Appendix A: Specifications

The tables in this chapter list the characteristics and features that apply to this instrument after it has had a warm-up period of at least five minutes.

The Performance Requirement column describes the limits of the Characteristic. Supplemental Information describes features and typical values or other helpful information.

Electrical Characteristics

Characteristic	Performance Requirement	Supplemental Information
Test Pulse		
Width	Selected: 2 ns, 10 ns, 100 ns, 1000 ns	Measured at half sine amplitude point with matching termination.
Accuracy	2 ns ± 1 ns; 10 ns, 100 ns, 1000 ns ± 10%	
Pulse Amplitude		
Terminated	−2.5 VDC ± 10% for 10 ns, 100 ns, 1000 ns; 2 ns ± 20%	
Unterminated	−5.0 VDC ± 10% for 10 ns, 100 ns, 1000 ns	Internal cable length prevents 2 ns pulse from reaching full unterminated voltage
Pulse Shape	1/2 sine	
Pulse Output Impedance	Selected: 50 Ω, 75 Ω, 93 Ω, 125 Ω	
Accuracy	1%	
Pulse Repetition Time	350 µs nominal	
Vertical		
Scale	0 dB to 63.75 dB gain	256 values at 0.25 dB increments
Accuracy	± 3%	
Set Adjustment	Set incident pulse within ± 3%	Combined with vertical scale control.
Vertical Position	Any waveform point moveable to center screen.	
Displayed Noise		With matching terminator at panel. Beyond three test pulse widths after test pulse.
Random	≤ ± 1.0 division peak with 57 dB gain, filter set to 1 ≤ ± 1.0 division peak with 63 dB gain, filter set to 8	
Aberrations	≤ 30 dB p-p for 10 ns, 100 ns, 1000 ns test pulse ≤ −25 dB p-p for 2 ns test pulse	Within three test pulse widths after test pulse. dB is relative to test pulse.

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Characteristic	Performance Requirement	Supplemental Information
Cable Connection Coupling	Capacitively coupled	
Max Input Susceptibility	± 400 V (DC + peak, AC at maximum frequency of 440 Hz). No damage with application for up to 30 seconds (might affect measurement capability).	
Distance Cursor Resolution	1/25 of 1 major division	
Cursor Readout Range	–2 ft to ≥ 50,000 ft (–0.61 m to 15,230 m)	5 digit readout
Resolution	0.04 ft	
Accuracy	Within 2% ± 0.02 ft at 1 ft/div	Vp must be set within ± 0.5% of cable
Horizontal Scale	1 ft/div to 5000 ft/div (0.25 m/div to 1000 m/div) 12 values: 1, 2, 5 sequence	
Range	0 to 50,000 ft (0 to 10,000 m)	
Horizontal Position	Any distance to full scale can be moved on screen	
Vp Range	0.30 to 0.99	Propagation velocity relative to air
Resolution	0.01	
Accuracy	within ± 1%	
Custom Option Port		Tek chart recorder is designed to operate with the 1503C. Produces a high resolution thermal dot matrix recording and waveform and control values.
Line Voltage	115 VAC (90 to 132 VAC) 45 to 440 Hz 230 VAC (180 to 250 VAC) 45 to 440 Hz	Fused at 0.3 A Fused at 0.15 A
Battery Pack Operation	8 hours minimum, 30 chart recordings maximum	+15° C to +25° C charge and discharge temperature, LCD backlight off. Operation of instrument with backlight on or at temperatures below +10° C will degrade battery operation specification
Full Charge Time	20 hours maximum	
Overcharge Protection	Charging discontinues once full charge is attained	
Discharge Protection	Operation terminates prior to battery damage	
Charge Capacity	3.4 Amp-hours typical	
Charge Indicator	Bat/low will be indicated on LCD when capacity reaches approximately 10%	

Environmental Characteristics

Characteristic	Performance Requirement	Supplemental Information
Temperature		
Operating	–10° C to +55° C	Battery capacity reduced at other than +15°C to +25°C
Non-operating	–62° C to +85° C	With battery removed. Storage temp with battery in is –20° C to +55° C. Contents on non-volatile memory (stored waveform) might be lost at temps below –40° C.
Humidity	to 100%	
Altitude		MIL–T–28800C, Class 3
Operating	to 10,000 ft	
Non-operating	to 40,000 ft	
Vibration	5 to 15 Hz, 0.06 inch p–p 15 to 25 Hz, 0.04 inch p–p 25 to 55 Hz, 0.013 inch p–p	MIL–T–28800C, Class 3
Shock, Mechanical		
Pulse	30 g, 11 ms 1/2 sine wave, total of 18 shocks	MIL–T–28800C, Class 3
Bench Handling		MIL–STD–810, Method 516, Procedure V
Operating	4 drops each face at 4 inches or 45 degrees with opposite edge as pivot	Cabinet on, front cover off
Non-operating	4 drops each face at 4 inches or 45 degrees with opposite edge as pivot. Satisfactory operation after drops.	Cabinet off, front cover off
Loose Cargo Bounce	1 inch double amplitude orbital path at 5 Hz, 6 faces	MIL–STD–810, Method 514, Procedure XI, Part 2
Water Resistance		MIL–T–28800C, Style A
Operating	Splash-proof and drip-proof	Front cover off
Non-operating	Watertight with 3 feet of water above top of case	Front cover on
Salt Atmosphere	Withstand 48 hours, 20% solution without corrosion	
Sand and Dust	Operates after test with cover on, non-operating	MIL–STD–810, Method 510, Procedure I
Washability	Capable of being washed	
Fungus Inert	Materials are fungus inert	

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Certifications and Compliances

Category	Standard or description
EC Declaration of Conformity – EMC	Meets intent of Directive 89/336/EEC for Electromagnetic Compatibility. Compliance was demonstrated to the following specifications as listed in the Official Journal of the European Union: EN 50081-1 Emissions: EN 55022 Class B Radiated and Conducted Emissions EN 60555-2 AC Power Line Harmonic Emissions EN 50082-1 Immunity: IEC 801-2 Electrostatic Discharge Immunity IEC 801-3 RF Electromagnetic Field Immunity IEC 801-4 Electrical Fast Transient/Burst Immunity IEC 801-5 Power Line Surge Immunity
Australia/New Zealand Declaration of Conformity – EMC	Complies with EMC provision of Radiocommunications Act per the following standard(s): AS/NZS 2064.1/2 Industrial, Scientific, and Medical Equipment: 1992
EMC Compliance	Meets the intent of Directive 89/336/EEC for Electromagnetic Compatibility when it is used with the product(s) stated in the specifications table. Refer to the EMC specification published for the stated products. May not meet the intent of the directive if used with other products.
FCC Compliance	Emissions comply with FCC Code of Federal Regulations 47, Part 15, Subpart B, Class A Limits.
Safety Standards	
U.S. Nationally Recognized Testing Laboratory Listing	UL1244 Standard for electrical and electronic measuring and test equipment.
Canadian Certification	CAN/CSA C22.2 No. 231 test equipment. CSA safety requirements for electrical and electronic measuring and
European Union Compliance	Low Voltage Directive 73/23/EEC, amended by 93/68/EEC EN 61010-1/A2 Safety requirements for electrical equipment for measurement, control, and laboratory use.
Additional Compliance	IEC61010-1/A2 Safety requirements for electrical equipment for measurement, control, and laboratory use.
Safety Certification Compliance	
Equipment Type	Test and measuring
Safety Class	Class 1 (as defined in IEC 61010-1, Annex H) – grounded product
Overvoltage Category	Overvoltage Category II (as defined in IEC 61010-1, Annex J)
Pollution Degree	Pollution Degree 3 (as defined in IEC 61010-1).
Installation (Overvoltage) Category	Terminals on this product may have different installation (overvoltage) category designations. The installation categories are: CAT III Distribution-level mains (usually permanently connected). Equipment at this level is typically in a fixed industrial location. CAT II Local-level mains (wall sockets). Equipment at this level includes appliances, portable tools, and similar products. Equipment is usually cord-connected. CAT I Secondary (signal level) or battery operated circuits of electronic equipment.

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Category	Standard or description	
Pollution Degree	A measure of the contaminates that could occur in the environment around and within a product. Typically the internal environment inside a product is considered to be the same as the external. Products should be used only in the environment for which they are rated.	
	Pollution Degree 1	No pollution or only dry, nonconductive pollution occurs. Products in this category are generally encapsulated, hermetically sealed, or located in clean rooms.
	Pollution Degree 2	Normally only dry, nonconductive pollution occurs. Occasionally a temporary conductivity that is caused by condensation must be expected. This location is a typical office/home environment. Temporary condensation occurs only when the product is out of service.
	Pollution Degree 3	Conductive pollution, or dry, nonconductive pollution that becomes conductive due to condensation. These are sheltered locations where neither temperature nor humidity is controlled. The area is protected from direct sunshine, rain, or direct wind.
	Pollution Degree 4	Pollution that generates persistent conductivity through conductive dust, rain, or snow. Typical outdoor locations.

Physical Characteristics

Characteristic	Description
Weight	
without cover	14.5 lbs (6.57 kg)
with cover	16 lbs (7.25 kg)
with cover, chart recorder, and battery pack	20 lbs (9.07 kg)
Shipping Weight	
domestic	25.5 lbs (11.57 kg)
export	25.5 lbs (11.57 kg)
Height	5.0 inches (127 mm)
Width	
with handle	12.4 inches (315 mm)
without handle	11.8 inches (300 mm)
Depth	
with cover on	16.5 inches (436 mm)
with handle extended to front	18.7 inches (490 mm)