



Conformity Challenges with Wireless Technologies in Vehicles

Steve Hayes / 10th February 2020

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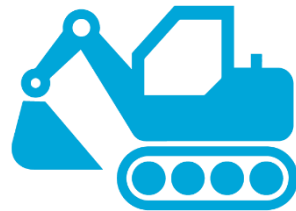
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Take away messages

Scope of Radio Equipment Directive



COM Guidance



EUROPEAN COMMISSION

Directorate-General for Internal Market, Industry, Entrepreneurship and
SMEs

Brussels, 26/04/ 2018

Supplementary Guidance on the LVD/EMCD/RED

2 Non-radio electrical products functioning with radio equipment

Electrical or electronic products whose function is not to intentionally emit or receive radio waves for the purpose of radio communication and/or radiodetermination (in this section referred to as 'non-radio product') may function with radio equipment.

The RED is applicable to the combination of the radio equipment and the non-radio product as a whole only if the radio equipment is:

- incorporated into the non-radio product; and
- permanently affixed to the non-radio product².

Hence if the radio equipment is incorporated in a fixed and permanent way in the non-radio product at the moment of its placing on the EU market (i.e. in such a way that it cannot be easily accessed and readily removed), as specified above, this product is deemed to be a single product.

In the other cases³ the radio equipment and the non-radio product are considered as separate finished products and only the radio equipment is subject to the RED⁴.

RED Guide

1.6.3.10 Radio equipment installed in vehicles

Where radio equipment is installed in vehicles such as cars, caravans, trains, etc (normally falling under a type approval legislation), the radio equipment has to comply with the RED unless the specific equipment falls within any of the exemptions of the RED. That radio equipment must comply with the requirements of both the RED and all applicable EU acts.

The person who places on the EU market the radio equipment is the responsible manufacturer, as defined in the RED and is responsible for compliance when the radio equipment is installed in accordance with the instructions. The risk assessment of the radio equipment should take into account its intended purpose.

The person who installs the radio equipment, already placed on the EU market, shall follow the instructions. He shall be considered as the manufacturer of the radio equipment when the vehicle is made available if:

- the compliance is impacted because the instructions provided for the radio equipment were not followed; or
- the intended function or performance of the radio equipment is modified.

Different legislation applies



Definitions

	Automotive Reg 10.5/6 LVD/MSD	EMCD	RED	
			Article 3.1(a)	Article 3.1(b)
EM Compatibility	✗	✓	✗	✓
EM Safety	✓	✗	✓	✗

Functions have to be separated out



Safety



Performance

Combined Equipment

ETSI EN 303 446-1 V1.2.1 (2019-10)



ElectroMagnetic Compatibility (EMC)
standard for combined and/or integrated
radio and non-radio equipment;
Part 1: Requirements for equipment intended to be used
in residential, commercial and light industry locations

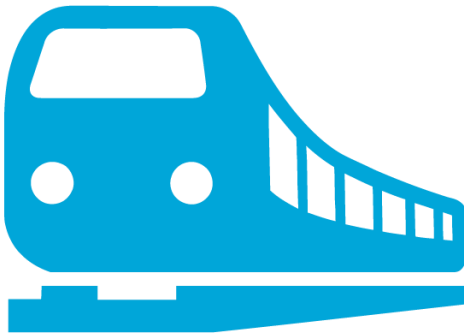
ETSI EN 303 446-2 V1.2.1 (2019-10)



ElectroMagnetic Compatibility (EMC)
standard for combined and/or integrated
radio and non-radio equipment;
Part 2: Requirements for equipment
intended to be used in industrial locations

Combined Equipment

- All referenced standards use IEC basic (IEC 61000-4-x) and CISPR standards
- Simple to combine referenced standards into hybrid set of requirements



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Combined Equipment

- Different base standards used
- Address different issues (EMC v EMS)
- Difficult to combine referenced standards into hybrid set of requirements



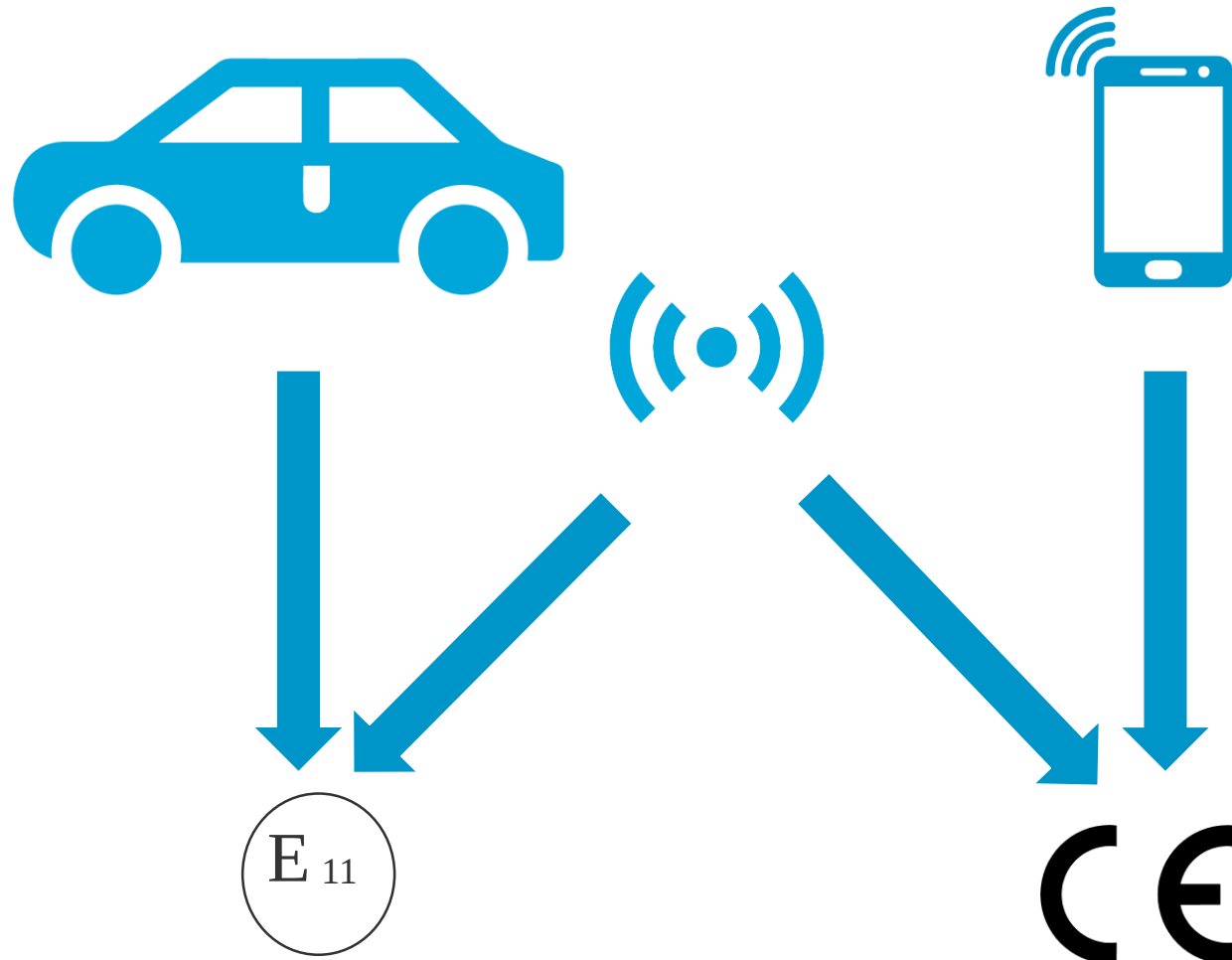
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Example - automotive



Example – automotive

Additional assessment needed

UNECE Reg 10.5/6



RED Article 3.2 or 3.1b limits



Additional risk
analysis tests

0.15

30

300

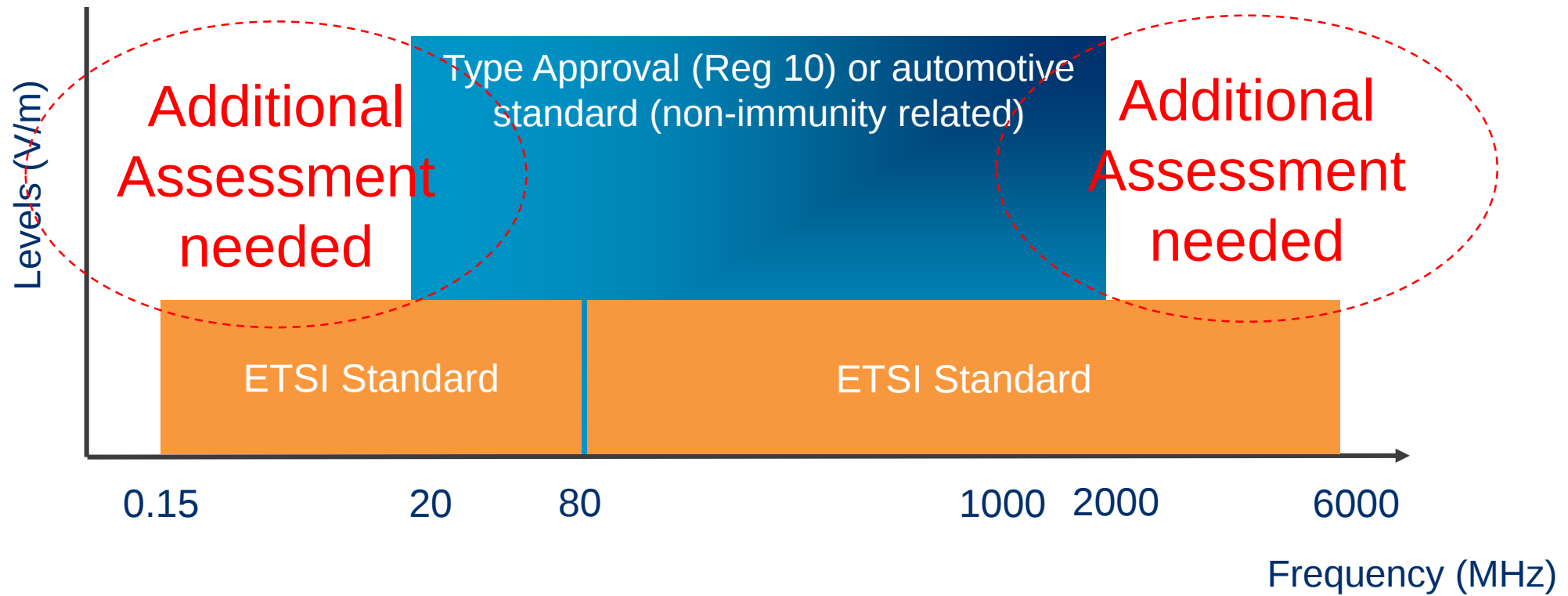
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6000

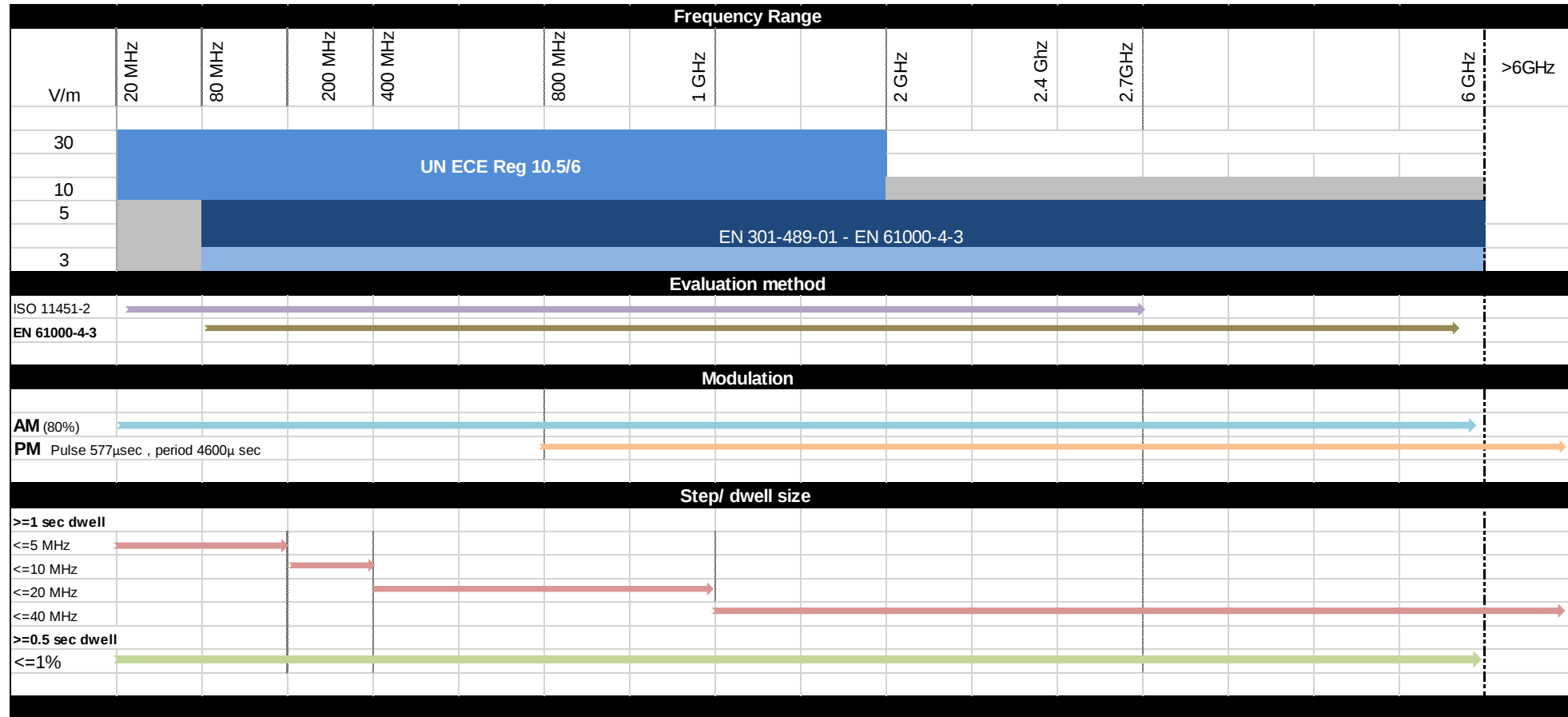
38,000

Frequency (MHz)

Automotive EMC - immunity



Illustrative Example of Issue



Principles

Methods selected should be based on primary EM environment/standards

Limits should be justified based on the function of the EUT – EMC v EMS

Frequency ranges should be the widest range based on the applicable standards

New EM threats not currently covered by standards should be considered

Take away messages

1

Understand the end EM environment and legislative requirements

2

Risk analysis will determine if EMC or EMS is more appropriate (or both)

3

Combine test requirements based on the primary EM environment

4

Prepare detailed test plans to combine and justify test requirements

5

Review requirements regularly to take into account new technologies and State of the Art

Thank you!

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