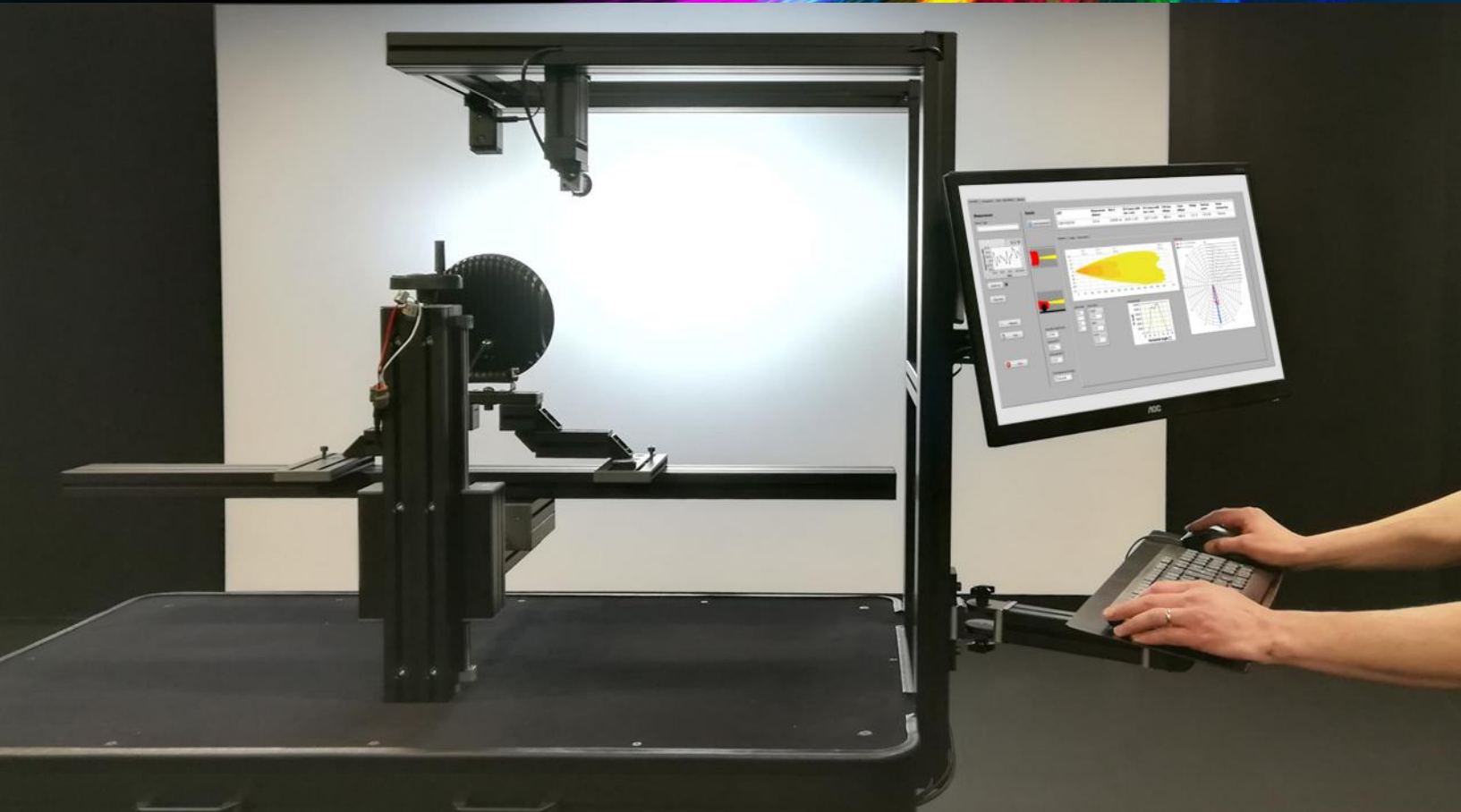


# BEAM TESTER CAMERA SYSTEM

## SSL BTC 20



SSL BTC 20 is a good choice for fast measurements of light beams with a reasonable accuracy. It is suitable for all kinds of directional and narrow beam sources, such as flashlights, automotive lights, signal lights and LED modules.

### Test Parameters:

- ✓ Beam Pattern [cd]
- ✓ Isolux Curves [lx, m]
- ✓ Partial Luminous Flux [lm]
- ✓ ANSI/NEMA FL 1-2009: Runtime, Peak Beam Intensity, Beam Distance

### Features:

- ✓ Light beam in seconds
- ✓ Quick assembly
- ✓ Intuitive software

# Application

Beam Tester Camera is a setup where a luminaire is pointed towards a white screen and then a picture is taken of it by a camera. The camera image is then processed by an operating program. The program can also be used to view and compare existing measurement results by importing ies file or measurement file.

The test parameters are vertical and horizontal isolux-curves, beam width, beam distance and luminous flux, etc. The software makes pdf reports, data comparison between three products.

| Property                | SSL BTC 20  | Goniophotometer   |
|-------------------------|---|---|
| Duration of measurement | Seconds   | Minutes to tens of minutes  |
| Easiness of operation   | Minimal user input  | More operational parameters   |
| Accuracy of result      | Reasonable <sup>[1]</sup>   | Accurate <sup>[1]</sup>   |
| Measurement angle       | Hor $\pm 35^\circ$ / Ver $\pm 24^\circ$ <sup>[2]</sup>  | Full $4\pi$ angular space available   |
| Suitability             | Narrow beam / directional sources<br>Production line tests<br>Limited dimensions <sup>[3]</sup> | All types of luminaires<br>All kinds of attaching.<br>All dimensions, including panels. |
| Min measurable lv       | 0.3 cd  | 0.001 cd <sup>[4]</sup>   |

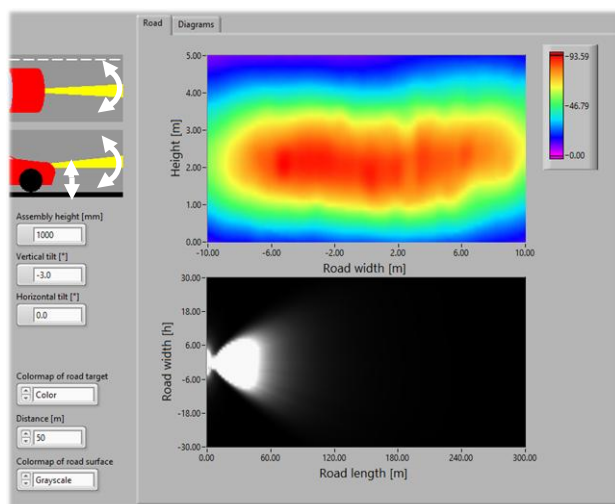
[1] The uncertainty for BTC 20 is <10 %, the uncertainty of a typical goniometer is <5%.

[2] Subject of geometry, given values on 4.0 x 2.5 m<sup>2</sup> screen with distance of 2.8 m.

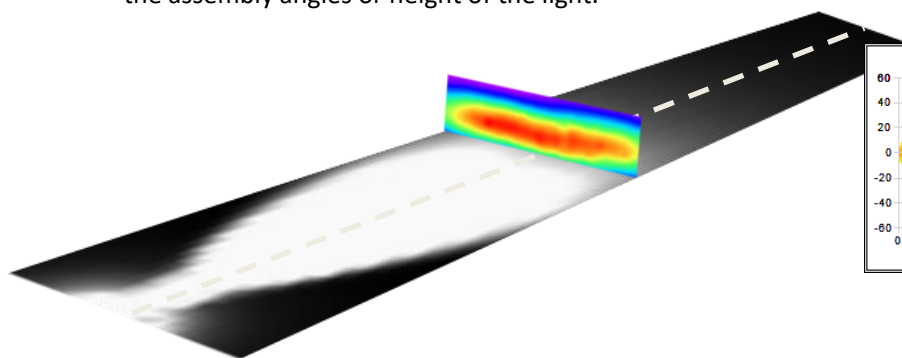
[3] The dimension limits for the luminaire are 1.4 m X 0.5 m and 20 kg.

[4] Subject of measurement distance.

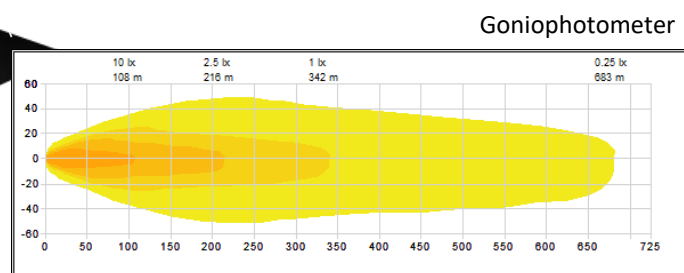
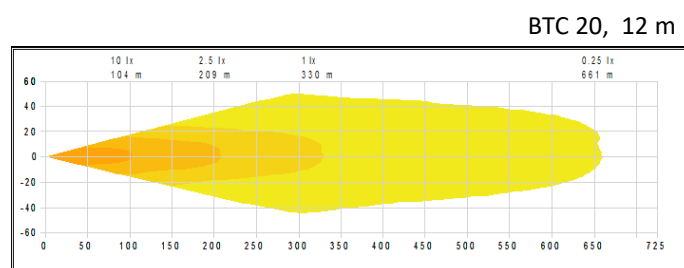
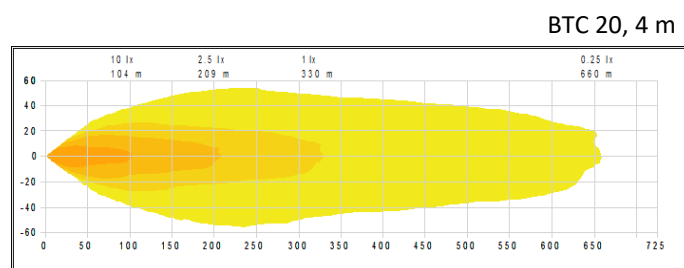
The measurement program is very easy and straightforward to use. Just align the luminaire and click the measure button. The results are ready in a few seconds. With the power source option, also the electrical parameters are measured.



The measurement program can visualize the effect of altering the assembly angles or height of the light.



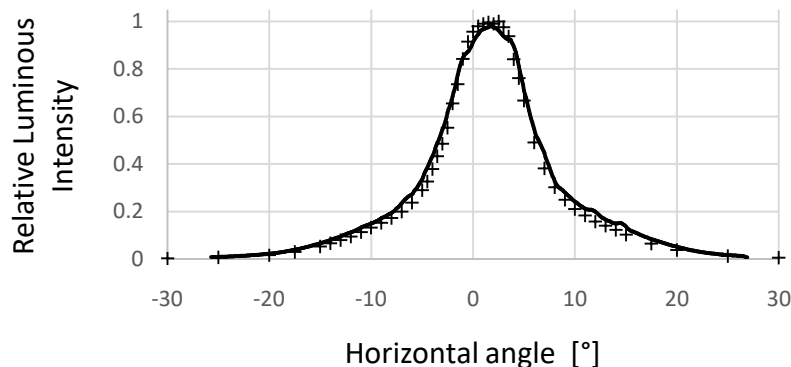
Light projection of a measured headlamp on road surface (grayscale) and on traversal plane at distance of 50 m (color).



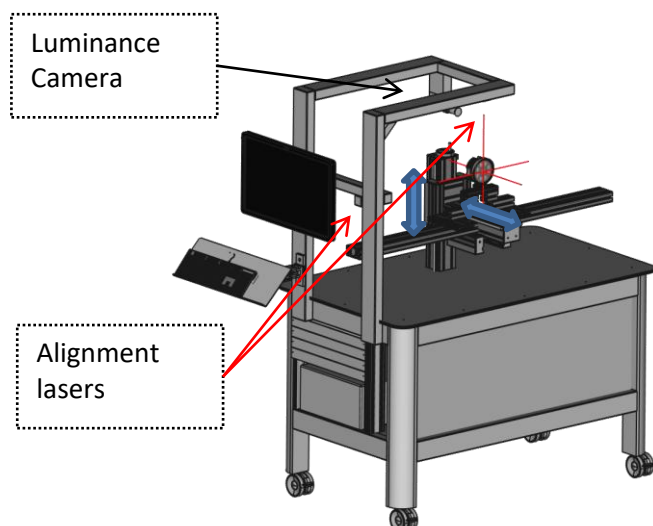
Comparison between calculated Isolux distances, measured with the BTC at 4 m, 12 m and a reference goniophotometer at 18 m.

# SPECIFICATION

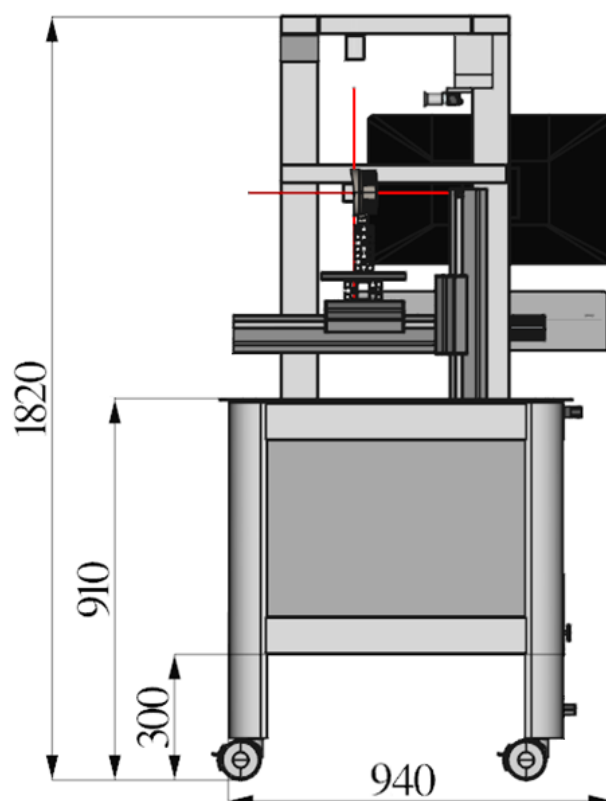
| Property <sup>[1]</sup>              | SSL BTC 20  |
|--------------------------------------|---|
| Application area                     | For automotive lighting fixtures, for signal lights, for flashlights, for production tester     |
| Electrical device integration        | 19" rack with 8U space for (optional) AC/DC power supply/meter                                  |
| Alignment laser                      | 2pcs of red cross-line laser (1mW, 635 nm), laser distance meter (measurement range 0.5 – 25 m) |
| Dimensions of the carriage           | 1.82 m (height), 0.94 m (width), 1.92 m (length), 110 kg (mass)                                 |
| Height of optical axis               | Approximately 1.25 m  |
| White screen                         | 4.0 x 2.5 m <sup>2</sup> lambertian screen with wall attaching frames                           |
| Max dimensions of the DUT            | 1.4 m (length), 0.5 m (height), 20kg (mass)   |
| Resolution                           | <0.1°   |
| Measurement distance                 | 3 m – 14 m  |
| Measuring angle range <sup>[2]</sup> | ±35° (Horizontal), ±24° (Vertical) @2.8 m   |
| Measuring time                       | 5 s – 20 s (depending on the luminous intensity of the LUT)                                     |
| Measurement range                    | 0.3 cd – 70 000 000 cd  |
| Accuracy                             | 7 % (lv), 4 % (Beam distance), ±2° (Beam angle)   |
| Reproducibility                      | 0.3 % (lv), 0.2 % (Beam distance), 0.5° (Beam angle) <sup>[3]</sup>                             |



Angular distribution of a narrow beam source measured with SSL BTC 20 (solid) and a goniophotometer (x)



- [1] Based upon the f-8mm lens
- [2] Customizable by 35mm/6mm lens
- [3] The accuracy of the beam width depends on the shape of the beam



Dimensions of the carriage

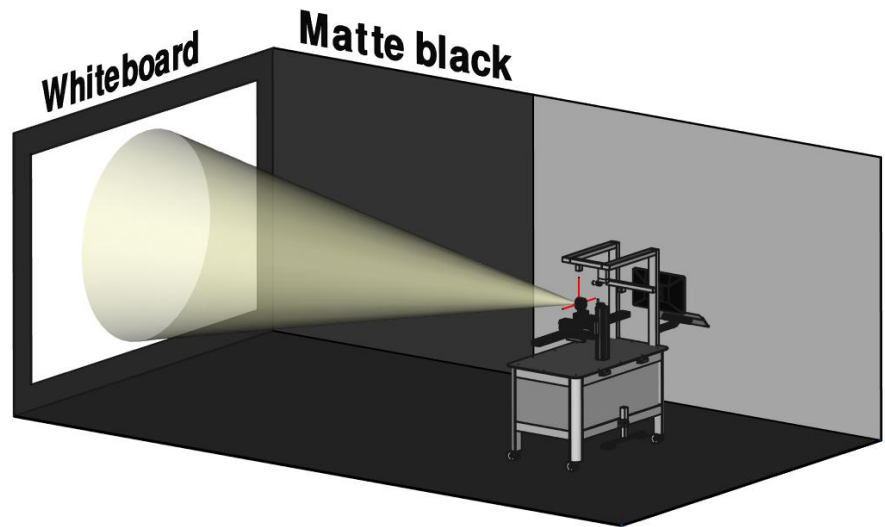
# BTC 20 – Ordering Information

## Beam Tester Camera Setup

|            |  |
|------------|--|
| SSL BTC 20 | Carrier with wheels, sample holder (adjustments by small rail carriers), integrated 19" device rack for 8U power supply etc.), alignment lasers x 2pcs & laser distance meter, imaging luminance meter (2.3Mp, USB 3.0, 8-mm lens, $V(\lambda)$ filter $f_1' < 5\%$ ), measurement computer with 21" display & display holder, White screen (Lambert, 4m x 2.5 m) with wall attaching mechanism. |
|------------|--|

## Options

|                   |  |
|-------------------|--|
| SSL BTC.motB      | Motorized B plane axis for automatic measurement of beam at different vertical angles to measure the light distribution on the surfaces close to the luminaire. The set includes 1-axis motion controller, rotary stage and mechanics, software integration to combine the beam from multiple images |
| SSL BTC-black     | Special low reflectance black material for a back wall and floor of laboratory room  |
| SSL BTC-service   | BTC system first installation and basic training including example measurements on customer site   |
| SSL BTC-color     | Imaging luminance meter replaced by imaging colorimeter  |
| SSL C-400.Lv      | Additional spot luminance/colorimeter C-400 with integration to measurement program  |
| SSL SPEKTRI 80.Lv | Additional spectral radiance meter Spektri 80 with integration to measurement program  |
| SSL-DC-750        | TDK GEN 750 W, programmable DC power supply, 19" 1U with integration to measurement program  |
| SSL-AC-2          | GW Instek APS-7050, programmable AC power supply, 19" 2U with integration to measurement program   |



## Requirements for the laboratory room

- Room height > 2.65 m, preferably 3 m
- Room width > 4.15 m, preferably > 6 m
- No reflecting surfaces between the whiteboard and the carriage (E.g. ceiling lamps)