

# Electromagnetic Compatibility in the heart of electronic devices

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A graphic with a dark blue background featuring glowing purple and blue waveforms. The text "EMC importance" is written in white, bold, sans-serif font in the center.

## EMC importance

The ability of electronic devices to:

- function in the presence of electromagnetic disturbances in specified environments, and
- To avoid disturbances to radio receivers, telecommunication networks and other electronic devices

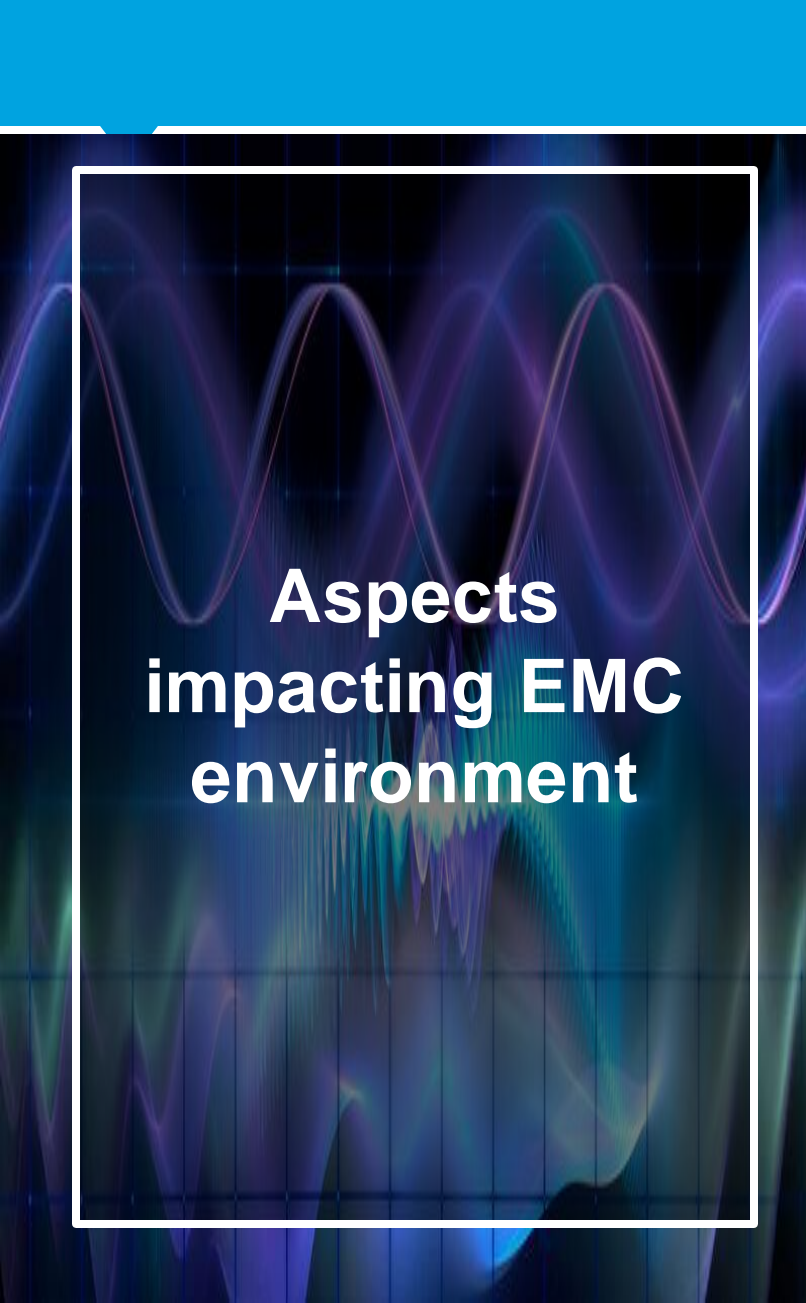




## EMC importance

As the technology advances, EMC becomes more important because:

- Increased use of electronic devices
- Automotive application
- Personal computing and devices (IoT) – Increased potential for susceptibility/ emission
- Introduction of new radio services
- Increasing clock frequencies
- Increase of automation (e.g. smart homes)
- Deployment of new network services
- Deployment of smart grids



## Aspects impacting EMC environment

- The **use of switching power converters** that is becoming more popular by the deployment of photovoltaic systems and wind turbines for utilization of natural energies.
- The **increase of clock frequencies and digital devices** in electronic circuits
- The **popular use of a variety of both wireless and wireline technologies for the exchange of voice and data** over short-range connection and telecommunications networks, for example:
  - Public Wi-Fi access points in cities, suburbs, and communities
  - use of wireless Access technologies (Wi-MAX, UWB, NFC, LTE, 5G etc.)

A graphic with a dark background featuring glowing, wavy lines in shades of purple, blue, and green, resembling an electromagnetic field or signal. The text "EMC Recommendations topics:" is overlaid in white.

**EMC  
Recommendations  
topics:**

## **EMC Recommendations of ITU-T K. series cover:**

- **Definition of environment (ITU-T K.34)**
- **Equipment test/conformance**
- **Emission of networks (ITU-T K.60)**
- **Guidelines to maintain EMC compatibility of product/networks**

# Question 4/5 Electromagnetic compatibility (EMC) aspects in ICT environment

Establishes EMC requirements for  
ICT equipment

## Objectives:

- to reduce electromagnetic compatibility issues
- maintain a controlled electromagnetic environment for ICT systems and services

Electromagnetic  
Compatibility



- **ITU-T K.136**  
“Electromagnetic compatibility requirements for radio telecommunication equipment”
- **ITU-T K.137**  
“Electromagnetic compatibility requirements and measurement methods for wireline telecommunication network equipment”

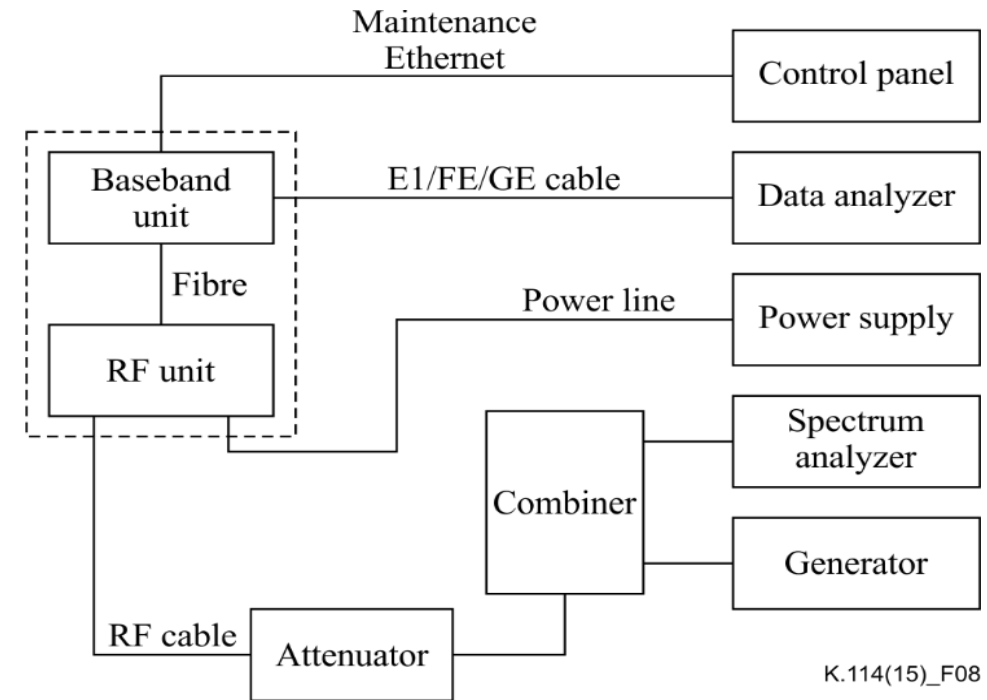
# Recommendation ITU-T K.114

## EMC requirement and test for mobile base stations

Specifies the EMC common requirements and test methods for digital cellular mobile communication base station equipment, repeaters and associated ancillary equipment which are independent of any kind of wireless access technologies, such as 2G, 3G, 4G, 5G or others.

Test conditions for base stations used Base station classification

- Test requirement
- Test arrangement
- Performance criteria pass/fail criteria)



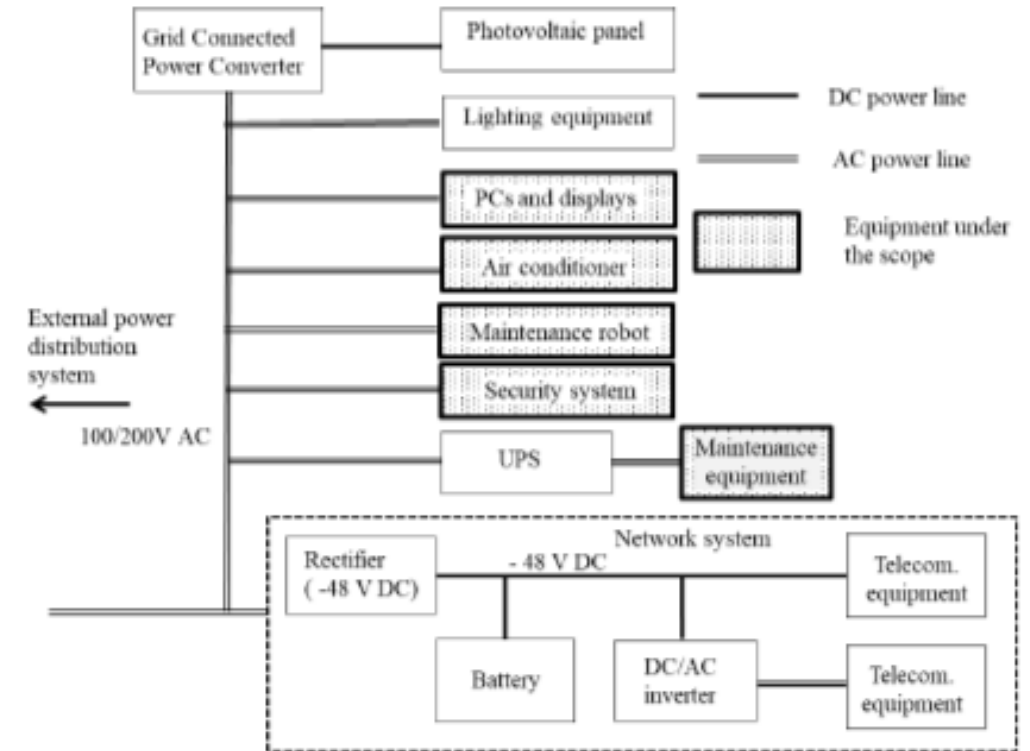
K.114(15)\_F08

## Recommendation ITU-T K.123

# Electromagnetic compatibility requirements for electrical equipment in telecommunication facilities

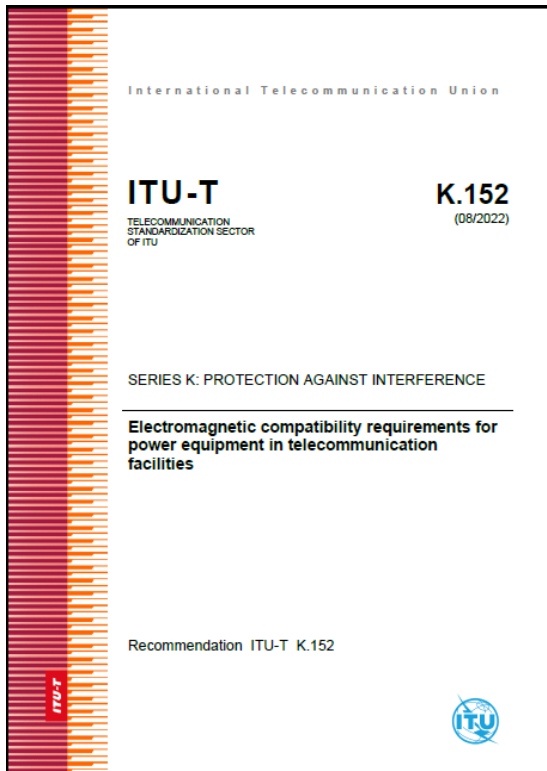
Requirements for radiated and conducted emissions from electrical systems installed in telecommunication facilities.

- inverter driven electrical equipment (air conditioners)
- personal computers, displays, printers,
- maintenance robots
- security systems including surveillance cameras.
- power conversion devices and electronic circuits
- Emission requirement
- Harmonic requirement on main line





# Recommendation ITU-T K. 152 Electromagnetic compatibility requirements for power equipment in telecommunication facilities



- requirements for radiated and conducted emissions from power equipment installed in telecommunication facilities.
- rectifiers that supply direct current (DC) voltages of up to 400 V,
- power-conditioning systems (PCSs)
- grid-connected power converters (GCPCs),
- uninterruptible power supplies (UPSs)



## Advancing EMC aspects

### Ongoing work

ITU-T  
K.DMEI

#### Determination and mitigation of electromagnetic interference between base stations due to tropospheric radio-duct

- Define how to protect from electromagnetic interference due to tropospheric radio-duct
- Liaison with ITU-R.

ITU-T  
K.plc.emc

#### Electromagnetic compatibility requirements and measurement methods for equipment and installations in outdoor applications using power line communication technology

- Present scope focuses on Photo-Voltaic sites using PLC
- Classification of sites and applicable limits will be defined

# Thank you!

Questions? Interested in learning more?  
Let us know!



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[SG5: Environment, climate change and circular economy](#)