TECHNICAL CODE

COMMUNICATIONS EQUIPMENT - BASELINE REQUIREMENTS

Developed by

Malaysian Technical Standards Forum Bhd

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Development of technical codes

The Communications and Multimedia Act 1998 (Laws of Malaysia Act 588) ('the Act') provides for a Technical Standards Forum designated under Section 184 of the Act or the Malaysian Communications and Multimedia Commission ('the Commission') to prepare a technical code. The technical code prepared pursuant to Section 185 of the Act shall consist of, at least, the requirements for network interoperability and the promotion of safety of network facilities.

Section 96 of the Act also provides for the Commission to determine a technical code in accordance with Section 55 of the Act if the technical code is not developed under an applicable provision of the Act and it is unlikely to be developed by the Technical Standards Forum within a reasonable time.

In exercise of the power conferred by Section 184 of the Act, the Commission has designated the Malaysian Technical Standards Forum Bhd ('MTSFB') as a Technical Standards Forum which is obligated, among others, to prepare the technical code under Section 185 of the Act.

A technical code prepared in accordance with Section 185 shall not be effective until it is registered by the Commission pursuant to Section 95 of the Act.

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Contents

Page

Committee representation ii
Foreword iii

0. Introduction 1
1. Scope 1
2. Normative references 1
3. Abbreviations 1
4. Terms and definitions 2
5. Requirements 2
   5.1 General Requirements 3
      5.1.1 Marking 3
      5.1.2 Interoperability 3
   5.2 Technical Requirements 3
      5.2.1 Radio Frequency (RF) 3
      5.2.2 Internet Protocol Version 6 (IPv6) compliance 3
      5.2.3 Electromagnetic Compatibility (EMC) 4
      5.2.4 Electrical requirement 4
      5.2.5 Specific Absorption Rate (SAR) 4

Annex A Normative references 6
Annex B Communications equipment with reference document for Electromagnetic Compatibility (EMC) 8
Annex C Communications equipment with reference document for electrical safety requirements 9

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This technical code was developed by Communications Terminal Working Group of the Malaysian Technical Standards Forum Bhd (MTSFB), which consists of representatives from the following organisations:

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Maxis Broadband Sdn Bhd

SIRIM Berhad

Smart Tech Asia Pacific Sdn Bhd

Terengganu Telecommunications Sdn Bhd

TM Technology Services Sdn Bhd

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Foreword

This technical code for Communications Equipment - Baseline Requirements ('Technical Code') was developed pursuant to Section 185 of the Communications and Multimedia Act 1998 (Laws of Malaysia Act 588) by the Communications Terminal Working Group of the Malaysian Technical Standards Forum Bhd (MTSFB).

This Technical Code was developed for the purpose of certifying communications equipment under the Communications and Multimedia (Technical Standards) Regulations 2000.

This Technical Code shall continue to be valid and effective from the date of its registration until it is replaced or revoked.

COMMUNICATIONS EQUIPMENT - BASELINE REQUIREMENTS

0. Introduction

With the communications market experiencing robust growth and rapid technological advancements in communications equipment, there is a clear need to establish a standard guideline for baseline requirements. This Technical Code will not only streamline the compliance process but also enhance the quality, interoperability and electrical safety of communications equipment. This Technical Code is applicable to all communications equipment for commercial use in Malaysia.

It is intended to complement the applicable Technical Codes in ensuring that the equipment complies with both this Technical Code and the relevant Technical Code. For communications equipment that is not covered in any Technical Code, this Technical Code shall be served as a baseline requirement.

1. Scope

This Technical Code defines the minimum technical requirements for all communications equipment including (but not limited to) user equipment, network facilities and radiocommunications equipment to be used in communications services which includes specifications related to Radio Frequency (RF), Electromagnetic Compatibility (EMC), electrical safety, and Specific Absorption Rate (SAR).

2. Normative references

The following normative references are indispensable for the application of this Technical Code. For dated references, only the edition cited applies. For undated references, the latest edition of the normative references (including any amendments) applies.

See Annex A.

3. Abbreviations

For the purposes of this Technical Code, the following abbreviations apply.

AC	Alternating Current
EMC	Electromagnetic Compatibility
IPv6	Internet Protocol version 6
NSP	Network Service Provider
PVC	Polyvinyl Chloride
RF	Radio Frequency
SAR	Specific Absorption Rate
SRD	Short Range Device

4. Terms and definitions

In this Technical Code, the following terms and definitions apply unless the context requires otherwise:

4.1 Connected Equipment

4.1.1 Directly connected equipment

Short Range Devices (SRDs) that establish a direct connection to the Network Service Provider (NSP) without requiring an intermediary device as illustrated in Figure 1 of Clause 5.

4.1.2 Non-directly connected equipment

SRD that establishes a connection to the NSP that require an intermediary device as illustrated in Figure 1 of Clause 5.

4.2 Electromagnetic Compatibility (EMC)

The ability of equipment to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to other equipment in that environment.

This means that electrical and electronic devices must operate correctly when exposed to electromagnetic disturbances and should not emit levels of electromagnetic interference that would prevent other equipment from functioning as intended.

4.3 Specific Absorption Rate (SAR)

The rate at which the human body absorbs RF energy from an electromagnetic field. It is typically measured in watts per kilogram (W/kg) and is used to ensure that exposure to electromagnetic radiation remains within safe limits.

5. Requirements

The equipment shall not cause interference with other authorised communications services and be able to tolerate any interference caused by other communications services, electrical or electronic equipment. The equipment shall not be constructed with any external or readily accessible control which permits the adjustment if its operation in a manner that is inconsistent with this specification. Compliance with all other applicable Malaysian regulation is mandatory, where relevant.

For directly connected SRD, it shall comply with the requirements of Internet Protocol version 6 (IPv6), Safety, EMC and SAR (if applicable). Figure 1 differentiates between directly connected and non-directly connected equipment.

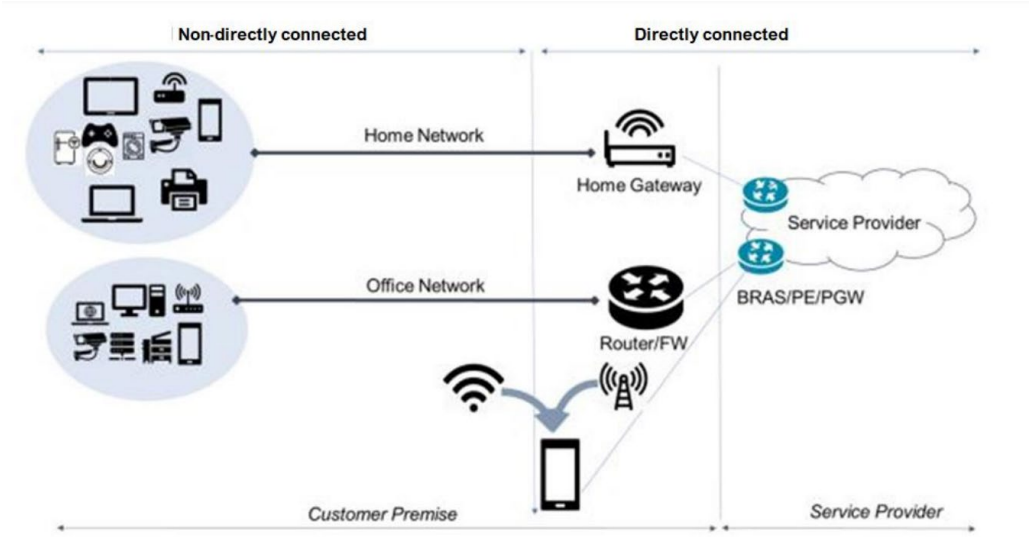

Figure 1. Directly and non-directly connected device

If the equipment has hybrid functionality and can operate as both directly and indirectly connected equipment, it shall comply with the requirements for directly connected equipment.

5.1 General Requirements

5.1.1 Marking

The equipment shall be marked with the following information:

a) supplier or manufacturer's name or identification mark;

b) equipment's brand name or trademark and model; and

c) other markings as required by the relevant standards.

The markings shall be legible, indelible and readily visible. All information on the marking shall be either in Bahasa Melayu or English language.

5.1.2 Interoperability

The equipment that connected to the public network shall have the ability to exchange information and to use the information that has been exchanged between two or more systems or components.

5.2 Technical Requirements

5.2.1 Radio Frequency (RF)

The equipment shall operate and conform to the RF requirements as specified in the respective Technical Codes.

5.2.2 Internet Protocol Version 6 (IPv6) compliance

The IPv6 specifications shall be according to the requirements specified in MCMC MTSFB TC T013.

5.2.3 Electromagnetic Compatibility (EMC)

The equipment shall comply with the EMC requirements as specified in ETSI EN 301 489-1 or equivalent standards, except for the type of communication equipment stated in Table B.1 of Annex B. The requirements shall cover emissions and immunity.

For equipment classified under SRD that are not directly connected to the NSP is excluded.

5.2.4 Electrical requirement

5.2.4.1 Power supply

For Alternating Current (AC) powered equipment, the operating voltage shall be 240 V + 5 %, - 10 % and frequency 50 Hz ± 1 % or 230 V ± 10 % and frequency 50 Hz ± 1 % in accordance with MS IEC 60038.

Where external power supply is used, e.g. AC adaptor, it shall not affect the capability of the equipment to meet this Technical Code. The adaptor shall be pre-approved by the relevant regulatory body before being used with the equipment.

5.2.4.2 Power supply cord and mains plug

The equipment shall be fitted with a suitable and certified power supply cord and mains plug. The power supply cord and mains plug are regulated products and shall be pre-approved by the relevant regulatory body, with the following requirements, before they can be used with the equipment.

a) The power supply cord shall be certified according to:

   i) MS 2112-5 or BS EN 50525-2-11 or IEC 60227-5 (for Polyvinyl Chloride (PVC) insulated - flexible cables or cords); or

   ii) MS 2127-4 or IEC 60245-1 and IEC 60245-4 (for rubber insulated - flexible cables or cords).

b) The mains plug shall be certified according to:

   i) MS 589-1 or BS 1363-1 (for 13 A, fused plug);

   ii) MS 1577 (for 15 A, fused plugs); or

   iii) MS 1578 or BS EN 50075 (for 2.5 A, 250 V, flat non-rewireable two-pole plugs with cord for the connection of class II equipment).

5.2.4.3 Electrical Safety

The equipment shall comply with the electrical safety requirements as specified in IEC 62368-1 or equivalent standards, except for the type of communication equipment stated in Table C.1 of Annex C.

For equipment classified as SRD that are not directly connected to the NSP is excluded.

5.2.5 Specific Absorption Rate (SAR)

The equipment that operate using cellular and mobile radio that is intended to be used at a position near the human body, in the manner described by the manufacturer, with the radiating part(s) of the device at distances up to and including 200 mm from a human body shall comply with the International Commission on Non-Ionizing Radiation Protection (ICNIRP) guideline and one or more of the following standards:

a) EN 50360;

b) EN 50566;

c) IEC 62209-1;

d) IEC 62209-2; and/or

e) any equivalent standards.

For equipment classified as SRD that are not directly connected to the NSP is excluded.

Annex A
(normative)

Normative references

MCMC MTSFB TC T013, *Internet Protocol version 6 (IPv6) - Equipment Compliance*

MS 589-1, *13 A plugs, socket-outlets, adaptors and connection units - Part 1: Specification for rewirable and non-rewirable 13 A fused plugs*

MS 1577, *Specification for 15 A plugs and socket-outlets for domestic and similar purposes*

MS 1578, *Specification for flat non-rewirable two-pole plugs, 2.5 A, 250 V with cord, for the connection of class II - Equipment for household and similar purposes*

MS 2112-5, *Electric cable and wire - Polyvinyl Chloride (PVC) insulated cables of rated voltages up to and including 450/750 V - Part 5: Flexible cables*

MS 2127-4, *Rubber insulated cables of rated voltages up to and including 450/750 V - Part 4: Cords and flexible cables*

MS IEC 60038, *IEC standard voltages*

CISPR 32, *Electromagnetic compatibility of multimedia equipment - Emission requirements*

CISPR 35, *Electromagnetic compatibility of multimedia equipment - Immunity requirements*

ICNIRP guideline

IEC 60227-5, *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V - Part 5: Flexible cables (cords)*

IEC 60245-1, *Rubber insulated cables - Rated voltages up to and including 450/750 V - Part 1: General requirements*

IEC 60245-4, *Rubber insulated cables - Rated voltages up to and including 450/750 V - Part 4: Cords and flexible cables*

IEC 60945, *Maritime navigation and radiocommunication equipment and systems - General requirements - Methods of testing and required test results*

IEC 62209-1, *Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Part 1: Devices used next to the ear (Frequency range of 300 MHz to 6 GHz)*

IEC 62209-2, *Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)*

IEC 62368-1, *Audio/video, information and communication technology equipment - Part 1: Safety requirements*

EN 50360, *Product standard to demonstrate the compliance of mobile phones with the basic restrictions related to human exposure to electromagnetic fields (300 MHz - 3 GHz)*

EN 50566, *Product standard to demonstrate the compliance of wireless communication devices with the basic restrictions and exposure limit values related to human exposure to electromagnetic fields in the frequency range from 30 MHz to 6 GHz: hand-held and body mounted devices in close proximity to the human body*

ETSI EN 301 489-1, *Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard for ElectroMagnetic Compatibility*

ETSI EN 301 489-53, *ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 53: Specific conditions for terrestrial sound broadcasting and digital TV broadcasting service transmitters and associated ancillary equipment Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU*

ETSI EN 301 843 -1, *ElectroMagnetic Compatibility (EMC) standard for marine radio equipment and services; Harmonised Standard for electromagnetic compatibility; Part 1: Common technical requirements*

ETSI TS 138 113, *5G; NR; Base Station (BS) ElectroMagnetic Compatibility (EMC) (3GPP TS 38.113 version 16.3.0 Release 16)*

BS 1363-1, *13 A plugs, socket-outlets, adaptors and connection units - Rewirable and non-rewirable 13 A fused plugs. Specification*

BS EN 50075*, Specification for flat non-wirable two-pole plugs 2.5 A 250 V, with cord, for the connection of class II-equipment for household and similar purposes*

BS EN 50525-2-11, *Electric cables. Low voltage energy cables of rated voltages up to and including 450/750V (U0/U) Cables for general applications. Flexible cables with thermoplastic PVC insulation*

RTCA DO 160G, *Environmental Conditions and Test Procedures for Airborne Equipment*

Annex B
(Normative)

Communications equipment with reference document for Electromagnetic Compatibility (EMC)

Table B.1 provides list of communications equipment with reference document for EMC which is not covered in ETSI EN 301 489-1.

Table B.1. List of communications equipment with reference document for Electromagnetic Compatibility (EMC)

Communications equipment	References
Maritime	ETSI EN 301 843-1 or IEC 60945
Aeronautical	RTCA DO 160G
Base station	ETSI TS 138 113
DTTV broadcasting	ETSI EN 301 489-53 or CISPR 32 and CISPR 35
NOTES: 1. Certification of all equipment is required in accordance with the aforementioned standards or any other relevant standards. The certifying agency will verify the relevancy of any standards through the certification process, which includes conducting a comprehensive suitability study and gap analysis subject to regulator's approval. 2. New standards may be introduced for future equipment.	

Annex C
(normative)

Communications equipment with reference document for electrical safety requirements

Table C.1 provides communications equipment with reference document for electrical safety, which is not covered IEC 62368-1.

Table C.1. List of communications equipment with reference document for safety requirements

Communications equipment	References
Maritime	IEC 60945
NOTES: 1. Certification of all equipment is required in accordance with the aforementioned standards or any other relevant standards. The certifying agency will verify the relevancy of any standards through the certification process, which includes conducting a comprehensive suitability study and gap analysis subject to regulator's approval. 2. New standards may be introduced for future equipment.	

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