



APPLIED RADAR, Inc.

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AR-CAS-0101

77 GHz Radar Sensor

(Preliminary Data)

Summary:

3-beam 77 GHz pulse-doppler radar sensor. 100 meter range. 3-degree pencil beams.

Applications:

Collision-Avoidance Radar
Industrial Process Control
Height/Range Sensing
Obstacle Detection
Security

Radar Specifications:

RF Frequency: 76.0 – 77.0 GHz
IF Frequency: 180 MHz (Typ.)
Radar Operation: Pulse-Doppler
Pulse Width: Programmable (20 ns – 1000 ns)
PRF: Programmable (1 kHz – 100 kHz)
Beamwidth: 3 degrees (pencil beam)
Range: 100 meters (typical)
Number Beams: 3

Power Supply:

DC Supply: +18 VDC (500 mA)

Control Inputs:

Radar controllable via either on-board DIP switches or external TTL signal via a 10-pin header. Inputs include:

Beam selection (1 – 3)
Pulse width (20ns – 1000 ns)
PRF (1kHz – 100 KHz)

Outputs:

IF Output (SMA)
Digital Timing Signal (SMA)

Mechanical Dimensions:

Size: 6.0" x 5.5" x 2.5"
Weight: Approx. 2 Lbs.

Figure 1: Typical Radiation Patterns, Beams 1 – 3

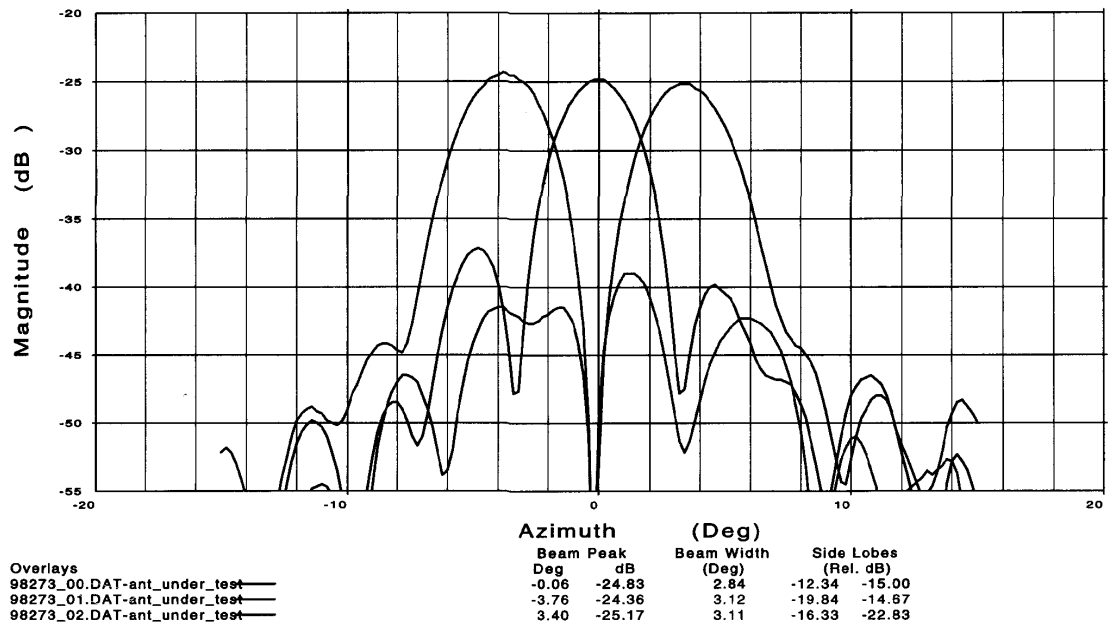


Figure 2: Sensor Block Diagram

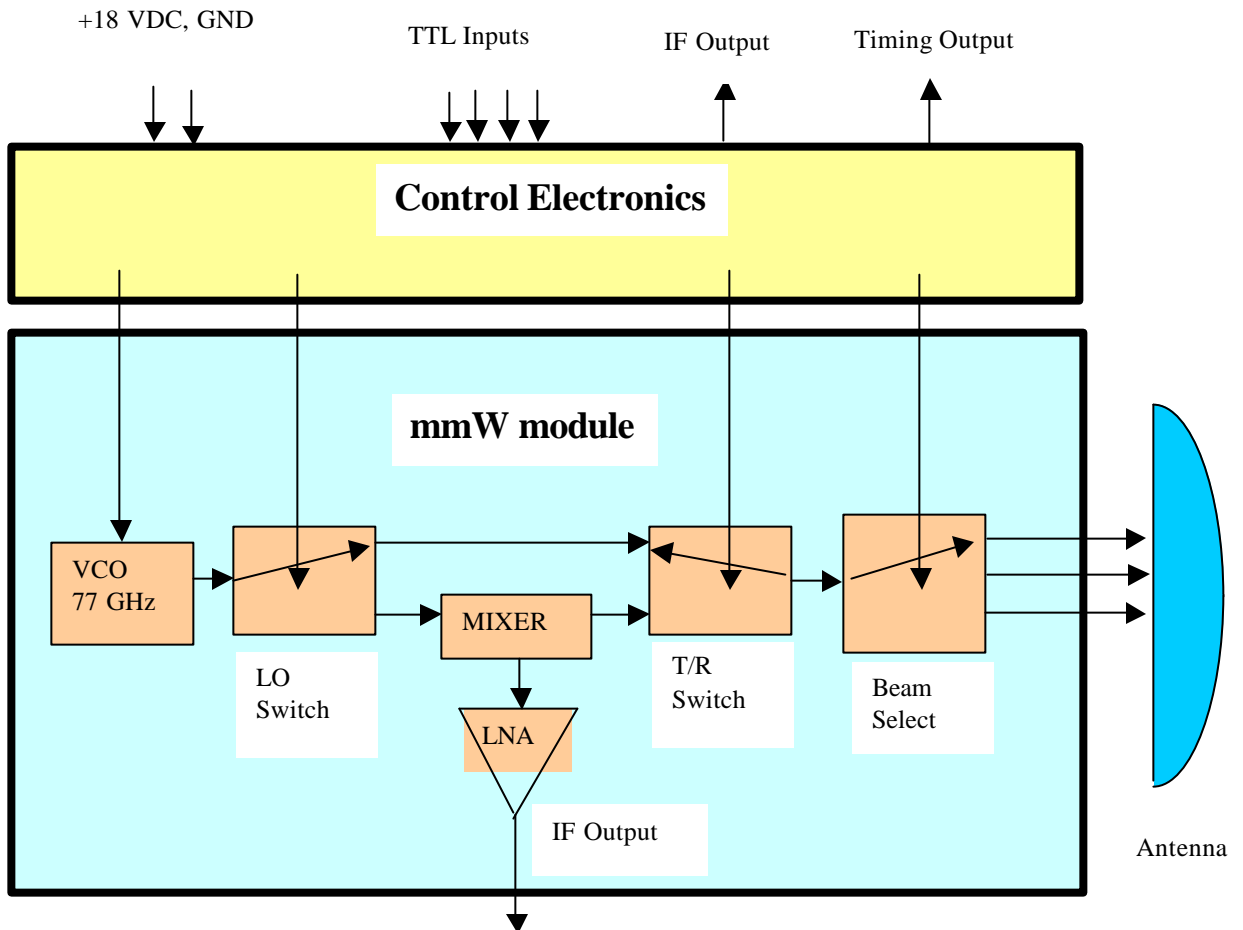


Figure 3: Driver/Control Electronics

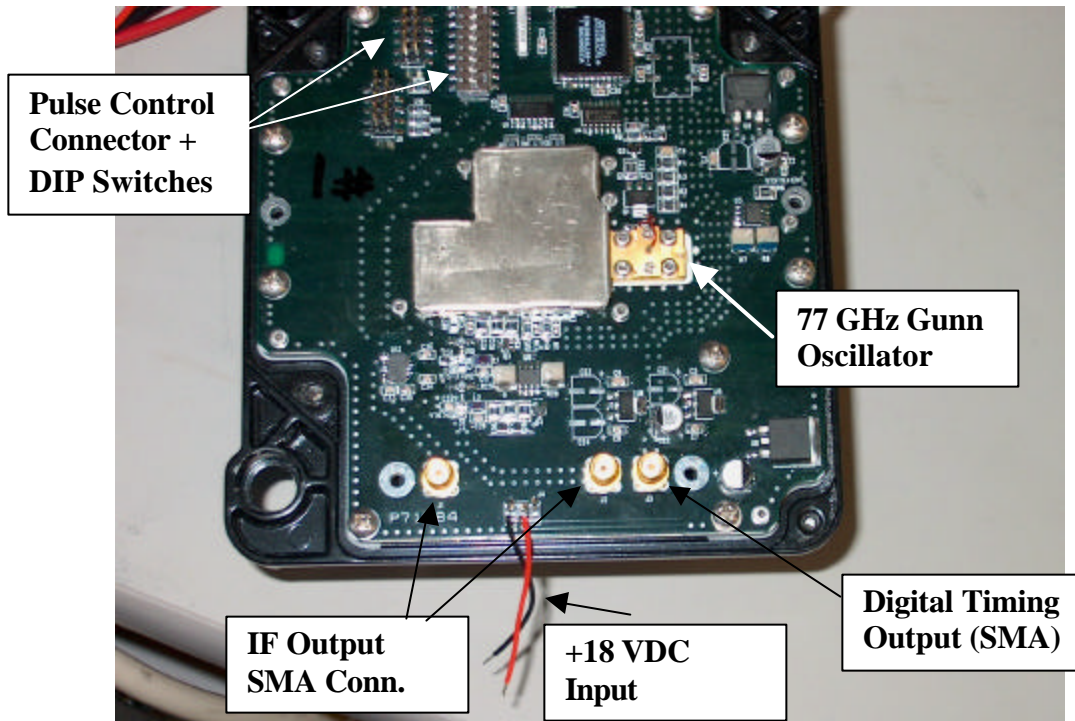
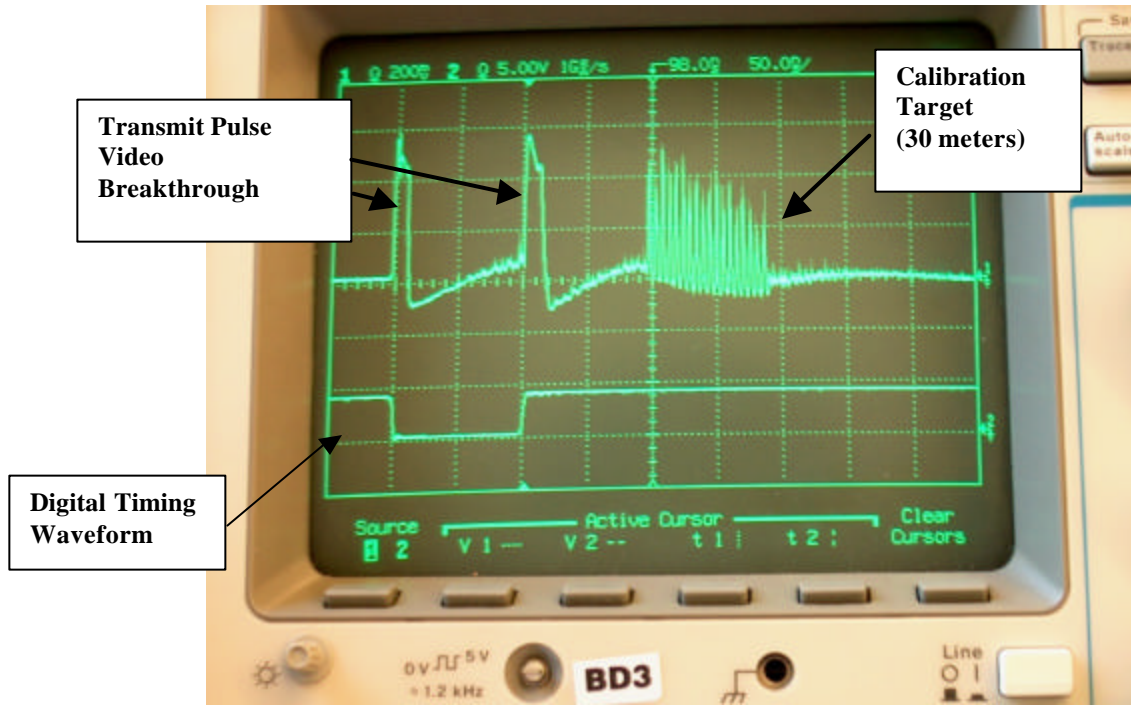
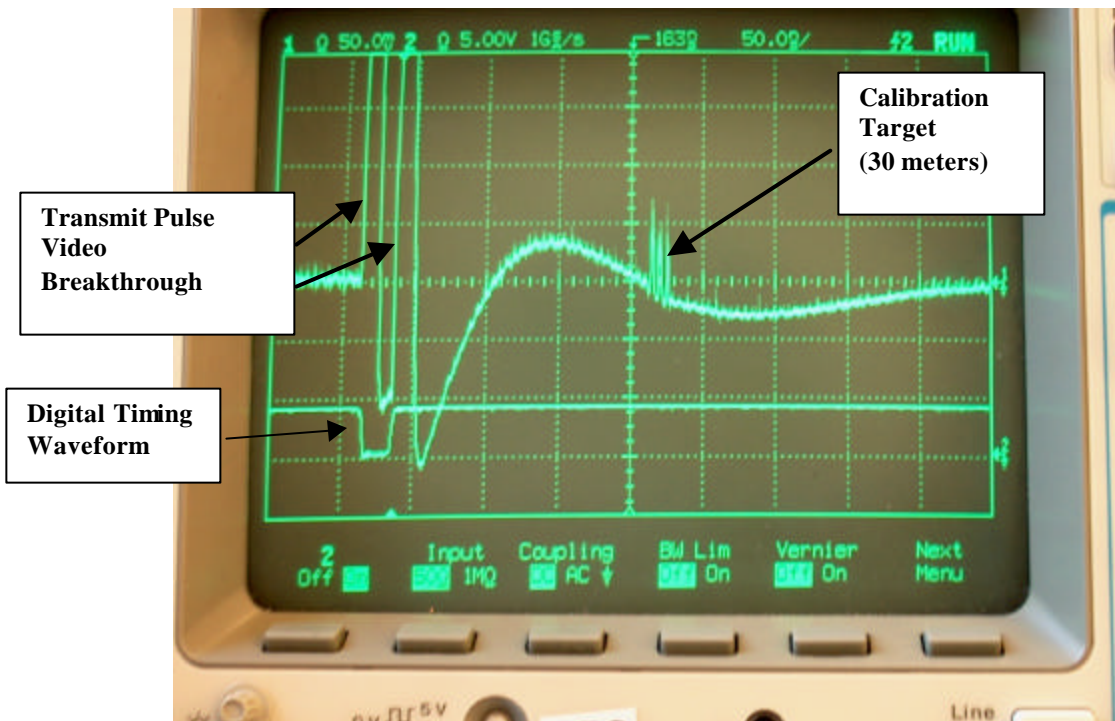


Figure 4: IF Output Signal: (a) 100 ns pulse, 200 mV/div; (b) 20 ns pulse mode, 50 mV/div. Scope time scale is 50 ns/div.



(a)



(b)