

Features:

- 70MHz-6 GHz Antenna Training Lab with 20 antennas
- Fully Software controlled RF Transceiver with customizable frequency and power
- Software-controlled 3D positioner along 3D plotting and measurement software
- Transmit and receive any waveform, any modulation, any frequency, any protocol using any antenna
- Calibrated Signal Generator with precise power, frequency
- Calibrated Spectrum Analyser with precise power, frequency
- Directional Coupler for Return loss, VSWR plotting
- -10dBm Transmit power & -100dBm Sensitivity Receiver
- All SMA connector antennas with RG316 cables
- Open-licensing of experimentation and study material with No recurring cost!
- Latest generation of ASIC architecture with integrated LNA, PA, RX/TX Mixers, PLL, Synthesizers, RX/TX Filters, RX Gain control, TX power control
- Support for TDD and FDD configuration
- Highly stable 1 ppm TCXO.

Description:

ATS06 is the world's most advanced Antenna Communication Training and Measurement Lab. It is the world's first Complete 3D measurement training system providing True 3D pattern of an antenna. ATS06 complies with IEEE Std 149-1979, "Test Procedure for Antennas". The complete setup requires minimum space and can be used as a benchtop system.

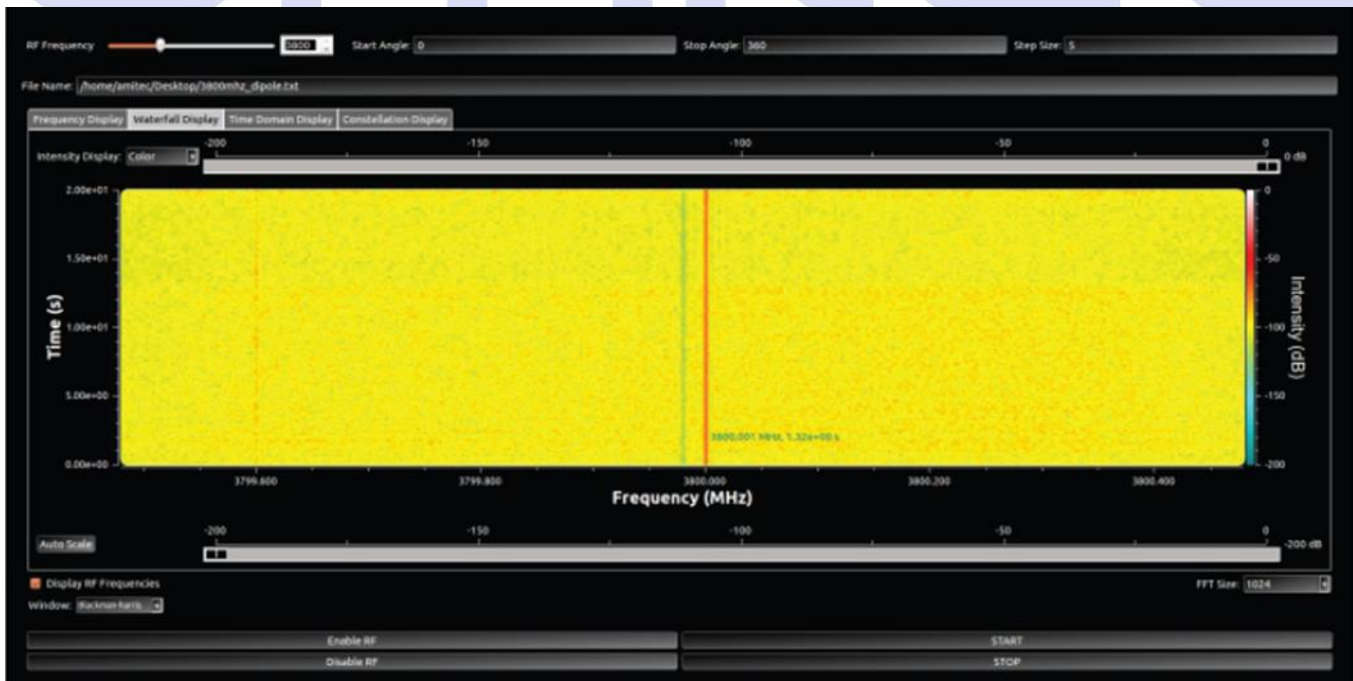
The complete setup consists of:

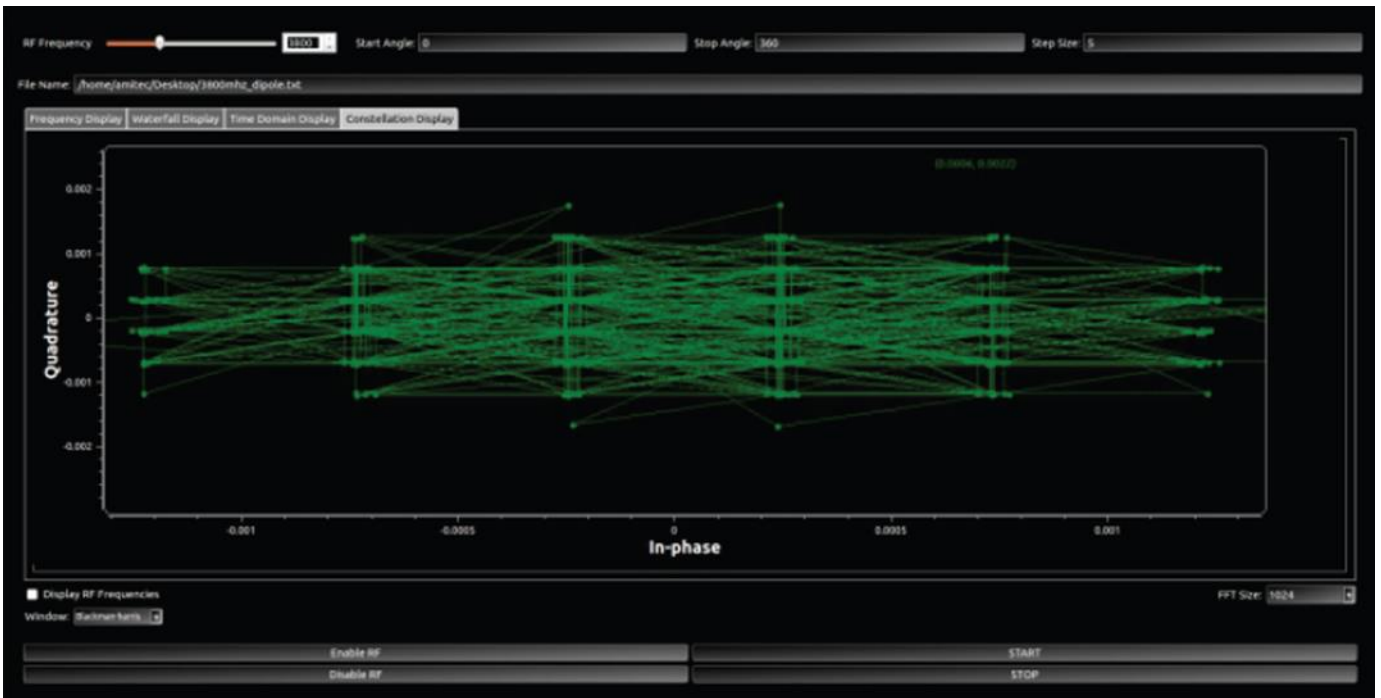
- USB powered calibrated software-controlled Vector Signal Generator and a calibrated software-controlled Vector Signal Analyzer
- Software-controlled 3D positioner with very low RCS
- Linux based Data Visualization and Management Software
- More than 20 different antennas consisting of narrowband, broadband, directional, Omni-directional and different polarizations


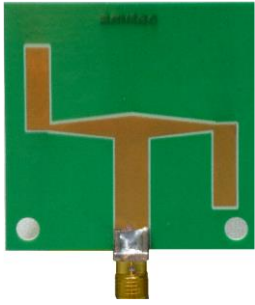

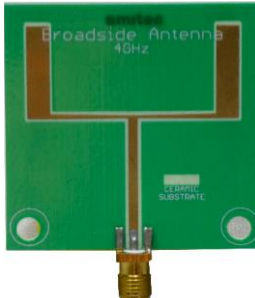






Broadband calibrated reference antenna for gain measurement and broadband directional coupler for return loss measurement. The setup works as spectrum analyzer, vector signal source and vector signal analyzer. It Covers broadcast television, satellite TV communication. Future ready from simple FM to QPSK, QAM standard to whatever future may hold.

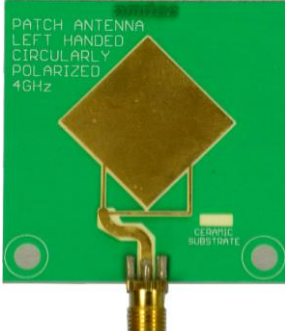
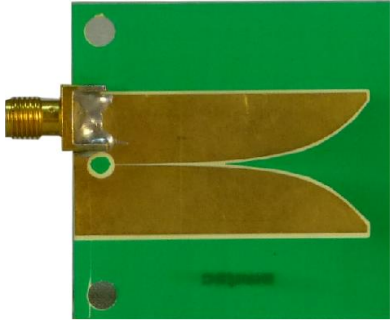
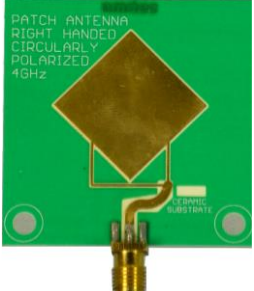
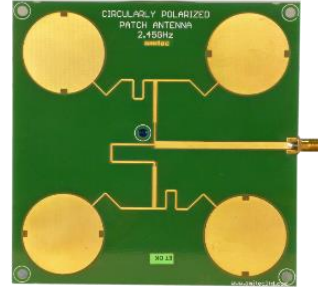

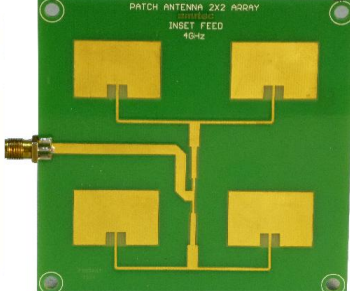

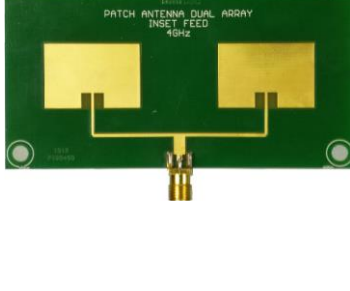

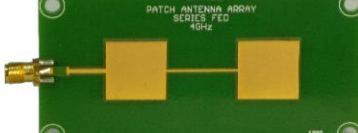


Hardware Technical Specifications:	
Transmit Receive Frequency Range	70MHz to 6GHz
3D Positioner RCS	<-20dBsm
3D Software Compatibility	MATLAB
3D Plot Compliance	IEEE Standard 149-1979
Frequency Resolution	100Hz
Compatibility	Works with Linux GnuRadio, MATLAB, Simulink
Accessibility	OSI layers for signal processing and development
Wireless transmission and reception	Over the air transmission and reception through antenna
Modulations supported	Any, Custom Modulations possible
Mode	Full Duplex, TDD, FDD
Maximum RF Output Power	-10dBm at 1GHz Typical
Maximum Receiver Sensitivity	-120 dBm at 1GHz Typical
TX/RX SMA Impedance	50 Ohm
TX/RX Gain Control Range & Step	>60dB & 1dB Typical
Minimum Rx Noise Figure	< 6dB at 1GHz Nominal
IQ Amplitude Error	0.5dB/-70dBc Image Typical
PLL Settling time	<20us Typical
ADC/DAC Resolution & SFDR	12 bits & >60dBc SFDR Typical
Power	USB Powered
THETA Start/ Stop Angle & Resolution	0 to 360 degrees in 1 degree
PHI Start/ Stop Angle & Resolution	0 to 180 degrees in 1 degree
Power	24 V
Positioner Control	Software control via USB Cable
Loading Capacity	1 kg
Shipping List Deliverable	ATS06 Transceiver Unit, 3D Positioner, 20 Antennas and Accessories
RF Cable	RG316 SMA-SMA X 2
Frequency Band Upgradable	Other 5G bands 6-12.4 GHz optional, 18-26GHz optional, 26-40GHz Optional
Reference Antennas	Reference Antennas 0.8GHz – 12 GHz X 2





<p>1. Microstrip Yagi</p>  <p>Yagi Antenna 4GHz</p>	<p>Fc : 4 + 0.1 GHz S11 : 10 + 2dB Polarisation : Linear Gain : 3dBi Feed : Microstrip balun Impedance : 50 Ohms Connector : SMA Masking: Selective Plating: Gold</p>	<p>6. Endfire Phased array</p> 	<p>S11: >10dB Bandwidth: 4 + 0.1GHz Gain: 3dBi Beamwidth : E plane 60° Beamwidth : H Plane 120° Polarisation : Linear Front to Back Ratio: 0dB Connector : SMA Masking: Selective Plating: Gold</p>
<p>2. Folded Dipole</p> 	<p>S11: >10dB Bandwidth: 4 + 0.2GHz Gain: 2dBi Beamwidth : E plane 70° Beamwidth : H Plane 180° Polarisation : Linear Front to Back Ratio: 0dB Connector : SMA Masking: Selective Plating: Gold</p>	<p>7. Broadside phased array</p> 	<p>S11: >10dB Bandwidth: 4 + 0.1GHz Gain: 3dBi Beamwidth : E plane 60° Beamwidth : H Plane 120° Polarisation : Linear Front to Back Ratio: 0dB Connector : SMA Masking: Selective Plating: Gold</p>
<p>3. Microstrip Dipole</p>  <p>Dipole Antenna 4GHz</p>	<p>Fc : 4 + 0.1 GHz S11 : 10 + 2dB Polarisation : Linear X Pol discrimination : 20dB Gain : 2dBi Feed: Microstrip balun Impedance : 50 Ohms Connector : SMA Masking: Selective Plating: Gold</p>	<p>8. Coplanar waveguide CPW Bow tie slot Antenna</p>  <p>CPW BOWTIE Antenna 4GHz</p>	<p>Fc : 4 + 0.1 GHz S11 : 10 + 2dB Polarisation : Linear Gain : 2dBi Impedance : 50 Ohms Connector : SMA Masking: Selective Plating: Gold</p>
<p>4. Microstrip Slot</p> 	<p>Fc : 4 + 0.1 GHz S11: >10dB Gain: 2dBi Beamwidth : E plane 60° Beamwidth : H Plane 180° Polarisation : Linear Front to Back Ratio: 0dB Connector : SMA Masking: Selective Plating: Gold</p>	<p>9. Wideband Bow tie Dipole Antenna</p> 	<p>Fc : 4 + 2 GHz S11 : 10 + 2dB Polarisation : Linear Gain : 2dBi Impedance : 50 Ohms Connector : SMA Substrate: Glass Epoxy Masking: Selective Plating: Selective Gold</p>
<p>5. Loop</p>  <p>Loop Antenna 4GHz</p>	<p>S11: >10dB Bandwidth: 4 + 0.1GHz Gain: 2dBi Beamwidth : E plane 70° Beamwidth : H Plane 180° Polarisation : Linear Front to Back Ratio: 0dB Connector : SMA Masking: Selective Plating: Gold</p>	<p>10. Reference Logperiodic</p> 	<p>S11: >10dB Bandwidth: 1 to 6GHz Gain: 4dBi Beamwidth : E plane 60° Beamwidth : H Plane 180° Polarisation : Linear Front to Back Ratio: 10dB Connector : SMA</p>

<p>11. Left Circularly Polarized Patch</p>  <p>PATCH ANTENNA LEFT HANDED CIRCULARLY POLARIZED 4GHz</p>	<p>Fc : 4 + 0.1 GHz S11 : 10 + 2dB Polarisation : LHCP Gain : 3dBi Impedance : 50 Ohms Connector : SMA Masking: Selective Plating: Gold</p>	<p>16. Vivaldi (Planar Horn: Aperture Antenna)</p> 	<p>S11 : >6dB Bandwidth : 3 ± 2 GHz Gain : 1dBi Beamwidth : E plane 80° Beamwidth : H Plane 180° Polarisation : Linear Front to Back Ratio : 0dB Connector : SMA</p>
<p>12. Right Circularly Polarized Patch</p>  <p>PATCH ANTENNA RIGHT HANDED CIRCULARLY POLARIZED 4GHz</p>	<p>Fc : 4 + 0.1 GHz S11 : 10 + 2dB Polarisation : RHCP Gain : 3dBi Impedance : 50 Ohms Connector : SMA Masking: Selective Plating: Gold</p>	<p>8. Microstrip Circular Patch Array 2 X 2</p>  <p>CIRCULARLY POLARIZED PATCH ANTENNA 2.45GHz</p>	<p>Fc : 2.4 + 0.1 GHz S11 : 10 + 2dB Polarisation : Circular Gain : 7dBi Impedance : 50 Ohms Connector : SMA</p>
<p>21. Spiral Slot</p> 	<p>Fc : 4 + 1 GHz S11 : 10 + 2dB Polarisation : Linear Gain : 2dBi Impedance : 50 Ohms Connector : SMA Masking: Selective Plating: Gold</p>	<p>18. Patch Array 2X2</p>  <p>PATCH ANTENNA 2X2 ARRAY INSET FEED 4GHz</p>	<p>Fc : 2.4 + 0.1 GHz S11 : 10 + 2dB Polarisation : Linear Gain : 8dBi Impedance : 50 Ohms Connector : SMA Masking: Selective Plating: Gold</p>
<p>22. Log Spiral</p> 	<p>Fc : 4 + 1 GHz S11 : >10dB Gain : 2dBi Beamwidth : E plane 80° Beamwidth : H Plane 120° Polarisation : Circular Front to Back Ratio: 0dB Connector : SMA Masking: Selective Plating: Gold</p>	<p>19. Dual Rectangular Patch</p>  <p>PATCH ANTENNA DUAL ARRAY INSET FEED 4GHz</p>	<p>Fc : 4 + 0.1 GHz S11 : 10 + 2dB Polarisation : Linear Gain : 5dBi Impedance : 50 Ohms Connector : SMA Masking: Selective Plating: Gold</p>
<p>15. Monopole</p>  <p>Monopole Antenna Trapezoidal CPU Fed UWB 4GHz</p>	<p>S11 : >10dB Bandwidth: 4 + 0.2GHz Gain: 1dBi Beamwidth : E plane 70° Beamwidth : H Plane 180° Polarisation : Linear Front to Back Ratio: 0dB Connector : SMA Masking: Selective Plating: Gold</p>	<p>20. Series fed patch array</p>  <p>PATCH ANTENNA ARRAY SERIES FED 4GHz</p>	<p>S11 : >6dB Bandwidth : 4 ± 0.3GHz Gain : 4dBi Beamwidth : E plane 40° Beamwidth : H Plane 40° Polarisation : Linear Front to Back Ratio : >8dB Connector : SMA</p>

<p>21. Directional Coupler</p> 	<p>Bandwidth: 1 - 6 GHz Insertion S12 : 1.5 + 0.5 dB Coupling S13 : 20 + 2dB Isolation S14: 20 + 2dB Directivity S23: 15 + 3dB Impedance : 50 Ohms Connector : SMA Usage: Antenna forward & reverse power & VSWR measurements.</p>	<p>24. E Field Probe</p> 	<p>E probe Type: Narrow Rejection H/E: 30dB Frequency: upto 3GHz Sensitivity: Low Size: 0.6cm</p>
<p>22. H Field Probe</p> 	<p>H probe Type: Loop Rejection E/H: 40dB Frequency: upto 800MHz Sensitivity: High Diameter: 6cm</p>	<p>25. Antenna Plotting Software</p> 	<p>USB interface with 3D plotting software along with cartesian and polar plots, 3dB/10dB beamwidth, Gain, Front to back, Side lobe level and position, Plot rotate, File-edit, save, get.</p>
<p>23. Transceiver</p> 	<p>Transmit & Receive Frequency Range: 70MHz to 6GHz Frequency Resolution: 100Hz Maximum RF Output Power: -10dBm at 1GHz Typical Maximum Receiver Sensitivity: -120 dBm at 1GHz Typical</p>	<p>26. 3D Positioner</p> 	<p>Software Compatibility: MATLAB Compliance IEEE Standard 149-1979 THETA Start/ Stop Angle & Resolution: 0 to 360 degrees in 1 degree PHI Start/ Stop Angle: 0 to 180 degrees in 1 degree</p>

Scope of Experimentation

- Establishing a complete RF link with point-to-point connectivity
- RF Link budgeting and calculations
- 3D Antenna Radiation Pattern measurement with Data Visualization and Management Software
- Measurement of Antenna Gain parameter and other characteristics
- Experimentation with more than 20 different types of antennas
- Experiments covering practical impairments such as Doppler shift
- Simultaneous visualization in time and frequency domain of received signal for practical approach
- Custom waveform transmission with 20 MHz of instantaneous bandwidth for advanced experimentation and research such as LTE
- Completely configurable frequency range from 70 MHz to 6 GHz can be used for RF path loss and other practical measurements
- VSWR and Return Loss measurement of antennas with broadband directional coupler
- Vertical, Horizontal and Circularly polarized antenna
- Polarization discrimination of Linear and Circular antennas
- Resonant and non-resonant antenna
- Reciprocity of antenna
- Current distribution of an antennas and comparative study of antennas
- EM simulation results of all the antennas included for practical verification
- Practical Verification of antennas working in Quad-band GSM, 20 bands of 3G, 40 bands of LTE, GPS, GNSS, Wi-Fi, CDMA and applications such as IoT
- Can be upgraded and daisy-chained for MIMO antenna measurement