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FORENSIC TESTING PROGRAM

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Breath Alcohol Calibration Verification
Test No. 24-5691 Summary Report

Each participant received a sample set consisting of four 34 L NIST traceable reference material dry gas cylinders. They were asked to analyze each cylinder using their existing protocols. Data were returned from 57 participants and are compiled into the following tables:

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This report contains the data received from the participants in this test. Since these participants are located in many countries around the world, and it is their option how the samples are to be used (e.g., training exercise, known or blind proficiency testing, research and development of new techniques, etc.), the results compiled in the Summary Report are not intended to be an overview of the quality of work performed in the profession and cannot be interpreted as such. The Summary Comments are included for the benefit of participants to assist with maintaining or enhancing the quality of their results. These comments are not intended to reflect the general state of the art within the profession.

Participant results are reported using a randomly assigned "WebCode". This code maintains participant's anonymity, provides linking of the various report sections, and will change with every report.

Manufacturer's Information

Each sample set consisted of four 34 L NIST traceable reference material dry gas cylinders (Items 1-4). Participants were asked to analyze the contents of each cylinder and report the apparent breath alcohol concentration (BrAC) and their uncertainty.

SAMPLE PREPARATION: Cylinders were sourced from an external specialty gas material provider. The Certificate of Analysis for each lot of dry gas cylinders was compared to the requested breath alcohol concentration. Once confirmed, each cylinder within a lot was labeled with the appropriate item and lot number. Participants were notified after sample shipment that the lot number displayed on the Item 2 gas cylinder labels was missing the last character, "2". The lot numbers provided on the data entry form and in the table below correspond appropriately to each item.

SAMPLE SET ASSEMBLY: Each sample set was assembled with an Item 1, 2, 3 and 4 in a pre-labeled box.

Item	Lot Number	BrAC (g/210 L)	Uncertainty (g/210 L)
1	09524003A3	0.200	± 0.0040
2	09524002A2	0.240	± 0.0048
3	09524001A1	0.030	± 0.0020
4	09524004A4	0.290	± 0.0058

Summary Comments

This test was designed to allow participants to assess their proficiency in the last calibration performed on their breath alcohol instrument. Participants were supplied with four items: 34 L NIST traceable reference material dry gas cylinders of different breath alcohol concentration (BrAC) values. Items 1, 2, 3, and 4 were manufactured with BrAC values of 0.200 ± 0.0040 g/210 L, 0.240 ± 0.0048 g/210 L, 0.030 ± 0.0020 g/210 L, and 0.290 ± 0.0058 g/210 L, respectively. Refer to the Manufacturer's Information for preparation details.

En analysis was performed on reported results for each item. En is not calculated for labs who did not report their expanded uncertainty. Participants with extreme data (En absolute values greater than 1.00) have been marked with an "X". Please refer to the En Analysis Guide for more information on this statistical analysis. A total of 57 participants reported results; however, not all participants reported an expanded uncertainty for every item. The percentage of participants reporting their expanded uncertainty for each item was 74%. A breakdown of the number of participants reporting extreme data per item based on En analysis is as follows: three for Item 1, two for Item 2, one for Item 3, and three for Item 4. Participants are advised to consider their reported expanded uncertainty when evaluating their En results. CTS uses a coverage factor equal to 2 for analysis. At this time, the linearity of the results for each participant will not be analyzed utilizing regression statistics.

CTS noted many participants reported their instrument's serial numbers. For the sake of anonymity, CTS did not reproduce this information in the report.

En Analysis Guide

Normalized Error, or En, is used in proficiency testing in many other industries to judge the quality of measurement results. It measures the relationship of a participant's value to the reference value, relative to the combined uncertainties of those values. En is calculated as follows:

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Where the assigned value, Xref, is determined in the manufacturer's reference laboratory, Uref is the expanded uncertainty of Xref, and Ulab is the Expanded Uncertainty of a participant's result, Xlab. En is not calculated for participants who did not report their Expanded Uncertainty.

Absolute values of En less than 1.00 should be obtained for the measurements to be acceptable. This is because there is a 95% probability that the calculated En will fall within an absolute value of 1.00. Any absolute values over 1.00 have been highlighted with an "X".

The following table and graph represent the results reported by participants.

Xref and Uref were determined by the dry gas cylinder supplier, which is ISO 17025 and ISO 17034 accredited.

Reported Results

As a verification of calibration, report the ethanol concentration of each cylinder and the uncertainty determined during the last calibration of the instrument.

TABLE 1 - Item 1

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Xlab: Participant's concentration
Xref: Reference material concentration
Ulab: Participant's uncertainty
Uref: Reference material uncertainty

† Uncertainty not reported or reported in units other than g/210 L, therefore En could not be calculated.

Item 1 BrAC : 0.200 g/210 L **Item 1 Uncertainty :** 0.0040 g/210 L

WebCode	Detector Type	Concentration (g/210 L)	Uncertainty k=2 (g/210 L)	Barometric Pressure (not used in En)	Performance Statistic (En)
2AYZ9H	IR	0.204		1012.9 hPas	†
2C7H8D	Electrochemical Fuel Cell	0.198	0.0110	742 mm Hg	-0.17
3C3FVE	IR	0.200	0.0040	987.0	0.00
4CG26G	Infrared Radiation (IR)	0.203	0.0060	764 mmHg	0.42
4UX8FC	Thermo electrically cooled lead selenide infrared	0.198		1006 mbar	†
63729K	EC	0.191	0.0140	992	-0.62
	IR	0.197	0.0150	992	-0.19
682TGG	IR	0.196	0.0060	847 hPa	-0.55
6KQPHE	IR	0.196	0.0030	1008 mb	-0.80
7N8CRD	IR	0.200		998.3 hPas	†
7R8NND	Electrochemical Fuel Cell	0.201	0.0040	921	0.18
	Infrared Detector	0.202	0.0040	921	0.35
8AJUCE	Electrochemical fuel cell	0.197	0.0080	755	-0.34
8M4AFE	Fuel Cell Detection	0.196		1007 mBar	†
	IR Detection	0.197		1007 mBar	†
8ZVVLA	IR	0.200	0.0100	1012	0.00
963LNF	EC	0.184	0.0140	1002	-1.10 X
	IR	0.179	0.0130	1002	-1.54 X

TABLE 1 - Item 1

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Xlab: Participant's concentration
Xref: Reference material concentration
Ulab: Participant's uncertainty
Uref: Reference material uncertainty

† Uncertainty not reported or reported in units other than g/210 L, therefore En could not be calculated.

Item 1 BrAC : 0.200 g/210 L **Item 1 Uncertainty :** 0.0040 g/210 L

WebCode	Detector Type	Concentration (g/210 L)	Uncertainty k=2 (g/210 L)	Barometric Pressure (not used in En)	Performance Statistic (En)
9LA3B8	IR	0.200	0.0100	1008.3	0.00
9PNFDF	EC	0.200	0.0150	933	0.00
	IR	0.204	0.0150	933	0.26
9WRK3E	EC	0.203	0.0150	1015	0.19
	IR	0.201	0.0150	1015	0.06
A7BFJ7	IR	0.197		968 mb	†
BGAE77	Thermo electrically cooled lead selenide infrared	0.198		1006 mbar	†
CA7QRB	Electrochemical Fuel Cell	0.202	0.0040	937 mBar	0.35
	Infrared	0.200	0.0040	937 mBar	0.00
CMQ7VB	EC	0.210	0.0160	979	0.61
	IR	0.197	0.0150	979	-0.19
CQQHQB	EC	0.196	0.0150	1007	-0.26
	IR	0.203	0.0150	1007	0.19
DVKXGA	Fuel Cell	0.197		760	†
E66PF7	Fuel cell	0.199	0.0050	756 mmHg	-0.16
ERERE9	EC	0.219	0.0160	1009	1.15 X
	IR	0.198	0.0150	1009	-0.13
FBLKW2	IR	0.199	0.0040	988.225	-0.18
G76C92	Infrared	0.203			†
GD7N6Y	Fuel Cell	0.198	0.0120	754.4 mmHg	-0.16
H6UWCF	IR	0.199	0.0110	inHg	-0.09

TABLE 1 - Item 1

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Xlab: Participant's concentration
Xref: Reference material concentration
Ulab: Participant's uncertainty
Uref: Reference material uncertainty

† Uncertainty not reported or reported in units other than g/210 L, therefore En could not be calculated.

Item 1 BrAC : 0.200 g/210 L **Item 1 Uncertainty :** 0.0040 g/210 L

WebCode	Detector Type	Concentration (g/210 L)	Uncertainty k=2 (g/210 L)	Barometric Pressure (not used in En)	Performance Statistic (En)
HMCVJY	Thermo electrically cooled selenide Infrared	0.196		1011 mbar	†
HQB8FX	Thermo electricallly cooled selenide infrared	0.196		1009 mbar	†
J72TYV	Fuel Cell	0.193	0.0080	On board barometer	-0.78
JGFNEV	Electrochemical Fuel Cell	0.199	0.0110	746 mmHg	-0.09
K897GX	Pyroelectric (Infrared)	0.199		1003.4 hPa	†
KPTY62	IR	0.198	0.0060	854 hPa	-0.28
KWQRDV	Fuel Cell	0.196	0.0080	On board barometer	-0.45
MAQ8CV	Electrochemical Sensor (Fuel Cell)	0.199	0.0120	996.5	-0.08
N9AAJV	Fuel Cell	0.195	0.0060	744 mmHg	-0.69
N9RLXU	IR	0.199		1011	†
NMABWW	IR	0.201	0.0080	1010.9 mBar	0.11
NQPJKW	EC	0.194	0.0150	1009	-0.39
	IR	0.198	0.0150	1009	-0.13
PB9BWX	EC	0.206	0.0150	1016	0.39
	IR	0.198	0.0150	1016	-0.13
PPCA8P	Fuel Cell	0.201	0.0110	748mmHg	0.09
Q26FET	Fuel Cell	0.199	0.0050	759	-0.16
Q2PWUV	Infrared	0.199	0.0060	854.4 hPa	-0.14

TABLE 1 - Item 1

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Xlab: Participant's concentration
Xref: Reference material concentration
Ulab: Participant's uncertainty
Uref: Reference material uncertainty

† Uncertainty not reported or reported in units other than g/210 L, therefore En could not be calculated.

Item 1 BrAC : 0.200 g/210 L **Item 1 Uncertainty :** 0.0040 g/210 L

WebCode	Detector Type	Concentration (g/210 L)	Uncertainty k=2 (g/210 L)	Barometric Pressure (not used in En)	Performance Statistic (En)
RTPT6P	Thermo electrically cooled lead selinide infared	0.197		1012 mbar	†
T2E4RP	IR	0.203	0.0100	1012mBar	0.28
T9WAPW	EC	0.202	0.0150	1002	0.13
	IR	0.196	0.0150	1002	-0.26
TCC2D4	Electrochemical Fuel Cell	0.197	0.0010	752 mmHg	-0.73
TMX7MN	IR	0.198		927.4	†
TYM6EQ	Infrared	0.201	0.0082	999.4	0.11
V8BF2R	Fuel cell	0.207	0.0040	861 (230478402)	1.24 X
WWC47P	Infrared	0.195	0.0060	856 hPa	-0.69
X46U2K	IR	0.200	0.0046	903 mb	0.00
XB3NZH	IR	0.202		965	†
Y386XE	Electrochemical Fuel Cell	0.199	0.0110	747 mm Hg	-0.09
Y9UTTK	IR	0.198	0.0090	947	-0.20

TABLE 1 - Item 2

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Xlab: Participant's concentration
Xref: Reference material concentration
Ulab: Participant's uncertainty
Uref: Reference material uncertainty

† Uncertainty not reported or reported in units other than g/210 L, therefore En could not be calculated.

Item 2 BrAC : 0.240 g/210 L **Item 2 Uncertainty :** 0.0048 g/210 L

WebCode	Detector Type	Concentration (g/210 L)	Uncertainty k=2 (g/210 L)	Barometric Pressure (not used in En)	Performance Statistic (En)
2AYZ9H	IR	0.245		1012.9 hPas	†
2C7H8D	Electrochemical Fuel Cell	0.237	0.0130	742 mm Hg	-0.22
3C3FVE	IR	0.238	0.0090	987.0	-0.20
4CG26G	Infrared Radiation (IR)	0.243	0.0060	764 mmHg	0.39
4UX8FC	Thermo electrically cooled lead selenide infrared	0.236		1006 mbar	†
63729K	EC	0.228	0.0170	992	-0.68
	IR	0.237	0.0170	992	-0.17
682TGG	IR	0.235	0.0060	847 hPa	-0.65
6KQPHE	IR	0.236	0.0030	1008 mb	-0.71
7N8CRD	IR	0.240		998.3 hPas	†
7R8NND	Electrochemical Fuel Cell	0.242	0.0040	921	0.32
	Infrared Detector	0.242	0.0040	921	0.32
8AJUCE	Electrochemical fuel cell	0.234	0.0130	755	-0.43
8M4AFE	Fuel Cell Detection	0.232		1007 mBar	†
	IR Detection	0.233		1007 mBar	†
8ZVVLA	IR	0.239	0.0100	1012	-0.09
963LNF	EC	0.222	0.0160	1002	-1.08 X
	IR	0.219	0.0160	1002	-1.26 X
9LA3B8	IR	0.239	0.0100	1008.3	-0.09
9PNFDF	EC	0.239	0.0170	933	-0.06
	IR	0.245	0.0170	933	0.28
9WRK3E	EC	0.239	0.0180	1015	-0.05
	IR	0.238	0.0170	1015	-0.11
A7BFJ7	IR	0.236		968 mb	†

TABLE 1 - Item 2

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Xlab: Participant's concentration
Xref: Reference material concentration
Ulab: Participant's uncertainty
Uref: Reference material uncertainty

† Uncertainty not reported or reported in units other than g/210 L, therefore En could not be calculated.

Item 2 BrAC : 0.240 g/210 L **Item 2 Uncertainty :** 0.0048 g/210 L

WebCode	Detector Type	Concentration (g/210 L)	Uncertainty k=2 (g/210 L)	Barometric Pressure (not used in En)	Performance Statistic (En)
BGAE77	Thermo electrically cooled lead selenide infrared	0.236		1006 mbar	†
CA7QRB	Electrochemical Fuel Cell	0.242	0.0040	937 mBar	0.32
	Infrared	0.240	0.0040	937 mBar	0.00
CMQ7VB	EC	0.249	0.0180	979	0.48
	IR	0.236	0.0170	979	-0.23
CQQHQB	EC	0.232	0.0170	1007	-0.45
	IR	0.243	0.0170	1007	0.17
DVKXGA	Fuel Cell	0.234		760	†
E66PF7	Fuel cell	0.236	0.0050	756 mmHg	-0.58
ERERE9	EC	0.259	0.0190	1009	0.97
	IR	0.235	0.0170	1009	-0.28
FBLKW2	IR	0.239	0.0090	988.225	-0.10
G76C92	Infrared	0.242			†
GD7N6Y	Fuel Cell	0.237	0.0140	754.4 mmHg	-0.20
H6UWCF	IR	0.236	0.0110	inHg	-0.33
HMCVJY	Thermo electrically cooled selenide Infrared	0.235		1011 mbar	†
HQB8FX	Thermo electricallly cooled selenide infrared	0.235		1009 mbar	†
J72TYV	Fuel Cell	0.240	0.0090	On board barometer	0.00
JGFNEV	Electrochemical Fuel Cell	0.237	0.0130	746 mmHg	-0.22
K897GX	Pyroelectric (Infrared)	0.239		1003.4 hPa	†
KPTY62	IR	0.237	0.0060	854 hPa	-0.39
KWQRDV	Fuel Cell	0.237	0.0080	On board barometer	-0.32

TABLE 1 - Item 2

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Xlab: Participant's concentration
Xref: Reference material concentration
Ulab: Participant's uncertainty
Uref: Reference material uncertainty

† Uncertainty not reported or reported in units other than g/210 L, therefore En could not be calculated.

Item 2 BrAC : 0.240 g/210 L **Item 2 Uncertainty :** 0.0048 g/210 L

WebCode	Detector Type	Concentration (g/210 L)	Uncertainty k=2 (g/210 L)	Barometric Pressure (not used in En)	Performance Statistic (En)
MAQ8CV	Electrochemical Sensor (Fuel Cell)	0.234	0.0150	996.5	-0.38
N9AAJV	Fuel Cell	0.234	0.0120	744 mmHg	-0.46
N9RLXU	IR	0.239		1011	†
NMABWW	IR	0.240	0.0080	1010.9 mBar	0.00
NQPJKW	EC	0.228	0.0170	1009	-0.68
	IR	0.237	0.0170	1009	-0.17
PB9BWX	EC	0.245	0.0180	1016	0.27
	IR	0.237	0.0170	1016	-0.17
PPCA8P	Fuel Cell	0.233	0.0130	748mmHg	-0.51
Q26FET	Fuel Cell	0.239	0.0050	759	-0.14
Q2PWUV	Infrared	0.236	0.0060	854.4 hPa	-0.52
RTPT6P	Thermo electrically cooled lead selinide infared	0.234		1012 mbar	†
T2E4RP	IR	0.244	0.0110	1012mBar	0.33
T9WAPW	EC	0.238	0.0180	1002	-0.11
	IR	0.235	0.0170	1002	-0.28
TCC2D4	Electrochemical Fuel Cell	0.235	0.0010	752 mmHg	-1.02 X
TMX7MN	IR	0.236		927.4	†
TYM6EQ	Infrared	0.242	0.0082	999.4	0.21
V8BF2R	Fuel cell	0.241	0.0040	861 (230478402)	0.16
WWC47P	Infrared	0.234	0.0060	856 hPa	-0.78
X46U2K	IR	0.239	0.0064	903 mb	-0.13
XB3NZH	IR	0.242		965	†

TABLE 1 - Item 2

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Xlab: Participant's concentration
Xref: Reference material concentration
Ulab: Participant's uncertainty
Uref: Reference material uncertainty

† Uncertainty not reported or reported in units other than g/210 L, therefore En could not be calculated.

Item 2 BrAC : 0.240 g/210 L **Item 2 Uncertainty :** 0.0048 g/210 L

WebCode	Detector Type	Concentration (g/210 L)	Uncertainty k=2 (g/210 L)	Barometric Pressure (not used in En)	Performance Statistic (En)
Y386XE	Electrochemical Fuel Cell	0.237	0.0130	747 mm Hg	-0.22
Y9UTTK	IR	0.238	0.0110	947	-0.17

TABLE 1 - Item 3

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Xlab: Participant's concentration
Xref: Reference material concentration
Ulab: Participant's uncertainty
Uref: Reference material uncertainty

† Uncertainty not reported or reported in units other than g/210 L, therefore En could not be calculated.

Item 3 BrAC : 0.030 g/210 L **Item 3 Uncertainty :** 0.0020 g/210 L

WebCode	Detector Type	Concentration (g/210 L)	Uncertainty k=2 (g/210 L)	Barometric Pressure (not used in En)	Performance Statistic (En)
2AYZ9H	IR	0.031		1012.9 hPas	†
2C7H8D	Electrochemical Fuel Cell	0.029	0.0050	742 mm Hg	-0.19
3C3FVE	IR	0.031	0.0020	987.0	0.35
4CG26G	Infrared Radiation (IR)	0.030	0.0010	764 mmHg	0.00
4UX8FC	Thermo electrically cooled lead selenide infrared	0.030		1006 mbar	†
63729K	EC	0.030	0.0050	992	0.00
	IR	0.030	0.0050	992	0.00
682TGG	IR	0.032	0.0100	847 hPa	0.20
6KQPHE	IR	0.032	0.0030	1008 mb	0.55
7N8CRD	IR	0.030		998.3 hPas	†
7R8NND	Electrochemical Fuel Cell	0.029	0.0020	921	-0.35
	Infrared Detector	0.030	0.0020	921	0.00
8AJUCE	Electrochemical fuel cell	0.028	0.0020	755	-0.71
8M4AFE	Fuel Cell Detection	0.030		1007 mBar	†
	IR Detection	0.030		1007 mBar	†
8ZVVLA	IR	0.029	0.0100	1012	-0.10
963LNF	EC	0.036	0.0050	1002	1.11 X
	IR	0.034	0.0050	1002	0.74
9LA3B8	IR	0.030	0.0100	1008.3	0.00

TABLE 1 - Item 3

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Xlab: Participant's concentration
Xref: Reference material concentration
Ulab: Participant's uncertainty
Uref: Reference material uncertainty

† Uncertainty not reported or reported in units other than g/210 L, therefore En could not be calculated.

Item 3 BrAC : 0.030 g/210 L **Item 3 Uncertainty :** 0.0020 g/210 L

WebCode	Detector Type	Concentration (g/210 L)	Uncertainty k=2 (g/210 L)	Barometric Pressure (not used in En)	Performance Statistic (En)
9PNFDF	EC	0.032	0.0050	933	0.37
	IR	0.031	0.0050	933	0.19
9WRK3E	EC	0.032	0.0050	1015	0.37
	IR	0.030	0.0050	1015	0.00
A7BFJ7	IR	0.030		968 mb	†
BGAE77	Thermo electrically cooled lead selenide infrared	0.030		1006 mbar	†
CA7QRB	Electrochemical Fuel Cell	0.030	0.0020	937 mBar	0.00
	Infrared	0.029	0.0020	937 mBar	-0.35
CMQ7VB	EC	0.032	0.0050	979	0.37
	IR	0.029	0.0050	979	-0.19
CQQHQB	EC	0.030	0.0050	1007	0.00
	IR	0.031	0.0050	1007	0.19
DVKXGA	Fuel Cell	0.029		760	†
E66PF7	Fuel cell	0.028	0.0030	756 mmHg	-0.55
ERERE9	EC	0.034	0.0050	1009	0.74
	IR	0.029	0.0050	1009	-0.19
FBLKW2	IR	0.030	0.0020	988.225	0.00
G76C92	Infrared	0.030			†
GD7N6Y	Fuel Cell	0.028	0.0050	754.4 mmHg	-0.37
H6UWCF	IR	0.031	0.0030	inHg	0.28
HMCVJY	Thermo electrically cooled selenide Infrared	0.030		1011 mbar	†

TABLE 1 - Item 3

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Xlab: Participant's concentration
Xref: Reference material concentration
Ulab: Participant's uncertainty
Uref: Reference material uncertainty

† Uncertainty not reported or reported in units other than g/210 L, therefore En could not be calculated.

Item 3 BrAC : 0.030 g/210 L **Item 3 Uncertainty :** 0.0020 g/210 L

WebCode	Detector Type	Concentration (g/210 L)	Uncertainty k=2 (g/210 L)	Barometric Pressure (not used in En)	Performance Statistic (En)
HQB8FX	Thermo electricallly cooled selenide infrared	0.030		1009 mbar	†
J72TYV	Fuel Cell	0.027	0.0030	On board barometer	-0.83
JGFNEV	Electrochemical Fuel Cell	0.029	0.0050	746 mmHg	-0.19
K897GX	Pyroelectric (Infrared)	0.027		1003.4 hPa	†
KPTY62	IR	0.030	0.0100	854 hPa	0.00
KWQRDV	Fuel Cell	0.027	0.0030	On board barometer	-0.83
MAQ8CV	Electrochemical Sensor (Fuel Cell)	0.030	0.0050	996.5	0.00
N9AAJV	Fuel Cell	0.028	0.0040	744 mmHg	-0.45
N9RLXU	IR	0.028		1011	†
NMABWW	IR	0.034	0.0040	1010.9 mBar	0.89
NQPJKW	EC	0.029	0.0050	1009	-0.19
	IR	0.029	0.0050	1009	-0.19
PB9BWX	EC	0.031	0.0050	1016	0.19
	IR	0.029	0.0050	1016	-0.19
PPCA8P	Fuel Cell	0.030	0.0050	748mmHg	0.00
Q26FET	Fuel Cell	0.029	0.0030	759	-0.28
Q2PWUV	Infrared	0.032	0.0100	854.4 hPa	0.20
RTPT6P	Thermo electrically cooled lead selinide infared	0.030		1012 mbar	†
T2E4RP	IR	0.030	0.0010	1012mBar	0.00

TABLE 1 - Item 3

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Xlab: Participant's concentration
Xref: Reference material concentration
Ulab: Participant's uncertainty
Uref: Reference material uncertainty

† Uncertainty not reported or reported in units other than g/210 L, therefore En could not be calculated.

Item 3 BrAC : 0.030 g/210 L **Item 3 Uncertainty :** 0.0020 g/210 L

WebCode	Detector Type	Concentration (g/210 L)	Uncertainty k=2 (g/210 L)	Barometric Pressure (not used in En)	Performance Statistic (En)
T9WAPW	EC	0.034	0.0050	1002	0.74
	IR	0.031	0.0050	1002	0.19
TCC2D4	Electrochemical Fuel Cell	0.029	0.0010	752 mmHg	-0.45
TMX7MN	IR	0.030		927.4	†
TYM6EQ	Infrared	0.030	0.0082	999.4	0.00
V8BF2R	Fuel cell	0.032	0.0020	861 (230478402)	0.71
WWC47P	Infrared	0.028	0.0100	856 hPa	-0.20
X46U2K	IR	0.029	0.0030	903 mb	-0.28
XB3NZH	IR	0.032		965	†
Y386XE	Electrochemical Fuel Cell	0.029	0.0050	747 mm Hg	-0.19
Y9UTTK	IR	0.028	0.0050	947	-0.37

TABLE 1 - Item 4

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Xlab: Participant's concentration
Xref: Reference material concentration
Ulab: Participant's uncertainty
Uref: Reference material uncertainty

† Uncertainty not reported or reported in units other than g/210 L, therefore En could not be calculated.

Item 4 BrAC : 0.290 g/210 L **Item 4 Uncertainty :** 0.0058 g/210 L

WebCode	Detector Type	Concentration (g/210 L)	Uncertainty k=2 (g/210 L)	Barometric Pressure (not used in En)	Performance Statistic (En)	
2AYZ9H	IR	0.294		1012.9 hPas	†	
2C7H8D	Electrochemical Fuel Cell	0.283	0.0160	742 mm Hg	-0.41	
3C3FVE	IR	0.287	0.0090	987.0	-0.28	
4CG26G	Infrared Radiation (IR)	0.294	0.0060	764 mmHg	0.48	
4UX8FC	Thermo electrically cooled lead selenide infrared	0.284		1006 mbar	†	
63729K	EC	0.272	0.0190	992	-0.91	
	IR	0.285	0.0200	992	-0.24	
682TGG	IR	0.283	0.0110	847 hPa	-0.56	
6KQPHE	IR	0.281	0.0030	1008 mb	-1.38	X
7N8CRD	IR	0.289		998.3 hPas	†	
7R8NND	Electrochemical Fuel Cell	0.289	0.0040	921	-0.14	
	Infrared Detector	0.289	0.0040	921	-0.14	
8AJUCE	Electrochemical fuel cell	0.282	0.0130	755	-0.56	
8M4AFE	Fuel Cell Detection	0.280		1007 mBar	†	
	IR Detection	0.281		1007 mBar	†	
8ZVVLA	IR	0.285	0.0100	1012	-0.43	
963LNF	EC	0.267	0.0190	1002	-1.16	X
	IR	0.265	0.0190	1002	-1.26	X
9LA3B8	IR	0.288	0.0100	1008.3	-0.17	
9PNFDF	EC	0.286	0.0200	933	-0.19	
	IR	0.295	0.0200	933	0.24	

TABLE 1 - Item 4

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Xlab: Participant's concentration
Xref: Reference material concentration
Ulab: Participant's uncertainty
Uref: Reference material uncertainty

† Uncertainty not reported or reported in units other than g/210 L, therefore En could not be calculated.

Item 4 BrAC : 0.290 g/210 L **Item 4 Uncertainty :** 0.0058 g/210 L

WebCode	Detector Type	Concentration (g/210 L)	Uncertainty k=2 (g/210 L)	Barometric Pressure (not used in En)	Performance Statistic (En)
9WRK3E	EC	0.285	0.0210	1015	-0.23
	IR	0.288	0.0200	1015	-0.10
A7BFJ7	IR	0.283		968 mb	†
BGAE77	Thermo electrically cooled lead selenide infrared	0.284		1006 mbar	†
CA7QRB	Electrochemical Fuel Cell	0.291	0.0040	937 mBar	0.14
	Infrared	0.288	0.0040	937 mBar	-0.28
CMQ7VB	EC	0.297	0.0210	979	0.32
	IR	0.283	0.0200	979	-0.34
CQQHQB	EC	0.277	0.0200	1007	-0.62
	IR	0.293	0.0200	1007	0.14
DVKXGA	Fuel Cell	0.282		760	†
E66PF7	Fuel cell	0.284	0.0050	756 mmHg	-0.78
ERERE9	EC	0.309	0.0220	1009	0.84
	IR	0.282	0.0200	1009	-0.38
FBLKW2	IR	0.286	0.0090	988.225	-0.37
G76C92	Infrared	0.292			†
GD7N6Y	Fuel Cell	0.285	0.0170	754.4 mmHg	-0.28
H6UWCF	IR	0.284	0.0110	inHg	-0.48
HMCVJY	Thermo electrically cooled selenide Infrared	0.282		1011 mbar	†
HQB8FX	Thermo electricallly cooled selenide infrared	0.282		1009 mbar	†

TABLE 1 - Item 4

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Xlab: Participant's concentration
Xref: Reference material concentration
Ulab: Participant's uncertainty
Uref: Reference material uncertainty

† Uncertainty not reported or reported in units other than g/210 L, therefore En could not be calculated.

Item 4 BrAC : 0.290 g/210 L **Item 4 Uncertainty :** 0.0058 g/210 L

WebCode	Detector Type	Concentration (g/210 L)	Uncertainty k=2 (g/210 L)	Barometric Pressure (not used in En)	Performance Statistic (En)
J72TYV	Fuel Cell	0.289	0.0090	On board barometer	-0.09
JGFNEV	Electrochemical Fuel Cell	0.284	0.0160	746 mmHg	-0.35
K897GX	Pyroelectric (Infrared)	0.286		1003.4 hPa	†
KPTY62	IR	0.286	0.0110	854 hPa	-0.32
KWQRDV	Fuel Cell	0.296	0.0090	On board barometer	0.56
MAQ8CV	Electrochemical Sensor (Fuel Cell)	0.279	0.0230	996.5	-0.46
N9AAJV	Fuel Cell	0.282	0.0120	744 mmHg	-0.60
N9RLXU	IR	0.289		1011	†
NMABWW	IR	0.288	0.0080	1010.9 mBar	-0.20
NQPJKW	EC	0.271	0.0200	1009	-0.91
	IR	0.285	0.0200	1009	-0.24
PB9BWX	EC	0.292	0.0210	1016	0.09
	IR	0.285	0.0200	1016	-0.24
PPCA8P	Fuel Cell	0.288	0.0160	748mmHg	-0.12
Q26FET	Fuel Cell	0.285	0.0050	759	-0.65
Q2PWUV	Infrared	0.283	0.0110	854.4 hPa	-0.56
RTPT6P	Thermo electrically cooled lead selinide infared	0.282		1012 mbar	†
T2E4RP	IR	0.293	0.0140	1012mBar	0.20

TABLE 1 - Item 4

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Xlab: Participant's concentration
Xref: Reference material concentration
Ulab: Participant's uncertainty
Uref: Reference material uncertainty

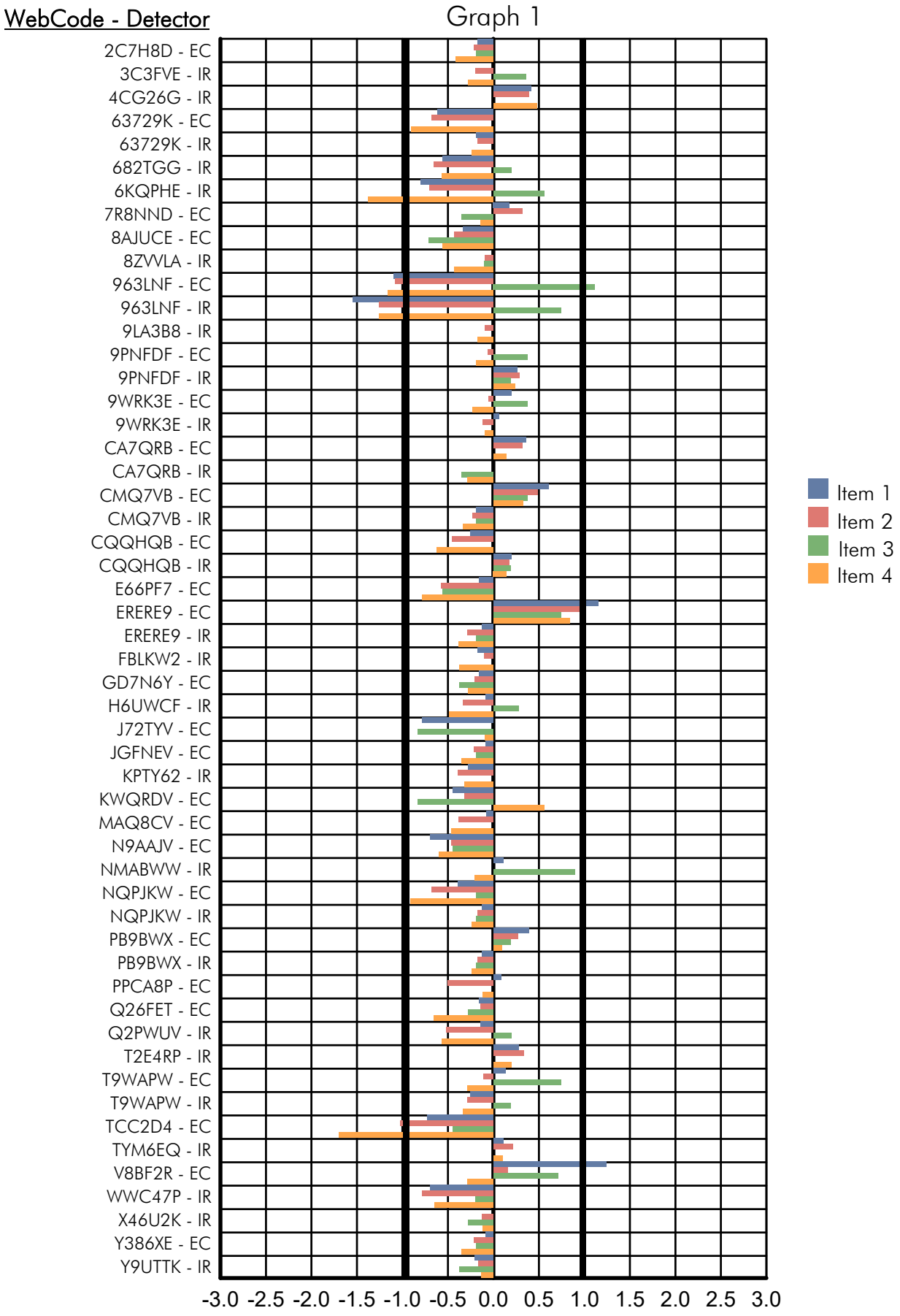
† Uncertainty not reported or reported in units other than g/210 L, therefore En could not be calculated.

Item 4 BrAC : 0.290 g/210 L **Item 4 Uncertainty :** 0.0058 g/210 L

WebCode	Detector Type	Concentration (g/210 L)	Uncertainty k=2 (g/210 L)	Barometric Pressure (not used in En)	Performance Statistic (En)	
T9WAPW	EC	0.284	0.0200	1002	-0.29	
	IR	0.283	0.0200	1002	-0.34	
TCC2D4	Electrochemical Fuel Cell	0.280	0.0010	752 mmHg	-1.70	X
TMX7MN	IR	0.281		927.4	†	
TYM6EQ	Infrared	0.291	0.0082	999.4	0.10	
V8BF2R	Fuel cell	0.288	0.0040	861 (230478402)	-0.28	
WWC47P	Infrared	0.282	0.0110	856 hPa	-0.64	
X46U2K	IR	0.289	0.0064	903 mb	-0.12	
XB3NZH	IR	0.293		965	†	
Y386XE	Electrochemical Fuel Cell	0.284	0.0160	747 mm Hg	-0.35	
Y9UTTK	IR	0.288	0.0140	947	-0.13	

En Results

Graph 1



Raw Data Adjustments

TABLE 2

List the type and amount of any adjustments made on the raw data to produce the reported concentration, such as for barometric pressure, the wet/dry offset, etc.

WebCode	Raw Data Adjustments
2C7H8D	The mean of two raw data measurements is calculated. From this, the adjusted result is normalized for pressure and wet/dry offset. The following equation is used for this conversion: Adjusted result = mean result x (760/pressure reading) x 1.045
3C3FVE	Adjust measured value to sea level equivalent =(analyzed value/barometric pressure)*1013
4UX8FC	Barometric pressure. The DataMaster DMT is equipped with a barometric sensor. The target value is adjusted based on the site specific reading of barometric pressure.
7R8NND	EC Cal factor 1300. CalGas Inlet Drygas %: 2%. EC Drygas offset: 8%. Adsorption 3%. IR CAl Factor 891. IR slope Multiplier: 13484. EC Quadratic Correction: 12.
8AJUCE	The raw data is normalized to 760 mmHg and corrected with a factor of 4.5% to account for the wet/dry offset.
BGAE77	Barometric pressure. The DataMaster DMT is equipped with a barometric sensor. The target value is adjusted based on the site specific reading of barometric pressure.
CA7QRB	IR Cal Factor= 860, EC Cal Factor=1285, CalGas Inlet Drygas %= 0%, EC Drygas Offset= 9%, Adsorption= 3%, IR Slope Multiplier= 13484, EC Quadratic Correction= 12
DVKXGA	Each result was adjusted from actual pressure to 760 mmHG (actuals: Item 1 - 740 mggHg, Item 2: 739 mmHg, Item 3: 747 mmHg, Item 4: 739 mmHg). A 0.045 offest was applied to each cannister to account for wet-dry offest.
E66PF7	Raw data adjusted for wet/dry offset(+4.5%) and normalized to sea level (760/xxx*760mmHg)
FBLKW2	IR average as measured was adjusted to sea level equivalent by taking (analyzed value/barometric pressure) * 1013
GD7N6Y	All adjustments on the raw data to produce the reported concentrations were programmed in the instrument's software.
H6UWCF	Adjusted the measured average (of 5 replicates) for each tank from barometric pressure to standard pressure (29.92 inHg). An excel spreadsheet was used to perform these calculations. Item 1 was 0.1956 g/210L at 29.40 inHg, this was adjusted to 0.199 g/210L at standard pressure. Item 2 was 0.2320 g/210L at 29.38 inHg, this was adjusted to 0.236 g/210L at standard pressure. Item 3 was 0.0302 g/210L at 29.39 inHg, this was adjusted to 0.031 g/210L at standard pressure. Item 4 was 0.2786 g/210L at 29.39 inHg, this was adjusted to 0.284 g/210L at standard pressure.
HMCVJY	Barometric pressure. The Data Master DMT is equipped with a barometric sensor. The target value is adjusted based on site specific reading of the barometric pressure.
HQB8FX	Barometric pressure. The Datamaster DMT is equipped with a barometric sensor. The target value is adjusted based on the site specific reading of barometric pressure.
J72TYV	Barometric pressure and temperature are automatically measured by the instrument. 4.5% wet/dry off set is applied for dry gas standards.
JGFNEV	Mean Instrument Result x (760/barometric pressure) x 1.045 1.045 is the wet/dry offset.
K897GX	For barometric pressure, a correction factor of 1.00 was calculated so no adjustments were made to the raw data.

TABLE 2

WebCode	Raw Data Adjustments
KWQRDV	Barometric pressure and temperature are automatically measured by the instrument. 4.5% wet/dry off set is applied for dry gas standards.
MAQ8CV	An adjustment was not performed because the instrument has a built-in pressure transducer. The pressure transducer automatically corrects for the altitude and applies the dry/wet offset for the selected dry gas standard.
N9AAJV	+4% dry gas correction, barometric pressure correction (760 mmHg/Lab Pressure mmHg)
NMABWW	No adjustments made
PPCA8P	The following calculation was used to normalize for barometric pressure and the wet/ dry offset: (mean instrument value in g/210L)x (760/barometric pressure reading) x 1.045= value normalized for pressure.
Q26FET	Raw data adjusted for wet/dry offset(+4.5%) and normalized to sea level (760/xxx*760mmHg).
Q2PWUV	None. Data as averaged from reported values of 9 replicates at each concentration.
RTPT6P	Barometric pressure. The Datamaster DMT is equipped with a barometric sensor. The target value is adjusted based on the specific reading of barometric pressure.
TCC2D4	- The instrument used in this test was calibrated with Corrected Dry Gas at a concentration of 0.080 +/- 0.002 g/210L. - Each item was tested in five replicates. The measurement uncertainty using a coverage factor of 2 (reflecting a 95% confidence level) was calculated for each concentration and rounded to three decimal places before reporting. - No pressure adjustment was made to the raw data, as automated pressure correction (normalization calculation) is included in our software. - The software is designed to use "Corrected" dry gas for calibration. A compensation factor of 4.5% wet/dry offset has been adopted by Intoximeters, therefore 4.5% of the mean result has been added to determine the reported concentration for each item. - The test records generated during the analysis are available for submission upon request for verification purposes.
TMX7MN	Reported average, truncated to the 3rd digit.
TYM6EQ	No adjustments were made except internally by the instrument.
X46U2K	CF = 1.11
Y386XE	mean of two raw data values adjusted for barometric pressure and wet/dry offset using the following calculation: mean value (760/instrument pressure)(1.045)= reported value

Instrument Information

TABLE 3

WebCode	Instrument used	Detector type
2AYZ9H	Draeger Alcotest 9510 [Serial Number]	IR
2C7H8D	Intoximeters Intox EC/IR II	Electrochemical Fuel Cell
3C3FVE	DMT	IR
4CG26G	Draeger Alcotest 7110 [Serial Number]	Infrared Radiation (IR)
4UX8FC	DMT [Serial Number]	Thermo electrically cooled lead selenide infrared
63729K	[Serial Number]	EC
	[Serial Number]	IR
682TGG	Intoxilyzer 8000	IR
6KQPHE	Intoxilyzer 8000 [Serial Number]	IR
7N8CRD	[Serial Number], Draeger Alcotest 9510	IR
7R8NND	Draeger Alcotest 9510	Electrochemical Fuel Cell
	Draeger Alcotest 9510	Infrared Detector
8AJUCE	Intoximeter EC/IR II	Electrochemical fuel cell
8M4AFE	Draeger 9510	Fuel Cell Detection
	Draeger 9510	IR Detection
8ZVVLA	INTOX 9000	IR
963LNF	[Serial Number]	EC
	[Serial Number]	IR
9LA3B8	INTOXILYZER 9000	IR
9PNFDF	[Serial Number]	EC
	[Serial Number]	IR
9WRK3E	[Serial Number]	EC
	[Serial Number]	IR
A7BFJ7	Intoxilyzer 8000	IR

TABLE 3

WebCode	Instrument used	Detector type
BGAE77	DataMaster DMT [Serial Number]	Thermo electrically cooled lead selenide infrared
CA7QRB	Draeger Alcotest 9510	Electrochemical Fuel Cell
	Draeger Alcotest 9510	Infrared
CMQ7VB	[Serial Number]	EC
	[Serial Number]	IR
CQQHQB	[Serial Number]	EC
	[Serial Number]	IR
DVKXGA	Intoximeter EC/IR2	Fuel Cell
E66PF7	Intox EC/IR II	Fuel cell
ERERE9	[Serial Number]	EC
	[Serial Number]	IR
FBLKW2	Intox DMT [Serial Number]	IR
G76C92	Alcotest 7100 MKIII-C [Serial Number]	Infrared
GD7N6Y	ASV-XL	Fuel Cell
H6UWCF	DataMaster DMT	IR
HMCVJY	Data Master DMT [Serial Number]	Thermo electrically cooled selenide Infrared
HQB8FX	Datamaster DMT [Serial Number]	Thermo electricallly cooled selenide infrared
J72TYV	Alcosensor V-XL	Fuel Cell
JGFNEV	Intoximeter ECIR II	Electrochemical Fuel Cell
K897GX	Intoxilyzer 9000, [Serial Number]	Pyroelectric (Infrared)
KPTY62	Intoxilyzer I8000	IR
KWQRDV	Alcosensor V-XL	Fuel Cell
MAQ8CV	Drager Alcotest A7510 [Serial Number]	Electrochemical Sensor (Fuel Cell)
N9AAJV	EC/IR II Serial Number [Serial Number] (Intoximeters, Inc)	Fuel Cell

TABLE 3

WebCode	Instrument used	Detector type
N9RLXU	Alcotest 9510 [Serial Number]	IR
NMABWW	Intoxilyzer 8000	IR
NQPJKW	[Serial Number]	EC
	[Serial Number]	IR
PB9BWX	[Serial Number]	EC
	[Serial Number]	IR
PPCA8P	Intoximeter Intox EC/IR II	Fuel Cell
Q26FET	Intox EC/IR II	Fuel Cell
Q2PWUV	Intoxilyzer 8000	Infrared
RTPT6P	Datamaster DMT [Serial Number]	Thermo electrically cooled lead selinide infared
T2E4RP	Draeger Alcotest 9510 [Serial Number]	IR
T9WAPW	[Serial Number]	EC
	[Serial Number]	IR
TCC2D4	Intox ECIR II (Inst. ID: [ID])	Electrochemical Fuel Cell
TMX7MN	[Serial Number]	IR
TYM6EQ	Intoxilyzer 9000	Infrared
V8BF2R	Lifeloc FC20 [Serial Number]	Fuel cell
WWC47P	Intoxilyzer 8000	Infrared
X46U2K	Intoxilyzer 9000	IR
XB3NZH	Intoxilyzer 9000	IR
Y386XE	Intoximeters, Intox EC/IR II	Electrochemical Fuel Cell
Y9UTTK	Intoxilyzer 8000	IR

Additional Comments

TABLE 4

WebCode	Additional Comments
2C7H8D	The estimated uncertainty of measure at k=2 coverage is 5.6% or 0.005, whichever is greater.
4CG26G	The reported expanded measurements of uncertainty reflect a overage factor of k=4.09 which corresponds to a 99.73% coverage level of confidence, assuming a normal distribution.
4UX8FC	Each item was analyzed three times. The average value of the three analyses for each item was reported to three decimal places (reported concentration). The laboratory only calculates expanded uncertainty for the calibration of the instrument, applying it to calibration measurements during the certification process. Uncertainty is not calculated for the verification of calibration, and hence not reported for the items.
7R8NND	Reported [Laboratory] Uncertainty is an expanded uncertainty with a 95% confidence interval with k=3.
8AJUCE	A laboratory certificate of instrument accuracy is issued with an expanded uncertainty using a coverage factor of K=3. The uncertainty of measurement is calculated for the certification process. Four concentrations of dry gas standards are used to certify the instrument's accuracy, and the uncertainty of measurement is calculated for these concentrations. The uncertainty provided with reported concentration was determined using a coverage factor of K=2.
8M4AFE	The laboratory does not calculate measurement uncertainty for breath alcohol calibrations.
BGAE77	Each item was analyzed three times. The average value of the three analyses for each item was reported to three decimal places (reported concentration). The laboratory only calculates expanded uncertainty for the calibration of the instrument, applying it to calibration measurements during the certification process. Uncertainty is not calculated for the verification of calibration, and hence not reported for the items.
CA7QRB	[Laboratory] calibrates instrumentation to K=3. CTS results were converted to K=2 for reporting purposes only.
DVKXGA	Measurement uncertainty is calculated for calibration purposes only at three concentrations (per our Testing Method, 0.020 g/210L, 0.082 g/210L, and 0.150 g/210L).
G76C92	[From Table 1 - Reported Results, Items 1-4: Expanded uncertainty values of 0.000 were removed as they are unsuitabe for comparison against the reference values.]
HMCVJY	Each item was analyzed three times. The average value of the three analyses for each item was reported to three decimal places (reported concentration). The laboratory only calculates expanded uncertainty for the calibration of the instrument applying it to calibration measurements during the certification process. Uncertainty is not calculated for the verification of calibration and hence not reported for the items.
HQB8FX	Each item was analyzed three times. The average value of the three analyses for each item was reported to three decimal places (reported concentration). The laboratory only calculates expanded uncertainty for the calibration of the instrument, applying it to calibration measurements during the certification process. Uncertainty is not calculated for the verification of calibration, and hence not reported for the items.
JGFNEV	Uncertainty of Measurement at a k=2 is currently at +/-5.6% or +/-0.005 whichever range is greater.

TABLE 4

WebCode	Additional Comments
K897GX	The expanded uncertainty is calculated using historical data from the calibration of evidential instruments. This uncertainty is not calculated on the individual samples but rather on the four different reference materials used during the calibration: 0.050 +/- 0.004 g/210L, 0.100 +/- 0.004 g/210L, 0.200 +/- 0.006 g/210L and 0.300 +/- 0.010 g/210L. With that said, I cannot assign an uncertainty to the reported concentrations.
PPCA8P	The uncertainty of measurement used is 5.6% or 0.005, whichever is greater, with a coverage factor of k=2; corresponding to a ~95% level of confidence.
RTPT6P	Each item was analyzed three times. The average value of the three analyses for each item was reported to three decimal places (reported concentration). The laboratory only calculates expanded uncertainty for the calibration of the instrument, applying it to the calibration measurements during the certification process. Uncertainty is not calculated for the verification, and hence not reported for the items.
TMX7MN	MU is only reported on calibrators; it is not reported on unknown concentrations.
XB3NZH	Item #2 was labeled with lot # "09524002A" on the front white label on the cylinder but as "09524 002 A 2 043" on the sticker on the bottom of the cylinder. The CTS form states that the lot # is "09524002A2"
Y386XE	UM at k=2 is 5.6% or 0.005, whichever is greater lot number on label of Item 2 is "09524002A"

-End of Report-
(Appendix may follow)

Collaborative Testing Services ~ Forensic Testing Program

Test No. 24-5691: Breath Alcohol Calibration Verification

DATA MUST BE SUBMITTED BY **Sept. 16, 2024, 11:59 p.m. EDT** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A WebCode: P8AWA9

The Accreditation Release section can be accessed by using the "Continue to Final Submission" button above. This information can be entered at any time prior to submitting to CTS.

Items Submitted (Sample Pack BRC):
Items 1-4: 34L NIST traceable reference material dry gas cylinders
Item 1: Lot # 09524003A3; Exp. Date: 7/5/2026
Item 2: Lot # 09524002A2; Exp. Date: 7/5/2026
Item 3: Lot # 09524001A1; Exp. Date: 7/5/2026
Item 4: Lot # 09524004A4; Exp. Date: 7/5/2026

1.) Detector type:
If additional detectors used, click the "Add Detector" link below.

2.) As a verification of calibration, report the ethanol concentration of each cylinder and the expanded uncertainty determined during the last calibration of the instrument. Results should be reported to three decimal places in g/210L and use a coverage factor of 2 for expanded uncertainty.

	Reported Concentration (g/210L)		Uncertainty (k=2)
Item 1:		±	
Item 2:		±	
Item 3:		±	
Item 4:		±	

Please note that it is the responsibility of the laboratory to normalize for barometric pressure and the wet/dry offset (if applicable).

3.) Instrument used:

4.) Barometric Pressure:

5.) List the type and amount of any adjustments made on the raw data to produce the reported concentration, such as for barometric pressure, the wet/dry offset etc.

6.) Additional Comments

Please note: *Any additional formatting applied in the free form space below will not transfer to the Summary Report and may cause your information to be illegible. This includes additional spacing and returns that present your responses in lists and tabular formats.*

RELEASE OF DATA TO ACCREDITATION BODIES

The Accreditation Release is accessed by pressing the "Continue to Final Submission" button online and can be completed at any time prior to submission to CTS.

CTS submits external proficiency test data directly to ANAB and/or A2LA. Please select one of the following statements to ensure your data is handled appropriately.

- ○ This participant's data is intended for submission to ANAB and/or A2LA. (Accreditation Release section below must be completed.)
- ○ This participant's data is **not** intended for submission to ANAB and/or A2LA.

Have the laboratory's designated individual complete the following steps
only if your laboratory is accredited in this testing/calibration discipline
by one or more of the following Accreditation Bodies.

Step 1: Provide the applicable Accreditation Certificate Number(s) for your laboratory

ANAB Certificate No.

A2LA Certificate No.

Step 2: Complete the Laboratory Identifying Information in its entirety

Authorized Contact Person and Title

Laboratory Name

Location (City/State)

ILMO specialty gases

7 Eastgate Dr. • P.O. Box 790 • Jacksonville, IL 62651-0790
217-245-2183 • Fax: 217-243-7634 • www.ilmoproducts.com

Certificate of Analysis

Certificate ID: 16510

Part #: BAC34L200T
Cylinder Size: 34L_200
Lot Number: 09524003A3
Expiration: 7/5/2026

0.200 BAC (For the calibration of instruments used to determine breath alcohol concentration)

Contents: 34 Liters @ 500 psig 70°F (21°C)

Component:	Reported Concentration:	Analytical Accuracy (U, k=2):	Analytical Method:
Ethanol	521 ppm	+/- 2% (rel. ppm)	Gravimetric
Nitrogen	Balance		

*NIST Traceable to:
Gravimetric Balance
Calibration Certificate No. 82326
Calibration Certificate No. 82331

Store in dry area, away from sources of heat, ignition and direct sunlight. Do not allow storage area to exceed 52 °C (125 °F).

Specialty Gas Lab Tech

06-10-2024
Issuance Date

PJLA
Calibration and Testing
Accreditation #61895

ISO/IEC 17025:2017 Accredited Laboratory

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217-245-2183 • Fax: 217-243-7634 • www.ilmoproducts.com

Certificate of Analysis

Certificate ID: 16513

Part #: BAC34L240T
Cylinder Size: 34L_240
Lot Number: 09524002A2
Expiration: 7/5/2026

0.240 BAC (For the calibration of instruments used to determine breath alcohol concentration)

Contents: 34 Liters @ 500 psig 70°F (21°C)

Component:	Reported Concentration:	Analytical Accuracy (U, k=2):	Analytical Method:
Ethanol	625 ppm	+/- 2% (rel. ppm)	Gravimetric
Nitrogen	Balance		

*NIST Traceable to:
Gravimetric Balance
Calibration Certificate No. 82326
Calibration Certificate No. 85691

Store in dry area, away from sources of heat, ignition and direct sunlight. Do not allow storage area to exceed 52 °C (125 °F).

Specialty Gas Lab Tech

06-13-2024
Issuance Date

PJLA
Calibration and Testing
Accreditation #61895

ISO/IEC 17025:2017 Accredited Laboratory

7 Eastgate Dr. • P.O. Box 790 • Jacksonville, IL 62651-0790
217-245-2183 • Fax: 217-243-7634 • www.ilmoproducts.com

Certificate of Analysis

Certificate ID: 16511

Part #: BAC34L030T
Cylinder Size: 34L
Lot Number: 09524001A1
Expiration: 7/5/2026

0.030 BAC (For the calibration of instruments used to determine breath alcohol concentration)

Contents: 34 Liters @ 500 psig 70°F (21°C)

Component:	Reported Concentration:	Analytical Accuracy (U, k=2): abs	Analytical Method:
Ethanol	78 ppm	+/- 0.002 BAC (G/210L) [5.2 ppm]	NDIR
Nitrogen	Balance		

*Reference Standard:
NIST Traceable Certified Reference Material - 104.7 µmol/mol Ethanol in Nitrogen - Serial No. ND7023 Lot No. 080722E1

Store in dry area, away from sources of heat, ignition and direct sunlight. Do not allow storage area to exceed 52 °C (125 °F).

Specialty Gas Lab Tech

06-10-2024
Issuance Date

PJLA
Calibration and Testing
Accreditation #61895

ISO/IEC 17025:2017 Accredited Laboratory

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Certificate of Analysis

Certificate ID: 16512

Part #: BAC34L290T
Cylinder Size: 34L_290
Lot Number: 09524004A4
Expiration: 7/5/2026

0.290 BAC (For the calibration of instruments used to determine breath alcohol concentration)

Contents: 34 Liters @ 470 psig 70°F (21°C)

Component:	Reported Concentration:	Analytical Accuracy (U, k=2):	Analytical Method:
Ethanol	755 ppm	+/- 2% (rel. ppm)	Gravimetric
Nitrogen	Balance		

*NIST Traceable to:
Gravimetric Balance
Calibration Certificate No. 82326
Calibration Certificate No. 85691

Store in dry area, away from sources of heat, ignition and direct sunlight. Do not allow storage area to exceed 52 °C (125 °F).

Specialty Gas Lab Tech

06-14-2024
Issuance Date

PJLA
Calibration and Testing
Accreditation #61895

ISO/IEC 17025:2017 Accredited Laboratory