Document 72-5325 Rev 006
Date issued 18 Oct 91 18 Jul 94

inmos SOURCE DOCUMENT

B431 SPECIFICATION

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B431 SPECIFICATION

DOCUMENT HISTORY PAGE

Document Originator:	Paul Grady
Final Approval Level:	See INMOS Source document 02-3004.
Rev 006: cn 39958	Mark Henderson - 24 Jun 94
Change detail:	Parts list changed item 13. GAL equations changed DRW0790 now replaces DRW0419.
Rev 005: cn 39613	Paul Grady - 01 Dec 93
Change detail:	Parts list changed to include alternative ethernet chip (item 16) Burnin test socket diagram included, DRW0696. Test procedure, DRW0452, changed to reference test socket diagram. Circuit diagram, DRW0379, now highlights incorrect LANCE pin numbering.
Rev 004: cn 37795	Paul Grady - 24 Mar 93
Change detail:	Test software disk number added to history sheet. Test procedure changed to describe testing with B004 or B008.
Rev 003: cn 36795	Paul Grady - 06 Nov 92
Change detail:	History Sheet updated, Cable Diagram DRW-0453 updated to Rev 04 to specify D type connector.

B431 SPECIFICATION

Rev 002: cn 36057 David Boreham - 06 Jul 92

Change detail:

DRW-0567 packing spec rev 0 changed to rev 1 to include customer pack list and remove old manual.
DOC-0065 packing list rev 1 added to spec.
DOC-0032 B431 User Manual/Software rev 0 to 1 software incorporated into manual package.
Revision history page updated to include the above changes.

Rev 001: cn 35189 Neil Campbell - 19 Feb 92

Change detail:

Addition of Application Software.
Replace History sheet, Parts List.
Addition of Packing spec.

Rev 000: cn 33323 Paul Grady - 21 Aug 91

New Document

B431 SPECIFICATION

SYSTEMS DEVICE REVISION LIST

PRODUCT	:	IMS B431-10B
Description	:	Ethernet TRAM (and support software)
BOARD	:	IMS B431-10ZA
Description	:	Ethernet TRAM
SIZE	:	Size 2 TRAM
STATUS	:	Production
PCB No.	:	221-CBRD-330-02
Support Software	:	IMS F006A
Issue	:	06
Date	:	22 June 1994

Document	Drawing No.	Issue	DCD Spec. No.
Assembly Instructions	DRW-0451	02	
Parts List	DRW-0365	08	
Packing List	DRW-0567	01	
Top Assembly	DRW-0366	01	
Bottom Assembly	DRW-0367	01	
TRAM Profile Drawing	DRW-0436	01	
Circuit Diagrams	DRW-0379	04	
GAL Equations	DRW-0790	01	
PCB Production List	DRW-0437	02	
Test Procedure	DRW-0452	05	
Hot soak test socket	DRW-0696	00	
Test S/W disk	DSK-0071	01	
Cable diagram	DRW-0453	04	
Customer Pack List	DOC-0065	01	
B431 User Manual/Software	DOC-0032	01	72-TRN-235

Revision List

Changes

1. Parts list changed; Item 13 SBS-ICS0231, now replaces SBS-ICS0123 as the programmed PAL. The original/correct GAL equations, are now called (see Change-2 below).
2. GAL Equations changed; DRW0790 now replaces DRW0419, as the GAL equations used for programming SBS-ICS0231.

B431 SPECIFICATION

IMS B431 Assembly Instructions
DRW 0451 ISSUE 2

1.0 This assembly list does not take the place of any INMOS specifications relating to vendor quality and engineering specification. It must not be assumed that any particular point not mentioned here is undefined by INMOS. If in doubt, contact INMOS. In addition, it must not be assumed that any specification mentioned here and applicable to this assembly can in any way be applied to any other similar work being done for INMOS, either directly or indirectly.

2.0 The B431 PCB should have the fixing lugs filed down. The finish should be flush with the board giving the correct board profile.

3.0 The GAL, IC15, must be programmed with the correct data (given in parts list).

4.0 The polarised plug, IC10, should have the polarising slot to the inside of the board.

5.0 The two pin polarised header, IC14, must be correctly orientated. The thinner of the two positioning edges must be to the outside of the board.

6.0 The crystal, IC17, must be fixed flush to the grounding pad on the PCB. A non-insulated wire strap must be used to hold the crystal's position. This wire must not be soldered to the case of the crystal.

7.0 There must be no solder on the legs of the TRAM pins. A spacer strip must be fitted to each set of TRAM pins.

8.0 The completed board must not exhibit warp.

9.0 Packing:-

9.1 The B431 is to be labelled with the serial number label, which must not obscure any marking on the silkscreen (eg the INMOS logo).

9.2 The B431 is packed in the TRAM box, which is labelled with the TRAM box label. The label should show the TRAM serial number.

9.3 The TRAM box, transceiver cable, B431 manual and packing list are to be placed in a packaging box. Adequate foam protection must be included.

9.4 The packaging box must be correctly labelled. It must show the product type, along with the serial number corresponding to the B431 TRAM inside that box.

B431 SPECIFICATION

Title B431 Parts List.
Doc Number DRW0365
Issue 08
Page 1 of 4
Date 22 June 1994

Line	SBS No	Qty	Description
Size 2 Ethernet TRAM			
1	SBS-CAS0002	3	Chip Capacitor 1u Multi-layer Ceramic. Nickel Barrier Terminated. Voltage not less than 10V. Tol -20%+80% or better. Dimensions as EIA size 1206. Approved part Murata GRM 42-6 Y5V 105 Z 16. C14 C15 C16
2	SBS-CAS0005	2	Surface mounting Capacitor 10u Tantalum. Voltage not less than 10v. Tol -20%+80%. Size C. Approved parts STC TAJ C 10 M x , ICC ICTC 106 M10. C17 C18
3	SBS-CAS0006	11	Chip Capacitor 100n Multi-layer Ceramic. Nickel Barrier Terminated. Voltage not less than 25V. Tol -20%+80%. Dimensions as EIA size 0805. [Part available as MuRata part number GRN40 Y5V 104 Z 25 PT.] C1 C2 C3 C4 C5 C6 C7 C8 C9 C20 C21
4	SBS-CAS0011	2	Chip Capacitor 100p Ceramic. Nickel Barrier Terminated. Voltage not less than 25V. Tol 10%. Dimensions as EIA size 0805. C10 C11
5	SBS-CAS0012	1	Chip Capacitor 680p Ceramic. Nickel Barrier Terminated. Voltage not less than 25V. Tol 10%. Dimensions as EIA size 0805. C12
6	SBS-CAS0013	1	Chip Capacitor 4n7 Ceramic. Nickel Barrier Terminated. Voltage not less than 25V. Tol 10%. Dimensions as EIA size 0805. C13
7	SBS-CAS0014	1	Chip capactior 22pF not less than 10VW C19
8	SBS-COD0029	1	IDC header, 2x7 way, no latches, low profile, PCB mounting. Suitable part 3M 3598-5002 IC10
9	SBS-DIS0002	2	Double diode, surface mount, common cathode on SOT-23 package. Approved parts from Mullard and Siemens as BAV70. [Mullard part available from Macro.] D1 D2
10	SBS-ICD0021	1	IC Am7992B Serial Interface Adapter (SIA), 24-pin 0.3" DIP. First used on B407. IC8
11	SBS-ICS0013	1	IC type 74F74D (D suffix signifies 14-pin SOIC package). IC18
12	SBS-ICS0045	1	IC type 74F04D (D suffix signifies 14-pin SOIC package). IC1
13	SBS-ICS0231	1	GAL16V8 device SBS-ICS0088 programmed as per equations given in SBS-DRW0790. IC15

B431 SPECIFICATION

Title B431 Parts List. **Doc Number** DRW0365 **Issue** 08 **Page** 2 of 4 **Date** 22 June 1994	**INMOS Limited Software and Systems** This drawing, and the information therein, is not to be used or copied without the written permission of INMOS Limited.

Line	SBS No	Qty	Description
...	SBS-ICS0088	...	IC PAL type GAL16V8, 10ns max prop delay. 20-pin PLCC package. Any approved manufacturer according to specification SBS-SPC0007. Device needs programming according to details supplied by INMOS and programming specification SBS-SPC0009.
...	SBS-SPC0007	...	**Approved PAL devices** The only approved INMOS PAL suppliers are—AMD, Texas Instruments, National Semiconductor, SGS-Thomson Microelectronics, Intel, Altera, Cypress, Signetics, and Lattice.
...	SBS-SPC0009	...	**EPLD Programming Specification** All EPLD devices used on INMOS products must be programmed using an approved programmer. Currently the approved programmers are : INTEL PCPP SMS SPRINT ALTERA PLMJ7032 Note not all the EPLD devices used on INMOS products can be programmed on all the programmers listed above. Check with the programmers manual to determine which devices can be programmed. Devices must be programmed according to data stored on a disk on some host computer. Devices must not be programmed from copied "master devices". Each device must be first verified empty (unprogrammed) in the case of EPROM cell based devices. Secondly the device is programmed from fuse data as specified above. Thirdly the device should be verified against the data stored in the programmer. Finally the device should be tested using a set of test vectors, if available, which are supplied with the programming data. Programmed EPLD devices must be marked with a durable marking method showing the INMOS part number (SBS-ICD-????). Any other marking may be applied to the device for identification but none is required by INMOS.
14	SBS-ICS0090	2	IC 32K by 8 SRAM, 35ns access. Surface-mounted 28-pin flat package. Approved parts are Cypress CY7C199-35SC and Mosel MS62256A-35FC. IC11 IC12
15	SBS-ICS0091	2	IC type 74F30D (D suffix signifies 14-pin SOIC package). IC5 IC6

B431 SPECIFICATION

Title B431 Parts List. **Doc Number** DRW0365 **Issue** 08 **Page** 3 of 4 **Date** 22 June 1994	**INMOS Limited Software and Systems** This drawing, and the information therein, is not to be used or copied without the written permission of INMOS Limited.

Line	SBS No	Qty	Description
16	SBS-ICS0207	1	Local Area Network Controller for Ethernet (LANCE). Operates to IEEE 802.3 Ethernet standards. 68 pin PLCC package. [Part available from AMD as AM7990 or AM79C90, SGS-Thomson as MK7990Q68.] IC7
17	SBS-ICS0109	2	IC type 74F573. 20-pin SOIC package. IC3 IC4
18	SBS-IMD0015	1	IC type IMS T2xx-J20S (Any 20 MHz T2 transputer in a 68-pin PLCC package). IC13
19	SBS-PIN0025	1	DuPont DuBox series pin header, 2 pin header arranged as 2 by 1 on 0.1 pitch. Order code 76384-302 (Note this is order code for 100 off). IC14
20	SBS-RES0001	4	Chip Resistor 56R, Tol 5%, 0.1W, Dimensions as EIA size 0805. [Part available from distributor Flint as stock no. R08 560 JT1.] R1 R2 R3 R4
21	SBS-RES0004	16	Chip Resistor 10K, Tol 5%, 0.1W, Dimensions as EIA size 0805. [Part available from distributor Flint as stock number R08 103 JT1.] R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R17 R18 R19 R20
22	SBS-RES0007	1	Chip Resistor ZeroOhm shorting link, 0.1W, Dimensions as EIA size 0805. [Part available from distributor Flint as stock number R08 000 JT1.] R27
23	SBS-RES0026	1	Chip Resistor 510R, Tol 5%, 0.1W, Dimensions as EIA size 0805. [Part available from distributor Flint as stock number R08 511 JT1.] R21
24	SBS-RES0027	1	Chip Resistor 3K, Tol 5%, 0.1W, Dimensions as EIA size 0805. [Part available from distributor Flint as stock number R08 302 JT1.] R22
25	SBS-RET0006	4	Resistor 40R2, Metal film, Tol 1%, TC 50ppm, $\frac{1}{8}$W; body length to fit holes on 0.5" pitch, dia less than 0.1". Available from Holsworthy Electronics Limited. First used on B407. R23 R24 R25 R26
26	SBS-SKT0012	4	Stacked Socket, 8-pin PCB mounting 0.1 pitch single-in-line. Made from 8 individual sockets SBS-SKT0011 assembled onto SBS-SKT0010 (therefore using a total of 16 SBS-SKT0011) P1 P2
...	SBS-SKT0010	...	Stackable Socket, 8-pin PCB mounting 0.1 pitch single-in-line. Gold-plated contact and shell. Made from 8 individual sockets SBS-SKT0011 assembled into wafer. These units (black or green) are not to be mixed on a product batch. [Approved parts are Scott 15108-128-446, 15108-128-446B, 14108-128-446.]

B431 SPECIFICATION

Title B431 Parts List: **Doc Number** DRW0365 **Issue** 08 **Page** 4 of 4 **Date** 22 June 1994	**INMOS Limited Software and Systems** This drawing, and the information therein, is not to be used or copied without the written permission of INMOS Limited.

Line	SBS No	Qty	Description
...	SBS-SKT0011	...	Stackable Socket, individual. Gold-plated contact and shell. Should use PCB hole finished size 1.1mm min, 1.2mm max. [Approved parts are Scott/EMC as part number 128-446 or 125-446.]
27	SBS-TFM0001	1	Isolation transformer for Ethernet. 75 μH, 500V RMS, IEEE 802.3 10BASE2, 0.3" 16-pin DIP. Recommended part PE-64102 from Pulse Engineering (available from CACL). First used on B407. IC16
28	SBS-TRS0001	1	Transistor type BC846, surface mounted n-p-n general purpose. [Part available from Macro.] IC9
29	SBS-XTL0001	1	Crystal, parallel resonant frequency 20MHz, ±50ppm, TC ±40ppm; motional crystal capacitance 0.022pF. Case style HC45/U. [Suitable part available from Euroquartz, part number JK20000A.] IC17
30	SBS-PCB0050	1	B431 Printed Circuit Board. PCB number is 221-CBRD-330-02.
31	SBS-LAB0000	1	PCB Serial Number label

B431 SPECIFICATION

Title B431 Packing Specification Doc Number DRW0567 Issue 1 Page 1 of 2 Date 2 July 1992	**INMOS Limited IQ Systems** This drawing, and the information therein, is not to be used or copied without the written permission of INMOS Limited.

Line	SBS No	Qty	Description
Board			
1	SBS-BRD0033	1	B431 Ethernet TRAM
Packing			
2	SBS-PAK0000	1	Black plastic conductive box 34x130x230mm, 10mm HD foam in base, 10mm FX foam in lid. [part available from Vitec Ltd, Manchester or Vermason Ltd, Letchworth]
3	SBS-LAB0010	1	TRAM Box Label.
4	SBS-PAK0003	1	Cardboard shipping box (242x412x67mm) [Part available from Rendac Packaging, Bristol, as 91.421]
5	SBS-LAB0001	1	Shipping Box Label
6	SBS-PAK0013	1	Clear sealable plastic bag, approx. 345mm x 235mm.
7	SBS-PAK0005	1	Profile foam, 10B/10R, 235x200mm (pair) [Part available from Rendac Packaging, Bristol as R099]
8	SBS-DOC0032	1	B431 Ethernet TRAM manual (incorporating F006 support software). Document 72-TRN-235.
Accessories			
9	SBS-CAB0010	1	Ethernet transceiver cable as described in DRW0453.
10	SBS-DOC0065	1	Customer Pack List for IMSB431 Ethernet TRAM

B431 SPECIFICATION

Title B431 Packing Specification Doc Number DRW0567 Issue 1 Page 2 of 2 Date 2 July 1992	**INMOS Limited IQ Systems** This drawing, and the information therein, is not to be used or copied without the written permission of INMOS Limited.

Line	SBS No	Qty	Description

1.0 This document defines how the B431 is to be packed.

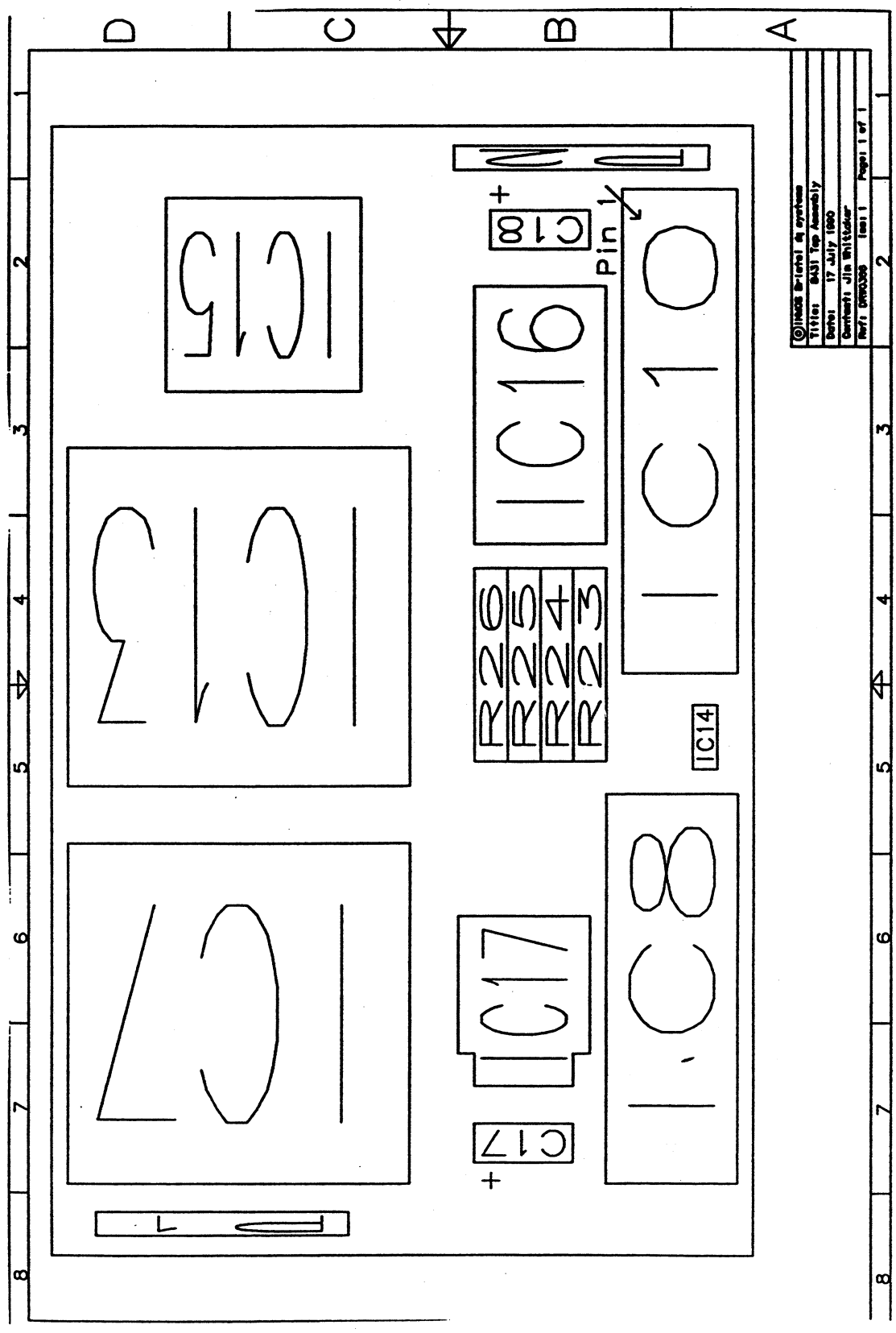
2.0 Packing steps...
2.1 Place the B431 in the TRAM box.
2.2 Label the TRAM box.
2.3 Fold the packing box into shape.
2.4 Place the manual/software in the packing box.
2.5 Place one layer of profile foam in the the packing box, profiled side up.
2.6 Place the TRAM box on top of the foam in the packing box.
2.7 Place the cable next to the TRAM box.
2.8 Place the remaining layer of profile foam, profiled side down on the TRAM/cable.
2.9 Close the packing box, seal shut with a quality assurance seal according to vendor's work practice.
2.10 Place the packing box label on the small side of the packing box.

B431 SPECIFICATION

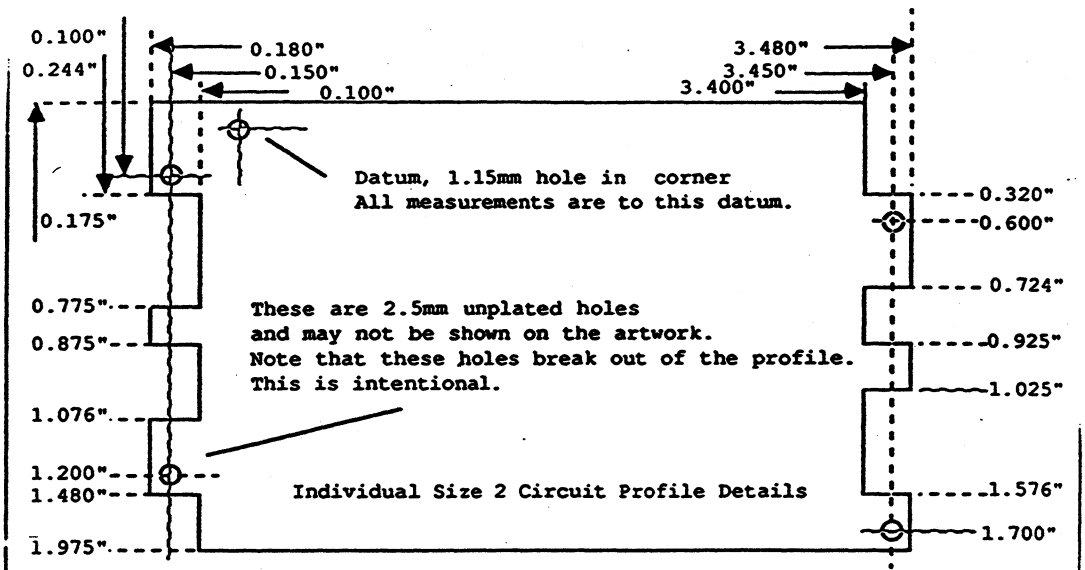
IMS B431 Packing List	inmos iq Systems
Doc Number SBS-DOC-0065 **Issue** 1 **Date** 1 July 1992 **Page** 1 of 1	SGS-THOMSON MICROELECTRONICS

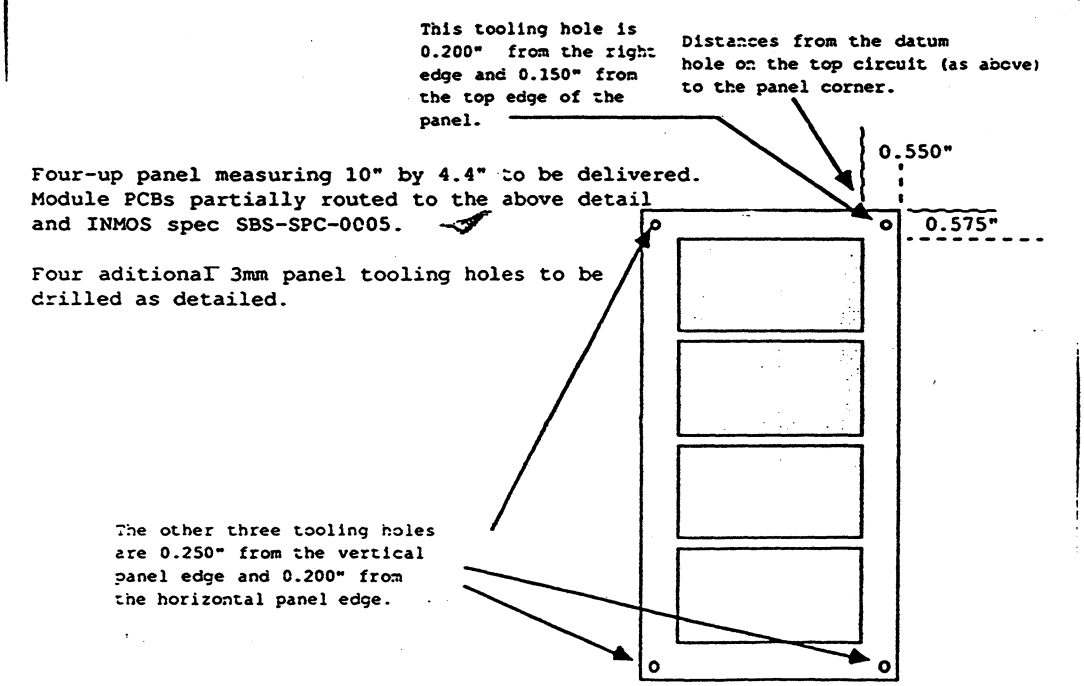
Line	Qty	Description	Received
1	1	B431 Ethernet TRAM	☐
2	1	B431 Ethernet TRAM manual (incorporating F006 support software). Document 72–TRN–235.	☐
3	1	Ethernet transceiver cable as described in DRW0453.	☐

B431 SPECIFICATION



B431 SPECIFICATION

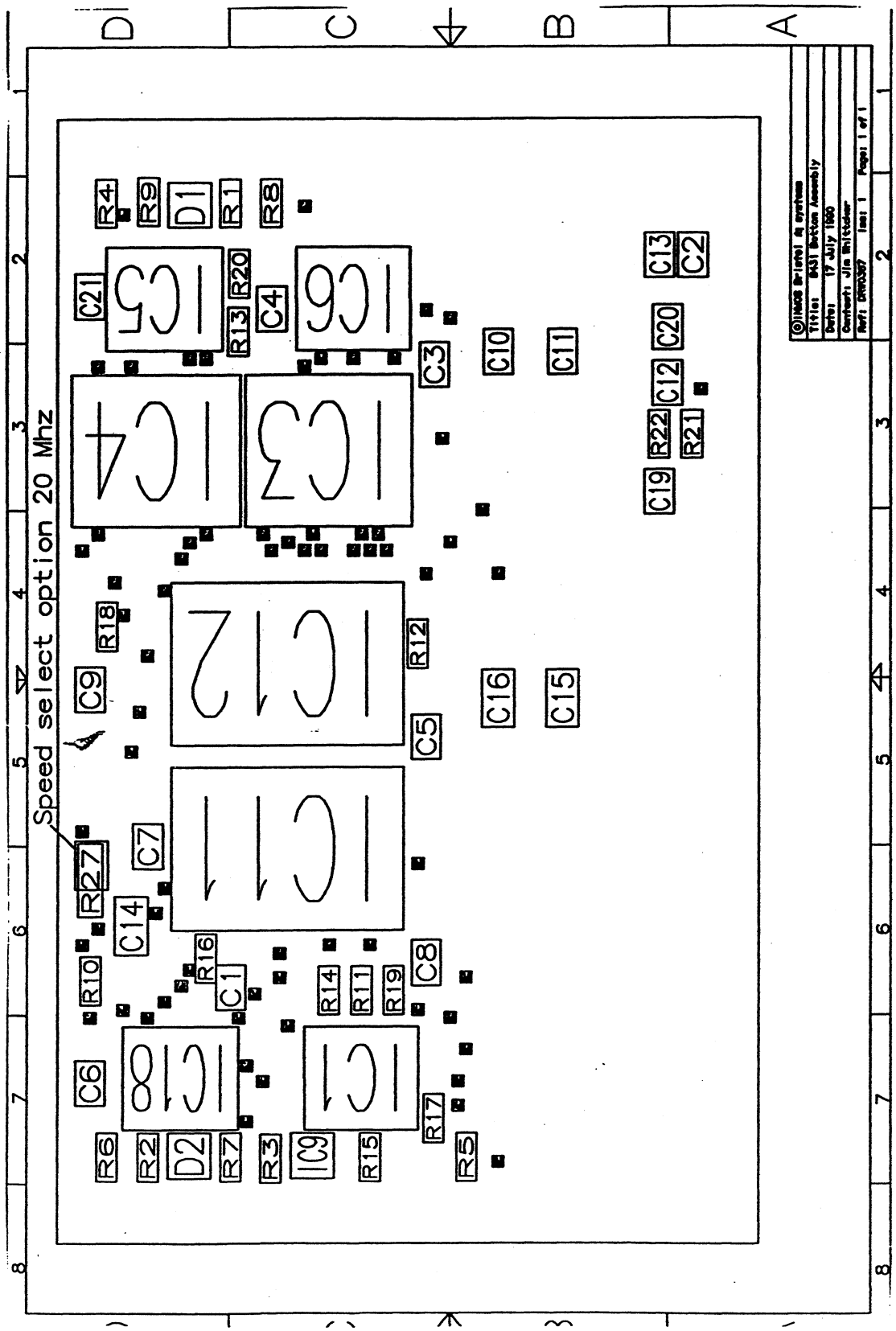




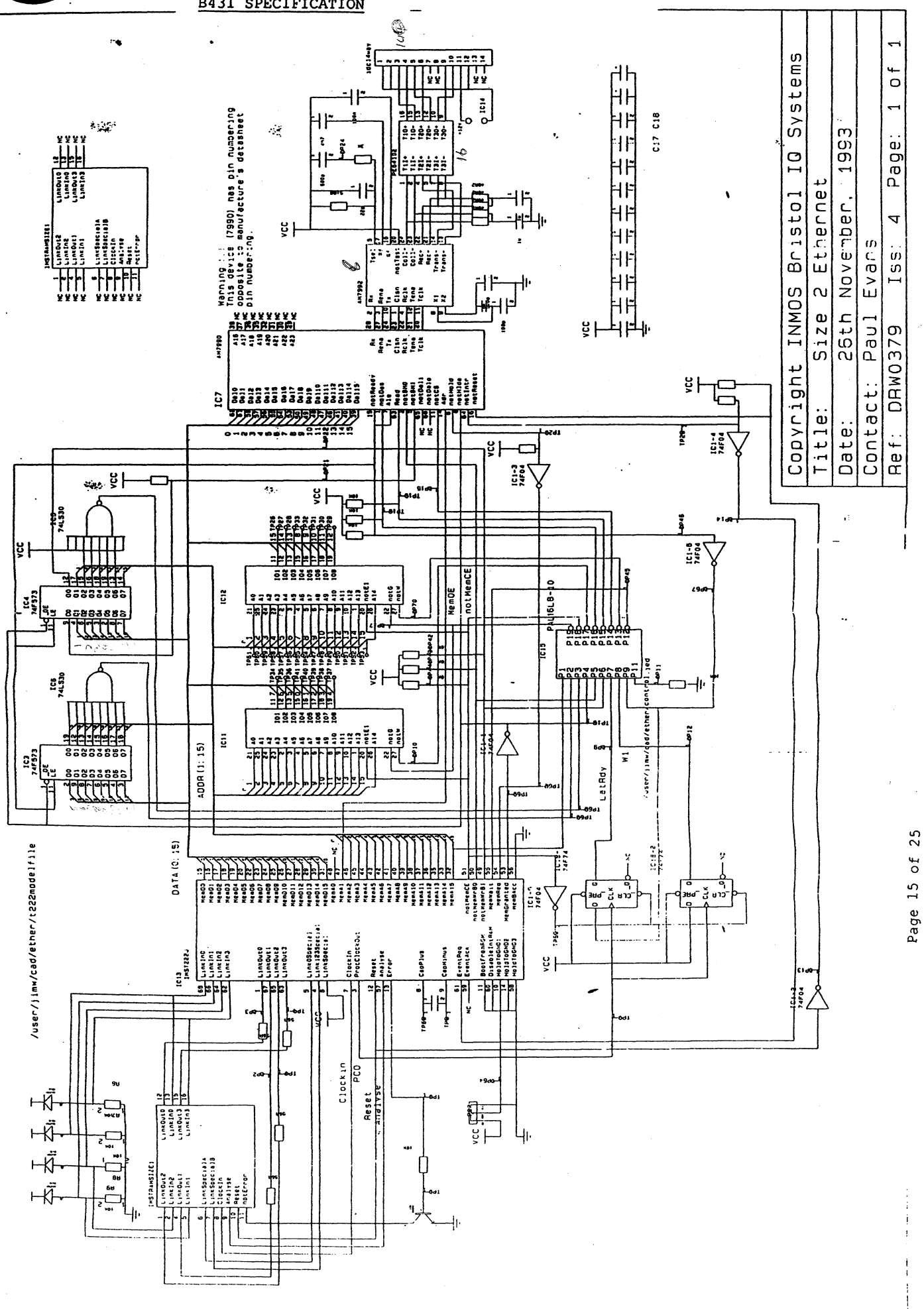
NOTE: Drawing not to scale

INMOS Bristol	Issue 1 Date 6-Feb-1991	Size 2 TRAM Profile and Routing Drawing. SBS-DRW-0436

B431 SPECIFICATION



B431 SPECIFICATION



B431 SPECIFICATION

```
TITLE Size 2 Ethernet board PAL
PATTERN SBS-DRW-0790
REVISION 1
AUTHOR Jim Whittaker
COMPANY Copyright 1990 INMOS Ltd. Bristol
DATE 12 Dec 1990

CHIP CONTROL PAL16L8

;1      2        3        4        5        6        7        8        9        10
A15     /LANCEL  /LANCEH  /MEMGR   /WRB0    /WRB1    LATRDY   W1       RDY      GND
;11     12       13       14       15       16       17       18       19       20
ATE     MEMWAIT  /WR1     /LCS     LREAD    /LDAS    /WR0     /MEMCE   /RAMOE   VCC

EQUATIONS

MEMWAIT      = /A15 * LANCEL * LANCEH * (/LATRDY + /W1) ; Allow time for LATRDY

MEMWAIT.TRST = /ATE

LCS          = /A15 * LANCEL * LANCEH * /MEMGR

LCS.TRST     = /ATE

LREAD        = /A15 * LANCEL * LANCEH * /WRB0 * /WRB1

LREAD.TRST   = /MEMGR

LDAS         = /A15 * LANCEL * LANCEH * /MEMGR * MEMCE * W1

LDAS.TRST    = /MEMGR

MEMCE        = LDAS

MEMCE.TRST   = MEMGR

RAMOE        = /WRB0 * /WRB1 * /(/A15 * LANCEL * LANCEH) * /MEMGR
             + LREAD * LDAS * MEMGR

RAMOE.TRST   = /ATE

WR0          = WRB0 * /MEMGR
             + WRB0 * MEMGR * /LREAD

WR0.TRST     = /ATE

WR1          = WRB1 * /MEMGR
             + WRB1 * MEMGR * /LREAD

WR1.TRST     = /ATE

SIMULATION
```

B431 SPECIFICATION

Title IMS B431 Test Procedure Doc Number DRW0452 Issue 5 Page 1 of 6 Date 23rd November 1993	**INMOS Limited IQ Systems** This drawing, and the information therein, is not to be used or copied without the written permission of INMOS Limited.

Line SBS No **Qty** **Description**

Test Procedure for the IMS B431 TRAM

1.0 Introduction.

This document contains the required procedure for testing IMSB431s, for single board confidence test and multiple board soak tests.

The software runs on an IBM PC with a B008 or B004 motherboard.
The test software is supplied on floppy disk in IBM PC format.
The software should be installed on hard disk after being received.
The disk contains the following files:-

"test.bat"	**functional test batch file.**
"b431test.bah"	**main functional test program. (Version 2.0)**
"burn.bat"	**burnin test batch file.**
"b431burn.bah"	**main burnin test program. (Version 2.0)**
"b431eng.bat"	**engineering batch file.**
"b431eng.bah"	**engineering test program. (Version 2.0)**

It is necessary to have the "ISERVER" installed on the PC to run these tests.

2.0 Test Flow.

Every B431 board must successfully pass through the following production and QA test flow in the order specified. Any board not passing these tests will be rejected.
Any board that fails any of these tests must be repaired and retested starting from ATE (2.1.1).

PRODUCTION TEST FLOW	COMMENT
2.1.1 ATE	-
2.1.2 Single board functional test.	Performed at 4.75V as specified in section 4.
2.1.3 Multiple board soak test.	Performed at 4.75V for 1 hour at 60 degrees C, as specified in section 5.
2.1.4 Single board functional test.	Performed at 4.75V as specified in section 4.

QA TEST FLOW	COMMENT
2.2.1 Single board functional test.	Performed at 4.75V as specified in section 4.

B431 SPECIFICATION

Title IMS B431 Test Procedure Doc Number DRW0452 Issue 5 Page 2 of 6 Date 23rd November 1993	**INMOS Limited IQ Systems** This drawing, and the information therein, is not to be used or copied without the written permission of INMOS Limited.

Line SBS No Qty Description

3.0 Test equipment.

3.1 IBM compatible PC including either B008-0C and a B404 TRAM or a B004 motherboard with associated jumpers.
(The ISERVER must be installed.)
3.2 One (or more) B012 and an associated power cable plus back to back connectors.
3.3 Three link cables plus two extra link cables for each additional B012 used.
3.4 One subsystem cable for each B012 used.
3.5 Current versions of test software (as described in section 1).
3.6 Test load Ethernet cable. This consists of "thick wire" Ethernet cable with doubly terminated loads. A transceiver box is tapped into this cable. This item is supplied by Inmos.
3.7 Pipe jumpers to fill vacant slots (max 15 per B012 used).
3.8 Power supply for 4.75V .
3.9 Power supply for 12V. (For Ethernet transceiver box.)
3.10 General purpose target tram to test links. eg B404, B403, B401.
3.11 Test plug for for burnin tests. One for each B431 tested in oven.
(See drawing DRW0696 for description).
3.12 5M long Ethernet AUI cable (supplied by Inmos).
3.13 If a B008-0C is used, a breakout board is required for the B008 D type connector. Also a set of sub-system pins are required.

4.0 Single Board Functional Test

4.1 Setup B008-0C in the following way:
Place B404 in slot 0 with sub-system pins.
Place pipe jumpers in slots 1,2,3,4,5,6,7,8 and 9.
Set SW1 to the following :- 1-ON, 2-OFF, 3-OFF, 4-ON, 5-ON, 6-ON, 7-ON, 8-ON.
Place all 6 jumpers in JP1, place both jumpers in JP3, ensure no jumpers are in JP2.
Ensure P1 (24 pin DIL socket) is empty and is not modified.
When installed into PC place breakout board on D type connector.
(The B008 is now setup at address #150 and all links at 10Mb/s.)
4.2 Setup the B012 in the following way.

Plug in back to back connector and fit power plug to B012 and 4.75V supply.
Using link and reset cables connect B004 to the B012 as shown below.

B004	B012	Cable type
Subsystem	up	Subsystem cable
Link 1	configup	Link cable
Link 2	pipehead	Link cable
-	slot0/C004	Yellow link cable

B431 SPECIFICATION

Title IMS B431 Test Procedure Doc Number DRW0452 Issue 5 Page 3 of 6 Date 23rd November 1993	**INMOS Limited IQ Systems** This drawing, and the information therein, is not to be used or copied without the written permission of INMOS Limited.

Line	SBS No	Qty	Description

If a B008 is used, connect up the B012 as follows:

B008 break-out board	B012	Cable type
SS	up	Subsystem cable
Link 11	configup	Link cable
Link 10	pipehead	Link cable
-	slot0/C004	Yellow link cable

Set the K1 switch into the standard configuration.
Set SW1-6 to "ON" position.

4.3 Place a target TRAM (for link tests) in slot 1.
4.4 Correctly place the B431 under test in slot 0.
4.5 Check that the terminating loads at the end of the Ethernet cable are screwed in. Connect the B431 TRAM to the short transceiver cable associated with that board. Connect the short transceiver cable to the 5M AUI cable. Plug the 5M cable into the Ethernet transceiver box. Ensure that no undue strain is placed on the short transceiver cable, AUI cable or Ethernet transceiver box.
4.6 Connect the 12V supply onto the 2 pin header, IC14, correctly.
4.7 Switch on 4.75V and 12V power supplies. Check that only "PWR" (power) and "SQE" (heartbeat) lights are lit on the transceiver box.
4.8 Start the test by typing:-
TEST [RETURN]
The operator will be prompted to choose the motherboard type.
After a choice is made the message "Do you wish to log test results ?" will appear on screen. Press "n" or "N".
4.9 The operator is required to remove one load termination from the Ethernet cable at the appropriate time. Screen prompts are given.
4.10 Each test will be reported as a pass or fail. The operator must observe these results and reject the board if any test fails.
4.11 If a test fails due to cable failure then that cable must be rejected. A paired transceiver cable and B431 board must remain together for all future tests and shipment. Interchanging of boards and cables will not be accepted.

B431 SPECIFICATION

Title IMS B431 Test Procedure **Doc Number** DRW0452 **Issue** 5 **Page** 4 **of** 6 **Date** 23rd November 1993	**INMOS Limited IQ Systems** This drawing, and the information therein, is not to be used or copied without the written permission of INMOS Limited.

Line SBS No Qty Description

5.0 Multiple Board Soak Test

5.1 **Setup the first B012 as follows.**
Plug in back to back connector and fit power plug to B012 and 4.75V supply.
Using link and reset cables connect B004 to the B012 as shown below.

B004/B008	B012	Cable type
Subsystem	up	Subsystem cable
Link 1	configup	Link cable
Link 2	pipehead	Link cable
-	slot0/C004	Yellow link cable

If a B008 is used, connect up the B012 as follows:

B008 break -out board	B012	Cable type
SS	up	Subsystem cable
Link 11	configup	Link cable
Link 10	pipehead	Link cable
-	slot0/C004	Yellow link cable

Set the K1 switch into the standard configuration.
Set the SW1-6 switches to "ON".
Each B012 can test 1 to 8 B431s at a time. If more B431s are to be soaked they can be fitted to additional B012s in a pipeline sequence.
(Max number of B431s tested at one time = 16).

Setup additional B012s as follows (if required).

Previous B012	B012	Cable type
Down subsystem	up subsys	Subsystem cable
Config down	configup	Link cable
pipetail	pipehead	Link cable
-	slot0/C004	Yellow link cable

Set K1 to standard configuration and SW1-6 all "ON".

5.2 Place B431s onto the B012 in the following slots, in sequential order. Slots 0, 1, 2, 3, 8, 9, 10, 11. Ensure board "index" matches the slot "index" on the B012. If any of these slots are unused place a pipejumper in them. If this B012 is full place B431s on another B012 in the same order. All unused slots must have a pipejumper placed in them (ie 4,5,6,7,12,13,14 and 15).

B431 SPECIFICATION

Title IMS B431 Test Procedure Doc Number DRW0452 Issue 5 Page 5 of 6 Date 23rd November 1993	INMOS Limited IQ Systems This drawing, and the information therein, is not to be used or copied without the written permission of INMOS Limited.

Line	SBS No	Qty	Description

5.3 Place test plug into socket IC10 of each B431 under test.
5.4 Switch on 4.75V supply to B012s. The current required should be 60mA for each B012 plus 50mA for each B431.
5.5 To start testing type:-
BURN [RETURN]
5.6 The operator will be asked for the motherboard type. After this enter filename for logging and comment as described in section 6.0. (If a filename is not entered and [RETURN] is pressed the results will NOT be logged. This may be used initially to set up and verify the test equipment.)
5.7 Each B431 will have its results printed out during burnin. The symbols used and their meaning are as follows:-

Symbol	Comment
"."	board PASS
"E"	board FAIL (Ethernet)
"M"	board FAIL (Memory)
" "	board FAIL (not found by host)

eg
Test number 1 = ... (four boards passing)
Test number 2 = .E.M (board 1 pass, board 2 fail, board 3 pass, board 4 fail)
A final summary will be given at the end of the burnin.
(Note :- Failing boards in a network may cause incorrect diagnostic results.)
(Testing is stopped by pressing a key on keyboard.)
5.8 Boards must be tested for 1 hour at 60 degrees C.
For boards to be accepted from a burnin test, ALL boards must pass ALL tests for the full 1 hour at temperature.

Title IMS B431 Test Procedure Doc Number DRW0452 Issue 5 Page 6 of 6 Date 23rd November 1993	INMOS Limited IQ Systems This drawing, and the information therein, is not to be used or copied without the written permission of INMOS Limited.

Line	SBS No	Qty	Description

6.0 Result filing

Results for the burnin soak tests must be recorded. Results are stored in files in the same directory on disk from where the tests are run. Adequate disk space should be provided for result logging. If results cannot be stored the message "PROGRAM FILING ERROR" will be observed on the PC monitor.

The following filename and comment convention should be used.

FILENAME CONVENTION:
The filename should be in the form A31MMDDR.log
where
A is assembly house prefix.
31 is board type (B431).
MM is month of test ie JA,FE,MR,AP,MY,JN,JL,AU,SE,OC,NO,DE.
DD is date of test.
R is run identifier.

Thus X31JL14C.LOG is the results from assembly house X on 14th July of third run of B431s.

COMMENT CONVENTION:

The comment should contain:
(i) The serial numbers of boards tested.
(ii) The time and date of testing.
(iii) The conditions of test (ie Oven temperature and duration.)

Each batch tested should have the soak test results stored on 5.25 inch disk. This must accompany the batch when sent to Inmos.

B431 SPECIFICATION

List of items to be sent to IMS B431 PCB manufacturers. The number of this PCB is 221-CBRD-330-02.

B431 PCB Production List

SBS-DRW-0437

LINE	SBS NO	QUANTITY	DESCRIPTION
1	SBS-DSK0039	1	Floppy disk, data for plotting and drilling for PCB 221-CBRD-330-02 (IMSB431)
2	SBS-SPC0005	1	Module PCBs are to be profiled to the sizes shown on the appropriate drawing. All inside corners are to be 1.2mm radius max. The extreme outside corners of each PCB or individual circuit module are to be chamfered, 0.010" min, 0.025 max. The profiling tolerance is ± 0.002" When circuit module PCBs are being made in a standard INMOS specified panel, the modules should be left in panels with breakout tabs approximately half way along each edge. Holes shown in the profiling drawings may not be detailed on corresponding drill phototools. These holes are always non-plated.
3	SBS-DRW0436	1	Size 2 TRAM profile and routing drawing.

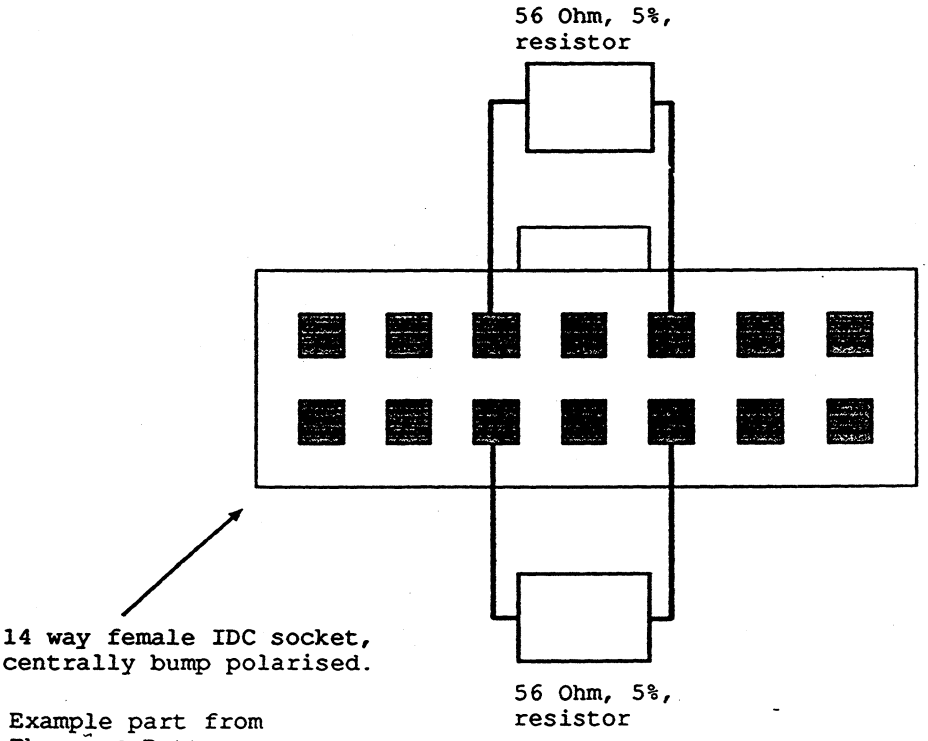
ADDITIONAL NOTES FOR MANUFACTURE

Stackup is as follows: top track, VCC, GROUND, bottom track.

Board thickness must be not less than 1.2mm and not more than 1.6mm, measured over sleve edge at edge of panel after resist.

Note that the phototools and drill data do not contain references to routing profile or un-plated panel tooling drill holes. All such information is contained on the relavent drawing (reference above).

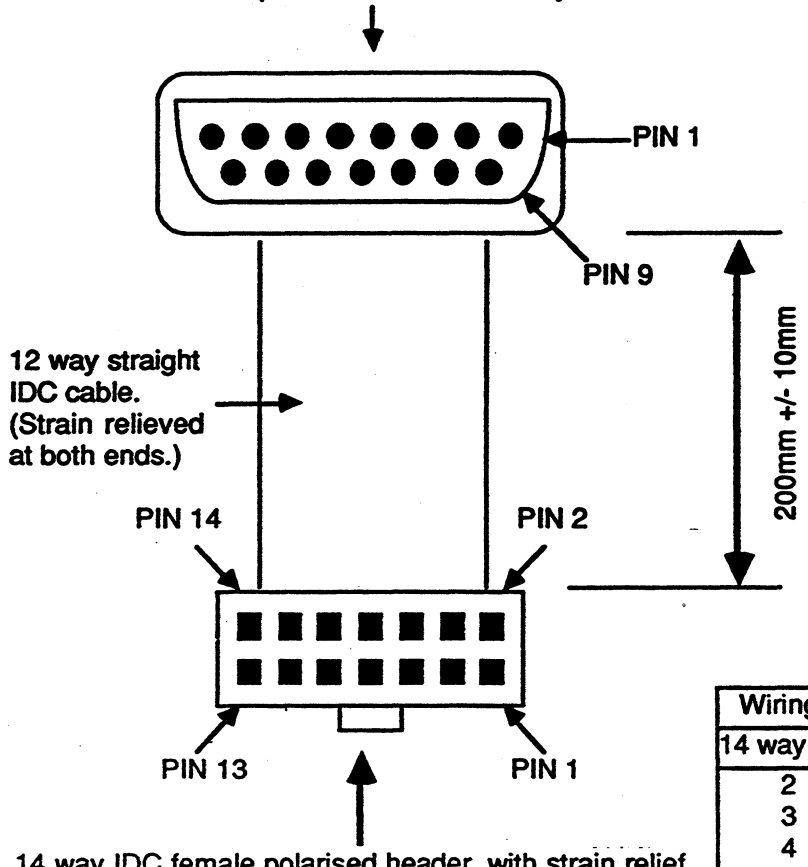
B431 SPECIFICATION



Title : B431 hot soak test-socket.	This drawing and the information therein is not to be used or copied without the written permission of INMOS Limited.
Date : 23 November 1993	
Doc No: DRW0696	
Issue : 0	

B431 SPECIFICATION

15 way female, D type ,IDC connector, metal case, strain relief.
Use RS part number 472-657 only.



14 way IDC female polarised header, with strain relief.

DRAWING NOT TO SCALE.

Wiring details	
14 way	D type
2	1
3	9
4	2
5	10
6	3
7	11
8	4
9	12
10	5
11	13
12	6
13	14

Title: B431 Ethernet cable	This drawing ,and the information therein, is not to be used or copied without the written permission of INMOS Ltd.
Drawing: DRW0453	
Issue: 4	
Date: 26-10-92	
Sheet 1 of 1	