# TRAFFIC SIGN COLOR COMPLIANCE TESTING — ALL-IN-ONE COMPLIANCE TESTING SOLUTION

**Built-in national standard color libraries enable direct measurement of luminance factor and chromaticity coordinates, with tolerance setting support. This facilitates rapid compliance verification of safety colors for traffic signs and reflective films.**

- Five Switchable Measurement Apertures
- Offers Traffic Signage Solution
- Supports Specialized Detection of Fluorescent Samples
- Provides Solutions for Color Quality Management and Production Quality Control


## Spectrophotometer TS-25C


The TS-25C Spectrophotometer is a laboratory-grade, high-precision color management instrument designed with "Accurate Measurement + Multi-Scenario Adaptability" at its core, providing color analysis solutions for various industries. The TS-25C features a 45/0 optical structure and grating spectrophotometry technology, ensuring standardized and precise measurements. It comes with five switchable measurement apertures for flexible adaptation to samples of different sizes. It also supports specialized detection for fluorescent samples, as well as the measurement of luminance factor and chromaticity coordinates for traffic signage, road markings, and reflective films. Pre-loaded with standard colors from GB 2893 and GB/T 18833, it allows for manual customization of polygonal or rectangular tolerance boxes. It meets the color measurement and quality control needs of industries such as plastic & electronics, paint & ink, textile & apparel dyeing, printing, and ceramics, fulfilling the requirements for laboratory-level accurate color analysis and cross-scenario color data transmission.

Combined LED + UV Light Source

Repeatability : ΔE*ab < 0.02

Inter-Instrument Agreement: ΔE*ab < 0.18

Supports Traffic Sign Color Compliance Testing

Five Measurement Apertures

## High-Precision Optical Design: Ensures Measurement Accuracy

**Professional Illumination Structure:** Utilizes a 45/0 (45° annular uniform illumination, 0° reception) optical structure, complying with international standards such as CIE No.15, ISO7724–1, and ASTM E1164, ensuring authoritative data.

**High Accuracy and Stability:** Colorimetric accuracy ΔEab ⩽ 0.02, inter–instrument agreement ΔEab ⩽ 0.18, guaranteeing data reliability and multi–device consistency.

## Fluorescent Sample Measurement: Accurately Captures Special Colors

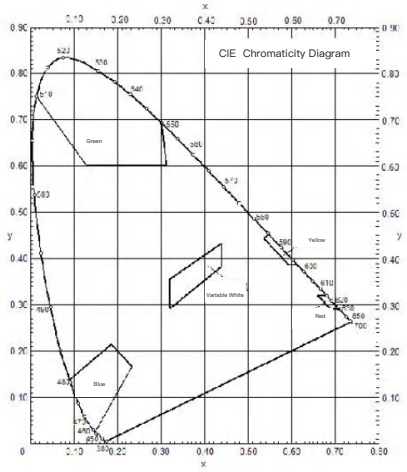
Equipped with a dedicated UV light source and combined with a full–spectrum LED light source, it supports color analysis of materials containing fluorescent agents, solving color measurement challenges for fluorescent samples in industries like plastics and textiles.


## Traffic Signage Solution: Complies with National Standards

Built–in standard color libraries for GB 2893 and GB/T 18833 enable direct measurement of luminance factor and chromaticity coordinates. Supports polygonal/rectangular tolerance settings, suitable for compliance testing of safety colors on traffic signage, reflective films, etc.



| Light Color | Boundary Equation | | Critical Point Coordinates |
|---|---|---|---|
| Variable White | Yellow Boundary | x=0.440 | x=0.320, y=0.356<br>x=0.440, y=0.433<br>x=0.440, y=0.383<br>x=0.320, y=0.292 |
| | Blue Boundary | x=0.320 | |
| | Green Boundary | y=0.150+0.643x | |
| | Purple Boundary | y=0.050+0.757x | |
| Green | Blue Boundary | y=0.768−1.306x | x=0.014, y=0.750<br>x=0.129, y=0.600<br>x=0.312, y=0.600<br>x=0.302, y=0.692 |
| | White Boundary | y=0.600 | |
| | Yellow Boundary | y=3.470−9.200x | |
| Blue | Green Boundary | y=0.805x+0.065 | x=0.090, y=0.137<br>x=0.186, y=0.214<br>x=0.233, y=0.167<br>x=0.148, y=0.025 |
| | White Boundary | y=0.400−x | |
| | Purple Boundary | y=1.668x−0.222 | |
| Yellow | Green Boundary | y=0.727x+0.054 | x=0.547, y=0.452<br>x=0.536, y=0.444<br>x=0.593, y=0.387<br>x=0.613, y=0.387 |
| | White Boundary | y=0.980−x | |
| | Red Boundary | y=0.387 | |
| Red | Yellow Boundary | y=0.320 | x=0.680, y=0.320<br>x=0.660, y=0.320<br>x=0.690, y=0.290<br>x=0.710, y=0.290 |
| | White Boundary | y=0.980−x | |
| | Purple Boundary | y=0.290 | |



## Multi-Source and Multi-Scenario Adaptability

### Supports 41 Illuminants

Covers measurement needs under various lighting conditions, supporting 41 illuminants (D65, A, CWF, LED series, etc.).

### Configures 9 Color Spaces

Supports 9 color space data formats including CIE LAB, XYZ, Yxy, LCh, CIE LUV, s-RGB, HunterLab, DIN Lab99, and Munsell (C/2), eliminating the need for repeated measurements and improving quality control efficiency.

### 10 Color Difference Formulas

Built-in 10 color difference formulas such as ΔEab, ΔEuv, ΔE94, ΔEcmc(2:1), ΔEcmc(1:1), and ΔE00, meeting different industry and customer standards for color difference evaluation.

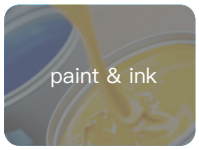
### Comprehensive Colorimetric Indices

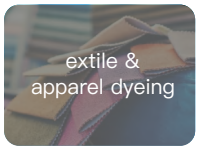
Supports various indices including Whiteness (WI), Yellowness (YI), Metamerism Index (MI), Blackness, Color Density (CMYK), Hiding Power, Staining Fastness, and Color Change Fastness, enabling comprehensive multi-dimensional color analysis.

## Full Industry Adaptability: One Device, Multiple Uses

**Multi-Format Sample Compatibility:** Equipped with five measurement apertures (11mm, 10mm, 5mm, 3mm, 1*3mm platform). Combined with optional accessories like a powder test box, multi-functional test fixture, and positioning plate, it can measure samples in various forms: solids, powders, liquids, pastes, etc.

**Comprehensive Industry Application Coverage:** Widely applicable to industries including plastics & electronics, paint & ink, textile & apparel dyeing, printing, ceramics, traffic signage, and fluorescent materials. Provides high-precision solutions for color quality management, production quality control, and scientific research & testing.



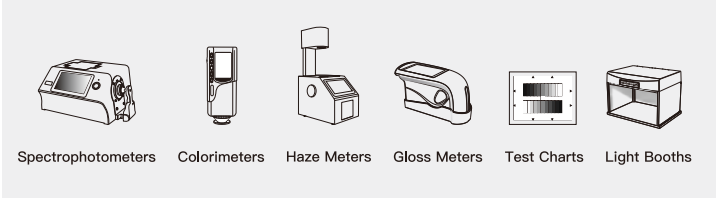

# OPTIONAL ACCESSORIES

| Product Name | Material Code | Image | Function |
|---|---|---|---|
| Powder Test Box | 2.006.01.0011 |  | Easy to use, designed specifically for measuring powdered targets. |
| Mini Printer | 1.609.01.0020 |  | Portable and convenient, capable of continuous printing without connecting to a computer. All measured parameters are easy to store. |
| Multi-function Testing Kit | / |  | Capable of holding liquids, powders, granules, etc., which facilitates measurement and improves accuracy and stability. |
| Positioning Plate | / |  | Ensures more precise measurement positioning. |

# PRODUCT SPECIFICATIONS

| | |
|---|---|
| Product Model | TS-25C |
| Illumination Geometry | 45/0 (45° annular uniform illumination, 0° reception) |
| Compliance Standards | CIE No.15, GB/T 3978, GB 2893, GB/T 18833, ISO 7724-1, ASTM E1164, DIN 5033 Teil 7 |
| Features | Enhanced spectrophotometer for precise laboratory color analysis and color data transmission.<br>Used for accurate color measurement and quality control in industries such as plastics & electronics, paint & ink, textile & apparel dyeing, printing, ceramics, etc. Can measure fluorescent samples.<br>Can measure luminance factor and chromaticity coordinates of traffic signage, road markings, and reflective films. Includes standard colors from GB 2893 and GB/T 18833. Supports manual customization of polygonal/rectangular tolerance boxes. |
| Light Source | Combined LED light source, UV light source |
| Spectroscopic Method | Plane grating spectroscopy |
| Sensor | Silicon photodiode array (dual array, 40 groups) |
| Wavelength Range | 400—700nm |
| Wavelength Interval | 10nm |
| Bandwidth (FWHM) | 10nm |
| Reflectance Resolution | 0.01% |
| Reflectance Measurement Range | 0~200% |
| Measurement Aperture | Five apertures: 11 mm platform + 10 mm platform + 5 mm platform + 3 mm platform + 1×3 mm platform |
| Color Spaces | CIE LAB, XYZ, Yxy, LCh, CIE LUV, sRGB, HunterLab, βxy, DIN Lab99, Munsell (C/2) |
| Color Difference Formulas | ΔEab, ΔEuv, ΔE94, ΔEcmc(2:1), ΔEcmc(1:1), ΔE00, DINΔE99, ΔE(Hunter) |
| Other Chromaticity Indices | Whiteness Index WI (ASTM E313, CIE/ISO, AATCC, Hunter),Yellowness Index YI (ASTM D1925, ASTM 313),Metamerism Index MI, Blackness (My, dM), Tint (ASTM E313-00), Munsell (C/2),Staining Fastness, Color Change Fastness, Strength, Color Density CMYK, Hiding Power, supports polygon chromaticity tolerance (partly implemented via PC software) |
| Measurement Time | Approx. 1.5 s |
| Display | Spectral graph/data, sample chromaticity values, color difference value/graph, pass/fail result, color deviation |
| Illuminants | D65, A, C, D50, D55, D75, F1, F2, F3, F4, F5, F6, F7, F8, F9, F10, F11, F12, CWF, DLF, TL83, TL84, TPL5, U30, B, U35, NBF, ID50, ID65, LED-B1, LED-B2, LED-B3, LED-B4, LED-B5, LED-BH1, LED-RGB1, LED-V1, LED-V2, LED-C2, LED-C3, LED-C5 (41 illuminants in total, some via PC software) |
| Observer Angle | 2°/10° |
| Display Precision | 0.01 |
| Repeatability | Spectral Reflectance: MAV, standard deviation within 0.08% (within 0.18% for 400—700 nm) Colorimetric Value: MAV, ΔE*ab within 0.02 (average of 30 measurements on white calibration plate at 5s intervals after instrument warm-up and calibration) |
| Inter-instrument Agreement | MAV, ΔE*ab within 0.18 (average measurement of BCRA Series II 12 color tiles) |
| Measurement Mode | Single measurement, average measurement (2—99 times) |
| Dimensions (L×W×H) | 169×73×87mm |
| Weight | Approx. 446g |
| Battery Capacity | Lithium battery, 10,000 measurements within 8h |
| Light Source Lifetime | 3 million measurements over 5 years |
| Display Screen | TFT true-color 3.5-inch capacitive touch screen |
| Interfaces | USB, Bluetooth |
| Data Storage | 1000 standards, 30,000 samples |
| Languages | Simplified Chinese, English, Traditional Chinese, Russian |
| Software Support | Android, iOS, Windows, WeChat Mini-Program |
| Operating Temperature | 0—40 °C, 0—85 % RH (non-condensing), altitude < 2000 m |
| Storage Temperature | -20—50 °C, 0—85 % RH (non-condensing) |
| Standard Accessories | Power adapter, data cable, built-in lithium battery, user manual, quality-control software (downloadable from official website), white/black calibration box, protective cover, measurement aperture |
| Optional Accessories | Mini printer, powder test box, multi-function testing kit, positioning plate |

## GUANGDONG THREENH TECHNOLOGY CO., LTD.





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