

# Test Certificate STS

Classification of geodetic instruments to measure Land Parcel Areas

Testing laboratory accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: STS 549

The Swiss Accreditation Service (SAS) is one of the signatories to the European cooperation for Accreditation (EA) Multilateral Agreement for the recognition of calibration certificates



Swiss Testing Service (STS)  
Schweizerischer Prüfdienst  
Service suisse d'essai  
Servizio svizzero di prova

Product: **Leica Zeno 10**  
Article no: **771872**  
Serial no: **BFB09410098**  
Antenna: **internal**  
Manufacturer: **Leica Geosystems AG**

Certificate. no.: LAM\_TC11\_0003.doc

Software: **ZenoField v2.1 / FW v1.013**  
Meas-Mode: **vertex, 1Hz, 5 epochs**  
Parameter settings: **Elevation Mask=10°, max. PDOP=n/a,  
Min. Number of Satellites= 4**  
Differential correction: **EGNOS (European Geostationary Navigation Overlay Service)**

Classification date: **November 8, 2011**

Ordered by: **Leica Geosystems AG**  
Order number:

**Classification:**

The product described above has been classified as:

**Avg. Buffer Width: 0.60m ±0.08m**   
**Class: <0.75m**

Product suited for area measurement of land parcels according to COMMISSION REGULATION (EC) No 1122/2009, of 30 November 2009: Buffer width of product must be <1.50m.

Leica Geosystems AG  
STS Testing Laboratory

November 21, 2011

Peter Maier  
Testing Laboratory Surveying

Wolfgang Hardegen  
Head of accredited laboratories

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### Test-Procedure:

5 parcels between 0.2ha and 1.8ha and of different shape are marked on the ground. Each parcel is measured 36 times (9 sets for each parcel and 4 runs per set at different conditions to reproduce typical situations of the real life). 36 areas are computed and analyzed for each parcel, which finally results in the buffer width.

The reported results and the certification of the product refers to its suitability for area measurement of parcels as described in the EU regulation and the IPSC- - JRC (Joint and Research Center documents:

- COMMISSION REGULATION (EC) No 1122/2009
- JRC: IPSC/G03/P/SKA/asi D(2007)(8307), Area measurement validation scheme
- JRC: IPSC/G03/P/SKA D(2006)(5834), Technical tolerances for on the spot checks

The product is classified depending on the experimentally determined reproducibility limit at 95% confidence level, expressed as buffer width:

- Class (1): buffer width < 1.50 m
- Class (2): buffer width < 1.25 m
- Class (3): buffer width < 1.00 m
- Class (4): buffer width < 0.75 m
- Class (5): buffer width < 0.50 m

Class (0): buffer width  $\geq$  1.50 m, exceeding the maximum value imposed by EU Regulation

The above reported expanded uncertainty is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with EA-4/02.