



Nigerian National
Electrotechnical
Committee

ELECTROMAGNETIC ENVIRONMENT AND CLASSIFICATION
“IEC 61000-2-5”
AN AFRICAN PERSPECTIVE

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**THE AFRICAN ELECTROTECHNICAL STANDARDISATION COMMISSION
2ND GENERAL ASSEMBLY AND WORKSHOP, AUGUST 2010 SOUTH AFRICA**

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IEC TC 77

- IEC TC 77 (and its 3 subcommittees) is responsible for
 - The development and maintenance of basic and generic EMC standards specifying electromagnetic environments, emissions, immunity, test procedure, measurement techniques etc
 - The most important part of this work is the description and classification of the electromagnetic environment, this falls within the remit of WG 13
- IEC TC 77 WG 13 is responsible for the development and maintenance of generic EMC Standards
 - These include IEC 61000-6-1, IEC 61000-6-2, IEC 61000-6-5 and **IEC 61000-2-5**

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WHAT IS EMC?

- EMC is defined as the “*ability of a device, equipment or system to function satisfactorily in its **electromagnetic environment** without introducing intolerable **electromagnetic disturbances** to anything in that environment*”
- Electromagnetic disturbance itself is defined as “*any electromagnetic phenomena which may degrade the performance of a device, equipment or system, or adversely affect living or inert matter*”
- Electromagnetic environment is defined as the “*totality of the electromagnetic phenomena existing at a given location*”
- So the starting point for the development of EMC standards is the description of electromagnetic environment(s) and electromagnetic phenomenon

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ELECTROMAGNETIC ENVIRONMENT CLASSIFICATION

- It is very difficult to provide a detailed description of all electromagnetic environments
- However the initial attempt is based on a generic classification of three distinctive environments
 - Residential
 - Commercial
 - Industrial
- Such distinctive classification does not exist in most of Africa

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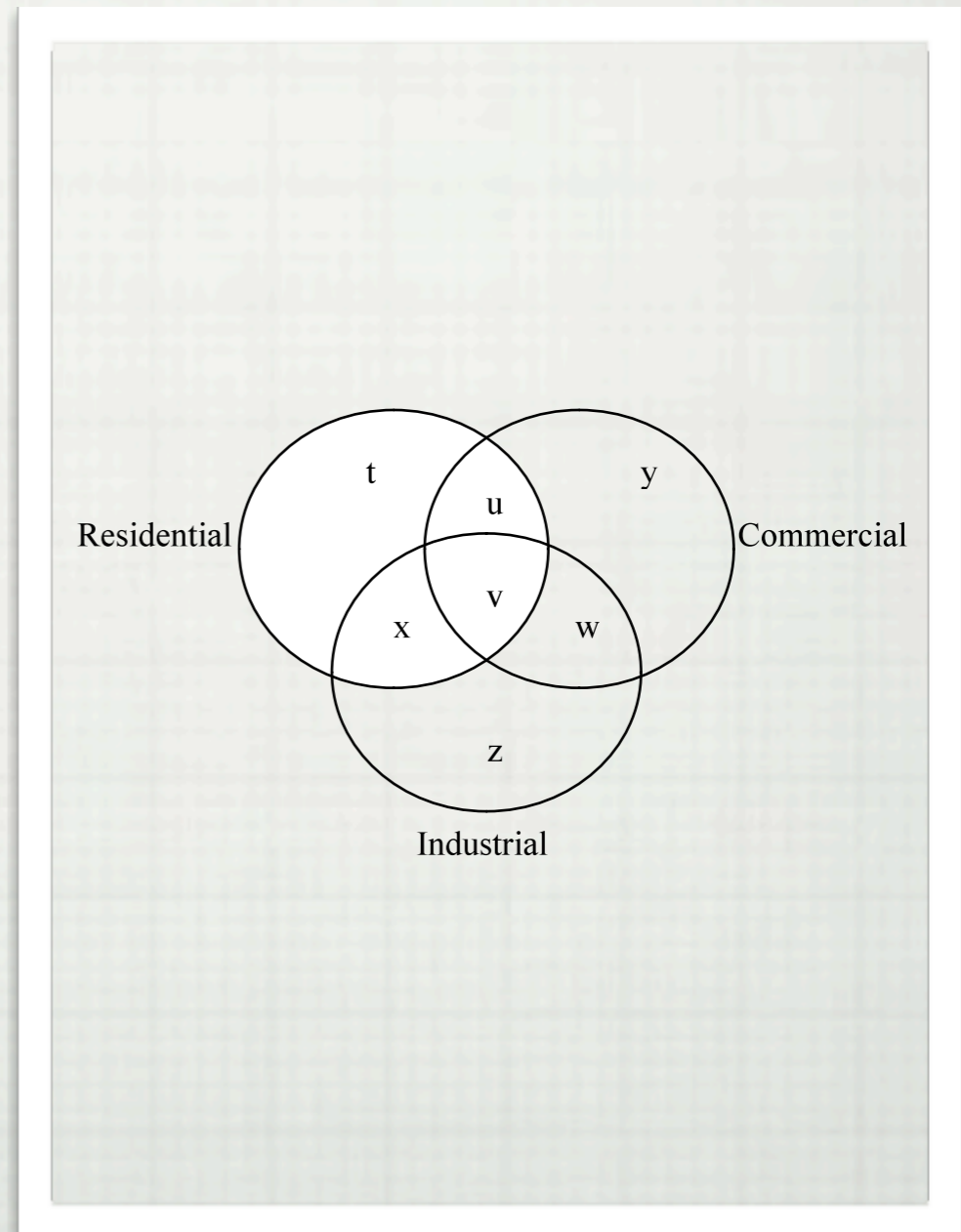
ELECTROMAGNETIC ENVIRONMENT CLASSIFICATION

- In the developed world, where town planning is effective, these classifications runs true
- In Africa however these three generic environments overlap and thus products developed for residential environment is likely to be exposed to electromagnetic disturbances from the other two
- in other words, products are more likely to be exposed to electromagnetic disturbance that far exceed what it is designed for resulting increased mal-operation or shorter life time

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ELECTROMAGNETIC ENVIRONMENT CLASSIFICATION

- The environments t, y and z are those that covered in generic EMC standards
- Environments u, v, x and w are those not defined in EMC standards but exist in Africa and similar enviros
- A recognition of these electromagnetic environment overlap is now contained in IEC 61000-2-5 Ed 2



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IMPLICATION FOR AFRICA - EMC STANDARDISATION

- What does this mean?
- Developing EMC requirements for Africa may require a recognition that
 - Products may require higher immunity than those specified in generic EMC standards for the specified environment
 - Power quality issues impacting residential locations greater in africa - non-linear loads, islanding etc
 - High concentration of multiple sources at the same location

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CONCLUSIONS

- The Nigeria National Committee remains actively involved in IEC TC 77 - covering EMC and Functional Safety
- We view this as having strategic importance as we embrace technology and seek technological growth
- Our involvement has led to a re-think in the way electromagnetic environments and location classes are classified - it is a start!
- The questions to be answered:
 - Is there commonality between electromagnetic environment and location classes within Africa?
 - If so, then it should be possible to harmonise a baseline description of our environment (in electromagnetic terms) into a common standard.

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