ISO 28902-3:2018 (E)

Air quality — Environmental meteorology — Part 3: Ground-based remote sensing of wind by continuous-wave Doppler lidar

Contents

	Forev	Foreword	
	Introd	Introduction	
1	Scop	Scope	
2	Norm	Normative references	
3	Terms	Terms and definitions	
4 Fund		amentals of heterodyne Doppler lidar	
	4.1	Overview	
	4.2	Heterodyne detection	
	4.3	Spectral analysis	
	4.3.1	Signal processing for CW lidar	
	4.3.2	An example of a wind speed estimation process	
	4.4	Target variables	
	4.5	Sources of noise and uncertainties	
	4.5.1	Local oscillator shot noise	
	4.5.2	Detector noise	
	4.5.3	Relative intensity noise	
	4.5.4	Speckles	
	4.5.5	Laser frequency	
	4.6	Range assignment	
	4.7	Known limitations	
5 Svs		m specifications and tests	
	-	· ·	
	5.1	System specifications	
	5.1.1	Laser wavelength	
	5.1.2	Transmitter/receiver characteristics	
	5.1.3	Pointing system characteristics	
	5.2	Figures of merit	
	5.3	Precision and availability of measurements	
	5.3.1 5.3.2	Radial velocity measurement accuracy	
		Data availability	
	5.3.3 5.4	Maximum operational range Testing procedures	
	5.4 5.4.1	General	
	5.4.2	Hard target return	
	5.4.3	Assessment of accuracy by intercomparison with other instrumentation	
	5.4.3.1	Sonic anemometer test	
	5.4.3.2	Performance test against masts	
	5.4.3.3	Comparison with Doppler weather radars	
	5.4.3.4	Comparison with radar wind profilers	
	5.4.4	Maximum operational range validation	
6		Measurement planning and installation instructions	
-			
	6.1	Site requirements	
	6.2	Limiting conditions for general operation	
	6.3	Maintenance and operational test	
	6.3.1	General Maintenance	
	6.3.2	Maintenance	
	6.3.3	Operational test	
	6.3.4	Uncertainty	