CCPRWG-SP/25-02

**Comité Consultatif de Photométrie et Radiométrie (CCPR)**

**Report of the 18th meeting of Working Group on Strategic Planning (WG-SP) – Version 2.0**

BIPM, Paris with online participation

June 4, 2024, 9:00 – 13:00 UTC+1

June 5, 2024, 9:00 – 13:00 UTC+1

# Attendance list

|  |  |
| --- | --- |
| CCPR President | CCPR-WG-SP Chair |
| Dr Maria Luisa Rastello, INRIM/CIPM | Dr Maria Nadal, NIST |
|  |  |
| CCPR Executive Secretary | CCPR-WG-KC Chair |
| Dr Joële Viallon, BIPM | Dr Haiyong Gan, NIM |
|  |  |
| Participant (in-person) | Participant (online) |
| Mr Mohammad Al Fohaid, SASO-NMCC | Dr Joaquin Campos Acosta, IO-CSIC |
| Mr Errol Atkinson, NMIA | Dr Juan Pablo Bábaro, INTI |
| Dr In Ho Bae, KRISS | Mrs Iakyra Borrakuens Couceiro, INMETRO  |
| Mr Anatolii Bescupschi, NMI (MD)  | Dr Angela Gamouras, NRC |
| Dr Giorgio Brida, INRIM | Dr Evgeniy Ivashin, VNIIOFI |
| Mr Paul Dekker, VSL | Dr Thiago Menegotto, INMETRO |
| Dr Aleksandr Dunaev, VNIIOFI | Dr Jacques Morel, METAS |
| Dr Jimmy Dubard, LNE | Dr Mira Naftaly, NPL |
| Dr Martin Dury, NPL | Dr Ferhat Sametoglu, UME |
| Dr Nigel Fox, NPL | Dr Luke Sandilands, NRC |
| Dr Jarle Gran, JV | Dr Florian Stuker, METAS |
| Prof. Erkki Ikonen, MIKES (Day 2 Only) | Dr Neil Swift, MSL |
| Dr Jane Ireland, NPL | Dr Erik Thorvaldson, NMIA |
| Dr Boris Khlevnoy, VNIIOFI | Dr Emma Woolliams, NPL |
| Prof. Dr Stefan Kück, PTB | Dr Howard Yoon, NIST |
| Dr Brenda Lam, SCL |  |
| Dr John Lehman, NIST |  |
| Dr, Kenichi Kinoshita, NMIJ/AIST |  |
| Dr Seon-Do Lim, KRISS |  |
| Lisa Meda INRIM |  |
| Dr Hui Liu, NIM |  |
| Dr Dobrochna Matkowska, GUM |  |
| Dr Hiroki Ninomiya, NMIJ/AIST |  |
| Dr Gaël Obein, LNE-LCM/Cnam |  |
| Dr Yoshihiro Ohno, NIST |  |
| Dr Hiroshi Shitomi, NMIJ/AIST |  |
| Dr Armin Sperling, PTB |  |
| Minoru Tanabe, NMIJ/AIST |  |
| Dr Li-Lin Tay, NRC |  |
| Dr Andrew D. Todd, NRC |  |
| Dr Shing Lung Steven Yang, SCL |  |
| Dr Zhang Jing NMC A\*STAR |  |
| Dr Weiqiang Zhao, NIM |  |

## Opening of the meeting and introductions

Maria Nadal opened the meeting and thanked BIPM for the venue, welcomed all participants and invited each to introduce themselves starting by NMI alphabetic order from those participating in person and then online.

This was followed by the introduction of the officials (See the attendance list above).

## Appointment of the recording secretary

Maria Nadal appointed Errol Atkinson as rapporteur for this meeting.

## Approval of the agenda

The [Agenda](https://www.bipm.org/documents/20126/258814740/2024%2BCCPR%2BWG-SP%2BAgenda%2BV4/62b12ff0-cc95-c177-bc3f-a01eb877ed04) was finalized during the meeting.

The agenda was approved without any comments.

## CCPR membership criteria

Nigel Fox sought clarification on “in person” and “online”. Joële Viallon responded that the CIPM accepts online attendance. Nigel deferred to the CIPM direction and Maria Luisa Rastello saw the value in in-person attendance Maria Nadal explained membership by NMI with reference to the CCPR.

AP-2024-01: Maria Nadal to revise the CCPR WG-SP Membership Criteria, version 1.3a to include statement: *in-person attendance is preferred but online is welcome* in section 3.1.

## Approval of the minutes of the 2023 CCPR WG-SP meeting

The Minutes of the 17th meeting of Working Group on Strategic Planning (WG-SP) were approved without any comments.

## Review of decisions and action points from the 2023 WG-SP meeting

### Review of decisions

DP-2023-01. Approved the realization of a joint workshop with CIE for the 100 years of the V(λ). This will be held at the BIPM during CCPR meetings in 2024. AP-2023-07.

Completed 3 June 2024

### Review of action points

AP-2023-01. Peter Blattner to provide a proposal of ToR that better reflects the activity of TG15.

Maria Nadal: Reported that the ToR was revised: To monitor activities related to digitalization in the field of photometry and radiometry, and initiate activities in response to identified needs.

DP-2024-01: The revision of the ToR of TG15 was accepted.

AP-2023-02. Joële Viallon to update CCPR website to reflect the new chair.

Completed: The new chair is Angela Gamouras, NRC Canada

AP-2023-03. Andreas Steiger should propose a new Task Group for the aimed pilot study. This should go to all members so that they have opportunity to show interest in participating.

AP-2023-04. Andreas Steiger should revise the ToR of TG8 to make them more appropriate for a Discussion Forum.

Maria Nadal: Reported that these had been fulfilled by changing TG8 from a Discussion Forum to a Task Group with a revised ToR of TG8 to “carry out a pilot comparison of reflection measurements by means of THz time domain spectroscopy (TDS)”

AP-2023-05. Joële to send an email to all CCPR members seeking a volunteer to chair TG 12.

Completed: New Chair: Zhao Weiqiang, NIM

AP-2023-06. John to send a new call should for participants of the pilot study for optical fibre responsivity.

Completed.

 AP-2023-07. Maria Nadal to announce during NEWRAD the workshop on cone fundamental based photometry.

Completed by Nigel Fox

AP-2023-08. Joële will put out a call for people interested in a Task Group on metrology for satellite observation.

Completed, see email December 19, 2023

AP-2023-09. The group of interest people should discuss the ToR proposed by Emma in her presentation.

Completed: New TG17: Discussion Forum on metrology for Satellite Observations

Chair: Emma Woolliams

## Reports on SP-TGs:

### TG17: Satellite Observations (Emma Woolliams)

Emma Woolliams presented the [BIPM CCPR WG-SP TG17](https://www.bipm.org/documents/20126/258816053/TG17%2B2024%2BCCPR%2BTG%2Bon%2BMetrology%2Bfor%2BSatellite%2BObservations/0ca1354c-4f41-bf74-3a25-be1221fdf47f) report.

Joële Viallon asked regarding the relationship of this Task Group with the CIPM sectorial Task Group of the environment. Emma responded that this Task Group is in response to the CIPM sectorial Task Group on the environment.

Maria Luisa Rastello noted that Kenya was part of the extended group and enquired if they were interested in CCPR. Emma was happy to pass on CCPR contact details.

AP-2024-02: Emma Woolliams to pass on CCPR contact details to Kenya.

Nigel Fox enquired if TG17 should be titled as a Task Group or a Discussion Forum.

Emma replied that there is a need for a Task Group specifically to set out the roadmap and more concrete tasks but that there is also a wider community in NMIs interested in the outputs of the Task Group who want to be a part of ongoing discussions. Emma would like to keep it flexible at present. A Task Group defines the short term better, but Emma has a list of interested people and does not want to exclude anybody.

Joële Viallon commented that from the list of actions, it looks more like a Task Group. It is possible to have a Task Group with members not from CCPR. Emma responded that she is happy to call it a Task Group for now and inform the other people who showed interest.

AP-2024-03: Emma Woolliams to inform Maria Nadal of the decision of the TG17 members on Task Group or Discussion Forum.

AP-2024-04: Maria Nadal to follow up with email exchange with Emma Woolliams on progress of the TG17 roadmap.

### TG6: Discussion Forum on Fibre Optics

Maria Nadal announced that Jimmy Dubard is looking for replacement to chair the Task Group because Jimmy cannot perform this duty after December 2025.

See report of [BIPM CCPR WG-SP TG6](https://www.bipm.org/documents/20126/258814764/TG6%2B2024%2BCCPR%2B-%2BDiscussion%2BForum%2Bon%2BFiber%2BOptics/ab0fd219-521d-b4b9-f19f-084f0260b4ac)

Jimmy Dubard reported on the position of chair of TG6 and that he had approached Jacques Morel, METAS as a replacement also noting that Jacques is already chair of TG9. Maria Nadal requested comments from members of TG6. Stefan Kück recommended finding a new chair and had no recommendation to close the TG. Maria Nadal thanked Jimmy for his chairing of the TG.

AP-2024-05: Maria Nadal to follow up with an email to Jimmy Dubard regarding progress in TG6.

### TG7: Discussion Forum on Few Photons Metrology

Angela Gamouras presented [CCPR-WG-SP-TG7](https://www.bipm.org/documents/20126/258815040/TG7%2B2024%2BCCPR%2B-%2BDiscussion%2BForum%2Bon%2BFew-Photon%2BMetrology/43c81b92-68b4-2755-5b27-a0c04b0a7e28)

Stefan Kück requested clarification of what activities belong inside CCPR or CIPM and what activities belong outside because they have no requirement to be handled by NMIs. Angela responded that there was a need to engage more with industry because of the benefit of the information transfer and agreed that what was in and out of scope for CCPR was important.

Emma Woolliams commented about the need for terminology agreement and referred to a recent paper on meta-thinking about how we think of terminology. Angela responded about the need for publishing so that information is readily available.

Jing Zhang raised that NMC A\*Star was interested to be in TG7 and requested information on how join. Angela responded that NMC A\*Star needed to email Angela Gamouras and Maria Nadal.

Maria Nadal questioned John Lehman regarding summer school registration being open to everyone. John responded that the school was not virtual but is open to everyone and that he has flyers.

Maria Nadal thanked Angela.

TG8: Discussion Forum on THz Metrology

(Chair: Andreas Steiger)

Dr. Mira Naftaly presented [CCPR-WG-SP-TG8](https://www.bipm.org/documents/20126/258815082/TG8%2B2024%2BCCPR%2BTG%2Bon%2BTHZ%2BMetrology/e8a095b4-12c7-b0b9-a12f-ae5b33d57349).

Maria Nadal asked if the comparison details had been discussed with members and Mira responded that the discussion had not happened yet.

AP-2024-06: Maria Nadal to follow up with Andreas Steiger regarding comparison details for TG8.

### TG10: Ad hoc on CCPR Strategy Document

Maria Nadal presented [CCPR-WG-SP-TG10](https://www.bipm.org/documents/20126/258108344/2022%2BCCPR%2BSurvey%2BSummary%2BResults/ef1c40e2-c896-0298-9eb9-d0bdae903d11).

She presented updates on the Strategic Priorities for the 2022 – 2032 CCPR Roadmap.

#### 1.SI: Future of the Candela

Nigel Fox asked if we were ahead of ourselves on strategy development on the revision of the candela. He requested clarification that it should be development of a potential strategy and that the slides indicated that we had already decided. Maria accepted the point.

AP-2024-07: Maria Nadal to revise “Long Term Plans” for the SI-Future of the Candela to: If needed, develop a strategy for implementing a new photometry system based on cone fundamentals.

#### 2.SI framework for digitalization in photometry and radiometry

#### 3.Development of LED based standard lamps to replace incandescent lamps in the field of photometry

#### 4.Replacement of source-based photometry by detector-based spectroradiometry

Nigel Fox asked, regarding photometer vs spectroradiometer photometry, if there was a Task Group in CIE working on this (to avoid CCPR duplication). Armin Sperling responded that there was not one in CIE but that there is a European project and maybe we can ask someone from this project to chair the Task Group. Nigel Fox clarified that the point was whether CCPR needed this Task Group. Yoshi Ohno asked if this project was related to Spectral Irradiance? Nigel Fox commented that the technique could be used for both Spectral Irradiance and Photometry. Yoshi Ohno volunteered that Yuqin Zong may be willing to participate.

Armin Sperling commented on current methods and Maria commented that the questions should be asked across photometry and spectroradiometry.

Maria asked if we should revise the statement concerning “Replacement of broadband photometers with spectroradiometers”. Gaël Obein said that the statement should be revised. Nigel Fox proposed “The use of spectrally resolving detectors for radiometry and photometry”. Yoshi Ohno sought clarification for primary standards and Nigel Fox explained the function of transfer standards, which Yoshi accepted.

Gaël Obein stated that it could be either Transfer Standards or Primary Scale Realization and Nigel Fox agreed that is could be for primary scales and transfer standards.

As a result, the statement now is “The use of spectrally resolving detectors as primary scale realization and transfer standards for radiometry and photometry.”

General agreement was reached.

AP-2024-08: Maria Nadal to revise current Strategic Priority: Replacement of source-based photometry by detector-based spectroradiometry” with “The use of spectrally resolving detectors as primary scale realization and transfer standards for radiometry and photometry.”

AP-2024-09: Maria Nadal to reach out to chair proposed by Armin Sperling for “Replacement of source-based photometry by detector-based spectroradiometry”.

#### 5.Development of near-field gonio-photometry standards

AP-2024-10: Maria Nadal to investigate by email if interested NMIs have the need to form a Task Group for the development of near-field gonio-photometry standards.

Nigel Fox suggested that this is perhaps more than just photometry and Gaël Obein raised that it should be photometry and radiometry. Stefan Kück suggested that it should start limited since it can be expanded in the future. This was followed by a discussion between Stefan Kück and Gaël Obein to refine the definition suitably.

Maria Luisa Rastello asked if many NMIs are active on imaging luminance measurement devices and Armin Sperling responded that PTB is active and so are some others. He also added agreement with Stefan Kück to start with a restricted spectral range.

This was followed by a discussion on the limitation of spectral range involving Nigel Fox, Stefan Kück, Gaël Obein and Armin Sperling.

Yoshi Ohno questioned “development of standards” and sought clarification to determine if this was for a luminance standard source or a radiance standard source. Armin Sperling responded that we could use the documentary standards we have now. The question is really about the methodology.

Maria summarized that for now the strategic priority is going to be limited to the visible spectral region.

#### 6.Few photons metrology

AP-2024-11: Angela Gamouras to send survey on few photons metrology to all the CCPR members.

#### 7.UV Metrology

Maria Nadal would like to see a Task Group form and volunteered Cameron Miller to chair as a suggestion to which there was general agreement.

Maria Nadal requested conformation that a new Task Group should be formed, and again general agreement was noted.

Maria Nadal requested if there were any other volunteers to be the chairperson for the new Task Group and there was no response.

AP-2024-12: Maria Nadal to inform Cameron Miller of UV Metrology TG Chair role.

#### 8.Climate and Environmental observations

Emma Woolliams reported that by October or November TG17 should be able to revamp long term strategic directions.

AP-2024-13: Emma Woolliams to revamp strategic directions of TG17.

#### 9.Standards to replace incandescent lamps in the field of radiometry

Armin Sperling suggested that we should combine spectroradiometry and traceability of spectroradiometry with this Task Group. In principle it is the same question.

Yoshi Ohno sought clarification that this will be detector based and Armin Sperling responded that at least that is one of the possibilities. The Euramet project is looking at this with one option being detector based but another option is also looking at sources.

AP-2024-14: Maria to seek interest among NMIs for a new Task group on standards to replace incandescent lamps in the field of radiometry to research suitable standards.

#### 10.Optical properties of materials

AP-2024-15: Maria Nadal to seek interest among NMIs for a new Task Group for optical properties of materials.

Joële Viallon commented that we need to update the CCPR Strategic Planning and Roadmap for the next CGPM in October 2026. It is best to have it ready one year before.

AP-2024-16: TG10 to revise CCPR Strategic Planning and Roadmap

### TG11: Single Photon Radiometry

Stefan Kück presented [CCPR-WG-SP TG11](https://www.bipm.org/documents/20126/258815585/08.SP%2BTG11%2BSingle%2BPhoton%2BRadiometry/2cd3cbbf-762a-0fcb-d261-4bd9c53f375c).

Stefan Kück asked AIST to update on remeasurement progress.

AP-2024-17: Hiroshi Shitomi to check on AIST progress in single photon pilot study and report to Kück.

Howard Yoon asked Stefan regarding the long-time scale effect on drift and Stefan responded that several intermediate measurements were done to monitor drift.

TG12: Discussion Forum on the use of White LED Sources for Photometry

Hiroshi Shitomi and Weiqiang Zhao provided a report.

Zhao Weiqiang added his background and experience and checked with Joële Viallon to determine if there was some official procedure to take over as chair of TG12. Joële Viallon responded that there wasn’t.

Maria Nadal asked if Hiroshi Shitomi remembered the questions asked on the survey form and Hiroshi responded that he did but that it would require preparation time and sought permission to summarize it tomorrow. Maria Nadal accepted.

Yoshi Ohno asked if spectral irradiance and total spectral flux using LEDs were going to be included. Weiqiang responded that the work on that was currently in progress.

Maria Nadal looked up the current ToR for TG12 and noted that that the next action item should be to update it.

AP-2024-18: TG12 to update ToR to include new 2024-2025 survey of activities in NMIs on the use of white Led sources for photometry and include the use of LEDs for spectral irradiance and total spectral flux.

### TG13: Optical Fibre Power Responsivity

John Lehman reported [BIPM CCPR WG-SP TG13](https://www.bipm.org/documents/20126/258815672/TG13%2B2024%2BCCPR%2BTG%2Bon%2BOptical%2BFiber%2BResponsivity/4a35c944-77ea-f1f0-ef30-8c85aa3b603d).

Maria Nadal requested information on the estimated uncertainties and John responded that the uncertainties are around 0.2% via fibre due to splitter drifts and that free space uncertainties are lower.

### TG14: Discussion Forum on Radiometry to Support Gravitational Wave Detection

John Lehman reported [BIPM CCPR WG-SP TG14](https://www.bipm.org/documents/20126/258815696/TG14%2B2024%2BCCPR%2BTG%2Bon%2BRadiometry%2Bto%2BSupport%2BGravitional%2BWave%2BDetection/a0845388-0c8d-8995-1c7e-c77bf949ab50).

Stefan Kück commented that this is a good example of how CCPR can react quickly, and this was followed by a general discussion on shipping issues.

Maria Nadal requested information on the current members to which John responded that there are several people who are the members. Maria Nadal checked the current members of TG14 online and sought clarification if the TG was welcoming new members. John responded that this is ongoing.

Maria Nadal questioned why other NMIs aren’t doing this, and John responded that, so far, no one else is doing this because the resources weren’t there.

## Day summary

Maria Nadal raised that the next Working Group meeting will be in 2025 and that we don’t have a venue yet. Joële Viallon raised that the next CCPR general assembly has a target year of 2027.

Maria Luisa Rastello reported that NMISA has withdrawn their organization of NEWRAD in 2026.

## Wednesday, 5 June 2024 - Resumption of the meeting

Maria Nadal opened the meeting and updated the agenda items.

### TG15: The Impact of Digitalization on Matters Related to the CCPR

Thiago Menegotto reported [CCPR WG-SP TG15](https://www.bipm.org/documents/20126/258109759/TG15%2B2024%2BCCPR%2BTG%2Bon%2Bthe%2BImpact%2Bof%2BDigitalization%2Bon%2BMatters%2BRelated%2Bto%2Bthe%2BCCPR/c059db9d-0adb-8ef2-0ee0-b272061888da).

Thiago Menegotto is to take over from Peter Blattner as the new chair of TG15.

Joële Viallon commented to everyone that there will be a report from this Task Group and from the discussion forum to the CCPR. She requested clarification if the report from the discussion forum should go via the TG15 Task Group and requested how this was to continue and if the discussion forum was still required.

Thiago Menegotto commented that one of the Task Groups that he comments on in the FORUM-MD is for the harmonization of activities among the CCs and that the chair of TG15 is participating in that group. Nigel Fox commented that it is logical to have structures to streamline information transfer to avoid repetition. Maria Luisa Rastello raised that it would not be good not to inform the whole CCPR and that there should be a general presentation at the general CCPR meeting to give information to the CCPR people but with a different content looking outside the CCPR. Nigel Fox agreed assuming the TG15 person would report to CCPR.

Maria Nadal commented that moving forward, it would be good to have Peter Blattner as chair of the Forum to present to the general assembly and Thiago to report to the WG-SP in the intervening years.

Maria Nadal commented that Thiago mentioned a workshop in collaboration with CIE and requested information on a contact in CIE. Thiago responded that he has contacts in CIE and can contact them to have a joint workshop.

Maria Nadal asked SP members if they were ready to have a workshop in 2025. Nigel Fox commented that if it is the topic of data format, it is too vast and complex and isn’t limited to CIE. The topic seems too advanced for a workshop although the broader themes of the topic should be discussed. Gaël Obein commented that next year is a little too early as there is still a bit of work to do. Stefan Kück commented that it is difficult for CCPR to act without knowing what is happening on a higher level and that it would be good to have an overview workshop. Gaël Obein commented that he thinks we are quite good. We have people on almost every level.

Maria Nadal requested that Stefan explain further. Stefan Kück responded that it would be good to have different groups (CIPM, CIE, etc.) to explain what is going on. Maria Nadal checked with Thiago if he understood what Stefan was saying for the proposed workshop. Thiago Menegotto recognized that it would be important to have something less specific and Stefan Kück explained the idea further. Armin Sperling added that this is also important for CIE so a joint workshop would be good.

Thiago Menegotto will try to organize and think of some structure and requested information on scheduling. Maria responded that this would be discussed later this morning.

Armin Sperling commented that next CIE meeting will be in Vienna in 2025.

DP-2024-02: Decided to hold workshop for digitalization information.

AP-2024-19: Thiago Menegotto to manage organization of digitalization workshop.

### TG16: Cone Fundamentals

Yoshi Ohno reported [CCPR WG SP TG16](https://www.bipm.org/documents/20126/258109895/TG16%2B2024%2BCCPR%2BTG%2Bon%2BCone%2BFundamental/70734ddd-2f40-37c0-0b17-9d583524ce5e).

Yoshi Ohno thanked Gaël Obein for the V(λ) presentation on Monday (Applause) and Dr Martin who stayed the whole day. And Joële Viallon and Gaël Obein for helping organize (Applause).

Erkki Ikonen requested clarification if using the 1924 V(λ) and 2015 VF(λ) makes a significant difference. Yoshi confirmed that the 2-degree V(λ) function does not have a big enough change to warrant making a change but that the 10-degree V(λ) function does. Yoshi summarized the presentation from 4 June and would show the data later.

Maria Nadal asked what the proposals for more research are and Yoshi responded that we need analysis of displays, both white and colored. Yoshi mentioned the window application: how V(λ) may affect window visible transmission. There are also other areas, and we should keep our eyes open. Maria Luisa Rastello commented that the workshop on Monday had a list of questions and CCPR should answer those questions.

Maria Nadal asked how we can ensure that TG16 members and CCPR members are well of aware of what CIE RF05 is doing and requested if CIE RF05 minutes could be included in the TG16 report.

AP-2024-20: Yoshi Ohno to include CIE RF05 progress in future CCPR WF SP TG16 reports.

### TG9: OTDR Length Comparison

Jacques Morel reported [BIPM CCPR WG-SP TG9](https://www.bipm.org/documents/20126/258815133/TG9%2B2024%2BCCPR%2BSummary%2Bof%2BActivities%2BOTDR/923494f0-aab3-1aff-bbcb-626385abd890).

Maria Nadal thanked Jacques.

Maria Luisa Rastello asked if Jacques had recent contact with NMISA and if they were willing to participate. Jacques replied that he had had contact 2 weeks ago.

Nigel Fox commented that supplementary comparisons need an official invitation to all RMOs before the protocol is decided and requested if the TG was planning to do this before issuing the technical protocol. Jacques responded that we need to establish a list of participants and that this will be part of the next activities.

Nigel Fox asked if NMISA is willing to pilot for all participants. Jacques responded that he hoped this was the case and will check.

AP-2024-21: Jacques Morel to check with NMISA is willing to pilot an OTDR length comparison for all participants.

## Report from BIPM/CIPM by Maria Luisa Rastello

Maria Luisa reported [BIPM/CIPM activities relevant to the CCPR](https://www.bipm.org/documents/20126/258816354/2024-06%2BCCPR%2Bmeeting%2BCGPM%2BCIPM/ce530b03-ce4b-0015-416f-c03d38c72863)

Maria Luisa announced the 150th Anniversary of the Metre Convention on May 19th to the 22nd, 2025 at the Palais des Congrès de Versailles. Joële Viallon commented that it is a very large room at the Palais de Congrès de Versailles. There is open registration for the events in May 2025.

Maria Nadal commented that the report mentioned that CCPR should contact Egypt, Nigeria and Kenya and asked how we are moving forward with that. Maria Luisa Rastello commented that informal contact should be first noting that scientific qualification is required. Maria further commented that we really miss our AFRIMETS representatives.

Maria Nadal questioned regarding some of the SIM countries listed in the report and Maria Luisa Rastello said that she was not sure of the approach but maybe some informal communication was warranted.

Maria Nadal thanked Maria Luisa Rastello.

### TG12 report on 2018 + questionnaire.

Hiroshi Shitomi reported [BIPM CCPR WG-SP TG12](https://www.bipm.org/documents/20126/258815634/TG12%2B2024%2BCCPR%2BDiscussion%2BForum%2Bon%2Bthe%2BUse%2Bof%2BWhite%2BLED%2Bfor%2BPhotometry/67113ca4-8572-0f1d-9587-634132c10d81).

Maria Nadal thanked Hiroshi Shitomi.

Maria Nadal showed the current ToR for TG12 which should be revised and updated and asked if the survey was recirculated in 2021. Hiroshi responded that he had tried to correct an answer that had been overlooked in the past. Maria Nadal asked if we should review the questionnaire to capture what all the NMIs are doing or if we should we revise the ToR to cover some of topics based on what Hiroshi already has in his analysis from the 2018 questionnaire. Hiroshi acknowledged this needed to happen.

Nigel Fox questioned if the title of the group needed to change and commented that the current title is limiting and that the group needs to discuss a wider range of topics. He suggested “Discussion forum on the use of LED sources for photometry and radiometry” and mentioned that this may have sub-groups. Armin Sperling suggested that this could be joint work with CIE Division 2. Hiroshi acknowledged that this had not happened yet but that it is probable.

Armin Sperling proposed a new Task Group with upgraded terms of reference. Maria Nadal commented that part of the ToR was completed and questioned if we were satisfied with the 2018 survey. Armin Sperling commented that it would be a good opportunity to revise the questionnaire. Paul Dekker asked if there was a reason for broadening the potential range of this scope and considered that the new LEDs may cause potential problems. Nigel Fox raised that this is what the CCPR is, covering all sources and ranges.

Maria Nadal summarized that we are leaving this discussion forum as it is because the ToR are not completed. Armin Sperling asked if it is possible to change the name or do we need close the TG and make a new one. Maria Nadal responded that if the questionnaire includes more than white LEDs then we need to change and since we need to explore the needs of our members outside the visible region then we should change.

Maria Nadal suggested a revised title: “On the use of LED sources for use in photometry and radiometry.”

AP-2024-22: TG12/Weiqiang Zhao to make a new questionnaire for TG12 and circulate it among all the members.

AP-2024-23: TG12/Weiqiang Zhao contact CIE for TG12 to work with CIE in this area.

AP-2024-24: TG12/Weiqiang Zhao to revise TG12 Title to “On the use of LED sources for use in photometry and radiometry”.

Yoshi Ohno commented that if radiometry includes spectroradiometry then I think it’s good. Nigel Fox commented that it may be the first action of ToR, given the importance of white light for photometric reference, it may need a specific Task Group. Weiqiang Zhao responded that this would be considered. Nigel Fox explained further that there needs to be a very specific focused Task Group having clear objectives about the steps and activities that need to happen to for there to be a suitable white LED as a replacement to support photometry going forwards. Maria Luisa Rastello commented that that would be very good. Maria Nadal stated that it would be the first question in your questionnaire.

Yoshi Ohno asked if it was possible to have a sub–Task Group. Maria Luisa Rastello and Nigel Fox replied that it was possible to have a Task Group outside the discussion forum. The discussion forum might identify the need of a short term specific technical Task Group which does not sit within the discussion forum.

## Results of 2022 CCPR survey as it is related to the CCPR roadmap (Maria Nadal)

Maria Nadal presented based on the [BIPM CCPR WG-SP TG10](https://www.bipm.org/documents/20126/258815273/TG10%2B2024%2BCCPR%2BTG%2Bon%2BStrategy%2BDocument/83598df6-fb12-dece-26b0-028312f9fcc2) presentation to have a more in depth discussion on the CCPR Roadmap/Strategic Priorities.

### Replacement of source based-photometry by detector-based spectroradiometry.

Nigel Fox commented that it is probably still timely to take the view that we took yesterday and that we don’t limit ourselves to the word photometry as the application. The current strategic priority is“The use of spectrally resolving detectors as primary scale realization and transfer standards for radiometry and photometry.” Gaël Obein, Stefan Kück and Maria Nadal discussed the objectives.

Nigel Fox asked why we limited the application simply to photometry? Stefan Kück responded that it required more work for a wider spectral range. Maria Nadal commented that there is another strategic priority in radiometry which is like the strategic priority in photometry. Stefan Kück recommended that the two could be combined in principle. However, the Task Group responses are different because one wants a pilot study, and the others want a workshop. Since there is a difference, he questioned how we prioritize. Nigel Fox stated that we are now combining 2 different things. Radiometry is related to LED sources – see TG16. We did not have a question for detector radiometry for transfer standards as replacement for spectral radiance and irradiance scales. The LED question we have potentially agreed to be incorporated in the TG16 activity. There isn’t a spectroradiometry equivalent. Stefan Kück agreed that this is not about combining these groups. Gaël Obein maintained that there were still two similar strategic priorities.

Maria Nadal did some digging revealing the following questions in the latest CCPR survey:

1*. “Standards to replace incandescent lamps in the field of radiometry.”*

2. *“Development of LED based standard lamps to replace incandescent lamps in the field of photometry.”*

Nigel Fox stated that we agreed that we have a working group to increase its scope to have LEDs to be explored for both for photometry and radiometry. There is also the possibility of replacing incandescent lamps by using spectrometers and this would be combined with what we have previously described for spectrally resolving detectors for photometry. If there are other candidates for standards to replace incandescent lamps in the field of radiometry, then we should keep this strategic priority.

Maria Nadal requested any feedback. Nigel Fox commented on “The use of spectrally resolving detectors as primary scale realization and transfer standards for radiometry and photometry”, that the first items in the ToR would limit scope to visible wavelength domain. The ToR should include a limited spectral range of the visible range. Maria Nadal commented that if that’s more appealing for a limited region. Gaël Obein commented that we should. We want to stay in the silicon range.

Maria Nadal summarized that we have “The use of spectrally resolving detectors as primary scale realization and transfer standards for radiometry and photometry” and we will limit the spectral range in the ToR to visible for now. Requested if this was acceptable and there were no objections. Maria further requested if we have a volunteer for chairperson to which there was no response. So, the priority is that our members would like to have a workshop.

Nigel Fox commented that we would expand the scope as to what the range of the workshop is for. Paul Dekker raised that there is a workshop in September 2025 in Delft on new calibration standards and methods and meetings from project itself and others. See “New Calibration Standards and Methods for Radiometry and Photometry After Phaseout of Incandescent Lamps” in <https://www.ptb.de/epm2022/newstand/home>.

AP-2024-25: Paul Dekker to forward workshop information to Maria Nadal

AP-2024-25: Completed in email dated 5 June 2024 at 12:19 PM.

AP-2024-26: Interested volunteers to chair a new Task Group on “The use of spectrally resolving detectors as primary scale realization and transfer standards for radiometry and photometry” with a limited visible spectral range in the ToR for now to email Maria Nadal.

### Development of near field goniophotometer standards

Maria Nadal suggested to postpone this due to the high workload.

Yoshi Ohno and Armin Sperling stated that the issue is how to validate the measurements. CIE is developing a guidance document in CIE TC2-62. The validation requires checking against a far field goniophotometer but there is no detail on how to validate. Maria Nadal commented that this is still so preliminary that we can add to the long-term plan.

### Few photons metrology

Maria Nadal suggested that perhaps this can be 2026 workshop once we have a better understanding of the technology.

### UV metrology

Maria Nadal highlighted that this is a priority for many NMIs and perhaps we should have a workshop in 2026. Stefan Kück asked how we handle all these workshops. We need to look at scheduling. We can organize a virtual workshop. Maria Nadal replied that we are guided by requests from the CCPR and it’s hard to find volunteers. Gael Obein stated that we should combine activities. We have NEWRAD, CIE, CCPR – European workshops are already happening. Maria Nadal noted that it’s a delicate balance and asked if European workshops were hybrid format. Gael Obein replied that the workshops were always hybrid. Stefan Kück commented that scheduling needs thought. Maria Nadal requested that if anyone is aware of a European or other relevant workshop, to pass on the information.

Joële Viallon commented that if the goal was information transfer, then it sounds like a webinar. If discussion is needed, then it should be a workshop or just discussion within a Task Group. Maria Luisa Rastello is in favor of Webinars. Gael Obein commented that we should ask the question regarding webinars, workshops, etc. Joële Viallon commented that we will have to circulate more outside the CCPR for webinars of interest to other NMIs. Nigel Fox agreed with webinars but noted that they are different from workshops and that most topics here are not mature enough for webinars.

Maria thanked all for a good discussion.

### LED based standard lamps

Maria Nadal stated that the members feel they are ready to start a pilot study and believes that there will be no workshop for this one yet. Nigel Fox commented that this activity sits within TG12.

AP-2024-27: TG12 chair to determine if members are ready to perform pilot study by including this question in the survey.

Nigel Fox, Stefan Kück, Yoshi Ohno, Joële Viallon and Erkki Ikonen discussed separate Task Group formation for the pilot study and TG12 discussion forum load. If it is a pilot comparison it should be in WG-KC. Maria Nadal referred to the pilot study and commented that information on who was interested and who is willing to volunteer can be collected at the same time. Weiqiang Zhao confirmed that these were two questions for the pilot study.

### Optical properties of materials

Maria Nadal asked if CIE was doing work on this already. Gaël Obein responded that CIE had engaged on Optical Properties of Materials, not on optical device settings to measure but more refreshing CIE documentation for the measurement of diffuse transmittance, diffuse reflectance, etc. There is a project in this topic starting in Euramet again. A suitable standard is Spectralon.

Maria Nadal asked if we should have a webinar in this area and Gaël Obein responded that we could set up one. Maria Luisa Rastello requested that the seminar be placed in a higher place on the task list. Gaël Obein expanded on the range of measurement types requiring different types of physical standards. Stefan Kück commented that this is very general and that it would be good to have a deeper look at what we are really looking for including looking at CIE development. Gaël Obein fully agreed and stated that we should start with 3 to 5 subcategories and then expand. Erkki Ikonen asked if Gaël would be willing to organize a webinar. Maria Nadal commented that first we need to determine the subcategories and then we can formulate the webinar with a narrow topic range.

AP-2024-28: Gaël Obein to ask WG-SP members to prioritize OPM subcategories.

## Discussion of possibilities for liaisons or meetings of WGs/TGs in conjunction with conferences.

### Next CCPR WG meeting possibilities

2025 – Midterm meeting of CIE in Vienna in July.

 European project in September.

 Nigel Fox: There is also the 150th anniversary of BIPM in May 2025.

2026 – NEWRAD location to be determined. CIE division 2 will also meet at NEWRAD.

AP-2024-29: Maria Luisa Rastello to contact CIE to determine if the 2025 CCPR working group meeting can join the 2025 CIE Midterm.

Joële Viallon reported that there is no fixed date but that the next General Assembly of the CCPR will probably be in the first week of June in 2027. Maria Luisa Rastello stated that is better to move it to around September to avoid RMO meetings.

Maria Nadal confirmed that the proposal is that the 27th meeting of the CCPR will be in 2027 around September.

## Closing of the meeting

**List of Decision Points**

1. DP-2024-01: The revision of the ToR of TG15 was accepted.
2. DP-2024-02: Decided to hold workshop for digitalization information.

**List of Action Points**

1. AP-2024-01: Maria Nadal to revise the CCPR WG-SP Membership Criteria, version 1.3a to include statement: *in-person attendance is preferred but online is welcome* in section 3.1.
2. AP-2024-02: Emma Woolliams to pass on CCPR contact details to Kenya.
3. AP-2024-03: Emma Woolliams to inform Maria Nadal of the decision of the TG17 members on Task Group or Discussion Forum.
4. AP-2024-04: Maria Nadal to follow up with email exchange with Emma Woolliams on progress of the TG17 roadmap.
5. AP-2024-05: Maria Nadal to follow up with an email to Jimmy Dubard regarding progress in TG6.
6. AP-2024-06: Maria Nadal to follow up with Andreas Steiger regarding comparison details for TG8.
7. AP-2024-07: Maria Nadal to revise “Long Term Plans” for the SI-Future of the Candela to: If needed, develop a strategy for implementing a new photometry system based on cone fundamentals.
8. AP-2024-08: Maria Nadal to revise current Strategic Priority: Replacement of source-based photometry by detector-based spectroradiometry” with “The use of spectrally resolving detectors as primary scale realization and transfer standards for radiometry and photometry.”
9. AP-2024-09: Maria Nadal to reach out to chair proposed by Armin Sperling for “Replacement of source-based photometry by detector-based spectroradiometry”.
10. AP-2024-10: Maria Nadal to investigate by email if interested NMIs have the need to form a Task Group for the development of near-field gonio-photometry standards.
11. AP-2024-11: Angela Gamouras to send survey on few photons metrology to all the CCPR members.
12. AP-2024-12: Maria Nadal to inform Cameron Miller of UV Metrology TG Chair role.
13. AP-2024-13: Emma Woolliams to revamp strategic directions of TG17.
14. AP-2024-14: Maria to seek interest among NMIs for a new Task group on standards to replace incandescent lamps in the field of radiometry to research suitable standards.
15. AP-2024-15: Maria Nadal to seek interest among NMIs for a new Task Group for optical properties of materials.
16. AP-2024-16: TG10 to revise CCPR Strategic Planning and Roadmap
17. AP-2024-17: Hiroshi Shitomi to check on AIST progress in single photon pilot study and report to Kück.
18. AP-2024-18: TG12 to update ToR to include new 2024-2025 survey of activities in NMIs on the use of white Led sources for photometry and include the use of LEDs for spectral irradiance and total spectral flux.
19. AP-2024-19: Thiago Menegotto to manage organization of digitalization workshop.
20. AP-2024-20: Yoshi Ohno to include CIE RF05 progress in future CCPR WF SP TG16 reports.
21. AP-2024-21: Jacques Morel to check with NMISA is willing to pilot an OTDR length comparison for all participants.
22. AP-2024-22: TG12/Weiqiang Zhao to make a new questionnaire for TG12 and circulate it among all the members.
23. AP-2024-23: TG12/Weiqiang Zhao contact CIE for TG12 to work with CIE in this area.
24. AP-2024-24: TG12/Weiqiang Zhao to revise TG12 title to “On the use of LED sources for use in photometry and radiometry.”
25. AP-2024-25: Paul Dekker to forward workshop information to Maria Nadal

Completed in email dated 5 June 2024 at 12:19 PM.

1. AP-2024-26: Interested volunteers to chair a new Task Group on “The use of spectrally resolving detectors as primary scale realization and transfer standards for radiometry and photometry” with a limited visible spectral range in the ToR for now to email Maria Nadal.
2. AP-2024-27: TG12 chair to determine if members are ready to perform pilot study by including this question in the survey.
3. AP-2024-28: Gaël Obein to ask WG-SP members to prioritize OPM subcategories.
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