

# Ceyear

## 3680A/B

### Cable & Antenna Analyzer

(1MHz~4GHz/8GHz)



China Electronics Technology Instruments Co., Ltd.

## Product Overview:

Adopting advanced techniques such as hybrid integration design of RF circuit and digital circuit, wideband fundamental-wave mixing, digital IF processing, intelligent power management, 3680A/B cable & antenna analyzer has advantages of high-speed, high-accuracy, compact, lightweight, battery-powered, touch screen operation, and automatic adjustment of backlight brightness. Besides testing VSWR, return loss, characteristic impedance, and phase, it can precisely locate the fault points as well.

3680A/B cable & antenna analyzer is developed for on-site test, which is mainly used for the test of cable & antenna system in various communication base stations, including trunking, GSM, PCS/DCS, CDMA, GPRS, WCDMA, CDMA2000, TD-SCDMA, LTE and paging system.

During the installation, calibration and routine maintenance of cable & antenna system, the cable& antenna analyzer can help users to quickly estimate the status of the transmission and feed line system, improve the maintenance efficiency of the running base stations and speed up the installation and calibration of new base stations. Besides, it can also be used for the reflection parameter test of RF devices and components in scientific research, teaching and manufacturing.

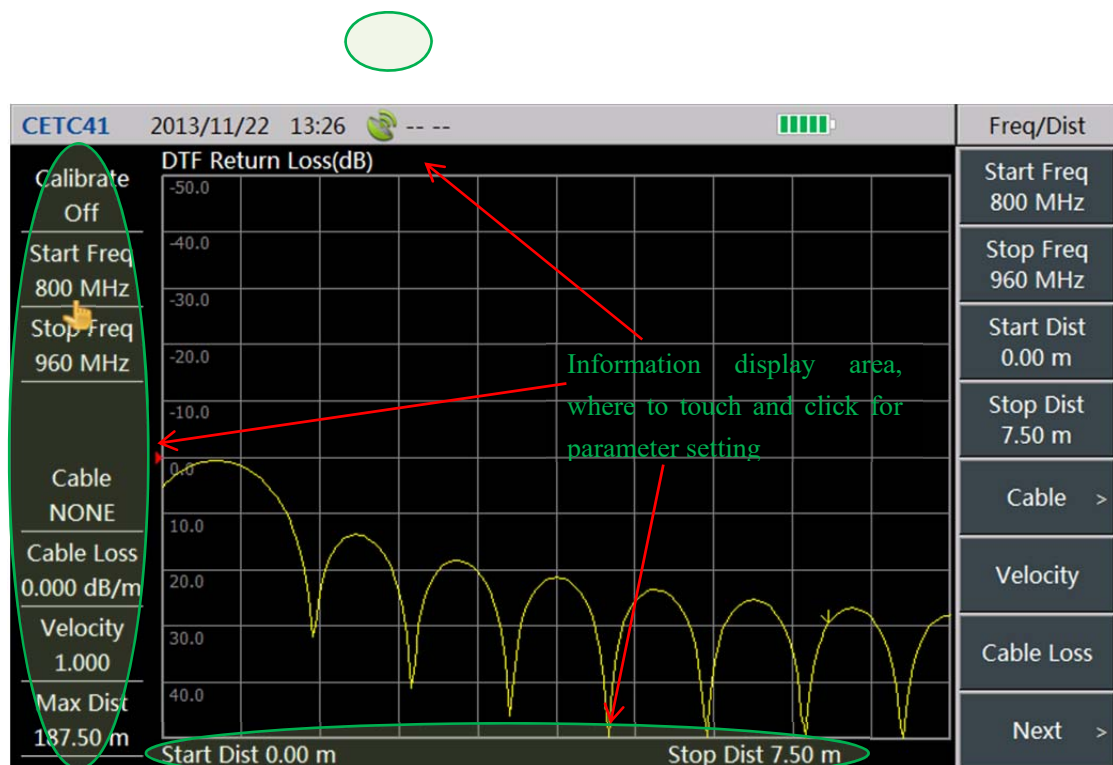
## Main Features:

- **Support multiple measurements**

It supports 7 measurements: return loss, VSWR, cable loss, DTF return loss, DTF VSWR, Smith chart, phase. And it can conduct comprehensive measurement and fault diagnosis on cable and antenna system.

- **Touch screen operation**

The instrument is designed with 7 inch LCD touch screen. Besides menu operation, users can also set the parameters by clicking all the displayed information on the touch screen.



Touch & click for parameter setting

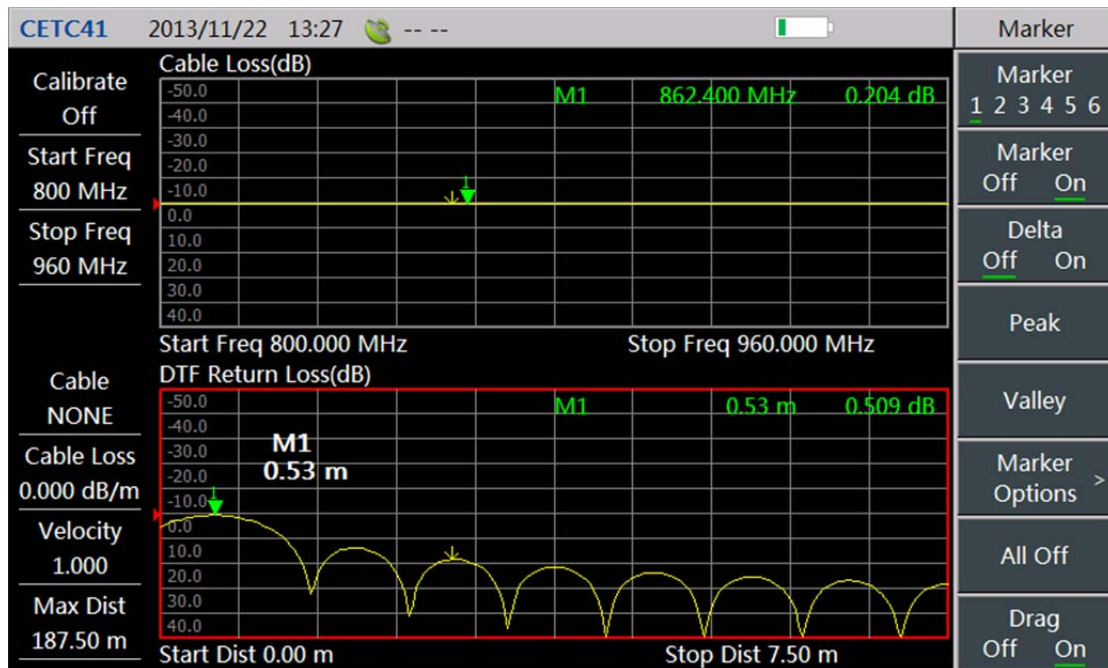
The 7 measurement types can be switched by finger sliding, no need of menu operation.



Finger sliding to switch measurement types

- **Double window display**

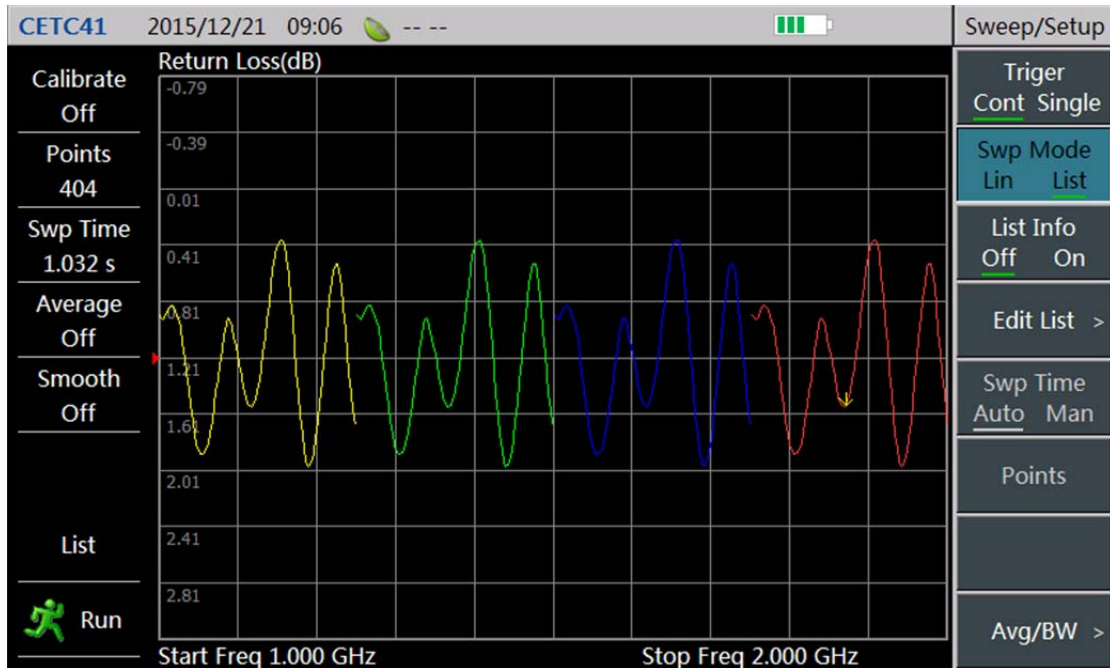
Each window can display different measurement types, with its independent marker function.



Double window display

- **List sweep**

The instrument supports list sweep function. Multiple frequency segments can be simultaneously measured, and each sweep segment can be set with different points and frequency rang. The list edit is convenient: directly click the parameters to be edited. Each segment can be opened or closed through “on/off” setting.



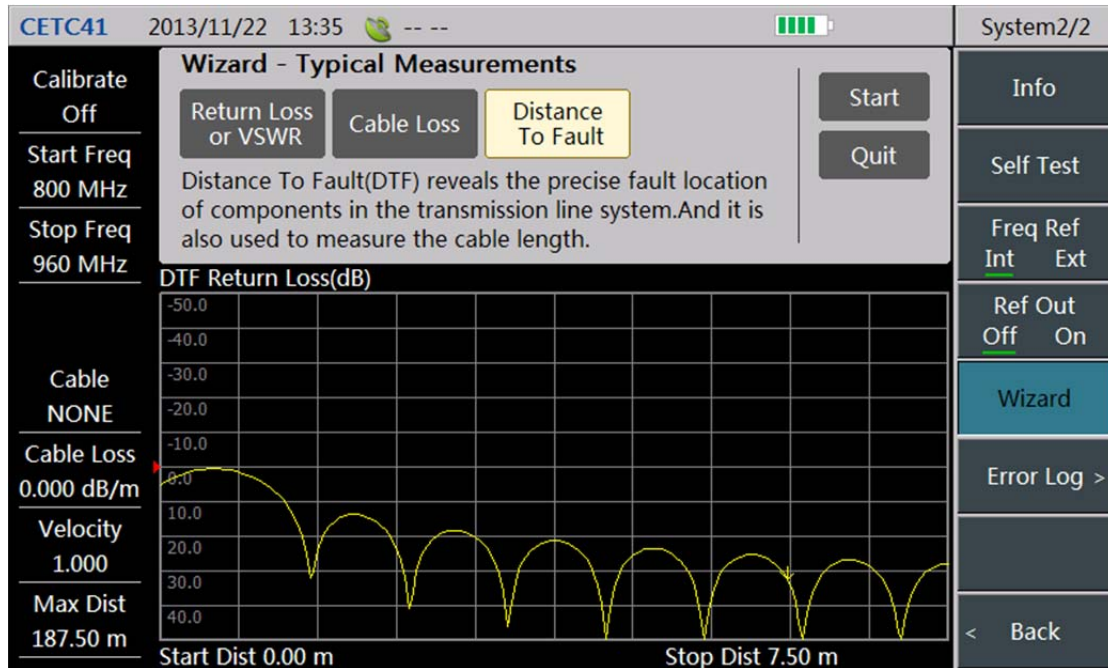
List sweep

Seg ID	Start Freq	Stop Freq	Points	On/Off
1	890.000 MHz	960.000 MHz	201	Off
2	1.000 GHz	1.200 GHz	101	On
3	890.000 MHz	960.002 MHz	101	Off
4	2.000 GHz	2.300 GHz	101	On
5	1.000 GHz	2.000 GHz	101	On
6	1.000 GHz	2.000 GHz	101	On

Edit list

- **Measurement wizard**

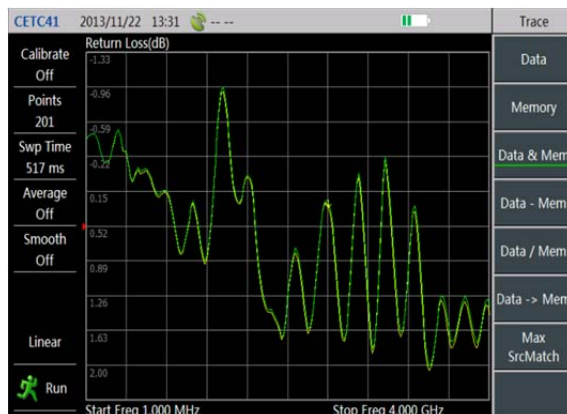
The measurement wizard illustrates the operation steps of typical measurements to guide users to finish the measurement and helps them to rapidly get familiar with the instrument operation.



Measurement wizard

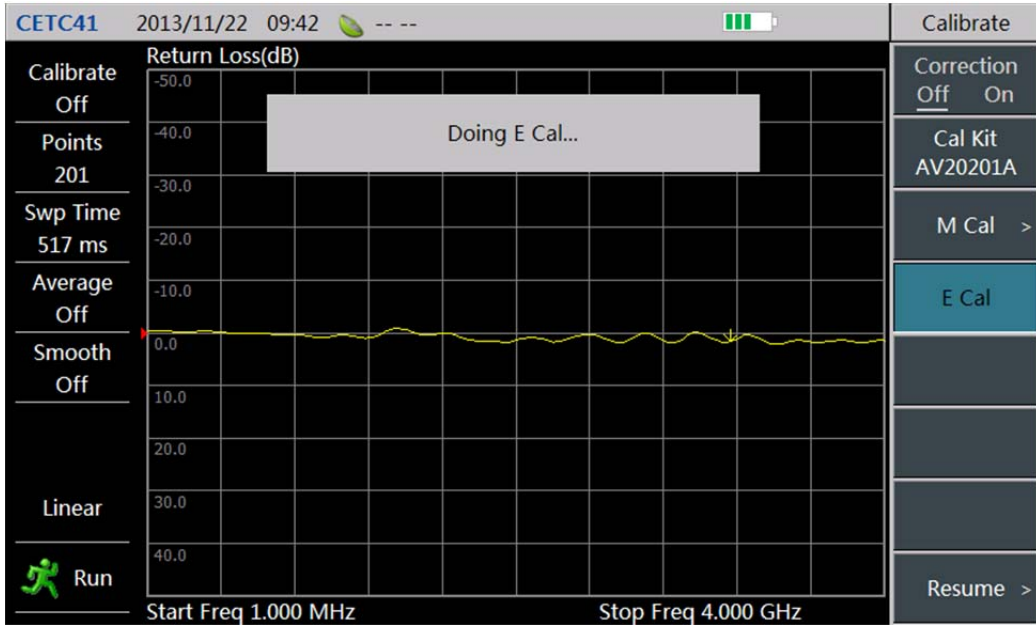
- **Data save/recall**

To save measurement traces or state, FLASH memory inside the instrument, SD card, and USB device are all available to choose.



- **Embedded electronic calibration**

3680A has embedded electronic calibration kit to realize “one-click” operation, without any external connection.



Embedded electronic calibration

- **Power measurement**

Power measurement option is provided, which can realize accurate power measurement along with external power sensor options.



Power measurement

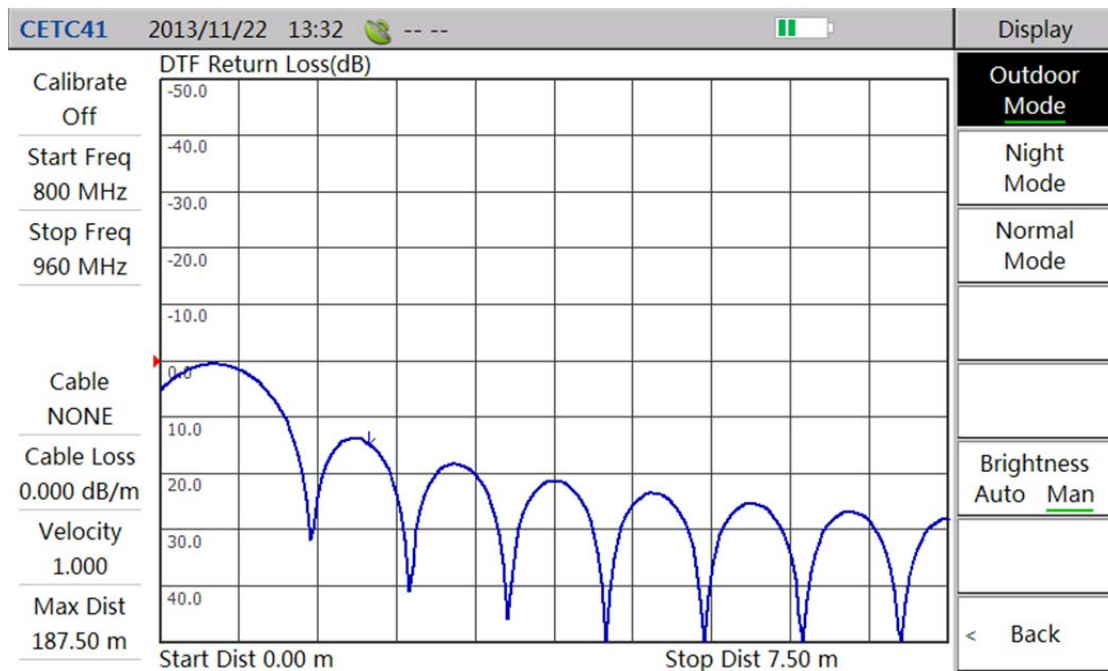
- **Resistant to wind & sand**

The instrument is suitable for field operation with its resistance to sand, dust, impact and vibration.



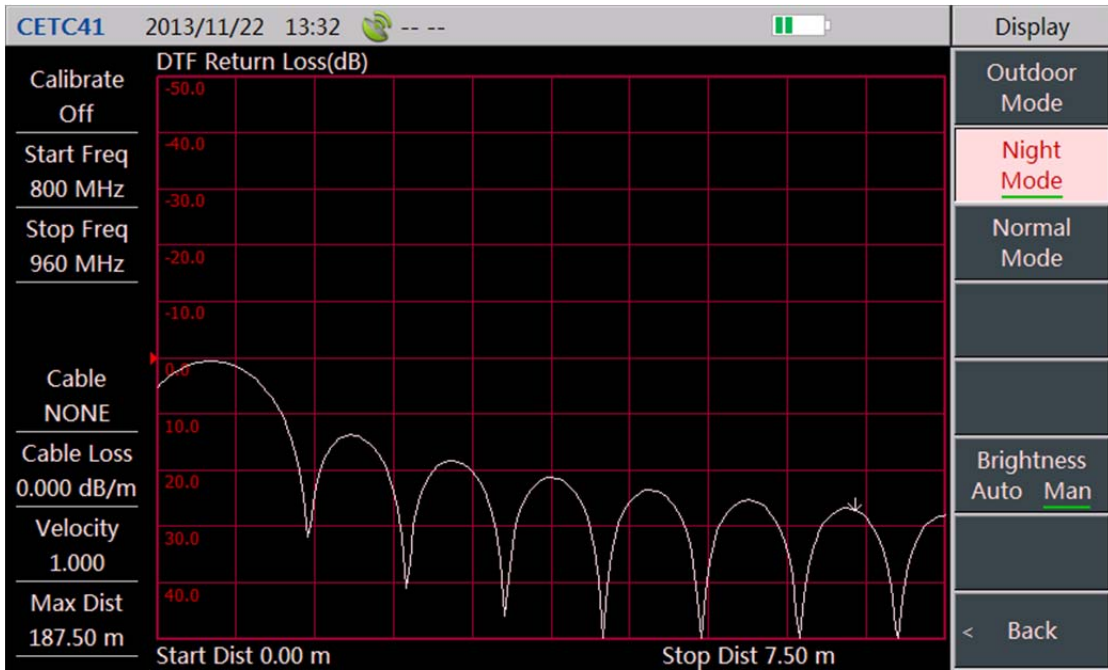
- **Multiple display modes**

The instrument has multiple display modes and function of screen brightness adjustment, which can offer the best display result in different environments.

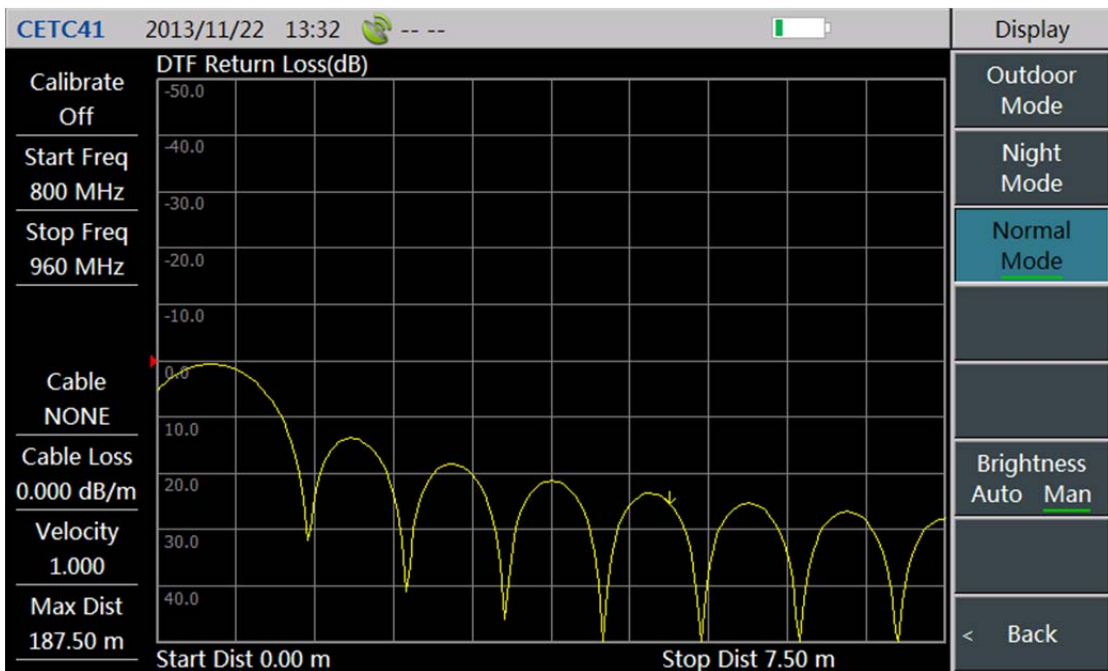


Outdoor mode





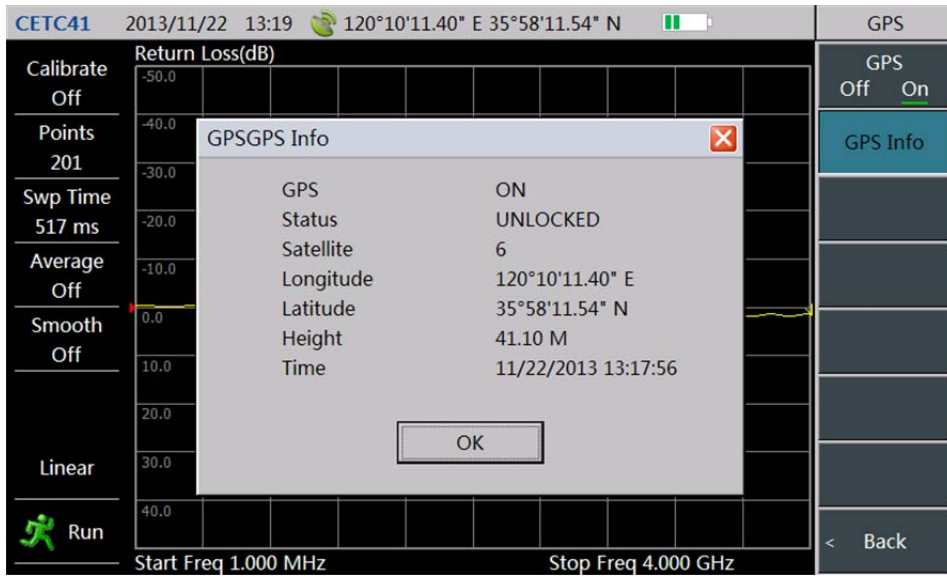
Night mode



Normal mode

- **GPS location**

The instrument has built-in GPS receiver, with which users can get the current location information through externally added GPS antenna.



GPS location

- **High-capacity battery**

The built-in high-capacity lithium-ion rechargeable battery can support 3680A to operate 8 hours and 3680B to operate 4 hours. The battery replacement is easy and convenient.



Battery replacement

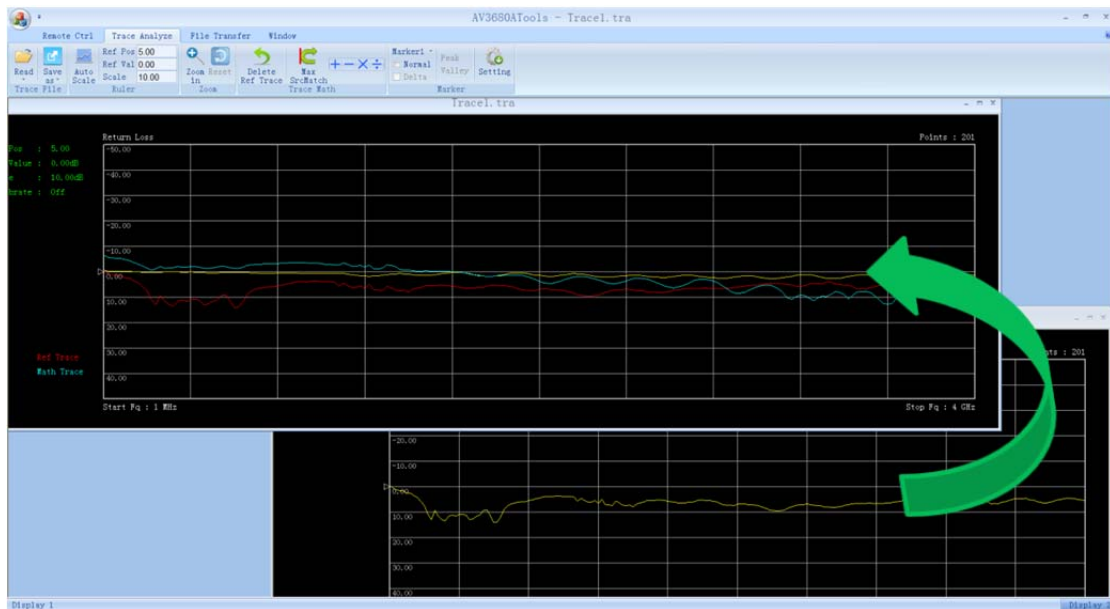
- **Remote operation & tool software**

The instrument can be connected to PC via USB or Ethernet to realize remote operation. Tool software is also provided for data analysis, real-time data acquisition, and curve save & recall.

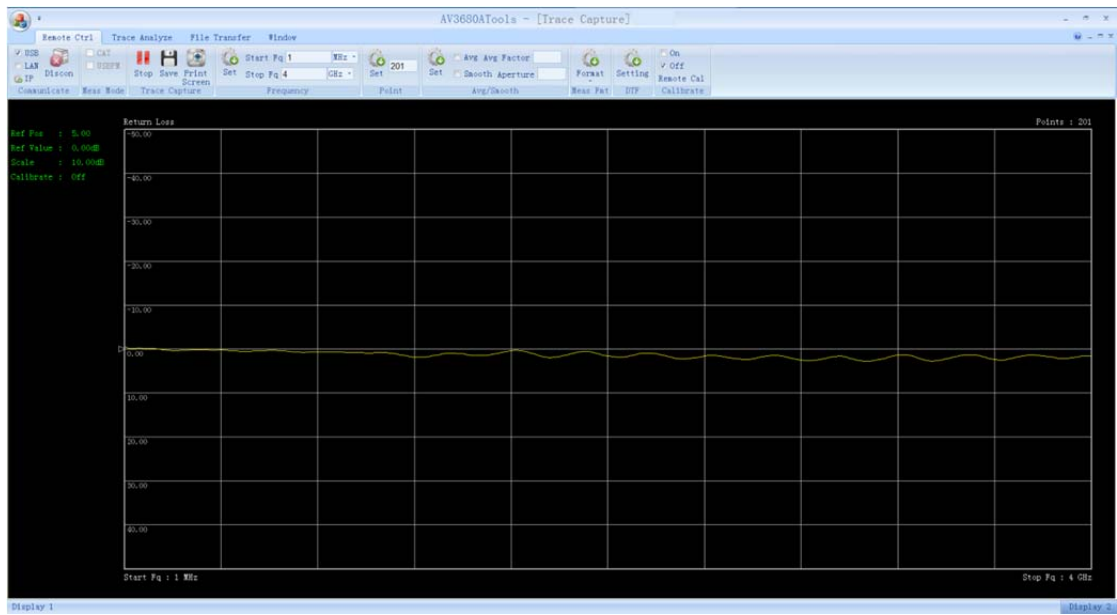


Remote operation

By trace dragging and comparison, traces from different windows can be moved to the same window for math operations.



Trace math operations

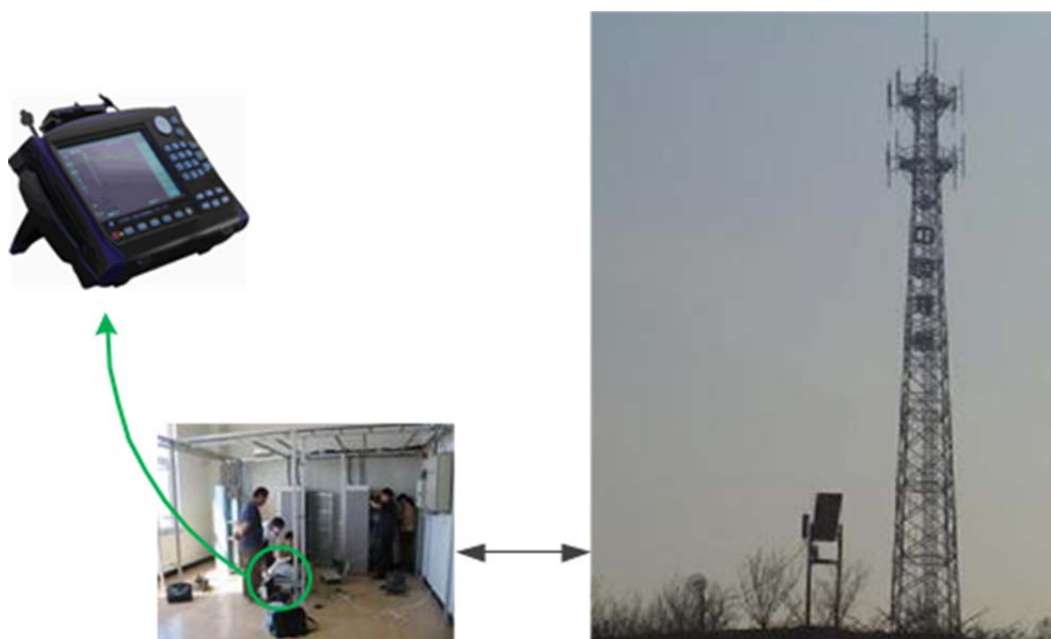


Data acquisition

## Typical Applications:

- **Performance measurement and maintenance of cable & antenna system**

3680A/B cable & antenna analyzer is developed for the daily measurement & maintenance of cable & antenna system, which can realize the measurement of VSWR, return loss, cable loss etc. It has unique FDR technique, and with functions of Distance-to-Fault (DTF) VSWR and Distance-to-Fault (DTF) return loss, it can precisely locate even tiny problems, and thus eliminate potential risks. During the installation, calibration and routine maintenance of the cable & antenna system, 3680A/B cable & antenna analyzer can help users to quickly estimate the status of the transmission and feed line system, which can improve the maintenance efficiency of the running base station and speed up the installation and calibration of new base stations.

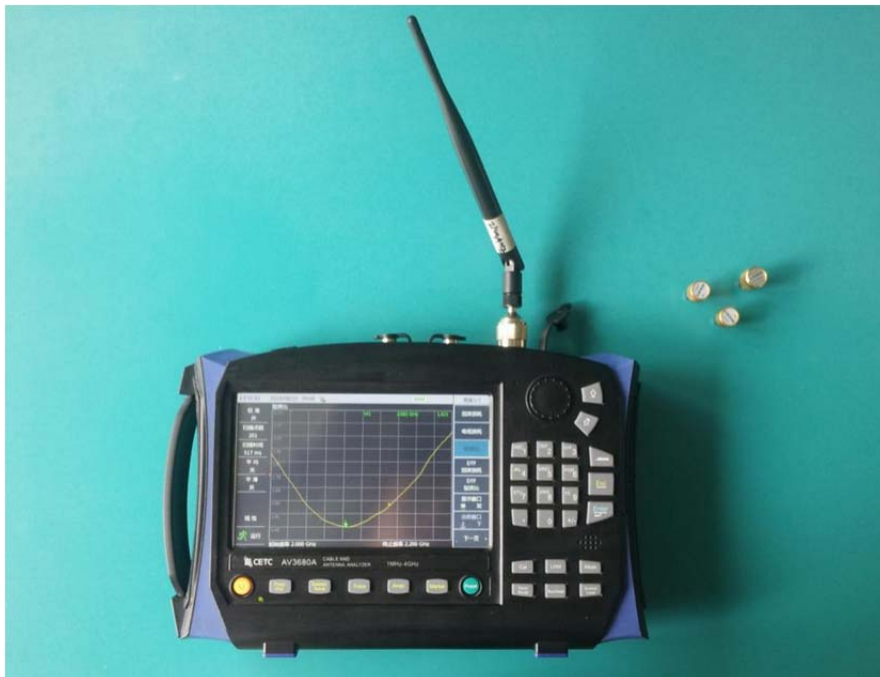


- **Cable & antenna performance measurement**

3680A/B cable & antenna analyzer offers multiple measurement modes to measure the cable loss, return loss, and VSWR of the cables.



Cable loss measurement



Antenna return loss/VSWR measurement

## Technical Specifications:

Model	3680A	3680B
Frequency range	1MHz~4GHz	1MHz~8GHz
Initial frequency error	$\pm 2 \times 10^{-6}$ (23°C)	$\pm 2.5 \times 10^{-6}$ (23°C)
Frequency temperature stability	$\pm 1 \times 10^{-6}/10^\circ\text{C}$ (23°C)	$\pm 1 \times 10^{-6}/10^\circ\text{C}$ (23°C)
Frequency resolution	1kHz	1kHz
Directivity	$\geq 42\text{dB}$ (mechanical calibration) $\geq 35\text{dB}$ (embedded electronic calibration)	$\geq 42\text{dB}$ (1MHz~6GHz) $\geq 36\text{dB}$ (6GHz~8GHz)
Source match	$\geq 31\text{dB}$ (mechanical calibration)	$\geq 31\text{dB}$
Reflection track	$\pm 0.08\text{dB}$ (mechanical calibration)	$\pm 0.08\text{dB}$
Battery capacity	8h (without embedded calibration option, 70% brightness) 6h (with embedded calibration option)	4h
Power consumption	$\leq 15\text{W}$ (no battery charging) $\leq 54\text{W}$ (battery charging)	$\leq 18\text{W}$ (no battery charging) $\leq 54\text{W}$ (battery charging)
Sweep time	1ms/frequency point (10kHz IF bandwidth)	
Power adapter	AC power: 110V (1 $\pm$ 10%) or 220V (1 $\pm$ 10%), 50Hz (1 $\pm$ 5%)	
Dimensions	295mm (W) $\times$ 205mm (H) $\times$ 70mm (D)	
Weight	2.5kg (with battery)	
Operation temperature	-10°C ~ +50°C	
Storage temperature	-40°C ~ +70°C	
Electromagnetic compatibility	Conforms to requirements of GJB3947A-2009 3.9.1	
Test port	Type N, female	
10MHz input/output port	BNC	
GPS antenna interface	BNC	



## Ordering Information:

- Main unit: 3680A cable & antenna analyzer (1MHz~4GHz)  
3680B cable & antenna analyzer (1MHz~8GHz)

- Standard accessories:


No.	Description	Remark
1	Power cord	Standard 3-core power cord
2	Power adapter	
3	Quick start guide	1 pc
4	PC tool software CD	
5	USB cable	
6	Built-in rechargeable lithium-ion battery	
7	Charger on vehicle	
8	Certificate of conformity	

- Options:

No.	Description	Function	Remark
3680A-001	English options		
3680A-002	User manual (in English)		
3680A-003	User manual (in Chinese)		
3680A-004	Programming manual (in Chinese)		
3680A-005	Programming manual (in English)		
3680A-006	USB power measurement	Power measurement	
3680A-007	AV87230 USB CW power sensor	9kHz~6GHz power sensor	
3680A-008	AV87231 USB CW power sensor	10MHz~18GHz power sensor	
3680A-009	AV87232 USB CW power sensor	50MHz~26.5GHz power sensor	
3680A-010	AV87233 USB CW power sensor	50MHz~40GHz power sensor	
3680A-011	Rechargeable lithium-ion battery	Spare battery	



3680A-012	N-type male calibration kit AV31101A	DC~18GHz calibration kit	
3680A-013	N-type female calibration kit AV31101B	DC~18GHz calibration kit	
3680A-014	N-type male calibration kit AV20201A	DC~9GHz calibration kit	
3680A-015	N-type female calibration kit AV20201B	DC~9GHz calibration kit	
3680A-016	Functional bag		
3680A-017	Carrying backpack		
3680A-018	Transportation case		
3680A-019	N-DIN adapter L29/N-KJ-T	N-DIN adapter	
3680A-020	N-DIN adapter L29/N-JJ-T	N-DIN adapter	
3680A-021	GPS antenna	GPS external antenna	
3680A-022	Low-loss cable N-JK (80cm)	test port extending cable	
3680A-023	Low-loss cable N-JJ (80cm)	test port extending cable	
3680A-024	purple cat5e cable (2m)	Point-to-point cable	
3680A-025	MicroSD Class4	8G	

3680A-026	Power adapter	Power adapter	
3680A-027	Embedded electronic calibration kit	Built-in	Only for 3680A
3680A-028	Economical calibration kits (male) AV20201AE	DC~9GHz calibration kit	
3680A-029	Economical calibration kits (female) AV20201BE	DC~9GHz calibration kit	

**3680A/B cable & antenna analyzer options:**



3680A/B main options



3680A-008 AV87231 USB CW power sensor



3680A-011 HY-2040 rechargeable lithium-ion battery



3680A-012 AV31101A N-type male calibration kit



3680A-016 functional bag



3680A-017 carrying backpack



3680A-019 L29/N-KJ-T N-DIN adapter



3680A-021 GPS antenna



3680A-022 low-loss cable N-JK(80cm)



3680A/B-023 low-loss cable N-JJ(80cm)



3680A-024 purple cat5e cable (2m)



3680A-025 MicroSD Class4 (8G)





3680A-026 power adapter