

Power Calibration Standard Trends

Report Generated on December 17, 2019

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1 About

Interpreting plots

Plots in this document show % variations in responses of Photon Calibrator Power Calibration Standards measured in the lab.

Values on the plots have been received using following equation:

$$Y(i) = ((RATIO(i) / \text{weighted_mean}(RATIO)) - 1) * 100\%$$

where

- $RATIO(i)$ - i-th value in the table;
- $\text{weight_mean}(RATIO)$ - $\text{sum}(RATIO/VARIANCE^2) / \text{sum}(1/VARIANCE^2)$;

Ratio of device responses

Below is an example for “WSH / GS” ratio.

The ratio of power calibration standard responses, for “Working Standard 1” over “Gold Standard” on day “zzz” is

$$PCAL_zzz_RAT_WSH_GS = WS1resp / GSresp$$

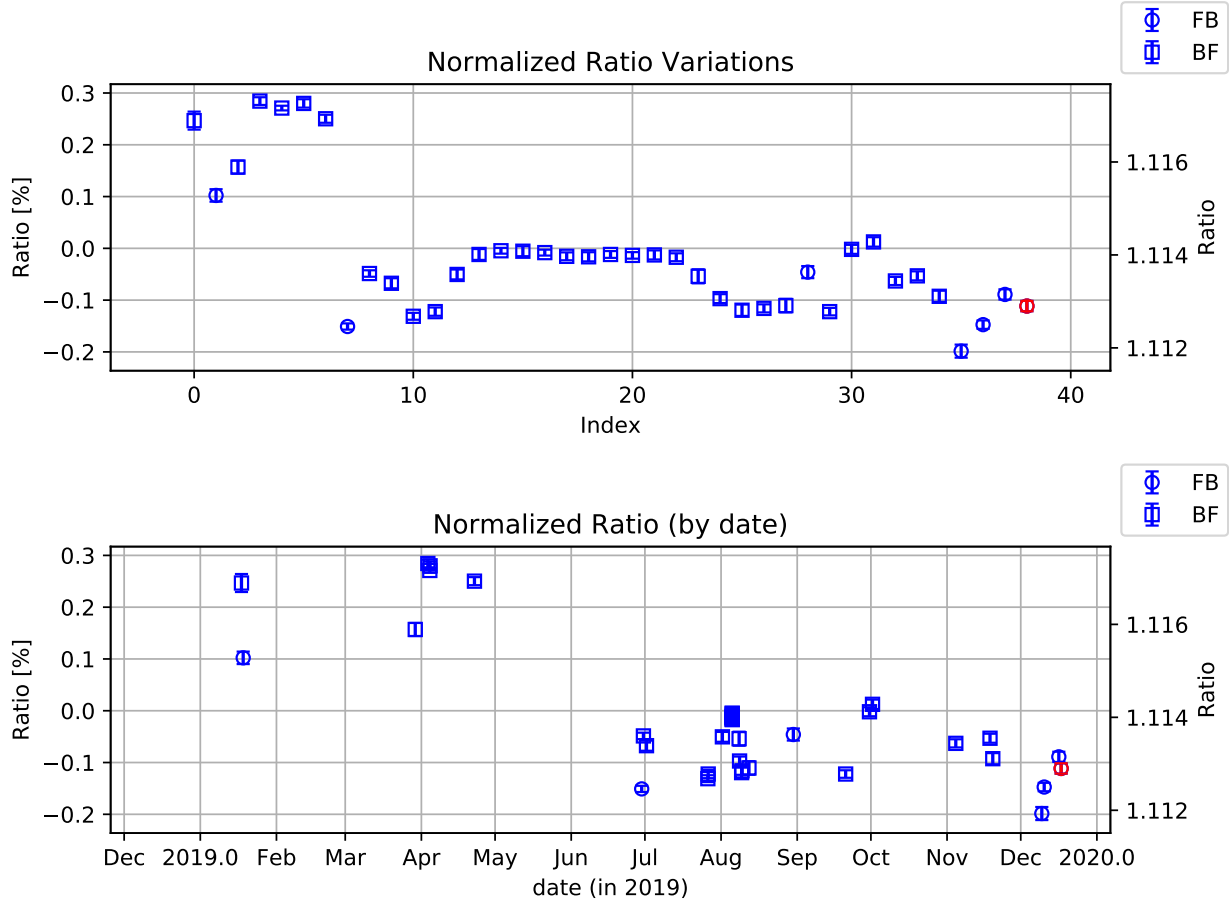
where

- $WSHresp$ - response of “Working Standard Hanford” in V/W;
- $GSresp$ - response of “Gold Standard” in V/W.

Note that as of February 2015 all ratio values were recorded without signs.

2 WSH / GS

Response ratio variations for “Working Standard Hanford” / “Gold Standard”.



Summary of RATIO data points:

Weighted mean value: 1.11414
Standard error on weighted mean: 2.42508E-04

Last measurement (2019-12-17T103717):

Response ratio: 1.11290
Deviation from mean: -5.12044 sigma

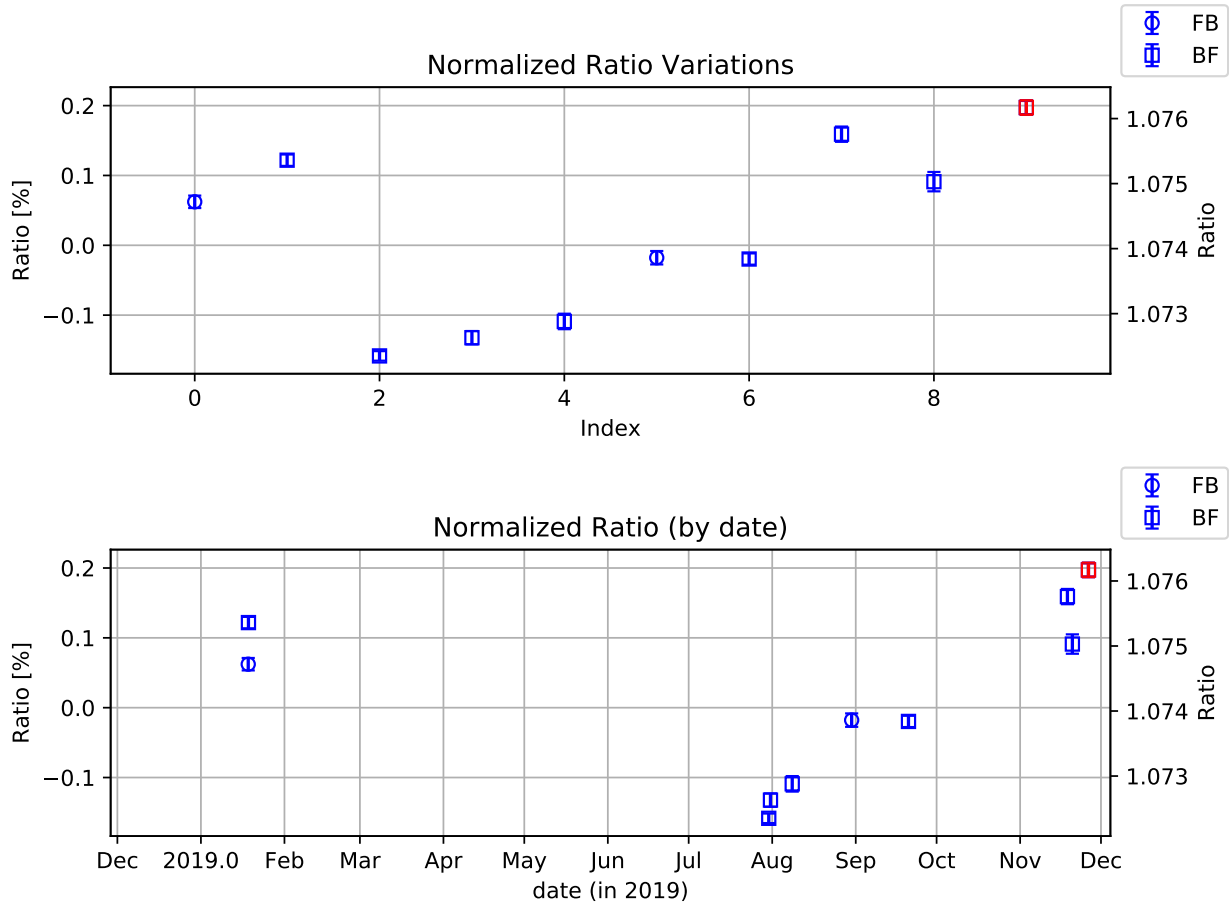
Table for WSH / GS:

RATIO	STD	UNIQUE_ID
1.11689	0.000193698	2019-01-17T181725
1.11528	0.000134431	2019-01-18T110452
1.11589	0.000140275	2019-03-29T121053
1.11731	8.30647e-05	2019-04-03T151424
1.11716	5.03008e-05	2019-04-04T102810
1.11726	9.01021e-05	2019-04-04T125526
1.11693	8.64125e-05	2019-04-22T143541
1.11246	6.70221e-05	2019-06-29T163138
1.1136	6.9748e-05	2019-06-30T092553
1.11339	0.000108654	2019-07-01T152902
1.11268	7.42076e-05	2019-07-26T144824
1.11278	8.92088e-05	2019-07-26T181950

1.11358	0.00010597	2019-08-01T130031
1.11401	0.00011678	2019-08-05T123657
1.11409	6.23067e-05	2019-08-05T124416
1.11408	0.000107065	2019-08-05T125007
1.11405	6.36649e-05	2019-08-05T125628
1.11397	8.47474e-05	2019-08-05T130155
1.11396	9.8479e-05	2019-08-05T130705
1.11401	7.32556e-05	2019-08-05T131346
1.11399	7.02953e-05	2019-08-05T131924
1.114	9.74732e-05	2019-08-05T132454
1.11395	8.51004e-05	2019-08-05T133003
1.11354	0.000151189	2019-08-08T082001
1.11306	9.60726e-05	2019-08-08T124738
1.11281	0.000122295	2019-08-09T085741
1.11285	8.69692e-05	2019-08-09T122737
1.11291	0.000145545	2019-08-12T083554
1.11363	0.000130112	2019-08-30T101405
1.11278	8.07697e-05	2019-09-20T171555
1.11412	9.65824e-05	2019-09-30T100122
1.11428	0.00010142	2019-10-01T154348
1.11344	8.78508e-05	2019-11-04T132313
1.11355	9.69667e-05	2019-11-18T114247
1.11311	0.000119843	2019-11-19T144239
1.11193	0.000140681	2019-12-09T134635
1.1125	9.0715e-05	2019-12-10T131715
1.11315	0.000110205	2019-12-16T115935
1.1129	0.000111227	2019-12-17T103717

3 WSL / GS

Response ratio variations for “Working Standard Livingston” / “Gold Standard”.



Summary of RATIO data points:

Weighted mean value: 1.07405
Standard error on weighted mean: 4.22106E-04

Last measurement (2019-11-26T082539):

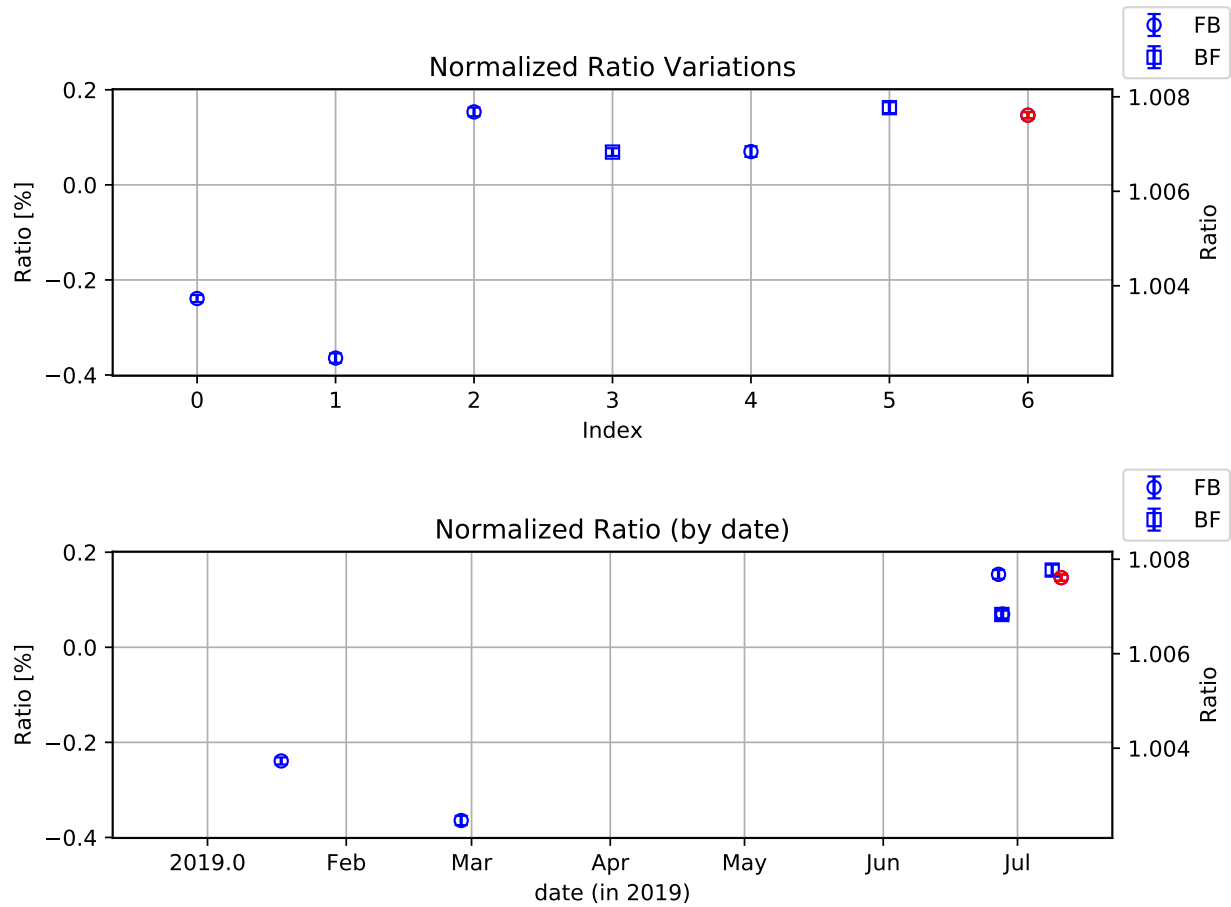
Response ratio: 1.07617
Deviation from mean: 5.01930 sigma

Table for WSL / GS:

RATIO	STD	UNIQUE_ID
1.07472	9.57858e-05	2019-01-18T132428
1.07536	8.75569e-05	2019-01-18T151938
1.07235	7.32401e-05	2019-07-30T170706
1.07263	0.000102953	2019-07-31T082848
1.07288	0.000119301	2019-08-08T101746
1.07386	0.000103192	2019-08-30T113405
1.07384	8.65457e-05	2019-09-20T133825
1.07576	0.000117579	2019-11-18T131350
1.07503	0.000149071	2019-11-20T091627
1.07617	0.000112127	2019-11-26T082539

4 WSS / GS

Response ratio variations for “Working Standard Spare” / “Gold Standard”.



Summary of RATIO data points:

Weighted mean value: 1.00614
Standard error on weighted mean: 7.59930E-04

Last measurement (2019-07-10T182717):

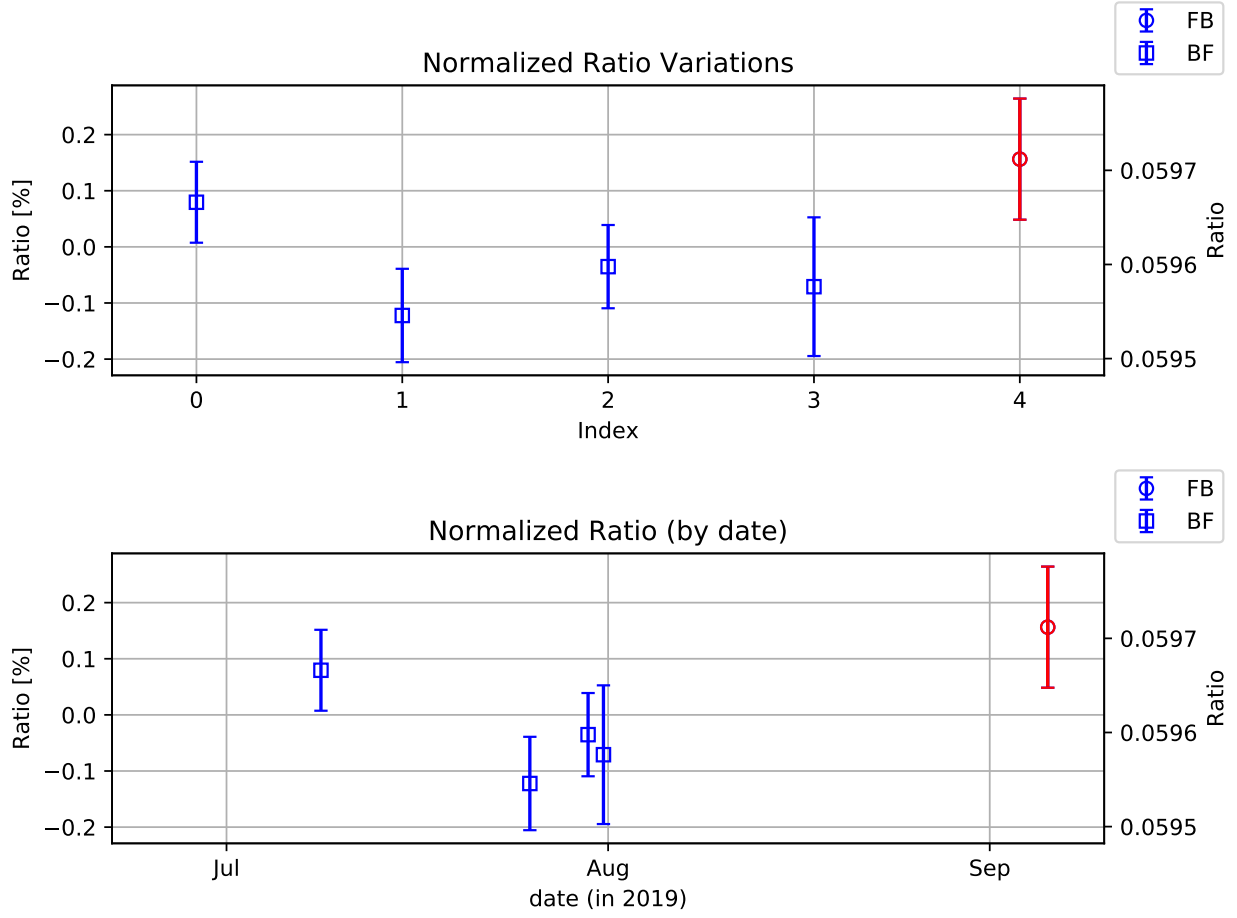
Response ratio: 1.00761
Deviation from mean: 1.93964 sigma

Table for WSS / GS:

RATIO	STD	UNIQUE_ID
1.00373	7.52049e-05	2019-01-17T111435
1.00247	9.80201e-05	2019-02-26T162846
1.00768	9.16701e-05	2019-06-26T182223
1.00683	8.12606e-05	2019-06-27T114821
1.00684	0.000112528	2019-06-27T160925
1.00777	0.000114572	2019-07-08T181253
1.00761	6.60312e-05	2019-07-10T182717

5 WSK / GS

Response ratio variations for “Working Standard KAGRA” / “Gold Standard”.



Summary of RATIO data points:

Weighted mean value: 0.05962
Standard error on weighted mean: 2.66182E-05

Last measurement (2019-09-05T170511):

Response ratio: 0.05971
Deviation from mean: 3.50119 sigma

Table for WSK / GS:

RATIO	STD	UNIQUE_ID
0.0596661	4.2986e-05	2019-07-08T160729
0.0595458	4.96045e-05	2019-07-25T152251
0.0595977	4.42228e-05	2019-07-30T085530
0.0595764	7.36804e-05	2019-07-31T145424
0.0597119	6.43412e-05	2019-09-05T170511