Wireless Systems

World Class Standards

A Connected World

Wireless systems and their regulatory environment

Towards a fully connected wireless world

Wireless Systems

It's a Wireless World

Radio technology is an integral part of our daily lives. We use it for:

- our mobile phones
- broadcast radio and television
- in Wireless Local Area Network (WLAN) and cordless technology
- Global Navigation Satellite Systems (GNSS)
- Radio Frequency Identification (RFID)
- Short Range Devices (SRDs)
- professional radio communication services

All of these technologies and applications compete for use of limited radio spectrum resources. ETSI creates the standards which define many of these radio technologies and systems.

As one of the founding partners of the Third Generation Partnership Project (3GPP™), ETSI plays a prominent role in the development of mobile communications.

We also provide the standards which the regulatory authorities in Europe – and elsewhere – use to manage the radio spectrum environment and to ensure safe co-existence between all these systems.

Our Role in the European Regulatory Environment

ETSI cooperates with the EC (European Commission) and CEPT (European Conference of Postal and Telecommunications Administrations) on aspects of the regulatory environment for radio equipment and spectrum, both at the EU level and at the wider intergovernmental level across Europe.

The essential requirements for radio equipment, which include constructing radio equipment so as to avoid harmful interference are harmonized, via the Radio Equipment Directive – RED - (2014/53/EU) and previously the R&TTE Directive (1999/5/EC).

Our Harmonised Standards are used by manufacturers to demonstrate that their products comply with a European Commission (EC) Directive, allowing them to be placed on the market or put into service within the 32 European Union (EU) and European Free Trade Association countries.

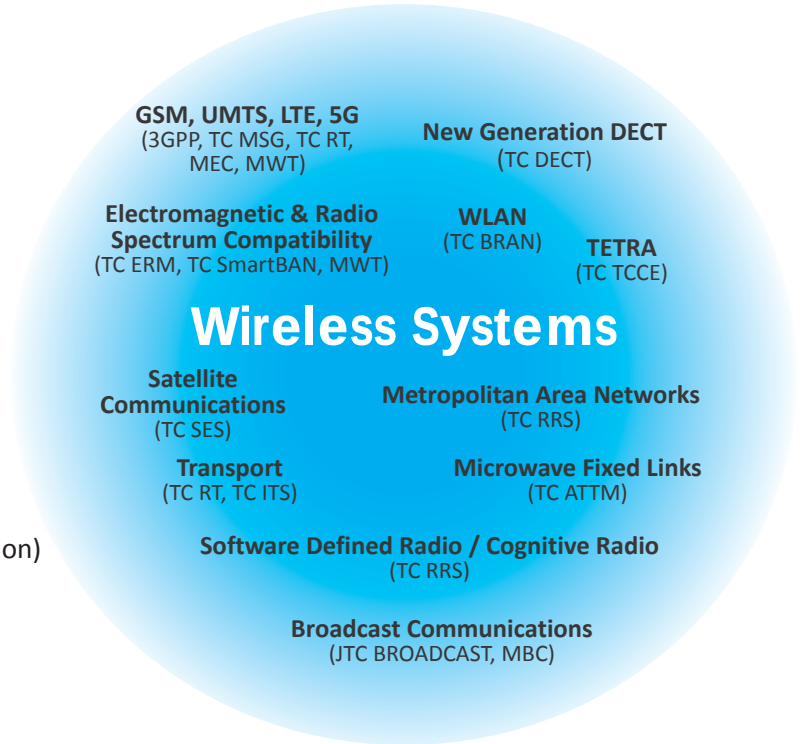
We support the Radio Spectrum Policy Group and we will make a regular update of our Technical Report (TR) which includes detailed information on spectrum usage and an overview of our standards, reports and specifications, together with their applications and relevant frequency bands. We develop the standards to enable Wireless Access Systems (WAS) and Intelligent Transport Systems (ITS) on WLAN-type and LTE™-type technology to share spectrum equitably.

ETSI Groups in the Wireless Systems Cluster

ETSI groups involved in Wireless Systems activities:

- **3GPP** (Third Generation Partnership Project)
- **ATTM** (Access, Terminals, Transmission and Multiplexing)
- **BRAN** (Broadband Radio Access Networks)
- **BROADCAST**
- **DECT** (Digital Enhanced Cordless Telecommunications)
- **ERM** (Electromagnetic compatibility and Radio spectrum Matters)
- **ITS** (Intelligent Transport Systems)
- **MBC** (Mobile and Broadcast Convergence)
- **MEC** (Mobile Edge Computing)
- **MSG** (Mobile Standards Group)
- **MWT** (Millimetre Wave Transmission)
- **RRS** (Reconfigurable Radio Systems)
- **RT** (Railway Telecommunications)
- **SES** (Satellite Earth Stations & Systems)
- **SmartBAN** (Smart Body Area Network)
- **TCCE** (TETRA and Critical Communications Evolution)

The Wireless Systems cluster also co-operates with various fora, consortia and organizations, including Car 2 Car Communication Consortium, CEN, CENELEC, CEPT, DECT Forum, DVB, EASA, EBU, ECMA International, EMSA, ERTICO, ESA, EUROCAE, IEC, IEEE-SA, ITU-R, NGMN Alliance, SAE International, TETRA and Critical Communications Association, ULE Alliance and the Wireless Innovation Forum.



Standardization Activities

We have embarked on a programme of work to ensure the **effective implementation of the Radio Equipment Directive**, co-operating closely with the European Commission (EC). We are heavily engaged in standardization in our Electromagnetic Compatibility and Radio Spectrum Matters committee (TC ERM) to take account of the RED's new requirements. For example, broadcast receivers, which had been specifically excluded from previous legislation, are now covered by the RED. For the first time equipment operating at frequencies below 9 kHz and radio determination equipment (including GNSS) are also included. Our Mobile Standards Group (TC MSG) provides the regulatory standards needed to support the deployment of GSM, UMTS and LTE networks in Europe. We are supporting EC Mandate M/512 by developing new ways to increase the efficiency of spectrum usage, including Licensed Shared Access (LSA) and mobile device reconfiguration and related certification. LSA is a new technology which allows for the co-existence of the original incumbent with a new cellular operator in the same frequency band, creating opportunities for spectrum sharing.

3GPP, the Third Generation Partnership Project, is a collaboration between seven standards organizations worldwide (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC) that develops specifications for **advanced mobile communications technologies**. 3GPP has developed the UMTS, LTE and LTE-Advanced technologies. Work has started on the development of future 5G systems and will intensify and will be influenced by ETSI's work on Mobile-Edge Computing (MEC), Network Functions Virtualisation (NFV) and Millimetre Wave Technology (mWT). 3GPP expects to complete a new Internet of Things (IoT) protocol based on GSM EDGE Radio Access Network (GERAN) technology, as well as the alternative narrow-band IoT (NB-IoT) technology based on LTE. 3GPP is also looking into the use of technologies derived from the General Packet Radio Service (GPRS) for the exchange of non-IP data, which will become increasingly important for Machine-to-Machine communications in the IoT.

Our **Broadband Radio Access Networks** committee (TC BRAN) is revising our Harmonised Standards for Radio Local Area Networks (RLANs) operating in the 5 GHz and 60 GHz bands to take account of the RED. We are including fair access and Listen Before Talk mechanisms to ensure co-existence between current and new RLAN technologies.

Mobile-Edge Computing (MEC) offers cloud-computing capabilities and an IT service environment at the edge of a mobile network, enabling operators to open their Radio Access Networks to authorized third parties. MEC will also help to satisfy the demanding throughput, latency, scalability and automation requirements of 5G. Our ISG MEC is developing specifications that will allow the hosting of third-party applications in a multi-vendor MEC environment, including APIs and other interfaces for radio network information, MEC location, user equipment identity and bandwidth management.

Interest in millimetre wave bands (30 - 300 GHz) has risen due to the under-utilized bandwidth in this part of the electromagnetic spectrum and the significant advantages of frequency re-usability and large channel bandwidths. Our ISG on **Millimetre Wave Transmission** (mWT) is working to facilitate the use of the V-band (57 - 66 GHz), the E-band (71 - 76 and 81 - 86 GHz) and, in the future, higher frequency bands for large volume backhaul and front-haul applications. We will focus on licensing, more innovative use of the spectrum, standardization of new bands above 90 GHz and the co-existence of different services in the V-band.

Our new Industry Specification Group (ISG) on **Mobile and Broadcast Convergence** (MBC) will develop the requirements for media delivery over converged mobile and broadcasting networks.

Our **Digital Enhanced Cordless Telecommunications (**DECT™) specification is the leading standard around the world for digital cordless telecommunications. We are now developing New Generation DECT and Ultra Low Energy (ULE) DECT, designed to meet the needs of the Machine-to-Machine (M2M) market.

TETRA, developed by the ETSI TC TCCE (TETRA and Critical Communications Evolution), is a digital trunked mobile radio standard developed to meet the needs of Professional Mobile Radio (PMR) users. Our TCCE committee is working closely with 3GPP to define a future professional broadband mobile radio system, based on LTE.

Our **Satellite** Earth Stations and Systems committee (TC SES) develops standards to enable high speed Internet access to fixed terminals or terminals on the move, be it in an aircraft, on board a ship or in a vehicle. Developing standards for location systems based on GNSS is also a priority topic. Work continues on new and updated Harmonised Standards for the RED.

To find out more about ETSI's Wireless System activities or to get involved, please contact **IGOR MINAEV,** Wireless Systems cluster coordinator: **wireless_systems@etsi.org**

ETSI produces globally-applicable standards for Information and Communications Technologies (ICT), including fixed, mobile, radio, converged, aeronautical, broadcast and internet technologies and is officially recognized by the European Union as a European Standards Organization. ETSI is an independent, not-for-profit association whose more than 800 member companies and organizations, drawn from 66 countries across five continents, determine its work programme and participate directly in its work.

For further information, please visit: www.etsi.org

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