AV3680A/B Cable & Antenna Analyzer

(1MHz～4GHz/8GHz)

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, AV3680A/B cable & antenna analyzer has advantages of high-speed, high-accuracy, compact, lightweight, battery-powered, touch screen operation, automatic adjustment of backlight brightness.Besides testing VSWR, return loss, characteristic impedance, and phase, it can precisely locate the fault points as well.

AV3680A/B cable & antenna analyzer is developed for on-site test, which is mainly used for the tset of cable & antenna system in various communication base stations, includingtrunking, 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 analyser can help users to quickly estimate the status of the tramission and feed line system, improve the maintenance effieicncy 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, teching and manufacturing.

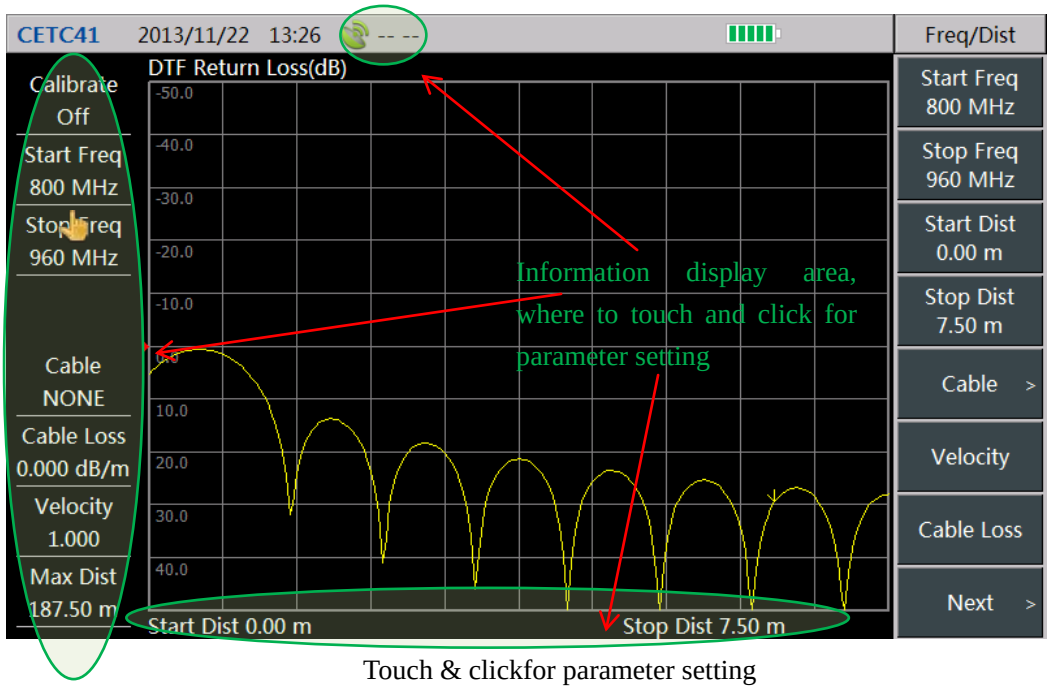
Main Features:

- **Support multiple measurements**

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

- **Touch screen operation**

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



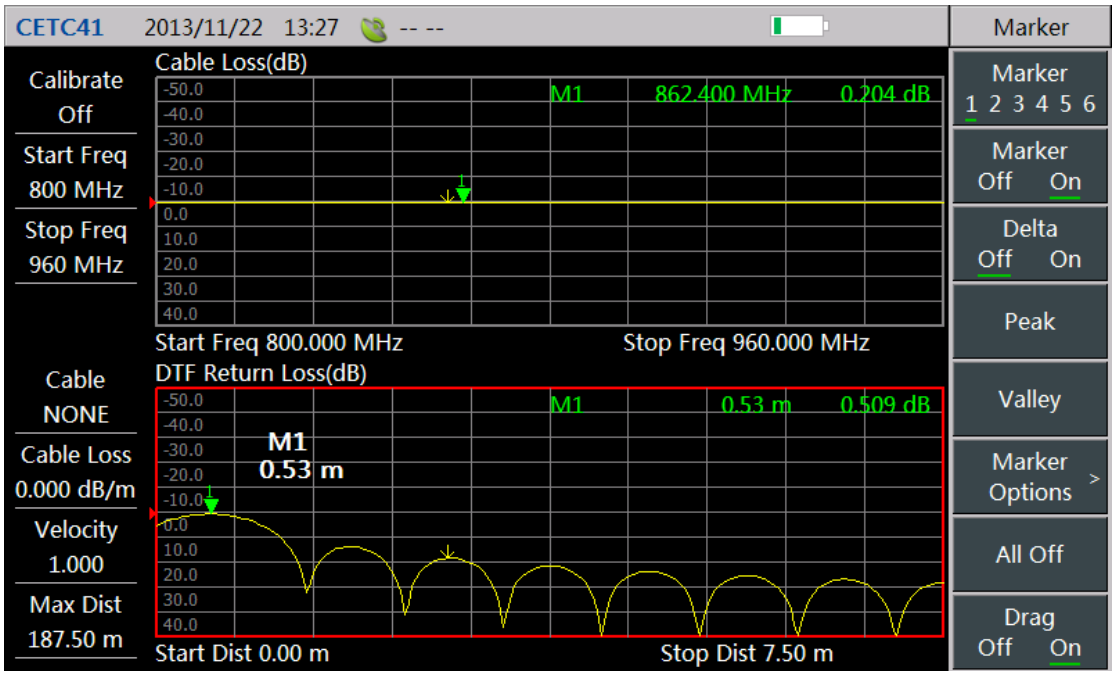
Touch & clickfor parameter setting

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

Finger sliding to switch measurement types

- **Double window display**

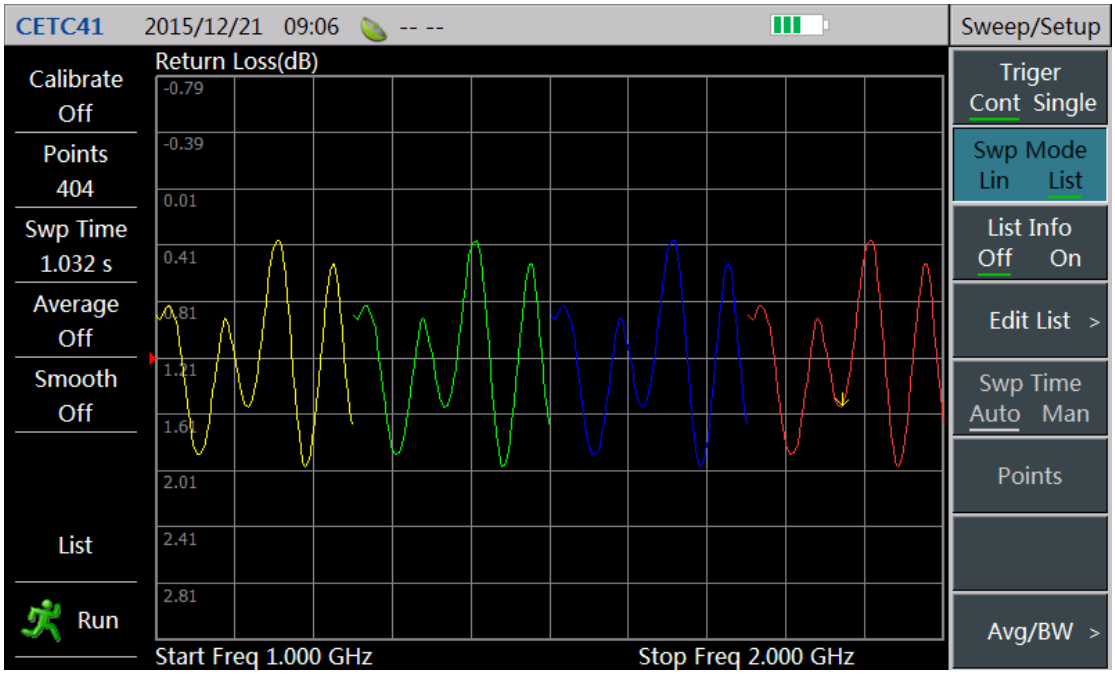
Each window can display different measurement types, with its independent marker function.



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 range. The list edit is convenient: directly click the parameters to be edited. Each segment can be opened or closed through “on/off” setting.

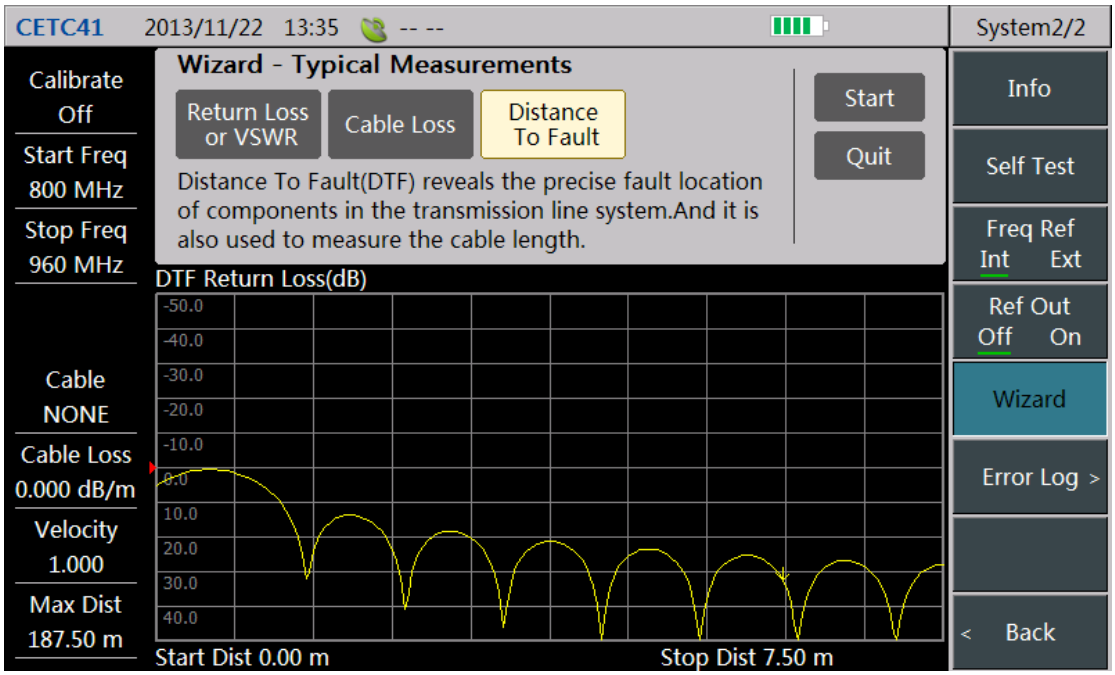


List sweep

Edit list

- **Measurement wizard**

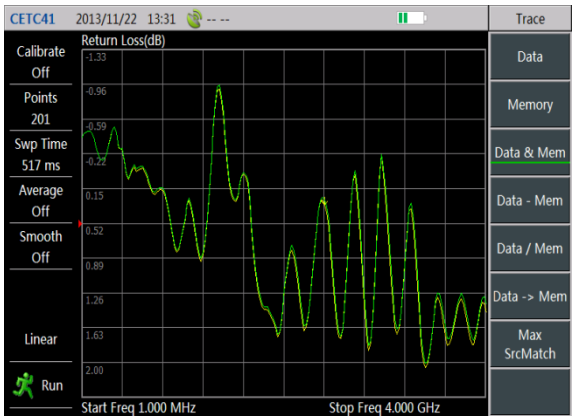
The measurement wizard illustrates the operation steps of typical measurements to guide users to finish the measurement and helps them to rapidly get familiar with the instrument operation.



Measurement wizard

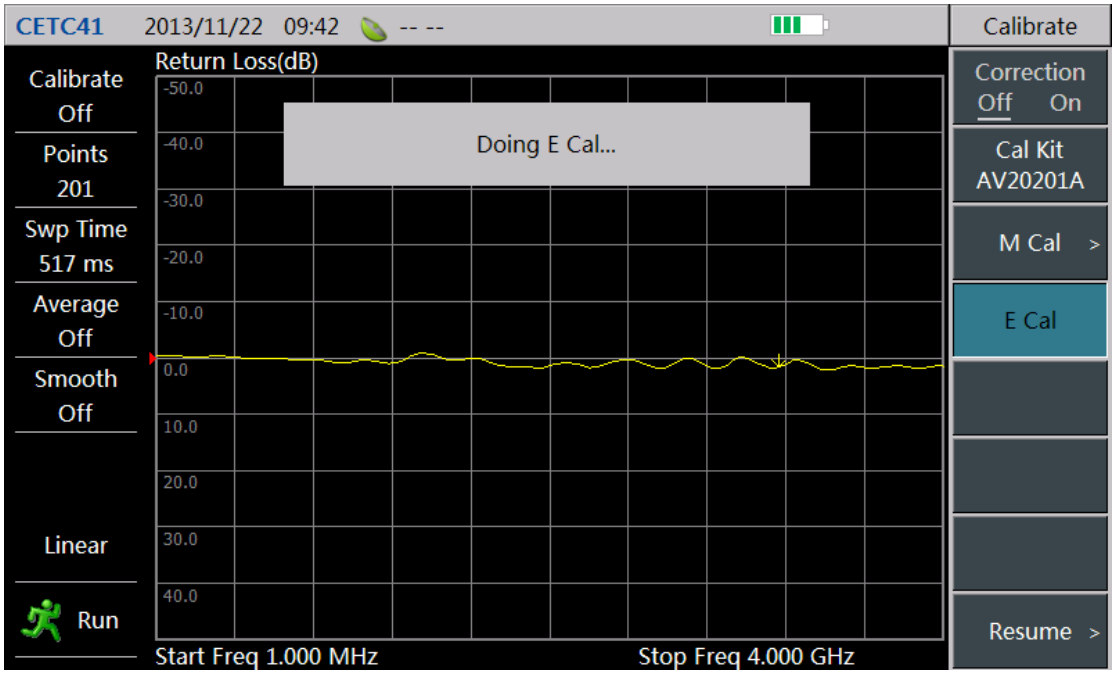
- **Data save/recall**

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



- **Embedded electronic calibration**

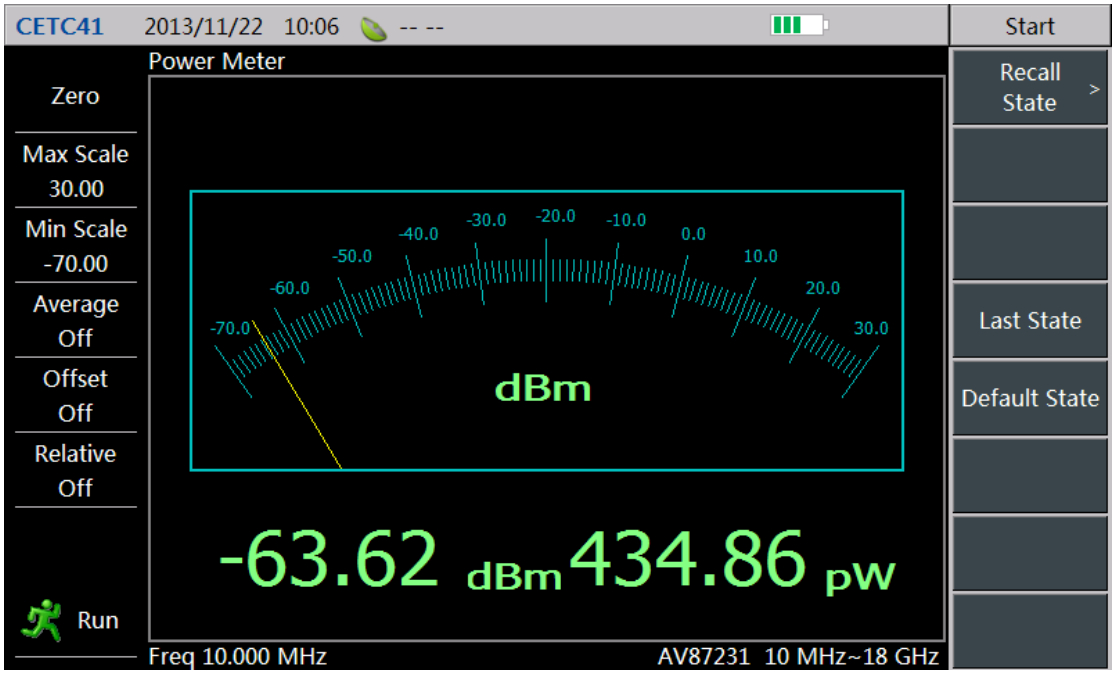
AV3680A has embedded electronic calibration kit to realize “one-click” operation, without any external connection.



Embedded electronic calibration

- **Power measurement**

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



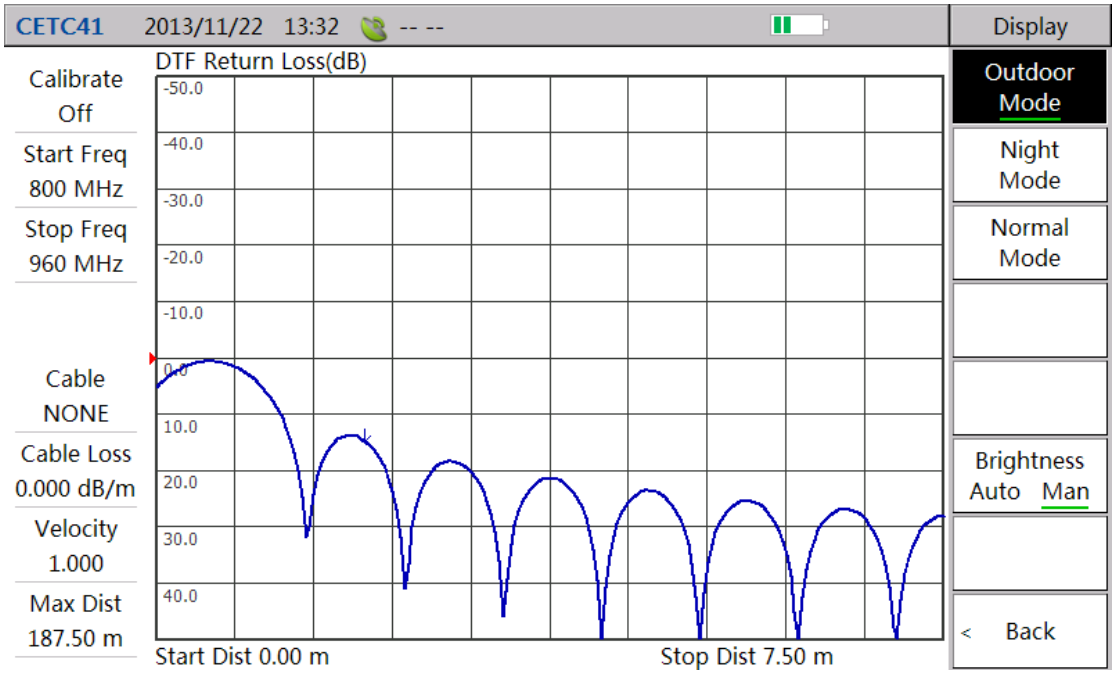
Power measurement

- **Resistant to wind & sand**

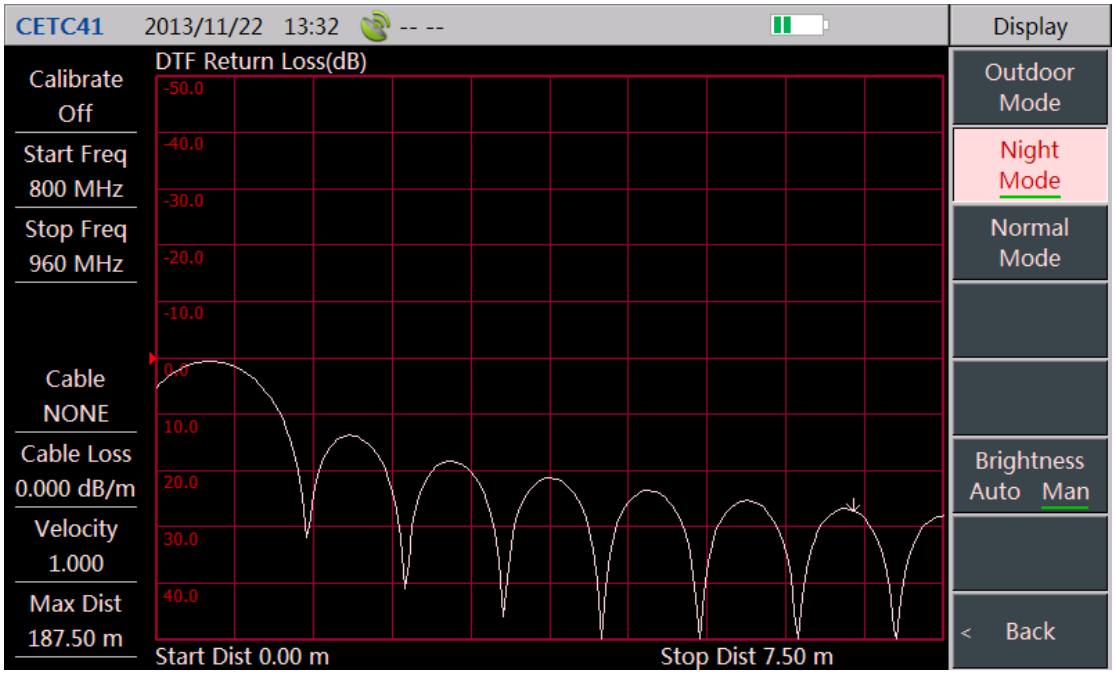
The instrument is suitable for field operation with its resistance to sand, dust, impact and vibration.

- **Multiple display modes**

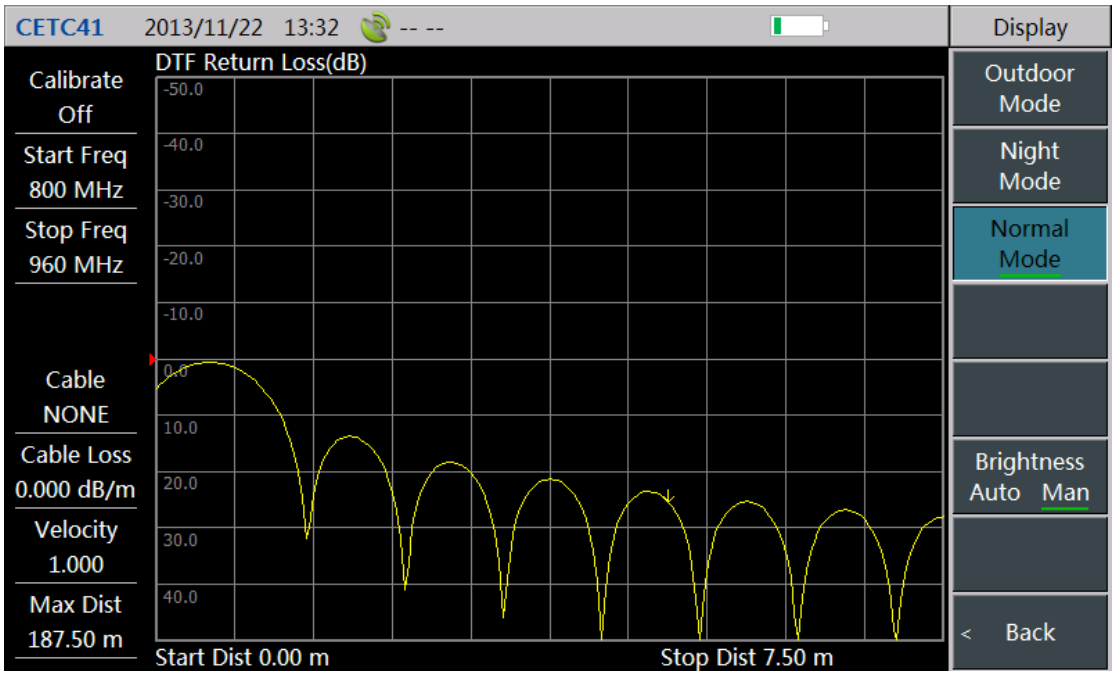
The instrument has multiple display modes and function of screen brightness adjustment, which can offer the best display result in different environments.



Outdoor mode



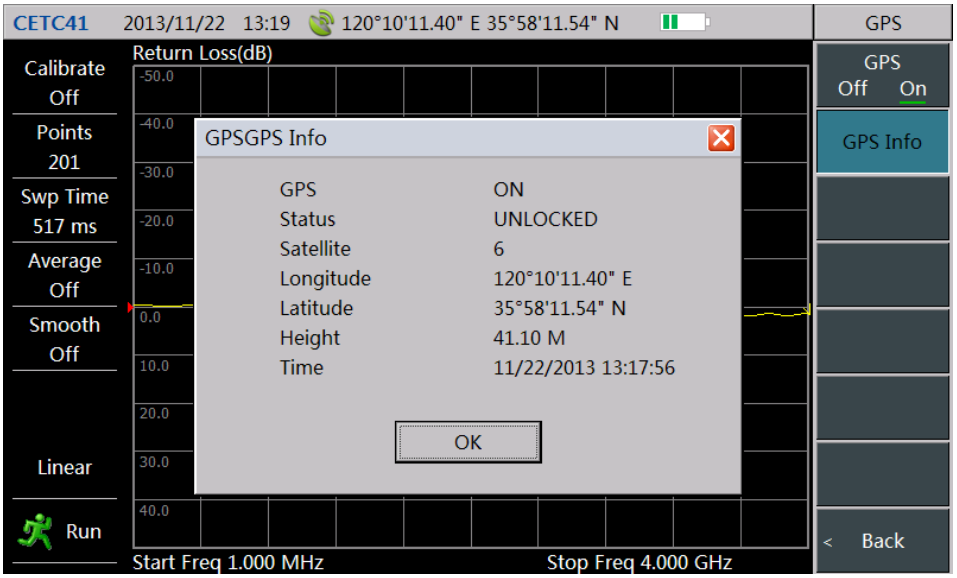
Night mode



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 AV3680A to operate 8 hours and AV3680Bto operate 5 hours. The battery replacement is easy and convenient.

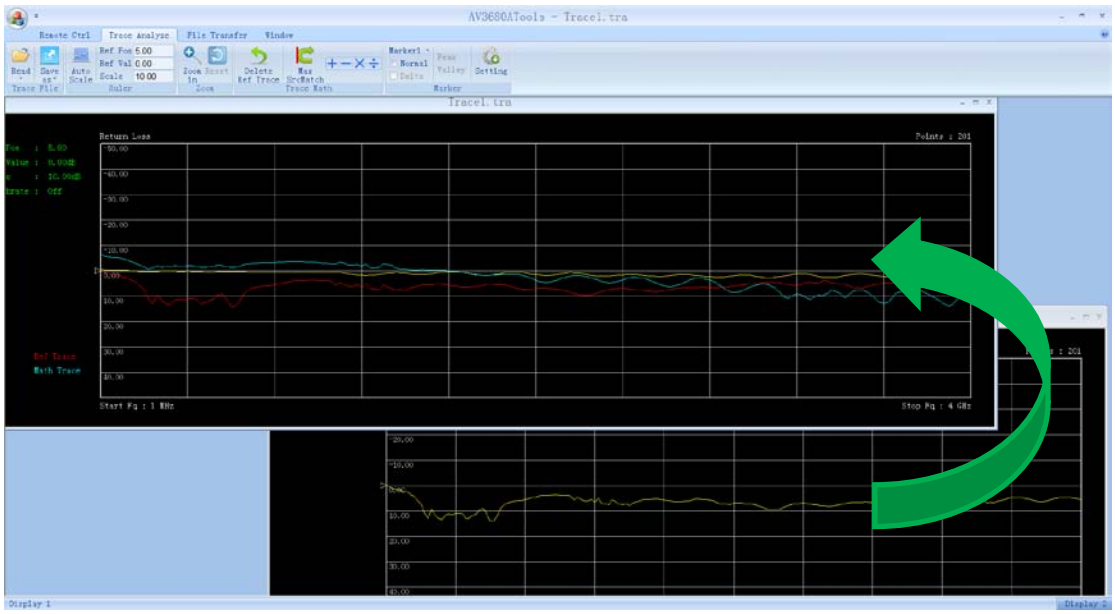
Battery replacement

- **Remote operation& tool software**

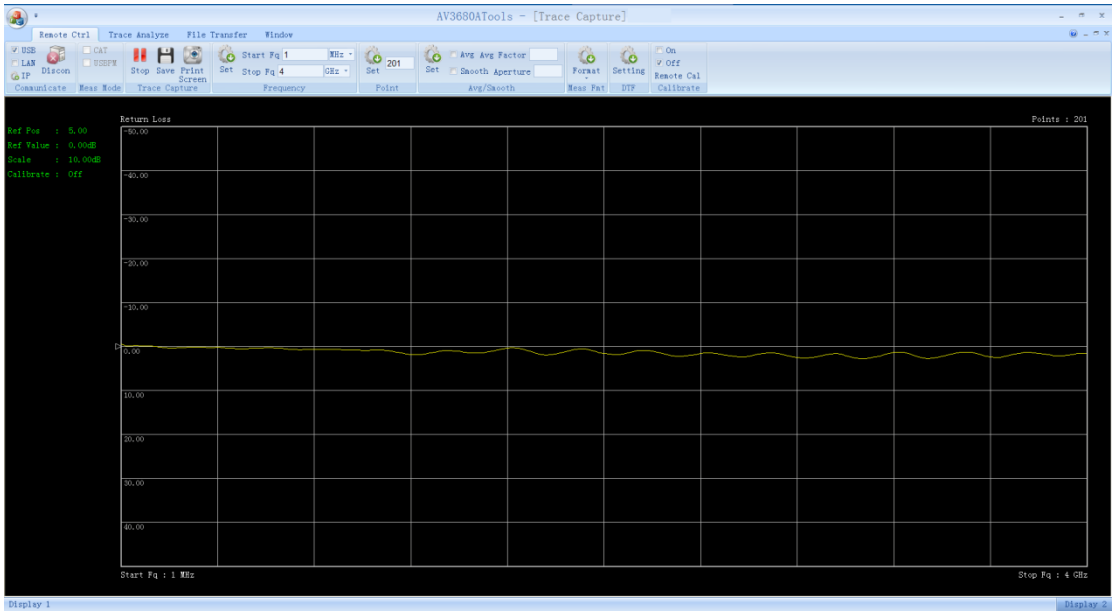
The instrument can be connected to PC via USB or Ethernet to realize remote operation. Tool software is also provided for data analysis, real-time data acquisition, and curve save & recall.

Remote operation

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



Trace math operations

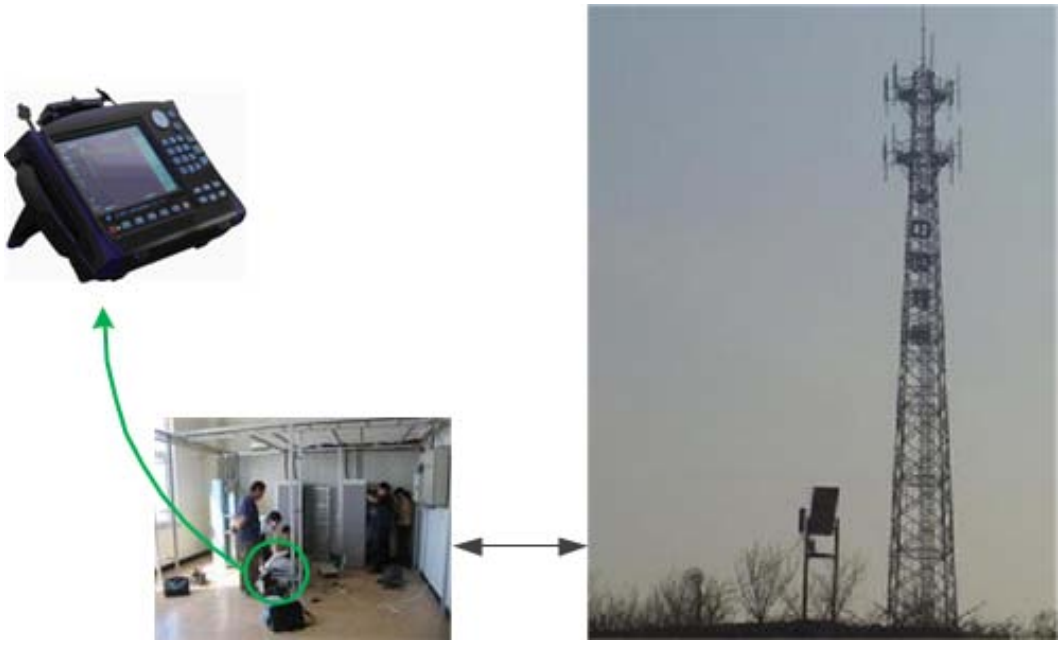


Data acquisition

Typical Applications:

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

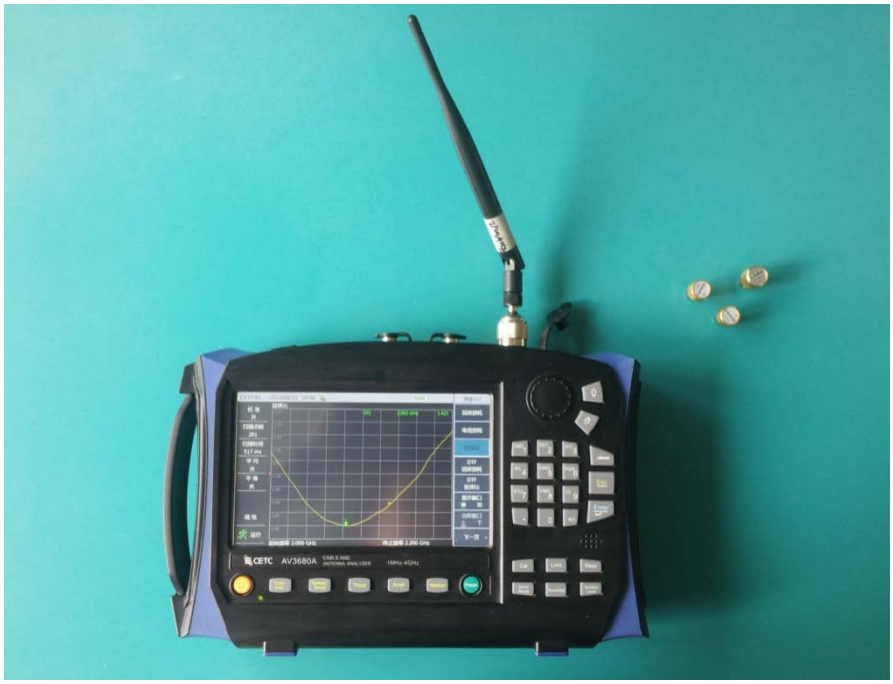
AV3680A/B cable & antenna analyzer is developed for the daily measurement &maintenance of cable & antenna system, which can realize the measurement of VSWR, return loss, cable loss etc. It has unique FDR technique, and with functions of Distance-to-Fault (DTF) VSWR and Distance-to-Fault (DTF) return 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, AV3680A/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**

AV3680A/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	AV3680A	AV3680B
Frequency range	1MHz～4GHz	1MHz～8GHz
Initial frequency error	$\pm 2\times 10^{-6}$ (23℃)	$\pm 2.5\times 10^{-6}$ (23℃)
Frequency temperature stability	$\pm 1\times 10^{-6}$/10℃ (relative to 23℃)	$\pm 1\times 10^{-6}$/10℃ (relative to 23℃)
Frequency resolution	1kHz	1kHz
Directivity	≥42dB (mechanical calibration) ≥35dB (embedded electronic calibration)	≥42dB（1MHz～6GHz） ≥36dB（6GHz～8GHz）
Source match	≥31dB (mechanical calibration)	≥31dB
Reflection tracking	±0.08dB (mechanical calibration)	±0.08dB
Battery capacity	8h (without embedded calibration option, 70% brightness) 6h (with embedded calibration option)	5h
Power consumption	≤15W (no battery charging) ≤54W(battery charging)	≤18W (no battery charging) ≤54W (battery charging)
Sweep time	1ms/frequency point (10kHz IF bandwidth)	
Power adapter	AC power: 110V (1±10％) or 220V (1±10％), 50Hz (1±5％)	
Dimensions	295mm (W)×205mm (H)×70mm (D)	
Weight	2.5kg (with battery)	
Operation temperature	-10℃～+50℃	
Storage temperature	-40℃～+70℃	
Electromagnetic compatibility	Conforms to requirements of GJB3947A-20093.9.1	
Test port	Type N, female	
10MHz input/output port	BNC	
GPS antenna interface	BNC	

Ordering Information:

- Main unit: AV3680Acable & antenna analyzer (1MHz~4GHz)

  AV3680Bcable & antenna analyzer (1MHz~8GHz)

- Standard accessories:

No.	Description	Remarks
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
AV3680A-001	English options		
AV3680A-002	User manual (in English)		
AV3680A-003	User manual (in Chinese)		
AV3680A-004	Programming manual (in Chinese)		
AV3680A-005	Programming manual (in English)		
AV3680A-006	USB power measurement	Power measurement	
AV3680A-007	AV87230 USBCW power sensor	9kHz～6GHzpower sensor	
AV3680A-008	AV87231 USB CW power sensor	10MHz～18GHz power sensor	
AV3680A-009	AV87232 USBCW power sensor	50MHz～26.5GHzpower sensor	
AV3680A-010	AV87233 USBCW power sensor	50MHz～40GHzpower sensor	
AV3680A-011	Rechargeable lithium-ion battery	Spare battery	

AV3680A-012	N-type male calibration kitAV31101A	DC～18GHzcalibration kit	
AV3680A-013	N-type female calibration kitAV31101B	DC～18GHzcalibration kit	
AV3680A-014	N-type male calibration kitAV20201A	DC～9GHzcalibration kit	
AV3680A-015	N-type female calibration kitAV20201B	DC～9GHzcalibration kit	
AV3680A-016	Functional bag		
AV3680A-017	Carrying backpack		
AV3680A-018	Transportation case		
AV3680A-019	N-DINadapterL29/N-KJ-T	N-DINadapter	
AV3680A-020	N-DINadapterL29/N-JJ-T	N-DINadapter	
AV3680A-021	GPS antenna	GPS external antenna	
AV3680A-022	Low-loss cableN-JK(80cm)	test port extending cable	
AV3680A-023	Low-loss cableN-JJ(80cm)	test port extending cable	
AV3680A-024	purple cat5e cable(2m)	Point-to-point cable	
AV3680A-025	MicroSD Class4	8G	

AV3680A-026	Power adapter	Power adapter	
AV3680A-027	Embedded electronic calibration kit	Built-in	Only for AV3680A
AV3680A-028	Economical calibration kit (male) AV20201AE	DC～9GHzcalibration kit	
AV3680A-029	Economical calibration kit(female) AV20201BE	DC～9GHz calibration kit	

AV3680A/B cable & antenna analyzer options:

AV3680A/Bmain options

AV3680A-008 AV87231 USB CW power sensor

AV3680A-011 HY-2040rechargeable lithium-ion battery

AV3680A-012 AV31101A N-type male calibration kit

AV3680A-016functional bag

AV3680A-017 carryingbackpack

AV3680A-019 L29/N-KJ-T N-DIN adapter

AV3680A-021GPS antenna

AV3680A-022low-loss cable N-JK (80cm)

AV3680A/B-023low-loss cable N-JJ (80cm)

AV3680A-024 purple cat5e cable (2m)

AV3680A-025MicroSD Class4 (8G)

AV3680A-026power adapter

Foreign products to be substituted:

The foreign product that AV3680A cable & antenna analyzer can substitute is: Anritsu S331L.
The performance comparison is shownas below:

Index	CETC 41st AV3680A	Anritsu S331L
Frequency range	1MHz~4GHz	2MHz~4GHz
Frequency resolution	1kHz	1kHz
Frequency accuracy	±2ppm	±5ppm
Measurement speed	1ms/frequency point (10kHz IF bandwidth)	1ms/data point
Data points	2~4001, default: 201	130, 259, 517, 1033
Effective directivity	≥42dB (mechanical calibration) ≥35dB (embedded electronic calibration)	≥42dB (OSL calibration) ≥38dB (Insta calibration)
Storage	Inside the instrument SD card USB device	Inside the instrument USB device
Operation temperature	-10℃~+50℃	-10℃~+55℃
Storage temperature	-40℃~+70℃	-40℃~+71℃
Battery capability	≥8h (70% brightness)	≥8h (70% brightness)
Dimensions	295mm× 205mm×70mm (with handles)	250mm×177mm×60mm
Weight	2.5kg (with battery)	2.0kg (with battery)
Display	7.0 inch touch screen	7.0 inch touch screen
Appearance		

The foreign product that AV3680B cable & antenna analyzer can substitute is: Anritsu S361E；
The performance comparison is shownas below:

Index	CETC 41st AV3680B	Anritsu S361E
Frequency range	1MHz~8GHz	2MHz~6GHz
Frequency resolution	1kHz	1kHz
Frequency accuracy	±2.5ppm	±2.5ppm
Measurement speed	1ms/frequency point (10kHz IF bandwidth)	1ms/data point
Data points	2~4001, default: 201	137, 275, 551, 1102, 2204
Effective directivity	≥42dB (1MHz~6GHz) ≥36dB (6GHz~8GHz)	≥42dB (1MHz~6GHz)
Storage	Inside the instrument SD card USBdevice	Inside the instrument SD card USBdevice
Operation temperature	-10℃~+50℃	-10℃~+55℃
Storage temperature	-40℃~+70℃	-40℃~+71℃
Battery capability	≥5h	≥4.5h
Dimensions	295mm× 205mm×70mm (with handles)	273mm×199mm×91mm
Weight	2.5kg (with battery)	2.71kg (with battery)
Display	7.0 inch touch screen	8.4 inch touch screen
Appearance