

## **JUSTIFICATION FOR COMMON REGULATORY OBJECTIVES FOR ICT EQUIPMENT**

### **USE OF THE UNECE INTERNATIONAL MODEL FOR ICT PRODUCTS**

The Information and Communications Technology (ICT) sector is today truly global. Products in the ICT sector are designed to perform their intended function successfully wherever they are used. At the same time, the commercial life cycle of ICT products is relatively short, which means that the time spent for getting access to markets (from a regulatory point of view) is critical.

The urgent need to facilitate services covering the widest possible population, e.g. e-health, support in emergency situations, e-learning, underlined the importance of establishing common conditions for access to different markets. This justifies the highest priority of converging market access conditions for the most popular devices.

The UNECE International Model is well suited for application to ICT products, thereby reducing the time spent for getting access to markets for such products, for the benefit of (private or business) consumers that will have early access to innovative products.

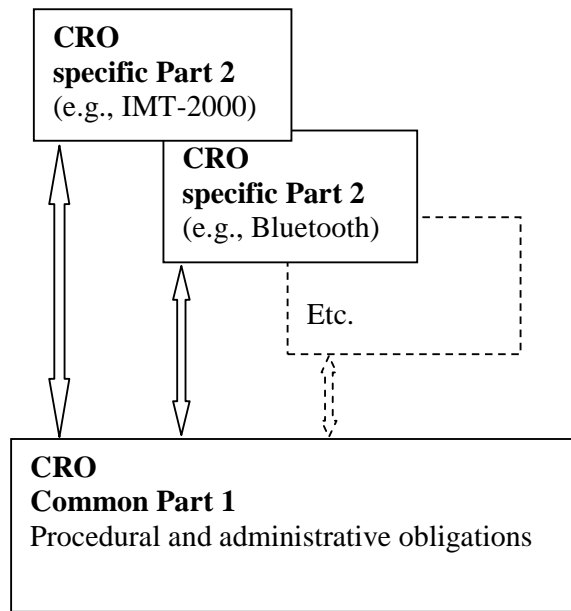
### **SEPARATE PART FOR GENERAL AND COMMON ASPECTS**

Due to the rapid convergence of technologies within the Information and Communications Technology (ICT) sector, products will increasingly be multifunctional. Several technical solutions will be incorporated into one physical product. Examples are:

- IMT-2000 mobile phones will include GSM and Bluetooth technology,
- a portable PC often includes PSTN access, WLAN and Bluetooth radio technology

In order to ensure that such multifunctional products have coherent administrative requirements related to placing products on the market, there is a need to keep the common and general elements identical for all CROs related to ICT products. This is done by introducing a structure consisting of two parts (see figure below):

- **Part 1** which applies for all ICT equipment CROs and specifies the common and general requirements needed to satisfy the regulatory objectives of the participating Countries.
- **Part 2** is specific for each type of ICT equipment. It specifies, for that type of ICT equipment, the specific requirements needed to satisfy the regulatory objectives of the participating Countries.



#### **COMMON REGULATORY OBJECTIVES**

Common Regulatory Objectives include technical requirements selected from standards for regulatory purposes. This is covered in part 2 of each CRO but some common understanding is required when translating legitimate authorities' concerns to the corresponding technical basis for regulation.

In this context, prior to stating specific technical requirements relevant for each one of the CROs, it is necessary to establish some common understanding on the scope of the legitimate authorities' concerns to be considered. The following table, derived from different recent experiences from countries converging their legislation, represents for the initial set of proposed CROs the legitimate authorities' concerns considered.

In each CRO, preference is given to the reference to international standards and, in their absence, to the relevant regional standards and, in their absence, national standards.

		<b>Regulatory Objectives (Part 2)</b>				
<b>Equipment type</b>	<u>Electrical Safety</u>	Electromagnetic Compatibility	Efficient use of Spectrum	Electromagnetic fields, safety	Others (e.g. Interoperability)	Individual Frequency license required (out of the CROs' scopes, see note 1)
Bluetooth	EU	EU	EU	EU		
GSM Equipment	EU	EU	EU	EU		
Wireless LANs	EU	EU	EU	EU		
Personal Computers	EU	EU		EU		n/a
POTS telephones and modems	EU	EU		n/a		n/a
<b>Legend</b>						
Specific requirements needed						
No requirements accepted						
Not applicable						

Note 1:

The base stations of some radio equipment cited above may need a specific license in some countries. This is not in the scope of the CROs but it will be useful to announce this kind of conditions prior to subscribing a CRO.

## **COMMON REGULATORY OBJECTIVES FOR ICT EQUIPMENT**

### **PART 1**

#### **GENERAL AND COMMON ASPECTS VALID FOR ICT EQUIPMENT**

##### **1. SCOPE**

This Common Regulatory Objective (CRO) is applicable to Information and Communications Technology (ICT) equipment, as defined in Clause 2.

A CRO is structured in 2 parts:

- **Part 1:** The present document is Part 1 for all ICT equipment CROs and specifies the common and general requirements needed to satisfy the regulatory objectives of the participating Countries.
- **Part 2:** Part 2 of each ICT equipment CRO specifies, for that type of ICT equipment, the specific requirements needed to satisfy the regulatory objectives of the participating Countries.

The validity of a CRO is only achieved with the full application of Part 1 and Part 2.

Thus, each CRO will allow the corresponding type of ICT equipment, when in compliance with the associated CRO (Part 1 and Part 2), to be placed on the market and, except in cases where licensing is required, be put into service within Countries, which have implemented this CRO.

##### **2. ICT EQUIPMENT**

ICT equipment is, in the context of the present document, all equipment specified in clause 2 of the parts 2 of all equipment CROs making reference to this part 1.

### 3. REFERENCES

UNECE TRADE/WP.6/2002/7

An international model for technical harmonization based on good regulatory practice for the preparation, adoption and application of technical regulations via the use of international standards

([http://www.unece.org/trade/tips/wp6/wp6\\_major.htm](http://www.unece.org/trade/tips/wp6/wp6_major.htm))

WTO/TBT, Art 2.4 and Art 2.6

Agreements on Technical Barriers to Trade

([http://docsonline.wto.org/gen\\_browseDetail.asp?preprog=3](http://docsonline.wto.org/gen_browseDetail.asp?preprog=3)); or

([http://www.wto.org/english/docs\\_e/legal\\_e/17-tbt.pdf](http://www.wto.org/english/docs_e/legal_e/17-tbt.pdf))

ISO/IEC Guide 22: 1996

General Criteria for supplier's declaration of conformity, SDoC

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Ref. To latest version

### 4. DEFINITIONS

Applicable definitions are found in:

WTO/TBT, Annex 1

Agreements on Technical Barriers to Trade

([http://docsonline.wto.org/gen\\_browseDetail.asp?preprog=3](http://docsonline.wto.org/gen_browseDetail.asp?preprog=3)); or

([http://www.wto.org/english/docs\\_e/legal\\_e/17-tbt.pdf](http://www.wto.org/english/docs_e/legal_e/17-tbt.pdf))

ISO/IEC Guide 2:1996

Standardization and related activities - General vocabulary

ISO/IEC Guide 22: 1996

General Criteria for supplier's declaration of conformity, SDoC

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ref to latest versions ISO 17'000  
and 17'050

## **5. ADOPTION OF A CRO NATIONALLY**

The Countries that have agreed to a CRO shall submit that CRO to the process used nationally, in order to adopt the whole or parts of the requirements specified in that CRO into their national regulations. The international part of this process is defined in the International model for technical harmonization based on good regulatory practice for the preparation, adoption and application of technical regulations via the use of international standards.

For each CRO, Countries shall inform the UNECE Secretariat about any legal marking requirements to be met in their territory for each type of ICT equipment covered by the CRO.

## **6. PLACING ON THE MARKET AND PUTTING INTO SERVICE**

Countries having adopted a CRO into their national regulation shall allow the placing on their market and, except where special licensing is required, putting into service of ICT equipment, which comply with the requirements of that CRO.

In the cases where licensing is required, e.g. individual frequency or special service conditions for mobile base stations, the Country will announce the UNECE, prior to subscribing the corresponding CRO. The UNECE shall immediately (within 1 month) inform all other Countries, which have notified the use of that CRO, and all Countries that are on their way to implementing that CRO.

## **7. REFERENCE TO STANDARDS**

Preferably the reference should be done directly to the relevant international or regional standards identified in each CRO, but a Country may have national regulations requiring that the international or regional standards referenced in the Annex of Part 2 of each adopted CRO are national standards. Such Countries shall ensure that the international or regional standards are transposed into national standards (without any changes), and that this process is done in due time. If translations into its national language are needed, the Country shall ensure that the translations are done in due time. The Country shall recognise references by suppliers to the international or regional standards as equivalent to their corresponding national standards. These measures are not needed in countries where reference to the standards can be done directly.

## **8. COMPLIANCE**

Compliance with each CRO shall be demonstrated as stated below.

1. The supplier shall prepare a Supplier's Declaration of Conformity (SDoC).
2. The supplier shall reference the CRO in the SDoC.
3. The supplier shall keep the SDoC and the documentation demonstrating evidence of conformity with the CRO available for market surveillance purposes in the Countries having adopted the CRO.

**9. INFORMATION PROVIDED WITH ICT EQUIPMENT**

ICT equipment shall be identified by the supplier by means of type, batch and/or serial numbers and by the name of the manufacturer or the person responsible for placing the equipment on the market.

The documentation provided with the ICT equipment shall include information regarding the intended use of the equipment and how to obtain the SDoC if it is not included with the documentation.

**10. MARKET SURVEILLANCE**

Countries having adopted a CRO are responsible for market surveillance in its territory and have the right to withdraw the corresponding ICT equipment from its national market if they are not in compliance with that CRO.

**11. PROTECTION**

Any Country that withdraws equipment from the market, after it has been introduced in the market under the CRO regime, shall declare this action without any time delay to the UNECE, indicating the reasons behind its decision.

The UNECE shall immediately inform all other Countries, which have notified the use of that CRO, and all Countries that are on their way to implementing that CRO.

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# **JUSTIFICATION FOR COMMON REGULATORY OBJECTIVES FOR BLUETOOTH EQUIPMENT**

This document provides the justification for a Common Regulatory Objective related to Bluetooth equipment (specific equipment for short distance connection of electronic devices). It identifies the requirements that are relevant to the CRO. The output from this document will be used for the Bluetooth CRO.

## **1. BLUETOOTH EQUIPMENT**

### **1.1 GLOBAL USE**

Bluetooth is an industry standard for wireless connectivity using data and/or voice links over short distances. It enables portable electronic devices to connect and communicate wirelessly. Bluetooth uses the unlicensed 2.4 GHz Industrial, Scientific and Medical (ISM) frequency band. This frequency band is recognised globally, and is used by different technologies. Standardisation organisations have defined standards to ensure co-existence between these different technologies.

Bluetooth technology will be included in mass-market products such as mobile phones, PDAs, portable PCs, digital cameras etc. These products will be used globally when people travel.

The Bluetooth protocol is standardized by the Bluetooth SIG Inc, which today has more than 2000 members.

### **1.2 APPLICATIONS COVERED**

The range of applications covered by this equipment is extremely wide. In principle a Bluetooth connection can replace any wire connection up to approximately 10 wires in a home environment or equivalent provided that the devices are equipped with the appropriate radio equipment. Some of these applications are:

- In mobile or fix phones, the connection to a headset allowing hands-free and wireless use of the telephone, i.e. the user may pursue another action simultaneously with the call;
- In mobile, fix phones or modems, the connection to a Personal Computer [PC] allowing wireless connection of the PC to internet, which opens a unlimited range of applications
- In the home or office environment the connection between a PC, a printer, a video camera or any other remote sensor or device; this opens again a unlimited range of applications like remote surveillance or control of devices

Security, safety, health, research, education, social support, small business 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 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
CB Bulletin (parts covering the intended markets)	IECEE (The IEC System for Conformity Testing and Certification of Electrical Equipment).

#### **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 best collection of such deviations and amendments is given in the CB Bulletin, used for the The “IEC System for Conformity Testing and Certification of Electrical Equipment” (IECEE, 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 3G). 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 (3G, 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, 3G, 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**

- ETSI EN 301 489–1 v1.3.1 Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements
- ETSI EN 301 489–17 v1.1.1 Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Wideband data and HIPERLAN equipment
- 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.

**ETSI:** The ETSI EN 301 489-series of standards call upon the following IEC/CISPR standards (in the form of European 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.

**FCC:** The FCC requirements in the United States are very similar to CISPR 22 in the frequency ranges that coincide, but so far the FCC does not recognise the CISPR standard as equivalent. Therefore, these are included.

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

ETSI EN 300 328-1 v1.3.1	Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband Transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using spread spectrum modulation techniques; Part 1: Technical characteristics and test conditions
FCC Part 15:247 (2001)	Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz.
FCC Part 15:205 (2001)	Restricted bands of operation.
(FCC Part 15.209 (2001)	Radiated emission limits - Listed under "C")
ARIB STD-T66 v1.0	Second Generation Low Power Data Communication System/Wireless LAN System

#### **Rationale:**

There is no single global standard available to cover the objectives "effective use of radio spectrum" for Bluetooth equipment (short range devices operating in the 2,4 GHz ISM band). The standards listed above largely overlap but will ensure the effective use of frequency spectrum on a global level. The technical aspects cover

- Modulation technique;
- Effective radiated power output;
- Peak power density;
- Frequency range;
- Channel spacing/number of channels

# COMMON REGULATORY OBJECTIVES FOR BLUETOOTH EQUIPMENT

## **PART 2**

### SPECIFIC ASPECTS OF BLUETOOTH EQUIPMENT

#### **1. SCOPE**

This Common Regulatory Objective, CRO, is applicable to Bluetooth equipment, as defined in Clause 2.

A CRO is structured in 2 parts:

- **Part 1:** Part 1 of all ICT equipment CROs specifies the common and general requirements needed to satisfy the regulatory objectives of the participating Countries.
- **Part 2:** The present document is Part 2 of the Bluetooth equipment CRO and specifies, for Bluetooth equipment, the specific requirements needed to satisfy the regulatory objectives of the participating Countries.

The validity of a CRO is only achieved with the full application of both Part 1 and Part 2.

This CRO specifies the requirements needed to satisfy the regulatory objectives of Countries. Thus, this agreement will allow Bluetooth equipment which is in compliance with this CRO to be placed on the market and be put into service as equipment within Countries, that have implemented this CRO.

#### **2. BLUETOOTH EQUIPMENT**

Bluetooth is an industry standard for wireless connectivity using data and/or voice links over short distances. The Bluetooth protocol is standardized by the Bluetooth SIG Inc. For the remainder of this document, “Bluetooth equipment” covers any component or end product, using Bluetooth technology.

#### **3. REFERENCES**

In addition to the references in Part 1 of this CRO, relevant references are:

Bluetooth V1.1	Core Specification
	Technical Specification of the Bluetooth system part 1
Bluetooth V1.1	Profile Specification
	Technical Specification of the Bluetooth system part 2

<http://www.bluetooth.org/specifications.htm>

#### **4. DEFINITIONS**

In addition to the references in Part 1 of this CRO, applicable definitions are found in:

Bluetooth V1.1	Core Specification Technical Specification of the Bluetooth system part 1
Bluetooth V1.1	Profile Specification Technical Specification of the Bluetooth system part 2 <a href="http://www.bluetooth.org/specifications.htm">http://www.bluetooth.org/specifications.htm</a>

#### **5. PRODUCT REQUIREMENTS**

This CRO covers the legitimate regulatory objectives for Bluetooth equipment.

The objectives cover:

- Safety, including Electromagnetic Fields
- Electromagnetic Compatibility
- Effective use of the radio spectrum

#### **6. REFERENCE TO STANDARDS**

The recognized standards relevant for this CRO are listed in the Annex.

ANNEX

Bluetooth equipment shall be held to be compliant if they comply with each of the standards listed. The version of the standard listed is valid at the time of publication of this CRO. Subsequent versions of the listed standards are accepted unless otherwise stated by Countries having agreed on this CRO.

Conformity requirements can be found in the standards where the technical requirements are defined, or in separate standards.

**A. Safety, excluding Electromagnetic Fields**

IEC 60950 (1999)	Safety of information technology equipment
CB Bulletin (parts covering the intended markets)	IECEE (The IEC System for Conformity Testing and Certification of Electrical Equipment).

**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, 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.

**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.

### **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.

### **C. Electromagnetic Compatibility**

ETSI EN 301 489–1 v1.3.1 Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

ETSI EN 301 489–17 v1.1.1 Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Wideband data and HIPERLAN equipment

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

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

ETSI EN 300 328-1 v1.3.1 Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband Transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using spread spectrum modulation techniques; Part 1: Technical characteristics and test conditions

FCC Part 15:247 (2001) Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz.

FCC Part 15:205 (2001) Restricted bands of operation.

ARIB STD-T66 v1.0 Second Generation Low Power Data Communication System/Wireless LAN System

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# **JUSTIFICATION FOR COMMON REGULATORY OBJECTIVES FOR GSM EQUIPMENT**

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

## **1. GSM EQUIPMENT**

### **1.1 GLOBAL USE**

GSM™ (Global System for Mobile Communications) is a digital cellular system standardised by ETSI. The system is now in use worldwide, with roaming agreements between operators on a global level. This allows mobile users to connect and use their mobile equipment wherever there is a network that accepts the individual user. The mobile 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 GSM network.

### **1.2 APPLICATIONS COVERED**

The range of applications covered by this equipment is extremely wide. GSM is established as the mobile telephone system with the wider coverage in the World. Some of these applications are:

- Voice 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 modem, supporting the link between the data originating terminal and the centre connected to the Telecommunications network, i.e. the GSM device can be used as a mobile 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 benefit 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

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for the CRO. Rather than list all acceptable versions, the “oldest acceptable” version at the time 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
CB Bulletin (parts covering the intended markets)	IECEE (The IEC System for Conformity Testing and Certification of Electrical Equipment).

#### **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 best collection of such deviations and amendments is given in the CB Bulletin, used for the The “IEC System for Conformity Testing and Certification of Electrical Equipment” (IECEE, see <http://www.iecee.org/>).

### **B. Electromagnetic Fields**

#### **Exposure limits**

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**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).

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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)**

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- 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**

- ETSI EN 301 489–1 v1.3.1 Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements
- ETSI EN 301 489–7 v1.1.1 **For Mobile Equipment:** "ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 7: Specific conditions for mobile and portable radio and ancillary equipment of digital cellular radio telecommunications systems (GSM and DCS)"
- ETSI EN 301 489–8 v1.1.1 **For Base Stations:** "ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 8: Specific conditions for GSM base stations"
- 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.

**ETSI:** The ETSI EN 301 489-series of standards call upon the following IEC/CISPR standards (in the form of European 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.

**FCC:** The FCC requirements in the United States are very similar to CISPR 22 in the frequency ranges that coincide, but so far the FCC does not recognise the CISPR standard as equivalent. Therefore, these are included.

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

- ETSI EN 301 419-1 v4.1.1 Digital cellular telecommunications system (phase 2); Attachment requirements for GSM; Part 1: Mobile Stations in the GSM 900 and DCS 1800 bands; Access (GSM 13.01 version 4.1.1) **applicable parts only**
- ETSI EN 301 419-2 v5.1.1 Digital cellular telecommunications system (phase 2+); Attachment requirements for GSM; High Speed Circuit Switched Data (HSCSD) Multislot Mobile Stations; Access
- ETSI EN 301 419-3 v5.0.2 Digital cellular telecommunications system (phase 2+); Attachment requirements for GSM; Advanced Speech Call Items (ASCI); Access (GSM 13.68 version 5.0.2 Release 1996) **applicable parts only**
- ETSI EN 301 419-7 v5.0.2 Digital cellular telecommunications system (phase 2+); Attachment requirements for GSM; Railways Band (R-GSM); Mobile Stations Access (GSM 13.67 version 5.0.2) **applicable parts only**
- ETSI EN 301 511 v7.0.1 Global System for Mobile communications (GSM); Harmonized standard for mobile stations in the GSM 900 and DCS 1800 bands (GSM 13.11 version 7.0.1 Release 1998)



ETSI EN 301 502 v8.1.2 Global System for Mobile communications (GSM); Harmonized standard for GSM; Base Station and Repeater equipment (GSM 13.21 version 8.1.2 Release 1999)

**Rationale:**

There are no global standards available to cover the objectives “effective use of radio spectrum” for GSM 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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# COMMON REGULATORY OBJECTIVES FOR GSM EQUIPMENT

## **PART 2**

### SPECIFIC ASPECTS OF GSM EQUIPMENT

#### **1. SCOPE**

This Common Regulatory Objective, CRO, is applicable to GSM™ equipment, as defined in Clause 2.

A CRO is structured in 2 parts:

- **Part 1:** Part 1 of all ICT equipment CROs specifies the common and general requirements needed to satisfy the regulatory objectives of the participating Countries.
- **Part 2:** The present document is Part 2 of the GSM equipment CRO and specifies, for GSM equipment, the specific requirements needed to satisfy the regulatory objectives of the participating Countries.

The validity of a CRO is only achieved with the full application of both Part 1 and Part 2.

This CRO specifies the requirements needed to satisfy the regulatory objectives of Countries. Thus, this agreement will allow GSM equipment which is in compliance with this CRO to be placed on the market and be put into service as equipment within Countries, that have implemented this CRO.

#### **2. GSM EQUIPMENT**

GSM™ (Global System for Mobile Communications) is a digital cellular system standardised by ETSI. GSM equipment covers base stations and mobile stations (such as handsets).

#### **3. REFERENCES**

In addition to the references in Part 1 of this CRO, relevant references are given in ETSI standards for GSM.

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#### **4. DEFINITIONS**

In addition to the references in Part 1 of this CRO, applicable definitions are found in ETSI standards for GSM.

#### **5. PRODUCT REQUIREMENTS**

This CRO covers the legitimate regulatory objectives for GSM equipment.

The objectives cover:

- Safety, including Electromagnetic Fields
- Electromagnetic Compatibility
- Effective use of the radio spectrum

#### **6. REFERENCE TO STANDARDS**

The recognized standards relevant for this CRO are listed in the Annex.

## ANNEX

GSM equipment shall be held to be compliant if they comply with each of the standards listed. The version of the standard listed is valid at the time of publication of this CRO. Subsequent versions of the listed standards are accepted unless otherwise stated by Countries having agreed on this CRO.

Conformity requirements can be found in the standards where the technical requirements are defined, or in separate standards.

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

IEC 60950 (1999)	Safety of information technology equipment
CB Bulletin (parts covering the intended markets)	IECEE (The IEC System for Conformity Testing and Certification of Electrical Equipment).

### **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, 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.

#### **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.

### **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.

### **C. Electromagnetic Compatibility**

ETSI EN 301 489–1 v1.3.1 Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

ETSI EN 301 489–7 v1.1.1 **For Mobile Equipment:** “ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 7: Specific conditions for mobile and portable radio and ancillary equipment of digital cellular radio telecommunications systems (GSM and DCS)”

ETSI EN 301 489-8 v1.1.1 **For Base Stations:** "ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 8: Specific conditions for GSM base stations"

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

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

ETSI EN 301 419-1 v4.1.1 Digital cellular telecommunications system (phase 2); Attachment requirements for GSM; Part 1: Mobile Stations in the GSM 900 and DCS 1800 bands; Access (GSM 13.01 version 4.1.1) **applicable parts only**

ETSI EN 301 419-2 v5.1.1 Digital cellular telecommunications system (phase 2+); Attachment requirements for GSM; High Speed Circuit Switched Data (HSCSD) Multislot Mobile Stations; Access

ETSI EN 301 419-3 v5.0.2 Digital cellular telecommunications system (phase 2+); Attachment requirements for GSM; Advanced Speech Call Items (ASCI); Access (GSM 13.68 version 5.0.2 Release 1996) **applicable parts only**

ETSI EN 301 419-7 v5.0.2 Digital cellular telecommunications system (phase 2+); Attachment requirements for GSM; Railways Band (R-GSM); Mobile Stations Access (GSM 13.67 version 5.0.2) **applicable parts only**

ETSI EN 301 511 v7.0.1 Global System for Mobile communications (GSM); Harmonized standard for mobile stations in the GSM 900 and DCS 1800 bands (GSM 13.11 version 7.0.1 Release 1998)

ETSI EN 301 502 v8.1.2 Global System for Mobile communications (GSM); Harmonized standard for GSM; Base Station and Repeater equipment (GSM 13.21 version 8.1.2 Release 1999)

FCC Part 15:247 (2001) Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz.

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FCC Part 15:205 (2001)      Restricted bands of operation.

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# **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



page 2

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
CB Bulletin (parts covering the intended markets)	IECEE (The IEC System for Conformity Testing and Certification of Electrical Equipment).

#### **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 best collection of such deviations and amendments is given in the CB Bulletin, used for the The “IEC System for Conformity Testing and Certification of Electrical Equipment” (IECEE, 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**

- |                        |  |
|------------------------|--|
| 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.

\* \* \* \*

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

## **PART 2**

### **SPECIFIC ASPECTS OF IMT-2000 EQUIPMENT**

#### **1. SCOPE**

This Common Regulatory Objective, CRO, is applicable to IMT-2000 equipment, as defined in Clause 2.

A CRO is structured in 2 parts:

- **Part 1:** Part 1 of all ICT equipment CROs specifies the common and general requirements needed to satisfy the regulatory objectives of the participating Countries.
- **Part 2:** The present document is Part 2 of the IMT-2000 equipment CRO and specifies, for IMT-2000 equipment, the specific requirements needed to satisfy the regulatory objectives of the participating Countries.

The validity of a CRO is only achieved with the full application of both Part 1 and Part 2.

This CRO specifies the requirements needed to satisfy the regulatory objectives of Countries. Thus, this agreement will allow IMT-2000 equipment which is in compliance with this CRO to be placed on the market and be put into service as equipment within Countries, that have implemented this CRO.

#### **2. IMT-2000 EQUIPMENT**

International Mobile Telecommunications-2000 (IMT-2000) are defined by a set of interdependent ITU Recommendations. 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.

#### **3. REFERENCES**

In addition to the references in Part 1 of this CRO, relevant references are given in the ITU-T Recommendations for IMT-2000.

#### **4. DEFINITIONS**

In addition to the references in Part 1 of this CRO, applicable definitions are found in ITU-T Recommendations for IMT-2000.

## **5. PRODUCT REQUIREMENTS**

This CRO covers the legitimate regulatory objectives for IMT-2000 equipment.

The objectives cover:

- Safety, including Electromagnetic Fields
- Electromagnetic Compatibility
- Effective use of the radio spectrum

## **6. REFERENCE TO STANDARDS**

The recognized standards relevant for this CRO are listed in the Annex.



ANNEX

IMT-2000 equipment shall be held to be compliant if they comply with each of the standards listed. The version of the standard listed is valid at the time of publication of this CRO. Subsequent versions of the listed standards are accepted unless otherwise stated by Countries having agreed on this CRO.

Conformity requirements can be found in the standards where the technical requirements are defined, or in separate standards.

**A. Safety, excluding Electromagnetic Fields**

IEC 60950 (1999)	Safety of information technology equipment
CB Bulletin (parts covering the intended markets)	IECEE (The IEC System for Conformity Testing and Certification of Electrical Equipment).

**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, 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.

**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.

### **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.

### **C. Electromagnetic Compatibility**

3GPP TS34.124                    **For mobile terminals and ancillary equipment:**  
“Electromagnetic compatibility (EMC) requirements for Mobile terminals and ancillary equipment”

3GPP TS25.113                    **For base stations and repeaters:** “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

**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)

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## **JUSTIFICATION FOR COMMON REGULATORY OBJECTIVES** **FOR PC EQUIPMENT**

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

### **1. PC EQUIPMENT**

#### **1.1 GLOBAL USE**

Personal Computer (PC) equipment and their peripherals are in worldwide use today. There is no reason to have different versions for different regions, and consequently PCs are designed for a true global market. People travel with their portable PCs, and connect them successfully to the mains power network.

#### **1.2 APPLICATIONS COVERED**

The range of applications covered by this equipment is extremely wide. The PC, with its dramatic increase of performance and price reduction became during the last half century THE tool of our life. In the administrations, in production lines, in the business, at home, in the means of transports, in hospitals, virtually everywhere there is at least a PC enhancing the human existence. The recent trend to integrate several Telecom technologies in the PC will further enhance the quality of life of the citizens and most of all is likely to be the solution to overcome the existing “digital divide”.

In principle a PC can by itself be the central tool of some of the following applications:

- Remote learning (e-learning), allowing a single teacher to broadcast or interact with many persons;
- Remote assistance, allowing a single expert, e.g. a surgeon in the best research centre of the world to assist a colleague in a less performing centre;
- Research information, making selective usage of internet, the ever wider source of information available generated by the human being.

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

The range of applications covered by PC peripherals like printers, scanners, memory units may be understood as an enhancement of the above set of central applications.

### **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 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**

IEC 60950 (1999)	Safety of information technology equipment
CB Bulletin (parts covering the intended markets)	IECEE (The IEC System for Conformity Testing and Certification of Electrical Equipment).

**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 best collection of such deviations and amendments is given in the CB Bulletin, used for the The “IEC System for Conformity Testing and Certification of Electrical Equipment” (IECEE, see <http://www.iecee.org/>).

**B. Electromagnetic Compatibility**

CISPR 22:1997 + Am1:2000 Class B	“Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement ”
FCC Part 15.109 Class B	<b>Additional for emissions above 1 GHz:</b> “Radio Frequency Devices; Unintentional Radiators; Radiated emission limits”
IEC 61000-3-2:1995 + Amendments	<b>For equipment with AC mains power:</b> “Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current $\leq 16$ A per phase)”
IEC 61000-3-3:1995	<b>For equipment with AC mains power:</b> “Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current $\leq 16$ A per phase and not subject to conditional connection”
CENELEC EN 55024:1998 (Alt: CISPR 24:1997)	“Information technology equipment – Immunity characteristics – Limits and methods of measurement”

**Rationale:**

**CISPR 22:** CISPR 22 is a widely recognised international standard for emission protection of radio spectrum from disturbances caused by “non-intentional transmitters”. It is published as

national standards in many countries. According to the classification given in CISPR 22, personal computers intended for domestic use should meet Class B.

**FCC Part 15:** The FCC Rules allow the use of CISPR 22 as a replacement for FCC Part 15 for “digital devices” (Part 15.109(g)). However since CISPR 22 currently does not contain limits above 1 GHz, it is required to comply with FCC part 15.109 for emissions above 1 GHz. According to the classification given in FCC Part 15, personal computers intended for domestic use should meet Class B.

**IEC 61000-3-2, -3:** In 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. The European standards EN 61000-3-2, -3 are identical to the IEC standards.

**CENELEC EN 55024 / CISPR 24:** Immunity aspects are included in EU’s EMC regulation. EN 55024 differs from CISPR 24 regarding the surge test and its compliance criterion for ports intended for connection of telecom lines to outdoor facilities. A PC without ports for connection to outdoor facilities is not subject to this test, and consequently for this case either standard can be used for immunity requirements. It should be noted that Ethernet ports are not connected directly to outdoor facilities, whereas PSTN modem ports normally are.

Note: The following international standards (in the form of European standards) are called up by EN 55024: IEC 61000-4-2, -3, -4, -5, -6, -8, -11

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# **COMMON REGULATORY OBJECTIVES FOR PC EQUIPMENT**

## **PART 2**

### **SPECIFIC ASPECTS OF PC EQUIPMENT**

#### **1. SCOPE**

This Common Regulatory Objective, CRO, is applicable to PC equipment and PC common peripherals, as defined in Clause 2.

A CRO is structured in 2 parts:

- **Part 1:** Part 1 of all ICT equipment CROs specifies the common and general requirements needed to satisfy the regulatory objectives of the participating Countries.
- **Part 2:** The present document is Part 2 of the PC equipment CRO and specifies, for PC equipment, the specific requirements needed to satisfy the regulatory objectives of the participating Countries.

The validity of a CRO is only achieved with the full application of both Part 1 and Part 2.

This CRO specifies the requirements needed to satisfy the regulatory objectives of Countries. Thus, this agreement will allow PC equipment, which is in compliance with this CRO to be placed on the market and be put into service as equipment within Countries that have implemented this CRO.

#### **2. PC EQUIPMENT AND PC COMMON PERIPHERALS**

A Personal Computer (PC) equipment can consist of a central unit for processing, and separate keyboard and Visual Display Unit (VDU). These functions can also be combined into one unit, typically for the case of a portable PC. It can be equipped with one or more ports for external communications.

PC common peripherals like printers, scanners, memory units and others commonly found on the market, are devices that have their function associated with a PC.

#### **3. REFERENCES**

There are no specific references related to this CRO apart from what is given in Part 1.

#### **4. DEFINITIONS**

There are no specific definitions related to this CRO apart from what is given in Part 1.

#### **5. PRODUCT REQUIREMENTS**

This CRO covers the legitimate regulatory objectives for PC equipment.

The objectives cover:

- Safety
- Electromagnetic Compatibility

#### **6. REFERENCE TO STANDARDS**

The recognized standards relevant for this CRO are listed in the Annex.

ANNEX

PC equipment shall be held to be compliant if they comply with each of the standards listed. The version of the standard listed is valid at the time of publication of this CRO. Subsequent versions of the listed standards are accepted unless otherwise stated by Countries having agreed on this CRO.

Conformity requirements can be found in the standards where the technical requirements are defined, or in separate standards.

**A. Safety**

IEC 60950 (1999)	Safety of information technology equipment
CB Bulletin (parts covering the intended markets)	IECEE (The IEC System for Conformity Testing and Certification of Electrical Equipment).

**B. Electromagnetic Compatibility**

CISPR 22:1997 + Am1:2000 Class B	“Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement”
FCC Part 15.109 Class B	<b>Additional for emissions above 1 GHz:</b> “Radio Frequency Devices; Unintentional Radiators; Radiated emission limits”
IEC 61000-3-2:1995 + Amendments	<b>For equipment with AC mains power:</b> “Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current $\leq 16$ A per phase)”
IEC 61000-3-3:1995	<b>For equipment with AC mains power:</b> “Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current $\leq 16$ A per phase and not subject to conditional connection”
CENELEC EN 55024:1998 (Alt: CISPR 24:1997)	“Information technology equipment – Immunity characteristics – Limits and methods of measurement”

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## **JUSTIFICATION FOR COMMON REGULATORY OBJECTIVES**

### **FOR PSTN EQUIPMENT**

This document provides the justification for a Common Regulatory Objective related to Public Switched Telephone Network (PSTN) Terminal equipment. It identifies the requirements that are relevant to the CRO. The output from this document will be used for the PSTN Terminal CRO.

#### **1. PSTN TERMINAL EQUIPMENT**

##### **1.1 GLOBAL USE**

The continuous use of terminals with analogue connection to the PSTN, such as modems or telephones, in networks is a measure of the need for such equipment. This type of equipment is undergoing constant and rapid development, and it is therefore imperative that the delay in, and cost of, market introduction is the minimum possible. Otherwise, new innovative products may be delayed. Also, countries where the market is comparatively small may never benefit from these products, if the cost of market introduction is too high.

The analogue presentations of PSTNs show many similarities in their basic performance. Portable PCs contain a modem port for dial-up connection to the local PSTN. Experience has shown that these modems can successfully inter-work in different networks globally, thus generating revenues for the operators while performing their intended tasks for the benefit of the user. The recent convergence of the voice transmission plans and the intensified use of digital transmission networks allow to extend from modems to every type of PSTN Terminal the connection conditions to be valid worldwide.

##### **1.2 APPLICATIONS COVERED**

The range of applications covered by this equipment is extremely wide. This is surely the lower cost and most popular Telecom technology. Also new telecom access technologies offer interfaces to this type of equipment to ensure backwards compatibility required by the user earlier telephone installations. Some of these applications are:

- Voice communication, allowing people to communicate when a fix infrastructure (home or office) is available;
- When connected to data devices, e.g. a PC, a modem can also be used to support the link between the data originating terminal and the centre connected to the Telecom network, i.e. the modem can be used as an access device to Internet;

Security, safety, health, research, education, social support, small business 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 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**

IEC 60950 (1999)	Safety of information technology equipment
CB Bulletin (parts covering the intended markets)	IECEE (The IEC System for Conformity Testing and Certification of Electrical Equipment).

#### **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 best collection of such deviations and amendments is given in the CB Bulletin, used for the The “IEC System for Conformity Testing and Certification of Electrical Equipment” (IECEE, see <http://www.iecee.org/>).

### **B. Electromagnetic Compatibility**

CISPR 22:1997 + Am1:2000 Class B	“Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement”
FCC Part 15.109 Class B	<b>Additional for emissions above 1 GHz:</b> “Radio Frequency Devices; Unintentional Radiators; Radiated emission limits”
IEC 61000-3-2:1995 + Amendments	<b>For equipment with AC mains power:</b> “Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current $\leq 16$ A per phase)”
IEC 61000-3-3:1995	<b>For equipment with AC mains power:</b> “Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current $\leq 16$ A per phase and not subject to conditional connection”
CENELEC EN 55024:1998	“Information technology equipment – Immunity characteristics – Limits and methods of measurement”

#### **Rationale:**

**CISPR 22:** CISPR 22 is a widely recognised international standard for emission protection of radio spectrum from disturbances caused by “non-intentional transmitters”. It is published as

national standards in many countries. According to the classification given in CISPR 22, terminals intended for domestic use should meet Class B.

**FCC Part 15:** The FCC Rules allow the use of CISPR 22 as a replacement for FCC Part 15 for “digital devices” (Part 15.109(g)). However since CISPR 22 currently does not contain limits above 1 GHz, it is required to comply with FCC part 15.109 for emissions above 1 GHz. According to the classification given in FCC Part 15, terminals intended for domestic use should meet Class B.

**IEC 61000-3-2, -3:** In 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. The European standards EN 61000-3-2, -3 are identical to the IEC standards.

**CENELEC EN 55024:** Immunity aspects are included in EU’s EMC regulation. EN 55024 differs from the international standard CISPR 24 regarding the surge test and its compliance criterion for ports intended for connection of telecom lines (PSTN) to outdoor facilities.

Note: The following international standards (in the form of European standards) are called up by EN 55024: IEC 61000-4-2, -3, -4, -5, -6, -8, -11

### **C. Avoidance of harm to the PSTN**

ETSI TBR 21\* (January 1998) Terminal Equipment (TE); Attachment requirements for pan-European approval for connection to the analogue Public Switched Telephone Networks (PSTNs) of TE (excluding TE supporting the voice telephony service) in which network addressing, if provided, is by means of Dual Tone Multi Frequency (DTMF) signalling

\*Clauses 1, 2, 3, 4.1, 4.4.3, 4.7.3, 4.7.4, and corresponding parts of Annex A.

(To be replaced by ES 203 021-1 and ES 203 021-2 at a later stage)

TIA/EIA/IS-968 (July 2001) Telecommunications - Telephone Terminal Equipment - Technical Requirements for Connection of Terminal Equipment to the Telephone Network

### **Rationale:**

**TBR 21:** There are no regulatory requirements for avoidance of harm to the PSTN in EU any more, however the ETSI standard TBR 21 is being used internationally for such purpose by a number of other countries. ETSI is currently preparing a draft standard prES 203 021. This standard will be a replacement of TBR 21 to take account of developments in PSTNs in recent years, and also to incorporate information from other countries as far as possible. The applicable parts of ES 203 021 will be:

- Part 1 (common elements)
- Part 2 (avoidance of harm to the PSTN)

**TIA/EIA/IS-968:** This standard contains technical requirements for avoidance of harm to the telephone network in order to comply with the FCC Code of Federal Regulations Title 47, Part 68.

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# COMMON REGULATORY OBJECTIVES FOR PSTN TERMINAL EQUIPMENT

## **PART 2**

### SPECIFIC ASPECTS OF PSTN TERMINAL EQUIPMENT

#### **1. SCOPE**

This Common Regulatory Objective, CRO, is applicable to PSTN Terminal equipment, as defined in Clause 2.

A CRO is structured in 2 parts:

- **Part 1:** Part 1 of all ICT equipment CROs specifies the common and general requirements needed to satisfy the regulatory objectives of the participating Countries.
- **Part 2:** The present document is Part 2 of the PSTN Terminal equipment CRO and specifies, for PSTN Terminal equipment, the specific requirements needed to satisfy the regulatory objectives of the participating Countries.

The validity of a CRO is only achieved with the full application of both Part 1 and Part 2.

This CRO specifies the requirements needed to satisfy the regulatory objectives of Countries. Thus, this agreement will allow PSTN Terminal equipment, which is in compliance with this CRO to be placed on the market and be put into service as equipment within Countries, that have implemented this CRO.

#### **2. PSTN TERMINAL EQUIPMENT**

A “PSTN Terminal”, e.g. a modem or a telephone, is a Telecommunication transmission device intended to be connected to analogue interfaces of the Public Switched Telephone Network (PSTN) as terminal equipment in order to exchange with other terminals information received from other sources in form of data signals with frequency characteristics within the voice band (a modem) or in order to allow a voice communication between two (or more) users connected via a telecommunications network (a telephone). For this purpose PSTN terminals normally interoperate with the PSTN. A terminal may be a separate piece of equipment, e.g. a simple telephone or a standalone modem, or an integral part of a device, e.g. a modem card in a portable PC.

#### **3. REFERENCES**

There are no specific references related to this CRO apart from what is given in Part 1.

#### **4. DEFINITIONS**

There are no specific definitions related to this CRO apart from what is given in Part 1.

#### **5. PRODUCT REQUIREMENTS**

This CRO covers the legitimate regulatory objectives for PSTN Terminal equipment.

The objectives cover:

- Safety, including Electromagnetic Fields
- Electromagnetic Compatibility
- Avoidance of harm to the PSTN

#### **6. REFERENCE TO STANDARDS**

The recognized standards relevant for this CRO are listed in the Annex.

## ANNEX

PSTN Terminal equipment shall be held to be compliant if they comply with each of the standards listed. The version of the standard listed is valid at the time of publication of this CRO. Subsequent versions of the listed standards are accepted unless otherwise stated by Countries having agreed on this CRO.

Conformity requirements can be found in the standards where the technical requirements are defined, or in separate standards.

### **A. Safety**

IEC 60950 (1999)	Safety of information technology equipment
CB Bulletin (parts covering the intended markets)	IECEE (The IEC System for Conformity Testing and Certification of Electrical Equipment).

### **B. Electromagnetic Compatibility**

CISPR 22:1997 + Am1:2000 Class B	“Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement ”
FCC Part 15.109 Class B	<b>Additional for emissions above 1 GHz:</b> “Radio Frequency Devices; Unintentional Radiators; Radiated emission limits”
IEC 61000-3-2:1995 + Amendments	<b>For equipment with AC mains power:</b> “Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current $\leq 16$ A per phase)”
IEC 61000-3-3:1995	<b>For equipment with AC mains power:</b> “Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current $\leq 16$ A per phase and not subject to conditional connection”
CENELEC EN 55024:1998	“Information technology equipment – Immunity characteristics – Limits and methods of measurement”

**C. Avoidance of harm to the PSTN**

ETSI TBR 21\* (January 1998) Terminal Equipment (TE); Attachment requirements for pan-European approval for connection to the analogue Public Switched Telephone Networks (PSTNs) of TE (excluding TE supporting the voice telephony service) in which network addressing, if provided, is by means of Dual Tone Multi Frequency (DTMF) signalling

\*Clauses 1, 2, 3, 4.1, 4.4.3, 4.7.3, 4.7.4, and corresponding parts of Annex A.

(To be replaced by ES 203 021-1 and ES 203 021-2 at a later stage)

TIA/EIA/IS-968 (July 2001) Telecommunications - Telephone Terminal Equipment - Technical Requirements for Connection of Terminal Equipment to the Telephone Network

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# **JUSTIFICATION FOR COMMON REGULATORY OBJECTIVES FOR WIRELESS LOCAL AREA NETWORK (WLAN) EQUIPMENT**

This document provides the justification for a Common Regulatory Objective related to Wireless Local Area Network (WLAN) equipment. It identifies the requirements that are relevant to the CRO. The output from this document will be used for the WLAN CRO.

## **1. WLAN EQUIPMENT**

### **1.1 GLOBAL USE**

WLAN is an industry standard for wireless connectivity using data and/or voice links over short distances. It enables electronic devices to connect and communicate wirelessly. WLAN as described in IEEE Std 802.11b uses the unlicensed 2.4 GHz Industrial, Scientific and Medical (ISM) frequency band. This frequency band is recognised globally, and is used by different technologies. Standardisation organisations have defined standards to ensure co-existence between these different technologies.

WLAN technology is used globally and one of its many uses is for people travelling, to allow them to connect their portable PCs to host networks at the location where they are, in order to communicate with their home location, or access data locally.

### **1.2 APPLICATIONS COVERED**

The range of applications covered by this equipment is extremely wide. WLAN applications may be considered similar to Bluetooth but extended to multimedia and video applications and available to a much greater number of connections. WLAN technology can easily be considered focused in business and professional applications while Bluetooth covers home and small business areas. Both technologies are being established worldwide and represent one of the most important recent successes of the Telecommunications sector. In principle a WLAN connection can replace any existing home or business network. Some of these applications are:

- In mobile or fix multimedia terminals, the connection to a wireless terminal allowing hands-free and wireless use of it, i.e. the user may pursue another action simultaneously with the call;
- In mobile, fix multimedia terminals, the connection to a Personal Computer [PC] allowing wireless broadband connection of the PC to internet, which opens a unlimited range of applications including video applications and quick internet access
- In the home or office environment the connection between a PC, a printer, a video camera or any other remote sensor or device; this opens again a unlimited range of applications like remote surveillance or control of devices

Security, safety, health, research, education, social support, small business 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 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
CB Bulletin (parts covering the intended markets)	IECEE (The IEC System for Conformity Testing and Certification of Electrical Equipment).

#### **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 best collection of such deviations and amendments is given in the CB Bulletin, used for the The “IEC System for Conformity Testing and Certification of Electrical Equipment” (IECEE, 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**

- ETSI EN 301 489–1 v1.3.1 Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements
- ETSI EN 301 489–17 v1.1.1 Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Wideband data and HIPERLAN equipment
- 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.

**ETSI:** The ETSI EN 301 489-series of standards call upon the following IEC/CISPR standards (in the form of European 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.

**FCC:** The FCC requirements in the United States are very similar to CISPR 22 in the frequency ranges that coincide, but so far the FCC does not recognise the CISPR standard as equivalent. Therefore, these are included.

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

ETSI EN 300 328-1 v1.3.1	Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband Transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using spread spectrum modulation techniques; Part 1: Technical characteristics and test conditions
FCC Part 15:247 (2001)	Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz.
FCC Part 15:205 (2001)	Restricted bands of operation.
(FCC Part 15.209 (2001)	Radiated emission limits - Listed under "C")
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#### **Rationale:**

There is no single global standard available to cover the objectives "effective use of radio spectrum" for WLAN equipment (short range devices operating in the 2,4 GHz ISM band). The standards listed above largely overlap but will ensure the effective use of frequency spectrum on a global level. The technical aspects cover

- Modulation technique;
- Effective radiated power output;
- Peak power density;
- Frequency range;
- Channel spacing/number of channels

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**COMMON REGULATORY OBJECTIVES FOR WIRELESS LOCAL AREA  
NETWORK (WLAN) EQUIPMENT**

**PART 2**

**SPECIFIC ASPECTS OF WLAN EQUIPMENT**

**1. SCOPE**

This Common Regulatory Objective, CRO, is applicable to Wireless Local Area Network (WLAN) equipment, as defined in Clause 2.

A CRO is structured in 2 parts:

- **Part 1:** Part 1 of all ICT equipment CROs specifies the common and general requirements needed to satisfy the regulatory objectives of the participating Countries.
- **Part 2:** The present document is Part 2 of the WLAN equipment CRO and specifies, for WLAN equipment, the specific requirements needed to satisfy the regulatory objectives of the participating Countries.

The validity of a CRO is only achieved with the full application of both Part 1 and Part 2.

This CRO specifies the requirements needed to satisfy the regulatory objectives of Countries. Thus, this agreement will allow WLAN equipment which is in compliance with this CRO to be placed on the market and be put into service as equipment within Countries, that have implemented this CRO.

**2. WLAN EQUIPMENT**

Wireless Local Area Network (WLAN) equipment covered by this CRO are the types working in accordance with IEEE 802.11b (2,4 GHz band).

**3. REFERENCES**

In addition to the references in Part 1 of this CRO, relevant references are:

IEEE Std 802.11b      Supplement to IEEE Standard for Information technology–  
Telecommunications and information exchange between systems– Local  
and metropolitan area networks– Specific requirements– Part 11: Wireless  
LAN Medium Access Control (MAC) and Physical Layer (PHY)  
specifications: Higher-Speed Physical Layer Extension in the 2.4 GHz  
Band

#### **4. DEFINITIONS**

In addition to the references in Part 1 of this CRO, applicable definitions are found in:

IEEE Std 802            IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture

#### **5. PRODUCT REQUIREMENTS**

This CRO covers the legitimate regulatory objectives for WLAN equipment.

The objectives cover:

- Safety, including Electromagnetic Fields
- Electromagnetic Compatibility
- Effective use of the radio spectrum

#### **6. REFERENCE TO STANDARDS**

The recognized standards relevant for this CRO are listed in the Annex.

## ANNEX

WLAN equipment shall be held to be compliant if they comply with each of the standards listed. The version of the standard listed is valid at the time of publication of this CRO. Subsequent versions of the listed standards are accepted unless otherwise stated by Countries having agreed on this CRO.

Conformity requirements can be found in the standards where the technical requirements are defined, or in separate standards.

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

IEC 60950 (1999)	Safety of information technology equipment
CB Bulletin (parts covering the intended markets)	IECEE (The IEC System for Conformity Testing and Certification of Electrical Equipment).

### **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, 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.

#### **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.

### **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.

### **C. Electromagnetic Compatibility**

ETSI EN 301 489–1 v1.3.1 Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

ETSI EN 301 489–17 v1.1.1 Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Wideband data and HIPERLAN equipment

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

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

ETSI EN 300 328-1 v1.3.1 Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband Transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using spread spectrum modulation techniques; Part 1: Technical characteristics and test conditions

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