



Sun Crest Inc.



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## Test Plan for the *Stellar Dish: Sun-tracking Solar Cooker*

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## Solar Cooker Test

The Aluminum coated umbrella needs to be tested to assure that it is efficient enough to be used as a cooker. The following tests will be performed for assurance.

	<b>Test Case</b>	<b>Yes</b>	<b>No</b>
a)	Solar cooker should reach at least 100° at the focal point of the umbrella		
b)	Solar cooker should boil water under the right weather conditions in 15-20 minutes		

## Support Structure Test

The support structure, as the name suggests, provides support to the entire system holding the dish, sun tracker, power supplies and the motors together even on windy days.



	<b>Test Case</b>	<b>Yes</b>	<b>No</b>
a)	The structure will be strong enough to withstand the gravitational force exerted by food including cooking vessel		
b)	The motor attached to the base should provide enough torque for the entire system to rotate while following the Sun		
c)	Motor will be attached at the base such that the base is fixed and the spindle provides the required rotations to the system		
d)	The dish will be mounted to the support structure such that it can only be re adjusted manually		

## Sun Tracker Test

Our design consists of two sun trackers. On days with good weather, the higher priority light sensor-dependent sun tracker uses four light sensors and reads light intensities feeding the information to the Arduino for position adjustment control. The second sun tracker is the large motor attached at the base of the structure that will follow the light sensor-dependent tracker for better guidance under bright sunny weather.

	<b>Test Case</b>	<b>Yes</b>	<b>No</b>
a)	The sun tracker will mechanically re-adjust the umbrella dish to face the sun when intentionally adjusted away from it		
b)	The large motor will move the umbrella to the position of the more accurate light sensor-dependent sun tracker on a bright sunny day		
c)	Light sensor-dependent sun tracker switches off when light intensity is low (on cloudy days or during time intervals when the sun is blocked by clouds) And sun tracking will then be executed using a constant-time rotation method		



## Software Test

Software test is directly related to the sun tracker. In order for the sun tracker to perform accurately, the software needs to be coded carefully.

	<b>Test Case</b>	<b>Yes</b>	<b>No</b>
a)	The software will detect the difference between the two light sensors in order to calculate the position of the Sun.		
b)	The software will regulate the rotation and the position of the Sun according to the light dependent sensor values.		