



DELTA retroreflectometer instruments for airfield use

DELTA and the retroreflectometer business

DELTA is the global leader within development, production and sale of retroreflectometer instruments for measuring retroreflection levels of pavement markings and traffic signs. DELTA has since the late 70s been involved in the retroreflectometer business as well as being an active part in writing the current European and American standards on retroreflection measurement of pavement markings and traffic signs.

Importance of retroreflection

Measuring retroreflection has so far primarily been a focus when it comes to traffic on roads. Markings and signs are important to ensure safe guidance of traffic reducing the risk of accidents. Especially at nighttime where the visibility is limited to light from vehicle headlights and partly from street lightening, high performing markings

and signs are important in guiding drivers safely to their destinations.



Lately, DELTA has experienced an increasing interest by airfields in retroreflectometers to ensure high performing markings and signs on airfield traffic areas, taxiways and runways.

DELTA retroreflectometers

DELTA offers the instruments necessary to measure retroreflection on roads and airfields. DELTA offers two lines of instruments, handheld and mobile.

Handheld instruments

Handheld instrument are typically used on small and medium size airfields and where a limited amount of markings and signs are to be measured. The instruments are handheld and provide spot measurements. DELTA's retroreflectometers are simple to calibrate and prepare for measurement. The instrument menus are easy to navigate and can be operated with a limited training.

LTL-X Mark II and LTL-XL

LTL-X Mark II and LTL-XL measure retroreflection of pavement markings. Depending of the model they are able to measure nighttime and daytime visibility of white and yellow markings. Both instruments are able to measure plane and profiled markings and the markings can be measured under dry and wet conditions as well as under continuous rain to show the performance under various climatic conditions.



RetroSign GR3 & GR1

The RetroSign instruments are in a position to show how traffic signs perform at night-time. RetroSign can be used for measuring all types of retroreflective sheetings and colors. If an asset management system is in place using barcodes, RetroSign will be able to read the barcode and link the sign to the measurements.



Mobile instrument

A mobile device is typically used in large airports and when frequent retroreflective measurements are to be made. DELTA's LTL-M mobile retroreflectometers measure

pavement markings at traffic speed. LTL-M delivers results for night visibility, daylight contrast and line width. LTL-M can provide night visibility data under dry conditions and on all types of white and yellow markings. LTL-M makes use of the latest technology within real time digital image processing ensuring accurate measurement under all driving conditions.



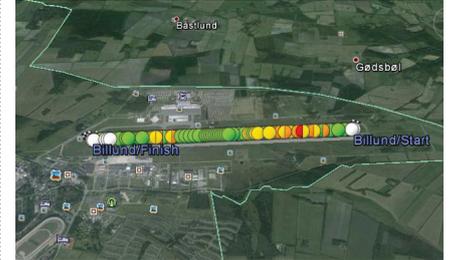
Data presentation

Measurement results are presented as a log file, curve (for LTL-M) and as a display on Goggle Earth. Each measured pavement or sign can be given a unique ID for easy recognition. The mobile LTL-M system can be delivered with an overhead camera for later review of the measured pavements.

Standards and accuracy

DELTA's retroreflectometers comply with existing European and US standards for pavement markings and traffic signs.

DELTA's instruments, when properly calibrated and operated, typically operate with a reproducibility of +/- 5 % and a repeatability of +/- 3 %.



Calibration standards

DELTA is an accredited calibration laboratory and delivers its instruments with calibration references which are traceable to international calibration institutes. DELTA recommends to make a daily calibration of the instruments to ensure correct measurement results.

Contact and further information

For further information about DELTA's retroreflectometer instruments, please contact Market Manager Kjeld Aabye at +45 72 19 46 30 or e-mail: kaa@delta.dk.

FAA Advisory Circular AC 150/5370-10G published in August 2014 is the first document providing requirements to minimum retroreflection levels of markings at installation in airports. Besides, the AC refers to the US ASTM E 1710 standard for information on the test method. The AC requires:

Type I, gradiation A, remarking at least every 6 months
White = 300 mcd Yellow = 175 mcd

Type III, gradiation A, where higher reflective values are desired
White = 600 mcd Yellow = 300 mcd

Type IV, gradiation A, with type 3 paint and larger glass beads
White = 400 mcd Yellow = 225 mcd

Preformed thermoplastic markings
White = 225 mcd Yellow 100 mcd

Further details can be located in the Advisory Circular chapter 620-2.3

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