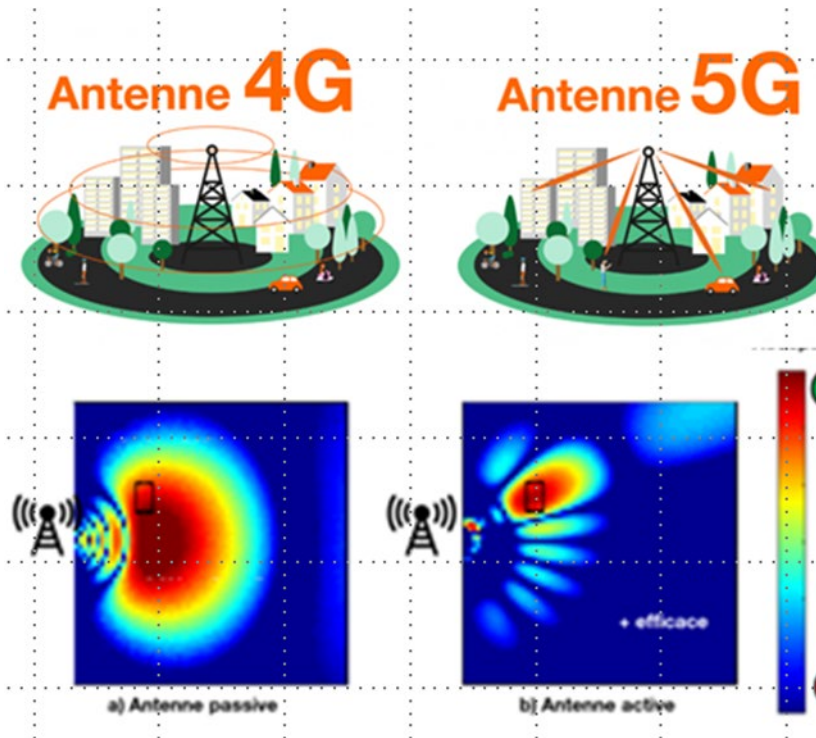


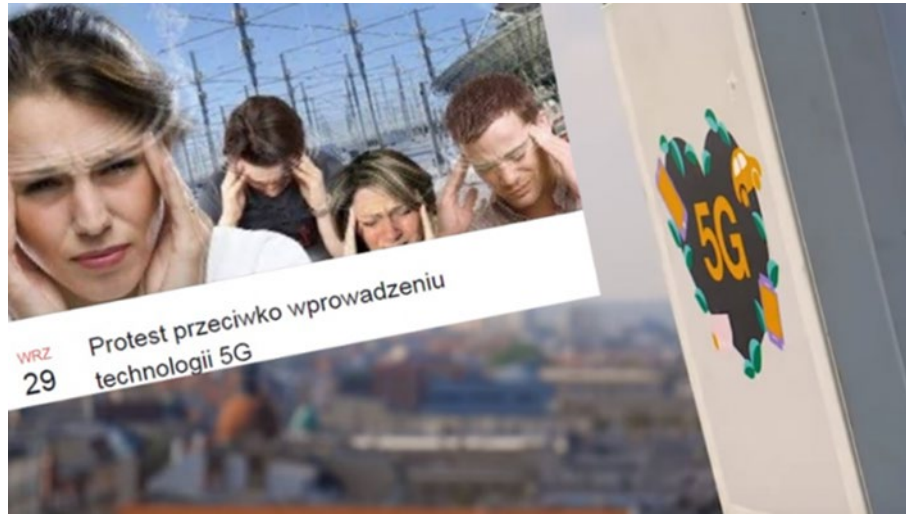
ITU-D Workshop on recent developments relevant to EMF policy formulation

Recent activities at ITU-T on EMF



Dr. Fryderyk Lewicki
 Chairman of Working Party 1
 of ITU-T Study Group 5
 Orange Polska, Poland

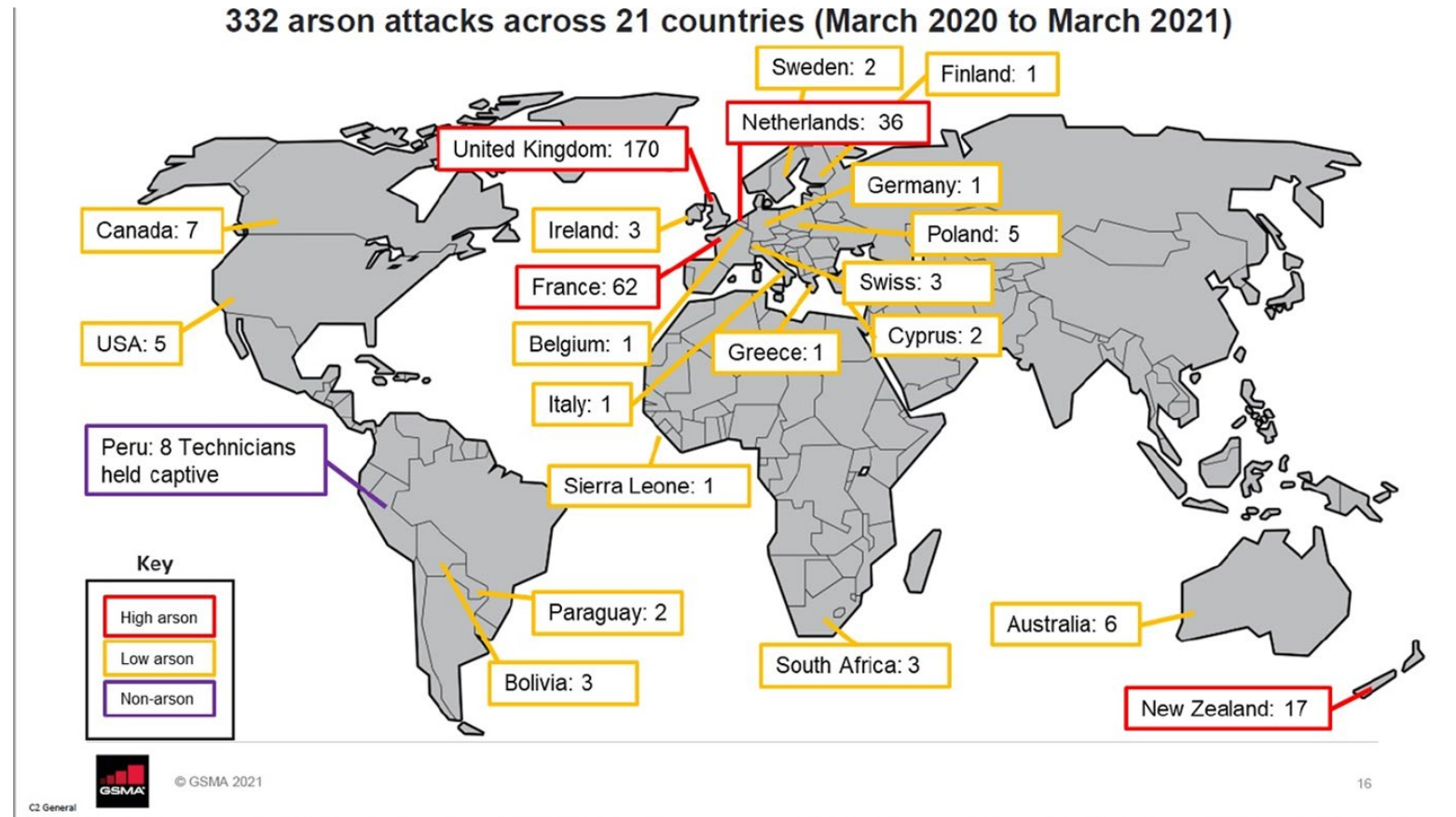
Problems with 5G rollout – fake news



Viruses cannot travel on radio waves/mobile networks. COVID-19 is spreading in many countries that do not have 5G mobile networks. COVID-19 is spread through respiratory droplets when an infected person coughs, sneezes or speaks. People can also be infected by touching a contaminated surface and then their eyes, mouth or nose.

FACT: 5G mobile networks DO NOT spread COVID-19

World Health Organization #Coronavirus #COVID19 8 April 2020



Source: The 10th GSMA EMF Forum 2021, Sarah Wylie, Vodafone

ITU-T Q3/5 Human Exposure to EMF

Cooperation with International Organizations

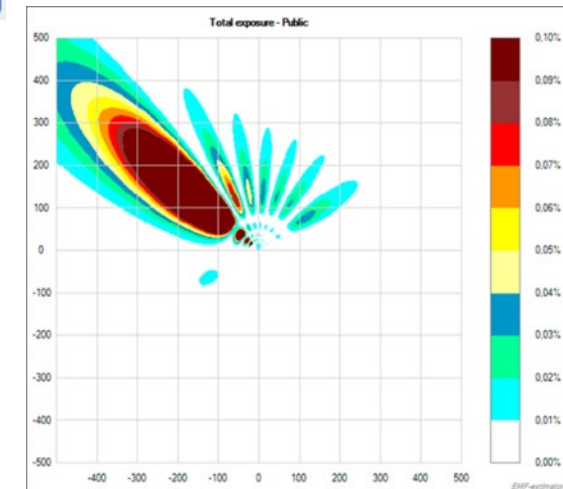
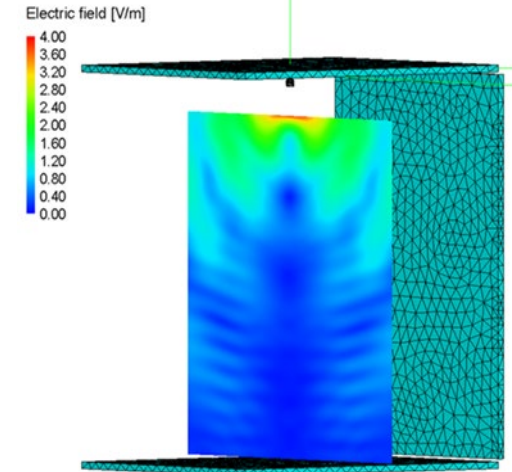
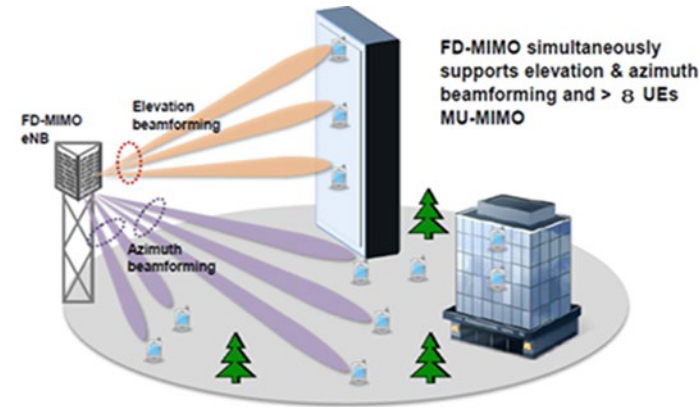
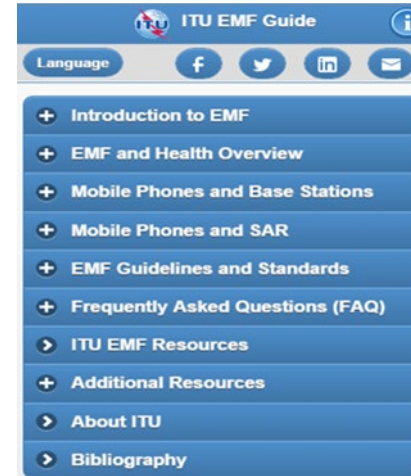
- World Health Organization
- International Commission on Non-Ionizing Radiation Protection
- International Electrotechnical Commission
- Institute of Electrical and Electronics Engineers
- GSM Association
- European Conference of Postal and Telecommunications Administrations
- European Telecommunications Standards Institute
- ITU-R, ITU-D



ITU-T Q3/5 – Current deliverables

- 12 Recommendations: (ITU-T K.52, K.61, K.70, K.90, **K.91**, K.83, K.100, K.113, K121, K.122, K.145, K.153)
- 10 Supplements: (ITU-T K.Suppl. 1, 4, 9, 13, 14, 16, 19, 20, 29 and 32) and 1 Technical Report
- 2 mobile applications
- 5 Software packages

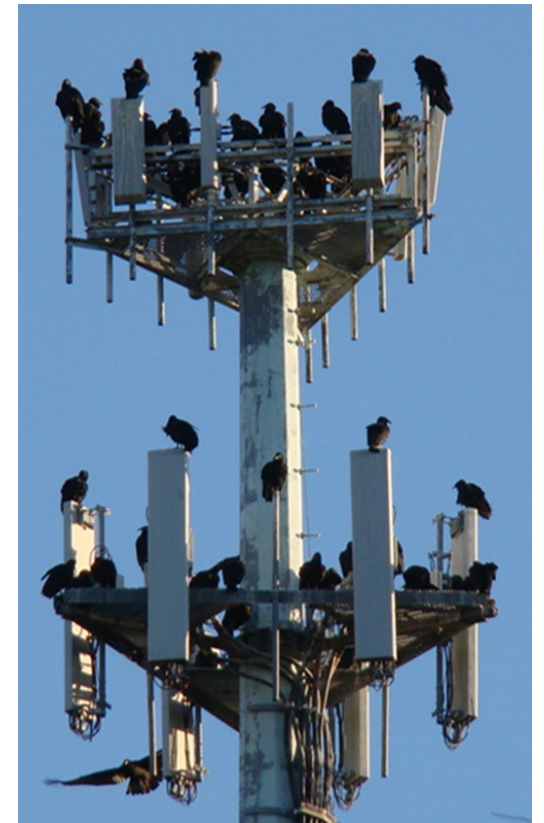
<https://www.itu.int/en/ITU-T/studygroups/2022-2024/05/Pages/default.aspx>



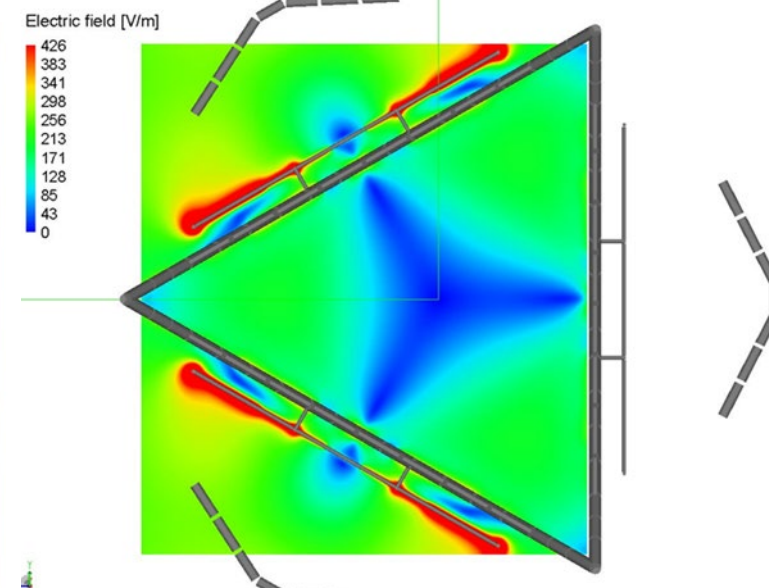
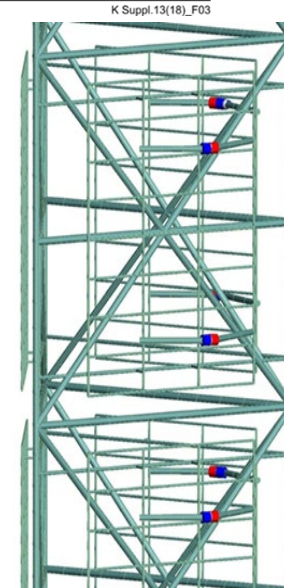
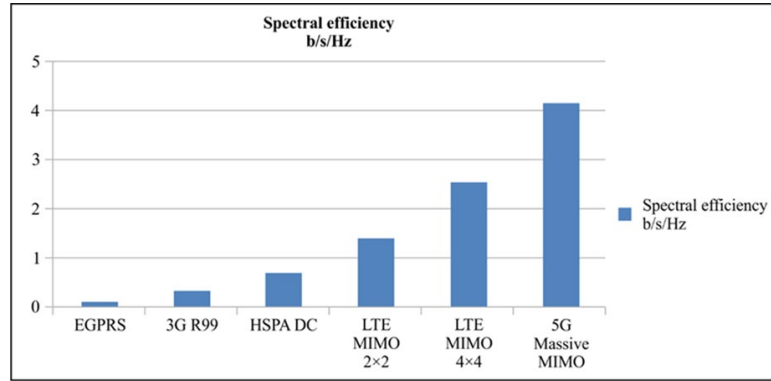
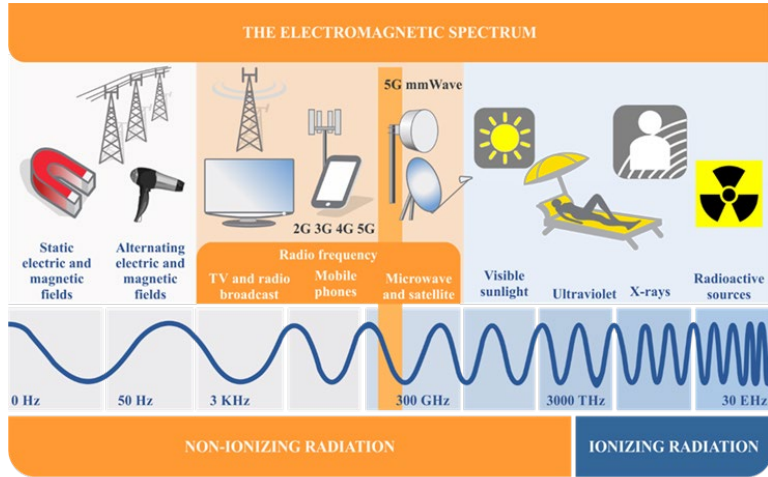
Recommendation ITU-T K.91

Guidance for assessment, evaluation and monitoring of human exposure to radio frequency electromagnetic fields

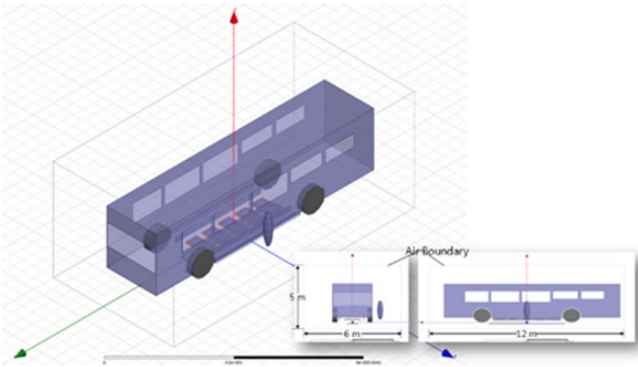
- There are plenty of standards concerning human exposure assessment
- Most of the standards are very general or product oriented
- In real environment there are many sources of radiation operating simultaneously
- Recommendation ITU-T K.91 gives guidance on the all issues concerning RF EMF including references to other ITU documents and international standards



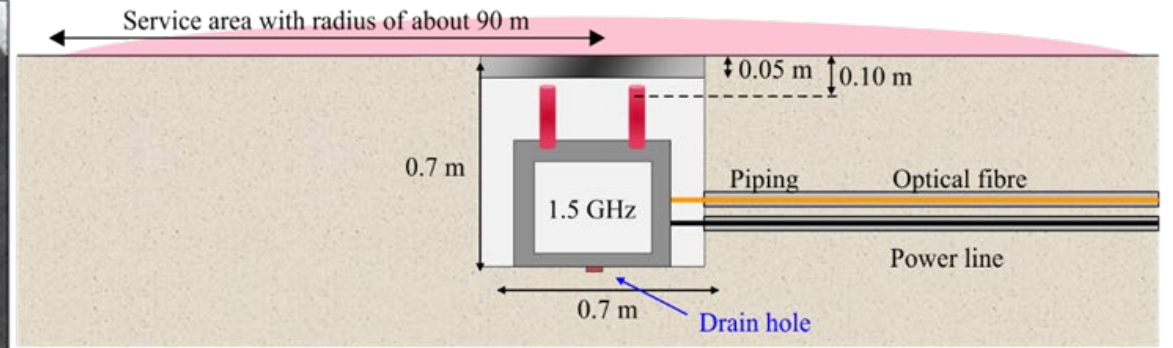
Examples from other ITU-T Recommendations



Q3/5 Informative documents: ITU-T Supplements & Reports

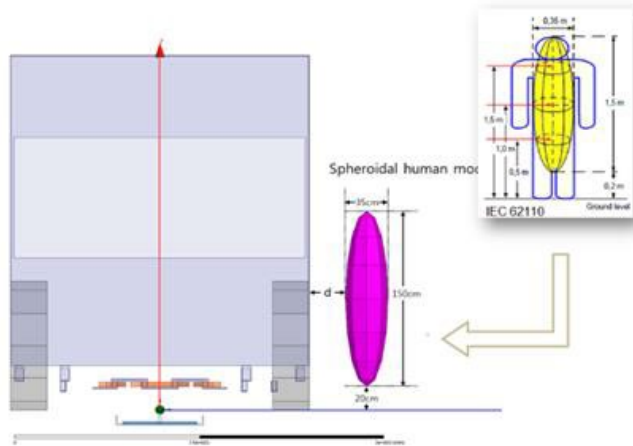


a) Photo



b) Structure and service area

K Suppl.20(20)_F01



	1G 1980	2G 1990	3G 2003	4G 2009	5G 2020
SERVICES					
DEVICES					

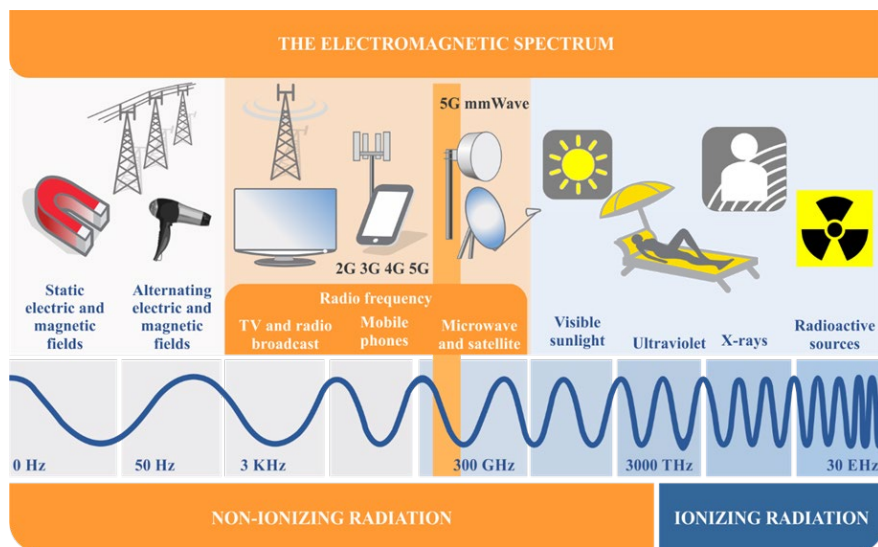
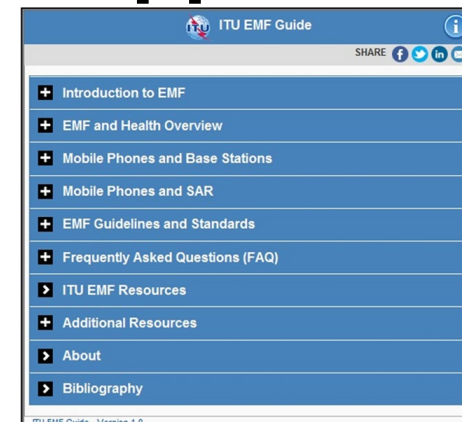
K Suppl.1(20)_F05



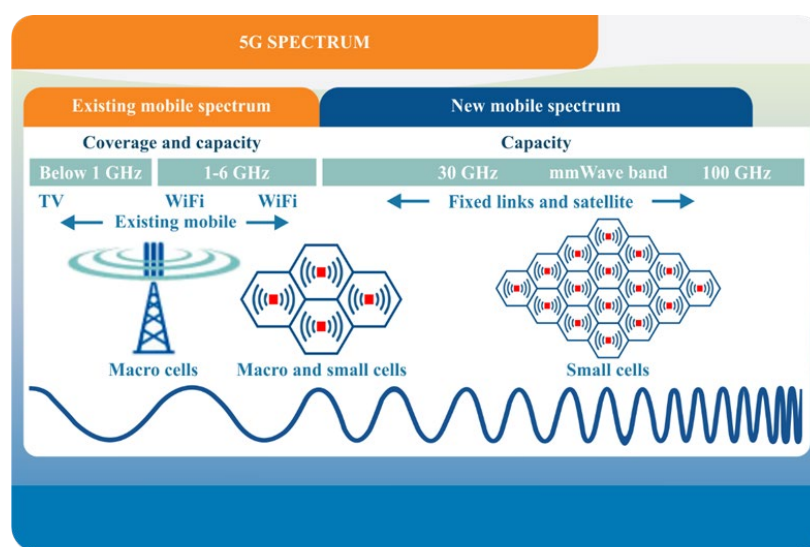
K Suppl.19(19)_F01

Q3/5 Informative documents: EMF-Guide: mobile App

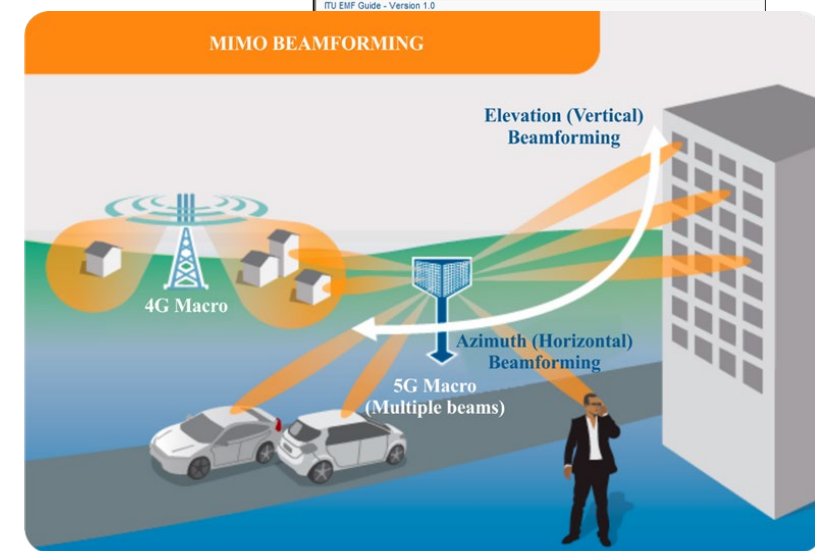
- Promotes RF EMF information and education resources, available in 6 languages
- Provides the most useful information in helping to clarify uncertainties concerning EMF



K Suppl.1(20)_F01



K Suppl.1(20)_F10

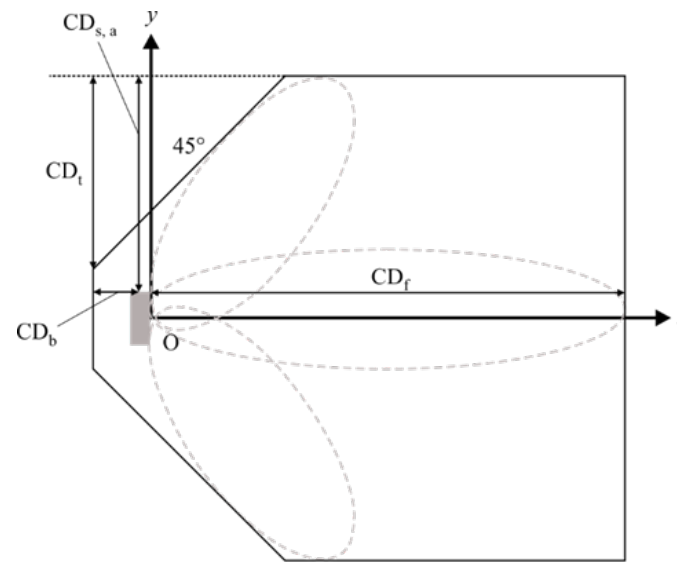


K Suppl.1(20)_F11

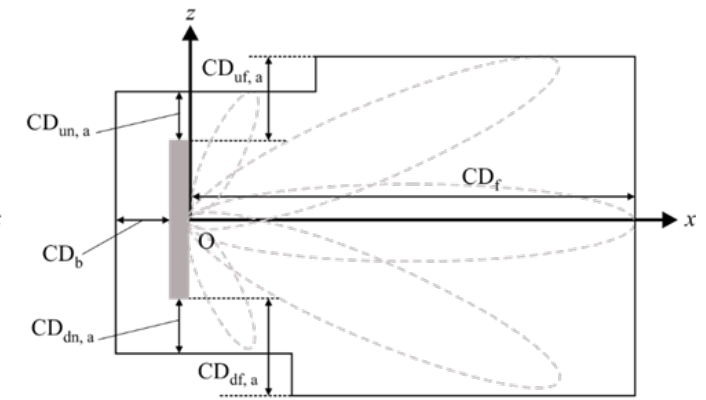
ITU-T Recommendation 153

Guidance on determining the compliance boundaries (exclusion zones) of radio transmitter installations

- Compliance boundaries present areas in which the electromagnetic fields may exceed the radio frequency electromagnetic field (RF-EMF) exposure limits.
- Recommendation ITU-T K.153 includes information on how the exclusion zones should be determined



a) Top view



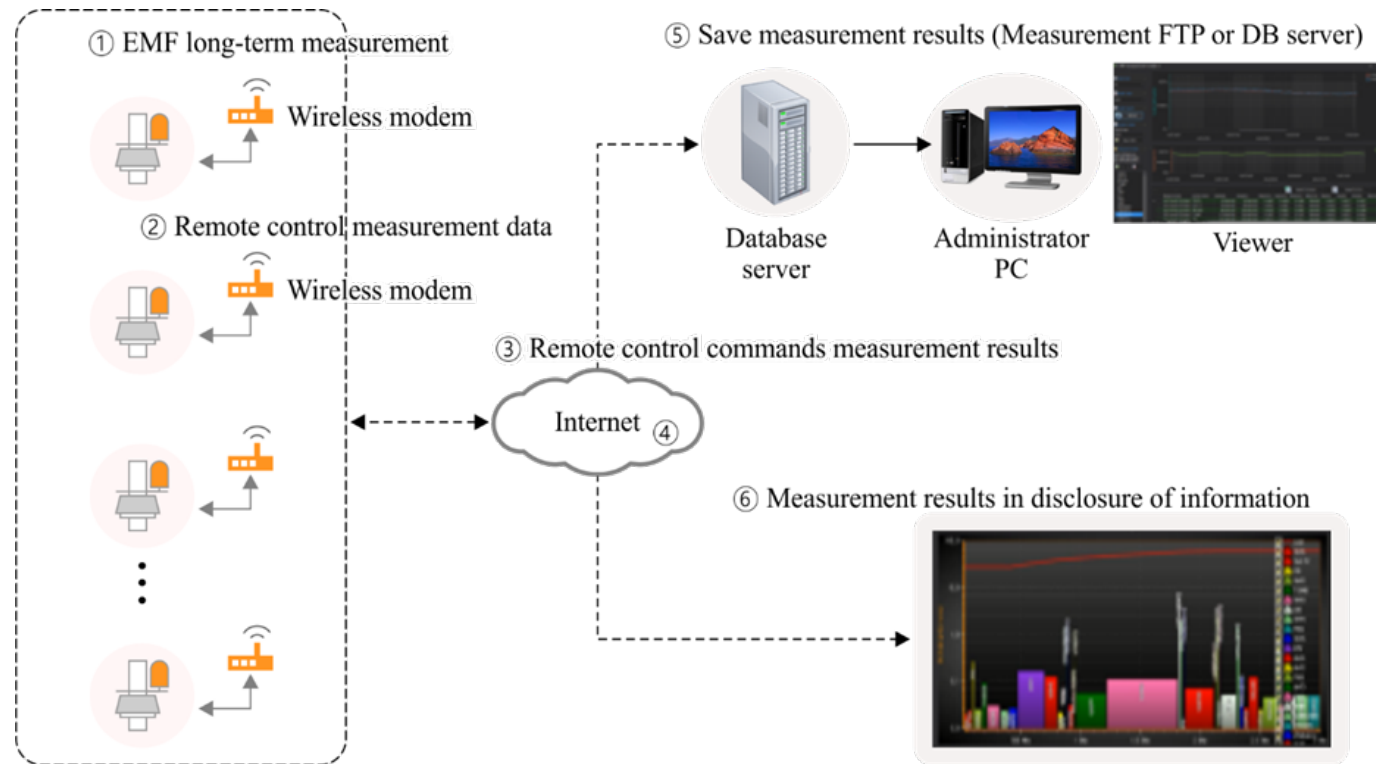
b) Side view

K.153(23)

ITU-T Recommendation 83 – constant update

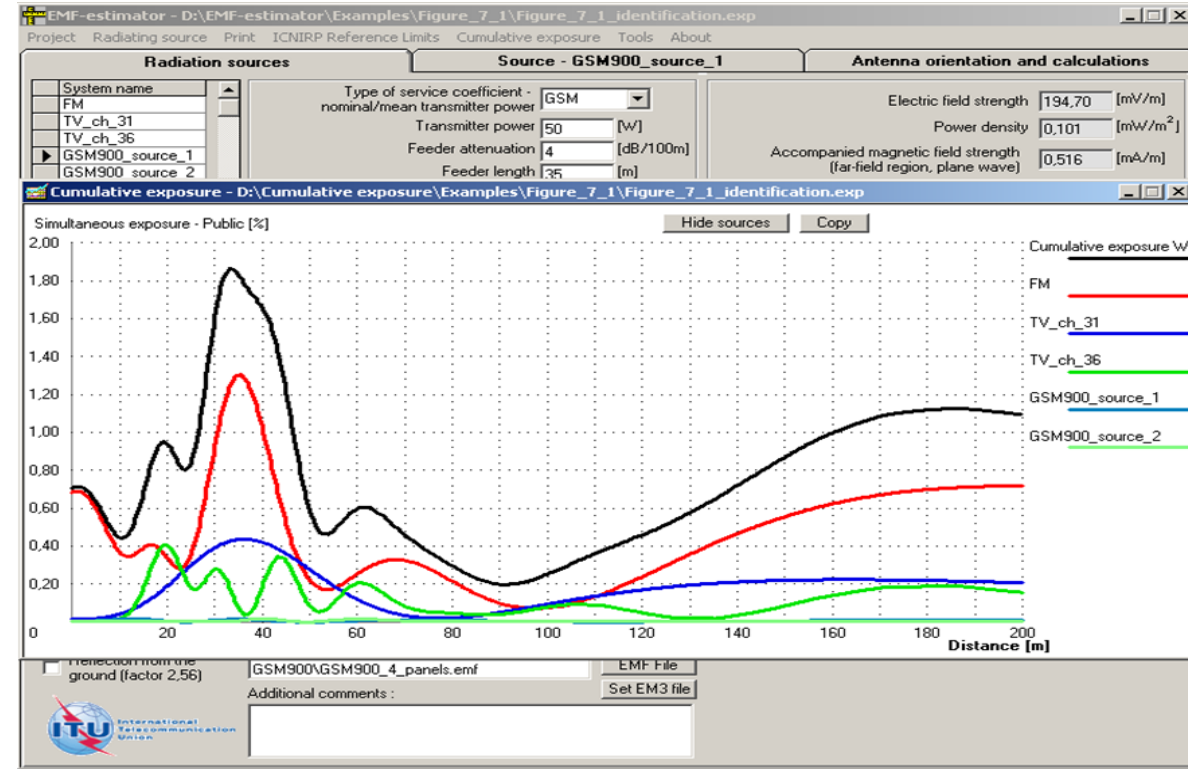
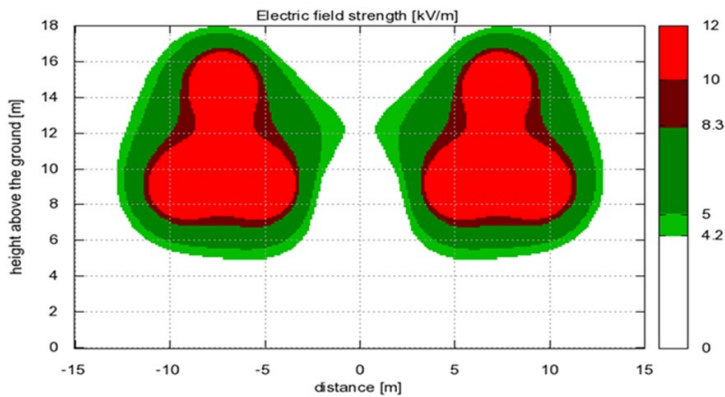
Monitoring of the electromagnetic field levels

information collected from different countries and entities concerning RF EMF monitoring systems and in sharing proper information to the general public



K.83(24)_FIII.5

ITU-T Q3/5 – software tools (EMF-estimator, EMFACDC, ...)

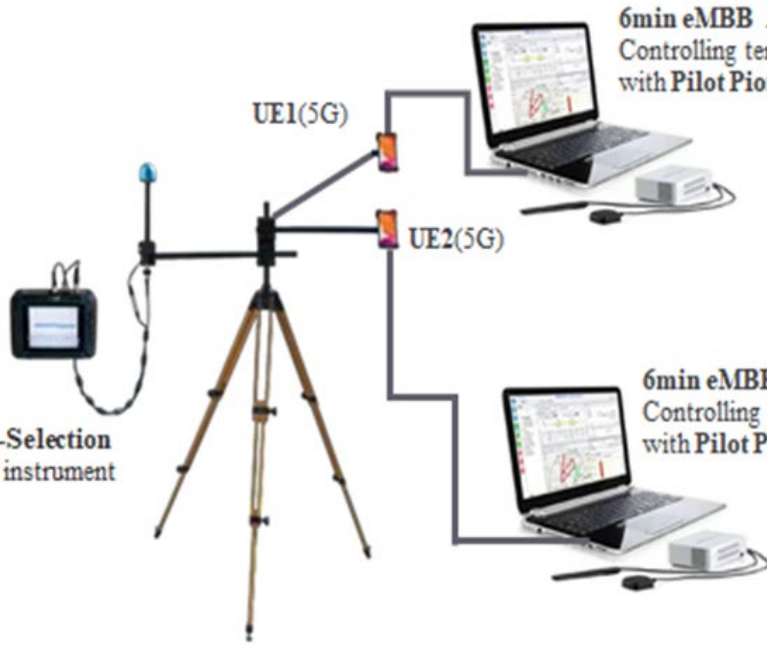


ITU-T Q3/5 ongoing work

Shared 5G base station



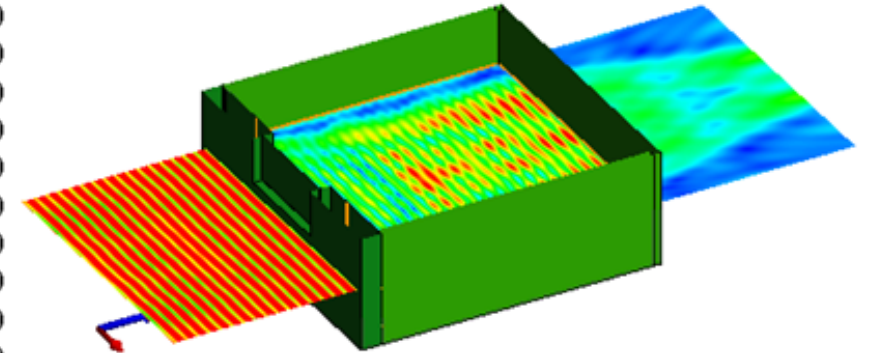
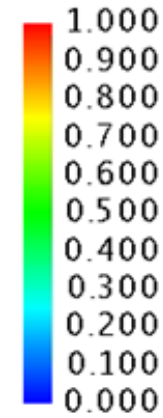
Frequency-Selection Monitoring instrument



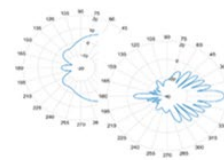
6min eMBB Application scenarios
Controlling terminal (PC1):
with Pilot Pioneer installed

6min eMBB Application scenarios
Controlling terminal (PC2):
with Pilot Pioneer installed

XYZ E-Field [V/m]



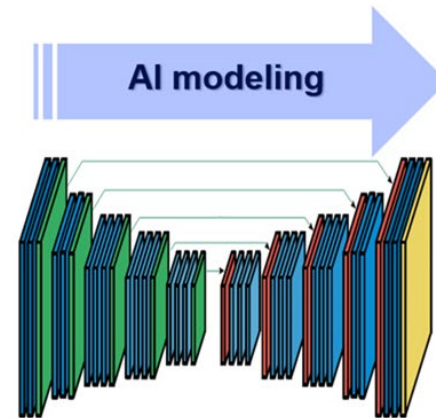
GIS data



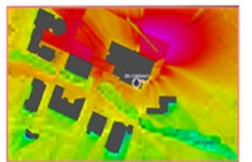
Antenna radiation pattern

Longitude	Latitude
Altitude	PCI
Distance	

Numeric data



AI modeling



Field strength

Thank you!

Questions? Interested in learning more?
Let us know!



Email

tsbsg5@itu.int



Website

[SG5: Environment, EMF & circular economy](#)

ITU-T Recommendations in force

ITU-T Rec. Number	Title	Year
K.52	Guidance on complying with limits for human exposure to electromagnetic fields	2021
K.61	Guidance to measurement and numerical prediction of electromagnetic fields for compliance with human exposure limits for telecommunication installation	2018
K.70	Mitigation techniques to limit human exposure to EMF's within vicinity of radiocommunication stations	2020
K.83	Monitoring of the electromagnetic field levels	2024
K.90	Evaluation techniques and working procedures for compliance with exposure limits of network operator personnel to power-frequency electromagnetic fields	2018
K.91	Guidance for assessment, evaluation and monitoring of the human exposure to radio frequency electromagnetic fields	2022
K.100	Measurement of human exposure levels when a wireless installation is put into service	2021
K.113	Generation of radiofrequency electromagnetic fields (RF-EMF) level maps	2015
K.121	Guidance on the Environmental Management for Electromagnetic Radiation from Radiocommunication Base Stations	2018
K.122	Exposure levels in the close proximity of the radiocommunication antennas	2016
K.145	Assessment and management of compliance with RF EMF exposure limits for workers at radiocommunication sites and facilities	2020
K.153	Guidance on determining the compliance boundaries (exclusion zones) of radio transmitter installations	2023

ITU-T Supplements in force

Work item	Title	Year
K Suppl. 1 to K.91	Guide on electromagnetic fields and health	2021
K. Suppl. 4 to K.91	Electromagnetic field considerations in smart sustainable cities	2018
K Suppl. 9	5G technology and human exposure to RF EMF	2019
K Suppl. 13	Radiofrequency electromagnetic field (RF-EMF) exposure levels from mobile and portable devices during different conditions of use	2021
K Suppl. 14	The impact of RF-EMF exposure limits stricter than the ICNIRP or IEEE guidelines on 4G and 5G mobile network deployment	2019
K Suppl. 16	Electromagnetic field (EMF) compliance assessments for 5G wireless networks.	2022
K Suppl. 19	Electromagnetic field (EMF) strength inside underground railway trains	2019
K Suppl. 20	RF Exposure evaluation around base station installed underground	2021
K Suppl. 29	EMF strength inside and outside of electric vehicle using wireless power transfer (WPT) technology	2022
K Suppl. 32	Case studies of radio frequency- electromagnetic field (RF-EMF) assessment	2023

ITU-T documents under development

ITU-T Rec. Number	Title	Year
K.devices	RF EMF exposure assessment of the wireless radiocommunication devices operating close to the human body	2024
K.peak	Comparison between peak and real exposure in the long-term considerations	2024
K.reflection	Impact of the metallic structures for the EMF exposure level	2024
K.Small	Small base stations - impact on the overall exposure level	2024
K.AI&EMF	EMF evaluation method using artificial intelligence in vicinity of 5G NR (IMT-2020) base station	2026
K.Suppl. MethDataEMF	Guidance on Methodologies for RF-EMF Assessments and Responding to Public Concerns regarding human exposure to RF-EMF from Telecommunication Installations	2026