

## Key comparison CCAUV.A-K1

MEASURAND : Pressure sensitivity level of laboratory standard microphone type LS1P

NOMINAL VALUE : 0 dB

$x_i$ : result of measurements carried out by laboratory  $i$  (designated as  $M_i$  in the CCAUV.A-K1 Final Report)  
 The quoted pressure sensitivity levels are the mean of measurements on two microphones, relative to the arithmetic mean value of all such measurement made in this key comparison.  
 The nominal value is therefore 0 dB, the key comparison reference value.

$u_i$ : combined standard uncertainty of  $x_i$   
 The uncertainty quoted in the table is  $2u_i$ , so that it can be given at a resolution consistent with the measured data.

Frequency Lab $i$	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		1250 Hz		1600 Hz		2000 Hz	
	$x_i$ / dB	$2u_i$ / dB	$x_i$ / dB	$2u_i$ / dB	$x_i$ / dB	$2u_i$ / dB	$x_i$ / dB	$2u_i$ / dB	$x_i$ / dB	$2u_i$ / dB	$x_i$ / dB	$2u_i$ / dB	$x_i$ / dB	$2u_i$ / dB	$x_i$ / dB	$2u_i$ / dB
NPL	0.02	0.03	0.01	0.03	0.01	0.03	0.01	0.03	0.01	0.03	0.01	0.03	0.02	0.03	0.01	0.03
CENAM	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.03	0.00	0.03	0.00	0.03	0.01	0.03	0.01	0.03
CSIR-NML	0.01	0.05	0.01	0.05	0.02	0.05	0.02	0.05	0.02	0.05	0.02	0.05	0.02	0.05	0.01	0.05
NMIA	-	-	-	-	0.02	0.04	0.01	0.04	0.01	0.04	-	-	-	-	-	-
DPLA	0.00	0.04	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.01	0.03	0.01	0.03	0.00	0.03
NMIJ	0.00	0.05	0.00	0.04	-0.01	0.04	-0.01	0.04	-0.01	0.04	-0.02	0.04	-0.01	0.04	-0.02	0.04
GUM	0.01	0.03	0.01	0.03	0.01	0.03	0.01	0.03	0.00	0.03	0.00	0.03	0.01	0.03	0.01	0.03
KRISS	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.01	0.03	0.01	0.03	0.01	0.03
NIST	-0.01	0.04	0.00	0.04	-0.01	0.04	0.00	0.04	-0.02	0.04	-0.02	0.04	-0.02	0.04	-0.02	0.04
NRC	-0.04	0.04	-0.04	0.04	-0.04	0.03	-0.04	0.04	-0.03	0.04	-0.03	0.04	-0.03	0.04	-0.03	0.04
PTB	0.00	0.03	0.01	0.03	0.01	0.03	0.01	0.03	0.01	0.03	0.01	0.03	0.02	0.03	0.01	0.03
VNIIFTRI	-0.01	0.08	0.00	0.05	0.00	0.05	0.00	0.05	0.00	0.05	-0.01	0.05	-0.01	0.05	-0.01	0.05

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 The quoted pressure sensitivity levels are the mean of measurements on two microphones, relative to the arithmetic mean value of all such measurement made in this key comparison.  
 The nominal value is therefore 0 dB, the key comparison reference value.

$u_i$ : combined standard uncertainty of  $x_i$   
 The uncertainty quoted in the table is  $2u_i$ , so that it can be given at a resolution consistent with the measured data.

Frequency $\Rightarrow$ Lab $i$ $\Downarrow$	2500 Hz		3150 Hz		4000 Hz		5000 Hz		6300 Hz		8000 Hz	
	$x_i$ / dB	$2u_i$ / dB	$x_i$ / dB	$2u_i$ / dB	$x_i$ / dB	$2u_i$ / dB	$x_i$ / dB	$2u_i$ / dB	$x_i$ / dB	$2u_i$ / dB	$x_i$ / dB	$2u_i$ / dB
NPL	0.02	0.03	0.02	0.04	0.02	0.04	0.01	0.05	0.02	0.05	0.03	0.05
CENAM	0.01	0.03	0.01	0.03	0.01	0.05	0.02	0.05	0.01	0.06	-0.01	0.10
CSIR-NML	0.02	0.05	0.01	0.05	0.01	0.06	0.01	0.07	0.03	0.06	0.02	0.07
NMIA	-	-	-	-	-	-	-	-	-	-	-	-
DPLA	0.01	0.03	0.01	0.03	0.01	0.03	0.02	0.04	0.03	0.05	0.01	0.06
NMIJ	-0.03	0.04	-0.03	0.04	-0.04	0.04	-0.05	0.05	-0.06	0.06	-0.05	0.06
GUM	0.01	0.03	0.01	0.03	0.02	0.04	0.01	0.05	0.02	0.05	0.04	0.05
KRISS	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.01	0.04	0.02	0.04
NIST	-0.01	0.04	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.04	-0.01	0.12
NRC	-0.03	0.04	-0.03	0.04	-0.04	0.04	-0.04	0.04	-0.04	0.04	-0.05	0.04
PTB	0.02	0.03	0.01	0.03	0.01	0.03	0.02	0.05	0.02	0.05	-0.01	0.05
VNIIFTRI	-0.02	0.05	-0.02	0.05	-0.03	0.06	-0.03	0.09	-0.02	0.14	0.02	0.23

## Key comparison EUROMET.AUV.A-K1

MEASURAND : Pressure sensitivity level of laboratory standard microphone type LS1P

NOMINAL VALUE : 0 dB

$x_{i\text{-EUR}}$ : result of measurements carried out by laboratory  $i$  (designated as  $M_i$  in the EUROMET.AUV.A-K1 Final Report)  
The quoted pressure sensitivity levels are relative to internal EUROMET reference values, computed as explained on page 3 of the EUROMET.AUV.A-K1 Final Report for each frequency, so the nominal value is 0 dB by design.

$u_{i\text{-EUR}}$ : combined standard uncertainty of  $x_{i\text{-EUR}}$   
The uncertainty quoted in the table is  $2u_{i\text{-EUR}}$ , so that it can be given at a resolution consistent with the measured data.

Frequency Lab $i$	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		1250 Hz		1600 Hz		2000 Hz	
	$x_{i\text{-EUR}}$ / dB	$2u_{i\text{-EUR}}$ / dB	$x_{i\text{-EUR}}$ / dB	$2u_{i\text{-EUR}}$ / dB	$x_{i\text{-EUR}}$ / dB	$2u_{i\text{-EUR}}$ / dB	$x_{i\text{-EUR}}$ / dB	$2u_{i\text{-EUR}}$ / dB	$x_{i\text{-EUR}}$ / dB	$2u_{i\text{-EUR}}$ / dB	$x_{i\text{-EUR}}$ / dB	$2u_{i\text{-EUR}}$ / dB	$x_{i\text{-EUR}}$ / dB	$2u_{i\text{-EUR}}$ / dB	$x_{i\text{-EUR}}$ / dB	$2u_{i\text{-EUR}}$ / dB
NPL	-0.01	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.01	0.03	0.01	0.03
DPLA	-0.03	0.04	-0.01	0.03	-0.01	0.03	-0.01	0.03	-0.01	0.03	-0.01	0.03	0.00	0.03	-0.01	0.03
BEV	-0.02	0.06	0.00	0.03	-0.01	0.03	-0.01	0.03	-0.01	0.03	-0.02	0.03	-0.01	0.03	-0.02	0.03
SP	0.00	0.05	0.01	0.04	0.01	0.04	0.00	0.04	0.01	0.04	0.01	0.04	0.00	0.04	0.00	0.04
IEN	-0.02	0.05	0.00	0.05	-0.01	0.05	0.00	0.05	-0.02	0.05	-0.03	0.05	-0.03	0.05	-0.02	0.05
PTB	0.00	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.01	0.03	0.00	0.03	0.01	0.03	0.02	0.03
UME	0.03	0.05	0.03	0.05	0.03	0.05	0.02	0.05	0.05	0.05	0.04	0.05	0.06	0.05	0.07	0.05
METAS	-0.04	0.03	-0.02	0.03	-0.01	0.03	-0.02	0.03	-0.02	0.03	-	-	-0.02	0.03	-0.04	0.03
SMU	0.02	0.04	0.01	0.04	0.01	0.04	0.02	0.04	0.01	0.04	0.00	0.04	0.01	0.04	0.02	0.04
OMH	0.03	0.07	0.04	0.07	0.04	0.07	0.02	0.07	0.00	0.07	-0.01	0.07	0.00	0.07	0.00	0.07
CMI	-	-	-0.03	0.03	-0.04	0.03	-0.03	0.03	-0.04	0.03	-	-	-	-	-	-

Results obtained at 10 kHz are not displayed in this Table, because they cannot be linked to CCAUV.A-K1 results, for which no data were taken at this frequency. They can be found in Table 2 on page 4 of the EUROMET.AUV.A-K1 Final Report.

## Key comparison EUROMET.AUV.A-K1

MEASURAND : Pressure sensitivity level of laboratory standard microphone type LS1P

NOMINAL VALUE : 0 dB

$x_{i-EUR}$ : result of measurements carried out by laboratory  $i$  (designated as  $M_i$  in the EUROMET.AUV.A-K1 Final Report)  
The quoted pressure sensitivity levels are relative to internal EUROMET reference values, computed as explained on page 3 of the EUROMET.AUV.A-K1 Final Report for each frequency, so the nominal value is 0 dB by design.

$u_{i-EUR}$ : combined standard uncertainty of  $x_{i-EUR}$   
The uncertainty quoted in the table is  $2u_{i-EUR}$ , so that it can be given at a resolution consistent with the measured data.

Frequency $\Rightarrow$ Lab $i$ $\Downarrow$	2500 Hz		3150 Hz		4000 Hz		5000 Hz		6300 Hz		8000 Hz	
	$x_{i-EUR}$ / dB	$2u_{i-EUR}$ / dB	$x_{i-EUR}$ / dB	$2u_{i-EUR}$ / dB	$x_{i-EUR}$ / dB	$2u_{i-EUR}$ / dB	$x_{i-EUR}$ / dB	$2u_{i-EUR}$ / dB	$x_{i-EUR}$ / dB	$2u_{i-EUR}$ / dB	$x_{i-EUR}$ / dB	$2u_{i-EUR}$ / dB
NPL	0.00	0.04	0.01	0.04	0.01	0.04	0.01	0.05	0.03	0.05	0.03	0.05
DPLA	-0.01	0.03	0.00	0.03	0.01	0.03	0.02	0.04	0.02	0.05	0.00	0.06
BEV	-0.02	0.03	-0.02	0.03	-0.02	0.03	-0.03	0.04	-0.06	0.05	-0.09	0.06
SP	-0.01	0.04	0.00	0.05	0.00	0.05	0.00	0.06	0.01	0.07	0.03	0.10
IEN	-0.02	0.05	-0.02	0.05	-0.03	0.05	-0.03	0.05	-0.03	0.05	0.04	0.05
PTB	0.01	0.03	0.02	0.03	0.02	0.03	0.03	0.06	0.05	0.06	0.05	0.06
UME	0.05	0.05	0.02	0.05	0.02	0.05	0.03	0.10	-0.01	0.10	-0.03	0.10
METAS	-	-	0.00	0.03	0.00	0.03	-	-	0.01	0.05	-0.01	0.04
SMU	0.02	0.04	-	-	-	-	-	-	-	-	-	-
OMH	-0.02	0.07	-0.01	0.07	-0.02	0.07	-0.03	0.07	-0.03	0.07	-0.04	0.07
CMI	-	-	-	-	-	-	-	-	-	-	-	-

Results obtained at 10 kHz are not displayed in this Table, because they cannot be linked to CCAUV.A-K1 results, for which no data were taken at this frequency. They can be found in Table 2 on page 4 of the EUROMET.AUV.A-K1 Final Report.

Key comparison APMP.AUV.A-K1

MEASURAND : Pressure sensitivity level of laboratory standard microphone type LS1P  
 NOMINAL VALUE : 0 dB

$x_{i-APMP}$ : result of measurements carried out by laboratory *i*  
 The quoted pressure sensitivity levels are relative to internal APMP reference values, computed as explained on page 16 of the APMP.AUV.A-K1 Final Report for each frequency, so the nominal value is 0 dB by design.

$u_{i-APMP}$ : combined standard uncertainty of  $x_{i-APMP}$   
 The uncertainty quoted in the table is  $2u_{i-APMP}$ , so that it can be given at a resolution consistent with the measured data.

Frequency $\Rightarrow$ Lab <i>i</i> $\Downarrow$	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		1250 Hz		1600 Hz		2000 Hz	
	$x_{i-APMP}$ / dB	$2u_{i-APMP}$ / dB	$x_{i-APMP}$ / dB	$2u_{i-APMP}$ / dB	$x_{i-APMP}$ / dB	$2u_{i-APMP}$ / dB	$x_{i-APMP}$ / dB	$2u_{i-APMP}$ / dB	$x_{i-APMP}$ / dB	$2u_{i-APMP}$ / dB	$x_{i-APMP}$ / dB	$2u_{i-APMP}$ / dB	$x_{i-APMP}$ / dB	$2u_{i-APMP}$ / dB	$x_{i-APMP}$ / dB	$2u_{i-APMP}$ / dB
CMS/ITRI	0.00	0.04	0.02	0.04	0.02	0.04	0.01	0.04	0.01	0.04	0.01	0.04	0.01	0.04	0.01	0.04
KRISS	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03
NIM	-0.01	0.05	-0.01	0.05	-0.01	0.05	-0.01	0.05	-0.01	0.05	-0.01	0.05	-0.01	0.05	-0.01	0.05
NIMT	0.00	0.04	0.00	0.04	0.00	0.04	0.01	0.04	0.01	0.04	0.00	0.04	0.01	0.04	0.01	0.04
NMIA	0.00	0.04	0.00	0.04	0.00	0.04	0.01	0.04	0.01	0.04	0.00	0.04	0.01	0.04	0.01	0.04
NML-SIRIM	0.00	0.04	0.00	0.03	0.00	0.03	0.01	0.03	0.01	0.03	0.00	0.03	0.00	0.03	0.01	0.03
NPLI	-0.02	0.07	-0.02	0.07	-0.01	0.07	-0.02	0.07	-0.01	0.07	-0.01	0.07	-0.01	0.07	-0.01	0.07
SCL	0.00	0.05	0.00	0.05	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.04
NMIJ	0.01	0.05	0.00	0.04	0.00	0.04	0.00	0.04	-0.01	0.04	-0.01	0.04	-0.01	0.04	-0.02	0.04

## Key comparison APMP.AUV.A-K1

MEASURAND : Pressure sensitivity level of laboratory standard microphone type LS1P

NOMINAL VALUE : 0 dB

$x_{i-APMP}$ : result of measurements carried out by laboratory  $i$

The quoted pressure sensitivity levels are relative to internal APMP reference values, computed as explained on page 16 of the APMP.AUV.A-K1 Final Report for each frequency, so the nominal value is 0 dB by design.

$u_{i-APMP}$ : combined standard uncertainty of  $x_{i-APMP}$

The uncertainty quoted in the table is  $2u_{i-APMP}$ , so that it can be given at a resolution consistent with the measured data.

Frequency $\Rightarrow$ Lab $i$ $\Downarrow$	2500 Hz		3150 Hz		4000 Hz		5000 Hz		6300 Hz		8000 Hz	
	$x_{i-APMP}$ / dB	$2u_{i-APMP}$ / dB	$x_{i-APMP}$ / dB	$2u_{i-APMP}$ / dB	$x_{i-APMP}$ / dB	$2u_{i-APMP}$ / dB	$x_{i-APMP}$ / dB	$2u_{i-APMP}$ / dB	$x_{i-APMP}$ / dB	$2u_{i-APMP}$ / dB	$x_{i-APMP}$ / dB	$2u_{i-APMP}$ / dB
CMS/ITRI	0.01	0.04	0.01	0.04	0.01	0.04	0.01	0.06	0.01	0.06	-0.02	0.06
KRISS	0.00	0.03	0.00	0.03	0.00	0.04	0.00	0.04	-0.01	0.04	-0.01	0.04
NIM	-0.01	0.05	0.00	0.05	0.00	0.05	-0.01	0.06	-0.02	0.06	-0.01	0.06
NIMT	0.01	0.04	0.01	0.04	0.01	0.04	0.00	0.04	0.00	0.04	0.00	0.06
NMIA	0.01	0.04	0.01	0.04	0.01	0.04	0.01	0.04	0.02	0.06	0.01	0.06
NML-SIRIM	0.01	0.03	0.01	0.03	0.00	0.04	0.01	0.05	0.03	0.06	0.04	0.07
NPLI	-0.01	0.07	0.00	0.07	0.00	0.07	0.02	0.07	0.02	0.07	0.04	0.07
SCL	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.05	-0.01	0.06	-0.01	0.06
NMIJ	-0.02	0.04	-0.03	0.04	-0.03	0.04	-0.04	0.05	-0.04	0.06	-0.02	0.06

## Key comparison SIM.AUV.A-K1

MEASURAND : Pressure sensitivity level of laboratory standard microphone type LS1P

NOMINAL VALUE : 0 dB

$x_{i-SIM}$ : result of measurements carried out by laboratory  $i$

The quoted pressure sensitivity levels are relative to internal SIM reference values, obtained as the arithmetic mean of all measurements available for each microphone, see on page 12 of the SIM.AUV.A-K1 Final Report, so the nominal value is 0 dB by design.

$u_{i-SIM}$ : combined standard uncertainty of  $x_{i-SIM}$

The transfer standards were calibrated by the pilot laboratory, NRC, before delivery and after return from a participating laboratory.

### Microphone serial number 907045

Frequency $\Rightarrow$ Lab $i$ $\Downarrow$	125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz		8000 Hz	
	$x_{i-SIM}$ / dB	$u_{i-SIM}$ / dB	$x_{i-SIM}$ / dB	$u_{i-SIM}$ / dB	$x_{i-SIM}$ / dB	$u_{i-SIM}$ / dB	$x_{i-SIM}$ / dB	$u_{i-SIM}$ / dB	$x_{i-SIM}$ / dB	$u_{i-SIM}$ / dB	$x_{i-SIM}$ / dB	$u_{i-SIM}$ / dB	$x_{i-SIM}$ / dB	$u_{i-SIM}$ / dB
NRC	0.01	0.025	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.025	-0.02	0.03
NIST	0.01	0.02	-0.01	0.02	-0.01	0.02	-0.02	0.02	-0.01	0.02	0.01	0.02	0.04	0.06
NRC	0.01	0.025	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.025	-0.01	0.03
CENAM	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.025	0.02	0.025	0.00	0.025	0.04	0.05
NRC	0.01	0.025	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.025	-0.01	0.03
INMETRO	-0.05	0.025	-0.04	0.025	-0.04	0.025	-0.05	0.025	-0.05	0.025	-0.05	0.035	-0.01	0.055
NRC	0.00	0.025	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.02	0.01	0.025	0.00	0.03
INTI	-0.01	0.025	-0.02	0.025	-0.01	0.025	-0.01	0.025	-0.01	0.025	-0.02	0.05	-0.02	0.05
NRC	0.00	0.025	0.00	0.01	0.00	0.02	0.00	0.02	0.00	0.02	0.00	0.025	-0.01	0.03

Key comparison SIM.AUV.A-K1

MEASURAND : Pressure sensitivity level of laboratory standard microphone type LS1P  
 NOMINAL VALUE : 0 dB

$x_{i-SIM}$ : result of measurements carried out by laboratory  $i$   
 The quoted pressure sensitivity levels are relative to internal SIM reference values, obtained as the arithmetic mean of all measurements available for each microphone, see on page 12 of the SIM.AUV.A-K1 Final Report, so the nominal value is 0 dB by design.

$u_{i-SIM}$ : combined standard uncertainty of  $x_{i-SIM}$

The transfer standards were calibrated by the pilot laboratory, NRC, before delivery and after return from a participating laboratory.

Microphone serial number 1734004

Frequency $\Rightarrow$ Lab $i$ $\Downarrow$	125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz		8000 Hz	
	$x_{i-SIM}$ / dB	$u_{i-SIM}$ / dB	$x_{i-SIM}$ / dB	$u_{i-SIM}$ / dB	$x_{i-SIM}$ / dB	$u_{i-SIM}$ / dB	$x_{i-SIM}$ / dB	$u_{i-SIM}$ / dB	$x_{i-SIM}$ / dB	$u_{i-SIM}$ / dB	$x_{i-SIM}$ / dB	$u_{i-SIM}$ / dB	$x_{i-SIM}$ / dB	$u_{i-SIM}$ / dB
NRC	0.00	0.025	0.00	0.01	0.00	0.02	0.00	0.02	0.00	0.02	0.00	0.025	-0.01	0.03
NIST	0.01	0.02	0.00	0.02	-0.01	0.02	-0.02	0.02	-0.01	0.02	0.01	0.02	0.04	0.06
NRC	0.01	0.025	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.025	-0.01	0.03
CENAM	0.01	0.02	0.01	0.02	0.01	0.02	0.00	0.025	0.00	0.025	0.00	0.025	0.00	0.05
NRC	-0.01	0.025	0.00	0.01	0.01	0.02	0.00	0.02	0.01	0.02	0.01	0.025	0.00	0.03
INMETRO	-0.02	0.025	-0.02	0.025	-0.01	0.025	0.00	0.025	-0.02	0.025	-0.02	0.035	0.00	0.055
NRC	0.00	0.025	0.00	0.01	-0.01	0.02	0.00	0.02	0.00	0.02	0.00	0.025	0.00	0.03
INTI	0.01	0.025	0.01	0.025	0.01	0.025	0.01	0.025	0.01	0.025	0.01	0.05	0.00	0.05
NRC	0.00	0.025	0.00	0.01	-0.01	0.02	0.00	0.02	0.00	0.02	0.00	0.025	-0.01	0.03



**Key comparison APMP.AUV.A-K1.1**

**MEASURAND :** Pressure sensitivity level of laboratory standard microphone type LS1P

**NOMINAL VALUE :** 0 dB

$x_{i-APMP-K1.1}$ : result of measurements carried out by KIM-LIPI obtained as the difference between KRIS and KIM-LIPI

$U_{i-APMP-K1.1}$ : Expanded uncertainty of  $x_{i-APMP-K1.1}$

Frequency $\Rightarrow$ Lab $i$ $\Downarrow$	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		1250 Hz		1600 Hz		2000 Hz	
	$x_{i-APMP-K1.1}$ / dB	$U_{i-APMP-K1.1}$ / dB	$x_{i-APMP-K1.1}$ / dB	$U_{i-APMP-K1.1}$ / dB	$x_{i-APMP-K1.1}$ / dB	$U_{i-APMP-K1.1}$ / dB	$x_{i-APMP-K1.1}$ / dB	$U_{i-APMP-K1.1}$ / dB	$x_{i-APMP-K1.1}$ / dB	$U_{i-APMP-K1.1}$ / dB	$x_{i-APMP-K1.1}$ / dB	$U_{i-APMP-K1.1}$ / dB	$x_{i-APMP-K1.1}$ / dB	$U_{i-APMP-K1.1}$ / dB	$x_{i-APMP-K1.1}$ / dB	$U_{i-APMP-K1.1}$ / dB
<b>KIM-LIPI</b>	<b>0.00</b>	0.08	<b>0.01</b>	0.08	<b>0.01</b>	0.08	<b>0.00</b>	0.08	<b>0.01</b>	0.07	<b>0.01</b>	0.08	<b>0.01</b>	0.08	<b>0.01</b>	0.08

**Key comparison APMP.AUV.A-K1.1**

**MEASURAND :** Pressure sensitivity level of laboratory standard microphone type LS1P

**NOMINAL VALUE :** 0 dB

$x_{i-APMP.K1.1}$ : result of measurements carried out by KIM-LIPI obtained as the difference between KRISS and KIM-LIPI

$U_{i-APMP.K1.1}$ : Expanded uncertainty of  $x_{i-APMP.K1.1}$

Frequency $\Rightarrow$ Lab $i$ $\Downarrow$	2500 Hz		3150 Hz		4000 Hz		5000 Hz		6300 Hz		8000 Hz	
	$x_{i-APMP.K1.1}$ / dB	$U_{i-APMP.K1.1}$ / dB	$x_{i-APMP.K1.1}$ / dB	$U_{i-APMP.K1.1}$ / dB	$x_{i-APMP.K1.1}$ / dB	$U_{i-APMP.K1.1}$ / dB	$x_{i-APMP.K1.1}$ / dB	$U_{i-APMP.K1.1}$ / dB	$x_{i-APMP.K1.1}$ / dB	$U_{i-APMP.K1.1}$ / dB	$x_{i-APMP.K1.1}$ / dB	$U_{i-APMP.K1.1}$ / dB
<b>KIM-LIPI</b>	<b>0.01</b>	0.08	<b>0.02</b>	0.09	<b>0.01</b>	0.10	<b>0.02</b>	0.11	<b>0.02</b>	0.11	<b>0.05</b>	0.12

Key comparison COOMET.AUV.A-K1

MEASURAND : Pressure sensitivity level of laboratory standard microphone type LS1F  
 NOMINAL VALUE : 0 dB

$x_{i-coo}$ : result of measurements carried out by laboratory  $i$

$u_{i-coo}$ : combined standard uncertainty of  $x_{i-coo}$

Lab $i$ → Frequency ↓	Microphone 4160.2302519										Microphone 4160.2302521									
	PTB		GUM		UME		SMU		VNIIFTRI		PTB		GUM		UME		SMU		VNIIFTRI	
	$x_{i-coo}$ / dB	$2u_{i-coo}$ / dB	$x_{i-coo}$ / dB	$2u_{i-coo}$ / dB	$x_{i-coo}$ / dB	$2u_{i-coo}$ / dB	$x_{i-coo}$ / dB	$2u_{i-coo}$ / dB	$x_{i-coo}$ / dB	$2u_{i-coo}$ / dB	$x_{i-coo}$ / dB	$2u_{i-coo}$ / dB	$x_{i-coo}$ / dB	$2u_{i-coo}$ / dB	$x_{i-coo}$ / dB	$2u_{i-coo}$ / dB	$x_{i-coo}$ / dB	$2u_{i-coo}$ / dB	$x_{i-coo}$ / dB	$2u_{i-coo}$ / dB
63 Hz	-26.88	0.03	-26.90	0.03	-26.89	0.06	-26.88	0.04	-26.93	0.06	-26.88	0.03	-26.89	0.03	-26.90	0.06	-26.87	0.04	-26.90	0.06
80 Hz	-26.89	0.03	-26.91	0.03	-26.89	0.06	-26.90	0.04	-26.94	0.05	-26.89	0.03	-26.90	0.03	-26.90	0.06	-26.89	0.04	-26.92	0.05
100 Hz	-26.91	0.03	-26.93	0.03	-26.91	0.06	-26.93	0.04	-26.95	0.04	-26.90	0.03	-26.91	0.03	-26.90	0.06	-26.90	0.04	-26.93	0.04
125 Hz	-26.91	0.03	-26.93	0.03	-26.91	0.06	-26.93	0.04	-26.96	0.04	-26.91	0.03	-26.92	0.03	-26.91	0.06	-26.91	0.04	-26.94	0.04
160 Hz	-26.92	0.03	-26.94	0.03	-26.92	0.06	-26.94	0.04	-26.97	0.04	-26.91	0.03	-26.93	0.03	-26.92	0.06	-26.92	0.04	-26.95	0.04
200 Hz	-26.93	0.03	-26.95	0.03	-26.94	0.06	-26.95	0.04	-26.98	0.04	-26.92	0.03	-26.94	0.03	-26.92	0.06	-26.93	0.04	-26.95	0.04
250 Hz	-26.93	0.03	-26.95	0.03	-26.94	0.06	-26.95	0.04	-26.98	0.04	-26.92	0.03	-26.94	0.03	-26.93	0.06	-26.94	0.04	-26.96	0.04
315 Hz	-26.94	0.03	-26.95	0.03	-26.94	0.06	-26.96	0.04	-26.98	0.04	-26.93	0.03	-26.94	0.03	-26.94	0.06	-26.94	0.04	-26.96	0.04
400 Hz	-26.94	0.03	-26.97	0.03	-26.94	0.06	-26.96	0.04	-26.99	0.04	-26.93	0.03	-26.95	0.03	-26.93	0.06	-26.94	0.04	-26.96	0.04
500 Hz	-26.94	0.03	-26.97	0.03	-26.94	0.06	-26.96	0.04	-26.99	0.04	-26.93	0.03	-26.95	0.03	-26.93	0.06	-26.94	0.04	-26.96	0.04
630 Hz	-26.94	0.03	-26.96	0.03	-26.93	0.06	-26.96	0.04	-26.98	0.04	-26.92	0.03	-26.95	0.03	-26.91	0.06	-26.94	0.04	-26.96	0.04
800 Hz	-26.93	0.03	-26.95	0.03	-26.92	0.06	-26.95	0.04	-26.98	0.04	-26.91	0.03	-26.94	0.03	-26.91	0.06	-26.93	0.04	-26.94	0.04
1000 Hz	-26.92	0.03	-26.95	0.03	-26.93	0.06	-26.93	0.04	-26.96	0.04	-26.90	0.03	-26.93	0.03	-26.90	0.06	-26.91	0.04	-26.93	0.04
1250 Hz	-26.90	0.03	-26.93	0.03	-26.92	0.06	-26.91	0.04	-26.94	0.04	-26.87	0.03	-26.90	0.03	-26.89	0.06	-26.88	0.04	-26.90	0.04
1600 Hz	-26.86	0.03	-26.89	0.03	-26.88	0.06	-26.88	0.04	-26.90	0.04	-26.82	0.03	-26.85	0.03	-26.84	0.06	-26.83	0.04	-26.85	0.04
2000 Hz	-26.80	0.03	-26.83	0.03	-26.83	0.06	-26.82	0.04	-26.84	0.04	-26.75	0.03	-26.77	0.03	-26.74	0.06	-26.76	0.04	-26.77	0.04
2500 Hz	-26.72	0.03	-26.75	0.04	-26.75	0.06	-26.74	0.05	-26.75	0.04	-26.64	0.03	-26.67	0.04	-26.66	0.06	-26.65	0.05	-26.66	0.04
3150 Hz	-26.59	0.03	-26.62	0.04	-26.60	0.07	-	-	-26.61	0.04	-26.48	0.03	-26.50	0.04	-26.48	0.07	-	-	-26.49	0.04
4000 Hz	-26.43	0.03	-26.44	0.04	-26.45	0.07	-	-	-26.43	0.04	-26.26	0.03	-26.26	0.04	-26.27	0.07	-	-	-26.26	0.04
5000 Hz	-26.30	0.05	-26.31	0.05	-26.31	0.07	-	-	-26.28	0.05	-26.05	0.05	-26.05	0.05	-26.05	0.07	-	-	-26.04	0.05
6300 Hz	-26.42	0.05	-26.41	0.05	-26.42	0.08	-	-	-26.37	0.06	-26.07	0.05	-26.07	0.05	-26.09	0.08	-	-	-26.06	0.06
8000 Hz	-27.43	0.05	-27.39	0.05	-27.37	0.09	-	-	-27.34	0.08	-27.15	0.05	-27.11	0.05	-27.11	0.09	-	-	-27.10	0.08
10000 Hz	-30.01	0.08	-29.91	0.09	-29.94	0.12	-	-	-29.82	0.13	-30.01	0.08	-29.94	0.09	-29.94	0.12	-	-	-29.93	0.13

Key comparison COOMET.AUV.A-K1.1

MEASURAND : Pressure sensitivity level of laboratory standard microphone type LS1F  
 NOMINAL VALUE : 0 dB

$x_{i-COO.1}$ : result of measurements carried out by laboratory *i*

$u_{i-COO.1}$ : combined standard uncertainty of  $x_{i-COO.1}$

Microphone 4160.2302520

Lab <i>i</i> Frequency	PTB		DNDI	
	$x_{i-COO.1}$ / dB	$2u_{i-COO.1}$ / dB	$x_{i-COO.1}$ / dB	$2u_{i-COO.1}$ / dB
63 Hz	-26.90	0.03	-26.90	0.05
80 Hz	-26.91	0.03	-26.91	0.05
100 Hz	-26.92	0.03	-26.92	0.05
125 Hz	-26.93	0.03	-26.93	0.05
160 Hz	-26.94	0.03	-26.94	0.05
200 Hz	-26.94	0.03	-26.95	0.05
250 Hz	-26.95	0.03	-26.95	0.05
315 Hz	-26.95	0.03	-26.95	0.05
400 Hz	-26.95	0.03	-26.96	0.05
500 Hz	-26.95	0.03	-26.96	0.04
630 Hz	-26.95	0.03	-26.96	0.04
800 Hz	-26.95	0.03	-26.95	0.04
1000 Hz	-26.93	0.03	-26.94	0.04
1250 Hz	-26.91	0.03	-26.93	0.04
1600 Hz	-26.88	0.03	-26.89	0.04
2000 Hz	-26.83	0.03	-26.84	0.04
2500 Hz	-26.76	0.03	-26.77	0.04
3150 Hz	-26.65	0.03	-26.66	0.04
4000 Hz	-26.52	0.03	-26.53	0.04
5000 Hz	-26.42	0.05	-26.44	0.05
6300 Hz	-26.57	0.05	-26.59	0.06
8000 Hz	-27.54	0.05	-27.57	0.08
10000 Hz	-30.09	0.08	-30.01	0.12

## Key comparison CCAUV.A-K1

MEASURAND : Pressure sensitivity level of laboratory standard microphone type LS1P

NOMINAL VALUE : 0 dB

The key comparison values,  $x_R$  (designated as  $M_{ref}$  in the CCAUV.A-K1 Final Report), are obtained as the arithmetic means of all measurements, normalized to zero decibels, at each frequency.

At a given frequency, the combined standard uncertainty,  $u_R$ , of the key comparison reference value is determined by propagating the individual measurement uncertainties.

Frequency	$x_R$	$u_R$
/ Hz	/ dB	/ dB
63	0.00	0.006
125	0.00	0.006
250	0.00	0.005
500	0.00	0.005
1000	0.00	0.005
1250	0.00	0.006
1600	0.00	0.006
2000	0.00	0.006
2500	0.00	0.006
3150	0.00	0.006
4000	0.00	0.006
5000	0.00	0.007
6300	0.00	0.008
8000	0.00	0.011

At a given frequency, the degree of equivalence of each laboratory with respect to the key comparison reference value is given by a pair of terms:  $D_i = (x_i - x_R)$ , and its expanded uncertainty ( $k = 2$ ),  $U_i = 2[(1 - 2/n)u_i^2 + u_R^2]^{1/2}$ , where  $n$  is the number of participants, both expressed in dB.

At a given frequency, the degree of equivalence between two laboratories  $i$  and  $j$  is given by a pair of terms:  $D_{ij} = (x_i - x_j)$ , and its expanded uncertainty ( $k = 2$ ),  $U_{ij} = 2(u_i^2 + u_j^2)^{1/2}$ , both expressed in dB.

The full matrix of equivalence is computed for the frequency 250 Hz.

Data for mutual equivalence at other frequencies can be derived from the table of individual measurements. However, the data at 250 Hz is characteristic of frequencies up to 2 kHz.

## Linking key comparison EUROMET.AUV.A-K1 to key comparison CCAUV.A-K1

NPL, DPLA and PTB provide the link between key comparisons CCAUV.A-K1 and EUROMET.AUV.A-K1.

The process involves calculating the average result of the linking participants at each frequency, in each comparison. The difference between the average result relative to the CCAUV.A-K1 key comparison reference value and relative to the EUROMET.AUV.A-K1 internal reference provides a linking factor  $d$ , which is used to convert the results relative to the EUROMET internal reference, so they become relative to the CCAUV.A-K1 key comparison reference value.

Frequency	Average value of results from NPL/DPLA/PTB in EUROMET.AUV.A-K1	Average value of results from NPL/DPLA/PTB in CCAUV.A-K1	$d$
/ Hz	/ dB	/ dB	/ dB
63	-0.013	0.008	<b>0.021</b>
125	0.001	0.005	<b>0.004</b>
250	0.005	0.004	<b>-0.001</b>
500	0.005	0.003	<b>-0.001</b>
1000	0.002	0.009	<b>0.007</b>
1250	-0.001	0.012	<b>0.014</b>
1600	0.003	0.013	<b>0.009</b>
2000	0.004	0.011	<b>0.007</b>
2500	-0.002	0.013	<b>0.015</b>
3150	0.010	0.012	<b>0.002</b>
4000	0.014	0.014	<b>-0.001</b>
5000	0.021	0.016	<b>-0.005</b>
6300	0.034	0.019	<b>-0.015</b>
8000	0.031	0.010	<b>-0.021</b>
10000	0.004	-0.006	<b>-0.010</b>

At a given frequency, the degree of equivalence of one laboratory participant in EUROMET.AUV.A-K1 with respect to the key comparison reference value is given by a pair of terms:  $D_i = (x_{i\text{-EUR}} + d)$ , and its expanded uncertainty ( $k = 2$ ),  $U_i = 2(u_{i\text{-EUR}}^2 + u_R^2)^{1/2}$ , both expressed in dB.

Full graphs of equivalence are given for frequencies 250 Hz and 1000 Hz.

At a given frequency, the degree of equivalence between two laboratories  $i$  and  $j$  is given by a pair of terms:  $D_{ij} = (x_i - x_j)$ , and its expanded uncertainty ( $k = 2$ ),  $U_{ij} = 2(u_i^2 + u_j^2)^{1/2}$ , both expressed in dB.

The index  $i$  (or  $j$ ) should be taken as  $i\text{-EUR}$  (or  $j\text{-EUR}$ ) when the corresponding laboratory has participated in EUROMET.AUV.A-K1 only.

The matrix of equivalence computed at frequency 250 Hz from results obtained in CCAUV.A-K1 is extended with pair-wise degrees of equivalence between participants having participated in EUROMET.AUV.A-K1 only.

The pair-wise degrees of equivalence between one laboratory participant in CCAUV.A-K1 and one laboratory participant in EUROMET.AUV.A-K1 only may be computed using the equations given above.

Other numbers are available from Annex A of the EUROMET.AUV.A-K1 Final Report.

## Linking key comparison APMP.AUV.A-K1 to key comparison CCAUV.A-K1

NMIJ and KRISS provide the link between key comparisons CCAUV.A-K1 and APMP.AUV.A-K1. NMIA also took part in both key comparisons, but was not included as a linking laboratory because it used different equipments.

The process involves calculating the average result of the linking participants at each frequency, in each comparison. The difference between the average result relative to the CCAUV.A-K1 key comparison reference value and relative to the APMP.AUV.A-K1 internal reference provides a linking factor  $d$ , which is used to convert the results relative to the APMP internal reference, so they become relative to the CCAUV.A-K1 key comparison reference value.

Frequency	Average value of results from NMIJ/KRISS in APMP.AUV.A-K1	Average value of results from NMIJ/KRISS in CCAUV.A-K1	$d$
/ Hz	/ dB	/ dB	/ dB
63	0.004	0.003	-0.002
125	0.000	0.000	0.000
250	-0.001	-0.006	-0.005
500	0.000	-0.003	-0.002
1000	-0.002	-0.003	-0.002
1250	-0.003	-0.003	0.000
1600	-0.005	-0.004	0.001
2000	-0.005	-0.003	0.002
2500	-0.010	-0.006	0.004
3150	-0.014	-0.007	0.006
4000	-0.016	-0.010	0.007
5000	-0.020	-0.012	0.008
6300	-0.027	-0.026	0.001
8000	-0.017	-0.015	0.001

At a given frequency, the degree of equivalence of one laboratory participant in APMP.AUV.A-K1 with respect to the key comparison reference value is given by a pair of terms:  $D_i = (x_{i-APMP} + d)$ , and its expanded uncertainty ( $k = 2$ ),  $U_i \sim 2(u_{i-APMP}^2 + u_R^2)^{1/2}$ , both expressed in dB.

The exact formula used to compute  $U_i$  is given in equation 12 on page 22 of the APMP.AUV.A-K1 Final Report.

Full graphs of equivalence are given for frequencies 250 Hz and 1000 Hz.

At a given frequency, the degree of equivalence between two laboratories  $i$  and  $j$  is given by a pair of terms:  $D_{ij} = (x_i - x_j)$ , and its expanded uncertainty ( $k = 2$ ),  $U_{ij} = 2(u_i^2 + u_j^2)^{1/2}$ , both expressed in dB.

The index  $i$  and  $j$  should be taken as  $i$ -APMP and  $j$ -APMP when both laboratories have participated in APMP.AUV.A-K1 only.

The formula to be used to compute  $U_{ij}$  for a pair composed of one participant in CCAUV.A-K1 and one participant in APMP.AUV.A-K1 is given in equation 18 on page 22 of the APMP.AUV.A-K1 Final Report.

The matrix of equivalence computed at frequency 250 Hz from results obtained in CCAUV.A-K1 and EUROMET.AUV.A-K1 is extended with pair-wise degrees of equivalence between laboratories having participated in APMP.AUV.A-K1 only.

#### Linking key comparison SIM.AUV.A-K1 to key comparison CCAUV.A-K1

NRC, NIST and CENAM provide the link between key comparisons CCAUV.A-K1 and SIM.AUV.A-K1, which is computed using a generalized linear least-squares method, as explained in Annex B on page 19 of the SIM.AUV.A-K1 Final Report.

At a given frequency, the degree of equivalence of one laboratory participant in SIM.AUV.A-K1 only, with respect to the CCAUV.A-K1 key comparison reference value, is given by a pair of terms:  $D_i$  and its expanded uncertainty ( $k = 2$ ),  $U_i$ , both expressed in dB. These are computed as explained in Annex B of the SIM.AUV.A-K1 Final Report.

Full graphs of equivalence are given for frequencies 250 Hz and 1000 Hz.

At a given frequency, the degree of equivalence between two laboratories  $i$  and  $j$  is given by a pair of terms:  $D_{ij}$ , and its expanded uncertainty ( $k = 2$ ),  $U_{ij}$ , both expressed in dB. These are computed as explained in Annex B of the SIM.AUV.A-K1 Final Report.

The matrix of equivalence computed at frequency 250 Hz from results obtained in CCAUV.A-K1, EUROMET.AUV.A-K1, and APMP.AUV.A-K1 is extended with pair-wise degrees of equivalence between laboratories having participated in SIM.AUV.A-K1 only.

#### Linking key comparison APMP.AUV.A-K1.1 to key comparison CCAUV.A-K1

KRISS provides the link between key comparisons CCAUV.A-K1 and APMP.AUV.A-K1.1. The linking process is explained in section 8 of the APMP.AUV.A-K1.1 Final Report.

At a given frequency, the degree of equivalence of KIM-LIPI participant in APMP.AUV.A-K1.1 only, with respect to the CCAUV.A-K1 key comparison reference value, is given by a pair of terms:  $D_i$  and its expanded uncertainty ( $k = 2$ ),  $U_i$ , both expressed in dB. These are computed as explained in section 8 of the APMP.AUV.A-K1.1 Final Report.

Full graphs of equivalence are given for frequencies 250 Hz and 1000 Hz.

No pair-wise degrees of equivalence are computed between KIM-LIPI and participants in CCAUV.A-K1 and other linked key comparisons.



#### Linking key comparison COOMET.AUV.A-K1 to key comparison CCAUV.A-K1

GUM, PTB and VNIIFTRI provide the link between key comparisons CCAUV.A-K1 and COOMET.AUV.A-K1. The linking process is explained in section 6 of the COOMET.AUV.A-K1 Final Report.

At a given frequency, the degree of equivalence of one laboratory  $i$  participant in COOMET.AUV.A-K1 only, with respect to the CCAUV.A-K1 key comparison reference value, is given by a pair of terms:  $D_i$  and its expanded uncertainty ( $k = 2$ ),  $U_i$ , both expressed in dB. These are computed as explained in section 6 of the COOMET.AUV.A-K1 Final Report.  
Full graphs of equivalence are given for frequencies 250 Hz and 1000 Hz.

At a given frequency, the degree of equivalence between two laboratories  $i$  and  $j$  is given by a pair of terms:  $D_{ij}$ , and its expanded uncertainty ( $k = 2$ ),  $U_{ij}$ , both expressed in dB. These are computed as explained in section 6 of the COOMET.AUV.A-K1 Final Report.

The matrix of equivalence computed at frequency 250 Hz from results obtained in CCAUV.A-K1, EUROMET.AUV.A-K1, APMP.AUV.A-K1, SIM.AUV.A-K1 and APMP.AUV.A-K1.1 is extended with pair-wise degrees of equivalence between laboratories having participated in COOMET.AUV.A-K1 only.

#### Linking key comparison COOMET.AUV.A-K1.1 to key comparison CCAUV.A-K1

PTB provides the link between key comparisons CCAUV.A-K1 and COOMET.AUV.A-K1.1. The linking process is explained in section 6 of the COOMET.AUV.A-K1.1 Final Report.

At a given frequency, the degree of equivalence of DNDI participant in COOMET.AUV.A-K1.1 only, with respect to the CCAUV.A-K1 key comparison reference value, is given by a pair of terms:  $D_i$  and its expanded uncertainty ( $k = 2$ ),  $U_i$ , both expressed in dB. These are computed as explained in section 6 of the COOMET.AUV.A-K1.1 Final Report.  
Full graphs of equivalence are given for frequencies 250 Hz and 1000 Hz.

No pair-wise degrees of equivalence involving DNDI are given here.

Key comparisons CCAUV.A-K1, EUROMET.AUV.A-K1, APMP.AUV.A-K1, SIM.AUV.A-K1, APMP.AUV.A-K1.1, COOMET.AUV.A-K1, and COOMET.AUV.A-K1.

Degrees of equivalence relative to the key comparison reference values

Frequency Lab <i>i</i>	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		1250 Hz		1600 Hz		2000 Hz	
	$D_i$	$U_i$	$D_i$	$U_i$	$D_i$	$U_i$	$D_i$	$U_i$	$D_i$	$U_i$	$D_i$	$U_i$	$D_i$	$U_i$	$D_i$	$U_i$
	/ dB	/ dB	/ dB	/ dB	/ dB	/ dB	/ dB	/ dB	/ dB	/ dB	/ dB	/ dB	/ dB	/ dB	/ dB	/ dB
NPL	0.02	0.03	0.01	0.03	0.01	0.03	0.01	0.03	0.01	0.03	0.01	0.03	0.02	0.03	0.01	0.03
CENAM	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.03	0.00	0.03	0.00	0.03	0.01	0.03	0.01	0.03
CSIR-NML	0.01	0.05	0.01	0.05	0.02	0.05	0.02	0.05	0.02	0.05	0.02	0.05	0.02	0.05	0.01	0.05
NMIA	-	-	-	-	0.02	0.04	0.01	0.04	0.01	0.04	-	-	-	-	-	-
DPLA	0.00	0.04	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.01	0.03	0.01	0.03	0.00	0.03
NMIJ	0.00	0.05	0.00	0.04	-0.01	0.04	-0.01	0.04	-0.01	0.04	-0.02	0.04	-0.01	0.04	-0.02	0.04
GUM	0.01	0.03	0.01	0.03	0.01	0.03	0.01	0.03	0.00	0.03	0.00	0.03	0.01	0.03	0.01	0.03
KRISS	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.01	0.03	0.01	0.03	0.01	0.03
NIST	-0.01	0.04	0.00	0.04	-0.01	0.04	0.00	0.04	-0.02	0.04	-0.02	0.04	-0.02	0.04	-0.02	0.04
NRC	-0.04	0.04	-0.04	0.04	-0.04	0.03	-0.04	0.04	-0.03	0.04	-0.03	0.04	-0.03	0.04	-0.03	0.04
PTB	0.00	0.03	0.01	0.03	0.01	0.03	0.01	0.03	0.01	0.03	0.01	0.03	0.02	0.03	0.01	0.03
VNIIFTRI	-0.01	0.07	0.00	0.05	0.00	0.05	0.00	0.05	0.00	0.05	-0.01	0.05	-0.01	0.05	-0.01	0.05
BEV	0.00	0.06	0.00	0.03	-0.01	0.03	-0.01	0.03	0.00	0.03	0.00	0.03	-0.01	0.03	-0.01	0.03
SP	0.02	0.05	0.01	0.04	0.01	0.04	0.00	0.04	0.02	0.04	0.02	0.04	0.01	0.04	0.00	0.04
IEN	0.00	0.05	0.00	0.05	-0.01	0.05	0.00	0.05	-0.01	0.05	-0.01	0.05	-0.02	0.05	-0.02	0.05
UME	0.05	0.05	0.03	0.05	0.02	0.05	0.02	0.05	0.06	0.05	0.06	0.05	0.06	0.05	0.07	0.05
METAS	-0.01	0.04	-0.02	0.03	-0.01	0.03	-0.02	0.03	-0.02	0.03	-	-	-0.01	0.03	-0.03	0.03
SMU	0.04	0.04	0.01	0.04	0.00	0.04	0.02	0.04	0.02	0.04	0.02	0.04	0.01	0.04	0.02	0.04
OMH	0.05	0.07	0.04	0.07	0.03	0.07	0.02	0.07	0.01	0.07	0.00	0.07	0.00	0.07	0.00	0.07
CMI	-	-	-0.03	0.03	-0.04	0.03	-0.04	0.03	-0.03	0.03	-	-	-	-	-	-
NMIA	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.04	0.01	0.04	0.01	0.04
CMS/ITRI	0.00	0.04	0.02	0.04	0.01	0.04	0.00	0.04	0.00	0.04	0.01	0.04	0.01	0.04	0.01	0.04
NIM	-0.01	0.05	-0.01	0.05	-0.01	0.05	-0.01	0.05	-0.01	0.05	-0.01	0.05	-0.01	0.05	0.00	0.05
NIMT	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.04	0.01	0.04	0.01	0.04
NML-SIRIM	0.00	0.04	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.01	0.03
NPLI	-0.02	0.07	-0.02	0.07	-0.02	0.07	-0.02	0.07	-0.02	0.07	-0.01	0.07	-0.01	0.07	-0.01	0.07
SCL	0.00	0.05	0.00	0.05	-0.01	0.04	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.04
INMETRO	-	-	-0.06	0.05	-0.04	0.05	-0.04	0.05	-0.04	0.05	-	-	-	-	-0.05	0.05
INTI	-	-	-0.03	0.05	-0.02	0.05	-0.02	0.05	-0.02	0.05	-	-	-	-	-0.02	0.05
KIM-LIPI	0.00	0.08	-0.01	0.08	-0.01	0.08	0.00	0.08	-0.01	0.08	0.00	0.08	0.00	0.08	0.00	0.08
UME	0.00	0.06	0.02	0.06	0.02	0.06	0.03	0.06	0.02	0.06	0.00	0.06	0.01	0.06	0.01	0.06
SMU	0.02	0.05	0.01	0.05	0.01	0.05	0.01	0.05	0.01	0.05	0.01	0.05	0.01	0.05	0.01	0.05
DNDI	0.01	0.06	0.02	0.06	0.02	0.06	0.01	0.06	0.01	0.06	0.00	0.06	0.02	0.06	0.01	0.06

Note: Many of the values for  $U_i$  appear to be the same as the corresponding value for  $2u_i$  in the tables of individual measurements. This is due to the variation in uncertainty  $u_i$  being small between participants, the relatively low value of  $u_R$  compared to  $u_i$ , and the rounding of the data to two decimal places that has been adopted in the tables. If the data were expressed with greater precision it would be apparent that they have different numerical values.

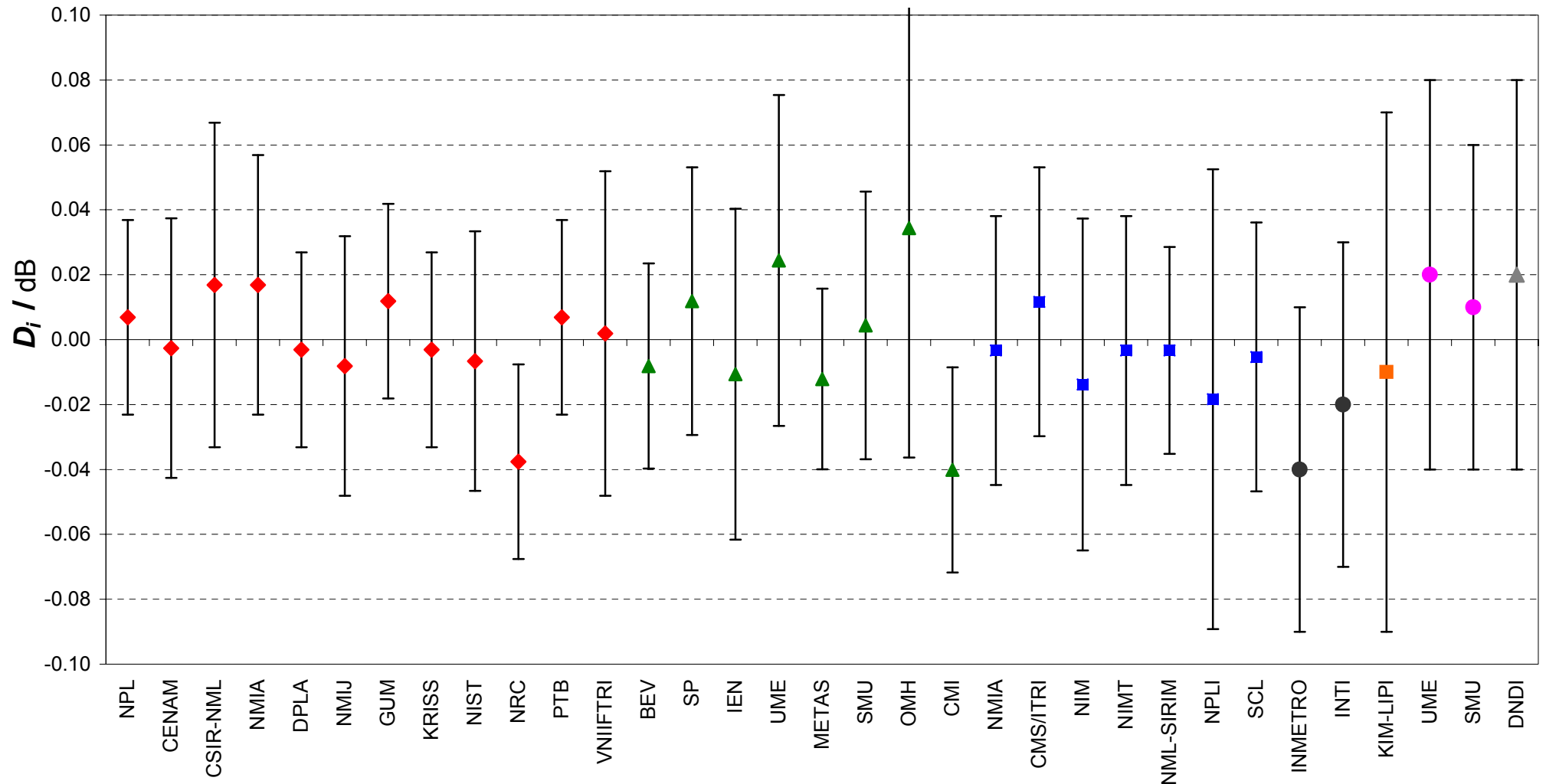
Key comparisons CCAUV.A-K1, EUROMET.AUV.A-K1, APMP.AUV.A-K1, SIM.AUV.A-K1, APMP.AUV.A-K1.1, COOMET.AUV.A-K1, and COOMET.AUV.A-K1.

Degrees of equivalence relative to the key comparison reference values

Frequency Lab <i>i</i>	2500 Hz		3150 Hz		4000 Hz		5000 Hz		6300 Hz		8000 Hz	
	$D_i$	$U_i$	$D_i$	$U_i$	$D_i$	$U_i$	$D_i$	$U_i$	$D_i$	$U_i$	$D_i$	$U_i$
	/ dB	/ dB	/ dB	/ dB	/ dB	/ dB	/ dB	/ dB	/ dB	/ dB	/ dB	/ dB
NPL	0.02	0.03	0.02	0.04	0.02	0.04	0.01	0.05	0.02	0.05	0.03	0.05
CENAM	0.01	0.03	0.01	0.03	0.01	0.05	0.02	0.05	0.01	0.06	-0.01	0.09
CSIR-NML	0.02	0.05	0.01	0.05	0.01	0.06	0.01	0.07	0.03	0.06	0.02	0.07
NMIA	-	-	-	-	-	-	-	-	-	-	-	-
DPLA	0.01	0.03	0.01	0.03	0.01	0.03	0.02	0.04	0.03	0.05	0.01	0.06
NMIJ	-0.03	0.04	-0.03	0.04	-0.04	0.04	-0.05	0.05	-0.06	0.06	-0.05	0.06
GUM	0.01	0.03	0.01	0.03	0.02	0.04	0.01	0.05	0.02	0.05	0.04	0.05
KRISS	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.01	0.04	0.02	0.04
NIST	-0.01	0.04	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.04	-0.01	0.11
NRC	-0.03	0.04	-0.03	0.04	-0.04	0.04	-0.04	0.04	-0.04	0.04	-0.05	0.04
PTB	0.02	0.03	0.01	0.03	0.01	0.03	0.02	0.05	0.02	0.05	-0.01	0.05
VNIFTRI	-0.02	0.05	-0.02	0.05	-0.03	0.06	-0.03	0.08	-0.02	0.13	0.02	0.21
BEV	-0.01	0.03	-0.01	0.03	-0.02	0.03	-0.04	0.04	-0.07	0.05	-0.11	0.06
SP	0.00	0.04	0.00	0.05	0.00	0.05	-0.01	0.06	0.00	0.07	0.01	0.10
IEN	-0.01	0.05	-0.02	0.05	-0.03	0.05	-0.03	0.05	-0.04	0.05	0.02	0.05
UME	0.07	0.05	0.02	0.05	0.02	0.05	0.02	0.10	-0.02	0.10	-0.05	0.10
METAS	-	-	0.00	0.03	0.00	0.03	-	-	-0.01	0.05	-0.03	0.05
SMU	0.04	0.04	-	-	-	-	-	-	-	-	-	-
OMH	0.00	0.07	-0.01	0.07	-0.02	0.07	-0.03	0.07	-0.05	0.07	-0.06	0.07
CMI	-	-	-	-	-	-	-	-	-	-	-	-
NMIA	0.01	0.04	0.02	0.04	0.02	0.04	0.02	0.04	0.02	0.06	0.01	0.07
CMS/ITRI	0.01	0.04	0.01	0.04	0.02	0.04	0.02	0.06	0.01	0.06	-0.02	0.07
NIM	0.00	0.05	0.00	0.05	0.01	0.05	-0.01	0.06	-0.02	0.06	-0.01	0.07
NIMT	0.01	0.04	0.01	0.04	0.02	0.04	0.01	0.04	0.00	0.04	0.00	0.07
NML-SIRIM	0.01	0.03	0.01	0.03	0.01	0.04	0.02	0.05	0.03	0.06	0.04	0.08
NPLI	0.00	0.07	0.00	0.07	0.01	0.07	0.03	0.07	0.02	0.07	0.04	0.08
SCL	0.00	0.04	0.01	0.04	0.01	0.04	0.00	0.05	-0.01	0.06	-0.01	0.07
INMETRO	-	-	-	-	-0.05	0.07	-	-	-	-	-0.04	0.12
INTI	-	-	-	-	-0.02	0.09	-	-	-	-	-0.05	0.11
KIM-LIPI	0.01	0.08	0.00	0.09	0.01	0.10	0.00	0.11	-0.01	0.12	-0.03	0.12
UME	0.00	0.06	0.01	0.07	-0.01	0.07	0.00	0.08	0.00	0.09	0.04	0.10
SMU	0.01	0.05	-	-	-	-	-	-	-	-	-	-
DNDI	0.02	0.06	0.01	0.06	0.01	0.06	0.01	0.08	0.00	0.09	-0.04	0.11

Note: Many of the values for  $U_i$  appear to be the same as the corresponding value for  $2u_i$  in the tables of individual measurements. This is due to the variation in uncertainty  $u_i$  being small between participants, the relatively low value of  $u_R$  compared to  $u_i$ , and the rounding of the data to two decimal places that has been adopted in the tables. If the data were expressed with greater precision it would be apparent that they have different numerical values.

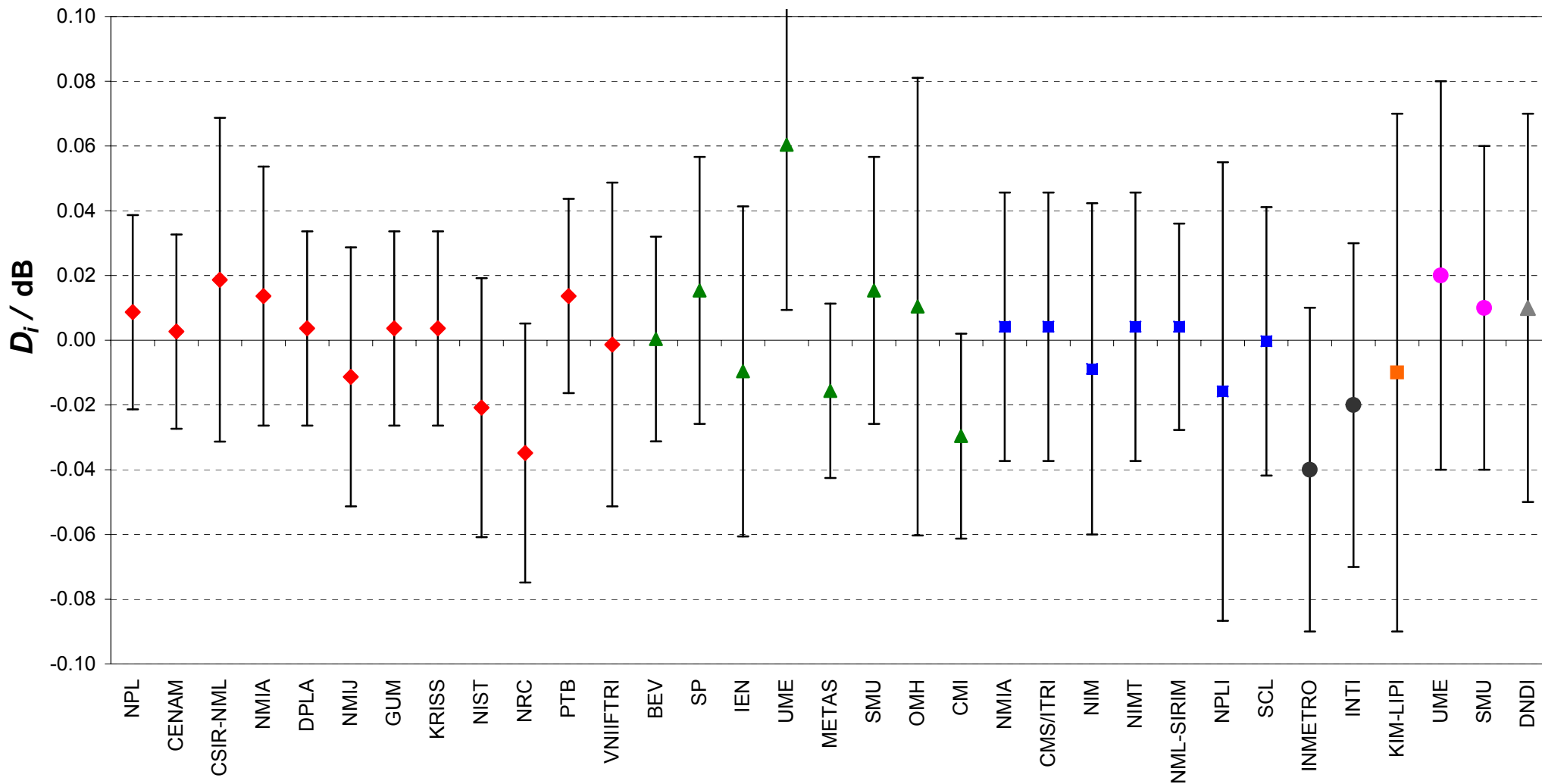
**CCAUV.A-K1, and EUROMET, APMP, and SIM.AUV.A-K1, APMP.AUV.A-K1.1, COOMET.AUV.A-K1, and  
COOMET.AUV.A-K1.1 - Microphone LS1P, frequency 250 Hz  
Degrees of equivalence [ $D_i$  and its expanded uncertainty  $U_i$  ( $k = 2$ )]**



**Red diamonds** : CCAUV.A-K1 participants  
**Green triangles** : EUROMET.AUV.A-K1 participants only  
**Blue squares** : APMP.AUV.A-K1 participants only  
**Black circles** : SIM.AUV.A-K1 participants only

**Orange square** : APMP.AUV.A-K1.1 participant only  
**Pink circles** : COOMET.AUV.A-K1 participants only  
**Grey triangle** : COOMET.AUV.A-K1.1 participant only

CCAUV.A-K1, and EUROMET, APMP, and SIM.AUV.A-K1, APMP.AUV.A-K1.1, COOMET.AUV.A-K1, and COOMET.AUV.A-K1.1 - Microphone LS1P, frequency 1000 Hz  
 Degrees of equivalence [ $D_i$  and its expanded uncertainty  $U_i$  ( $k = 2$ )]



**Red diamonds** : CCAUV.A-K1 participants  
**Green triangles** : EUROMET.AUV.A-K1 participants only  
**Blue squares** : APMP.AUV.A-K1 participants only  
**Black circles** : SIM.AUV.A-K1 participants only  
**Orange square** : APMP.AUV.A-K1.1 participant only  
**Pink circles** : COOMET.AUV.A-K1 participants only  
**Grey triangle** : COOMET.AUV.A-K1.1 participant only











Key comparisons CCAUV.A-K1, EUROMET, APMP, and SIM.AUV.A-K1, APMP.AUV.A-K1.1, and COOMET.AUV.A-K1 and K1.1

Frequency: 250 Hz

Matrix of equivalence (Continued)

Lab *i* ↓

Lab *j* →

	<i>D<sub>i</sub></i> / dB		<i>U<sub>i</sub></i> / dB		NML-SIRIM		NPLI		SCL		INMETRO		INTI		UME		SMU	
	<i>D<sub>ij</sub></i> / dB	<i>U<sub>ij</sub></i> / dB	<i>D<sub>ij</sub></i> / dB	<i>U<sub>ij</sub></i> / dB	<i>D<sub>ij</sub></i> / dB	<i>U<sub>ij</sub></i> / dB	<i>D<sub>ij</sub></i> / dB	<i>U<sub>ij</sub></i> / dB	<i>D<sub>ij</sub></i> / dB	<i>U<sub>ij</sub></i> / dB	<i>D<sub>ij</sub></i> / dB	<i>U<sub>ij</sub></i> / dB	<i>D<sub>ij</sub></i> / dB	<i>U<sub>ij</sub></i> / dB	<i>D<sub>ij</sub></i> / dB	<i>U<sub>ij</sub></i> / dB	<i>D<sub>ij</sub></i> / dB	<i>U<sub>ij</sub></i> / dB
NPL	0.01	0.03																
CENAM	0.00	0.04																
CSIR-NML	0.02	0.05																
NMIA	0.02	0.04																
DPLA	0.00	0.03																
NMIJ	-0.01	0.04																
GUM	0.01	0.03			Not computed				Not computed				Not computed					
KRISS	0.00	0.03																
NIST	-0.01	0.04																
NRC	-0.04	0.03																
PTB	0.01	0.03																
VNIFTRI	0.00	0.05																
BEV	-0.01	0.03																
SP	0.01	0.04																
IEN	-0.01	0.05																
UME	0.02	0.05			Not computed				Not computed				Not computed					
METAS	-0.01	0.03																
SMU	0.00	0.04																
OMH	0.03	0.07																
CMI	-0.04	0.03																
NMIA	0.00	0.04	0.00	0.05	0.01	0.08	0.00	0.06										
CMS/ITRI	0.01	0.04	0.02	0.05	0.03	0.08	0.02	0.06										
NIM	-0.01	0.05	-0.01	0.06	0.00	0.09	-0.01	0.06										
NIMT	0.00	0.04	0.00	0.05	0.01	0.08	0.00	0.06										
NML-SIRIM	0.00	0.03			0.01	0.08	0.00	0.05			Not computed				Not computed			
NPLI	-0.02	0.07	-0.01	0.08			-0.01	0.08										
SCL	-0.01	0.04	0.00	0.05	0.01	0.08												
INMETRO	-0.04	0.05			Not computed								-0.03	0.07			Not computed	
INTI	-0.02	0.05									0.03	0.07					Not computed	
KIM-LIPI	-0.01	0.08			Not computed						Not computed						Not computed	
UME	0.02	0.06															0.01	0.07
SMU	0.01	0.05			Not computed												-0.01	0.07
DNDI	0.02	0.06			Not computed						Not computed						Not computed	