

application note



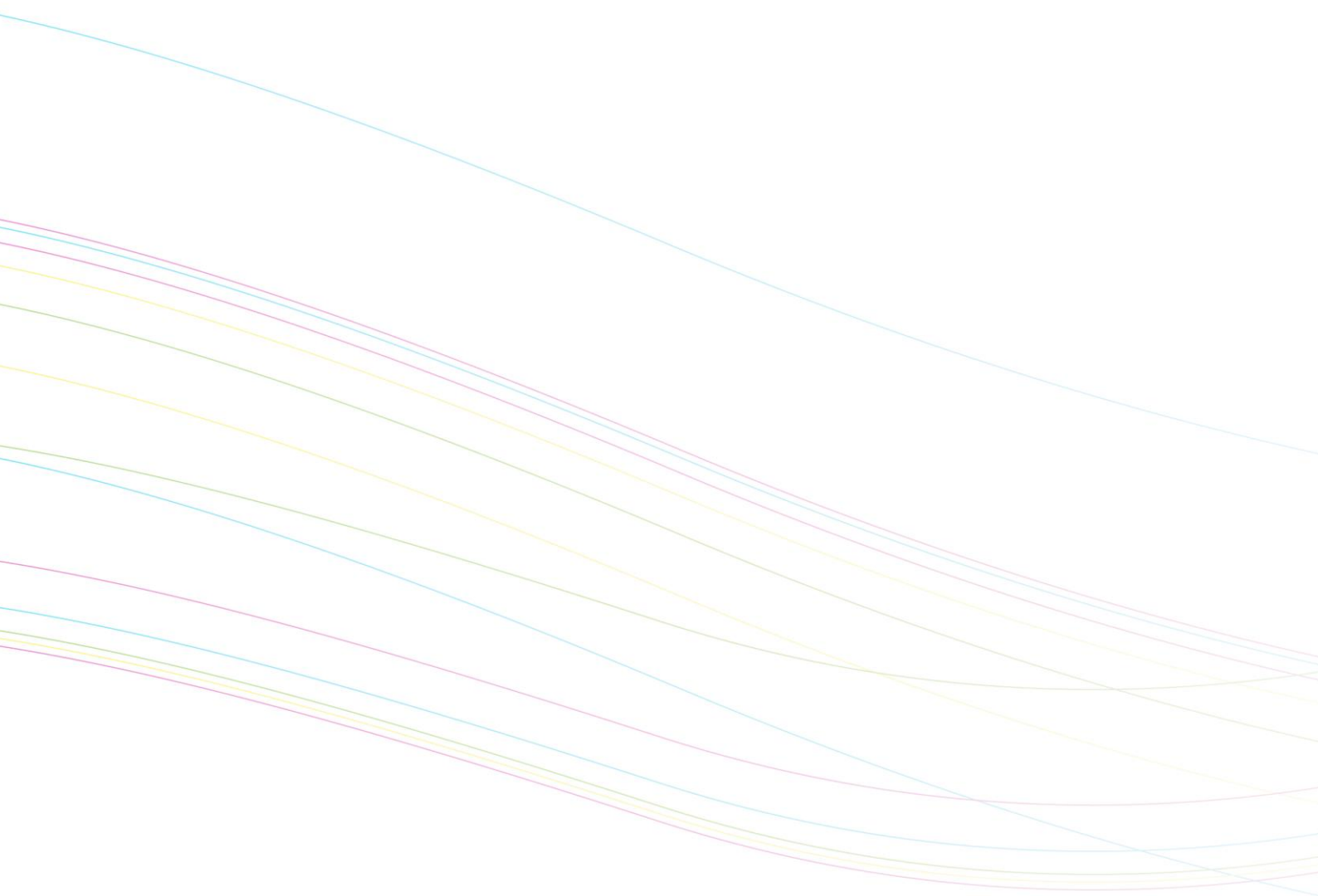
# reflection measurement

reflective probes



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## 1 Introduction

This document is intended to clarify the procedure for reflection measurements by means of probes. General principles of  $0^\circ$  and  $45^\circ$  probes for reflection measurements are explained and a number of general remarks to ensure accurate measurement results are listed.

These measurements can be carried out using the *measure reflection* option in Admesy's Iliad software application. Latest Iliad Version can be downloaded from the Admesy website for free.

[www.admesy.com/download/software/iliad.zip](http://www.admesy.com/download/software/iliad.zip)



## 2 Reflective probes

In particular cases it may be desirable to carry out reflection measurements by means of a probe (e.g. type of material, flexibility, accessibility of sample under test, size of measurable spot). Depending on the type of measurement which should include the specular component or exclude, one can use a straight probe ( $0^\circ$ ) or a  $45^\circ$  probe respectively (fig 1). The type of devices needed for reflection measurements depend on the application. The example in figure 1 shows a LED light source and spectrometer. It may be desirable to use a different light source and/or colorimeter instead, depending on your application.

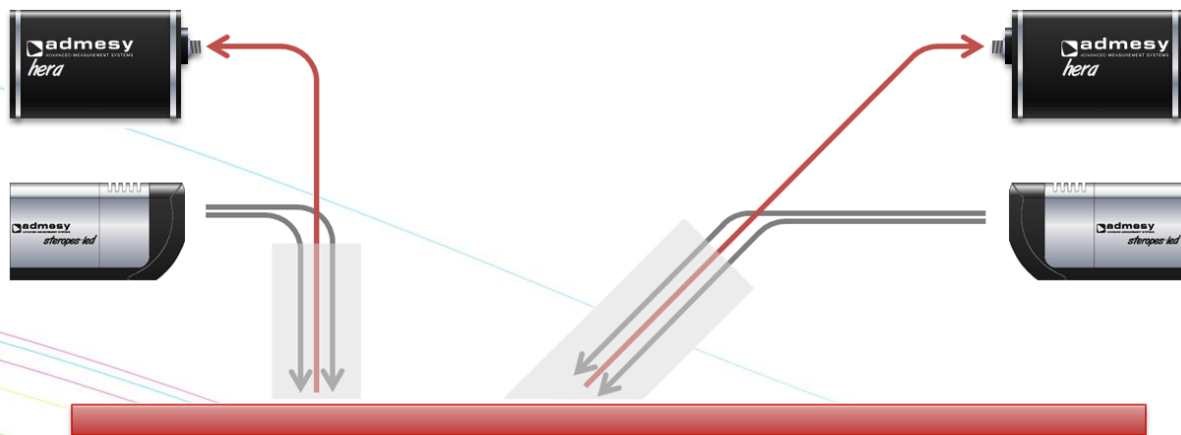


Fig 1 Principle of  $0^\circ$  reflective probe setup (left) and  $45^\circ$  probe (right).

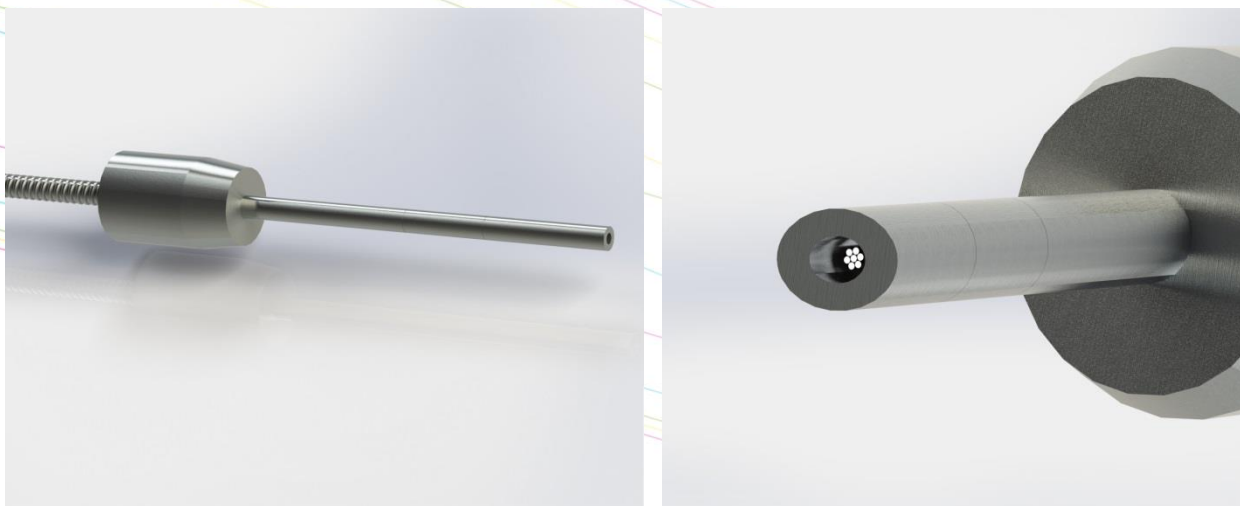


Fig 2 Reflective probes. Detail picture on the right shows the seven fibers. Center fiber is connected to measurement device, the six outer fibers are connected to a light source.



### 3 Reflection measurement procedure with reflective probes

For reflection measurements using a probe connected to a light source and detector, the probe is placed on the sample object to be measured either manually (fig 3) or by means of a probe holder.

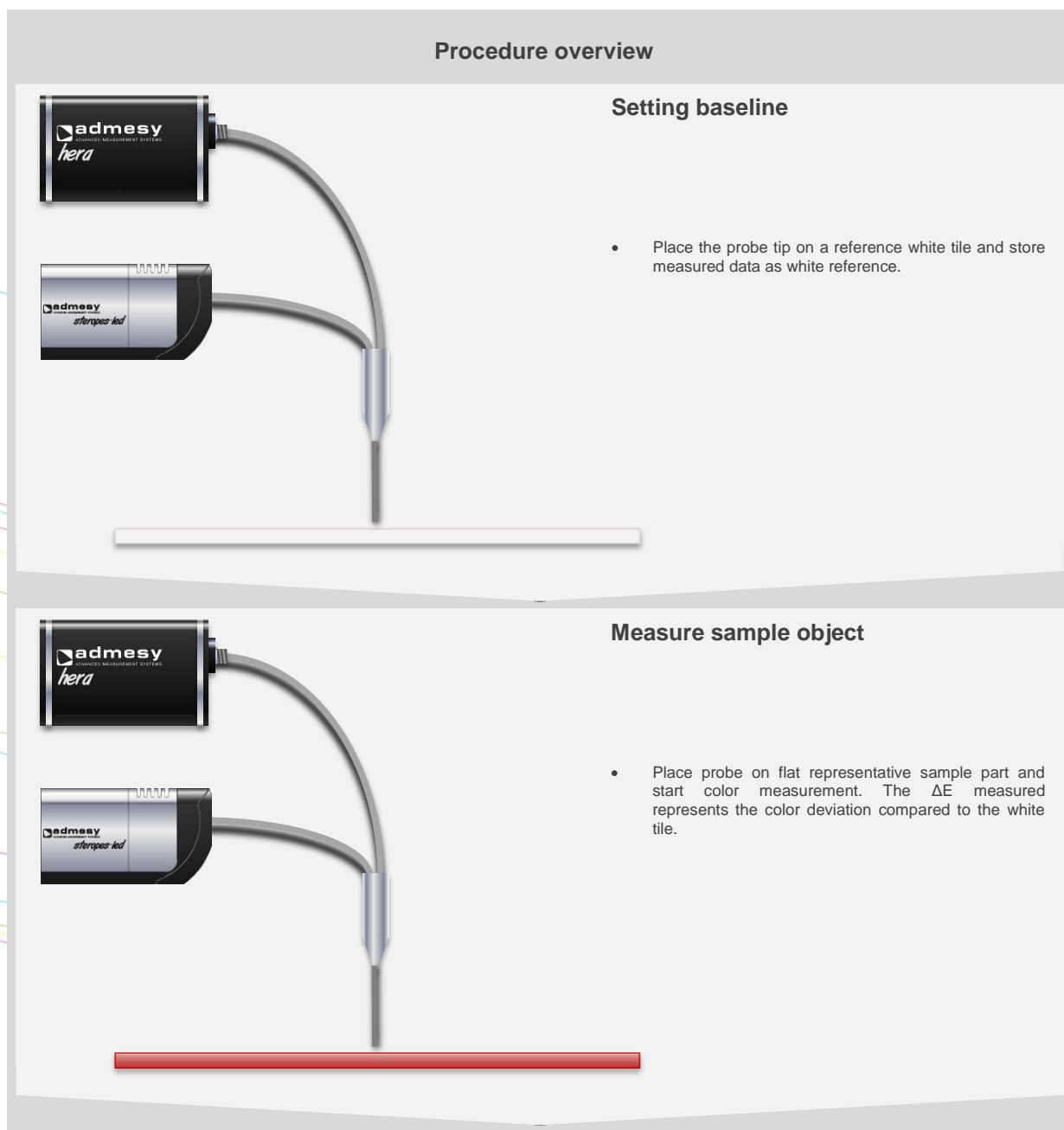


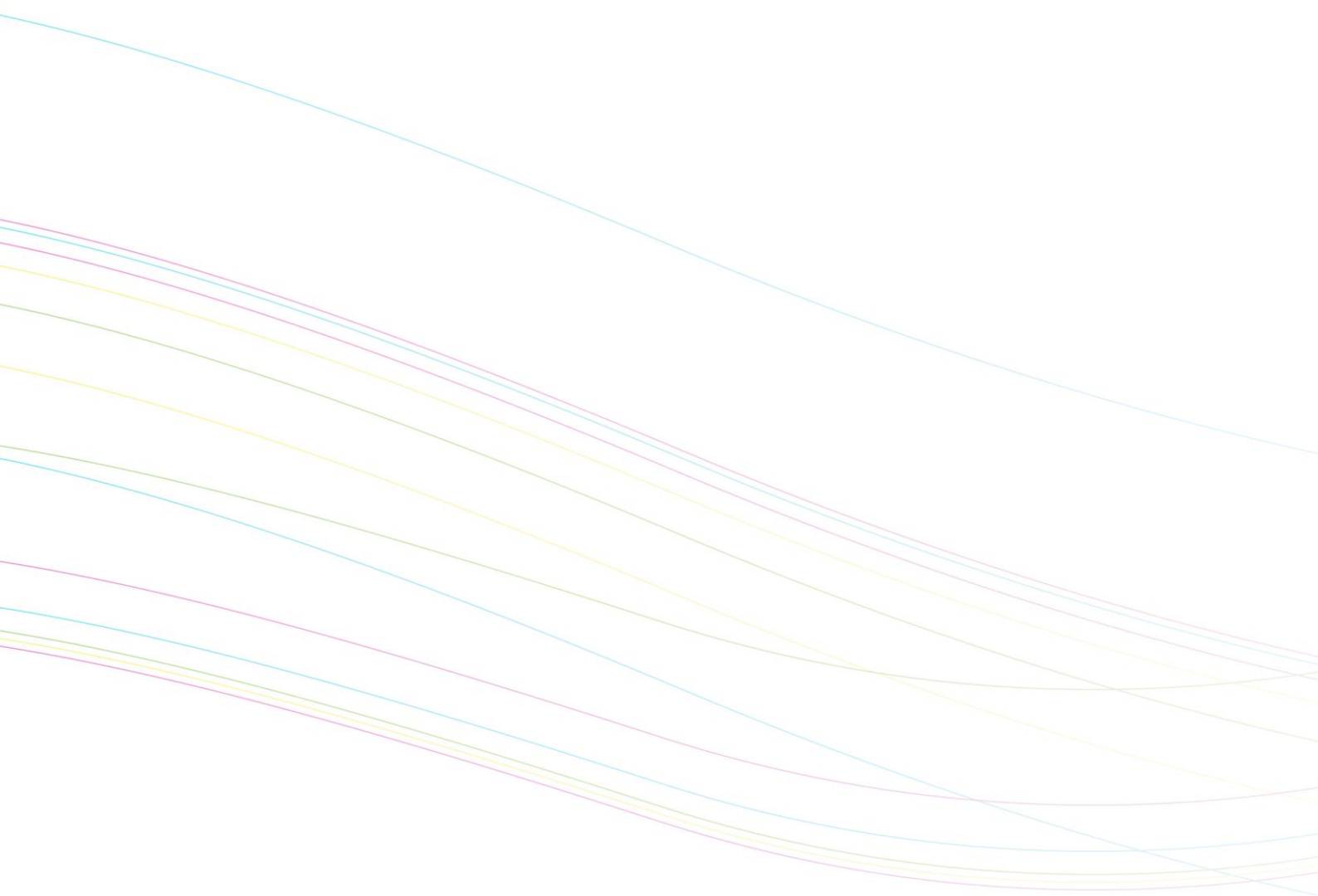
Fig 3 Reflection measurement procedure with reflective probes.



## 4 General remarks for reflection measurements with probes

To ensure accuracy and repeatability of measurements, a number of remarks are listed below with a brief explanation.

- Control alignment and angle of probe and sample spot to be measured.
- Check appropriate use of fibers: illumination and measurement fibers should be connected properly.
- Check minimum radius of fibers: do not bend fibers.
- Control ambient lighting.
- Control reference white tile before carrying out baseline measurement.
- Select representative sample part.
- Consider spectral response of light source compared to the sample under test when carrying out a reflection measurement: spectral response of light source should match the application.
- Consider effects of luminescent objects when carrying out a reflection measurement.



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