

**Laboratory** Precision Electronics Limited, D-10, Sector 3, Noida, Uttar Pradesh  
**Accreditation Standard** ISO/IEC 17025: 2005  
**Certificate Number** CC-2659 **Page** 1 of 3  
**Validity** 26.04.2018 to 25.04.2020 **Last Amended on** --

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
-----	--------------------------------	-----------------	---	---------

**ELECTRO-TECHANICAL CALIBRATION**

**I. SOURCE**

1.	Frequency <sup>#</sup>	10 Hz to 10 kHz 10 kHz to 1 GHz	5.8 % 0.006%	Using Function Generator (33220A), Signal Generator (HP 8648C) by Direct Method
2.	RF frequency <sup>#</sup>	1GHz to 3GHz  3GHz to 20GHz	0.006% to 0.0023%  0.0006%	Using Signal Generator (HP 8648C), by Direct Method  Using Signal Generator (68037C) by Direct Method
3.	RF Power <sup>#</sup>	100MHz to 1GHz (-)60dBm to +10dBm,  1GHz to 15GHz (-)30dBm to +10dBm	1.75 dB  1.75 dB to 1.2 dB	Using Signal Generator (HP 8648C), by Direct Method  Using Signal Generator (68037C) by Direct Method
4.	Amplitude Modulation <sup>#</sup> (Depth)	Depth : 10 % to 90 % , CW: 10MHz to 1 GHz (MF : 400Hz, 1 kHz)	2.5% to 5.5%	Using Signal Generator (HP 8648C) by Direct Method
5.	Frequency Modulation <sup>#</sup> (Deviation)	Deviation:1 kHz to 200 kHz, CW: 10MHz to 1 GHz (MF : 400 Hz,1 kHz)	4%	Using Signal Generator (HP 8648C) by Direct Method
6.	DC Voltage <sup>#</sup>	1V to 10V 10V to 105V	1.0% to 0.65%	Using Fluke 732A, Keithley 220 by Direct Method
7.	DC Current <sup>#</sup>	100 $\mu$ A to 100mA	0.2	Using Keithley 220 by Direct Method

---

**Ram Ashray**  
**Convenor**

---

**Avijit Das**  
**Program Director**

**Laboratory** Precision Electronics Limited, D-10, Sector 3, Noida, Uttar Pradesh  
**Accreditation Standard** ISO/IEC 17025: 2005  
**Certificate Number** CC-2659 **Page** 2 of 3  
**Validity** 26.04.2018 to 25.04.2020 **Last Amended on** --

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
8.	Resistance <sup>#</sup>	5 $\Omega$ to 110k $\Omega$	1.0% to 0.13%	Using General Radio 1432M by Direct Method
<b>II. MEASURE</b>				
1.	Frequency <sup>#</sup>	1kHz to 1GHz	0.1% to 0.0035%	Using Frequency Counter (HP 5348A) by Direct Method
2.	RF Frequency <sup>#</sup>	1GHz to 20GHz	0.003%	Using Frequency Counter (HP 5348A) / Spectrum Analyzer (HP8563A) by Direct Method
3.	RF Power <sup>#</sup>	100MHz to 1GHz (-)60dBm to +10dBm,  1GHz to 12GHz (-)30dBm to +10dBm	1.36 dB  1.2 dB to 2.32 dB	Using Spectrum Analyzer (HP8563A) / Counter Power Meter HP5348A by Direct Method
4.	Amplitude Modulation Depth <sup>#</sup>	Depth : 10 % to 90 % , CW: 10 MHz to 1 GHz (MF : 400 Hz, 1 kHz)	3.6% to 5%	Using Modulation Analyzer (R&S FAM) by Direct Method
5.	Frequency Modulation Deviation <sup>#</sup>	Deviation: 1 kHz to 500 kHz, CW: 10MHz to 1 GHz (MF : 400Hz, 1 kHz)	7% @ $\Delta F$ 200 kHz, CW: 10 MHz, MF: 400 Hz	Using Modulation Analyzer (R&S FAM) by Direct Method
6.	DC Voltage <sup>#</sup>	50 mV to 800 V	0.02% to 0.01%	Using Datron 1061A by Direct Method
7.	AC Voltage <sup>#</sup>	<b>50 Hz</b> 50 mV to 800 V	0.2% to 0.15%	Using Datron 1061A by Direct Method

---

Ram Ashray  
Convenor

---

Avijit Das  
Program Director

**Laboratory** Precision Electronics Limited, D-10, Sector 3, Noida, Uttar Pradesh  
**Accreditation Standard** ISO/IEC 17025: 2005  
**Certificate Number** CC-2659 **Page** 3 of 3  
**Validity** 26.04.2018 to 25.04.2020 **Last Amended on** --

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
8.	DC Current <sup>#</sup>	50 $\mu$ A to 800mA 10 A to 400 A	0.35% to 0.025% 2.4%	Using Datron 1061A, Fluke 325 by Direct Method
9.	AC Current <sup>#</sup>	<b>50 Hz</b> 50 $\mu$ A to 800mA, 10 A to 400 A	0.5% to 0.05% 2.5%	Using Datron 1061A, Fluke 325 by Direct Method
10.	Resistance <sup>#</sup>	5 $\Omega$ to 110k $\Omega$	3.4%	Using Datron 1061A by Direct Method

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

# The laboratory is also capable for site calibration however, the uncertainty at site depends on the prevailing actual environmental conditions and master equipment used.

---

Ram Ashray  
Convenor

---

Avijit Das  
Program Director