Workshop on international, regional and national policies concerning human exposure to electromagnetic fields 25 May 2023 Geneva <u>https://www.itu.int/en/ITU-D/Study-Groups/2022-2025/Pages/meetings/session-Q7-2-may23.aspx</u>

# Session 1: International, regional and national policies concerning human exposure to electromagnetic fields

## ITU recent activities (including the 2021 Q7/2 report) on EMF

Speaker: Dr. Haim Mazar (Madjar), ITU inter-sector coordinator on RF-EMF and co-rapporteur for ITU-D <u>Question 7/2</u>

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ITU Development (D) Study Group 2 rapporteur group meetings (22 May - 2 June 2023)





# ITU Intersector Activities: Implementing ITU Resolutions

- Plenipotentiary Conference Resolution 176 (Rev. Bucharest, 2022) 'Measurement and assessment concerns related to human exposure to electromagnetic fields'
- ITU-T <u>Resolution 72</u> (Rev. Geneva, 2022) 'Measurement and assessment concerns related to human exposure to electromagnetic fields'
- ITU-D <u>Resolution 62</u> (Rev. Kigali, 2022) 'Assessment and measurement of human exposure to electromagnetic fields'

## ITU Intersector Activities: Externally and Internally

Workshop on international, regional and national policies concerning human exposure to electromagnetic fields

- Incorporating the ICNIRP 2020 in cooperation with ITU-D, R and T experts, in ITU Deliveries
- The Inter-Sector Coordination Group (ISCG) relates the ITU inter-sector activities, to map ITU-D Questions with ITU-R Working Parties and ITU-D and ITU-T Questions (including ITU-T Topics interesting ITU-D Questions)
- A useful matrix to avoid overlap and to indicate to which ITU group, to avoid overlap among ITU-D/R/T EMF activities, and to properly liaise the recent meeting-reports
- This is the present separation among ITU-D/R/T on EMF activities:
  D: Strategies & Policies concerning human exposure to EMF
  R: EMF measurements from base stations to assess human exposure
  T: Simulation, assessment and 5G (IMT).

The 3 ITU Sectors use this Figure, retrieved from ICNIRP (2020) Table 5 'power density for occupational versus general public exposures 30 MHz–300 GHz'



Recommendations ITU-T Rec. K.91 (2022) Fig. I.1; ITU-R BS.1698 (approved by R-SG6 on 17 March 2023) Fig. 35, Q 7/2 Report (2021) Fig. 6 based on Mazar, Wiley book <u>Spectrum Management</u> Fig 9.6, <u>Chapter 9</u>, revised 2021

The figure depicts differences between the ICNIRP (2020) power-density levels of occupational and general-public exposure, averaged over **30 minutes** and the **whole body**. The power-density ratio of 5 in ICNIRP (2020) Table 5: e.g., above 2000 MHz (see brown arrows), ratio 50/10 -5-

Study Group 2 Question 7

Video Report

Policies, guidelines, regulations and assessments of human exposure to radio-frequency electromagnetic fields Workshop on international, regional and national policies concerning human exposure to electromagnetic fields Final Report of Q7/2

Policies, guidelines, regulations and assessments of human exposure to radio-frequency electromagnetic fields Study period 2018-2021

The report focuses on science-based policies, guidelines, regulations and assessments in respect to human exposure to RF-EMF, based on updated international RF-EMF exposure limits defined by the ICNIRP Guidelines 2020 and the IEEE C95.1-2019

'The best practice for administrations that choose to use international RF-EMF exposure limits is to limit the exposure levels to the thresholds specified in ICNIRP (2020) Guidelines.'

The ICNIRP and IEEE limits are largely harmonized, and the power-density limits for whole-body exposure to continuous fields are identical above 30 MHz



See also <u>Background Paper - Implementing 5G for good: Does</u> <u>EMF matter</u>? ITU Regional Forum for Europe: 5G strategies, policies, and implementation, 22-23 October 2020

ITU-D Study Group 2 rapporteur group meetings (22 May - 2 June 2023)

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ITU-D activities: WTDC-22 (precisely WTDC Resolution 62) instructs Question 7/2 to study these Tasks during the 2022-2025 study period

T1	Conduct a periodic review concerning the performance of the operators and mobile equipment
	manufacturers in this field to verify that they are following the national specifications or ITU
	Recommendations, in order to ensure the safe use of EMF
T2	Conduct public awareness campaigns on the adverse impact of EMF, and deploy successful
	solutions, including regulations
Т3	Continue to cooperate through the exchange of experts and the organization of seminars, specialized workshops and meetings
Τ4	Invite member states to adopt international standards for measuring and assessing EMF levels, and use effective methods for verifying compliance
Τ5	To collaborate with ITU-T Study Group 5 in particular to update the ITU EMF guide and mobile application relating to human exposure to EMF and the guidance on its implementation, as a matter of high priority
T6	To contribute to the organization of seminars, workshops or training on the subject of EMF
Τ7	To ensure wide dissemination of ITU publications and literature on EMF issues in cooperation with ITU-R and ITU-T
Τ8	To continue to cooperate with WHO, ICNIRP, the Institute of Electrical and Electronics Engineers (IEEE) and other relevant international organizations on guidelines and limits of human exposure to EMF, and to raise awareness and disseminate information to the membership and the public with regard to human exposure to EMF,

## Draft Output Report on ITU-D Question 7/2 ; Table of contents

**Executive summary** 

#### **Chapter 1 – Introduction**

1.1 Objective of the question; 1.2 Scope of the report

#### Chapter 2 – ITU and international activities

Resolution 176 of the Plenipotentiary Conference; 2.2 Resolution 62 of WTDC 2022; 2.3 Resolution 72 of WTSA and deliverables of ITU-T Question 3/5;
 Actions of ITU Regional Offices; 2.5 IEEE and ICNIRP guidelines

#### Chapter 3 – Updates and the adoptions of international and regional RF-EMF exposure limits

3.1 ITU-T Recommendations and their relevant K supplements, ITU-R activities; 3.2 WHO <u>Task Group</u> on Radiofrequency Fields and Health Risks

#### **Chapter 4 – Policies to limit exposure to radiofrequency fields**

#### Chapter 5 – Formulating national EMF policies on exposure limits

Annexes: Annex 1: Acknowledgements to chapter coordinators; Annex 2: Abbreviations and acronyms; Annex 3: Question 7/2 contributions for rapporteur group and study group meetings; Annex 4: Case studies; 4.1 Background; 4.2 Country initiatives; 4.3 Examining the implementation of exposure limits via a broad range of country case studies, including on the ICNIRP (2020) Guidelines

ITU-T Study Group 5: Environment, climate change and circular economy

ITU-T Study Group 5: **EMF**, environment, climate action, sustainable digitalization and circular economy,

- ITU-T Study Group 5 develops standards on:
- Electromagnetic compatibility, resistibility and lightning protection
- Soft error caused by particle radiations
- Human exposure to electromagnetic fields
- Circular economy and e-waste management
- ICTs related to the environment, energy efficiency, clean energy and sustainable digitalization for climate actions

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![](_page_8_Picture_11.jpeg)

![](_page_8_Picture_12.jpeg)

![](_page_8_Picture_13.jpeg)

![](_page_8_Picture_14.jpeg)

Setting the Environmental Standards of <mark>5G</mark>

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Strengthening the achievements of the Connect 2030 Agenda

## ITU-T Raising awareness on EMF

## Key elements for successful public communications:

- Information easy to understand;
- Open and transparent dialogues;
- Providing stakeholders with trusted sources of information.

## **ITU's Public information on EMF:**

- <u>ITU EMF Guide</u> key information source
- EMF Website
- Report on "Monitoring of electromagnetic field levels in Latin America"
- Best practices to reduce exposure from mobile devices

The EMF Guide mobile app was updated in 2021. It is available in the 6 UN official languages at <a href="http://emfguide.itu.int">http://emfguide.itu.int</a>. The updated version includes information related to the EMF aspects of 5G.

ITU-D Study Group 2 rapporteur group meetings (22 May - 2 June 2023)

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![](_page_9_Picture_15.jpeg)

Monitoring of electromagnetic field levels in Latin America Implementation of Recommendation ITU-T K.83

![](_page_9_Picture_17.jpeg)

ITU

Introduction to EMF Overview of EMF and health Mobile Phones and Base Stations

Mobile phones, SAR and power density Relevant EMF Guidelines and Standards

Frequently Asked Questions (FAQ)

About this Guide on electromagnetic fiel

5G and RF EMF

ITU EMF Resources Additional Resources

Bibliography

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### ITU-T Recommendations on EMF assessment

- K.52 (2021) Guidance on complying with limits for human exposure to electromagnetic fields includes K.52calculator software"
- K.61 (2018) Guidance on measurement and numerical prediction of electromagnetic fields for compliance with human exposure limits for telecommunication installations
- K.70 (2020) Mitigation techniques to limit human exposure to EMFs in the vicinity of radiocommunication stations includes "EMF Estimator software"
- K.83 (2022) Monitoring of electromagnetic field levels
- <u>K.90</u> (2018) Evaluation techniques and working procedures for compliance with exposure limits of network operator personnel to power-frequency electromagnetic fields— includes "EMFACDC" software
- K.91 (2022) Guidance for assessment, evaluation and monitoring of human exposure to radio frequency electromagnetic fields – includes "Uncertainty calculator" and "Watt\_Guard" software, Supplement and mobile App "EMF-guide", mobile App " EMF Exposure"
- <u>K.100</u> (2021) Measurement of RF EMF to determine compliance with human exposure limits when a base station is put into service
- K.113 (2015) Generation of RF EMF level maps
- <u>K.121</u> (2016) Guidance on the environmental management for compliance with radio frequency EMF limits for radiocommunication base stations
- <u>K.122</u> (2016)- Exposure levels in close proximity of radiocommunication antennas
- <u>K.145 (2020)</u>- Assessment and management of compliance with radio frequency electromagnetic field exposure limits for workers at radiocommunication sites and facilities
- K supplements Eight Supplements to ITU-T K-series Recommendations ITU-D Study Group 2 rapporteur group meetings (22 May 2 June 2023)

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ITU's worldwide recognized reference on Spectrum Monitoring and related issues

## Chapter 5.6 on Non-Ionizing Radiation (NIR) measurements

- Explains NIR limits & exposure quotient
- Instruments for NIR measurements
  - Broadband isotropic probes and meters
  - Tri-axis antennas and field strength meters
  - Transportable station
  - standard field strength measurement equipment

# Measurement procedures for different radio services (incl. mobile, broadcasting, etc.)

Reporting methods

Source: ITU-R Handbook on Spectrum Monitoring (2011) <a href="https://www.itu.int/pub/R-HDB-23">www.itu.int/pub/R-HDB-23</a>

On-going ITU-R Studies on EMF measurements to assess human exposure

Work initiated by the ITU Experts Group on Spectrum Monitoring (i.e. <u>ITU-R WP 1C</u>) in response to Question <u>ITU-R 239/1</u> (2016): What are the measurements techniques to assess the human exposure from wireless installations of all types? How can measurement results be presented?

Report ITU-R <u>SM.2452</u> (2022) - Electromagnetic field measurements to assess human exposure

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