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Test laboratory for paragliders, paragliders harness and paragliders reserve parachutes

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INSPECTION REPORT

PARAGLIDERS RESCUE SYSTEMS | EMERGENCY PARACHUTE

Inspection report number: **EP_135.2015**

SAMPLE DATA

Manufacturer name:	**Flow Paragliders PTY LTD**
Representative	**Felipe Rezende**
Street:	**1/24 Clyde Road**
Post code / place:	**Dee Why 2099 NSW**
Country:	**Australia**
Model name:	**Aura**
Model size:	**M**
Manufacturer max load [kg]:	**100**
Volum [cm3] :	**5000**
Manufacturers serial number flight (EP1, EP2, EP4, EP6) :	**153702** Date of reception: **19.09.2015**
Manufacturers serial number load (EP3, EP5) :	**AUXRM15303** Date of reception: **19.09.2015**
Date of issue:	**19.01.2016**
Place of declaration:	**Villeneuve**
Director management :	**Alain Zoller**
Signature:	

Air Turquoise SA, having thoroughly assessed the sample mentioned hereunder, declare it was found conform with all requirements defined by the following directives:

EN 12491 | 2001 and LTF NFL II 91/09 chapter 6 Paraglider rescue systems
LTF Ref chapter: 6.1.1 to 6.1.19, exclusion 6.1.10

Present declaration's scope only extends to the conformity of a given sample, on a given date and in a given place – as mentioned here above.

This inspection report contain the following test and is complet with the test report number EP1 to EP6

TESTS	RESULTS	INSPECTORS	PLACES	DATES
1. Deployment system strength test (inner container)				
Minimum 700 N strength required during min 10 [s]:	POSITIVE	AZ	Villeneuve	04.12.2015
2. Descent rate and stability test - ref. A and B				
Sink rate EN standard	POSITIVE	CT	Villeneuve	10.11.2015
Sink rate LTF standard	POSITIVE	CT	Villeneuve	10.11.2015
Speed opening	POSITIVE	CT	Villeneuve	10.11.2015
Stability	POSITIVE	CT	Villeneuve	10.11.2015
3. Strength test opening shock				
Test 1 | 40 [m/s]	POSITIVE	AZ	Illarsaz	08.10.2015
Test 2 | 40 [m/s]	POSITIVE	AZ	Illarsaz	09.10.2015
Test 3 | 40 [m/s]	POSITIVE	AZ	Illarsaz	05.11.2015
4. Interaction and stability test (piloted) - ref. C				
the emergency parachute is deployed from a paraglider in normal straight flight.	N/A	n/a	n/a	x
the pilot shall take no action while the behaviour of the parachute and paraglider are observed 200 metres.	N/A	n/a	n/a	x
the pilot take action while the behaviour of the parachute and paraglider are observed 200 metres.	N/A	n/a	n/a	x
5.Connecting strap				
Mininum load capacity of 2400 [daN]	POSITIVE	AZ	Villeneuve	19.01.2016
6. Measurement				
According to manufacturer user manual	POSITIVE	AZ	Villeneuve	11.11.2015

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Deployment system strength

EP PARAGLIDERS RESCUE SYSTEMS

TEST REPORT EP 1

Test report number:	**EP_135.2015**
SAMPLE DATA	
Manufacturer name:	**Flow Paragliders PTY LTD**
Representative	**Felipe Rezende**
Street:	**1/24 Clyde Road**
Post code / place:	**Dee Why 2099 NSW**
Country:	**Australia**
Rescue systems manufacturers name:	**Aura**
Rescue systems manufacturers Size:	**M**
Rescue systems manufacturers max load (kg):	**100**
Manufacturers serial number flight :	**153702**
Date of sample received:	**19.09.2015**
Place of test:	**Villeneuve**
Date of test:	**04.12.2015**
Directive:	**EN 12491 | 2001** chapter 5.3.2 **and LTF 91/09** chapter 6
Inspector:	**Alain Zoller**
Results:	POSITIVE
Signature:	

ATMOSPHERE AGL	
[C°]	**21.8**
RH [%]	**40**
[hPa]	**1035**

The deployment system is loaded at min 700 [N] during 10 secondes min. The deployment system is loaded until breaking. Each componnent is tested.

RESULTS	
Minimum strength required during min 10s [kN]:	**700.00**
Strength of 700 N duration each components no1 [s]:: 1	**3.58**
Strength of 700 N duration each components no2 [s]:: 2	**N/A**
Strength of 700 N duration each components no3 [s]:: 3	**N/A**
Uncertainty 95% [kN] :	**0.017**
INSPECTION RESULTS MINIMUM Time [s]:	**3.6**
Max strength components [kN]:	
Max strength components no1 [kN]: 1	**1.886**
Max strength components no2 [kN]: 2	**-0.017**
Max strength components no3 [kN]: 3	**N/A**
Uncertainty 95% [kN]:	**0.017**
Max strength [kN]:	**-0.017**

Deployment system strength

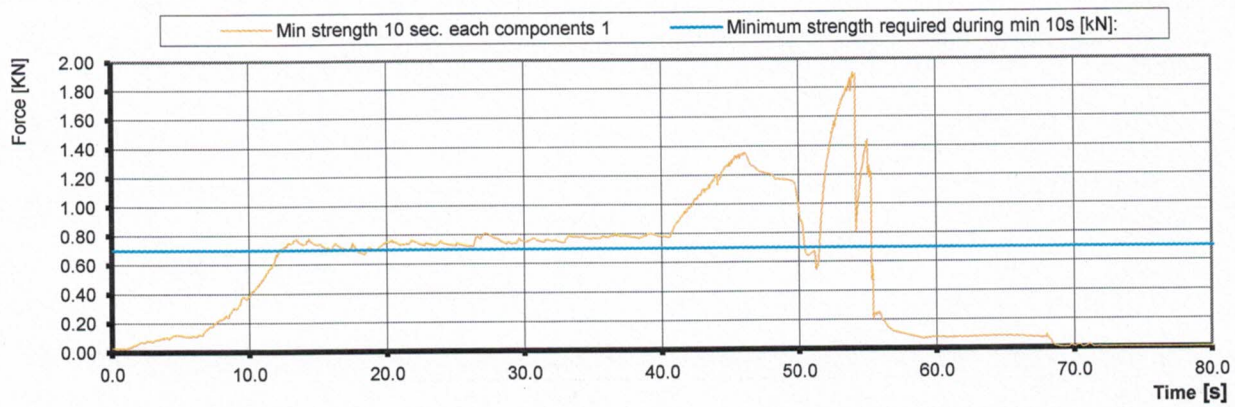
PARAGLIDERS RESCUE SYSTEMS

TEST REPORT EP 1

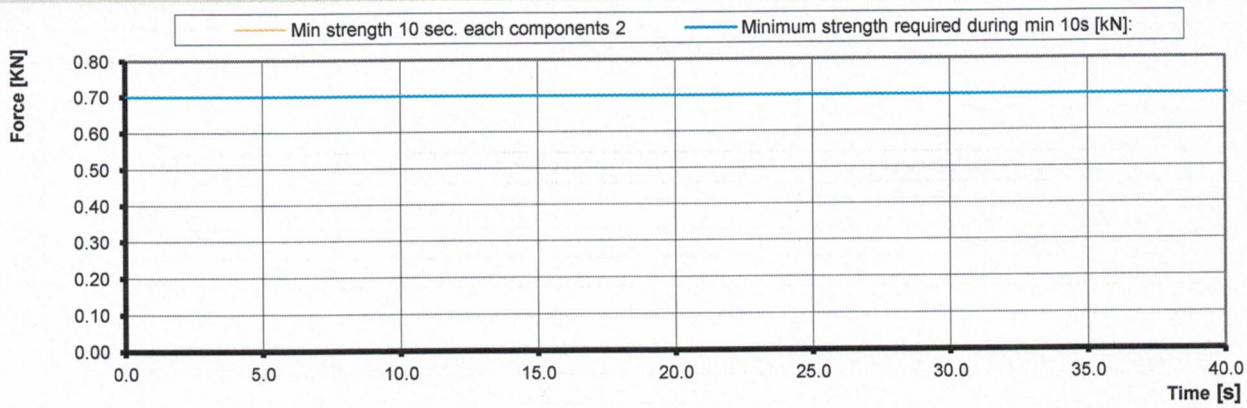
Test report number: **EP_135.2015**

Involved test	Item	Validity	Manufacturer	Type nr.	S/N
Deployment system strength test	Load Cell (axial)	11.06.2016	Burster / MTS	8431-10000	1185483
Deployment system strength test	USB interface	11.06.2016	Burster / MTS	9205-V001	10000469
Deployment system strength test	Winch	06.01.2017	Arwin	300/600	n/a
Weather	Geos n° 11 Skywatc	08.05.2017	JDC elec.	Geos n° 11	22

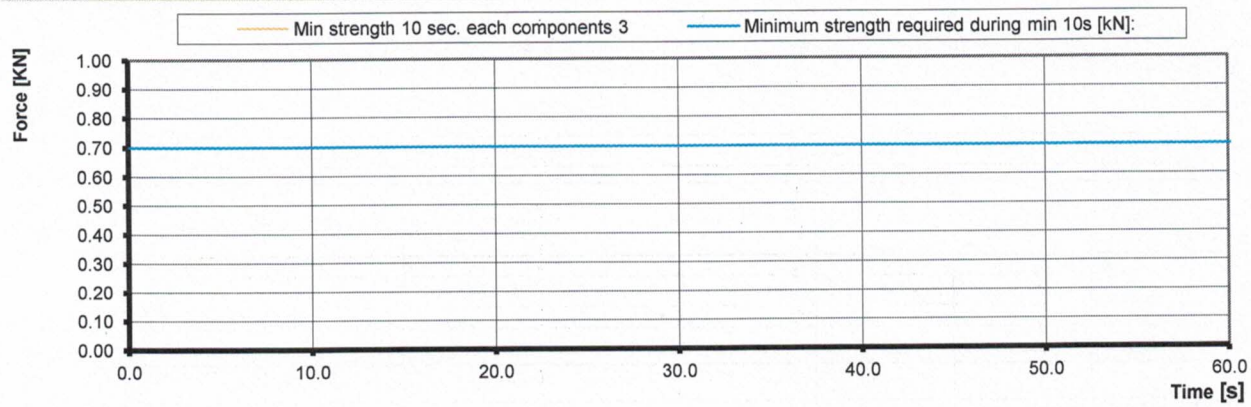
Min strength 10 sec. each components 1



Min strength 10 sec. each components 2



Min strength 10 sec. each components 3



Descent rate and stability test - ref. A and B

EP PARAGLIDERS RESCUE SYSTEMS

TEST REPORT EP 2

Test report number:	**EP_135.2015**
SAMPLE DATA	
Manufacturer name:	**Flow Paragliders PTY LTD**
Representative	**Felipe Rezende**
Street:	**1/24 Clyde Road**
Post code / place:	**Dee Why 2099 NSW**
Country:	**Australia**
Rescue systems manufacturers name:	**Aura**
Rescue systems manufacturers Size:	**M**
Rescue systems manufacturers max load [kg]:	**100**
Manufacturers serial number flight :	**153702**
Date of sample received:	**19.09.2015**
Place of test:	**Villeneuve**
Date of test:	**10.11.2015**
Directive:	**EN 12491 | 2001** chapter 5.3.4 and 5.3.3 **and LTF 91/09** chapter 6
Inspector:	**Alain Zoller**
Signature:	

ATMOSPHERE AGL	Test no1	ATMOSPHERE AGL	Test no2
[C°]	11	[C°]	11.5
RH [%]	74	RH [%]	68
[hPa]	976.4	[hPa]	986
Wind [m/s]	0.1	Wind [m/s]	0.1

The rescue system is droped from a paraglider in straight flight at 8 [m/s] +-1 [m/s]. The paraglider is released as the rescue system begins to open, minimum 100 [m] descent. Wink link 200 [N] is used to measure the speed opening.

RESULTS	EN	LTF
Sink rate results:	**POSITIVE**	**POSITIVE**
Stability results:	**POSITIVE**	**POSITIVE**
Speed opening results:	**POSITIVE**	**POSITVE**
Max sink rate test requirements [m/s]	**5.50**	**6.80**
Sink rate test 1 [m/s] 1	**5.41**	**5.41**
Sink rate test 2 [m/s] 2	**5.47**	**5.47**
Behavior during descent		
Stability test 1 1	**Stable**	**Stable**
Stability test 2 2	**Stable**	**Stable**
Requirement time from the instant of free drop until a load of 200 [N] is sustained [s]	**5.00**	**5.00**
Speed opening test 1 [s]	**0.15**	**0.15**
Speed opening test 2 [s]	**3.11**	**3.11**

Involved test	Item	Validity	Manufacturer	Type nr.	S/N
Deployment system strength test	Weak links	2030	Tost	n/a	n/a
Descent rate and stability test	Line 30 meters	2020	Air Turquoise	n/a	n/a
Descent rate and stability test	Camecorder	2020	CANON	Legria HF G10	463440300907
Weather	Geos n° 11 Skywatch	08.05.2017	JDC elec.	Geos n° 11	22

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Descent rate and stability test - ref. A and B

PARAGLIDERS RESCUE SYSTEMS

TEST REPORT EP 2

Test report number: **EP_135.2015**

A. At horizontal airspeed 8 m/s and vertical speed 1.5 m/s

B. Formula to be used for correcting the test mass ofr differences from ICAO standard atmosphere

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

Sink rate test 1

Ground level atmospheric pressure at test location: (p)	976.4	[hPa]	RH [%]	74
ICAO standard atmospheric pressure at MSL: (po)	1013.25	[hPa]	Wind [m/s]	0.1
Ground level température at the test location: (T)	11	[C°]		
	284.15	[°K]		
ICAO standard temperature at MSL: (To)	15	[C°]		
	288.15	[°K]		
Total weight in flight: (mdec)	100	[kg]		
Corrected mass: (mcorr)	97.72	[kg]		
Corrected mass with uncertainty: (mcorr)	98.62	[kg]		
Time when pilot release rescue	0			
Time when weak link broke	0			
Speed opening (sec.):	0.15	[s]		
Time boil touch	18.8			
Time pilot touch	24.5			
Time between boil touch and pilot touch (30m)	5.55	[s]		
Sink rate:	5.4108	[m/s]		
Behaviour:	Stable			
Inspector:	EB			
Date of test :	25.09.2015			

Sink rate test 2

Ground level atmospheric pressure at the test location: (p)	986	[hPa]	RH [%]	68
ICAO standard atmospheric pressure at MSL: (po)	1013.25	[hPa]	Wind [m/s]	0.1
Ground level température at the test location: (T)	11.5	[C°]		
	284.65	[°K]		
ICAO standard temperature at MSL: (To)	15	[C°]		
	288.15	[°K]		
Total weight in flight: (mdec)	100	[kg]		
Corrected mass: (mcorr)	98.51	[kg]		
Corrected mass with uncertainty: (mcorr)	99.41	[kg]		
Time when pilot release rescue	14.24			
Time when weak link broke	17.2			
Speed opening (sec.):	3.11	[s]		
Time boil touch	1.12			
Time pilot touch	6.76			
Time between boil touch and pilot touch (30m)	5.49	[s]		
Sink rate:	5.4699	[m/s]		
Behaviour:	Stable			
Inspector:	CT			
Date of test :	10.11.2015			

Descent rate and stability test - ref. A and B

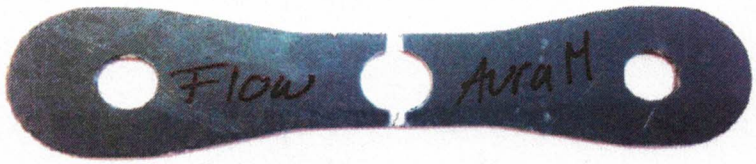
PARAGLIDERS RESCUE SYSTEMS

TEST REPORT EP 2

Test report number: **EP_135.2015**

WINK LINKS 1

WINK LINKS 2



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Strength test opening shock

PARAGLIDERS RESCUE SYSTEMS

TEST REPORT EP 3

Inspection report number:	**EP_135.2015**
TEST SAMPLE DATA	
Manufacturer name:	**Flow Paragliders PTY LTD**
Representative	**Felipe Rezende**
Street:	**1/24 Clyde Road**
Post code / place:	**Dee Why 2099 NSW**
Country:	**Australia**
Rescue systems manufacturers name:	**Aura**
Rescue systems manufacturers Size:	**M**
Rescue systems manufacturers max load [kg]:	**100**
Manufacturers serial number load :	**AUXRM15303**
Date of sample received:	**19.09.2015**
Place of test:	**Illarsaz**
Date of test: 1 | 2 | 3:	**08.10.2015 09.10.2015 05.11.2015**
Directive:	**EN 12491 | 2001** chapter 5.3.5 **and LTF 91/09** chapter 6
Inspector:	**Alain Zoller**
Results:	**POSITIVE**
Signature:	

ATMOSPHERE AGL	Test no1	Test no2	Test no3
[C°]	14.9	9.5	10.9
RH [%]	65	78	68
[hPa]	1019.3	1019.4	981.2
Wind [m/s]	1.5	0.1	1.4

The drop test device is accelerated to a straight line velocity of 40 m/s. Speed of opening must be less than 5 seconds and shock not exceeded 15g.

RESULTS	
Speed of opening in max 5 secondes	
Speed of opening test 1 [s]	**POSITIVE**
Speed of opening test 2 [s]	**POSITIVE**
Speed of opening test 3 [s]	**POSITIVE**
Uncertainty 95% [s]	**0.15**
Sample statut after shock	
Strength test 40 m/s opening shock 1	**POSITIVE**
Strength test 40 m/s opening shock 2	**POSITIVE**
Strength test 40 m/s opening shock 3	**POSITIVE**
Uncertainty 95% [m/s]	**1.73**
Wink link statut after shock	
Wink link test 1	**POSITIVE**
Wink link test 2	**POSITIVE**
Wink link test 3	**POSITIVE**
Uncertainty 95% [%]	**10**

Strength test opening shock

PARAGLIDERS RESCUE SYSTEMS

TEST REPORT EP 3

Test report number: **EP_135.2015**

Involved test	Item	Validity	Manufacturer	Type nr.	S/N
Strength test 41 m/s opening shock	Helicopter	Air-Glacier	Air-Glacier	Air-Glacier	Air-Glacier
Strength test 41 m/s opening shock	Weight	2017	Air Turquoise	n/a	n/a
Strength test 41 m/s opening shock	Wink links	2020	Tost	n/a	n/a
Strength test 41 m/s opening shock	Camecorder	2017	CANON	Legria HF G10	463440300907
Weather	Geos n° 11 Skywatch	08.05.2017	JDC elec.	Geos n° 11	22

Connecting strap

EP PARAGLIDERS RESCUE SYSTEMS

TEST REPORT EP 5

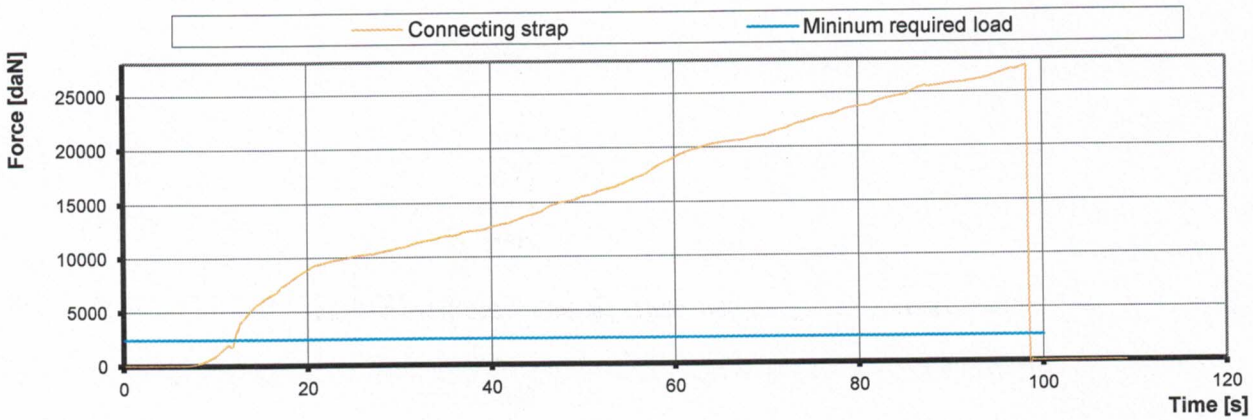
Test report number:	**EP_135.2015**
TEST SAMPLE DATA	
Manufacturer name:	**Flow Paragliders PTY LTD**
Representative	**Felipe Rezende**
Street:	**1/24 Clyde Road**
Post code / place:	**Dee Why 2099 NSW**
Country:	**Australia**
Rescue systems manufacturers name:	**Aura**
Rescue systems manufacturers Size:	**M**
Rescue systems manufacturers max load (kg):	**100**
Manufacturers serial number load :	**AUXRM15303**
Date of sample received:	**19.09.2015**
Place of test:	**Villeneuve**
Date of test:	**19.01.2016**
Directive:	**LTF 91/09** chapter 6
Inspector:	**Alain Zoller**
Results:	**POSITIVE**
Signature:	

ATMOSPHERE AGL	
[C°]	**20.5**
RH [%]	**35**
[hPa]	**1014.9**

The connecting strap is loaded at min 2400 [daN] and must not break.

RESULTS	**[daN]**
Mininum required load	**2400**
Load capacity 1	**26818**
Uncertainty 95%	**42**
Max STRENGTH	**26776.1**

GRAPHIQUE Connecting strap



Involved test	Item	Validity	Manufacturer	Type nr.	S/N
Strap	Load Cell (axial)	11.06.20	Althen	SHK-D-3	20562
Atmosphere	Geos n° 11 Skywatch	08.05.20	JDC elec.	Geos n°	22

Measurement 50 N

EP PARAGLIDERS RESCUE SYSTEMS

MEASUREMENT REPORT EP 6

Teste report number:	**EP_135.2015**
TEST SAMPLE DATA	
Manufacturer name:	**Flow Paragliders PTY LTD**
Representative	**Felipe Rezende**
Street:	**1/24 Clyde Road**
Post code / place:	**Dee Why 2099 NSW**
Country:	**Australia**
Rescue systems manufacturers name:	**Aura**
Rescue systems manufacturers Size:	**M**
Rescue systems manufacturers max load (kg):	**100**
Manufacturers serial number flight :	**153702**
Place of test:	**Villeneuve**
Date of measurement:	**11.11.2015**
Directive:	**EN 12491 | 2001** chapter **and LTF 91/09** chapter 6
Inspector:	**Alain Zoller**
According to manufacturer user manual	**POSITIVE**
Signature:	

ATMOSPHERE AGL	
[C°]	**20.5**
RH [%]	**57**
[hPa]	**1014.6**

The rescue system lines are measured with 50[N] of tension. Center line and all types of mains lines are measured from attach point base until end of riser. Canopy dimensions are not measured. The rescue system is weighed with pod. Dimentions are compare with users manual.

RESULTS	
Center Line (average) [mm]	**5575**
Main Line (average of 5 pcs) 1 [mm]	**4780**
Main Line (average of 5 pcs) 2 [mm]	**n/a**
Tolerance [mm]	**25**
Number of center lines:	**2**
Number of lines:	**16**
Weight [grame]	**1486.4**

Involved test	Item	Validity	Manufacturer	Type nr.	S/N
Line length measurements	laser distance meter	07.04.2017	Leica	DISTO D3a BT	911110352
Atmosphere	Geos n° 11 Skywatch	08.05.2017	JDC elec.	Geos n° 11	22