



DIGICO
RÉSEAU GLOBAL INC.
GLOBAL NETWORK INC.

Tel: 450 967-7100
Fax: 450 967-7444
ing@digico.cc

| | | | | | |
|---------|-------------------|--------------------------|------------------|-------------------------------|-------|
| Ref. | DF01947-00 | Date | April 16, 2009 | Page | 1/1 |
| Author | Ioan Tempea, ing. | | | | |
| Subject | Client | | McGill Cosmology | # | 13090 |
| | Assem bly # | Cryoelectronics Rev0A | PCB | Cryoelectronics Board Rev0 | |

This document outlines the non-conformities between Digico's good design practices, in terms of DfM and documentation, and the new customer design. Each point is weighed in the « Impact » column, as follows:

- Fatal – dead-end non-conformity, not allowing for assembly to be finalized or even begun
- Productivity – non-conformity that can be worked out with a major impact on the assembly costs
- Improvement – non-conformity that once eliminated would improve assembly costs or communication
- Reliability – long term reliability impacting non-conformity

Customer feedback is required for at least « Fatal » et « Productivity » non-conformities prior to any assembly.

| No | Non-conformity | Suggested Solution | Impact | Customer Feedback |
|----|---|------------------------------------|--------------|-------------------|
| 1 | SMT to TH clearances do not allow for the use of wave pallets | Ensure minimum 0.100" clearance | Productivity | |
| 2 | Apertures for thermal pads of BxU32 not in the paste file | To be added | Reliability | |
| 3 | SW1 and SW2 not washable | Consider washable replacements | Improvement | |
| 4 | Mismatch component – footprint at several SMT locations | Revise PCB design | Fatal | |
| 5 | Damaged sockets | Review suppliers | Reliability | |
| 6 | Mismatch component – footprint J4 & J11 | Review PCB design or component | Productivity | |
| 7 | Yellow solder mask does not allow for bridging inspection | Consider other colors, if possible | Improvement | |
| 8 | Solder mask issue on one PCB | Notify supplier | Reliability | |
| 9 | No part numbering system available | Implement one | Productivity | |
| 10 | BOM format not friendly | RE-shape BOM | Productivity | |
| 11 | No AVL available | Consider creating one | Productivity | |

Details

- The current design does not allow for the use of wave pallets, so the soldering of the TH parts is manually done. The wave pallets could lower the cost of the boards, depending on the production volume. In order to allow for pallets, the clearances between SMT components on solder side and TH annular rings must be 0.100" as a general rule. The PCB has several non-conforming hot spots: RT1 vs. J12-19, around IxJ3 and OxJ1, L12 vs. SW2, around Pgrd2, R174 and C174 vs. J21, around J24, under U33, around F3-4 and J11, around GxJ2, RT3 vs. Prgd1.
As an alternative, intrusive soldering might be considered, a more detailed analysis can be made upon request.
- The thermal pads apertures for BxU32 are not in paste file. Although we caught it, this error can easily be overlooked by assemblers.
- SW1 and SW2 are non-washable, so they require a separate soldering operation, with no-clean flux. Replacing the current parts with washable components would help reducing the assembly cost.
- U40, RT1, RT2, RT3 and L8 were not assembled due to mismatch component package vs. footprint. Same kind of mismatch for U22, U24 and U35, but the components were assembled with customer's agreement, although the result is not IPC-A-610 Class 3 compliant.
- The customer supplied sockets IxJ3 and OxJ1 are not properly cut and the pins are exposed on several pieces, see Image 1. The parts were assembled with customer's agreement, although the result is not IPC-A-610 Class 3 compliant.



DIGICO
RÉSEAU GLOBAL INC.
GLOBAL NETWORK INC.

Tel: 450 967-7100
Fax: 450 967-7444
ing@digico.cc

Ref. DF01947-00

Date April 16, 2009

Page 1/1

Author

Ioan Tempea, ing.

Subject

NPI Non-conformity Report

Client

McGill Cosmology

#

13090

Assem
bly #

Cryoelectronics
Rev0A

PCB

Cryoelectronics Board
Rev0



Image 1

6. The terminal blocks J4 and J11 have guiding pins, Image 2, but the PCB does not have holes for those pins. The guiding pins have been removed upon customer's approval.

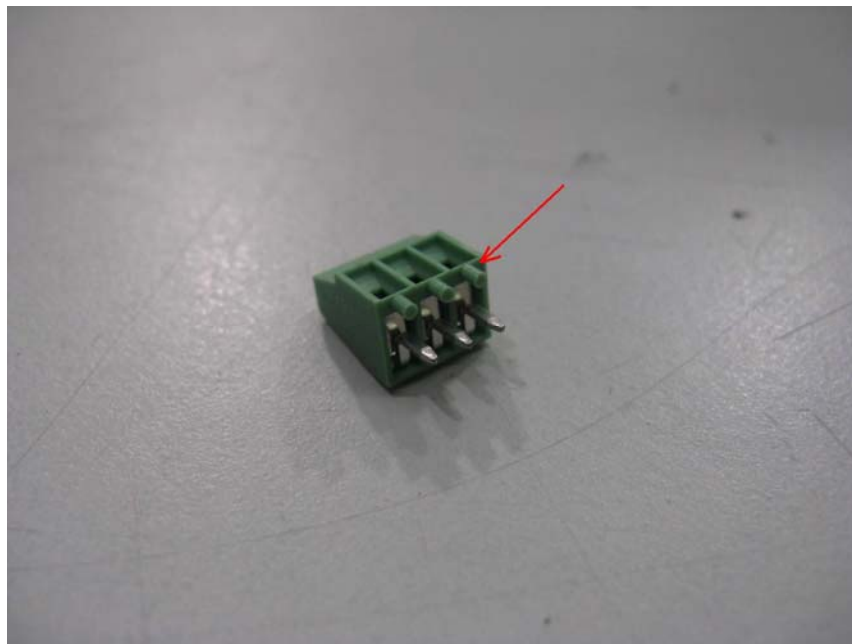


Image 2

7. The yellow solder mask does not allow for proper AOI inspection of the solder joints.
8. One of the PCBs has an imperfection between the pads of O3U4, see Image 3. The solder mask is missing and there is some unknown particulate matter instead. There does not seem to be any circuitry in the affected area and the two pads



DIGICO
RÉSEAU GLOBAL INC.
GLOBAL NETWORK INC.

Tel: 450 967-7100
Fax: 450 967-7444
ing@digico.cc

Ref. DF01947-00

Date April 16, 2009

Page 1/1

Author Ioan Tempea, ing.

Subject NPI Non-conformity Report

| | | | |
|----------------|--------------------------|-----|-------------------------------|
| Client | McGill Cosmology | # | 13090 |
| Assem bly # | Cryoelectronics Rev0A | PCB | Cryoelectronics Board Rev0 |

are not shorted, so the PCB was populated with customer's agreement. The serial number of the affected product is 14090001.

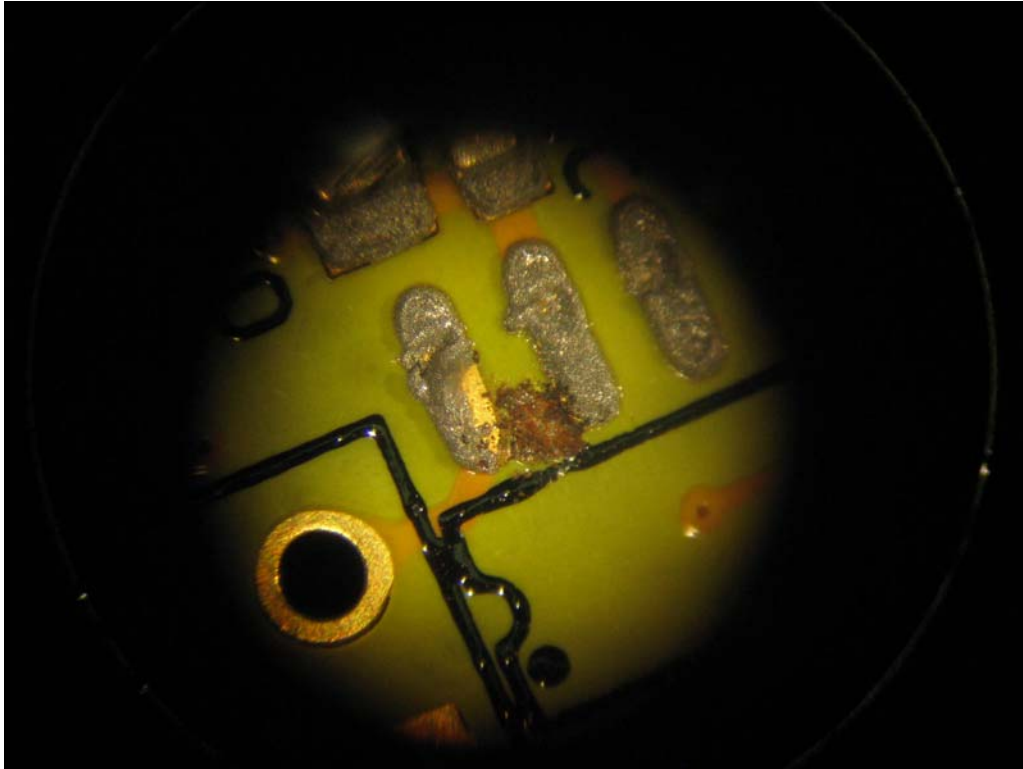


Image 3

9. The BOM does not have customer part numbers. This creates confusion in handling alternate sources for the same component and makes manufacturing operations impossible. For internal use, Digico created a part numbering system for the customer. We strongly suggest that the customer create a part numbering system or adopt ours.
10. The BOM does not group together all the components with the same value, e.g. 0.1uF capacitors appear in two groups. This makes data handling difficult for assemblers. For clarity, remove the components not used (DNL) from BOM or mark DNL in a separate BOM column. As presented in the current BOM, it might get away unnoticed.
11. In case alternate sources are considered for components or the product is to be assembled turn-key, we suggest an AVL be prepared and supplied to the assembly house.

Customer Representative: _____

Signature: _____

Date: _____