Radiocommunications Spectrum Marketing Plan (500 MHz Band) 2003

as amended

made under section 39 of the

Radiocommunications Act 1992

This compilation was prepared on 14 February 2007
taking into account amendments up to *Radiocommunications Spectrum Marketing Plan (500 MHz Band) 2003 Variation (No. 1) 2007*

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Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Page

Contents

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Part 1 Preliminary

1.1 Title [see Note 1]

This Plan is called the *Radiocommunications Spectrum Marketing Plan (500 MHz Band) 2003*.

1.2 Commencement

This Plan commences on 12 November 2003.

1.3 Purpose

(1) Subject to subsection 1.3. (2), this Plan sets out how those parts of the 500 MHz band designated by the Minister under section 36 of the Act are to be apportioned among spectrum licences issued by ACMA.

(2) This Plan does not deal with a part of the 500 MHz band that:

(a) was allocated under the *Radiocommunications Spectrum Marketing Plan (500 MHz Band) 1996*, except those parts specified in Schedule 10; or

(b) was used for the conversion of apparatus licences under the *Radiocommunications Spectrum Conversion Plan (500 MHz Band) 1996*, except those parts specified in Schedule 10.

(3) This Plan also sets out other matters that a licensee must take into account in operating devices under a spectrum licence.

1.4 Interpretation

(1) In this Plan:

ACMA means the Australian Communications and Media Authority.

Act means the *Radiocommunications Act 1992.*

Advisory Guidelines means the following documents made by ACMA under section 262 of the Act, as in force from time to time:

(a) *Radiocommunications Advisory Guidelines (Co-ordinating the operation of transmitters in the 500 MHz Bands)*; and

(b) *Radiocommunications Advisory Guidelines (Registration of Devices under Spectrum Licences without an Interference Impact Certificate) 1998*.

cell means a square with a side measured in degrees, and where appropriate, minutes and seconds, by reference to the Australian National Spheroid.

device boundary, in relation to a receiver or a group of receivers, means the device boundary established in accordance with Part 1 of Schedule 1.

effective antenna height means the effective height of an antenna, calculated in accordance with Schedule 2.

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

effective occupied bandwidth, in relation to a transmitter, means the minimum width of a frequency band having fixed upper and lower limits that is necessary to contain 99% of the true mean power of the transmitter's emission at any time.

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

emission limits outside the area means the maximum permitted level of radio emission, outside the geographic area of a licence, that may be caused by the operation of a radiocommunications device under the licence.

emission limits outside the band means the maximum permitted level of radio emission, outside the frequency band of a licence, that may be caused by the operation of a radiocommunications device under the licence.

fixed receiver means a radiocommunications receiver located at a fixed point on land or sea and not established for use while in motion.

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

group of receivers has the meaning given by section 1.5.

horizontally radiated power, for a radiocommunications device, means the radiated maximum true mean power within the frequency band of the licence, summed over all polarizations and measured in units of dBm EIRP, in a direction referenced from, and in the horizontal plane containing, the phase centre of the antenna used with the radiocommunications device.

in-band, in relation to a transmitter operated under a licence, means the frequencies within the frequency band of the spectrum to which the licence relates.

level of protection, in relation to a receiver operated under a licence, means the level of protection that:

(a) causes the device boundary of the receiver to be as near as possible to the boundary of the geographic area of the licence while remaining within that geographic area; and

(b) is never less than -139 dBm per 12.5 kHz.

licence means a spectrum licence.

LOP criterion (500 MHz) has the meaning given by Part 2 of Schedule 1.

maximum true mean power means the true mean power measured in a 12.5 kHz rectangular bandwidth that is located within a specified frequency band such that the true mean power is the maximum of true mean powers produced.

Note The power within a 12.5 kHz rectangular bandwidth is normally established by taking measurements using either an adjacent channel power meter or a spectrum analyser. The accuracy of measuring equipment, measurement procedure and any corrections to measurements necessary to take account of practical filter shape factors would normally be in accordance with good engineering practice.

mean power means the average mean power measured during an interval of time that is at least 10 times the period of the lowest modulation frequency.

mobile receiver means a radiocommunications receiver established for use while in motion or during halts at unspecified points on land or sea.

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

peak power means the average power measured within a specified bandwidth during one radio frequency cycle at the crest of the signal envelope.

population, means the notional population of a lot, fixed by ACMA and set out in the column headed, 'Notional Population', in the table in Schedule 3.

roads mobile list means the list giving the names of major roads, latitude and longitude of the centre location, the effective radius and 2 sets of co-ordinates from which sections of the roads may be identified, published by ACMA.

spectrum map grid means the map grid developed by ACMA for Australia, showing cells the sides of which measure 3 degrees of arc, 1 degree of arc or 5 minutes of arc, published by ACMA.

spurious radio emission means emissions that are not:

(a) modulation products; or

(b) wide band noise; or

(c) emissions caused by switching transients.

standard trading unit (STU) means a parcel of spectrum space that consists of:

(a) a frequency band having lower and upper frequency limits defined by:

(i) $500.99375 + n \times .0125$ and $(n + 1) \times .0125$ respectively; or

(ii) $510.99375 + n \times .0125$ and $(n + 1) \times .0125$ respectively;

where n is any integer from 0 to 319 (inclusive); and

(b) a geographic area equal to a cell of the spectrum map grid.

towns mobile list means the list giving the names of towns, latitude and longitude of the centre location and the effective radius for each town, published by ACMA.

true mean power means:

(a) if an unmodulated carrier is present — the mean power measured while the unmodulated carrier is present; and

(b) if an unmodulated carrier is not present — the mean power measured while transmitted information is present.

unencumbered, in relation to the spectrum, means a part of the spectrum in which apparatus licences have not been issued.

500 MHz band means the following frequency bands:

(a) 500.99375 MHz – 504.99375 MHz (the 500 MHz Lower band).

(b) 510.99375 MHz – 514.99375 MHz (the 500 MHz Upper band).

Note The following terms, used in this Plan, are defined in the *Radiocommunications Act 1992* and have the meanings given to them by that Act:

apparatus licence	licensee
frequency band	public or community service
	spectrum licence

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

(2) In this Plan, the range of numbers that identifies a frequency band includes the higher, but not the lower, number.

1.5 Group of receivers

(1) For the purpose of this determination, two or more receivers are a group of receivers if:

(a) they have:

(i) the same intended polarisation for their antennas; and

(ii) for the intended polarisation of their antennas — the same forward gain, 3 dB beamwidth and front to back ratio; and

(b) they are operated for the purpose of receiving information from the same transmitter.

(2) A receiver may belong to more than one group.

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Part 2 Allocation of spectrum licences

2.1 Spectrum to be apportioned

(1) ACMA will apportion parts of the spectrum in the 500 MHz Band designated by the Minister under section 36 of the Act in accordance with this Marketing Plan.

(2) ACMA does not propose to reserve any spectrum in the 500 MHz Band for public or community services.

2.2 Identification of licences

(1) ACMA has divided the parts of the spectrum that have been designated by the Minister into available licences.

(2) Each licence covers a geographic area. A description of the area of each available licence is set out in Schedule 4.

(3) Each available licence also covers a particular frequency band and its 'pair', except where the pair has already been allocated. The frequency bands are set out in Schedule 5.

(4) Licences may be issued for all or part of the spectrum available in an area, subject to any procedures for allocating spectrum licences determined by ACMA under section 60 of the Act.

2.3 Aggregation of licences

After licences have been allocated, a licensee may apply for licences covering adjacent areas or contiguous bandwidths to be aggregated to form licences covering a wider area or wider bandwidth or both.

2.4 How licences will be allocated

Licences will be allocated in accordance with procedures determined by ACMA under section 60 of the Act.

2.5 Sample licence

A sample licence is set out in Schedule 6.

2.6 Core licence conditions

(1) Section 66 of the Act requires a licence to contain core conditions that define the parts of the spectrum that can be used under the licence, in terms of:

(a) frequency band; and

(b) geographic area; and

(c) emission limits outside the area; and

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

(d) emission limits outside the band.

(2) These conditions will be included in the licence.

2.7 Other licence conditions

The licence will also include conditions about:

(a) payment of charges (section 67 of the Act); and

(b) use by third parties (section 68); and

(c) registration of transmitters (section 69); and

(d) other matters that ACMA may include in the licence (section 71).

2.8 Determination of core licence conditions

(1) The core conditions for the geographic area of a licence will apply to the area or the aggregation of areas described in Schedule 4 that cover the lots allocated to the licensee in the allocation under section 60 of the Act.

(2) The core conditions for frequency bands will apply to the bands or aggregation of bands described in Schedule 5 that cover the lots allocated to the licensee.

2.9 Emission limits

(1) The emission limits outside the area for all licences are worked out in accordance with Schedule 7.

(2) The emission limits outside the band for all licences are worked out in accordance with Schedule 8.

Note These core conditions may be varied by ACMA with the licensee's agreement — see section 72 of the Act.

2.10 Level of protection

(1) The level of in-band emission from a transmitter operating under a licence, measured at a fixed receiver operating otherwise than under that licence, must be, for not more than 99% of the time in any one hour period, not greater than the level of protection for that receiver plus 20dB.

Note 1 The level of protection may be taken into account during interference settlement.

Note 2 The level of protection relates to interference caused by in-band emissions from geographically adjacent spectrum licensees and does not relate to interference caused by, for example, intermodulation or services operated under apparatus licences.

Note 3 The level of protection is applied only within an equivalent intermediate frequency bandwidth of the receiver that is based on the effective occupied bandwidth of the transmitter that communicates with the receiver.

Note 4 The same level of protection is provided to a receiver regardless of the gain of the antenna used with the receiver or the bearing of the interfering transmitter.

(2) The level of emission at the fixed receiver is the level of radio emission received by a notional antenna located as if its phase centre is located at the phase centre of the antenna used with the receiver and measured:

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

(a) as mean power in units of dBm at the terminals of the notional antenna; and

(b) in relation to 12.5 kHz rectangular bandwidths within the frequency band:

(i) whose upper limit is equal to the emission centre frequency plus half the effective occupied bandwidth of a transmitter that communicates with the receiver; and

(ii) whose lower limit is equal to the emission centre frequency minus half the effective occupied bandwidth of a transmitter that communicates with the receiver.

(3) In subsection (2), ***notional antenna*** means an antenna with a gain of 0 dBi in any direction.

(4) The level of protection for each of the following receivers is never less than -77 dBm per 12.5 kHz:

(a) a fixed receiver whose operation is authorised under a licence issued for the 500 MHz Lower band when its effective antenna height for segment 'm' = 1 is greater than 10 metres; or

(b) a fixed receiver whose operation is authorised under a licence issued for the 500 MHz Upper band when its effective antenna height for segment 'm' = 1 is less than 20 metres; or

(c) a mobile receiver.

(5) When it is not possible to establish whether a measured level of emission at a fixed receiver meets the requirements of subsection (1) because emission levels cannot be measured in accordance with subsection (2) with equipment of reasonable accuracy and reliability (for example, because of internally generated spurious signals or overload problems in the measuring equipment caused by other transmitters), ACMA will:

(a) estimate the level of emission from the transmitter, having regard to the measurements taken and the circumstances in which the measurements were taken; and

(b) discuss the estimated level with the relevant licensees; and

(c) take whatever action is necessary to resolve any interference that ACMA considers to be the result of the level of transmission. This action may include variation of licence conditions, for example to reduce the level of emission at the receiver.

Note 1 Measurement of levels of emission at receivers having the benchmark level of protection (down to −119 dBm/12.5 kHz) is often unreliable. In some cases, the interference mechanism is determined by a process of applying remedies to suspected causes rather than by direct measurement.

Note 2 When emission levels can not be reliably measured, interference settlement may be effected by providing an acceptable protection ratio between the wanted and unwanted signals, taking account of necessary fading and operating conditions.

Note 3 Operating problems in the absence of a wanted signal, that can be removed by fitting systems such as CTCSS, would not normally be considered to be interference.

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

2.11 Guidelines

Guidelines made by ACMA under section 262 of the Act about co-ordinating the operation of transmitters may be taken into account in settling interference disputes under Part 4.3 of the Act.

Note 1 Paragraph 262 (2) (d) of the Act authorises the making of guidelines about frequency co-ordination. Copies of the guidelines are available from ACMA.

Note 2 ACMA does not intend to afford protection to receivers operating under spectrum licences from any interference they may incur from transmitters in Telstra's Radio Concentrator System that are operated in accordance with their apparatus licence. ACMA intends to afford protection, in accordance with the guidelines, to RCS receivers from transmitters operated under spectrum licences. Each case will be assessed on its merits.

2.12 Duration of licences

(1) The licences issued under this Plan will have an expiry date of 31 May 2012.

2.13 Registration of licences

(1) ACMA will register licences, as required by section 144 of the Act.

Note Details about registration are in the *Radiocommunications (Contents of Register) Determination No. 1 of 1997*.

(2) Each spectrum licence will include a condition that prohibits operation of a transmitter unless any requirements under Part 3.5 of the Act to have the transmitter registered have been met.

Note See section 69 of the Act.

(3) Transmitters that are part of a group of transmitters may be registered individually or as a group.

(4) ACMA does not propose to register mobile transmitters that operate:

(a) outside the limits of a town on the towns mobile list; or

(b) on a road that is not on the roads mobile list; or

(c) at sea and only communicate with a mobile receiver at sea.

2.14 Trading in licences

(1) As permitted by Division 5 of Part 3.2 of the Act, a licensee may assign or otherwise deal with the whole or any part of a licence. ACMA has made rules under section 88 of the Act to regulate trading in licences. The rules restrict trading by reference to whole standard trading units and minimum contiguous bandwidth.

Note See the *Radiocommunications (Trading Rules for Spectrum Licence) Determination 1998*

2.15 Spectrum licences that are about to expire

(1) As required by section 78 of the Act, ACMA will publish notices periodically in the *Gazette*:

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

(a) stating where information can be obtained about licences that are due to expire within the next two years; and

(b) inviting expressions of interest from people who want to have these licences issued to them.

(2) The information will also be available from any of ACMA's Regional Offices.

(3) ACMA will also send licensees regular reminders during the last two years of the term of their licences that the licences are due to expire.

2.16 Re-issue of licences

(1) ACMA will re-issue licences, in accordance with Division 4 of Part 3.2 of the Act.

(2) As a general rule, licences will only be re-issued after the lots they cover are offered for re-allocation by auction, tender, or predetermined or negotiated price. In re-allocating the licences, ACMA will follow the procedures set out in the determinations made under section 60 of the Act that are in force at the time.

(3) However, as set out in section 82 of the Act, ACMA may re-issue a licence to the previous licensee without re-allocating the licence if it is in the public interest to do so.

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Schedules

Schedule 1

(section 1.4)

Part 1 Device boundary of a fixed receiver or a group of fixed receivers

1. The device boundary of a fixed receiver or a group of fixed receivers is established as follows:

Step 1: Calculate the LOP-Criterion (500 MHz) for each increment (m·5) minutes in distance by reference to the Australian National Spheroid, where m is any integer beginning 1 to 30, along each of 36 radials. All increments m = 1, begin at the common central point of the radials. The common central point is the centre location of the receiver. The 36 radials have bearings taken clockwise and given by the sequence ϕ0, ϕ1, ϕ2,... ϕ33, ϕ34, ϕ35 (ϕn) according to the sequence rule ϕn = n·10 degrees referenced to true north.

Note In the expression 'm·5', and similar expressions, the symbol ' · ' represents the operation of multiplication.

Step 2: Calculate an end point for each radial as the point corresponding to the sum of:

(a) the distance in kilometres along the radial equal to the length corresponding to the number of 5 minute increments from the centre location of the receiver that corresponds to the calculated value of the LOP-Criterion (500 MHz) being zero or negative when either all the previous values calculated for that radial are positive, or the number of the increment is equal to 1; and

(b) the effective radius of the centre location, calculated in accordance with Schedule 9.

Note 1 The value of m for each increment is the same as the value of m for the segment referred to in paragraph 2 (c) of Schedule 2.

Note 2 The actual distance in kilometres for a 5 minute increment in distance varies according to the direction and location of the radial by reference to the Australian National Spheroid. Distances measured in minutes are accepted usage in mapping.

Step 3: Identify the location of each end point by reference to the spectrum map grid.

Step 4: Connect the end point of each radial consecutively to draw a polygon in relation to the spectrum map grid cells.

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Step 5: Aggregate the spectrum map grid cells that either fall within or are intersected by the polygon. The boundary of this aggregated area is the device boundary of the receiver.

2. If there is more than one centre location for a group of fixed receivers, a device boundary is to be calculated for each centre location.

Part 2 LOP-criterion (500 MHz)

If:

(a) LOP is the level of protection of a fixed receiver; and

(b) $he_m(\phi_n)$ is the effective antenna height of the receiver (referred to in this Schedule as 'he') and measured in metres for segment m (m being any integer from 1 to 30) for each bearing ϕ_n; and

(c) $d_m(\phi_n)$ is the distance m·5 minutes with reference to the Australian National Spheroid (referred to in this Schedule as 'he') and calculated for segment m and measured in kilometres for each bearing ϕ_n ; and

(d) if he < 1.5 then he = 1.5, and if he > 1600 then he = 1600;

then:

(e) if the receiver is authorised to operate under a licence issued for frequency bands in the 500 MHz Lower Band, the LOP-Criterion (500 MHz) is either:

(i) the value, rounded to one decimal place, of the mathematical expression:

$$LOP - 3.2 \cdot (\log_{10}(11.8 \cdot he))^2 + 30 \cdot \log_{10}(d) + 93:$$

when:

$0.1 \text{ km} < d \leq 10 \text{ km}$; and

$1.5 \text{ m} \leq he \leq 10 \text{ m}$; or

(ii) the value, rounded to one decimal place, of the mathematical expression:

$$LOP - 3.2 \cdot (\log_{10}(11.8 \cdot he))^2 + 60 \cdot \log_{10}(d) + 59:$$

when:

$10 \text{ km} < d$; and

$1.5 \text{ m} \leq he \leq 10 \text{ m}$; or

(f) if the receiver is authorised to operate under a licence issued for frequency bands in the 500 MHz Upper Band, the LOP-Criterion (500 MHz) is either:

(i) the value, rounded to one decimal place, of the mathematical expression:

$$LOP - (1.6 \cdot he)^{1/2} + 30 \cdot \log_{10}(d) + 90:$$

when:

$0.1 \text{ km} < d \leq 10 \text{ km}$; and

$20 \text{ m} \leq he \leq 1600 \text{ m}$; or

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

(ii) the value, rounded to one decimal place, of the mathematical expression:

$LOP - (1.6 \cdot he)^{1/2} + 60 \cdot \log_{10}(d) + 55$:

when:

$10 \text{ km} < d$; and

$20 \text{ m} \leq he \leq 1600 \text{ m}$.

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Schedule 2 Effective antenna height

(section 1.4)

1. The effective height of an antenna is determined in accordance with its receiver, as set out in this Schedule.

Note To simplify the calculation of mean ground height by persons accredited under section 263 of the Act to issue interference certificates under section 145 (3) of the Act, ACMA provides lists of the average of the elevation attributes for the RadDEM cells within 5 minute segments of 2.5 degree sectors for any location in Australia.

2. **Effective antenna height of a fixed receiver** (see Diagram 1 below)

If:

(a) *hg* is the vertical height in metres of the phase centre of the fixed receiver's antenna measured relative to the point:

(i) located on the line of intersection between the external surface of the structure supporting the antenna and the surface of the ground or sea; and

(ii) having the lowest elevation on that line; and

(b) *hs* is the sum of:

(i) the elevation attribute of the RadDEM cell containing the location of the phase centre of a fixed receivers antenna; and

(ii) *hg*; and

(c) $hag_m(\phi_n)$ is average ground height, as described below, for each of the segments 'm' of a sector of 10 degrees arc centred along each of the bearings ϕ_n, calculated by taking the average of the elevation attributes for all of the cells that have either half or more than half their area within each segment 'm'; and

(d) each sector is divided into 30 segments 'm' (as illustrated in Diagram 2 below) with:

(i) any two consecutively numbered segments 1 to 30 being contiguous; and

(ii) each segment being a 5 minute increment in radial distance; and

(iii) segment 1 beginning at the centre location;

then:

(e) for fixed receivers operating in the 500 MHz Lower Band the effective antenna height:

(i) for segment 'm' = 1, $he_1(\phi_n)$, is *hg* for that centre location except when $(hs - hg - hag_1(\phi_n))$ is > 48 in which case $he_1(\phi_n)$ is $(hs - hag_1(\phi_n))$ for that centre location; and

(ii) for segments 'm' = 2 to 30, $he_m(\phi_n)$, is $(hs - hag_m(\phi_n))$ for that centre location except when $(hs - hag_m(\phi_n))$ is > 10 in which case $he_m(\phi_n)$ is 10 for that centre location; and

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

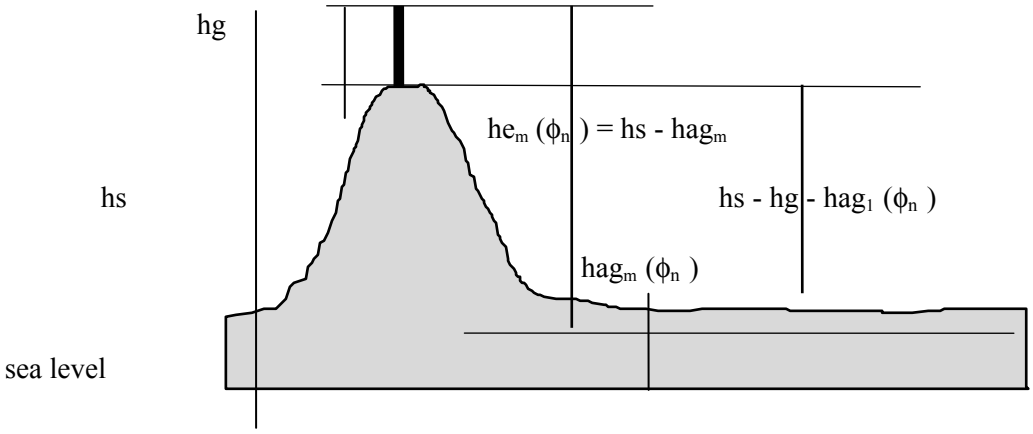
(f) for fixed receivers operating in the 500 MHz Upper Band the effective antenna height:

(i) for segment 'm' = 1, $he_1(\phi_n)$, is *hg* for that centre location except when (*hs* - *hg* - $hag_1(\phi_n)$) is > 0 in which case $he_1(\phi_n)$ is (*hs* - $hag_1(\phi_n)$) for that centre location; and

(ii) for segments 'm' = 2 to 30, $he_m(\phi_n)$, is (*hs* - $hag_m(\phi_n)$) for that centre location except when (*hs* - $hag_m(\phi_n)$) is < 20 in which case $he_m(\phi_n)$ is 20 for that centre location.

Note A RadDEM cell is represented as raster data such that the western and southerly boundary of the cell is part of the cell but the northerly and easterly boundary are parts of the adjacent cells. This is an important consideration when a location falls on a cell boundary.

Diagram 1 Calculating effective antenna height



hg : antenna height above ground

hs : antenna height above sea level

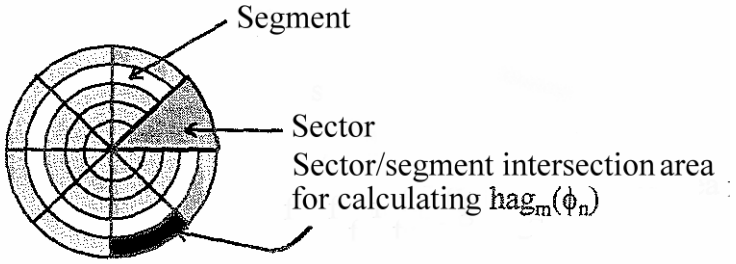
$hag_m(\phi_n)$: average ground height above sea level in segment 'm' of sector 'n'

$he_m(\phi_n)$: effective antenna height for segment 'm' of sector 'n'

Note for this case $hs - hg - hag_1(\phi_n) > 0$

Diagram 2 Segments and sectors

Not to scale



Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

3. Effective antenna height of a group of fixed receivers

For a group of fixed receivers, where hg_{max} is less than 10 metres, then:

(a) the group of receivers is to be treated as if it is a single fixed receiver; and

(b) the effective antenna height of the group $he_m(\phi_n)$, is hg_{max} for any segment 'm'=1 to 30, and any bearing (ϕ_n), where hg_{max} is greater than any *hg* established for each receiver in the group calculated in accordance with clause 2 (a).

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Schedule 3 Description of areas containing available spectrum for allocation

(section 1.4)

Item	Name	Notional Population
1	Cairns	233 007
2	Townsville	164 631
3	Brisbane	2 472 858
4	Northern Rivers	462 992
5	Newcastle	644 005
6	Sydney / Wollongong	4 302 340
7	Central West NSW	257 723
8	Canberra / South Coast	486 335
9	Regional Victoria	899 691
10	Melbourne	3 786 052
11	Tasmania	454 233
12	Adelaide	1 393 987
13	South West WA	1 700 372
14	Pilbara	38 656

Note The notional population is based on the Australian Bureau of Statistics 2001 census figures for the geographic areas defined in Schedule 4.

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Schedule 4 Coordinates of geographical areas

(subsection 2.2 (2))

Part 1 Description

1.1 Description

The geographical area of a licence is the area of land described in a table below, bounded by a line starting at the intersection of the first co-ordinates listed in the table for the area and then bounded by a line passing sequentially through the intersections of each set of co-ordinates shown in the table to the point of commencement.

Part 2 Queensland

2.1 Cairns

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
1	145 30 0	16 00 0
2	147 00 0	16 00 0
3	147 00 0	18 45 0
4	146 55 0	18 45 0
5	146 55 0	18 50 0
6	146 45 0	18 50 0
7	146 40 0	18 55 0
8	146 35 0	18 55 0
9	146 35 0	19 00 0
10	146 20 0	19 00 0
11	146 20 0	19 05 0
12	146 15 0	19 05 0
13	146 15 0	19 10 0
14	146 10 0	19 10 0
15	146 10 0	19 00 0
16	146 00 0	19 00 0
17	146 00 0	18 55 0
18	145 55 0	18 55 0

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
19	145 55 0	18 50 0
20	145 50 0	18 50 0
21	145 50 0	18 45 0
22	145 45 0	18 45 0
23	145 45 0	18 10 0
24	145 40 0	18 10 0
25	145 40 0	17 45 0
26	145 20 0	17 45 0
27	145 20 0	17 40 0
28	145 15 0	17 40 0
29	145 15 0	16 55 0
30	145 10 0	16 55 0
31	145 10 0	16 20 0
32	145 05 0	16 20 0
33	145 05 0	16 05 0
34	145 30 0	16 05 0
35	145 30 0	16 00 0

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

2.2 Townsville

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
1	146 55 0	18 45 0
2	147 00 0	18 45 0
3	147 00 0	19 00 0
4	148 00 0	19 00 0
5	148 00 0	20 00 0
6	147 55 0	20 00 0
7	147 55 0	20 05 0
8	147 50 0	20 05 0
9	147 50 0	20 10 0
10	146 50 0	20 10 0
11	146 50 0	19 55 0
12	146 45 0	19 55 0
13	146 45 0	19 40 0
14	146 40 0	19 40 0
15	146 40 0	19 35 0
16	146 35 0	19 35 0
17	146 35 0	19 30 0

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
18	146 30 0	19 30 0
19	146 30 0	19 25 0
20	146 25 0	19 25 0
21	146 25 0	19 20 0
22	146 20 0	19 20 0
23	146 20 0	19 15 0
24	146 15 0	19 15 0
25	146 15 0	19 05 0
26	146 20 0	19 05 0
27	146 20 0	19 00 0
28	146 35 0	19 00 0
29	146 35 0	18 55 0
30	146 45 0	18 55 0
31	146 45 0	18 50 0
32	146 55 0	18 50 0
33	146 55 0	18 45 0

2.3 Brisbane

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
1	152 10 0	26 00 0
2	154 00 0	26 00 0
3	154 00 0	28 30 0
4	153 00 0	28 30 0
5	153 00 0	28 20 0
6	152 25 0	28 20 0

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
7	152 25 0	28 00 0
8	152 20 0	28 00 0
9	152 20 0	27 35 0
10	152 10 0	27 35 0
11	152 10 0	26 00 0

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Part 3 New South Wales

3.1 Northern Rivers

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
1	152 15 0	28 20 0
2	153 00 0	28 20 0
3	153 00 0	28 30 0
4	154 00 0	28 30 0
5	154 00 0	32 00 0
6	150 20 0	32 00 0
7	150 20 0	31 45 0
8	150 45 0	31 45 0
9	150 45 0	31 35 0
10	151 00 0	31 35 0
11	151 00 0	31 30 0
12	151 10 0	31 30 0
13	151 10 0	31 25 0
14	151 15 0	31 25 0

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
15	151 15 0	31 20 0
16	151 20 0	31 20 0
17	151 20 0	31 15 0
18	151 25 0	31 15 0
19	151 25 0	29 10 0
20	151 35 0	29 10 0
21	151 35 0	29 00 0
22	151 55 0	29 00 0
23	151 55 0	28 55 0
24	152 05 0	28 55 0
25	152 05 0	28 25 0
26	152 15 0	28 25 0
27	152 15 0	28 20 0

3.2 Newcastle

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
1	150 30 0	32 00 0
2	153 00 0	32 00 0
3	153 00 0	33 00 0
4	152 00 0	33 00 0
5	152 00 0	33 20 0

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
6	151 15 0	33 20 0
7	151 15 0	33 05 0
8	150 30 0	33 05 0
9	150 30 0	32 00 0

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

3.3 Sydney / Wollongong

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
1	150 10 0	33 05 0
2	151 15 0	33 05 0
3	151 15 0	33 20 0
4	152 00 0	33 20 0
5	152 00 0	35 00 0
6	151 00 0	35 00 0
7	151 00 0	35 35 0
8	149 55 0	35 35 0
9	149 55 0	34 05 0
10	150 10 0	34 05 0
11	150 10 0	33 05 0

3.4 Central West NSW

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
1	150 20 0	32 00 0
2	150 30 0	32 00 0
3	150 30 0	33 05 0
4	150 10 0	33 05 0
5	150 10 0	34 05 0
6	149 55 0	34 05 0
7	149 55 0	34 40 0
8	149 00 0	34 40 0
9	149 00 0	34 35 0
10	148 35 0	34 35 0
11	148 35 0	35 45 0
12	146 35 0	35 45 0
13	146 35 0	35 40 0
14	146 55 0	35 40 0
15	146 55 0	34 45 0
16	147 00 0	34 45 0
17	147 00 0	34 35 0
18	147 05 0	34 35 0
19	147 05 0	34 25 0
20	147 10 0	34 25 0
21	147 10 0	34 15 0
22	147 15 0	34 15 0
23	147 15 0	34 10 0
24	147 20 0	34 10 0
25	147 20 0	34 05 0
26	147 25 0	34 05 0
27	147 25 0	34 00 0
28	147 30 0	34 00 0
29	147 30 0	33 55 0
30	147 40 0	33 55 0
31	147 40 0	33 50 0
32	147 45 0	33 50 0
33	147 45 0	33 45 0
34	147 55 0	33 45 0
35	147 55 0	33 40 0
36	148 05 0	33 40 0
37	148 05 0	33 35 0
38	148 15 0	33 35 0
39	148 15 0	33 30 0
40	148 40 0	33 30 0
41	148 40 0	33 25 0
42	148 50 0	33 25 0

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
43	148 50 0	33 15 0
44	148 55 0	33 15 0
45	148 55 0	33 05 0
46	149 10 0	33 05 0
47	149 10 0	33 00 0
48	149 15 0	33 00 0
49	149 15 0	32 55 0
50	149 20 0	32 55 0
51	149 20 0	32 45 0
52	149 25 0	32 45 0
53	149 25 0	32 40 0
54	149 30 0	32 40 0
55	149 30 0	32 35 0
56	149 40 0	32 35 0

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
57	149 40 0	32 30 0
58	149 45 0	32 30 0
59	149 45 0	32 25 0
60	149 55 0	32 25 0
61	149 55 0	32 20 0
62	150 00 0	32 20 0
63	150 00 0	32 15 0
64	150 10 0	32 15 0
65	150 10 0	32 10 0
66	150 15 0	32 10 0
67	150 15 0	32 05 0
68	150 20 0	32 05 0
69	150 20 0	32 00 0

Part 4 Australian Capital Territory

4.1 Canberra / South Coast

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
1	148 35 0	34 35 0
2	149 00 0	34 35 0
3	149 00 0	34 40 0
4	149 55 0	34 40 0
5	149 55 0	35 35 0
6	151 00 0	35 35 0
7	151 00 0	38 00 0
8	150 00 0	38 00 0
9	150 00 0	37 30 0
10	149 50 0	37 30 0
11	149 50 0	37 25 0
12	149 35 0	37 25 0
13	149 35 0	37 20 0

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
14	149 20 0	37 20 0
15	149 20 0	37 15 0
16	149 05 0	37 15 0
17	149 05 0	37 10 0
18	148 55 0	37 10 0
19	148 55 0	37 05 0
20	148 40 0	37 05 0
21	148 40 0	37 00 0
22	148 30 0	37 00 0
23	148 30 0	36 55 0
24	148 20 0	36 55 0
25	148 20 0	36 50 0
26	148 10 0	36 50 0

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
27	148 10 0	36 40 0
28	148 15 0	36 40 0
29	148 15 0	36 25 0
30	148 20 0	36 25 0
31	148 20 0	36 15 0

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
32	148 25 0	36 15 0
33	148 25 0	35 45 0
34	148 35 0	35 45 0
35	148 35 0	34 35 0

Part 5 Victoria

5.1 Regional Victoria

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
1	141 00 0	34 00 0
2	143 00 0	34 00 0
3	143 00 0	36 25 0
4	143 30 0	36 25 0
5	143 30 0	36 20 0
6	143 40 0	36 20 0
7	143 40 0	36 15 0
8	143 50 0	36 15 0
9	143 50 0	36 10 0
10	144 00 0	36 10 0
11	144 00 0	36 05 0
12	144 20 0	36 05 0
13	144 20 0	36 00 0
14	144 45 0	36 00 0
15	144 45 0	35 55 0
16	145 15 0	35 55 0
17	145 15 0	35 50 0
18	146 30 0	35 50 0
19	146 30 0	35 45 0
20	148 25 0	35 45 0
21	148 25 0	36 15 0
22	148 20 0	36 15 0

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
23	148 20 0	36 25 0
24	148 15 0	36 25 0
25	148 15 0	36 40 0
26	148 10 0	36 40 0
27	148 10 0	36 50 0
28	148 20 0	36 50 0
29	148 20 0	36 55 0
30	148 30 0	36 55 0
31	148 30 0	37 00 0
32	148 40 0	37 00 0
33	148 40 0	37 05 0
34	148 55 0	37 05 0
35	148 55 0	37 10 0
36	149 05 0	37 10 0
37	149 05 0	37 15 0
38	149 20 0	37 15 0
39	149 20 0	37 20 0
40	149 35 0	37 20 0
41	149 35 0	37 25 0
42	149 50 0	37 25 0
43	149 50 0	37 30 0
44	150 00 0	37 30 0

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
45	150 00 0	38 00 0
46	148 00 0	38 00 0
47	148 00 0	39 00 0
48	146 30 0	39 00 0
49	146 30 0	37 35 0
50	145 55 0	37 35 0
51	145 55 0	36 55 0
52	144 50 0	36 55 0
53	144 50 0	37 05 0
54	144 35 0	37 05 0
55	144 35 0	37 25 0

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
56	144 05 0	37 25 0
57	144 05 0	38 05 0
58	144 00 0	38 05 0
59	144 00 0	40 00 0
60	143 00 0	40 00 0
61	143 00 0	39 00 0
62	141 00 0	39 00 0
63	141 00 0	35 00 0
64	141 00 0	34 00 0

5.2 Melbourne

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
1	144 50 0	36 55 0
2	145 55 0	36 55 0
3	145 55 0	37 35 0
4	146 30 0	37 35 0
5	146 30 0	39 00 0
6	147 00 0	39 00 0
7	147 00 0	40 00 0
8	144 00 0	40 00 0
9	144 00 0	39 00 0

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
10	144 00 0	38 05 0
11	144 05 0	38 05 0
12	144 05 0	37 25 0
13	144 35 0	37 25 0
14	144 35 0	37 05 0
15	144 50 0	37 05 0
16	144 50 0	36 55 0

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Part 6 Tasmania

6.1 Tasmania

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
1	147 00 0	39 00 0
2	149 00 0	39 00 0
3	149 00 0	44 00 0
4	145 00 0	44 00 0
5	145 00 0	42 00 0
6	144 00 0	42 00 0

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
7	144 00 0	41 00 0
8	143 00 0	41 00 0
9	143 00 0	40 00 0
10	147 00 0	40 00 0
11	147 00 0	39 00 0

Part 7 South Australia

7.1 Adelaide

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
1	137 55 0	33 05 0
2	139 00 0	33 05 0
3	139 00 0	34 00 0
4	141 00 0	34 00 0
5	141 00 0	39 00 0
6	140 00 0	39 00 0
7	140 00 0	38 00 0
8	139 00 0	38 00 0
9	139 00 0	37 00 0
10	136 00 0	37 00 0
11	136 00 0	36 00 0
12	135 00 0	36 00 0
13	135 00 0	34 15 0
14	135 55 0	34 15 0
15	135 55 0	34 10 0
16	136 00 0	34 10 0
17	136 00 0	34 05 0
18	136 05 0	34 05 0

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
19	136 05 0	34 00 0
20	136 10 0	34 00 0
21	136 10 0	33 55 0
22	136 15 0	33 55 0
23	136 15 0	33 50 0
24	136 25 0	33 50 0
25	136 25 0	33 45 0
26	136 30 0	33 45 0
27	136 30 0	33 40 0
28	136 35 0	33 40 0
29	136 35 0	33 35 0
30	136 40 0	33 35 0
31	136 40 0	33 25 0
32	137 05 0	33 25 0
33	137 05 0	33 20 0
34	137 25 0	33 20 0
35	137 25 0	33 15 0
36	137 40 0	33 15 0

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
37	137 40 0	33 10 0
38	137 55 0	33 10 0

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
39	137 55 0	33 05 0

Part 8 Western Australia

8.1 South West WA

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
1	113 00 0	26 00 0
2	115 00 0	26 00 0
3	115 00 0	29 00 0
4	117 00 0	29 00 0
5	117 00 0	30 00 0
6	118 00 0	30 00 0
7	118 00 0	31 00 0
8	120 00 0	31 00 0
9	120 00 0	32 00 0
10	123 00 0	32 00 0
11	123 00 0	31 00 0
12	133 00 0	31 00 0
13	133 00 0	33 00 0
14	132 00 0	33 00 0
15	132 00 0	32 00 0
16	129 00 0	32 00 0
17	129 00 0	33 00 0
18	125 00 0	33 00 0

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
19	125 00 0	34 00 0
20	124 00 0	34 00 0
21	124 00 0	35 00 0
22	119 00 0	35 00 0
23	119 00 0	36 00 0
24	116 00 0	36 00 0
25	116 00 0	35 00 0
26	114 00 0	35 00 0
27	114 00 0	33 00 0
28	115 00 0	33 00 0
29	115 00 0	31 00 0
30	114 00 0	31 00 0
31	114 00 0	29 00 0
32	113 00 0	29 00 0
33	113 00 0	26 00 0

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

8.2 Pilbara

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
1	115 00 0	19 00 0
2	124 00 0	19 00 0
3	124 00 0	22 00 0
4	115 00 0	22 00 0
5	115 00 0	24 00 0

Point	Coordinates	
	° ′ ″ East	° ′ ″ South
6	113 00 0	24 00 0
7	113 00 0	21 00 0
8	115 00 0	21 00 0
9	115 00 0	19 00 0

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Schedule 5 Description of available spectrum

(sections 2.1, 2.2 and 2.4)

Area	Lower Band	Upper Band	Bandwidth (kHz)
Cairns	501.00625 – 501.01875	511.00625 – 511.01875	2x 12.5
	501.01875 – 501.04375	511.01875 – 511.04375	2x 25
Townsville	501.09375 – 502.09375	511.09375 – 512.09375	2x 1000
Brisbane	501.09375 – 501.19375	511.09375 – 511.19375	2x 100
Northern Rivers	500.99375 – 501.00625	510.99375 – 511.00625	2x 12.5
	501.00625 – 501.01875	511.00625 – 511.01875	2x 12.5
	n/a	511.04375 – 511.06875	25
	501.06875 – 501.09375	511.06875 – 511.09375	2x 25
	504.84375 – 504.96875	514.84375 – 514.96875	2x 125
Newcastle	500.99375 – 501.00625	510.99375 – 511.00625	2x 12.5
	501.01875 – 501.04375	n/a	25
	504.81875 – 504.89375	514.81875 – 514.89375	2x 75
	504.91875 – 504.94375	514.91875 – 514.94375	2x 25
	504.94375 – 504.98125	514.94375 – 514.98125	2x 37.5
Sydney / Wollongong	500.99375 – 501.00625	510.99375 – 511.00625	2x 12.5
	504.91875 – 504.94375	514.91875 – 514.94375	2x 25
	n/a	511.06875 – 511.09375	25
	504.94375 – 504.98125	514.94375 – 514.98125	2x 37.5
Central West NSW	500.99375 – 501.00625	510.99375 – 511.00625	2x 12.5
	501.00625 – 501.09375	511.00625 – 511.09375	2x 87.5
	504.84375 – 504.96875	514.84375 – 514.96875	2x 125
Canberra / South Coast	500.99375 – 501.00625	510.99375 – 511.00625	2x 12.5
	501.04375 – 501.09375	511.04375 – 511.09375	2x 50
	501.49375 – 501.59375	511.49375 – 511.59375	2x 100
	504.79375 – 504.86875	n/a	75
Regional Victoria	500.99375 – 501.01875	510.99375 – 511.01875	2x 25
	504.91875 – 504.99375	514.91875 – 514.99375	2x 75
Melbourne	501.49375 – 501.59375	511.49375 – 511.59375	2x 100

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Area	Lower Band	Upper Band	Bandwidth (kHz)
Tasmania	500.99375 – 501.06875	510.99375 – 511.06875	2x 75
	504.79375 – 504.99375	514.79375 – 514.99375	2x 200
Adelaide	n/a	510.99375 – 511.00625	12.5
South West WA	n/a	511.59375 – 512.09375	500
	504.94375 – 504.99375	514.94375 – 514.99375	2x 50
Pilbara	500.99375 – 501.01875	510.99375 – 511.01875	2x 25
	501.04375 – 501.09375	511.04375 – 511.09375	2x 50
	501.29375 – 501.59375	511.29375 – 511.59375	2x 300
	504.84375 – 504.99375	514.84375 – 514.99375	2x 150

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Schedule 6 Sample licence

(Section 2.5)

COMMONWEALTH OF AUSTRALIA

AUSTRALIAN COMMUNICATIONS AND MEDIA AUTHORITY

Radiocommunications Act 1992

Sample Spectrum Licence

This licence is issued under Part 3.2 of the *Radiocommunications Act 1992* ('the Act') by the person named at Item 8 of Schedule 1 of this licence.

1. The person named at Item 1 of Schedule 1 of this licence ('the licensee'), or a person authorised under subsection 68 (1) of the Act, is authorised to operate radiocommunications devices subject to:
   (a) the Act; and
   (b) the core conditions set out in Schedule 2 of this licence; and
   (c) the statutory conditions set out in Schedule 3 of this licence; and
   (d) the other conditions (if any) included in this licence by ACMA and set out in Schedule 4 of this licence.
2. This licence comes into force on the date shown at Item 4 of Schedule 1 of this licence and remains in force until the end of the day shown at Item 5 of Schedule 1 of this licence.
3. Unless the contrary intention appears, terms and expressions used in this licence have the meaning given to them by the *Radiocommunications Spectrum Marketing Plan (500 MHz Band) 2003*.

Licensee: **Bloopers Pty Limited**

Client Number: **11223344**

Band Release: **500 MHz Upper Band**

Licence Number: **55667788**

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

LICENCE SCHEDULE 1

LICENCE AND TECHNICAL DETAILS

Part 1 — Licence Details

Item	
1	*Name of Licensee*
	Address of Licensee
2	*Client Number*
3	*Band Release*
4	*Date of Licence Effect*
5	*Date of Licence Expiry*
6	*Licence Number*
7	*Date of Licence Issue*
8	*Issuing Officer*

Part 2 — Technical Details

Item	
9	*Upper limit of frequency band*
10	*Lower limit of frequency band*
11	*Offsets for purposes of core condition 3(a)*
12	*Offsets for purposes of core condition 3(b)*
13	*Power conversion function k1(d) for the purposes of core condition 3*
14	*Power conversion function k2(d) for the purposes of core condition 3*
15	*Peak power for the purposes of core condition 4(a)*
16	*Maximum true mean power for the purposes of core condition 4(b)*
17	*Maximum true mean power for the purposes of core condition 4(c)*
18	*Mean power for the purposes of core condition 5*
19	*Mean power for the purposes of core condition 6*
20	*Section 145 Determination for registration of transmitters*

Part 3 — Geographic Area

For the purposes of core condition 2, the area within which operation of radiocommunications devices is authorised by this licence is as follows:

[*Description of area*]

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

LICENCE SCHEDULE 2

CORE CONDITIONS

Frequency band

1. The frequency band in which operation of radiocommunication devices is authorised by this licence is the contiguous range of frequencies that are between the upper and lower frequency limits at Items 9 and 10 of Part 2 of Schedule 1 of this licence, respectively.

Geographic area

2. The area within which operation of radiocommunications devices is authorised by this licence is the geographic area set out at Part 3 of Schedule 1 of this licence.

Emission limits outside the area

3. The emission limits outside the area are:

(a) for frequency bands only containing frequencies that are removed from the upper and lower frequency limits of the licence by the offsets set out at Item 11 of Part 2 of Schedule 1 of this licence — a horizontally radiated power of P1 dBm EIRP; and

(b) for frequency bands only containing frequencies that are removed from the upper and lower frequency limits of the licence by the offsets set out at Item 12 of Part 2 of Schedule 1 of this licence — a horizontally radiated power of P2 dBm EIRP;

where:

P1 = 49.2 - k1(d); and

P2 = 70 - k2(d); and

where:

d is the distance in kilometres of the device from the boundary of the geographic area and k1(d) and k2(d) are the power conversion functions set out at Items 13 and 14 of Part 2 of Schedule 1 of this licence, respectively.

Emission limits outside the band

4. For radio emission that is caused by transmitters and is not spurious radio emission, the emission limits outside the band are:

(a) for frequency bands containing frequencies that are removed from the upper and lower frequency limits of the licence by offsets within the range 1.25 kHz to 13.75 kHz — the peak power set out at Item 15 of Part 2 of Schedule 1 of this licence; and

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

(b) for frequency bands only containing frequencies that are removed from the upper and lower frequency limits of the licence by offsets within the range 13.75 kHz to 300 kHz — the maximum true mean power set out at Item 16 of Part 2 of Schedule 1 of this licence; and

(c) for frequency bands only containing frequencies that are removed from the lower and upper frequency limits of the licence by offsets within the range 300 kHz to 1.5 MHz — the maximum true mean power set out at Item 17 of Part 2 of Schedule 1 of this licence.

5. For radio emission that is spurious radio emission and caused by transmitters, the emission limits outside the band are the mean power set out at Item 18 of Part 2 of Schedule 1 of this licence measured at frequencies from 100 kHz to 2.9 GHz.

6. For radio emission caused by receivers, the emission limits outside the band are the mean power set out at Item 19 of Part 2 of Schedule 1 of this licence measured at frequencies from 100 kHz to 2.9 GHz.

Note The procedure for calculating the device boundary of a transmitter has a consequence that receivers also operating under a spectrum licence are afforded lower levels of protection as they move closer to the geographic boundary of the licence. The procedure for calculating the device boundary of a receiver according to a specified level of protection is set out in the Schedules of the *Radiocommunications Spectrum Marketing Plan (500 MHz Band) 2003*.

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

LICENCE SCHEDULE 3

STATUTORY CONDITIONS

Liability to pay charges

1. The licensee must meet all obligations to pay charges fixed by determinations made under section 294 of the Act and subsection 60 (1) of the *Australian Communications and Media Authority Act 2005*.

Third Party use

2. (1) The licensee must notify any person authorised to operate radiocommunications devices under the licence of that person's obligations under the Act, in particular of any registration requirements under Part 3.5 of the Act for operation of radiocommunications devices under the licence, and any rules made under subsection 68 (3) of the Act.

(2) Any operation of a radiocommunications device under the licence by a person other than the licensee must comply with any rules made by ACMA under subsection 68 (3) of the Act.

Transmitter registration requirements

3. The licensee must not operate a transmitter under this licence unless the transmitter has been exempted from the registration requirements under the following condition, or:

(a) the requirements of ACMA under Part 3.5 of the Act relating to registration of the transmitter have been met; and

(b) the transmitter complies with the details about it that have been entered in the register.

Exemption from registration requirements

4. The following kinds of transmitters do not have to be registered:

(a) a mobile transmitter that only operates:

(i) outside the limits of a town that is on the towns mobile list; or

(ii) on a road that is not on the roads mobile list;

(b) a mobile transmitter that only transmits at sea and only communicates with a mobile receiver at sea.

Note The Determination that sets out the unacceptable levels of interference for the purpose of registering transmitters to be operated under this licence, and which is to be used for the issue of certificates by accredited people under subsection 145 (3) of the Act is set out at Item 20 of Part 2 of Schedule 1 of this licence.

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Residency etc

5. (a) At all times when the licensee derives income, profits or gains from operating radiocommunications devices under this licence or from authorising others to do so:

- the licensee must be an Australian resident; or
- the income, profits or gains must be attributable to a permanent establishment in Australia through which the licensee carries on business.

(b) At all times when an authorised person derives income, profits or gains from allowing third parties to operate radiocommunications devices under the licence, either:

- the authorised person must be an Australian resident; or
- the income, profits or gains must be attributable to a permanent establishment in Australia through which the authorised person carries on business.

(c) In this condition:

Australian resident has the same meaning as in the *Income Tax Assessment Act 1997*.

authorised person means a person authorised under section 68 of the *Radiocommunications Act 1992* by the licensee to operate radiocommunications devices under this licence.

permanent establishment has the same meaning as in:

- if the licensee or authorised person (as appropriate) is a resident of a country or other jurisdiction with which Australia has an agreement, within the meaning of the *International Tax Agreements Act 1953* — that agreement; or
- in any other case — the *Income Tax Assessment Act 1997*.

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

LICENCE SCHEDULE 4

CONDITIONS INCLUDED BY ACMA

Interference management

1.1 In this licence:

Level of Protection has the meaning it is given in the *Radiocommunications Spectrum Marketing Plan (500 MHz Band) 2003*.

manage interference includes investigation of the possible causes of the interference, taking all steps reasonably necessary to resolve disputes concerning interference where more than one person is involved, taking steps (or requiring persons authorised to operate devices under this licence to take steps) reasonably likely to reduce interference to acceptable levels, and negotiating with other persons for the purpose of reducing interference to acceptable levels.

Responsibility to manage interference

2.1 The licensee must manage interference between radiocommunications devices operated under this licence, and interference between radiocommunications devices operated under this licence and operated under any other spectrum licence held by the licensee.

Responsibility for interference — receivers

3.1 The licensee must accept interference to a receiver operated under this licence that is caused by emissions outside the frequency band of this licence where the receiver has:

(a) an adjacent channel selectivity performance; or

(b) an intermodulation immunity performance; or

(c) blocking immunity performance; or

(d) spurious response immunity performance;

that is less than the level of performance set out in Australian Standard AS 4295 - 1995 as in force on 1 November 1996.

3.2 For the purposes of subparagraph 3.2, the level of performance set out in Australian Standard AS 4295 - 1995 is taken to be a notional level of performance, irrespective of whether that Australian Standard applies to the receiver.

3.3 The licensee must accept levels of emission measured at a receiver operated under this licence that are below the receiver's Level of Protection plus 20dB for up to and including 99% of the time in any one hour period.

3.4 Nothing in clause 3.1 or 3.3 is to be taken to imply that the licensee is prevented from negotiating with other licensees for additional protection from interference.

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Responsibility for interference — transmitters

4.1 The licensee must not operate a transmitter under this licence in such a manner that the level of in-band emission from that transmitter, measured at a fixed receiver operating under another spectrum licence, exceeds the level of protection for that receiver plus 20dB for more than 1% of the time in any one hour period.

Co-sited devices

5. Where:

(a) interference occurs between a radiocommunications device operated under this licence and a radiocommunications device operated under another licence that is located within 200 metres of the first device; and

(b) that interference is not the result of operation of a radiocommunications device in a manner that is not in accordance with the conditions of the relevant licence; and

(c) either the licensee or the holder of the other licence wishes to resolve the interference;

the licensee must take reasonable steps to negotiate arrangements reasonably likely to reduce the interference to acceptable levels with:

(d) the holder of the other licence; or

(e) if a site manager is responsible for managing interference at that location, that site manager.

Information for Register

6. The licensee must give ACMA all information as required by ACMA from time to time for inclusion in the Register.

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

LICENCE NOTES

Variation to licence conditions

ACMA may, with the written agreement of the licensee of a spectrum licence, vary this licence by including one or more further conditions, or revoking or varying any conditions of the licence provided that the conditions as varied still comply with the requirements of Subdivision C of Division 1 of Part 3.2 of the Act.

ACMA may, by written notice given to the licensee, vary a licence by including one or more further conditions or revoking or varying any non core conditions of the licence provided that the licence as varied complies with the requirements of Subdivision C of Division 1 of Part 3.2 of the Act.

Guidelines

ACMA has issued written advisory guidelines under section 262 of the Act about co-ordinating the operation of transmitters, in relation to receivers operated in Telstra's Radio Concentrator System. The guidelines should be read in conjunction with the relevant Determination made under section 145 (3) of the Act setting out the unacceptable levels of interference for the purpose of the registration of transmitters to be operated under this licence. The guidelines should be followed by licensees (and accredited persons) before operating transmitters.

ACMA does not intend to afford protection to receivers operated under spectrum licences from any interference they may incur from RCS transmitters operated in accordance with their apparatus licence. ACMA also intends to afford protection, in accordance with the guidelines, to RCS receivers from transmitters operated under this spectrum licence. Copies of the guidelines, the Radiocommunications Advisory Guidelines (Co-ordinating the operation of transmitters in the 500 MHz Bands) 1996, are available from ACMA.

The suspension and cancellation of spectrum licences

ACMA may by written notice given to a licensee suspend, cancel or revoke a spectrum licence where ACMA is satisfied that the licensee, or a person authorised by the licensee to operate a radiocommunications device under the licence, has contravened a condition of the licence, or in any other way contravened the Act, or operated a radiocommunications device under the licence, or purportedly under the licence in contravention of any other law (whether written or unwritten) of the Commonwealth, a State or a Territory or in the course of contravening such a law.

Re issue

A spectrum licence may not be reissued to the same licensee without a price based allocation procedure except where:

ACMA is satisfied under section 82 (1) of the Act that special circumstances exist as a result of which it would in the public interest for that licensee to continue to hold that licence; or

the licensee provides a service of a kind determined by the Minister under section 82 (3) of the Act for which reissuing licences to the same licensees would be in the public interest.

Trading

A licensee may assign or otherwise deal with the whole or any part of a spectrum licence provided that this is done in accordance with any rules determined by ACMA under section 88 of the Act.

An assignment under section 85 of the whole or any part of a licence that involves any change to a licence does not take effect until ACMA has been advised of the changes and the Register of Spectrum Licences has been altered accordingly.

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Appeals

An application may be made to ACMA for re-consideration of decisions listed under section 285 of the Act and a person affected by and dissatisfied with the decision may seek a re-consideration of the decision by ACMA under section 288 (1) of the Act. This decision can be subject to further re-consideration by the Administrative Appeals Tribunal, subject to the provisions of the *Administrative Appeals Tribunal Act 1975*.

Labelling of transmitters

Transmitters operated under this licence are to be labelled in accordance with the *Radiocommunications (Labelling) Determination 1997*.

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Schedule 7 Emission limits outside the area

(section 2.9 (1))

The emission limits outside the area, for frequency bands only containing in-band frequencies, are a horizontally radiated power of:

P dBm EIRP;

where:

P = 49.2 - k1(d);

where:

d is the distance in kilometres of the device from the boundary of the geographic area and k1(d) is the power conversion function:

k1(d) = 0 for d ≥ 0.

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Schedule 8 Emission limits outside the band

(section 2.9 (2))

Note Emission limits outside the band manage levels of:

(a) modulation products and switching transient emissions (carrier rise times) outside the frequency band of the licence;

(b) sideband noise (vco phase noise);

(c) transmitter broadband noise;

(d) any transmitter spurious signals from frequency combining processes, including multicoupling of transmitters into an antenna; and

(e) any receiver emissions.

For radio emission that is caused by transmitters and is not spurious radio emission, the emission limits outside the band are:

(a) for frequency bands containing frequencies that are removed from the upper and lower frequency limits of the licence by offsets within the range 1.25 kHz to 13.75 kHz — a peak power of -1 dBm EIRP; and

(b) for frequency bands only containing frequencies that are removed from the upper and lower frequency limits of the licence by offsets within the range 13.75 kHz to 300 kHz — a maximum true mean power of -11 dBm EIRP; and

(c) for frequency bands only containing frequencies that are removed from the lower and upper frequency limits of the licence by offsets within the range 300 kHz to 1.5 MHz — a maximum true mean power of -46 dBm EIRP.

For radio emission that is caused by transmitters and is spurious radio emission, the emission limits outside the band are a mean power of -30 dBm EIRP measured at frequencies from 100 kHz to 2.9 GHz.

For radio emission caused by receivers, the emission limits outside the band under all operating conditions are a mean power of -57 dBm EIRP measured at frequencies from 100 kHz to 2.9 GHz.

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Schedule 9 Centre location and effective radius of a fixed receiver

(schedule 1)

Note 1 A model for the location of a receiver (the effective location) is the circumference of the circle defined by the centre location and the effective radius.

Note 2 The level of protection for a mobile receiver is -77dBm per 12.5 kHz — see clause 20.

1. The centre location of a receiver is the centre of a circle l_c with an effective radius r_e. This Schedule sets out the l_c and r_e of particular receivers.

2. **Centre location and effective radius of a fixed receiver**

For a fixed receiver, l_c is the location (by latitude and longitude) of the phase centre of the receiver's antenna and re is zero.

3. **Centre location and effective radius of a group of fixed receivers**

For a group of fixed receivers operating within the limits of a town specified in the towns mobile list, l_c and r_e are taken to be those specified in the towns mobile list for that town.

If a group of fixed receivers:

(a) all operate outside a town that is on the towns mobile list; or

(b) includes receivers that operate outside the limits of a town that is on the towns mobile list.

each member of the group that is outside the town is to be treated as a single fixed receiver.

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Schedule 10 500 MHz Licences expiring on 31 May 2007

(paragraph 1.3. (2) (a))

Item	Areas	Bandwidth	Frequency (low)
1	Sydney / Wollongong Newcastle	37.5 kHz	504.9437500 MHz
2	Sydney / Wollongong Newcastle	37.5 kHz	514.9437500 MHz
3	Sydney / Wollongong Newcastle Northern Rivers Central West NSW Canberra / South Coast	12.5 kHz	500.9937500 MHz
4	Sydney / Wollongong Newcastle Northern Rivers Central West NSW Canberra / South Coast	12.5 kHz	510.9937500 MHz
5	Canberra / South Coast	50 kHz	501.0437500 MHz
6	Canberra / South Coast	50 kHz	511.0437500 MHz
7	Canberra / South Coast	75 kHz	504.7937500 MHz
8	Cairns	12.5 kHz	501.0062500 MHz
9	Brisbane	100 kHz	501.0937500 MHz
10	Brisbane	100 kHz	511.0937500 MHz
11	Canberra / South Coast	100 kHz	501.4937500 MHz
12	Canberra / South Coast	100 kHz	511.4937500 MHz
13	Cairns	25 kHz	501.0187500 MHz
14	Cairns	25 kHz	511.0187500 MHz
15	Melbourne	100 kHz	501.4937500 MHz
16	Melbourne	100 kHz	511.4937500 MHz
17	Adelaide	12.5 kHz	510.9937500 MHz
18	Sydney / Wollongong	25 kHz	511.0687500 MHz

Note 1 Licences at items 1 and 2 were obtained under the *Radiocommunications Spectrum Conversion Plan (500 MHz Band) 1996*.

Note 2 Licences at items 3 to 18 were obtained under the *Radiocommunications Spectrum Marketing Plan (500 MHz Band) 1996*.

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Notes to the *Radiocommunications Spectrum Marketing Plan (500 MHz Band) 2003*

Note 1

The *Radiocommunications Spectrum Marketing Plan (500 MHz Band) 2003* (in force under section 39 of the *Radiocommunications Act 1992*) as shown in this compilation is amended as indicated in the Tables below.

Under the *Legislative Instruments Act 2003*, which came into force on 1 January 2005, it is a requirement for all non-exempt legislative instruments to be registered on the Federal Register of Legislative Instruments.

Table of Instruments

Title	Date of notification in *Gazette* or FRLI registration	Date of commencement	Application, saving or transitional provisions
Radiocommunications Spectrum Marketing Plan (500 MHz Band) 2003	12 Nov 2003 (*see Gazette* 2003, No. GN47)	12 Nov 2003	
Radiocommunications Spectrum Marketing Plan (500 MHz Band) 2003 Variation (No. 1) 2007	30 Jan 2007 (*see* F2007L00217)	31 Jan 2007	—

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
Part 1	
S. 1.3	am. 2007 No. 1
S. 1.4	am. 2007 No. 1
Note to s. 1.4 (1)	am. 2007 No. 1
Part 2	
S. 2.1	am. 2007 No. 1
S. 2.2	am. 2007 No. 1
S. 2.4	am. 2007 No. 1
S. 2.7	am. 2007 No. 1
S. 2.9	am. 2007 No. 1
S. 2.10	am. 2007 No. 1
S. 2.11	am. 2007 No. 1
S. 2.13	am. 2007 No. 1
S. 2.14	am. 2007 No. 1
S. 2.15	am. 2007 No. 1
S. 2.16	am. 2007 No. 1
Schedule 2	
Schedule 2	am. 2007 No. 1
Schedule 3	
Schedule 3	rs. 2007 No. 1
Schedule 4	
Schedule 4	rs. 2007 No. 1
Schedule 5	
Schedule 5	rs. 2007 No. 1
Schedule 6	
Heading to Schedule 6	am. 2007 No. 1
Schedule 6	am. 2007 No. 1
Schedule 10	
Schedule 10	ad. 2007 No. 1

Rectified 06/07/2007 Federal Register of Legislative Instruments F2007C00118