

ULTRA SCSI PROGRESS REPORT

- **ULTRA SCSI WAS FIRST INTRODUCED AT THE NOVEMBER 1993 SCSI WORKING GROUP**
- **HAPPENINGS SINCE THEN ARE SUMMARIZED HERE**
- **NEW DATA FOR 40 MEGATRANSFER /SEC APPLICATIONS ARE PRESENTED**
- **BUS AND ERROR RATE DATA FROM SFF MEETING ARE PUBLISHED**
- **SOURCES OF DOCUMENTATION ARE INDENTIFIED**

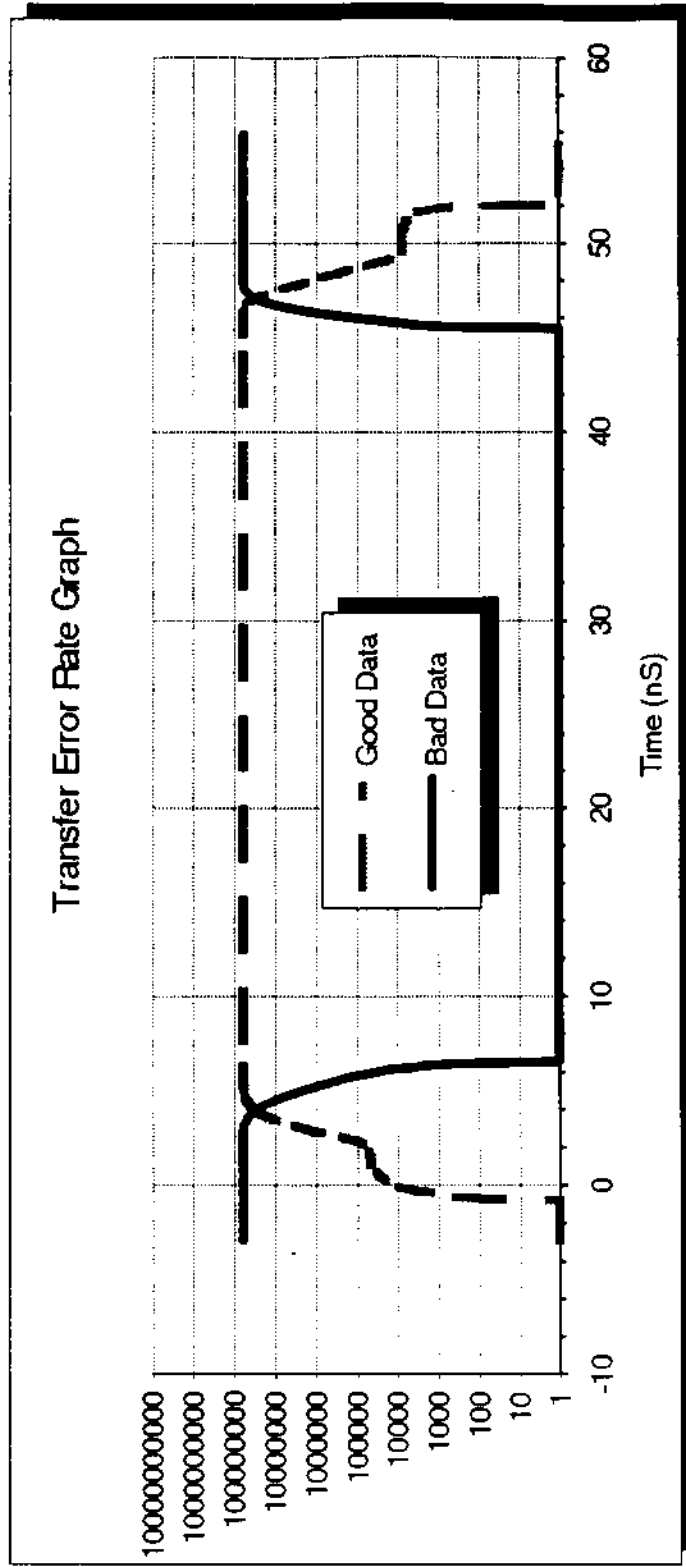
ULTRA SCSI MEETINGS AND DOCUMENTATION

- **NOV 1993 SCSI WORKING GROUP**
 - **ULTRA SCSI PROPOSAL INTRODUCED**
 - » **ULTRA-1: 20 MEGATRANSFERS/SEC**
 - » **ULTRA-2: 40 MEGATRANSFERS/SEC**
 - **FIRST TESTING RESULTS PRESENTED (DIFFERENTIAL 20 MEGATRANSFERS/SEC)**
 - **AVAILABLE IN SCSI DECEMBER MAILING**
- **JAN 1994 SCSI WORKING GROUP**
 - **DIFFERENTIAL STUB TESTING RESULTS**
 - **FIRST 30 METRANSFER/SEC RESULTS**
 - **AVAILABLE IN FEBRUARY SCSI MAILING**
- **JAN 1994 SCSI FORUM**
 - **SUMMARY OF PREVIOUS WORK**
 - **AVAILABLE FROM TECHNOLOGY FORUMS**

ULTRA SCSI MEETINGS AND DOCUMENTATION

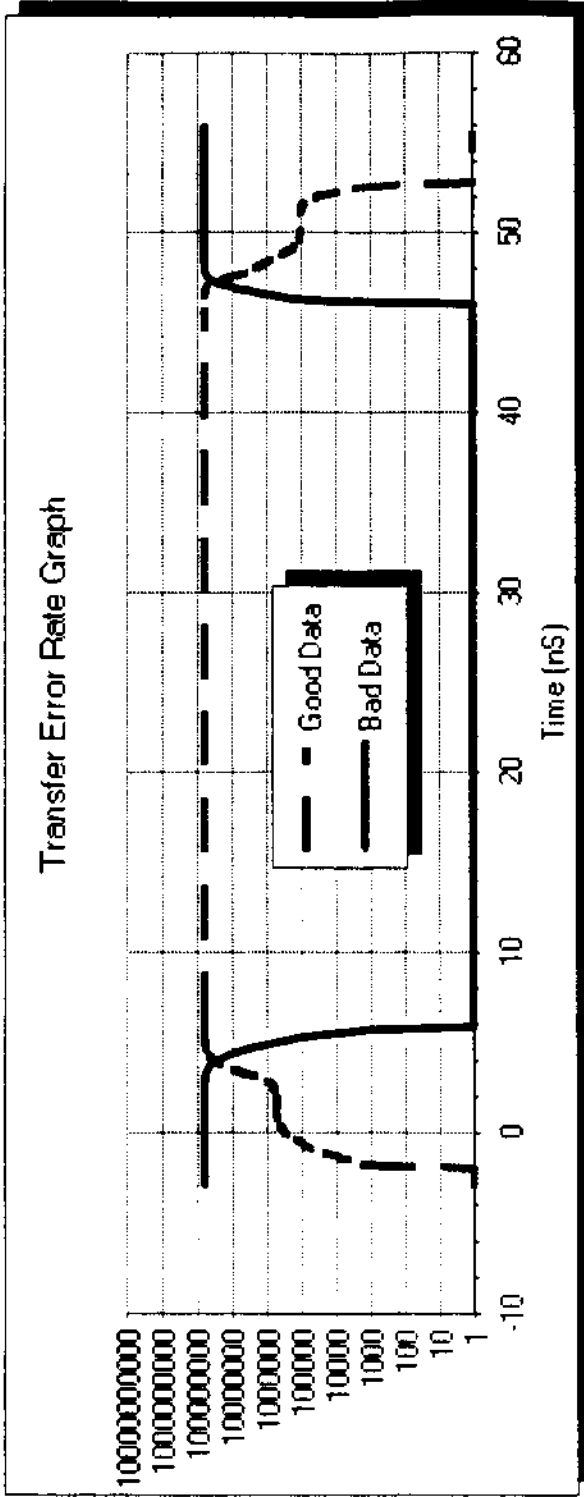
- **MARCH 1994 SFF SSWG (QUANTUM)**
 - **FIRST SINGLE ENDED RESULTS**
 - » **20 MEGATRANSFERS/SEC**
 - » **COMPLEX STUB CONFIGURATIONS**
 - **ALL MAJOR SILICON VENDORS PRESENT (BOTH SINGLE ENDED AND DIFFERENTIAL)**
 - **DETAILED TIMING SPECS PROPOSED BY SILICON VENDORS**
 - **WAVEFORM ANALYSIS SHOWING SKEW AND JITTER SOURCES**
 - **TIMING SPECS AND SILICON VENDOR COMMENTS AVAILABLE FROM SFF REFLECTOR (MEETING MINUTES)**
 - **BUS ERROR RATES AND WAVEFORMS AVAILABLE TODAY**
 - **NEXT MEETING ANNOUNCED FOR 3/31**
- **MARCH 1994 SCSI WORKING GROUP**
 - **FIRST 40 MEGATRANSFER/SEC DATA**
 - **SINGLE ENDED DATA PUBLISHED**
 - **PROPOSAL FOR SPI-2 STANDARD PROJECT INITIATED**
 - **WILL BE AVAILABLE IN APRIL MAILING**

SINGLE ENDED ULTRA SCSI

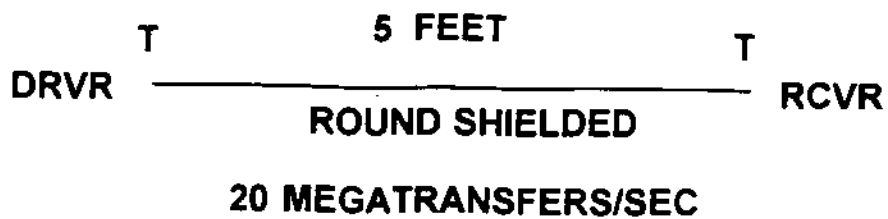


SINGLE ENDED ULTRA SCSI
20 MEGATRANSFERS/SEC -- ALL LINES TRANSFERRING DATA
TI SINGLE ENDED DRIVERS/RECEIVERS (3 SEPARATE CHIPS)
5 FOOT CABLE, ACTIVE TERMINATORS
NO STUBS
TERMINATORS AT DRIVER/RECEIVER

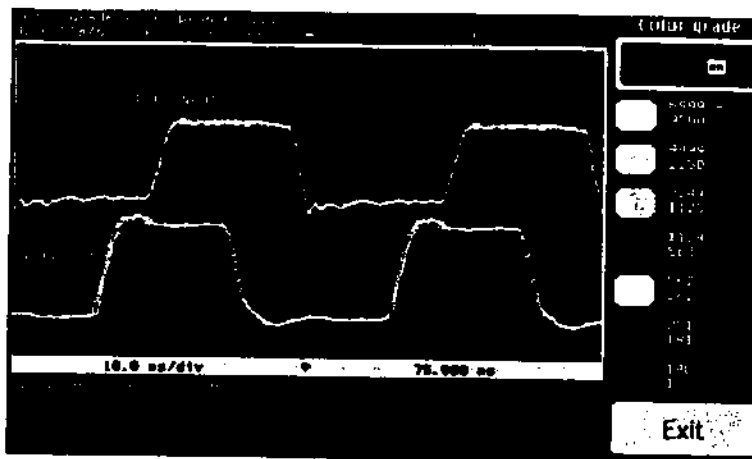
SINGLE ENDED ULTRA SCSI



SINGLE ENDED ULTRA SCSI
20 MEGATRANSFERS/SEC -- SCSI DATA LINES TRANSFERRING DATA
TI SINGLE ENDED DRIVERS/RECEIVERS (3 SEPARATE CHIPS)
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NO STUBS
TERMINATORS AT DRIVER/RECEIVER

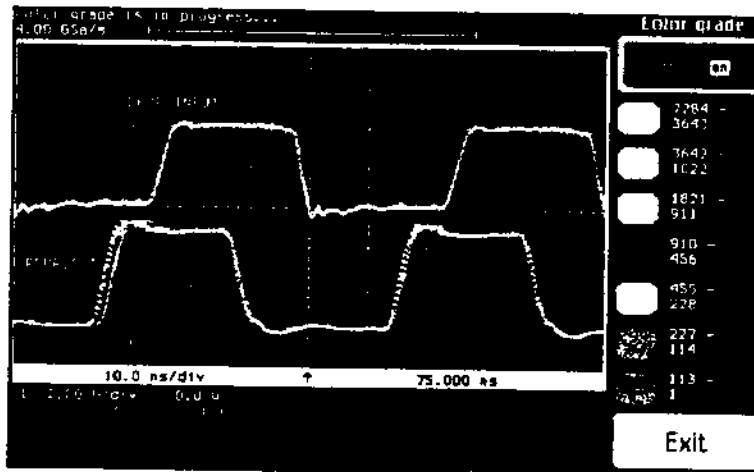


DRIVER INPUT
RECEIVER OUTPUT

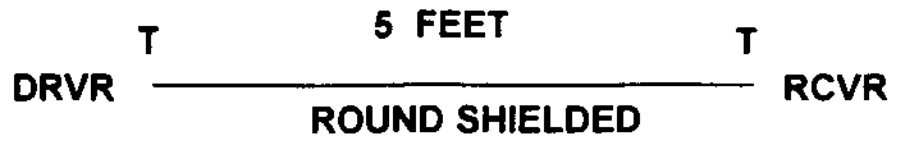


ALL 27 LINES ACTIVE

DRIVER INPUT
RECEIVER OUTPUT



ONLY SCSI DATA BITS ACTIVE



20 MEGATRANSFERS/SEC

DRIVER INPUT
RECEIVER OUTPUT



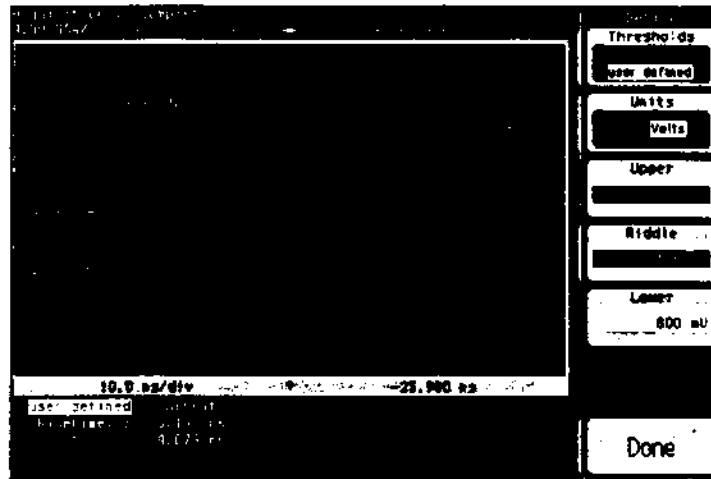
ONLY SCSI DATA BITS ACTIVE -- CLOCK AT NOMINAL MID POINT



20 MEGATRANSFERS/SEC

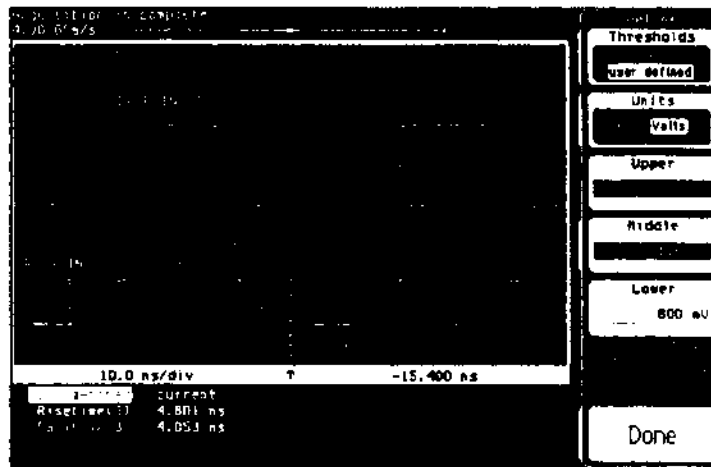
DRIVER INPUT

DRIVER OUTPUT

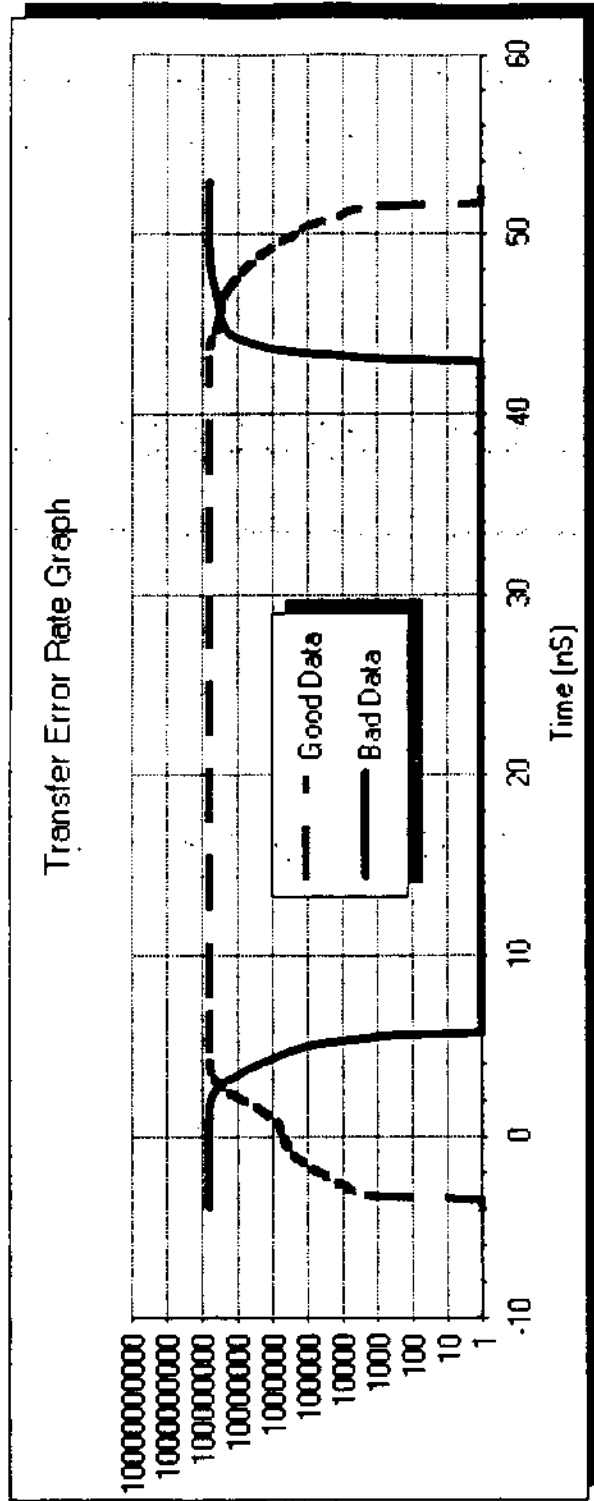


DRIVER INPUT

RECEIVER INPUT

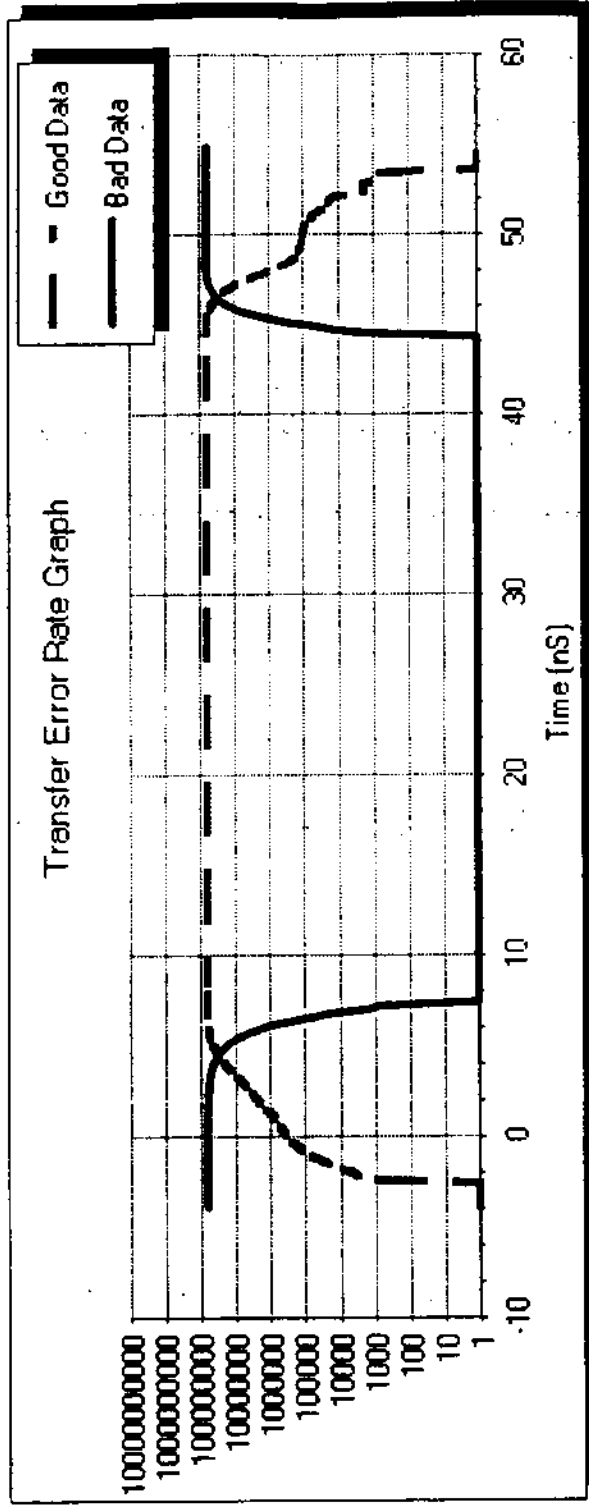


SINGLE ENDED ULTRA SCSI



SINGLE ENDED ULTRA SCSI
20 MEGATRANSFERS/SEC -- SCSI DATA LINES TRANSFERRING DATA
T1 SINGLE ENDED DRIVERS/RECEIVERS (3 SEPARATE CHIPS)
1.5M FLAT CABLE, ACTIVE TERMINATORS
13 8" STUBS ON 4" CENTERS
TERMINATORS AT DRIVER/RECEIVER

SINGLE ENDED ULTRA SCSI

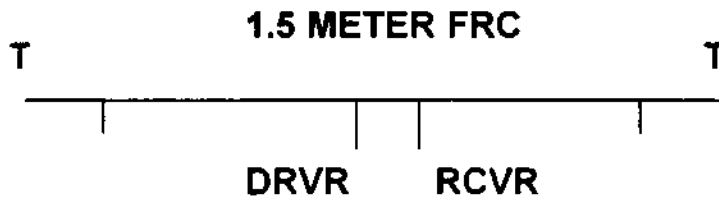
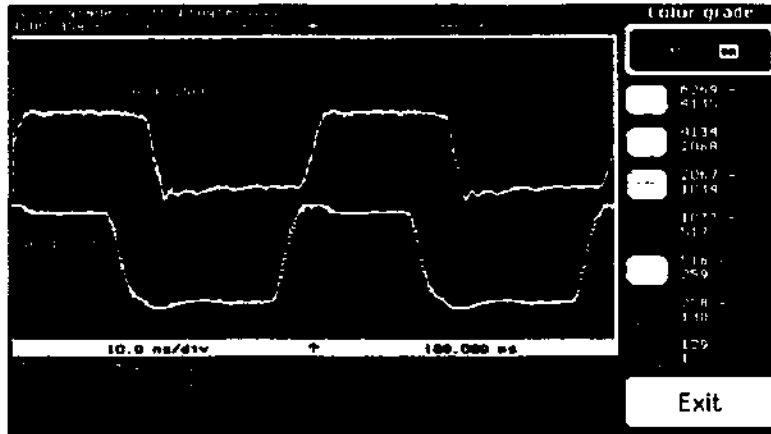


SINGLE ENDED ULTRA SCSI
20 MEGATRANSFERS/SEC -- SCSI DATA LINES TRANSFERRING DATA
T1 SINGLE ENDED DRIVERS/RECEIVERS (3 SEPARATE CHIPS)
1.5M FLAT CABLE, ACTIVE TERMINATORS
13 8" STUBS ON 4" CENTERS
DRIVING AND RECEIVING NEAR MID BUS



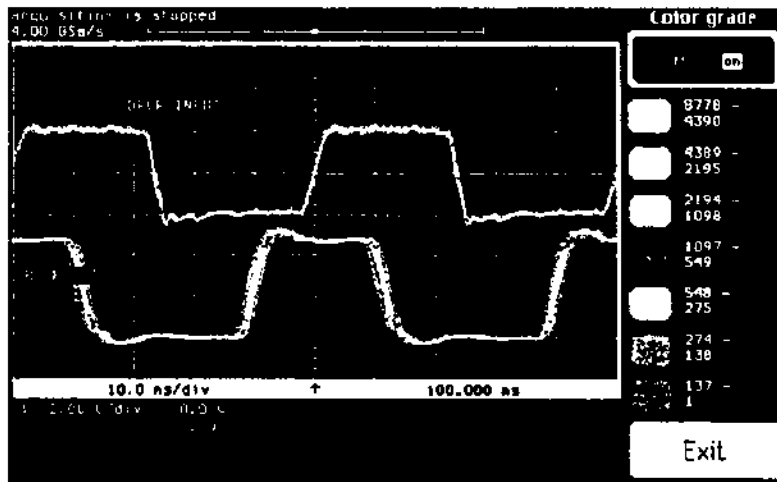
13 8" STUBS
20 MEGATRANSFERS/SEC

DRIVER INPUT
RECEIVER OUTPUT

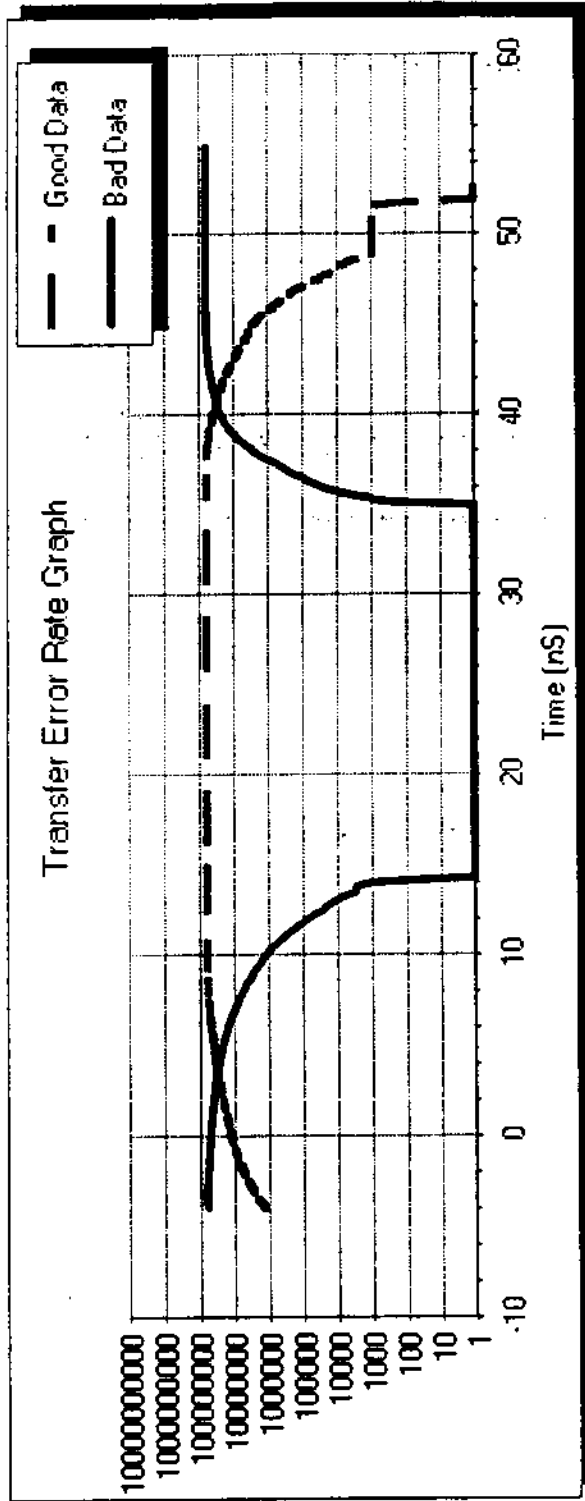


13 8" STUBS

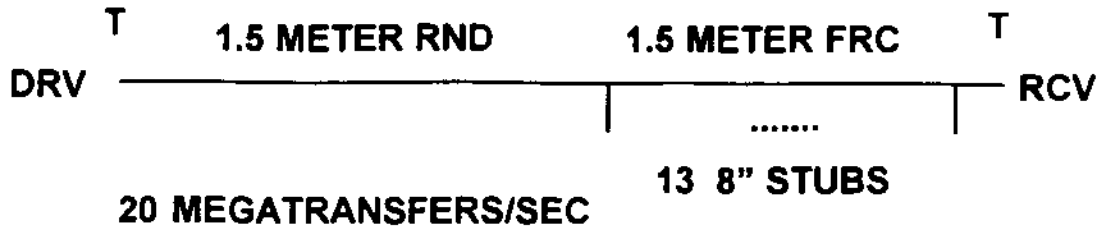
DRIVER INPUT
RECEIVER OUTPUT



SINGLE ENDED ULTRA SCSI

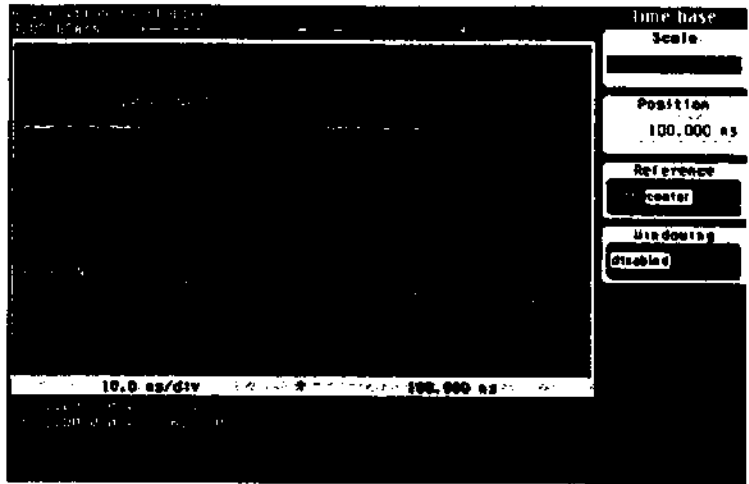


SINGLE ENDED ULTRA SCSI
20 MEGATRANSFERS/SEC -- SCSI DATA LINES TRANSFERRING DATA
TI SINGLE ENDED DRIVERS/RECEIVERS (3 SEPARATE CHIPS)
3M FLAT/ROUND CABLE 1.5M/SECTION, ACTIVE TERMINATORS
FLAT SECTION NEAR RECEIVER, 13 8" STUBS ON 4" CENTERS
TERMINATORS AT DRIVER/RECEIVER



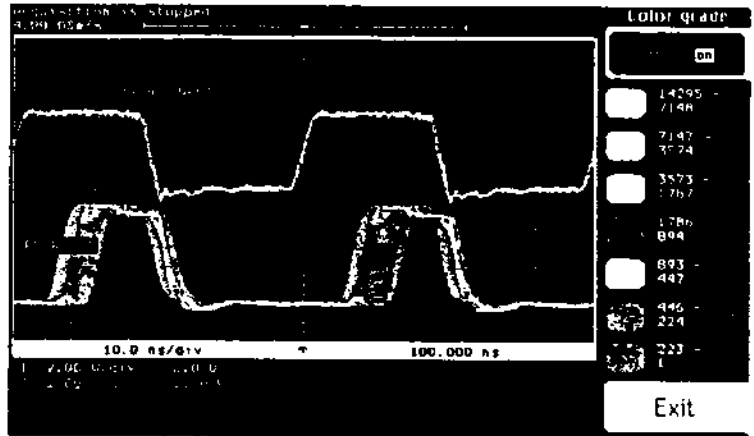
DRIVER INPUT

RECEIVER INPUT

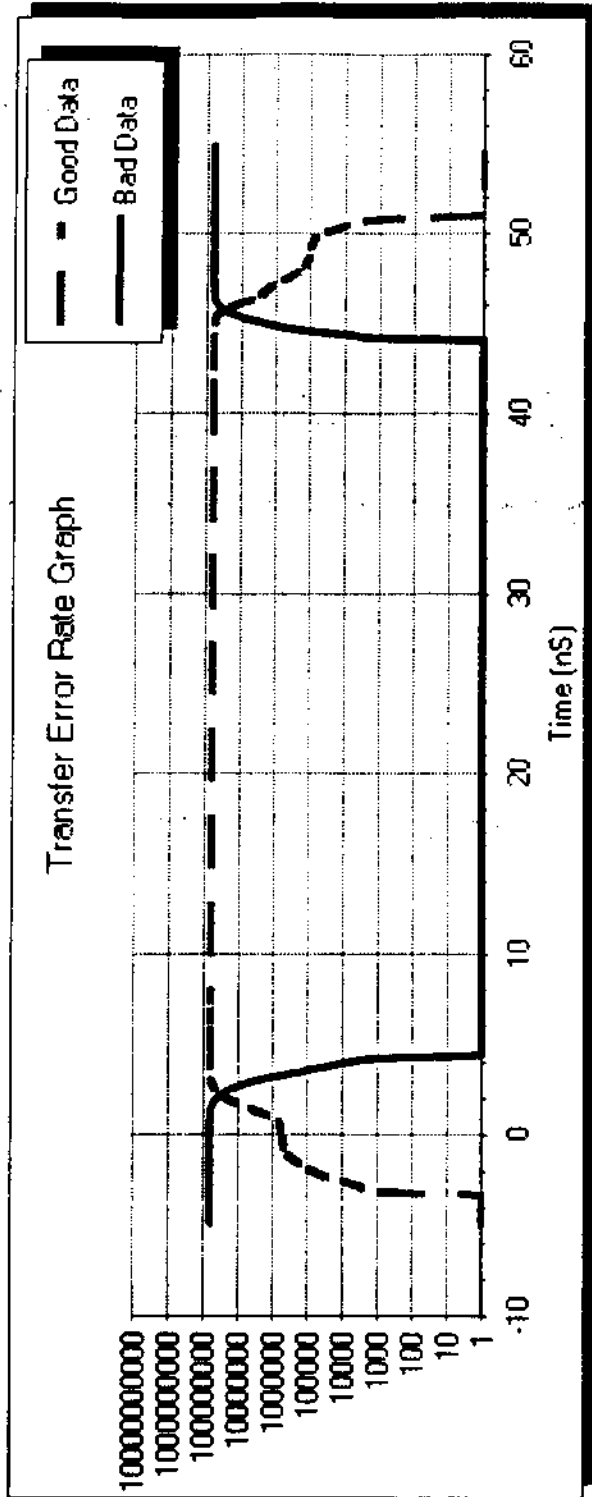


DRIVER INPUT

RECEIVER OUTPUT



SINGLE ENDED ULTRA SCSI



SINGLE ENDED ULTRA SCSI
20 MEGATRANSFERS/SEC -- SCSI DATA LINES TRANSFERRING DATA
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FLAT SECTION NEAR RECEIVER, NO STUBS
TERMINATORS AT DRIVER/RECEIVER

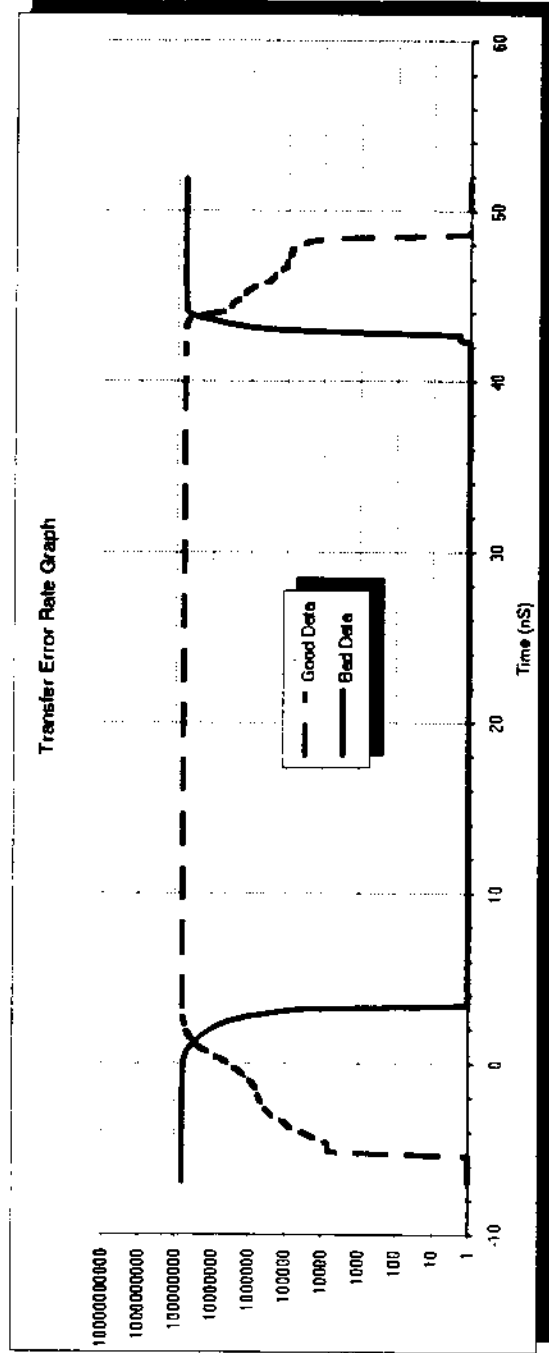
DRV ^T 1.5 METER RND 1.5 METER FRC ^T RCV

20 MEGATRANSFERS/SEC

DRIVER INPUT
RECEIVER OUTPUT

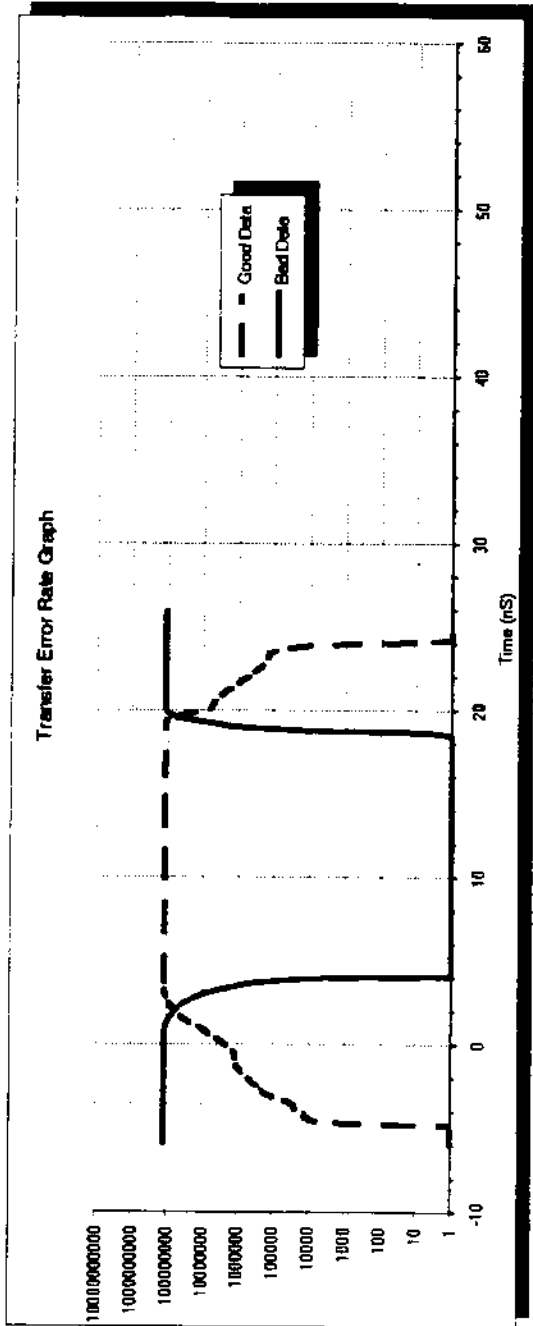


DIFFERENTIAL ULTRA-2 SCSI



PHYSICAL SETUP FOR 40 MEGATRANSFER/SEC TESTING
THIS DATA AT 20 MEGATRANSFERS/SEC
SCSI DATA LINES TRANSFERRING RANDOM DATA
27 SINGLE CHANNEL TRANSCEIVERS (27 CHIPS PER END)
20 METER ROUND 30 GA 34 TWISTED PAIR CABLE
NO STUBS, NO LOADS
TERMINATORS AT DRIVERS/RECEIVERS

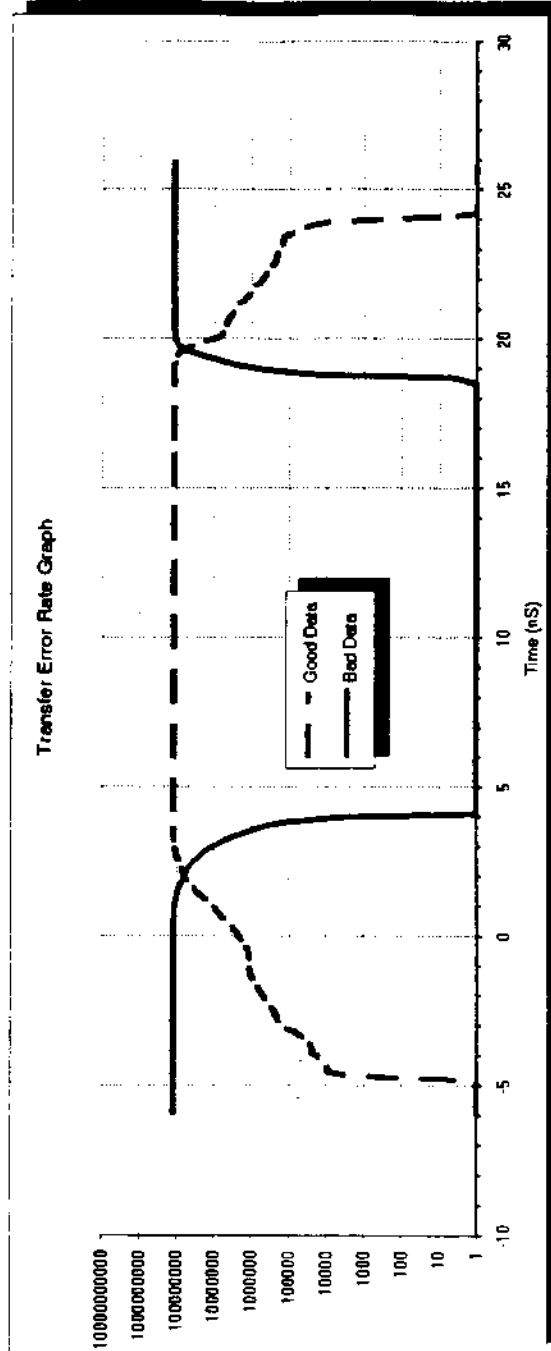
DIFFERENTIAL ULTRA-2 SCSI



PHYSICAL SETUP FOR 40 MEGATRANSFER/SEC TESTING
THIS DATA AT 40 MEGATRANSFERS/SEC
SCSI DATA LINES TRANSFERRING RANDOM DATA
27 SINGLE CHANNEL TRANSCEIVERS (27 CHIPS PER END)
20 METER ROUND 30 GA 34 TWISTED PAIR CABLE
NO STUBS, NO LOADS
TERMINATORS AT DRIVERS/RECEIVERS

BILL HAM DIGITAL EQUIPMENT MARCH 16, 1994 SCSI WORKING GROUP

DIFFERENTIAL ULTRA-2 SCSI (EXPANDED SCALE)



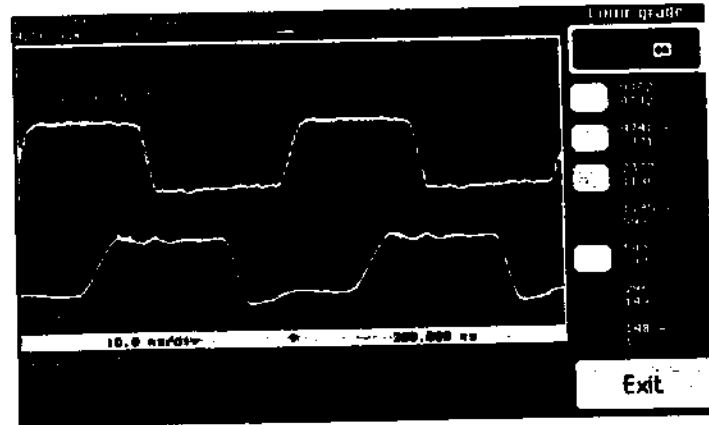
PHYSICAL SETUP FOR 40 MEGATRANSFER/SEC TESTING
THIS DATA AT 40 MEGATRANSFERS/SEC
SCSI DATA LINES TRANSFERRING RANDOM DATA
27 SINGLE CHANNEL TRANSCEIVERS (27 CHIPS PER END)
20 METER ROUND 30 GA 34 TWISTED PAIR CABLE
NO STUBS, NO LOADS
TERMINATORS AT DRIVERS/RECEIVERS

DIFFERENTIAL ULTRA-2 SCSI

20 METERS ROUND 30 TP CABLE,
TERMINATORS AT DRIVER/RECEIVER
NO STUBS, NO LOADS

DRIVER INPUT

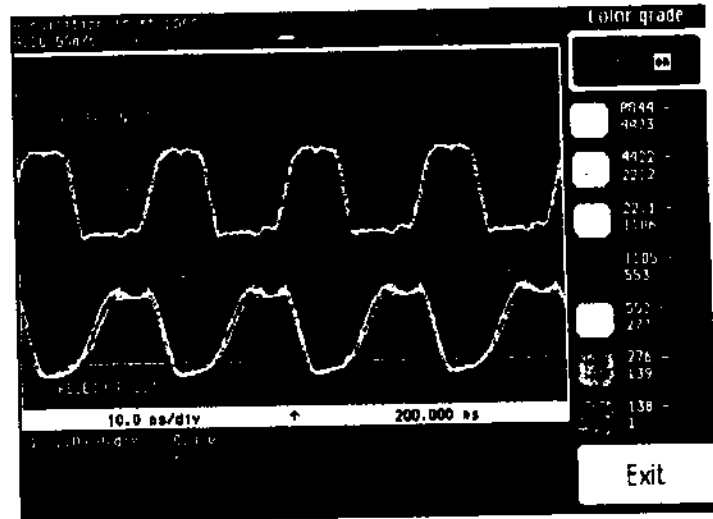
RECEIVER OUTPUT



20 MEGATRANSFERS SCSI DATA ONLY
CLOCK SWEPT

DRIVER INPUT

RECEIVER OUTPUT



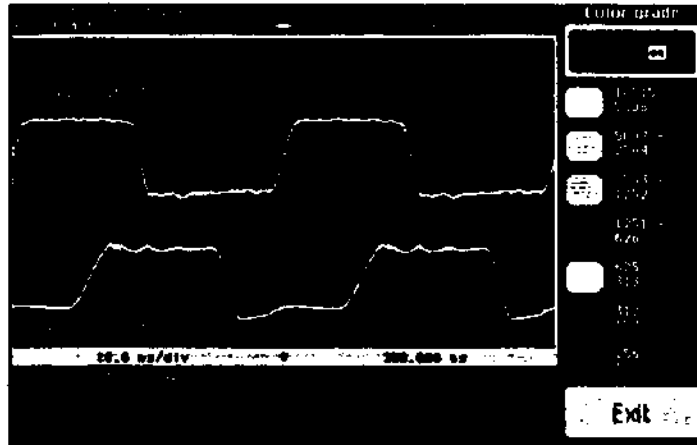
40 MEGATRANSFERS SCSI DATA ONLY
CLOCK SWEPT

DIFFERENTIAL ULTRA-2 SCSI

20 METERS ROUND 30 TP CABLE,
TERMINATORS AT DRIVER/RECEIVER
NO STUBS, NO LOADS

DRIVER INPUT

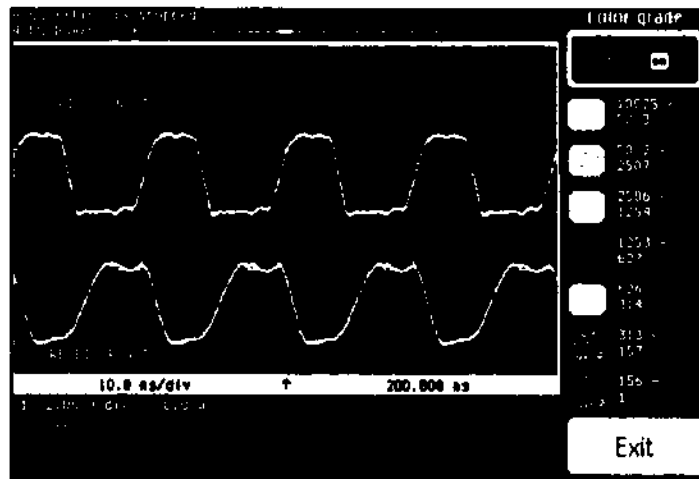
RECEIVER OUTPUT



20 MEGATRANSFERS SCSI DATA ONLY
CLOCK CENTERED

DRIVER INPUT

RECEIVER OUTPUT



40 MEGATRANSFERS SCSI DATA ONLY
CLOCK CENTERED