Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K

Equivalence statements

For each temperature in the comparison the key comparison reference value, T_R, is the weighted mean of T_i, the individual temperature values of thermometers.
The weighted mean is calculated using the laboratory uncertainty combined with the comparison uncertainty, to set the weights. T_R is used as the baseline for the comparison, but has no special significance with respect to the ITS-90, and is used without uncertainty.

The degree of equivalence of each temperature *Ti* with respect to the key comparison reference value, T_R, is given by a pair of terms: D_i = (T_i -T_R) and U_i, its expanded uncertainty at 95 % confidence, both expressed in mK.
U_i includes the uncertainties in the original laboratory calibrations and in the comparison measurements, but not in T_R.

CCT-K1

KEY COMPARISON REFERENCE VALUES, T_R / K

T_R / K	T_R / K	T_R / K	T_R / K
0.649875	1.996554	4.477522	16.999335
0.676928	2.248485	5.000458	18.597377
0.704354	2.600776	5.948165	20.298899
0.761580	2.699911	7.201544	21.575444
0.858421	2.896733	8.296372	22.676998
0.991223	2.996648	8.399612	23.496448
1.031584	3.099398	9.508020	24.101970
1.224991	3.400235	10.803390	24.340317
1.249542	3.429250	12.297309	24.446403
1.503370	3.800903	13.798183	24.551354
1.754822	4.224794	15.499566	

EURAMET.T-K1

EURAMET.T-K1 was linked to CCT-K1 via NPL, PTB and VSL who participated in both comparisons.

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 0.650 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.205 \text{ mK}$$

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	0.650152	0.139
NIST A129	0.649998	0.139
NMi-VSL 226246	0.650370	0.182
NPL 221481	0.649615	0.254
NPL 221483	0.649625	0.254
NPL 221485	0.649681	0.254
PTB 229074	0.649546	0.180
PTB 229075	0.649551	0.180
VNIIFTRI 79	0.650145	0.540
VNIIFTRI 89	0.650376	0.550

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 0.649875 K

Matrix of equivalence

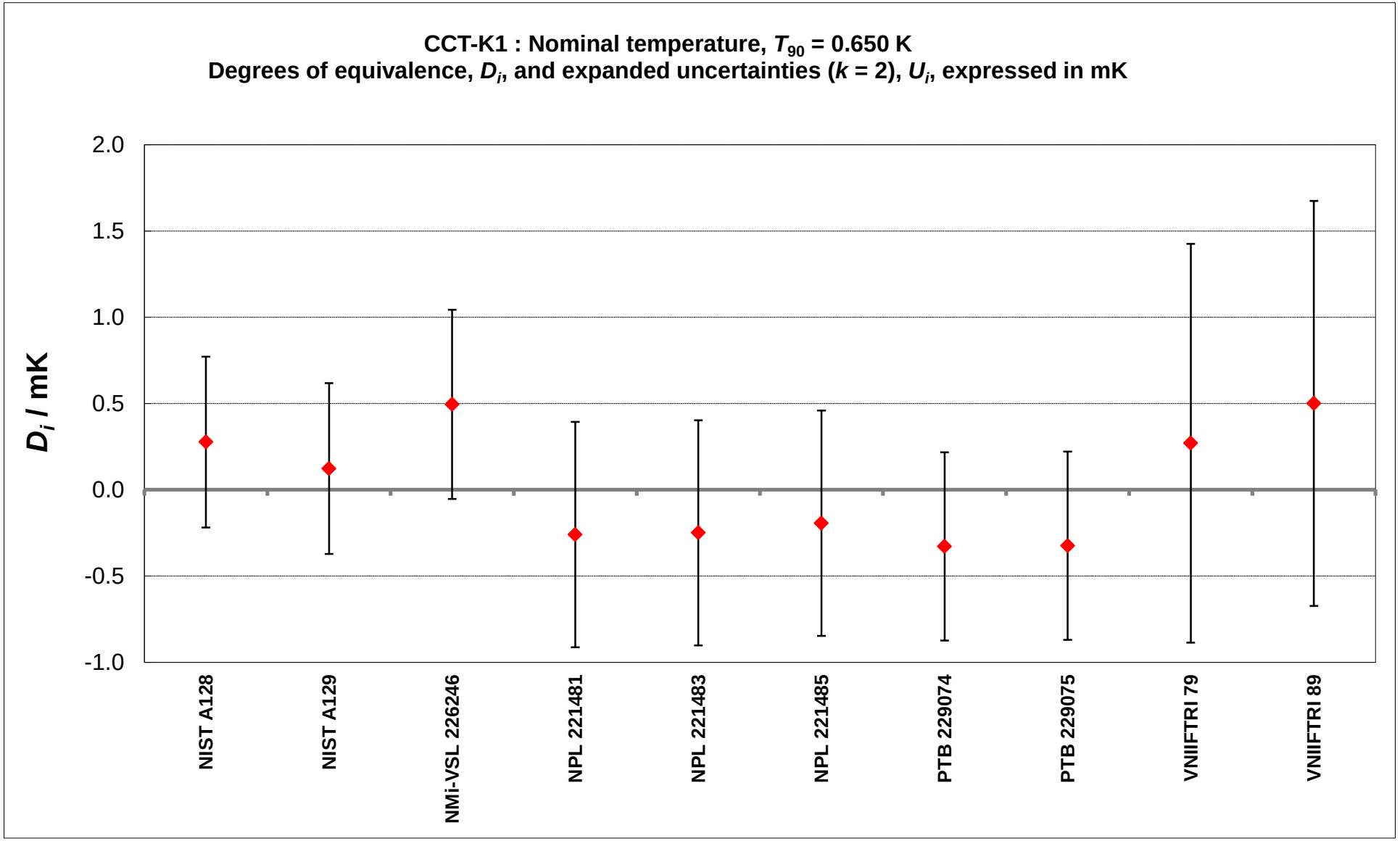
Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NIST A128		NIST A129		NMi-VSL 226246		NPL 221481		NPL 221483		NPL 221485	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**0.277**	0.495			**0.154**	0.700	**-0.218**	0.739	**0.536**	0.819	**0.526**	0.819	**0.470**	0.819
NIST A129	**0.123**	0.495	**-0.154**	0.700			**-0.372**	0.739	**0.383**	0.819	**0.373**	0.819	**0.316**	0.819
NMi-VSL 226246	**0.495**	0.548	**0.218**	0.739	**0.372**	0.739			**0.755**	0.852	**0.745**	0.852	**0.689**	0.852
NPL 221481	**-0.260**	0.653	**-0.536**	0.819	**-0.383**	0.819	**-0.755**	0.852			**-0.010**	0.923	**-0.066**	0.923
NPL 221483	**-0.250**	0.653	**-0.526**	0.819	**-0.373**	0.819	**-0.745**	0.852	**0.010**	0.923			**-0.056**	0.923
NPL 221485	**-0.194**	0.653	**-0.470**	0.819	**-0.316**	0.819	**-0.689**	0.852	**0.066**	0.923	**0.056**	0.923		
PTB 229074	**-0.329**	0.546	**-0.606**	0.737	**-0.452**	0.737	**-0.824**	0.773	**-0.069**	0.851	**-0.079**	0.851	**-0.135**	0.851
PTB 229075	**-0.324**	0.546	**-0.601**	0.737	**-0.447**	0.737	**-0.819**	0.773	**-0.064**	0.851	**-0.074**	0.851	**-0.130**	0.851
VNIIFTRI 79	**0.270**	1.155	**-0.007**	1.257	**0.147**	1.257	**-0.225**	1.279	**0.529**	1.327	**0.519**	1.327	**0.463**	1.327
VNIIFTRI 89	**0.501**	1.174	**0.224**	1.274	**0.378**	1.274	**0.005**	1.295	**0.760**	1.343	**0.750**	1.343	**0.694**	1.343

Matrix of equivalence (Continued)

Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	PTB 229074		PTB 229075		VNIIFTRI 79		VNIIFTRI 89	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**0.277**	0.495	**0.606**	0.737	**0.601**	0.737	**0.007**	1.257	**-0.224**	1.274
NIST A129	**0.123**	0.495	**0.452**	0.737	**0.447**	0.737	**-0.147**	1.257	**-0.378**	1.274
NMi-VSL 226246	**0.495**	0.548	**0.824**	0.773	**0.819**	0.773	**0.225**	1.279	**-0.005**	1.295
NPL 221481	**-0.260**	0.653	**0.069**	0.851	**0.064**	0.851	**-0.529**	1.327	**-0.760**	1.343
NPL 221483	**-0.250**	0.653	**0.079**	0.851	**0.074**	0.851	**-0.519**	1.327	**-0.750**	1.343
NPL 221485	**-0.194**	0.653	**0.135**	0.851	**0.130**	0.851	**-0.463**	1.327	**-0.694**	1.343
PTB 229074	**-0.329**	0.546			**-0.005**	0.772	**-0.599**	1.278	**-0.830**	1.294
PTB 229075	**-0.324**	0.546	**0.005**	0.772			**-0.594**	1.278	**-0.825**	1.294
VNIIFTRI 79	**0.270**	1.155	**0.599**	1.278	**0.594**	1.278			**-0.231**	1.647
VNIIFTRI 89	**0.501**	1.174	**0.8296**	1.2945	**0.825**	1.294	**0.231**	1.647		


CCT-K1 : Nominal temperature, T_{90} = 0.650 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 0.677 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.201 \text{ mK}$$

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	0.677079	0.121
NIST A129	0.676957	0.121
NMi-VSL 226246	0.677410	0.182
NPL 221481	0.677030	0.245
NPL 221483	0.676970	0.245
NPL 221485	0.676438	0.245
PTB 229074	0.676573	0.180
PTB 229075	0.676440	0.180
VNIIFTRI 79	0.677630	0.533
VNIIFTRI 89	0.677956	0.548

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 0.676928 K

Matrix of equivalence

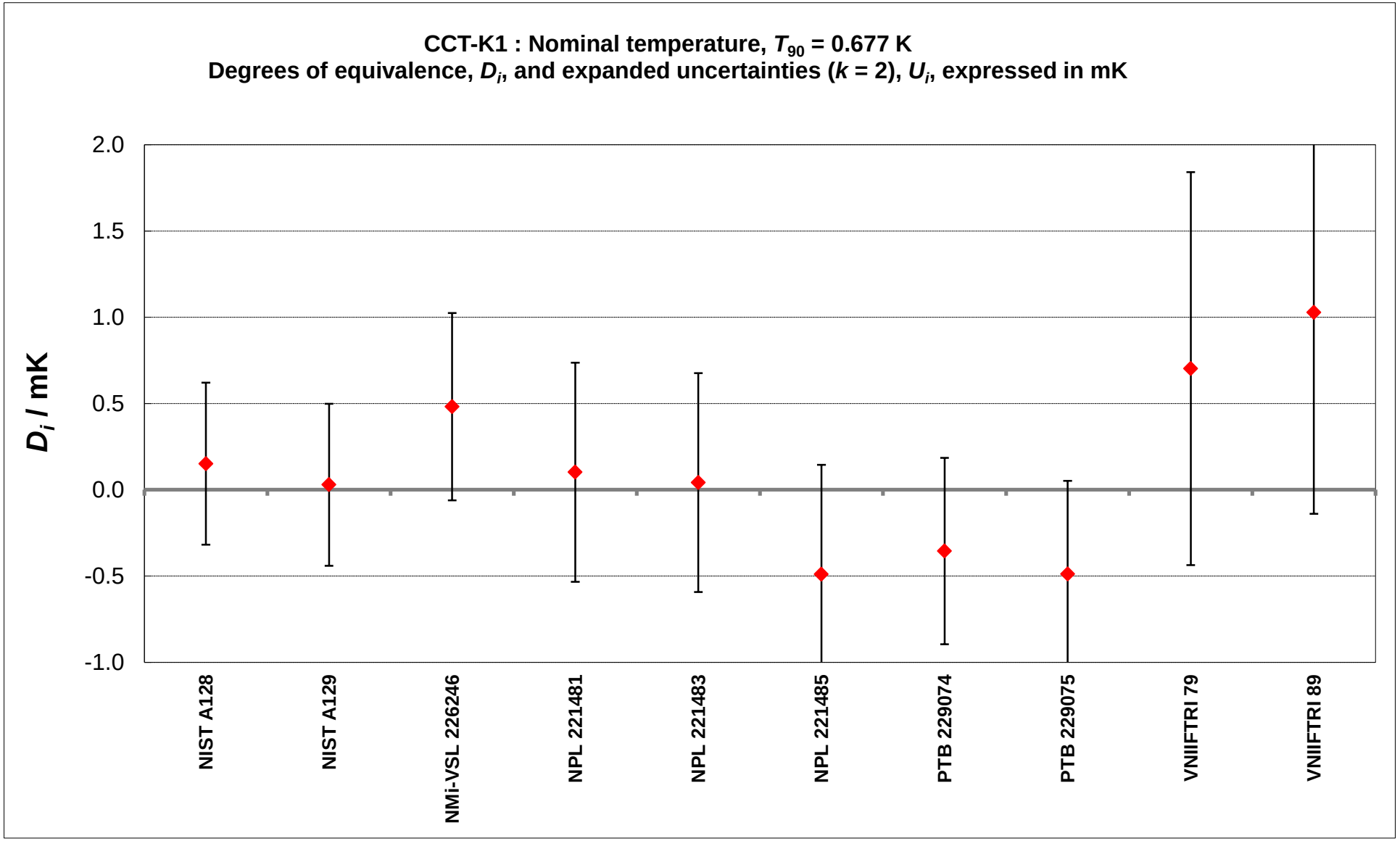
Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NIST A128		NIST A129		NMi-VSL 226246		NPL 221481		NPL 221483		NPL 221485	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**0.151**	0.470			**0.122**	0.664	**-0.330**	0.718	**0.049**	0.790	**0.109**	0.790	**0.641**	0.790
NIST A129	**0.029**	0.470	**-0.122**	0.664			**-0.452**	0.718	**-0.073**	0.790	**-0.013**	0.790	**0.519**	0.790
NMi-VSL 226246	**0.482**	0.543	**0.330**	0.718	**0.452**	0.718			**0.380**	0.835	**0.440**	0.835	**0.971**	0.835
NPL 221481	**0.102**	0.635	**-0.049**	0.790	**0.073**	0.790	**-0.380**	0.835			**0.060**	0.898	**0.592**	0.898
NPL 221483	**0.042**	0.635	**-0.109**	0.790	**0.013**	0.790	**-0.440**	0.835	**-0.060**	0.898			**0.532**	0.898
NPL 221485	**-0.490**	0.635	**-0.641**	0.790	**-0.519**	0.790	**-0.971**	0.835	**-0.592**	0.898	**-0.532**	0.898		
PTB 229074	**-0.355**	0.540	**-0.506**	0.716	**-0.384**	0.716	**-0.836**	0.766	**-0.457**	0.833	**-0.397**	0.833	**0.135**	0.833
PTB 229075	**-0.488**	0.540	**-0.639**	0.716	**-0.517**	0.716	**-0.970**	0.766	**-0.590**	0.833	**-0.530**	0.833	**0.002**	0.833
VNIIFTRI 79	**0.702**	1.139	**0.551**	1.232	**0.673**	1.232	**0.220**	1.262	**0.600**	1.304	**0.660**	1.304	**1.192**	1.304
VNIIFTRI 89	**1.028**	1.167	**0.877**	1.258	**0.999**	1.258	**0.547**	1.287	**0.926**	1.328	**0.986**	1.328	**1.518**	1.328

Matrix of equivalence (Continued)

Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	PTB 229074		PTB 229075		VNIIFTRI 79		VNIIFTRI 89	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**0.151**	0.470	**0.506**	0.716	**0.639**	0.716	**-0.551**	1.232	**-0.877**	1.258
NIST A129	**0.029**	0.470	**0.384**	0.716	**0.517**	0.716	**-0.673**	1.232	**-0.999**	1.258
NMi-VSL 226246	**0.482**	0.543	**0.836**	0.766	**0.970**	0.766	**-0.220**	1.262	**-0.547**	1.287
NPL 221481	**0.102**	0.635	**0.457**	0.833	**0.590**	0.833	**-0.600**	1.304	**-0.926**	1.328
NPL 221483	**0.042**	0.635	**0.397**	0.833	**0.530**	0.833	**-0.660**	1.304	**-0.986**	1.328
NPL 221485	**-0.490**	0.635	**-0.135**	0.833	**-0.002**	0.833	**-1.192**	1.304	**-1.518**	1.328
PTB 229074	**-0.355**	0.540			**0.133**	0.764	**-1.057**	1.261	**-1.383**	1.286
PTB 229075	**-0.488**	0.540	**-0.133**	0.764			**-1.190**	1.261	**-1.516**	1.286
VNIIFTRI 79	**0.702**	1.139	**1.057**	1.261	**1.190**	1.261			**-0.326**	1.631
VNIIFTRI 89	**1.028**	1.167	**1.383**	1.2858	**1.516**	1.286	**0.326**	1.631		


CCT-K1 : Nominal temperature, T_{90} = 0.677 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 0.704 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

u_{comp} = 0.198 mK

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	0.704853	0.110
NIST A129	0.704179	0.110
NMi-VSL 226246	0.704626	0.182
NPL 221481	0.704350	0.236
NPL 221483	0.704305	0.236
NPL 221485	0.704029	0.236
PTB 229074	0.704040	0.180
PTB 229075	0.703875	0.180
VNIIFTRI 79	0.705043	0.526
VNIIFTRI 89	0.705293	0.545

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 0.704354 K

Matrix of equivalence

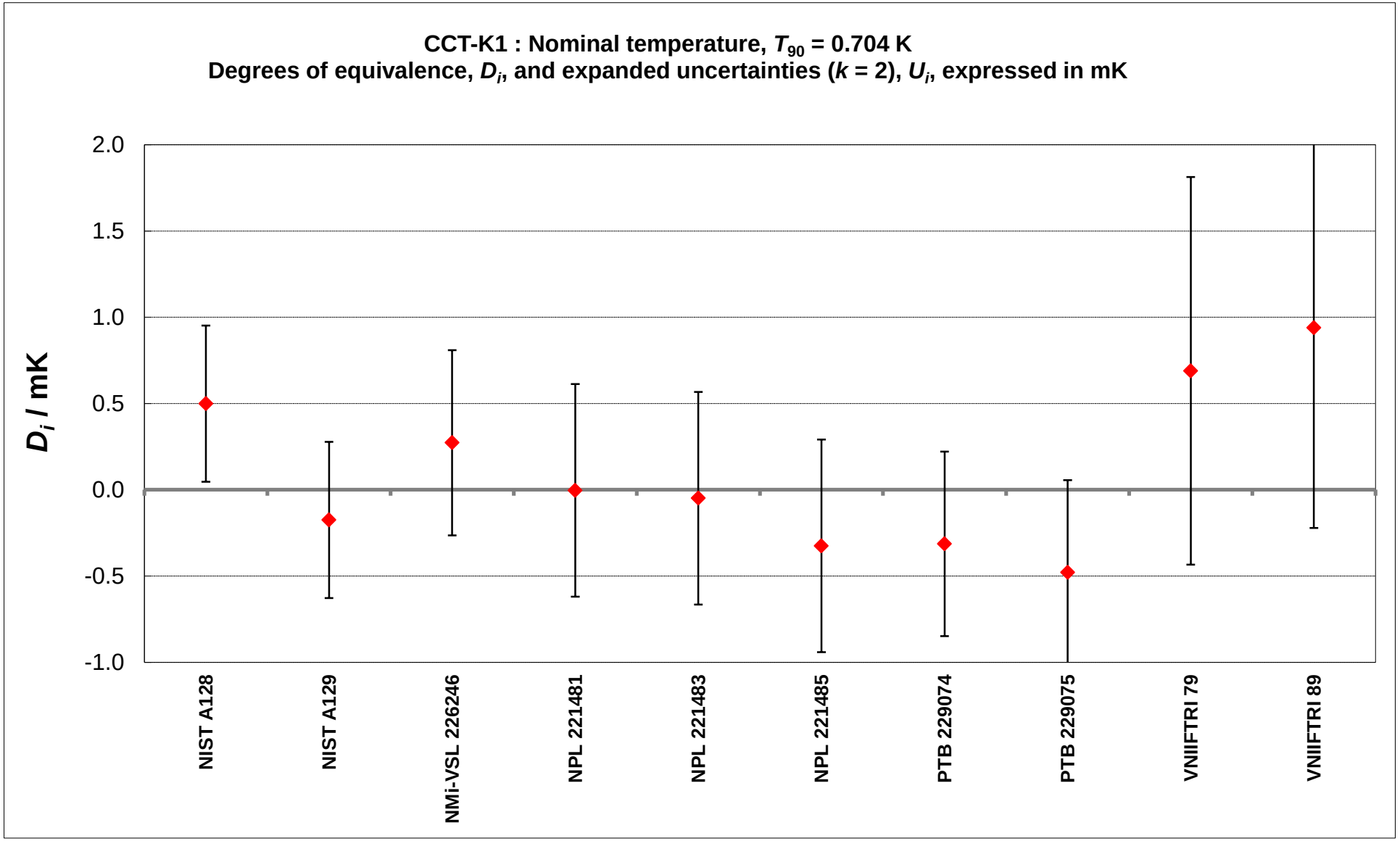
Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NIST A128		NIST A129		NMi-VSL 226246		NPL 221481		NPL 221483		NPL 221485	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**0.499**	0.453			**0.674**	0.640	**0.227**	0.702	**0.503**	0.765	**0.548**	0.765	**0.824**	0.765
NIST A129	**-0.175**	0.453	**-0.674**	0.640			**-0.447**	0.702	**-0.171**	0.765	**-0.126**	0.765	**0.150**	0.765
NMi-VSL 226246	**0.272**	0.537	**-0.227**	0.702	**0.447**	0.702			**0.276**	0.817	**0.321**	0.817	**0.598**	0.817
NPL 221481	**-0.004**	0.616	**-0.503**	0.765	**0.171**	0.765	**-0.276**	0.817			**0.045**	0.872	**0.322**	0.872
NPL 221483	**-0.049**	0.616	**-0.548**	0.765	**0.126**	0.765	**-0.321**	0.817	**-0.045**	0.872			**0.277**	0.872
NPL 221485	**-0.325**	0.616	**-0.824**	0.765	**-0.150**	0.765	**-0.598**	0.817	**-0.322**	0.872	**-0.277**	0.872		
PTB 229074	**-0.314**	0.535	**-0.813**	0.701	**-0.139**	0.701	**-0.586**	0.758	**-0.310**	0.816	**-0.265**	0.816	**0.012**	0.816
PTB 229075	**-0.479**	0.535	**-0.978**	0.701	**-0.304**	0.701	**-0.752**	0.758	**-0.476**	0.816	**-0.431**	0.816	**-0.154**	0.816
VNIIFTRI 79	**0.689**	1.124	**0.190**	1.211	**0.864**	1.211	**0.416**	1.245	**0.693**	1.281	**0.738**	1.281	**1.014**	1.281
VNIIFTRI 89	**0.939**	1.160	**0.440**	1.245	**1.114**	1.245	**0.667**	1.278	**0.943**	1.314	**0.988**	1.314	**1.264**	1.314

Matrix of equivalence (Continued)

Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	PTB 229074		PTB 229075		VNIIFTRI 79		VNIIFTRI 89	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**0.499**	0.453	**0.813**	0.701	**0.978**	0.701	**-0.190**	1.211	**-0.440**	1.245
NIST A129	**-0.175**	0.453	**0.139**	0.701	**0.304**	0.701	**-0.864**	1.211	**-1.114**	1.245
NMi-VSL 226246	**0.272**	0.537	**0.586**	0.758	**0.752**	0.758	**-0.416**	1.245	**-0.667**	1.278
NPL 221481	**-0.004**	0.616	**0.310**	0.816	**0.476**	0.816	**-0.693**	1.281	**-0.943**	1.314
NPL 221483	**-0.049**	0.616	**0.265**	0.816	**0.431**	0.816	**-0.738**	1.281	**-0.988**	1.314
NPL 221485	**-0.325**	0.616	**-0.012**	0.816	**0.154**	0.816	**-1.014**	1.281	**-1.264**	1.314
PTB 229074	**-0.314**	0.535			**0.166**	0.756	**-1.003**	1.244	**-1.253**	1.277
PTB 229075	**-0.479**	0.535	**-0.166**	0.756			**-1.168**	1.244	**-1.418**	1.277
VNIIFTRI 79	**0.689**	1.124	**1.003**	1.244	**1.168**	1.244			**-0.250**	1.615
VNIIFTRI 89	**0.939**	1.160	**1.2527**	1.2772	**1.418**	1.277	**0.250**	1.615		


CCT-K1 : Nominal temperature, T_{90} = 0.704 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 0.762 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

u_{comp} = 0.190 mK

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	0.761654	0.082
NIST A129	0.761491	0.082
NMi-VSL 226246	0.761866	0.182
NPL 221481	0.761820	0.218
NPL 221483	0.761770	0.218
NPL 221485	0.761112	0.218
PTB 229074	0.761082	0.180
PTB 229075	0.761437	0.180
VNIIFTRI 79	0.762375	0.511
VNIIFTRI 89	0.762682	0.540

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 0.761580 K

Matrix of equivalence

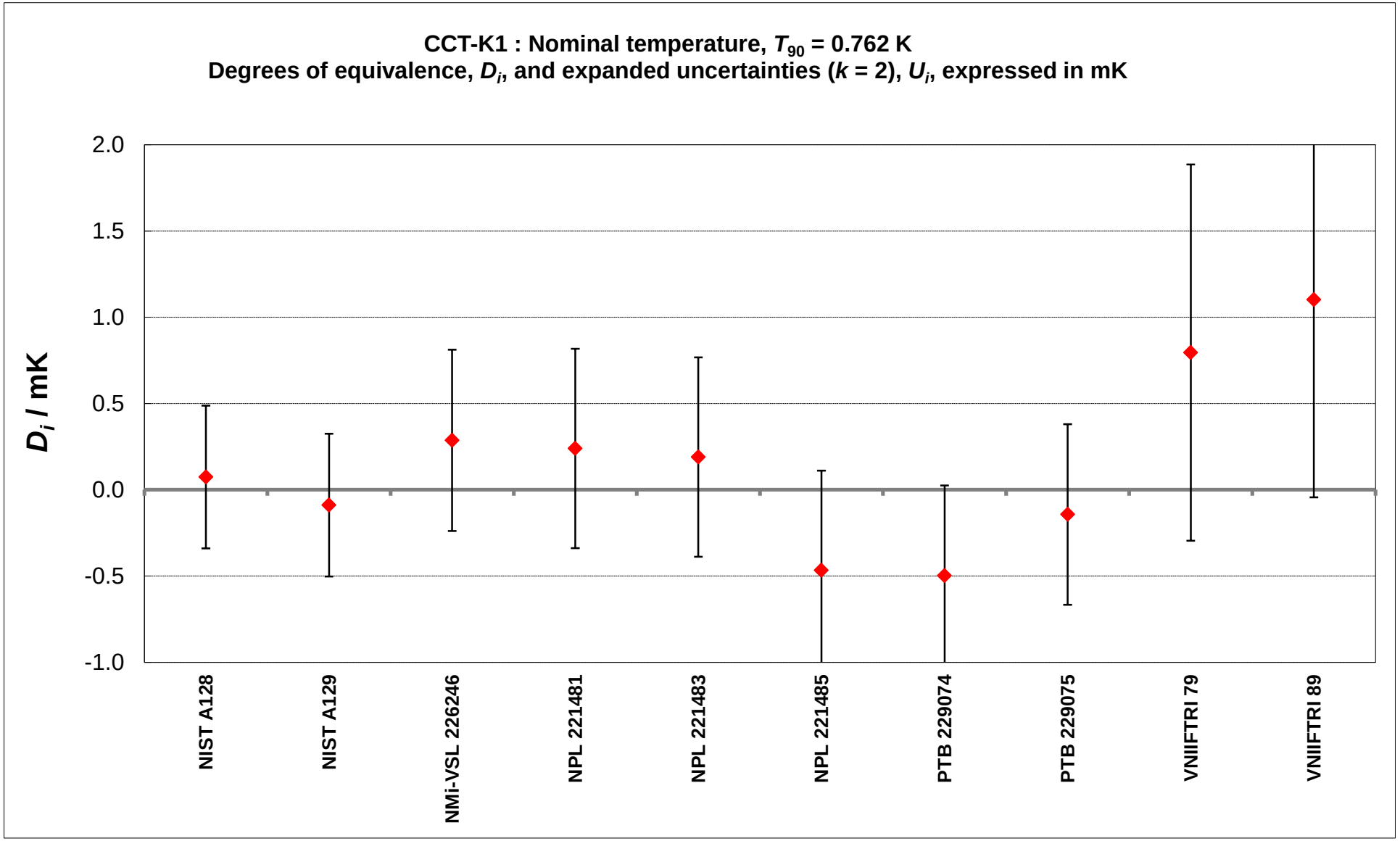
Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NIST A128		NIST A129		NMi-VSL 226246		NPL 221481		NPL 221483		NPL 221485	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**0.074**	0.413			**0.163**	0.585	**-0.213**	0.669	**-0.166**	0.711	**-0.116**	0.711	**0.541**	0.711
NIST A129	**-0.089**	0.413	**-0.163**	0.585			**-0.376**	0.669	**-0.329**	0.711	**-0.279**	0.711	**0.379**	0.711
NMi-VSL 226246	**0.286**	0.526	**0.213**	0.669	**0.376**	0.669			**0.046**	0.781	**0.096**	0.781	**0.754**	0.781
NPL 221481	**0.240**	0.578	**0.166**	0.711	**0.329**	0.711	**-0.046**	0.781			**0.050**	0.817	**0.708**	0.817
NPL 221483	**0.190**	0.578	**0.116**	0.711	**0.279**	0.711	**-0.096**	0.781	**-0.050**	0.817			**0.658**	0.817
NPL 221485	**-0.468**	0.578	**-0.541**	0.711	**-0.379**	0.711	**-0.754**	0.781	**-0.708**	0.817	**-0.658**	0.817		
PTB 229074	**-0.498**	0.523	**-0.572**	0.667	**-0.409**	0.667	**-0.785**	0.742	**-0.738**	0.780	**-0.688**	0.780	**-0.031**	0.780
PTB 229075	**-0.143**	0.523	**-0.217**	0.667	**-0.054**	0.667	**-0.430**	0.742	**-0.383**	0.780	**-0.333**	0.780	**0.324**	0.780
VNIIFTRI 79	**0.795**	1.090	**0.721**	1.166	**0.884**	1.166	**0.508**	1.211	**0.555**	1.234	**0.605**	1.234	**1.262**	1.234
VNIIFTRI 89	**1.102**	1.145	**1.028**	1.218	**1.191**	1.218	**0.815**	1.260	**0.862**	1.283	**0.912**	1.283	**1.569**	1.283

Matrix of equivalence (Continued)

Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	PTB 229074		PTB 229075		VNIIFTRI 79		VNIIFTRI 89	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**0.074**	0.413	**0.572**	0.667	**0.217**	0.667	**-0.721**	1.166	**-1.028**	1.218
NIST A129	**-0.089**	0.413	**0.409**	0.667	**0.054**	0.667	**-0.884**	1.166	**-1.191**	1.218
NMi-VSL 226246	**0.286**	0.526	**0.785**	0.742	**0.430**	0.742	**-0.508**	1.211	**-0.815**	1.260
NPL 221481	**0.240**	0.578	**0.738**	0.780	**0.383**	0.780	**-0.555**	1.234	**-0.862**	1.283
NPL 221483	**0.190**	0.578	**0.688**	0.780	**0.333**	0.780	**-0.605**	1.234	**-0.912**	1.283
NPL 221485	**-0.468**	0.578	**0.031**	0.780	**-0.324**	0.780	**-1.262**	1.234	**-1.569**	1.283
PTB 229074	**-0.498**	0.523			**-0.355**	0.740	**-1.293**	1.210	**-1.600**	1.259
PTB 229075	**-0.143**	0.523	**0.355**	0.740			**-0.938**	1.210	**-1.245**	1.259
VNIIFTRI 79	**0.795**	1.090	**1.293**	1.210	**0.938**	1.210			**-0.307**	1.582
VNIIFTRI 89	**1.102**	1.145	**1.6001**	1.2593	**1.245**	1.259	**0.307**	1.582		


CCT-K1 : Nominal temperature, T_{90} = 0.762 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 0.858 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

u_{comp} = 0.177 mK

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	0.858267	0.076
NIST A129	0.858267	0.076
NMi-VSL 226246	0.858603	0.182
NPL 221481	0.858740	0.186
NPL 221483	0.858680	0.186
NPL 221485	0.858267	0.186
PTB 229074	0.858122	0.180
PTB 229075	0.858288	0.180
VNIIFTRI 79	0.859183	0.486
VNIIFTRI 89	0.859376	0.532

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 0.858421 K

Matrix of equivalence

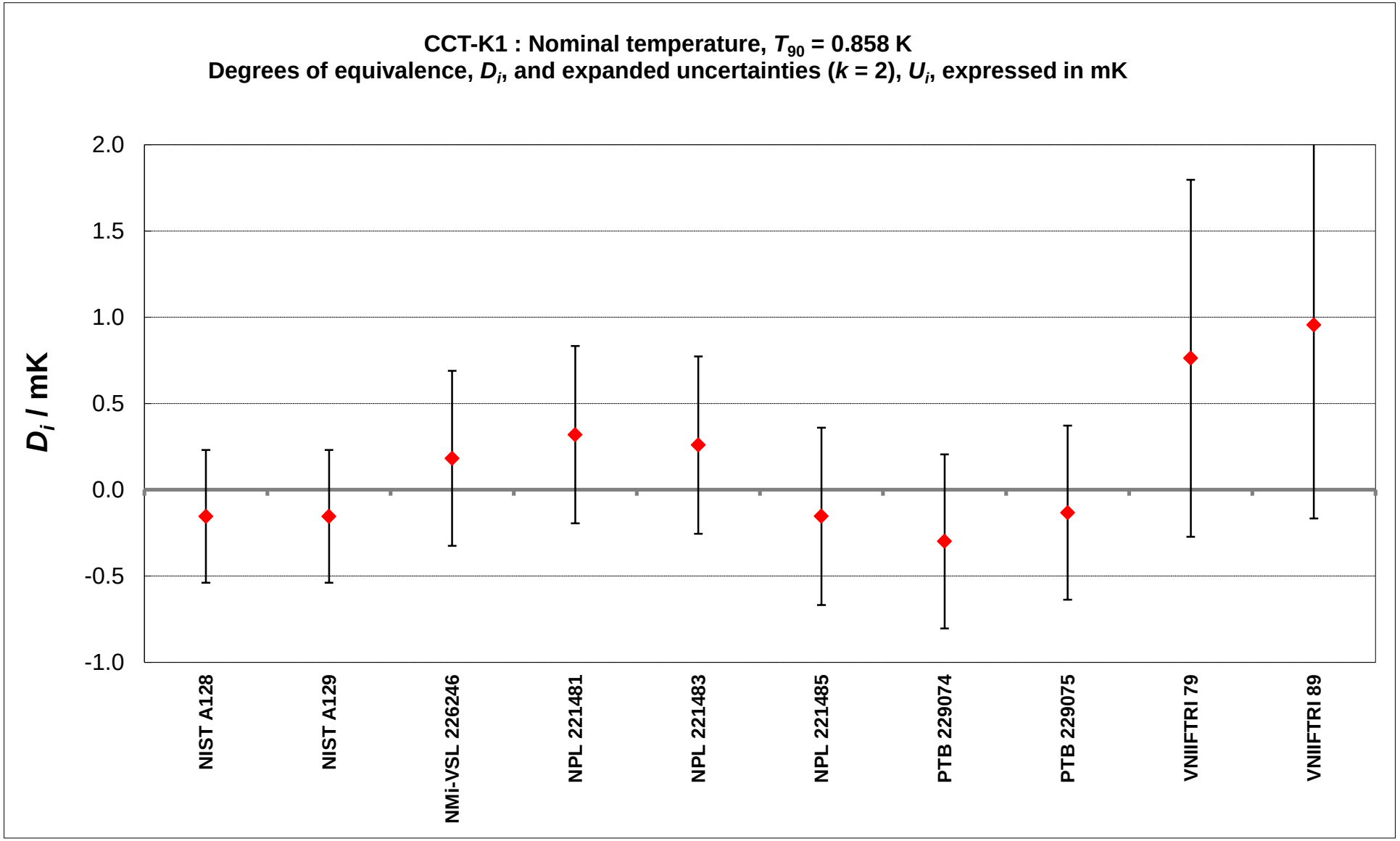
Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NIST A128		NIST A129		NMi-VSL 226246		NPL 221481		NPL 221483		NPL 221485	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**-0.154**	0.384			**0.000**	0.544	**-0.336**	0.636	**-0.473**	0.642	**-0.413**	0.642	**0.000**	0.642
NIST A129	**-0.154**	0.384	**0.000**	0.544			**-0.336**	0.636	**-0.473**	0.642	**-0.413**	0.642	**0.000**	0.642
NMi-VSL 226246	**0.182**	0.507	**0.336**	0.636	**0.336**	0.636			**-0.137**	0.722	**-0.077**	0.722	**0.336**	0.722
NPL 221481	**0.319**	0.514	**0.473**	0.642	**0.473**	0.642	**0.137**	0.722			**0.060**	0.727	**0.473**	0.727
NPL 221483	**0.259**	0.514	**0.413**	0.642	**0.413**	0.642	**0.077**	0.722	**-0.060**	0.727			**0.413**	0.727
NPL 221485	**-0.154**	0.514	**0.000**	0.642	**0.000**	0.642	**-0.336**	0.722	**-0.473**	0.727	**-0.413**	0.727		
PTB 229074	**-0.299**	0.505	**-0.145**	0.634	**-0.145**	0.634	**-0.481**	0.715	**-0.619**	0.720	**-0.559**	0.720	**-0.145**	0.720
PTB 229075	**-0.133**	0.505	**0.021**	0.634	**0.021**	0.634	**-0.315**	0.715	**-0.452**	0.720	**-0.392**	0.720	**0.021**	0.720
VNIIFTRI 79	**0.762**	1.035	**0.917**	1.104	**0.917**	1.104	**0.581**	1.152	**0.443**	1.155	**0.503**	1.155	**0.916**	1.155
VNIIFTRI 89	**0.955**	1.121	**1.109**	1.185	**1.109**	1.185	**0.773**	1.231	**0.636**	1.233	**0.696**	1.233	**1.109**	1.233

Matrix of equivalence (Continued)

Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	PTB 229074		PTB 229075		VNIIFTRI 79		VNIIFTRI 89	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**-0.154**	0.384	**0.145**	0.634	**-0.021**	0.634	**-0.917**	1.104	**-1.109**	1.185
NIST A129	**-0.154**	0.384	**0.145**	0.634	**-0.021**	0.634	**-0.917**	1.104	**-1.109**	1.185
NMi-VSL 226246	**0.182**	0.507	**0.481**	0.715	**0.315**	0.715	**-0.581**	1.152	**-0.773**	1.231
NPL 221481	**0.319**	0.514	**0.619**	0.720	**0.452**	0.720	**-0.443**	1.155	**-0.636**	1.233
NPL 221483	**0.259**	0.514	**0.559**	0.720	**0.392**	0.720	**-0.503**	1.155	**-0.696**	1.233
NPL 221485	**-0.154**	0.514	**0.145**	0.720	**-0.021**	0.720	**-0.916**	1.155	**-1.109**	1.233
PTB 229074	**-0.299**	0.505			**-0.166**	0.714	**-1.062**	1.151	**-1.255**	1.230
PTB 229075	**-0.133**	0.505	**0.166**	0.714			**-0.895**	1.151	**-1.088**	1.230
VNIIFTRI 79	**0.762**	1.035	**1.062**	1.151	**0.895**	1.151			**-0.193**	1.526
VNIIFTRI 89	**0.955**	1.121	**1.2545**	1.2296	**1.088**	1.230	**0.193**	1.526		


CCT-K1 : Nominal temperature, T_{90} = 0.858 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 0.991 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

u_{comp} = 0.159 mK

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	0.991179	0.078
NIST A129	0.991012	0.078
NMi-VSL 226246	0.991361	0.182
NPL 221481	0.991590	0.144
NPL 221485	0.991375	0.144
PTB 229074	0.991133	0.180
PTB 229075	0.990995	0.180

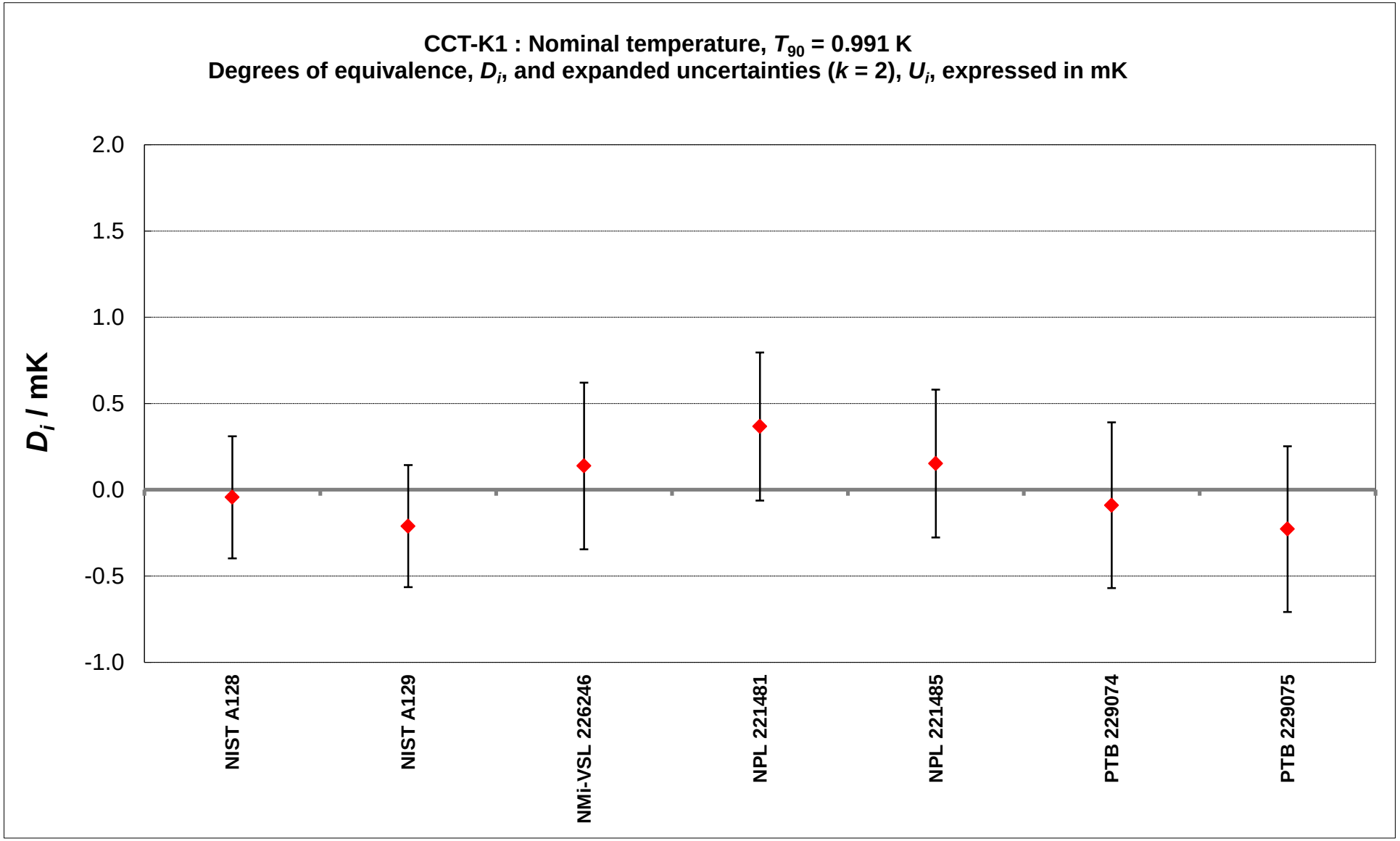
Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 0.991223 K

Matrix of equivalence

Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NIST A128		NIST A129		NMi-VSL 226246		NPL 221481		NPL 221485		PTB 229074		PTB 229075	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**-0.044**	0.354			**0.168**	0.500	**-0.182**	0.599	**-0.411**	0.556	**-0.196**	0.556	**0.046**	0.597	**0.184**	0.597
NIST A129	**-0.211**	0.354	**-0.168**	0.500			**-0.349**	0.599	**-0.578**	0.556	**-0.363**	0.556	**-0.121**	0.597	**0.016**	0.597
NMi-VSL 226246	**0.138**	0.483	**0.182**	0.599	**0.349**	0.599			**-0.229**	0.646	**-0.014**	0.646	**0.228**	0.681	**0.366**	0.681
NPL 221481	**0.367**	0.429	**0.411**	0.556	**0.578**	0.556	**0.229**	0.646			**0.215**	0.607	**0.457**	0.644	**0.595**	0.644
NPL 221485	**0.152**	0.429	**0.196**	0.556	**0.363**	0.556	**0.014**	0.646	**-0.215**	0.607			**0.242**	0.644	**0.380**	0.644
PTB 229074	**-0.090**	0.480	**-0.046**	0.597	**0.121**	0.597	**-0.228**	0.681	**-0.457**	0.644	**-0.242**	0.644			**0.138**	0.679
PTB 229075	**-0.228**	0.480	**-0.184**	0.597	**-0.016**	0.597	**-0.366**	0.681	**-0.595**	0.644	**-0.380**	0.644	**-0.138**	0.679		


CCT-K1 : Nominal temperature, T_{90} = 0.991 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221485
PTB 229074
PTB 229075

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 1.032 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.157 \text{ mK}$$

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	1.031395	0.078
NIST A129	1.031369	0.078
NMi-VSL 226246	1.031678	0.182
NPL 221481	1.031835	0.145
NPL 221483	1.031765	0.145
NPL 221485	1.031717	0.145
PTB 229074	1.031415	0.180
PTB 229075	1.031397	0.180
VNIIFTRI 79	1.032281	0.454
VNIIFTRI 89	1.032306	0.526

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 1.031584 K

Matrix of equivalence

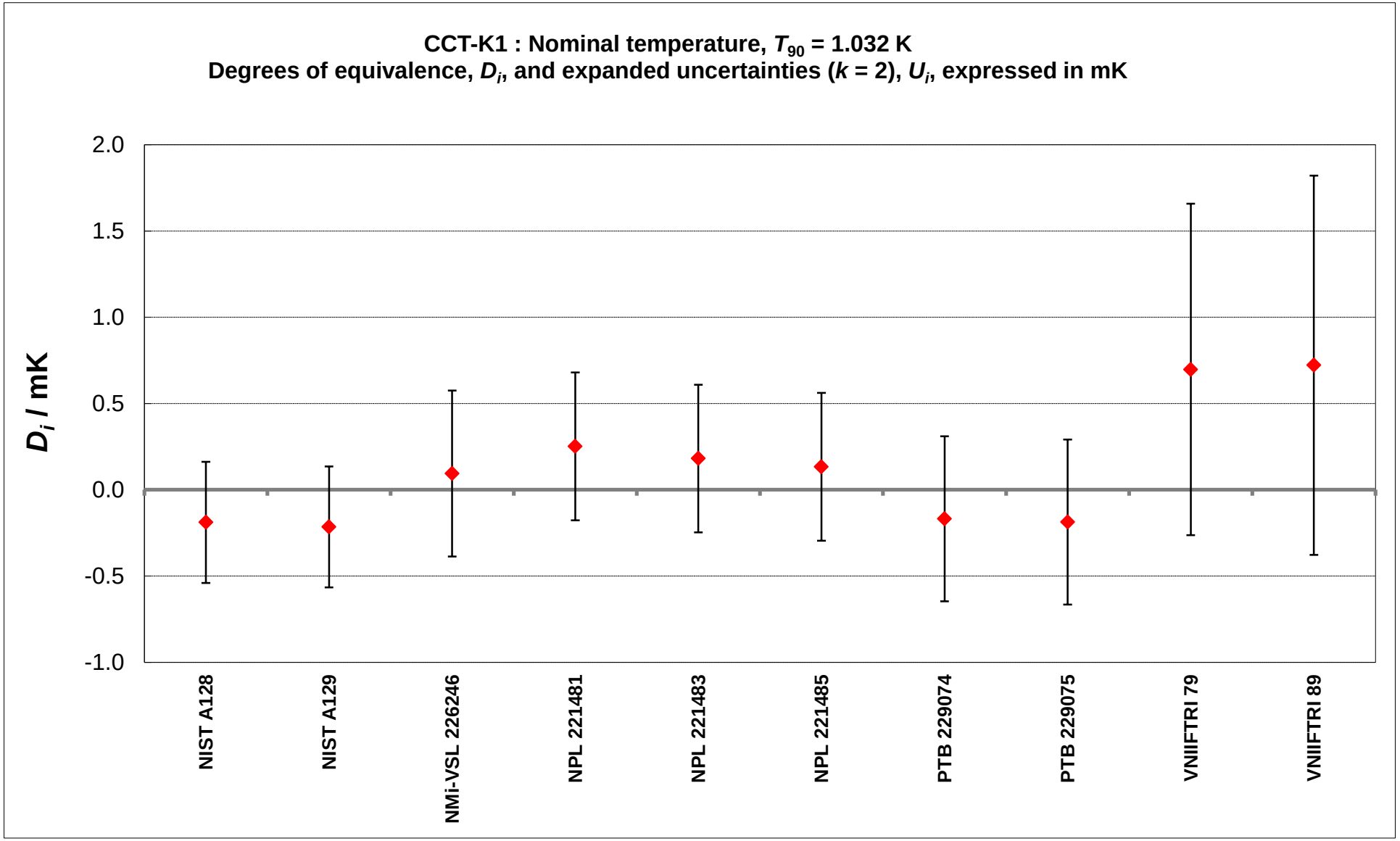
Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NIST A128		NIST A129		NMi-VSL 226246		NPL 221481		NPL 221483		NPL 221485	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**-0.189**	0.351			**0.026**	0.496	**-0.283**	0.595	**-0.440**	0.553	**-0.370**	0.553	**-0.322**	0.553
NIST A129	**-0.215**	0.351	**-0.026**	0.496			**-0.310**	0.595	**-0.467**	0.553	**-0.397**	0.553	**-0.348**	0.553
NMi-VSL 226246	**0.094**	0.481	**0.283**	0.595	**0.310**	0.595			**-0.157**	0.644	**-0.087**	0.644	**-0.039**	0.644
NPL 221481	**0.251**	0.428	**0.440**	0.553	**0.467**	0.553	**0.157**	0.644			**0.070**	0.605	**0.118**	0.605
NPL 221483	**0.181**	0.428	**0.370**	0.553	**0.397**	0.553	**0.087**	0.644	**-0.070**	0.605			**0.048**	0.605
NPL 221485	**0.133**	0.428	**0.322**	0.553	**0.348**	0.553	**0.039**	0.644	**-0.118**	0.605	**-0.048**	0.605		
PTB 229074	**-0.169**	0.478	**0.021**	0.593	**0.047**	0.593	**-0.263**	0.678	**-0.420**	0.642	**-0.350**	0.642	**-0.302**	0.642
PTB 229075	**-0.187**	0.478	**0.002**	0.593	**0.028**	0.593	**-0.281**	0.678	**-0.438**	0.642	**-0.368**	0.642	**-0.320**	0.642
VNIIFTRI 79	**0.697**	0.961	**0.886**	1.023	**0.913**	1.023	**0.603**	1.074	**0.446**	1.052	**0.516**	1.052	**0.564**	1.052
VNIIFTRI 89	**0.722**	1.099	**0.911**	1.153	**0.937**	1.153	**0.628**	1.199	**0.471**	1.179	**0.541**	1.179	**0.589**	1.179

Matrix of equivalence (Continued)

Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	PTB 229074		PTB 229075		VNIIFTRI 79		VNIIFTRI 89	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**-0.189**	0.351	**-0.021**	0.593	**-0.002**	0.593	**-0.886**	1.023	**-0.911**	1.153
NIST A129	**-0.215**	0.351	**-0.047**	0.593	**-0.028**	0.593	**-0.913**	1.023	**-0.937**	1.153
NMi-VSL 226246	**0.094**	0.481	**0.263**	0.678	**0.281**	0.678	**-0.603**	1.074	**-0.628**	1.199
NPL 221481	**0.251**	0.428	**0.420**	0.642	**0.438**	0.642	**-0.446**	1.052	**-0.471**	1.179
NPL 221483	**0.181**	0.428	**0.350**	0.642	**0.368**	0.642	**-0.516**	1.052	**-0.541**	1.179
NPL 221485	**0.133**	0.428	**0.302**	0.642	**0.320**	0.642	**-0.564**	1.052	**-0.589**	1.179
PTB 229074	**-0.169**	0.478			**0.018**	0.676	**-0.866**	1.073	**-0.890**	1.198
PTB 229075	**-0.187**	0.478	**-0.018**	0.676			**-0.884**	1.073	**-0.909**	1.198
VNIIFTRI 79	**0.697**	0.961	**0.866**	1.073	**0.884**	1.073			**-0.025**	1.460
VNIIFTRI 89	**0.722**	1.099	**0.8904**	1.1983	**0.909**	1.198	**0.025**	1.460		


CCT-K1 : Nominal temperature, T_{90} = 1.032 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 1.225 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.149 \text{ mK}$$

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	1.224814	0.065
NIST A129	1.224828	0.065
NMi-VSL 226246	1.225123	0.256
NPL 221481	1.225340	0.151
NPL 221485	1.225201	0.151
PTB 229074	1.224998	0.180
PTB 229075	1.224931	0.180

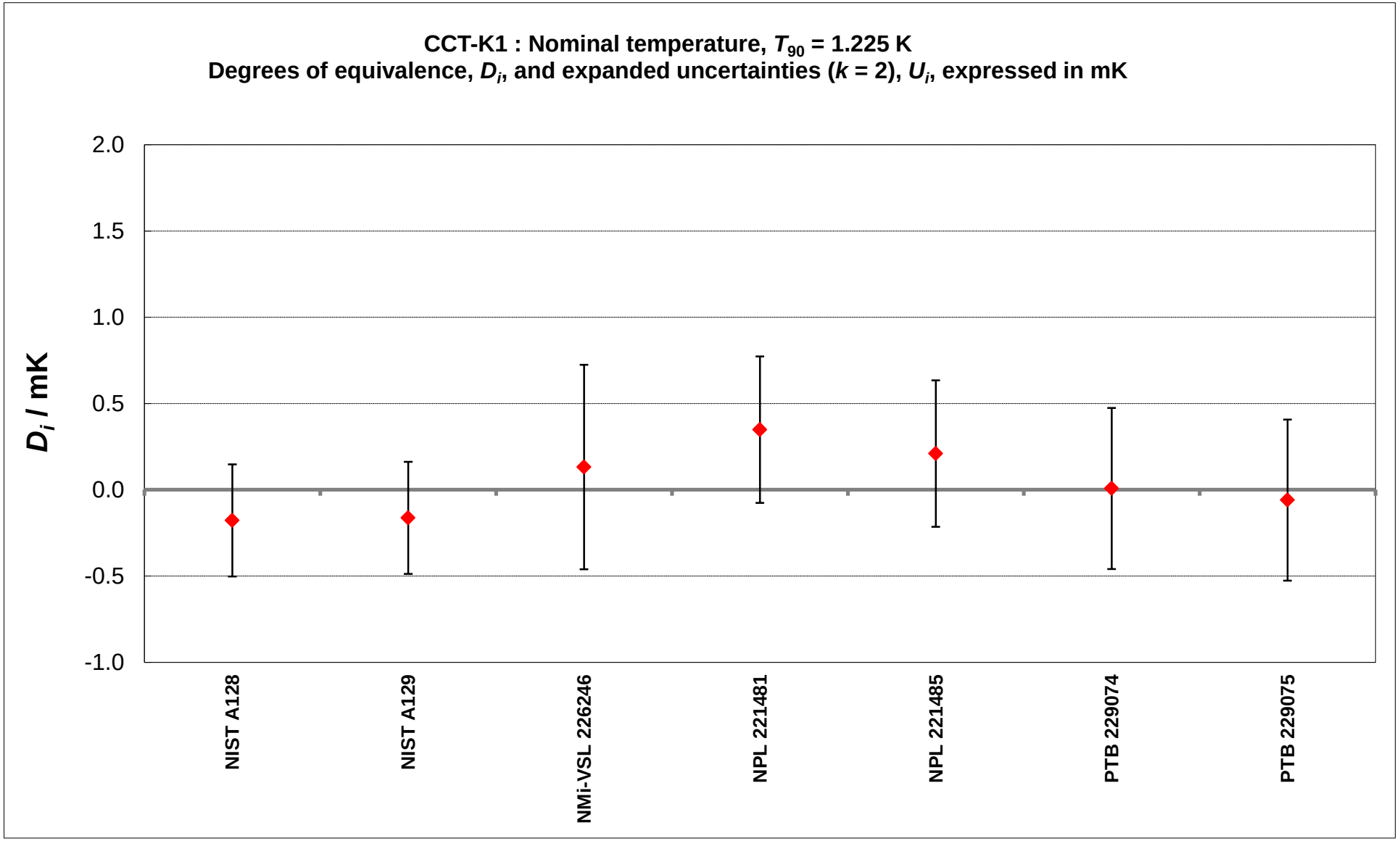
Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 1.224991 K

Matrix of equivalence

Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NIST A128		NIST A129		NMi-VSL 226246		NPL 221481		NPL 221485		PTB 229074		PTB 229075	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**-0.177**	0.325			**-0.014**	0.459	**-0.309**	0.675	**-0.526**	0.534	**-0.388**	0.534	**-0.185**	0.569	**-0.118**	0.569
NIST A129	**-0.163**	0.325	**0.014**	0.459			**-0.295**	0.675	**-0.512**	0.534	**-0.373**	0.534	**-0.171**	0.569	**-0.103**	0.569
NMi-VSL 226246	**0.132**	0.592	**0.309**	0.675	**0.295**	0.675			**-0.217**	0.729	**-0.078**	0.729	**0.124**	0.754	**0.191**	0.754
NPL 221481	**0.349**	0.425	**0.526**	0.534	**0.512**	0.534	**0.217**	0.729			**0.139**	0.600	**0.341**	0.631	**0.408**	0.631
NPL 221485	**0.210**	0.425	**0.388**	0.534	**0.373**	0.534	**0.078**	0.729	**-0.139**	0.600			**0.203**	0.631	**0.270**	0.631
PTB 229074	**0.007**	0.467	**0.185**	0.569	**0.171**	0.569	**-0.124**	0.754	**-0.341**	0.631	**-0.203**	0.631			**0.067**	0.661
PTB 229075	**-0.060**	0.467	**0.118**	0.569	**0.103**	0.569	**-0.191**	0.754	**-0.408**	0.631	**-0.270**	0.631	**-0.067**	0.661		


CCT-K1 : Nominal temperature, T_{90} = 1.225 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221485
PTB 229074
PTB 229075

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 1.250 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.148 \text{ mK}$$

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	1.249254	0.065
NIST A129	1.249283	0.065
NMi-VSL 226246	1.249645	0.256
NPL 221481	1.250010	0.152
NPL 221483	1.249780	0.152
NPL 221485	1.249814	0.152
PTB 229074	1.249406	0.180
PTB 229075	1.249394	0.180
VNIIFTRI 79	1.249940	0.480
VNIIFTRI 89	1.250150	0.570

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 1.249542 K

Matrix of equivalence

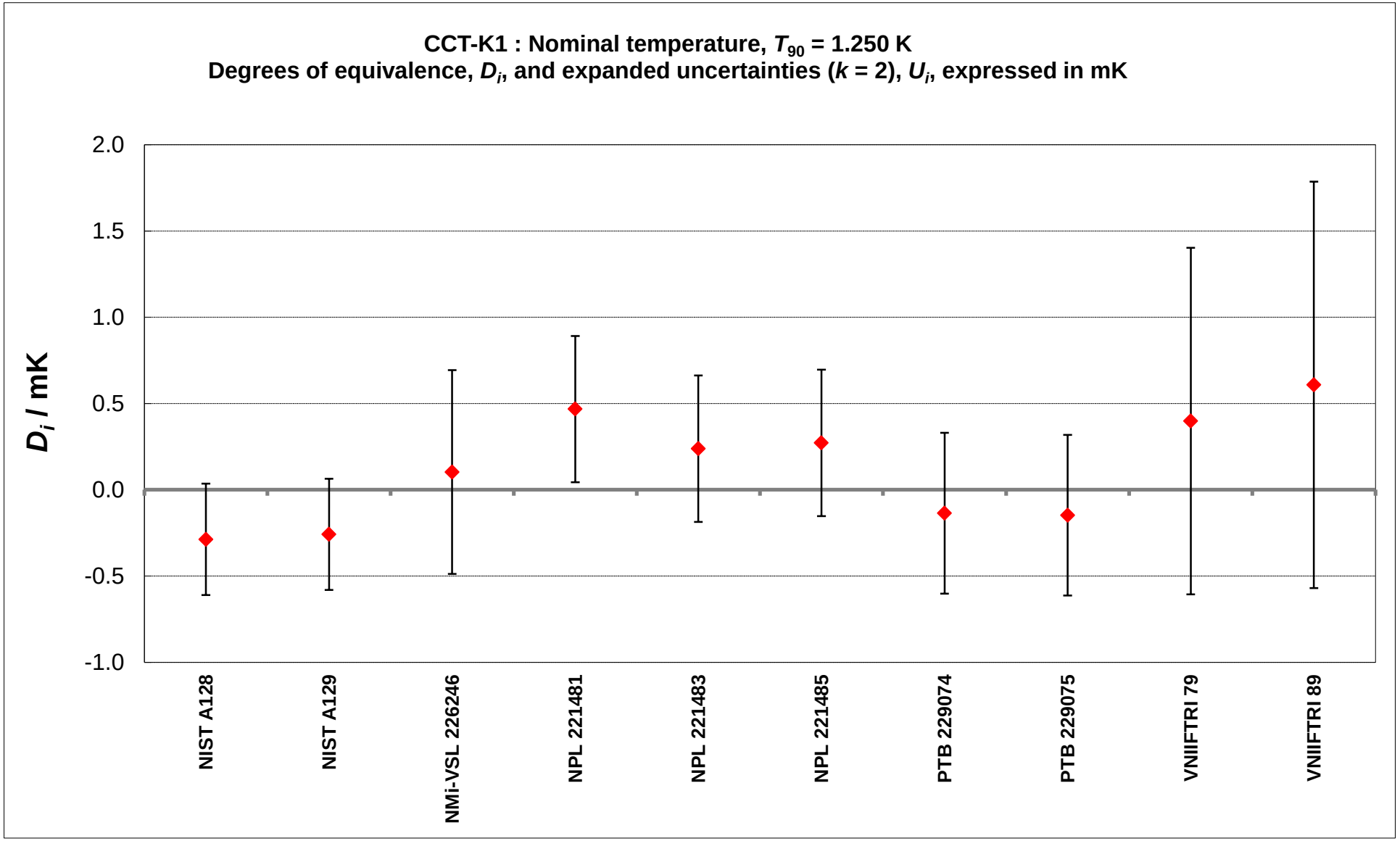
Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NIST A128		NIST A129		NMi-VSL 226246		NPL 221481		NPL 221483		NPL 221485	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	-0.288	0.323			-0.029	0.456	-0.390	0.673	-0.755	0.533	-0.525	0.533	-0.559	0.533
NIST A129	-0.259	0.323	0.029	0.456			-0.361	0.673	-0.726	0.533	-0.496	0.533	-0.530	0.533
NMi-VSL 226246	0.103	0.591	0.390	0.673	0.361	0.673			-0.365	0.728	-0.135	0.728	-0.169	0.728
NPL 221481	0.468	0.424	0.755	0.533	0.726	0.533	0.365	0.728			0.230	0.600	0.196	0.600
NPL 221483	0.238	0.424	0.525	0.533	0.496	0.533	0.135	0.728	-0.230	0.600			-0.034	0.600
NPL 221485	0.272	0.424	0.559	0.533	0.530	0.533	0.169	0.728	-0.196	0.600	0.034	0.600		
PTB 229074	-0.136	0.466	0.152	0.567	0.123	0.567	-0.239	0.753	-0.604	0.630	-0.374	0.630	-0.408	0.630
PTB 229075	-0.148	0.466	0.140	0.567	0.111	0.567	-0.250	0.753	-0.615	0.630	-0.385	0.630	-0.419	0.630
VNIIFTRI 79	0.398	1.004	0.686	1.055	0.657	1.055	0.296	1.166	-0.069	1.090	0.161	1.090	0.127	1.090
VNIIFTRI 89	0.608	1.178	0.896	1.221	0.867	1.221	0.505	1.318	0.141	1.252	0.371	1.252	0.336	1.252

Matrix of equivalence (Continued)

Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	PTB 229074		PTB 229075		VNIIFTRI 79		VNIIFTRI 89	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	-0.288	0.323	-0.152	0.567	-0.140	0.567	-0.686	1.055	-0.896	1.221
NIST A129	-0.259	0.323	-0.123	0.567	-0.111	0.567	-0.657	1.055	-0.867	1.221
NMi-VSL 226246	0.103	0.591	0.239	0.753	0.250	0.753	-0.296	1.166	-0.505	1.318
NPL 221481	0.468	0.424	0.604	0.630	0.615	0.630	0.069	1.090	-0.141	1.252
NPL 221483	0.238	0.424	0.374	0.630	0.385	0.630	-0.161	1.090	-0.371	1.252
NPL 221485	0.272	0.424	0.408	0.630	0.419	0.630	-0.127	1.090	-0.336	1.252
PTB 229074	-0.136	0.466			0.012	0.659	-0.534	1.107	-0.744	1.267
PTB 229075	-0.148	0.466	-0.012	0.659			-0.546	1.107	-0.756	1.267
VNIIFTRI 79	0.398	1.004	0.534	1.107	0.546	1.107			-0.210	1.548
VNIIFTRI 89	0.608	1.178	0.744	1.2665	0.756	1.267	0.210	1.548		


CCT-K1 : Nominal temperature, T_{90} = 1.250 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 1.503 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

u_{comp} = 0.137 mK

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	1.503103	0.062
NIST A129	1.503008	0.062
NMi-VSL 226246	1.503751	0.256
NPL 221481	1.503610	0.160
NPL 221483	1.503650	0.160
NPL 221485	1.503561	0.160
NRC A138	1.503715	0.225
NRC A140	1.503918	0.225
PTB 229074	1.503155	0.180
PTB 229075	1.503100	0.180
VNIIFTRI 79	1.503876	0.510
VNIIFTRI 89	1.504156	0.620

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 1.503370 K

Matrix of equivalence

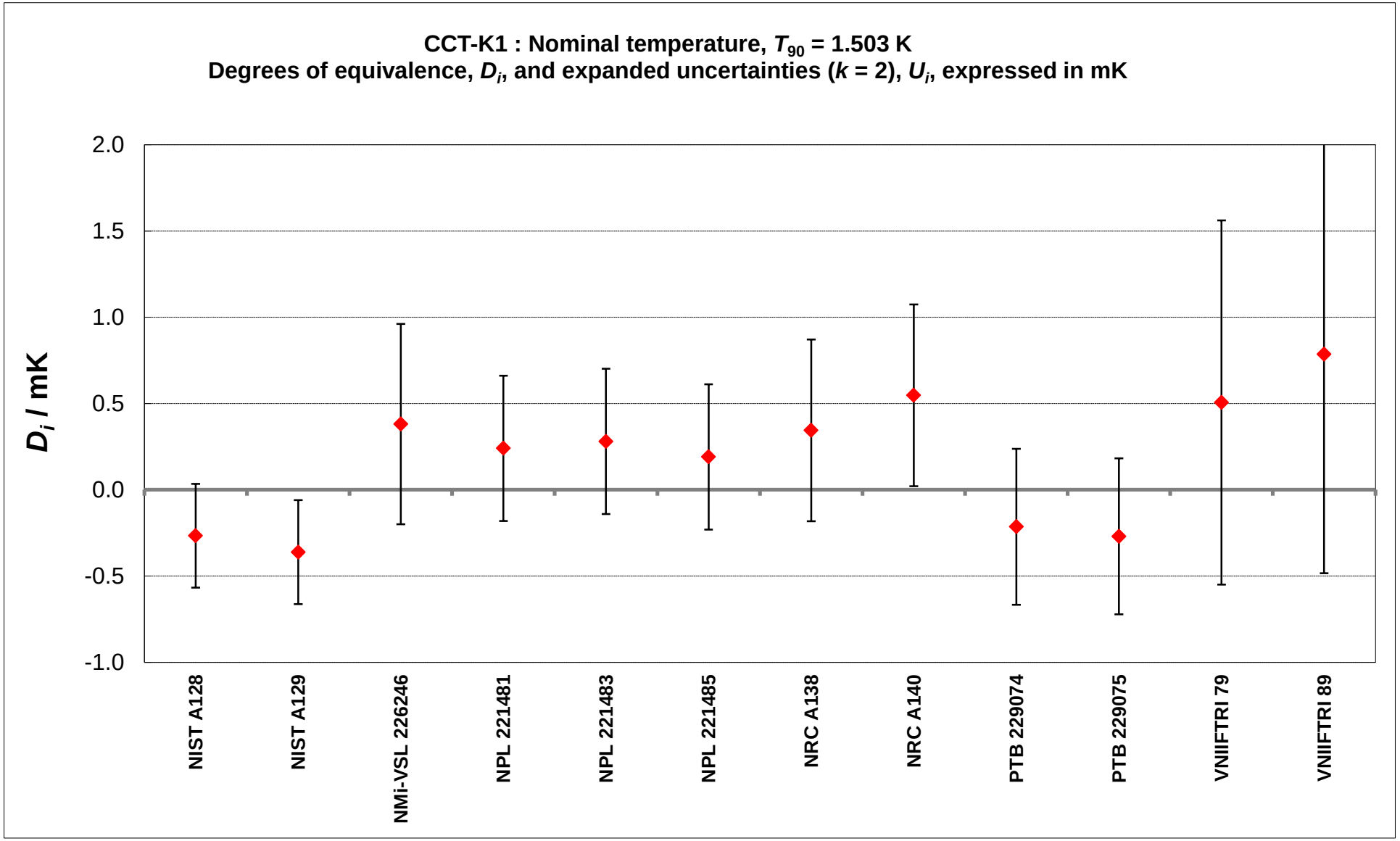
Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NIST A128		NIST A129		NMi-VSL 226246		NPL 221481		NPL 221483		NPL 221485	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**-0.267**	0.301			**0.095**	0.426	**-0.648**	0.654	**-0.507**	0.518	**-0.547**	0.518	**-0.457**	0.518
NIST A129	**-0.362**	0.301	**-0.095**	0.426			**-0.743**	0.654	**-0.602**	0.518	**-0.642**	0.518	**-0.552**	0.518
NMi-VSL 226246	**0.381**	0.581	**0.648**	0.654	**0.743**	0.654			**0.141**	0.717	**0.101**	0.717	**0.190**	0.717
NPL 221481	**0.240**	0.421	**0.507**	0.518	**0.602**	0.518	**-0.141**	0.717			**-0.040**	0.596	**0.050**	0.596
NPL 221483	**0.280**	0.421	**0.547**	0.518	**0.642**	0.518	**-0.101**	0.717	**0.040**	0.596			**0.090**	0.596
NPL 221485	**0.191**	0.421	**0.457**	0.518	**0.552**	0.518	**-0.190**	0.717	**-0.050**	0.596	**-0.090**	0.596		
NRC A138	**0.345**	0.527	**0.611**	0.607	**0.706**	0.607	**-0.036**	0.784	**0.104**	0.675	**0.064**	0.675	**0.154**	0.675
NRC A140	**0.548**	0.527	**0.815**	0.607	**0.910**	0.607	**0.167**	0.784	**0.308**	0.675	**0.268**	0.675	**0.357**	0.675
PTB 229074	**-0.215**	0.452	**0.052**	0.543	**0.147**	0.543	**-0.596**	0.736	**-0.455**	0.618	**-0.495**	0.618	**-0.405**	0.618
PTB 229075	**-0.270**	0.452	**-0.004**	0.543	**0.092**	0.543	**-0.651**	0.736	**-0.511**	0.618	**-0.551**	0.618	**-0.461**	0.618
VNIIFTRI 79	**0.506**	1.055	**0.773**	1.098	**0.868**	1.098	**0.125**	1.205	**0.266**	1.136	**0.226**	1.136	**0.316**	1.136
VNIIFTRI 89	**0.786**	1.269	**1.052**	1.304	**1.147**	1.304	**0.405**	1.396	**0.545**	1.337	**0.505**	1.337	**0.595**	1.337

Matrix of equivalence (Continued)

Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NRC A138		NRC A140		PTB 229074		PTB 229075		VNIIFTRI 79		VNIIFTRI 89	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**-0.267**	0.301	**-0.611**	0.607	**-0.815**	0.607	**-0.052**	0.543	**0.004**	0.543	**-0.773**	1.098	**-1.052**	1.304
NIST A129	**-0.362**	0.301	**-0.706**	0.607	**-0.910**	0.607	**-0.147**	0.543	**-0.092**	0.543	**-0.868**	1.098	**-1.147**	1.304
NMi-VSL 226246	**0.381**	0.581	**0.036**	0.784	**-0.167**	0.784	**0.596**	0.736	**0.651**	0.736	**-0.125**	1.205	**-0.405**	1.396
NPL 221481	**0.240**	0.421	**-0.104**	0.675	**-0.308**	0.675	**0.455**	0.618	**0.511**	0.618	**-0.266**	1.136	**-0.545**	1.337
NPL 221483	**0.280**	0.421	**-0.064**	0.675	**-0.268**	0.675	**0.495**	0.618	**0.551**	0.618	**-0.226**	1.136	**-0.505**	1.337
NPL 221485	**0.191**	0.421	**-0.154**	0.675	**-0.357**	0.675	**0.405**	0.618	**0.461**	0.618	**-0.316**	1.136	**-0.595**	1.337
NRC A138	**0.345**	0.527			**-0.203**	0.745	**0.559**	0.694	**0.615**	0.694	**-0.161**	1.180	**-0.441**	1.374
NRC A140	**0.548**	0.527	0.2032	0.7451			**0.763**	0.694	**0.818**	0.694	**0.042**	1.180	**-0.238**	1.374
PTB 229074	**-0.215**	0.452	**-0.559**	0.694	-0.763	0.6944			**0.056**	0.640	**-0.721**	1.148	**-1.000**	1.347
PTB 229075	**-0.270**	0.452	**-0.615**	0.694	**-0.818**	0.694	-0.0555	0.6398			**-0.776**	1.148	**-1.056**	1.347
VNIIFTRI 79	**0.506**	1.055	**0.161**	1.180	**-0.042**	1.180	**0.721**	1.148	0.7764	1.1483			**-0.279**	1.651
VNIIFTRI 89	**0.786**	1.269	**0.441**	1.374	**0.238**	1.374	**1.000**	1.347	**1.056**	1.347	0.2794	1.6505		


CCT-K1 : Nominal temperature, T_{90} = 1.503 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 1.755 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

u_{comp} = 0.132 mK

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	1.754643	0.038
NIST A129	1.754505	0.038
NMi-VSL 226246	1.755116	0.256
NPL 221481	1.755060	0.157
NPL 221483	1.755070	0.157
NPL 221485	1.754965	0.157
NRC A138	1.755172	0.225
NRC A140	1.755291	0.225
PTB 229074	1.754594	0.180
PTB 229075	1.754562	0.180
VNIIFTRI 79	1.755577	0.484
VNIIFTRI 89	1.755761	0.592

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 1.754822 K

Matrix of equivalence

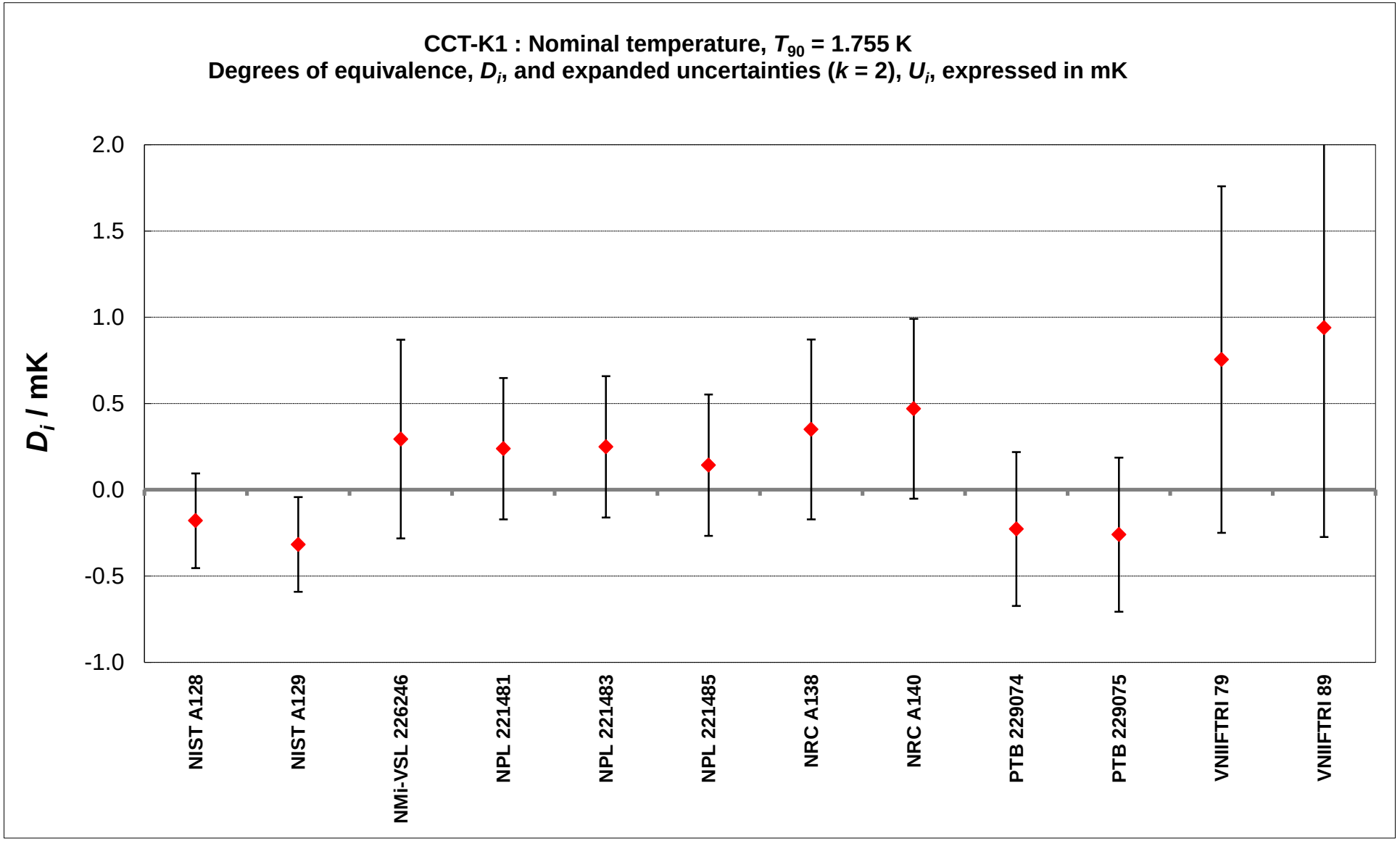
Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NIST A128		NIST A129		NMi-VSL 226246		NPL 221481		NPL 221483		NPL 221485	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	-0.179	0.275			0.138	0.388	-0.473	0.638	-0.418	0.493	-0.428	0.493	-0.322	0.493
NIST A129	-0.317	0.275	-0.138	0.388			-0.611	0.638	-0.556	0.493	-0.566	0.493	-0.460	0.493
NMi-VSL 226246	0.294	0.576	0.473	0.638	0.611	0.638			0.055	0.707	0.045	0.707	0.151	0.707
NPL 221481	0.238	0.410	0.418	0.493	0.556	0.493	-0.055	0.707			-0.010	0.579	0.095	0.579
NPL 221483	0.248	0.410	0.428	0.493	0.566	0.493	-0.045	0.707	0.010	0.579			0.105	0.579
NPL 221485	0.143	0.410	0.322	0.493	0.460	0.493	-0.151	0.707	-0.095	0.579	-0.105	0.579		
NRC A138	0.350	0.522	0.529	0.590	0.668	0.590	0.056	0.777	0.112	0.663	0.102	0.663	0.207	0.663
NRC A140	0.469	0.522	0.649	0.590	0.787	0.590	0.176	0.777	0.231	0.663	0.221	0.663	0.326	0.663
PTB 229074	-0.228	0.446	-0.049	0.524	0.090	0.524	-0.521	0.729	-0.466	0.606	-0.476	0.606	-0.371	0.606
PTB 229075	-0.260	0.446	-0.081	0.524	0.057	0.524	-0.554	0.729	-0.499	0.606	-0.509	0.606	-0.403	0.606
VNIIFTRI 79	0.755	1.004	0.934	1.041	1.073	1.041	0.461	1.158	0.517	1.085	0.507	1.085	0.612	1.085
VNIIFTRI 89	0.939	1.213	1.118	1.243	1.256	1.243	0.645	1.343	0.701	1.280	0.691	1.280	0.796	1.280

Matrix of equivalence (Continued)

Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NRC A138		NRC A140		PTB 229074		PTB 229075		VNIIFTRI 79		VNIIFTRI 89	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	-0.179	0.275	-0.529	0.590	-0.649	0.590	0.049	0.524	0.081	0.524	-0.934	1.041	-1.118	1.243
NIST A129	-0.317	0.275	-0.668	0.590	-0.787	0.590	-0.090	0.524	-0.057	0.524	-1.073	1.041	-1.256	1.243
NMi-VSL 226246	0.294	0.576	-0.056	0.777	-0.176	0.777	0.521	0.729	0.554	0.729	-0.461	1.158	-0.645	1.343
NPL 221481	0.238	0.410	-0.112	0.663	-0.231	0.663	0.466	0.606	0.499	0.606	-0.517	1.085	-0.701	1.280
NPL 221483	0.248	0.410	-0.102	0.663	-0.221	0.663	0.476	0.606	0.509	0.606	-0.507	1.085	-0.691	1.280
NPL 221485	0.143	0.410	-0.207	0.663	-0.326	0.663	0.371	0.606	0.403	0.606	-0.612	1.085	-0.796	1.280
NRC A138	0.350	0.522			-0.119	0.738	0.578	0.686	0.610	0.686	-0.405	1.132	-0.589	1.320
NRC A140	0.469	0.522	0.1192	0.7377			0.697	0.686	0.730	0.686	-0.286	1.132	-0.470	1.320
PTB 229074	-0.228	0.446	-0.578	0.686	-0.697	0.6865			0.033	0.631	-0.983	1.099	-1.167	1.292
PTB 229075	-0.260	0.446	-0.610	0.686	-0.730	0.686	-0.0326	0.6312			-1.015	1.099	-1.199	1.292
VNIIFTRI 79	0.755	1.004	0.405	1.132	0.286	1.132	0.983	1.099	1.0154	1.0989			-0.184	1.575
VNIIFTRI 89	0.939	1.213	0.589	1.320	0.470	1.320	1.167	1.292	1.199	1.292	0.1838	1.5745		


CCT-K1 : Nominal temperature, T_{90} = 1.755 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 1.997 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.127 \text{ mK}$$

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	1.996327	0.039
NIST A129	1.996288	0.039
NMi-VSL 226246	1.996820	0.256
NPL 221481	1.996780	0.154
NPL 221483	1.996840	0.154
NPL 221485	1.996757	0.154
NRC A138	1.996922	0.225
NRC A140	1.996943	0.225
PTB 229074	1.996278	0.180
PTB 229075	1.996315	0.180
VNIIFTRI 79	1.997300	0.460
VNIIFTRI 89	1.997462	0.565

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 1.996554 K

Matrix of equivalence

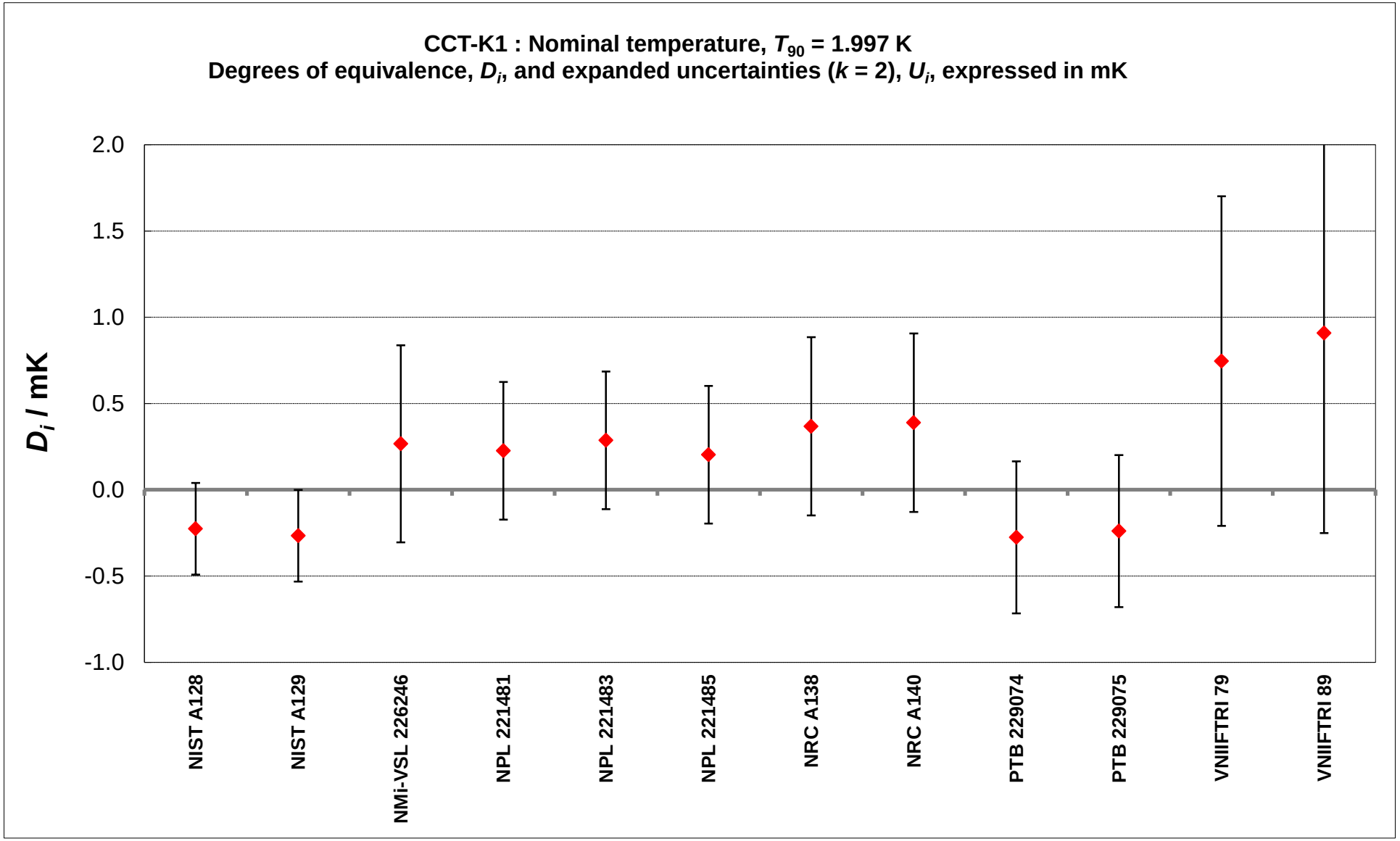
Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NIST A128		NIST A129		NMi-VSL 226246		NPL 221481		NPL 221483		NPL 221485	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	-0.227	0.266			0.040	0.376	-0.493	0.630	-0.453	0.479	-0.513	0.479	-0.430	0.479
NIST A129	-0.266	0.266	-0.040	0.376			-0.532	0.630	-0.492	0.479	-0.552	0.479	-0.470	0.479
NMi-VSL 226246	0.266	0.572	0.493	0.630	0.532	0.630			0.040	0.697	-0.020	0.697	0.063	0.697
NPL 221481	0.226	0.399	0.453	0.479	0.492	0.479	-0.040	0.697			-0.060	0.564	0.023	0.564
NPL 221483	0.286	0.399	0.513	0.479	0.552	0.479	0.020	0.697	0.060	0.564			0.083	0.564
NPL 221485	0.203	0.399	0.430	0.479	0.470	0.479	-0.063	0.697	-0.023	0.564	-0.083	0.564		
NRC A138	0.368	0.517	0.594	0.581	0.634	0.581	0.102	0.771	0.142	0.653	0.082	0.653	0.165	0.653
NRC A140	0.389	0.517	0.615	0.581	0.655	0.581	0.123	0.771	0.163	0.653	0.103	0.653	0.185	0.653
PTB 229074	-0.276	0.441	-0.049	0.515	-0.010	0.515	-0.542	0.722	-0.502	0.594	-0.562	0.594	-0.479	0.594
PTB 229075	-0.239	0.441	-0.012	0.515	0.027	0.515	-0.505	0.722	-0.465	0.594	-0.525	0.594	-0.442	0.594
VNIIFTRI 79	0.746	0.955	0.973	0.991	1.012	0.991	0.480	1.113	0.520	1.035	0.460	1.035	0.543	1.035
VNIIFTRI 89	0.908	1.159	1.135	1.189	1.174	1.189	0.642	1.292	0.682	1.225	0.622	1.225	0.705	1.225

Matrix of equivalence (Continued)

Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NRC A138		NRC A140		PTB 229074		PTB 229075		VNIIFTRI 79		VNIIFTRI 89	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	-0.227	0.266	-0.594	0.581	-0.615	0.581	0.049	0.515	0.012	0.515	-0.973	0.991	-1.135	1.189
NIST A129	-0.266	0.266	-0.634	0.581	-0.655	0.581	0.010	0.515	-0.027	0.515	-1.012	0.991	-1.174	1.189
NMi-VSL 226246	0.266	0.572	-0.102	0.771	-0.123	0.771	0.542	0.722	0.505	0.722	-0.480	1.113	-0.642	1.292
NPL 221481	0.226	0.399	-0.142	0.653	-0.163	0.653	0.502	0.594	0.465	0.594	-0.520	1.035	-0.682	1.225
NPL 221483	0.286	0.399	-0.082	0.653	-0.103	0.653	0.562	0.594	0.525	0.594	-0.460	1.035	-0.622	1.225
NPL 221485	0.203	0.399	-0.165	0.653	-0.185	0.653	0.479	0.594	0.442	0.594	-0.543	1.035	-0.705	1.225
NRC A138	0.368	0.517			-0.021	0.731	0.644	0.679	0.607	0.679	-0.378	1.086	-0.540	1.269
NRC A140	0.389	0.517	0.0209	0.7309			0.665	0.679	0.628	0.679	-0.357	1.086	-0.519	1.269
PTB 229074	-0.276	0.441	-0.644	0.679	-0.665	0.6792			-0.037	0.623	-1.022	1.052	-1.184	1.240
PTB 229075	-0.239	0.441	-0.607	0.679	-0.628	0.679	0.037	0.6232			-0.985	1.052	-1.147	1.240
VNIIFTRI 79	0.746	0.955	0.378	1.086	0.357	1.086	1.022	1.052	0.9849	1.0517			-0.162	1.502
VNIIFTRI 89	0.908	1.159	0.540	1.269	0.519	1.269	1.184	1.240	1.147	1.240	0.1621	1.5016		


CCT-K1 : Nominal temperature, T_{90} = 1.997 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 2.248 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.122 \text{ mK}$$

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	2.248374	0.039
NIST A129	2.248385	0.039
NMi-VSL 226246	2.248743	0.225
NPL 221481	2.248710	0.150
NPL 221483	2.248750	0.150
NPL 221485	2.248685	0.150
NRC A138	2.248713	0.225
NRC A140	2.248734	0.225
PTB 229074	2.248321	0.180
PTB 229075	2.248306	0.180
VNIIFTRI 79	2.249248	0.435
VNIIFTRI 89	2.249363	0.538
NMIJ B271	2.248277	0.095
NMIJ B310	2.248308	0.094

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 2.248485 K

Matrix of equivalence

Lab, S/N *j* ⟹

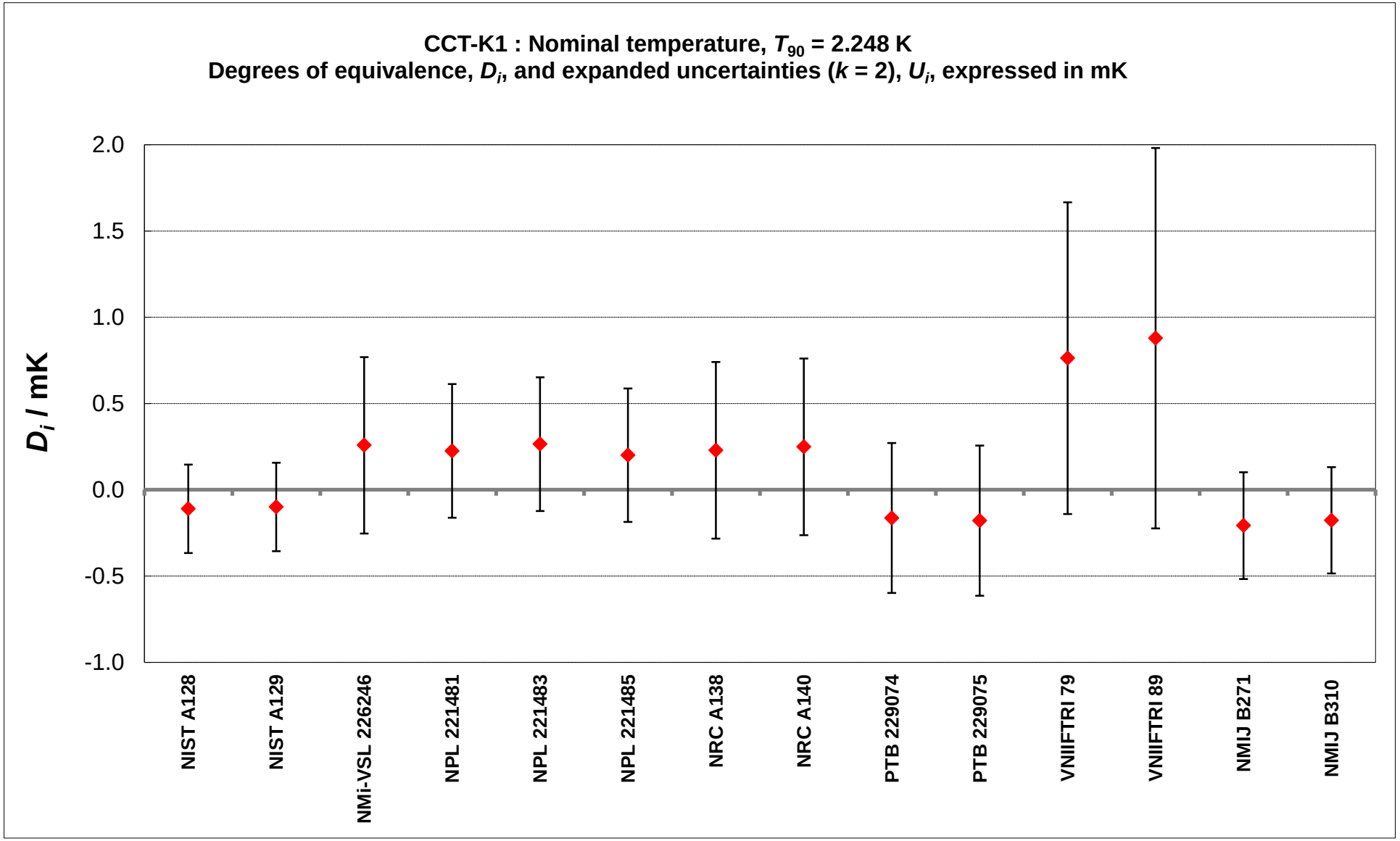
Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NIST A128		NIST A129		NMi-VSL 226246		NPL 221481		NPL 221483		NPL 221485		NRC A138	
			D_{ii} / mK	U_{ii} / mK	D_{ii} / mK	U_{ii} / mK	D_{ii} / mK	U_{ii} / mK	D_{ii} / mK	U_{ii} / mK	D_{ii} / mK	U_{ii} / mK	D_{ii} / mK	U_{ii} / mK	D_{ii} / mK	U_{ii} / mK
NIST A128	-0.111	0.256			-0.011	0.363	-0.368	0.573	-0.336	0.465	-0.376	0.465	-0.311	0.465	-0.339	0.573
NIST A129	-0.100	0.256	0.011	0.363			-0.358	0.573	-0.325	0.465	-0.365	0.465	-0.300	0.465	-0.328	0.573
NMi-VSL 226246	0.258	0.512	0.368	0.573	0.358	0.573			0.033	0.642	-0.007	0.642	0.057	0.642	0.029	0.724
NPL 221481	0.225	0.387	0.336	0.465	0.325	0.465	-0.033	0.642			-0.040	0.548	0.024	0.548	-0.003	0.642
NPL 221483	0.265	0.387	0.376	0.465	0.365	0.465	0.007	0.642	0.040	0.548			0.064	0.548	0.037	0.642
NPL 221485	0.200	0.387	0.311	0.465	0.300	0.465	-0.057	0.642	-0.024	0.548	-0.064	0.548			-0.028	0.642
NRC A138	0.228	0.512	0.339	0.573	0.328	0.573	-0.029	0.724	0.003	0.642	-0.037	0.642	0.028	0.642		
NRC A140	0.249	0.512	0.360	0.573	0.349	0.573	-0.009	0.724	0.024	0.642	-0.016	0.642	0.049	0.642	0.021	0.724
PTB 229074	-0.164	0.435	-0.053	0.505	-0.064	0.505	-0.421	0.672	-0.388	0.582	-0.428	0.582	-0.364	0.582	-0.392	0.672
PTB 229075	-0.179	0.435	-0.068	0.505	-0.079	0.505	-0.437	0.672	-0.404	0.582	-0.444	0.582	-0.380	0.582	-0.407	0.672
VNIIFTRI 79	0.763	0.904	0.873	0.939	0.863	0.939	0.505	1.039	0.538	0.983	0.498	0.983	0.562	0.983	0.534	1.039
VNIIFTRI 89	0.878	1.102	0.989	1.132	0.978	1.132	0.621	1.216	0.654	1.169	0.614	1.169	0.678	1.169	0.650	1.216
NMIJ B271	-0.208	0.309	-0.097	0.402	-0.108	0.402	-0.465	0.598	-0.432	0.496	-0.472	0.496	-0.408	0.496	-0.436	0.598
NMIJ B310	-0.177	0.308	-0.066	0.401	-0.077	0.401	-0.435	0.597	-0.402	0.495	-0.442	0.495	-0.378	0.495	-0.405	0.597

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 2.248485 K

Matrix of equivalence (Continued)

Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NRC A140		PTB 229074		PTB 229075		VNIIFTRI 79		VNIIFTRI 89		NMIJ B271		NMIJ B310	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	-0.111	0.256	-0.360	0.573	0.053	0.505	0.068	0.505	-0.873	0.939	-0.989	1.132	0.097	0.402	0.066	0.401
NIST A129	-0.100	0.256	-0.349	0.573	0.064	0.505	0.079	0.505	-0.863	0.939	-0.978	1.132	0.108	0.402	0.077	0.401
NMi-VSL 226246	0.258	0.512	0.009	0.724	0.421	0.672	0.437	0.672	-0.505	1.039	-0.621	1.216	0.465	0.598	0.435	0.597
NPL 221481	0.225	0.387	-0.024	0.642	0.388	0.582	0.404	0.582	-0.538	0.983	-0.654	1.169	0.432	0.496	0.402	0.495
NPL 221483	0.265	0.387	0.016	0.642	0.428	0.582	0.444	0.582	-0.498	0.983	-0.614	1.169	0.472	0.496	0.442	0.495
NPL 221485	0.200	0.387	-0.049	0.642	0.364	0.582	0.380	0.582	-0.562	0.983	-0.678	1.169	0.408	0.496	0.378	0.495
NRC A138	0.228	0.512	-0.021	0.724	0.392	0.672	0.407	0.672	-0.534	1.039	-0.650	1.216	0.436	0.598	0.405	0.597
NRC A140	0.249	0.512			0.413	0.672	0.428	0.672	-0.514	1.039	-0.629	1.216	0.457	0.598	0.426	0.597
PTB 229074	-0.164	0.435	-0.413	0.672			0.016	0.615	-0.926	1.003	-1.042	1.185	0.044	0.534	0.014	0.533
PTB 229075	-0.179	0.435	-0.428	0.672	-0.016	0.615			-0.942	1.003	-1.058	1.185	0.028	0.534	-0.002	0.533
VNIIFTRI 79	0.763	0.904	0.514	1.039	0.926	1.003	0.942	1.003			-0.116	1.426	0.970	0.955	0.940	0.955
VNIIFTRI 89	0.878	1.102	0.629	1.216	1.042	1.185	1.058	1.185	0.116	1.426			1.086	1.145	1.056	1.145
NMIJ B271	-0.208	0.309	-0.457	0.598	-0.044	0.534	-0.028	0.534	-0.970	0.955	-1.086	1.145			-0.030	0.436
NMIJ B310	-0.177	0.308	-0.426	0.597	-0.014	0.533	0.002	0.533	-0.940	0.955	-1.056	1.145	0.030	0.436		


CCT-K1 : Nominal temperature, T_{90} = 2.248 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
NMIJ B271
NMIJ B310

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 2.601 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.115 \text{ mK}$$

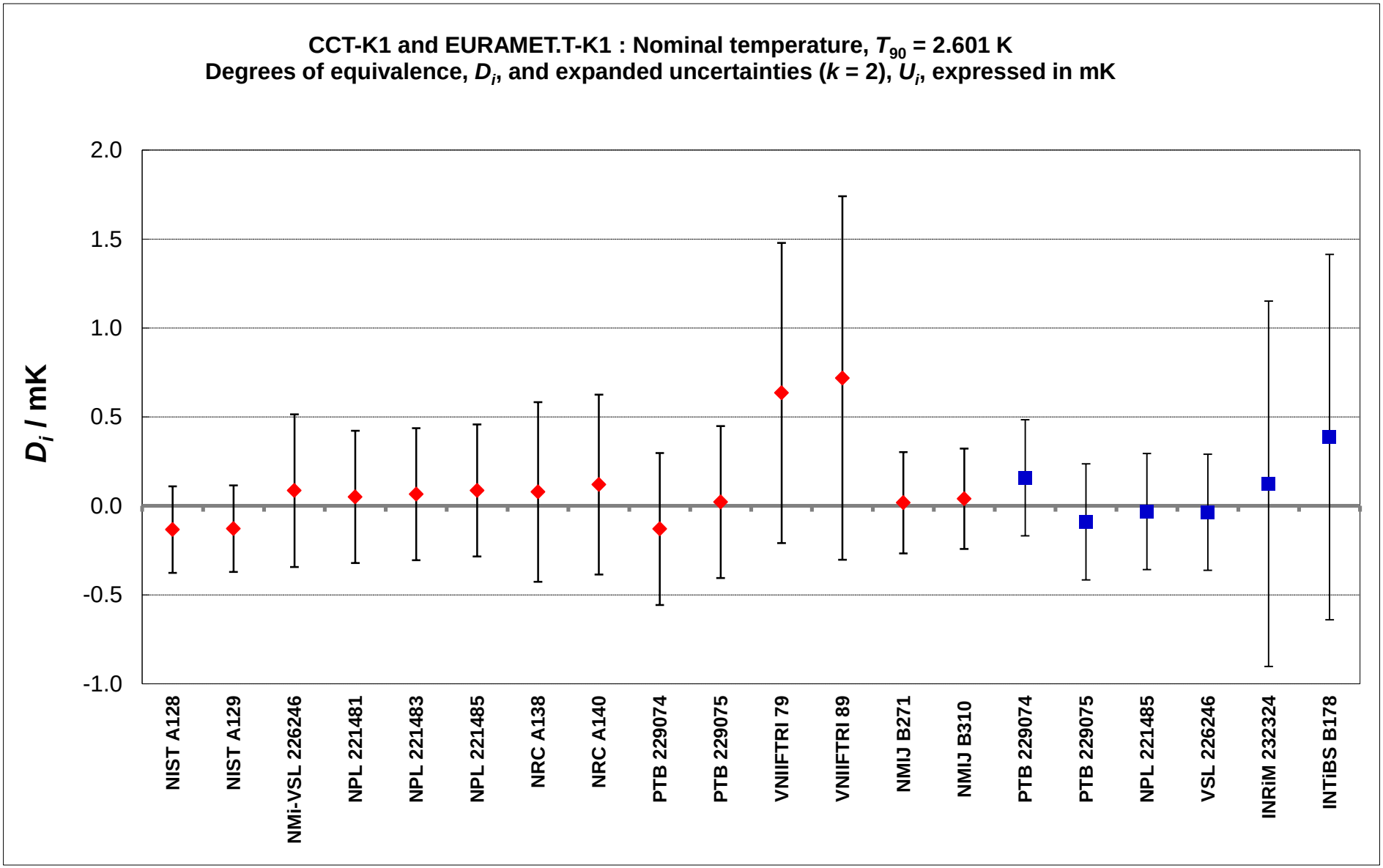
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	2.600642	0.040
NIST A129	2.600648	0.040
NMi-VSL 226246	2.600862	0.181
NPL 221481	2.600827	0.146
NPL 221483	2.600842	0.146
NPL 221485	2.600863	0.146
NRC A138	2.600854	0.225
NRC A140	2.600896	0.225
PTB 229074	2.600646	0.180
PTB 229075	2.600798	0.180
VNIIFTRI 79	2.601411	0.406
VNIIFTRI 89	2.601495	0.498
NMIJ B271	2.600793	0.084
NMIJ B310	2.600816	0.082

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 2.600776 K

Matrix of equivalence

Lab, S/N *i*	D_i / mK	U_i / mK
NIST A128	-0.134	0.243
NIST A129	-0.128	0.243
NMi-VSL 226246	0.086	0.429
NPL 221481	0.051	0.372
NPL 221483	0.066	0.372
NPL 221485	0.087	0.372
NRC A138	0.078	0.505
NRC A140	0.120	0.505
PTB 229074	-0.130	0.427
PTB 229075	0.022	0.427
VNIIFTRI 79	0.635	0.844
VNIIFTRI 89	0.719	1.022
NMIJ B271	0.017	0.285
NMIJ B310	0.040	0.282
PTB 229074	0.158	0.326
PTB 229075	-0.090	0.326
NPL 221485	-0.032	0.326
VSL 226246	-0.036	0.326
INRiM 232324	0.124	1.027
INTiBS B178	0.387	1.027


CCT-K1 and EURAMET.T-K1 : Nominal temperature, T_{90} = 2.601 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
NMIJ B271
NMIJ B310
PTB 229074
PTB 229075
NPL 221485
VSL 226246
INRiM 232324
INTiBS B178

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 2.700 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.115 \text{ mK}$$

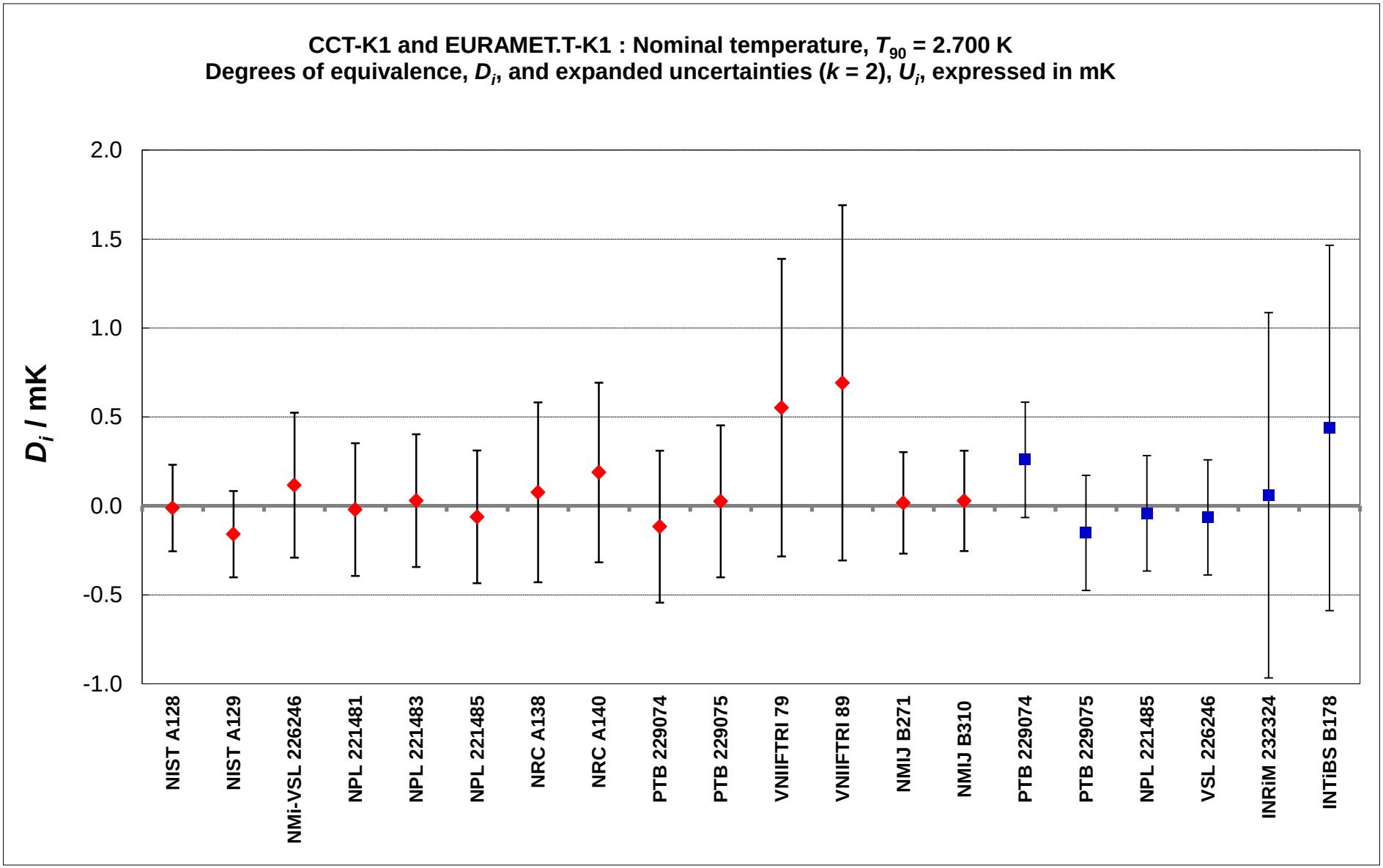
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	2.699899	0.040
NIST A129	2.699752	0.040
NMi-VSL 226246	2.700027	0.169
NPL 221481	2.699890	0.147
NPL 221483	2.699940	0.147
NPL 221485	2.699849	0.147
NRC A138	2.699987	0.225
NRC A140	2.700099	0.225
PTB 229074	2.699794	0.180
PTB 229075	2.699936	0.180
VNIIFTRI 79	2.700463	0.402
VNIIFTRI 89	2.700602	0.486
NMIJ B271	2.699928	0.085
NMIJ B310	2.699939	0.082

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 2.699911 K

Matrix of equivalence

Lab, S/N *i*	D_i / mK	U_i / mK
NIST A128	-0.012	0.243
NIST A129	-0.159	0.243
NMi-VSL 226246	0.116	0.408
NPL 221481	-0.021	0.373
NPL 221483	0.029	0.373
NPL 221485	-0.062	0.373
NRC A138	0.076	0.505
NRC A140	0.188	0.505
PTB 229074	-0.117	0.427
PTB 229075	0.025	0.427
VNIIFTRI 79	0.552	0.836
VNIIFTRI 89	0.691	0.999
NMIJ B271	0.017	0.286
NMIJ B310	0.028	0.282
PTB 229074	0.259	0.324
PTB 229075	-0.152	0.324
NPL 221485	-0.042	0.324
VSL 226246	-0.065	0.324
INRiM 232324	0.060	1.027
INTiBS B178	0.438	1.027


CCT-K1 and EURAMET.T-K1 : Nominal temperature, T_{90} = 2.700 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
NMIJ B271
NMIJ B310
PTB 229074
PTB 229075
NPL 221485
VSL 226246
INRiM 232324
INTiBS B178

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 2.897 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

u_{comp} = 0.114 mK

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	2.896679	0.040
NIST A129	2.896544	0.040
NMi-VSL 226246	2.896816	0.144
NPL 221481	2.896790	0.150
NPL 221483	2.896800	0.150
NPL 221485	2.896663	0.150
NRC A138	2.896787	0.225
NRC A140	2.896897	0.225
PTB 229074	2.896512	0.180
PTB 229075	2.896793	0.180
VNIIFTRI 79	2.897272	0.394
VNIIFTRI 89	2.897367	0.462
NMIJ B271	2.896750	0.081
NMIJ B310	2.896850	0.084

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 2.896733 K

Matrix of equivalence

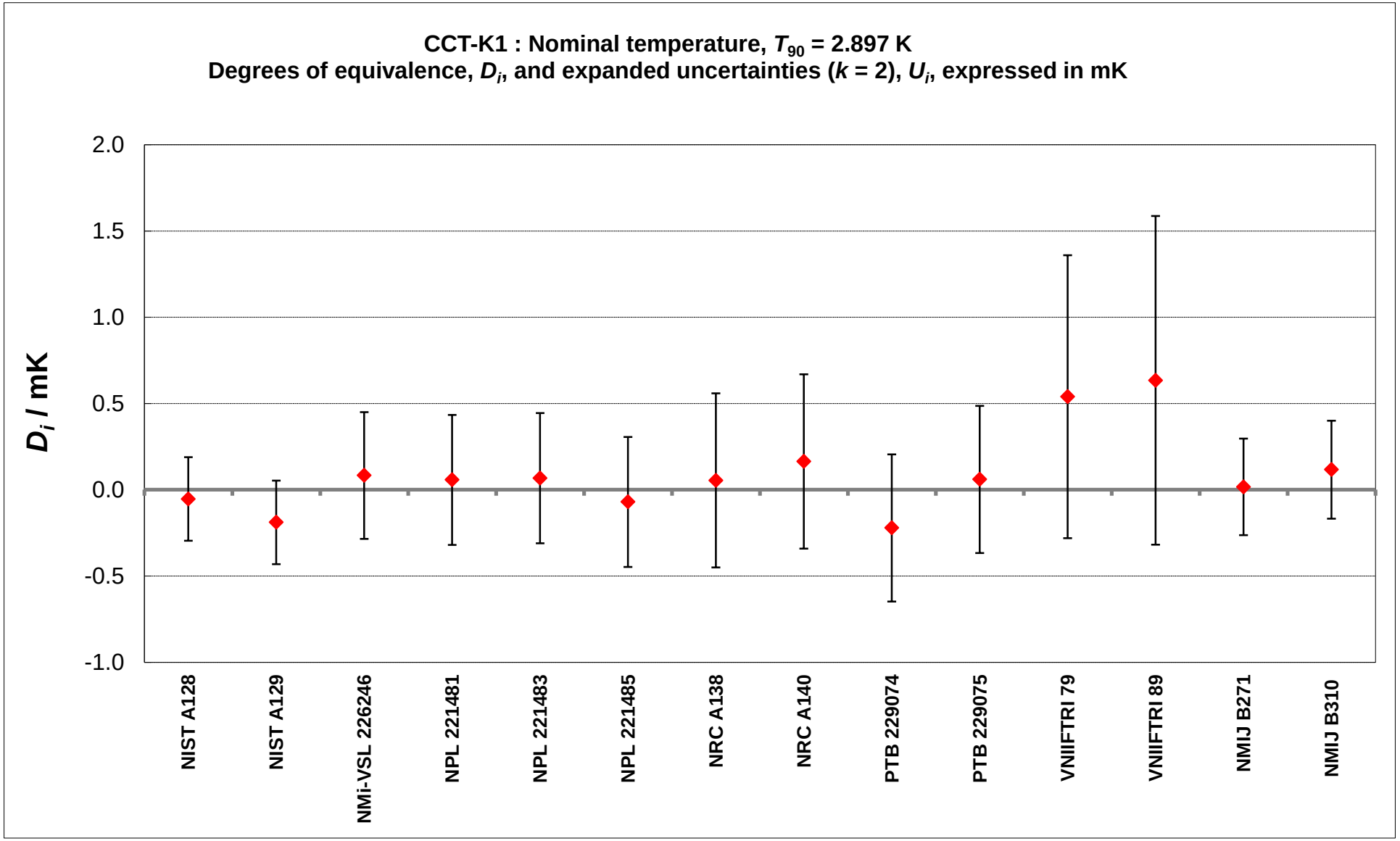
Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NIST A128		NIST A129		NMi-VSL 226246		NPL 221481		NPL 221483		NPL 221485		NRC A138	
			D_{ii} / mK	U_{ii} / mK	D_{ii} / mK	U_{ii} / mK	D_{ii} / mK	U_{ii} / mK	D_{ii} / mK	U_{ii} / mK	D_{ii} / mK	U_{ii} / mK	D_{ii} / mK	U_{ii} / mK	D_{ii} / mK	U_{ii} / mK
NIST A128	-0.054	0.242			0.135	0.343	-0.136	0.440	-0.111	0.448	-0.121	0.448	0.017	0.448	-0.108	0.560
NIST A129	-0.189	0.242	-0.135	0.343			-0.272	0.440	-0.246	0.448	-0.256	0.448	-0.118	0.448	-0.243	0.560
NMi-VSL 226246	0.083	0.368	0.136	0.440	0.272	0.440			0.026	0.526	0.016	0.526	0.153	0.526	0.029	0.624
NPL 221481	0.057	0.377	0.111	0.448	0.246	0.448	-0.026	0.526			-0.010	0.533	0.128	0.533	0.003	0.630
NPL 221483	0.067	0.377	0.121	0.448	0.256	0.448	-0.016	0.526	0.010	0.533			0.138	0.533	0.013	0.630
NPL 221485	-0.070	0.377	-0.017	0.448	0.118	0.448	-0.153	0.526	-0.128	0.533	-0.138	0.533			-0.125	0.630
NRC A138	0.054	0.505	0.108	0.560	0.243	0.560	-0.029	0.624	-0.003	0.630	-0.013	0.630	0.125	0.630		
NRC A140	0.164	0.505	0.218	0.560	0.353	0.560	0.081	0.624	0.107	0.630	0.097	0.630	0.235	0.630	0.110	0.714
PTB 229074	-0.221	0.426	-0.168	0.490	-0.033	0.490	-0.304	0.563	-0.279	0.569	-0.289	0.569	-0.151	0.569	-0.275	0.661
PTB 229075	0.060	0.426	0.114	0.490	0.249	0.490	-0.023	0.563	0.003	0.569	-0.007	0.569	0.131	0.569	0.006	0.661
VNIIFTRI 79	0.539	0.821	0.593	0.856	0.728	0.856	0.457	0.899	0.482	0.903	0.472	0.903	0.610	0.903	0.485	0.963
VNIIFTRI 89	0.634	0.952	0.687	0.983	0.823	0.983	0.551	1.021	0.577	1.024	0.567	1.024	0.704	1.024	0.580	1.078
NMIJ B271	0.017	0.280	0.070	0.370	0.205	0.370	-0.066	0.462	-0.041	0.470	-0.051	0.470	0.087	0.470	-0.038	0.577
NMIJ B310	0.117	0.284	0.170	0.373	0.305	0.373	0.034	0.464	0.059	0.472	0.049	0.472	0.187	0.472	0.062	0.579

Matrix of equivalence (Continued)

Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NRC A140		PTB 229074		PTB 229075		VNIIFTRI 79		VNIIFTRI 89		NMIJ B271		NMIJ B310	
			D_{ii} / mK	U_{ii} / mK	D_{ii} / mK	U_{ii} / mK	D_{ii} / mK	U_{ii} / mK	D_{ii} / mK	U_{ii} / mK	D_{ii} / mK	U_{ii} / mK	D_{ii} / mK	U_{ii} / mK	D_{ii} / mK	U_{ii} / mK
NIST A128	-0.054	0.242	-0.218	0.560	0.168	0.490	-0.114	0.490	-0.593	0.856	-0.687	0.983	-0.070	0.370	-0.170	0.373
NIST A129	-0.189	0.242	-0.353	0.560	0.033	0.490	-0.249	0.490	-0.728	0.856	-0.823	0.983	-0.205	0.370	-0.305	0.373
NMi-VSL 226246	0.083	0.368	-0.081	0.624	0.304	0.563	0.023	0.563	-0.457	0.899	-0.551	1.021	0.066	0.462	-0.034	0.464
NPL 221481	0.057	0.377	-0.107	0.630	0.279	0.569	-0.003	0.569	-0.482	0.903	-0.577	1.024	0.041	0.470	-0.059	0.472
NPL 221483	0.067	0.377	-0.097	0.630	0.289	0.569	0.007	0.569	-0.472	0.903	-0.567	1.024	0.051	0.470	-0.049	0.472
NPL 221485	-0.070	0.377	-0.235	0.630	0.151	0.569	-0.131	0.569	-0.610	0.903	-0.704	1.024	-0.087	0.470	-0.187	0.472
NRC A138	0.054	0.505	-0.110	0.714	0.275	0.661	-0.006	0.661	-0.485	0.963	-0.580	1.078	0.038	0.577	-0.062	0.579
NRC A140	0.164	0.505			0.385	0.661	0.104	0.661	-0.375	0.963	-0.470	1.078	0.148	0.577	0.047	0.579
PTB 229074	-0.221	0.426	-0.385	0.661			-0.281	0.603	-0.761	0.925	-0.855	1.044	-0.238	0.510	-0.338	0.512
PTB 229075	0.060	0.426	-0.104	0.661	0.281	0.603			-0.479	0.925	-0.574	1.044	0.043	0.510	-0.057	0.512
VNIIFTRI 79	0.539	0.821	0.375	0.963	0.761	0.925	0.479	0.925			-0.094	1.257	0.523	0.867	0.423	0.868
VNIIFTRI 89	0.634	0.952	0.470	1.078	0.855	1.044	0.574	1.044	0.094	1.257			0.617	0.993	0.517	0.994
NMIJ B271	0.017	0.280	-0.148	0.577	0.238	0.510	-0.043	0.510	-0.523	0.867	-0.617	0.993			-0.100	0.399
NMIJ B310	0.117	0.284	-0.047	0.579	0.338	0.512	0.057	0.512	-0.423	0.868	-0.517	0.994	0.100	0.399		


CCT-K1 : Nominal temperature, T_{90} = 2.897 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
NMIJ B271
NMIJ B310

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 2.997 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.114 \text{ mK}$$

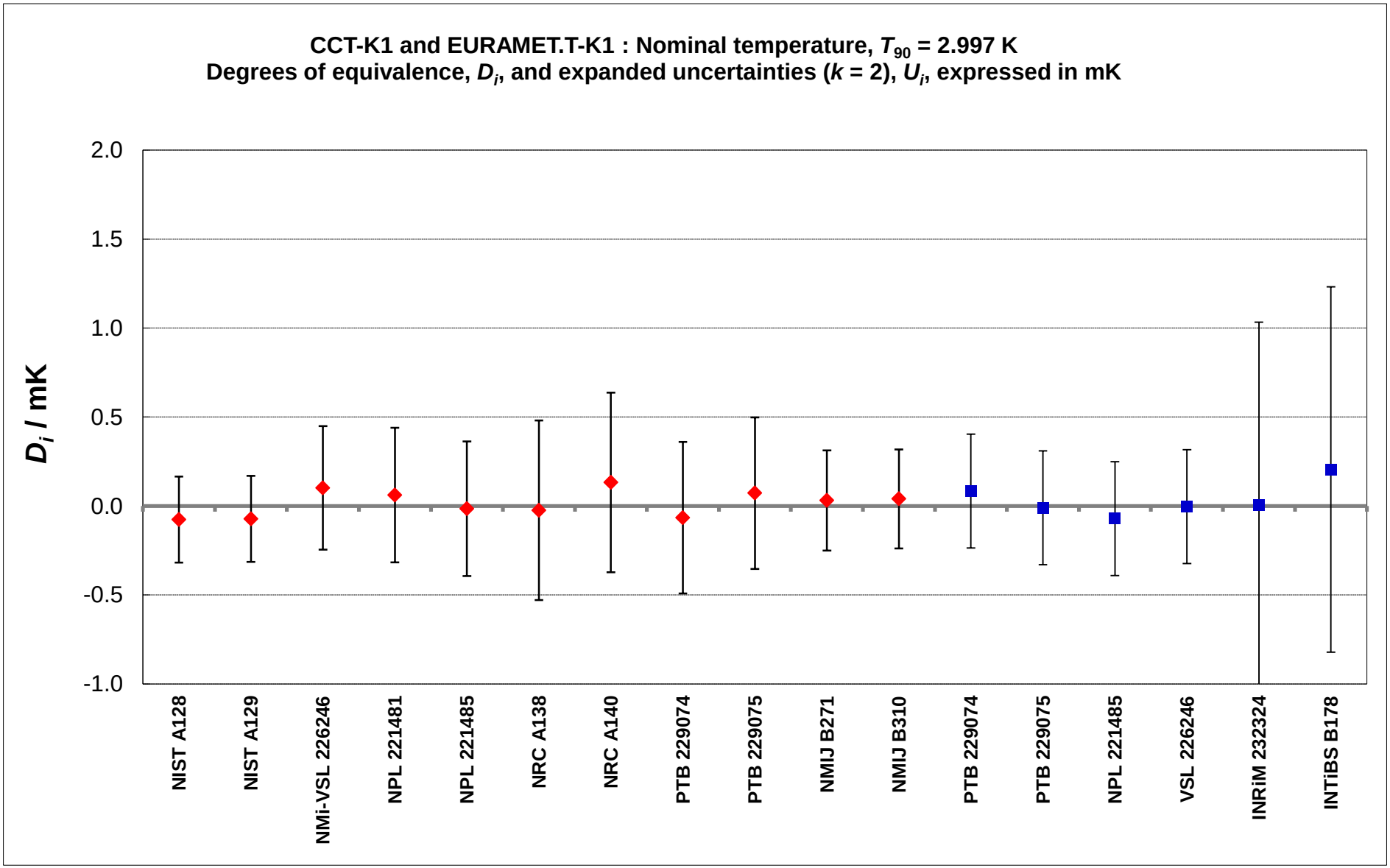
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	2.996572	0.041
NIST A129	2.996576	0.041
NMi-VSL 226246	2.996750	0.131
NPL 221481	2.996710	0.151
NPL 221485	2.996632	0.151
NRC A138	2.996624	0.225
NRC A140	2.996781	0.225
PTB 229074	2.996582	0.180
PTB 229075	2.996720	0.180
NMIJ B271	2.996679	0.082
NMIJ B310	2.996688	0.080

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 2.996648 K

Matrix of equivalence

Lab, S/N *i*	D_i / mK	U_i / mK
NIST A128	-0.076	0.242
NIST A129	-0.072	0.242
NMi-VSL 226246	0.102	0.347
NPL 221481	0.062	0.379
NPL 221485	-0.016	0.379
NRC A138	-0.024	0.504
NRC A140	0.133	0.504
PTB 229074	-0.066	0.426
PTB 229075	0.072	0.426
NMIJ B271	0.031	0.281
NMIJ B310	0.040	0.279
PTB 229074	0.084	0.320
PTB 229075	-0.010	0.320
NPL 221485	-0.071	0.320
VSL 226246	-0.003	0.320
INRiM 232324	0.006	1.027
INTiBS B178	0.205	1.027


CCT-K1 and EURAMET.T-K1 : Nominal temperature, T_{90} = 2.997 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
NMIJ B271
NMIJ B310
PTB 229074
PTB 229075
NPL 221485
VSL 226246
INRiM 232324
INTiBS B178

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 3.099 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.114 \text{ mK}$$

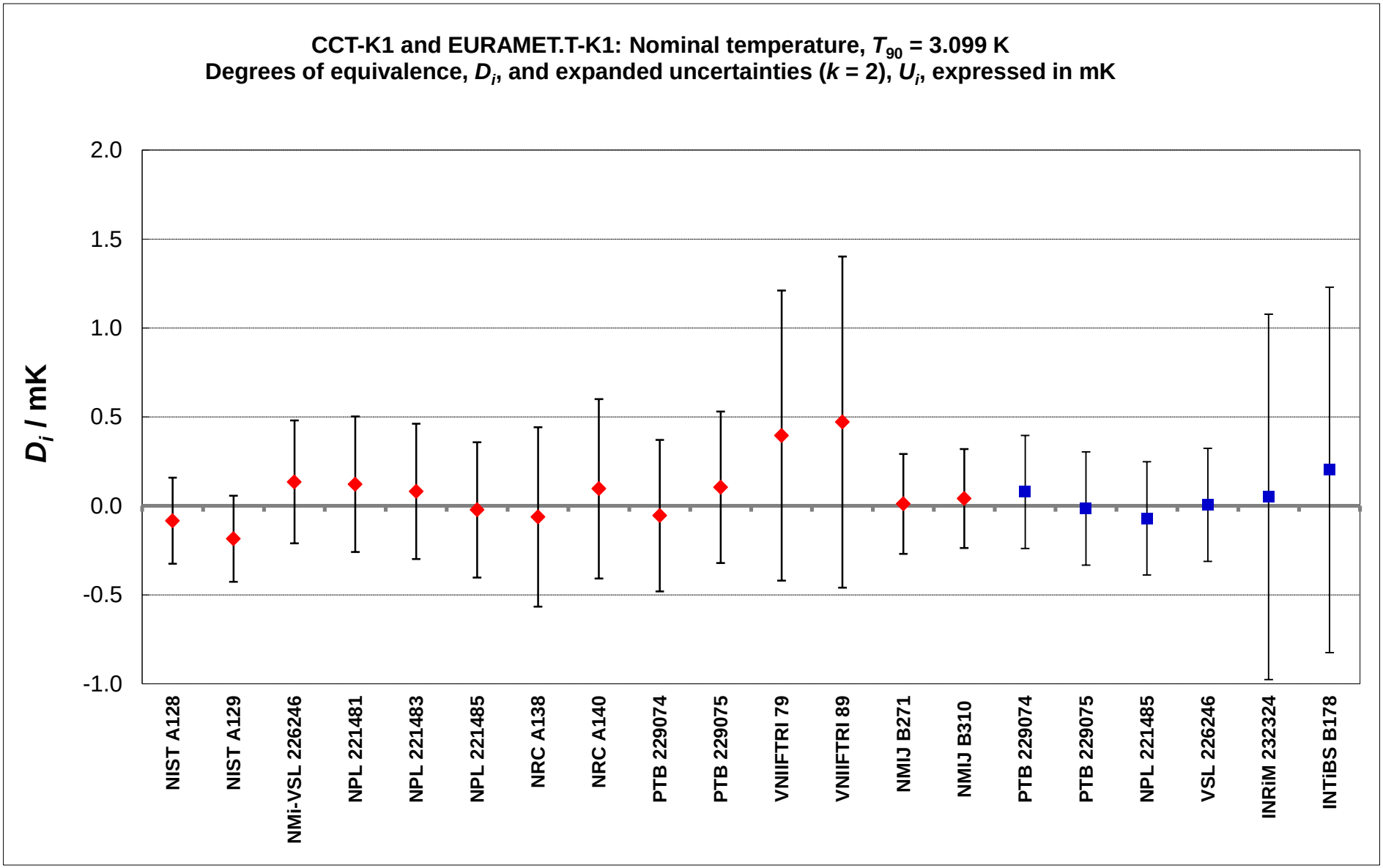
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	3.099314	0.041
NIST A129	3.099213	0.041
NMi-VSL 226246	3.099533	0.130
NPL 221481	3.099520	0.153
NPL 221483	3.099480	0.153
NPL 221485	3.099376	0.153
NRC A138	3.099336	0.225
NRC A140	3.099494	0.225
PTB 229074	3.099343	0.180
PTB 229075	3.099502	0.180
VNIIFTRI 79	3.099793	0.392
VNIIFTRI 89	3.099869	0.451
NMIJ B271	3.099409	0.082
NMIJ B310	3.099440	0.080

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 3.099398 K

Matrix of equivalence

Lab, S/N *i*	D_i / mK	U_i / mK
NIST A128	-0.084	0.242
NIST A129	-0.185	0.242
NMi-VSL 226246	0.135	0.346
NPL 221481	0.122	0.381
NPL 221483	0.082	0.381
NPL 221485	-0.022	0.381
NRC A138	-0.062	0.504
NRC A140	0.096	0.504
PTB 229074	-0.055	0.426
PTB 229075	0.104	0.426
VNIIFTRI 79	0.395	0.816
VNIIFTRI 89	0.471	0.931
NMIJ B271	0.011	0.280
NMIJ B310	0.042	0.278
PTB 229074	0.078	0.318
PTB 229075	-0.015	0.318
NPL 221485	-0.070	0.318
VSL 226246	0.006	0.318
INRiM 232324	0.051	1.027
INTiBS B178	0.202	1.027


CCT-K1 and EURAMET.T-K1: Nominal temperature, T_{90} = 3.099 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
NMIJ B271
NMIJ B310
PTB 229074
PTB 229075
NPL 221485
VSL 226246
INRiM 232324
INTiBS B178

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 3.400 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.113 \text{ mK}$$

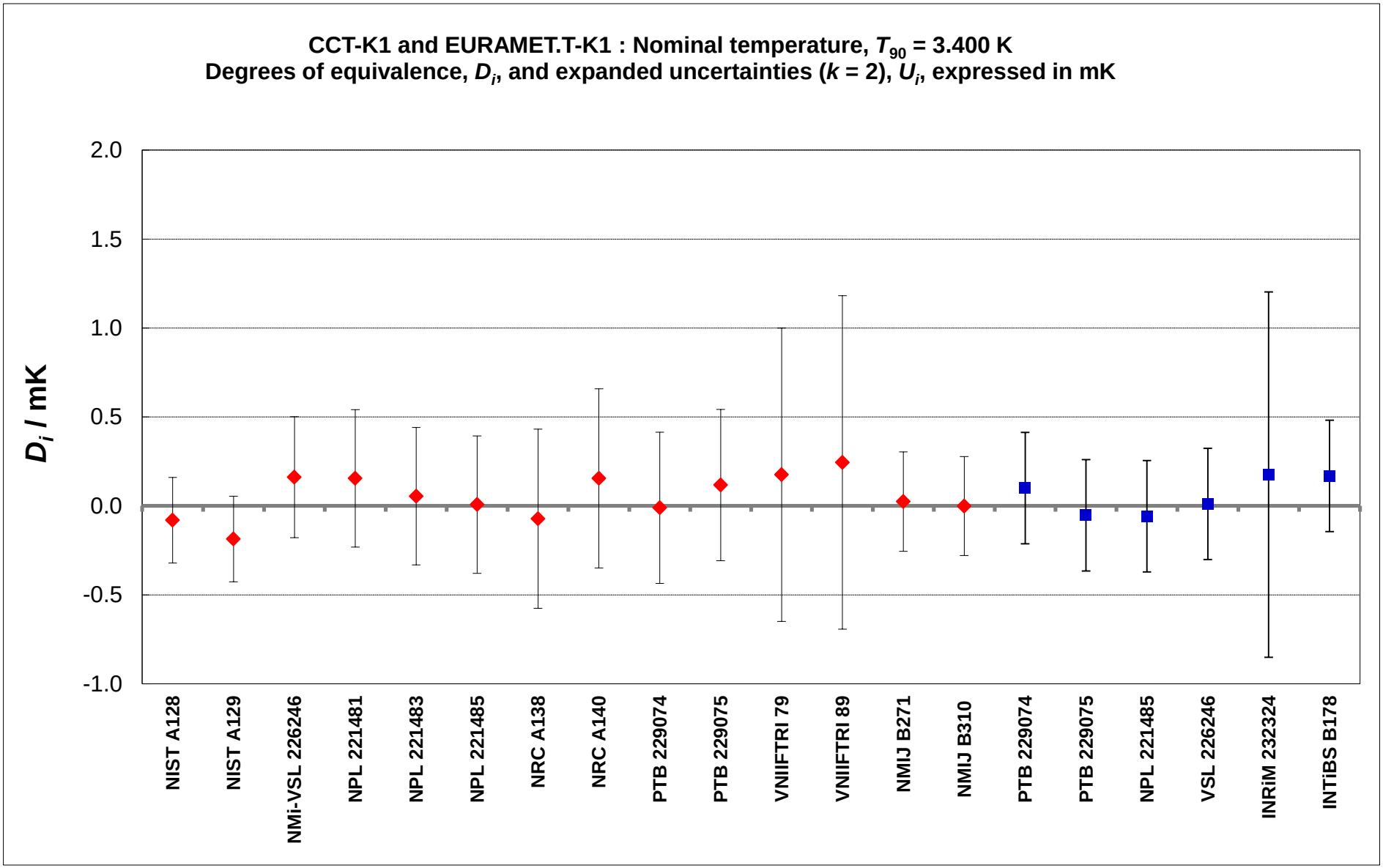
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	3.400154	0.042
NIST A129	3.400049	0.042
NMi-VSL 226246	3.400396	0.127
NPL 221481	3.400390	0.157
NPL 221483	3.400290	0.157
NPL 221485	3.400242	0.157
NRC A138	3.400163	0.225
NRC A140	3.400390	0.225
PTB 229074	3.400225	0.180
PTB 229075	3.400352	0.180
VNIIFTRI 79	3.400410	0.396
VNIIFTRI 89	3.400480	0.455
NMIJ B271	3.400259	0.082
NMIJ B310	3.400234	0.081

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 3.400235 K

Matrix of equivalence

Lab, S/N *i*	D_i / mK	U_i / mK
NIST A128	-0.081	0.241
NIST A129	-0.186	0.241
NMi-VSL 226246	0.161	0.341
NPL 221481	0.155	0.386
NPL 221483	0.055	0.386
NPL 221485	0.007	0.386
NRC A138	-0.072	0.504
NRC A140	0.155	0.504
PTB 229074	-0.010	0.425
PTB 229075	0.117	0.425
VNIIFTRI 79	0.175	0.824
VNIIFTRI 89	0.245	0.937
NMIJ B271	0.024	0.279
NMIJ B310	-0.001	0.278
PTB 229074	0.100	0.313
PTB 229075	-0.053	0.313
NPL 221485	-0.058	0.313
VSL 226246	0.011	0.313
INRiM 232324	0.176	1.027
INTiBS B178	0.168	0.313


CCT-K1 and EURAMET.T-K1 : Nominal temperature, T_{90} = 3.400 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
NMIJ B271
NMIJ B310
PTB 229074
PTB 229075
NPL 221485
VSL 226246
INRiM 232324
INTiBS B178

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 3.429 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

u_{comp} = 0.113 mK

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	3.429195	0.042
NIST A129	3.429129	0.042
NMi-VSL 226246	3.429411	0.127
NPL 221481	3.429460	0.157
NPL 221485	3.429250	0.157
NRC A138	3.429182	0.225
NRC A140	3.429382	0.225
PTB 229074	3.429166	0.180
PTB 229075	3.429333	0.180
NMIJ B271	3.429255	0.082
NMIJ B310	3.429244	0.081

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 3.429250 K

Matrix of equivalence

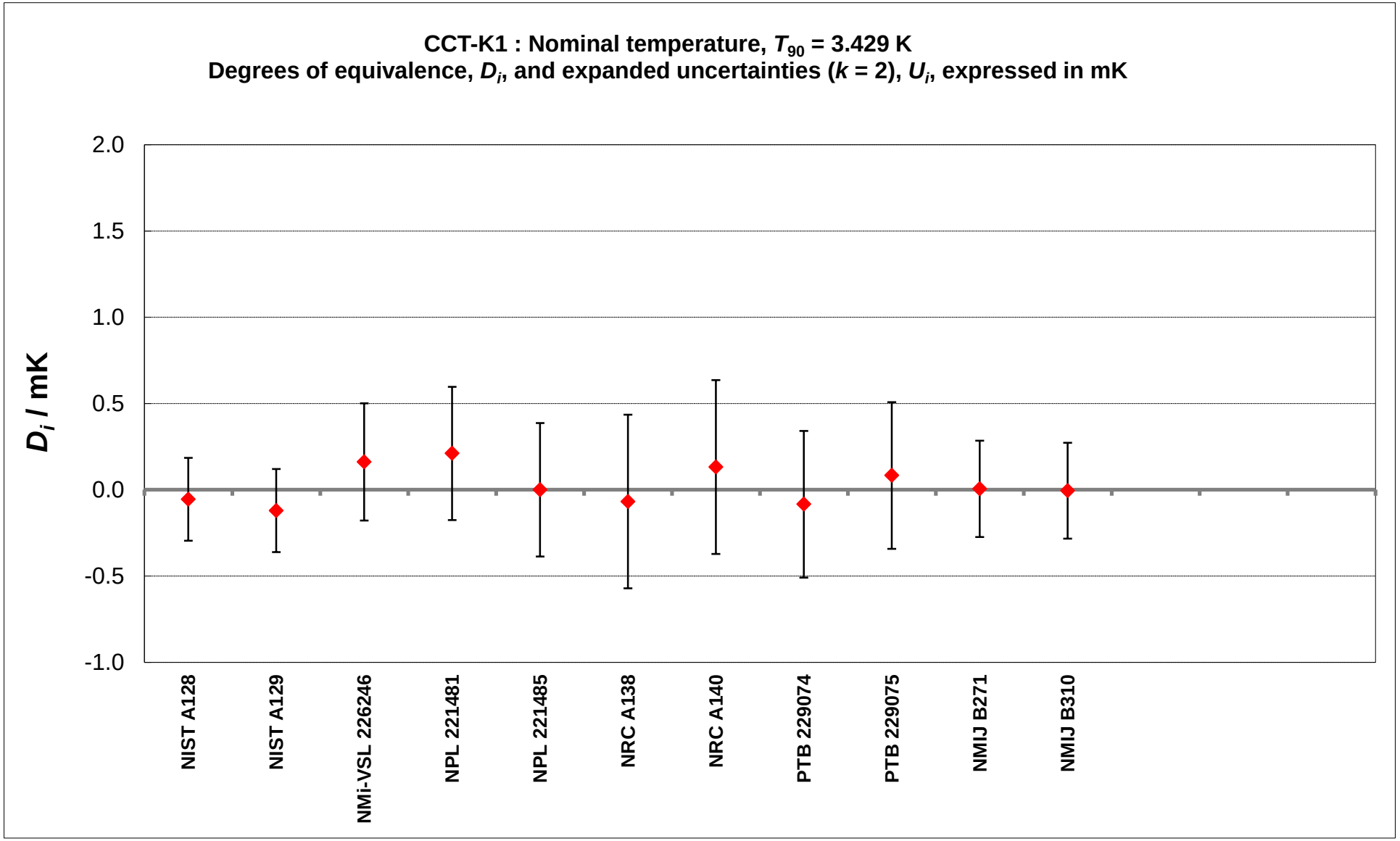
Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NIST A128		NIST A129		NMi-VSL 226246		NPL 221481		NPL 221485		NRC A138	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**-0.055**	0.241			**0.066**	0.340	**-0.217**	0.417	**-0.266**	0.455	**-0.055**	0.455	**0.013**	0.558
NIST A129	**-0.121**	0.241	**-0.066**	0.340			**-0.282**	0.417	**-0.331**	0.455	**-0.121**	0.455	**-0.053**	0.558
NMi-VSL 226246	**0.161**	0.340	**0.217**	0.417	**0.282**	0.417			**-0.049**	0.515	**0.161**	0.515	**0.229**	0.608
NPL 221481	**0.210**	0.387	**0.266**	0.455	**0.331**	0.455	**0.049**	0.515			**0.210**	0.547	**0.279**	0.635
NPL 221485	**0.000**	0.387	**0.055**	0.455	**0.121**	0.455	**-0.161**	0.515	**-0.210**	0.547			**0.068**	0.635
NRC A138	**-0.068**	0.503	**-0.013**	0.558	**0.053**	0.558	**-0.229**	0.608	**-0.279**	0.635	**-0.068**	0.635		
NRC A140	**0.132**	0.503	**0.187**	0.558	**0.253**	0.558	**-0.029**	0.608	**-0.078**	0.635	**0.132**	0.635	**0.200**	0.712
PTB 229074	**-0.084**	0.425	**-0.029**	0.488	**0.037**	0.488	**-0.245**	0.544	**-0.294**	0.575	**-0.084**	0.575	**-0.016**	0.659
PTB 229075	**0.083**	0.425	**0.138**	0.488	**0.204**	0.488	**-0.078**	0.544	**-0.127**	0.575	**0.083**	0.575	**0.151**	0.659
NMIJ B271	**0.005**	0.279	**0.060**	0.369	**0.126**	0.369	**-0.156**	0.440	**-0.205**	0.477	**0.005**	0.477	**0.073**	0.576
NMIJ B310	**-0.006**	0.278	**0.050**	0.368	**0.115**	0.368	**-0.167**	0.439	**-0.216**	0.476	**-0.006**	0.476	**0.062**	0.575

Matrix of equivalence (Continued)

Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NRC A140		PTB 229074		PTB 229075		NMIJ B271		NMIJ B310	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**-0.055**	0.241	**-0.187**	0.558	**0.029**	0.488	**-0.138**	0.488	**-0.060**	0.369	**-0.050**	0.368
NIST A129	**-0.121**	0.241	**-0.253**	0.558	**-0.037**	0.488	**-0.204**	0.488	**-0.126**	0.369	**-0.115**	0.368
NMi-VSL 226246	**0.161**	0.340	**0.029**	0.608	**0.245**	0.544	**0.078**	0.544	**0.156**	0.440	**0.167**	0.439
NPL 221481	**0.210**	0.387	**0.078**	0.635	**0.294**	0.575	**0.127**	0.575	**0.205**	0.477	**0.216**	0.476
NPL 221485	**0.000**	0.387	**-0.132**	0.635	**0.084**	0.575	**-0.083**	0.575	**-0.005**	0.477	**0.006**	0.476
NRC A138	**-0.068**	0.503	**-0.200**	0.712	**0.016**	0.659	**-0.151**	0.659	**-0.073**	0.576	**-0.062**	0.575
NRC A140	**0.132**	0.503			**0.216**	0.659	**0.049**	0.659	**0.127**	0.576	**0.138**	0.575
PTB 229074	**-0.084**	0.425	**-0.216**	0.659			**-0.167**	0.601	**-0.089**	0.508	**-0.078**	0.508
PTB 229075	**0.083**	0.425	**-0.049**	0.659	**0.167**	0.601			**0.078**	0.508	**0.089**	0.508
NMIJ B271	**0.005**	0.279	**-0.127**	0.576	**0.089**	0.508	**-0.078**	0.508			**0.011**	0.394
NMIJ B310	**-0.006**	0.278	**-0.138**	0.575	**0.078**	0.508	**-0.089**	0.508	**-0.011**	0.394		


CCT-K1 : Nominal temperature, T_{90} = 3.429 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
NMIJ B271
NMIJ B310

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 3.801 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.112 \text{ mK}$$

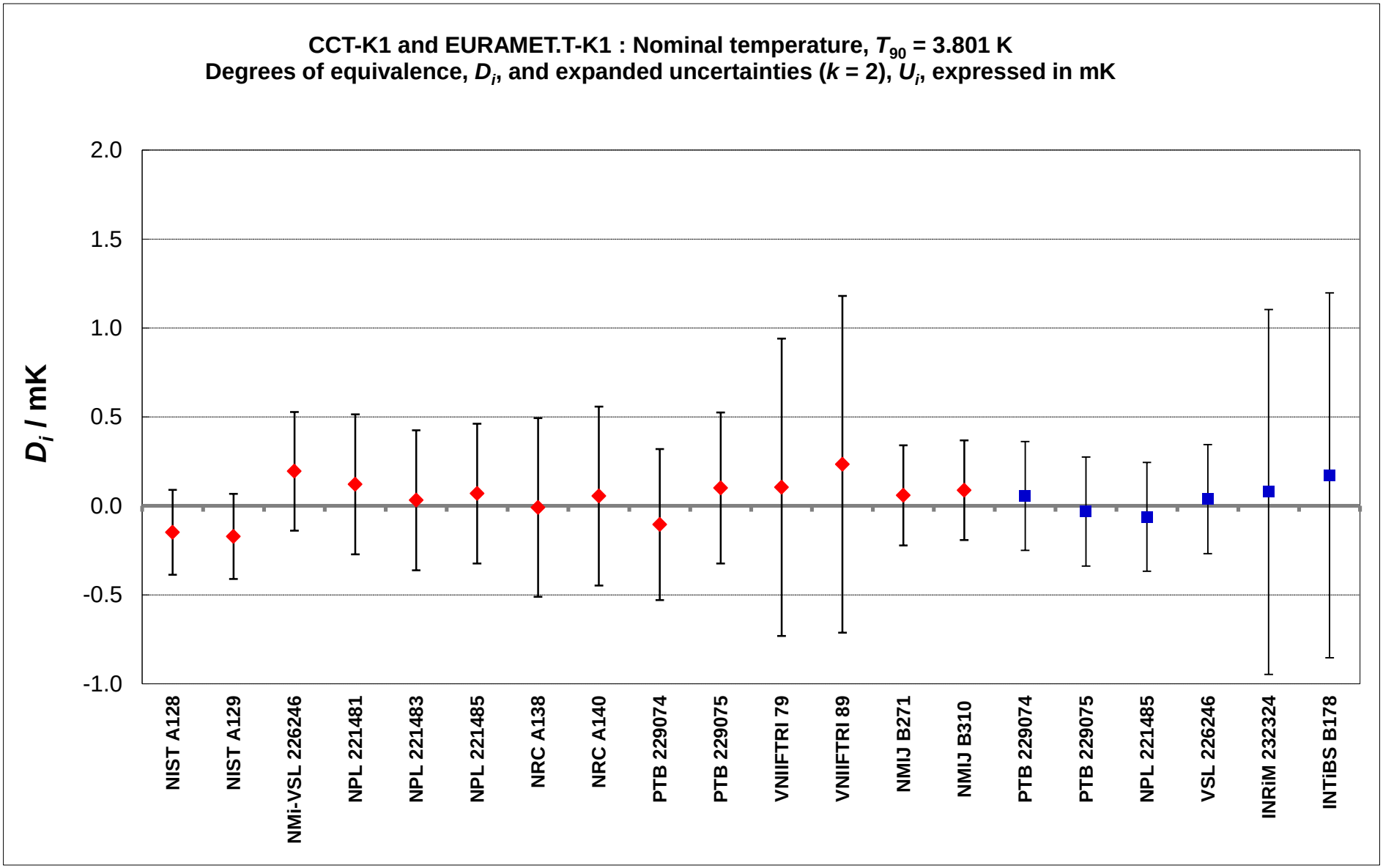
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	3.800754	0.042
NIST A129	3.800731	0.042
NMi-VSL 226246	3.801097	0.124
NPL 221481	3.801025	0.162
NPL 221483	3.800935	0.162
NPL 221485	3.800972	0.162
NRC A138	3.800894	0.225
NRC A140	3.800958	0.225
PTB 229074	3.800798	0.180
PTB 229075	3.801003	0.180
VNIIFTRI 79	3.801008	0.403
VNIIFTRI 89	3.801137	0.460
NMIJ B271	3.800962	0.085
NMIJ B310	3.800991	0.084

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 3.800903 K

Matrix of equivalence

Lab, S/N *i*	D_i / mK	U_i / mK
NIST A128	-0.149	0.239
NIST A129	-0.172	0.239
NMi-VSL 226246	0.194	0.334
NPL 221481	0.122	0.394
NPL 221483	0.032	0.394
NPL 221485	0.069	0.394
NRC A138	-0.009	0.503
NRC A140	0.055	0.503
PTB 229074	-0.105	0.424
PTB 229075	0.100	0.424
VNIIFTRI 79	0.105	0.836
VNIIFTRI 89	0.234	0.946
NMIJ B271	0.059	0.281
NMIJ B310	0.088	0.280
PTB 229074	0.056	0.306
PTB 229075	-0.032	0.306
NPL 221485	-0.062	0.306
VSL 226246	0.038	0.306
INRiM 232324	0.078	1.026
INTiBS B178	0.172	1.026


CCT-K1 and EURAMET.T-K1 : Nominal temperature, T_{90} = 3.801 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
NMIJ B271
NMIJ B310
PTB 229074
PTB 229075
NPL 221485
VSL 226246
INRiM 232324
INTiBS B178

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 4.225 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.111 \text{ mK}$$

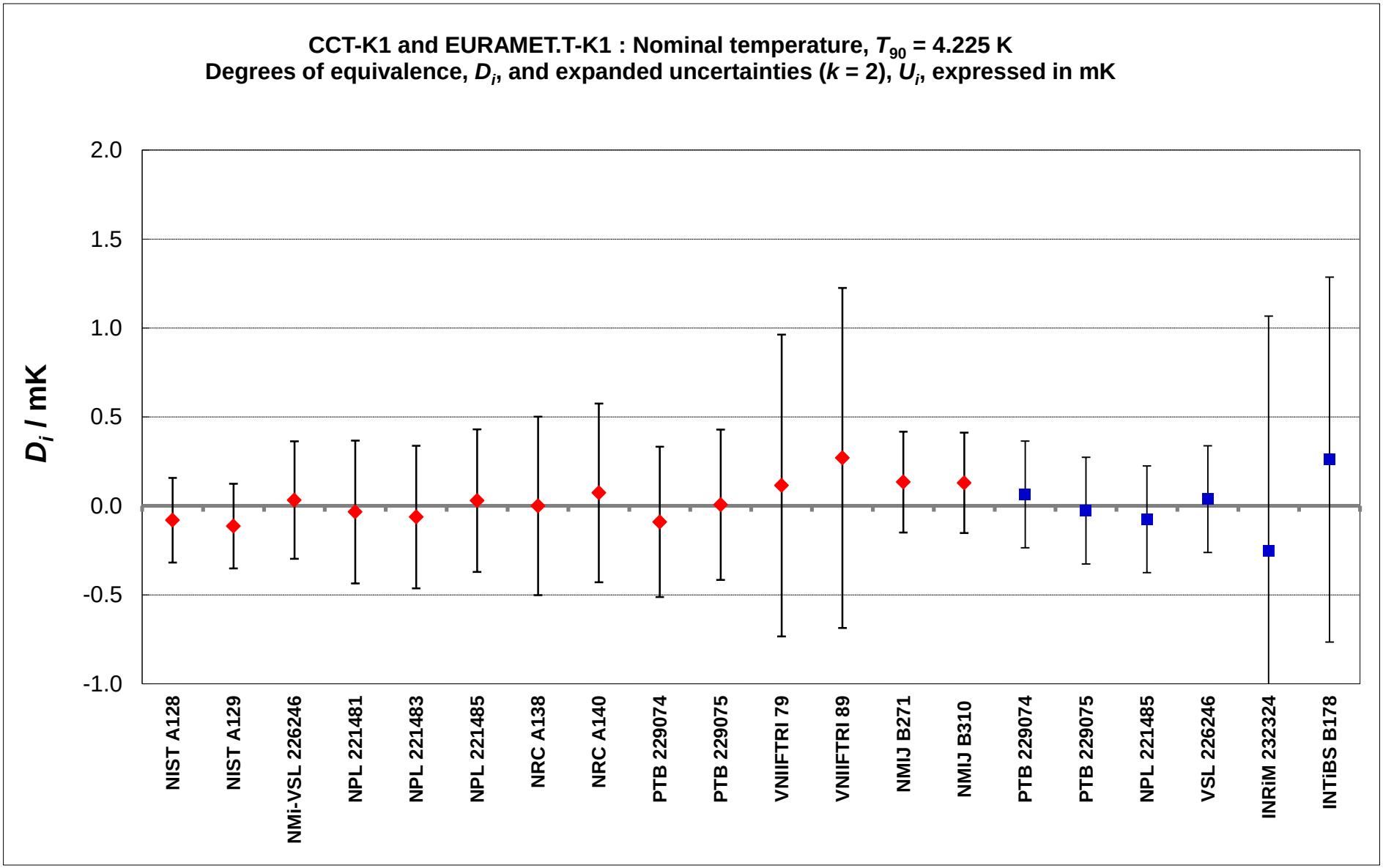
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	4.224713	0.042
NIST A129	4.224680	0.042
NMi-VSL 226246	4.224827	0.122
NPL 221481	4.224760	0.167
NPL 221483	4.224731	0.167
NPL 221485	4.224823	0.167
NRC A138	4.224794	0.225
NRC A140	4.224867	0.225
PTB 229074	4.224704	0.180
PTB 229075	4.224800	0.180
VNIIFTRI 79	4.224908	0.409
VNIIFTRI 89	4.225064	0.465
NMIJ B271	4.224928	0.088
NMIJ B310	4.224923	0.087

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 4.224794 K

Matrix of equivalence

Lab, S/N *i*	D_i / mK	U_i / mK
NIST A128	-0.081	0.238
NIST A129	-0.114	0.238
NMi-VSL 226246	0.033	0.330
NPL 221481	-0.034	0.401
NPL 221483	-0.063	0.401
NPL 221485	0.029	0.401
NRC A138	0.000	0.502
NRC A140	0.073	0.502
PTB 229074	-0.090	0.423
PTB 229075	0.006	0.423
VNIIFTRI 79	0.114	0.848
VNIIFTRI 89	0.270	0.956
NMIJ B271	0.134	0.283
NMIJ B310	0.129	0.282
PTB 229074	0.064	0.300
PTB 229075	-0.027	0.300
NPL 221485	-0.075	0.300
VSL 226246	0.038	0.300
INRiM 232324	-0.253	1.320
INTiBS B178	0.260	1.026


CCT-K1 and EURAMET.T-K1 : Nominal temperature, T_{90} = 4.225 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
NMIJ B271
NMIJ B310
PTB 229074
PTB 229075
NPL 221485
VSL 226246
INRiM 232324
INTiBS B178

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 4.478 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.112 \text{ mK}$$

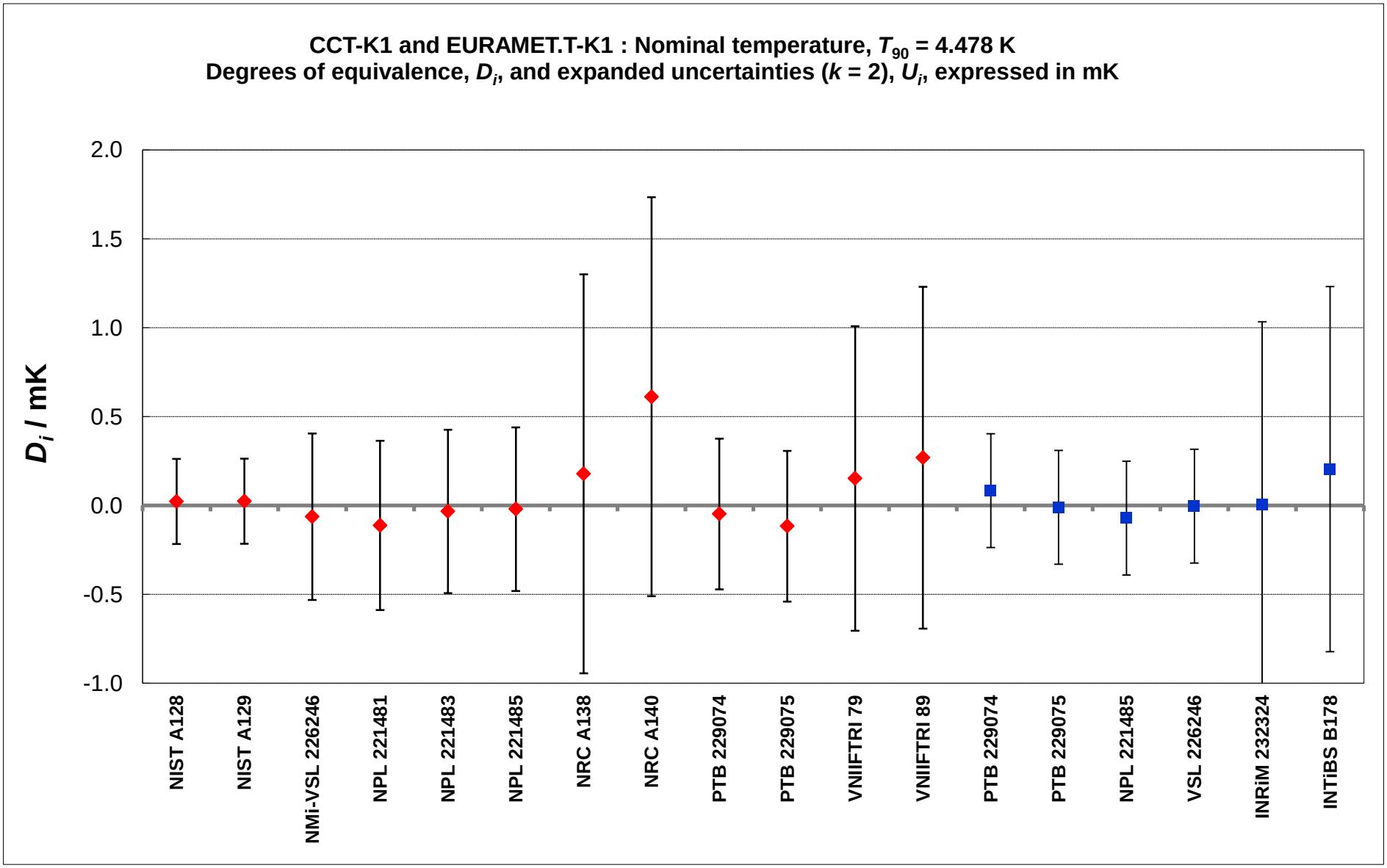
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	4.477545	0.042
NIST A129	4.477546	0.042
NMi-VSL 226246	4.477459	0.206
NPL 221481	4.477410	0.210
NPL 221483	4.477489	0.201
NPL 221485	4.477502	0.201
NRC A138	4.477701	0.550
NRC A140	4.478134	0.550
PTB 229074	4.477475	0.180
PTB 229075	4.477406	0.180
VNIIFTRI 79	4.477674	0.413
VNIIFTRI 89	4.477791	0.468

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 4.477522 K

Matrix of equivalence

Lab, S/N *i*	D_i / mK	U_i / mK
NIST A128	**0.023**	0.240
NIST A129	**0.024**	0.240
NMi-VSL 226246	**-0.063**	0.468
NPL 221481	**-0.112**	0.476
NPL 221483	**-0.033**	0.460
NPL 221485	**-0.020**	0.460
NRC A138	**0.179**	1.123
NRC A140	**0.612**	1.123
PTB 229074	**-0.047**	0.424
PTB 229075	**-0.116**	0.424
VNIIFTRI 79	**0.152**	0.856
VNIIFTRI 89	**0.269**	0.962
PTB 229074	**0.100**	0.302
PTB 229075	**-0.117**	0.302
NPL 221485	**-0.026**	0.302
VSL 226246	**0.043**	0.302
INRiM 232324	**-0.161**	1.320
INTiBS B178	**0.342**	1.026


CCT-K1 and EURAMET.T-K1 : Nominal temperature, T_{90} = 4.478 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
PTB 229074
PTB 229075
NPL 221485
VSL 226246
INRiM 232324
INTiBS B178

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 5.000 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.114 \text{ mK}$$

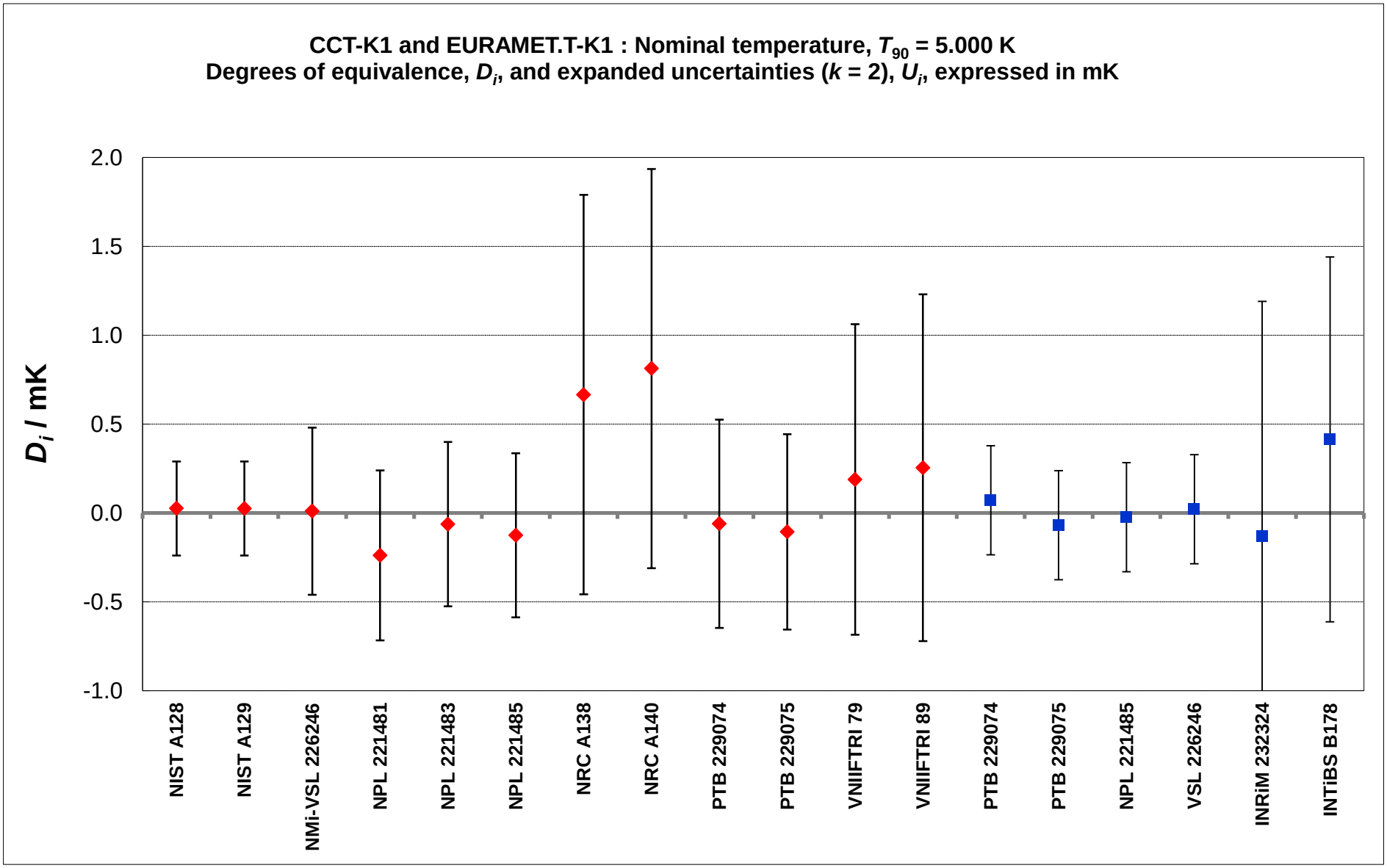
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	5.000483	0.067
NIST A129	5.000483	0.067
NMi-VSL 226246	5.000468	0.206
NPL 221481	5.000220	0.210
NPL 221483	5.000395	0.201
NPL 221485	5.000332	0.201
NRC A138	5.001124	0.550
NRC A140	5.001270	0.550
PTB 229074	5.000397	0.270
PTB 229075	5.000352	0.250
VNIIFTRI 79	5.000647	0.421
VNIIFTRI 89	5.000713	0.474

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 5.000458 K

Matrix of equivalence

Lab, S/N *i*	D_i / mK	U_i / mK
NIST A128	**0.025**	0.264
NIST A129	**0.025**	0.264
NMi-VSL 226246	**0.010**	0.470
NPL 221481	**-0.238**	0.478
NPL 221483	**-0.063**	0.462
NPL 221485	**-0.126**	0.462
NRC A138	**0.666**	1.123
NRC A140	**0.812**	1.123
PTB 229074	**-0.061**	0.586
PTB 229075	**-0.106**	0.550
VNIIFTRI 79	**0.189**	0.873
VNIIFTRI 89	**0.255**	0.975
PTB 229074	**0.071**	0.307
PTB 229075	**-0.069**	0.307
NPL 221485	**-0.024**	0.307
VSL 226246	**0.021**	0.307
INRiM 232324	**-0.130**	1.321
INTiBS B178	**0.414**	1.027


CCT-K1 and EURAMET.T-K1 : Nominal temperature, T_{90} = 5.000 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
PTB 229074
PTB 229075
NPL 221485
VSL 226246
INRiM 232324
INTiBS B178

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 5.948 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.118 \text{ mK}$$

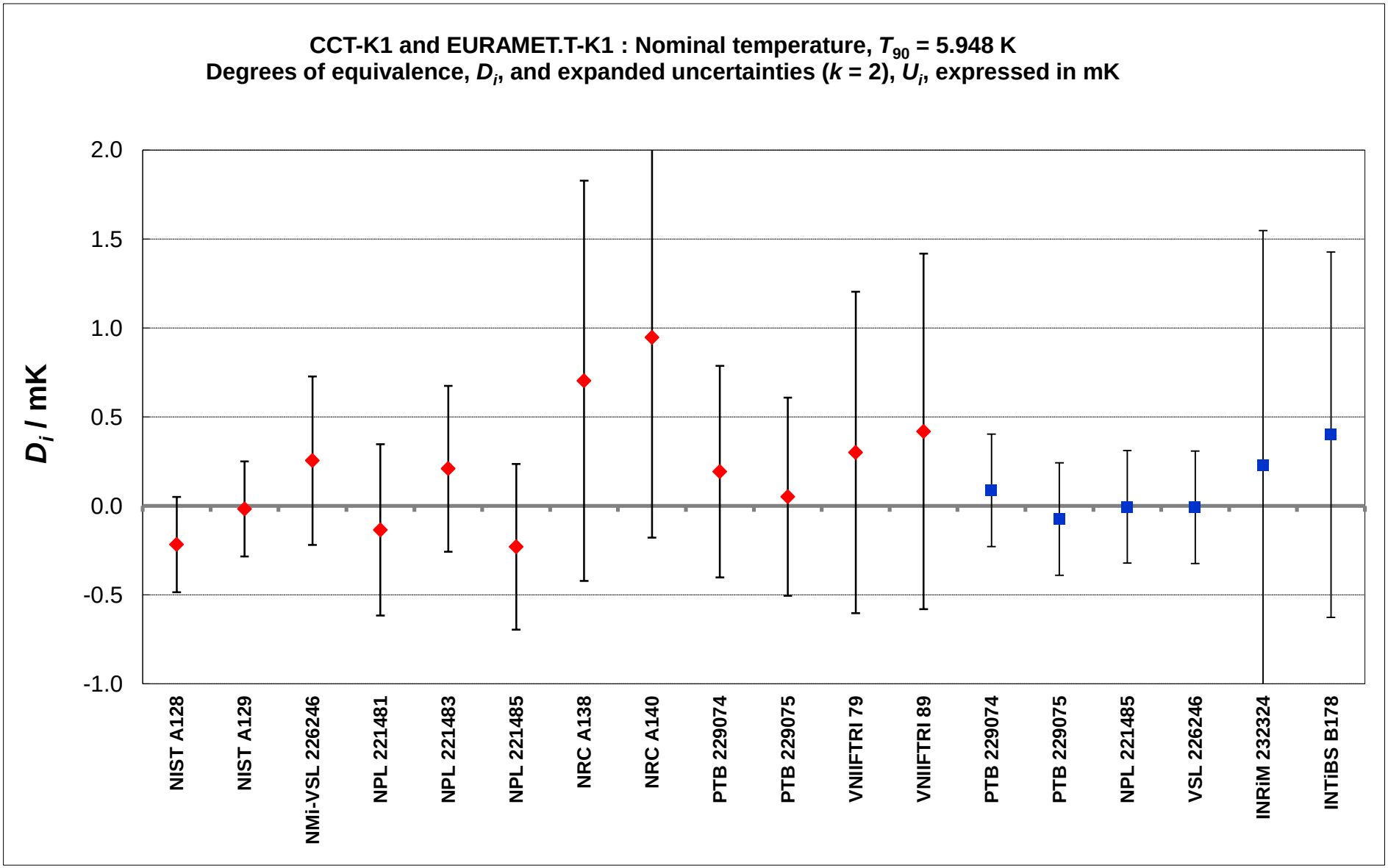
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	5.947948	0.064
NIST A129	5.948148	0.064
NMi-VSL 226246	5.948420	0.206
NPL 221481	5.948030	0.210
NPL 221483	5.948374	0.201
NPL 221485	5.947935	0.201
NRC A138	5.948869	0.550
NRC A140	5.949112	0.550
PTB 229074	5.948358	0.273
PTB 229075	5.948217	0.252
VNIIFTRI 79	5.948466	0.436
VNIIFTRI 89	5.948584	0.485

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 5.948165 K

Matrix of equivalence

Lab, S/N *i*	D_i / mK	U_i / mK
NIST A128	-0.217	0.268
NIST A129	-0.017	0.268
NMi-VSL 226246	0.255	0.474
NPL 221481	-0.135	0.481
NPL 221483	0.209	0.466
NPL 221485	-0.230	0.466
NRC A138	0.704	1.125
NRC A140	0.947	1.125
PTB 229074	0.193	0.594
PTB 229075	0.052	0.557
VNIIFTRI 79	0.301	0.904
VNIIFTRI 89	0.419	0.999
PTB 229074	0.088	0.316
PTB 229075	-0.074	0.316
NPL 221485	-0.005	0.316
VSL 226246	-0.008	0.316
INRiM 232324	0.227	1.321
INTiBS B178	0.400	1.027


CCT-K1 and EURAMET.T-K1 : Nominal temperature, T_{90} = 5.948 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
PTB 229074
PTB 229075
NPL 221485
VSL 226246
INRiM 232324
INTiBS B178

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 7.202 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.122 \text{ mK}$$

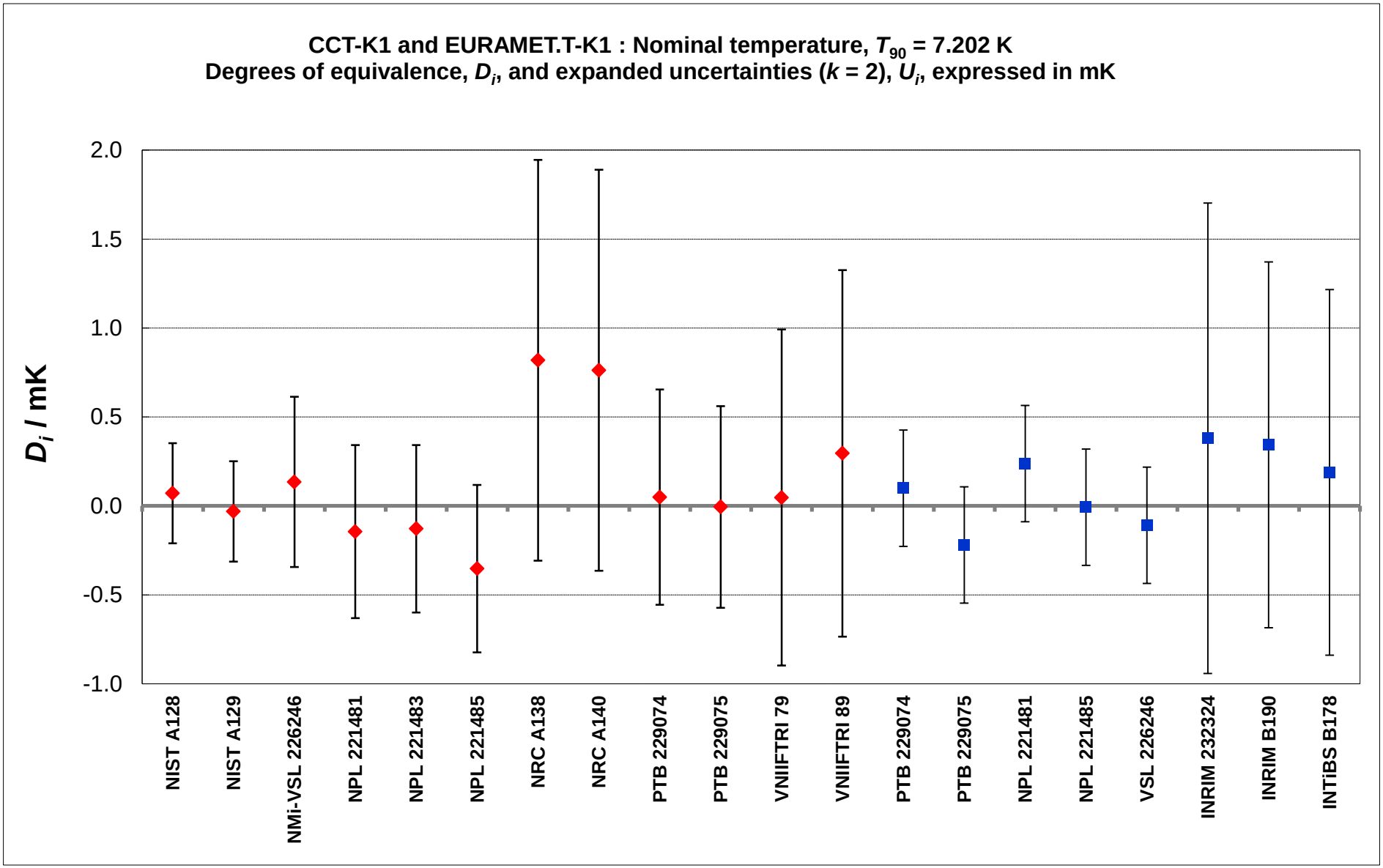
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	7.201615	0.070
NIST A129	7.201513	0.070
NMi-VSL 226246	7.201679	0.206
NPL 221481	7.201400	0.210
NPL 221483	7.201415	0.201
NPL 221485	7.201191	0.201
NRC A138	7.202363	0.550
NRC A140	7.202306	0.550
PTB 229074	7.201593	0.277
PTB 229075	7.201538	0.256
VNIIFTRI 79	7.201591	0.456
VNIIFTRI 89	7.201839	0.501

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 7.201544 K

Matrix of equivalence

Lab, S/N *i*	D_i / mK	U_i / mK
NIST A128	**0.071**	0.282
NIST A129	**-0.031**	0.282
NMi-VSL 226246	**0.135**	0.478
NPL 221481	**-0.144**	0.486
NPL 221483	**-0.129**	0.471
NPL 221485	**-0.353**	0.471
NRC A138	**0.819**	1.127
NRC A140	**0.762**	1.127
PTB 229074	**0.049**	0.605
PTB 229075	**-0.006**	0.567
VNIIFTRI 79	**0.047**	0.945
VNIIFTRI 89	**0.295**	1.031
PTB 229074	**0.099**	0.327
PTB 229075	**-0.220**	0.327
NPL 221481	**0.238**	0.327
NPL 221485	**-0.008**	0.327
VSL 226246	**-0.109**	0.327
INRIM 232324	**0.380**	1.322
INRIM B190	**0.343**	1.028
INTiBS B178	**0.188**	1.028


CCT-K1 and EURAMET.T-K1 : Nominal temperature, T_{90} = 7.202 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
PTB 229074
PTB 229075
NPL 221481
NPL 221485
VSL 226246
INRIM 232324
INRIM B190
INTiBS B178

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 8.296 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.127 \text{ mK}$$

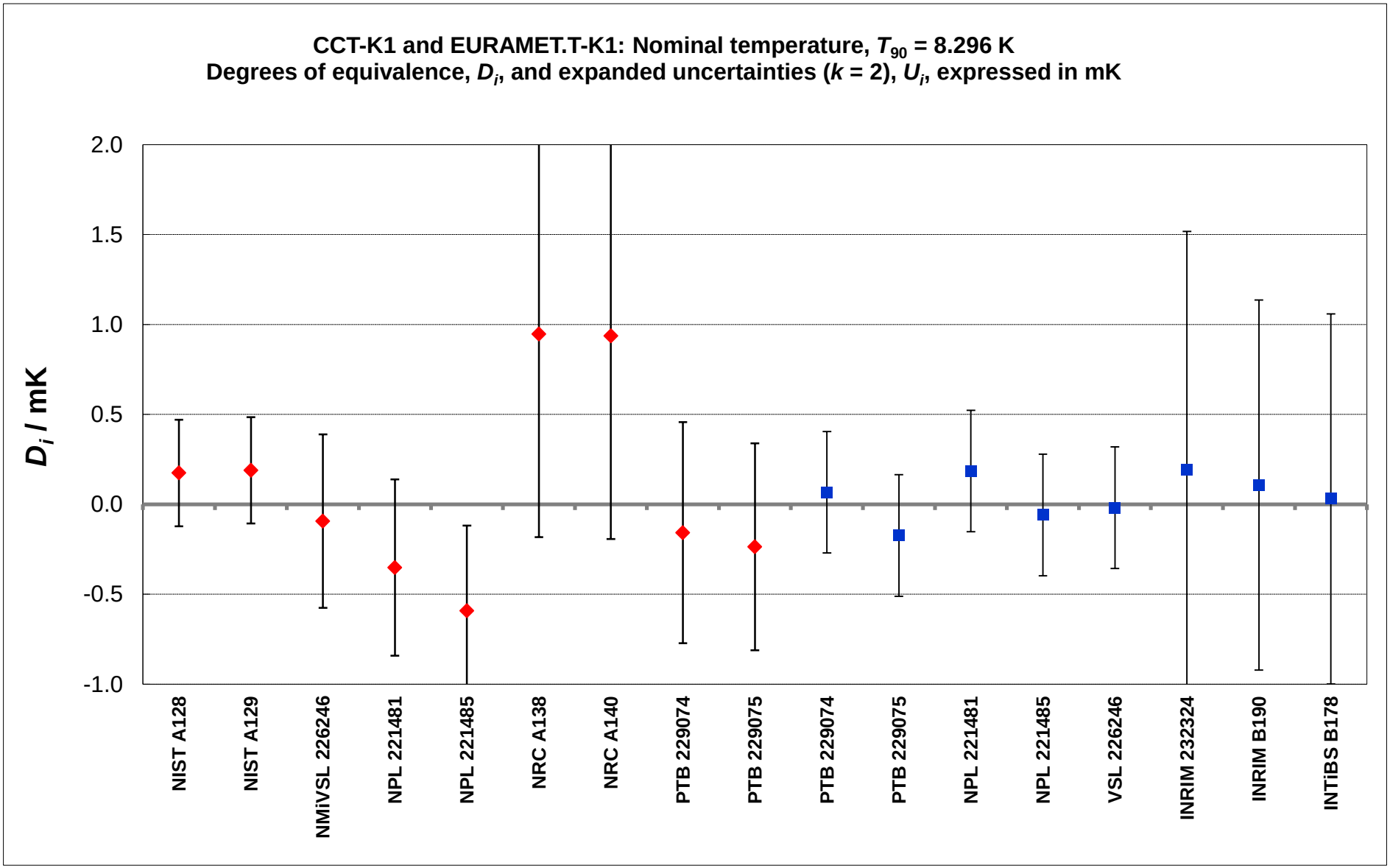
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	8.296546	0.076
NIST A129	8.296561	0.076
NMiVSL 226246	8.296278	0.206
NPL 221481	8.296020	0.210
NPL 221485	8.295779	0.201
NRC A138	8.297318	0.550
NRC A140	8.297308	0.550
PTB 229074	8.296214	0.280
PTB 229075	8.296135	0.258

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 8.296372 K

Matrix of equivalence

Lab, S/N *i*	D_i / mK	U_i / mK
NIST A128	**0.174**	0.296
NIST A129	**0.189**	0.296
NMiVSL 226246	**-0.094**	0.483
NPL 221481	**-0.352**	0.490
NPL 221485	**-0.593**	0.475
NRC A138	**0.946**	1.129
NRC A140	**0.936**	1.129
PTB 229074	**-0.158**	0.615
PTB 229075	**-0.237**	0.575
PTB 229074	**0.067**	0.338
PTB 229075	**-0.174**	0.338
NPL 221481	**0.185**	0.338
NPL 221485	**-0.060**	0.338
VSL 226246	**-0.019**	0.338
INRIM 232324	**0.194**	1.323
INRIM B190	**0.107**	1.029
INTiBS B178	**0.030**	1.029


CCT-K1 and EURAMET.T-K1: Nominal temperature, T_{90} = 8.296 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMiVSL 226246
NPL 221481
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
PTB 229074
PTB 229075
NPL 221481
NPL 221485
VSL 226246
INRIM 232324
INRIM B190
INTiBS B178

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 8.400 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.127 \text{ mK}$$

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	8.399816	0.076
NIST A129	8.399757	0.076
NMi-VSL 226246	8.399564	0.206
NPL 221481	8.399350	0.210
NPL 221483	8.399316	0.201
NPL 221485	8.398898	0.201
NRC A138	8.400617	0.550
NRC A140	8.400524	0.550
PTB 229074	8.399608	0.280
PTB 229075	8.399518	0.259
VNIIFTRI 79	8.399714	0.475
VNIIFTRI 89	8.400138	0.515

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 8.399612 K

Matrix of equivalence

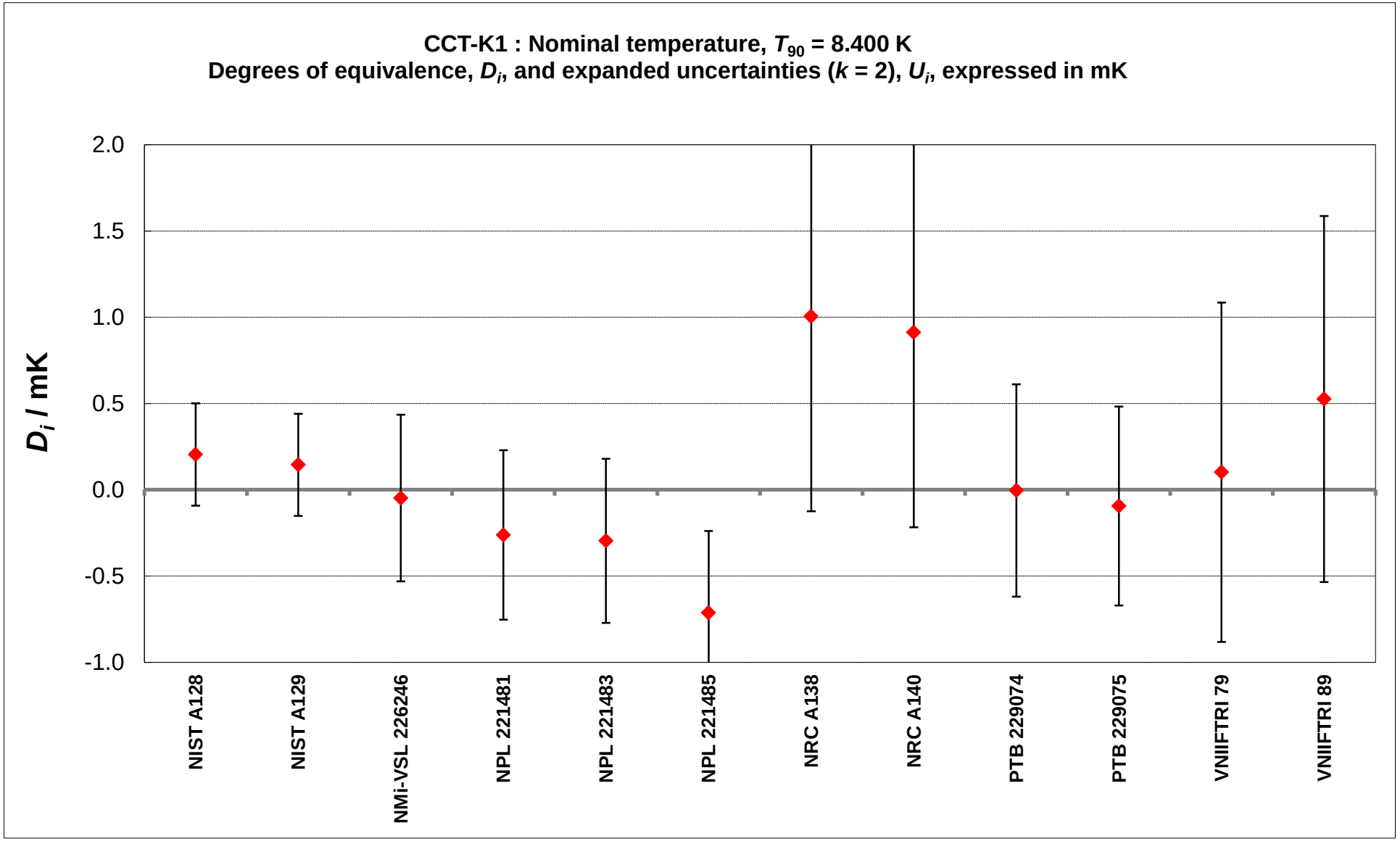
Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NIST A128		NIST A129		NMi-VSL 226246		NPL 221481		NPL 221483		NPL 221485	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**0.204**	0.296			**0.060**	0.419	**0.253**	0.567	**0.467**	0.573	**0.500**	0.560	**0.918**	0.560
NIST A129	**0.145**	0.296	**-0.060**	0.419			**0.193**	0.567	**0.407**	0.573	**0.441**	0.560	**0.859**	0.560
NMi-VSL 226246	**-0.048**	0.483	**-0.253**	0.567	**-0.193**	0.567			**0.214**	0.689	**0.248**	0.678	**0.666**	0.678
NPL 221481	**-0.262**	0.491	**-0.467**	0.573	**-0.407**	0.573	**-0.214**	0.689			**0.034**	0.683	**0.452**	0.683
NPL 221483	**-0.296**	0.475	**-0.500**	0.560	**-0.441**	0.560	**-0.248**	0.678	**-0.034**	0.683			**0.418**	0.672
NPL 221485	**-0.714**	0.475	**-0.918**	0.560	**-0.859**	0.560	**-0.666**	0.678	**-0.452**	0.683	**-0.418**	0.672		
NRC A138	**1.005**	1.129	**0.800**	1.167	**0.860**	1.167	**1.053**	1.228	**1.267**	1.231	**1.301**	1.225	**1.719**	1.225
NRC A140	**0.912**	1.129	**0.708**	1.167	**0.767**	1.167	**0.960**	1.228	**1.174**	1.231	**1.208**	1.225	**1.626**	1.225
PTB 229074	**-0.004**	0.616	**-0.208**	0.683	**-0.149**	0.683	**0.044**	0.783	**0.258**	0.787	**0.292**	0.778	**0.710**	0.778
PTB 229075	**-0.094**	0.576	**-0.299**	0.648	**-0.239**	0.648	**-0.046**	0.752	**0.168**	0.757	**0.202**	0.747	**0.620**	0.747
VNIIFTRI 79	**0.102**	0.983	**-0.103**	1.027	**-0.043**	1.027	**0.150**	1.096	**0.364**	1.099	**0.397**	1.092	**0.815**	1.092
VNIIFTRI 89	**0.526**	1.061	**0.322**	1.101	**0.381**	1.101	**0.574**	1.166	**0.788**	1.169	**0.822**	1.162	**1.240**	1.162

Matrix of equivalence (Continued)

Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NRC A138		NRC A140		PTB 229074		PTB 229075		VNIIFTRI 79		VNIIFTRI 89	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**0.204**	0.296	**-0.800**	1.167	**-0.708**	1.167	**0.208**	0.683	**0.299**	0.648	**0.103**	1.027	**-0.322**	1.101
NIST A129	**0.145**	0.296	**-0.860**	1.167	**-0.767**	1.167	**0.149**	0.683	**0.239**	0.648	**0.043**	1.027	**-0.381**	1.101
NMi-VSL 226246	**-0.048**	0.483	**-1.053**	1.228	**-0.960**	1.228	**-0.044**	0.783	**0.046**	0.752	**-0.150**	1.096	**-0.574**	1.166
NPL 221481	**-0.262**	0.491	**-1.267**	1.231	**-1.174**	1.231	**-0.258**	0.787	**-0.168**	0.757	**-0.364**	1.099	**-0.788**	1.169
NPL 221483	**-0.296**	0.475	**-1.301**	1.225	**-1.208**	1.225	**-0.292**	0.778	**-0.202**	0.747	**-0.397**	1.092	**-0.822**	1.162
NPL 221485	**-0.714**	0.475	**-1.719**	1.225	**-1.626**	1.225	**-0.710**	0.778	**-0.620**	0.747	**-0.815**	1.092	**-1.240**	1.162
NRC A138	**1.005**	1.129			**0.093**	1.597	**1.009**	1.286	**1.099**	1.268	**0.903**	1.497	**0.479**	1.549
NRC A140	**0.912**	1.129	-0.093	1.5965			**0.916**	1.286	**1.006**	1.268	**0.810**	1.497	**0.386**	1.549
PTB 229074	**-0.004**	0.616	**-1.009**	1.286	-0.916	1.2859			**0.090**	0.843	**-0.105**	1.160	**-0.530**	1.227
PTB 229075	**-0.094**	0.576	**-1.099**	1.268	**-1.006**	1.268	-0.0904	0.8433			**-0.196**	1.140	**-0.620**	1.207
VNIIFTRI 79	**0.102**	0.983	**-0.903**	1.497	**-0.810**	1.497	**0.105**	1.160	0.1958	1.1398			**-0.425**	1.446
VNIIFTRI 89	**0.526**	1.061	**-0.479**	1.549	**-0.386**	1.549	**0.530**	1.227	**0.620**	1.207	0.4245	1.4465		


CCT-K1 : Nominal temperature, T_{90} = 8.400 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 9.508 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.131 \text{ mK}$$

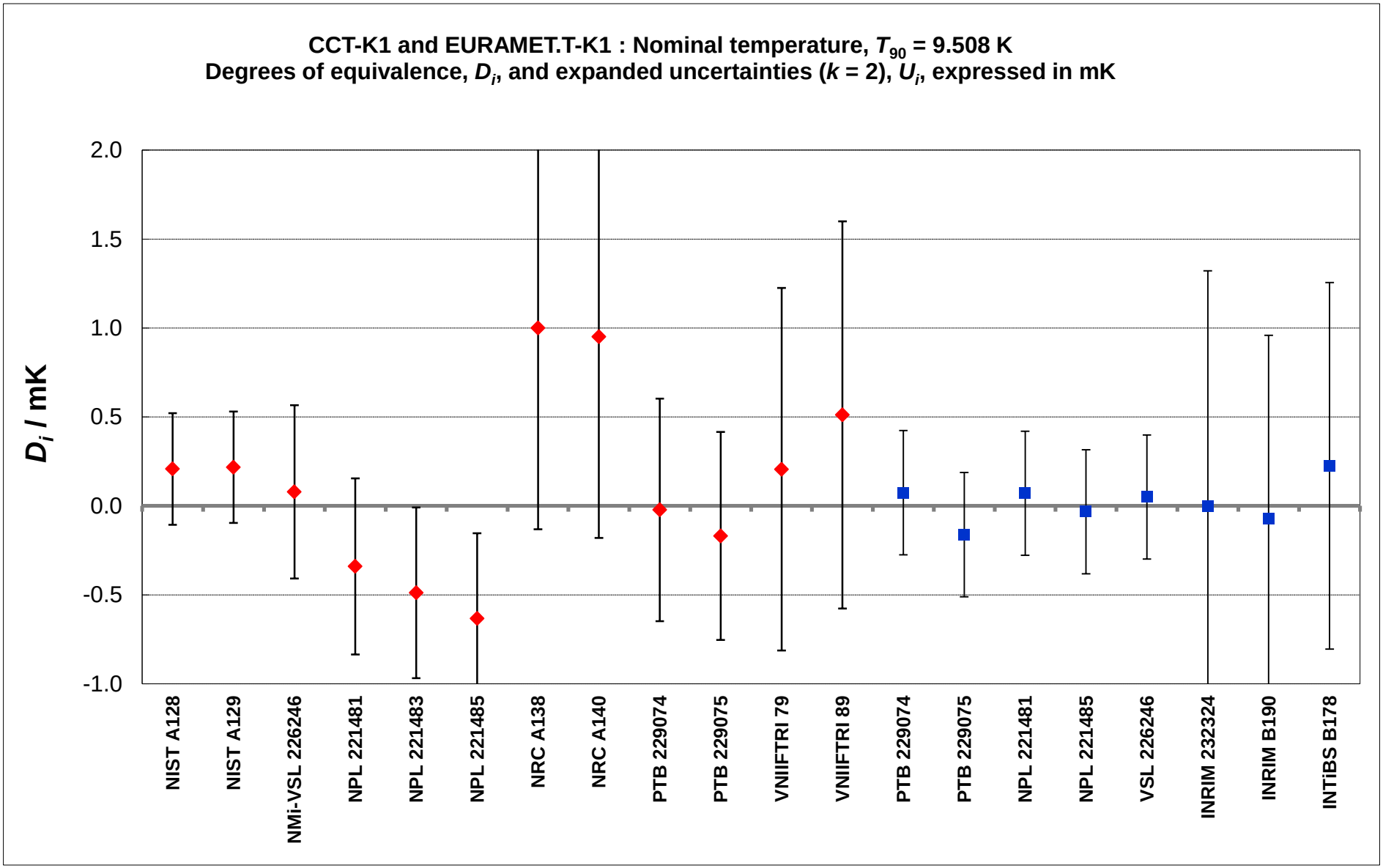
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	9.508227	0.086
NIST A129	9.508237	0.086
NMi-VSL 226246	9.508099	0.206
NPL 221481	9.507680	0.210
NPL 221483	9.507531	0.201
NPL 221485	9.507387	0.201
NRC A138	9.509019	0.550
NRC A140	9.508971	0.550
PTB 229074	9.507997	0.284
PTB 229075	9.507851	0.262
VNIIFTRI 79	9.508226	0.492
VNIIFTRI 89	9.508531	0.528

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 9.50802 K

Matrix of equivalence

Lab, S/N *i*	D_i / mK	U_i / mK
NIST A128	**0.207**	0.313
NIST A129	**0.217**	0.313
NMi-VSL 226246	**0.079**	0.488
NPL 221481	**-0.340**	0.495
NPL 221483	**-0.489**	0.480
NPL 221485	**-0.633**	0.480
NRC A138	**0.999**	1.131
NRC A140	**0.951**	1.131
PTB 229074	**-0.023**	0.625
PTB 229075	**-0.169**	0.585
VNIIFTRI 79	**0.206**	1.019
VNIIFTRI 89	**0.511**	1.089
PTB 229074	**0.074**	0.349
PTB 229075	**-0.162**	0.349
NPL 221481	**0.071**	0.349
NPL 221485	**-0.033**	0.349
VSL 226246	**0.050**	0.349
INRIM 232324	**-0.001**	1.323
INRIM B190	**-0.071**	1.030
INTiBS B178	**0.225**	1.030


CCT-K1 and EURAMET.T-K1 : Nominal temperature, T_{90} = 9.508 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
PTB 229074
PTB 229075
NPL 221481
NPL 221485
VSL 226246
INRIM 232324
INRIM B190
INTiBS B178

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 10.803 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.137 \text{ mK}$$

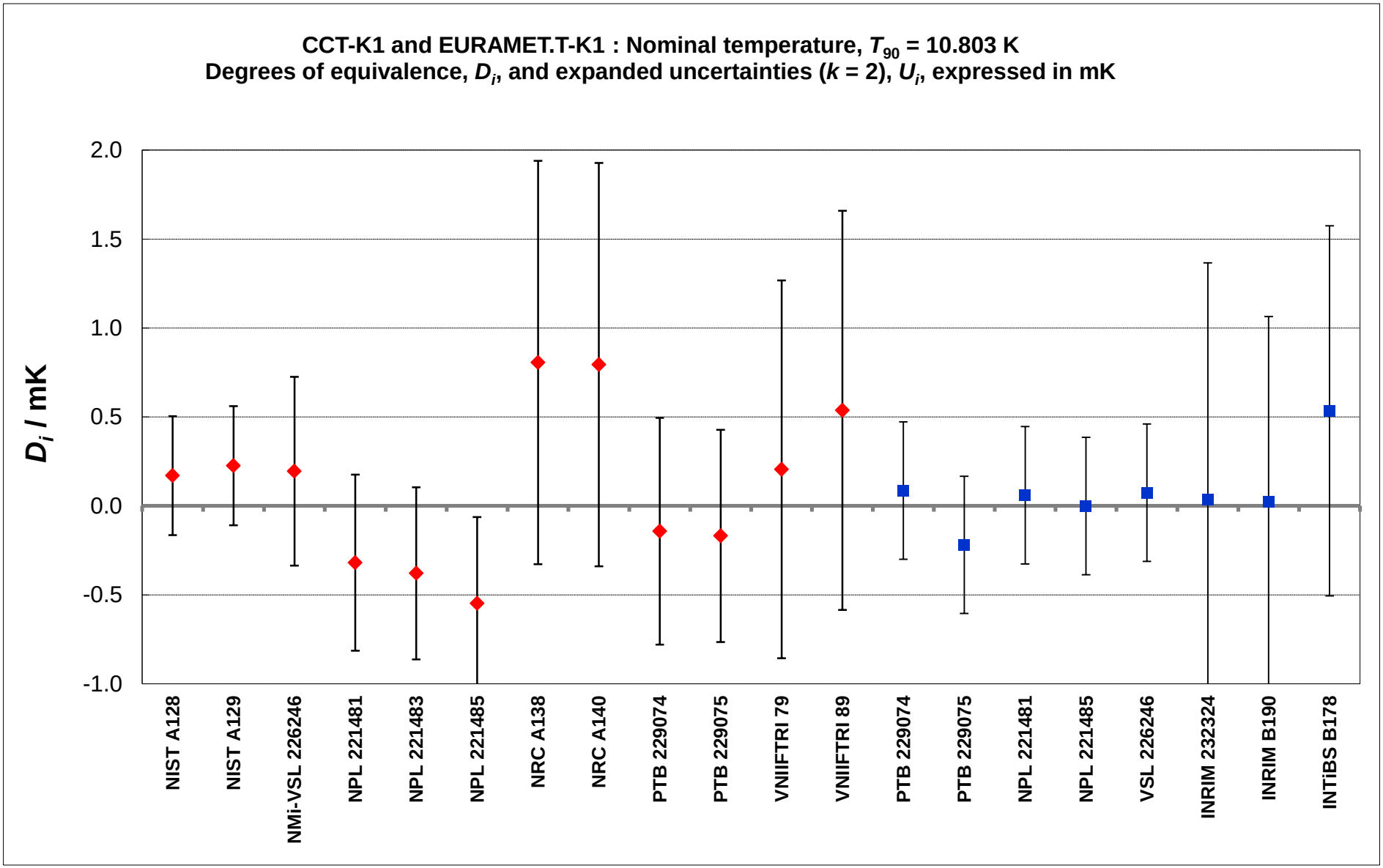
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	10.803560	0.096
NIST A129	10.803616	0.096
NMi-VSL 226246	10.803584	0.227
NPL 221481	10.803070	0.206
NPL 221483	10.803011	0.200
NPL 221485	10.802842	0.200
NRC A138	10.804196	0.550
NRC A140	10.804185	0.550
PTB 229074	10.803248	0.288
PTB 229075	10.803221	0.265
VNIIFTRI 79	10.803595	0.513
VNIIFTRI 89	10.803927	0.544

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 10.803390 K

Matrix of equivalence

Lab, S/N *i*	D_i / mK	U_i / mK
NIST A128	**0.170**	0.335
NIST A129	**0.226**	0.335
NMi-VSL 226246	**0.194**	0.531
NPL 221481	**-0.320**	0.495
NPL 221483	**-0.379**	0.484
NPL 221485	**-0.548**	0.484
NRC A138	**0.806**	1.134
NRC A140	**0.795**	1.134
PTB 229074	**-0.142**	0.638
PTB 229075	**-0.169**	0.597
VNIIFTRI 79	**0.205**	1.062
VNIIFTRI 89	**0.537**	1.122
PTB 229074	**0.086**	0.386
PTB 229075	**-0.219**	0.386
NPL 221481	**0.060**	0.386
NPL 221485	**-0.001**	0.386
VSL 226246	**0.074**	0.386
INRIM 232324	**0.035**	1.331
INRIM B190	**0.024**	1.040
INTiBS B178	**0.534**	1.040


CCT-K1 and EURAMET.T-K1 : Nominal temperature, T_{90} = 10.803 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
PTB 229074
PTB 229075
NPL 221481
NPL 221485
VSL 226246
INRIM 232324
INRIM B190
INTiBS B178

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 12.297 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.145 \text{ mK}$$

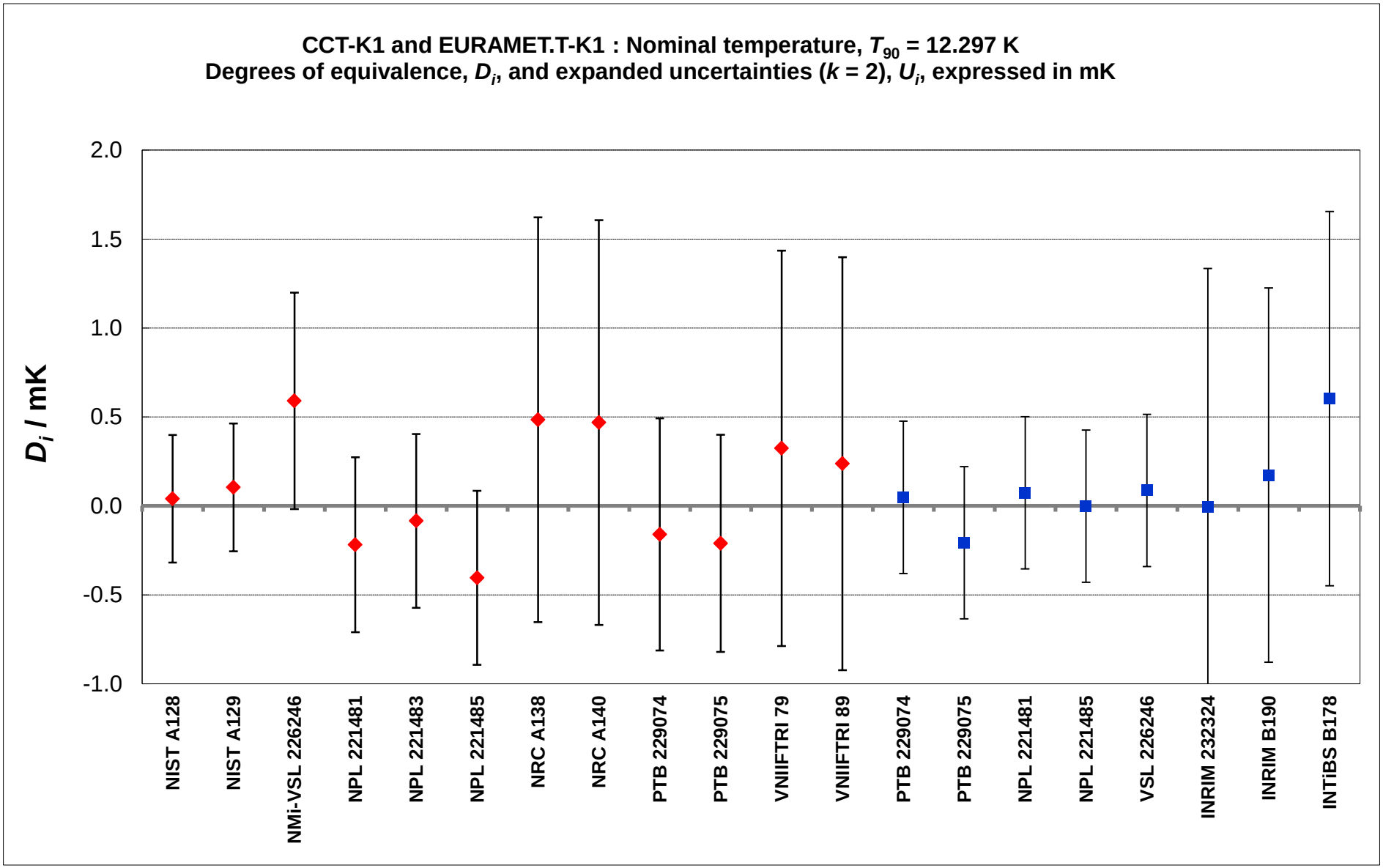
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	12.297349	0.106
NIST A129	12.297413	0.106
NMi-VSL 226246	12.297900	0.267
NPL 221481	12.297090	0.199
NPL 221483	12.297224	0.197
NPL 221485	12.296905	0.197
NRC A138	12.297793	0.550
NRC A140	12.297778	0.550
PTB 229074	12.297149	0.292
PTB 229075	12.297099	0.269
VNIIFTRI 79	12.297633	0.536
VNIIFTRI 89	12.297547	0.562

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 12.297309 K

Matrix of equivalence

Lab, S/N *i*	D_i / mK	U_i / mK
NIST A128	**0.040**	0.359
NIST A129	**0.104**	0.359
NMi-VSL 226246	**0.591**	0.608
NPL 221481	**-0.219**	0.492
NPL 221483	**-0.085**	0.489
NPL 221485	**-0.404**	0.489
NRC A138	**0.484**	1.138
NRC A140	**0.469**	1.138
PTB 229074	**-0.160**	0.653
PTB 229075	**-0.210**	0.611
VNIIFTRI 79	**0.324**	1.111
VNIIFTRI 89	**0.238**	1.161
PTB 229074	**0.048**	0.428
PTB 229075	**-0.207**	0.428
NPL 221481	**0.074**	0.428
NPL 221485	**-0.002**	0.428
VSL 226246	**0.087**	0.428
INRIM 232324	**-0.006**	1.341
INRIM B190	**0.173**	1.052
INTiBS B178	**0.603**	1.052


CCT-K1 and EURAMET.T-K1 : Nominal temperature, T_{90} = 12.297 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
PTB 229074
PTB 229075
NPL 221481
NPL 221485
VSL 226246
INRIM 232324
INRIM B190
INTiBS B178

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 13.798 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.153 \text{ mK}$$

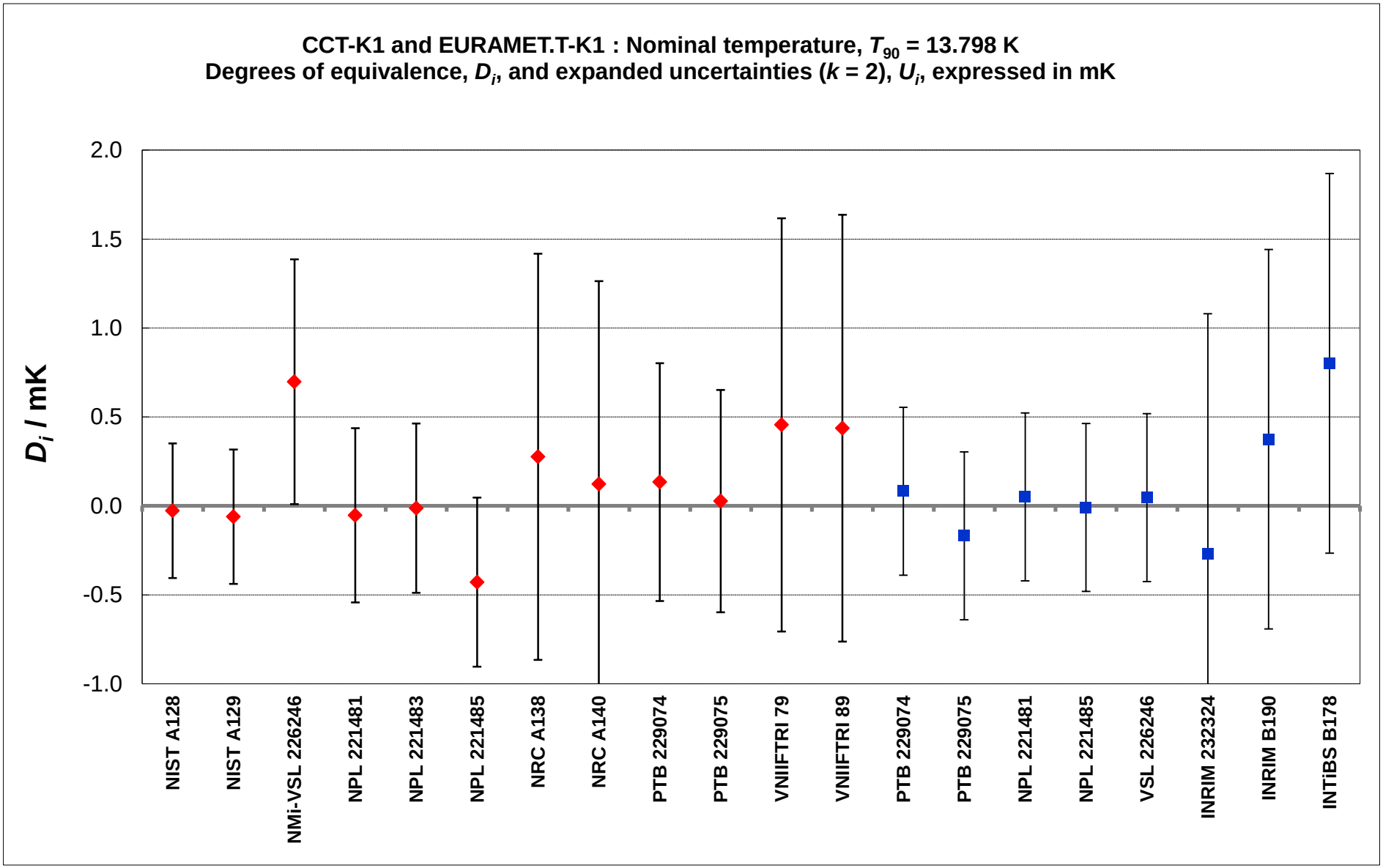
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	13.798156	0.111
NIST A129	13.798122	0.111
NMi-VSL 226246	13.798881	0.308
NPL 221481	13.798130	0.191
NPL 221483	13.798170	0.182
NPL 221485	13.797754	0.182
NRC A138	13.798459	0.550
NRC A140	13.798305	0.550
PTB 229074	13.798317	0.297
PTB 229075	13.798209	0.273
VNIIFTRI 79	13.798638	0.560
VNIIFTRI 89	13.798620	0.580

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 13.798183 K

Matrix of equivalence

Lab, S/N *i*	D_i / mK	U_i / mK
NIST A128	-0.027	0.378
NIST A129	-0.061	0.378
NMi-VSL 226246	0.698	0.688
NPL 221481	-0.053	0.489
NPL 221483	-0.013	0.476
NPL 221485	-0.429	0.476
NRC A138	0.276	1.142
NRC A140	0.122	1.142
PTB 229074	0.134	0.668
PTB 229075	0.026	0.625
VNIIFTRI 79	0.455	1.161
VNIIFTRI 89	0.437	1.200
PTB 229074	0.082	0.472
PTB 229075	-0.168	0.472
NPL 221481	0.050	0.472
NPL 221485	-0.009	0.472
VSL 226246	0.046	0.472
INRIM 232324	-0.272	1.352
INRIM B190	0.375	1.067
INTiBS B178	0.801	1.067


CCT-K1 and EURAMET.T-K1 : Nominal temperature, T_{90} = 13.798 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
PTB 229074
PTB 229075
NPL 221481
NPL 221485
VSL 226246
INRIM 232324
INRIM B190
INTiBS B178

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 15.500 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.153 \text{ mK}$$

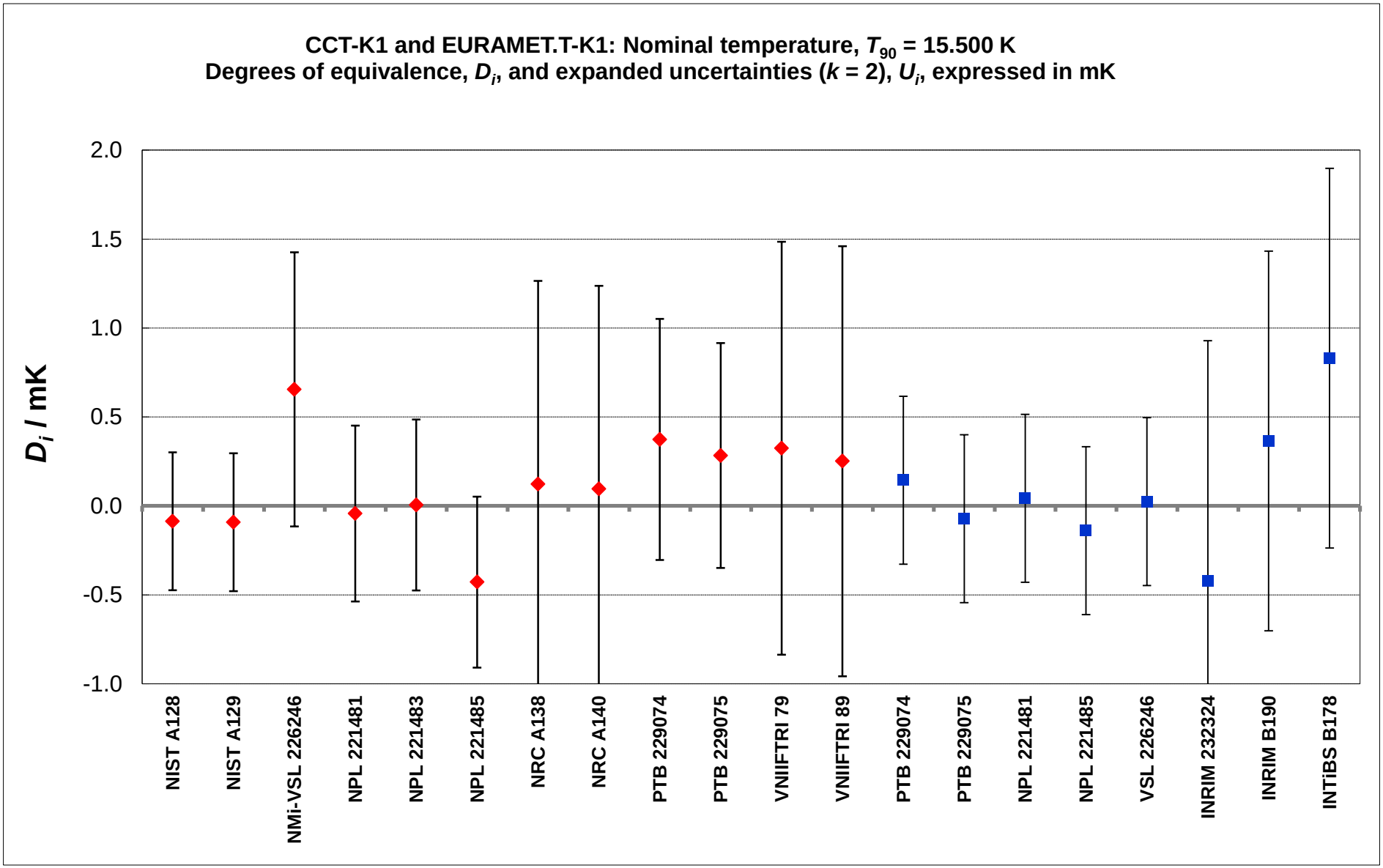
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	15.499479	0.119
NIST A129	15.499474	0.119
NMi-VSL 226246	15.500221	0.354
NPL 221481	15.499523	0.194
NPL 221483	15.499571	0.185
NPL 221485	15.499138	0.185
NRC A138	15.499689	0.550
NRC A140	15.499662	0.550
PTB 229074	15.499940	0.302
PTB 229075	15.499849	0.277
VNIIFTRI 79	15.499890	0.560
VNIIFTRI 89	15.499817	0.585

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 15.499566 K

Matrix of equivalence

Lab, S/N *i* ⇩	D_i / mK	U_i / mK
NIST A128	-0.087	0.388
NIST A129	-0.092	0.388
NMi-VSL 226246	0.655	0.771
NPL 221481	-0.043	0.494
NPL 221483	0.005	0.480
NPL 221485	-0.428	0.480
NRC A138	0.123	1.142
NRC A140	0.096	1.142
PTB 229074	0.374	0.677
PTB 229075	0.283	0.633
VNIIFTRI 79	0.324	1.161
VNIIFTRI 89	0.251	1.209
PTB 229074	0.144	0.472
PTB 229075	-0.072	0.472
NPL 221481	0.043	0.472
NPL 221485	-0.139	0.472
VSL 226246	0.024	0.472
INRIM 232324	-0.424	1.352
INRIM B190	0.365	1.067
INTiBS B178	0.830	1.067


CCT-K1 and EURAMET.T-K1: Nominal temperature, T_{90} = 15.500 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
PTB 229074
PTB 229075
NPL 221481
NPL 221485
VSL 226246
INRIM 232324
INRIM B190
INTiBS B178

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 16.999 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.153 \text{ mK}$$

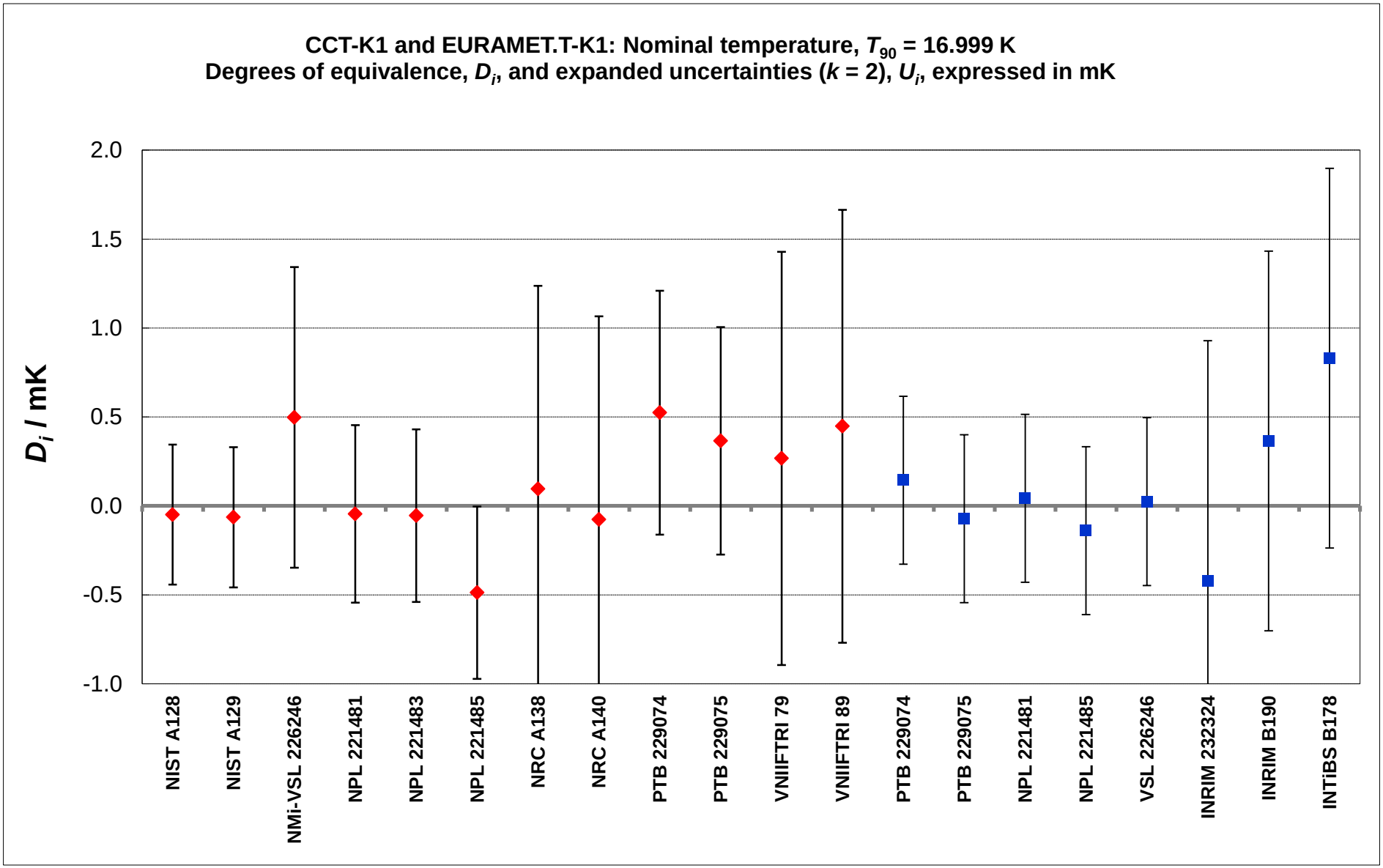
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	16.999286	0.124
NIST A129	16.999271	0.124
NMi-VSL 226246	16.999833	0.394
NPL 221481	16.999290	0.197
NPL 221483	16.999280	0.188
NPL 221485	16.998847	0.188
NRC A138	16.999430	0.550
NRC A140	16.999259	0.550
PTB 229074	16.999859	0.307
PTB 229075	16.999701	0.281
VNIIFTRI 79	16.999602	0.560
VNIIFTRI 89	16.999783	0.589

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 16.999335 K

Matrix of equivalence

Lab, S/N *i*	D_i / mK	U_i / mK
NIST A128	**-0.049**	0.394
NIST A129	**-0.064**	0.394
NMi-VSL 226246	**0.498**	0.845
NPL 221481	**-0.045**	0.499
NPL 221483	**-0.055**	0.485
NPL 221485	**-0.488**	0.485
NRC A138	**0.095**	1.142
NRC A140	**-0.076**	1.142
PTB 229074	**0.524**	0.686
PTB 229075	**0.366**	0.639
VNIIFTRI 79	**0.267**	1.161
VNIIFTRI 89	**0.448**	1.217
PTB 229074	**0.144**	0.472
PTB 229075	**-0.072**	0.472
NPL 221481	**0.043**	0.472
NPL 221485	**-0.139**	0.472
VSL 226246	**0.024**	0.472
INRIM 232324	**-0.424**	1.352
INRIM B190	**0.365**	1.067
INTiBS B178	**0.830**	1.067


CCT-K1 and EURAMET.T-K1: Nominal temperature, T_{90} = 16.999 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
PTB 229074
PTB 229075
NPL 221481
NPL 221485
VSL 226246
INRIM 232324
INRIM B190
INTiBS B178

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 18.597 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.153 \text{ mK}$$

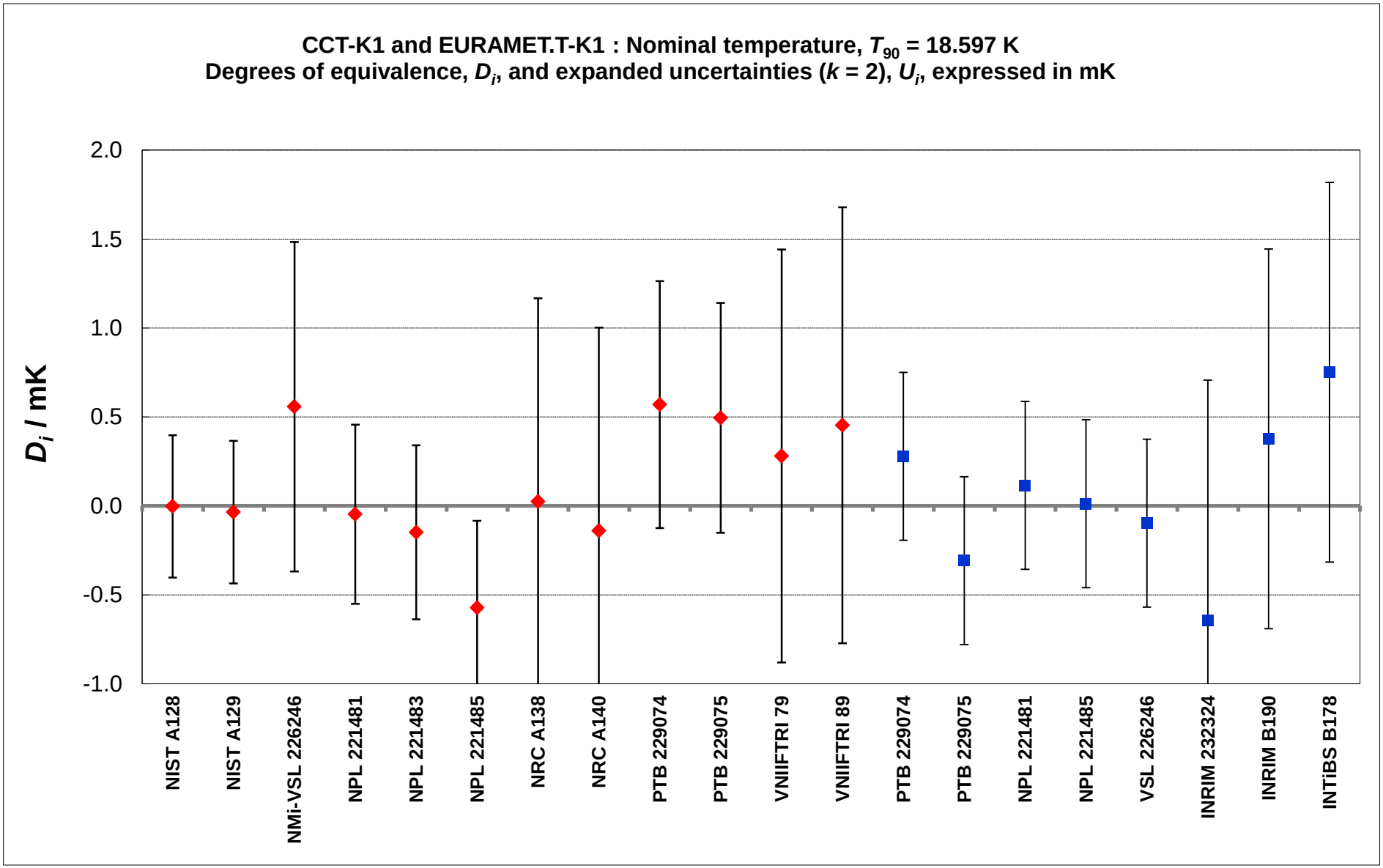
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	18.597374	0.129
NIST A129	18.597342	0.129
NMi-VSL 226246	18.597934	0.437
NPL 221481	18.597330	0.200
NPL 221483	18.597229	0.191
NPL 221485	18.596804	0.191
NRC A138	18.597402	0.550
NRC A140	18.597237	0.550
PTB 229074	18.597946	0.312
PTB 229075	18.597872	0.285
VNIIFTRI 79	18.597658	0.560
VNIIFTRI 89	18.597830	0.593

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 18.597377 K

Matrix of equivalence

Lab, S/N *i*	D_i / mK	U_i / mK
NIST A128	**-0.003**	0.401
NIST A129	**-0.035**	0.401
NMi-VSL 226246	**0.557**	0.926
NPL 221481	**-0.047**	0.503
NPL 221483	**-0.148**	0.489
NPL 221485	**-0.573**	0.489
NRC A138	**0.025**	1.142
NRC A140	**-0.140**	1.142
PTB 229074	**0.569**	0.695
PTB 229075	**0.495**	0.647
VNIIFTRI 79	**0.281**	1.161
VNIIFTRI 89	**0.453**	1.226
PTB 229074	**0.279**	0.472
PTB 229075	**-0.308**	0.472
NPL 221481	**0.115**	0.472
NPL 221485	**0.012**	0.472
VSL 226246	**-0.097**	0.472
INRIM 232324	**-0.645**	1.352
INRIM B190	**0.377**	1.067
INTiBS B178	**0.751**	1.067


CCT-K1 and EURAMET.T-K1 : Nominal temperature, T_{90} = 18.597 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
PTB 229074
PTB 229075
NPL 221481
NPL 221485
VSL 226246
INRIM 232324
INRIM B190
INTiBS B178

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 20.299 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.153 \text{ mK}$$

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	20.299107	0.132
NIST A129	20.299108	0.132
NMi-VSL 226246	20.299225	0.475
NPL 221481	20.298690	0.203
NPL 221483	20.298576	0.194
NPL 221485	20.298352	0.194
NRC A138	20.298800	0.550
NRC A140	20.298750	0.550
PTB 229074	20.299355	0.317
PTB 229075	20.299131	0.289
VNIIFTRI 79	20.298975	0.560
VNIIFTRI 89	20.299144	0.598

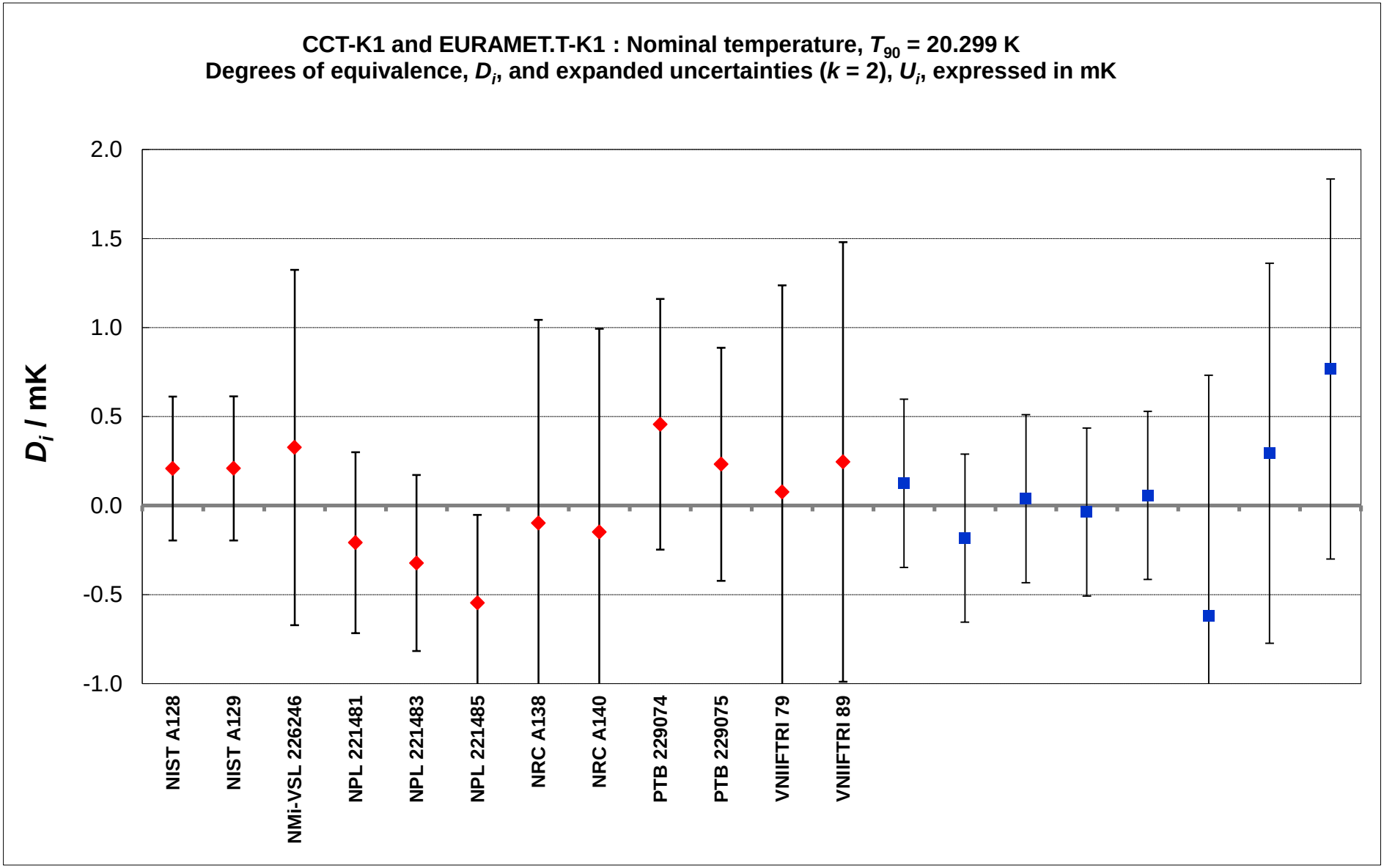
Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 20.298899 K

Matrix of equivalence

Lab, S/N *i* ⇩	D_i / mK	U_i / mK
NIST A128	**0.208**	0.404
NIST A129	**0.209**	0.404
NMi-VSL 226246	**0.326**	0.998
NPL 221481	**-0.209**	0.508
NPL 221483	**-0.323**	0.494
NPL 221485	**-0.547**	0.494
NRC A138	**-0.099**	1.142
NRC A140	**-0.149**	1.142
PTB 229074	**0.456**	0.704
PTB 229075	**0.232**	0.654
VNIIFTRI 79	**0.076**	1.161
VNIIFTRI 89	**0.245**	1.235
PTB 229074	**0.125**	0.472
PTB 229075	**-0.183**	0.472
NPL 221481	**0.039**	0.472
NPL 221485	**-0.037**	0.472
VSL 226246	**0.057**	0.472
INRIM 232324	**-0.620**	1.352
INRIM B190	**0.294**	1.067
INTiBS B178	**0.767**	1.067

CCT-K1 and EURAMET.T-K1 : Nominal temperature, T_{90} = 20.299 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK



Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 21.575 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.153 \text{ mK}$$

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	21.575775	0.142
NIST A129	21.575754	0.142
NMi-VSL 226246	21.575850	0.514
NPL 221481	21.575120	0.207
NPL 221483	21.574976	0.198
NPL 221485	21.574975	0.198
NRC A138	21.575266	0.550
NRC A140	21.575114	0.550
PTB 229074	21.575934	0.321
PTB 229075	21.575693	0.292
VNIIFTRI 79	21.575227	0.560
VNIIFTRI 89	21.575344	0.602

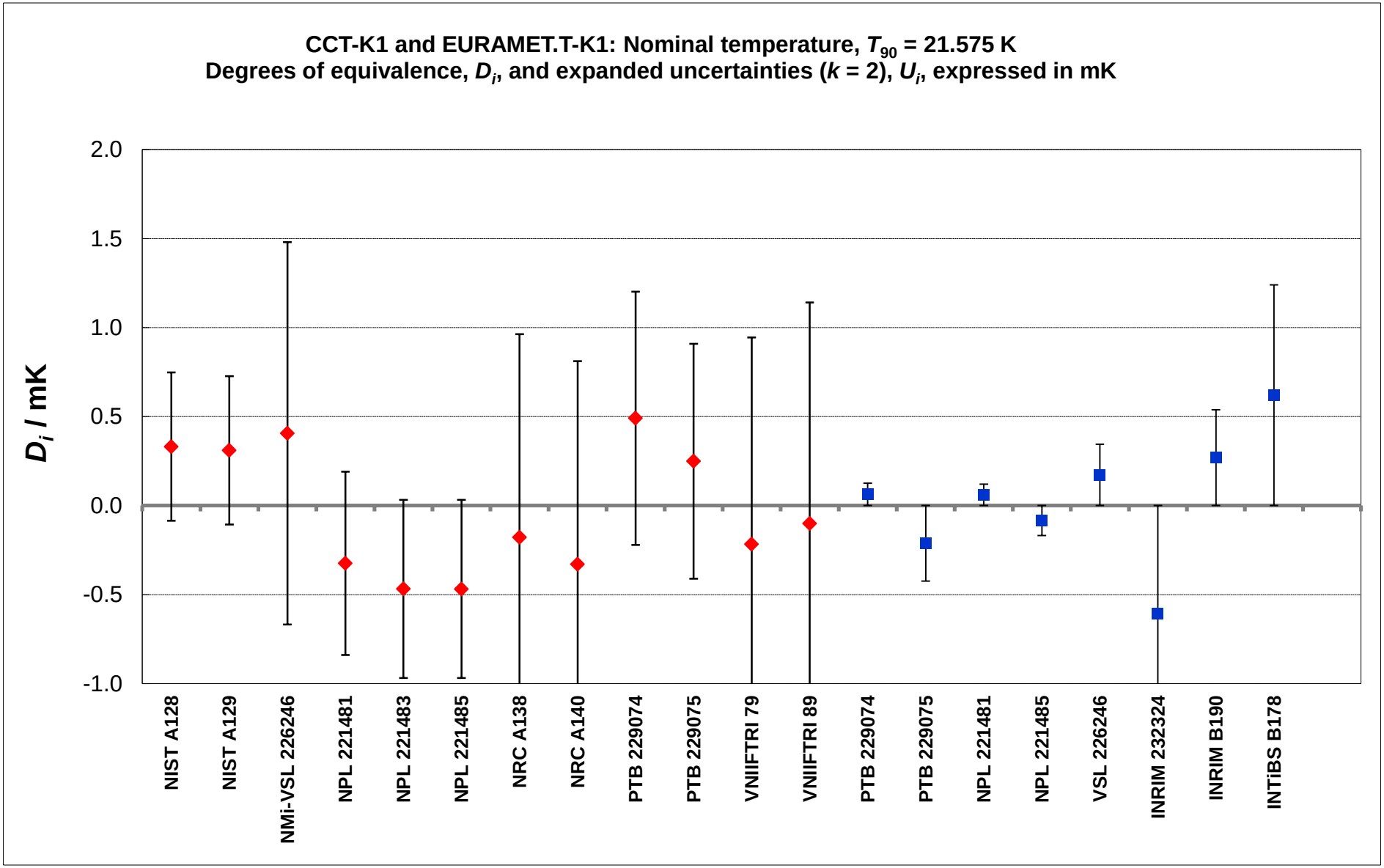
Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 21.575444 K

Matrix of equivalence

Lab, S/N *i* ⇩	D_i / mK	U_i / mK
NIST A128	**0.331**	0.417
NIST A129	**0.310**	0.417
NMi-VSL 226246	**0.406**	1.073
NPL 221481	**-0.324**	0.515
NPL 221483	**-0.468**	0.500
NPL 221485	**-0.469**	0.500
NRC A138	**-0.178**	1.142
NRC A140	**-0.330**	1.142
PTB 229074	**0.490**	0.711
PTB 229075	**0.249**	0.660
VNIIFTRI 79	**-0.217**	1.161
VNIIFTRI 89	**-0.100**	1.242
PTB 229074	**0.063**	0.472
PTB 229075	**-0.212**	0.472
NPL 221481	**0.060**	0.472
NPL 221485	**-0.084**	0.472
VSL 226246	**0.172**	0.472
INRIM 232324	**-0.607**	1.352
INRIM B190	**0.269**	1.067
INTiBS B178	**0.620**	1.067

CCT-K1 and EURAMET.T-K1: Nominal temperature, T_{90} = 21.575 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK



Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 22.677 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.153 \text{ mK}$$

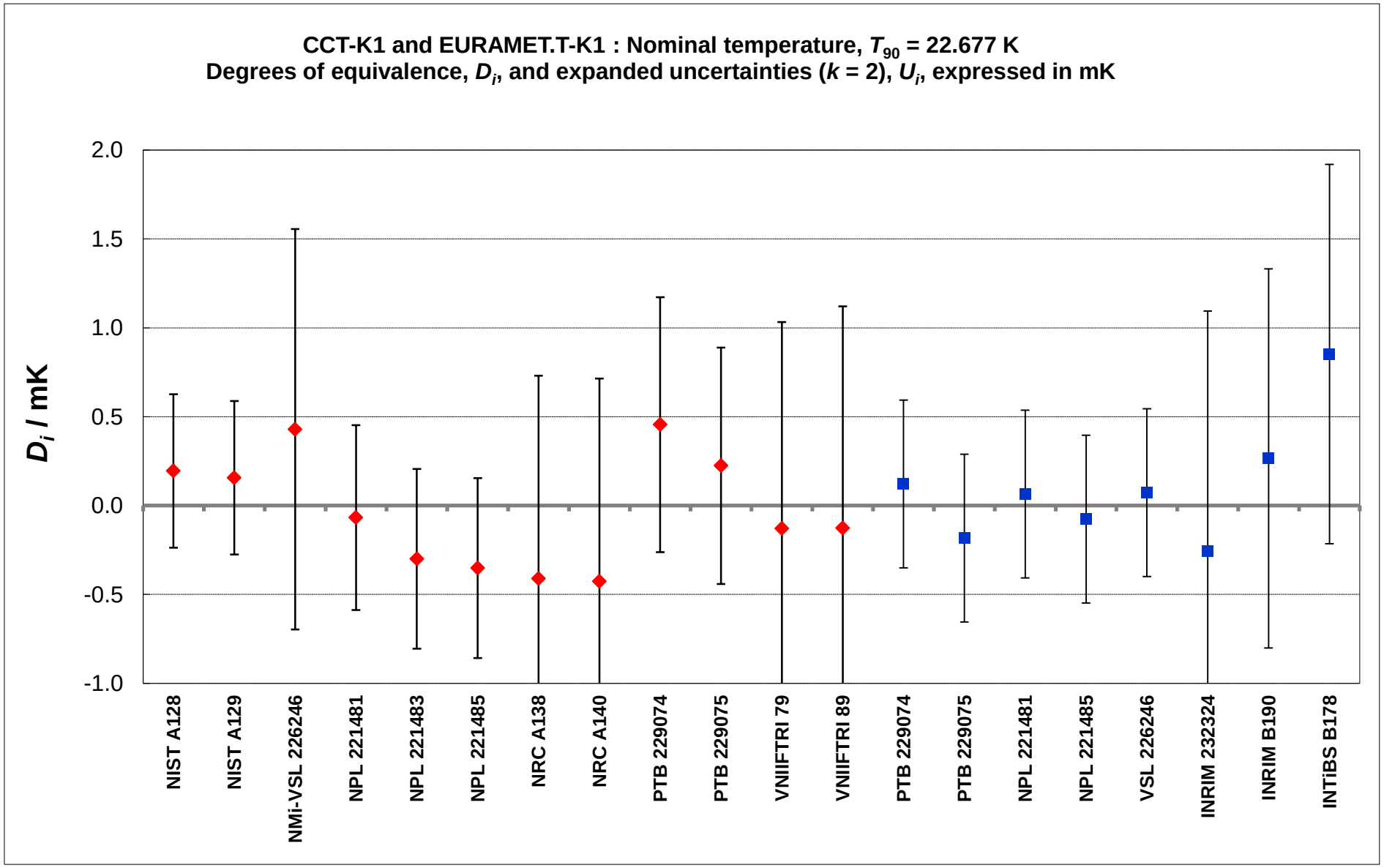
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	22.677193	0.152
NIST A129	22.677155	0.152
NMi-VSL 226246	22.677427	0.542
NPL 221481	22.676930	0.210
NPL 221483	22.676699	0.201
NPL 221485	22.676646	0.201
NRC A138	22.676586	0.550
NRC A140	22.676571	0.550
PTB 229074	22.677453	0.324
PTB 229075	22.677222	0.295
VNIIFTRI 79	22.676869	0.560
VNIIFTRI 89	22.676872	0.605

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 22.676998 K

Matrix of equivalence

Lab, S/N *i*	D_i / mK	U_i / mK
NIST A128	**0.195**	0.431
NIST A129	**0.157**	0.431
NMi-VSL 226246	**0.429**	1.127
NPL 221481	**-0.068**	0.520
NPL 221483	**-0.299**	0.506
NPL 221485	**-0.352**	0.506
NRC A138	**-0.412**	1.142
NRC A140	**-0.427**	1.142
PTB 229074	**0.455**	0.717
PTB 229075	**0.224**	0.665
VNIIFTRI 79	**-0.129**	1.161
VNIIFTRI 89	**-0.126**	1.248
PTB 229074	**0.121**	0.472
PTB 229075	**-0.183**	0.472
NPL 221481	**0.065**	0.472
NPL 221485	**-0.076**	0.472
VSL 226246	**0.073**	0.472
INRIM 232324	**-0.257**	1.352
INRIM B190	**0.265**	1.067
INTiBS B178	**0.852**	1.067


CCT-K1 and EURAMET.T-K1 : Nominal temperature, T_{90} = 22.677 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
PTB 229074
PTB 229075
NPL 221481
NPL 221485
VSL 226246
INRIM 232324
INRIM B190
INTiBS B178

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 23.496 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

u_{comp} = 0.153 mK

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	23.496504	0.162
NIST A129	23.496495	0.162
NMi-VSL 226246	23.496942	0.563
NPL 221481	23.496400	0.213
NPL 221483	23.496171	0.204
NPL 221485	23.496328	0.204
NRC A138	23.496000	0.550
NRC A140	23.496009	0.550
PTB 229074	23.496996	0.327
PTB 229075	23.496714	0.297
VNIIFTRI 79	23.496311	0.560
VNIIFTRI 89	23.496381	0.607

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 23.496448 K

Matrix of equivalence

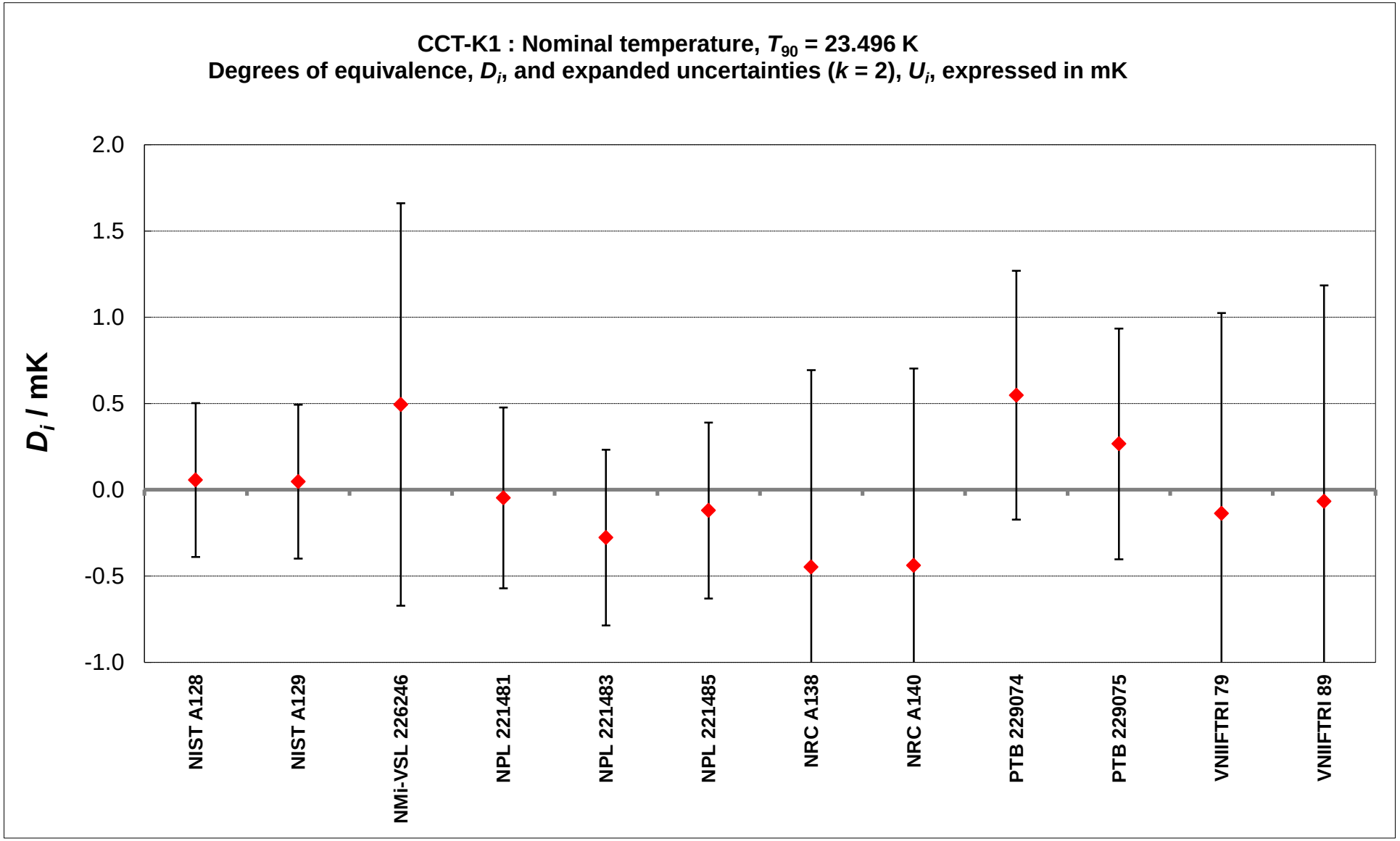
Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NIST A128		NIST A129		NMi-VSL 226246		NPL 221481		NPL 221483		NPL 221485	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**0.056**	0.446			**0.010**	0.630	**-0.438**	1.249	**0.104**	0.688	**0.333**	0.677	**0.176**	0.677
NIST A129	**0.047**	0.446	**-0.010**	0.630			**-0.448**	1.249	**0.094**	0.688	**0.324**	0.677	**0.167**	0.677
NMi-VSL 226246	**0.494**	1.166	**0.438**	1.249	**0.448**	1.249			**0.542**	1.279	**0.771**	1.273	**0.614**	1.273
NPL 221481	**-0.048**	0.524	**-0.104**	0.688	**-0.094**	0.688	**-0.542**	1.279			**0.229**	0.731	**0.073**	0.731
NPL 221483	**-0.277**	0.510	**-0.333**	0.677	**-0.324**	0.677	**-0.771**	1.273	**-0.229**	0.731			**-0.157**	0.721
NPL 221485	**-0.120**	0.510	**-0.176**	0.677	**-0.167**	0.677	**-0.614**	1.273	**-0.073**	0.731	**0.157**	0.721		
NRC A138	**-0.448**	1.142	**-0.504**	1.226	**-0.495**	1.226	**-0.942**	1.632	**-0.401**	1.256	**-0.171**	1.250	**-0.328**	1.250
NRC A140	**-0.439**	1.142	**-0.495**	1.226	**-0.486**	1.226	**-0.934**	1.632	**-0.392**	1.256	**-0.162**	1.250	**-0.319**	1.250
PTB 229074	**0.548**	0.722	**0.492**	0.848	**0.501**	0.848	**0.054**	1.371	**0.596**	0.892	**0.825**	0.883	**0.668**	0.883
PTB 229075	**0.266**	0.669	**0.210**	0.804	**0.219**	0.804	**-0.228**	1.344	**0.314**	0.850	**0.543**	0.841	**0.386**	0.841
VNIIFTRI 79	**-0.137**	1.161	**-0.193**	1.244	**-0.184**	1.244	**-0.631**	1.646	**-0.090**	1.274	**0.140**	1.268	**-0.017**	1.268
VNIIFTRI 89	**-0.067**	1.252	**-0.124**	1.329	**-0.114**	1.329	**-0.562**	1.711	**-0.020**	1.358	**0.210**	1.352	**0.053**	1.352

Matrix of equivalence (Continued)

Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NRC A138		NRC A140		PTB 229074		PTB 229075		VNIIFTRI 79		VNIIFTRI 89	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**0.056**	0.446	**0.504**	1.226	**0.495**	1.226	**-0.492**	0.848	**-0.210**	0.804	**0.193**	1.244	**0.124**	1.329
NIST A129	**0.047**	0.446	**0.495**	1.226	**0.486**	1.226	**-0.501**	0.848	**-0.219**	0.804	**0.184**	1.244	**0.114**	1.329
NMi-VSL 226246	**0.494**	1.166	**0.942**	1.632	**0.934**	1.632	**-0.054**	1.371	**0.228**	1.344	**0.631**	1.646	**0.562**	1.711
NPL 221481	**-0.048**	0.524	**0.401**	1.256	**0.392**	1.256	**-0.596**	0.892	**-0.314**	0.850	**0.090**	1.274	**0.020**	1.358
NPL 221483	**-0.277**	0.510	**0.171**	1.250	**0.162**	1.250	**-0.825**	0.883	**-0.543**	0.841	**-0.140**	1.268	**-0.210**	1.352
NPL 221485	**-0.120**	0.510	**0.328**	1.250	**0.319**	1.250	**-0.668**	0.883	**-0.386**	0.841	**0.017**	1.268	**-0.053**	1.352
NRC A138	**-0.448**	1.142			**-0.009**	1.615	**-0.996**	1.351	**-0.714**	1.323	**-0.311**	1.628	**-0.381**	1.695
NRC A140	**-0.439**	1.142	0.0089	1.6147			**-0.987**	1.351	**-0.705**	1.323	**-0.302**	1.628	**-0.372**	1.695
PTB 229074	**0.548**	0.722	**0.996**	1.351	0.9874	1.3507			**0.282**	0.984	**0.685**	1.367	**0.615**	1.445
PTB 229075	**0.266**	0.669	**0.714**	1.323	**0.705**	1.323	-0.2822	0.9838			**0.403**	1.340	**0.333**	1.420
VNIIFTRI 79	**-0.137**	1.161	**0.311**	1.628	**0.302**	1.628	**-0.685**	1.367	-0.403	1.3399			**-0.070**	1.708
VNIIFTRI 89	**-0.067**	1.252	**0.381**	1.695	**0.372**	1.695	**-0.615**	1.445	**-0.333**	1.420	0.0699	1.7077		


CCT-K1 : Nominal temperature, T_{90} = 23.496 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 24.102 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.153 \text{ mK}$$

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	24.101929	0.168
NIST A129	24.102011	0.168
NMi-VSL 226246	24.102501	0.578
NPL 221481	24.101920	0.215
NPL 221483	24.101771	0.206
NPL 221485	24.101752	0.206
NRC A138	24.101887	0.550
NRC A140	24.101930	0.550
PTB 229074	24.102615	0.329
PTB 229075	24.102251	0.299
VNIIFTRI 79	24.101651	0.560
VNIIFTRI 89	24.101785	0.609

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 24.101970 K

Matrix of equivalence

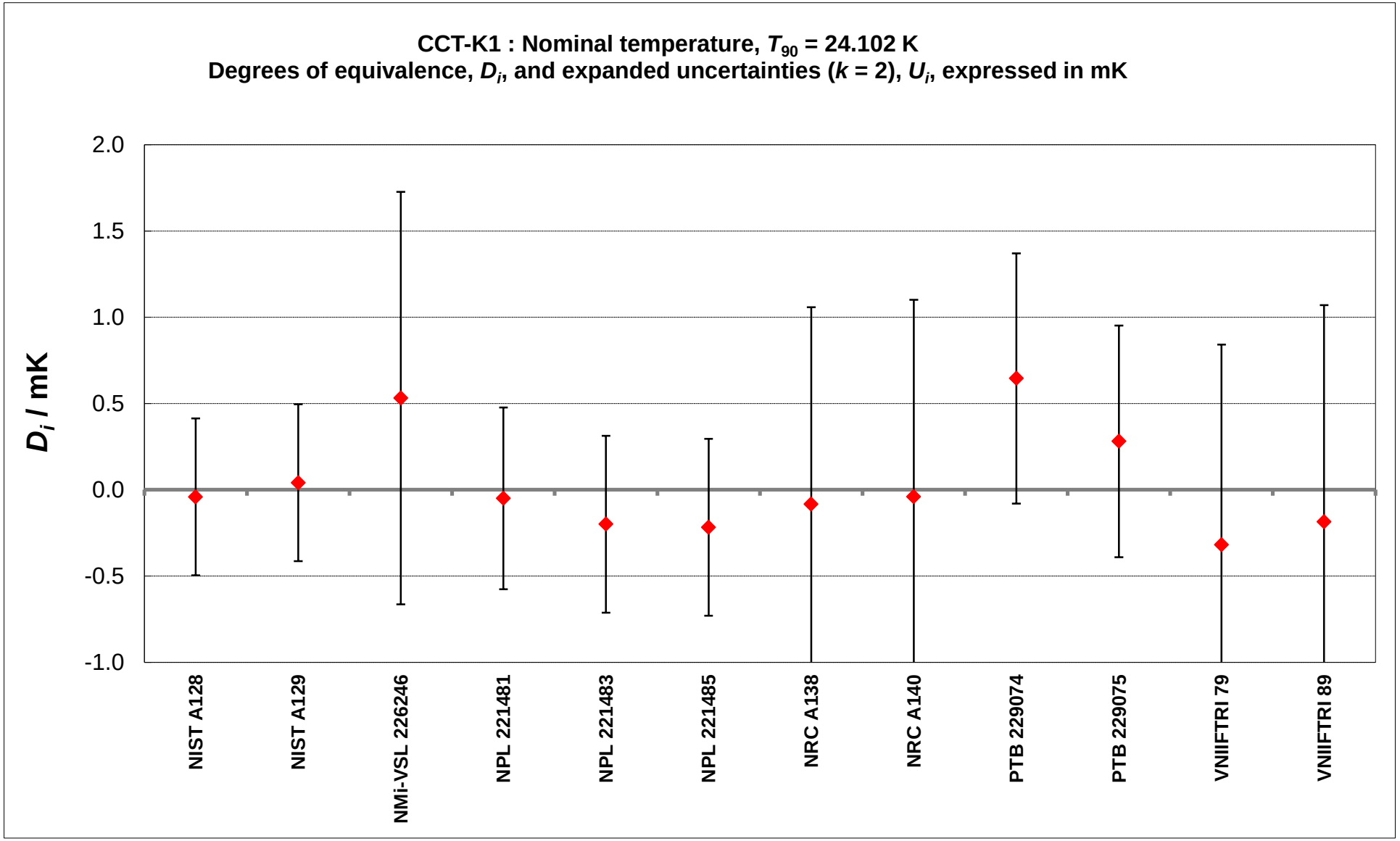
Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NIST A128		NIST A129		NMi-VSL 226246		NPL 221481		NPL 221483		NPL 221485	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**-0.041**	0.454			**-0.082**	0.643	**-0.573**	1.279	**0.009**	0.696	**0.158**	0.685	**0.177**	0.685
NIST A129	**0.041**	0.454	**0.082**	0.643			**-0.491**	1.279	**0.091**	0.696	**0.240**	0.685	**0.259**	0.685
NMi-VSL 226246	**0.531**	1.196	**0.573**	1.279	**0.491**	1.279			**0.581**	1.307	**0.731**	1.301	**0.749**	1.301
NPL 221481	**-0.050**	0.527	**-0.009**	0.696	**-0.091**	0.696	**-0.581**	1.307			**0.149**	0.735	**0.168**	0.735
NPL 221483	**-0.199**	0.513	**-0.158**	0.685	**-0.240**	0.685	**-0.731**	1.301	**-0.149**	0.735			**0.019**	0.725
NPL 221485	**-0.218**	0.513	**-0.177**	0.685	**-0.259**	0.685	**-0.749**	1.301	**-0.168**	0.735	**-0.019**	0.725		
NRC A138	**-0.083**	1.142	**-0.042**	1.229	**-0.124**	1.229	**-0.614**	1.653	**-0.033**	1.258	**0.116**	1.252	**0.135**	1.252
NRC A140	**-0.040**	1.142	**0.001**	1.229	**-0.081**	1.229	**-0.571**	1.653	**0.010**	1.258	**0.159**	1.252	**0.178**	1.252
PTB 229074	**0.645**	0.725	**0.686**	0.856	**0.604**	0.856	**0.114**	1.398	**0.695**	0.896	**0.845**	0.888	**0.863**	0.888
PTB 229075	**0.281**	0.671	**0.322**	0.811	**0.240**	0.811	**-0.251**	1.371	**0.331**	0.854	**0.480**	0.845	**0.499**	0.845
VNIIFTRI 79	**-0.319**	1.161	**-0.278**	1.247	**-0.360**	1.247	**-0.850**	1.667	**-0.269**	1.275	**-0.120**	1.269	**-0.101**	1.269
VNIIFTRI 89	**-0.185**	1.256	**-0.144**	1.335	**-0.226**	1.335	**-0.717**	1.734	**-0.135**	1.362	**0.014**	1.356	**0.033**	1.356

Matrix of equivalence (Continued)

Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NRC A138		NRC A140		PTB 229074		PTB 229075		VNIIFTRI 79		VNIIFTRI 89	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**-0.041**	0.454	**0.042**	1.229	**-0.001**	1.229	**-0.686**	0.856	**-0.322**	0.811	**0.278**	1.247	**0.144**	1.335
NIST A129	**0.041**	0.454	**0.124**	1.229	**0.081**	1.229	**-0.604**	0.856	**-0.240**	0.811	**0.360**	1.247	**0.226**	1.335
NMi-VSL 226246	**0.531**	1.196	**0.614**	1.653	**0.571**	1.653	**-0.114**	1.398	**0.251**	1.371	**0.850**	1.667	**0.717**	1.734
NPL 221481	**-0.050**	0.527	**0.033**	1.258	**-0.010**	1.258	**-0.695**	0.896	**-0.331**	0.854	**0.269**	1.275	**0.135**	1.362
NPL 221483	**-0.199**	0.513	**-0.116**	1.252	**-0.159**	1.252	**-0.845**	0.888	**-0.480**	0.845	**0.120**	1.269	**-0.014**	1.356
NPL 221485	**-0.218**	0.513	**-0.135**	1.252	**-0.178**	1.252	**-0.863**	0.888	**-0.499**	0.845	**0.101**	1.269	**-0.033**	1.356
NRC A138	**-0.083**	1.142			**-0.043**	1.615	**-0.728**	1.352	**-0.364**	1.325	**0.236**	1.628	**0.102**	1.697
NRC A140	**-0.040**	1.142	0.0431	1.6147			**-0.685**	1.352	**-0.321**	1.325	**0.279**	1.628	**0.145**	1.697
PTB 229074	**0.645**	0.725	**0.728**	1.352	0.6853	1.3525			**0.364**	0.988	**0.964**	1.369	**0.830**	1.450
PTB 229075	**0.281**	0.671	**0.364**	1.325	**0.321**	1.325	-0.3645	0.9882			**0.600**	1.341	**0.466**	1.424
VNIIFTRI 79	**-0.319**	1.161	**-0.236**	1.628	**-0.279**	1.628	**-0.964**	1.369	-0.6	1.3412			**-0.134**	1.710
VNIIFTRI 89	**-0.185**	1.256	**-0.102**	1.697	**-0.145**	1.697	**-0.830**	1.450	**-0.466**	1.424	0.1339	1.7102		


CCT-K1 : Nominal temperature, T_{90} = 24.102 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 24.340 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

u_{comp} = 0.153 mK

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	24.340191	0.174
NIST A129	24.340214	0.174
NMiVSL 226246	24.340765	0.584
NPL 221481	24.340270	0.215
NPL 221485	24.340219	0.206
NRC A138	24.340051	0.550
NRC A140	24.339870	0.550
PTB 229074	24.340847	0.329
PTB 229075	24.340698	0.299

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 24.340317 K

Matrix of equivalence

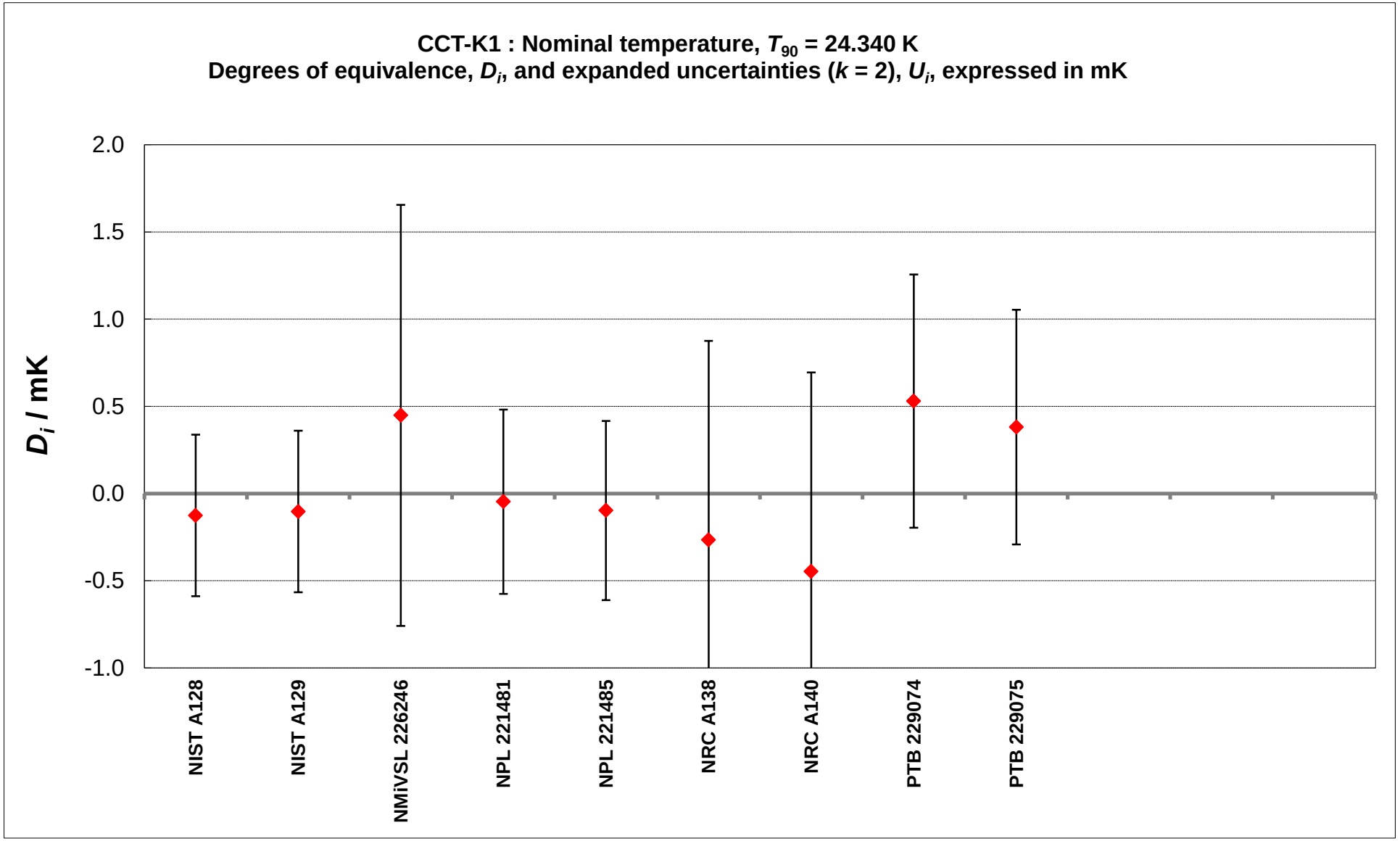
Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NIST A128		NIST A129		NMi-VSL 226246		NPL 221481		NPL 221485		NRC A138	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**-0.126**	0.463			**-0.023**	0.655	**-0.574**	1.293	**-0.079**	0.703	**-0.028**	0.692	**0.140**	1.232
NIST A129	**-0.103**	0.463	**0.023**	0.655			**-0.552**	1.293	**-0.056**	0.703	**-0.006**	0.692	**0.163**	1.232
NMiVSL 226246	**0.448**	1.207	**0.574**	1.293	**0.552**	1.293			**0.495**	1.318	**0.546**	1.312	**0.715**	1.662
NPL 221481	**-0.047**	0.528	**0.079**	0.703	**0.056**	0.703	**-0.495**	1.318			**0.051**	0.737	**0.219**	1.258
NPL 221485	**-0.098**	0.514	**0.028**	0.692	**0.006**	0.692	**-0.546**	1.312	**-0.051**	0.737			**0.169**	1.252
NRC A138	**-0.266**	1.142	**-0.140**	1.232	**-0.163**	1.232	**-0.715**	1.662	**-0.219**	1.258	**-0.169**	1.252		
NRC A140	**-0.447**	1.142	**-0.321**	1.232	**-0.344**	1.232	**-0.896**	1.662	**-0.400**	1.258	**-0.350**	1.252	**-0.181**	1.615
PTB 229074	**0.530**	0.726	**0.656**	0.861	**0.633**	0.861	**0.081**	1.409	**0.577**	0.898	**0.627**	0.890	**0.796**	1.353
PTB 229075	**0.381**	0.673	**0.507**	0.817	**0.484**	0.817	**-0.067**	1.382	**0.428**	0.855	**0.479**	0.846	**0.647**	1.325

Matrix of equivalence (Continued)

Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NRC A140		PTB 229074		PTB 229075	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**-0.126**	0.463	**0.321**	1.232	**-0.656**	0.861	**-0.507**	0.817
NIST A129	**-0.103**	0.463	**0.344**	1.232	**-0.633**	0.861	**-0.484**	0.817
NMiVSL 226246	**0.448**	1.207	**0.896**	1.662	**-0.081**	1.409	**0.067**	1.382
NPL 221481	**-0.047**	0.528	**0.400**	1.258	**-0.577**	0.898	**-0.428**	0.855
NPL 221485	**-0.098**	0.514	**0.350**	1.252	**-0.627**	0.890	**-0.479**	0.846
NRC A138	**-0.266**	1.142	**0.181**	1.615	**-0.796**	1.353	**-0.647**	1.325
NRC A140	**-0.447**	1.142			**-0.977**	1.353	**-0.828**	1.325
PTB 229074	**0.530**	0.726	0.977	1.3532			**0.149**	0.990
PTB 229075	**0.381**	0.673	**0.828**	1.325	-0.149	0.9899		


CCT-K1 : Nominal temperature, T_{90} = 24.340 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMiVSL 226246
NPL 221481
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 24.446 K

CCT-K1

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

$$u_{comp} = 0.153 \text{ mK}$$

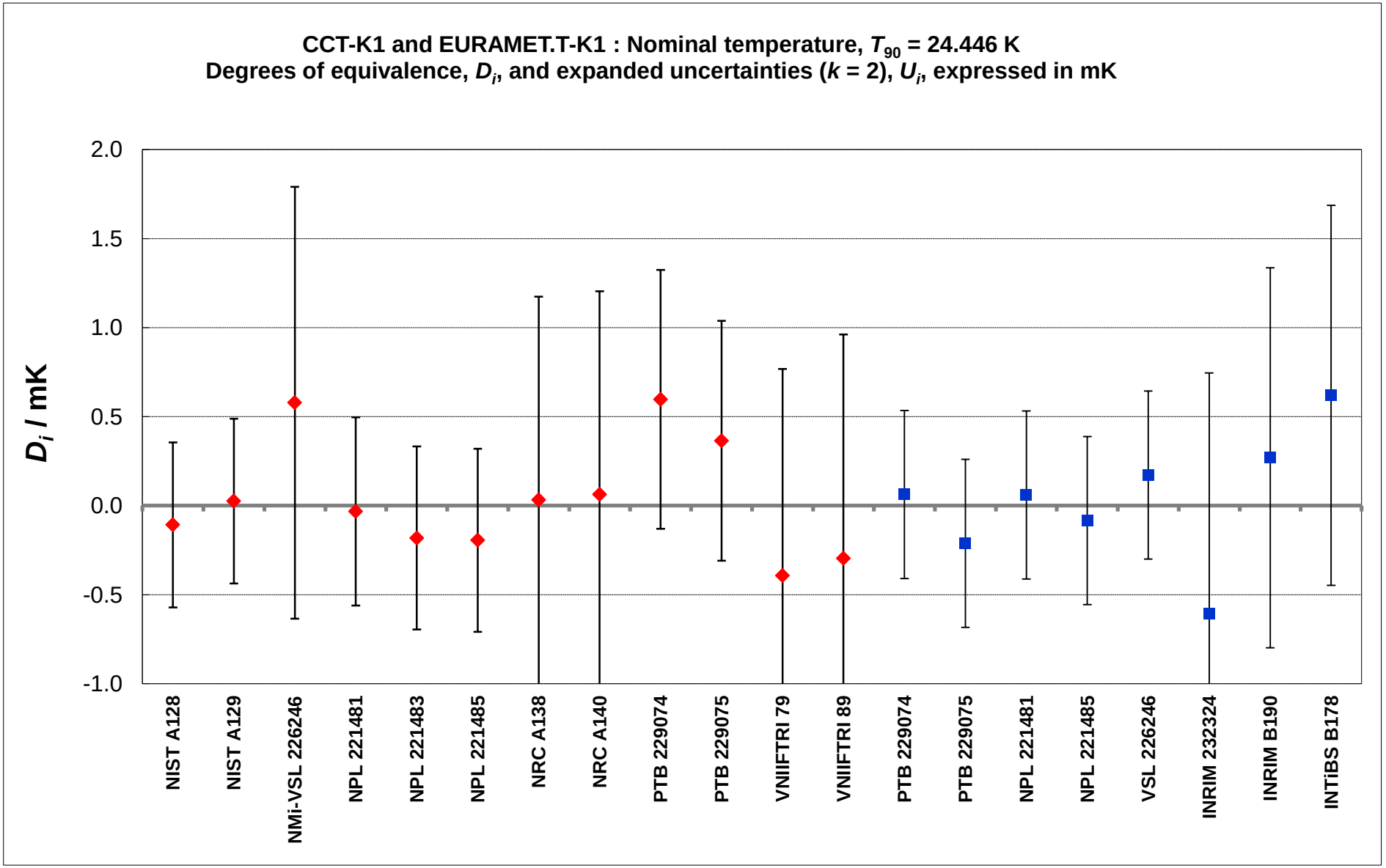
Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	24.446295	0.174
NIST A129	24.446429	0.174
NMi-VSL 226246	24.446981	0.587
NPL 221481	24.446370	0.216
NPL 221483	24.446221	0.207
NPL 221485	24.446209	0.207
NRC A138	24.446435	0.550
NRC A140	24.446466	0.550
PTB 229074	24.447000	0.330
PTB 229075	24.446767	0.300
VNIIFTRI 79	24.446009	0.560
VNIIFTRI 89	24.446107	0.610

Key comparison CCT-K1 and EURAMET.T-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 24.446403 K

Matrix of equivalence

Lab, S/N *i*	D_i / mK	U_i / mK
NIST A128	-0.108	0.463
NIST A129	0.026	0.463
NMi-VSL 226246	0.578	1.212
NPL 221481	-0.033	0.529
NPL 221483	-0.182	0.514
NPL 221485	-0.194	0.514
NRC A138	0.032	1.142
NRC A140	0.063	1.142
PTB 229074	0.597	0.727
PTB 229075	0.364	0.673
VNIIFTRI 79	-0.394	1.161
VNIIFTRI 89	-0.296	1.257
PTB 229074	0.081	0.472
PTB 229075	-0.147	0.472
NPL 221481	0.090	0.472
NPL 221485	-0.134	0.472
VSL 226246	0.109	0.472
INRIM 232324	0.307	1.352
INRIM B190	0.446	1.067
INTiBS B178	0.844	1.067


CCT-K1 and EURAMET.T-K1 : Nominal temperature, T_{90} = 24.446 K
Degrees of equivalence, D_i, and expanded uncertainties (k = 2), U_i, expressed in mK
D_i / mK
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
NIST A128
NIST A129
NMi-VSL 226246
NPL 221481
NPL 221483
NPL 221485
NRC A138
NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89
PTB 229074
PTB 229075
NPL 221481
NPL 221485
VSL 226246
INRIM 232324
INRIM B190
INTiBS B178

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
NOMINAL TEMPERATURE : T_{90} = 24.551 K

Laboratory individual measurements

Lab: Laboratory
S/N *i* : serial number of Thermometer *i*
T_i : temperature value for Thermometer *i*
u_i : standard uncertainty in the calibration of Thermometer *i*
u_{comp}: standard uncertainty in the comparison measurements

u_{comp} = 0.153 mK

Lab, S/N *i*	T_i / mK	u_i / mK
NIST A128	24.551286	0.174
NIST A129	24.551288	0.174
NMi-VSL 226246	24.551814	0.588
NPL 221481	24.551375	0.216
NPL 221483	24.551221	0.207
NPL 221485	24.551122	0.207
NRC A138	24.551544	0.550
NRC A140	24.551501	0.550
PTB 229074	24.551980	0.330
PTB 229075	24.551635	0.300
VNIIFTRI 79	24.550982	0.560
VNIIFTRI 89	24.551080	0.610

Key comparison CCT-K1

MEASURAND : Temperature T_{90} / K
KEY COMPARISON REFERENCE VALUE: T_R = 24.551354 K

Matrix of equivalence

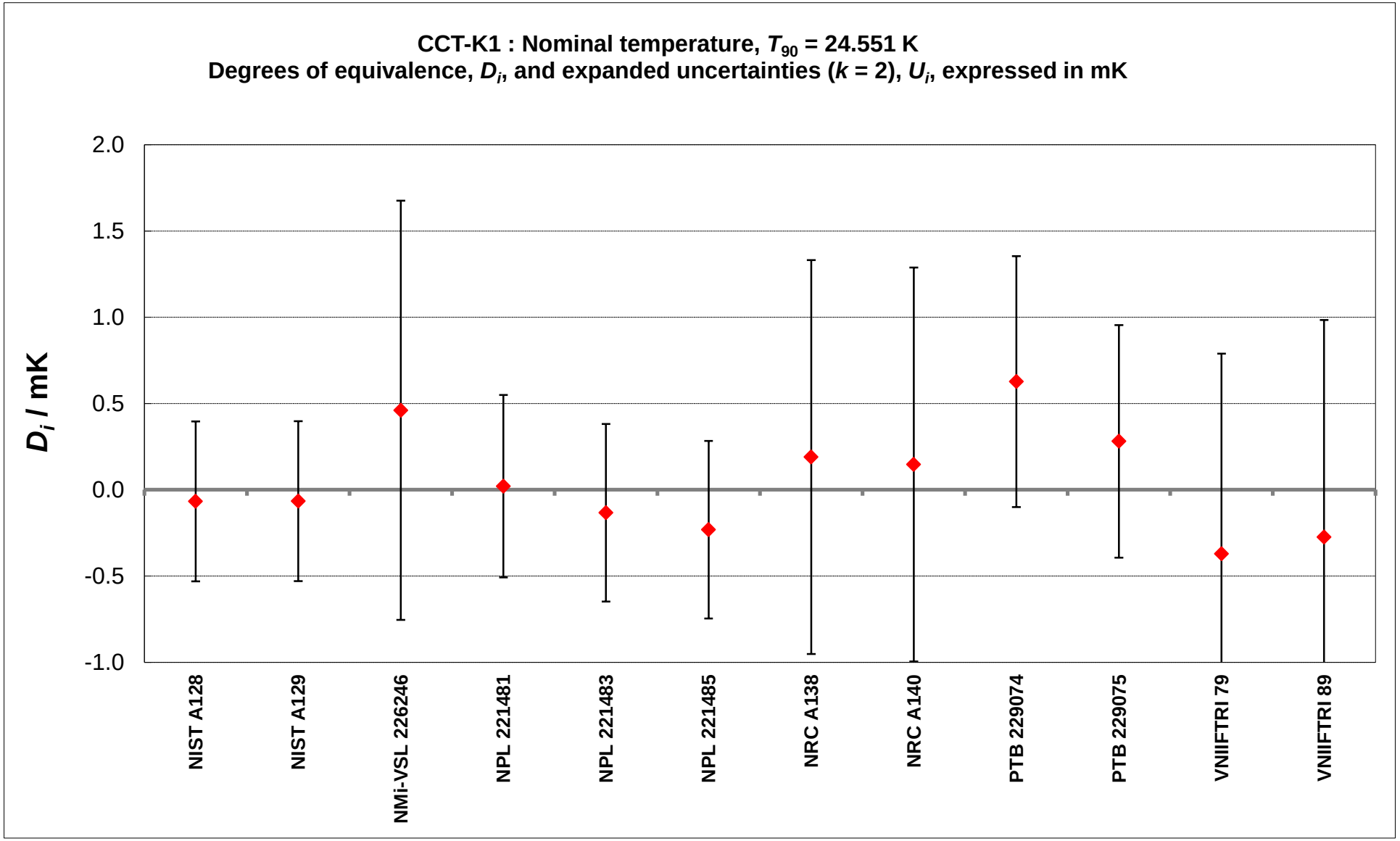
Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NIST A128		NIST A129		NMi-VSL 226246		NPL 221481		NPL 221483		NPL 221485	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**-0.068**	0.463			**-0.002**	0.655	**-0.528**	1.300	**-0.088**	0.703	**0.065**	0.693	**0.164**	0.693
NIST A129	**-0.066**	0.463	**0.002**	0.655			**-0.526**	1.300	**-0.086**	0.703	**0.067**	0.693	**0.166**	0.693
NMi-VSL 226246	**0.460**	1.215	**0.528**	1.300	**0.526**	1.300			**0.440**	1.325	**0.593**	1.319	**0.692**	1.319
NPL 221481	**0.021**	0.529	**0.088**	0.703	**0.086**	0.703	**-0.440**	1.325			**0.154**	0.738	**0.253**	0.738
NPL 221483	**-0.133**	0.515	**-0.065**	0.693	**-0.067**	0.693	**-0.593**	1.319	**-0.154**	0.738			**0.099**	0.728
NPL 221485	**-0.232**	0.515	**-0.164**	0.693	**-0.166**	0.693	**-0.692**	1.319	**-0.253**	0.738	**-0.099**	0.728		
NRC A138	**0.190**	1.142	**0.258**	1.232	**0.256**	1.232	**-0.270**	1.667	**0.169**	1.259	**0.323**	1.252	**0.422**	1.252
NRC A140	**0.147**	1.142	**0.214**	1.232	**0.212**	1.232	**-0.314**	1.667	**0.126**	1.259	**0.279**	1.252	**0.378**	1.252
PTB 229074	**0.626**	0.727	**0.694**	0.862	**0.692**	0.862	**0.166**	1.416	**0.606**	0.900	**0.759**	0.891	**0.858**	0.891
PTB 229075	**0.281**	0.674	**0.348**	0.817	**0.346**	0.817	**-0.180**	1.389	**0.260**	0.857	**0.413**	0.848	**0.512**	0.848
VNIIFTRI 79	**-0.372**	1.161	**-0.304**	1.250	**-0.306**	1.250	**-0.832**	1.680	**-0.392**	1.276	**-0.239**	1.270	**-0.140**	1.270
VNIIFTRI 89	**-0.274**	1.258	**-0.207**	1.341	**-0.209**	1.341	**-0.735**	1.749	**-0.295**	1.365	**-0.142**	1.359	**-0.043**	1.359

Matrix of equivalence (Continued)

Lab, S/N *j* ⟹

Lab, S/N *i* ⇩	D_i / mK	U_i / mK	NRC A138		NRC A140		PTB 229074		PTB 229075		VNIIFTRI 79		VNIIFTRI 89	
			D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK	D_{ij} / mK	U_{ij} / mK
NIST A128	**-0.068**	0.463	**-0.258**	1.232	**-0.214**	1.232	**-0.694**	0.862	**-0.348**	0.817	**0.304**	1.250	**0.207**	1.341
NIST A129	**-0.066**	0.463	**-0.256**	1.232	**-0.212**	1.232	**-0.692**	0.862	**-0.346**	0.817	**0.306**	1.250	**0.209**	1.341
NMi-VSL 226246	**0.460**	1.215	**0.270**	1.667	**0.314**	1.667	**-0.166**	1.416	**0.180**	1.389	**0.832**	1.680	**0.735**	1.749
NPL 221481	**0.021**	0.529	**-0.169**	1.259	**-0.126**	1.259	**-0.606**	0.900	**-0.260**	0.857	**0.392**	1.276	**0.295**	1.365
NPL 221483	**-0.133**	0.515	**-0.323**	1.252	**-0.279**	1.252	**-0.759**	0.891	**-0.413**	0.848	**0.239**	1.270	**0.142**	1.359
NPL 221485	**-0.232**	0.515	**-0.422**	1.252	**-0.378**	1.252	**-0.858**	0.891	**-0.512**	0.848	**0.140**	1.270	**0.043**	1.359
NRC A138	**0.190**	1.142			**0.043**	1.615	**-0.437**	1.354	**-0.091**	1.326	**0.562**	1.628	**0.464**	1.699
NRC A140	**0.147**	1.142	-0.043	1.6147			**-0.480**	1.354	**-0.134**	1.326	**0.518**	1.628	**0.421**	1.699
PTB 229074	**0.626**	0.727	**0.437**	1.354	0.48	1.3538			**0.346**	0.991	**0.998**	1.370	**0.901**	1.453
PTB 229075	**0.281**	0.674	**0.091**	1.326	**0.134**	1.326	-0.346	0.9914			**0.652**	1.342	**0.555**	1.427
VNIIFTRI 79	**-0.372**	1.161	**-0.562**	1.628	**-0.518**	1.628	**-0.998**	1.370	-0.652	1.3423			**-0.097**	1.712
VNIIFTRI 89	**-0.274**	1.258	**-0.464**	1.699	**-0.421**	1.699	**-0.901**	1.453	**-0.555**	1.427	0.0973	1.7119		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NIST A128
NIST A129
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NPL 221481
NPL 221483
NPL 221485
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NRC A140
PTB 229074
PTB 229075
VNIIFTRI 79
VNIIFTRI 89