# **CERTIFICATE OF CALIBRATION**

**Issued By:** Calibration Testing Solutions **Date of Issue:** 15 January 2025 Certificate Number: 328817.3.1.1



CTS CALIBRATION TESTING SOLUTIONS A PHENNA GROUP COMPANY Calibration Testing Solutions Markham Lane Duckmanton Chesterfield S44 5HS Page 1 of 2

Approved Signatory

L. Todd

Customer:	PPT Group UK Ltd T/A Mecmesin Slinford
	RH13 0SZ

Date Received: 14 January 2025

Instrument	CTSi Ref:	328817.3.1.1			
	Description:	Digital Multimeter (5.5 digit)	Customer Ref: TM0003		
	Manufacturer:	Hewlett Packard			
	Model Number:	3478A			
	Serial Number:	2619A45735			
	Procedure Number / Version: 2044 / 3.00 LT/N				
E					

## **Environmental Conditions**

Temperature:	20 °C ± 2 °C	Mains Voltage:	240 V ± 10 V
		Mains Frequency:	50 Hz ± 1 Hz

#### Comments

The instrument is calibrated in accordance to manufacturer's operators manual. Instrument calibrated using a Multi-Product Calibrator into the Front Input tmls The Resistance was calibrated using Decade and Non-Decade Resistance Boxes.

The stated uncertainties include the contributions of the unit under test.

#### **Calibration Information**

The instrument was calibrated against laboratory standards whose values are traceable to recognised National Standards. The uncertainty limits quoted refer to the measured values only, with no account being taken of the instruments ability to maintain its calibration.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximatley 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

The results found only apply to the item calibrated.

Calibrated By: L. Todd

Date of Calibration: 15 January 2025

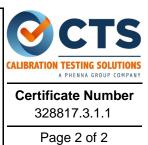
This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory. Calibration Testing Solutions is a trading division of Construction Testing Solutions Ltd.

# **CERTIFICATE OF CALIBRATION**

Issued By: Calibration Testing Solutions

#### Accredited Calibration Laboratory No. 0783

### AS FOUND RESULTS



	Applied Value	Reading	Tolerance	Uncertainties	
DC Voltage					
30mV DC Range	29.000mV	29.0007mV	14.1uV	6.08uV	
300mV DC Range	290.000mV	290.018mV	25.3uV	24.8uV	
30V DC Range	29.000V	28.9999V	2.4mV	1.79mV	
300V DC Range	290.000V	289.999V	22.3mV	19.9mV	
Linearity					
3V DC Linearity	-2.90000V	-2.89991V	194uV	179uV	
3V DC Linearity	-2.50000V	-2.49992V	170uV	156uV	
3V DC Linearity	-2.00000V	-1.99993V	140uV	127uV	
3V DC Linearity	-1.50000V	-1.49994V	110uV	98.0uV	
3V DC Linearity	-1.00000V	-0.99996V	80uV	69.0uV	
3V DC Linearity	-0.50000V	-0.49998V	50uV	40.0uV	
3V DC Linearity	0.50000V	0.49998V	50uV	40.0uV	
3V DC Linearity	1.00000V	0.99996V	80uV	69.0uV	
3V DC Linearity	1.50000V	1.49994V	110uV	98.0uV	
3V DC Linearity	2.00000V	1.99993V	140uV	127uV	
3V DC Linearity	2.50000V	2.49991V	170uV	156uV	
3V DC Linearity	2.90000V	2.89991V	194uV	179uV	
SV DC Linearity	2.90000	2.099910	1940 V	17900	
AC Voltage					
300mV AC @ 60Hz	290.000mV	289.721mV	1.5mV	291uV	
3V AC @ 60Hz	2.90000V	2.89785V	14.4mV	1.05mV	
30V AC @ 60Hz	29.0000V	28.9726V	143.7mV	13.4mV	
30V AC @ 1kHz	29.000V	28.9892V	65mV	13.4mV	
30V AC @ 10kHz	29.000V	28.9799V	65mV	13.4mV	
30V AC @ 25kHz	29.000V	28.9790V	89.4mV	63.9mV	
30V AC @ 45kHz	29.000V	28.9745V	89.4mV	63.9mV	
300V AC @ 60Hz	290.000V	289.867V	1.6V	291mV	
DC Current					
300mA DC Range	290.000mA	290.041mA	475uA	40.3uA	
3A DC Range	0.90000A	0.90022A	1.5mA	380uA	
3A DC Range	2.90000A	2.90563A	29.3mA	1.08mA	
AC Current					
300mAAC @ 60Hz	290.000mA	290.021mA	2.5mA	668uA	
3AAC @ 60Hz	0.9000A	0.89966A	15.1mA	2.08mA	
3A AC @ 60Hz	2.90000A	2.90823A	45.1mA	6.68mA	
Resistance: 4-wire					
30R Range	10.0000Ω	10.0057Ω	7.5mR	5.85mR	
300R Range	100.000Ω	100.005Ω	22mR	12.5mR	
3kR Range	1.00000kΩ	0.99988kΩ	180mR	125mR	
30kR Range	10.0000kΩ	9.9988kΩ	1.8R	1.25R	
300kR Range	100.000kΩ	99.998kΩ	18R	12.5R	
Resistance: 2-wire					
3MR Range	1.00000ΜΩ	0.99994MΩ	196R	155R	
30MR Range	10.0000MΩ	9.9993MΩ	8.8kR	280R	

END OF TEST DATA