

NetTek™ Analyzer

► YBA250 BTS Antenna and Transmission Line Analyzer • YBAC1 Calibration Kit



► Features & Benefits

Improve Quality of Service Through Preventative Maintenance Activities On Antennas, Before They Become Service-affecting

Quickly Analyze the Most Important Antenna and Transmission Line Problems

Easy-to-Use Distance-to-Fault (DTF) Measurements for Locating Antenna and Transmission Line Trouble

Advanced Calibration Technique Speeds and Simplifies Your Measurements by Allowing a Single Calibration for Use Across Entire Frequency Range

Modular Instrument for Handheld NetTek™ Y350C, Which Allows for Easy Future Expansion for New Functions

► Applications

Return Loss/VSWR/Cable Loss Measurements for Antenna and Transmission Line Analysis

Distance-to-Fault (DTF) Measurements for Locating Problems

Maintenance and Installation Checks

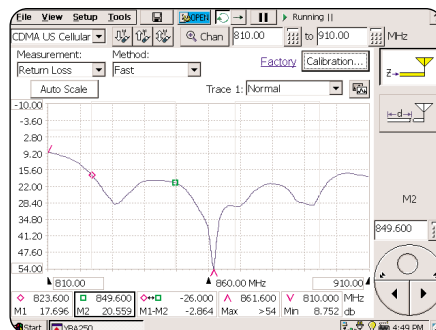
Affordable, Portable, Ready for the Field

Antenna and Transmission Line Analyzer for Wireless Communications Systems

The Tektronix NetTek is a revolutionary portable BTS field tool. The YBA250 test module tailors this system for fast identification of base station antenna and transmission line trouble, and easy location of those faults. The YBA250 test module offers this capability at a surprisingly low price, in a rugged, easy-to-use package, suitable for all field environments.

Return Loss/VSWR

The YBA250 antenna test module allows you to quickly analyze the system using either Return Loss or VSWR. Comparisons against initial conformance tests enable users to easily identify degradation in system performance. Viewing the frequency response vs. channel tables for various standards provides easier interpretation of how the problem may be affecting performance.

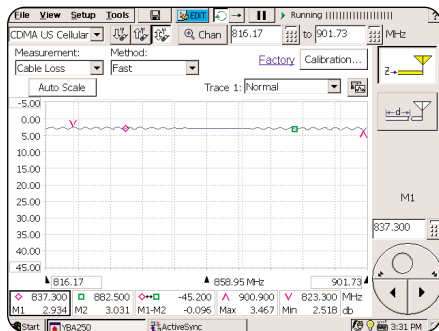


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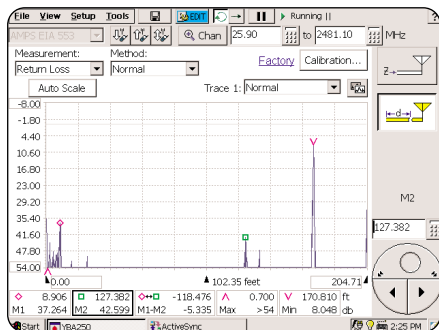
Cable Loss

System performance can also be analyzed in terms of insertion loss, which can be measured using the Cable Loss feature of the YBA250. Cable loss is commonly measured from one end on installed cables, where access to the opposite end is difficult.



Distance-to-Fault (DTF)

The YBA250 test module helps locate antenna and transmission line faults quickly and easily. Using the Distance-to-Fault (DTF) capability, users are able to identify problem areas and their location. The YBA250's interface provides access to multiple cable types and easier setup of DTF parameters for faster troubleshooting.

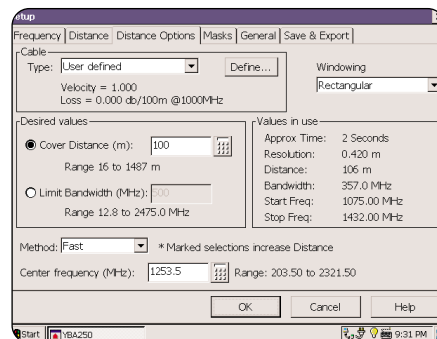


Easy to Use

The NetTek BTS field tool is based around the familiar Windows CE operating system. As a result, users will spend less time learning the instrument and more time troubleshooting the network. The YBA250 test module puts measurement functions just a point of the finger away. Furthermore, built-in help guides speed the measurement process.

Common measurements have been optimized for quick, repeatable results. For example, novice users can display Distance-to-Fault results with straightforward Windows-like zoom and resize controls.

To further minimize troubleshooting time and improve effectiveness, users can control the YBA250's accuracy and resolution to optimize measurement results. For easier interpretation of these results, the YBA250 also enables user-defined masks to qualify antenna performance. This provides faster analysis and allows users to share masks and results.

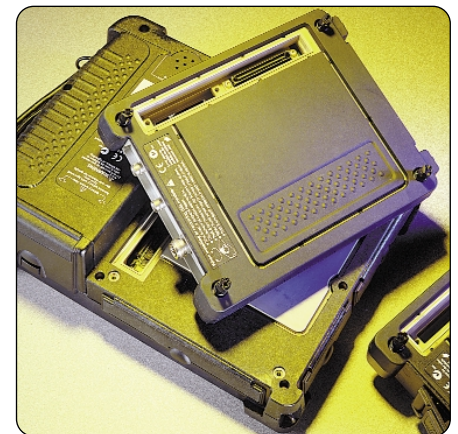


Advanced Calibration

By using Tektronix' expert factory calibration program, the YBA250 speeds up and simplifies the troubleshooting process. By enabling users to reference a single calibration across the entire frequency range, we have eliminated antiquated calibration procedures each time the frequency or display range is changed.

The Modules and the Platform
The Tektronix NetTek Y350C analyzer platform is required for using NetTek modules and cards. The Y350C platform includes the display, power supply, CPU and battery compartments. Modules such as the YBA250 can then be attached to the back. Up to four modules can be attached at once. A variety of modules and options allows you to tailor the instrument to service the standards and interfaces for use in your network.

The modular design also means that the instrument can easily be upgraded. New measurements or standards can be added with software upgrades, or with additional modules.



► Y350C platform combined with test modules.

► Characteristics

YBA250 Antenna and Transmission Line Analyzer Module

Operation Modes

Return Loss/VSWR/Cable Loss.

Distance-to-Fault (DTF).

Measurement Characteristics

Return Loss/VSWR –

Range:

Return Loss – 0.00 to 54.00 dB.

VSWR – 1.00 to 65.00.

Resolution:

Return Loss – 0.01 dB.

VSWR – 0.01.

Accuracy:

Factory Calibration – ≤ 1.2 dB, typical (from 0°C to 40°C up to 2.5 GHz, measuring a 17 dB return loss.)

User Calibration – $< 0.05 + |20 \log(1 \pm 10^{(RL_{rel})/20})|$ dB, typical. Where RL_{rel} is the measured return loss value minus the calibration return loss value. Return loss measurement accuracy is dependent on the quality of the calibration standards used. Tektronix recommends the use of a YBAC1 calibration kit or equivalent.

Cable Loss –

Range: 0.00 to 27.00 dB.

Resolution: 0.01 dB.

Distance-To-Fault (DTF) –

Vertical Range:

Return Loss – 0.00 to 54.00 dB.

VSWR – 1.00 to 65.00.

Distance Range: 0 to $1486 * V_{rel}$ m. Where V_{rel} is the signal velocity in the line with respect to the speed of light.

Resolution: $\leq 6.1 * V_{rel}$ cm at a distance of 200 meters, across frequency range up to 2.5 GHz.

Accuracy: Timing accuracy is equal to ± 75 ppm.

Distance accuracy varies with uncertainty in the velocity of propagation of the measured cable, along with the uncertainty of the timing accuracy.

Inputs/Outputs –

Frequency Range: 25 MHz to 2.5 GHz.

Signal Source: +3 dBm, –20 dBm (nominal).

Input Level: +20 dBm (maximum safe input).

Interference Immunity: +11 dBm.

RF Connector: 50 Ω , type N.

General Characteristics

Temperature –

Operating: 0°C to 50°C.

Nonoperating: –40°C to +60°C.

Altitude –

Operating: Up to 15,000 ft. (4,550 m).

Nonoperating: Up to 50,000 ft. (12,192 m).

Humidity – 5% to 95% up to 30°C.

Calibration – 1 year cycle.

Warranty – 1 year.

Physical Characteristics

YBA250

Dimensions	mm	in.
Height	187	7.375
Width	241	9.5
Depth	32	1.25
Weight	kg	lbs.
Net	1.0	2.2

YBAC1 Calibration Kit

General Characteristics

Precision Open –

Connector: Type N.

Frequency Range: 0.1 to 18.0 GHz.

Phase Accuracy: ± 2.0 degrees.

Reflection Coefficient: 0.99 (minimum).

Precision Short –

Connector: Type N.

Frequency Range: DC to 18.0 GHz.

Precision Load –

Connector: Type N.

Impedance: 50 Ω (nominal).

Frequency Range: DC to 18.0 GHz.

VSWR: 1.02 – From DC to 2.5 GHz.

Calibration – 1 year cycle.

Warranty – 1 year.

Physical Characteristics

YBAC1

Weight	kg	lbs.
Net	0.5	1.1

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► Ordering Information

YBA250

Module without platform. NetTek Y350C analyzer platform is required for using NetTek modules and cards.

Options

Opt. C3 – Three years of Calibration Service.

Opt. C5 – Five years of Calibration Service.

Opt. D1 – Calibration data report.

Opt. D3 – Three years of Calibration data reports.

Opt. D5 – Five years of Calibration data reports.

Opt. R3 – Three years of Repair Service.

Opt. R5 – Five years of Repair Service.

Suggested YBA250 Test Module Accessories

YBAC1 – Calibration Kit.

Precision Cable – Order 012-1619-00.

“N” Male to BNC Female Adapter – Order 103-0045-00.

Barrel “N” Female – Order 103-0429-00.

Type N Male to Type N Male Adapter – Order 103-0430-00.

7-16(F) to N(F) Adapter – Order 103-0431-00.

7-16(M) to N(F) Adapter – Order 103-0432-00.

YBAC1

Calibration kit for YBA250.

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