

Round-robin tests for in-house measuring laboratories

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Results and Evaluation

Round-robin test
Organic substances with thermodesorption (VOC)
28-29 April 2016

Summary of laboratory means

Sample 1

	n-Butyl acetate	Z score	n-Heptane	Z score	Toluene	Z score	n-Octane	Z score	p-Xylene	Z score
Unit	µg/m³		µg/m³		µg/m³		µg/m³		µg/m³	
24	119,02	1,03	102,16	3,47 E	102,22	2,72 E	131,74	1,92	97,40	1,55
33	125,20	1,61	66,35	-1,25	61,70	-2,32 E	103,60	-0,63	93,15	1,05
51	95,18	-1,18	71,68	-0,55	83,09	0,34	97,74	-1,16	81,73	-0,31
61	96,72	-1,03	73,71	-0,28	74,85	-0,69	99,27	-1,02	81,39	-0,35
75	107,50	-0,04	120,00	5,82 BE	75,00	-0,67	147,50	3,34 E	71,00	-1,58
84	106,00	-0,17	74,30	-0,20	88,00	0,95	106,00	-0,41	81,70	-0,31
97	111,50	0,34	78,00	0,28	87,50	0,89	105,50	-0,46	90,50	0,73
232	101,91	-0,55	83,32	0,99	85,41	0,63	100,00	-0,95	74,17	-1,20
265	113,00	0,47	76,00	0,02	100,00	2,44 E	108,00	-0,23	93,00	1,03
283	94,85	-1,21	63,60	-1,61	62,85	-2,18 E	86,90	-2,14 E	77,25	-0,84
284	114,72	0,63	84,79	1,18	89,78	1,17	129,68	1,73	89,78	0,65
504	105,71	-0,20	73,09	-0,36	84,47	0,51	101,33	-0,83	83,37	-0,11
-	-	--	-	--	-	--	-	--	-	--
Method	ISO 5725-2		ISO 5725-2		ISO 5725-2		ISO 5725-2		ISO 5725-2	
Assessment	Z <=2,00		Z <=2,00		Z <=2,00		Z <=2,00		Z <=2,00	
No. of laboratories that submitted results	12		12		12		12		12	
Mean	107,88		75,84		80,36		110,54		84,30	
Reproducibility s.d.	10,19		10,00		12,89		19,01		8,40	
Rel. reproducibility s.d.	9,44 %		13,19 %		16,04 %		17,19 %		9,97 %	
Reference value	94,10		72,10		83,80		103,00		85,90	
Target s.d.	10,79		7,58		8,04		11,05		8,43	
Rel. SDPA	10,00 %		10,00 %		10,00 %		10,00 %		10,00 %	
Lower limit of tolerance	86,30		60,67		64,29		88,43		67,44	
Upper limit of tolerance	129,45		91,01		96,44		132,65		101,17	
Type B outliers			1							
No. of laboratories after elimination of outliers type A-D and F (without)	12		11		12		12		12	

	n-Butyl acetate	Z score	n-Heptane	Z score	Toluene	Z score	n-Octane	Z score	p-Xylene	Z score
laboratories that only gave states but no measured values)										
Explanation of outlier types										
A: Single outlier	Grubbs									
B: Differing laboratory mean	Grubbs									
C: Excessive laboratory s.d.	Cochran									
D: Excluded manually										
E: mean outside tolerance limits										
F: Z-Score >3,5										
L: Differing laboratory mean (Grubbs II)	Grubbs für 2									
	Ethylbenzene	Z score	1,2,4-Trimethylbenzene	Z score	4-Methyl-2-Pentanone	Z score	Cumene	Z score		
Unit	µg/m³		µg/m³		µg/m³		µg/m³			
24	61,98	0,91	60,12	-0,15	105,42	1,76	63,25	0,27		
33	61,20	0,77	68,90	1,29	105,80	1,80	66,00	0,72		
51	54,10	-0,48	56,48	-0,74	83,40	-0,70	54,98	-1,07		
61	51,53	-0,93	51,59	-1,54	86,06	-0,40	55,45	-1,00		
75	48,00	-1,55	62,00	0,16	69,00	-2,30 E				
84	64,30	1,32	62,70	0,28	89,70	0,01	66,00	0,72		
97	58,50	0,30	64,00	0,49	90,50	0,09	62,00	0,07		
232	59,63	0,50	61,13	0,02	81,86	-0,87	62,76	0,19		
265	59,00	0,39	62,00	0,16	90,00	0,04	60,00	-0,26		
283	50,60	-1,09	52,90	-1,33	79,85	-1,09	56,50	-0,83		
284	59,85	0,54	64,84	0,63	112,22	2,52 E	64,84	0,53		
504	64,03	1,27	67,22	1,02	76,49	-1,47	68,91	1,19		
-	-	--	-	--	-	--	-	--		
Method	ISO 5725-2		ISO 5725-2		ISO 5725-2		ISO 5725-2			
Assessment	Z <=2,00		Z <=2,00		Z <=2,00		Z <=2,00			
No. of laboratories that submitted results	12		12		12		11			
Mean	56,80		61,01		89,65		61,59			

	Ethylbenzene	Z score	1,2,4-Trimethylbenzene	Z score	4-Methyl-2-Pentanone	Z score	Cumene	Z score
Reproducibility s.d.	5,64		5,87		13,96		4,73	
Rel. reproducibility s.d.	9,93 %		9,61 %		15,57 %		7,68 %	
Reference value	56,50		54,40		83,60		53,70	
Target s.d.	5,68		6,10		8,97		6,16	
Rel. SDPA	10,00 %		10,00 %		10,00 %		10,00 %	
Lower limit of tolerance	45,44		48,81		71,72		49,27	
Upper limit of tolerance	68,16		73,21		107,58		73,91	
No. of laboratories after elimination of outliers type A-D and F (without laboratories that only gave states but no measured values)	12		12		12		11	

Summary of laboratory means

Sample 2

	n-Butyl acetate	Z score	n-Heptane	Z score	Toluene	Z score	n-Octane	Z score
Unit	µg/m ³		µg/m ³		µg/m ³		µg/m ³	
24	128,71	0,42	114,45	2,31 BE	62,36	-0,02	101,05	1,00
33	124,20	0,06	90,20	-0,30	49,05	-2,15 E	67,40	-2,66 E
51	113,82	-0,78	90,97	-0,21	61,52	-0,15	89,59	-0,25
61	117,08	-0,52	92,19	-0,08	62,81	0,05	94,87	0,32
75	118,50	-0,40 C	146,50	5,76 BE	55,00	-1,20	121,00	3,17 CE
84	137,00	1,09	92,00	-0,10	77,70	2,44 E	97,70	0,63
97	118,50	-0,40	92,00	-0,10	64,00	0,24	92,50	0,07
232	113,60	-0,80	94,94	0,21	61,28	-0,19	83,83	-0,88
265	137,00	1,09	94,00	0,11	72,00	1,53	96,00	0,45
283	113,70	-0,79	85,60	-0,79	63,45	0,16	83,75	-0,89
284	137,26	1,12	102,32	1,01	67,38	0,79	114,80	2,49 E
504	124,18	0,06	97,90	0,53	66,23	0,60	95,40	0,38
-	-	--	-	--	-	--	-	--
Method	ISO 5725-2		ISO 5725-2		ISO 5725-2		ISO 5725-2	
Assessment	Z ≤2,00		Z ≤2,00		Z ≤2,00		Z ≤2,00	
No. of laboratories that submitted results	12		12		12		12	
Mean	123,49		92,96		62,47		91,89	
Reproducibility s.d.	9,54		5,28		7,44		13,54	
Rel. reproducibility s.d.	7,72 %		5,68 %		11,91 %		14,74 %	
Reference value	111,30		89,10		60,20		90,80	
Target s.d.	12,35		9,30		6,25		9,19	
Rel. SDPA	10,00 %		10,00 %		10,00 %		10,00 %	
Lower limit of tolerance	98,79		74,37		49,98		73,51	
Upper limit of tolerance	148,18		111,56		74,96		110,27	
Type B outliers			2					
Type C outliers	1						1	
No. of laboratories after elimination of	11		10		12		11	

	n-Butyl acetate	Z score	n-Heptane	Z score	Toluene	Z score	n-Octane	Z score
outliers type A-D and F (w without laboratories that only gave states but no measured values)								
Explanation of outlier types								
A: Single outlier	Grubbs							
B: Differing laboratory mean	Grubbs							
C: Excessive laboratory s.d.	Cochran							
D: Excluded manually								
E: mean outside tolerance limits								
F: Z-Score >3,5								
L: Differing laboratory mean (Grubbs II)	Grubbs für 2							

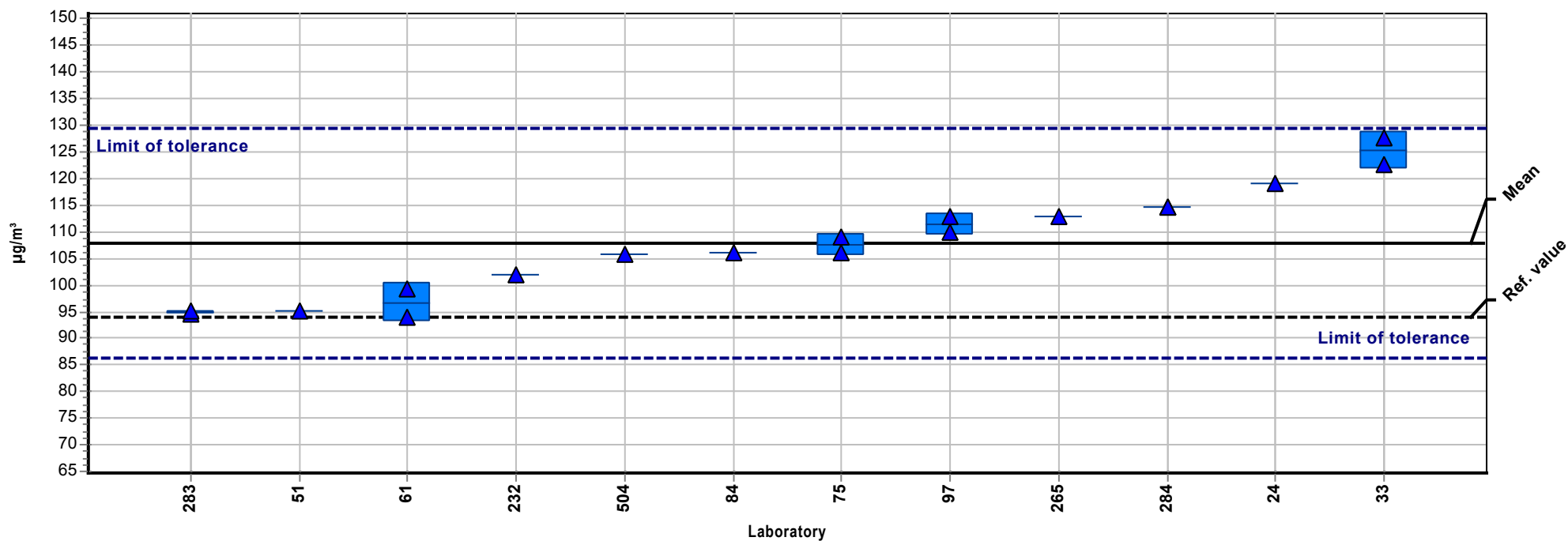
	p-Xylene	Z score	Ethylbenzene	Z score	1,2,4-Trimethylbenzene	Z score	4-Methyl-2-Pentanone	Z score
Unit	µg/m³		µg/m³		µg/m³		µg/m³	
24	121,03	0,78	88,63	0,20	55,04	-1,14	116,84	0,85
33	109,35	-0,26	82,85	-0,47	62,45	0,06	105,95	-0,16
51	112,47	0,02	85,66	-0,14	59,32	-0,45	103,46	-0,39
61	116,36	0,36	88,63	0,20	58,30	-0,61	106,49	-0,11
75	95,00	-1,54	76,00	-1,25	61,50	-0,10	85,00	-2,10 E
84	110,00	-0,20	97,30	1,20	73,70	1,87	110,00	0,22
97	124,00	1,04	91,50	0,53	62,00	-0,02	111,00	0,31
232	95,01	-1,54	79,44	-0,86	60,68	-0,23	95,00	-1,18
265	127,00	1,31	92,00	0,59	64,00	0,30	113,00	0,50
283	104,50	-0,69	79,00	-0,91	54,20	-1,27	106,75	-0,08
284	122,28	0,89	97,33	1,20	67,38	0,85	134,76	2,52 E
504	112,49	0,02	90,51	0,42	73,53	1,84	99,50	-0,76
-	-	--	-	--	-	--	-	--
Method	ISO 5725-2		ISO 5725-2		ISO 5725-2		ISO 5725-2	
Assessment	Z <=2,00		Z <=2,00		Z <=2,00		Z <=2,00	
No. of laboratories that submitted results	12		12		12		12	
Mean	112,28		86,90		62,11		107,65	

	p-Xylene	Z score	Ethylbenzene	Z score	1,2,4-Trimethylbenzene	Z score	4-Methyl-2-Pentanone	Z score
Reproducibility s.d.	10,83		7,50		6,05		13,39	
Rel. reproducibility s.d.	9,65 %		8,63 %		9,74 %		12,44 %	
Reference value	118,90		88,50		55,60		101,40	
Target s.d.	11,23		8,69		6,21		10,77	
Rel. SDPA	10,00 %		10,00 %		10,00 %		10,00 %	
Lower limit of tolerance	89,82		69,52		49,69		86,12	
Upper limit of tolerance	134,73		104,28		74,53		129,18	
No. of laboratories after elimination of outliers type A-D and F (without laboratories that only gave states but no measured values)	12		12		12		12	
Cumene Z score								
Unit	µg/m ³							
24	99,35	-0,16						
33	101,10	0,01						
51	95,40	-0,55						
61	100,39	-0,06						
84	100,00	-0,10						
97	102,00	0,10						
232	90,92	-1,00						
265	103,00	0,20						
283	94,65	-0,63						
284	112,31	1,12						
504	106,09	0,51						
-	-	--						
Method	ISO 5725-2							
Assessment	Z ≤2,00							
No. of laboratories that submitted results	11							
Mean	100,98							
Reproducibility s.d.	6,35							
Rel. reproducibility s.d.	6,29 %							

	Cumene	Z score
Reference value	92,90	
Target s.d.	10,10	
Rel. SDPA	10,00 %	
Lower limit of tolerance	80,78	
Upper limit of tolerance	121,17	
No. of laboratories after elimination of outliers type A-D and F (without laboratories that only gave states but no measured values)	11	

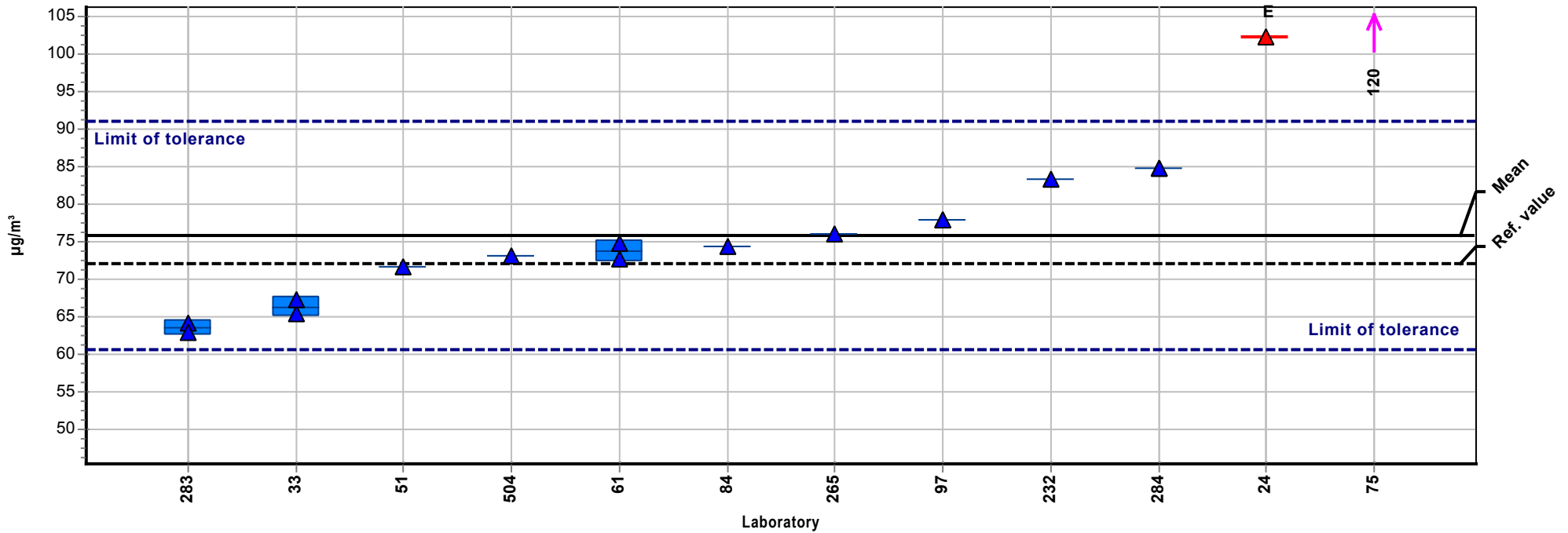
Summary results

Measurand:	n-Butyl acetate	Mean:	107,88 µg/m ³
Sample:	1	Reprod. s.d.:	10,19 µg/m ³
Method:	ISO 5725-2	Rel. reprod. s.d.:	9,44%
Rel. target s.d.:	10,00% (Limited)	Reference value:	94,10 µg/m ³
No. of laboratories:	12	Range of tolerance:	86,30 - 129,45 µg/m ³ (Z-Score <= 2,00)



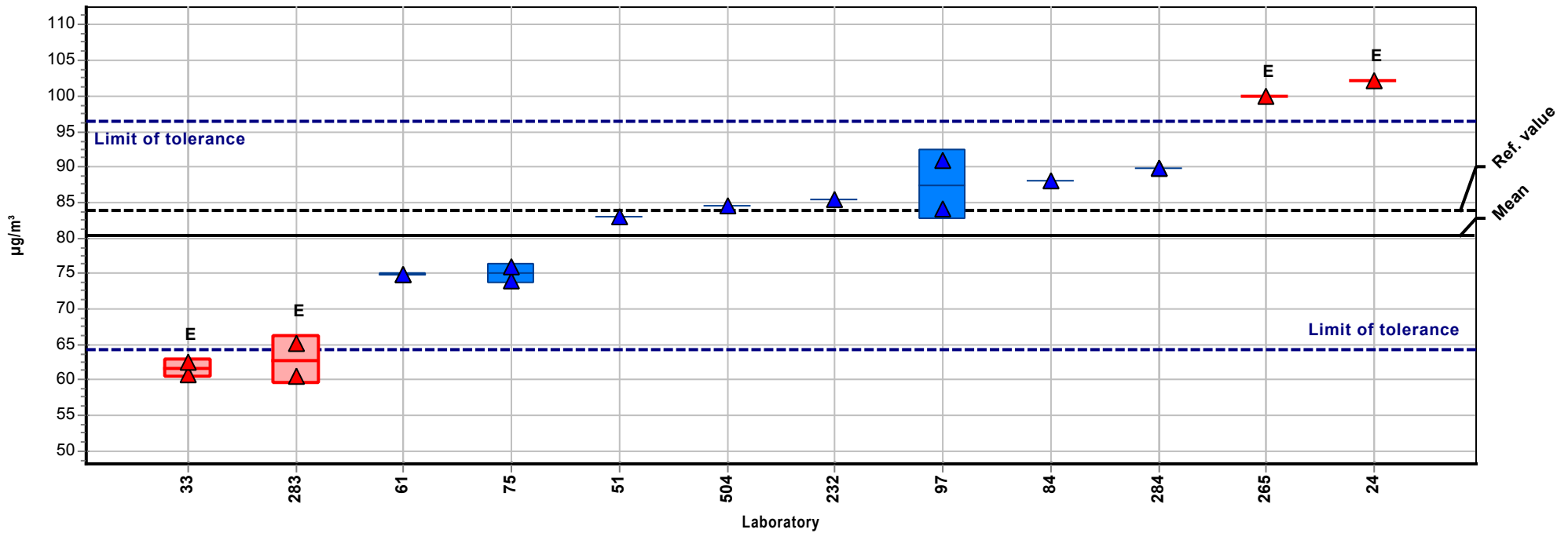
Summary results

Measurand:	n-Heptane	Mean:	75,84 µg/m³
Sample:	1	Reprod. s.d.:	10,00 µg/m³
Method:	ISO 5725-2	Rel. reprod. s.d.:	13,19%
Rel. target s.d.:	10,00% (Limited)	Reference value:	72,10 µg/m³
No. of laboratories:	11	Range of tolerance:	60,67 - 91,01 µg/m³ (Z-Score ≤ 2,00)



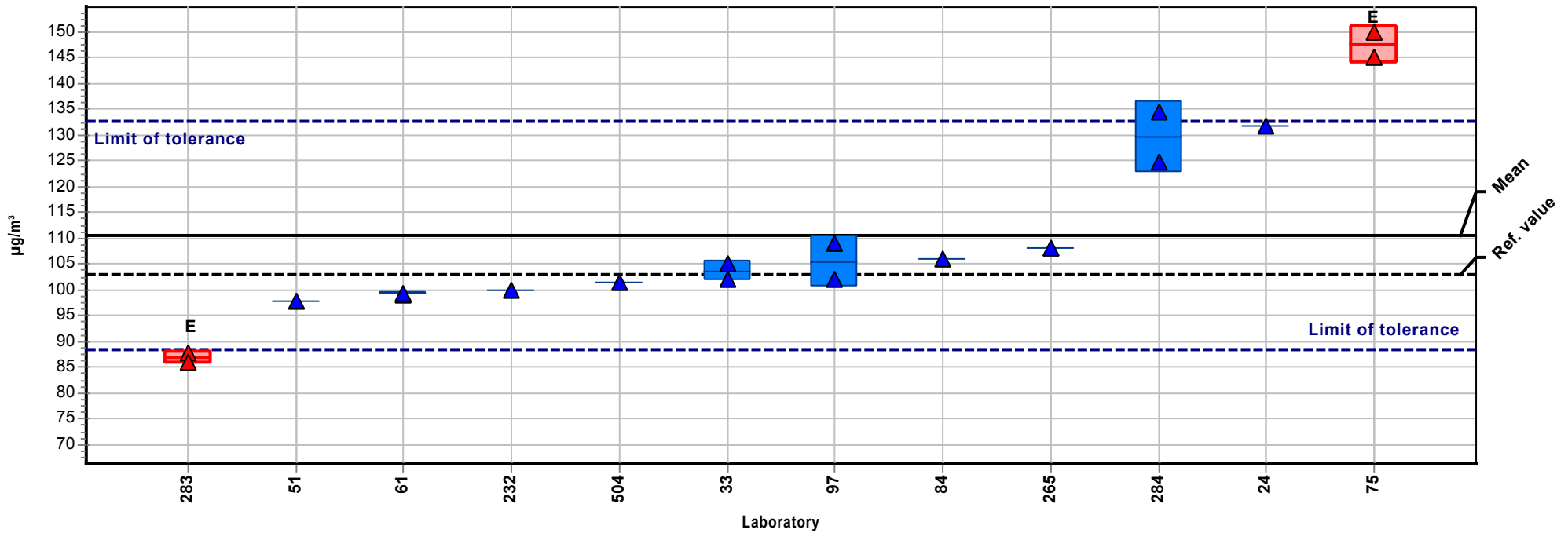
Summary results

Measurand:	Toluene	Mean:	80,36 µg/m³
Sample:	1	Reprod. s.d.:	12,89 µg/m³
Method:	ISO 5725-2	Rel. reprod. s.d.:	16,04%
Rel. target s.d.:	10,00% (Limited)	Reference value:	83,80 µg/m³
No. of laboratories:	12	Range of tolerance:	64,29 - 96,44 µg/m³ (Z-Score ≤ 2,00)



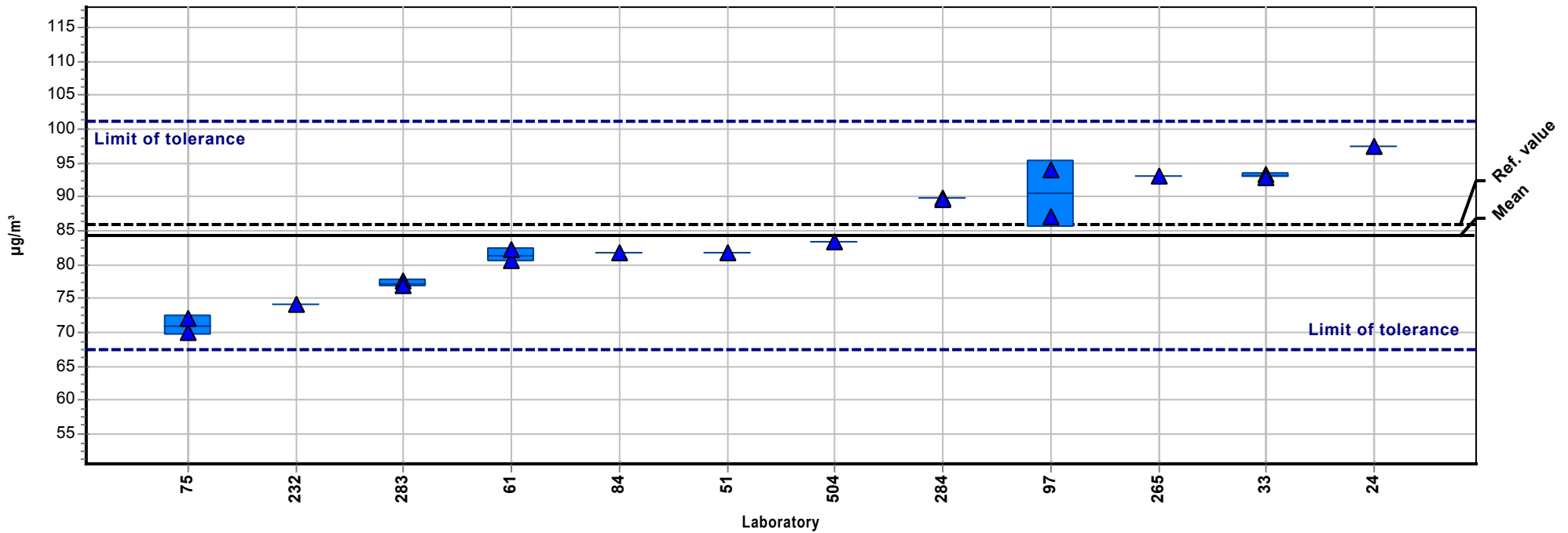
Summary results

Measurand:	n-Octane	Mean:	110,54 µg/m ³
Sample:	1	Reprod. s.d.:	19,01 µg/m ³
Method:	ISO 5725-2	Rel. reprod. s.d.:	17,19%
Rel. target s.d.:	10,00% (Limited)	Reference value:	103,00 µg/m ³
No. of laboratories:	12	Range of tolerance:	88,43 - 132,65 µg/m ³ (Z-Score ≤ 2,00)



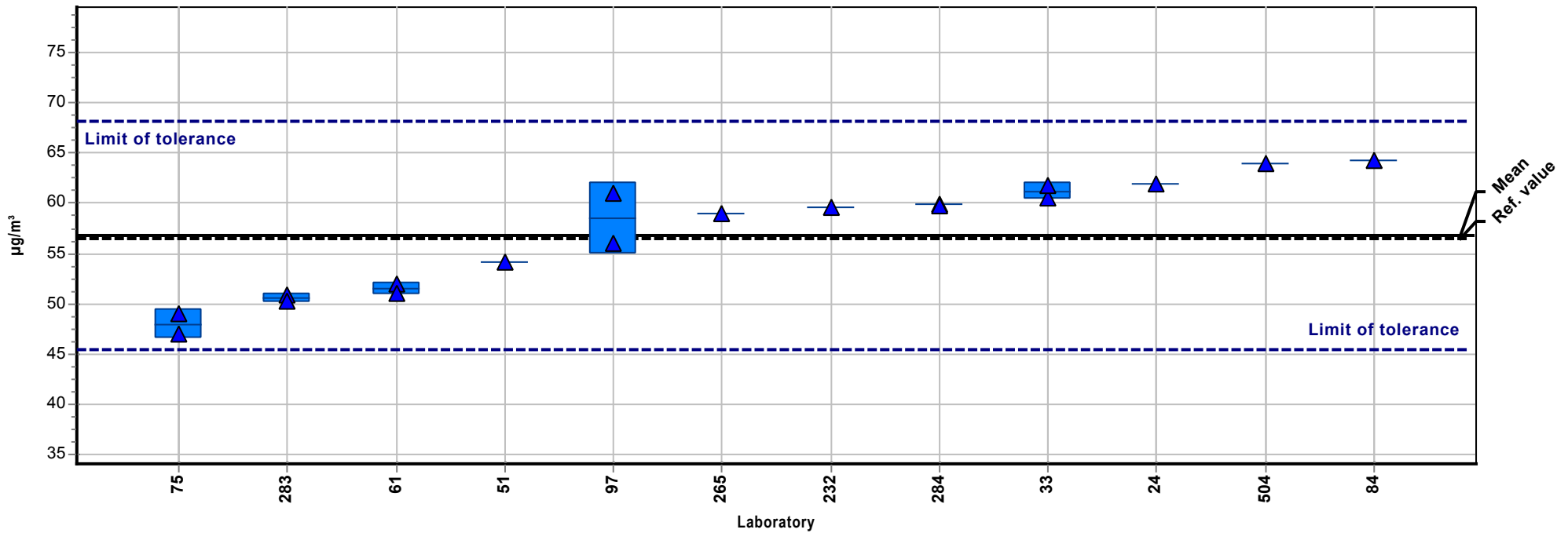
Summary results

Measurand:	p-Xylene	Mean:	84,30 $\mu\text{g}/\text{m}^3$
Sample:	1	Reprod. s.d.:	8,40 $\mu\text{g}/\text{m}^3$
Method:	ISO 5725-2	Rel. reprod. s.d.:	9,97%
Rel. target s.d.:	10,00% (Limited)	Reference value:	85,90 $\mu\text{g}/\text{m}^3$
No. of laboratories:	12	Range of tolerance:	67,44 - 101,17 $\mu\text{g}/\text{m}^3$ ($ Z\text{-Score} \leq 2,00$)



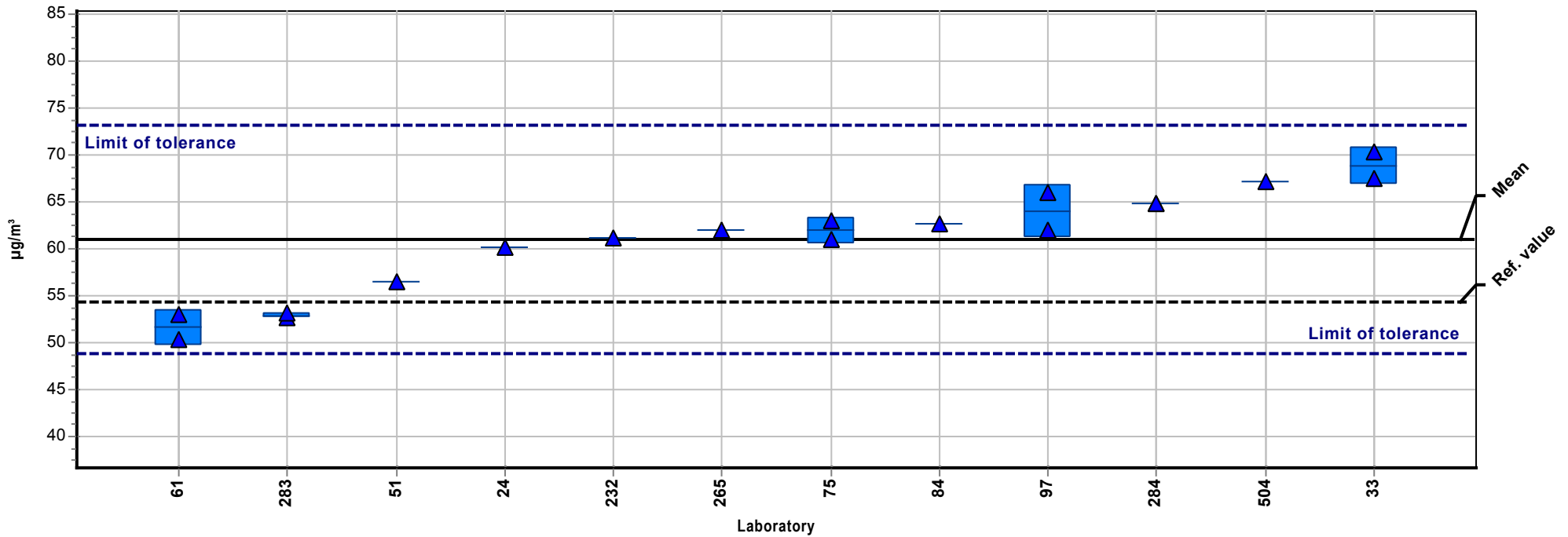
Summary results

Measurand:	Ethylbenzene	Mean:	56,80 $\mu\text{g}/\text{m}^3$
Sample:	1	Reprod. s.d.:	5,64 $\mu\text{g}/\text{m}^3$
Method:	ISO 5725-2	Rel. reprod. s.d.:	9,93%
Rel. target s.d.:	10,00% (Limited)	Reference value:	56,50 $\mu\text{g}/\text{m}^3$
No. of laboratories:	12	Range of tolerance:	45,44 - 68,16 $\mu\text{g}/\text{m}^3$ ($ Z\text{-Score} \leq 2,00$)



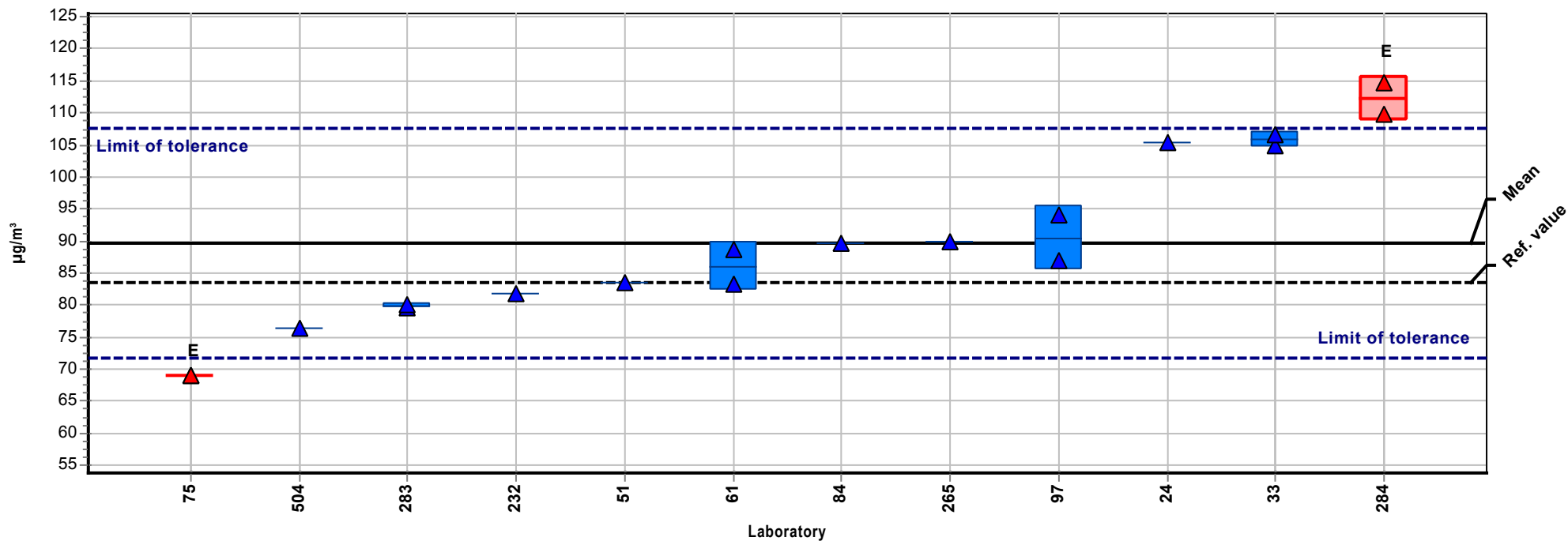
Summary results

Measurand:	1,2,4-Trimethylbenzene	Mean:	61,01 $\mu\text{g}/\text{m}^3$
Sample:	1	Reprod. s.d.:	5,87 $\mu\text{g}/\text{m}^3$
Method:	ISO 5725-2	Rel. reprod. s.d.:	9,61%
Rel. target s.d.:	10,00% (Limited)	Reference value:	54,40 $\mu\text{g}/\text{m}^3$
No. of laboratories:	12	Range of tolerance:	48,81 - 73,21 $\mu\text{g}/\text{m}^3$ ($ Z\text{-Score} \leq 2,00$)



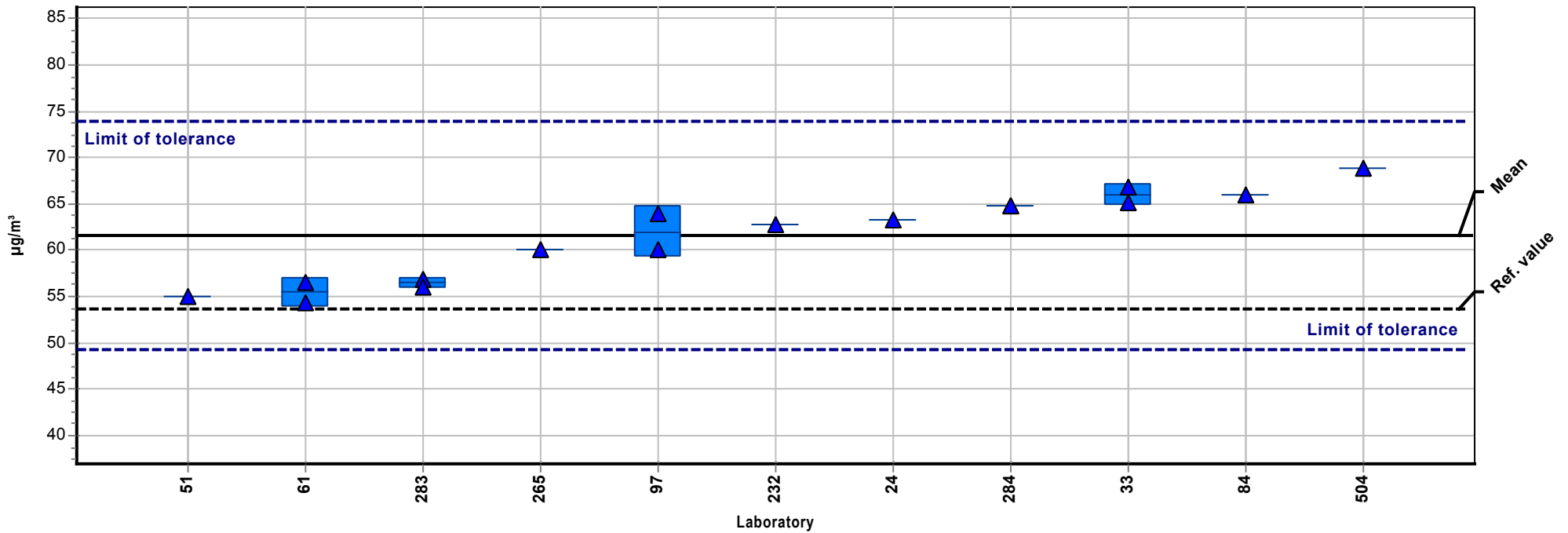
Summary results

Measurand:	4-Methyl-2-Pentanone	Mean:	89,65 µg/m³
Sample:	1	Reprod. s.d.:	13,96 µg/m³
Method:	ISO 5725-2	Rel. reprod. s.d.:	15,57%
Rel. target s.d.:	10,00% (Limited)	Reference value:	83,60 µg/m³
No. of laboratories:	12	Range of tolerance:	71,72 - 107,58 µg/m³ (Z-Score ≤ 2,00)



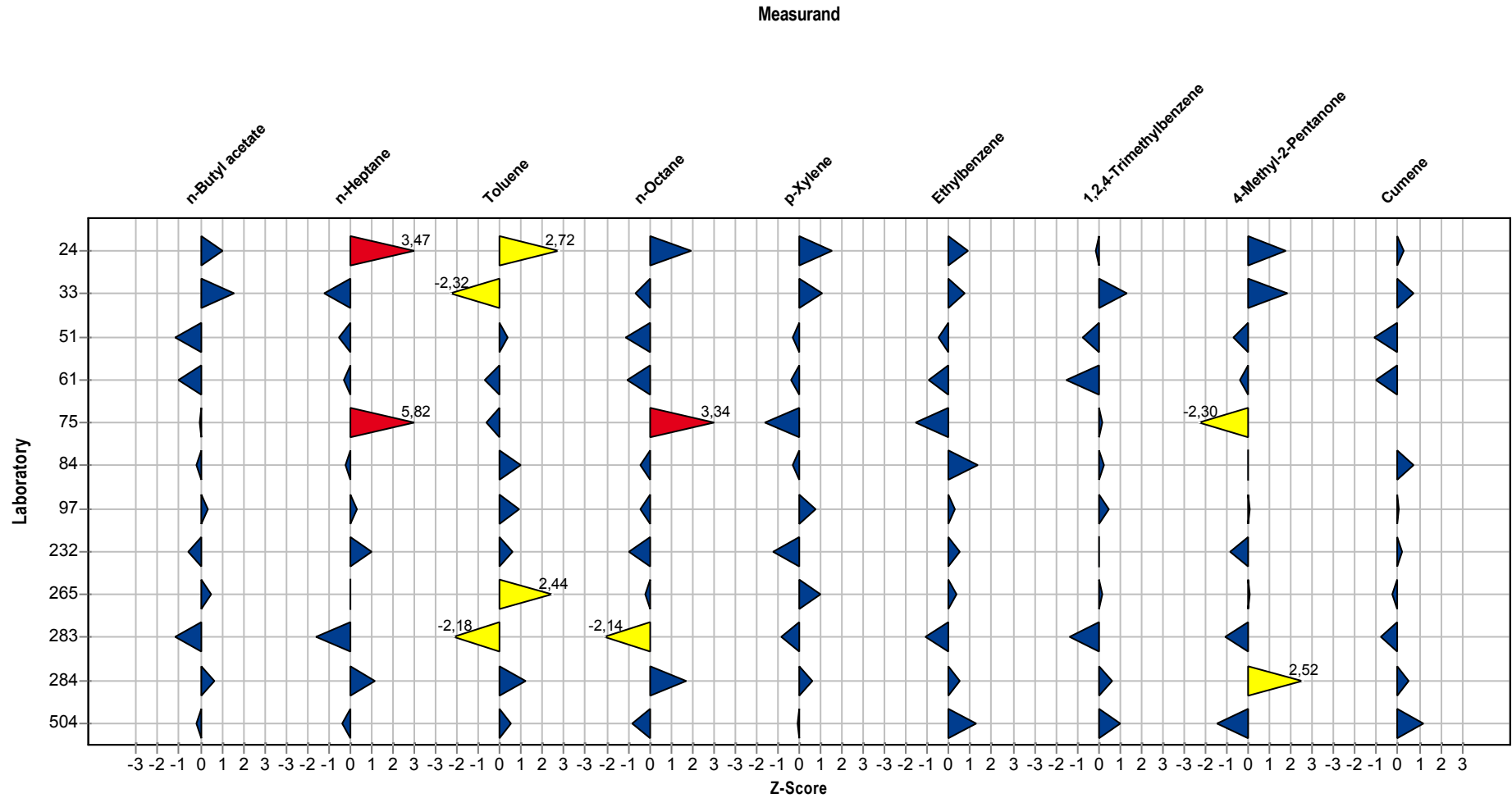
Summary results

Measurand:	Cumene	Mean:	61,59 µg/m³
Sample:	1	Reprod. s.d.:	4,73 µg/m³
Method:	ISO 5725-2	Rel. reprod. s.d.:	7,68%
Rel. target s.d.:	10,00% (Limited)	Reference value:	53,70 µg/m³
No. of laboratories:	11	Range of tolerance:	49,27 - 73,91 µg/m³ (Z-Score <= 2,00)



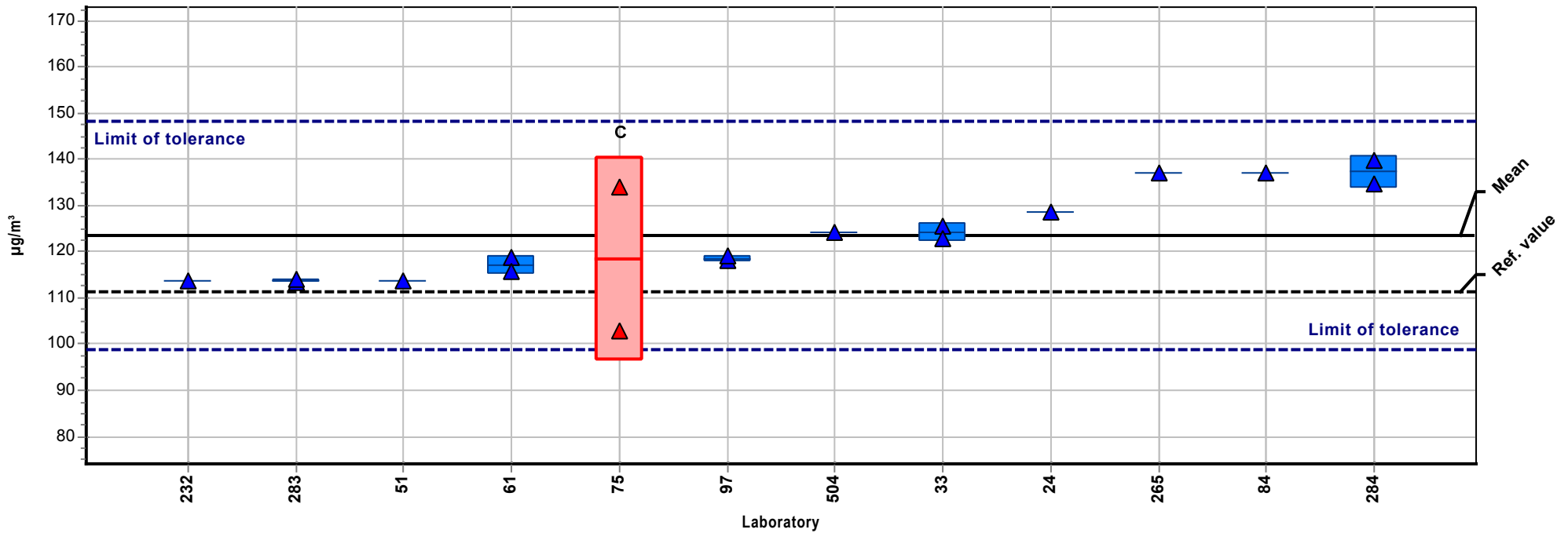
Sample chart of Z-Scores

Sample: 1



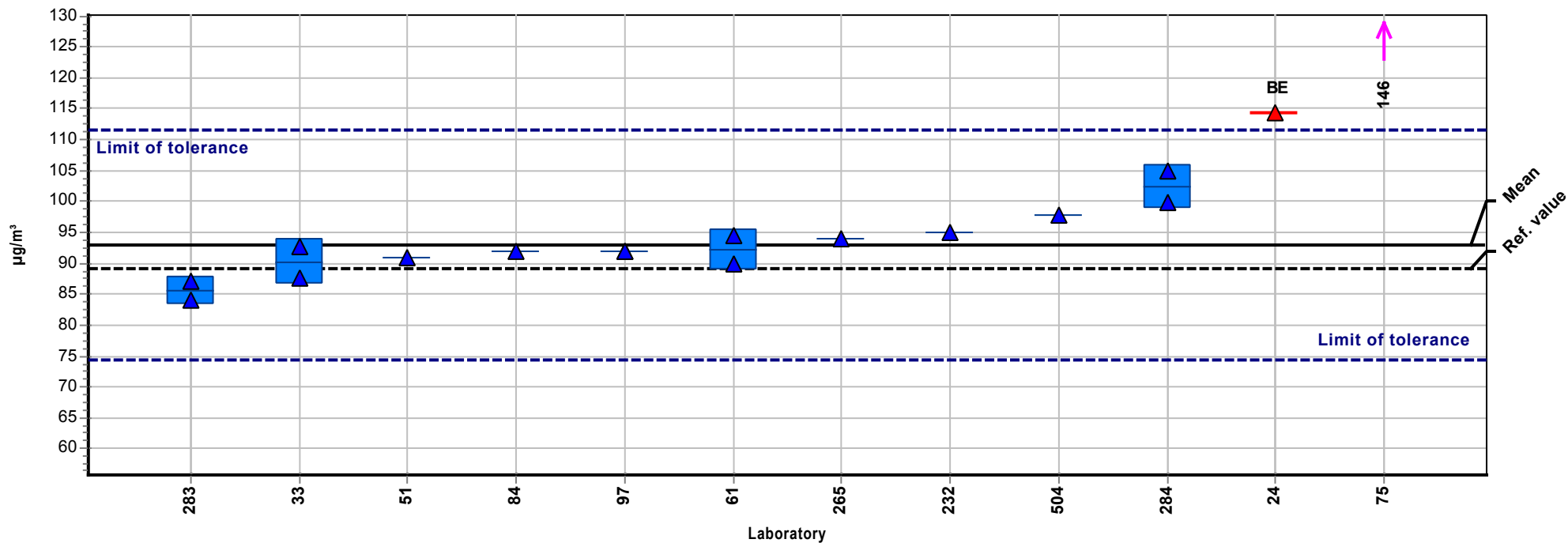
Summary results

Measurand:	n-Butyl acetate	Mean:	123,49 µg/m ³
Sample:	2	Reprod. s.d.:	9,54 µg/m ³
Method:	ISO 5725-2	Rel. reprod. s.d.:	7,72%
Rel. target s.d.:	10,00% (Limited)	Reference value:	111,30 µg/m ³
No. of laboratories:	11	Range of tolerance:	98,79 - 148,18 µg/m ³ (Z-Score ≤ 2,00)



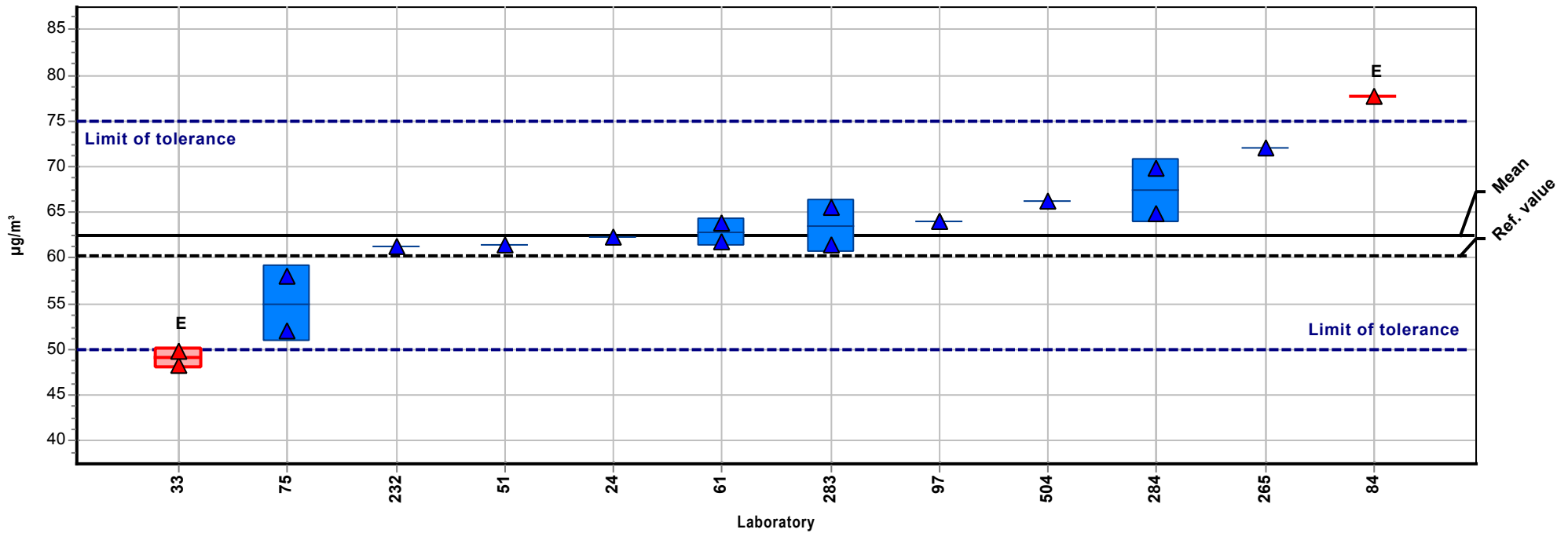
Summary results

Measurand:	n-Heptane	Mean:	92,96 µg/m ³
Sample:	2	Reprod. s.d.:	5,28 µg/m ³
Method:	ISO 5725-2	Rel. reprod. s.d.:	5,68%
Rel. target s.d.:	10,00% (Limited)	Reference value:	89,10 µg/m ³
No. of laboratories:	10	Range of tolerance:	74,37 - 111,56 µg/m ³ (Z-Score ≤ 2,00)



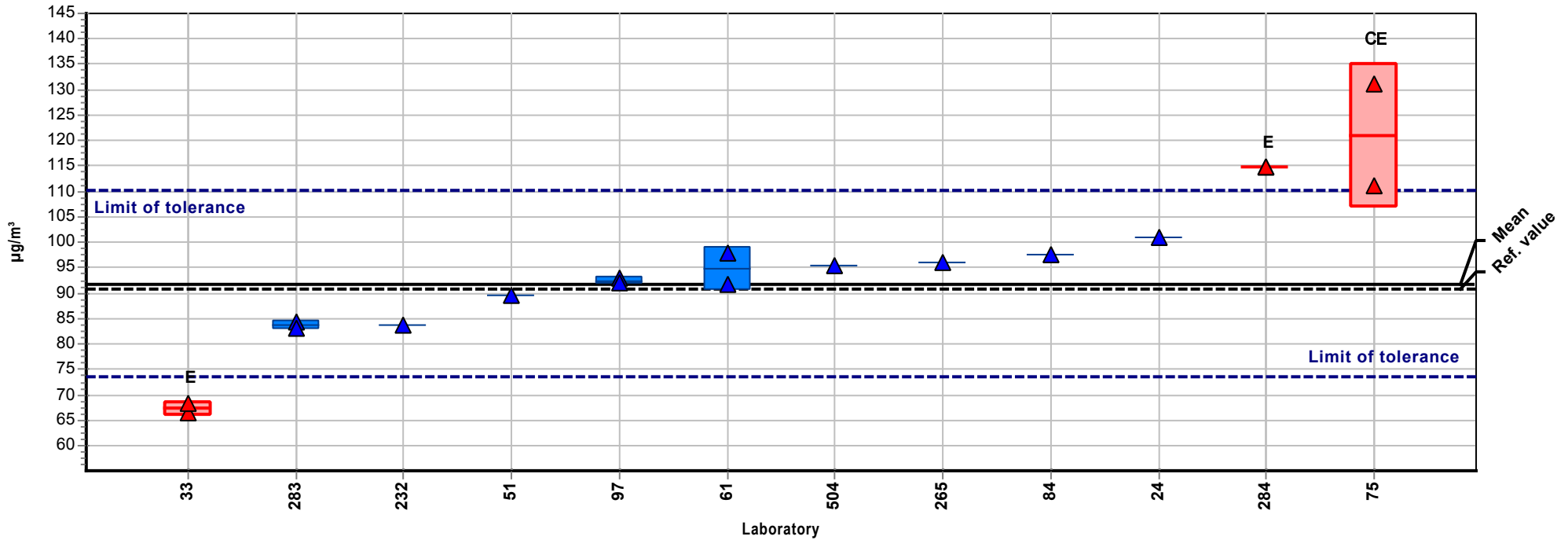
Summary results

Measurand:	Toluene	Mean:	62,47 µg/m ³
Sample:	2	Reprod. s.d.:	7,44 µg/m ³
Method:	ISO 5725-2	Rel. reprod. s.d.:	11,91%
Rel. target s.d.:	10,00% (Limited)	Reference value:	60,20 µg/m ³
No. of laboratories:	12	Range of tolerance:	49,98 - 74,96 µg/m ³ (Z-Score <= 2,00)



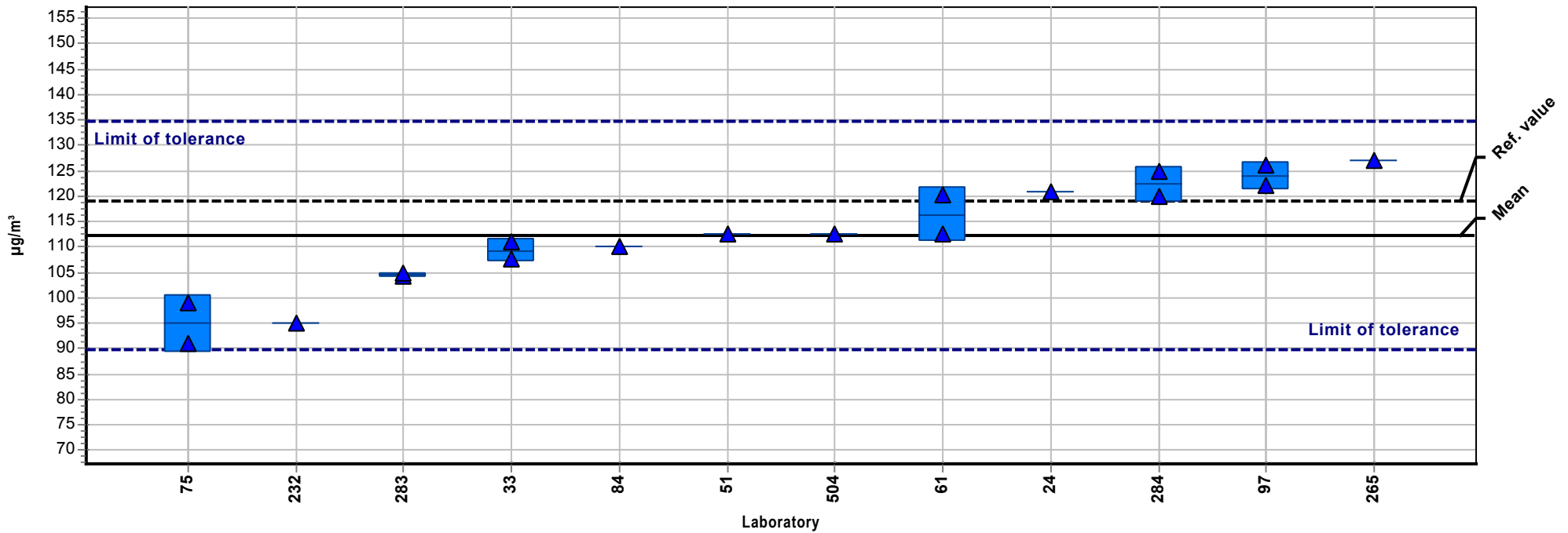
Summary results

Measurand:	n-Octane	Mean:	91,89 $\mu\text{g}/\text{m}^3$
Sample:	2	Reprod. s.d.:	13,54 $\mu\text{g}/\text{m}^3$
Method:	ISO 5725-2	Rel. reprod. s.d.:	14,74%
Rel. target s.d.:	10,00% (Limited)	Reference value:	90,80 $\mu\text{g}/\text{m}^3$
No. of laboratories:	11	Range of tolerance:	73,51 - 110,27 $\mu\text{g}/\text{m}^3$ ($ Z\text{-Score} \leq 2,00$)



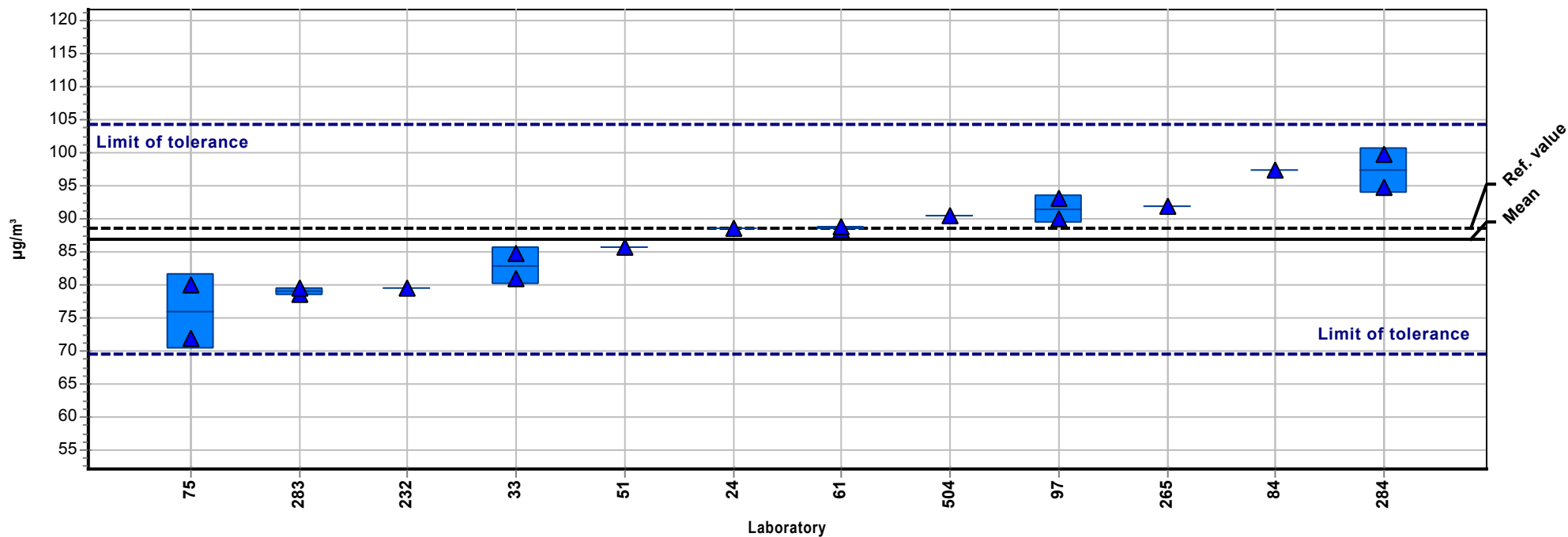
Summary results

Measurand:	p-Xylene	Mean:	112,28 µg/m ³
Sample:	2	Reprod. s.d.:	10,83 µg/m ³
Method:	ISO 5725-2	Rel. reprod. s.d.:	9,65%
Rel. target s.d.:	10,00% (Limited)	Reference value:	118,90 µg/m ³
No. of laboratories:	12	Range of tolerance:	89,82 - 134,73 µg/m ³ (Z-Score <= 2,00)



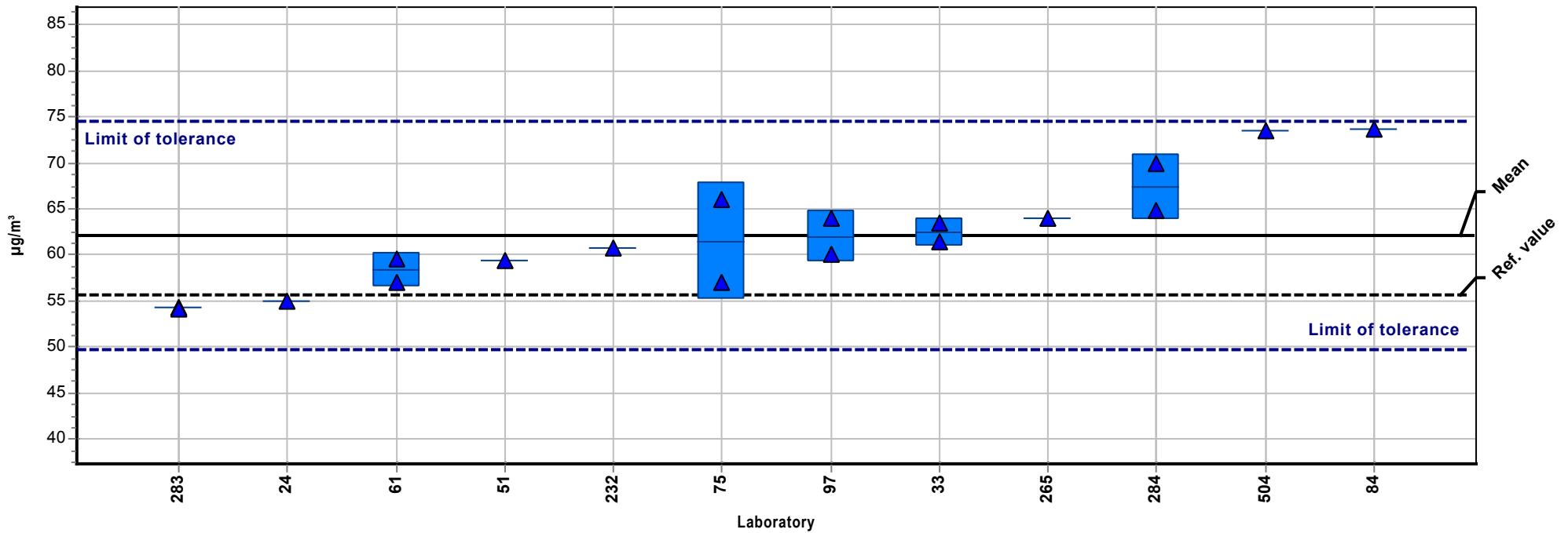
Summary results

Measurand:	Ethylbenzene	Mean:	86,90 µg/m ³
Sample:	2	Reprod. s.d.:	7,50 µg/m ³
Method:	ISO 5725-2	Rel. reprod. s.d.:	8,63%
Rel. target s.d.:	10,00% (Limited)	Reference value:	88,50 µg/m ³
No. of laboratories:	12	Range of tolerance:	69,52 - 104,28 µg/m ³ (Z-Score <= 2,00)



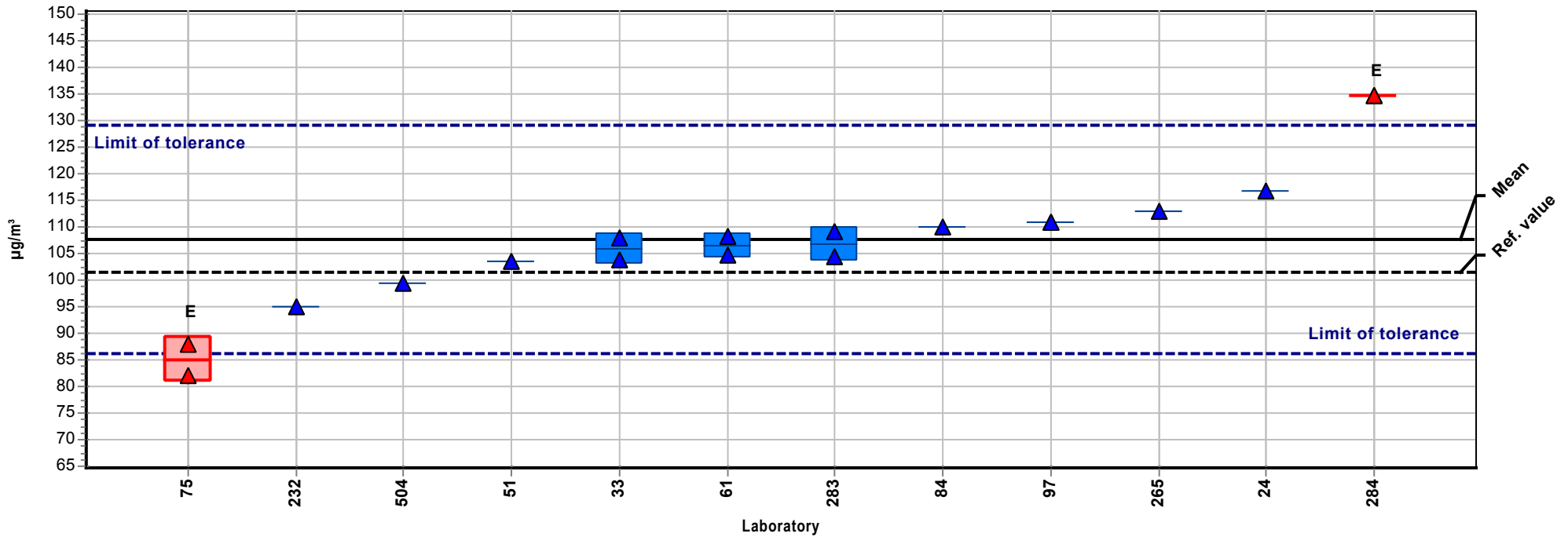
Summary results

Measurand:	1,2,4-Trimethylbenzene	Mean:	62,11 µg/m³
Sample:	2	Reprod. s.d.:	6,05 µg/m³
Method:	ISO 5725-2	Rel. reprod. s.d.:	9,74%
Rel. target s.d.:	10,00% (Limited)	Reference value:	55,60 µg/m³
No. of laboratories:	12	Range of tolerance:	49,69 - 74,53 µg/m³ (Z-Score ≤ 2,00)



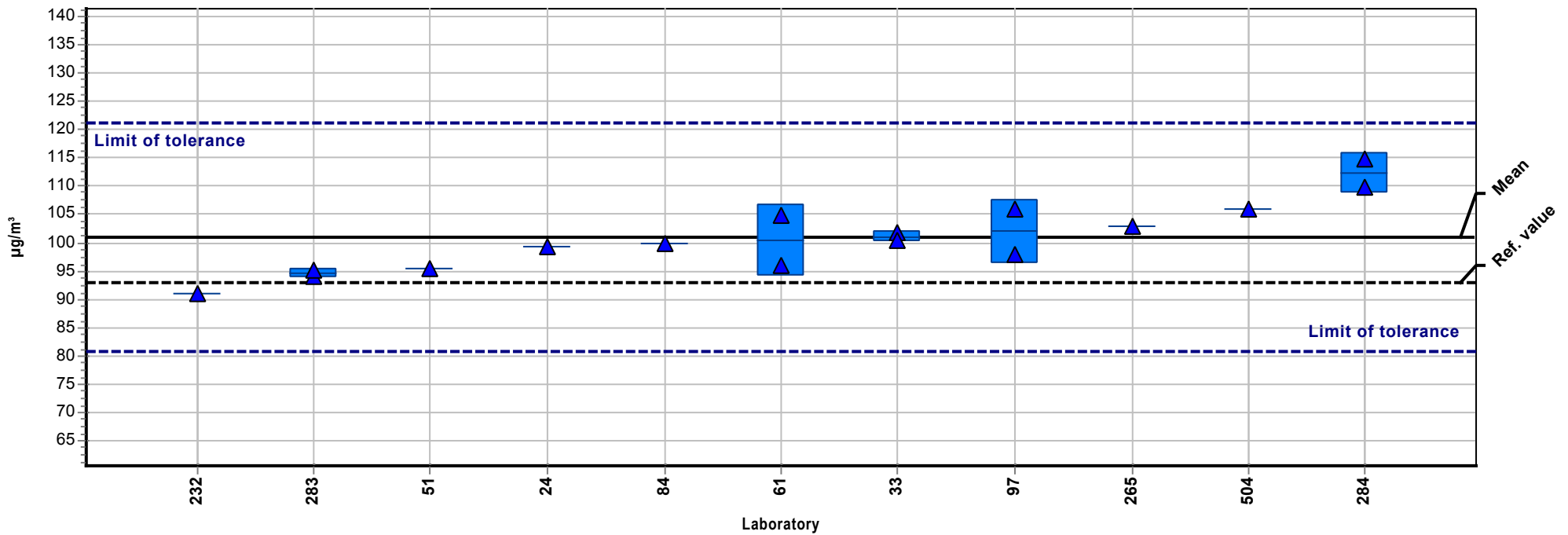
Summary results

Measurand:	4-Methyl-2-Pentanone	Mean:	107,65 µg/m ³
Sample:	2	Reprod. s.d.:	13,39 µg/m ³
Method:	ISO 5725-2	Rel. reprod. s.d.:	12,44%
Rel. target s.d.:	10,00% (Limited)	Reference value:	101,40 µg/m ³
No. of laboratories:	12	Range of tolerance:	86,12 - 129,18 µg/m ³ (Z-Score <= 2,00)



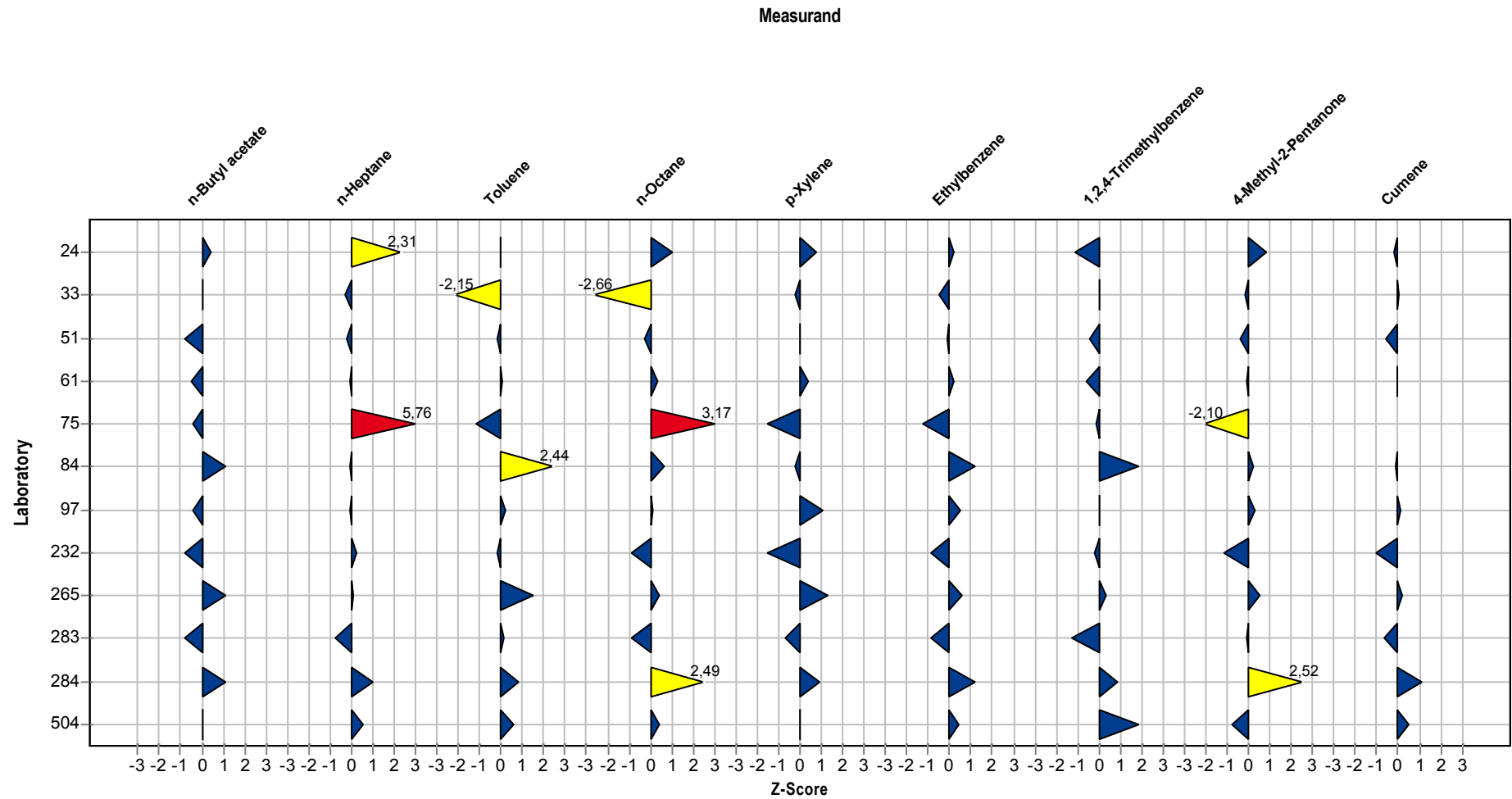
Summary results

Measurand:	Cumene	Mean:	100,98 µg/m ³
Sample:	2	Reprod. s.d.:	6,35 µg/m ³
Method:	ISO 5725-2	Rel. reprod. s.d.:	6,29%
Rel. target s.d.:	10,00% (Limited)	Reference value:	92,90 µg/m ³
No. of laboratories:	11	Range of tolerance:	80,78 - 121,17 µg/m ³ (Z-Score <= 2,00)



Sample chart of Z-Scores

Sample: 2



Questions and Answers

Participant	Kind of tube	Sampling pump	Sampling flow rate	Flow rate measurement
24	Gerstel Tenax TA	Desaga GS 301	0,1-0,2 L/min	Desaga GS 301
33	Tenax TA	SKC 224-PCTX 8	0,1 l/min	BIOS-Defender
51	Tenax TA	Analyt-MTC 358	100ml/min	pumpeninterne Flusskontrolle
61	Tenax TA	Gilian LFS 113DC	25 ml/min	Gilian Bubbleflow
75	Tenax TA	Air check 2000 SKC	50 ml/min	Régulateur/débitmètre massique Vogtlin
84	Supelco (3,5"x1,4") Zw eibettsystem	GSA 350ex	0,05 L/min	Dry Cal Definer
97	Tenax TA (Hersteller: CAMCO)	GSA SG350ex / GSA SG5100	83 ml/min	Bronkhorst F-111B-2K0-ABD-00
265	Tenax TA	Desaga 301	100 ml/min	
283	Tenax TA	Personal Air Sampler GilAirPlus, SG4000	0,2 l/min	Analyt Flow meter
284	Tenax TA	Gilian, GilAir Plus	0.1 L/min	Gilian, Gilibrator 2

Participant	Sampling time	Analytical method	Thermodesorber	Desorption temperature	Desorption flow
24	20-40 min	DIN ISO 16000-6	Gerstel TDS 2	280°C	43 mL/min
33	30-45 Minuten	Hausmethode SOP M 100	Perkin-Elmer TurboMatrix 650	300 °C	100
51	20 min	DIN ISO 16000-6	Gerstel TDS3	260°C	1,2 ml/min
61	40 min und 80 min	Ja	Turbomatrix ATD	300°C	10
75	20	ISO 16000-6	Gerstel TD-100	250°C	30
84	40 min	GCMS	Shimadzu QP-2010 Quadropol	240°C	100 ml/min
97	30 min	DIN ISO 16000-6	Shimadzu TD20 mit Cryofocussierung	240°C	60
265	20, 40, 50 min	DIN ISO 16000-6	Shimadzu TD 20	250°C	60ml/min
283	2,5 bis 10 Min	DIN ISO 16000-6	Markes TD-100	250°C	20
284	20 Min.	DIN ISO 16000-6	Markers	295	100

Participant	Desorption time	Cyro trap	Carrier gas	Flow rate
24	10 min	-150 °C / 280°C	Helium	1,3 mL/min
33	7,5	-30°C / 300°C	Helium	2,0
51	5 min	-30°C 260°C	Helium	1,2 ml/min

VOC with sampling 2/2016

Participant	Desorption time	Cyros trap	Carrier gas	Flow rate
61	15	-30°C bis 300°C	Helium	1ml/min
75	10	0 and 300°C	He	1.3
84	8 min	-20°C; Heiztemp 270°C	Helium 5.0	2,47 ml/min
97	7	-15°C/ 240°C	Helium	41 ml/min (Total flow); 1ml/min (Column Flow)
265	28min	-13°C, 250°C	Helium	27,1ml/min
283	20	-20°C / 300°C	Helium	1,29
284	5	-100°C	Helium	1

Participant	Analytical column	Detector
24	Agilent Ultra 2	Agilent MSD 5973
33	SGE HT 8 / 50m ID 0,22 0,25µm	MS
51	DB-624 30 m, ID 0,250mm, Film 1,40µm	MSD
61	Kapillarsäule	Massenspektrometer
75	SPB1	MS
84	HP 5 MS 60x0,25x0,25	MS (Scan Aufzeichnung, Scan /SIM Auswertung)
97	ZB5 60 m; 0,25mm; 1µm Film (Hersteller Phenomenex)	MS
265	Agilent VF-5ms	MS
283	DB 624 30m x 0,25mm x 1,4µm	Single Quadrupol-MSD
284	HP-1MS	MS

Participant	Data evaluation
24	2-Punktkalibrierung externer Standards, Massenspektrum
33	externer Standard
51	externe Standards/ Retentionzeit + Massenspektrum
61	Identifikation über Nist, Quantifizierung interner Standard
75	Identification and quantification
84	Shimadzu QP2010 Quadropol
97	interne Standard Quantifizierung, Identifizierung über Retentionszeit und SIM Massen (-Verhältnis)
265	substanzspezifische Kalibration
283	Identifizierung über ausgewählte Massenspuren, Quantifizierung über Kalibrierreihe mit dot. Sorptionsröhrchen
284	SIM

VOC with sampling 2/2016

Participant	Recovery rate	Date of analysis
24	nein	09.-18.06.2016
33	ja	17-18.05.16
51	nein	09.05. - 11.05.2016
61	Ja	06.06.2016
75	Yes	May 13
84	Nein	12.05-25-.05.2016
97	keine Berücksichtigung notw endig, da Wiederfindung bei nahezu 100%	06.05.2016
265	nein	02.05.2016
283	nein	04.05.2016
284	Nein	13.05.2016

Blank Values RRT VOC with sampling 2/2016

Blank 1, 28 April 2016

Lab.	Measurant [$\mu\text{g}/\text{m}^3$]								
	n-Butyl- acetate	n-Heptane	Toluene	n-Octane	p-Xylene	Ethyl- benzene	1,2,4- Trimethyl- benzene	4-Methyl -2-Pentanone	Cumene
24	0	0	0	0	0	0	0	0	0
33	0	0	3,5	0	0,7	0	0	0	0
51	0	0	< 0,1	0	0	0	0	0	0
61	0,0	2,26	2,49	0,0	0,0	0,0	6,11	0,0	0,0
75									
84									
97	4	< 0,3	0,5	< 0,3	0,4	< 0,3	< 0,3	0,5	< 0,3
232	9,56	0,0	0,0	3,12	13,07	8,59	19,12	0,0	16,98
265	0	0	0	0	0	0	0	0	0
283	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
284	< 2,47	< 2,47	< 2,47	< 2,47	< 2,47	< 2,47	< 2,47	< 4,93	< 4,93
504	0,0	0,0	0,0	1,99	25,51	9,97	26,11	0,0	18,14
IFA	< 5,0	< 5,0	< 5,0	< 5,0	< 5,0	< 5,0	< 5,0	< 10,0	< 10,0

Blank 2, 29 April 2016

Lab.	Measurant [$\mu\text{g}/\text{m}^3$]								
	n-Butyl- acetate	n-Heptane	Toluene	n-Octane	p-Xylene	Ethyl- benzene	1,2,4- Trimethyl- benzene	4-Methyl -2-Pentanone	Cumene
24	0	0	0	0	0	0	0	0	0
33	0	0	3,7	0	0,5	0	0	0	0
51	0	0	0	< 0,1	< 0,1	0	< 0,1	0	0
61	0	0	2,39	0	0,25	0	2,86	0	0,51
75									
84									
97	0,5	< 0,3	< 0,3	< 0,3	0,4	< 0,3	0,4	< 0,3	< 0,3
232	10,33	0,0	0,0	3,58	13,31	9,14	19,47	0,0	17,49
265	0	0	0	0	0	0	0	0	0
283	< 1	< 1	< 1	1,5	<	< 1	< 1	< 1	< 1
284	< 2,49	< 2,49	< 2,49	< 2,49	< 2,49	< 2,49	< 2,49	< 4,98	< 4,98
504	6,40	0,0	5,00	12,40	29,00	21,20	26,40	0,0	27,60
IFA	< 5,0	< 5,0	< 5,0	< 5,0	< 5,0	< 5,0	< 5,0	< 10,0	< 10,0