Consultative Committee for Photometry and Radiometry (CCPR)

24th Meeting (19 - 20 September 2019)

Questionnaire on activities in radiometry and photometry

## Reply from: NMI Australia

## Delegate: Peter Manson

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1. Summarize the progress in your laboratory in realizing top-level standards of:
2. broad-band radiometric quantities :

None

(b) spectral radiometric quantities :

We have implemented the use of an optical pyrometer (calibrated by the NMIA Temperature section) to measure the temperature of the cavity in the high-temperature blackbody that is the basis of our spectral irradiance measurements. Determination of the cavity temperature using the filter radiometers that were previously used was time consuming and there were concerns about the effects of filter drift. The new system uses a pneumatic actuator to move the diffuser out of the optical path, allowing the pyrometer to record the absolute temperatures at the beginning and end of a run. We also use a simplified filter radiometer as a drift monitor during the run between absolute temperature measurements. Some minor improvements to the power supply system have also been made.

We have enhanced our laser power measurement capabilities, extending the upper limit to 20 W. This extension is based on a several stages of build-up from our reference Si detectors using a mechanical chopper as a variable attenuator. The attenuation ratio of the chopper can be varied because it uses a pair of blades that can be displaced relative to each other. Because we use slow thermal power sensors, the result is a variable attenuator with an attenuation that can be calculated from the blade geometry.

(c) photometric quantities :

Minor improvements to our luminous flux measurement system have been made. We now use two reference lamps of different types when calibrating the photometer to allow consistency checking, and we have implemented a laser alignment system.

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

Demand for testing of traffic lights according to AS 2144 has dropped to zero so that work has been terminated. A number of accredited labs in Australia have developed capability in this area over a number of years.

1. 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.

We are not aware of any concerns about whether CCPR activities provide sufficient support to meet the needs of our users. We believe that the primary concern of our users is the quality and efficiency of our services, and that the CCPR activities related to the MRA provide good support.

1. What priorities do you suggest for new research and development programmes at NMIs in the area of Photometry and Radiometry?
2. 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?
3. Have you got any other information to place before the CCPR in advance of its next meeting?
4. 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