emc STANDARDS

CE + CE does not = CE - what to do instead for EMC

Helping you solve your EMC problems

emc9a v2.1

CCC

CE + CE
does not = CE !
– what to do instead for EMC

CHERRY
CLOUGH
CONSULTANTS LTD

Eur Ing Keith Armstrong CEng, FIET, Senior MIEEE, ACGI
phone & fax: +44 (0)1785 660 247
keith.armstrong@cherryclough.com   www.cherryclough.com

1 of 61

---

emc9a v2.1

CCC

Contents

1. **Why "CE+CE=CE" cannot achieve due diligence for EMC compliance**
    (an engineering approach is required instead)

2. **Determining purchasing specifications for EMC performance**

3. **Judging suppliers' evidence of EMC performance**

4. **Second sources, counterfeits, and Purchasing**

2 of 61

CHERRY
CLOUGH
CONSULTANTS LTD

Member

EMCTLA
EMC Test Labs Association

Member

emcia

emc9a v2.1   CCC

Important note:
CE + CE _does not_ equal CE
for Safety compliance too

■ **The basic principles expressed in this course module, also apply to safety compliance…**

– **for example, I have a version of this course module which replaces 'EMC' with 'safety'…**

◆ **and replaces EMC standard numbers with safety standard numbers…**

◆ **plus has a few other detailed changes, which do not affect the basic principles**

3 of 61

---

emc9a v2.1   CCC

Selecting Commercial Off-the-Shelf (COTS) items for their EMC when integrating them into a new product

■ **This course module is equally applicable to:**

– **systems and installations of any size or scale…**

◆ **commercial, IT, industrial, residential, transportation, etc.**

– **finished products…**

◆ **machines, equipment, computers, vehicles, etc.**

– **sub-assemblies and "components"**

◆ **such as PLCs, power supplies, motor drives, pneumatic solenoids, valve islands, modules, assembled PCBs, etc.**

4 of 61

CHERRY
CLOUGH
CONSULTANTS LTD

Member
EMCTLA
EMC Test Labs Association

Member
emcia

emc9a v2.1

CCC

Why "CE+CE=CE" cannot achieve due diligence for EMC compliance
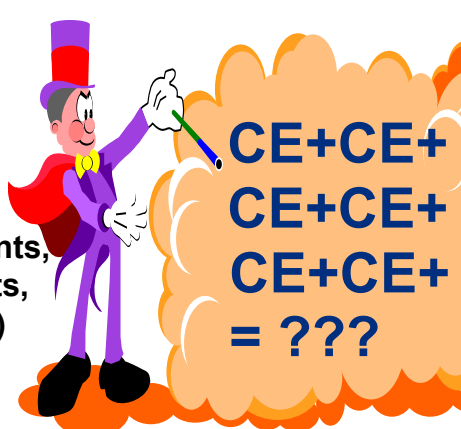
(an engineering approach is required instead)

5 of 61

---

emc9a v2.1

CCC

CE + CE = CE is a nice idea

- **It would be nice if we could simply use CE-marked "parts" to build our final "product"**
  (whether the "parts" are components, modules, sub-assemblies, products, or even systems in their own right)

- **But we need to have confidence that this would ensure actual EMC compliance for our "product"**
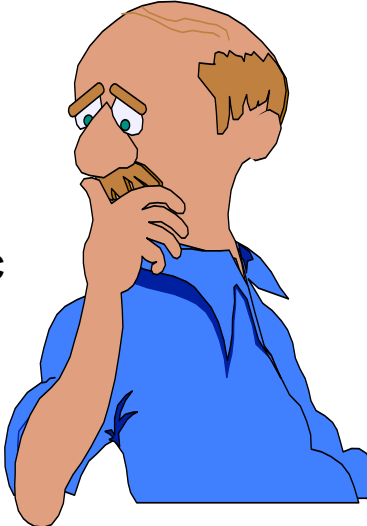
  – **i.e. compliance with EMC Protection Requirements**

CE+CE+
CE+CE+
CE+CE+
= ???

6 of 61

Member

CHERRY
CLOUGH
CONSULTANTS LTD

EMCTLA
EMC Test Labs Association

Member
emcia

emc9a v2.1

CCC

CE+CE is unreliable because:

- **Some suppliers lie, or don't try very hard, or get it wrong**

- **Test set-ups can differ from actual assembly or installation**
  - **making nonsense of the part's EMC test data**

- **Some test labs get it wrong**
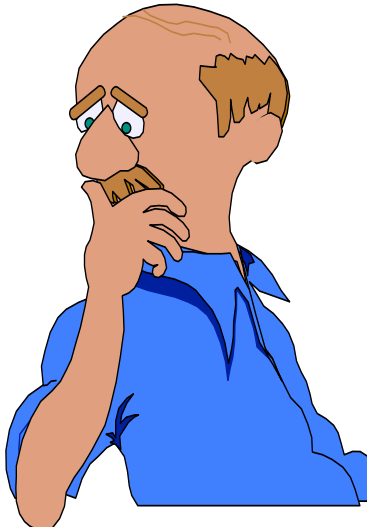
- **Emissions can add up**

7 of 61

emc9a v2.1

CCC

CE+CE is unreliable   continued...

- **Apparatus declared compliant by technical arguments instead of testing may never have been competently assessed…**
  - **or assessor's recommendations or warnings ignored**

- **When test purchases are made by enforcement authorities…**
  - **they generally find between 25% and 50% do not comply with all relevant Directives…**

8 of 61

CHERRY CLOUGH CONSULTANTS LTD

Member

EMCTLA
EMC Test Labs Association

Member

emcia