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USER INFORMATION

The Tektronix 521A PAL Vectorscope measures luminance, hue, and colour bar amplitude of the PAL[1] colour television signal. All silicon solid-state circuitry provides low power consumption and cool, quiet operation. The 521A allows continuous monitoring of the signal. Self-canceling pushbutton switches permit rapid selection of television signal characteristics, and internal calibration signals.

The 521A decodes colour signals to recover chrominance and luminance information. The demodulated colour information is used in the VECTOR PAL, VECTOR NTSC, R, G, B, U, V, Differential Gain, and Differential Phase displays. The luminance component of the colour signal is viewed in the Y mode, or reapplied to the demodulated chrominance signal to provide R, G, and B displays. +V and −V lines of a signal can be displayed individually or together.

[1]**Phase Alternate Line.**

Vector display is a polar plot, with the length of the vectors a function of the peak to peak amplitude of the chrominance signal. Angular displacement is relative to the phase of the reference vectors, referred to as burst.

The 521A is equipped with two signal inputs that can be operated independently or time shared. The chrominance and luminance gain accuracy of each channel can be checked using the internal test signal.

A digital line selector permits the display of a single line Insertion Test Signal from a selected line of either fields 1 and 3 or fields 2 and 4.

CHARACTERISTICS

Electrical specifications for this instrument are valid over the stated environmental limits contained in this section. Calibration at 20°C to 30°C ambient with a 20 minute warm-up period is required to maintain stated accuracies.

TABLE 1-1

Colour Processing

Characteristic	Performance Requirement
CHROMINANCE	
Subcarrier Frequency (F_{sc})	4.43361875 MHz.
F_{sc} Bandwidth	F_{sc} +800 kHz ±250 kHz to F_{sc} −800 kHz ±250 kHz.
Vector Phase Accuracy	1° or less marker to graticule.
Incremental Accuracy	0.5° or less marker to graticule.
Quadrature Phase Adjustment Range	+2° to −2°.
Test Circle Amplitude	0.748 V ±1%.
Colour Decoding Accuracy R, G, and B	±3% of colour component amplitude.
Differential Gain[2] Deflection Factor	Referred to CCIR Test Signal #3 or Linearity Saircase Test Signal, 1% Diff Gain = 2 minor div. of deflection.
Accuracy (50% APL)	±1% last 90% of trace.
Dynamic Gain (10% to 90% APL)	±1% last 90% of trace.
Differential Phase[3] Resolution	0.1° can be resolved with CCIR Test Signal #3 or Linearity Staircase Test Signal.

[2]**The change in gain of the colour subcarrier as the luminance level is varied.**

[3]**The change in phase of the colour subcarrier as the luminance is varied.**

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TABLE 1-3

Horizontal and Vertical Display

Characteristic	Performance Requirement
Clamp Stability	
Temperature	±2%.
Line Voltage	±2%.
Vector Stability, with Rotation of A and B Phase Controls.	±1° on X and Y axis. ±2 mV of F_{sc} on sync tips).
Luminance, Display Shift	±2%.
Display Shift Between U, V, and Diff Phase	±2%.
Sweep Length	5 cm to 6.5 cm.

TABLE 1-4

Power Sources

Characteristic	Performance Requirement
Line Voltage Ranges	90 to 136 Vac. 180 to 272 Vac.
Maximum Power Consumption (115 Vac, 50 Hz)	100 W.
Maximum Current (115 Vac, 50 Hz)	1.1 A.
Line Frequency	47 Hz to 63 Hz.

CRT

The 521A PAL Vectorscope uses a T5211 crt having a minimum horizontal resolution of 12 lines/cm, and minimum vertical resolution of 10 lines/cm. Maximum geometry (bowing) error is 0.5 mm; orthogonality variation is 1° or less. The useable scan radius is 5.5 cm. The trace rotation is at least +3° to −3°, and is controlled by the front panel BEAM ROTATION control.

ENVIRONMENTAL CONSIDERATIONS

Storage or transportation (non-operating) temperature of −40°C to +65°C and altitude variations up to 50,000 feet are acceptable.

Following a 20 minute warmup period, the performance requirements of this instrument are met in a temperature range of 0°C to +50°C at altitudes up to 15,000 feet.

In the original packaging, or when repackaged according to instructions, this instrument is qualified under National Safe Transit Committee prodedure 1A, Category 1. See repackaging instructions located at the rear of the Disassembly Instructions section of this manual.

PHYSICAL SIZE

The 521A PAL Vectorscope is normally shipped in a rackmounting configuration. The following dimensions are for the rackmount. Bench mount dimensions can be found in the rackmounting pull-out. Height 7 inches (17.8 cm), width 19 inches (48.3 cm), depth 19.75 inches (50.2 cm).

Net weight is 33 pounds (15 kg); shipping weights are approximately 61 pounds (27.7 kg) domestic and 82 pounds (37.3 kg) export.

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