



## **Barbados Policy on Electromagnetic Compatibility**

**Policy in accordance with Sections 4(2)(b) and 4(2)(f) of the Telecommunications Act 2001-36.**

### **1. INTRODUCTION**

#### 1.1 Objective

The EMC framework aims to limit electromagnetic disturbance and set levels of intrinsic immunity, so as to ensure that different telecommunication equipment can operate in the same environment without interference.

#### 1.2 Definition of EMC

“Electromagnetic Compatibility” or more commonly known as EMC, means the ability of an electronic appliance, equipment and installation containing electrical and/or electronic components to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment.

1.3 EMC encompasses controls of both intentional and unintentional emissions from a range of products that can interfere with telecommunications as well as protection of a range of devices that may be susceptible such emissions.

### **2. SCOPE OF APPLICATION**

2.1 This requirement shall apply to all telecommunication /radio/electronics equipment which may produce electromagnetic disturbance, or to functioning of which such disturbances may affect.

#### 2.2 General Exclusions

2.2.1 The EMC requirements do not apply to:-

- a) Telecommunication equipment which are intended for export;
- b) Telecommunication equipment for use in a **sealed electromagnetic environment** so long as it is accompanied by

instructions stating that the equipment is suitable for use only in a sealed electromagnetic environment.

- c) Radio-communication equipment which are covered by a different set of standards and compliance arrangements administered by the Ministry.
- d) A product with a power consumption that does not exceed six nanowatts.
- e) A spare part intended for use in replacing parts of a product.
- f) Military equipment or weapons systems of Barbados Defence Force, Regional Security System and the Royal Barbados Police Force.
- g) A prototype for demonstration purposes including tests or educational equipment and products to be used for exhibition.

### **3. EMC REQUIREMENTS**

3.1 To ensure compliance with the EMC regulatory arrangements, suppliers must satisfy four basic requirements. They must:-

- (i) Establish sound technical grounds for product compliance
- (ii) Make and hold a declaration of conformity
- (iii) Prepare and keep compliance records and
- (iv) Label the products as directed.

3.2 The equipment should be so constructed that:-

#### **3.2.1 Emission Requirements**

The electromagnetic disturbance it generates does not exceed a level allowing telecommunication equipment to operate as intended; and

#### **3.2.2 Immunity Requirements**

The equipment has an adequate level of intrinsic immunity of electromagnetic disturbance to enable it to operate as intended.

Note: "To operate as intended" means using the equipment in accordance with the manufacturer's instructions and using it in the electromagnetic environment determined by standards chosen by the manufacturer.

- 3.3 Compliance with EMC requirements can be demonstrated by meeting the applicable EMC standards for both emission and immunity limits given in **Annex 1** and **Annex 2**.

#### **4. EMC CONFORMITY REQUIREMENTS**

- 4.1 EMC emission requirements have to be **mandatory** while the immunity requirements are voluntary at present. However, the immunity requirements may be subjected to regulation at a later date when deemed necessary.
- 4.2 Suppliers must ensure that the telecommunications/radio/electronics equipment intended for use in Barbados has been successfully tested for conformity with the mandatory EMC requirements as stipulated in this document.
- 4.3 The equipment may be placed on the market for sale or to be taken into service only if it complies fully with:
- a) the Ministry's Type Approval Specification relevant to the equipment, and
  - b) the mandatory EMC requirements as specified in this document.

#### **5. DOCUMENT REQUIREMENTS**

- 5.1 Supplier/vendor will maintain compliance records, which are a collection of documents assembled by the supplier to support the declaration that the product placed on the market complies with relevant standards. These records are often referred to as 'Compliance Folder.'

The documents included will depend on the compliance level. They may include some or all of the following:-

- Test Reports
- Description of the marketed product that positively identifies it (for example, brand name or model no.) possibly including a photograph and/or circuit diagram/block diagram, service/operation/installation manuals/user guide and performance specifications.
- A signed declaration of conformity

Note: Compliance records can be stored/maintained electronically, provided a hard copy in English is produced at the time of inspection.

5.2 Specifically, compliance with the EMC requirements must be supported by the following:

- a) Declaration of Conformity; and
- b) EMC Test Report from recognised testing laboratories.

5.3 All documents submitted for Type Approval application (under the Type Approval Scheme) or filed by the Supplier (under the General Approval Scheme) must be in the **English language**.

#### 5.4 Declaration of Conformity

5.4.1 The Declaration of Conformity is a formal attestation by the applicant or Supplier that the product to be placed on the market meets the specified EMC requirements.

5.4.2 The Declaration of Conformity shall:

- (a) give the name and address of the Supplier or manufacturer and testing laboratory;
- (b) give the trade and model name of the equipment to which it relates to identify it;
- (c) state the reference numbers and titles of the applicable EMC standards applied in entirety or in part;
- (d) be signed by an authorised officer of the manufacturer or Supplier.

#### 5.5 Instruction for Use

5.5.1 Manufacturers should provide instructions containing information required in order to use the telecommunication/radio/electronics equipment in accordance with the intended purpose. These instructions may cover methods of:

- a) Installation
- b) Operation (including a user guide) and
- c) Maintenance

#### 5.6 EMC Test Report

5.6.1 EMC test reports and results from Suppliers shall be accepted by the Ministry if they are produced by test laboratories which are:

- a) accredited to ISO or  
\*
- b) conform to IEC/EN/American or CISPR standards, or  
\* \* \*
- c) recognised by the Ministry, as per special approval

### 5.6.2 Performance Criteria

A functional description and a definition of performance criteria, during or as a consequence of the EMC testing, should be provided in the test report, based on the following criteria;

#### Performance criterion A

No noticeable loss of function or performance is allowed below a performance level specified by the manufacturer

#### Performance criterion B

No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer. During the test, degradation of performance is allowed. No change of actual operating state or stored data is allowed.

#### Performance criterion C

Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

### 5.6.3 The EMC test report issued by the test laboratory shall:

- (a) indicate details of the accreditation status of the test laboratory and the location of the test house;
- (b) describe the equipment to which it relates;
- (c) state the reference numbers and titles of the applicable EMC standards, applied in entirety or in part;
- (d) give a description of the test specifications, methods and procedures, with which it has been ensured that the equipment complies with the EMC requirements referred to in Section 3; and

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\* See Definitions at Annex 1

- (e) comment on the test results/data collated.

## 5.7 Product Marking

- 5.7.1 Label/marking indicates that the product complies with the applicable standards and establishes a traceable link between a product and the supplier responsible for placing the same in the market.
- 5.7.2 Suppliers and dealers must before selling the equipment, ensure that the equipment meets the Ministry's type approval and EMC standards and specifications. Suppliers and dealers must also ensure that equipment offered for sale or use is clearly marked or affixed with the following:
  - a) the trade name, model name and serial number;
  - b) manufacturer's/supplier's name;
  - c) type approval label for equipment approved by the Ministry or compliance marking for equipment offered for sale under the General Approval Scheme.

## **6. EFFECTIVE DATE OF IMPLEMENTATION**

- 6.1 The mandatory emission requirement as specified in this document will be effective from 1<sup>st</sup> April 2005. That is, a one year grace period is given from 1<sup>st</sup> April 2004 to 31<sup>st</sup> March 2005.

## **7. PENALTIES FOR VIOLATION UNDER SECTION 23 PART XIV OF THE TELECOMMUNICATIONS ACT 2001-36**

- 7.1 Penalties may include:-
  - Prohibiting the supply of products until an interference problem is solved/corrected
  - Seizure and forfeiture of the stocks
  - Fines

## **8. EMC STANDARDS**

- 8.1 A list of the standards which apply to the U.S.A. can be found on the Federal Communications Commission (FCC) Website at [www.fcc.gov](http://www.fcc.gov).
- 8.2 A list of the standards dealing with Commercial/Industrial can be found on the Institute of Electrical and Electronics (IEEE) Inc. website at: ([www.standards.ieee.org](http://www.standards.ieee.org)).

<b>LIST OF ACCEPTABLE EMC STANDARDS</b>
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**EMISSION STANDARDS:**

CISPR 22 (1997)	Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment; ITE
EN 55022 (1998)	Limits and Methods of Measurement of Radio Disturbance Amended Characteristics of Information Technology Equipment; ITE
IEC CISPR 22: 1993	Limits and Methods of Measurements of Radio Disturbance Characteristics of Information Technology Equipment
EN55011/CISPR-11	ISM Equipment
EN55013/CISPR13	TV Receivers and Audio Equipment
EN55022/CISPR22	Information Technology
EN55103-1	Audio, video, audio-video and entertainment equipment
EN60870-2-1/ IEC60870-2-1	Tele-control equipment and systems
EN60945/IEC60945	Maritime navigation equipment
EN300386	Telecommunications network equipment

**IMMUNITY STANDARDS:**

IEC 61000-4-1 (1994)	Overview of EMC Immunity Tests
IEC 61000-4-2 (1995)	Electro-static Discharge Immunity; ESD
IEC 61000-4-3 (1995)	Immunity to Radio Frequency EM-Fields; RF Radiated Field
IEC 61000-4-4 (1995)	Electrical Fast Transient/Burst Immunity
IEC 61000-4-5 (1995)	Surge (Mains) Immunity
IEC 61000-4-6 (1996)	Immunity to Conducted Disturbances Induced by Radio Frequency Fields; RF Conducted

Note: Emission and Immunity Standards should conform to either International Standards/ American Standards or equivalent European Standards.

## Abbreviations:-

EN	-	European Norms
IEC	-	International Electrotechnical Commission
CISPR-		International Special Committee on Radio Interference
ISO	-	International Standards Organisation

### The Performance Requirements of the Generic Immunity Standards

		IEC 61000-6-1 (1997) Light Industrial	IEC 61000-6-2 (1999) Industrial	
Phenomena	Port	Basic standard and test specification	Basic standard and test specification	Performance Criteria **
<b>Electrostatic Discharge</b>	Enclosure	IEC 61000-4-2 $\pm$ 8kV Air discharge $\pm$ 4kV contact discharge	IEC 61000-4-2 $\pm$ 8kV Air discharge $\pm$ 4 kV contact discharge	B
<b>RF Field</b>  (caused by RF intentional and unintentional transmitters)	Enclosure	IEC 61000-4-3* 80-1000 MHz AM 3 V/m	IEC 61000-4-3* 80-1000 MHz AM 10 V/m	A
<b>Fast Transients</b>  (caused by switching of inductive loads and relay contacts bouncing)	Signal/Control DC in/out AC in/out Functional earth	IEC 61000-4-4 5/50 ns, 5kHz $\pm$ 0.5 kV $\pm$ 0.5 kV $\pm$ 1 kV $\pm$ 0.5 kV	IEC 61000-4-4 5/50 ns, 5 kHz $\pm$ 1 kV $\pm$ 2 kV $\pm$ 2 kV $\pm$ 1 kV	B
<b>RF Common mode</b>  (caused by RF intentional and unintentional transmitters)	Signal/Control DC in/out AC in/out Functional earth	IEC 61000-4-6* 3V 0.15 MHz- 80 MHz AM 3V 3V 3V	IEC 61000-4-6* 10V 0.15 MHz-80 MHz AM 10V 10V 10V	A
<b>Surges</b>  (caused by lightning discharge and system faults)	DC in/out AC in	IEC 61000-4-5 1.2/50 (8/20) $\mu$ s $\pm$ 0.5 kV Cm/ $\pm$ 0.5 kV DM $\pm$ 1 kV Cm/ $\pm$ 2 kV DM	<u>IEC 61000-4-5</u> 1.2/50 (8/20) $\mu$ s $\pm$ 0.5 kV Cm/ $\pm$ 0.5 kV DM $\pm$ 1 kV Cm/ $\pm$ 2 kV DM	B

\* Except for frequency band(s) in which the EUT is specifically assigned to operate or receive RF signals.

\*\* Paragraph 5.6.2 refers.