EVALUATION OF MEASUREMENT UNCERTAINTY

1. COMPANY NAME : Sri Balaji Castings Pvt. Ltd. **DATE :** 17-02-2024

2. DEVICE UNDER CALIBRATION : th

Range (mm) : 85	**Resolution (mm) :** 63	**Coefficient of Thermal Expansion (DUC)-(αD)(mm/m°C) :** 0.0047

3. STANDARDS / EQUIPMENT USED FOR CALIBRATION :

Sr.No	Master Name	Range/Size (mm)	L.C. (mm)	Uncertainty (mm)	Accuracy (mm)	Material
Master 1	Torque Wrench - SBC2/TW/005	10 to 50	52	41	36	Carbide

4. ENVIRONMENTAL PARAMETERS

Start Temp T1 (°C)	End Temp T2 (°C)	Mean Temp (TA= (T1+T2)/2)	Ref. Temp (TR)	Thermal Expansion of master (mm/m°C)(αM)	Thermal Expansion of DUC (mm/m°C)(αD)	Uncertainty of Temperature Indicator (°C) UT (±)
12	54	33.00	20	0.0047	0.0047	85

5. REPEATABILITY (mm)

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	Standard Deviation	n
14	25	36	98	4	2	6	3	1	5	29.9043	10

6. UNCERTAINTY BUDGET

Source of uncertainty Xi		Estimates (Xi)	Probability Distribution	Type	Factor (x)	Standard Uncertainty u = (Xi / x)	Sensitivity Coefficient (y)	Uncertainty contribution ui = (x * y)	Degree of freedom vi = (n - 1)
U1	Uncertainty due to Calibration of Master 1 mentioned in the certificate	41.0000	Normal	Type B	2	20.5000	1	20.5000	∞
U2	Uncertainty due to Calibration of Master 2 mentioned in the certificate		Normal	Type B	2		1		∞
U3	Uncertainty due to Calibration of Master 3 mentioned in the certificate		Rect	Type B	√3		1		∞
U4	Uncertainty due to accuracy of Master 1	36.0000	Rect	Type B	√3	20.7846	1	20.7846	∞

Combined Uncertainty (Uc) : 29.1933 mm **Coverge Factor** (k) : - **Degree of freedom** (veff): -

Expanded Uncertainty (U): ± 0.0000 mm

Metric Metric
Prepared By