



Breath Alcohol Calibration Verification Test No. 18-569 Summary Report

Each sample pack consisted of four 34L certified reference material dry gas cylinders which participants were requested to analyze. Data were returned from 44 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 34L certified reference material dry gas cylinders (Items 1-4). Participants were requested to analyze the contents of each cylinder and report the apparent breath alcohol concentration.

SAMPLE PREPARATION-

Each dry gas cylinder was compared to its corresponding Certificate of Analysis. After verifying the breath alcohol concentration with the lot number, the cylinder was labeled with the appropriate Item number.

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

<u>Item</u>	<u>Breath Alcohol Concentration</u> <u>(g/210L)</u>	<u>Manufacturer's Uncertainty</u> <u>(g/210L)</u>
1	0.320	± 0.0064
2	0.090	± 0.0020
3	0.200	± 0.0040
4	0.010	± 0.0020

The information presented here details how test samples were prepared as well as any design specifications. This information does not necessarily represent the answers that should or could be obtained from an examination of the sample(s). Final interpretation of the results should be deferred until the summary report is available.

Summary Comments

This test was designed to allow participants to assess their proficiency in the last calibration performed on their breath alcohol instrument. Each participant was supplied with a sample set consisting of four 34L certified reference material dry gas cylinders which contained different breath alcohol concentration (BrAC) values. (Refer to Manufacturer's Information for production 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. Of the 44 participants that reported results, four reported "extreme" data for Item 1, one participant reported "extreme" data for Item 2, one participant reported "extreme" data for Item 3, and six participants reported extreme data for Item 4. Of these six participants, some reported extreme values for both EC and IR detector types. Participants are advised to consider their reported expanded uncertainty when evaluating their En results. CTS uses a coverage factor equal to 2 in its 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 E_n , 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. E_n is calculated as follows:

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

Where the assigned value, X_{ref} , is determined in the manufacturer's reference laboratory, U_{ref} is the expanded uncertainty of X_{ref} , and U_{lab} is the Expanded Uncertainty of a participant's result, X_{lab} . E_n is not calculated for participants who did not report their Expanded Uncertainty.

Absolute values of E_n less than **1.00** should be obtained for the measurements to be acceptable. This is because there is a 95% probability that the calculated E_n 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.

X_{ref} and U_{ref} were determined by the dry gas cylinder manufacturer, which is ISO 17025 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

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

Xlab: Participant's concentration
 Xref: Manufacturer's concentration
 Ulab: Participant's uncertainty
 Uref: Manufacturer's uncertainty

Item 1 Manufacturer's Concentration: 0.320 g/210L

Item 1 Manufacturer's Uncertainty: 0.0064 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in En)	Performance Statistic (En1)
29BETF	Thermo Electrically Cooled Lead Selenide Infrared	0.318		1009 mbar	
2ZW3PB	EC	0.309	0.0150	1010	-0.67
	IR	0.319	0.0152	1010	-0.06
3BB6BF	Thermo electrically cooled lead selenide infrared	0.313		1014 mbar	
3KJBZB	EC	0.314	0.0164		-0.34
	IR	0.307	0.0158		-0.76
3VZX9C	EC	0.290	0.0146	929 hPA	-1.88 X
	IR	0.307	0.0150	929 hPA	-0.80
48QAW9	E/C	0.308	0.0154	1014	-0.72
	I/R	0.303	0.0150	1014	-1.04 X
492GC2	Fuel Cell	0.326	0.0060	N/A - Instrument is set up to adjust for barometric pressure	0.68
4TNJEB	EC	0.320	0.0156	977	0.00
	IR	0.319	0.0154	977	-0.06
686V7B	Fuel Cell	0.313	0.0060	759 mm/Hg	-0.80
6B672B	Fuel Cell	0.317	0.0060	756 mm Hg	-0.34
869YUL	IR	0.314	0.0440	906 mb	-0.13
9BUEXJ	EC	0.314		1007	
	IR	0.312		1007	

TABLE 1 - Item 1

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

X_{lab}: Participant's concentration
 X_{ref}: Manufacturer's concentration
 U_{lab}: Participant's uncertainty
 U_{ref}: Manufacturer's uncertainty

Item 1 Manufacturer's Concentration: 0.320 g/210L

Item 1 Manufacturer's Uncertainty: 0.0064 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in E _n)	Performance Statistic (E _n)
9GYAGJ	IR	0.319		928	
AC43E2	EC	0.329	0.0164	1010 hPas	0.51
	IR	0.3226	0.0162	1010 hPas	0.15
DAZEM2	Infrared	0.313	0.0041	1004.2 mbar	-0.92
DFQPXY	EC	0.310	0.0148	1013 hPas	-0.62
	IR	0.320	0.0150	1013 hPas	0.00
DPDDLRL	Electrochemical Fuel Cell	0.312	0.0170	748mmHg	-0.44
E7W467	Electrochemical fuel cell	0.313	0.0070	757	-0.74
FFFYKX	EC	0.309	0.0156	986 hPas	-0.65
	IR	0.311	0.0152	986 hPas	-0.55
G9YN6B	IR	0.319		923	
H82UKC	Electrochemical sensor (fuel cell)	0.312	0.0120	992.5	-0.59
HKAF9B	IR	0.319		1005.4	
J2Q29R	EC	0.305	0.0152	+1009.1 hPas	-0.91
	IR	0.314	0.0154	+1009.1 hPas	-0.36
JG4A9V	IR	0.314	0.0120	29.56 in HG	-0.44
JLVJG9	Infrared	0.312	0.0100	858 hPa	-0.67
JVK8CB	Fuel Cell	0.314	0.0120	995.0	-0.44
K2K72R	EC	0.310	0.0150	1002 Hpas	-0.61
	IR	0.320	0.0152	1002 Hpas	0.00
L4PJCJ	Electrochemical Cell	0.317	0.0180	752.9 mmHg	-0.16

TABLE 1 - Item 1

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

Xlab: Participant's concentration
 Xref: Manufacturer's concentration
 Ulab: Participant's uncertainty
 Uref: Manufacturer's uncertainty

Item 1 Manufacturer's Concentration: 0.320 g/210L

Item 1 Manufacturer's Uncertainty: 0.0064 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in En)	Performance Statistic (En1)
LT868V	Thermo Electrically Cooled Leas Selenide Infrared	0.316		1009 mbar	
MJFFW8	Fuel Cell	0.308	0.0120	992.3 mbar	-0.88
ND6MJN	EC	0.342	0.0170	1007 hPa	1.21 X
	IR	0.322	0.0162	1007 hPa	0.11
NQRUFN	EC	0.304	0.0150	1006 hPas	-0.98
	IR	0.298	0.0144	1006 hPas	-1.40 X
Q7GLEV	Dual Wavelength 3.4 and 9.4 micrometer Pyroelectric Detector	0.310	0.0360	844	-0.27
QEEDMN	IR	0.320	0.0500	955	0.00
T2FGDL	Fuel Cell	0.316	0.0040	743 mmHg	-0.53
TBMJQD	Electrochemical Fuel Cell	0.312	0.0170	747 mm Hg	-0.44
UNNHCN	Thermo electrically Cooled Lead Selenide Infrared	0.318		1009 mbar	
UWYYJN	Thermo Electrically Cooled Lead Selenide Infrared	0.321		1011 mbar	
VNME8Y	IR	0.317	0.0150	1011.7mBAR	-0.18
W6JLEW	IR	0.314		1011.5 hPas	
X9KE2K	Thermo Electrically Cooled Lead Selenide Infrared.	0.315		1013 mbar	
XBNHXW	Fuel cell	0.320	0.0130	993.5	0.00
YNQ9FU	Infra-red	0.312	0.0080	1016 millibars	-0.78
Z78W3U	Electrochemical Fuel Cell	0.314	0.0120	990.2	-0.44

TABLE 1 - Item 2

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

X_{lab}: Participant's concentration
 X_{ref}: Manufacturer's concentration
 U_{lab}: Participant's uncertainty
 U_{ref}: Manufacturer's uncertainty

Item 2 Manufacturer's Concentration: 0.090 g/210L

Item 2 Manufacturer's Uncertainty: 0.0020 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in En)	Performance Statistic (En2)
29BETF	Thermo Electrically Cooled Lead Selenide Infrared	0.090		1009 mbar	
2ZW3PB	EC	0.089	0.0058	1010	-0.16
	IR	0.090	0.0060	1010	0.00
3BB6BF	Thermo electrically cooled lead selenide infrared	0.089		1014 mbar	
3KJBZB	EC	0.090	0.0060		0.00
	IR	0.087	0.0058		-0.49
3VZX9C	EC	0.087	0.0058	929 hPA	-0.49
	IR	0.091	0.0060	929 hPA	0.16
48QAW9	E/C	0.087	0.0058	1014	-0.49
	I/R	0.085	0.0058	1014	-0.81
492GC2	Fuel Cell	0.090	0.0060	N/A - Instrument is set up to adjust for barometric pressure	0.00
4TNJEB	EC	0.093	0.0060	977	0.47
	IR	0.092	0.0060	977	0.32
686V7B	Fuel Cell	0.088	0.0030	759 mm/Hg	-0.55
6B672B	Fuel Cell	0.088	0.0030	756 mm Hg	-0.55
869YUL	IR	0.090	0.0440	906 mb	0.00
9BUEXJ	EC	0.087		1007	
	IR	0.087		1007	
9GYAGJ	IR	0.091		928	
AC43E2	EC	0.092	0.0062	1010 hPas	0.31
	IR	0.092	0.0062	1010 hPas	0.31
DAZEM2	Infrared	0.090	0.0041	1004.2 mbar	0.00
DFQPXY	EC	0.089	0.0058	1013 hPas	-0.16
	IR	0.091	0.0060	1013 hPas	0.16

TABLE 1 - Item 2

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

X_{lab}: Participant's concentration
 X_{ref}: Manufacturer's concentration
 U_{lab}: Participant's uncertainty
 U_{ref}: Manufacturer's uncertainty

Item 2 Manufacturer's Concentration: 0.090 g/210L

Item 2 Manufacturer's Uncertainty: 0.0020 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in E _n)	Performance Statistic (E _n 2)
DPDDLRL	Electrochemical Fuel Cell	0.087	0.0050	748mmHg	-0.56
E7W467	Electrochemical fuel cell	0.088	0.0040	757	-0.45
FFFYKX	EC	0.092	0.0060	986 hPas	0.32
	IR	0.092	0.0060	986 hPas	0.32
G9YN6B	IR	0.093		923	
H82UKC	Electrochemical sensor (fuel cell)	0.088	0.0120	992.5	-0.16
HKAF9B	IR	0.089		1005.4	
J2Q29R	EC	0.087	0.0058	+1009.1 hPas	-0.49
	IR	0.089	0.0060	+1009.1 hPas	-0.16
JG4A9V	IR	0.090	0.0070	29.56 in HG	0.00
JLVJG9	Infrared	0.090	0.0040	858 hPa	0.00
JVK8CB	Fuel Cell	0.090	0.0120	995.0	0.00
K2K72R	EC	0.090	0.0060	1002 Hpas	0.00
	IR	0.092	0.0060	1002 Hpas	0.32
L4PJCJ	Electrochemical Cell	0.088	0.0050	752.9 mmHg	-0.37
LT868V	Thermo Electrically Cooled Leas Selenide Infared	0.090		1009 mbar	
MJFFW8	Fuel Cell	0.088	0.0050	992.3 mbar	-0.37
ND6MJN	EC	0.097	0.0064	1007 hPa	1.04 X
	IR	0.091	0.0062	1007 hPa	0.15
NQRUFN	EC	0.092	0.0062	1006 hPas	0.31
	IR	0.092	0.0060	1006 hPas	0.32
Q7GLEV	Dual Wavelength 3.4 and 9.4 micrometer Pyroelectric Detector	0.088	0.0036	844	-0.49
QEEDMN	IR	0.091	0.0050	955	0.19

TABLE 1 - Item 2

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

X_{lab}: Participant's concentration
 X_{ref}: Manufacturer's concentration
 U_{lab}: Participant's uncertainty
 U_{ref}: Manufacturer's uncertainty

Item 2 Manufacturer's Concentration: 0.090 g/210L

Item 2 Manufacturer's Uncertainty: 0.0020 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in E _n)	Performance Statistic (E _n 2)
T2FGDL	Fuel Cell	0.088	0.0030	743 mmHg	-0.55
TBMJQD	Electrochemical Fuel Cell	0.087	0.0050	747 mm Hg	-0.56
UNNHCN	Thermo electrically Cooled Lead Selenide Infrared	0.090		1009 mbar	
UWYYJN	Thermo Electrically Cooled Lead Selenide Infrared	0.091		1011 mbar	
VNME8Y	IR	0.091	0.0040	1011.7mBAR	0.22
W6JLEW	IR	0.089		1011.5 hPas	
X9KE2K	Thermo Electrically Cooled Lead Selenide Infrared.	0.090		1013 mbar	
XBNHXW	Fuel cell	0.091	0.0130	993.5	0.08
YNQ9FU	Infra-red	0.089	0.0030	1016 millibars	-0.28
Z78W3U	Electrochemical Fuel Cell	0.089	0.0120	990.2	-0.08

TABLE 1 - Item 3

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

X_{lab}: Participant's concentration
 X_{ref}: Manufacturer's concentration
 U_{lab}: Participant's uncertainty
 U_{ref}: Manufacturer's uncertainty

Item 3 Manufacturer's Concentration: 0.200 g/210L

Item 3 Manufacturer's Uncertainty: 0.0040 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in E _n)	Performance Statistic (E _n 3)
29BETF	Thermo Electrically Cooled Lead Selenide Infrared	0.199		1009 mbar	
2ZW3PB	EC	0.194	0.0100	1010	-0.56
	IR	0.199	0.0106	1010	-0.09
3BB6BF	Thermo electrically cooled lead selenide infrared	0.196		1014 mbar	
3KJBZB	EC	0.198	0.0110		-0.17
	IR	0.194	0.0106		-0.53
3VZX9C	EC	0.185	0.0100	929 hPa	-1.39 X
	IR	0.195	0.0106	929 hPa	-0.44
48QAW9	E/C	0.192	0.0104	1014	-0.72
	I/R	0.190	0.0106	1014	-0.88
492GC2	Fuel Cell	0.199	0.0060	N/A - Instrument is set up to adjust for barometric pressure	-0.14
4TNJEB	EC	0.200	0.0106	977	0.00
	IR	0.201	0.0106	977	0.09
686V7B	Fuel Cell	0.196	0.0060	759 mm/Hg	-0.55
6B672B	Fuel Cell	0.196	0.0060	756 mm Hg	-0.55
869YUL	IR	0.198	0.0440	906 mb	-0.05
9BUEXJ	EC	0.195		1007	
	IR	0.197		1007	
9GYAGJ	IR	0.202		928	
AC43E2	EC	0.205	0.0110	1010 hPas	0.43
	IR	0.205	0.0110	1010 hPas	0.43

TABLE 1 - Item 3

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

X_{lab}: Participant's concentration
 X_{ref}: Manufacturer's concentration
 U_{lab}: Participant's uncertainty
 U_{ref}: Manufacturer's uncertainty

Item 3 Manufacturer's Concentration: 0.200 g/210L

Item 3 Manufacturer's Uncertainty: 0.0040 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in E _n)	Performance Statistic (E _n 3)
DAZEM2	Infrared	0.197	0.0041	1004.2 mbar	-0.52
DFQPXY	EC	0.194	0.0100	1013 hPas	-0.56
	IR	0.201	0.0102	1013 hPas	0.09
DPDDLRL	Electrochemical Fuel Cell	0.194	0.0110	748mmHg	-0.51
E7W467	Electrochemical fuel cell	0.196	0.0040	757	-0.71
FFFYKX	EC	0.196	0.0106	986 hPas	-0.35
	IR	0.198	0.0104	986 hPas	-0.18
G9YN6B	IR	0.201		923	
H82UKC	Electrochemical sensor (fuel cell)	0.191	0.0120	992.5	-0.71
HKAF9B	IR	0.200		1005.4	
J2Q29R	EC	0.191	0.0102	+1009.1 hPas	-0.82
	IR	0.198	0.0102	+1009.1 hPas	-0.18
JG4A9V	IR	0.196	0.0120	29.56 in HG	-0.32
JLVJG9	Infrared	0.196	0.0060	858 hPa	-0.55
JVK8CB	Fuel Cell	0.196	0.0120	995.0	-0.32
K2K72R	EC	0.196	0.0102	1002 Hpas	-0.37
	IR	0.202	0.0104	1002 Hpas	0.18
L4PJCJ	Electrochemical Cell	0.197	0.0110	752.9 mmHg	-0.26
LT868V	Thermo Electrically Cooled Leas Selenide Infrared	0.198		1009 mbar	
MJFFW8	Fuel Cell	0.193	0.0120	992.3 mbar	-0.55

TABLE 1 - Item 3

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

X_{lab}: Participant's concentration
 X_{ref}: Manufacturer's concentration
 U_{lab}: Participant's uncertainty
 U_{ref}: Manufacturer's uncertainty

Item 3 Manufacturer's Concentration: 0.200 g/210L

Item 3 Manufacturer's Uncertainty: 0.0040 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in E _n)	Performance Statistic (E _{n3})
ND6MJN	EC	0.211	0.0114	1007 hPa	0.91
	IR	0.201	0.0108	1007 hPa	0.09
NQRUFN	EC	0.194	0.0102	1006 hPas	-0.55
	IR	0.194	0.0102	1006 hPas	-0.55
Q7GLEV	Dual Wavelength 3.4 and 9.4 micrometer Pyroelectric Detector	0.194	0.0360	844	-0.17
QEEDMN	IR	0.201	0.0500	955	0.02
T2FGDL	Fuel Cell	0.198	0.0040	743 mmHg	-0.35
TBMJQD	Electrochemical Fuel Cell	0.196	0.0110	747 mm Hg	-0.34
UNNHCN	Thermo electrically Cooled Lead Selenide Infrared	0.200		1009 mbar	
UWYYJN	Thermo Electrically Cooled Lead Selenide Infrared	0.201		1011 mbar	
VNME8Y	IR	0.201	0.0090	1011.7mBAR	0.10
W6JLEW	IR	0.197		1011.5 hPas	
X9KE2K	Thermo Electrically Cooled Lead Selenide Infrared.	0.196		1013 mbar	
XBNHXW	Fuel cell	0.202	0.0130	993.5	0.15
YNQ9FU	Infra-red	0.197	0.0040	1016 millibars	-0.53
Z78W3U	Electrochemical Fuel Cell	0.192	0.0120	990.2	-0.63

TABLE 1 - Item 4

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

X_{lab}: Participant's concentration
 X_{ref}: Manufacturer's concentration
 U_{lab}: Participant's uncertainty
 U_{ref}: Manufacturer's uncertainty

Item 4 Manufacturer's Concentration: 0.010 g/210L

Item 4 Manufacturer's Uncertainty: 0.0020 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in E _n)	Performance Statistic (E _n 4)
29BETF	Thermo Electrically Cooled Lead Selenide Infrared	0.011		1009 mbar	
2ZW3PB	EC	0.010	0.0032	1010	0.00
	IR	0.010	0.0032	1010	0.00
3BB6BF	Thermo electrically cooled lead selenide infrared	0.010		1014 mbar	
3KJBZB	EC	0.010	0.0032		0.00
	IR	0.009	0.0032		-0.26
3VZX9C	EC	0.014	0.0032	929 hPA	1.06 X
	IR	0.014	0.0032	929 hPA	1.06 X
48QAW9	E/C	0.010	0.0032	1014	0.00
	I/R	0.009	0.0032	1014	-0.26
492GC2	Fuel Cell	0.006	0.0030	N/A - Instrument is set up to adjust for barometric pressure	-1.11 X
4TNJEB	EC	0.015	0.0032	977	1.32 X
	IR	0.014	0.0032	977	1.06 X
686V7B	Fuel Cell	0.008	0.0030	759 mm/Hg	-0.55
6B672B	Fuel Cell	0.008	0.0030	756 mm Hg	-0.55
869YUL	IR	0.00	0.0440	906 mb	-0.23
9BUEXJ	EC	0.010		1007	
	IR	0.009		1007	
9GYAGJ	IR	0.00		928	
AC43E2	EC	0.011	0.0032	1010 hPas	0.26
	IR	0.010	0.0032	1010 hPas	0.00

TABLE 1 - Item 4

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

Xlab: Participant's concentration
 Xref: Manufacturer's concentration
 Ulab: Participant's uncertainty
 Uref: Manufacturer's uncertainty

Item 4 Manufacturer's Concentration: 0.010 g/210L

Item 4 Manufacturer's Uncertainty: 0.0020 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in En)	Performance Statistic (En4)
DAZEM2	Infrared	0.012	0.0041	1004.2 mbar	0.44
DFQPXY	EC	0.011	0.0032	1013 hPas	0.26
	IR	0.011	0.0032	1013 hPas	0.26
DPDDLRL	Electrochemical Fuel Cell	0.008	0.0050	748mmHg	-0.37
E7W467	Electrochemical fuel cell	0.009	0.0010	757	-0.45
FFFYKX	EC	0.014	0.0032	986 hPas	1.06 X
	IR	0.013	0.0032	986 hPas	0.79
G9YN6B	IR	0.00		923	
H82UKC	Electrochemical sensor (fuel cell)	0.010	0.0050	992.5	0.00
HKAF9B	IR	0.010		1005.4	
J2Q29R	EC	0.010	0.0032	+1009.1 hPas	0.00
	IR	0.010	0.0032	+1009.1 hPas	0.00
JG4A9V	IR	0.011	0.0050	29.56 in HG	0.19
JLVJG9	Infrared	0.00	0.0000	858 hPa	0.00
JVK8CB	Fuel Cell	0.011	0.0050	995.0	0.19
K2K72R	EC	0.011	0.0032	1002 Hpas	0.26
	IR	0.011	0.0032	1002 Hpas	0.26
L4PJCJ	Electrochemical Cell	0.008	0.0050	752.9 mmHg	-0.37
LT868V	Thermo Electrically Cooled Leas Selenide Infrared	0.011		1009 mbar	
MJFFW8	Fuel Cell	0.010	0.0050	992.3 mbar	0.00

TABLE 1 - Item 4

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

Xlab: Participant's concentration
 Xref: Manufacturer's concentration
 Ulab: Participant's uncertainty
 Uref: Manufacturer's uncertainty

Item 4 Manufacturer's Concentration: 0.010 g/210L

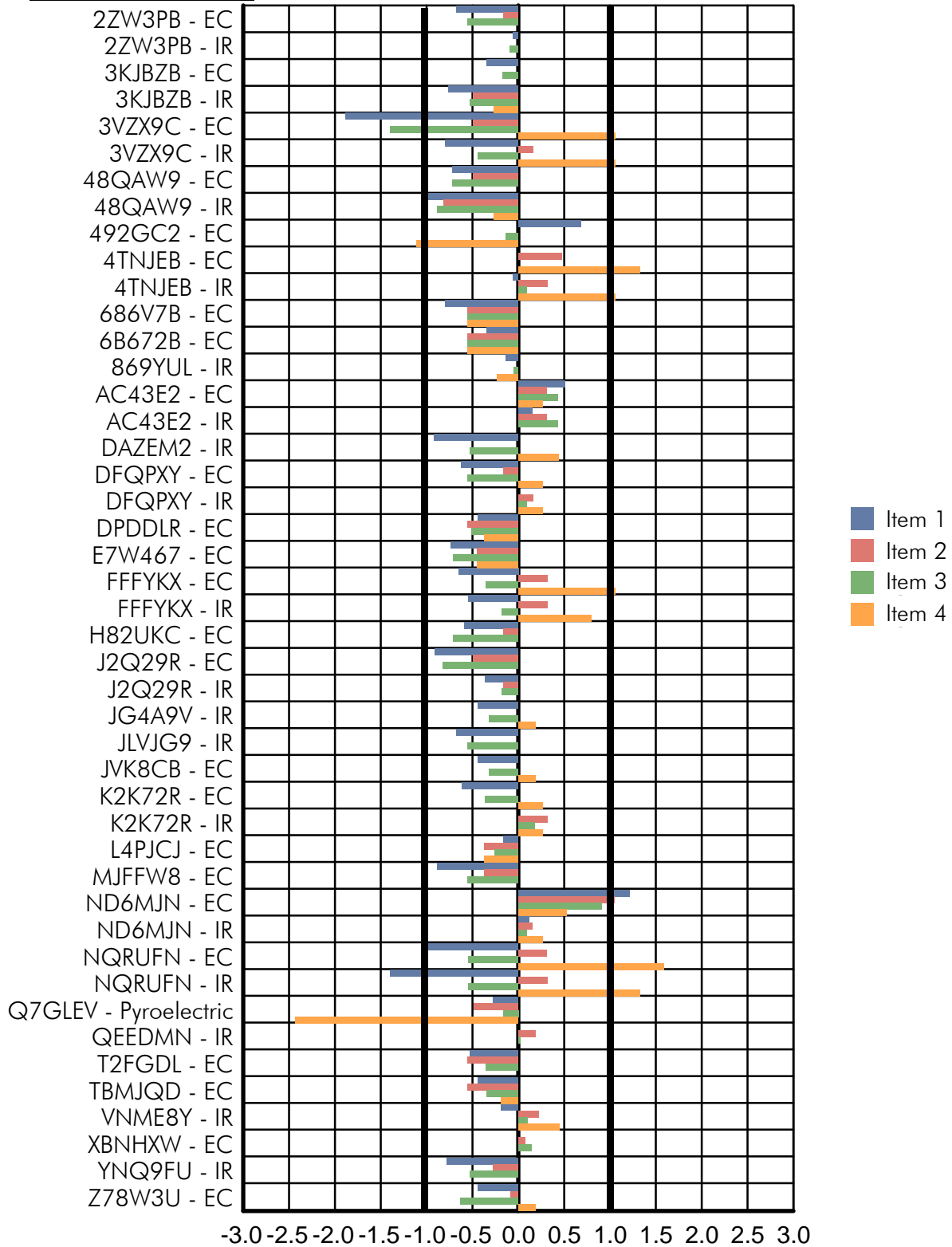
Item 4 Manufacturer's Uncertainty: 0.0020 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in En)	Performance Statistic (En4)
ND6MJN	EC	0.012	0.0032	1007 hPa	0.53
	IR	0.011	0.0032	1007 hPa	0.26
NQRUFN	EC	0.016	0.0032	1006 hPas	1.59 X
	IR	0.015	0.0032	1006 hPas	1.32 X
Q7GLEV	Dual Wavelength 3.4 and 9.4 micrometer Pyroelectric Detector	0.00	0.0036	844	-2.43 X
QEEDMN	IR	0.00		955	
T2FGDL	Fuel Cell	0.010	0.0020	743 mmHg	0.00
TBMJQD	Electrochemical Fuel Cell	0.009	0.0050	747 mm Hg	-0.19
UNNHCN	Thermo electrically Cooled Lead Selenide Infrared	0.011		1009 mbar	
UWYYJN	Thermo Electrically Cooled Lead Selenide Infrared	0.011		1011 mbar	
VNME8Y	IR	0.011	0.0010	1011.7mBAR	0.45
W6JLEW	IR	0.010		1011.5 hPas	
X9KE2K	Thermo Electrically Cooled Lead Selenide Infrared.	0.011		1013 mbar	
XBNHXW	Fuel cell	0.010	0.0050	993.5	0.00
YNQ9FU	Infra-red	0.010	0.0010	1016 millibars	0.00
Z78W3U	Electrochemical Fuel Cell	0.011	0.0050	990.2	0.19

En Results

Graph 1

WebCode - Detector



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
29BETF	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.
2ZW3PB	[No adjustments reported]
3BB6BF	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.
3KJBZB	[No adjustments reported]
3VZX9C	[No adjustments reported]
48QAW9	[No adjustments reported]
492GC2	+4.5% correction for dry gas standards (built into software)
4TNJEB	[No adjustments reported]
686V7B	Raw data adjusted for wet/dry offset (+4.5%) and normalized to sea level 760 (760/759mm Hg).
6B672B	Raw data adjusted for wet/dry offset (+4.5%) and normalized to sea level (760/756 mm Hg).
869YUL	correction factor 1.11
9BUEXJ	NA
9GYAGJ	Results are the average of five tests, truncated to the third digit. Uncertainty has not yet been established.
AC43E2	[No adjustments reported]
DAZEM2	n/a
DFQPXY	[No adjustments reported]
DPDDLRL	Adjusted for barometric pressure and the wet/dry offset
E7W467	The raw data is normalized to 760 mmHg and corrected with a factor of 4.5% to account for the wet/dry offset.
FFFYKX	[No adjustments reported]
G9YN6B	N/A
H82UKC	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.
HKAF9B	[No adjustments reported]
J2Q29R	N/A
JG4A9V	The Draeger Alcotest 7110 MKIII-C has a built in factory offset of +4% for periodic determinations of accuracy (i.e. accuracy checks or acc-checks) when using dry gas calibration devices.

TABLE 2

WebCode	Raw Data Adjustments
JLVJG9	No adjustments to raw data, other than rounding to three decimal places.
JVK8CB	No additional adjustments were made. The instrument has a built in pressure transducer to correct for altitude and the dry/wet offset for a dry gas standard is automatically applied when the type of standard, dry gas, is selected.
K2K72R	[No adjustments reported]
L4PJCJ	4.5% wet/dry offset done by the instrument. Barometric adjustment done by instrument in calibration mode.
LT868V	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.
MJFFW8	None. Instrument has a sensor to automatically adjust for ambient pressure. Dry/wet offset is adjusted during the maintenance of the instrument and is applied by the instrument during analysis of dry gas standards.
NQRUFN	[No adjustments reported]
Q7GLEV	N/A
QEEDMN	NA
T2FGDL	4% correction factor for dry gas standard. Barometric pressure correction
TBMJQD	The raw result is normalized to atmospheric pressure dividing 760 by 747 mm Hg. The result is also corrected by multiplying it by 1.045.
UNNHCHN	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.
UWYYJN	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.
VNME8Y	n/a
W6JLEW	N/A
X9KE2K	Barometric pressure. The Data Master DMT is equipped with a barometric sensor. The target value is adjusted based on the site specific reading of barometric pressure.
XBNHXW	No additional adjustments were made. Instrument has a built in pressure transducer to correct for altitude and the dry/wet offset for a dry gas standard is automatically applied when the type of standard, dry gas, is selected.
YNQ9FU	Raw values were divided by .9636 to yield the reported values. This conversion corrects for barometric pressure related to altitude.
Z78W3U	Adjustments not applicable due to the instrument having a built in pressure transducer that automatically corrects for atmospheric pressure. When the standard type of dry gas is selected the dry/wet offset is automatically applied.

Instrument Information

TABLE 3

WebCode	Instrument used	Detector type
29BETF	DataMaster DMT [S/n]	Thermo Electrically Cooled Lead Selenide Infrared
2ZW3PB	Draeger Alcotest 9510 [S/n]	EC
	Draeger Alcotest 9510 [S/n]	IR
3BB6BF	DataMaster DMT [S/n]	Thermo electrically cooled lead selenide infrared
3KJBZB	Draeger Alcotest 9510 [S/n]	EC
	Draeger Alcotest 9510 [S/n]	IR
3VZX9C	Draeger Alcotest 9510 [S/n]	EC
	Draeger Alcotest 9510 [S/n]	IR
48QAW9	Draeger Alcotest 9510 [S/n]	E/C
	Draeger Alcotest 9510 [S/n]	I/R
492GC2	AlcoSensor V XL	Fuel Cell
4TNJEB	[S/n] Draeger 9510 Alcotest	EC
	[S/n] Draeger 9510 Alcotest	IR
686V7B	Intox EC/IR II	Fuel Cell
6B672B	INTOX EC/IR II	Fuel Cell
869YUL	Intoxilyzer 8000	IR
9BUEXJ	AlcoTest 9510	EC
	AlcoTest 9510	IR
9GYAGJ	Intoxilyzer 8000	IR
AC43E2	Draeger Alcotest 9510	EC
	Draeger Alcotest 9510	IR
DAZEM2	Intoxilyzer 9000	Infrared
DFQPXY	Draeger Alcotest 9510 [S/n]	EC
	Draeger Alcotest 9510 [S/n]	IR
DPDDLRL	Intox EC/IR II	Electrochemical Fuel Cell
E7W467	Intoximeter EC/IR II	Electrochemical fuel cell
FFFYKX	Draeger 9510 [S/n]	EC
	Draeger 9510 [S/n]	IR
G9YN6B	Intoxilyzer 8000	IR
H82UKC	Draeger A7510: S/n	Electrochemical sensor (fuel cell)
HKAF9B	Draeger Alcotest 9510 S/n	IR
J2Q29R	Draeger Alcotest 9510	EC
	Draeger Alcotest 9510	IR
JG4A9V	Draeger Alcotest 7110 MKIII-C	IR
JLVJG9	Intoxilyzer 8000	Infrared

TABLE 3

WebCode	Instrument used	Detector type
JVK8CB	Dräger Alcotest 7510: S/n	Fuel Cell
K2K72R	Draeger Alcotest 9510 Draeger Alcotest 9510	EC IR
L4PJCJ	Alcosensor V-XL @ POA	Electrochemical Cell
LT868V	Datamaster DMT [S/n]	Thermo Electrically Cooled Lead Selenide Infrared
MJFFW8	Dräger Alcotest 7510	Fuel Cell
ND6MJN	Draeger Alcotest 9510 [S/n] Draeger Alcotest 9510 [S/n]	EC IR
NQRUFN	Draeger 9510 [S/n] Draeger 9510 [S/n]	EC IR
Q7GLEV	Intoxilyzer 8000 [S/n]	Dual Wavelength 3.4 and 9.4 micrometer Pyroelectric Detector
QEEDMN	Intoxilyzer 8000	IR
T2FGDL	ECIR II (Intoximeters, Inc.) S/n	Fuel Cell
TBMJQD	Intoximeters, Intox EC/IR II	Electrochemical Fuel Cell
UNNHCHN	DataMaster DMT [S/n]	Thermo electrically Cooled Lead Selenide Infrared
UWYYJN	DataMaster DMT [S/n]	Thermo Electrically Cooled Lead Selenide Infrared
VNME8Y	Draeger Alcotest 9510	IR
W6JLEW	Alcotest 9510 S/n	IR
X9KE2K	DataMaster DMT [S/n]	Thermo Electrically Cooled Lead Selenide Infrared.
XBNHXW	Dräger Alcotest 7510: S/n	Fuel cell
YNQ9FU	DMT-G	Infra-red
Z78W3U	Draeger Alcotest A7510 S/n	Electrochemical Fuel Cell

Additional Comments

TABLE 4

WebCode	Additional Comments
29BETF	Each item was analyzed five times. The average value of the five 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 of the calibration, and hence not reported for the items.
3BB6BF	Each item was analyzed five times. The average value of the five analyses for each item was reported to three decimal places (reported concentration). The laboratory only calculates expended 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.
9BUEXJ	This laboratory has not calculated measurement uncertainty for breath alcohol calibration.
DPDDLRL	Uncertainty of measurement for this instrument for k=2 is 0.005g/210L or 5.6%, whichever is greater
E7W467	Laboratory certificate of instrument accuracy are 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 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.
G9YN6B	Uncertainty has not been established.
H82UKC	The [Laboratory Name] report results to three decimal places in g/ 210L and uses a coverage factor of 3.17 (k=3.17) representing a 99% CL for the expanded uncertainty. Result would have been reported as the following: Item 1: 0.312 (g/210L) +/-0.019; Item 2: 0.088 (g/210L) +/-0.019; Item 3: 0.191 (g/210L) +/-0.019; Item 4: 0.010 (g/210L) +/-0.008
JG4A9V	[From Table 1 - Reported Results: "The Draeger Alcotest 7110 MKIII-C Instrument is equipped with an Infrared (IR) detector and an electrochemical (EC) fuel cell detector. For the purpose of reporting calibration results, only the IR detector results are reported." Participant crossed out K=2 and replaced with K=3 for the uncertainty. "Approximate 99.73% coverage level of confidence". "From Fisher Scientific Barometric Pressure measuring device [S/n], calibration date: January 2018"]
JLVJG9	All four items tested with nine samples. Item 1: Average: 0.3124, min: 0.312, max 0.313, Std Dev 0.0005, Rel Std Dev 0.17%. Item 2: Average: 0.0898, min: 0.089, max 0.091, Std Dev 0.0007, Rel Std Dev 0.75%. Item 3: Average: 0.1959, min: 0.195, max 0.196, Std Dev 0.0003, Rel Std Dev 0.18%. Item 4: Average: 0.0000, min: 0.000, max 0.000, Std Dev 0.0000, Rel Std Dev 0.01% (note that relative standard deviation of 0.01% is reported by these instruments whenever standard deviation is zero)
JVK8CB	The [Laboratory Name] report results to three decimal places in g/210L and uses a coverage factor of 3.17 (k=3.17) representing a 99% CL for the expanded uncertainty. Result would have been reported as the following: Item 1: 0.314 (g/210L) +/-0.019; Item 2: 0.090 (g/210L) +/-0.019; Item 3: 0.196 (g/210L) +/-0.019; Item 4: 0.011 (g/210L) +/-0.008
LT868V	Each item was analyzed five times. The average value of the five 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.
ND6MJN	[From Table 1 - Reported Results, Items 1-4: "Mensor CPG2400 [S/n]"]

TABLE 4

WebCode	Additional Comments
QEEDMN	[Participant created a manually formatted table within the free form text space. This special formatting was not transferable into the final report. Data is presented as is.] Note: Possible discrepancy with labeling on gas cylinders received. CTS Label Lot # Side Lot # Bottom Item 1 12818004A4 12818004A4. Item 2 12818002A2 12818002A2. Item 3 12818003A3 12818003A3. Item 4 12818001A1 12818001A1
T2FGDL	Item #1 lot number: 12818004a4. Item #2 lot number: 12818002a2. Item #3 lot number: 12818003a3. Item #4 lot number: 12818001a1
TBMJQD	The estimated uncertainty of measurement for k=2 is 5.6% or 0.005 g/210L, whichever is greater.
UNNHCN	Each item was analyzed five times. The average value of the five 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.
UWYYJN	Each item was analyzed five times. The average value of the five 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.
X9KE2K	Each item was analyzed five times. The average value of the five 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 these items.
XBNHXW	The [Laboratory Name] report results to three decimal places in g/210L and uses a coverage factor of 3.17 (k=3.17) representing a 99% CL for the expanded uncertainty. Result would have been reported as the following: Item 1: 0.320 (g/210L) +/- 0.021; Item 2: 0.091 (g/210L) +/- 0.021; Item 3: 0.202 (g/210L) +/- 0.021; Item 4: 0.010 (G/210L) +/- 0.008
YNQ9FU	The uncertainty reported with each result reflects the 2018 calculated calibration uncertainty value closest to the result reported with an expanded uncertainty of K=2.
Z78W3U	Per our laboratory method, results are reported to three decimal places in g/210L with a 99% CL for expanded uncertainty. The reported results for these samples would have normally been reported as: Item 1: 0.314 +/- 0.019 g/210L; Item 2: 0.089 +/- 0.019 g/210L; Item 3: 0.192 +/- 0.019 g/210L; Item 4: 0.011 +/- 0.008 g/210L

-End of Report-
(Appendix may follow)

Appendix: Data Sheet

Collaborative Testing Services ~ Forensic Testing Program

Test No. 18-569: Breath Alcohol Calibration Verification

DATA MUST BE RECEIVED BY September 17, 2018 TO BE INCLUDED IN THE REPORT

Participant Code:

WebCode:

Accreditation Release Statement

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

- This participant's data is intended for submission to ASCLD/LAB, ANAB, and/or A2LA. (Accreditation Release section on the last page must be completed and submitted.)
- This participant's data is NOT intended for submission to ASCLD/LAB, ANAB or A2LA.

Items Submitted (Sample Pack BRC):

Items 1-4: 34L certified reference material dry gas cylinders

Note: Please disregard the cylinder labeling with regard to concentration.

Please return all pages of this data sheet.

Participant Code:

WebCode:

1.) Detector type (If additional detectors used, please copy this page):

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.

<u>Reported Concentration (g/210L)</u>	<u>Uncertainty (k=2)</u>
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).

Participant Code:

WebCode:

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

Return Instructions: Data must be received via online data entry, fax (please include a cover sheet), or mail by **September 17, 2018** to be included in the report. Emailed data sheets are not accepted.

QUESTIONS?

TEL: +1-571-434-1925 (8 am - 4:30 pm EST)

EMAIL: forensics@cts-interlab.com

www.ctsforensics.com

Participant Code:

ONLINE DATA ENTRY: www.cts-portal.com

FAX: +1-571-434-1937

MAIL: Collaborative Testing Services, Inc.

P.O. Box 650820

Sterling, VA 20165-0820 USA

Please return all pages of this data sheet.

Collaborative Testing Services ~ Forensic Testing Program

RELEASE OF DATA TO ACCREDITATION BODIES

The following Accreditation Releases will apply only to:

Participant Code:

WebCode:

for Test No. **18-569 Breath Alcohol Calibration Verification**

This release page must be completed and received by **September 17, 2018** to have this participant's submitted data included in the reports forwarded to the respective Accreditation Bodies.

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. _____

(Include ASCLD/LAB Certificate here)

A2LA Certificate No. _____

Step 2: Complete the Laboratory Identifying Information in its entirety

Signature and Title _____

Laboratory Name _____

Location (City/State) _____

Return Instructions

Accreditation Release

Please submit the completed Accreditation Release at the same time as your full data sheet. See Data Sheet Return Instructions on the previous page.

*Questions? Contact us 8 am-4:30 pm EST
Telephone: +1-571-434-1925
email: forensics@cts-interlab.com*

Please return all pages of this data sheet.

CTS Test 18-569
Item 1



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: 11140
Part #: BAC34L320T
Cylinder Size: 34L
Lot Number: 12818004A4
Expiration: 8/5/2020

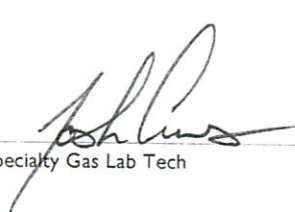
0.320 BAC (For the calibration of instruments used to determine breath alcohol concentration)

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

Component:	Reported Concentration:	Analytical Accuracy (U, k=2):	Analytical Method:
Ethanol	834 ppm	+/- 2% (rel. ppm)	Gravimetric
Nitrogen	Balance		

*NIST Traceable Gravimetric Scale
Calibration Certificate No. 404101701
Calibration Certificate No. 404101702

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

06-12-18
Date



The calibration results within this certificate were obtained using equipment and standards capable of producing analytical results traceable to NIST, and apply only to the items contained on this certificate. ILMO Products Company makes no warranty or representation as to the suitability of the use of any information provided for any particular purpose. The information use is at the sole discretion and risk of the user. Liability shall be limited to established replacement cost of this material or service.

ISO/IEC 17025:2005 Accredited Laboratory

CTS Test 18-569
Item 2



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: 11138
Part #: BAC34L090T
Cylinder Size: 34L
Lot Number: 12818002A2
Expiration: 8/5/2020

0.090 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	235 ppm	+/- 0.002 BAC (G/210L) [5.2 ppm]	NDIR
Nitrogen	Balance		

*NIST Traceable Reference Material
Cylinder No. CC274523 / Job No. 09160306
Certified 362.2 µmol/mol Ethanol in Nitrogen

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

06-12-18
Date



The calibration results within this certificate were obtained using equipment and standards capable of producing analytical results traceable to NIST, and apply only to the items contained on this certificate. ILMO Products Company makes no warranty or representation as to the suitability of the use of any information provided for any particular purpose. The information use is at the sole discretion and risk of the user. Liability shall be limited to established replacement cost of this material or service.

ISO/IEC 17025:2005 Accredited Laboratory

CTS Test 18-569
Item 3



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: 11139
Part #: BAC34L200T
Cylinder Size: 34L
Lot Number: 12818003A3
Expiration: 8/5/2020

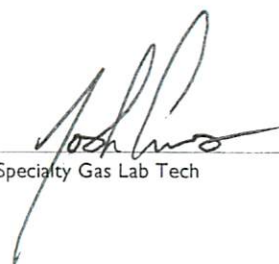
0.200 BAC (For the calibration of instruments used to determine breath alcohol concentration)

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 Gravimetric Scale
Calibration Certificate No. 404101701
Calibration Certificate No. 404101702

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

06-12-18
Date



The calibration results within this certificate were obtained using equipment and standards capable of producing analytical results traceable to NIST, and apply only to the items contained on this certificate. ILMO Products Company makes no warranty or representation as to the suitability of the use of any information provided for any particular purpose. The information use is at the sole discretion and risk of the user. Liability shall be limited to established replacement cost of this material or service.

ISO/IEC 17025:2005 Accredited Laboratory

CTS Test 18-569
Item 4



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: 11137
Part #: BAC34L010T
Cylinder Size: 34L
Lot Number: 12818001A1
Expiration: 8/5/2020

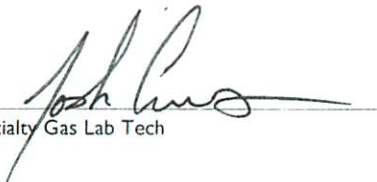
0.010 BAC (For the calibration of instruments used to determine breath alcohol concentration)

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

Component:	Reported Concentration:	Analytical Accuracy (U, k=2):	Analytical Method:
Ethanol	26 ppm	+/- 0.002 BAC (G/210L) [5.2 ppm]	NDIR
Nitrogen	Balance		

*NIST Traceable Reference Material
Cylinder No. CC274523 / Job No. 09160306
Certified 362.2 µmol/mol Ethanol in Nitrogen

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

06-12-18
Date



The calibration results within this certificate were obtained using equipment and standards capable of producing analytical results traceable to NIST, and apply only to the items contained on this certificate. ILMO Products Company makes no warranty or representation as to the suitability of the use of any information provided for any particular purpose. The information use is at the sole discretion and risk of the user. Liability shall be limited to established replacement cost of this material or service.

ISO/IEC 17025:2005 Accredited Laboratory