

Laboratory Standards & Calibration Lab, 13 Base Repair Depot (Air Force), Palam,
New Delhi

Accreditation Standard ISO/IEC 17025:2005

Discipline Electro-Technical Calibration Issue Date 03.07.2014

Certificate Number C-0058 Valid Until 02.07.2016

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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks
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MEASURE^s

1. DC Voltage	1 mV to 10 mV	0.042% to 0.005%	Using DMM Fluke 8508A by Direct Method	
	10 mV to 100 mV	0.005% to 0.001%		
	100 mV to 100 V	0.001%		
	100 V to 1000 V	0.001%		
2. DC Current	1 μ A to 1 mA	0.07% to 0.0053%	Using DMM Fluke 8508A by Direct Method	
	1 mA to 100 mA	0.0053% to 0.007%		
	100 mA to 1 A	0.007% to 0.023%		
	1 A to 19 A	0.023% to 0.057%		
3. AC Voltage	50 Hz to 10 kHz		Using DMM Fluke 8508A by Direct Method	
	1 mV to 100 mV	1.0% to 0.02%		
	100 mV to 1V	0.02%		
	1 V to 100 V	0.02%		
	100 V to 1000 V	0.02% to 0.047%		
	10 kHz to 100 kHz		2.5% to 0.11%	
	1 mV to 100 mV	0.11% to 0.09%		
	100 mV to 1V	0.11% to 0.09%		
	10 kHz		0.047%	
	100 V to 690 V			
	4. AC Current	50 Hz to 10 kHz		Using DMM Fluke 8508A by Direct Method
		1 mA to 1 A	0.06% to 0.10%	
1 A to 10.9 A		0.10% to 0.31%		

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AC Current	50 Hz to 1 kHz 10.9 A to 19 A	0.12% to 0.15%	Using DMM Fluke 8508A by Direct Method
	50 Hz to 5 kHz 10.9 A to 19 A	0.31%	
5. DC Resistance	1 Ω to 10 Ω 10 Ω to 1 k Ω 1 k Ω to 10 M Ω 10 M Ω to 100 M Ω	0.004% to 0.0025% 0.0025% 0.0025% to 0.011% 0.011% to 0.058%	Using DMM Fluke 8508A by Direct Method
6. Inductance	1 kHz 100 μ H to 10 H	0.30% to 0.16%	Using ESI – 2100 LCR Video Bridge by Direct Method
7. Capacitance	1 kHz 100 pF to 1 μ F	0.012% to 0.089%	Using Capacitance Measuring Assembly (Analog) by Direct Method
8. RF Attenuator	50 MHz to 18 GHz Impedance: 50Ω 1 dB to 50 dB	0.20 dB to 0.40 dB	Using attenuator and HP 8510C Vector Network Analyser by Direct Method

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9. VSWR	50MHz to 18 GHz Impedance: 50 Ω 1.04 to 4.5	0.025% to 0.030%	Using Coaxial mismatches and HP 8510C Vector Network Analyser by Direct Method
10. Frequency	10 Hz to 500 MHz 500 MHz to 18 GHz	175 ppm to 0.006 ppm 0.006 ppm to 0.0002 ppm	Using HP 5350 B Freq. Counter locked to Cesium Freq. Standard by Direct Method
11. RF Power	50 MHz to 18 GHz Impedance: 50 Ω 10 nW to 100 mW 100 mW to 1W	7% to 9.7% 9.7% to 20%	Using HP 438 A Power Meter with HP 8481A, HP 8484A, HP 8481H and by Direct Method
12. Modulation Amplitude Modulation	10 MHz to 1.3 GHz Depth 10 % to 99 % Tone: 1 kHz	2% to 3%	Using HP 8902A Measuring Receiver by Direct Method
Frequency Modulation	Deviation: 10 kHz to 400 kHz Tone: 1 kHz	5%	

Avijit Das
Program Manager

Sangeeta Kunwar
Convenor

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<u>SOURCE</u> ^s			
13. DC Voltage	1 mV to 10 mV	0.061% to 0.0081%	Using Fluke 5720 Calibrator by Direct Method
	10 mV to 100 mV	0.0081% to 0.0018%	
	100 mV to 100 V	0.0018% to 0.0012%	
	100 V to 1000 V	0.0012% to 0.0014%	
14. DC Current	1 μ A to 1 mA	1.0% to 0.012%	Using Fluke 5720 Calibrator/ 5725 Amp by Direct Method
	1 mA to 100 mA	0.012% to 0.008%	
	100 mA to 1 A	0.008% to 0.013%	
	1 A to 11 A	0.013% to 0.05%	
	11A to 19 A	0.05% to 0.06%	
15. AC Voltage	50 Hz to 100 kHz		Using Fluke 5720 Calibrator/ 5725 Amp by Direct Method
	1 mV to 100 mV	0.5%	
	100 mV to 1V	0.012% to 0.023%	
	1 V to 100 V	0.05% to 0.012%	
16. AC Current	50 kHz to 10 kHz		Using Fluke 5720 Calibrator/5725 Amp/5520A MFC by Direct Method
	100V to 1000V	0.012% to 0.017%	
	50 Hz to 10 kHz		
	1 mA to 100 mA	0.12% to 0.28%	
	100 mA to 1 A	0.28% to 1.0%	
17. DC Resistance	1 A to 20 A	0.30% to 0.40%	
	0.1 Ω	0.01%	Using Fluke 5720 Calibrator by Direct Method
	1 Ω	0.01%	
	10 Ω	0.003%	
	1 k Ω	0.002%	
	10 k Ω	0.035%	
100 k Ω	0.035%		

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DC Resistance	1 M Ω 10 M Ω 100 M Ω 1 G Ω	0.017% 0.044% 0.081% 2.0%	Using Fluke 5720 Calibrator by Direct Method
18. Oscilloscope DC Voltage	1 mV to 200V (1M Ω Load)	0.11% to 0.04%	Fluke 5720A Calibrator by Direct Method
Levelled Sine (Bandwidth)	500 MHz	1.5% to 4%	
Time Marker	1 ns to 100 ms	6 ppm	
19. Inductance	1 kHz 100 μ H to 10 H	0.3% to 0.15%	Using GR 1482 by Direct Method
20. Capacitance	1 kHz 100 pF to 1 μ F	0.3% to 0.15%	Using GR 1404 & 1409 by Direct Method
21. Frequency	10 Hz to 500 MHz 500 MHz to 18 GHz	175 ppm to 0.006 ppm 0.006 ppm to 0.0002 ppm	Using HP 8673C Signal Generator E 8257D, Signal Generator and HP 5350B Frequency Counter locked to Cesium Freq. Standard by Direct Method

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22. RF Power	50 MHz to 8 GHz Impedance: 50 Ω 10 nW to 100 mW 100 mW to 1W	7% to 9.7% 9.7% to 20%	Using HP8673 C & E 8257D Signal Generator and TWT Amplifier By Direct Method
23. Modulation Amplitude Modulation	10 MHz to 1.3 GHz Depth 10 % to 99 %	2% to 3%	Using HP 8657 B Signal Generator and E 8257 D Signal Generator By Direct Method
Frequency Modulation	Deviation: 10 kHz to 400 kHz	5%	

* Measurement Capability is expressed as an uncertainty (\pm) at a confidence probability of 95%

\$Only in Permanent Laboratory