Collaborative Testing Services, Inc.

Paper & Paperboard Testing Program

Summary Report #2902 G - October 2017

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384	Opacity (89% Reflectance Backing) - Fine Papers
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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	
39HHAY		**GA47**	95.18	-0.98	3.52	-0.11	0.03	-0.40	0.42	HE
		GA48	95.07	-0.95	3.12					
3FVD7T		**GA47**	94.88	-0.43	3.99	0.30	-0.05	0.08	0.32	NE
		GA48	95.19	-0.48	4.07					
7PAM7H		**GA47**	93.80	-0.80	3.68	0.39	0.01	-0.02	0.39	TC
		GA48	94.18	-0.79	3.66					
98369H	X	**GA47**	92.96	0.16	3.28	0.38	-0.08	0.02	0.39	TS
		GA48	93.34	0.08	3.30					
9UYNEA		**GA47**	95.02	-0.74	3.70	0.28	0.00	-0.01	0.28	TC
		GA48	95.30	-0.74	3.69					
ACDLXC		**GA47**	95.89	-0.71	2.96	0.36	-0.03	-0.03	0.37	XS
		GA48	96.26	-0.75	2.93					
B4WBJC	X	**GA47**	94.22	0.16	3.34	0.34	-0.04	0.00	0.34	TS
		GA48	94.56	0.13	3.34					
BA7G4N		**GA47**	94.00	-1.01	3.73	0.12	-0.09	-0.12	0.20	HG
		GA48	94.13	-1.10	3.61					
FB4HW9		**GA47**	94.33	-0.94	2.86	0.12	-0.10	-0.17	0.23	HE
		GA48	94.45	-1.03	2.69					
FE24HK		**GA47**	95.14	-0.82	3.60	0.26	-0.01	0.05	0.26	EH
		GA48	95.40	-0.84	3.65					
FE4R36		**GA47**	95.10	-0.74	3.78	0.26	0.04	0.02	0.27	TS
		GA48	95.36	-0.70	3.80					
GBXNQ9		**GA47**	93.04	-0.48	3.58	0.34	-0.04	0.04	0.35	TS
		GA48	93.38	-0.52	3.62					
H634EC		**GA47**	94.15	-0.68	3.58	0.34	-0.01	0.00	0.34	MK
		GA48	94.49	-0.69	3.58					
J4BH87		**GA47**	94.60	-0.69	3.53	0.37	0.04	0.01	0.37	HE
		GA48	94.97	-0.64	3.54					
J6KMHA		**GA47**	93.69	-0.83	3.71	0.39	0.01	0.02	0.39	TM
		GA48	94.07	-0.83	3.73					
KQD3C3		**GA47**	93.85	-0.82	3.76	0.26	-0.01	0.03	0.26	LA
		GA48	94.10	-0.82	3.79					

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
N324PE		GA47	92.79	-0.22	3.47	0.33	-0.08	0.04	0.34	TS
		GA48	93.12	-0.30	3.51					
N3YJTY		GA47	94.94	-0.75	3.81	0.30	-0.01	-0.01	0.30	EH
		GA48	95.25	-0.76	3.80					
NA3FMW		GA47	93.93	-0.60	3.98	0.55	-0.05	0.16	0.57 X	VM
		GA48	94.48	-0.65	4.14					
TRZC3F		GA47	93.86	-0.84	3.65	0.35	-0.01	0.01	0.35	XX
		GA48	94.21	-0.85	3.65					
U2NFTV		GA47	94.43	-0.95	3.03	0.15	-0.09	-0.16	0.23	HE
		GA48	94.58	-1.04	2.87					
XFBWAN		GA47	94.10	-0.69	3.54	-0.21	-0.01	0.03	0.22	TC
		GA48	93.88	-0.70	3.57					
YALYWL		GA47	93.08	-0.46	3.49	0.33	0.01	0.00	0.33	TS
		GA48	93.41	-0.46	3.49					

Summary Statistics

Grand Means							
GA47	94.217	-0.723	3.548	0.261	-0.021	-0.021	0.323
GA48	94.486	-0.744	3.547				
Stnd Dev Btwn Labs							
GA47	0.808	0.198	0.299	0.171	0.042	0.115	0.084
GA48	0.786	0.201	0.351				

Statistics based on 21 of 23 reporting participants

Comments on Assigned Data Flags for Test #350

B4WBJC (X) - High a values for both samples and inconsistent within the determinations for Sample GA47.

98369H (X) - High a values for both samples.

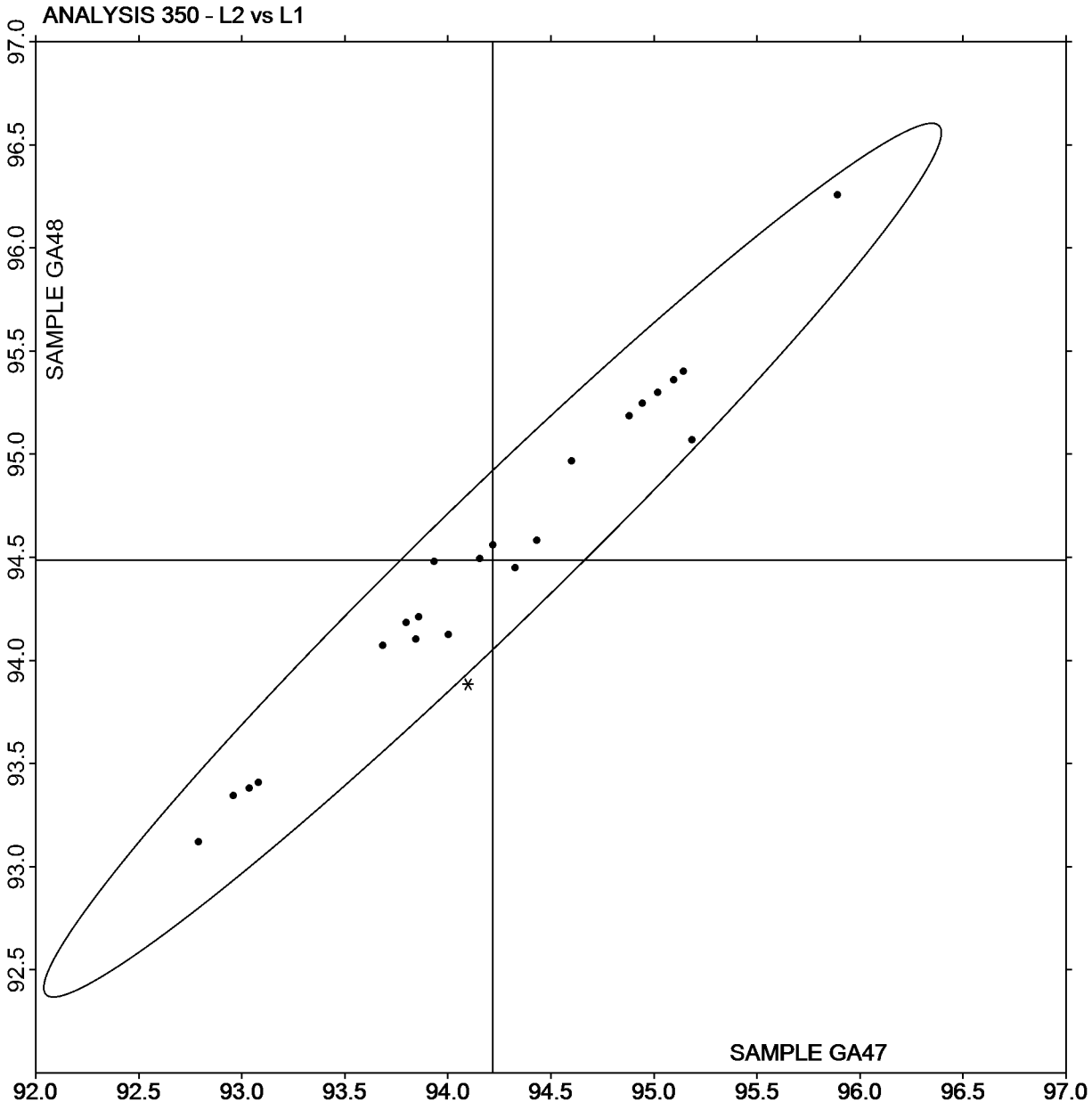
Analysis Notes:

NA3FMW - One determination removed from the Lab Mean of Sample GA48, b values, per Grubb's Test at 1% risk (TAPPI 1205).

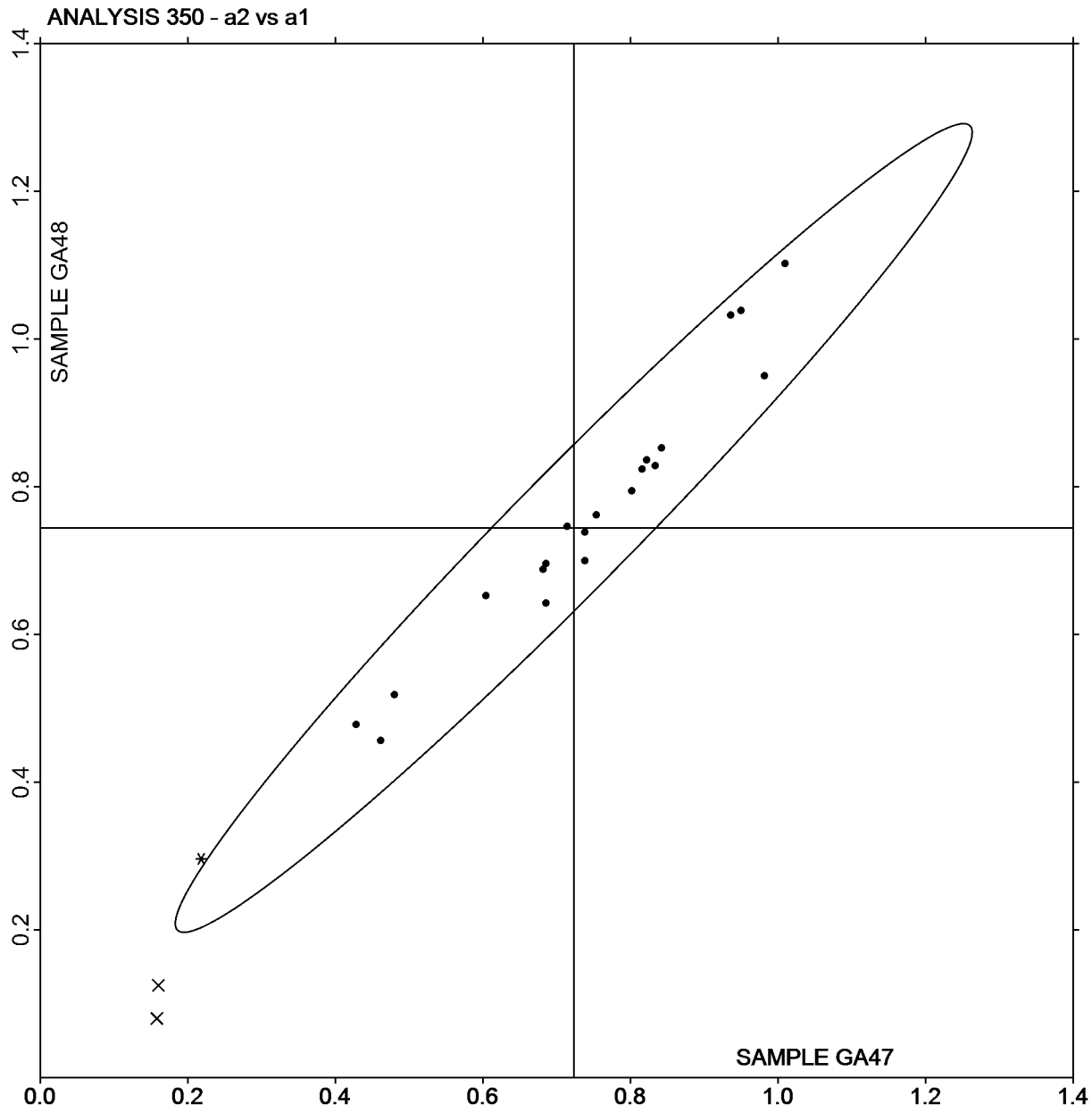
Key to Instrument Codes Reported by Participants

EH	Datacolor Elrepho SF450	HE	Hunter LabScan
HG	Hunter ColorQUEST	LA	L & W Elrepho AL300
MK	Macbeth Color-Eye 7000 Spectrophotometer	NE	Minolta CM-3500d Spectrophotometer
TC	Technidyne Color Touch Series	TM	Technidyne Technibrite Micro TB-1C
TS	Technidyne Brightimeter Micro S-5	VM	Valmet PaperLab (was Kajaani/Robotest)
XS	X-Rite 938 Spectrodensitometer	XX	Instrument make/model not specified by lab

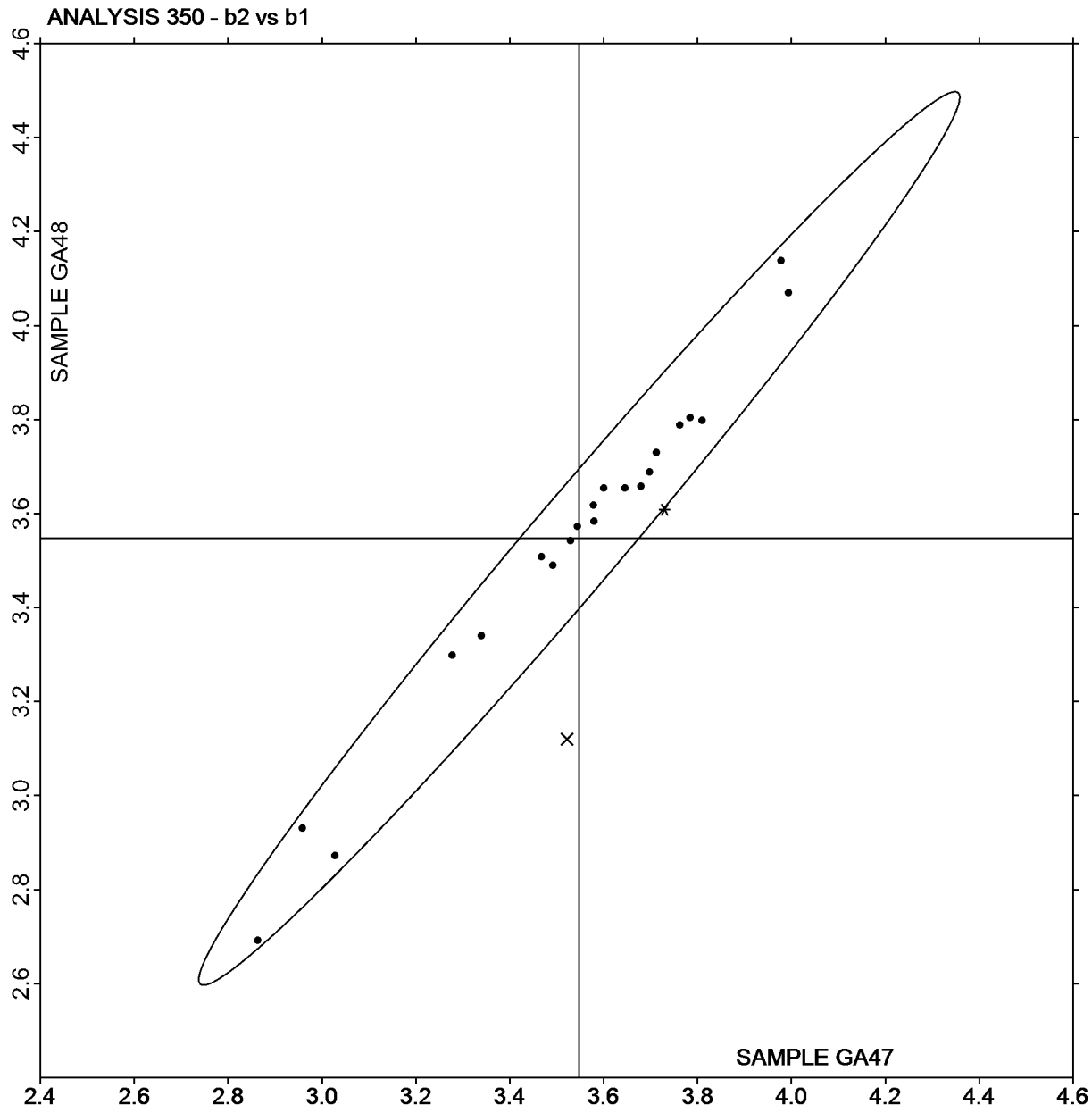
Plot of L values GA48 v L values GA47



Plot of a values GA48 v a values GA47



Plot of b values GA48 v b values GA47



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
2XZEPU		GA47	93.70	-0.61	3.56	0.36	0.02	-0.01	0.36	TC
		GA48	94.05	-0.59	3.56					
864ABN		GA47	95.36	-0.69	3.50	0.26	0.03	0.00	0.26	XX
		GA48	95.62	-0.66	3.51					
BFPPLU		GA47	95.36	-0.70	3.78	0.28	0.04	0.02	0.29	HT
		GA48	95.64	-0.66	3.80					
CJ8BT8		GA47	95.44	-0.72	3.69	0.30	0.03	0.07	0.31	HT
		GA48	95.73	-0.70	3.76					
CPTGAE		GA47	94.67	-0.74	3.58	-0.18	0.02	-0.40	0.44 X	NG
		GA48	94.49	-0.72	3.18					
FMTJ7N		GA47	93.76	-0.63	3.17	0.35	0.03	0.02	0.35	TC
		GA48	94.11	-0.60	3.19					
J4BH87		GA47	94.61	-0.68	3.52	0.26	0.03	0.05	0.27	HE
		GA48	94.87	-0.65	3.58					
MF76K4		GA47	95.47	-0.64	3.85	0.25	-0.02	-0.01	0.25	XV
		GA48	95.72	-0.66	3.84					
MHXYNZ		GA47	95.28	-0.62	3.91	0.30	-0.02	0.03	0.30	XM
		GA48	95.57	-0.63	3.94					
TQP8RD		GA47	95.07	-0.60	4.01	0.30	0.05	-0.01	0.30	NG
		GA48	95.37	-0.55	4.00					
VCXMXU		GA47	94.20	-0.66	3.50	0.33	0.04	-0.04	0.33	HE
		GA48	94.53	-0.61	3.46					
VRQCVC		GA47	96.97	-0.57	2.82	-0.03	-0.07	-0.16	0.18	XP
		GA48	96.93	-0.64	2.66					
XFWHVM		GA47	95.10	-0.63	3.79	0.27	0.03	-0.03	0.27	LS
		GA48	95.37	-0.60	3.76					
XUR2BP		GA47	95.24	-0.68	3.84	0.27	0.04	0.00	0.28	HT
		GA48	95.51	-0.64	3.85					
YJUE3T		GA47	94.83	-0.76	3.18	-0.08	0.01	-0.36	0.36	EH
		GA48	94.75	-0.75	2.82					
YRHCM8		GA47	95.20	-0.60	3.96	0.27	0.04	-0.02	0.27	NG
		GA48	95.46	-0.56	3.94					

Z32Z4R	**GA47**	95.29	-0.57	3.78	0.27	0.01	0.05	0.27	NF
	GA48	95.55	-0.55	3.83					
ZYDTD4	**GA47**	94.60	-0.55	3.44	0.29	0.04	0.01	0.29	HV
	GA48	94.89	-0.51	3.44					

Summary Statistics

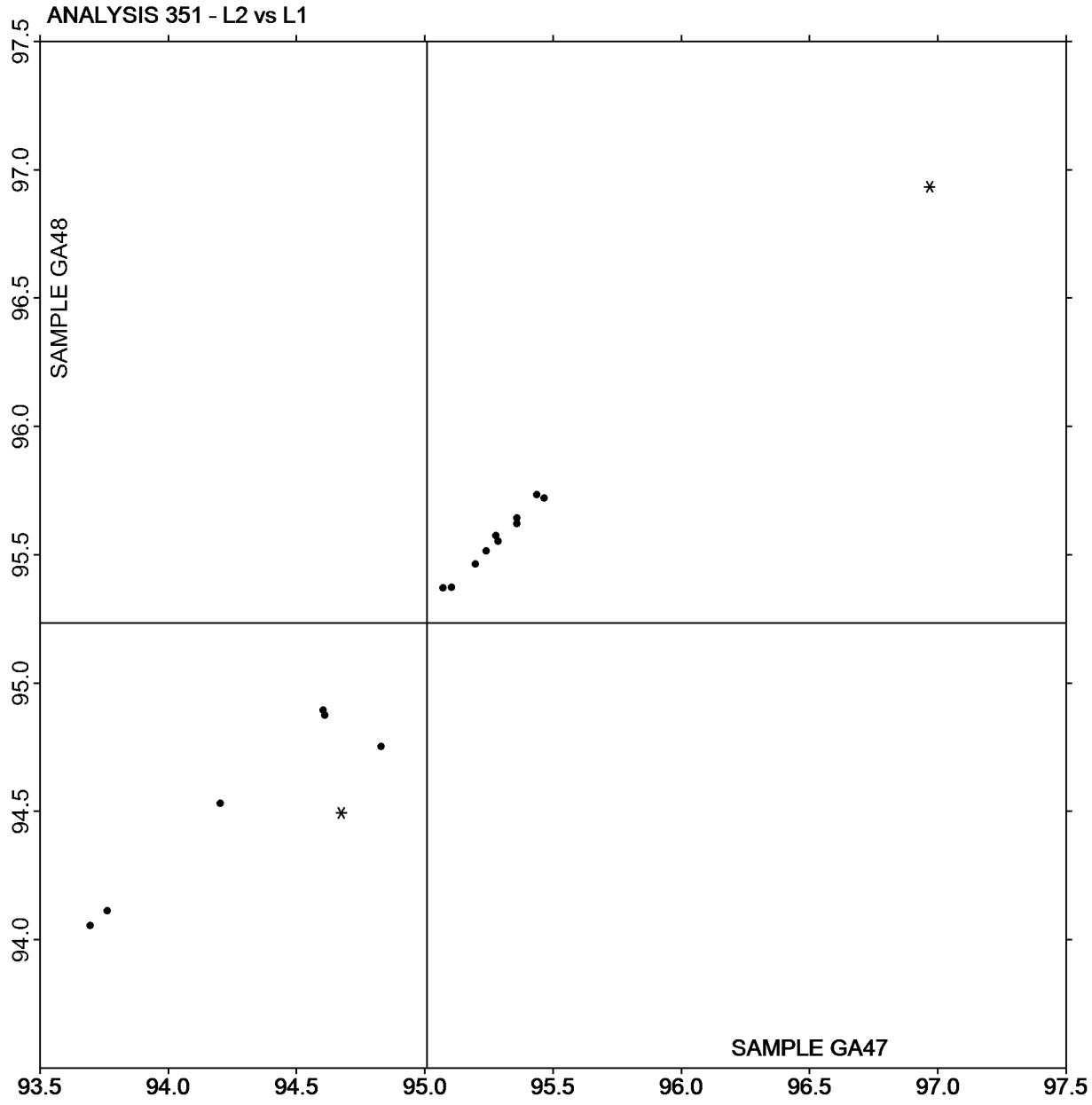
Grand Means								
GA47	95.008	-0.648	3.605	0.225	0.019	-0.043	0.299	
GA48	95.234	-0.628	3.562					
Stnd Dev Btwn Labs								
GA47	0.732	0.061	0.311	0.154	0.029	0.133	0.056	
GA48	0.697	0.062	0.385					

Statistics based on 18 of 18 reporting participants

Key to Instrument Codes Reported by Participants

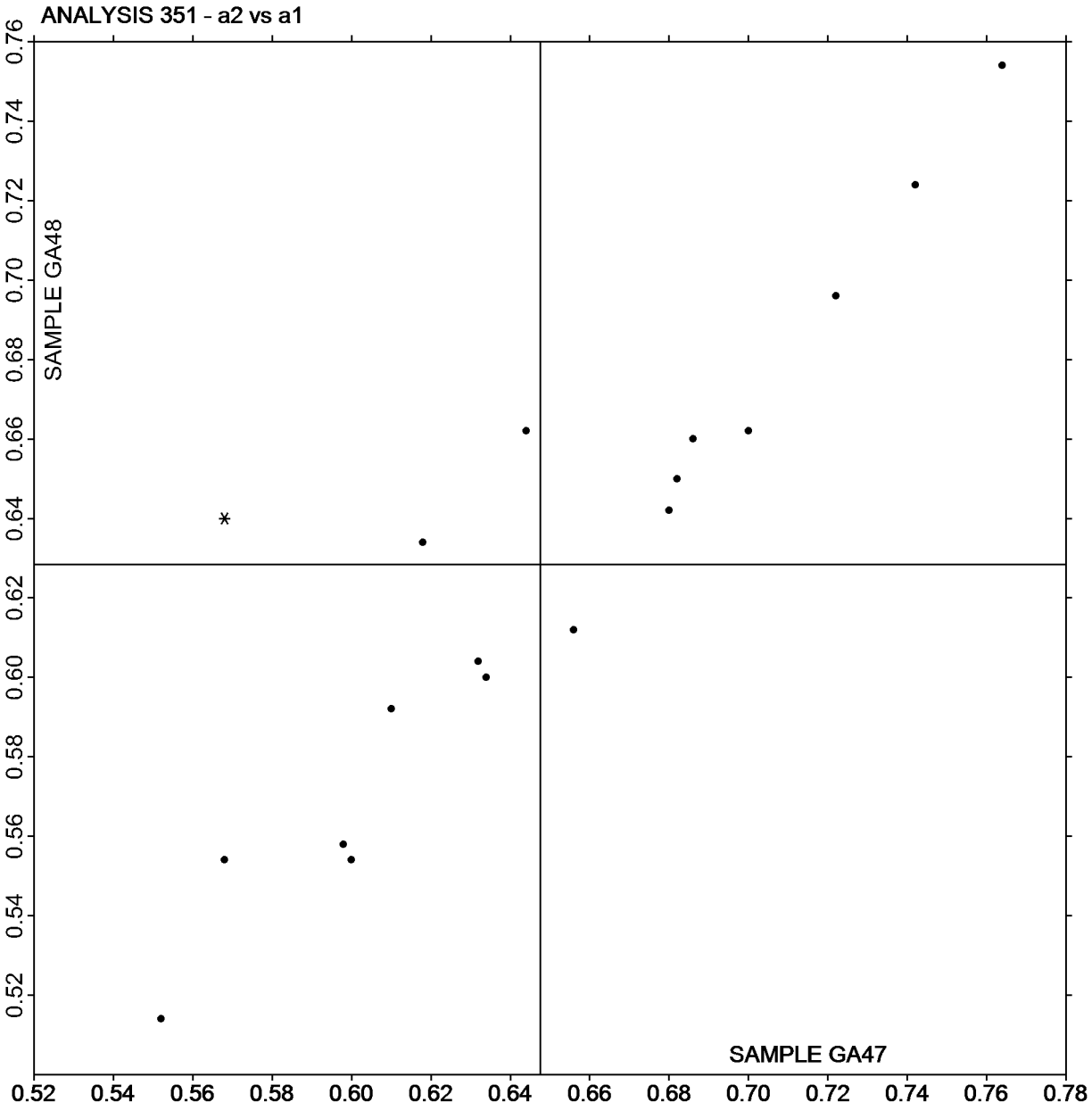
EH	Datacolor Elrepho SF450	HE	Hunter LabScan
HT	Hunter UltraScan Vis	HV	Hunter Ultrascan XE
LS	L & W Elrepho SE 070	NF	Minolta CM-3600d Spectrophotometer
NG	Minolta CM-3700d Spectrophotometer	TC	Technidyne Color Touch Series
XM	X-Rite CA-22	XP	X-Rite Spectrophotometer DTP
XV	X-Rite SP60 Series	XX	Instrument make/model not specified by lab

Plot of L values GA48 v L values GA47



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

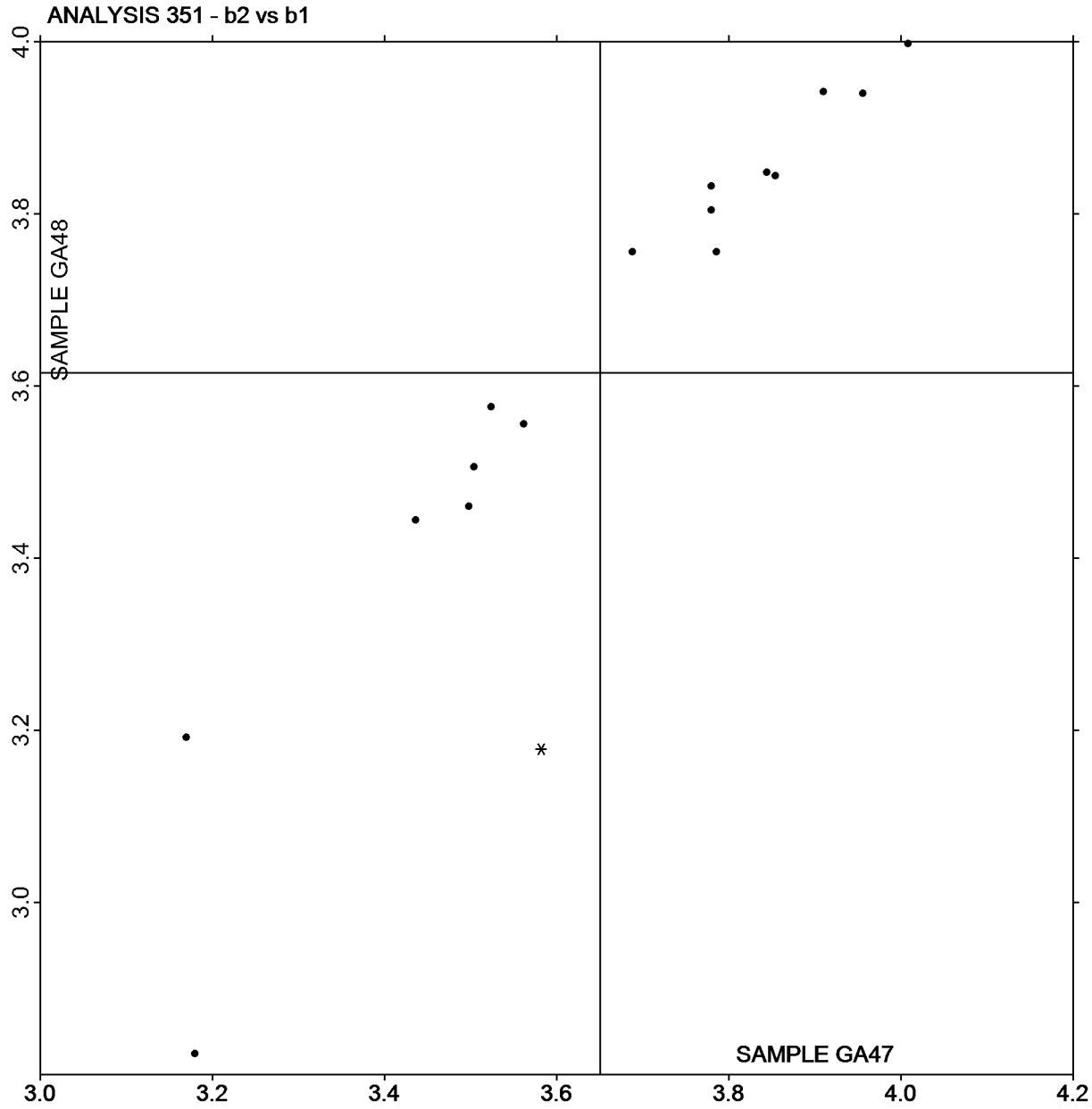
Plot of a values GA48 v a values GA47



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

Web Code	Data Flag	Samples	CIE L* a* b* Color Values L*	a*	b*	Color Difference Values ΔL*	Δa*	Δb*	ΔE*	InstrCode

Plot of b values GA48 v b values GA47



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 #2902G, October 2017

Analysis 360

Thickness (Caliper), Printing papers

TAPPI Official Test Method T411

WebCode	Data Flag	Sample GV47 Lab Mean	Sample GV47 Diff from Grand Mean	Sample GV47 CPV	Sample GV48 Lab Mean	Sample GV48 Diff from Grand Mean	Sample GV48 CPV	Instr Code
2WUU2U	*	3.782	-0.101	-1.45	3.739	-0.142	-2.20	EM
2XZEPU		3.794	-0.089	-1.27	3.797	-0.084	-1.30	PP
3F2JUH		3.905	0.022	0.32	3.871	-0.010	-0.15	TM
4THXAL	X	3.626	-0.257	-3.69	3.637	-0.244	-3.78	EM
6M934R		3.827	-0.056	-0.80	3.835	-0.046	-0.71	PP
864ABN		3.876	-0.007	-0.10	3.848	-0.033	-0.51	LW
8MHT3L		3.873	-0.010	-0.14	3.821	-0.060	-0.92	XX
946L8J		3.867	-0.016	-0.23	3.844	-0.037	-0.57	LA
98369H		3.804	-0.079	-1.14	3.831	-0.049	-0.76	TM
9CHFLL		3.913	0.030	0.44	3.915	0.034	0.53	TM
9UYNEA		3.883	0.000	0.01	3.869	-0.012	-0.18	LA
ACDLXC		3.750	-0.133	-1.91	3.760	-0.121	-1.87	TM
BFPPLU		3.897	0.014	0.21	3.866	-0.015	-0.23	EM
BZWYNC		3.897	0.014	0.20	3.917	0.036	0.56	TM
CMPLQB		3.956	0.073	1.05	3.930	0.049	0.76	LW
CPTGAE		3.975	0.092	1.33	3.965	0.084	1.31	LW
DAWJMA		3.886	0.003	0.05	3.860	-0.021	-0.32	LW
EMEEUT		3.867	-0.016	-0.23	3.857	-0.024	-0.37	TA
EVP377		3.859	-0.024	-0.34	3.866	-0.015	-0.23	LW
FE24HK		3.953	0.070	1.01	3.914	0.033	0.52	EM
GBXNQ9	*	3.814	-0.069	-0.99	3.892	0.011	0.18	LA
GFN39N		3.865	-0.018	-0.25	3.875	-0.006	-0.09	LA
GWTCB9	X	3.746	-0.137	-1.97	3.941	0.060	0.93	LW
GXRHR3		3.860	-0.022	-0.32	3.857	-0.024	-0.37	LW
H634EC		3.913	0.030	0.44	3.920	0.039	0.61	PP
HA3AYA		3.927	0.044	0.64	3.886	0.005	0.08	EM
J6KMHA		3.885	0.002	0.03	3.921	0.040	0.62	TA
JAFDQ7		3.897	0.014	0.21	3.896	0.015	0.24	EM
JCKQQT		3.879	-0.004	-0.05	3.910	0.029	0.45	TM
JH9NZ2		3.970	0.087	1.26	3.990	0.109	1.69	LW
KQD3C3		3.961	0.079	1.13	3.944	0.063	0.98	LA
KQJDCE		3.769	-0.114	-1.63	3.791	-0.090	-1.39	TM
L9CFMN		3.929	0.046	0.67	3.915	0.035	0.54	XX
LR79FY		3.893	0.010	0.15	3.856	-0.025	-0.39	LW
LRLET4		3.921	0.038	0.55	3.917	0.036	0.56	LW
MHXYNZ		3.819	-0.064	-0.92	3.854	-0.026	-0.41	LW
N9NXH7		3.780	-0.103	-1.48	3.810	-0.071	-1.10	TM
NQ7XPN		3.890	0.007	0.10	3.882	0.001	0.02	MS
NULHHV		3.887	0.005	0.07	3.906	0.025	0.39	EM
PT3ZRV		3.913	0.030	0.43	3.905	0.024	0.38	LW

Paper & Paperboard Interlaboratory Testing Program

Analysis 360

Thickness (Caliper), Printing papers

TAPPI Official Test Method T411

WebCode	Data Flag	Sample GV47 Lab Mean	Sample GV47 Diff from Grand Mean	Sample GV47 CPV	Sample GV48 Lab Mean	Sample GV48 Diff from Grand Mean	Sample GV48 CPV	Instr Code
PVFDU7		3.917	0.034	0.49	3.922	0.041	0.64	PP
QDU4C3		3.982	0.099	1.43	3.989	0.108	1.68	EM
QFZUDQ		3.875	-0.008	-0.11	3.894	0.013	0.20	FR
RY6QAR		3.985	0.102	1.47	3.943	0.062	0.96	LW
TPWJ8W		3.909	0.026	0.38	3.910	0.029	0.45	TM
TQP8RD		3.709	-0.174	-2.50	3.741	-0.140	-2.16	PP
TRZC3F	X	3.900	0.017	0.25	3.680	-0.201	-3.11	XX
TTFNPR		3.994	0.111	1.60	3.981	0.100	1.55	TM
UGFFGA		3.920	0.037	0.54	3.930	0.049	0.76	EM
VCXMXU		3.968	0.085	1.22	3.941	0.060	0.93	TM
VJJFBE		3.768	-0.115	-1.65	3.795	-0.086	-1.33	TA
VRQCVC	X	3.780	-0.103	-1.48	3.870	-0.011	-0.17	TM
VYWQ2M		3.949	0.067	0.96	3.931	0.050	0.78	LW
WCXWDX		3.920	0.038	0.54	3.939	0.058	0.90	LW
XFBWAN		3.965	0.082	1.18	3.981	0.100	1.55	TA
XUR2BP		3.823	-0.060	-0.86	3.870	-0.011	-0.17	EM
XUX48P		4.010	0.127	1.83	3.975	0.095	1.46	LW
XYMQTH	*	3.720	-0.163	-2.34	3.690	-0.191	-2.95	TM
YALYWL		3.860	-0.023	-0.33	3.861	-0.020	-0.31	EM
YRHCM8		3.863	-0.020	-0.28	3.865	-0.016	-0.24	EM
YUDMQM		3.839	-0.044	-0.63	3.837	-0.044	-0.68	PP
Z32Z4R		3.956	0.073	1.05	3.939	0.058	0.90	TM
ZYDTD4		3.809	-0.074	-1.06	3.796	-0.085	-1.31	EM

Summary Statistics	Sample GV47	Sample GV48
Grand Means	3.88 mils	3.88 mils
Stnd Dev Btwn Labs	0.07 mils	0.06 mils

Statistics based on 59 of 63 reporting participants.

Comments on Assigned Data Flags for Test #360

4THXAL (X) - Data for both samples are low. Possible Systematic Error.

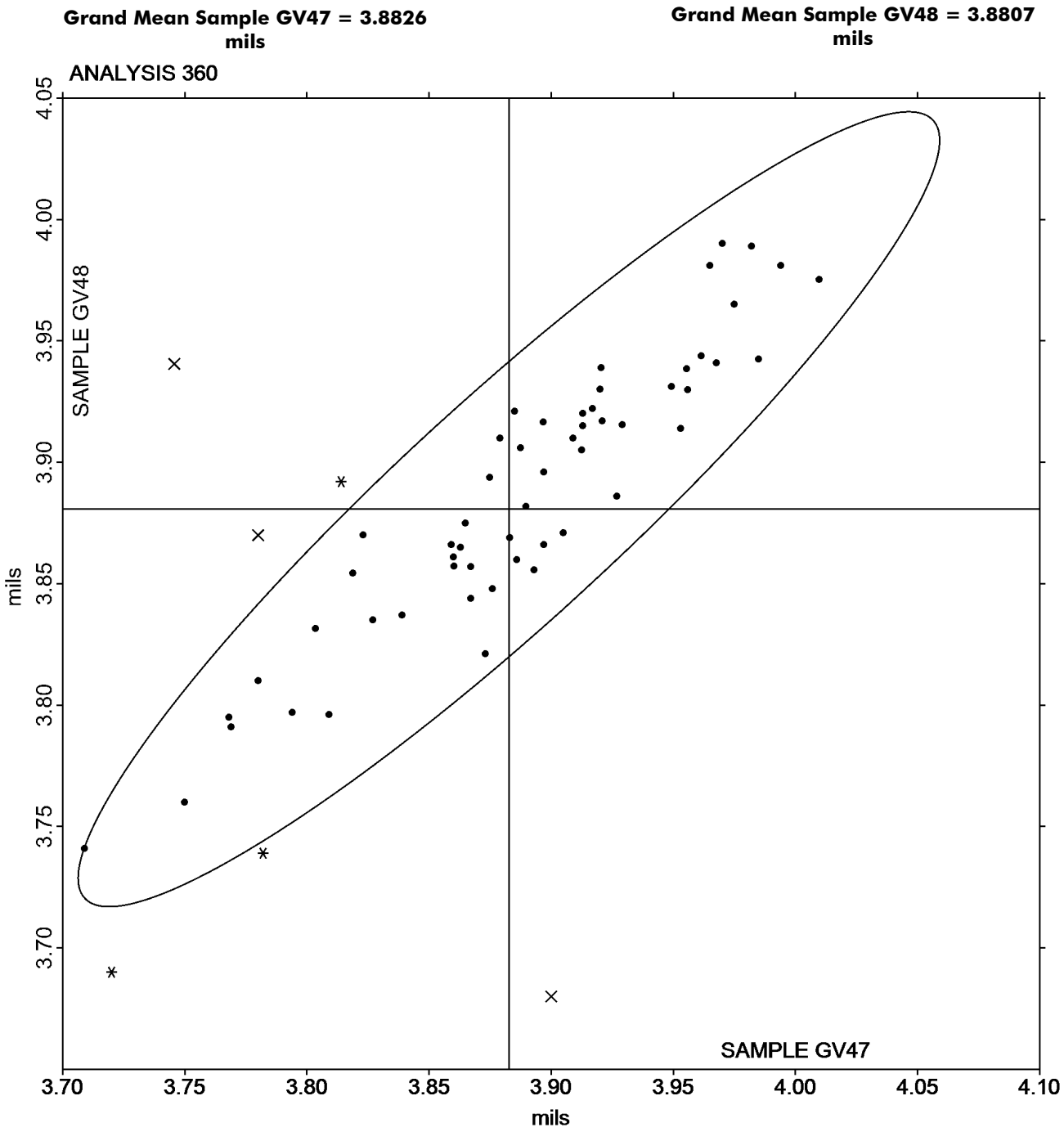
GWTCB9 (X) - Inconsistent in testing between samples.

TRZC3F (X) - Data for sample GV48 are low. Inconsistent within the determinations of sample GV48.

VRQCVC (X) - Inconsistent in testing between samples.

Key to Instrument Codes Reported by Participants

EM	Emveco	FR	Frank Instruments
LA	L & W Autoline	LW	L & W
MS	Messmer	PP	Technidyne Profile/Plus
TA	Thwing-Albert	TM	TMI
XX	Instrument make/model not specified by lab		



Paper & Paperboard Interlaboratory Testing Program

Analysis 361

Thickness (Caliper), Packaging papers

TAPPI Official Test Method T411

WebCode	Data Flag	Sample GY47 Lab Mean	Sample GY47 Diff from Grand Mean	Sample GY47 CPV	Sample GY48 Lab Mean	Sample GY48 Diff from Grand Mean	Sample GY48 CPV	Instr Code
2877BH		14.03	-0.05	-0.35	14.03	-0.05	-0.42	TM
39HHAY		13.94	-0.13	-0.91	13.97	-0.11	-0.93	LA
3F2JUH		14.30	0.22	1.49	14.19	0.11	0.90	TM
69BXT9		14.18	0.10	0.68	14.11	0.03	0.25	TM
772846		13.98	-0.10	-0.67	14.03	-0.05	-0.45	TA
8LMCLH		14.26	0.18	1.25	14.32	0.24	1.97	TM
B4WBJC		13.90	-0.18	-1.25	13.96	-0.12	-1.01	EM
B8EPRH		13.89	-0.18	-1.26	13.96	-0.13	-1.06	LA
BCACMR		14.22	0.15	1.00	14.13	0.04	0.35	LA
FB4HW9		14.18	0.10	0.69	14.14	0.05	0.44	EM
FMTJ7N		14.01	-0.07	-0.50	14.10	0.01	0.11	EM
J4BH87		14.02	-0.06	-0.39	13.98	-0.10	-0.85	EM
JPQZE3		14.11	0.04	0.25	14.13	0.05	0.38	LW
JXK8W9		14.20	0.13	0.86	14.21	0.12	1.03	LA
KEHUTY		14.02	-0.06	-0.40	14.11	0.03	0.22	LA
LD7GN3		14.07	-0.01	-0.05	14.10	0.01	0.09	TA
LR79FY		14.29	0.21	1.45	14.23	0.14	1.20	XX
LTGXWQ		13.97	-0.11	-0.75	13.93	-0.16	-1.30	TM
MBU2U3		13.97	-0.11	-0.77	13.96	-0.13	-1.07	TA
N9NXH7		13.92	-0.16	-1.08	13.91	-0.17	-1.44	TM
NA3FMW		13.89	-0.18	-1.26	14.03	-0.06	-0.48	XX
NFQZQC		14.35	0.27	1.83	14.23	0.15	1.24	XX
NULHHV		14.20	0.13	0.86	14.15	0.06	0.52	EM
P3GM66		14.10	0.02	0.14	14.03	-0.05	-0.45	LW
PT3ZRV		14.04	-0.03	-0.23	14.04	-0.04	-0.37	LW
R9UE7F		13.89	-0.19	-1.28	13.90	-0.18	-1.53	TM
U2NFTV		14.27	0.19	1.28	14.30	0.21	1.76	EM
URZLGY		14.03	-0.05	-0.33	14.16	0.08	0.63	LA
VJJFBE	X	13.82	-0.26	-1.79	13.37	-0.71	-5.89	TA
WCXWDX		14.22	0.14	0.95	14.19	0.11	0.90	LW
XFWHVM		14.10	0.02	0.15	14.10	0.02	0.13	XX
Y4DFXT		13.77	-0.31	-2.10	13.85	-0.23	-1.94	TM
YJUE3T		14.18	0.10	0.70	14.23	0.14	1.18	EM

Summary Statistics	Sample GY47	Sample GY48
Grand Means	14.08 mils	14.08 mils
Stnd Dev Btwn Labs	0.15 mils	0.12 mils

Statistics based on 32 of 33 reporting participants.

Comments on Assigned Data Flags for Test #361

VJJFBE (X) - Data for sample GY48 are low.

Analysis Notes:

39HHAY - Data appear to be reported as micrometers, not mils as indicated on datasheet. Unit changed by CTS.

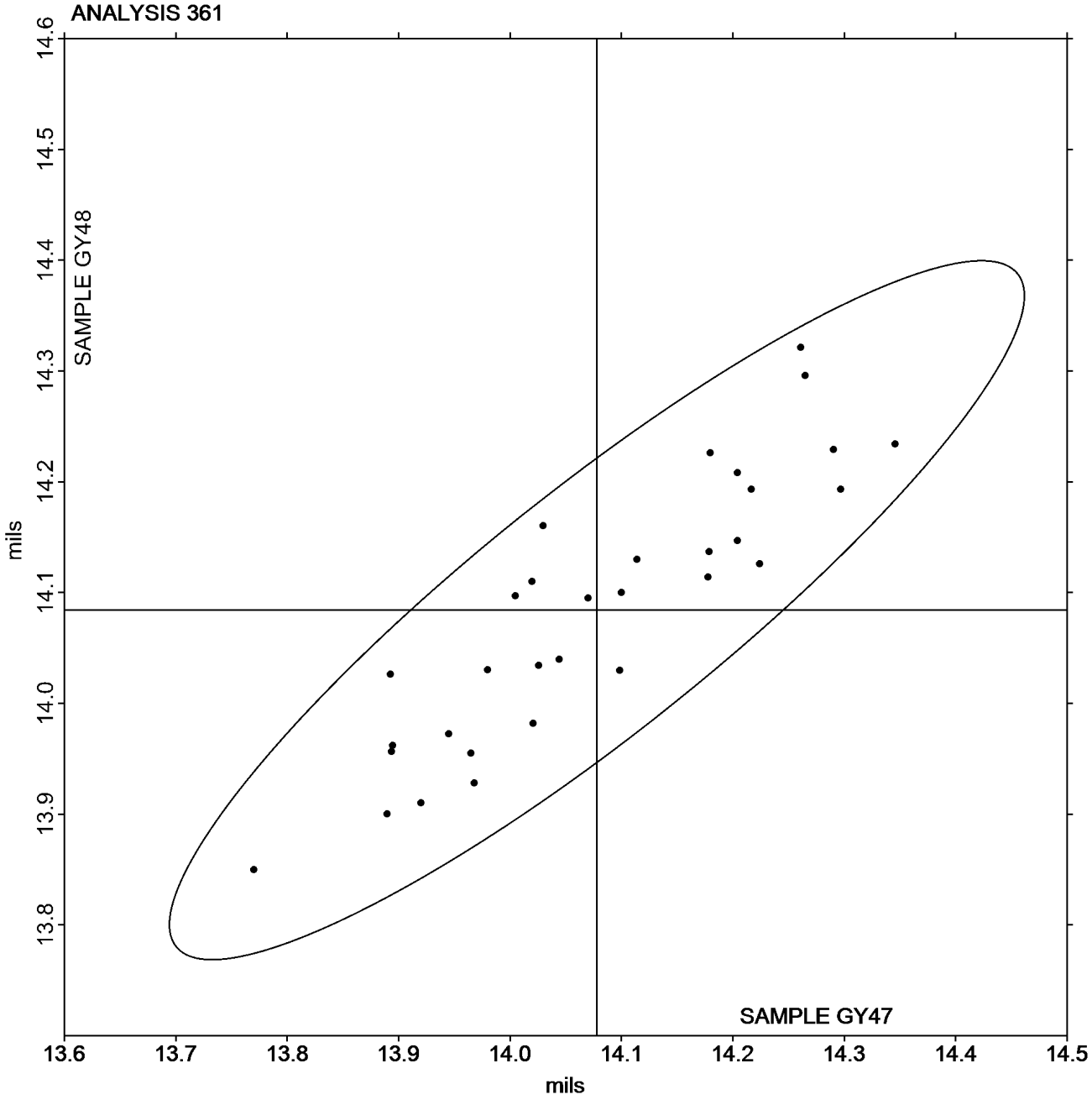
LR79FY - One determination removed from the Lab Mean of Sample GY47 per Grubb's Test at 1% risk (TAPPI 1205).

Key to Instrument Codes Reported by Participants

EM	Emveco	LA	L & W Autoline
LW	L & W	TA	Thwing-Albert
TM	TMI	XX	Instrument make/model not specified by lab

Grand Mean Sample GY47 = 14.078 mils

Grand Mean Sample GY48 = 14.084 mils



Paper & Paperboard Interlaboratory Testing Program

Analysis 364

Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

TAPPI Official Test Method T549

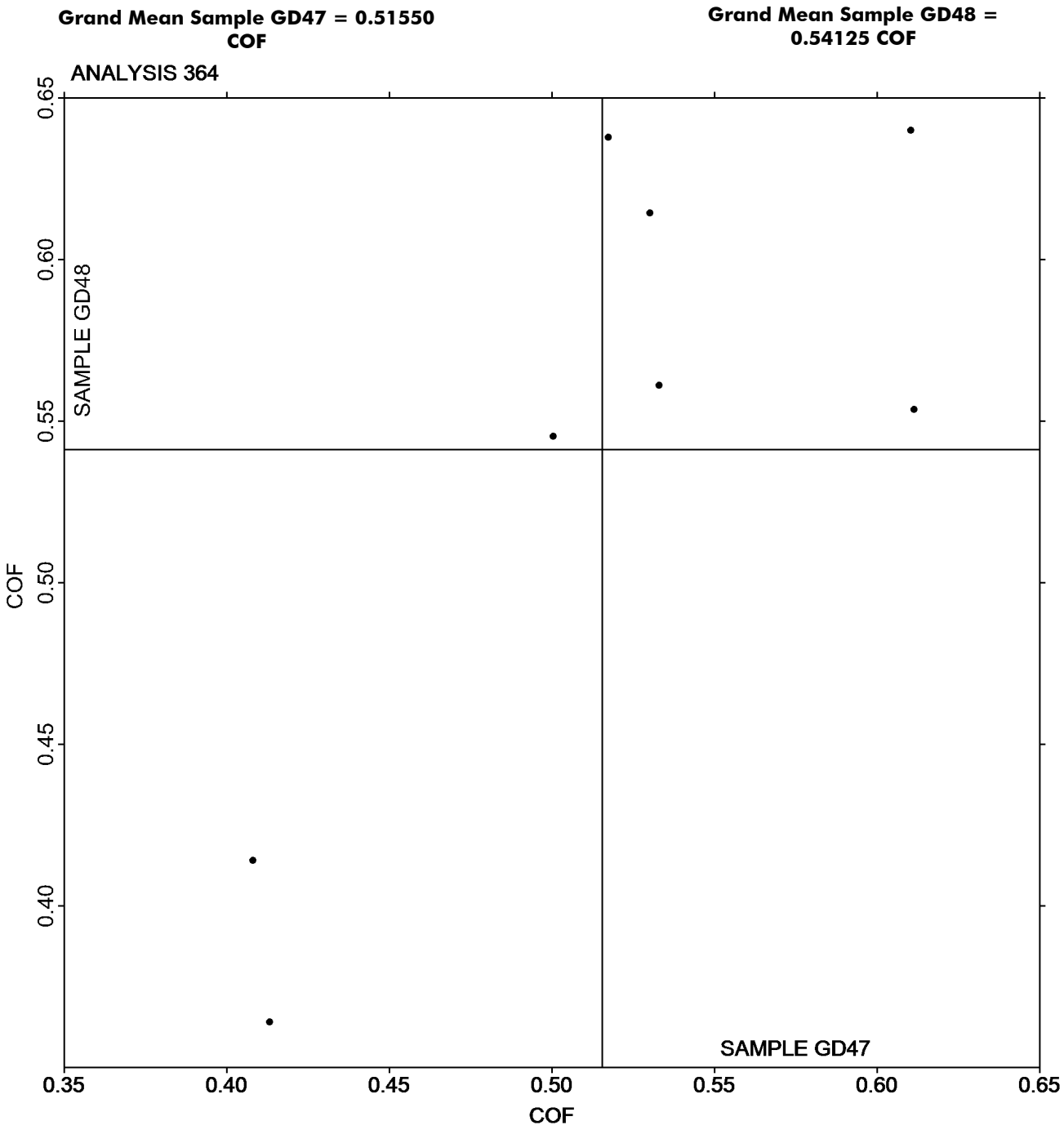
WebCode	Data Flag	Sample GD47 Lab Mean	Sample GD47 Diff from Grand Mean	Sample GD47 CPV	Sample GD48 Lab Mean	Sample GD48 Diff from Grand Mean	Sample GD48 CPV	Instr Code
78C9MH		0.6104	0.0949	1.24	0.6400	0.0988	0.97	TA
ACCKFK		0.5330	0.0175	0.23	0.5610	0.0198	0.19	IT
ACDLXC		0.4132	-0.1023	-1.34	0.3640	-0.1773	-1.74	XX
B8EPRH		0.5004	-0.0151	-0.20	0.5452	0.0040	0.04	TA
CPTGAE		0.5302	0.0147	0.19	0.6144	0.0732	0.72	TM
LR79FY		0.5174	0.0019	0.02	0.6378	0.0966	0.95	TL
UGFFGA		0.4080	-0.1075	-1.41	0.4140	-0.1273	-1.25	TA
YALYWL		0.6114	0.0959	1.25	0.5536	0.0124	0.12	XX

Summary Statistics	Sample GD47	Sample GD48
Grand Means	0.52 COF	0.54 COF
Stnd Dev Btwn Labs	0.08 COF	0.10 COF

Statistics based on 8 of 8 reporting participants.

Key to Instrument Codes Reported by Participants

IT	IMASS SP-2100	TA	Thwing-Albert Friction Tester
TL	TMI 32-90 Lab Master/Slip and Friction	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 GD47 Lab Mean	Sample GD47 Diff from Grand Mean	Sample GD47 CPV	Sample GD48 Lab Mean	Sample GD48 Diff from Grand Mean	Sample GD48 CPV	Instr Code
2WUU2U		0.5470	0.0649	0.96	0.5494	0.0472	0.66	TA
6M934R		0.4350	-0.0471	-0.70	0.4950	-0.0072	-0.10	TA
78C9MH		0.4866	0.0045	0.07	0.5098	0.0076	0.11	TA
ACCKFK		0.4188	-0.0633	-0.93	0.4282	-0.0740	-1.04	IR
ACDLXC	X	0.4548	-0.0273	-0.40	0.3606	-0.1416	-1.98	XX
B8EPRH		0.4758	-0.0063	-0.09	0.5140	0.0118	0.16	TA
CPTGAE		0.5078	0.0257	0.38	0.5496	0.0474	0.66	TM
J6KMHA		0.3864	-0.0957	-1.41	0.3894	-0.1128	-1.58	TA
KQD3C3		0.5708	0.0887	1.31	0.5828	0.0806	1.13	TM
LR79FY		0.5760	0.0939	1.39	0.5930	0.0908	1.27	TL
N324PE		0.4168	-0.0653	-0.96	0.4110	-0.0912	-1.28	TA

Summary Statistics	Sample GD47	Sample GD48
Grand Means	0.48 COF	0.50 COF
Stnd Dev Btwn Labs	0.07 COF	0.07 COF

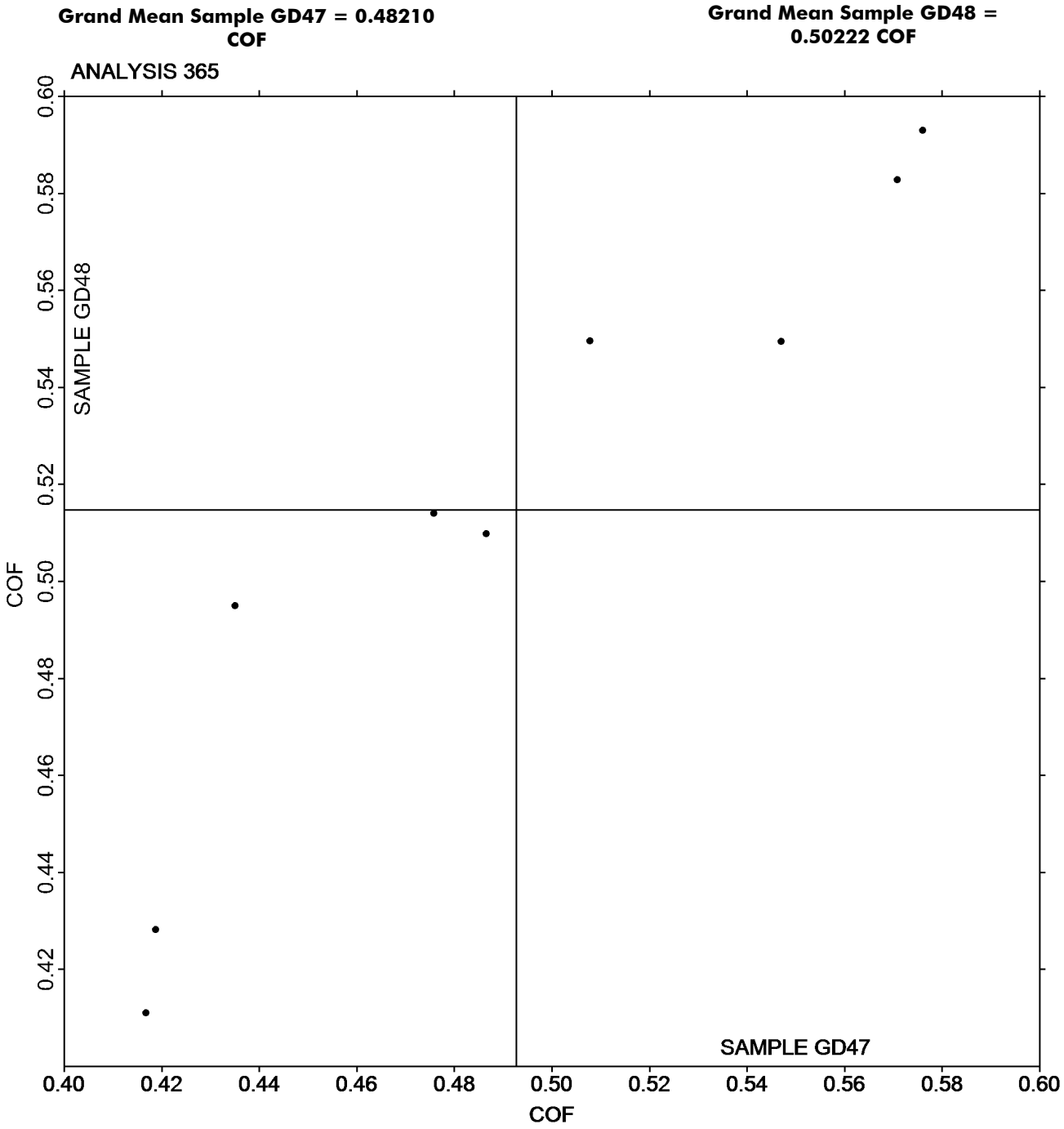
Statistics based on 10 of 11 reporting participants.

Comments on Assigned Data Flags for Test #365

ACDLXC (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample GD47.

Key to Instrument Codes Reported by Participants

IR	IMASS SP-2000	TA	Thwing-Albert Friction Tester
TL	TMI 32-90 Lab Master/Slip and Friction	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 370

Air Resistance - Gurley Oil Type

TAPPI Official Test Method T460

WebCode	Data Flag	Sample GE47 Lab Mean	Sample GE47 Diff from Grand Mean	Sample GE47 CPV	Sample GE48 Lab Mean	Sample GE48 Diff from Grand Mean	Sample GE48 CPV	Instr Code
2XZEPU		25.11	-0.18	-0.14	24.66	-0.97	-0.81	HG
3F2JUH		25.26	-0.03	-0.02	25.91	0.29	0.24	PP
438L6P		23.84	-1.45	-1.16	24.11	-1.52	-1.26	LP
78C9MH		26.70	1.41	1.14	27.34	1.71	1.43	WG
946L8J		27.23	1.94	1.56	27.53	1.91	1.59	LA
98369H		25.68	0.39	0.32	26.33	0.70	0.59	LP
ACDLXC		23.90	-1.39	-1.12	24.40	-1.23	-1.02	GS
B8EPRH		24.93	-0.36	-0.29	26.14	0.51	0.43	LA
BFPPLU		25.70	0.41	0.33	25.37	-0.26	-0.21	HG
D6M74P		23.94	-1.35	-1.08	24.82	-0.81	-0.67	XX
E2HZ2P		25.35	0.06	0.05	26.62	0.99	0.83	LP
E86PJD	X	21.44	-3.85	-3.09	19.70	-5.92	-4.94	TN
FE24HK		25.94	0.65	0.53	27.51	1.88	1.57	HG
FMD3CV		26.57	1.28	1.03	25.77	0.14	0.12	XX
FMTJ7N		25.75	0.46	0.37	25.23	-0.40	-0.33	PP
GBXNQ9		25.90	0.61	0.49	25.51	-0.12	-0.10	LA
GNLTWJ		25.38	0.09	0.07	26.54	0.92	0.76	LA
JCKQQT		25.10	-0.19	-0.15	25.97	0.34	0.29	HG
JPQZE3		24.80	-0.49	-0.39	25.18	-0.45	-0.37	LW
LR79FY		25.03	-0.26	-0.21	26.37	0.74	0.62	LP
MHXYNZ		24.90	-0.39	-0.31	25.20	-0.43	-0.36	LW
N3YJTY		24.97	-0.32	-0.25	24.88	-0.75	-0.63	RE
NA3FMW	*	21.97	-3.32	-2.67	22.39	-3.24	-2.70	VM
P3GM66		23.21	-2.08	-1.67	23.48	-2.15	-1.79	TL
PVFDU7		26.88	1.59	1.28	25.93	0.30	0.25	PP
QDU4C3		24.11	-1.17	-0.94	25.03	-0.59	-0.49	PP
R9UE7F		27.32	2.03	1.64	27.32	1.69	1.41	TL
RY6QAR		23.09	-2.20	-1.77	23.74	-1.89	-1.57	LP
T6ULUV	X	32.09	6.80	5.47	31.36	5.73	4.78	GA
TRZC3F		25.07	-0.22	-0.17	26.08	0.45	0.38	XX
UGFFGA		25.80	0.52	0.41	24.87	-0.75	-0.63	PP
URZLGY		26.50	1.21	0.98	25.40	-0.23	-0.19	LA
VYWQ2M		26.30	1.01	0.82	26.29	0.66	0.55	LP
WCXWDX		25.97	0.68	0.55	26.28	0.65	0.55	PP
XFBWAN		23.56	-1.73	-1.39	25.20	-0.43	-0.36	PP
XUR2BP		26.99	1.70	1.37	27.43	1.80	1.51	PP
Y4DFXT		25.50	0.21	0.17	26.07	0.44	0.37	TL
YUDMQM		27.10	1.81	1.45	27.28	1.65	1.38	PP
Z32Z4R		24.21	-1.08	-0.87	23.87	-1.76	-1.47	XX
ZYDTD4		25.34	0.05	0.04	25.73	0.10	0.09	PP

Paper & Paperboard Interlaboratory Testing Program

Analysis 370

Air Resistance - Gurley Oil Type

TAPPI Official Test Method T460

Summary Statistics	Sample GE47	Sample GE48
Grand Means	25.29 sec/100 cc	25.63 sec/100 cc
Stnd Dev Btwn Labs	1.24 sec/100 cc	1.20 sec/100 cc

Statistics based on 38 of 40 reporting participants.

Comments on Assigned Data Flags for Test #370

T6ULUV (X) - Data for both samples are high. Possible Systematic Error.

E86PJD (X) - Data for both samples are low. Possible Systematic Error.

Analysis Notes:

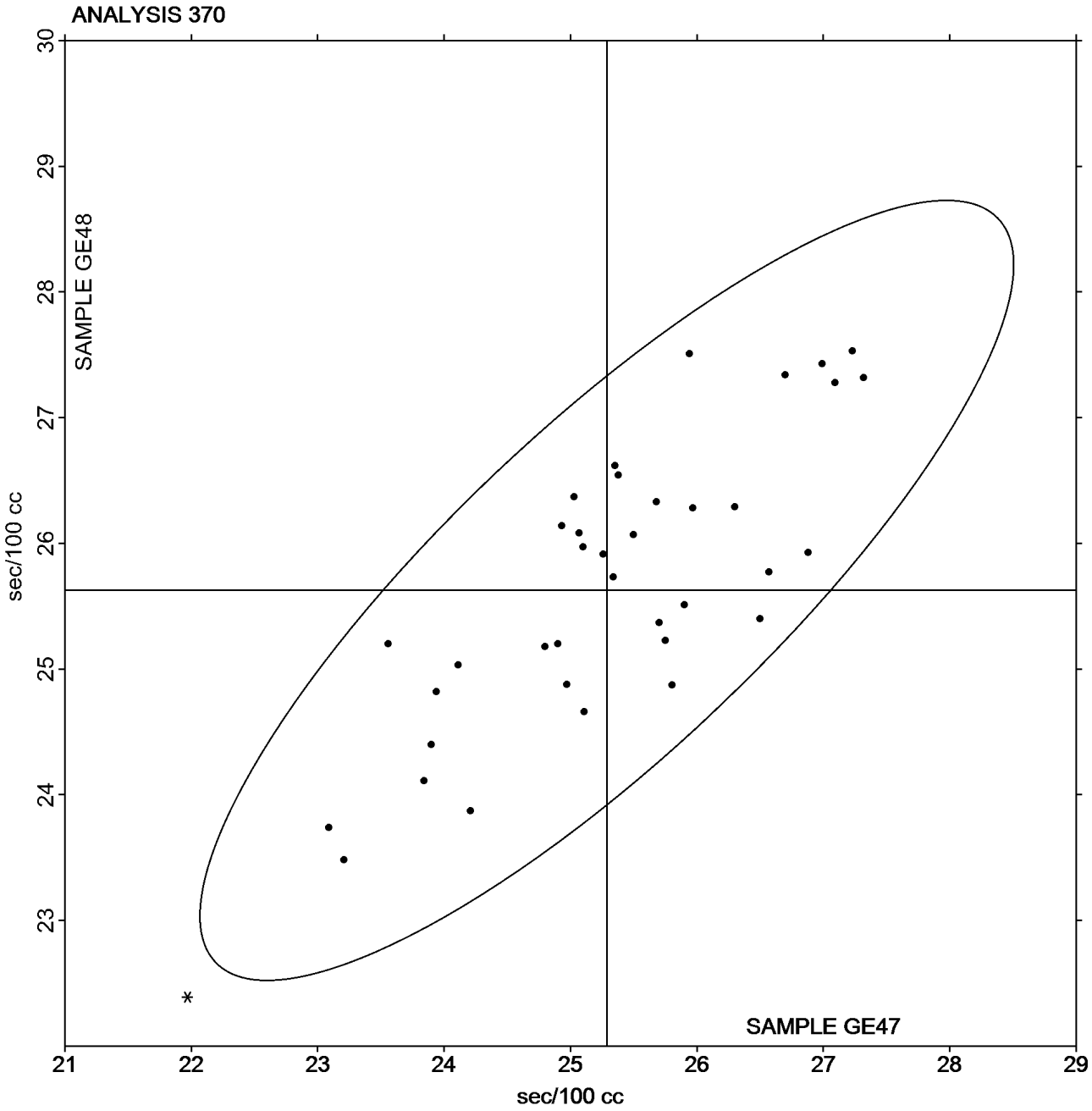
BFPPLU - One determination removed from the Lab Mean of Sample GE47 per Grubb's Test at 1% risk (TAPPI 1205).

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	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	RE	Regmed Gurley Densometer PGH-T
TL	Gurley Densometer #4110, Oil Flotation	TN	Gurley S-P-S Tester #4190
VM	Valmet PaperLab (was Kajaani/Robotest)	WG	W & LE Gurley Tester
XX	Instrument make/model not specified by lab		

Grand Mean Sample GE47 = 25.287 sec/100 cc

Grand Mean Sample GE48 = 25.626 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

		Sample GE47			Sample GE48			
WebCode	Data Flag	Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	Instr Code
2XZEPU		108.3	-5.0	-0.94	106.5	-5.7	-1.30	TT
3F2JUH		111.4	-1.8	-0.35	112.2	0.0	-0.01	PP
8JK8BJ	X	23.1	-90.2	-17.08	15.8	-96.4	-21.90	XX
9CHFLL		117.7	4.4	0.84	117.1	4.9	1.11	SH
A4YVFR	X	26.6	-86.7	-16.42	25.9	-86.3	-19.61	TT
ACDLXC		110.6	-2.7	-0.50	109.0	-3.2	-0.73	SH
BZWYNC		114.5	1.2	0.23	110.5	-1.7	-0.39	TT
DEB4PP		119.7	6.4	1.22	120.6	8.4	1.91	VM
JQLHDJ	X	108.1	-5.2	-0.98	98.6	-13.6	-3.10	GA
MJQWRZ		106.4	-6.9	-1.30	107.2	-5.0	-1.14	LP
NA3FMW		124.6	11.3	2.15	117.3	5.1	1.16	PP
PF2AAW		113.6	0.3	0.06	112.5	0.3	0.06	HM
TRZC3F		113.0	-0.3	-0.05	107.7	-4.5	-1.03	XX
VRQCVC		107.8	-5.5	-1.03	113.4	1.2	0.27	TT
XFBWAN		111.5	-1.8	-0.33	112.6	0.4	0.09	HM

Summary Statistics	Sample GE47	Sample GE48
Grand Means	113.26 Sheffield Units	112.21 Sheffield Units
Stnd Dev Btwn Labs	5.28 Sheffield Units	4.40 Sheffield Units

Statistics based on 12 of 15 reporting participants.

Comments on Assigned Data Flags for Test #372

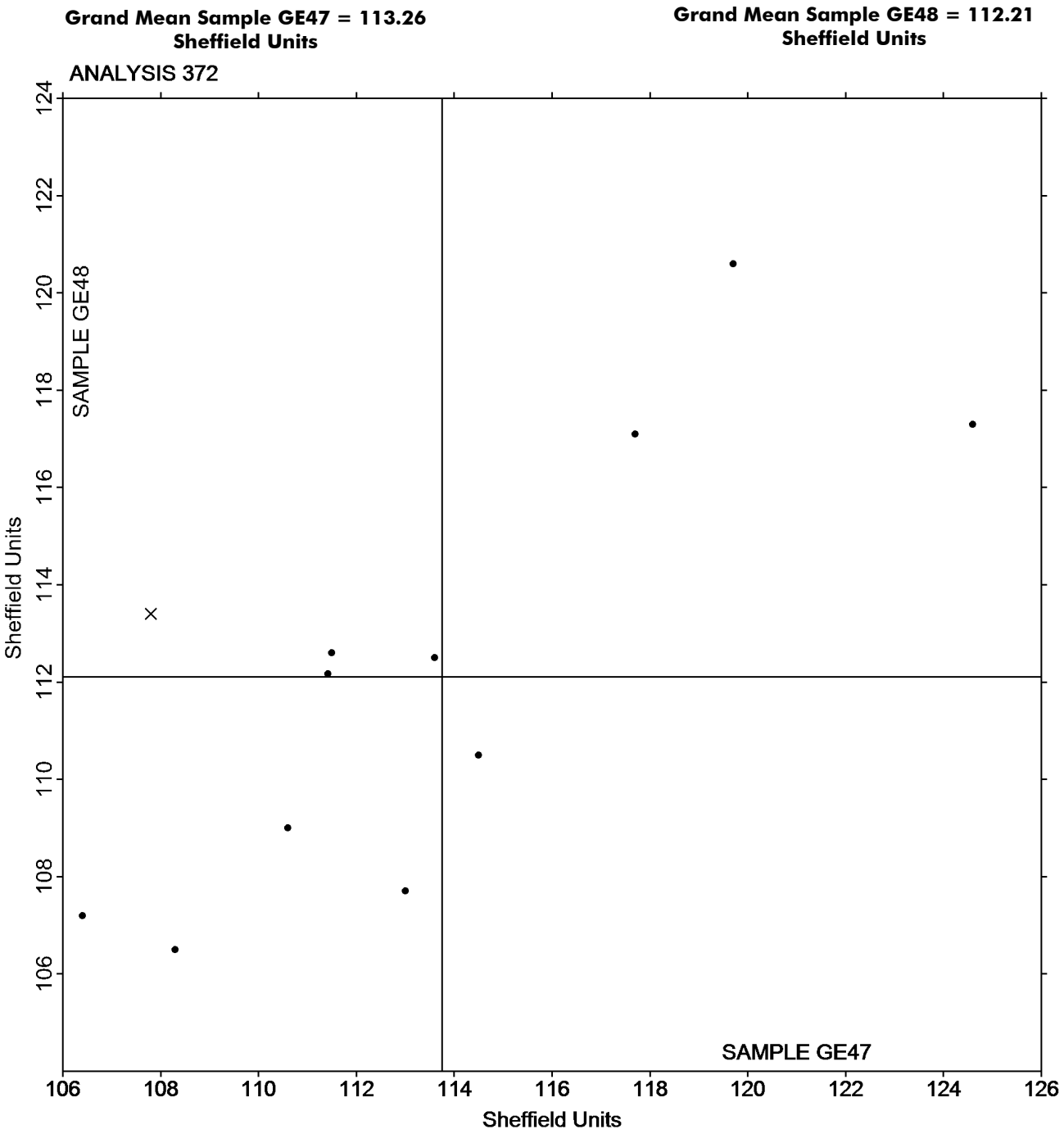
JQLHDJ (X) - Data for sample GE48 are low.

A4YVFR (X) - Extreme Data.

8JK8BJ (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	HM	Technidyne - Hagerty Model #538
LP	L & W Densometer, Air Permeance	PP	Technidyne Profile/Plus
SH	Sheffield	TT	TMI Monitor/Smoothness II, Model 58-24
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 376

Roughness - Print Surf Method - 0.5 to 4.0 Microns

TAPPI Official Test Method T555

WebCode	Data Flag	Sample GJ47 Lab Mean	Sample GJ47 Diff from Grand Mean	Sample GJ47 CPV	Sample GJ48 Lab Mean	Sample GJ48 Diff from Grand Mean	Sample GJ48 CPV	Instr Code
2XZEPU		0.7580	-0.0567	-0.58	0.8330	-0.0374	-0.38	ZZ
39HHAY		0.8200	0.0053	0.05	0.9130	0.0426	0.43	ZZ
4MBCFX		0.9380	0.1233	1.25	1.0130	0.1426	1.45	ZZ
6V2GKH		0.8610	0.0463	0.47	0.9240	0.0536	0.55	ZZ
78C9MH		0.7300	-0.0847	-0.86	0.7690	-0.1014	-1.03	ZZ
7PAM7H		0.7650	-0.0497	-0.50	0.8520	-0.0184	-0.19	ZZ
98369H		0.6870	-0.1277	-1.30	0.7480	-0.1224	-1.25	ZZ
9UYNEA		0.6760	-0.1387	-1.41	0.7850	-0.0854	-0.87	ZZ
AJVTXP		0.8980	0.0833	0.85	0.9680	0.0976	0.99	ZZ
B4WBJC	X	1.2920	0.4773	4.85	1.2940	0.4236	4.32	ZZ
BCACMR		0.6700	-0.1447	-1.47	0.7390	-0.1314	-1.34	ZZ
CMPLQB		0.7600	-0.0547	-0.56	0.7970	-0.0734	-0.75	ZZ
EVP377		0.8550	0.0403	0.41	0.9300	0.0596	0.61	ZZ
FB4HW9		0.7760	-0.0387	-0.39	0.8400	-0.0304	-0.31	ZZ
FE24HK		0.7560	-0.0587	-0.60	0.8410	-0.0294	-0.30	ZZ
H634EC		0.8920	0.0773	0.78	0.9190	0.0486	0.50	ZZ
HA3AYA	X	0.7140	-0.1007	-1.02	0.8860	0.0156	0.16	ZZ
J4BH87		0.7740	-0.0407	-0.41	0.7930	-0.0774	-0.79	ZZ
J6KMHA		0.9280	0.1133	1.15	0.9910	0.1206	1.23	ZZ
JAFDQ7		0.9690	0.1543	1.57	0.9840	0.1136	1.16	ZZ
JXK8W9		0.9110	0.0963	0.98	0.9800	0.1096	1.12	ZZ
KEHUTY		0.6800	-0.1347	-1.37	0.7130	-0.1574	-1.61	ZZ
N324PE		0.7320	-0.0827	-0.84	0.7630	-0.1074	-1.10	ZZ
NA3FMW	*	1.0620	0.2473	2.51	1.0890	0.2186	2.23	ZZ
NULHHV		0.8385	0.0238	0.24	0.8960	0.0256	0.26	ZZ
PF2AAW		0.6730	-0.1417	-1.44	0.7230	-0.1474	-1.50	ZZ
PT3ZRV		0.8220	0.0073	0.07	0.8650	-0.0054	-0.06	ZZ
Q6X9CJ		0.8290	0.0143	0.15	0.8710	0.0006	0.01	ZZ
QDU4C3		0.7620	-0.0527	-0.53	0.8230	-0.0474	-0.48	ZZ
U2NFTV		0.7252	-0.0895	-0.91	0.7790	-0.0914	-0.93	ZZ
XEJ37T		0.9390	0.1243	1.26	1.0300	0.1596	1.63	ZZ
XFWHVM		0.8120	-0.0027	-0.03	0.8540	-0.0164	-0.17	ZZ
XYMQTH		0.8010	-0.0137	-0.14	0.8050	-0.0654	-0.67	ZZ
YJUE3T		0.8290	0.0143	0.15	0.9010	0.0306	0.31	ZZ
ZYDTD4		0.9560	0.1413	1.43	0.9930	0.1226	1.25	ZZ

Summary Statistics	Sample GJ47	Sample GJ48
Grand Means	0.81 Microns	0.87 Microns
Stnd Dev Btwn Labs	0.10 Microns	0.10 Microns

Statistics based on 33 of 35 reporting participants.

Comments on Assigned Data Flags for Test #376

B4WBJC (X) - Data for both samples are high. Possible Systematic Error.

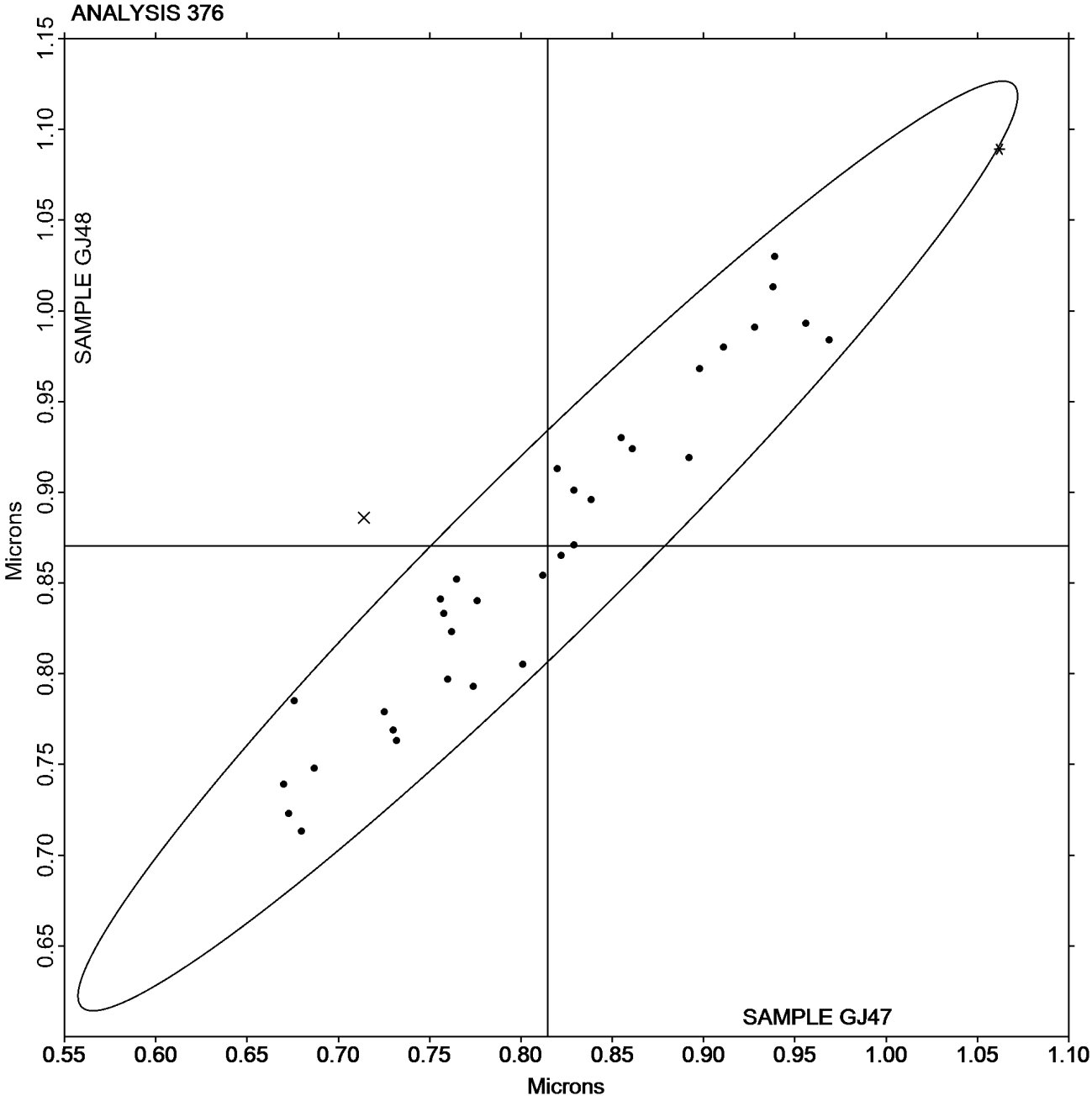
HA3AYA (X) - Inconsistent in testing between samples.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Grand Mean Sample GJ47 = 0.81469 Microns

Grand Mean Sample GJ48 = 0.87042 Microns



Paper & Paperboard Interlaboratory Testing Program

Analysis 377

Roughness - Print Surf Method - 2.5 to 6.0 Microns

TAPPI Official Test Method T555

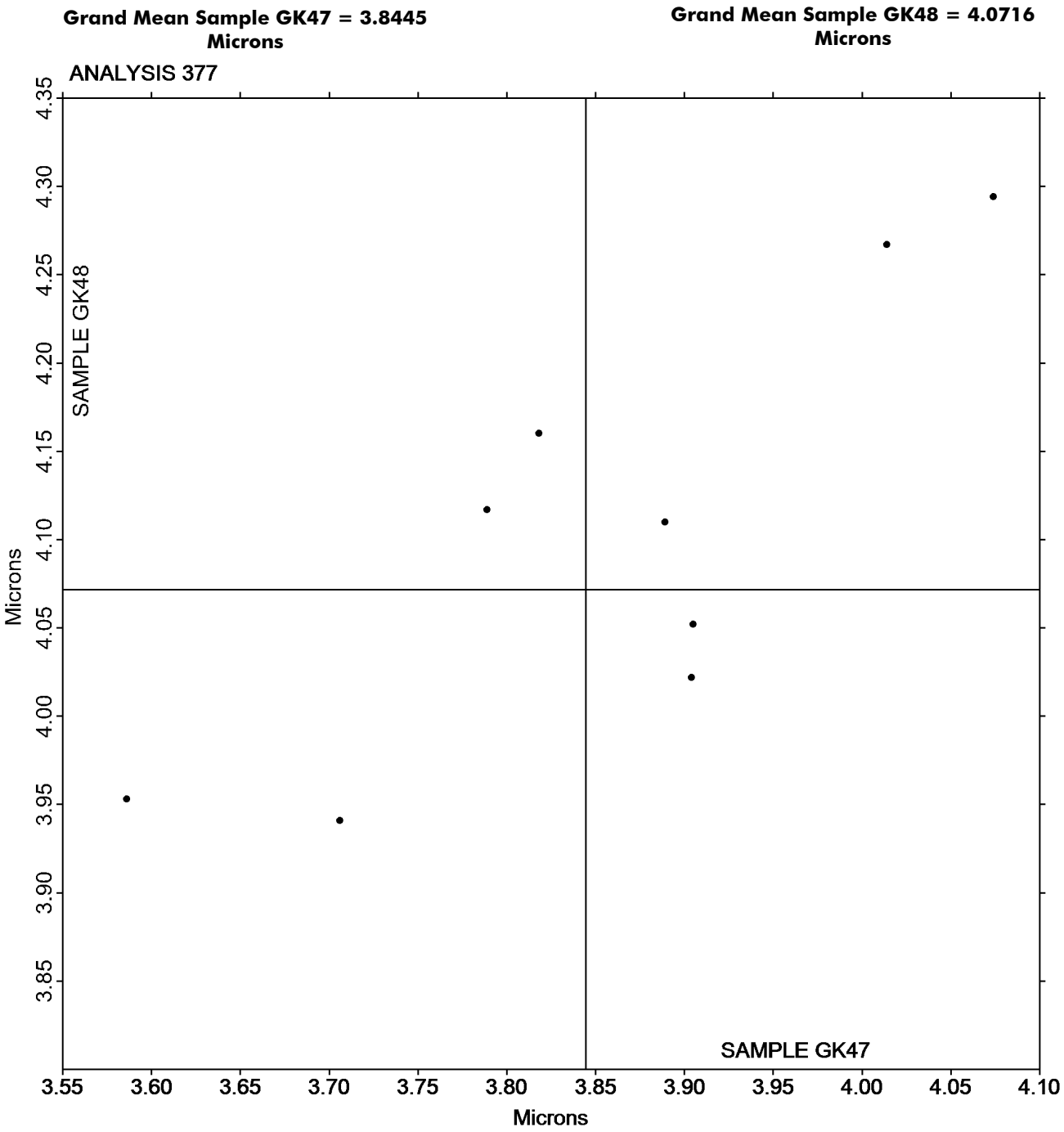
WebCode	Data Flag	Sample GK47 Lab Mean	Sample GK47 Diff from Grand Mean	Sample GK47 CPV	Sample GK48 Lab Mean	Sample GK48 Diff from Grand Mean	Sample GK48 CPV	Instr Code
2877BH		3.760	-0.085	-0.59	3.800	-0.272	-1.79	ZZ
78C9MH		3.789	-0.056	-0.38	4.117	0.045	0.30	ZZ
DEB4PP		3.818	-0.027	-0.18	4.160	0.088	0.58	ZZ
FE24HK		3.706	-0.139	-0.96	3.941	-0.131	-0.86	ZZ
FMTJ7N		3.889	0.045	0.31	4.110	0.038	0.25	ZZ
GBXNQ9		3.586	-0.259	-1.79	3.953	-0.119	-0.78	ZZ
LR79FY		3.904	0.060	0.41	4.022	-0.050	-0.33	ZZ
UGFFGA		4.074	0.230	1.59	4.294	0.222	1.47	ZZ
WCXWDX		3.905	0.061	0.42	4.052	-0.020	-0.13	ZZ
YALYWL		4.014	0.170	1.17	4.267	0.195	1.29	ZZ

Summary Statistics	Sample GK47	Sample GK48
Grand Means	3.84 Microns	4.07 Microns
Stnd Dev Btwn Labs	0.14 Microns	0.15 Microns

Statistics based on 10 of 10 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 GL47 Lab Mean	Sample GL47 Diff from Grand Mean	Sample GL47 CPV	Sample GL48 Lab Mean	Sample GL48 Diff from Grand Mean	Sample GL48 CPV	Instr Code
2XZEPU		157.7	11.3	0.98	160.6	12.2	1.28	TT
39HHAY		145.4	-1.0	-0.09	149.9	1.5	0.15	LW
3F2JUH		149.8	3.4	0.29	149.8	1.4	0.15	PP
4MBCFX		134.5	-11.9	-1.04	142.5	-5.9	-0.62	TS
78C9MH	*	171.4	25.0	2.17	159.8	11.4	1.19	XX
7G4HGL		142.0	-4.4	-0.39	144.1	-4.3	-0.45	XX
864ABN		140.4	-6.0	-0.52	138.8	-9.7	-1.01	SH
8JK8BJ	X	68.3	-78.2	-6.80	32.5	-115.9	-12.15	XX
8LMCLH		146.1	-0.3	-0.03	142.3	-6.1	-0.64	GA
8MHT3L		126.0	-20.4	-1.78	125.3	-23.1	-2.42	XX
946L8J		135.5	-11.0	-0.95	138.0	-10.4	-1.09	LA
98369H		140.5	-5.9	-0.52	143.5	-4.9	-0.52	TS
9CHFLL		155.2	8.8	0.76	159.4	11.0	1.15	SH
A6D6M8		175.3	28.9	2.51	170.0	21.6	2.26	TT
ACDLXC		147.6	1.2	0.10	146.8	-1.6	-0.17	XX
AJVTXP		160.8	14.4	1.25	163.3	14.9	1.56	LW
B4WBJC		139.4	-7.0	-0.61	149.5	1.1	0.11	GL
BCACMR		138.6	-7.8	-0.68	145.2	-3.2	-0.34	LA
BFPPLU		130.5	-15.9	-1.39	140.0	-8.4	-0.88	HM
BZWYNC	*	118.0	-28.4	-2.47	121.5	-26.9	-2.82	TT
CPTGAE	*	122.8	-23.6	-2.06	139.5	-8.9	-0.93	PP
FB4HW9		150.6	4.2	0.36	157.2	8.8	0.92	PP
FMTJ7N	*	154.4	8.0	0.70	141.3	-7.1	-0.74	PP
GBXNQ9	X	196.8	50.4	4.39	198.5	50.1	5.25	LA
GFN39N		143.8	-2.6	-0.23	153.6	5.2	0.54	LA
J4BH87		149.2	2.8	0.25	145.9	-2.5	-0.27	PP
J6KMHA		152.4	6.0	0.52	152.7	4.3	0.45	PP
JCKQQT		149.0	2.6	0.22	153.1	4.7	0.49	TS
JQLHDJ		163.3	16.9	1.47	158.4	9.9	1.04	GA
JXK8W9		132.0	-14.4	-1.25	139.0	-9.4	-0.99	LA
KEHUTY		151.0	4.6	0.40	149.4	1.0	0.10	LA
LD7GN3		139.9	-6.5	-0.56	143.3	-5.1	-0.54	PP
LR79FY		149.4	3.0	0.26	149.1	0.7	0.07	LW
MBU2U3		137.9	-8.5	-0.74	139.9	-8.5	-0.90	PP
MHXYNZ		140.7	-5.7	-0.50	149.5	1.1	0.11	TS
MJQWRZ		156.4	10.0	0.87	152.9	4.5	0.47	PP
N324PE		151.7	5.3	0.46	163.2	14.8	1.55	HM
N9NXH7		170.0	23.6	2.05	168.0	19.6	2.05	GL
NA3FMW		142.2	-4.2	-0.37	149.6	1.2	0.12	VM
NULHHV		153.0	6.5	0.57	148.3	-0.1	-0.01	HM

Paper & Paperboard Interlaboratory Testing Program

Analysis 378

Roughness - Sheffield Type

TAPPI Official Test Method T538

WebCode	Data Flag	Sample GL47 Lab Mean	Sample GL47 Diff from Grand Mean	Sample GL47 CPV	Sample GL48 Lab Mean	Sample GL48 Diff from Grand Mean	Sample GL48 CPV	Instr Code
PJYQK7		150.1	3.7	0.32	150.0	1.6	0.16	GA
PVFDU7		138.2	-8.3	-0.72	146.3	-2.1	-0.22	PP
QDU4C3		132.6	-13.9	-1.21	132.2	-16.2	-1.70	PP
TQP8RD		147.5	1.1	0.09	145.5	-2.9	-0.31	PP
TRZC3F		129.7	-16.7	-1.46	137.4	-11.0	-1.16	XX
U2NFTV		145.0	-1.4	-0.12	148.4	-0.1	-0.01	PP
UGFFGA		155.4	9.0	0.78	155.0	6.6	0.69	PP
VRQCVC		146.4	0.0	0.00	144.9	-3.5	-0.37	TT
WCXWDX		152.5	6.0	0.53	150.4	2.0	0.21	PP
XFBWAN		140.2	-6.2	-0.54	149.5	1.1	0.11	PP
XUR2BP		154.4	8.0	0.69	149.5	1.1	0.11	SH
YALYWL		151.1	4.7	0.41	145.2	-3.2	-0.34	HM
YJUE3T		143.8	-2.6	-0.23	148.7	0.3	0.03	LW
YRHCM8	*	155.0	8.6	0.75	166.4	18.0	1.88	PP
YUDMQM		159.0	12.5	1.09	157.0	8.6	0.90	PP
ZYDTD4		141.4	-5.0	-0.44	144.7	-3.7	-0.39	HM

Summary Statistics	Sample GL47	Sample GL48
Grand Means	146.42 Sheffield	148.43 Sheffield
Stnd Dev Btwn Labs	11.49 Sheffield	9.54 Sheffield

Statistics based on 54 of 56 reporting participants.

Comments on Assigned Data Flags for Test #378

GBXNQ9 (X) - Data for both samples are high.

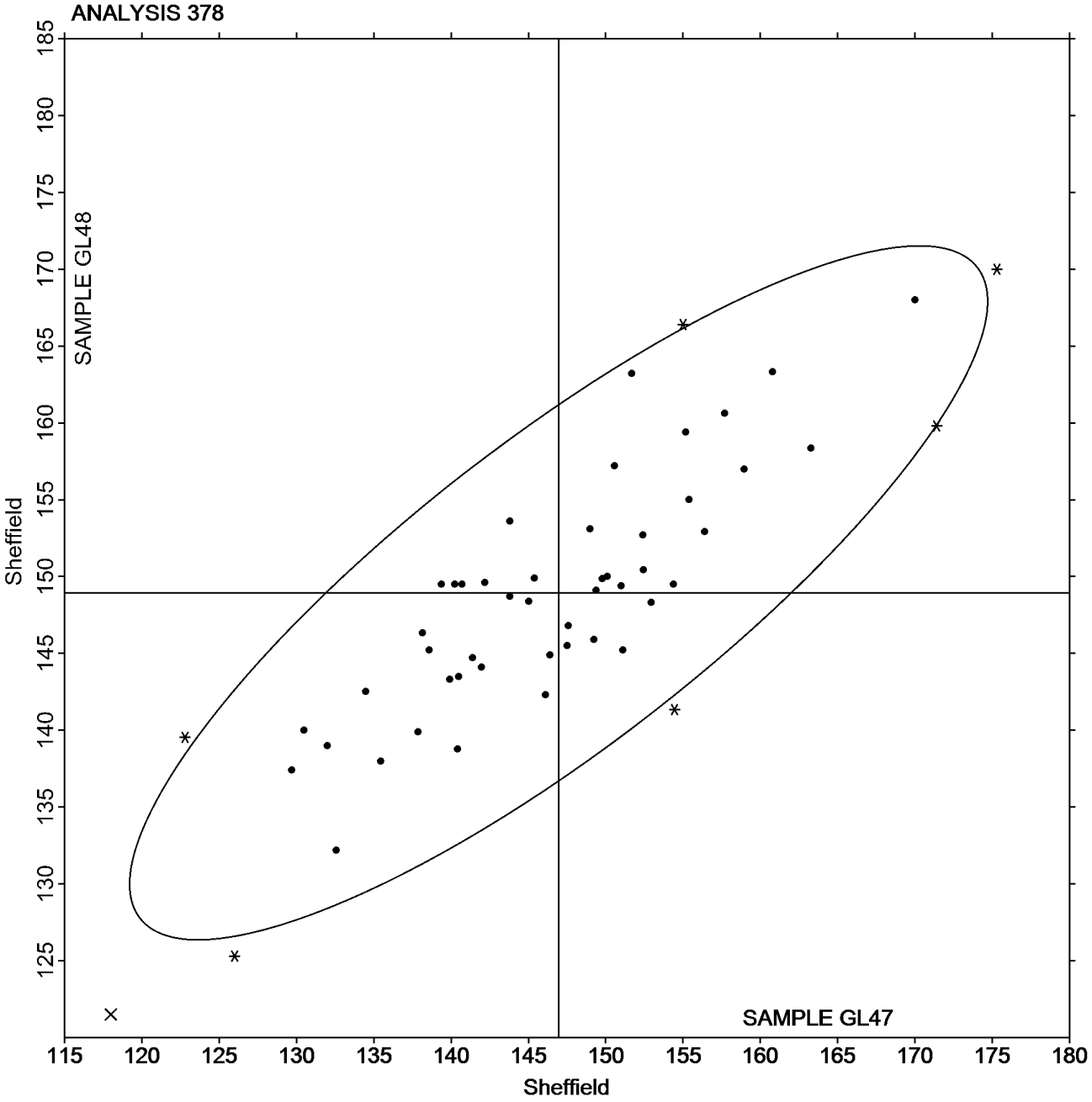
8JK8BJ (X) - Extreme Data.

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	PP	Technidyne Profile/Plus
SH	Sheffield (Bendix Precisionaire)	TS	TMI Monitor/Smoothness, Model 58-02
TT	TMI Monitor/Smoothness II, Model 58-24	VM	Valmet PaperLab (was Kajaani\Robotest)
XX	Instrument make/model not specified by lab		

Grand Mean Sample GL47 = 146.42
Sheffield

Grand Mean Sample GL48 = 148.43
Sheffield



Paper & Paperboard Interlaboratory Testing Program

Analysis 382
Moisture in Paper
TAPPI Official Test Method T412

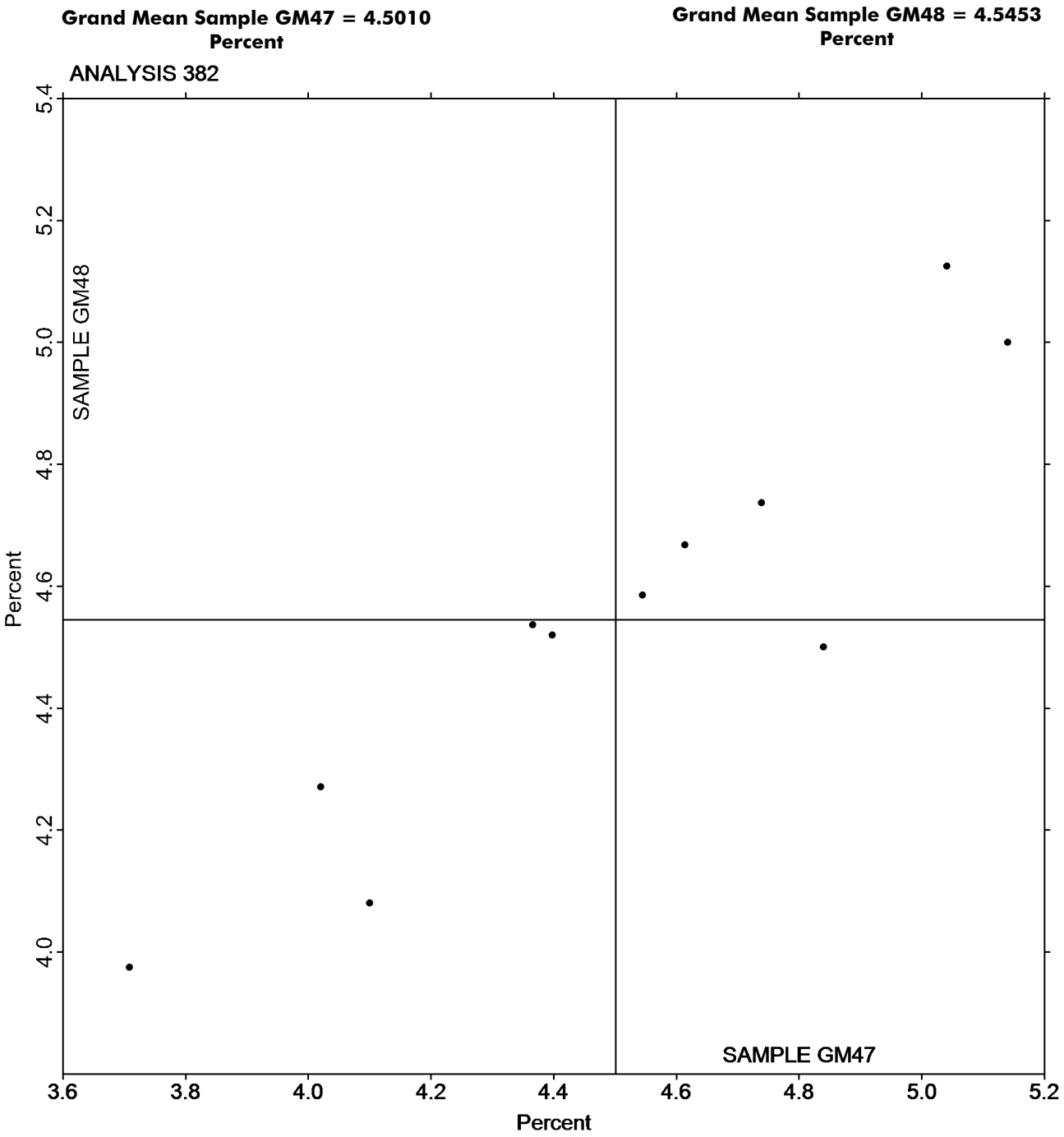
WebCode	Data Flag	Sample GM47 Lab Mean	Sample GM47 Diff from Grand Mean	Sample GM47 CPV	Sample GM48 Lab Mean	Sample GM48 Diff from Grand Mean	Sample GM48 CPV	Instr Code
2877BH		4.840	0.339	0.77	4.500	-0.045	-0.13	ZZ
3FVD7T		5.140	0.639	1.45	5.000	0.455	1.30	ZZ
69BXT9		4.366	-0.135	-0.31	4.537	-0.008	-0.02	ZZ
EVP377		4.398	-0.103	-0.24	4.520	-0.025	-0.07	ZZ
FT4BYB		3.709	-0.792	-1.80	3.975	-0.570	-1.63	ZZ
JU2VCK		5.041	0.540	1.23	5.125	0.580	1.66	ZZ
KYAXD8		4.614	0.113	0.26	4.668	0.123	0.35	ZZ
NQ7XPN		4.545	0.044	0.10	4.585	0.040	0.11	ZZ
QWM8XA		4.020	-0.481	-1.09	4.271	-0.274	-0.79	ZZ
UGFFGA		4.739	0.238	0.54	4.737	0.192	0.55	ZZ
YALYWL		4.100	-0.401	-0.91	4.080	-0.465	-1.33	ZZ

Summary Statistics	Sample GM47	Sample GM48
Grand Means	4.50 Percent	4.55 Percent
Stnd Dev Btwn Labs	0.44 Percent	0.35 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

Analysis 384

Opacity (89% Reflectance Backing) - Fine Papers

TAPPI Official Test Method T425

WebCode	Data Flag	Sample GN47 Lab Mean	Sample GN47 Diff from Grand Mean	Sample GN47 CPV	Sample GN48 Lab Mean	Sample GN48 Diff from Grand Mean	Sample GN48 CPV	Instr Code
2XZEPU		89.29	0.25	0.48	89.11	0.02	0.04	ZZ
3F2JUH		89.84	0.80	1.54	89.42	0.33	0.60	ZZ
7PAM7H		89.20	0.16	0.30	89.51	0.42	0.76	ZZ
864ABN		89.53	0.49	0.94	89.59	0.50	0.90	ZZ
8MHT3L		89.39	0.34	0.66	89.11	0.02	0.03	ZZ
946L8J		88.57	-0.47	-0.91	88.79	-0.30	-0.54	ZZ
9CHFLL		88.96	-0.08	-0.16	88.87	-0.22	-0.39	ZZ
9UYNEA	*	88.80	-0.24	-0.47	89.80	0.71	1.28	ZZ
ACDLXC	X	87.03	-2.01	-3.87	86.83	-2.26	-4.06	ZZ
BFPPLU		89.02	-0.02	-0.04	88.76	-0.33	-0.59	ZZ
BZWYNC		90.18	1.14	2.19	90.04	0.95	1.71	ZZ
CPTGAE	X	92.98	3.94	7.59	92.89	3.81	6.84	ZZ
FE24HK		89.38	0.34	0.65	89.19	0.10	0.18	ZZ
GBXNQ9		88.55	-0.49	-0.95	88.53	-0.56	-1.00	ZZ
H634EC		89.19	0.15	0.28	89.40	0.31	0.56	ZZ
HA3AYA		89.66	0.62	1.19	89.63	0.54	0.98	ZZ
J6KMHA		88.62	-0.42	-0.81	88.47	-0.62	-1.11	ZZ
JCKQQT		88.77	-0.27	-0.52	89.37	0.28	0.51	ZZ
MHXYNZ		89.03	-0.01	-0.02	89.07	-0.02	-0.03	ZZ
N324PE		89.58	0.54	1.04	89.11	0.02	0.04	ZZ
N9NXH7	X	92.75	3.71	7.14	93.35	4.26	7.66	ZZ
NPWRBZ		88.72	-0.33	-0.63	88.60	-0.49	-0.88	ZZ
NULHHV		88.25	-0.79	-1.53	87.87	-1.22	-2.19	ZZ
R9UE7F		88.65	-0.39	-0.76	88.22	-0.87	-1.56	ZZ
TQP8RD		88.49	-0.55	-1.06	89.24	0.15	0.27	ZZ
TRZC3F	*	87.43	-1.61	-3.10	87.58	-1.51	-2.71	ZZ
UGFFGA		89.45	0.40	0.78	89.52	0.43	0.77	ZZ
VCXMXU		88.77	-0.27	-0.52	88.92	-0.17	-0.30	ZZ
VRQCVC		89.44	0.40	0.77	89.92	0.83	1.50	ZZ
WCXWDX		88.94	-0.11	-0.21	88.93	-0.16	-0.28	ZZ
XEJ37T		88.51	-0.53	-1.03	89.17	0.09	0.16	ZZ
XUR2BP		88.98	-0.06	-0.12	88.97	-0.12	-0.21	ZZ
YALYWL		89.23	0.19	0.36	88.98	-0.11	-0.19	ZZ
YRHCM8		89.60	0.56	1.07	89.93	0.84	1.51	ZZ
YUDMQM		88.93	-0.11	-0.22	89.17	0.09	0.15	ZZ
Z32Z4R		89.27	0.22	0.43	89.53	0.44	0.80	ZZ
ZYDTD4		89.24	0.20	0.38	88.66	-0.43	-0.77	ZZ

Summary Statistics	Sample GN47	Sample GN48
Grand Means	89.04 Percent	89.09 Percent
Stnd Dev Btwn Labs	0.52 Percent	0.56 Percent

Statistics based on 34 of 37 reporting participants.

Comments on Assigned Data Flags for Test #384

CPTGAE (X) - Extreme Data.

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

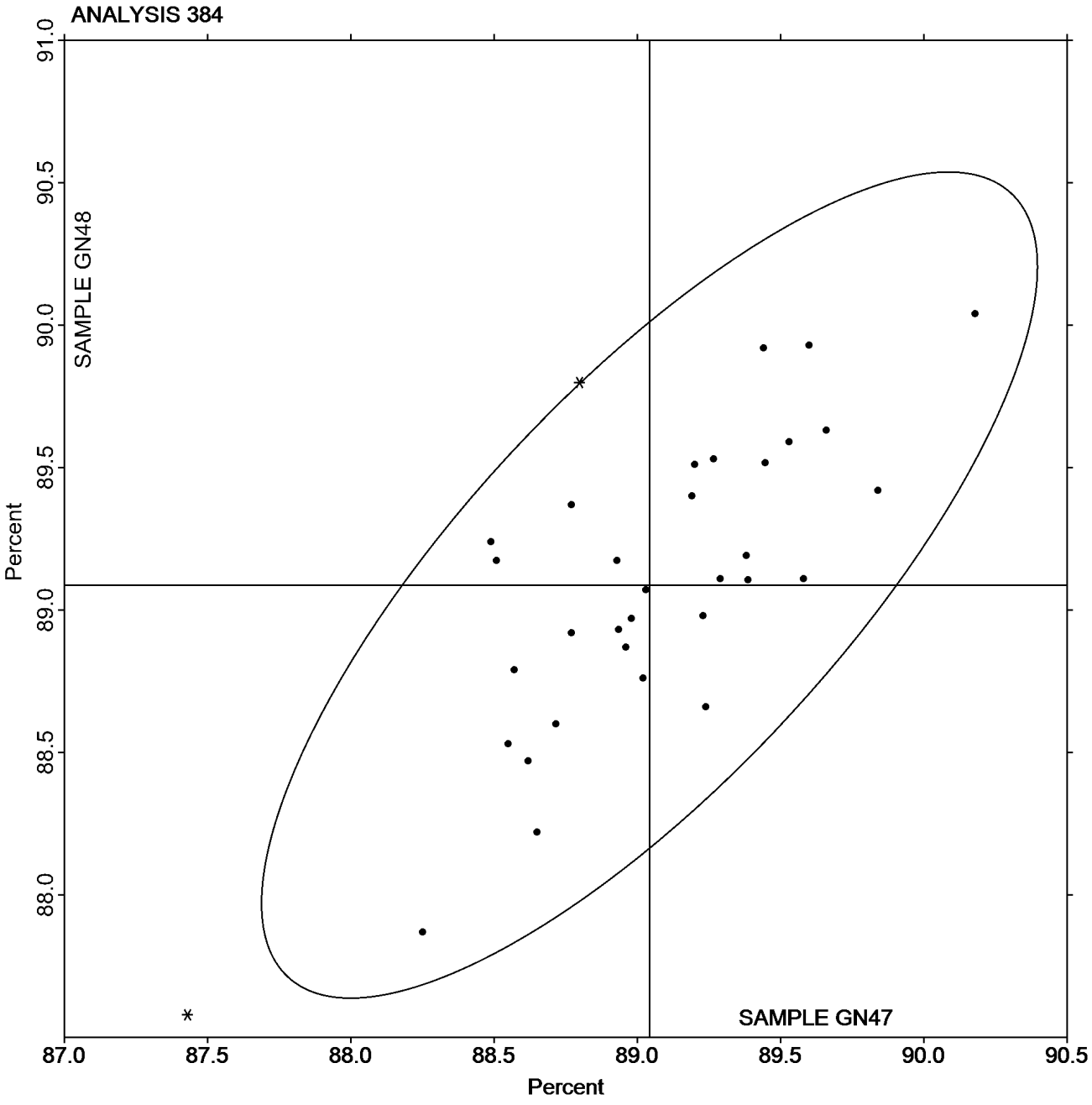
N9NXH7 (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Grand Mean Sample GN47 = 89.042
Percent

Grand Mean Sample GN48 = 89.088
Percent



Paper & Paperboard Interlaboratory Testing Program

Analysis 386

Opacity (Paper Backing) - Fine Papers and Newsprint

TAPPI Official Test Method T519

WebCode	Data Flag	Sample GP47 Lab Mean	Sample GP47 Diff from Grand Mean	Sample GP47 CPV	Sample GP48 Lab Mean	Sample GP48 Diff from Grand Mean	Sample GP48 CPV	Instr Code
DAWJMA		90.03	0.00	0.04	90.08	0.01	0.09	ZZ
DTUKYF		90.02	-0.01	-0.06	90.15	0.09	0.87	ZZ
GWTCB9		89.97	-0.05	-0.58	90.05	-0.01	-0.12	ZZ
J6KMHA	X	89.47	-0.55	-6.35	90.04	-0.03	-0.26	ZZ
JH9NZ2		90.08	0.06	0.71	89.89	-0.17	-1.72	ZZ
JPQZE3		89.88	-0.14	-1.61	90.00	-0.07	-0.66	ZZ
KQD3C3		90.07	0.05	0.54	90.25	0.19	1.84	ZZ
N3YJTY		89.94	-0.08	-0.96	89.96	-0.10	-1.03	ZZ
NULHHV		89.99	-0.04	-0.42	90.05	-0.02	-0.20	ZZ
PT3ZRV		89.88	-0.14	-1.62	90.05	-0.02	-0.20	ZZ
RY6QAR		90.06	0.04	0.42	90.15	0.08	0.83	ZZ
VYWQ2M		90.07	0.05	0.57	90.00	-0.07	-0.64	ZZ
XFBWAN		90.02	0.00	0.01	89.98	-0.09	-0.90	ZZ
XYMQTH		90.20	0.18	2.06	90.22	0.15	1.51	ZZ
Y4DFXT		90.10	0.08	0.89	90.10	0.03	0.34	ZZ

Summary Statistics	Sample GP47	Sample GP48
Grand Means	90.02 Percent	90.07 Percent
Stnd Dev Btwn Labs	0.09 Percent	0.10 Percent

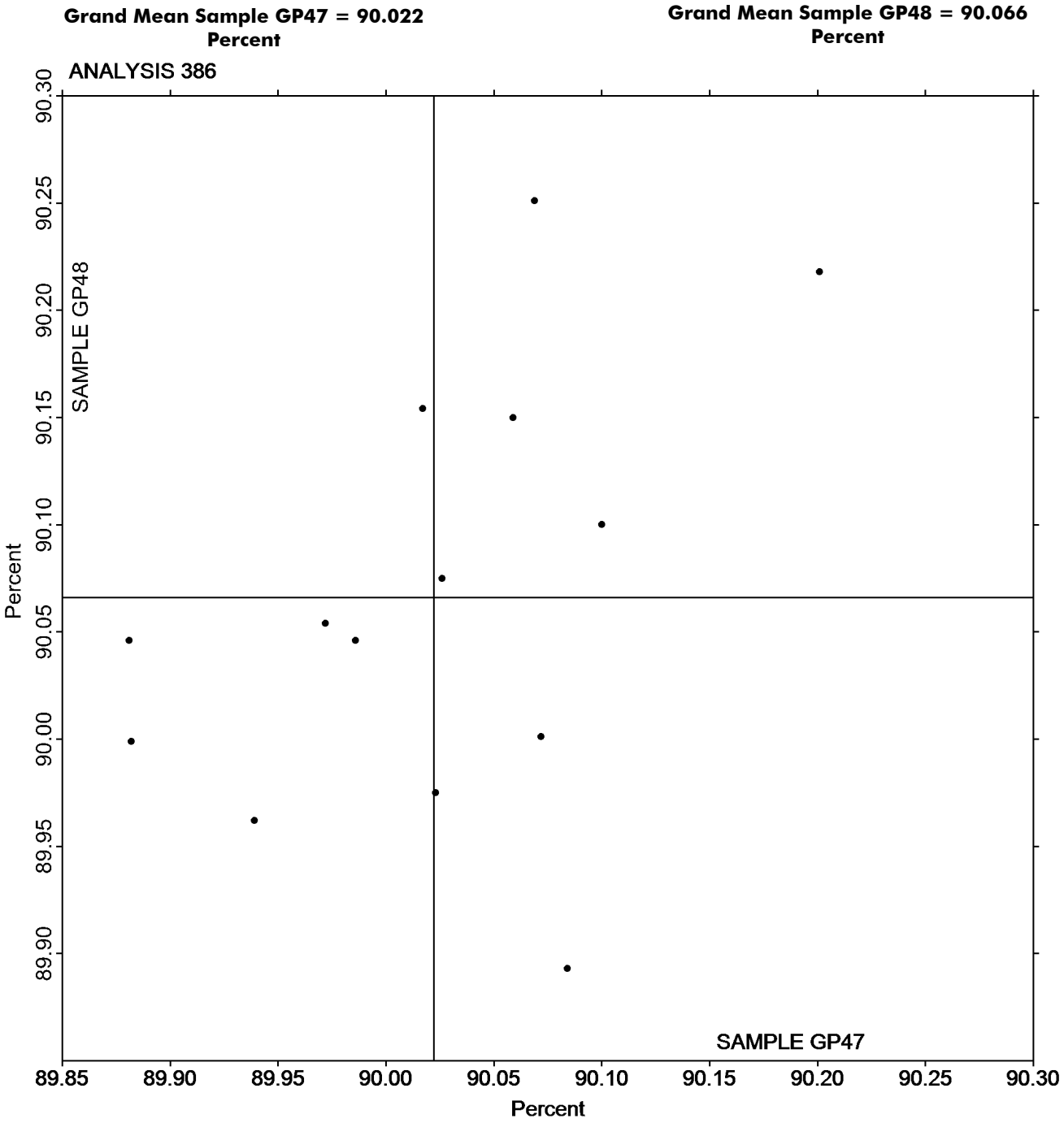
Statistics based on 14 of 15 reporting participants.

Comments on Assigned Data Flags for Test #386

J6KMHA (X) - Extreme Data for Sample GP47.

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 GR47 Lab Mean	Sample GR47 Diff from Grand Mean	Sample GR47 CPV	Sample GR48 Lab Mean	Sample GR48 Diff from Grand Mean	Sample GR48 CPV	Instr Code
2877BH	X	87.01	2.83	2.66	86.74	2.02	2.07	TS
37A8BA		84.67	0.50	0.46	85.40	0.68	0.70	XX
3F2JUH		84.43	0.25	0.23	84.89	0.17	0.18	XS
864ABN		82.98	-1.20	-1.13	83.64	-1.08	-1.11	TA
8MHT3L	X	92.49	8.31	7.79	86.40	1.67	1.72	XX
ACDLXC	X	89.00	4.82	4.52	89.48	4.76	4.89	PE
AJVTXP	X	87.04	2.86	2.68	86.46	1.74	1.79	XX
B4WBJC		85.51	1.33	1.25	86.01	1.29	1.33	TS
BCACMR	*	86.46	2.28	2.14	86.54	1.82	1.87	EF
BZWYNC		84.69	0.51	0.48	85.30	0.58	0.59	TS
FB4HW9		84.58	0.40	0.38	85.08	0.36	0.37	HG
FE24HK	*	84.68	0.50	0.47	85.60	0.88	0.90	TT
FMTJ7N		83.21	-0.97	-0.91	83.79	-0.93	-0.96	TS
GBXNQ9		82.82	-1.36	-1.28	83.43	-1.29	-1.33	TS
H634EC		84.27	0.10	0.09	84.74	0.02	0.02	MK
J4BH87	X	87.43	3.25	3.04	88.16	3.44	3.53	TT
J6KMHA		82.61	-1.57	-1.47	83.23	-1.50	-1.54	TS
JCKQQT		83.50	-0.68	-0.64	84.00	-0.72	-0.74	TS
KQJDCE		85.26	1.08	1.02	85.79	1.07	1.09	HG
LD7GN3		83.34	-0.84	-0.79	84.23	-0.50	-0.51	TS
MBU2U3		83.08	-1.10	-1.03	83.68	-1.04	-1.07	TS
N324PE		82.78	-1.40	-1.32	83.45	-1.27	-1.31	TT
NQ7XPN		83.69	-0.49	-0.46	84.08	-0.65	-0.66	XX
NULHHV		82.61	-1.57	-1.47	83.42	-1.30	-1.33	TS
R9UE7F		85.31	1.13	1.06	85.44	0.72	0.74	TS
TQP8RD		83.70	-0.48	-0.45	84.30	-0.42	-0.43	XX
TRZC3F		85.03	0.85	0.79	85.39	0.67	0.68	XX
U2NFTV		85.03	0.85	0.80	85.52	0.80	0.82	HG
V2GVB6		84.73	0.55	0.51	85.34	0.62	0.63	TS
XEJ37T		85.58	1.40	1.31	86.05	1.33	1.36	TS
XFWHVM		84.99	0.81	0.76	85.46	0.74	0.76	TT
YJUE3T		83.15	-1.03	-0.96	83.83	-0.90	-0.92	TT
YRHCM8		84.53	0.35	0.32	84.90	0.18	0.18	TS
YUDMQM		82.86	-1.32	-1.24	83.39	-1.33	-1.37	TS
ZYDTD4		85.31	1.13	1.06	85.75	1.03	1.06	TT

Summary Statistics	Sample GR47	Sample GR48
Grand Means	84.18 Percent	84.72 Percent
Stnd Dev Btwn Labs	1.07 Percent	0.97 Percent

Statistics based on 30 of 35 reporting participants.

Comments on Assigned Data Flags for Test #390

J4BH87 (X) - Data for both samples are high. Possible Systematic Error.

ACDLXC (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample GR48.

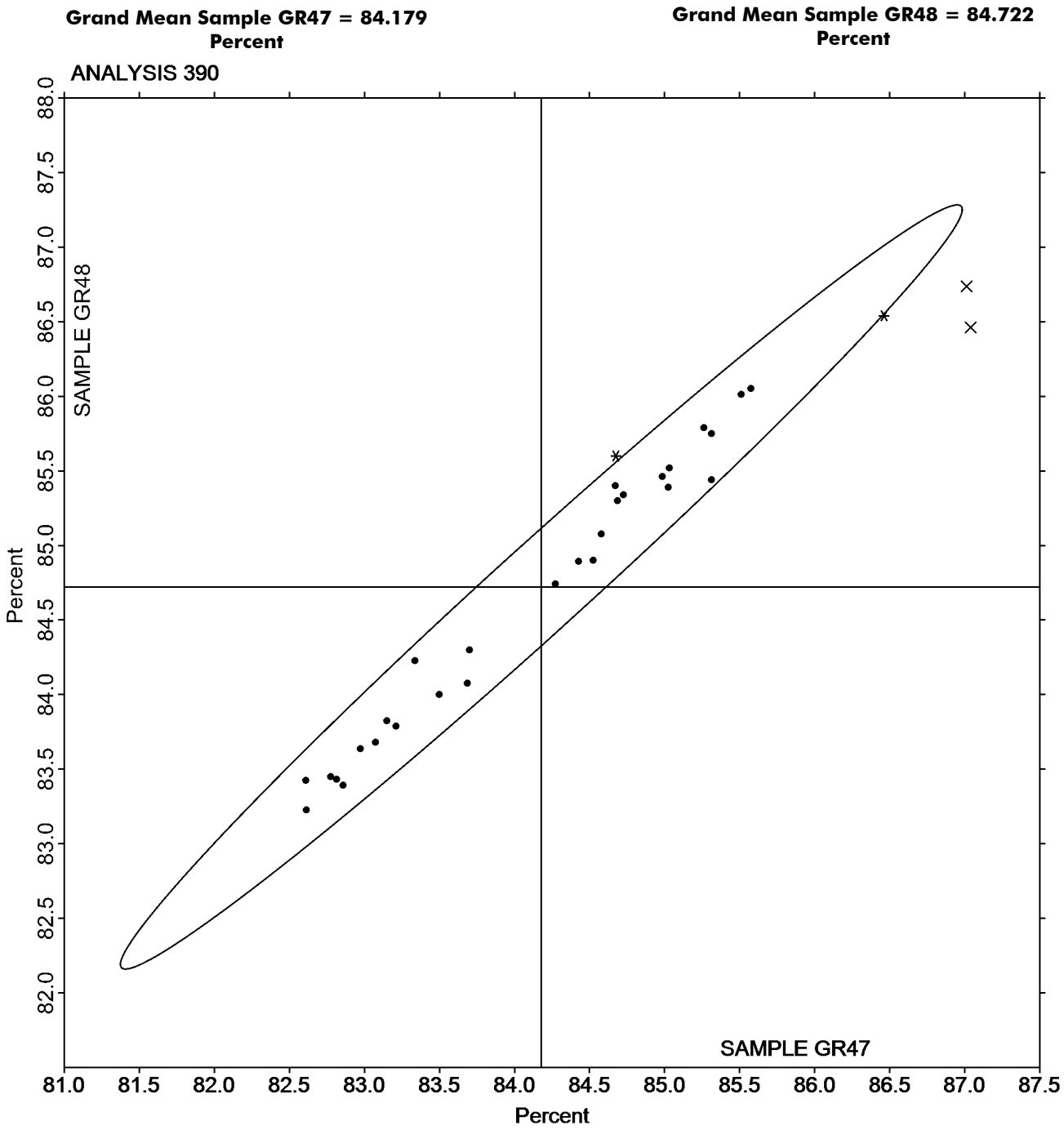
2877BH (X) - Data for sample GR47 are high. Inconsistent within the determinations of both samples.

8MHT3L (X) - Extreme Data for Sample GR47.

AJVTXP (X) - Data for sample GR47 are high.

Key to Instrument Codes Reported by Participants

EF	L & W Datacolor Elrepho	HG	Hunter Labscan / XE
MK	Macbeth Color-Eye 7000 Spectrophotometer	PE	Photovolt 577
TA	Technidyne, Diano, M.S. S-4	TS	Technidyne Brightimeter Micro S-5
TT	Technidyne Brightimeter Micro S4-M	XS	X-Rite 938 Spectrodensitometer
XX	Instrument make/model not specified by lab		



Paper & Paperboard Interlaboratory Testing Program

Analysis 391

Directional Brightness of Fluorescent Samples

TAPPI Official Test Method T452

WebCode	Data Flag	Sample GZ47 Lab Mean	Sample GZ47 Diff from Grand Mean	Sample GZ47 CPV	Sample GZ48 Lab Mean	Sample GZ48 Diff from Grand Mean	Sample GZ48 CPV	Instr Code
7PAM7H		92.68	-0.04	-0.05	92.41	-0.31	-0.39	PP
8MHT3L		94.33	1.61	2.16	94.48	1.76	2.20	XX
946L8J		92.76	0.04	0.05	92.88	0.16	0.20	TT
9UYNEA		93.18	0.46	0.62	93.22	0.50	0.63	TS
BFPPLU		91.16	-1.56	-2.10	91.02	-1.70	-2.13	HT
CPTGAE	X	86.67	-6.05	-8.10	86.73	-6.00	-7.52	TS
FA966A		92.65	-0.07	-0.10	92.35	-0.37	-0.47	TS
HA3AYA		93.00	0.28	0.38	92.75	0.03	0.03	TT
JCKQQT		92.60	-0.12	-0.16	92.66	-0.06	-0.08	TS
MHXYNZ		92.68	-0.04	-0.05	93.02	0.30	0.37	TS
UGFFGA		92.36	-0.36	-0.48	92.95	0.23	0.28	TS
WCXWDX		93.23	0.51	0.68	92.82	0.10	0.13	TS
XUR2BP		91.78	-0.94	-1.26	91.78	-0.95	-1.19	HT
Z32Z4R		92.95	0.23	0.30	93.06	0.33	0.42	TS

Summary Statistics	Sample GZ47	Sample GZ48
Grand Means	92.72 Percent	92.72 Percent
Stnd Dev Btwn Labs	0.75 Percent	0.80 Percent

Statistics based on 13 of 14 reporting participants.

Comments on Assigned Data Flags for Test #391

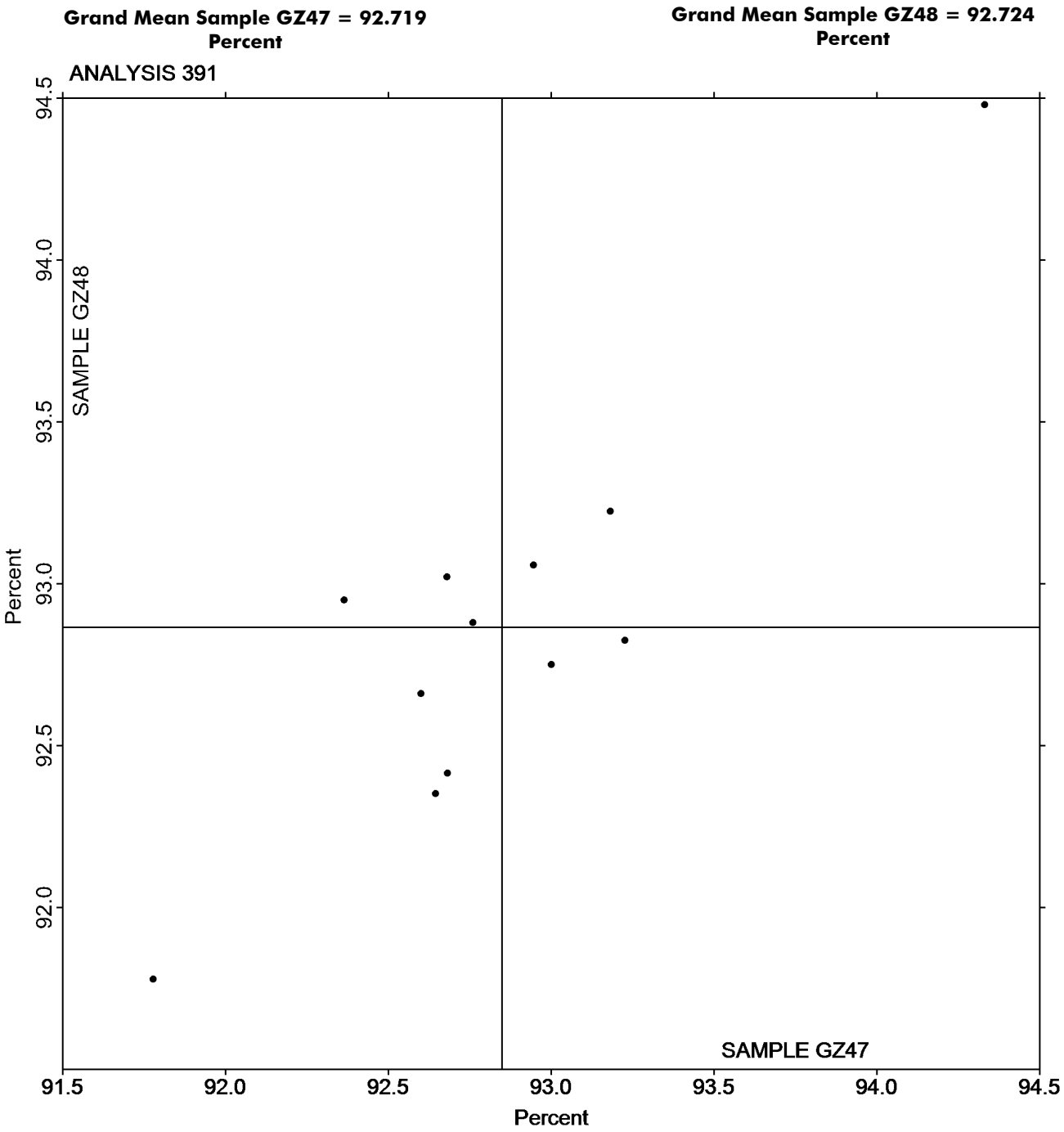
CPTGAE (X) - Extreme Data.

Analysis Notes:

HA3AYA - One determination removed from the Lab Mean of Sample GZ48 per Grubb's Test at 1% risk (TAPPI 1205).

Key to Instrument Codes Reported by Participants

HT	Hunter UltraScan Vis	PP	Technidyne Profile/Plus
TS	Technidyne Brightimeter Micro S-5	TT	Technidyne Brightimeter Micro S4-M
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 392
Diffuse Brightness
TAPPI Official Test Method T525

WebCode	Data Flag	Sample GR47 Lab Mean	Sample GR47 Diff from Grand Mean	Sample GR47 CPV	Sample GR48 Lab Mean	Sample GR48 Diff from Grand Mean	Sample GR48 CPV	Instr Code
2WUU2U		83.16	-0.27	-0.90	83.66	-0.35	-1.12	TC
2XZEPU		83.48	0.06	0.20	84.08	0.08	0.27	TC
37A8BA		83.54	0.12	0.39	84.15	0.15	0.47	TC
4THXAL		83.26	-0.17	-0.56	83.80	-0.20	-0.64	TC
CMPLQB		83.59	0.16	0.55	84.12	0.12	0.38	TC
DTUKYF	X	83.26	-0.16	-0.55	83.16	-0.84	-2.73	TC
E2HZ2P		83.56	0.14	0.47	84.21	0.21	0.67	TC
FA966A		83.55	0.13	0.44	84.09	0.09	0.28	TC
FE4R36		83.48	0.06	0.20	84.12	0.12	0.39	LA
FMTJ7N		84.15	0.73	2.45	84.74	0.73	2.37	TC
GBXNQ9		83.34	-0.08	-0.28	84.01	0.01	0.02	TC
GWTCB9		83.24	-0.18	-0.62	83.82	-0.18	-0.59	TM
GXRHR3		83.24	-0.18	-0.61	83.89	-0.12	-0.37	TC
J4BH87		83.28	-0.15	-0.50	83.88	-0.13	-0.41	TL
J6KMHA		83.39	-0.03	-0.10	83.93	-0.07	-0.22	TM
JAFDQ7		83.35	-0.07	-0.23	84.09	0.09	0.30	TC
JH9NZ2		83.35	-0.07	-0.24	83.90	-0.10	-0.33	TC
KQD3C3		83.30	-0.12	-0.40	83.88	-0.12	-0.38	LA
N324PE		83.37	-0.05	-0.17	83.97	-0.03	-0.11	LT
N3YJTY		82.87	-0.55	-1.86	83.50	-0.50	-1.61	EG
NQ7XPN		83.88	0.46	1.54	84.30	0.30	0.97	EE
NULHHV		83.70	0.28	0.94	84.36	0.36	1.17	TC
PT3ZRV		83.47	0.05	0.16	83.90	-0.11	-0.34	LS
QMH6QR		83.20	-0.23	-0.76	83.81	-0.19	-0.62	TC
TTFNPR		83.57	0.15	0.51	83.99	-0.01	-0.02	TC
XFBWAN		83.60	0.18	0.61	84.18	0.18	0.57	TC
XFWHVM		82.76	-0.66	-2.22	83.24	-0.76	-2.46	EG
Y4DFXT		83.14	-0.28	-0.96	83.74	-0.26	-0.85	TM
YJUE3T		83.99	0.57	1.92	84.70	0.70	2.25	EG

Summary Statistics	Sample GR47	Sample GR48
Grand Means	83.42 Percent	84.00 Percent
Stnd Dev Btwn Labs	0.30 Percent	0.31 Percent

Statistics based on 28 of 29 reporting participants.

Comments on Assigned Data Flags for Test #392

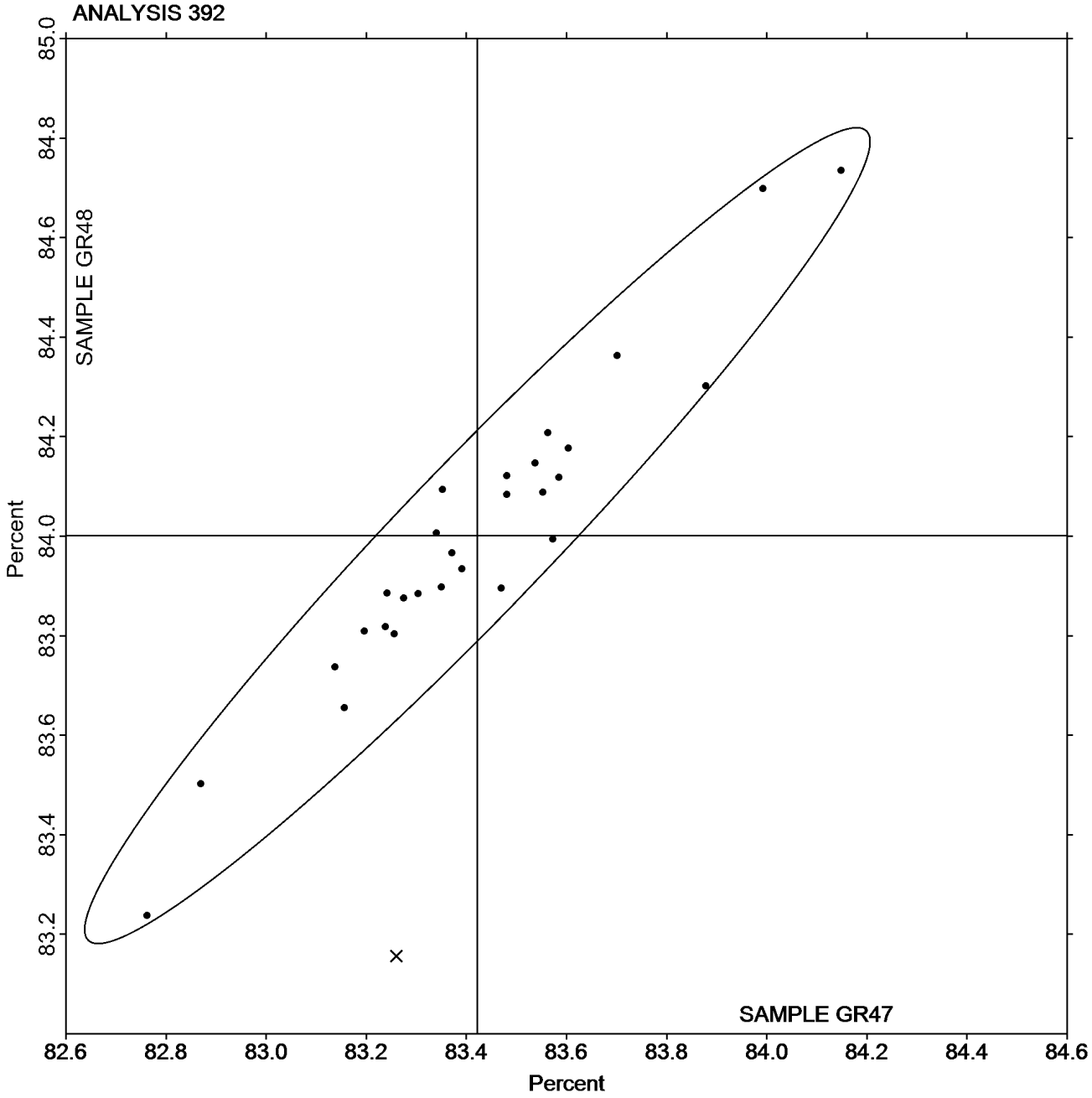
DTUKYF (X) - Data for sample GR48 are low. Inconsistent within the determinations of sample GR47.

Key to Instrument Codes Reported by Participants

EE	Datacolor Elrepho 2000	EG	Datacolor Elrepho 450X
LA	L & W Elrepho - Autoline	LS	L & W Elrepho SE 070
LT	L & W Elrepho SE 071	TC	Technidyne Color Touch Series
TL	Technidyne Technibrite TB-1	TM	Technidyne Technibrite Micro TB-1C

Grand Mean Sample GR47 = 83.422 Percent

Grand Mean Sample GR48 = 84.001 Percent



Paper & Paperboard Interlaboratory Testing Program

Analysis 394

Fluorescent Component of Directional Brightness

TAPPI Official Test Method T452

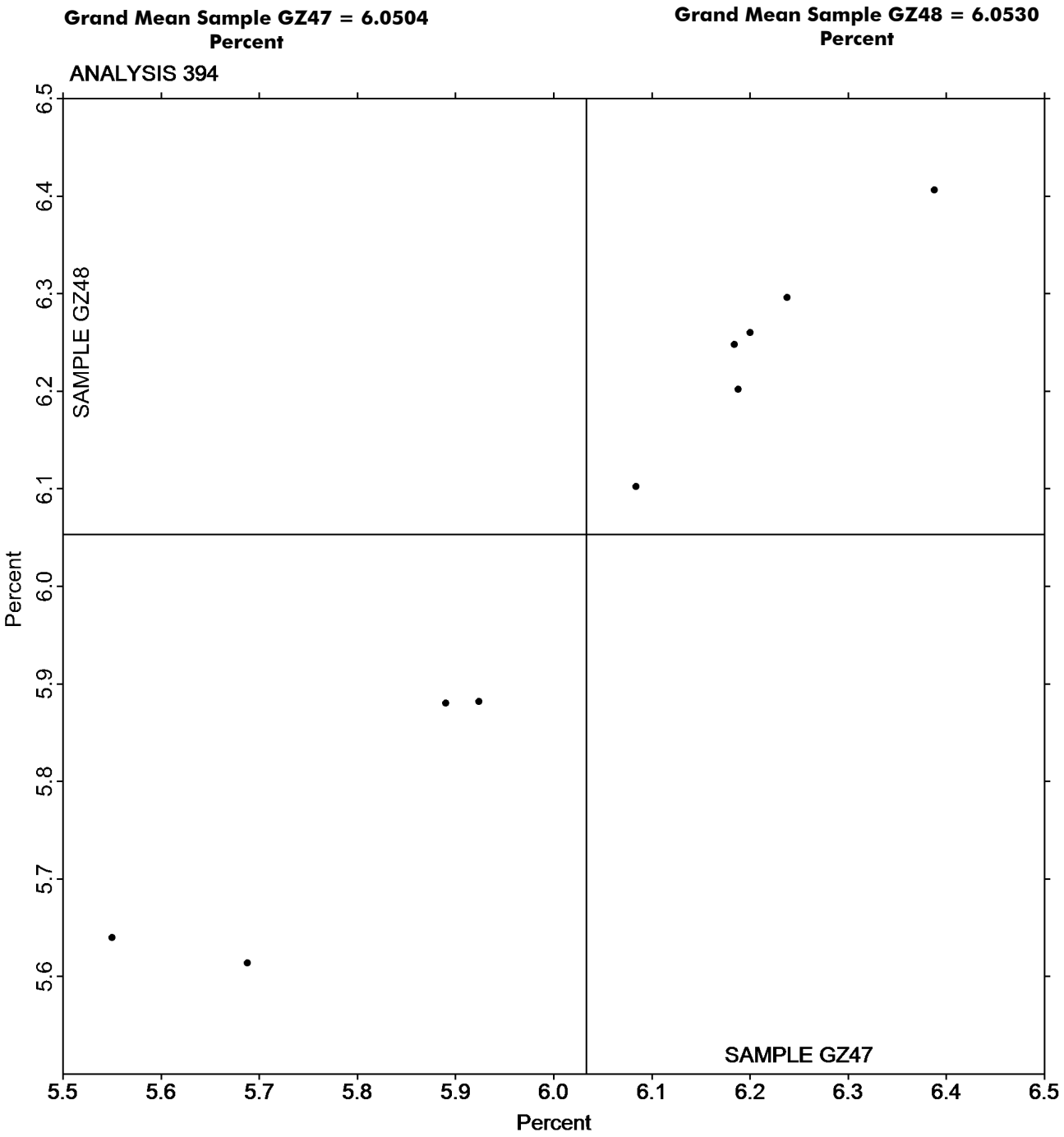
WebCode	Data Flag	Sample GZ47 Lab Mean	Sample GZ47 Diff from Grand Mean	Sample GZ47 CPV	Sample GZ48 Lab Mean	Sample GZ48 Diff from Grand Mean	Sample GZ48 CPV	Instr Code
7PAM7H		6.084	0.034	0.14	6.102	0.049	0.17	PP
8MHT3L		5.924	-0.126	-0.54	5.882	-0.171	-0.61	XX
946L8J		6.200	0.150	0.64	6.260	0.207	0.74	TT
9UYNEA		5.890	-0.160	-0.69	5.880	-0.173	-0.62	TS
CPTGAE		6.184	0.134	0.57	6.248	0.195	0.69	TS
FA966A		5.688	-0.362	-1.55	5.614	-0.439	-1.56	TS
JCKQQT		5.720	-0.330	-1.41	5.640	-0.413	-1.47	TS
UGFFGA		6.238	0.188	0.80	6.296	0.243	0.86	TS
WCXWDX		6.388	0.338	1.44	6.406	0.353	1.26	TS
Z32Z4R		6.188	0.138	0.59	6.202	0.149	0.53	TS

Summary Statistics	Sample GZ47	Sample GZ48
Grand Means	6.05 Percent	6.05 Percent
Stnd Dev Btwn Labs	0.23 Percent	0.28 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	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 395

Specular Gloss at 75 Degrees - High Range

TAPPI Official Test Method T480

WebCode	Data Flag	Sample GT47 Lab Mean	Sample GT47 Diff from Grand Mean	Sample GT47 CPV	Sample GT48 Lab Mean	Sample GT48 Diff from Grand Mean	Sample GT48 CPV	Instr Code
7PAM7H		77.30	0.47	0.38	76.30	0.31	0.21	PP
98369H		75.19	-1.64	-1.35	76.25	0.26	0.18	XX
9UYNEA		76.10	-0.73	-0.60	75.95	-0.04	-0.03	LA
FB4HW9		78.92	2.09	1.71	76.55	0.56	0.38	TH
FE24HK		78.13	1.30	1.06	75.02	-0.97	-0.66	TH
H634EC		76.71	-0.12	-0.10	75.84	-0.15	-0.10	PP
HA3AYA		76.71	-0.13	-0.10	76.98	0.99	0.67	TG
J4BH87		74.68	-2.15	-1.76	72.77	-3.22	-2.18	GS
J6KMHA		76.49	-0.34	-0.28	75.94	-0.05	-0.03	TH
JXK8W9		76.28	-0.55	-0.45	76.48	0.49	0.33	LA
KEHUTY		77.02	0.19	0.15	74.30	-1.69	-1.14	XX
NA3FMW		75.80	-1.03	-0.85	74.11	-1.88	-1.27	VM
NULHHV		79.41	2.58	2.11	78.72	2.73	1.85	TG
PT3ZRV		77.65	0.82	0.67	78.71	2.72	1.84	LB
QMH6QR	X	71.48	-5.35	-4.38	70.90	-5.09	-3.45	ZH
U2NFTV		77.74	0.91	0.74	77.03	1.04	0.70	TH
XEJ37T		75.67	-1.16	-0.95	74.89	-1.10	-0.74	LA
XFWHVM		76.40	-0.43	-0.35	75.49	-0.50	-0.34	GM
YJUE3T		76.80	-0.03	-0.03	76.48	0.49	0.33	TH

Summary Statistics	Sample GT47	Sample GT48
Grand Means	76.83 Gloss Units	75.99 Gloss Units
Stnd Dev Btwn Labs	1.22 Gloss Units	1.48 Gloss Units

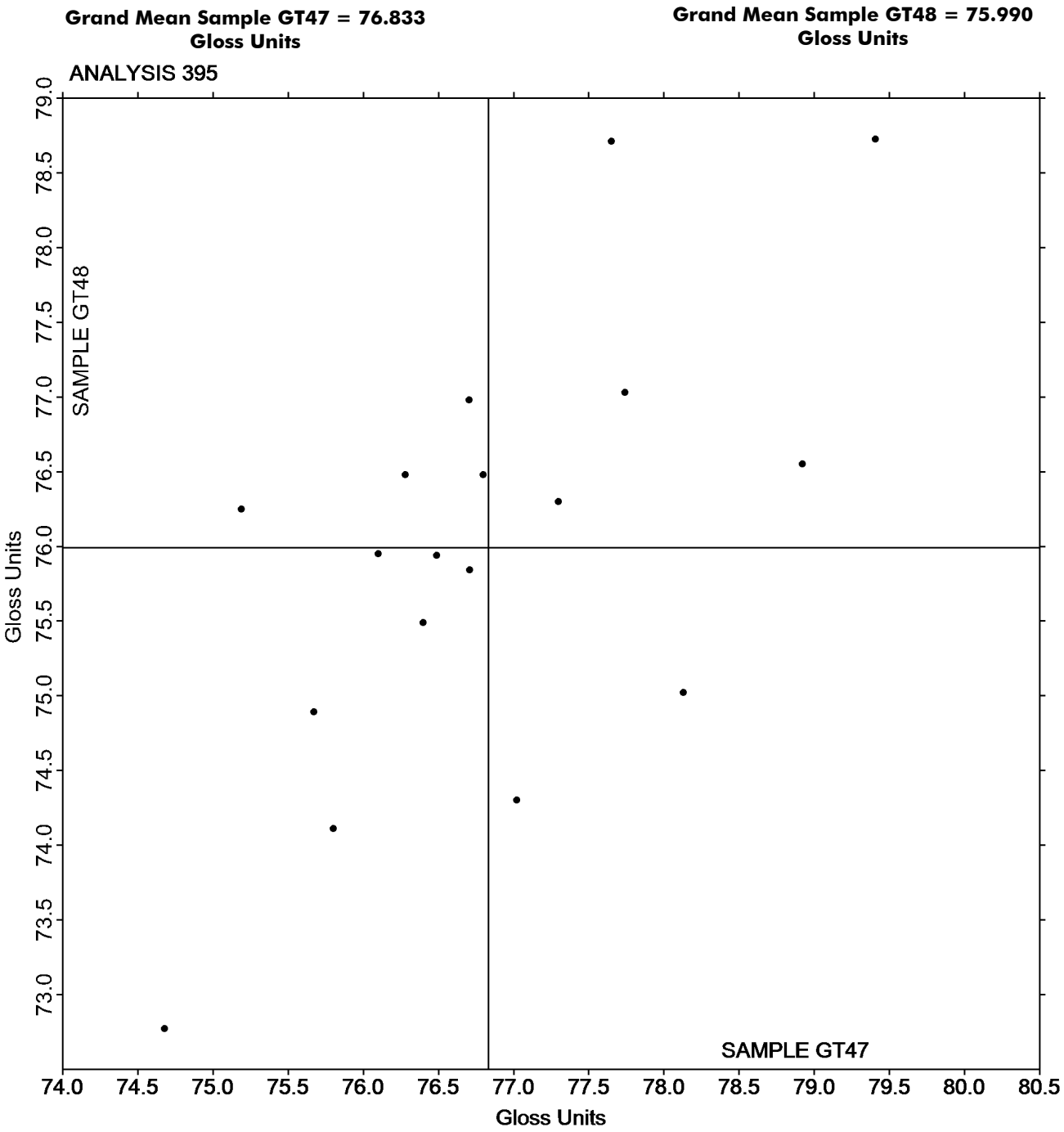
Statistics based on 18 of 19 reporting participants.

Comments on Assigned Data Flags for Test #395

QMH6QR (X) - Data for both samples are low.

Key to Instrument Codes Reported by Participants

GM	BYK-Gardner micro-gloss	GS	BYK-Gardner Glossgard II
LA	L & W Gloss - Autoline 300	LB	L & W Gloss Tester Code 224
PP	Technidyne Profile/Plus	TG	Technidyne T480
TH	Technidyne T480A	VM	Valmet PaperLab (was Kajaani/Robotest)
XX	Instrument make/model not specified by lab	ZH	Zehntner ZLR 1050



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

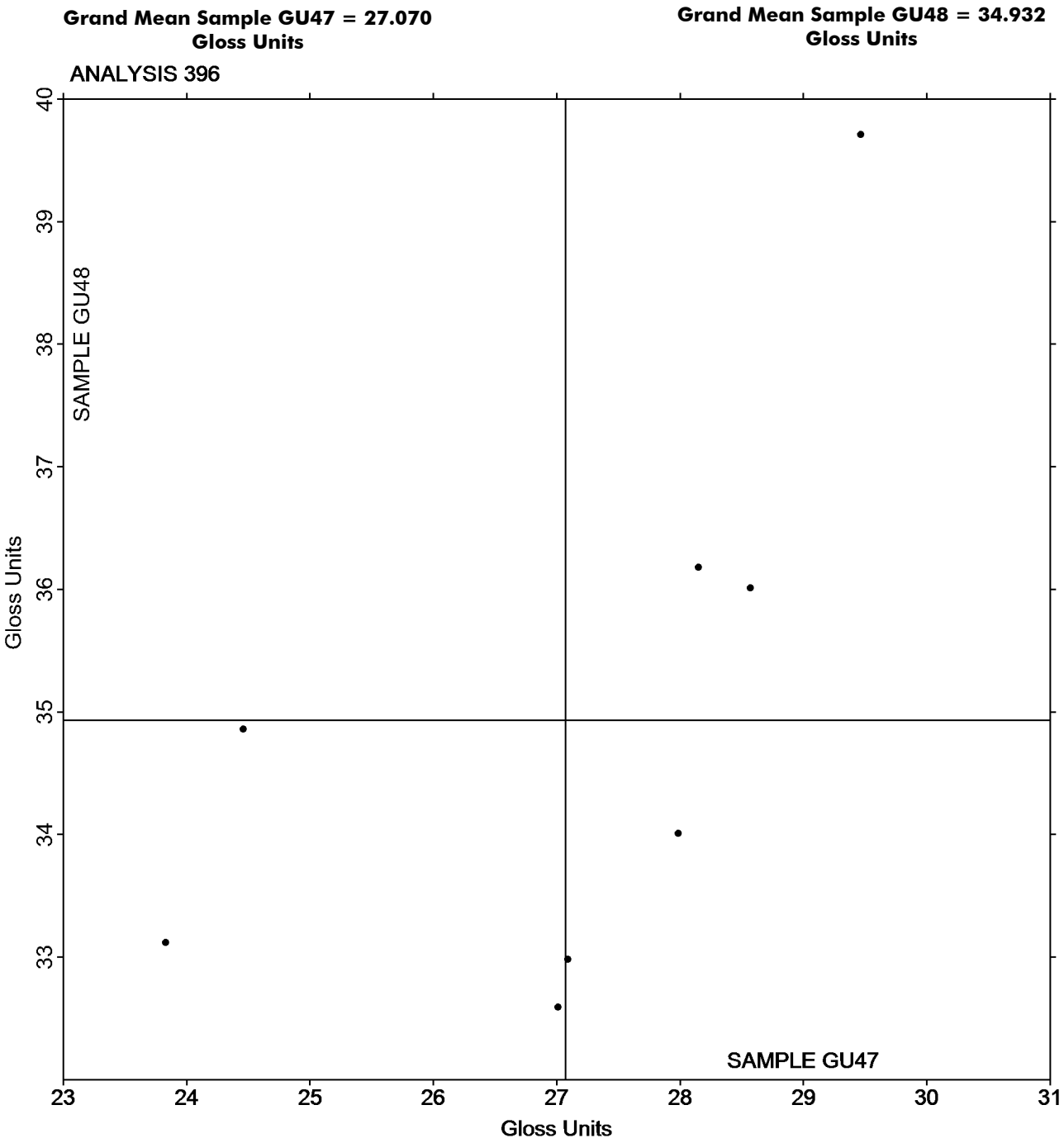
WebCode	Data Flag	Sample GU47 Lab Mean	Sample GU47 Diff from Grand Mean	Sample GU47 CPV	Sample GU48 Lab Mean	Sample GU48 Diff from Grand Mean	Sample GU48 CPV	Instr Code
2XZEPU		27.09	0.02	0.01	32.98	-1.95	-0.83	TH
3F2JUH		28.57	1.50	0.76	36.01	1.08	0.46	TH
864ABN		27.99	0.91	0.46	34.01	-0.92	-0.39	TH
AJVTXP		23.83	-3.24	-1.64	33.12	-1.81	-0.77	GA
FMTJ7N		28.15	1.08	0.55	36.18	1.25	0.53	TH
NULHHV		29.47	2.40	1.21	39.71	4.78	2.02	TG
PT3ZRV		24.46	-2.61	-1.32	34.86	-0.07	-0.03	LA
YALYWL		27.01	-0.06	-0.03	32.59	-2.34	-0.99	PP

Summary Statistics	Sample GU47	Sample GU48
Grand Means	27.07 Gloss Units	34.93 Gloss Units
Stnd Dev Btwn Labs	1.98 Gloss Units	2.36 Gloss Units

Statistics based on 8 of 8 reporting participants.

Key to Instrument Codes Reported by Participants

GA	BYK-Gardner (model not specified)	LA	L & W Gloss - Autoline 300
PP	Technidyne Profile/Plus	TG	Technidyne T480
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 398

Grammage (Mass per Unit Area)

TAPPI Official Test Method T410

WebCode	Data Flag	Sample GW47 Lab Mean	Sample GW47 Diff from Grand Mean	Sample GW47 CPV	Sample GW48 Lab Mean	Sample GW48 Diff from Grand Mean	Sample GW48 CPV	Instr Code
2XZEPU		90.71	1.42	2.04	103.9	0.2	0.41	ZZ
37A8BA		89.66	0.38	0.54	104.2	0.5	0.93	ZZ
3F2JUH		88.90	-0.39	-0.55	103.7	0.0	-0.03	ZZ
69BXT9		88.31	-0.97	-1.39	102.9	-0.8	-1.58	ZZ
7UM89W		89.37	0.09	0.13	104.0	0.4	0.71	ZZ
864ABN		88.78	-0.50	-0.72	102.7	-1.0	-1.95	ZZ
9CHFLL		87.94	-1.34	-1.92	103.4	-0.3	-0.54	ZZ
B8EPRH		89.24	-0.04	-0.06	103.0	-0.6	-1.27	ZZ
BFPPLU		89.91	0.63	0.90	104.0	0.3	0.66	ZZ
DAWJMA		88.92	-0.36	-0.51	103.9	0.2	0.47	ZZ
EVP377		89.37	0.08	0.12	103.5	-0.2	-0.38	ZZ
GFN39N		88.62	-0.66	-0.95	104.1	0.4	0.87	ZZ
JPQZE3		89.13	-0.15	-0.22	103.5	-0.2	-0.38	ZZ
JU2VCK		90.20	0.92	1.31	104.5	0.8	1.50	ZZ
KQJDCE		89.42	0.14	0.20	103.8	0.1	0.22	ZZ
LTGXWQ		89.34	0.05	0.08	103.7	0.0	0.02	ZZ
MHXYNZ		90.21	0.93	1.33	104.3	0.6	1.11	ZZ
NFQZQC		89.05	-0.23	-0.33	103.6	-0.1	-0.17	ZZ
NQ7XPN		89.22	-0.06	-0.09	103.9	0.2	0.36	ZZ
PT3ZRV		88.59	-0.70	-1.00	103.3	-0.3	-0.67	ZZ
QFZUDQ		90.65	1.37	1.96	104.7	1.0	1.94	ZZ
TQP8RD		88.79	-0.49	-0.71	103.2	-0.5	-0.91	ZZ
VCXMXU		90.17	0.89	1.27	104.1	0.4	0.73	ZZ
XUR2BP		89.19	-0.09	-0.13	103.6	-0.1	-0.21	ZZ
YRHCM8		88.45	-0.83	-1.19	102.6	-1.0	-2.05	ZZ
Z32Z4R		89.23	-0.05	-0.08	103.8	0.1	0.22	ZZ

Summary Statistics	Sample GW47	Sample GW48
Grand Means	89.28 g/sq m	103.69 g/sq m
Stnd Dev Btwn Labs	0.70 g/sq m	0.51 g/sq m

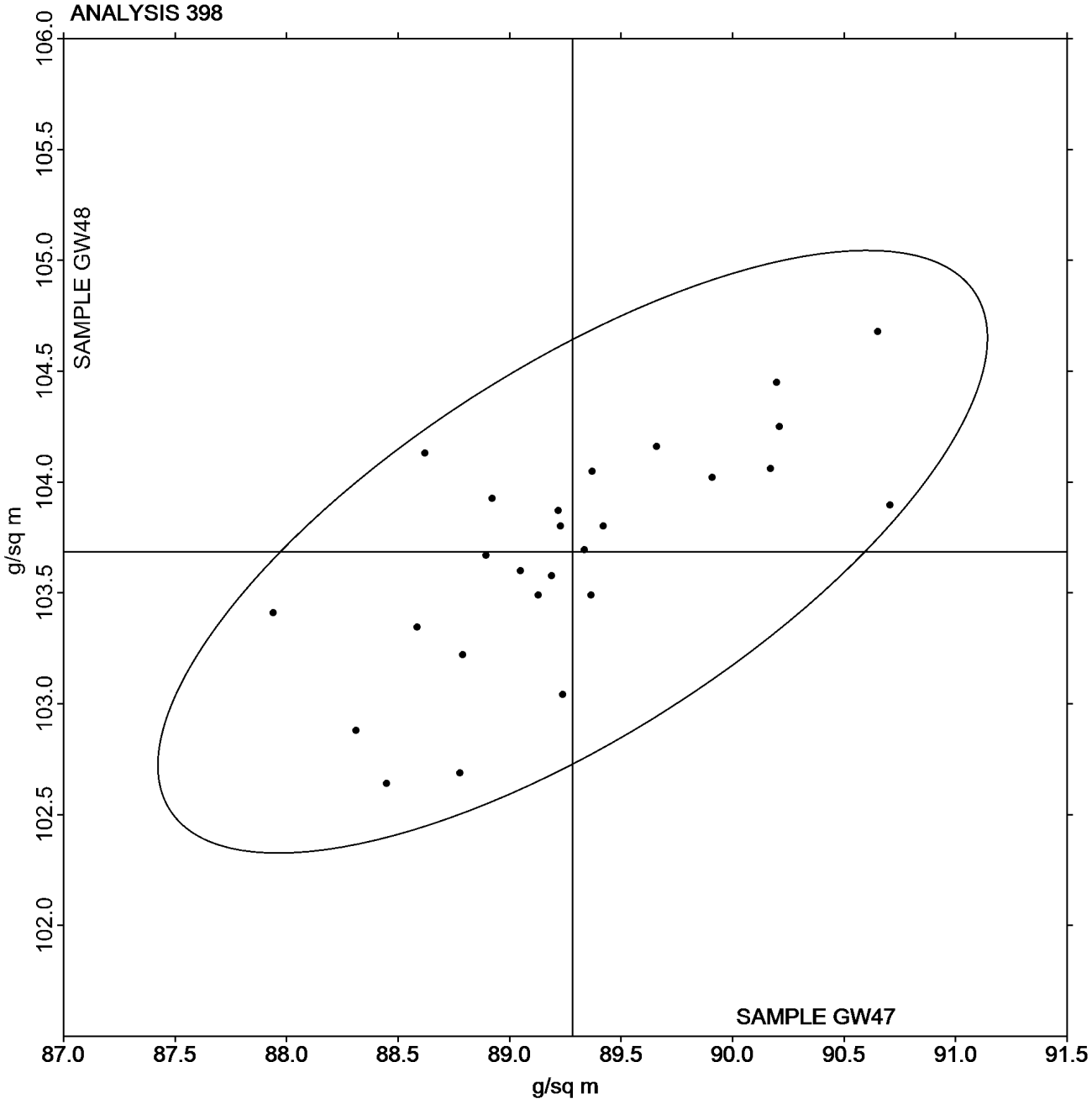
Statistics based on 26 of 26 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Grand Mean Sample GW47 = 89.283 g/sq m

Grand Mean Sample GW48 = 103.69 g/sq m



Paper & Paperboard Interlaboratory Testing Program

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

WebCode	Data Flag	Sample GX47 Lab Mean	Sample GX47 Diff from Grand Mean	Sample GX47 CPV	Sample GX48 Lab Mean	Sample GX48 Diff from Grand Mean	Sample GX48 CPV	Instr Code
2XZEPU		161.7	18.8	0.80	160.6	14.2	0.60	HE
6M934R		141.1	-1.8	-0.08	127.6	-18.8	-0.80	HE
8JK8BJ		150.3	7.4	0.31	162.3	15.9	0.67	XX
9CHFLL		139.5	-3.4	-0.14	144.2	-2.2	-0.09	HE
9UYNEA		160.1	17.2	0.73	156.1	9.7	0.41	HE
ACDLXC		137.7	-5.3	-0.22	143.8	-2.6	-0.11	HE
BZWYNC		147.5	4.6	0.19	170.9	24.5	1.04	HE
CPTGAE	X	511.7	368.8	15.61	490.5	344.1	14.56	HE
FE24HK		174.1	31.1	1.32	155.2	8.8	0.37	HE
GBXNQ9	*	198.1	55.2	2.34	201.6	55.2	2.34	XX
GNLTWJ		124.7	-18.2	-0.77	145.2	-1.2	-0.05	HE
H634EC		122.5	-20.4	-0.87	155.6	9.2	0.39	HE
JCKQQT	X	240.3	97.4	4.12	170.8	24.4	1.03	HE
LD7GN3		174.3	31.4	1.33	142.5	-3.9	-0.16	HE
LR79FY		140.9	-2.0	-0.09	131.4	-15.0	-0.63	HE
MBU2U3		152.9	9.9	0.42	157.6	11.2	0.48	HE
MHXYNZ		126.9	-16.0	-0.68	162.4	16.0	0.68	HE
N324PE		111.8	-31.1	-1.32	102.1	-44.3	-1.87	HE
N9NXH7		135.4	-7.5	-0.32	132.9	-13.5	-0.57	HE
NA3FMW		135.1	-7.8	-0.33	151.5	5.1	0.22	HE
T6ULUV	*	73.3	-69.6	-2.94	112.1	-34.3	-1.45	HE
TQP8RD		104.9	-38.0	-1.61	153.0	6.6	0.28	XX
TRZC3F		140.8	-2.1	-0.09	196.9	50.5	2.14	XX
VJJFBE		163.7	20.8	0.88	118.9	-27.5	-1.16	HE
VRQCVC		165.5	22.6	0.96	159.2	12.8	0.54	HE
WCXWDX		136.6	-6.3	-0.27	95.0	-51.4	-2.18	HE
XEJ37T		138.8	-4.1	-0.17	120.2	-26.2	-1.11	HE
YALYWL		140.7	-2.2	-0.09	141.6	-4.8	-0.20	HE
YRHCM8		137.6	-5.3	-0.22	145.4	-1.0	-0.04	HE
YUDMQM		147.2	4.3	0.18	144.5	-1.9	-0.08	HE
ZYDTD4		160.9	17.9	0.76	155.2	8.8	0.37	HE

Summary Statistics	Sample GX47	Sample GX48
Grand Means	142.91 Seconds	146.40 Seconds
Stnd Dev Btwn Labs	23.63 Seconds	23.64 Seconds

Statistics based on 29 of 31 reporting participants.

Comments on Assigned Data Flags for Test #399

CPTGAE (X) - Extreme Data.

JCKQQT (X) - Data for sample GX47 are high. Inconsistent within the determinations of sample GX48.

Analysis Notes:

LR79FY - One determination removed from the Lab Mean of Sample GX48 per Grubb's Test at 1% risk (TAPPI 1205).

Key to Instrument Codes Reported by Participants

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

Grand Mean Sample GX47 = 142.91 Seconds

Grand Mean Sample GX48 = 146.40 Seconds