Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 1800 MHz Band) 2023

The Australian Communications and Media Authority makes the following guidelines under section 262 of the *Radiocommunications Act 1992*.

Dated: 16 March 2023

Chris Jose
[signed]
Member

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[signed]
~~Member~~/General Manager

Australian Communications and Media Authority

Part 1—Preliminary

1 Name

These are the *Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 1800 MHz Band) 2023*.

2 Commencement

This instrument commences at the start of the day after the day it is registered on the Federal Register of Legislation.

Note: The Federal Register of Legislation may be accessed free of charge at www.legislation.gov.au.

3 Authority

This instrument is made under section 262 of the Act.

4 Repeal of the *Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 1800 MHz Band) 2012*

The *Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 1800 MHz Band) 2012* [F2012L02048] are repealed.

5 Definitions

(1) In this instrument, unless the contrary intention appears:

1800 MHz band means the 1800 MHz lower band and the 1800 MHz upper band.

1800 MHz lower band means the frequency band 1710 MHz to 1785 MHz.

1800 MHz spectrum licence means a spectrum licence that authorises the operation of radiocommunications devices in the 1800 MHz band.

1800 MHz upper band means the frequency band 1805 MHz to 1880 MHz.

Act means the *Radiocommunications Act 1992*.

adjacent channel, in relation to another channel (***the occupied channel***), means a channel with a centre frequency offset on either side of the assigned channel frequency of the occupied channel by a specific frequency relation.

blocking means the measure of the ability of a radiocommunications receiver to receive a wanted signal in the presence of a high level unwanted interferer on frequencies other than those of an adjacent channel.

Category 1 receiver: see paragraph 9(a).

Category 2 receiver: see paragraph 9(b).

Cellular Devices Class Licence means:

(a) the *Radiocommunications (Cellular Mobile Telecommunications Devices) Class Licence 2014*; or

(b) if another instrument replaces that class licence – the other instrument.

centre frequency, in relation to a radiocommunications transmitter, means the frequency midway between the lower and upper frequency limits of the transmitter's occupied bandwidth.

CEPT Report 41 means CEPT Report 041, "Report from CEPT to European Commission in response to Task 2 of the Mandate to CEPT on the 900/1800 MHz bands: Compatibility between LTE and WiMAX operating within the bands 880-915 MHz / 925-960 MHz and 1710-1785 MHz / 1805-1880 MHz (900/1800 MHz bands) and systems operating in adjacent bands", published by the European Conference of Postal and Telecommunications Administrations.

Note: CEPT Report 41 is available, free of charge, from the website of the European Communications Office at docdb.cept.org.

Cordless Devices Class Licence means:

(a) the *Radiocommunications (Cordless Communications Devices) Class Licence 2014*; or

(b) if another instrument replaces that class licence – the other instrument.

Cordless Devices Equipment Rules means:

(a) the Digital Enhanced Cordless Telecommunications Equipment Standard (***Cordless Devices Standard***), set out in item 13 of the table in clause 3 of Schedule 5 to the *Radiocommunications Equipment (General) Rules 2021*; or

(b) if equipment rules are made to replace the Cordless Devices Standard – those equipment rules, to the extent that they perform the same or substantially the same function as the Cordless Standard.

ECC Report 96 means ECC Report 096, "Compatibility between UMTS 900/1800 and systems operating in adjacent bands", published by the Electronic Communications Committee of the European Conference of Postal and Telecommunications Administrations.

Note: ECC Report 96 is available, free of charge, from the website of the European Communications Office at docdb.cept.org.

ECC Report 146 means ECC Report 146, "Compatibility between GSM MCBTS and other services (TRR, RSBN/PRMG, HC-SDMA, GSM-R, DME, MIDS, DECT", published by the Electronic Communications Committee of the European Conference of Postal and Telecommunications Administrations.

Note: ECC Report 146 is available, free of charge, from the website of the European Communications Office at docdb.cept.org.

ECC Report 162 means ECC Report 162, "Practical mechanism to improve the compatibility between GSM-R and public mobile networks and guidance on practical coordination", published by the Electronic Communications Committee of the European Conference of Postal and Telecommunications Administrations.

Note: ECC Report 162 is available, free of charge, from the website of the European Communications Office at docdb.cept.org.

effective antenna height has the meaning given by the section 145 determination.

fixed service means a radiocommunication service between fixed points.

fixed transmitter means a radiocommunications transmitter:

(a) located at a fixed point on land or sea; and

(b) not designed or intended for use while in motion.

geographic area, for a spectrum licence, means the area within which operation of a radiocommunications device is authorised under the licence.

GSM-R means the Global System for Mobile Communications – Railway.

GSO: see subsection 11(2).

high sited: see subsection (2).

in-band means:

(a) for a radiocommunications device operated under a spectrum licence – the part of the spectrum within which the operation of radiocommunications devices is authorised under the licence;

(b) for a radiocommunications device operated under an apparatus licence that specifies a frequency band – the frequencies within the lower frequency limit and the upper frequency limit specified in the licence;

(c) for a radiocommunications device operated under an apparatus licence that specifies a specific frequency and bandwidth – the frequencies within that bandwidth, when centred on the specific frequency.

ITU-R Recommendation means a recommendation made by the Radiocommunication Sector of the International Telecommunication Union.

Note: ITU-R Recommendations are available, free of charge, from the website of the International Telecommunication Union at www.itu.int.

low sited: see subsection (3).

meteorological-satellite service means an earth exploration-satellite service that is used for meteorological purposes.

mobile transmitter means a radiocommunications transmitter that is used:

(a) while in motion on land, on water or in the air; or

(b) in a stationary position at unspecified points on land, on water or in the air.

NGSO: see subsection 11(2).

out-of-band, for a radiocommunications device, means a frequency other than an in-band frequency.

point to point fixed service means a radiocommunication service using point to point stations.

Radio Regulations means the document titled 'Radio Regulations', published by the International Telecommunication Union.

Note 1: The Radio Regulations are not regulations made by the Governor-General under the Act.

Note 2: The Radio Regulations are available, free of charge, from the International Telecommunication Union's website at www.itu.int.

RALI FX 3 means the Radiocommunications Assignment and Licensing Instruction FX 3 *Microwave fixed services frequency coordination*, published by the ACMA.

Note: RALI FX 3 is available, free of charge, from the ACMA's website at www.acma.gov.au.

RALI MS 31 means the Radiocommunications Assignment and Licensing Instruction MS 31 *Notification zones for apparatus licensed services around radio astronomy facilities*, published by the ACMA.

Note: RALI MS 31 is available, free of charge, from the ACMA's website at www.acma.gov.au.

RALI MS 34 means the Radiocommunications Assignment and Licensing Instruction MS 34 *Frequency coordination and licensing procedures for apparatus licensed PTS in the 1800 MHz bands*, published by the ACMA.

Note: RALI MS 34 is available, free of charge, from the ACMA's website at www.acma.gov.au.

section 145 determination means the *Radiocommunications (Unacceptable Levels of Interference – 1800 MHz Band) Determination 2023*.

Note: The section 145 determination is available, free of charge, from the Federal Register of Legislation at www.legislation.gov.au.

spectrum space means the 3 dimensional space consisting of a frequency band and a geographic area.

Note: A number of other expressions used in this instrument are defined in the Act, including the following:

(a) ACMA;
(b) apparatus licence;
(c) class licence;
(d) core conditions;
(e) equipment rules;
(f) frequency band;
(g) interference;
(h) radiocommunication;
(i) radiocommunications device;
(j) radiocommunications receiver;
(k) radiocommunications transmitter;
(l) radio emission;
(m) Register;
(n) spectrum licence;
(o) spectrum plan;
(p) transmitter licence.

(2) A radiocommunications device is ***high sited*** if its effective antenna height for any increment 1, $h_{e_1(\varphi_n)}$ is greater than 10 metres.

(3) A radiocommunications device is ***low sited*** if it is not high sited.

(4) In this instrument, unless the contrary intention appears, each of the terms listed in subsection (5) has the meaning given by:

(a) the *Radiocommunications (Interpretation) Determination 2015*; or
(b) if another instrument replaces that determination and defines the term – the other instrument.

(5) For the purposes of subsection (4), the terms are:

(a) ***earth exploration-satellite service***;
(b) ***earth receive station***;
(c) ***earth station***;
(d) ***EIRP***;
(e) ***land station***;
(f) ***mobile station***;
(g) ***PMTS Class B***;
(h) ***PMTS Class C***;
(i) ***point to point station***;
(j) ***public mobile telecommunications service***;
(k) ***radio astronomy service***;

(l) ***space station***;

(m) ***station***.

(6) In this instrument, unless otherwise specified, a reference to a part of the spectrum or a frequency band includes all frequencies that are greater than but not including the lower frequency, up to and including the higher frequency.

Note: This subsection means the lower number in a part of the spectrum or a frequency band is not included in the part of the spectrum or the frequency band.

6 References to other instruments

In this instrument, unless the contrary intention appears:

(a) a reference to any other legislative instrument is a reference to that other legislative instrument as in force from time to time; and

(b) a reference to any other kind of instrument or writing is a reference to that other instrument or writing as in force or existence from time to time.

Note 1: For references to Commonwealth Acts, see section 10 of the *Acts Interpretation Act 1901*; and see also subsection 13(1) of the *Legislation Act 2003* for the application of the *Acts Interpretation Act 1901* to legislative instruments.

Note 2: All Commonwealth Acts and legislative instruments are registered on the Federal Register of Legislation.

Note 3: See section 314A of the Act.

Part 2—Overview

7 Background

(1) The 1800 MHz spectrum licences have been allocated in relation to geographic areas in capital cities and in regional areas. Apparatus licensed and class licensed radiocommunications transmitters communicate with radiocommunications receivers in and adjacent to the 1800 MHz band. These receivers may suffer interference from radiocommunications transmitters operated under an 1800 MHz spectrum licence.

(2) This instrument has been made to provide guidance on the management of interference from radiocommunications transmitters operated under an 1800 MHz spectrum licence to apparatus licensed radiocommunications receivers operating in the following circumstances:

(a) point to point fixed services operating in and adjacent to the 1800 MHz band (Part 3);

(b) meteorological-satellite services operating at frequencies below 1710 MHz (Part 4);

(c) cordless communications devices authorised by the Cordless Devices Class Licence and operating in the 1880 MHz to 1900 MHz frequency band (Part 5);

(d) public mobile telecommunications services operating in the 1800 MHz band outside the geographic areas of 1800 MHz spectrum licences (Part 7).

(3) This instrument also provides advice on the following:

(a) the protection of radio astronomy services operating in the 1250 MHz to 1780 MHz frequency band on a fortuitous basis (Part 6);

(b) the co-existence arrangements between public mobile telecommunications service networks and GSM-R technologies, operating under 1800 MHz spectrum licences (Part 8).

(4) As radio waves propagate in different ways because of factors such as frequency, terrain, atmospheric conditions and topography, there are a number of ways to predict path loss. The ITU-R Recommendation P.1144 “Guide to the application of the propagation methods of Radiocommunication Study Group 3” provides a guide on the application of various propagation methods developed by the Radiocommunication Sector of the International Telecommunication Union. It advises on the most appropriate methods for particular applications, as well as the limits, required input information and output for each of these methods. The most recent version of propagation models developed by the Radiocommunication Sector of the International Telecommunication Union should be considered when modelling propagation in the 1800 MHz band.

Note 1: ITU-R Recommendation P.1144 is available, free of charge, from the International Telecommunication Union’s website at www.itu.int.

Note 2: The use of other published propagation models applicable to the 1800 MHz band may also be suitable.

(5) The ACMA may take this instrument into account in determining whether a radiocommunications transmitter operated under an 1800 MHz spectrum licence is causing interference to an apparatus licensed or class licensed radiocommunications receiver operating in circumstances set out in this instrument.

(6) This instrument does not prevent a person negotiating and implementing other protection requirements with other persons.

Part 3—Point to point fixed service receivers

8 Background

(1) Point to point fixed services in the 1800 MHz band are generally licensed in accordance with the frequency assignment criteria set out in RALI FX 3. RALI FX 3 provides details about channel plans for individual microwave bands, and guidance on interference criteria and frequency coordination between microwave links to achieve certain performance objectives. It provides assignment criteria for each frequency band and specifies protection ratios. The criteria are usually based on accepted ITU-R Recommendations.

(2) RALI FX 3 is subject to continuing review in consultation with industry, to incorporate improved assignment techniques and changing technology requirements. Particular account is taken of changes in ITU-R Recommendations, and standards made by other bodies. As revisions seek to improve spectrum access opportunities, without causing undue detriment to existing licences, users of RALI FX 3 should consult the current version when planning systems, to increase spectrum productivity.

9 Point to point receiver categories

A radiocommunications receiver that is part of a fixed service operating in the 1800 MHz band is:

(a) if the operation of the receiver is authorised by an apparatus licence first issued under section 100 of the Act before 18 June 2013 – a ***Category 1 receiver***; or

(b) if the operation of the receiver is authorised by an apparatus licence first issued under section 100 of the Act on or after 18 June 2013, in the spectrum space of an 1800 MHz spectrum licence – a ***Category 2 receiver***.

10 Point to point receiver protection requirements

(1) The protection requirements for fixed services in the 1800 MHz band are specified in RALI FX 3. In planning for the operation of radiocommunications transmitters under a spectrum licence, spectrum licensees are to provide a level of in-band and out-of-band protection from those transmitters as would be provided for apparatus licensed radiocommunications transmitters used for fixed services, the frequencies of which are assigned in accordance with RALI FX 3.

(2) Category 1 receivers are to be provided with in-band and out-of-band protection from interference according to RALI FX 3.

(3) Category 2 receivers:

(a) are to be provided with out-of-band protection from interference according to RALI FX 3 caused by a radiocommunications transmitter operated under an 1800 MHz spectrum licence operated under a frequency adjacent spectrum licence, which was included in the Register after the apparatus licence that authorises operation of the receiver was first issued under section 100 of the Act; and

(b) are to accept levels of in-band emissions from a radiocommunications transmitter operated under an 1800 MHz spectrum licence, if the transmitter is operated in accordance with the conditions of the 1800 MHz spectrum licence and does not cause an unacceptable level of interference as defined in the section 145 determination.

Part 4—Meteorological-satellite services (space-to-earth)

11 Background

(1) The meteorological-satellite service operates at frequencies below 1710 MHz, which is adjacent to the 1800 MHz lower band.

(2) Earth receive stations in the meteorological-satellite service use the 1670 MHz to 1710 MHz frequency band for the reception of data to assist in meteorological forecasting and other scientific purposes. The service uses both geostationary (***GSO***) and non-geostationary (***NGSO***) space stations. The 1698 MHz to 1710 MHz frequency band is typically used for NGSO purposes, with GSO space stations deployed below 1698 MHz.

(3) Out-of-band emissions from both fixed transmitters and mobile transmitters operated under an 1800 MHz spectrum licence have the potential to cause interference to earth receive stations in the meteorological-satellite service. The potential for interference is also likely to be increased for technologies that use wide-band emissions. The protection requirements in section 12 apply in relation to interference from all radiocommunications transmitters operated under an 1800 MHz spectrum licence, including mobile transmitters.

12 Protection requirements

The protection requirements for earth receive stations in the meteorological-satellite service operated below 1710 MHz are set out in:

(a) ITU-R Recommendation SA.1026 "Aggregate interference criteria for space-to-Earth data transmission systems operating in the Earth exploration-satellite and meteorological-satellite services using satellites in low-Earth orbit"; and

(b) ITU-R Recommendation SA.1160 "Interference criteria for data dissemination and direct data readout systems in the Earth exploration-satellite and meteorological-satellite services using satellites in the geostationary orbit".

Note: ITU-R Recommendations SA.1026 and SA.1160 are available, free of charge, from the International Telecommunication Union's website at www.itu.int.

13 Additional information on meteorological-satellite service protection

(1) Information on the prediction of appropriate coordination distances, propagation models, threshold coordination levels and earth receive station and antenna characteristics, which may assist in assessing compliance with interference criteria, is available from the following:

(a) ITU-R Recommendation SA.1027 "Sharing criteria for space-to-Earth data transmission systems in the Earth exploration-satellite and meteorological-satellite services using satellites in low-Earth orbit";

(b) ITU-R Recommendation SA.1158 "Feasibility of frequency sharing in the 1 670-1 710 MHz band between the meteorological-satellite service (space-to-Earth) and the mobile-satellite service (Earth-to-space)";

(c) ITU-R Recommendation SA.1161 "Sharing and coordination criteria for data dissemination and direct data readout systems in the Earth exploration-satellite and meteorological-satellite services using satellites in geostationary orbit".

Note: ITU-R Recommendations SA.1027, SA.1158 and SA.1161 are available, free of charge, from the International Telecommunication Union's website at www.itu.int.

(2) Subsections (3) to (7) may also assist in assessing compliance with interference criteria.

(3) The main source of interference will be from a mobile transmitter operating in the 1800 MHz lower band, caused by either in-band or out-of-band emissions. The probability of interference depends not only on physical proximity to an earth receive station, but also network configuration and operation, such as the EIRP of the mobile transmitter (which will depend on cell size and the location of the mobile transmitter, relative to the base station).

(4) Liaison is encouraged between spectrum licensees and operators of earth receive stations in the meteorological-satellite service to determine additional details about specific sites that may assist in coordination, including the following:

(a) the nature of the transmission of the meteorological-satellite service (for example, recorded data playback or direct data readout) and type of satellite orbit (GSO or NGSO);

(b) the earth receive station antenna azimuth and elevation, or minimum elevation angle;

(c) the earth receive station radiofrequency and intermediate frequency bandwidth and response (including any additional filtering that may be installed);

(d) the earth receive station antenna height and gain (if not available from the Register).

(5) If the antenna radiation pattern of an earth receive station in the meteorological-satellite service is unavailable, ITU-R Recommendation SA.465 “Reference radiation pattern for earth station antennas in the fixed-satellite service for use in coordination and interference assessment in the frequency range 2 to 31 GHz” may be used for coordination, even though the earth receive station operates outside the frequency range for that document.

Note: ITU-R Recommendation SA.465 is available, free of charge, from the International Telecommunication Union’s website at www.itu.int.

(6) Coordination is performed on a first-in-time basis, and the operator of any new or relocated earth receive station in the meteorological-satellite service will need to assess the interference potential from existing spectrum licensed services (from both fixed transmitters and mobile transmitters).

(7) Local terrain and clutter may also be taken into account.

(8) Additional information can also be found in Appendix 7 of the Radio Regulations describing methods for the determination of the coordination area around an earth receive station in frequency bands between 100 MHz and 105 GHz.

Note: The title of Appendix 7 of the Radio Regulations is “Methods for the determination of the coordination area around an earth station in frequency bands between 100 MHz and 105 GHz”.

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Part 5—Cordless communications devices

14 Background

(1) Some cordless communications devices, the operation of which is authorised by the Cordless Devices Class Licence, operate in the 1880 MHz to 1900 MHz frequency band. This band is adjacent to the 1800 MHz upper band used by 1800 MHz spectrum licences. Devices which may operate in the 1880 MHz to 1900 MHz frequency band generally must comply with the Cordless Devices Equipment Rules.

(2) CEPT Report 41, ECC Report 96 and ECC Report 146 show that no guard band is required for International Mobile Telecommunications (IMT) technologies operating below and directly adjacent to the 1880 MHz to 1900 MHz frequency band (below the 1880 MHz frequency boundary) to coexist with digitally enhanced cordless telecommunications services operating in the 1880 MHz to 1900 MHz frequency band. This is due to the ability of digitally enhanced cordless telecommunications services to dynamically select channels located further away from the 1800 MHz frequency boundary in order to avoid interference.

15 Protection requirements

If:

(a) a spectrum licensee complies with all the core conditions of an 1800 MHz spectrum licence; and

(b) a radiocommunications transmitter operated under the licence does not cause an unacceptable level of interference, as defined in the section 145 determination;

for the purpose of this instrument, no unacceptable interference is taken to be caused to any cordless communications devices operated in accordance with the Cordless Devices Class Licence.

Part 6—Radio astronomy service receivers

16 Background

(1) Radiocommunications receivers used in a radio astronomy service conduct passive observations in the 1.2 GHz to 1.8 GHz frequency band.

Note: See Australian footnote reference AUS87 in Parts 2 and 3 of the spectrum plan.

(2) Due to the highly sensitive nature of such receivers, spectrum licensees are requested to have regard to such receivers operating on frequencies in and adjacent to the 1800 MHz band. A number of radio astronomy facilities operate in bands covered by Australian footnote reference AUS87 in the spectrum plan.

(3) At the time this instrument was made, Australian footnote reference AUS87 in the spectrum plan stated that there are radio astronomy facilities operated by the Commonwealth Scientific and Industrial Research Organisation and the University of Tasmania.

17 Protection requirements

(1) Spectrum licensees are requested to have regard to radiocommunications receivers used in a radio astronomy service operating on frequencies in the 1800 MHz band, covered by Australian footnote reference AUS87 in the spectrum plan.

(2) Although these radio astronomy facilities operate on a fortuitous reception basis, the ACMA encourages the direct liaison of spectrum licensees with the operators of such radiocommunications receivers, particularly during the system planning phase of new systems, to minimise the potential interference impact on these receivers. Spectrum licensees planning new fixed transmitters that are required to be included in the Register are requested to follow the notification arrangements in RALI MS 31.

Part 7—Public mobile telecommunications services

18 Background

(1) Public mobile telecommunications services operate in spectrum in and adjacent to the 1800 MHz band. The operation of mobile stations that communicate with land stations for the purposes of a public mobile telecommunications service may be authorised by the Cellular Devices Class Licence.

(2) The ACMA has determined, under section 98 of the Act, that the public telecommunications service (***PTS***) type of transmitter licence is available to be issued under section 100 of the Act. There are two kinds of PTS transmitter licences available in the 1800 MHz band:

(a) PMTS Class B, which authorises the use of radiocommunications devices (limited to land stations) in terrestrial systems; and

(b) PMTS Class C, which authorises the use of radiocommunications devices located on aircraft.

19 Protection requirements – PMTS Class B

(1) PMTS Class B licences in the 1800 MHz band are generally issued in accordance with the frequency assignment criteria in RALI MS 34, which provides details about channel plans and guidance on interference criteria and frequency coordination procedures.

(2) The protection requirements for radiocommunications receivers operating in relation to a PMTS Class B licence are specified in RALI MS 34. In planning for the operation of radiocommunications transmitters under an 1800 MHz spectrum licence, radiocommunications receivers operating in relation to a PMTS Class B licence are to be provided with the protection set out in this section.

(3) For the purposes of this instrument, radiocommunications receivers operating in relation to a PMTS Class B licence are taken to be divided into two classes:

(a) land station radiocommunications receivers, which operate in the 1710 MHz to 1785 MHz frequency band outside those areas subject to spectrum licensing in the 1800 MHz band; and

(b) mobile station radiocommunications receivers, which operate in the 1805 MHz to 1880 MHz frequency band outside those areas subject to spectrum licensing in the 1800 MHz band.

Land station radiocommunications receivers

(4) Land station radiocommunications receivers operated in relation to a PMTS Class B licence are:

(a) to be provided with out-of-band protection from interference according to RALI MS 34, from spectrum licensed radiocommunications transmitters that:

(i) are high sited; and

(ii) operate in the 1800 MHz lower band; and

(iii) were included in the Register after the PMTS Class B licence was issued; and

(iv) operate in accordance with all conditions of the spectrum licence; and

(v) do not cause an unacceptable level of interference, as defined in the section 145 determination; and

(b) required to accept levels of out-of-band interference from spectrum licensed radiocommunications transmitters that:

(i) are low sited; and

(ii) operate in the 1800 MHz lower band; and

(iii) operate in accordance with all conditions of the spectrum licence; and

(iv) do not cause an unacceptable level of interference, as defined in the section 145 determination; and

(c) required to accept levels of in-band emissions from spectrum licensed radiocommunications transmitters that:

(i) operate in accordance with all conditions of the spectrum licence; and

(ii) do not cause an unacceptable level of interference, as defined in the section 145 determination.

Mobile station radiocommunications receivers

(5) The ACMA will not regard interference from a spectrum licensed radiocommunications transmitter to a mobile station radiocommunications receiver operating in the 1800 MHz band as unacceptable if the transmitter:

(a) operates in accordance with all conditions of the spectrum licence; and

(b) does not cause an unacceptable level of interference, as defined in the section 145 determination.

20 Protection requirements – PMTS Class C

PMTS Class C licences will be afforded the same protection from spectrum licensed radiocommunications transmitters as they are afforded from apparatus licensed radiocommunications transmitters. As a result, radiocommunications receivers operated in relation to a PMTS Class C licence are required to accept levels of in-band and out-of-band emissions from a spectrum licensed radiocommunications transmitter if the transmitter:

(a) operates in accordance with all conditions of the spectrum licence; and

(b) does not cause an unacceptable level of interference, as defined in the section 145 determination.

Part 8—Co-existence arrangements for GSM-R networks

21 Background

(1) GSM-R is based on the standard Global System for Mobile Communications (GSM) platform; however, its use and deployment configurations vary to some degree from that of a public mobile telecommunications service network. These variations include an increase in the minimum quality of service and reliability, and the introduction of vehicle mobile stations which may have an increased EIRP (up to 39 dBm/200 kHz) and an increased notional antenna height (typically 4 metres).

(2) These differences may give rise to additional co-existence considerations when other radiocommunication services are in close physical proximity. There are several European studies which deal with co-existence between GSM-R and public mobile telecommunications service networks, namely the following:

(a) ECC Report 96;

(b) ECC Report 146;

(c) ECC Report 162;

(d) CEPT Report 41.

Note: Although these studies relate to the 900 MHz band, their results also apply to the 1800 MHz band.

22 Co-existence recommendations

(1) It is recommended that all spectrum licensees, when planning and deploying radiocommunications systems, consider the co-existence issues that may arise with GSM-R networks, and typically GSM-R vehicle mobile stations, that may operate in the 1800 MHz band. It is also recommended that affected licensees seek to coordinate between themselves to help manage and resolve interference that may arise to or from GSM-R vehicle mobile stations.

(2) Licensees should also be aware of the following matters that may affect co-existence between GSM-R and public mobile telecommunications service networks:

(a) co-existence between GSM-R and public mobile telecommunications service networks has been studied in the reports specified in subsection 21(2), which conclude that in general a 200 kHz guard band is sufficient for co-existence, though is some cases additional coordination may be needed;

(b) some GSM-R network operators may choose to implement a two channel guard band (400 kHz) at the frequency boundary with another spectrum licensee, to obtain more isolation from frequency adjacent radiocommunication services;

(c) coordination with mobile stations may be difficult due to their mobility, although GSM-R services typically operate in close proximity to railway infrastructure;

(d) potential interference paths are in both directions (such as to and from GSM-R vehicle mobile stations);

(e) ECC Report 162 describes a range of mechanisms that may be used to address co-existence between GSM-R and public mobile telecommunications service networks.