



# 3681B/BU Cable & Antenna Analyzer (300kHz~9GHz)



**3681B cable & antenna analyzer**



**3681BU cable & antenna analyzer**

**Ceyear Technologies Co., Ltd.**

# Product Overview

The Ceyear 3681 series cable and antenna analyzer has a frequency range of 300 kHz to 9 GHz and can test parameters including cable loss, VSWR and return loss. It can also identify minor issues through its VSWR or return loss fault location function, thereby eliminating potential faults.

The 3681B features a compact, lightweight design for easy transport and operation in confined spaces. With a 10.1-inch LCD touchscreen, it provides an intuitive interface for enhanced field testing efficiency.

The 3681BU cable and antenna analyzer works based on USB 3.0 bus communications. Compact, efficient and flexible, it is ideal for applications requiring high mobility and portability in test systems, such as communication and RF component testing. It is also applicable in scenarios requiring high automation and test efficiency.

## Main Features

- **Practical antenna and feeder analysis**

The return loss and 1-port cable loss can be tested.

The distance to fault (DTF) function is provided.

The TDR cable analysis capability can be used to determine the location and nature of the fault (e.g. short circuit or open circuit).

- **Supporting embedded calibration**

Test efficiency can be improved by implementing one-button calibration without the need for external calibration kits.

- **Flexible optical time-domain reflectometer and optical power meter**

**Optical time-domain reflectometer:**

Fiber type G.652, single mode 9/125, measured

Wavelength 1310nm±20nm & 1550nm±20nm, dynamic range value 38dB (typical)

**Optical power meter:**

Calibration wavelength: 850/980/1270/1300/1310/1490/1550/1577/1625/1650nm,

Measurement range: -50dBm ~+20dBm (typical) (single optical port shared with OTDR)

- **Convenient use**

10.1" LCD and capacitive touch screen are provided, and marker dragging is supported

8 independent cursors, 4 display windows, 8 display traces

- **Good field adaptability**

Operating temperature:  $-10^{\circ}\text{C} \sim 55^{\circ}\text{C}$ , storage temperature:  $-40^{\circ}\text{C} \sim 70^{\circ}\text{C}$

3681B weight (excluding battery): approx. 1.3kg

3681BU weight: approx. 0.4kg

Three display modes, including Default, Outdoor, and Night mode

Built-in high-capacity lithium-ion battery, a typical battery life of 4 hours

## Extensive test function modes and options

### Antenna and feeder analysis:

The 3681 cable & antenna analyzer supports measurement of return loss, VSWR, impedance, cable loss, and distance to faults of cables, feeders, and other DUTs, among which the measurement of return loss and distance to faults will help the user determine the specific causes of performance degradation of the antenna and feeder system. The antenna and feeder analysis function supports TDR test to analyze the types of cable faults. In addition, the instrument is also built in with some commonly used parameters of cables and feeders for ease of use.



### USB power measurement (option):

The 3681B cable & antenna analyzer can be used to measure continuous wave signal up to 67GHz when connected to external Ceyear 87233C/D/E/F/LUSB continuous wave power sensors or 87235B/C/D/F/FA/H/LUSB average power sensors.



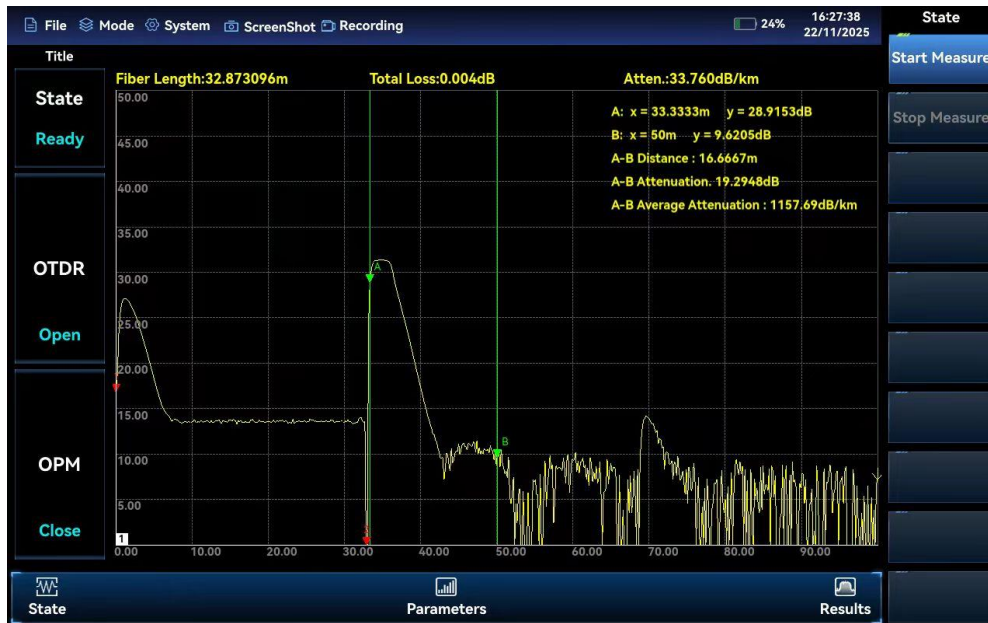
### USB peal power measurement (option):

The 3681B cable & antenna analyzer, when connected via USB interface to external Ceyear 87234D/E/F/L USB peak power sensors and 87236D/E/F/L USB peak power sensors, can be used to measure RF/microwave signals up to 67 GHz, enabling pulse power measurements with a large dynamic range.



### Optical time domain reflectometer (option):

The optical time-domain reflectometer of the 3681B cable & antenna analyzer, when connected to an external USB optical time-domain reflectometer, can be used to locate and analyze optical fiber fault points and measure optical power.



## Typical applications

- **Field comprehensive performance evaluation of electronic equipment**

The 3681B cable and antenna analyzer has many advantages, including a high performance index, fast sweep speed and simple operation. It is handheld, small and lightweight, and has excellent environmental adaptability. It can be powered by batteries and is ideal for the field installation, commissioning and maintenance of electronic equipment.

- **Multi-parameter testing for cable TV, wireless communication, etc.**

The 3681 series cable & antenna analyzer is applicable to operators and equipment manufacturers in cable TV, cellular phone systems, digital mobile telecommunication operators and equipment manufacturers for on-site integrated tests of antenna and feeder contact performance, component S-parameters and feedthrough power.

- **Building of multi-channel S11 parameter test system**

The 3681BU cable & antenna analyzer is a compact, efficient and flexible USB bus module product. It can be used to build multi-channel S11 parameter test systems on production lines, providing users with a low-cost S11 parameter test system integration solution.

# Technical specifications

<b>Model</b>	3681B: 300kHz to 9GHz 3681BU: 300kHz to 9GHz
<b>Frequency accuracy</b>	±1.0ppm
<b>IFBW</b>	3Hz, 10Hz, 30Hz, 100Hz, 300Hz, 1kHz, 3kHz, 10kHz, 30kHz, 100kHz
<b>Reflection tracking</b>	±0.08dB (300kHz≤f≤9GHz)
<b>Valid directivity</b>	≥42dB (300kHz≤f≤6GHz) ≥36dB (6GHz<f≤9GHz)
<b>Valid source matching</b>	≥31dB (300kHz≤f≤9GHz)
<b>Size</b>	3681B Nominal dimensions (W × H × D): (258.3±2.5) mm × (179.4±2.5) mm × (37.0±1.5) mm (excluding dust plug, connectors, and side straps) 3681BU Nominal dimensions (W × H × D): (167±1.2) mm × (75±0.8) mm × (24.5±0.5) mm, excluding interface plug.
<b>Weight</b>	3681B: ≤1.3kg (excluding built-in battery) 3681BU: ≤0.4kg
<b>Operating temperature</b>	-10°C to +55°C
<b>Saving temperature</b>	-40°C to +70°C
<b>Electromagnetic compatibility</b>	Comply with relevant requirements of 3.9.1 in GJB 3947A-2009
<b>Power input type</b>	3681B: AC power adapter: input voltage 100V~240V AC, 50Hz/60Hz; Output voltage: 15V DC, 1.5A Built-in Li-ion battery: nominal voltage 7.2V 3681BU: AC power adapter: input voltage 100V~240V AC, 50Hz/60Hz; Output voltage: 5V DC, 2.0A
<b>Battery power endurance time</b>	Typical value 4h
<b>Test port</b>	3681B/BU: N-type female adapter
<b>Other interface</b>	3681B: GPS antenna interface: SMA female (option) 3681BU: Trigger input: MMCX Trigger output: MMCX
<b>Communication and auxiliary interfaces</b>	3681B: USB interface: USB Type C interface * 1 Memory card: Micro SD card 3681BU: USB interface: USB Type C interface * 2

# Ordering Information

- **Mainframe**

Model	Name	Frequency range
3681B	Cable & antenna analyzer	300kHz-9GHz
3681BU	Cable & antenna analyzer	300kHz-9GHz

- **Standard**

**3681B cable & antenna analyzer:**

No.	Name	Quantity	Description
1	Power cord	1	
2	Rechargeable li-ion battery	1	
3	Power adapter	1	
4	Quick start guide	1	Quick start guide
5	Product certificate	1	Certificate of conformity

**3681BU cable & antenna analyzer:**

No.	Name	Quantity	Description
1	Communication cable assembly	2	
2	Quick start guide	1	Quick start guide
3	Product certificate	1	Certificate of conformity

- **3681B option**

No.	Option No.	Option name	Function
1	3681-01	English version options	Including English signs, menus and quick start guide.
2	3681-02	User' manual (Chinese version)	User' manual (Chinese version).
3	3681-03	User' manual (English version)	User' manual (English version).
4	3681-04	Programmed control manual (Chinese version)	Programming manual (Chinese version).
5	3681-05	Programmed control manual (English version)	Programming manual (English version).
6	3681-S01	USB power meter	It provides power measurement function and requires use with external USB continuous wave power sensors 87233C/D/E/F/L and USB average power sensors 87235B/C/D/F/FA/H/L.

No.	Option No.	Option name	Function
7	3681-S02	USB peak power measurement	It provides peak power measurement function and requires use with the 87236D/E/F/L USB peak/average power sensor.
8	3681-S32	TDR	Analysis of the location and nature of cable faults
9	3681-S34	Optical time domain reflectometer	Optical time-domain reflectometer and optical power meter functions
10	3681-S38	Embedded electronic calibration	
11	3681-H01	GPS/Beidou function	GPS or BSD positioning when an external antenna is connected.
12	3681-H02	WiFi wireless communication	Wireless data transmission and communication with external devices.
13	3681-H06	Power adapter	Power adapter
14	3681-H07	Rechargeable li-ion battery	Backup battery pack, with nominal voltage of 7.2V and battery capacity of 9900mAh
15	3681-H11	Memory card	Mrico SD card, with capacity of 128G.
16	3681-H12	Type-C 10-in-1 docking station	For communication interface expansion.
17	3681-H14	Type-C to USB adapter	It is a USB-C male to USB-A female adapter. If the 3681B is equipped with the power measurement, peak power measurement or optical time domain reflectometer option, this option is mandatory.
18	87233C	USB CW power sensor	Frequency range: 8kHz to 12GHz, interface type N(m)
19	87233D	USB CW power sensor	Frequency range: 10MHz to 18GHz, interface type N(m)
20	87233E	USB CW power sensor	Frequency range: 50MHz to 26.5GHz, interface type 3.5mm(m)
21	87233F	USB CW power sensor	Frequency range: 50MHz to 40GHz, interface type 2.4mm(m)
22	87233L	USB CW power sensor	Frequency range: 50MHz to 67GHz, interface type 1.85mm(m)
23	87235B	USB average power meter	Frequency range: 8kHz to 8GHz, interface type N(m)
24	87235C	USB average power meter	Frequency range: 10MHz to 8GHz, interface type N(m)
25	87235D	USB average power meter	Frequency range: 10MHz to 18GHz, interface type N(m)
26	87235F	USB average power meter	Frequency range: 10MHz to 33GHz, interface type 3.5mm(m)

No.	Option No.	Option name	Function
27	87235FA	USB average power meter	Frequency range: 10MHz to 40GHz, interface type 2.92mm(m)
28	87235H	USB average power meter	Frequency range: 10MHz to 50GHz, interface type 2.4mm(m)
29	87235L	USB average power meter	Frequency range: 50MHz to 67GHz, interface type 1.85mm
30	87236D	USB peak/average power sensor	Frequency range: 50MHz to 18GHz, interface type N(m).
31	87236E	USB peak/average power sensor	Frequency range: 50MHz to 26.5GHz, interface type 3.5mm(m).
32	87236F	USB peak/average power sensor	Frequency range: 50MHz to 40GHz, interface type 2.4mm(m).
33	87236L	USB peak/average power sensor	Frequency range: 500MHz to 67GHz, interface type 1.85mm(m).
34	31101A	N-type male calibration kit	DC to 18GHz calibration kit
35	31101B	N-type female calibration kit	DC to 18GHz calibration kit
36	20201A	N-type male calibration kit	DC to 9GHz calibration kit
37	20201B	N-type female calibration kit	DC to 9GHz calibration kit
38	20201AE	N-type economical male calibration kit	DC to 9GHz calibration kit
39	20201BE	N-type economical female calibration kit	DC to 9GHz calibration kit
40	87302AZ	Test cable	N/N-JJ test cable (0.6m)
41	87302BA	Test cable	N/N-KJ test cable (0.6m)
42	3681-H67	USB optical time domain reflectometer	It is used for USB optical time domain reflection and optical power measurement.
43	3681B-JL	Measurement service	Measurement and calibration services and measurement reports are provided, which applies to 3681B only.
44	3681B-EWT1	extended warranty of one year	An extended warranty of one year beyond the standard warranty period is provided. For a 2-year extension, 2 items can be selected, and so on. The service does not include calibration and covers only one-way shipping costs, and is applicable to 3681B only.

● **3681BU option**

No.	Option No.	Option name	Function
1	3681U-01	English version options	Including English signs, menus and quick start guide.

No.	Option No.	Option name	Function
2	3681U-02	User' manual (Chinese version)	User' manual (Chinese version).
3	3681U-03	User' manual (English version)	User' manual (English version).
4	3681U-04	Programmed control manual (Chinese version)	Programming manual (Chinese version).
5	3681U-05	Programmed control manual (English version)	Programming manual (English version).
6	3681-S32	TDR	Analysis of the location and nature of cable faults
7	3681-S38	Embedded electronic calibration	
8	3681U-H13	USB 3.0 hub	10-port USB 3.0 hub.
9	31101A	N-type male calibration kit	DC to 18GHz calibration kit
10	31101B	N-type female calibration kit	DC to 18GHz calibration kit
11	20201A	N-type male calibration kit	DC to 9GHz calibration kit
12	20201B	N-type female calibration kit	DC to 9GHz calibration kit
13	20201AE	N-type economical male calibration kit	DC to 9GHz calibration kit
14	20201BE	N-type economical female calibration kit	DC to 9GHz calibration kit
15	87302AZ	Test cable	N/N-JJ test cable (0.6m)
16	87302BA	Test cable	N/N-KJ test cable (0.6m)
17	3681BU-JL	Measurement service	Measurement and calibration services and measurement reports are provided, which applies to 3681BU only.
18	3681BU-EWT1	Extended warranty of one year	An extended warranty of one year beyond the standard warranty period is provided. For a 2-year extension, 2 items can be selected, and so on. The service does not include calibration and covers only one-way shipping costs, and is applicable to 3681BU only.