

ZephIR 145 Validation Test

Michael Courtney and Julia Gottschall

Risø DTU

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Description of test

Risø DTU has carried out a validation test of ZephIR lidar 145 in the period 22 Oct to 17 November 2009. The lidar was placed 40m north of the meteorological tower at Høvsøre Test Station for Large Wind Turbines, Denmark. Simultaneous measurements of wind speed have been performed from the lidar and from calibrated cup anemometers at 40, 60, 80, 100 and 116m. The measurements of the cup anemometers at the four lower heights were corrected for the effects of the mast and booms. The lidar was operated for this period with the internal cloud-correction algorithm functioning.

The results of the validation test are presented in the form of parameters from a regression analysis using two different regression models; $y = C + kx$ and $y = mx$. Estimated parameters (C, k and m) are given together with the coefficient of determination (R^2) for both models.

The dataset includes all periods with wind directions between 50° and 310° and wind speeds above 4 m/s.

Height	C [m/s]	k [-]	R^2	m [-]	R^2
116	-0.03	0.994	0.981	0.991	0.981
100	0.14	0.983	0.978	0.997	0.978
80	0.22	0.976	0.981	0.999	0.981
60	0.20	0.976	0.988	0.997	0.987
40	0.13	0.984	0.985	0.999	0.985