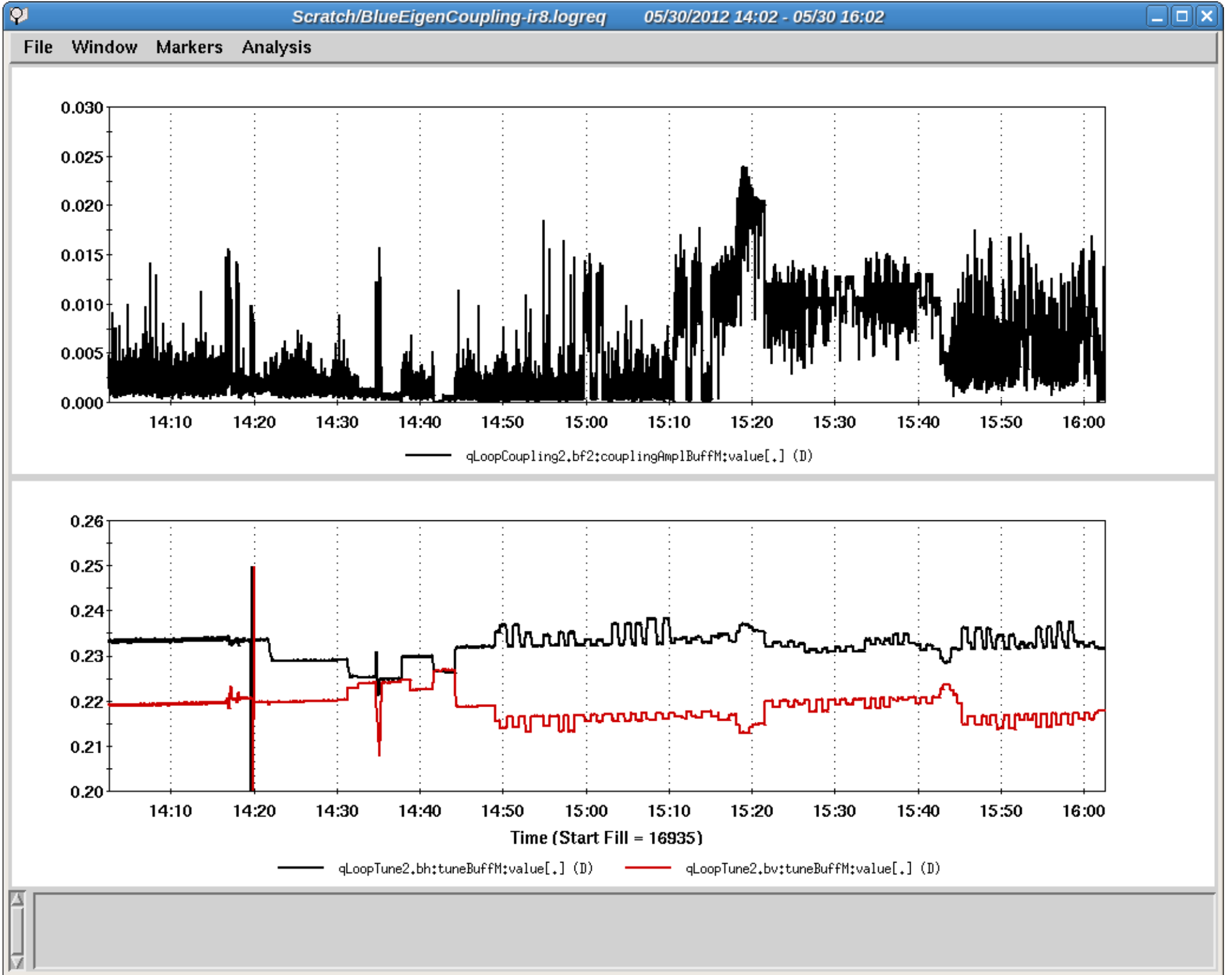
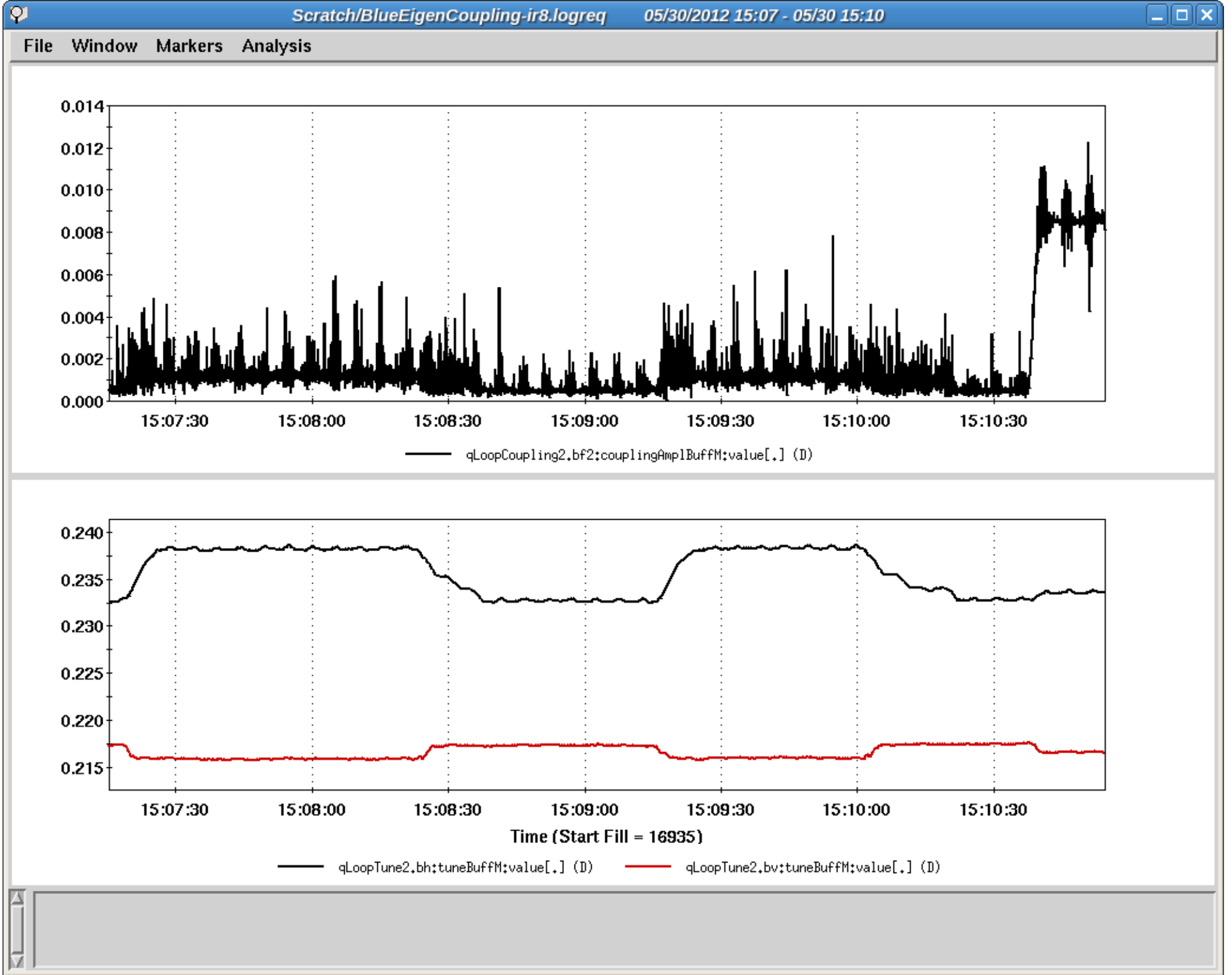
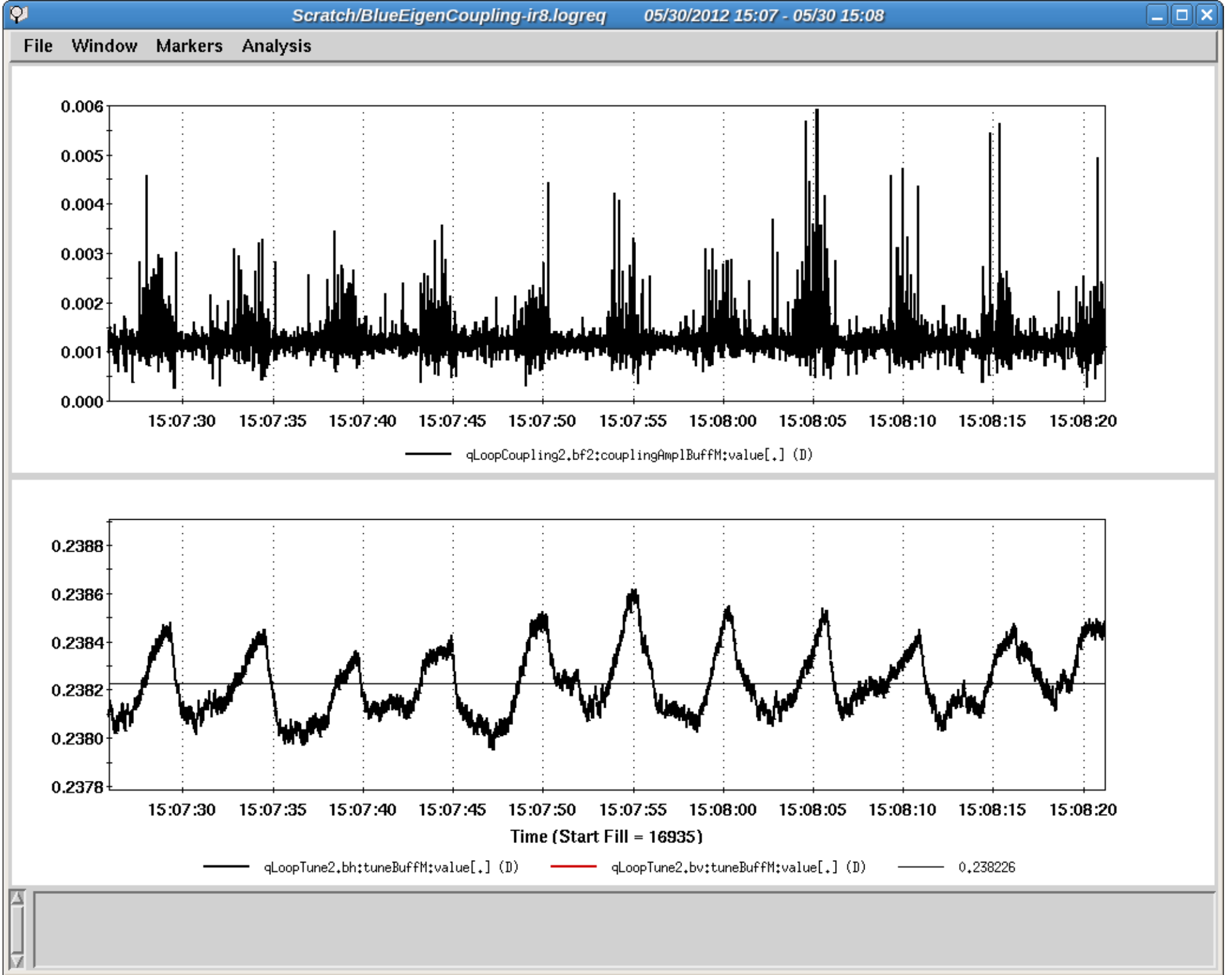
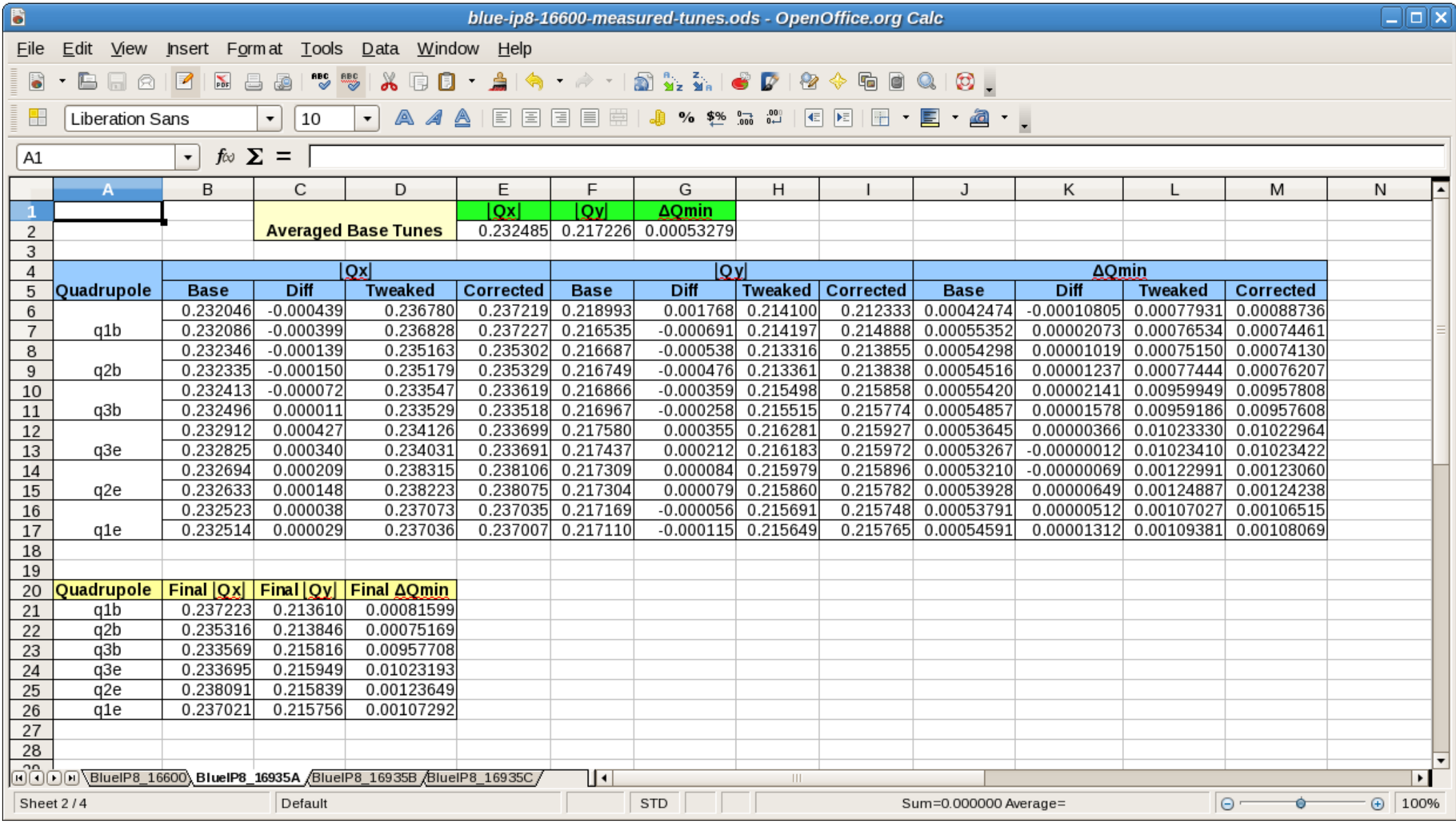
4x4 Transfer Matrix

- Two sets of measurements Fill #16600 and 16935
- For Fill #16935
  - Booster was running causing spikes in tune measurements.
  - The measured ΔQ_{min} was noisy.
  - Made three measurements with different levels of coupling.


Scratch/BlueEigenCoupling-ir8.logreq 05/30/2012 14:02 - 05/30 16:02
File Window Markers Analysis
0.030
0.025
0.020
0.015
0.010
0.005
0.000
14:10 14:20 14:30 14:40 14:50 15:00 15:10 15:20 15:30 15:40 15:50 16:00
qLoopCoupling2.bf2:couplingAmplBuffM:value[.] (D)
0.26
0.25
0.24
0.23
0.22
0.21
0.20
14:10 14:20 14:30 14:40 14:50 15:00 15:10 15:20 15:30 15:40 15:50 16:00
Time (Start Fill = 16935)
qLoopTune2.bh:tuneBuffM:value[.] (D)
qLoopTune2.bv:tuneBuffM:value[.] (D)


Scratch/BlueEigenCoupling-ir8.logreq 05/30/2012 15:07 - 05/30 15:10
File Window Markers Analysis
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
15:07:30
15:08:00
15:08:30
15:09:00
15:09:30
15:10:00
15:10:30
qLoopCoupling2.bf2:couplingAmplBuffM:value[.] (D)
0.240
0.235
0.230
0.225
0.220
0.215
15:07:30
15:08:00
15:08:30
15:09:00
15:09:30
15:10:00
15:10:30
Time (Start Fill = 16935)
qLoopTune2.bh:tuneBuffM:value[.] (D)
qLoopTune2.bv:tuneBuffM:value[.] (D)


Scratch/BlueEigenCoupling-ir8.logreq 05/30/2012 15:07 - 05/30 15:08
File Window Markers Analysis
0.006
0.005
0.004
0.003
0.002
0.001
0.000
15:07:30 15:07:35 15:07:40 15:07:45 15:07:50 15:07:55 15:08:00 15:08:05 15:08:10 15:08:15 15:08:20
qLoopCoupling2.bf2:couplingAmplBuffM:value[.] (D)
0.2388
0.2386
0.2384
0.2382
0.2380
0.2378
15:07:30 15:07:35 15:07:40 15:07:45 15:07:50 15:07:55 15:08:00 15:08:05 15:08:10 15:08:15 15:08:20
Time (Start Fill = 16935)
qLoopTune2.bh:tuneBuffM:value[.] (D)
qLoopTune2.bv:tuneBuffM:value[.] (D)
0.238226



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1					|Qx|	|Qy|	ΔQmin						
2			Averaged Base Tunes		0.232485	0.217226	0.00053279							
3														
4		|Qx|				|Qy|			ΔQmin				
5	Quadrupole	Base	Diff	Tweaked	Corrected	Base	Diff	Tweaked	Corrected	Base	Diff	Tweaked	Corrected	
6		0.232046	-0.000439	0.236780	0.237219	0.218993	0.001768	0.214100	0.212333	0.00042474	-0.00010805	0.00077931	0.00088736	
7	q1b	0.232086	-0.000399	0.236828	0.237227	0.216535	-0.000691	0.214197	0.214888	0.00055352	0.00002073	0.00076534	0.00074461	
8		0.232346	-0.000139	0.235163	0.235302	0.216687	-0.000538	0.213316	0.213855	0.00054298	0.00001019	0.00075150	0.00074130	
9	q2b	0.232335	-0.000150	0.235179	0.235329	0.216749	-0.000476	0.213361	0.213838	0.00054516	0.00001237	0.00077444	0.00076207	
10		0.232413	-0.000072	0.233547	0.233619	0.216866	-0.000359	0.215498	0.215858	0.00055420	0.00002141	0.00959949	0.00957808	
11	q3b	0.232496	0.000011	0.233529	0.233518	0.216967	-0.000258	0.215515	0.215774	0.00054857	0.00001578	0.00959186	0.00957608	
12		0.232912	0.000427	0.234126	0.233699	0.217580	0.000355	0.216281	0.215927	0.00053645	0.00000366	0.01023330	0.01022964	
13	q3e	0.232825	0.000340	0.234031	0.233691	0.217437	0.000212	0.216183	0.215972	0.00053267	-0.00000012	0.01023410	0.01023422	
14		0.232694	0.000209	0.238315	0.238106	0.217309	0.000084	0.215979	0.215896	0.00053210	-0.00000069	0.00122991	0.00123060	
15	q2e	0.232633	0.000148	0.238223	0.238075	0.217304	0.000079	0.215860	0.215782	0.00053928	0.00000649	0.00124887	0.00124238	
16		0.232523	0.000038	0.237073	0.237035	0.217169	-0.000056	0.215691	0.215748	0.00053791	0.00000512	0.00107027	0.00106515	
17	q1e	0.232514	0.000029	0.237036	0.237007	0.217110	-0.000115	0.215649	0.215765	0.00054591	0.00001312	0.00109381	0.00108069	
18														
19														
20	Quadrupole	Final |Qx|	Final |Qy|	Final ΔQmin										
21	q1b	0.237223	0.213610	0.00081599										
22	q2b	0.235316	0.213846	0.00075169										
23	q3b	0.233569	0.215816	0.00957708										
24	q3e	0.233695	0.215949	0.01023193										
25	q2e	0.238091	0.215839	0.00123649										
26	q1e	0.237021	0.215756	0.00107292										
27														
28														

Fill #16600 (pp12b-v2 ramp) and bi5-qs3 changed by +0.5

	Uncoupled	Tunes Only	Horizontal	Vertical	All	OptiCalc
α_x	-0.107	-0.133	-0.154	-0.267	-0.220	-0.228
β_x	12.134	11.014	10.374	11.208	10.464	10.219
α_y	0.052	0.082	-0.174	0.075	0.017	0.066
β_y	8.387	7.601	6.581	7.381	7.453	5.646
ΔQ_{min}	0.00000	0.00635	0.00733	0.00733	0.00733	0.00733*
δQ_{error}	0.00294	0.00010	0.00151	0.00058	0.00041	***

Fill #16935 (CuAu12-v2 ramp) no additional coupling

	Uncoupled	Tunes Only	Horizontal	Vertical	All	OptiCalc
α_x	-0.089	-0.098	-0.061	0.282	-0.184	-0.095
β_x	9.247	9.103	9.229	4.221	7.447	8.816
α_y	-0.158	-0.173	-0.169	-0.231	-0.081	-0.017
β_y	27.638	28.123	8.233	25.147	11.140	8.961
ΔQ_{min}	0.00000	0.00374	0.00086	0.00085	0.00088	0.00053*
δQ_{error}	0.00092	0.00081	0.00385	0.00659	0.00220	***

* Measured ΔQ_{min}

Fill #16935 (CuAu12-v2 ramp) with bi5-qs3 changed by -0.5

	Uncoupled	Tunes Only	Horizontal	Vertical	All	OptiCalc
α_x	-0.099	-0.105	-0.762	-2.811	-0.737	-0.095
β_x	27.270	17.552	13.918	25.670	12.890	8.816
α_y	0.098	0.101	-0.420	0.003	-0.258	-0.017
β_y	27.616	14.032	16.599	7.980	12.654	8.961
ΔQ_{min}	0.00000	0.01101	0.01142	0.01120	0.01142	0.01119*
δQ_{error}	0.00208	0.00077	0.00319	0.01840	0.00329	***

Fill #16935 (CuAu12-v2 ramp) with bi5-qs3 changed by -0.3

	Uncoupled	Tunes Only	Horizontal	Vertical	All	OptiCalc
α_x	-0.069	-0.078	-0.068	-0.080	-0.058	-0.095
β_x	9.626	8.998	9.391	11.626	9.439	8.816
α_y	0.214	0.234	0.198	0.202	0.228	-0.017
β_y	24.142	20.021	19.384	25.595	22.119	8.961
ΔQ_{min}	0.00000	0.00651	0.00430	0.00431	0.00430	0.00430*
δQ_{error}	0.00070	0.00079	0.00067	0.00092	0.00069	***

* Measured ΔQ_{min}