

HKCA 1039
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**PERFORMANCE SPECIFICATION
FOR RADIOCOMMUNICATIONS APPARATUS
OPERATING IN THE 2.4 GHz OR 5 GHz BAND
AND EMPLOYING FREQUENCY HOPPING
OR DIGITAL MODULATION**



FOREWORD

1. This specification is prescribed under section 32D of the Telecommunications Ordinance (Cap. 106) (“the Ordinance”) to set out the technical and evaluation requirements for radiocommunications apparatus employing frequency hopping spread spectrum or digital modulation and operating in the 2.4 GHz or 5 GHz band in Hong Kong. Apparatus using other modulation techniques in such frequency bands is covered by other specification(s) where applicable. Radiocommunications apparatus falling into the scope of this specification, unless covered by other application-specific specification, shall meet the stipulated requirements.
2. Under the Ordinance, the possession or use of any radiocommunications apparatus or any apparatus emitting radio frequency energy must be covered by an appropriate licence issued by the Communications Authority (“CA”) with the exception of those specifically exempted from licensing under the Ordinance, such as those covered by the Telecommunications (Telecommunications Apparatus) (Exemption from Licensing) Order (Cap. 106Z).
3. At present, the Office of the Communications Authority (“OFCA”) operates a **Hong Kong Telecommunications Equipment Evaluation and Certification (“HKTEC”) Scheme**. Details of the HKTEC Scheme can be found in the information note OFCA I 421. Under the HKTEC Scheme, suppliers or manufacturers may apply for certification of their apparatus against this specification. The application procedures for certification of radiocommunications apparatus can be found in the information note OFCA I 401. A prescribed label may be affixed to the certified equipment. Details of the labelling arrangement can be found in the Standardisation Guide HKCA 3211.
4. In addition to this specification, radiocommunications apparatus capable of being used for connection as customer premises equipment (“CPE”) to the public telecommunications networks (“PTNs”) in Hong Kong should comply with the relevant network connection specification(s) issued by the CA. Manufacturers or suppliers may also apply for a separate certification to verify conformity of the apparatus with the relevant specification(s) before it is connected to the PTNs. Details concerning the application procedure for certification of CPE can be found in the information note OFCA I 412.
5. The 2.4 GHz and 5 GHz bands are also allocated for use by Industrial, Scientific and Medical equipment and other radiocommunications apparatus employing different modulation techniques. Manufacturers or suppliers of radiocommunications apparatus operating in these frequency bands are advised to consider the potential interference due to the shared use of the frequencies.
6. The CA may amend any part of this specification as and when it deems necessary.
7. In case of doubt about the interpretation of this specification, the methods of carrying out the test and the validity of statements made by the manufacturers or suppliers about the equipment, the decision of the CA shall be final.

8. The HKCA specifications and information notes issued by the CA can be downloaded from OFCA's website at <http://www.ofca.gov.hk>. Enquiries about this specification may be directed to:

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AMENDMENT HISTORY

Item	Issue No.	Paragraph	Descriptions
1.	Issue 2 April 2005	2.1 (a)	Add indoor operation requirement for the 5.15 – 5.35 GHz band.
2.	Issue 2 April 2005	2.1 (b), 2.1 (c), 2.3 (d)	Add requirements for radiocommunications apparatus operating in the 5.470 – 5.725 GHz band.
3.	Issue 3 January 2008	2.2 (b), 2.3 (a), 2.3 (b)	Remove reference to version number and issue date of FCC standards.
4.	Issue 3 January 2008	2.3 (c)	Remove reference to ETSI ETS 300 836-1 and TS 101 475. Add reference to ETSI EN 301 893.
5.	Issue 3 January 2008	2.3 (d)	Remove reference to ETSI TS 101 475 and ITU-R Rec. M.1652. Add reference to ETSI EN 301 893. Merge with 2.3 (c).
6.	Issue 3 January 2008	2.2 (a)	Remove reference to ETSI EN 300 328-1. Add reference to ETSI EN 300 328.
7.	Issue 4 October 2010	2.3 (b)	Add 5.470 – 5.725 GHz band to 2.3 (b).
8.	Issue 5 June 2013	2.3 (d)	Add reference to ETSI EN 302 502 for radiocommunications apparatus operating in the 5.725 – 5.850 GHz band.
9.	Issue 6 June 2015	2.3(a)	Exclude apparatus using digital modulation techniques in the 5.725 – 5.850 GHz band.
10.	Issue 6 June 2015	2.3(b)	Adjust the frequency range from 5.725 – 5.825 GHz to 5.725 – 5.850 GHz.
11.	Issue 7 August 2024	1.5	Revise paragraph 1.5 on Type Number.
12.	Issue 7 August 2024	1.7	Remove paragraph 1.7 on Electrical Safety Requirements.
13.	Issue 7 August 2024	2.1 (a), 2.1 (b)	Add footnote on the use of the 5.15 – 5.25 GHz band inside road vehicles.
14.	Issue 7 August 2024	2.2 (a), 2.3 (c), 2.3 (d)	Update titles of the standards being referenced.

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1. GENERAL

1.1 SCOPE OF SPECIFICATION

This specification defines the minimum performance requirements for radiocommunications apparatus using frequency hopping spread spectrum or digital modulation and operating in the 2.4 GHz or 5 GHz band (hereafter referred to as the "apparatus"). The requirements apply to both portable unit and base unit of the apparatus where applicable.

1.2 DEFINITION

- (a) "effective radiated power" (e.r.p.) has the meaning assigned to it by Article 1 of the Radio Regulations published by the International Telecommunication Union ("ITU"), as revised from time to time;
- (b) "equivalent isotropically radiated power" (e.i.r.p.) has the meaning assigned to it by Article 1 of the Radio Regulations published by ITU, as revised from time to time;
- (c) "spurious emission" has the meaning assigned to it by Article 1 of the Radio Regulations published by ITU, as revised from time to time;
- (d) "frequency hopping spread spectrum modulation" means a modulation system which hops to channel frequencies that are selected at the system hopping rate from a pseudo-randomly ordered list of hopping frequencies;
- (e) "digital modulation" means the process by which the characteristics of a carrier wave are varied among a set of predetermined discrete values in accordance with a digital modulating function as specified in document ANSI C63.17-1998 published by the American National Standards Institute ("ANSI").

1.3 PROTECTION AGAINST UNINTENTIONAL ACCESS

If the apparatus is intended to be used as a cordless telephone, it shall incorporate circuitry which makes use of a digital security code to provide access protection from the portable unit to the base unit and vice versa. When the portable unit is switched on, it shall transmit the code to the base unit which will respond and give access to the public or private telecommunications network only if the code matches with the base unit. Similarly, communication to the portable unit (e.g. ringing) shall be set up only if the code transmitted by the base unit matches the code set in the portable unit. There must be provision for at least 256 possible discrete digital codes.

1.4 ANTENNA REQUIREMENTS

The apparatus shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the equipment.

1.5 TYPE NUMBER

The brand name and type number of cordless telephones shall be clearly indicated on the casing of the portable unit and the base unit. Each type number shall be unique. The manufacturer who first submits to use a type number will have the priority to use that type number.

1.6 CONTROLS

Controls, which if maladjusted might increase the interfering potentialities of the apparatus, shall not be made accessible to the end user.

2. TECHNICAL REQUIREMENTS

2.1 GENERAL REQUIREMENTS

- (a) The apparatus shall operate in the frequency bands 2.400 – 2.4835 GHz, 5.15 – 5.35 GHz, 5.470 – 5.725 GHz and 5.725 – 5.850 GHz. 5.15 – 5.35 GHz shall be restricted to indoor operations¹.
- (b) The peak output power of the apparatus shall not exceed the levels indicated below:

Operating Band	Output Level (e.i.r.p.)
2.400 – 2.4835 GHz	4 W
5.15 – 5.35 GHz	200 mW ¹
5.470 – 5.725 GHz	1 W
5.725 – 5.850 GHz	4 W

- (c) The spurious emission level of the apparatus shall not exceed 10 µW e.r.p. outside the corresponding frequency band indicated below:

Operating Band	Emission outside of the Band
2.400 – 2.4835 GHz	2.390 – 2.4935 GHz
5.15 – 5.35 GHz	5.15 – 5.35 GHz
5.470 – 5.725 GHz	5.470 – 5.725 GHz
5.725 – 5.850 GHz	5.715 – 5.860 GHz

2.2 OPERATION IN THE 2.4 GHz BAND

The apparatus shall operate in the frequency band 2.400 – 2.4835 GHz using frequency hopping spread spectrum or digital modulation techniques, and meet the technical requirements according to either one of the following paragraphs:

- (a) ETSI EN 300 328 “Wideband transmission systems; Data transmission equipment operating in the 2.4 GHz band; Harmonised Standard for access to radio spectrum” published by the European Telecommunications Standards Institute (“ETSI”);
- (b) Code of Federal Regulations (USA); Title 47 Telecommunication; Chapter 1 Federal Communications Commission, Part 15 Radio Frequency Devices; Section 15.247; subject to the following conditions:
- (i) If the apparatus is designed for use as a cordless telephone or for data transmission at an aggregate bit rate not greater than 11 Mbps, the peak output power of the transmitter shall not exceed 200 mW e.i.r.p.; and

¹ Use of the 5.15 – 5.25 GHz band inside road vehicles (i.e. automobiles) is allowed subject to compliance with the technical requirements specified in resolves 2 of Resolution 229 (Rev. WRC-19) in the Radio Regulations published by ITU. For the avoidance of doubt, use of the 5.25 – 5.35 GHz band inside road vehicles is not allowed.

- (ii) If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power of the transmitter shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

2.3 OPERATION IN THE 5 GHz BAND

The apparatus shall meet the technical requirements in one of the following paragraphs for each supported frequency band:

- (a) The apparatus shall operate in the frequency band 5.725 – 5.850 GHz using frequency hopping spread spectrum and meet the technical requirements according to the Code of Federal Regulations (USA); Title 47 Telecommunication; Chapter 1 Federal Communications Commission, Part 15 Radio Frequency Devices; Section 15.247;
- (b) The apparatus shall operate in the frequency band 5.15 – 5.35 GHz or 5.470 – 5.725 GHz or 5.725 – 5.850 GHz, using digital modulation technique, and meet the technical requirements according to the Code of Federal Regulations (USA); Title 47 Telecommunication; Chapter 1 Federal Communications Commission, Part 15 Radio Frequency Devices; Subpart E – Unlicensed National Information Infrastructure Devices;
- (c) The apparatus shall operate in the frequency band 5.15 – 5.35 GHz or 5.470 – 5.725 GHz using digital modulation technique, and meet the technical requirements of ETSI EN 301 893 “5 GHz RLAN; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU” published by ETSI;
- (d) The apparatus shall operate in the frequency band 5.725 – 5.850 GHz using digital modulation technique, and meet the technical requirements of ETSI EN 302 502 “Wireless Access Systems (WAS); 5.8 GHz fixed broadband data transmitting systems; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU” published by ETSI.

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