DS200UCVAG1A## CARD / IS200UCVIH1A## CARD
DS215UCV#H#A# MODULES/ IS215UCV#H#A# MODULES
TEST INSTRUCTIONS

9.1 SCOPE

This document describes tests for DS200UCVAG1A##, IS200UCVIH1A##, DS215UCVAG1A#, DS215UCVA3A#, DS215UCVBG1A#, DS215UCVBG3A#, IS215UCVCH1A#, IS215UCVCH3A#, IS215UCVCH5A#, IS215UCVDH1A#, IS215UCVDH3A#, IS215UCVDH5A#, IS215UCVDH7A#, IS215UCVDH9A#

9.2 DOCUMENTATION

1. Elementary drawing DS200UCVAG1A## and IS200UCVIH1A##.

2. BOM / Assembly drawings: DS215UCVAG1A#, DS215UCVA3A#, DS215UCVBG1A#, DS215UCVBG3A#, IS215UCVCH1A#, IS215UCVCH3A#, IS215UCVCH5A# IS215UCVDH1A#, IS215UCVDH3A#, IS215UCVDH5A#, IS215UCVDH7A#, IS215UCVDH9A#

3. UCVA_ATE Test Station - Vasalf08misge\Gedsv1\Projects\Testdev\Ti_man\Ds215\Utils\Ucva_ate\Fixture \ucva_fix.skd

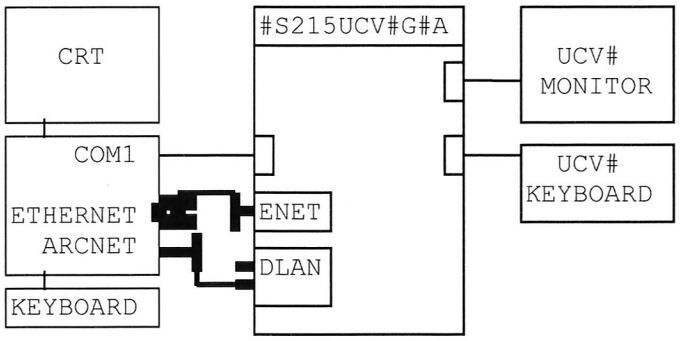
4. Test Instructions Vasalf08misge\Gedsv1\Projects\Testdev\Ti_man\Ds215\Ucv#g#a \215ucva.doc

5. Test-specific Computer programs:
   Vasalf08misge\Gedsv1\Projects\Testdev\Ti_man\Ds215\Utils\Ucva_ate*.*
   Note: Complete Test Station backup floppy disks (and maybe patches).

9.3 WORKSTATION EQUIPMENT

1. IBM Compatible PC with DOS test programs installed.
2. ETHERNET PC card.
3. ARCNET CONTROL BOARD Part# 278A2181VRP3 installed in the PC.
4. DS215UCVAG#A Test Fixture. (see drawing 336A4505)
5. Two ethernet card Transceivers. One for BNC and one for 10baseT connections.

9.4 TEST SET-UP



Use 50 ohm terminators on both ends of the ethernet RG-52 coax cable.
Use 93 ohm terminators at the ends of the arcnet RG-62 coax cable.
Use NULL twisted pair cable for 10baseT connections.

9.5 DS215UCVAG#A#/IS215UCV#H#A TEST INSTRUCTIONS

The major difference between DS215UCVAG#AA through DS215UCVBG#AF (old revisions) and DS215UCVBG#AG through IS215UCV#H#A# (newer revisions) is:

a. BIOS CMOS setup for hard drive operation (old revisions).
b. Loading FLASH via hard drive (old revisions).
c. BIOS CMOS settings, remove Pentium processor card JP1, power up, power down, loads CMOS settings with BIOS default (newer revisions).
d. FLASH loaded via serial port. (newer revisions).
e. IS215UCVDH#A# and IS215UCVCH#A# are almost identical.

The objective of the IS215UCV#H#A test is to verify that FLASH memory (SIMM) is Programmed and verified correct, and ARCNET (DLAN), GENIUS, ISBUS and ETHERNET Communications are functional.

1. After the UCVA_ATE Test Station computer is turned on (or reset) the following Menu selection should appear on the Test Station CRT:
   Also, you can bring up the menu from the C:> prompt by typing "menu" <cr>.

```
**********   MAIN MENU  **********
IS215UCVDH#A#                    1
IS215UCVCH#A#                    2
DS215UCVBG#A#                    3
DS215UCVAG#A#                    4
```

2. Select the unit to test from the MENU tree until the desired test appears:

3. Select "TEST ALL" from the MENU and follow program instructions.

   "TEST ALL" (selection 1) performs in order selections 2, 3, 4 and 5 if the selections are in the menu.
   If "TEST ALL" fails ARCNET TEST, for example, the technician may choose to complete the test by performing selections 3, 4 and 5 ("ARCNET TEST ONLY" and "GENIE TEST ONLY", "ETHERNET TEST ONLY"), because they have yet to pass.
   Only "TEST ALL" will ask the operator to replace a jumper on DS215UCVBG# at the end of the test.

   Once pass is indicated at the end of each test, the technician should

   (T) stamp the Unit Under Test (UUT) using black ink visible near #S215UCV#H#A# label.

9.6 DS215UCVAG#A# and DS215UCVBG#AA-DS215UCVBG#AF PREPARATION (old revisions)

F10 may be pressed any time to abort any test.
In order to boot the Unit Under Test (UUT) from a hard drive on DS215UCVAG#, the BIOS must be set-up for the hard drive. (This is part of the "TEST ALL" procedure.) On DS215UCVBG#AA\#AF removing processor card jumper JP1 automatically sets up the BIOS.

BIOS SET-UP

```
Current Date:[  /  /   ]                Video System:     [EGA / VGA  ]
Current Time:[ :  :  ]                  Power Up Speed:   [Fast       ]

[  640K] System Memory                  BIOS Shadow:    [System in RAM]
[ 7168K] Extended Memory                                [Video in RAM ]

 Internal COM A: [COM1, 3F8H]           Internal Floppy:[Disabled     ]
 Internal COM B: [COM2, 2F8H]           Internal IDE:   [Enabled      ]
 Internal LPT:   [LPT1, 378H]

 Diskette Drive 0: Type:[Not Installed] System Memory Cache: [On ]
 Diskette Drive 1: Type:[Not Installed]

Fixed Disk 0:Type:[User]  CY:[988]  HD:[16]  ST:[52]  LZ:[988]  WP:[None]
Fixed Disk 1:Type:[None]
```

The hard drive has (2) partitions: default is QNX operating system the other is for the DOS operating system. QNX boots up to "Login:" prompt, DOS boots up to "C:\>" prompt. Only in the (2) cases list below would the UUT be booted to DOS and both are exceptions to normal testing.

Case 1: If ethernet fails during the transmission of files from the Test Station to the UUT using FTP, the technician probably should select and follow the ETHERNET CONFIGURATION PROCEDURE from the Test Station menu if the UUT is a DS215UCVAG#A#.

The ethernet configuration is:
- I/O Base - 0x280
- Interrupt assignment - IRQ 5
- Physical Media - Thin Ethernet
- Adapter Architecture - I/O port

Case 2: If the normal test procedure fails, the technician probably should select and follow the DIAGNOSTIC TEST PROCEDURE from the Test Station menu to obtain more detail information on the failed circuit. If a vendor card fails, it should be tagged with this detailed information.

9.6.1 DS215UCVAG#A ETHERNET CONFIGURATION PROCEDURE REVIEWED (old revisions)

The Test Station ETHERNET CONFIGURATION PROCEDURE guides the technician through the ethernet configuration procedure. The actual configuration program is a DOS program called AUTOSET that is ran on the UUT. The BIOS must be set-up so the UUT boots from the hard drive. From the Test Station Computer the technician is instructed to press the UCVA keyboard key "4" during the boot process to boot from the DOS partition on the hard drive. At the C:\> "AUTOSET" ,<cr> is entered to run the configuration program from the UCVA keyboard & monitor.
The technician is instructed to remove U50 EPROM at the beginning of the procedure.
U50 EPROM must be remove.
The ethernet configuration is:
- I/O Base - 0x280
- Interrupt assignment - IRQ 5
- Physical Media - Thin Ethernet

9.6.2 DS215UCVAG#A# and DS215UCVBG#AA-DS215UCVBG#AF FLASH MEMORY LOAD PROCEDURE REVIEWED (old revisions)

"FLASH MEMORY LOAD PROCEDURE" guides the technician through the flash memory programming procedure.

Once the flash memory has been successfully programmed, the "FLASH MEMORY LOAD PROCEDURE" may be skipped in the "TEST ALL" selection.

Keyboard, monitor and hard disk drive connected to the DS215UCV#G#A are used. When the Unit Under Test (UUT) is turned on, it should boot from the hard drive and display "Login:". The technician is instructed to login as "test" and enter password "test" also. The following menu should then be displayed on the UCV# monitor:

```
       Selections
         a-  Load Driver, erase flash and copy core image and runtime.
         b-  Load 4Meg Flash Driver.
         c-  Erase flash.
         d-  Load 4Meg flash.
         e-  Load runtime.
         v-  Verify.
         r-  Reboot.
         x-  Exit.
        ?
```

1. Select **"Load Driver, erase flash and copy core image and runtime"** by typing "a" <cr> from the UCV# keyboard.
   This is the only selection the technician should use.
   Selections b, c, d, e, v, r, and x are for engineering use.

2. After about 3 minutes the following menu should then be displayed on the UCV# monitor:

```
    1-  Load DS215UCV#G1 runtime
    3-  Load DS215UCV#G3 runtime
    x-  Exit.
   ?
```

3. Make selection depending on UUT. Type "1" <cr> for Group1(G1) or "3" <cr> for Group3(G3) by typing on the UCV# keyboard.

4. After about 1 minute the FLASH LOAD should be complete.

   The flash memory appears exactly like a disk drive with QNX4 operating system. Now when the DS215UCV#G#A is turned on without the hard drive, it boots up as a computer running QNX4.

   Signal VPP (DS200UCVAG1A## sheet 4DA2E) is switched on to program/erase FLASH memory. All of sheet 4DA and the FLASH SIMM module work before this procedure will pass.

9.6.2 DS215UCVAG#A# and DS215UCVBG#AA-DS215UCVBG#AF FLASH MEMORY LOAD PROCEDURE REVIEWED continued (old revisions)

If an error occurs, select and run Diagnostic procedure from the menu.

If the UUT is a DS215UCVAG#A the following BIOS change applies:
The FLASH MEMORY LOAD PROCEDURE is concluded by changing the BIOS set-up to:

```
Current Date:[  /  /   ]                Video System:    [EGA / VGA  ]
Current Time:[ :  :  ]                  Power Up Speed: [Fast        ]

[  640K] System Memory                  BIOS Shadow:     [System in RAM]
[ 7168K] Extended Memory                                 [Video in RAM ]

Internal COM A: [COM1, 3F8H]            Internal Floppy:[ Disabled]
Internal COM B: [COM2, 2F8H]            Internal IDE:    [ Disabled]
Internal LPT:   [LPT1, 378H]

Diskette Drive 0: Type:[Not Installed]  System Memory Cache: [On ]
Diskette Drive 1: Type:[Not Installed]

Fixed Disk 0:Type:[ None]
Fixed Disk 1:Type:[ None]
```

9.7 DS215UCVBG#AG-DS215UCVBG#AZ and IS215UCV#H#A# PREPARATION & FLASH LOAD (new revisions)

Removing the Pentium processor card jumper JP1 automatically loads CMOS with BIOS defaults on power-up.
FLASH is loaded via high speed serial port (baud = 115200).

9.8 REVIEW OF FUNCTIONAL TESTS

Test programs run on the unit under test (UUT) processor. Tests are loaded on the UUT test via the hard drive or ftp transmission. UUT test programs are started by the test station PC sending commands via RS-232 COM port.

9.8.1 ETHERNET COMMUNICATIONS TEST REVIEWED

The processor half of the DS215UCV#G#A should have already been configured and tested, including an ethernet test. The ethernet test starts by testing the UUT response to a "ping" from the test station PC.
Whenever "ftp 192.0.2.2 < ftp2uc2k.cmd > ftp2uc2k.log" appears on the test station CRT, files are being transferred to or from the UUT. The test station computer compares (3) files for data integrity just as quick verification test.
It is possible the test station will "hang-up" if the ethernet circuitry is defective. If this happens, simply "reset" test station PC.

9.8.2 ARCNET COMMUNICATIONS TEST REVIEWED

After ARCTEST program is started on the UUT and on the test station PC, arcnet communications between the test station PC and the UUT is verified. The test station sends data via arcnet coax and then checks the response from the UUT. Only a few bytes are exchanged so the test is repeated four times to insure functionality. The technician is asked to swap coax cable and the terminator during the test so both channels (and transformers) are tested.
Most of the ARCNET circuitry is on DS200UCVAG1A## sheets 4EA, 4FA and 4GA.

If an error occurs, the technician may select and run Diagnostic procedure from the menu.

9.8.3 GENIUS COMMUNICATIONS TEST REVIEWED

Most of the Micro-Genie card interface circuitry is on DS200UCVAG1A## sheet 4CA. The test program running on the processor card sends commands to the Micro-Genie which in turns communicates with the GENIUS I/O block through a serial link. Both ends of this serial link must be terminated with 150 ohm resistors. Please be aware the wires in the GENIUS connector that plugs into the UUT may break with use.

If the technician finds a defective Micro-Genie card you may use the DIAGNOSTIC TEST PROCEDURE and tag the card with failure information before returning the card.

For new revisions the IS200UCVIH1A## card also supports Micro-Genie interface and should be returned for repair if found defective.

9.8.4 ISBUS COMMUNICATIONS TEST REVIEWED

The UUT test program is called ist. The ISBUS circuitry is on IS200UCVIH1A## card. A special NULL twisted pair phone (loopback) cable is connected between the two connectors on a IS200UCVIH1A## card. The test checks Dual Port RAM, IRQ's, transformers and other circuitry related to the ISBUS function. If this test fails return card to supplier for repair.

9.8.5 NVRAM TEST REVIEWED

The UUT test program is called nvtest. The non-volatile RAM circuitry is on on both DS200UCVAG1A## and IS200UCVIH1A## cards. This test is performed on IS215UCV#H#A# and DS215UCVBG#AG-G#AZ units. On units other than G1A# or H1A# the NVRAM & FLASH used is on the card nearest the processor card.

9.8.6 DS200UCVAG1A## DIAGNOSTIC TEST PROCEDURE REVIEWED

The Test Station DIAGNOSTIC TEST PROCEDURE guides the technician through the diagnostic tests. The actual test is a DOS program run on the UUT. The BIOS must be set-up so the UUT boots from the hard drive. The technician is instructed to press the UCVA keyboard key "4" during the boot process to boot from the DOS partition on the hard drive. At the C:\> "ucva" ,<cr> is entered to bring up the Diagnostic Test Menu. UCVA TEST PART 1 then UCVA TEST PART 2 should be run or run "FLASH SIMM TEST". These tests may not tell the technician what the defect is but hopefully guides him to the defective circuitry. If the test stops at a failure the technician should write down the error message then continue by pressing the UCVA keyboard <cr> key to pick up on anymore errors.

9.8.7 DS200UCVAG1A## CARD SUPPLIER TEST PROCEDURE REVIEWED

The DS200UCVAG1A## card supplier should run two tests.
(Test 1.) "DIAGNOSTIC TEST PROCEDURE", "PART 1" and "FLASH TEST".
(Test 2.) "APPLICATION TEST" "TEST ALL".

First assemble unit under test.
(a.) Install FLASH SIMM "test" card (assuming it has been programmed).
(b.) Install GE FANUC Genius "test" card.
(c.) Install processor "test" card, unit under test, and backplane "test" card.

Now we have made a DS215UCVAG1A# module.

The First Test is necessary to check the UCVA "HARD DRIVE" circuitry.
Perform the "DIAGNOSTIC TEST PROCEDURE" for DS215UCVAG1A.
Run "DS215UCVAG1A TEST PART 1".
This test requires the UCVA "HARD DRIVE", Keyboard, and monitor connections. Note when the "HARD DRIVE" ribbon cable is connected, the COM1 cable should be disconnected. When the "HARD DRIVE" ribbon is disconnected, the COM1 cable should be connected.
Also the UCVA BIOS must be set for:
Fixed Disk 0:Type:[User] CY:[988] HD:[16] ST:[52] LZ:[988] WP:[None]
or
Fixed Disk 0:Type:[Auto] CY:[988] HD:[16] ST:[52] LZ:[988] WP:[None]
in order to boot to the DOS C:\> prompt as instructed.
Run "FLASH TEST" under "DIAGNOSTIC TEST PROCEDURE". This test does not write data into the FLASH, but it does test flash address latching.

The second test is necessary to check the UCVA Arcnet and Genie circuitry.
Perform the "APPLICATION TEST" "TEST ALL" for DS215UCVAG1A.

If these tests pass the unit under test is probably good, however, the FLASH SIMM circuitry has not been completely tested. If a card is returned for repair with a flash memory problem, perform "FLASH LOAD PROCEDURE" to verify repair. There could be an open run at the flash simm connector.

If a new "test" FLASH SIMM is in hand or the "test" FLASH SIMM is believed to be corrupted performed "FLASH LOAD PROCEDURE". This needs to be done only once. After the FLASH SIMM has been programmed (with application software) the data remains in the FLASH SIMM (non-volatile memory).

Just another note: If the UCVA "HARD DRIVE", Keyboard, and monitor are connected and the rack power is turned on while holding "F2" key to enter BIOS settings. If
Fixed Disk 0:Type:[Auto] CY:[988] HD:[16] ST:[52] LZ:[988] WP:[None]
is displayed, (we are looking for [Auto] setting or if [Auto] can be set), save (F10) BIOS settings. Now, it is no longer necessary to ever change the BIOS settings. The BIOS setting steps may now be skipped. The UCVA should always know if the "HARD DRIVE" ribbon is connected or not, (auto detect). If HARD DRIVE ribbon is NOT connected, the following is displayed in the BIOS settings:
Fixed Disk 0:Type:[None]
If HARD DRIVE ribbon IS connected the following is displayed in the BIOS settings:
Fixed Disk 0:Type:[Auto] CY:[988] HD:[16] ST:[52] LZ:[988] WP:[None]

REV	INIT	DESCRIPTION OF CHANGE	DATE COMPLETED
001	RLT	First Made For DS215UCVAG1A#	JULY 22, 1996
002	RLT	Added DS215UCVAG3A# test	SEP 30, 1996
003	RLT	Added DS215UCVBG1A# & DS215UCVBG3A# tests	JAN 28, 1997
004	RLT	Added DS200UCVAG1A## Card Supplier test section	APRIL 30, 1998
005	RLT	Added IS215UCVCH#A# tests	FEB 07, 1998
006	RLT	Added IS215UCVDH#A# tests	JUNE 07, 1999

007	RLT	Added minor modifications	JUNE 11, 1999
008	RLT	Made very minor modification	SEPT 1, 1999