LUARI

Precision Optical Measurement
Engineered for flawless accuracy

BTG-8S

PHOTOVOLTAIC GLASS SPECTRAL TRANSMITTANCE TESTER

WWW.LUARI.UK

Overview

The BTG-8S Photovoltaic Glass Spectral Transmittance Tester is a specialized instrument designed and manufactured by Qinhuangdao Xianhe Science & Technology Development Co., Ltd.

It is primarily used to measure the spectral transmittance of solar photovoltaic glass, and is also suitable for float glass, insulating glass, tempered glass, laminated glass, coated glass, and automotive glass.

The system provides accurate, stable, and repeatable optical measurements, making it suitable for laboratories, production lines, and glass quality-inspection departments.

Key Features

- Designed to resist ambient light interference, enabling long-duration continuous testing.
- Industrial-grade computer control provides excellent stability and scalability.
- Core optical and electronic components feature high durability and long service life.
- User-friendly test software includes:

  Voice prompts
  Guided test workflows
  Editable waiting intervals between measurement points

System Architecture

The BTG-8 system integrates several core components to ensure reliable performance and ease of use:

Sample Table
- Surface size: 2500 × 1500 mm
- Height: 800 mm
- Felt-covered surface to prevent sample damage

Spectrometer
- High-stability optical measurement module for precise spectral data collection

Industrial Computer
- Controls test execution, data acquisition, curve processing, and result output

This integrated architecture ensures long-term durability, operational stability, and high measurement accuracy.

Component Display Figures

OPERATING CONDITIONS

Power Supply	AC 220V, 50 Hz
Ambient Temperature	0°C – 40°C
Relative Humidity	< 98%
Installation Notes	Instrument must be properly grounded: Avoid vibration and maintain a clean, stable environment

TECHNICAL SPECIFICATIONS

Wavelength Range	380–1100 nm
Custom Wavelength	280–1200 nm
Spectrum Half-Height Width	4.3 nm
Wavelength Accuracy	0.2–0.3 nm
Spectral Interval	≤ 1 nm
Data Storage Interval	1 nm
Calculation Interval	5 nm
Measurement Speed	Up to 150 ms/point
Measurement Range	0–100%
Accuracy	0.01%
Stability	≤ 0.05%

Repeatability	≤ 0.05%
Measurement Geometry	Integrating sphere illumination + collimated receiving
Integrating Sphere Diameter	120 mm
Light Source	12V, 20W
Lamp Life	~2000 hours
Sample Table Size	2500 × 1500 mm
Monitor Size	31.5 inches
Overall Machine Dimensions	2500 × 1660 × 1500 mm (L × W × H)

1

WIDE SPECTRAL RANGE
Measures 380–1100 nm with high-resolution output

2

PHOTOVOLTAIC LIGHT-SOURCE SIMULATION
Calculates AM1.5, D65, and custom transmittance metrics

3

COLOR MEASUREMENT
Outputs Lab color values and overall ΔE*

4

GUIDED OPERATION MODES
Manual, Automatic, and Path modes for flexible workflows

5

CENTRALIZED DATA & STATISTICS
Database storage, historical queries, curve comparison & histograms

6

AUTOMATIC CALIBRATION & STABILITY
Auto-calibration, fault alerts, and long-term continuous operation

Functional Capabilities

1. Measurement & Analysis Functions

The BTG-8 provides a comprehensive set of optical and analytical measurement capabilities, including:

Spectral Transmittance Measurement:
Measures spectral transmittance across the 380–1100 nm range and displays both numerical results and full spectral curves.

Photovoltaic & Standard Illumination Calculations:
Using the AM1.5 solar spectrum and D65 illumination distribution, the system automatically computes:

- AM1.5 effective integral transmittance
- D65 visible-light transmittance
- Effective transmittance using user-defined battery response curves

Additional light-source models may be added according to customer requirements.

Color Measurement:
Measures L*, a*, b* color values and computes overall color difference (ΔE).

Operational Feedback:
Provides audible prompts (start/end of test) and on-screen indicator lights showing real-time test progress and system status.

Automatic Calibration System:
Features built-in automatic calibration with customizable intervals and real-time display of the remaining calibration time.

2. Test Operation Modes

The BTG-8 provides three measurement modes to support different testing workflows and operational requirements.

• **Manual Test Mode**

The operator sets key parameters such as measurement duration, interval time, and number of test points.
After placing the sample into the test area, the user manually initiates the test and may save results upon completion.

This mode provides full operator control and is ideal for customized or non-standard testing scenarios.

• Automatic Test Mode

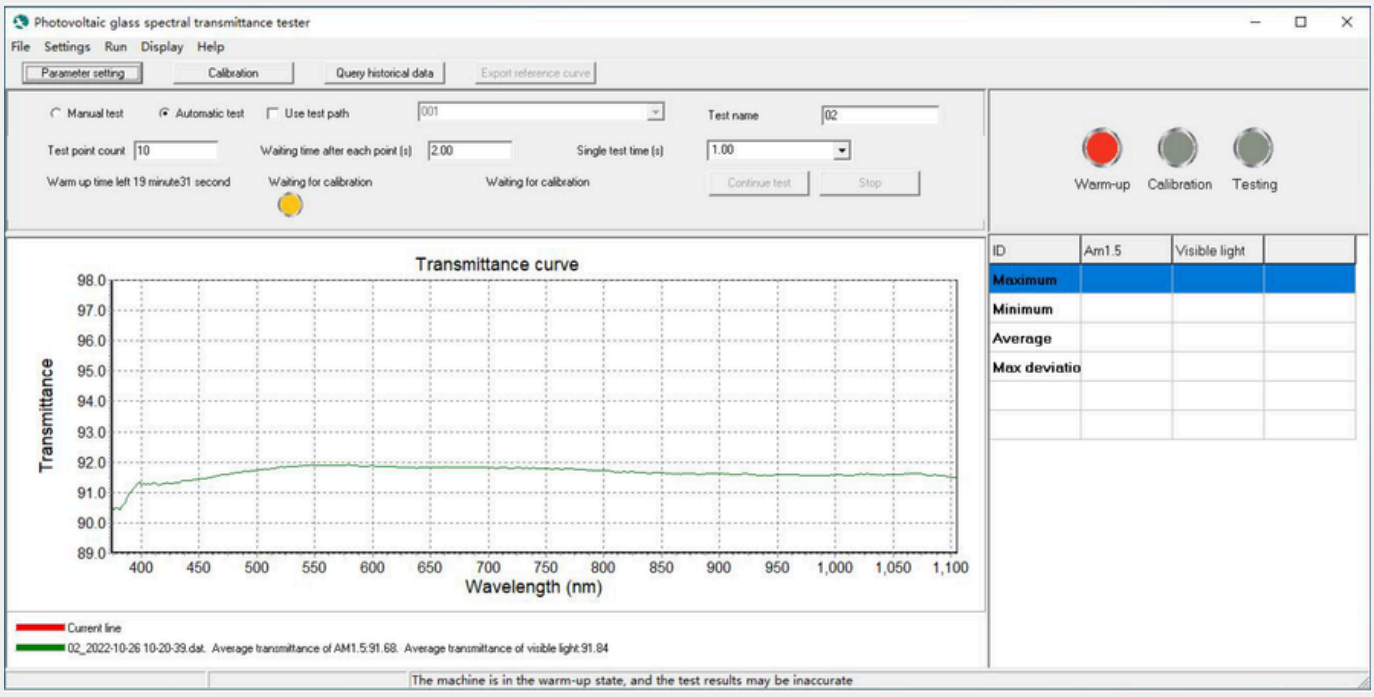
Once measurement parameters are configured and the sample is positioned, the system performs the entire test sequence automatically.

All measurement data and analytical results are stored directly in the database without operator intervention.
This mode is optimized for efficiency, repeatability, and high-throughput testing environments.

• Path Test Mode

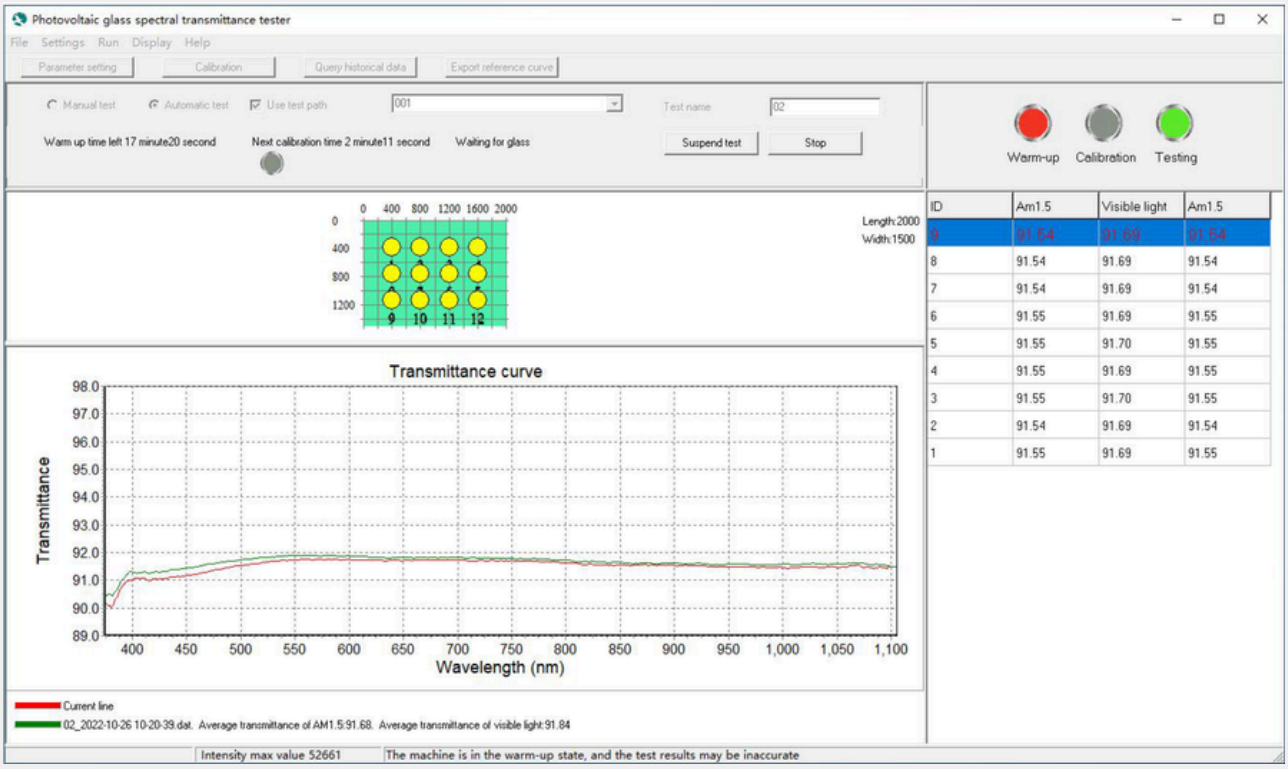
The operator predefines measurement points, the test sequence, and interval times prior to testing.
During the test, the interface guides the operator step-by-step through each programmed measurement position.

The system automatically records and saves the complete set of measurement results, along with the associated test path.
This mode is ideal for structured, multi-point evaluation of large samples.



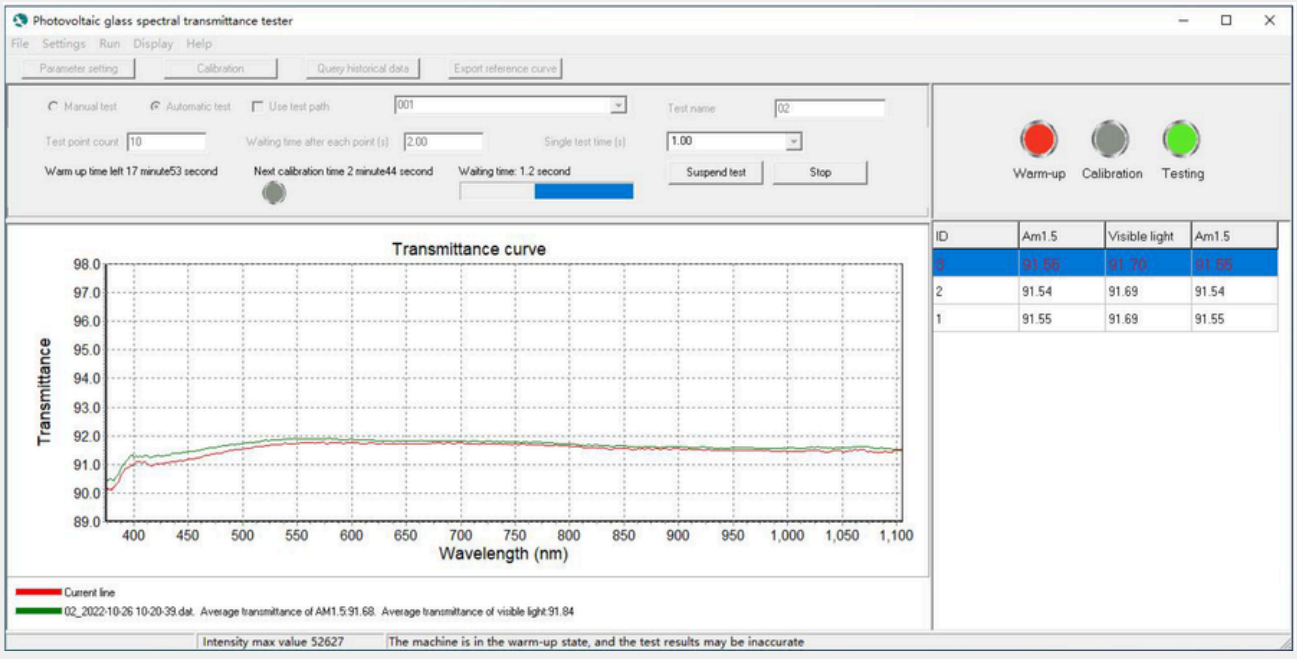
Measurement Interface Showing Real-Time Transmittance Curve

During testing, the system presents the spectral transmittance curve alongside active test parameters, warm-up and calibration indicators, and calculated AM1.5/visible-light statistics.



Path Mode Measurement Interface With Point Map and Spectral Output

During path-based testing, the BTG-8 displays the programmed grid of measurement locations, real-time spectral transmittance curves, and tabulated AM1.5/visible-light results for each point. This interface enables structured multi-point evaluation of large glass samples.



Live Transmittance Curve During Automatic Testing

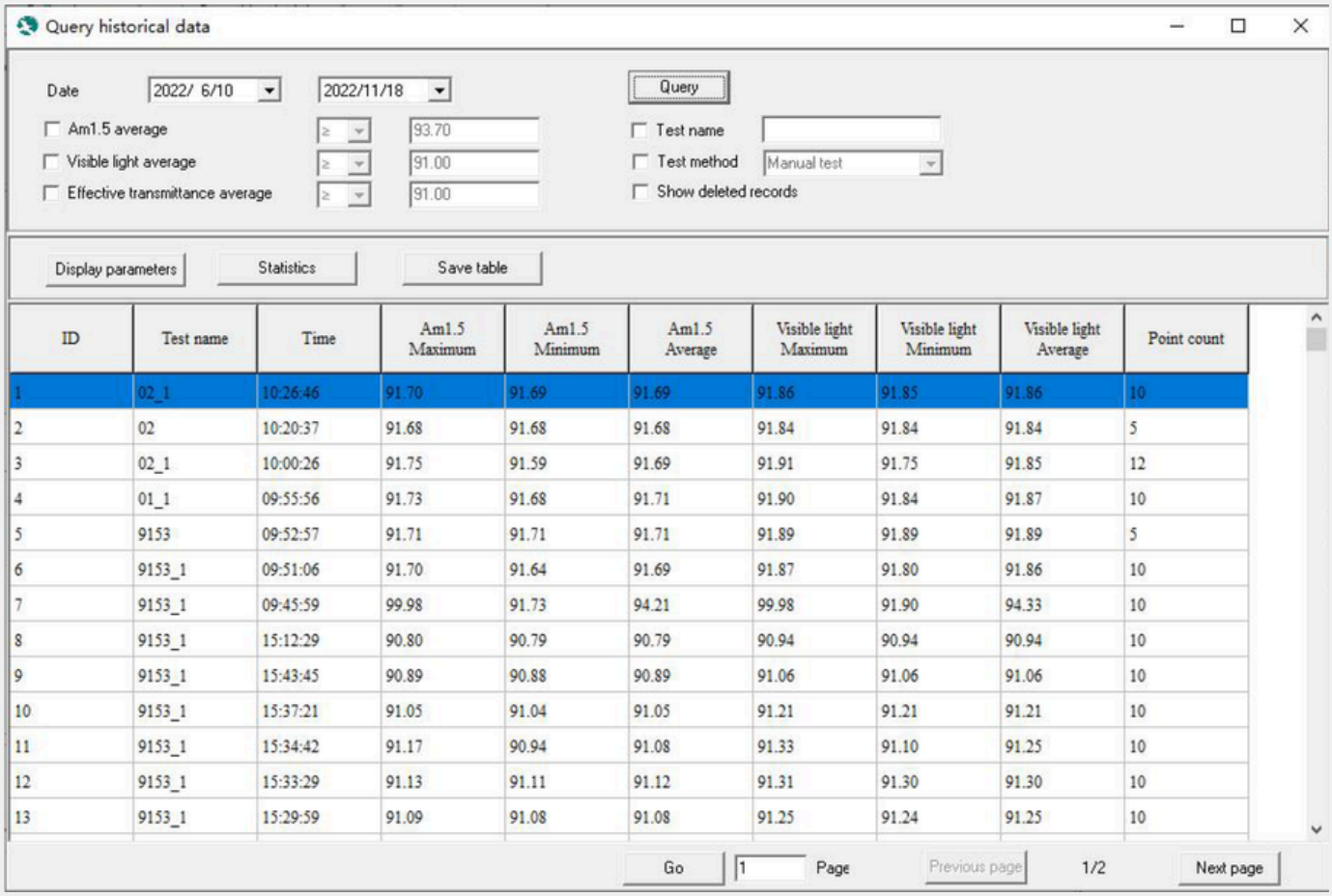
The BTG-8 plots the spectral transmittance curve in real time and simultaneously updates AM1.5 and visible-light transmittance values for each measurement point.

3. Data Management and Statistical Functions

All measurement results are automatically stored in the system database, enabling efficient retrieval, review, and export of historical records. The software also provides built-in statistical tools, including histogram generation and summary analysis. Test reports may be printed directly or exported as PDF for documentation and quality-control purposes. The database can be fully backed up to external storage to support long-term data archiving.

4. System Monitoring and Fault Handling

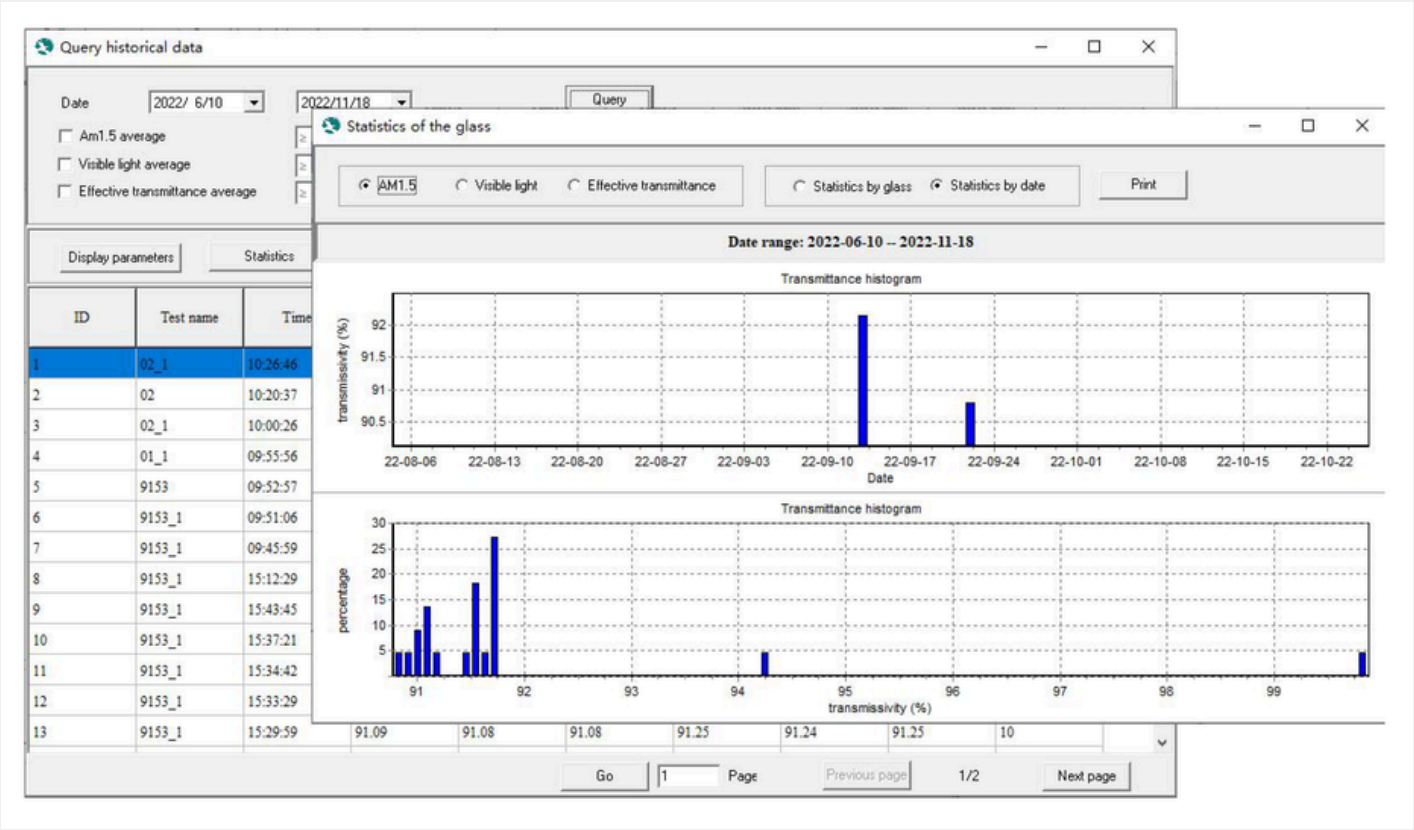
The tester includes a comprehensive fault-alarm mechanism.
Any hardware abnormality triggers on-screen alerts or pop-up notifications, and all fault information is automatically logged for diagnostic and maintenance analysis. The system is designed for stable operation under varying ambient-light conditions and maintains reliable measurement performance even during extended periods of continuous use.



ID	Test name	Time	Am1.5 Maximum	Am1.5 Minimum	Am1.5 Average	Visible light Maximum	Visible light Minimum	Visible light Average	Point count
1	02_1	10:26:46	91.70	91.69	91.69	91.86	91.85	91.86	10
2	02	10:20:37	91.68	91.68	91.68	91.84	91.84	91.84	5
3	02_1	10:00:26	91.75	91.59	91.69	91.91	91.75	91.85	12
4	01_1	09:55:56	91.73	91.68	91.71	91.90	91.84	91.87	10
5	9153	09:52:57	91.71	91.71	91.71	91.89	91.89	91.89	5
6	9153_1	09:51:06	91.70	91.64	91.69	91.87	91.80	91.86	10
7	9153_1	09:45:59	99.98	91.73	94.21	99.98	91.90	94.33	10
8	9153_1	15:12:29	90.80	90.79	90.79	90.94	90.94	90.94	10
9	9153_1	15:43:45	90.89	90.88	90.89	91.06	91.06	91.06	10
10	9153_1	15:37:21	91.05	91.04	91.05	91.21	91.21	91.21	10
11	9153_1	15:34:42	91.17	90.94	91.08	91.33	91.10	91.25	10
12	9153_1	15:33:29	91.13	91.11	91.12	91.31	91.30	91.30	10
13	9153_1	15:29:59	91.09	91.08	91.08	91.25	91.24	91.25	10

Live Transmittance Curve During Automatic Testing

The Historical Data module provides access to all previously recorded test results. Users can define filters—including test period, measurement mode, and transmittance criteria—and view detailed statistics such as maximum, minimum, and average AM1.5 and visible-light transmittance, as well as point counts per test.



Statistical Analysis of Historical Transmittance Data

This interface presents a statistical evaluation of previously recorded measurements. The upper histogram displays the distribution of transmittance values over time within the selected date range, allowing users to observe trends and stability. The lower histogram illustrates the frequency distribution of transmittance percentages, enabling rapid assessment of data dispersion and consistency. These tools support quality monitoring, comparative analysis, and long-term performance evaluation.

Technical Support & Enquiries

For technical enquiries, installation support, or operational assistance, please contact:

Mobile: +44 7377366178 /+44 7939992902
Contact Person: Lu Lin
Email: Admin@luari.uk