



# सीएसआईआर - केन्द्रीय वैज्ञानिक उपकरण संगठन

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## Test Certificate of UV-C Irradiance

Date:02/11/2020

Certificate No.	CSIO/20-21/UV-C/07d
Date of Receipt	26/10/2020
Name of Organisation	Godrej Security Solutions (Godrej & Boyce Mfg. Co. Ltd.)
Address	Plant 17, Pirojshanagar, Vikhroli, Mumbai - 400079, Maharashtra, India
Test Conducted	Spatial Uniformity of UV-C Irradiance
Identification Method Used (derived from)	<ol style="list-style-type: none"><li>IEC 60904 - 09: Photovoltaic devices - Part 9: Solar Simulator Performance Requirements (T 82 Working Group of IEC): Testing of Spatial Uniformity, Temporal Stability and Spectral Irradiance</li><li>ANSI - Illuminating Engineering Society of North America: Guide for the Measurement of UV Radiation from Sources LM 55 96</li><li>Ultraviolet Germicidal Irradiation Handbook UVGI for Air and Surface Disinfection - Wladyslaw Kowalski, Springer Publication, 2009</li><li>Chun-Chieh Tseng &amp; Chih-Shan Li (2007) Inactivation of Viruses on Surfaces by Ultraviolet Germicidal Irradiation, Journal of Occupational and Environmental Hygiene, 4:6, 400-405, DOI: 10.1080/15459620701329012</li></ol>
Description of Instruments	Godrej UV Case - 40 Litres Gr
Environmental Condition	Standard Temperature and Humidity Conditions (Temperature 25°C. Humidity: 45% RH)

### Observations:

- No leakage irradiance has been observed around the equipment during operating conditions.
- As per references indicated in "identification method used" section, the test specimen generates sufficient energy dose in 80 seconds to 3 minutes to reduce single strand RNA Virus (SARS CoV-2/Covid19) to more than 99% on the surface.

  
(Anand VP)

Tested by

  
(Robert Sam)

Checked by

  
(Kota Srinivas)

Authorized Signatory

**Test Report – Godrej UV Case – 40 Litres Gr**

**Methodology:** The spatial uniformity of UV-C irradiation inside the UV case is measured using standard UV-C detector placed perpendicular to the test bed. The detector is placed upwards in two levels at various positional coordinates (e.g. (1,1) .... (1,3) to (3,1) .... (3,3)) at a height of 6 cm and 16 cm respectively. The detailed diagram of the UV case is attached as annexure -1.

Position of Detector	Irradiance in mW/cm <sup>2</sup> for detector facing upward at 6 cm height from the base	Irradiance in mW/cm <sup>2</sup> for detector facing upward at 16 cm height from base
1,1	1.31	1.34
1,2	1.42	1.54
1,3	1.25	<b>1.26</b>
2,1	1.83	2.61
2,2	2.01	2.97
2,3	1.89	2.63
3,1	1.27	1.33
3,2	1.32	1.52
3,3	<b>1.23</b>	1.47

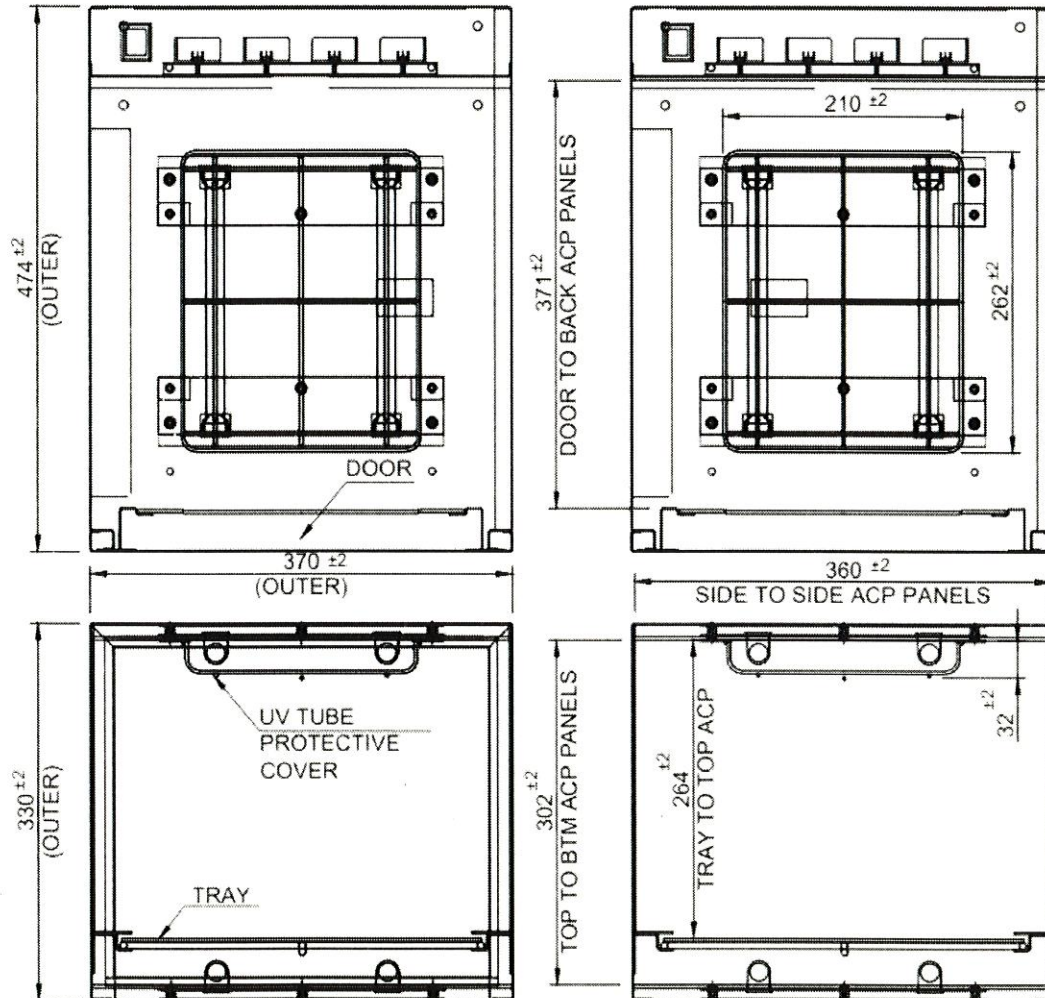
**Observations**

1. Minimum Irradiance: 1.23 mW/cm<sup>2</sup> (for detector facing upward at 6 cm height from the base)
2. Minimum Irradiance: 1.26 mW/cm<sup>2</sup> (for detector facing upward at 16 cm height from base)
3. Average Directional Irradiance: 1.32 mW/cm<sup>2</sup> (for detector placed at centre of the working area at a height of 11 cm from the base)

**Disclaimer:** It is very important to note that the results specified are only for the tested specimen. The studies do not include any virology tests and the necessary energy dose sufficiently produced by the tested specimen is an indicative term based on the references. Actual Virology test may be included to exactly validate the same.



Annexure 1 :



Gross Volume of the Case : 40 Litres.

