

# BilicareFocus

Deeply researched,  
advanced phototherapy system



ISO 13485 verified by  
IAF for CDSCO  
**MH/M/MD/008636**



**PATENTED  
PHOTOTHERAPY  
SYSTEM**



### About Shreeyash:

Shreeyash Electro Medicals is into manufacturing New Born life saving devices since last 30 years in Pune with an established sales & service network all across India.

The manufacturing activity is carried in 3 facilities in Pune in an ISO 13485 certified premises.

Shreeyash was the First company in India to manufacture:

- Bubble CPAP in 2003
- Neonatal Ventilator in 2004
- High Frequency Oscillatory Ventilator in 2006
- Conductive Patient Warming Blankets in 2013, and
- A fully Automatic Human Milk Pasteurizer in 2017.



### Existing problems with LED phototherapy:

General purpose LEDs are used and their optics are wide beam which spread the light with a wider angle and result into wastage of light

The phototherapy treatment needs a focused low frequency light treatment with uniform irradiance level. Current solutions provide highly inconsistent distribution of light over the baby tray.

As most of the light is scattered, clinicians tend to bring the LED panel close to the baby to achieve desired speed and efficacy of the treatment, which may be harmful for the baby and inconvenient for the doctors and nurses.

Low frequency & scattered light causes light pollution and nausea among the ICU staff.

Scattering of light makes the phototherapy inefficient which leads to use of a greater number of LED for better results, which also results in increase in cost & power.

### Use of Phototherapy, Old school of thought:

Distance between baby & phototherapy should be at least 18 inches.

**Advantages:** Easy access to baby for clinical procedures & Cyanosis can be detected, no chances of hyperthermia.

**Drawbacks:** Slow reduction of bilirubin.

### Use of Phototherapy, New school of thoughts:

Distance between baby & phototherapy should be as close as possible.

**Advantages:** Faster reduction of bilirubin.

**Drawbacks:** Lesser access to baby for clinical procedures. Chances of baby getting heated, cannot detect cyanosis, chances of Rash.

### What is the optimum Solution?

The answer is **Shreeyash BilicareFocus.**

No reduction in height of phototherapy for higher irradiance, but still effective treatment is provided.

Easy access to baby for clinical procedures.

Less hospital stays of the patient, economical to hospitals due to focused light ensuring no wastage of light, which ensures that the life of LED is increased.

Economy to patient as hospital-stay is reduced due to fast reduction in bilirubin without any side effects.

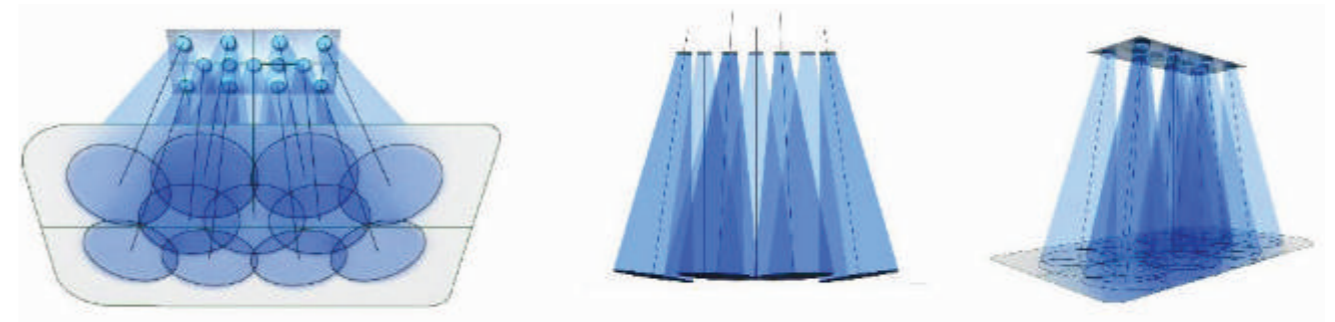
### Concept of 3 D LED Array:

LEDs with predefined beam angle are placed to deliver 3D beams across the baby bed, this was achieved after CAD simulation to arrive at an optimal 3D orientation of each of the LED beam.

**Benefits:** This helps to ensure LED beams form an uniform light spread on the bed without creating uneven light spots with very low intensity or very high concentration.

This 3D array also helps to make the LED panel very compact yet powerful. This is very convenient for the treating doctors as it is not in their way and they can manipulate it multiple ways.

### High treatment efficacy with precision 3D light array



Precision optics for efficient, and evenly distributed focussed low frequency blue LED lights



The focus on the baby, with evenly distributed irradiance that can be adjusted from 25 to 45 mW/cm<sup>2</sup>/nm



Low light pollution reducing short wavelength (blue light) nausea of NICU staff

### LED Faceted panel

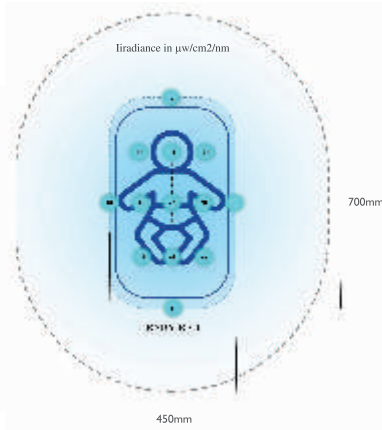


# Lab Testing reports of BilicareFocus

Actual results of BilicareFocus  
Phototherapy using 3 D optics,  
Diamond faceted panel &  
mode selection keys:

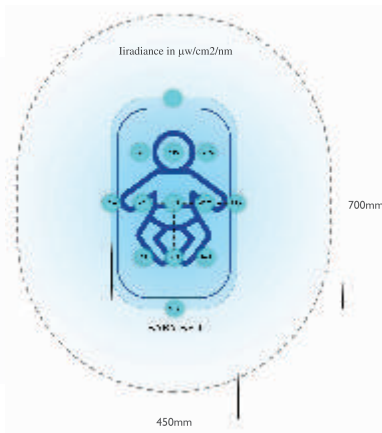
## Test Report of **MODE 1** (Mild Mode)

Reading Distance from Baby  
Bed - 45Cm **Power 50%**.  
Irradiance measured on  
DALE 40 Phototherapy  
Radiometer



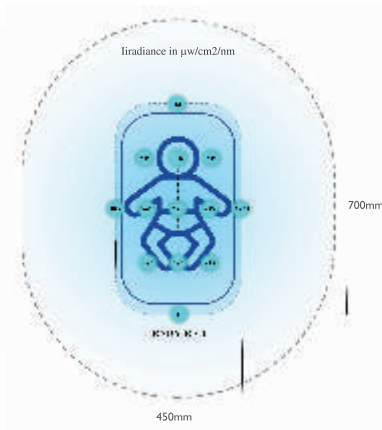
## Test Report of **MODE 2** (Conventional Mode)

Reading Distance from Baby  
Bed - 45Cm **Power 75%**.  
Irradiance measured on  
DALE 40 Phototherapy  
Radiometer.



## Test Report of **MODE 3** (Intensive Mode)

Reading Distance from Baby  
Bed - 45Cm **Power 100%**  
Irradiance measured on  
DALE 40 Phototherapy  
Radiometer



## BilicareFocus Invention at a glance:

- Irradiance of 25 to > 45 mw/cm<sup>2</sup> is achieved from a distance of 18 inches(45cm)
- Faceted LED Panel to focus the blue light only on baby tray & to avoid wastage of light & Avoid light pollution in the room.
- LED fixed in different THREE D angles to focus the blue light.
- Special 30-degree lens used to focus the blue light on baby treatment area.
- Three modes of Photo therapy treatment incorporated which provides different wave length from a distance of 18 inches to treat neonatal jaundice as per the serum bilirubin level of the newborn, hence no need to reduce the distance between light source & baby bassinet. This enhances efficacy of Infant care takers.
- No need of special cooling fan required as the LED enclosure is manufactured in aluminum box which itself acts as a heat sink absorbing whatever heat produced by LED.
- Special Cree LED used which produces less heat & dissipates more light.
- Almost doubles the life of LED as the irradiance of 25 mw/cm<sup>2</sup> is achieved using only 50% of power & also as the light is not wasted.
- Economical for hospitals as the electricity consumption is reduced.
- Economical for patient as the hospital stay is reduced.
- Sleek & elegant design of phototherapy & unbreakable baby bassinet not only livens up the ambience but ensures durability.
- Smart controller that indicates the phototherapy used hours, treatment time, infant feed schedule & also controls the irradiance.

## Patent Application Published in the official journal.

Patent Application Number : 202221039137  
Journal Number : 30/2022  
Journal Date : 29/07/2022  
Patent Publication Date : 29/07/2022