

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-K-18020-01-00
according to DIN EN ISO/IEC 17025:2018

Valid from: 20.06.2019

Date of issue: 20.06.2019

Holder of certificate:

**Deutsche Wind Guard Consulting GmbH
Oldenburger Str. 65, 26316 Varel**

Calibration in the fields:

Fluid quantities

- **Velocity of gases**

Abbreviations used: see last page

*The certificate together with its annex reflects the status at the time of the date of issue. The current status of the scope of accreditation can be found in the database of accredited bodies of Deutsche Akkreditierungsstelle GmbH.
<https://www.dakks.de/en/content/accredited-bodies-dakks>*

Permanent Laboratory

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement ¹⁾	Remarks
Velocity of gases Ground based remote sensing devices Absolute value of flow vector (horizontal component)	4 m/s to 16 m/s	comparison measurement acc. to IEC 61400-12-1: 2017	$0.02 \cdot v + 0.04 \text{ m/s}$	Test field with meteorological mast v: measuring value
Direction of flow vector	128° to 183°	comparison measurement acc. to IEC 61400-12-1: 2017	6.1°	
Nacelle based remote sensing devices Absolute value of flow vector (in direction of the beam)	4 m/s to 16 m/s	VA Nacelle LiDAR Calibration ID: D6452 rev. 3	$0.02 \cdot v + 0.04 \text{ m/s}$	
Inclination of optical measuring beams	-3° to 3°	VA Nacelle LiDAR Calibration ID: D6452 rev. 3	0.08°	
Opening angle between optical measuring beams	1° to 90°	VA Nacelle LiDAR Calibration ID: D6452 rev. 3	0.04°	

Abbreviations used:

CMC	Calibration and measurement capabilities
IEC	International Electrotechnical Commission
VA Nacelle LiDAR	Internal calibration instruction of Deutsche Wind Guard Consulting GmbH

¹⁾ The expanded uncertainties according to EA-4/02 M:2013 are part of CMC and are the best measurement uncertainties within accreditation. They have a coverage probability of approximately 95 % and have a coverage factor of $k = 2$ unless stated otherwise. Uncertainties without unit are relative uncertainties referring to the measurement value unless stated otherwise.