



Breath Alcohol Calibration Verification Test No. 21-5691 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 55 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 and their uncertainty.

SAMPLE PREPARATION-

Cylinders were sourced from a certified reference material vendor. 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 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	0.030	± 0.0020
2	0.270	± 0.0054
3	0.150	± 0.0030
4	0.100	± 0.0020

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. A total of 55 participants reported results; however, not all participants reported an expanded uncertainty for every item. The percentage of participants reporting their expanded uncertainty fluctuated between 67-70% depending on the item. A breakdown of the number of participants reporting extreme data per item based on En analysis is as follows: five for Item 2, three for item 3, and one for item 4. There was no extreme data reported for Item 1. Participants should note that Item 2 had the highest number of extreme results and the highest ethanol concentration; Item 1 had no extreme results and the lowest ethanol concentration. 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.

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

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

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: 0.030 g/210L

Item 1 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)
2WRTT3	EC	0.031	0.0040	1007	0.22
	IR	0.030	0.0040	1007	0.00
3GWN7Q	IR, Pyroelectric detector	0.031		1004.3 hPA	
4NBUHN	IR	0.030	0.0020	985	0.00
4P7DJP	IR	0.030	0.0030	1017.9 mBar	0.00
64J9CQ	Fuel Cell	0.032	0.0020	937 mbar	0.71
7BDVHG	Thermo Electrically Cooled Lead Selenide Infrared	0.030		1004 mbar	
7G3B8N	Fuel Cell	0.029	0.0030	N/A	-0.28
7PTTNH	Thermo Electrically Cooled Lead Seleniod Infrared	0.029		1001 mbar	
7RKWBX	EC	0.029	0.0040	1011	-0.22
	IR	0.029	0.0040	1011	-0.22
9CJWHK	IR	0.030		930.6	
9CY4YV	EC	0.030	0.0040	1013	0.00
	IR	0.030	0.0040	1013	0.00
9VUWKU	EC	0.030	0.0040	1002	0.00
	IR	0.029	0.0040	1002	-0.22
9W8FBJ	IR	0.029		1004 hPas	
A36CRU	EC	0.030	0.0040	982	0.00
	IR	0.028	0.0040	982	-0.45

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: 0.030 g/210L

Item 1 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)
A799BW	EC	0.031	0.0040	1005	0.22
	IR	0.030	0.0040	1005	0.00
ALYBR2	3.4 and 9.4 um Dual Wavelength Pyroelectric Detector.	0.028	0.0036	759.81 mm Hg	-0.49
AXVAMD	Thermo electrically cooled lead selenide infrared	0.029		1006 mbar	
B27RDT	EC	0.030	0.0040	982	0.00
	IR	0.029	0.0040	982	-0.22
BBJLTV	IR	0.031	0.0030	1005.8 mBar	0.28
BCRQCC	IR	0.031		977	
BW3L6H	fuel cell	0.030	0.0020	864 mBar	0.00
C8WGFH	Thermo electrically cooled lead selenide infrared.	0.029		1004 mbar	
CFABVK	EC (fuel cell)	0.029	0.0050	754.0 mm/Hg	-0.19
CX3D6U	Infrared	0.031	0.0110	1007.5	0.09
DM4X2B	Thermo electrically cooled lead selenide infrared	0.029		1003 mbar	
DPRBJT	EC	0.029	0.0040	1013	-0.22
	IR	0.028	0.0040	1013	-0.45
E3AKLP	EC	0.029	0.0040	980	-0.22
	IR	0.028	0.0040	980	-0.45
ENQXCQ	IR	0.030	0.0030	1014.5	0.00
ETLRAT	IR	0.032	0.0050	962 (8/25/21) & 956 (8/26/21)	0.37

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: 0.030 g/210L

Item 1 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)
FUWWKV	Electrochemical Fuel Cell	0.028	0.0020	755	-0.71
GD9VBB	Infrared (IR)	0.030	0.0020	969.8	0.00
GLD3QB	IR	0.029		1004 hPas	
GN8QA7	Thermo electrically cooled lead selenide infrared	0.029		1004 mbar	
JAXV4A	Infrared	0.030	0.0100	858.2 hPa	0.00
JJZUL	Fuel Cell	0.028	0.0030	757	-0.55
JWAQVD	Infrared	0.029			
K2HD3M	Fuel Cell	0.029	0.0030	744 mmHg	-0.28
L6X8HK	Fuel Cell	0.029		745	
LXUGV9	Fuel cell	0.029	0.0030	N/A	-0.28
NFKD4D	EC	0.029	0.0040	1012	-0.22
	IR	0.029	0.0040	1012	-0.22
NQUGW7	IR	0.031		930 CF: 1.08	
NR3TD8	Fuel Cell	0.031	0.0030	928 mBar	0.28
PM24A7	Electrochemical Fuel Cell	0.029	0.0050	745 mmHg	-0.19
PWC7V7	Fuel Cell (EC)	0.028	0.0050	747 mm Hg	-0.37
QKWX96	IR	0.029	0.0010	1014 mbar	-0.45
RB2F72	IR	0.030	0.0013	909	0.00
RHJT4F	IR	0.030	0.0020	1003 hPA at 11:18 hrs and 11:47 hrs	0.00

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: 0.030 g/210L

Item 1 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)
RV9P6D	Fuel Cell	0.029		747	
RWMU4B	EC	0.029	0.0040	929	-0.22
	IR	0.028	0.0040	929	-0.45
TEFCC4	Electrochemical Fuel Cell	0.031	0.0050	994.2	0.19
V67MMX	EC	0.029		1012 mbar	
	IR	0.029		1012 mbar	
X6DLWW	Electrochemical Fuel Cell	0.030	0.0050	742 mm Hg	0.00
X9B8H9	Fuel Cell	0.028	0.0030	755	-0.55
XHJGA8	EC	0.030	0.0040	986	0.00
	IR	0.029	0.0040	986	-0.22
Y4GMXP	IR	0.030		973	

TABLE 1 - Item 2

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

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

Item 2 Manufacturer's Concentration: 0.270 g/210L

Item 2 Manufacturer's Uncertainty: 0.0054 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in En)	Performance Statistic (En)
2WRTT3	EC	0.284	0.0140	1007	0.93
	IR	0.271	0.0130	1007	0.07
3GWN7Q	IR, Pyroelectric detector	0.272		1004.3 hPA	
4NBUHN	IR	0.266	0.0070	985	-0.45
4P7DJP	IR	0.269	0.0110	1017.9 mBar	-0.08
64J9CQ	Fuel Cell	0.274	0.0040	937 mbar	0.60
7BDVHG	Thermo Electrically Cooled Lead Selenide Infrared	0.269		1004 mbar	
7G3B8N	Fuel Cell	0.279	0.0050	N/A	1.22 X
7PTTNH	Thermo Electrically Cooled Lead Seleniod Infrared	0.263		1001 mbar	
7RKWBX	EC	0.274	0.0140	1011	0.27
	IR	0.278	0.0140	1011	0.53
9CJWHK	IR	0.263		930.6	
9CY4YV	EC	0.271	0.0140	1013	0.07
	IR	0.277	0.0140	1013	0.47
9VUWKU	EC	0.273	0.0140	1002	0.20
	IR	0.280	0.0140	1002	0.67
9W8FBJ	IR	0.274		1004 hPas	
A36CRU	EC	0.268	0.0130	982	-0.14
	IR	0.267	0.0130	982	-0.21
A799BW	EC	0.259	0.0130	1005	-0.78
	IR	0.253	0.0130	1005	-1.21 X
ALYBR2	3.4 and 9.4 um Dual Wavelength Pyroelectric Detector.	0.261	0.0036	759.81 mm Hg	-1.39 X
AXVAMD	Thermo electrically cooled lead selenide infrared	0.264		1006 mbar	

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: 0.270 g/210L

Item 2 Manufacturer's Uncertainty: 0.0054 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in En)	Performance Statistic (En)
B27RDT	EC	0.263	0.0130	982	-0.50
	IR	0.267	0.0130	982	-0.21
BBJLTV	IR	0.265	0.0140	1005.8 mBar	-0.33
BCRQCC	IR	0.268		977	
BW3L6H	fuel cell	0.261	0.0040	864 mBar	-1.34 X
C8WGFH	Thermo electrically cooled lead selenide infrared.	0.264		1004 mbar	
CFABVK	EC (fuel cell)	0.269	0.0150	754.0 mm/Hg	-0.06
CX3D6U	Infrared	0.273	0.0110	1007.5	0.24
DM4X2B	Thermo electrically cooled lead selenide infrared	0.264		1003 mbar	
DPRBJT	EC	0.265	0.0130	1013	-0.36
	IR	0.267	0.0130	1013	-0.21
E3AKLP	EC	0.264	0.0130	980	-0.43
	IR	0.258	0.0130	980	-0.85
ENQXCQ	IR	0.272	0.0080	1014.5	0.21
ETLRAT	IR	0.270	0.0140	962 (8/25/21) & 956 (8/26/21)	0.00
FUWWKV	Electrochemical Fuel Cell	0.263	0.0130	755	-0.50
GD9VBB	Infrared (IR)	0.271	0.0070	969.8	0.11
GLD3QB	IR	0.273		1004 hPas	
GN8QA7	Thermo electrically cooled lead selenide infrared	0.264		1004 mbar	
JAXV4A	Infrared	0.268	0.0110	858.2 hPa	-0.16
JJZUL	Fuel Cell	0.270	0.0050	757	0.00
JWAQVD	Infrared	0.274			
K2HD3M	Fuel Cell	0.270	0.0110	744 mmHg	0.00

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: 0.270 g/210L

Item 2 Manufacturer's Uncertainty: 0.0054 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in En)	Performance Statistic (En)
L6X8HK	Fuel Cell	0.271		745	
LXUGV9	Fuel cell	0.281	0.0050	N/A	1.49 X
NFKD4D	EC	0.268	0.0130	1012	-0.14
	IR	0.272	0.0130	1012	0.14
NQUGW7	IR	0.263		930 CF: 1.08	
NR3TD8	Fuel Cell	0.264	0.0060	928 mBar	-0.74
PM24A7	Electrochemical Fuel Cell	0.272	0.0130	745 mmHg	0.14
PWC7V7	Fuel Cell (EC)	0.262	0.0120	747 mm Hg	-0.61
QKWX96	IR	0.271	0.0120	1014 mbar	0.08
RB2F72	IR	0.271	0.0119	909	0.08
RHJT4F	IR	0.273	0.0120	1003 hPA at 11:18 hrs and 11:47 hrs	0.23
RV9P6D	Fuel Cell	0.270		747	
RWMU4B	EC	0.262	0.0130	929	-0.57
	IR	0.267	0.0130	929	-0.21
TEFCC4	Electrochemical Fuel Cell	0.271	0.0230	994.2	0.04
V67MMX	EC	0.271		1012 mbar	
	IR	0.269		1012 mbar	
X6DLWW	Electrochemical Fuel Cell	0.272	0.0130	742 mm Hg	0.14
X9B8H9	Fuel Cell	0.268	0.0050	755	-0.27
XHJGA8	EC	0.267	0.0130	986	-0.21
	IR	0.271	0.0130	986	0.07
Y4GMXP	IR	0.267		973	

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: 0.150 g/210L

Item 3 Manufacturer's Uncertainty: 0.0030 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in E _n)	Performance Statistic (E _n)
2WRTT3	EC	0.156	0.0090	1007	0.63
	IR	0.149	0.0080	1007	-0.12
3GWN7Q	IR, Pyroelectric detector	0.151		1004.3 hPa	
4NBUHN	IR	0.148	0.0040	985	-0.40
4P7DJP	IR	0.149	0.0030	1017.9 mBar	-0.24
64J9CQ	Fuel Cell	0.150	0.0040	937 mbar	0.00
7BDVHG	Thermo Electrically Cooled Lead Selenide Infrared	0.148		1004 mbar	
7G3B8N	Fuel Cell	0.153	0.0050	N/A	0.51
7PTTNH	Thermo Electrically Cooled Lead Seleniod Infrared	0.146		1001 mbar	
7RKWBX	EC	0.149	0.0080	1011	-0.12
	IR	0.152	0.0090	1011	0.21
9CJWHK	IR	0.147		930.6	
9CY4YV	EC	0.150	0.0080	1013	0.00
	IR	0.153	0.0090	1013	0.32
9VUWKU	EC	0.151	0.0090	1002	0.11
	IR	0.154	0.0090	1002	0.42
9W8FBJ	IR	0.149		1004 hPas	
A36CRU	EC	0.148	0.0080	982	-0.23
	IR	0.147	0.0080	982	-0.35
A799BW	EC	0.146	0.0080	1005	-0.47
	IR	0.141	0.0080	1005	-1.05 X

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: 0.150 g/210L

Item 3 Manufacturer's Uncertainty: 0.0030 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in En)	Performance Statistic (En)
ALYBR2	3.4 and 9.4 um Dual Wavelength Pyroelectric Detector.	0.143	0.0036	759.81 mm Hg	-1.49 X
AXVAMD	Thermo electrically cooled lead selenide infrared	0.146		1006 mbar	
B27RDT	EC	0.147	0.0090	982	-0.32
	IR	0.148	0.0080	982	-0.23
BBJLTV	IR	0.148	0.0030	1005.8 mBar	-0.47
BCRQCC	IR	0.149		977	
BW3L6H	fuel cell	0.144	0.0040	864 mBar	-1.20 X
C8WGFH	Thermo electrically cooled lead selenide infrared.	0.146		1004 mbar	
CFABVK	EC (fuel cell)	0.147	0.0080	754.0 mm/Hg	-0.35
CX3D6U	Infrared	0.151	0.0110	1007.5	0.09
DM4X2B	Thermo electrically cooled lead selenide infrared	0.146		1003 mbar	
DPRBJT	EC	0.145	0.0080	1013	-0.59
	IR	0.147	0.0080	1013	-0.35
E3AKLP	EC	0.146	0.0080	980	-0.47
	IR	0.144	0.0080	980	-0.70
ENQXCQ	IR	0.149	0.0030	1014.5	-0.24
ETLRAT	IR	0.150	0.0080	962 (8/25/21) & 956 (8/26/21)	0.00
FUWWKV	Electrochemical Fuel Cell	0.144	0.0080	755	-0.70
GD9VBB	Infrared (IR)	0.149	0.0040	969.8	-0.20

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: 0.150 g/210L

Item 3 Manufacturer's Uncertainty: 0.0030 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in En)	Performance Statistic (En)
GLD3QB	IR	0.150		1004 hPas	
GN8QA7	Thermo electrically cooled lead selenide infrared	0.145		1004 mbar	
JAXV4A	Infrared	0.148	0.0070	858.2 hPa	-0.26
JJZUL	Fuel Cell	0.148	0.0050	757	-0.34
JWAQVD	Infrared	0.151			
K2HD3M	Fuel Cell	0.149	0.0060	744 mmHg	-0.15
L6X8HK	Fuel Cell	0.149		745	
LXUGV9	Fuel cell	0.145	0.0060	N/A	-0.75
NFKD4D	EC	0.145	0.0080	1012	-0.59
	IR	0.149	0.0080	1012	-0.12
NQUGW7	IR	0.148		930 CF: 1.08	
NR3TD8	Fuel Cell	0.147	0.0060	928 mBar	-0.45
PM24A7	Electrochemical Fuel Cell	0.149	0.0070	745 mmHg	-0.13
PWC7V7	Fuel Cell (EC)	0.145	0.0070	747 mm Hg	-0.66
QKWX96	IR	0.150	0.0070	1014 mbar	0.00
RB2F72	IR	0.148	0.0065	909	-0.28
RHJT4F	IR	0.151	0.0070	1003 hPA at 11:18 hrs and 11:47 hrs	0.13
RV9P6D	Fuel Cell	0.149		747	

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: 0.150 g/210L

Item 3 Manufacturer's Uncertainty: 0.0030 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in En)	Performance Statistic (En)
RWMU4B	EC	0.145	0.0080	929	-0.59
	IR	0.148	0.0080	929	-0.23
TEFCC4	Electrochemical Fuel Cell	0.150	0.0090	994.2	0.00
V67MMX	EC	0.148		1012 mbar	
	IR	0.148		1012 mbar	
X6DLWW	Electrochemical Fuel Cell	0.150	0.0070	742 mm Hg	0.00
X9B8H9	Fuel Cell	0.147	0.0050	755	-0.51
XHJGA8	EC	0.147	0.0080	986	-0.35
	IR	0.151	0.0080	986	0.12
Y4GMXP	IR	0.147		973	

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: 0.100 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)
2WRTT3	EC	0.103	0.0060	1007	0.47
	IR	0.099	0.0060	1007	-0.16
3GWN7Q	IR, Pyroelectric detector	0.100		1004.3 hPa	
4NBUHN	IR	0.098	0.0020	985	-0.71
4P7DJP	IR	0.100	0.0030	1017.9 mBar	0.00
64J9CQ	Fuel Cell	0.100	0.0020	937 mbar	0.00
7BDVHG	Thermo Electrically Cooled Lead Selenide Infrared	0.098		1004 mbar	
7G3B8N	Fuel Cell	0.100	0.0050	N/A	0.00
7PTTNH	Thermo Electrically Cooled Lead Seleniod Infrared	0.097		1001 mbar	
7RKWBX	EC	0.099	0.0060	1011	-0.16
	IR	0.100	0.0060	1011	0.00
9CJWHK	IR	0.099		930.6	
9CY4YV	EC	0.099	0.0060	1013	-0.16
	IR	0.102	0.0060	1013	0.32
9VUWKU	EC	0.100	0.0060	1002	0.00
	IR	0.102	0.0060	1002	0.32
9W8FBJ	IR	0.100		1004 hPas	
A36CRU	EC	0.099	0.0060	982	-0.16
	IR	0.097	0.0060	982	-0.47
A799BW	EC	0.099	0.0060	1005	-0.16
	IR	0.095	0.0060	1005	-0.79

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: 0.100 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)
ALYBR2	3.4 and 9.4 um Dual Wavelength Pyroelectric Detector.	0.095	0.0036	759.81 mm Hg	-1.21 X
AXVAMD	Thermo electrically cooled lead selenide infrared	0.097		1006 mbar	
B27RDT	EC	0.098	0.0060	982	-0.32
	IR	0.098	0.0060	982	-0.32
BBJLTV	IR	0.099	0.0030	1005.8 mBar	-0.28
BCRQCC	IR	0.099		977	
BW3L6H	fuel cell	0.097	0.0040	864 mBar	-0.67
C8WGFH	Thermo electrically cooled lead selenide infrared.	0.098		1004 mbar	
CFABVK	EC (fuel cell)	0.097	0.0060	754.0 mm/Hg	-0.47
CX3D6U	Infrared	0.101	0.0110	1007.5	0.09
DM4X2B	Thermo electrically cooled lead selenide infrared	0.097		1003 mbar	
DPRBJT	EC	0.096	0.0060	1013	-0.63
	IR	0.097	0.0060	1013	-0.47
E3AKLP	EC	0.097	0.0060	980	-0.47
	IR	0.097	0.0060	980	-0.47
ENQXCQ	IR	0.099	0.0030	1014.5	-0.28
ETLRAT	IR	0.100	0.0050	962 (8/25/21) & 956 (8/26/21)	0.00
FUWWKV	Electrochemical Fuel Cell	0.096	0.0080	755	-0.49
GD9VBB	Infrared (IR)	0.100	0.0020	969.8	0.00

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: 0.100 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)
GLD3QB	IR	0.099		1004 hPas	
GN8QA7	Thermo electrically cooled lead selenide infrared	0.097		1004 mbar	
JAXV4A	Infrared	0.099	0.0050	858.2 hPa	-0.19
JJZUL	Fuel Cell	0.099	0.0030	757	-0.28
JWAQVD	Infrared	0.100			
K2HD3M	Fuel Cell	0.099	0.0060	744 mmHg	-0.16
L6X8HK	Fuel Cell	0.099		745	
LXUGV9	Fuel cell	0.097	0.0060	N/A	-0.47
NFKD4D	EC	0.096	0.0060	1012	-0.63
	IR	0.098	0.0060	1012	-0.32
NQUGW7	IR	0.099		930 CF: 1.08	
NR3TD8	Fuel Cell	0.098	0.0030	928 mBar	-0.55
PM24A7	Electrochemical Fuel Cell	0.099	0.0050	745 mmHg	-0.19
PWC7V7	Fuel Cell (EC)	0.096	0.0050	747 mm Hg	-0.74
QKWX96	IR	0.099	0.0040	1014 mbar	-0.22
RB2F72	IR	0.099	0.0043	909	-0.21
RHJT4F	IR	0.101	0.0070	1003 hPA at 11:18 hrs and 11:47 hrs	0.14
RV9P6D	Fuel Cell	0.098		747	

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: 0.100 g/210L

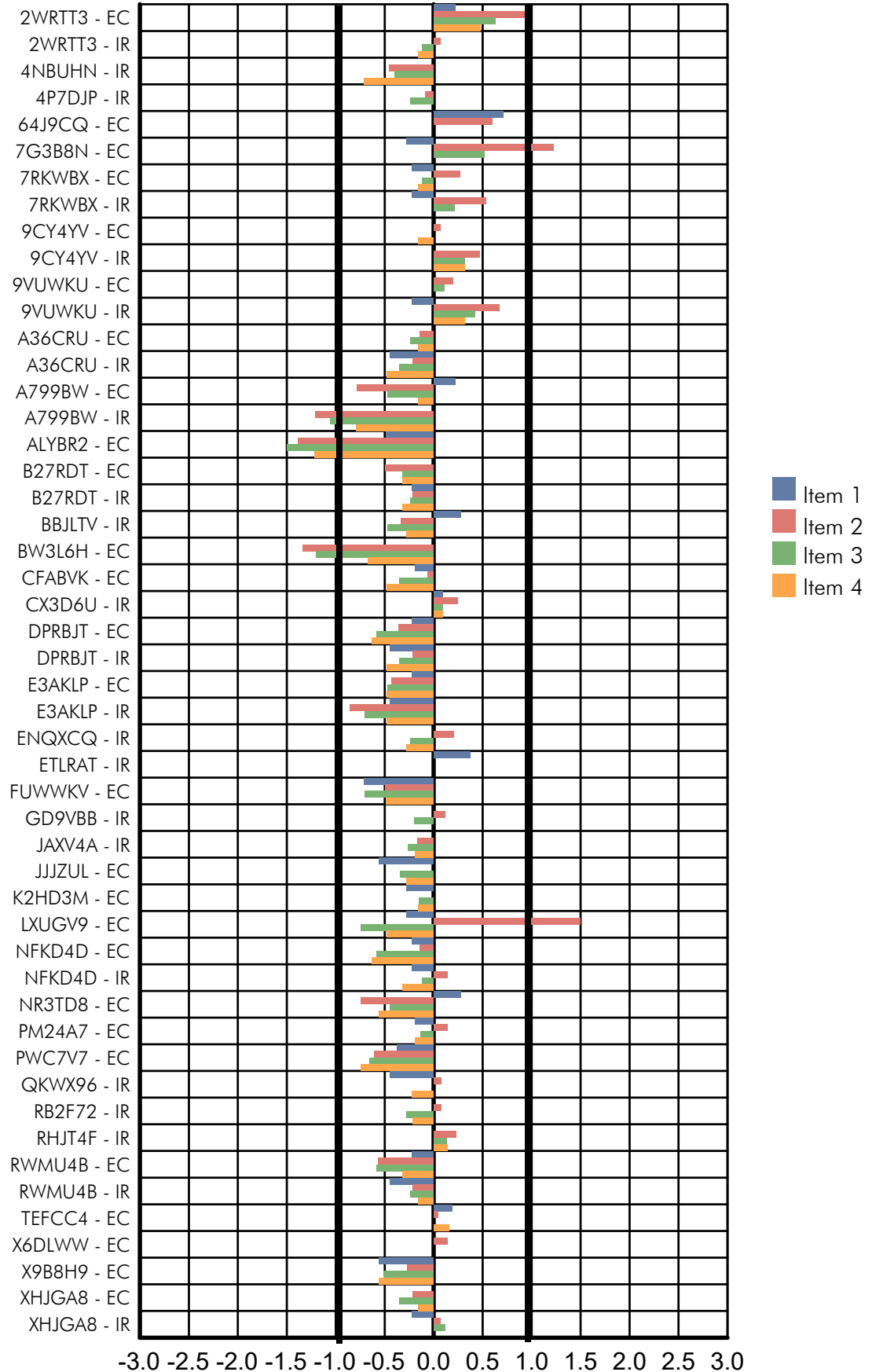
Item 4 Manufacturer's Uncertainty: 0.0020 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in E _n)	Performance Statistic (E _n)
RWMU4B	EC	0.098	0.0060	929	-0.32
	IR	0.099	0.0060	929	-0.16
TEFCC4	Electrochemical Fuel Cell	0.101	0.0060	994.2	0.16
V67MMX	EC	0.099		1012 mbar	
	IR	0.099		1012 mbar	
X6DLWW	Electrochemical Fuel Cell	0.100	0.0050	742 mm Hg	0.00
X9B8H9	Fuel Cell	0.098	0.0030	755	-0.55
XHJGA8	EC	0.099	0.0060	986	-0.16
	IR	0.100	0.0060	986	0.00
Y4GMXP	IR	0.097		973	

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
3GWN7Q	N/A
4NBUHN	Measurements were normalized to standard barometric pressure.
4P7DJP	N/A - Instrument Auto-Compensates
64J9CQ	The EasyCal dry gas delivery system has dual barometers and does the barometric pressure correction for you. Typical procedure is to run everything in duplicate on the Lifeloc, so I ran each bottle twice and took the scientific average. Lifeloc UM is reported to a k=3 and approximately 95% confidence at three levels (0.040, 0.080, and 0.0200). I chose the level closest to the answer, and I converted k=3 to a k=2 for reporting.
7BDVHG	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.
7G3B8N	Built in +4.5% offset for accuracy checks performed using dry gas tanks. Target value for accuracy checks adjusted by instrument software according to barometric pressure.
7PTTNH	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.
9CJWHK	N/A
9W8FBJ	N/A
ALYBR2	N/A
AXVAMD	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.
BBJLTV	Automatically compensated
BW3L6H	Average of two values used. Utilized a Lifeloc EasyCal with built-in barometers so no conversions were needed. The wet/dry offset on our FC20's is 1.015 and is set by Lifeloc.
C8WGFH	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.
CFABVK	All adjustments were calculated by the software programmed in the instrument itself. The multipoint protocol has a 4.5% wet/dry offset, and barometric pressure adjustment.
CX3D6U	No adjustments were made on the raw data to produce a reported concentration
DM4X2B	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.
ENQXCQ	No adjustments were made to the raw data. [Initials]
FUWWKV	The raw data is normalized to 760 mmHg and corrected with a factor of 4.5% to account for the wet/dry offset.
GD9VBB	IR measurements were normalized to sea level equivalent = analyzed value/barometric pressure*1013

TABLE 2

WebCode	Raw Data Adjustments
GLD3QB	N/A
GN8QA7	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.
JAXV4A	No adjustments made to reported results.
JJZUL	Raw data adjusted for wet/dry offset (+4.5%) and normalized to sea level.
JWAQVD	N/A
K2HD3M	+4% dry gas correction, barometric pressure correction (760 mmHg/Lab Pressure mmHg)
L6X8HK	4.5% was added to the result to adjust for wet/dry offset
LXUGV9	Built in 4.5% offset for periodic determinations of accuracy (PDA) when using dry gas ethanol devices. Adjusts target on PDAs only according to barometric pressure.
NQUGW7	Analyzed each item 5 times, averaged the values, and reported the average - truncated to 3 digits.
NR3TD8	Adjustment using 0.160 NIST certified gas solution and EasyCal delivery system. NIST certified barometer used to compare EasyCal barometer. NIST certified thermometer used to determine items are used in standard laboratory conditions.
PM24A7	The raw result is normalized to atmospheric pressure dividing 760 mmHg by barometric pressure (745 mmHg). The result is also corrected by multiplying it by 1.045
PWC7V7	Raw data was adjusted for the wet/dry offset and for barometric pressure by taking the mean of 2 determinations, multiplying it by 1.045 and multiplying it by (760/current barometric pressure).
QKWX96	N/A
RB2F72	Barometric pressure correction factor is 1.11
RHJT4F	No adjustments made.
RV9P6D	4.5% was added to the result to adjust for wet/dry offset.
TEFCC4	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. 08/13/2021 [Initials]
V67MMX	NA
X6DLWW	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
X9B8H9	Raw data adjusted for wet/dry offset (+4.5%) and normalized to sea level (760/XXX*760 mmHg)
Y4GMXP	Each cylinder was tested 5 times and the reported average of the 5 tests is what is reported.

Instrument Information

TABLE 3

WebCode	Instrument used	Detector type
2WRRT3	ARLB-0007	EC
	ARLB-0007	IR
3GWN7Q	Intoxilyzer 9000 [Serial Number]	IR, Pyroelectric detector
4NBUHN	DMT	IR
4P7DJP	Intoxilyzer 8000	IR
64J9CQ	Lifeloc FC-20BT with EasyCal Dry Gas Delivery System	Fuel Cell
7BDVHG	DataMaster DMT [Serial Number]	Thermo Electrically Cooled Lead Selenide Infrared
7G3B8N	Intoximeters Alco-Sensor V XL	Fuel Cell
7PTTNH	DataMaster DMT [Serial Number]	Thermo Electrically Cooled Lead Seleniod Infrared
7RKWBX	ARJN-0041	EC
	ARJN-0041	IR
9CJWHK	Intoxilyzer 8000	IR
9CY4YV	ARJN-0030	EC
	ARJN-0030	IR
9VUWKU	ARKC-0060	EC
	ARKC-0060	IR
9W8FBJ	Draeger Alcotest 9510 [Serial Number]	IR
A36CRU	ARAH-0073	EC
	ARAH-0073	IR
A799BW	ARJH-0006	EC
	ARJH-0006	IR
ALYBR2	Intoxilyzer 8000 [Serial Number]	3.4 and 9.4 um Dual Wavelength Pyroelectric Detector.
AXVAMD	DataMaster DMT [Serial Number]	Thermo electrically cooled lead selenide infrared
B27RDT	ARAF-0029	EC
	ARAF-0029	IR
BBJLTV	Intoxilyzer 8000	IR
BCRQCC	CMI Intoxilyzer 8000 [Serial Number]	IR
BW3L6H	Lifeloc FC20	fuel cell
C8WGFH	DataMaster DMT [Serial Number]	Thermo electrically cooled lead selenide infrared.
CFABVK	ASV-XL	EC (fuel cell)
CX3D6U	Intoxilyzer 9000	Infrared
DM4X2B	DataMaster DMT [Serial Number]	Thermo electrically cooled lead selenide infrared

TABLE 3

WebCode	Instrument used	Detector type
DPRBJT	ARCE-0031	EC
	ARCE-0031	IR
E3AKLP	ARKC-0040	EC
	ARKC-0040	IR
ENQXCQ	CMI Intoxilyzer 8000	IR
ETLRAT	Intoxilyzer 8000	IR
FUWWKV	Intoximeter EC/IR II	Electrochemical Fuel Cell
GD9VBB	DMT [Serial Number]	Infrared (IR)
GLD3QB	Alcotest 9510 [Serial Number]	IR
GN8QA7	Datamaster DMT [Serial Number]	Thermo electrically cooled lead selenide infrared
JAXV4A	Intoxilyzer 8000	Infrared
JJZUL	Intox EC/IR II	Fuel Cell
JWAQVD	Draeger Alcotest 7110 MKIII-C [Serial Number]	Infrared
K2HD3M	ECIR II (Intoximeters, Inc.) [Serial Number]	Fuel Cell
L6X8HK	Intox EC/IR II	Fuel Cell
LXUGV9	AlcoSensor V XL	Fuel cell
NFKD4D	ARKA-0033	EC
	ARKA-0033	IR
NQUGW7	Intoxilyzer 8000 [Serial Number]	IR
NR3TD8	Lifeloc FC20BT	Fuel Cell
PM24A7	Intoximeters, Intox EC/IR II	Electrochemical Fuel Cell
PWC7V7	12966- Intox EC/IR II	Fuel Cell (EC)
QKWX96	Drager Alcotest 9510	IR
RB2F72	Intoxilyzer 8000 [Serial Number]	IR
RHJT4F	ARNK-0083	IR
RV9P6D	Intox EC/IR II	Fuel Cell
RWMU4B	ARHC-0006	EC
	ARHC-0006	IR
TEFCC4	Drager A7510 [Serial Number]	Electrochemical Fuel Cell
V67MMX	Draeger AlcoTest 9510	EC
	Draeger AlcoTest 9510	IR
X6DLWW	Intoximeters, Inc Intox EC/IR II	Electrochemical Fuel Cell
X9B8H9	Intox EC/IR II	Fuel Cell
XHJGA8	ARKC-0032	EC
	ARKC-0032	IR
Y4GMXP	Intoxilyzer 8000	IR

Additional Comments

TABLE 4

WebCode	Additional Comments
3GWN7Q	The uncertainty is built on historical data from the calibration of all the instruments in the field. We do not figure the uncertainty on the individual samples but on each of the four different certified reference materials used during the calibration: 0.050 +/- 0.003 g/210L, 0.100 +/- 0.004 g/210L, 0.200 +/- 0.005 g/210L and 0.300 +/- 0.010 g/210L. With that said I cannot assign an uncertainty to the reported concentrations.
64J9CQ	1 = 0.032/0.031 nearest UM is 0.003 at 0.040 level (reported 0.032 +/- 0.002), 2 = 0.275/0.272 nearest UM is 0.006 at 0.200 level (reported 0.274 +/- 0.004), 3 = 0.151/0.150 nearest UM is 0.006 at 0.200 level (reported 0.150 +/- 0.004), 4 = 0.100/0.100 nearest UM is 0.003 at 0.080 level (reported 0.100 +/- 0.002)
7BDVHG	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.
7PTTNH	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.
9CJWHK	Measurement uncertainty is only calculated for specific calibration levels. The measurement uncertainty is not provided for concentrations not included in the current calibration procedure.
AXVAMD	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.
C8WGFH	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.
DM4X2B	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 items.
FUWWKV	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 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

TABLE 4

WebCode	Additional Comments
GN8QA7	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.
JAXV4A	Reported value for Test Item #1 is outside the lab's BA I8000 Calibration Procedure calibration range.
JWAQVD	[From Table 1 - Reported Results, Items 1-4: The uncertainty value of 0.000 was removed from Items 1 - 4 because our statistical analysis program is unable to calculate En using this value.]
NQUGW7	Uncertainty is only reported on values that we have used to establish uncertainty in our lab. None of these results match those values, so uncertainty is Not Applicable.
NR3TD8	Uncertainty of measurement based on expanded uncertainty with ~95% confidence interval (k=3).
PM24A7	The estimated uncertainty of measurement for k=2 is 4.6% or 0.005 g/210L, whichever is greater.
PWC7V7	Uncertainty of Measurement @ k=2 is 4.6% or 0.005 g/210L, whichever is greater.
V67MMX	This laboratory has not calculated measurement uncertainty for breath alcohol calibration.
X6DLWW	The estimated uncertainty of measurement at k=2 coverage is 4.6% or 0.005, whichever is greater.

-End of Report-
(Appendix may follow)

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 ASCLD/LAB, 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 ASCLD/LAB, ANAB, and/or A2LA. (Accreditation Release section below must be completed.)

This participant's data is not intended for submission to ASCLD/LAB, 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.
(Include ASCLD/LAB Certificate here)

A2LA Certificate No.

Step 2: Complete the Laboratory Identifying Information in its entirety

Authorized Contact Person and Title

Laboratory Name

Location (City/State)



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

Certificate of Analysis

Certificate ID: 13881
Part #: BAC34L150T
Cylinder Size: 34L
Lot Number: 09821003A3
Expiration: 8/5/2023

0.150 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	391 ppm	+/- 2% (rel. ppm)	NDIR
Nitrogen	Balance		

*NIST Traceable to:
Certified Reference Material - 421.8 µmol/mol
Ethanol in Nitrogen - Serial No. GN0015034 Lot No. 050319E12

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

06-23-2021
Issuance 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.



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Certificate of Analysis

Certificate ID: 13880
Part #: BAC34L270T
Cylinder Size: 34L_270
Lot Number: 09821002A2
Expiration: 8/5/2023

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

Contents: 34 Liters @ 350 psig 70°F (21°C)

Component:	Reported Concentration:	Analytical Accuracy (U, k=2):	Analytical Method:
Ethanol	703 ppm	+/- 2% (rel. ppm)	Gravimetric
Nitrogen	Balance		

*NIST Traceable to:
Gravimetric Balance
Calibration Certificate No. 41451
Calibration Certificate No. 41460

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


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ISO/IEC 17025:2017 Accredited Laboratory



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Certificate of Analysis

Certificate ID: 13879
Part #: BAC34L030T
Cylinder Size: 34L
Lot Number: 09821001A1
Expiration: 8/5/2023

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):	Analytical Method:
Ethanol	78 ppm	+/- 0.002 BAC (G/210L) [5.2 ppm]	NDIR
Nitrogen	Balance		

***Traceable to:**

Certified Reference Material - 104.4 µmol/mol
Ethanol in Nitrogen - Serial No. GN0015020 Lot No. 050319E10

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

06-23-2021
Issuance 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.



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Certificate of Analysis

Certificate ID: 13882
Part #: BAC34L100T
Cylinder Size: 34L
Lot Number: 09821004A4
Expiration: 8/5/2023

0.100 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	260 ppm	+/- 0.002 BAC (G/210L) [5.2 ppm]	NDIR
Nitrogen	Balance		

***Traceable to:**

Certified Reference Material - 262.4 µmol/mol
Ethanol in Nitrogen - Serial No. GN0015026 Lot No. 050319E11

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

06-23-2021
Issuance 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.