

ITU-T SG5 and EMF

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Climate Change
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Agenda

- ITU Overview
- ITU-T/SG5
 - Mandate and Objectives
 - Strategy
 - Structure
- Resolution 72 of ITU-T
- SG5 Q7/5 : Human exposure to electromagnetic fields (EMFs) due to radio systems and mobile equipment
- Key EMF Recommendations
- Future EMF Publications and Recommendations
- Conclusion

ITU Overview



ITU : enabling communication since **1865**

1865

2015



193 Member States

(Governments and regulatory bodies)

700 Private Sector

(Sector Members and Associates)

49 Academia

UN bodies
e.g. WHO, WMO

UN agency for ICTs



**Regional/National
SDO's**
e.g. ETSI, IEC

Unique public/ Private partnership

Industry fora
e.g. WiMAX

**Regional Frequency
Management**
e.g. CEPT

ITU's mission

committed to connecting the world

ITU-T
develops ICT
and telecom-
munication
standards

SGs: Network functionality,
NGN, tariffs, Environment &
Climate change

**General
Secretariat**
coordinates
work of ITU

ITU-D
assists developing
countries

ITU-R
manages radio spectrum
and satellite orbits

Mandate of Study Group 5 on EMF

Resolution 2 (WTSA-12, Dubai, 20-29 November 2012)

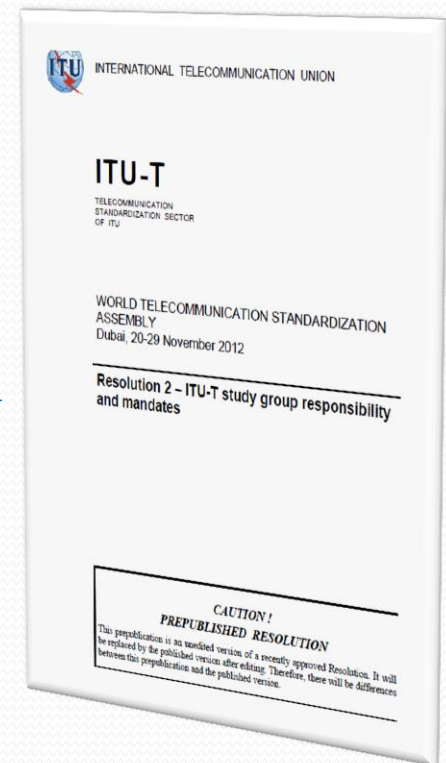
General Areas of Study

Study Group 5 is responsible for :

- Studying ICT environmental aspects of electromagnetic phenomena and climate change.
- Studies related to safety and to health effects connected with electromagnetic fields produced by telecommunication installations and devices, including cellular phones.

Lead Study Groups in Specific Areas of Study

- Lead study group on electromagnetic effects.



Objective

Study environmental issues to define PROTECTIVE MEASURES, INSTALLATION TECHNIQUES & METHODOLOGIES by means :

- **Recommendations: K & L-series**
- **Directives**
- **Handbooks**
 - Lightning Handbook, Earthing Handbook
 - Measuring Handbook, Mitigation Handbook
 - Handbooks on ICT & Climate change



Recommendations for limiting the RISK of :

- Damages to telecommunication installation and equipment
- Disturbances to and from telecommunication systems
- **Injury to people: Safety & Human exposure to EMF produced by telecommunication installations (Q7/5)**

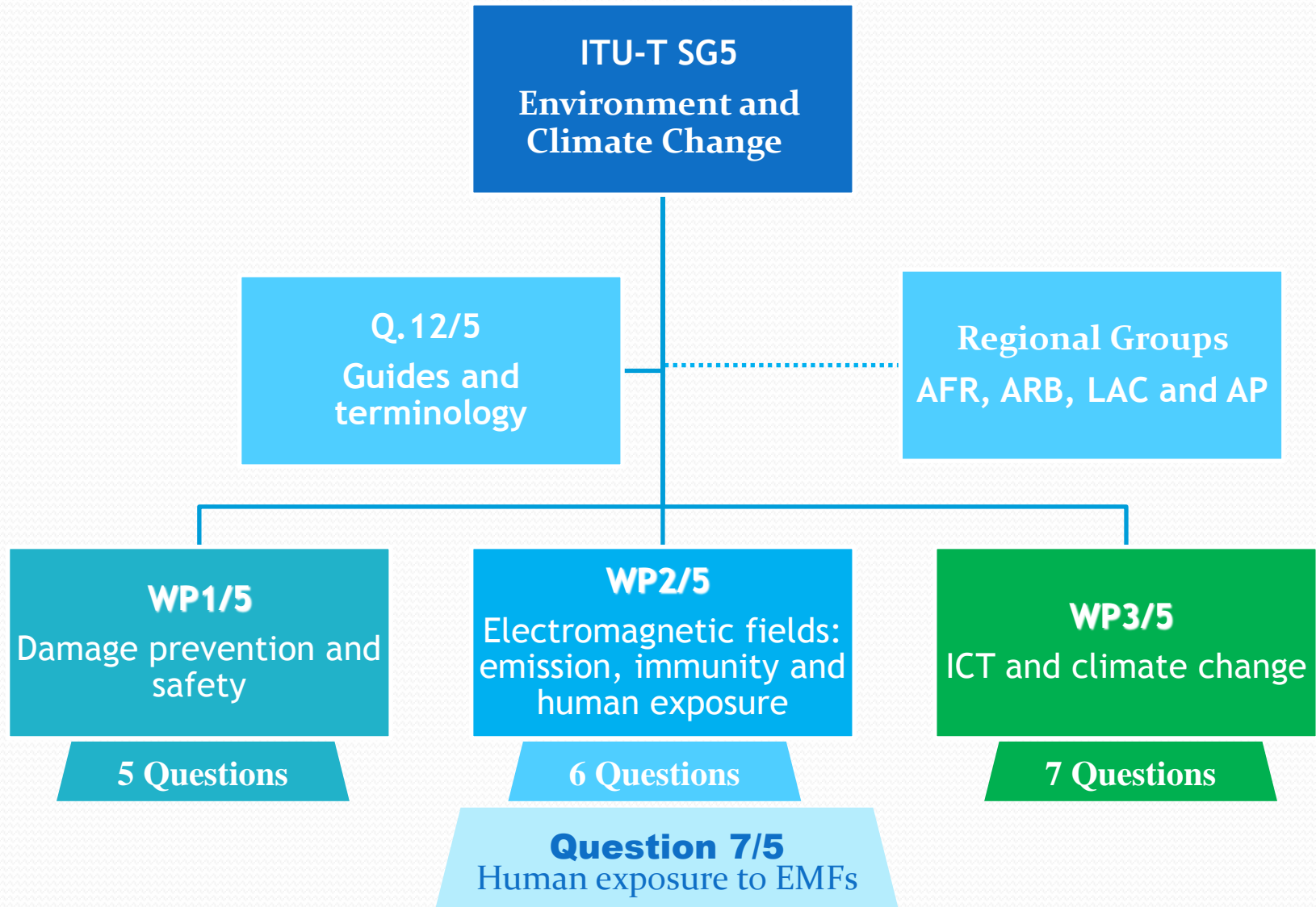
Strategy of Study Group 5

The new strategy for ITU-T SG5 is based on five pillars:

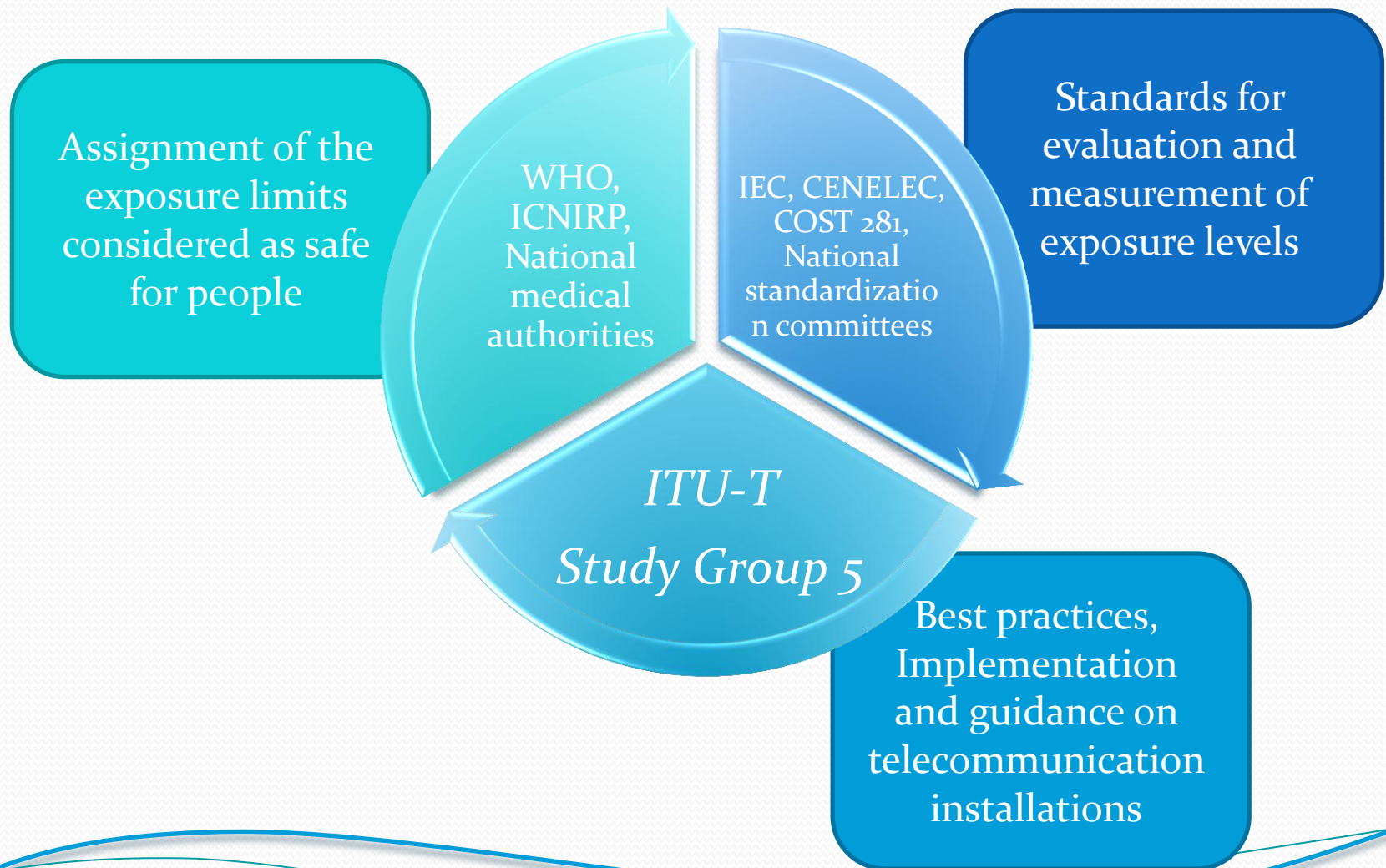
- 1. *Improvement of the quality of ITU-T SG5 deliverables*** (Recommendations, Handbooks, Supplements, etc);
- 2. *Establishment of a think tank*** to identify new work items that could be developed within SG5;
- 3. *Promotion*** of the work of ITU-T SG5;
- 4. *Recruitment*** of new sector members and academia that can contribute to the work of SG5;
- 5. *Mentoring*** of new comers.



Structure of ITU-T SG5



Main tasks & Responsibility on EMF



ITU-T Resolution 72 on Measurement concerns related to human exposure to electromagnetic fields

Revised and consented at World Telecommunication Standardization Assembly (Dubai, 2012)

- ❑ **Recognizes** that Study Group 5, in establishing measurement methodologies for assessing human exposure to RF energy, already cooperates with many participating standards organizations (PSOs).

- ❑ **Resolves** to invite ITU-T, in particular SG5, to expand and continue its work and support in this domain, including but not limited to:
 - i) Disseminating information** related to this topic through organizing workshops and seminars;
 - ii) Continuing to cooperate and collaborate** with other organizations working on this topic and to leverage their work, in particular with a view to assisting the developing countries in the establishment of standards and in monitoring compliance with these standards;
 - iii) Cooperating on these issues with ITU-R SG1 and SG6, and with SG1 of the ITU-D** in the framework of Q 23/1;
 - iv) Strengthening coordination with WHO.**



Question 7/5

"Human exposure to electromagnetic fields (EMFs) due to radio systems and mobile equipment"

Rapporteur: **Fryderyk Lewicki** (Orange, Poland)

Associate Rapporteur: **Tariq Alamri** (CITC, Saudi Arabia)

Associate Rapporteur: **Mike Wood** (Telstra, Australia)

Associate Rapporteur: **Jafar Keshvari** (Nokia, Finland)

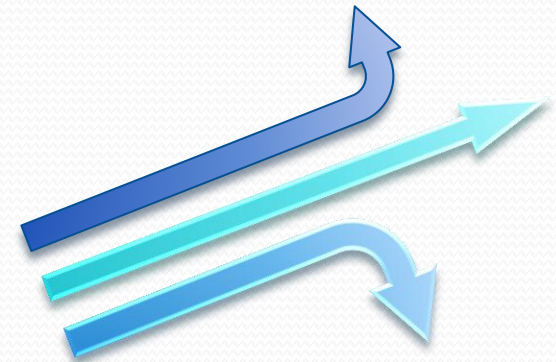


Question 7/5 (Cont'd)

Goals

To provide a high level framework for :

- Managing the human exposure to EMFs (regulatory practices).
- Guidelines for the assessment of human exposure based on existing ITU-T Recommendations and standards produced by other standards development organizations (SDOs).



Ways

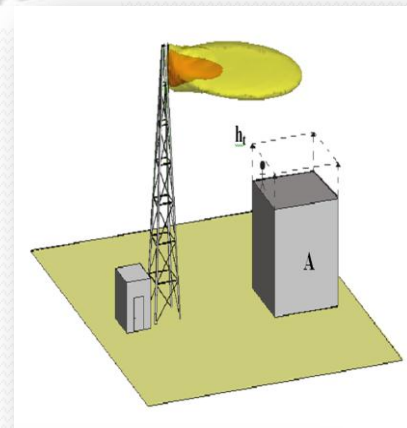
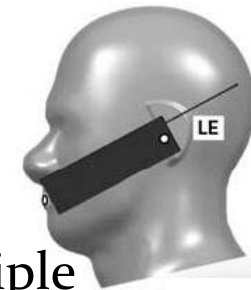
- Measuring techniques
- Procedures
- Numerical modeling

for evaluating the electromagnetic field due to telecommunication systems and radio terminals.

Question 7/5 (Cont'd)

Main Study Area:

- Real site measurements and modeling of the multiple sources operating on different frequencies and transmitting antennas;
- Determine the validity of electromagnetic field predictions;
- Procedures and guidance on numerical modeling of EMFs in the areas around telecommunication transmitting antennas and various systems;
- Guidance based on existing SAR measuring and calculating procedures, techniques and protocols for evaluating EMF due to ICT equipment;
- Handbook to answer frequently questions about human exposure to EMF.



Question 7/5 (Cont'd)

Main Tasks

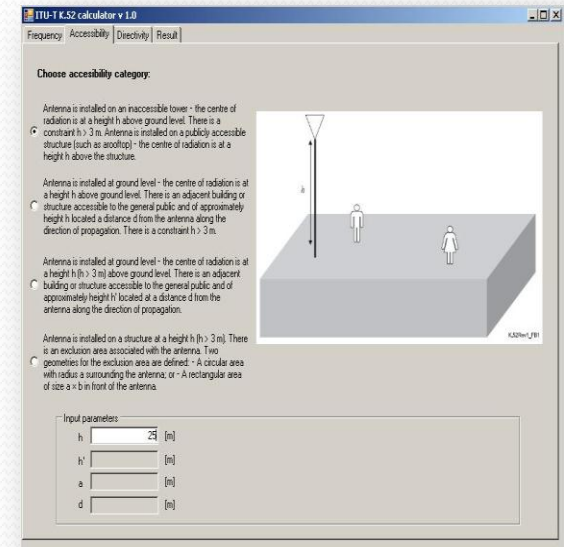
- Develop Recommendations for the telecommunication sector;
- Work on activities specified in Resolutions;
- Collaboration with other standardization bodies (IEC, CENELEC, WHO) in order to avoid duplication of work;
- Maintenance and enhancement of the existing Recommendations.



Key EMF Recommendations

Recommendation ITU-T K. 52 “Guidance on complying with limits for human exposure to electromagnetic fields”

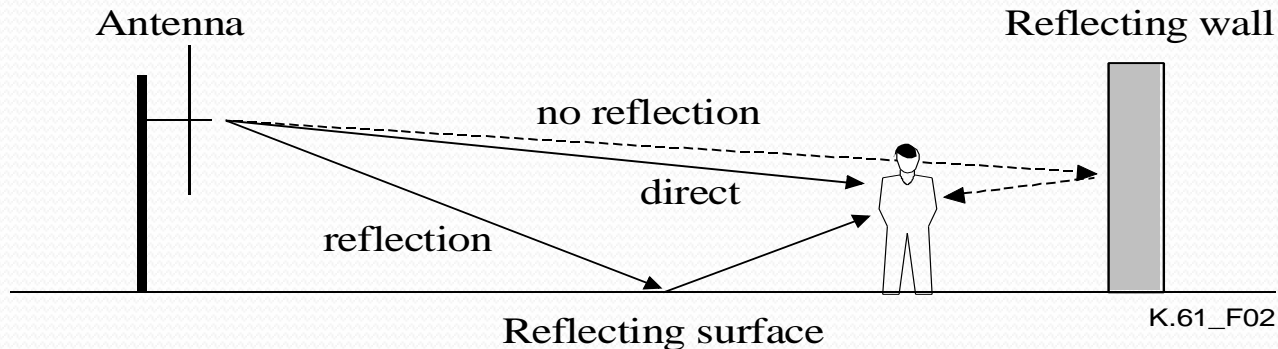
- Aim to help with compliance with safety limits for human exposure to EMFs.
- Guidance on calculation method, and installation assessment procedure.
- Based on safety limits provided by ICNIRP
- Determine the likelihood of installation compliance based on accessibility criteria, antenna properties and emitter power.
- Recommend IEC Standard for the compliance measurement of mobile handsets.



Key EMF Recommendations (Cont'd)

Recommendation ITU-T K.61 "Guidance on measurement and numerical prediction of electromagnetic fields for compliance with human exposure limits for telecommunication installations"

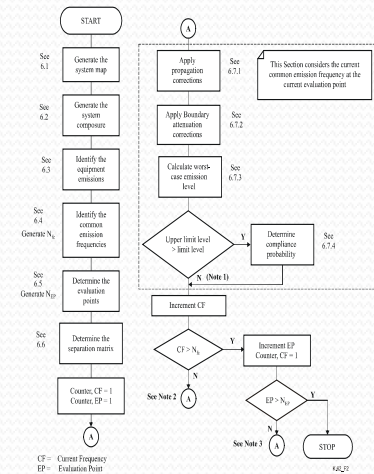
- Help telecommunication operators to verify compliance with exposure standards promulgated by local or national authorities.
- Guidance on measurement methods that can be used to achieve a compliance assessment.
- Provide guidance on the selection of numerical methods suitable for exposure prediction in various situations.



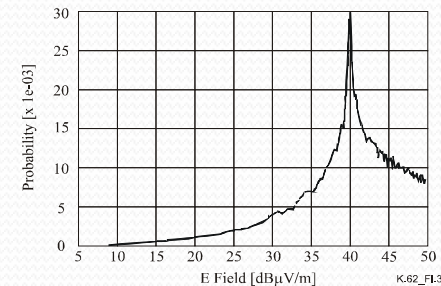
Key EMF Recommendations (Cont'd)

Recommendation ITU-T K.62 "System level radiated emissions compliance using mathematical modelling"

- Support telecommunication operators in demonstrating the compliance of the radiated emissions generated by telecommunication systems.
- Telecommunication operators typically construct their systems from many items of equipment that are each engineered to individually meet radiated emissions requirements.
- Presents a method that allows the radiated emissions to be assessed without performing practical measurement.
- Suite to the analysis of systems that are physically very large, for which practical testing is both prohibitively expensive and practically difficult to perform.



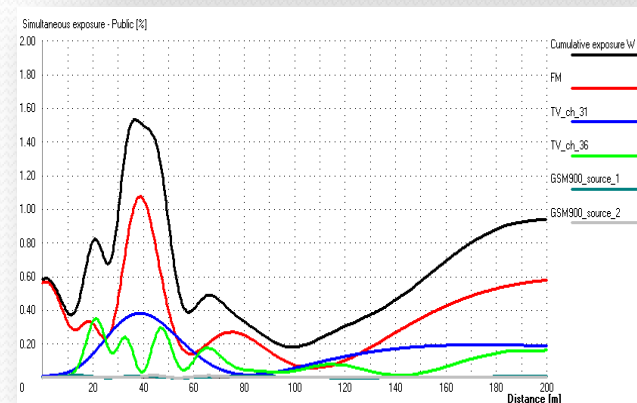
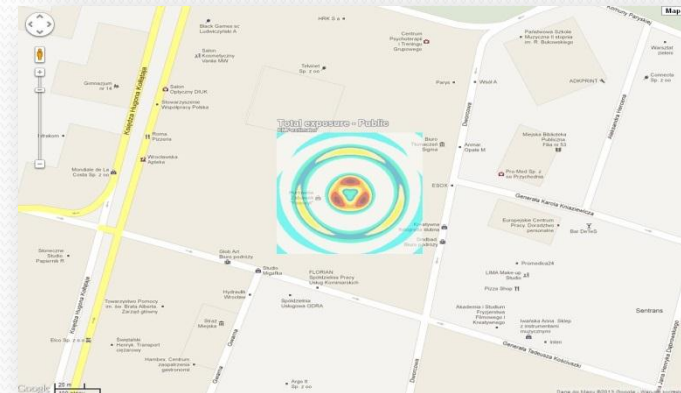
NOTE 1—If upper limit > limit level, compliance probability is 100%.
 NOTE 2—Repeat process at the next evaluation point, considering the next common emission frequency.
 NOTE 3—Repeat process at next evaluation point, starting at the first common emission frequency.



Key EMF Recommendations (Cont'd)

Recommendation ITU-T K.70 "Mitigation techniques to limit human exposure to EMFs in the vicinity of radiocommunication stations"

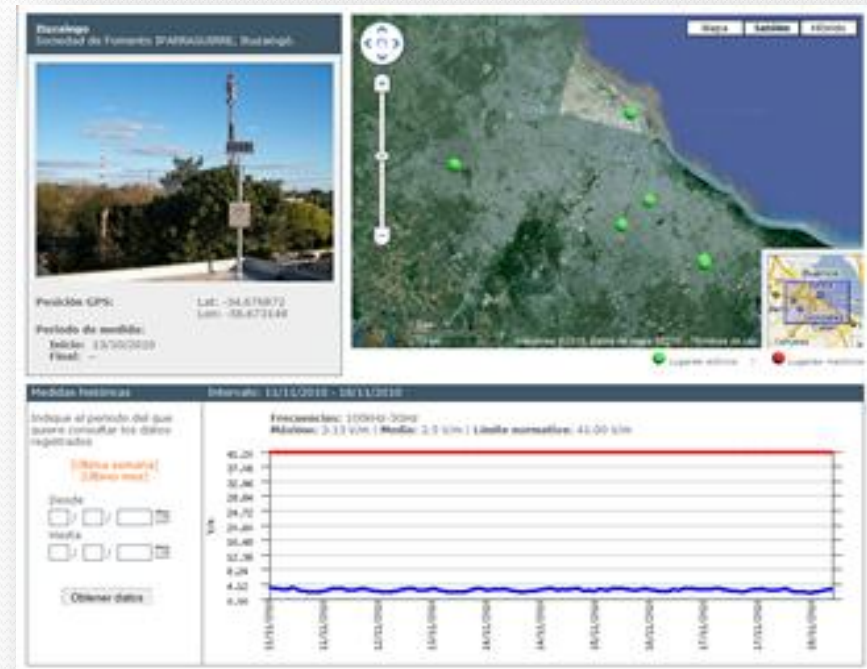
- Defines techniques which may be used by telecommunication operators to evaluate the cumulative (total) exposure ratio in the vicinity of transmitting antennas and to identify the main source of radiation.
- Guidance on mitigation methods which allow reduction of radiation level.
- Provides guidance on procedures necessary in the environment (on site) in which, in most cases, there is a simultaneous exposure to multiple frequencies from many different sources.
- Software provided that implements methodology: **EMF- estimator**



Key EMF Recommendations (Cont'd)

Recommendation ITU-T K.83 "Monitoring of electromagnetic field levels"

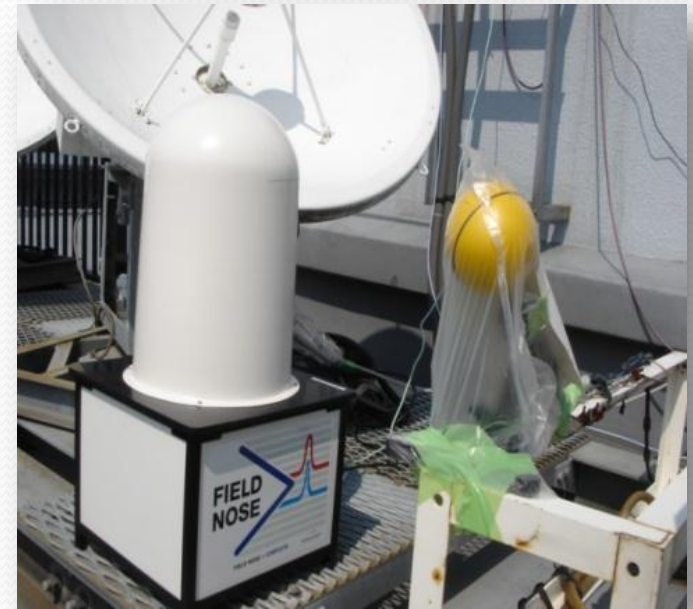
- Guidance to make long-term measurements for the monitoring of electromagnetic fields (EMF) in the selected areas that are under public concern.
- Provide the general public clear and easily available data concerning electromagnetic field levels in the form of results of continuous measurement.



Key EMF Recommendations (Cont'd)

Recommendation ITU-T K.90 "Evaluation techniques and working procedures for compliance with exposure limits of network operator personnel to power-frequency electromagnetic fields"

- Provide evaluation techniques and guidelines for compliance with safety limits for human exposure to EMFs of telecommunication network personnel (e.g., outside plant craft) at power frequencies (DC, 50 Hz and 60 Hz).
- Provide techniques and procedures for determining the need for any precautions at the work site.
- Includes an electronic attachment containing the EMFACDC program.



Key EMF Recommendations (Cont'd)

Recommendation ITU-T K.91 "Guidance for assessment, evaluation and monitoring of human exposure to radio frequency electromagnetic fields"

- Guidance on how to assess and monitor human exposure to radio frequency EMF in the areas with surrounding radiocommunication installations based on existing exposure and compliance standards in the frequency range of 9 kHz to 300 GHz.
- Examine the area accessible to people in the real environment of currently operated services with many different sources of RF EMF.
- Give references to standards and recommendations related to EMF compliance of products.
- Include information concerning fixed amateur stations and information on comparison measurement/calculations and uncertainty evaluation.
- A software is provided in order to help in the calculation of the uncertainty.



Future EMF Publications and Recommendations

EMF Handbook

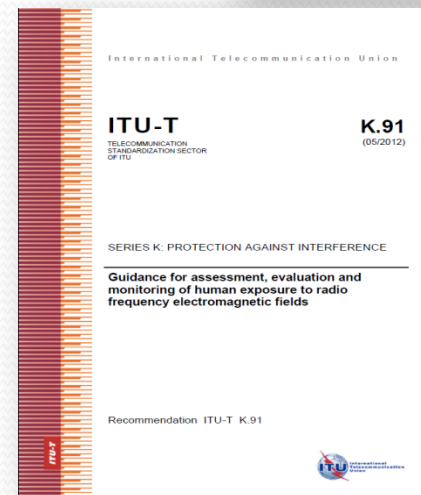
A new EMF handbook or web-based 'technical information paper' including the option of an EMF information application is being developed.

Brochure

ITU-T activities on human exposure to EMFs due to radio systems and mobile equipment.

Recommendation ITU-T K.mpis

Measurement of human exposure levels when a wireless installation is put into service”



Conclusion

- ITU-T Study Group 5 Recommendations can be used to assess EMF exposure, to identify potentially hazardous situations and to comply with exposure limits.
- ITU-T Study Group 5 takes part in standardization by preparing Recommendations, which give appropriate guidance for administrations and telecommunication operators and implement Resolution 72 (WTSA-12, Dubai).
- ITU activity is complementary to the works carried out in other international standardization bodies involved in this subject - there is no duplication of work.
- All the Study Group 5 activities are reported in ITU web site:

<http://www.itu.int/ITU-/studygroups/com05/index.asp>

All Recommendations are available in electronic (PDF) form free of charge.



Thank You



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Supplementary Slide

Additional Information

- ITU

<http://www.itu.int>

- ITU-T/SG5 “Environment & Climate Change”

<http://www.itu.int/ITU-T/studygroups/como5/index.asp>

- ITU-T, the Environment and Climate Change

<http://www.itu.int/ITU-T/climatechange>

- ITU Symposia & Events on EMF

<http://www.itu.int/en/ITU-T/climatechange/emf-1305/Pages/default.aspx>

- ITU Events

<http://www.itu.int/en/events>