EVALUATION OF MEASUREMENT UNCERTAINTY

1. COMPANY NAME : Super Auto Forge Private Limited **DATE :** 22-02-2024

2. DEVICE UNDER CALIBRATION : gf

Range/Size (mm) : 52	**Least Count (mm) :** 75

3. STANDARDS / EQUIPMENT USED FOR CALIBRATION :

Sr.No	Master Name	Range/Size (mm)	L.C. (mm)	Uncertainty (mm)	Accuracy (mm)	Material
Master 1	CMM - I-CMM-01		96	75	23	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 (±)
74	23	48.50	6	0.0047	0.0047	45

5. REPEATABILITY (mm)

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	Standard Deviation	n
25	36	58	59	8	69	12	5	3	6	25.6231	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	75.0000	Normal	Type B	2	37.5000	1	37.5000	∞
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	23.0000	Rect	Type B	√3	13.2791	1	13.2791	∞
U5	Uncertainty due to Least count of Master 1	48.0000	Rect	Type B	√3	27.7128	1	27.7128	∞
U6	Uncertainty due to Least count of Master 2		Rect	Type B	√3		1		∞
U7	Uncertainty due to Least count of Master 3		Rect	Type B	√3		1		∞
U8	Uncertainty due to Least count of DUC	37.5000	Rect	Type B	√3	21.6506	1	21.6506	∞

Combined Uncertainty (Uc) : 53.0974 mm **Coverge Factor** (k) : - **Degree of freedom** (veff): -

Expanded Uncertainty (U): ± 0.0000 mm

Metric Metric
Prepared By