

**LABORATORY TEST REPORT: YB2-2720 CR**  
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**REQUESTED BY: J.M. COMPAGNON**  
**DATES TESTED: Jan-2007**  
**DATE: 16-02-2007**

**CC: D. RENSCH, B. TEUNISSEN, B. DRUCKENMILLER, K. KITADA**

**SUBJECT:** PIP Minitek straight header solder performance

**PURPOSE:**

This report describes the solder performance of the Pin-in-paste Minitek straight header according to the lead-free profile in TA-842 rev. H.

**CONCLUSIONS:**

All tested samples comply with the requirements.

**SAMPLE DESCRIPTION:**

Table 1: Test Sample Descriptions						
Item	Product Name	Part #	Lot #	# of samples	Base Mat'l	Plating
1	Minitek straight shrouded header	10075025-101-50LF	-	5	CuSn	min. 2 µm matte tin over min. 1.27 µm Ni
2	Minitek straight unshrouded header	10075024-101-25LF	-	5	CuSn	min. 2 µm matte tin over min. 1.27 µm Ni
3	Testboard holes ø0.8 mm	SK51010	12/06/01	10	FR4	SnPb

**TEST DESCRIPTION:**

**Test Matrix:** The tests performed are listed in table 2. The numbers in the columns indicate the sequence in which the tests were performed.

Table 2: Test sequence	
Test description	Group 1
Visual examination	1
<b>Solder performance</b>	
Reflow soldering	2
Visual examination	3

**Visual examination** – Samples were visually examined at a magnification of 10x for any evidence of workmanship defects and other damage that could be detrimental to the performance of the connectors. Furthermore the presence of discolouration, cracks, blistering etc. was checked.

**Reflow soldering** – Lead free solder paste (Sn<sub>96.5</sub>Ag<sub>3</sub>Cu<sub>0.5</sub>) was applied to the test boards using a stencil with an aperture of 1.9x1.2 mm for the shrouded and 2.1x1.0 mm for the unshrouded version, a thickness of 0.150 mm and a paste depth of about 60%. Then the boards were submitted to a reflow profile according to TA-842.

Requirement: T<sub>max</sub> = 260 <sup>+0</sup>/<sub>-5</sub> °C

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**Visual examination** – Of each board the fillets were inspected from the outside and of one board a cross section had been made to evaluate the filling degree of the solder joints.

Requirement: Filling degree to be 100% from fillet to fillet (except for voids)

**TEST RESULTS:**

**Visual examination** – The samples showed warped walls, but this was not detrimental to the performance of the connectors. Furthermore no discoloration, cracks or blistering was detected.

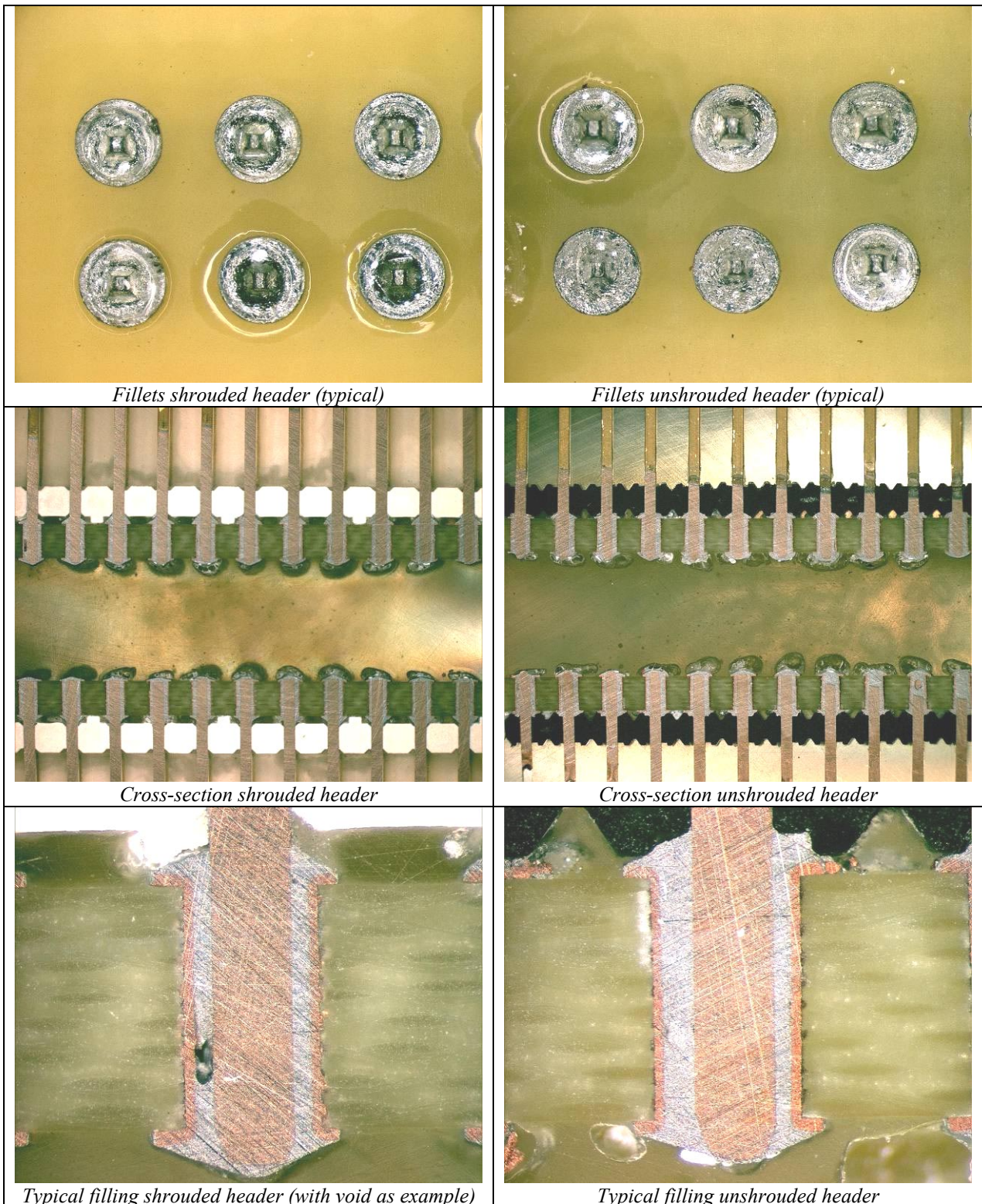
**Reflow profile** – See the graph below.



**Figure 1: Reflow profile applied**

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**Visual inspection** – The solder joints showed good fillets from the outside for both the shrouded and unshrouded version, see photos in fig. 2. In the cross sections, the filling was also good, the maximum possible. Only some joints show (sometimes large) voids. This is quite normal for lead free paste in a PIP solder process.



**Figure 2:** photos of fillets and sections

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**EQUIPMENT:**

<b>ITEM NAME</b>	<b>MANUFACTURERS NAME</b>	<b>CAL. NUMBER</b>	<b>CALIBRATION DUE DATE</b>
Reflow oven	Dima SMRO 0403	U-003	05-01-2008
Stereo microscope	Leica MZ9.5	I-030	no cal. needed

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