



Quantitative Drug Analysis - Methamphetamine HCl Test No. 18-505 Summary Report

Each sample set consisted of two items with different concentrations of methamphetamine HCl. Participants were asked to determine the concentration of methamphetamine HCl in each item. Data were returned from 71 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 pack consisted of two items containing different concentrations of methamphetamine HCl and caffeine. Participants were requested to analyze each item and report the quantitative determination of methamphetamine HCl present in the samples.

SAMPLE PREPARATION-

The appropriate amount of methamphetamine HCl and caffeine for each Item were thoroughly mixed to ensure homogeneity.

ITEMS 1 and 2 (PREPARATION): For each Item, approximately 500 mg of the powder was weighed out and deposited into a glassine bag, which was folded and secured with a label. The folded glassine bag was placed into a small zip top bag and heat sealed closed. The heat sealed bag was then placed into a pre-labeled 5 1/2 inch coin envelope.

SAMPLE PACK ASSEMBLY: One of each of the Item 1 and Item 2 envelopes was placed into a larger pre-labeled sample pack envelope.

VERIFICATION: Laboratories that conducted predistribution analysis of the samples reported consistent results that were comparable to the preparation concentrations of methamphetamine HCl. The following methods were used to examine the items: GC/MS, LC, NMR, LC-UV-MS and FTIR.

Item	Preparation methamphetamine HCl
1	50%
2	73%

Summary Comments

This test was designed to allow participants to assess their proficiency in the determination of methamphetamine HCl concentrations. Each participant was supplied with a sample set consisting of two items containing caffeine and different concentrations of methamphetamine HCl. Participants were requested to determine the methamphetamine HCl concentration for both items. (Refer to the Manufacturer's Information for preparation details.)

The results are separated into two tables, the reported results and the raw analytical data. The table of reported results shows the concentration that each participant would report according to their normal reporting procedures (e.g. mean, lowest result, truncated results). The table of raw data shows the results from each determination made by the laboratory to produce their reported results.

The raw data was used to calculate the grand mean and the standard deviation for each item. Participants with "extreme" data (± 3 STD from grand mean) have been marked with an "X" and their results were excluded from the calculations of the grand mean and standard deviation. Three participants reported "extreme" data for Item 1 and four participants reported "extreme" data for both Items 1 and 2. The grand mean and standard deviation are supplied to assist the participants and accrediting bodies in determining the acceptability of the results.

As a supplemental examination of the raw data, Bivariate Control Analysis was also performed to analyze the measurement of both samples simultaneously. In this analysis, an ellipse was drawn so that 95% of the time a randomly selected participant was inside it. Two participants whose results fell outside of the 95% ellipse, but within the 99% control limit have been marked with a "**". An additional seven participants with results that fell outside the 99% control limit have been marked with an "X" and their results were excluded from the calculations for this supplemental examination. For more information regarding Bivariate Control Analysis, please see the supplemental section at the end of this report.

Participants used a variety of methods to examine the samples. The most common method of analysis utilized was GC/FID.

Reported Results

What is the concentration of Methamphetamine HCl in each of the samples?

TABLE 1 - Reported Results

WebCode	Item 1	Item 2	
Preparation concentration:	50%	73%	Coverage factor k
3M3CYA	43.34 (%)	64.57 (%)	
3TRWZ4	49.8 ± 1.8 (%)	72.5 ± 2.6 (%)	2
4479VD	48.39 ± 7.39 (%)	71.54 ± 7.39 (%)	0.04 g
4UFPFK	Refer to additional comments [Table 5]	73 ± 8 (%)	
68YRBG	50.95 ± 4.8 (%)	74.28 ± 5.3 (%)	2.025
6HKX8K	55 ± 6 (%)	77 ± 6 (%)	2
6WZUP3	47.5 ± 5.9 (%)	74.1 ± 5.9 (%)	2
7HD9HE	47.8 ± 1.0 (%)	71.2 ± 0.7 (%)	2
8UPTG2	50.7 ± 4.3 (%)	74.7 ± 6.3 (%)	2
92347L	47.9 ± 3.9 (%)	72.5 ± 6.0 (%)	2
964ANX	50 ± 3 (%)	73 ± 3 (%)	2
AGV26V	48.00 ± 3.36 (%)	69.78 ± 4.88 (%)	2
AHJP63	48.0 ± 4.8 (%)	71.4 ± 7.1 (%)	
AQ22H4	48.9 ± 3.0 (%)	73.9 ± 4.6 (%)	3
B3NPTT	47 ± 4.50 (%)	72 ± 4.50 (%)	2
BPYPZ7	50.6 ± 4.2 (%)	76.4 ± 6.0 (%)	2
BRM4MU	48.8 ± 2.5 (%)	70.3 ± 3.9 (%)	2
CTGC8J	51.6 ± 4.3 (%)	75.9 ± 6.3 (%)	2
DBRLNB	Refer to additional comments [Table 5]	71 ± 8 (%)	
E3FMUY	49.6 ± 1.9 (%)	73.5 ± 1.9 (%)	2
EE8DE4	48.92 ± 7.89 (%)	71.23 ± 7.89 (%)	2

TABLE 1 - Reported Results

WebCode	Item 1	Item 2	
Preparation concentration:	50%	73%	Coverage factor k
EWCKT6	48.4 ± 4.0 (%)	68.5 ± 5.6 (%)	2
EWPE96	49.2 ± 0.2 (%)	72.6 ± 0.6 (%)	2
FP84V6	50.0 ± 4.2 (%)	73.5 ± 6.2 (%)	2
G38LLU	39 (%)	58 (%)	
G9UETN	0.23 ± 0.01 (grams)	0.36 ± 0.02 (grams)	2
GJFGFP	49 ± 3 (%)	72 ± 3 (%)	2.025
HHFZEC	47.5 ± 3.9 (%)	69.6 ± 5.7 (%)	2
J3ZYJ8	48 ± 3.8 (%)	70 ± 3.8 (%)	3
J94ZK2	49.7 ± 1.1 (%)	72.0 ± 0.2 (%)	2
JHVG96	Refer to additional comments [Table 5]	71 ± 8 (%)	
JLQA6L	47.42 ± 3.32 (%)	72.50 ± 5.08 (%)	2
JLVPDF	48 ± 4 (%)	72 ± 7 (%)	
JTRJDY	47.27 ± 8.09 (%)	69.68 ± 8.09 (%)	2
KBP6UJ	20 ± 2 (% m/m)	32 ± 3 (% m/m)	2
KM6WF9	45 ± 28 (%)	69 ± 17 (%)	3
LAU44L	48.6 ± 4.1 (%)	72.7 ± 6.1 (%)	2
LFYHAX	48.65 ± 7.89 (%)	72.29 ± 7.89 (%)	2
LH68AK	49.2% ± 1.4 (WGT/VOL)	71.1% ± 1.9 (WGT/VOL)	
LP4RE2	50,51 ± 0,25 (%)	73,25 ± 0,48 (%)	
LP6LX8	48 ± 28 (%)	71 ± 17 (%)	3
MDNZN7	48 ± 28 (%)	72 ± 17 (%)	3
MMVV94	49 ± 6 (%)	73 ± 6 (%)	2
NNJUY8	50.6 ± 4.2 (%)	76.1 ± 6.4 (%)	2

TABLE 1 - Reported Results

WebCode	Item 1	Item 2	Coverage factor k
Preparation concentration:	50%	73%	
NZFX42	48 ± 3.8 (%)	69 ± 3.8 (%)	3
QYGCME	0.24 ± 0.01 (grams)	0.36 ± 0.02 (grams)	2
RW6WTE	41.7 ± 2.3 (%)	72.1 ± 4.0 (%)	2
RXJJ8L	20 ± 8 (% m/m)	26 ± 4.7 (% m/m)	2
T2YBXE	49 ± 6.3 (%)	71 ± 6.3 (%)	2
TBZVXL	48 ± 4 (%)	71 ± 4 (%)	2
TV6CGY	50 ± 7 (%)	73 ± 7 (%)	2
U4UGRB	44.0 ± 1.4 (% w/w)	70.0 ± 2.3 (% w/w)	3
U6Q3EB	0.25 ± 0.02 (grams)	0.36 ± 0.02 (grams)	2
UG4XYF	52.80 ± 1.77 (%)	74.63 ± 2.42 (%)	2
VMPADA	48.8 ± 4.8 (%)	71.4 ± 7.1 (%)	3
W473CW	48 ± 28 (%)	72 ± 17 (%)	3
W49RGU	46 ± 5 (%)	71 ± 5 (%)	2.05
X8LPNG	49 ± 3 (%)	72 ± 3 (%)	2
X9H7ZD	48.5 ± 2.1 (%)	70.9 ± 2.1 (%)	
XB8E79	49.1 ± 2.6 (%w/w)	72.0 ± 4.1 (%w/w)	2
XUWTMJ	48.5 ± 3.8 (%)	71.0 ± 6.1 (%)	2
YNQEF8	46 ± 3 (%)	69 ± 3 (%)	2.025
YWJRDJ	49.8 ± 2.2 (%)	71.0 ± 0.7 (%)	2
YWJU26	47 ± 28 (%)	71 ± 17 (%)	3
Z2BFC6	48.0	70.3	
ZBXGPU	48.6 ± 4.0 (%)	71.3 ± 5.8 (%)	2
ZFQJTT	49 ± 28 (%)	73 ± 17 (%)	3
ZPDD8B	49.3 ± 1.2 (% weight)	72.6 ± 1.2 (% weight)	1.2

TABLE 1 - Reported Results

WebCode	Item 1	Item 2	
Preparation concentration:	50%	73%	Coverage factor k
ZR4LD7	48.2 ± 2.7 (%)	72.3 ± 4.0 (%)	2
ZUMTEE	47.1 (%)	68.1 (%)	
ZX9HW7	49 ± 4.9 (%)	76 ± 7.6 (%)	2

Reporting Procedures

TABLE 2

WebCode	Reporting Procedures
3M3CYA	The mean of duplicate/several determinations.
3TRWZ4	The mean of duplicate/several determinations.
4479VD	The mean of duplicate/several determinations.
4UFPFK	The mean of duplicate/several determinations.
68YRBG	The mean of duplicate/several determinations.
6HKX8K	The mean of duplicate/several determinations.
6WZUP3	The mean of duplicate/several determinations.
7HD9HE	The mean of duplicate/several determinations.
8UPTG2	The mean of duplicate/several determinations.
92347L	The mean of duplicate/several determinations.
964ANX	The mean of duplicate/several determinations.
AGV26V	The mean of duplicate/several determinations.
AHJP63	The mean of duplicate/several determinations.
AQ22H4	The mean of duplicate/several determinations.
B3NPTT	The mean of duplicate/several determinations.
BPYPZ7	The mean of duplicate/several determinations.
BRM4MU	The lowest value of duplicate/several determinations.
CTGC8J	The mean of duplicate/several determinations.
DBRLNB	The mean of duplicate/several determinations.
E3FMUY	The mean of duplicate/several determinations.
EE8DE4	The mean of duplicate/several determinations.
EWCKT6	The mean of duplicate/several determinations.
EWPE96	The mean of the lowest value of duplicates.
FP84V6	The mean of duplicate/several determinations.
G38LLU	The mean of duplicate/several determinations.

TABLE 2

WebCode	Reporting Procedures
G9UETN	The mean of duplicate/several determinations.
GJFGFP	The mean of duplicate/several determinations.
HHFZEC	The mean of duplicate/several determinations.
J3ZYJ8	The mean of duplicate/several determinations.
J94ZK2	The lowest value of duplicate/several determinations.
JHVG96	The mean of duplicate/several determinations.
JLQA6L	The mean of duplicate/several determinations.
JLVPDF	The mean of duplicate/several determinations.
JTRJDY	The mean of duplicate/several determinations.
KBP6UJ	The mean of duplicate/several determinations.
KM6WF9	The mean of duplicate/several determinations.
LAU44L	The mean of duplicate/several determinations.
LFYHAX	The mean of duplicate/several determinations.
LH68AK	The mean of duplicate/several determinations.
LP4RE2	The mean of duplicate/several determinations.
LP6LX8	The mean of duplicate/several determinations.
MDNZN7	The mean of duplicate/several determinations.
MMVW94	The mean of duplicate/several determinations.
NNJUY8	The mean of duplicate/several determinations.
NZFX42	The mean of duplicate/several determinations.
QYGCME	The mean of duplicate/several determinations.
RW6WTE	The lowest value of duplicate/several determinations.
T2YBXE	The mean of duplicate/several determinations.
TBZVXL	single determination by FTNMR
TV6CGY	The mean of duplicate/several determinations.
U4UGRB	The mean of duplicate/several determinations.

TABLE 2

WebCode	Reporting Procedures
U6Q3EB	The mean of duplicate/several determinations.
UG4XYF	The mean of duplicate/several determinations.
VMPADA	The mean of duplicate/several determinations.
W473CW	The mean of duplicate/several determinations.
W49RGU	The lowest value of duplicate/several determinations.
X8LPNG	The mean of duplicate/several determinations.
X9H7ZD	The mean of duplicate/several determinations.
XB8E79	The mean of duplicate/several determinations.
XUWTMJ	The mean of duplicate/several determinations.
YNQEF8	The mean of duplicate/several determinations.
YWJRDL	The mean of duplicate/several determinations.
YWJU26	The mean of duplicate/several determinations.
Z2BFC6	The mean of duplicate/several determinations.
ZBXGPU	The mean of duplicate/several determinations.
ZFQJTT	Truncated mean of duplicate/several determinations
ZPDD8B	The mean of duplicate/several determinations.
ZR4LD7	The lowest value of duplicate/several determinations.
ZUMTEE	% purity calculated from the mean of multiple instrument raw response.
ZX9HW7	The mean of duplicate/several determinations.

Response Summary		Participants: 70
The mean of duplicate/several determinations:	61	(87.1%)
The lowest value of duplicate/several determinations:	5	(7.1%)
Other:	4	(5.7%)

Raw Data

List of raw data determinations in percent.

TABLE 3 - Item 1

WebCode	Item 1	Preparation target concentration : 50%				Mean	
3M3CYA	43.34	43.34				43.34 X	
3TRWZ4	49.30	50.30				49.80	
4479VD	47.94	48.60	48.62			48.39	
4UFPFK							
68YRBG	50.48	51.42				50.95	
6HKX8K	55.24	56.23	54.97			55.48 X	
6WZUP3	47.55	48.39	46.93	47.27		47.54	
7HD9HE	47.00	48.50	48.00	47.60		47.78	
8UPTG2	50.20	51.10				50.65	
92347L	48.19	47.77				47.98	
964ANX	50.23	49.95	49.91			50.03	
AGV26V	47.77	48.24				48.01	
AHJP63	48.00					48.00	
AQ22H4	48.78	49.17				48.98	
B3NPTT	46.64	47.28				46.96	
BPYPZ7	49.61	51.20	51.08	50.42	50.36	50.86	50.59
BRM4MU	48.80	49.10				48.95	
CTGC8J	52.40	50.90				51.65	
DBRLNB							
E3FMUY	49.32	49.66	49.70	49.81		49.62	
EE8DE4	48.71	49.03	49.01			48.92	
EWCKT6	48.90	48.03				48.47	
EWPE96	49.10	49.30	49.20	49.30		49.23	
FP84V6	49.90	50.20				50.05	
G38LLU	39.40	38.50				38.95 X	
G9UETN	48.61	48.17	47.81	46.44		47.76	
GJFGFP	49.90	50.21	48.65			49.59	
HHFZEC	47.89	47.16				47.53	
J3ZYJ8							
J94ZK2	49.80	48.80	49.80	50.40		49.70	

TABLE 3 - Item 1

WebCode	Item 1		Preparation target concentration : 50%				Mean
JHVG96							
JLQA6L	49.21	45.64					47.43
JLVPDF	47.11	49.93	49.68				48.91
JTRJDY	47.37	47.32	47.30	47.57	47.04	47.03	47.27
KBP6UJ	22.00	20.00	16.00				19.33 X
KM6WF9	46.53	45.35					45.94
LAU44L	48.40	48.90					48.65
LFYHAX	48.94	48.67	48.33				48.65
LH68AK	49.52	48.97					49.25
LP4RE2	50.72	50.59	50.22				50.51
LP6LX8	48.66	48.66					48.66
MDNZN7	47.86	48.21					48.04
MMVW94	49.40	49.06	49.27				49.24
NNJUY8	49.90	51.42					50.66
NZFX42							
QYGCME	49.20	49.30	50.26	49.40			49.54
RW6WTE	41.70	44.40					43.05 X
RXJJ8L	23.00	22.00	16.00				20.33 X
T2YBXE	48.45	48.34	49.14	49.14			48.77
TBZVXL	48.67						48.67
TV6CGY	50.77	49.70	51.07				50.51
U4UGRB	45.10	43.03					44.07 X
U6Q3EB	49.92	51.23	51.04	51.19			50.85
UG4XYF	53.30	51.80	52.80	52.19	54.27	52.46	52.80
VMPADA	49.40	48.30					48.85
W473CW	48.60	47.10					47.85
W49RGU	46.00	46.00	46.00	48.00	48.00	49.00	47.17
X8LPNG	50.04	49.84	49.45				49.78
X9H7ZD	48.11	48.42	48.75	49.03			48.58
XB8E79	49.17	49.09					49.13
XUWTMJ	48.74	48.39	48.61	48.38	48.96	48.08	48.53
YNQEF8	45.23	45.61	47.66				46.17

TABLE 3 - Item 1

WebCode	Item 1		Preparation target concentration : 50%						Mean
YWJRDJ	49.90	51.10	49.00	48.30	50.70	51.20	48.80	48.60	49.75
	51.30	50.10	49.30	48.70					
YWJU26	47.26	47.55							47.41
Z2BFC6	48.50	47.40							47.95
ZBXGPU	48.17	49.21							48.69
ZFQJTT	49.30	49.40							49.35
ZPDD8B	49.50	49.20	49.30						49.33
ZR4LD7	48.50	48.20							48.35
ZUMTEE									
ZX9HW7	50.00	48.40							49.20

Statistical Analysis for Item 1					
Grand Mean	48.92	Number of Participants Included	58	Number of Participants without Raw Data	6
Standard Deviation	1.296	Number of Participants Excluded	7		

TABLE 3 - Item 2

WebCode	Item 2		Preparation target concentration : 73%				Mean
3M3CYA	65.60	63.55					64.58 X
3TRWZ4	72.50	72.60					72.55
4479VD	72.46	71.59	70.58				71.54
4UFPFK	72.83	72.75					72.79
68YRBG	73.04	75.53					74.29
6HKX8K	77.25	77.39	77.01				77.22
6WZUP3	73.21	73.70	74.93	74.65			74.12
7HD9HE	70.70	71.00	71.70	71.40			71.20
8UPTG2	74.40	74.90					74.65
92347L	72.70	72.33					72.52
964ANX	72.83	74.29	72.96				73.36
AGV26V	68.88	70.67					69.78
AHJP63	71.40						71.40
AQ22H4	73.89	74.00					73.95
B3NPTT	73.76	70.42					72.09
BPYPZ7	76.88	76.43	76.92	76.28	75.69	75.95	76.36
BRM4MU	70.30	71.50					70.90
CTGC8J	75.90	75.90					75.90
DBRLNB	70.75	71.63					71.19
E3FMUY	73.28	73.51	73.76	73.55			73.53
EE8DE4	72.28	70.30	71.12				71.23
EWCKT6	68.80	68.22					68.51
EWPE96	72.50	72.70	72.00	73.00			72.55
FP84V6	73.70	73.30					73.50
G38LLU	56.30	60.20					58.25 X
G9UETN	74.64	73.08	73.56	72.61			73.47
GJFGFP	72.16	73.50	71.90				72.52
HHFZEC	70.32	68.97					69.64
J3ZYJ8							
J94ZK2	72.10	71.90	72.20	72.00			72.05
JHVG96	71.66	70.21					70.94
JLQA6L	72.21	72.80					72.51

TABLE 3 - Item 2

WebCode	Item 2		Preparation target concentration : 73%					Mean	
JLVPDF	71.67	73.61	72.78					72.69	
JTRJDY	70.34	69.36	70.68	67.72	69.19	70.76		69.68	
KBP6UJ	35.00	35.00	26.00					32.00 X	
KM6WF9	69.74	69.32						69.53	
LAU44L	72.50	72.90						72.70	
LFYHAX	71.83	73.39	71.63					72.28	
LH68AK	71.84	70.42						71.13	
LP4RE2	72.70	73.81	73.25					73.25	
LP6LX8	71.86	71.42						71.64	
MDNZN7	71.08	73.03						72.06	
MMVW94	73.42	72.89	74.19					73.50	
NNJUY8	76.65	75.56						76.11	
NZFX42									
QYGCME	76.66	75.61	75.43	74.31				75.50	
RW6WTE	73.50	72.10						72.80	
RXJJ8L	24.00	28.00	27.00					26.33 X	
T2YBXE	70.77	70.52	71.78	70.58				70.91	
TBZVXL	71.47							71.47	
TV6CGY	73.86	73.59	73.42					73.62	
U4UGRB	70.86	69.15						70.01	
U6Q3EB	72.84	73.24	73.44	71.96				72.87	
UG4XYF	75.48	75.89	75.15	73.19	75.01	73.04		74.63	
VMPADA	71.90	70.90						71.40	
W473CW	72.70	72.00						72.35	
W49RGU	71.00	71.00	72.00	72.00	73.00	73.00		72.00	
X8LPNG	74.08	72.07	72.52					72.89	
X9H7ZD	70.46	70.23	71.75	71.41				70.97	
XB8E79	71.53	72.57						72.05	
XUWTMJ	70.71	69.68	69.98	71.89	72.37	71.49		71.02	
YNQEF8	71.49	68.12	70.33					69.98	
YWJRDJ	71.00	71.70	70.60	70.80	70.80	71.10	70.70	71.40	70.98
	71.30	70.90	70.80	70.70					

TABLE 3 - Item 2

WebCode	Item 2		Preparation target concentration : 73%	Mean
YWJU26	71.91	71.11		71.51
Z2BFC6	70.00	70.60		70.30
ZBXGPU	71.51	71.26		71.38
ZFQJTT	73.00	73.60		73.30
ZPDD8B	72.80	72.50	72.60	72.63
ZR4LD7	72.30	72.40		72.35
ZUMTEE				
ZX9HW7	77.60	73.90		75.75

Statistical Analysis for Item 2					
Grand Mean	72.40	Number of Participants Included	64	Number of Participants without Raw Data	3
Standard Deviation	1.786	Number of Participants Excluded	4		

TABLE 3 - Response Summary

Response Summary	Item 1	Item 2
Preparation concentration:	50%	73%
Grand Mean	48.92	72.40
Standard Deviation	1.296	1.786

Method of Analysis

TABLE 4 - Methods

WebCode	GC	LC	FTIR	GC/MS	LC/MS	UV	GC/FID	Other
3M3CYA							✓	
3TRWZ4		✓						
4479VD				✓				
4UFPFK			✓				✓	
68YRBG				✓				
6HKX8K							✓	
6WZUP3		✓						
7HD9HE				✓				
8UPTG2								LC/UV/MS
92347L							✓	
964ANX		✓						
AGV26V				✓				
AHJP63							✓	
AQ22H4							✓	
B3NPTT								HPLC with 257nm UV detector
BPYPZ7							✓	
BRM4MU							✓	
CTGC8J		✓						
DBRLNB			✓				✓	
E3FMUY							✓	
EE8DE4				✓				
EWCKT6							✓	
EWPE96								qNMR
FP84V6								LC/UV/MS
G38LLU				✓				
G9UETN							✓	
GJFGFP		✓						
HHFZEC							✓	
J3ZYJ8	✓							
J94ZK2								qNMR

TABLE 4 - Methods

WebCode	GC	LC	FTIR	GC/MS	LC/MS	UV	GC/FID	Other
JHVG96			✓				✓	
JLQA6L				✓				
JLVPDF					✓			
JTRJDY				✓				
KBP6UJ				✓				
KM6WF9							✓	
LAU44L								LC/UV/MS
LFYHAX				✓				
LH68AK		✓						
LP4RE2								HPLC
LP6LX8							✓	
MDNZN7							✓	
MMVW94							✓	
NNJUY8		✓						
NZFX42	✓							
QYGCME							✓	
RW6WTE			✓				✓	
RXJJ8L				✓				
T2YBXE		✓						
TBZVXL								FTNMR
TV6CGY		✓	✓			✓		
U4UGRB							✓	
U6Q3EB	✓							
UG4XYF		✓						
VMPADA							✓	
W473CW				✓			✓	Color/Spot Tests
W49RGU							✓	
X8LPNG		✓						
X9H7ZD							✓	
XB8E79								UPLC
XUWTMJ							✓	
YNQEF8		✓						

TABLE 4 - Methods

WebCode	GC	LC	FTIR	GC/MS	LC/MS	UV	GC/FID	Other
YWJRDL	✓							
YWJU26				✓			✓	Color test
Z2BFC6		✓						LC/DAD
ZBXGPU							✓	
ZFQJT							✓	
ZPDD8B				✓				
ZR4LD7							✓	
ZUMTEE				✓				
ZX9HW7		✓						

Response Summary

Participants	GC	LC	FTIR	GC/MS	LC/MS	UV	GC/FID
71	4	14	5	15	1	1	30
Percent	5.6%	19.7%	7.0%	21.1%	1.4%	1.4%	42.3%

Additional Comments

TABLE 5

WebCode	Additional Comments
4UFPFK	Item 1: The concentration was below the lowest calibrator, as a result the material was insufficient for quantitation.
68YRBG	Our lab reports meth purity in base form. Calculations to determine meth HCl purity done per PT instructions.
8UPTG2	additional tests: GC/MS, Weight Determination, FTIR, Marquis
AHJP63	Purity uncertainties are reported as +/- 10% of the calculated values.
B3NPTT	Presence of caffeine was confirmed in item 1 and indicated in item 2.
CTGC8J	Items also contain Caffeine
DBRLNB	Item 1: The concentration was below the lowest calibrator, as a result the material was insufficient for quantitation.
FP84V6	Additional tests: GC/MS, FTIR, Weight Determination
JHVG96	Item 1: The concentration was below the lowest calibrator, as a result the material was insufficient for quantitation.
LAU44L	Other methodologies used for this analysis include: GC/MS, weight determination, FTIR
LP4RE2	The main result was given from HPLC. In addition, GC / FID analysis was performed for confirmation and the following results were obtained: ITEM 1 50,34 +/- 0,29 (%); ITEM 2 72,95 +/- 1,35 (%)
NNJU8	Second peak detected, not identified
TBZVL	Item 1: d-methamphetamine hydrochloride and caffeine. Item 2: d-methamphetamine hydrochloride and caffeine
U4UGRB	In routine practice concentration (% purity) is calculated based on methamphetamine base, and in the case report the weight of methamphetamine base for the whole sample was reported, not the concentration.
UG4XYF	Uncertainty (k = 2) calculated as 2 x standard deviation. It was quantitatively found that both samples were diluted with pure caffeine. Thus, 100% minus methamphetamine hydrochloride content = caffeine content.
XB8E79	Caffeine indicated in each of items 1 and 2. Detector: PDA. Column: Acquity UPLC BEH C18, 1.7um, 2.1x100mm. Calibration: 3 point. Primary Standard: Methylamphetamine.HCl; Origin: NMI, Purity: 99.8% +/- 1.9%, Batch No. 14-D-12
Z2BFC6	Item 1 : cutting agent : caffeine : 45.2 %. Item 2 : cutting agent : caffeine : 25.8 %
ZUMTEE	The measurement uncertainty for our method has not been calculated for this purity range because it is not consistent with the range we see in casework.
ZX9HW7	Instrumentation for quantitative analysis was a LC/PDA. Items 1 and 2: Caffeine was also detected in the powders.

Supplemental: Hotelling T-Squared Bivariate Control Analysis

Hotelling T-Squared Bivariate Control Analysis is used in many other industries to examine results. Although not typically used in forensic science, CTS is presenting an introduction to this type of statistical data analysis. A laboratory may choose to delve deeper in a participant's results by studying both sets of statistics available in this report. The statistics presented in Table 3 - Raw Data of this report examine the results of each item independently of each other. However, because the same materials are chosen for both samples, there should be a correlation of measurement performance between the two samples. A bi-variate analysis technique judges measurement performance on both samples simultaneously, represented as an ellipse. For each participant, the mean of Item 1 (x-axis) is plotted against the mean of Item 2 (y-axis). The horizontal and vertical cross-hairs are the grand means for each Item. When 20 or more participants are included in the statistics, an ellipse is drawn so that 95% of the time a randomly selected participant will be included inside.

When considering your participant's position on the plot relative to the ellipse, remember that, generally speaking, if a participant's plotted point falls on the major axis outside of the ellipse, the participant is consistent in its measurements between the two samples but exhibits an offset from the grand mean (systematic difference). If a plotted point falls to the side of the ellipse, it indicates possible differences in the way that the participant tested the two samples or differences in sample behavior (consistency difference). The two-sample plot enables you to see which sample, if either, is "extreme" and to ascertain the nature of the "extreme" data.

Systematic Difference

Bias is illustrated in the control ellipse on the two sample plot. If a particular analysis/sample combination did not show bias, the control ellipse would become a circle. Differences in procedures, conditions, instrumentation and sample preparation all contribute to the bias of a participant. When these differences become too large, a participant may receive a Data Flag. When the test results for both samples are both high or low compared to the group, a participant has a fixed set of factors on which to focus to identify a cause. Furthermore, since additional testing on similar samples should produce similar high or low results, it is possible to determine that a systematic error has been successfully corrected.

Consistency Difference

The participant's results indicate that there are differences in the way the two samples tested (the plotted point falls to the side of the ellipse). This type of error may be attributed to the analyst deviating from the procedure when testing one of the samples or a material interaction occurrence with the instrument or room conditions. The inconsistency is reflected in the Comparative Performance Values (CPV) for the two samples, such as a +1.5 CPV for Item 1 and a -2.2 CPV for Item 2. CPV is the number of standard deviations a value is from the grand mean.

Key for Data Flags		
<u>Data Flag</u>	<u>Statistically Included/Excluded</u>	<u>Explanation</u>
*	Included	Results fall outside 95% ellipse, but within a 99% control limit (ellipse) that is calculated.
X	Excluded	Results fall outside of 99% control limit.
M	Excluded	Data is missing for at least one item

Bivariate Control Analysis

WebCode	Data Flag	Item 1			Item 2		
		Participant Mean	Difference from Grand Mean	CPV	Participant Mean	Difference from Grand Mean	CPV
3M3CYA	X	43.34	-5.582	-4.31	64.58	-7.814	-4.38
3TRWZ4		49.80	0.878	0.68	72.55	0.161	0.09
4479VD		48.39	-0.536	-0.41	71.54	-0.845	-0.48
4UFPFK	M				72.79	0.401	0.22
68YRBG		50.95	2.028	1.57	74.29	1.896	1.06
6HKX8K	X	55.48	6.555	5.06	77.22	4.830	2.70
6WZUP3		47.54	-1.387	-1.07	74.12	1.734	0.97
7HD9HE		47.78	-1.147	-0.89	71.20	-1.189	-0.67
8UPTG2		50.65	1.728	1.33	74.65	2.261	1.26
92347L		47.98	-0.944	-0.73	72.52	0.127	0.07
964ANX		50.03	1.108	0.86	73.36	0.971	0.54
AGV26V		48.01	-0.917	-0.71	69.78	-2.614	-1.47
AHJP63		48.00	-0.922	-0.71	71.40	-0.989	-0.56
AQ22H4		48.98	0.053	0.04	73.95	1.556	0.87
B3NPTT		46.96	-1.962	-1.51	72.09	-0.299	-0.17
BPYPZ7		50.59	1.666	1.29	76.36	3.970	2.22
BRM4MU		48.95	0.028	0.02	70.90	-1.489	-0.84
CTGC8J		51.65	2.728	2.11	75.90	3.511	1.96
DBRLNB	M				71.19	-1.199	-0.68
E3FMUY		49.62	0.700	0.54	73.53	1.136	0.63
EE8DE4		48.92	-0.006	0.00	71.23	-1.155	-0.65
EWCKT6	*	48.47	-0.456	-0.35	68.51	-3.879	-2.18
EWPE96		49.23	0.303	0.23	72.55	0.161	0.09
FP84V6		50.05	1.128	0.87	73.50	1.111	0.62
G38LLU	X	38.95	-9.972	-7.70	58.25	-14.139	-7.92

WebCode	Data Flag	Item 1			Item 2		
		Participant Mean	Difference from Grand Mean	CPV	Participant Mean	Difference from Grand Mean	CPV
G9UETN		47.76	-1.165	-0.90	73.47	1.084	0.60
GJFGFP		49.59	0.664	0.51	72.52	0.131	0.07
HHFZEC		47.53	-1.394	-1.08	69.64	-2.746	-1.54
J3ZYJ8	M						
J94ZK2		49.70	0.778	0.60	72.05	-0.339	-0.19
JHVG96	M				70.94	-1.454	-0.82
JLQA6L		47.43	-1.497	-1.16	72.51	0.116	0.06
JLVPDF		48.91	-0.016	-0.01	72.69	0.298	0.16
JTRJDY		47.27	-1.651	-1.27	69.68	-2.714	-1.52
KBP6UJ	X	19.33	-29.589	-22.84	32.00	-40.389	-22.62
KM6WF9		45.94	-2.982	-2.30	69.53	-2.859	-1.61
LAU44L		48.65	-0.272	-0.21	72.70	0.311	0.17
LFYHAX		48.65	-0.276	-0.21	72.28	-0.105	-0.06
LH68AK		49.25	0.323	0.25	71.13	-1.259	-0.71
LP4RE2		50.51	1.588	1.23	73.25	0.865	0.48
LP6LX8		48.66	-0.262	-0.20	71.64	-0.749	-0.42
MDNZN7		48.04	-0.887	-0.68	72.06	-0.334	-0.19
MMVW94		49.24	0.318	0.25	73.50	1.114	0.62
NNJUY8		50.66	1.738	1.34	76.11	3.716	2.08
NZFX42	M						
QYGCME		49.54	0.618	0.48	75.50	3.114	1.74
RW6WTE	X	43.05	-5.872	-4.53	72.80	0.411	0.23
RXJJ8L	X	20.33	-28.589	-22.07	26.33	-46.055	-25.80
T2YBXE		48.77	-0.155	-0.12	70.91	-1.476	-0.83
TBZVXL		48.67	-0.252	-0.19	71.47	-0.919	-0.52
TV6CGY		50.51	1.591	1.23	73.62	1.235	0.69
U4UGRB	X	44.07	-4.857	-3.75	70.01	-2.384	-1.34

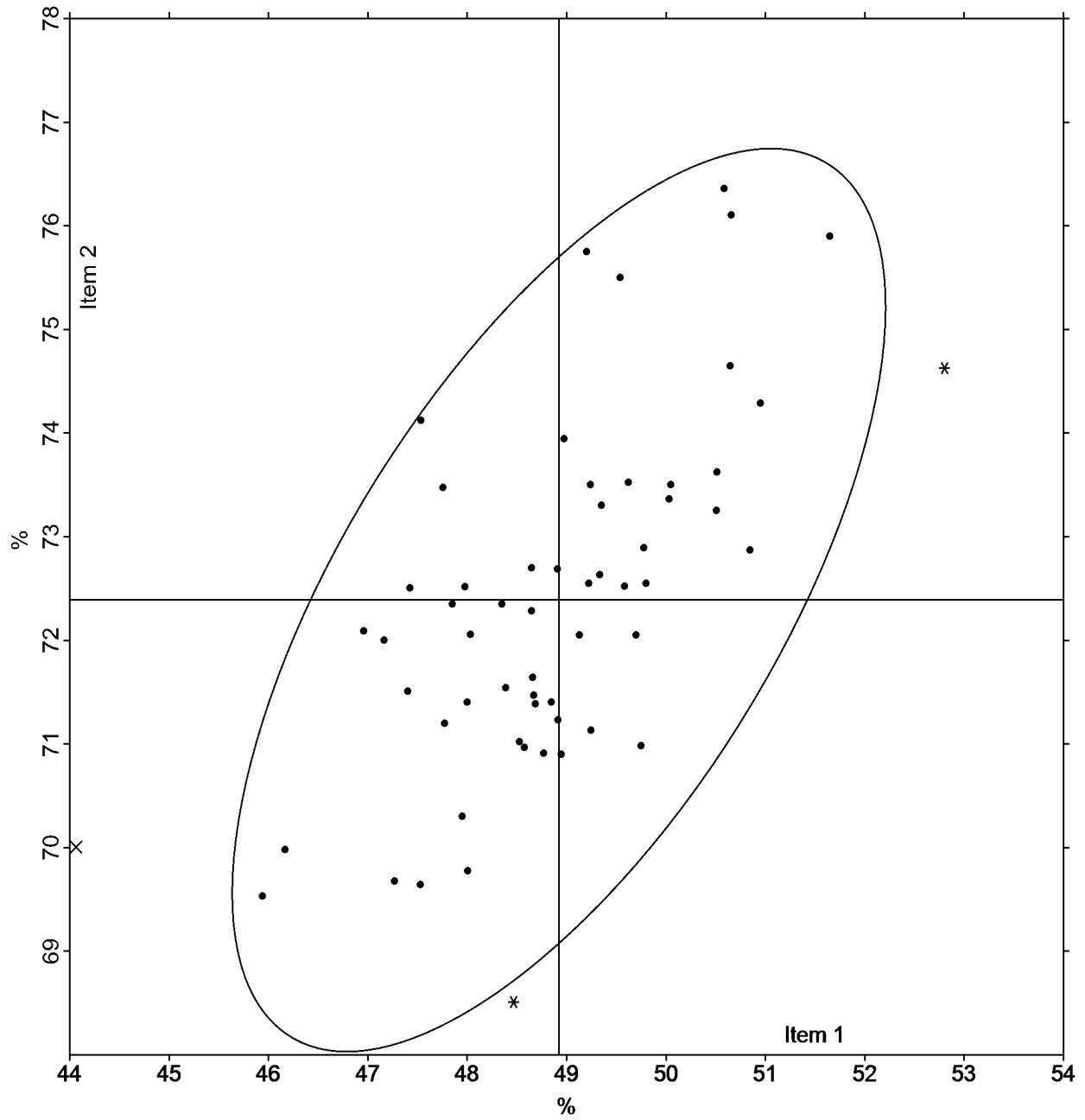
WebCode	Data Flag	Item 1			Item 2		
		Participant Mean	Difference from Grand Mean	CPV	Participant Mean	Difference from Grand Mean	CPV
U6Q3EB		50.85	1.923	1.48	72.87	0.481	0.26
UG4XYF	*	52.80	3.881	3.00	74.63	2.238	1.25
VMPADA		48.85	-0.072	-0.06	71.40	-0.989	-0.56
W473CW		47.85	-1.072	-0.83	72.35	-0.039	-0.03
W49RGU		47.17	-1.756	-1.35	72.00	-0.389	-0.22
X8LPNG		49.78	0.854	0.66	72.89	0.501	0.28
X9H7ZD		48.58	-0.346	-0.27	70.97	-1.423	-0.80
XB8E79		49.13	0.208	0.16	72.05	-0.339	-0.19
XUWTMJ		48.53	-0.396	-0.31	71.02	-1.369	-0.77
YNQEF8		46.17	-2.756	-2.13	69.98	-2.409	-1.35
YWJRDJ		49.75	0.828	0.64	70.98	-1.405	-0.79
YWJU26		47.41	-1.517	-1.17	71.51	-0.879	-0.50
Z2BFC6		47.95	-0.972	-0.75	70.30	-2.089	-1.17
ZBXGPU		48.69	-0.233	-0.18	71.38	-1.005	-0.57
ZFQJTT		49.35	0.428	0.33	73.30	0.911	0.51
ZPDD8B		49.33	0.411	0.32	72.63	0.245	0.13
ZR4LD7		48.35	-0.572	-0.44	72.35	-0.039	-0.03
ZUMTEE	M						
ZX9HW7		49.20	0.278	0.21	75.75	3.361	1.88

Response Summary		Item 1	Item 2
Preparation Concentration		50%	73%
Grand Mean		48.92	72.39
Standard Deviation		1.30	1.72
Participants Included: 58	Participants Excluded: 7	Participants without Raw Data for both items: 6	

Bivariate Control Analysis

Item 1 Grand Mean: 48.92

Item 2 Grand Mean: 72.39



-End of Report-
(Appendix may follow)

Appendix: Data Sheet

Collaborative Testing Services ~ Forensic Testing Program

Test No. 18-505: Quantitative Drug Analysis - Methamphetamine HCl

DATA MUST BE RECEIVED BY July 16, 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.

Scenario:

Investigators have submitted two powdered methamphetamine HCl samples from separate cases to be quantitatively examined. Using your laboratory's procedures, analyze each sample and report the quantitative determination of methamphetamine HCl present in the samples.

Note:

-Please follow your laboratory's policies and procedures for sample homogenization.

-This is not intended as a qualitative test but rather as a quantitative examination of the methamphetamine HCl present in the samples.

Items Submitted (Sample Pack DQ1):

Items 1 & 2: Powdered methamphetamine HCl samples

1a.) What is the concentration of methamphetamine HCl in each of the samples? (Results should be reported using your laboratory reporting criteria for decimal places, uncertainty, and units.)

	<u>Reported Concentration</u>	±	<u>Uncertainty (k= _____)</u>	(<u>Units</u>)
Item 1:		±		()
Item 2:		±		()

1b.) Are the values listed above:

- The mean of duplicate / several determinations? The lowest value of duplicate / several determinations?
- Other? (Specify): _____

Please return all pages of this data sheet.

Participant Code:

WebCode:

2.) Please list your raw data determinations below in percent of methamphetamine HCl.

(Results not reported in % will be excluded from statistical calculations).

Item 1 (%)		Item 2 (%)	
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

3.) What methods were used to quantitatively examine the items?

- | | | |
|---------------------------------|---|-------------------------------|
| <input type="checkbox"/> GC | <input type="checkbox"/> LC | <input type="checkbox"/> FTIR |
| <input type="checkbox"/> GC/MS | <input type="checkbox"/> LC/MS | <input type="checkbox"/> UV |
| <input type="checkbox"/> GC/FID | <input type="checkbox"/> Other (specify): _____ | |

4.) Additional Comments

<p>Return Instructions: Data must be received via online data entry, fax (please include a cover sheet), or mail by <u>July 16, 2018</u> to be included in the report. Emailed data sheets are not accepted.</p> <p>QUESTIONS? TEL: +1-571-434-1925 (8 am - 4:30 pm EST) EMAIL: forensics@cts-interlab.com www.ctsforensics.com</p>	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. **18-505: Quantitative Drug Analysis - Methamphetamine HCl**

This release page must be completed and received by July 16, 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.