 16-bit acquisition
Sampling	:	11 kHz to 44 kHz rate
FFT	:	amplitude and/or phase System
PC required	:	300 MHz or faster PC, 64MB RAM, 1MB of disk space, Windows® XP, sound card, (Not supplied)
Data export	:	Raw data export as WAV file
Screenshot	:	Saved in BMP and EMF formats
Visible trace	:	can be saved as text file
Function	:	Copy-paste for screenshots or data files - Printing,
Triggering	:	Adjustable trigger level, slope, and delay
Pretrigger	:	View - Single shot triggering mode
Measure	:	On screen - Two cursors set by left and right click - Voltage and time difference readout - Direct frequency readout
Accessories	:	Tuning Fork, Buzzer, Turbine Fan,

4. Microwave absorber



Absorber: EM Lossy PU Foam Cones
 Reflection: -40dB @10GHz
 Fire retardancy: As Per NRL USA-8093 Standard complying Tests No.: 1,2 and 3 with zero halogen means
 Shielding Effectiveness: 40dB from 8-24 GHz
 Quiet zone: -40dB
 Equivalent RCS: -30 dBsm 8-40GHz

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5. Variable speed fan with speed regulator



RPM: approx. 1500
 Speed: Variable
 Blade RCS: High
 Diameter: 100mm
 Mounting Stand: Vibration Less with Non metallic Top mount

6. Pendulum



Length: Adjustable upto 1m
 Bob: High Dielectric
 BOB's RCS: High
 Mounting Stand: Broad Base vibration Less

7. Tuning Fork



Frequency: approx. 480Hz
 RCS: High
 Mounting Stand: Vibration Less with Non metallic Top mount

8. Piezoelectric Buzzer



Frequency: 3.7KHz
 RCS: High
 Mounting Stand: Vibration Less with Non metallic Top mount

9, 10. Target Emulator- 2 Nos.



Velocity Emulation: 0 to 1000km/hr
 Output Power: +10dBm
 Antenna beamwidth: E Plane 3dB Beam width : 40°. H Plane 3dB Beamwidth: 80°
 Frequency: 10.5GHz

11. High RCS Reference Target Reflector



RCS: 1sq. m

12. Accessories

- 1) All necessary connectors & cables.
- 2) Experimental Manual
- 3) Power adapter
- 4) Power Supply leads with banana Plug- 2 Nos.
- 5) Spanner

E-Manual: Installation Video for ease of Learning

Dimensions: 56X45X26cms Weight: 10Kgs Warranty: 3 yrs.

Areas of Experimentation and scope of study

- * To investigate the fundamental concepts of Doppler radar.
- * To setup radar and tune it for best performance.
- * To measure speed of a fan.
- * To detect the presence of a hidden Time Bomb with the help of a Doppler radar.
- * To find out the Time period and frequency of a moving Pendulum for different lengths.
- * To actuate the opening of a door, Traffic signal, Intrusion alarm etc. with the help of a radar.
- * To measure the units of items being produced in an assembly line production unit.
- * To determine the presence of moving plasma from one electrode to other in a Tube light.
- * To detect the presence of transformer hum and find its frequency.
- * To measure the variable speeds of moving objects using Velocity simulator.
- * Calibration of Doppler radar using tuning fork.
- * To study the reflective, absorptive and transmissive properties of materials using radar and velocity simulator.
- * To find the speed of a moving object with Doppler radar from different angles.
- * To find the speed of a moving object approaching or receding away from radar from different-different angles
- * To estimate the size of a moving objects using Radar
- * To measure the distance traveled using Radar.
- * To find out the presence of a Pedestrian and manage Traffic till he walks away.
- * To find out the presence of an aero plane with the rotation of the turbine of its engine as used by Air Force.
- * To study the use of radar in detecting respiration and heart beating.
- * Study of climatic conditions of atmosphere cyclones, Clouds, tornado using a Doppler radar.

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