



Breath Alcohol Calibration Verification Test No. 19-569 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 49 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	0.040	± 0.0020
2	0.100	± 0.0020
3	0.230	± 0.0046
4	0.380	± 0.0076

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 49 participants that reported results, only 25 reported their expanded uncertainty. A breakdown of the number of participants reporting "extreme" data per item based on En analysis is as follows: one for Item 1, seven for Item 3, and 16 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 in its analysis. At this time, the linearity of the results for each participant will not be analyzed utilizing regression statistics.

Due to the number of En absolute values greater than 1.00 for Items 3 and 4, CTS contacted the manufacturer of the dry gas cylinders to ensure there were no issues with the samples. The manufacturer confirmed there were no anomalies in the production data for either of these items.

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: 0.040 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 En)	Performance Statistic (En)
34CKB6	Thermo Electrically Cooled Lead Selenide Infrared	0.040		1008 mbar	
3HWZE6	fuel cell	0.040	0.0050	742 mm Hg	0.00
3X8CW6	EC	0.0413		1015	
	IR	0.0403		1015	
4BQDR3	Dual Wavelength 3.4 and 9.4 micrometer Pyroelectric Detector	0.039	0.0036	844	-0.24
4JJY69	Infrared	0.040	0.0030	990.3	0.00
4M6BW7	EC	0.040		1005 HPAS	
	IR	0.039		1005 HPAS	
4T7ZLH	EC	0.040		1005 hPa	
	IR	0.040		1005 hPa	
7K99T7	Fuel Cell	0.040	0.0050	996.1 mbar	0.00
7VQNW9	Electrochemical sensor (fuel cell)	0.041	0.0050	995.6	0.19
88EC4D	IR	0.041	0.0050	850	0.19
8V7A7B	EC	0.040		1012 hPa	
	IR	0.040		1012 hPa	
AX3WBB	IR	0.042		928 CF: 1.09	
CN8DA8	Fuel Cell	0.400	0.0030	737	99.85 X

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: 0.040 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)
CT6UL2	Fuel Cell	0.041	0.0050	995.6	0.19
D32HQ3	IR Detector (Only -- For Reporting)	0.040	0.0020	1003 mb at 1143 hours (start) and at 1204 hours (end)	0.00
EPVNW6	IR	0.039	0.0030	1007.5 mBar	-0.28
ETQF63	IR	0.040	0.0040	997.3	0.00
FCJ9JR	EC	0.041		991	
	IR	0.040		991	
GA AVL4	IR	0.040	0.0030	1020.3 mBar	0.00
GMG2CW	IR	0.039	0.0020	1014 mBAR	-0.35
GW4Y32	Fuel Cell	0.039	0.0030	752	-0.28
H3NE7Y	EC	0.040		1011	
	IR	0.039		1011	
HBHMRP	Thermo Electrically Cooled Lead Selenide Infrared	0.039		1007 mbar	
HJCRKQ	Thermo electrically cooled lead selenide infrared	0.040		1011 mbar	
J28K7P	Thermo Electrically Cooled Selenide infrared	0.039		1006 mbar	
JMQPQT	Pyro-electric IR detector	0.042		999.4 HPa	
JYM44R	EC	0.0401		1003 hPa	
	IR	0.0392		1003 hPa	
KDG8KM	EC	0.040		975	
	IR	0.040		975	

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: 0.040 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)
L89G3U	Electrochemical Fuel Cell	0.040	0.0050	741 mmHg	0.00
LNCBAU	EC (fuel cell)	0.040	0.0050	756.6 mmHg	0.00
MUZKCK	EC	0.040		930 hPA	
	IR	0.039		930 hPA	
N9U2LV	IR	0.038	0.0030	1006.8	-0.55
NR9DDL	Thermo electrically cooled lead selenide infrared.	0.040		1008 mbar	
PD6E4U	IR	0.040	0.0030	954	0.00
Q2KMRP	Fuel Cell	0.039	0.0030		-0.28
RCZT4J	IR	0.041	0.0020	907	0.35
RRWJDH	EC	0.041		1012.4	
	IR	0.039		1012.4	
T9HL9C	Electrochemical Fuel cell	0.038	0.0010	755	-0.89
TR98YM	Fuel Cell	0.038	0.0030		-0.55
UVM64N	Fuel Cell	0.039	0.0030	754	-0.28
VHYGAG	IR	0.043		925	
WBE9EC	EC	0.039		982.3 mBAR	
	IR	0.038		982.3 mBAR	
WTWKDB	Thermo Electrically Cooled Lead Selenide Infrared	0.040		1005 mbar	
XUK4L9	EC	0.0396		1005	
	IR	0.0394		1005	

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: 0.040 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 1)
Y6F7AF	Electrochemical Fuel Cell	0.041	0.0050	989.3	0.19
YGE838	EC	0.0396		1008	
	IR	0.0396		1008	
Z7Q9VE	Fuel Cell	0.040	0.0050	996.4	0.00
Z82AHD	IR	0.039		1003.2 hPas	
ZFCC4D	IR	0.039		1000.5 hPas	

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: 0.100 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)
34CKB6	Thermo Electrically Cooled Lead Selenide Infrared	0.099		1008 mbar	
3HWZE6	fuel cell	0.100	0.0050	742 mm Hg	0.00
3X8CW6	EC	0.1022		1015	
	IR	0.0997		1015	
4BQDR3	Dual Wavelength 3.4 and 9.4 micrometer Pyroelectric Detector	0.096	0.0036	844	-0.97
4JJY69	Infrared	0.097	0.0050	990.3	-0.56
4M6BW7	EC	0.099		1005 HPAS	
	IR	0.098		1005 HPAS	
4T7ZLH	EC	0.097		1005 hPa	
	IR	0.098		1005 hPa	
7K99T7	Fuel Cell	0.099	0.0130	996.1 mbar	-0.08
7VQNW9	Electrochemical sensor (fuel cell)	0.100	0.0130	995.6	0.00
88EC4D	IR	0.098	0.0030	850	-0.55
8V7A7B	EC	0.097		1012 hPa	
	IR	0.098		1012 hPa	
AX3WBB	IR	0.101		928 CF: 1.09	
CN8DA8	Fuel Cell	0.098	0.0030	737	-0.55
CT6UL2	Fuel Cell	0.100	0.0130	995.6	0.00
D32HQ3	IR Detector (Only -- For Reporting)	0.097	0.0030	1003 mb at 1143 hours (start) and at 1204 hours (end)	-0.83
EPVNW6	IR	0.098	0.0050	1007.5 mBar	-0.37
ETQF63	IR	0.099	0.0040	997.3	-0.22

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: 0.100 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)
FCJ9JR	EC	0.102		991	
	IR	0.100		991	
GA AVL4	IR	0.098	0.0050	1020.3 mBar	-0.37
GMG2CW	IR	0.097	0.0040	1014 mBAR	-0.67
GW4Y32	Fuel Cell	0.097	0.0030	752	-0.83
H3NE7Y	EC	0.098		1011	
	IR	0.098		1011	
HBHMRP	Thermo Electrically Cooled Lead Selenide Infrared	0.098		1007 mbar	
HJCRKQ	Thermo electrically cooled lead selenide infrared	0.098		1011 mbar	
J28K7P	Thermo Electrically Cooled Selenide infrared	0.097		1006 mbar	
JMQPQT	Pyro-electric IR detector	0.101		999.4 hPa	
JYM44R	EC	0.0974		1003 hPA	
	IR	0.098		1003 hPA	
KDG8KM	EC	0.098		975	
	IR	0.099		975	
L89G3U	Electrochemical Fuel Cell	0.099	0.0050	741 mmHg	-0.19
LNCBAU	EC (fuel cell)	0.099	0.0050	756.6 mmHg	-0.19
MUZKCK	EC	0.096		930 hPA	
	IR	0.097		930 hPA	
N9U2LV	IR	0.096	0.0050	1006.8	-0.74
NR9DDL	Thermo electrically cooled lead selenide infrared.	0.100		1008 mbar	
PD6E4U	IR	0.098	0.0030	954	-0.55
Q2KMRP	Fuel Cell	0.101	0.0050		0.19

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: 0.100 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)
RCZT4J	IR	0.100	0.0040	907	0.00
RRWJDH	EC	0.103		1012.4	
	IR	0.099		1012.4	
T9HL9C	Electrochemical Fuel cell	0.096	0.0050	755	-0.74
TR98YM	Fuel Cell	0.098	0.0050		-0.37
UVM64N	Fuel Cell	0.098	0.0030	754	-0.55
VHYGAG	IR	0.101		925	
WBE9EC	EC	0.096		982.3 mBAR	
	IR	0.095		982.3 mBAR	
WTWKDB	Thermo Electrically Cooled Lead Selenide Infrared	0.100		1005 mbar	
XUK4L9	EC	0.0961		1005	
	IR	0.0976		1005	
Y6F7AF	Electrochemical Fuel Cell	0.101	0.0130	989.3	0.08
YGE838	EC	0.0987		1008	
	IR	0.0993		1008	
Z7Q9VE	Fuel Cell	0.099	0.0120	996.4	-0.08
Z82AHD	IR	0.098		1003.2 hPas	
ZFCC4D	IR	0.097		1000.5 hPas	

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: 0.230 g/210L

Item 3 Manufacturer's Uncertainty: 0.0046 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)
34CKB6	Thermo Electrically Cooled Lead Selenide Infrared	0.225		1008 mbar	
3HWZE6	fuel cell	0.227	0.0110	742 mm Hg	-0.25
3X8CW6	EC	0.2326		1015	
	IR	0.2276		1015	
4BQDR3	Dual Wavelength 3.4 and 9.4 micrometer Pyroelectric Detector	0.220	0.0080	844	-1.08 X
4JJY69	Infrared	0.225	0.0080	990.3	-0.54
4M6BW7	EC	0.223		1005 HPAS	
	IR	0.223		1005 HPAS	
4T7ZLH	EC	0.225		1005 hPa	
	IR	0.225		1005 hPa	
7K99T7	Fuel Cell	0.222	0.0130	996.1 mbar	-0.58
7VQNW9	Electrochemical sensor (fuel cell)	0.226	0.0130	995.6	-0.29
88EC4D	IR	0.222	0.0060	850	-1.06 X
8V7A7B	EC	0.219		1012 hPa	
	IR	0.225		1012 hPa	
AX3WBB	IR	0.229		928 CF: 1.09	
CN8DA8	Fuel Cell	0.223	0.0070	737	-0.84
CT6UL2	Fuel Cell	0.227	0.0130	995.6	-0.22
D32HQ3	IR Detector (Only -- For Reporting)	0.224	0.0050	1003 mb at 1143 hours (start) and at 1204 hours (end)	-0.88

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: 0.230 g/210L

Item 3 Manufacturer's Uncertainty: 0.0046 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in En)	Performance Statistic (En3)
EPVNW6	IR	0.222	0.0050	1007.5 mBar	-1.18 X
ETQF63	IR	0.223	0.0040	997.3	-1.15 X
FCJ9JR	EC	0.232		991	
	IR	0.229		991	
GAAVL4	IR	0.223	0.0050	1020.3 mBar	-1.03 X
GMG2CW	IR	0.223	0.0100	1014 mBAR	-0.64
GW4Y32	Fuel Cell	0.224	0.0050	752	-0.88
H3NE7Y	EC	0.222		1011	
	IR	0.223		1011	
HBHMRP	Thermo Electrically Cooled Lead Selenide Infrared	0.223		1007 mbar	
HJCRKQ	Thermo electrically cooled lead selenide infrared	0.222		1011 mbar	
J28K7P	Thermo Electrically Cooled Selenide infrared	0.220		1006 mbar	
JMQPQT	Pyro-electric IR detector	0.225		999.4 HPa	
JYM44R	EC	0.2198		1003 hPA	
	IR	0.2234		1003 hPA	
KDG8KM	EC	0.222		975	
	IR	0.228		975	
L89G3U	Electrochemical Fuel Cell	0.225	0.0110	741 mmHg	-0.42
LNCBAU	EC (fuel cell)	0.229	0.0120	756.6 mmHg	-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: 0.230 g/210L

Item 3 Manufacturer's Uncertainty: 0.0046 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in En)	Performance Statistic (En3)
MUZKCK	EC	0.217		930 hPA	
	IR	0.222		930 hPA	
N9U2LV	IR	0.220	0.0050	1006.8	-1.47 X
NR9DDL	Thermo electrically cooled lead selenide infrared.	0.229		1008 mbar	
PD6E4U	IR	0.223	0.0070	954	-0.84
Q2KMRP	Fuel Cell	0.235	0.0050		0.74
RCZT4J	IR	0.225	0.0100	907	-0.45
RRWJDH	EC	0.234		1012.4	
	IR	0.229		1012.4	
T9HL9C	Electrochemical Fuel cell	0.220	0.0070	755	-1.19 X
TR98YM	Fuel Cell	0.228	0.0050		-0.29
UVM64N	Fuel Cell	0.224	0.0050	754	-0.88
VHYGAG	IR	0.228		925	
WBE9EC	EC	0.219		982.3 mBAR	
	IR	0.218		982.3 mBAR	
WTWKDB	Thermo Electrically Cooled Lead Selenide Infrared	0.228		1005 mbar	
XUK4L9	EC	0.2207		1005	
	IR	0.2244		1005	
Y6F7AF	Electrochemical Fuel Cell	0.225	0.0130	989.3	-0.36
YGE838	EC	0.2232		1008	
	IR	0.2268		1008	

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: 0.230 g/210L

Item 3 Manufacturer's Uncertainty: 0.0046 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in En)	Performance Statistic (En3)
Z7Q9VE	Fuel Cell	0.225	0.0120	996.4	-0.39
Z82AHD	IR	0.229		1003.2 hPas	
ZFCC4D	IR	0.226		1000.5 hPas	

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: 0.380 g/210L

Item 4 Manufacturer's Uncertainty: 0.0076 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)
34CKB6	Thermo Electrically Cooled Lead Selenide Infrared	0.364		1008 mbar	
3HWZE6	fuel cell	0.369	0.0180	742 mm Hg	-0.56
3X8CW6	EC	0.3819		1015	
	IR	0.3733		1015	
4BQDR3	Dual Wavelength 3.4 and 9.4 micrometer Pyroelectric Detector	0.362	0.0130	844	-1.20 X
4JJY69	Infrared	0.366	0.0080	990.3	-1.27 X
4M6BW7	EC	0.363		1005 HPAS	
	IR	0.363		1005 HPAS	
4T7ZLH	EC	0.367		1005 hPa	
	IR	0.367		1005 hPa	
7K99T7	Fuel Cell	0.360	0.0130	996.1 mbar	-1.33 X
7VQNW9	Electrochemical sensor (fuel cell)	0.367	0.0130	995.6	-0.86
88EC4D	IR	0.363	0.0180	850	-0.87
8V7A7B	EC	0.361		1012 hPa	
	IR	0.369		1012 hPa	
AX3WBB	IR	0.371		928 CF: 1.09	
CN8DA8	Fuel Cell	0.362	0.0070	737	-1.74 X
CT6UL2	Fuel Cell	0.371	0.0130	995.6	-0.60
D32HQ3	IR Detector (Only -- For Reporting)	0.366	0.0050	1003 mb at 1143 hours (start) and at 1204 hours (end)	-1.54 X

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: 0.380 g/210L

Item 4 Manufacturer's Uncertainty: 0.0076 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in E _n)	Performance Statistic (E _n)
EPVNW6	IR	0.363	0.0050	1007.5 mBar	-1.87 X
ETQF63	IR	0.365	0.0040	997.3	-1.75 X
FCJ9JR	EC	0.377		991	
	IR	0.373		991	
GAAVL4	IR	0.363	0.0050	1020.3 mBar	-1.87 X
GMG2CW	IR	0.365	0.0160	1014 mBAR	-0.85
GW4Y32	Fuel Cell	0.365	0.0050	752	-1.65 X
H3NE7Y	EC	0.357		1011	
	IR	0.362		1011	
HBHMRP	Thermo Electrically Cooled Lead Selenide Infrared	0.364		1007 mbar	
HJCRKQ	Thermo electrically cooled lead selenide infrared	0.361		1011 mbar	
J28K7P	Thermo Electrically Cooled Selenide infrared	0.359		1006 mbar	
JMQPQT	Pyro-electric IR detector	0.364		999.4 hPa	
JYM44R	EC	0.3599		1003 hPa	
	IR	0.3635		1003 hPa	
KDG8KM	EC	0.359		975	
	IR	0.373		975	
L89G3U	Electrochemical Fuel Cell	0.362	0.0180	741 mmHg	-0.92
LNCBAU	EC (fuel cell)	0.373	0.0200	756.6 mmHg	-0.33

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: 0.380 g/210L

Item 4 Manufacturer's Uncertainty: 0.0076 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in E _n)	Performance Statistic (E _n)
MUZKCK	EC	0.353		930 hPA	
	IR	0.366		930 hPA	
N9U2LV	IR	0.361	0.0050	1006.8	-2.09 X
NR9DDL	Thermo electrically cooled lead selenide infrared.	0.376		1008 mbar	
PD6E4U	IR	0.363	0.0110	954	-1.27 X
Q2KMRP	Fuel Cell	0.385	0.0050		0.55
RCZT4J	IR	0.361	0.0160	907	-1.07 X
RRWJDH	EC	0.383		1012.4	
	IR	0.376		1012.4	
T9HL9C	Electrochemical Fuel cell	0.356	0.0070	755	-2.32 X
TR98YM	Fuel Cell	0.374	0.0050		-0.66
UVM64N	Fuel Cell	0.367	0.0050	754	-1.43 X
VHYGAG	IR	0.369		925	
WBE9EC	EC	0.362		982.3 mBAR	
	IR	0.360		982.3 mBAR	
WTWKDB	Thermo Electrically Cooled Lead Selenide Infrared	0.372		1005 mbar	
XUK4L9	EC	0.3607		1005	
	IR	0.3683		1005	
Y6F7AF	Electrochemical Fuel Cell	0.362	0.0130	989.3	-1.20 X
YGE838	EC	0.3626		1008	
	IR	0.3691		1008	

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: 0.380 g/210L

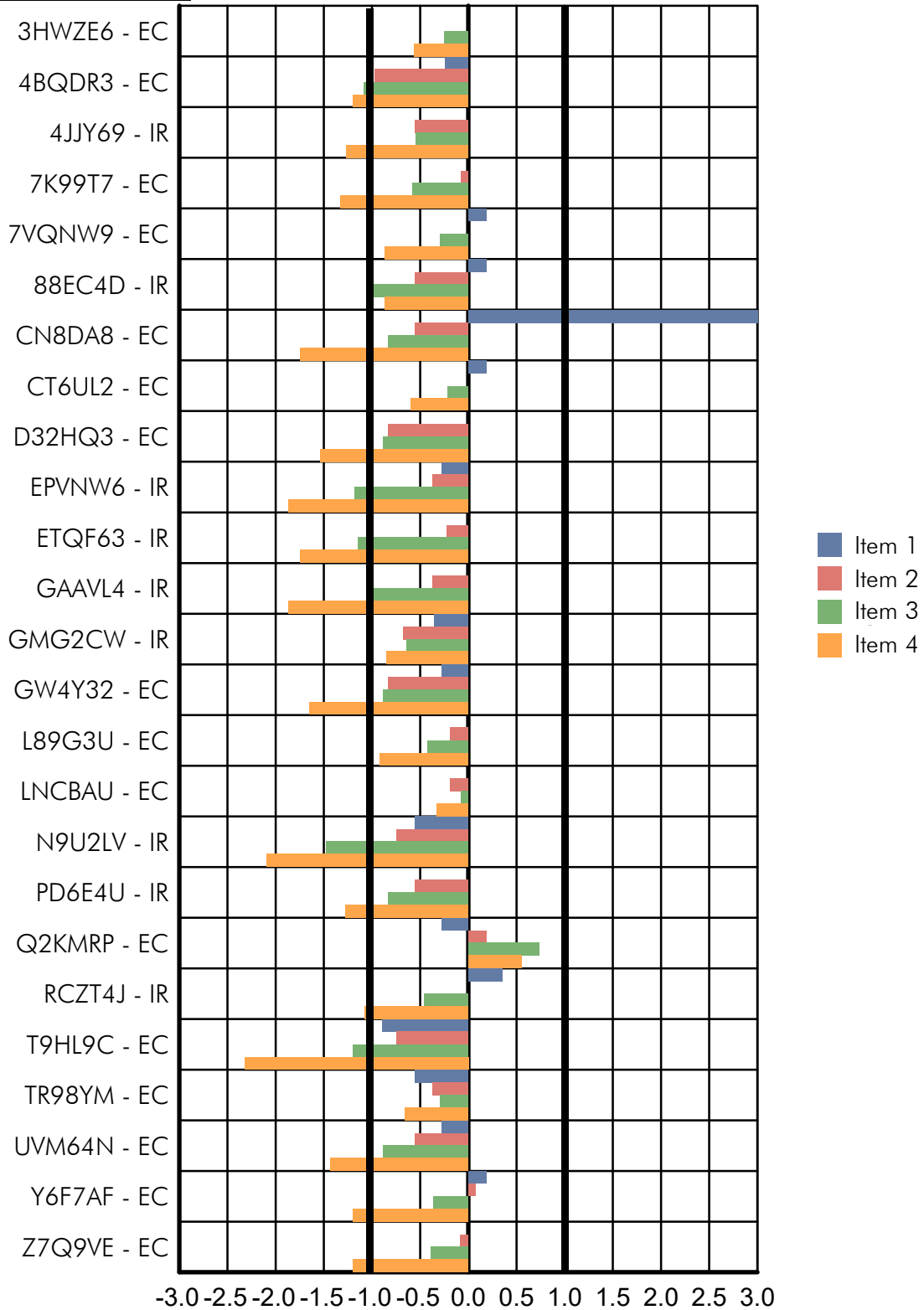
Item 4 Manufacturer's Uncertainty: 0.0076 g/210L

WebCode	Detector Type	Concentration (g/210L)	Uncertainty k=2 (g/210L)	Barometric Pressure (not used in En)	Performance Statistic (En4)
Z7Q9VE	Fuel Cell	0.363	0.0120	996.4	-1.20 X
Z82AHD	IR	0.379		1003.2 hPas	
ZFCC4D	IR	0.372		1000.5 hPas	

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
34CKB6	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.
3HWZE6	Values converted both for barometric pressure and the wet/dry offset by taking the result and multiplying it by (760/742) and by multiplying that by 1.045.
4BQDR3	N/A
4JJY69	Raw infrared values were normalized for barometric pressure using the following formula: Normalized Value = Analyzed Value/Barometric Pressure x 1013. See BrAD, Diagnostic tab of control test for Audit ID for barometric pressure. Item IR Average Barometric Pressure (mbar) IR Normalized IR Reported (Round to 3 sig figs) #1 0.0390 990.1 0.0399 0.040 #2 0.0953 990.3 0.0974 0.097 #3 0.2197 990.3 0.2247 0.225 #4 0.3583 990.5 0.3664 0.366. [Participant submitted data in a format that could not be reproduced in this report.]
4T7ZLH	NA
7K99T7	No adjustment needed. Instrument has internal pressure transducer that auto adjusts for the ambient pressure
7VQNW9	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.
88EC4D	Instrument does these adjustments automatically
AX3WBB	None
CN8DA8	4% Correction Factor for Dry Gas Standard; Barometric Pressure 737
CT6UL2	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.
D32HQ3	None
EPVNW6	None
ETQF63	Any adjustment is internal to the instrument.
GA AVL4	N/A - Automatic Compensation
G MG2CW	N/A
GW4Y32	Raw data adjusted for wet/dry offset (+4.5%) and normalized to sea level (760/752*760mmHg).
HBHMRP	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.
HJCRKQ	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.

TABLE 2

WebCode	Raw Data Adjustments
J28K7P	Barometric Pressure. The Datamaster DMT is equipped with a barometric sensor. The target value is adjusted based on site specific reading of barometric pressure.
JMQPQT	N/A
L89G3U	The raw result is normalized to atmospheric pressure dividing 760mmHg by the average raw atmospheric pressure. The result is also corrected by multiplying it by 1.045.
LNCBAU	4.5% wet/dry offset for calibration
N9U2LV	No adjustments made.
NR9DDL	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.
Q2KMRP	The ASVxl instruments have a built in +4.5% offset for accuracy checks when using dry gas ethanol devices only. The ASVxl has the ability to detect the atmospheric pressure & compensates for this during accuracy checks by altering the accuracy check target value accordingly.
RCZT4J	Barometric correction factor of 1.12
T9HL9C	The raw data is normalized to 760 mmHg and corrected with a factor of 4.5% to account for the wet/dry offset.
TR98YM	The ASVxl instruments have a built in +4.5% offset for accuracy checks when using dry gas ethanol devices. This is to correct for the concentration difference in uncorrected dry gas ethanol devices. The instrument also has the ability to detect atmospheric pressure and compensate by adjusting the target value of the standard accordingly. Note that this adjustment is not done in evidential test mode or calibration adjust mode when using wet bath standards.
UVM64N	Raw data adjusted for wet/dry offset (+4.5%) and normalized to sea level $([760/754] * 760 \text{ mmHg})$.
VHYGAG	N/A
WTWKDB	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.
Y6F7AF	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.
Z7Q9VE	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.
Z82AHD	N/A
ZFCC4D	N/A

Instrument Information

TABLE 3

WebCode	Instrument used	Detector type
34CKB6	[S/N]	Thermo Electrically Cooled Lead Selenide Infrared
3HWZE6	Intox EC/IR II	fuel cell
3X8CW6	AlcoTest 9510 [S/N]	EC
	AlcoTest 9510 [S/N]	IR
4BQDR3	IR 8000 [S/N]	Dual Wavelength 3.4 and 9.4 micrometer Pyroelectric Detector
4JJY69	DataMaster DMT-G w/ Fuel Cell Option	Infrared
4M6BW7	Draeger AlcoTest 9510 [S/N]	EC
	Draeger AlcoTest 9510 [S/N]	IR
4T7ZLH	Draeger Alcotest 9510	EC
	Draeger Alcotest 9510	IR
7K99T7	Dräger Alcotest 7510	Fuel Cell
7VQNW9	Dräger A7510: [S/N]	Electrochemical sensor (fuel cell)
88EC4D	Intoxilyzer 8000	IR
8V7A7B	[S/N]	EC
	[S/N]	IR
AX3WBB	Intoxilyzer 8000, [S/N]	IR
CN8DA8	EC/IR II (Intoximeters, Inc.), [S/N]	Fuel Cell
CT6UL2	Drager Alcotest 7510	Fuel Cell
D32HQ3	Draeger Alcotest 7110 MK III-C	IR Detector (Only -- For Reporting)
EPVNW6	Intoxilyzer 8000	IR
ETQF63	Intoxilyzer 9000	IR
FCJ9JR	Draeger AlcoTest 9510 [S/N]	EC
	Draeger AlcoTest 9510 [S/N]	IR
GAAVL4	Intoxilyzer 8000	IR
GMG2CW	[S/N]	IR
GW4Y32	Intox EC/IR II	Fuel Cell
H3NE7Y	[S/N]	EC
	[S/N]	IR
HBHMRP	DataMaster DMT [S/N]	Thermo Electrically Cooled Lead Selenide Infrared
HJCRKQ	DataMaster DMT [S/N]	Thermo electrically cooled lead selenide infrared
J28K7P	Datamaster DMT [S/N]	Thermo Electrically Cooled Selenide infared
JMQPQT	Intoxilyzer 9000	Pyro-electric IR detector
JYM44R	[S/N]	EC

TABLE 3

WebCode	Instrument used	Detector type
	[S/N]	IR
KDG8KM	Draeger Alco-Test 9510 [S/N]	EC
	Draeger Alco-Test 9510 [S/N]	IR
L89G3U	Intoximeters, INTOX EC/IR II	Electrochemical Fuel Cell
LNCBAU	AS V-XL	EC (fuel cell)
MUZKCK	Draeger AlcoTest 9510 [S/N]	EC
	Draeger AlcoTest 9510 [S/N]	IR
N9U2LV	Intoxilyzer 8000	IR
NR9DDL	DataMaster DMT [S/N]	Thermo electrically cooled lead selenide infrared.
PD6E4U	Intoxilyzer 8000	IR
Q2KMRP	[S/N] ASV-XL	Fuel Cell
RCZT4J	Intoxilyzer 8000	IR
RRWJDH	Draeger AlcoTest 9510 [S/N]	EC
	Draeger AlcoTest 9510 [S/N]	IR
T9HL9C	Intoximeter EC/IR II	Electrochemical Fuel cell
TR98YM	AS-V XL [S/N]	Fuel Cell
UVM64N	Intox EC/IR II	Fuel Cell
VHYGAG	Intoxilyzer 8000	IR
WBE9EC	Draeger AlcoTest 9510 [S/N]	EC
	Draeger AlcoTest 9510 [S/N]	IR
WTWKDB	DataMaster DMT [S/N]	Thermo Electrically Cooled Lead Selenide Infrared
XUK4L9	[S/N]	EC
	[S/N]	IR
Y6F7AF	Draeger Alcotest A7510 [S/N]	Electrochemical Fuel Cell
YGE838	Draeger 9510 [S/N]	EC
	Draeger 9510 [S/N]	IR
Z7Q9VE	Drager Alcotest 7510: [S/N]	Fuel Cell
Z82AHD	Draeger Alcotest 9510 [S/N]	IR
ZFCC4D	Draeger Alcotest 9510 [S/N]	IR

Additional Comments

TABLE 4

WebCode	Additional Comments
34CKB6	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.
3HWZE6	Tank #2 was empty. I used tank #2 from the second set of standards that were ordered/supplied for other analysts.
4JJY69	Reviewer, see BrAD Diagnostics tab of control tests associated with the Audit-IDs below for barometric pressure verification. Audit ID Item 100581-1023 #1 100581-1024 #2 100581-1025 #3 100581-1026 #4 The formula for normalizing dry gas measurements to standard pressure can be found in the following paper: Silverman LD, Wong K, Miller S. Confirmation of ethanol compressed gas standard concentrations by an NIST-traceable, absolute chemical method and comparison with wet breath alcohol simulators. J Anal Toxicol 1997; 21: 369–372. [Participant submitted data in a format that could not be reproduced in this report.]
4T7ZLH	This laboratory has not calculated measurement uncertainty for breath alcohol calibration.
7VQNW9	[Laboratory] 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: 0.041 (g/210L) +/-0.008, Item 2: 0.100 (g/210L) +/-0.020, Item 3: 0.226 (g/210L) +/-0.020, Item 4: 0.367 (g/210L) +/-0.020
CN8DA8	Item #1 lot number: 12019000A1. Item #2 lot number: 12019000A3. Item #3 lot number: 12019000A2. Item #4 lot number: 12019000A4
D32HQ3	ACC-CHECK tickets for tests were affixed to the submitted hand-written notes. [Attachment not provided by participant.]
HBHMRP	Each item was analyzed five times. The average value of the five analyses for each item was reported to the 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.
HJCRKQ	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.
J28K7P	Each item was analyzed five times. The average value of the five analysis 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 calibrated for the verification of calibration and hence not reported for the items.
JMQPQT	Our 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 4 different Reference Materials used during the calibration: 0.050 +/-0.005 g/210L, 0.100 +/- 0.005 g/210L, 0.200 +/-0.009 g/210L, and 0.300 +/- 0.013 g/210L. With that said, I cannot assign an uncertainty to the reported concentrations.

TABLE 4

WebCode	Additional Comments
L89G3U	The estimated uncertainty of measurement for k=2 is 5.0% or 0.005g/210L, whichever is greater.
N9U2LV	All results were truncated to three decimal places.
NR9DDL	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.
T9HL9C	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.
VHYGAG	Uncertainty has not been established.
WTWKDB	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.
Y6F7AF	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: 0.041 +/- 0.008 g/210L, Item 2: 0.101 +/- 0.021 g/210L, Item 3: 0.225 +/- 0.021 g/210L, Item 4: 0.362 +/- 0.021 g/210L
Z7Q9VE	The laboratory reports 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. Results would have been reported as the following: Item 1: 0.040 (g/210L) +/- 0.008, Item 2: 0.099 (g/210L) +/- 0.020, Item 3: 0.225 (g/210L) +/- 0.020, Item 4: 0.363 (g/210L) +/- 0.020

-End of Report-
(Appendix may follow)

Test No. 19-569: Breath Alcohol Calibration Verification

DATA MUST BE SUBMITTED BY **Sept. 16, 2019, 11:59 p.m.** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A

WebCode: Y878F4

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 certified reference material dry gas cylinders

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:	<input type="text"/>	± <input type="text"/>
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Item 2:	<input type="text"/>	± <input type="text"/>
---------	----------------------	------------------------

Item 3:	<input type="text"/>	± <input type="text"/>
---------	----------------------	------------------------

Item 4:	<input type="text"/>	± <input type="text"/>
---------	----------------------	------------------------

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 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)

CTS Test 19-569
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: 12032
Part #: BAC34L040T
Cylinder Size: 34L
Lot Number: 12019000A1
Expiration: 8/5/2021

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

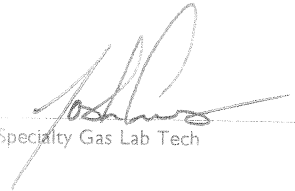
Contents: 34 Liters @ 500 psig 70°F (21°C)

Component:	Reported Concentration:	Analytical Accuracy (U, k=2):	Analytical Method:
Ethanol	104 ppm	+/- 0.002 BAC (G/210L) [5.2 ppm]	NDIR
Nitrogen	Balance		

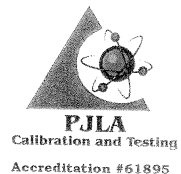
*Traceable to:

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

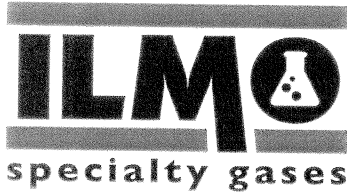
07-02-19
Date



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 19-569
Item 2



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

Certificate of Analysis

Certificate ID: 12033
Part #: BAC34L100T
Cylinder Size: 34L
Lot Number: 12019000A3
Expiration: 8/5/2021

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

07-02-19
Date



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 19-569
Item 3



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

Certificate of Analysis

Certificate ID: 12034
Part #: BAC34L230T
Cylinder Size: 34L
Lot Number: 12019000A2
Expiration: 8/5/2021


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

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

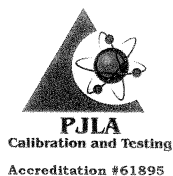
Component:	Reported Concentration:	Analytical Accuracy (U, k=2):	Analytical Method:
Ethanol	599 ppm	+/- 2% (rel. ppm)	Gravimetric
Nitrogen	Balance		

*NIST Traceable to:
Gravimetric Balance
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

07-02-19
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 19-569
Item 4



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Certificate of Analysis

Certificate ID: 12035
Part #: BAC34L380T
Cylinder Size: 34L
Lot Number: 12019000A4
Expiration: 8/5/2021

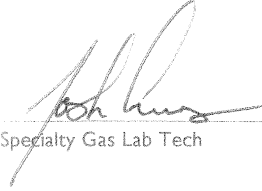
0.380 BAC (For the calibration of instruments used to determine breath alcohol concentration)

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

Component:	Reported Concentration:	Analytical Accuracy (U, k=2):	Analytical Method:
Ethanol	990 ppm	+/- 2% (rel. ppm)	Gravimetric
Nitrogen	Balance		

*NIST Traceable to:
Gravimetric Balance
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

07-02-19
Date



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