

ITU-T Study Group 5:
*“Setting the
environmental
standards for 5G”*

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Working Party 2/5 Chairman
ITU-T Study Group 5



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

SG5 is responsible for:

Studying ICT environmental aspects of electromagnetic phenomena and climate change.

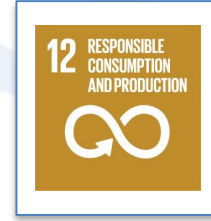
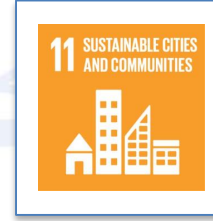
Studies on how to use ICTs to help countries and the ICT sector to adapt to the effects of environmental challenges, including climate change, in line with the Sustainable Development Goals (SDGs).

Lead Study Group for

electromagnetic compatibility, lightning protection and electromagnetic effects

ICTs related to the environment, climate change, energy efficiency and clean energy

circular economy, including e-waste



9 Questions

4 Regional Groups

EMC, lightning protection, EMF



Current key topics

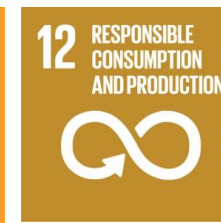
- Ethernet port protection (wired internet access)
- Base station protection (wireless internet access)
- Multi-port surge protective devices
- EMC requirement for telecommunication equipment and cabling & in home
- Assessment and Monitoring of the Exposure to RF EMF

Environment, Energy Efficiency and the Circular Economy



Current key topics

- E-waste management and reduction
- Circular Economy
- Sustainability - Reducing GHG to Achieve SDGs
- Environmental impact of mobile phones
- Energy efficiency KPIs for ICT Goods, networks, services
- Efficiency of SC&C solutions
- Green Data Centers Solutions and KPI/metrics
- 5G/IMT2020 sustainable development: EE KPI/ Metrics, Power feeding solutions, environmental impact assessment



Setting Environmental Requirements for 5G

International Standards

Supplements

Technical Reports

ITU-T
SG5

Electromagnetic
compatibility
(EMC)

ITU-T K.Suppl.10

Electromagnetic
fields (EMF)

ITU-T K.Suppl.9
ITU-T K.Suppl.14

Energy feeding &
efficiency

ITU-T L. 1220
ITU-T L.1222
ITU-T L. Suppl.36

Resistibility

ITU-T K.Suppl.8





ITU-T K. Suppl. 10

Analysis of EMC aspects and definition of requirements for 5G systems

This Supplement provides guidance on the EMC compliance assessment considerations for 5G systems. Given the 5G Radio Access Network (RAN) technical standards are still being finalised, the first version of this Supplement focuses on possible emission and immunity requirements for 5G systems.

ITU-T K. Suppl. 8

Resistibility analysis of 5G systems

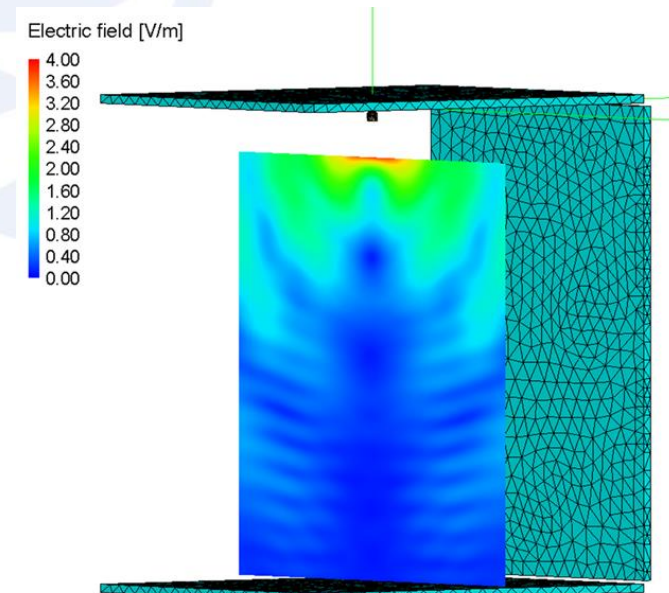
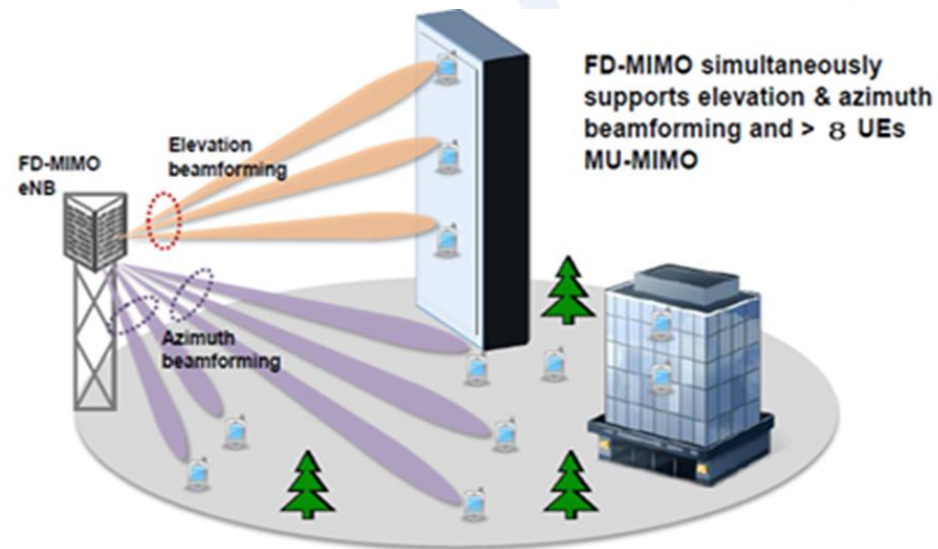
This Supplement analyses 5G system resistibility requirements for lightning and power fault events. The electrical threats posed by lightning and power fault events are discussed and the appropriate resistibility tests identified. Installation practice can have a big influence on the reliability of service and the equipment. Earthing, location and craftsmanship are discussed.

ITU-T K. Suppl. 9

5G technology and human exposure to RF EMF

Contains an analysis of the impact of the implementation of 5G mobile systems with respect to exposure level of EMF around radiocommunication infrastructure

- **Higher frequencies and higher throughput**
- **Smart antennas:** will be more efficient which will result in minimized RF-EMF exposure
- **Small cells:** are well suited for coverage extent as well as capacity issues. Better quality and reduced power to and from mobile phones.
- **Internet of things (IoT):** EMF exposure will usually be much lower than from other devices and systems



ITU-T K.Suppl.14

The impact of RF-EMF exposure limits stricter than the ICNIRP or IEEE guidelines on 4G and 5G mobile network deployment



- Provides an overview of some of the challenges faced by countries, regions and cities which are about to deploy 4G or 5G infrastructures.
- Includes a case study on Poland
- Based on inputs and contributions from, inter alia, Poland, India, Ericsson, Nokia, China Telecom, Huawei, Uganda, Cisco, GSMA and Vodafone, Telstra, Korea, Belgium, etc.



Recommendation ITU-T L.1220

Innovative energy storage technology for stationary use - Part 1: Overview of energy storage

This Supplement provides guidance on the EMC compliance assessment considerations for 5G systems. Given the 5G Radio Access Network (RAN) technical standards are still being finalised, the first version of this Supplement focuses on possible emission and immunity requirements for 5G systems.

Recommendation ITU-T L.1222

Innovative energy storage technology for stationary use - Part 3: Supercapacitor technology

This Recommendation contains selection criteria for telecommunication application based on main performance parameters and the methods for proper use.



ITU-T L. Suppl.36

Study on methods and metrics to evaluate energy efficiency for future 5G systems

This Supplement analyses the energy efficiency issues for future 5G systems. The focus of this Supplement is on methods and metrics to measure energy efficiency in 5G systems, with consideration of the degree of stability of the systems known so far and the experience of the legacy systems as well as related measurement procedures for evaluating future standardization evolutions.



International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Series L

Supplement 36
(11/2017)

SERIES L: ENVIRONMENT AND ICTS, CLIMATE
CHANGE, E-WASTE, ENERGY EFFICIENCY;
CONSTRUCTION, INSTALLATION AND PROTECTION
OF CABLES AND OTHER ELEMENTS OF OUTSIDE
PLANT

**ITU-T L.1310 – Study on methods and metrics to
evaluate energy efficiency for future 5G systems**

ITU-T L-series Recommendations – Supplement 36



Some work items under study on Setting the environmental requirements for 5G



- Draft Supplement ITU-T K.Supp-5G_EMF_Compliance on “**Electromagnetic field (EMF) compliance assessments for 5G wireless networks**”.
- Draft Recommendation ITU-T L.5G_powering on “**Sustainable power feeding solutions for 5G network**”.
- Draft Recommendation ITU-T L.EE_5G on “**Energy efficiency Metrics and measurement methodology for 5G solutions**”.
- Draft Recommendation ITU-T L.ENST2battery on “**Innovative energy storage technology for stationary use - Part 2: Battery**”.
- Draft Recommendation ITU-T L.methodology_arch on “**Methodology to assess the environmental impact of the different proposed architectures**”.
- Draft Recommendation ITU-T L.ENV-KPI-5G-ARCH on “**Environmental KPIs/metrics for 5G architectures**”.
- Draft Recommendation ITU-T L.EE_sclicing on “**Energy efficiency and slicing of IMT2020/5G**”.
- Draft Recommendation ITU-T L.ARCH_EOL_CE on “**Environmental Impact of architecture solutions with regards to End of Life and Circular Economy (CE)**”.

Connect 2020 Agenda – Towards PP-18

Target 3.2: Volume of redundant e-waste to be reduced by 50% by 2020

→ **Draft Recommendation L.EW2020** “Connect 2020 Agenda E-waste reduction”

Target 3.3: Greenhouse Gas Emissions (GHG) generated by the telecommunication/ICT sector to be decreased per device by 30% by 2020

- **Draft Recommendation ITU-T L.1450** “Methodologies for the assessment of the environmental impact of the information and communication technology sector”
- **Draft Recommendation ITU-T L.1460** “Connect 2020 greenhouse gases emissions – Guidelines”

GOAL 3: SUSTAINABILITY

SUSTAINABILITY

Manage challenges resulting from telecommunication/ICT development

Targets:

- ▶ Target 3.1: Cybersecurity readiness should be improved by 40% by 2020
- ▶ Target 3.2: Volume of redundant e-waste to be reduced by 50% by 2020
- ▶ Target 3.3: Green House Gas emissions generated by the telecommunication/ICT sector to be decreased per device by 30% by 2020



Keep warming “well below 2°C”.



Upcoming meetings



- **ITU-T Study Group 5 “Environment, Climate Change and Circular Economy” meeting**
11-21 September 2018, Geneva, Switzerland
- **ITU-T Study Group 5 Regional Group for Asia and the Pacific (SG5RG-AP) meeting**
3 December 2018, Wuxi, China



Thank you!

For more information please contact: tsbsg5@itu.int

