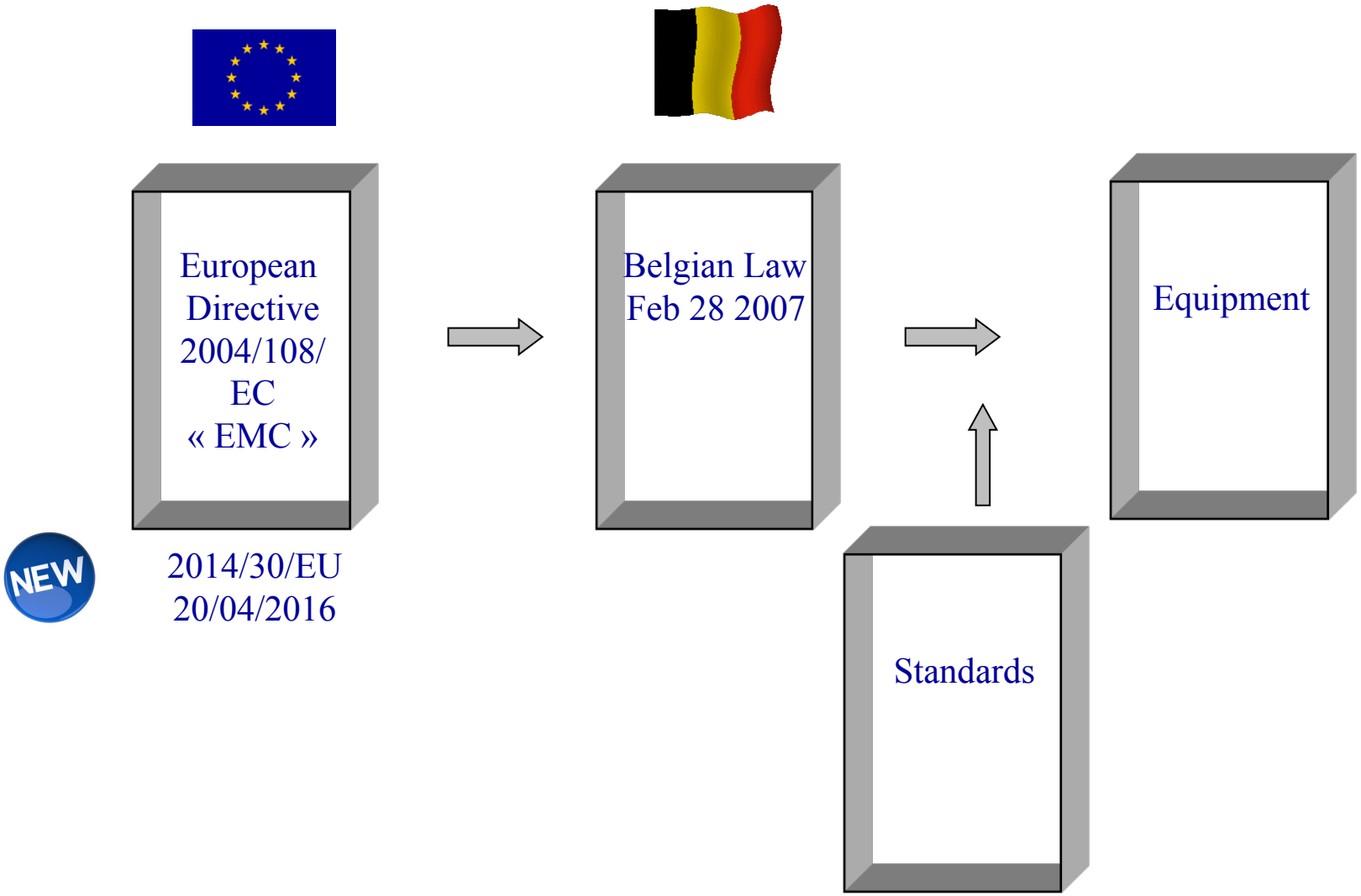
EMC Directive 2004/108/EC-2014/30/EU

Véronique Beauvois, Ir.
2015-2016



Directive 2004/108/EC
Objectives

- Good functioning of the internal market
- ***Free movement*** of goods

- Electromagnetic environment *with a adequate level*
  - adequate protection of radio communication
  - adequate protection of telecommunication networks

- Not related to safety

Directive 2004/108/EC
Structure

Chapter I: General Provisions

Art. 1	Subject matter and scope
Art. 2	Definitions
Art. 3	Placing on the market, putting into service
Art. 4	Free movement of equipment
Art. 5	Essential requirements
Art. 6	Harmonized standards

Chapter II: Apparatus

Art. 7	Conformity assessment procedure for apparatus
Art. 8	CE marking
Art. 9	Other marks and information
Art. 10	Safeguards
Art. 11	Decisions to withdraw, prohibit or restrict the free movement of apparatus
Art. 12	Notified bodies

Chapter III: Fixed Installations

Art. 13	Fixed installations

7 Annexes

Chapter IV: Final Provisions

Art. 14	Repeal
Art. 15	Transitional provisions
Art. 16	Transposition
Art. 17	Entry into force
Art. 18	Addressees

Directive 2004/108/EC
Structure - Annex

Annex I: Essential requirements

1. Protection requirements
2. Specific requirements for fixed installations

Annex II : Conformity Assessment Procedure referred to in art 7 (internal production control)

Annex III : Conformity Assessment Procedure referred to in art7

Annex IV: Technical documentation, EC declaration of conformity

1. Technical documentation
2. EC declaration of conformity

Annex V: CE marking referred to in art 8

Annex VI: Criteria for the assessment of the bodies to be notified

Annex VII: Correlation Table

Directive 2004/108/EC

- Scope

equipment is:

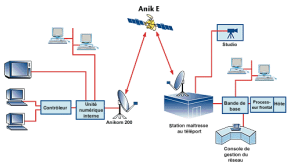
•apparatus

- electrical or electronic apparatus
- component (for the integration by the end-user

e.g. a CD-ROM drive)

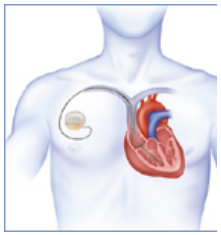
- fixed installation: particular combination of several types of apparatus assembled, ijnstalled and intendeds to be used permanently at a fixed location.

- large machines
- networks (power plant, telecommunication)

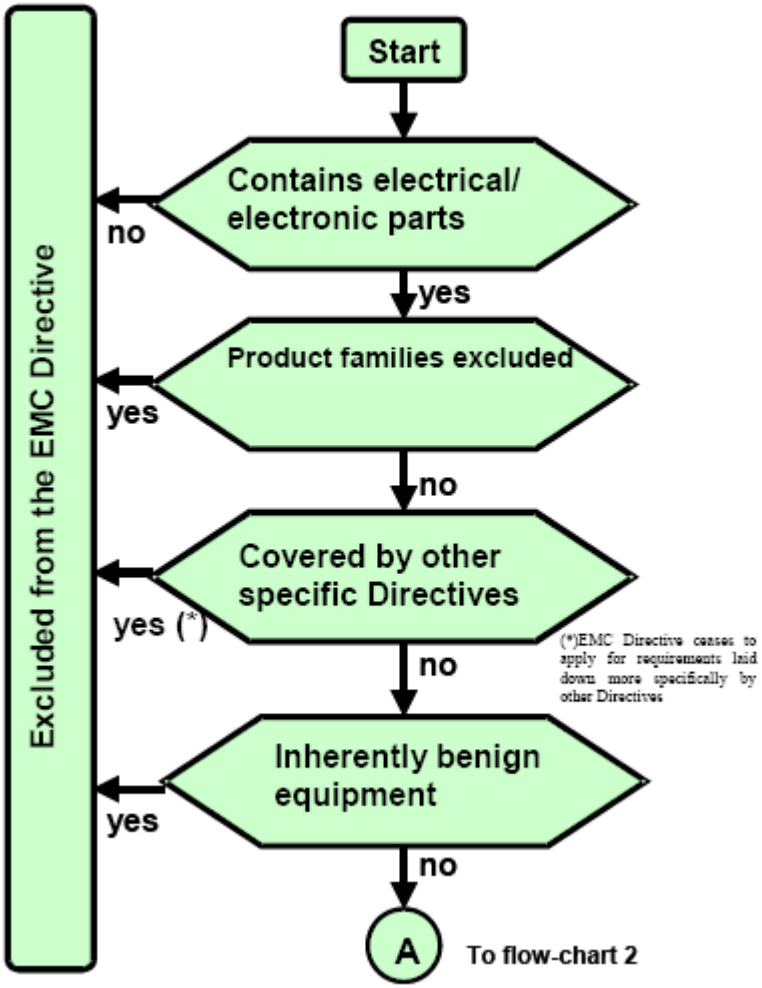


Directive 2004/108/EC

- Scope - exclusions
  - equipment covered by Directive R&TTE 1999/5/EC (2014/53/EU)
  - aeronautical products (other regulation)
  - radio equipment used by radio amateurs, except if available commercially
  - equipment inherently not emitting (passive equipment, watch, electronic greeting cards)
  - equipment for which essential requirements are laid down in other directives (wholly or partly)
    - 90/385/EC: active implantable medical devices
    - 2004/22/EC: measuring instruments (water meter, gas meter, taximeters,)

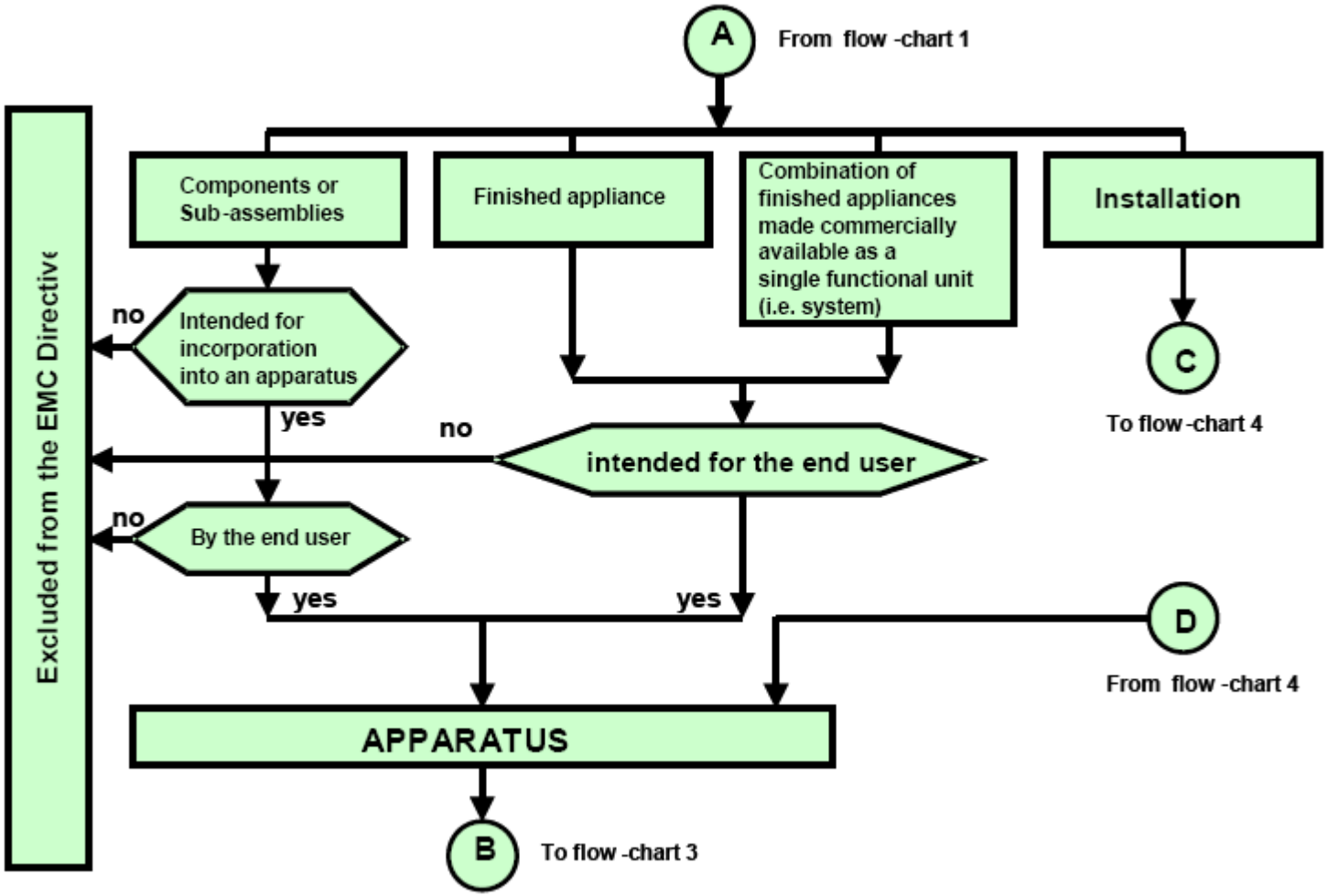


Directive 2004/108/EC



[Guide for the EMC Directive 2004/108/EC]

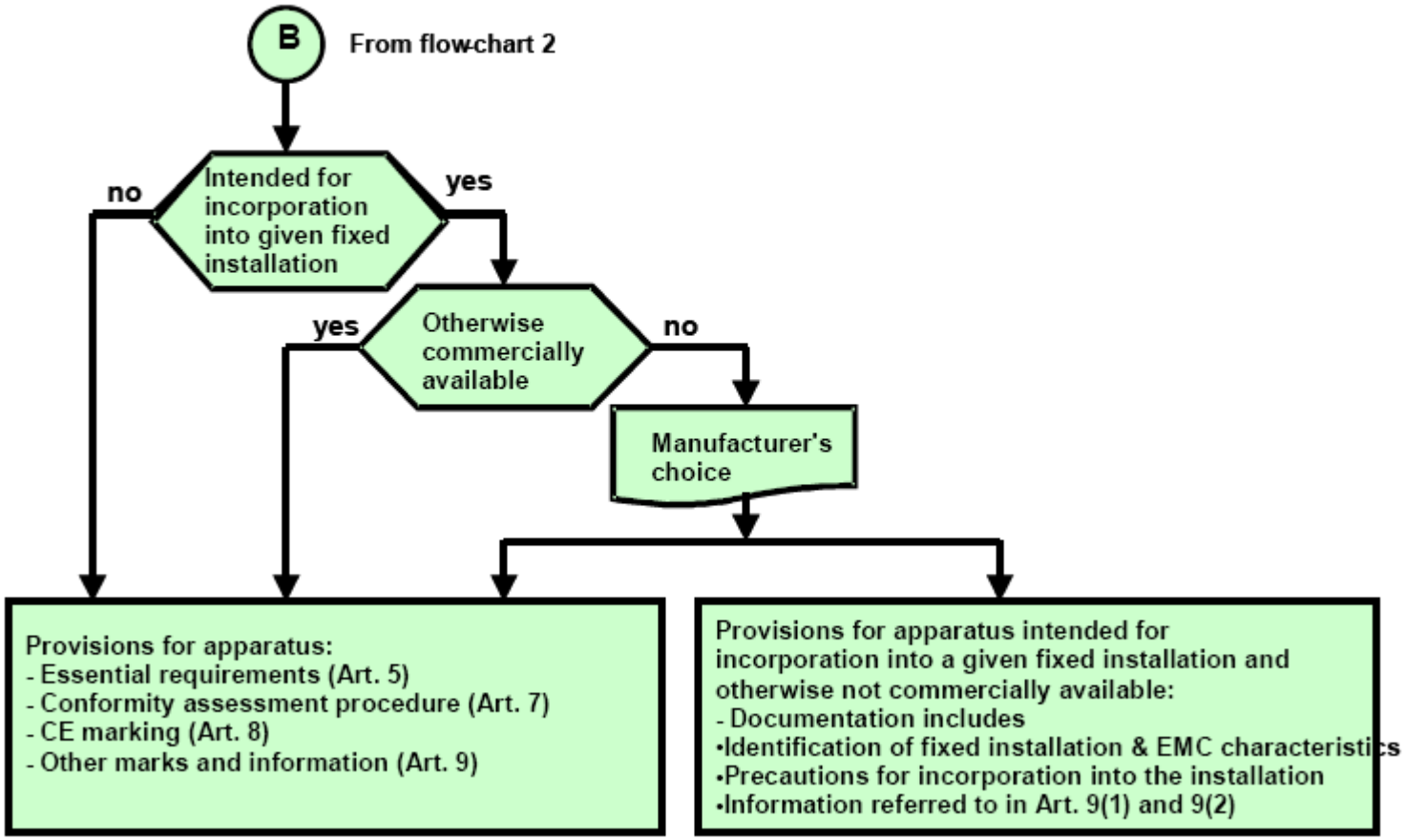
Directive 2004/108/EC



[Guide for the EMC Directive 2004/108/EC]

Directive 2004/108/EC

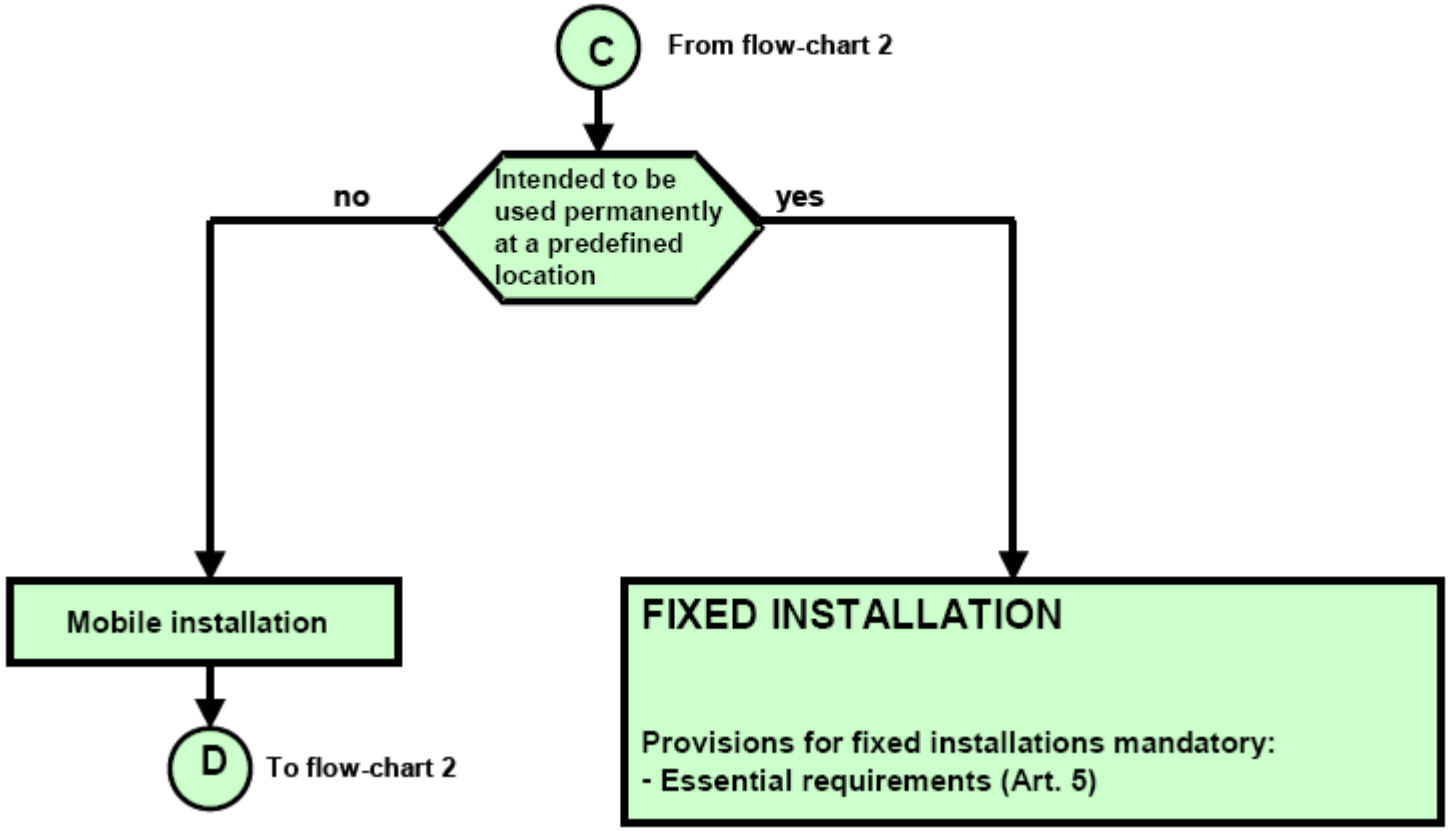
Flowchart 3 - Provisions applicable to apparatus



[Guide for the EMC Directive 2004/108/EC]

Directive 2004/108/EC

Flowchart 4 - Installations



[Guide for the EMC Directive 2004/108/EC]

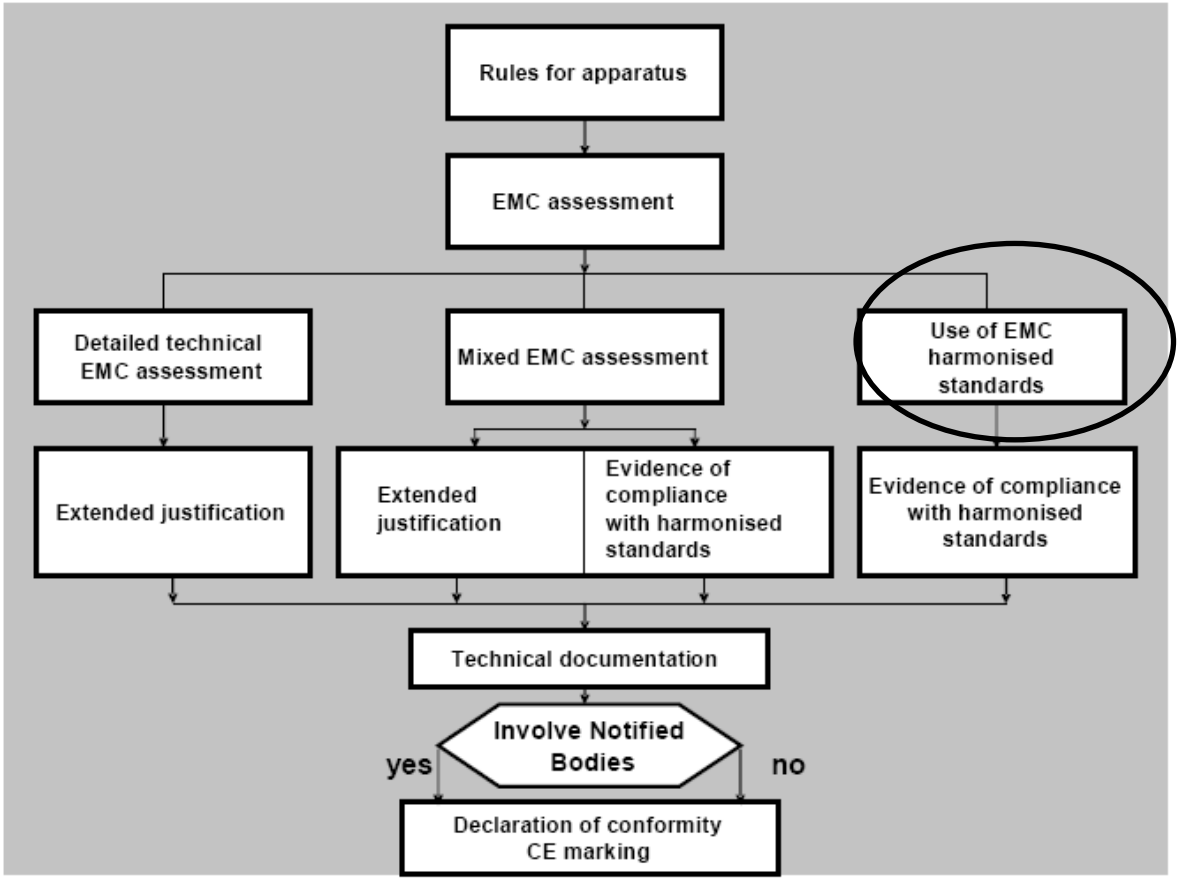
Directive 2004/108/EC
Essential requirements

- Protection requirements for all equipment
  - Emission
  - Immunity

- Specific requirements for fixed installations
  - shall be installed applying good engineering practices and respecting the information on the intented use of its componentswith a view of meeting the protection requirements
  - The good engineering practives shall be documented and the documentation shall be held by the person responsible at the disposal of the relevant national authorities for inspection purposes.

Directive 2004/108/EC

Flowchart 5 - Conformity assessment procedure for apparatus



[Guide for the EMC Directive 2004/108/EC]

Directive 2004/108/EC
Information

- Information requirements for all equipment
  - identification (type, batch, serial number…)
  - name & address of manufacturer
  - name & address of authorised representative in the Community
    - if manufacturer is not established in the Community
  - use instructions
  - specific precautions
    - to ensure the conformitu with protection requirements
    - for installation, use and maintenance
  - a clear inidcation of use restrictions
    - e.g. if conformity is not insured in residential locations

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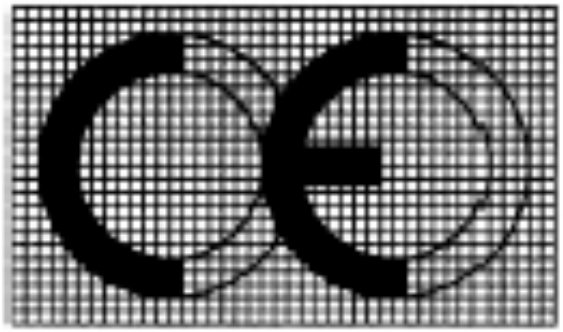
Suppliers Declaration of Conformity (conform ISO 17050)

1.	**Number of SdoC:**	**23456**
2.	**Issuer's name:**	**Electronic Emission Presentation B.V.** **Immunitystreet 2** **Emission City** **Belgium**
3.	**Object of declaration:**	**Seminar Presentation Machine** **Honshu Model de Luxe**
4.	**The object of declaration described above is in conformity with the requirements of the following documents:**	
	Document No:	**Title**
	2004/108/EC	**EU EMC Directive (December 2004)**
	EU Harmonised standards	**EN 88099:2009** **EN 99099:2010** **EN 99088:2008 Part X except Chapter Y**
	EEP test method: 2009	**Test method XYZ. To cover the parts of EN 99088 not being applied**
5.	**Additional information**	**A technical documentation nr. Global Presentation nr. YZZ is available to document compliance of the excluded part of the harmonized standard**
6.	**Signed for and on behalf of:**	**Electronic Emission presentations B.V.**
7.	**Date:**	**30 August 2010**
8.	**Name and Function:**	**Mr. E Veen Managing Director**

Directive 2004/108/EC
CE Marking



The 'CE' marking must have a height of at least 5 mm. If the 'CE' marking is reduced or enlarged the proportions given in the above graduated drawing must be respected.

The 'CE' marking must be affixed to the apparatus or to its data plate. Where this is not possible or not warranted on account of the nature of the apparatus, it must be affixed to the packaging, if any, and to the accompanying documents.

Where the apparatus is the subject of other Directives covering other aspects and which also provide for the 'CE' marking, the latter shall indicate that the apparatus also conforms with those other Directives.

However, where one or more of those Directives allow the manufacturer, during a transitional period, to choose which arrangements to apply, the 'CE' marking shall indicate conformity only with the Directives applied by the manufacturer. In that case, particulars of the Directives applied, as published in the *Official Journal of the European Union*, must be given in the documents, notices or instructions required by the Directives and accompanying such apparatus.

Directive 2004/108/EC
Directive > Harmonised Standards

Cenelec	EN 55015:2006 Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment CISPR 15:2005	EN 55015:2000 + A1:2001 + A2:2002 Note 2.1	Date expired (01/09/2009)
	EN 55015:2006/A1:2007 CISPR 15:2005/A1:2006	Note 3	Date expired (01/05/2010)
	EN 55015:2006/A2:2009 CISPR 15:2005/A2:2008	Note 3	Date expired (01/03/2012)
Cenelec	EN 55015:2013 **(new)** Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment CISPR 15:2013 + IS1:2013 + IS2:2013	EN 55015:2006 and its amendments Note 2.1	12/06/2016
Cenelec	EN 55020:2007 Sound and television broadcast receivers and associated equipment - Immunity characteristics - Limits and methods of measurement CISPR 20:2006	EN 55020:2002 + A1:2003 + A2:2005 Note 2.1	Date expired (01/12/2009)
	EN 55020:2007/A11:2011	Note 3	Date expired (01/01/2013)
Cenelec	EN 55022:2010 Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement CISPR 22:2008 (Modified)	EN 55022:2006 + A1:2007	Date expired (01/12/2013)
	EN 55022:2010/AC:2011		
Cenelec	EN 55024:2010 Information technology equipment - Immunity characteristics - Limits and methods of measurement CISPR 24:2010	EN 55024:1998 + A1:2001 + A2:2003	Date expired (01/12/2013)

Directive 2004/108/EC
Transposition (Art. 16)

- Belgian law February 28, 2007 (new directive 2014/30/EU should be transposed before 20/04/2016)
- Competent authorities:
  - SPF Economie – DG Energie
  - SPF Emploi – DG Contrôle du Bien-être au Travail
  - IBPT/BIPT
- Notified Bodies: http://ec.europa.eu/growth/tools-databases/nando/

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« New Approach » directives

- 2006/42/EC Machinery Safety
- 2014/53/EC R&TTE (Radio & Telecom Terminal Equipment)
- 2009/48/EC Safety of toys
- 93/42/EEC Medical devices
- 2014/35/EU Low voltage

+

- 2004/104/EC Automotive (e marking)

We have to apply all applicable directives !

Standardisation in EMC

Véronique Beauvois, Ir.
2015-2016

Content

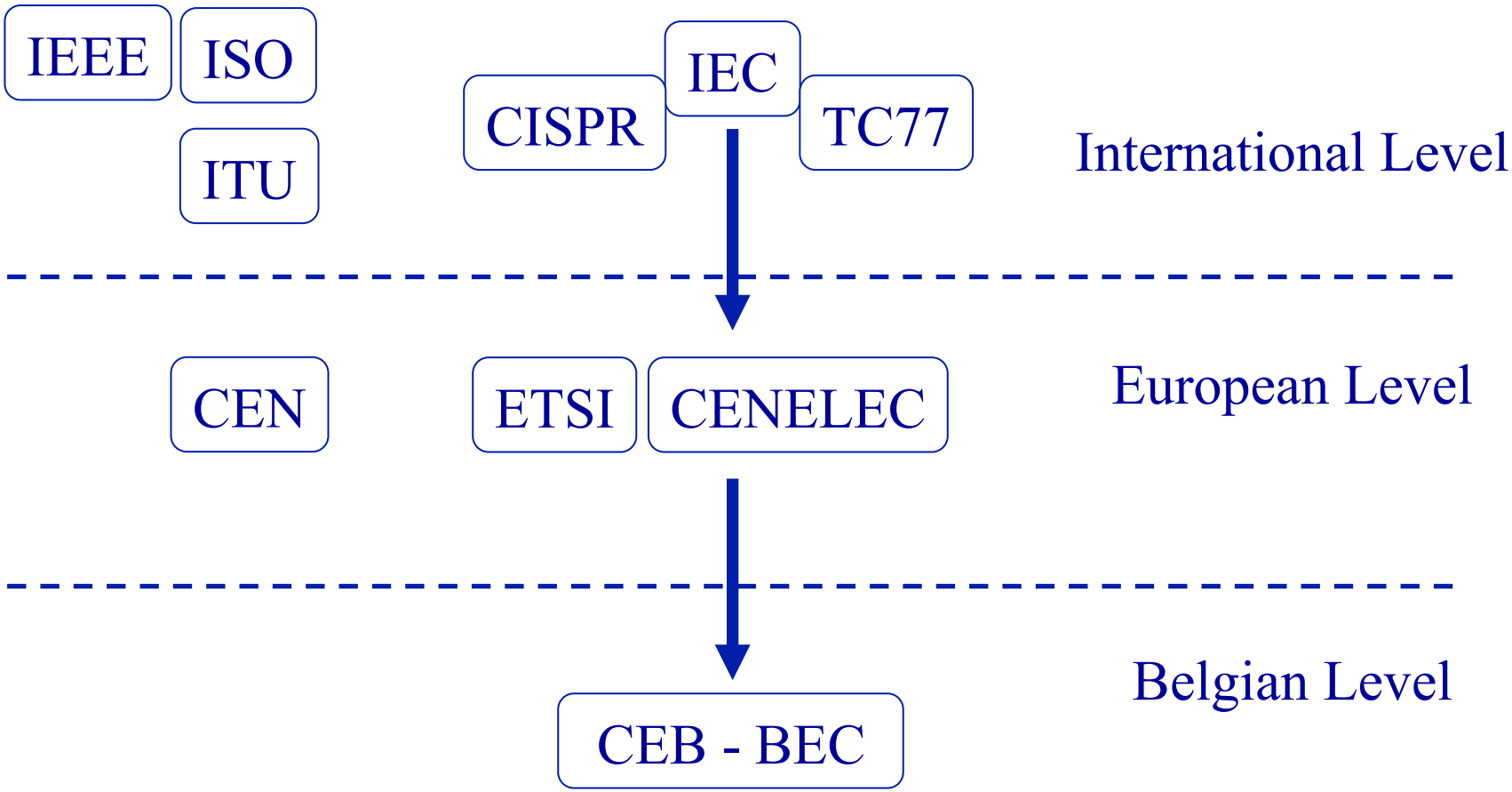
- Directives > Standards
- Standardisation committees
- International Level
- European Level
- National Level
- Standards types : basic, generic, product
- Conclusions

Directives > Standards

• « **New Approach** »: technical harmonisation which defines a clear difference between the responsibilities of the European legislator and the European standardisation committees (CEN, CENELEC, ETSI) in a legal framework to facilitate the movement of goods.

- European directives define essential requirements (health, safety and environmental issues);
- European standardisation committees publish technical specifications in standards to answer to the essential requirements (presumption of conformity) and then they are considered as “harmonised standards”.

Standardisation Committees



International Level (IEC / CISPR)

- Documents types: standards, reports, technical reports, guides
- IEC: divided in commissions and sub-commissions
- EMC:

TC 77 (1973) – horizontal commission – divided in sub- commissions

SC 77A (L.F. ≤ 9 kHz)

SC 77B (H.F. > 9 kHz)

SC 77C (High power transient phenomena)

International Level (IEC / CISPR)

• EMC:

CISPR (1933) (The International Special Committee on Radio Interference).

-Main task: from 9 kHz, prepare standards to protect radio reception from interference sources (IT, lighting, ISM, …)

- divided in sub-commissions.

European Level (CENELEC)

- Frequently IEC > CENELEC
- Divided in commissions and sub-commissions.
- EMC: TC 210 – horizontal commission – divided in W.G.

Belgian Level (CEB-BEC)

- Bureau de Normalisation (**NBN**)
- Comité Electrotechnique Belge (**CEB-BEC**)
- Membre of IEC and CENELEC. Same TCs.
- Publication of standards from IEC and CENELEC
- **NBN** = Norme Belge – Belgische Norm
- Modifications, exceptions and/or possible additions

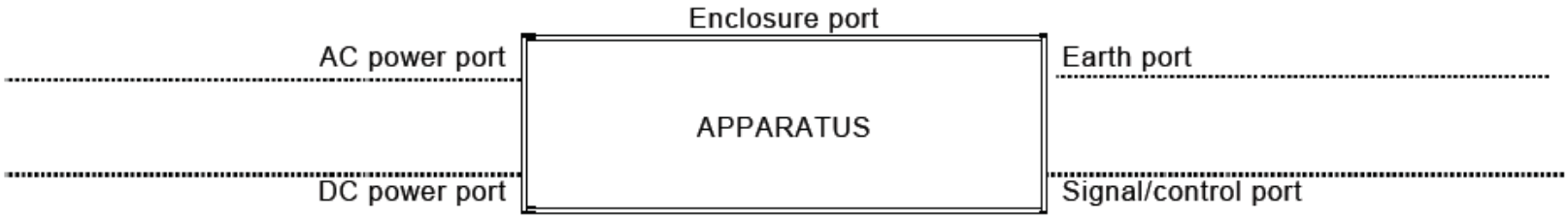
www.nbn.be

Types of standards in EMC

Type	Contents	Aims
BASIC (*)	- Measurement and test methods - Instrumentation - Test set-up - Ranges of test levels (immunity) - No limits/No performance criteria	- Reference documents - No conformance testing of products (Not published in the OJEU list)
GENERIC	- Precise and essential requirements (limits) for all products intended for use in each environment i.e. residential, commercial, light industry and industry -Refer to basic standards for measurement/test methods (no repetition) - General performance criteria	- Conformance testing of products (Published in the OJEU list) - Co-ordination tool for product (family) standards
PRODUCT-FAMILY	- EMC requirements for product-families - More detailed performance criteria - Specific test set-up etc. - Refer to basic standards for measurements/tests (no repetition)	- Conformance testing of products (Published in the OJEU list). - Precedence over generic standards but to be co-ordinated with them.
DEDICATED PRODUCT	- Same as for product-family but more specific.	- Same as for product-family but more specific. - Generally not needed for emission

[Cenelec Guide 24]

Apparatus - Ports



Tests are related to different ports:

- Enclosure: E & H (LF & HF), DES
- Power supply ports (AC/DC)
- Signal/Control ports (Ethernet, RS-232, …)

Basic Standards - Immunity

Electrostatic discharge (ESD)	IEC 61000-4-2	EN 61000-4-2
Radio-frequency electromagnetic field	IEC 61000-4-3	EN 61000-4-3
Electrical fast transients/burst -	IEC 61000-4-4	EN 61000-4-4
Surges	IEC 61000-4-5	EN 61000-4-5
Conducted high frequency disturbances	IEC 61000-4-6	EN 61000-4-6
Power-frequency magnetic fields	IEC 61000-4-8	EN 61000-4-8
Pulse magnetic fields	IEC 61000-4-9	EN 61000-4-9
Damped oscillatory magnetic fields	IEC 61000-4-10	EN 61000-4-10
Voltage variations, dips and interruptions	IEC 61000-4-11	EN 61000-4-11
Oscillatory waves	IEC 61000-4-12	EN 61000-4-12
Harmonics and interharmonics including mains signally at ac power port, low frequency immunity tests	IEC 61000-4-13	EN 61000-4-13
Voltage fluctuations	IEC 61000-4-14	EN 61000-4-14
Conducted low-frequency disturbances	IEC 61000-4-16	EN 61000-4-16
Ripple on dc input power port	IEC 61000-4-17	EN 61000-4-17
Unbalance	IEC 61000-4-27	EN 61000-4-27
Variation of power frequency	IEC 61000-4-28	EN 61000-4-28
Voltage variations and dips on dc power ports	IEC 61000-4-29	EN 61000-4-29

[Cenelec Guide 24]

Generic Standards

1 - Residential, commercial and light industrial

EN 61000-6-3	Generic emission standard.
EN 61000-6-1	Generic immunity standard.

2 - Industrial

EN 61000-6-4	Generic emission standard.
EN 61000-6-2	Generic immunity standard.

[Cenelec Guide 24]

Product Standards – IEC/EN 60601-1-2

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air		Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines		Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV differential mode ±2 kV common mode		Mains power quality should be that of a typical commercial or hospital environment.

Basic Standards