



Annex to Solar Keymark Certificate					Licence Number		SKM 10043.1				
					Date issued		2023-10-27				
					Issued by		DQS Hellas				
Licence holder		SONNE AKTION LTD			Country		Greece				
Brand (optional)		Phaethon			Web		www.sonne.gr				
Street, Number		68 Km N.R. Athens - Lamia			E-mail		info@sonne.gr				
Postcode, City		32009 Schimatari Viotias			Tel		+30 22620 59260				
Collector Type					Flat plate collector						
Collector name		Gross area (A _G) m ²	Gross length mm	Gross width mm	Gross height mm	Power output per collector G _b = 850 W/m ² , G _d = 150 W/m ² & u = 1.3 m/s $\vartheta_m - \vartheta_a$					
						0 K W	10 K W	30 K W	50 K W	70 K W	76 K W
Phaethon SA170		1.65	1,560	1,040	85	1,207	1,144	997	822	620	554
Phaethon SA200		2.00	2,000	1,000	85	1,463	1,386	1,208	997	751	671
Phaethon SA240		2.39	1,995	1,200	85	1,748	1,657	1,444	1,191	898	802
Phaethon SA240 HOR		2.39	1,200	1,995	85	1,748	1,657	1,444	1,191	898	802
Power output per m ² gross area						731	693	604	498	376	336
Performance parameters test method		Steady state - outdoor									
Performance parameters (related to A _G)		η_0, b	a1	a2	a3	a4	a5	a6	a7	a8	Kd
Units		-	W/(m ² K)	W/(m ² K ²)	J/(m ³ K)	-	J/(m ² K)	s/m	W/(m ² K ⁴)	W/(m ² K ⁴)	-
Test results		0.755	3.61	0.021	0.000	0.00	7,950	0.000	0.00	0.0E+00	0.79
Incidence angle modifier test method		Steady state - outdoor									
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Transversal		K _{θT, coll}	1.00	0.98	0.95	0.89	0.82	0.71	0.55	0.32	0.00
Longitudinal		K _{θL, coll}	1.00	0.98	0.95	0.89	0.82	0.71	0.55	0.32	0.00
Heat transfer medium for testing		Water									
Flow rate for testing (per gross area, A _G)		dm/dt	0.022		kg/(sm ²)						
Maximum temperature difference during thermal performance test		($\vartheta_m - \vartheta_a$) _{max}	46		K						
Standard stagnation temperature (G = 1000 W/m ² ; ϑ_a = 30 °C)		ϑ_{stg}	182		°C						
Maximum operating temperature		$\vartheta_{max, op}$	100		°C						
Maximum operating pressure		p _{max, op}	1000		kPa						
Testing laboratory		NCSR "DEMOKRITOS"					www.solar.demokritos.gr				
Test report(s)		4228 DE1 4229 DE1 4230 DQ1					Dated		25/07/18 25/07/18 30/07/18		
Comments of testing laboratory		Ver. 6.2 (13.01.2022)									
The data were obtained from the test reports 4228 DE1 (Collector Phaethon SA170) and 4230 DQ1 (Collector Phaethon SA240).							N.C.S.R. "DEMOKRITOS" SOLAR ENERGY LABORATORY Tel: +210 6503815 - Fax: +210 6544582 P.O. BOX 60037, 15310 Ag. Paraskevi, Greece				
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