

Enhanced Sensitivity Employing Zwitterionic and pI Matching Dyes (Z-CyDyes) Optimized for
2D-Gel Electrophoresis Based on Side Chain Modifications of CyDye Fluorophores. New Tools
For Use in Proteomics and Diagnostics.

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[Appendix SI-A](#)

Values for the 281 spots chosen from the 2D-DIGE experiment (Figs 5, 6, and 7) were obtained using Progenesis SameSpots Software. Each spot measured was manually inspected to insure that the included volume (region inside the perimeter) was centered on each spot and was not overlapping other peaks. The normalized volume used in the comparison is a logarithmic ratio of a given dye over the internal standard dye, Cy2. The % difference is a ratio of normalized spot volumes.

Appdendix SI-A: Z-Cy3 vs. Cy3 DIGE Fluor and Z-Cy5 vs. Cy5 DIGE Fluor, Spot Volume Comparison.

Ref. Spot	Z-Cy3 Volume	Norm. Vol. Z-Cy3	Cy3 Volume	Norm. Vol. Cy3	% difference (Z-Cy3/Cy3)*100
26	861707.8053	1.39899584	621593.3874	0.801376868	174.5740231
14	9913523.991	1.285761017	6549322.488	0.739512572	173.8660119
43	2722525.263	3.021152248	1992216.39	1.918049868	157.5116632
44	428956.3146	1.542807765	313095.7698	0.988827934	156.0238857
69	2007832.184	1.021938981	1467509.953	0.701245294	145.7320269
123	22248088.64	1.065655954	14817539.06	0.737940983	144.409374
80	7498286.994	1.208396881	6017404.394	0.849708193	142.213161
82	1381192.879	1.112439678	1129199.441	0.787215994	141.3131448
100	13446759.62	1.111984149	9700188.064	0.793888689	140.0680176
102	1284024.135	1.029829651	1268868.913	0.740270451	139.115326
92	2297298.703	0.992025268	2190641.993	0.715545472	138.6390253
138	476582.7532	1.115050245	561375.3223	0.809347261	137.7715472
112	1062732.088	1.059212721	1337674.988	0.76971907	137.6102999
189	23372941.33	1.045051069	22461048.47	0.770930322	135.5571365
104	12336159.9	1.056903516	9840768.988	0.782673537	135.0375944
142	47415303.53	0.995535818	33827636.52	0.739053446	134.704171
85	4900018.181	1.160210622	4617069.497	0.862172145	134.568326
119	13653867.77	1.131863791	12511778.75	0.842513108	134.3437603
215	1914824.075	0.943796159	1884460.511	0.705233419	133.8274865
114	1324272.961	1.10427523	1258456.434	0.825236646	133.8131596
77	1071244.453	0.894986603	972586.158	0.673269146	132.9314746
157	746867.3583	1.051250168	836982.9477	0.790873818	132.9226161
205	440252.1874	0.974948726	490788.7943	0.734928576	132.6589763
116	2158356.003	1.005168307	1940915.855	0.758544162	132.5128262
159	877994.0728	0.927570271	883020.1753	0.708036997	131.0059044
117	1514098.793	0.873885263	1604619.813	0.668561242	130.7113259
253	3148583.705	1.361829426	3138758.796	1.042525323	130.6279469
127	4886982.246	0.860394518	4649713.614	0.660958658	130.1737269
113	2372780.395	0.992258674	2840314.504	0.763283305	129.9987394
243	166572.7805	0.888935204	190341.3389	0.685455261	129.6853718
154	4637899.921	1.238079544	6164850.804	0.955673429	129.5504831

					% difference
Ref. Spot	Z-Cy3 Volume	Norm. Vol. Z- Cy3	Cy3 Volume	Norm. Vol. Cy3	(Z- Cy3/Cy3)*100
132	1959133.361	1.022130082	1627410.627	0.792768312	128.931753
134	2565952.921	1.087543309	2839851.839	0.845486976	128.6292208
406	1499567.764	1.541400483	1279521.531	1.198922417	128.5654902
137	1034455.559	0.916730454	1194360.544	0.713976046	128.3979286
186	5789340.21	1.065420078	4858089.435	0.829987153	128.3658518
191	72841773.76	1.026782567	57500661.54	0.800009953	128.346224
99	734978.2196	0.976773696	859371.7478	0.765080256	127.6694424
392	1161588.333	1.060155486	1157318.345	0.831695452	127.4691936
271	14107411.2	1.094048507	12742081.33	0.858970692	127.3673848
169	5096891.518	1.091029928	4728082.925	0.857693152	127.205158
143	47854509.33	1.074031923	52300029.43	0.847131409	126.784571
136	2208890.45	0.962252222	2567101.868	0.764861327	125.8074095
71	1670502.462	1.037896948	1362118.441	0.826423377	125.5890112
139	3904183.834	1.054086728	3651355.654	0.841504986	125.2620895
204	3017854.328	0.921372832	3627010.349	0.735632323	125.2490958
190	1266026.242	0.805431608	1556295.821	0.644814896	124.9089643
166	3196494.789	0.788992558	2873939.243	0.632315546	124.7782952
226	66686705.44	0.992650358	70750827.85	0.796716281	124.5927041
224	2318023.85	0.878160367	2702623.689	0.705118912	124.540748
197	11937564.75	0.870286807	11751913.98	0.701021258	124.1455658
467	610167.0545	1.004234391	748301.1676	0.811988264	123.6759737
165	2008818.352	0.991519959	2386691.659	0.802415628	123.5668803
188	1605288.134	1.186844945	2147379.274	0.960717194	123.5373898
184	806955.3537	0.876947625	863551.4944	0.711347543	123.2797714
272	19578580.15	0.990807013	17366126.96	0.804341296	123.1824125
147	10500137.36	0.948229412	10578637.38	0.769870758	123.1673501
162	17996729.79	0.9728501	23923974.64	0.789949317	123.1534833
201	835939.366	0.87759782	1026549.856	0.712898983	123.1026892
294	12619405.8	1.002625243	13867098.21	0.814943833	123.029981
125	2825617.695	0.96732091	4230366.207	0.786497093	122.9910343
256	3768432.6	1.111493273	4440792.827	0.905508566	122.7479579
163	5140472.995	0.982819016	4881757.01	0.801470128	122.6270301
298	2029158.504	1.030214929	2239404.896	0.84155361	122.4182176
279	4614613.208	1.001586386	4544651.646	0.818375387	122.387159
84	3209836.877	1.08439011	3048011.741	0.886697075	122.2954423
249	1867108.322	0.819462595	1321140.693	0.670616366	122.1954364
181	8103846.003	1.046801876	8005958.932	0.856832185	122.1711666

					% difference
Ref. Spot	Z-Cy3 Volume	Norm. Vol. Z-Cy3	Cy3 Volume	Norm. Vol. Cy3	(Z-Cy3/Cy3)*100
172	2084284.122	0.937794468	1789088.94	0.769091163	121.9354106
161	4619418.401	1.004220541	5052901.452	0.825194172	121.6950597
228	2641522.21	0.976432158	3359106.273	0.802965475	121.6032555
185	1117534.569	0.969176276	1361186.305	0.797091613	121.5890696
237	941270.8333	0.860613684	627192.1292	0.707884077	121.5755111
150	2197527.616	0.942276791	2452828.966	0.775537033	121.4999092
232	1185465.913	0.916850081	1831225.665	0.754736774	121.4794498
234	621097.9721	0.872966702	974414.344	0.719168543	121.3855514
199	3818719.292	0.92917435	3887833.169	0.7669147	121.1574573
262	2180073.481	0.953097087	1937842.21	0.788039408	120.9453585
198	1633454.684	0.993738853	1961923.88	0.821904057	120.9069166
236	657805.2029	0.908177658	730102.7378	0.752893721	120.6249478
257	3782683.228	0.965226395	3721720.652	0.800726759	120.5437915
319	4554905.293	0.992942081	4071283.861	0.82422454	120.4698517
194	2805634.931	0.881620209	3628907.69	0.732059338	120.4301568
187	923776.572	0.874203973	1302523.581	0.726087578	120.3992464
440	1710252.737	1.286600011	1761130.649	1.069716873	120.274817
248	7594428.663	0.873760928	9438289.049	0.726673566	120.2411879
175	2056552.396	0.944416848	2347794.787	0.785606791	120.2149546
211	13134255.98	0.863014669	14536000.49	0.718619369	120.0934328
275	43540253.58	0.957587443	41807274.99	0.798301022	119.9531777
216	12353506.09	1.147783665	17745201.37	0.957321839	119.8952765
246	3153565.346	1.071124147	3803470.815	0.895642379	119.5928389
210	1635383.661	0.975449722	2029155.449	0.815983296	119.5428541
437	801619.4499	0.961317526	837146.6275	0.805477989	119.3474607
167	723785.5299	1.037835966	817925.5399	0.869816921	119.3165988
247	1925301.793	0.972471395	2417948.306	0.8151553	119.2989108
218	8249642.206	1.075566355	10395632.3	0.90434139	118.9336645
135	4149886.741	0.864911862	3904798.281	0.72771719	118.8527458
229	14627442.98	0.951409002	14039218.7	0.801149022	118.7555593
168	399305.7673	0.818587244	600124.4488	0.689798266	118.670528
260	11083406.63	0.926638981	13471174	0.78098472	118.6500781
487	312178.1151	0.927797551	424137.7718	0.782497953	118.5686874
202	4978217.635	0.867605915	6116418.987	0.732201382	118.4927995
233	7244689.609	0.889690091	9350598.729	0.751846139	118.3340639
225	2578063.92	0.952894852	2666787.822	0.806210822	118.1942521
273	1290503.803	0.793591442	1607271.507	0.672326756	118.0365699

					% difference
Ref. Spot	Z-Cy3 Volume	Norm. Vol. Z-Cy3	Cy3 Volume	Norm. Vol. Cy3	(Z-Cy3/Cy3)*100
266	113324090.1	1.12275116	130803387.4	0.952206595	117.9104583
334	878342.9978	0.905942845	993738.7422	0.768724081	117.8501971
126	2593327.307	0.852328969	2536377.256	0.72326897	117.8439838
131	153144.695	1.121981746	186185.2954	0.952226968	117.827134
239	15579179.89	0.953540699	17163227.59	0.809931579	117.7310188
283	34681979.38	0.916602851	32266605.91	0.781227021	117.3286158
245	5855407.272	1.007728853	8227414.856	0.859160734	117.292238
337	8409309.253	1.024725482	10182093.43	0.873818265	117.2698629
494	651462.2788	0.899886365	846059.5343	0.769189633	116.9914839
250	1207299.366	0.929851382	1449509.04	0.795688032	116.8613005
183	13451661.83	0.885920114	14491828.15	0.759463887	116.6507228
193	1027978.399	0.855333891	1200086.419	0.735130389	116.3513172
220	10432223.86	0.917243605	10715007.72	0.788355617	116.3489655
223	1386539.097	0.822680486	1624261.041	0.707706881	116.2459357
478	915173.3952	1.336949603	688701.4607	1.153574017	115.8962999
230	23389717.08	1.002443726	32010395.61	0.867052803	115.6150725
280	1941325.474	0.961829796	2658725.498	0.832089295	115.5921368
231	2070158.503	0.860522275	2636253.932	0.744650534	115.5605529
291	2823455.113	0.991728845	3927149.416	0.859051849	115.4445854
242	1185666.504	1.00306043	1340436.283	0.869449527	115.3672983
274	841816.1743	0.998630704	826943.7473	0.866043888	115.3094801
472	1932718.247	0.8609581	2364670.553	0.746812502	115.2843716
259	2252510.923	0.96476799	2713885.481	0.8382621	115.0914481
270	4462500.313	0.826709182	5717928.913	0.71862607	115.0402437
293	10383525.16	0.980566245	13090017.33	0.853441456	114.8955488
261	11867457.86	0.894280073	16278720	0.779633159	114.7052384
342	910225.0588	0.908354809	1304079.75	0.792580955	114.6071961
315	3908746.038	1.204249844	4523253.737	1.053494823	114.3099916
296	3503211.609	0.924465736	4017554.933	0.809716012	114.1716012
299	1848605.521	0.908134297	2820886.164	0.796130537	114.068517
252	2091444.197	0.911941833	2072419.701	0.799519942	114.0611741
75	986399.3829	0.87682815	956369.4023	0.769922602	113.8852331
310	591271.2778	0.864955922	922826.3922	0.759804343	113.8392969
295	3143184.207	0.855559354	3632545.702	0.752534019	113.6904554
495	375650.8481	0.943579724	514464.9405	0.830071218	113.6745503
312	49182075.96	0.919587889	59432664.37	0.809521005	113.5965446
287	2224734.088	0.862060815	2653146.446	0.760778378	113.3130015

					% difference
Ref. Spot	Z-Cy3 Volume	Norm. Vol. Z-Cy3	Cy3 Volume	Norm. Vol. Cy3	(Z-Cy3/Cy3)*100
520	147427.3109	1.036861935	182281.6287	0.917786198	112.9742349
207	1636881.515	0.946830025	1857030.818	0.839518788	112.7824699
323	7709666.911	0.995095362	9070346.315	0.8839585	112.5726335
306	1943806.496	1.041701898	2513237.403	0.92638865	112.4476102
213	91252605.58	0.889155577	132211129.6	0.791116743	112.392461
332	22409595.09	0.944418213	23960708.6	0.841516944	112.2280686
304	882636.0865	0.859285326	1288947.705	0.767326674	111.9842898
324	8488901.009	0.81734764	10796958.51	0.731056908	111.8035588
265	8131307.109	0.848870027	10888955.96	0.759772846	111.7268183
309	1503075.786	0.993461451	2169649.813	0.890492273	111.5631748
331	1793242.48	0.889812285	2903502.64	0.797883458	111.5215858
281	992431.8072	0.972700918	1036291.602	0.87267085	111.4625197
302	2227211.225	1.054900639	2263384.75	0.946934359	111.4016647
360	1862730.145	0.894843419	2122773.722	0.80376645	111.3312727
289	4442805.734	0.896627688	4878807.581	0.806866069	111.1247235
352	1347123.716	1.029529315	1688461.525	0.926773652	111.0874605
282	459677.0906	0.973020169	807278.8352	0.876394344	111.025382
276	3655306.892	0.888311065	5101909.164	0.800106681	111.0240779
343	18937893.91	0.938066375	23062310.51	0.845074043	111.0040455
227	2159725.636	0.915704066	1711795.335	0.825656259	110.9062103
325	857300.8908	0.868454863	1117980.048	0.784920982	110.64233
286	4067927.416	0.920244005	4519899.598	0.831952821	110.6125229
537	26033391.47	0.964257796	31630651.78	0.872007213	110.5791078
351	2404333.131	0.995583138	2581138.418	0.902285894	110.3400978
499	120203.32	0.929310918	91563.57019	0.844848734	109.9973143
277	2315706.038	0.951442656	2625508.118	0.865488567	109.9312795
254	2650876.079	0.850076066	3636904.597	0.775151211	109.6658373
359	1339626.418	0.991613593	1815278.823	0.905922358	109.4590043
284	7340777.696	1.007384338	9570295.041	0.92077015	109.4067111
314	3934938.785	0.92022666	5064751.143	0.843132876	109.143729
109	633716.5934	0.971467764	781564.9602	0.891199048	109.0068224
308	1903916.378	0.90323738	2258000.003	0.828912398	108.9665666
333	7508123.167	1.020806586	8931343.707	0.937211959	108.9195007
322	13722549.1	0.856048446	17424187.93	0.786275868	108.8738038
523	1329473.935	0.954700457	1857298.852	0.880253944	108.4573904
550	387351.4493	1.078182398	403204.7801	0.995886938	108.2635344
285	103086173.8	1.046660415	135515235.9	0.96956559	107.9514811

					% difference
Ref. Spot	Z-Cy3 Volume	Norm. Vol. Z-Cy3	Cy3 Volume	Norm. Vol. Cy3	(Z-Cy3/Cy3)*100
278	2057516.637	0.905378652	2843264.803	0.843869759	107.2889083
517	296657.0248	1.117123888	298094.6628	1.041546702	107.2562456
348	32152554.3	0.870091106	44296309.74	0.81146761	107.224379
555	1388818.831	0.843516966	1720712.147	0.787298445	107.1406875
338	10006614.93	0.849059752	15656221.06	0.794793665	106.8276949
341	1519651.249	0.896898928	2609711.74	0.840419773	106.7203506
307	352924.2421	0.871974504	389420.1585	0.817988267	106.5998791
519	836778.7584	1.079740247	877953.3411	1.016555054	106.2156194
327	697188.3721	1.091245991	821999.1958	1.027988594	106.1535116
508	2866239.971	0.835726399	3323215.267	0.787624241	106.107247
528	282208.1005	0.988052025	474334.0931	0.93463279	105.7155319
511	897420.2077	1.026565736	1286304.842	0.973386777	105.4632917
300	3712519.31	0.929126347	4266016.205	0.881326895	105.423578
497	247069.0917	0.82299751	217751.7582	0.781606745	105.2955998
490	193597.9771	0.944204839	288531.1752	0.903207437	104.5390904
345	57092556.44	0.935672083	86893179.08	0.895266344	104.5132646
318	425107.7313	1.058169629	480457.0958	1.012568283	104.5035329
329	4093011.985	0.848203367	4290489.312	0.811788296	104.4857842
502	1324322.613	0.87899498	2557726.666	0.842146195	104.3755805
303	1693146.009	0.788750948	2590282.588	0.755859817	104.3514856
320	2234587.862	0.897516165	2912580.818	0.860362282	104.3183998
524	1466551.445	0.963435364	2201907.675	0.928297877	103.7851521
358	1135441.063	0.995099689	1563630.379	0.959019077	103.7622414
473	745292.2481	1.430435871	1300399.282	1.380311281	103.6313976
549	2568885.185	0.941498924	3416846.148	0.912735833	103.1513051
546	420734.4959	0.994888657	698258.0941	0.969879046	102.5786319
548	1378761.111	1.017044003	1877807.799	0.992239446	102.499856
515	1441684.9	0.9946521	1758985.932	0.971028835	102.4328077
264	1522419.988	0.999753718	2513491.198	0.976481762	102.3832453
552	668266.4416	0.977126418	915654.6769	0.954503796	102.3700923
518	11688744.74	0.879997373	16443306.41	0.86040229	102.2774327
336	1573719.323	0.900038441	1998421.927	0.883404154	101.8829758
356	536118.6888	1.006362256	753470.9206	0.988823028	101.773748
222	2017412.951	1.001852424	2771109.874	0.985122653	101.6982425
547	6440890.106	0.984990647	6716326.482	0.972674878	101.2661753
539	6090068.74	0.920828788	10826348.84	0.90985248	101.2063832
566	424904.1119	0.959850199	576692.1955	0.948580913	101.1880152

					% difference
Ref. Spot	Z-Cy3 Volume	Norm. Vol. Z-Cy3	Cy3 Volume	Norm. Vol. Cy3	(Z-Cy3/Cy3)*100
565	507276.5207	0.969684962	862545.3815	0.961848805	100.8146973
349	3352811.879	0.817048973	4243230.633	0.811508461	100.6827424
479	2621496.524	1.032858203	4069726.905	1.026127154	100.6559664
551	392571.8947	1.048544382	485229.6364	1.045477847	100.2933141
556	200209.8477	1.102900297	233543.947	1.103499378	99.94571078
561	86105.15417	1.240948287	173335.4199	1.241778022	99.9331817
521	2094784.532	0.936109327	2205246.43	0.939772945	99.61015917
340	2273756.893	0.942107347	2404680.73	0.946440848	99.5421266
347	3320847.459	0.770347355	4858919.589	0.773894744	99.54161865
498	35935577.33	1.123277579	50514350.34	1.135006272	98.96664066
560	781257.6345	1.057306563	929521.2904	1.074344095	98.41414572
545	2441450.814	1.088065723	3654520.548	1.106517151	98.33247701
522	2768130.399	0.866632035	3148663.775	0.884227408	98.01008511
505	111958.3587	0.94808226	132536.6286	0.970573859	97.68264945
339	2843344.796	1.016729281	4199978.775	1.043806048	97.40595806
335	2967129.695	1.051002831	3817017.393	1.080038696	97.31159025
485	1720814.955	1.004029623	2211313.19	1.031926578	97.29661438
354	4709454.933	0.966150266	8321614.972	0.993720009	97.22560246
317	865216.4013	0.861034156	1047554.986	0.887942057	96.96963322
364	2866131.198	1.005593441	4898773.513	1.03842865	96.83799091
326	6085669	0.808897772	8533716.507	0.836085261	96.74823962
526	1676309.921	0.842950013	2247320.611	0.873260218	96.52907523
491	396102.3273	1.062573848	466817.1964	1.102421084	96.38547949
540	14664554.14	0.876087726	20063072.48	0.909535629	96.32252973
553	1314305.519	0.862624891	2137041.953	0.897829525	96.07891778
563	1541000.256	0.875123715	2149638.292	0.911105296	96.05077697
466	846545.095	0.922156256	1459527.27	0.960352949	96.02264012
534	3709189.392	0.938234121	4346339.609	0.977770328	95.95649345
290	2385546.852	0.973273948	3374358	1.015534519	95.83858846
504	1282915.257	1.035868648	1699761.077	1.081283614	95.7999025
559	238586.526	0.797433244	466312.4494	0.832654907	95.76995672
144	664217.2234	1.168266412	1054299.74	1.221775692	95.62036792
288	1680567.234	0.984177852	2664446.466	1.031449432	95.41697559
564	14888932.64	1.008174303	19519800.1	1.05721934	95.36094028
542	31592972.99	0.882928876	43231555.78	0.928221951	95.1204478

					% difference
Ref. Spot	Z-Cy3 Volume	Norm. Vol. Z- Cy3	Cy3 Volume	Norm. Vol. Cy3	(Z- Cy3/Cy3)*100
301	1597630.677	0.991358666	2392303.602	1.047369064	94.65227684
457	438376.6359	1.136688108	660632.3793	1.206941623	94.17921181
493	3698330.595	0.771822494	6405243.235	0.819721213	94.15670618
350	2152409.221	1.061558767	2675328.161	1.133470683	93.65559979
258	1295057.364	0.923278452	1849542.139	0.998750878	92.44331818
530	388224.7572	1.175758352	636096.4781	1.275774063	92.16038999
357	737635.1366	1.02645179	1417733.099	1.11567696	92.00259809
538	1226106.985	0.934012322	2738074.685	1.030640922	90.62441655
214	372433.4532	1.200928007	704635.9725	1.334300682	90.00430137
492	392862.0546	0.91714922	758100.925	1.036063602	88.52248235
355	2650350.504	0.954227478	3840583.581	1.090405626	87.5112394
255	828534.0453	1.018877755	1598834.894	1.183555687	86.0861695
436	40471.88991	0.991186167	116976.3843	1.161178952	85.36032839
313	532429.4269	0.803829313	973970.6734	0.959892513	83.7415963
316	785740.74	0.796391507	1094670.561	0.954388056	83.44525083
482	71234.3008	0.857460044	111240.5278	1.02825885	83.38951267
238	1391380.235	0.861563818	2103718.748	1.056536935	81.54601981
251	2785774.735	1.127027321	4111551.483	1.392605617	80.92939647
195	2312960.747	0.859853748	3257782.643	1.14050037	75.39267599
212	138560.2959	0.919162254	190128.0031	1.232534899	74.57494749
425	1525228.545	0.644493339	2443581.371	0.887525378	72.61689121

					% difference
Ref. Spot	Z-Cy5 Volume	Norm. Vol. Z-Cy5	Cy5 Volume	Norm. Vol. Cy5	(Z-Cy5/Cy5)*100
44	726250.7937	1.798767756	273059.6185	1.073176468	167.6115542
43	4500363.237	3.494237113	1759343.856	2.134813384	163.6788087
14	17634823.42	1.608282377	7448110.268	1.059442539	151.8045875
26	1441924.708	1.602048109	647988.2559	1.061350975	150.9442349
71	3094886.607	1.375737667	1240084.724	0.946276678	145.384294
112	1636144.666	1.170125858	1126406.403	0.820350571	142.6372942
80	12049099.27	1.378495164	5443484.968	0.967803116	142.4354955
85	8303220.134	1.384689169	4195829.307	0.988226026	140.1186704
75	1954078.946	1.2635546	939518.0019	0.906242538	139.4278626
69	3227955.704	1.173853967	1391122.032	0.845054987	138.9085899
131	264832.4251	1.391442657	157972.8629	1.020441139	136.3569739
134	3977634.01	1.226383285	2423301.664	0.912523982	134.3946361
138	697377.2045	1.166715261	471133.1626	0.870646851	134.0055682
154	7009744.541	1.348001104	5223223.121	1.023999054	131.6408545
216	19167231.05	1.281039187	14330862.1	0.975472448	131.3249995
99	1236884.362	1.193254458	803886.4339	0.909646194	131.1778652
117	2410911.739	1.007455304	1463351.524	0.769365192	130.9463067
116	3464145.616	1.144847384	1778793.055	0.879700876	130.1405302
126	4479452.946	1.066098981	2238334.671	0.819953327	130.0194713
203	1674149.787	0.985469388	1013041.923	0.767175577	128.4542181
119	21399814.12	1.26046383	11684768.48	0.982316427	128.3154588
100	20719998.2	1.237014415	9293767.726	0.965650331	128.1016922
406	2376630.325	1.758854698	1208095.462	1.377664159	127.669337
114	2114098.512	1.251105835	1178740.575	0.980743092	127.5671321
437	1234741.118	1.06893181	688710.1099	0.841704846	126.9960385
92	3650721.568	1.124749634	2148477.47	0.887597733	126.7183987
188	2482953.214	1.317705123	1833581.81	1.040909372	126.5917244
123	31164792.4	1.094698553	13775809	0.865759239	126.4437622
249	2792216.278	0.878059081	1083086.25	0.695550049	126.2395256
132	3095670.316	1.153693567	1475320.592	0.915335728	126.0404824
102	2019446.458	1.149129346	1235130.31	0.914356281	125.6763222
82	2208169.452	1.274452799	1149541.034	1.014284684	125.6504035
204	4550743.383	0.993737005	3090581.535	0.792511022	125.3909381
243	231529.9022	0.900942337	158286.5567	0.722055724	124.7746271
201	1264084.464	0.967214866	883494.3206	0.776029078	124.6364207

Ref. Spot	Z-Cy5 Volume	Norm. Vol. Z-Cy5	Cy5 Volume	Norm. Vol. Cy5	% difference (Z-Cy5/Cy5)*100
77	1823888.145	1.097480358	998831.9881	0.881787062	124.4609277
232	1786032.589	1.000050246	1536243.52	0.803768249	124.4202228
181	12807116.5	1.178418633	7046579.723	0.947584087	124.3603232
392	2165734.875	1.330864527	1177019.823	1.070854149	124.2806528
157	1103245.646	1.11049105	748259.6044	0.895314001	124.0336964
104	19863835.67	1.209820991	9703449.278	0.976777228	123.8584353
167	1161921.419	1.211012669	729302.1186	0.978210993	123.798718
299	2810983.122	0.99073241	2235941.068	0.809357245	122.4097784
147	16746949.51	1.099255739	9846190.675	0.898338559	122.3654186
172	3280022.461	1.065501588	1589670.444	0.871007514	122.3297814
237	1398751.376	0.934170799	535876.1864	0.764329386	122.2209712
163	8064034.066	1.119148839	4436641.372	0.916827993	122.0674814
478	1285770.487	1.367300854	530786.8198	1.125162029	121.5203516
142	68686673.42	1.058338562	31921560.95	0.877863247	120.5584772
242	1858931.776	1.143152298	1152474.541	0.948273704	120.5508803
186	8563469.777	1.139645795	4360922.478	0.945751375	120.5016271
184	1249295.755	0.977749889	780247.0013	0.813365796	120.2103522
136	3560071.751	1.105746791	2445262.954	0.921726087	119.9647928
245	9033577.214	1.128701846	7145076.817	0.940894676	119.9604882
246	4793255.287	1.175186866	3308823.51	0.981622282	119.7188459
302	3466051.991	1.174348039	1861645.32	0.982529798	119.522893
191	106419100.5	1.089704613	52007467.43	0.914441716	119.166109
162	29058839.05	1.105656537	22209390.27	0.928460772	119.0848952
166	0.880352175	2648061.755	0.73945009	119.0549824	119.0549824
198	2556585.245	1.116556834	1771297.749	0.939144123	118.8908929
84	5835610.892	1.425207983	3263273.65	1.200011445	118.7661992
440	2740879.832	1.406066076	1551425.722	1.18493984	118.6613893
252	3306170.066	1.044892932	1814874.808	0.881915956	118.4798761
206	5232626.906	0.989868303	3683925.647	0.836010649	118.4037911
247	2942777.999	1.069554949	2109479.968	0.903320802	118.4025594
300	6093690.244	1.096617796	3565750.201	0.928115832	118.1552731
224	3424540.929	0.938776417	2418238.4	0.795426239	118.0218066
221	1480635.838	1.069670716	934667.9412	0.906590441	117.9883073
473	960623.4439	1.377505044	875610.0089	1.16798077	117.9390174
139	6250423.402	1.210620711	3517952.787	1.026934981	117.8867926
199	5940284.397	1.040836454	3530779.986	0.882950034	117.8816937
327	1094601.175	1.229590928	660531.2601	1.043400385	117.8445921

Ref. Spot	Z-Cy5 Volume	Norm. Vol. Z-Cy5	Cy5 volume	Norm. Vol Cy5	% difference (Z-Cy5/Cy5)*100
315	5617432.165	1.273335651	3668491.975	1.08186945	117.6977177
125	4717777.145	1.159703942	4191568.507	0.985966126	117.6210736
143	77132365.64	1.212920051	50475410.94	1.034438108	117.2539992
225	4028097.238	1.073135987	2389540.374	0.916165253	117.1334519
310	865721.4293	0.925201878	754272.3497	0.790405918	117.054017
306	2920808.833	1.136610184	2078367.243	0.971400768	117.0073384
169	7769646.512	1.191120927	4438959.402	1.019674836	116.8138003
256	5556797.151	1.176531199	3906480.856	1.007913613	116.7293688
230	37405081.04	1.150498876	28682899.39	0.987452764	116.5117885
228	3984705.263	1.067675283	3019197.836	0.916674294	116.4726981
185	1744463.177	1.095471488	1268917.324	0.942474837	116.2334998
333	11414252.48	1.113629955	7306044.62	0.958681428	116.1626712
175	3274375.787	1.08338872	2198364.375	0.932916143	116.1292715
342	1301469.294	0.933490752	1041033.575	0.804641409	116.0132628
135	6997676.609	1.055152157	3863201.665	0.909521316	116.0118118
291	4340572.09	1.085003531	3376067.716	0.935597764	115.9690171
113	3843861.385	1.157816583	2936720.408	0.999135381	115.881852
250	1881522.977	1.041374887	1293900.603	0.899263458	115.8030917
273	1935178.185	0.86148232	1406943.943	0.745608278	115.5408739
505	159398.3895	0.972584127	89847.13079	0.84222802	115.4775315
220	16379990.24	1.052588775	9861246.172	0.916007808	114.9104588
197	18134045.12	0.952348474	11042830	0.829793088	114.769391
127	7552794.558	0.973171051	4686997.979	0.848784504	114.6546675
161	7506733.801	1.155492958	4874700.941	1.008299489	114.5981894
207	2724702.44	1.133057052	1725793.17	0.990709139	114.368285
280	2978386.955	1.059171172	2344887.41	0.9284623	114.0779946
259	3585649.646	1.087132776	2434604.93	0.953240913	114.0459627
137	1640717.29	1.03203728	1194555.05	0.905867746	113.9280303
515	2203181.96	1.10031615	1384923.096	0.966119258	113.8903029
211	20394054.59	0.965682447	13539726.55	0.847958452	113.8832267
309	2279056.385	1.085287431	1826012.202	0.953126208	113.8660779
218	13036253.55	1.209111952	9643348.467	1.063110312	113.7334421
150	3625589.243	1.101166951	2417364.235	0.969038489	113.6350065
165	3184168.053	1.117541892	2310311.92	0.983504869	113.6285063
227	3561749.512	1.09796349	1585692.232	0.968695456	113.3445484
183	21905286.53	1.044036149	13840484.08	0.921412581	113.3082151
286	6480664.747	1.057390798	4011828.422	0.933388046	113.2852303

Ref. Spot	Z-Cy5 Volume	Norm. Vol. Z-Cy5	Cy5 Volume	Norm. Vol. Cy5	% difference (Z-Cy5/Cy5)*100
190	1949959.378	0.880850296	1483348.714	0.778999869	113.0745114
159	1312342.497	0.993641313	864610.8135	0.879005283	113.0415632
257	5603876.72	1.040356359	3386507.619	0.920583967	113.0104798
194	4431660.763	0.996644262	3449943.086	0.883696225	112.7813194
519	1187672.21	1.072278602	650854.1815	0.950856844	112.7697201
334	1216372.004	0.912564722	829025.7077	0.809270787	112.7638284
294	17903533.29	1.01808662	12196938.93	0.907189999	112.2241891
283	51626671.87	0.993881489	28937024.29	0.886043782	112.1706974
495	543222.6826	0.975566213	427534.2618	0.872952299	111.7548135
205	620751.801	0.992074763	466296.1335	0.887870722	111.736398
284	11979686.06	1.17093977	8610374.113	1.049083696	111.6154769
234	928488.1866	0.950159491	906146.8759	0.852554044	111.4485936
248	11646645.2	0.953035774	8781960.565	0.85592528	111.3456742
521	3264167.07	1.055974355	1796817.735	0.948532764	111.3271354
289	7031501.483	1.021318158	4389868.569	0.918352229	111.2120301
466	1459292.959	1.14333939	1256928.716	1.0281574	111.2027585
168	660514.1694	0.960109232	581692.5555	0.863443451	111.1953806
511	1347570.57	1.114763472	1043102.585	1.00364154	111.0718745
275	64026592.33	1.021256235	38093994.33	0.92067834	110.9243251
282	744146.0363	1.115327052	730177.155	1.006968791	110.7608361
193	1677555.613	1.000952481	1168583.858	0.905362644	110.5581821
277	3730733.531	1.105502326	2396300.6	1.000837647	110.457708
229	22582214.83	1.063179946	13352432.74	0.963241464	110.3752264
304	1383417.001	0.944961212	1140307.741	0.857915534	110.1461828
312	72717728.38	0.984809585	51861495.37	0.894541959	110.0909325
467	774122.9495	0.930628344	621765.097	0.847269944	109.8384701
298	2944926.483	1.048553064	2008858.383	0.956045265	109.6760899
352	1978447.752	1.061142952	1383751.591	0.968998766	109.5092161
524	2201492.307	1.044993472	1823059.4	0.956997974	109.1949514
545	3549841.41	1.161729521	2784963.05	1.064096248	109.1752295
358	1687714.649	1.076987719	1268511.808	0.986963698	109.1213103
210	2588831.137	1.099370283	1985755.117	1.009162142	108.9389145
345	90862288.7	1.048792507	74287744.4	0.965303216	108.6490223
548	2004948.584	1.062647468	1471892.472	0.979062079	108.537292
189	33296076.95	1.054597663	22371902.31	0.972338179	108.4599665
263	9875759.224	1.047352685	6370955.575	0.96599357	108.4223247
261	18834990.93	1.009663807	15387059.38	0.931529921	108.3876947

Ref. Spot	Z-Cy5 Volume	Norm. Vol. Z-Cy5	Cy5 Volume	Norm. Vol. Cy5	% difference (Z-Cy5/Cy5)*100
265	13083345.44	0.978467127	10221357.43	0.902797243	108.3817141
332	33093604.44	1.000322098	20801059.37	0.924238137	108.2320733
472	2900933.723	0.914682025	2123289.986	0.8457611	108.1489826
271	19859628.32	1.10303511	11963835.23	1.020905463	108.0447848
223	2211246.254	0.942238939	1578727.741	0.872262312	108.0224293
340	3705311.054	1.111009865	2116299.472	1.029663319	107.9003054
320	3616323.585	1.03400979	2563619.68	0.958820307	107.8418743
499	185379.0521	0.989085617	79795.29289	0.917271468	107.8291054
360	2639846.318	0.901088457	1745376.417	0.835888504	107.8000776
279	6656802.418	1.042874574	4242508.073	0.967527128	107.7876313
331	2687910.82	0.95019585	2533959.152	0.88166866	107.7724425
272	28469487.99	1.030925631	16319784.56	0.956680688	107.7606817
319	6202851.16	0.965292573	3501224.663	0.895840848	107.7526857
517	423758.8968	1.058029003	216271.193	0.982306947	107.7085941
239	24195713.33	1.066465782	16559452.32	0.990509813	107.6683711
523	1910636.995	0.992791598	1548129.178	0.922601513	107.6078442
337	11881080.66	1.031644663	8860579.527	0.959744555	107.491588
490	304128.6544	1.067447029	252739.7435	0.993933639	107.3962071
547	9601687.895	1.056807199	5387672.449	0.984135107	107.3843613
329	6467407.084	0.968104466	3785861.392	0.901957901	107.3336643
202	7977810.652	0.991991909	6110028.685	0.925743787	107.1562048
187	1462794.965	0.996298398	1320533.951	0.930510351	107.0701037
233	11359910.48	0.995986596	9142244.766	0.932186166	106.8441727
231	3332506.707	0.987322143	2583227.43	0.924960925	106.7420382
307	565604.1542	1.001206678	358909.4397	0.938504793	106.6810405
260	16913114.28	1.011909638	12954276.98	0.949861846	106.5322965
276	5863440.797	1.022251975	4847097.134	0.961188659	106.352896
278	3421408.165	1.075787981	2691055.965	1.011531365	106.3524096
215	2603033.452	0.918993198	1830970.924	0.86620497	106.0941959
528	369632.28	0.933142057	352055.6976	0.879712348	106.0735431
270	6968921.186	0.92340961	5480132.252	0.872070036	105.887093
479	4421416.234	1.246037181	3692303.549	1.178919684	105.6931357
323	11547466.65	1.059954302	8127180.849	1.002885327	105.6904785
308	2971272.454	1.010840891	2059087.509	0.956453783	105.6863288
254	4422310.924	1.012376547	3553925.801	0.958750469	105.59333
326	10296398.27	0.968794938	7343885.981	0.918605957	105.4636028
492	641688.7416	1.08122507	609260.6152	1.02533279	105.4511355

Ref. Spot	Z-Cy5 Volume	Norm. Vol. Z-Cy5	Cy5 Volume	Norm. Vol. Cy5	% difference (Z-Cy5/Cy5)*100
534	5643891.964	1.041369428	3476169.065	0.988464336	105.352251
281	1556428.239	1.110744568	989464.5284	1.055483494	105.235617
348	48690526.33	0.942235578	38594748.54	0.895406206	105.2299584
325	1302113.41	0.940393023	1005303.742	0.895372873	105.0280895
560	1138989.365	1.121234749	730335.0582	1.067684302	105.0155694
520	201927.6199	0.989072425	147613.4988	0.942259821	104.9681206
508	4326125.98	0.90822239	2873814.926	0.865293255	104.9612238
293	15754509.68	1.069059479	12339657.7	1.019188067	104.8932492
361	808621.2167	1.03659797	567240.4486	0.988526151	104.8629789
317	1446220.658	1.038371783	954905.2297	0.991404761	104.7374215
564	21349577.88	1.053326018	14779437.66	1.007289883	104.5702965
287	3455909.874	0.966769021	2546066.806	0.924803083	104.5378241
359	1915799.005	1.017063789	1536808.817	0.976283139	104.1771335
537	36001404.69	0.95223807	26178260.05	0.914381547	104.1401233
355	4252000.444	1.087530945	2908026.781	1.045139091	104.0560969
338	15351350.48	0.938237584	14027342.82	0.901946279	104.0236659
226	99941753.95	1.060040948	71545259.51	1.020941512	103.829743
328	6862829.917	0.99007693	4976033.323	0.955234762	103.6474979
253	4202281.779	1.292501993	2965713.935	1.247576476	103.6010231
343	28210084.26	0.993652207	20685468.34	0.959881519	103.5182142
555	1946704.096	0.840103826	1399371.196	0.81243546	103.4056079
213	150760166.2	1.059230037	134984404.8	1.02500366	103.3391469
262	3271777.064	1.019017081	1918341.916	0.987649862	103.1759452
552	971496.4949	1.03001579	765288.8396	0.999524144	103.0506163
236	1005681.891	0.993643746	735141.3809	0.964289189	103.0441653
494	925688.209	0.906261824	767770.3585	0.881130914	102.8521198
482	116727.7338	1.028249905	86933.47238	1.006197632	102.1916442
274	1284061.156	1.108149174	813176.3051	1.08532271	102.103196
322	21068075.22	0.944293335	16175731.67	0.925868721	101.9899813
561	113903.3189	1.190460113	130576.3278	1.172524487	101.529659
526	2575487.446	0.947807235	1907300.712	0.934633997	101.4094542
295	4776381.26	0.940021222	3554914.506	0.928141265	101.279973
556	269470.396	1.043422285	173123.6855	1.030725041	101.231875
539	9474395.657	1.003143704	9364741.591	0.991508734	101.1734611
553	2010930.63	0.926973142	1727703.808	0.917107188	101.0757689
530	508313.4892	1.152709592	450309.8648	1.140900244	101.0350903
212	215603.5384	1.150075782	139904.2342	1.138384818	101.0269781

Ref. Spot	Z-Cy5 Volume	Norm. Vol. Z-Cy5	Cy5 Volume	Norm. Vol. Cy5	% difference (Z-Cy5/Cy5)*100
347	0.899103867	4411113.681	0.890376992	100.9801327	100.9801327
549	3779218.048	0.989643699	2898904.262	0.980776279	100.9041226
363	2180640.108	0.920480434	1548119.719	0.912578619	100.8658778
554	1405407.829	0.97167962	1124234.739	0.96500957	100.6911899
498	61009637.66	1.315529448	45944221.08	1.308028892	100.5734244
351	3516338.79	1.04159364	2345755.375	1.036181081	100.5223565
518	18207368.56	0.977416772	14716981.48	0.972615901	100.493604
497	396537.4733	0.915789058	201328.769	0.915172526	100.0673679
565	719967.1156	0.993000704	708463.7706	0.99636421	99.66242209
296	5381988.299	1.004954164	3959294.169	1.010422316	99.45882513
566	640736.0539	0.967304469	466215.2491	0.97308629	99.40582642
324	12601287.72	0.869129726	10211886.22	0.875976738	99.21835685
314	6100422.117	1.006568581	4823838.748	1.019479949	98.73353392
559	346756.7724	0.834708515	374312.3858	0.84565077	98.70605505
540	22390909.74	0.951149907	16796905.81	0.964339692	98.63224701
336	2469371.386	1.027641952	1857874.832	1.043536228	98.47688319
341	2338549.408	0.967538464	2396885.73	0.990173777	97.7140061
502	2031502.506	0.95189304	2336366.228	0.980202826	97.11184409
522	4266049.249	0.948377225	2751456.017	0.977588597	97.01189519
538	1827936.654	0.993251969	2199752.393	1.026829108	96.73001683
493	0.878820809	5629036.073	0.909817359	96.59310195	96.59310195
318	660590.7331	1.178079685	457645.6373	1.22017046	96.55041847
550	555074.4847	1.022566127	338347.09	1.063369021	96.16286598
542	46213866.47	0.926982545	35630371.89	0.967389701	95.82307354
563	2160753.255	0.880058745	1717407.11	0.920104032	95.64774354
487	393610.6448	0.818875485	372306.7488	0.864958576	94.67221993
356	791240.4882	1.069406849	685320.4386	1.129686397	94.6640459
551	501822.1863	0.969186371	372111.1773	1.029166371	94.17198205
364	4068909.104	1.014530406	4033172.882	1.079896056	93.94704242
303	0.868255759	2514928.606	0.931035879	93.25696012	93.25696012
313	832207.6783	0.906009142	776874.1138	0.972643522	93.14914677
485	2039449.688	0.867008278	1591196.215	0.934089433	92.81855121
354	5911931.662	0.869355988	6218381.359	0.939966279	92.48799738
316	1203558.196	0.884698776	870400.978	0.961249704	92.03631189
546	525938.3751	0.912098701	564562.4018	0.993153706	91.83862431
491	482020.5781	0.933845757	338673.1296	1.034596011	90.26187484
504	1861742.061	1.077964098	1436070.686	1.198883593	89.91399202

Ref. Spot	Z-Cy5 Volume	Norm. Vol. Z-Cy5	Cy5 Volume	Norm. Vol. Cy5	% difference (Z-Cy5/Cy5)*100
290	3775816.886	1.102797946	3234498.705	1.230981777	89.58686206
301	2460616.475	1.093562243	2221782.333	1.231600789	88.7919408
266	150868509.2	1.080292598	132872014.7	1.225883758	88.12357549
285	147868269.7	1.085362134	135888840.2	1.232307669	88.07558058
357	997665.5271	0.988868161	1126930.083	1.126190175	87.80649867
339	4087089.233	1.05053757	3811668.089	1.199682131	87.56799346
238	1790022.797	0.802332092	1443458.631	0.917621531	87.4360578
264	2339378.114	1.097764585	2547213.604	1.258764598	87.20968058
251	3538305.12	1.064786581	2851962.104	1.221414703	87.17649935
330	3148356.816	1.032709949	2843537.654	1.189615994	86.81036186
288	2566037.17	1.080337536	2547861.373	1.24616603	86.69290526
350	2921402.594	1.052150312	2288143.35	1.216829038	86.46656837
349	4555171.299	0.802606911	3827044.256	0.928949232	86.39943748
335	4169418.048	1.066499225	3483463.365	1.244118921	85.72325416
214	424814.5706	0.996891181	484851.7253	1.16425591	85.62474732
457	500850.8247	0.949650295	485439.8139	1.11330811	85.29986317
255	1025178.592	0.909739474	1136583.959	1.079504505	84.27380058
425	0.665493374	1737732.7	0.796717917	83.52935965	83.52935965
222	3071411.823	1.085801549	2903765.699	1.311766703	82.77398304
436	48193.50258	0.873419785	80789.71465	1.056140011	82.69924211
109	982995.427	1.098902849	946731.0433	1.358753564	80.87580253
258	1859566.504	0.952155046	1747761.213	1.198575915	79.44052892
195	2931184.278	0.838791663	2457888.235	1.087120482	77.15719438
144	668930.6778	0.853464293	769111.9465	1.120805517	76.14740293