



Report from APMP Technical Committee for Acoustics, Ultrasound and Vibration (TCAUV)

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TCAUV Membership and Meetings

The APMP TCAUV has members from NMIs of 11 regional economies (Australia, China, Chinese Taipei, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, Singapore and Thailand) that are involved in the AUV field. The TCAUV was created in 1999 and now holds annual meetings just prior to the annual APMP General Assembly meetings. The 5th TCAUV meeting was held on 5-6 September 2005 in Korea and the next meeting is due between 11-16 December 2006 in New Delhi.

Regional Key Comparisons

APMP.AUV.A-K1 – Comparison of LS1P Microphone Calibrations

This regional Key Comparison involved determination of pressure sensitivity of two LS1P microphones in the frequency range 63 Hz to 8 kHz with NMIJ as the pilot laboratory. Draft B of the report was released in May 2006. Results showed that the deviations from mean values were less than ± 0.05 dB for all frequencies. The results have been linked to the CIPM Key Comparison CCAUV.A-K1 by introducing a correction factor. The degree of equivalence with the key comparison reference value for all nine participating laboratories was within corresponding expanded uncertainties. This Key Comparison utilised international delivery services for transporting microphone artefacts (rather than hand-carrying) using a specially built container lined with a cushioning material and with small holes in outer casing to prevent damage from shocks and changes in environmental conditions..

APMP.AUV.A-K3 – Comparison of LS2P Microphone Calibrations

The draft Protocol was circulated to members in April 2006 and after revision, based on comments from the members, the Protocol was finally approved in June 2006 by all the participants with the planned start date of 1 July 2006. Two LS2P microphone artefacts have been chosen and ten APMP laboratories are participating with KRISS, Korea as the Pilot Laboratory. Both microphone artefacts will return to KRISS each time two participants have completed their measurements to monitor their stability. Frequency range agreed for this Comparison is from 63 Hz to 25 kHz with 31.5 Hz as the optional frequency. So far NIMT, Thailand and SPRING, Singapore have completed their measurements. After consultations with the BIPM, the numbering for this inter-comparison was made consistent with the CCAUV numbers even though no APMP.AUV.A-K2 exists. It is planned to link the results with the corresponding CCAUV comparison using the linking labs (NMIA, NMIJ, NIM, and KRISS) which participated in CCAUV Key Comparison. Expected completion date of the measurements by all ten participating laboratories is June 2007.

Proposal for Future Comparison

It was agreed at the APMP meeting in Jeju in September 2005 that APMP should carry out a Key Comparison in Ultrasonics Power measurements. The proposal is still at the preliminary stage at present, however, the NPLI, India has agreed to fabricate a suitable artefact for this project.

CMC Reviews and Additions

CMC submission in Acoustics and Ultrasound from NIM, China has passed the intra-RMO review and has been submitted for the inter-RMO review. Their vibration CMCs will be included and reviewed later as they are finalising the results of the bilateral comparison with PTB, Germany.

The CMCs of CMS/ITRI, Chinese Taipei in Shock Calibrations have successfully gone through intra-RMO and inter-RMO review processes (i.e. all RMO have approved) and are ready for publication. An earlier issue on the traceability of the reference accelerometer calibration was overcome by having their reference calibrated at the PTB, Germany which has shock sensitivity in its declared CMCs. Another issue in relation to reporting of the shock duration (not mandatory in ISO 5347-4 but required in ISO 16063-22) was resolved by clarification. The CMS/ITRI currently calibrates using ISO 5347-4 but they plan to change to new Standard in 2008.

Technical peer review of SCL, Hong Kong was completed in January 2006 and they have extended the scope of accreditation. The Acoustics and Vibration CMCs of NPLI, India will be technically peer reviewed in October 2006. Their Ultrasonics CMCs have already been peer-reviewed. It is planned that the NPLI CMCs will be submitted for intra-RMO and inter-RMO reviews in the near future. Other expert peer reviews being done include those of NMIJ who plan to add free-field response of sound level meter and sound-pressure levels of acoustic calibrators to their CMCs.

Other Items

Indonesia's NMI (KIM-LIPI) is working toward having their acoustic capabilities accredited through KAN (Indonesian accreditation body) with a view to have their CMCs in acoustics included in appendix C of CIPM MRA scheme.

KIM-LIPI, Indonesia and SIRIM, Malaysia have expressed interest in receiving training in the following AUV areas:

KIM-LIPI:

Acoustics	Reciprocity calibration and its measurement uncertainty analysis
Vibration	Primary calibration using ISO 16063-11 and its uncertainty analysis

SIRIM:

Ultrasonics	Hydrophones, primary and comparison calibrations
Acceleration	Primary and comparison calibration of shock accelerometers
Sound Level Meters	Free-field acoustic response and requirements of new IEC 61672.

If any CCAUV member body can assist in providing training or can fund their training needs, they are welcome to discuss with me for further details.

The Journal of Metrological Society of India is planning to have a Special Issue on Acoustics & Vibration next year (Apr-Jun 2007). This is an invitation and Call for Papers to anyone who wishes to submit a paper for publication in the Special Issue. The Paper can be in any broad area of acoustics and vibration and should be submitted by 1 January 2007. For example, it may be on the current status of AUV metrology or new developments in your NMI, it may be on some results of inter-comparisons, or any other work that you have been undertaking and would like to have published. The interest in submitting abstracts and papers can also be sent to me as the Guest Editor for that Special Issue.

I attended the APMP TC Chairs meeting held in Singapore on 30-31 March 2006. Issues discussed at the meeting included: regular monitoring process of CMCs and their modifications, making establishment of Quality Systems mandatory for new CMC submissions, BMC and CMC, procedures for intra-APMP reviews, need for on-site reviews and APMP guidelines for acceptance of data in Appendix C APMP G-3.

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