Collaborative Testing Services, Inc.

Paper & Paperboard Testing Program

Summary Report #3052 G - April 2020

Introduction to the Paper & Paperboard Interlaboratory Program

Explanation of Tables and Definitions of Terms

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The CTS Paper & Paperboard Interlaboratory Program

In 1969, the National Bureau of Standards (now designated the National Institute for Standards and Technology) and the Technical Association of the Pulp and Paper Industry (TAPPI) developed an interlaboratory program for paper and paperboard testing. Since 1971, Collaborative Testing Services has operated the Collaborative Reference Program for Paper and Paperboard. With hundreds of organizations from around the world participating in these tests, this program has become one of the largest of its kind. The program allows laboratories to compare the performance of their testing with that of other participating laboratories, and provides a realistic picture of the state of paper testing.

About CTS

Founded in 1971, Collaborative Testing Services, Inc. (CTS) is a privately - owned company that specializes in interlaboratory tests for a variety of industrial sectors: rubber, plastics, fasteners and metals, CKPG, paper, color and wine, as well as proficiency tests for forensic laboratories. All of the tests are designed to assist organizations in achieving and maintaining quality assurance objectives. Labs from the U.S., as well as more than 80 countries, currently participate in CTS programs.

If there are any questions on the report or testing program, please contact:

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Key for Web Summary Reports (Page 1 of 2)

WebCode — Assigned laboratory identification number (temporary) used to ensure lab confidentiality while permitting a lab to locate its data in the Paper Report published on the CTS Web site. The WebCode for each analysis can be found on the datasheets and in the Performance Analysis Report mailed to each participant.

Lab Mean — The average of the values obtained for each sample by the participant.

Grand Mean — The average of the LAB MEANS for all included participants. Laboratories flagged with an X or an M (see DATA FLAG column) are excluded from the GRAND MEAN.

ΔE — The calculated total color difference between the two samples. For the Hunter L,a,b analyses it is calculated in Hunter units (ΔE). For the L*,a*,b* analyses it is calculated in CIELAB units (ΔE*).

Difference from Grand Mean — The difference of the LAB MEAN from the GRAND MEAN.

Between-Lab Standard Deviation — An indication of the precision of measurement between the laboratories. The greater the spread of the LAB MEANS about the GRAND MEAN, the larger the BETWEEN-LAB STANDARD DEVIATION (and vice versa).

Comparative Performance Value — An indication of how well a laboratory's results agree with the other participants. The CPV is a ratio indicating the number of standard deviations from the GRAND MEAN. The closer a laboratory's COMPARATIVE PERFORMANCE VALUE is to zero, the more consistent its results are with the other participants' data (and vice versa). The critical value for each CPV will vary depending on the number of labs participating in a test.

Inst Code — A code indicating the manufacturer of the instrument used to perform the test (see separate INSTRUMENT CODE LIST for each test section), if instruments are tracked.

Data Flag — DATA FLAGS are assigned based on the simultaneous analysis of both samples tested. Refer to the following chart for an explanation of each symbol:

DATA FLAG	STATISTICALLY INCLUDED/EXCLUDED	ACTION REQUIRED
*	INCLUDED	**CAUTION** - review testing procedure and monitor future results. Results fall outside 95% ellipse but within a 99% ellipse that is calculated but not drawn.
X	EXCLUDED	**STOP** - immediate review of data and/or testing procedure is required. Results fall outside the 99% ellipse. See specific notes following each table for more information on why the data is excluded.
M	EXCLUDED	**PROCEED** - lab was unable to report data for at least one sample.

Graph - For each laboratory, the LAB MEAN for the first sample (x-axis) is plotted against the LAB MEAN for the second sample (y-axis) with each point representing a laboratory. The horizontal and vertical cross-hairs are the GRAND MEANS for each sample. When 20 or more laboratories are in the statistics, an ellipse is also drawn so that 95% of the time a randomly selected laboratory will be included inside the ellipse. Plotted data flags are explained on the previous page.

Common Problems Highlighted in Footnotes

1. ***Extreme data*** - The laboratory's results for one or both samples are so inconsistent with those of the other participants that the lab mean(s) fall outside the plot. The participant is advised to immediately review his data and/or testing procedure.

2. ***Systematic bias*** - The laboratory's results are either consistently high or low for both samples when compared to the other participants (the plotted point falls near the top or bottom of the ellipse). This indicates that the participant is performing the test with a constant bias. Causes of systematic errors include improper calibration, the particular make/model of equipment or a modification to the testing procedure.

3. ***Inconsistency in testing between samples/sample sets*** - The laboratory'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 CPVs for the two samples, such as a +1.5 CPV for sample A and a -2.2 CPV for sample B. CTS also will specify if the laboratory's data for one sample are high/low compared to the other participants. If this inconsistency is slight, the lab's plotted point will be an * that falls on the edge of the ellipse.

4. ***Inconsistency in testing within a sample*** - The laboratory's within-lab standard deviation for a specified sample is high when compared to the other participants, often causing the lab's plotted point to fall outside of the ellipse.

Labs flagged with an * are not typically included in the footnotes of a data table. These labs may locate their position in the control ellipse and use the definitions above to help identify the type of testing error. An * should serve as a caution flag, a "yellow light", to a lab. If this error is repeated in future rounds, a lab may need to stop and review its testing procedures. The initial data flag is not cause for alarm. Interlaboratory tests conducted at regular intervals permit a lab to recognize trends in testing.

Paper & Paperboard Interlaboratory Testing Program

Analysis 350

Color & Color Difference - Near White Papers - C/2deg obs

Hunter L,a,b - Illuminant C - 2 Degree Observer

Web Code	Data Flag	Samples	Hunter L, a, b Color Values			Color Difference Values				Instr Code
			L	a	b	ΔL	Δa	Δb	ΔE	
4FVRBV		**GA77**	92.69	-0.25	2.31	-0.07	0.01	0.02	0.08	TS
		GA78	92.62	-0.24	2.33					
4QVE3T		**GA77**	92.69	-1.15	1.14	0.01	0.04	-0.06	0.07	HG
		GA78	92.70	-1.11	1.08					
6GM699		**GA77**	93.91	-0.70	2.30	0.02	-0.03	0.04	0.06	HE
		GA78	93.93	-0.73	2.34					
7Q8V97	X	**GA77**	93.90	0.22	1.79	0.14	0.02	0.03	0.14	TS
		GA78	94.04	0.24	1.81					
8BQZRA		**GA77**	95.04	-0.70	2.42	-0.08	-0.01	-0.08	0.12	LS
		GA78	94.96	-0.71	2.34					
99HA36		**GA77**	93.08	-0.18	1.97	0.03	-0.01	0.03	0.04	TS
		GA78	93.11	-0.19	2.00					
9XXV2N		**GA77**	92.50	-0.22	2.14	-0.13	-0.01	0.04	0.14	TS
		GA78	92.37	-0.23	2.18					
BPYKV6		**GA77**	95.06	-0.62	2.42	0.01	0.12	-0.17	0.21	EH
		GA78	95.07	-0.49	2.25					
DBQ92U		**GA77**	93.82	-0.57	2.42	-0.17	0.00	0.03	0.17	TC
		GA78	93.65	-0.57	2.46					
FY8DZL	X	**GA77**	92.05	0.06	1.96	0.08	-0.04	0.00	0.09	TS
		GA78	92.13	0.02	1.96					
MBYCRP		**GA77**	93.60	-0.33	2.33	0.11	0.01	0.12	0.16	LA
		GA78	93.71	-0.31	2.44					
MLY3BC		**GA77**	95.09	-0.68	2.57	0.00	0.00	0.01	0.01	TS
		GA78	95.08	-0.68	2.58					
PEMXBN		**GA77**	94.63	-0.62	2.36	0.07	-0.01	0.22	0.23	HE
		GA78	94.71	-0.63	2.57					
PZT7T9		**GA77**	93.72	-0.62	2.42	0.05	0.01	0.02	0.06	TC
		GA78	93.77	-0.62	2.44					
RMFQWM		**GA77**	94.15	-0.73	2.02	0.01	0.03	0.00	0.03	HE
		GA78	94.16	-0.70	2.02					
TCNRJM		**GA77**	95.12	-0.62	2.41	-0.01	0.00	0.00	0.01	TC
		GA78	95.11	-0.62	2.41					

Paper & Paperboard Interlaboratory Testing Program

Report #3052 G, April 2020

Analysis 350

Color & Color Difference - Near White Papers - C/2deg obs

Hunter L,a,b - Illuminant C - 2 Degree Observer

Web Code	Data Flag	Samples	Hunter L, a, b Color Values L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code
TUB8MJ	X	GA77	95.46	0.57	1.24	0.05	-0.01	0.03	0.06	XS
		GA78	95.50	0.56	1.27					
Y6VZQG		GA77	92.93	-0.62	1.84	0.01	-0.02	0.02	0.03	XX
		GA78	92.94	-0.64	1.86					
ZLBXHD	X	GA77	82.46	0.40	0.48	-0.28	-0.02	0.04	0.28 X	TS
		GA78	82.18	0.38	0.52					

Summary Statistics

Grand Means							
GA77	93.857	-0.574	2.029	-0.009	0.009	0.016	0.094
GA78	93.864	-0.565	2.047				
Stnd Dev Btwn Labs							
GA77	1.045	0.247	0.544	0.075	0.036	0.085	0.072
GA78	1.052	0.242	0.550				

Statistics based on 15 of 19 reporting participants

Comments on Assigned Data Flags for Test #350

FY8DZL (X) - High "a" values for for GA77. Inconsistent within replicate readings of "a" for sample GA77.

7Q8V97 (X) - High "a" values for both samples. Inconsistent within replicate readings of "a" for both samples.

TUB8MJ (X) - High "a" values for both samples. Possibly missing a negative sign.

ZLBXHD (X) - Extreme data for both "L" values. High "a" values for both samples. Low "b" values for both samples. Low delta "L" value; high delta "E" value.

Analysis Notes:

7Q8V97 - Due to CTS graphs using Absolute Values, data Flag is located within consensus data. However, "a" data is higher than the negative Grand Mean as shown above graphs.

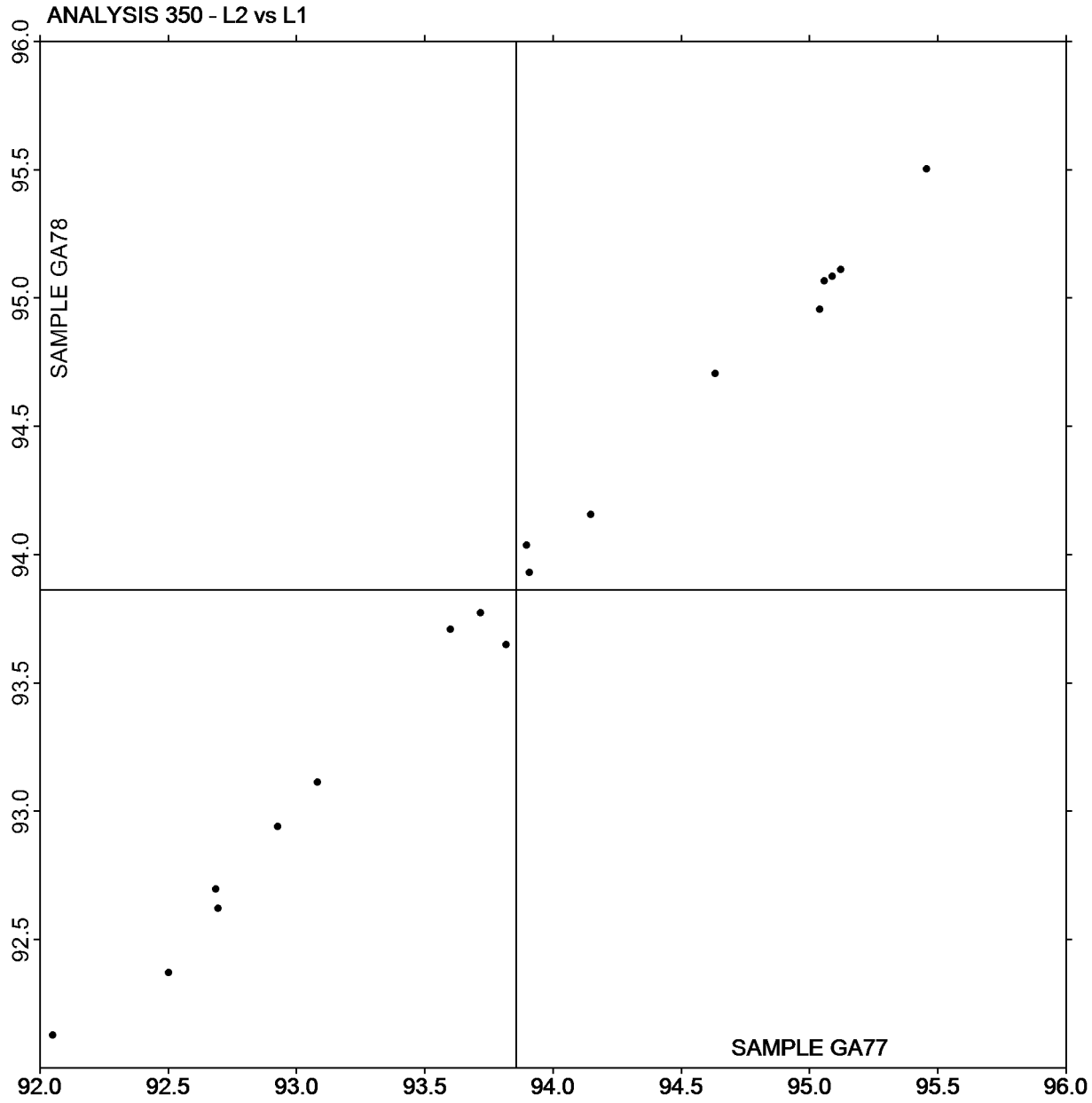
TUB8MJ - Due to CTS graphs using Absolute Values, data Flag is located within consensus data. However, "a" data is higher than the negative Grand Mean as shown above graphs.

ZLBXHD - Due to CTS graphs using Absolute Values, data Flag is located within consensus data. However, "a" data is higher than the negative Grand Mean as shown above graphs.

Key to Instrument Codes Reported by Participants

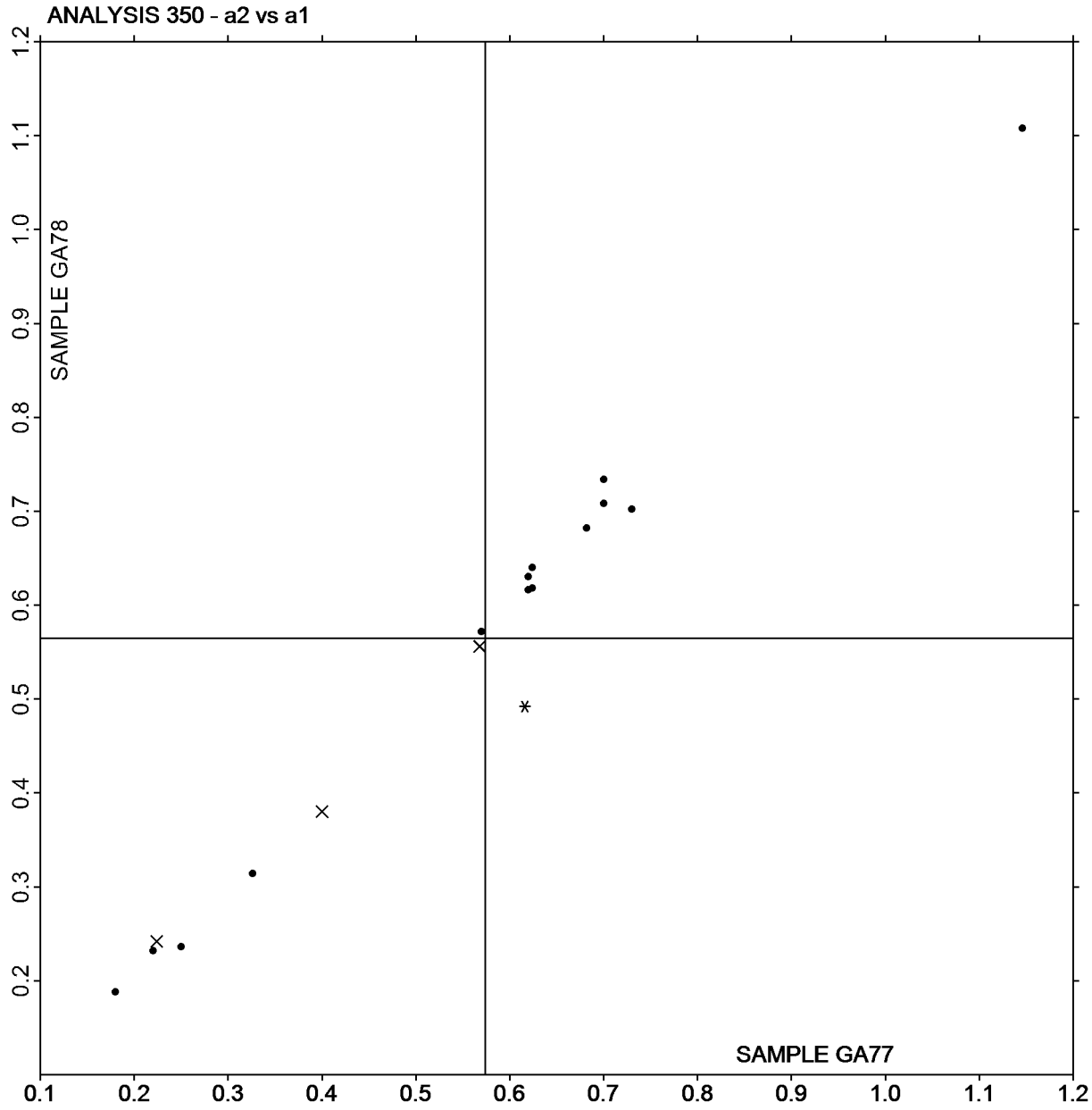
EH	Datacolor Elrepho SF450	HE	Hunter LabScan
HG	Hunter ColorQUEST	LA	L & W Elrepho AL300
LS	L & W Elrepho SE 070	TC	Technidyne Color Touch Series
TS	Technidyne Brightimeter Micro S-5	XS	X-Rite 938 Spectrodensitometer
XX	Instrument make/model not specified by lab		

Plot of L values GA78 vs L values GA77



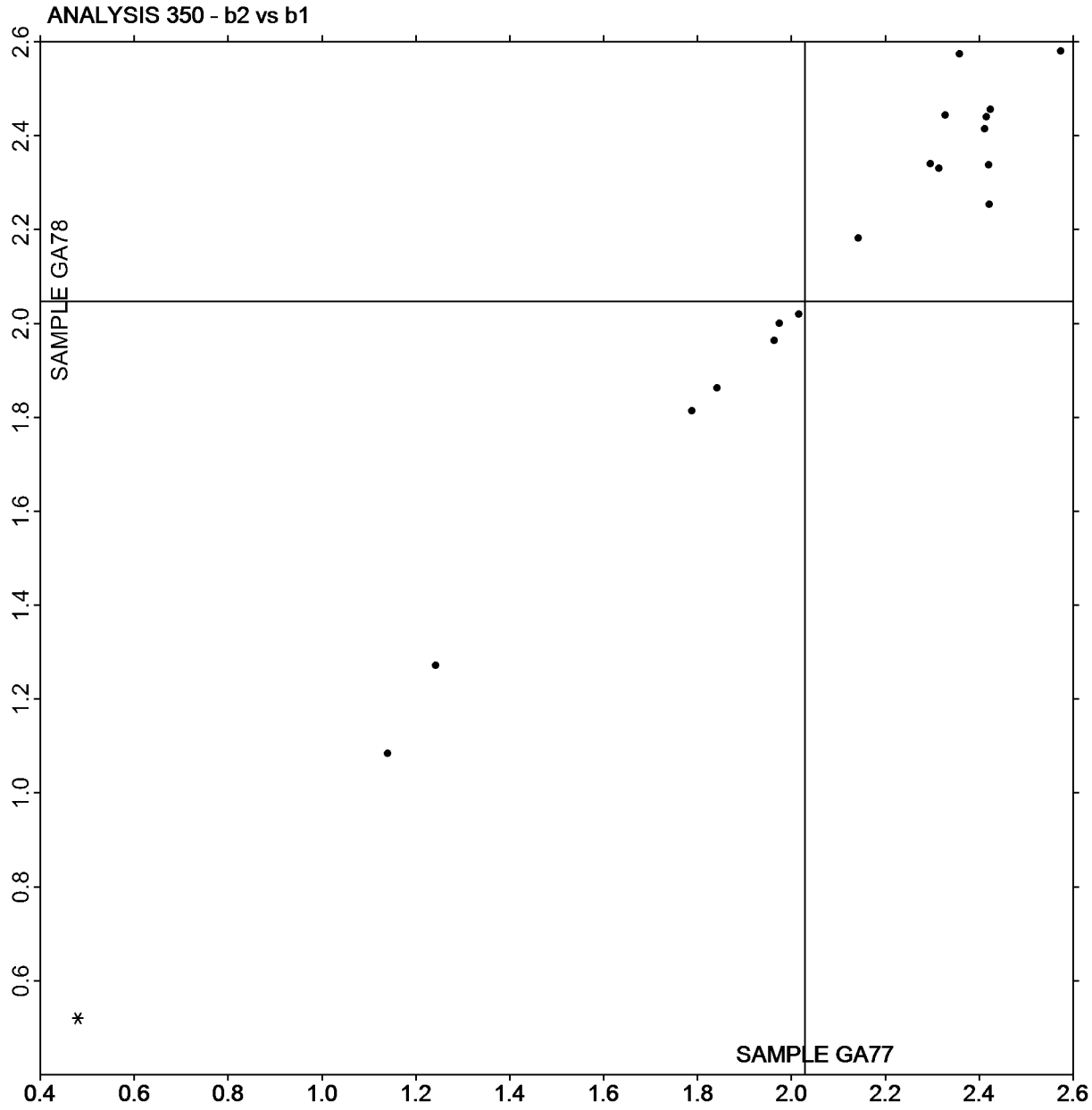
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Plot of a values GA78 vs a values GA77



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Plot of b values GA78 vs b values GA77



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Paper & Paperboard Interlaboratory Testing Program

Analysis 351

Color & Color Difference - Near White Papers - D65/10deg obs

Hunter L,a,b - Illuminant D65 - 10 Degree Observer

Web Code	Data Flag	Samples	CIE L* a* b* Color Values L*	a*	b*	Color Difference Values ΔL*	Δa*	Δb*	ΔE*	InstrCode
32F8DX		**GA77**	94.90	-0.65	2.43	0.08	0.08	-0.05	0.12	EH
		GA78	94.98	-0.58	2.38					
387GMV		**GA77**	93.69	-0.56	2.41	0.02	0.02	0.00	0.03	TC
		GA78	93.71	-0.55	2.41					
BHW37X		**GA77**	94.50	-0.51	2.25	0.01	0.01	0.01	0.01	HE
		GA78	94.51	-0.50	2.25					
BPYKV6		**GA77**	95.01	-0.58	2.52	0.02	0.02	-0.05	0.06	XX
		GA78	95.02	-0.56	2.47					
CX6G2Z		**GA77**	94.98	-0.66	2.54	-0.02	0.01	0.01	0.02	EH
		GA78	94.96	-0.66	2.55					
DBQ92U		**GA77**	94.61	-0.39	2.57	-0.15	-0.01	0.02	0.15	HE
		GA78	94.46	-0.40	2.59					
E2F7FU		**GA77**	95.25	-0.67	2.55	0.02	-0.01	0.02	0.03	HT
		GA78	95.27	-0.68	2.57					
FKMV7W		**GA77**	95.23	-0.57	2.63	0.01	0.01	0.02	0.02	HT
		GA78	95.24	-0.56	2.65					
HQ78BW		**GA77**	95.07	-0.61	2.61	0.10	0.02	0.05	0.12	NG
		GA78	95.18	-0.59	2.67					
MQTW9D		**GA77**	95.23	-0.58	2.62	0.00	0.01	0.02	0.02	EF
		GA78	95.22	-0.57	2.64					
P7FNXQ		**GA77**	97.16	-0.39	1.57	-0.11	-0.03	-0.25	0.28	XP
		GA78	97.06	-0.41	1.32					
R429R9		**GA77**	95.13	-0.71	2.20	0.11	0.00	0.04	0.12	XC
		GA78	95.25	-0.71	2.25					
R9VBTM		**GA77**	95.06	-0.60	2.58	0.04	0.02	-0.01	0.04	LS
		GA78	95.09	-0.58	2.58					
UUQG7Q		**GA77**	95.12	-0.63	2.43	0.06	0.28	-0.19	0.34	TC
		GA78	95.18	-0.36	2.24					

Paper & Paperboard Interlaboratory Testing Program

Analysis 351

Color & Color Difference - Near White Papers - D65/10deg obs

Hunter L,a,b - Illuminant D65 - 10 Degree Observer

Summary Statistics

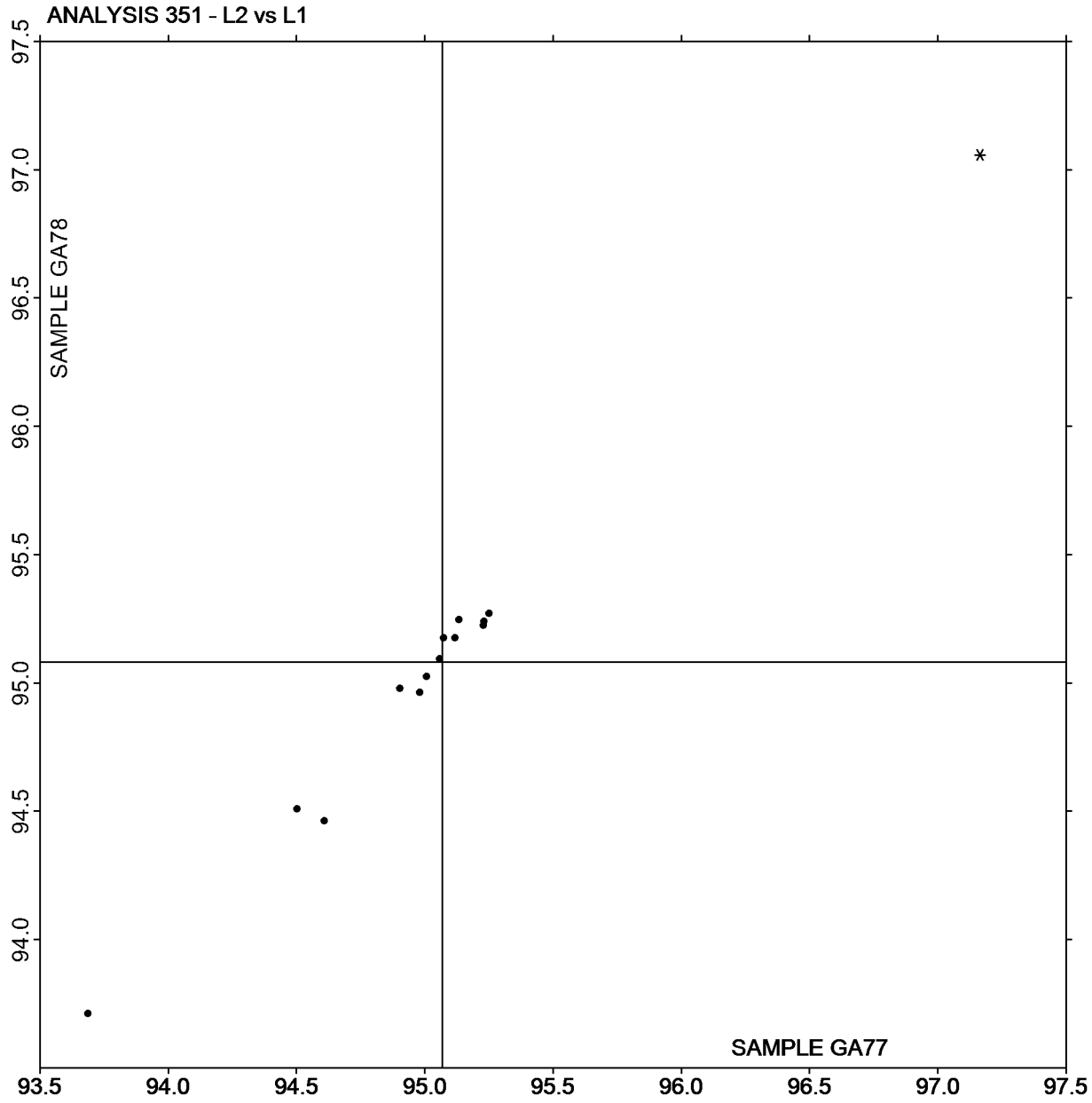
Grand Means							
GA77	95.067	-0.580	2.423	0.013	0.030	-0.026	0.098
GA78	95.081	-0.550	2.398				
Stnd Dev Btwn Labs							
GA77	0.732	0.096	0.279	0.071	0.074	0.090	0.101
GA78	0.715	0.103	0.347				

Statistics based on 14 of 14 reporting participants

Key to Instrument Codes Reported by Participants

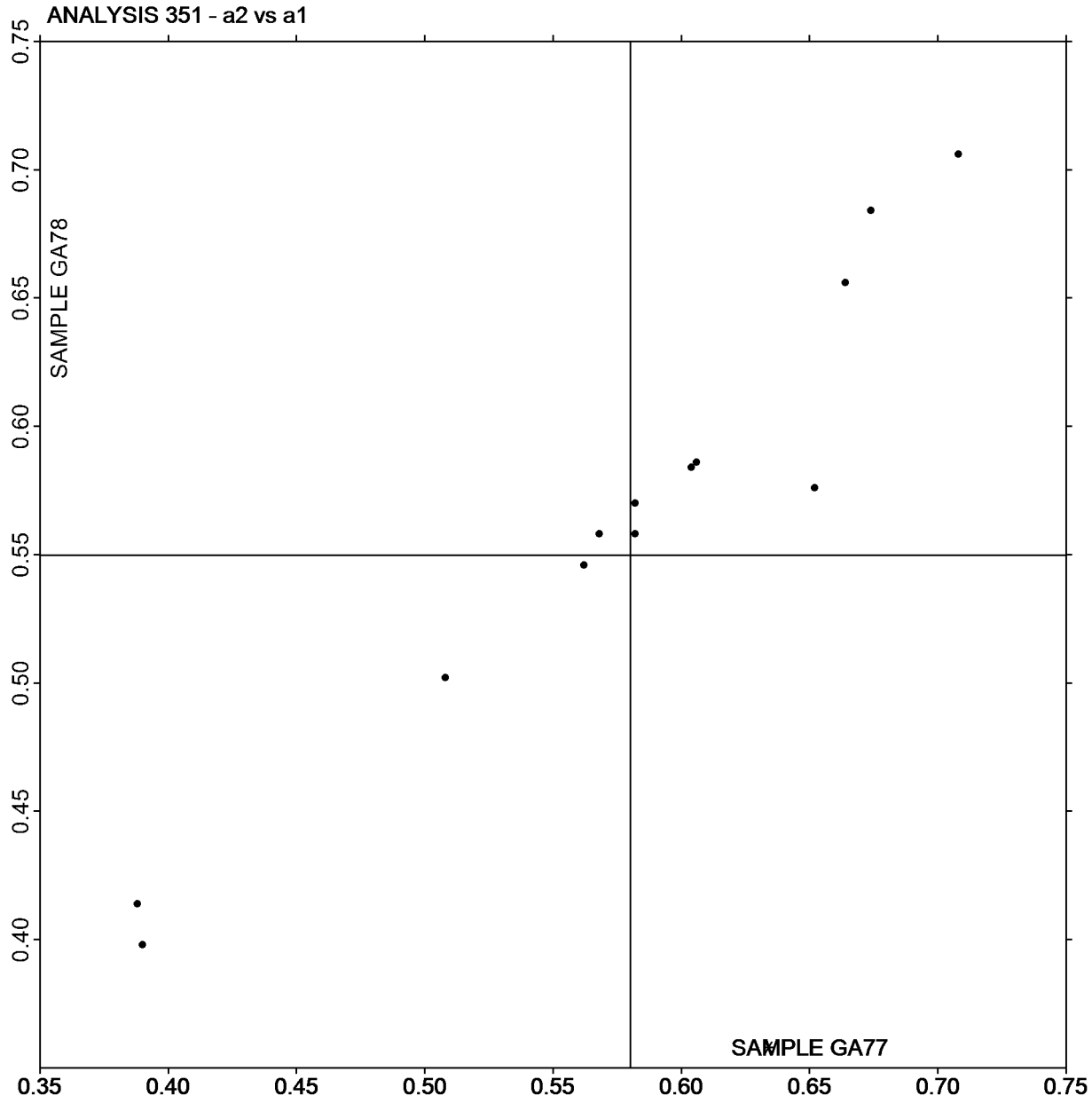
EF	Datacolor Elrepho 3000	EH	Datacolor Elrepho SF450
HE	Hunter LabScan	HT	Hunter UltraScan Vis
LS	L & W Elrepho SE 070	NG	Minolta CM-3700d Spectrophotometer
TC	Technidyne Color Touch Series	XC	X-Rite eXact Series
XP	X-Rite Spectrophotometer DTP	XX	Instrument make/model not specified by lab

Plot of L values GA78 vs L values GA77



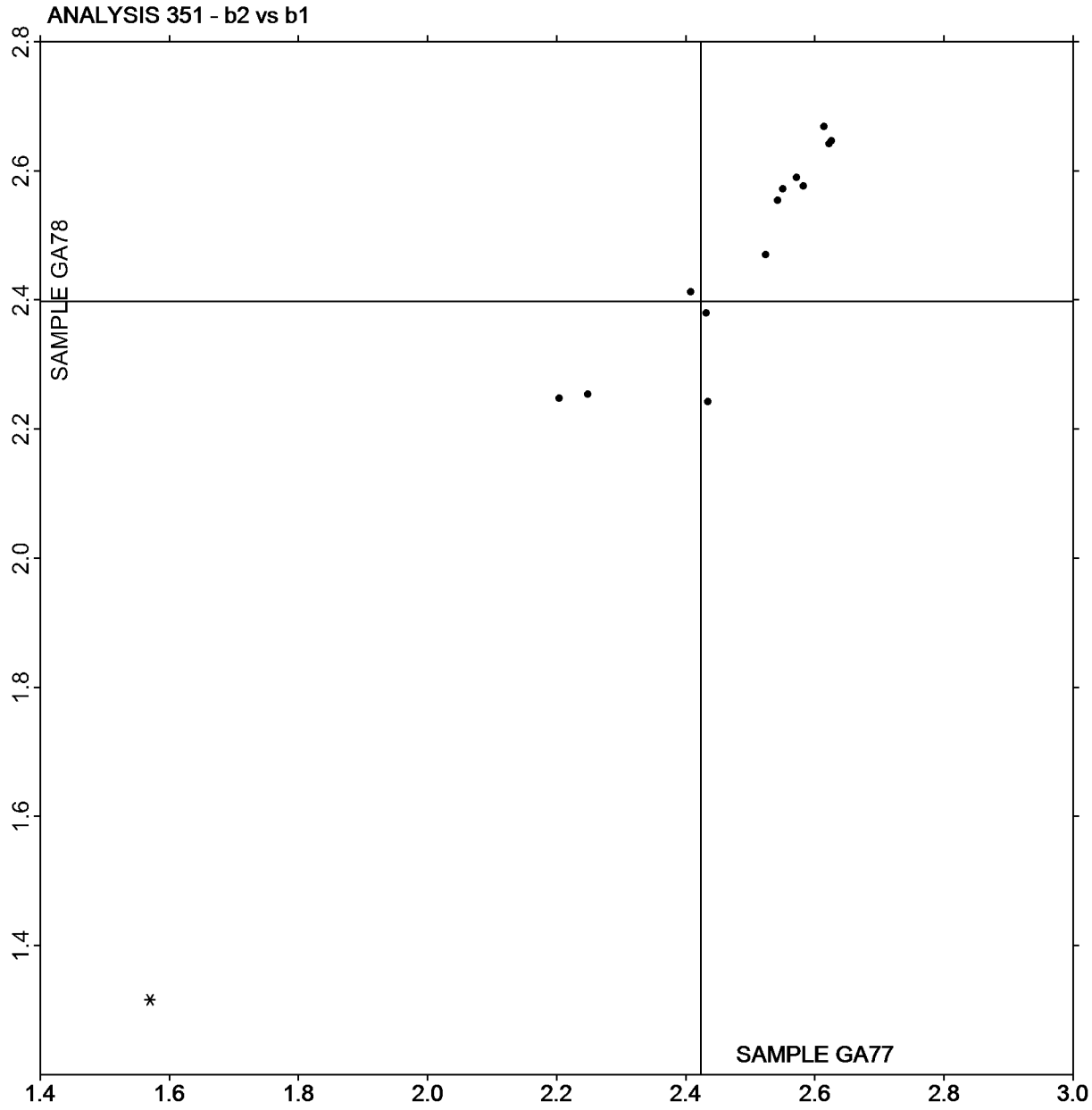
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Plot of a values GA78 vs a values GA77



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Plot of b values GA78 vs b values GA77



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

WebCode	Data Flag	Sample GV77 Lab Mean	Sample GV77 Diff from Grand Mean	Sample GV77 CPV	Sample GV78 Lab Mean	Sample GV78 Diff from Grand Mean	Sample GV78 CPV	Instr Code
2AF8DY		4.912	-0.049	-0.52	5.062	0.102	1.04	TA
2TBZXX		5.117	0.156	1.64	4.985	0.025	0.25	XX
32F8DX		4.977	0.016	0.16	5.015	0.055	0.56	EM
387GMV		4.858	-0.103	-1.09	4.890	-0.070	-0.71	PP
3XVE2V		4.790	-0.171	-1.81	4.812	-0.148	-1.50	EM
4FVRBV		4.843	-0.118	-1.25	4.724	-0.236	-2.39	TM
4Y7GNU		4.996	0.035	0.37	4.916	-0.044	-0.45	TM
6G3Y2A	*	4.712	-0.249	-2.63	4.725	-0.235	-2.39	PP
6Y3DA9		5.044	0.082	0.87	4.996	0.036	0.36	LW
73GBEB		4.740	-0.221	-2.33	4.800	-0.160	-1.62	TM
7LD6HG		4.883	-0.078	-0.83	4.925	-0.035	-0.35	VM
7Q8V97		4.936	-0.026	-0.27	4.938	-0.022	-0.22	TM
8BQZRA		5.006	0.044	0.46	4.999	0.039	0.39	LW
8ND63Q		4.901	-0.060	-0.64	4.864	-0.096	-0.97	PP
99HA36		4.954	-0.007	-0.08	4.837	-0.123	-1.25	LA
A9VH7Q		4.804	-0.157	-1.66	4.970	0.010	0.10	LW
BHW37X		5.029	0.068	0.71	5.056	0.096	0.98	EM
BPYKV6		4.990	0.029	0.30	5.045	0.085	0.86	EM
DZNHBZ		4.990	0.029	0.30	4.901	-0.059	-0.60	TA
E2F7FU		4.930	-0.031	-0.33	4.984	0.024	0.24	EM
FHJ3DJ		4.980	0.019	0.20	4.850	-0.110	-1.12	PP
FKMV7W		4.918	-0.043	-0.46	4.924	-0.036	-0.36	EM
FY8DZL		5.060	0.099	1.04	5.060	0.100	1.02	EM
GA37LG		4.970	0.009	0.09	5.040	0.080	0.81	TA
HGLW26		4.961	-0.001	-0.01	4.953	-0.007	-0.07	TM
HQ78BW		4.932	-0.029	-0.31	4.981	0.021	0.21	PP
HXLJBV		4.982	0.021	0.22	4.927	-0.033	-0.33	PP
JGVX8G		4.813	-0.148	-1.56	4.900	-0.060	-0.61	LA
JW8CPE		5.140	0.178	1.88	5.204	0.244	2.48	LW
KKUVTT		5.054	0.093	0.98	5.045	0.085	0.87	LW
L46B72		4.988	0.027	0.28	4.921	-0.039	-0.40	LA
LQYREE		5.052	0.091	0.95	4.926	-0.034	-0.34	LA
MBYCRP		5.044	0.083	0.88	5.017	0.057	0.58	EM
NQ7QMT		5.104	0.143	1.50	5.123	0.163	1.66	XX
P7FNXQ		4.855	-0.106	-1.12	4.870	-0.090	-0.91	TM
PNCM9C		4.949	-0.012	-0.13	4.914	-0.046	-0.47	PP
QF28VV		5.104	0.143	1.50	4.920	-0.040	-0.41	EM
QYBKUQ		5.004	0.043	0.45	5.045	0.085	0.86	LW
R429R9		4.988	0.027	0.28	5.000	0.040	0.41	LW
R82KM9		5.038	0.076	0.81	5.020	0.060	0.61	LW
RELK4L		5.013	0.052	0.55	5.007	0.047	0.47	LW

Paper & Paperboard Interlaboratory Testing Program

Analysis 360

Thickness (Caliper), Printing papers

TAPPI Official Test Method T411

WebCode	Data Flag	Sample GV77 Lab Mean	Sample GV77 Diff from Grand Mean	Sample GV77 CPV	Sample GV78 Lab Mean	Sample GV78 Diff from Grand Mean	Sample GV78 CPV	Instr Code
TBU2D8		4.958	-0.003	-0.04	4.956	-0.004	-0.04	TM
TCNRJM		4.944	-0.017	-0.18	5.039	0.079	0.80	PP
TUB8MJ		4.900	-0.061	-0.65	4.860	-0.100	-1.01	TM
UUQG7Q		5.000	0.039	0.41	5.075	0.115	1.17	PP
V26Y8H		5.062	0.100	1.06	5.004	0.044	0.45	LW
XD72CH		4.744	-0.217	-2.29	4.786	-0.174	-1.77	TA
XE3MDG		5.050	0.088	0.93	5.018	0.058	0.59	TM
Y6VZQG		4.980	0.019	0.20	4.920	-0.040	-0.41	XX
YHW43F		4.939	-0.022	-0.24	4.912	-0.048	-0.49	TM
YXRLUY		5.020	0.059	0.62	5.051	0.091	0.92	EM
Z27HY2		5.010	0.049	0.51	4.990	0.030	0.31	LW
Z3Z96F	*	4.970	0.009	0.10	5.176	0.216	2.19	LW
ZDZWWC		4.978	0.017	0.17	4.959	-0.001	-0.01	TM

Summary Statistics	Sample GV77	Sample GV78
Grand Means	4.96 mils	4.96 mils
Stnd Dev Btwn Labs	0.09 mils	0.10 mils

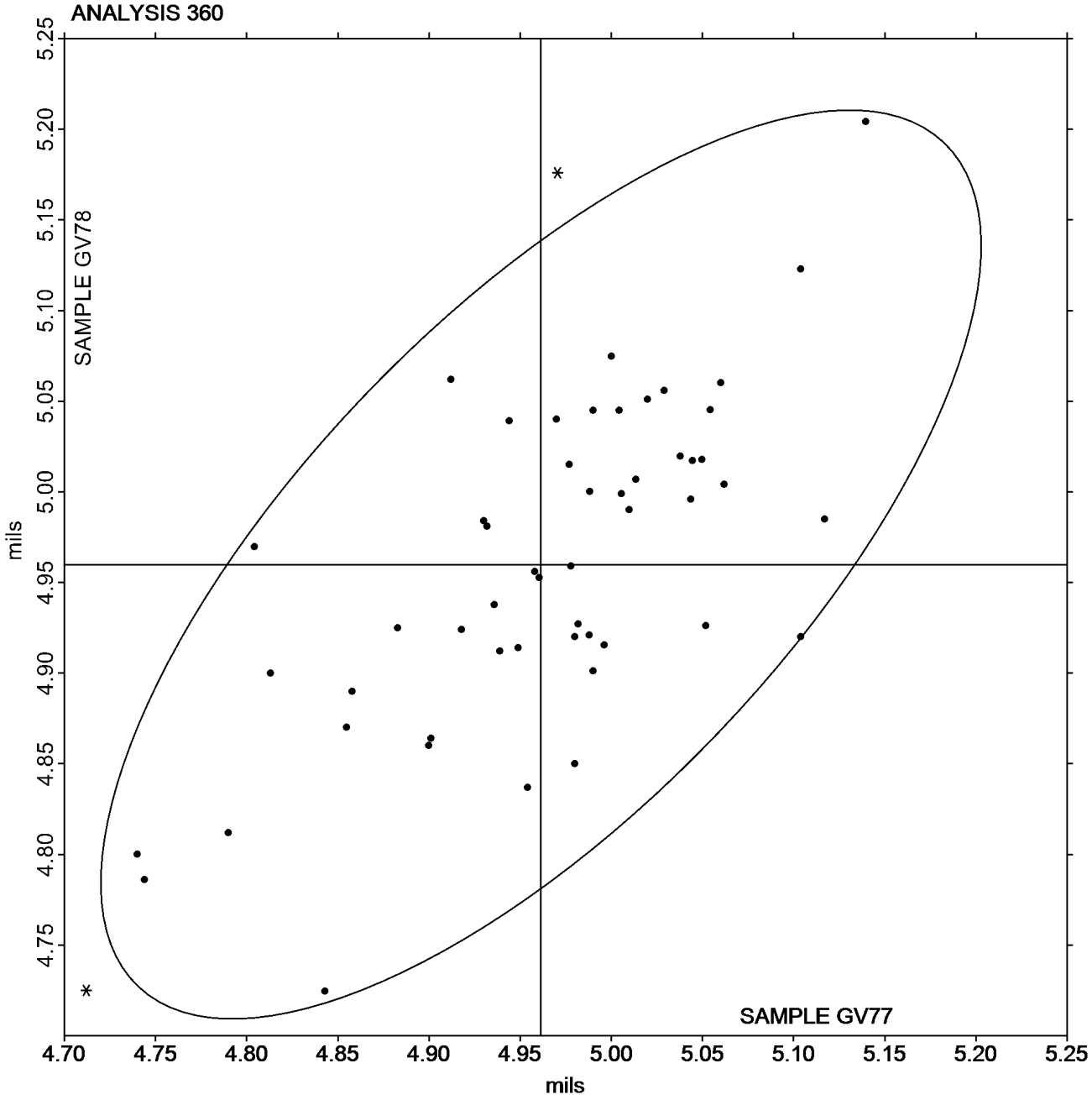
Statistics based on 54 of 54 reporting participants.

Key to Instrument Codes Reported by Participants

EM	Emveco	LA	L & W Autoline
LW	L & W	PP	Technidyne Profile/Plus
TA	Thwing-Albert	TM	TMI
VM	Valmet PaperLab (was Kajaani/Robotest)	XX	Instrument make/model not specified by lab

Grand Mean Sample GV77 = 4.9614 mils

Grand Mean Sample GV78 = 4.9599 mils



Paper & Paperboard Interlaboratory Testing Program

Analysis 361
Thickness (Caliper), Packaging papers
TAPPI Official Test Method T411

WebCode	Data Flag	Sample GY77 Lab Mean	Sample GY77 Diff from Grand Mean	Sample GY77 CPV	Sample GY78 Lab Mean	Sample GY78 Diff from Grand Mean	Sample GY78 CPV	Instr Code
2YU34E		14.09	0.05	0.23	9.496	-0.014	-0.06	LW
32F8DX		14.35	0.32	1.48	9.842	0.332	1.49	EM
6GM699		14.10	0.06	0.29	9.475	-0.035	-0.16	EM
73GBEB		13.61	-0.43	-2.00	9.120	-0.390	-1.75	TM
9GE63P		14.24	0.20	0.94	9.683	0.173	0.77	LA
AJGUV6		13.99	-0.05	-0.22	9.710	0.200	0.89	TM
CHYKV3		13.99	-0.05	-0.22	9.386	-0.125	-0.56	LW
FBYY7G		14.16	0.12	0.56	9.579	0.068	0.31	LA
FHJ3DJ		13.98	-0.05	-0.25	9.449	-0.062	-0.28	LW
GA37LG		14.17	0.13	0.62	9.640	0.130	0.58	TA
KGE2FG		14.14	0.10	0.48	9.706	0.195	0.88	LW
LQYREE		14.23	0.19	0.90	9.677	0.167	0.75	LA
MBYCRP		14.22	0.19	0.87	9.612	0.101	0.45	EM
PEMXBN		14.02	-0.01	-0.06	9.510	0.000	0.00	EM
QHQUUQ		14.18	0.14	0.67	9.639	0.129	0.58	TM
R6VYXM		14.14	0.10	0.49	9.494	-0.016	-0.07	LA
R9VBTM	*	14.23	0.19	0.90	9.310	-0.200	-0.90	LW
RELK4L		14.09	0.05	0.25	9.718	0.207	0.93	LW
RMFQWM		13.98	-0.05	-0.26	9.560	0.050	0.22	EM
RRBKUN		13.69	-0.35	-1.65	8.992	-0.518	-2.32	TM
TGLBM7		14.38	0.34	1.61	9.811	0.301	1.35	TM
VBP4FG		13.53	-0.51	-2.40	9.015	-0.495	-2.22	TA
X6C3A4		13.96	-0.08	-0.36	9.417	-0.093	-0.42	VP
X9CD3H		14.05	0.02	0.08	9.782	0.272	1.22	TM
XD72CH		13.93	-0.11	-0.53	9.348	-0.162	-0.73	TA
XVRKAP		14.10	0.06	0.28	9.643	0.132	0.59	LW
ZHVQUD		13.67	-0.37	-1.72	9.300	-0.210	-0.94	TA
ZLBXHD		13.83	-0.21	-0.96	9.381	-0.129	-0.58	EM

Summary Statistics	Sample GY77	Sample GY78
Grand Means	14.04 mils	9.51 mils
Stnd Dev Btwn Labs	0.21 mils	0.22 mils

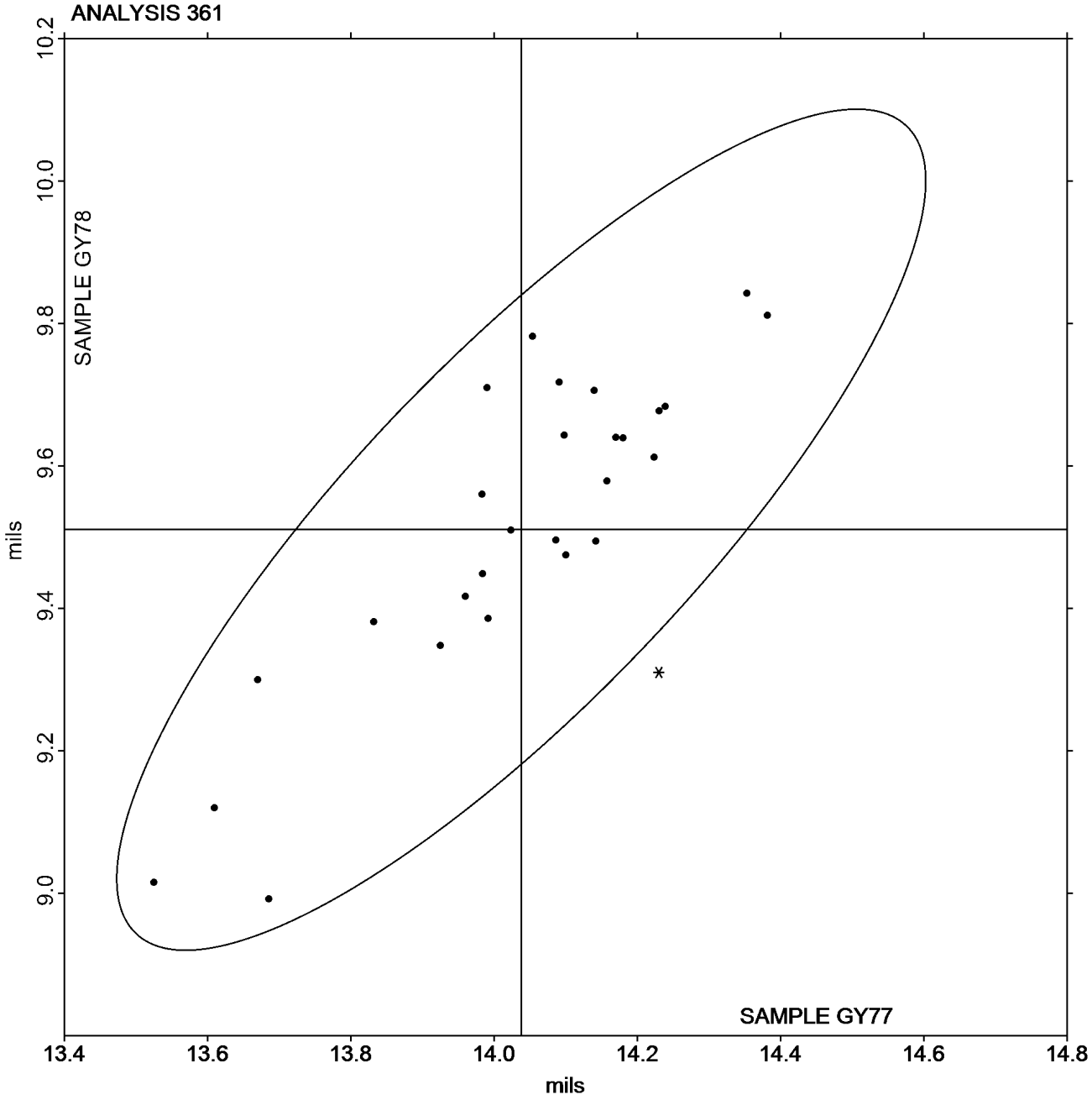
Statistics based on 28 of 28 reporting participants.

Key to Instrument Codes Reported by Participants

EM	Emveco	LA	L & W Autoline
LW	L & W	TA	Thwing-Albert
TM	TMI	VP	Valmet Paper Lab

Grand Mean Sample GY77 = 14.038 mils

Grand Mean Sample GY78 = 9.5105 mils



Paper & Paperboard Interlaboratory Testing Program

Analysis 364

Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

TAPPI Official Test Method T549

WebCode	Data Flag	Sample GD77 Lab Mean	Sample GD77 Diff from Grand Mean	Sample GD77 CPV	Sample GD78 Lab Mean	Sample GD78 Diff from Grand Mean	Sample GD78 CPV	Instr Code
3XVE2V		0.5436	-0.0187	-0.24	0.5394	-0.0135	-0.20	TA
6V43D9		0.5718	0.0095	0.12	0.5814	0.0285	0.42	TA
8ND63Q	X	0.0584	-0.5039	-6.39	0.0584	-0.4945	-7.23	TM
9XXV2N		0.6216	0.0593	0.75	0.6296	0.0767	1.12	XX
FY8DZL		0.6300	0.0677	0.86	0.5784	0.0255	0.37	TA
KGE2FG		0.5790	0.0167	0.21	0.5086	-0.0443	-0.65	TA
TUB8MJ		0.3964	-0.1659	-2.10	0.4272	-0.1257	-1.84	XX
YXRLUY		0.5940	0.0317	0.40	0.6060	0.0531	0.78	TA

Summary Statistics	Sample GD77	Sample GD78
Grand Means	0.56 COF	0.55 COF
Stnd Dev Btwn Labs	0.08 COF	0.07 COF

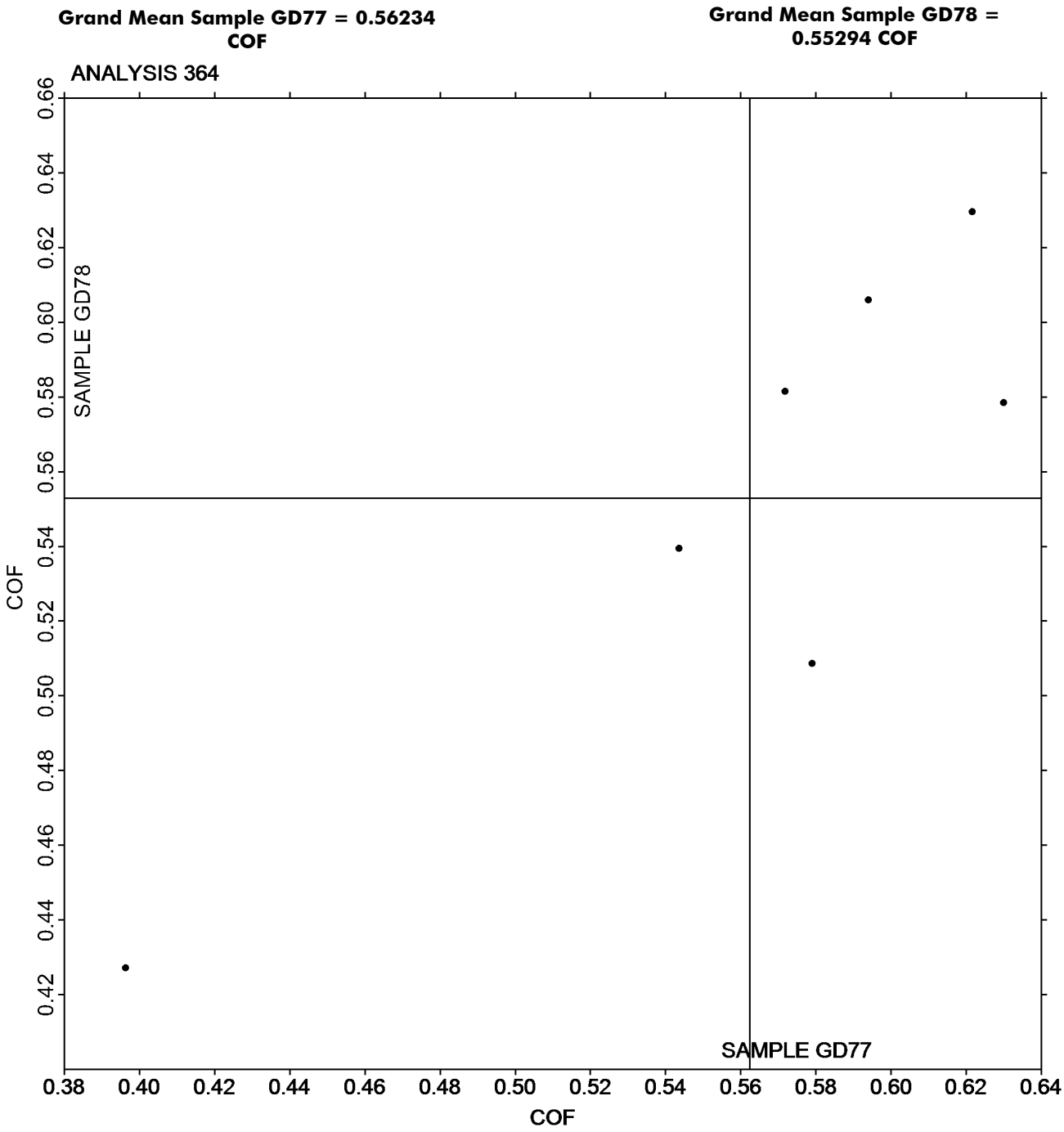
Statistics based on 7 of 8 reporting participants.

Comments on Assigned Data Flags for Test #364

8ND63Q (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

TA	Thwing-Albert Friction Tester	TM	TMI 32-06 Monitor/Slip and Friction
XX	Instrument make/model not specified by lab		



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Paper & Paperboard Interlaboratory Testing Program

Analysis 365

Coefficient of Kinetic Friction - Horizontal Plane Method - Printing Papers

TAPPI Official Test Method T549

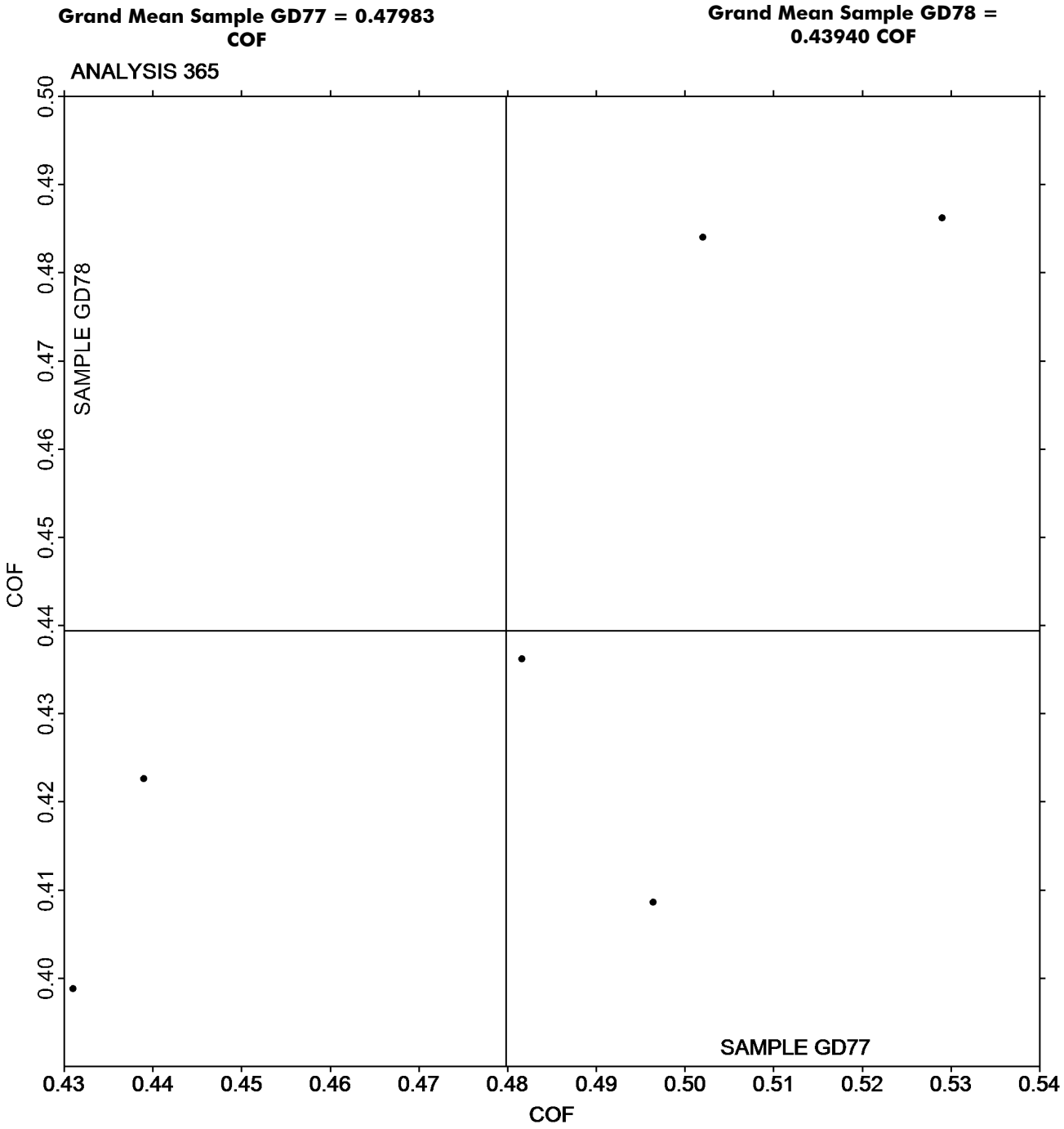
WebCode	Data Flag	Sample GD77 Lab Mean	Sample GD77 Diff from Grand Mean	Sample GD77 CPV	Sample GD78 Lab Mean	Sample GD78 Diff from Grand Mean	Sample GD78 CPV	Instr Code
3XVE2V		0.4816	0.0018	0.05	0.4362	-0.0032	-0.09	TA
6V43D9		0.4310	-0.0488	-1.28	0.3988	-0.0406	-1.08	TA
9XXV2N		0.5290	0.0492	1.29	0.4862	0.0468	1.24	TA
KGE2FG		0.4964	0.0166	0.44	0.4086	-0.0308	-0.82	TL
TUB8MJ		0.4390	-0.0408	-1.07	0.4226	-0.0168	-0.45	XX
YXRLUY		0.5020	0.0222	0.58	0.4840	0.0446	1.19	XX

Summary Statistics	Sample GD77	Sample GD78
Grand Means	0.48 COF	0.44 COF
Stnd Dev Btwn Labs	0.04 COF	0.04 COF

Statistics based on 6 of 6 reporting participants.

Key to Instrument Codes Reported by Participants

TA	Thwing-Albert Friction Tester	TL	TMI 32-90 Lab Master/Slip and Friction
XX	Instrument make/model not specified by lab		



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Paper & Paperboard Interlaboratory Testing Program

Analysis 370

Air Resistance - Gurley Oil Type

TAPPI Official Test Method T460

WebCode	Data Flag	Sample GE77 Lab Mean	Sample GE77 Diff from Grand Mean	Sample GE77 CPV	Sample GE78 Lab Mean	Sample GE78 Diff from Grand Mean	Sample GE78 CPV	Instr Code
2CLPBV		16.27	0.22	0.26	16.28	0.40	0.48	XX
387GMV		15.75	-0.30	-0.35	14.95	-0.93	-1.11	PP
4FVRBV		16.27	0.22	0.26	15.87	-0.01	-0.01	LP
6G3Y2A		15.64	-0.41	-0.48	15.59	-0.29	-0.34	HG
6V43D9		15.77	-0.28	-0.33	15.81	-0.07	-0.08	WG
7Q8V97		17.26	1.21	1.41	16.88	1.00	1.20	LW
8BQZRA		15.45	-0.60	-0.70	15.39	-0.49	-0.58	LP
8ULRD8		17.06	1.01	1.18	16.64	0.76	0.91	XX
99HA36		15.77	-0.28	-0.33	15.52	-0.36	-0.43	LA
AJC3QM		16.30	0.25	0.29	16.25	0.37	0.44	GL
BHW37X		15.84	-0.21	-0.25	15.86	-0.02	-0.03	PP
BPYKV6		15.97	-0.08	-0.09	15.33	-0.55	-0.65	PP
CHYKV3		15.42	-0.63	-0.74	15.45	-0.43	-0.51	TL
DMJRHL		17.01	0.96	1.12	16.87	0.99	1.18	TL
E2F7FU		15.97	-0.08	-0.09	15.59	-0.29	-0.34	HG
FBYY7G		16.07	0.02	0.03	15.75	-0.13	-0.16	LA
FHJ3DJ		16.31	0.26	0.30	15.92	0.04	0.05	PP
FKMV7W		14.94	-1.11	-1.30	15.46	-0.42	-0.50	PP
GA37LG		16.18	0.13	0.15	15.89	0.01	0.02	PP
JGVX8G	*	18.73	2.68	3.13	18.39	2.51	3.00	LA
L8JHED		15.02	-1.03	-1.20	15.39	-0.49	-0.58	LP
LL6XGD		14.35	-1.70	-1.99	14.20	-1.68	-2.00	GL
MPD8XT		16.73	0.68	0.79	16.81	0.93	1.11	PP
MQTW9D		17.08	1.03	1.20	17.17	1.29	1.54	LP
NQ7QMT		15.18	-0.87	-1.02	15.64	-0.23	-0.28	HG
PNCM9C		17.05	1.00	1.17	16.87	0.99	1.19	PP
QF28VV		15.63	-0.42	-0.49	15.48	-0.40	-0.48	PP
QYBKUQ		16.06	0.01	0.01	15.90	0.02	0.03	LP
R429R9		17.11	1.06	1.24	16.51	0.63	0.76	LW
TTY32M		15.57	-0.48	-0.56	15.03	-0.85	-1.01	PP
TUB8MJ		15.70	-0.35	-0.41	15.30	-0.58	-0.69	GS
UUQG7Q		15.51	-0.54	-0.63	15.56	-0.32	-0.38	PP
X6C3A4		17.16	1.11	1.30	17.18	1.30	1.55	VM
XVRKAP		14.34	-1.71	-2.00	13.91	-1.97	-2.35	LP
Y6VZQG		15.78	-0.27	-0.31	15.36	-0.52	-0.62	XX
YHW43F		16.20	0.15	0.18	16.15	0.27	0.33	HG
YXRLUY		16.01	-0.04	-0.05	15.98	0.10	0.12	PP
Z3Z96F		15.43	-0.62	-0.72	15.22	-0.66	-0.78	LP

Paper & Paperboard Interlaboratory Testing Program

Analysis 370

Air Resistance - Gurley Oil Type

TAPPI Official Test Method T460

Summary Statistics	Sample GE77	Sample GE78
Grand Means	16.05 sec/100 cc	15.88 sec/100 cc
Stnd Dev Btwn Labs	0.86 sec/100 cc	0.84 sec/100 cc

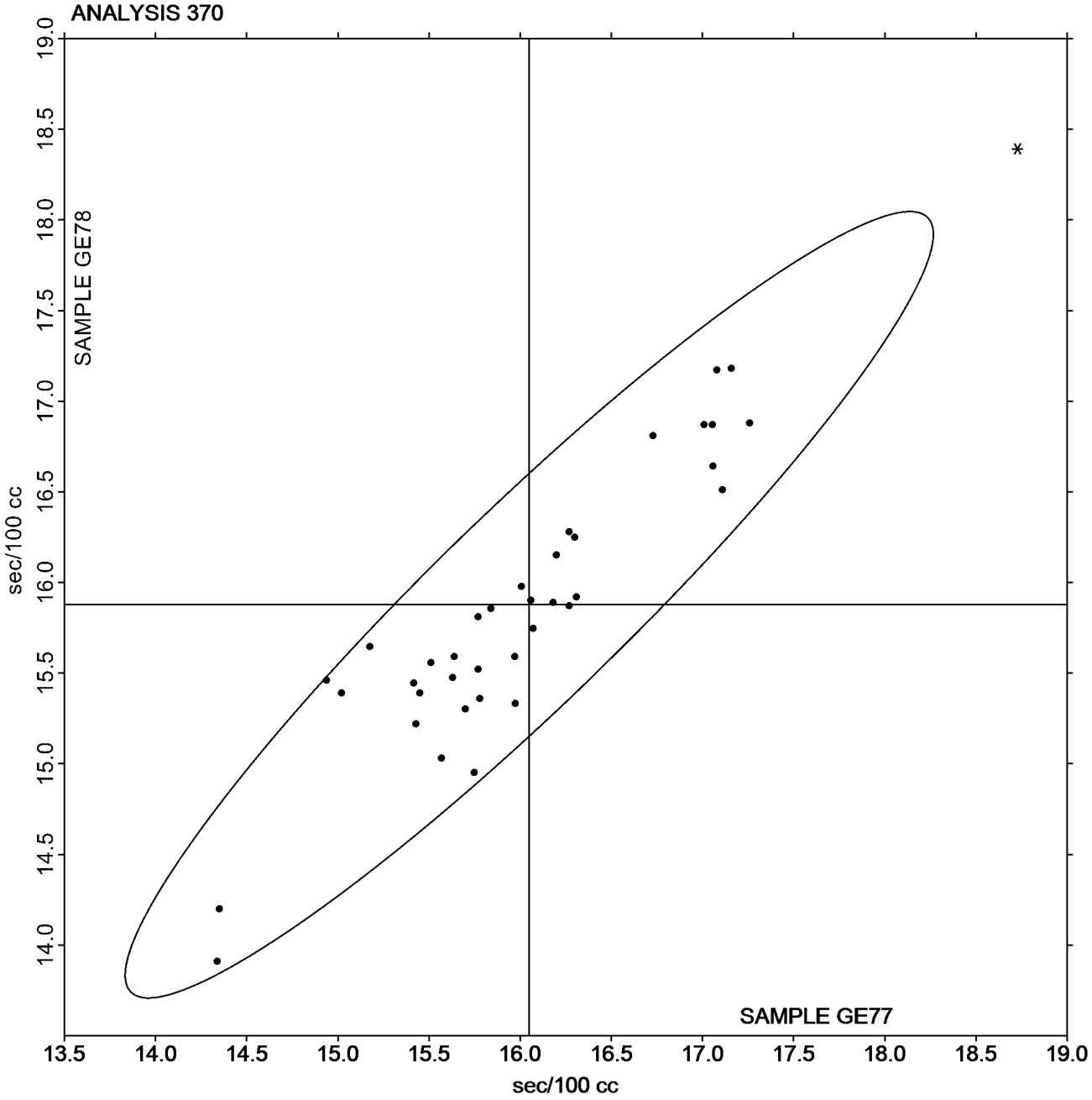
Statistics based on 38 of 38 reporting participants.

Key to Instrument Codes Reported by Participants

GL	Gurley #4110	GS	Gurley-Hill S-P-S Tester #4190
HG	Technidyne - Hagerty Model #1	LA	L & W Autoline
LP	L & W Densometer, Air Permeance	LW	L & W Type Gurley Densometer, Oil Flotation
PP	Technidyne Profile/Plus	TL	Gurley Densometer #4110, Oil Flotation
VM	Valmet PaperLab (was Kajaani/Robotest)	WG	W & LE Gurley Tester
XX	Instrument make/model not specified by lab		

Grand Mean Sample GE77 = 16.050 sec/100 cc

Grand Mean Sample GE78 = 15.877 sec/100 cc



Paper & Paperboard Interlaboratory Testing Program

Analysis 372

Porosity - Sheffield Type - Sheffield Units for 3/4 inch Diameter Orifice

TAPPI Official Test Method T547

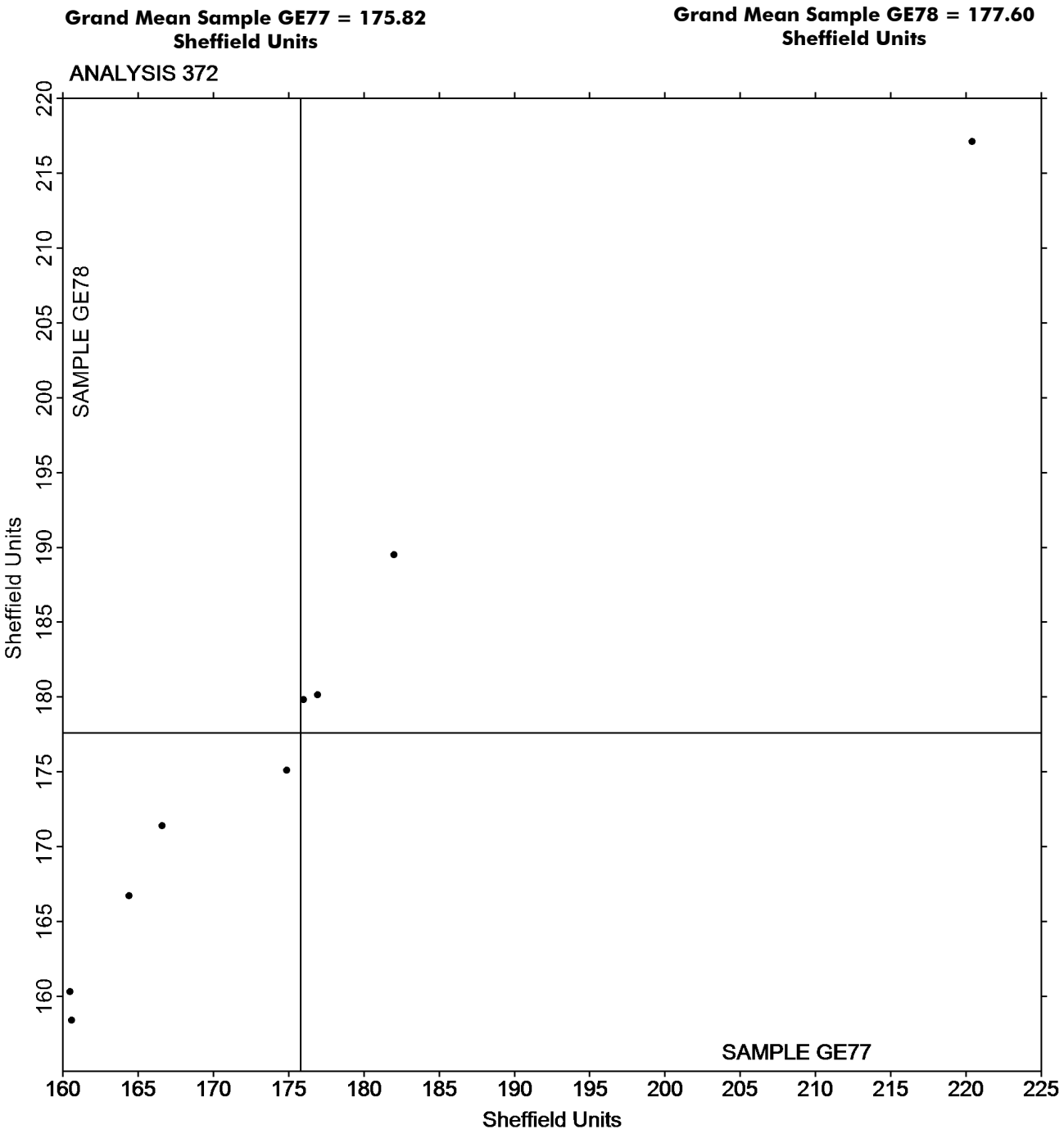
WebCode	Data Flag	Sample GE77 Lab Mean	Sample GE77 Diff from Grand Mean	Sample GE77 CPV	Sample GE78 Lab Mean	Sample GE78 Diff from Grand Mean	Sample GE78 CPV	Instr Code
2AF8DY		174.9	-0.9	-0.05	175.1	-2.5	-0.14	HM
2TBZXX		176.0	0.2	0.01	179.8	2.2	0.12	LA
387GMV		164.4	-11.4	-0.62	166.7	-10.9	-0.61	PP
7VHCWG		176.9	1.1	0.06	180.1	2.5	0.14	XX
GA37LG		166.6	-9.2	-0.50	171.4	-6.2	-0.35	PP
HXQQ96		220.4	44.6	2.42	217.1	39.5	2.21	LP
TUB8MJ		160.6	-15.2	-0.83	158.4	-19.2	-1.08	SH
X6C3A4		182.0	6.2	0.34	189.5	11.9	0.67	PP
ZDZWWC		160.5	-15.3	-0.83	160.3	-17.3	-0.97	SH

Summary Statistics	Sample GE77	Sample GE78
Grand Means	175.82 Sheffield Units	177.60 Sheffield Units
Stnd Dev Btwn Labs	18.40 Sheffield Units	17.83 Sheffield Units

Statistics based on 9 of 9 reporting participants.

Key to Instrument Codes Reported by Participants

HM	Technidyne - Hagerty Model #538	LA	L & W Roughness Sheffield - Autoline
LP	L & W Densometer, Air Permeance	PP	Technidyne Profile/Plus
SH	Sheffield	XX	Instrument make/model not specified by lab



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Paper & Paperboard Interlaboratory Testing Program

Analysis 376

Roughness - Print Surf Method - 0.5 to 4.0 Microns

TAPPI Official Test Method T555

WebCode	Data Flag	Sample GJ77 Lab Mean	Sample GJ77 Diff from Grand Mean	Sample GJ77 CPV	Sample GJ78 Lab Mean	Sample GJ78 Diff from Grand Mean	Sample GJ78 CPV	Instr Code
32F8DX		0.7130	-0.1429	-1.28	0.7150	-0.1433	-1.63	ZZ
387GMV		0.9020	0.0461	0.41	0.8080	-0.0503	-0.57	ZZ
4FVRBV		0.7690	-0.0869	-0.78	0.7710	-0.0873	-0.99	ZZ
4T6RZG		0.9250	0.0691	0.62	0.9170	0.0587	0.67	ZZ
6G3Y2A		0.8050	-0.0509	-0.46	0.8160	-0.0423	-0.48	ZZ
6GM699		0.7810	-0.0749	-0.67	0.8050	-0.0533	-0.61	ZZ
6V43D9		0.7970	-0.0589	-0.53	0.8030	-0.0553	-0.63	ZZ
6ZH93B		0.9340	0.0781	0.70	0.9630	0.1047	1.19	ZZ
7LD6HG		1.0730	0.2171	1.95	1.0640	0.2057	2.34	ZZ
9XXV2N		0.7700	-0.0859	-0.77	0.8150	-0.0433	-0.49	ZZ
BHW37X		0.8740	0.0181	0.16	0.8850	0.0267	0.30	ZZ
BPYKV6		1.0020	0.1461	1.31	0.9270	0.0687	0.78	ZZ
DBQ92U	X	1.2780	0.4221	3.79	1.3210	0.4628	5.27	ZZ
HXLJBV		0.8980	0.0421	0.38	0.8620	0.0037	0.04	ZZ
JW8CPE		0.8130	-0.0429	-0.39	0.8110	-0.0473	-0.54	ZZ
K3TFLU		0.9970	0.1411	1.27	1.0000	0.1417	1.62	ZZ
L46B72		0.8380	-0.0179	-0.16	0.7250	-0.1333	-1.52	ZZ
LQYREE	*	0.5260	-0.3299	-2.96	0.6800	-0.1783	-2.03	ZZ
PEMXBN		0.9640	0.1081	0.97	0.9430	0.0848	0.97	ZZ
PZT7T9		0.8140	-0.0419	-0.38	0.8660	0.0077	0.09	ZZ
QF28VV		0.9040	0.0481	0.43	0.8760	0.0177	0.20	ZZ
R6VYXM		0.8910	0.0351	0.32	0.9520	0.0937	1.07	ZZ
R9VBTM		0.8800	0.0241	0.22	0.8530	-0.0053	-0.06	ZZ
RELK4L		0.7300	-0.1259	-1.13	0.8080	-0.0503	-0.57	ZZ
RK7BGM		0.8160	-0.0399	-0.36	0.9270	0.0687	0.78	ZZ
RMFQWM		0.7870	-0.0689	-0.62	0.8160	-0.0423	-0.48	ZZ
TCNRJM		0.9580	0.1021	0.92	0.8930	0.0347	0.40	ZZ
X6C3A4	X	1.3280	0.4721	4.24	0.8640	0.0057	0.07	ZZ
ZHVQUD		0.9980	0.1421	1.28	0.9240	0.0657	0.75	ZZ
ZLBXHD		0.8050	-0.0509	-0.46	0.8060	-0.0523	-0.60	ZZ

Summary Statistics	Sample GJ77	Sample GJ78
Grand Means	0.86 Microns	0.86 Microns
Stnd Dev Btwn Labs	0.11 Microns	0.09 Microns

Statistics based on 28 of 30 reporting participants.

Comments on Assigned Data Flags for Test #376

X6C3A4 (X) - Data for sample GJ77 are high.

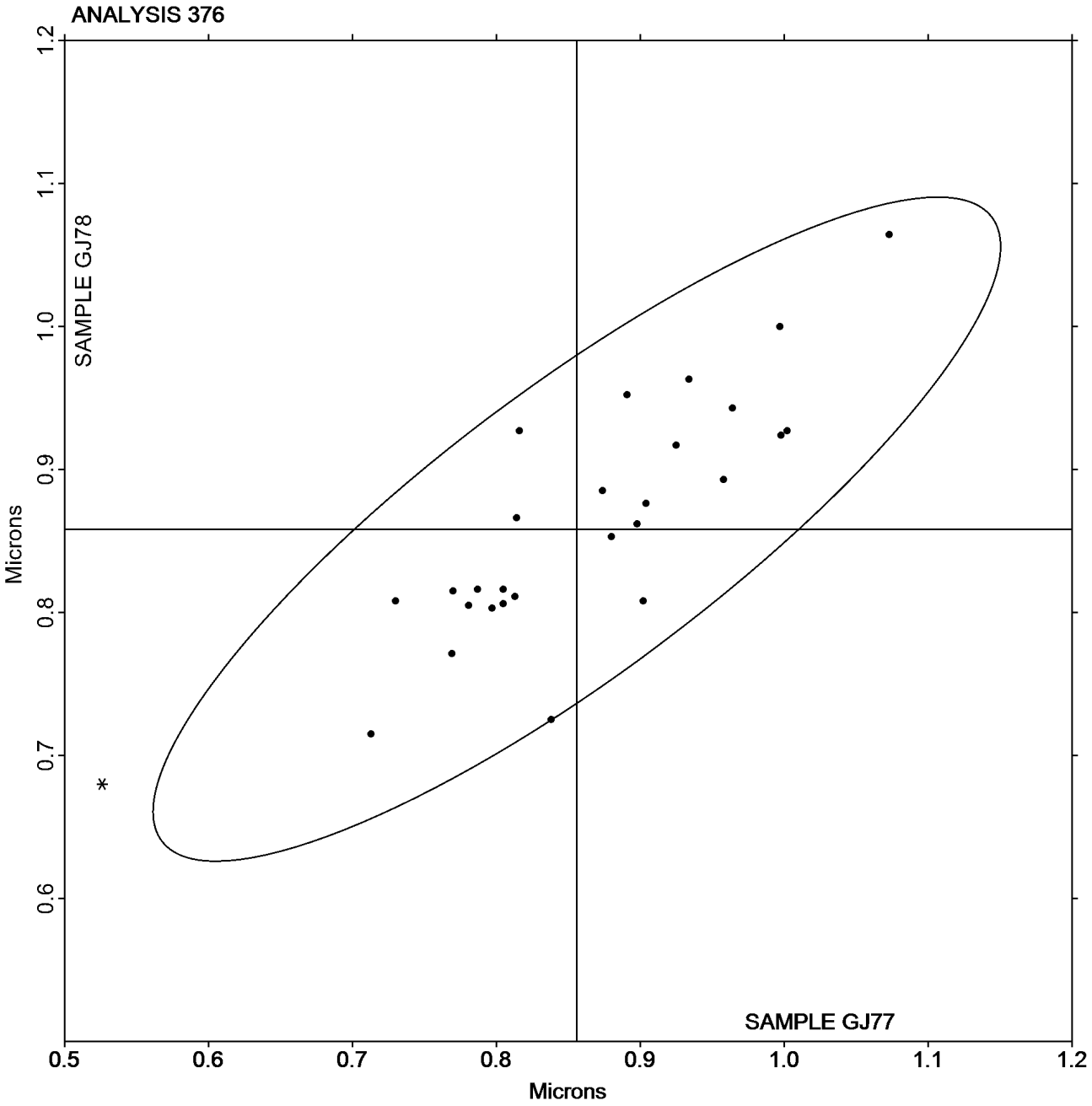
DBQ92U (X) - Data for both samples are high.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Grand Mean Sample GJ77 = 0.85586 Microns

Grand Mean Sample GJ78 = 0.85825 Microns



Paper & Paperboard Interlaboratory Testing Program

Analysis 377

Roughness - Print Surf Method - 2.5 to 6.0 Microns

TAPPI Official Test Method T555

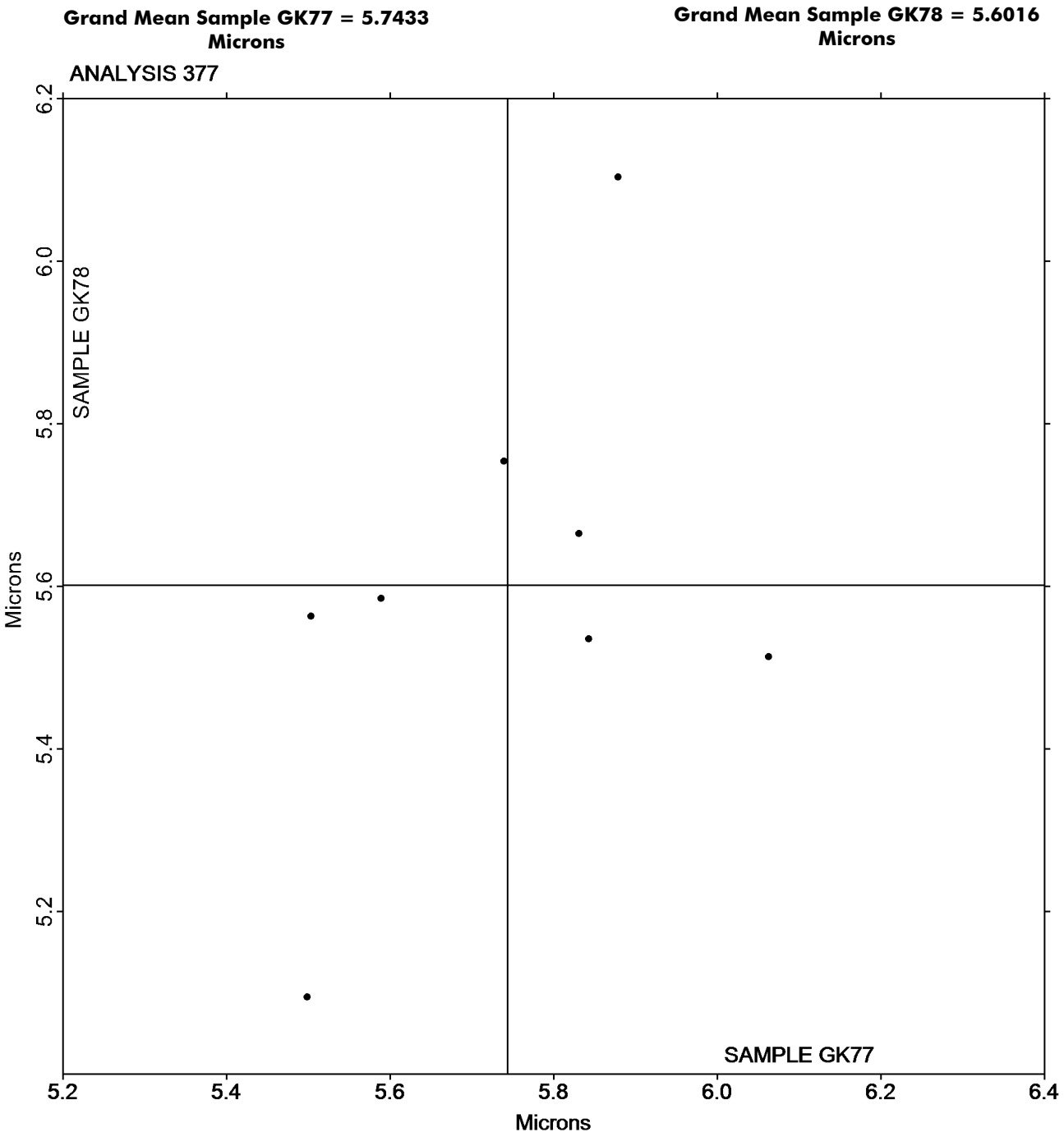
WebCode	Data Flag	Sample GK77 Lab Mean	Sample GK77 Diff from Grand Mean	Sample GK77 CPV	Sample GK78 Lab Mean	Sample GK78 Diff from Grand Mean	Sample GK78 CPV	Instr Code
32F8DX		6.063	0.320	1.60	5.513	-0.089	-0.32	ZZ
6V43D9		5.589	-0.154	-0.77	5.585	-0.017	-0.06	ZZ
99HA36		5.503	-0.240	-1.20	5.563	-0.039	-0.14	ZZ
FHJ3DJ		5.843	0.100	0.50	5.535	-0.067	-0.24	ZZ
FY8DZL		5.739	-0.004	-0.02	5.754	0.152	0.54	ZZ
KGE2FG		5.879	0.136	0.68	6.103	0.501	1.79	ZZ
LQYREE		5.831	0.088	0.44	5.665	0.063	0.23	ZZ
RRBKUN		5.499	-0.244	-1.22	5.095	-0.507	-1.81	ZZ

Summary Statistics	Sample GK77	Sample GK78
Grand Means	5.74 Microns	5.60 Microns
Stnd Dev Btwn Labs	0.20 Microns	0.28 Microns

Statistics based on 8 of 8 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

WebCode	Data Flag	Sample GL77 Lab Mean	Sample GL77 Diff from Grand Mean	Sample GL77 CPV	Sample GL78 Lab Mean	Sample GL78 Diff from Grand Mean	Sample GL78 CPV	Instr Code
2TBZXX		147.9	-3.5	-0.39	146.6	-4.9	-0.58	LA
32F8DX		143.5	-7.9	-0.88	156.7	5.2	0.61	LW
387GMV		146.9	-4.5	-0.50	154.9	3.4	0.40	PP
38NUND		149.6	-1.8	-0.20	158.9	7.3	0.86	MP
4FVRBV		132.8	-18.6	-2.07	139.5	-12.0	-1.42	TS
4T6RZG		155.5	4.1	0.46	153.5	2.0	0.23	LW
6G3Y2A		158.8	7.4	0.82	148.3	-3.2	-0.38	HM
6GM699		154.1	2.7	0.30	157.0	5.5	0.65	PP
6V43D9		166.9	15.5	1.72	156.9	5.4	0.63	XX
73GBEB	X	181.0	29.6	3.29	182.0	30.5	3.58	GL
7Q8V97		146.0	-5.4	-0.60	141.1	-10.4	-1.23	SH
99HA36		164.8	13.4	1.49	167.4	15.9	1.87	LA
9XXV2N		152.7	1.3	0.15	155.3	3.8	0.44	HM
9Z88G6		153.1	1.7	0.19	160.1	8.6	1.01	XX
BHW37X		155.0	3.6	0.40	152.3	0.7	0.09	PP
DBQ92U		160.0	8.6	0.96	149.1	-2.4	-0.29	LW
E2F7FU		149.6	-1.8	-0.20	149.1	-2.4	-0.29	HM
E4MLNK	*	130.4	-21.0	-2.34	130.9	-20.7	-2.44	LA
FHJ3DJ		157.8	6.4	0.71	163.3	11.7	1.38	PP
FKMV7W		134.5	-16.9	-1.88	141.5	-10.0	-1.18	SH
FY8DZL		138.6	-12.8	-1.42	147.3	-4.3	-0.50	PP
GA37LG		158.2	6.8	0.76	150.1	-1.4	-0.17	PP
HQ78BW	*	143.4	-8.0	-0.89	163.1	11.5	1.36	PP
HRYVFP	*	168.1	16.7	1.86	175.3	23.8	2.80	TT
HXQQ96		152.3	0.9	0.10	150.2	-1.3	-0.16	LW
JGVX8G		147.6	-3.8	-0.42	151.0	-0.6	-0.07	LA
K3TFLU		132.8	-18.6	-2.07	137.7	-13.8	-1.63	LW
KGE2FG		160.6	9.2	1.02	155.0	3.5	0.41	LW
LQYREE		157.9	6.5	0.72	157.6	6.1	0.71	LA
MPD8XT		147.7	-3.7	-0.41	160.5	8.9	1.05	PP
MQTW9D		153.3	1.9	0.21	143.5	-8.0	-0.95	LW
NQ7QMT		158.3	6.9	0.76	146.6	-5.0	-0.58	HM
PEMXBN		142.2	-9.2	-1.02	150.4	-1.2	-0.14	PP
PNCM9C		167.8	16.4	1.83	153.3	1.7	0.20	PP
QF28VV		145.1	-6.3	-0.70	141.4	-10.2	-1.20	PP
R429R9		153.6	2.2	0.25	152.6	1.1	0.12	TS
R6VYXM		154.0	2.6	0.29	154.7	3.2	0.37	LA
R9VBTM		154.4	3.0	0.33	154.2	2.6	0.31	PP
RMFQWM		158.9	7.6	0.84	152.2	0.7	0.08	PP
TTY32M		157.6	6.2	0.69	159.0	7.4	0.87	PP
TUB8MJ		149.9	-1.5	-0.17	155.6	4.1	0.48	XX

Paper & Paperboard Interlaboratory Testing Program

Analysis 378
Roughness - Sheffield Type
TAPPI Official Test Method T538

WebCode	Data Flag	Sample GL77 Lab Mean	Sample GL77 Diff from Grand Mean	Sample GL77 CPV	Sample GL78 Lab Mean	Sample GL78 Diff from Grand Mean	Sample GL78 CPV	Instr Code
UUQG7Q		148.1	-3.3	-0.36	150.6	-0.9	-0.11	PP
VBP4FG		160.1	8.7	0.97	147.0	-4.6	-0.54	PP
VQMFNL		151.5	0.1	0.01	150.4	-1.1	-0.13	HM
X6C3A4		151.0	-0.4	-0.04	143.6	-7.9	-0.94	VM
Y6VZQG		136.2	-15.2	-1.69	135.3	-16.2	-1.91	XX
YHW43F		149.0	-2.4	-0.27	153.0	1.5	0.17	TS
YXRLUY		150.7	-0.7	-0.07	149.7	-1.9	-0.22	PP
ZDZWWC		145.0	-6.4	-0.71	138.0	-13.5	-1.59	TZ
ZHVQUD		152.3	0.9	0.10	150.3	-1.2	-0.14	PP
ZLBXHD		163.5	12.1	1.35	166.0	14.5	1.70	GL

Summary Statistics	Sample GL77	Sample GL78
Grand Means	151.39 Sheffield	151.55 Sheffield
Stnd Dev Btwn Labs	8.99 Sheffield	8.50 Sheffield

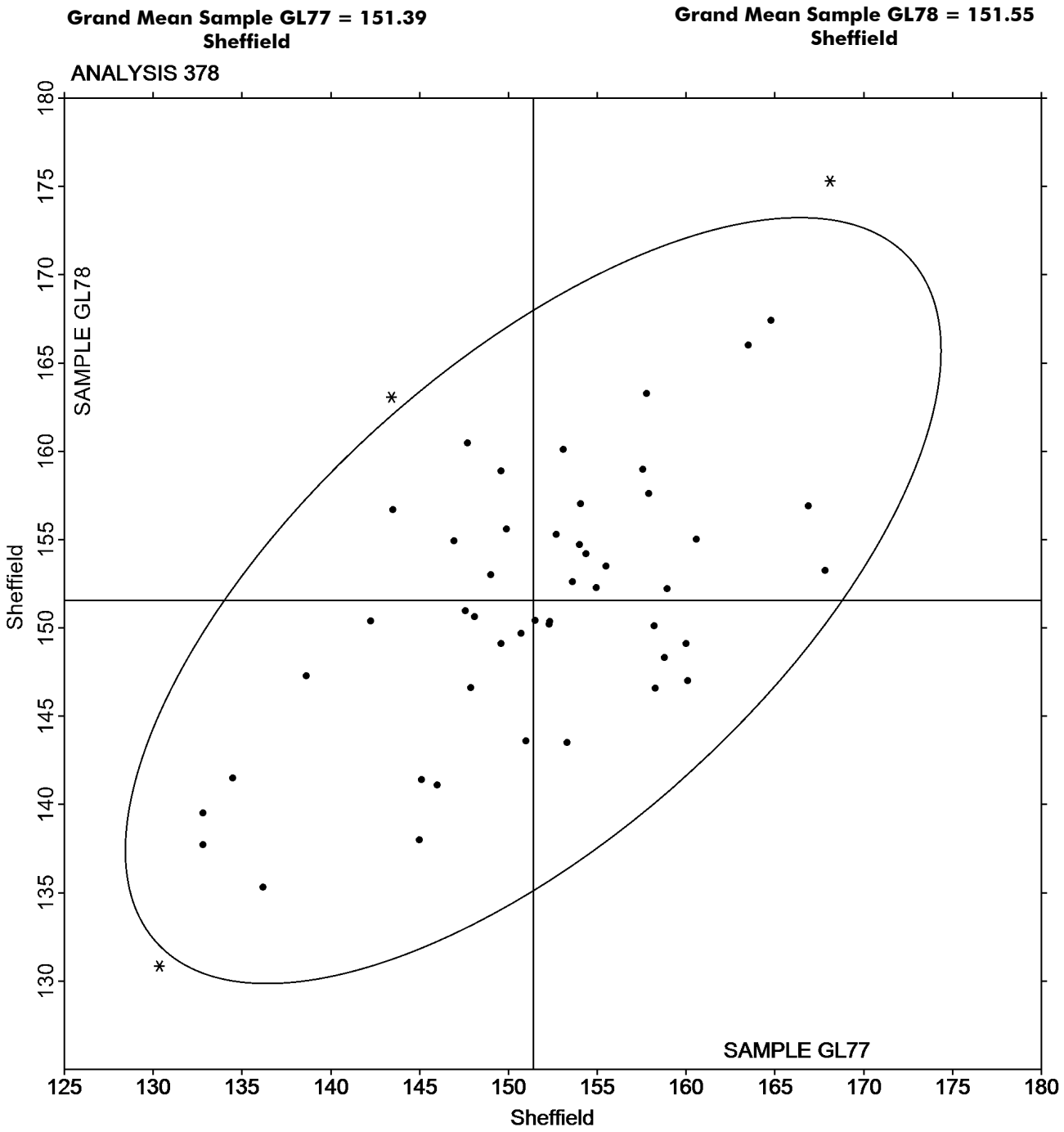
Statistics based on 50 of 51 reporting participants.

Comments on Assigned Data Flags for Test #378

73GBEB (X) - Data for both samples are high.

Key to Instrument Codes Reported by Participants

GL	Giddings and Lewis Sheffield	HM	Technidyne - Hagerty Model #538
LA	L & W Roughness Sheffield - Autoline	LW	L & W Roughness Tester
MP	Metso Paperlab	PP	Technidyne Profile/Plus
SH	Sheffield (Bendix Precisionaire)	TS	TMI Monitor/Smoothness, Model 58-02
TT	TMI Monitor/Smoothness II, Model 58-24	TZ	TMI Sheffield Paper Tester, Model 58-25
VM	Valmet PaperLab (was Kajaani\Robotest)	XX	Instrument make/model not specified by lab



Paper & Paperboard Interlaboratory Testing Program

Analysis 382
Moisture in Paper
TAPPI Official Test Method T412

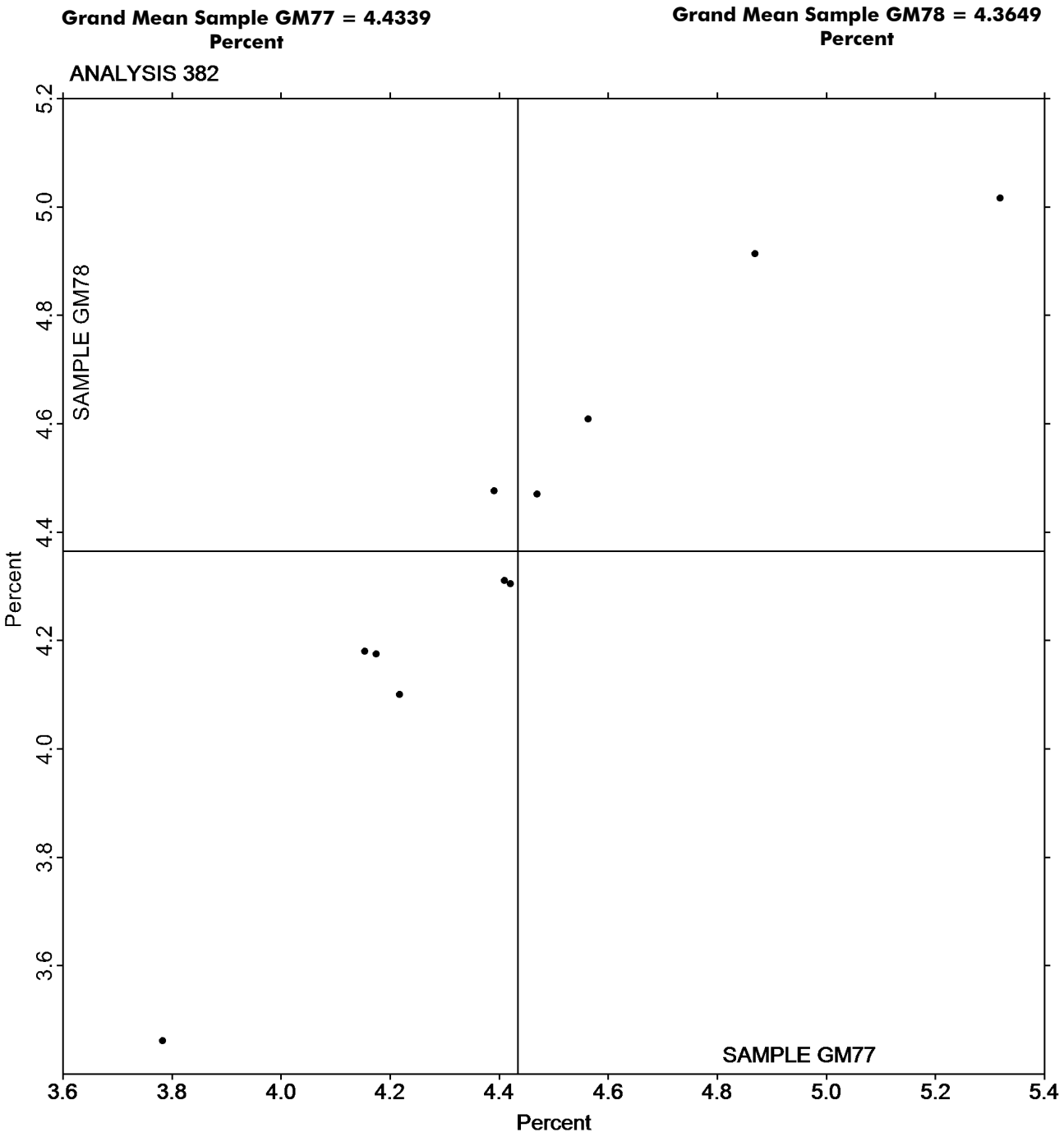
WebCode	Data Flag	Sample GM77 Lab Mean	Sample GM77 Diff from Grand Mean	Sample GM77 CPV	Sample GM78 Lab Mean	Sample GM78 Diff from Grand Mean	Sample GM78 CPV	Instr Code
8BQZRA		3.783	-0.651	-1.62	3.461	-0.904	-2.15	ZZ
L7B7WC		4.391	-0.043	-0.11	4.476	0.111	0.26	ZZ
LZH7FV		4.175	-0.259	-0.65	4.175	-0.190	-0.45	ZZ
PJ2WYX		4.410	-0.024	-0.06	4.310	-0.055	-0.13	ZZ
QHQUUQ		4.154	-0.280	-0.70	4.180	-0.185	-0.44	ZZ
R6F4MW		4.563	0.129	0.32	4.608	0.243	0.58	ZZ
RRBKUN		4.470	0.036	0.09	4.470	0.105	0.25	ZZ
V26Y8H		4.218	-0.216	-0.54	4.100	-0.265	-0.63	ZZ
WBNF8P		4.421	-0.013	-0.03	4.304	-0.061	-0.14	ZZ
WNPNVC		4.870	0.436	1.09	4.914	0.549	1.30	ZZ
YXRLUY		5.319	0.885	2.21	5.016	0.651	1.55	ZZ

Summary Statistics	Sample GM77	Sample GM78
Grand Means	4.43 Percent	4.36 Percent
Stnd Dev Btwn Labs	0.40 Percent	0.42 Percent

Statistics based on 11 of 11 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Paper & Paperboard Interlaboratory Testing Program

Report #3052G, April 2020

Analysis 384

Opacity (89% Reflectance Backing) - Fine Papers

TAPPI Official Test Method T425

WebCode	Data Flag	Sample GN77 Lab Mean	Sample GN77 Diff from Grand Mean	Sample GN77 CPV	Sample GN78 Lab Mean	Sample GN78 Diff from Grand Mean	Sample GN78 CPV	Instr Code
2TBZXX		95.93	-0.17	-0.49	93.95	-0.39	-0.97	ZZ
387GMV		96.06	-0.04	-0.11	94.34	0.00	-0.01	ZZ
6G3Y2A		96.13	0.03	0.09	94.50	0.16	0.39	ZZ
73GBEB		96.84	0.74	2.17	95.02	0.68	1.68	ZZ
7LD6HG	X	97.35	1.25	3.65	95.15	0.81	2.00	ZZ
99HA36	X	95.14	-0.96	-2.80	94.70	0.36	0.89	ZZ
9XXV2N		96.53	0.43	1.26	94.89	0.55	1.35	ZZ
BHW37X	*	96.32	0.22	0.65	95.03	0.69	1.70	ZZ
BPYKV6		96.19	0.09	0.27	94.33	-0.01	-0.03	ZZ
E2F7FU		96.24	0.14	0.42	94.48	0.14	0.34	ZZ
EZANGX		95.89	-0.21	-0.62	94.18	-0.17	-0.42	ZZ
FHJ3DJ		95.99	-0.11	-0.32	94.08	-0.26	-0.65	ZZ
FKMV7W		95.99	-0.11	-0.32	94.04	-0.30	-0.75	ZZ
FY8DZL		95.93	-0.17	-0.50	94.21	-0.14	-0.34	ZZ
GA37LG		95.64	-0.46	-1.34	94.10	-0.24	-0.60	ZZ
HQ78BW		96.21	0.11	0.33	94.17	-0.17	-0.43	ZZ
JGVX8G	X	92.91	-3.19	-9.32	92.54	-1.80	-4.46	ZZ
L46B72		96.01	-0.09	-0.26	94.32	-0.02	-0.06	ZZ
P7FNXQ		96.55	0.45	1.32	94.87	0.53	1.30	ZZ
PNCM9C		95.98	-0.12	-0.36	94.11	-0.23	-0.58	ZZ
PZT7T9		96.02	-0.08	-0.24	94.22	-0.12	-0.30	ZZ
QB7DXU		96.03	-0.07	-0.20	94.43	0.09	0.22	ZZ
R429R9		96.60	0.50	1.47	94.86	0.52	1.28	ZZ
TCNRJM		96.39	0.29	0.84	94.78	0.44	1.08	ZZ
TUB8MJ	*	95.03	-1.07	-3.12	93.15	-1.19	-2.95	ZZ
UUQG7Q		95.95	-0.15	-0.44	94.24	-0.10	-0.25	ZZ
YHW43F		96.12	0.02	0.06	94.29	-0.05	-0.13	ZZ
YXRLUY		96.02	-0.08	-0.23	94.31	-0.03	-0.07	ZZ
ZDZWWC		95.98	-0.12	-0.35	94.02	-0.32	-0.80	ZZ

Summary Statistics	Sample GN77	Sample GN78
Grand Means	96.10 Percent	94.34 Percent
Stnd Dev Btwn Labs	0.34 Percent	0.40 Percent

Statistics based on 26 of 29 reporting participants.

Comments on Assigned Data Flags for Test #384

JGVX8G (X) - Extreme Data.

99HA36 (X) - Data for sample GN77 are low. Inconsistent within the determinations of sample GN77.

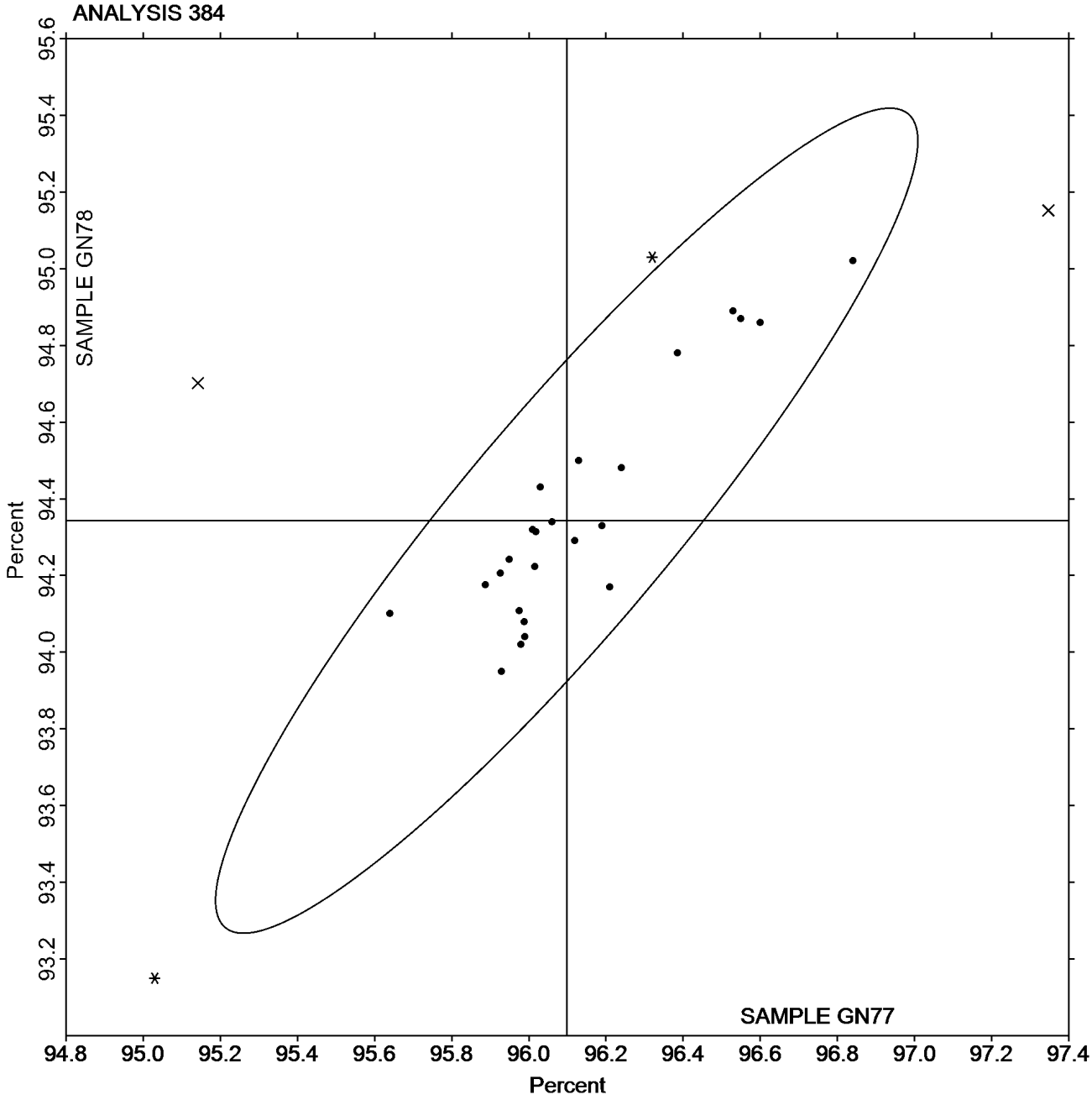
7LD6HG (X) - Data for sample GN77 are high.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Grand Mean Sample GN77 = 96.098 Percent

Grand Mean Sample GN78 = 94.343 Percent



Paper & Paperboard Interlaboratory Testing Program

Analysis 386

Opacity (Paper Backing) - Fine Papers and Newsprint

TAPPI Official Test Method T519

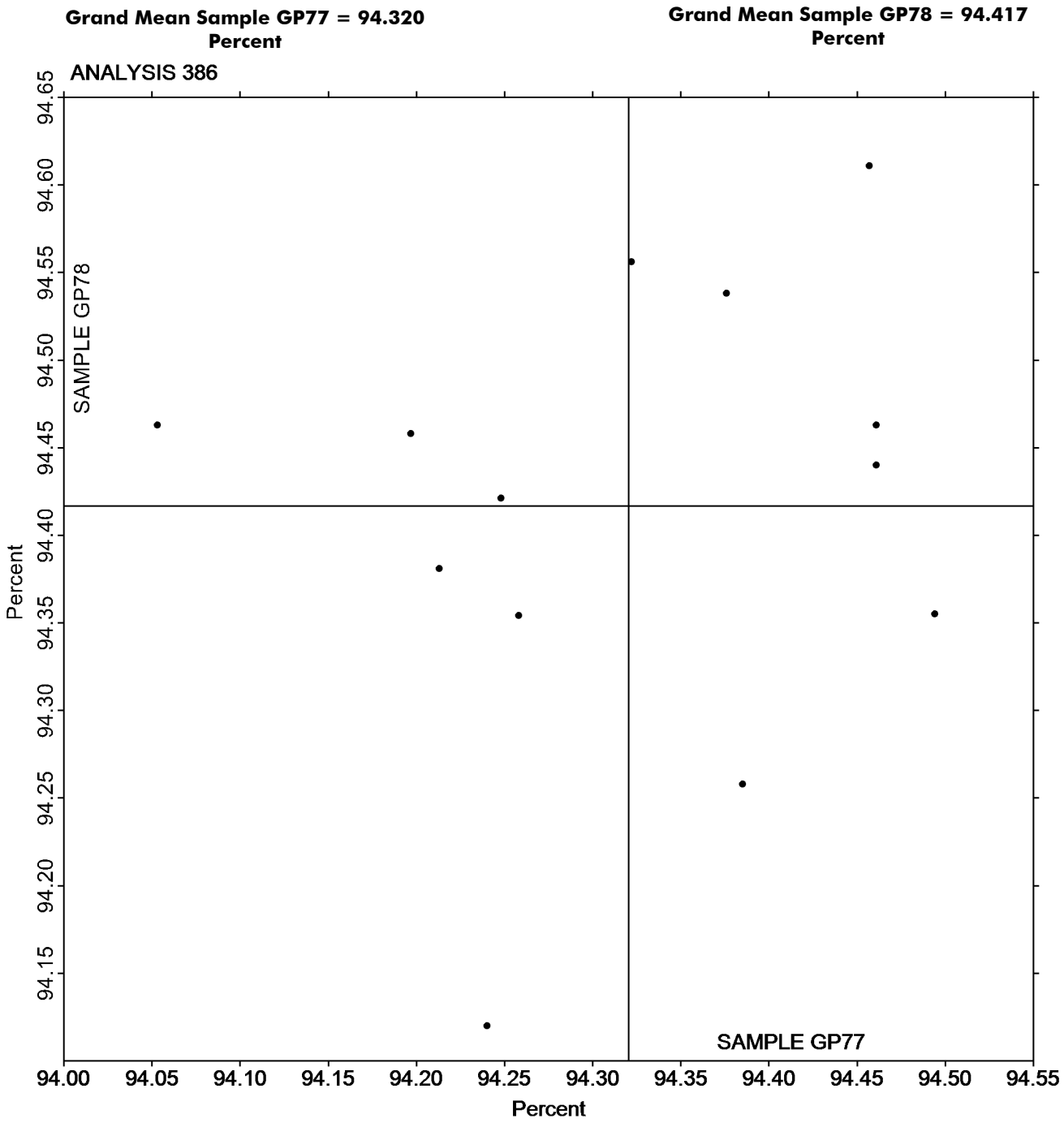
WebCode	Data Flag	Sample GP77 Lab Mean	Sample GP77 Diff from Grand Mean	Sample GP77 CPV	Sample GP78 Lab Mean	Sample GP78 Diff from Grand Mean	Sample GP78 CPV	Instr Code
8BQZRA		94.32	0.00	0.01	94.56	0.14	1.08	ZZ
A9VH7Q		94.21	-0.11	-0.81	94.38	-0.04	-0.28	ZZ
CX6G2Z		94.39	0.06	0.49	94.26	-0.16	-1.23	ZZ
HGLW26		94.26	-0.06	-0.47	94.35	-0.06	-0.49	ZZ
KKUVTT		94.05	-0.27	-2.02	94.46	0.05	0.36	ZZ
MBYCRP		94.24	-0.08	-0.61	94.12	-0.30	-2.30	ZZ
P2LMXW		94.46	0.14	1.06	94.46	0.05	0.36	ZZ
R82KM9		94.46	0.14	1.06	94.44	0.02	0.18	ZZ
RELK4L		94.38	0.06	0.42	94.54	0.12	0.94	ZZ
TBU2D8		94.20	-0.12	-0.93	94.46	0.04	0.32	ZZ
TGLBM7		94.49	0.17	1.31	94.36	-0.06	-0.48	ZZ
XVRKAP		94.25	-0.07	-0.55	94.42	0.00	0.03	ZZ
Z3Z96F		94.46	0.14	1.03	94.61	0.19	1.50	ZZ

Summary Statistics	Sample GP77	Sample GP78
Grand Means	94.32 Percent	94.42 Percent
Stnd Dev Btwn Labs	0.13 Percent	0.13 Percent

Statistics based on 13 of 13 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Paper & Paperboard Interlaboratory Testing Program

Analysis 390
Directional Brightness
TAPPI Official Test Method T452

WebCode	Data Flag	Sample GR77 Lab Mean	Sample GR77 Diff from Grand Mean	Sample GR77 CPV	Sample GR78 Lab Mean	Sample GR78 Diff from Grand Mean	Sample GR78 CPV	Instr Code
32F8DX		83.78	-1.83	-1.24	83.65	-1.94	-1.34	TT
4T6RZG		87.64	2.03	1.38	87.63	2.04	1.40	HZ
4Y7GNU		86.20	0.59	0.40	86.27	0.68	0.46	HG
6GM699		84.83	-0.77	-0.52	84.84	-0.75	-0.52	HG
7LD6HG		86.17	0.56	0.38	86.15	0.56	0.39	VM
99HA36		85.13	-0.48	-0.32	85.01	-0.58	-0.40	TS
9XXV2N		83.21	-2.40	-1.62	83.48	-2.12	-1.46	TS
BHW37X		86.68	1.07	0.72	86.76	1.17	0.80	TT
BPYKV6	*	84.55	-1.05	-0.71	83.78	-1.81	-1.25	TP
DBQ92U		86.04	0.43	0.29	86.34	0.75	0.51	HG
GA37LG		84.83	-0.78	-0.53	85.45	-0.14	-0.10	XC
HQ78BW		84.20	-1.41	-0.95	84.18	-1.42	-0.97	XX
JYYZWV		87.09	1.48	1.00	87.02	1.43	0.98	TS
L46B72		86.61	1.00	0.68	86.43	0.84	0.58	TS
LR84UU		86.99	1.38	0.93	86.84	1.25	0.86	TS
PEMXBN		87.06	1.46	0.99	87.05	1.46	1.00	TP
PNCM9C		83.68	-1.93	-1.31	83.84	-1.75	-1.21	TT
R9VBTM		84.03	-1.58	-1.07	84.00	-1.59	-1.09	PP
RMFQWM		85.98	0.37	0.25	86.02	0.43	0.29	HG
RRBKUN	X	70.83	-14.78	-10.01	68.90	-16.69	-11.47	TS
TUB8MJ		87.69	2.08	1.41	87.39	1.80	1.23	PE
Y6VZQG		86.45	0.84	0.57	86.10	0.51	0.35	XX
YHW43F		83.63	-1.98	-1.34	83.79	-1.80	-1.24	TS
ZDZWWC		88.00	2.39	1.62	88.09	2.50	1.72	TS
ZHVQUD		84.14	-1.47	-1.00	84.12	-1.47	-1.01	TS
ZLBXHD	X	67.99	-17.62	-11.93	67.63	-17.97	-12.35	TS

Summary Statistics	Sample GR77	Sample GR78
Grand Means	85.61 Percent	85.59 Percent
Stnd Dev Btwn Labs	1.48 Percent	1.45 Percent

Statistics based on 24 of 26 reporting participants.

Comments on Assigned Data Flags for Test #390

ZLBXHD (X) - Extreme Data.

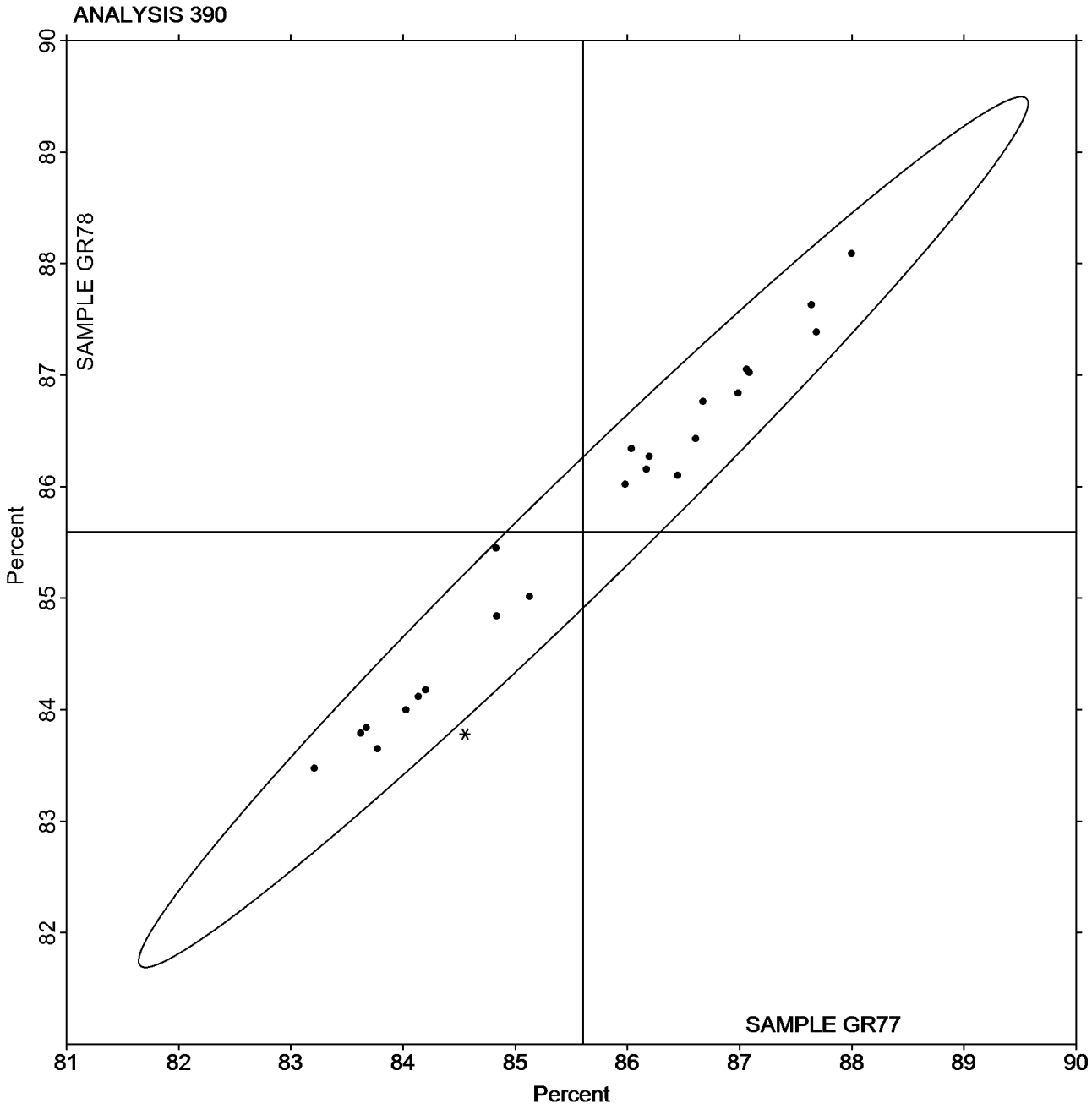
RRBKUN (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

HG	Hunter Labscan / XE	HZ	Hunter Lab ColorFlex EZ Series
PE	Photovolt 577	PP	Technidyne Profile/Plus
TP	Technidyne Test/Plus	TS	Technidyne Brightimeter Micro S-5
TT	Technidyne Brightimeter Micro S4-M	VM	Valmet PaperLab (was Kajaani/Robotest)
XC	X-Rite Color i5	XX	Instrument make/model not specified by lab

Grand Mean Sample GR77 = 85.607 Percent

Grand Mean Sample GR78 = 85.592 Percent



Paper & Paperboard Interlaboratory Testing Program

Analysis 391

Directional Brightness of Fluorescent Samples

TAPPI Official Test Method T452

WebCode	Data Flag	Sample GZ77 Lab Mean	Sample GZ77 Diff from Grand Mean	Sample GZ77 CPV	Sample GZ78 Lab Mean	Sample GZ78 Diff from Grand Mean	Sample GZ78 CPV	Instr Code
6G3Y2A		94.26	-0.65	-0.93	97.14	-1.09	-1.93	TT
FHJ3DJ		95.29	0.38	0.55	98.51	0.29	0.51	TS
JGVX8G		94.34	-0.57	-0.81	97.44	-0.79	-1.40	TT
P7FNXQ		95.40	0.49	0.70	98.46	0.23	0.42	TT
PNCM9C		95.26	0.35	0.50	98.22	-0.01	-0.01	TT
PZT7T9		95.26	0.35	0.50	98.72	0.49	0.88	PP
R429R9		93.20	-1.71	-2.45	97.70	-0.53	-0.94	TS
TCNRJM		95.08	0.17	0.24	98.21	-0.02	-0.03	TS
UUQG7Q		95.54	0.63	0.90	98.86	0.63	1.13	PP
YHW43F		95.20	0.29	0.42	98.66	0.43	0.77	TS
YXRLUY		95.18	0.27	0.38	98.56	0.33	0.60	TS

Summary Statistics	Sample GZ77	Sample GZ78
Grand Means	94.91 Percent	98.23 Percent
Stnd Dev Btwn Labs	0.70 Percent	0.56 Percent

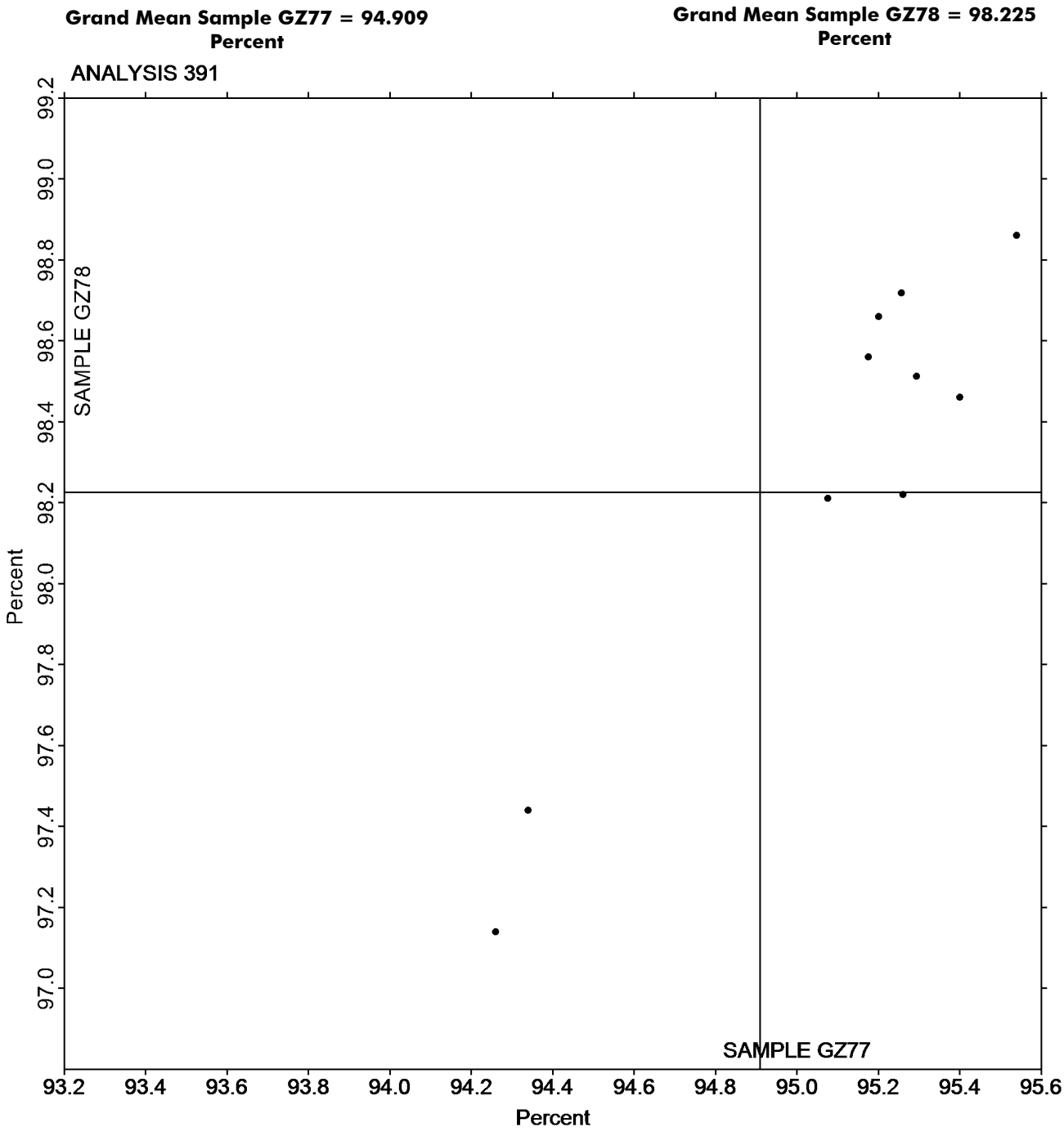
Statistics based on 11 of 11 reporting participants.

Key to Instrument Codes Reported by Participants

PP Technidyne Profile/Plus

TT Technidyne Brightimeter Micro S4-M

TS Technidyne Brightimeter Micro S-5



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Paper & Paperboard Interlaboratory Testing Program

Analysis 392
Diffuse Brightness
TAPPI Official Test Method T525

WebCode	Data Flag	Sample GR77 Lab Mean	Sample GR77 Diff from Grand Mean	Sample GR77 CPV	Sample GR78 Lab Mean	Sample GR78 Diff from Grand Mean	Sample GR78 CPV	Instr Code
32F8DX		84.87	-0.09	-0.44	85.01	0.08	0.40	EG
387GMV		85.04	0.08	0.39	85.01	0.07	0.38	TC
3XVE2V		84.89	-0.07	-0.33	84.87	-0.07	-0.34	TC
8BQZRA		84.82	-0.14	-0.69	84.74	-0.20	-1.04	LE
99HA36	*	85.40	0.44	2.15	84.90	-0.04	-0.19	TC
9XXV2N	*	84.86	-0.10	-0.47	85.32	0.38	1.97	LT
CQPXG2		84.94	-0.03	-0.12	84.84	-0.09	-0.48	TC
CX6G2Z		84.47	-0.49	-2.40	84.54	-0.40	-2.06	EG
DBQ92U		85.06	0.09	0.46	84.86	-0.08	-0.42	TC
HXLJBV		84.89	-0.07	-0.33	84.90	-0.04	-0.19	TC
JW8CPE		85.08	0.12	0.56	85.06	0.13	0.65	TC
JYYZWV		84.84	-0.12	-0.57	84.84	-0.09	-0.48	TC
KKUVTT		85.08	0.12	0.57	85.10	0.16	0.83	LE
LZH7FV		85.02	0.06	0.28	84.94	0.00	0.00	EE
MBYCRP		84.72	-0.24	-1.18	84.71	-0.23	-1.17	LA
MLY3BC		84.95	-0.02	-0.07	84.95	0.01	0.04	LA
MQTW9D		85.18	0.21	1.04	85.08	0.14	0.75	EF
P2LMXW		85.26	0.30	1.47	85.18	0.24	1.27	TC
PEMXBN		85.13	0.16	0.80	85.06	0.13	0.65	TL
R9VBTM		84.75	-0.21	-1.02	84.73	-0.21	-1.07	LT
RDRUX8	X	67.70	-17.26	-83.73	67.86	-17.07	-88.34	TZ
RELK4L		84.76	-0.20	-0.99	84.72	-0.22	-1.12	AC
RK7BGM	X	85.85	0.89	4.30	85.97	1.03	5.34	XX
TBU2D8		85.10	0.14	0.69	84.94	0.00	0.01	TC
TGLBM7		85.28	0.32	1.54	85.39	0.45	2.33	TC
TTY32M		84.86	-0.10	-0.47	84.96	0.03	0.13	TC
Z27HY2		84.78	-0.18	-0.87	84.77	-0.17	-0.86	TC

Summary Statistics	Sample GR77	Sample GR78
Grand Means	84.96 Percent	84.94 Percent
Stnd Dev Btwn Labs	0.21 Percent	0.19 Percent

Statistics based on 25 of 27 reporting participants.

Comments on Assigned Data Flags for Test #392

RDRUX8 (X) - Extreme Data.

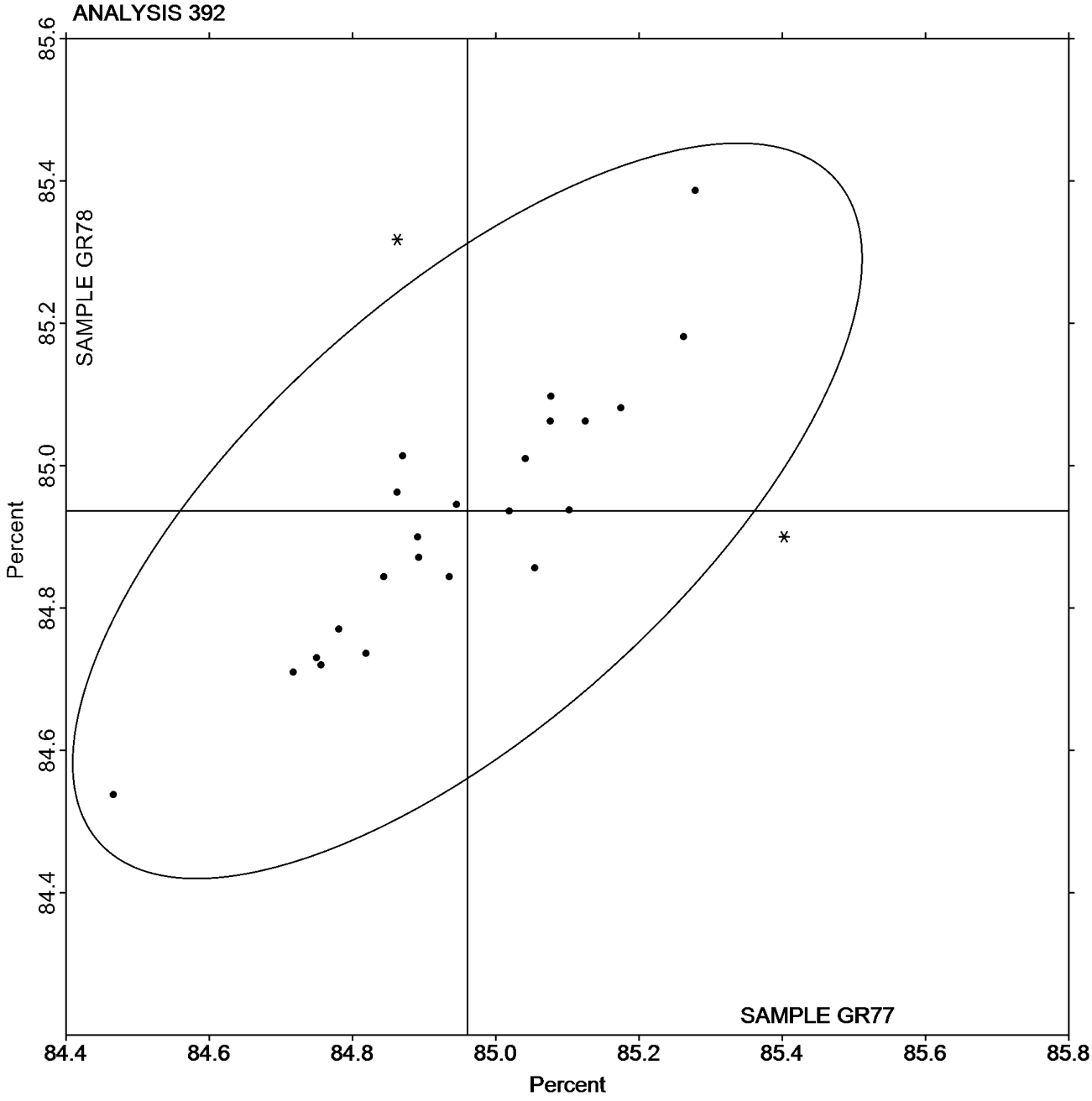
RK7BGM (X) - Data for both samples are high.

Key to Instrument Codes Reported by Participants

AC	ACS Spectro-Sensor II	EE	Datacolor Elrepho 2000
EF	Datacolor Elrepho 3000	EG	Datacolor Elrepho 450X
LA	L & W Elrepho - Autoline	LE	L & W Elrepho
LT	L & W Elrepho SE 071	TC	Technidyne Color Touch Series
TL	Technidyne Technibrite TB-1	TZ	Technibrite Model TB-1
XX	Instrument make/model not specified by lab		

Grand Mean Sample GR77 = 84.960
Percent

Grand Mean Sample GR78 = 84.937
Percent



Paper & Paperboard Interlaboratory Testing Program

Analysis 394

Fluorescent Component of Directional Brightness

TAPPI Official Test Method T452

WebCode	Data Flag	Sample GZ77 Lab Mean	Sample GZ77 Diff from Grand Mean	Sample GZ77 CPV	Sample GZ78 Lab Mean	Sample GZ78 Diff from Grand Mean	Sample GZ78 CPV	Instr Code
6G3Y2A		7.960	-0.047	-0.12	9.000	0.047	0.13	TT
FHJ3DJ		7.814	-0.193	-0.50	8.768	-0.185	-0.49	TS
JGVX8G		7.420	-0.587	-1.52	8.440	-0.513	-1.37	TT
PZT7T9		8.536	0.529	1.37	9.520	0.567	1.52	PP
TCNRJM		8.026	0.019	0.05	8.904	-0.049	-0.13	TS
UUQG7Q		7.800	-0.207	-0.54	8.740	-0.213	-0.57	PP
YHW43F		8.580	0.573	1.48	9.480	0.527	1.41	TS
YXRLUY		7.922	-0.085	-0.22	8.772	-0.181	-0.48	TS

Summary Statistics	Sample GZ77	Sample GZ78
Grand Means	8.01 Percent	8.95 Percent
Stnd Dev Btwn Labs	0.39 Percent	0.37 Percent

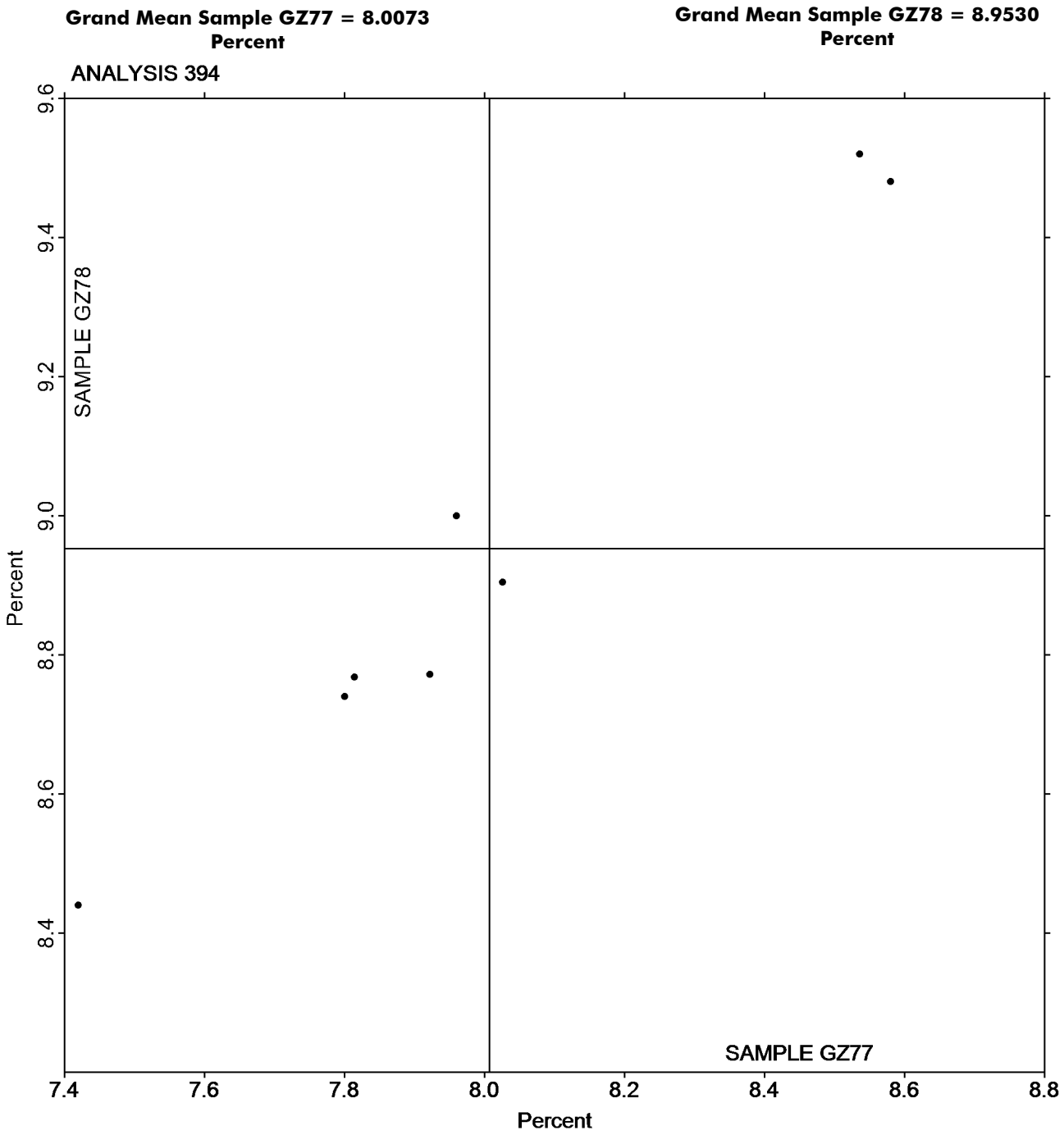
Statistics based on 8 of 8 reporting participants.

Key to Instrument Codes Reported by Participants

PP Technidyne Profile/Plus

TS Technidyne Brightimeter Micro S-5

TT Technidyne Brightimeter Micro S4-M



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Paper & Paperboard Interlaboratory Testing Program

Report #3052G, April 2020

Analysis 395

Specular Gloss at 75 Degrees - High Range

TAPPI Official Test Method T480

WebCode	Data Flag	Sample GT77 Lab Mean	Sample GT77 Diff from Grand Mean	Sample GT77 CPV	Sample GT78 Lab Mean	Sample GT78 Diff from Grand Mean	Sample GT78 CPV	Instr Code
32F8DX		65.77	-0.12	-0.06	68.19	1.97	1.01	TH
4FVRBV		66.69	0.80	0.37	66.97	0.75	0.39	XX
6G3Y2A		62.30	-3.59	-1.66	64.41	-1.81	-0.93	PP
6GM699		68.61	2.72	1.26	68.20	1.98	1.02	TH
7LD6HG		66.81	0.92	0.42	66.93	0.71	0.37	VM
BPYKV6		67.59	1.70	0.79	66.20	-0.02	-0.01	TH
HGLW26		65.59	-0.30	-0.14	64.23	-1.99	-1.02	GM
L46B72	*	59.84	-6.05	-2.80	62.87	-3.35	-1.72	LA
LQYREE		67.51	1.62	0.75	67.18	0.96	0.49	LA
P2LMXW		65.78	-0.11	-0.05	64.69	-1.53	-0.79	LA
PEMXBN		65.69	-0.20	-0.09	63.84	-2.38	-1.22	GM
PZT7T9		67.12	1.23	0.57	66.43	0.21	0.11	PP
R6VYXM	X	55.78	-10.11	-4.68	40.63	-25.59	-13.15	LF
R9VBTM		66.04	0.15	0.07	65.61	-0.61	-0.31	GA
RELK4L		65.49	-0.40	-0.19	68.39	2.17	1.12	LB
RMFQWM		68.64	2.75	1.27	70.12	3.90	2.00	TH
TCNRJM		65.99	0.10	0.04	67.06	0.84	0.43	LF
X6C3A4		64.72	-1.17	-0.54	64.40	-1.82	-0.93	VM

Summary Statistics	Sample GT77	Sample GT78
Grand Means	65.89 Gloss Units	66.22 Gloss Units
Stnd Dev Btwn Labs	2.16 Gloss Units	1.95 Gloss Units

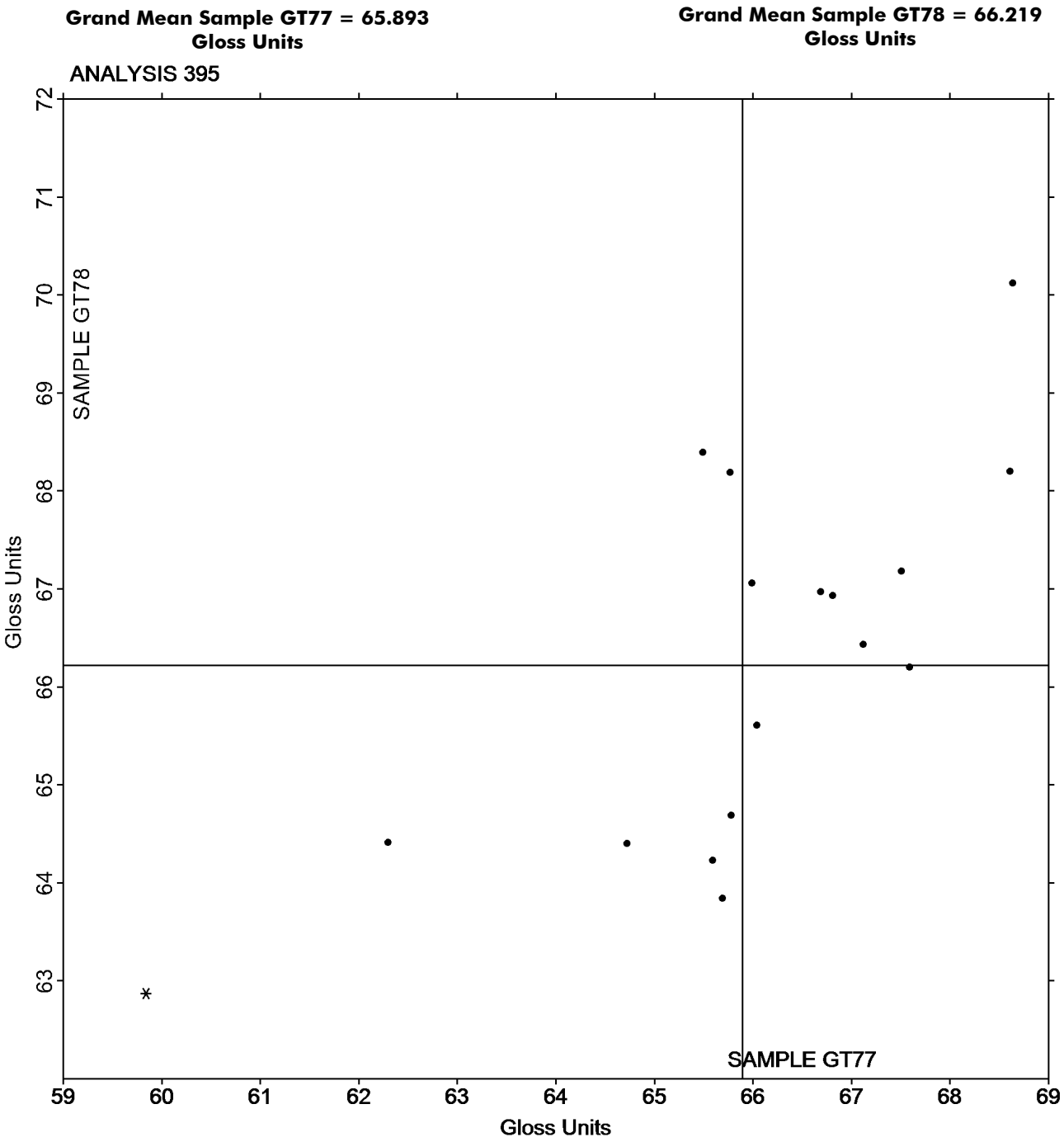
Statistics based on 17 of 18 reporting participants.

Comments on Assigned Data Flags for Test #395

R6VYXM (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

GA	BYK-Gardner (model not specified)	GM	BYK-Gardner micro-gloss
LA	L & W Gloss - Autoline 300	LB	L & W Gloss Tester Code 224
LF	L & W Autoline 400	PP	Technidyne Profile/Plus
TH	Technidyne T480A	VM	Valmet PaperLab (was Kajaani/Robotest)
XX	Instrument make/model not specified by lab		



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Paper & Paperboard Interlaboratory Testing Program

Analysis 396

Specular Gloss at 75 Degrees - Low Range

TAPPI Official Test Method T480

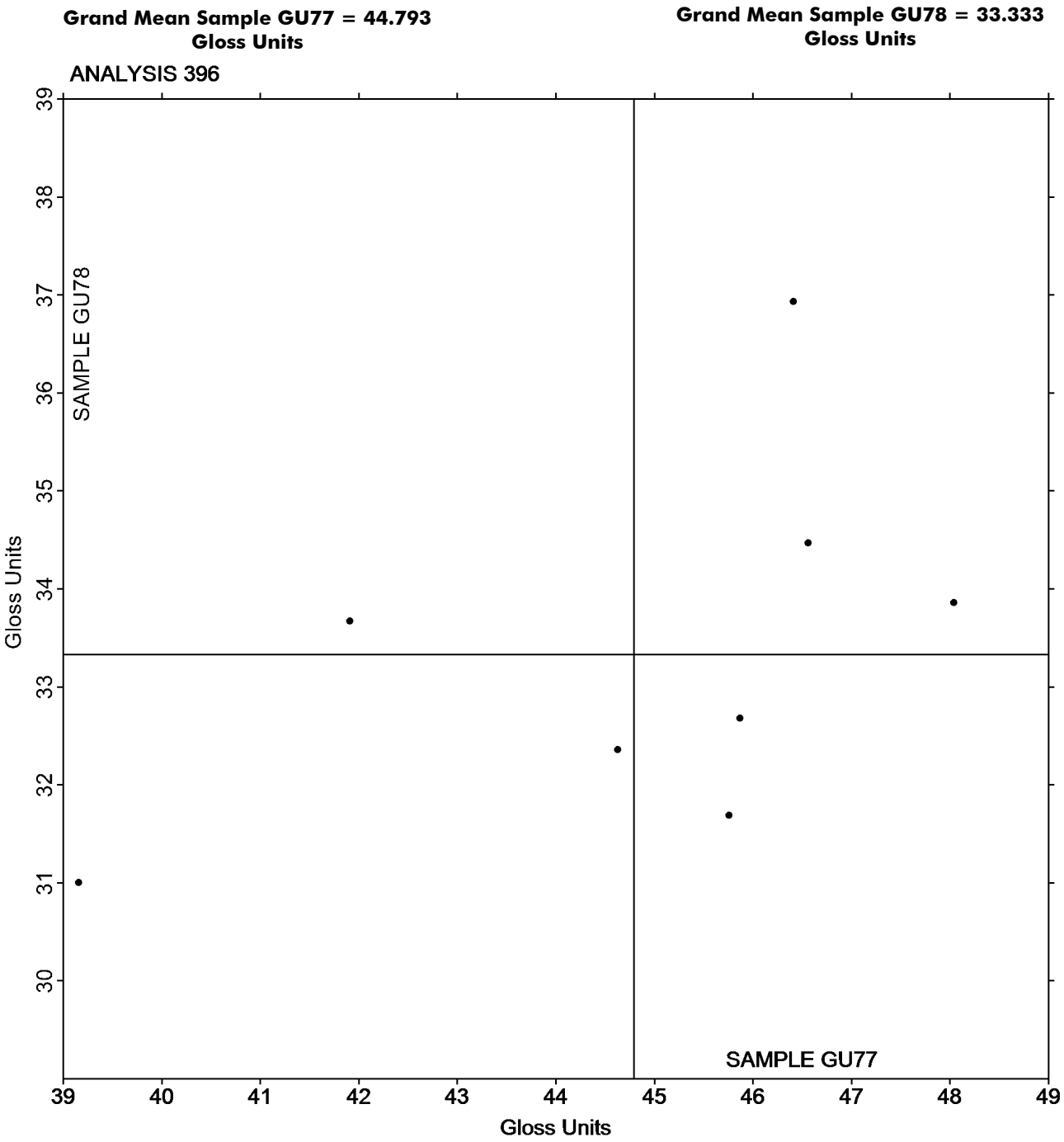
WebCode	Data Flag	Sample GU77 Lab Mean	Sample GU77 Diff from Grand Mean	Sample GU77 CPV	Sample GU78 Lab Mean	Sample GU78 Diff from Grand Mean	Sample GU78 CPV	Instr Code
387GMV		46.41	1.62	0.56	36.93	3.60	1.94	TH
4T6RZG		45.76	0.97	0.33	31.69	-1.64	-0.88	GS
DBQ92U		46.56	1.77	0.61	34.47	1.14	0.61	PP
FY8DZL		44.63	-0.16	-0.06	32.36	-0.97	-0.52	PP
GA37LG		48.04	3.25	1.12	33.86	0.53	0.28	TH
P2LMXW		39.16	-5.63	-1.95	31.00	-2.33	-1.26	LA
RELK4L		45.87	1.08	0.37	32.68	-0.65	-0.35	LA
V26Y8H		41.91	-2.88	-1.00	33.67	0.34	0.18	ZT

Summary Statistics	Sample GU77	Sample GU78
Grand Means	44.79 Gloss Units	33.33 Gloss Units
Stnd Dev Btwn Labs	2.89 Gloss Units	1.86 Gloss Units

Statistics based on 8 of 8 reporting participants.

Key to Instrument Codes Reported by Participants

GS	BYK-Gardner Glossgard II	LA	L & W Gloss - Autoline 300
PP	Technidyne Profile/Plus	TH	Technidyne T480A
ZT	Zehntner ZLR 1020		



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Paper & Paperboard Interlaboratory Testing Program

Analysis 398
Grammage (Mass per Unit Area)
TAPPI Official Test Method T410

WebCode	Data Flag	Sample GW77 Lab Mean	Sample GW77 Diff from Grand Mean	Sample GW77 CPV	Sample GW78 Lab Mean	Sample GW78 Diff from Grand Mean	Sample GW78 CPV	Instr Code
2AF8DY		73.30	-0.01	-0.04	89.88	0.65	0.99	ZZ
2TBZXX		72.84	-0.47	-1.58	88.24	-0.98	-1.49	ZZ
2YU34E		73.44	0.13	0.44	89.19	-0.03	-0.05	ZZ
387GMV		73.23	-0.08	-0.27	90.04	0.82	1.23	ZZ
4Y7GNU		73.35	0.04	0.13	89.12	-0.11	-0.16	ZZ
8BQZRA		73.46	0.15	0.51	89.22	0.00	-0.01	ZZ
9GE63P		73.35	0.04	0.14	89.51	0.29	0.43	ZZ
A9VH7Q		73.47	0.16	0.53	89.37	0.15	0.22	ZZ
BA78ZA		73.30	-0.01	-0.04	89.06	-0.16	-0.24	ZZ
CQ4RB3		73.20	-0.11	-0.35	88.91	-0.31	-0.47	ZZ
E2F7FU		73.30	-0.01	-0.03	88.74	-0.48	-0.73	ZZ
FKMV7W		73.14	-0.17	-0.57	89.46	0.24	0.36	ZZ
GA37LG		73.05	-0.26	-0.88	88.78	-0.45	-0.67	ZZ
HQ78BW		73.25	-0.06	-0.20	88.84	-0.38	-0.58	ZZ
LZH7FV		73.29	-0.02	-0.08	89.16	-0.06	-0.09	ZZ
M336ZQ	*	73.86	0.55	1.83	91.52	2.29	3.46	ZZ
QHQUUQ		73.87	0.56	1.87	89.05	-0.18	-0.26	ZZ
R429R9	*	72.51	-0.80	-2.68	88.87	-0.35	-0.54	ZZ
RELK4L		73.73	0.42	1.41	89.30	0.08	0.12	ZZ
V26Y8H		73.27	-0.04	-0.15	88.82	-0.41	-0.62	ZZ
WNPNVC		73.18	-0.13	-0.43	88.42	-0.80	-1.21	ZZ
XVRKAP	X	64.66	-8.65	-29.04	78.04	-11.18	-16.88	ZZ
YK977M		73.44	0.13	0.44	89.43	0.21	0.31	ZZ

Summary Statistics	Sample GW77	Sample GW78
Grand Means	73.31 g/sq m	89.22 g/sq m
Stnd Dev Btwn Labs	0.30 g/sq m	0.66 g/sq m

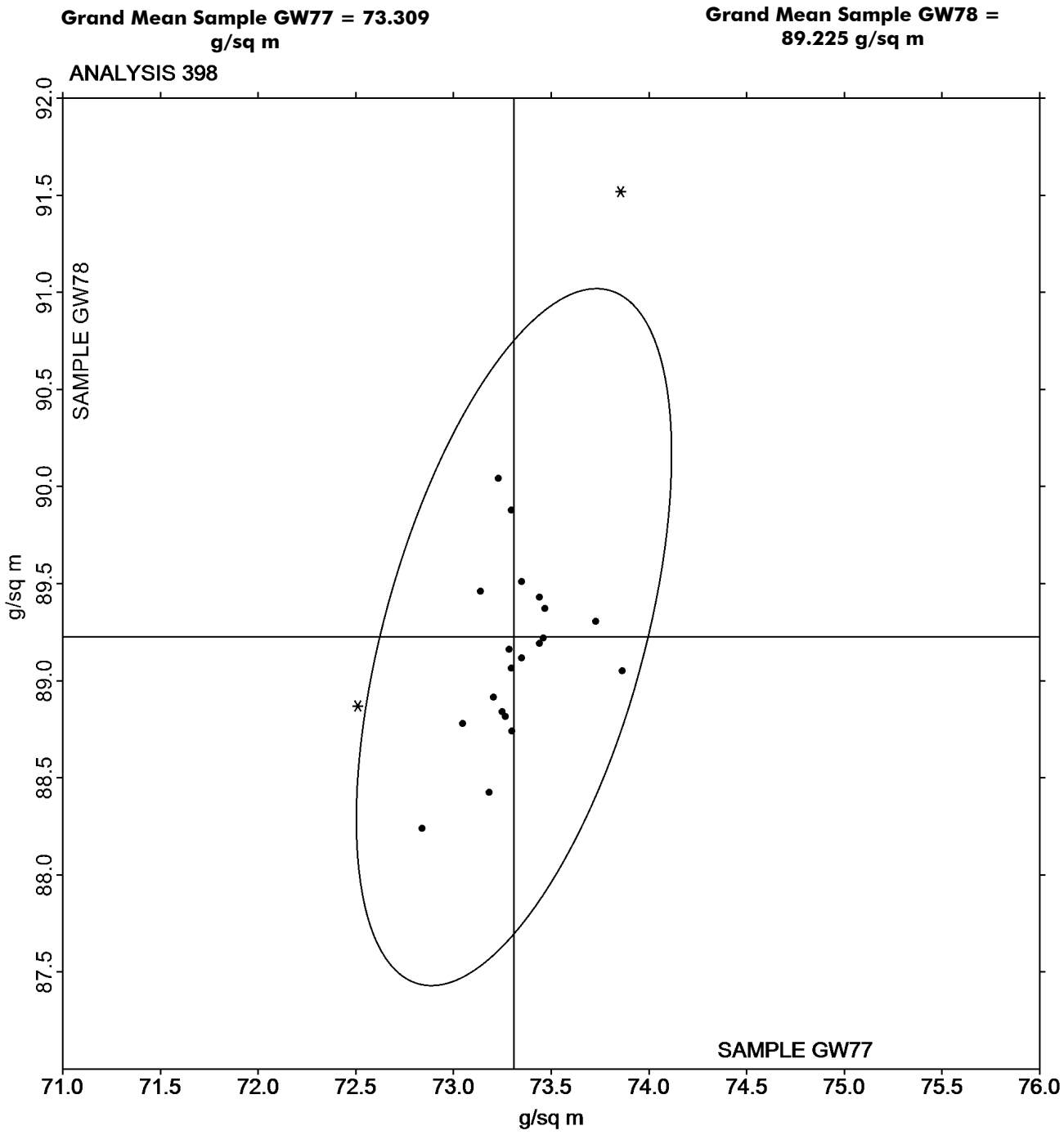
Statistics based on 22 of 23 reporting participants.

Comments on Assigned Data Flags for Test #398

XVRKAP (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



Paper & Paperboard Interlaboratory Testing Program

Analysis 399
Sizing Test (Hercules Type)
TAPPI Official Test Method T530

WebCode	Data Flag	Sample GX77 Lab Mean	Sample GX77 Diff from Grand Mean	Sample GX77 CPV	Sample GX78 Lab Mean	Sample GX78 Diff from Grand Mean	Sample GX78 CPV	Instr Code
2TBZXX		15.68	0.94	0.22	18.02	3.76	0.91	HE
387GMV		21.16	6.42	1.48	18.34	4.08	0.99	HE
4FVRBV		15.87	1.13	0.26	15.31	1.05	0.26	XX
73GBEB		25.70	10.96	2.53	23.78	9.52	2.31	HE
7Q8V97		13.93	-0.81	-0.19	11.22	-3.04	-0.74	HE
7VHCWG		10.41	-4.33	-1.00	10.18	-4.08	-0.99	HE
99HA36		20.35	5.61	1.29	18.30	4.04	0.98	HE
9XXV2N		13.05	-1.69	-0.39	13.03	-1.23	-0.30	HE
BHW37X		19.03	4.29	0.99	14.43	0.17	0.04	HE
FBYY7G		11.81	-2.93	-0.68	11.39	-2.87	-0.70	HE
FHJ3DJ		13.47	-1.27	-0.29	14.60	0.34	0.08	HE
FY8DZL		21.34	6.60	1.52	19.47	5.21	1.27	HE
HQ78BW		17.13	2.39	0.55	15.74	1.48	0.36	XX
HXQQ96		12.93	-1.81	-0.42	12.32	-1.94	-0.47	HE
JW8CPE		20.34	5.60	1.29	18.58	4.32	1.05	HE
KGE2FG		13.57	-1.17	-0.27	13.65	-0.61	-0.15	HE
P7FNXQ		8.91	-5.83	-1.34	7.46	-6.80	-1.65	HE
PNCM9C	*	19.28	4.54	1.05	23.72	9.46	2.30	HE
R429R9		10.40	-4.34	-1.00	11.20	-3.06	-0.74	HE
TCNRJM		13.10	-1.64	-0.38	13.95	-0.31	-0.07	HE
TUB8MJ		17.60	2.86	0.66	19.10	4.84	1.18	HE
UUQG7Q		10.47	-4.27	-0.98	8.75	-5.51	-1.34	HE
VBP4FG		11.27	-3.47	-0.80	11.58	-2.68	-0.65	HE
X6C3A4		10.78	-3.96	-0.91	13.14	-1.12	-0.27	HE
XD72CH		11.81	-2.93	-0.68	13.49	-0.77	-0.19	HE
Y6VZQG		8.44	-6.30	-1.45	8.88	-5.38	-1.31	XX
YHW43F		12.96	-1.78	-0.41	12.91	-1.35	-0.33	HE
YXRLUY		11.62	-3.12	-0.72	10.34	-3.92	-0.95	HE
ZDZWWC		18.30	3.56	0.82	13.70	-0.56	-0.14	HE
ZHVQUD		11.49	-3.25	-0.75	11.16	-3.10	-0.75	HE

Summary Statistics	Sample GX77	Sample GX78
Grand Means	14.74 Seconds	14.26 Seconds
Stnd Dev Btwn Labs	4.34 Seconds	4.11 Seconds

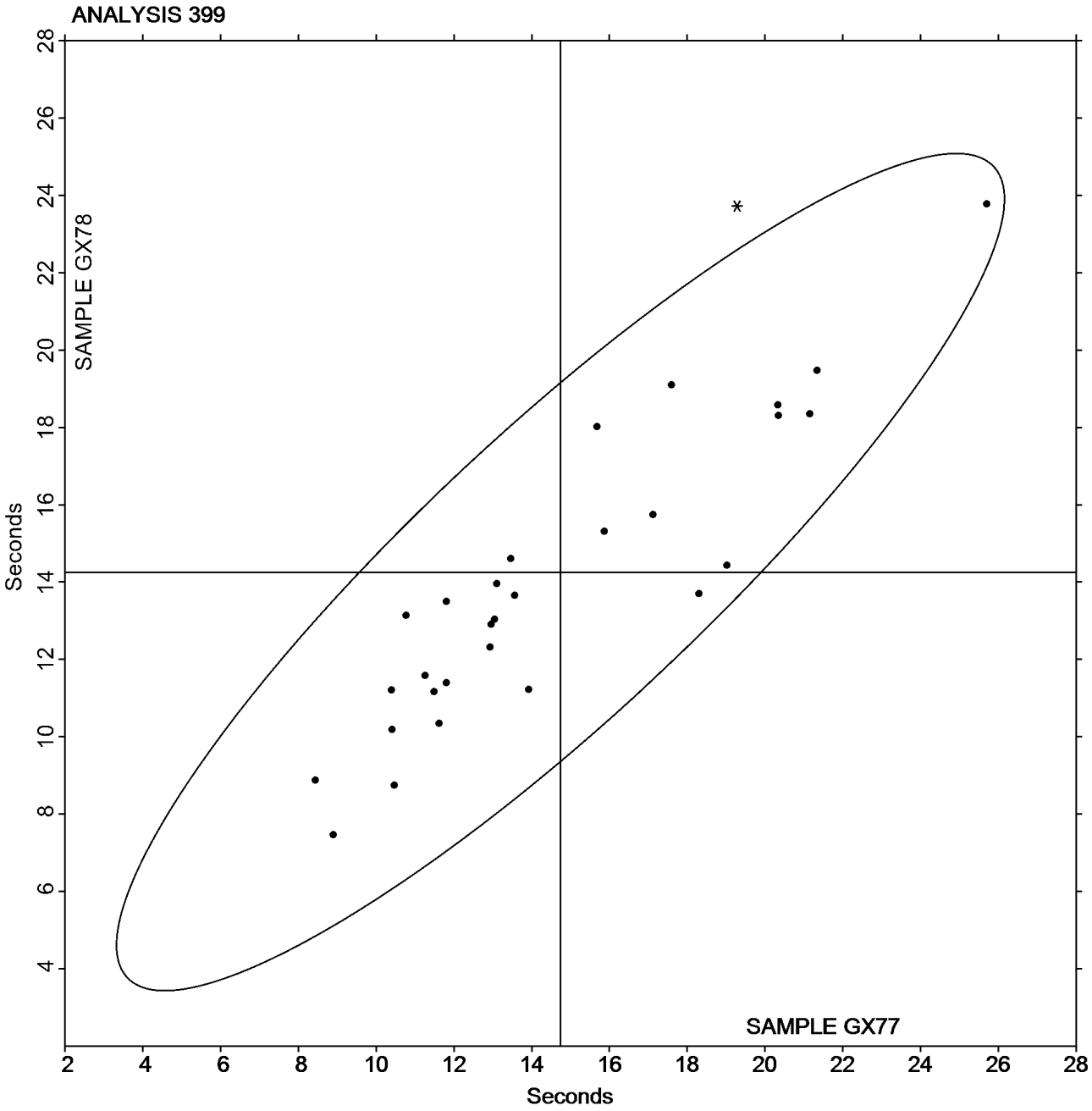
Statistics based on 30 of 30 reporting participants.

Key to Instrument Codes Reported by Participants

HE	Hercules Sizing Tester	XX	Instrument make/model not specified by lab

Grand Mean Sample GX77 = 14.740 Seconds

Grand Mean Sample GX78 = 14.258 Seconds



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