

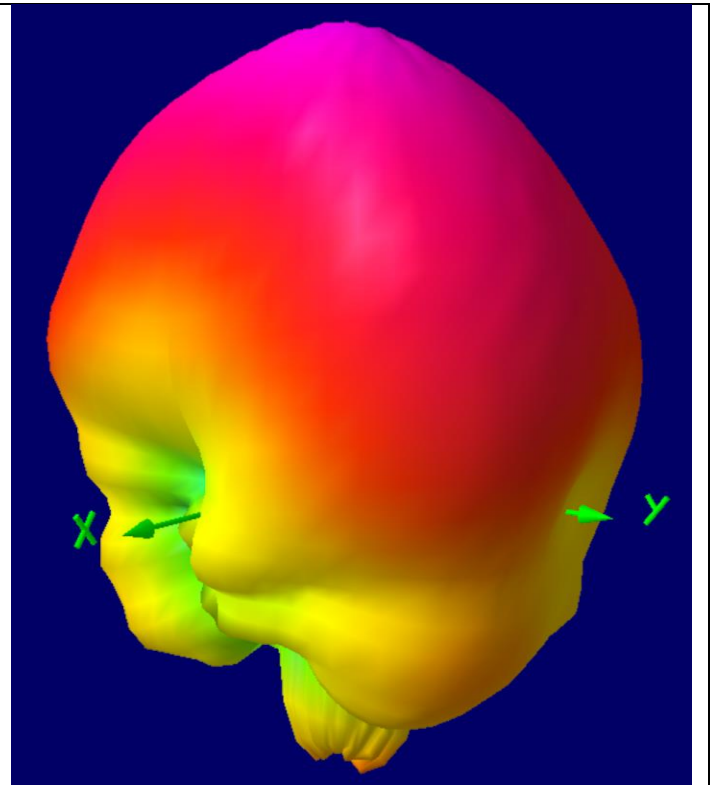
ANTENNA TRAINING SYSTEM

ANTENNA COMMUNICATION TRAINING AND
MEASUREMENT LAB- ATS04

amitec
Innovating Technology

Features:

- World's first 3D antenna measurement training system
- Only system complying to IEEE Standard 149-1979
- Antenna Gain Measurement
- EIRP and Total Radiated Power Measurement
- Vector Signal Generator and Vector Signal Analyzer
- Built-in Spectrum Analyzer with waterfall and Oscilloscope
- Test with LTE, Wi-Fi and other advanced waveforms



ATS04 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. ATS04 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

ATS04 Transceiver Specification

Transmitter Frequency Range	270 MHz to 3.8 GHz
Receiver Frequency Range	270 MHz to 3.8 GHz
Mode	Full Duplex
Power	USB powered
Bandwidth	100 KHz to 28 MHz
Frequency Resolution	< 30 Hz
Maximum Output Power	-10 dBm
Level Accuracy	<3 dB
Receiver Sensitivity	-100 dBm
Antenna connectors	SMA
TX/RX Impedance	50 Ohms

3D Positioner Specification

Azimuth Start Angle	-360 to 360 degree
Azimuth Stop Angle	-360 to 360 degree
Azimuth Minimum Step Size	1 degree
Elevation Start Angle	-360 to 360 degree
Elevation Stop Angle	-360 to 360 degree
Elevation Minimum Step Size	1 degree
Power	12 V Adapter
Control	Software via USB
No of cycles of rotation	User Configurable
Return to Home	Yes
Loading Capacity	1 Kg

TRANSCEIVER UNIT



3D POSITIONER

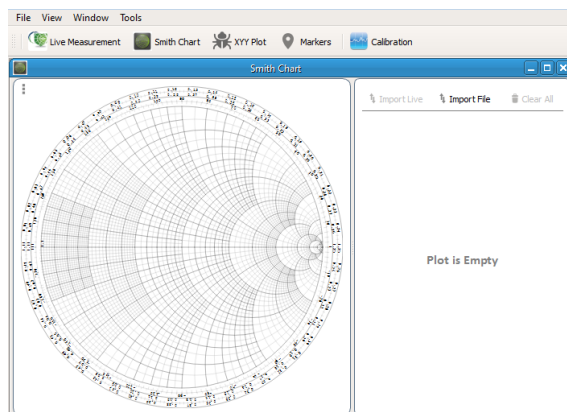


2-port Vector Network Analyzer

Technical Specifications:



- 2-port Vector Network Analyzer
- Measure reflection and transmission coefficients (S11, S21) - magnitude and phase
- Frequency range: **500 kHz to 4 GHz**; Measurements outside this region might be possible but are not guaranteed. Linear, logarithmic and listed scan.
- Dynamic range (typically): **@350 MHz up to 70 dB** (System dynamic range); **@4 GHz up to 40 dB** (System dynamic range)
Not that the dynamic range varies upon frequency, calibration parameters and measurement speed.
Output power -14 dBm at 100MHz
- Impedance from 3 to 1000 Ohms

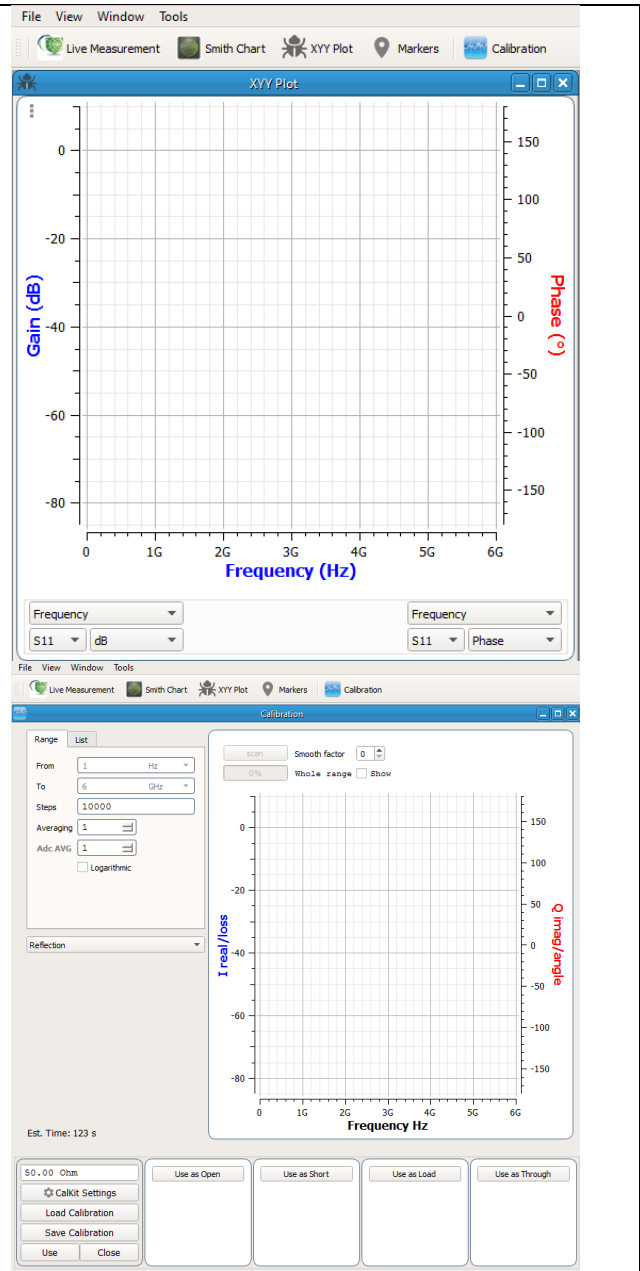



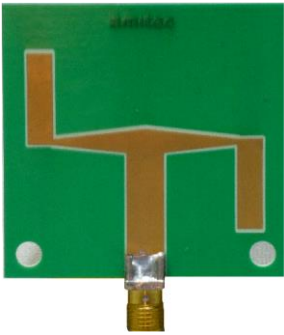

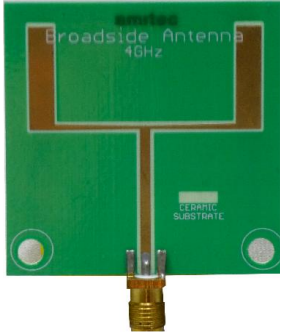



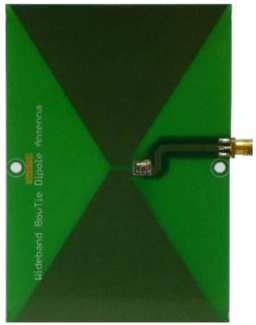
- Measurement speed: about 10 ms per step plus communication (for example a 1001 points scan takes 12 seconds).
- Number of steps: 1 to 10001
- Frequency setting resolution: 1 Hz
- Connection to PC: USB
- RF connectors: SMA female



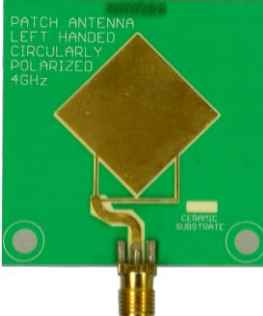
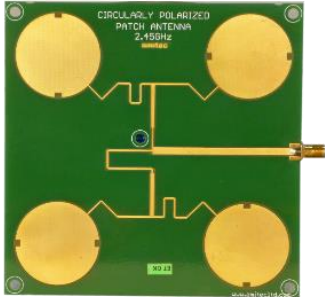

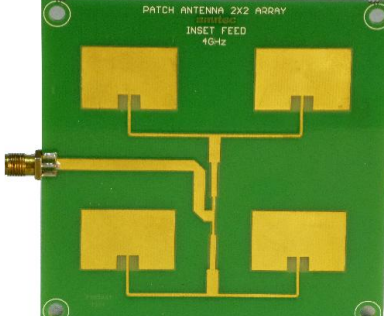

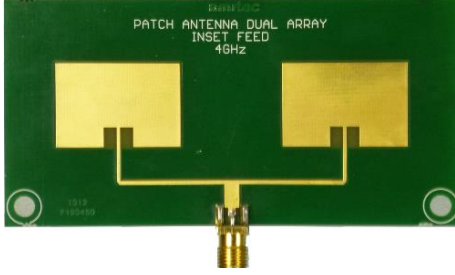
Software features:


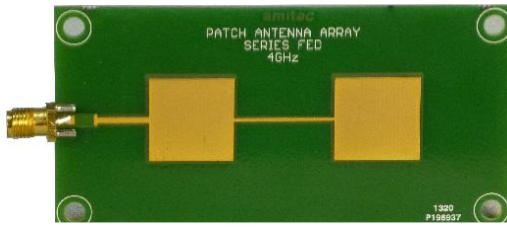
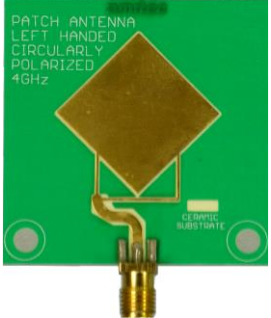
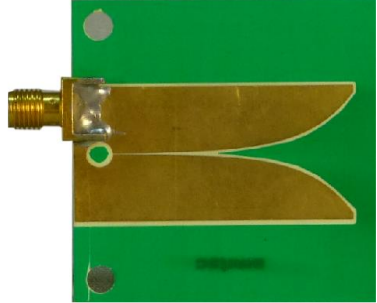
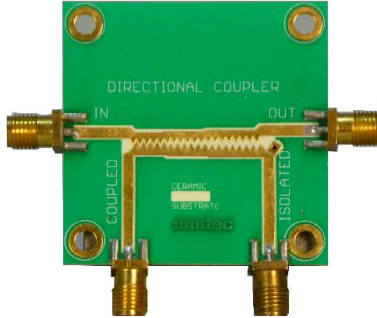
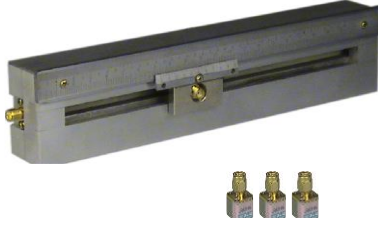

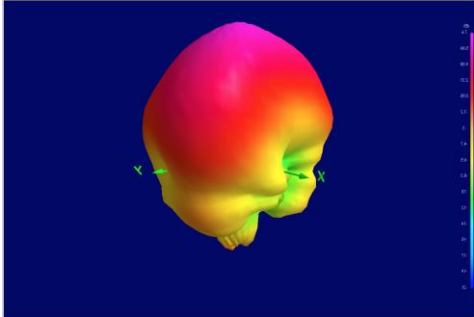
Available for Windows, MacOS and Linux

- OSL calibration functionality
- Time domain measurements
- Plot S-Parameter, Impedance, Phase, Resistance, Reactance, VSWR
- Plot in Smith chart
- Export in Excel, Touchstone
- Save complete sets of measurement together in one project file.



ANTENNAS			
1.	Microstrip Yagi	5.	End-Fire Phased Array
			
2.	2. Folded Dipole	6.	Broad-Side Phased Array
			
3.	3. Microstrip Dipole	7.	CPW Bow-tie slot
			
4.	4. Microstrip Slot	8.	Wideband Bow-tie Dipole
			

9.	<p style="text-align: center;">Loop</p>  <p style="text-align: center;">Loop Antenna 4GHz</p>	13.	<p style="text-align: center;">Reference Log-Periodic</p> 
10.	<p style="text-align: center;">RHCP Patch</p>  <p style="text-align: center;">PATCH ANTENNA LEFT HANDED CIRCULARLY POLARIZED 4GHz</p>	14.	<p style="text-align: center;">Circular Patch 2*2</p>  <p style="text-align: center;">CIRCULARLY POLARIZED PATCH ANTENNA 2.45GHz</p>
11.	<p style="text-align: center;">Spiral Slot</p> 	15.	<p style="text-align: center;">Patch Array 2*2</p>  <p style="text-align: center;">PATCH ANTENNA 2X2 ARRAY INSET FEED 4GHz</p>
12.	<p style="text-align: center;">Log Spiral</p> 	16.	<p style="text-align: center;">Patch Array 2*1</p>  <p style="text-align: center;">PATCH ANTENNA DUAL ARRAY INSET FEED 4GHz</p>

17.	<p style="text-align: center;">Monopole</p> 	21.	<p style="text-align: center;">Series Fed Patch</p> 
18.	<p style="text-align: center;">LHCP Patch</p> 	22.	<p style="text-align: center;">Vivaldi</p> 
19.	<p style="text-align: center;">Broadband Directional Coupler</p> 	23.	<p style="text-align: center;">Coaxial Slotted Line and OSL</p> 
20.	<p style="text-align: center;">E & H Probe</p> 	24.	<p style="text-align: center;">3D Visualization Software</p> 

Area and Scope of Learning

- 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 28 MHz of instantaneous bandwidth for advanced experimentation and research such as LTE
- Completely configurable frequency range from 270 MHz to 3.8 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

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Specifications subject to change without notice. All specifications shown are typical. Radio meets applicable regulatory requirements.