

# LiDAR Reflectometer Kit

Take the test to the target



## Easy and portable for field testing

Labsphere's Reflectometer is a compact, lightweight, and portable integrating sphere that delivers an easy to use method for field testing the reflectance of LiDAR targets and other materials at LiDAR wavelengths! The unit is ergonomically designed enabling single hand use for uninhibited spot reflectance measurements across the target. The Reflectometer has three wavelength module options specific to LiDAR applications including 850 nm, 905 nm, and 1550 nm. Data are captured real-time for immediate validation. Accuracy is assured with a NIST traceable reflectance kit for user calibration prior to every use.

## Applications

- Field calibration/validation of LiDAR target
- Reflectance of debris at LiDAR wavelengths
- In house calibration and reporting at LiDAR wavelengths
- Product qualification

## Models

- REF-850-8H: 850 nm Reflectometer Kit
- REF-905-8H: 905 nm Reflectometer Kit
- REF-1550-8H: 1550 nm Reflectometer Kit

## Features

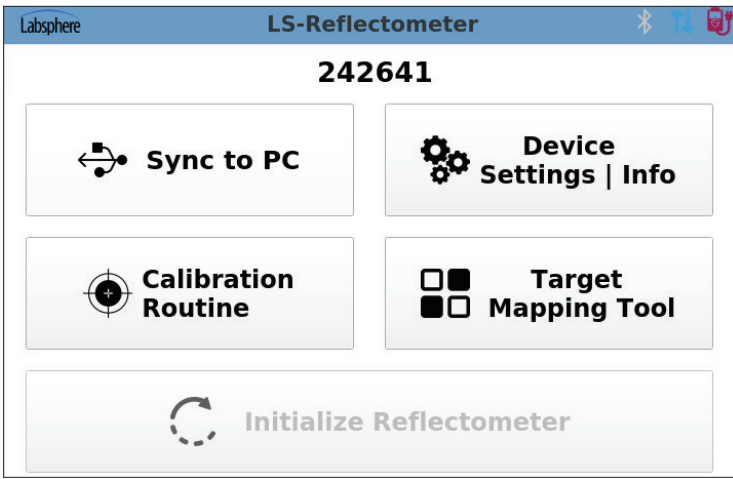
- Field testing of LiDAR targets and other objects
- Traceable reflectance measurements at your finger tips
- Measure reflectance at either 850 nm, 905 nm or 1550 nm
- Cover full reflectance scale from 2% to 99%
- Robust design with carry case and reference standard for field use
- Ergonomic design with finger trigger and touch display for full analysis on the go

## Functions

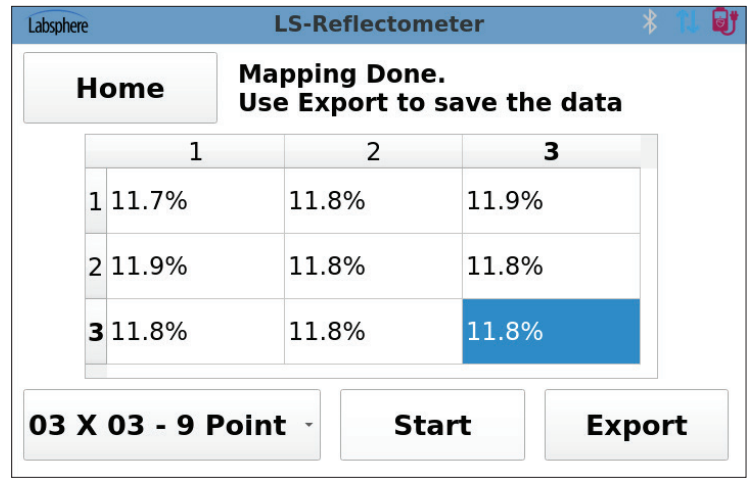
- 8/H reflectance at LiDAR wavelengths
- Reflectance mapping
- Performance histogram
- Reflectance history

## Includes

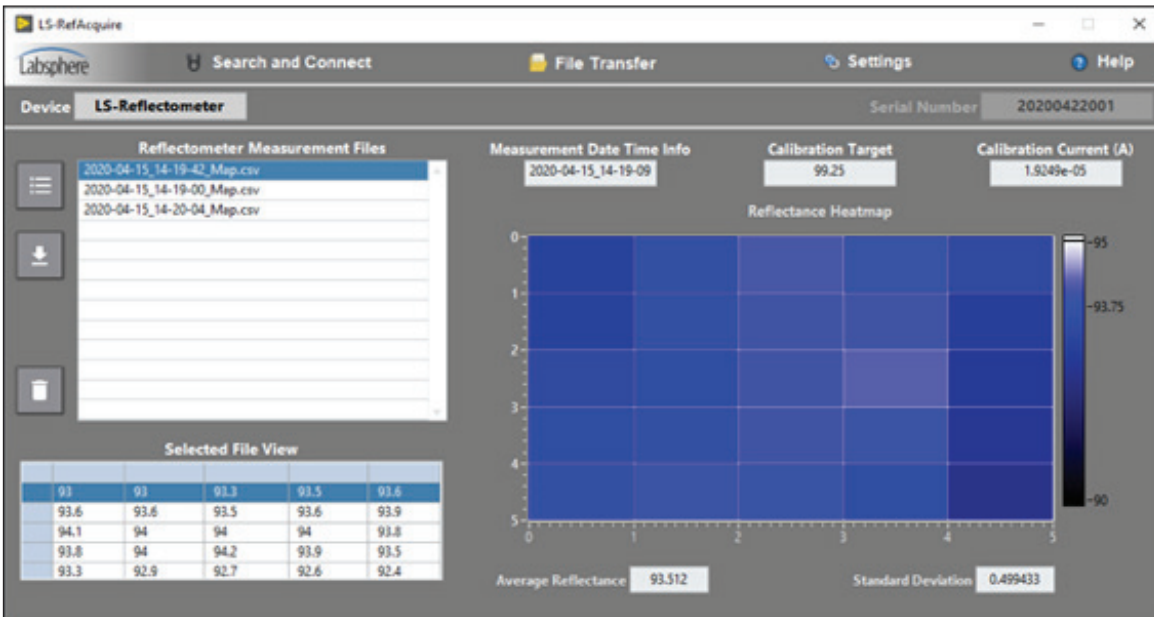
- Hand held reflectometer
- Data acquisition software
- Powered by USB
- NIST traceable Spectralon® 99% Reference Standard
- Carry and storage case



The Reflectometer's user friendly touchscreen interface puts device calibration, data transfer to external PC, target reflectance mapping, and single scan measurements at your fingertips.



Target mapping mode simplifies reflectance mapping with two mapping options; 3 X 3, nine point maps, and 5 X 5, 25 point maps.



RefAcquire works with the reflectometer hardware in real time over USB to provide file transfers, file maintenance, and data visualization. RefAcquire's reflectance heatmap creates a data visualization tool that provides a fast and efficient way to evaluate reflectance data with a quick glance.

### Reflectometer Measurement Uncertainty

Repeatability is the standard deviation from measuring the same sample with no movement 25 times.

The Monte Carlo Method (MCM) is used to derive the total uncertainty in the corrected reflectance value of the sample.

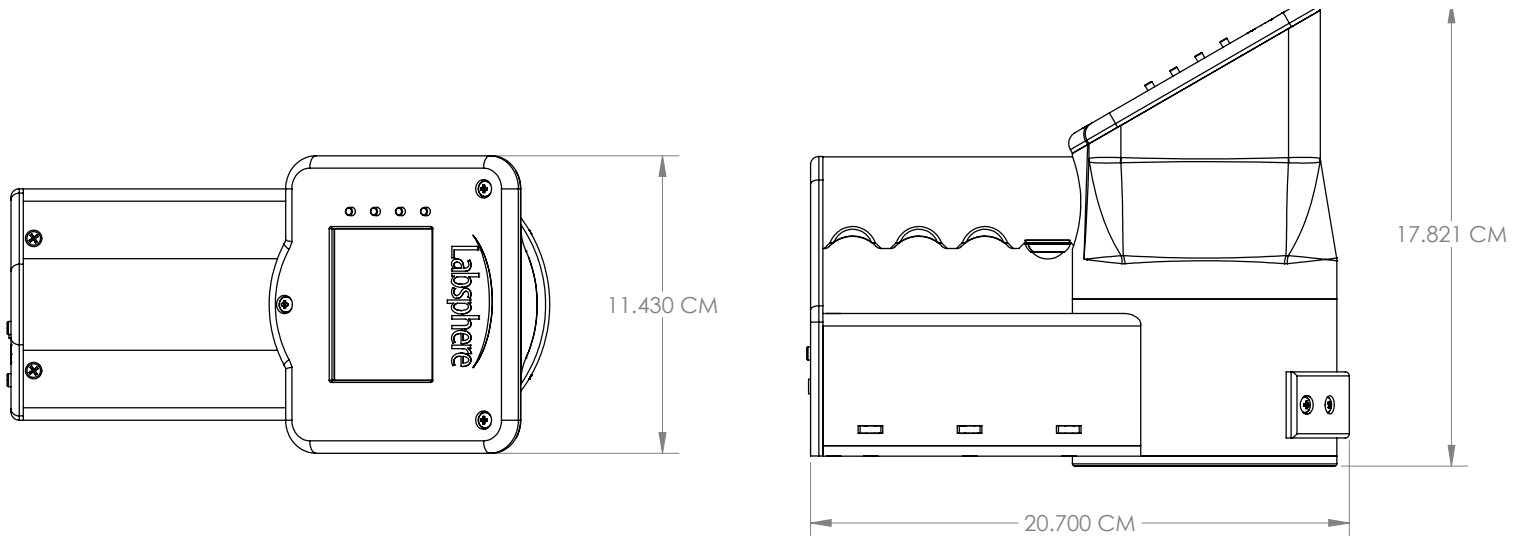
	850 nm		905 nm	
	Repeatability	Monte Carlo (k=2)	Repeatability	Monte Carlo (k=2)
Permafect 5%	± 0.0003 %	± 0.358 %	± 0.015 %	± 0.421 %
Permafect 10%	± 0.028 %	± 0.920 %	± 0.002 %	± 0.528 %
Permafect 18%	± 0.001 %	± 0.739 %	± 0.010 %	± 0.612 %
Permafect 50%	± 0.061 %	± 1.543 %	± 0.008 %	± 1.286 %
Permafect 80%	± 0.007 %	± 1.520 %	± 0.025 %	± 1.295 %
Permafect 94%	± 0.003 %	± 1.031 %	± 0.012 %	± 0.779 %



# Specifications and Ordering Information

Model Number:	REF-850-8H	REF-905-8H	REF-1550-8H
Order Number:	AA-01582-000	AA-01582-100	AA-01582-200
Measurement Wavelength:	850 nm	905 nm	1550 nm
Sensor:	InGaAs	InGaAs	InGaAs
Port Diameter (cm):	1.27	1.27	1.27
Measurement Geometry:	8/H Reflectance Factor	8/H Reflectance Factor	8/H Reflectance Factor
Reflectance Reference Standard:	Spectralon® SRS-99-020	Spectralon® SRS-99-020	Spectralon® SRS-99-020
Operating Temperature:	+10°C to +40°C	+10°C to +40°C	+10°C to +40°C
Data Transfer:	Micro USB (Type-B) to USB Type A	Micro USB (Type-B) to USB Type A	Micro USB (Type-B) to USB Type A
Power:	USB Micro-B input: 5VDC, 2A-max	USB Micro-B input: 5VDC, 2A-max	USB Micro-B input: 5VDC, 2A-max
Charging Time:	2½ - 3 hours (Turned off & USB port)	2½ - 3 hours (Turned off & USB port)	2½ - 3 hours (Turned off & USB port)
Idle Use Time:	5½ - 6 hours (Full charge)	5½ - 6 hours (Full charge)	5½ - 6 hours (Full charge)
Usage Time:	3 - 4 hours (Full charge)	3 - 4 hours (Full charge)	3 - 4 hours (Full charge)
Instrument Dimensions (cm):	17.8 H x 11.4 W x 20.7 L	17.8 H x 11.4 W x 20.7 L	17.8 H x 11.4 W x 20.7 L
Instrument Weight:	2.5 kg	2.5 kg	2.5 kg

Order Number	Model Number	Description
AA-01582-000	REF-850-8H	Portable 850 nm 8/H Reflectance Measurement Kit: 850 nm Reflectometer, 99% Spectralon Diffuse Reflectance Standard, Light trap, Software and Carry Case
AA-01582-100	REF-905-8H	Portable 905 nm 8/H Reflectance Measurement Kit: 905 nm Reflectometer, 99% Spectralon Diffuse Reflectance Standard, Light trap, Software and Carry Case
AA-01582-200	REF-1550-8H	Portable 1550 nm 8/H Reflectance Measurement Kit: 1550 nm Reflectometer, 99% Spectralon Diffuse Reflectance Standard, Light trap, Software and Carry Case
AA-01582-850	REF-850-LED	Add 850 nm LED module, AA-01582-850, to existing Reflectometer, Includes coefficient correction for 850 nm LED module; Available at time of purchase or through RMA process
AA-01582-905	REF-905-LED	Add 905 nm LED module, AA-01582-905, to existing Reflectometer, Includes coefficient correction for 905 nm LED module; Available at time of purchase or through RMA process
AA-01582-155	REF-1550-LED	Add 1550 nm LED module, AA-01582-155, to existing Reflectometer, Includes coefficient correction for 1550 nm LED module; Available at time of purchase or through RMA process
AA-01582-500	REF-LED-CC	Reflectometer LED Correction Curve, does not include LED replacement



Advancing the Technology of Light: Measure. Create. Reflect.

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