

# TECHNICAL SPEC FOR Resistivity mapping system

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## System Model:

**KLA RS-35C**

Model = RS35C , S/N = 9206RS35C

**Wafer size: 6 inch**

**Standalone: Yes**

**Vintage: 1990**

**Missing parts: none**

**Defected parts: none**

## Acceptance results at installation:

### 1 INTRO

The RS30C tool is a four point probe metrology tool which was previously installed in Fab1. This tool was selected to be installed in Fab2 for contingency in case the current tool in Fab2 goes down and to decrease the travel distance of the operators from EPI from Bay7 to Bay1. This report describes the tool to tool matching approach to minimize variation from tool to tool.

### 2 TOOL IDENTIFICATION

4PP Probe installed in Fab2 – Bay1 , this is the reference tool (Model = RS35C , S/N = 9206RS35C)

PROMETRIX tool from Fab1 (Model = RS30C , S/N = 907R3)

### 3 TOOL SET-UP

#### 3.1 Standard resistors

The tools are checked with standard resistors that are mounted in the probe-head instead of a normal 4PP head Type A or Type B. These resistors allow to check the measurement electronics and general condition of the tool. The measurements of these resistors is done without any correlation curve programmed into the system.

Resistor Value	4PP Bay1	RS30	Criteria	Passed
2.794 Ohm	2.79	2.79	2.788 - 2.800	PASSED
279.4 Ohm	279.7	279.5	278.841 - 279.959	PASSED
27.94 KOhm	27.888	27.888	27.884 – 27.996	PASSED

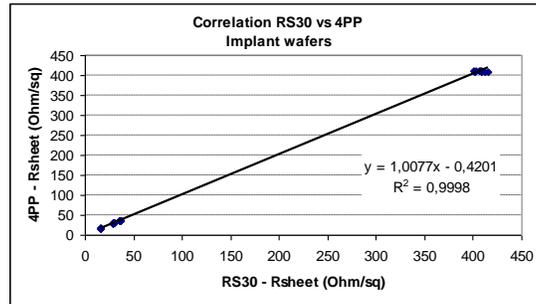
Remarks : The Analog Voltage PCB had to be replaced to get the resistor measurements of the RS30 within the criteria. This table is showing the end result with the newly installed PCB.

### 3.2 Software

In order to have all recipes transferred a full system software copy of the 4PP from Fab2 was installed on the RS30 to have an exact copy of all recipes and set-up parameters.

## 4 TOOL MATCHING FOR IMPLANT RSHEET

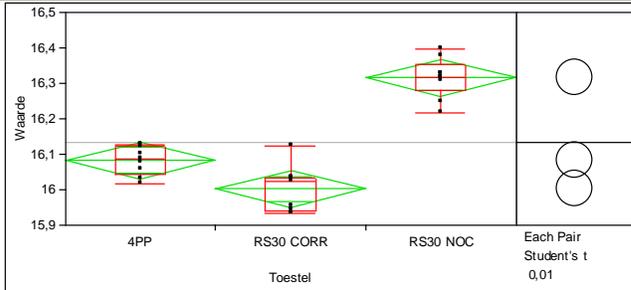
Four wafers are taken which have target values at 15.9 , 28.7 , 35.85 and 405 Ohm/sq. With these four values a correlation plot is drawn and the equation factors are used to match the RS30 to the 4PP of Fab2.



**The correlation equation is  $Y=1.0077 x - 0.420$**

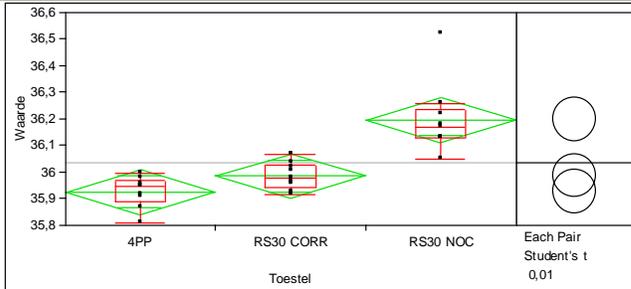
**Sample=S1**

**Oneway Analysis of Waarde By Toestel**



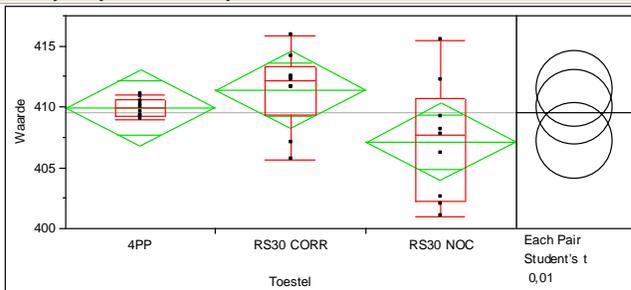
**Sample=S2**

**Oneway Analysis of Waarde By Toestel**



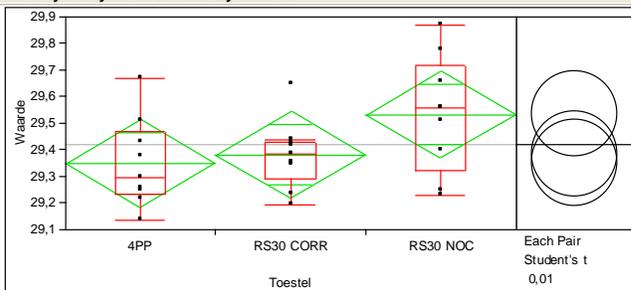
**Sample=S3**

**Oneway Analysis of Waarde By Toestel**



**Sample=S4**

**Oneway Analysis of Waarde By Toestel**



**Data acquisition :**

1. 9 datapoints per wafer are taken at certain location.
2. The same location , wafer and probe (TYPE B) is used to prevent introducing other sources of variation

The graphs are showing the situation before the calibration (RS30 NOC) and after the correlation equation is used by the software (RS30CORR) the reference tool is the 4PP.

The mean difference is tested with “each pair Student t” at 0.01 confidence level. If the circles are touching then the difference is not significant.

Availability 2024 :

