

Questionnaire on activities in radiometry and photometry

Reply from: NMI Australia

Delegate: Peter Manson

1. Summarize the progress in your laboratory in realizing top-level standards of:

- (a) broad-band radiometric quantities

- (b) spectral radiometric quantities

We use a goniophotometer with 1 m arm length for measurements of total luminous flux. We have started modifications of the detector mount and the opposite, balancing arm, to mount our small array spectrometer system on the goniophotometer. The aim is to make spatially-resolved spectrum measurements during the total luminous flux measurement. We believe this information may be relevant to our clients when combined with measurements of luminous flux for solid state lighting products.

- (c) photometric quantities

We have changed the baffles used for stray light control in photometric measurements. The new baffles are shaped like a sixteen-sided star, meaning no inner edges of the baffles reflect light from the lamp back towards the optical axis. This has resulted in reduced scattering of light from the lamp into the detector.

2. What other work has taken place in your laboratory in scientific or technological areas relevant to the CCPR?

As part of NMIA's plans to strengthen our engagement with the health sector in Australia, we have been extending our laser power measurement capability up to powers of a few tens of Watts. The extension has been based on using an optical chopper as an attenuator whose transmittance can be calculated from the geometry of the chopper blades. This allows linearity tests to be performed on thermal laser power meters. We plan to characterise an electrical substitution calorimeter and compare it with the build-up system. We are also planning to develop capability for laser pulse energy measurements.

3. What work in PR has been/will be terminated in your laboratory, if any, in the past /future few years? Please provide the name of the institution if it has been/will be substituted by a DI or accredited laboratory.

After closing a small number of activities in the last few years, we believe that our range of services is quite a good match to the demand from our clients so there are no plans to close any other services.

4. What are present, new or emerging needs of users of your services that are not being supported sufficiently by current CCPR activities or initiatives? In the light of this information please suggest desirable changes in the future working program of the CCPR.

Consultative Committee for Photometry and Radiometry (CCPR)

23rd Meeting (22 - 23 September 2016)

We have not received any feedback from stakeholders which would indicate present or future concerns about whether our work is sufficiently supported by CCPR activities. Similarly, we do not have any concerns related to our own development work.

5. What priorities do you suggest for new research and development programmes at NMIs in the area of Photometry and Radiometry?
6. Are there any research projects where you might be looking for collaborators from other NMIs or are there studies that might be suitable for collaboration or coordination between NMIs?

The recently-released CIE S 025 standard “Test Method for LED Lamps, LED Luminaires and LED Modules” specifies a tolerance interval of 0 m.s⁻¹ to 0.25 m.s⁻¹ for air movement. This requirement is placing demands for wind-speed measurements at low speeds that Australian accredited labs cannot meet. In order to allow the requirements to be met, we would like to collaborate to measure the influence factor for air movement on a wide range of representative types of LED sources. The desire is to provide information that labs can use to prepare uncertainty budgets based on the achievable wind-speed measurement uncertainty.

7. Have you got any other information to place before the CCPR in advance of its next meeting?
8. Bibliography of radiometry and photometry papers of your laboratory since the last CCPR (September 2014)?

Littler, I.C.M., Atkinson, E.G., Manson, P.J., Ballico, M., Kosubek, E., Taubert, D., and Hollandt, J. *Aperture area measurement using two different traceability routes* Meas. Sci. Technol **26** (2015) 125201