

# About Company

Shenzhen Atten Electronics Co. Ltd., is the pioneering name in electronics instruments manufacturing in China. Established in 1996 and in a short span of 12 years, Atten had grown into a professional enterprise engages in electronic instruments and communication apparatus and also we are the largest electronic company and strongest in technology around china.

Atten is the unique large-scale ISO9001:2000 company who produces spectrum analyzers for industry and commerce in china. Our company has more than 600 skilled workers, with 10 production lines and 20000 square meter modern factory area manufacturing high quality products.

We have honored with the title of Shenzhen New & High Technology Project cooperation. All of our products has been accredited for "3C" \ "CE" \ "E-mark" \ "ROHS" \ "UL". We had ten production line, we can produce more than 30000 output every month.



## THE NO.1 INSTRUMENTS BRAND IN CHINA



### ■ Atten Group Overview

ATTEN GROUP Inc's subsidiaries include: ATTEN (HONGKONG) Co., Ltd, Shanghai TANA Electronics Co., Ltd., Shenzhen ATTEN Electronic Instruments & Equipments Branch Company and Shenzhen ATTEN Power Supply Factory. We have sales branches all over the country, in Beijing, Shanghai, Chengdu, Jinan Kunming, Xi'an, Nanchang, Changsha, Quanzhou, Hefei, Guangzhou and Shenzhen. So far, we have established two Product R&D Departments and a Microwave Instrument Institute. They mainly engage in developing and application of RF, Microwave products, and has developed more than ten national patented products.

### ■ Sale's Network And Service Guarantee

Atten have the strongest presence in China and have extensive sales network with more than 25 office and 85 distributors across china. We have a well trained service network for speedy service to our customers. Our products are exported to North America, South America, Southeast Asia and Europe.

### ■ Technical Strength

Atten's Research and Design department, have more than 100 highly qualified research engineer and have more than 200 Precision Testing Equipment for research. There are three separate research department, respectively RF microwave instrument & trainer experiment research, power supply and advanced solder and desolder equipments. Our shanghai RF microwave instrument research department, have more than 60 advanced RF technical engineer, having vast experience in microwave research and application, Our overseas R&D is in American Cogni technical company.

### ■ Corporation tenet

From the research to manufacture, from the sales to maintenance, ATTEN Electronic Co., Ltd. manufacture quality products, specialty technical support and fast/perfect service Guarantee. We promise to pass on the maximum profit to customers, we will develop together with the Customers.

# Contents

## RF Instruments

Spectrum Analyzer	04
AT6000D Series	05
AT6000 Series	08
AT5000 Series	09
Return Loss Bridge , Impedance Transformer	10
Frequency Counter , Frequency Expander	11
AZ530 Series Probes	12

## Digital Oscilloscope

<b>NEW</b> ADS1000 Series	14
ADS2000 Series	17

## Analog Oscilloscope

AT7328 , AT7340 , AT7328S , AT7340S	20
-------------------------------------	----

## Vector Network Analyzer

Signal Generator	23
------------------	----

## Educational Training Kits

AT3000 Waveguide Training System	25
AT3030/AT3020 RF Training System Kit	27
AT3200 Antenna Training System	29
<b>NEW</b> AT437C Power Meter	30

## Power Supply

Programmable Power Supply	31
---------------------------	----

## Regulated DC Power Supply

<b>NEW</b> APS3003S/APS3005S, APS3003S-3D/APS3005S-3D	
<b>NEW</b> TPR3003T-3C / TPR3005T-3C, TPR3003T / TPR3005T	
PVR3003B / PVR3005B	

## Switching Power Supply

KPS-150 / KPS-300 / KPS-600 / KPS-900	36
KPS3030DA / KPS3050DA ,KPS2054	

## Soldering / Rework Tools

### Advanced Soldering Station

<b>NEW</b> AT60D , AT80D , AT100D	38
<b>NEW</b> AT306DH	39
<b>NEW</b> AT306H	40
<b>NEW</b> AT969D	41
<b>NEW</b> AT969A	42
AT201D / AT204D	43

### Hot Air Rework Station

<b>NEW</b> AT860D	44
AT850D , AT850B , AT8502 , AT8305	45

## RF Microwave Components

ATS Series Attenuator	48
-----------------------	----

VCO / YTO , Programmable Attenuator	49
-------------------------------------	----

# RF Instruments

ATTEN RF & Microwave instrument series, The R&D centre of ATTEN Group, is developed on the basis of Shanghai Radio 26th factory. The RF & Microwave institute has more than 60 senior experts in RF technology which is established in Shanghai, and all of them have more than 40 years experience in RF & Microwave technology, and they take charge of the research and applications for the RF & Microwave technology, and get several great achievements.

## Spectrum Analyzer

AT spectrum analyzer can carry out good inspection to the faults of cable system and wireless system including remote control, cordless phone, cable TV and communication equipment, as well as good comparison and analysis to frequency of signals.

AT5010 spectrum analyzer can test mobile phone, RF circuits, for example, control signal of logic circuit, baseband signal, local oscillator signal of RF circuit, IF signal and transmission signal, It is very quick and accurate to use AT5010 spectrum analyzer to overhaul the fault of mobile phone which can not enter the network, and determine the fault point.

### Electromagnetic Compatible (EMC) Testing:

measure the function of harmful electromagnetic wave to be transmitted by various electronic equipments. In addition, it can output AM/FM demodulation signal from socket PHONE, identify the broadcast signal affected by noise. From authorization aspect, it is very effective measurement function for the evaluation and research in advance to carry out the measurement of radioactive noise.

Widely used for production, development, education and scientific research. True form of signal (such as RF-pulse signal) can be observed from ATTEN spectrum analyzer clearly, where figures are expanded by Fourier series, good for apprehend in education and research.

Now we have products such as spectrum analyzers, RF signal generator, oscilloscope, frequency meter, attenuators and so on. We have different customers in different area. Such as Zhejiang university, Nanjing university of Posts & Telecommunications, Beijing university of Posts And Telecommunications, ZTE, FOXCONN, and so on.



*The RF & Microwave research department for uses on:  
As RF & microwave tech. Popularizer,  
we will give you good solution for your problems.*

## Spectrum Analyzer

### AT6000D Series (AT6060D / AT6030D)



AT6060D: 6GHz

AT6030D: 3GHz

### Specifications

- GPIB(option), RS-232C(option), Printer (supports nearly all types of Printer)
- REF<sub>in</sub>, REF<sub>out</sub> functions
- Large capacity internal memory for storing measured data
- Stores measured data up to 900 events
- Stores Setup data up to 3,000 events
- USB Host Port
- Supports USB Printer
- Stores data and applied Image file(GIF) into USB Flash memory
- Ethernet Port and Software(option) for Internet remote control
- Measures wide frequency : 9 kHz ~ 3.0 Ghz(6.0Ghz)
- Superior Resolution : Minimum 1 Hz
- Wide Input Dynamic Range : -130 dBm ~ 20 dBm
- Easy and simple Key Buttons
- CDMA measurement functions :ACPR, ACLR, OBW, Channel Power
- Resolution Bandwidth(RBW) :1 kHz ~ 3 MHz(1-3 Step), 9 kHz, 120 kHz
- Simple usage and convenience 8 Markers, Trace function, Trigger function
- Supports various types of convenient interface

## High definition color TFT LCD

High definition color 640x480 TFT LCD enables high precision measurement and natural data display.

## Simple and easy to use KEY

Keys are allocated for user's conveniences so that users can be easily familiar with them. And they provide various functions.

## USB Interface

- Can store measured data into the USB Memory through its built-in USB Host that supports USB 1.1 and 2.0(GIF Format)
- Can convert measured data to MS Excel as it also supports the CSV file format.
- Supports nearly all types of printers such as Centronics printer and USB Interface printer
- Firmware can be upgraded through USB

## Large Internal Memory Space

**Waveform** : stores maximum 900 waveforms

**State** : stores maximum 3,000 states Easily stores/calls waveforms and states of the equipment based on various types of application and usage

## CDMA Measurement

### Channel Power(CHP) Measurement

The PSA-6000 model provides power measurement functions for mobile communication and simple menus. Measured values are automatically displayed at the bottom of trace.

### OBW Measurement

Measures the Occupied Bandwidth(OBW) of modulation signal in the unit of %.

### ACP Measurement

Measures the Influence of transmitted power on the Adjacent Channel, or the ratio of power to the Adjacent Channel throughout the mobile communication system using multi-channel.

## Technical Specifications

### Frequency

Range : 9kHz to 3.0GHz(6.0GHz)

Resolution: Minimum 1Hz

Span Range: 100 Hz/div to 300 MHz/div Selection of 1, 2, 5 steps(automatic),ZERO Span, FULL Span (9KHz to 3.0GHz)

Frequency Selection: Start, Stop, Center, Span setup

Span Accuracy:  $\pm 3\%$  of the Indicated Span Width

Readout Accuracy:  $\leq \pm$  (Indicated frequency  $\times$  Reference frequency accuracy  $+ \text{Span} \times \text{Span accuracy} + 50\%$  of RBW)

Phase Noise :  $\leq -100\text{dBc/Hz}$  (@ 10kHz offset)

### Amplitude

Range : +20 dBm  $\sim$  -105 dBm,  
+20 dBm  $\sim$  -130 dBm(Pre Amp ON)

Average Noise Level (1kHz RBW, 10Hz VBW) :

$\leq -105\text{dBm}$  150 kHz  $\sim$  2.7 GHz

$\leq -127\text{dBm}$ (Pre Amp On) 20 MHz  $\sim$  2.7 GHz

$\leq -100\text{dBm}$ , -123 dBm(Pre Amp On) 2.7 GHz  $\sim$  3 GHz

$\leq -130\text{dBm}$ (Pre Amp On) ; Typically

Amplitude Unit : dBm, dBmV, dB V, V, mV, V, W, mW, uW

Display Scale linearity:

$\leq \pm 1.5\text{dB}/70\text{dB}$  (10dB/div),  $\leq \pm 1.5\text{dB}/40\text{dB}$  (5dB/div)

$\leq \pm 0.5\text{dB}/8\text{dB}$  (1dB/div),  $\leq \pm 0.5\text{dB}/16\text{dB}$  (2dB/div)

Frequency Response (0 dB attenuation) :

3.5  $\sim$  1.5 dB (100kHz  $\sim$  10MHz)

$\pm 1.5\text{dB}$  (10MHz  $\sim$  3GHz)

### Reference Level

Range : -90 dBm to +20 dBm

Resolution : 0.1 dB steps

Accuracy :  $\pm 1.5\text{dB}$

Second Harmonic Distortion :  $\leq -60\text{dBc}$ , -40 dBm input

Intermodulation Distortion :  $\leq -70\text{dBc}$ , -40 dBm input

Residual Spurious :  $\leq -85\text{dBm}$  (Input terminated,  
0 dB attenuation)

Other Input Spurious :  $\leq -60\text{dBc}$ , -30 dBm input

### Resolution Bandwidth

Selections : 1kHz, 3kHz, 10kHz, 30kHz, 100kHz, 300kHz,  
1MHz, 3MHz, 9kHz, 120kHz

Accuracy :  $\leq \pm 20\%$

Selectivity : 60 dB / 3 dB ratio  $< 15 : 1$

60 dB / 6 dB ratio  $< 12 : 1$  (9 kHz, 120 kHz)

Switching Error :  $\leq \pm 1.0\text{dB}$  (1kHz Reference RBW)

Video Bandwidth : 10 Hz to 3 MHz in 1-3-10 steps

### Sweep

Rate: 100 ms to 1000 sec, 40ms to 1000sec(zero span)

Accuracy :  $\leq \pm 20\%$

Trigger Source : External(rear), Video, Free Run, Line

Trigger Modes : continuous, single

Trigger Level : TTL level

### Storage

Trace Storage : maximum 900 waveforms

Setup Storage : maximum 3,000 states

### Screen Display

Type : 6.4" color TFT LCD

Display Resolution : 640(H) x 480(V) active display area

Marker Modes : Peak search, Delta marker, Marker to Center, Marker to Reference (8 markers maximum)

### Input

RF Input Connector : N-type Female, 50 ohm nominal

VSWR : 150 kHz to 3.0 GHz,

VSWR  $< 1.5 : 1$  (with 0 dBm Reference Level)

Maximum input level : 0 Vdc, +20 dBm

### Standard Frequency(10MHZ, REF.)

Temperature Stability :  $\pm 0.5\text{ppm}$

Aging :  $\pm 0.5\text{ppm}/\text{Year}$

Connector : BNC female

Input Level : -5 dBm to +15 dBm

Output Level : 10 MHz, +8 dBm nominal

### Interface

RS-232C

Printer

Driver : PCL Command, HP, EPSON,

SAMSUNG,CANON Laser-Jet, Desk-Jet.

Connector : for standard 25 pin female D-Sub  
parallel printer, supports USB

USB HostPrinter Driver :

PCL Command, HP, EPSON,SAMSUNG CANON

Laser-Jet, Desk-Jet

USB Storage Device : Supports 1.1 and 2.0, for storing image file, supports GIF format

Ethernet(Optional) : 10-Base-T Ethernet,

Supports internet remote control

GPIB Interface(Optional) : IEEE488 bus

### General Specifications

System size : 350(W) X 195(H) X 370(D)mm

System weight : 10kg

Input Voltage : 100 $\sim$ 240 VAC at 50/60Hz

Operating Temperature : 0 $^{\circ}$ C to 40 $^{\circ}$ C

storage temperature: -20 $^{\circ}$ C to 70 $^{\circ}$ C

RF emissions : EN 55011, FCC PART15 Section 15.101

RF Immunity : EN 61326

### Accessories

Power Cord

Operating Manual

Antenna

SMA cable

BNC cable

### Options

TRACKING GENERATOR

CDMA(CDMA2000, WCDMA) SIGNAL GENERATOR

GPIB Interface(IEEE 488 Bus)

ETHERNET Interface , for Internet Remote Control

SOFT CARRYING CASE

General KIT SET

RETURN LOSS BRIDGE KIT SET

## Spectrum Analyzer

### AT6000 Series (AT6011 / AT6010)



#### AT6011 Specifications

At6011 Spectrum Analyzer is a low cost, high performance digital synthesized RF measurement instrument with Tracking Generator and frequency upto 1GHz. It uses VCO phase locked technique. It is rugged and easy to control operating panel. It's the most stable Spectrum Analyzer you can find with good noise floor performance.

#### AT6011 With Tracking Generator

- Output : N connector
- Output Impedance: 50ohm
- Frequency range : 0.15MHz~1050MHz
- Output level range : -50dBm~+0dBm  
(in 10dB steps and vary)
- Frequency response:  $\pm 2$ dB
- Output attenuator : 0~40dB (4\*10dB)
- Output attenuator accuracy:  $\pm 2$ dB RF interfere : >20dBc

#### AT6010 Specifications

- Frequency range: 0.15 to 1050MHz
- CF adjust range: 0~1050MHz
- Resolution of frequency display: 10kHz
- RBW: 400kHz and 20kHz
- Video filter bandwidth: 4kHz
- Average noise level: -90dBm (20kHz Bandwidth)
- Amplitude range: -100dBm to +13dBm
- Sweep rate: 40Hz
- Reference level: -27dBm to +13dBm
- Frequency generator: TCXO DDS
- Input attenuator accuracy:  $\pm 2$ dB/10dB
- Signal input connector: N type
- Stability:  $\pm 10$ ppm/year
- Aging:  $\pm 2$ ppm/year
- Accuracy:  $\pm 10$ kHz
- Display: CRT 8x10 Div
- Third order intermod: -90dBc (two signals>3MHz apart)
- Scan width: 100kHz/div~100MHz/div,  
1-2-5 steps and 0 step
- Log scale fidelity:  $\pm 2$ dB (CF: 500MHz 10dBm attn  
zero scan RBW: 400kHz) 500MHz

## Spectrum Analyzer

### AT5000 Series (AT5011<sup>+</sup> / AT5010<sup>+</sup>),(AT5006 / AT5005)



#### AT5011<sup>+</sup> / AT5010<sup>+</sup> Specifications

AT5010<sup>+</sup> /AT 5011<sup>+</sup> is the perfect instrument for analyzing any kind of signal within the frequency range of 0.15 to 1050 MHz, and is best suited for meeting the RF measurement needs of education and industry.

- Frequency range: 0.15 to 1050MHz
- Center frequency display accuracy:  $\pm 100$ kHz
- Marker accuracy: 0.1% span +100kHz
- Resolution of frequency display: 100kHz (4.5 digit LED)
- Frequency scanwidth accuracy:  $\pm 10\%$
- Frequency stability: better than 150kHz/hour
- IF Bandwidth (-3dB): 400kHz and 20kHz;
- Video-Filter (ON): 4kHz
- Sweep rate: 43Hz
- Amplitude range: -100dBm to +13dBm
- Screen display range: 80dB (10dB/div.)
- Reference level: -27dBm to +13dBm (in 10dB steps)
- Reference level accuracy:  $\pm 2$ dB
- Average noise level: -90dBm (20kHz Bandwidth)
- Distortion: <-50dBc of 2nd and 3rd harmonic
- Third order intermod.: -60dBc (two signals>3MHz apart)
- Sensitivity: Better than -90dBm
- Log scale fidelity:  $\pm 2$ dB (without attn.) 500MHz
- Input attenuator: 0 to 40dB (4x10dB steps)
- Input attenuator accuracy:  $\pm 2$ dB/10dB
- Max. input level: +10dBm,  $\pm 25$ V DC (0dB attn.)  
+20dBm (40dB attn.)
- Frequency scanwidth: 100kHz/div. To 100MHz/div,  
in 1-2-5 steps and 0Hz/div.  
(Zero Scan)

#### AT5006 / AT5005 Specifications

AT5005/AT5006 is the perfect instrument for analyzing any kind of signal within the frequency range of 0.15 to 500 MHz, and is best suited for meeting the RF measurement needs of education and industry.

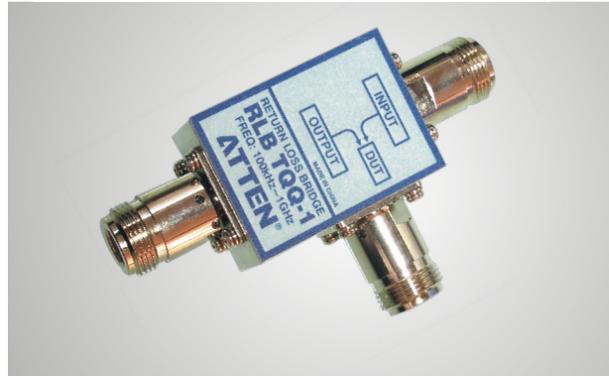
- Frequency Range : 150 KHz to 500 Mhz.
- 4 Digit Display : Centre & Marker.
- Frequency, 0.1 MHz Resolution.
- Amplitude Range : -100 dBm to +13 dBm.
- Filters : 20 KHz, 250 KHz & Video Filter.
- Built-in Tracking Generator : 0.15 MHz to 500 Mhz  
(Model 8005TG only).
- Output Power : +1 dBm to -50 dBm (50 ohms).

#### AT5006 Tracking Generator

- Output Frequency Range: 150KHz to 500MHz.
- Output Power Level: -50dBm to +1dBm  
( in 10dB steps & Variable ).
- Output Attenuator: 0 to 40 dB (4 x 10 dB steps).
- Output Attenuator Accuracy:  $\pm 1$ dB.
- Output Flatness (150KHz to 500MHz):  $\pm 1.5$ dB.
- Spurious Outputs:  
Harmonic Spurs & Non  
harmonic Spurs( RFI ): <20dBc.  
Output Impedance: 50 ohms (BNC female).
- MISCELLANEOUS
- AM/Demodulator : Earphones

## Return Loss Bridge / Impedance Transformer

### AT-TQQ-1 / AT-RLB-6031



#### AT-TQQ-1 Specifications

- Frequency Range: 10MHz~1GHz
- Characteristic Impedance: 50 Ω
- Directivity:  $\geq 29$ dB
- Insertion Loss (Nominal): 6.5dB (From "Input" to "Output" )
- Connector Type: "Input": L16G~50K,  
"Output": L16G~50K,  
"Test": L16G~50K
- Dimensions: 110(L)x70(W)x24(H)mm
- Weight: approx. 230g



#### AT-RLB-6031 Specifications

- Frequency range: 15MHz~3GHz
- characteristic impedance: 50 Ω
- Directional:  $\geq 29$ dB
- Insertion loss: (Source-Load) < 7 dB
- Insertion loss: (Load-Mismatch connector) < 8dB
- Power: 1.5W
- Connector type: N
- Standing Wave(Source): > 15 dB
- Standing Wave(Reflection): > 7 dB
- Standing wave(Load): > 15 dB



#### Impedance Transformer Specifications

- Frequency Range: DC~1000MHz
- VSWR:  $\leq 1.20$ (BNC-50 Ω -J),  $\leq 1.35$ (BNC-75 Ω -K)
- Rated Power: 250mW
- Connector: BNC~50J/BNC~75K
- Dimensions: 22x80(Φ x1, mm)
- Weight: 105g

## Frequency Counter / Frequency Expander

### AT-F1000C / F2700C, AT5000-F1 / F2 / F3



#### Frequency Counter Specifications

##### Features

- 8-Digit LED display
- Few switches, for easy operation
- Quickness, high resolution
- Gate time: 0.01S/0.1S/1S
- Accuracy:  $\pm 1$ Hz  $\pm 1$  Count Figure  $\pm$  Time Base

##### Accuracy

- Input sensitivity:  
10Hz~8MHz: 75mV (Channel 1)  
8MHz~10MHz: 30mV (Channel 1)  
10MHz~100MHz: 30mV (Channel 1)  
F1000C 100MHz~1000MHz: 30mV (Channel 2)  
F2700C 100MHz~2400MHz: 30mV (Channel 2)  
2.4~2.7GHz: 30mV (Channel 2)
- Input impedance: 1M Ω at Channel 1, 50 Ω at Channel 2
- Max input voltage: 250Vrms Channel 1, 5Vrms Channel 2
- Max aging rate:  $\pm 5$ ppm/year
- Power input: AC 220V  $\pm 10\%$  (50/60Hz)
- Power consumption: approx. 5W
- Dimensions: 230(W)x210(H)x76(D)mm
- Weight: 1.8kg

**AT-F1000C: 10Hz to 1000MHz**

**AT-F2700C: 10Hz to 2700MHz**



#### Frequency Expander Specifications

- Input Impedance: 50Ω
- Power Source: 220V  $\pm 10\%$ , 50~60Hz
- Power Consumption: 5W
- Dimension: 210(L)x207(W)x85(H)mm
- Weight: approx. 2kg

**AT5000-F1: 1050~2050MHz**

**AT5000-F2: 2050~3050MHz**

**AT5000-F3: 3050~4050MHz**

## Magnetic Field Probes

AZ530-E / AZ530-H / AZ530-M



AZ530-M:0.1~1000MHz

AZ530-H :0.1~1000MHz

AZ530-E :0.1~1000MHz

### Magnetic Field Probes

AZ 500 Series is the ideal toolkit for the investigation of RF electromagnetic fields. It is indispensable for EMI precompliance testing during product development, prior to third party testing.

The set includes 3 hand-held probes with a built-in pre-amplifier covering the frequency range from 100kHz to over 1000MHz.

The probes one magnetic field probe, one electric field probe, and one high impedance probe are all matched to the 50W inputs of spectrum analyzer or RF-receivers. The power can be supplied either from batteries, Ni-Cads or through a power cord directly connected to an SA3010/ SA3011 series spectrum analyzer. Signal feed is via a 1.5 m BNC-cable.

When used in conjunction with a spectrum analyzer or a measuring receiver, the probes can be used to locate and qualify EMI sources, as well as evaluate EMC problems at the breadboard and prototype level. They enable the user to evaluate radiated fields and perform shield effectiveness comparisons.

Mechanical screening performance and immunity test on cables and components are easily performed.

#### Models

- AZ530-H: High Impedance (Active FET Probe)
- AZ530-M: Magnetic Field Probe
- AZ530-E: Electric Field Probe

- Frequency Range : 0.1MHz to 1000MHz (lower frequency limit depends on probe type).
- Output Impedance : 50 Ω .
- Output Connector : BNC - jack.
- Input Capacitance : 2pF (High Impedance Probe).
- Max. Input Level : +10dBm (without destruction).
- 1dB - Compression : -2dBm (frequency range Point dependent).
- DC Input Voltage : 20V max.
- Supply Voltage : 6V DC
  - 4 AA size batteries
  - Supply-power of analyzer. (Batteries or Ni-Cads are not included).
- Supply Current : 8mA (M-Field Probe)  
5mA (E-Field Probe)  
24mA (H-High Impedance Probe).
- Probe Dimensions : 40 (W) x 19 (D) x 195 (L) mm.
- Housing : Plastic (electrically shielded internally).
- Accessories : BNC Cable (1.5m) - 1 Number
- Power Supply Cable - 1 Number

## Conducted Interference Test Interface

AT166 Conducted Interference Test Interface



### AT166 Conducted Interference Test Interface Description

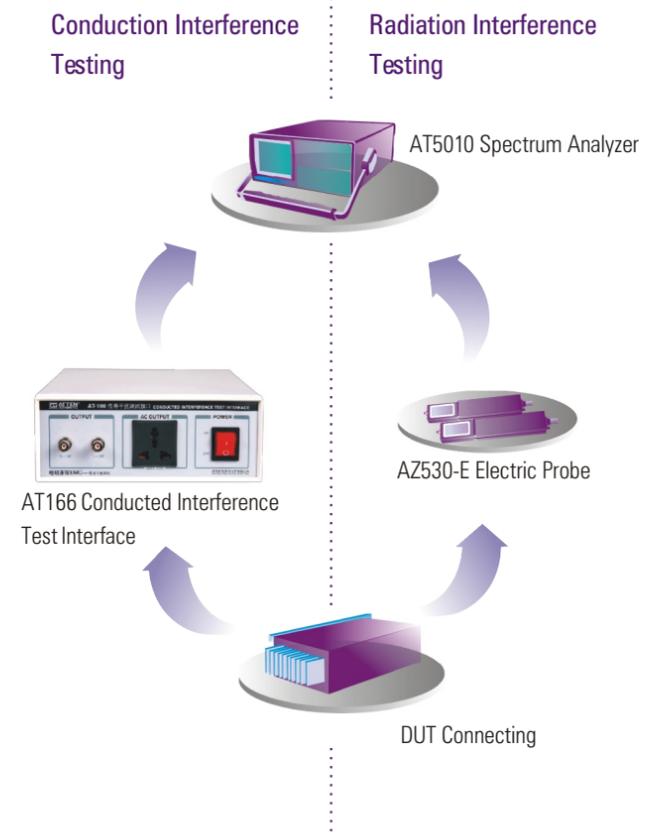
Electromagnetic compatibility (EMC) is the ability of electronic and electrical equipment and systems to operate without adversely affecting other electrical or electronic equipment or being affected by other sources of interference such as powerline transients RF signals, digital pulses, lighting, or cosmic influences.

Electromagnetic compatibility (EMC) is the ability of electronic and electrical equipment and systems to without adversely affecting other electrical or electronic operate equipment or being affected by other sources of interference such as powerline transients, RF signals, digital pulses, lightning, or cosmic influences.

EMI causes undesirable effects in telecommunications,data processing equipment, television, radios, automotive electronics, avionics, space systems, medical devices, and numerous other electronic devices.

### CCC, CE Certification Measurement before Submission

(Best solution for pre-authentication)



# Digital Oscilloscope

The digital storage oscilloscope is unlike any other electronic consumer product, as intended clients of digital storage oscilloscopes are professional electronic engineers. Therefore, ultra stability and top performance are much more important than an attractive interface. Many years of experience make the design of the ADS series attuned to the most tactical and original needs of users. At the roots of its design, the ADS series digital storage oscilloscopes combine mature and steady hardware configuration, high-powered digital signal processing technology and functionality concepts with a mainstream display interface and the operation panel.

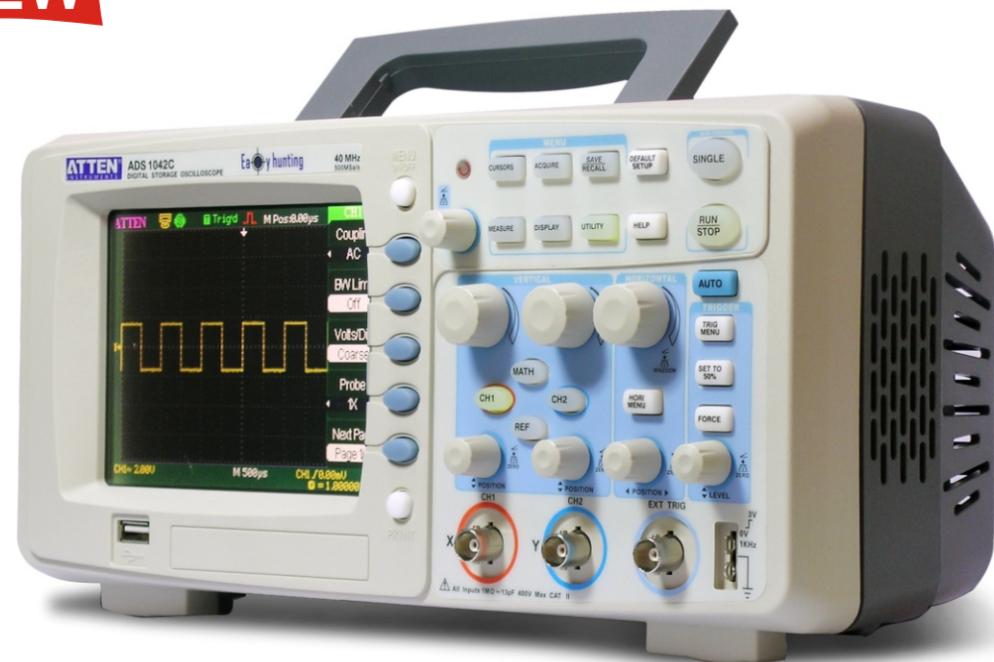
In our design we did not attempt to match the specifications and usability of other comparable products currently on the market, but rather to exceed them in every respect, often outperforming same level products internationally. The ADS series, with its intuitive logical and convenient user interface and attractive price is very affordable and well received by customers worldwide.

The ADS series product matrix is comprehensive and is designed to satisfy all customers' needs regardless of the application.

## Digital Oscilloscope

### ADS1000 Series

**NEW**



### Specifications

- Dual channel-channel bandwidth: 25MHZ-100MHZ.
- The real time sampling rate is 1GSa/s.
- Memory depth of ADS1000CA is 2M.pts
- Use Colored TFT LCD, the waveform display is clearer and stable.
- Screen saver function: 1 minute to 5 hours
- The volume exquisite and it is convenient for carrying.
- Trigger Modes: Edge, Pulse, Video, Slope, Alternative and Delay trigger modes.
- Unique Digital Filter function and Waveform recorder function
- Pass/Fail function
- Thirty two parameters Auto measure function.
- Cursor measure covers Manual mode, Track mode and Auto mode.
- Channel waveform and it is FFT waveform display on split screen.
- Pop-up Menu display pattern is more convenient for users using it.
- Multiple Language User Interface.
- Support Multilingual online help system.

Model/Index	ADS1042CA	ADS1022CA
Bandwidth	40MHZ	25MHZ
Real Time Sampling	1GSa/s 2ch	
Equivalent Sampling Rate	50GSa/s	
Memory Depth	Common Save	Deep Save
	40kpts	Not Support
	20kpts	2Mpts
	20kpts	1Mpts
Rise Time	< 8.8ns	< 14ns
Input Impedance	1MΩ     13pF	
Sec/div Range	10ns/div-50s/div	25ns/div-50s/div
	Roll: 100ms-50s/div	
XY Mode	Phase Error: ± 3 degrees	
	Support the sampling rate : 5Ksa/s~500MSa/s (in a 1-2-5 sequence)	
Vertical Sensitivity	2mv-10v/div(1-2-5 Sequence)	

Model/Index	ADS1042C	ADS1022C
Bandwidth	40MHZ	25MHZ
Real Time Sampling	500MSa/s	
Equivalent Sampling Rate	50GSa/s	
Rise Time	< 8.8ns	< 14ns
Input Impedance	1MΩ     13pF	
Sec/div Range	10ns/div-50s/div	25ns/div-50s/div
	Roll: 100ms-50s/div	
Display	Color TFT(320*234)5.7" LCD	

Model/Index	The Common Specifications Of All ADS1000 Series Products
Display	12 divides full screen display
Channels	2
Vertical Sensitivity	2mv-5v/div(1-2-5 Sequence)
Vertical Resolution	8bit
Memory Depth	Each channel : at least 4k/CH
Waveform Capture Rate	The highest capture rate exceed 1000 times/sec
Input coupling	DC, AC, GND
Input Max voltage	400V(Vpp)
Trigger Types	Edge, Pulse, Video, Slope, Alternative, Delay
Trigger Modes	Auto, Normal, Single
Trigger Source	CH1,CH2,Ext,Ext/5,AC Line
Save/Recall	Provide two groups reference waveforms, twenty groups capture waveforms and twenty groups setups internal save/recall function and USB flash drive Save/Recall function
Auto Measure Types	Vpp, Vmax, Vmin, Vamp, Vtop, Vbase, Cmean, Mean, Vrms, Crms, ROVShoot, FOVShoot, RPREShoot, FPRESShoot, Freq, Period, Rise time, Fall Time, +Width, -Width, +Duty, -Duty, BWid, Phase, FRR, FRF, FFR, FFF, LRR, LRF, LFR, LFF
Cousor measure	Manual, Track, Auto
Sample Types	Real Time, Equivalent Time
Averages	4,16,32,64,128,256
Math	+ , - , * , / , Invert FFT Window: Hanning, Hanmming, Blackman, Rectangular Sampling Points: 1024 points
XY Mode	Phase Error: $\pm 3$ degrees Support the sampling rate : 5Ksa/s~200MSa/s (in a 1-2-5 sequence)
Display Model	Main, Window, Window Zoom, Roll, X-Y
Menu Display	2Sec, 5Sec, 10Sec, 20Sec, Infinite
Display Language	Simplified Chinese, Traditional Chinese, English, Arabic, French, German, Russian, Spanish, Portuguese, Japanese, Korean
Power Source Voltage	100-240VAC,47HZ-440HZ,50VA Max
Size and Weight	305mm x 154mm x133mm, about2.3kg
Accessories	(1:1,10:1)Problex2, EasyScope3.0 Computer Software System, Power Cord, USB cable,User Manual, EasyDsoLib software package, USB Host: Support USB flash drive storage USB Device: Support PictBridge compatible printers and PC Remote control
Options	GPIB Communication Module, Serial Interface Communication Module, Pass/Fail Interface Module

## Digital Oscilloscope

### ADS2000 Series



**25MHz~ 200MHz**

### Product Summary

The most powerful homemade digital oscilloscope at present, the perfect combo with top performance and powerful function, which represent the highest level presently available in homemade digital storage oscilloscopes.

ADS2000 series digital storage oscilloscopes combine mature and steady hardware configuration, high-powered digital signal processing technology and functionality concepts with a mainstream display interface and the operation panel. In our design we did not attempt to match the specifications and usability of other comparable products currently on the market, but rather to exceed them in every respect, often outperforming same level products internationally. The ADS2000 series, with its intuitive logical and convenient user interface and attractive price is very affordable. ADS2000 series is attuned to the most tactical and original needs of users who consider ultra stability and top performance are much more important than an attractive interface.

## Specifications

- The highest real time sampling rate is 1GSa/s(500MSa/s), equivalent time sampling rate is 50GSa/s
- Dual channel bandwidth: 25MHz-200MHz.
- USB Host/Device, support USB flash device storage and EasyScope2.0 software system
- Support PictBridge compatible printers
- Thirty two parameters can be displayed in the menu area.  
All measure function displays waveform parameters on the screen area according to measure kinds
- Cousor measure covers manual mode, track mode and auto mode
- Support two groups reference waveforms, twenty groups captured waveforms and twenty groups setups  
internal Storage/Recall function and USB flash drive storage function
- Digital Filter function
- Pass/Fail function
- Waveform recorder function
- Support Multilingual online help
- The highest successive waveform capture rate exceed 1000 times/sec
- Vertical Sensitivity: 2mV-5V/div; Time base range: 2.5ns-50s/div
- FFT function

Model / Index	ADS2202CA/SA	ADS2152CA/SA	ADS2102CA/SA	ADS2062CA/SA
Bandwidth	200MHz	150MHz	100MHz	60MHz
Real time sampling	The highest sampling rate of each channel is 1GSa/s			
Display	Color (320*240) 5.7" LCD / Monochrome (320*240) 5.7" LCD			
Rise time	<1.8ns	<2.3ns	<3.5ns	<5.8ns
Input impedance	1M $\Omega$   13Pf, 50 $\Omega$	1M $\Omega$   13Pf, 50 $\Omega$	1M $\Omega$    13Pf	1M $\Omega$    13Pf
Sec/div Range	2.5nS/div-50S/div	2.5nS/div-50S/div	2.5nS/div-50S/div	5nS/div~50S/div
Roll: 100mS/DIV ~ 50S/DIV (in 1-2-5 sequence)				

Model / Index	ADS2202C/S	ADS2152C/S	ADS2102C/S	ADS2062C/S	ADS2042C	ADS2022C
Bandwidth	200MHz	150MHz	100MHz	60MHz	40MHz	25MHz
Real time sampling	The highest sampling rate of each channel is 500MSa/s					
Display	Color (320*240) 5.7" LCD / Monochrome (320*240) 5.7" LCD					
Rise time	<1.8ns	<2.3ns	<3.5ns	<5.8ns	<8.8ns	<14ns
Input impedance	1M $\Omega$   13Pf, 50 $\Omega$		1M $\Omega$    13Pf			
Sec/div Range	2.5nS/div ~50S/div	2.5nS/div ~50S/div	2.5nS/div ~50S/div	5nS/div ~50S/div	10nS/div ~50S/div	25nS/div ~50S/div
Roll: 100mS/DIV ~ 50S/DIV (in 1-2-5 sequence)						

## Model / Index

## The Common Specifications

Channels	2
Vertical Sensitivity	2mV—5V/div(1-2-5 Sequence )
Vertical Resolution	8 bit
Equivalent Sampling Rate	The highest sampling rate of each channel is 50GSa/s
Memory Depth	Each channel : at least 4k/ CH
Waveform Capture Rate	The highest capture rate exceed 1000 times/sec
Save/Recall	Provide two groups ref waveforms, twenty groups capture waveforms and twenty groups setups internal save/recall function and USB flash drive Save/Recall function
Display Model	MAIN, WINDOW, WINDOW ZOOM, ROLL, X-Y
Trigger Types	Edge trigger, Pulse trigger, Video trigger
Trigger Modes	Auto, Normal, Single
Math Operation	+ , - , * , / , Invert FFT Window: Hanning, Hamming, Blackman, Rectangular Sampling points: 1024points
Auto Measure Types	Vpp, Vmax, Vmin, Vamp, Vtop, Vbase, Vavg, Mean, Vrms, Crms, ROVShoot, FOVShoot, RPREShoot, FPRESshoot, Freq, Period, Rise time, Fall Time, +Width, -Width, +Duty, - Duty, Bwid, Phase, FRR, FRF, FFR, FFF, LRR, LRF, LFR, LFF
Cursor Measure	Manual mode, Track mode, Auto mode
Sample Types	Real time , Equivalent time
Averages	4, 16, 32, 64, 128, 256
Display language	Manifold languages
XY Mode	Phase Error: $\pm 3$ degrees Support the sampling rate: 5KSa/s—200MSa/s (in a 1-2-5 sequence)
Input Voltage	100—240 VAC, 47Hz—440Hz, 50VA Max
Size and Weight	300mm x 150mm x 290mm, about 4.6kg
Accessories	(1:1, 10:1)Problex2, EasyScope Computer Software System, Power Cord, User Manual USB Host: Support USB flash drive storage USB Device: Support PictBridge compatible printers and PC Remote control
Options	GPIB Communication Module, Serial Interface Communication Module, Pass/Fail Interface Module

## Analog Oscilloscope

AT7328 / AT7340 / AT7328S / AT7340S



### AT7340S / AT7328S Specifications

- Band width: DC 0~40MHz / DC 0~20MHz Dual channel, import oscilloscope tube, code switch, it is CRT readout, and you can read out the frequency value directly.
- Rise time: app. 9.5nS/17.5nS (5MAG: app. 50nS)
- Vertical sensitivity: 5mV~20V/DIV, 20 steps in 1-2-5 sequence Accuracy  $\leq 3\%$
- Trigger mode: auto, normal, TV, TV-H
- Sweep time: 0.2 $\mu$  sec~0.5Sec/DIV, 20 steps in 1-2-5 sequence
- Horizontal sweep MAG: x10
- Vertical mode: CH1/CH2/DUAL/ADD
- Deflection coefficient: 5mV~5VDIV:  $\pm 0.5$ DIV, 1mV~2mV/DIV  $\pm 2$ DIV

### AT7340 / AT7328 Specifications

- Band width: DC 0~40MHz / DC 0~20MHz
- Rise time: app. 9.5nS/ app. 17.5nS
- Vertical sensitivity: 5mV~5V/DIV, 20 steps in 1-2-5 sequence Accuracy  $\leq 3\%$
- Trigger mode: auto, normal, TV, TV-H
- Sweep time: 0.2 $\mu$  sec~0.5Sec/DIV, 20 steps in 1-2-5 Sequence
- Horizontal sweep MAG: x10
- Vertical mode: CH1/CH2/DUAL/ADD
- Deflection coefficient: 5mV~5VDIV:  $\pm 0.5$ DIV

## Vector Network Analyzer

ATN3021/ATN3022



### TEST METHOD:

Can do the full-span scan, List scan and Point-frequency scan.

### TEST FUNCTION:

Can test the Transmission parameter (the amplitude-frequency characteristic, insertion loss, phase, the gain of amplifier, the gain of antenna, group delay, option for the antenna orientation chart measurement) and Reflection testing (test standing wave, return loss, impedance, reflection phase, electric length, display the smith circuit chart function, opt permittivity & testing function), time-domain fault orientation function.

### TEST FORMAT:

Display as the logarithm amplitude and the amplitude phase at the same time. Reflection testing displays the logarithm display, standing wave ratio display, the Smith circular chart display.

**DISPLAY OUTPUT:** 5" CRT kinescope display.

**RECORD DEVICE:** Printer or U disc.

### Using Range And Relevant Capability

- Suitable for radio, television, telecommunications, radar etc. feedback system's testing and higher education college's RF microwave teaching experiment.
- After selection can test the 50  $\Omega$ , 75  $\Omega$ , 100  $\Omega$
- Optional time-domain fault orientation function can check the fault location of coaxial cable in the feedback system. Testing range is: 0-1200m, orientation true. The resolution is about  $\pm 3$ mm when the length about 10m, the resolution is  $\pm 1$ cm when the length about 30m.
- Match the relevant testing accessory (impedance transformer, difference bridge etc) can test the transmission line's characteristic impedance, insertion loss, time-lapse, phase shift etc. Specifications of the coaxial cable, wisted pair, coaxial connector and transmission line. It can also be used to detect the therefore cable's leakage and shield capability.
- Relevant probe, can test the permittivity constant of the relevant liquid, plane solid and powder etc.



Item No.	ATN3021	ATN3022	
Signal source	Frequency span	30~3200MHz	
	Frequency accuracy	10-5	
	Resolution of Frequency	0.025MHz	
Display	The Resolution of Insertion-loss	The indeterminacy of 0.01dB/div is 4% of 0.2dB±dB in 50dB	
	The resolution of reflection	The indeterminacy of 0.002 is 0.01(the surplus standing wave is 1.02)	
	The resolution of phase	0.1° ,the indeterminacy is about 5° /div	
The characteristic of Measurement	Frequency range	30-3200MHz	
	The bate of the mixed wave	40dB	
	Group delay	1ns-40 μ s	
	Time-domain fault orientation	0~1200 m divided 9 degree	
	Test Antenna orientation chart(option)	one record (totally 361 dot)	
	Dynamic range	Insertion loss	80dB
		Return loss	50dB
Gain		-20-30dB	
Port - Characteristic	Reflection bridge direction	≥35dB	
	Load return loss	≥40dB	
	Testing port	N type single channel   N type dual channel	
Others	Dimension	430(width)*133(height)*450(length)	
	Weight	13kg	
	Standard accessory	50 Ω N kit	
	Optional accessory	75 Ω N testing kit, SMA testing kit, TV frequency modulation anti-interfere special bridge	

50 Ω N Kit (30~3200MHz/30~6000MHz)	50 Ω SMA Kit (30~3200MHz/30~6000MHz)	75 Ω N Kit (5~2500MHz)
Reflection bridge (1 pcs)	Reflection bridge (1 pcs)	Reflection bridge (1pcs)
10dB attenuator(SWR=1.4) (2pcs)	10dB attenuator(SWR=1.4) (1pcs)	Impedance transformer (50 Ω -75 Ω 1pcs)
Matched load (1pcs five head)	Matched load J head (1pcs)	Matched load J head (1pcs)
Protection connector (1pcs)	Protection connector (1pcs)	Protection connector (1pcs)
Matched load (1pcs K head)	Matched load K head (1pcs)	Matched load K head (1pcs)
Circuit opener JK (each 1 pcs)	Circuit opener JK (each 1 pcs)	Circuit opener JK (each 1 pcs)
Unmatched load(1pcs)	Unmatched load(1pcs)	Unmatched(1.4) load(1pcs)
Circuit-shorter JK (each 1pcs)	Circuit-shorter JK (each 1pcs)	Circuit-shorter JK (each 1pcs)
		Dual male (1pcs) / Dual female(1pcs)

## Signal Generator

### AT8010D Standard Signal Generator



#### AT8010D Standard Signal Generator

- Frequency range: 5KHz-1100MHz
- Cover full range of VHF
- 100 groups setting storage permanence
- Compact design
- Converse protection
- Fit for: TV-SET,FM/AM radio,wireless phone,communications equipment,car stereo, and radio and so on.

#### Specifications

##### Frequency

- Range: 5KHz-1100MHz
- Display: LCD.16 Digit. 2 Rows
- Resolution: 5KHz-499.9MHz:1KHz,1.25KHz
- Accuracy: 500MHz-1100MHz:2.5KHz ± 1.0 x 10(-6)

##### Output level

- Range: 14dB μ V-126dB μ VEMF at 100MHz
- Display:LCD.16Digit.2 Rows
- Resolution:0.1dB
- Accuracy: ± 1.5dB(100.0dB μ V-126dB μ V) ± 2dB(-14dB μ V-100dB μ V)
- Output Impedance:50 Ω

##### Modulation

- Inner Modulation: 1KHz or 400Hz ± 2%

##### Outer modulation

- Input Impedance: 100K Ω
- Input Level: 0-2Vrms
- Frequency Range: FM:20Hz-100KHz AM:20Hz-10KHz
- Frequency Response: ± 1dB (ref,1KHz)

##### FM

- Range: 0.0-100KHz
- Resolution: 0.1KHz
- Accuracy: ± 3%

##### AM

- Range: 0.0-99.9%
- Resolution: 0.1%
- Accuracy: ± 5%

##### Others

- Input Power: AC110/220V ± 10% 50/60Hz
- Volume: 134(H)\*300(W)\*330(D)
- Weight: About 8.5Kg