CHECKLIST

Measurement system analysis in an audit

What auditors typically want to see about measurement system analysis. To tick off before the audit, per area, control plan or gage.

AREA OR CONTROL PLAN	DATE	PREPARED BY

A Overview and assignment

	ITEM	EVIDENCE
☐	**1. List of measuring equipment** All measuring equipment relevant for inspection, with unique ID, type, location and person responsible.	Equipment list
☐	**2. Assignment to characteristics** For every characteristic in the inspection or control plan the gage is named; special characteristics are marked.	Inspection plan, control plan
☐	**3. Valid study per gage and characteristic** For each combination there is a current study with date, procedure and result. Missing or expired studies are visible.	Study overview

B Procedure and study size

☐	**4. Procedure suits the characteristic** Variable characteristics for example with a study on a reference standard, gage R&R with or without appraiser influence, linearity and stability; attribute characteristics with kappa or signal detection. Excluding the appraiser influence is justified.	Study report, definition
☐	**5. Study size** Number of parts, appraisers, trials and measurements as planned; deviations are justified.	Study report
☐	**6. Representative parts** The parts cover the process variation or the tolerance range; attribute studies include boundary samples.	Part selection, reference values
☐	**7. Production conditions** The study ran under production conditions: location, appraisers, fixture, measuring program and measuring instruction are described.	Study report, instruction

C Reference and assessment

☐	**8. Reference to tolerance or process variation** The reference is stated. Tolerance or process variation is backed by a source, such as the drawing or a process capability study.	Drawing, process data
☐	**9. Limits and their source** Acceptance criteria, for example for %GRR, ndc, Cg and Cgk, kappa or Q_{MP}, are defined; the source is named: customer requirement, company guideline or reference work with edition.	Customer requirement, guideline
☐	**10. Resolution** The resolution of the gage is assessed relative to the tolerance or process variation.	Study report
☐	**11. Reference standards and values** Standard with ID, calibrated value, measurement uncertainty and calibration date; the calibration certificate can be found and was valid at the time of the study.	Calibration certificate

- [ ] **12. Calibration status of the gage** — Calibration history
  The gage was calibrated and released at the time of the study.

D Result and actions

- [ ] **13. Clear result** — Study report
  Result documented with key figures: capable, conditionally capable or not capable.
- [ ] **14. Actions for “not capable” or “conditionally capable”** — Action plan, approval
  Cause, action, person responsible, due date and repeat study are documented; a conditional approval is justified and, where required, agreed with the customer.
- [ ] **15. Anomalies explained** — Raw data, note
  Outliers, deleted or repeated measurements are justified; the original values are kept.

E Repetition and stability

- [ ] **16. Repeat interval** — Definition, gage management
  Interval defined, time-based and event-based, for example after repair, conversion, a new measuring program, relocation or a change of appraisers.
- [ ] **17. Stability over time** — Stability chart
  Stability is monitored, for example with a stability study or a control chart on a reference standard; the results are current.

F Documentation and approval

- [ ] **18. Complete report** — Study report
  Characteristic, gage, standard, appraisers, date, study size, measurements or a reference to them, and the assessment are included.
- [ ] **19. Approval** — Study report
  Prepared by and approved by with date and signature or an equivalent electronic approval.
- [ ] **20. Traceability** — Filing, archive
  Raw data and reports are archived, the retention period is known, changes are traceable.

This checklist is a working aid and does not claim to be complete. Which procedures, study sizes and limits apply is set by your customer requirements, your company guidelines and the reference works they name. Customer-specific requirements take precedence.