Collaborative Testing Services, Inc.

Paper & Paperboard Testing Program

Summary Report #3112 G - April 2021

Analysis	Analysis Name
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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 L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code
2KY8T6		GA89	94.04	-0.49	1.74	0.10	0.04	0.03	0.11	TS
		GA90	94.14	-0.45	1.77					
6NMTD4		GA89	94.11	-0.64	1.84	-0.04	-0.05	0.05	0.08	HE
		GA90	94.07	-0.69	1.89					
AFUBN9		GA89	95.25	-0.54	2.09	0.03	0.04	-0.02	0.05	TC
		GA90	95.28	-0.50	2.08					
BHJWVQ		GA89	95.21	-0.56	2.27	0.01	0.03	-0.02	0.04	TS
		GA90	95.22	-0.53	2.25					
D9HLDQ		GA89	94.11	-0.17	2.00	0.00	-0.03	0.06	0.06	LA
		GA90	94.10	-0.20	2.06					
DNH7D3		GA89	95.26	-0.54	2.33	0.00	0.02	-0.01	0.03	LS
		GA90	95.26	-0.52	2.32					
GN63VK		GA89	97.07	-1.78	3.50	-0.02	0.05	-0.01	0.05	VM
		GA90	97.04	-1.73	3.50					
GPK3CN	X	GA89	92.53	0.62	2.50	0.14	-0.05	-0.05	0.16 X	XS
		GA90	92.67	0.57	2.44					
HWFLRN		GA89	94.71	-0.38	2.01	0.00	0.00	-0.01	0.01	HE
		GA90	94.71	-0.38	1.99					
JAV8PM		GA89	94.73	-0.42	2.13	-0.02	-0.05	0.01	0.06	HE
		GA90	94.71	-0.48	2.14					
L86FY3		GA89	93.97	-0.50	2.06	0.00	0.00	0.06	0.06	TC
		GA90	93.97	-0.50	2.11					
LWNVE7		GA89	92.77	-0.05	1.61	-0.03	0.02	0.04	0.06	TS
		GA90	92.74	-0.02	1.65					
NEERLQ		GA89	93.98	-0.48	2.03	-0.02	-0.03	0.04	0.06	TC
		GA90	93.95	-0.51	2.07					
QTPDXF	X	GA89	81.90	0.10	-0.10	0.24	-0.02	0.08	0.25 X	TS
		GA90	82.14	0.08	-0.02					
T6FJCV		GA89	92.72	-1.03	0.91	-0.03	0.00	0.02	0.03	HG
		GA90	92.69	-1.03	0.94					
TBHXPK		GA89	95.24	-0.61	2.17	0.01	0.02	-0.02	0.03	LS
		GA90	95.25	-0.59	2.15					

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 L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code
THDVE8		GA89	92.87	-0.38	1.53	-0.09	0.03	-0.04	0.10	TS
		GA90	92.78	-0.35	1.49					
W6JDFK		GA89	95.29	-0.53	2.18	-0.01	0.02	-0.06	0.06	EH
		GA90	95.28	-0.51	2.12					

Summary Statistics

Grand Means							
GA89	94.344	-0.568	2.053	-0.009	0.006	0.007	0.056
GA90	94.345	-0.562	2.057				
Stnd Dev Btwn Labs							
GA89	1.196	0.385	0.523	0.039	0.032	0.036	0.026
GA90	1.193	0.377	0.513				

Statistics based on 16 of 18 reporting participants

Comments on Assigned Data Flags for Test #350

GPK3CN (X) - High "a" values for both samples. High delta "L" and "E" values.

QTPDXF (X) - Extreme data for both "L" values. Low data for both "b" values. Inconsistent within replicate readings of "a" for sample GA89. High delta "L" & "E" values.

Analysis Notes:

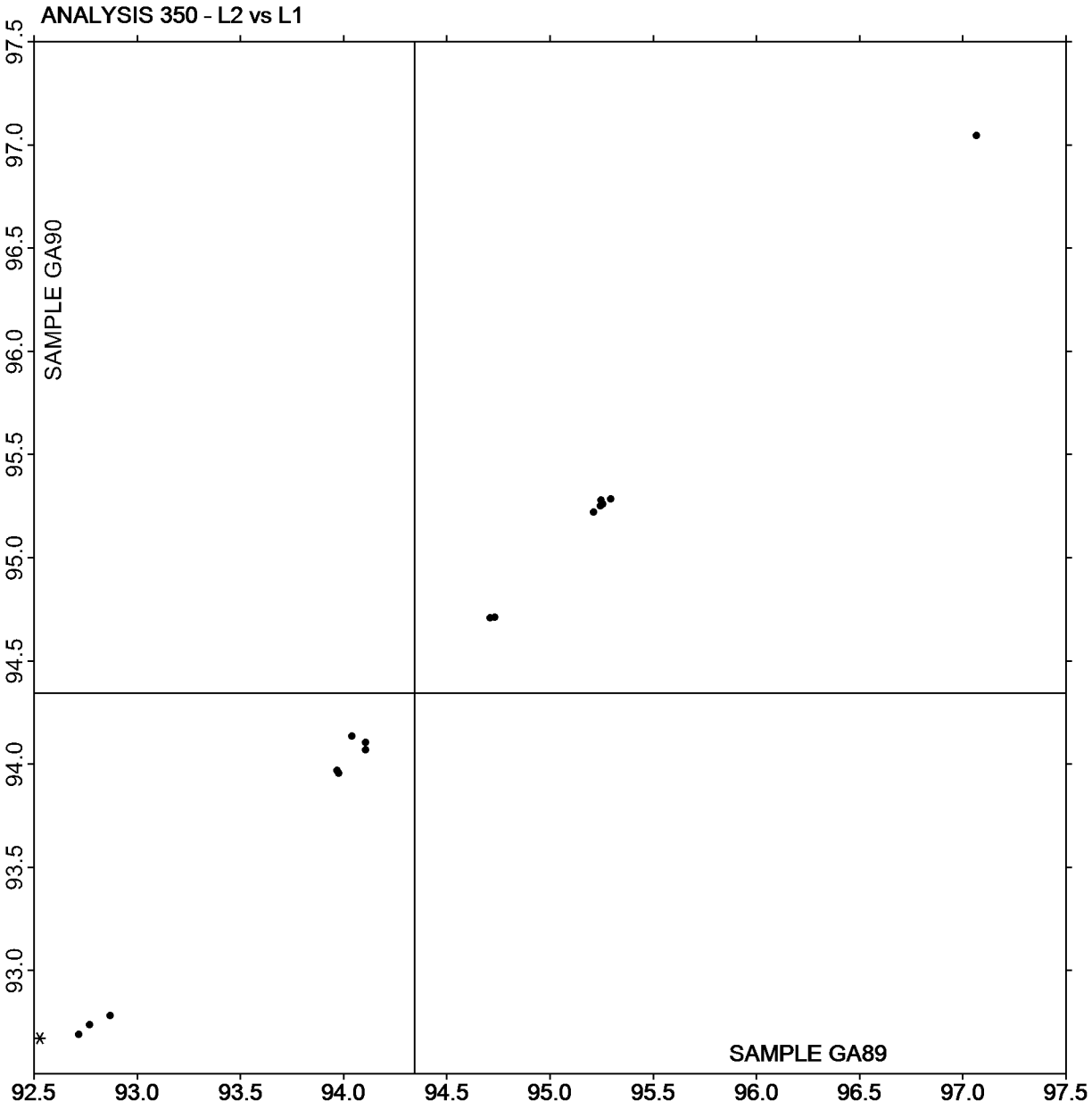
GPK3CN - Due to CTS graphs using Absolute Values, data Flag is located within consensus data. However, "a" data is higher than the negative Grand Mean as shown above graphs.

QTPDXF - 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

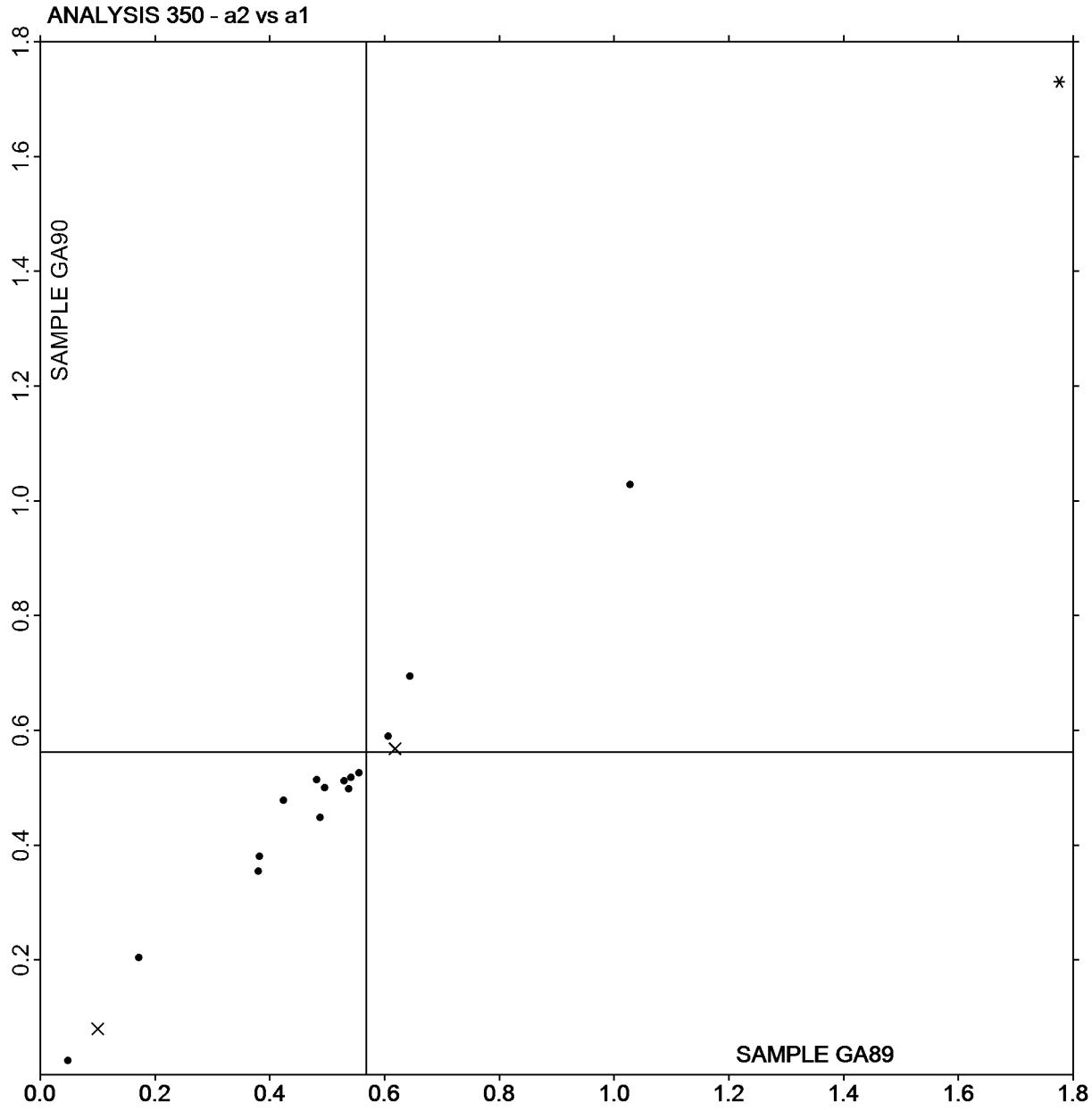
EH	Datacolor Elrepho SF450	HE	Hunter LabScan
HG	Hunter ColorQUEST	LA	L & W Elrepho AL300
LS	L & W Elrepho SE 070	TC	Technidyne Color Touch Series
TS	Technidyne Brightimeter Micro S-5	VM	Valmet PaperLab (was Kajaani/Robotest)
XS	X-Rite 938 Spectrodensitometer		

Plot of L values GA90 vs L values GA89



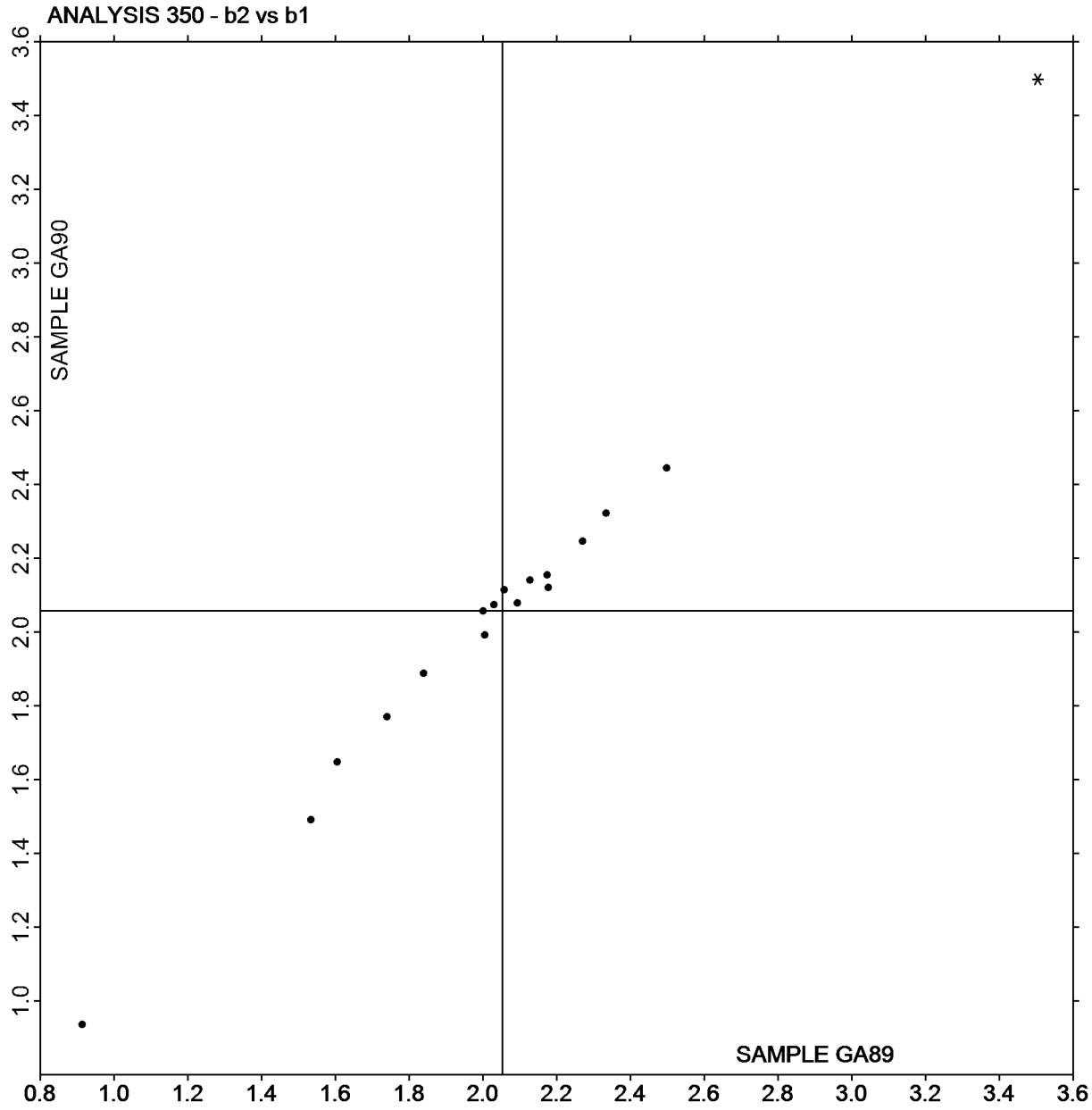
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Plot of a values GA90 vs a values GA89



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 GA90 vs b values GA89



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 #3112 G, April 2021

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
8AHD66		GA89	95.55	-0.66	2.20	0.19	0.00	-0.04	0.20	NG
		GA90	95.75	-0.66	2.16					
AE3BND		GA89	95.80	-0.52	2.16	0.00	0.01	-0.01	0.01	XV
		GA90	95.80	-0.51	2.15					
CBXGMD		GA89	95.44	-0.85	2.28	0.01	0.05	-0.02	0.05	EF
		GA90	95.44	-0.81	2.26					
CLF3R8		GA89	95.31	-0.50	2.10	0.03	0.13	-0.19	0.23	TC
		GA90	95.34	-0.37	1.91					
DNH7D3		GA89	95.28	-0.54	2.33	-0.02	0.00	0.00	0.02	LS
		GA90	95.26	-0.53	2.33					
FK8662		GA89	94.86	-0.37	1.95	-0.01	-0.01	-0.01	0.02	HE
		GA90	94.85	-0.38	1.93					
KC4GGK		GA89	95.38	-0.50	2.32	0.00	0.02	0.01	0.02	HT
		GA90	95.38	-0.48	2.33					
MMRCD3		GA89	95.27	-0.61	2.04	-0.03	-0.01	0.02	0.03	XC
		GA90	95.25	-0.62	2.06					
NEERLQ		GA89	94.59	-0.39	2.08	0.09	0.09	0.13	0.19	HE
		GA90	94.68	-0.30	2.21					
NWVPAW		GA89	93.88	-0.55	2.03	0.04	0.02	0.06	0.07	TC
		GA90	93.92	-0.53	2.09					
QB3RFA		GA89	95.22	-0.53	2.18	0.01	0.00	0.01	0.02	EH
		GA90	95.24	-0.53	2.19					
R2VGLP		GA89	95.24	-0.50	2.20	0.01	0.00	0.01	0.01	LS
		GA90	95.25	-0.50	2.21					
W6JDFK		GA89	95.28	-0.53	2.16	0.00	0.03	-0.07	0.08	EH
		GA90	95.29	-0.50	2.09					
WYEJHH		GA89	95.29	-0.57	2.24	0.00	0.01	0.02	0.03	HT
		GA90	95.30	-0.55	2.26					
YT46TJ	X	GA89	96.36	-0.14	-0.12	0.29	0.03	0.22	0.37 X	XP
		GA90	96.65	-0.11	0.10					
ZY44KK		GA89	94.08	-0.32	1.94	-0.01	0.00	-0.01	0.01	XB
		GA90	94.07	-0.32	1.94					

Summary Statistics

Grand Means							
GA89	95.177	-0.506	2.148	0.022	0.023	-0.005	0.066
GA90	95.215	-0.482	2.143				
Stnd Dev Btwn Labs							
GA89	0.602	0.155	0.122	0.055	0.039	0.068	0.075
GA90	0.644	0.162	0.136				

Statistics based on 15 of 16 reporting participants

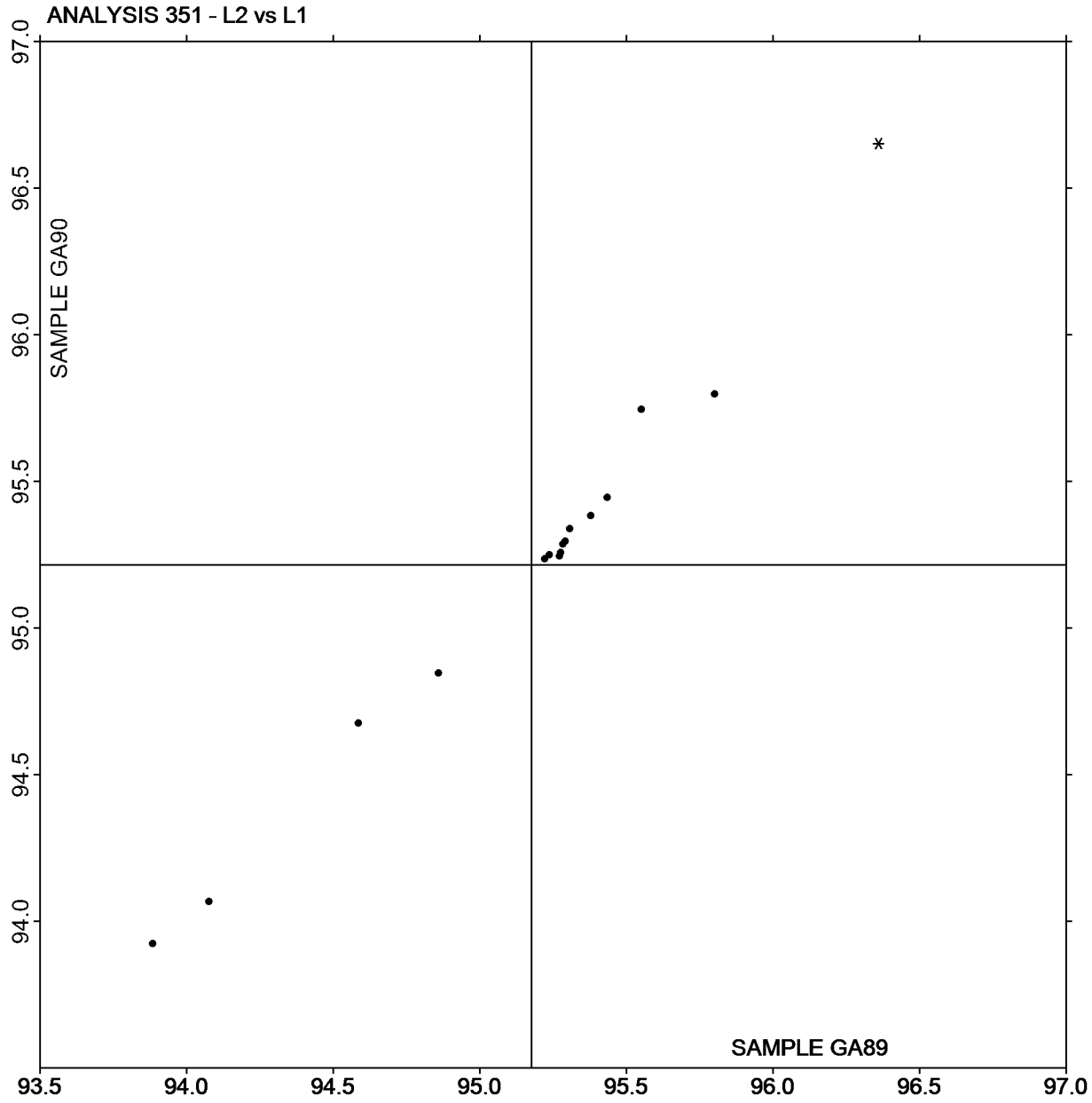
Comments on Assigned Data Flags for Test #351

YT46TJ (X) - Extreme data for both "b" values. Large delta "L", delta "b" and delta "E".

Key to Instrument Codes Reported by Participants

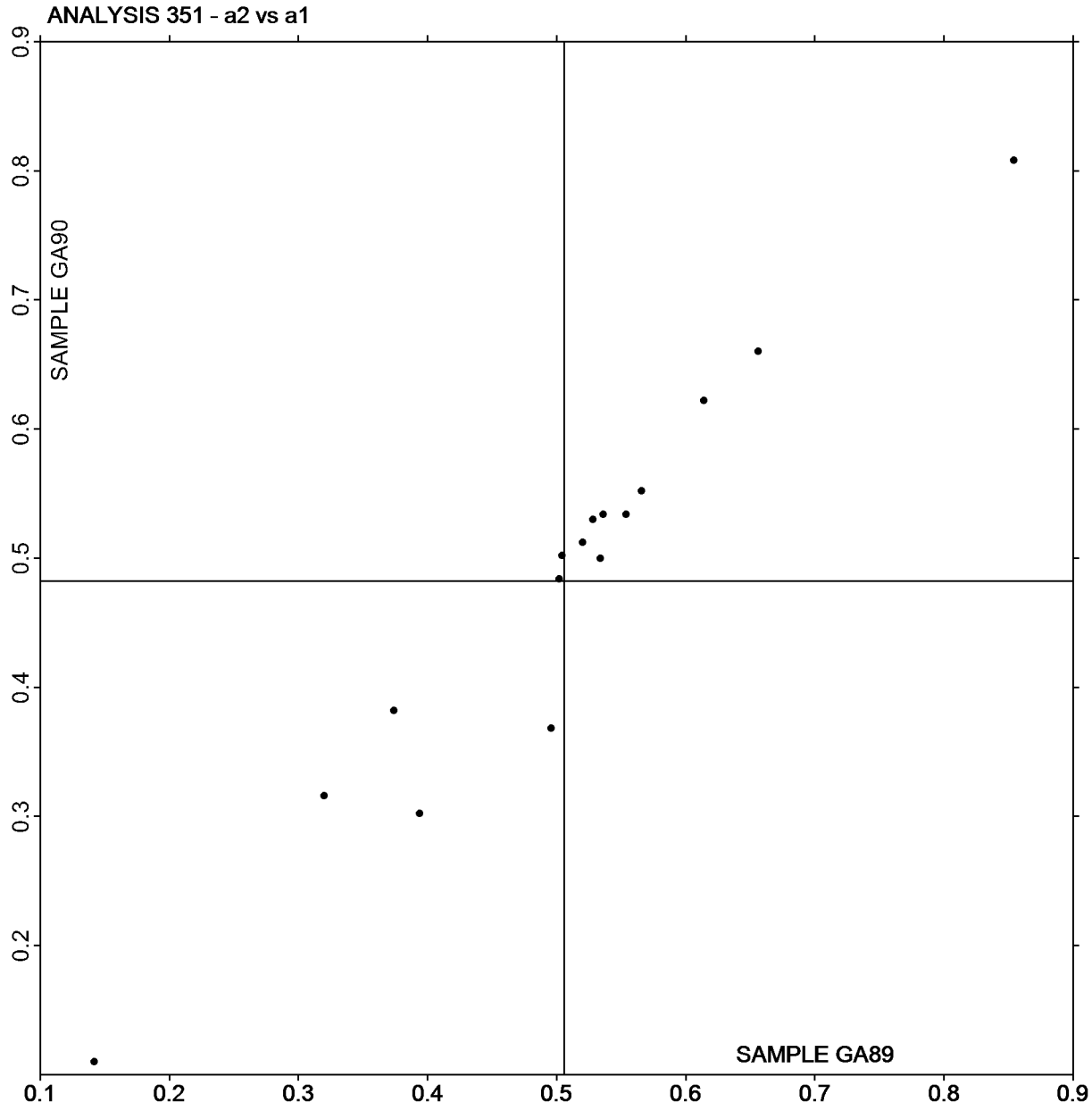
EF	Datacolor Elrepho 3000	EH	Datacolor Elrepho SF450
HE	Hunter LabScan	HT	Hunter UltraScan Vis
LS	L & W Elrepho SE 070	NG	Minolta CM-3700d Spectrophotometer
TC	Technidyne Color Touch Series	XB	X-Rite Ci7
XC	X-Rite eXact Series	XP	X-Rite Spectrophotometer DTP
XV	X-Rite SP60 Series		

Plot of L values GA90 vs L values GA89



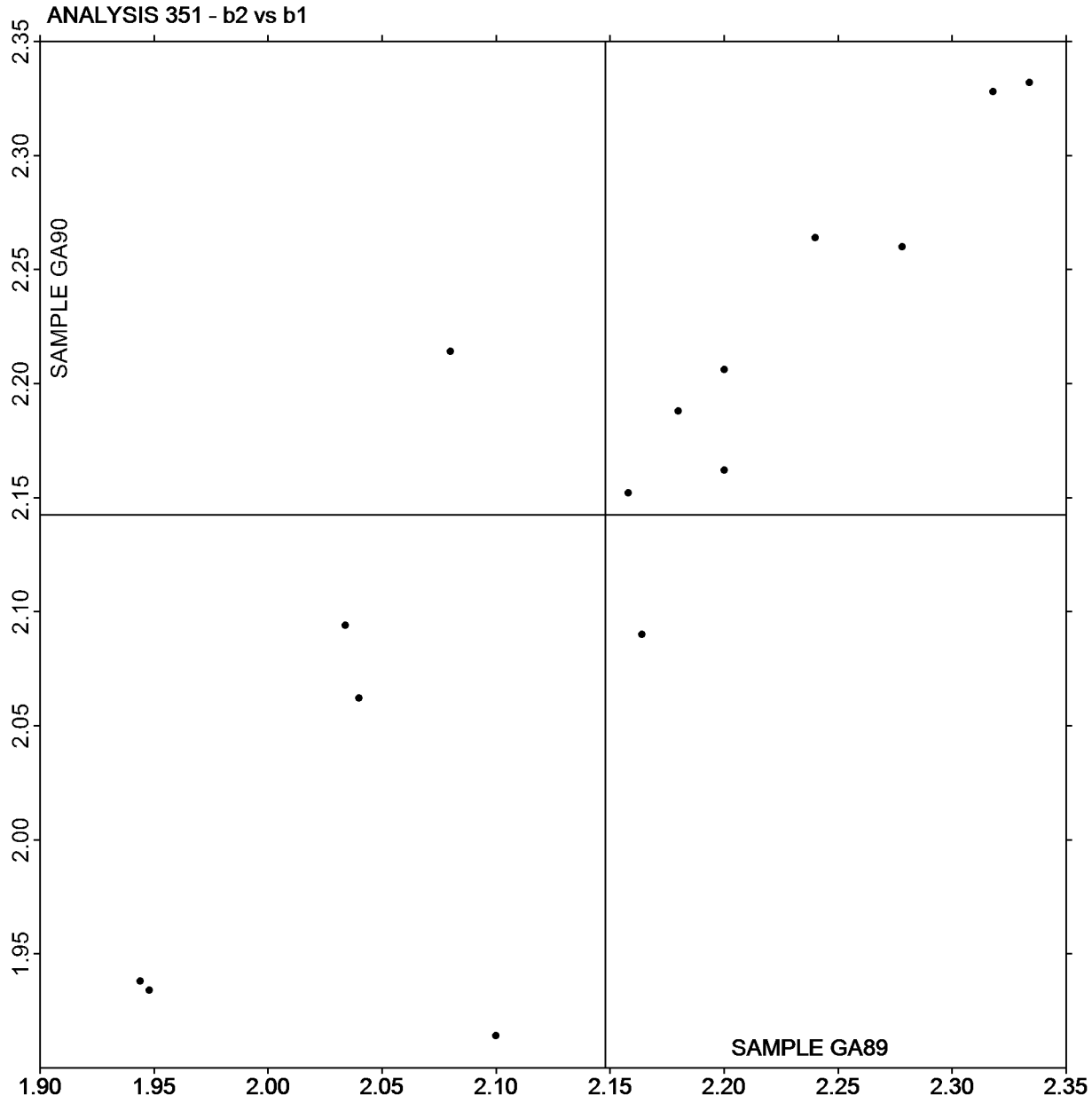
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Plot of a values GA90 vs a values GA89



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 GA90 vs b values GA89



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 GV89 Lab Mean	Sample GV89 Diff from Grand Mean	Sample GV89 CPV	Sample GV90 Lab Mean	Sample GV90 Diff from Grand Mean	Sample GV90 CPV	Instr Code
297LRG		3.891	0.031	0.44	3.828	-0.018	-0.25	MT
2AGP2Y		3.956	0.095	1.37	3.943	0.097	1.36	TM
2KY8T6		3.785	-0.076	-1.09	3.758	-0.088	-1.23	LA
3GR9X3		3.896	0.036	0.52	3.859	0.014	0.20	LW
3RUQDC		3.923	0.062	0.90	3.917	0.071	1.00	EM
6AKGLB		3.748	-0.113	-1.62	3.691	-0.155	-2.17	TA
74XTMY		3.886	0.025	0.36	3.887	0.041	0.58	LW
7QQ6AV		3.852	-0.009	-0.12	3.823	-0.023	-0.32	PP
9C3K6T	*	3.665	-0.196	-2.82	3.628	-0.218	-3.05	LA
AFUBN9		3.857	-0.004	-0.05	3.862	0.016	0.23	LA
APP64F		3.962	0.101	1.46	3.939	0.093	1.31	TA
B6R93C		3.888	0.027	0.40	3.860	0.014	0.20	LA
B8ZJYF		3.901	0.040	0.58	3.888	0.042	0.60	EM
C6N9DW		3.833	-0.028	-0.40	3.785	-0.061	-0.85	TM
CLF3R8		3.945	0.084	1.22	3.929	0.084	1.17	PP
D9HLDQ		3.906	0.045	0.65	3.914	0.068	0.96	EM
FBK2ZM		3.870	0.009	0.14	3.886	0.040	0.57	OK
FK8662		3.878	0.017	0.25	3.884	0.038	0.54	PP
FXGVRA	*	4.049	0.188	2.72	4.026	0.180	2.52	LW
FZNZKX		3.868	0.007	0.11	3.812	-0.034	-0.47	PP
GPK3CN		3.750	-0.111	-1.59	3.760	-0.086	-1.20	TM
H8DM9Y		3.847	-0.014	-0.19	3.802	-0.044	-0.61	TM
HTFFBX		3.818	-0.042	-0.61	3.808	-0.038	-0.53	FR
JVEBAQ		3.889	0.028	0.41	3.878	0.032	0.46	TM
KC4GGK		3.904	0.043	0.63	3.920	0.074	1.04	EM
KPRLPG		3.773	-0.088	-1.26	3.805	-0.041	-0.57	LA
LPJ2CX		3.909	0.049	0.70	3.876	0.030	0.42	LW
LRPGPV		3.748	-0.113	-1.62	3.751	-0.095	-1.33	PP
M9RHYM		3.959	0.099	1.43	3.919	0.074	1.03	LW
MMRCD3		3.850	-0.010	-0.15	3.850	0.005	0.07	LW
NRJ2AZ		3.804	-0.057	-0.81	3.765	-0.081	-1.13	TM
NWVPAW		3.799	-0.062	-0.89	3.778	-0.068	-0.95	PP
NZU4V2		3.830	-0.031	-0.44	3.828	-0.018	-0.25	TM
QB3RFA		3.782	-0.079	-1.13	3.811	-0.035	-0.48	EM
QPP22F		3.885	0.024	0.35	3.859	0.013	0.19	TM
QXFM7R		3.812	-0.048	-0.70	3.805	-0.041	-0.57	LW
RPLUGY		3.917	0.056	0.81	3.892	0.046	0.65	LW
TBHXPK		3.894	0.034	0.48	3.909	0.064	0.89	LW
THDVE8		3.899	0.038	0.55	3.869	0.023	0.33	EM
U4CHJ9		3.914	0.053	0.77	3.915	0.069	0.97	TA
VYW976		3.823	-0.038	-0.54	3.810	-0.036	-0.50	PP

Paper & Paperboard Interlaboratory Testing Program

Analysis 360

Thickness (Caliper), Printing papers

TAPPI Official Test Method T411

WebCode	Data Flag	Sample GV89 Lab Mean	Sample GV89 Diff from Grand Mean	Sample GV89 CPV	Sample GV90 Lab Mean	Sample GV90 Diff from Grand Mean	Sample GV90 CPV	Instr Code
W6JDFK		3.869	0.008	0.12	3.834	-0.012	-0.16	EM
WYEJHH		3.911	0.050	0.73	3.926	0.080	1.12	EM
Y6AHK4		3.817	-0.044	-0.63	3.785	-0.061	-0.85	TA
YFQ8J9		3.843	-0.017	-0.25	3.807	-0.038	-0.53	LW
YT46TJ		3.765	-0.096	-1.38	3.805	-0.041	-0.57	TM
ZY44KK		3.873	0.012	0.18	3.854	0.008	0.12	TM

Summary Statistics	Sample GV89	Sample GV90
Grand Means	3.86 mils	3.85 mils
Stnd Dev Btwn Labs	0.07 mils	0.07 mils

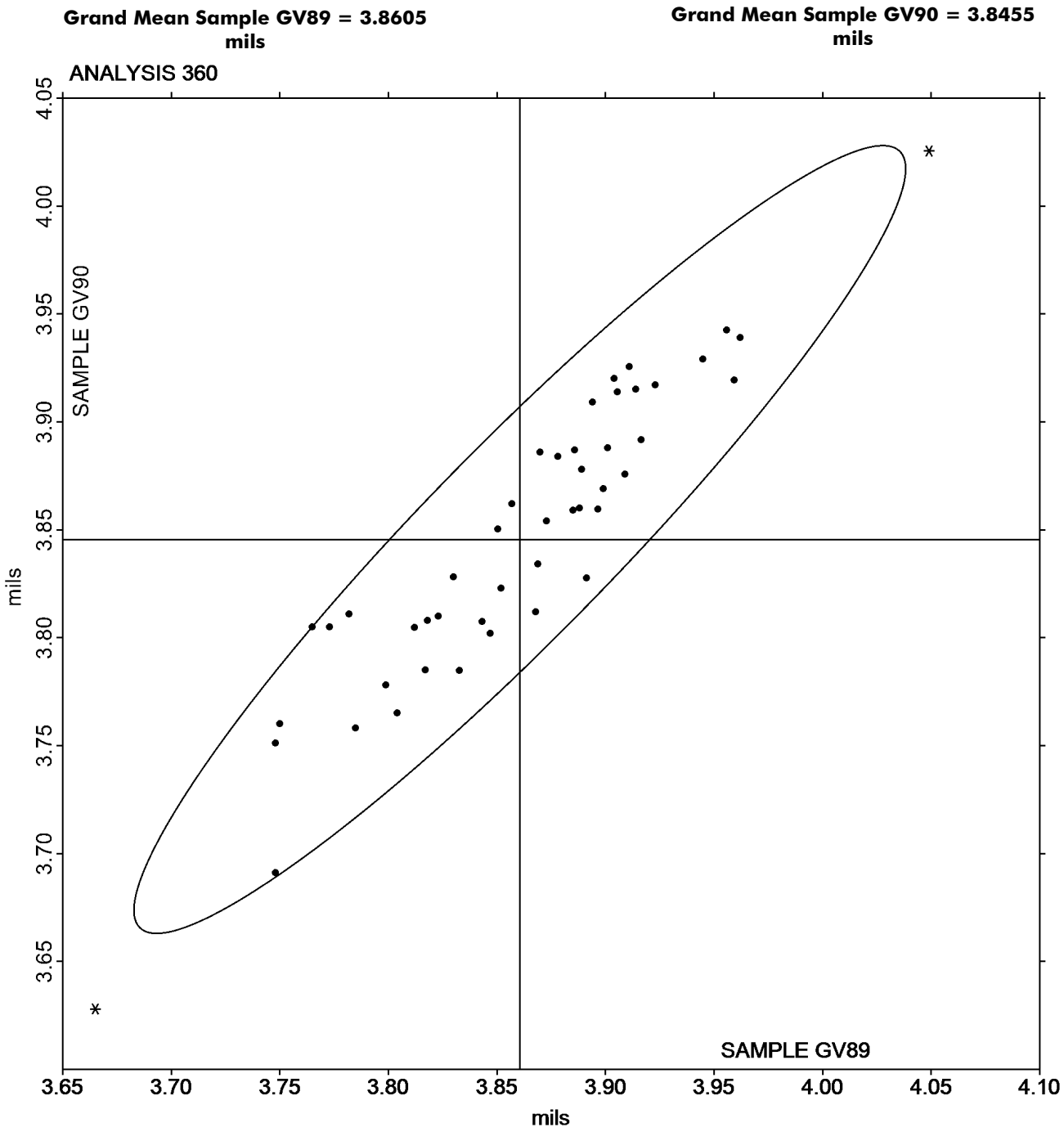
Statistics based on 47 of 47 reporting participants.

Analysis Notes:

WYEJHH - One determination removed from the Lab Mean of Sample GV90 per Grubb's Test at 1% risk (TAPPI 1205).

Key to Instrument Codes Reported by Participants

EM	Emveco	FR	Frank Instruments
LA	L & W Autoline	LW	L & W
MT	Mitutoyo	OK	Oakland
PP	Technidyne Profile/Plus	TA	Thwing-Albert
TM	TMI		



Paper & Paperboard Interlaboratory Testing Program

Analysis 361

Thickness (Caliper), Packaging papers

TAPPI Official Test Method T411

WebCode	Data Flag	Sample GY89 Lab Mean	Sample GY89 Diff from Grand Mean	Sample GY89 CPV	Sample GY90 Lab Mean	Sample GY90 Diff from Grand Mean	Sample GY90 CPV	Instr Code
2BAHWH		7.612	0.062	0.72	9.570	0.036	0.27	LA
3MGQFK		7.559	0.009	0.10	9.567	0.033	0.24	LW
6AKGLB		7.460	-0.090	-1.06	9.431	-0.103	-0.76	TA
6NMTD4		7.502	-0.048	-0.57	9.591	0.057	0.42	EM
78ZR4J		7.578	0.028	0.32	9.505	-0.029	-0.21	LW
9ACJY6		7.460	-0.090	-1.06	9.284	-0.250	-1.86	TM
9C3K6T		7.440	-0.110	-1.30	9.430	-0.104	-0.77	LA
AZKHZ7		7.434	-0.116	-1.37	9.396	-0.138	-1.02	LW
D9HLDQ		7.628	0.078	0.91	9.580	0.046	0.34	EM
DE823X		7.588	0.038	0.44	9.622	0.088	0.65	TM
DNH7D3		7.488	-0.062	-0.73	9.480	-0.054	-0.40	TM
G2BYC2		7.530	-0.020	-0.24	9.510	-0.024	-0.18	TA
GCCCG8		7.519	-0.031	-0.37	9.549	0.015	0.11	LA
GFCNC8		7.555	0.005	0.06	9.525	-0.009	-0.07	LA
GN63VK		7.545	-0.005	-0.06	9.409	-0.125	-0.93	TM
HGLZNH		7.642	0.092	1.08	9.713	0.179	1.33	LW
HWFLRN		7.565	0.015	0.17	9.605	0.071	0.53	EM
JAV8PM		7.614	0.064	0.75	9.668	0.134	0.99	EM
JBQKE2		7.689	0.139	1.63	9.806	0.272	2.02	PP
JCK9WW	X	7.165	-0.385	-4.53	9.129	-0.405	-3.00	LA
JUMBAU		7.660	0.110	1.29	9.720	0.186	1.38	TM
K4QM44		7.612	0.062	0.72	9.493	-0.041	-0.30	LW
KNBMAX		7.453	-0.098	-1.15	9.276	-0.258	-1.92	MM
MHWT6C		7.460	-0.090	-1.06	9.390	-0.144	-1.07	TM
NEERLQ		7.570	0.020	0.23	9.671	0.137	1.02	EM
PL7PNJ		7.532	-0.019	-0.22	9.661	0.127	0.95	LW
QB3RFA		7.416	-0.134	-1.58	9.345	-0.189	-1.40	EM
QTPDXF		7.452	-0.098	-1.16	9.355	-0.179	-1.33	OK
R2VGLP		7.537	-0.013	-0.16	9.428	-0.106	-0.79	LW
RMYZWR		7.410	-0.140	-1.65	9.424	-0.110	-0.82	TM
RPLUGY		7.575	0.024	0.29	9.555	0.021	0.16	LW
RUFVE8		7.506	-0.044	-0.52	9.492	-0.042	-0.32	LW
RYAQHZ		7.518	-0.032	-0.38	9.442	-0.092	-0.68	LW
U4CHJ9		7.629	0.079	0.92	9.605	0.071	0.53	TA
VJ8Z98		7.701	0.151	1.77	9.735	0.201	1.49	LW
WXYENQ		7.751	0.201	2.36	9.762	0.228	1.69	LA
YY6L24		7.624	0.073	0.86	9.631	0.097	0.72	LW

Summary Statistics	Sample GY89	Sample GY90
Grand Means	7.55 mils	9.53 mils
Stnd Dev Btwn Labs	0.09 mils	0.13 mils

Statistics based on 36 of 37 reporting participants.

Comments on Assigned Data Flags for Test #361

JCK9WW (X) - Data for both samples are low.

Analysis Notes:

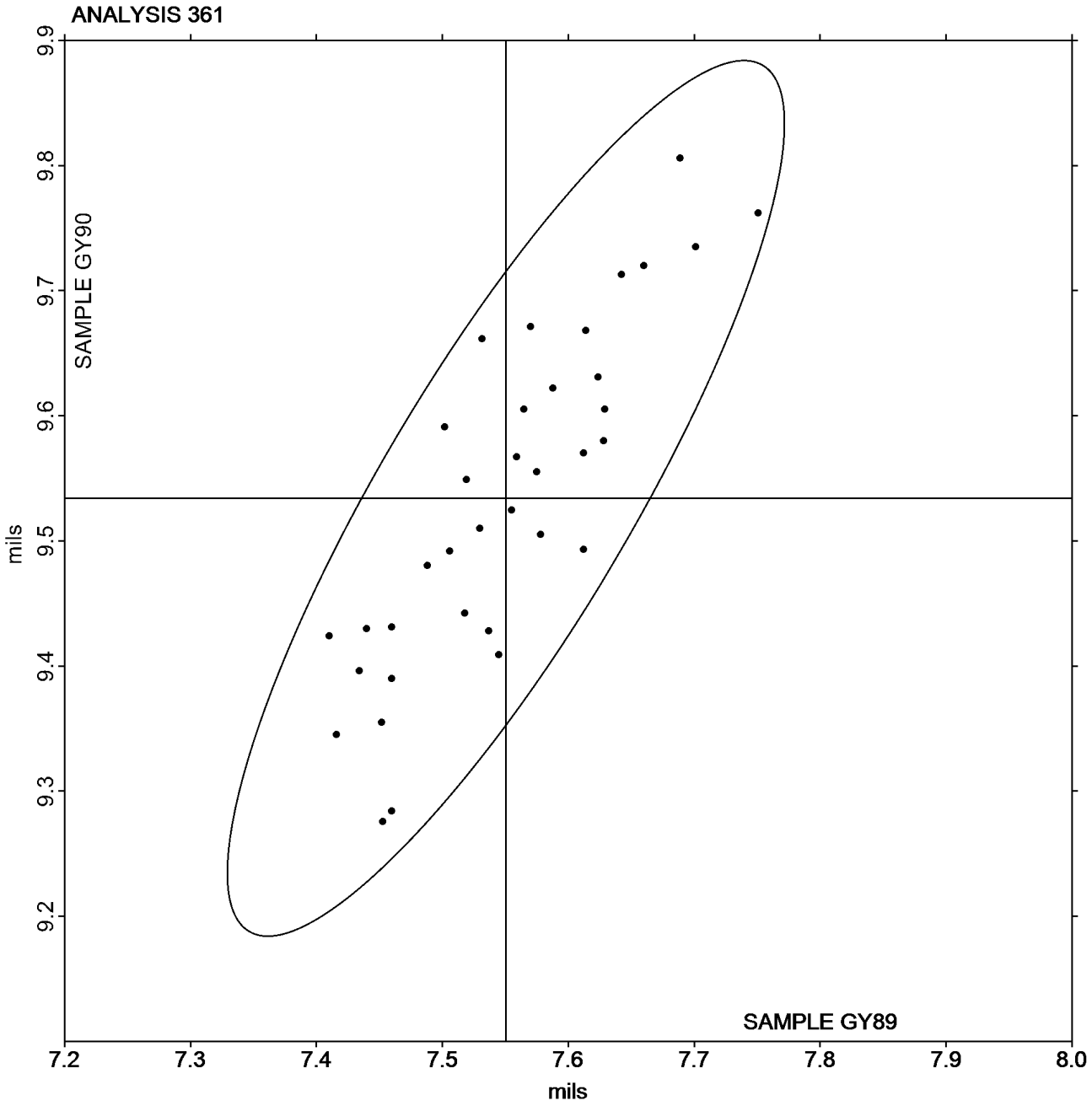
DNH7D3 - Data appear to be reported as micrometers, not mils as indicated on data entry form. CTS will not correct the Units going forward.

Key to Instrument Codes Reported by Participants

EM	Emveco	LA	L & W Autoline
LW	L & W	MM	Mitutoyo Digital Micrometer
OK	Oakland	PP	Technidyne Profile/Plus
TA	Thwing-Albert	TM	TMI

Grand Mean Sample GY89 = 7.5504 mils

Grand Mean Sample GY90 = 9.5341 mils



Paper & Paperboard Interlaboratory Testing Program

Analysis 364

Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

TAPPI Official Test Method T549

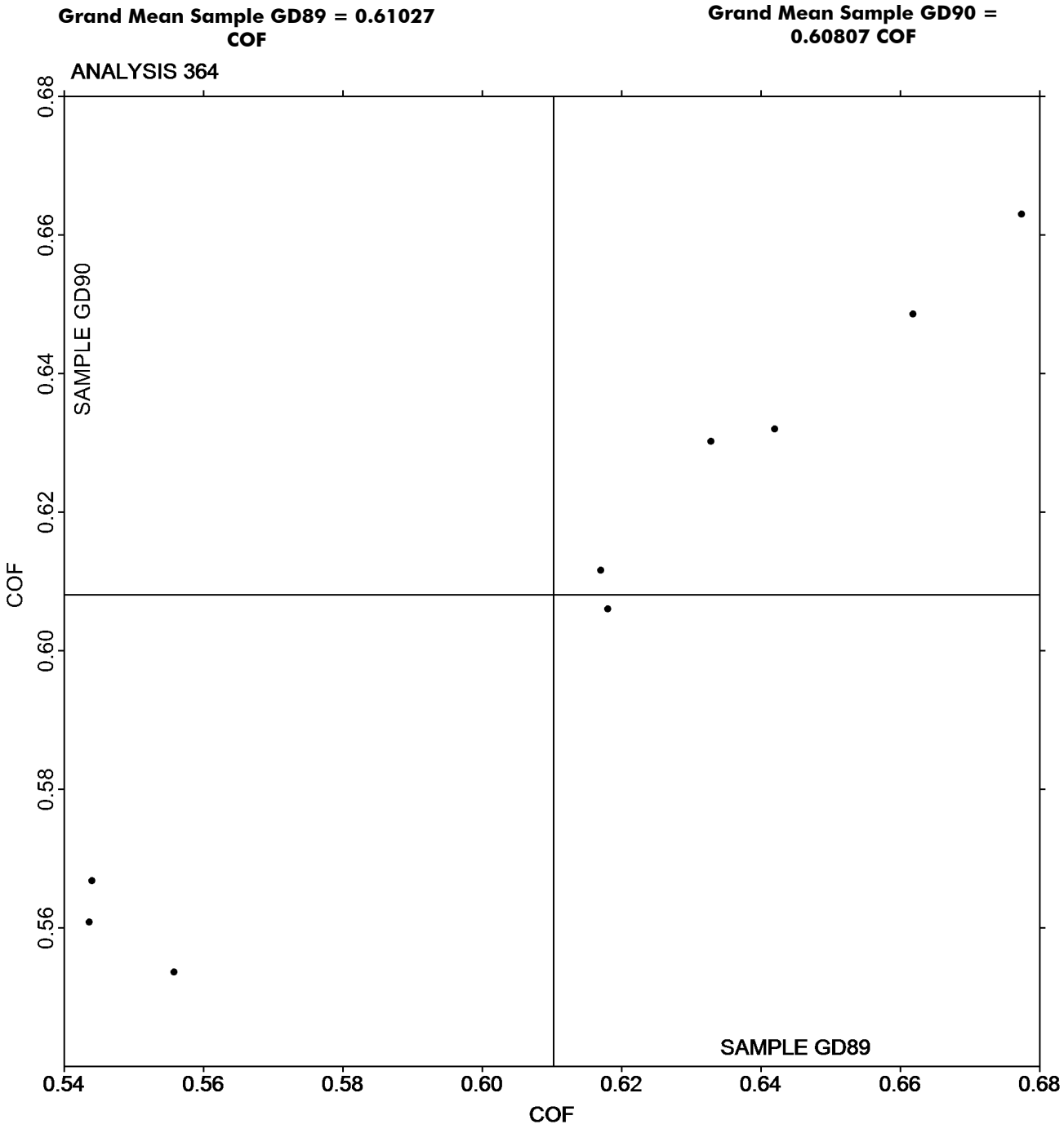
WebCode	Data Flag	Sample GD89 Lab Mean	Sample GD89 Diff from Grand Mean	Sample GD89 CPV	Sample GD90 Lab Mean	Sample GD90 Diff from Grand Mean	Sample GD90 CPV	Instr Code
B8ZJYF		0.6420	0.0317	0.63	0.6320	0.0239	0.60	TA
FK8662		0.6180	0.0077	0.15	0.6060	-0.0021	-0.05	TA
GPK3CN		0.5436	-0.0667	-1.31	0.5608	-0.0473	-1.19	XX
JCK9WW		0.5440	-0.0663	-1.31	0.5668	-0.0413	-1.04	TA
K8N2VY		0.5558	-0.0545	-1.07	0.5536	-0.0545	-1.37	IT
LWNVE7		0.6328	0.0225	0.44	0.6302	0.0221	0.56	TA
THDVE8		0.6618	0.0515	1.02	0.6486	0.0405	1.02	TA
VJ8Z98		0.6170	0.0067	0.13	0.6116	0.0035	0.09	TA
WFGFF9		0.6774	0.0671	1.32	0.6630	0.0549	1.38	TA

Summary Statistics	Sample GD89	Sample GD90
Grand Means	0.61 COF	0.61 COF
Stnd Dev Btwn Labs	0.05 COF	0.04 COF

Statistics based on 9 of 9 reporting participants.

Key to Instrument Codes Reported by Participants

IT	IMASS SP-2100	TA	Thwing-Albert Friction Tester
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

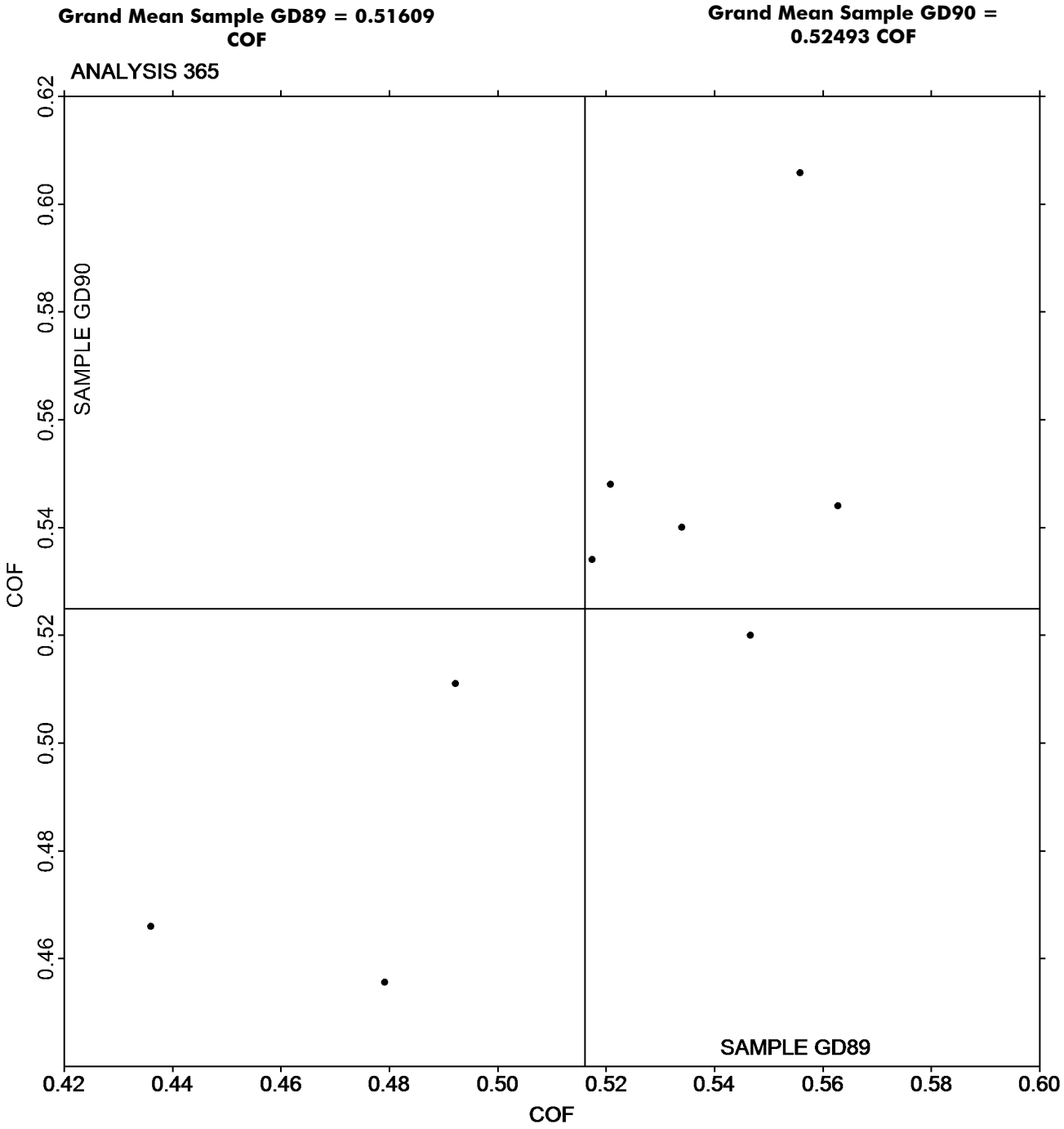
WebCode	Data Flag	Sample GD89 Lab Mean	Sample GD89 Diff from Grand Mean	Sample GD89 CPV	Sample GD90 Lab Mean	Sample GD90 Diff from Grand Mean	Sample GD90 CPV	Instr Code
B8ZJYF		0.5340	0.0179	0.44	0.5400	0.0151	0.33	XX
FK8662		0.4360	-0.0801	-1.96	0.4660	-0.0589	-1.31	TA
GPK3CN		0.5174	0.0013	0.03	0.5340	0.0091	0.20	XX
JCK9WW		0.4922	-0.0239	-0.58	0.5110	-0.0139	-0.31	TA
K8N2VY		0.4792	-0.0369	-0.90	0.4556	-0.0693	-1.54	IR
LWNVE7		0.5558	0.0397	0.97	0.6058	0.0809	1.79	TA
THDVE8		0.5466	0.0305	0.75	0.5200	-0.0049	-0.11	TA
VJ8Z98		0.5628	0.0467	1.14	0.5440	0.0191	0.42	TN
WFGFF9		0.5208	0.0047	0.12	0.5480	0.0231	0.51	TA

Summary Statistics	Sample GD89	Sample GD90
Grand Means	0.52 COF	0.52 COF
Stnd Dev Btwn Labs	0.04 COF	0.05 COF

Statistics based on 9 of 9 reporting participants.

Key to Instrument Codes Reported by Participants

IR	IMASS SP-2000	TA	Thwing-Albert Friction Tester
TN	TMI 32-07 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 370

Air Resistance - Gurley Oil Type

TAPPI Official Test Method T460

WebCode	Data Flag	Sample GE89 Lab Mean	Sample GE89 Diff from Grand Mean	Sample GE89 CPV	Sample GE90 Lab Mean	Sample GE90 Diff from Grand Mean	Sample GE90 CPV	Instr Code
2AGP2Y		13.73	-0.17	-0.26	13.99	0.11	0.17	LP
2KY8T6		14.20	0.30	0.46	13.87	-0.01	-0.02	LA
392QLF		14.81	0.91	1.38	14.49	0.61	0.96	PP
3MGQFK		12.96	-0.94	-1.42	12.91	-0.97	-1.54	LP
3RUQDC		13.40	-0.50	-0.76	13.09	-0.79	-1.25	PP
63MPGN		13.82	-0.08	-0.12	13.74	-0.14	-0.23	LP
78ZR4J		14.12	0.22	0.34	14.05	0.17	0.27	LW
7QQ6AV		14.70	0.80	1.21	14.80	0.92	1.46	PP
AZKHZ7		14.75	0.85	1.29	14.60	0.72	1.14	TL
B8ZJYF		13.79	-0.11	-0.17	13.94	0.06	0.10	PP
C9NEUM		13.56	-0.34	-0.51	13.85	-0.03	-0.05	TL
CBXGMD		14.30	0.40	0.61	14.67	0.79	1.25	LP
CLF3R8		15.00	1.10	1.67	14.72	0.83	1.32	PP
EFJVM4		14.06	0.16	0.24	13.69	-0.19	-0.31	PP
EKER64		14.81	0.91	1.38	14.53	0.65	1.03	XX
FK8662		13.50	-0.40	-0.61	13.19	-0.70	-1.11	PP
FP87DB		14.96	1.06	1.61	14.87	0.99	1.57	TM
FZNZKX		13.31	-0.59	-0.90	14.00	0.12	0.19	PP
GFCNC8		14.20	0.30	0.46	14.17	0.28	0.45	LA
GN63VK		14.21	0.31	0.47	14.06	0.18	0.28	VM
GPK3CN	*	14.70	0.80	1.21	13.90	0.02	0.03	GS
H8DM9Y		13.11	-0.79	-1.20	13.33	-0.55	-0.88	GG
HGLZNH	X	10.97	-2.93	-4.44	10.38	-3.50	-5.55	HM
JCK9WW		13.84	-0.06	-0.09	14.00	0.12	0.19	LA
JVEBAQ		13.91	0.01	0.02	14.35	0.47	0.74	HG
K4QM44		13.97	0.07	0.11	13.76	-0.12	-0.19	LP
KC4GGK		13.62	-0.28	-0.42	13.54	-0.34	-0.54	PP
KPRLPG	*	15.75	1.85	2.81	15.80	1.92	3.04	LA
LPJ2CX		12.81	-1.09	-1.65	12.97	-0.91	-1.45	LP
LRPGPV	X	0.62	-13.28	-20.14	0.62	-13.26	-21.03	HG
M9RHYM		14.22	0.32	0.49	13.78	-0.10	-0.16	LP
MHWT6C		13.50	-0.40	-0.61	13.58	-0.30	-0.48	TL
MMRCD3		13.40	-0.50	-0.76	13.90	0.02	0.03	LW
NEERLQ		13.52	-0.38	-0.57	13.87	-0.02	-0.02	PP
NWVPAW		13.43	-0.47	-0.71	13.14	-0.74	-1.17	PP
RKBNY8		12.99	-0.91	-1.38	12.81	-1.07	-1.70	LP
RPLUGY		13.25	-0.65	-0.98	13.57	-0.31	-0.50	PP
RUFVE8	X	10.90	-3.00	-4.55	10.73	-3.15	-5.00	HM
RXZJHR		14.04	0.14	0.21	13.59	-0.29	-0.46	GL
RYAQHZ	*	12.40	-1.50	-2.27	12.12	-1.76	-2.80	WG
TBHXPK		13.68	-0.22	-0.33	13.53	-0.35	-0.56	LP

Paper & Paperboard Interlaboratory Testing Program

Analysis 370

Air Resistance - Gurley Oil Type

TAPPI Official Test Method T460

WebCode	Data Flag	Sample GE89 Lab Mean	Sample GE89 Diff from Grand Mean	Sample GE89 CPV	Sample GE90 Lab Mean	Sample GE90 Diff from Grand Mean	Sample GE90 CPV	Instr Code
U4CHJ9		13.45	-0.45	-0.68	13.71	-0.17	-0.27	PP
W6JDFK		13.14	-0.76	-1.16	13.70	-0.19	-0.30	PP
WFGFF9		14.16	0.26	0.40	14.04	0.16	0.25	WG
WXYENQ	X	10.30	-3.60	-5.46	10.11	-3.77	-5.98	LA
WYEJHH		14.20	0.30	0.46	14.26	0.38	0.60	HG
XQWMYU		14.15	0.25	0.38	14.20	0.32	0.50	TL
Y6AHK4		13.97	0.07	0.11	14.09	0.21	0.33	GA
ZY44KK		14.07	0.17	0.25	13.94	0.06	0.09	PP

Summary Statistics	Sample GE89	Sample GE90
Grand Means	13.90 sec/100 cc	13.88 sec/100 cc
Stnd Dev Btwn Labs	0.66 sec/100 cc	0.63 sec/100 cc

Statistics based on 45 of 49 reporting participants.

Comments on Assigned Data Flags for Test #370

RUFVE8 (X) - Data for both samples are low. Possible Systematic Error.

HGLZNH (X) - Data for both samples are low. Possible Systematic Error.

LRPGPV (X) - Extreme Data.

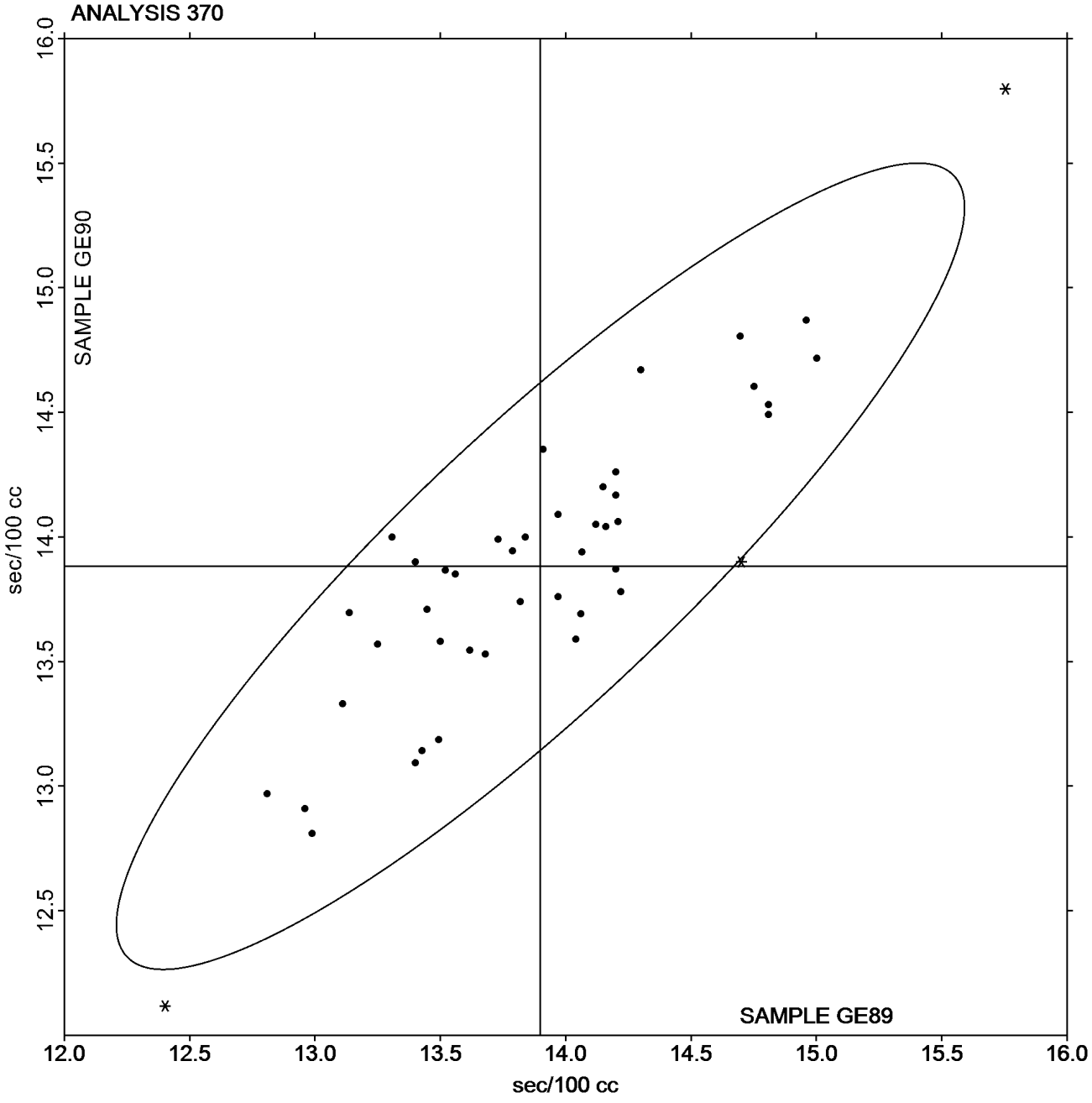
WXYENQ (X) - Data for both samples are low. Possible Systematic Error.

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	GG	Gurley Precision Model #4320
GL	Gurley #4110	GS	Gurley-Hill S-P-S Tester #4190
HG	Technidyne - Hagerty Model #1	HM	Technidyne - Hagerty Model #538
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	TM	TMI Densometer 58-03
VM	Valmet PaperLab (was Kajaani/Robotest)	WG	W & LE Gurley Tester
XX	Instrument make/model not specified by lab		

Grand Mean Sample GE89 = 13.899 sec/100 cc

Grand Mean Sample GE90 = 13.882 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 GE89 Lab Mean	Sample GE89 Diff from Grand Mean	Sample GE89 CPV	Sample GE90 Lab Mean	Sample GE90 Diff from Grand Mean	Sample GE90 CPV	Instr Code
APP64F		198.4	8.8	0.85	195.8	6.4	0.62	HM
FBK2ZM		204.1	14.5	1.40	200.8	11.4	1.10	LA
GN63VK		187.7	-1.8	-0.18	193.2	3.8	0.37	PP
GPK3CN		171.1	-18.5	-1.77	168.1	-21.3	-2.05	SH
NWVPAW		187.9	-1.7	-0.16	190.0	0.6	0.06	PP
NZU4V2	X	108.2	-81.4	-7.81	108.5	-80.9	-7.79	LP
QPP22F		191.5	1.9	0.19	190.5	1.1	0.11	SH
U4CHJ9		186.2	-3.4	-0.32	187.1	-2.3	-0.22	PP

Summary Statistics	Sample GE89	Sample GE90
Grand Means	189.55 Sheffield Units	189.35 Sheffield Units
Stnd Dev Btwn Labs	10.42 Sheffield Units	10.37 Sheffield Units

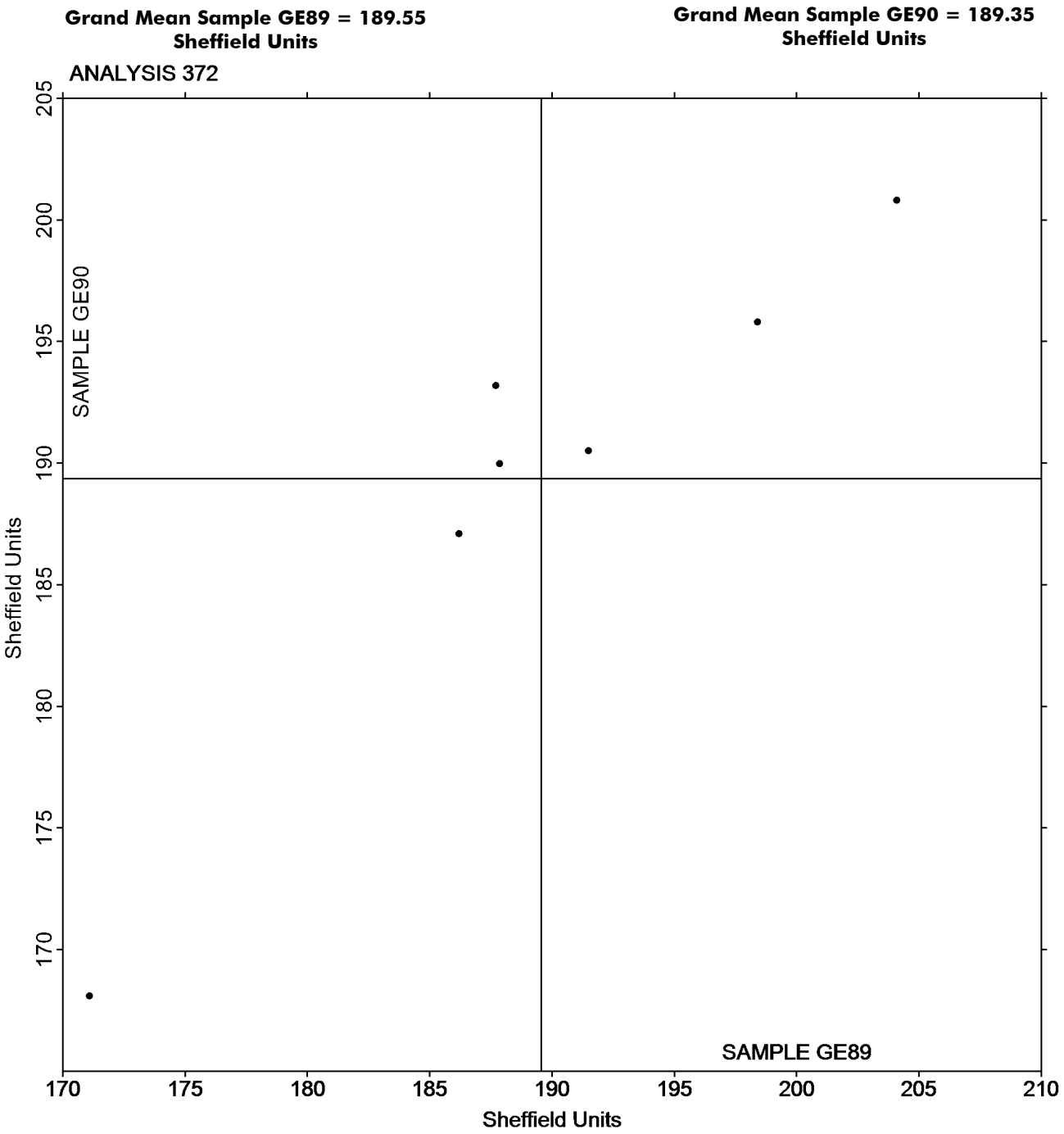
Statistics based on 7 of 8 reporting participants.

Comments on Assigned Data Flags for Test #372

NZU4V2 (X) - Extreme Data.

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		



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 GJ89 Lab Mean	Sample GJ89 Diff from Grand Mean	Sample GJ89 CPV	Sample GJ90 Lab Mean	Sample GJ90 Diff from Grand Mean	Sample GJ90 CPV	Instr Code
2BAHWH		1.1530	0.1957	1.57	1.0850	0.1370	0.98	ZZ
3GR9X3		1.1170	0.1597	1.28	1.1180	0.1700	1.21	ZZ
3RUQDC		0.9750	0.0177	0.14	1.0320	0.0840	0.60	ZZ
6NMTD4		0.9110	-0.0463	-0.37	0.9550	0.0070	0.05	ZZ
9C3K6T		0.7740	-0.1833	-1.47	0.7300	-0.2180	-1.55	ZZ
9ZQC78		0.8930	-0.0643	-0.51	0.9470	-0.0010	-0.01	ZZ
AFUBN9		0.9710	0.0137	0.11	0.9970	0.0490	0.35	ZZ
B6R93C		0.8480	-0.1093	-0.87	0.9150	-0.0330	-0.24	ZZ
DNH7D3		0.9920	0.0347	0.28	0.9000	-0.0480	-0.34	ZZ
EAVD32		0.7050	-0.2523	-2.02	0.6190	-0.3290	-2.34	ZZ
EFYE72		0.9590	0.0017	0.01	0.9520	0.0040	0.03	ZZ
FK8662		1.0240	0.0667	0.53	0.9210	-0.0270	-0.19	ZZ
FXGVRA		0.8600	-0.0973	-0.78	0.8850	-0.0630	-0.45	ZZ
GN63VK		0.9690	0.0117	0.09	0.9090	-0.0390	-0.28	ZZ
HWFLRN		0.9450	-0.0123	-0.10	0.9880	0.0400	0.28	ZZ
JAV8PM		0.8580	-0.0993	-0.79	0.9240	-0.0240	-0.17	ZZ
L86FY3		1.0280	0.0707	0.57	0.9360	-0.0120	-0.09	ZZ
LRPGPV		0.9560	-0.0013	-0.01	0.9320	-0.0160	-0.11	ZZ
LWNVE7		0.8820	-0.0753	-0.60	0.8910	-0.0570	-0.41	ZZ
NEERLQ	*	1.3050	0.3478	2.78	1.4070	0.4590	3.27	ZZ
NWVPAW		0.9880	0.0308	0.25	0.9630	0.0150	0.11	ZZ
PL9C6X		0.9250	-0.0323	-0.26	0.9100	-0.0380	-0.27	ZZ
QB3RFA		0.7760	-0.1813	-1.45	0.7420	-0.2060	-1.47	ZZ
QTPDXF		0.9090	-0.0483	-0.39	0.9850	0.0370	0.26	ZZ
R2VGLP		1.0050	0.0477	0.38	0.8970	-0.0510	-0.36	ZZ
VYW976		1.0670	0.1097	0.88	1.0850	0.1370	0.98	ZZ
W6JDFK		0.8820	-0.0753	-0.60	0.8450	-0.1030	-0.73	ZZ
WFGFF9		1.1260	0.1688	1.35	1.0740	0.1260	0.90	ZZ

Summary Statistics	Sample GJ89	Sample GJ90
Grand Means	0.96 Microns	0.95 Microns
Stnd Dev Btwn Labs	0.13 Microns	0.14 Microns

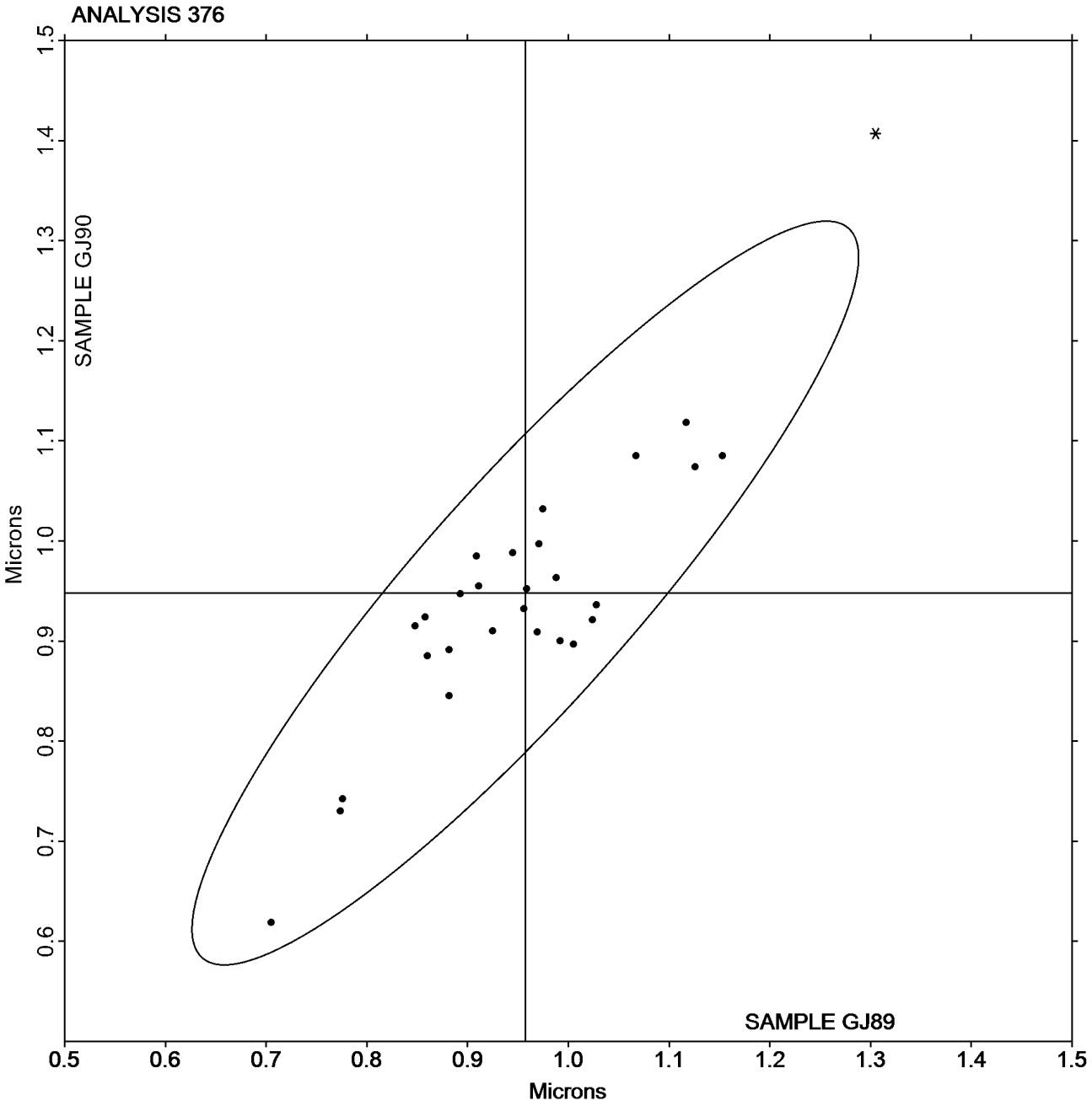
Statistics based on 28 of 28 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Grand Mean Sample GJ89 = 0.95725 Microns

Grand Mean Sample GJ90 = 0.94800 Microns



Paper & Paperboard Interlaboratory Testing Program

Analysis 377

Roughness - Print Surf Method - 2.5 to 6.0 Microns

TAPPI Official Test Method T555

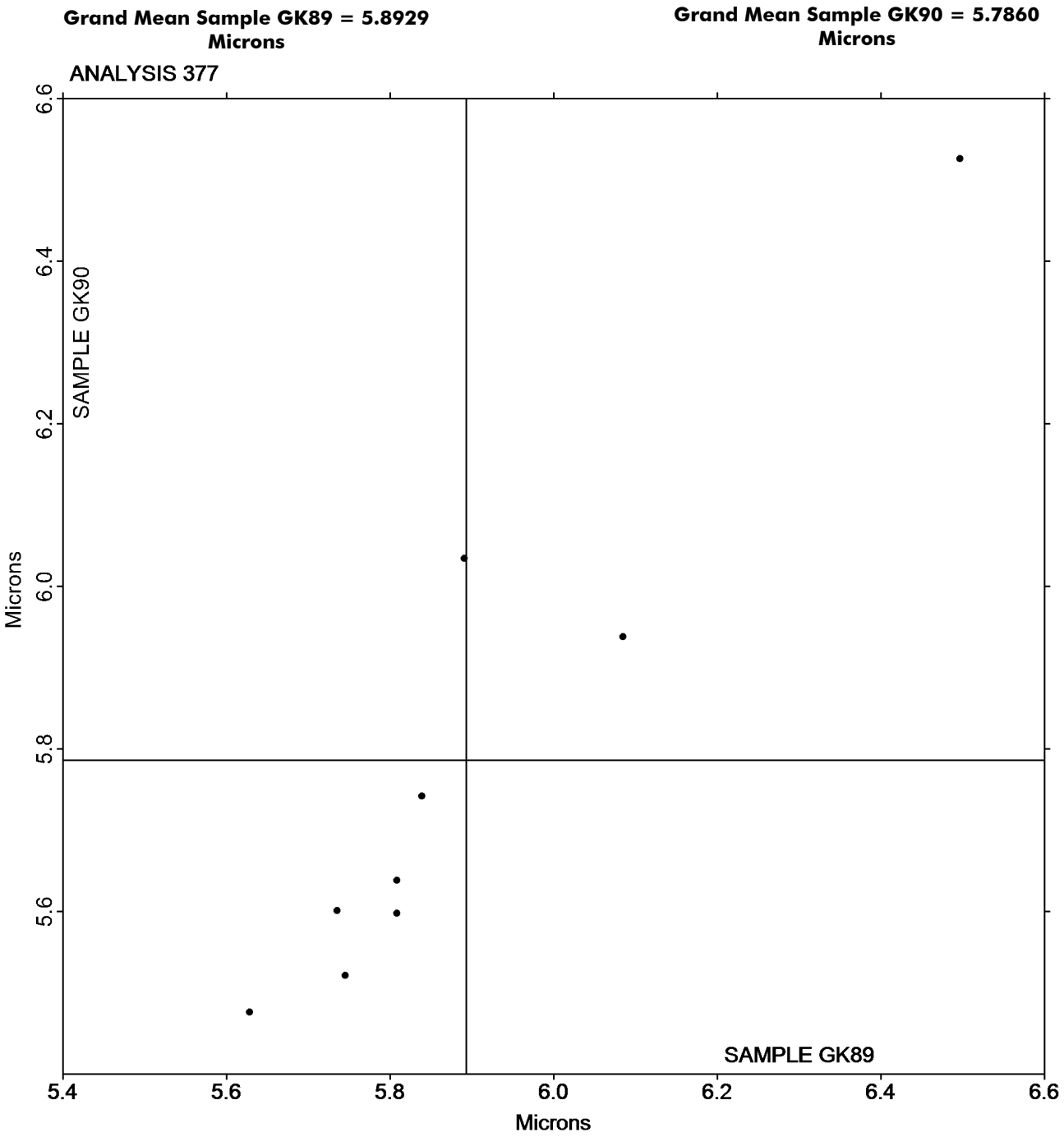
WebCode	Data Flag	Sample GK89 Lab Mean	Sample GK89 Diff from Grand Mean	Sample GK89 CPV	Sample GK90 Lab Mean	Sample GK90 Diff from Grand Mean	Sample GK90 CPV	Instr Code
2KY8T6		5.808	-0.085	-0.33	5.598	-0.188	-0.56	ZZ
9C3K6T		5.745	-0.148	-0.57	5.521	-0.265	-0.79	ZZ
B8ZJYF		5.891	-0.002	-0.01	6.034	0.248	0.74	ZZ
NEERLQ		6.497	0.604	2.33	6.526	0.740	2.22	ZZ
QB3RFA		5.808	-0.085	-0.33	5.638	-0.148	-0.44	ZZ
RPLUGY		5.735	-0.158	-0.61	5.601	-0.185	-0.55	ZZ
THDVE8		6.085	0.192	0.74	5.938	0.152	0.46	ZZ
VJ8Z98		5.839	-0.054	-0.21	5.742	-0.044	-0.13	ZZ
WFGFF9		5.628	-0.265	-1.02	5.476	-0.310	-0.93	ZZ

Summary Statistics	Sample GK89	Sample GK90
Grand Means	5.89 Microns	5.79 Microns
Stnd Dev Btwn Labs	0.26 Microns	0.33 Microns

Statistics based on 9 of 9 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 378

Roughness - Sheffield Type

TAPPI Official Test Method T538

WebCode	Data Flag	Sample GL89 Lab Mean	Sample GL89 Diff from Grand Mean	Sample GL89 CPV	Sample GL90 Lab Mean	Sample GL90 Diff from Grand Mean	Sample GL90 CPV	Instr Code
2BAHWH		116.3	-3.0	-0.46	119.3	0.9	0.13	LA
2KY8T6		133.7	14.4	2.23	135.4	17.0	2.44	LA
392QLF		118.2	-1.0	-0.16	119.2	0.8	0.12	PP
3RUQDC		119.9	0.6	0.09	123.1	4.7	0.68	PP
6NMTD4	*	121.8	2.5	0.39	131.9	13.5	1.94	PP
7LWBA9	X	158.5	39.2	6.05	158.8	40.4	5.79	TT
7QQ6AV		127.7	8.4	1.30	124.0	5.6	0.81	PP
8YDLFB	X	97.1	-22.2	-3.42	92.3	-26.1	-3.74	LA
9C3K6T		121.2	1.9	0.30	116.6	-1.8	-0.26	LA
9ZQC78		123.0	3.8	0.58	123.3	4.9	0.70	PP
B8ZJYF		117.9	-1.4	-0.21	117.7	-0.7	-0.09	PP
CBXGMD		108.7	-10.6	-1.63	105.9	-12.5	-1.79	LW
CLF3R8		112.9	-6.4	-0.99	116.5	-1.9	-0.28	PP
DNH7D3	X	152.9	33.6	5.19	156.0	37.6	5.39	TT
EAVD32		118.8	-0.5	-0.07	110.4	-8.0	-1.15	LW
EFJVM4		108.0	-11.3	-1.75	113.5	-4.9	-0.70	PP
FBK2ZM		115.9	-3.4	-0.52	110.1	-8.3	-1.19	LA
FK8662		118.4	-0.8	-0.13	116.5	-1.9	-0.27	PP
FZNZKX		114.0	-5.3	-0.82	111.1	-7.3	-1.04	PP
GN63VK		118.3	-1.0	-0.15	114.3	-4.1	-0.59	VM
GPK3CN		125.8	6.5	1.01	120.8	2.4	0.35	XX
HGLZNH		119.1	-0.2	-0.03	118.1	-0.3	-0.04	HM
HWFLRN		111.5	-7.8	-1.20	111.3	-7.1	-1.01	PP
JAV8PM		127.6	8.4	1.29	124.2	5.8	0.83	PP
JVEBAQ		121.0	1.7	0.27	119.4	1.0	0.14	TS
K4QM44		120.0	0.7	0.11	117.6	-0.8	-0.11	LW
KC4GGK		114.5	-4.8	-0.74	119.6	1.2	0.17	SH
KFGJ4F		123.1	3.8	0.59	117.5	-0.9	-0.12	LA
KPRLPG		107.7	-11.6	-1.78	103.7	-14.7	-2.11	LA
LRPGPV		118.8	-0.5	-0.07	128.7	10.3	1.48	HM
LWNVE7		127.8	8.5	1.32	121.9	3.5	0.50	HM
MMRCD3		120.1	0.8	0.13	119.9	1.5	0.22	TS
NEERLQ		129.3	10.0	1.55	125.7	7.3	1.05	LW
NWVPAW		132.0	12.7	1.96	132.0	13.6	1.95	PP
NZU4V2		118.4	-0.9	-0.13	124.1	5.7	0.82	LW
PL9C6X		120.9	1.6	0.25	118.4	0.0	0.00	LW
QB3RFA		112.6	-6.7	-1.03	117.4	-1.0	-0.14	LW
QPP22F		113.0	-6.3	-0.97	119.5	1.1	0.16	TZ
QTPDXF	X	148.0	28.7	4.43	153.0	34.6	4.96	GL
R2VGLP		119.5	0.2	0.03	112.5	-5.9	-0.85	PP
RPLUGY		124.2	4.9	0.76	123.7	5.3	0.76	PP

Paper & Paperboard Interlaboratory Testing Program

Analysis 378
Roughness - Sheffield Type
TAPPI Official Test Method T538

WebCode	Data Flag	Sample GL89 Lab Mean	Sample GL89 Diff from Grand Mean	Sample GL89 CPV	Sample GL90 Lab Mean	Sample GL90 Diff from Grand Mean	Sample GL90 CPV	Instr Code
RUFVE8		116.6	-2.7	-0.41	108.8	-9.6	-1.38	HM
TBHXPK		122.8	3.5	0.55	114.4	-4.0	-0.57	LW
THDVE8		117.3	-2.0	-0.30	113.4	-5.0	-0.71	PP
U4CHJ9		117.8	-1.5	-0.23	111.8	-6.6	-0.94	PP
V7JZFJ		118.7	-0.6	-0.09	117.5	-0.9	-0.13	GA
VJ8Z98		121.3	2.0	0.31	124.7	6.3	0.90	LW
WFGFF9		129.4	10.1	1.56	131.6	13.2	1.89	XX
WXYENQ		122.0	2.7	0.42	119.0	0.6	0.09	XX
WYEJHH		123.6	4.3	0.67	116.8	-1.6	-0.23	HM
XXFVED	*	103.0	-16.3	-2.51	108.8	-9.6	-1.37	MP
Y6AHK4		122.9	3.6	0.56	122.1	3.7	0.53	GA
ZY44KK		107.2	-12.0	-1.86	107.3	-11.1	-1.59	PP

Summary Statistics	Sample GL89	Sample GL90
Grand Means	119.27 Sheffield	118.39 Sheffield
Stnd Dev Btwn Labs	6.48 Sheffield	6.97 Sheffield

Statistics based on 49 of 53 reporting participants.

Comments on Assigned Data Flags for Test #378

QTPDXF (X) - Data for both samples are high. Possible Systematic Error.

7LWBA9 (X) - Extreme Data.

DNH7D3 (X) - Data for both samples are high. Possible Systematic Error.

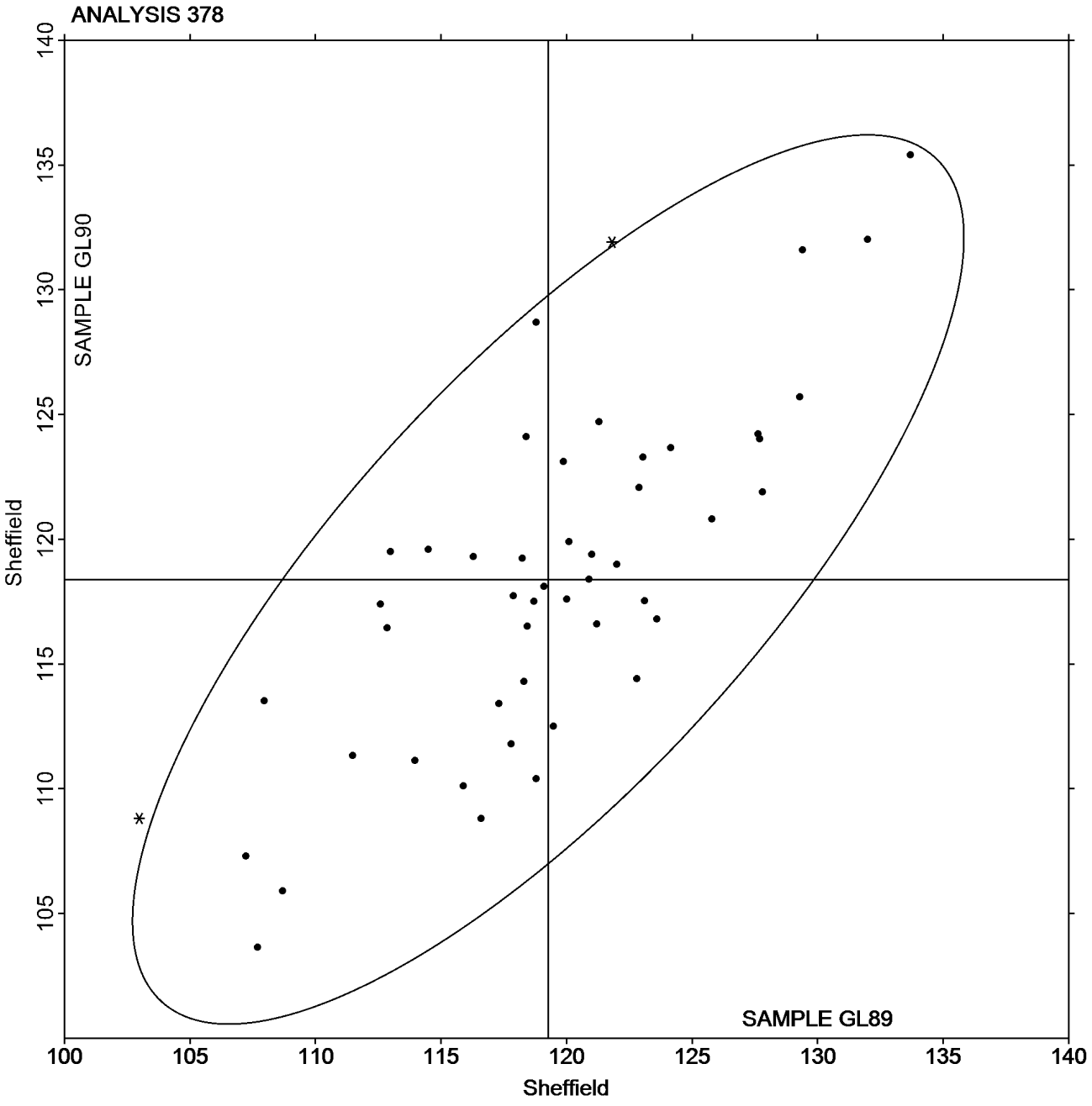
8YDLFB (X) - Data for both samples are low. Possible Systematic Error.

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	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		

Grand Mean Sample GL89 = 119.27
Sheffield

Grand Mean Sample GL90 = 118.39
Sheffield



Paper & Paperboard Interlaboratory Testing Program

Analysis 382
Moisture in Paper
TAPPI Official Test Method T412

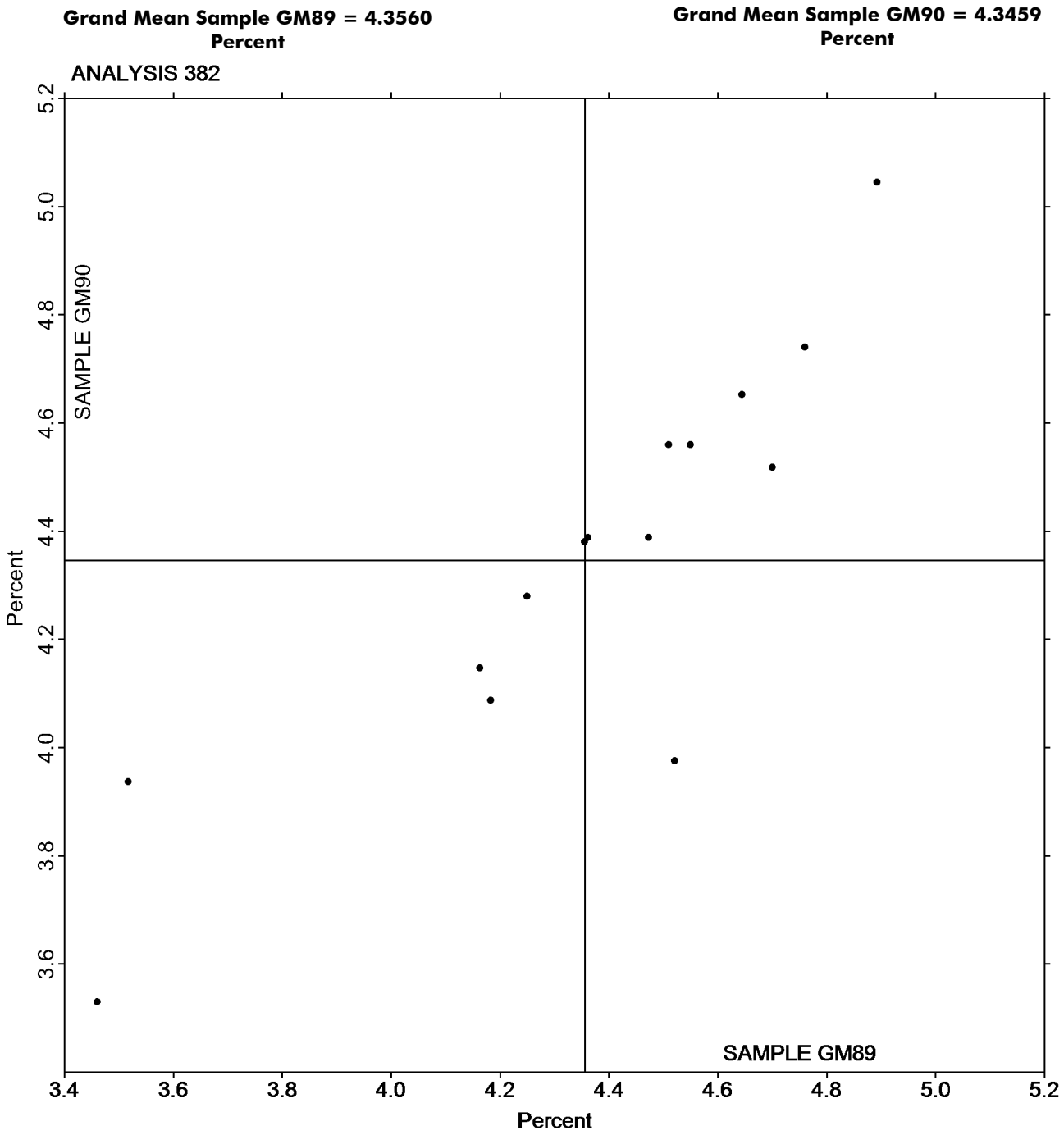
WebCode	Data Flag	Sample GM89 Lab Mean	Sample GM89 Diff from Grand Mean	Sample GM89 CPV	Sample GM90 Lab Mean	Sample GM90 Diff from Grand Mean	Sample GM90 CPV	Instr Code
3GR9X3		4.473	0.117	0.29	4.389	0.043	0.11	ZZ
6HY6KJ		4.550	0.194	0.47	4.560	0.214	0.57	ZZ
72N4YG		4.521	0.165	0.40	3.976	-0.370	-0.99	ZZ
8AHD66		4.250	-0.106	-0.26	4.280	-0.066	-0.18	ZZ
APP64F		4.893	0.537	1.31	5.045	0.699	1.88	ZZ
ARPMX2		4.355	-0.001	0.00	4.380	0.034	0.09	ZZ
B8YTL7		4.644	0.288	0.70	4.652	0.306	0.82	ZZ
B8ZJYF		4.362	0.006	0.01	4.388	0.042	0.11	ZZ
CY6ZXC		4.760	0.404	0.99	4.740	0.394	1.06	ZZ
DE823X		4.163	-0.193	-0.47	4.147	-0.199	-0.53	ZZ
DNH7D3		4.700	0.344	0.84	4.518	0.172	0.46	ZZ
KNBMAX		3.460	-0.896	-2.19	3.530	-0.816	-2.19	ZZ
RK8YWV		4.183	-0.173	-0.42	4.087	-0.259	-0.69	ZZ
RMYZWR		4.510	0.154	0.38	4.560	0.214	0.57	ZZ
TBHXPK		3.517	-0.839	-2.05	3.937	-0.409	-1.10	ZZ

Summary Statistics	Sample GM89	Sample GM90
Grand Means	4.36 Percent	4.35 Percent
Stnd Dev Btwn Labs	0.41 Percent	0.37 Percent

Statistics based on 15 of 15 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 384

Opacity (89% Reflectance Backing) - Fine Papers

TAPPI Official Test Method T425

WebCode	Data Flag	Sample GN89 Lab Mean	Sample GN89 Diff from Grand Mean	Sample GN89 CPV	Sample GN90 Lab Mean	Sample GN90 Diff from Grand Mean	Sample GN90 CPV	Instr Code
2AGP2Y		89.63	0.50	1.29	89.75	0.52	1.16	ZZ
2KY8T6	X	91.52	2.39	6.18	91.39	2.15	4.85	ZZ
7QQ6AV		89.20	0.08	0.20	89.32	0.09	0.19	ZZ
AFUBN9		89.23	0.11	0.27	89.28	0.05	0.10	ZZ
B6R93C	*	87.95	-1.18	-3.05	88.13	-1.11	-2.49	ZZ
B8ZJYF		89.67	0.54	1.41	89.58	0.34	0.77	ZZ
CLF3R8		88.72	-0.41	-1.07	88.98	-0.26	-0.59	ZZ
FBK2ZM		89.03	-0.10	-0.25	88.96	-0.28	-0.62	ZZ
FK8662		88.95	-0.17	-0.45	89.52	0.28	0.64	ZZ
GPK3CN		88.70	-0.43	-1.11	88.57	-0.67	-1.50	ZZ
H8DM9Y		89.48	0.35	0.91	89.42	0.18	0.42	ZZ
JVEBAQ		89.22	0.09	0.24	89.25	0.01	0.03	ZZ
KC4GGK		89.44	0.31	0.81	89.36	0.12	0.28	ZZ
KPRLPG		89.87	0.74	1.92	90.08	0.84	1.90	ZZ
L86FY3		89.21	0.09	0.22	89.27	0.04	0.08	ZZ
LRPGPV		89.12	-0.01	-0.02	89.32	0.08	0.19	ZZ
LWNVE7		89.38	0.25	0.65	89.59	0.35	0.80	ZZ
MMRCD3		88.96	-0.17	-0.44	89.14	-0.10	-0.22	ZZ
NWVPAW		88.67	-0.46	-1.19	89.06	-0.18	-0.40	ZZ
RPLUGY		88.96	-0.17	-0.44	88.83	-0.40	-0.91	ZZ
THDVE8		89.01	-0.12	-0.30	88.96	-0.28	-0.62	ZZ
TWXC8C		88.89	-0.23	-0.61	89.21	-0.03	-0.06	ZZ
U4CHJ9	*	89.04	-0.09	-0.23	88.40	-0.84	-1.89	ZZ
W6JDFK		89.14	0.01	0.03	89.20	-0.04	-0.08	ZZ
WYEJHH		89.23	0.10	0.26	89.46	0.22	0.50	ZZ
YT46TJ		89.55	0.42	1.09	90.05	0.81	1.84	ZZ
ZY44KK		89.07	-0.06	-0.15	89.45	0.21	0.48	ZZ

Summary Statistics	Sample GN89	Sample GN90
Grand Means	89.13 Percent	89.24 Percent
Stnd Dev Btwn Labs	0.39 Percent	0.44 Percent

Statistics based on 26 of 27 reporting participants.

Comments on Assigned Data Flags for Test #384

2KY8T6 (X) - Extreme Data.

Analysis Notes:

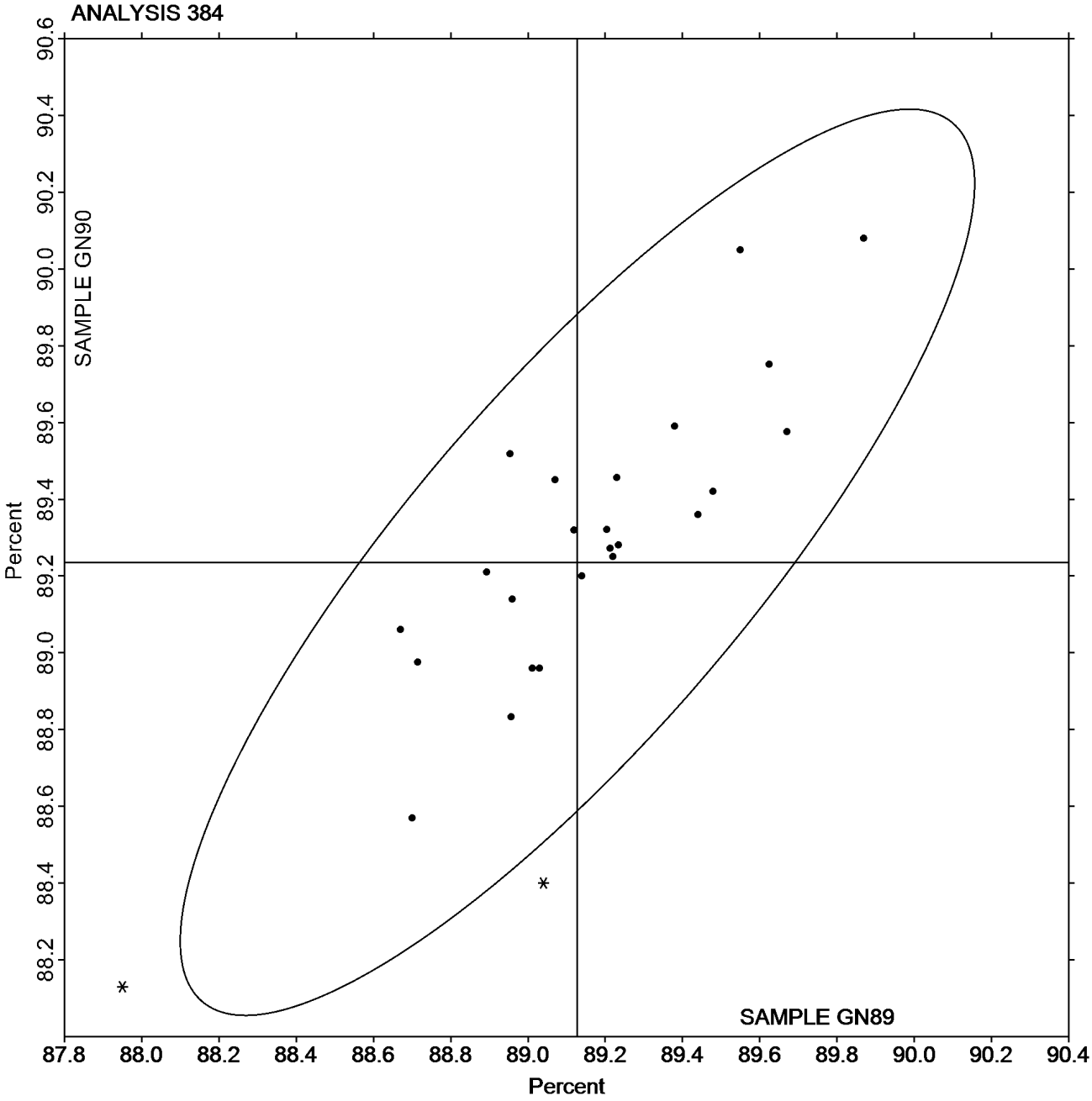
WYEJHH - One determination removed from the Lab Mean of Sample GN90 per Grubb's Test at 1% risk (TAPPI 1205).

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Grand Mean Sample GN89 = 89.128
Percent

Grand Mean Sample GN90 = 89.236
Percent



Paper & Paperboard Interlaboratory Testing Program

Analysis 386

Opacity (Paper Backing) - Fine Papers and Newsprint

TAPPI Official Test Method T519

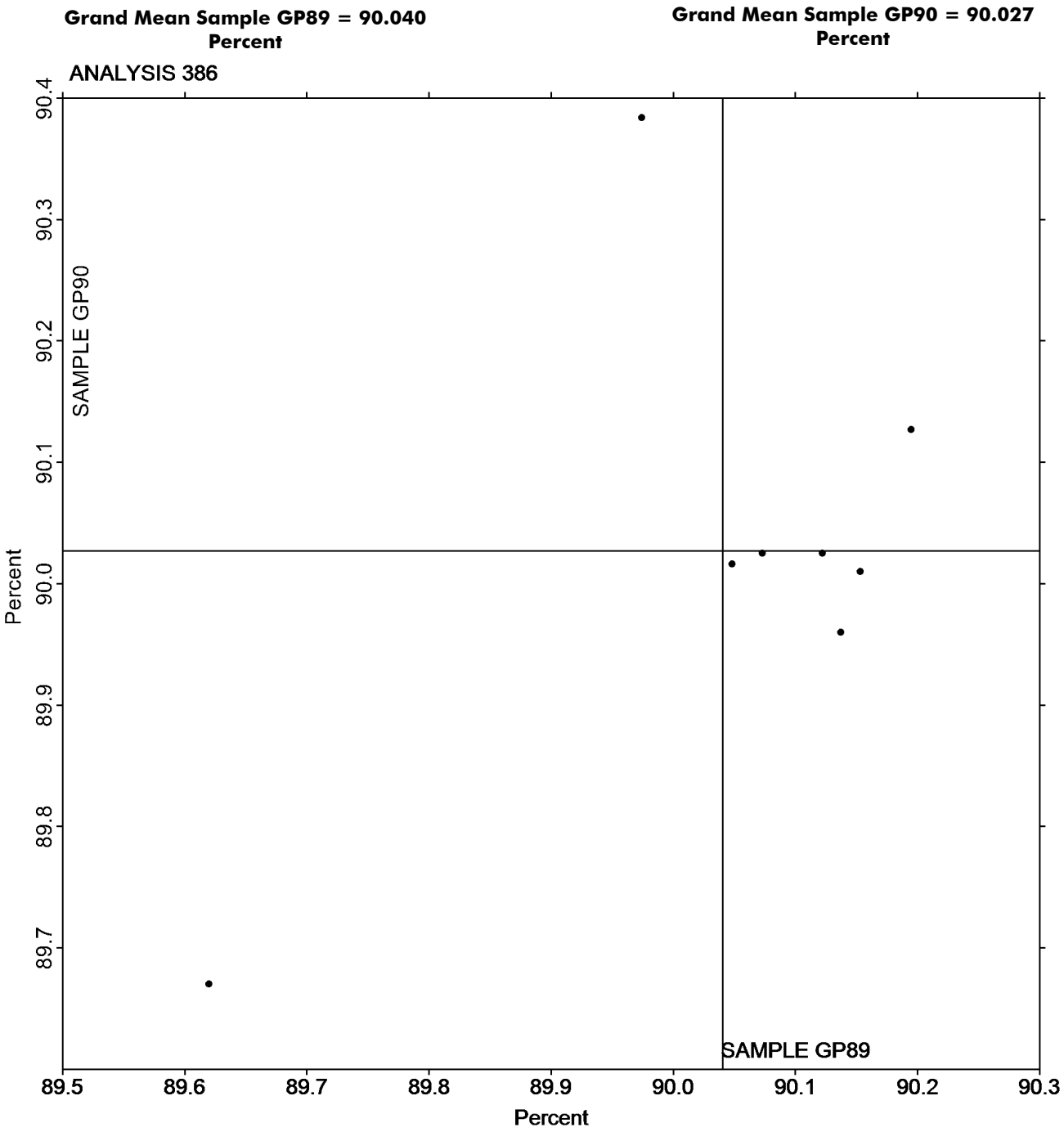
WebCode	Data Flag	Sample GP89 Lab Mean	Sample GP89 Diff from Grand Mean	Sample GP89 CPV	Sample GP90 Lab Mean	Sample GP90 Diff from Grand Mean	Sample GP90 CPV	Instr Code
3MGQFK		89.97	-0.07	-0.36	90.38	0.36	1.82	ZZ
78ZR4J		90.14	0.10	0.53	89.96	-0.07	-0.34	ZZ
D9HLDQ		90.05	0.01	0.04	90.02	-0.01	-0.06	ZZ
LPJ2CX		90.07	0.03	0.18	90.03	0.00	-0.01	ZZ
MHWT6C		89.62	-0.42	-2.29	89.67	-0.36	-1.82	ZZ
NZU4V2		90.12	0.08	0.45	90.03	0.00	-0.01	ZZ
TBHXPK		90.20	0.15	0.84	90.13	0.10	0.51	ZZ
YFQ8J9		90.15	0.11	0.62	90.01	-0.02	-0.09	ZZ

Summary Statistics	Sample GP89	Sample GP90
Grand Means	90.04 Percent	90.03 Percent
Stnd Dev Btwn Labs	0.18 Percent	0.20 Percent

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.

Paper & Paperboard Interlaboratory Testing Program

Analysis 390
Directional Brightness
TAPPI Official Test Method T452

WebCode	Data Flag	Sample GR89 Lab Mean	Sample GR89 Diff from Grand Mean	Sample GR89 CPV	Sample GR90 Lab Mean	Sample GR90 Diff from Grand Mean	Sample GR90 CPV	Instr Code
2KY8T6		87.08	0.95	0.79	86.59	0.48	0.39	TS
6NMTD4		85.59	-0.54	-0.45	85.55	-0.56	-0.46	HG
7QQ6AV		85.58	-0.54	-0.45	85.56	-0.55	-0.45	TP
B6R93C		85.16	-0.96	-0.80	85.03	-1.09	-0.89	TS
FK8662		84.92	-1.21	-1.00	84.64	-1.47	-1.21	PP
GPK3CN		86.95	0.83	0.69	87.12	1.00	0.82	PE
H8DM9Y	X	85.12	-1.00	-0.83	87.14	1.03	0.84	TP
HWFLRN		87.06	0.94	0.78	87.09	0.97	0.80	TT
JAV8PM		87.41	1.28	1.06	87.40	1.29	1.06	HG
JVEBAQ		84.33	-1.80	-1.49	84.71	-1.40	-1.15	TS
LWNVE7		84.87	-1.26	-1.04	84.67	-1.45	-1.19	TS
NEERLQ		87.19	1.06	0.88	87.00	0.89	0.73	HG
PL9C6X		85.60	-0.53	-0.44	85.59	-0.52	-0.43	HZ
QB3RFA		85.13	-1.00	-0.83	85.14	-0.98	-0.80	TT
QPP22F		88.94	2.81	2.34	89.06	2.95	2.42	TS
QTPDXF	X	68.38	-17.75	-14.73	68.16	-17.95	-14.73	TS
R2VGLP		87.28	1.15	0.96	87.38	1.26	1.04	TP
RMYZWR	X	75.24	-10.88	-9.03	74.83	-11.28	-9.26	TS
U4CHJ9		85.96	-0.16	-0.13	86.39	0.28	0.23	XC
W6JDFK		85.07	-1.05	-0.87	85.12	-1.00	-0.82	TP
ZY44KK		86.14	0.01	0.01	86.00	-0.11	-0.09	TT

Summary Statistics	Sample GR89	Sample GR90
Grand Means	86.12 Percent	86.11 Percent
Stnd Dev Btwn Labs	1.20 Percent	1.22 Percent

Statistics based on 18 of 21 reporting participants.

Comments on Assigned Data Flags for Test #390

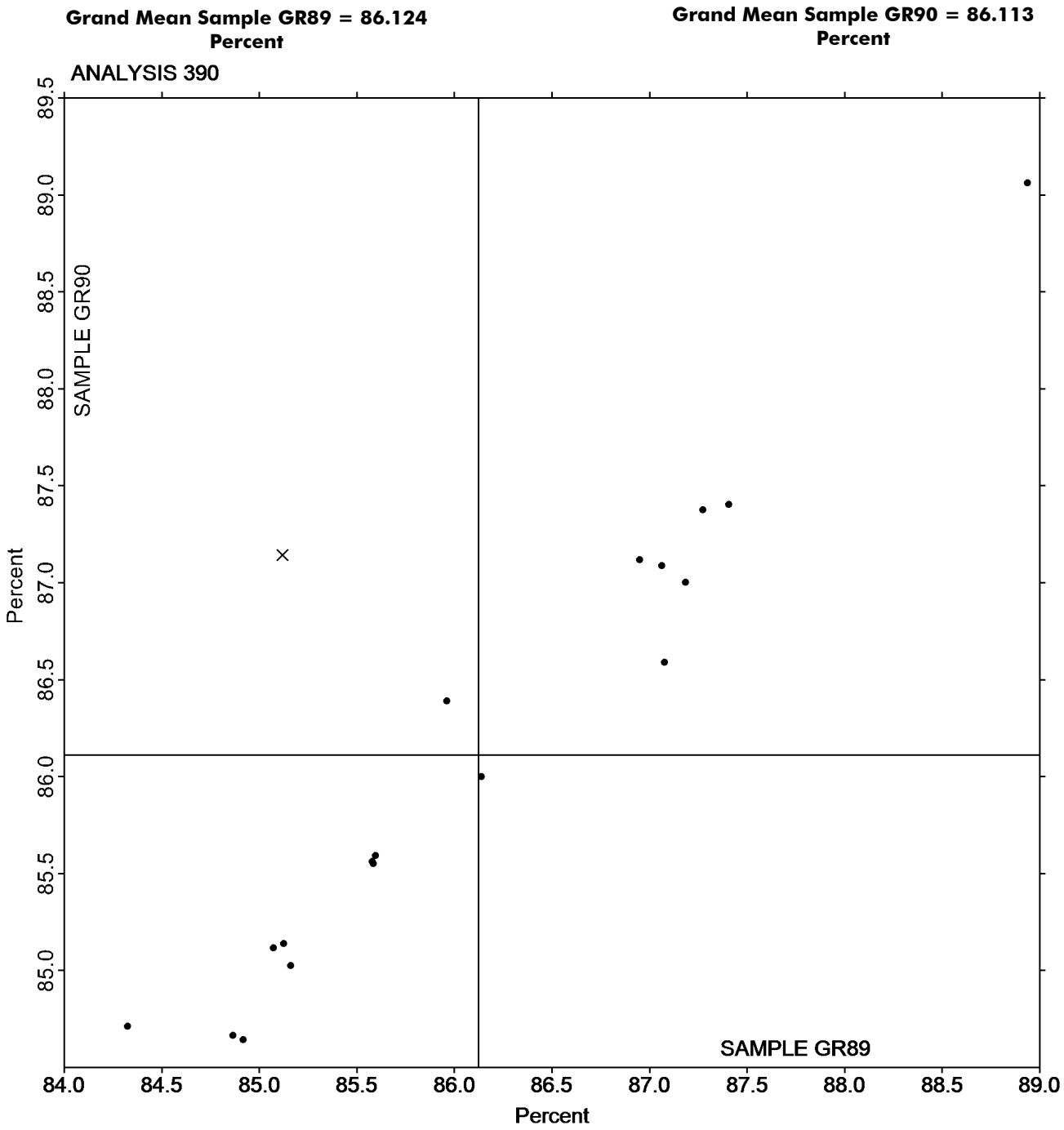
QTPDXF (X) - Extreme Data.

RMYZWR (X) - Extreme Data.

H8DM9Y (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample GR90.

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	XC	X-Rite Color i5



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 391

Directional Brightness of Fluorescent Samples

TAPPI Official Test Method T452

WebCode	Data Flag	Sample GZ89 Lab Mean	Sample GZ89 Diff from Grand Mean	Sample GZ89 CPV	Sample GZ90 Lab Mean	Sample GZ90 Diff from Grand Mean	Sample GZ90 CPV	Instr Code
7QQ6AV		99.73	1.36	0.88	99.84	1.48	0.86	PP
AFUBN9		99.17	0.80	0.52	99.55	1.19	0.70	TS
B8ZJYF		98.91	0.54	0.35	98.96	0.60	0.35	TS
CLF3R8		98.78	0.41	0.26	99.60	1.24	0.73	PP
JVEBAQ		96.92	-1.45	-0.94	96.46	-1.90	-1.11	TS
KPRLPG		99.04	0.67	0.43	99.50	1.14	0.67	TT
L86FY3		98.50	0.13	0.09	98.40	0.04	0.03	PP
LRPGPV		94.58	-3.79	-2.45	94.36	-4.00	-2.33	TT
MMRCD3		99.68	1.31	0.85	98.56	0.20	0.12	TS
RPLUGY		98.39	0.02	0.01	98.33	-0.02	-0.01	TS

Summary Statistics	Sample GZ89	Sample GZ90
Grand Means	98.37 Percent	98.36 Percent
Stnd Dev Btwn Labs	1.55 Percent	1.71 Percent

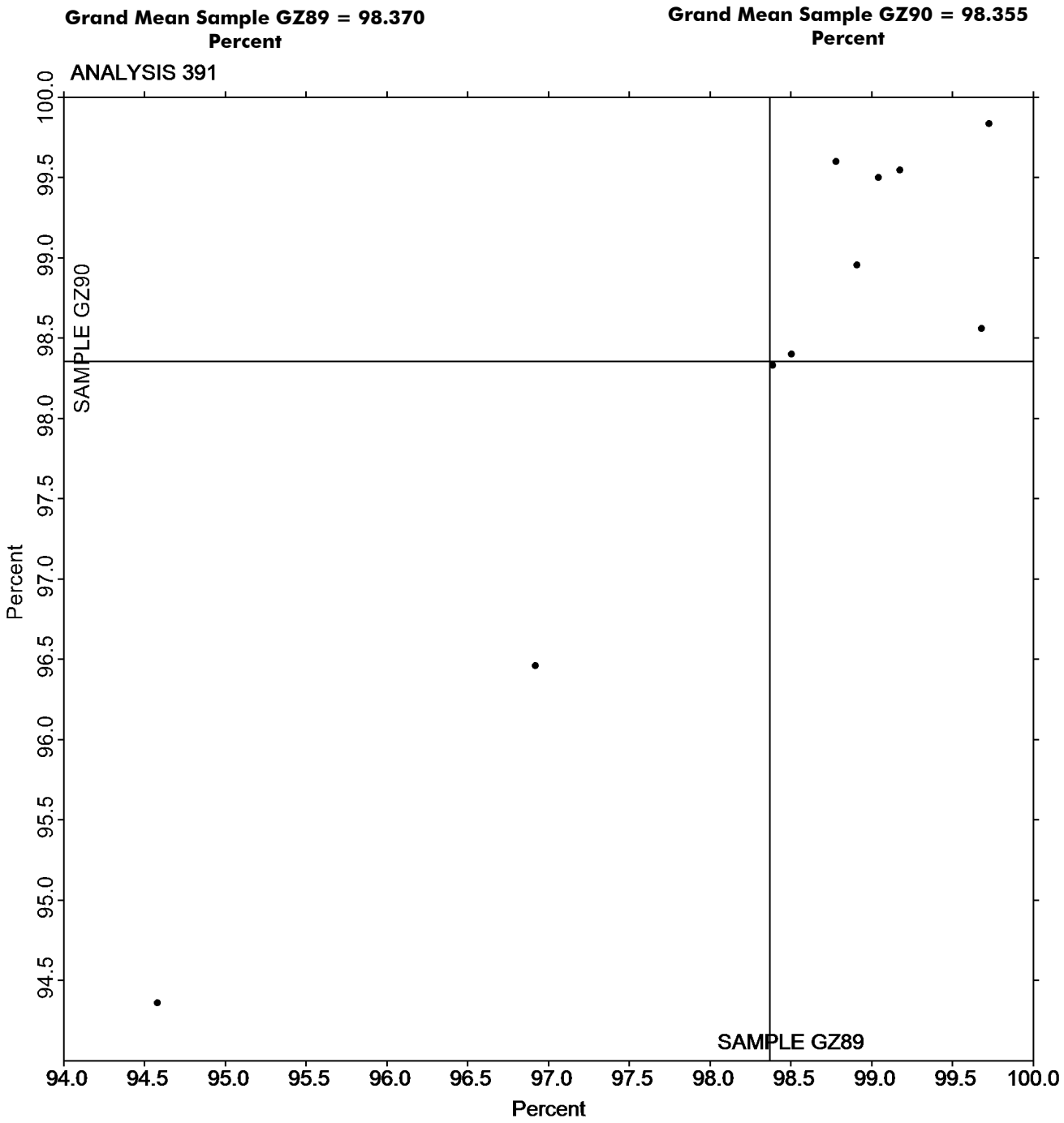
Statistics based on 10 of 10 reporting participants.

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

Analysis 392
Diffuse Brightness
TAPPI Official Test Method T525

WebCode	Data Flag	Sample GR89 Lab Mean	Sample GR89 Diff from Grand Mean	Sample GR89 CPV	Sample GR90 Lab Mean	Sample GR90 Diff from Grand Mean	Sample GR90 CPV	Instr Code
2KY8T6		85.81	1.93	0.37	85.87	1.99	0.38	TC
63MPGN		85.82	1.95	0.37	85.81	1.93	0.37	TC
BHJWVQ		85.60	1.72	0.33	85.57	1.69	0.32	LA
CBXGMD		85.93	2.06	0.39	85.89	2.00	0.38	EF
D9HLDQ		85.80	1.93	0.37	85.85	1.96	0.38	LA
DNH7D3		85.42	1.54	0.29	85.44	1.55	0.30	LE
EFJVM4		85.93	2.05	0.39	85.90	2.01	0.39	TC
FJTVWZ		85.52	1.65	0.31	85.54	1.66	0.32	XX
FXGVRA	*	86.01	2.13	0.40	85.80	1.92	0.37	TC
HWFLRN		85.80	1.92	0.37	85.80	1.91	0.37	TL
LWNVE7		76.54	-7.34	-1.39	76.65	-7.24	-1.39	LT
MHWT6C		86.40	2.52	0.48	86.49	2.60	0.50	TM
NEERLQ		86.00	2.12	0.40	85.88	1.99	0.38	TC
NRJ2AZ		85.63	1.75	0.33	85.58	1.69	0.32	TC
NWVPAW		85.91	2.03	0.39	85.87	1.98	0.38	TC
NZU4V2		85.74	1.86	0.35	85.77	1.88	0.36	TC
QB3RFA		85.76	1.89	0.36	85.81	1.92	0.37	EG
QXFM7R		85.78	1.90	0.36	85.71	1.83	0.35	LE
R2VGLP		85.59	1.71	0.33	85.62	1.73	0.33	LT
TBHXPK		85.62	1.74	0.33	85.63	1.74	0.33	LE
TE688X	*	68.36	-15.51	-2.95	68.44	-15.45	-2.96	TL
VYW976	*	68.35	-15.52	-2.95	68.59	-15.29	-2.93	TC
YFQ8J9		85.86	1.98	0.38	85.89	2.00	0.38	LE

Summary Statistics	Sample GR89	Sample GR90
Grand Means	83.88 Percent	83.89 Percent
Stnd Dev Btwn Labs	5.27 Percent	5.21 Percent

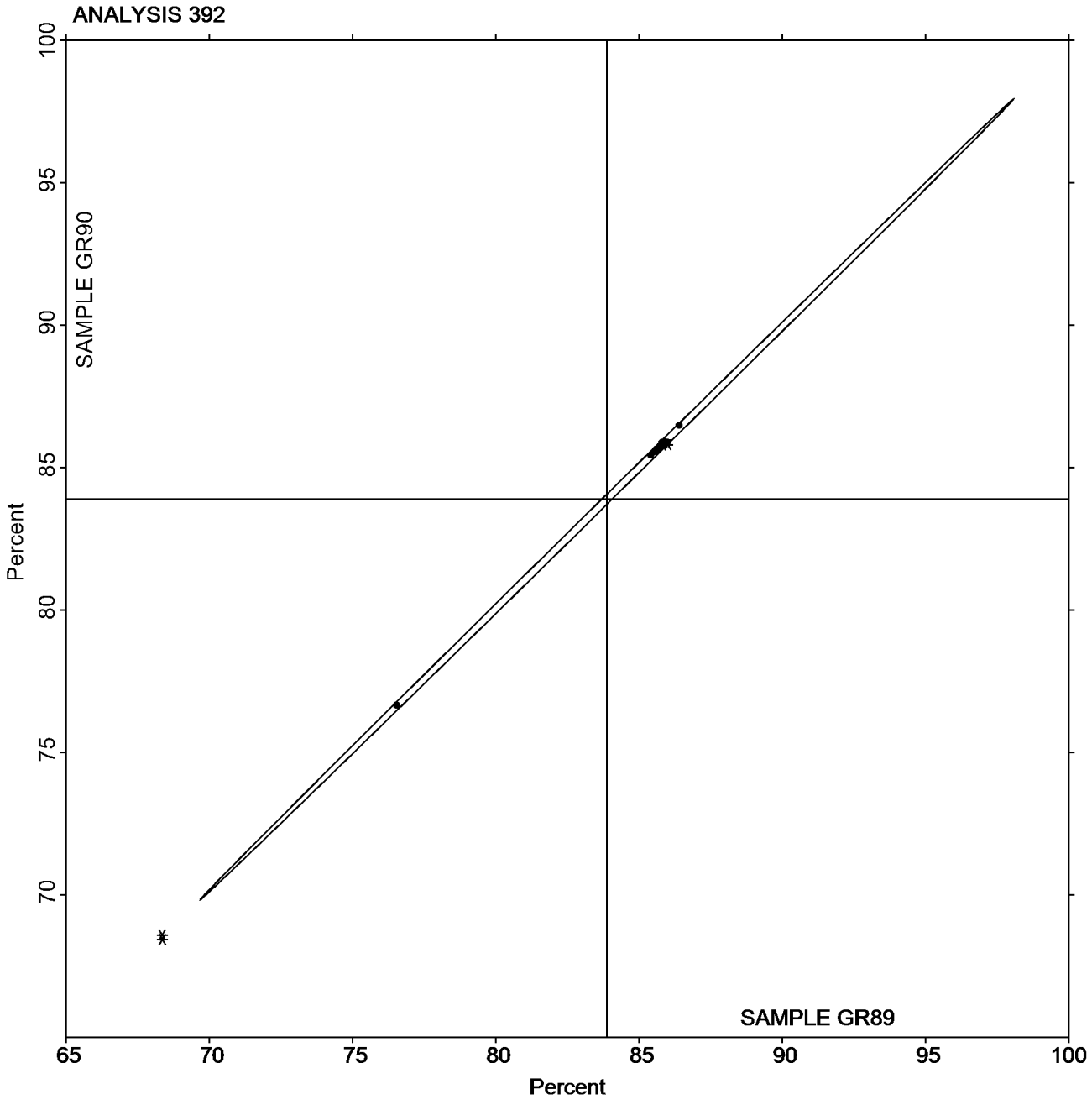
Statistics based on 23 of 23 reporting participants.

Key to Instrument Codes Reported by Participants

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	TM	Technidyne Technibrite Micro TB-1C
XX	Instrument make/model not specified by lab		

Grand Mean Sample GR89 = 83.877
Percent

Grand Mean Sample GR90 = 83.886
Percent



Paper & Paperboard Interlaboratory Testing Program

Analysis 394

Fluorescent Component of Directional Brightness

TAPPI Official Test Method T452

WebCode	Data Flag	Sample GZ89 Lab Mean	Sample GZ89 Diff from Grand Mean	Sample GZ89 CPV	Sample GZ90 Lab Mean	Sample GZ90 Diff from Grand Mean	Sample GZ90 CPV	Instr Code
AFUBN9		7.920	0.246	0.60	8.002	0.274	0.60	TS
B8ZJYF		7.962	0.288	0.70	7.974	0.247	0.54	TS
CLF3R8		8.020	0.346	0.84	8.220	0.493	1.08	PP
JVEBAQ		7.060	-0.614	-1.50	7.060	-0.667	-1.46	TS
KPRLPG		7.940	0.266	0.65	8.040	0.313	0.68	TT
L86FY3		7.782	0.108	0.26	7.832	0.104	0.23	PP
LRPGPV		7.000	-0.674	-1.64	7.000	-0.727	-1.59	TT
RPLUGY		7.710	0.036	0.09	7.692	-0.036	-0.08	TS

Summary Statistics	Sample GZ89	Sample GZ90
Grand Means	7.67 Percent	7.73 Percent
Stnd Dev Btwn Labs	0.41 Percent	0.46 Percent

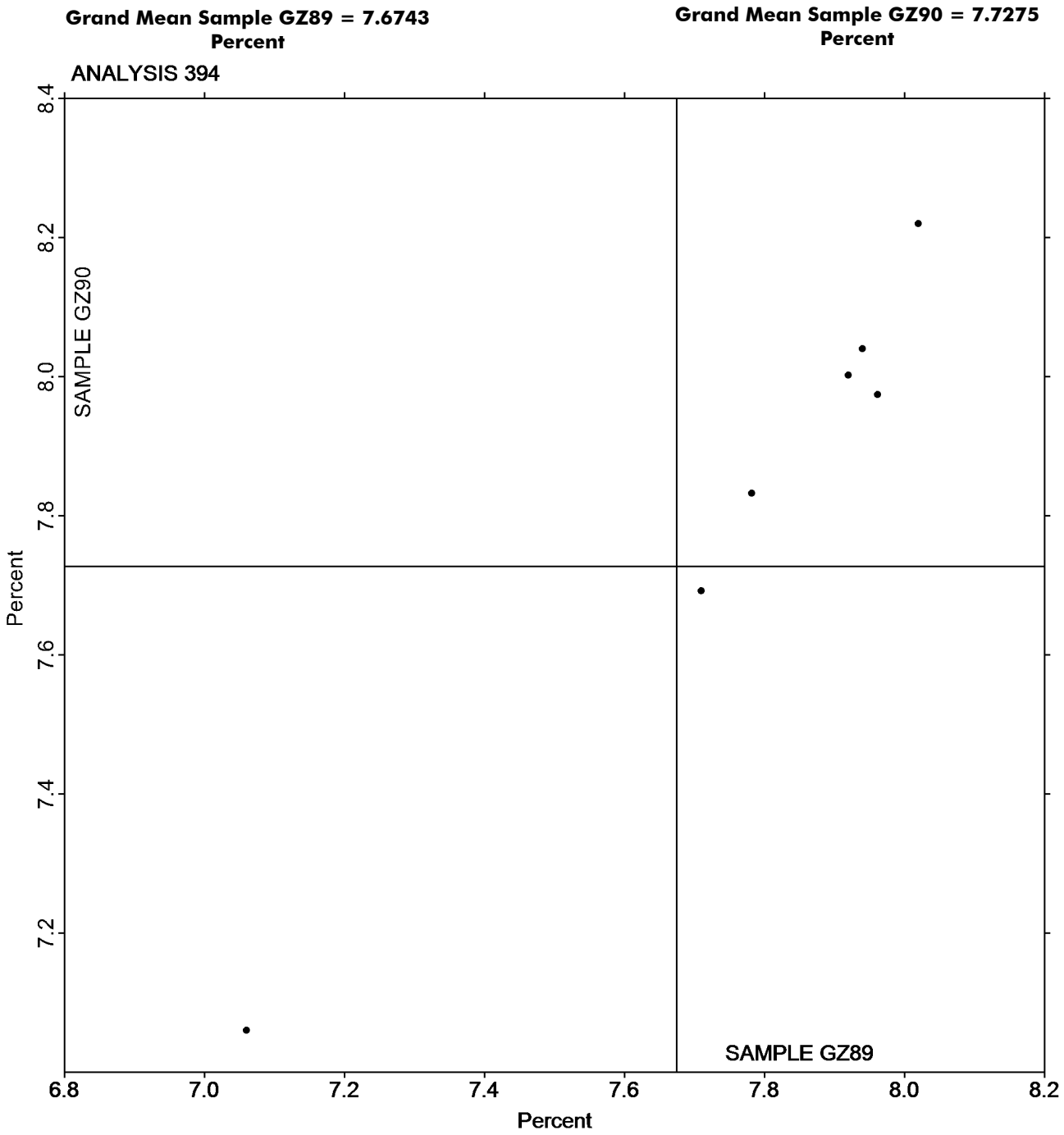
Statistics based on 8 of 8 reporting participants.

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 395

Specular Gloss at 75 Degrees - High Range

TAPPI Official Test Method T480

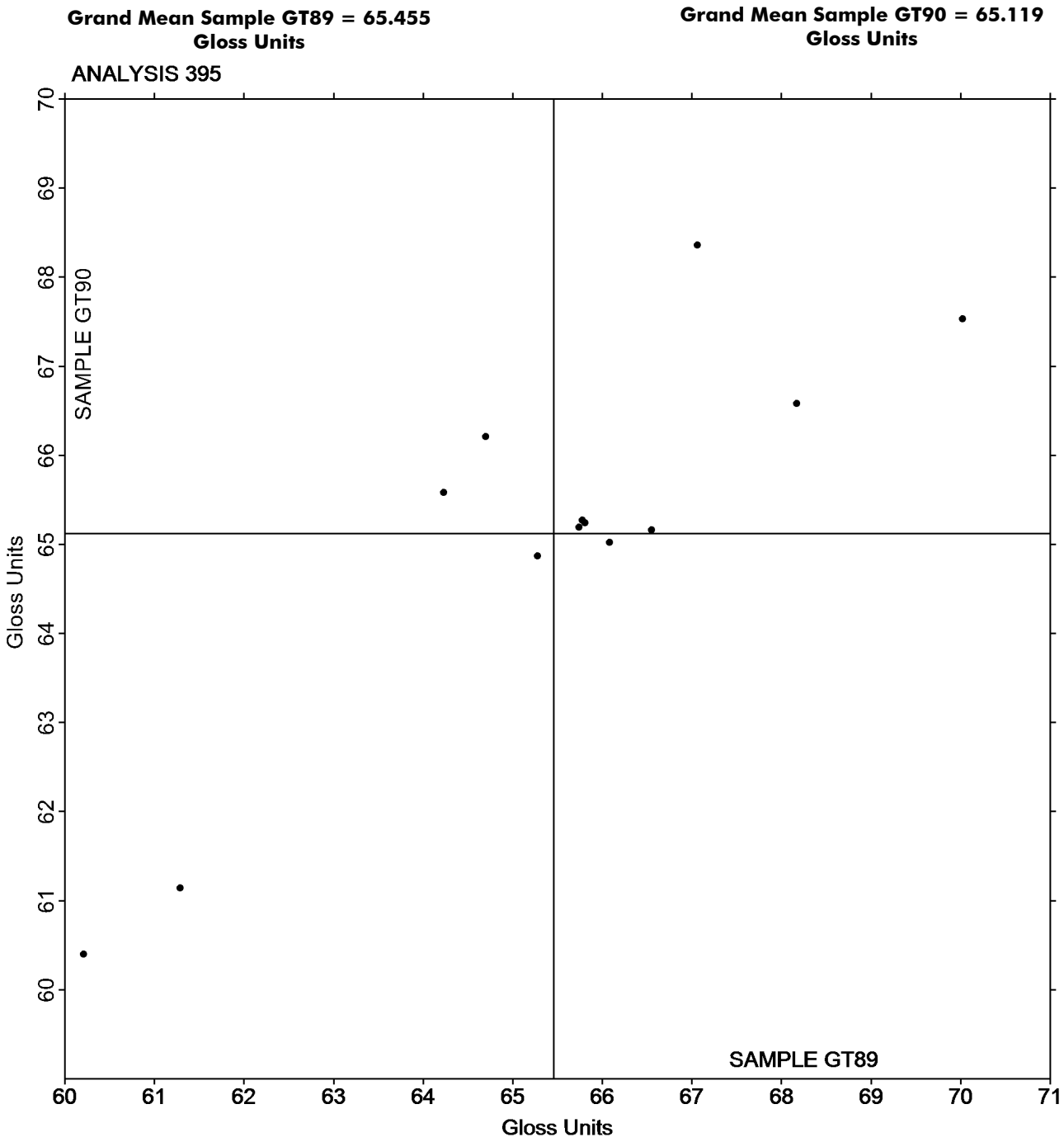
WebCode	Data Flag	Sample GT89 Lab Mean	Sample GT89 Diff from Grand Mean	Sample GT89 CPV	Sample GT90 Lab Mean	Sample GT90 Diff from Grand Mean	Sample GT90 CPV	Instr Code
2BAHWH		70.02	4.56	1.77	67.53	2.41	1.10	LF
6NMTD4		61.29	-4.17	-1.62	61.14	-3.98	-1.81	PP
9C3K6T		68.17	2.71	1.05	66.58	1.46	0.66	LA
AFUBN9		65.78	0.32	0.13	65.27	0.15	0.07	LF
B6R93C		66.55	1.09	0.42	65.16	0.04	0.02	LA
GN63VK		65.81	0.35	0.14	65.24	0.12	0.05	GM
HWFLRN		66.08	0.62	0.24	65.02	-0.10	-0.05	GM
JAV8PM		60.21	-5.25	-2.04	60.40	-4.72	-2.15	PP
L86FY3		64.70	-0.76	-0.29	66.21	1.09	0.50	PP
LRPGPV		64.23	-1.23	-0.48	65.58	0.46	0.21	PP
QB3RFA		67.06	1.60	0.62	68.36	3.24	1.47	TH
R2VGLP		65.28	-0.18	-0.07	64.87	-0.25	-0.11	GA
W6JDFK		65.74	0.28	0.11	65.19	0.07	0.03	TH

Summary Statistics	Sample GT89	Sample GT90
Grand Means	65.46 Gloss Units	65.12 Gloss Units
Stnd Dev Btwn Labs	2.58 Gloss Units	2.20 Gloss Units

Statistics based on 13 of 13 reporting participants.

Key to Instrument Codes Reported by Participants

GA	BYK-Gardner (model not specified)	GM	BYK-Gardner micro-gloss
LA	L & W Gloss - Autoline 300	LF	L & W Autoline 400
PP	Technidyne Profile/Plus	TH	Technidyne T480A



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

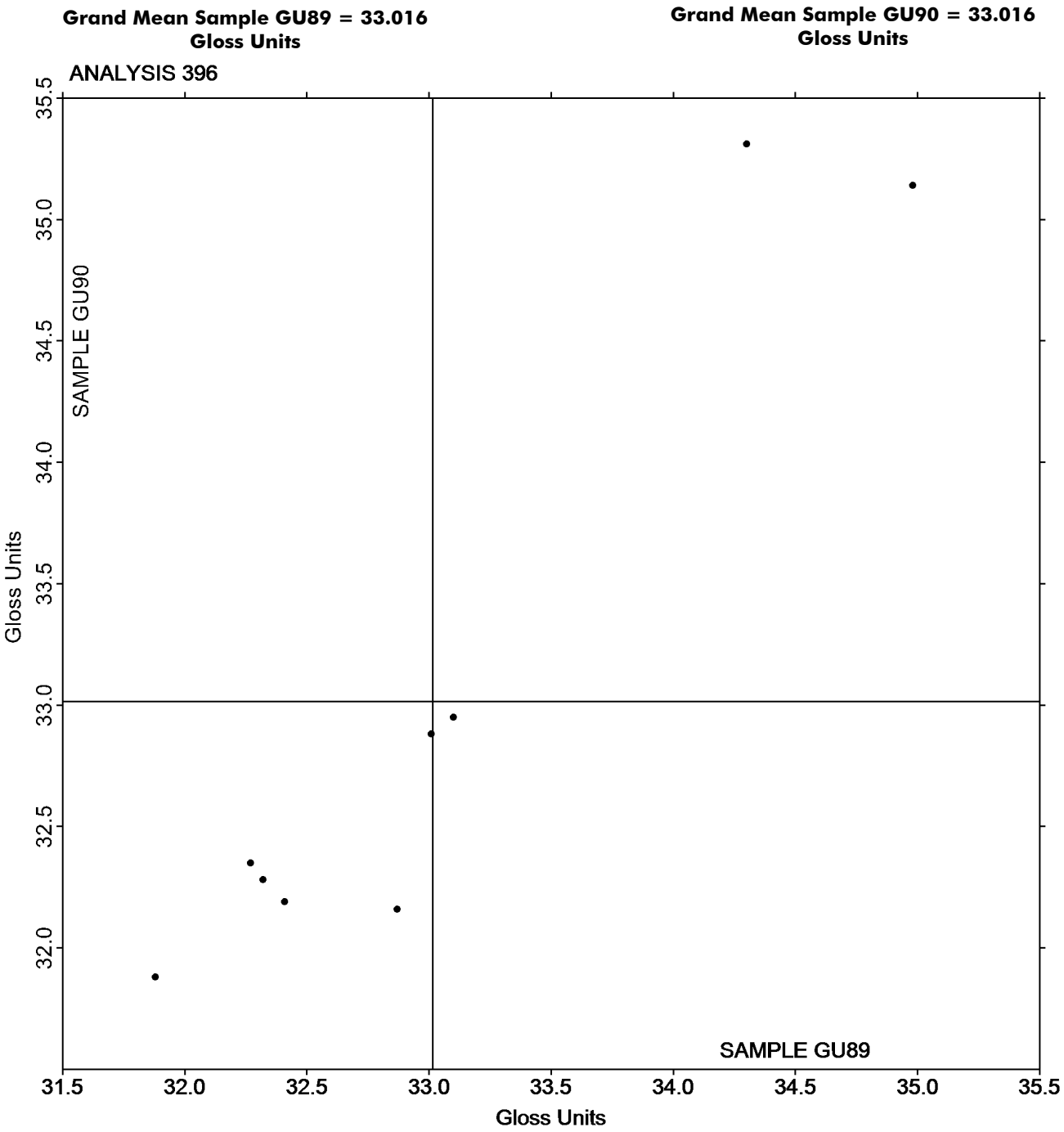
WebCode	Data Flag	Sample GU89 Lab Mean	Sample GU89 Diff from Grand Mean	Sample GU89 CPV	Sample GU90 Lab Mean	Sample GU90 Diff from Grand Mean	Sample GU90 CPV	Instr Code
3GR9X3		33.01	-0.01	-0.01	32.88	-0.14	-0.10	WJ
DNH7D3		32.41	-0.61	-0.60	32.19	-0.83	-0.64	TH
K4QM44		31.88	-1.14	-1.12	31.88	-1.14	-0.87	GM
NEERLQ		34.98	1.96	1.94	35.14	2.12	1.64	PP
NWVPAW		34.30	1.28	1.27	35.31	2.29	1.77	TH
PL9C6X		32.87	-0.15	-0.14	32.16	-0.86	-0.66	GS
THDVE8		32.32	-0.70	-0.69	32.28	-0.74	-0.57	PP
U4CHJ9		32.27	-0.75	-0.73	32.35	-0.67	-0.51	TH
ZY44KK		33.10	0.08	0.08	32.95	-0.07	-0.05	TH

Summary Statistics	Sample GU89	Sample GU90
Grand Means	33.02 Gloss Units	33.02 Gloss Units
Stnd Dev Btwn Labs	1.01 Gloss Units	1.30 Gloss Units

Statistics based on 9 of 9 reporting participants.

Key to Instrument Codes Reported by Participants

GM	BYK-Gardner micro-gloss	GS	BYK-Gardner Glossgard II
PP	Technidyne Profile/Plus	TH	Technidyne T480A
WJ	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 GW89 Lab Mean	Sample GW89 Diff from Grand Mean	Sample GW89 CPV	Sample GW90 Lab Mean	Sample GW90 Diff from Grand Mean	Sample GW90 CPV	Instr Code
2AGP2Y		90.63	0.48	0.94	104.4	1.0	2.08	ZZ
3GR9X3		89.72	-0.43	-0.84	103.3	-0.1	-0.16	ZZ
3MGQFK		90.27	0.12	0.24	103.3	0.0	-0.10	ZZ
63MPGN		90.59	0.44	0.87	103.5	0.2	0.31	ZZ
78ZR4J		89.67	-0.48	-0.94	104.0	0.6	1.25	ZZ
APP64F		90.73	0.58	1.15	103.7	0.4	0.74	ZZ
ARPMX2		89.92	-0.23	-0.45	103.1	-0.3	-0.52	ZZ
B7LY76		89.82	-0.33	-0.64	103.7	0.3	0.62	ZZ
B8YTL7	*	91.19	1.04	2.05	102.9	-0.5	-1.02	ZZ
DE823X		90.43	0.28	0.54	103.5	0.1	0.19	ZZ
DNH7D3		90.00	-0.15	-0.29	103.2	-0.2	-0.35	ZZ
FBK2ZM		90.55	0.40	0.79	102.9	-0.5	-1.04	ZZ
GCCCG8		90.49	0.34	0.67	103.8	0.4	0.84	ZZ
H8DM9Y		90.42	0.27	0.54	103.2	-0.2	-0.32	ZZ
HD3Z92		89.43	-0.72	-1.42	102.5	-0.9	-1.74	ZZ
HTFFBX		90.44	0.29	0.56	103.2	-0.2	-0.35	ZZ
JCK9WW		89.80	-0.35	-0.69	103.4	0.0	0.05	ZZ
KC4GGK		89.78	-0.37	-0.73	103.2	-0.1	-0.27	ZZ
KNBMAX		89.37	-0.78	-1.53	102.4	-1.0	-2.02	ZZ
KYDM6Q		89.96	-0.19	-0.37	103.9	0.5	1.08	ZZ
MMRCD3		89.23	-0.92	-1.81	102.6	-0.7	-1.50	ZZ
NWVPAW		90.87	0.72	1.42	103.1	-0.3	-0.64	ZZ
PL7PNJ		90.70	0.55	1.08	103.7	0.3	0.70	ZZ
TBHXPK		90.63	0.48	0.95	104.2	0.8	1.69	ZZ
U4CHJ9		89.99	-0.16	-0.31	103.2	-0.1	-0.27	ZZ
WYEJHH	X	89.72	-0.43	-0.84	107.7	4.3	8.68	ZZ
Y6AHK4		89.76	-0.39	-0.78	103.9	0.5	1.04	ZZ
ZY44KK		89.65	-0.50	-0.98	103.2	-0.1	-0.29	ZZ

Summary Statistics	Sample GW89	Sample GW90
Grand Means	90.15 g/sq m	103.37 g/sq m
Stnd Dev Btwn Labs	0.51 g/sq m	0.50 g/sq m

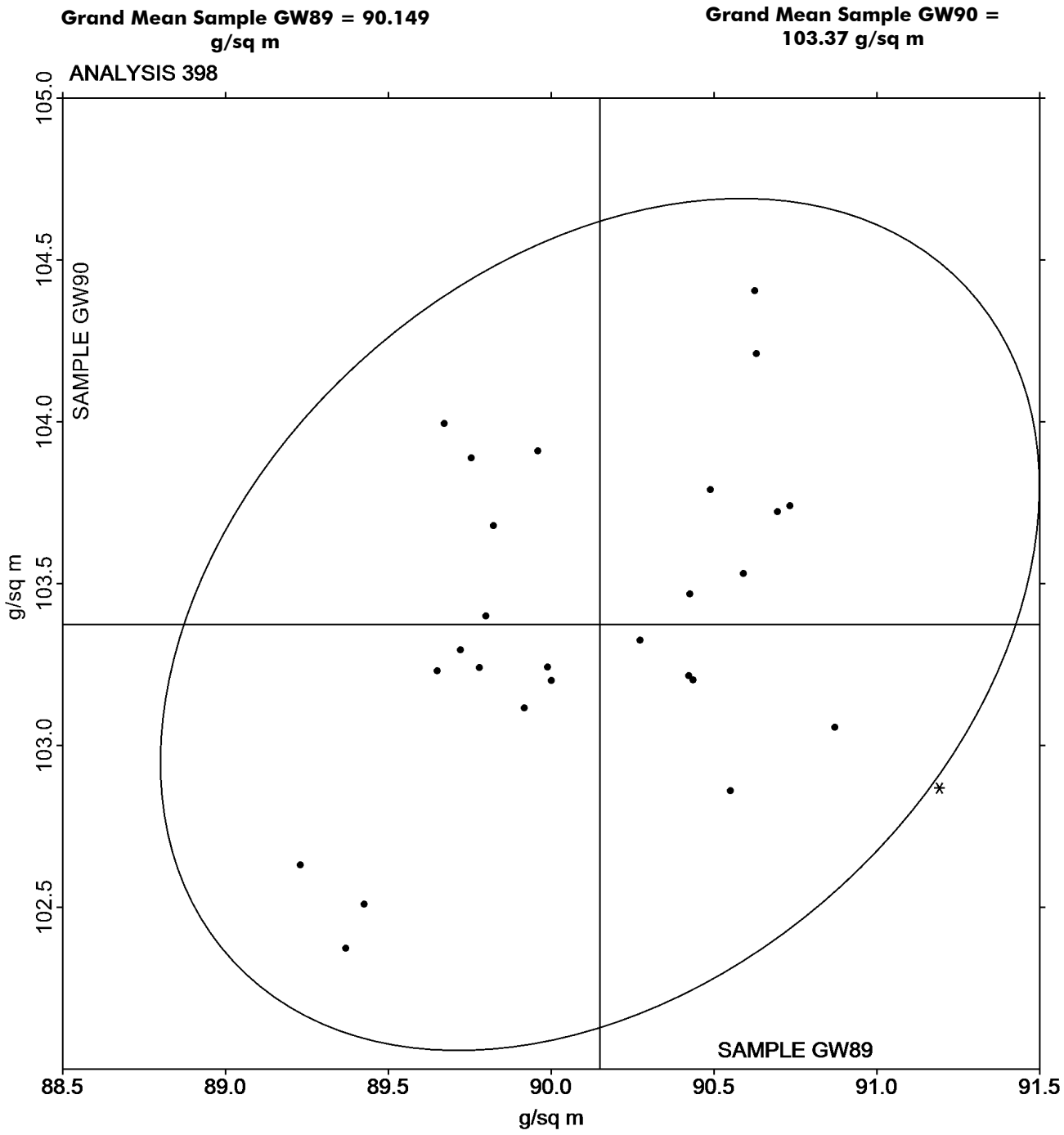
Statistics based on 27 of 28 reporting participants.

Comments on Assigned Data Flags for Test #398

WYEJHH (X) - Extreme Data for Sample GW90.

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 GX89 Lab Mean	Sample GX89 Diff from Grand Mean	Sample GX89 CPV	Sample GX90 Lab Mean	Sample GX90 Diff from Grand Mean	Sample GX90 CPV	Instr Code
2KY8T6		19.97	6.38	1.60	18.74	5.67	1.55	HE
6AKGLB		12.04	-1.55	-0.39	11.20	-1.87	-0.51	HE
7QQ6AV		22.65	9.06	2.28	20.26	7.19	1.97	HE
AFUBN9		12.44	-1.15	-0.29	12.37	-0.70	-0.19	HE
B8ZJYF		11.38	-2.21	-0.56	10.30	-2.77	-0.76	HE
CLF3R8		8.45	-5.14	-1.29	8.04	-5.03	-1.38	HE
FBK2ZM		11.32	-2.27	-0.57	10.91	-2.16	-0.59	HE
FK8662		15.54	1.95	0.49	16.30	3.23	0.89	HE
FXGVRA		22.47	8.88	2.23	21.48	8.41	2.31	HE
GFCNC8		10.65	-2.94	-0.74	10.58	-2.49	-0.68	HE
GN63VK		10.77	-2.82	-0.71	11.47	-1.60	-0.44	HE
GPK3CN		13.08	-0.51	-0.13	12.08	-0.99	-0.27	HE
HWFLRN	X	0.30	-13.29	-3.34	0.22	-12.85	-3.52	XX
JVEBAQ		10.56	-3.03	-0.76	10.32	-2.75	-0.75	HE
K4QM44		10.63	-2.96	-0.74	10.29	-2.78	-0.76	HE
LWNVE7		10.63	-2.96	-0.74	10.03	-3.04	-0.83	HE
MMRCD3		10.50	-3.09	-0.78	10.30	-2.77	-0.76	HE
NWVPAW		18.71	5.12	1.29	17.67	4.60	1.26	HE
NZU4V2		10.83	-2.76	-0.69	11.06	-2.01	-0.55	HE
RPLUGY		14.01	0.42	0.10	14.21	1.14	0.31	HE
RYAQHZ	X	1.91	-11.68	-2.94	1.78	-11.29	-3.09	HE
THDVE8		15.13	1.54	0.39	15.03	1.96	0.54	HE
VJ8Z98		10.67	-2.92	-0.73	10.15	-2.92	-0.80	HE
WXYENQ		15.35	1.76	0.44	15.32	2.25	0.62	HE
YT46TJ		14.85	1.26	0.32	12.49	-0.58	-0.16	HE

Summary Statistics	Sample GX89	Sample GX90
Grand Means	13.59 Seconds	13.07 Seconds
Stnd Dev Btwn Labs	3.98 Seconds	3.65 Seconds

Statistics based on 23 of 25 reporting participants.

Comments on Assigned Data Flags for Test #399

RYAQHZ (X) - Data for both samples are low. Possible Systematic Error.

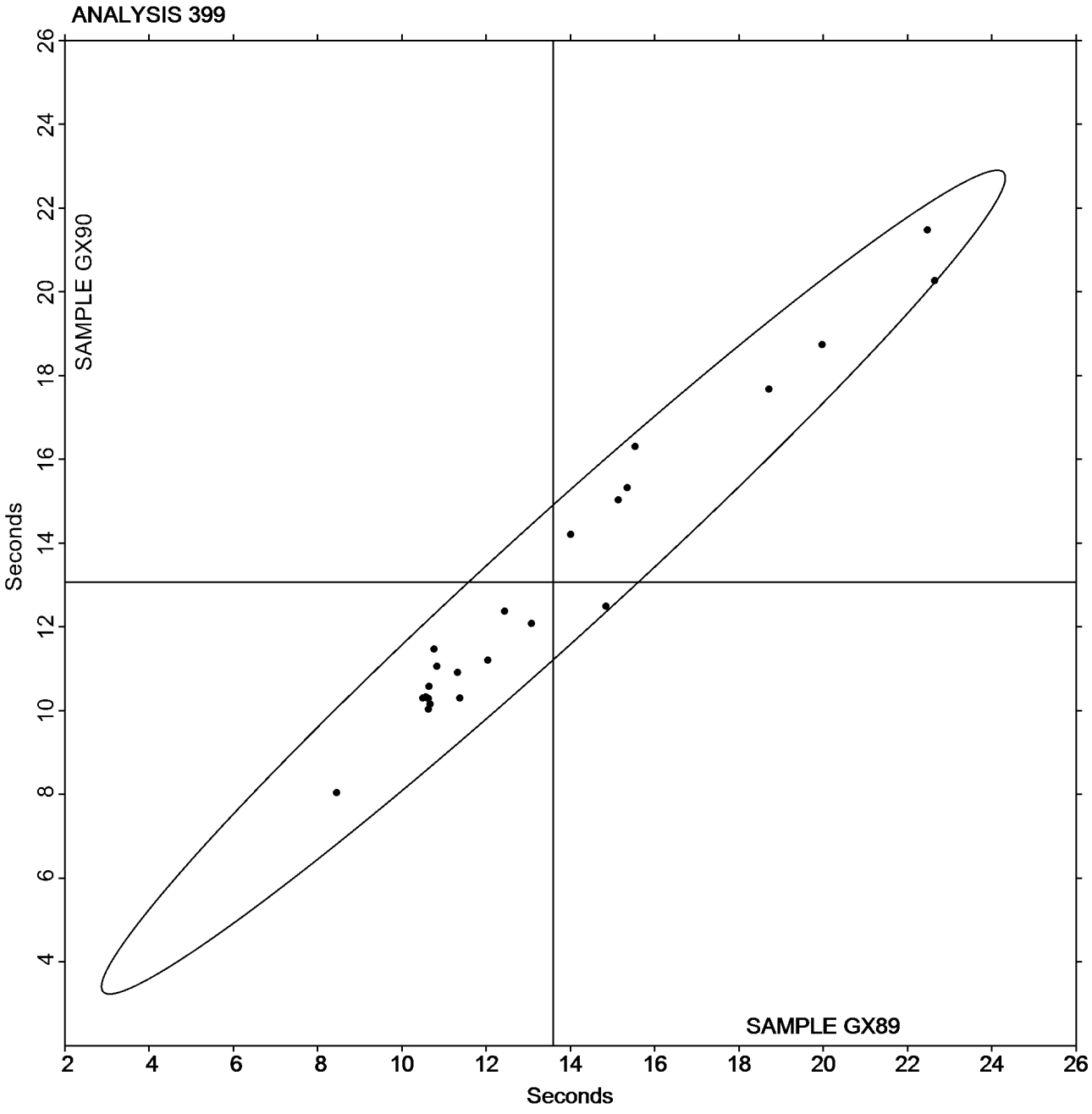
HWFLRN (X) - Data for both samples are low. Possible Systematic Error.

Key to Instrument Codes Reported by Participants

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

Grand Mean Sample GX89 = 13.593 Seconds

Grand Mean Sample GX90 = 13.070 Seconds



-End of Report-