

BIPM-SIM Training course: KCDB 2.0

KCDB Statistics

Bureau
International des
Poids et
Mesures

20th April 2022
Chingis KUANBAYEV
BIPM

Contents – getting the numbers

Data available in the KCDB

- CIPM MRA participation
- Participation in key comparisons
- Participation in supplementary comparisons
- Piloting of comparisons
- CMCs declarations

www.bipm.org - Country page information

- Participation in the work of Consultative Committees
- Signatory/NMI
- Designated institutes
- Calibration certificates issued by the BIPM

KCDB Statistics:

CIPM MRA participation

The CIPM MRA has been signed by:

- representatives of:
 - 63 Member States
 - 38 Associates of the CGPM
- 4 international organizations (ESA, IAEA, JRC, WMO) and covers a further 150 designated institutes.

April 2022: <https://www.bipm.org/en/cipm-mra/participation>

The screenshot shows the BIPM website header with the logo 'Bureau International des Poids et Mesures' and the tagline 'Coordinating the world-wide measurement system to ensure comparable and internationally accepted measurement results'. The navigation menu includes 'ABOUT US', 'COORDINATION', 'LIAISON', 'TECHNICAL/SCIENTIFIC', and 'PUBLICATIONS & EVENTS'. The 'COORDINATION' menu is expanded, showing options like 'CIPM MRA', 'PARTICIPATING LABORATORIES', 'USE OF THE CIPM MRA LOGO', 'DOCUMENTS ON THE CIPM MRA', 'CMC APPROVAL PROCESS', 'JCRB', and 'KCDB'. The main content area is titled 'CIPM MRA' and includes a description of the MRA and a list of participating laboratories. The 'Argentina' section is highlighted, showing the 'Instituto Nacional de Tecnología Industrial' (INTI) as a signatory and the 'Comisión Nacional de Energía Atómica' (CNEA) as a designated institute.

Bureau International des Poids et Mesures

SIGN IN | Français

Coordinating the world-wide measurement system to ensure comparable and internationally accepted measurement results

ABOUT US | COORDINATION | LIAISON | TECHNICAL/SCIENTIFIC | PUBLICATIONS & EVENTS

CIPM MRA

PARTICIPATING LABORATORIES

USE OF THE CIPM MRA LOGO

DOCUMENTS ON THE CIPM MRA

CMC APPROVAL PROCESS

JCRB

KCDB

The CIPM MRA is open to all Member States, Associate States and Economies, and to certain international organizations invited by the CIPM.

There are 252 institutes participating in the CIPM MRA, comprising 38 NMIs, 4 International organizations and 150 designated institutes.

Argentina

Signatory/NMI

Instituto Nacional de Tecnología Industrial

→ INTI

San Martín, Prov. Buenos Aires

Participating in the CIPM MRA since: 14 October 1999

Signed by: Joaquín VALDÉS (INTI)

Designated institute(s)

Comisión Nacional de Energía Atómica

For ionizing radiation

→ CNEA

Buenos Aires

KCDB Statistics

- 1 CIPM MRA Participants
 - NMIs, DIs, and IOs
- 2 Total numbers:
 - CIPM MRA participants, CMCs, KCs and SCs
- 3 4 Statistics by state or economy:
 - CMCs
 - Key comparisons
 - Supplementary comparisons
- 4 More comparison statistics
- 4 Statistics (if logged in)
 - CMC Review performance
 - List of Greyed out CMCs
 - Comparison older than 5 years

The screenshot shows the KCDB website interface. At the top, there is a navigation bar with a logo, a link to BIPM.org, and a 'CIPM MRA PARTICIPANTS' button. Below the navigation bar, there is a header section with the KCDB logo and a statement: 'All data listed in the KCDB have been reviewed and approved within the CIPM Mutual Recognition Arrangement.' The main content area features a navigation bar with tabs for 'CMCs', 'COMPARISONS', 'NEWS', and 'STATISTICS'. The 'STATISTICS' tab is highlighted. Below the navigation bar, there are two search bars: 'Calibration and Measurement Capabilities - CMCs' and 'Key and supplementary comparisons'. The 'NEWS' section displays three news items. The 'STATISTICS' section shows a world map with regional labels (EURAMET, COOMET, SIM, GULFMET, AFIRM, AFIRMETS) and a table of statistics. The table lists the number of CIPM MRA participants (252), key comparisons (1120), CMCs (25714), and supplementary comparisons (652). Below the table, there are links for 'CMC statistics', 'Key comparisons by state or economy', 'Supplementary comparisons by state or economy', and 'More comparison statistics'.

← to BIPM.org

1 CIPM MRA PARTICIPANTS

1

KCDB

All data listed in the KCDB have been reviewed and approved within the CIPM Mutual Recognition Arrangement.

2

3

4

STATISTICS

Calibration and Measurement Capabilities - CMCs

Type a keyword

SEARCH

→ Advanced search

Key and supplementary comparisons

Type a keyword or identifier

SEARCH

→ Advanced search

News

5 APRIL 2022
IMPROVED SECURITY: NEW PASSWORD CRITERIA

New password criteria for logging into the KCDB platform have been implemented. The password must be composed by at least 10 characters and contain 1 capital letter, 1 number and 1 special character (presently allowed: ! & # @ % * < > \$).

15 APRIL 2022
IMPORTANT

The KCDB web will be shut down for maintenance on Friday 15 April from 13:00 to 14:00 Paris time (UTC+2). The search facility may be hampered until 15:00 (UTC+2).

19 APRIL 2022
Accelerator Photon Beams - BIPM

The results of the [BIPM-RUHL-KG](#) comparisons carried out between the [BIPM](#) and [PTB \(Germany\)](#) have been published in the KCDB. It is a repeat of a former comparison carried out 10 years earlier. The comparison concerns the determination of absorbed dose to water in accelerator photon beams and support quality and traceability in **radiotherapy**.

14 APRIL 2022
Length metrology - EURAMET

SEE ALL NEWS

Statistics

Currently in the KCDB there are

252	1120
CIPM MRA participants	key comparisons
25714	652
CMCs	supplementary comparisons

→ CMC statistics

→ Key comparisons by state or economy

→ Supplementary comparisons by state or economy

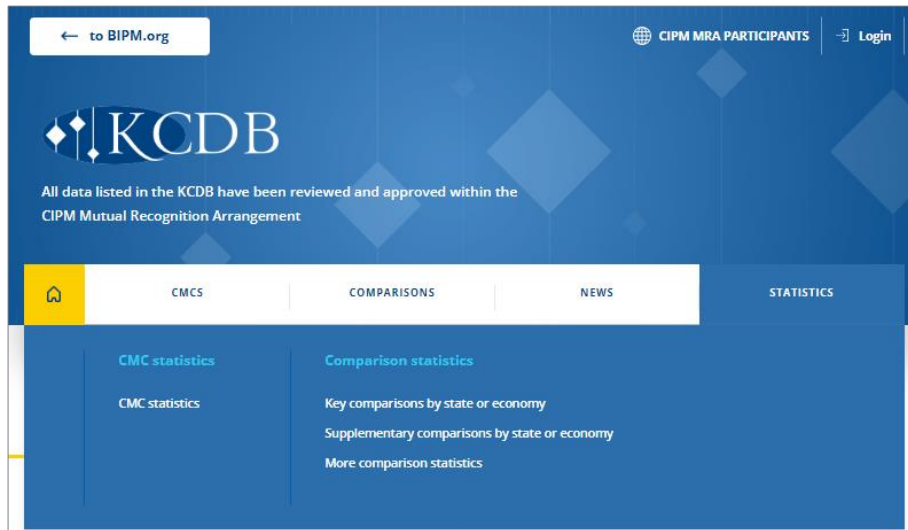
→ More comparison statistics

2

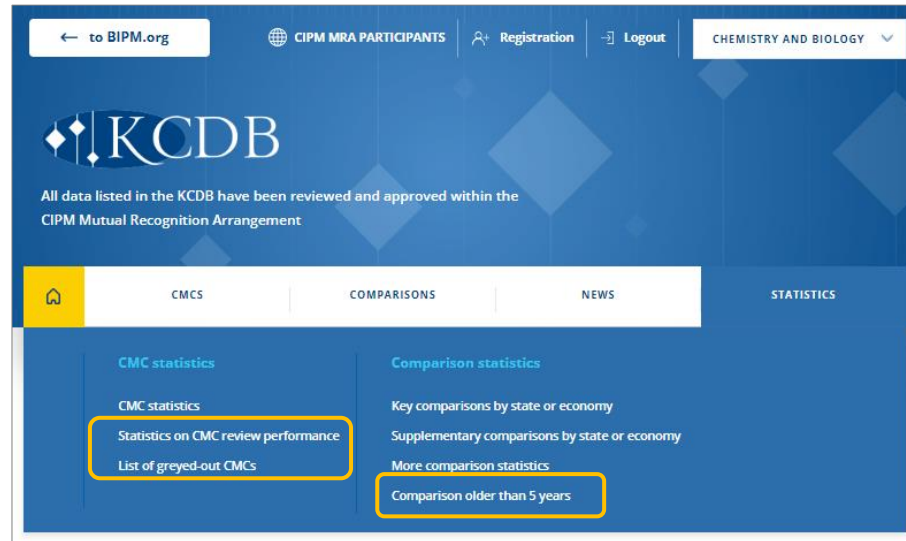
3

KCDB Statistics: available data

Open access

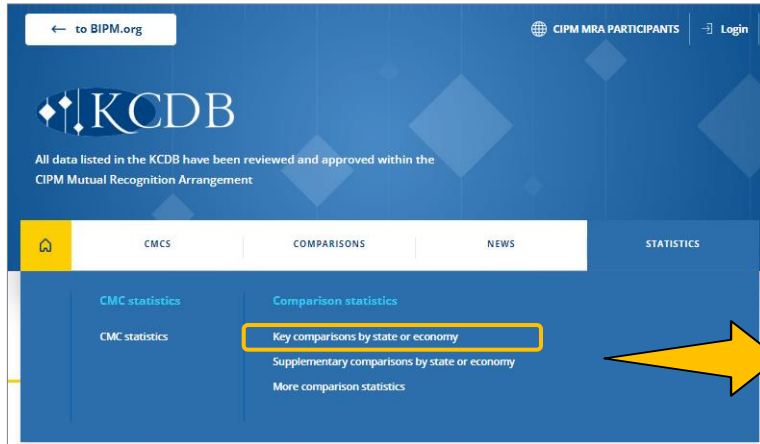


Logged in



KCDB Statistics:

Participation comparisons



Home > Key comparisons by state or economy

Number of key comparisons by state or economy

EXPORT XLS

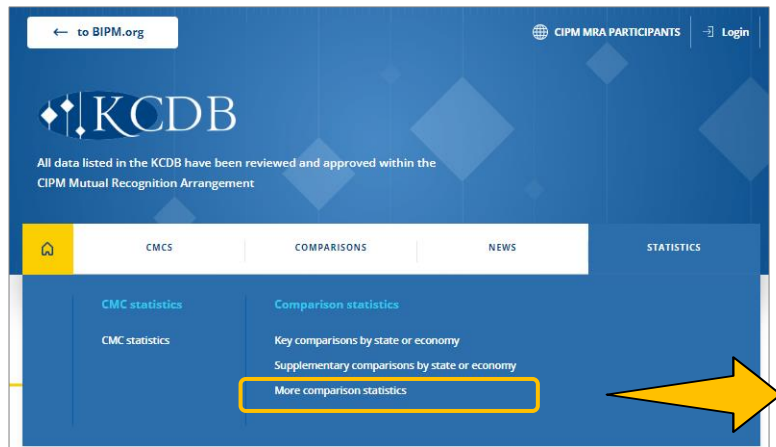
COUNTRY	STATUS	RMD	PARTICIPATION INCLUDING PILOTS	PILOTS
Albania	A	EURAMET	8	
Argentina	MS	SIM	123	
Australia	MS	APMP	278	
Austria	MS	EURAMET	134	
Azerbaijan	A	COOMET	1	
Bangladesh	A	APMP	2	
Belarus	MS	COOMET	38	
Belgium	MS	EURAMET	51	
BIPM - International Organization	IO	N/A	189	158
Bolivia	A	SIM	10	0
Bosnia and Herzegovina	A	EURAMET	14	0
Botswana	A	AFRIMETS	1	0
Brazil	MS	SIM	237	14
Bulgaria	MS	EURAMET	54	2
Cameroon	A	APMP	0	0
Canada	MS	SIM	227	22
CARICOM (Caribbean Community)	A	SIM	1	0
Chile	MS	SIM	19	1
China	MS	APMP	404	39
Chinese Taipei	A	APMP	108	14
Colombia	MS	SIM	29	0
Costa Rica	A	SIM	20	1
Croatia	MS	EURAMET	27	1

Example



KCDB Statistics:

More comparison statistics



Available data – KCs and SCs by:

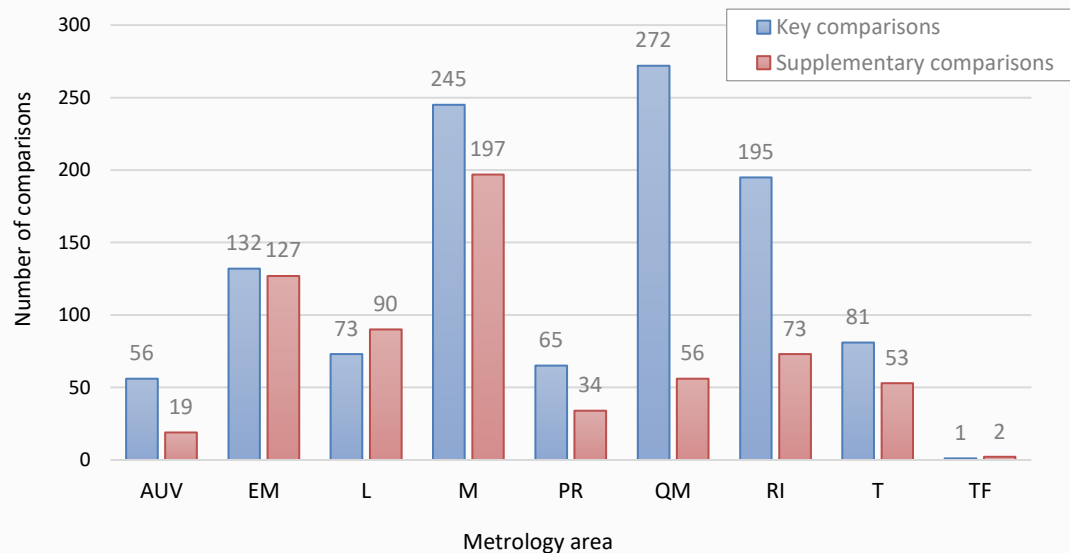
- metrology area
- organization
- country
- year



Comparisons by metrology area

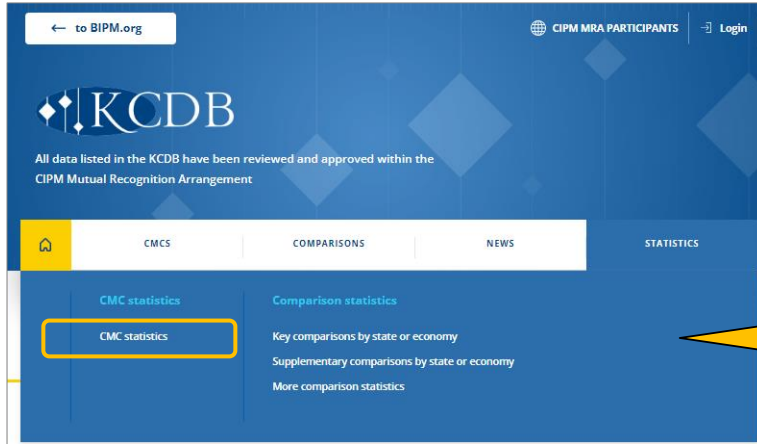
Example

Number of comparisons in KCDB, by Metrology Area
BIPM comparisons included



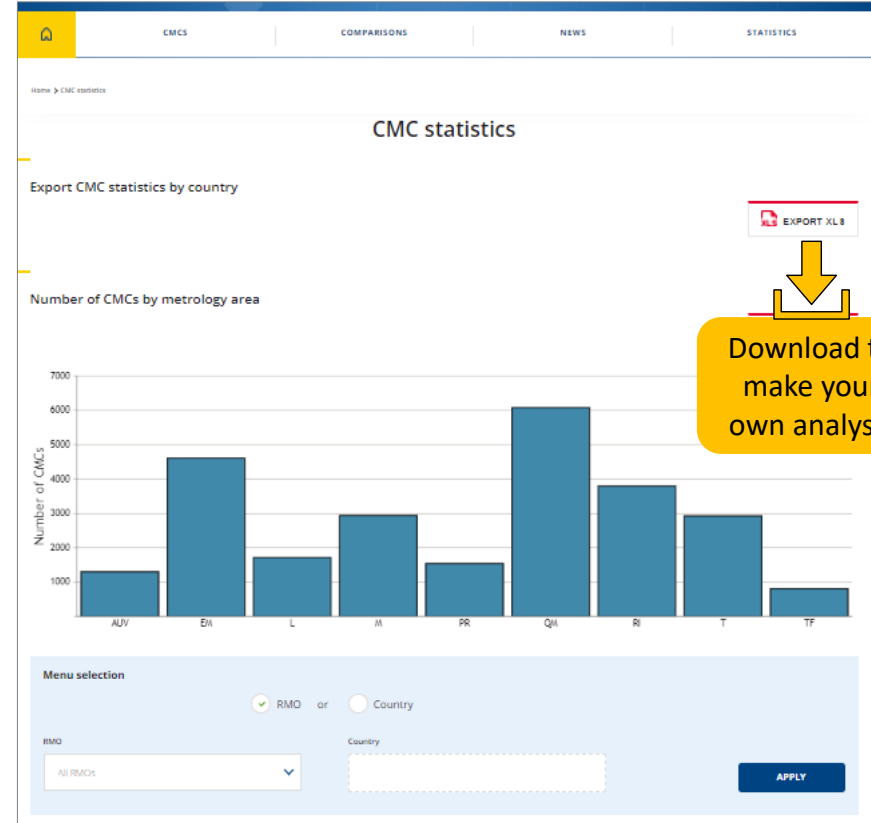
- Largest workload by metrology area in M, QM, IR and EM.

KCDB Statistics: CMCs declarations



Available data – CMC statistics by:

- *country*
- *RMO*
- *approval year*

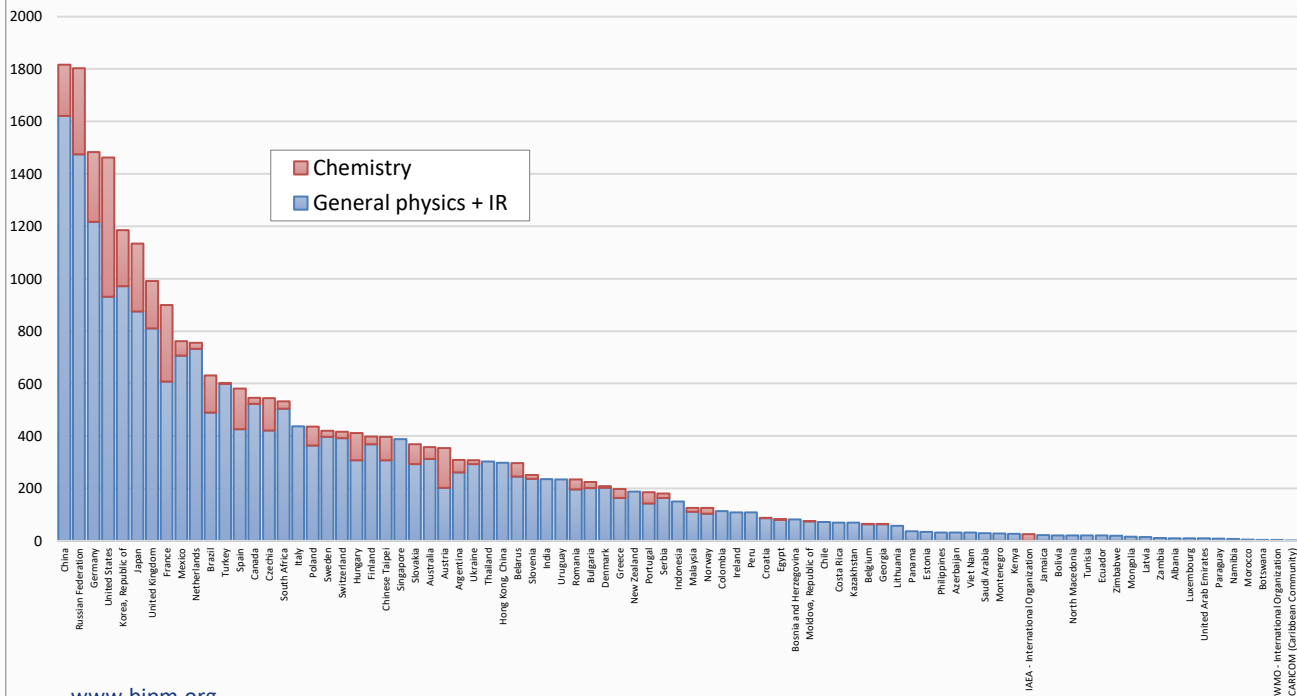


Download to
make your
own analysis

CMC analysis: distribution of CMCs by participants

Example

CMCs by Signatory, April 2022
One or more CMCs



10 countries with largest number of CMCs:

China	Japan
Russia	UK
Germany	France
USA	Mexico
Korea	Netherlands

April 2022: 25,717 CMCs in KCDB

19 signatories do not have CMCs

43 sign. with 100 or more chemistry CMCs

84 sign. with 100 or more physical CMCs.

April 2022:

<https://www.bipm.org/kcdb/cmc/statistics/public>

KCDB Statistics: Logged in

The screenshot shows the KCDB (Knowledge and Compliance Database) interface for logged-in users. The top navigation bar includes a link to BIPM.org, a globe icon for CIPM MRA PARTICIPANTS, a user icon for Registration, and a Logout button. A dropdown menu for 'CHEMISTRY AND BIOLOGY' is also visible. The main header features the KCDB logo and a statement: 'All data listed in the KCDB have been reviewed and approved within the CIPM Mutual Recognition Arrangement'. Below this is a navigation bar with icons for Home, CMCS, COMPARISONS, NEWS, and STATISTICS. The STATISTICS section is active, displaying two columns of links. The left column, titled 'CMC statistics', includes 'Statistics on CMC review performance' and 'List of greyed-out CMCs'. The right column, titled 'Comparison statistics', includes 'Key comparisons by state or economy', 'Supplementary comparisons by state or economy', 'More comparison statistics', and 'Comparison older than 5 years'. The links 'Statistics on CMC review performance', 'List of greyed-out CMCs', and 'Comparison older than 5 years' are highlighted with yellow boxes.

← to BIPM.org

CIPM MRA PARTICIPANTS

Registration

Logout

CHEMISTRY AND BIOLOGY

KCDB

All data listed in the KCDB have been reviewed and approved within the CIPM Mutual Recognition Arrangement

CMCS

COMPARISONS

NEWS

STATISTICS

CMC statistics

CMC statistics

Statistics on CMC review performance

List of greyed-out CMCs

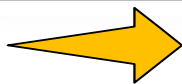
Comparison statistics

Key comparisons by state or economy

Supplementary comparisons by state or economy

More comparison statistics

Comparison older than 5 years



Statistics on review performance

Loss of rights within the JCRB review for the last twelve months

 EXPORT XLS

Reason for loss of rights	AFRIMETS	APMP	COOMET	EURAMET	GULFMET	SIM
No reply to review request	0	0	0	18	18	0
Accepted but did not complete the review	9	0	0	0	0	11
Reviewed but did not vote when requested	0	0	0	0	0	0
Total loss of rights	9	0	0	18	18	11

Menu selection

Metrology area

AUV

APPLY



Statistics on CMC review performance:

- Loss of rights within the JCRB review for the last twelve months
- Duration from the first CMC submission for JCRB review to publication in the KCDB by year
- Number of CMCs presently under revision in the JCRB review process
- Number of CMCs presently under JCRB review by submitting RMO
- Number of comments issued during the JCRB review

CMCS
COMPARISONS
NEWS
STATISTICS

Home > List of greyed-out CMCS

List of greyed-out CMCS

EXPORT XLS

CMC IDENTIFIER	DATE OF GREYING OUT	COUNTRY	METROLOGY AREA	FIVE YEAR LIMIT
SIM-QM-AR-00000039-1	2022-02-16	Argentina	QM	
SIM-QM-AR-0000003A-1	2022-02-16	Argentina	QM	
SIM-QM-AR-0000003B-1	2022-02-16	Argentina	QM	
SIM-QM-AR-0000003C-1	2022-02-16	Argentina	QM	
SIM-QM-AR-0000003D-1	2022-02-16	Argentina	QM	
SIM-QM-AR-00000038-1	2022-02-16	Argentina	QM	2027-02-16
SIM-EM-CA-000008M2-1	2021-09-13	Canada	EM	2026-09-13
SIM-EM-CA-000008M3-1	2021-09-13	Canada	EM	2026-09-13
SIM-EM-CA-000008M4-1	2021-09-13	Canada	EM	2026-09-13
SIM-EM-CA-000008MU-1	2021-09-13	Canada	EM	2026-09-13

< 1 2 3 4 >

Menu selection

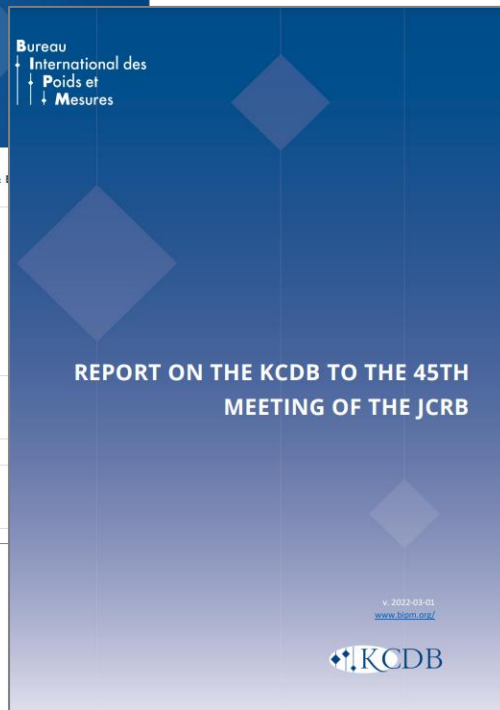
Metrology area
RMO

All metrology areas
SIM

APPLY



KCDB Reports



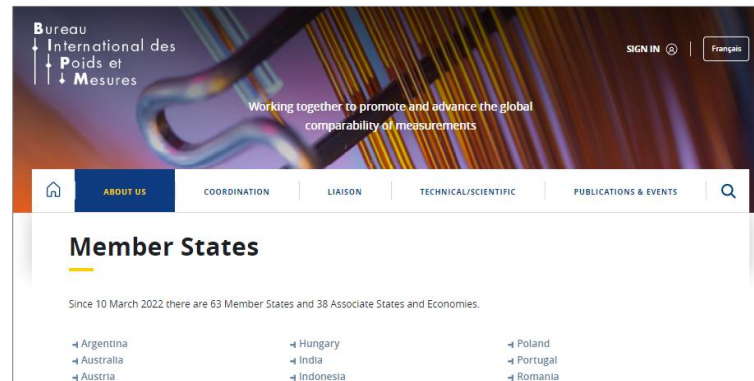
KCDB Reports

- summarize the major progress and evolution of the KCDB
- issued biannually
- publicly available via the BIPM website

<https://www.bipm.org/en/cipm-mra/kcdb-reports>

www.bipm.org - Country page information

- Participation in the work of Consultative Committees
- Signatory/NMI
- Designated institutes
- Calibration certificates issued by the BIPM



www.bipm.org - Country page information

- Participation in the work of Consultative Committees

Bureau International des Poids et Mesures

Working together to promote and advance the global comparability of measurements

SIGN IN | Français

ABOUT US | COORDINATION | LIAISON | TECHNICAL/SCIENTIFIC | PUBLICATIONS & EVENTS

Member State / Associate

Select

View

Member State: Brazil

The Federative Republic of Brazil (then the Empire of Brazil) was one of the initial signatories of the Metre Convention (20 May 1875).

It ratified the Convention and first became a Member State on 19 April 1921.

It withdrew with effect from 1932, then acceded again on **14 April 1954**.

Participation of the NMI/DIs in the CCs

CCAUV	CCEM	CCL	CCM	CCPR	CCQM	CCRI	CCT	CCTF	CCU

- Member
 - Observer

www.bipm.org - Country page information

- Signatory/NMI
- Designated institutes

CIPM MRA

Signatory/NMI

I Instituto Nacional de Metrologia, Qualidade e Tecnologia
→ [INMETRO](#)
Rio de Janeiro

Participating in the CIPM MRA since: 14 October 1999
Signed by: Marco Antonio ALBUQUERQUE de ARAUJO LIMA (then President, INMETRO)

Designated institute(s)

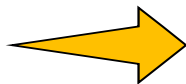
I National Laboratory for Metrology of Ionising Radiation/Institute of Radiation Protection and Dosimetry CNEN
For ionizing radiation
→ [LNMRI/IRD](#)
Rio de Janeiro

I Observatório Nacional/Divisão Serviço da Hora
→ [ON/DSHO](#)
Rio de Janeiro

www.bipm.org - Country page information

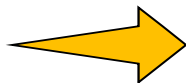
- Calibration certificates issued by the BIPM

BIPM services provided



Comparisons piloted by the BIPM

[→ Key comparisons](#)



Calibration certificates issued by the BIPM

Search filter :

Year

Department

Calibration certificate No.98 (2021)

100 pF Standard Capacitor, sn 01508

BR INMETRO

Calibration certificate No.97 (2021)

100 pF Standard Capacitor, sn 01163

BR INMETRO

Calibration certificate No.96 (2021)

10 pF Standard Capacitor, sn 01477

BR INMETRO

Calibration certificate No.95 (2021)

10 pF Standard Capacitor, sn 01209

BR INMETRO

Calibration certificate No.94 (2021)

1 pF Standard Capacitor, sn 01210

BR INMETRO

Calibration certificate No.89 (2021)

10 k Ω standard resistor, sn 043007

BR INMETRO

Conclusion

A powerful tool to understand where you are (today and over time) at the NMI level, country level and RMO level...

- www.bipm.org => country page information shows engagement of a country in the BIPM activities
- KCDB website (both open access and restricted) can provide statistics on comparisons, CMCs, and the review process
- These statistics can be used to show engagement of NMIs and RMOs in the CIPM MRA, and show variations across metrology areas and over time
 - Statistics can help guide decisions on implementation and effectiveness, and identify problem areas needing corrective action

Thank you