

Jandel Engineering Limited Four Point Probe Reference Sample

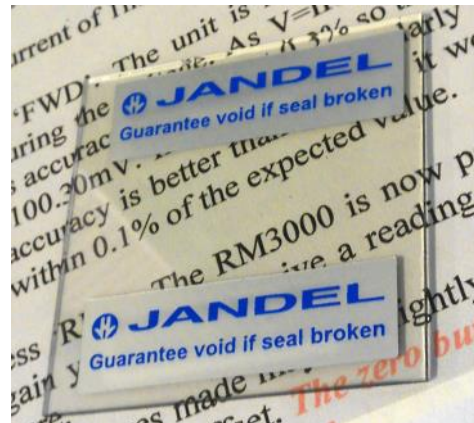
Jandel Engineering offers an indium-tin-oxide (ITO) coated glass sample that can be used as a reference sample to assess whether a four point probing system is working properly. The sample is not NIST traceable, but assigned values are carefully assessed based on measurements made by an employee with over 20 years of four point probe measurement experience. The dimension of the samples are 2" square with the assigned value applying to the 1" central area of the sample. The assigned values are between 12 and 15 ohms-per-square which is printed on the sample as shown below.



See page 2 for an example of the documentation that accompanies the sample.

ITO is a transparent oxide. The labels are applied to the bottom of the sample which is not coated with ITO. The labels are applied from the bottom such that the printed value can be read through the sample while measuring the top side which has the ITO layer applied.

Jandel does not know the exact thickness of the ITO layer, however, nominal thickness is 150nm.



The image above shows the backside of the reference sample, i.e., the side that is NOT measured.



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Jandel Indium Tin Oxide Reference Sample

Serial No. 74235

Verified measurement of central 25mm square region:

12.85 ohms/square ± 0.26

Test date: 18th April 2008

Validity: 1 year

Notes:

1. Avoid taking measurements from a fixed point, spread measurements across the central area
2. Measure the sample 3 times and calculate the mean average, a current of 10mA is suggested
3. Use the average of the forward and reverse readings
4. Leave the sample in its protective container when not in use
5. Do not touch the measurement surface of the sample
6. The sample can be cleaned using IPA and dried with filtered nitrogen

This sample is not a traceable standard, it is a reference sample. NIST traceable standards are available from NIST and VLSI Standards.