

# CONSOLIDATED VERSION

# VERSION CONSOLIDÉE



INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE  
COMITÉ INTERNATIONAL SPÉCIAL DES PERTURBATIONS RADIOÉLECTRIQUES

**Sound and television broadcast receivers and associated equipment – Immunity characteristics – Limits and methods of measurement**

**Récepteurs de radiodiffusion et de télévision et équipements associés – Caractéristiques d'immunité – Limites et méthodes de mesure**

CISPR 20:2006

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INTERNATIONAL ELECTROTECHNICAL COMMISSION  
INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

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**SOUND AND TELEVISION BROADCAST RECEIVERS  
AND ASSOCIATED EQUIPMENT –  
IMMUNITY CHARACTERISTICS –  
LIMITS AND METHODS OF MEASUREMENT**

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**In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions and deletions are displayed in red, with deletions being struck through. A separate Final version with all changes accepted is available in this publication.**

**This publication has been prepared for user convenience.**

International Standard CISPR 20 has been prepared by CISPR, subcommittee I: Electromagnetic compatibility of information technology equipment, multimedia equipment and receivers.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

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WITHDRAWN

# SOUND AND TELEVISION BROADCAST RECEIVERS AND ASSOCIATED EQUIPMENT – IMMUNITY CHARACTERISTICS – LIMITS AND METHODS OF MEASUREMENT

## 1 Scope and object

This standard for immunity requirements applies to television broadcast receivers, sound broadcast receivers and associated equipment intended for use in the residential, commercial and light industrial environment.

This standard describes the methods of measurement and specified limits applicable to sound and television receivers and to associated equipment with regard to their immunity characteristics to disturbing signals.

This standard is also applicable to the immunity of outdoor units of direct to home (DTH) satellite receiving systems for individual reception.

NOTE 1 Receiving systems for collective reception, in particular cable distribution head ends (Community Antenna Television, CATV) and community reception systems (Master Antenna Television, MATV) are covered by IEC 60728-2.

NOTE 2 Broadcast receivers for digital signals are covered by Annex I and Annex J.

Immunity requirements are given in the frequency range 0 Hz to 400 GHz. Radio-frequency tests outside the specified frequency bands or concerning other phenomena than given in this standard are not required.

The objective of this standard is to define the immunity test requirements for equipment defined in the scope in relation to continuous and transient, conducted and radiated disturbances including electrostatic discharges.

These test requirements represent essential electromagnetic immunity requirements.

Test requirements are specified for each port (enclosure or connector) considered.

NOTE 3 This standard does not specify electrical safety requirements for equipment such as protection against electric shocks, unsafe operation, insulation co-ordination and related dielectric tests.

NOTE 4 In special cases, situations will arise where the level of disturbances may exceed the levels specified in this standard e.g. where a hand-held transmitter is used in proximity to an equipment. In these instances special mitigation measures may have to be employed.

The environments encompassed by this standard are residential, commercial and light-industrial locations, both indoor and outdoor. The following list, although not comprehensive, gives an indication of locations which are included:

- residential properties, e.g. houses, apartments, etc.;
- retail outlets, e.g. shops, supermarkets, etc.;
- business premises, e.g. offices, banks, etc.;
- areas of public entertainment, e.g. cinemas, public bars, dance halls, etc.;
- outdoor locations, e.g. petrol stations, car parks, amusement and sports centres, etc.;
- light-industrial locations e.g. workshops, laboratories, service centres, etc.;
- car and boat.

Locations which are characterized by their mains power being supplied directly at low voltage from the public mains are considered to be residential, commercial or light industrial.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CISPR 16-1-3, *Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-3: Radio disturbance and immunity measuring apparatus - Ancillary equipment - Disturbance power*

IEC 60050(161), *International Electrotechnical Vocabulary (IEV) – Chapter 161: Electromagnetic compatibility*

IEC 60268-1:1985, *Sound system equipment – Part 1: General*

IEC 61000-4-2, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*. Basic EMC Publication

IEC 61000-4-3, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*. Basic EMC Publication

IEC 61000-4-4, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*. Basic EMC Publication

IEC 61000-4-6:2008, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

IEC 61672-1:2002, *Electroacoustics – Sound level meters – Part 1: Specifications*

ETS 300 158:1992, *Satellite Earth Stations and Systems (SES) – Television Receive Only (TVRO-FSS) Satellite Earth Stations operating in the 11/12 GHz FSS bands*

ETS 300 249:1993, *Satellite Earth Stations and Systems (SES) – Television Receive-Only (TVRO) equipment used in the Broadcasting Satellite Service (BSS)*

ITU-R BS.468-4, *Measurement of audio-frequency noise voltage level in sound broadcasting*

ITU-R BT.471-1:1986, *Nomenclature and description of colour bar signals*

ITU-R BT.500-10, *Methodology for the subjective assessment of the quality of television pictures*

ITU-T J.61, *Transmission performance of television circuits designed for use in international connections*

## 3 Terms, definitions and abbreviations

### 3.1 Terms and definitions

For the purposes of this standard, the definitions contained in IEC 60050(161) as well as the following apply.

A non-exhaustive overview of equipment to which the standard is applicable is given in Table 1. The terminology and abbreviations of Table 1 are also used in other tables.

**Table 1 – Survey (non exhaustive) of receiver and associated equipment types, including the appropriate parts of multifunction equipment**

Equipment		Intended for mains powering and portable with external power connection facility		Battery powered portable, without external power connection facility (portable)	Car radio
		With a connection facility for an external antenna	Without a connection facility for an external antenna		
Sound broadcast receivers (radio) (including satellite receivers)	FM	FM radio ant. PC FM tuner card	FM radio	Portable radio	Car radio FM
	LW, MW, SW (AM)	AM radio ant. PC AM tuner card	AM radio		Car radio AM
Television broadcast receivers (TV) (including satellite receivers)		TV antenna PC TV tuner card	TV	Portable TV	Car TV
Associated equipment (ass.)	Video tape/disc equipment (recording and/or play-back)	With tuner	Ass. video tuner antenna	Ass. video Tuner	Portable ass. video
		Without tuner	Ass. video		
	Audio tape/disc equipment		Ass. audio	Portable ass. audio	
	Other, e.g. audio amplifiers, decoders, electronic organs		Ass. other	Portable ass. other, e.g. infrared devices	

### 3.1.1

#### sound receivers

appliances intended for the reception of sound broadcast and similar services for terrestrial, cable and satellite transmissions; these sound receivers can be digital receivers with digital incoming signals or receivers with digital processing of digital or analogue incoming signals

### 3.1.2

#### television receivers

appliances intended for the reception of television broadcast and similar services for terrestrial, cable and satellite transmissions; these TV receivers can be digital receivers with digital incoming signals or receivers with digital processing of digital or analogue incoming signals

NOTE 1 Modular units which are part of sound or television receiving systems, like tuners, frequency converters, modulators, etc. are considered to be sound or television receivers respectively.

NOTE 2 Tuners may be provided with a broadcast-satellite-receiving stage and with demodulators, decoders, demultiplexers, D/A converters, encoders (e.g. NTSC, PAL or SECAM encoders) etc.

NOTE 3 Frequency converters may be provided with a broadcast-satellite-receiving stage and with devices which convert the signals to other frequency bands.

NOTE 4 Receivers, tuners, or frequency converters may be tuneable or may only be able to receive a fixed frequency.

### 3.1.3

#### associated equipment

appliance either intended to be connected directly to sound or television receivers, or to generate or to reproduce audio or visual information; excluded are information technology equipment even if they are intended to be connected to a television broadcast receiver

NOTE Information technology equipment is defined in CISPR 22.

#### **3.1.4**

##### **multifunction equipment**

appliances in which two or more functions are provided in the same unit, for instance television reception, radio reception, digital clock, tape-recorder or disc player etc.

#### **3.1.5**

##### **disturbance signal**

an unwanted signal which may degrade radio reception or cause malfunction in equipment; specific unwanted signals are simulating disturbance signals, generated under laboratory conditions

#### **3.1.6**

##### **immunity**

ability to maintain a specified performance when the equipment is subjected to disturbance (unwanted) signals of specified levels

NOTE In this standard the specified performance is:

- a specified sound signal-to-interference ratio and/or
- no greater than just perceptible degradation of the picture when a wanted signal and an unwanted signal occur simultaneously.

#### **3.1.7**

##### **input immunity**

immunity from unwanted signal voltages present at the antenna input terminal

#### **3.1.8**

##### **immunity from conducted voltages**

immunity from unwanted signal voltages present at the equipment terminals for audio and mains input and audio output

#### **3.1.9**

##### **immunity from conducted currents**

immunity from unwanted signal (common mode) currents present in cables connected to the equipment

#### **3.1.10**

##### **immunity from radiated fields**

immunity from unwanted electromagnetic fields present at the equipment

#### **3.1.11**

##### **screening effectiveness**

characteristic of a coaxial connector terminal to attenuate the transfer of internal voltages into external fields and vice versa

#### **3.1.12**

##### **port**

particular interface of the specified apparatus with the external electromagnetic environment (see Figure 1)

#### **3.1.13**

##### **enclosure port**

physical boundary of the apparatus through which electromagnetic fields may radiate or impinge