SOLAR COLLECTOR CERTIFICATION

CERTIFIED SOLAR COLLECTOR

SUPPLIER: **Solartron Energy Systems Inc.**
1328 Highway #6
Amherst, NS, B4H3Y2, Canada

MODEL: SolarBeam SB-4.5-4400

COLLECTOR TYPE: Concentrating

CERTIFICATION#: 2011034A

Original Certification Date: 19-Aug-11

COLLECTOR SPECIFICATIONS (for the tested collector)

Gross Area	15.90 m^2	171.15 ft^2	**Gross Length**	4.50 m	14.76 ft
Aperture Area	15.80 m^2	170.07 ft^2	**Gross Width**	4.50 m	14.76 ft
Absorber Area	0.0645 m^2	0.69 ft^2	**Gross Depth**	2.845 m	9.33 ft
Fluid Capacity	0.303 liter	0.08 gal	**Test Pressure**	258 kPa	37.5 psi
Dry Weight	436 kg	961 lb	**Concentration Ratio**	246	
Tracking: two axis			**Control System:** active		
Cover Geometry: none			**Reflector Geometry:** parabolic		

COLLECTOR MATERIALS and COATINGS

Cover: none	**Reflector:** anodized aluminum
Absorber: aluminum block with integrated flow passages	**Absorber Coating:** silica-ceramic coating

TECHNICAL INFORMATION

Collector Model: (Based on Aperture Area)

$$Q/A_a = F'(\tau\alpha)_{en} K_{\Theta b}(\Theta)G_b + F'(\tau\alpha)_{en} K_{\Theta d}(\Theta)G_d - c_1(t_m-t_a) - c_2(t_m-t_a)^2 - c_3u(t_m-t_a) + c_4(E_L - \sigma t a^4) - c_5\, dt_m/dt - c_6uG$$

$$K(\Theta) = 1 - b_o\,[1/\cos(\Theta) - 1]$$

Collector efficiency factor: $F'(\tau\alpha)_{en}$	0.729	
Incident angle modifier for diffuse radiation: $K_{\Theta d}$	-	
Longitudinal incident angle modifier constant: b_{0L}	-	
Transverse incident angle modifier constant: b_{0T}	-	
Heat loss coefficient: c_1	0.733	**[W/(m^2K)]**
Temperature dependence of the heat loss coefficient: c_2	0.0204	**[W/(m^2K^2)]**
Wind speed dependence of the heat loss coefficient: c_3	0.00	**[J/(m^3K)]**
Sky temperature loss coefficient: c_4	0.00	**[W/(m^2K)]**
Effective thermal capacity: c_5	253	**[J/(m^2K)]**
Wind dependence of zero-loss efficiency: c_6	0.085	**[s/m]**

IAM	**10°**	**20°**	**30°**	**40°**	**50°**	**60°**	**70°**
$K_{\Theta T}(\Theta_T)$							
$K_{\Theta L}(\Theta_L)$							

Impact Safety Rating: 0

Test Conditions:

Max Fluid Temperature During Efficiency Test: 84 °C	**Wind Speed Range During Efficiency Test:** 1.0 to 4.0 m/s
Test Fluid: water	**Test Flow Rate:** 0.270 kg/sec
Exposure Test Conducted: wet	**Test Method:** SRCC Standard 600

Remarks: