



The LTL-M mobile retroreflectometer features

The efficient and accurate way to measure the retroreflection of road markings

LTL-M measures all types of road markings at a simulated distance of 30 m with the highest level of accuracy. LTL-M is used mounted on a vehicle measuring retroreflection at traffic speed, providing full overview of the condition of the road markings. The instrument operates with an accuracy of typically +/- 5 % and a repeatability of typically of +/- 3 %, which is in line with DELTA's hand-held retroreflectometers LTL-2000, LTL-X, and LTL-XL.

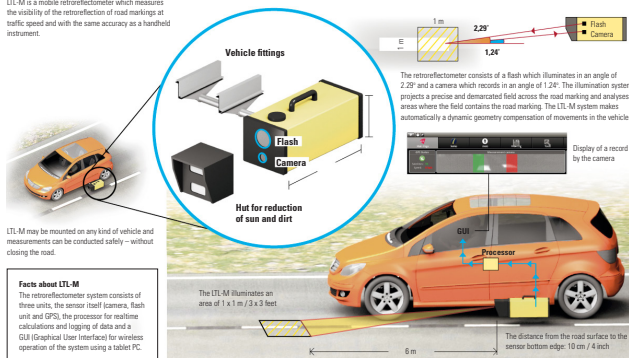
LTL-M is a robust, reliable and advanced instrument designed for professionals using modern digital camera and illumination technology. This technology results in high measurement accuracy independent of changes in the geometry of the system caused by vehicle bouncing during driving.

The LTL-M system consists of three parts

- The sensor unit mounted on the outside of the vehicle containing camera and flash system
- The real time processor placed inside the vehicle
- The GUI (Graphical User Interface) Tablet PC placed next to the driver

LTL-M captures night visibility of road markings

LTL-M is a mobile retroreflectometer which measures the visibility of the retroreflection of road markings at traffic speed and with the same accuracy as a handheld instrument.



LTL-M illustration from the Danish engineering magazine Ingeniøren



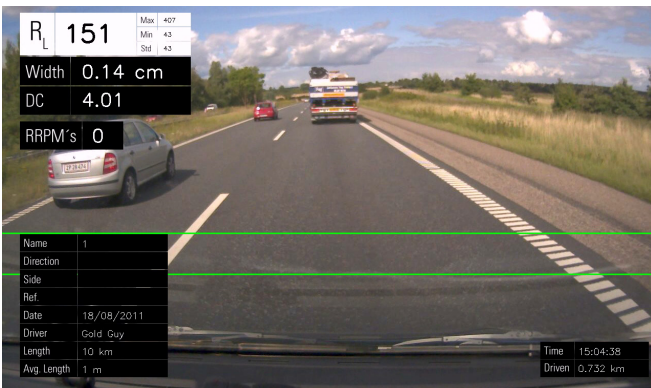
LTL-M mounted on a vehicle

LTL-M measures R_L (nighttime visibility) under dry conditions, daylight contrast as well as records line geometry and missing or non-working road studs (RRPMs).

LTL-M measures white and yellow road markings up to 25 mm/1 inch in profile depth with no adjustments necessary. Calibration and change of light source can be done with a simple operation in the field.

LTL-M comes with GPS and can be delivered with DMI (Distance Measuring Instrument) and an overhead camera. GPS makes it possible to determine exactly where specific measurements have been carried out. A DMI unit ensures correct distance measures if GPS contact cannot be established. An overhead camera supports additional visual inspection of problem areas when data are reviewed.

Measurement data, GPS data and other recorded data will be automatically stored. The system gives the driver the option of marking incidents during operation in the log as well as inform about possible problems and malfunctions.



Video overlay

The software supplied with the instrument generates an easy-to-read txt.file, a graph and a google earth map for measurement evaluation and presentation. LTL-M lends itself to remote service and easy software upgrades through internet link-up when new advanced road marking analysis is offered.

The LTL-M calibration reference is calibrated at DELTA's DANAK-accredited laboratory and is traceable to standards issued by PTB (Physikalish-Technische Bundesanstalt, Germany) and NIST (National Institute of Standards and Technology, USA). The instrument itself does not need re-calibration unless damaged – except for a recommended calibration of the LTL-M calibration reference every 2 years. The recommended once-daily field calibration of the instrument is simple and fast to carry out.

DELTA offers service of the instrument at its factory and re-calibration of the calibration unit at its DANAK-accredited laboratory.



LTL-M GUI tablet PC

The LTL-M features in brief

- Provides continuous measurements of full width and length of markings at traffic speed
- Digital camera and real-time image processing
- Measures RL under dry conditions
- Measures 1x1 m/3x3 feet pr picture, 25 picture per sec.
- Accuracy in line with hand-held retroreflectometers
- Measures daylight contrast
- Measures plane and profiled markings up to 25 mm/1 inch
- Shows and stores day and time
- Records road studs (RRPMs)
- Records line width
- Provides average values between 1 m/3 feet and indefinite

Straus Zert certification

Test Certificate No. 0913-2011-02 on the suitability of the LTL-M dynamic retroreflectometer for the dynamic measurement of the coefficient of retroreflected luminance RL of road marking.

Overall assessment:

The LTL-M retroreflectometer is suitable for the dynamic measurement regardless of speed, of the coefficient of retroreflected luminance RL of road markings, and delivers the same results as a static retroreflectometer

StrausZert, Germany, December 6, 2011

LTL-M complies with the following standards

EN 1436 (R_L), ASTM E 1710 and EN 1463-1.

Contact and further information

For further information about DELTA's LTL-M mobile retroreflectometer please contact:



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