TABLE 1-1

ELECTRICAL

Characteristic	Performance Requirement		Supplemental Information		
VERTICAL DEFLECTION SYSTEM					
Deflection Factor					
Channel 1 or 2 calibrated range					
Without probe	1 mV to 10 V/div in 13 steps. Steps in a 1-2-5 sequence.				
With 10X probe	10 mV to 100 V/div in 13 steps. Steps in a 1-2-5 sequence.				
Accuracy	Within 3% of indicated deflection.				
Uncalibrated (VAR) range	Provides continuous variable deflection factors between the calibrated steps. Extends maximum uncalibrated deflection factor to at least 25 volts/division.		Each deflection factor increased by a factor of at least 2.5:1.		
Frequency Response Upper −3 dB Frequency AC or DC Coupled 6 Division Reference	−15°C to +30°C	−30°C to −55°C	Bandwidth measured with 6 division reference, vertically centered. VAR V/DIV in Calibrated position.		
With Standard X10 Probe or from 25 Ω Source	At least 25 MHz at 10 mV/DIV to 10 V/DIV, decreasing to 18 MHz to 1 mV/DIV.	At least 22 MHz at 10 mV/DIV to 10 V/DIV, decreasing to 16 MHz at 1 mV/DIV.			
Without Probe or from 25 Ω Source				−15°C to +30°C	+30°C to +55°C
			10 mV/DIV to 10 V/DIV	25 MHz	25 MHz
			5 mV/DIV	23 MHz	21 MHz
			2 mV/DIV	20 MHz	18 MHz
			1 mV/DIV	18 MHz	16 MHz
Lower −3 dB Frequency					
DC (Direct) Coupled	Within Gain Accuracy to DC.				
AC (Capacitive) Coupled					
X1 Probe or No Probe	10 Hz or less				
X10 Probe	1 Hz or less				

TABLE 1-1 (cont)

Characteristic	Performance Requirement		Supplemental Information	
Step Response				
Risetime				
With Standard X10 Probe or from 25 Ω Source	−15°C to +30°C	+30°C to +55°C	6 Division Positive-going step, centered vertically. VAR V/DIV in Calibrated position.	
	14 ns or less 10 mV/DIV to 10 V/DIV, increasing to 19.5 ns or less at 1 mV/DIV.	16 ns or less 10 mV/DIV to 10 V/DIV, increasing to 22 ns or less at 1 mV/DIV.		
Without Probe, from 25 Ω Source				−15°C to +30°C
			10 mV/DIV	14.0 ns or less
			5 mV/DIV	15.2 ns or less
			2 mV/DIV	17.5 ns or less
			1 mV/DIV	19.5 ns or less
Input RC Characteristics				
Resistance	1 megohm within 2%.			
Capacitance	Approximately 24 picofarads.			
Vertical Display Modes	Channel 1 only. Channel 2 only. Dual-Trace, alternate between channels. Dual-Trace, chop between channels. Added algebraically			
Input Coupling Modes	AC (capacitive) coupled, DC (direct) coupled, or AC Pre-Charge.			
Maximum Safe Input Voltage				
DC Coupled			250 V (DC plus peak AC) 500 V peak to peak AC (1 kHz or less)	
AC Coupled			500 V (DC plus peak AC) 500 V peak to peak AC (1 kHz or less)	
Chopped Mode Rate	Approximately 100 kilohertz.			
Signal Delay (Delay Line)	Allows viewing leading edge of a triggering waveform.			
Step Attenuator Balance			Adjustable for no trace shift when deflection factor is changed from 1 mV/DIV to 10 mV/DIV.	
Polarity Inversion	Display signal from Channel 2 can be inverted.			
	TRIGGERING			
Trigger Source	Internal from Channel 1 only or from displayed channel(s). Internal from AC power source. External from signal applied to EXT TRIG INPUT connector. External from signal applied to EXT TRIG INPUT connector attenuated 10 times.			

TABLE 1-1 (cont)

Characteristic	Performance Requirement	Supplemental Information
Trigger Coupling	AC AC low-frequency reject High-frequency reject DC The combination of high-frequency reject and AC low-frequency reject.	
Coupling and Sensitivity		
Coupling	To 5 MHz	At 25 MHz
DC Internal	0.3 Div deflection	1 Div deflection
DC External	50 mV	±75 mV
AC	Same as DC at 20 Hz and above, requirements increase below 20 Hz.	
AC LF REJ	Same as AC at 150 kHz and above, requirements increase below 150 kHz.	
AC HF REJ	Same as AC at 15 kHz and below, requirements increase above 15 kHz.	
External Input RC Characteristics		
Resistance		1 MΩ (within 2% at DC) NOTE: In LF REJ mode with 1:1 attenuation the 1 MΩ DC coupled is shunted by 100 kΩ AC coupled. Effective input resistance decreases with increasing frequency to approximately 100 kΩ at 20 kHz and above.
Capacitance		Approximately 100 picofarads 1:1. Approximately 70 picofarads 1:10.

HORIZONTAL DEFLECTION SYSTEM

Sweep Mode	Normal—Stable display presented only with signals meeting limits specified in Fig. 1-2. No display presented in the absence of an adequate trigger signal. Automatic—Stable display presented only with signals meeting limits specified in Fig. 1-2. Presents a free-running	

TABLE 1-1 (cont)

Characteristic	Performance Requirement		Supplemental Information
	trace in the absence of an adequate trigger signal. Single Sweep - Sweep Generator produces only one sweep when triggered. Further sweeps are locked out until RESET button is pressed.		
Calibrated Sweep Rates (unmagnified)	0.2 microsecond to 5 seconds/division in 23 steps in a 1-2-5 sequence.		
Magnifier	Direct-reading, six position, push to turn switch with up to 50 times maximum magnification. Extends the fastest sweep rate to 20 nanoseconds/division.		
Sweep Time Accuracy	Unmagnified	Magnified	Over full 10 displayed horizontal divisions.
+20°C to +30°C	Within 3%	Within 4%	Exclude the following portions of the sweep when checking magnified timing:
−15°C to +55°C	Within 4%	Within 5%	X2 magnification - first and last 0.5 div. X5 magnification — first and last one div. X10 magnification — first and last two div. X20 magnification - first and last five div. X50 magnification — first and last ten div.
Uncalibrated (variable) Sweep Rates	Provides continuously variable sweep rates between the calibrated steps. Extends the slowest uncalibrated sweep rate to at least 12.5 seconds/division.		At least 2.5:1.
EXT HORIZ Input			
Resistance			Approximately 50 kilohms.
Sensitivity	≈0.5 volt/division		
Bandwidth			DC to 500 kHz (10 div reference signal).

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TABLE 1-1 (cont)

Characteristic	Performance Requirement	Supplemental Information
CALIBRATOR		
Output Voltage (+20°C to +30°C)	0.6 volt with 1.0%, open circuit.	0.6 volt within 2.0% open circuit from −15°C to +55°C.
Repetition Rate (−20°C to +30°C)	One kilohertz within 1.0%.	1 kHz within 2.0% from −15°C to +55°C.
Output Resistance		Approximately 575 ohms.
Z AXIS INPUT		
Sensitivity	Five volt peak to peak signal causes noticeable modulation at normal intensity.	Positive-going signal decreases intensity.
Usable Frequency Range	DC to 20 megahertz.	
Input Resistance		Approximately 50 kilohms.
POWER SOURCE		
Line Voltage Range	115 volts nominal 90 to 136 volts; 230 volts nominal 180 to 272 volts	
Line Voltage Frequency Range	48 to 440 hertz	
Power Consumption	90 volt amperes or 60 watts maximum.	
DISPLAY		
Graticule		
Type	Internal	
Area	Eight divisions vertical by 10 divisions horizontal. Each division equals .98 centimeter.	
Beam Finder	Limits display within graticule area when pressed.	
Storage Writing Speed		
Standard CRT	100 Div/ms minimum (400 Div/ms enhanced)	Measured within the center 6 vertical and 8 horizontal divisions (Some writing speed degradation with usage is normal)
Option 1 CRT	500 Div/ms minimum (5 Div/µs enhanced)	

TABLE 1-2

ENVIRONMENTAL

Characteristic	Performance Requirement	Supplemental Information
Temperature		
Operating	−15°C to +55°C	
Non-Operating	−55°C to +75°C	
Altitude		
Operating	To 15,000 feet	Maximum allowable operating temperature decreased by 1°C per 1000 feet from 5000 feet to 15,000 feet.
Non-Operating	To 50,000 feet	
Humidity		
Operating and Non-Operating	Five cycles (120 hours) referenced to MIL-E 16400F.	
Vibration		
Operating and Non-Operating	15 minutes along each of the 3 major axes at a total displacement of 0.025 inch peak to peak (4 g's at 55 Hertz) with frequency varied from 10 to 55 to 10 Hertz in one minute sweeps. Hold for three minutes at 55 Hertz. All major resonances must be above 55 Hertz.	
Shock		
Operating and Non-Operating	30 g's, 1/2 sine, 11 milliseconds duration, two shocks per axis each direction for a total of 12 shocks.	
Transportation	Tested to National Safe Transit Committee procedure 1A with a 30 inch drop.	
Electromagnetic Interference Optional EMI mesh filter installed	As tested in MIL-I-6181D	
Radiated	150 kilohertz to one gigahertz with mesh filter installed.	Mesh filter reduces light output approximately 56%.
Conducted	150 kilohertz to 25 megahertz.	

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TABLE 1-3

PHYSICAL

Characteristic	Performance Requirement
Construction	
Chassis	Aluminum alloy.
Panel	Aluminum alloy with anodized finish.
Cabinet	Blue vinyl-coated aluminum.
Circuit Boards	Glass-epoxy laminate or polyphenylene oxide.

TABLE 1-3 (cont)

Characteristic	Performance Requirement
Overall Dimensions	
Height	5.6 inches.
Width	13 inches including handle.
Depth	18.6 inches.
Weight (Including Panel, Cover and Accessories)	20 pounds, 6 ounces.
Domestic Shipping Weight	30 pounds, 2 ounces.
Export-Packed Shipping Weight	35 pounds, 2 ounces.