



Another EMC resource
from EMC Standards



17 - Overview of test methods for EMC Directive Compliance

Helping you solve your EMC problems

By Keith Armstrong

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Module 17: Overview of EMC testing for IEC residential, commercial and industrial standards

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Change Record: from v2 to v3, October 2018

- Added to the foot of every slide: 'Cherry Clough Consultants confidential training material'
- Change Record slide (this one) added, numbered: 17.cr
- Slide 17.0.2 slightly modified: '+ A14' deleted
- Slide 17.0.4 substantially modified
- Slides 17.1a.3 and 4 slightly modified to communicate better
- Slide 17.1c.5 substantially modified, and renumbered as 17.1c.10
- Slides 17.1c.2-4 renumbered as 17.1c.3-5 respectively
- New slides 17.1c.2, 7, 8 and 9 added
- Slide 17.1d.4 substantially modified
- Slide 17.2a.3 substantially modified
- Slide 17.2a.4 slightly modified: n replaced by h
- Slides 17.2b.4, 5 and 6 slightly modified to communicate better
- Slide 17.2c.2 substantially modified
- Slide 17.3b.5 and 6 substantially modified
- Slide 17.3d.7 substantially modified
- Slide 17.3f.2 substantially modified
- Slide 17.3h.5 substantially modified
- Section 4 (References) updated, and web links added
- Final slide 17.0.5 moved to the very end

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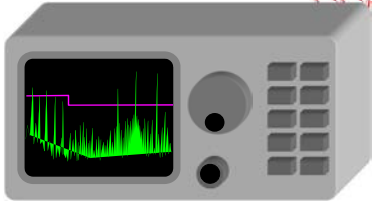
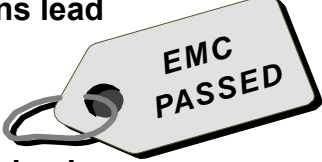
17.1 RF emissions tests

- a) Conducted emissions on the mains lead
- b) Discontinuous emissions
- c) Radiated emissions
- d) Conducted emissions on telecom leads

17.2 Testing emissions of harmonics, voltage fluctuations, and switch-on inrush current

- a) Harmonic emissions (EN 61000-3-2)
- b) Voltage fluctuations/flicker (EN 61000-3-3)
- c) Inrush currents at switch-on (EN 61000-3-3)

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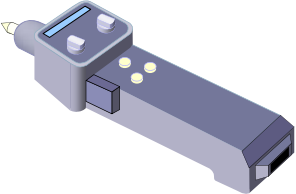
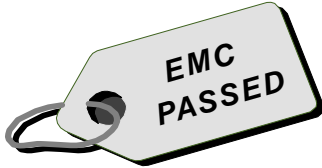
Contents continued...

17.3 Immunity tests

- a) Performance criteria: A, B and C
- b) Radiated RF fields
- c) Power-frequency magnetic fields
- d) Conducted RF
- e) Personnel electro-static discharge (ESD)
- f) Fast transient bursts (FTB)
- g) Surges
- h) Supply dips and short interruptions

17.4 Some useful references

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This is a Product Designer's overview of typical commercial/industrial EMC tests...

– applied by typical EN standards under the EMC Directive (we have other course modules for EMC Testers)

- **Some special EN and other types of EMC standards (e.g. military, automotive) might use very different methods, and/or test other types of emissions or immunity**
- **Note: EMC tests high-reliability or Functional Safety may need to be different and/or tougher, see the IET's 2017 Code of Practice on EM Resilience: www.theiet.org/resources/standards/emr-cop.cfm**
- **Note: it is easy to make very *inaccurate* EMC measurements**
- **Always refer to the version of the standard that the product will be tested to, for the testing details**

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17. Overview of basic test methods for EMC Directive compliance

17.1

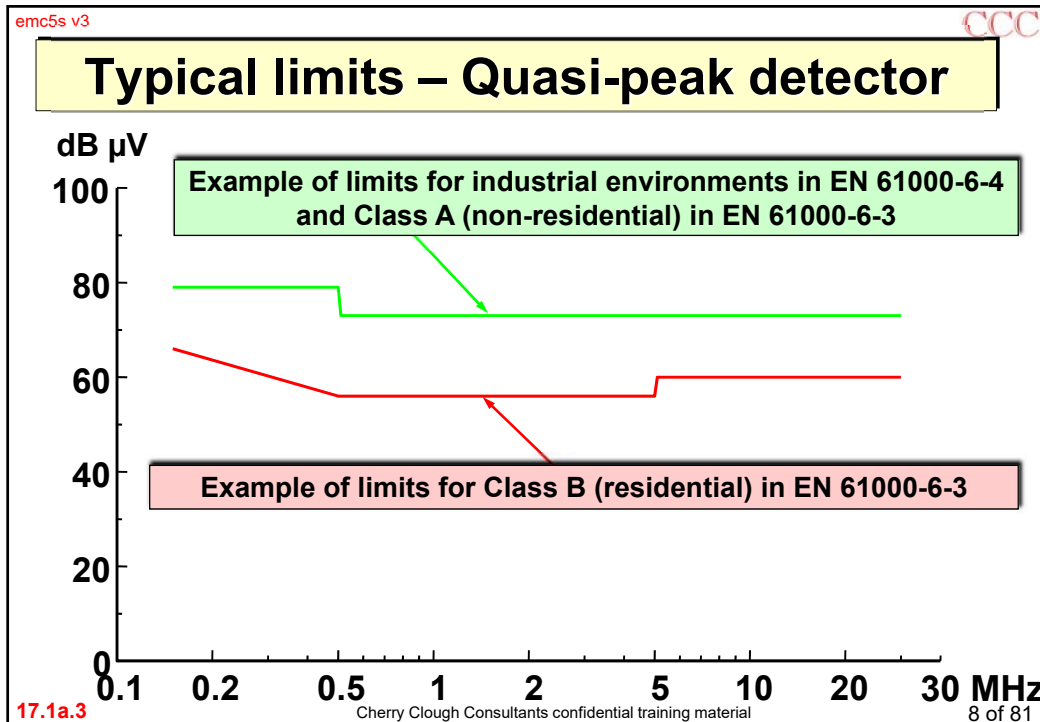
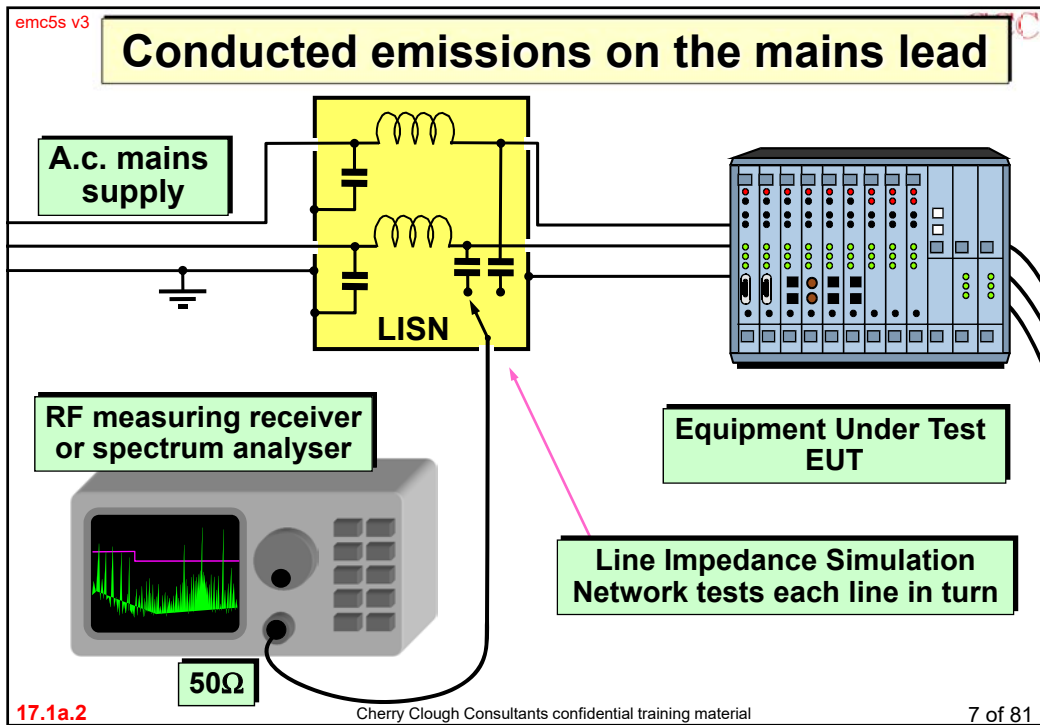
RF emissions tests

a)

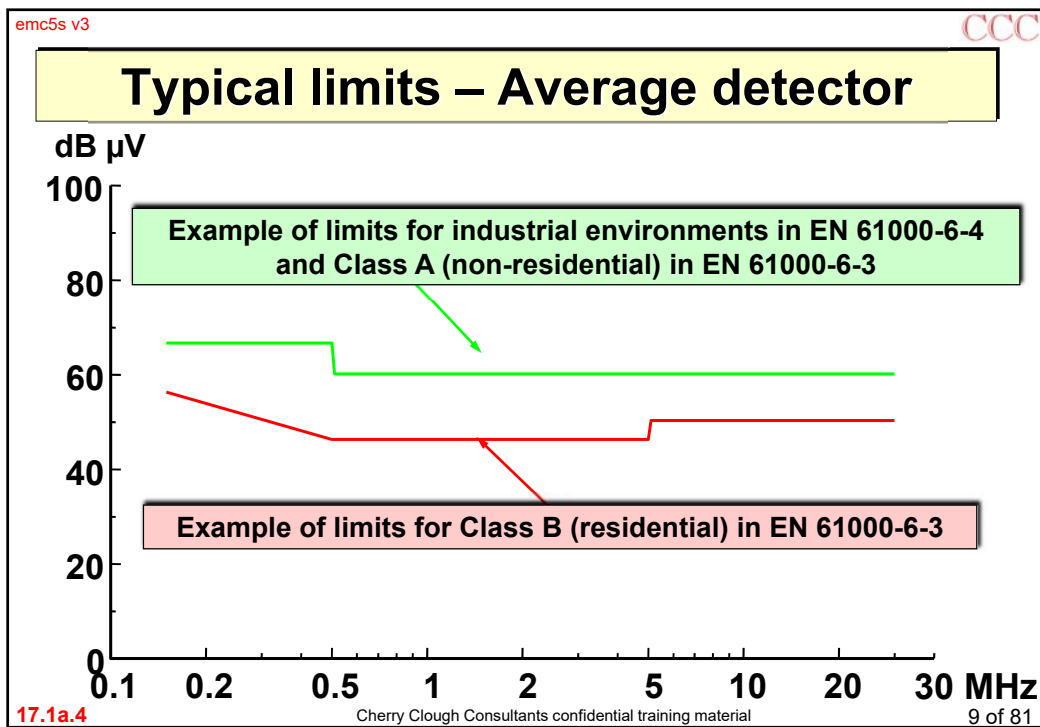
Conducted emissions on the mains lead

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17. Overview of basic test methods for EMC Directive compliance

17.1 RF emissions tests

b) Discontinuous emissions

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