

SKMM WTS CTS
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TECHNICAL SPECIFICATION FOR CORDLESS TELEPHONE SYSTEMS



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FOREWORD

This technical specification was developed under the authority of the Malaysian Communications and Multimedia Commission (SKMM) under the Communications and Multimedia Act 1998 (CMA 98) and the relevant provisions on technical regulation of Part VII of the CMA 98. It is based on recognised International Standards documents

This technical specification specifies the standards to conform for testing and certification on telecommunications equipments.

NOTICE

This Specification is subject to review and revision

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TECHNICAL SPECIFICATION FOR CORDLESS TELEPHONE SYSTEMS

1. Scope

This technical specification defines the minimum requirements for analogue or digital cordless telephone systems operating in 46/49 MHz and Digital Enhanced Cordless Telecommunications (DECT) which support the cordless Private Automatic Branch Exchange (PABX) application.

Cordless telephone systems are intended for in-building or localised on-site operations, providing communications in radius of a few hundred metres. Applications are market segment dependent (residential or business).

2. Normative references

The following normative references are indispensable for the application of this technical specification. 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 and symbol

For the purpose of this Technical Specification, the following abbreviation applies.

AC	Alternating Current
ADPCM	Adaptive Differential Pulse Code Modulation
CVSDM	Continuously Variable Slope Delta Modulation
DC	Direct Current
EIRP	Effective Isotropic Radiated Power
ETSI	European Telecommunications Standards Institute
FCC	Federal Communications Commission
FDD	Frequency Division Duplexing
FDMA	Frequency Division Multiple Access
GFSK	Gaussian Frequency Shift Keying

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IEC	International Electrotechnical Commission
SKMM	Malaysian Communications and Multimedia Commission
TDMA	Time Division Multiple Access
TDD	Time Division Duplex

4. General

4.1 Cordless Telephony

Cordless telephony is an application of cordless system in its basic form, comprising two parts:

- a) a fixed part (base station), which is connected to a PSTN line; and
- b) a portable set (mobile handset unit).

Each part uses multi-channel access techniques and individually perform the following operations:

- a) search for idle channels;
- b) set up speech paths using the selected channel; and
- c) check identification codes in the signals between the fixed part and the portable set in order to ensure that only associated units will lock to each other.

Digital cordless systems which support cordless telephony, DECT systems for instance, may have more advanced features such as connection to two PSTN lines, use of two or four portable sets, intercom facility via the base station and call transfer between handset units.

4.2 Cordless PABX

In addition to basic cordless telephony, cordless PABX are single cell or multi-cell systems intended to serve small or large businesses for cordless extensions and on-premises communications networks.

5. Requirements

5.1 General requirements

5.1.1 Power supply requirements

TE may be AC or DC powered. For AC powered TE, the operating voltage shall be 240 V +5 %, -10 % and frequency 50 Hz \pm 1 % as according to MS 406 or 230 V \pm 10 % and frequency 50 Hz \pm 1 % as according to MS IEC 60038 whichever is current.

Where external power supply is used, e.g. AC adaptor or battery, it shall not affect the capability of the TE to meet this specification.

Adaptor shall be pre-approved by the relevant regulatory body before it can be used with the TE.

5.1.2 Power supply cord and mains plug requirements

TE shall be fitted with a suitable and appropriate approved power supply cord and mains plug. Both are regulated products and shall be pre-approved by the relevant regulatory body before it can be used with the TE.

The power supply cord shall be certified according to:

- MS 140; or
- BS 6500; or
- IEC 60227-5; or
- IEC 60245-4.

The main plug shall be certified according to:

- 13 A fused plugs: MS 589: Part 1 or BS 1363: Part 1; or
- 2.5 A, 250 V, flat non-rewirable two-pole plugs: MS 1578 or BS EN 50075.

5.1.3 Polarity

The performance of the TE shall be independent of the PSTN line polarity i.e. the TE shall conform to both polarities of the line feeding (ETSI TBR 21, clause 4.3.1).

5.1.4 Interoperability and connectivity requirements

TE shall comply with the minimum requirement that is specified by the regulatory body.

5.1.4.1 Interoperability

TE shall be able to exchange information and to use the information that has been exchanged between two or more systems or components.

5.1.4.2 Connectivity

TE shall be able to link with other programs and devices to allow interoperability.

5.1.5 Marking requirements

TE shall be marked with the following information:

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

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- b) supplier/manufacture's model or type reference; and
- c) other markings as required by the relevant standards.

The markings shall be legible, indelible and readily visible.

5.1.6 Language

All markings, software and related documents shall be in Bahasa Melayu or English language.

5.1.7 Electromagnetic Compatibility and electrical safety requirements

5.1.7.1 TE shall comply with the limits for conducted disturbance at the mains terminals and telecommunication ports, and the limits for radiated disturbance defined in the IEC CISPR 22.

5.1.7.2 TE shall comply with the MS IEC 60950-1 safety standard. The requirements in MS IEC 60950-1 that are applicable to the TE [e.g. class of equipment, type of telecommunication network voltage (TNV) circuit and types of components] shall be identified and complied with.

5.2 Technical Requirement

5.2.1 Cordless telephone systems

Cordless telephone systems shall be designed to meet the following requirements:

- a) Cordless system shall use the radio frequency spectrum efficiently with multi-channel access techniques to conserve the frequency spectrum.
- b) Where the fixed part of the cordless system is connected to PSTN, in addition to complying with this technical specification, it shall comply with the requirements for connection to PSTN specified in SKMM FTS PSTN.
- c) Where the fixed part of the cordless system supported A-CLIP, in addition to complying with this technical specification, it shall comply with A-CLIP requirement in SKMM FTS P ACLIP.

5.2.2 Analogue Cordless Telephone

Analogue cordless telephone shall fulfil the characteristics given in Table 1 with operating frequencies and channels specified in Table 1 a).

Table 1. Characteristics of Analogue Cordless Telephones operating in 46/49 MHz Band

Class of emission	F3E or G3E	
Multiple access scheme	FDMA	
Duplex type	FDD	
Transmit frequency band (MHz)	fixed part	46.6100 to 46.9700
	portable set	49.6100 to 49.9700
Transmitted output power (EIRP) (acceptable test method: ETSI 300 296-1, Subclause 8.2.2 or equivalent)	fixed part	≤ 50 mW
	portable set	≤ 50 mW
Carrier frequency stability/tolerance	fixed part	± 0.01 %
	portable set	± 0.01 %
Number of speech channels	1 (min), 10 (max)	
Operating frequencies and channel selection	Refer to Table 1a)	
Radio frequency channel spacing	Fundamental emission shall be confined within 25 kHz centred on the actual carrier frequency.	
Spurious emissions	Any spurious and harmonic emission shall not exceed -26.0 dBm –To calculate (IDA :32db)	
Identification code	There shall be provisions for at least 256 possible discrete digital codes [FCC Part 15.214 (d)].	
Antenna	TE shall be equipped with integral antenna and the antenna gain shall be unity. Use of an antenna jack or/and external antenna shall be prohibited.	

Table 1 a). Analogue cordless telephones operating frequencies and channel selection in 46/49 MHz Band

Channel Number	Base Transmit frequency	Portable transmit frequency
1	46.610 MHz	49.670 MHz
2	46.630 MHz	49.845 MHz
3	46.670 MHz	49.860 MHz
4	46.710 MHz	49.770 MHz
5	46.730 MHz	49.875 MHz
6	46.770 MHz	49.830 MHz
7	46.830 MHz	49.890 MHz
8	46.870 MHz	49.930 MHz
9	46.930 MHz	49.990 MHz
10	46.970 MHz	49.970 MHz

5.2.3 Digital Cordless Telephone

DECT shall comply with the characteristics given in Table 2 and DECT common interface requirements given in ETSI EN 300 175-1 to 300 175-8, operating in its authorised frequency band.

Table 2. Characteristics of Digital Cordless Systems

Digital Cordless System	DECT	
Class of emission	F1W and F7W	
Multiple access scheme	Multi-carrier TDMA	
Duplex type	TDD	
Authorised frequency band (MHz)	1880 to 1900	
Radio frequency channel spacing (kHz)	1728	
Gross bit rate per carrier (kbit/s)	1152	
Number of speech channels	12 (per carrier)	
Transmission power, EIRP (mW) (Peak power over time-slot)	fixed part	≤ 250
	portable set	≤ 250
Voice signals - type of modulation - processing	GFSK ADPCM or CVSDM	
Identification code	> 10 ⁷ combinations	

Annex A
(normative)

Normative references

BS 1363: Part 1	13 A plugs, socket-outlets, adaptors and connection units - Part 1: Specification for rewirable and non-rewirable 13 A fused plugs
BS 6500	Electric cables flexible cords rated up to 300/500 V, for use with appliances and equipment intended for domestic, office and similar environments
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
ETSI 300 296-1	Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment using integral antennas intended primarily for analogue speech; Part 1: Technical characteristics and methods of measurement
ETSI EN 300 175-1	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 1: Overview
ETSI EN 300 175-2	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 2: Physical Layer (PHL)
ETSI EN 300 175-3	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) layer
ETSI EN 300 175-4	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 4: Data Link Control (DLC) layer
ETSI EN 300 175-5	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer
ETSI EN 300 175-6	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 6: "Identities and addressing";
ETSI EN 300 175-7	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 7: Security features
ETSI EN 300 175-8	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 8: Speech coding and transmission

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ETSI TBR 21	Terminal Equipment (TE); Attachment Requirements for pan-European approval for connection to the analogue Public Switched Telephone Networks (PSTNs) to TE (excluding TE supporting the voice telephony service) in which network addressing, if provided, is by means of Dual Tone Multi Frequency (DTMF) signalling
FCC Part 15.214	Radio Frequency Devices -Cordless telephones
FCC Part 15.233	Radio Frequency Devices - Operation within the bands 43.71-44.49 MHz, 46.60-46.98 MHz, 48.75-49.51 MHz and 49.66-50.0 MHz
IEC 60227-5	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V - Part 5: Flexible cables (cords)
IEC 60245-4	Rubber insulated cables - Rated voltages up to and including 450/750 V - Part 4: Cords and flexible cables
IEC CISPR 22	Information Technology Equipment - Radio disturbance characteristics - Limits and methods of measurement
ITU-T Recommendation E.161	Arrangement of digits, letters and symbols on telephones and other devices that can be used for gaining access to a telephone network
MS 140	Specification for insulated flexible cords and cables
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 406	Specification for voltages and frequency for alternating current transmission and distribution systems
MS 589: Part 1	Specification for 13 A plugs, socket outlets, adaptors and connection units Part 1: Specification for rewirable and non-rewirable 13 A fused plugs
MS IEC 60038	IEC standard voltages
MS IEC 60950-1	Information technology equipment - Safety - Part 1: General requirements
SKMM FTS PSTN	Technical specification for terminal equipment connecting to the Public Switched Telephone Network (PSTN)
SKMM FTS P ACLIP	Technical specification for Analogue calling line Identity presentation (A-CLIP) facility for connection to Public Switched Telephone Network (PSTN)