ENVIRONMENT AGENCY AUSTRIA umweltbundesamt

INTERLABORATORY COMPARISON EVALUATION

Nonylphenol, Octylphenol, Bisphenol A

– NP02

Sample dispatch on 24th February 2015

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Table of contents

1 Interlaboratory comparison NP02

1.1 Participants and time schedule

- Number of registrations: 12
- Number of submitted data records: 11
- Dispatch of samples: 24th February 2015
- Closing date for submission of data: 24th March 2015

To anonymise results, each laboratory was given a laboratory code on a random basis.

1.2 Sampling, sample material and distribution

One wastewater and one surface water were selected as sample material. The sampling was carried out on 23rd February 2015. The samples were stored at < 4 °C until further processing. The groundwater was partly spiked with specific substances. The samples were filled into bottles with continuous stirring. The homogeneous mixtures were dispatched on 24th February 2015. Each participant received:

- 2 samples, filled in 1000 ml aluminium bottles.

1.3 Check analysis

While filling the bottles, aliquots of each sample were collected at random moments for check analysis. Testing was performed 8 days after sample dispatch.

In the parameter-oriented evaluation, the results of the check testing are listed in the form of arithmetic means of the detected concentrations as check value ± U The uncertainties of the check value were calculated as extended uncertainties (k=2).

2 Evaluation

The analytical results had to be made available to the organiser not later than 24th March 2015. Any values received at a later date were not considered. A statistical evaluation of interlaboratory comparison data was only carried out if at least 6 valid results per parameter were available.

To evaluate the data, outliers were detected first by using the outlier test method according to Hampel. Values identified as conspicuous by this test method are marked specifically in the parameter-oriented evaluation. Further evaluation was performed in accordance with DIN ISO 5725-2. The adjusted average value (after removal of outliers) for all submitted results was used as a basis for the calculation of recovery rates.

z-Score

z-Scores were calculated on the basis of the following formula:

$$z - score = \frac{x_i - \overline{X}}{\sigma}$$

In this context,

x_i is the measurement value of the participating laboratory.

$\overline{X}$ is the adjusted average value (i.e. after removal of outliers) of the participants' results.

σ is the reproducibility standard deviation, calculated from the participants' results (after removal of outliers) in the relevant test round.

Interpretation of z-Scores in the parameter-oriented evaluation:

- |z| < 2: result: good
- 2 < |z| < 3 result: questionable
- |z| > 3 result: not satisfactory

3 Representation and interpretation of measurement results

The parameter-oriented evaluation shows the measurement values including uncertainty, recovery rate, calculated z-Score and the outliers in tabular form. The results listed in the table are also illustrated in graphical form (see 5 Explanatory notes on the parameter oriented report)

4 Explanatory notes

None.

5 Explanatory notes on the parameter oriented report

Mean ± CI (99%)	***Mean of the participants results, without outliners ± 99% confidence interval***
Minimum – Maximum	***Minimum and maximum of all submitted results, after removal of outliners***
Check value ± U	***Mean of check value ± expanded uncertainty (k=2)***

Labcode	Result	± U	Recovery [%]	z-score	Comments
LC0001	0.015	0.0001	89. 7	-0.5	
LC0002	0.0148	0.003	88. 5	0.6	
LC0003	-	-	-	-	
LC0004	-	-	-	-	
. . .					
LC0009	0.100	0.01	597.9	24.2	H

Symbols and abbreviations:

± U Results uncertainty as indicated by participant

\- *No data available*

Possible remarks in the column comments:

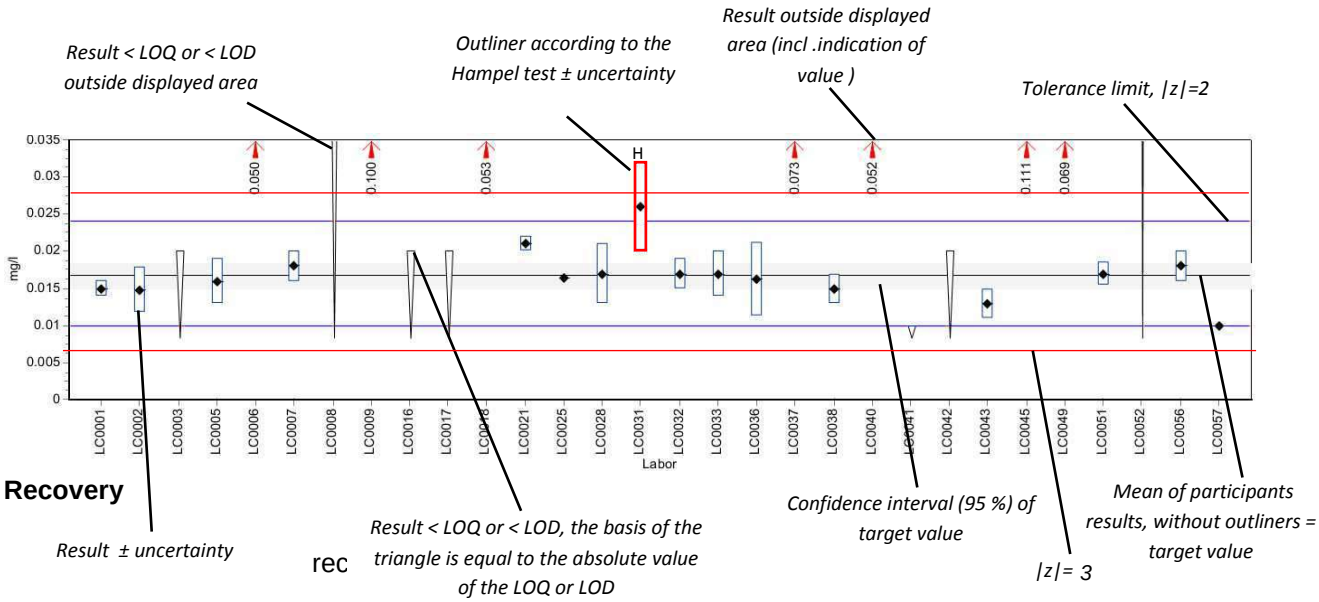
H Outliner according to Hampel-Test

FN False negative – For a result < LOQ (level of quantification): The absolute value of the LOD/LOQ fulfils the condition of an outliner according to the Hampel test.

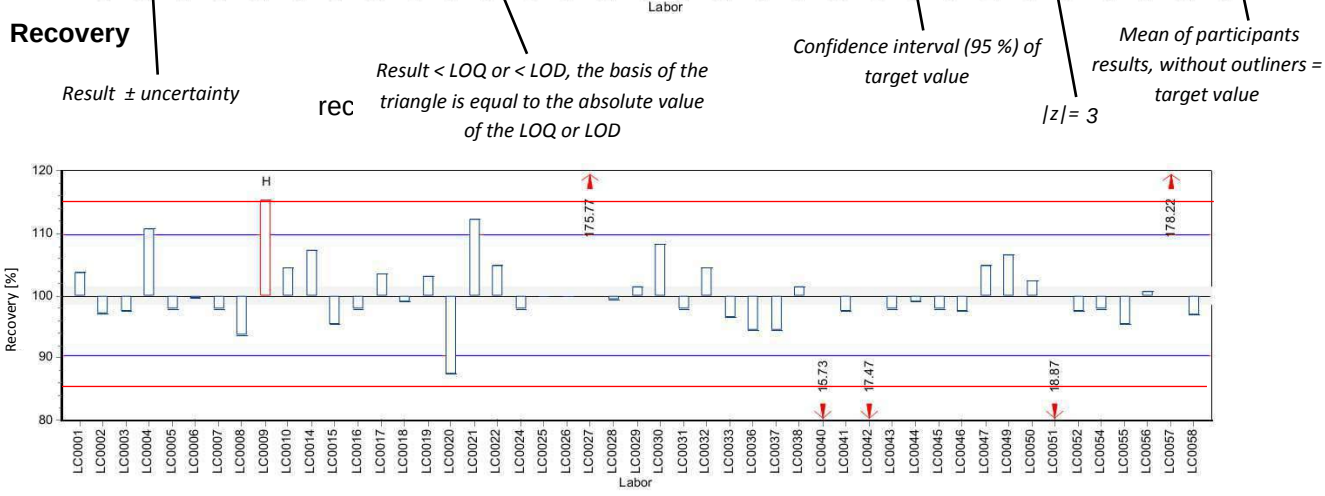
FP False positive – For parameters where no target value is available because of a too low analyte content (n < 6): Result that exceeds the median of the absolute values of the transmitted LOD/LOQs by more than 100 %.

Graphical presentation of results

Results

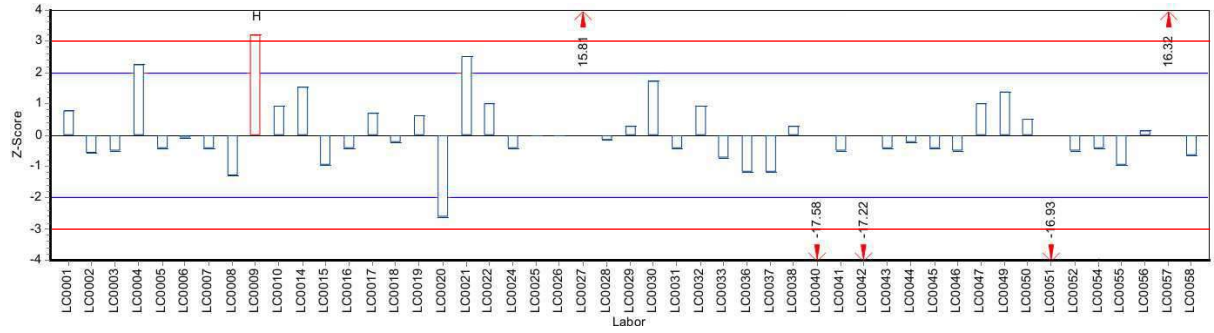


Recovery



z-Score

Presentation of results as z-scores.



6 Summary of results, after removal of outliers

Parameter	Sample	Unit	Number of results for calculation	Number of outliners	Mean	±	CI (99%)	Minimum	Maximum	SD	RSD
Nonylphenol	NP02 A	µg/l	7	1	2.47	±	0.639	1.9	3.56	0.563	22.8
	NP02 B	µg/l	8	1	0.352	±	0.131	0.2	0.57	0.124	35.1
Octylphenol	NP02 A	µg/l	7	2	2.02	±	0.243	1.6	2.27	0.214	10.6
	NP02 B	µg/l	3	0	-	±	-	0.018	0.103	-	-
Bisphenol A	NP02 A	µg/l	7	0	1.27	±	0.118	1.1	1.4	0.104	8.22
	NP02 B	µg/l	8	0	0.208	±	0.0504	0.11	0.26	0.0475	22.9

7 Parameter oriented report

Parameter oriented report

NP02 A

Nonylphenol

Unit	µg/l
Mean ± Cl (99%)	2.47 ± 0.639
Minimum - Maximum	1.9 - 3.56
Check value ± U	2.4 ± 0.27

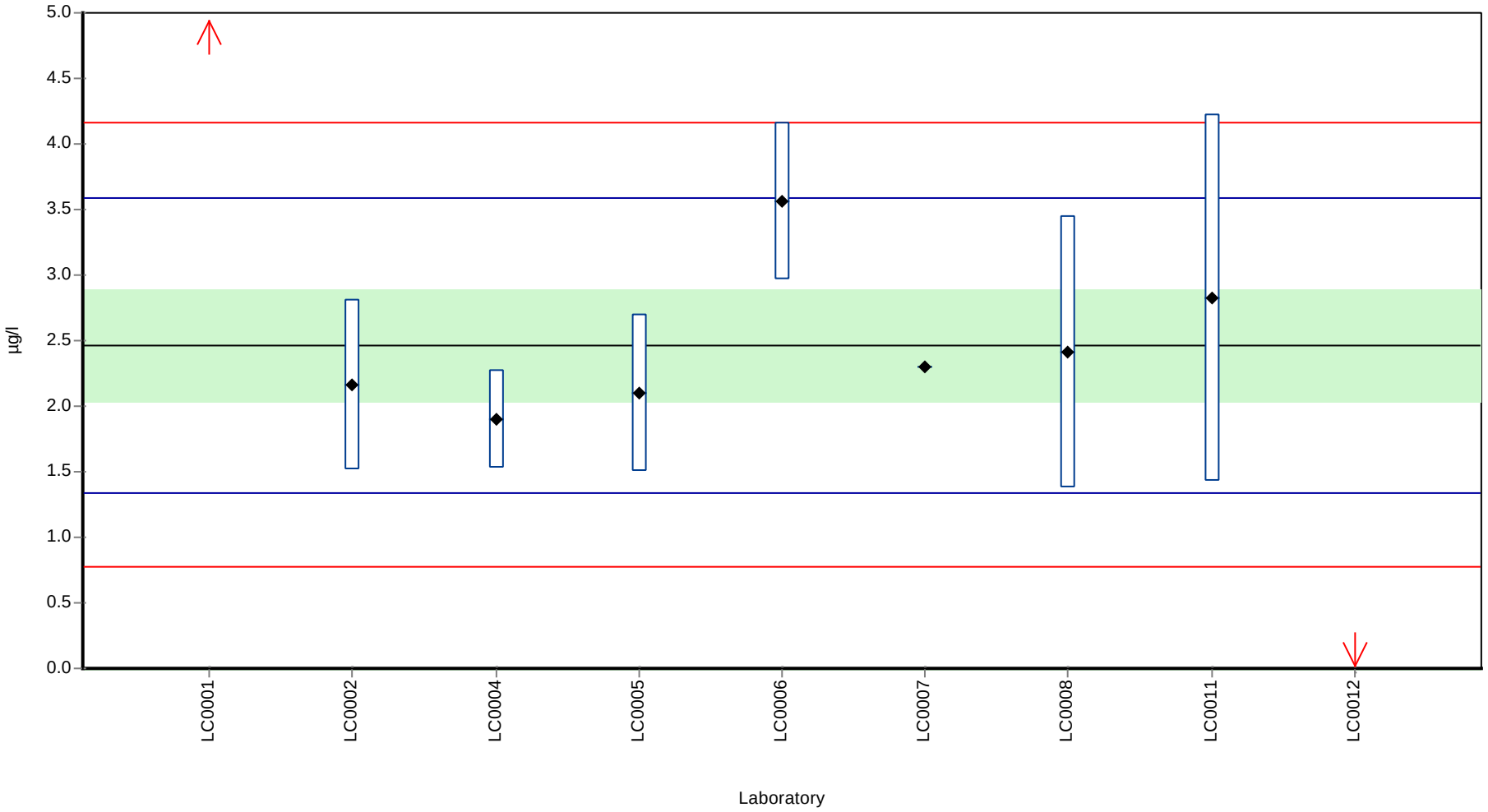
Labcode	Result	± U	Recovery [%]	z-score	Comments
LC0001	15.700	1.500	636.5	23.5	H
LC0002	2.166	0.649	87.8	-0.5	
LC0003	-	-	-	-	
LC0004	1.900	0.380	77.0	-1.0	
LC0005	2.100	0.600	85.1	-0.7	
LC0006	3.560	0.600	144.3	1.9	
LC0007	2.300	-	93.2	-0.3	
LC0008	2.410	1.040	97.7	-0.1	
LC0009	-	-	-	-	
LC0010	-	-	-	-	
LC0011	2.830	1.400	114.7	0.6	
LC0012	< 0.02 (LOQ)	-	-	-	FN

Characteristics of parameter

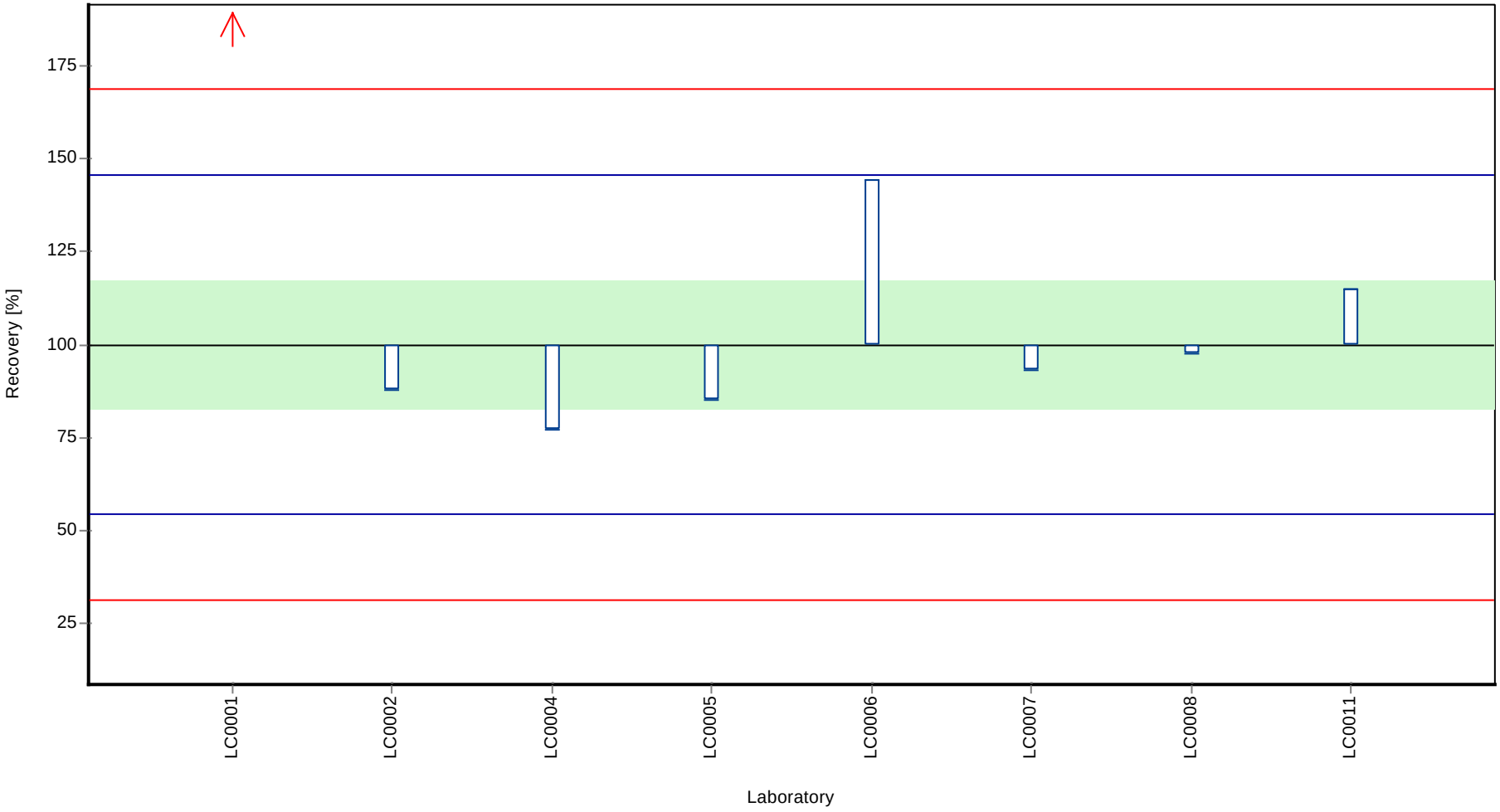
	all results	without outliners	Unit
Mean ± Cl (99%)	4.12 ± 4.99	2.47 ± 0.639	µg/l
Minimum	1.9	1.9	µg/l
Maximum	15.7	3.56	µg/l
Standard deviation	4.71	0.563	µg/l
rel. Standard deviation	114	22.8	%
n	8	7	-

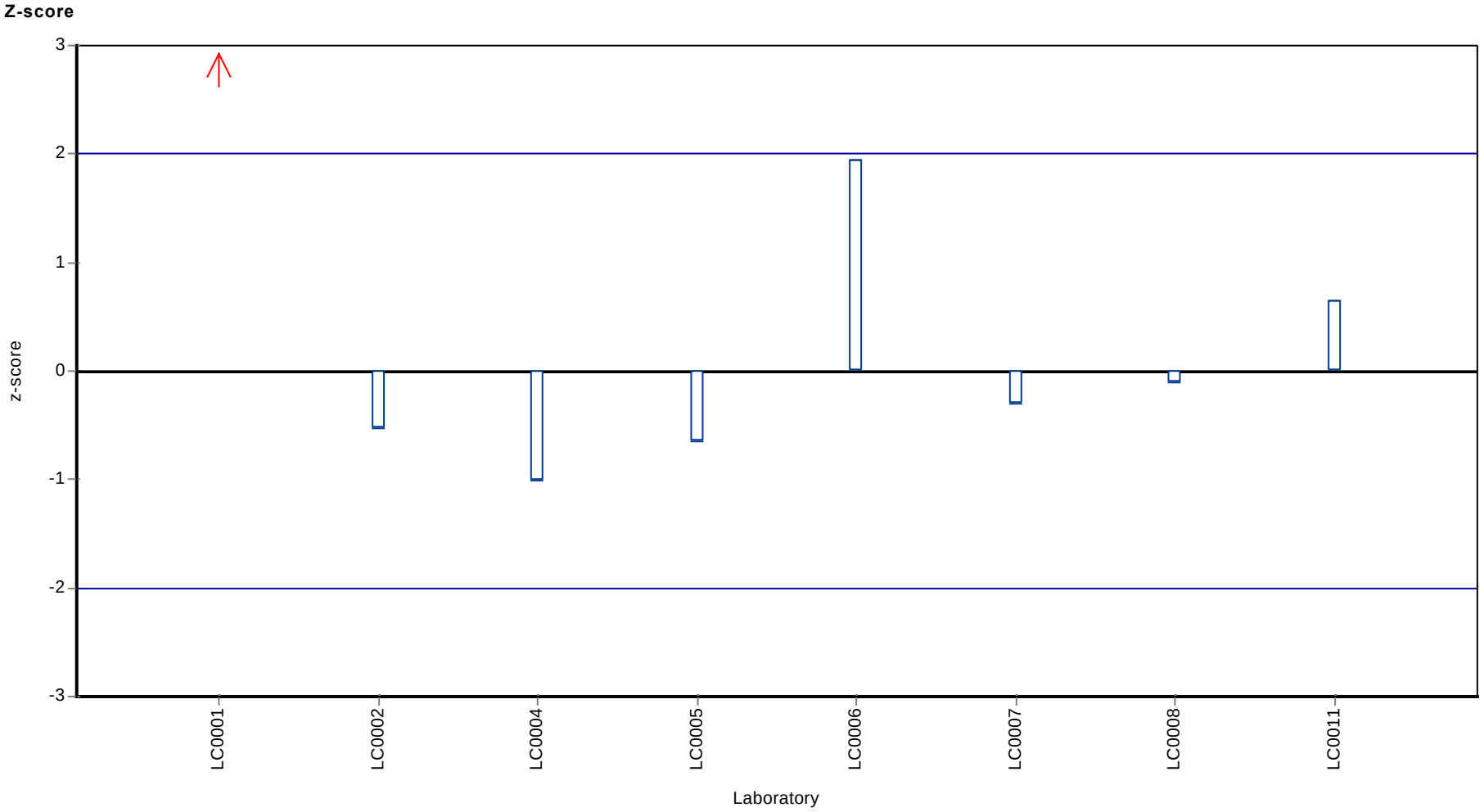
Graphical presentation of results

Results



Recovery rate




Z-score
3
2
1
0
-1
-2
-3
z-score
LC0001
LC0002
LC0004
LC0005
LC0006
LC0007
LC0008
LC0011
Laboratory

Parameter oriented report

NP02 B

Nonylphenol

Unit	µg/l
Mean ± Cl (99%)	0.352 ± 0.131
Minimum - Maximum	0.2 - 0.57
Check value ± U	0.32 ± 0.096

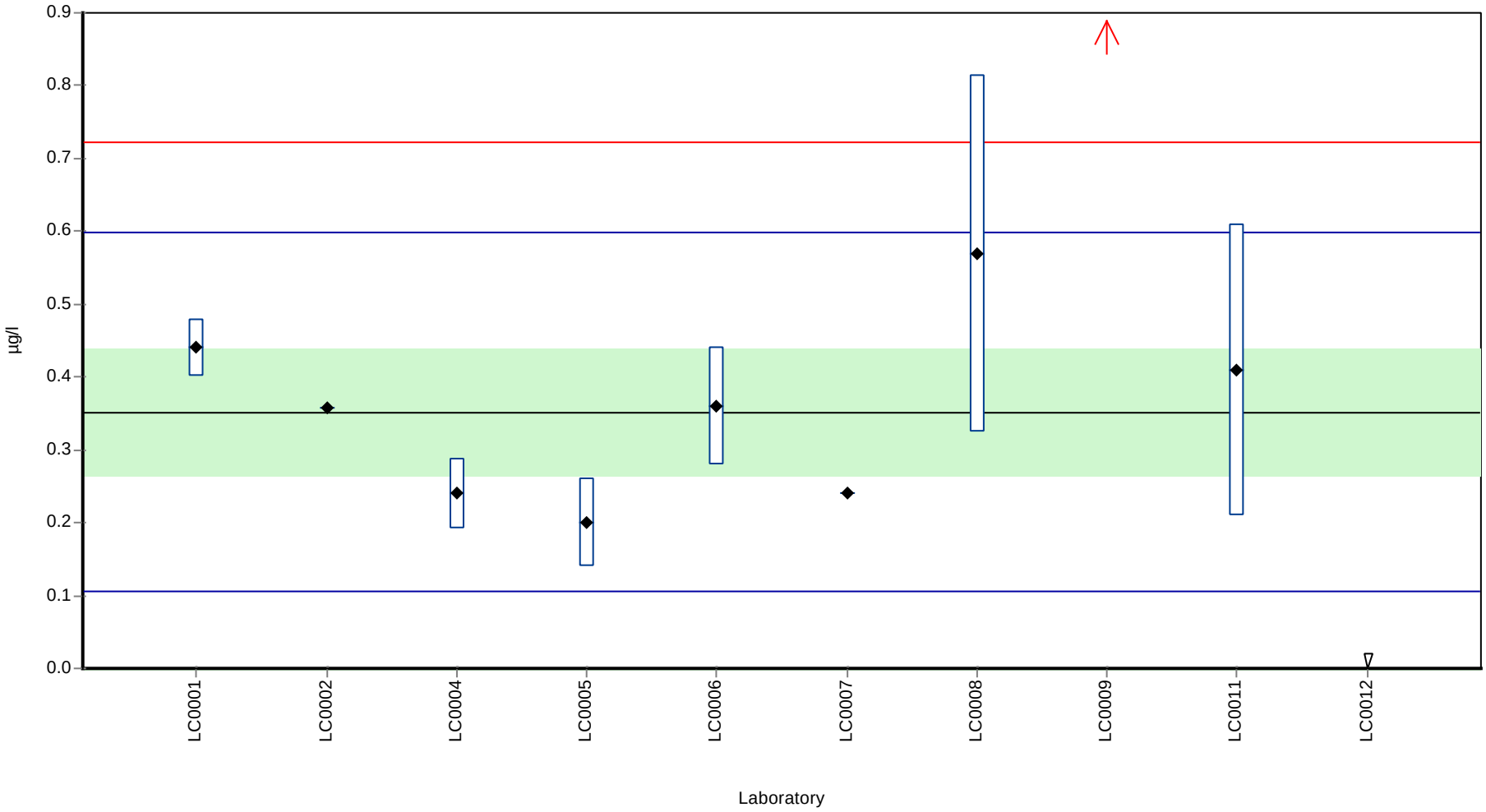
Labcode	Result	± U	Recovery [%]	z-score	Comments
LC0001	0.440	0.040	125.0	0.7	
LC0002	0.357	0.0014	101.4	0.0	
LC0003	-	-	-	-	
LC0004	0.240	0.048	68.2	-0.9	
LC0005	0.200	0.060	56.8	-1.2	
LC0006	0.360	0.080	102.2	0.1	
LC0007	0.240	-	68.2	-0.9	
LC0008	0.570	0.245	161.9	1.8	
LC0009	1.200	0.230	340.8	6.9	H
LC0010	-	-	-	-	
LC0011	0.410	0.200	116.4	0.5	
LC0012	< 0.02 (LOQ)	-	-	-	

Characteristics of parameter

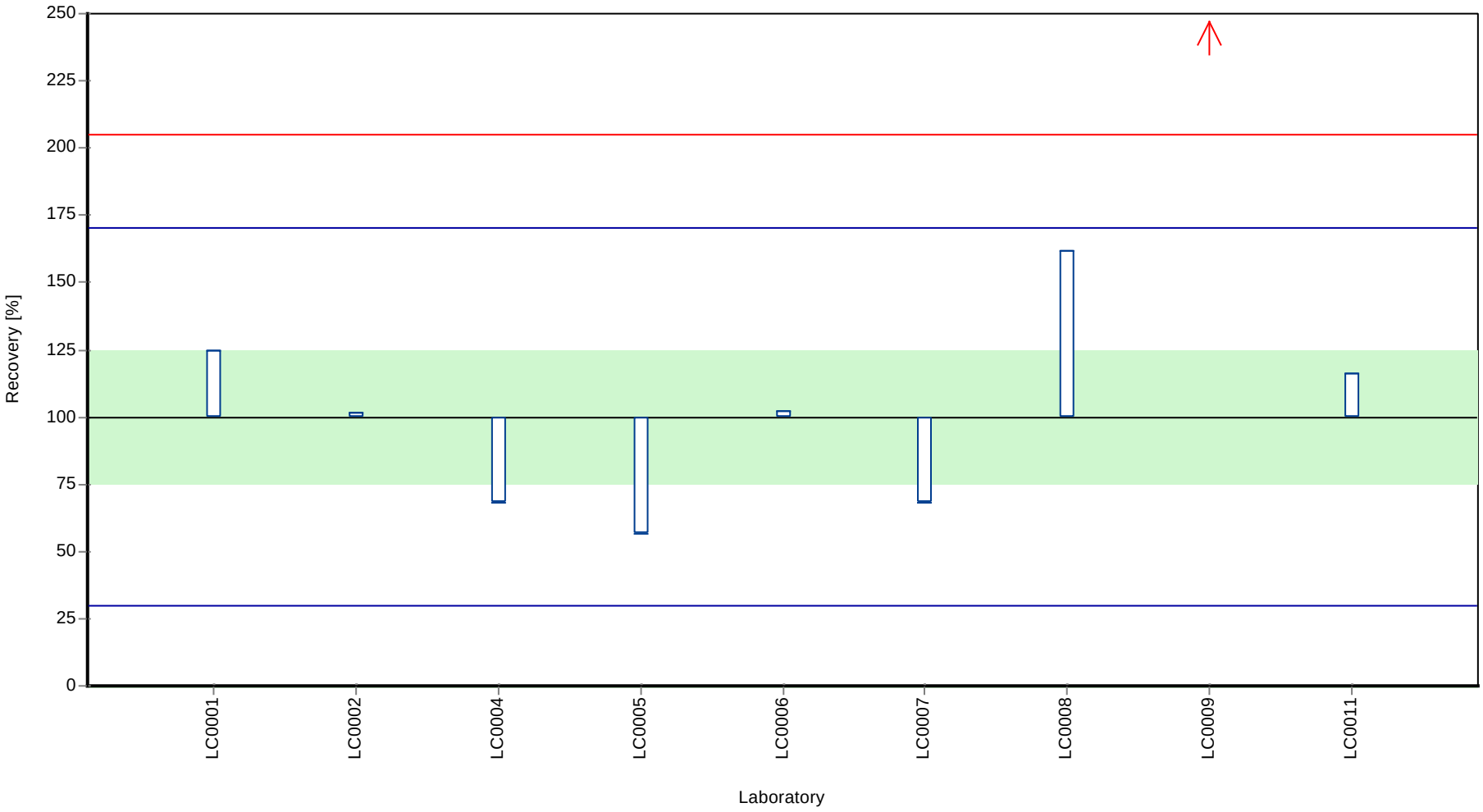
	all results	without outliners	Unit
Mean ± Cl (99%)	0.446 ± 0.305	0.352 ± 0.131	µg/l
Minimum	0.2	0.2	µg/l
Maximum	1.2	0.57	µg/l
Standard deviation	0.305	0.124	µg/l
rel. Standard deviation	68.4	35.1	%
n	9	8	-

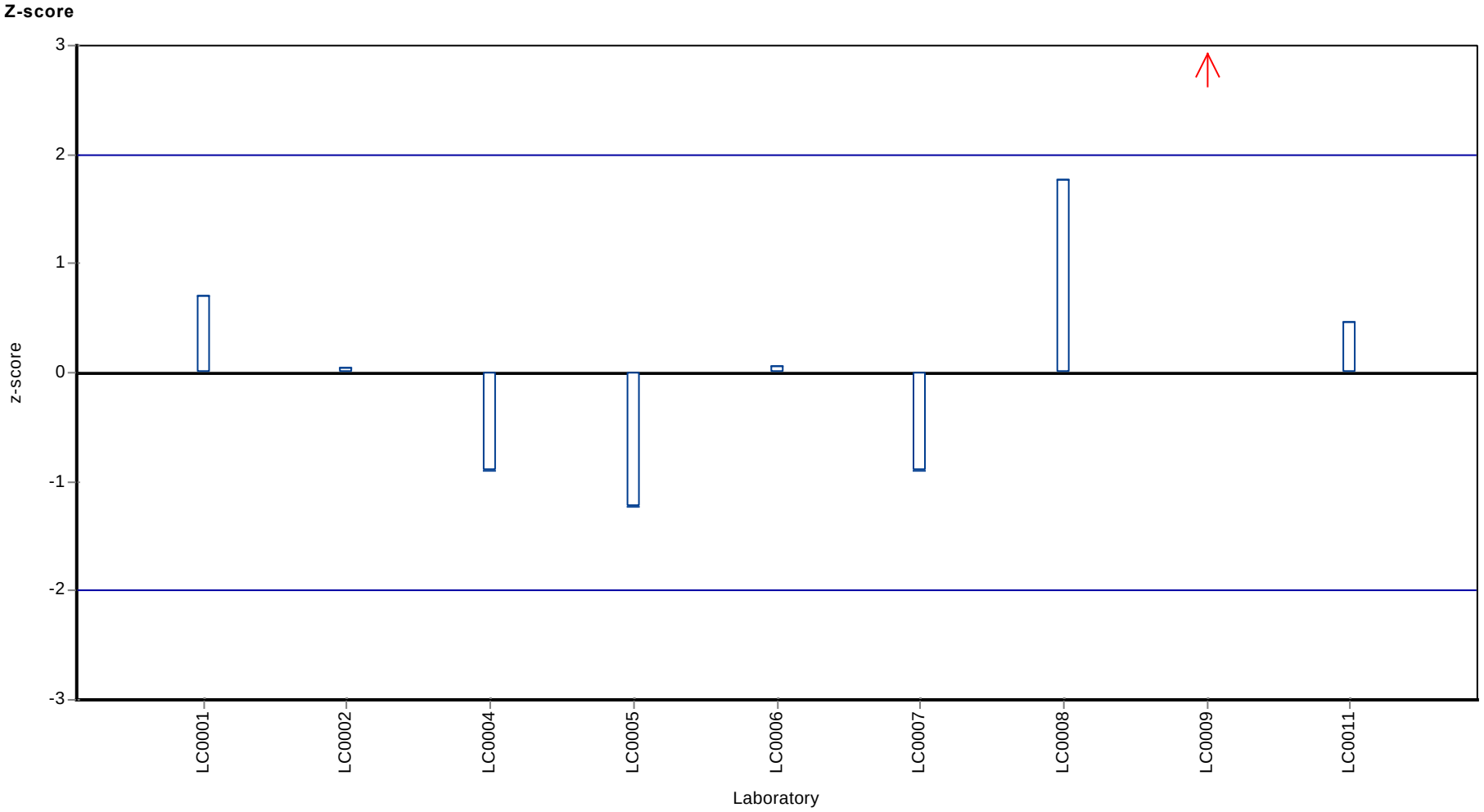
Graphical presentation of results

Results



Recovery rate




Z-score
3
2
1
0
-1
-2
-3
z-score
LC0001
LC0002
LC0004
LC0005
LC0006
LC0007
LC0008
LC0009
LC0011
Laboratory

Parameter oriented report

NP02 A

Octylphenol

Unit	µg/l
Mean ± Cl (99%)	2.02 ± 0.243
Minimum - Maximum	1.6 - 2.27
Check value ± U	1.9 ± 0.22

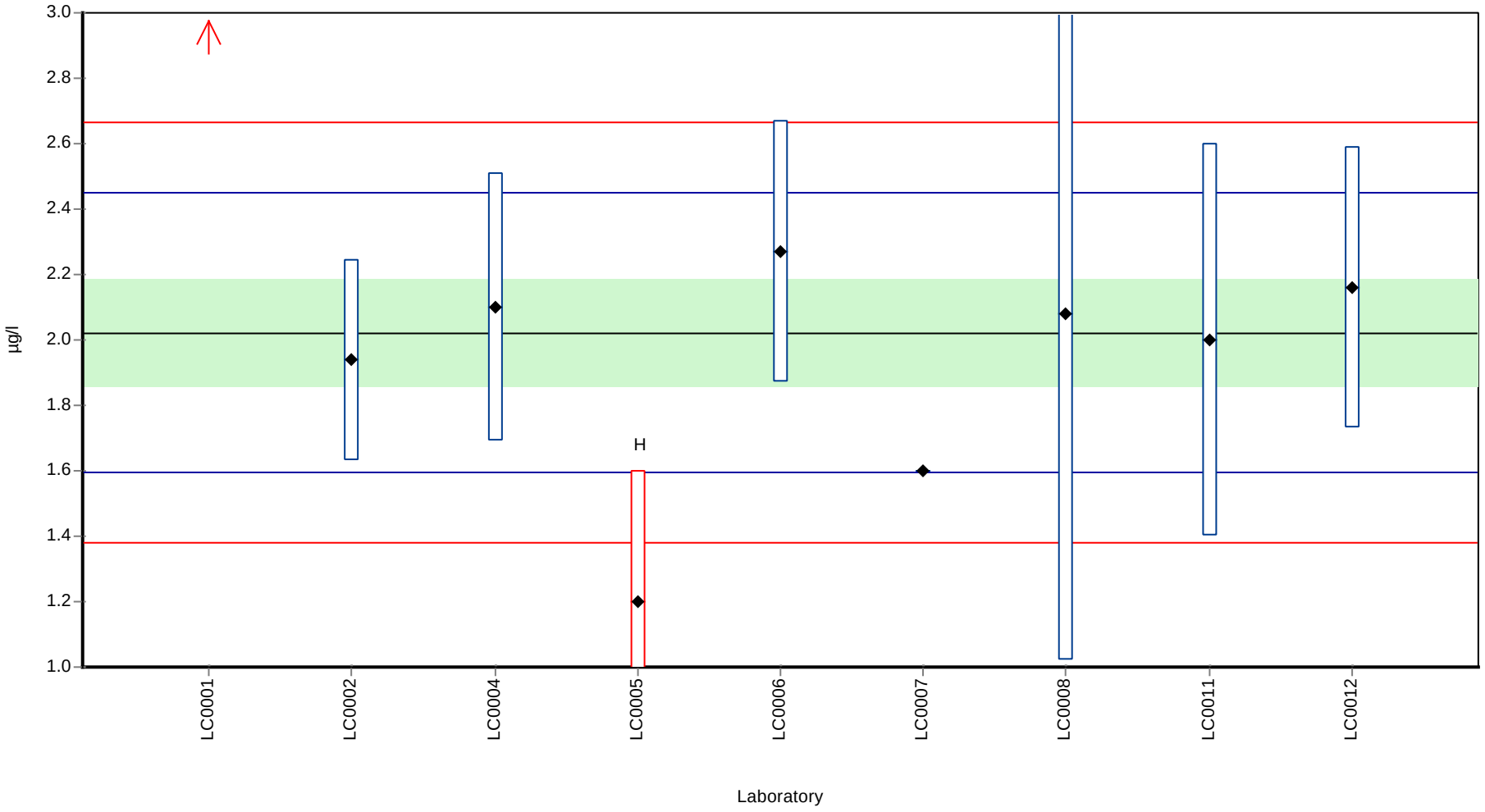
Labcode	Result	± U	Recovery [%]	z-score	Comments
LC0001	8.000	0.800	395.8	27.9	H
LC0002	1.939	0.307	95.9	-0.4	
LC0003	-	-	-	-	
LC0004	2.100	0.410	103.9	0.4	
LC0005	1.200	0.400	59.4	-3.8	H
LC0006	2.270	0.400	112.3	1.2	
LC0007	1.600	-	79.2	-2.0	
LC0008	2.080	1.060	102.9	0.3	
LC0009	-	-	-	-	
LC0010	-	-	-	-	
LC0011	2.000	0.600	98.9	-0.1	
LC0012	2.160	0.430	106.9	0.6	

Characteristics of parameter

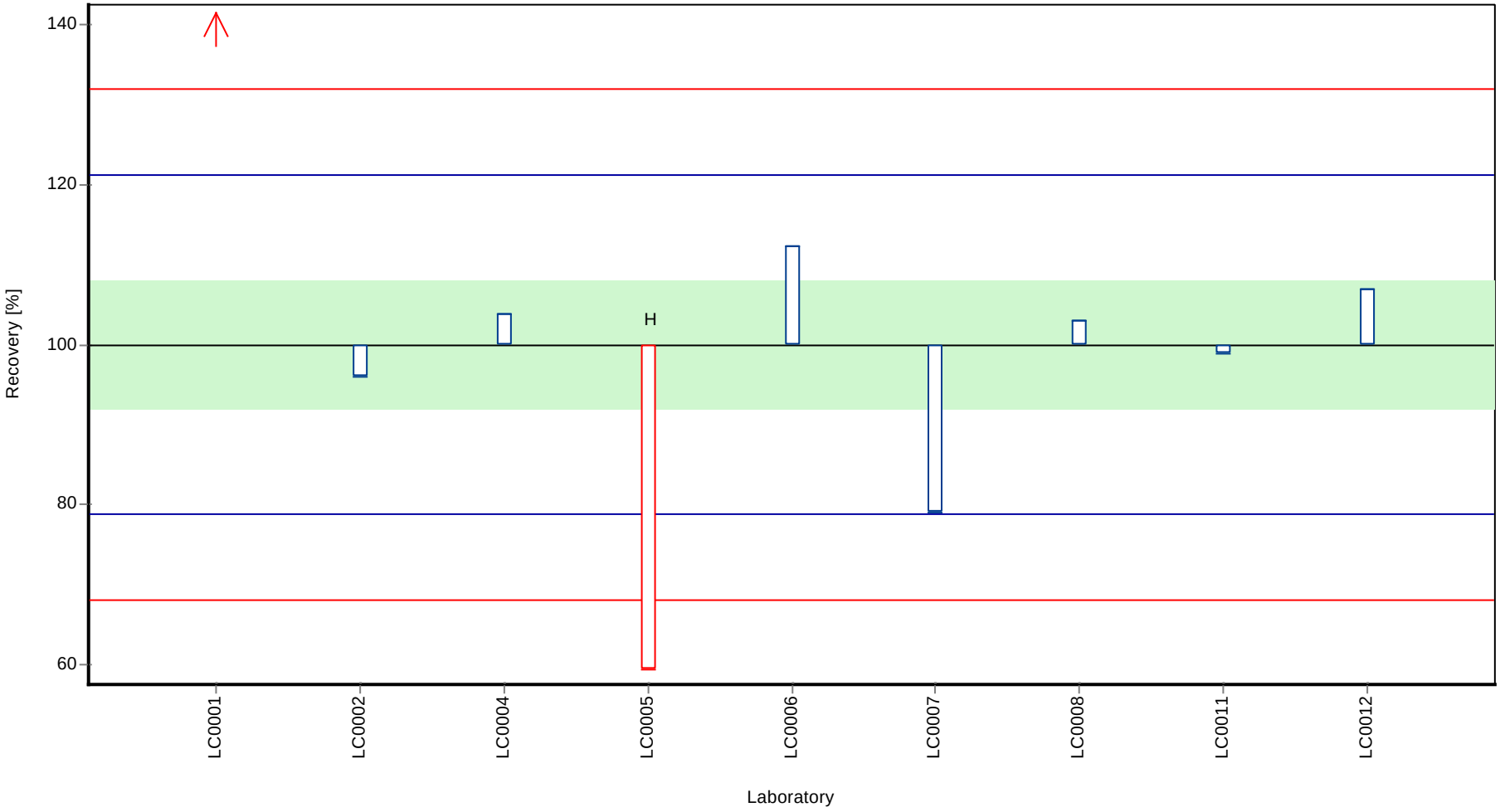
	all results	without outliners	Unit
Mean ± Cl (99%)	2.59 ± 2.05	2.02 ± 0.243	µg/l
Minimum	1.2	1.6	µg/l
Maximum	8	2.27	µg/l
Standard deviation	2.05	0.214	µg/l
rel. Standard deviation	79.2	10.6	%
n	9	7	-

Graphical presentation of results

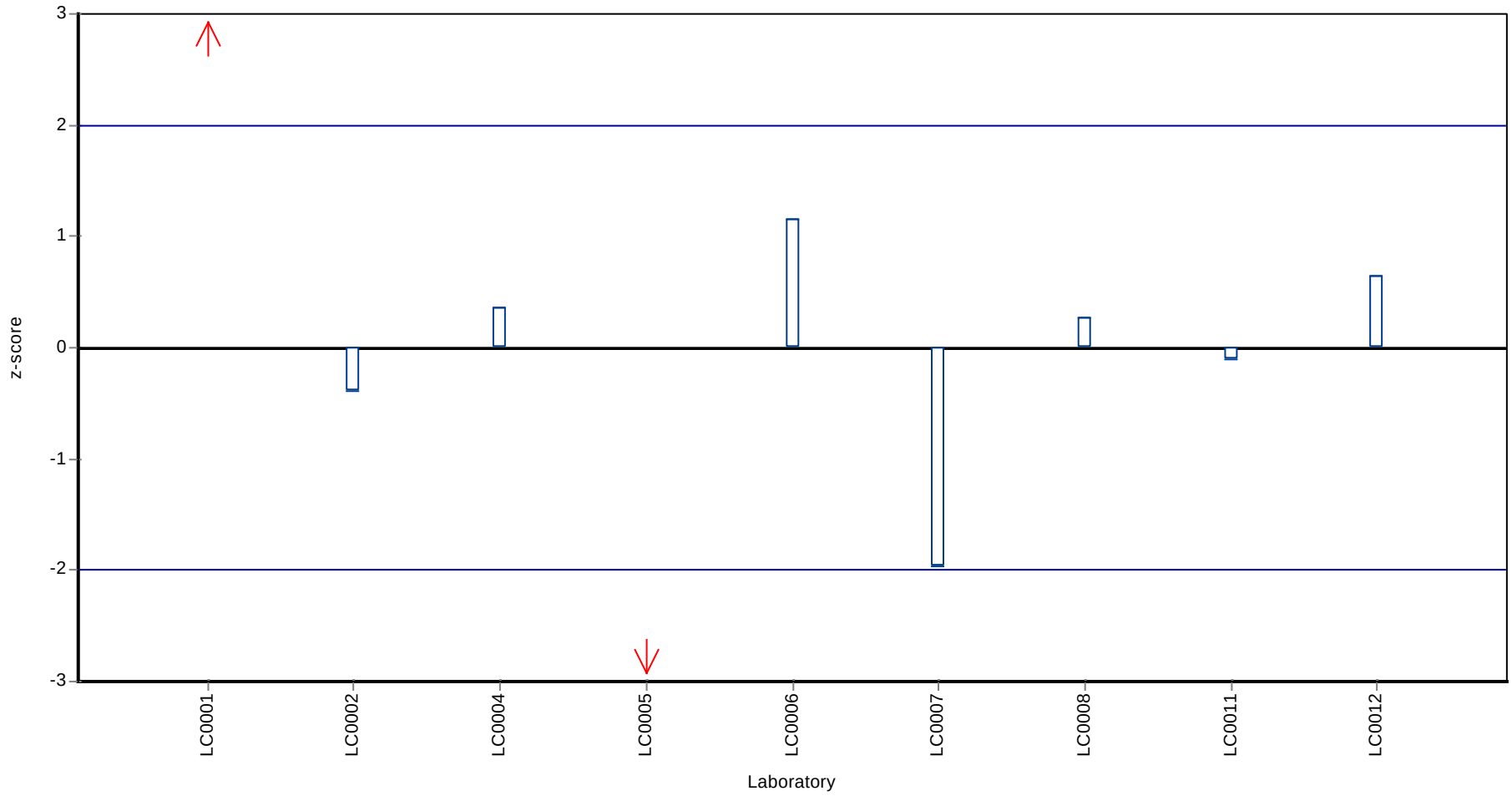
Results



Recovery rate



Z-score


3
2
1
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-1
-2
-3
z-score
LC0001
LC0002
LC0004
LC0005
LC0006
LC0007
LC0008
LC0011
LC0012
Laboratory

Parameter oriented report

NP02 B

Octylphenol

Unit	µg/l
Mean ± Cl (99%)	-
Minimum - Maximum	0.018 - 0.103
Check value ± U	< 0.03 (LOD)

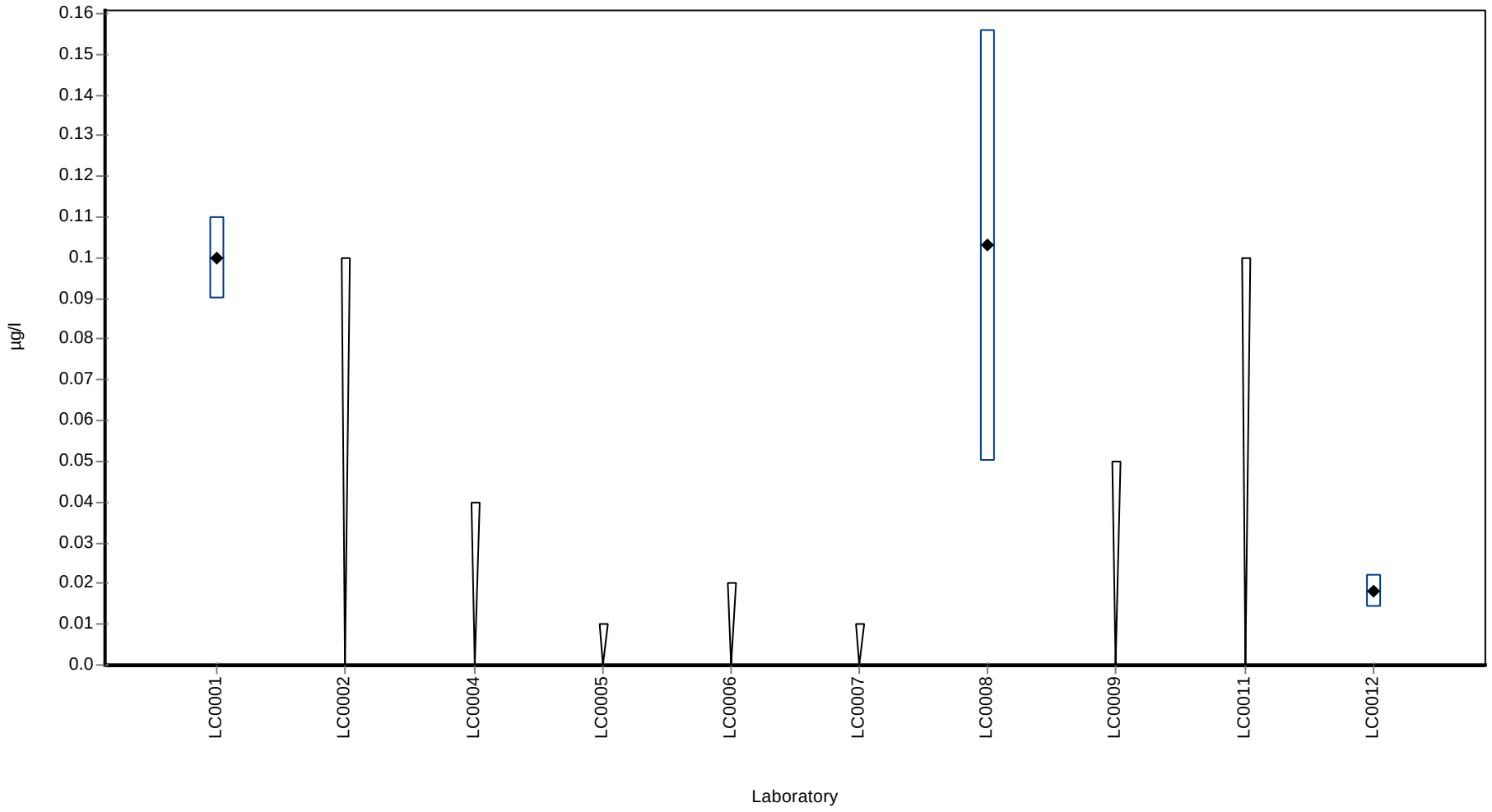
Labcode	Result	± U	Recovery [%]	z-score	Comments
LC0001	0.100	0.010	-	-	FP
LC0002	< 0.1 (LOQ)	-	-	-	
LC0003	-	-	-	-	
LC0004	<0.04 (LOD)	-	-	-	
LC0005	< 0.01 (LOQ)	-	-	-	
LC0006	< 0.02 (LOQ)	-	-	-	
LC0007	< 0.01 (LOQ)	-	-	-	
LC0008	0.103	0.053	-	-	FP
LC0009	< 0.05 (LOQ)	-	-	-	
LC0010	-	-	-	-	
LC0011	< 0.1 (LOQ)	-	-	-	
LC0012	0.018	0.004	-	-	

Characteristics of parameter

	all results	without outliners	Unit
Mean ± Cl (99%)	0.0737 ± 0.0835	-	µg/l
Minimum	0.018	0.018	µg/l
Maximum	0.103	0.103	µg/l
Standard deviation	0.0482	-	µg/l
rel. Standard deviation	65.5	-	%
n	3	3	-

Graphical presentation of results

Results



Parameter oriented report

NP02 A

Bisphenol A

Unit	µg/l
Mean ± Cl (99%)	1.27 ± 0.118
Minimum - Maximum	1.1 - 1.4
Check value ± U	0.96 ± 0.2

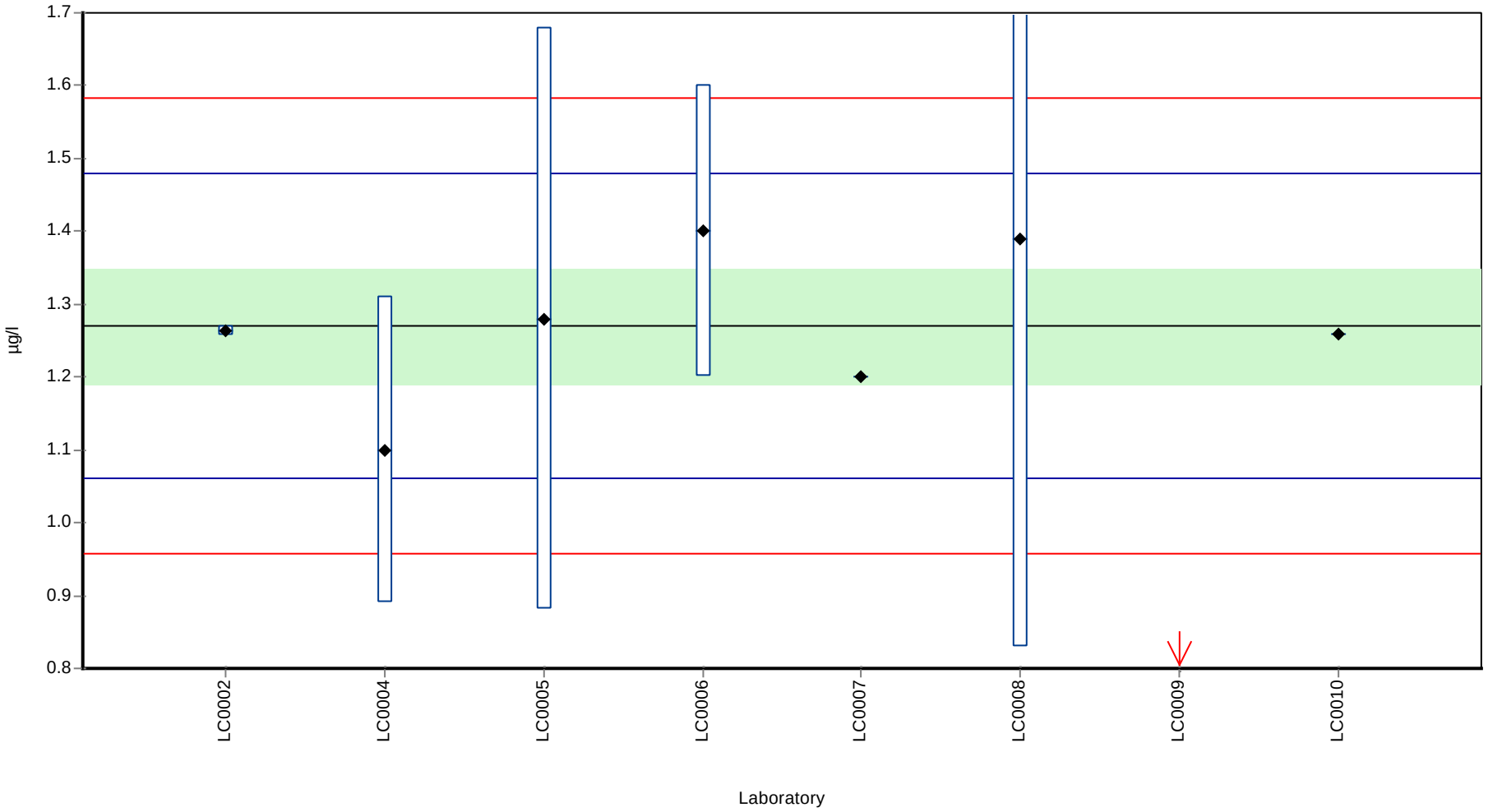
Labcode	Result	± U	Recovery [%]	z-score	Comments
LC0001	-	-	-	-	
LC0002	1.264	0.0071	99.5	-0.1	
LC0003	-	-	-	-	
LC0004	1.100	0.210	86.6	-1.6	
LC0005	1.280	0.400	100.8	0.1	
LC0006	1.400	0.200	110.2	1.2	
LC0007	1.200	-	94.5	-0.7	
LC0008	1.390	0.560	109.4	1.1	
LC0009	< 0.05 (LOQ)	-	-	-	FN
LC0010	1.258	-	99.0	-0.1	
LC0011	-	-	-	-	
LC0012	-	-	-	-	

Characteristics of parameter

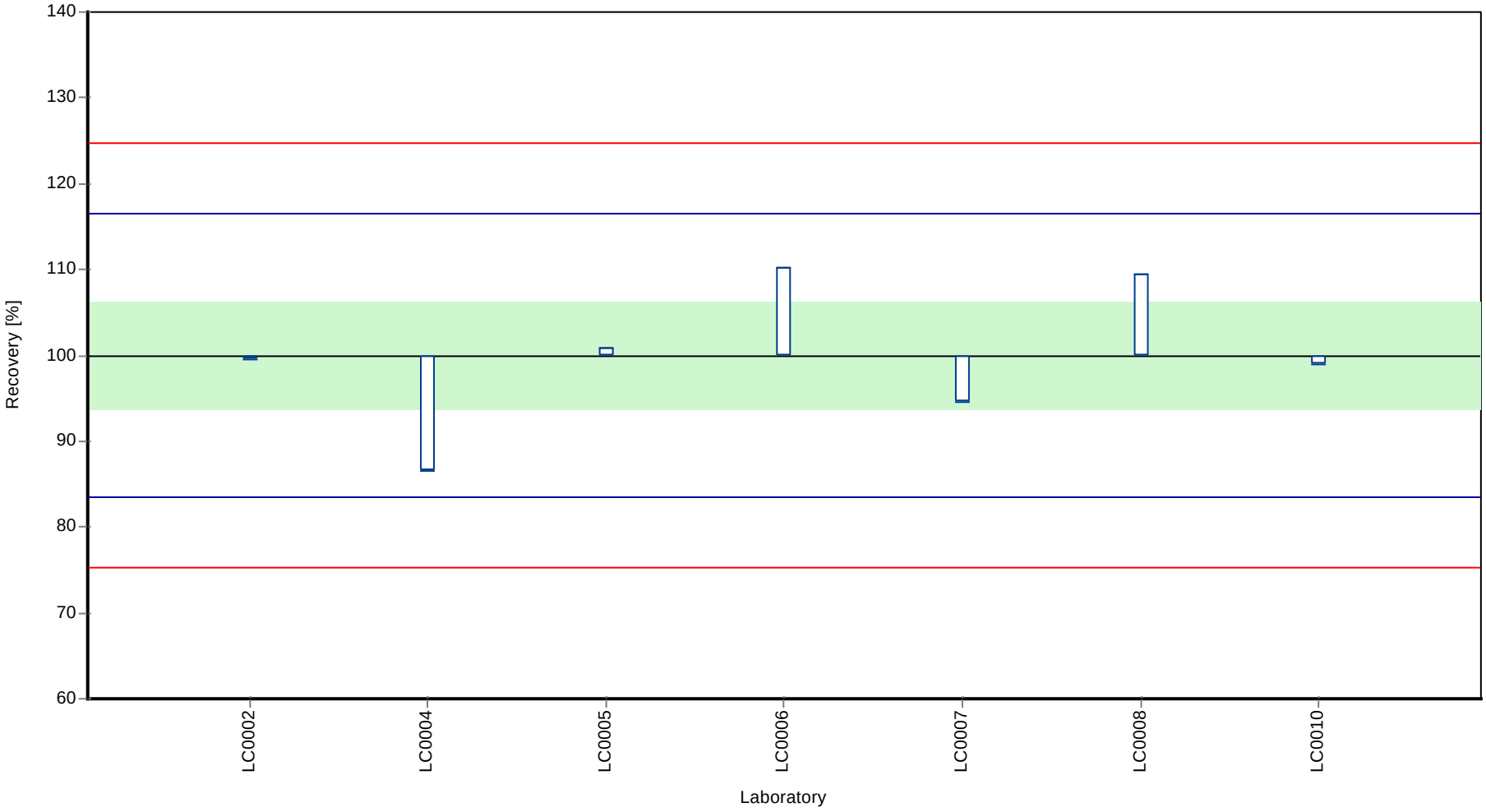
	all results	without outliners	Unit
Mean ± Cl (99%)	1.27 ± 0.118	1.27 ± 0.118	µg/l
Minimum	1.1	1.1	µg/l
Maximum	1.4	1.4	µg/l
Standard deviation	0.104	0.104	µg/l
rel. Standard deviation	8.22	8.22	%
n	7	7	-

Graphical presentation of results

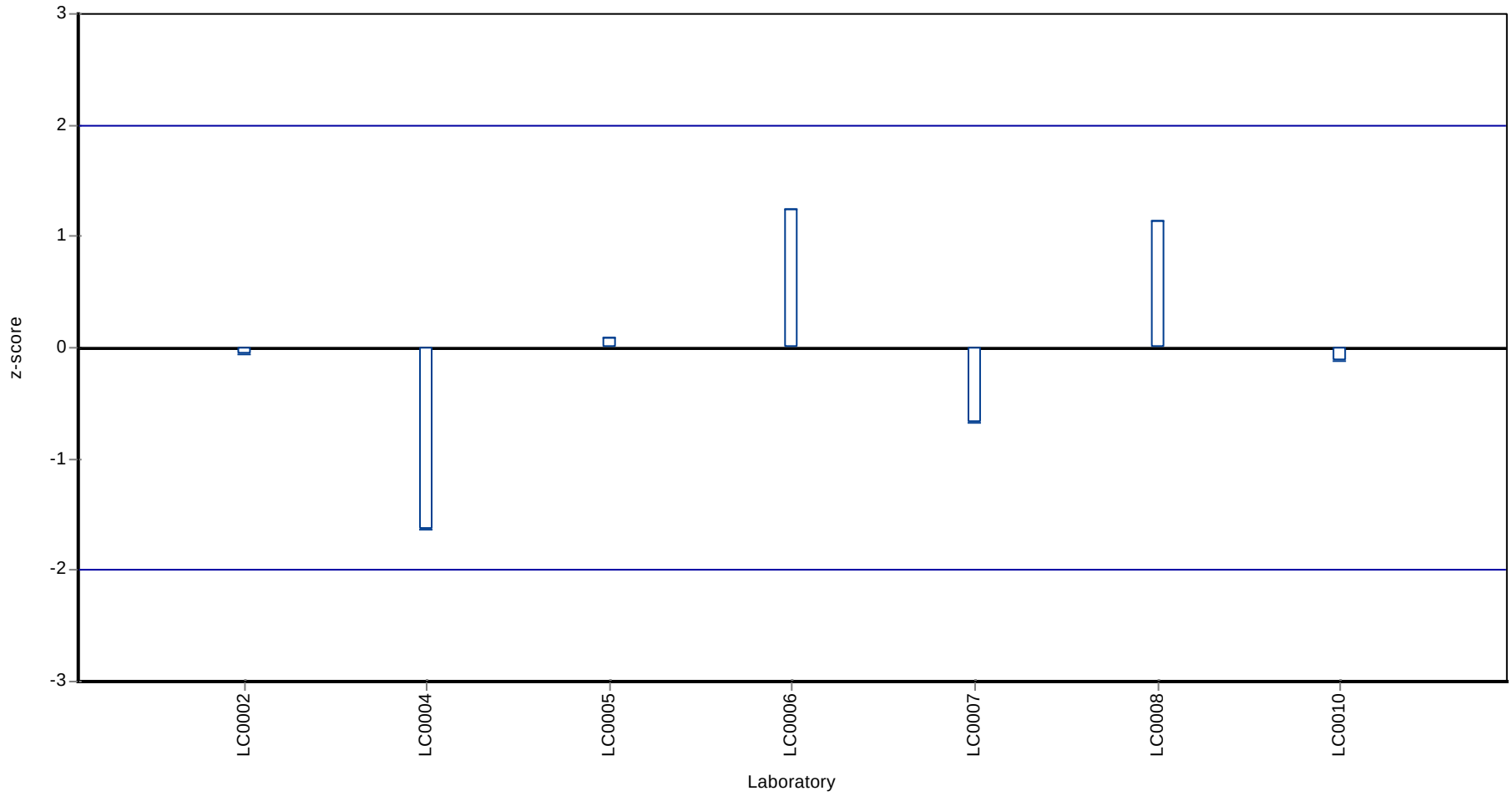
Results



Recovery rate



Z-score


3
2
1
0
-1
-2
-3
z-score
LC0002
LC0004
LC0005
LC0006
LC0007
LC0008
LC0010
Laboratory

Parameter oriented report

NP02 B

Bisphenol A

Unit	µg/l
Mean ± Cl (99%)	0.208 ± 0.0504
Minimum - Maximum	0.11 - 0.26
Check value ± U	0.19 ± 0.029

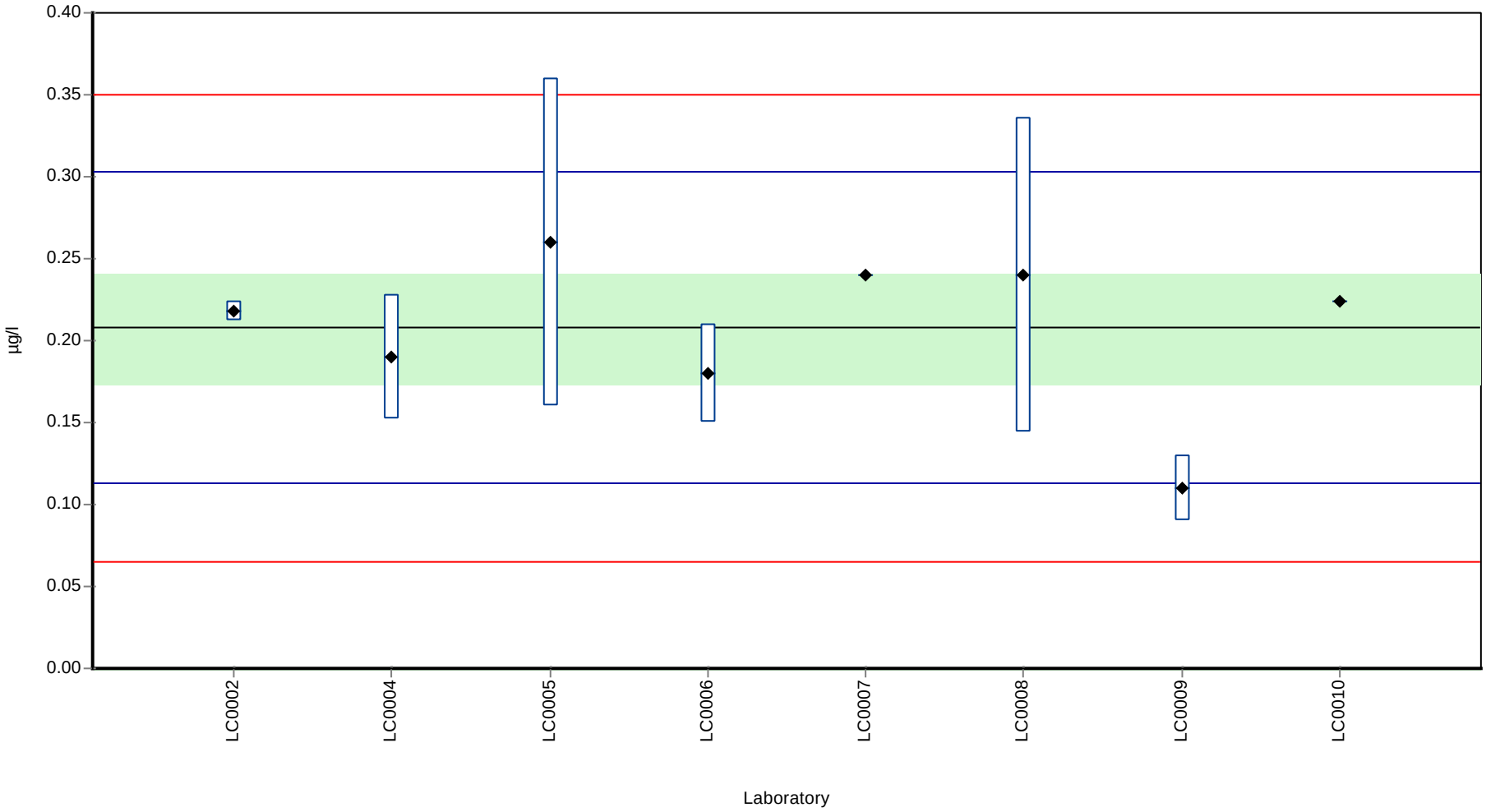
Labcode	Result	± U	Recovery [%]	z-score	Comments
LC0001	-	-	-	-	
LC0002	0.218	0.0056	104.9	0.2	
LC0003	-	-	-	-	
LC0004	0.190	0.038	91.5	-0.4	
LC0005	0.260	0.100	125.2	1.1	
LC0006	0.180	0.030	86.6	-0.6	
LC0007	0.240	-	115.5	0.7	
LC0008	0.240	0.096	115.5	0.7	
LC0009	0.110	0.020	52.9	-2.1	
LC0010	0.224	-	107.8	0.3	
LC0011	-	-	-	-	
LC0012	-	-	-	-	

Characteristics of parameter

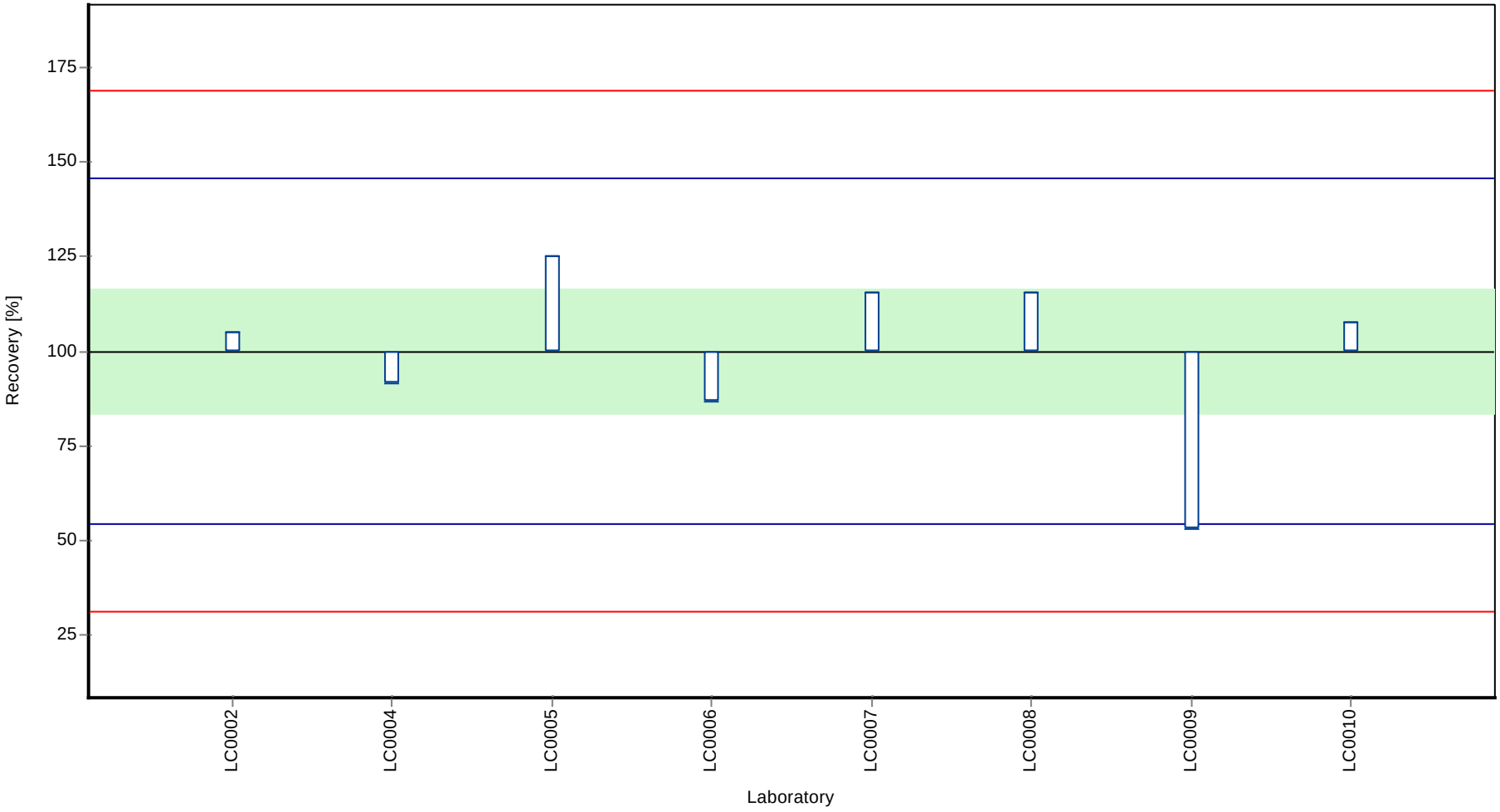
	all results	without outliners	Unit
Mean ± Cl (99%)	0.208 ± 0.0504	0.208 ± 0.0504	µg/l
Minimum	0.11	0.11	µg/l
Maximum	0.26	0.26	µg/l
Standard deviation	0.0475	0.0475	µg/l
rel. Standard deviation	22.9	22.9	%
n	8	8	-

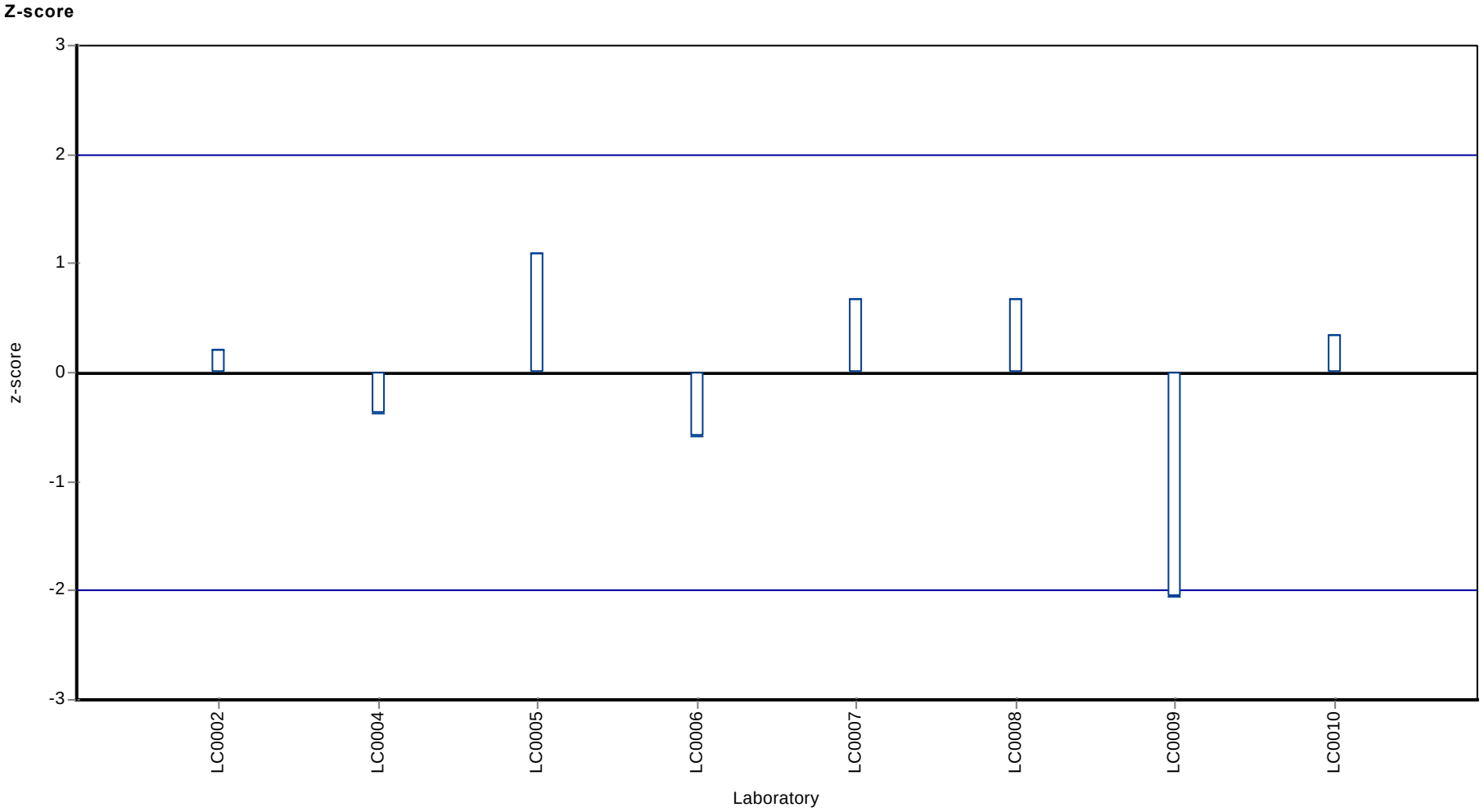
Graphical presentation of results

Results



Recovery rate




Z-score
3
2
1
0
-1
-2
-3
z-score
LC0002
LC0004
LC0005
LC0006
LC0007
LC0008
LC0009
LC0010
Laboratory

8 Laboratory oriented report

The laboratory oriented report is sorted by laboratory code.

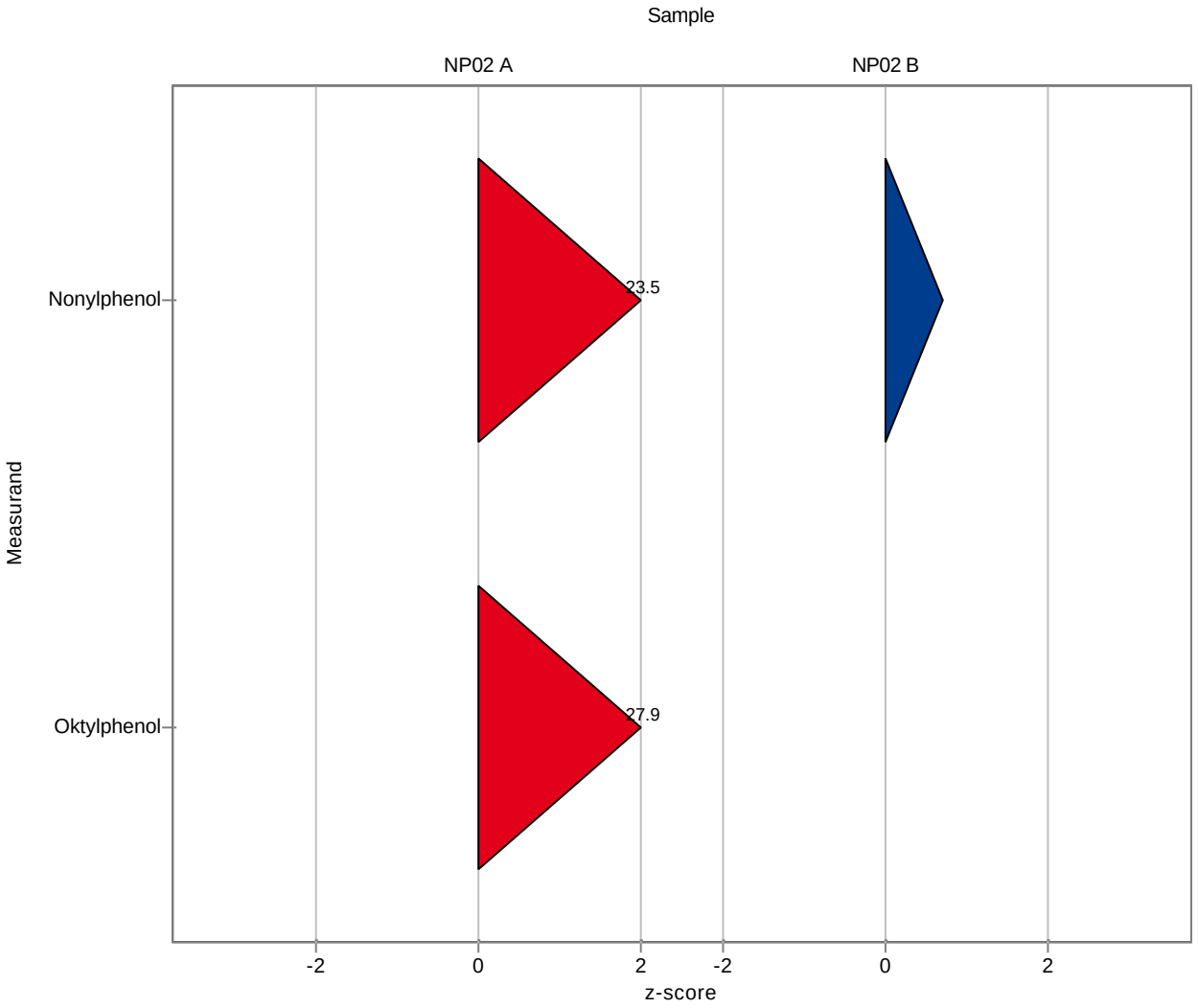
The following results were achieved:

Sample: NP02A

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	2.47	±	0.639	15.7	1.5	0.563	636.5	23.49
Oktylphenol	µg/l	2.02	±	0.243	8	0.8	0.214	395.8	27.90
Bisphenol A	µg/l	1.27	±	0.118	-	-	0.104	-	-

Sample: NP02B

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	0.352	±	0.131	0.44	0.04	0.124	125.0	0.71
Oktylphenol	µg/l	-	±	-	0.1	0.01	-	-	-
Bisphenol A	µg/l	0.208	±	0.0504	-	-	0.0475	-	-


Sample
NP02 A
NP02 B
Nonylphenol
Oktylphenol
23.5
27.9
Measurand
-2
0
2
-2
0
2
z-score

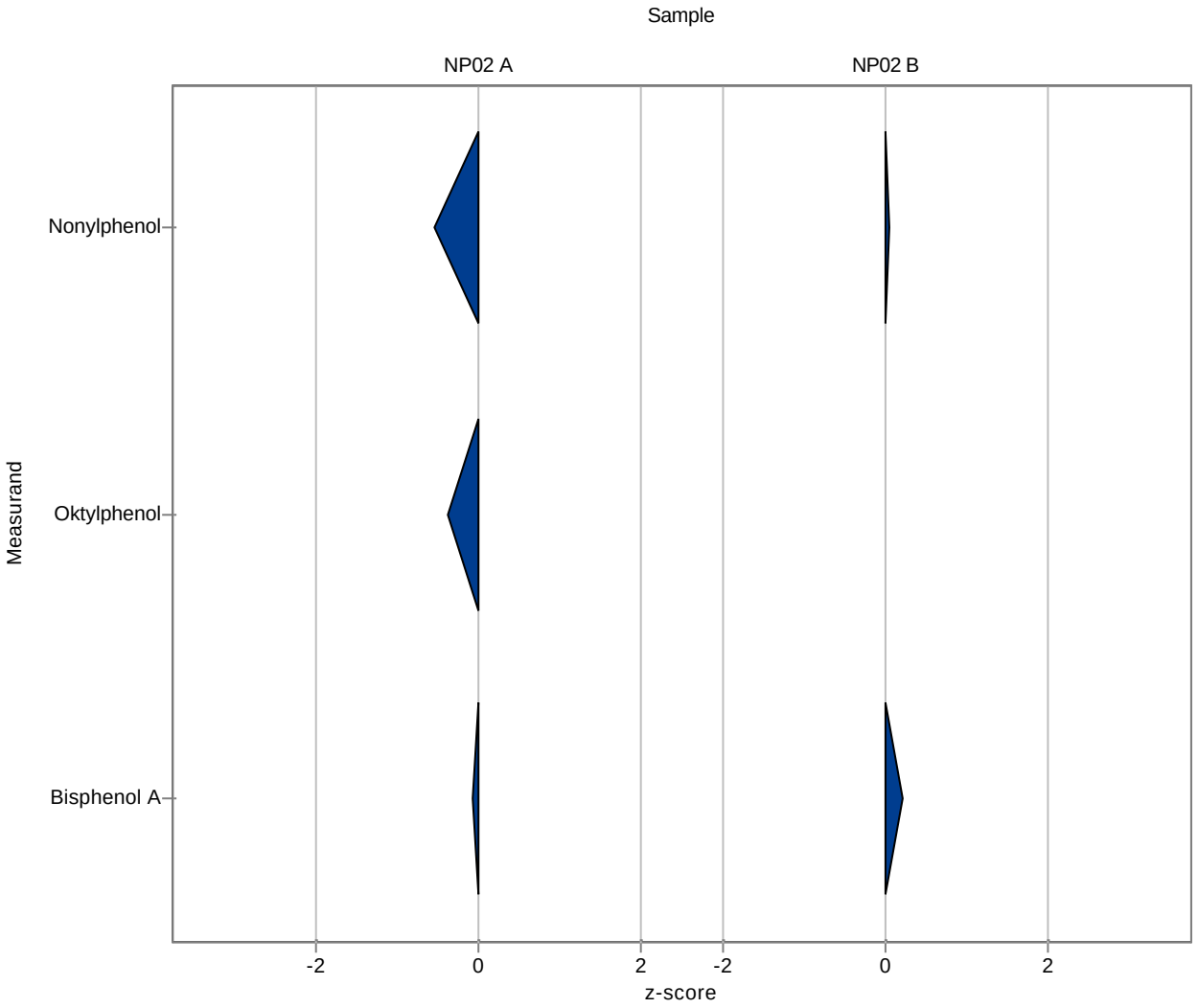
The following results were achieved:

Sample: NP02A

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	2.47	±	0.639	2.166	0.649	0.563	87.8	-0.53
Oktylphenol	µg/l	2.02	±	0.243	1.939	0.307	0.214	95.9	-0.38
Bisphenol A	µg/l	1.27	±	0.118	1.264	0.0071	0.104	99.5	-0.06

Sample: NP02B

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	0.352	±	0.131	0.357	0.0014	0.124	101.4	0.04
Oktylphenol	µg/l	-	±	-	<0.1 (LOQ)	-	-	-	-
Bisphenol A	µg/l	0.208	±	0.0504	0.218	0.0056	0.0475	104.9	0.22


Sample
NP02 A
NP02 B
Nonylphenol
Oktylphenol
Bisphenol A
Measurand
-2
0
2
-2
0
2
z-score

The following results were achieved:

Sample: NP02A

Parameter	Unit	Target	± CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	2.47	± 0.639	-	-	0.563	-	-
Oktylphenol	µg/l	2.02	± 0.243	-	-	0.214	-	-
Bisphenol A	µg/l	1.27	± 0.118	-	-	0.104	-	-

Sample: NP02B

Parameter	Unit	Target	± CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	0.352	± 0.131	-	-	0.124	-	-
Oktylphenol	µg/l	-	± -	-	-	-	-	-
Bisphenol A	µg/l	0.208	± 0.0504	-	-	0.0475	-	-

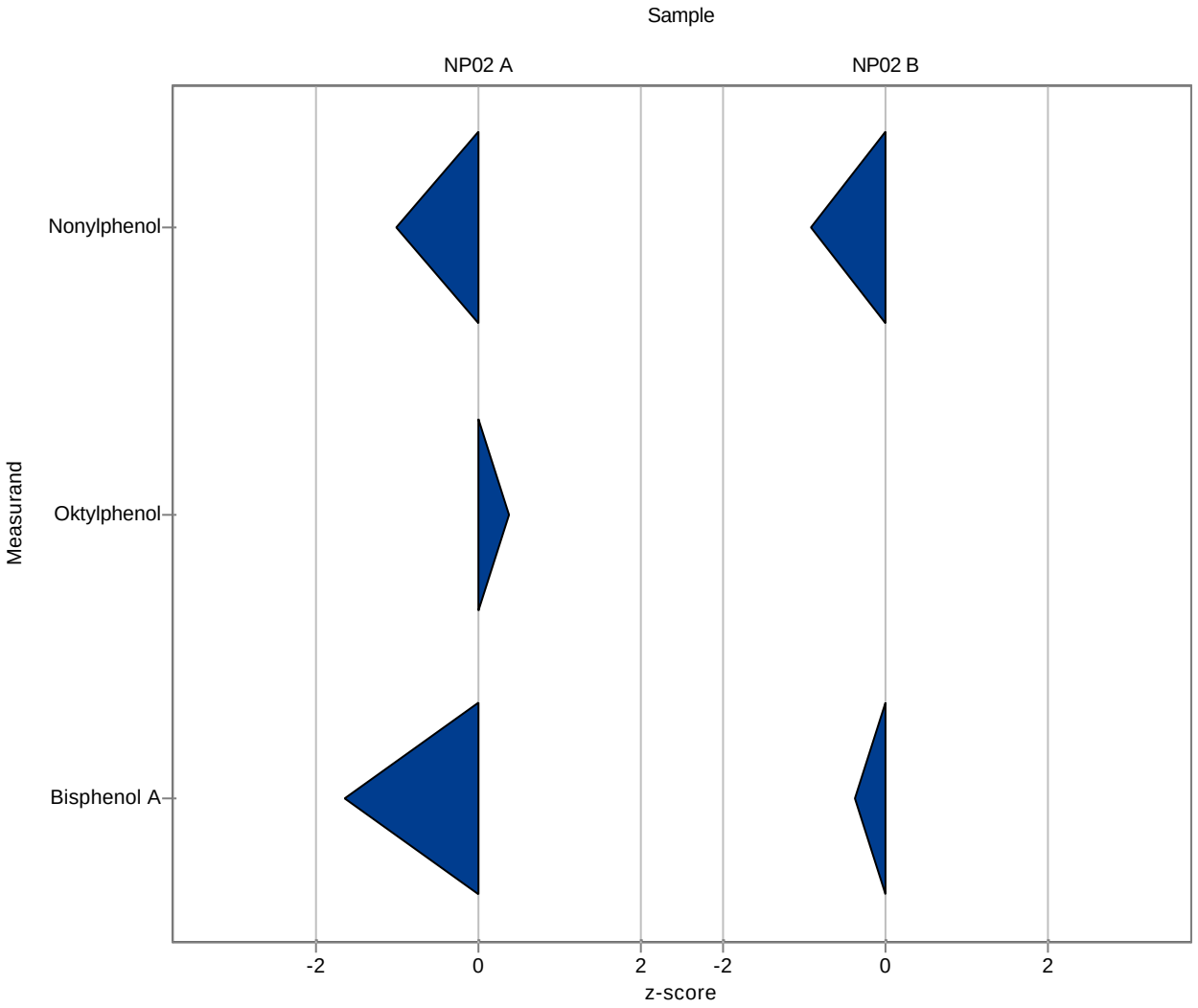
The following results were achieved:

Sample: NP02A

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	2.47	±	0.639	1.9	0.38	0.563	77.0	-1.01
Oktylphenol	µg/l	2.02	±	0.243	2.1	0.41	0.214	103.9	0.37
Bisphenol A	µg/l	1.27	±	0.118	1.1	0.21	0.104	86.6	-1.63

Sample: NP02B

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	0.352	±	0.131	0.24	0.048	0.124	68.2	-0.91
Oktylphenol	µg/l	-	±	-	<0.04 (LOD)	-	-	-	-
Bisphenol A	µg/l	0.208	±	0.0504	0.19	0.038	0.0475	91.5	-0.37


Sample
NP02 A
NP02 B
Measurand
Nonylphenol
Oktylphenol
Bisphenol A
-2
0
2
-2
0
2
z-score

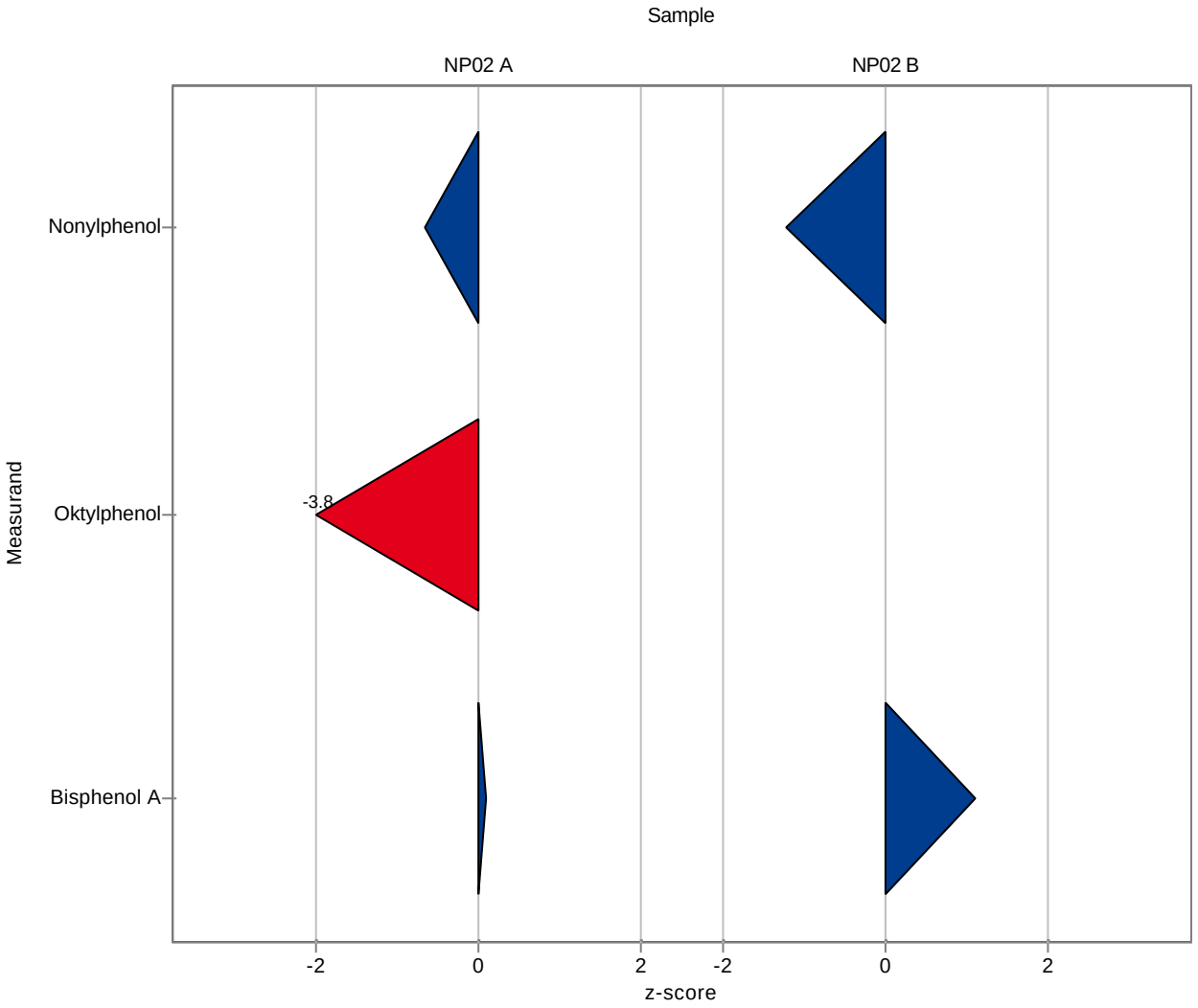
The following results were achieved:

Sample: NP02A

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	2.47	±	0.639	2.1	0.6	0.563	85.1	-0.65
Oktylphenol	µg/l	2.02	±	0.243	1.2	0.4	0.214	59.4	-3.83
Bisphenol A	µg/l	1.27	±	0.118	1.28	0.4	0.104	100.8	0.09

Sample: NP02B

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	0.352	±	0.131	0.2	0.06	0.124	56.8	-1.23
Oktylphenol	µg/l	-	±	-	<0.01 (LOQ)	-	-	-	-
Bisphenol A	µg/l	0.208	±	0.0504	0.26	0.1	0.0475	125.2	1.10


Sample
NP02 A
NP02 B
Nonylphenol
Oktylphenol
Bisphenol A
Measurand
-3.8
-2
0
2
-2
0
2
z-score

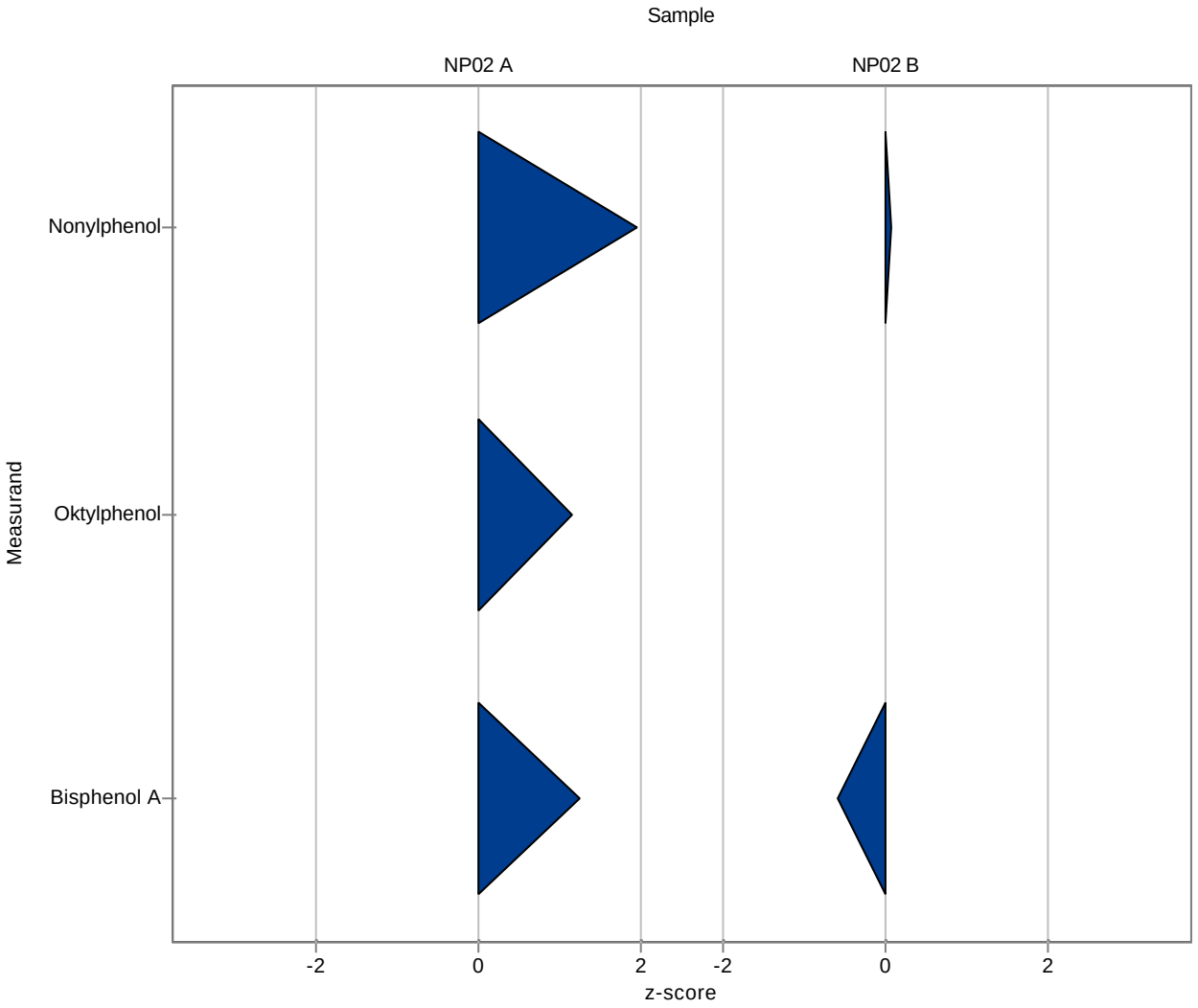
The following results were achieved:

Sample: NP02A

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	2.47	±	0.639	3.56	0.6	0.563	144.3	1.94
Oktylphenol	µg/l	2.02	±	0.243	2.27	0.4	0.214	112.3	1.16
Bisphenol A	µg/l	1.27	±	0.118	1.4	0.2	0.104	110.2	1.24

Sample: NP02B

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	0.352	±	0.131	0.36	0.08	0.124	102.2	0.06
Oktylphenol	µg/l	-	±	-	<0.02 (LOQ)	-	-	-	-
Bisphenol A	µg/l	0.208	±	0.0504	0.18	0.03	0.0475	86.6	-0.58


Sample
NP02 A
NP02 B
Nonylphenol
Oktylphenol
Bisphenol A
Measurand
-2
0
2
-2
0
2
z-score

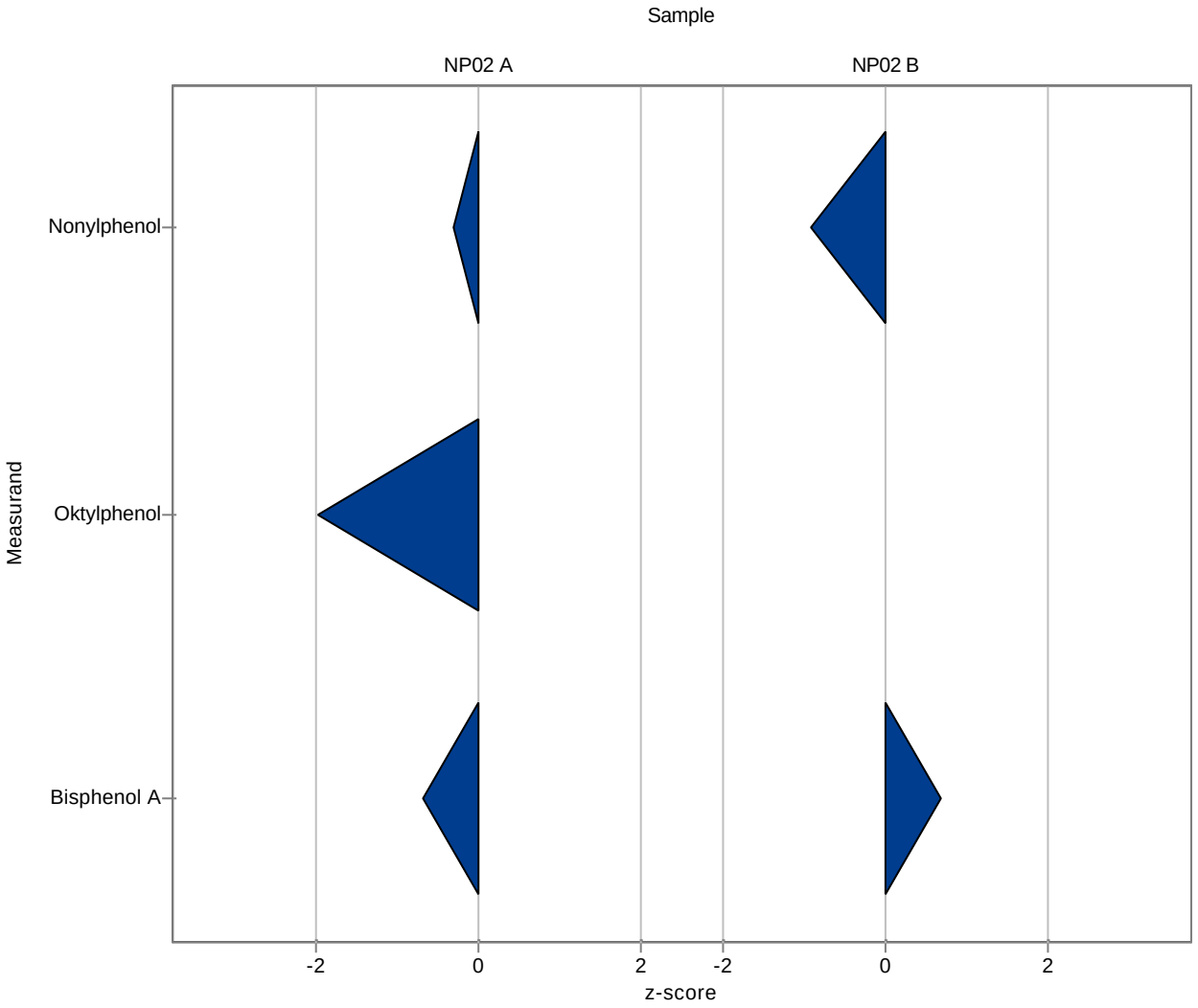
The following results were achieved:

Sample: NP02A

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	2.47	±	0.639	2.3	-	0.563	93.2	-0.30
Oktylphenol	µg/l	2.02	±	0.243	1.6	-	0.214	79.2	-1.97
Bisphenol A	µg/l	1.27	±	0.118	1.2	-	0.104	94.5	-0.67

Sample: NP02B

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	0.352	±	0.131	0.24	-	0.124	68.2	-0.91
Oktylphenol	µg/l	-	±	-	<0.01 (LOQ)	-	-	-	-
Bisphenol A	µg/l	0.208	±	0.0504	0.24	-	0.0475	115.5	0.68


Sample
NP02 A
NP02 B
Measurand
Nonylphenol
Oktylphenol
Bisphenol A
-2
0
2
-2
0
2
z-score

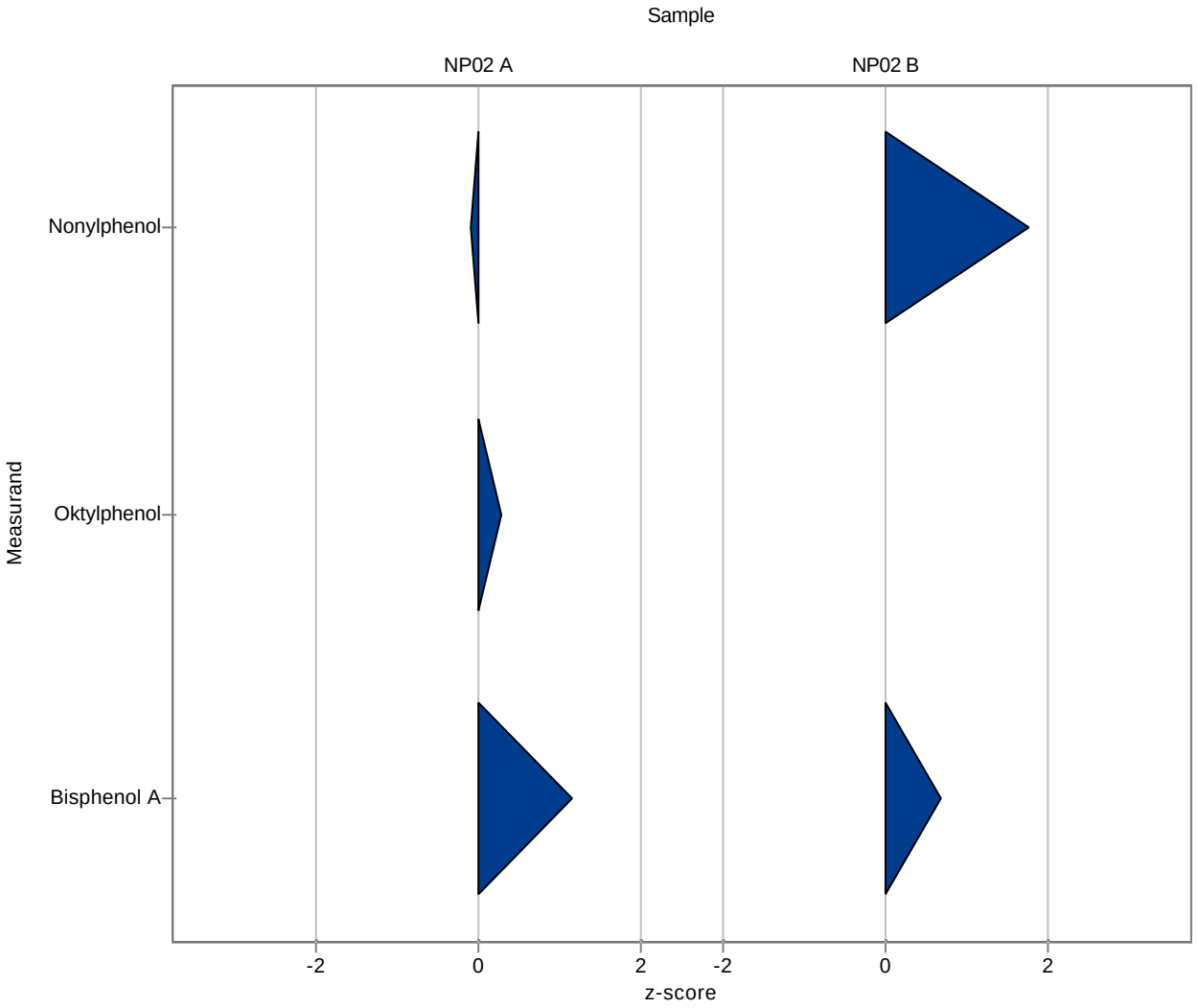
The following results were achieved:

Sample: NP02A

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	2.47	±	0.639	2.41	1.04	0.563	97.7	-0.10
Oktylphenol	µg/l	2.02	±	0.243	2.08	1.06	0.214	102.9	0.27
Bisphenol A	µg/l	1.27	±	0.118	1.39	0.56	0.104	109.4	1.15

Sample: NP02B

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	0.352	±	0.131	0.57	0.245	0.124	161.9	1.76
Oktylphenol	µg/l	-	±	-	0.103	0.053	-	-	-
Bisphenol A	µg/l	0.208	±	0.0504	0.24	0.096	0.0475	115.5	0.68


Sample
NP02 A
NP02 B
Nonylphenol
Oktylphenol
Bisphenol A
Measurand
-2
0
2
-2
0
2
z-score

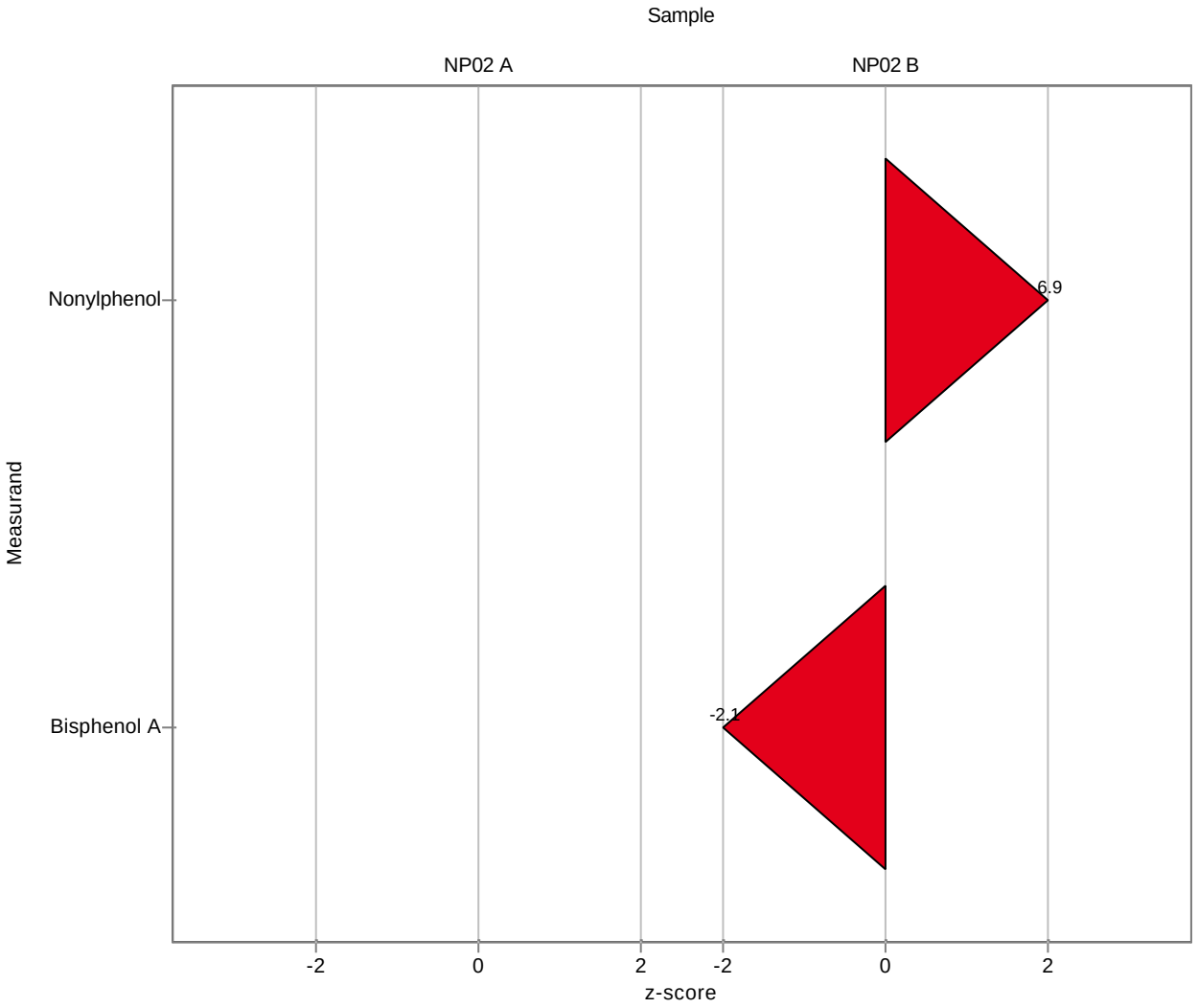
The following results were achieved:

Sample: NP02A

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	2.47	±	0.639	-	-	0.563	-	-
Oktylphenol	µg/l	2.02	±	0.243	-	-	0.214	-	-
Bisphenol A	µg/l	1.27	±	0.118	<0.05 (LOQ)	-	0.104	-	-

Sample: NP02B

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	0.352	±	0.131	1.2	0.23	0.124	340.8	6.86
Oktylphenol	µg/l	-	±	-	<0.05 (LOQ)	-	-	-	-
Bisphenol A	µg/l	0.208	±	0.0504	0.11	0.02	0.0475	52.9	-2.06


Sample
NP02 A
NP02 B
Measurand
Nonylphenol
Bisphenol A
6.9
-2.1
-2
0
2
-2
0
2
z-score

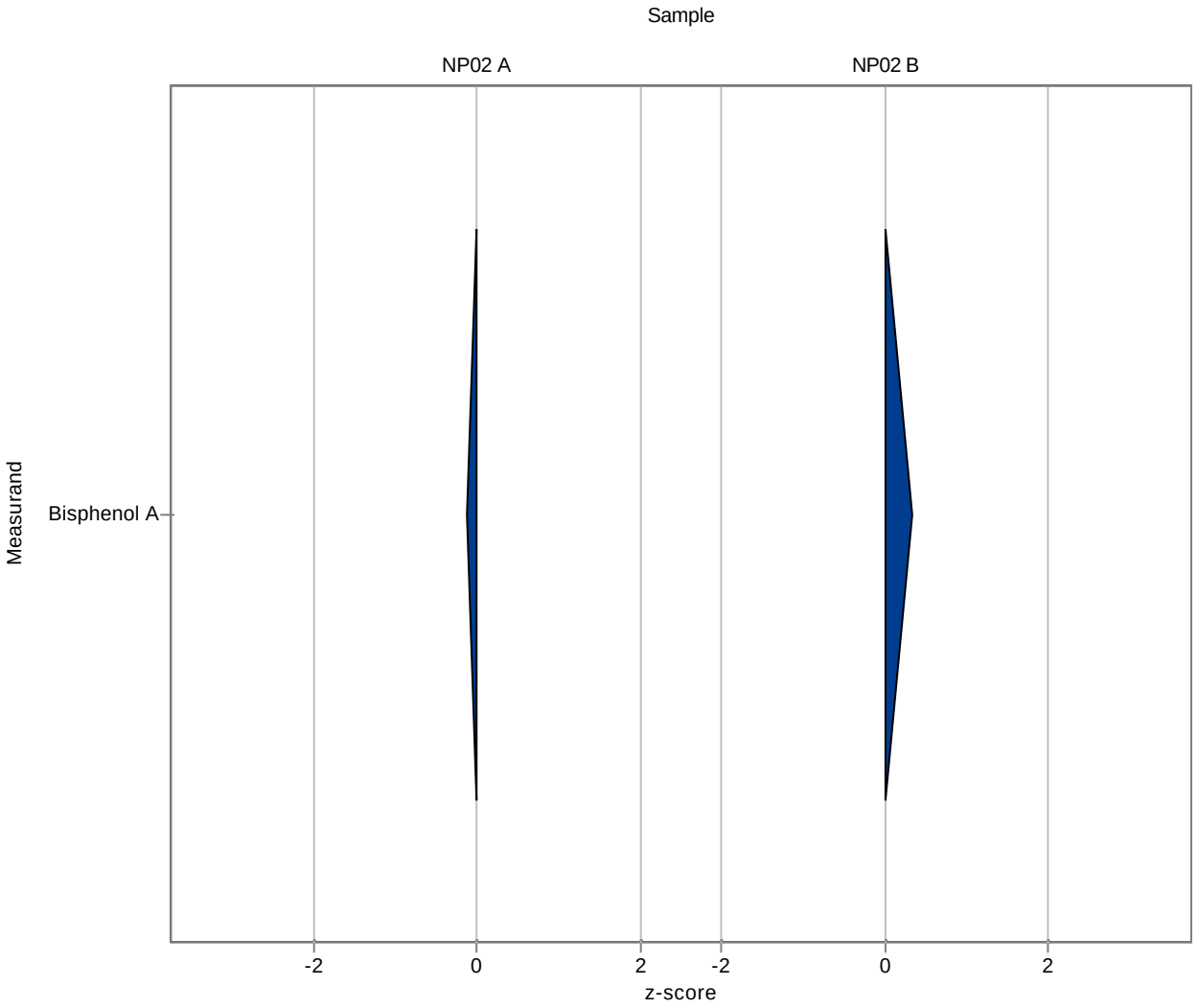
The following results were achieved:

Sample: NP02A

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	2.47	±	0.639	-	-	0.563	-	-
Oktylphenol	µg/l	2.02	±	0.243	-	-	0.214	-	-
Bisphenol A	µg/l	1.27	±	0.118	1.258	-	0.104	99.0	-0.12

Sample: NP02B

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	0.352	±	0.131	-	-	0.124	-	-
Oktylphenol	µg/l	-	±	-	-	-	-	-	-
Bisphenol A	µg/l	0.208	±	0.0504	0.224	-	0.0475	107.8	0.34


Sample
NP02 A
NP02 B
Measurand
Bisphenol A
-2
0
2
-2
0
2
z-score

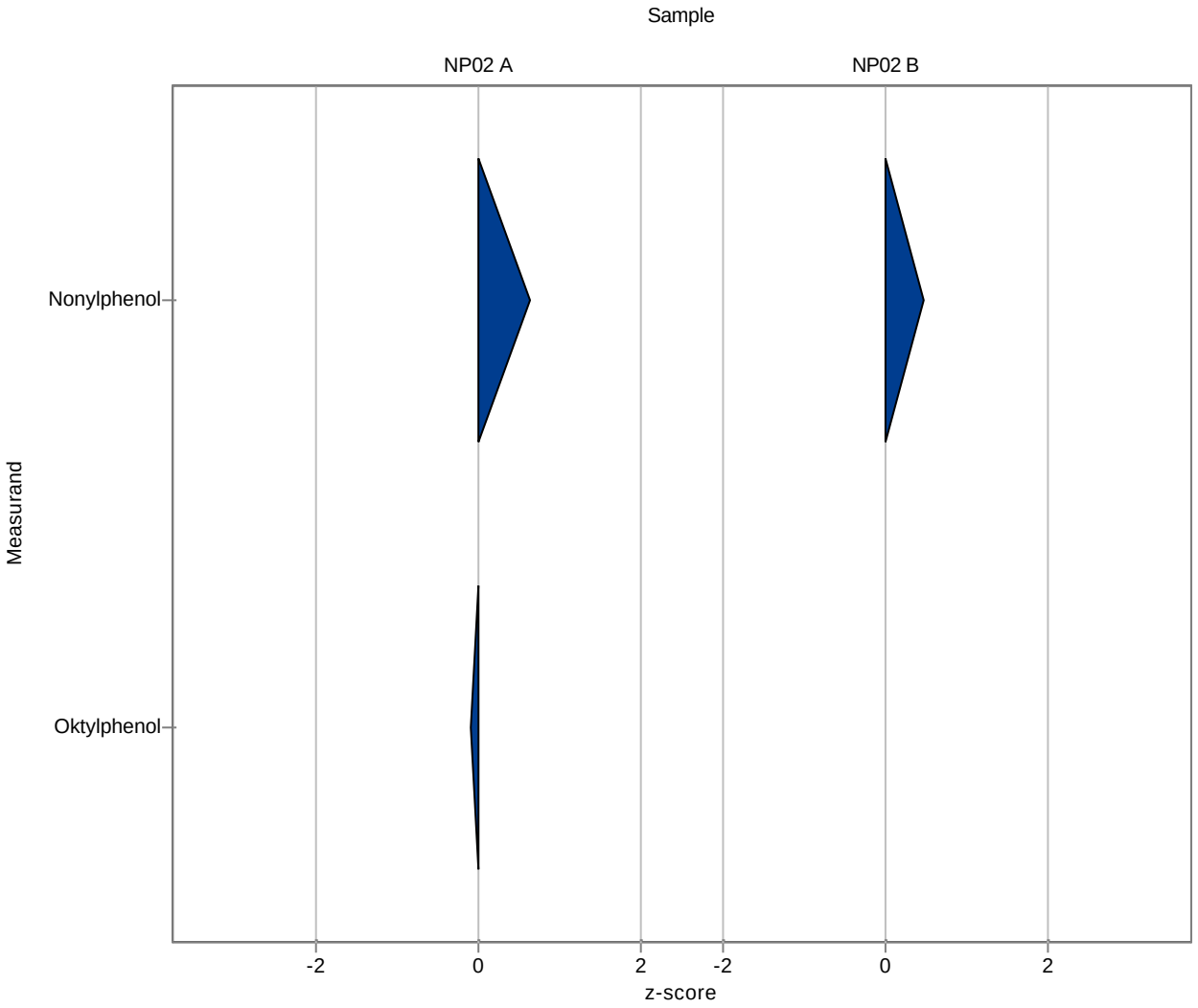
The following results were achieved:

Sample: NP02A

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	2.47	±	0.639	2.83	1.4	0.563	114.7	0.65
Oktylphenol	µg/l	2.02	±	0.243	2	0.6	0.214	98.9	-0.10
Bisphenol A	µg/l	1.27	±	0.118	-	-	0.104	-	-

Sample: NP02B

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	0.352	±	0.131	0.41	0.2	0.124	116.4	0.47
Oktylphenol	µg/l	-	±	-	<0.1 (LOQ)	-	-	-	-
Bisphenol A	µg/l	0.208	±	0.0504	-	-	0.0475	-	-


Sample
NP02 A
NP02 B
Measurand
Nonylphenol
Oktylphenol
-2
0
2
-2
0
2
z-score

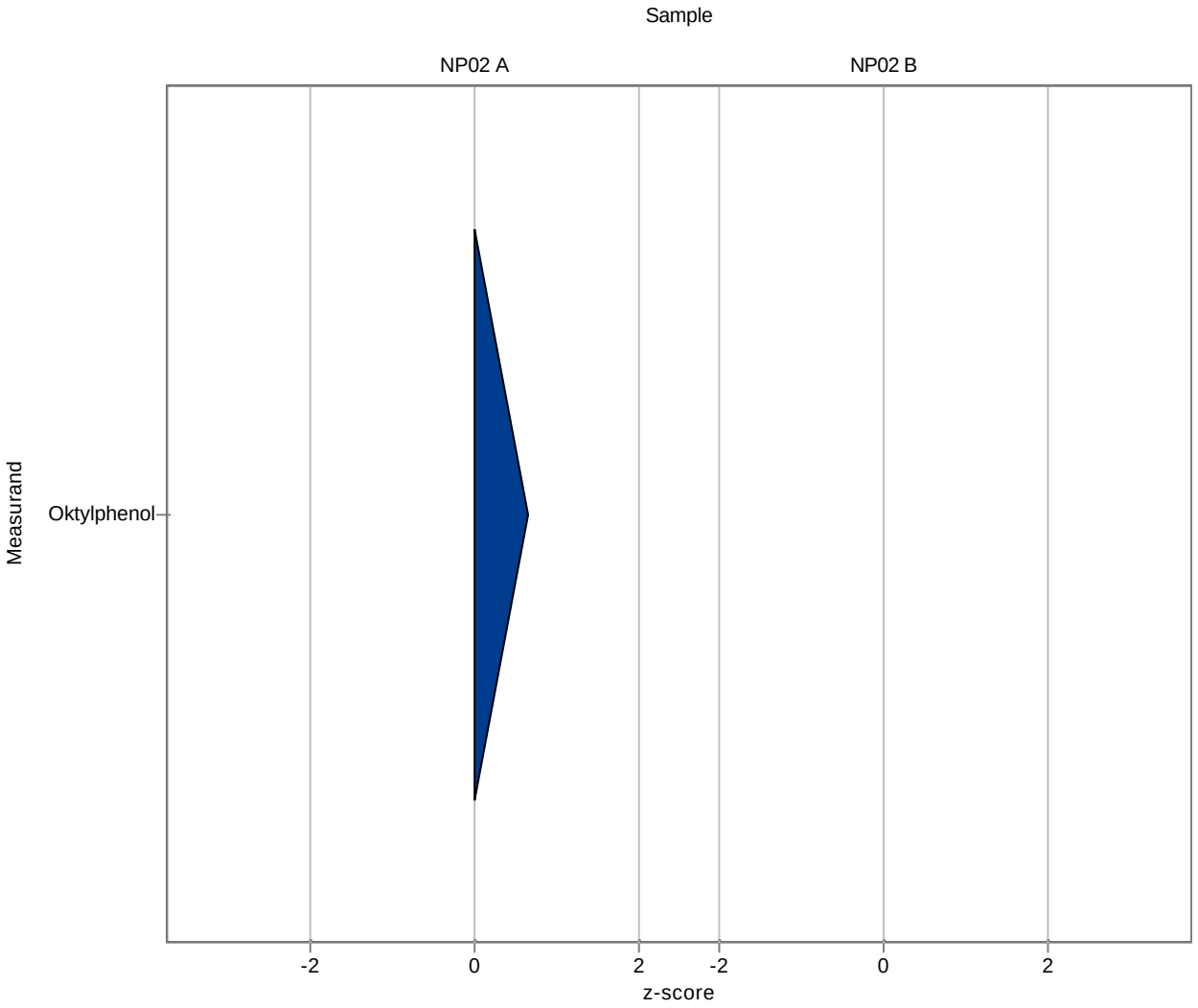
The following results were achieved:

Sample: NP02A

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	2.47	±	0.639	<0.02 (LOQ)	-	0.563	-	-
Oktylphenol	µg/l	2.02	±	0.243	2.16	0.43	0.214	106.9	0.65
Bisphenol A	µg/l	1.27	±	0.118	-	-	0.104	-	-

Sample: NP02B

Parameter	Unit	Target	±	CI(99%)	Result	± U	Criteria	Recovery	z-score
Nonylphenol	µg/l	0.352	±	0.131	<0.02 (LOQ)	-	0.124	-	-
Oktylphenol	µg/l	-	±	-	0.018	0.004	-	-	-
Bisphenol A	µg/l	0.208	±	0.0504	-	-	0.0475	-	-


Sample
NP02 A
NP02 B
Measurand
Oktylphenol
-2
0
2
-2
0
2
z-score