AIR TURQUOISE SA | PARA-TEST.COM
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Test laboratory for paragliders, paraglider harnesses
and paraglider reserve parachutes

paragliding by air turquoise

Speed of opening, stability, descent rate

Inspection certificate number: **EP_349.2023**

Test Report

Manufacturer data

Manufacturer name:	**Dudek Paragliders**
Representative:	**POWAIR sp. z o.o.**
Street:	**Ul. Centralna 2U**
Post code / Place:	**86-031 Osielsko**
Country:	**Poland**

Sample data

Name:	**Quad Light**	Size:	**160**
Steerable (1):	**No**	Maximum weight in flight (2) [kg]:	**160**
Weight (3) [kg]:	**1.72**	volume packed [cm^3]:	**5300**
Serial number:	**2462-12-2354**		

Test data (4)	**Test no. 1**	**Test no. 2**
Place of test:	**Villeneuve**	**Villeneuve**
Date of test:	**18.02.2020**	**08.05.2020**
Inspector:	**Claude Thurnheer**	**Alain Zoller**
Atmosphere AGL		
[°C]	**6.8**	**18**
RH [%]	**70**	**63**
[hPa]	**986.9**	**976.3**
Wind [m/s]	**0.2**	**0.1**

Summary of both results (5)	**EN**	**NfL**
Time of opening test [s]:	**3.38**	**3.38**
Calculated descent rate test [m/s]:	**5.35**	**5.35**
Stability test:	**POSITIVE**	**POSITIVE**
Behaviour during descent test:	**Stable**	**Stable**
If steerable:		
Any flight procedure and/or configuration described in the user's manual	**N/A**	**N/A**

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Formula using to calculate corrected mass

$$m_{corr} := m_{dec} \cdot \frac{p \cdot T_0}{p_0 \cdot T}$$

Sink rate test no. 1 (6)

Ground level atmospheric pressure at test location: (p)	986.9	[hPa]
ICAO standard atmospheric pressure at MSL: (po)	1013.25	[hPa]
Ground level temperature at the test location: (T)	6.8	[°C]
	279.95	[°K]
ICAO standard temperature at MSL: (To)	15	[°C]
	288.15	[°K]
Declared maximum payload: (mdec)	160	[kg]
Corrected mass: (mcorr)	160.40	[kg]
Corrected mass with uncertainty: (mcorr)	161.30	[kg]
Time when pilot release rescue:	18.17	[s]
Time when weak link broken:	21.4	[s]
Calculated speed opening [s]:	**3.38**	[s]
Time ball touch the water:	1.97	[s]
Time pilot touch the water:	10.13	[s]
Time between ball and pilot touching water (40m)	8.01	[s]
Calculated sink rate [m/s]:	**5.00**	[m/s]

Sink rate test no. 2 (6)

Ground level atmospheric pressure at test location: (p)	976.3	[hPa]
ICAO standard atmospheric pressure at MSL: (po)	1013.25	[hPa]
Ground level temperature at the test location: (T)	18	[°C]
	291.15	[°K]
ICAO standard temperature at MSL: (To)	15	[°C]
	288.15	[°K]
Declared maximum payloadt: (mdec)	160	[kg]
Corrected mass: (mcorr)	152.58	[kg]
Corrected mass with uncertainty: (mcorr)	153.48	[kg]
Time when pilot release rescue:	14.9	[s]
Time when weak link broken:	17.77	[s]
Calculated speed opening [s]:	**3.02**	[s]
Time ball touch the water:	59.8	[s]
Time pilot touch the water:	67.43	[s]
Time between ball and pilot touching water (40m)	7.48	[s]
Calculated sink rate [m/s]:	**5.35**	[m/s]

Inspection certificate number: **EP_349.2023**

Weak link test no. 1

Weak link test no. 2

Instrument & type no.	Validity	Manufacturer	S/N
Weak link	continously	Tost	N/A
Line 30 meter	check every 12 months	Air Turquoise SA	N/A
Geos n° 11 Skywatch	18.06.2025	JDC elec.	Unit11

The validation of this test report is given by the signature of the test manager on inspection certificate 93.20

Air Turquoise SA has thoroughly tested the sample of emergency parachute mentioned above and certifies its conformity with the standards: **EN 12491:2015+A1:2021**[7] and **NfL 2-565-20**

[1] Steerable: Emergency Parachute fitted with controls for steering and landing flare. [2] Total weight in flight exclude weight of paraglider, also called payload - [3] Weight of the emergency parachute

[4]The rescue system is dropped from a paraglider in straight flight at 10 [m/s] +-1 [m/s] and a vertical airspeed of less than 1,5 [m/s]. The paraglider is released as the rescue system begins to open. Wink link 200 [N] is used to measure the speed opening. After a minimum of 125 m of descent, the average rate of descent is measured over 30 m of descent. The stability is observed. The test is carried out twice (this may be with the same parachute or with identical item).

[5] The calculated value include the value minus the uncertainty / The uncertainty stated is the expanded uncertainty obtained by multiplying the standard uncertainty by the coverage factor k = 2. The value of the measured lies within the assigned range of values with a probability of 95%. The tests do not include any compatibility tests with alternative inner containers. The maximum opening time should be 4 [s] up to and including 140 [kg] and 5 [s] above 140 [kg] according to the EN standard. For the NfL standard it should be a maximum of 5 [s]. The required maximum sink rate is for EN standard for unsteerable or steerable parachute with locked controls 5.5 [m/s], for steerable parachute with unlocked controls 4 [m/s], and for NfL standard 6.80 [m/s]. The final result for EN and for NfL is the worst case of both tests.

[6] Condition for the sink rate test. A. At horizontal airspeed 10 m/s (+/- 1m/s) and vertical speed 1.5 m/s B. Formula to be used for correcting the test mass of differences from ICAO standard atmosphere.

[7] This standard is NOT covered by accreditation D-IS-19457-01

Strength test - 40 m/s opening shock

Inspection certificate number: **EP_349.2023** **Test Report**

Manufacturer data

Manufacturer name:	**Dudek Paragliders**
Representative:	**POWAIR sp. z o.o.**
Street:	**Ul. Centralna 2U**
Post code / Place:	**86-031 Osielsko**
Country:	**Poland**

Sample data

Name:	**Quad Light**	Size:	**160**
Steerable	**No**	Maximum weight [kg]:	**160**
Weight [kg]	**1.72**	Volume packed [cm^3]:	**5300**
Serial number:	**2462-12-2354**		

Test data (1)	**Test no. 1**	**Test no. 2**
Place of test	**Illarsaz**	**Illarsaz**
Date of test	**06.02.2020**	**28.02.2020**
Maximum weight [kg]	**160**	**160**
Inspector:	**Alain Zoller**	**Alain Zoller**
Atmosphere AGL		
[°C]	**1.5**	**2**
RH [%]	**67**	**63**
[hPa]	**985.2**	**977.5**
Wind [m/s]	**0.1**	**0.2**

Test results	**Test no. 1**	**Test no. 2**
Strength test (40m/s shock)	**POSITIVE**	**POSITIVE**
Aircraft speed uncertainty K=2 [m/s] (2)	2.9	2.9

Item / type no.	Validity	Manufacturer	S/N
Weight	check every 12 months	Air Turquoise SA	N/A
Geos n° 11	18.06.2025	JDC elec.	Unit11
Weak link	continously	Tost	N/A

The validation of this test report is given by the signature of the test manager on inspection certificate 93.20

Air Turquoise SA has thoroughly tested the sample of emergency parachute mentioned above and certifies its conformity with the standards:

EN 12491:2015+A1:2021[3] and NfL 2-565-20

[1] The emergency parachute (in its standard inner container and packed according to the user's manual instructions) is stowed on the drop test device. The test parachute's riser (or both risers in the case of a two riser parachute) is (are) connected to the single anchor point on the drop test device using the connector(s) specified and supplied by the parachute manufacturer.
The drop test device is accelerated to a straight line velocity of 40 m/s and the parachute deployed using its handle or handle attachment point by a static line attached to a drogue chute or similar low force deployment system.
The test is carried out twice with the same parachute. In case steerable parachute, in both tests, the controls shall remain locked.

[2] Calculated value include the value minus the uncertainty (on safe side) / The uncertainty stated is the expanded uncertainty obtained by multiplying the standard uncertainty by the coverage factor k = 2. The value of the measured lies within the assigned range of values with a probability of 95%.

[3] This standard is NOT covered by accreditation D-IS-19457-01