

APMP 2021 TCT Report to CCT

Hisashi Abe (NMIJ)
APMP TCT Chair

CCT meeting
February 8, 2022, Online



APMP TCT meeting 2021

- November 1 and 2, 2021, Online
- 61 participants from 20 economies



APMP TCT Structure

- Chair: Hisashi Abe (NMIJ), from Nov. 26, 2021 (3 years)
- Working Groups (5)
 - SPRT, FP and TPW (5 members led by I. Yang, KRISS)
 - Radiation Thermometry (6 members led by X. Lu, NIM)
 - Humidity (6 members led by H. Abe, NMIJ)
 - Industrial Thermometers (7 members led by Y.-G. Kim, KRISS)
 - Thermophysical Properties (4 members led by M. Akoshima, NMIJ)
- Task Group (1)
 - Strategy (7 members lead by B. I. Choi, KRISS)



APMP TCT Key comparisons

Identifier	Comparison	Status
APMP.T-K3.6	Ar realization	Draft B being revised after first CCT-WG-KC review
APMP.T-K4.1	Ag realization	Draft B being revised after first CCT-WG-KC review
APMP.T-K4.2	Al realization	Measurement in progress
APMP.T-K6.2013	DP Meter	Measurement in progress
APMP.T-K8	High DP meter	<u>Published at KCDB and <i>Metrologia</i> Supplementary</u>
APMP.T-K9	SPRT Ar-Zn	Measurement in progress**

** Categorized as “Silent” comparison by KCDB in late 2021



APMP TCT Supplementary comparisons

Identifier	Comparison	Status
APMP.T-S8	LiG Thermometer	Measurement in progress [*] , ^{**}
APMP.T-S9	Thermal diffusivity	Measurement in progress
APMP.T-S10	Thermal conductivity	Measurement in progress
APMP.T-S11	Radiation thermometer	Draft report being prepared ^{**}
APMP.T-S12	Radiation thermometer	Draft report being prepared ^{**}
APMP.T-S13	DP Meter	Measurement in progress ^{**}
APMP.T-S14	RH meter	Measurement in progress
APMP.T-S15	Ear Thermometer	Draft report being prepared
APMP.T-S16	Thermocouple	Measurement in progress
APMP.T-S17	Air thermometer	Circulation of artifact delayed after protocol approval

^{*}The issue with the artifact stuck in Egypt since 2017 was resolved.

^{**} Categorized as “Silent” comparison by KCDB in late 2021



Hybrid comparisons

Code	A-NMI	I-NMI	Artifact/Range	Third party
APMP.T-H1	MSL-BD	NMC	IPRT from -80 °C to 400 °C	TCT Chair*
APMP.T-H2	MSL-BD	NMC	LIGT from -80 °C to 80 °C	TCT Chair*
APMP.T-H3	MUSSD	NIM	SPRT from TPW to Zn	TCT Chair*

* The former TCT chair, Dr. Inseok Yang (KRISS)

Status

- -H1 & -H2: **Final report approved and uploaded in the APMP website**
- -H3: Calibration report from I-NMI received, A-NMI measurement in progress



APMP CMC reviews and submission

- TCT 2021CMC Review
 - Called for submission on August 9, 2021
 - The review was finished by the end of 2021, and then will be forwarded to inter-RMO review at the end of April 2022.

(agreed among RMO TC-T chairs that CMCs be submitted for inter-RMO review at the end of April with a minor submission opportunity at the end of October)

	SPRT	Industrial	Radiation	Humidity	Total
NIMT	4	15	9		28
NMIM				1	1
SCL				1	1
Total	4		9	2	30



Inter-RMO CMC Reviews

- In the first half of 2021
 - 10 from AFRIMETS
 - Review finished
- In the second half of 2021
 - 16 from EURAMET
 - 7 from AFRIMETS
 - deadline of review: Jan. 31, 2022



TCI Projects

- TCT_01_TCI2017 Relative humidity
 - Protocol approved.
 - Measurement being started with two loops: with ATA Carnet and without the ATA Carnet (APMP.T-S14)
 - Measurement on-going
- TCT_01_TCI2018 LIG comparison
 - Measurement on-going
- TCT_01_TCI2019 Ag freezing point
 - The duty of the project overseer was transferred from KRISS to NIM.
 - Measurement protocol being agreed.



COVID-19 Response program

- COVID-2021-02 Thermal Imagers
 - Project overseer: NMIA and NMC A*STAR
- COVID-2021-03 Forehead infrared thermometer calibration for DENs
 - Proposed by NML-ITDI
 - Being evaluated by the APMP now



Peer Reviews

- List of approved peer reviewers since 2014

* Approve by EC due to non-NMI Staff
Approve by EC due to current TCT Chair

Laboratory	Sub-field	2021	2020	2019	2018	2017	2016	2015	2014
CMS	contact-T		Graham Machin					Zundong Yuan	
	non-contact-T							Hisashi Abe	
	Humidity		Ferdouse Jahan						
EMI	contact-T					Erich Tegeler			
	non-contact-T					Peter Rienshaus*			
	Humidity								
KRISS	contact-T	Shu-Fei Tsai				Jintao Zhang			
	non-contact-T					Duan Yuning			
	Humidity	Wang Li				Hisashi Abe			
MSL	contact-T			Andrew Todd				Eric van der Ham	
	non-contact-T								
	Humidity	Byung Il Choi				Hisashi Abe			
NIM	contact-T				Steffen Rudtsch				
	non-contact-T	Wang Li					Klaus Anhalt		
	Humidity								
NIMT	contact-T		Inseok Yang#			Shu Fei Tsai			
	non-contact-T		Naohiko Sasajima			Yoshiro Yamada			
	Humidity		Byung Il Choi			Hisashi Abe			
NMC	contact-T						Inseok Yang		
	non-contact-T						Yoshiro Yamada		
	Humidity						Byung Il Choi		
NMIA	contact-T			Lars Bunger				Shu-Fei Tsai	
	non-contact-T							Hisashi Abe	
	Humidity			Jeremy Lovell-Smith					
NMIJ	contact-T				Shu Fei Tsai				
	non-contact-T								
	Humidity				Jerrymy Lovell-Smith				
NMIM	contact-T	Jianping Sun					Yong-Gyoo Kim		
	non-contact-T	Xiaofeng Lu					Wang Li#		
	Humidity	Hisashi Abe							
SCL	contact-T	Inseok Yang#			Graham Machin		Kee-Sool Gam		
	non-contact-T								
	Humidity	Wang Li			Hisashi Abe		Stefanie Bell		
SNSU-BSN	contact-T							Kazuaki Yamazawa	
	non-contact-T							Hisashi Abe	
	Humidity							Yoshiro Yamada	
VMI	contact-T		Inseok Yang#						
	non-contact-T								
	Humidity								



TCT Work Plan 2021 -

- Based on the CCT Strategic Plan and APMP Strategic Plan
- Meet the need of member institutes for the claim of CMCs according to the CIPM MRA
 - RMO comparisons, including planning, review of the protocol, execution, review of the report
 - CMC reviews, both intra-RMO and inter-RMO (JCRB)
 - Peer reviews or technical assessment for the CMCs
- Work closely with APMP, APMP Focus Groups, APMP DEC to identify issues and needs from the border field of metrology and to provide technical expertise for the identified needs
 - TCI projects
 - DEC projects
 - COVID-19 response programs



EURAMET- BIPM Training on Comparisons

- EURAMET – BIPM Short training on comparisons on thermometry
 - APMP TCT Chair* participated as a lecturer
 - Hybrid Comparisons were introduced and promoted
 - 97 participated (21 from APMP)

Tuesday 27th April 2021

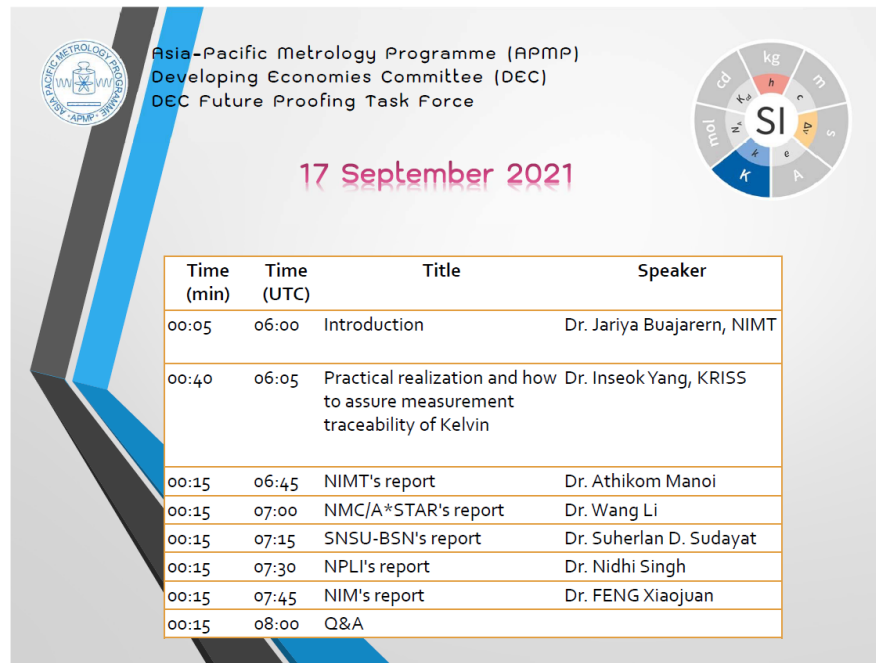
13:00 -13:20	5	Exchange of experiences with the KCDB 2.0	SP
13:20 - 14:20	6	Conducting a comparison exercise. Case studies: <ul style="list-style-type: none"> a) Thermometry: CCT-K10 b) Humidity: EURAMET project P1189 c) Thermophysical quantities: New comparison on thermal expansion coefficient d) Hybrid Comparisons 	HM DH SK IY
14:20 – 14:40	7	Post inter-laboratory comparisons actions: monitoring the impact of comparison results on the CMCs	JB
14:40 -15:00	8	Re-thinking intercomparisons	AO (tbc)

* The former TCT chair, Dr. Inseok Yang (KRISS)



Workshop on SI realization

- DEC-organized workshop on the SI realization
 - Kelvin session was on 17 September 2021
 - TCT Chair, NIMT, NMC A*STAR, SNSU-BSN, NPLI and NIM have contributed



Asia-Pacific Metrology Programme (APMP)
 Developing Economies Committee (DEC)
 DEC Future Proofing Task Force

17 September 2021

Time (min)	Time (UTC)	Title	Speaker
00:05	06:00	Introduction	Dr. Jariya Buajarern, NIMT
00:40	06:05	Practical realization and how to assure measurement traceability of Kelvin	Dr. Inseok Yang, KRISS
00:15	06:45	NIMT's report	Dr. Athikom Manoi
00:15	07:00	NMC/A*STAR's report	Dr. Wang Li
00:15	07:15	SNSU-BSN's report	Dr. Suherlan D. Sudayat
00:15	07:30	NPLI's report	Dr. Nidhi Singh
00:15	07:45	NIM's report	Dr. FENG Xiaojuan
00:15	08:00	Q&A	

