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PERFORMANCE SPECIFICATION FOR RADIO FREQUENCY IDENTIFICATION (RFID) EQUIPMENT OPERATING IN THE 865 – 868 MHz AND/OR 920 – 925 MHz BANDS

TELECOMMUNICATIONS AUTHORITY
HONG KONG

FOREWORD

1. This specification is prescribed under section 32D of the Telecommunications Ordinance (Cap 106) ("the Ordinance") to set out the technical requirements for Radio Frequency Identification (RFID) equipment operating in the 865 – 868 MHz and/or 920 – 925 MHz band in Hong Kong. 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 Telecommunications Authority (TA) 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.

3. At present, the Office of the Telecommunications Authority (OFTA) operates a **H**ong **K**ong **T**elecommunications Equipment **E**valuation and **C**ertification (HKTEC) Scheme. Details of the HKTEC Scheme can be found in the information note OFTA I 421. Under the Scheme, suppliers or manufacturers of the radiocommunications apparatus may apply to OFTA for certification of their apparatus against this specification. The application procedures for certification of radiocommunications apparatus can be found in the information note OFTA I 401. A prescribed label may be affixed to the equipment which has been certified by the TA. Details of the labelling arrangement can be found in the Standardisation Guide HKTA 3211.

4. RFID equipment is required to operate on a "no-interference no-protection" basis, i.e. they may not cause radio interference and cannot claim protection from interference. Manufacturers or suppliers of RFID equipment are advised to consider the potentiality of interference due to the shared use of the frequencies.

5. The TA reserves the right to give separate certification to models he considers to be technical variants and the performance of which may differ between models.

6. The TA may amend any part of this specification as and when he 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 equipment manufacturers or suppliers about the equipment, the decision of the TA shall be final.

8. The HKTA specifications and information notes are issued by the TA. The documents can be obtained through one of the following methods :-

   - downloading direct through the OFTA's Internet Home Page. The Home Page address is http://www.ofta.gov.hk;
   - making a request for hard copies to :

Radio Laboratory,
Standards Section,
Office of the Telecommunications Authority,
29/F Wu Chung House,
213 Queen's Road East, Wanchai, Hong Kong.

Fax : +852 2343 5824
Email : radiolab@ofta.gov.hk

9. Enquiries about this specification may be directed to —

Radio Laboratory,
Standards Section,
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CONTENTS

1. SCOPE OF SPECIFICATION

This specification defines the minimum performance requirements for Radio Frequency Identification (RFID) equipment operating in the 865 – 868 MHz and/or 920 – 925 MHz band.

2. ELECTRICAL SAFETY

The equipment shall comply with the electrical safety requirements set out in HKTA 2001 "Compliance Test Specification Safety and Electrical Protection Requirements for Subscriber Equipment Connected to the Public Telecommunications Networks in Hong Kong" issued by the Telecommunications Authority (TA).

3. RADIATION PROTECTION

3.1 The RFID equipment shall comply with the exposure limits specified in:-

EN 50364 "Limitation of human exposure to electromagnetic fields from devices operating in the frequency range 0 Hz to 10 GHz, used in Electronic Article Surveillance (EAS), Radio Frequency Identification (RFID) and similar applications" issued by European Committee for Electrotechnical Standardization (CENELEC)

or

ANSI/IEEE C95.1 "IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz" issued by American National Standards Institute (ANSI) / Institute of Electrical and Electronics Engineers (IEEE)

or

"Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz)" issued by International Commission on Non-Ionizing Radiation Protection (ICNIRP)

3.2 Reference Test Method

To demonstrate the compliance with the exposure limits, assessment method should be made reference to:-

EN 50357 "Evaluation of human exposure to electromagnetic fields from devices used in Electronic Article Surveillance (EAS), Radio Frequency Identification (RFID) and similar applications" issued by European Committee for Electrotechnical Standardization (CENELEC)

or

ANSI/IEEE C95.3 “IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields – RF and Microwave” issued by American National Standards Institute (ANSI) / Institute of Electrical and Electronics Engineers (IEEE)

or

other measurement methods issued by relevant organisations which are acceptable to the TA.

4. OPERATING FREQUENCIES

The equipment shall operate in the frequency bands 865 – 868 MHz and/or 920 – 925 MHz.

5. TECHNICAL REQUIREMENTS

5.1 OPERATION IN THE 865 – 868 MHz BAND

a) In the 865 – 868 MHz band, the equipment shall operate on channels of 200 kHz spacing. The channel centre frequencies are 864.9 MHz + (0.2 MHz * channel number) and the available channel numbers for each sub-band (a1, a2 and a3) are:

a1: channel numbers 1 to 15
a2: channel numbers 4 to 15
a3: channel numbers 4 to 13

b) The peak output power of the equipment shall not exceed the levels indicated below:

Operating Band	Power Level
a1 865 – 868 MHz	0.1 W (e.r.p.)
a2 865.6 – 868 MHz	0.5 W (e.r.p.)
a3 865.6 – 867.6 MHz	2 W (e.r.p.)

c) The equipment shall operate in the frequency band 865 – 868 MHz and meet the technical requirement according to European Telecommunications Standards Institute (ETSI) Standard EN 302 208-2 "Electromagnetic compatibility and Radio Spectrum Matters (ERM); Radio Frequency Identification Equipment operating in the band 865 MHz to 868 MHz with power level up to 2 W; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive”;

d) The power of any spurious emission shall not exceed the corresponding frequency band indicated below :

Operating Band	Spurious Emission Level
47 – 74 MHz 87.5 – 118 MHz 174 - 230 MHz 470 – 862 MHz	e.r.p. not to exceed 4 nW
Other frequencies below 1000 MHz	e.r.p. not to exceed 250 nW
Frequency above 1000 MHz	e.r.p. not to exceed 1 μW

5.2 OPERATION IN THE 920 – 925 MHz BAND

a) The equipment shall operate in the frequency band 920 – 925 MHz and meet the technical requirement 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 equipment shall use frequency hopping spread spectrum modulation;

c) The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz;

d) The peak transmitter power shall not exceed 1W and the equivalent isotropically radiated power (EIRP) from the equipment shall not exceed 4W;

e) If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi;

f) The spurious emission level of the equipment shall not exceed 10 μW outside the frequency band in which the fundamental frequencies are located.

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