




Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate						Licence Number		SKM 9921/2							
						Issued		8/2/2016							
Company holding the						Country		GREECE							
Brand (optional)						Website		http://www.cosmosolar.com/							
Blue Solar, Cosmosolar, Delta Solar, Falcon, Federman, Skyland, Supernet, Nuevosol, primesolar, viber															
Street, street number						E-mail		info@cosmosolar.com							
Ntrei Road, Dervenochorion Gate															
Postal Code / City, province						Tel/Fax		30 210 3479414 / 210 3479484							
32200 Viotia															
Collector Type (flat plate glazed/un-glazed; evacuate tubular)						Flat plate collector - glazed									
Thermal / photo voltaic hybrid collector? (PVT collector)						No									
Integration in the roof possible ? (manufacturers declaration)						Yes									
	Collector name	Aperture area (Aa) m ²	Gross length mm	Gross width mm	Gross height mm	Gross area (Ag) m ²	Power output per collector module								
							G = 1000 W/m ²								
							Tm-Ta								
							0 K	10 K	30 K	50 K	70 K				
							W	W	W	W	W				
	EPI 20	1,30	1.517	1.019	90	1,55	997	949	837	703	545				
	EPI 12	1,61	1.517	1.247	90	1,89	1234	1175	1037	870	674				
	EPI 25	1,77	2.017	1.017	90	2,05	1353	1288	1136	953	739				
	EPI 16	2,00	1.917	1.197	90	2,30	1526	1454	1282	1076	834				
	EPI 54	2,26	2.017	1.277	90	2,58	1.729	1647	1453	1219	945				
Performance test method						Glazed liquid heating collector - steady state - indoor									
Performance parameters related to aperture						η_0	a1	a2							
Units						-	W/(m ² K)	W/(m ² K ²)							
Test results - Flow rate and fluid see note 1						0,765	3,415	0,022							
Bi-directional incidence angle modifiers?						Yes									
						K θ values are obligatory for 50°.									
Incidence angle modifiers Kθ(θT) transversal direction						Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
						K θ (θ T)					0,89			0,00	
Incidence angle modifiers Kθ(θL) longitudinal direction						Angle									
						K θ (θ L)									
Stagnation temperature - Weather conditions see note 2						T _{stp}	184 °C								
Effective thermal capacity						C _{eff} = C/A _v	5,518 kJ/(m ² K)								
Max. intended operation temperature - see note 3						T _{max,op}	°C								
Max. operation pressure - see note 3						p _{max,op}	100 kPa								
Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m² aperture area															
Flow rate	kg/(s m ²)														
Pressure drop, ΔP	Pa														
Optional weather data						Location	Link								
Testing Laboratory						IZES gGmbH, TZSB an der HTW									
Website						www.izes.de/tzsb									
Test report id. number						KT08_03, KT08_04			Date of test report			2008/09/22			
During the test G_{DIF}/G_{TOT} was always between						0,14	and	0,18							
Comments of testing laboratory:															
Example comment.															
Note 1	Flow rate	0,020	kg/(s m ²)	Fluid	Water										
Note 2	Irradiance, G = 1000 W/m²; Ambient temperature, T_a = 30 °C														
Note 3	Given by manufacturer														
 Datasheet version: 4.06, 2014-01-15															
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Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	SKM 9921/2
	Issued	8/2/2016

Annual collector output kWh/module													
Collector name	Location and collector temperature (T _m)												
	Athens			Davos			Stockholm			Würzburg			
	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	
EPI 20	1.519	1.061	649	1.152	767	439	846	538	301	918	577	317	
EPI 12	1.880	1.314	803	1.426	950	543	1.048	666	373	1.137	714	393	
EPI 25	2.061	1.440	880	1.564	1.041	596	1.148	730	408	1.246	783	430	
EPI 16	2.325	1.625	993	1.764	1.175	672	1.296	824	461	1.406	884	486	
EPI 54	2.634	1.841	1.125	1.999	1.331	761	1.468	933	522	1.593	1.001	550	

Collector mounting: Fixed or tracking Fixed; slope = latitude - 15° (rounded to nearest 5°)

Overview of locations				
Location	Latitude °	G _{tot} kWh/m ²	T _a °C	Collector orientation or tracking mode
Athens	38	1.765	18,5	South, 25°
Davos	47	1.714	3,2	South, 30°
Stockholm	59	1.166	7,5	South, 45°
Würzburg	50	1.244	9,0	South, 35°

G _{tot}	Annual total irradiation on collector plane	kWh/m ²
T _a	Mean annual ambient air temperature	°C
T _m	Constant collector operating temperature (mean of in- and outlet temperatures)	°C

The calculation of the annual collector performance is performed with the official Solar Keymark spreadsheet tool ScenoCalc. The collector output is calculated hour by hour according to the efficiency parameters from the Keymark test using constant collector operating temperature (T_m). A detailed description of the calculations is available at <http://www.sp.se/en/index/services/solar/ScenoCalc/Sidor/default.aspx>.

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	ScenoCalc version: Ver. 4.06 (Jan, 2014)