

# Summary of the results from tests of the SALTRO16 pre-series

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The **second pre-series**, containing 55 chips, has been tested using the Lund test board .

Lund test board: serial readout via a CPLD to an SRU. At its present status we are limited to reading out 2 out of 16 channels simultaneously.

The results are summarized below:

46 chips passed the test

4 chips had bad ball attachment

1 chip had a failure in the bonding

1 chip had no connection

3 chips had probably faulty dies

⇒ **Success rate: 83%**

The absence of proper connection in one chip, was verified from measurements with the diode tester function of a voltmeter, by which it should be possible to probe the protection diodes in case of connection.

We think it is unlikely that the lack of connection is due to a die problem but more probably to a problem with the bonding.

The first pre-series, containing 34 chips, has also been tested with the Lund test board. Chips with a disfunction were in addition tested with the CERN test board. The results were consistent.

CERN test board: readout via the 40 bit ALTRO-bus. We have added an adaptor for the BGA-socket.

The result was:

20 chips passed the test

6 chips had oscillating ADC values for one channel each

3 chips had bit problems, one channel per chip

1 chips had a short between power and ground

4 chips had no connection to the die

⇒ Success rate 59%

The lack of connection for four chips was verified in the same way as for the second pre-series. It is likely that the 4 chips with no connection to the die have a bonding problem.

A strange thing is that the problem with oscillating ADC values, which we observed in the first batch, was not seen in the second one.

We have written to the company and asked if they have understood the reason for the failure of the balling and bonding, and if they think this can be avoided in the future. Already at the receipt of the chips the company informed us about the balling and bonding failures. Could be due to start-up problems.

We have also asked if they have a strategy to handle the variations in the die size.

We have asked for a prognosis of the mounting success rate for future production.

If we get satisfactory answers we are prepared to request a quote for the full production.

**We are puzzled about the significantly different success rates in the two pre-series.**