

# **JUSTIFICATION FOR COMMON REGULATORY OBJECTIVES FOR IMT-2000 EQUIPMENT**

This document provides the justification for a Common Regulatory Objective related to IMT-2000 equipment. It identifies the requirements that are relevant to the CRO. The output from this document will be used for the IMT-2000 CRO.

## **1. IMT-2000 EQUIPMENT**

### **1.1 GLOBAL USE**

IMT-2000, also known as the Third Generation Mobile Systems, provides a framework for worldwide wireless access by linking the diverse system of terrestrial and/or satellite based networks. There will be roaming agreements between operators on a global level. This allows users to connect and use their IMT-2000 equipment wherever there is a network that accepts the individual user. The user devices only transmit if there is a network, which it can recognise (“receive before transmit” principle), which means that these devices do not cause interference to the radio spectrum in regions where there is no IMT-2000 network.

### **1.2 APPLICATIONS COVERED**

The range of applications covered by this equipment is extremely wide. IMT-2000 applications may be considered similar to GSM but extended to multimedia and video applications. This IMT-2000 technology can easily be considered the one following GSM and will soon be established on the World market as the mobile telephone and general telecommunications system with a very wide coverage. Some of these applications are:

- Voice and video communication, allowing people to communicate without the need of a fix infrastructure;
- When connected to data devices, e.g. a PC, the GSM device can also be used as a broad band modem, supporting the link between the data originating terminal and the centre connected to the Telecommunications network, i.e. the IMT-2000 device can be used as a mobile broadband access device to Internet;
- To the unlimited number of mobile applications, the mobile systems may play a relevant role in emergency situations where the fix network may not exist or have been affected by a fire, an explosion or a malicious attack

Security, safety, health, business in general, research, education, social support and many other areas can therefore easily beneficiate from this technology.

## **2. IDENTIFICATION OF STANDARDS /RECOMMENDATIONS TO SATISFY REGULATORY OBJECTIVES**

Standards are continually revised. It is necessary to allow for a transition period between versions. This means that, in general, more than one version of a standard is acceptable as a basis for the CRO. Rather than list all acceptable versions, the “oldest acceptable” version at the time

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of publication of the CRO is listed. Subsequent versions of the listed standards are to be accepted unless otherwise stated by Countries having agreed on the CRO.

The standards relevant for this CRO are listed in the Annex. A rationale for the choice of these standards is given.

### **3. REVIEW**

This document should be reviewed periodically to ensure that the requirements are still valid and suitable for the CRO in question. The review should aim to reduce the requirements in the CRO to a minimum allowing for new innovative products and/or solutions to be placed on the market.

Where necessary, an update of the CRO should be initiated.

## ANNEX

### **A. Safety, excluding Electromagnetic Fields**

IEC 60950 (1999)                      Safety of information technology equipment

National deviations/  
amendments to IEC 60 950              National deviations or amendments valid in countries that  
participate in the CRO

#### **Rationale:**

The international standard for equipment in this sector is IEC 60950. Due to special national conditions in some countries, national deviations or amendments exist. The deviations/amendments valid in those countries that participate in this CRO need to be taken into account.

Note: there is a collection of such deviations and amendments given in the CB Bulletin, used for the The “IEC System for Conformity Testing and Certification of Electrical Equipment” (IECEE). For information about the IECEE SB-Scheme, see <http://www.iecee.org/>.

### **B. Electromagnetic Fields**

#### **Exposure limits**

ICNIRP (April 1998)                      Guidelines for limiting exposure to time-varying electric, magnetic,  
and electromagnetic fields (up to 300 GHz) – International  
Commission on Non-Ionizing Radiation Protection (ICNIRP),  
Health Physics, Vol. 74, No. 4, April 1998.

IEEE C95.1 (1999)                      Standard for safety levels with respect to human exposure to radio  
frequency electromagnetic fields, 3 kHz to 300 GHz.

#### **Rationale:**

**ICNIRP:** There is no IEC or other international standard specifying limits for human exposure to electromagnetic fields. ICNIRP is an international independent scientific organization that cooperates with WHO, IEC and other international organizations. Its recommended limits have been endorsed by the WHO and have been implemented in several national standards and regulations worldwide. The ICNIRP general public exposure limits have been adopted in the EC Council Recommendation on EMF (1999/15/EC).

**IEEE C95.1:** The IEEE standard has been the basis for national EMF standards and regulations in a number of countries. It is very similar to the ICNIRP guidelines but there are some differences in the limits applicable for wireless products. In many countries it has been or will be replaced by the ICNIRP guidelines. In the US, the FCC has adopted the IEEE limits for portable radio devices (FCC 47 CFR 1.1310, CFR 47 2.1093). The IEEE is in the process of revising the C95.1 standard, and a closer harmonization with ICNIRP is possible.

### **Compliance Assessment (portable and mobile devices)**

- CENELEC EN 50360:2001 Product standard to demonstrate the compliance of mobile phones with the basic restrictions related to human exposure to electromagnetic fields (300 MHz – 3 GHz).
- CENELEC EN 50361:2001 Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz – 3 GHz).
- CENELEC EN 50371:2002 Generic standard to demonstrate the compliance of low power electronic and electrical apparatus with the basic restrictions related to human exposure to electromagnetic fields (10 MHz – 300 GHz) – General public.
- FCC OET Bulletin 65 (2001) Supplement C: Evaluating compliance with FCC guidelines for human exposure to radiofrequency electromagnetic fields: Additional information for evaluating compliance for mobile and portable devices with FCC limits for human exposure to radiofrequency emissions.

### **Rationale:**

**EN 50360 and EN 50361:** EN 50360 is a product standard used for EU's R&TTE directive and specifies EMF requirements for mobile phones (GSM and IMT-2000). EN 50361 describes the test method and procedures that should be used to verify that the product is in compliance with the requirements of EN 50360 (SAR testing). There is not yet any international standard for RF exposure assessments of mobile and portable wireless devices. IEC is in the process of developing such a standard (draft IEC 62209), which will cover handheld, bodyworn, laptop, desktop and palmtop terminals (IMT-2000, WLAN and Bluetooth). It is expected that the IEC standard will be adopted as an EN and replace EN 50361.

Regulatory bodies in most countries accept the use of EN 50361 to show compliance with exposure limits. A Japanese version of the standard has been published by ARIB (T56, 2002).

**EN 50371:** This generic standard specifies test exclusions for low-power devices (< 20 mW) transmitted power. It is applicable for e.g. short-range Bluetooth products.

**OET Bulletin 65:** With no international standard, the FCC has issued a test specification for portable (handheld and bodyworn) and mobile wireless terminals. For handheld phones, it is

based on a draft IEEE standard (P1528) that will be published in a near future. The IEEE standard is well harmonized with the IEC draft and with EN 50361.

### **Compliance Assessment (base stations and fixed terminal stations)**

- CENELEC EN 50385:2002 Product standard to demonstrate the compliance of radio base stations and fixed terminal stations for wireless telecommunication systems with the basic restrictions or the reference levels related to general public exposure to radio frequency electromagnetic fields (110 MHz – 40 GHz).
- CENELEC EN 50383:2002 Basic standard for the calculation and measurement of electromagnetic field strength and SAR related to human exposure from radio base stations and fixed terminal stations for wireless telecommunication systems (110 MHz – 40 GHz).
- CENELEC EN 50371:2002 Generic standard to demonstrate the compliance of low power electronic and electrical apparatus with the basic restrictions related to human exposure to electromagnetic fields (10 MHz – 300 GHz) – General public.

### **Rationale:**

**EN 50385 and EN 50383:** EN 50385 is a product standard used for the EU’s R&TTE directive and specifies EMF requirements for base stations and fixed terminal stations (GSM, IMT-2000, WLAN). EN 50383 describes the measurement and calculation methods and procedures that should be used to verify that the product is in compliance with the requirements of EN 50385. There is no international standard for RF exposure compliance assessments of base station products.

**EN 50371:** This generic standard specifies test exclusions for low-power devices (< 20 mW) transmitted power. It is applicable for fixed low-power transmitters.

### **C. Electromagnetic Compatibility**

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|------------------------|--|
| 3GPP TS34.124          | <b>For mobile terminals and ancillary equipment:</b> “Electromagnetic compatibility (EMC) requirements for Mobile terminals and ancillary equipment” |
| 3GPP TS25.113          | <b>For base stations and repeaters:</b> “Base station and repeater ElectroMagnetic Compatibility (EMC)   |
| FCC Part 15.207 (2001) | Radio Frequency Devices; Intentional Radiators; Conducted limits   |
| FCC Part 15.209 (2001) | Radio Frequency Devices; Intentional Radiators; Radiated emission limits   |

**Rationale:**

There are no particular IEC/CISPR standards published covering EMC requirements for radio transmitting equipment. Regional standards are therefore used. The 3rd Generation Partnership Project (3GPP, see [www.3gpp.org](http://www.3gpp.org)) brings together a number of telecommunications standards bodies. The 3GPP deliverables are published as specifications from either ARIB (Japan), CWTS (China), ETSI (Europe), T1 (via ATIS, North America), TTA (Korea) or TTC (Japan). The 3GPP standards call up the following international standards for the different requirements:

- For emission: CISPR 22, IEC 61000-3-2, -3
- For immunity: IEC 61000-4-2, -3, -4, -5, -6, -11

Note 1: In the EU, protection of electricity distribution networks is part of the emission aspects of EMC regulation. Therefore, requirements for harmonics and flicker are part of the standards used for regulatory purposes.

Note 2: Immunity aspects are included in EU's EMC regulation.

**D. Effective use of the radio spectrum**

ETSI EN 301 908-01 v1.1.1 Electromagnetic compatibility and Radio spectrum matter; base stations and User Equipment for IMT-2000; Part 1: introduction and common requirements

ETSI EN 301 908-02 v1.1.1 Electromagnetic compatibility and Radio spectrum matter; base stations and User Equipment for IMT-2000; Part 2: IMT-2000 CDMA Direct Spread (UTRA FDD) UE

ETSI EN 301 908-03 v1.1.1 Electromagnetic compatibility and Radio spectrum matter; base stations and User Equipment for IMT-2000; Part 3: IMT-2000 CDMA Direct Spread (UTRA FDD) BS

ETSI EN 301 908-04 v1.1.1 Electromagnetic compatibility and Radio spectrum matter; base stations and User Equipment for IMT-2000; Part 4: IMT-2000 CDMA Multi-carrier (cdma2000) UE

ETSI EN 301 908-05 v1.1.1 Electromagnetic compatibility and Radio spectrum matter; base stations and User Equipment for IMT-2000; Part 5: IMT-2000 CDMA Multi-carrier (cdma2000) BS

ETSI EN 301 908-06 v1.1.1 Electromagnetic compatibility and Radio spectrum matter; base stations and User Equipment for IMT-2000; Part 6: IMT-2000 CDMA TDD (UTRA TDD) UE

ETSI EN 301 908-07 v1.1.1 Electromagnetic compatibility and Radio spectrum matter; base stations and User Equipment for IMT-2000; Part 7: IMT-2000 CDMA TDD (UTRA TDD) BS

- ETSI EN 301 908-08 v1.1.1 Electromagnetic compatibility and Radio spectrum matter; base stations and User Equipment for IMT-2000; Part 8: IMT-2000 CDMA TDMA Single-Carrier (UWC 136) UE
- ETSI EN 301 908-09 v1.1.1 Electromagnetic compatibility and Radio spectrum matter; base stations and User Equipment for IMT-2000; Part 9: IMT-2000 CDMA TDMA Single-Carrier (UWC 136) BS
- ETSI EN 301 908-10 v1.1.1 Electromagnetic compatibility and Radio spectrum matter; base stations and User Equipment for IMT-2000; Part 10: IMT-2000 CDMA FDMA/TDMA (DECT)
- ETSI EN 301 908-11 v2.1.1 Electromagnetic compatibility and Radio spectrum matter; base stations and User Equipment for IMT-2000; Part 11: IMT-2000, CDMA Direct Spread (UTRA FDD) (Repeaters)

**Rationale:**

There are no global standards available to cover the objectives “effective use of radio spectrum” for IMT-2000 equipment. Regional standards are therefore used. The standards listed above will ensure the effective use of frequency spectrum on a global level.

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