

## ROUGHNESS TESTER- TECHNICAL SPECIFICATIONS COMPLIANCE MATRIX

S.NO.	SPECIFICATION	SPECIFICATION - VALUE	COMPLIANCE
1	Machine requirement 1	Equipment shall be capable of measuring, analyzing and displaying of all surface texture parameters like Roughness (Ra, Rt, Rz, Rms etc.), Waviness (Wa, Wt, Wz etc.) on any form and contour measurements like radius, angle, distances, intersection of elements, internal & external thread parameters (i.e. angle, pitch etc.) and their analysis.	
2	Machine requirement 2	Basic equipment shall consist of Traverse unit, Measuring stand with granite table and columns, Measuring gauge (pick up), various styli, calibration standards, Computer with colour monitor, printer and software for both surface roughness and contour on precision machined metallic/non-metallic parts.	
3	Machine requirement 3	Equipment shall be capable to measure both surface roughness and contour in a single traverse.	
4	Horizontal traverse	0 to 200 mm minimum	
5	Data sampling interval in 'X'	0.125µm or better over 200mm length	
6	Straightness accuracy	0.4 µm or better over 200 mm length	
7	Vertical performance	As mentioned below	
8	Nominal measuring range (z)	10mm minimum or nearest possible higher size for 100mm standard stylus arm.	
9	Measurement	Contact (stylus)instrument	
10	Resolution in 'Z'	0.8 nanometer or better	
11	Accuracy in 'Z'	±1.5 microns max or better over 10mm for 100mm stylus	

12	Motorized Vertical Column	450mm minimum	
13	Stylus force	1milli Newton.	
14	Spherical calibration artifacts	Party has to provide suitable spherical artifacts (calibration standard) to demonstrate the above stated accuracies.	
15	System Noise	Please indicate the error value.	
16	Radius measurement uncertainty (0.1mm to 2000mm or above)	Please indicate the error value.	
17	Calibration accuracy (Pt)	Please indicate the error value.	
18	Accessories	Different suitable Accessories like XY table, universal vise, Motorized Rotary Stage shall be quoted separately with individual cost as an option.	
19	Features of Equipment 1	Both “CNC” and manual movement through joystick shall be possible for vertical and horizontal axis.	
20	Features of Equipment 2	Suitable granite base and leveling stand with vibration isolation.	
21	Features of Equipment 3	Traverse unit tilting mechanism with minimum 8° shall be available with indication of tilt of angle.	
22	Features of Equipment 4	Any other additional features /Capabilities of the machine shall also be quoted as an option.	
23	Probe arms and Styli requirement 1	Different probe arms with various styli tips shall be quoted separately, with cost of each element as per the details in indicative sketches attached as annexure B.	
24	Probe arms and Styli requirement 2	Suitable material with adequate strength and less weight shall be selected for probe arms.	
25	Probe arms and Styli requirement 3	The figures of probe arms and styli are indicative considering the applications. The size and shape of each probe arm and styli can be varied slightly	

		from the indicative sketch without changing the tip configuration with respect to the available Probe arm and stylus configuration with each manufacturer.	
26	Probe arms and Styli requirement 4	The holding portion mechanism of stylus to the gauge/ probe shall be as per the available configuration of each manufacture's gauge/probe	
27	Measuring Capabilities and Software features 1	Software package for measurement of all surface texture parameters like roughness (Ra, Rt, Rz, Rms etc), Waviness (Wa, Wt, Wz etc) on any form and contour measurement like radius, angle, distance, chamfer, intersection of elements and best fit functions etc.	
28	Measuring Capabilities and Software features 2	"CNC" measurement and self teaching programming shall be possible.	
29	Measuring Capabilities and Software features 3	Include/Exclude facility shall be possible for analysis.	
30	Measuring Capabilities and Software features 4	Magnification/Zooming facility to be provided.	
31	Measuring Capabilities and Software features 5	Filters, various ranges of cut-off values and geometric references like LS arc, LS line, MZ line etc. to be provided.	
32	Measuring Capabilities and Software features 6	Auto alignment of measured data through software shall be possible.	
33	Measuring Capabilities and Software features 7	Comparison of master profile to measured profile in two colours and generation of master profile data.	
34	Measuring Capabilities and Software features 8	Facility to draw line, radius, best fit circle and best fit line in zoomed condition.	
35	Measuring Capabilities and Software features 9	Re-analysis without re-measurement.	

36	Measuring Capabilities and Software features 10	Provision for contour measurement and analysis, display of measurement result, storage of data and programmes etc.	
37	Measuring Capabilities and Software features 11	Suitable latest version computer which can accommodate windows/LINUX operating system and its application machine software may be quoted.	
38	Measuring Capabilities and Software features 12	Minimum 22" LED colour Monitor and laser jet colour printer shall also be quoted along with machine.	
39	Measuring Capabilities and Software features 13	Facility for inputting nominal co-ordinates of comparison with measured co-ordinates, standard software libraries for commonly used profiles like thread, gear, provision for importing and exporting data in DXF/ CAD formats.	