

LEGISLATIVE COUNCIL BRIEF

Telecommunications Ordinance
(Chapter 106)

TELECOMMUNICATIONS (TELECOMMUNICATIONS APPARATUS) (EXEMPTION FROM LICENSING) (AMENDMENT) ORDER 2012

INTRODUCTION

At the meeting of the Executive Council on 11 December 2012, the Council ADVISED and the Chief Executive ORDERED that the Telecommunications (Telecommunications Apparatus) (Exemption from A Licensing) (Amendment) Order 2012, at Annex A, should be made under section 39 of the Telecommunications Ordinance to amend the Telecommunications (Telecommunications Apparatus) (Exemption from Licensing) Order by withdrawing the licensing exemptions granted to persons in respect of Personal Handy Phone System apparatus.

JUSTIFICATIONS

2. Personal Handy Phone System (PHS) is a short and medium-range mobile radiocommunications technology. In Hong Kong, PHS was introduced in 1997 for private use only, predominantly for home cordless telephone, and is operating within the 1895 – 1906.1 MHz band. Under the Telecommunications (Telecommunications Apparatus) (Exemption from Licensing) Order (Cap. 106Z) (the existing exemption order), persons possessing, using, selling, importing or exporting PHS apparatus operating within the 1895 – 1906.1 MHz band that meets the prescribed technical criteria are exempted from the licensing obligations under the Telecommunications Ordinance (Cap. 106) (the Ordinance).

3. The deployment of PHS in Hong Kong has not been as successful as anticipated. Digital Enhanced Cordless Telecommunications (DECT) (another cordless telephone standard in competition with PHS) phones are the dominant cordless telephone apparatus in Hong Kong. In a market survey conducted in September 2010 by the former Office of the Telecommunications Authority [OFTA, the functions of which have been transferred to the Office of the Communications Authority (OFCA) since 1 April 2012], no PHS apparatus was found to be on sale in the local market. Since 2002, OFTA or OFCA has not received any application for certification of PHS apparatus under its voluntary scheme in which equipment manufacturers or suppliers may apply for certification against prescribed technical criteria so as to promote market acceptance. In contrast, over 500 certifications of DECT phones have been processed under the scheme during the same period.

4. The former OFTA had also monitored the radio spectrum utilisation of the 1895 – 1906.1 MHz band and confirmed that there is scanty deployment of PHS apparatus in Hong Kong. These findings indicate that the radio spectrum concerned is not efficiently used.

5. As stipulated in section 32G(1) of the Ordinance, the Communications Authority [or the Telecommunications Authority (TA) before 1 April 2012] shall promote the efficient allocation and use of the radio spectrum as a public resource of Hong Kong. Furthermore, in accordance with the Radio Spectrum Policy Framework promulgated by the then Commerce, Industry and Technology Bureau in April 2007, Hong Kong's spectrum policy objective aims, among other things, to facilitate the most economically and socially efficient use of spectrum with a view to attaining maximum benefit for the community.

6. Having regard to the limited supply of PHS apparatus in the market, the typical life-time of a home cordless telephone, and the scanty radio spectrum utilization of the 1895 – 1906.1 MHz band, we consider that the allocation of the frequency band of 1895 – 1906.1 MHz for PHS should be withdrawn. Part of the vacated frequency band can then be re-planned to meet the growing demand for mobile communications services, for example 3G or

4G services. To effect the re-planning of the frequency band, the licensing exemptions in respect of PHS apparatus operating within the 1895 – 1906.1 MHz band need to be withdrawn. We recommend that the licensing exemptions in respect of dealing in the course of trade or business, demonstration with a view to sale, and import or export for personal use of such PHS apparatus [prohibited under sections 8(1)(c), (d) and 9 of the Ordinance] should cease immediately upon the commencement of the Telecommunications (Telecommunications Apparatus) (Exemption from Licensing) (Amendment) Order 2012 (the amendment order). However, in order to mitigate the possible impact on existing users, we recommend that the licensing exemptions in respect of establishment or maintenance, and possession or use of the PHS apparatus [prohibited under sections 8(1)(a) and (b) of the Ordinance] should cease three years from the date of commencement of the amendment order.

OTHER OPTIONS

7. We consider maintaining the status quo not desirable. Radio spectrum is a scarce public resource and it is our spectrum policy objective to facilitate the most efficient use of radio spectrum. We have to make available radio spectrum required for service expansion in a timely manner in order to meet the increasing public demand for mobile communications services. Amendments to the existing exemption order are necessary to effect the proposed changes.

THE AMENDMENT ORDER

8. **Sections 4 and 5** of the amendment order provide for the transitional arrangements. The existing licensing exemptions in respect of establishment or maintenance, and possession or use of the PHS apparatus will only be withdrawn after midnight on the date immediately before the third anniversary of the commencement date of the amendment order.

9. **Section 7** of the amendment order provides for the withdrawal of licensing exemptions granted in respect of PHS apparatus operating within the 1895 – 1906.1 MHz band by removing the 1895 – 1906.1 MHz band and the respective technical criteria from Schedule 2 of the existing exemption order.

- B 10. The provisions of the existing exemption order are at Annex B.

LEGISLATIVE TIMETABLE

11. The legislative timetable is as follows –

Publication in the Gazette	21 December 2012
Tabling at the Legislative Council	9 January 2013

IMPLICATIONS OF THE PROPOSAL

12. The proposal will make the concerned radio spectrum, which is currently not used efficiently, available for other communications applications. This is conducive to developing a vibrant communications market, which will in turn bring benefits to businesses and consumers in Hong Kong.

13. The proposal is in conformity with the Basic Law, including the provisions concerning human rights. It has no financial, civil service, productivity, environmental, or sustainability implications. The amendment order does not affect the binding effect of the Ordinance.

PUBLIC CONSULTATION

14. Members of the Radio Spectrum Advisory Committee, an advisory committee set up by the former TA to give advice on the use of radio spectrum in Hong Kong and comprised of representatives from the communications industry, reviewed the deployment of PHS in March 2011 and generally supported the withdrawal of the licensing exemptions granted in respect of PHS apparatus.

15. The former TA also conducted a 10-week public consultation in November 2011 on the proposed withdrawal of the licensing exemptions granted in respect of PHS apparatus operating within the 1895 – 1906.1 MHz

band, and consequently the removal of the frequency band and the respective technical criteria from Schedule 2 of the existing exemption order. Only one respondent, who is an industry member, responded to the consultation and he supported the proposal.

PUBLICITY

16. We will issue a press release when the amendment order is published in the Gazette. A spokesperson will be available to answer media and public enquiries.

BACKGROUND

17. Under section 8(1) of the Ordinance, licences are required for establishing or maintaining any means of telecommunications, or possessing, or using, dealing in the course of trade or business, or demonstrating with a view to sale radiocommunications apparatus. Under section 9 of the Ordinance, licences are required for the import or export of radiocommunications transmitting apparatus. Section 39 of the Ordinance also provides that the Chief Executive in Council may by order exempt any person or any class of persons from any of the provisions of the Ordinance as he thinks fit. In March 1997, exemptions from the obligation to hold a licence under the Ordinance were granted in respect of PHS apparatus operating within the 1895 – 1906.1 MHz band and meeting the prescribed technical criteria.

ENQUIRY

18. For enquiries, please contact Mr Ivanhoe Chang, Principal Assistant Secretary for Commerce and Economic Development (Communications and Technology) at 2810 2713.

**Communications and Technology Branch
Commerce and Economic Development Bureau
December 2012**

**Telecommunications (Telecommunications Apparatus)
(Exemption from Licensing) (Amendment) Order 2012**

(Made by the Chief Executive in Council under section 39 of the
Telecommunications Ordinance (Cap. 106))

1. Commencement

This Order comes into operation on a day to be appointed by the Director-General of Communications by notice published in the Gazette.

**2. Telecommunications (Telecommunications Apparatus)
(Exemption from Licensing) Order amended**

The Telecommunications (Telecommunications Apparatus) (Exemption from Licensing) Order (Cap. 106 sub. leg. Z) is amended as set out in sections 3 to 8.

3. Section 2 amended (interpretation)

Section 2—

Add in alphabetical order

“*2012 Amendment Order* (《2012年修訂令》) means the Telecommunications (Telecommunications Apparatus) (Exemption from Licensing) (Amendment) Order 2012;”.

4. Section 5 amended (exemption for other radiocommunications apparatus)

After section 5(1)—

Add

“(1A) Subject to subsection (2), a person who is required under section 8(1)(a) or (b) of the Ordinance to hold a licence in respect of any radiocommunications apparatus is exempted from that requirement if the apparatus—

- (a) is used or is capable of being used in a manner otherwise than that described in subsection (1)(a);
- (b) is not used or is incapable of being used as a mobile earth station;
- (c) meets the technical criteria set out in Schedule 3; and
- (d) tolerates interference from other telecommunications apparatus or any telecommunications system authorized under the Ordinance.

(1B) Subsection (1A) expires at midnight on the date immediately before the 3rd anniversary of the commencement date of the 2012 Amendment Order.”.

5. Section 6 amended (exemption for hybrid telecommunications apparatus)

(1) Section 6(2)—

Repeal

“section 5 are”

Substitute

“section 5(1) and (2) are”.

(2) After section 6(3)—

Add

“(4) A person who is required under section 8(1)(a) or (b) of the Ordinance to hold a licence in respect of a

telecommunication apparatus is exempted from that requirement if—

- (a) the apparatus is used or is capable of being used in a combination of a manner described in section 3(1) and the manners described in section 5(1A); and
 - (b) the relevant provisions in sections 3 and 5 are complied with.
- (5) Subsection (4) expires at midnight on the date immediately before the 3rd anniversary of the commencement date of the 2012 Amendment Order.”.

6. Section 7 amended (exemption for import and export of radiocommunications apparatus)

Section 7—

Repeal

“section 5 or 6”

Substitute

“section 5(1) or 6(1), (2) or (3)”.

7. Schedule 2 amended (technical criteria for apparatus used, etc. other than as mobile earth stations)

(1) Schedule 2, table—

Repeal

“ 1895–1906.1 MHz ^[7]	(a) carrier power not to exceed 10 mW for apparatus with antenna output terminal; or (b) e.r.p. not to exceed 10 mW for apparatus with integral antenna	(a) e.r.p. not to exceed 250 nW for frequency within 1895–1906.1 MHz; and (b) e.r.p. not to exceed 2.5 µW for frequency within 30 MHz–10 GHz excluding 1895–1906.1 MHz
----------------------------------	--	---

(2) Schedule 2, Note—

Repeal

“^[7] The carrier frequencies of the apparatus shall be $1895.15 + (n - 1) \times 0.3$ MHz, where n is an integer in the range 1 to 37.”.

8. Schedule 3 added

After Schedule 2—

Add

“Schedule 3

[s. 5]

**Technical Criteria for Radiocommunications
Apparatus Exempted under Section 5(1A)**

The radiocommunications apparatus operates within the frequency band shown in column 1 of the following table and the output level and spurious emission level generated by the apparatus do not exceed the limits set out in columns 2 and 3—

Column 1	Column 2	Column 3
Frequency Band	Limits on Output Level	Limits on Spurious Emission Level
1895–1906.1 MHz ^[1]	(a) carrier power not to exceed 10 mW for apparatus with antenna output terminal; or (b) e.r.p. not to exceed 10 mW for apparatus with integral antenna	(a) e.r.p. not to exceed 250 nW for frequency within 1895–1906.1 MHz; and (b) e.r.p. not to exceed 2.5 µW for frequency within 30 MHz–10 GHz excluding 1895–1906.1 MHz

Note: ^[1] The carrier frequencies of the apparatus are $1895.15 + (n - 1) \times 0.3$ MHz, where n is an integer in the range 1 to 37.”.

Clerk to the Executive Council

COUNCIL CHAMBER

2012

Explanatory Note

The purpose of this Order is to withdraw the exemption from the requirement to hold a licence or permit under section 8(1)(c) or (d) or 9 of the Telecommunications Ordinance (Cap. 106) (*principal Ordinance*) for any telecommunications apparatus operating within the 1895–1906.1 MHz frequency band (*1895–1906.1 MHz apparatus*).

2. As a transitional arrangement, the exemption from the requirement to hold a licence under section 8(1)(a) or (b) of the principal Ordinance for any 1895–1906.1 MHz apparatus will only be withdrawn after midnight on the date immediately before the 3rd anniversary of the commencement date of the Order.

Chapter:	106Z	Telecommunications (Telecommunications Apparatus) (Exemption from Licensing) Order	Gazette Number	Version Date
----------	------	---	----------------	--------------

		Empowering section	E.R. 2 of 2012	02/08/2012
--	--	---------------------------	----------------	------------

(Cap 106, section 39)

(Enacting provision omitted—E.R. 2 of 2012)

[21 February 2003] *L.N. 50 of 2003*

(Originally L.N. 4 of 2003)

(*Format changes—E.R. 2 of 2012)

Note:

* The format of the whole Order has been updated to the current legislative styles.

Section:	1	(Omitted as spent—E.R. 2 of 2012)	E.R. 2 of 2012	02/08/2012
----------	---	--	----------------	------------

Section:	2	Interpretation	E.R. 2 of 2012	02/08/2012
----------	---	-----------------------	----------------	------------

In this Order, unless the context otherwise requires-

carrier power (載波功率), **effective radiated power** or **e.r.p.** (有效輻射功率), **equivalent isotropically radiated power** or **e.i.r.p.** (等效全向輻射功率), **mean power** (平均功率), **mobile earth station** (移動地球站), **spurious emission** (雜散發射) and **unwanted emissions** (無用發射) have the meanings assigned to them respectively by Article 1 of Chapter 1 of the Radio Regulations published by the General Secretariat of the International Telecommunication Union, edition of 2001, as revised from time to time;

digital modulation (數碼調制) means the process by which the characteristics of a carrier wave (that is to say, an electromagnetic wave used to carry an information signal) 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;

frequency hopping spread spectrum modulation (頻率跳變擴譜調制) means a modulation system which hops to channel frequencies that are selected at the system hopping rate from a pseudorandomly ordered list of hopping frequencies;

modulation (調制) has the meaning assigned to it in "Terms and Definitions" of the Recommendation ITU-R V.662 approved by the International Telecommunication Union, as revised from time to time;

non-radiocommunications (非無線電通訊) means telecommunications other than by means of radio waves;

non-radiocommunications apparatus (非無線電通訊器具) means telecommunications apparatus used for or in connection with non-radiocommunications;

taxi (的士) means a motor vehicle which is registered as a taxi under the Road Traffic Ordinance (Cap 374);

telecommunications apparatus (電訊器具) means an apparatus used for or in connection with non-radiocommunications or radiocommunications or both.

Section:	3	Exemption for non-radiocommunications apparatus	E.R. 2 of 2012	02/08/2012
----------	---	--	----------------	------------

- (1) A person who establishes or maintains any non-radiocommunications apparatus which is not used to provide a public telecommunications service and-
- (a) is lawfully connected to a telecommunications network or system for obtaining services from a person who operates that telecommunications network or system under any of the following licences issued or created under the Ordinance-
- (i) a fixed carrier licence;
 - (ii) a fixed telecommunications network services licence;

- (iii) a public non-exclusive telecommunications service licence (for services other than a licence for mobile virtual network operator services);
 - (iv) the class licence for in-building telecommunications systems;
 - (v) any other licence (including a class licence) for the provision of any public telecommunications service; or
- (b) is used in a manner other than that described in paragraph (a) where-
- (i) the person and the apparatus meet the conditions specified in subsection (2); and
 - (ii) the apparatus meets the technical criteria set out in Schedule 2,
- is exempted from the obligation to hold a licence under section 8(1)(a) of the Ordinance.
- (2) For the purposes of subsection (1)(b)(i), the conditions are that-
- (a) the person does not use the apparatus in such a manner as to cause harmful interference with other telecommunications apparatus or any telecommunications system authorized under the Ordinance;
 - (b) the person complies with any direction given by the Authority for avoiding interference with other telecommunications apparatus or any telecommunications system authorized under the Ordinance;
 - (c) the apparatus tolerates interference from other telecommunications apparatus or any telecommunications system authorized under the Ordinance; and
 - (d) the apparatus is made available for inspection and testing, if so required, by any person authorized for the purpose by the Authority.

Section:	4	Exemption for radiocommunications apparatus relating to taxis	E.R. 2 of 2012	02/08/2012
----------	---	--	----------------	------------

- (1) Subject to subsection (2), a person who-
- (a) possesses any radiocommunications apparatus capable of being used; or
 - (b) uses any radiocommunications apparatus,
- solely for a lawful connection to a telecommunications network or system for obtaining services from a person who operates that telecommunications network or system under a public radiocommunications service licence for communication between a radiocommunications installation and taxis is exempted from the obligation to hold a licence under section 8(1)(a) or (b) of the Ordinance, as the case may be.
- (2) A person is not exempted from section 8(1)(a) or (b) of the Ordinance, as the case may be, unless-
- (a) the person complies with any standards or specifications as may be prescribed under section 32D, and with any order or requirements as may be prescribed under section 32E, of the Ordinance;
 - (b) the person does not use the apparatus to provide a public telecommunications service;
 - (c) the person does not use the apparatus in such a manner as to cause harmful interference with other telecommunications apparatus or any telecommunications system authorized under the Ordinance;
 - (d) the person complies with any direction given by the Authority for avoiding interference with other telecommunications apparatus or any telecommunications system authorized under the Ordinance; and
 - (e) the apparatus is made available for inspection and testing, if so required, by any person authorized for the purpose by the Authority.

Section:	5	Exemption for other radiocommunications apparatus	E.R. 2 of 2012	02/08/2012
----------	---	--	----------------	------------

- (1) Subject to subsection (2), a person who is under an obligation to hold a licence under section 8(1)(a), (b), (c) or (d) of the Ordinance in respect of any radiocommunications apparatus is exempted from section 8(1)(a), (b), (c) or (d) of the Ordinance, as the case may be, if the apparatus is used or is capable of being used-
- (a) for a lawful connection by radiocommunications to a telecommunications network or system for obtaining services from a person who operates that telecommunications network or system under any of the following licences issued or created under the Ordinance-
 - (i) a fixed carrier licence;
 - (ii) a mobile carrier licence;
 - (iii) a fixed telecommunications network services licence;
 - (iv) a public radiocommunications service licence (for services other than a licence for communication between a radiocommunications installation and taxis);
 - (v) a public radiocommunications service licence (for services other than land mobile services);
 - (vi) a public non-exclusive telecommunications service licence;

- (vii) the class licence for in-building telecommunications systems;
- (viii) any other licence (including a class licence) for the provision of any public telecommunications service; or
- (b) in a manner other than that described in paragraph (a), and-
 - (i) in the case where the apparatus is used or is capable of being used as a mobile earth station, it meets the technical criteria set out in Schedule 1; or
 - (ii) in the case where the apparatus is used or is capable of being used other than as a mobile earth station, it meets the technical criteria set out in Schedule 2 and tolerates interference from other telecommunications apparatus or any telecommunications system authorized under the Ordinance.
- (2) A person is not exempted from section 8(1)(a), (b), (c) or (d) of the Ordinance, as the case may be, unless-
 - (a) the person complies with any standards or specifications as may be prescribed under section 32D, and with any order or requirements as may be prescribed under section 32E, of the Ordinance;
 - (b) the person does not use the apparatus to provide a public telecommunications service;
 - (c) the person does not use the apparatus in such a manner as to cause harmful interference with other telecommunications apparatus or any telecommunications system authorized under the Ordinance;
 - (d) the person complies with any direction given by the Authority for avoiding interference with other telecommunications apparatus or any telecommunications system authorized under the Ordinance; and
 - (e) the apparatus is made available for inspection and testing, if so required, by any person authorized for the purpose by the Authority.

Section:	6	Exemption for hybrid telecommunications apparatus	E.R. 2 of 2012	02/08/2012
----------	---	--	----------------	------------

- (1) A person who is under an obligation to hold a licence under section 8(1)(a) of the Ordinance in respect of any non-radiocommunications apparatus that is used in a combination of those manners as described in section 3(1)(a) and (b) is exempted from section 8(1)(a) of the Ordinance if the provisions in section 3 are complied with.
- (2) A person who is under an obligation to hold a licence under section 8(1)(a), (b), (c) or (d) of the Ordinance in respect of any radiocommunications apparatus that is used or is capable of being used in a combination of those manners as described in section 5(1)(a) and (b) is exempted from section 8(1)(a), (b), (c) or (d) of the Ordinance, as the case may be, if the provisions in section 5 are complied with.
- (3) A person who is under an obligation to hold a licence under section 8(1)(a), (b), (c) or (d) of the Ordinance in respect of any telecommunications apparatus that is used or is capable of being used in a combination of any one or more of those manners as described in sections 3(1) and in 5(1) is exempted from section 8(1)(a), (b), (c) or (d) of the Ordinance, as the case may be, if the relevant provisions in both sections 3 and 5 are complied with.

Section:	7	Exemption for import and export of radiocommunications apparatus	E.R. 2 of 2012	02/08/2012
----------	---	---	----------------	------------

A person who imports into, or exports from, Hong Kong any radiocommunications apparatus exempted under section 5 or 6 is also exempted from section 9 of the Ordinance if the apparatus is imported or exported, as the case may be, for the person's reasonable personal use and that the relevant quantity commensurates with such use.

Section:	8	(Omitted as spent—E.R. 2 of 2012)	E.R. 2 of 2012	02/08/2012
----------	---	--	----------------	------------

Schedule:	1	Technical Criteria for Apparatus Used, etc. as Mobile Earth Stations	E.R. 2 of 2012	02/08/2012
-----------	---	---	----------------	------------

[section 5]

- 1. The operating frequency for transmission shall be within the frequency bands 1610 MHz to 1660.5 MHz, 1668 MHz to 1675 MHz or 1980 MHz to 2010 MHz.
- 2. The operating frequency for reception shall be within the frequency bands 1518 MHz to 1559 MHz, 1613.8 MHz to 1626.5 MHz, 2170 MHz to 2200 MHz or 2483.5 MHz to 2500 MHz.

3. The mean equivalent isotropically radiated power density produced by the mobile earth station shall not exceed -3 dBW/4kHz within the frequency band 1610 MHz to 1626.5 MHz.
4. The unwanted emissions generated by the mobile earth station shall comply with the relevant requirements in—
 - (a) Recommendation ITU-R M.1343 “Essential Technical Requirements of Mobile Earth Stations for Global Non-Geostationary Mobile-Satellite Service Systems in the Bands 1 – 3 GHz” ; or
 - (b) Recommendation ITU-R M.1480 “Essential Technical Requirements of Mobile Earth Stations of Geostationary Mobile-Satellite Systems that are Implementing the Global Mobile Personal Communications By Satellite (GMPCS)—Memorandum of Understanding Arrangements in Parts of the Frequency Band 1 – 3 GHz” ,
 approved by the International Telecommunication Union as revised from time to time.

(Schedule 1 replaced L.N. 22 of 2005)

Schedule:	2	Technical Criteria for Apparatus Used, etc. other than as Mobile Earth Stations	E.R. 2 of 2012	02/08/2012
-----------	---	--	----------------	------------

[sections 3 & 5]

Telecommunications apparatus shall operate within a frequency band shown in column 1 of the following table and the output level and spurious emission level generated by the apparatus shall not exceed the limits set out opposite to that frequency band in columns 2 and 3-

Column 1	Column 2	Column 3
Frequency Band	Limits on Output Level	Limits on Spurious Emission Level
3-195 kHz	electric field strength not to exceed 40 dB μ V/m and magnetic field strength not to exceed 48.4 dBnA/m at 100 m from the apparatus	spurious emission level not to exceed the limits set out in Note ^[9]
1627.5-1796.5 kHz ^[1]	electric field strength not to exceed 88 dB μ V/m at 30 m from the apparatus	electric field strength not to exceed 34 dB μ V/m at 30 m from the apparatus within 0.5-30 MHz; spurious emission level not to exceed the limits set out in Note ^{[9](b)}
13.553-13.567 MHz	(a) electric field strength not to exceed 80 dB μ V/m at 30 m from the apparatus; or (b) magnetic field strength not to exceed 42 dB μ A/m at 10 m from the apparatus	spurious emission level not to exceed the limits set out in Note ^[9]
26.96-27.28 MHz	mean power not to exceed 0.5 W	
33-33.28 MHz	e.r.p. not to exceed 10 mW	
35.145-35.225 MHz	e.r.p. not to exceed 100 mW	(a) e.r.p. not to exceed 2 nW for frequency below 1 GHz; and (b) e.r.p. not to exceed 20 nW for frequency at or above 1 GHz
36.26-36.54 MHz	e.r.p. not to exceed 10 mW	spurious emission level not to exceed the limits set out in Note ^[9]
36.41-36.69 MHz		
36.71-36.99 MHz		
36.96-37.24 MHz		
40.66-40.70 MHz	e.r.p. not to exceed 100 mW	(a) e.r.p. not to exceed 2 nW for frequency below 1 GHz; and (b) e.r.p. not to exceed 20 nW for frequency at or above 1 GHz
42.75-43.03 MHz	e.r.p. not to exceed 10 mW	spurious emission level not to exceed the limits set out in Note ^[9]

43.71-44.49 MHz ^[2]	electric field strength not to exceed 10 mV/m at 3 m from the apparatus	spurious emission level not to exceed the limits set out in Note ^[10]
44.73-45.01 MHz	e.r.p. not to exceed 10 mW	spurious emission level not to exceed the limits set out in Note ^[9]
46.6-46.98 MHz ^[2]	electric field strength not to exceed 10 mV/m at 3 m from the apparatus	spurious emission level not to exceed the limits set out in Note ^[10]
47.13-47.41 MHz	e.r.p. not to exceed 10 mW	spurious emission level not to exceed the limits set out in Note ^[9]
47.43-47.56 MHz ^[1]	e.r.p. not to exceed 10 mW	spurious emission level not to exceed the limits set out in Note ^{[9](b)}
48.75-50 MHz ^[2]	electric field strength not to exceed 10 mV/m at 3 m from the apparatus	spurious emission level not to exceed the limits set out in Note ^[10]
72.00-72.02 MHz	carrier power not to exceed 750 mW	spurious emission level not to exceed 30 μ W
72.12-72.14 MHz		
72.16-72.22 MHz		
72.26-72.28 MHz		
173.96-174.24 MHz	e.r.p. not to exceed 20 mW	spurious emission level not to exceed the limits set out in Note ^[9]
187.5-188.0 MHz	e.r.p. not to exceed 10 mW	
253.85-255 MHz ^[3]	e.r.p. not to exceed 12 mW	e.r.p. not to exceed 2.5 μ W
266.75-267.25 MHz	e.r.p. not to exceed 10 mW	spurious emission level not to exceed the limits set out in Note ^[9]
313.75-314.25 MHz		
314.75-315.25 MHz		
380.2-381.325 MHz ^[3]	e.r.p. not to exceed 12 mW	e.r.p. not to exceed 2.5 μ W
409.74-410 MHz ^[4]	e.r.p. not to exceed 0.5 W	e.r.p. not to exceed 50 μ W
819.1-823.1 MHz	(a) e.r.p. not to exceed 100 mW; and (b) power spectral density not to exceed 10 mW per 25 kHz	spurious emission level not to exceed the limits set out in Note ^[9]
864.1-868.1 MHz ^[5]	carrier power or e.r.p. not to exceed 10 mW	(a) e.r.p. not to exceed 250 nW for frequency below 1 GHz excluding 41-68 MHz, 87.5-118 MHz, 162-230 MHz and 470-862 MHz; (b) e.r.p. not to exceed 4 nW for frequency in the bands 41-68 MHz, 87.5-118 MHz, 162-230 MHz and 470-862 MHz; and (c) e.r.p. not to exceed 1 μ W for frequency at or above 1 GHz
865-868 MHz ^[13]	e.r.p. not to exceed 100 mW	(a) e.r.p. not to exceed 250 nW for frequency below 1 GHz excluding 47-74 MHz, 87.5-118 MHz, 174-230 MHz and 470-862 MHz; (b) e.r.p. not to exceed 4 nW for frequency in the bands 47-74 MHz, 87.5-118 MHz, 174-230 MHz and 470-862 MHz; and (c) e.r.p. not to exceed 1 μ W for frequency at or above 1 GHz
865.6-867.6 MHz ^[14]	e.r.p. not to exceed 2 W	
865.6-868 MHz ^[15]	e.r.p. not to exceed 500 mW	
919.5-920.0 MHz	e.r.p. not to exceed 10 mW	spurious emission level not to exceed the limits set out in Note ^[9]
920-925 MHz ^[16]	e.i.r.p. not to exceed 4 W	e.r.p. not to exceed 10 μ W for frequency outside the frequency band in which the fundamental frequencies are located
1880-1900 MHz ^[6]	(a) peak power not to exceed 250 mW for	(a) e.r.p. not to exceed 250 nW for

	apparatus with antenna output terminal; or (b) peak e.i.r.p. not to exceed 250 mW for apparatus with integral antenna	frequency below 1 GHz; and (b) e.r.p. not to exceed 1 μ W for frequency at or above 1 GHz
1895-1906.1 MHz ^[7]	(a) carrier power not to exceed 10 mW for apparatus with antenna output terminal; or (b) e.r.p. not to exceed 10 mW for apparatus with integral antenna	(a) e.r.p. not to exceed 250 nW for frequency within 1895-1906.1 MHz; and (b) e.r.p. not to exceed 2.5 μ W for frequency within 30 MHz-10 GHz excluding 1895-1906.1 MHz
2400-2483.5 MHz	(a) peak e.i.r.p. not to exceed 4 W for frequency hopping spread spectrum modulation or digital modulation systems; or (b) aggregate e.r.p. not to exceed 100 mW for any modulation	e.r.p. not to exceed 10 μ W for frequency outside the frequency band in which the fundamental frequencies are located
5150-5350 MHz ^[11]	e.i.r.p. not to exceed 200 mW using only digital modulation	e.r.p. not to exceed 10 μ W
5470-5725 MHz ^[12]	e.i.r.p. not to exceed 1 W	
5725-5850 MHz	(a) peak e.i.r.p. not to exceed 4 W for frequency hopping spread spectrum modulation or digital modulation systems; or (b) aggregate e.r.p. not to exceed 100 mW for any modulation	e.r.p. not to exceed 10 μ W for frequency outside the frequency band in which the fundamental frequencies are located
18.82-18.87 GHz	(a) e.r.p. not to exceed 100 mW; and (b) power spectral density not to exceed 3 mW per 100 kHz	e.r.p. not to exceed 10 μ W for frequency outside the frequency band in which the fundamental frequencies are located
76-77 GHz	carrier power not to exceed 10 mW	(a) power density not to exceed 600 pW/cm ² at 3 m from the apparatus for frequency above 40 GHz but below 200 GHz; and (b) power density not to exceed 1000 pW/cm ² at 3 m from the apparatus for frequency at or above 200 GHz
3000 GHz or above ^[8]	Not applicable	Not applicable

Note: ^[1]The apparatus shall operate within the frequency bands 1627.5-1796.5 kHz paired with 47.43-47.56 MHz and on one of the following pairs of frequencies-

Channel Number	kHz	MHz
1	1642.00	47.45625
2	1662.00	47.46875
3	1682.00	47.48125
4	1702.00	47.49375
5	1722.00	47.50625
6	1742.00	47.51875
7	1762.00	47.53125 or 47.44375
8	1782.00	47.54375

^[2]The apparatus shall operate within the frequency bands 43.71-44.49 MHz, 46.6-46.98 MHz and 48.75-50 MHz and on any one or more of the following pairs of frequencies-

Channel Number	MHz	MHz
1	43.720	48.760
2	43.740	48.840
3	43.820	48.860
4	43.840	48.920
5	43.920	49.020
6	43.960	49.080
7	44.120	49.100
8	44.160	49.160
9	44.180	49.200
10	44.200	49.240
11	44.320	49.280
12	44.360	49.360
13	44.400	49.400
14	44.460	49.460
15	44.480	49.500
16	46.610	49.670
17	46.630	49.845
18	46.670	49.860
19	46.710	49.770
20	46.730	49.875
21	46.770	49.830
22	46.830	49.890
23	46.870	49.930
24	46.930	49.990
25	46.970	49.970

^[3]The apparatus shall operate within the frequency bands 253.85-255 MHz paired with 380.2-381.325 MHz and the frequency pairs shall be as follows-

Speech Channel	380.2 + n × 0.0125 MHz, where n is an integer in the range 1 to 88 (except 46)	253.85 + n × 0.0125 MHz, where n is an integer in the range 1 to 88 (except 46)
Control Channel	380.775 MHz and 381.3125 MHz	254.425 MHz and 254.9625 MHz

^[4]The apparatus shall employ frequency modulation and the carrier frequencies of the apparatus shall be $409.7375 + (0.0125 \times n)$ MHz, where n is an integer in the range 1 to 20.

^[5]The carrier frequencies of the apparatus shall be $864.05 + (0.1 \times n)$ MHz, where n is an integer in the range 1 to 40.

^[6]The carrier frequencies of the apparatus shall be $1880.064 + (1.728 \times n)$ MHz, where n is an integer in the range 1 to 10.

^[7]The carrier frequencies of the apparatus shall be $1895.15 + (n - 1) \times 0.3$ MHz, where n is an integer in the range 1 to 37.

^[8]The apparatus shall satisfy at least one of the following conditions-

- (a) the maximum usable range of the apparatus does not exceed 30 m;
- (b) the transmission path does not cross a public street or unleased Government land.

^[9]An apparatus with the following frequency range shall not generate a spurious emission level which exceeds the limits set out opposite to that frequency range-

(a) 3 kHz-30 MHz

Frequency Range	Limits on Spurious Emission Level
3-415 kHz	electric field strength not to exceed 17 dB μ V/m and magnetic field strength not to exceed 25.4 dBnA/m at 300 m from the apparatus
415 kHz-30 MHz	electric field strength not to exceed 30 dB μ V/m and magnetic field strength not to exceed 38.4 dBnA/m at 30 m from the apparatus

(b) 30 MHz-1000 MHz

Frequency Range	Limits on Spurious Emission Level
30-1000 MHz excluding 87-137 MHz and 470-790 MHz	e.r.p. not to exceed 300 nW
87-137 MHz and 470-790 MHz	e.r.p. not to exceed 60 nW

(c) 1-2 GHz

Frequency Range	Limits on Spurious Emission Level
1-2 GHz	e.r.p. not to exceed 1 μ W

^[10] An apparatus with the following frequency range shall not generate a spurious emission level which exceeds the limits set out opposite to that frequency range-

Frequency Range	Limits on Spurious Emission Level
1.705-30.0 MHz	electric field strength not to exceed 30 μ V/m at 30 m from the apparatus
30-88 MHz	electric field strength not to exceed 100 μ V/m at 3 m from the apparatus
88-216 MHz	electric field strength not to exceed 150 μ V/m at 3 m from the apparatus
216-960 MHz	electric field strength not to exceed 200 μ V/m at 3 m from the apparatus
above 960 MHz	electric field strength not to exceed 500 μ V/m at 3 m from the apparatus

^[11] Use of the band 5150-5350 MHz is restricted to indoor operations.

^[12] Use of the band 5470-5725 MHz shall comply with the technical requirements in Recommendation ITU-R M.1652 “Dynamic frequency selection (DFS) in wireless access systems including radio local area networks for the purpose of protecting the radiodetermination service in the 5 GHz band” approved by the International Telecommunication Union as revised from time to time.

^[13] The carrier frequencies of the apparatus shall be $864.90 + (0.2 \times n)$ MHz, where n is an integer in the range 1 to 15.

^[14] The carrier frequencies of the apparatus shall be $864.90 + (0.2 \times n)$ MHz, where n is an integer in the range 4 to 13.

^[15] The carrier frequencies of the apparatus shall be $864.90 + (0.2 \times n)$ MHz, where n is an integer in the range 4

to 15.

^[16] Use of the band 920-925 MHz is restricted to apparatus operating with frequency hopping spread spectrum modulation.

(Schedule 2 replaced L.N. 22 of 2005)