



TENNESSEE BUREAU OF INVESTIGATION

Forensic Services Division

Breath Alcohol Unit Standard Operating Procedures Manual

Breath Alcohol Certification Procedure

4. BREATH ALCOHOL CERTIFICATION PROCEDURE

4.1. Scope –

The purpose of this procedure is to certify the State of Tennessee's evidentiary breath alcohol instruments.

4.2. Terms and Definitions –

Certification: Performing the calibration of the instrument using NIST traceable standards

EC/IR II: EC/IR II Evidentiary Breath Instrumentation

ASV-XL: Alco-Sensor V-XL Portable Evidentiary Breath Instrumentation

Tolerance Range: +/- 0.005 or 5% - whichever is greater.

True-Cal Barometer (or other NIST Certified Barometer): Traceable barometer used to check the internal barometer in the instrument.

4.3. Procedure –

State v. Sensing requires that the forensic services division of the Tennessee Bureau of Investigation test the evidentiary breath testing instruments. Each evidentiary breath alcohol instrument in the state must be certified within 90 days. This certification procedure involves the calibration of the instrument, ensuring that it is operating properly, and restocking any consumable supplies used by the operators of the instrument.

- ❖ If the instrument is not available for certification within 90 days a Protocol Departure Form (Laboratory Quality Assurance Manual Appendix H) must be completed and signed by the proper parties.

4.3.1. Reagents and Chemicals –

0.040g/210L Dry Gas Standard from Air Gas – supplied by Intoximeters, Inc.

0.080g/210L Dry Gas Standard from Air Gas – supplied by Intoximeters, Inc.

0.200g/210L Dry Gas Standard from Air Gas – supplied by Intoximeters, Inc.



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4.3.2. Limitations –

The internal barometer in each instrument must be compared to a NIST traceable reference barometer (True-Cal).

Any adjustments to instrument must be performed with a 0.100g/210L dry gas standard. This will be documented on the Certification Worksheet.

4.3.3. Procedure

4.3.3.1. Verify Internal Barometer

- Access the proper menu.
- Confirm that the reference barometer is reading 800 mm Hg or less. If the reading is greater than 800 mm Hg, do not continue. The instrument will not be certified at this time.
- Visually confirm that the instrument barometer (a) reading is within 7mm Hg (1%) of the reference barometer (b) (True-Cal).
 - A. Record the barometer readings on the approved Certification Worksheet.
 - B. If the above criteria are met, continue with the calibration procedure.
 - C. If the above criteria are not met, remove the instrument from service until repaired by the manufacturer.
- Initiate the “Accuracy Test” testing sequence for the 0.040g/210L standard.
 - A. Remove the internal 0.082g/210L standard and replace with the 0.040g/210L calibration standard.
 - B. When prompted type in your last name, and first name.
 - C. Verify that the standard to use is “Std 1 – Dry Gas”



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- D. Note the dry gas standard's lot number, tank number, and expiration date on the approved Calibration Worksheet.
- ❖ The lot and tank number should be separated by a hyphen
 - Example: "lot no. - tank no."
- ❖ Follow the instrument prompts for the analysis of the internal standard.
 - The standard will be tested three (3) times.
- ❖ After the testing sequence is complete a printout will be generated. Retain this time/date stamped printout for review.
 - If the standard tested is within the tolerance range, the bottom of the printout will read: "Test Status: Success". This is a successful certification.
 - If the standard tested is outside of the tolerance range, the instrument must be adjusted. The printout will read: "Test Status: Standard out of range" (See Instrument Adjustment Procedure)
- Initiate the "Accuracy Test" testing sequence for the 0.080g/210L standard.
 - A. Remove the 0.040g/210L standard and replace with the 0.080g/210L calibration standard.
 - B. When prompted type in your last name, and first name.
 - C. Verify that the standard to use is "Std 1 – Dry Gas"
 - D. Note the dry gas standard's lot number, tank number, and expiration date on the approved Calibration Worksheet.



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- ❖ The lot and tank number should be separated by a hyphen
 - Example: “lot no. - tank no.”
- ❖ Follow the instrument prompts for the analysis of the standard.
 - The standard will be tested three (3) times.
- ❖ After the testing sequence is complete a printout will be generated. Retain this time/date stamped printout for review
 - If the standard tested is within the tolerance range, the bottom of the printout will read: “Test Status: Success”. This is a successful certification.
 - If the standard tested is outside of the tolerance range, the instrument must be adjusted. The printout will read: “Test Status: Standard out of range” (See Instrument Adjustment Procedure)
- Initiate the “Accuracy Test” testing sequence for the 0.200g/210L standard.
 - A. Remove the 0.080g/210L standard and replace with the 0.200g/210L calibration standard.
 - B. When prompted type in your last name, and first name.
 - C. Verify that the standard to use is “Std 1 – Dry Gas”
 - D. Note the dry gas standard’s lot number, tank number, and expiration date on the approved Calibration Worksheet.
- ❖ The lot and tank number should be separated by a hyphen

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- Example: "lot no. - tank no."
- ❖ Follow the instrument prompts for the analysis of the standard.
- The standard will be tested three (3) times.
- ❖ After the testing sequence is complete a printout will be generated. Retain this time/date stamped printout for review.
- If the standard tested is within the tolerance range, the bottom of the printout will read: "Test Status: Success". This is a successful certification.
- If the standard tested is outside of the tolerance range, the instrument must be adjusted. The printout will read: "Test Status: Standard out of range" (See Instrument Adjustment Procedure)

****Above standards can be run in any order****

- ❖ Reinstall the internal 0.082g/210L standard (if applicable)
- ❖ Perform a breath test
 - Initiate the "Training Test" sequence
 - When prompted for a subject last name type in: TBI.
 - When prompted for a subject first name type in: Blank.
 - When prompted for operator last and first name type in your complete name.

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- Press the space bar to start the testing sequence.
- When prompted, submit a blank sample of your own breath into the instrument.
- A printout of this blank check will be generated.
 - Expected final result is: “0.00 g/210L”.
 - Should any other result be obtained, the instrument must be removed from service and repaired by the manufacturer.
- Retain this time and date stamped printout for review.
- ❖ Complete the Certification Worksheet
 - Any test printouts that are not being used for the calibration shall be listed in the notes section of the worksheet by test # and test status description.
 - The scientist will then electronically sign the worksheet(s) and save to the Breath Alcohol shared drive.
- ❖ The scientist performing the calibration will then enter certification information into LIMS.
- ❖ The scientist will then schedule the upcoming calibration in their electronic calendar (ie: Outlook).
- ❖ Each instrument’s laboratory number schema will be as follows: two digit year, BREATH, serial number (e.g., 15BREATH8000).
- ❖ If the calibration is unsuccessful, perform the adjustment procedure and re-run the calibration procedure.

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- ❖ If the adjustment and calibration procedures fail, a “Failure to Certify Notification” document will be entered into LIMS. The instrument will be removed for repair.
- ❖ All thermal paper printouts for each calibration event will be stapled together and provided to the reviewer when the review takes place.
- ❖ After calibration documentation has been technically and administratively reviewed the report and worksheet(s) will be available in iResults for the agency and corresponding District Attorney’s Office.
- ❖ All worksheets are to be retained electronically in the Breath Alcohol shared drive. Reviewed thermal paper test prints will not be retained after the review is complete.

4.4. Instruments and Equipment –

When using dry gas standards, a NIST certified True-Cal barometer, or equivalent, must be used to check the barometric pressure at the instrument. This instrument will be certified with Intoximeters, Inc., or other approved vendor prior to expiration.

4.5. Measurement Traceability –

All standards used are purchased, certified standards with accompanying NIST certification documents. All calibration standards are run through a quality control check (QC) by the Technical Leader prior to being put in use. Documentation of the QC checks are retained in the TBI Crime Lab located in Nashville, TN.

4.6. Reference Materials –

Intoximeters EC/IR II Manual, current version.
Intoximeters Alco Sensor V – XL Manual, current version.

4.7. Worksheets and Documentation – see appendix section of this manual

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