

# Quantiflux™

## USER MANUAL

Release date 30/10-2020

Version: 1.1 Beta version

# QUANTIFLUX™

## BACKGROUND

Local contamination testing will inform about the risk of leakage current, corrosion and electrochemical migration since high amounts of contamination (e.g. flux residues) are known to cause such failures on printed circuit board assemblies in localized areas. The Quantiflux kit provides local quantification of water soluble conductive contamination expressed as  $\mu\text{g NaCl}/\text{cm}^2$  ( $\mu\text{g NaCl}/\text{inch}^2$ ) via a conductivity calibration curve. The calibration curve is made from calibration solutions with specific known NaCl concentrations included in the Analysis Kit.

## QUANTIFLUX CONTENT

This package includes

- 1 handheld conductivitymeter
- 1 set of extraction solution (3\*10 mL =30 mL)
- 1 set of calibration solutions
- 3 calibration boards
- 20 syringes for adding and removing extraction solution.
- 100 foam pads for local extraction testing (for testing on product PCBA).
- 10 measurement boards for conductivity measurement (10 test areas for each board)
- 1 Residues RAT bottle for detection of active flux residues left on PCBA surface



Quantiflux™ kit contents.

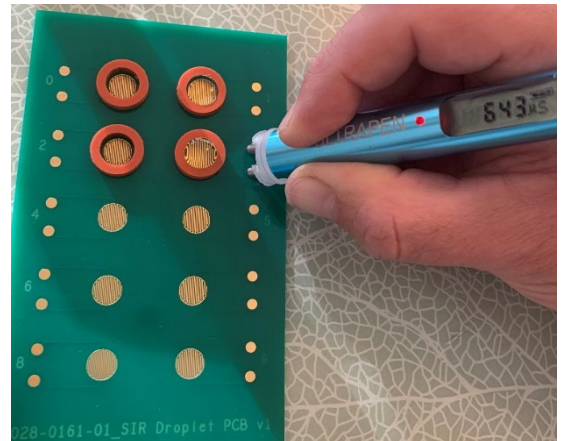
# INSTRUCTIONS

## 1. HOW TO PERFORM A CALIBRATION

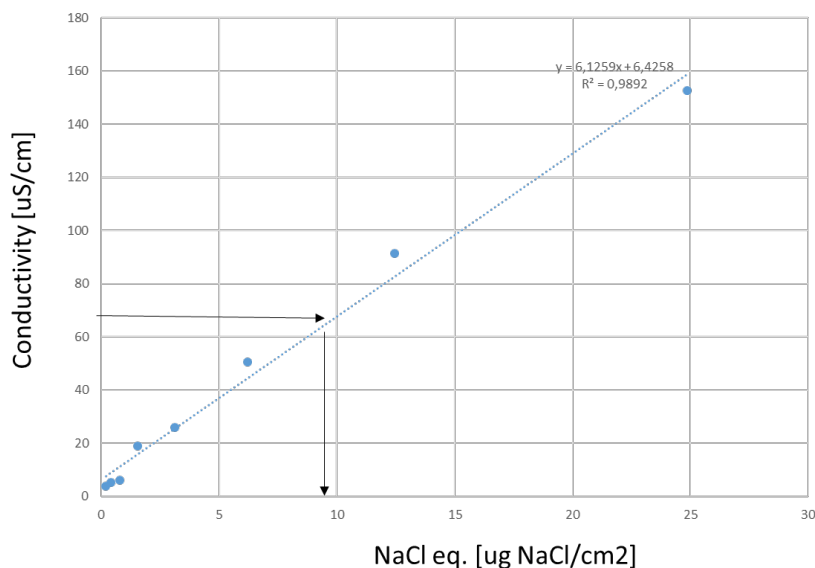
A calibration curve is necessary in order to translate from the measured conductivity [ $\mu\text{S}/\text{cm}$ ] to industry standard value NaCl equivalent [ $\mu\text{g}/\text{cm}^2$ ]. Each Quantiflux measurement setup will require its own calibration curve, since the measurement will depend on ambient testing conditions.

The calibration set includes 9 calibration solutions.

- Place the foam pad around the measurement test pattern, making sure no part of the pattern is covered by the pad. Use tweezers and gloves in order not to contaminate the pads and boards. Use a syringe to extract 200  $\mu\text{L}$  of calibration solution and place the solution on the measurement board.
- Place the conductivitymeter on the connecting points. Press the top of the conductivitymeter and note the measured value.



Note the conductivity value for all solutions and construct the calibration curve. From the obtained values a correlation between conductivity and NaCl equivalent values can be made. An example of a calibration curve is shown below. It is recommended to begin the calibration with the pure extraction solution and continue with solutions of increasing conductivity. Preferably use a new syringe for each solution.



Quantiflux calibration curve example.

## 2. HOW TO PERFORM A MEASUREMENT

Once the calibration curve has been constructed measurement in one extraction point can be performed as follows:

1. Mount foam pad in desired extraction areas using a tweezer, to avoid contaminating the foam pads.
2. If via holes are present in the area, it can be necessary to mount the included tape on the backside to avoid draining the extraction solution from the test area.
3. Fill 200  $\mu\text{L}$  of extraction solution into a syringe (without air bobbles).
4. Add the 200  $\mu\text{L}$  of extraction solution to the confined area inside the foam pad and leave it for 1 minute in order to extract conductive residues from the PCBA.
5. Use a syringe to withdraw the extraction solution from the PCBA.
6. Place the extraction solution onto one of the measurement boards test area and press conductivitymeter on connecting pads and read the value on the conductivitymeter.
7. Use the calibration curve to translate conductivity into NaCl equivalent.

Repeat for all desired extraction points.

## 3. TEST WITH CALIBRATION BOARD

- In order to test the procedure with known levels of contamination use the calibration board and follow the instructions given above for *how to perform a measurement*.

