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DEVELOPMENT OF A SYSTEM TO VALIDATE GROUP 3 FACSIMILE EQUIPMENT--ETC(U)
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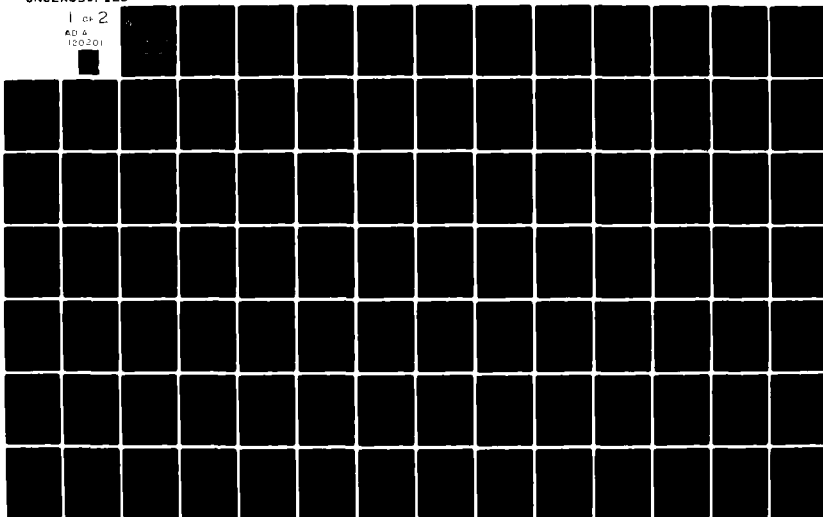
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NATIONAL COMMUNICATIONS SYSTEM

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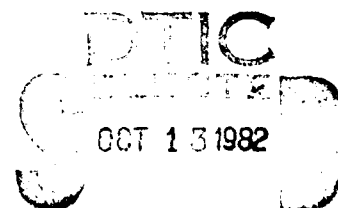
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DEVELOPMENT OF A SYSTEM

TO VALIDATE GROUP 3

FACSIMILE EQUIPMENT

JULY 1982



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NCS TECHNICAL INFORMATION BULLETIN 82-4

DEVELOPMENT OF A SYSTEM TO VALIDATE

GROUP 3 FACSIMILE EQUIPMENT

JULY 1982

PROJECT OFFICER

DENNIS BODSON
Senior Electronics Engineer
Office of NCS Technology
and Standards

APPROVED FOR PUBLICATION:

Marshall L. Cain

MARSHALL L. CAIN
Assistant Manager
Office of Technology
and Standards

FOREWORD

Among the responsibilities assigned to the Office of the Manager, National Communications System, is the management of the Federal Telecommunication Standards Program. Under this program, the NCS, with the assistance of the Federal Telecommunication Standards Committee identifies, develops, and coordinates proposed Federal Standards which either contribute to the interoperability of functionally similar Federal telecommunication systems or to the achievement of a compatible and efficient interface between computer and telecommunication systems. In developing and coordinating these standards a considerable amount of effort is expended in initiating and pursuing joint standards development efforts with appropriate technical committees of the Electronic Industries Association, the American National Standards Institute, the International Organization for Standardization, and the International Telegraph and Telephone Consultative Committee of the International Telecommunication Union. This Technical Information Bulletin presents an overview of an effort which is contributing to the development of compatible Federal, national, and international standards in the area of digital facsimile standards. It has been prepared to inform interested Federal activities of the progress of these efforts. Any comments, inputs or statements of requirements which could assist in the advancement of this work are welcome and should be addressed to:

Office of the Manager
National Communications System
ATTN: NCS-TS
Washington, D.C. 20305
(202) 692-2124

DEVELOPMENT OF A SYSTEM
TO VALIDATE GROUP 3
FACSIMILE EQUIPMENT

Final Report

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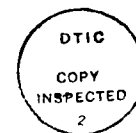
July 30, 1982

Submitted By:

DELTA INFORMATION SYSTEMS, INC.

310 Cottman Street

Jenkintown, Pennsylvania 19046



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1.0 INTRODUCTION

This document summarizes work performed by Delta Information Systems, Inc. for the office of Technology and Standards of the National Communications System, an organization of the U.S. Government, under Phase II of contract number DCA100-81-C-0023. The work performed on Phase I was described in a separate final report dated July 27, 1981 (NCS Technical Information Bulletin 81-8).

The Office of Technology and Standards, headed by National Communications System Assistant Manager Marshall L. Cain, is responsible for the management of the Federal Telecommunications Standards Program, which develops telecommunication standards whose use is mandatory by all Federal agencies.

The objective of this program is to develop a system to validate Group 3 facsimile equipment as specified in Federal Standards 1062 and 1063. (The Federal standards incorporate Electronic Industry Standards, EIA RS-465 and RS-466 respectively). The program consists of two phases. In Phase I the methodology for the validation of Group 3 facsimile equipment was developed. In Phase II the validation methodology, developed in Phase I, was implemented and tested.

Section 2.0 describes the general design of the overall Validation System indicating that it is composed of four

major hardware components

- Microprocessor System Controller.
- Floppy disk.
- Versatec V80 Printer, and
- DEC LA120 Keyboard Printer.

The heart of the system is the controller. Sections 3.0 and 4.0 describe the hardware and software design of the controller respectively. The operator interface including keyboard commands and test parameters is described in Section 5.0. The procedure for using the Validation System is outlined in Section 6.0. Finally the results of the acceptance test are summarized in detail in section 7.0.

2. SYSTEM DESIGN

The Group 3 Facsimile Validation equipment is implemented using the Motorola EXORciser II M6809 development system with additional Motorola M68 series micromodules and compatible DIS designed boards which contain a Rockwell V96P/1 modem and associated interface logic.

A Motorola EXORDisk III double sided dual drive floppy disk provides approximately one million bytes of on-line storage for system software and compressed test documents. A DEC LA120 medium speed printing terminal provides operator control of the test process and a printed record of test results. A Versatec V80 plotter provides hard copy of facsimile documents received from the unit under test. Connection to the unit under test is made via the switched telephone network through an exclusion key telephone.

A block diagram of the Group III Facsimile Validation system is shown in Figure 2-1.

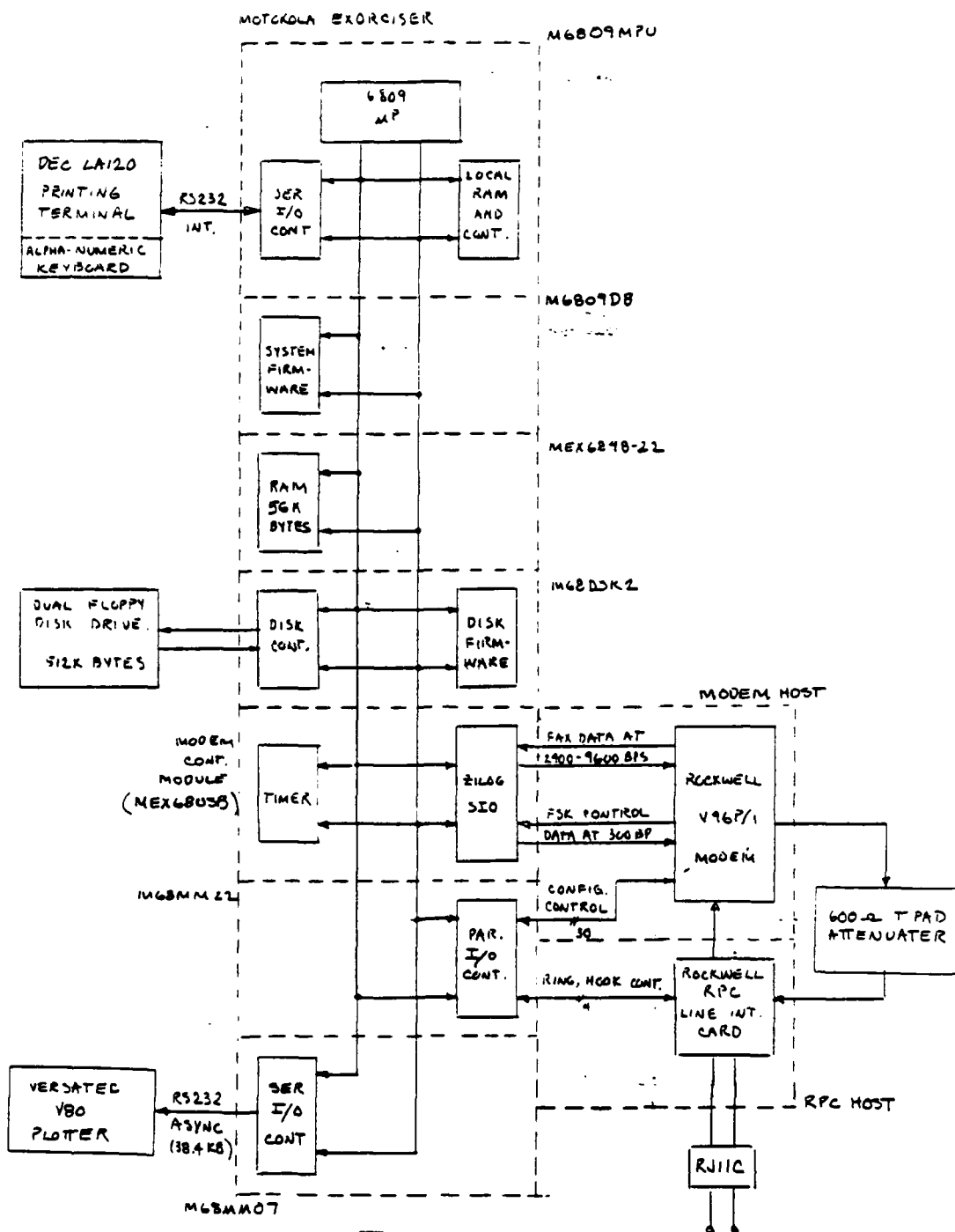


Figure 2-1

Facsimile Validation Block Diagram

TO OUT VIA
SWITCHED
TELEPHONE
NETWORK

2.1 SYSTEM OPERATION

The Group 3 Validation software and the Motorola MDOS programs necessary to load and run it are resident on one floppy disk (FAXVAL) which is inserted in disk drive #0. Compressed facsimile test documents for transmission to the unit under test are contained in a floppy disk (FAXDOC) which is inserted in disk drive #1. The disk in drive #1 (FAXDOC) also provides storage space for documents received from the unit under test.

The test operator inserts these two disks in the disk drive and initializes the system from the printing terminal by transferring the control program from disk #0 (FAXVAL) to system RAM for execution by the microprocessor on the EXORciser II MPU module. The operator has 10 tests available to him, and he can modify the operating parameters and test error conditions in these to accomodate the characteristics of the unit under test. Upon completion of each test, UUT identifying data, test conditions, and test results are automatically printed at the DEC terminal.

Facsimile data received and stored on disk #1 (FAXDOC) can be decoded and transferred through an asynchronous serial interface to the Versatec V80 plotter for visual evaluation of document quality.

2.2 VERSATEC V80 PRINTER/PLOTTER

The Versatec V80 Printer/Plotter is an electrostatic hard copy device which can perform both printing and plotting operations for data received on either an 8-bit parallel or an asynchronous serial interface.

The Facsimile Validation equipment uses the V80 in plot mode only, with data transferred via the serial interface at 38.4 baud with 8 data bits, one start bit, and one stop bit.

The V80 plots a fixed 2112 nibs/line (200 nibs/inch on 11 inch wide paper). Vertical resolution is 200 lines/inch. All facsimile documents printed on the V80 use this format. Those which have fewer than 2112 elements per line will have white fill elements printed at the end of each line; those which have more than 2112 bits per line will be truncated, with the information on the right hand side of the document lost. Neither of these conditions should affect the function of the printout, which is facsimile quality evaluation.

The fixed vertical resolution causes facsimile documents received at 7.7 lines/mm to have a normal aspect ratio and those received at 3.85 lines/mm to appear compressed 2.1 vertically.

2.3 EXORDisk III

The Motorola EXORDisk III is a dual double-sided floppy disk drive capable of storing 512,512 bytes of IBM 3740 formatted data per disk.

Two individually selectable disk drives, a power supply , and a cooling fan are contained in a single housing. The disks interface to the system through a M68DSK2 board inserted in the EXORciser II card cage.

2.4 DEC LA120 PRINTING TERMINAL

The DEC LA120 printing terminal provides operator control of Facsimile Validation operation and a hard copy printout of test results. It contains a full ASCII keyboard with standard ANSI escape sequences. The LA120 communicates with the EXORciser II through an EIA RS-232 compatible serial asynchronous interface operating at 1200 baud. It prints 120 characters per line.

3.0 HARDWARE DESIGN

3.1 CONTROL LOGIC

The system control logic is contained on 9 printed circuit cards in the Motorola EXORciser II chassis. Operation is controlled by a 6809 microprocessor on the MPU board, which interconnects to the memory, support logic and I/O devices on the other boards through the Motorola Dynamic System Bus via the card cage backpan wiring. The backpan wiring is universal, and all card slots are electrically equivalent. The chassis contains +5VDC and $\pm$ 12VDC power supplies.

3.1.1 MOTOROLA M6809MPU PROCESSOR MODULE

The M6809MPU module contains an MC68B09 microprocessor, support hardware, and bus interface drivers. The microprocessor executes the Group 3 Facsimile Validation program from the 64K RAM memory described in 3.1.3 below. It operates at a 2.0 MHZ clock rate in single page memory mode.

A block diagram of the M6809MPU module is shown in Figure 3-1.

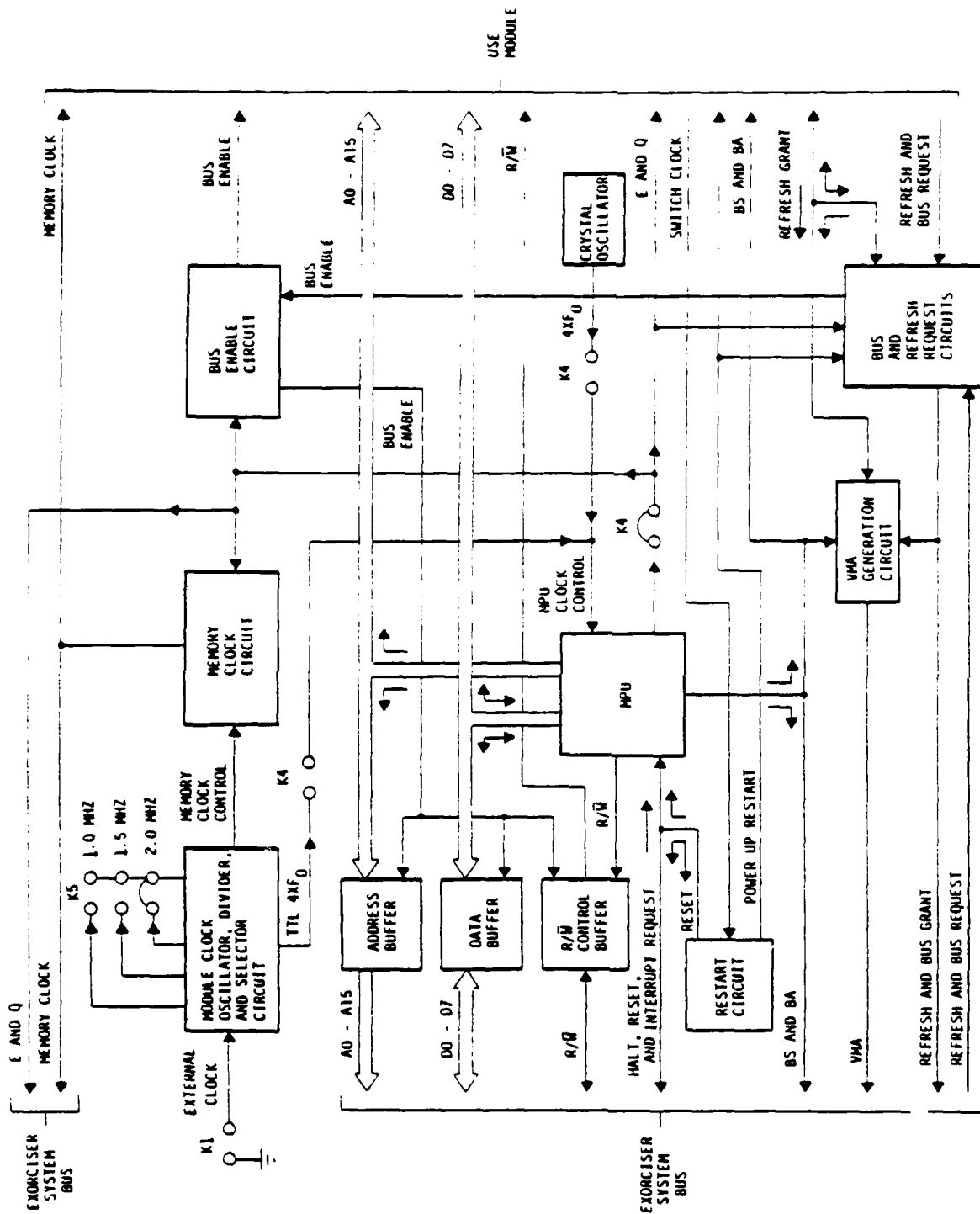


FIGURE 3-1. MPU Module, Block Diagram

3.1.2 MOTOROLA M6809DB DEBUG MODULE

The M6809DB module contains the RS232 asynchronous serial interface to the DEC LA120 printing terminal, memory control logic, and EXbug firmware. It is configured in the following manner:

- (a) SW1 set to single page memory mode
- (b) SW2 set to SYNC mode
- (c) SW3 set to EXBG restart mode.

A block diagram of the M6809DB module is shown in Figure 3- 2.

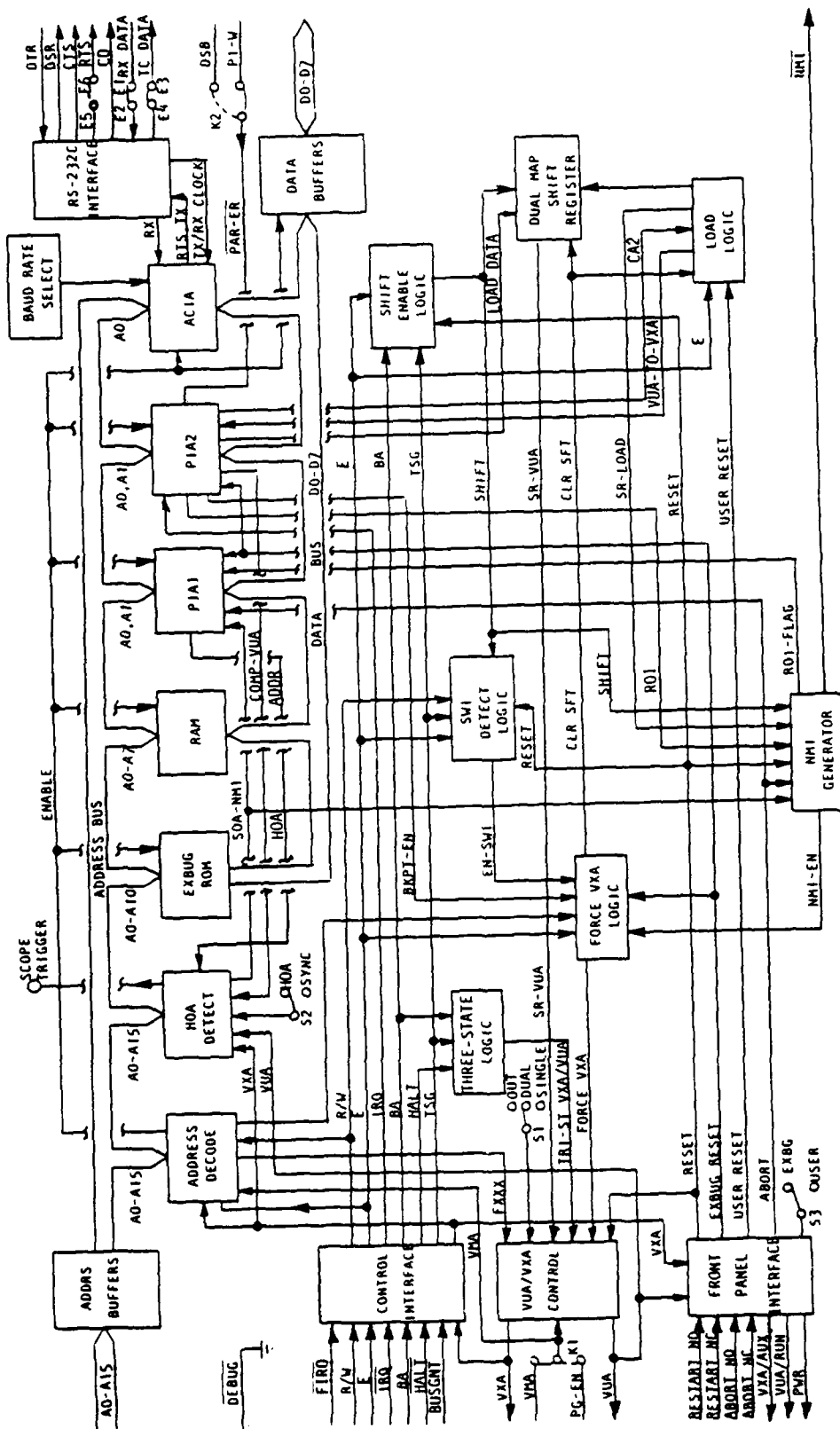


FIGURE 3-2 ME809 Debug Block Diagram

3.1.3 MOTOROLA MEX6864-22 DYNAMIC RAM Module

The MEX6864-22 module provides up to 65,536 x 8-bits of system RAM memory. It has been modified to provide 56K 8-bit bytes of RAM at hex addresses \$0000 through \$DFFF, leaving addresses \$E000 through \$FFFF free for ~~t/c~~ various hardware devices.

The module is configured for VUA addressing (address enable jumper at position 1-2) and for 2.0 MHZ operation with no parity check.

The FAX VAL program is loaded from disk #0 to RAM addresses \$2000 through \$7FFF for execution. Addresses \$8000 through \$CF00 are allocated for transmit and receive facsimile data, and address \$D000 through \$DFFF to the Versatec V80 print buffer and to microprocessor stack FIFOs.

A block diagram of the MEX6864-22 module is shown in Figure 3-3.

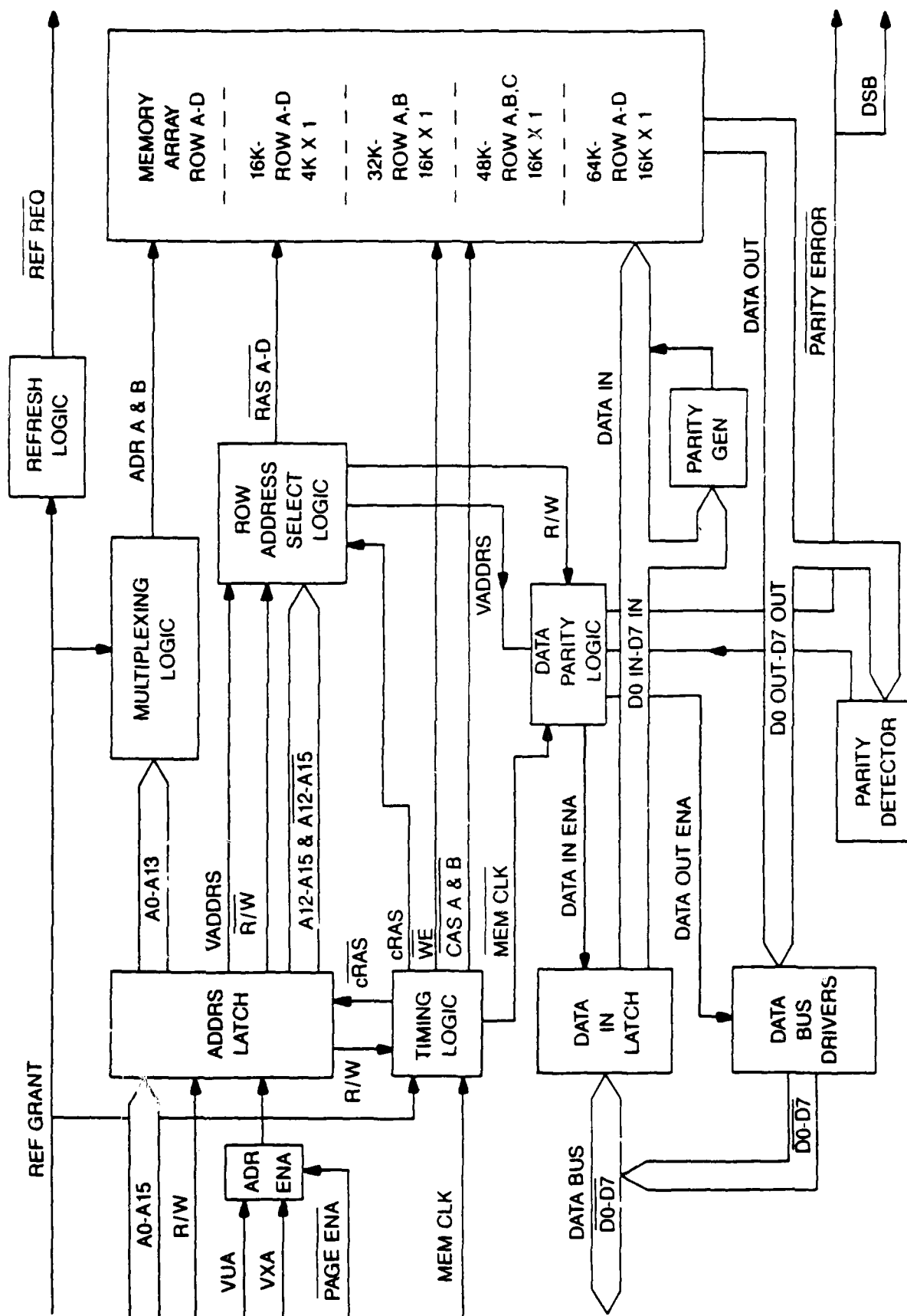


Figure 3-3. Dynamic RAM Block Diagram

3.1.4 MOTOROLA M68MM22 QUAD PARALLEL INTERFACE MODULE

The M68MM22 module consists of eight 8-bit parallel I/O ports implemented with four MC6841 PIO devices. These parallel interface lines are used primarily to control the Rockwell V96P/1 modem (refer to 3.1.8 below). The modem interface signals are detailed in figure 3-11.

The module is configured for VUA addressing with device addresses listed below:

<u>Port</u>	<u>Address</u>	<u>I/O Configuration</u>
1	\$EF10	output
2	\$EF11	output
3	\$EF14	output
4	\$EF15	output
5	\$EF18	input
6	\$EF19	input
7	\$EF22	output
8	\$EF23	input

A block diagram of the M68MM22 module is shown in Figure 3- 4.

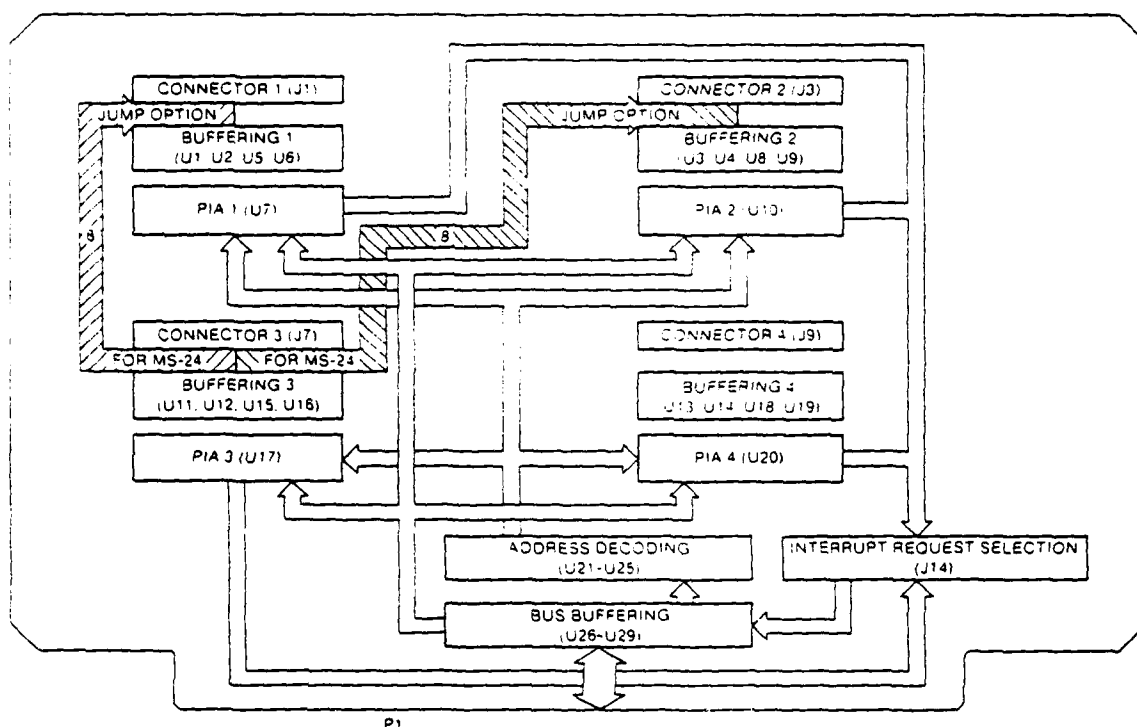


FIGURE 3- 4. Micromodule 22 Block Diagram

3.1.5 MOTOROLA M68MM07 QUAD COMMUNICATIONS MODULE

The M68MM07 module provides four asynchronous serial interface ports. Port 1 is used to interface to the Versatec V80 printer. The other three ports are not utilized.

The V80 interface port is configured as an RS-232C modem ACIA, operating at 38.4 K band with 8 data bits and one stop bit. The device address is \$ECF0.

The physical interface to the V80 is via a cable connecting to board-edge connector P3. Pin 2 on this connector, unassigned for the serial interface, is used as a tie point for a control signal which forces the V80 to 'plot' mode via pin 19 on the V80 parallel interface.

A block diagram of the M68MM07 module is shown in Figure 3-5.

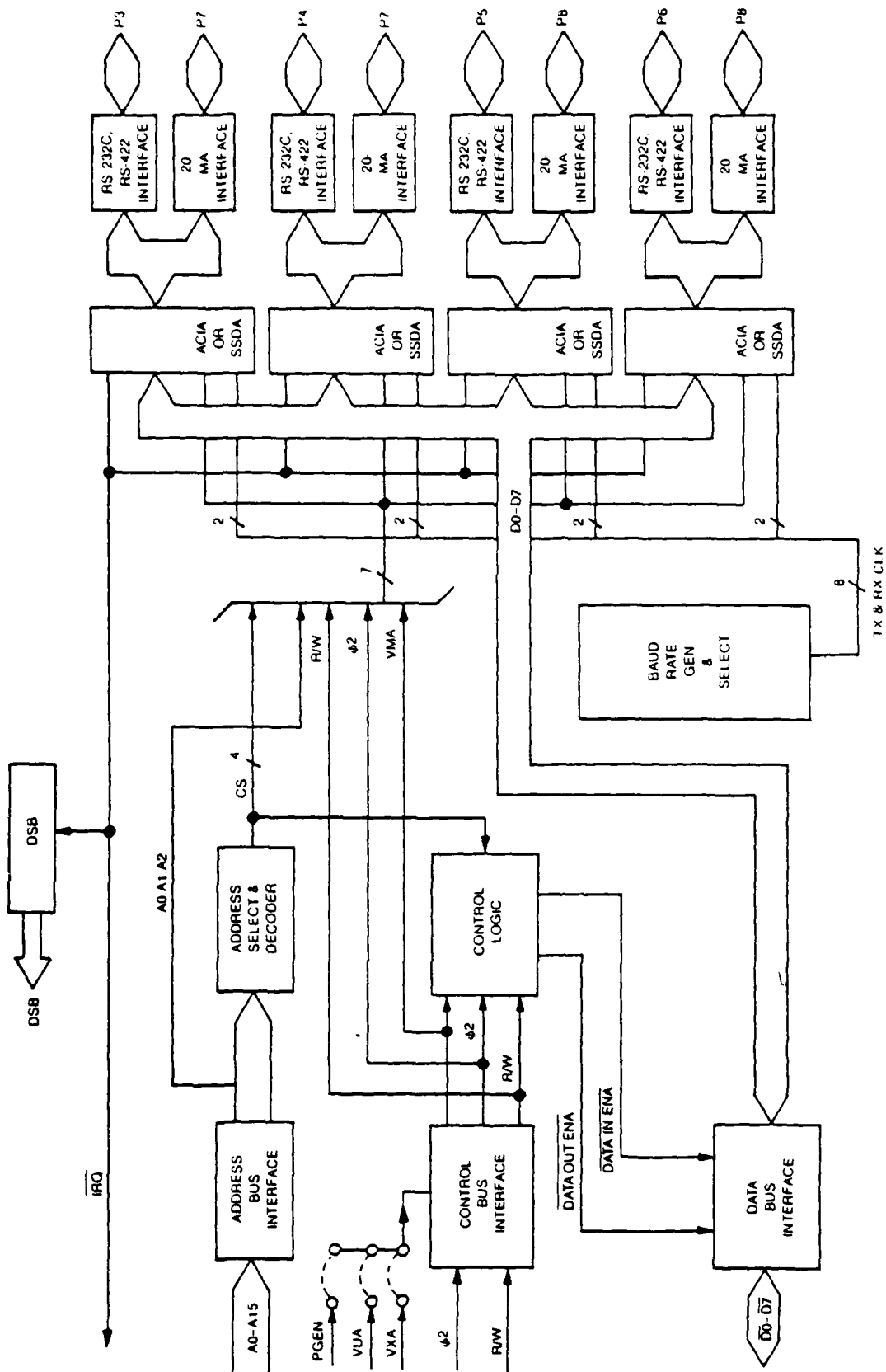


FIGURE 3-5. M68MM07 Quad Communications Module Block Diagram

3.1.6 MOTOROLA M68SFDC FLOPPY DISK CONTROLLER MODULE

The M68SFDC module interfaces the dual floppy disk drive to the microprocessor. In addition to the disk interface circuits it contains disk access routines in local ROMs.

The module is configured for VUA addressing.

A block diagram of the M68SFDC module is shown in Figure 3- 6.

3.1.7 MODEM CONTROL MODULE

The Modem Control Module consists of a Motorola MEX68USB Universal Support Module containing the following additional devices:

- (a) One MC68B54 advanced Data-Link Controller which controls the low speed HDLC interface between the microprocessor and the modem. The device address is \$ED10.
- (b) One MC68B52 Synchronous Serial Data Adaptor which controls the high speed facsimile data interface between the microprocessor and the modem. The device address is \$ED20.
- (c) One MC6840 Programmable Timer Module which is used to control FAXVAL program timeouts. Counter 1 is used in a continuous internal clock mode to generate a 2 MS timeout which the program uses to update various software counters. The device address is \$ED08.
- (d) Two SN7404 inverter modules and one SN7400 2-input gate modules generate support signals for the above three chips.

A logic diagram of the modem interface circuits and timer circuit is shown in Figure 3-7. The layout of this logic is shown in Figure 3- 8.

A block diagram of the basic MEX68USB board on which this logic is implemented is shown in Figure 3-9.

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MODEM CONTROL LOGIC

NOTE: REMOVE U7 & U4 FOR NORMAL OPERATION

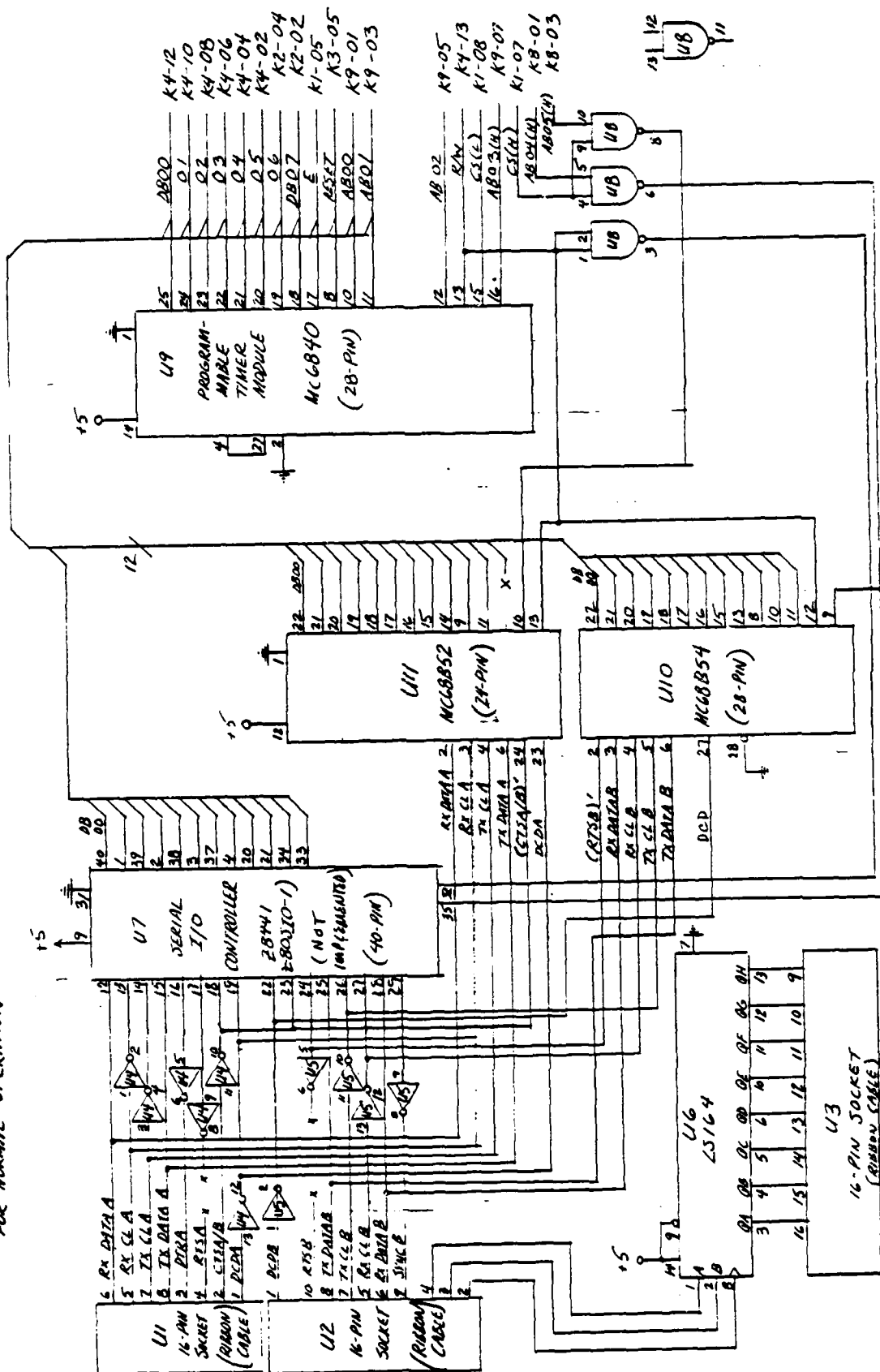
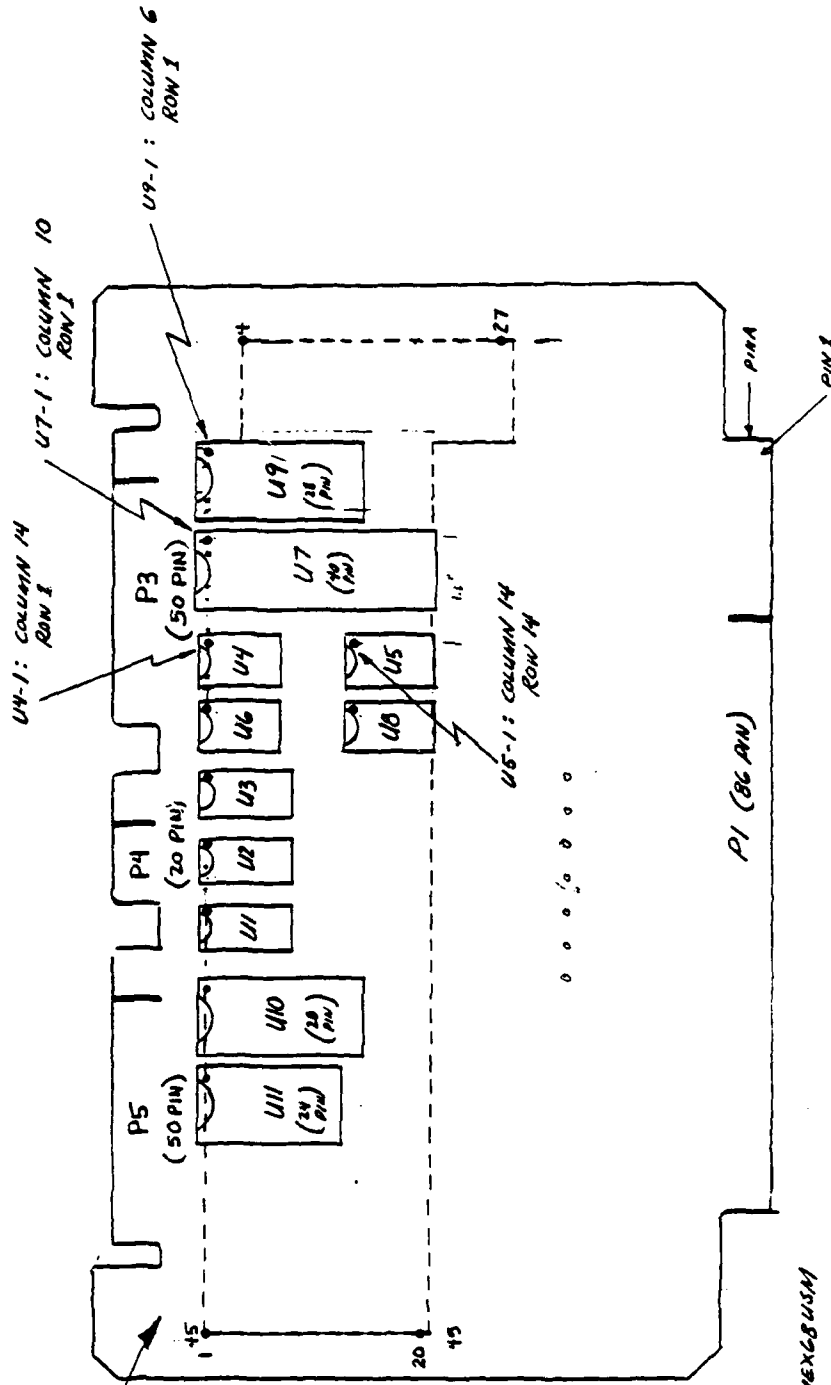


Figure 3-7. Modem Control Logic

BOARD 4 MODEM CONTROL BOARD ASSEMBLY

NOTE:

WIRING SIDE
IS SHOWN



BILL OF MATERIALS

QTY	BOARD, UNIV. SPT. NDL	MEXCELUSIM
1	U1-U3	16-PIN
3	U4-U6, U8	14-PIN
3	U7	40-PIN
5	U9	28-PIN

Figure 3-8 Modem Control Layout

2/2/62 CDB
12/4/62

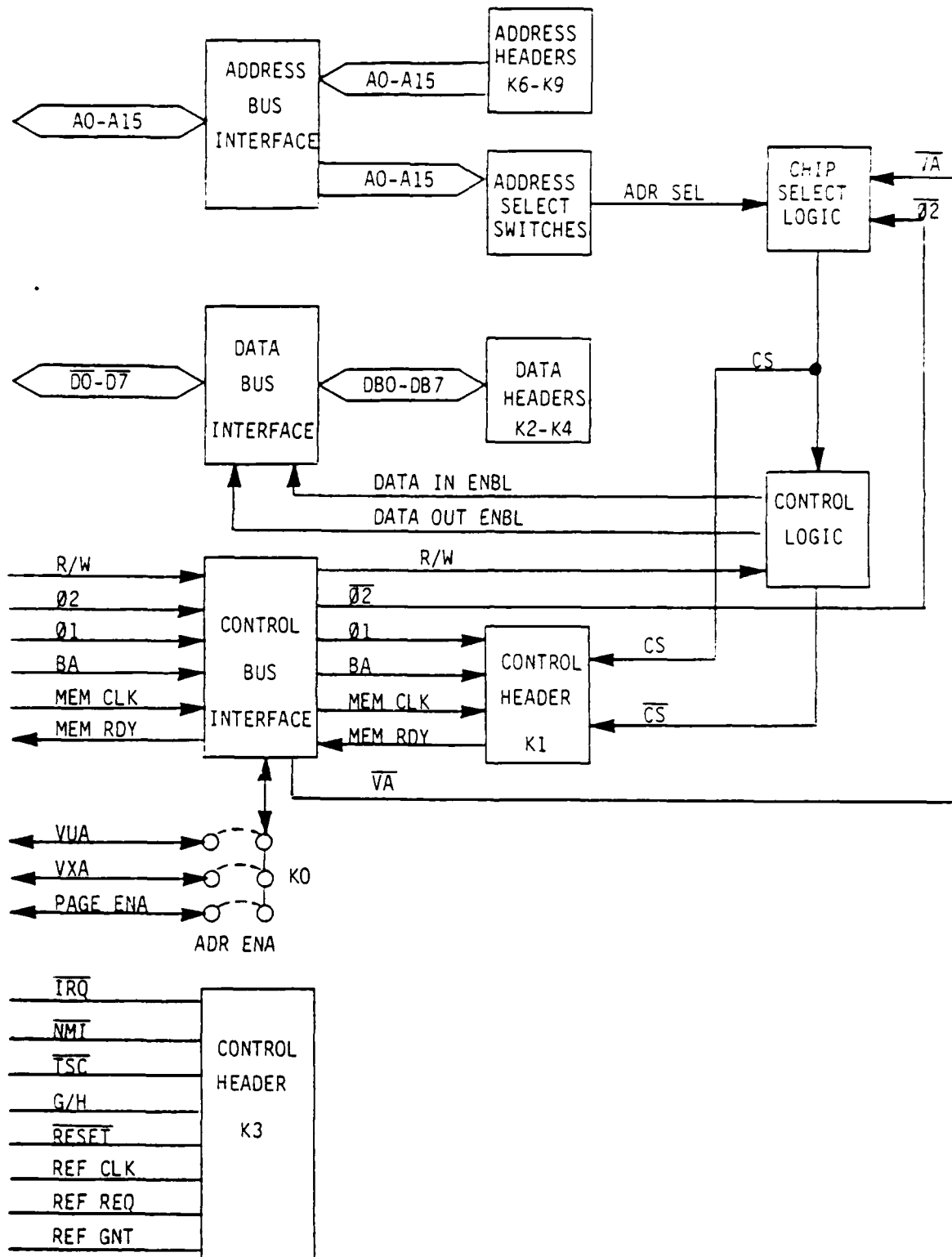


FIGURE 3-9. Universal Support Module Block Diagram

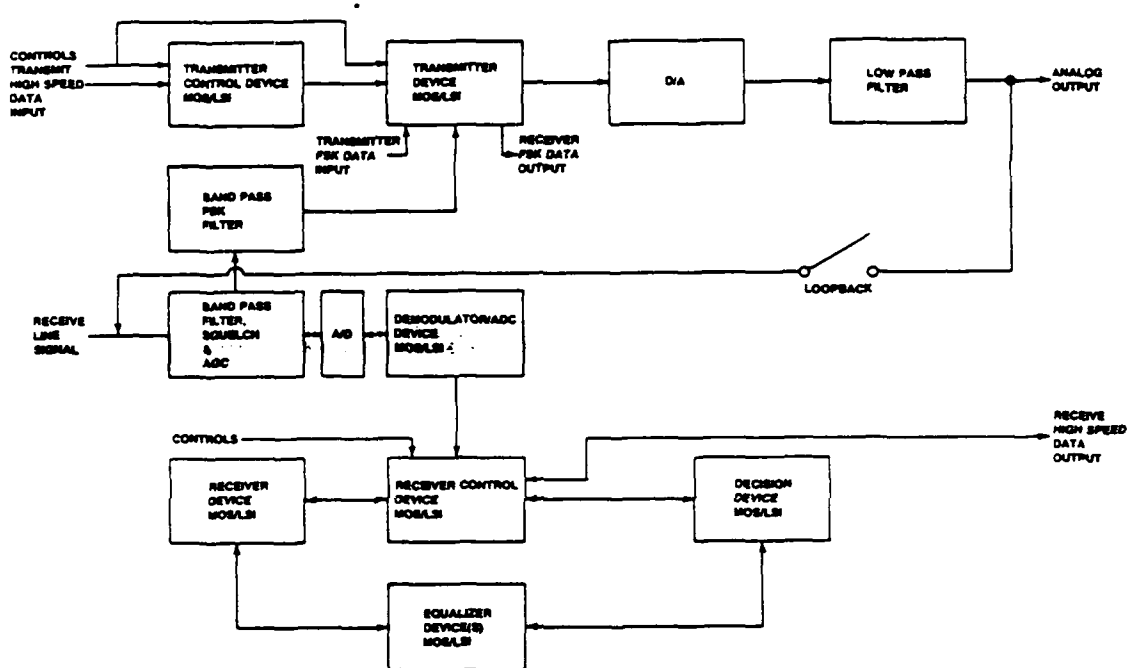
3.1.8 MODEM HOST MODULE

The Modem Host Module consists of a Motorola wire wrap module on which is mounted a Rockwell V96P/1 multi-configuration 9600 BPS modem. The Rockwell modem has CCITT V.29 and V.27 compatibility, and can operate in 9600/7200/4800/2400 bps modes. It interfaces to the switched telephone network through the RPC module described in 3.1.9 below.

A block diagram of the modem is shown in Figure 3-10.

The modem signal interface is shown in Figure 3-11.

V96P/1 FUNCTIONAL DIAGRAM



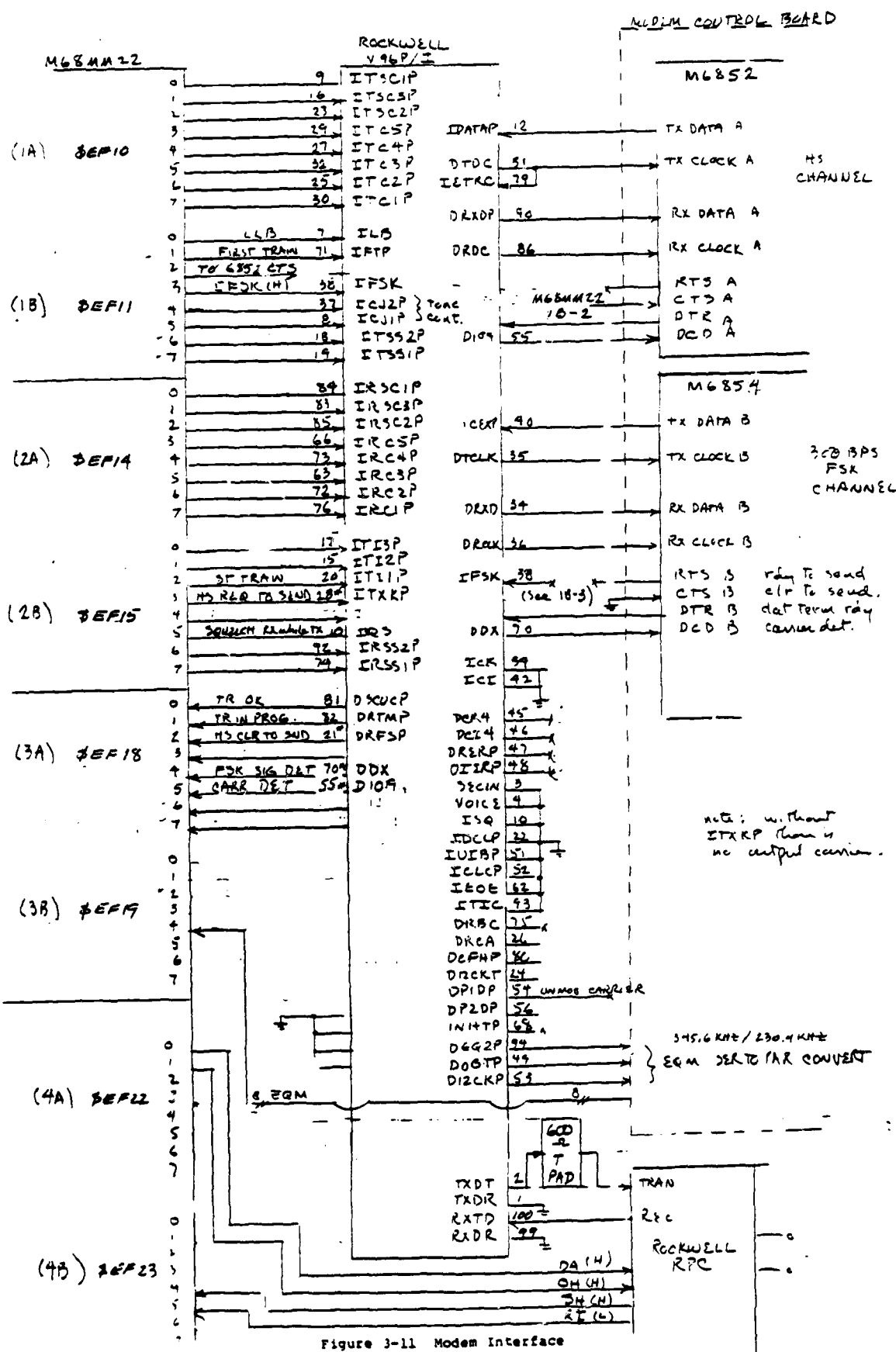
POWER SUPPLIES:

+5V ($\pm 5\%$) +VM, <200 ma
 +12V ($\pm 5\%$) +VA, <110 ma
 -12V ($\pm 5\%$) -V, <280 ma
 (maximum currents)

ENVIRONMENTAL SPECIFICATIONS

Operating temperature: 0°C to 60°C
 Humidity: Up to 90%, non-condensing, or a wet bulb temperature up to 35°C, whichever is less

Figure 3-10 Modem Block Diagram



3.1.9 RPC HOST MODULE

The RPC Host Module consists of a Motorola wire wrap module on which is mounted a Rockwell RPC (Registered Protective Circuitry) module. The RPC interfaces the Rockwell V96P/1 modem to the switched telephone network.

The RPC is configured in permissive mode. The FCC registration number is AMQ9SQ-67943-DP-E. The Ringer equivalent is 0.8B.

A block diagram of the RPC is shown in Figure 3-12.

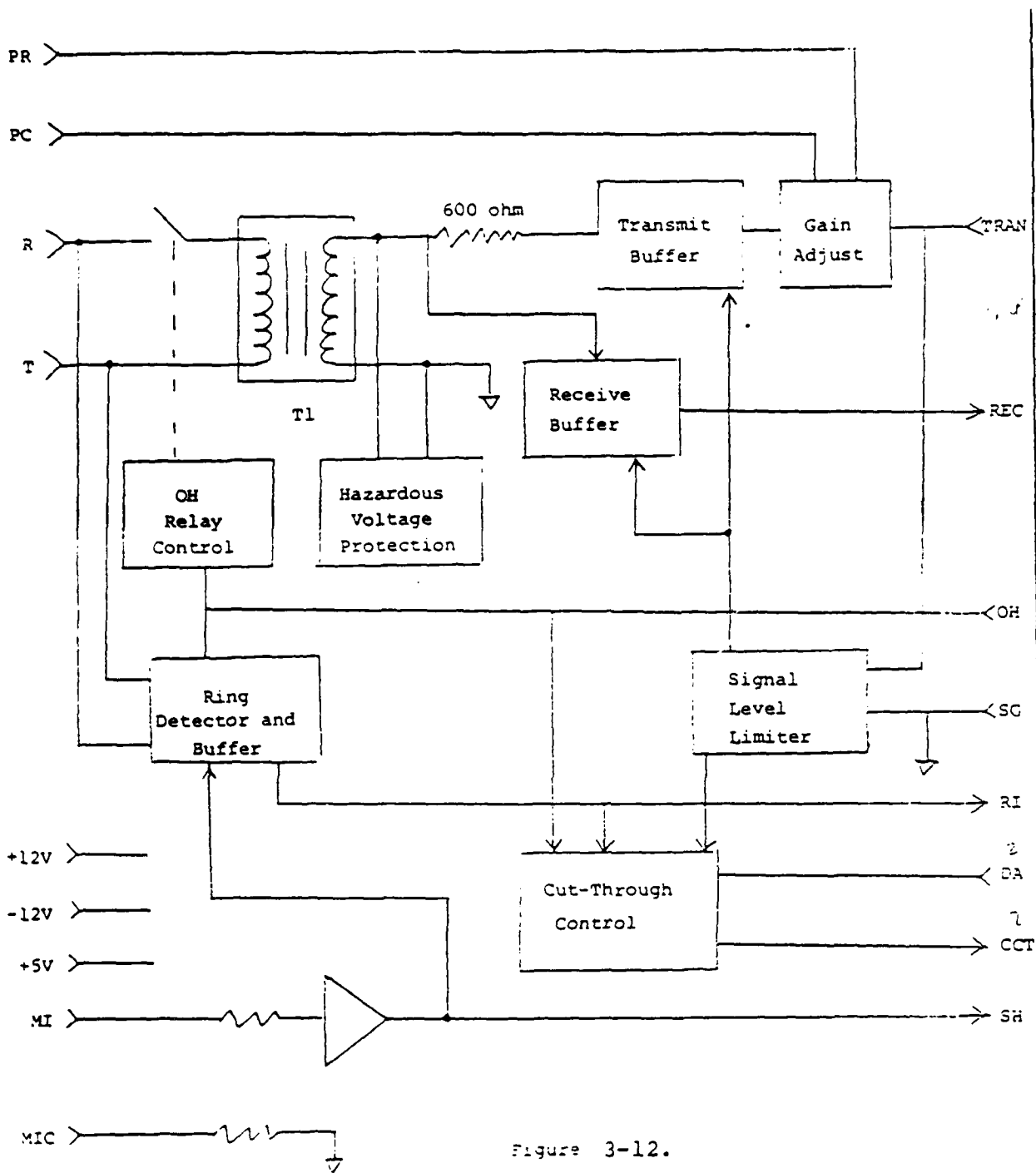


Figure 3-12.

Rockwell RPC Block Diagram

4.0 SOFTWARE DESIGN

The Facsimile Validation (FAXVAL) software hierarchy chart is shown in figure 4-1. FAXVAL is designed to exercise a UUT by running any of a repertoire of ten tests in a manner compatible with EIA standards RS465 and RS466. Operations occurring during test execution are not fixed, but will vary depending upon test parameter selection and upon UUT responses to test situations. Various error conditions can be inserted into test message sequences and UUT response to these errors is recorded.

The FAXVAL program generally does not analyze the group 3 compatibility of UUT operations, but instead lists a complete history of events that occurred during a test. Operator evaluation of this history for group 3 compatibility is required.

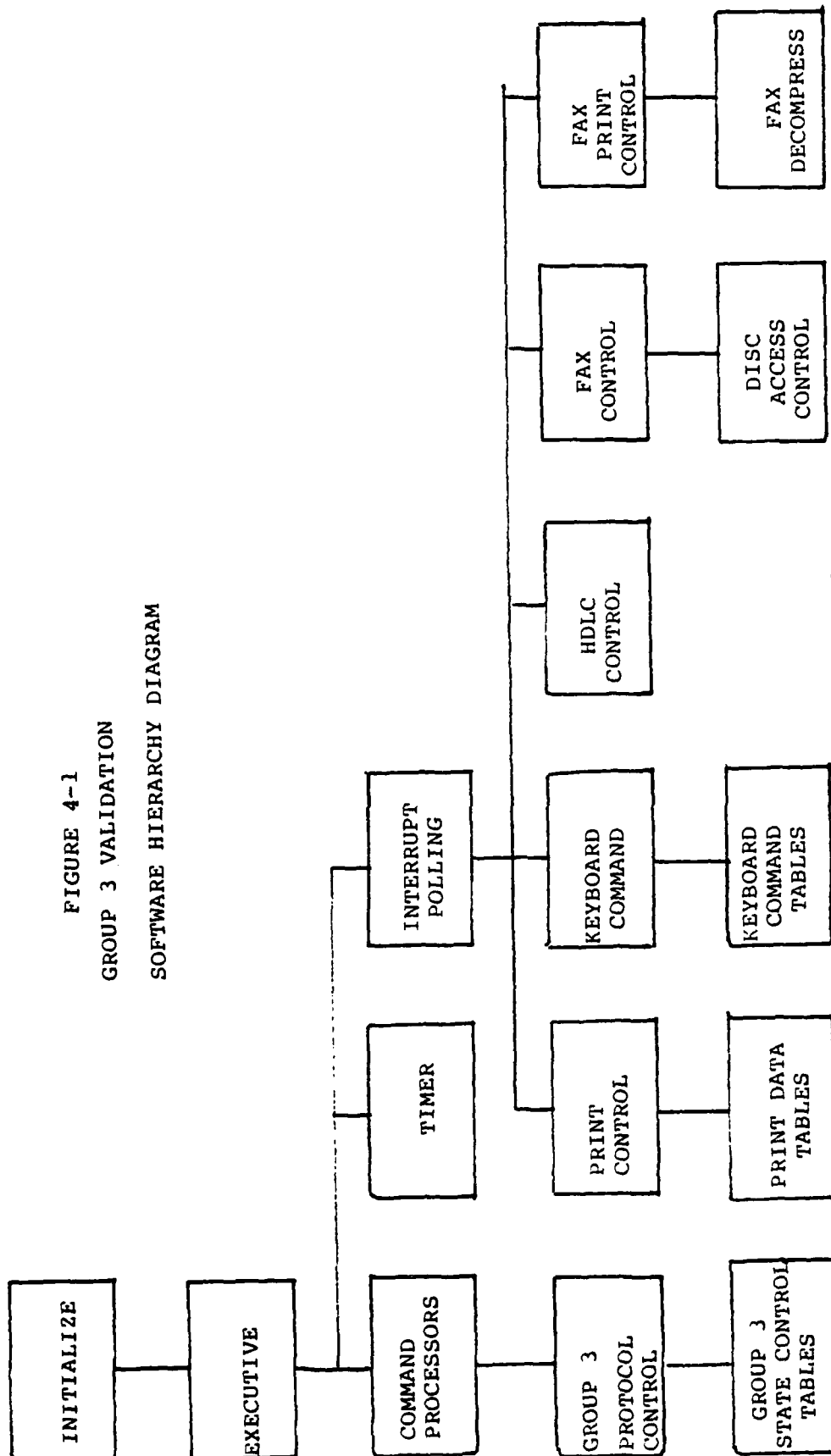
The test operator initiates and controls FAXVAL operation through the alphanumeric keyboard on the DEC LA120 printing terminal, and a hard copy record of each test run is printed at this terminal.

FAXVAL is designed such that most operations are table driven and are therefore easily modified. The group 3 protocol is contained in two tables which are accessed after each input and output data transfer to select the next appropriate action. All routines which use or change the test parameters obtain them from a single table. Test parameter entries, test errors, and even the tests themselves can be altered or expanded by changes to the appropriate tables.

FIGURE 4-1

GROUP 3 VALIDATION

SOFTWARE HIERARCHY DIAGRAM



4.1 INITIALIZE

Clears RAM work areas and buffers. Presets operating parameters in RAM. Programs hardware devices such as the timer module and the serial and parallel control modules.

4.2 EXECUTIVE

Runs continually in the background when other routines are inactive. Calls TIMER to update timeouts in progress. Polls interrupt sources (FAX interface, HDLC interface, modem conditions, FAX printer interface, operator keyboard) and calls appropriate interrupt handler routines. Polls group 3 status inputs (command output, response received) to control the group 3 operating state sequence.

4.3 TIMER

Polls timeout requests and updates timeout counters as required. Branches to user defined exit address if timeout expires.

4.4 COMMAND PROCESSORS

Polls group 3 command output and response received status. Selects next group 3 operating state and action.

4.5 INTERRUPT POLLING

Polls interrupting devices for active interrupt requests. Calls appropriate handling routines.

4.6 GROUP 3 PROTOCOL CONTROL/STATE CONTROL TABLES

Uses input/output command codes, operational status, and timeout status to address GROUP 3 STATE CONTROL tables. The table output defines the next action to be taken.

4.7 PRINT CONTROL/DATA TABLES

Controls operator interface printouts. Translates and formats test data and test conditions for operator printout. Controls transfer of data to printer.

4.8 KEYBOARD CONTROL/COMMAND TABLES

Senses and processes operator keyboard inputs.

4.9 HDLC CONTROL

Controls the transfer of HDLC input/output command data. Assembles output message data buffers and interprets input data. Interface with the Group 3 PROTOCOL CONTROL routines.

4.10 FAX CONTROL/DISC ACCESS CONTROL

Controls the transfer of FAX data. Transfers output test documents from the DISC to the FAX interface, and stores input FAX data on the DISC for later printout.

4.11 FAX PRINT CONTROL/FAX DECOMPRESS

Decompresses FAX input data and transfers that data to the V80 printer interface.

5.0 OPERATOR INTERFACE

5.1 KEYBOARD COMMANDS

FAXVAL program operation is controlled by operator keyboard inputs. Available operations are listed below. Each is selected by a 2 letter keyboard entry, with some operations requiring additional numeric entries. The elected operation is executed when RETURN is depressed. Illegal entries will be indicated by a 'WHAT?' printout.

1. LIST TESTS (LT<)

A list of the 10 available tests is printed. The list describes test conditions and specifies inserted errors.

2. LIST ERRORS (LE<)

A list of the available inserted test conditions/errors is printed. This list defines the errors shown by number in the TEST LIST. These 'errors' are non-standard group III operation inserted by the FAXVAL program into communications with the UUT in order to observe the response of the UUT.

3. LIST PARAMETERS (LP<)

A list of the operating parameters and test conditions which are common to all tests. These may be changed (see CP below) to configure the Tester properly for communications with the UUT and to observe the response of the UUT to changes in these parameters.

4. CHANGE PARAMETER (CPN₁N₂<)

Prints the Parameter defined by the two digit suffix (N₁N₂=HEX 09 through 15) and its current value.

Depressing the space bar causes the parameter value to advance to its' next permissible value. When the desired value is reached, depressing the RETURN key terminates the operation.

5. RESET PARAMETERS TO ORIGINAL VALUES (ZP<)

Resets all parameters to the original (usually lowest or most often used) values.

6. ENTER DIAL NUMBER (DNM₁...M₂₀<)

Enters the number to be dialed for 'auto-dial' tests. This number need be entered only once after program initialization. Any number of digits from 1 to 11 can be entered, and only those digits entered will be dialed. If no number is entered the program will dial an infinite sequence of zeros.

To change the number, perform a new entry.

7. ENTER INTERNATIONAL TELEPHONE NUMBER (TNM₁...M₂₀)

Enters the 20-digit number to be transmitted in the FIF of CSI and CIG optional frames. All 20 digits must be entered. This number need be entered only once after program initialization. To change the number, perform a new entry.

8. ENTER NON-STANDARD FIF (NSM₁...M₂₄)

Enter the data to be transmitted in the FIF of NSF or NSS optional frames. The field M₁ through M₂₄ may be any even number of hex digits (0 thru F) from 2 through 24. Only the data entered will be transmitted. This data

need be entered only once after program initialization.

To change it, perform a new entry.

9. ENTER UUT IDENTIFICATION DATA (SIM₁...M₁₂₀<)

Allows entry of 1 line (120 characters maximum) of alphanumeric characters identifying the UUT. This line will be printed at the top of the test history printout following completion of each test. A full line should be entered.

If no entry is made, no data will be printed. The entry need be made only once after program initialization.

Typical information in this field would include the manufacturer, model number, operating mode, date, testers I.D.

10. LIST UUT IDENTIFICATION DATA (LI<)

Prints the current UUT Identification line.

11. SELECT TEST (STM₁M₂<)

Selects a test. M₁ M₂ may be any value from 01 through 0A. The test conditions and current parameter values are printed.

12. RUN TEST (RU<)

The last test selected will be performed. 'TEST RUNNING' is printed. The completion of the test will be indicated by an automatic printout of

- a) the UUT I.D. Data
- b) the test description and parameter values
- c) the test history

13. ABORT TEST (AB<)

Aborts the test. The tester disconnects from the UUT.

14. LIST TEST HISTORY (LH<)

The test history of the last test run is printed.

15. PRINT LAST RECEIVED DOCUMENT (PV<)

The last received facsimile document is decoded and plotted on the Versatec V80. The decoding method (Huffman or Modified Read) is determined by the setting of parameter 09. The minimum number of bits per line, the number of error lines, and the total number of lines decoded are printed on the LA120 for each document page.

16. DECODE LAST RECEIVED DOCUMENT (LL<)

The first page of the last received document is decoded using the method defined by parameter 09. The minimum number of bits per line, the number of error lines, and the total number of lines decoded are printed.

5.2 TEST PARAMETERS

The thirteen parameters printed for an 'LP' keyboard command and as part of an 'ST' printout are common to all tests. A description of these parameters and their allowable values is given below. A summary of the parameters and their values is shown in table 5-3.

1. COMPRESSION METHOD (09)

A) HUFFMAN

Sets bit 16 of the DIS, DTC, and DCS FIF fields to 'zero'. Selects 1-dimensional decoding of received facsimile data for output to the Versatec V80 plotter. Test documents 1 and 2 are HUFFMAN coded.

B) MODIFIED READ

Sets bit 16 of the DIS, DTC, and DCS FIF fields to a 'one'. Selects 2-dimensional decoding of received facsimile data for output to the Versatec plotter. Test document 3 is MODIFIED READ coded.

2. MINIMUM SCAN LINE TIME (0A)

Selects the 3-bit code in FIF bits 21 through 23. Specifies a minimum scan line time for data transmitted by the UUT, which should add fill as necessary to meet this requirement. No real Tester receive time limit exists, of course. Data received from the UUT is simply stored in RAM memory and then transferred to disk.

-FIF-

	<u>Value</u>	<u>DIS/DTC code</u> <u>(bits 21-22-23)</u>	<u>DCS code</u> <u>(bits 21-22-23)</u>
(a)	0	111	111
(b)	5	100	100
(c)	10	010	010
(d)	20	000	000
(e)	40	001	001
(f)	10/5	011	010/100
(g)	20/10	110	000/010
(h)	40/20	101	001/000

The double entries refer to the value at a vertical resolution of:

7.7 lines per MM/3.85 lines per MM.

Other entries are independent of vertical resolution.

3. VERTICAL RESOLUTION (0B)

A) 3.85 lines/mm

Sets FIF bit 15 to zero

B) 7.7 lines/mm

Sets FIF bit 15 to one.

4. MAXIMUM PAPER WIDTH (0C)

FIF code

(bits 17-18)

A) 216 mm	00
B) 256 mm	10
C) 297 mm	01

5. MAXIMUM PAPER LENGTH (0D)

FIF code

(bits 19-20)

A) 297 mm	0 0
B) 364 mm	1 0
C) UNLIMITED	0 1

6. DATA SIGNALING RATE (OE)

Selects the bit rate for which the modem is configured in both transmit and receive modes.

Sets the following code into the DCS FIF:

DCS FIF field	
<u>Value</u>	<u>(bits 11-12)</u>
(A) 2400 bps	0 0
(B) 9600 bps	1 0
(C) 4800 bps	0 1
(D) 7200 bps	1 1

Bits 11, 12 of the DIS/DTC FIF are always set to '1,1', indicating V.27 ter and V. 29 capability.

The Data Signaling Rate may automatically change under the following conditions:

A) TESTER data transmission.

If a FTT response to a preliminary train sequence (DCS, TCF) is received, and 'TX BIT RATE FALLBACK' (parameter 12) is enabled, the Data Signaling Rate will drop to the next lower value and the preliminary train sequence will be repeated. If 'TX BIT RATE FALLBACK' is disabled, the preliminary train will be repeated at the original bit rate.

B) UUT data transmission

If a DCS message is received specifying a lower bit rate than that selected, the Data Signaling Rate will automatically be set to this lower value. If a DCS is received specifying a

higher bit rate than that selected, the Data Signalling Rate will be unchanged and an FTT response will be generated.

7. PREAMBLE DURATION (OF)

Selects the duration of the flag preamble to low speed HDLC messages.

(A) 0.86 seconds (low limit)

(B) 1.14 seconds (high limit)

8. TX TEST DOCUMENT (10)

Selects one of the documents stored on disk#1 (FAXDOC) for transmission if the test being run requires a transmission.

- A) Test document 1 is two pages, HUFFMAN CODED. It consists of actual facsimile data previously received and stored.
- B) Test document 2 is two pages, HUFFMAN coded. The first page is a computer generated pattern. The second page is actual facsimile data previously received and stored.
- C) Test document 3 is two pages, MODIFIED READ coded.
- D) The 'LAST RECEIVED' document is the latest facsimile data received. It may consist of 1 or 2 pages.

9. TCF/FAXIN RESPONSE (11)

Selects the tester response to the preliminary train (DCS, TCF sequence) and facsimile data inputs.

A) CFR/MCF

Selects CFR as a response to DCS, TCF and MCF as a response to EOM, EOP, or MCF following facsimile data.

The CFR response may be over-ridden by an automatic FTT response if the training bit rate specified in DCS is higher than that selected in parameter field (0E).

B) CFR/RTP

Same as (A) above except that RTP replaces MCF as the data input response.

C) FTT/RTN THEN CFR/MCF

The first response to the DCS, TCF training sequence is FTT. All subsequent responses are CFR, subject to the automatic FTT described in (A) above. The first response to EOM, EOP, or MPS after facsimile data input is RTN. All subsequent responses are MCF.

(D) ALWAYS FTT/RTN

All responses to DCS, TCF are FTT. All responses to ECP, EOM, or MPS after facsimile input data are RTN.

10. TX BIT RATE FALLBACK (12)

When enabled, TX BIT RATE FALLBACK automatically drops the transmit bit rate to the next lower value if a FTT response to a preliminary train sequence is received. When disabled, the preliminary train is repeated at the original bit rate.

11. OPTIONAL FRAMES (13)

Selects optional frames for transmission.

(A) NONE

No optional frames are transmitted

(B) NSF WITH FIRST DIS

An NSF frame, with an FIF field containing the data previously entered via the 'NS' keyboard command, preceeds the first DIS frame transmitted. After a response to the DIS is received, subsequent DIS commands will not include the NSF frame. If no response is received, NSF, DIS sequence is repeated.

(C) CSI/CIG WITH FIRST DIS/DTC

A CSI frame, with an FIF field containing the 20 byte international telephone number previously entered via the 'TN' keyboard command proceeds the first DIS frame transmitted. A CIG frame with the same FIF field preceeds the first DTC. After responses are received, subsequent DIS and DTC commands will not include the CSI or CIG frames.

(D) NSF, CSI, CIG

The first DIS frame is preceeded by both the NSF frame and the CSI frame.

The first DTC frame is preceeded by CIG.

12. EXTENDED FIF (14)

This controls the FIF field length for DIS, DCS, and DTC message. Selecting a 3-byte FIF sets the FIF bit 24 to 'zero'. Selecting a 4-byte FIF sets FIF bit 24 to a 'one', and causes a 4th (all zeros) byte to be added to the FIF.

13. AUTO TEST ERRORS (15)

Enables or disables the automatic test errors specified in the 'Test List' and described in the 'List Errors' printout.

Table 5-1

SUMMARY OF KEYBOARD COMMANDS

1. LT<	LIST TESTS
2. LE<	LIST ERRORS
3. LP<	LIST PARAMETERS
4. ZP<	ZERO PARAMETERS (RESET TO BASE VALUES)
5. CPN ₁ N ₂ <	CHANGE PARAMETER (N ₁ N ₂ = 09 THRU 15) ('SPACE' KEY SELECTS NEXT PARAMETER VALUE, 'RETURN' KEY EXITS CHANGE PARAMETER MODE.)
6. STN ₁ N ₂ <	SELECT TEST (N ₁ N ₂ = 01 thru 0A)
7. RU	RUN SELECTED TEST
8. DNM ₁ ...M ₁₁ <	ENTER AUTO-DIAL TELEPHONE NUMBER (M ₁ ...M ₁₁ = 1 THRU 11 DECIMAL DIGITS)
9. TNM ₁ ...M ₂₀ <	ENTER INTERNATIONAL TELEPHONE NUMBER FOR CIG/CSI FIF FIELDS (M ₁ ...M ₂₀ = 20 DECIMAL DIGITS)
10. NSM ₁ ...M ₂₄ <	ENTER NON-STANDARD FRAME FIF FIELD (M ₁ ...M ₂₄ = EVEN NUMBER OF HEX DIGITS FROM 2 THRU 24)
11. SI [120 A/N]<	ENTER UUT IDENTIFICATION LINE (120 MAX ALPHANUMERIC CHARACTERS)
12. LI<	LIST LAST ENTERED UUT IDENTIFICATION LINE
13. AB<	ABORT TEST
14. LH<	LIST TEST HISTORY FORM LAST TEST RUN
15. PV<	PLOT LAST RECEIVED DOCUMENT ON V80. PRINT MIN BITS PER LINE. ERROR LINES/TOTAL LINES.

16. LL<

RUN DECODE ON LAST RECEIVED DOCUMENT. PRINT
MIN BITS PER LINE, ERROR LINES/TOTAL LINES.

MINIMUM SCAN LINE (MS)	MINIMUM BITS PER LINE			
	2400 BPS	4800 BPS	7200 BPS	9600 BPS
0	-	-	-	-
5	12	24	36	48
10	24	48	72	96
20	48	96	144	192
40	96	192	288	384

Table 5-2 MINIMUM BITS/SCAN LINE

SUMMARY OF TEST PARAMETERS

NO.	PARAMETER	HUFFMAN	MOD. READ	
09	COMPRESSION METHOD			
0A	MINIMUM SCAN TIME	0 MS 40 MS	5 MS 10/5* MS	20 MS 40/20* MS
0B	VERTICAL RESOLUTION	3.85 L/MM	7.7 L/MM	
0C	MAX PAPER WIDTH	216 MM	256 MM	297 MM
0D	MAX PAPER LENGTH	297 MM	364 MM	UNLIMITED
0E	DATA SINGALLING RATE	2400 BPS	4800 BPS	7200 BPS
0F	FLAG PREAMBLE DURATION	0.86 SEC	1.14 SEC	
10	TEST DOCUMENT	1 (HUFF)	2 (HUFF)	3 (M.READ)
11	TCF/FAXIN RESPONSE	CFT/MCF	CFR/RTP	FTT/RTN then CFR/MCF
12	TX BIT RATE FALLBACK	ENABLED	DISABLED	
13	OPTIONAL FRAMES	NONE	NSF	CSI, CIG
14	EXTENDED FIF	NO (3 BYTES)	YES (4BYTES)	NSF, CSI, CIG
15	AUTO TEST ERRORS	ENABLED	DISABLED	

* N/M = (N)MS AT 3.85 L/MM, (M) MS AT 7.7 L/MM

Table 5-3

6 . TEST PROCEDURE

This section describes the methods of initializing, running, and analyzing a validation test on a group 3 facsimile machine.

6.1 TEST CONFIGURATION

The test equipment configuration is shown in figure 6-1. The tester is connected to the Unit Under Test (UUT) through a local (presumably short) switched telephone network connection. Details of the UUT connection will vary depending upon the specific machine under test. Equipment at remote locations may be tested provided that the telephone connection is adequate for the data transmission at the highest required bit rate. Remote testing obviously requires a separate voice connection with an on-site operator.

6.2 HARDWARE INITIALIZATION

(A) Energize the equipment in the following order:

1. Exorciser II
2. Exordisk III
3. DEC LA120 printing terminal
4. Versatec V80 plotter
5. UUT

(B) Set the DEC terminal ON LINE.

- (C) Perform a local form feed at the DEC terminal
and, if necessary, manually adjust the print head
to the top of form position.
- (D) Perform a local form feed at the V80 plotter.

6.3 PROGRAM INITIALIZATION

The Facsimile Validation program is loaded by the following sequence of operations.

- (1) Insert the FAXVAL disk in drive 0 (left drive)
and the TESTDOC disk in drive 1.
- (2) Depress RESTART at the EXORciser.
- (3) Type MDOS< (< = RETURN key) at the DEC terminal
A '=' cue will appear.
- (4) Type LOAD FAXVAL<
A 'E' cue will appear
- (5) Type .P<. A display showing the current value of the
Program counter will appear.
- (6) Type 475E<. A ':' cue will appear. The program is
now running, and the FAXVAL keyboard commands listed
in table 5-1 can be executed.

6.4 PRELIMINARY TEST OPERATIONS.

- (A) Perform an 'LT' keyboard operation to obtain a test list printout for later reference.
- (B) Perform an 'LE' keyboard operation to obtain a test error description printout for later reference.
- (C) Perform an 'LP' keyboard operation to obtain a list of test parameters for later reference. Typical printout of 6.4(A) through (C) are shown in figure 6-2.
- (D) Enter the UUT telephone number using a 'DN' command. Ordinarily this is 7 or 11 digits, but fewer may be entered if required. This entry need be made only once after program initialization. It can be changed at any time.
- (E) Enter the 20 digit International Telephone Number used for CSI and CIG FIF fields using the 'TN' command. Unless a specific number is required, enter any arbitrary digits. This entry need be made only once after program initialization. It can be changed at any time.
- (F) Enter the non-standard frame FIF data using the 'NS' command. Unless a specific pattern is required, enter any even numbers of hex characters up to 48 (24 bytes). This entry need be made only once after program initialization. It can be changed at any time.
- (G) Enter the UUT Identification line using the 'SI' command. This line consists of up to 120 alphanumerics

which should normally identify:

1. Manufacture and model number
2. Configuration
3. Date
4. Testing facility

This entry need be made only once after program initialization. It can be changed at any time.

6.5 TEST EXECUTION

The sequence of tests performed and the parameter settings for these tests will be, in general, unique to each machine tested. The first tests performed might be test 04 and test 03 to verify that communications with the UUT has been established. Following this the tests listed in table 6-3 might be performed in sequence, and an analysis of the results may indicate the need for re-testing or testing with different parameter settings.

The following procedures should be used to run the individual tests. Keyboard entry of the auto-dial number (DN), the international telephone number (TN), the non-standard FIF (NS), and the UUT identification data (SI) must be performed once after program initialization prior to running any tests, but need not be repeated for each test.

Parameter value changes may be made any time before or after selecting a test. The selected parameter values are common to all tests.

If for any reason it is necessary to abort a test in progress, type 'AB<' The test will terminate, and the test history accumulated to that point will be printed.

6.3. 1. TEST 01

Test 01 requires manual call establishment, with the UUT the calling station and document source. One facsimile page is transmitted.

6.5.1.1 Parameters

The test parameters should be set to the nominal values specified in table 1.

6.5.1.2 Error Conditions

The tester will respond PIN to the FAX transmission. This should provoke the UUT to issue an operator alert and if no line request is made, to disconnect after a T3 ($10^+ 5$ sec.) timeout.

6.5.1.3 Test Procedure

- (a) Type 'ST01<'. The test description and parameters will be printed.
- (b) Insert a test document in the UUT document feeder.
- (c) Manually dial the Tester from the UUT telephone. Do not replace the UUT handset.
- (d) Manually answer the Tester telephone
- (e) Type 'RU<'
- (f) Wait approximately 1 second, then pull the tester phone exclusion key UP.
- (g) Listen at the UUT receiver for a tone sequence from the Tester. At the end of a sequence initiate document transmission (depress SEND control) and replace the UUT handset.
- (h) The UUT scans the test document and transmits the facsimile data to the Tester, which writes it onto disk #1.
- (i) If AUTO TEST ERRORS are enabled, the Tester responds PIN to EOP, causing an operator alert at the UUT. 'START TIMEOUT' prints at the terminal.
- (j) After approximately 10 seconds the UUT will terminate the operator alert and disconnect. Press the 'RETURN' key when this occurs to complete the timeout measurement and terminate the test.
- (k) The test history is automatically printed at test completion.
- (m) Replace the Tester handset.

6.5.2 TEST 02

Test 02 requires manual operation at the calling station (tester) and automatic operation at the called station (UUT). The tester transmits one facsimile page to the UUT.

6.5.2.1 Test Parameters

The test parameters should be set to the nominal values specified in table 1. The TX TEST DOCUMENT will normally be that received during Test 01, but may be any other test document compatible with the UUT compression method.

6.5.2.2 Test Errors

The Tester transmits PRI-EOP after transmitting facsimile data. The UUT should issue an operator alert and disconnect after the third transmission of PRI-EOP.

If the UUT operator alert is answered by some appropriate operator action, the UUT should transmit a PIN or PIP response to PRI-EOP.

6.5.2.3 Test Procedure

- (a) Type 'STO2<'. The test description and parameters will be printed.
- (b) Manually dial the UUT from the Tester telephone.
Do not pull the exclusion key.
- (c) Allow the UUT to answer the call automatically.
- (d) Type 'RU<'.
(e) Wait approximately one second.
- (f) Pull the Tester phone exclusion key UP.
- (g) The Tester will read the selected test document from disk #1 and transmit it to the UUT.
- (h) If AUTO TEST ERRORS are enabled, the UUT issues an operator alert after receiving a PRI-EOP message following the facsimile data.
- (i) The test history is automatically printed at test completion.
- (j) Replace the Tester handset.

6.5.3 TEST 03

Test 03 requires automatic operation at the calling station (tester) and manual operation at the called station (UUT). The Tester transmits one facsimile page to the UUT.

6.5.3.1 Test Parameters

The test parameters should be set to the nominal values shown in table 1.

6.5.3.2 Test Errors

The Tester will generate a false facsimile control code (\$05) in the EOP message following facsimile data transmission. Subsequent operation depends upon the UUT response. If no response is received from the UUT, the Tester will generate a correct EOP message after a T4 timeout.

6.5.3.3 Auxiliary Tests

Test 03 run with fully automatic circuit establishment and with the TX TEST DOCUMENT set to LAST RECEIVED is a convenient method of verifying facsimile data received by the Tester.

6.5.3.4 Test Procedure

- (a) Type 'ST03<'. The test description and parameters will be printed
- (b) Remove the tester handset and pull the exclusion key UP
- (c) Type 'RU<'
- (d) The tester will automatically dial the UUT.
- (e) Manually answer the UUT phone.
- (f) Wait for a tone sequence from the tester and then initiate document reception at the UUT (depress RECEIVE switch) and replace the UUT handset. (Note: the test also may be run automatically, allowing the UUT to answer the call).
- (g) The Tester will read the test document from disk #1 and transmit it to the UUT.
- (h) The test history will be printed automatically at test completion.
- (i) Replace the UUT handset.

6.5.4. TEST 04

Test 4 requires automatic call establishment. The tester polls the UUT, which transmits one facsimile page.

6.5.4.1 Test Parameters

The test parameters should be set to the nominal values shown in table 1.

6.5.4.2 Test Errors.

Three error conditions are implemented in Test 04.

- (a) The tester ignores the first DIS message from the UUT. The UUT should re-transmit DIS.
- (b) The tester discards one MPS, EOM, or EOP message following facsimile data transmission from the UUT, and responds with a CRP message. The UUT should repeat the discarded message.
- (c) The tester CFR response to a UUT facsimile data transmission has bit 5 of the control byte set incorrectly to 'zero' (indicating more frames to come in the HDLC message). The UUT should discard this message.

6.5.4.3 Auxiliary Tests

Test 04 can conveniently be used to exercise several other test conditions. AUTO TEST ERRORS will normally (but not necessarily) be disabled when they are run. After each

of these, test 03 may be run in a fully automatic mode to verify the facsimile data received during test 04.

- (a) Set TCF/FAXIN RESPONSE (parameter 11) to 'ALWAYS FTT/RTN'. This test demonstrates the UUT response to continual negative response to preliminary train and facsimile data transmission.
- (b) Set the DATA SIGNALLING RATE (parameter 0E) to 2400 BPS. If the UUT attempts to transmit data at rates higher than this, the tester will generate FTT responses until the UUT drops its bit rate to match the tester bit rate. This test requires the TDF/FAXIN RESPONSE parameter to be set to 'CFR/MCF'.
- (c) Set the MIN SCAN LINE TIME and DATA SIGNALING RATE parameters to various combinations which will exercise the UUT's ability to inset fill characters into the facsimile data (see table 2). After each facsimile transmission perform a keyboard 'LL' operation to determine whether the transmission met the scan line time requirements.

6.5.5.3 Test Procedure

- (a) Type 'ST05<'. The test description and parameters will be printed.
- (b) Set the DATA SIGNALLING RATE to 9600 BPS.
- (c) Adjust the line attenuator control at the left of the Tester card cage to a setting of approximately '1'. The function of the attenuator is to reduce signal amplitude to the UUT to a point where it will not train at 9600 BPS, but will train at one of the lower frequencies. The test may have to be repeated several times to achieve this attenuation.
- (d) Remove the Tester telephone handset and pull the exclusion key UP.
- (e) Type 'RU<'.
(f) Manually dial the Tester from the UUT telephone. The Tester will automatically answer the call.
- (g) Listen at the UUT for a tone sequence. At the end of the sequence initiate document reception (press RECEIVE switch) and replace the UUT handset.
- (h) The Tester will read the test document from disk #1 and transmit it to the UUT.
- (i) The test history is automatically printed at test completion.
- (j) Replace the Tester handset.
- (k) Reset the line attenuator control to the normal setting of approximately '7'.

6.5.6. TEST 06

Test 06 requires automatic call establishment. The tester calls the UUT and transmits a two page document to it.

6.5.6.1 Test Parameter

The test parameters should be set to the nominal values shown in table 1.

6.5.6.2 Test Error

The tester does not transmit an EOP message following the second facsimile page. The UUT should disconnect after a T2 timeout period (6 ± 1 sec).

6.5.6.3 Test Procedure

- (a) Type 'ST06<'. The test description and parameters will be printed.
- (b) Select a test document with at least two pages.
- (c) Remove the Tester telephone handset and pull the exclusion key UP.
- (d) Type 'RU<'.
 - (e) The tester will automatically dial the UUT. The UUT will automatically answer the call.
 - (f) The tester will read two pages of facsimile data from disk #1 and transmit this data to the UUT.
 - (g) At the end of the second page the tester will omit transmission of an EOM message and print 'START TIMEOUT MEASUREMENT'.
 - (h) In approximately 6 seconds the UUT will disconnect. Type 'RETURN' when this occurs to complete the timeout measurement and terminate the test.
 - (i) The test history will be automatically printed at test completion.
 - (j) Replace the Tester handset.

6.5.7. TEST 07

Test 07 requires automatic call establishment. The UUT calls the tester and transmits a two page document.

6.5.7.1 Test Parameters

The test parameters should be set to the nominal values shown in table 1.

6.5.7.2 Test Errors

Two test error conditions are exercised in test 07:

- (a) The tester ignores receipt of a MPS, EOP, or EOM message after receipt of facsimile data. The UUT should re-transmit the message.
- (b) The tester generates a CFR message with bit 5 of the control byte set to zero (which would normally indicate that more frames were forthcoming in the HDLC message.) Subsequent operation depends upon the UUT response. If it simply discards the message the tester will retransmit a correct CFR message after a T4 timeout.

6.5.7.3 Test Procedure

- (a) Type 'ST07<'. The test description and parameters will be printed.
- (b) Place two documents in the UUT document feeder.
- (c) Remove the Tester handset and pull the exclusion key UP.
- (d) Type 'RU<'.
 - (e) Manually dial the tester form the UUT. The Tester will automatically answer the call.
 - (f) Listen at the UUT for a tone generated by the Tester.
At the end of the sequence initiate UUT document transmission (press the SEND switch) and replace the UUT handset.
 - (g) The UUT will scan and transmit two facsimile pages to the Tester, which will store them on disk #1.
 - (h) The test history will be automatically printed at test completion.
 - (i) Replace the Tester handset.

6.5.8. TEST 08

Test 08 requires automatic call establishment. The tester calls the UUT, transmits a two page document, and then receives a two page document.

6.5.8.1 Test Parameters

The test parameters should be set to the nominal values shown in table 1. The TX TEST document must have at least two pages.

6.5.8.2 Test Errors

No automatic test errors are inserted in test 08.

6.5.8.3 Test Procedure

- (a) Type 'ST08<'. The test description and parameters will be printed.
- (b) Select a TX TEST DOCUMENT with two pages.
- (c) Insert two documents in the UUT 'document feeder.
- (d) Remove the tester handset and pull the exclusion key UP.
- (e) Type 'RU<'. .
- (f) The tester will automatically dial the UUT. The UUT will automatically answer the call.
- (g) The tester will read two pages from disk #1 and transmit these to the UUT.
- (h) The UUT will scan the two documents in its feeder and transmit these to the tester, which will store them on disk #1.
- (i) The test history will be automatically printed at test completion.
- (j) Replace the tester handset.

6.5.9. TEST 09

Test 09 requires automatic circuit establishment. The UUT calls the tester.

6.5.9.1 Test Parameters

Test parameter selection does not affect test operation.

6.5.9.2 Test Errors.

The tester does not send a DIS response to the UUT call. The UUT should disconnect after a T1 (35 ± 5 seconds) timeout.

6.5.9.3 Test Procedure

- (a) Type 'ST09'. The test description and parameters will be printed.
- (b) Insert a document in the UUT document feeder.
- (c) Remove the Tester handset and pull the exclusion key UP.
- (d) Type 'RU<'. .
- (e) Manually dial the Tester from the UUT. The Tester will automatically answer the call.
- (f) Listen at the UUT for the CED tone generated by the Tester. At the completion of the tone, initiate document transmission at the UUT (depress the SEND switch) and replace the UUT handset.
- (g) The Tester will inhibit transmission of a DIS message, and 'START TIMEOUT MEASUREMENT' will be printed.
- (h) After approximately 35 seconds the UUT will disconnect. When this occurs type 'RETURN' to complete the timeout measurement and terminate the test.
- (i) The test history will automatically be printed at test completion.
- (j) Replace the tester handset.

6.5.10. TEST 0A

Test 0A requires automatic circuit establishment. The UUT calls the tester.

6.5.10.1 Test Parameters

Test parameter selection does not affect test operation.

6.5.10.2 Test Errors

The tester transmits an illegal command code in the DIS message. The UUT should disconnect.

6.5.10.3 Test Procedure

- (a) Type 'ST0A<'. The test description and parameters will be printed.
- (b) Insert a test document in the UUT document feeder.
- (c) Remove the Tester handset and pull the exclusion key UP.
- (d) Manually dial the Tester from the UUT. The Tester will automatically answer the call.
- (e) Listen at the UUT for a tone sequence from the Tester. At the end of the sequence initiate document transmission (press SEND switch), and replace the UUT handset.
- (f) The Tester will generate an illegal command, which should cause the UUT to disconnect immediately.
- (g) The Tester will continue sending this command for approximately 35 seconds before terminating the test. If desired the test can be terminated before this by typing 'AB<'.
If desired the test can be terminated before this by typing 'AB<'.
- (h) The test history will be automatically printed at test completion.
- (i) Replace the Tester handset.

(c) Data transfers, pre-train sequences, timeouts, and special conditions are indicated by a descriptive comment in parentheses. For example:

- (1) The tester received no response to its DIS message on line 01 within the T4 timeout period (4.5 seconds since the tester is in manual mode). Line 02 indicates this timeout and line 03 indicates the DIS retransmission.
- (2) After receipt of a DCS message (line 04) the tester received a TCF facsimile pretrain transmission of approximately 1.2 seconds in duration.
- (3) Inserted test errors are usually accompanied by a comment with a "T.C;" prefix (Test Condition) such as that shown on line 0A.
- (4) The time between transmission of the PIN message and the UUT disconnect was approximately 13.8 seconds as shown on line 0B.

In general, the FAXVAL program does not analyze the test history message sequences and timeout durations for group 3 compatibility. Operator verification of the sequences is required. Except for inserted error conditions, however, the program will always respond to a situation in accordance with group 3 requirements.

There are certain tests automatically made on all received HDLC messages, and a message which fails to meet any of these is discarded with an appropriate explanation in the test history.

- (a) A message must be received within 2.55 seconds.
- (b) All frames of a message must contain a correct CRC check sum.
- (c) The last frame of a message must have bit 5 of the control byte set to '1'; all other frames must have it set to '0'.
- (d) Each frame in the message must have a legal address byte (always SFF) control byte (S03 or S13) and a legal facsimile control code.

6.6 Test History

The test history is a sequential listing of all communications between the tester and the UUT during test execution. A typical test history is shown in figure 6-4

There are three types of test history entries:

- (a) HDLC messages from the tester to the UUT are shown as a 3 or 6 letter entry in the TESTER column. The message abbreviation is compatible with appendix 2 and paragraph 5.3 of EIA standard RS466. The number in paranthesis indicates the status of the 'X' bit in the facsimile control byte of the message.

The STATUS column indicates the operational status of the FAXVAL program when the message was sent. It normally has no group 3 significance.

The FIF column lists the contents of the Facsimile Information Field (if any) of the message. Each pair of hex digits defines one 8-bit byte of the field, with bit 0 the first received or transmitted. For example, the FIF of the DIS message listed on line (01) of Figure 6-4 is:

bit 1	0	}	no. T.2 operation
(first revd)	0		
	0		
	0	}	no T.3 operation
	0		
	0		
	0		
	0		
	1		RS465 transmitter
	1		RS465 receiver
	1	}	V.27 ter and V.29 operation
	1		
	0		
	0		
	0		Vertical resolution = 3.85 l/mm
	0		One dimensional coding
	0	}	Maximum paper width = 297mm
	1		
	1	}	Maximum paper length = 364mm
	0		
	0	}	Minimum scan line time = 10MS @ 3.85l/mm
	1		
	1		
bit 24	0		No extended field

(b) HDLC messages from the UUT to the tester have the same format, with the message abbreviation listed in the UUT column.

RAA: AMQ93Q-67943-DP-E

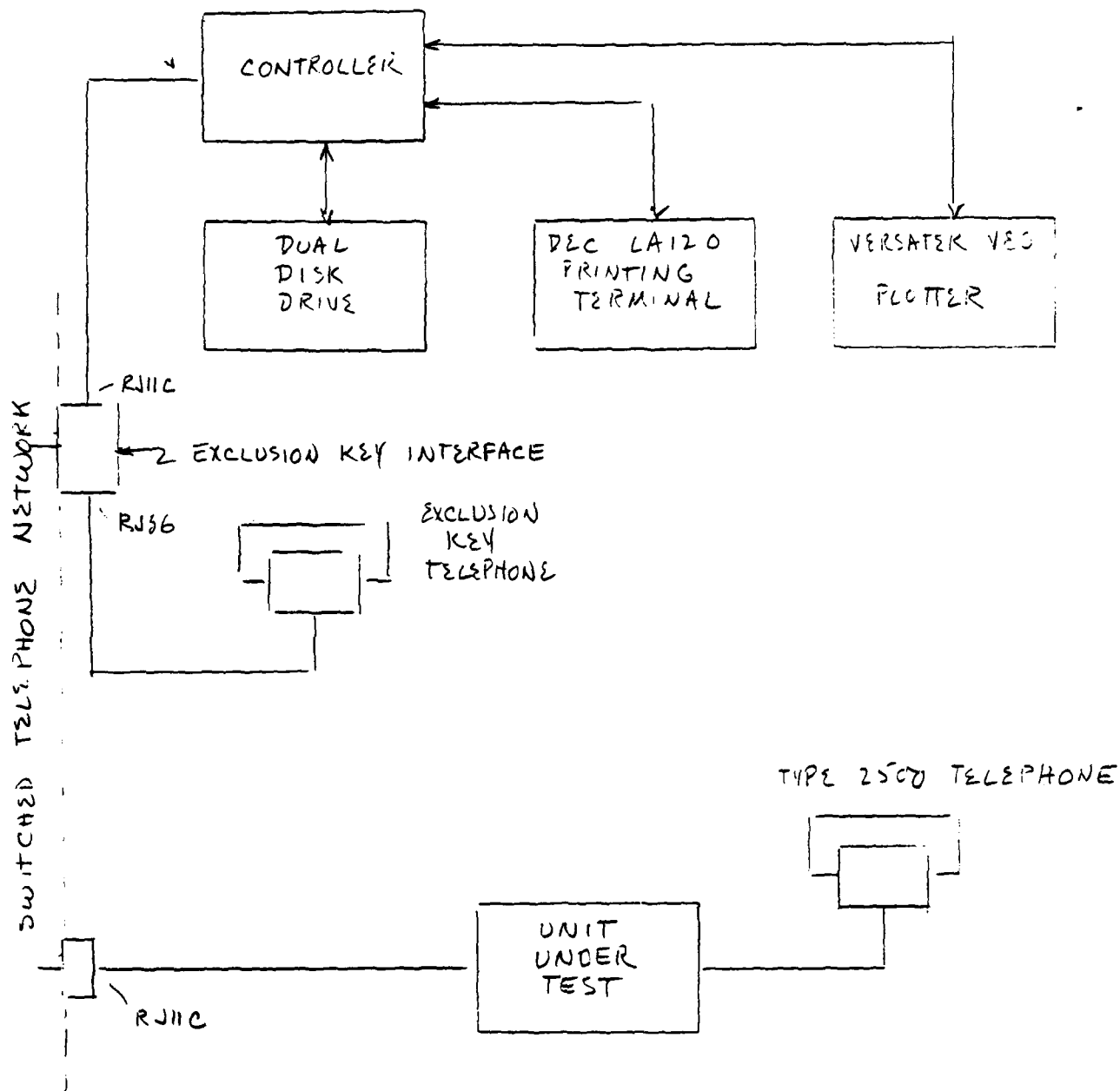


FIGURE 6-1 TYPICAL TEST CONFIGURATION

LT

TEST	METH	TESTER	UUT	DOC EXCG	CALLER	DOC ORG	PAGES	TEST ERRORS
1	1T	MNL	MNL	NO	UUT	UUT	1	09
2	2T	MNL	AUTO	NO	TESTER	TESTER	1	10
3	3T	AUTO	MNL	NO	TESTER	TESTER	1	05
4	4R	AUTO	AUTO	NO	TESTER	UUT	1	01-04-06
5	4R	AUTO	AUTO	NO	UUT	TESTER	2	13
6	4T	AUTO	AUTO	NO	TESTER	TESTER	2	08
7	4T	AUTO	AUTO	NO	UUT	UUT	2	02-06
8	4R/T	AUTO	AUTO	YES	TESTER	BOTH	2,2	NONE
9	NA	AUTO	AUTO	NO	UUT	NONE	NONE	07
A	NA	AUTO	AUTO	NO	UUT	NONE	NONE	12

DLE

TEST CONDITIONS/INSERTED ERRORS DESCRIPTION:

BYTE: ERRORS1

01. BIT 0 = TESTER IGNORES DIS ONCE
02. 1 = TESTER IGNORES MPS, EOM, OR EOP ONCE
03. 2 = GENERATE ONE MPS WITH CRC ERROR
04. 3 = IGNORE MPS, EOM OR EOP. SEND CRP
05. 4 = GENERATE FALSE FAX CONTROL CODE IN ONE EOP
06. 5 = GENERATE ONE CFR WITH \$03 2ND BYTE
07. 6 = DIS NOT SENT, MEASURE T1
08. 7 = EOP NOT SENT, MEASURE T2

BYTE: ERRORS2

09. BIT 0 = RESPOND PIN TO FAX. MEASURE T3
10. 1 = SEND PRI-EOP AFTER FAX
11. 2 = TRANSMIT CSI/CIG FRAME
12. 3 = SEND ILLEGAL COMMAND TO PROVOKE DISCONNECT
13. 4 = DEGRADE LINE TO PROVOKE DATA RATE FALLBACK (MANUAL)
14. 5 = EXTENDED FIF
15. 6 = SEND NSF FRAME WITH DIS
16. 7 = UNASSIGNED

DLP

09 COMPRESSION CODE: HUFFMAN
0A MIN SCAN LINE TIME: 10/5 MS
0B VERT RESOLUTION: 3.85 LI/MM
0C MAX PAPER WIDTH: 216 MM (1728 PELS)
0D MAX PAPER LENGTH: 364 MM
0E DATA SIGNALING RATE: 4800 BPS
0F PREAMBLE DURATION: 0.86 SEC
10 TX TEST DOCUMENT: 01
11 TCF/FAXIN RESPONSE: CFR/MCF
12 TX BIT RATE FALLBACK: ENABLED
13 OPTIONAL FRAMES: NONE
14 EXTENDED FIF: NO (3 BYTES)
15 AUTO TEST ERRORS: DISABLED

TEST	OF METHOD	TESTER	CALLING STA	DOC ORIG	PAGES	TEST ERROR	COMP CODE	MINIMUM SCAN	LINE TIME (MS)	VERTICAL RESOLUTION (L/MM)	MAX PAPER WIDTH (MM)	MAX PAPER LENGTH (MM)	DATA RATE (BPS)	PREAMBLE DURATION (SEC)	TX TEST DOCUMENT	TCF / FAX IN RESPONSE	TX BIT RATE	OPTIONAL FRAMES	EXTENDED FIF	TEST ERROR	ENABLED
1	IT	MAN	MAN	OUT	1	9		0					9600	0.86	LX	CFR/MCF	ENR	NSF	NO	NO	NORMAL RX OPERATION. CHECK NSF OPTIONAL FRAME
1	"	"	"	"	"	"							"	"	"	"	"	NONE	"	YES	TESTER RESPONDS PIN TO FAX. UUT SHOULD ISSUE OPERATOR ALERT AND DISCONNECT AFTER T3
2	2T	MAN	AUTO	TST	1	10							"	"	"	"	"	"	"	YES	TESTER SENDS PRI-EOP AFTER FAX. UUT SHOULD ISSUE OPERATOR ALERT.
2	"	"	"	"	"	"							"	"	"	"	"	"	"	YES	OPERATOR RESPONSE TO UUT ALERT. UUT SHOULD TRANSMIT PIN OR PIP.
3	3T	AUTO	MAN	TST	1	5							"	1.14	1	"	"	"	"	YES	TESTER GENERATES FALSE FACSIMILE CONTROL CODE IN ONE EOP MESSAGE
4	4K	AUTO	AUTO	TST	1	14-6							"	"	"	"	"	"	"	YES	TESTER IGNORES ONE DIS MESSAGE, SENDS CRP AFTER FAX, SENDS CFR WITH WRONG CONTROL BYTE.
4	"	"	"	"	"	"							"	"	"	"	"	"	"	NO	NO DOCUMENT READY AT UUT
4	"	"	"	"	"	"							2400	"	"	"	"	"	"	NO	TESTER RESPONDS FIT TO PRETRAIN UNTIL UUT DROPS BIT RATE TO 2400.
1	"	"	"	"	"	"							9600	"	"	FTT/RIN	"	"	"	NO	TESTER RESPONDS FIT TO ALL PRETRAINS, RTN TO ALL FAX TRANSMISSIONS.
4	"	"	"	"	"	"		40					9600	"	"	CFR/MCF	"	"	"	NO	CHECK UUT ABILITY TO INSERT FILL. (CHECK WITH LL OR PV KEYBOARD CMD)
5	4K	AUTO	AUTO	UUT	2	13		5					"	0.86	2	CFR/MCF	"	"	YES	YES	LINE ATTENUATOR MANUALLY ADJUSTED TO PROVIDE UUT TO FIT RESPONSE TO PRETRAIN CHECK NSF OPTIONAL
6	4T	AUTO	AUTO	TST	2	8							"	"	"	"	"	"	"	YES	TESTER DOES NOT SEND EOP AFTER FAX. UUT SHOULD DISCONNECT AFTER T2.
7	4T	AUTO	AUTO	TST	2	2-6							"	1.14	"	"	"	"	"	YES	TESTER IGNORES MP/EOP/EOM AFTER FAX ONCE, SENDS CFR WITH WRONG CONTROL BYTS.
8	4K/4T	AUTO	AUTO	TST	2	-							"	"	1	"	"	NSF, CSI, CIG	"	YES	CHECK PROTOCOL FOR 2 PAGE TX, 2 PAGE RX. CHECK OPTIONAL FRAMES

Figure 6-3 Test Summary (Sheet 1 of 2)

TEST	OF METHOD	TESTER	UUT	CALLING STA	DOC ORIG	PAGES	TEST ERROR	COMP CODE	MINIMUM SCALE	LINE TIME (MS)	VERTICAL RESOLUTION (L/MM)	MAX PAPER WIDTH (MM)	MAX PAPER LENGTH (MM)	DATA RATE (KBPS)	PREAMBLE DURATION (SEC)	TX TEST DOCUMENT	TCF / FAX IN RESPONSE	TX BKT RATE	OPTIONAL FRAMES	EXTENDED PIF	TEST ERROR ENABLED	
9	-	AUTO AUTO UUT	-	-	-	1	7														YES	TESTER DOES NOT TRANSMIT DIS. UUT SHOULD DISCONNECT AFTER T1
A	-	AUTO AUTO UUT	-	-	-	1	12														YES	TESTER SENDS ILLEGAL COMMAND IN PLACE OF DIS. UUT SHOULD DISCONNECT

NOTE: Undefined parameters set as MOD by UUT or to other values to test UUT response.

6-35

AD-A120 201

DELTA INFORMATION SYSTEMS INC JENKINTOWN PA
DEVELOPMENT OF A SYSTEM TO VALIDATE GROUP 3 FACSIMILE EQUIPMENT--ETC(U)
JUL 82

F/G 17/2

DCA100-81-C-0023

UNCLASSIFIED

NCS-TIB-82-4

NL

2 of 2

40 A
120201

END
DRI
FILMED
11-82
DTIC

```

TEST:
01 OPERATING METHOD:      01
02 CALLING UNIT:        1T ; MNL-MNL
03 DOCUMENT EXCHANGE:    UUT
04 PAGES / DOCUMENT:     NO
05 DOCUMENT ORIGINATOR:  1
06 ERRORS1:             UUT
07 ERRORS2:             00
08 ERRORS3:             01
09 COMPRESSION CODE:     00
10 MIN SCAN LINE TIME:   HUFFMAN
11 VERT RESOLUTION:      10/5 MS
12 MAX PAPER WIDTH:      3.85 LI/MM
13 MAX PAPER LENGTH:     297 MM (2432 PELS)
14 DATA SIGNALING RATE: 364 MM
15 PREAMBLE DURATION:    9600 BPS
16 TX TEST DOCUMENT:     1.14 SEC
17 TCF/FAXIN RESPONSE:   LAST RECEIVED
18 TX BIT RATE FALLBACK: CFR/MCF
19 OPTIONAL FRAMES:      ENABLED
20 EXTENDED FIF:         NONE
21 AUTO TEST ERRORS:     NO (3 BYTES)
22

```

TESTER	UUT	STATUS	FIF
01. DIS (1)		00 00 02 01	00 0F 66
02. (T4 TIMEOUT)			
03. DIS (1)		00 00 02 00	00 0F 66
04. DCS (1)		00 00 02 01	00 06 94 00
05. (TCF RCVD, NOT ALL ZEROS, DURATION (MS)=001804)			
06. CFR (0)		00 00 04 04	
07. (FAX RECEIVED)			
08. EQP (1)		00 00 08 02	
09. MCF (0)		00 00 20 00	
0A. DCN (1)		00 00 08 04	
0B. (END TEST)			

Figure 6-4 Typical Test History

7. ACCEPTANCE TEST

The acceptance test consisted of a series of tests run on a Burroughs DEX5100 facsimile machine. The DEX 5100 was colocated with the Facsimile Validation equipment. Communication between them was through the local switched telephone network as shown in figure 6-1.

The DEX 5100 tested had only one-dimensional (Huffman) . data coding implemented, and so additional tests were performed on a remotely located Burroughs 3600 machine to demonstrate two-dimensional (Modified Read) data transfers and decoding capability.

The acceptance test demonstrated all of the Facsimile Validation tests. While the form of the acceptance test was generally that which would be followed during an actual group 3 compliance test, the parameter and test sequence selection was made to demonstrate the capabilities of the Facsimile Validation equipment, and not to establish the group 3 compliance of the DEX5100.

The following is a brief description of the acceptance test operations and comments on the test results. Page references refer to the acceptance test printouts in Appendix A.

7.1 Initial Operations

a) Page 1 contains the test list, the Error description list, and the Parameter list which are normally printed at the start of a test for later reference.

b) Pages 2 through 4 show 'Change Parameter' (CP) operations demonstrating the available parameter settings.

c) Page 5 shows entry of the auto-dial number (DN), the International Telephone Number (TN), the Non-standard FIF (NS), and the UUT Identification data (SI). The remainder of page 5 and page 6 show selection of test 1 and initial parameter selection.

7.2 Test 1 (Errors disabled)

a) Page 7 shows the test results printout for test 1 with Auto Test Errors disabled. The format is that used for all test results: UUT identification line, test description and parameter list, and test history. The message abbreviations in the test history are these shown in EIA RS-466, appendix 2.

b) The UUT did not respond to the first DIS message (test history line 01) because it was not enabled until the test operator heard that message tone sequence. The tester repeated the DIS message (line 03) after a T4 timeout (4.5 seconds because the tester was in manual mode.)

c) The DIS message FIF was 3 bytes (24 bits) because of parameter 14. The '00 OF 66' FIF translates to bits 1 through 24 as shown below (refer to EIA RS 466, Table 2):

Bit 1 - 0
0
0
0
0
0
0

1 RS465 transmitter
1 RS465 receiver
1 } V27. ter and V29 signaling capability
1 }
0
0
0 Vertical resolution = 3.85 l/mm
0 One demensional coding

0 }
1 } Maximum paper width = 297 mm
1 }
0 } Maximum paper length = 364 mm
0 }
1 } Minimum scan line time = 10 ms @ 3.85 l/mm
1 }

bit 24- 0 no extended field

d) The number in parenthesis after each message indicates the state of the first bit (sometimes the X bit) in the facsimile control field of that message.

e) The UUT responded DCS (line 04) followed by a TCF period of approximately 1.8 seconds. (line 05). The DCS FIF translates to:

Bit 1 - 0
0
0
0
0
0
0
0
0

0
1 - RS 465 Receiver
1 }
0 } 9600 BPS
0 }
0 } Max paper width 216 mm
0 }
0 - Vertical resolution = 3.85 l/mm
0 - one dimensional coding

```

0} Maximum paper width = 216 mm
0}
1} Maximum paper length = 364 mm
0}
1} Minimum scan line = 5 ms
0}
0}
1 - Extended field

0 - 300 BPS handshaking
0 - Compressed data
0
0
0
0
0
0
0

```

f) The tester confirmed the TCF (line 06) and received FAX data (line 07).

g) The UUT transmitted an 'End of Procedure' (line 08) after the FAX data. The tester confirmed receipt (line 09), and the UUT disconnected (line 0A).

7.3 Test 1 (Errors Enabled)

a) Page 8 shows AUTO TEST ERRORS enabled and test 1 run again.

b) Page 9 shows the test results. After receipt of EOP from the UUT, the tester responded PIN (test Error 09). The UUT issued an audible operator alert and disconnected after a timeout (T3 in group 3 protocol) of approximately 15.8 seconds.

7.4 Test 2 (no operator intervention at UUT)

a) Page 10 shows test 2 selection and Run enable.

b) Page 11 shows the test results. The tester received a message containing an NSF frame (discarded) and a DIS frame. It responded with a DCS, TCF sequence to the UUT which confirmed a successful train by CFR.

The tester transmitted one page of facsimile data (that received in test 1 above because of parameter 10), and then transmitted PRI-EOP to the UUT to initiate an operator alert. The UUT did issue an audible operator alert which was not answered. The UUT issued no response to the tester, which disconnected after two re-transmissions.

7.5 Test 2 (Operator intervention at UUT)

a) Page 12 shows the results of repeating test 2 with operator intervention at the UUT when it issues the audible alert. The operator intervention caused a PIP response.

7.6 Test 3

a) Page 13 shows selection of test document 1 for transmission and the selection and Run enable of test 3.

b) Page 14 shows the test results. A false facsimile control code was generated in the first EOP message. The UUT ignored this message, but accepted the correct retransmission.

7.7 Test 4 (normal error operation)

a) Page 15 shows selection of Test 4, which polls the UUT, and the RUN enable.

b) Page 16 shows the test results.

The tester ignored the first DIS from the UUT (line 03) and accepted the retransmission.

b) The tester generated an incorrect CFR response (line 09) to a DCS, TCF sequence from the UUT. The UUT retransmitted the sequence.

c) The tester ignored the first EOM after receipt of facsimile data (line 10). The UUT retransmitted the EOM.

d) Page 17 shows the execution of a 'PV' keyboard command which causes the document received during this test to be printed on the Versatec V80. The decode routine prints:

1. the shortest decoded line (35 bits)
2. the total number of lines decoded (523)
3. the number of lines which did not decode to the proper length (4).

7.8 Test 4 (no document at UUT)

a) Page 18 shows the results of running test 4 with no TX document available at the UUT.

7.9 Test 4 (polling the UUT from a 2400 bit machine)

a) Pages 20 and 21 show the results of running test 4 with the tester signaling rate set to 2400 bps. The test history overflowed page 20 and was printed again in its entirety on page 21.

b) The UUT transmitted a DCS, TCF pretrain sequence at 9600 BPS (line 07), 7200 BPS (line 0A) and 4800 BPS (line 0D). The tester responded FTT to each of these.

c) The UUT tried 2400 BPS at line 10. The tester trained at this bit rate, and the remainder of the test was similar to 7.8 above.

7.10 Test 4 (9600 BPS signaling rate with one FTT response)

a) Page 23 shows the results of running test 4 with the tester signaling rate set to 9600 BPS and parameter 11 set to force one FTT response to a DCS, TCF pretrain and one RTN response to a facsimile data transfer.

b) The FTT response at test history line 09 caused the UUT to re-train at 7200 BPS (line 0A, 0B). The RTN response (line 17) was unanswered in the T2 timeout period.

7.11 Test 4 (7200 BPS with constant FTT responses)

a) Page 25 shows the results of running test 4 with parameter 11 set to force FTT responses to all pretrain sequences from the UUT. The UUT transmitted the pretrain sequence at 9600 BPS, 7200 BPS, 4800 BPS, and 2400 BPS. Having failed to train the tester at any of these bit rates, the UUT disconnected.

7.12 Test 4 (minimum scan line times set to 0 ms and 40 ms)

a) Pages 26 and 27 shown the results of running test 4

to obtain data from the UUT with two minimum scan line times: 0 ms and 40 ms. After each test the resulting data was decoded using the 'LL' keyboard command to obtain the minimum number of bits per line received. The data received at 0 ms/line had a minimum line length of 32 bits, and the same document transmitted with the 40 ms/line requirement had enough fill inserted to increase the minimum coded scan line to 172 bits (approximately 17 ms)

7.13 Test 5

a) Pages 29 and 30 show the results of running test 5, which requires a manual adjustment of the TX line attenuator to stimulate the UUT to issue a FTT response. The test history overflowed page 29 and is repeated in its entirety on page 30.

The tester received no response to the first two pre-train sequences (line 06 through 0B), probably because the attenuation was too great. A FTT response was received at line 0E, provoking a bit rate fallback to 7200 BPS. Two pages of facsimile data were then transmitted normally.

7.14 Test 6

a) Page 32 shows the results of running test 6 with errors enabled. The tester did not transmit an EOM message after the facsimile data (line 0F), and the UUT disconnected after a timeout (group 3 T2) of approximately 14 seconds.

b) Page 34 shown the results of running test 6 with errors disabled to demonstrate transmission of two pages of facsimile data to the UUT.

7.15 Test 7

a) Page 35 shows the results of running test 7 with errors disabled to demonstrate receipt of two pages of facsimile data from the UUT. Parameter 13 was set to generate an NSF frame with each DIS message until a response was received from the UUT.

B) Pages 38 and 39 show the results of running test 7 with errors enabled. The test history overflowed page 38, and is repeated in its entirety on page 29. The errors are inserted at line 0E and 15.

7.16 Test 8

Test 8 has no test errors implemented. It is designed to demonstrate a 2 page document exchange between the Tester and the UUT. Parameter 13 was set to enable NSF, CSI, and CIG optional frames. The test results are shown on pages 41 and 42.

7.17 Test 9

Test 9 is designed to measure the UUT T1 timeout by inhibiting the DIS message from the Tester. The test result on page 44 shows a T1 timeout of approximately 49 seconds.

7.18 Test A

Test A is designed to provoke the UUT to disconnect by transmitting an illegal command in place of DIS. Page 46 shows the test results. The UUT did disconnect after the first CFR. The test was then aborted using the 'AB' keyboard command.

7.19 Test 1 (Modified Read coding)

Test 1 was run on a remote machine (Burroughs 3600) which had 2D (Modified Read) data coding capability. Facsimile data was successfully received and stored. Test results are shown on page 47. A 'PV' keyboard command demonstrated the capability of decoding and printing the 2D data (figure 7-3).

7.20 Test 2 (Modified Read coding)

The 2D data received in 7.19 above was successfully transmitted back to the remote machine using test 2. Test results are shown on page 48.

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Figure 7-1 Typical FAX to UUT (result of test 2)

dex® Auto Dial Command Work Sheet

[illegible]

Figure 7-2 V80 Printout (result of test 3)

82. 04/09 10:44 PM 1-*

The requirement for high speed message facsimile equipment to be used with the DDD switched network is being satisfied by various techniques of information redundancy removal. These techniques are varied in nature and are known by such names as "run length encoding", "white skipping", etc. Each technique offers different advantages in terms of information compression which in turn relates directly to document transmission time. The Electronic Industries Association is chartered to provide industrial standards which not only assure compatibility of equipments but provide the user with a reference upon which to base comparison of equipment. In recognition of the confusion which can arise in comparing equipment for transmission time when such time is a function of information content, EIA has proposed this document as a transmission time reference standard. This letter contains three hundred words and is a statistical average document.

Figure 7-3 Modified READ V80 Printout

APPENDIX A

Acceptance Test Print-outs

LT

TEST	METH	TESTER	UUT	DOC	EXCG	CALLER	DOC	ORG	PAGES	TEST ERRORS
1	1T	NML	NML	NO		UUT	UUT		1	09
2	2T	NML	AUTO	NO		TESTER	TESTER		1	10
3	3T	AUTO	NML	NO		TESTER	TESTER		1	05
4	4R	AUTO	AUTO	NO		UUT	UUT		1	01-04-04
5	4R	AUTO	AUTO	NO		TESTER	TESTER		2	13
6	4T	AUTO	AUTO	NO		TESTER	TESTER		2	08
7	4T	AUTO	AUTO	NO		UUT	UUT		2	02-06
8	4R/T	AUTO	AUTO	YES		TESTER	90TH		2+2	NONE
9	NA	AUTO	AUTO	NO		UUT	NONE		NONE	07
A	NA	AUTO	AUTO	NO		UUT	NONE		NONE	12

>LE

TEST CONDITIONS/INSERTED ERRORS DESCRIPTION:

BYTE1 ERRORS1

01. BIT 0 - TESTER IGNORES DIS ONCE
02. 1 - TESTER IGNORES MP9, EOM, OR EOP ONCE
03. 2 - GENERATE ONE MP9 WITH CRC ERROR
04. 3 - IGNORE MP9, EOM OR EOP. SEND CRP
05. 4 - GENERATE FALSE FAX CONTROL CODE IN ONE EOP
06. 5 - GENERATE ONE CFR WITH 903 2ND BYTE
07. 6 - DIS NOT SENT, MEASURE T1
08. 7 - EOP NOT SENT, MEASURE T2

BYTE1 ERRORS2

09. BIT 0 - RESPOND PIN TO FAX. MEASURE T3
10. 1 - SEND PRI-EOP AFTER FAX
11. 2 - TRANSMIT CSI/CID FRAME
12. 3 - SEND ILLEGAL COMMAND TO PROVOKE DISCONNECT
13. 4 - DEGRADE LINE TO PROVOKE DATA RATE FALLBACK (MANUAL)
14. 5 - EXTENDED FIF
15. 6 - SEND NSF FRAME WITH DIS
16. 7 - UNASSIGNED

>LP

09 COMPRESSION CODE1

- | | |
|--------------------------|--------------------|
| 0A MIN SCAN LINE TIME1 | HUFFMAN |
| 0B VERT RESOLUTION1 | 10/5 MS |
| 0C MAX PAPER WIDTH1 | 3.85 LI/MM |
| 0D MAX PAPER LENGTH1 | 216 MM (1728 PELS) |
| 0E DATA SIGNALING RATE1 | 364 MM |
| 0F PREAMBLE DURATION1 | 4800 BPS |
| 10 TX TEST DOCUMENT1 | 0.86 SEC |
| 11 TCF/FAXIM RESPONSE1 | 01 |
| 12 TX BIT RATE FALLBACK1 | CFR/MCF |
| 13 OPTIONAL FRAMES1 | ENABLED |
| 14 EXTENDED FIF1 | NONE |
| 15 AUTO TEST ERRORS1 | NO (3 BYTES) |
| | DISABLED |

CP09

09 COMPRESSION CODE1

HUFFMAN

MODIFIED READ

HUFFMAN

>CP0A

0A MIN SCAN LINE TIME1

0 MS

5 MS

10 MS

20 MS

40 MS

10/5 MS

20/10 MS

40/20 MS

>CP0B

0B VERT RESOLUTION1

7.70 LI/MM

3.85 LI/MM

>CP0C

0C MAX PAPER WIDTH1

216 MM (1728 PELS)

256 MM (2048 PELS)

297 MM (2432 PELS)

>CP0D

0D MAX PAPER LENGTH1

297 MM

364 MM

UNLIMITED

CP0E

OE DATA SIGNALING RATE: 2400 BPS
9600 BPS
4800 BPS
7200 BPS

>CP0F

OF PREAMBLE DURATION: 0.86 SEC
1.14 SEC

>CP10

10 TX TEST DOCUMENT: 01
02
03
LAST RECEIVED

>CP11

11 TCF/FAXIN RESPONSE: CFR/MCF
CFR/RTP
FTT/RTN THEN CFR/MCF
ALWAYS FTT/RTN
CFR/MCF

>CP12

12 TX BIT RATE FALLBACK: ENABLED
DISABLED

CP13

13 OPTIONAL FRAMES:

NONE
NSF WITH FIRST DIS
CIS/CIG WITH FIRST DIS/DTC
NSF,CST,CIG
NONE

>CP14

14 EXTENDED FIF

NO (3 BYTES)
YES (4 BYTES)

>CP15

15 AUTO TEST ERRORS:

ENABLED
DISABLED

DN5725639

TM12345678900987654321

MS12345ABCDE

91 BURROUGHS DEX 5100 (HALF DUPLEX CONFIGURATION)

8 JULY 1982

ST01

TESTS:

01 OPERATING METHOD: 01 ; HNL-MNL
02 CALLING UNIT: UUT
03 DOCUMENT EXCHANGE: NO
04 PAGES / DOCUMENT: 1
05 DOCUMENT ORIGINATOR: UUT
06 ERRORS: 00
07 ERRORS: 01
08 ERRORS: 00
09 COMPRESSION CODE: HUFFMAN
0A MIN SCAN LINE TIME: 40/20 MS
0B VERT RESOLUTION: 3.85 LI/MM
0C MAX PAPER WIDTH: 297 MM (2432 PELS)
0D MAX PAPER LENGTH: UNLIMITED
0E DATA SIGNALING RATE: 7200 BPS
0F PREAMBLE DURATION: 1.14 SEC
10 TX TEST DOCUMENT: LAST RECEIVED
11 ICF/FAIN RESPONSE: CFR/MCF
12 TX BIT RATE FALLBACK: DISABLED
13 OPTIONAL FRAMES: NONE
14 EXTENDED FIF: YES (4 BYTES)
15 AUTO TEST ERRORS: DISABLED

A-5

CP0A

0A MIN SCAN LINE TIME: 40/20 MS
0 MS
5 MS
10 MS
20 MS
40 MS
10/5 MS

CP0E

0E DATA SIGNALING RATE: 7200 BPS
2400 BPS
9600 BPS

CP0B

0B MAX PAPER LENGTH: UNLIMITED
297 MM

364 MM

>CP12

12 TX BIT RATE FALLBACK? DISABLED
 ENABLED

>CP14

14 EXTENDED FIFO YES (4 BYTES)
 NO (3 BYTES)

>RURU

TEST RUNNING

>

9 JULY 1982

BURROUGHS DEX 5100 (HALF DUPLEX CONFIGURATION)

```

TEST:
01 OPERATING METHOD: 01
02 CALLING UNIT: 1T 8 NNL-MNL
03 DOCUMENT EXCHANGE: UUT
04 PAGES / DOCUMENT: NO
05 DOCUMENT ORIGINATOR: 1
06 ERRORS: UUT
07 ERRORS2: 00
08 ERS: 01
09 COMPRESSION CODE: 00
10 MIN SCAN LINE TIME: HUFFMAN
11 VERT RESOLUTION: 10/5 MS
12 MAX PAPER WIDTH: 3.85 LI/MM
13 MAX PAPER LENGTH: 297 MM (2432 PELS)
14 DATA SIGNALING RATE: 364 MM
15 PREAMBLE DURATION: 9600 BPS
16 TX TEST DOCUMENT: 1.14 SEC
17 TX RATE FALLBACK: LAST RECEIVED
18 TX RATE FALLBACK: CFR/MCF
19 TX RATE FALLBACK: ENABLED
20 TX RATE FALLBACK: NONE
21 TX RATE FALLBACK: NO (3 BYTES)
22 TX RATE FALLBACK: DISABLED
23 TX RATE FALLBACK:
24 TX RATE FALLBACK:
25 TX RATE FALLBACK:
26 TX RATE FALLBACK:
27 TX RATE FALLBACK:
28 TX RATE FALLBACK:
29 TX RATE FALLBACK:
30 TX RATE FALLBACK:
31 TX RATE FALLBACK:
32 TX RATE FALLBACK:
33 TX RATE FALLBACK:
34 TX RATE FALLBACK:
35 TX RATE FALLBACK:
36 TX RATE FALLBACK:
37 TX RATE FALLBACK:
38 TX RATE FALLBACK:
39 TX RATE FALLBACK:
40 TX RATE FALLBACK:
41 TX RATE FALLBACK:
42 TX RATE FALLBACK:
43 TX RATE FALLBACK:
44 TX RATE FALLBACK:
45 TX RATE FALLBACK:
46 TX RATE FALLBACK:
47 TX RATE FALLBACK:
48 TX RATE FALLBACK:
49 TX RATE FALLBACK:
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51 TX RATE FALLBACK:
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72 TX RATE FALLBACK:
73 TX RATE FALLBACK:
74 TX RATE FALLBACK:
75 TX RATE FALLBACK:
76 TX RATE FALLBACK:
77 TX RATE FALLBACK:
78 TX RATE FALLBACK:
79 TX RATE FALLBACK:
80 TX RATE FALLBACK:
81 TX RATE FALLBACK:
82 TX RATE FALLBACK:
83 TX RATE FALLBACK:
84 TX RATE FALLBACK:
85 TX RATE FALLBACK:
86 TX RATE FALLBACK:
87 TX RATE FALLBACK:
88 TX RATE FALLBACK:
89 TX RATE FALLBACK:
90 TX RATE FALLBACK:
91 TX RATE FALLBACK:
92 TX RATE FALLBACK:
93 TX RATE FALLBACK:
94 TX RATE FALLBACK:
95 TX RATE FALLBACK:
96 TX RATE FALLBACK:
97 TX RATE FALLBACK:
98 TX RATE FALLBACK:
99 TX RATE FALLBACK:
100 TX RATE FALLBACK:

```

A-7

TESTER	UUT	STATUS	FIF
01. DIS (1)		00 00 02 01	00 OF 66
02. (14 TIMEDOUT)			
03. DIS (1)		00 00 02 00	00 OF 66
04. DCS (1)		00 00 02 01	00 OF 94 00
05. (TCF RCVD. NOT ALL ZEROS. DURATION (MS)=001804)			
06. CFR (0)		00 00 04 04	
07. (FAX RECEIVED)			
08. EOP (1)		00 00 08 02	
09. MCF (0)		00 00 20 00	
0A. DCN (1)		00 00 08 04	
0B. (END TEST)			

CP15

15 AUTO TEST ERRORS: DISABLED
ENABLED

15 AUTO TEST ERRORS: ENABLED

>8701

TEST:
01 OPERATING METHOD: 01
02 CALLING UNIT: 11, MNL-MNL
03 DOCUMENT EXCHANGE: UUT
04 PAGES / DOCUMENT: NO
05 DOCUMENT ORIGINATOR: 1
06 UUT
07 ERRORS: 00
08 ERRORS: 01
09 COMPRESSION CODE: 00
10 MIN SCAN LINE TIME: HUFFMAN
11 VERT RESOLUTION: 10/5 MS
12 MAX PAPER WIDTH: 3.95 LI/MM
13 MAX PAPER LENGTH: 297 MM (2432 PELS)
14 DATA SIGNALING RATE: 364 MM
15 OF PREAMBLE DURATION: 9600 SPS
16 TX TEST DOCUMENT: 1.14 SEC
17 TCF/FAXIN RESPONSE: LAST RECEIVED
18 TX BIT RATE FALLBACK: CFR/MCF
19 OPTIONAL FRAMES: ENABLED
20 EXTENDED FIF: NONE
21 AUTO TEST ERRORS: NO (3 BYTES)
22 ENABLED

>KU

TEST RUNNING

8 JULY 1982

START TIMEOUT MEASUREMENT

BURROUGHS DEX 5100 (HALF DUPLEX CONFIGURATION)

TEST:
 01 OPERATING METHOD: 17 # MNL-MNL
 02 CALLING UNIT: UUT
 03 DOCUMENT EXCHANGE: NO
 04 PAGES / DOCUMENT: 1
 05 DOCUMENT ORIGINATOR: UUT
 06 ERRORS1: 00
 07 ERRORS2: 01
 08 ERRORS3: 00
 09 COMPRESSION CODE: HUFFMAN
 10 MIN SCAN LINE TIME: 10/5 MS
 11 VERT RESOLUTION: 3.85 LI/MM
 12 MAX PAPER WIDTH: 297 MM (2432 PELS)
 13 MAX PAPER LENGTH: 384 MM
 14 DATA SIGNALING RATE: 9600 BPS
 15 PREAMBLE DURATION: 1.14 SEC
 16 TX TEST DOCUMENT: LAST RECEIVED
 17 TCF/FAXIN RESPONSE: CFR/MCF
 18 TX BIT RATE FALLBACK: ENABLED
 19 OPTIONAL FRAMES: NONE
 20 EXTENDED FIF: NO (3 BYTES)
 21 AUTO TEST ERRORS: ENABLED

A-9

TESTER	UUT	STATUS	FIF
01. DIS (1)		00 00 02 01	00 OF 66
02. (T4 TIMEOUT)			
03. DIS (1)		00 00 02 00	00 OF 44
04. BCS (1)		00 00 02 01	00 OF 94 00
05. (TCF RCVD, NOT ALL ZEROS, DURATION (MS)-001748)		00 00 04 04	
06. CFR (0)			
07. (FAX RECEIVED)			
08. EDP (1)		00 00 08 02	
09. PIM (0)		00 00 20 00	
0A. (T.C. RESPOND PIN, MEASURE T3)			
0B. (TIMEOUT (MS) = 015804)			
0C. (END TEST)			

BT02

TEST:
01 OPERATING METHOD:
02 CALLING UNIT:
03 DOCUMENT EXCHANGE:
04 PAGES / DOCUMENT:
05 DOCUMENT ORIGINATOR:
06 ERRORS:
07 ERRORS:
08 ERRORS:
09 COMPRESSION CODE:
0A MIN SCAN LINE TIME:
0B VERT RESOLUTION:
0C MAX PAPER WIDTH:
0D MAX PAPER LENGTH:
0E DATA SIGNALING RATE:
0F PREAMBLE DURATION:
10 TX TEST DOCUMENT:
11 TCF/FAXIN RESPONSE:
12 TX BIT RATE FALLBACK:
13 OPTIONAL FRAMES:
14 EXTENDED FIF:
15 AUTO TEST ERRORS:
02
2T I HML-AUTO
TESTER
NO
1
TESTER
00
00
00
HUFFMAN
10/5 MS
3.85 LI/MM
297 MM (2432 PELB)
364 MM
9600 BPS
1.1 SEC
LAST RECEIVED
CFR/MCF
ENABLED
NONE
NO (3 BYTES)
ENABLED

>RU

TEST RUNNING

BURROUGHS DEX 5100 (HAI) DUPLX CONFIDURATION

TEST:
 01 OPERATING METHOD: 02
 02 CALLING UNIT: TESTK
 03 DOCUMENT EXCHANGE: NO
 04 PAGES / DOCUMENT: 1
 05 DOCUMENT ORIGINATOR: TESTK
 06 ERRORS1: 00
 07 ERRORS2: 02
 08 ERRORS3: 00
 09 COMPRESSION CODE: HUFFMAN
 10 MIN SCAN LINE TIME: 10/5 HS
 11 VERT RESOLUTION: 3.85 LI/MM
 12 MAX PAPER WIDTH: 297 MM (2432 PELS)
 13 MAX PAPER LENGTH: 354 MM
 14 DATA SIGNALING RATE: 9600 BPS
 15 PREAMBLE DURATION: 1.14 SEC
 16 TX TEST DOCUMENT: LAST RECEIVED
 17 TCF/FAXIN RESPONSE: CFR/MCF
 18 TX BIT RATE FALLBACK: ENABLED
 19 OPTIONAL FRAMES: NONE
 20 EXTENDED FIF: NO (3 BYTES)
 21 AUTO TEST ERRORS: ENABLED

TESTER	UUT	STATUS	FIF
01. NSF	(0)	02 00 00 00	CB 80 C0 00 00 17 00 00 00 00
02. DIB	(0)	02 00 00 00	10 4E E4 00
03. DCS (1)		04 00 00 00	00 07 26
04. (TCF TRANSMITTED)			
05. CFR	(0)	04 02 00 00	
06. (FAX TRANSMITTED)			
07. PRI-EOP(1)		10 02 00 00	
08. (T4 TIMEOUT)			
09. PRI-EOP(1)		10 02 00 00	
0A. (T4 TIMEOUT)			
0B. PRI-EOP(1)		10 02 00 00	
0C. (T4 TIMEOUT)			
0D. BDN (1)		80 00 00 00	
0E. (END TEST)			

OPERATOR ALERT

LINE REQUEST (KEY 1 = YES) (10 SEC DISCONNECT TIMEOUT)

> OPERATOR ALERT COMPLETE

>

BURROUGHS DEX 5100 (HALF DUPLEX CONFIGURATION)

8 JULY 1982

TEST1
01 OPERATING METHOD: 02
02 CALLING UNIT: 21 1 MM-AUTO
03 DOCUMENT EXCHANGE: 00
04 PAGES / DOCUMENT: 1
05 DOCUMENT ORIGINATOR: 00
06 ERROR: 00
07 ERROR: 02
08 ERROR: 00
09 COMPRESSION CODE: HUFFMAN
10 MIN SCAN LINE TIME: 10/5 MS
11 VERT RESOLUTION: 3.85 LI/MM
12 MAX PAPER WIDTH: 297 MM (2432 FELS)
13 MAX PAPER LENGTH: 364 MM
14 DATA SIGNALING RATE: 9600 BPS
15 OF PREAMBLE DURATION: 1.14 SEC
16 TX TEST DOCUMENT: LAST RECEIVED
17 TCF/FAXIN RESPONSE: CFC/MCF
18 TX BIT RATE FALLBACK: ENABLED
19 OPTIONAL FRAMES: NONE
20 EXTENDED FIF: NO (3 BYTES)
21 AUTO TEST ERROR: ENABLED

A-12

TESTER	UNIT	STATUS	FIF
01.	NSF (0)	02 00 00 00	08 80 C0 00 00 17 00 00 00 00
02.	BIS (0)	02 00 00 00	18 4F E4 00
03.	BIS (1)	04 00 00 00	00 07 26
04.	(TCF TRANSMITTED)	(0)	
05.	CFR	04 02 00 00	
06.	(FAX TRANSMITTED)		
07.	FRI-EOF(1)	10 02 00 00	
08.	(T4 TIMEOUT)		
09.	FRI-EOF(1)	10 02 00 00	
0A.	FIF (0)	10 02 00 00	
0B.	(T3 TIMEOUT)		
0C.	(T1 TIMEOUT)		
0D.	(END TEST)		

```

CPOF
OF PREAMBLE DURATION: 1.14 SEC
0.84 SEC

>CP10
10 TX TEST DOCUMENT: LAST RECEIVED
01

>S103
TEST:
01 OPERATING METHOD: 3T 1 AUTO-MNL
02 CALLING UNIT: TESTER
03 DOCUMENT EXCHANGE: NO
04 PAGES / DOCUMENT: 1
05 DOCUMENT ORIGINATOR: TESTER
06 ERRORS1: 10
07 ERRORS2: 00
08 ERRORS3: 00
09 COMPRESSION CODE: HUFFMAN
0A MIN SCAN LINE TIME: 10/5 MS
0B VERT RESOLUTION: 3.85 LI/MM
0C MAX PAPER WIDTH: 297 MM (2432 PELS)
0D MAX PAPER LENGTH: 364 MM
0E DATA SIGNALING RATE: 9600 BPS
0F PREAMBLE DURATION: 0.86 SEC
10 TX TEST DOCUMENT: 01
11 TCF/FAXIN RESPONSE: CFR/MCF
12 TX BIT RATE FALLBACK: ENABLED
13 OPTIONAL FRAMES: NONE
14 EXTENDED FIF: NO (3 BYTES)
15 AUTO TEST ERRORS: ENABLED

>RU
TEST RUNNING

```

8 JULY 1982

BURROUGHS DEX 5100 (HALF DUPLEX CONFIGURATION)

TEST1		03	
01 OPERATING METHOD:	3T 1 AUTO-MNL		
02 CALLING UNIT:	TESTER		
03 DOCUMENT EXCHANGE:	MD		
04 PAGES / DOCUMENT:	1		
05 DOCUMENT ORIGINATOR:	TESTER		
06 ERRORS:	10		
07 ERRORS2:	00		
08 ERRORS3:	00		
09 COMPRESSION CODE:	HUFFMAN		
0A MIN SCAN LINE TIME:	10/5 MB		
0B VERT RESOLUTION:	3.83 LI/MM		
0C MAX PAPER WIDTH:	297 MM (2432 PELS)		
0D MAX PAPER LENGTH:	364 MM		
0E DATA SIGNALING RATE:	9600 BPS		
0F PREAMBLE DURATION:	0.86 SEC		
10 TX TEST DOCUMENT:	01		
11 TCF/FAXIN RESPONSE:	CFR/MCF		
12 TX BIT RATE FALLBACK:	ENABLED		
13 OPTIONAL FRAMES:	NONE		
14 EXTENDED FIF:	MD (3 BYTES)		
15 AUTO TEST ERRORS:	ENABLED		

TESTER	UNIT	STATUS	FIF
01.	MSF (0)	02 00 00 00	C8 H0 C0 00 00 17 00 00 00 00
02.	DIS (0)	02 00 00 00	18 4F E4 00
03.	DCS (1)	04 00 00 00	00 07 26
04.	(TCF TRANSMITTED)		
05.	CFR (0)	04 02 00 00	
06.	(FAX TRANSMITTED)		
07.	(T.C. FALSE EOP CODE GENERATED)		
08.	EQP (1)	10 02 00 00	
09.	(T4 TIMEOUT)		
0A.	EOP (1)	10 02 00 00	
0B.	MCF (0)	10 02 00 00	
0C.	DCM (1)	80 00 00 00	
0D.	(END TEST)		

ST04

TEST:	04
01 OPERATING METHOD:	4R 1 AUTO-AUTO
02 CALLING UNIT:	TESTER
03 DOCUMENT EXCHANGE:	NO
04 PAGES / DOCUMENT:	1
05 DOCUMENT ORIGINATOR:	UUT
06 ERROR81:	29
07 ERROR82:	00
08 ERROR83:	00
09 COMPRESSION CODE:	HUFFMAN
0A MIN SCAN LINE TIME:	10/5 MS
0B VERT RESOLUTION:	3.85 LI/MM
0C MAX PAPER WIDTH:	297 MM (2432 PELS)
0D MAX PAPER LENGTH:	364 MM
0E DATA SIGNALING RATE:	9600 BPS
0F PREAMBLE DURATION:	0.86 SEC
10 TX TEST DOCUMENT:	01
11 TCF/FAXIN RESPONSE:	CFR/MCF
12 TX BIT RATE FALLBACK:	ENABLED
13 OPTIONAL FRAMES:	NONE
14 EXTENDED FIF:	NO (3 BYTES)
15 AUTO TEST ERRORS:	ENABLED

>RU

TEST RUNNING

9 JULY 1982

BURROUGHS DEX 5100 (HALF DUPLEX CONFIGURATION)

TESTER	UNIT	STATUS	FIF
01. OPERATING METHOD:	NSF (0)	02 00 00 00	CB 80 C0 00 00 17 00 00 00 00
02. CALLING UNIT:	DTS (0)	02 00 00 00	1B 4F E4 00
03. DOCUMENT EXCHANGE:	NSF (0)	02 00 00 00	CB 80 C0 00 00 17 00 00 00 00
04. PAGES / DOCUMENT:	DTS (0)	02 00 00 00	1B 4F E4 00
05. DOCUMENT ORIGINATOR:	DCS (1)	00 00 02 01	00 0F 46
06. ERROR:	DCS (0)	00 00 02 01	00 06 94 00
07. ERROR:	DCS (0)	00 00 08 01	00 06 94 00
08. ERROR:	DCS (0)	00 00 08 01	00 06 94 00
09. COMPRESSION CODE:	EDM (0)	00 00 08 02	00 00 08 02
10. MIN SCAN LINE TIME:	EDM (0)	00 00 08 02	00 00 08 02
11. VERT RESOLUTION:	EDM (0)	00 00 08 02	00 00 08 02
12. MAX PAPER WIDTH:	EDM (0)	00 00 08 02	00 00 08 02
13. MAX PAPER LENGTH:	EDM (0)	00 00 08 02	00 00 08 02
14. DATA SIGNALING RATE:	EDM (0)	00 00 08 02	00 00 08 02
15. PREAMBLE DURATION:	EDM (0)	00 00 08 02	00 00 08 02
16. TX TEST DOCUMENT:	EDM (0)	00 00 08 02	00 00 08 02
17. TCF/FAXIN RESPONSE:	EDM (0)	00 00 08 02	00 00 08 02
18. TX BIT RATE FALLBACK:	EDM (0)	00 00 08 02	00 00 08 02
19. OPTIONAL FRAMES:	EDM (0)	00 00 08 02	00 00 08 02
20. EXTENDED FIF:	EDM (0)	00 00 08 02	00 00 08 02
21. AUTO TEST ERROR:	EDM (0)	00 00 08 02	00 00 08 02

PV
>PRINTING FAX
(MINIMUM CODED LINE LENGTH (BITS) = 000035)
(ERROR LINES/TOTAL LINES = 000004 /000523)
>PRINTING FAX
NEXT PAGE INVALID

RU
TEST RUNNING
>

8 JULY 1982

BURROUGHS BEX 5100 (HALF DUPLEX CONFIGURATION)

```

TEST:
01 OPERATING METHOD: 04
02 CALLING UNIT: 4R 1 AUTO-AUTO
03 DOCUMENT EXCHANGE: TESTER
04 PAGES / DOCUMENT: NO
05 DOCUMENT ORIGINATOR: 1
06 ERRORS: 29
07 ERRORS: 00
08 ERRORS: 00
09 COMPRESSION CODE: HUFFMAN
0A MIN SCAN LINE: 10/5 MS
0B VERT RESOLUTION: 3.85 LI/MM
0C MAX PAPER WIDTH: 297 MM (2432 PELS)
0D MAX PAPER LENGTH: 364 MM
0E DATA SIGNALING RATE: 9600 BPS
0F PREAMBLE DURATION: 0.86 SEC
10 TX TEST DOCUMENT: 01
11 TCF/FAXIM RESPONSE: CFR/MCF
12 TX BIT RATE FALLBACK: ENABLED
13 OPTIONAL FRAMES: NONE
14 EXTENDED FIF: MD (3 BYTES)
15 AUTO TEST ERRORS: ENABLED
  
```

A-18

TESTER	UNIT	STATUS	FIF
01.	MSF (0)	02 00 00 00	C8 80 C0 00 00 17 00 00 00 00
02.	DIS (0)	02 00 00 00	10 4E F4 00
03.	(T.C. IGNORE DIS)		
04.	MSF (0)	02 00 00 00	C8 80 C0 00 00 17 00 00 00 00
05.	DIS (0)	02 00 00 00	10 4E F4 00
06.	DTC (1)	00 00 02 10	00 0F 66
07.	MSC (1)	00 00 02 01	C8 80 C0 00 00 17 00 00 00 00
08.	DTC (1)	00 00 02 01	10 4E F4 00
09.	DCN (1)	00 00 80 00	
0A.	(END TEST)		

CPOE

OE DATA SIGNALING RATE: 9600 BPS
4800 BPS
7200 BPS
2400 BPS

RU

TEST RUNNING

8 JULY 1982

BURKOWS DEX 5100 (HALF DUPLEX CONFIGURATION)

TESTS

01 OPERATING METHOD: 04
 02 CALLING UNIT: 4R 1 AUTO-AUTO
 03 DOCUMENT EXCHANGE: TESTER
 04 PAGES / DOCUMENT: NO
 05 DOCUMENT ORIGINATOR: 1
 06 ERRORS: 29
 07 ERROR82: 00
 08 ERROR83: 00
 09 COMPRESSION CODE: HUFFMAN
 0A MIN SCAN LINE TIME: 10/5 MS
 0B VERT RESOLUTION: 3.85 LI/MM
 0C MAX PAPER WIDTH: 297 MM (2432 FELS)
 0D MAX PAPER LENGTH: 364 MM
 0E DATA SIGNALING RATE: 2400 BPS
 0F PREAMBLE DURATION: 0.86 SEC
 10 TX TEST DOCUMENT: 01
 11 TCF/FAXIN RESPONSE: CFR/MCF
 12 TX BIT RATE FALLBACK: ENABLED
 13 OPTIONAL FRAMES: NONE
 14 EXTENDED FIF: NO (3 BYTES)
 15 AUTO TEST ERRORS: ENABLED

A-20

TESTER	UNIT	STATUS	FIF
01.	MSF (0)	02 00 00 00	C8 80 C0 00 00 17 00 00 00 00
02.	DIS (0)	02 00 00 00	18 4F E4 00
03.	(T.C. IGNORE DIS)	02 00 00 00	
04.	MSF (0)	02 00 00 00	C8 80 C0 00 00 17 00 00 00 00
05.	DIS (0)	02 00 00 00	18 4F E4 00
06.	BIT (1)	00 00 02 10	00 0F 66
07.	DCS (0)	00 00 02 01	00 06 94 00
08.	(NO CORRECT CARRIER IN 10 SECONDS)		
09.	FTT (1)	00 00 04 04	
0A.	DCS (0)	00 00 08 01	00 0E 94 00
0B.	(NO CORRECT CARRIER IN 10 SECONDS)		
0C.	FTT (1)	00 00 04 04	
0D.	DCS (0)	00 00 08 01	00 0A 94 00
0E.	(NO CORRECT CARRIER IN 10 SECONDS)		
0F.	FTT (1)	00 00 04 04	
10.	DCS (0)	00 00 08 01	00 02 94 00
11.	(TCF RCVD, NOT ALL ZEROS. DURATION (MS)=001610)		
12.	(T.C. NO BIT 5 IN CFR CONTROL BYTE)		
13.	CFR (1)	00 02 04 04	
14.	DCS (0)	00 00 08 01	00 02 94 00
15.	(TCF RCVD, NOT ALL ZEROS. DURATION (MS)=001622)		
16.	CFR (1)	00 00 04 04	
17.	(FAX RECEIVED)		
18.	EOM (0)	00 00 08 02	
19.	(T.C. IGNORE MFS-FUN-ENF, SEND LRF)		
1A.	CRF (1)	00 00 08 02	
1B.	EOM (0)	00 00 08 02	
1C.	MCF (1)	00 00 20 00	
1D.	(12 TIME OUT)		

LM

TESTER	UNIT	STATUS	FIF
01.	MSF (0)	02 00 00 00	CB 80 C0 00 00 17 00 00 00 00
02.	DIS (0)	02 00 00 00	18 4F E4 00
03.	(T.C. IGNORE DIS)		
04.	MSF (0)	02 00 00 00	CB 80 C0 00 00 17 00 00 00 00
05.	DIS (0)	02 00 00 00	18 4F E4 00
06.	DTC (1)	00 00 02 10	00 0F 46
07.	DCS (0)	00 00 02 01	00 06 94 00
08.	(NO CORRECT CARRIER IN 10 SECONDS)		
09.	FTT (1)	00 00 04 04	00 0E 94 00
0A.	DCS (0)	00 00 08 01	
0B.	(NO CORRECT CARRIER IN 10 SECONDS)		
0C.	FTT (1)	00 00 04 04	00 0A 94 00
0D.	DCS (0)	00 00 08 01	
0E.	(NO CORRECT CARRIER IN 10 SECONDS)		
0F.	FTT (1)	00 00 04 04	00 02 94 00
10.	DCS (0)	00 00 08 01	00 02 94 00
11.	(TCF RCVD, NOT ALL ZEROS, DURATION (MS)=001610)		
12.	(T.C. NO BIT 5 IN CFR CONTROL BYTE)		
13.	CFR (1)	00 00 04 04	00 02 94 00
14.	DCS (0)	00 00 08 01	00 02 94 00
15.	(TCF RCVD, NOT ALL ZEROS, DURATION (MS)=001622)		
16.	CFR (1)	00 00 04 04	
17.	(FAX RECEIVED)		
18.	EDM (0)	00 00 08 02	
19.	(T.C. IGNORE MPS-EDM-EDP, SEND CRP)		
1A.	CRF (1)	00 00 08 02	
1B.	EDM (0)	00 00 08 02	
1C.	MSF (1)	00 00 20 00	
1D.	(12 TIMEOUT)		
1E.	DIS (1)	00 00 02 01	00 0F 46
1F.	MSC (1)	00 00 02 01	CB 80 C8 00 00 1B 00 00 00 00
20.	DTC (1)	00 00 02 01	10 4E E4 00
21.	DCM (0)	00 00 80 00	
22.	(END TEST)		

CP0E

DE DATA SIGNALING RATE: 2400 BPS
9600 BPS

>CP11

11 TCF/FAXIN RESPONSE: CFR/MCF
CFR/RTF
FTT/RTN THEN CFR/MCF

>RU

TEST RUNNING

8 JULY 1982

BURROUGHS BEX 5100 (HALF DUPLEX CONFIGURATION)

TEST#	TESTER	UNIT	STATUS	FIF
01	OPERATING METHOD:	4R 1 AUTO-AUTO		
02	CALLING UNIT:	TESTER		
03	DOCUMENT EXCHANGE:	NO		
04	PAGES / DOCUMENT:	1		
05	DOCUMENT ORIGINATOR:	UNIT		
06	ERRORS1:	29		
07	ERRORS2:	00		
08	ERRORS3:	00		
09	COMPRESSION CODE:	HUFFMAN		
10	MIN SCAN LINE TIME:	10/5 MS		
11	VERT RESOLUTION:	3.85 LI/MM		
12	MAX PAPER WIDTH:	297 MM (2432 PELS)		
13	MAX PAPER LENGTH:	364 MM		
14	DATA SIGNALING RATE:	4800 BPS		
15	PREAMBLE DURATION:	0.86 SEC		
16	TX TEST DOCUMENT:	01		
17	TCF/FAXIN RESPONSE:	FIT/RIN THEN CFR/MCF		
18	TX BIT RATE FALLBACK:	ENABLED		
19	OPTIONAL FRAMES:	NONE		
20	EXTENDED FIF:	NO (3 BYTES)		
21	AUTO TEST ERRORS:	ENABLED		

TEST#	TESTER	UNIT	STATUS	FIF
01.	MSF	(0)	02 00 00 00	CB 80 C0 00 00 17 00 00 00 00
02.	DIS	(0)	02 00 00 00	18 4F E4 00
03.	(T.C. IGNORE DIS)			
04.	MSF	(0)	02 00 00 00	CB 80 C0 00 00 17 00 00 00 00
05.	DIS	(0)	02 00 00 00	18 4F E4 00
06.	DTG	(1)	00 00 02 10	00 0F 66
07.	DCS	(0)	00 00 02 01	00 0A 94 00
08.	(TCF RCVD, NOT ALL ZEROS, DURATION (MS)=001804)			
09.	FTT	(1)	00 00 04 04	
10.	DCS	(0)	00 00 08 01	00 0E 94 00
11.	(BIT RATE FALLBACK TO 7200)			
12.	(TCF RCVD, NOT ALL ZEROS, DURATION (MS)=001588)			
13.	(T.C. NO BIT 5 IN CFR CONTROL BYTE)			
14.	CFR	(1)	00 00 04 04	
15.	DCS	(0)	00 00 08 01	00 0E 94 00
16.	(TCF RCVD, NOT ALL ZEROS, DURATION (MS)=001700)			
17.	CFR	(1)	00 00 04 04	
18.	(FAX RECEIVED)			
19.	EDM	(0)	00 00 08 02	
20.	(T.C. IGNORE MPS-EDM EOF, SEND CFR)			
21.	CFR	(1)	00 00 08 02	
22.	EDM	(0)	00 00 09 07	
23.	RIN	(1)	00 00 20 00	
24.	(T2 TIMEOUT)			
25.	DIS	(1)	00 00 02 01	00 0F 76
26.	MSC	(1)	00 00 02 01	CB 80 C0 00 00 1B 00 00 00 00
27.	DIC	(1)	00 00 02 01	10 4E E4 00
28.	RCN	(0)	00 00 80 00	
29.	(END TEST)			

CP0E

OE DATA SIGNALING RATE: 4800 BPS
7200 BPS

CP11

11 TCF/FAXIN RESPONSE: FTT/RTN THEN CFR/NCF
ALWAYS FTT/RTN

>RU

TEST RUNNING

8 JULY 1982

BURKHOUGH'S DEX 5100 (HALF DUPLEX CONFIGURATION)

TEST1
 01 OPERATING METHOD: 04
 02 CALLING UNIT: 4R 1 AUTO-AUTO
 03 DOCUMENT EXCHANGE: TESTER
 04 PAGES / DOCUMENT: NO
 05 DOCUMENT ORIGINATOR: 1
 06 ERRORS: UUT
 07 ERRORS2: 29
 08 ERRORS3: 00
 09 COMPRESSION CODE: HUFFMAN
 0A MIN SCAN LINE TIME: 10/5 MS
 0B VERT RESOLUTION: 3.85 LI/MM
 0C MAX PAPER WIDTH: 297 MM (2432 PELS)
 0E DATA SIGNALING RATE: 364 MM
 0F PREAMBLE DURATION: 0.86 SEC
 10 1X TEST DOCUMENT: 01
 11 ICF/FAXIN RESPONSE: ALWAYS FIT/RTM
 12 1X BIT RATE FALLBACK: ENABLED
 13 OPTIONAL FRAMES: NONE
 14 EXTENDED FIT: NO (3 BYTES)
 15 AUTO TEST ERRORS: ENABLED

TESTER	UUT	STATUS	FIF
01.	NSF	(0) 02 00 00 00	CB 80 C0 00 00 17 00 00 00 00
02.	DIS	(0) 02 00 00 00	18 4F E4 00
03. (I.C. IGNORE DIS)	NSF	(0) 02 00 00 00	CB 80 C0 00 00 17 00 00 00 00
04.	DIS	(0) 02 00 00 00	18 4F E4 00
05.	DIS	(0) 02 00 00 00	00 0F 46
06.	DIC (1)	00 00 02 10	00 06 94 00
07.	DCS	(0) 00 00 02 01	DURATION (MS)=001734
08. (ICF RCVD, NOT ALL ZEROS, DURATION (MS)=001734)	DCS	(0) 00 00 04 04	00 0E 94 00
09. FIT (1)	DCS	(0) 00 00 08 01	DURATION (MS)=001588
0A.	DCS	(0) 00 00 04 04	00 0A 94 00
0B. (ICF RCVD, NOT ALL ZEROS, DURATION (MS)=001588)	DCS	(0) 00 00 08 01	DURATION (MS)=000606
0C. FIT (1)	DCS	(0) 00 00 04 04	00 02 94 00
0D.	DCS	(0) 00 00 08 01	DURATION (MS)=001628
0E. (BIT RATE FALLBACK TO 4800)	DCS	(0) 00 00 04 04	00 00 04 04
0F. (ICF RCVD, NOT ALL ZEROS, DURATION (MS)=000606)	DCS	(0) 00 00 08 01	00 02 94 00
10. FIT (1)	DCS	(0) 00 00 04 04	DURATION (MS)=001628
11.	DCS	(0) 00 00 08 01	00 00 04 04
12. (BIT RATE FALLBACK TO 2400)	DCS	(0) 00 00 04 04	00 00 04 04
13. (ICF RCVD, NOT ALL ZEROS, DURATION (MS)=001628)	DCS	(0) 00 00 08 01	00 00 04 04
14. FIT (1)	DCS	(0) 00 00 04 04	00 00 04 04
15.	DCS	(0) 00 00 08 01	00 00 04 04
16. (END TEST)	DCS	(0) 00 00 04 04	00 00 04 04

8 JULY 1982

BURROUGHS DEX 5100 (HALF DUPLEX CONFIGURATION)

```

TEST:
01 OPERATING METHOD: 04
02 CALLING UNIT: 4R 1 AUTO-AUTO
03 DOCUMENT EXCHANGE: TESTER
04 PAGES / DOCUMENT: NO
05 DOCUMENT ORIGINATOR: 1
06 DOCUMENT ORIGINATOR: UUT
07 ERRORS: 29
08 ERRORS: 00
09 ERRORS: 00
10 COMPRESSION CODE: HUFFMAN
11 MIN SCAN LINE TIME: 0 MS
12 VERT RESOLUTION: 3.85 LI/MM
13 MAX PAPER WIDTH: 297 MM (2432 FELB)
14 MAX PAPER LENGTH: 364 MM
15 DATA SIGNALING RATE: 9600 BPS
16 FREEMBLE DURATION: 0.86 SEC
17 TX TEST DOCUMENT: 01
18 ICF/FAXIN RESPONSE: CFR/MCF
19 TX BIT RATE FALLBACK: ENABLED
20 OPTIONAL FRAMES: NONE
21 EXTENDED FIF: NO (3 BYTES)
22 AUTO TEST ERRORS: DISABLED
  
```

A-26

TESTER	UUT	STATUS	FIF
01. NSF (0)	(0)	02 00 00 00	C8 80 C0 00 00 17 00 00 00 00
02. DIS (0)	(0)	02 00 00 00	18 4F E4 00
03. DTC (1)	(1)	00 00 02 10	00 0F 76
04. DCS (0)	(0)	00 00 02 01	00 06 F4 00
05. (TCF RUVD, NOT ALL ZEROS, DURATION (MS)=001804)		00 00 04 04	
06. CFR (1)	(1)	00 00 08 02	
07. (FAX RECEIVED)		00 00 20 00	
08. MCF (1)	(1)	00 00 02 01	00 0F 76
09. (T2 TIMEOUT)		00 00 02 01	C8 80 C8 00 00 1R 00 00 00 00
0A. DIS (1)	(1)	00 00 02 01	10 4E E4 00
0B. DTC (1)	(1)	00 00 02 01	
0C. DCM (0)	(0)	00 00 80 00	
0D. (END TEST)			

>LL

(MINIMUM CODED LINE LENGTH (BITS) = 000032)

(ERROR LINES/TOTAL LINES = 000007 /000556)

8 JULY 1982

BURROUGHS BEX 5100 (HALF DUPLEX CONFIGURATION)

TESTER	UNIT	STATUS	FIF
01 OPERATING METHOD:	NSF	(0)	02 00 00 00 C8 80 C0 00 17 00 00 00 00
02 CALLING UNIT:	DIS	(0)	02 00 00 00 18 4F E4 00
03 DOCUMENT EXCHANGE:	DIS	(1)	00 00 02 10 00 0F 46
04 PAGES / DOCUMENT:	DCS	(0)	00 00 02 01 00 06 C4 00
05 DOCUMENT ORIGINATOR:	DCS	(0)	00 00 02 01 00 06 C4 00
06 ERROR:	DCS	(1)	00 00 04 04
07 ERROR:	DCS	(1)	00 00 04 04
08 ERROR:	DCS	(1)	00 00 08 02
09 COMPRESSION CODE:	DCS	(1)	00 00 20 00
0A MIN SCAN LINE TIME:	DCS	(1)	00 00 02 01
0B VERT RESOLUTION:	DCS	(1)	00 00 02 01
0C MAX PAPER WIDTH:	DCS	(1)	00 00 02 01
0D MAX PAPER LENGTH:	DCS	(1)	00 00 02 01
0E DATA SIGNALING RATE:	DCS	(1)	00 00 02 01
0F PREAMBLE DURATION:	DCS	(1)	00 00 02 01
10 TX TEST DOCUMENT:	DCS	(1)	00 00 02 01
11 TCF/FAXIN RESPONSE:	DCS	(1)	00 00 02 01
12 TX BIT RATE FALLBACK:	DCS	(1)	00 00 02 01
13 OPTIONAL FRAMES:	DCS	(1)	00 00 02 01
14 EXTENDED FIF:	DCS	(1)	00 00 02 01
15 AUTO TEST ERROR:	DCS	(1)	00 00 02 01

LL

(MINIMUM CODED LINE LENGTH (BITS) = 000172)

(ERROR LINES/TOTAL LINES = 000002 / 000323)

CP14

14 EXTENDED FIF:

NO (3 BYTES)

YES (4 BYTES)

>CP13

13 OPTIONAL FRAMES:

NONE

NSF WITH FIRST DIS

>CPOA

0A MIN SCAN LINE TIME:

40 MS

10/5 MS

20/10 MS

40/20 MS

0 MS

5 MS

10 MS

20 MS

40 MS

10/5 MS

A-28

>ST05

TEST:

01 OPERATING METHOD:

05 4R 1 AUTO-AUTO

02 CALLING UNIT:

WUT

03 DOCUMENT EXCHANGE:

NO

04 PAGES / DOCUMENT:

2

05 DOCUMENT ORIGINATOR:

TESTER

06 ERRORS1:

00

07 ERRORS2:

00

08 ERRORS3:

00

09 COMPRESSION CODE:

INFTMAN

0A MIN SCAN LINE TIME:

10/5 MS

0B VERT RESOLUTION:

3.85 LI/MM

0C MAX PAPER WIDTH:

297 MM (2432 PELS)

0D MAX PAPER LENGTH:

364 MM

0E DATA SIGNALING RATE:

5600 MPS

0F PREAMBLE DURATION:

0.96 SEC

10 TX TEST DOCUMENT:

01

11 TCF/FAXIN RESPONSE:

CFR/NOT

12 TX BIT RATE FAILURE:

ENABLED

13 OPTIONAL FRAMES:

NSF WITH FIRST DIS

14 EXTENDED FIF:

YES (4 BYTES)

15 AUTO TEST ERRORS:

DISABLED

8 JULY 1982

BURROUGHS DEX 5100 (HALF DUPLEX CONFIGURATION)

TEST:
 01 OPERATING METHOD: 4R 1 AUTO-AUTO
 02 CALLING UNIT: UUT
 03 DOCUMENT EXCHANGE: NO
 04 PAGES / DOCUMENT: 2
 05 DOCUMENT ORIGINATOR: TESTER
 06 ERROR: 00
 07 ERROR: 00
 08 ERROR: 00
 09 COMPRESSION CODE: HUFFMAN
 10 MIN SCAN LINE TIME: 10/5 MS
 11 VERT RESOLUTION: 3.85 LI/MM
 12 MAX PAPER WIDTH: 297 MM (2432 PELS)
 13 MAX PAPER LENGTH: 364 MM
 14 DATA SIGNALING RATE: 7200 WPS
 15 PREAMBLE DURATION: 1.14 SEC
 16 TX TEST DOCUMENT: 02
 17 TCF/FAXIN RESPONSE: CFR/MCF
 18 TX BIT RATE FALLBACK: NONE
 19 OPTIONAL FRAMES: YES (4 BYTES)
 20 EXTENDED FIF: ENABLED
 21 AUTO TEST ERRORS:

TESTER	UUT	STATUS	FIF
01. DIB (1)		00 00 02 01	00 0F E6 00
02. (T4 TIMEOUT)			
03. DIB (1)		00 00 02 00	00 0F E6 00
04. NSF (0)		00 00 02 01	C8 80 C8 00 00 18 00 00 00 00
05. DIB (0)		00 00 02 01	18 4F E4 00
06. DCS (0)		04 00 00 00	00 07 A6 00
07. (TCF TRANSMITTED)			
08. (T4 TIMEOUT)			
09. DCS (0)		04 00 00 00	00 07 A6 00
10. (TCF TRANSMITTED)			
11. (T4 TIMEOUT)			
12. DCS (0)		04 00 00 00	00 07 A6 00
13. (TCF TRANSMITTED)			
14. (T4 TIMEOUT)			
15. DCS (0)		04 02 00 00	00 0F A6 00
16. (BIT RATE FALLBACK TO 7200)			
17. DCS (0)		04 00 00 00	00 0F A6 00
18. (TCF TRANSMITTED)			
19. (T4 TIMEOUT)			
20. DCS (0)		04 02 00 00	00 0F A6 00
21. (TCF TRANSMITTED)			
22. (T4 TIMEOUT)			
23. DCS (0)		04 00 00 00	00 0F A6 00
24. (TCF TRANSMITTED)			
25. (T4 TIMEOUT)			
26. DCS (0)		04 02 00 00	00 0F A6 00
27. (TCF TRANSMITTED)			
28. (T4 TIMEOUT)			
29. DCS (0)		04 00 00 00	00 0F A6 00
30. (TCF TRANSMITTED)			
31. (T4 TIMEOUT)			
32. DCS (0)		04 02 00 00	00 0F A6 00
33. (TCF TRANSMITTED)			
34. (T4 TIMEOUT)			
35. DCS (0)		04 00 00 00	00 0F A6 00
36. (TCF TRANSMITTED)			
37. (T4 TIMEOUT)			
38. DCS (0)		04 02 00 00	00 0F A6 00
39. (TCF TRANSMITTED)			
40. (T4 TIMEOUT)			
41. DCS (0)		04 00 00 00	00 0F A6 00
42. (TCF TRANSMITTED)			
43. (T4 TIMEOUT)			
44. DCS (0)		04 02 00 00	00 0F A6 00
45. (TCF TRANSMITTED)			
46. (T4 TIMEOUT)			
47. DCS (0)		04 00 00 00	00 0F A6 00
48. (TCF TRANSMITTED)			
49. (T4 TIMEOUT)			
50. DCS (0)		04 02 00 00	00 0F A6 00
51. (TCF TRANSMITTED)			
52. (T4 TIMEOUT)			
53. DCS (0)		04 00 00 00	00 0F A6 00
54. (TCF TRANSMITTED)			
55. (T4 TIMEOUT)			
56. DCS (0)		04 02 00 00	00 0F A6 00
57. (TCF TRANSMITTED)			
58. (T4 TIMEOUT)			
59. DCS (0)		04 00 00 00	00 0F A6 00
60. (TCF TRANSMITTED)			
61. (T4 TIMEOUT)			
62. DCS (0)		04 02 00 00	00 0F A6 00
63. (TCF TRANSMITTED)			
64. (T4 TIMEOUT)			
65. DCS (0)		04 00 00 00	00 0F A6 00
66. (TCF TRANSMITTED)			
67. (T4 TIMEOUT)			
68. DCS (0)		04 02 00 00	00 0F A6 00
69. (TCF TRANSMITTED)			
70. (T4 TIMEOUT)			
71. DCS (0)		04 00 00 00	00 0F A6 00
72. (TCF TRANSMITTED)			
73. (T4 TIMEOUT)			
74. DCS (0)		04 02 00 00	00 0F A6 00
75. (TCF TRANSMITTED)			
76. (T4 TIMEOUT)			
77. DCS (0)		04 00 00 00	00 0F A6 00
78. (TCF TRANSMITTED)			
79. (T4 TIMEOUT)			
80. DCS (0)		04 02 00 00	00 0F A6 00
81. (TCF TRANSMITTED)			
82. (T4 TIMEOUT)			
83. DCS (0)		04 00 00 00	00 0F A6 00
84. (TCF TRANSMITTED)			
85. (T4 TIMEOUT)			
86. DCS (0)		04 02 00 00	00 0F A6 00
87. (TCF TRANSMITTED)			
88. (T4 TIMEOUT)			
89. DCS (0)		04 00 00 00	00 0F A6 00
90. (TCF TRANSMITTED)			
91. (T4 TIMEOUT)			
92. DCS (0)		04 02 00 00	00 0F A6 00
93. (TCF TRANSMITTED)			
94. (T4 TIMEOUT)			
95. DCS (0)		04 00 00 00	00 0F A6 00
96. (TCF TRANSMITTED)			
97. (T4 TIMEOUT)			
98. DCS (0)		04 02 00 00	00 0F A6 00
99. (TCF TRANSMITTED)			
100. (T4 TIMEOUT)			

LH

TESTER	UNIT	STATUS	FIF
01. BIS (1)		00 00 02 01	00 0F E6 00
02. (T4 TIMEOUT)			
03. BIS (1)		00 00 02 00	00 0F E6 00
04. MSF (0)		00 00 02 01	C8 80 C8 00 00 1B 00 00 00 00
05. BIS (0)		00 00 02 01	18 4F E4 00
06. DCS (0)		04 00 00 00	00 07 A6 00
07. (TCF TRANSMITTED)			
08. (T4 TIMEOUT)			
09. DCS (0)		04 00 00 00	00 07 A6 00
0A. (TCF TRANSMITTED)			
0B. (T4 TIMEOUT)			
0C. DCS (0)		04 00 00 00	00 07 A6 00
0D. (TCF TRANSMITTED)			
0E. FIT (0)		04 02 00 00	
0F. (BIT RATE FALLBACK TO 7200)			
10. DCS (0)		04 00 00 00	00 0F A6 00
11. (TCF TRANSMITTED)			
12. CFR (0)		04 02 00 00	
13. (FAX TRANSMITTED)			
14. MPS (0)		10 04 00 00	
15. (T4 TIMEOUT)			
16. MPS (0)		10 04 00 00	
17. RTP (0)		10 04 00 00	
18. DCS (0)		04 00 00 00	00 0F A6 00
19. (TCF TRANSMITTED)			
1A. CFR (0)		04 02 00 00	
1B. (FAX TRANSMITTED)			
1C. EOP (0)		10 02 00 00	
1D. (T4 TIMEOUT)			
1E. EOP (0)		10 02 00 00	
1F. MCF (0)		10 02 00 00	
20. DCN (0)		80 00 00 00	
21. (END TEST)			

CPOF

OF PREAMBLE DURATION: 0.86 SEC
1.14 SEC

>CP15

15 AUTO TEST ERRORS: DISABLED
ENABLED

>ST06

TEST:
04 1 AUTO-AUTO
01 OPERATING METHOD: TESTER
02 CALLING UNIT: NO
03 DOCUMENT EXCHANGE: 2
04 PAGES / DOCUMENT: TESTER
05 DOCUMENT ORIGINATOR: 80
06 ERRORS1: 00
07 ERRORS2: 00
08 ERRORS3: HUFFMAN
09 COMPRESSION CODE: 10/5 MS
0A MIN SCAN LINE TIME: 3.85 LI/MM
0B VERT RESOLUTION: 297 MM (2432 PELS)
0C MAX PAPER WIDTH: 364 MM
0D MAX PAPER LENGTH: 9600 BPS
0E DATA SIGNALING RATE: 1.14 SEC
0F PREAMBLE DURATION: 01
10 TX TEST DOCUMENT: CFR/MCF
11 TCF/FAXIN RESPONSE: ENABLED
12 TX BIT RATE FALLBACK: NSF WITH FIRST BIS
13 OPTIONAL FRAMES: YES (4 BYTES)
14 EXTENDED FFI: ENABLED
15 AUTO TEST ERRORS:

>CP10

10 TX TEST DOCUMENT: 01
02

>KU

TEST RUNNING

9 JULY 1982

BURROUGHS DEX 5100 (HALF DUPLEX CONFIGURATION)

START TIMEOUT MEASUREMENT

TEST1
 01 OPERATING METHOD: 06
 02 CALLING UNIT: 4T 1 AUTO-AUTO
 03 DOCUMENT EXCHANGE: TESTER
 04 PAGES / DOCUMENT: NO
 05 DOCUMENT ORIGINATOR: 2
 06 ERRORS: 80
 07 ERRORS: 00
 08 ERRORS: 00
 09 COMPRESSION CODE: HUFFMAN
 0A MIN SCAN LINE TIME: 10/5 MS
 0B VERT RESOLUTION: 3.85 LI/MM
 0C MAX PAPER WIDTH: 297 MM (2432 PELS)
 0D MAX PAPER LENGTH: 364 MM
 0E DATA SIGNALING RATE: 9600 BPS
 0F PREAMBLE DURATION: 1.14 SEC
 10 TX TEST DOCUMENT: 02
 11 TCF/FAXIN RESPONSE: CFR/MCF
 12 TX 81T RATE FALLBACK: ENABLED
 13 OPTIONAL FRAMES: NSF WITH FIRST DIS
 14 EXTENDED FIF: YES (4 BYTES)
 15 AUTO TEST ERRORS: ENABLED

A-32

TESTER	UNIT	STATUS	FIF
01.	NSF (0)	02 00 00 00	C8 80 C0 00 00 17 00 00 00 00
02.	DIS (0)	02 00 00 00	18 4F E4 00
03.	DCS (1)	04 00 00 00	00 07 A6 00
04.	(TCF TRANSMITTED)	04 02 00 00	
05.	CFR		
06.	(FAX TRANSMITTED)	10 04 00 00	
07.	MFS (1)		
08.	(T4 TIMEOUT)	10 04 00 00	
09.	MFS (1)	10 04 00 00	
0A.	RTF (0)	04 00 00 00	00 07 A6 00
0B.	DCS (1)		
0C.	(TCF TRANSMITTED)	04 02 00 00	
0D.	CFR		
0E.	(FAX TRANSMITTED)		
0F.	(I.C. EOM NOT SENT. MEASURE T2)		
10.	(TIMEOUT (MS) = 013984)		
11.	(END TEST)		

CP15
15 AUTO TEST ERRORS!
ENABLED
DISABLED

>RU
TEST RUNNING
>

8 JULY 1982

(HALF DUPLEX CONFIGURATION)

BURROUGHS BEX 5100

TESTER	UUT	STATUS	FIF
01. OPERATING METHOD:	NSF (0)	02 00 00 00	C8 80 C0 00 00 17 00 00 00 00
02. CALLING UNIT:	DIB (0)	02 00 00 00	18 4F E4 00
03. DOCUMENT EXCHANGE:	DCS (1)	04 00 00 00	00 07 A6 00
04. PAGES / DOCUMENT:	(TCF TRANSMITTED)	(0)	
05. DOCUMENT ORIGINATOR:	CFR	04 02 00 00	
06. ERRORS1:	(FAX TRANSMITTED)		
07. ERRORS2:	MFS (1)	10 04 00 00	
08. ERRORS3:	(14 TIMEOUT)	10 04 00 00	
09. COMPRESSION CODE:	MFS (1)	10 04 00 00	
10. MIN SCAN LINE TIME:	RTP (0)	04 00 00 00	00 07 A6 00
11. VERT RESOLUTION:	DCS (1)	04 02 00 00	
12. MAX PAPER WIDTH:	(TCF TRANSMITTED)	10 02 00 00	
13. MAX PAPER LENGTH:	MFS (1)	10 02 00 00	
14. DATA SIGNALING RATE:	(14 TIMEOUT)	10 02 00 00	
15. PREAMBLE DURATION:	EDF (1)	10 02 00 00	
16. TX TEST DOCUMENT:	DCF (1)	10 02 00 00	
17. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
18. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
19. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
20. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
21. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
22. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
23. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
24. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
25. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
26. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
27. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
28. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
29. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
30. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
31. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
32. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
33. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
34. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
35. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
36. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
37. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
38. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
39. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
40. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
41. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
42. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
43. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
44. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
45. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
46. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
47. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
48. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
49. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
50. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
51. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
52. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
53. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
54. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
55. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
56. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
57. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
58. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
59. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
60. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
61. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
62. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
63. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
64. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
65. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
66. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
67. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
68. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
69. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
70. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
71. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
72. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
73. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
74. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
75. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
76. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
77. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
78. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
79. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
80. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
81. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
82. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
83. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
84. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
85. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
86. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
87. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
88. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
89. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
90. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
91. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
92. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
93. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
94. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
95. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
96. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
97. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
98. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	
99. TX BIT RATE FALLBACK:	DCF (1)	10 02 00 00	
100. TCF/FAXIN RESPONSE:	DCF (1)	10 02 00 00	

8107

01 OPERATING METHOD:	07	TEST
02 CALLING UNIT:	41	AUTO-AUTO
03 DOCUMENT EXCHANGE:	UNIT	
04 PAGES / DOCUMENT:	NO	
05 DOCUMENT ORIGINATOR:	2	
06 ERRORS1:	UNIT	
07 ERRORS2:	22	
08 ERRORS3:	00	
09 COMPRESSION CODE:	00	
10 HIN SCAN LINE TIME:	HUFFMAN	
11 VERT RESOLUTION:	10/5 MS	
12 MAX PAPER WIDTH:	3.85 LI/MM	
13 MAX PAPER LENGTH:	297 MM (2432 PELS)	
14 DATA SIGNALING RATE:	364 MM	
15 PREAMBLE DURATION:	9600 BPS	
16 TX TEST DOCUMENT:	1.14 SEC	
17 TCF/FAXIN RESPONSE:	02	
18 TX BIT RATE FALLBACK:	CFR/MCF	
19 OPTIONAL FRAMES:	ENABLED	
20 EXTENDED FIF:	NSF WITH FIRST DIS	
21 AUTO TEST ERRORS:	YES (4 BYTES)	
	DISABLED	

RU

TEST RUNNING

8 JULY 1982

BURROUGHS BEX 5100 (HALF DUPLEX CONFIGURATION)

TEST:
07
AT 1 AUTO-AUTO
UNIT

01 OPERATING METHOD:
02 CALLING UNIT:
03 DOCUMENT EXCHANGE:
04 PAGES / DOCUMENT:
05 DOCUMENT ORIGINATOR:
06 ERROR1:
07 ERROR2:
08 ERROR3:
09 COMPRESSION CODE:
10 MIN SCAN LINE TIME:
11 VERT RESOLUTION:
12 MAX PAPER WIDTH:
13 MAX PAPER LENGTH:
14 DATA SIGNALING RATE:
15 PREAMBLE DURATION:
16 TX TEST DOCUMENT:
17 TCF/FAXIN RESPONSE:
18 TX BIT RATE FALLBACK:
19 OPTIONAL FRAMES:
20 EXTENDED FIF:
21 AUTO TEST ERRORS:

01. MSF (1)
02. DIS (1)
03. (T4 TIMEOUT)
04. MSF (1)
05. DIS (1)
06. (T4 TIMEOUT)
07. MSF (1)
08. DIS (1)
09. (TCF RCVD, NOT ALL ZEROS, DURATION (MS)=001634)
10. CFR (0)
11. (FAX RECEIVED)
12. MCF (0)
13. (T2 TIMEOUT)
14. DIS (1)
15. (TCF RCVD, NOT ALL ZEROS, DURATION (MS)=001642)
16. CFR (0)
17. (FAX RECEIVED)
18. MCF (0)
19. (END TEST)

TESTER	UNIT	STATUS	FIF
01. MSF (1)		00 00 02 01	12 34 5A BC DE
02. DIS (1)		00 00 02 01	00 0F E6 00
03. (T4 TIMEOUT)			
04. MSF (1)		00 00 02 00	12 34 5A BC DE
05. DIS (1)		00 00 02 00	00 0F E6 00
06. (T4 TIMEOUT)			
07. MSF (1)		00 00 02 00	12 34 5A BC DE
08. DIS (1)		00 00 02 00	00 0F E6 00
09. (TCF RCVD, NOT ALL ZEROS, DURATION (MS)=001634)		00 00 02 01	00 06 9A 00
10. CFR (0)		00 00 04 04	
11. (FAX RECEIVED)			
12. MCF (0)		00 00 08 02	
13. (T2 TIMEOUT)		00 00 20 00	
14. DIS (1)			
15. (TCF RCVD, NOT ALL ZEROS, DURATION (MS)=001642)		00 00 02 01	00 0F E6 00
16. CFR (0)		00 00 02 01	00 06 9A 00
17. (FAX RECEIVED)		00 00 04 04	
18. MCF (0)		00 00 08 02	
19. (END TEST)		00 00 20 00	

CP15

15 AUTO TEST ERRORS

DISABLED

ENABLED

>RU

TEST RUNNING

>

8 JULY 1982

BURROUGHS BEX 5100 (HALF DUPLEX CONFIGURATION)

TEST:
 01 OPERATING METHOD: 41 AUTO-AUTO
 02 CALLING UNIT: UUT
 03 DOCUMENT EXCHANGE: NO
 04 PAGES / DOCUMENT: 2
 05 DOCUMENT ORIGINATOR: UUT
 06 ERROR: 22
 07 ERROR: 00
 08 ERROR: 00
 09 COMPRESSION CODE: HUFFMAN
 10 MIN SCAN LINE TIME: 10/5 MS
 11 VERT RESOLUTION: 3.85 LI/MM
 12 MAX PAPER WIDTH: 297 MM (2432 PELS)
 13 MAX PAPER LENGTH: 344 MM
 14 DATA SIGNALING RATE: 9600 BPS
 15 PREAMBLE DURATION: 1.14 SEC
 16 TX TEST DOCUMENT: 02
 17 TCF/FAKIN RESPONSE: CFR/MCF
 18 TX BIT RATE FALLBACK: ENABLED
 19 OPTIONAL FRAMES: NSF WITH FIRST DIS
 20 EXTENDED FIF: YES (4 BYTES)
 21 AUTO TEST ERRORS: ENABLED

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TESTER	UUT	STATUS	FIF
01. NSF (1)		00 00 02 01	12 34 5A BC DE
02. DIS (1)		00 00 02 01	00 0F E6 00
03. (14 TIMEOUT)			
04. NSF (1)		00 00 02 00	12 34 5A BC DE
05. DIS (1)		00 00 02 00	00 0F E6 00
06. (14 TIMEOUT)			
07. NSF (1)		00 00 02 00	12 34 5A BC DE
08. DIS (1)		00 00 02 00	00 0F E6 00
09. (14 TIMEOUT)			
10. NSF (1)		00 00 02 00	12 34 5A BC DE
11. DIS (1)		00 00 02 00	00 0F E6 00
12. (14 TIMEOUT)			
13. NSF (1)		00 00 02 01	00 0F E6 00
14. DIS (1)		00 00 02 01	00 0F E6 00
15. (14 TIMEOUT)			
16. NSF (1)		00 00 02 01	00 0F E6 00
17. DIS (1)		00 00 02 01	00 0F E6 00
18. (14 TIMEOUT)			
19. NSF (1)		00 00 02 01	00 0F E6 00
20. DIS (1)		00 00 02 01	00 0F E6 00
21. (14 TIMEOUT)			
22. NSF (1)		00 00 02 01	00 0F E6 00
23. DIS (1)		00 00 02 01	00 0F E6 00
24. (14 TIMEOUT)			
25. NSF (1)		00 00 02 01	00 0F E6 00
26. DIS (1)		00 00 02 01	00 0F E6 00
27. (14 TIMEOUT)			
28. NSF (1)		00 00 02 01	00 0F E6 00
29. DIS (1)		00 00 02 01	00 0F E6 00
30. (14 TIMEOUT)			
31. NSF (1)		00 00 02 01	00 0F E6 00
32. DIS (1)		00 00 02 01	00 0F E6 00
33. (14 TIMEOUT)			
34. NSF (1)		00 00 02 01	00 0F E6 00
35. DIS (1)		00 00 02 01	00 0F E6 00
36. (14 TIMEOUT)			
37. NSF (1)		00 00 02 01	00 0F E6 00
38. DIS (1)		00 00 02 01	00 0F E6 00
39. (14 TIMEOUT)			
40. NSF (1)		00 00 02 01	00 0F E6 00
41. DIS (1)		00 00 02 01	00 0F E6 00
42. (14 TIMEOUT)			
43. NSF (1)		00 00 02 01	00 0F E6 00
44. DIS (1)		00 00 02 01	00 0F E6 00
45. (14 TIMEOUT)			
46. NSF (1)		00 00 02 01	00 0F E6 00
47. DIS (1)		00 00 02 01	00 0F E6 00
48. (14 TIMEOUT)			
49. NSF (1)		00 00 02 01	00 0F E6 00
50. DIS (1)		00 00 02 01	00 0F E6 00
51. (14 TIMEOUT)			
52. NSF (1)		00 00 02 01	00 0F E6 00
53. DIS (1)		00 00 02 01	00 0F E6 00
54. (14 TIMEOUT)			
55. NSF (1)		00 00 02 01	00 0F E6 00
56. DIS (1)		00 00 02 01	00 0F E6 00
57. (14 TIMEOUT)			
58. NSF (1)		00 00 02 01	00 0F E6 00
59. DIS (1)		00 00 02 01	00 0F E6 00
60. (14 TIMEOUT)			
61. NSF (1)		00 00 02 01	00 0F E6 00
62. DIS (1)		00 00 02 01	00 0F E6 00
63. (14 TIMEOUT)			
64. NSF (1)		00 00 02 01	00 0F E6 00
65. DIS (1)		00 00 02 01	00 0F E6 00
66. (14 TIMEOUT)			
67. NSF (1)		00 00 02 01	00 0F E6 00
68. DIS (1)		00 00 02 01	00 0F E6 00
69. (14 TIMEOUT)			
70. NSF (1)		00 00 02 01	00 0F E6 00
71. DIS (1)		00 00 02 01	00 0F E6 00
72. (14 TIMEOUT)			
73. NSF (1)		00 00 02 01	00 0F E6 00
74. DIS (1)		00 00 02 01	00 0F E6 00
75. (14 TIMEOUT)			
76. NSF (1)		00 00 02 01	00 0F E6 00
77. DIS (1)		00 00 02 01	00 0F E6 00
78. (14 TIMEOUT)			
79. NSF (1)		00 00 02 01	00 0F E6 00
80. DIS (1)		00 00 02 01	00 0F E6 00
81. (14 TIMEOUT)			
82. NSF (1)		00 00 02 01	00 0F E6 00
83. DIS (1)		00 00 02 01	00 0F E6 00
84. (14 TIMEOUT)			
85. NSF (1)		00 00 02 01	00 0F E6 00
86. DIS (1)		00 00 02 01	00 0F E6 00
87. (14 TIMEOUT)			
88. NSF (1)		00 00 02 01	00 0F E6 00
89. DIS (1)		00 00 02 01	00 0F E6 00
90. (14 TIMEOUT)			
91. NSF (1)		00 00 02 01	00 0F E6 00
92. DIS (1)		00 00 02 01	00 0F E6 00
93. (14 TIMEOUT)			
94. NSF (1)		00 00 02 01	00 0F E6 00
95. DIS (1)		00 00 02 01	00 0F E6 00
96. (14 TIMEOUT)			
97. NSF (1)		00 00 02 01	00 0F E6 00
98. DIS (1)		00 00 02 01	00 0F E6 00
99. (14 TIMEOUT)			
100. NSF (1)		00 00 02 01	00 0F E6 00
101. DIS (1)		00 00 02 01	00 0F E6 00
102. (14 TIMEOUT)			
103. NSF (1)		00 00 02 01	00 0F E6 00
104. DIS (1)		00 00 02 01	00 0F E6 00
105. (14 TIMEOUT)			
106. NSF (1)		00 00 02 01	00 0F E6 00
107. DIS (1)		00 00 02 01	00 0F E6 00
108. (14 TIMEOUT)			
109. NSF (1)		00 00 02 01	00 0F E6 00
110. DIS (1)		00 00 02 01	00 0F E6 00
111. (14 TIMEOUT)			
112. NSF (1)		00 00 02 01	00 0F E6 00
113. DIS (1)		00 00 02 01	00 0F E6 00
114. (14 TIMEOUT)			
115. NSF (1)		00 00 02 01	00 0F E6 00
116. DIS (1)		00 00 02 01	00 0F E6 00
117. (14 TIMEOUT)			
118. NSF (1)		00 00 02 01	00 0F E6 00
119. DIS (1)		00 00 02 01	00 0F E6 00
120. (14 TIMEOUT)			
121. NSF (1)		00 00 02 01	00 0F E6 00
122. DIS (1)		00 00 02 01	00 0F E6 00
123. (14 TIMEOUT)			
124. NSF (1)		00 00 02 01	00 0F E6 00
125. DIS (1)		00 00 02 01	00 0F E6 00
126. (14 TIMEOUT)			
127. NSF (1)		00 00 02 01	00 0F E6 00
128. DIS (1)		00 00 02 01	00 0F E6 00
129. (14 TIMEOUT)			
130. NSF (1)		00 00 02 01	00 0F E6 00
131. DIS (1)		00 00 02 01	00 0F E6 00
132. (14 TIMEOUT)			
133. NSF (1)		00 00 02 01	00 0F E6 00
134. DIS (1)		00 00 02 01	00 0F E6 00
135. (14 TIMEOUT)			
136. NSF (1)		00 00 02 01	00 0F E6 00
137. DIS (1)		00 00 02 01	00 0F E6 00
138. (14 TIMEOUT)			
139. NSF (1)		00 00 02 01	00 0F E6 00
140. DIS (1)		00 00 02 01	00 0F E6 00
141. (14 TIMEOUT)			
142. NSF (1)		00 00 02 01	00 0F E6 00
143. DIS (1)		00 00 02 01	00 0F E6 00
144. (14 TIMEOUT)			
145. NSF (1)		00 00 02 01	00 0F E6 00
146. DIS (1)		00 00 02 01	00 0F E6 00
147. (14 TIMEOUT)			
148. NSF (1)		00 00 02 01	00 0F E6 00
149. DIS (1)		00 00 02 01	00 0F E6 00
150. (14 TIMEOUT)			
151. NSF (1)		00 00 02 01	00 0F E6 00
152. DIS (1)		00 00 02 01	00 0F E6 00
153. (14 TIMEOUT)			
154. NSF (1)		00 00 02 01	00 0F E6 00
155. DIS (1)		00 00 02 01	00 0F E6 00
156. (14 TIMEOUT)			
157. NSF (1)		00 00 02 01	00 0F E6 00
158. DIS (1)		00 00 02 01	00 0F E6 00
159. (14 TIMEOUT)			
160. NSF (1)		00 00 02 01	00 0F E6 00
161. DIS (1)		00 00 02 01	00 0F E6 00
162. (14 TIMEOUT)			
163. NSF (1)		00 00 02 01	00 0F E6 00
164. DIS (1)		00 00 02 01	00 0F E6 00
165. (14 TIMEOUT)			
166. NSF (1)		00 00 02 01	00 0F E6 00
167. DIS (1)		00 00 02 01	00 0F E6 00
168. (14 TIMEOUT)			
169. NSF (1)		00 00 02 01	00 0F E6 00
170. DIS (1)		00 00 02 01	00 0F E6 00
171. (14 TIMEOUT)			
172. NSF (1)		00 00 02 01	00 0F E6 00
173. DIS (1)		00 00 02 01	00 0F E6 00
174. (14 TIMEOUT)			
175. NSF (1)		00 00 02 01	00 0F E6 00
176. DIS (1)		00 00 02 01	00 0F E6 00
177. (14 TIMEOUT)			
178. NSF (1)		00 00 02 01	00 0F E6 00
179. DIS (1)		00 00 02 01	00 0F E6 00
180. (14 TIMEOUT)			
181. NSF (1)		00 00 02 01	00 0F E6 00
182. DIS (1)		00 00 02 01	00 0F E6 00
183. (14 TIMEOUT)			
184. NSF (1)		00 00 02 01	00 0F E6 00
185. DIS (1)		00 00 02 01	00 0F E6 00
186. (14 TIMEOUT)			
187. NSF (1)		00 00 02 01	00 0F E6 00
188. DIS (1)		00 00 02 01	00 0F E6 00
189. (14 TIMEOUT)			
190. NSF (1)		00 00 02 01	00 0F E6 00
191. DIS (1)		00 00 02 01	00 0F E6 00
192. (14 TIMEOUT)			
193. NSF (1)		00 00 02 01	00 0F E6 00
194. DIS (1)		00 00 02 01	00 0F E6 00
195. (14 TIMEOUT)			
196. NSF (1)		00 00 02 01	00 0F E6 00
197. DIS (1)		00 00 02 01	00 0F E6 00
198. (14 TIMEOUT)			
199. NSF (1)		00 00 02 01	00 0F E6 00
200. DIS (1)		00 00 02 01	00 0F E6 00

LH

TESTER	WUT	STATUS	FIF
01. MSF (1)		00 00 02 01	12 34 5A BC DE
02. DIS (1)		00 00 02 01	00 0F E6 00
03. (T4 TIMEOUT)			
04. MSF (1)		00 00 02 00	12 34 5A BC DE
05. DIS (1)		00 00 02 00	00 0F E6 00
06. (T4 TIMEOUT)			
07. MSF (1)		00 00 02 00	12 34 5A BC DE
08. DIS (1)		00 00 02 00	00 0F E6 00
09. (T4 TIMEOUT)			
0A. MSF (1)		00 00 02 00	12 34 5A BC DE
0B. DIS (1)		00 00 02 00	00 0F E6 00
0C. DCS (1)		00 00 02 01	00 0A 94 00
0D. (TCF RCVD, NOT ALL ZEROS. DURATION (MS)=001636)			
0E. (T.C. NO BIT 5 IN CFR CONTROL BYTE)			
0F. CFR (0)		00 00 04 04	
10. DCS (1)		00 00 08 01	00 06 94 00
11. (TCF RCVD, NOT ALL ZEROS. DURATION (MS)=001636)			
12. CFR (0)		00 00 04 04	
13. (FAX RECEIVED)			
14. EOM (1)		00 00 08 02	
15. (T.C. IGNORE MPS-EOM-EOP)			
16. EOM (1)		00 00 08 02	
17. MCF (0)		00 00 20 00	
18. (T2 TIMEOUT)			
19. DIS (1)		00 00 02 01	00 0F E6 00
1A. DCS (1)		00 00 02 01	00 0A 94 00
1B. (TCF RCVD, NOT ALL ZEROS. DURATION (MS)=001642)			
1C. CFR (0)		00 00 04 04	
1D. (FAX RECEIVED)			
1E. EOP (1)		00 00 08 02	
1F. MCF (0)		00 00 20 00	
20. DCN (1)		00 00 08 04	
21. (END TEST)			

8108

TEST!
01 OPERATING METHOD!
02 CALLING UNIT!
03 DOCUMENT EXCHANGE!
04 PAGES / DOCUMENT!
05 DOCUMENT ORIGINATOR!
06 ERROR81!
07 ERROR82!
08 ERROR83!
09 COMPRESSION CODE!
0A MIN SCAN LINE TIME!
0B VER. RESOLUTION!
0C MAX PAPER WIDTH!
0D MAX PAPER LENGTH!
0E DATA SIGNALING RATE!
0F PREAMBLE DURATION!
10 TX TEST DOCUMENT!
11 TCF/FAXIN RESPONSE!
12 TX BIT RATE FALLBACK!
13 OPTIONAL FRAMES!
14 EXTENDED FIF!
15 AUTO TEST ERRORS!

08
47 1 AUTO-AUTO
TESTER
YES
2
TESTER
00
00
00
HUFFMAN
10/5 MB
3.85 LJ/MM
297 MM (2432 PELS)
344 MM
9600 BPS
1.14 SEC
02
CFR/MCF
ENABLED
NSF WITH FIRST DIS
YES (4 BYTES)
ENABLED

>CP13

13 OPTIONAL FRAMES!

NSF WITH FIRST DIS

CIS/CIS WITH FIRST DIS/DIC

NSF.CSI.C10

>RU

TEST RUNNING

8 JULY 1982

BURROUGHS DEX S100 (HALF DUPLEX CONFIGURATION)

TEST:
 01 OPERATING METHOD: 08
 02 CALLING UNIT: 41 1 AUTO-AUTO
 03 DOCUMENT EXCHANGE: TESTER
 04 PAGES / DOCUMENT: 2 YES
 05 DOCUMENT ORIGINATOR: TESTER
 06 ERRORS: 00
 07 ERRORS: 00
 08 ERRORS: 00
 09 COMPRESSION CODE: HUFFMAN
 0A MIN SCAN LINE TIME: 10/5 MS
 0B VERT RESOLUTION: 3.85 LI/MM
 0C MAX PAPER WIDTH: 297 MM (2432 PELS)
 0D MAX PAPER LENGTH: 364 MM
 0E DATA SIGNALING RATE: 9600 BPS
 0F PREAMBLE DURATION: 1.14 SEC
 10 TX TEST DOCUMENT: 02
 11 TCF/FAXIN RESPONSE: CFR/MCF
 12 TX BIT RATE FALLBACK: ENABLED
 13 OPTIONAL FRAMES: NSF-C81-CIG
 14 EXTENDED FIF: YES (4 BYTES)
 15 AUTO TEST ERRORS: ENABLED

TESTER	UNIT	STATUS	FIF
01.	NSF (0)	02 00 00 00	C8 80 C0 00 00 17 00 00 00 00
02.	DIS (0)	02 00 00 00	18 4F E4 00
03. CIB (1)		04 00 00 00	31 32 33 34 35 36 37 38 39 30 30 39 30 36 35 34 33 32 31
04. DCS (1)		04 00 00 00	00 07 A6 00
05. (TCF TRANSMITTED)		04 02 00 00	
06. (FAX TRANSMITTED)		10 04 00 00	
07. MFS (1)		10 04 00 00	
08. (T4 TIMEOUT)		04 00 00 00	
09. MFS (1)		04 00 00 00	
10. DCS (1)		04 02 00 00	
11. (TCF TRANSMITTED)		10 01 00 00	
12. EDM (1)		10 01 00 00	
13. NSF (0)		02 00 00 00	C8 80 C0 00 00 17 00 00 00 00
14. DIS (0)		02 00 00 00	18 4F E4 00
15. DCS (1)		00 00 02 10	00 07 A6 00
16. DCS (0)		00 00 02 01	00 06 94 00
17. (TCF RCVD, NOT ALL ZEROS, DURATION (MS)=001634)		00 00 04 04	
18. CFR (1)		00 00 08 02	
19. (FAX RECEIVED)		00 00 20 00	
20. MCF (1)			
21. (T2 TIMEOUT)			

LM

TESTER	UNIT	STATUS	FIF
01.	MSF	(0)	02 00 00 00
02.	BIS	(0)	02 00 00 00
03.	C18 (1)		18 4F E4 00
04.	DCS (1)		31 32 33 34 35 36 37 38 39 30 30 39 38 37 36 35 34 33 32 31
05.	(TCF TRANSMITTED)		00 07 A6 00
06.	CFR	(0)	04 02 00 00
07.	(FAX TRANSMITTED)		
08.	MP8 (1)		10 04 00 00
09.	(T4 TIMEOUT)		
0A.	MP8 (1)		10 04 00 00
0B.	RIP	(0)	10 04 00 00
0C.	DCS (1)		10 04 00 00
0D.	(TCF TRANSMITTED)		00 07 A6 00
0E.	CFR	(0)	04 02 00 00
0F.	(FAX TRANSMITTED)		
10.	EOM (1)		10 01 00 00
11.	(T4 TIMEOUT)		
12.	EOM (1)		10 01 00 00
13.	MCF	(0)	10 01 00 00
14.	MSF	(0)	02 00 00 00
15.	BIS	(0)	02 00 00 00
16.	DTC (1)		02 00 00 00
17.	DCS	(0)	00 00 02 01
18.	(TCF RCVD, NOT ALL ZEROS, DURATION (MS)=001634)		00 00 02 01
19.	CFR	(1)	00 00 04 04
1A.	(FAX RECEIVED)		
1B.	EOM	(0)	00 00 08 02
1C.	MCF (1)		00 00 20 00
1D.	(T2 TIMEOUT)		
1E.	MSF (1)		00 00 02 01
1F.	BIS (1)		00 00 02 01
20.	DCS	(1)	00 00 02 01
21.	(TCF RCVD, NOT ALL ZEROS, DURATION (MS)=001640)		00 00 02 01
22.	CFR	(0)	00 00 04 04
23.	(FAX RECEIVED)		
24.	EOM	(1)	00 00 08 02
25.	MCF (0)		00 00 20 00
26.	(T2 TIMEOUT)		
27.	BIS (1)		00 00 02 01
28.	NSC	(1)	00 00 02 01
29.	DTC	(1)	00 00 02 01
2A.	DCM (0)		00 00 80 00
2B.	(END TEST)		

CP13

13 OPTIONAL FRAMES:

MSF.CSI.C10

NONE

>BT09

TEST:
01 OPERATING METHOD: 09
02 CALLING UNIT: 41 / AUTO-AUTO
03 DOCUMENT EXCHANGE: DUT
04 PAGES / DOCUMENT: NO
05 DOCUMENT ORIGINATOR: 1
06 ERRORS: TESTER
07 ERRORS2: 40
08 ERRORS3: 00
09 COMPRESSION CODE: 00
10 MIN SCAN LINE TIME: HUFFMAN
11 VERT RESOLUTION: 10/5 MS
12 MAX PAPER WIDTH: 3.85 LI/MM
13 DATA SIGNALING RATE: 297 MH (2432 PELS)
14 PREAMBLE DURATION: 9600 BPS
15 TX TEST DOCUMENT: 1.14 SEC
16 TX TEST RESPONSE: 02
17 TX BIT RATE FALLBACK: CFR/MCF
18 OPTIONAL FRAMES: ENABLED
19 EXTENDED FIF: NONE
20 AUTO TEST ERRORS: YES (4 BYTES)
21

>RU

TEST RUNNING

8 JULY 1982

START TIMEOUT MEASUREMENT

BURROUGHS DEX 5100 (HALF DUPLEX CONFIGURATION)

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TEST:
01 OPERATING METHOD: 09
02 CALLING UNIT: 4T : AUTO-AUTO
03 DOCUMENT EXCHANGE: UUT
04 PAPER / DOCUMENT: MD
05 DOCUMENT ORIGINATOR: 1
06 ERRORS1: TESTER
07 ERRORS2: 40
08 ERRORS3: 00
09 COMPRESSION CODE: 00
10 MIN SCAN LINE TIME: HUFFMAN
11 VERT RESOLUTION: 10/5 MS
12 MAX PAPER WIDTH: 3.85 LI/MM
13 MAX PAPER LENGTH: 297 MM (2432 PELS)
14 DATA SIGNALING RATE: 364 MM
15 PREAMBLE DURATION: 9600 BPS
16 TX TEST DOCUMENT: 1.14 SEC
17 TX BIT RATE FALLBACK: 02
18 TX BIT RATE FALLBACK: CFR/MCF
19 TX BIT RATE FALLBACK: ENABLED
20 TX BIT RATE FALLBACK: NONE
21 TX BIT RATE FALLBACK: YES (4 BYTES)
22 TX BIT RATE FALLBACK: ENABLED
23 TX BIT RATE FALLBACK:
24 TX BIT RATE FALLBACK:
25 TX BIT RATE FALLBACK:
26 TX BIT RATE FALLBACK:
27 TX BIT RATE FALLBACK:
28 TX BIT RATE FALLBACK:
29 TX BIT RATE FALLBACK:
30 TX BIT RATE FALLBACK:
31 TX BIT RATE FALLBACK:
32 TX BIT RATE FALLBACK:
33 TX BIT RATE FALLBACK:
34 TX BIT RATE FALLBACK:
35 TX BIT RATE FALLBACK:
36 TX BIT RATE FALLBACK:
37 TX BIT RATE FALLBACK:
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79 TX BIT RATE FALLBACK:
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81 TX BIT RATE FALLBACK:
82 TX BIT RATE FALLBACK:
83 TX BIT RATE FALLBACK:
84 TX BIT RATE FALLBACK:
85 TX BIT RATE FALLBACK:
86 TX BIT RATE FALLBACK:
87 TX BIT RATE FALLBACK:
88 TX BIT RATE FALLBACK:
89 TX BIT RATE FALLBACK:
90 TX BIT RATE FALLBACK:
91 TX BIT RATE FALLBACK:
92 TX BIT RATE FALLBACK:
93 TX BIT RATE FALLBACK:
94 TX BIT RATE FALLBACK:
95 TX BIT RATE FALLBACK:
96 TX BIT RATE FALLBACK:
97 TX BIT RATE FALLBACK:
98 TX BIT RATE FALLBACK:
99 TX BIT RATE FALLBACK:
100 TX BIT RATE FALLBACK:

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TESTER	UUT	STATUS	FIF
01. (T.C. DIS NOT SENT. MEASURE T1)			
02. (TIMEOUT (MS) = 049348)			
03. (END TEST)			

8704

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TEST:
01 OPERATING METHOD: 0A 1 AUTO-AUTO
02 CALLING UNIT: UUT
03 DOCUMENT EXCHANGE: NO
04 PAGES / DOCUMENT: 1
05 DOCUMENT ORIGINATOR: TESTER
06 ERRORS1: 00
07 ERRORS2: 00
08 ERRORS3: 00
09 COMPRESSION CODE: HUFFMAN
0A MIN SCAN LINE TIME: 10/5 MS
0B VERT RESOLUTION: 3.85 LI/MM
0C MAX PAPER WIDTH: 297 MM (2432 PELS)
0D MAX PAPER LENGTH: 364 MM
0E DATA SIGNALING RATE: 9600 BP3
0F PREAMBLE DURATION: 1.14 SEC
10 TX TEST DOCUMENT: 02
11 TCF/FAXIN RESPONSE: CFR/MCF
12 TX BIT RATE FALLBACK: ENABLED
13 OPTIONAL FRAMES: NONE
14 EXTENDED FIF: YES (4 BYTES)
15 AUTO TEST ERRORS: ENABLED

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>RU

TEST RUNNING

8 JULY 1982

AD BURROUGHS BEX 5100 (HALF DUPLEX CONFIGURATION)

TEST:
 01 OPERATING METHOD:
 02 CALLING UNIT:
 03 DOCUMENT EXCHANGE:
 04 PAGES / DOCUMENT:
 05 DOCUMENT ORIGINATOR:
 06 ERROR81:
 07 ERROR82:
 08 ERROR83:
 09 COMPRESSION CODE:
 0A MIN SCAN TIME:
 0B VERT RESOLUTION:
 0C MAX PAPER WIDTH:
 0D MAX PAPER LENGTH:
 0E DATA SIGNALING RATE:
 0F PREAMBLE DURATION:
 10 TX TEST DOCUMENT:
 11 TCF/FAXIN RESPONSE:
 12 TX BIT RATE FALLBACK:
 13 OPTIONAL FRAMES:
 14 EXTENDED FIF:
 15 AUTO TEST ERROR81:

0A 4T 1 AUTO-AUTO
 UUT
 MU
 1 TESTER
 00
 00
 00
 HUFFMAN
 10/5 MS
 3.85 LI/MM
 297 MM (2432 PELS)
 364 MM
 9600 BPS
 1.14 SEC
 02
 CFR/MCF
 ENABLED
 NONE
 YES (4 BYTES)
 ENABLED

TESTER	UUT	STATUS	FIF
01. CFR (1)		00 00 02 01	
02. (T4 TIMEOUT)		00 00 02 00	
03. CFR (1)		00 00 02 00	
04. (T4 TIMEOUT)		00 00 02 00	
05. CFR (1)		00 00 02 00	
06. (T4 TIMEOUT)		00 00 02 00	
07. CFR (1)		00 00 02 00	
08. DCM (1)		00 00 02 01	
09. (END TEST)			

8 JULY 1982

BURROUGHS DEX 5100 (HALF DUPLEX CONFIGURATION)

TEST:
 01 OPERATING METHOD: 01
 02 CALLING UNIT: 11 MNL-MNL
 03 DOCUMENT EXCHANGE: UNIT
 04 PAGES / DOCUMENT: NO
 05 DOCUMENT ORIGINATOR: 1
 06 ERROR: UNIT
 07 ERROR: 00
 08 ERROR: 01
 09 ERROR: 00
 10 COMPRESSION CODE: MODIFIED READ
 11 MIN SCAN LINE TIME: 10/5 MS
 12 VERT RESOLUTION: 7.70 LI/MM
 13 MAX PAPER WIDTH: 216 MM (1/28 PELS)
 14 MAX PAPER LENGTH: 364 MM
 15 DATA SIGNALING RATE: 9600 BPS
 16 PREAMBLE DURATION: 1.14 SEC
 17 TX TEST DOCUMENT: LAST RECEIVED
 18 TCF/FAXIN RESPONSE: CFR/MCF
 19 TX BIT RATE FALLBACK: ENABLED
 20 OPTIONAL FRAMES: NONE
 21 EXTENDED FIF: NO (3 BYTES)
 22 AUTO TEST ERRORS: DISABLED

TESTER	UNIT	STATUS	FIF
01. DIS (1)		00 00 02 01	00 CF 64
02. (14 TIMEOUT)			
03. DIS (1)		00 00 02 00	00 CF 64
04. DCS (1)		00 00 02 01	00 C6 14
05. (TCF RCVD, NOT ALL ZEROS, DURATION (MS)=001914)			
06. CFR (0)		00 00 04 04	
07. (FAX RECEIVED)			
08. EOP (1)		00 00 08 02	
09. MCF (0)		00 00 20 00	
0A. DCM (1)		00 00 08 04	
0B. (END TEST)			

8 JULY 1982

(HALF DUPLEX CONFIGURATION)

BURROUGHS DEX 5100

TEST1
01 OPERATING METHOD:
02 CALLING UNIT:
03 DOCUMENT EXCHANGE:
04 PAGES / DOCUMENT:
05 DOCUMENT ORIGINATOR:
06 ERROR81:
07 ERROR82:
08 ERROR83:
09 COMPRESSION CODE:
10 MIN SCAN LINE TIME:
11 VERT RESOLUTION:
12 MAX PAPER WIDTH:
13 MAX PAPER LENGTH:
14 DATA SIGNALING RATE:
15 PREAMBLE DURATION:
16 TX TEST DOCUMENT:
17 TCF/FAXIN RESPONSE:
18 TX BIT RATE FALLBACK:
19 OPTIONAL FRAMES:
20 EXTENDED FIF:
21 AUTO TEST ERRORS:
22 1 MML-AUTO
TESTER
NO
1
TESTER
00
02
00
MODIFIED READ
10/5 MS
7.70 LI/MM
216 MM (1728 PELS)
364 MM
9600 BPS
1.14 SEC
LAST RECEIVED
CFR/MCF
ENABLED
NONE
NO (3 BYTES)
DISABLED

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TESTER	UNIT	STATUS	FIF
01.	NSF	(0)	00 00 00 00
02.	DIB	(0)	00 00 00 00
03.	DCS (1)	(0)	00 CE 38
04.	(TCF TRANSMITTED)	(0)	00 C7 14
05.	(FAX TRANSMITTED)	(0)	04 02 00 00
06.	EDP (1)	(0)	10 02 00 00
07.	(T4 TIMEOUT)	(0)	10 02 00 00
08.	EDP (1)	(0)	10 02 00 00
09.	RTM	(0)	10 02 00 00
10.	DCS (1)	(0)	10 02 00 00
11.	(TCF TRANSMITTED)	(0)	04 00 00 00
12.	CFR	(0)	04 02 00 00
13.	(FAX TRANSMITTED)	(0)	10 02 00 00
14.	EDP (1)	(0)	10 02 00 00
15.	(T4 TIMEOUT)	(0)	10 02 00 00
16.	EDP (1)	(0)	10 02 00 00
17.	RTM	(0)	10 02 00 00
18.	DCM (1)	(0)	10 02 00 00
19.	(END TEST)	(0)	00 00 00 00

LME
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