

**CCPR-K2.b**

**Spectral responsivity measurements  
in the wavelength range  
300 nm to 1000 nm**

**Degrees of equivalence**

**and**

**Graphs of equivalence**

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**CCPR-K2.b**

At each wavelength, the key comparison reference value  $X_{KCRV}$  is calculated as the weighted mean of the participant's results  $x_i$ , weighted by the inverse square of the individual uncertainties,  $u_i$ , with weights limited to a maximum of 20%.

The degree of equivalence of the i-th laboratory with respect to the reference value is given by a pair of terms:  
 $D_i = (x_i - x_{KCRV})$  and  $U_i$  its expanded uncertainty ( $k = 2$ ), both expressed in relative units.

The degree of equivalence between two laboratories is given by a pair of terms:  
 $D_{ij} = D_i - D_j$  and  $U_{ij}$  its expanded uncertainty ( $k = 2$ ), both expressed in relative units.

Wavelength = 300 nm      Lab i      Lab j       $\Rightarrow$

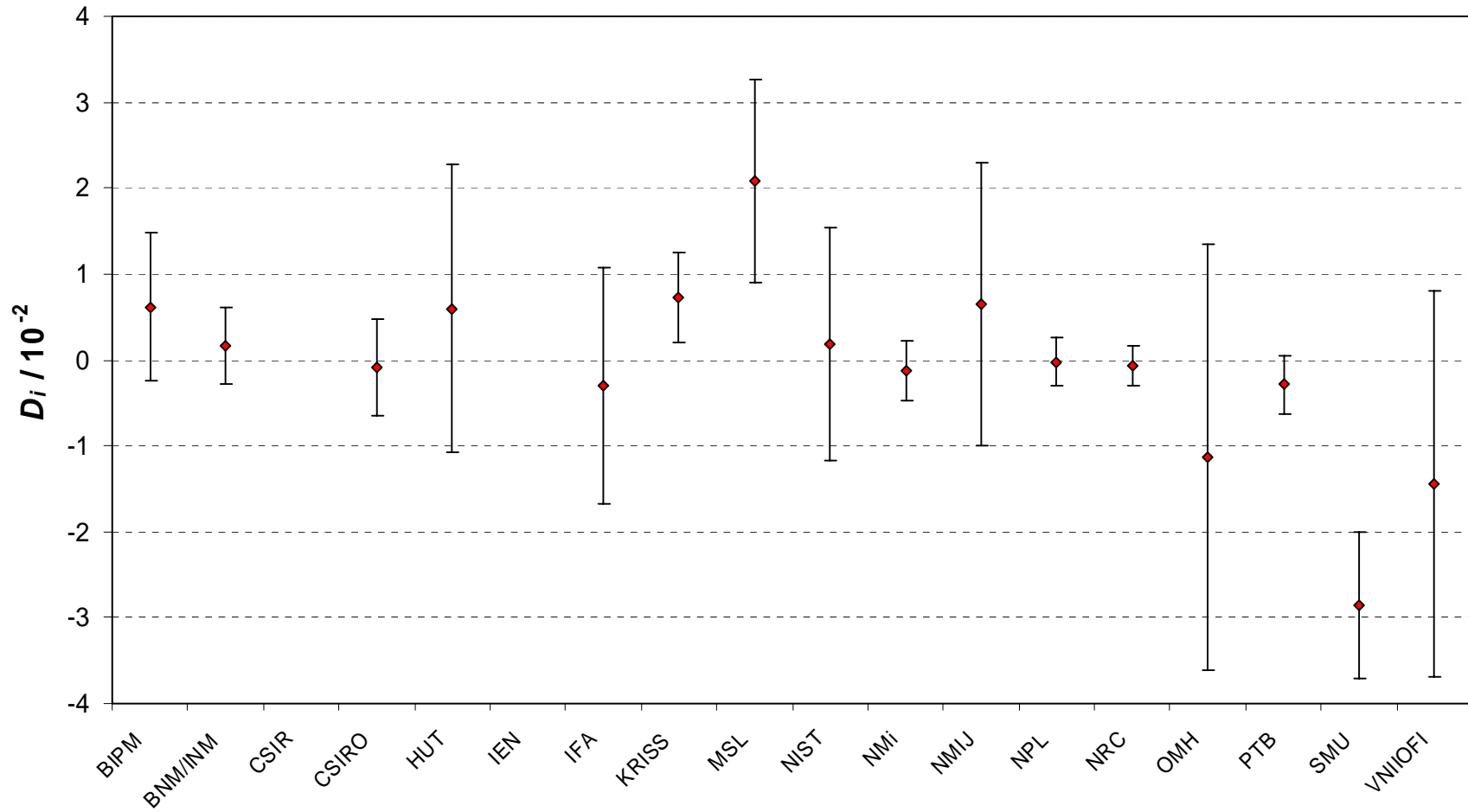
	$D_i$	$U_i$
	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>
CSIRO	-0.085	0.566
NRC	-0.075	0.232
IFA	-0.298	1.378
NPL	-0.024	0.276
HUT	0.598	1.669
OMH	-1.131	2.481
SMU	-2.859	0.846
NMi	-0.130	0.349
NIST	0.187	1.361
NMIJ	0.651	1.641
VNIOFI	-1.447	2.251
CSIR		
BNM/INM	0.173	0.445
MSL	2.080	1.183
PTB	-0.290	0.344
IEN		
KRISS	0.728	0.530
BIPM	0.613	0.860

CSIRO		NRC		IFA		NPL		HUT		OMH		SMU		NMi		NIST		
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	
/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	
		-0.010	0.63	0.213	1.51	-0.062	0.66	-0.683	1.78	1.046	2.55	2.774	1.02	0.045	0.70	-0.272	1.49	
0.010	0.63			0.223	1.41	-0.051	0.39	-0.673	1.69	1.057	2.49	2.784	0.87	0.055	0.45	-0.262	1.39	
-0.213	1.51	-0.223	1.41			-0.275	1.42	-0.896	2.18	0.833	2.84	2.561	1.62	-0.168	1.44	-0.485	1.95	
0.062	0.66	0.051	0.39	0.275	1.42			-0.622	1.70	1.108	2.50	2.836	0.89	0.106	0.49	-0.211	1.40	
0.683	1.78	0.673	1.69	0.896	2.18	0.622	1.70			1.729	2.99	3.457	1.87	0.728	1.72	0.411	2.16	
-1.046	2.55	-1.057	2.49	-0.833	2.84	-1.108	2.50	-1.729	2.99			1.728	2.61	-1.002	2.51	-1.319	2.83	
-2.774	1.02	-2.784	0.87	-2.561	1.62	-2.836	0.89	-3.457	1.87	-1.728	2.61			-2.729	0.92	-3.046	1.60	
-0.045	0.70	-0.055	0.45	0.168	1.44	-0.106	0.49	-0.728	1.72	1.002	2.51	2.729	0.92			-0.317	1.42	
0.272	1.49	0.262	1.39	0.485	1.95	0.211	1.40	-0.411	2.16	1.319	2.83	3.046	1.60	0.317	1.42			
0.736	1.75	0.726	1.67	0.949	2.15	0.675	1.68	0.053	2.35	1.783	2.98	3.510	1.85	0.781	1.69	0.464	2.14	
-1.362	2.33	-1.372	2.27	-1.149	2.65	-1.424	2.28	-2.045	2.81	-0.316	3.35	1.412	2.41	-1.317	2.29	-1.634	2.64	
0.258	0.75	0.248	0.53	0.471	1.46	0.197	0.56	-0.425	1.74	1.304	2.52	3.032	0.96	0.303	0.61	-0.014	1.45	
2.166	1.31	2.155	1.20	2.378	1.82	2.104	1.21	1.482	2.05	3.212	2.74	4.939	1.44	2.210	1.24	1.893	1.80	
-0.204	0.70	-0.215	0.45	0.009	1.44	-0.266	0.49	-0.888	1.72	0.842	2.51	2.570	0.92	-0.160	0.54	-0.477	1.42	
0.814	0.81	0.803	0.60	1.027	1.49	0.752	0.63	0.130	1.76	1.860	2.54	3.588	1.00	0.858	0.67	0.541	1.48	
0.698	1.05	0.688	0.91	0.911	1.64	0.637	0.93	0.015	1.89	1.745	2.63	3.472	1.21	0.743	0.95	0.426	1.62	

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NMIJ		VNIOFI		CSIR		BNM/INM		MSL		PTB		IEN		KRISS		BIPM				
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		-0.736	1.75	1.362	2.33			-0.258	0.75	-2.166	1.31	0.204	0.70			-0.814	0.81	-0.698	1.05	
-0.726	1.67	1.372	2.27			-0.248	0.53	-2.155	1.20	0.215	0.45			-0.803	0.60	-0.688	0.91			
-0.949	2.15	1.149	2.65			-0.471	1.46	-2.378	1.82	-0.009	1.44			-1.027	1.49	-0.911	1.64			
-0.675	1.68	1.424	2.28			-0.197	0.56	-2.104	1.21	0.266	0.49			-0.752	0.63	-0.637	0.93			
-0.053	2.35	2.045	2.81			0.425	1.74	-1.482	2.05	0.888	1.72			-0.130	1.76	-0.015	1.89			
-1.783	2.98	0.316	3.35			-1.304	2.52	-3.212	2.74	-0.842	2.51			-1.860	2.54	-1.745	2.63			
-3.510	1.85	-1.412	2.41			-3.032	0.96	-4.939	1.44	-2.570	0.92			-3.588	1.00	-3.472	1.21			
-0.781	1.69	1.317	2.29			-0.303	0.61	-2.210	1.24	0.160	0.54			-0.858	0.67	-0.743	0.95			
-0.464	2.14	1.634	2.64			0.014	1.45	-1.893	1.80	0.477	1.42			-0.541	1.48	-0.426	1.62			
		2.098	2.79			0.478	1.71	-1.429	2.02	0.941	1.69			-0.077	1.74	0.038	1.87			
-2.098	2.79					-1.620	2.30	-3.527	2.54	-1.158	2.29			-2.176	2.32	-2.060	2.42			
-0.478	1.71	1.620	2.30					-1.907	1.27	0.463	0.60			-0.555	0.73	-0.440	0.99			
1.429	2.02	3.527	2.54			1.907	1.27			2.370	1.23			1.352	1.30	1.467	1.46			
-0.941	1.69	1.158	2.29			-0.463	0.60	-2.370	1.23					-1.018	0.67	-0.903	0.95			
0.077	1.74	2.176	2.32			0.555	0.73	-1.352	1.30	1.018	0.67					0.115	1.03			
-0.038	1.87	2.060	2.42			0.440	0.99	-1.467	1.46	0.903	0.95			-0.115	1.03					

CCPR-K2.b Spectral responsivity  $\lambda = 300 \text{ nm}$   
Degrees of equivalence:  $D_i$  and expanded uncertainty  $U_i (k = 2)$



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The degree of equivalence between two laboratories is given by a pair of terms:  
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**Wavelength = 320 nm**      Lab  $j$        $\rightarrow$

Lab  $i$        $\downarrow$

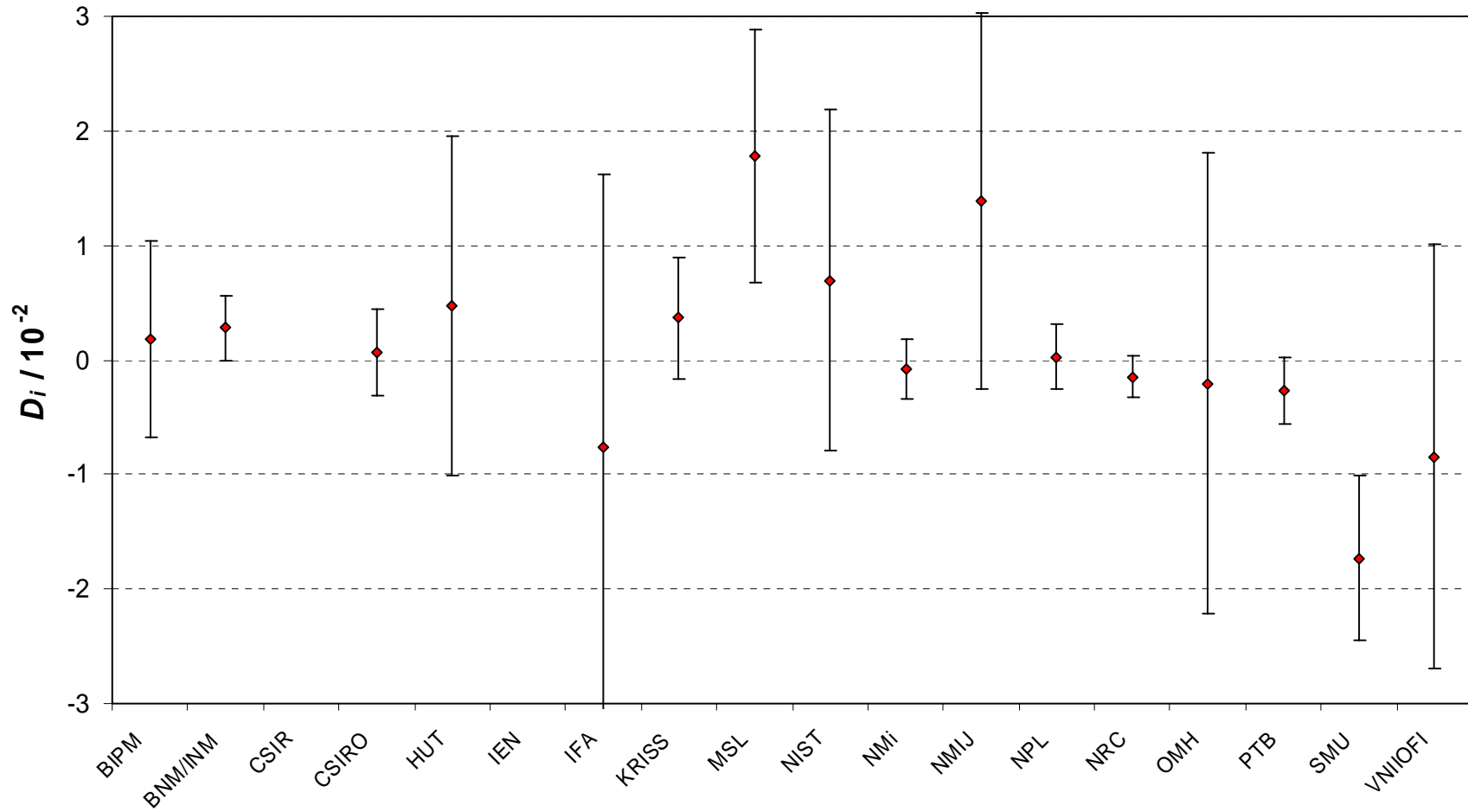
	$D_i$	$U_i$
	/10 <sup>-2</sup>	/10 <sup>-2</sup>
CSIRO	0.067	0.380
NRC	-0.150	0.183
IFA	-0.756	2.380
NPL	0.028	0.278
HUT	0.472	1.475
OMH	-0.205	2.007
SMU	-1.731	0.723
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NIST	0.697	1.496
NMIJ	1.393	1.642
VNIIOFI	-0.849	1.852
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$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$				
/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>				
		0.218	0.44	0.824	2.42	0.039	0.50	-0.405	1.53	0.272	2.04	1.799	0.82	0.152	0.50	-0.629	1.55		
	-0.218	0.44		0.606	2.39	-0.179	0.36	-0.623	1.49	0.054	2.01	1.581	0.74	-0.066	0.35	-0.847	1.51		
	-0.824	2.42	-0.606	2.39		-0.784	2.40	-1.228	2.81	-0.551	3.11	0.975	2.49	-0.672	2.40	-1.453	2.82		
	-0.039	0.50	0.179	0.36	0.784	2.40		-0.444	1.51	0.233	2.03	1.759	0.78	0.113	0.42	-0.669	1.53		
	0.405	1.53	0.623	1.49	1.228	2.81	0.444	1.51		0.677	2.49	2.203	1.64	0.557	1.51	-0.225	2.11		
	-0.272	2.04	-0.054	2.01	0.551	3.11	-0.233	2.03	-0.677	2.49		1.526	2.13	-0.120	2.03	-0.902	2.50		
	-1.799	0.82	-1.581	0.74	-0.975	2.49	-1.759	0.78	-2.203	1.64	-1.526	2.13		-1.647	0.77	-2.428	1.66		
	-0.152	0.50	0.066	0.35	0.672	2.40	-0.113	0.42	-0.557	1.51	0.120	2.03	1.647	0.77		-0.781	1.53		
	0.629	1.55	0.847	1.51	1.453	2.82	0.669	1.53	0.225	2.11	0.902	2.50	2.428	1.66	0.781	1.53			
	1.325	1.69	1.543	1.66	2.149	2.90	1.365	1.67	0.921	2.21	1.598	2.59	3.124	1.79	1.477	1.67	0.696	2.23	
	-0.917	1.90	-0.699	1.87	-0.093	3.02	-0.877	1.88	-1.321	2.37	-0.644	2.73	0.882	1.99	-0.765	1.88	-1.546	2.39	
	0.211	0.51	0.429	0.36	1.035	2.40	0.250	0.44	-0.194	1.51	0.483	2.03	2.010	0.78	0.363	0.43	-0.418	1.53	
	1.714	1.17	1.932	1.12	2.538	2.63	1.754	1.14	1.310	1.85	1.987	2.29	3.513	1.31	1.866	1.14	1.085	1.86	
	-0.334	0.51	-0.117	0.37	0.489	2.40	-0.295	0.44	-0.739	1.51	-0.062	2.03	1.464	0.78	-0.182	0.43	-0.964	1.53	
	0.299	0.67	0.517	0.57	1.123	2.44	0.339	0.62	-0.105	1.58	0.572	2.08	2.098	0.90	0.451	0.62	-0.330	1.60	
	0.108	0.96	0.326	0.89	0.932	2.54	0.147	0.92	-0.297	1.72	0.380	2.18	1.907	1.12	0.260	0.91	-0.521	1.73	

NMIJ	VNIIOFI		CSIR		BNM/INM		MSL		PTB		IEN		KRISS		BIPM				
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$				
/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>				
	-1.325	1.69	0.917	1.90		-0.211	0.51	-1.714	1.17	0.334	0.51		-0.299	0.67	-0.108	0.96			
	-1.543	1.66	0.699	1.87		-0.429	0.36	-1.932	1.12	0.117	0.37		-0.517	0.57	-0.326	0.89			
	-2.149	2.90	0.093	3.02		-1.035	2.40	-2.538	2.63	-0.489	2.40		-1.123	2.44	-0.932	2.54			
	-1.365	1.67	0.877	1.88		-0.250	0.44	-1.754	1.14	0.295	0.44		-0.339	0.62	-0.147	0.92			
	-0.921	2.21	1.321	2.37		0.194	1.51	-1.310	1.85	0.739	1.51		0.105	1.58	0.297	1.72			
	-1.598	2.59	0.644	2.73		-0.483	2.03	-1.987	2.29	0.062	2.03		-0.572	2.08	-0.380	2.18			
	-3.124	1.79	-0.882	1.99		-2.010	0.78	-3.513	1.31	-1.464	0.78		-2.098	0.90	-1.907	1.12			
	-1.477	1.67	0.765	1.88		-0.363	0.43	-1.866	1.14	0.182	0.43		-0.451	0.62	-0.260	0.91			
	-0.696	2.23	1.546	2.39		0.418	1.53	-1.085	1.86	0.964	1.53		0.330	1.60	0.521	1.73			
			2.242	2.48		1.114	1.68	-0.389	1.98	1.660	1.68		1.026	1.73	1.217	1.86			
	-2.242	2.48				-1.128	1.88	-2.631	2.16	-0.582	1.88		-1.216	1.93	-1.025	2.05			
	-1.114	1.68	1.128	1.88				-1.503	1.15	0.545	0.44		-0.088	0.62	0.103	0.92			
	0.389	1.98	2.631	2.16		1.503	1.15			2.049	1.15		1.415	1.23	1.606	1.40			
	-1.660	1.68	0.582	1.88		-0.545	0.44	-2.049	1.15				-0.634	0.63	-0.443	0.92			
	-1.026	1.73	1.216	1.93		0.088	0.62	-1.415	1.23	0.634	0.63				0.191	1.02			
	-1.217	1.86	1.025	2.05		-1.013	0.92	-1.606	1.40	0.443	0.92		-0.191	1.02					

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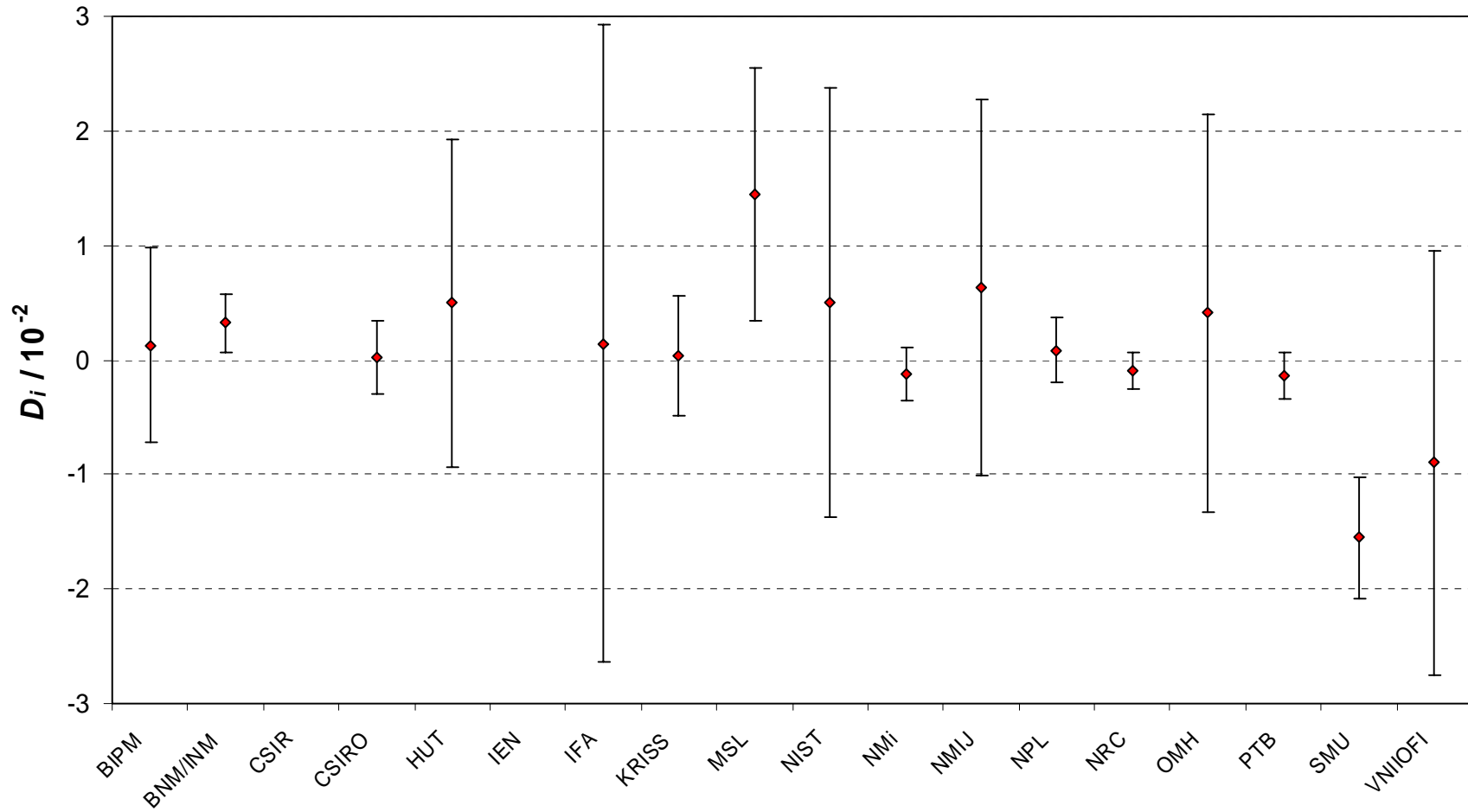
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OMH	0.408	1.741
SMU	-1.553	0.526
NMi	-0.123	0.229
NIST	0.500	1.870
NMIJ	0.633	1.642
VNIIOFI	-0.898	1.852
CSIR		
BNM/INM	0.324	0.253
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OMH	0.408	1.741
SMU	-1.553	0.526
NMi	-0.123	0.229
NIST	0.500	1.870
NMIJ	0.633	1.642
VNIIOFI	-0.898	1.852
CSIR		
BNM/INM	0.324	0.253
MSL	1.444	1.098
PTB	-0.132	0.204
IEN		
KRISS	0.031	0.522
BIPM	0.124	0.850

	CSIRO		NRC		IFA		NPL		HUT		OMH		SMU		NMI		NIST	
	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$
	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>
CSIRO			0.122	0.37	-0.120	2.80	-0.061	0.46	-0.470	1.47	-0.382	1.77	1.578	0.62	0.148	0.42	-0.475	1.90
NRC	-0.122	0.37			-0.241	2.79	-0.183	0.35	-0.592	1.44	-0.504	1.75	1.456	0.54	0.027	0.30	-0.596	1.88
IFA	0.120	2.80	0.241	2.79			0.058	2.80	-0.350	3.13	-0.263	3.28	1.698	2.83	0.268	2.79	-0.355	3.35
NPL	0.061	0.46	0.183	0.35	-0.058	2.80			-0.409	1.47	-0.321	1.77	1.640	0.60	0.210	0.40	-0.413	1.90
HUT	0.470	1.47	0.592	1.44	0.350	3.13	0.409	1.47			0.088	2.25	2.048	1.52	0.618	1.46	-0.005	2.36
OMH	0.382	1.77	0.504	1.75	0.263	3.28	0.321	1.77	-0.088	2.25			1.961	1.81	0.531	1.76	-0.092	2.56
SMU	-1.578	0.62	-1.456	0.54	-1.698	2.83	-1.640	0.60	-2.048	1.52	-1.961	1.81			-1.430	0.58	-2.053	1.94
NMi	-0.148	0.42	-0.027	0.30	-0.268	2.79	-0.210	0.40	-0.618	1.46	-0.531	1.76	1.430	0.58			-0.623	1.89
NIST	0.475	1.90	0.596	1.88	0.355	3.35	0.413	1.90	0.005	2.36	0.092	2.56	2.053	1.94	0.623	1.89		
NMIJ	0.608	1.68	0.730	1.65	0.488	3.23	0.546	1.67	0.138	2.18	0.225	2.39	2.186	1.72	0.756	1.67	0.133	2.49
VNIIOFI	-0.924	1.89	-0.802	1.86	-1.043	3.34	-0.985	1.88	-1.394	2.34	-1.306	2.54	0.655	1.93	-0.775	1.87	-1.398	2.64
CSIR																		
BNM/INM	0.298	0.43	0.420	0.32	0.179	2.80	0.237	0.41	-0.172	1.46	-0.084	1.76	1.877	0.59	0.447	0.38	-0.176	1.89
MSL	1.419	1.14	1.541	1.11	1.300	2.99	1.358	1.14	0.949	1.80	1.037	2.05	2.997	1.21	1.567	1.12	0.944	2.17
PTB	-0.157	0.41	-0.035	0.28	-0.277	2.79	-0.219	0.38	-0.627	1.45	-0.540	1.75	1.421	0.57	-0.009	0.34	-0.632	1.89
IEN																		
KRISS	0.005	0.63	0.127	0.56	-0.114	2.83	-0.056	0.62	-0.465	1.53	-0.377	1.82	1.583	0.74	0.154	0.59	-0.469	1.95
BIPM	0.099	0.92	0.221	0.87	-0.020	2.91	0.038	0.91	-0.371	1.67	-0.283	1.94	1.677	1.00	0.247	0.89	-0.376	2.06

	NMIJ		VNIIOFI		CSIR		BNM/INM		MSL		PTB		IEN		KRISS		BIPM	
	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$
	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>
CSIRO	-0.608	1.68	0.924	1.89			-0.298	0.43	-1.419	1.14	0.157	0.41			-0.005	0.63	-0.099	0.92
NRC	-0.730	1.65	0.802	1.86			-0.420	0.32	-1.541	1.11	0.035	0.28			-0.127	0.56	-0.221	0.87
IFA	-0.488	3.23	1.043	3.34			-0.179	2.80	-1.300	2.99	0.277	2.79			0.114	2.83	0.020	2.91
NPL	-0.546	1.67	0.985	1.88			-0.237	0.41	-1.358	1.14	0.219	0.38			0.056	0.62	-0.038	0.91
HUT	-0.138	2.18	1.394	2.34			0.172	1.46	-0.949	1.80	0.627	1.45			0.465	1.53	0.371	1.67
OMH	-0.225	2.39	1.306	2.54			0.084	1.76	-1.037	2.05	0.540	1.75			0.377	1.82	0.283	1.94
SMU	-2.186	1.72	-0.655	1.93			-1.877	0.59	-2.997	1.21	-1.421	0.57			-1.583	0.74	-1.677	1.00
NMi	-0.756	1.67	0.775	1.87			-0.447	0.38	-1.567	1.12	0.009	0.34			-0.154	0.59	-0.247	0.89
NIST	-0.133	2.49	1.398	2.64			0.176	1.89	-0.944	2.17	0.632	1.89			0.469	1.95	0.376	2.06
NMIJ			1.531	2.48			0.309	1.67	-0.811	1.98	0.765	1.66			0.603	1.73	0.509	1.86
VNIIOFI	-1.531	2.48					-1.222	1.88	-2.343	2.15	-0.766	1.87			-0.929	1.93	-1.023	2.04
CSIR																		
BNM/INM	-0.309	1.67	1.222	1.88					-1.121	1.13	0.456	0.36			0.293	0.60	0.199	0.90
MSL	0.811	1.98	2.343	2.15			1.121	1.13			1.576	1.12			1.414	1.22	1.320	1.39
PTB	-0.765	1.66	0.766	1.87			-0.456	0.36	-1.576	1.12					-0.162	0.58	-0.256	0.89
IEN																		
KRISS	-0.603	1.73	0.929	1.93			-0.293	0.60	-1.414	1.22	0.162	0.58					-0.094	1.01
BIPM	-0.509	1.86	1.023	2.04			-0.199	0.90	-1.320	1.39	0.256	0.89			0.094	1.01		

CCPR-K2.b Spectral responsivity  $\lambda = 340 \text{ nm}$   
Degrees of equivalence:  $D_i$  and expanded uncertainty  $U_i (k = 2)$





**CCPR-K2.b**

At each wavelength, the key comparison reference value  $X_{KCRV}$  is calculated as the weighted mean of the participant's results  $x_i$ , weighted by the inverse square of the individual uncertainties,  $u_i$ , with weights limited to a maximum of 20%.

The degree of equivalence of the  $i$ -th laboratory with respect to the reference value is given by a pair of terms:  
 $D_i = (x_i - X_{KCRV})$  and  $U_i$  its expanded uncertainty ( $k = 2$ ), both expressed in relative units.

The degree of equivalence between two laboratories is given by a pair of terms:  
 $D_{ij} = D_i - D_j$  and  $U_{ij}$  its expanded uncertainty ( $k = 2$ ), both expressed in relative units.

**Wavelength = 360 nm**      Lab  $j$        $\Rightarrow$

Lab  $i$        $\Downarrow$

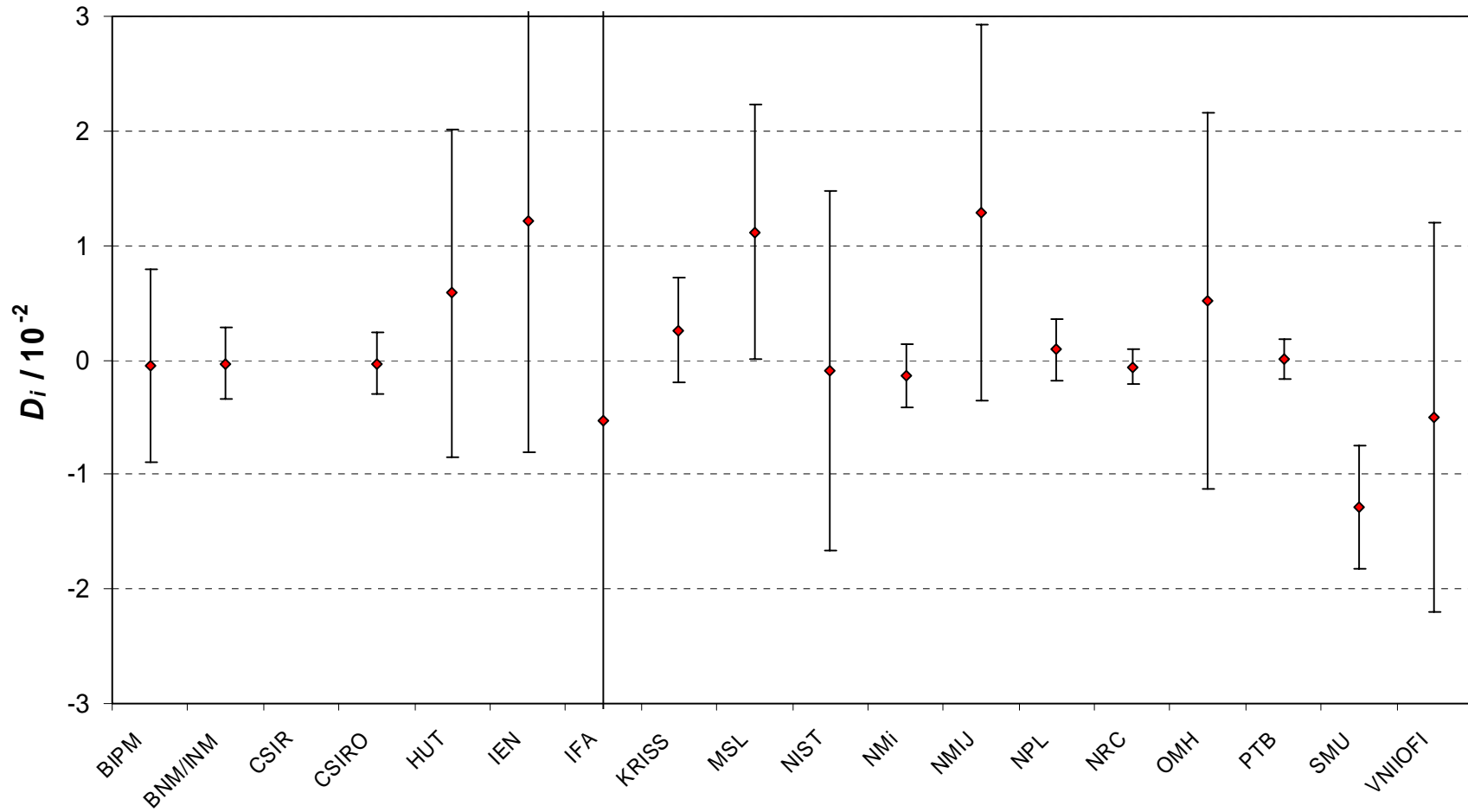
	$D_i$	$U_i$
	/10 <sup>-2</sup>	/10 <sup>-2</sup>
CSIRO	-0.029	0.266
NRC	-0.060	0.152
IFA	-0.534	10.620
NPL	0.089	0.267
HUT	0.581	1.428
OMH	0.513	1.645
SMU	-1.289	0.539
NMi	-0.139	0.277
NIST	-0.094	1.563
NMIJ	1.285	1.639
VNIIOFI	-0.503	1.699
CSIR		
BNM/INM	-0.033	0.313
MSL	1.117	1.114
PTB	0.014	0.174
IEN	1.209	2.015
KRISS	0.258	0.458
BIPM	-0.055	0.845

CSIRO	NRC		IFA		NPL		HUT		OMH		SMU		NMi		NIST			
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	
/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	
		0.031	0.33	0.505	10.62	-0.118	0.41	-0.610	1.46	-0.543	1.67	1.260	0.60	0.110	0.42	0.065	1.59	
	-0.031	0.33		0.474	10.62	-0.149	0.33	-0.642	1.44	-0.574	1.65	1.229	0.55	0.079	0.34	0.034	1.57	
	-0.505	10.62	-0.474	10.62		-0.623	10.62	-1.115	10.72	-1.048	10.75	0.755	10.63	-0.395	10.62	-0.440	10.74	
	0.118	0.41	0.149	0.33	0.623	10.62		-0.493	1.46	-0.425	1.67	1.378	0.60	0.228	0.42	0.183	1.59	
	0.610	1.46	0.642	1.44	1.115	10.72	0.493	1.46		0.068	2.18	1.871	1.53	0.720	1.46	0.675	2.12	
	0.543	1.67	0.574	1.65	1.048	10.75	0.425	1.67	-0.068	2.18		1.803	1.73	0.653	1.67	0.607	2.27	
	-1.260	0.60	-1.229	0.55	-0.755	10.63	-1.378	0.60	-1.871	1.53	-1.803	1.73		-1.150	0.61	-1.195	1.65	
	-0.110	0.42	-0.079	0.34	0.395	10.62	-0.228	0.42	-0.720	1.46	-0.653	1.67	1.150	0.61		-0.045	1.60	
	-0.065	1.59	-0.034	1.57	0.440	10.74	-0.183	1.59	-0.675	2.12	-0.607	2.27	1.195	1.65	0.045	1.60		
	1.314	1.67	1.345	1.65	1.819	10.75	1.196	1.67	0.704	2.18	0.772	2.32	2.574	1.73	1.424	1.67	1.379	2.27
	-0.474	1.73	-0.442	1.71	0.031	10.76	-0.591	1.73	-1.084	2.23	-1.016	2.37	0.787	1.78	-0.364	1.73	-0.409	2.32
	-0.004	0.44	0.028	0.37	0.501	10.63	-0.121	0.44	-0.614	1.47	-0.546	1.68	1.257	0.63	0.106	0.45	0.061	1.60
	1.147	1.15	1.178	1.12	1.652	10.68	1.029	1.15	0.536	1.81	0.604	1.98	2.407	1.23	1.257	1.15	1.211	1.92
	0.043	0.35	0.075	0.24	0.548	10.62	-0.074	0.35	-0.567	1.44	-0.499	1.65	1.304	0.56	0.153	0.35	0.108	1.58
	1.238	2.04	1.269	2.02	1.743	10.81	1.120	2.04	0.627	2.48	0.695	2.60	2.498	2.09	1.348	2.04	1.302	2.56
	0.287	0.56	0.318	0.50	0.792	10.63	0.169	0.56	-0.324	1.51	-0.256	1.71	1.547	0.71	0.397	0.56	0.352	1.64
	-0.026	0.90	0.005	0.87	0.479	10.65	-0.144	0.90	-0.637	1.67	-0.569	1.85	1.234	1.00	0.084	0.91	0.039	1.78

NMIJ	VNIIOFI		CSIR		BNM/INM		MSL		PTB		IEN		KRISS		BIPM			
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	
/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	
	-1.314	1.67	0.474	1.73			0.004	0.44	-1.147	1.15	-0.043	0.35	-1.238	2.04	-0.287	0.56	0.026	0.90
	-1.345	1.65	0.442	1.71			-0.028	0.37	-1.178	1.12	-0.075	0.24	-1.269	2.02	-0.318	0.50	-0.005	0.87
	-1.819	10.75	-0.031	10.76			-0.501	10.63	-1.652	10.68	-0.548	10.62	-1.743	10.81	-0.792	10.63	-0.479	10.65
	-1.196	1.67	0.591	1.73			0.121	0.44	-1.029	1.15	0.074	0.35	-1.120	2.04	-0.169	0.56	0.144	0.90
	-0.704	2.18	1.084	2.23			0.614	1.47	-0.536	1.81	0.567	1.44	-0.627	2.48	0.324	1.51	0.637	1.67
	-0.772	2.32	1.016	2.37			0.546	1.68	-0.604	1.98	0.499	1.65	-0.695	2.60	0.256	1.71	0.569	1.85
	-2.574	1.73	-0.787	1.78			-1.257	0.63	-2.407	1.23	-1.304	0.56	-2.498	2.09	-1.547	0.71	-1.234	1.00
	-1.424	1.67	0.364	1.73			-0.106	0.45	-1.257	1.15	-0.153	0.35	-1.348	2.04	-0.397	0.56	-0.084	0.91
	-0.094	1.563					-0.061	1.60	-1.211	1.92	-0.108	1.58	-1.302	2.56	-0.352	1.64	-0.039	1.78
	1.379	2.27	0.409	2.32			1.318	1.68	0.168	1.98	1.271	1.65	0.077	2.60	1.027	1.71	1.340	1.85
	-1.788	2.37	1.788	2.37			-0.470	1.74	-1.620	2.03	-0.517	1.71	-1.711	2.64	-0.760	1.77	-0.447	1.91
	-1.318	1.68	0.470	1.74					-1.150	1.16	-0.047	0.38	-1.241	2.05	-0.290	0.58	0.023	0.92
	-0.168	1.98	1.620	2.03			1.150	1.16			1.103	1.13	-0.091	2.30	0.860	1.21	1.173	1.40
	-1.271	1.65	0.517	1.71			0.047	0.38	-1.103	1.13			-1.194	2.03	-0.243	0.51	0.070	0.87
	-0.077	2.60	1.711	2.64			1.241	2.05	0.091	2.30	1.194	2.03			0.951	2.07	1.264	2.19
	-1.027	1.71	0.760	1.77			0.290	0.58	-0.860	1.21	0.243	0.51	-0.951	2.07			0.313	0.98
	-1.340	1.85	0.447	1.91			-0.023	0.92	-1.173	1.40	-0.070	0.87	-1.264	2.19	-0.313	0.98		

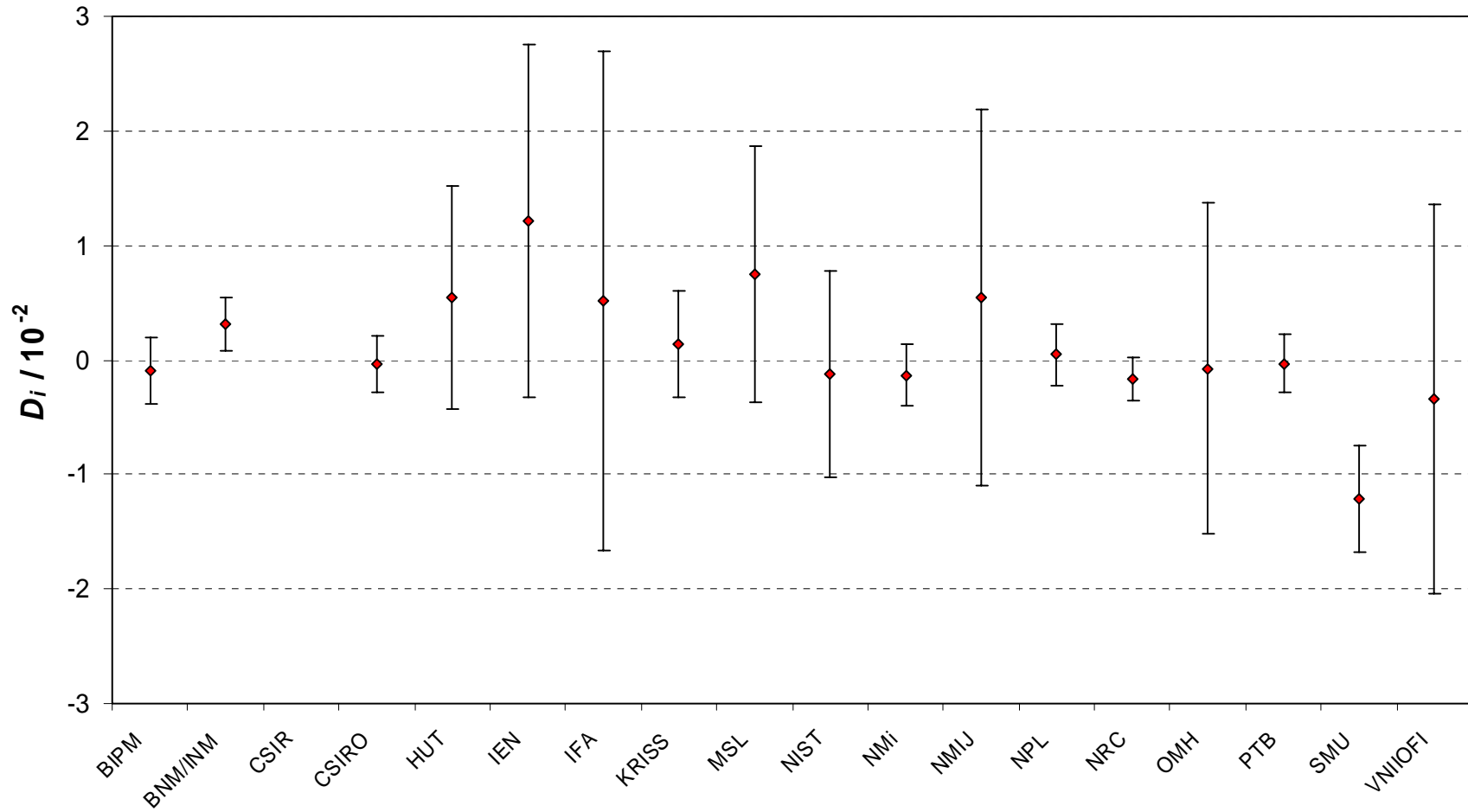
CSIRO	$D_i$	$U_i$
	/10 <sup>-2</sup>	/10 <sup>-2</sup>
CSIRO	-0.029	0.266
NRC	-0.060	0.152
IFA	-0.534	10.620
NPL	0.089	0.267
HUT	0.581	1.428
OMH	0.513	1.645
SMU	-1.289	0.539
NMi	-0.139	0.277
NIST	-0.094	1.563
NMIJ	1.285	1.639
VNIIOFI	-0.503	1.699
CSIR		
BNM/INM	-0.033	0.313
MSL	1.117	1.114
PTB	0.014	0.174
IEN	1.209	2.015
KRISS	0.258	0.458
BIPM	-0.055	0.845

CCPR-K2.b Spectral responsivity  $\lambda = 360 \text{ nm}$   
Degrees of equivalence:  $D_i$  and expanded uncertainty  $U_i (k = 2)$





**CCPR-K2.b Spectral responsivity  $\lambda = 380$  nm**  
**Degrees of equivalence:  $D_i$  and expanded uncertainty  $U_i$  ( $k = 2$ )**



**CCPR-K2.b**

At each wavelength, the key comparison reference value  $X_{KCRV}$  is calculated as the weighted mean of the participant's results  $x_i$ , weighted by the inverse square of the individual uncertainties,  $u_i$ , with weights limited to a maximum of 20%.

The degree of equivalence of the  $i$ -th laboratory with respect to the reference value is given by a pair of terms:  
 $D_i = (x_i - X_{KCRV})$  and  $U_i$  its expanded uncertainty ( $k = 2$ ), both expressed in relative units.

The degree of equivalence between two laboratories is given by a pair of terms:  
 $D_{ij} = D_i - D_j$  and  $U_{ij}$  its expanded uncertainty ( $k = 2$ ), both expressed in relative units.

**Wavelength = 400 nm**      Lab  $j$        $\rightarrow$

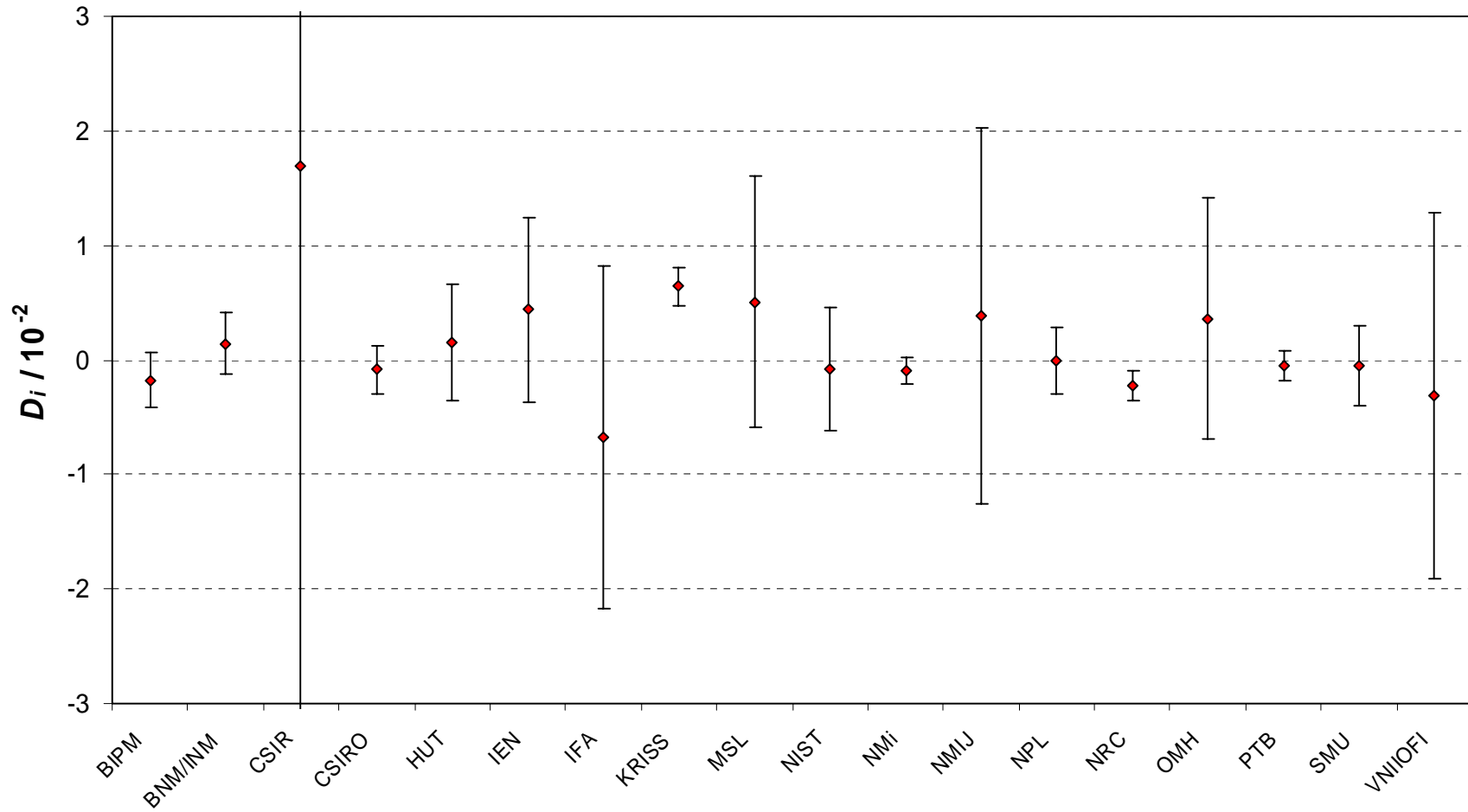
Lab  $i$        $\downarrow$

	$D_i$	$U_i$
	/10 <sup>-2</sup>	/10 <sup>-2</sup>
CSIRO	-0.084	0.211
NRC	-0.227	0.130
IFA	-0.678	1.500
NPL	-0.007	0.285
HUT	0.150	0.505
OMH	0.358	1.051
SMU	-0.050	0.354
NMi	-0.091	0.118
NIST	-0.079	0.541
NMIJ	0.387	1.641
VNIIOFI	-0.311	1.601
CSIR	1.697	5.400
BNM/INM	0.144	0.267
MSL	0.507	1.101
PTB	-0.054	0.135
IEN	0.437	0.812
KRISS	0.643	0.169
BIPM	-0.178	0.239

CSIRO	NRC		IFA		NPL		HUT		OMH		SMU		NMi		NIST			
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	
/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	
		0.143	0.26	0.594	1.52	-0.077	0.37	-0.234	0.56	-0.443	1.07	-0.034	0.41	0.007	0.26	-0.005	0.59	
	-0.143			0.451	1.51	-0.220	0.33	-0.377	0.53	-0.586	1.06	-0.177	0.38	-0.136	0.19	-0.148	0.56	
	-0.594	1.52	-0.451	1.51		-0.671	1.53	-0.828	1.59	-1.036	1.83	-0.628	1.54	-0.587	1.51	-0.599	1.60	
	0.077	0.37	0.220	0.33	0.671	1.53		-0.157	0.59	-0.365	1.09	0.043	0.45	0.084	0.32	0.072	0.62	
	0.234	0.56	0.377	0.53	0.828	1.59	0.157	0.59		-0.209	1.17	0.200	0.62	0.241	0.53	0.229	0.75	
	0.443	1.07	0.586	1.06	1.036	1.83	0.365	1.09	0.209	1.17		0.408	1.11	0.450	1.06	0.437	1.18	
	0.034	0.41	0.177	0.38	0.628	1.54	-0.043	0.45	-0.200	0.62	-0.408	1.11		0.042	0.37	0.029	0.65	
	-0.007	0.26	0.136	0.19	0.587	1.51	-0.084	0.32	-0.241	0.53	-0.450	1.06	-0.042	0.37		-0.012	0.56	
	0.005	0.59	0.148	0.56	0.599	1.60	-0.072	0.62	-0.229	0.75	-0.437	1.18	-0.029	0.65	0.012	0.56		
	0.471	1.66	0.615	1.65	1.065	2.22	0.394	1.67	0.237	1.72	0.029	1.95	0.437	1.68	0.479	1.65	0.466	1.73
	-0.227	1.62	-0.083	1.61	0.367	2.20	-0.304	1.63	-0.461	1.68	-0.669	1.92	-0.261	1.64	-0.219	1.61	-0.232	1.69
	1.781	5.41	1.924	5.40	2.375	5.61	1.704	5.41	1.547	5.42	1.338	5.50	1.747	5.41	1.788	5.40	1.776	5.43
	0.229	0.35	0.372	0.31	0.822	1.53	0.151	0.40	-0.005	0.58	-0.214	1.08	0.194	0.44	0.236	0.30	0.223	0.61
	0.591	1.12	0.734	1.11	1.185	1.86	0.514	1.14	0.357	1.21	0.149	1.52	0.557	1.15	0.598	1.11	0.586	1.23
	0.030	0.27	0.173	0.21	0.624	1.51	-0.047	0.33	-0.204	0.53	-0.412	1.06	-0.004	0.38	0.037	0.20	0.025	0.57
	0.521	0.84	0.664	0.83	1.114	1.71	0.444	0.87	0.287	0.96	0.078	1.33	0.486	0.89	0.528	0.83	0.515	0.98
	0.727	0.29	0.870	0.23	1.321	1.51	0.650	0.34	0.493	0.54	0.285	1.06	0.693	0.39	0.734	0.22	0.722	0.57
	-0.094	0.33	0.049	0.29	0.500	1.52	-0.171	0.38	-0.328	0.57	-0.536	1.08	-0.128	0.43	-0.087	0.28	-0.099	0.60

NMIJ	VNIIOFI		CSIR		BNM/INM		MSL		PTB		IEN		KRISS		BIPM						
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$				
/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>				
				-0.471	1.66	0.227	1.62	-1.781	5.41	-0.229	0.35	-0.591	1.12	-0.030	0.27	-0.521	0.84	-0.727	0.29	0.094	0.33
				-0.615	1.65	0.083	1.61	-1.924	5.40	-0.372	0.31	-0.734	1.11	-0.173	0.21	-0.664	0.83	-0.870	0.23	-0.049	0.29
				-1.065	2.22	-0.367	2.20	-2.375	5.61	-0.822	1.53	-1.185	1.86	-0.624	1.51	-1.114	1.71	-1.321	1.51	-0.500	1.52
				-0.394	1.67	0.304	1.63	-1.704	5.41	-0.151	0.40	-0.514	1.14	0.047	0.33	-0.444	0.87	-0.650	0.34	0.171	0.38
				-0.237	1.72	0.461	1.68	-1.547	5.42	0.005	0.58	-0.357	1.21	0.204	0.53	-0.287	0.96	-0.493	0.54	0.328	0.57
				-0.029	1.95	0.669	1.92	-1.338	5.50	0.214	1.08	-0.149	1.52	0.412	1.06	-0.078	1.33	-0.285	1.06	0.536	1.08
				-0.437	1.68	0.261	1.64	-1.747	5.41	-0.194	0.44	-0.557	1.15	0.004	0.38	-0.486	0.89	-0.693	0.39	0.128	0.43
				-0.479	1.65	0.219	1.61	-1.788	5.40	-0.236	0.30	-0.598	1.11	-0.037	0.20	-0.528	0.83	-0.734	0.22	0.087	0.28
				-0.466	1.73	0.232	1.69	-1.776	5.43	-0.223	0.61	-0.586	1.23	-0.025	0.57	-0.515	0.98	-0.722	0.57	0.099	0.60
						0.698	2.29	-1.310	5.64	0.243	1.66	-0.120	1.98	0.441	1.65	-0.049	1.83	-0.256	1.65	0.565	1.66
				-0.698	2.29			-2.008	5.63	-0.455	1.63	-0.818	1.94	-0.257	1.61	-0.747	1.80	-0.954	1.61	-0.133	1.62
				1.310	5.64	2.008	5.63			1.552	5.41	1.190	5.51	1.751	5.40	1.260	5.46	1.054	5.40	1.875	5.41
				-0.243	1.66	0.455	1.63	-1.552	5.41			-0.363	1.13	0.198	0.31	-0.292	0.86	-0.499	0.33	0.322	0.37
				0.120	1.98	0.818	1.94	-1.190	5.51	0.363	1.13			0.561	1.11	0.070	1.37	-0.136	1.11	0.685	1.13
				-0.441	1.65	0.257	1.61	-1.751	5.40	-0.198	0.31	-0.561	1.11			-0.491	0.83	-0.697	0.24	0.124	0.29
				0.049	1.83	0.747	1.80	-1.260	5.46	0.292	0.86	-0.070	1.37	0.491	0.83			-0.206	0.83	0.615	0.85
				0.256	1.65	0.954	1.61	-1.054	5.40	0.499	0.33	0.136	1.11	0.697	0.24	0.206	0.83			0.821	0.31
				-0.565	1.66	0.133	1.62	-1.875	5.41	-0.322	0.37	-0.685	1.13	-0.124	0.29	-0.615	0.85	-0.821	0.31		

**CCPR-K2.b Spectral responsivity  $\lambda = 400$  nm**  
**Degrees of equivalence:  $D_i$  and expanded uncertainty  $U_i$  ( $k = 2$ )**



**CCPR-K2.b**

At each wavelength, the key comparison reference value  $X_{KCRV}$  is calculated as the weighted mean of the participant's results  $x_i$ , weighted by the inverse square of the individual uncertainties,  $u_i$ , with weights limited to a maximum of 20%.

The degree of equivalence of the  $i$ -th laboratory with respect to the reference value is given by a pair of terms:

$$D_i = (x_i - X_{KCRV}) \text{ and } U_i \text{ its expanded uncertainty } (k = 2), \text{ both expressed in relative units.}$$

The degree of equivalence between two laboratories is given by a pair of terms:

$$D_{ij} = D_i - D_j \text{ and } U_{ij} \text{ its expanded uncertainty } (k = 2), \text{ both expressed in relative units.}$$

**Wavelength = 450 nm**      Lab  $j$        $\rightarrow$

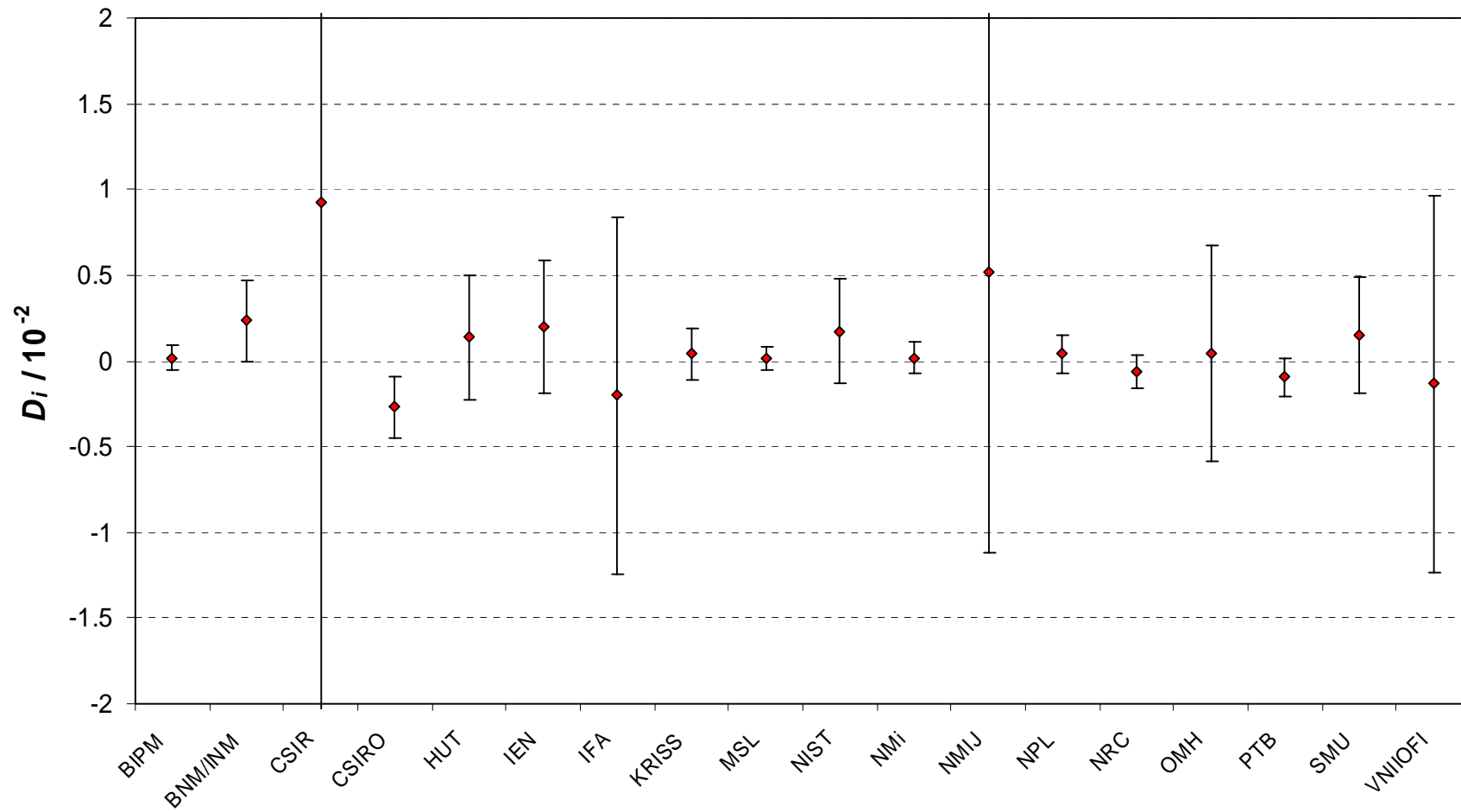
Lab  $i$        $\downarrow$

	$D_i$	$U_i$
	/10 <sup>-2</sup>	/10 <sup>-2</sup>
CSIRO	-0.269	0.178
NRC	-0.063	0.095
IFA	-0.201	1.040
NPL	0.042	0.111
HUT	0.137	0.366
OMH	0.042	0.633
SMU	0.148	0.341
NMi	0.019	0.089
NIST	0.172	0.303
NMIJ	0.519	1.640
VNIIOFI	-0.134	1.101
CSIR	0.921	3.000
BNM/INM	0.233	0.237
MSL	0.014	0.068
PTB	-0.094	0.112
IEN	0.197	0.387
KRISS	0.041	0.150
BIPM	0.017	0.073

CSIRO		NRC		IFA		NPL		HUT		OMH		SMU		NMi		NIST	
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$
/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>
		-0.206	0.21	-0.068	1.06	-0.310	0.22	-0.405	0.41	-0.311	0.66	-0.417	0.39	-0.287	0.21	-0.441	0.35
0.206	0.21			0.138	1.05	-0.104	0.15	-0.199	0.38	-0.105	0.64	-0.211	0.36	-0.081	0.14	-0.235	0.32
0.068	1.06	-0.138	1.05			-0.242	1.05	-0.337	1.10	-0.243	1.22	-0.349	1.10	-0.220	1.05	-0.373	1.08
0.310	0.22	0.104	0.15	0.242	1.05			-0.095	0.39	-0.001	0.64	-0.106	0.36	0.023	0.15	-0.131	0.33
0.405	0.41	0.199	0.38	0.337	1.10	0.095	0.39			0.094	0.73	-0.011	0.50	0.118	0.38	-0.036	0.48
0.311	0.66	0.105	0.64	0.243	1.22	0.001	0.64	-0.094	0.73			-0.106	0.72	0.023	0.64	-0.130	0.70
0.417	0.39	0.211	0.36	0.349	1.10	0.106	0.36	0.011	0.50	0.106	0.72			0.129	0.36	-0.024	0.46
0.287	0.21	0.081	0.14	0.220	1.05	-0.023	0.15	-0.118	0.38	-0.023	0.64	-0.129	0.36			-0.153	0.32
0.441	0.35	0.235	0.32	0.373	1.08	0.131	0.33	0.036	0.48	0.130	0.70	0.024	0.46	0.153	0.32		
0.787	1.65	0.581	1.64	0.720	1.94	0.477	1.64	0.382	1.68	0.477	1.76	0.371	1.68	0.500	1.64	0.347	1.67
0.135	1.12	-0.071	1.11	0.067	1.52	-0.175	1.11	-0.270	1.16	-0.176	1.27	-0.282	1.15	-0.153	1.11	-0.306	1.14
1.190	3.01	0.984	3.00	1.122	3.18	0.880	3.00	0.785	3.02	0.879	3.07	0.773	3.02	0.902	3.00	0.749	3.02
0.502	0.30	0.296	0.26	0.434	1.07	0.192	0.27	0.097	0.44	0.191	0.68	0.086	0.42	0.215	0.26	0.061	0.39
0.282	0.20	0.076	0.13	0.215	1.04	-0.028	0.14	-0.123	0.37	-0.028	0.64	-0.134	0.35	-0.005	0.12	-0.158	0.31
0.174	0.22	-0.032	0.15	0.106	1.05	-0.136	0.17	-0.231	0.39	-0.137	0.64	-0.242	0.36	-0.113	0.15	-0.267	0.33
0.466	0.43	0.260	0.40	0.398	1.11	0.156	0.41	0.061	0.54	0.155	0.74	0.049	0.52	0.178	0.40	0.025	0.49
0.309	0.24	0.103	0.18	0.241	1.05	-0.001	0.19	-0.096	0.40	-0.002	0.65	-0.107	0.38	0.022	0.18	-0.131	0.34
0.286	0.20	0.080	0.13	0.218	1.04	-0.024	0.14	-0.119	0.38	-0.025	0.64	-0.131	0.35	-0.002	0.13	-0.155	0.32

NMIJ		VNIIOFI		CSIR		BNM/INM		MSL		PTB		IEN		KRISS		BIPM	
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$
/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>
-0.787	1.65	-0.135	1.12	-1.190	3.01	-0.502	0.30	-0.282	0.20	-0.174	0.22	-0.466	0.43	-0.309	0.24	-0.286	0.20
-0.581	1.64	0.071	1.11	-0.984	3.00	-0.296	0.26	-0.076	0.13	0.032	0.15	-0.260	0.40	-0.103	0.18	-0.080	0.13
-0.720	1.94	-0.067	1.52	-1.122	3.18	-0.434	1.07	-0.215	1.04	-0.106	1.05	-0.398	1.11	-0.241	1.05	-0.218	1.04
-0.477	1.64	0.175	1.11	-0.880	3.00	-0.192	0.27	0.028	0.14	0.136	0.17	-0.156	0.41	0.001	0.19	0.024	0.14
-0.382	1.68	0.270	1.16	-0.785	3.02	-0.097	0.44	0.123	0.37	0.231	0.39	-0.061	0.54	0.096	0.40	0.119	0.38
-0.477	1.76	0.176	1.27	-0.879	3.07	-0.191	0.68	0.028	0.64	0.137	0.64	-0.155	0.74	0.002	0.65	0.025	0.64
-0.371	1.68	0.282	1.15	-0.773	3.02	-0.086	0.42	0.134	0.35	0.242	0.36	-0.049	0.52	0.107	0.38	0.131	0.35
-0.500	1.64	0.153	1.11	-0.902	3.00	-0.215	0.26	0.005	0.12	0.113	0.15	-0.178	0.40	-0.022	0.18	0.002	0.13
-0.347	1.67	0.306	1.14	-0.749	3.02	-0.061	0.39	0.158	0.31	0.267	0.33	-0.025	0.49	0.131	0.34	0.155	0.32
		0.653	1.98	-0.402	3.42	0.285	1.66	0.505	1.64	0.613	1.64	0.322	1.69	0.478	1.65	0.502	1.64
-0.653	1.98			-1.055	3.20	-0.367	1.13	-0.148	1.10	-0.039	1.11	-0.331	1.17	-0.175	1.11	-0.151	1.10
0.402	3.42	1.055	3.20			0.688	3.01	0.907	3.00	1.016	3.00	0.724	3.03	0.881	3.00	0.904	3.00
-0.285	1.66	0.367	1.13	-0.688	3.01			0.220	0.25	0.328	0.27	0.036	0.46	0.193	0.29	0.216	0.25
-0.505	1.64	0.148	1.10	-0.907	3.00	-0.220	0.25			0.108	0.14	-0.183	0.40	-0.027	0.17	-0.003	0.11
-0.613	1.64	0.039	1.11	-1.016	3.00	-0.328	0.27	-0.108	0.14			-0.292	0.41	-0.135	0.19	-0.112	0.14
-0.322	1.69	0.331	1.17	-0.724	3.03	-0.036	0.46	0.183	0.40	0.292	0.41			0.156	0.42	0.180	0.40
-0.478	1.65	0.175	1.11	-0.881	3.00	-0.193	0.29	0.027	0.17	0.135	0.19	-0.156	0.42			0.023	0.17
-0.502	1.64	0.151	1.10	-0.904	3.00	-0.216	0.25	0.003	0.11	0.112	0.14	-0.180	0.40	-0.023	0.17		

**CCPR-K2.b Spectral responsivity  $\lambda = 450$  nm**  
**Degrees of equivalence:  $D_i$  and expanded uncertainty  $U_i$  ( $k = 2$ )**





**CCPR-K2.b**

At each wavelength, the key comparison reference value  $X_{KCRV}$  is calculated as the weighted mean of the participant's results  $x_i$ , weighted by the inverse square of the individual uncertainties,  $u_i$ , with weights limited to a maximum of 20%.

The degree of equivalence of the  $i$ -th laboratory with respect to the reference value is given by a pair of terms:

$$D_i = (x_i - x_{KCRV}) \text{ and } U_i \text{ its expanded uncertainty } (k = 2), \text{ both expressed in relative units.}$$

The degree of equivalence between two laboratories is given by a pair of terms:

$$D_{ij} = D_i - D_j \text{ and } U_{ij} \text{ its expanded uncertainty } (k = 2), \text{ both expressed in relative units.}$$

**Wavelength = 500 nm**      Lab  $j$        $\rightarrow$

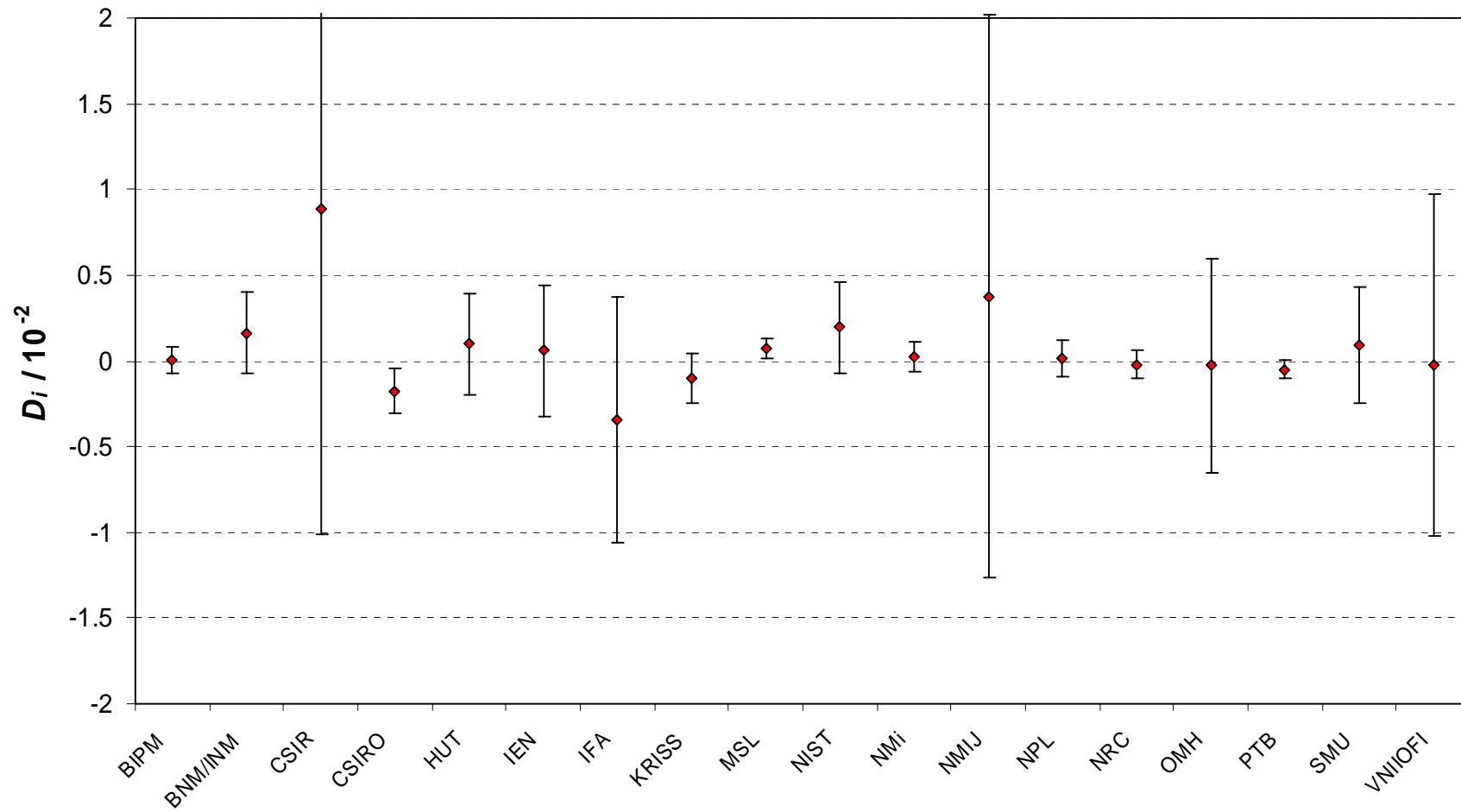
Lab  $i$        $\downarrow$

	$D_i$	$U_i$
	/10 <sup>-2</sup>	/10 <sup>-2</sup>
CSIRO	-0.175	0.130
NRC	-0.019	0.081
IFA	-0.345	0.720
NPL	0.015	0.111
HUT	0.098	0.296
OMH	-0.028	0.622
SMU	0.093	0.342
NMi	0.024	0.088
NIST	0.194	0.262
NMIJ	0.375	1.640
VNIOFI	-0.023	1.001
CSIR	0.884	1.900
BNM/INM	0.165	0.234
MSL	0.072	0.062
PTB	-0.049	0.050
IEN	0.058	0.382
KRISS	-0.099	0.145
BIPM	0.005	0.073

CSIRO	NRC		IFA		NPL		HUT		OMH		SMU		NMi		NIST		
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$		
/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>		
		-0.156	0.16	0.170	0.73	-0.190	0.18	-0.273	0.33	-0.147	0.64	-0.268	0.37	-0.199	0.16	-0.369	0.30
0.156	0.16			0.326	0.73	-0.035	0.14	-0.117	0.31	0.009	0.63	-0.112	0.35	-0.043	0.13	-0.213	0.28
-0.170	0.73	-0.326	0.73			-0.360	0.73	-0.443	0.78	-0.317	0.95	-0.438	0.80	-0.369	0.73	-0.539	0.77
0.190	0.18	0.035	0.14	0.360	0.73			-0.083	0.32	0.044	0.63	-0.078	0.36	-0.009	0.15	-0.179	0.29
0.273	0.33	0.117	0.31	0.443	0.78	0.083	0.32			0.126	0.69	0.005	0.45	0.074	0.31	-0.096	0.40
0.147	0.64	-0.009	0.63	0.317	0.95	-0.044	0.63	-0.126	0.69			-0.121	0.71	-0.052	0.63	-0.222	0.68
0.268	0.37	0.112	0.35	0.438	0.80	0.078	0.36	-0.005	0.45	0.121	0.71			0.069	0.36	-0.101	0.43
0.199	0.16	0.043	0.13	0.369	0.73	0.009	0.15	-0.074	0.31	0.052	0.63	-0.069	0.36			-0.170	0.28
0.369	0.30	0.213	0.28	0.539	0.77	0.179	0.29	0.096	0.40	0.222	0.68	0.101	0.43	0.170	0.28		
0.550	1.65	0.395	1.64	0.720	1.79	0.360	1.64	0.278	1.67	0.404	1.76	0.282	1.68	0.351	1.64	0.181	1.66
0.153	1.01	-0.003	1.01	0.323	1.23	-0.038	1.01	-0.120	1.04	0.006	1.18	-0.116	1.06	-0.046	1.01	-0.216	1.04
1.059	1.91	0.904	1.90	1.229	2.03	0.869	1.90	0.787	1.92	0.913	2.00	0.791	1.93	0.860	1.90	0.690	1.92
0.340	0.27	0.184	0.25	0.510	0.76	0.149	0.26	0.067	0.38	0.193	0.67	0.072	0.42	0.141	0.25	-0.029	0.35
0.247	0.15	0.092	0.11	0.417	0.72	0.057	0.13	-0.025	0.31	0.101	0.63	-0.021	0.35	0.048	0.12	-0.121	0.27
0.127	0.14	-0.029	0.10	0.296	0.72	-0.064	0.13	-0.146	0.30	-0.020	0.63	-0.142	0.35	-0.072	0.11	-0.242	0.27
0.233	0.41	0.078	0.39	0.403	0.82	0.043	0.40	-0.039	0.49	0.087	0.73	-0.035	0.51	0.034	0.39	-0.136	0.47
0.076	0.20	-0.079	0.17	0.246	0.74	-0.114	0.19	-0.197	0.33	-0.070	0.64	-0.192	0.37	-0.123	0.18	-0.293	0.30
0.180	0.16	0.024	0.12	0.350	0.73	-0.010	0.14	-0.093	0.31	0.033	0.63	-0.088	0.35	-0.019	0.12	-0.189	0.28

NMIJ	VNIOFI		CSIR		BNM/INM		MSL		PTB		IEN		KRISS		BIPM		
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$		
/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>		
-0.550	1.65	-0.153	1.01	-1.059	1.91	-0.340	0.27	-0.247	0.15	-0.127	0.14	-0.233	0.41	-0.076	0.20	-0.180	0.16
-0.395	1.64	0.003	1.01	-0.904	1.90	-0.184	0.25	-0.092	0.11	-0.029	0.10	-0.078	0.39	0.079	0.17	-0.024	0.12
-0.720	1.79	-0.323	1.23	-1.229	2.03	-0.510	0.76	-0.417	0.72	-0.296	0.72	-0.403	0.82	-0.246	0.74	-0.350	0.73
-0.360	1.64	0.038	1.01	-0.869	1.90	-0.149	0.26	-0.057	0.13	0.064	0.13	-0.043	0.40	0.114	0.19	0.010	0.14
-0.278	1.67	0.120	1.04	-0.787	1.92	-0.067	0.38	0.025	0.31	0.146	0.30	0.039	0.49	0.197	0.33	0.093	0.31
-0.404	1.76	-0.006	1.18	-0.913	2.00	-0.193	0.67	-0.101	0.63	0.020	0.63	-0.087	0.73	0.070	0.64	-0.033	0.63
-0.282	1.68	0.116	1.06	-0.791	1.93	-0.072	0.42	0.021	0.35	0.142	0.35	0.035	0.51	0.192	0.37	0.088	0.35
-0.351	1.64	0.046	1.01	-0.860	1.90	-0.141	0.25	-0.048	0.12	0.072	0.11	-0.034	0.39	0.123	0.18	0.019	0.12
-0.181	1.66	0.216	1.04	-0.690	1.92	0.029	0.35	0.121	0.27	0.242	0.27	0.136	0.47	0.293	0.30	0.189	0.28
		0.398	1.92	-0.509	2.51	0.211	1.66	0.303	1.64	0.424	1.64	0.317	1.68	0.474	1.65	0.370	1.64
-0.398	1.92			-0.907	2.15	-0.187	1.03	-0.095	1.00	0.026	1.00	-0.081	1.07	0.076	1.01	-0.028	1.00
0.509	2.51	0.907	2.15			0.720	1.92	0.812	1.90	0.933	1.90	0.826	1.94	0.983	1.91	0.879	1.90
-0.211	1.66	0.187	1.03	-0.720	1.92			0.092	0.25	0.213	0.24	0.106	0.45	0.263	0.28	0.159	0.25
-0.303	1.64	0.095	1.00	-0.812	1.90	-0.092	0.25			0.121	0.09	0.014	0.39	0.171	0.16	0.067	0.11
-0.424	1.64	-0.026	1.00	-0.933	1.90	-0.213	0.24	-0.121	0.09			-0.107	0.39	0.050	0.16	-0.054	0.10
-0.317	1.68	0.081	1.07	-0.826	1.94	-0.106	0.45	-0.014	0.39	0.107	0.39			0.157	0.41	0.053	0.39
-0.474	1.65	-0.076	1.01	-0.983	1.91	-0.263	0.28	-0.171	0.16	-0.050	0.16	-0.157	0.41			-0.104	0.17
-0.370	1.64	0.028	1.00	-0.879	1.90	-0.159	0.25	-0.067	0.11	0.054	0.10	-0.053	0.39	0.104	0.17		

**CCPR-K2.b Spectral responsivity  $\lambda = 500$  nm**  
**Degrees of equivalence:  $D_i$  and expanded uncertainty  $U_i$  ( $k = 2$ )**



**CCPR-K2.b**

At each wavelength, the key comparison reference value  $X_{KCRV}$  is calculated as the weighted mean of the participant's results  $x_i$ , weighted by the inverse square of the individual uncertainties,  $u_i$ , with weights limited to a maximum of 20%.

The degree of equivalence of the  $i$ -th laboratory with respect to the reference value is given by a pair of terms:  
 $D_i = (x_i - X_{KCRV})$  and  $U_i$  its expanded uncertainty ( $k = 2$ ), both expressed in relative units.

The degree of equivalence between two laboratories is given by a pair of terms:  
 $D_{ij} = D_i - D_j$  and  $U_{ij}$  its expanded uncertainty ( $k = 2$ ), both expressed in relative units.

**Wavelength = 550 nm**      Lab  $j$        $\rightarrow$

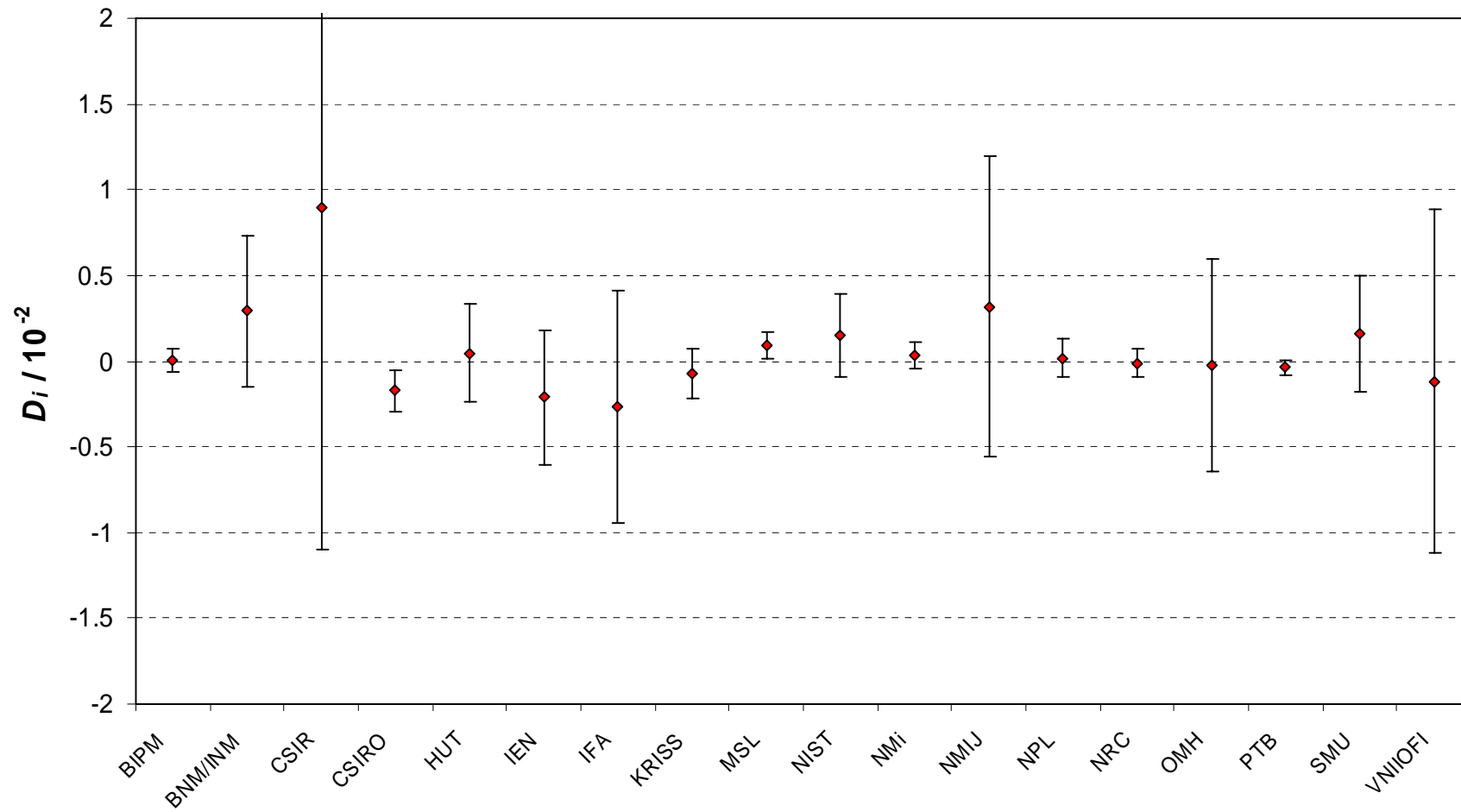
Lab  $i$        $\downarrow$

	$D_i$	$U_i$
	/10 <sup>-2</sup>	/10 <sup>-2</sup>
CSIRO	-0.173	0.118
NRC	-0.010	0.078
IFA	-0.266	0.680
NPL	0.017	0.110
HUT	0.047	0.285
OMH	-0.023	0.622
SMU	0.158	0.341
NMi	0.033	0.081
NIST	0.149	0.242
NMIJ	0.320	0.881
VNIIOFI	-0.118	1.001
CSIR	0.900	2.000
BNM/INM	0.295	0.440
MSL	0.092	0.077
PTB	-0.037	0.046
IEN	-0.211	0.392
KRISS	-0.073	0.145
BIPM	0.005	0.072

CSIRO		NRC		IFA		NPL		HUT		OMH		SMU		NMi		NIST	
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$
/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>
		-0.163	0.15	0.094	0.69	-0.190	0.17	-0.220	0.31	-0.150	0.63	-0.331	0.36	-0.205	0.15	-0.322	0.27
0.163	0.15			0.256	0.69	-0.027	0.14	-0.057	0.30	0.012	0.63	-0.168	0.35	-0.043	0.12	-0.159	0.26
-0.094	0.69	-0.256	0.69			-0.283	0.69	-0.313	0.74	-0.244	0.92	-0.425	0.76	-0.299	0.69	-0.415	0.72
0.190	0.17	0.027	0.14	0.283	0.69			-0.030	0.31	0.039	0.63	-0.142	0.36	-0.016	0.14	-0.132	0.27
0.220	0.31	0.057	0.30	0.313	0.74	0.030	0.31			0.069	0.69	-0.111	0.45	0.014	0.30	-0.102	0.38
0.150	0.63	-0.012	0.63	0.244	0.92	-0.039	0.63	-0.069	0.69			-0.181	0.71	-0.055	0.63	-0.171	0.67
0.331	0.36	0.168	0.35	0.425	0.76	0.142	0.36	0.111	0.45	0.181	0.71			0.126	0.35	0.009	0.42
0.205	0.15	0.043	0.12	0.299	0.69	0.016	0.14	-0.014	0.30	0.055	0.63	-0.126	0.35			-0.116	0.26
0.322	0.27	0.159	0.26	0.415	0.72	0.132	0.27	0.102	0.38	0.171	0.67	-0.009	0.42	0.116	0.26		
0.492	0.89	0.330	0.89	0.586	1.11	0.303	0.89	0.273	0.93	0.342	1.08	0.161	0.95	0.287	0.89	0.171	0.91
0.055	1.01	-0.108	1.00	0.148	1.21	-0.135	1.01	-0.165	1.04	-0.096	1.18	-0.276	1.06	-0.151	1.00	-0.267	1.03
1.072	2.00	0.910	2.00	1.166	2.11	0.883	2.00	0.853	2.02	0.922	2.10	0.741	2.03	0.867	2.00	0.751	2.02
0.468	0.46	0.305	0.45	0.561	0.81	0.278	0.46	0.248	0.53	0.317	0.76	0.137	0.56	0.262	0.45	0.146	0.50
0.265	0.15	0.102	0.12	0.358	0.69	0.075	0.14	0.045	0.30	0.114	0.63	-0.067	0.35	0.059	0.12	-0.057	0.26
0.136	0.13	-0.027	0.10	0.229	0.68	-0.054	0.12	-0.084	0.29	-0.015	0.62	-0.195	0.35	-0.070	0.10	-0.186	0.25
-0.038	0.41	-0.201	0.40	0.055	0.79	-0.228	0.41	-0.258	0.49	-0.189	0.74	-0.369	0.52	-0.244	0.40	-0.360	0.46
0.100	0.19	-0.063	0.17	0.193	0.70	-0.090	0.19	-0.120	0.32	-0.051	0.64	-0.232	0.37	-0.106	0.17	-0.222	0.29
0.178	0.15	0.015	0.12	0.271	0.69	-0.012	0.14	-0.042	0.30	0.027	0.63	-0.154	0.35	-0.028	0.12	-0.144	0.26

NMIJ		VNIIOFI		CSIR		BNM/INM		MSL		PTB		IEN		KRISS		BIPM	
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$
/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>
-0.492	0.89	-0.055	1.01	-1.072	2.00	-0.468	0.46	-0.265	0.15	-0.136	0.13	0.038	0.41	-0.100	0.19	-0.178	0.15
-0.330	0.89	0.108	1.00	-0.910	2.00	-0.305	0.45	-0.102	0.12	0.027	0.10	0.201	0.40	0.063	0.17	-0.015	0.12
-0.586	1.11	-0.148	1.21	-1.166	2.11	-0.561	0.81	-0.358	0.69	-0.229	0.68	-0.055	0.79	-0.193	0.70	-0.271	0.69
-0.303	0.89	0.135	1.01	-0.883	2.00	-0.278	0.46	-0.075	0.14	0.054	0.12	0.228	0.41	0.090	0.19	0.012	0.14
-0.273	0.93	0.165	1.04	-0.853	2.02	-0.248	0.53	-0.045	0.30	0.084	0.29	0.258	0.49	0.120	0.32	0.042	0.30
-0.342	1.08	0.096	1.18	-0.922	2.10	-0.317	0.76	-0.114	0.63	0.015	0.62	0.189	0.74	0.051	0.64	-0.027	0.63
-0.161	0.95	0.276	1.06	-0.741	2.03	-0.137	0.56	0.067	0.35	0.195	0.35	0.369	0.52	0.232	0.37	0.154	0.35
-0.287	0.89	0.151	1.00	-0.867	2.00	-0.262	0.45	-0.059	0.12	0.070	0.10	0.244	0.40	0.106	0.17	0.028	0.12
-0.171	0.91	0.267	1.03	-0.751	2.02	-0.146	0.50	0.057	0.26	0.186	0.25	0.360	0.46	0.222	0.29	0.144	0.26
		0.438	1.33	-0.580	2.19	0.025	0.99	0.228	0.89	0.357	0.88	0.531	0.97	0.393	0.89	0.315	0.88
-0.438	1.33			-1.018	2.24	-0.413	1.09	-0.210	1.00	-0.081	1.00	0.093	1.08	-0.045	1.01	-0.123	1.00
0.580	2.19	1.018	2.24			0.605	2.05	0.808	2.00	0.937	2.00	1.111	2.04	0.973	2.01	0.895	2.00
-0.025	0.99	0.413	1.09	-0.605	2.05			0.203	0.45	0.332	0.44	0.506	0.59	0.368	0.47	0.290	0.45
-0.228	0.89	0.210	1.00	-0.808	2.00	-0.203	0.45			0.129	0.09	0.303	0.40	0.165	0.17	0.087	0.12
-0.357	0.88	0.081	1.00	-0.937	2.00	-0.332	0.44	-0.129	0.09			0.174	0.40	0.036	0.15	-0.042	0.09
-0.531	0.97	-0.093	1.08	-1.111	2.04	-0.506	0.59	-0.303	0.40	-0.174	0.40			-0.138	0.42	-0.216	0.40
-0.393	0.89	0.045	1.01	-0.973	2.01	-0.368	0.47	-0.165	0.17	-0.036	0.15	0.138	0.42			-0.078	0.17
-0.315	0.88	0.123	1.00	-0.895	2.00	-0.290	0.45	-0.087	0.12	0.042	0.09	0.216	0.40	0.078	0.17		

**CCPR-K2.b Spectral responsivity  $\lambda = 550$  nm**  
**Degrees of equivalence:  $D_i$  and expanded uncertainty  $U_i$  ( $k = 2$ )**



**CCPR-K2.b**

At each wavelength, the key comparison reference value  $X_{KCRV}$  is calculated as the weighted mean of the participant's results  $x_i$ , weighted by the inverse square of the individual uncertainties,  $u_i$ , with weights limited to a maximum of 20%.

The degree of equivalence of the  $i$ -th laboratory with respect to the reference value is given by a pair of terms:

$$D_i = (x_i - x_{KCRV}) \text{ and } U_i \text{ its expanded uncertainty } (k = 2), \text{ both expressed in relative units.}$$

The degree of equivalence between two laboratories is given by a pair of terms:

$$D_{ij} = D_i - D_j \text{ and } U_{ij} \text{ its expanded uncertainty } (k = 2), \text{ both expressed in relative units.}$$

**Wavelength = 600 nm**      Lab  $j$  →

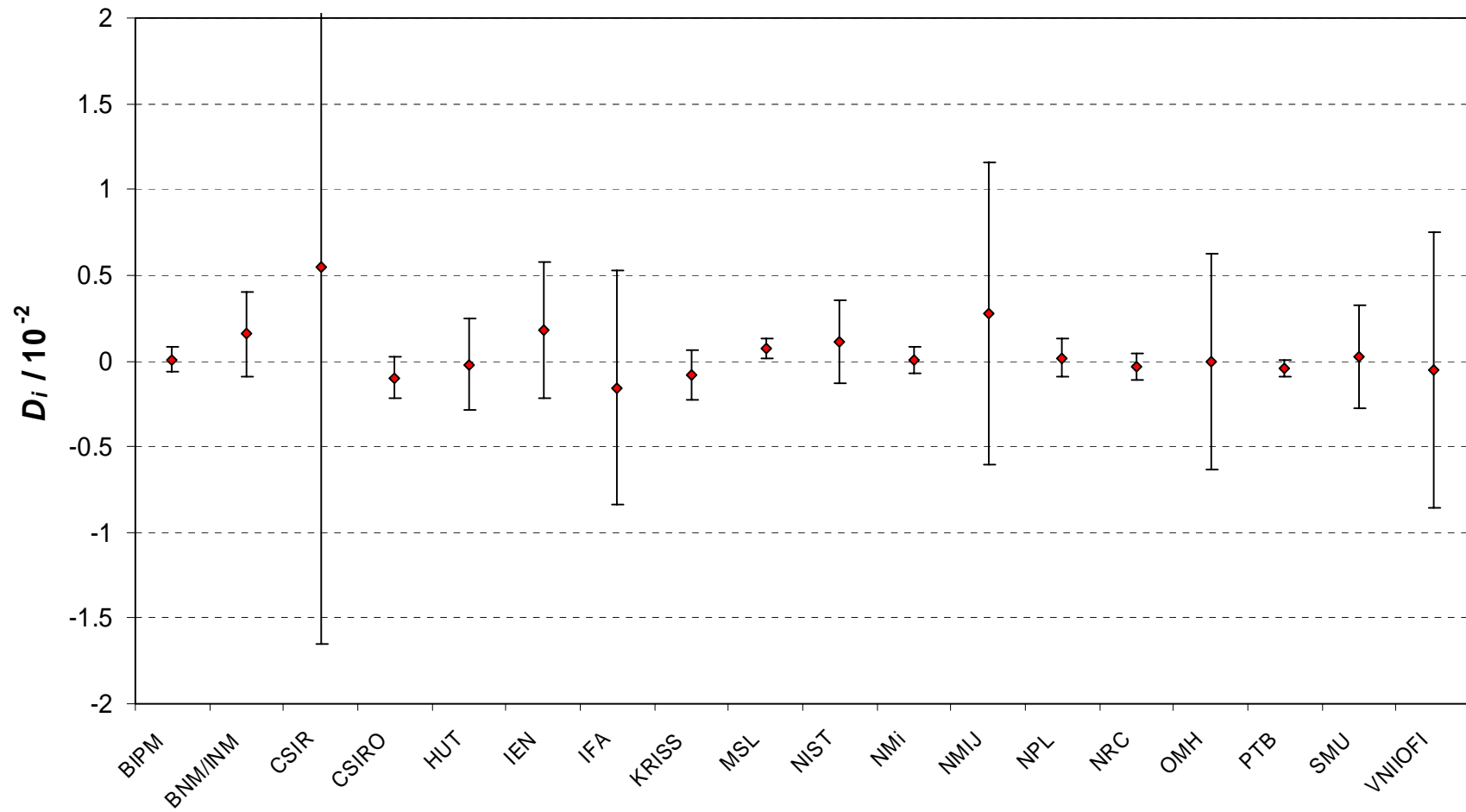
Lab  $i$  ↓

	$D_i$	$U_i$
	/10 <sup>-2</sup>	/10 <sup>-2</sup>
CSIRO	-0.097	0.120
NRC	-0.034	0.076
IFA	-0.156	0.680
NPL	0.017	0.110
HUT	-0.020	0.271
OMH	-0.005	0.629
SMU	0.027	0.302
NMi	0.005	0.077
NIST	0.107	0.242
NMIJ	0.273	0.881
VNIIOFI	-0.053	0.801
CSIR	0.552	2.200
BNM/INM	0.157	0.245
MSL	0.075	0.059
PTB	-0.043	0.045
IEN	0.177	0.397
KRISS	-0.085	0.145
BIPM	0.008	0.073

CSIRO	NRC		IFA		NPL		HUT		OMH		SMU		NMI		NIST		
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$		
/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>		
0.063	0.15	-0.063	0.15	0.059	0.69	-0.114	0.17	-0.077	0.30	-0.092	0.64	-0.124	0.33	-0.102	0.15	-0.204	0.27
-0.059	0.69	-0.122	0.69	0.122	0.69	-0.051	0.14	-0.014	0.28	-0.029	0.63	-0.061	0.31	-0.039	0.12	-0.141	0.26
0.114	0.17	0.051	0.14	0.173	0.69	-0.173	0.69	-0.136	0.73	-0.151	0.93	-0.183	0.75	-0.161	0.69	-0.263	0.72
0.077	0.30	0.014	0.28	0.136	0.73	-0.036	0.30	0.036	0.30	0.022	0.64	-0.010	0.32	0.011	0.14	-0.090	0.27
0.092	0.64	0.029	0.63	0.151	0.93	-0.022	0.64	0.015	0.69	-0.015	0.69	-0.032	0.70	-0.010	0.63	-0.112	0.68
0.124	0.33	0.061	0.31	0.183	0.75	0.010	0.32	0.047	0.41	0.032	0.70	0.022	0.31	0.022	0.31	-0.080	0.39
0.102	0.15	0.039	0.12	0.161	0.69	-0.011	0.14	0.025	0.28	0.010	0.63	-0.022	0.31	-0.022	0.31	-0.102	0.26
0.204	0.27	0.141	0.26	0.263	0.72	0.090	0.27	0.127	0.37	0.112	0.68	0.080	0.39	0.102	0.26		
0.370	0.89	0.307	0.89	0.429	1.11	0.257	0.89	0.293	0.92	0.278	1.08	0.246	0.93	0.268	0.89	0.166	0.91
0.044	0.81	-0.019	0.81	0.103	1.05	-0.070	0.81	-0.033	0.85	-0.048	1.02	-0.080	0.86	-0.058	0.81	-0.160	0.84
0.649	2.20	0.586	2.20	0.708	2.30	0.535	2.20	0.571	2.22	0.557	2.29	0.525	2.22	0.546	2.20	0.445	2.21
0.254	0.28	0.191	0.26	0.313	0.72	0.140	0.27	0.177	0.37	0.162	0.68	0.130	0.39	0.152	0.26	0.050	0.35
0.172	0.14	0.109	0.11	0.231	0.68	0.058	0.13	0.095	0.28	0.080	0.63	0.048	0.31	0.070	0.11	-0.032	0.25
0.054	0.13	-0.009	0.09	0.113	0.68	-0.060	0.12	-0.024	0.28	-0.038	0.63	-0.070	0.31	-0.049	0.10	-0.151	0.25
0.274	0.42	0.211	0.41	0.333	0.79	0.160	0.41	0.196	0.48	0.182	0.74	0.150	0.50	0.171	0.41	0.070	0.47
0.013	0.19	-0.051	0.17	0.072	0.70	-0.101	0.19	-0.065	0.31	-0.079	0.65	-0.112	0.34	-0.090	0.17	-0.192	0.29
0.105	0.15	0.042	0.11	0.164	0.69	-0.009	0.14	0.027	0.28	0.013	0.63	-0.019	0.31	0.002	0.11	-0.099	0.26

NMIJ	VNIIOFI		CSIR		BNM/INM		MSL		PTB		IEN		KRISS		BIPM		
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$		
/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>		
-0.370	0.89	-0.044	0.81	-0.649	2.20	-0.254	0.28	-0.172	0.14	-0.054	0.13	-0.274	0.42	-0.013	0.19	-0.105	0.15
-0.307	0.89	0.019	0.81	-0.586	2.20	-0.191	0.26	-0.109	0.11	0.009	0.09	-0.211	0.41	0.051	0.17	-0.042	0.11
-0.429	1.11	-0.103	1.05	-0.708	2.30	-0.313	0.72	-0.231	0.68	-0.113	0.68	-0.333	0.79	-0.072	0.70	-0.164	0.69
-0.257	0.89	0.070	0.81	-0.535	2.20	-0.140	0.27	-0.058	0.13	0.060	0.12	-0.160	0.41	0.101	0.19	0.009	0.14
-0.293	0.92	0.033	0.85	-0.571	2.22	-0.177	0.37	-0.095	0.28	0.024	0.28	-0.196	0.48	0.065	0.31	-0.027	0.28
-0.278	1.08	0.048	1.02	-0.557	2.29	-0.162	0.68	-0.080	0.63	0.038	0.63	-0.182	0.74	0.079	0.65	-0.013	0.63
-0.246	0.93	0.080	0.86	-0.525	2.22	-0.130	0.39	-0.048	0.31	0.070	0.31	-0.150	0.50	0.112	0.34	0.019	0.31
-0.268	0.89	0.058	0.81	-0.546	2.20	-0.152	0.26	-0.070	0.11	0.049	0.10	-0.171	0.41	0.090	0.17	-0.002	0.11
-0.166	0.91	0.160	0.84	-0.445	2.21	-0.050	0.35	0.032	0.25	0.151	0.25	-0.070	0.47	0.192	0.29	0.099	0.26
-0.326	1.19	0.326	1.19	-0.278	2.37	0.116	0.92	0.198	0.88	0.317	0.88	0.097	0.97	0.358	0.89	0.266	0.88
0.278	2.37	0.605	2.34	-0.605	2.34	-0.210	0.84	-0.128	0.80	-0.009	0.80	-0.230	0.89	0.032	0.82	-0.061	0.81
0.278	2.37	0.605	2.34	0.395	2.21	0.477	2.20	0.595	2.20	0.375	2.24	0.636	2.21	0.544	2.20		
-0.116	0.92	0.210	0.84	-0.395	2.21			0.082	0.26	0.201	0.25	-0.020	0.47	0.242	0.29	0.150	0.26
-0.198	0.88	0.128	0.80	-0.477	2.20	-0.082	0.26			0.118	0.08	-0.102	0.40	0.159	0.16	0.067	0.10
-0.317	0.88	0.009	0.80	-0.595	2.20	-0.201	0.25	-0.118	0.08			-0.220	0.40	0.041	0.16	-0.051	0.09
-0.097	0.97	0.230	0.89	-0.375	2.24	0.020	0.47	0.102	0.40	0.220	0.40			0.261	0.42	0.169	0.41
-0.358	0.89	-0.032	0.82	-0.636	2.21	-0.242	0.29	-0.159	0.16	-0.041	0.16	-0.261	0.42			-0.092	0.17
-0.266	0.88	0.061	0.81	-0.544	2.20	-0.150	0.26	-0.067	0.10	0.051	0.09	-0.169	0.41	0.092	0.17		

**CCPR-K2.b Spectral responsivity  $\lambda = 600$  nm**  
**Degrees of equivalence:  $D_i$  and expanded uncertainty  $U_i$  ( $k = 2$ )**



**CCPR-K2.b**

At each wavelength, the key comparison reference value  $X_{KCRV}$  is calculated as the weighted mean of the participant's results  $x_i$ , weighted by the inverse square of the individual uncertainties,  $u_i$ , with weights limited to a maximum of 20%.

The degree of equivalence of the  $i$ -th laboratory with respect to the reference value is given by a pair of terms:

$$D_i = (x_i - x_{KCRV}) \text{ and } U_i \text{ its expanded uncertainty } (k = 2), \text{ both expressed in relative units.}$$

The degree of equivalence between two laboratories is given by a pair of terms:

$$D_{ij} = D_i - D_j \text{ and } U_{ij} \text{ its expanded uncertainty } (k = 2), \text{ both expressed in relative units.}$$

**Wavelength = 650 nm**      Lab  $j$        $\rightarrow$

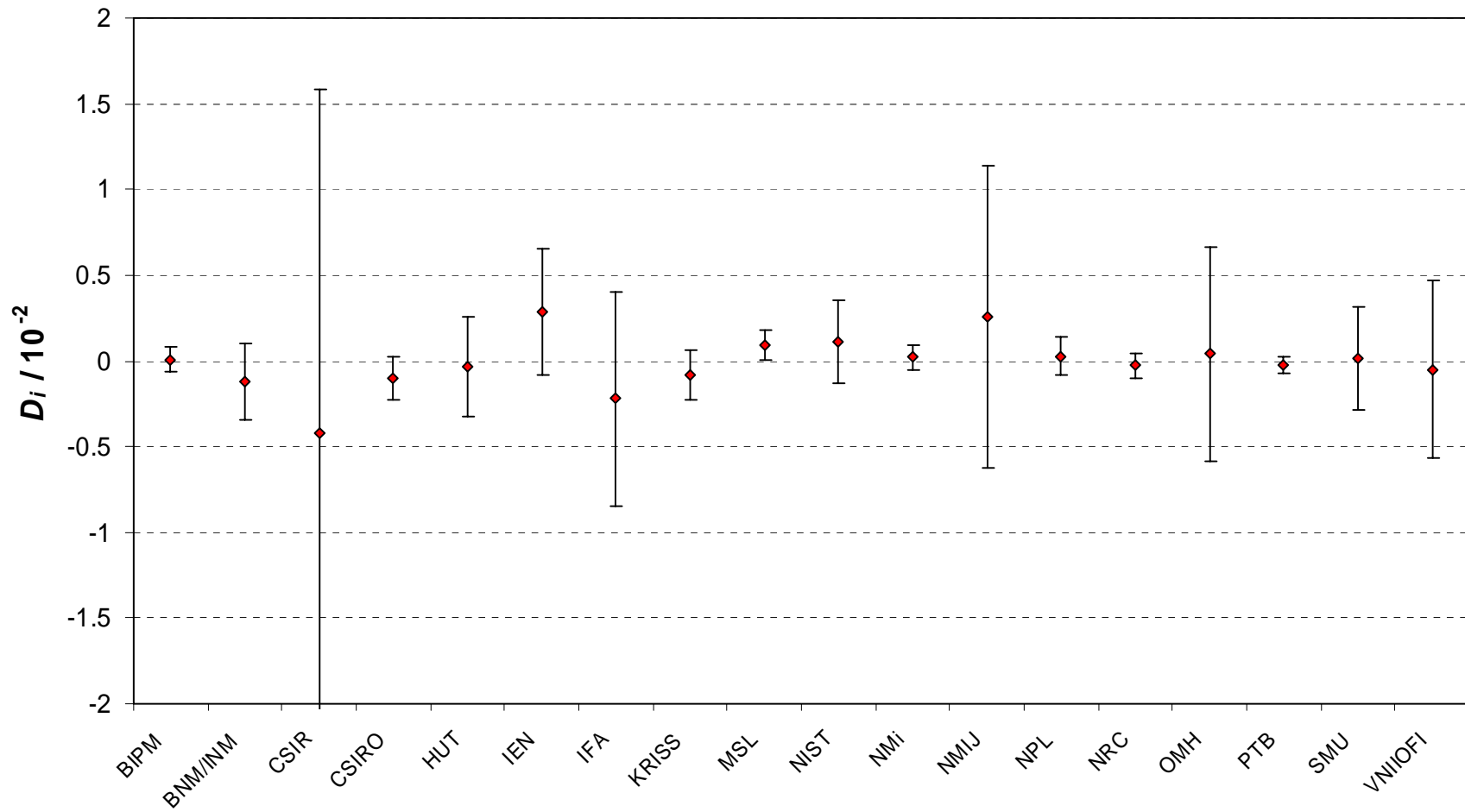
Lab  $i$        $\downarrow$

	$D_i$	$U_i$
	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>
CSIRO	-0.101	0.122
NRC	-0.025	0.073
IFA	-0.223	0.620
NPL	0.026	0.109
HUT	-0.034	0.290
OMH	0.041	0.627
SMU	0.015	0.302
NMi	0.024	0.073
NIST	0.112	0.241
NMIJ	0.254	0.881
VNIIOFI	-0.050	0.516
CSIR	-0.421	2.000
BNM/INM	-0.118	0.223
MSL	0.092	0.085
PTB	-0.024	0.044
IEN	0.286	0.372
KRISS	-0.084	0.145
BIPM	0.009	0.073

CSIRO		NRC		IFA		NPL		HUT		OMH		SMU		NMi		NIST	
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$
/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>
		-0.076	0.15	0.121	0.63	-0.128	0.17	-0.068	0.32	-0.142	0.64	-0.116	0.33	-0.125	0.15	-0.213	0.27
0.076	0.15			0.198	0.63	-0.052	0.14	0.008	0.30	-0.066	0.63	-0.040	0.31	-0.049	0.11	-0.137	0.26
-0.121	0.63	-0.198	0.63			-0.249	0.63	-0.189	0.69	-0.264	0.88	-0.238	0.69	-0.246	0.63	-0.334	0.67
0.128	0.17	0.052	0.14	0.249	0.63			0.060	0.31	-0.015	0.64	0.011	0.32	0.003	0.14	-0.085	0.27
0.068	0.32	-0.008	0.30	0.189	0.69	-0.060	0.31			-0.075	0.69	-0.049	0.42	-0.057	0.30	-0.145	0.38
0.142	0.64	0.066	0.63	0.264	0.88	0.015	0.64	0.075	0.69			0.026	0.70	0.017	0.63	-0.070	0.67
0.116	0.33	0.040	0.31	0.238	0.69	-0.011	0.32	0.049	0.42	-0.026	0.70			-0.009	0.31	-0.096	0.39
0.125	0.15	0.049	0.11	0.246	0.63	-0.003	0.14	0.057	0.30	-0.017	0.63	0.009	0.31			-0.088	0.26
0.213	0.27	0.137	0.26	0.334	0.67	0.085	0.27	0.145	0.38	0.070	0.67	0.096	0.39	0.088	0.26		
0.355	0.89	0.279	0.88	0.476	1.08	0.227	0.89	0.287	0.93	0.213	1.08	0.239	0.93	0.230	0.88	0.142	0.91
0.051	0.53	-0.025	0.52	0.173	0.81	-0.076	0.53	-0.016	0.59	-0.091	0.81	-0.065	0.60	-0.074	0.52	-0.161	0.57
-0.319	2.00	-0.396	2.00	-0.198	2.09	-0.447	2.00	-0.387	2.02	-0.462	2.10	-0.436	2.02	-0.444	2.00	-0.532	2.02
-0.017	0.26	-0.093	0.24	0.105	0.66	-0.145	0.25	-0.085	0.37	-0.159	0.67	-0.133	0.38	-0.142	0.24	-0.230	0.33
0.193	0.16	0.117	0.12	0.315	0.63	0.066	0.15	0.125	0.31	0.051	0.63	0.077	0.32	0.068	0.12	-0.020	0.26
0.078	0.13	0.002	0.09	0.199	0.62	-0.050	0.12	0.010	0.30	-0.065	0.63	-0.039	0.31	-0.047	0.09	-0.135	0.25
0.388	0.39	0.311	0.38	0.509	0.72	0.260	0.39	0.320	0.47	0.245	0.73	0.271	0.48	0.263	0.38	0.175	0.45
0.017	0.19	-0.059	0.17	0.138	0.64	-0.111	0.19	-0.051	0.33	-0.125	0.64	-0.099	0.34	-0.108	0.17	-0.196	0.28
0.111	0.15	0.034	0.11	0.232	0.63	-0.017	0.14	0.043	0.30	-0.032	0.63	-0.006	0.31	-0.014	0.11	-0.102	0.26

NMIJ		VNIIOFI		CSIR		BNM/INM		MSL		PTB		IEN		KRISS		BIPM	
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$
/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>
-0.355	0.89	-0.051	0.53	0.319	2.00	0.017	0.26	-0.193	0.16	-0.078	0.13	-0.388	0.39	-0.017	0.19	-0.111	0.15
-0.279	0.88	0.025	0.52	0.396	2.00	0.093	0.24	-0.117	0.12	-0.002	0.09	-0.311	0.38	0.059	0.17	-0.034	0.11
-0.476	1.08	-0.173	0.81	0.198	2.09	-0.105	0.66	-0.315	0.63	-0.199	0.62	-0.509	0.72	-0.138	0.64	-0.232	0.63
-0.227	0.89	0.076	0.53	0.447	2.00	0.145	0.25	-0.066	0.15	0.050	0.12	-0.260	0.39	0.111	0.19	0.017	0.14
-0.287	0.93	0.016	0.59	0.387	2.02	0.085	0.37	-0.125	0.31	-0.010	0.30	-0.320	0.47	0.051	0.33	-0.043	0.30
-0.213	1.08	0.091	0.81	0.462	2.10	0.159	0.67	-0.051	0.63	0.065	0.63	-0.245	0.73	0.125	0.64	0.032	0.63
-0.239	0.93	0.065	0.60	0.436	2.02	0.133	0.38	-0.077	0.32	0.039	0.31	-0.271	0.48	0.099	0.34	0.006	0.31
-0.230	0.88	0.074	0.52	0.444	2.00	0.142	0.24	-0.068	0.12	0.047	0.09	-0.263	0.38	0.108	0.17	0.014	0.11
-0.142	0.91	0.161	0.57	0.532	2.02	0.230	0.33	0.020	0.26	0.135	0.25	-0.175	0.45	0.196	0.28	0.102	0.26
		0.304	1.02	0.675	2.19	0.372	0.91	0.162	0.89	0.277	0.88	-0.033	0.96	0.338	0.89	0.245	0.88
-0.304	1.02			0.371	2.07	0.068	0.56	-0.142	0.53	-0.026	0.52	-0.336	0.64	0.034	0.54	-0.059	0.52
-0.675	2.19	-0.371	2.07			-0.303	2.01	-0.513	2.00	-0.397	2.00	-0.707	2.04	-0.336	2.01	-0.430	2.00
-0.372	0.91	-0.068	0.56	0.303	2.01			-0.210	0.24	-0.094	0.23	-0.404	0.44	-0.034	0.27	-0.127	0.24
-0.162	0.89	0.142	0.53	0.513	2.00	0.210	0.24			0.116	0.10	-0.194	0.38	0.176	0.17	0.083	0.12
-0.277	0.88	0.026	0.52	0.397	2.00	0.094	0.23	-0.116	0.10			-0.310	0.38	0.061	0.15	-0.033	0.09
0.033	0.96	0.336	0.64	0.707	2.04	0.404	0.44	0.194	0.38	0.310	0.38			0.371	0.40	0.277	0.38
-0.338	0.89	-0.034	0.54	0.336	2.01	0.034	0.27	-0.176	0.17	-0.061	0.15	-0.371	0.40			-0.094	0.17
-0.245	0.88	0.059	0.52	0.430	2.00	0.127	0.24	-0.083	0.12	0.033	0.09	-0.277	0.38	0.094	0.17		

**CCPR-K2.b Spectral responsivity  $\lambda = 650$  nm**  
**Degrees of equivalence:  $D_i$  and expanded uncertainty  $U_i$  ( $k = 2$ )**





**CCPR-K2.b**

At each wavelength, the key comparison reference value  $X_{KCRV}$  is calculated as the weighted mean of the participant's results  $x_i$ , weighted by the inverse square of the individual uncertainties,  $u_i$ , with weights limited to a maximum of 20%.

The degree of equivalence of the  $i$ -th laboratory with respect to the reference value is given by a pair of terms:

$$D_i = (x_i - x_{KCRV}) \text{ and } U_i \text{ its expanded uncertainty } (k = 2), \text{ both expressed in relative units.}$$

The degree of equivalence between two laboratories is given by a pair of terms:

$$D_{ij} = D_i - D_j \text{ and } U_{ij} \text{ its expanded uncertainty } (k = 2), \text{ both expressed in relative units.}$$

**Wavelength = 700 nm**      Lab  $j$        $\rightarrow$

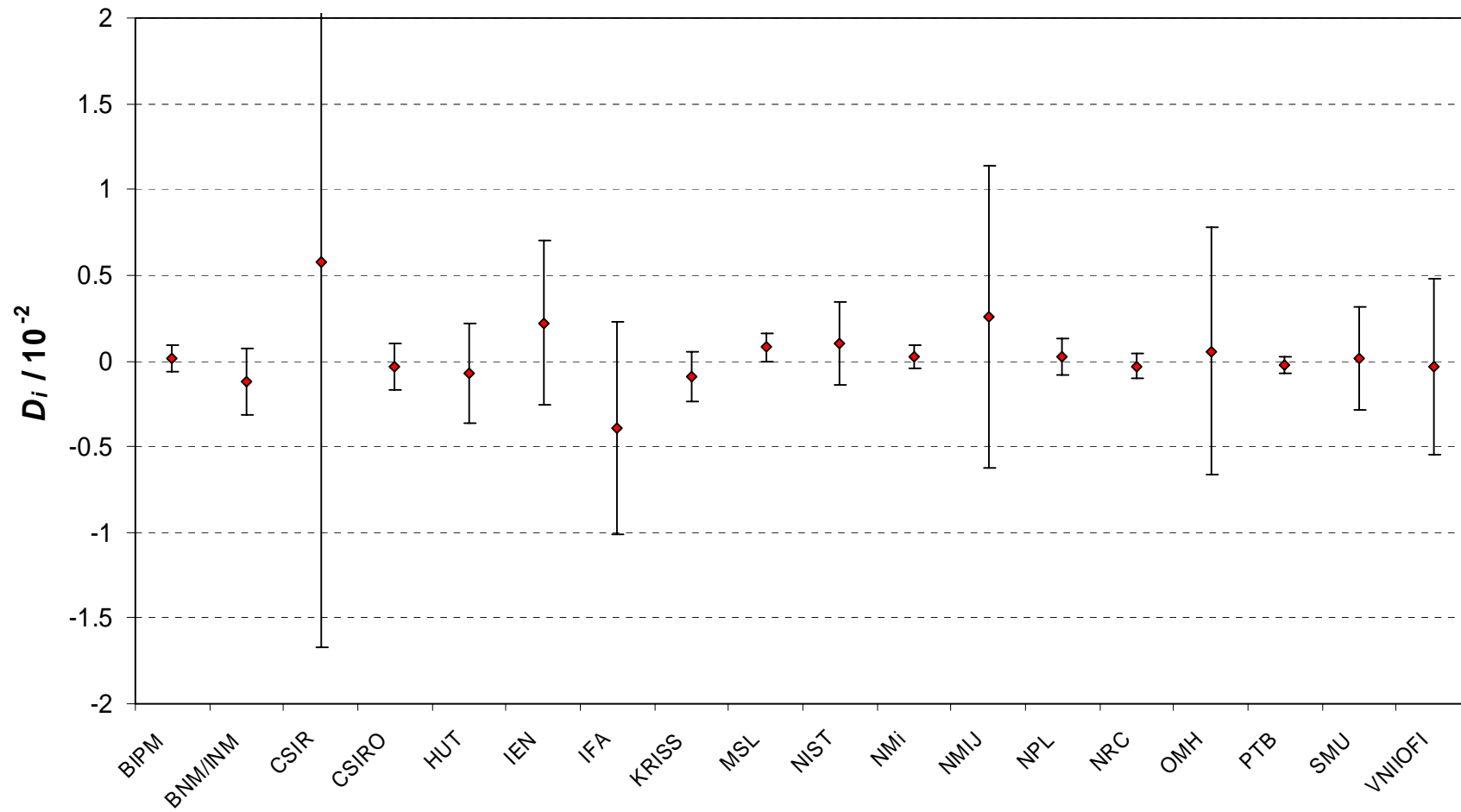
Lab  $i$        $\downarrow$

	$D_i$	$U_i$
	/10 <sup>-2</sup>	/10 <sup>-2</sup>
CSIRO	-0.033	0.140
NRC	-0.030	0.071
IFA	-0.388	0.620
NPL	0.024	0.109
HUT	-0.070	0.290
OMH	0.054	0.722
SMU	0.016	0.302
NMi	0.024	0.071
NIST	0.104	0.241
NMIJ	0.254	0.881
VNIIOFI	-0.035	0.516
CSIR	0.576	2.250
BNM/INM	-0.124	0.194
MSL	0.080	0.084
PTB	-0.025	0.045
IEN	0.223	0.476
KRISS	-0.095	0.144
BIPM	0.015	0.073

CSIRO	NRC		IFA		NPL		HUT		OMH		SMU		NMi		NIST		
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$		
/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>		
		-0.004	0.16	0.355	0.64	-0.057	0.18	0.037	0.33	-0.087	0.74	-0.050	0.34	-0.057	0.16	-0.137	0.28
0.004	0.16			0.358	0.63	-0.054	0.14	0.040	0.30	-0.084	0.73	-0.046	0.31	-0.053	0.11	-0.134	0.26
-0.355	0.64	-0.358	0.63			-0.412	0.63	-0.318	0.69	-0.442	0.95	-0.404	0.69	-0.412	0.63	-0.492	0.67
0.057	0.18	0.054	0.14	0.412	0.63			0.094	0.31	-0.030	0.73	0.007	0.32	0.000	0.14	-0.080	0.27
-0.037	0.33	-0.040	0.30	0.318	0.69	-0.094	0.31			-0.124	0.78	-0.086	0.42	-0.094	0.30	-0.174	0.38
0.087	0.74	0.084	0.73	0.442	0.95	0.030	0.73	0.124	0.78			0.038	0.78	0.030	0.73	-0.050	0.76
0.050	0.34	0.046	0.31	0.404	0.69	-0.007	0.32	0.086	0.42	-0.038	0.78			-0.007	0.31	-0.088	0.39
0.057	0.16	0.053	0.11	0.412	0.63	0.000	0.14	0.094	0.30	-0.030	0.73	0.007	0.31			-0.080	0.26
0.137	0.28	0.134	0.26	0.492	0.67	0.080	0.27	0.174	0.38	0.050	0.76	0.088	0.39	0.080	0.26		
0.287	0.89	0.284	0.88	0.642	1.08	0.230	0.89	0.324	0.93	0.200	1.14	0.238	0.93	0.230	0.88	0.150	0.91
-0.002	0.54	-0.005	0.52	0.353	0.81	-0.059	0.53	0.035	0.59	-0.089	0.89	-0.051	0.60	-0.059	0.52	-0.139	0.57
0.609	2.26	0.606	2.25	0.964	2.33	0.552	2.25	0.646	2.27	0.522	2.36	0.559	2.27	0.552	2.25	0.472	2.26
-0.090	0.24	-0.094	0.21	0.264	0.65	-0.147	0.23	-0.053	0.35	-0.178	0.75	-0.140	0.36	-0.147	0.21	-0.228	0.31
0.114	0.17	0.110	0.12	0.468	0.63	0.056	0.15	0.150	0.31	0.026	0.73	0.064	0.32	0.057	0.12	-0.024	0.26
0.008	0.15	0.005	0.09	0.363	0.62	-0.049	0.12	0.045	0.30	-0.079	0.72	-0.041	0.31	-0.049	0.09	-0.129	0.25
0.256	0.50	0.253	0.48	0.611	0.78	0.199	0.49	0.293	0.56	0.169	0.87	0.206	0.57	0.199	0.48	0.119	0.54
-0.062	0.21	-0.065	0.17	0.293	0.64	-0.119	0.19	-0.025	0.33	-0.149	0.74	-0.111	0.34	-0.118	0.17	-0.199	0.28
0.048	0.16	0.045	0.11	0.403	0.63	-0.009	0.14	0.085	0.30	-0.039	0.73	-0.002	0.31	-0.009	0.11	-0.089	0.26

NMIJ	VNIIOFI		CSIR		BNM/INM		MSL		PTB		IEN		KRISS		BIPM				
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$				
/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>				
		-0.287	0.89	0.002	0.54	-0.609	2.26	0.090	0.24	-0.114	0.17	-0.008	0.15	-0.256	0.50	0.062	0.21	-0.048	0.16
-0.284	0.88	0.005	0.52	-0.606	2.25	0.094	0.21	-0.110	0.12	-0.005	0.09	-0.253	0.48	0.065	0.17	-0.045	0.11		
-0.642	1.08	-0.353	0.81	-0.964	2.33	-0.264	0.65	-0.468	0.63	-0.363	0.62	-0.611	0.78	-0.293	0.64	-0.403	0.63		
-0.230	0.89	0.059	0.53	-0.552	2.25	0.147	0.23	-0.056	0.15	0.049	0.12	-0.199	0.49	0.119	0.19	0.009	0.14		
-0.324	0.93	-0.035	0.59	-0.646	2.27	0.053	0.35	-0.150	0.31	-0.045	0.30	-0.293	0.56	0.025	0.33	-0.085	0.30		
-0.200	1.14	0.089	0.89	-0.522	2.36	0.178	0.75	-0.026	0.73	0.079	0.72	-0.169	0.87	0.149	0.74	0.039	0.73		
-0.238	0.93	0.051	0.60	-0.559	2.27	0.140	0.36	-0.064	0.32	0.041	0.31	-0.206	0.57	0.111	0.34	0.002	0.31		
-0.230	0.88	0.059	0.52	-0.552	2.25	0.147	0.21	-0.057	0.12	0.049	0.09	-0.199	0.48	0.118	0.17	0.009	0.11		
-0.150	0.91	0.139	0.57	-0.472	2.26	0.228	0.31	0.024	0.26	0.129	0.25	-0.119	0.54	0.199	0.28	0.089	0.26		
		0.289	1.02	-0.322	2.42	0.377	0.90	0.174	0.89	0.279	0.88	0.031	1.00	0.349	0.89	0.239	0.88		
-0.289	1.02			-0.611	2.31	0.089	0.55	-0.115	0.52	-0.010	0.52	-0.258	0.70	0.060	0.54	-0.050	0.52		
0.322	2.42	0.611	2.31			0.699	2.26	0.496	2.25	0.601	2.25	0.353	2.30	0.671	2.26	0.561	2.25		
-0.377	0.90	-0.089	0.55	-0.699	2.26			-0.204	0.22	-0.099	0.20	-0.346	0.52	-0.029	0.25	-0.138	0.21		
-0.174	0.89	0.115	0.52	-0.496	2.25	0.204	0.22			0.105	0.10	-0.143	0.49	0.175	0.17	0.065	0.12		
-0.279	0.88	0.010	0.52	-0.601	2.25	0.099	0.20	-0.105	0.10			-0.248	0.48	0.070	0.15	-0.040	0.09		
-0.031	1.00	0.258	0.70	-0.353	2.30	0.346	0.52	0.143	0.49	0.248	0.48			0.318	0.50	0.208	0.48		
-0.349	0.89	-0.060	0.54	-0.671	2.26	0.029	0.25	-0.175	0.17	-0.070	0.15	-0.318	0.50			-0.110	0.17		
-0.239	0.88	0.050	0.52	-0.561	2.25	0.138	0.21	-0.065	0.12	0.040	0.09	-0.208	0.48	0.110	0.17				

**CCPR-K2.b Spectral responsivity  $\lambda = 700$  nm**  
**Degrees of equivalence:  $D_i$  and expanded uncertainty  $U_i$  ( $k = 2$ )**



**CCPR-K2.b**

At each wavelength, the key comparison reference value  $X_{KCRV}$  is calculated as the weighted mean of the participant's results  $x_i$ , weighted by the inverse square of the individual uncertainties,  $u_i$ , with weights limited to a maximum of 20%.

The degree of equivalence of the  $i$ -th laboratory with respect to the reference value is given by a pair of terms:

$$D_i = (x_i - x_{KCRV}) \text{ and } U_i \text{ its expanded uncertainty } (k = 2), \text{ both expressed in relative units.}$$

The degree of equivalence between two laboratories is given by a pair of terms:

$$D_{ij} = D_i - D_j \text{ and } U_{ij} \text{ its expanded uncertainty } (k = 2), \text{ both expressed in relative units.}$$

**Wavelength = 750 nm**      Lab  $j$        $\rightarrow$

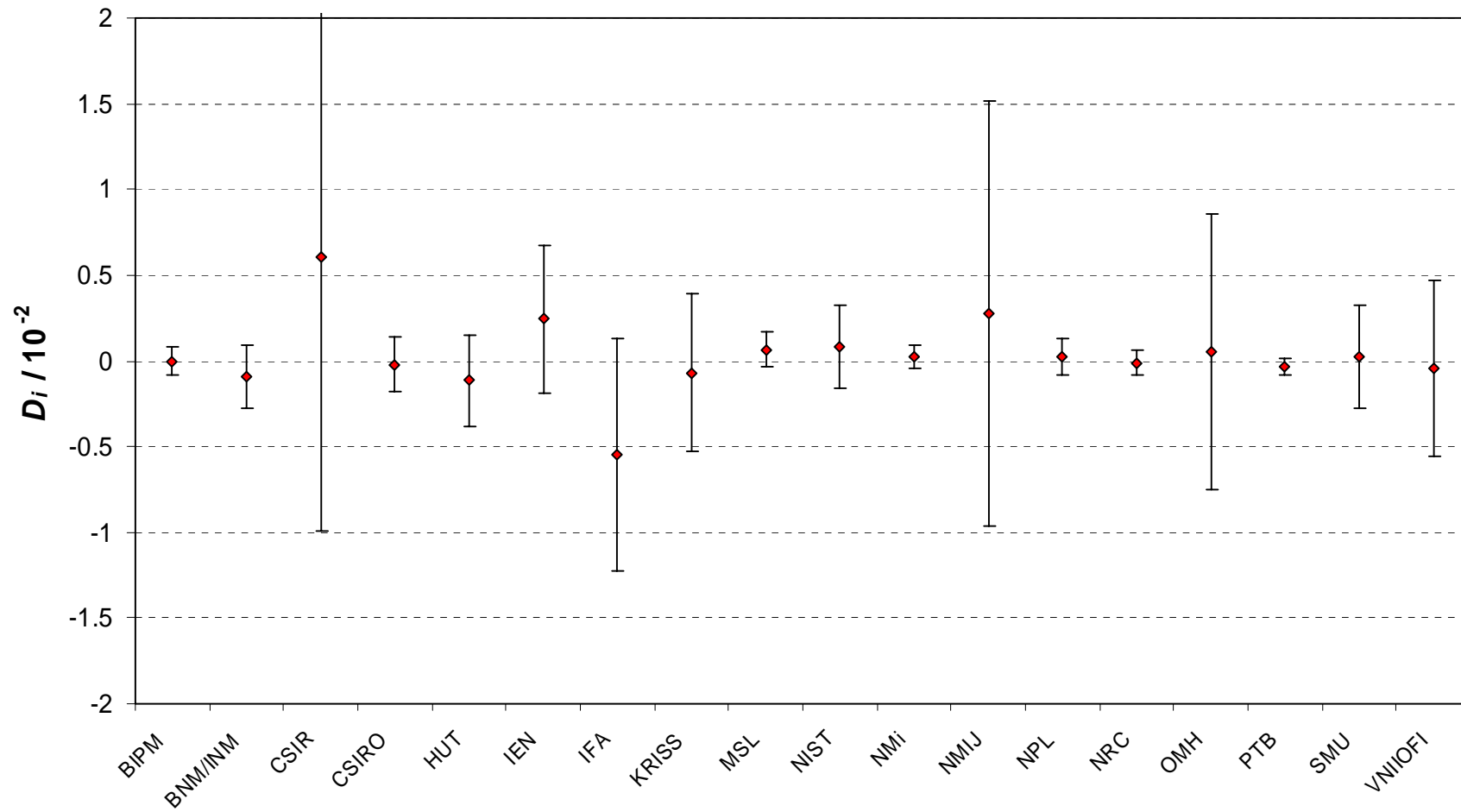
Lab  $i$        $\downarrow$

	$D_i$	$U_i$
	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>
CSIRO	-0.020	0.156
NRC	-0.012	0.072
IFA	-0.548	0.680
NPL	0.023	0.108
HUT	-0.116	0.270
OMH	0.051	0.801
SMU	0.021	0.301
NMi	0.024	0.068
NIST	0.084	0.241
NMIJ	0.279	1.240
VNIOFI	-0.042	0.516
CSIR	0.609	1.600
BNM/INM	-0.092	0.182
MSL	0.065	0.103
PTB	-0.033	0.046
IEN	0.243	0.431
KRISS	-0.068	0.456
BIPM	-0.002	0.084

CSIRO		NRC		IFA		NPL		HUT		OMH		SMU		NMi		NIST	
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$
/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>
		-0.008	0.18	0.529	0.70	-0.042	0.20	0.096	0.32	-0.071	0.82	-0.040	0.34	-0.044	0.18	-0.103	0.29
0.008	0.18			0.537	0.69	-0.034	0.14	0.104	0.28	-0.063	0.81	-0.032	0.31	-0.036	0.11	-0.095	0.26
-0.529	0.70	-0.537	0.69			-0.571	0.69	-0.432	0.73	-0.600	1.05	-0.569	0.75	-0.573	0.69	-0.632	0.72
0.042	0.20	0.034	0.14	0.571	0.69			0.139	0.30	-0.029	0.81	0.002	0.32	-0.002	0.14	-0.061	0.27
-0.096	0.32	-0.104	0.28	0.432	0.73	-0.139	0.30			-0.167	0.85	-0.137	0.41	-0.140	0.28	-0.200	0.37
0.071	0.82	0.063	0.81	0.600	1.05	0.029	0.81	0.167	0.85			0.031	0.86	0.027	0.81	-0.032	0.84
0.040	0.34	0.032	0.31	0.569	0.75	-0.002	0.32	0.137	0.41	-0.031	0.86			-0.004	0.31	-0.063	0.39
0.044	0.18	0.036	0.11	0.573	0.69	0.002	0.14	0.140	0.28	-0.027	0.81	0.004	0.31			-0.059	0.25
0.103	0.29	0.095	0.26	0.632	0.72	0.061	0.27	0.200	0.37	0.032	0.84	0.063	0.39	0.059	0.25		
0.299	1.25	0.291	1.24	0.828	1.42	0.257	1.25	0.395	1.27	0.228	1.48	0.259	1.28	0.255	1.24	0.196	1.26
-0.022	0.54	-0.030	0.52	0.507	0.86	-0.064	0.53	0.074	0.58	-0.093	0.95	-0.062	0.60	-0.066	0.52	-0.125	0.57
0.629	1.61	0.621	1.60	1.158	1.74	0.587	1.60	0.725	1.62	0.558	1.79	0.589	1.63	0.585	1.60	0.526	1.62
-0.072	0.24	-0.080	0.20	0.457	0.71	-0.114	0.22	0.024	0.33	-0.143	0.82	-0.112	0.36	-0.116	0.20	-0.175	0.31
0.084	0.19	0.076	0.13	0.613	0.69	0.042	0.16	0.181	0.29	0.013	0.81	0.044	0.32	0.040	0.13	-0.019	0.27
-0.014	0.17	-0.022	0.09	0.515	0.68	-0.056	0.12	0.083	0.28	-0.084	0.80	-0.054	0.31	-0.057	0.09	-0.117	0.25
0.263	0.46	0.255	0.44	0.791	0.81	0.220	0.45	0.359	0.51	0.192	0.91	0.222	0.53	0.219	0.44	0.159	0.50
-0.049	0.48	-0.057	0.46	0.480	0.82	-0.091	0.47	0.048	0.53	-0.119	0.92	-0.089	0.55	-0.092	0.46	-0.152	0.52
0.018	0.18	0.010	0.12	0.547	0.69	-0.024	0.15	0.114	0.29	-0.053	0.81	-0.022	0.32	-0.026	0.12	-0.085	0.26

NMIJ		VNIOFI		CSIR		BNM/INM		MSL		PTB		IEN		KRISS		BIPM	
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$
/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>
-0.299	1.25	0.022	0.54	-0.629	1.61	0.072	0.24	-0.084	0.19	0.014	0.17	-0.263	0.46	0.049	0.48	-0.018	0.18
-0.291	1.24	0.030	0.52	-0.621	1.60	0.080	0.20	-0.076	0.13	0.022	0.09	-0.255	0.44	0.057	0.46	-0.010	0.12
-0.828	1.42	-0.507	0.86	-1.158	1.74	-0.457	0.71	-0.613	0.69	-0.515	0.68	-0.791	0.81	-0.480	0.82	-0.547	0.69
-0.257	1.25	0.064	0.53	-0.587	1.60	0.114	0.22	-0.042	0.16	0.056	0.12	-0.220	0.45	0.091	0.47	0.024	0.15
-0.395	1.27	-0.074	0.58	-0.725	1.62	-0.024	0.33	-0.181	0.29	-0.083	0.28	-0.359	0.51	-0.048	0.53	-0.114	0.29
-0.228	1.48	0.093	0.95	-0.558	1.79	0.143	0.82	-0.013	0.81	0.084	0.80	-0.192	0.91	0.119	0.92	0.053	0.81
-0.259	1.28	0.062	0.60	-0.589	1.63	0.112	0.36	-0.044	0.32	0.054	0.31	-0.222	0.53	0.089	0.55	0.022	0.32
-0.255	1.24	0.066	0.52	-0.585	1.60	0.116	0.20	-0.040	0.13	0.057	0.09	-0.219	0.44	0.092	0.46	0.026	0.12
-0.196	1.26	0.125	0.57	-0.526	1.62	0.175	0.31	0.019	0.27	0.117	0.25	-0.159	0.50	0.152	0.52	0.085	0.26
		0.321	1.34	-0.330	2.03	0.371	1.25	0.215	1.25	0.313	1.24	0.036	1.31	0.348	1.32	0.281	1.24
-0.321	1.34			-0.651	1.68	0.050	0.55	-0.106	0.53	-0.008	0.52	-0.285	0.67	0.027	0.69	-0.040	0.53
0.330	2.03	0.651	1.68			0.701	1.61	0.545	1.60	0.643	1.60	0.366	1.66	0.678	1.66	0.611	1.60
-0.371	1.25	-0.050	0.55	-0.701	1.61			-0.156	0.21	-0.059	0.19	-0.335	0.47	-0.024	0.49	-0.090	0.21
-0.215	1.25	0.106	0.53	-0.545	1.60	0.156	0.21			0.098	0.12	-0.178	0.45	0.133	0.47	0.066	0.14
-0.313	1.24	0.008	0.52	-0.643	1.60	0.059	0.19	-0.098	0.12			-0.276	0.44	0.035	0.46	-0.032	0.10
-0.036	1.31	0.285	0.67	-0.366	1.66	0.335	0.47	0.178	0.45	0.276	0.44			0.311	0.63	0.245	0.44
-0.348	1.32	-0.027	0.69	-0.678	1.66	0.024	0.49	-0.133	0.47	-0.035	0.46	-0.311	0.63			-0.067	0.47
-0.281	1.24	0.040	0.53	-0.611	1.60	0.090	0.21	-0.066	0.14	0.032	0.10	-0.245	0.44	0.067	0.47		

**CCPR-K2.b Spectral responsivity  $\lambda = 750$  nm**  
**Degrees of equivalence:  $D_i$  and expanded uncertainty  $U_i$  ( $k = 2$ )**



**CCPR-K2.b**

At each wavelength, the key comparison reference value  $X_{KCRV}$  is calculated as the weighted mean of the participant's results  $x_i$ , weighted by the inverse square of the individual uncertainties,  $u_i$ , with weights limited to a maximum of 20%.

The degree of equivalence of the  $i$ -th laboratory with respect to the reference value is given by a pair of terms:

$$D_i = (x_i - x_{KCRV}) \text{ and } U_i \text{ its expanded uncertainty } (k = 2), \text{ both expressed in relative units.}$$

The degree of equivalence between two laboratories is given by a pair of terms:

$$D_{ij} = D_i - D_j \text{ and } U_{ij} \text{ its expanded uncertainty } (k = 2), \text{ both expressed in relative units.}$$

**Wavelength = 800 nm**      Lab  $j$        $\rightarrow$

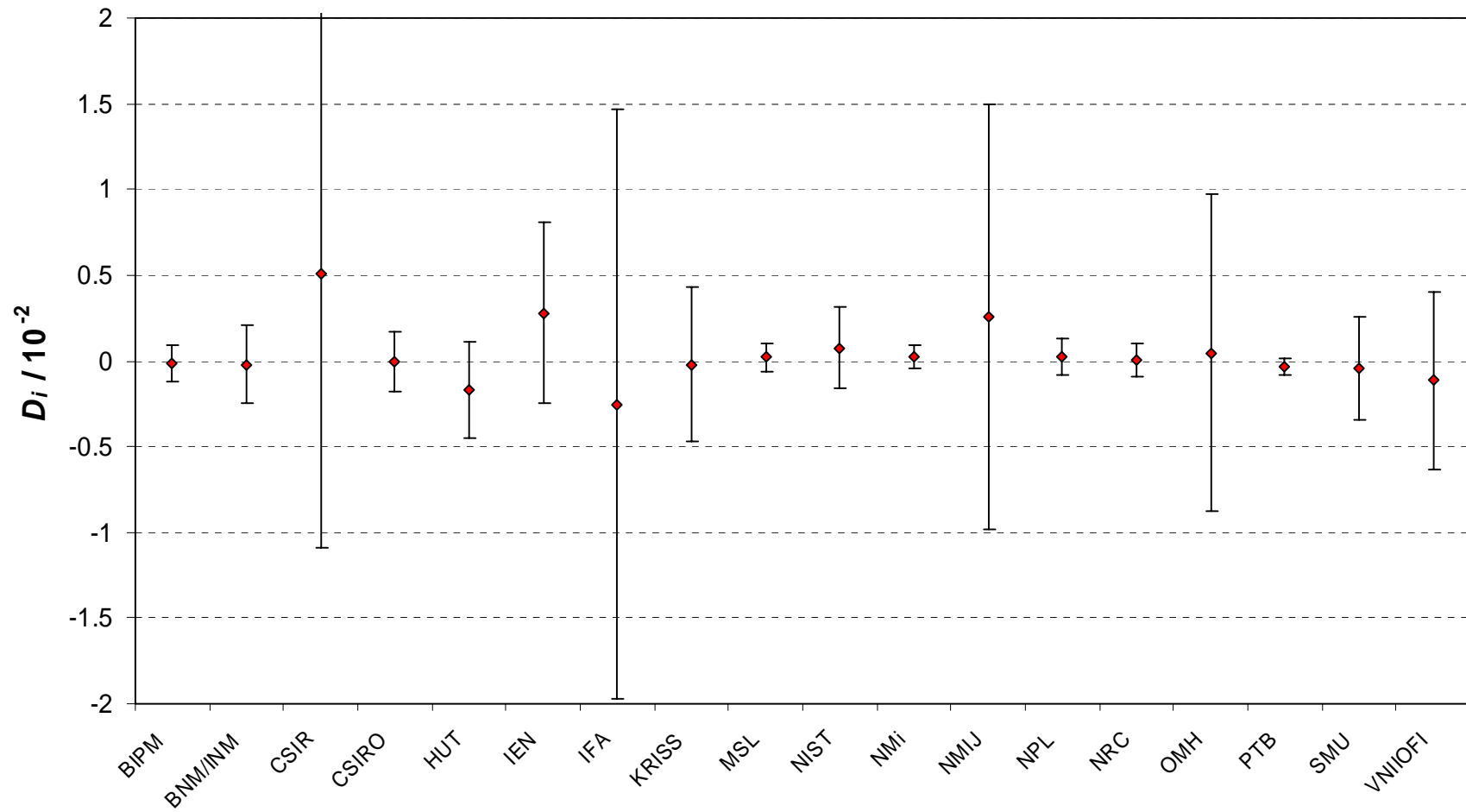
Lab  $i$        $\downarrow$

	$D_i$	$U_i$
	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>
CSIRO	-0.002	0.176
NRC	0.003	0.099
IFA	-0.253	1.720
NPL	0.021	0.108
HUT	-0.166	0.279
OMH	0.046	0.925
SMU	-0.043	0.301
NMi	0.022	0.067
NIST	0.076	0.240
NMIJ	0.255	1.240
VNIIOFI	-0.115	0.516
CSIR	0.512	1.600
BNM/INM	-0.022	0.228
MSL	0.021	0.085
PTB	-0.037	0.047
IEN	0.281	0.531
KRISS	-0.023	0.451
BIPM	-0.013	0.107

CSIRO		NRC		IFA		NPL		HUT		OMH		SMU		NMi		NIST	
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$
/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>
		-0.005	0.21	0.251	1.73	-0.023	0.21	0.164	0.33	-0.048	0.94	0.041	0.35	-0.024	0.20	-0.078	0.30
0.005	0.21			0.256	1.72	-0.017	0.16	0.170	0.30	-0.042	0.93	0.046	0.32	-0.019	0.13	-0.072	0.27
-0.251	1.73	-0.256	1.72			-0.274	1.72	-0.087	1.74	-0.299	1.95	-0.210	1.75	-0.275	1.72	-0.329	1.74
0.023	0.21	0.017	0.16	0.274	1.72			0.187	0.30	-0.025	0.93	0.063	0.32	-0.001	0.14	-0.055	0.27
-0.164	0.33	-0.170	0.30	0.087	1.74	-0.187	0.30			-0.212	0.97	-0.124	0.41	-0.188	0.29	-0.242	0.37
0.048	0.94	0.042	0.93	0.299	1.95	0.025	0.93	0.212	0.97			0.088	0.97	0.024	0.93	-0.030	0.96
-0.041	0.35	-0.046	0.32	0.210	1.75	-0.063	0.32	0.124	0.41	-0.088	0.97			-0.064	0.31	-0.118	0.39
0.024	0.20	0.019	0.13	0.275	1.72	0.001	0.14	0.188	0.29	-0.024	0.93	0.064	0.31			-0.054	0.25
0.078	0.30	0.072	0.27	0.329	1.74	0.055	0.27	0.242	0.37	0.030	0.96	0.118	0.39	0.054	0.25		
0.256	1.25	0.251	1.25	0.507	2.12	0.234	1.25	0.421	1.27	0.209	1.55	0.297	1.28	0.233	1.24	0.179	1.26
-0.113	0.55	-0.118	0.53	0.138	1.80	-0.136	0.53	0.051	0.59	-0.160	1.06	-0.072	0.60	-0.137	0.52	-0.191	0.57
0.514	1.61	0.509	1.60	0.765	2.35	0.491	1.60	0.678	1.63	0.466	1.85	0.555	1.63	0.490	1.60	0.436	1.62
-0.020	0.29	-0.025	0.25	0.231	1.74	-0.043	0.26	0.144	0.36	-0.068	0.95	0.021	0.38	-0.044	0.24	-0.098	0.34
0.023	0.20	0.017	0.14	0.274	1.72	0.000	0.15	0.187	0.30	-0.025	0.93	0.063	0.32	-0.001	0.12	-0.055	0.26
-0.035	0.19	-0.041	0.12	0.216	1.72	-0.058	0.12	0.129	0.29	-0.083	0.93	0.005	0.31	-0.059	0.09	-0.113	0.25
0.283	0.56	0.277	0.54	0.534	1.80	0.260	0.54	0.447	0.60	0.235	1.07	0.323	0.61	0.259	0.54	0.205	0.59
-0.021	0.49	-0.027	0.46	0.230	1.78	-0.044	0.47	0.143	0.53	-0.069	1.03	0.019	0.54	-0.045	0.46	-0.099	0.51
-0.011	0.21	-0.016	0.16	0.240	1.72	-0.033	0.16	0.153	0.30	-0.058	0.93	0.030	0.32	-0.035	0.14	-0.088	0.27

NMIJ		VNIIOFI		CSIR		BNM/INM		MSL		PTB		IEN		KRISS		BIPM	
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$
/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>
-0.256	1.25	0.113	0.55	-0.514	1.61	0.020	0.29	-0.023	0.20	0.035	0.19	-0.283	0.56	0.021	0.49	0.011	0.21
-0.251	1.25	0.118	0.53	-0.509	1.60	0.025	0.25	-0.017	0.14	0.041	0.12	-0.277	0.54	0.027	0.46	0.016	0.16
-0.507	2.12	-0.138	1.80	-0.765	2.35	-0.231	1.74	-0.274	1.72	-0.216	1.72	-0.534	1.80	-0.230	1.78	-0.240	1.72
-0.234	1.25	0.136	0.53	-0.491	1.60	0.043	0.26	0.000	0.15	0.058	0.12	-0.260	0.54	0.044	0.47	0.033	0.16
-0.421	1.27	-0.051	0.59	-0.678	1.63	-0.144	0.36	-0.187	0.30	-0.129	0.29	-0.447	0.60	-0.143	0.53	-0.153	0.30
-0.209	1.55	0.160	1.06	-0.466	1.85	0.068	0.95	0.025	0.93	0.083	0.93	-0.235	1.07	0.069	1.03	0.058	0.93
-0.297	1.28	0.072	0.60	-0.555	1.63	-0.021	0.38	-0.063	0.32	-0.005	0.31	-0.323	0.61	-0.019	0.54	-0.030	0.32
-0.233	1.24	0.137	0.52	-0.490	1.60	0.044	0.24	0.001	0.12	0.059	0.09	-0.259	0.54	0.045	0.46	0.035	0.14
-0.179	1.26	0.191	0.57	-0.436	1.62	0.098	0.34	0.055	0.26	0.113	0.25	-0.205	0.59	0.099	0.51	0.088	0.27
		0.369	1.34	-0.258	2.03	0.276	1.26	0.234	1.24	0.292	1.24	-0.026	1.35	0.278	1.32	0.267	1.25
-0.369	1.34			-0.627	1.68	-0.093	0.57	-0.136	0.53	-0.078	0.52	-0.396	0.74	-0.092	0.69	-0.102	0.53
0.258	2.03	0.627	1.68			0.534	1.62	0.491	1.60	0.549	1.60	0.231	1.69	0.535	1.66	0.525	1.60
-0.276	1.26	0.093	0.57	-0.534	1.62			-0.043	0.25	0.015	0.24	-0.303	0.58	0.001	0.51	-0.009	0.26
-0.234	1.24	0.136	0.53	-0.491	1.60	0.043	0.25			0.058	0.10	-0.260	0.54	0.044	0.46	0.033	0.15
-0.292	1.24	0.078	0.52	-0.549	1.60	-0.015	0.24	-0.058	0.10			-0.318	0.53	-0.014	0.45	-0.025	0.12
0.026	1.35	0.396	0.74	-0.231	1.69	0.303	0.58	0.260	0.54	0.318	0.53			0.304	0.70	0.293	0.54
-0.278	1.32	0.092	0.69	-0.535	1.66	-0.001	0.51	-0.044	0.46	0.014	0.45	-0.304	0.70			-0.010	0.47
-0.267	1.25	0.102	0.53	-0.525	1.60	0.009	0.26	-0.033	0.15	0.025	0.12	-0.293	0.54	0.010	0.47		

**CCPR-K2.b Spectral responsivity  $\lambda = 800$  nm**  
**Degrees of equivalence:  $D_i$  and expanded uncertainty  $U_i$  ( $k = 2$ )**



**CCPR-K2.b**

At each wavelength, the key comparison reference value  $X_{KCRV}$  is calculated as the weighted mean of the participant's results  $x_i$ , weighted by the inverse square of the individual uncertainties,  $u_i$ , with weights limited to a maximum of 20%.

The degree of equivalence of the  $i$ -th laboratory with respect to the reference value is given by a pair of terms:

$$D_i = (x_i - x_{KCRV}) \text{ and } U_i \text{ its expanded uncertainty } (k = 2), \text{ both expressed in relative units.}$$

The degree of equivalence between two laboratories is given by a pair of terms:

$$D_{ij} = D_i - D_j \text{ and } U_{ij} \text{ its expanded uncertainty } (k = 2), \text{ both expressed in relative units.}$$

**Wavelength = 850 nm**      Lab  $j$        $\rightarrow$

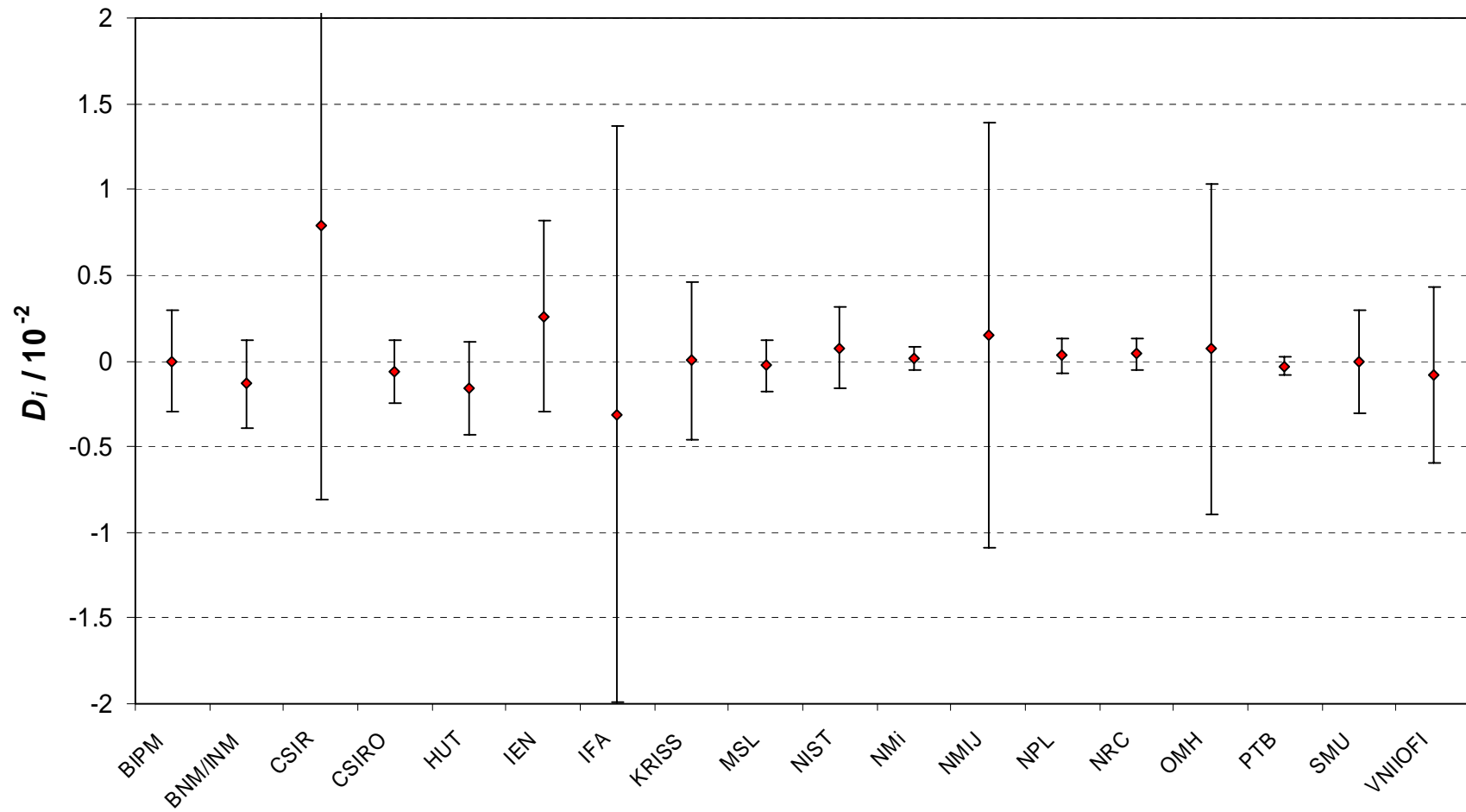
Lab  $i$        $\downarrow$

	$D_i$	$U_i$
	/10 <sup>-2</sup>	/10 <sup>-2</sup>
CSIRO	-0.062	0.181
NRC	0.042	0.093
IFA	-0.313	1.680
NPL	0.031	0.105
HUT	-0.161	0.273
OMH	0.072	0.964
SMU	-0.009	0.300
NMi	0.017	0.069
NIST	0.075	0.239
NMIJ	0.148	1.240
VNIIOFI	-0.080	0.515
CSIR	0.789	1.600
BNM/INM	-0.134	0.258
MSL	-0.027	0.150
PTB	-0.030	0.052
IEN	0.261	0.555
KRISS	0.003	0.460
BIPM	-0.002	0.297

CSIRO		NRC		IFA		NPL		HUT		OMH		SMU		NMi		NIST	
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$
/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>
		-0.104	0.21	0.251	1.69	-0.092	0.22	0.099	0.33	-0.134	0.98	-0.053	0.36	-0.078	0.20	-0.137	0.31
0.104	0.21			0.355	1.68	0.012	0.16	0.203	0.30	-0.030	0.97	0.051	0.32	0.026	0.13	-0.033	0.27
-0.251	1.69	-0.355	1.68			-0.343	1.68	-0.152	1.70	-0.385	1.94	-0.304	1.71	-0.329	1.68	-0.388	1.70
0.092	0.22	-0.012	0.16	0.343	1.68			0.191	0.30	-0.042	0.97	0.039	0.32	0.014	0.14	-0.045	0.27
-0.099	0.33	-0.203	0.30	0.152	1.70	-0.191	0.30			-0.233	1.00	-0.152	0.41	-0.177	0.29	-0.236	0.37
0.134	0.98	0.030	0.97	0.385	1.94	0.042	0.97	0.233	1.00			0.081	1.01	0.056	0.97	-0.003	1.00
0.053	0.36	-0.051	0.32	0.304	1.71	-0.039	0.32	0.152	0.41	-0.081	1.01			-0.025	0.31	-0.084	0.39
0.078	0.20	-0.026	0.13	0.329	1.68	-0.014	0.14	0.177	0.29	-0.056	0.97	0.025	0.31			-0.059	0.25
0.137	0.31	0.033	0.27	0.388	1.70	0.045	0.27	0.236	0.37	0.003	1.00	0.084	0.39	0.059	0.25		
0.210	1.25	0.105	1.25	0.460	2.09	0.117	1.25	0.308	1.27	0.075	1.57	0.156	1.28	0.131	1.24	0.073	1.26
-0.018	0.55	-0.122	0.53	0.233	1.76	-0.110	0.53	0.081	0.59	-0.152	1.09	-0.071	0.60	-0.097	0.52	-0.155	0.57
0.851	1.61	0.747	1.60	1.102	2.32	0.759	1.60	0.950	1.62	0.717	1.87	0.798	1.63	0.773	1.60	0.714	1.62
-0.072	0.32	-0.176	0.28	0.179	1.70	-0.165	0.29	0.027	0.38	-0.206	1.00	-0.125	0.40	-0.151	0.27	-0.209	0.36
0.035	0.24	-0.069	0.19	0.286	1.69	-0.057	0.20	0.134	0.32	-0.099	0.98	-0.018	0.34	-0.043	0.17	-0.102	0.29
0.032	0.19	-0.072	0.11	0.283	1.68	-0.060	0.12	0.131	0.28	-0.102	0.97	-0.021	0.31	-0.046	0.09	-0.105	0.25
0.323	0.59	0.219	0.57	0.573	1.77	0.230	0.57	0.422	0.62	0.189	1.11	0.270	0.63	0.244	0.56	0.186	0.61
0.065	0.50	-0.040	0.47	0.315	1.74	-0.028	0.48	0.163	0.54	-0.070	1.07	0.011	0.55	-0.014	0.47	-0.072	0.52
0.060	0.35	-0.044	0.32	0.311	1.71	-0.033	0.32	0.159	0.41	-0.074	1.01	0.007	0.43	-0.019	0.31	-0.077	0.39

NMIJ		VNIIOFI		CSIR		BNM/INM		MSL		PTB		IEN		KRISS		BIPM	
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$
/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>
-0.210	1.25	0.018	0.55	-0.851	1.61	0.072	0.32	-0.035	0.24	-0.032	0.19	-0.323	0.59	-0.065	0.50	-0.060	0.35
-0.105	1.25	0.122	0.53	-0.747	1.60	0.176	0.28	0.069	0.19	0.072	0.11	-0.219	0.57	0.040	0.47	0.044	0.32
-0.460	2.09	-0.233	1.76	-1.102	2.32	-0.179	1.70	-0.286	1.69	-0.283	1.68	-0.573	1.77	-0.315	1.74	-0.311	1.71
-0.117	1.25	0.110	0.53	-0.759	1.60	0.165	0.29	0.057	0.20	0.060	0.12	-0.230	0.57	0.028	0.48	0.033	0.32
-0.308	1.27	-0.081	0.59	-0.950	1.62	-0.027	0.38	-0.134	0.32	-0.131	0.28	-0.422	0.62	-0.163	0.54	-0.159	0.41
-0.075	1.57	0.152	1.09	-0.717	1.87	0.206	1.00	0.099	0.98	0.102	0.97	-0.189	1.11	0.070	1.07	0.074	1.01
-0.156	1.28	0.071	0.60	-0.798	1.63	0.125	0.40	0.018	0.34	0.021	0.31	-0.270	0.63	-0.011	0.55	-0.007	0.43
-0.131	1.24	0.097	0.52	-0.773	1.60	0.151	0.27	0.043	0.17	0.046	0.09	-0.244	0.56	0.014	0.47	0.019	0.31
-0.073	1.26	0.155	0.57	-0.714	1.62	0.209	0.36	0.102	0.29	0.105	0.25	-0.186	0.61	0.072	0.52	0.077	0.39
		0.228	1.34	-0.642	2.03	0.282	1.27	0.174	1.25	0.177	1.24	-0.113	1.36	0.145	1.32	0.150	1.28
-0.228	1.34			-0.869	1.68	0.054	0.58	-0.053	0.54	-0.050	0.52	-0.341	0.76	-0.083	0.69	-0.078	0.60
0.642	2.03	0.869	1.68			0.923	1.62	0.816	1.61	0.819	1.60	0.528	1.69	0.787	1.67	0.791	1.63
-0.282	1.27	-0.054	0.58	-0.923	1.62			-0.107	0.31	-0.104	0.27	-0.395	0.62	-0.137	0.53	-0.132	0.40
-0.174	1.25	0.053	0.54	-0.816	1.61	0.107	0.31			0.003	0.16	-0.288	0.58	-0.029	0.49	-0.025	0.34
-0.177	1.24	0.050	0.52	-0.819	1.60	0.104	0.27	-0.003	0.16			-0.291	0.56	-0.032	0.46	-0.028	0.30
0.113	1.36	0.341	0.76	-0.528	1.69	0.395	0.62	0.288	0.58	0.291	0.56			0.258	0.72	0.263	0.63
-0.145	1.32	0.083	0.69	-0.787	1.67	0.137	0.53	0.029	0.49	0.032	0.46	-0.258	0.72			0.005	0.55
-0.150	1.28	0.078	0.60	-0.791	1.63	0.132	0.40	0.025	0.34	0.028	0.30	-0.263	0.63	-0.005	0.55		

**CCPR-K2.b Spectral responsivity  $\lambda = 850$  nm**  
**Degrees of equivalence:  $D_i$  and expanded uncertainty  $U_i$  ( $k = 2$ )**





**CCPR-K2.b**

At each wavelength, the key comparison reference value  $X_{KCRV}$  is calculated as the weighted mean of the participant's results  $x_i$ , weighted by the inverse square of the individual uncertainties,  $u_i$ , with weights limited to a maximum of 20%.

The degree of equivalence of the  $i$ -th laboratory with respect to the reference value is given by a pair of terms:

$$D_i = (x_i - X_{KCRV}) \text{ and } U_i \text{ its expanded uncertainty } (k = 2), \text{ both expressed in relative units.}$$

The degree of equivalence between two laboratories is given by a pair of terms:

$$D_{ij} = D_i - D_j \text{ and } U_{ij} \text{ its expanded uncertainty } (k = 2), \text{ both expressed in relative units.}$$

**Wavelength = 900 nm**      Lab  $j$        $\rightarrow$

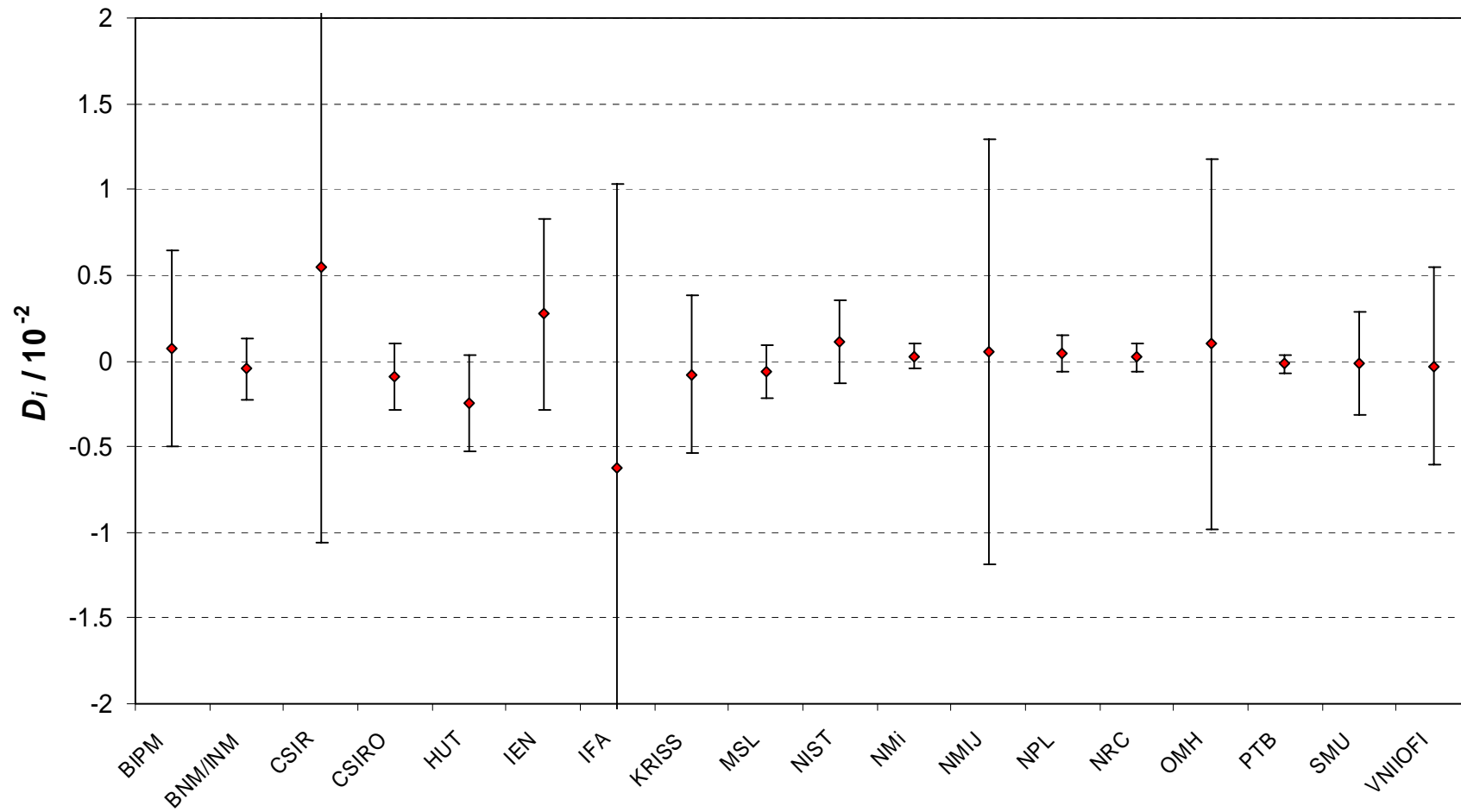
Lab  $i$        $\downarrow$

	$D_i$	$U_i$
	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>
CSIRO	-0.093	0.193
NRC	0.022	0.081
IFA	-0.627	1.660
NPL	0.047	0.105
HUT	-0.244	0.279
OMH	0.098	1.077
SMU	-0.018	0.300
NMi	0.026	0.072
NIST	0.112	0.239
NMIJ	0.050	1.240
VNIIOFI	-0.029	0.575
CSIR	0.543	1.600
BNM/INM	-0.047	0.176
MSL	-0.064	0.151
PTB	-0.018	0.053
IEN	0.273	0.555
KRISS	-0.082	0.460
BIPM	0.071	0.572

CSIRO		NRC		IFA		NPL		HUT		OMH		SMU		NMI		NIST	
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$
/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>
0.115	0.22	-0.115	0.22	0.534	1.67	-0.140	0.23	0.151	0.35	-0.191	1.10	-0.075	0.36	-0.119	0.21	-0.205	0.31
-0.534	1.67	-0.649	1.66	0.649	1.66	-0.025	0.15	0.266	0.30	-0.076	1.08	0.040	0.32	-0.004	0.12	-0.090	0.26
0.140	0.23	0.025	0.15	0.674	1.66	-0.674	1.66	-0.383	1.68	-0.725	1.98	-0.609	1.69	-0.653	1.66	-0.740	1.68
-0.151	0.35	-0.266	0.30	0.383	1.68	-0.291	0.31	0.291	0.31	-0.051	1.08	0.065	0.32	0.021	0.14	-0.065	0.27
0.191	1.10	0.076	1.08	0.725	1.98	0.051	1.08	0.342	1.11	-0.342	1.11	-0.226	0.41	-0.270	0.29	-0.356	0.37
0.075	0.36	-0.040	0.32	0.609	1.69	-0.065	0.32	0.226	0.41	-0.116	1.12	0.116	1.12	0.072	1.08	-0.014	1.11
0.119	0.21	0.004	0.12	0.653	1.66	-0.021	0.14	0.270	0.29	-0.072	1.08	0.044	0.31	-0.044	0.31	-0.131	0.39
0.205	0.31	0.090	0.26	0.740	1.68	0.065	0.27	0.356	0.37	0.014	1.11	0.131	0.39	0.086	0.26	-0.086	0.26
0.143	1.26	0.028	1.24	0.677	2.07	0.003	1.25	0.294	1.27	-0.048	1.64	0.068	1.28	0.024	1.24	-0.062	1.26
0.063	0.61	-0.051	0.58	0.598	1.76	-0.076	0.59	0.215	0.64	-0.127	1.22	-0.011	0.65	-0.055	0.58	-0.142	0.63
0.636	1.61	0.521	1.60	1.170	2.31	0.496	1.60	0.787	1.63	0.445	1.93	0.561	1.63	0.517	1.60	0.431	1.62
0.046	0.27	-0.069	0.20	0.581	1.67	-0.094	0.22	0.198	0.34	-0.144	1.09	-0.028	0.35	-0.073	0.20	-0.159	0.30
0.029	0.25	-0.086	0.18	0.564	1.67	-0.111	0.20	0.181	0.32	-0.161	1.09	-0.045	0.34	-0.090	0.18	-0.176	0.29
0.075	0.20	-0.040	0.10	0.609	1.66	-0.065	0.12	0.226	0.29	-0.116	1.08	0.000	0.31	-0.044	0.09	-0.130	0.25
0.366	0.59	0.251	0.56	0.900	1.75	0.226	0.57	0.517	0.62	0.175	1.21	0.291	0.63	0.247	0.56	0.161	0.61
0.011	0.50	-0.104	0.47	0.546	1.72	-0.129	0.48	0.162	0.54	-0.180	1.17	-0.064	0.55	-0.108	0.47	-0.194	0.52
0.164	0.61	0.049	0.58	0.699	1.76	0.024	0.59	0.316	0.64	-0.027	1.22	0.090	0.65	0.045	0.58	-0.041	0.62

NMIJ		VNIIOFI		CSIR		BNM/INM		MSL		PTB		IEN		KRISS		BIPM	
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$
/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>
-0.143	1.26	-0.063	0.61	-0.636	1.61	-0.046	0.27	-0.029	0.25	-0.075	0.20	-0.366	0.59	-0.011	0.50	-0.164	0.61
-0.028	1.24	0.051	0.58	-0.521	1.60	0.069	0.20	0.086	0.18	0.040	0.10	-0.251	0.56	0.104	0.47	-0.049	0.58
-0.677	2.07	-0.598	1.76	-1.170	2.31	-0.581	1.67	-0.564	1.67	-0.609	1.66	-0.900	1.75	-0.546	1.72	-0.699	1.76
-0.003	1.25	0.076	0.59	-0.496	1.60	0.094	0.22	0.111	0.20	0.065	0.12	-0.226	0.57	0.129	0.48	-0.024	0.59
-0.294	1.27	-0.215	0.64	-0.787	1.63	-0.198	0.34	-0.181	0.32	-0.226	0.29	-0.517	0.62	-0.162	0.54	-0.316	0.64
0.048	1.64	0.127	1.22	-0.445	1.93	0.144	1.09	0.161	1.09	0.116	1.08	-0.175	1.21	0.180	1.17	0.027	1.22
-0.068	1.28	0.011	0.65	-0.561	1.63	0.028	0.35	0.045	0.34	0.000	0.31	-0.291	0.63	0.064	0.55	-0.090	0.65
-0.024	1.24	0.055	0.58	-0.517	1.60	0.073	0.20	0.090	0.18	0.044	0.09	-0.247	0.56	0.108	0.47	-0.045	0.58
0.062	1.26	0.142	0.63	-0.431	1.62	0.159	0.30	0.176	0.29	0.130	0.25	-0.161	0.61	0.194	0.52	0.041	0.62
-0.079	1.37	0.079	1.37	-0.493	2.03	0.096	1.25	0.113	1.25	0.068	1.24	-0.223	1.36	0.132	1.32	-0.021	1.37
0.493	2.03	0.572	1.70	-0.572	1.70	0.017	0.61	0.034	0.60	-0.011	0.58	-0.302	0.80	0.052	0.74	-0.101	0.81
-0.096	1.25	-0.017	0.61	-0.590	1.61	0.017	0.24	0.017	0.24	-0.029	0.19	-0.320	0.59	0.035	0.50	-0.118	0.60
-0.113	1.25	-0.034	0.60	-0.607	1.61	-0.017	0.24	0.046	0.17	-0.046	0.17	-0.337	0.58	0.018	0.49	-0.135	0.60
-0.068	1.24	0.011	0.58	-0.561	1.60	0.029	0.19	0.046	0.17	-0.291	0.56	0.064	0.47	0.064	0.47	-0.089	0.58
0.223	1.36	0.302	0.80	-0.270	1.69	0.320	0.59	0.337	0.58	0.291	0.56	0.355	0.72	0.355	0.72	0.202	0.80
-0.132	1.32	-0.052	0.74	-0.625	1.67	-0.035	0.50	-0.018	0.49	-0.064	0.47	-0.355	0.72	-0.355	0.72	-0.153	0.74
0.021	1.37	0.101	0.81	-0.472	1.70	0.118	0.60	0.135	0.60	0.089	0.58	-0.202	0.80	0.153	0.74	-0.153	0.74

**CCPR-K2.b Spectral responsivity  $\lambda = 900$  nm**  
**Degrees of equivalence:  $D_i$  and expanded uncertainty  $U_i$  ( $k = 2$ )**



**CCPR-K2.b**

At each wavelength, the key comparison reference value  $X_{KCRV}$  is calculated as the weighted mean of the participant's results  $x_i$ , weighted by the inverse square of the individual uncertainties,  $u_i$ , with weights limited to a maximum of 20%.

The degree of equivalence of the  $i$ -th laboratory with respect to the reference value is given by a pair of terms:  
 $D_i = (x_i - X_{KCRV})$  and  $U_i$  its expanded uncertainty ( $k = 2$ ), both expressed in relative units.

The degree of equivalence between two laboratories is given by a pair of terms:  
 $D_{ij} = D_i - D_j$  and  $U_{ij}$  its expanded uncertainty ( $k = 2$ ), both expressed in relative units.

**Wavelength = 950 nm**      Lab  $j$        $\rightarrow$

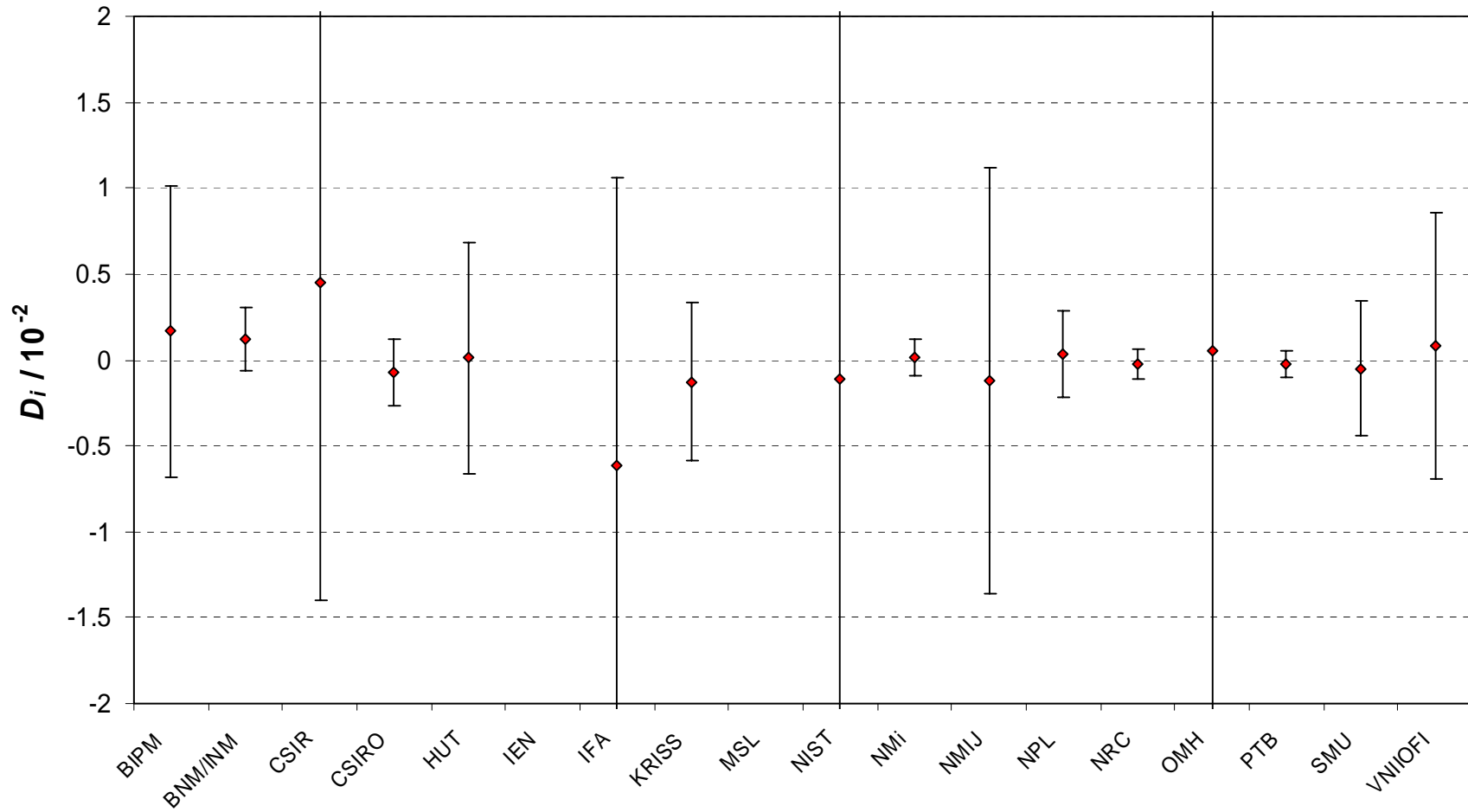
Lab  $i$        $\downarrow$

	$D_i$	$U_i$
	/10 <sup>-2</sup>	/10 <sup>-2</sup>
CSIRO	-0.071	0.195
NRC	-0.023	0.090
IFA	-0.615	1.679
NPL	0.031	0.251
HUT	0.011	0.672
OMH	0.056	2.651
SMU	-0.049	0.397
NMi	0.015	0.110
NIST	-0.111	2.579
NMIJ	-0.119	1.239
VNIOFI	0.080	0.774
CSIR	0.448	1.849
BNM/INM	0.123	0.183
MSL		
PTB	-0.024	0.075
IEN		
KRISS	-0.127	0.458
BIPM	0.167	0.845

CSIRO		NRC		IFA		NPL		HUT		OMH		SMU		NMi		NIST	
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$
/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>
		-0.048	0.23	0.544	1.69	-0.102	0.34	-0.082	0.71	-0.127	2.66	-0.022	0.46	-0.086	0.25	0.040	2.59
0.048	0.23			0.592	1.68	-0.054	0.28	-0.034	0.68	-0.079	2.65	0.026	0.42	-0.038	0.15	0.089	2.58
-0.544	1.69	-0.592	1.68			-0.646	1.70	-0.626	1.81	-0.670	3.14	-0.566	1.73	-0.630	1.69	-0.503	3.08
0.102	0.34	0.054	0.28	0.646	1.70			0.020	0.73	-0.024	2.66	0.080	0.48	0.016	0.29	0.143	2.59
0.082	0.71	0.034	0.68	0.626	1.81	-0.020	0.73			-0.045	2.74	0.060	0.79	-0.004	0.69	0.123	2.67
0.127	2.66	0.079	2.65	0.670	3.14	0.024	2.66	0.045	2.74			0.105	2.68	0.041	2.65	0.167	3.70
0.022	0.46	-0.026	0.42	0.566	1.73	-0.080	0.48	-0.060	0.79	-0.105	2.68			-0.064	0.42	0.063	2.61
0.086	0.25	0.038	0.15	0.630	1.69	-0.016	0.29	0.004	0.69	-0.041	2.65	0.064	0.42			0.127	2.58
-0.040	2.59	-0.089	2.58	0.503	3.08	-0.143	2.59	-0.123	2.67	-0.167	3.70	-0.063	2.61	-0.127	2.58		
-0.048	1.26	-0.096	1.25	0.496	2.09	-0.150	1.27	-0.130	1.41	-0.175	2.93	-0.070	1.31	-0.134	1.25	-0.007	2.86
0.151	0.81	0.103	0.78	0.695	1.85	0.049	0.82	0.069	1.03	0.024	2.76	0.129	0.88	0.065	0.79	0.192	2.70
0.519	1.86	0.470	1.85	1.062	2.50	0.416	1.87	0.437	1.97	0.392	3.23	0.496	1.90	0.433	1.86	0.559	3.18
0.194	0.29	0.146	0.22	0.738	1.69	0.092	0.33	0.112	0.71	0.067	2.66	0.172	0.45	0.108	0.24	0.234	2.59
0.047	0.22	-0.001	0.11	0.591	1.68	-0.055	0.27	-0.035	0.68	-0.080	2.65	0.025	0.41	-0.039	0.14	0.087	2.58
-0.056	0.51	-0.104	0.47	0.488	1.74	-0.158	0.54	-0.138	0.82	-0.183	2.69	-0.078	0.62	-0.142	0.48	-0.016	2.62
0.238	0.88	0.190	0.85	0.782	1.88	0.136	0.89	0.156	1.09	0.111	2.78	0.216	0.94	0.152	0.86	0.279	2.72

NMIJ		VNIOFI		CSIR		BNM/INM		MSL		PTB		IEN		KRISS		BIPM	
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$
/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>	/10 <sup>-2</sup>
		-0.151	0.81	-0.519	1.86	-0.194	0.29			-0.047	0.22			0.056	0.51	-0.238	0.88
0.096	1.25	-0.103	0.78	-0.470	1.85	-0.146	0.22			0.001	0.11			0.104	0.47	-0.190	0.85
-0.496	2.09	-0.695	1.85	-1.062	2.50	-0.738	1.69			-0.591	1.68			-0.488	1.74	-0.782	1.88
0.150	1.27	-0.049	0.82	-0.416	1.87	-0.092	0.33			0.055	0.27			0.158	0.54	-0.136	0.89
0.130	1.41	-0.069	1.03	-0.437	1.97	-0.112	0.71			0.035	0.68			0.138	0.82	-0.156	1.09
0.175	2.93	-0.024	2.76	-0.392	3.23	-0.067	2.66			0.080	2.65			0.183	2.69	-0.111	2.78
0.070	1.31	-0.129	0.88	-0.496	1.90	-0.172	0.45			-0.025	0.41			0.078	0.62	-0.216	0.94
0.134	1.25	-0.065	0.79	-0.433	1.86	-0.108	0.24			0.039	0.14			0.142	0.48	-0.152	0.86
0.007	2.86	-0.192	2.70	-0.559	3.18	-0.234	2.59			-0.087	2.58			0.016	2.62	-0.279	2.72
		-0.199	1.47	-0.567	2.23	-0.242	1.26			-0.095	1.24			0.008	1.33	-0.286	1.50
0.199	1.47			-0.368	2.01	-0.043	0.80			0.104	0.78			0.207	0.91	-0.087	1.15
0.567	2.23	0.368	2.01			0.325	1.86			0.472	1.85			0.575	1.91	0.281	2.04
0.242	1.26	0.043	0.80	-0.325	1.86					0.147	0.21			0.250	0.51	-0.044	0.87
0.095	1.24	-0.104	0.78	-0.472	1.85	-0.147	0.21							0.103	0.47	-0.191	0.85
-0.008	1.33	-0.207	0.91	-0.575	1.91	-0.250	0.51			-0.103	0.47					-0.294	0.97
0.286	1.50	0.087	1.15	-0.281	2.04	0.044	0.87			0.191	0.85			0.294	0.97		

**CCPR-K2.b Spectral responsivity  $\lambda = 950$  nm**  
**Degrees of equivalence:  $D_i$  and expanded uncertainty  $U_i$  ( $k = 2$ )**



**CCPR-K2.b**

At each wavelength, the key comparison reference value  $X_{KCRV}$  is calculated as the weighted mean of the participant's results  $x_i$ , weighted by the inverse square of the individual uncertainties,  $u_i$ , with weights limited to a maximum of 20%.

The degree of equivalence of the  $i$ -th laboratory with respect to the reference value is given by a pair of terms:

$$D_i = (x_i - x_{KCRV}) \text{ and } U_i \text{ its expanded uncertainty } (k = 2), \text{ both expressed in relative units.}$$

The degree of equivalence between two laboratories is given by a pair of terms:

$$D_{ij} = D_i - D_j \text{ and } U_{ij} \text{ its expanded uncertainty } (k = 2), \text{ both expressed in relative units.}$$

**Wavelength = 1000 nm**    Lab  $j$   $\rightarrow$

Lab  $i$   $\downarrow$

	$D_i$	$U_i$
	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>
CSIRO	-0.435	0.304
NRC	-0.149	0.375
IFA	-1.035	1.690
NPL	-0.056	0.318
HUT	-0.101	2.587
OMH	0.065	1.837
SMU	-0.075	0.504
NMi	-0.032	0.531
NIST	-0.164	1.759
NMIJ	-0.154	1.270
VNIIOFI	0.258	0.942
CSIR	0.478	2.416
BNM/INM	1.038	0.356
MSL		
PTB	-0.122	0.258
IEN		
KRISS	-0.062	0.545
BIPM	0.252	0.985

CSIRO		NRC		IFA		NPL		HUT		OMH		SMU		NMi		NIST		
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	
/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	
		-0.286	0.52	0.600	1.73	-0.378	0.48	-0.333	2.61	-0.500	1.86	-0.360	0.62	-0.403	0.64	-0.271	1.80	
0.286	0.52			0.886	1.74	-0.092	0.53	-0.047	2.62	-0.214	1.87	-0.074	0.66	-0.117	0.68	0.015	1.81	
-0.600	1.73	-0.886	1.74			-0.978	1.73	-0.933	3.10	-1.100	2.50	-0.960	1.77	-1.003	1.78	-0.871	2.45	
0.378	0.48	0.092	0.53	0.978	1.73			0.045	2.61	-0.122	1.86	0.018	0.63	-0.025	0.65	0.108	1.80	
0.333	2.61	0.047	2.62	0.933	3.10	-0.045	2.61			-0.167	3.17	-0.026	2.64	-0.070	2.65	0.063	3.13	
0.500	1.86	0.214	1.87	1.100	2.50	0.122	1.86	0.167	3.17			0.140	1.90	0.097	1.91	0.229	2.54	
0.360	0.62	0.074	0.66	0.960	1.77	-0.018	0.63	0.026	2.64	-0.140	1.90			-0.043	0.76	0.089	1.84	
0.403	0.64	0.117	0.68	1.003	1.78	0.025	0.65	0.070	2.65	-0.097	1.91	0.043	0.76			0.132	1.85	
0.271	1.80	-0.015	1.81	0.871	2.45	-0.108	1.80	-0.063	3.13	-0.229	2.54	-0.089	1.84	-0.132	1.85			
0.281	1.32	-0.005	1.34	0.881	2.12	-0.097	1.32	-0.052	2.89	-0.219	2.23	-0.079	1.38	-0.122	1.39	0.010	2.18	
0.692	1.01	0.407	1.03	1.293	1.94	0.314	1.01	0.359	2.76	0.193	2.06	0.333	1.09	0.289	1.10	0.422	2.00	
0.912	2.44	0.626	2.45	1.512	2.95	0.534	2.44	0.579	3.54	0.412	3.03	0.553	2.48	0.509	2.48	0.642	2.99	
1.472	0.51	1.186	0.55	2.072	1.74	1.094	0.51	1.139	2.62	0.972	1.87	1.113	0.65	1.069	0.67	1.202	1.81	
0.312	0.44	0.026	0.49	0.912	1.72	-0.066	0.45	-0.021	2.61	-0.188	1.85	-0.048	0.59	-0.091	0.62	0.041	1.79	
0.372	0.65	0.086	0.69	0.972	1.79	-0.006	0.66	0.039	2.65	-0.128	1.92	0.013	0.77	-0.031	0.78	0.102	1.85	
0.687	1.05	0.401	1.07	1.287	1.97	0.309	1.05	0.353	2.77	0.187	2.08	0.327	1.12	0.284	1.14	0.416	2.03	

NMIJ		VNIIOFI		CSIR		BNM/INM		MSL		PTB		IEN		KRISS		BIPM		
$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	$D_{ij}$	$U_{ij}$	
/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>	
		-0.281	1.32	-0.692	1.01	-0.912	2.44	-1.472	0.51	-0.312	0.44			-0.372	0.65	-0.687	1.05	
0.005	1.34	-0.407	1.03	-0.626	2.45	-1.186	0.55			-0.026	0.49			-0.086	0.69	-0.401	1.07	
-0.881	2.12	-1.293	1.94	-1.512	2.95	-2.072	1.74			-0.912	1.72			-0.972	1.79	-1.287	1.97	
0.097	1.32	-0.314	1.01	-0.534	2.44	-1.094	0.51			0.066	0.45			0.006	0.66	-0.309	1.05	
0.052	2.89	-0.359	2.76	-0.579	3.54	-1.139	2.62			0.021	2.61			-0.039	2.65	-0.353	2.77	
0.219	2.23	-0.193	2.06	-0.412	3.03	-0.972	1.87			0.188	1.85			0.128	1.92	-0.187	2.08	
0.079	1.38	-0.333	1.09	-0.553	2.48	-1.113	0.65			0.048	0.59			-0.013	0.77	-0.327	1.12	
0.122	1.39	-0.289	1.10	-0.509	2.48	-1.069	0.67			0.091	0.62			0.031	0.78	-0.284	1.14	
-0.010	2.18	-0.422	2.00	-0.642	2.99	-1.202	1.81			-0.041	1.79			-0.102	1.85	-0.416	2.03	
		-0.412	1.59	-0.631	2.74	-1.191	1.33			-0.031	1.31			-0.091	1.40	-0.406	1.62	
0.412	1.59			-0.220	2.60	-0.780	1.02			0.380	0.99			0.320	1.11	0.006	1.38	
0.631	2.74	0.220	2.60			-0.560	2.45			0.600	2.44			0.540	2.48	0.226	2.62	
1.191	1.33	0.780	1.02	0.560	2.45					1.160	0.48			1.100	0.68	0.786	1.07	
0.031	1.31	-0.380	0.99	-0.600	2.44	-1.160	0.48							-0.060	0.63	-0.375	1.03	
0.091	1.40	-0.320	1.11	-0.540	2.48	-1.100	0.68			0.060	0.63					-0.314	1.14	
0.406	1.62	-0.006	1.38	-0.226	2.62	-0.786	1.07			0.375	1.03			0.314	1.14			

	$D_i$	$U_i$
	/ 10 <sup>-2</sup>	/ 10 <sup>-2</sup>
CSIRO	-0.435	0.304
NRC	-0.149	0.375
IFA	-1.035	1.690
NPL	-0.056	0.318
HUT	-0.101	2.587
OMH	0.065	1.837
SMU	-0.075	0.504
NMi	-0.032	0.531
NIST	-0.164	1.759
NMIJ	-0.154	1.270
VNIIOFI	0.258	0.942
CSIR	0.478	2.416
BNM/INM	1.038	0.356
MSL		
PTB	-0.122	0.258
IEN		
KRISS	-0.062	0.545
BIPM	0.252	0.985

**CCPR-K2.b Spectral responsivity  $\lambda = 1000$  nm**  
**Degrees of equivalence:  $D_i$  and expanded uncertainty  $U_i$  ( $k = 2$ )**

