AEROFLEX
35 South Service Road • Plainview, NY 11803
TEL: 516 694-6700 • FAX: 516 694-6715

APPLICATION NOTE #111

CT2577 / 79
Identifying the Remote Terminal Address Using "Built in Self Test"

Point of Contact:
John Vanchieri
Tel: (516) 752-2484

Identifying the Remote Terminal Address Using "Built in Self Test"

Some system environments require that the applications 1553 Modules Remote Terminal Address (RTA) be identified when the system is initialized. The CT2577/9 series can perform this function utilizing the devices internal Self test capabilities. This affords a high degree of functional coverage along with, when required, identifying the RTA.

BASICS OF THE CT2577/79 SELF TEST FUNCTION

The Self test feature is an **internal (off-line) and external (on-line) loop back test** for additional verification of functionality. This is in addition to the Remote Terminals internal Wraparound circuitry. The difference being that **this test is manual and under subsystem control**.

The subsystem microprocessor **selects either off-line or on-line mode, initializes the Self test data** and then **initiates the Self test. After** the Self test has **completed** the subsystem then **reads back the wrapped data word** and determines if it is correct. The **on-line** Self test must be done with the **1553 data bus quiet**.

For a more detailed description of the CT2577/79 Built in Self test please refer to application note #110, **Using the CT2577/79 Built in Self Test.**

PERFORMING A SELF TEST

The Self test function is **enabled or disabled** by **writing to specific address locations** (data is don't care). Reset (pulsing NRES) will disable Self test.

Addresses shown are for 16 bit operation

Address	Function
406h	**Enable off-line** Self test and set device status bit 6
407h	**Enable on-line** Self test and set device status bit 7
408h	**Disable** Self test

When **8 bit mode** is used (NBIT16=1) upper and lower bytes are selected via **UB** (0=lower byte) and must be asserted along with the address highway. **D0 through D7 contain data**, D8 through D15 are not used.
It is recommended that the user always use word width operations accessing the upper byte then lower byte for all operations.

TYPICAL SEQUENCE OF EVENTS

The following sequence can be used to identify the CT2577/79 Terminal Address and assumes that an RTA with correct parity (odd) is set and the Latch Address input (LA) is low.

1. Issue Reset (pulse NRES).
2. Initialize the desired operating mode (W=Write, R=Read, address/data)
   W - 400h/XXXX (RT Mode) OR 401h/XXXX (BC Mode)
3. Select Self test mode
   W - 406h/XXXX (off-line) OR 407h/XXXX (on-line)
4. Verify Self test mode (Assumes BTL is disabled)
   R - 001h/XX40h (off-line) OR 001h/XX80h (on-line)
5. Select Bus to be used
   W - 010h/XXXX (Primary) OR 018h/XXXX (Secondary)
6. Write Self test Data word (ST-Data, A55Ah typically used)
   W - 020h/ST-Data
7. Write Command word (Start from RTA = 00h)
   W - 000h/0021h (RT0 R SA1 WC1)

Do not use Broadcast commands for this particular function as ALL RTA's would PASS the Self test defeating the intent of the scenario.

SA1 is used for convenience, **ANY Receive SA** can be substituted

On subsequent iterations increment the RTA field of the Self test Command word. RTA range is 00h to 1Eh.

Command 0021h = **0000 0**000 0010 0001

When decoded into established 1553 groups

Command 0021h = **00000** 0 00001 00001
RTA T/R SA WC

8. Clear Self test Data location. Should be performed immediately following Command word write (step 7)
W - 020h/0000h

This location will be overwritten with Self test data and must be altered to insure that when finally read the Self test data was actually written

9. Verify Cleared Self test data location
R - 020h/0000h

10. Wait 45µs for Self test to complete (after NCMDSTRB)

11. Read Self test data
R - 020h/0000h (if Wrong RTA) OR ST-Data (if RTA matches)

While equal to 0000h go to step 7.

When the ST-Data data is returned the RTA field in the Self test command word equals the terminals hardwired RTA.

12. Disable Self test
W - 408h/XXXX

13. Verify Self test disabled (assumes BTL is disabled)
R - 001h/0000h

14. Proceed with normal system functions