ITUPublications
Resolutions

International Telecommunication Union
Standardization Sector

WORLD TELECOMMUNICATION STANDARDIZATION ASSEMBLY
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Resolution 72 – Measurement and assessment concerns related to human exposure to electromagnetic fields

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, and information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

RESOLUTION 72 (Rev. New Delhi, 2024)

Measurement and assessment concerns related to human exposure to electromagnetic fields

(Johannesburg, 2008; Dubai, 2012; Hammamet, 2016; Geneva, 2022; New Delhi, 2024)

The World Telecommunication Standardization Assembly (New Delhi, 2024),

recalling

a) Resolution 176 (Rev. Bucharest, 2022) of the Plenipotentiary Conference, on measurement and assessment concerns related to human exposure to electromagnetic fields (EMF);

b) Resolution 62 (Rev. Kigali, 2022) of the World Telecommunication Development Conference, on assessment and measurement of human exposure to EMF,

considering

a) the importance of telecommunications/information and communication technologies (ICTs) for political, economic, social and cultural progress;

b) that, in the framework of telecommunications/ICTs to help bridge the digital divide between developed and developing countries[1], a significant part of the infrastructure needed involves various wireless technologies and the installation of base stations in the appropriate measure to ensure quality of service;

c) that, with the significant advancements in telecommunication technology, the use of telecommunication/ICT user equipment by humans has also greatly increased;

d) that there is a need to inform the public of the levels of EMF from different radio-frequency (RF) sources, and of the limits of safe exposure from these sources, in a scientific and objective manner through measurements and other standardized methodologies, as well as of the potential effects of EMF exposure;

e) that an enormous amount of research has been carried out regarding wireless systems and health, and many independent expert committees have reviewed this research;

f) that the World Health Organization (WHO) has the expertise and competency in the health field to assess the impact of EMF on the human body;

g) that WHO advocates exposure limits that were established by international organizations such as the International Commission on Non-Ionizing Radiation Protection (ICNIRP);

[1] These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition.

h) that ITU works closely with WHO on matters related to human exposure to EMF;

i) that ITU has a mechanism for verifying compliance with radio-signal levels by calculating and measuring the field strength and power density of these signals;

j) that the International Electrotechnical Commission (IEC) and the Institute of Electrical and Electronics Engineers (IEEE) and other relevant organizations develop measurement standards for the Specific Absorption Rate (SAR) of the human body;

k) that the considerable increase in the use of telecommunication/ICT equipment has resulted in an increase in the sources of EMF emission, including simultaneous exposure from multiple sources, with a potential impact on exposure levels;

l) that regulatory authorities in many developing countries urgently need information on methods of assessing and measuring human exposure to RF-EMF, in order to put in place national regulations to protect populations;

m) that ICNIRP[2] and IEEE[3] have developed guidelines and recommendations for EMF exposure limits and that many administrations have adopted national regulations based on those guidelines;

n) that IEC has developed methods for determining the parameters of EMF affecting health;

o) that most developing countries do not have the necessary tools to measure and assess the impact of radio waves on the human body;

p) relevant resolutions, recommendations and reports of the ITU Telecommunication Standardization Sector (ITU-T), the ITU Radiocommunication Sector (ITU-R) and the ITU Telecommunication Development Sector (ITU-D) related to human exposure to EMF;

q) that there is continuous advancement in wireless communication technologies, such as those using millimetre waves and reconfigurable intelligent surfaces, and ongoing work in the ITU Sectors related to such advances and also the concomitant EMF exposure aspect, and that active coordination and collaboration between the Sectors and other specialized and expert organizations in this field are important to avoid duplication of effort;

r) that modelling and assessment of human exposure to EMF can be facilitated by advances such as artificial intelligence,

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2 ICNIRP Guidelines for limiting exposure to EMF (100 kHz to 300 GHz), 2020.

3 IEEE Std C95.1™-2019, IEEE Standard for safety levels with respect to human exposure to electric, magnetic and electromagnetic Fields, 0 Hz to 300 GHz.

recognizing

a) the work done within ITU-R study groups on radio-wave propagation, electromagnetic compatibility and related aspects, including measurement methods;

b) the work done within ITU-T Study Group 5 on techniques for RF measurement and assessment;

c) that ITU-T Study Group 5, in establishing methodologies for assessing human exposure to RF-EMF, cooperates with many participating standards organizations;

d) that the ITU EMF Guide, in its digital version, also available in a mobile-phone application, is updated as ITU and/or WHO receive information and/or results of research;

e) that ITU-T Study Group 5 regularly updates existing ITU-T Recommendations related to human exposure to RF-EMF in response to advances in telecommunications/ICTs, taking into consideration emerging concerns, accurate information, methodologies and new scientific research, etc.,

recognizing further

a) that some publications about EMF effects on health create doubt among the population, increasing the perception of the risk that they involve;

b) that, in the absence of appropriate regulation and accurate, complete information and public awareness, some people become concerned about long-term exposure to EMF, due to their perception of risk, and are likely to oppose the deployment of radio installations in their neighbourhoods, demanding the enactment of restrictive municipal rules that affect the deployment of wireless networks;

c) that ITU-T Study Group 5, in particular, has elaborated ITU-T Recommendations on the technical measurement and environment management of EMF that help to diminish risk perception within the population;

d) that the development of these ITU-T Recommendations has made it possible to significantly decrease the cost of measurement equipment and to leverage the results through social communication;

e) that advanced equipment used for measuring human exposure to RF energy is expensive, in particular for developing countries;

f) that implementing such measurement and assessment is essential for many regulatory authorities, in particular in developing countries, in order to monitor the limits for human exposure to RF energy, and that they are called upon to ensure those limits are met in order to license different services;

g) the importance of EMF emission assessment when implementing policies in some countries,

noting

a) that other national, regional and international standards-development organizations (SDOs) are carrying out activities related to human exposure to EMF;

b) the urgent need for regulatory bodies in many developing countries to obtain information on EMF measurement and assessment methodologies in regard to human exposure to RF energy, in order to establish or reinforce national regulations to protect their citizens;

c) that collaborative efforts between stakeholders are key in fostering adequate public awareness on EMF and health;

d) that, so far, the studies and assessments conducted by various countries, using the appropriate methodologies, and shared with ITU-T Study Group 5, have not indicated any exceedance of the exposure limits set under the ICNIRP guidelines,

resolves

to invite ITU-T, in particular ITU-T Study Group 5, within its mandate, to expand and continue its work and support in this domain, including, but not limited to:

i) developing new and/or updating existing reports and ITU-T Recommendations, taking into account the advances in wireless technologies, advances in measurement/assessment methodologies and best practices, in close coordination with other ITU Sectors and relevant specialized organizations in this field;

ii) developing technical reports and ITU-T Recommendations, if necessary, to support countries in formulating guidelines on EMF exposure;

iii) publishing and disseminating its technical reports, as well as developing ITU-T Recommendations to address these issues;

iv) developing, promoting and disseminating information and training resources related to this topic through the organization of international and regional training programmes, workshops, forums and seminars for regulators, operators and any interested stakeholders from developing countries;

v) studying EMF exposure assessment from both intentional and unintentional sources, including multiple sources such as wireless power transfer and other RF technologies, associated with new and emerging technologies, including Internet of Things and International Mobile Telecommunications systems, as well as the results of measurement, evaluation, monitoring, calculations and overview of the impact on EMF levels;

vi) continuing to cooperate, collaborate and coordinate with other organizations such as WHO, ICNIRP, IEEE, International Organization for Standardization (ISO)/IEC and other relevant organizations working on this topic, and to leverage their work (ICNIRP, 2020; IEEE C95.1, 2019), in particular with a view to assisting developing countries in the establishment of standards and in monitoring compliance with these standards, especially on telecommunication installations and terminals;

vii) collaborating with ICT experts, the research community and other relevant stakeholders to study the EMF aspects of telecommunications/ICTs, including emerging ones, potentially also using emerging ICT technologies to study these EMF aspects;

viii) cooperating on these issues with ITU-R study groups, and with ITU-D Study Group 2 in the framework of EMF measurements to assess human exposure and other relevant issues;

ix) coordinating and cooperating with various international organizations specialized in health matters, SDOs and organizations recognized by United Nations agencies dealing with the harmonization of exposure guidelines, in order to generate consistent protocols for assessing exposure to RF-EMF;

x) encourage collaboration with SDOs on simplifying the testing process for measuring and assessing exposure to EMF, in order to make it more accessible and cost-effective for developing countries,

instructs the Director of the Telecommunication Standardization Bureau, in close collaboration with the Directors of the other two Bureaux

within the available financial resources,

1 to support the development of reports identifying the needs of developing countries on the issue of assessing human exposure to EMF, and to submit the reports as soon as possible to ITU-T Study Group 5 for its consideration and action in accordance with its mandate;

2 to regularly update the ITU-T portal on EMF activities, including, but not limited to, the ITU EMF Guide, its mobile application, links to websites, the global portal on ICTs and the environment and flyers, as well as information intended for the general public;

3 to hold workshops in developing countries with presentations and training on the use of equipment employed in assessing human exposure to RF energy, including SAR;

4 to appoint experts in the field of assessment and measurement of exposure to EMF to assist developing countries in the formulation of their strategies and standardization activities in this area;

5 to extend support for developing countries while they establish their national and/or regional centres equipped with test benches for continuous monitoring of EMF levels, especially in selected areas where the public has concerns, and transparently provide the data to the general public, using, among other things, the modalities set out in Resolutions 44 (Rev. New Delhi, 2024) and 76 (Rev. New Delhi, 2024) of this assembly and Resolution 177 (Rev. Bucharest, 2022) of the Plenipotentiary Conference, in the context of the development of regional test centres;

6 to invite ITU-T Study Group 5 to coordinate and cooperate with various international organizations such as WHO, ICNIRP, IEC, ISO, IEEE and other relevant international and regional organizations in the harmonization of exposure thresholds globally and to generate consistent measurement protocols;

7 to report to the next world telecommunication standardization assembly on measures taken to implement this resolution,

invites Member States and Sector Members

1 to contribute actively to the work of ITU-T Study Group 5 by providing relevant and timely information, in order to assist developing countries in providing information and addressing measurement and assessment concerns related to human exposure to EMF radiated by intentional and unintentional sources;

2 to conduct periodic reviews and take the appropriate measures to ensure that ITU-T Recommendations and other relevant international organization guidelines related to exposure to EMF are followed by entities concerned;

3 to cooperate and share expertise and resources between developed and developing countries in order to help government administrations, especially in developing countries, to reinforce or establish an appropriate regulatory framework for protecting people and the environment from non-ionizing radiation from intentional and unintentional sources;

4 to encourage the use of ITU-T Recommendations, in particular the K-series and its supplements, to build national standards for measuring and assessing EMF levels, and to inform the public of compliance with those standards through all appropriate channels and means of communication;

5 to carry out awareness-raising campaigns among the general public on exposure to EMF sources, in order to improve access to reliable technical data, such as the results of measurements and assessments, and the factors affecting EMF from RF stations and devices, with a view to mitigating concerns about the effects of EMF,

further invites Member States

1 to adopt suitable measures included in the relevant ITU Recommendations and international standards in order to ensure compliance with exposure limits to protect health against the adverse effect of EMF exposure;

2 to encourage administrations to follow the latest updated ICNIRP Guidelines and relevant standards of other SDOs;

3 to assess the impact and potential changes in accordance with the relevant ITU Recommendations and international standards on measuring and assessing human exposure to EMF.