FACT SHEET NO. 9

Electromagnetic Compatibility

The Minister responsible for Telecommunications, by means of the Telecommunications Unit is accountable for this policy, which ensures that different telecommunication equipment can operate in the same surroundings without causing interference. In view of the large number of electronic systems in every aspect of our daily lives, there inevitably comes the problem of compatibility.

This **Fact Sheet** aims to explain **EMC** in a straightforward question and answer manner.

Question: What is Electromagnetic Compatibility?

Answer: **Electromagnetic Compatibility,** which is often shortened to **EMC,** refers to the capability of any electronic piece of equipment, or any installation containing electrical or electronic parts, to operate adequately without causing interference to other devices in the same surroundings. For instance: listening to the news on the radio whilst shaving using an electric razor should not pose a problem.

Question: Why do we need EMC?

Answer: If **EMC** design practices are maintained by both the radio and the razor manufacturers, then using an electric razor, while listening to the radio should not pose any problems. Furthermore, most global governmental policies disallow electronic devices from producing or being vulnerable to, **Electro-Magnetic Interference**.

Question: How do suppliers meet the terms of EMC regulations?

Answer: **EMC** can be handled in two ways: before the product is shipped (designing for EMC) or after the product has been sold to the public. To comply with regulations, it is essential for the product to be compliant before it reaches the market place. Nevertheless, sometimes even the "best" designs are not sufficient, and require some modification to ensure a completely finished and compliant product. This is the "ART" aspect of **EMC**.

Question: What are the main components of EMC?

Answer: There are three main components of EMC;

- these are [unwarranted] **Emissions**,
- [inappropriate] **Susceptibility**
- and the [unintended] **Path** between them.

The arcing of the electric razor's motor brushes arcing is a case of unwarranted **Emissions** and the radio's picking up the noise through the **Path(s)** (power line, and/or through the air), is the unnecessary **Susceptibility**

Question: What are the offenders we are trying to keep under control?

Answer: **EMI - Electro-Magnetic Interference**
RFI - Radio Frequency Interference
TVI - Television Interference

EMI is an electrical disturbance in a system due to natural phenomena, low-frequency waves from electromechanical devices or high-frequency waves (RFI) from chips and other electronic devices. Radiated **EMI** is most often measured in the frequency range from 30 Megahertz (MHz) to 10 GigaHertz (GHz). Emission sources include clocks, clock lines, data lines and switching power supplies. Conducted **EMI** is most often measured in the frequency range of several kilohertz (kHz) to 30 MHz. Emission sources include power supplies (switching), power rails, motors, relays**.**

RFI can be defined as high-frequency electromagnetic waves that emanate from electronic devices such as chips and other electronic devices.

TVI is high-frequency electromagnetic waves that emanate from electronic devices causing Interference to Television Reception.

Question: What are the EMC requirements?

Answer: To ensure **EMC** compliance, four basic requirements must be satisfied:-

(1) Establishing sound technical grounds for product Compliance;
(2) Making and holding a declaration of conformity;
(3) Preparing and keeping compliance records;
(4) Labeling the products as directed.

Question: Are there any EMC exemptions?

Answer: The **EMC** requirements do not apply to the following:-

(a) Telecommunication equipment which is intended for export.

(b) Telecommunication equipment for use in a sealed electromagnetic environment so long as it is accompanied by instructions to that effect.

(c) Radio-communication equipment which is covered by a different set of standards and compliance arrangements administered by the Ministry.

(d) Equipment with a power consumption that does not go beyond six nanowatts or 6nW (1 nanawatt = one billionth of a watt).

(e) A spare part intended for use in replacing parts of a product.

(f) Military equipment of weapons systems of the Barbados Defence Force (BDF), Regional Security System (RSS) or the Royal Barbados Police Force (RBPF).

(g) A prototype for demonstration or exhibition purposes, tests, or educational equipment

Question: Where can I find information on EMC Standards?

Answer: A list of standards applicable to the USA can be found on the Federal Communications Commission (FCC) website at www.fcc.gov. A further list dealing with Commercial/Industrial can be found on the Institute of Electrical and electronics (IEEE) website at www.standards.ieee.org

Question: What are the penalties for violation of EMC regulations under Section 23 Part XIV of the Telecommunications Act 2001-36?

Answer: The penalties may include:-

(a) Prohibiting the supply of products until an interference problem is solved

(b) Seizure and forfeiture of the stocks

(c) Fines

Question: What is the effective date of implementation?

Answer: The mandatory emission requirement as specified by the **Barbados Policy on Electromagnetic Compatibility** will become effective 1st April, 2005. A one-year grace period is given from 1st April, 2004.

Further information is contained in the **Barbados Policy on Electromagnetic Compatibility.**

Issued by
Minister responsible for Telecommunications