



RDI Quality Control Tests: Waves

The RDI Waves ADCP has three independent sources of wave spectra. Pressure, Orbital Velocity and Surface track are all used to construct spectra. While each source has its own set of errors, the combination of independent sources of spectra provides the opportunity to check for self-consistency.

TIME SERIES VALUES	
TEST: description (click name for more details)	ADCP Waves Array
NO PRESSURE: check that sensor is deep enough.	✓
CHECKSUM: verify checksums, check data integrity.	✓
DISCONTINUITY: check for time gaps of greater than 5 seconds.	✓
WILD POINT EDITOR: screen for points far from the mean.	✓
MIN/MAX: data screened against appropriate min, max values.	✓
DELTA MAX: check point-to-point changes, screen points.	✓
TOTAL PERCENT GOOD: check for 90% minimum good data.	✓
DYNAMIC MOTION CHECK: check if orientation changing while sampling.	✓
TILT CHECK: check instrument orientation for static tilts.	✓
MEAN CURRENTS CHECK: check current during sample interval.	✓
SPECTRAL VALUES	
TEST: description (click name for more details)	ADCP Waves Array
STANDARD DEVIATION TEST: check standard deviation from 0.9-1 Hz	✓
DIR. ARRAY PERCENT GOOD: check percent of good sensors in array.	✓
DIRECTIONAL SPECTRUM MINIMUM: check minimum above noise floor.	✓
RANGE CHECK: limit directional spectrum to valid frequencies.	✓
SPECTRA COMPARISON: visual comparison of independent spectra.	✓
PARAMETER VALUES	
TEST: description (click name for more details)	ADCP Waves Array
LOW Hs CHECK: check if Hs is below the noise floor minimum.	✓
RANGE CHECK: check range of peak period and direction.	✓

NORTEK Quality Control Tests: Waves

Nortek incorporates some data quality checks into their processing. If a burst of data has one of these errors, it is indicated in the output file by an error code. If the burst is in error then the affected estimates are set to a value of "-99999", or a similar presentation but differing magnitude (e.g. -999.9).

The error messages are bit coded so that multiple error types in a given burst can be distinguished. A bitwise sum is used to report the complete error code for a given burst.

TIME SERIES VALUES	
TEST: description (click name for more details)	AWAC-AST
CORRUPT DATA: verify checksums, check for damaged, incomplete data.	✓
LOW AMPLITUDE: check that acoustic signal is strong enough.	✓
AST OUT OF BOUNDS: check for bad detects and unreasonable paramters.	✓
AST CLOSE TO CLIP: check if surface detections are too close to window.	✓
SPECTRAL VALUES	
TEST: description (click name for more details)	AWAC-AST
WHITE NOISE TEST: checks that spectrum contains real information	✓
DIRECTIONAL AMBIGUITY: checks for ambiguity in the peak direction	✓
PARAMETER VALUES	
TEST: description (click name for more details)	AWAC-AST
UNREASONABLE ESTIMATE: check range of estimated wave parameters.	✓
AST OUT OF BOUNDS: check for bad detects and unreasonable paramters.	✓

SONTEK Quality Control Tests: Waves

SonTek/YSI uses PUV technology for directional waves measurements. SonTek offers both bistatic (ADV, Triton) and monostatic (ADP, PC-ADP) sensors capable of directional wave measurements. The processing of the raw pressure and velocity signal is done by Parametric Spectral Method-based software during post-processing. Due to the inherent differences between bistatic and monostatic instrumentation, each has its own set of checks and tests to insure data quality. However, the processing routines perform only basic data checking, so are capable of delivering near-raw data to the end-user, in addition to the processed values.

TIME SERIES VALUES	
TEST: description (click name for more details)	PUV
LOW PRESSURE VARIATION: check variability of pressure data	✓
MIN/MAX VELOCITY VARIANCE: check variability of velocity data	✓
MIN/MAX DEPTH VALUES: check that depths are appropriate for wave data collection	✓
UNREASONABLE VELOCITY: verify absolute velocity is not too large	✓
MINIMUM DECAY FACTOR: verify decay factor is not too small	✓
MINIMUM DATA POINTS: confirm bursts have at least 128 points	✓
MEAN CURRENTS: check for strong ambient currents, correct frequencies	✓
CHECKSUM: Verify data recording and transmission checksums	✓
PARAMETER VALUES	
TEST: description (click name for more details)	PUV
UNREASONABLE Hs: verify wave height within reasonable limits	✓
MAXIMUM PEAK PERIOD: check that Tp does not exceed 20 seconds	✓