

AUSTRALIAN COMMUNICATIONS AUTHORITY

Spectrum licence Allocation

28 GHz and 31 GHz Bands

APPLICANT INFORMATION PACKAGE

14 November 1998

Foreword

Thank you for your interest in the spectrum licence allocation for spectrum in the 28/31 GHz radiofrequency bands.

This Applicant Information Package (the Package) contains important information regarding the allocation, which you will need to read and understand prior to taking part in the allocation process.

The Package contains:

- ◆ an overview of what is being allocated;
- ◆ a guide to the allocation process, including instruments for participating;
- ◆ the legal instruments under which the allocation will take place; and
- ◆ application documents.

Important Notice

The allocation of spectrum by issuing spectrum licences is provided for by the *Radiocommunications Act 1992* ('the Act'). Amendments under the *Radiocommunications Amendment Act 1997* provide for the sale of spectrum while encumbered; that is, while apparatus licensees are operating in the band. Clearance of these existing licensees needs to take place before the end of the re-allocation period. Persons wishing to apply are urged to familiarise themselves with all provisions of the Act, not just those pertaining to spectrum licensing and should be aware that some activities associated with radiocommunications may also be regulated by the *Trade Practices Act 1974*, (the TPA) the *Broadcasting Services Act 1992*, and the *Telecommunications Act 1997*. Depending on the activity undertaken using the spectrum under a licence, other Commonwealth, State and Territory laws may apply.

The Australian Communications Authority ('the ACA') is a statutory authority established under the *Australian Communications Authority Act 1997* ('the ACA Act') to, amongst other things, administer the *Radiocommunications Act 1992*. The ACA is required by section 10 of the ACA Act to perform its functions in a manner consistent with any general policies of the Commonwealth notified, and with any directions given, to the ACA by the Minister administering that Act (sections 11 and 12 of the ACA Act respectively). The policies of the Commonwealth, a sovereign entity, may change from time to time. Furthermore, in exercising its powers and functions, including those conferred on the ACA by the Act, the ACA may be expected to apply its own policies which may also change from time to time.

28 GHz and 31 GHz Bands Auction

The Package provides advice on how the ACA proposes to allocate spectrum licences. Nothing in this paper should be taken to bind the ACA to any particular course of action in relation to the allocation of licences in the spectrum under discussion. Interested persons should not rely on statements made in this document about the policies that may be followed by other authorities, nor about the effect of any legislation, but should take what steps they consider necessary to inform themselves on those matters independently of the ACA. The comments made in this paper about the *Radiocommunications Act 1992* and the *Telecommunications Act 1997* reflect present policies of the ACA.

Australia is a signatory to the International Telecommunication Constitution and Convention and to other international treaties relating to communications. The administration of radiocommunications by the ACA is undertaken with respect to these conventions and treaties.

Prospective applicants should, on their own responsibility, take whatever steps they consider necessary to ensure they have access to appropriate technical or other specialist advice, independently of the ACA, concerning their application, operation of radiocommunications equipment and services, or other matters relevant to the proposed licence allocation system and operation of transmitters and services under the licences. Applicants are also advised to seek advice independently of the ACA on the treatment of spectrum licences and other investments under Australian taxation laws, and on the operation of foreign investment laws and policy on proposed investment in communications in Australia.

ACA Reservations

ACA May Change Process

The ACA may, under the Act, vary or deviate from these processes, or terminate the auction process.

The ACA reserves to itself the right to add to, or vary or amend the information, terms and procedures set out in this invitation document, in its sole discretion.

Other ACA Rights

The ACA reserves the right, in its absolute discretion at any stage of the auction process to do all or any of the following:

- (a) require additional information from any registered applicant; and
- (b) change the structure and timing of the auction process.

Registered Applicants to Meet Own Costs

A registered applicant's participation in any stage of the auction process shall be at the registered applicant's sole risk, cost and expense.

Applications Become Property of the ACA

All application documents submitted in response to the Invitation document shall become the property of the ACA.

Collusive Bidding

Registered applicants and their officers, employees, agents and advisers must not engage in any collusive bidding, anti-competitive conduct or any other similar conduct with any other registered applicants, or any other person in relation to the preparation or lodgement of applications or bids for a spectrum licence under the auction process.

Confidential Information

Registered applicants and their respective officers, employees, agents and advisers must not take steps to obtain, or use, confidential information of the ACA relating to its businesses or the auction process other than information which is publicly available or made available by the ACA to registered applicants during the auction process.

28 GHz and 31 GHz Bands Auction

Return of Information to the ACA

The ACA reserves the right, in its absolute discretion, to require that all written information provided to registered applicants (and copies of the information) be returned to the ACA at any stage.

Conflict of Interest

Registered applicants and their respective officers, employees, agents and advisers must not place themselves in a position which may, or does, give rise to a conflict of interest (or a potential conflict of interest) between the interests of the ACA or Commonwealth (on the one hand) or any interests (on the other hand) during the auction process.

Application of Laws

The laws of the Australian Capital Territory apply to the auction process.

	17
Deed of Financial Security and Performance Payment.....	18
Simultaneous Ascending Auctions.....	18
Starting Bids	19
Minimum Bids	19
Automatic Re-bidding	20
Eligibility Limit	21
Provision of information: carrier licence condition.....	21
Activity	21
. Activity Targets.....	21
. Auction Stages	22
. Eligibility Reductions.....	22

	37
Confirmation of Registration	37
Publication of applicants names and bidder identification numbers (BIN).....	38
Getting Ready for the Auction.....	38
• Training.....	38
• Computer Bidding	38
• Important Information for Overseas Applicants.....	38
• Minimum System Requirements for ACA Auction • Software.....	39
Step 4 - Bid in the Auction	39
Auction Rules	39
Auction Rounds	40
Electronic Bidding	40
Emergency Telephone Bidding.....	41
Making Bids	42
Auction Results.....	42
Close of Auction	43
Step 5 - Paying for Your Licence.....	43
Examples of How the Auction Procedures May Operate	44
Starting Bids	44

	60
Licence Term	60
Licence Sanctions.....	61
Suspending and Cancelling Spectrum Licences.....	61
Licence Resumption	61
Charging for ACA Services	61
Licences that are about to expire.....	62

5. Technical Framework 63

In this Chapter.....	63
Introduction	63
Core Conditions	65
Out-of-area emissions	66
• How registration requirements operate in Lower Bands (eg 1.8 GHz band)	66
• New concept for the 28 GHz and 31 GHz bands Framework.....	67
Out-of-band emissions	67
Levels of protection not provided.....	68
• How out-of-area emissions are additionally managed when licences have narrow frequency bandwidths eg those licences involving the 500 MHz band	68
• Levels of Protection and the 28 GHz and 31 GHz bands....	68
Deployment constraints	68

28 GHz and 31 GHz Bands Auction

• Out-of-band issues arising under the technical framework where there are no deployment constraints imposed.....	69
• In-band issues arising under the technical framework where there are no deployment constraints imposed.....	69
• Practical examples of the operation of the technical framework, and potential loss of utility of spectrum	69
Managing interference between non-spectrum licensed and spectrum licensed devices	70
Radiocommunications Advisory Guidelines (Protection of Non-spectrum-licensed Receivers - 28 GHz and 31 GHz Bands) 1998.....	71
Radiocommunications Advisory Guidelines (Managing Interference from Non-spectrum-licensed Transmitters - 28 GHz and 31 GHz Bands) 1998.....	71
Receiver Performance.....	71
Interference that the technical framework does not prevent.....	72
Registering groups of transmitters	72
International co-ordination.....	73
Health and safety	73
Environmental and other considerations.....	73
Obtaining a permit to operate non-standard devices	73
Glossary of Terms	75

Tables

1. Areas for Spectrum Licence Allocation	2
--	---

Maps

1. Areas for Spectrum Licence Allocation.....	3
---	---

Figures

1. Standard Trading Units.....	51
2. STUs can be aggregated	52

Attachments

- 1 Radiocommunications (Spectrum Designation) Notice No.1 of 1998
- 2 Spectrum Re-allocation Declaration No.1 of 1998
- 3 Invitation to apply
- 4 Radiocommunications Spectrum Marketing Plan (28 GHz and 31 GHz Bands) 1998
- 5 List of incumbent apparatus licences in the 31.0 GHz to 31.3 GHz Band
- 6 Carrier Licence Conditions (28 GHz and 31 GHz Bands) Declaration 1998
- 7 Taxation treatment of spectrum licences: press release
- 8 Radiocommunications (Spectrum Licence Allocation) Determination (No. 2) 1998
- 9 Entry fee and eligibility payment
- 10 Application documents
- 11 Auction system file formats
- 12 Radiocommunications (Unacceptable Levels of Interference - 28 GHz and 31 GHz Bands) Determination 1998
- 13 Radiocommunications Advisory Guidelines (Managing Interference from Non-spectrum-licensed Transmitters - 28 GHz and 31 GHz Bands) 1998
- 14 Radiocommunications Advisory Guidelines (Protection of Non-spectrum-licensed Receivers - 28 GHz and 31 GHz Bands) 1998
- 15 Order form and information for the ACA CD-Rom extract from the Register of Radiocommunications Licences
- 16 Area maps and boundary coordinates

28 GHz and 31 GHz Bands Auction

1. What is Being Offered?

In this Chapter...

- a description of the areas in which spectrum is being offered
- a description of the bandwidth parcels that are being offered in each area
- a description of spectrum allocation lots being offered
- other important information about the spectrum being offered.

This part describes the spectrum being offered for allocation. It describes the spectrum parcels that are available, and the areas in which they will be available. Each combination of band and area will be regarded as a spectrum allocation lot; that is, a lot that will be open to bidding in the auction. There are 29 lots on offer in this auction, and applicants are able to bid on any lot or any combination of lots up to their own pre-declared limit (their eligibility).

Available Spectrum

On 14 January 1998, the Minister for Communications, the Information Economy and the Arts gave the ACA a notice designating the 28 GHz band (27.5 GHz to 28.35GHz) of the radiofrequency spectrum to be allocated by issuing spectrum licences. On the same day the Minister made a declaration that the 31 GHz band (31.0 GHz to 31.3 GHz) of the radiofrequency spectrum was to be allocated by issuing spectrum licences. Copies of the instruments signed by the Minister are at [Attachments 1 and 2](#).

The allocation was advertised in the national and international press. ([Attachment 3](#)).

Allocation Areas

For the purposes of the auction, the ACA has divided Australia into 29 areas determined by considering population distribution, communities of common interest, geography and ability to shield radio signals, and existing radio site usage.

[Table 1](#) shows, for each area in which spectrum will be allocated:

- the *name* and *number* of the area for the purposes of the allocation;
- the *population* of the area; and
- the *lot rating*.

28 GHz and 31 GHz Bands Auction

Table 1
Areas for Spectrum Licence Allocation

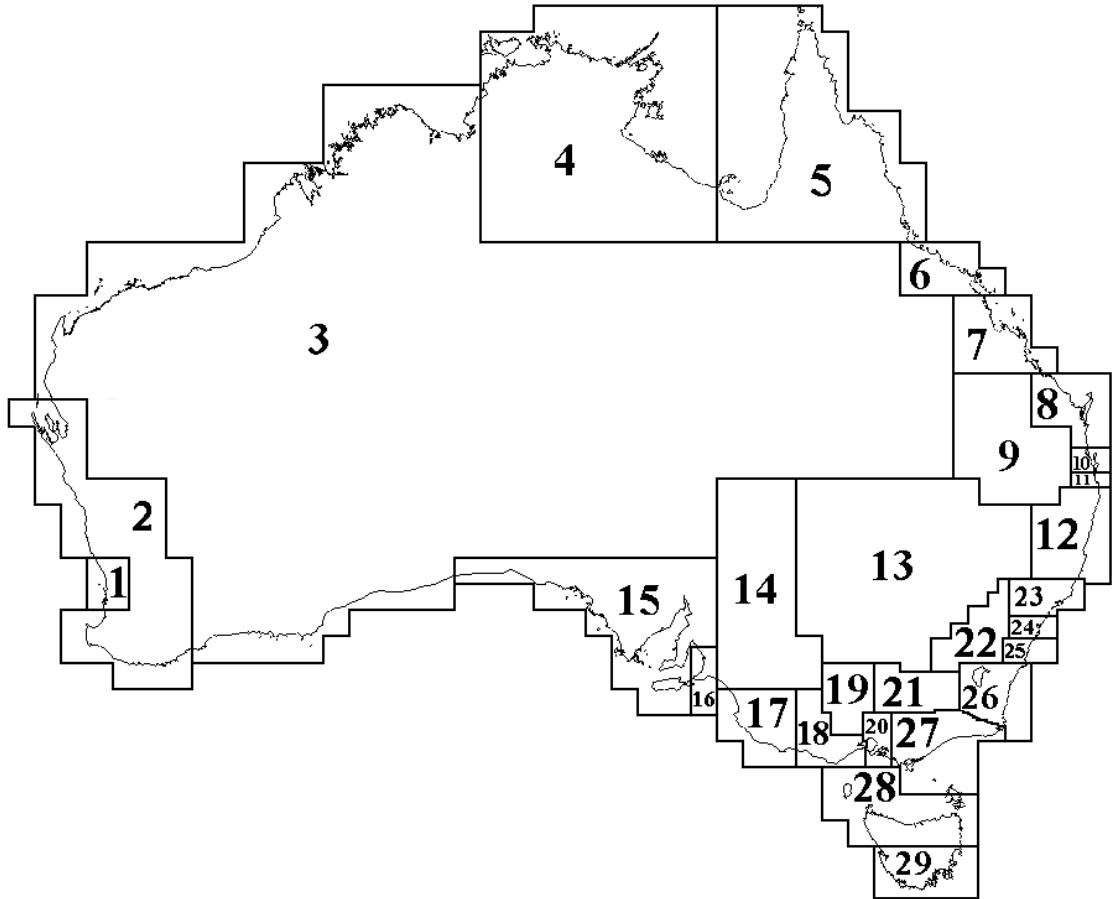
Lot Number	Allocation Area	Population	Lot Rating
1	Perth	1,197,869	13,775
2	South West WA	245,022	2,817
3	Remote Australia*	357,367	4,109
4	Darwin	161,813	1,860
5	Cairns	252,594	2,904
6	Townsville	219,465	2,523
7	Rockhampton	241,103	2,772
8	Sunshine Coast	337,596	3,882
9	Inner West Queensland	275,134	3,164
10	Brisbane	1,349,161	15,515
11	Gold Coast	361,854	4,161
12	Northern NSW	420,732	4,838
13	Central West NSW	313,855	3,609
14	Riverland	163,342	1,878
15	Spencer Gulf	170,961	1,966
16	Adelaide	1,099,365	12,642
17	Mount Gambier	96,474	1,109
18	Geelong	343,630	3,951
19	Bendigo	350,478	4,030
20	Melbourne	3,058,427	35,171
21	Albury	274,716	3,159
22	Bathurst	277,943	3,196
23	Newcastle	576,639	6,631
24	Sydney	3,455,867	39,742
25	Wollongong	369,461	4,248
26	South Coast	436,995	5,025
27	Eastern Victoria	230,822	2,654
28	Launceston	245,403	2,822
29	Hobart	238,275	2,740

*Remote Australia allocation area includes: Kalgoorlie, Northern WA, Alice Springs, Mount Isa, previously identified separately in the Draft Marketing Plan released in March 1998.

Note 1: The population of each area has been set by the ACA based on an estimate derived from census collection data from 1991. These population figures are for the purposes of the auction only.

Note 2: Each lot has a lot rating which is a measure of its population coverage and bandwidth. Lot ratings are calculated by multiplying the population of the area of the lot by the bandwidth in MHz and dividing by 100,000. (NB Earlier spectrum licence auctions involved dividing by 100.) Lot ratings for this auction are rounded down to the nearest whole number. Lot ratings are important because they provide a basis for applying activity rules which prevent the auction from stalling. (See **Chapter 2 - How is it being allocated?**)

Map 1 Areas for Spectrum Licence Allocation



This map is indicative. A precise description of each area where licences are being offered is contained in the accompanying *Radiocommunications Spectrum Marketing Plan (28 GHz and 31 GHz Bands) 1998* at Attachment 4.

The individual Area Maps and detailed Boundary Coordinates are shown at Attachment 16.

28 GHz and 31 GHz Bands Auction

Bandwidth Parcels for the Allocation

The radiofrequency bands on offer are being allocated as spectrum lots which may be aggregated through the allocation process to form spectrum licences.

In the 28 GHz band, the ACA will allocate one parcel of 850 MHz in each allocation area (27.5 GHz to 28.35 GHz).

In the 31 GHz band, the ACA will allocate one parcel of 300 MHz in each allocation area (31 GHz to 31.3 GHz).

These parcels will be combined to form one lot of 1150 MHz in each allocation area.

Spectrum Allocation Lots

The ACA will use a simultaneous multiple round auction system to allocate the spectrum. The system employs spectrum allocation lots (or "lots"). Lots are like "building blocks" of spectrum. The auction process allocates lots to the applicants who, in economic terms, value them most highly. The lots are then aggregated after the auction to form licences.

Each combination of *allocation area* and *spectrum parcel* will be regarded as a lot. Each lot will be numbered sequentially and will have an area name.

Each lot has a *lot rating* which is a measure of its population coverage and bandwidth. Lot ratings are calculated by multiplying the population of the area of the lot by the bandwidth of the lot and dividing by 100,000. Lot ratings are rounded down to the nearest whole number. Lot ratings are important to the auction system because they provide a basis for applying activity rules which prevent the auction from stalling (See **Chapter 2 - How is it being allocated?**).

No "combinatorial" bidding

The ACA has decided not to provide for "combinatorial bidding". This means that registered applicants will not be able to bundle lots together and offer a single bid representing the amount of money they would be prepared to pay for the bundle. Applicants interested in establishing an operation that covers more than one allocation area should consider bidding on as many lots as they believe necessary to support their proposed operation.

Other Information about the Spectrum Being Offered

Spectrum subject to spectrum licensing

Spectrum licences will be issued to applicants who are the highest bidders on lots in this auction and who pay the bid prices. Spectrum licences authorise the use of spectrum space in a particular band and over a particular area, rather than the use of specified devices.

People interested in the auction are urged to read and understand all of the provisions related to spectrum licensing set out in the *Radiocommunications Act 1992*.

An overview of spectrum licensing and how it works is provided in **Chapter 4 - Spectrum Licensing**. An overview of the technical framework applying to spectrum licences in the 28 GHz and 31 GHz bands and applied through the s.145 determinations and s.262 advisory guidelines is contained in **Chapter 5 - Technical Framework**.

Applicants should, on their own responsibility, take whatever steps they consider necessary to ensure that they have access to appropriate technical or other specialist advice, independently of the ACA, concerning their applications, operation of radiocommunications equipment and services, or other matters relevant to the proposed licence allocation system and operation of transmitters and services under the licences. These enquiries should include, but not be limited to, engineering assessment, availability of transmission sites, environmental and health considerations and Commonwealth, State and Local Government planning requirements.

Applicants should be aware that they will need to co-ordinate services to be operated under the spectrum licences with both existing and future apparatus licensed services within and outside the spectrum to be allocated. Furthermore, in some cases spectrum licensees will have to co-ordinate their services with other spectrum licensees, and the ACA **will not play a role in that co-ordination**. The ACA intends that accredited persons be utilised for that co-ordination (see Chapter 5). The co-ordination requirements will be set out in s.145 determinations and s.262 advisory guidelines as issued and varied from time to time by the ACA. Copies of the s.145 determinations and s.262 advisory guidelines applicable from the time of the spectrum allocation are included in the attachments to this package of documents.

Spectrum to be allocated while encumbered

Prospective applicants should be aware that the spectrum allocation lots will be allocated and become the subject of spectrum licences while spectrum in the 31 GHz band is encumbered. That is, certain existing apparatus licensed services

28 GHz and 31 GHz Bands Auction

will be able to continue to operate in the spectrum that is to be allocated in this auction during the re-allocation period.

The procedure for sale of encumbered spectrum is set out in Part 3.6 of the *Radiocommunications Act 1992*. Prospective applicants should familiarise themselves with the provisions of this Part.

The Act guarantees continuity for these incumbent services until the end of the period set out in the Minister's re-allocation declaration, known as the re-allocation period. For incumbent services in the 31 GHz band, the re-allocation period ends on 2 February 2003. Successful bidders in the auction and the existing licensees may, on their own responsibility, enter into negotiations for the incumbents to vacate the spectrum before the end of the re-allocation period. A list of the incumbents, together with technical details of their licences is at **Attachment 5**.

IMPORTANT NOTE

The effect of the 'incumbent' provisions of the Act is that whilst a spectrum licence may be issued for spectrum in a particular area, the spectrum licensee may not be able to use spectrum that is still used by an incumbent apparatus licensee until the end of the re-allocation period. Prospective applicants should note that this may mean that they will obtain unrestricted access to spectrum under a spectrum licence at different times, and should carefully examine the potential effect of the re-allocation declarations on their proposed acquisitions of spectrum.

Advisory Guidelines for Protecting Incumbents

The ACA has made advisory guidelines under s.262 of the Act for the protection of services of incumbent apparatus licensees from interference while their licence continues under a re-allocation declaration (see **Chapter 5 - Technical Framework**).

Competition/Bidding Limits

On 2 November 1998 the Minister for Communications, Information Technology and the Arts, Senator the Hon. Richard Alston, imposed a condition on carrier licences held by Telstra and Optus that will prevent them or their subsidiaries from bidding in the 28/31 GHz spectrum licence auction or entering into certain agreements under which other persons would seek to obtain such spectrum licences on their behalf. The Minister imposed the condition by way of a declaration under subsection 63(2) of the *Telecommunications Act 1997*. Telstra and Optus were consulted on the condition prior to its imposition.

The carrier licence condition is at **Attachment 6**.

Local Telephone Call Services

The Australian Competition and Consumer Commission (ACCC) is presently conducting a public inquiry into whether to declare local call resale and local interconnection services under the telecommunications access regime (Part XIC of the *Trade Practices Act 1974*). Declaration of a service by the ACCC, if it promotes the long-term interests of end-users, establishes rights of access to the service by any access seeker and requires the access provider to supply the service on request and on terms which ultimately can be arbitrated by the ACCC.

The inquiry will focus on the local telecommunications network and on local services to decide if competitors should be able to interconnect more directly to customers' premises. It will also determine if local call resale should be subject to direct ACCC regulation. In making these decisions the ACCC will ultimately be concerned with achieving benefits for end-users, including sustainable lower prices and a greater choice of new and innovative services.

A draft report on local call access and resale is expected to be issued by the ACCC before the end of 1998. Once comments from industry and the public have been received in relation to the draft report, the ACCC will issue a final report. The final report will contain the ACCC decision and its reasons. Further information is available from:

Mr Chris Pattas

Director, Telecommunications Access

Australian Competition and Consumer Commission

GPO Box 520 J

MELBOURNE VIC 3001

Telephone: (03) 9290 1858 (international + 613 9290 1858)

Fax: (03) 9663 3699 (international + 613 9663 3699)

Application of the *Trade Practices Act 1974*

In this auction, an applicant can nominate to bid on any lot, or any combination of lots on offer. Applicants should be aware that under the *Radiocommunications Act 1992* certain provisions of the *Trade Practices Act 1974* (TPA) apply to aspects of radiocommunications licensing. In particular, section 71A of the *Radiocommunications Act 1992* deems the issue of a spectrum licence to a person to be an acquisition by the person of an asset of another person for the purposes of section 50 and related sections of the TPA. Similarly, section 68A of the *Radiocommunications Act 1992* provides that, for the purposes of section 50 of the TPA, the authorisation of a person to operate radiocommunications devices under a spectrum licence is taken to be an acquisition by the person of an asset of another person.

28 GHz and 31 GHz Bands Auction

The acquisition of assets within Australia is subject to provisions contained in Part IV of the TPA. The TPA prohibits (section 50) acquisitions of shares or assets where the acquisition is likely to have the effect of substantially lessening competition in a substantial market. Such acquisitions can nevertheless be authorised under the TPA if the ACCC is satisfied that they would result in such benefit to the public that they should be allowed to take place. Alternatively, undertakings can be given to the ACCC under the TPA, where appropriate, to resolve matters where the proposed acquisition is, in the ACCC's view, likely to contravene the TPA.

The ACCC's approach to the administration and enforcement of the acquisition provisions of the TPA is outlined in its revised Merger Guidelines published in July 1996. A copy of the merger guidelines may be obtained from the ACCC or downloaded from the ACCC's website.

There is no formal requirement for proposed acquisitions to be notified to the ACCC. However, the ACCC would encourage parties interested in acquiring spectrum licences to consider whether the acquisition is likely to raise issues under the TPA. If this is the case, then the ACCC would encourage the parties to approach the ACCC on an informal and confidential basis prior to participating in the sale process.

The ACA will be providing details of all applicants to the ACCC.

Applicants should therefore seek such legal or other advice as they consider necessary as to their ability to use spectrum for the purposes intended. Information on the ACCC can be found on their home page at:

<http://www.accc.gov.au>

Taxation Treatment of Spectrum Licences

The Australian Treasurer issued a press release on 11 March 1998 which announced the Government's intention to amend the treatment of spectrum licences under the *Income Tax Assessment Act 1997* (ITAA) and to make consequential amendments to the *Radiocommunications Act 1992*. Changes will apply to all successful bidders (See a copy of the press release at **Attachment 7**).

The Government has decided to legislate to allow for the amortisation of the acquisition cost of domestic spectrum licences over the 15 year effective life of the licence. Allowing amortisation is consistent with matching the cost of the licence to the income it generates and with the taxation treatment of spectrum licences in countries such as the United States and Japan. The change will also rid Australian resident bidders of any financial disadvantage compared with overseas bidders due to differing taxation treatment.

The Government also announced measures designed to ensure that Australia is able to assert its taxing rights over income from the use of spectrum where a spectrum licence is owned by a non-resident.

However, the ACA is not able to provide any specific advice to applicants on the treatment which may be accorded to spectrum licences awarded through this auction under Australian taxation laws. Applicants should seek such specialist advice as they consider necessary on how spectrum licences may be treated under such laws.

Foreign Investment Approval

Foreign applicants intending to establish a business in Australia may need prior approval under the Government's foreign investment policy and the *Foreign Acquisitions and Takeovers Act 1975*.

The Government's foreign investment policy is framed and administered with a view to encouraging foreign investment and ensuring that such investment is consistent with the needs of Australia. The Government recognises the substantial contribution foreign investment makes to the development of Australia's industries and resources.

The types of proposals by foreign interests to invest in Australia that require prior approval and should be notified to the Australian Government include (but are not limited to) the following:

- acquisitions of substantial interests in existing Australian businesses with total assets of \$5 million or more;
- plans to establish new businesses involving a total investment of \$10 million or more;
- direct investments by foreign governments or their agencies irrespective of size;
- certain acquisitions of real estate.

With regard to the telecommunications sector specifically, prior approval is required for foreign involvement in the establishment of new entrants to, or investment in existing businesses in, the telecommunications sector. Proposals above the notification thresholds will be dealt with on a case by case basis and will be normally approved unless judged contrary to the national interest. (In a press release by the Treasurer of 14 August 1997, the Government noted that it "considers it important from a competition viewpoint that participants in the telecommunications sector not be unnecessarily constrained by foreign investment regulation").

Foreign applicants are encouraged to make their own inquiries about foreign investment approval. Detailed information is available from the Treasury website at:

<http://www.treasury.gov.au/FIRB/Policy>

Further information can also be obtained from, or submissions made to:

28 GHz and 31 GHz Bands Auction

The Executive Member

Foreign Investment Review Board

C/o The Treasury

CANBERRA ACT AUSTRALIA 2600

Telephone: (02) 6263 3795 (international + 612 6263 3795)

Fax: (02) 6263 2940 (international + 612 6263 2940)

Licensing under the *Telecommunications Act 1997*

The *Telecommunications Act 1997* introduces a regulatory regime designed to achieve full and open competition in the Australian telecommunications market. A key element of the new arrangements introduced in this Act is that there is no limit on the number of carriers permitted to enter the market.

Under this regime, any person may install and operate telecommunications facilities and networks. A carrier licence, however, must generally be held by any person owning specific infrastructure (referred to as 'network units') where those facilities are used to supply carriage services to the public. A network unit is used to supply a carriage service to the public where it is used to carry communications between two end-users both of whom are outside the immediate circle of the owner of the unit or to supply point-to-multipoint or designated content services to end-users where at least one of the end-users is outside the owner's immediate circle. A person's immediate circle consists of the person and:

- if an individual or partnership - the person's employees;
- if a body corporate - officers of the body corporate; or
- if a government body - special provisions apply.

A carrier licence need not be held where the network units are used solely or principally for exempt purposes (such as defence, and certain transport, electricity supply or broadcasting activities) or where the ACA has determined (through the 'nominated carrier declaration' provisions) that another person who holds a carrier licence accepts the carrier related responsibilities for the facilities.

There are four categories of network unit set out in the Act, one of which deals with radiocommunications facilities.

A designated radiocommunications facility is a network unit if it is used, or is for use, to supply a carriage service between a point in Australia and one or more other points in Australia (notwithstanding whether the supply involves the use of a satellite or a line or other facility outside Australia). The following kinds of facility are designated radiocommunications facilities for the purposes of the *Telecommunications Act 1997*:

- a base station for the supply of public mobile telecommunications services;

Applicant Information Package

- a base station that is part of a terrestrial radiocommunications customer access network;
- a fixed radiocommunications link **which has the characteristic of double-ended interconnection**;
- a satellite based facility;
- a radiocommunications transmitter or receiver of a kind specified in a Ministerial determination.

Carriers are individually licensed, subject to initial application and annual licence charges intended to recover the costs of regulating the industry.

Persons wishing to apply for carrier licences including applicants for spectrum licences which could be used to provide carriage services under that Act, are urged to familiarise themselves with the provisions of the Act, not just those pertaining to the granting of licences. Applicants should make their own enquiries as to the legislative and other obligations (including industry development obligations) that are imposed on carriers and those declared to be nominated carriers.

Further advice on the requirements relating to the carrier licensing and nominated carrier declaration schemes can be obtained from the:

Licensing and Infrastructure Team

Australian Communications Authority

PO Box 13112

Levels 11-14

Law Courts PO

200 Queen Street

MELBOURNE VIC 8010

MELBOURNE VIC 3000

Telephone: (03) 9963 6800 (international + 613 9963 6800)

Fax: (03) 9963 6979 (international + 613 9963 6979)

A guide and applicant information on carrier licences can also be found under **licensing** on the ACA's website at the following address:

<http://www.aca.gov.au/licence/carrier/guicarlc.htm>

Telecommunications Standards

Under s.376 of the *Telecommunications Act 1997* the ACA may make standards relating to specified customer equipment. Customer equipment is equipment that operates in connection with a carriage service beyond the network boundary of a carrier or carriage service provider. If the licensee is a carrier and is offering an air interface to customers, the customer's equipment will be subject to technical standards under s.376. All customer equipment is subject to TS001 (safety) and AS/NZS2772.1 (Radiofrequency radiation). Except for certain technology specific

28 GHz and 31 GHz Bands Auction

standards for Customer Equipment, (GSM, AMPS, CT2 CAI, DECT, PHS, & Mobilesat) there are no applicable mandatory standards for the air interface.

Further information on technical standards can be obtained from:

Mr Grant Symons

Executive Manager

Telecommunications Standards

Australian Communications Authority

PO Box 13112

Levels 11 - 14

Law Courts PO

200 Queen St

MELBOURNE VIC 3004

MELBOURNE VIC 3000

Telephone: (03) 9963 6860 (international + 613 9963 6860)

Fax: (03) 9828 7438 (international + 613 9963 6970)

Emergency Service Numbers

The primary emergency service number in Australia is “000”. Standard telephone services must carry calls made to “000” and deliver them as specified, without charge to the caller. There are also two secondary emergency numbers, “100” and “112”. These secondary numbers are for particular users.

“100” is for emergency calls made by people with hearing and speech impairments who cannot use voice telephony. It is data services and services which are compatible with teletypewriters (TTYs) which must be able to carry calls to “100”.

“112” is an extra emergency number available for users of GSM mobile phones. Non-GSM mobile networks may send calls made to “112” on to a recorded voice announcement that directs the caller to “000”.

Requirements on carriers and carriage service providers in relation to emergency call services are set out in the *Telecommunications (Emergency Call Service) Determination 1997*. Further information can be obtained from the:

Law Enforcement and Emergency Services Liaison Team

Australian Communications Authority

PO Box 13112

Levels 11-14

Law Courts PO

200 Queen Street

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Defence use of the Spectrum

The Australian Defence Force is a large user of the radiofrequency spectrum. Under the Act and the Radiocommunications Regulations, a wide range of defence and national security uses of the spectrum is exempt from the application of the Act.

All spectrum users need to be aware that they may, from time to time, have to share use of the spectrum with agencies engaged in activities associated with defence and national security and whose services are exempt from the Act in this way ('exempt services'). The ACA can give no guarantee that the use of spectrum by such exempt services will not cause interference, and prospective applicants should note that civil proceedings under s. 50 of the Act will not lie if interference is caused by exempt services to spectrum licensees.

Co-ordination with existing radiocommunications services

Nothing in the ACA's spectrum licensing approach absolves licensees from the obligation to avoid interfering with services provided by other legitimate users of the radiofrequency spectrum. This may require a spectrum licensee to co-ordinate proposed new devices with existing apparatus licences, and with the devices operated by other spectrum licensees (see **Chapter 5 - Technical Framework**).

Protection for Adjacent Services

The ACA has made advisory guidelines under s.262 of the Act for protecting from interference, devices that are operated under apparatus licences in spectrum that is adjacent to spectrum that is the subject of spectrum licences issued as a result of the auction (see **Chapter 5 - Technical Framework**).

28 GHz and 31 GHz Bands Auction

Imposition of Licence Conditions

The ACA reserves the right at all times to impose on spectrum licensees such licence conditions as it considers necessary to allow the ACA to fulfil its statutory obligations regarding the management of radiofrequency spectrum. In particular, Australia is a signatory to the International Telecommunication Constitution and Convention and will impose any licence conditions necessary to enable Australia to fulfil its international treaty obligations.

Duration of Licences

Licences issued will be for terms of fifteen (15) years. This is the maximum allowable under the *Radiocommunications Act 1992*. Spectrum licences are issued with no automatic right of renewal.

Provision of Broadcasting Services

Some of the services that may be provided by transmitters are subject to the *Broadcasting Services Act 1992*. The issue of a radiocommunications licence under the allocation system set out in this Information Package should not be taken as an indication that any licence required under the *Broadcasting Services Act 1992* will be issued. Nor should it be taken as an indication that the service would fall within the terms of any class licence issued under that Act. Administration of the *Broadcasting Services Act 1992* is the responsibility of the Australian Broadcasting Authority ('the ABA').

Advice on licensing broadcasting services may be sought from:

The Manager

Allocation and Renewals Section

Program Services Branch

Australian Broadcasting Authority

Level 15, Darling Park

201 Sussex Street

SYDNEY NSW 2000

Telephone: 02 9334 7800

Facsimile: 02 9334 7799

2. How is it being allocated?

In this Chapter ...

- general information about the simultaneous ascending auction system
- information about how the auction process works

In this auction, applicants will compete for *spectrum licences*. This form of licence was implemented for the first time in 1997. Broadly speaking, instead of authorising the operation of a specific device or type of device, a spectrum licence authorises the use of spectrum within a geographic area, provided that the device complies with the engineering framework for spectrum licensing in the band.

This part explains how the ACA will use the *simultaneous ascending auction* system to allocate lots. Lots are like “building blocks” of spectrum space. The auction process allocates lots to the applicants who value them most highly. These lots are aggregated after the auction by the ACA to form licences.

The spectrum allocation lots on offer in the auction are defined in the *Radiocommunications Spectrum Marketing Plan (28 GHz and 31 GHz Bands) 1998 (Attachment 4)*, and are described in the previous chapter.

Overview

IMPORTANT WARNING

The following information is only intended to provide a general overview of the allocation scheme which is contained in the Radiocommunications (Spectrum Licence Allocation) Determination No.2 1998 (see Attachment 8). Potential applicants should not rely on this information, but should instead rely on the content of the Determination itself. Potential applicants are also urged to seek appropriate independent legal advice in relation to the Determination.

In a simultaneous ascending auction, all bidders are able to bid on all elements of their preferred aggregations at the *same time*. All the lots on offer are auctioned simultaneously, rather than in sequence. Bidders can bid on any lot, or any combination of lots, up to their own pre-declared limit. This limit is expressed as eligibility; a representation of the amount of bandwidth and population coverage the bidder ultimately hopes to acquire.

Bidding is conducted over multiple rounds and the auction closes when there are no new bids on any of the lots in a round in the final stage of the auction, no bidder exercises a pro-active waiver and no applicant remains under suspension (see

28 GHz and 31 GHz Bands Auction

Auction Stages). A key feature of the auction is the application of *activity rules* that encourage active participation and ensure that the process does not stall. If a bidder fails to meet his or her activity requirements, the amount of spectrum that he or she is eligible to bid on reduces. Bidders may not bid on lots in such a way that their bidding activity would exceed their eligibility.

Applicants must pay an entry fee to participate in the auction which is intended to contribute to the ACA's costs in bringing the spectrum to market. The ACA has set this fee at \$2,000 (**Attachment 9**). This fee is not refundable.

Applicants must also pay an *eligibility payment* to register for the allocation process. The rate of eligibility payment has been set by the ACA as \$10.00 AUD per unit of eligibility (**Attachment 9**). Thus the eligibility payment will be calculated proportionally to the amount of eligibility nominated by the applicant. The eligibility payment will be held against bid withdrawal penalties in the auction. Any eligibility payment remaining after deduction of bid withdrawal penalties will be credited against the bid price of successful applicants. This eligibility payment is refundable at the end of the auction to the extent that there is any surplus after the deduction of bid withdrawal penalties, and after credit to the balance of the bid price (ie. winning bids plus bid withdrawal penalties minus the eligibility payment).

Each round of the auction will consist of:

- a bidding period when bidders make their bids and any automatic rebids, or withdraw some or all of their current high bids so that they may redeploy their eligibility to pursue different bidding strategies;
- a short period of time for the ACA to calculate the results and make them available for download, and for bidders to consider the results before the next round commences.

The auction will be conducted electronically using computers. Bidders will submit their bids using a computer and modem, transmitting bids over the public telephone network or the internet. Bids will be encrypted for security and data integrity.

The ACA's auction bidding software provides for bidding and withdrawing bids in the auction, and for viewing the results of the auction. The software allows a bidder to view the whole database of lots on offer, or to select lots by area. Information is also provided regarding the current eligibility, current activity, the current value of high bids, and any bid withdrawal penalties for all bidders.

The ACA will use "public key" encryption to seek to secure the privacy and integrity of each bidder's bid file as it is transmitted to the ACA. Public key encryption also offers scope to provide sophisticated digital authentication procedures for files that are mathematically improbable to compromise. For the auction, the ACA will provide all pairs of encryption keys. Each bidder will be given a copy of the ACA's public key and a copy of their own secret key. The ACA will retain a copy of all public and secret keys distributed in the auction, stored under appropriate security arrangements. In all cases, the bidder must provide a bidder identification number and certain authentication information for a

Applicant Information Package

bid to be accepted (see the Determination at **Attachment 8** for details of the authentication required).

The ACA accepts that emergency situations may occur during the auction, and under these circumstances will accept telephone bids. Telephone bidding will only be permitted in circumstances which the ACA considers amount to an emergency. Telephone bidders may issue instructions by telephone to an operator who will be using the bidding software to prepare bids. The submitted bid will then be returned by fax to the bidder as confirmation.

Application Period

Applications will close at **5.00 pm Canberra time, Friday 8 January 1999**.

Applications must be accompanied by the entry fee of \$2,000 and the eligibility payment calculated by the applicant.

NOTE: The ACA cannot accept applications after the closing time.

Restrictions on use of software overseas

The ACA is going to provide two versions of its auction software. One is for bidders in Australia. That software contains high-level encryption systems that may be illegal in other countries and which cannot be exported from Australia without a permit.

The second type of software that the ACA will provide is for applicants who wish to bid from outside Australia. For these applicants, the ACA will provide an 'Export Only' version of the software which will not contain the restricted encryption components.

Applicants intending to bid from overseas will need to obtain their own copy of the encryption software from a supplier. They should then insert the encryption software into the working directory of the ACA software.

The auction computer system works with the PGP 2.6.x encryption software. Details about some potential sources for PGP 2.6.x can be found on the internet at:

<http://www.pgpi.com/download>

28 GHz and 31 GHz Bands Auction

Deed of Financial Security and Performance Payment

Applicants have the option of providing either a Deed of Financial Security or a Performance Payment for their participation in the auction.

They must nominate their preference, and if they choose the Deed of Financial Security, it must accompany their application. If they elect to pay a Performance Payment, then the amount of the Performance Payment must be paid with their Entry Fee and all money must accompany the application documents. Note that if the funds are being deposited by electronic funds transfer, the amounts must be on deposit with the ACA bank account at the time the application forms are received and the mandatory notification requirements set out in the Determination must have been followed. If the procedures are not followed, the ACA may be unable to reconcile amounts in its bank account with your application, and may conclude that the requirements of the Determination have not been met, in which case you will be excluded from participation.

The Deed of Financial Security or Performance Payment guarantees and secures the payment of any moneys owing to the ACA by applicants under the Determination (at **Attachment 8**).

IMPORTANT NOTE

In previous allocations some applicants have had difficulties arranging a Deed of Guarantee (now Deed of Financial Security) before the application closing date. It is in an applicant's best interest to ensure that a Deed of Financial Security is obtained in time. The ACA recommends that applicants obtain prompt advice from financial institutions.

Simultaneous Ascending Auctions

Under the determination, the auction will take place in a number of stages, each of which will comprise a number of rounds. The number of rounds in each stage is not fixed, and bidding is possible on all lots in all rounds. The auction manager will decide when the auction should move from one stage to the next.

Each stage of the auction will require applicants to make active bids in each round on a higher percentage of their eligibility than the previous stage. Applicants will be told the number of stages for the auction and the activity percentage applying to each stage before the auction commences.

The auction continues from round to round until such time as a round passes in the final stage with no new bid being made on any lot in that round, no bidder exercising a waiver and no applicant remaining under suspension. The auction can also be brought to an end by the auction manager at a specified round (clause 4.25 of the determination at **Attachment 8**).

Each round has two discrete components, and these follow a schedule, which is published in advance for every round. There is:

Applicant Information Package

- the bidding period - during which registered applicants make and, after the first round, may withdraw their high bids on lots from previous rounds; and
- the results period - during which the auction manager works out the high bids on each lot offered, using the auction computer system and then publishes, using the auction computer system and the internet, the results and information for the round.

After considering the results for one round, bidders bid again on their preferred lots, or make a different set of bids in the next round.

Once all bidding has stopped the auction manager will declare the auction closed and will advise all registered applicants of the closure. The applicant who has the highest bid on each lot at the end of the auction wins the lot at the price of that bid.

The auction manager has discretion to stop the auction at a specified round, but must advise all registered applicants of this before the proposed closure.

Starting Bids

At the start of the auction, each lot will be subject to a specified starting bid. Starting bids act like a reserve price, but they are disclosed at the start of the auction. The starting bid on all lots will be set by the auction manager immediately before the auction.

Minimum Bids

After the starting bid is made on a lot, all new bids on that lot will be subject to a minimum bid, which is the amount that a person wishing to bid on that lot must bid in order to make a valid bid for that round. The minimum bid is calculated by adding an increment to the current high bid, and is updated for every lot and every round, based on a formula.

Note that in the case where a bid is withdrawn, the high bid will be taken as the next highest bid made on that lot. The minimum bid for the lot in the next round will be set equal to that next highest bid, or, if there has been no other bid on the lot, to the starting bid.

The formula for calculating the minimum bid for the next round takes the current high bid and adds the *higher of*:

- a percentage of the current high bid; or
- a price per lot rating.

The auction manager will set these amounts after the closing date for applications.

During the auction, the auction manager can vary these amounts after consulting with bidders. In the early stages of the auction, larger increments are likely to be set, but as the auction matures, smaller and more conservative increments might be chosen to allow for more marginal adjustments to pricing. Adjusting this

28 GHz and 31 GHz Bands Auction

increment level may also be used to influence the speed at which the auction closes.

Automatic Re-bidding

In this auction, the ACA is providing a facility for automatic re-bidding. This facility is being provided to speed the auction process. Applicants should note that an automatic re-bid for a round will apply to that round only.

In simple terms, a person may nominate to automatically re-bid on a lot in any one round. They may do this so that in the event that another bidder also bids on that lot, or makes a higher bid on that lot, they can be sure to win the lot, up to a limit which they nominate. There is no obligation on any applicant to use the automatic re-bid facility. Applicants using the facility, however, may speed the auction along because it effectively allows a number of bidding actions on a lot to be compressed into a single round.

Automatic re-bids are calculated to raise the high bid value on a lot by one increment at a time, up to a limit set by each bidder nominating to automatically re-bid (the *automatic rebid limit*).

To use the automatic rebid facility, applicants will nominate an automatic rebid limit for each of the lots they want to win. The automatic rebid limit for a lot must be at least one minimum bid increment more than the applicant's own bid or, if the applicant is already the high bidder on the lot, at least 2 minimum bid increments greater than the high bid. It can be as much as the applicant wishes.

When processing bid instructions, the auction system will identify the highest bidder on each lot. If any of the other applicants have nominated an automatic rebid limit higher than this amount, the system will identify the person with the highest re-bid limit as the high bidder on the lot. The amount recorded as their bid will be one minimum bid increment higher than the next highest automatic rebid limit, or their automatic rebid limit, whichever is the lesser amount.

While the ACA believes this will be a useful facility, we advise that it be used with some caution. With automatic re-bidding, it would be possible for bidding on one lot to escalate very quickly, while adjacent identical or nearly substitutable lots remain comparatively low priced. Re-assessing the best bid on a range of options after each round is a less risky strategy.

Eligibility Limit

The initial eligibility of an applicant is determined by the number of lots the applicant hopes to win at auction. The eligibility of an applicant determines how many lots on which a bidder may have active bids at any stage of the auction.

An applicant may bid on any lot or any combination of lots, provided that the total of the lot ratings of the lots on which they are *active* never exceeds their eligibility. Bidders are not restricted to bidding on the particular lots that they considered when nominating their eligibility.

The ACA's auction software provides information to bidders during the auction to assist them to manage their bidding within this limit. Correctly utilised, the system will not permit a bid file to be prepared if it contains bids which would exceed this limit.

IMPORTANT NOTE

Applicants should note that too little initial eligibility may restrict bidding options during the auction. It is vital that applicants be realistic when calculating eligibility with regards to the lots they hope to win.

Provision of Information: carrier licence condition

With imposition of the carrier licence condition on Telstra and Optus (Attachment 6), it is possible that the ACA could require certain persons (including registered applicants) to provide information to the ACA before and after the spectrum licence auction with a view to ensuring that the carrier licence condition is not infringed.

Activity

Activity Targets

To prevent the auction stalling, bidders will have to be active on lots with a lot rating that exceeds the relevant activity target set by the auction manager for the stage in which they are bidding. *Active* means they must either:

- be recorded as the high bidder on a lot in the previous round's results **and** not withdraw that bid in the current round; **or**
- make a new valid bid on a lot (which need not be the highest bid made during the round) in the current round.

For new bids made in a round, any valid bid will count, not just those bids that are the highest for the round. When the number of new bids at one level of activity declines, the auction manager may decide to move to the next stage of the auction with a higher activity level (see below). Before moving on to the next stage the auction manager will ask all applicants to comment upon a proposal to do so. After taking into account their comments, the auction manager will then decide

28 GHz and 31 GHz Bands Auction

whether to move to the next stage. When the new bid activity level declines at this higher activity target, the ACA may again raise the target to the next level, following the same process. Once the activity target is set at the final level, it will remain at that level until the auction closes.

Auction Stages

Simultaneous multiple round auctions are conducted over several stages (previously there have been three), with each stage having an unspecified number of rounds. Each successive stage requires a higher level of bidder activity, and the auction manager will move the auction from one stage to the next (and so a higher level of activity) when a decline in bidding activity indicates that an equilibrium is near.

The level of bidder activity required in each stage is expressed as a percentage of their eligibility. For example, the auction manager could set activity targets as follows:

- 60 per cent of their eligibility in the first stage;
- 85 per cent of their eligibility in the second stage; and
- 95 per cent of their eligibility in the third stage.

These amounts will not be set until after applications close, when the likely competitive environment can be considered.

Eligibility Reductions

Bidders not complying with these activity requirements will have their eligibility for licences reduced unless they use a waiver (see below). Bidders who lose eligibility for under-activity will, in future rounds, only be able to bid in accordance with their reduced eligibility level. Once lost, eligibility cannot be recovered.

The ACA's auction bidding software incorporates a facility which provides bidders with a running total of their activity during the auction. The system provides notification if a bid file does not contain enough activity to meet the current activity target.

High Bids

Bidders do not have to raise their own high bids but they may do so if they wish. However, raising a high bid will not add to a bidder's activity, as they are already considered active on the lot by being the high bidder from the previous round.

If two or more identical bids are received, the applicant whose bid is the first recorded on the auction computer system will be regarded as the high bidder for that round. The time of a telephone bid being made will be taken as the time when the file containing it has been authenticated by the ACA's auction computer system. If there are any disputes in this regard, the auction manager will make the final decision.

Waivers

The ACA recognises that there will be times when bidders need to take “time out” from the auction, perhaps to consider an alternative bidding strategy. All bidders, therefore, will have a number of waivers which exempt them from the reduction of eligibility described above. The number of waivers is set by the auction manager.

Applicants can:

- nominate to exercise a waiver in a round (a “pro-active waiver”); **or**
- if they do not exercise one, the Auction Manager will automatically apply one of their waivers (an “automatic waiver”) rather than reduce eligibility; **unless**
- the applicant asks the auction manager **not** to do this (an "automatic waiver over-ride").

The difference between a pro-active waiver and an automatic waiver is that a bidder can use a pro-active waiver to keep the auction open for one more round if there are no new bids made.

The auction manager will set the number of waivers after applications close, and registered applicants will be informed as to how many waivers they will have.

Bid Withdrawal

This form of auction allows bidders to change their bidding strategies and the lots they hope to win. To do this they may need to withdraw their high bids on some lots to move to other lots without exceeding their eligibility.

When a high bid is withdrawn, and if no other bidder bids on the lot, the lot will be shown in the next results file at the second highest price that has been bid during the auction, but without that price being attributed to the second highest bidder. This is because the second highest bidder, acting on the knowledge that it is not the highest bidder, may have already decided to deploy its eligibility elsewhere, in which case attributing the lot to that bidder may cause them to exceed their eligibility.

The second highest bid price will be attributed in the results to the default bidder (BIN 9999), which is the ACA. In this situation, the ACA will not apply a minimum bid increment to the amount in the next round. Instead, the minimum bid on the lot will be set equal to the second highest bid. In this way, if the bidder who made the second highest bid is still interested in the lot, they may bid on the lot and confirm their interest without further financial commitment.

If a bidder withdraws a bid, the lot rating of that lot will be deducted from the bidder’s activity in the round. The bidder will need to consider whether, by withdrawing a bid on a lot, it fails to meet the activity target for that round.

Bid Withdrawal Penalties

28 GHz and 31 GHz Bands Auction

To discourage bidders from making frivolous bids and then withdrawing them, each bid withdrawal may be subject to a bid withdrawal penalty.

The penalty works like this: a “bid” is like a promise for a certain amount of money for the lot. If the bid is withdrawn, and the lot is ultimately sold for less, the promise is broken.

The person withdrawing the bid is liable to pay the ACA to make up any shortfall between the promise that it made (the withdrawn bid), and the final bid price paid at the end of the auction. If at the end of the auction there is no shortfall, then there will be no bid withdrawal penalty.

Close of Auction

The auction will be closed when a round passes in the final stage in which no new bids were made, and no “pro-active waivers” were exercised. It is also possible for the auction manager to bring the auction to a close on two rounds notice.

The auction manager must advise all registered bidders of the close of auction. Applicants who made the highest bids on lots at the close will be issued with a notice of payment due.

Payment Process

When the auction closes, each successful applicant (ie. the bidder who makes the highest final bid on a lot) will be issued with a notice confirming the results of the auction and setting out the amount owing on each lot on which that applicant was successful, **plus** any bid withdrawal penalties, **less** the initial eligibility payment (this is called the "balance of the bid price" in the auction rules).

This notice will be sent by receipted mail to the address of the applicant.

Successful bidders will have 10 working days from the date of the notice in which to pay 10 per cent of the balance of the bid price. Successful bidders will then have a further 20 working days to pay the remainder, making a total of 30 working days from the date of the notice for the balance of the bid price to be paid.

Default

If either the 10% payment or the 90% payment is missed, the applicant will be taken to be in default of its financial obligations. Also all successful bids made by the defaulting bidder will be treated as withdrawn bids and the bid withdrawal penalty calculated accordingly.

If the ACA holds a performance payment for a successful applicant who is in default, then so much of the monies held by the ACA as would meet the undischarged liability of the applicant will be forfeited to the ACA, with any surplus being returned to the applicant. However, if there is still an amount outstanding, this will be a debt due to the ACA.

Applicant Information Package

The ACA may also initiate damages action for the cost of having to re-auction the affected spectrum lots and for the difference in the price obtained.

Any successful bidder defaulting on payment of a lot will not be entitled to a spectrum licence for that lot or any other lot on offer in the auction.

Unallocated Lots

Any unsold or defaulted lots may be allocated by the ACA by another auction, by tender, or by a pre-determined or negotiated price.

28 GHz and 31 GHz Bands Auction

3. How to Get a Licence.

In this chapter ...

- a step-by-step guide to the allocation process
- details about how to fill in the application form
- what will happen after you apply and the auction progresses.

Introduction

To get a licence, follow these steps carefully:

1. Inform yourself - read and understand all of the information in this applicant information package!;
2. Work out how much spectrum you want, and where;
3. Register for the auction;
4. Bid in the auction; and (if successful)
5. Pay the ACA the amount due for the successful bids.

Step 1 - Inform yourself

Spectrum licensing is different from the more traditional apparatus licensing approach which is familiar to most spectrum users. It offers more flexibility and new opportunities to spectrum users.

Before participating in this auction make sure that you read and understand all of the material in this Package. Understand the opportunities and responsibilities that spectrum licensing entails. You are strongly urged to seek your own legal and engineering advice to help you do this.

Once you have your licence, the ACA expects you to manage the potential for interference. The ACA requires that, before you operate any devices as part of your system, you conduct, or contract someone else to conduct for you, an engineering analysis of your system to make sure that it fits within the spectrum space authorised by your licence and will not cause unacceptable interference to other users of the spectrum. There are a series of determinations under s.145 and advisory guidelines under s.262 of the Act that must be followed to avoid unacceptable interference.

The ACA also requires that before you operate any transmitter in your spectrum space, you register them. You cannot use the transmitters unless they are registered, or are exempt from the requirement to be registered. Mobile telephone handsets are exempt from registration.

28 GHz and 31 GHz Bands Auction

More information about spectrum licensing is in **Chapter 4 - Spectrum Licensing**, and on the technical framework for spectrum licensing, in **Chapter 5 - Technical Framework**.

IMPORTANT NOTE

Spectrum licences are issued for fixed terms of up to 15 years. Under the Radiocommunications Act 1992, spectrum licences must be re-allocated by a price-based allocation (eg. another auction) and can only be re-issued to the persons to whom they were previously issued without another price-based allocation process, when it is in the public interest.

The ACA will be using the “simultaneous ascending auction” system to allocate spectrum licences. It is different from the traditional "English" open outcry auction often used to sell art or antiques, for example, and with which most people are familiar. You should carefully read the auction rules contained in the Determination (**Attachment 8**) and understand what they mean before you apply to take part.

IMPORTANT NOTE

Take care in completing the application forms. These are important for establishing your right to participate and bid during the auction.

The ACA will arrange for people who register to participate in the auction by the closing date to be given an opportunity for training and to participate in a trial auction. Training will not be provided to bidders overseas. Applicants should not, however, rely solely on the training given by the ACA. That training will be concerned only with the “mechanics” of the auction system. The ACA will not provide training or advice on bidding strategies, or on all the possible effects of the actions of bidders during the auction process. Applicants should seek such legal and other advice as they consider necessary in relation to the auction system.

IMPORTANT NOTE

Once involved in an auction, you must be prepared to take part in every round, otherwise you may become ineligible to be issued a licence.

Step 2 - Work out How Much Spectrum You Want

How much spectrum you want will depend on what you want to do.

In allocating spectrum licences, the ACA is not just offering the opportunity to acquire spectrum and use it for communication systems. There is also scope for licensees to authorise other people to use the spectrum space authorised by their licence. If an applicant wishes to do this, they may be interested in acquiring bandwidth in a number of areas.

Whatever your circumstances, you need to think carefully about how much spectrum you need and what you propose to do with it. Under spectrum licensing, the onus is on you to acquire enough spectrum to accommodate your systems, and,

if appropriate, the systems of all of those people whom you wish to authorise to operate under your spectrum licence. You should seek expert engineering advice.

Example

Justine, from Justine's Internet Connections, wants to provide internet access in the five areas with the largest population - Sydney, Brisbane, Melbourne, Adelaide and Perth.

Justine looks at the lots available in this allocation. She sees, from the tables in the Marketing Plan, that there is only one lot of 1150 MHz in each area.

Justine therefore aims to obtain a lot in each of the 5 markets.

How much spectrum you want is up to you, but whether or not you get it depends on who else wants it, and how much you and they are prepared to pay.

When planning your spectrum requirements, the ACA recommends that you seek expert engineering advice regarding the spectrum needs of the systems you want to operate. The ACA makes no representations about the suitability of the spectrum to be offered for any particular use, including the uses set out in the example above.

Step 3 - Register for the auction

If, after you have considered your spectrum needs, you decide that you want to participate in this spectrum auction, you **MUST** register with the ACA by lodging your application by **5pm Canberra time, Friday 8 January 1999**.

You should register as early as possible. This will enable the ACA to contact any applicants who have not completed or submitted all the necessary forms, and to accept corrections which were received in accordance with subclause 2.5(3) of the Determination by the closing date.

To register in this auction, you **MUST**:

- Fill out the application form (see **Attachment 10**).
- Work out your eligibility based on your business plan, and calculate your eligibility payment - you **MUST** nominate how much eligibility you require (this is a measure of how much spectrum you want to win) and you **MUST** pay the eligibility payment based on this. *You cannot bid on, and consequently cannot win, more spectrum than authorised by your eligibility.*
- There is an entry fee of \$2000 for this allocation, which must be lodged at the time of application. The instrument setting the entry fee and rate of eligibility payment is at **Attachment 9**.

28 GHz and 31 GHz Bands Auction

- Complete the Deed of Financial Security (see **Attachment 10**) or pay a Performance Payment *if you are required to do so* under the auction rules.
- Complete the Deed of Acknowledgment (see **Attachment 10**) in every case, which commits you to your actions in the auction.
- Get your application form, and a bank cheque (alternatively, payment can be made by electronic funds transfer) for the total of the entry fee and the eligibility payment, completed Deed of Acknowledgment and the completed Deed of Financial Security or Performance Payment, to the ACA by **5pm Canberra time, Friday 8 January 1999**.

IMPORTANT NOTE

Late applications cannot be accepted. The ACA recommends early lodgement of application forms in the event of errors or omissions.

The application form

Any individual or body that wishes to bid for a spectrum licence in this auction MUST complete the application form. Follow the instructions on the form carefully.

One copy of the Application form is included with this Applicant Information Package. Further copies are available from the ACA and following the **Spectrum Auctions** links of the ACA's website:

<http://www.aca.gov.au>

An application form jointly submitted by more than one person must be signed by each of those persons. Each party to an application is jointly and severally liable in respect of the application.

Where the applicant is a company, the application form must be executed under seal with a certification that the seal was duly affixed.

The application form must have an original signature or other means of execution. A facsimile or a copy of a completed application form cannot be accepted. The ACA can only accept application forms that are complete and legible. To assist legibility all forms should be completed in block letters, or be typed.

Nominate spectrum preferences

To participate in this auction, you must tell us how many lots you want, involving what areas, as your first preference. We ask that you do this because if the ACA is able to satisfy every applicant's first preference, we will not proceed to auction - instead, we will offer you a licence for the areas that you nominate, at the starting bid for the lots (see below - **Allocation of licences without an auction**).

Items **F** to **J** of the application form are provided specifically to help you nominate your preference, and calculate your *eligibility* in the auction. Eligibility is important because it will be used to determine how much spectrum you can acquire

Applicant Information Package

in this auction, how much you have to pay in your *eligibility payment*, and how active you have to be during the auction.

IMPORTANT NOTE

Applicants can nominate any eligibility amount and applicants are NOT restricted to nominating the amount calculated on the spectrum preferences part of the application form.

Calculate eligibility

To nominate your allocation preferences, and calculate your eligibility in this auction, you will need to complete the application form as follows:

1. For each area in column **F**, enter the number 1 in the corresponding row of column **H** if you want a lot for that area and 0 in the row if you do not want the lot. (There is only 1 lot for each area.)
2. For each area, multiply the number you entered in column **H** by 1150 and ENTER the result in column **I**
3. For each row, multiply the population in column **G** with the bandwidth in column **I**, divide by 100,000, round down to the nearest whole number and ENTER the result in column **J**.
4. Total all the entries in Column **J** and ENTER the result in box **K**.

The result in box **K** is the eligibility needed to bid on this nominated set of preferences. You may nominate this result as your eligibility or you may choose another amount. In the auction you will not be permitted to be active on lots with a total lot rating that exceeds your eligibility. As indicated earlier, eligibility may be reduced as a result of bidding activity requirements not being met.

28 GHz and 31 GHz Bands Auction

Example

Justine wants 1 lot of 1150 MHz in each of the five markets with the largest population.

Justine enters the number "1" in column **H** in each of the 5 rows relevant to those areas in the eligibility calculation form.

She then multiplies this by 1150 and enters "1150" in column **I** for each of the five rows in the eligibility calculation form.

She then calculates the lot rating, as the population in column **G** multiplied by the bandwidth in column **I** divided by 100,000 and enters this result in column **J**.

	F	I	J
Brisbane	1,349,161	1150 MHz	15,515
Sydney	3,455,867	1150 MHz	39,742
Melbourne	3,058,427	1150 MHz	35,171
Adelaide	1,099,365	1150 MHz	12,642
Perth	1,197,869	1150 MHz	13,775
		TOTAL	116,845

Justine totals all of the entries in column **J** and enters the result (116,845) in box **K**. Box **K** is Justine's eligibility based on these preferences (see cl. 2.6 of the Determination). Justine may, if she wishes, nominate a different eligibility amount in box **K**.

IMPORTANT NOTE

You can, if you wish, nominate all of the spectrum in all of the markets. However, you will be required to have active bids on lots that, in total, meet an increasing percentage of your nominated eligibility. If you don't, your eligibility will be reduced, which will mean that the amount of spectrum you can acquire at the auction will also be reduced!

Activity

Each lot on offer has a *lot rating* (see clause. 2.5 of the *Radiocommunications Spectrum Marketing Plan (28 GHz and 31 GHz Bands) 1998 (Attachment 4)*). Lot ratings are calculated by multiplying the population of the area of the lot, by the bandwidth of the lot and dividing the result by 100,000.

Applicant Information Package

Each applicant's *activity* in each round of the auction will be calculated by adding the lot ratings of all the lots on which they are *active*.

Active means they must either be recorded as the highest bidder on a lot in the previous round's results, and not withdraw the bid in the current round (see **Bid Withdrawal** below), or they must have made a valid bid on the lot in the current round. *Activity* relates to **valid** bids, not **highest** bids. A bid does not have to be the highest bid on a lot in a round to count towards activity.

IMPORTANT NOTE

During the auction, applicants do not have to bid on the lots that cover the bands and areas nominated on the application form. Applicants can use their eligibility to bid on any lot on offer in the auction, once the auction is under way.

Eligibility Payment

To participate in this auction, in addition to the entry fee (see below), applicants **MUST** lodge with the ACA an eligibility payment calculated as \$10.00 AUD per unit of eligibility (**Attachment 9**). Calculate the eligibility payment and enter the result in box **L** on the application form.

Example

Justine has calculated the firm's eligibility to be 116,845 (see above). She has entered this in box **K** on the application form. Justine calculates the Eligibility Payment as $116,845 \times \$10.00 = \$1,168,450$. She enters \$1,168,450 in box **L** on the application form.

Under the auction system it is possible to withdraw bids, but this may be subject to withdrawal penalties. The Eligibility Payment will be held against such a liability (see below - **Bid Withdrawals** and **Bid Withdrawal Penalties**).

The Eligibility Payment will be credited to the final bid price payable if you are the highest bidder on lots during the auction.

While the eligibility payment is calculated on the lots a bidder hopes to win, bidders are not bound to bid on the lots nominated at the time of application. Applicants can switch their bids to any lots on offer in the auction, once it is underway. However, applicants cannot be active on lots that have lot ratings which exceed their eligibility.

Unsuccessful bidders, who do not incur bid withdrawal penalties, will be refunded the eligibility payment in full.

28 GHz and 31 GHz Bands Auction

Entry Fee

To Register in this auction, applicants **MUST** pay an Entry Fee of \$2,000 (Item **M** on the application form). The Entry Fee will not be waived. The Entry Fee is not refundable.

Total Amount Payable

To work out the total amount payable to the ACA in order to participate in this auction, add the amounts in boxes **L and M, and O where appropriate**, and enter the amount in box **P**.

IMPORTANT NOTE

*When you lodge your application form with the ACA, the Form **MUST** be accompanied by a bank cheque made payable to the ACA for the amount in box **P** on the application form unless alternative arrangements for payment of the amount by electronic funds transfer are made in accordance with the Determination (at Attachment 8).*

Deed of Financial Security or Performance Payment

Applicants must provide a Deed of Financial Security or Performance Payment before they can be registered unless they are exempted from providing a Deed of Financial Security or Performance Payment under the Determination. A Deed of Financial Security guarantees the payment of any moneys owing to the ACA by applicants under the Determination.

All applicants **must** provide a Deed of Financial Security or Performance Payment **UNLESS** they satisfy the ACA that they:

- are an authority of the Commonwealth, or of a State or Territory; or
- are a subsidiary of an authority of the Commonwealth or of a State or Territory (within the meaning of the Corporations Law); or
- are an Australian company which does not carry on a business for a profit.

IMPORTANT NOTE

An applicant is not automatically exempt from the requirement to provide a Deed of Financial Security or Performance Payment if it thinks it falls into one of these categories. The ACA must be satisfied that the applicant falls into one of these categories. An applicant must take action to satisfy the ACA that it meets the criteria. If the ACA is not satisfied, the applicant will have to provide a Deed of Financial Security or Performance Payment.

To be satisfied that the applicant falls into one of the exempt categories, the ACA requires that evidence produced be in the form of a properly made statutory declaration. The statutory declaration should:

Applicant Information Package

- be made by a director, or member of the governing body of the applicant; and
- state the capacity in which the person is making the declaration; and
- state the matters relied upon in order to establish that the company or body is exempt.

Applicants should also provide full details of all other matters of which they are aware that may be relevant to the ACA's consideration of the issue.

Person giving Deed of Financial Security must be qualified to give the Deed

An Applicant who provides a Deed of Financial Security must also satisfy the ACA that the person giving the Deed is **qualified** to give the Deed (as set out in clause 2.8(5) of the Determination - **Attachment 8**.)

To be satisfied that the person giving the Deed is qualified, the ACA requires that evidence be produced in the form of a properly made statutory declaration that:

- states the capacity in which the person is making the declaration; and
- states the specific status of the person which satisfies the requirements in clause 2.8(5) of the determination.

Submitting a Deed of Financial Security

Applicants should make arrangements for the early provision of the Deed of Financial Security to ensure that the full application package can be lodged by the due date.

Deeds may only be provided by completing and submitting the Deed of Financial Security in the form approved by the ACA. Alternatively, if providing a Performance Payment, the corresponding boxes on the Application Form (N and O) should be ticked and filled in. A copy of the Deed form is included in application documents included in this Applicant Information Package. You can obtain more Deeds from the ACA website.

Instructions for completing the Deed of Financial Security are provided on the form. These instructions should be followed carefully. The Deed must have an original signature or other means of execution. **Photocopies and facsimile transmissions are not acceptable.** A Deed of Financial Security must be complete and legible to be accepted by the ACA.

The original of the statutory declaration attesting to the status of the person making the Deed must accompany a Deed of Financial Security that is submitted.

Deeds of Financial Security or Performance Payments must be received by the ACA at the same time as the application form (before closing time on the closing date).

28 GHz and 31 GHz Bands Auction

If a Deed of Financial Security or Performance Payment has not been received from an applicant by the closing date, then the applicant will be excluded from participating in the auction unless it satisfies the ACA that it falls within one of the categories referred to in subclause 2.8(1) of the Determination (**Attachment 8**).

Deed of Acknowledgment

All applicants **MUST** complete a Deed of Acknowledgment. This Deed acknowledges, amongst other things, that an applicant will honour all bids that are made by them during the auction. A copy of the Deed of Acknowledgment is included in the application documents included in this Applicant Information Package. You may request more copies from the ACA at the address below.

Getting Forms and Money to the ACA

To register for the auction the ACA must receive:

- your completed application form; and
- your Deed of Financial Security properly completed and executed, if this is required;
- your Deed of Acknowledgment properly completed and executed; and
- a bank cheque or bank cheques (or alternatively, payment by electronic funds transfer), covering both the entry fee, eligibility payment and Performance Payment (if applicable). Bank cheques for this amount should be made payable to “The Collector of Public Monies, Australian Communications Authority” and be crossed “Not Negotiable”. Payment must be in Australian dollars. Personal or company cheques will not be accepted:

BY: **5pm Canberra time, Friday 8 January 1999**

AT:	ACA Auction Centre Locked Bag 3321 BMDC ACT 2617 Australia.	OR	Purple Building Benjamin Offices Chan St, Belconnen ACT 2617 Australia.
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The ACA will process your registration and issue a receipt that will also confirm the details that have been registered about your application.

Applicant registration will be complete only when the applicant has completed registration requirements and the ACA enters the names of the applicants in the register of applicants. The ACA must refuse registration if all required forms, entry fee, eligibility payment and performance payment (if applicable) are not provided in accordance with the Determination (**Attachment 8**).

Allocation of licences without an auction

Applicant Information Package

On the application form, there is provision for applicants to nominate how many lots they wish to acquire in the 28 GHz and 31 GHz bands. If the ACA can satisfy every applicant's preference without needing to go to an auction, it will offer all of the applicants a licence based on their nominated preference at the price of the starting bid for the lots that would comprise the licence. If all applicants accept the offer, the ACA will not proceed with the auction (see Part 3 of the Determination at **Attachment 8**).

If the ACA is unable to satisfy every applicant's preference, the ACA will proceed to auction. In this event, the ACA will set an auction date and move into the process of confirming auction details with applicants.

Confirmation of Registration

If the ACA decides to proceed to an auction, the ACA will send a package of information by receipted mail to registered applicants in accordance with the Determination (see **Attachment 8**). This package, which will be sent at least 5 working days before the starting date of the auction set by the ACA, will contain:

- advice of the starting date and time of the auction;
- advice that the applicant is registered;
- confirmation of the applicant's initial eligibility in the auction (see clause 2.6 of the Determination at **Attachment 8**);
- advice of the number of waivers issued to applicants for the auction;
- the schedule for the first round of the auction;
- telephone and fax numbers to be used in communication with the ACA during the auction;
- the applicant's bidder identification number, passwords, encryption keys and transaction code keys for use in the auction;
- information about how to obtain important data to be used in preparing bids in the first round of the auction;
- advice of the number of stages set for the auction and the activity percentage required for each stage;
- advice on starting bids and the minimum bid increments (see below - **Minimum Bid Increments**).

28 GHz and 31 GHz Bands Auction

Publication of applicants' names and bidder identification numbers (BIN)

At least 5 working days before the start of the auction, the ACA will publish in the national press the names of all the applicants who have been registered to take part in the auction, together with their eligibility and their bidder identification numbers. The ACA will only publish the names of natural persons if those persons have consented to the release of this information. During the auction, applicants are identified in the auction results by their bidder identification number (BIN).

Getting Ready for the Auction

Training

Before the start of the auction, the ACA will contact all registered applicants to advise them of the time, date and place of software installation for use in the auction and how to use the bidding software.

There are no legal requirements upon the ACA to provide training to clients outside Australia.

Computer Bidding

The ACA has developed computer software to enable applicants to prepare their bids and transmit them to the ACA during the auction. This software is designed with point-and-click functionality to make bidding on lots easier. The ACA will provide the software, manuals and some training. The ACA will grant a licence for the software to registered applicants. A copy of the licence is included in the application documents (**Attachment 10**). Applicants agree to the licence conditions by signing the Deed of Acknowledgment.

Applicants will need to install the program on their computer and test it thoroughly to become familiar with it. Installation will take around 10 minutes. Applicants will need to ensure that they have appropriate archiving facilities for auction results files. One results file is produced for each round of the auction, and each file is likely to be of the order of 350 kB (uncompressed) in size.

Prior to the auction the ACA will conduct a trial auction so that applicants can become familiar with the auction procedure before the allocation process begins. Details of the trial auction will be sent to all applicants.

Important Information for Overseas Applicants

The ACA is going to provide two versions of the bidding software. One is for bidders in Australia. This version contains high-level encryption systems that may be illegal in other countries and which cannot be exported from Australia without a permit.

The second type of software that the ACA will provide is for applicants who wish to bid from outside Australia. For these applicants, the ACA will provide an

"Export Only" version of the software which will not contain the restricted encryption components.

IMPORTANT NOTE

Applicants intending to bid from overseas will need to obtain their own copy of the encryption software from a supplier. They should then insert the encryption software into the working directory of the ACA software.

The auction computer system works with the PGP 2.6.x encryption software. Details about some potential sources for PGP 2.6.x can be found on the internet at:

<http://www.pgpi.com/download>

Minimum System Requirements for ACA Auction Software

To run ACA's auction software, applicants will need:

- a personal computer with a Pentium or higher microprocessor;
- Microsoft Windows 95 or NT 4.0 operating system;
- Screen resolution of 800 x 600 pixels (for best performance);
- Minimum 16 MB of random access memory (RAM) (32 MB for NT 4.0);
- 10 MB of hard disk space for programs and local files plus capacity to store results files;
- 1 x 1.44 megabyte floppy disk drive;
- a modem, and
- Microsoft Office 97, or at the very least, a complete installation of the Microsoft Access 97 ODBC 3.0 driver set.

Step 4 — Bid in the Auction

The ACA is using the simultaneous ascending auction system to allocate licences.

An introduction to the auction system is in **Chapter 2 - How is it being allocated?**

Auction Rules

This form of auction has a number of rules which govern its progress, and serve to keep it fair. These rules are set out in the accompanying Determination (**Attachment 8**).

IMPORTANT WARNING

28 GHz and 31 GHz Bands Auction

The following information is only intended to provide a general overview of the allocation scheme which is contained in the Determination. Potential applicants should not rely on this information, but should instead rely on the content of the Determination itself. Potential applicants are also urged to seek appropriate independent legal and other advice in relation to the Determination. A copy of the Determination is at Attachment 8.

Auction Rounds

Bidding takes place over a number of rounds. In a round, applicants will be able to submit bids on the lots they want to win, or withdraw bids on lots they no longer wish to pursue; that is, it is possible in this form of auction to change bidding strategies. The ACA will then prepare results for this bidding.

There will be a number of rounds each day. Initially, 2 rounds per day are planned, but in order to keep the auction moving, up to 6 rounds per day may be desirable. Rounds will continue until no more bids are received on all lots. The ACA will consult with all bidders before changing the number of rounds per day.

Once all bidding has stopped the auction manager will declare the auction closed and will advise all applicants of the closure.

The auction manager has the discretion to stop the auction at a specified round, but must advise all registered applicants of this at least two rounds before the proposed closure. The ACA does not plan to use this mechanism except under exceptional circumstances.

Electronic Bidding

Each applicant will be issued with a dial-in account with the ACA similar to those offered by commercial internet service providers. Alternatively, the ACA software can transmit bids on the internet. This will allow them to connect to the auction computer by modem using a telephone number supplied by the auction manager. The ACA will assign a Bidder Identification Number (BIN), a password, transaction codes keys, and encryption keys to each applicant.

The auction software is designed so that applicants need only connect to either upload bid files or download result files. All of the processing and preparation of bids can be done without being connected to the ACA.

To establish a connection, the auction software will transmit the applicant's *userid* (BIN) and *password* issued by the ACA.

Once connection is established, the applicant will be able to:

- download from the auction computer system a file containing the latest auction results and any messages from the auction computer system; and
- upload to the auction computer system the applicant's bid file and bid withdrawal file during a round.

An applicant may need to connect to the Auction Centre a number of times during a round:

Applicant Information Package

- to make bidding instructions; or
- to obtain the final results of the round.

The schedule for a round, published one round in advance in every results file, will provide information to applicants about when to make these connections.

The results file will be published in Microsoft Access 97 format. A complete specification of the files and their contents is at **Attachment 11**.

IMPORTANT NOTE

Once the auction is underway, bidders are strongly encouraged to download EVERY results file produced by the ACA. Each bidder's status can vary quite markedly from round to round, and you will need to view the results of every round to ensure that your eligibility is maintained.

Further, the results file for each round contains the schedule for the next round, and so contains important information about the times for bidding and for connecting to download auction results.

The ACA accepts no liability for the failure of an applicant to make or withdraw a bid as a result of that applicant being unaware of changes to the auction schedule.

Emergency Telephone Bidding

In the event of a technical emergency that precludes a bidder bidding on-line, the ACA may accept placement of bids by telephone. When a bidder contacts the ACA with their bids, the ACA needs to be able to establish that the person speaking is who they purport to be. The ACA needs to ***authenticate*** the instructions.

For each bidder in the auction, the ACA will prepare a list of 'one-time' transaction code keys for use in authenticating bids. Each list will contain a minimum of 100 transaction key codes. No two lists will be the same. No two codes will be the same, except as generated by chance. Each key will consist of 8 randomly generated letters. Each key will be used once, in the order in which the keys are listed. The ACA will retain a copy of each list issued to the applicant.

Applicants bidding by telephone must identify each communication of bid or withdrawal instructions to the ACA using the next available transaction code key by quoting the key to the ACA operator when asked.

Once a transaction code key is used, the bidder must strike through that key on their copy of the list and note the round and the date and time that it was used. The ACA will do the same.

Transaction code keys will be distributed by receipted mail. Applicants should note that they will be bound by any bid made using their own transaction code keys, and will be required to pay the balance of bid price on any lot on which they are the highest bidder at the close of the auction. Consequently, if a bidder has any suspicion that the integrity of the keys has been compromised in transit or

28 GHz and 31 GHz Bands Auction

otherwise, they **must** advise the ACA immediately so that new keys can be prepared.

Making Bids

The ACA's auction software is designed to help applicants see the implications of their strategy in terms of their commitment to pay and their activity levels, which are important to preserving eligibility in the auction.

Bidders may bid on any lot or any combination of lots, **provided that the total of the lots ratings of the lots on which they are active never exceeds their eligibility**. Bids that exceed an applicant's eligibility will be rejected by the auction system.

The lots on which you may bid are not restricted to the lots nominated when working out your eligibility. The auction software will revise and display the activity status after every new bidding instruction or bid withdrawal instruction is added.

These bidding instructions can be changed by an applicant at any time ***until they are transmitted to the ACA***. Bidding instructions cannot be changed after transmission, but bids from previous rounds can be withdrawn in certain circumstances (see clauses 4.21 - 4.22 of the Determination at **Attachment 8**).

Applicants can lodge their bidding instructions only once and at the same time in a round. Their instructions may contain bids on any lot or any combination of lots.

Applicants will use the ACA software to prepare a bid file which contains bidding instructions referring to the lots and the amount bid on each lot. Each bid file will be transmitted to the ACA auction centre using a modem and will be automatically receipted. Bid files will be check-summed and encrypted prior to transmission to help preserve their integrity.

Telephone bidders will be asked to quote their BIN and transaction code key to the operator. The operator will then accept bidding instructions identifying the lots being bid on and the amount of each bid. Telephone bidders will receive a fax-back confirmation of receipt of their bids.

Auction Results

The ACA will publish the results file for every round in the auction. The results will contain:

- all bids and bid withdrawals made by all applicants during the round;
- information about the highest bid on every lot, and the bidder identification number of the registered applicant who made it;
- information about the status of all applicants in the auction (eg, their activity levels, their eligibility, number of waivers remaining); and
- information about the starting date and times for bidding and for results preparation for the next round.

Applicant Information Package

The results will be available for download by registered applicants using the auction software, because the software uses the information in the results to help construct the next bids. The ACA will also release all results for all rounds under **Spectrum Auctions** on its website at:

<http://www.aca.gov.au>

Close of Auction

The auction will be closed when a round in the final stage passes with no new bids being made on any lot in the round, no "pro-active waivers" being exercised and no applicant remaining under suspension.

The auction manager must advise all registered applicants of the close of auction. Applicants who made the highest bids on lots at the close will be issued with a notice of payment due. The auction manager may close the auction after giving bidders two rounds notice.

Step 5 - Paying for Your Licence

When the auction closes, the ACA will send to each successful applicant a notice setting out:

- each lot on which they were successful;
- their high bid for that lot;
- the total of bid withdrawal penalties, and the lots on which they incurred bid withdrawal penalties; and
- the balance of the bid price (after deduction of the Eligibility Payment).

This notice will be sent by receipted mail to the address provided in the application form.

Applicants will have 10 working days from the date of the notice in which to pay 10 per cent of the balance of the bid price.

Applicants will then have a further 20 working days to pay the remainder. See pages 24 and 25 regarding default in paying on time.

PAYMENT MUST BE MADE BY BANK CHEQUE UNLESS ALTERNATIVE ARRANGEMENTS FOR ELECTRONIC FUNDS TRANSFER HAVE BEEN MADE WITH THE AUCTION MANAGER.

Defaulted lots may be allocated at another price based allocation process.

Examples of How the Auction Procedures May Operate

28 GHz and 31 GHz Bands Auction

To illustrate how the auction procedures might operate in practice, a number of examples are given below. Prospective applicants should, however, note that these examples are not exhaustive, contain only brief descriptions of the relevant procedures in each case, and are based on the ACA's understanding of the procedures.

Prospective applicants should not rely on these examples, nor on the more detailed descriptions of the ACA's interpretations of the auction procedures given above, but should satisfy themselves of the meaning of the procedures, and take such legal and other advice as they consider necessary.

Starting Bids

Under clause 2.17(2) of the Determination (**Attachment 8**), the starting bid on each lot is the amount calculated by multiplying the *starting price per lot rating* [set by the Auction Manager under clause 2.17(1)(a)] by the lot rating of the lot.

Example

Assume that the starting price per lot rating is \$20.00.

At the start of the auction, Justine wishes to place a starting bid on all 5 of the lots she hopes to win.

The aggregate of lot ratings for all of these lots, from the Marketing Plan, is 116,845. The starting bid is the product of 116,845 and \$20.00. This produces a figure of \$2,336,900.

The starting bid on each lot will be calculated by the ACA and included in the round 0 (the opening round) file available to on-line bidders.

Minimum Bid Increments

For the purposes of the following example, assume that the Auction Manager has set the minimum bid increments as follows:

- 2.17(1)(b) increment of price per lot rating = \$10.00; and
- 2.17(1)(c) increment of percentage of high bid = five per cent (5%).

Until advised further by the Auction Manager, the minimum new bid that would be accepted by the ACA on any lot after a starting bid has been made would be the current highest bid on that lot, plus the higher of:

- \$10.00 multiplied by the lot rating for the lot; or
- 5 per cent of the high bid currently recorded in the results.

Example

Justine was not successful in the first round. She sees that her competitor, Nigel, from Strategic Spectrum

Applicant Information Package

Management, is recorded as the high bidder on each of the 5 lots that she wants, with a high bid total of \$5.4 million.

Justine calculates the minimum bid that she must make in order to continue bidding on these lots:

- \$10.00 by total lot rating = \$1,168,450
- 5% of \$5.4m = \$270,000

Therefore, the minimum acceptable bid in the next round on the 5 lots Justine wants to win would be \$5,400,000 + \$1,168,450 = \$6,568,450.

Justine bids.

The minimum bid calculated by the auction system for every lot will be included in every results file produced by the ACA.

Activity requirements

To prevent the auction stalling, applicants will have to be active on lots with a lot rating that equals or exceeds a percentage of their eligibility in every round.

Activity requirements are explained in **Chapter 2 - How is it being allocated?**

Active means they must either be recorded as the high bidder on a lot in the previous round's results, and not withdraw the bid in the current round (see **Bid Withdrawal** below), or they must have made a valid bid on the lot in the current round. Activity relates to **valid** bids, not **highest** bids. A bid does not have to be the highest bid on a lot to count towards activity.

IMPORTANT NOTE

Any applicant that does not meet this activity target will have their eligibility reduced!

28 GHz and 31 GHz Bands Auction

Example

In stage 1, the ACA has set an activity target of 60 per cent.

Justine has eligibility of 116,845. To reach an activity percentage of 60 percent, Justine must either make new bids, or be recorded as the highest bidder in the previous round, on lots that have combined lot rating of 60 % of $116,845 = 70,107$.

If Justine bids in Sydney and Adelaide (lot ratings 39,742 and 12,642) her activity will be $39,742 + 12,642 = 52,384$ and she will not meet this activity target, and her eligibility will be reduced. If she also bids in Melbourne (lot rating 35,171), her activity will be $39,742 + 12,642 + 35,171 = 87,555$, which is above her activity target, and her eligibility will not be reduced.

Applicants not complying with the activity requirements will have their eligibility reduced unless a waiver is used. Applicants who lose eligibility for under-activity will only be able to bid in accordance with their reduced eligibility level. Eligibility is re-calculated every round, based on activity in the round. Bidders who do not meet their activity requirements will have a new reduced eligibility in the next round. That new eligibility will be calculated as their *current activity* divided by the **percentage of eligibility** for the round (see clause 4.19(2) of the Determination (**Attachment 8**)).

To avoid reductions in eligibility, applicants will need to meet the activity target for the round of the auction.

Example

Continuing from the example above, Justine decides to only bid in Sydney and Adelaide, and not in Melbourne.

Her activity, therefore, is 52,384.

At a 60 per cent percentage of eligibility, Justine's new eligibility is:

$$= 52,384 / 0.60$$

$$= 87,307$$

which is 75 per cent of her initial eligibility (116,845)

Bid Withdrawal Penalties

As explained in Chapter 2, applicants can withdraw their bids from a previous round. To prevent people making and then withdrawing bids frivolously, and perhaps delaying the auction process, all bid withdrawal is subject to a bid withdrawal penalty.

When a bid is withdrawn, the person making the withdrawal is liable to the ACA to make up any shortfall between the promise that the person made, and the amount that the lot finally sells for. Applicants who have incurred a withdrawal penalty will be informed of their obligations at the end of the auction. Of course, there is no penalty if the lot eventually sells for a sum equal to or more than the withdrawn bid.

Example

Justine is the high bidder at \$3m on one of the lots that she originally commenced bidding on. The history of bidding on this lot is:

Nigel	\$1.5m
Justine	\$2.0m
Nigel	\$2.5m
Justine	\$3.0m

Justine notices that a different lot from the one she has been bidding on requires a minimum bid of only \$1.0m.

Justine decides to switch her bidding to the cheaper lot, and withdraws her current standing \$3.0m bid.

In the results after the bid withdrawal period, the lot will show the default bidder (bidder 9999) as the highest bidder. The highest bid shown in the results will be \$2.5m (the next highest bid made). The minimum bid for the next round will not include an increment, and will also show \$2.5m.

In this situation, if Nigel still wants the lot, he will have to re-make his previous \$2.5m bid. Nigel makes this bid.

If at the end of the auction, no other bid is lodged on the lot, Justine will be liable for a bid withdrawal penalty equal to her withdrawn bid (\$3.0m) minus the final sale price (\$2.5m) = \$0.5m.

If, during a current round, an applicant withdraws a high bid on a lot from a previous round, the applicant will not be regarded as active on the lot in the current round.

If at the end of the auction, a lot that has been subject to a withdrawn bid is not sold, the bid withdrawal penalty will be equal to the difference between the withdrawn bid and the next highest bid made by any other bidder in the auction

28 GHz and 31 GHz Bands Auction

which has not been withdrawn. If there are no other bids on the lots, the withdrawal penalty will be for the full amount of the withdrawn bid.

4. Spectrum Licensing

In this Chapter ...

- **information about spectrum licensing**
- **an introduction to the concept of "spectrum space" and standard trading units (STUs) of spectrum space**
- **information for people wanting to use spectrum space themselves**
- **information about authorising others to use spectrum space**
- **information about trading spectrum space**
- **other important information about licence conditions, spectrum licence tax, and regulatory compliance.**

Spectrum licensing is a form of licensing introduced in Australia by the *Radiocommunications Act 1992*. Spectrum licences were issued for the first time in 1997, following the auction of the 500 MHz band. Spectrum licences are a tradeable, technology neutral spectrum access right for a fixed non-renewable term. Instead of authorising the use of a specific device, spectrum licences authorise the use of spectrum space and give licensees the freedom to deploy any device from any site within their spectrum space, provided that the device is compatible with the core conditions of the licence, and other conditions imposed by the ACA on the licence, and the technical framework of determinations and advisory guidelines established for the bands (see **Chapter 5 - Technical Framework**). Compliance with the core conditions is undertaken in accordance with a set engineering framework for interference management.

Spectrum licences offer a new way of managing the radiofrequency spectrum. Licensees will have much greater flexibility than under apparatus licensing to manage the deployment of devices within the spectrum space authorised by the licence for a fixed term of up to fifteen (15) years.

Within the bounds of spectrum space and the technical co-ordination framework, licensees may be able to operate whatever type of communications service they choose, and be able to change that service in response to technical improvements or changes in consumer demand.

Spectrum licences are tradeable. Licensees are free to seek to buy and sell spectrum space in the open market as the need arises, or to authorise other people to operate devices in their spectrum space, including under commercial arrangements. Spectrum licences can be aggregated or sub-divided to form new licences.

Spectrum Space

The concept of "spectrum space" is fundamental to the ACA's approach to spectrum licensing. Spectrum space is conceptually like other types of three dimensional space. It covers an area and it has a height. Spectrum space, if thought of as a cube, covers a geographic area authorised by a licence. The *area* is like the floor of the cube. The radiofrequency *bandwidth* is represented by the height of the cube.

Standard Trading Units

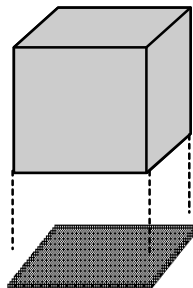
The challenge in developing spectrum licensing was the need to have a licensing and management system that was capable of dealing with a medium which is effectively a continuum in four dimensions (latitude, longitude, frequency and time - note that, for convenience, the ACA effectively holds "time" constant for all licences, so allowing spectrum space to be thought of in three dimensions).

The solution to this problem was to commoditise the spectrum subject to spectrum licensing; that is, to create finite indivisible three-dimensional units of spectrum space that can be aggregated into useful configurations. These finite indivisible units of spectrum space are called standard trading units, or STUs (Figure 1).

STUs are like building blocks, or house bricks. By themselves, they may be too small to have much utility, but because of their regular shape, and their referential relationship with their immediate neighbours, they can be stacked vertically, or horizontally with neighbouring STUs to form larger bodies of spectrum space that do have utility (Figure 2).

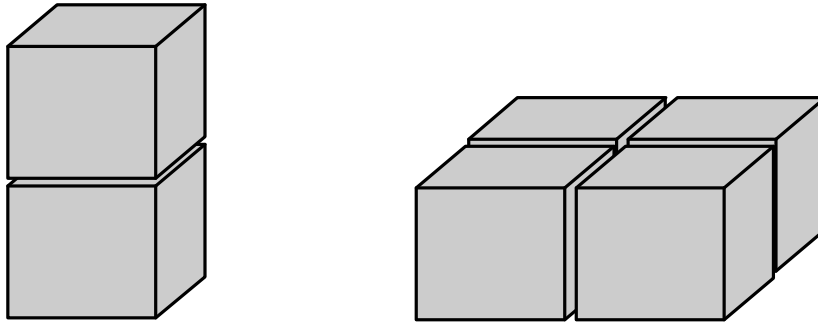
Figure 1

Standard Trading Units (STUs)



Standard Trading Units are like cubes of spectrum space. They cover an area in the horizontal plane, and they have height, representing bandwidth.

Figure 2
STUs can be aggregated



STUs can be stacked vertically (left) to provide increased bandwidth or horizontally (right) to cover a larger area.

The main use of the STU concept is in trading spectrum space. The ACA permits spectrum space to be bought and sold in terms of STUs. Licensees who wish to trade part of a licence can disaggregate the licence into its component STUs and offer them for sale individually or in multiples. A single STU is the smallest unit of spectrum space for which the ACA will issue a licence or register trading.

The frequency bandwidth of STUs may vary in size depending on the spectrum band in which licences are being issued, but the minimum areas which may be traded will be constant for all bands. For the purposes of spectrum licensing in the 28 GHz and 31 GHz bands, the following definitions apply.

Frequency Band

The frequency bandwidth of each STU will be 50 MHz. The technical framework (see **Chapter 5 - Technical Framework**) for spectrum licensing in these bands has been predicated on these STU sizes.

Geographic area

In the geographic dimension, STUs follow the spectrum map grid (SMG) published by the ACA. The SMG has three resolutions related to population density. In central and northern Australia the resolution is 3 degrees of arc. In regional Australia, it is one degree of arc and in rural and urban Australia, where the need for efficient spectrum use is highest, the resolution is 5 minutes of arc. It should be noted that the size and shape of STUs varies with latitude, but the sides

28 GHz and 31 GHz Bands Auction

of an area covered by an STU are approximately 330 km, 110 km, and 9 km depending on the resolution.

The ACA reserves the right to alter at any time the application of these different resolutions of STU. It may need to do this, for example, in response to shifts in population density identified from an Australian census, or because there is a demonstrated need to do this to facilitate trading. In general terms the ACA expects that any change in resolution will tend to facilitate trading at a finer resolution. (It should be noted that areas for the purposes of STUs are not necessarily the same as the areas referred to in Table 1 of this Applicant Information Package).

Using Spectrum for Communications Systems

Under spectrum licensing, licensees are responsible for planning the use of equipment within their own spectrum in accordance with a technical framework as defined by the core conditions of the licence and described in the various determinations and guidelines (see **Chapter 5 - Technical Framework**). The core conditions specify for each licence:

- the part or parts of the spectrum in which the operation of devices is authorised under the licence;
- the area within which the operation of devices is authorised;
- the maximum emission levels outside the bandwidth of the licence; and
- the maximum emission levels outside the area of the licence.

In addition to the core conditions, and the conditions required by the Act to be included, there may be licence conditions included by the ACA under s.71 of the Act (see **Chapter 5 - Technical Framework**). Examples of the licence conditions that the ACA will impose are set out in the sample licence included in the Marketing Plan at **Attachment 4**. Most of these are related to interference management. These conditions are very important, as they relate to the management of actual interference that may be experienced or caused by devices operated under the licence. They are important because some conditions impose **responsibilities** on spectrum licensees, especially responsibility for the management of interference, and responsibilities to negotiate with other licensees (or site managers) in relation to co-sited devices.

Before a device will be registered for use under a licence, the ACA may need to be satisfied that use of the device has been properly planned and that it will not cause unacceptable interference to other spectrum users. The ACA will accept an Interference Impact Certificate (IIC), issued by an accredited person (see below - **The Role of Accredited Persons**) as evidence that a device will not cause unacceptable interference. Licensees may engage an accredited person to conduct an engineering assessment of the proposed transmitter, and if satisfied that the

device will not cause unacceptable interference, the accredited person may issue such a certificate.

The procedure for checking whether or not there is a probability that a device will cause unacceptable interference is set out by the ACA (see **Chapter 5 - Technical Framework**).

An accredited person cannot properly issue an IIC unless he or she follows this process.

If a licensee seeks registration of a device directly from the ACA and does not have an IIC, the ACA will charge for the work necessary to be satisfied that the device will not cause unacceptable interference. The ACA will charge the licensee for work on a time and materials basis. The ACA's current standard charging rate for consultancy work is \$191.00 per hour. This is expected to change in late December 1998.

Registered devices must be identified with a label carrying their registration number (see below).

The Radiocommunications (Unacceptable Levels of Interference) Determination

A determination relating to unacceptable levels of interference has been made under section 145 of the Radiocommunications Act 1992 for this auction. A copy of the determination is at **Attachment 12**.

This determination applies to all devices to be registered under a spectrum licence in the bands being allocated, irrespective of the type of service that a licensee proposes to operate.

The s.145 determination (see **Chapter 5 - Technical Framework**) sets out procedures that licensees should follow to ensure that their systems satisfy the core conditions of the licence relating to emission limits both outside the geographic area and outside the frequency band of the licence.

Compulsory Registration of Certain Devices

It will be a condition of all spectrum licences issued in these bands that licensees must not operate transmitters under those licences unless the transmitters are registered with the ACA, or have been exempted from the registration requirements.

Registration Exemptions

Certain kinds of transmitters are exempt from the registration requirements. These are mobile transmitters and indoor fixed transmitters.

28 GHz and 31 GHz Bands Auction

The Role of Accredited Persons

An accredited person is someone who has been accredited by the ACA to perform engineering work traditionally undertaken by the ACA and its predecessors. Under the Act, only an accredited person can issue the Interference Impact Certificate (IIC) that may be required before a transmitter can be registered for operation under a spectrum licence. Anyone with the appropriate qualifications and experience can apply to the ACA for accreditation.

Spectrum licensing is intended to provide industry with freedom to manage their spectrum in the way that best suits their needs. Consistent with this theme, the ACA has reviewed its approach to device registration policy and developed a set of principles on how registration requests to the ACA are to be handled. The ACA is now encouraging industry to take responsibility for the management of their licences by seeking the registration services of ACA accredited persons or having their employees accredited. The registration strategy and principles are:

1. Licensees must not operate devices (transmitters) under spectrum licences unless those devices are registered with the ACA or specifically exempted (cellular mobile handsets and certain other devices have been exempted).

Before a device can be registered, the licensee must either:

- a) ensure that it meets the requirements of the relevant section 145 determination; or
- b) ensure that sufficient internal guard space exists within the licence; or
- c) ensure that external guard space is provided, in that written agreements exist between all potentially affected adjacent licensees.

In case (a), before the device is entered in the Register, the ACA must receive an Interference Impact Certificate issued by an accredited person stating that the device will not cause unacceptable interference, or the ACA must have carried out the necessary checks to ensure that the device meets the requirements of the section 145 determination.

In cases (b) and (c) checks must be carried out to ensure that the necessary guard space is provided.

NOTE: Accredited persons would also normally take account of any compatibility requirements specified in relevant Advisory Guidelines made under section 262 of the Act.

3. Licensees should be encouraged to use accredited persons for device registration wherever possible.
4. Licensees should be encouraged to seek appropriate accreditation on behalf of their employees.

Applicant Information Package

5. The ACA will only carry out the work associated with device registration when the following type of circumstances apply:
 - a) no accredited person is available or willing to take on the task;
 - b) use of an accredited person will cause an unreasonable delay to the licensee;
 - c) the licensee can show that the issuing of an IIC by available accredited persons would give rise to a conflict of interest and the licensee is unable to satisfactorily resolve this conflict.

The timing of completion of any such work carried out by the ACA will need to take account of other ACA priorities.

6. The ACA will charge independently determined fully commercial rates for any work associated with a device registration service.
7. The ACA will be prepared to provide recourse to a device registration service only until the end of June 1999. Before that date, however, the ACA will review the working device registration services by accredited persons to ensure that licensees have adequate opportunity to have devices registered. Licensees and accredited persons will be consulted in this review.
8. The ACA will not make software related to a device registration service available externally unless it is satisfied that adequate software is not available from external sources. Any ACA software would be charged for on a fully commercial basis.
9. The ACA does not intend for coordination procedures used or developed by the ACA to become 'standard' procedures. The ultimate gauge of the effectiveness of a coordination procedure is the level of spectrum utility it makes available and the actual interference rate it causes.
10. The ACA intends to audit the work of both accredited persons and internal staff in an equitable manner.
11. To ensure that they are not disadvantaged and are kept properly informed, the ACA will ensure that accredited persons have access to all relevant device registration policy when it is adopted.
12. The ACA intends to enable accredited persons to enter devices directly into RADCOM through a remote registration facility. This facility is expected to become available towards the end of 1998. Hard copy applications for device registration will also continue to be accepted, but they may take a little longer to process than automatic transactions.

28 GHz and 31 GHz Bands Auction

Labelling Requirements for Transmitters

It is a requirement of the ACA that licensees label all transmitters with the Registration Number provided when the transmitter is registered.

There are some exemptions to the requirement for labelling. The exemptions apply to devices that have low interference potential, for example, low power mobile transmitters. For further details contact the ACA for a copy of the *Radiocommunications (Labelling) Determination 1997*.

Authorising Third Parties

There is nothing to prevent a spectrum licensee from creating its own spectrum access order under its spectrum licence, and authorising spectrum use by its clients under a commercial arrangement.

The ACA points out to potential applicants and potential third party authorisees that the authorisation of a third party under the Act by a spectrum licensee would appear to be the exercise of a statutory power, and that it is not clear that the power of a spectrum licensee to revoke a third party authorisation can be fettered by any contractual or other arrangement. The ACA notes, however, that some licensees have, in the past, entered into agreements that, if valid, would have the effect of preventing the licensee from revoking a third party authorisation unless, for example, there had been a breach of contract as between the licensee and the third party authorisee.

The ACA further points out to potential applicants and potential third party authorisees that such arrangements can lead to difficulties when there is a dispute as to whether or not a third party authorisation has been validly revoked. In this situation, the ACA may be placed in the position of having to decide whether a third party authorisee is lawfully operating a transmitter, which could involve the ACA having to make an assessment of, for example, the contractual rights of the parties. The ACA may find this difficult or impossible to do.

The ACA, therefore, suggests that spectrum licensees should carefully consider the arrangements under which they make third party authorisations, and seek their own legal advice on how the requirements of the Act might be met in relation to the authorisation of the use of devices under spectrum licences.

All devices operated under a spectrum licence need to be registered with the ACA, unless exempt, and the spectrum licensee would be responsible for ensuring that devices are registered.

Spectrum licences will include a condition that operation of devices by a person other than the licensee must comply with any rules made by the ACA about third party use [s.68(2)(a) of the Act].

Spectrum licences will include a condition that the licensee notify any authorised third parties under the licence of their obligations under the Act, in particular, registration requirements for devices and any rules made [s.68(2)(b)].

IMPORTANT NOTE

A device cannot be operated unless authorised directly by a licence, or by the licensee issuing an authorisation to another person to operate the device. Licensees operating a wireless local loop service (for example), in order to comply with this requirement, will need to individually authorise every handset that operates in their spectrum space. This is a separate issue from the exemption from device registration extended to such handsets.

Applicants should also note that for the purposes of certain sections of the *Trade Practices Act 1974*, authorisation to operate devices under a spectrum licence is taken to be an acquisition of an asset by the authorised third party.

Trading in Spectrum Space

Spectrum licensees will be able to seek to negotiate the purchase of additional spectrum space to cover larger areas, more bandwidth, or both. Licensees will also be able to subdivide their licences and offer to sell spectrum space as, for example, a number of narrower bandwidth channels, or a number of smaller areas subject to the requirements as to STUs (see below). **It will be up to licensees to find their own buyers and sellers of spectrum space, and the ACA will not have a role in facilitating such trading, other than to make available through the Register of Spectrum Licences the contact details of all spectrum licensees.**

An important rule is that the trade of spectrum licences does not have effect until it has been registered with the ACA, and new licences are issued, or variations are made to existing licences, to reflect the changed ownership arrangements. This means that as soon as practicable after any transaction involving spectrum space is concluded, the seller and the buyer should jointly register the trade with the ACA. There is a form for this available from the ACA.

Spectrum licences may not be traded for the purpose of securing loans. This restriction is necessary to ensure that the ACA is not involved in registering transactions that are concerned only with such a transfer, and where there is no change in the relevant spectrum space.

Trading of spectrum space can only take place in terms of whole STUs of spectrum space defined by the ACA. The area and the bandwidth of each spectrum licence can be subdivided and sold, or the licences can also be sold in their entirety.

28 GHz and 31 GHz Bands Auction

Registration of Trading

Both parties to a trade, or an assignment, must notify the ACA when a trade has been agreed so that the Register of Spectrum Licences can be updated. The parties to a trade must complete a 'Notice of Trading' Form setting out the new ownership details and send it to the ACA for registration.

The ACA will register assignments as soon as practicable after receiving a Notice of Trading Form. A trade does not take effect until the Register has been changed by the ACA. The ACA will then vary, issue or cancel licences as appropriate to take assignments into account. There will be a fee charged to recover the ACA's costs in registering any trade, and for issuing the new licence(s).

The Register of Spectrum Licences

The Register of Radiocommunications Licences is a public reference source containing information about the use of spectrum by radiocommunications licensees [ss.143-144 of the Act]. The ACA will establish a Register of Spectrum Licences to be kept in an electronic form. It will include the following information in respect of each spectrum licence:

- the name and postal address of the licensee;
- the date of issue and expiry of the licence; and
- details about the conditions of spectrum licences.

These details are similar to the registration requirements for apparatus licences.

The ACA may also be required to keep in the Register details of certain transmitters operated under spectrum licences so that users can coordinate spectrum use with other licensees. Each licence will include a condition that transmitters are not to be operated under the licence unless the registration requirements of the ACA have been met [s.69 of the Act]. The condition may exempt transmitters of particular kinds (for example, mobile transceivers) from meeting the requirements for registration. The details that the ACA intends to record include, but are not limited to:

- date of registration;
- location;
- radiated power; and
- antenna details.

The registration requirements may include a requirement that the licensee present an IIC (an *interference impact certificate*) issued by an accredited person stating that operation of the device under the licence will not cause unacceptable interference (see **Chapter 5 - Technical Framework**). In certain circumstances

the ACA may accept an application to register a device without a certificate being furnished, for example, to allow the operation on an experimental basis of a new type of transmitter. If an interference certificate is required, but none is furnished, the onus will be on the licensee to notify the ACA of transmitter details. Once details of a device have been registered, the licensee or person authorised by the licensee will need to comply with those details in operating the device until such time as the registration is varied. Operation of a device will not be authorised under a licence if it is operated in a manner that is not in accordance with the details in the Register.

The ACA will update the Register as soon as practicable if a spectrum licence is varied, suspended, cancelled or surrendered, or if the licence or part of the licence is assigned to another person, or resumed by the ACA [s.146 of the Act].

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

The ACA does not propose to register mobile transmitters that operate:

- outside the limits of a town on the towns mobile list; or
- on a road that is not on the roads mobile list; or
- at sea and only communicate with a mobile receiver at sea.

Low powered handsets used under spectrum licences are not required to be registered with the ACA. However, spectrum licensees intending to use spectrum for mobile telecommunications will be required to authorise the use of third party operated handsets under the licence in accordance with s.68 of the Act (see **Authorising Third Parties** above).

Spectrum Licence Conditions

A spectrum licence authorises the licensee, or a person authorised by the licensee, to operate radiocommunications devices in accordance with the conditions contained in the licence. Each spectrum licence will include core conditions [s.66 of the Act] that specify:

- the part or parts of the spectrum in which the operation of devices is authorised under the licence;
- the area within which the operation of devices is authorised;
- the maximum emission levels outside the bandwidth of the licence; and
- the maximum emission levels outside the area of the licence.

Effectively the core conditions define the spectrum space within which the licensee is authorised to operate radiocommunications devices under the licence.

The licence will also include conditions about:

28 GHz and 31 GHz Bands Auction

- payment of charges (s.67);
- use by third parties, especially in relation to handsets (s.68);
- registration of transmitters (s.69); and
- any other matters that the ACA may need to include in the licence to provide for efficient administration of the Act, for example, to require proper co-ordination with other devices or to manage devices in a way that does not compromise Australia's international treaty obligations.

Spectrum Licence Tax

The ACA will recover from all licensees a share of the overhead costs of maintaining the spectrum through an annual fee or '**spectrum licence tax**'. Apparatus licensees contribute towards these costs through the spectrum maintenance component in their annual licence fees. The other two components paid annually by apparatus licensees are the spectrum access tax and a cost recovery charge for licence issue or renewal. Spectrum licensees will not pay a spectrum access tax.

The spectrum licence tax will be calculated for each spectrum licensee as its share, on a per MHz per person basis, of the spectrum maintenance component that would apply if the spectrum subject to the Minister's declaration had been allocated by issuing apparatus licences. This means that instead of each spectrum licensee contributing the same amount to overhead costs as apparatus licensees, they each contribute to the amount that would apply to one apparatus licence.

The total revenue collection may vary from year to year, but will be linked to the apparatus licence fee table. The proportion paid by each licensee from year to year may vary depending on the number of licences on issue and their total coverage. The factors affecting each licensee's contribution for the band will be reviewed annually. A spectrum licence for a 28/31 GHz lot in the Sydney area would attract a tax of the order of \$10,000 per annum.

Licence Term

The licences issued will be for terms of fifteen (15) years, and will commence on the date of issue. The ACA will publish information regarding licences that are about to expire.

Spectrum licences are issued with no automatic right of renewal. At the end of the licence period, replacement licences will generally be re-allocated following a price-based procedure (s.81 of the Act). This provision does not prevent a spectrum licence being reissued to a person to whom it was previously issued.

A spectrum licence may be reissued to the same licensee without participating in a price-based allocation process where this is in accord with a determination by the Minister [s.82(3) of the Act], or the ACA is satisfied that special circumstances

exist as a result of which it is in the public interest for that person to continue to hold the licence [s.82(1)(b) of the Act].

The Act does not exempt the licensee from paying a spectrum access charge in these circumstances.

Licence Sanctions

Suspending and Cancelling Spectrum Licences

If the ACA is satisfied that a licensee, or an authorised third party has:

- breached a licence condition or the Act, or
- has operated a device in breach of any other Commonwealth, State or Territory statutory or common law, or
- operated the device in the course of contravening such a law,

the ACA may, by written notice giving reasons, suspend a spectrum licence (s.75 of the Act). The suspension will cease within 28 days unless proceedings for an offence against the Act are instituted. The ACA may revoke the suspension at any time.

The ACA may also take action to cancel a spectrum licence (s.77 of the Act).

Application may be made to the ACA for reconsideration of a decision to suspend or cancel a spectrum licence (s.285 of the Act).

It should also be noted that in the event that licence conditions are breached by a licensee or an authorised third party, other licensees may also be able to pursue a remedy through the courts by undertaking civil proceedings.

Licence Resumption

The ACA is empowered to resume spectrum licences by agreement or by compulsory process subject to payment of just compensation [ss.89-95 of the Act]. The ACA may only exercise its powers to resume spectrum licences where the Minister has given written approval [s.91 of the Act].

Charging for ACA Services

Under its enabling legislation, the ACA may recover its costs. Any services provided by the ACA to spectrum licensees will be charged at the ACA's normal charging schedule.

In many instances, the ACA has set a standard charge for services offered, including registration of devices and registration of trading of spectrum space.

28 GHz and 31 GHz Bands Auction

Each spectrum licence will include a condition that the licensee meet its obligations to pay any cost recovery charges levied by the ACA (s.67 of the Act).

Licences that are about to expire

The ACA will periodically publish notices in the Commonwealth Gazette stating where information can be obtained about spectrum licences due to expire within the next two years (s.78 of the Act). These publications will also invite expressions of interest from members of the public who would like a spectrum licence to be issued to them. This information can also be obtained from any of the ACA's area offices.

The ACA also proposes to send regular expiry reminders to licensees during the last two years of their licence. The first batch of these notices is not likely to be issued until 2012/2013 (that is, about thirteen years after the auction takes place).

5. Technical framework

In this Chapter...

- **an explanation of the technical framework underpinning spectrum licensing in the 28 GHz and 31 GHz bands**
- **an explanation of the purpose and operation of the s.145 Determination of unacceptable interference**
- **an explanation of the Advisory Guidelines that protect non-spectrum licensed devices in frequency-adjacent spectrum for the term of the spectrum licence and in the spectrum licensed spectrum during the re-allocation period**
- **an explanation of the Advisory Guidelines that protect devices operating under a spectrum licence from interference caused by frequency-adjacent non-spectrum licensed devices**
- **an explanation of other emission management mechanisms**
- **other important information about the technical framework.**

Introduction

The technical framework for spectrum licences at 28 GHz and 31 GHz has been established by the ACA to support the use of different types of service, including point to point and point to multipoint services.

Broadly speaking, the technical framework for spectrum licensing in the 28 GHz and 31 GHz bands is constructed from three interlocking tools. Two of these tools are used to deal with the management of emission levels, namely the core conditions of the licences themselves, and the registration of devices under the Act. The third tool, advisory guidelines made by the ACA under the Act, provides a framework for the co-ordination of spectrum licensed services with non-spectrum licensed services operating within the spectrum to be re-allocated, and with non-spectrum licensed services that operate in spectrum surrounding the spectrum to be spectrum licensed.

The entire technical framework is predicated on the assumptions that:

- spectrum and non-spectrum licensees will employ good engineering practice in establishing and maintaining their services;
- receivers employed by spectrum licensees will be required to operate at a minimum level of performance based on receiver characteristics listed in Part 3 of the *Radiocommunications Advisory Guidelines (Managing Interference*

28 GHz and 31 GHz Bands Auction

from *Non-spectrum-licensed Transmitters*^{3/4} 28 GHz and 31 GHz Bands) 1998 (**Attachment 13**)(see Receiver Performance below); and

- receivers employed by non-spectrum licensees will, as a minimum, meet the relevant standard made under the *Radiocommunications Act 1992* or, if there is no such standard, the level of performance referred to in the advisory guideline that applies to the apparatus licensed service in question; and
- spectrum licensees will be responsible for managing interference that they, or their third party authorisees, cause to their own services through their operation of devices under any spectrum licence or any other licence.

The following general principles have also been followed in developing the technical framework:

- the ACA has attempted to provide the maximum flexibility to spectrum licensees to establish services while minimising the level of negotiation between licensees who have adjacent spectrum licences;
- emission limits have been specified as absolute power levels rather than power levels that are relative to the transmitter power;
 - this allows licensees to strike a balance between the maximum radiated power of a device and its out-of-band performance;
- the core conditions indirectly specify frequency stability by requiring the emission limits outside the band to be maintained under all conditions;
 - this allows a licensee to balance emission bandwidths along with frequency stability, as well as transmitter rise and fall times providing 'internal guard bands' as necessary.

The interference sources that the technical framework seeks to manage are those resulting from:

- unwanted in-band emissions;
- the modulation process;
- the frequency generation process;
- transient unwanted emissions such as those caused by switching a transmitter on and off; and
- intermodulation effects including 'blooming' and 'spectral re-growth'.

All five of these mechanisms are dealt with by a combination of the core conditions relating to out-of-area and out-of-band emissions, and those parts of the registration process which give effect to those conditions at the point of registration of devices prior to their operation.

The technical framework also provides additional controls in relation to interference, such as that caused by intermodulation effects and other co-siting interference phenomena. A licence condition imposes on spectrum licensees the

responsibility to manage interference that arises from devices that are located within 200 metres of each of their transmitters.

It should be noted that in all cases, the technical framework established by the ACA for the 28 GHz and 31 GHz bands is a basis upon which further flexibility may be achieved. The ACA is prepared to consider alternative management arrangements for emission levels agreed between spectrum licensees and, where relevant, other licensees. Spectrum licensees should note, however, that the ACA will not give effect to alternative arrangements unless all affected and potentially affected licensees have agreed to the arrangements and those arrangements lead to reasonable levels of spectrum productivity. Changes to emission limits may be related to either the licence core conditions or the registration requirements (see below).

In the case of changes to the core condition relating to out-of-area emission, spectrum licensees might propose alternative arrangements with the ACA under which higher powers for smaller bandwidths inside the frequency band of the licence would be allowed. The variation to the level of power would depend on the width of the guard bands being proposed, and the notional RF selectivity expected for receivers operating in adjacent spectrum.

In the case of variations to the core condition relating to out-of-band emission, all licensees operating in a particular designated spectrum licensing band would normally have to be in agreement with a specific variation before the ACA could consider any change.

In the case of changes to the device registration requirements (device boundary criteria and deployment constraints - when applicable), licensees may agree between themselves, without direct ACA involvement, to allow emissions to spill into each other's spectrum space.

Furthermore, it should be noted that such agreements between licensees can only continue to apply while the shape of the spectrum space of the licences held by the respective licensees remain unchanged. Where trading of licences takes place and licences with new shapes are issued, these agreements will need to be re-negotiated. This re-negotiation can occur at any time, that is, before or after the trade, so that there is no loss of flexibility to licensees.

When trading occurs by means of the division of a spectrum licence, a check will be required to ensure that the devices continue to comply with the conditions of the relevant licences. The ACA intends to issue provisional licence numbers before a trade to facilitate the redistribution of devices between the licences that a licensee wishes to operate after the trade.

Core Conditions

This part of the Chapter explains what the core conditions relating to emissions are intended to achieve, and how the emissions subject to those conditions are further managed under the technical framework.

28 GHz and 31 GHz Bands Auction

Out-of-area emissions

Emissions from a fixed transmitter operated under a spectrum licence located anywhere in the geographic area of the licence are limited by core conditions to a maximum radiated power (measured within a 1 MHz bandwidth) of:

- 79 dBm EIRP for transmitters using antennas with less than 5 degrees beamwidth; and
- 65 dBm EIRP for all other transmitters.

Radiated power is mean power measured when information is being transmitted and the radiated power must stay below the maximum limit with a 95% level of confidence. This often means that there is a practical limit of 5 dB less than the maximum limit for levels of radiated power estimated in real situations. The conditions, therefore, effectively place an overall cap on power at the boundary and also throughout the entire geographic area of a licence.

How registration requirements operate in Lower Bands (eg 1.8 GHz band)

In other bands, for example spectrum licences at 1.8 GHz, an additional layer of management is usually imposed at the point of registration of devices and before registering a device, an accredited person would normally calculate a device boundary of the transmitter in accordance with a determination made by the ACA under s.145 of the Act for unacceptable levels of interference. Such a determination ensures that high levels of emission from transmitters operated under a licence are kept within the geographic area of the licence. The calculation of a device boundary for 1.8 GHz spectrum licences takes special account of the increase in emission levels caused by placing transmitters at high sites.

Calculating a device boundary involves establishing the distance, along radials from the transmitter, that is required for the emission level to drop below what the ACA considers to be the typical level of protection required by receivers in adjacent geographic areas. The distance along each radial is based on a mathematical propagation model. The model takes account of the terrain loss of emissions by adjusting the antenna height of a device according to its height above average terrain, called its effective antenna height. Effective antenna heights are calculated every 5 minutes in distance along each radial.

If the device boundary so calculated for a 1.8 GHz transmitter falls outside the geographic area of the relevant spectrum licence the ACA will, generally speaking, refuse to register the device because the levels of emission outside the licence that it would cause will be 'unacceptable interference' within the meaning of s.145 of the Act. The ACA will consider registration in these circumstances but only where all affected licensees reach alternative arrangements for the management of emission levels.

The effect of these two layers of management, core condition and registration requirement, is to create 'emission buffer zones' along the geographic boundaries of the licences.

New concept for the 28 GHz and 31 GHz bands framework

For the management of 28 GHz and 31 GHz spectrum licences the ACA does **not intend to use device boundary criteria** to create an in-band emission buffer zone along the boundaries of the geographic areas of spectrum licences (see **Attachment 12, Radiocommunications (Unacceptable Levels of Interference - 28 GHz and 31 GHz Bands) Determination of 1998**). At 28 GHz and 31 GHz, the appropriate propagation model to use is free space loss and the height-gain effect of transmitters does not have to be specially managed. The use of a free space loss model helps to ensure equity in the levels of emission emanating from adjacent spectrum licences without the need for additional constraints on the basis of effective antenna height. Device boundaries are used at lower frequencies (eg 1.8 GHz) to equitably contain emissions within the spectrum space that a person is licensed to use. Instead of using device boundaries to create emission buffer zones at 28 GHz and 31 GHz the ACA intends that licensees create these zones by the management of both the location and antenna directivity of their receivers.

Spectrum licensees must expect that certain levels of emission will legitimately cross their geographic boundaries from points within other spectrum licensed areas. Accordingly, when considering what services they might establish within their own geographic areas, spectrum licensees will have to take into account the fact that transmitters may be located at certain points within other spectrum licensed areas, and that those transmitters may radiate power into the spectrum licensee's area at any level up to that allowed under the conditions of the licence including registration requirements. For 28 GHz and 31 GHz spectrum licences it is allowable for licences to operate at maximum power on the boundary of the geographic area. However, if the ACA considers that transmitters are being inappropriately placed, the ACA may impose additional further conditions on licences to manage their location.

Out-of-band emissions

Out-of-band emission limits are imposed by a core condition. To establish whether the operation of a device will cause 'unacceptable interference' by breaching the out-of-band emission limits, a licensee or accredited person must work out the radiated power of the device within bandwidths outside the frequency band of the licence using good engineering practice. If the power so calculated is greater than a figure specified in the relevant licence condition, two things follow:

- if the device is not yet registered - the ACA will generally speaking refuse to register it, because the interference that it would cause will be 'unacceptable interference' within the meaning of s.145 of the Act, (unless, for example, all relevant licensees agree upon alternative arrangements);
- if the device is already registered - there will be a breach of the core licence condition, unless, once again, all relevant licensees have agreed upon alternative arrangements, and the ACA varies the relevant licence or licences to reflect those varied arrangements (see s.72 of the Act).

28 GHz and 31 GHz Bands Auction

Potential applicants should note that no allowance has been made for ‘blooming’ or ‘spectral-growth’ of transmitter signals. As a result, if an applicant wants to operate services close to the limits of the frequency band of the licence, and does not take account of ‘blooming’ or ‘spectral growth’, the amount of spectrum available for use in the frequency band will need to be reduced so as to provide appropriate guard bands as necessary.

Levels of protection not provided

How out-of-area emissions are additionally managed when licences have narrow frequency bandwidths (eg those spectrum licences involving the 500 MHz band)

It should be noted that under the interference management regime established for spectrum licensing in the 500 MHz band, receivers in adjacent areas are further protected from in-band interference by ‘levels of protection’, which were enforced by means of a licence condition. This protection was afforded by requiring that the power at a receiver must not exceed a specified level measured in a certain manner. That gave protection to receivers on a sliding scale, which varied with the antenna height and distance to the boundary of the geographic area. This protection is only necessary when spectrum licences have very narrow frequency bands (eg 12.5 kHz) because a spectrum licensee has no additional frequency space in which to move in order to avoid interference.

Levels of Protection and the 28 GHz and 31 GHz bands

The method of protection described above is not necessary for the 28 GHz band and 31 GHz band, because the STU bandwidth of 50 MHz is sufficiently large for licensees to avoid interference from adjacent areas by relocating their service within their own spectrum space as necessary, including within their own frequency band.

Deployment constraints

Whilst the two core conditions aimed at emission levels provide some measure of protection from both intermodulation effects and transmitter broadband noise, the ACA does not consider it will be necessary to provide further means of protecting against this interference mechanism through the imposition of constraints on the deployment of either transmitters or receivers in both bands. The onus will lie on spectrum licensees to determine the best location for their receivers, having regard to the overall technical framework.

It is, however, important to note that (as mentioned above) the technical framework does not provide any protection from intermodulation effects or broadband noise where devices are located within 200 metres of each of their transmitters. Consequently, the ACA proposes to impose a special condition on the spectrum licences that will have the effect of requiring spectrum licensees to

come to an arrangement amongst themselves in relation to interference in such cases. Managing interference includes investigating possible causes of interference, taking steps to resolve disputes concerning interference, and taking steps to reduce the likelihood of interference occurring.

Out-of-band issues arising under the technical framework where there are no deployment constraints imposed

The elimination of deployment constraints means that, in particular, to manage out-of-band interference, spectrum licensees may have to provide themselves with additional out-of-band ‘emission buffers’ along any ‘frequency boundary’ of their licences. Accordingly, spectrum licensees who may want to operate a receiver at a high site where transmitters in adjacent bands are likely to be operating, when considering the services that they might be able to operate within this spectrum, should note that they may have to:

- provide guard bands and/or high performance filters at the edges of their spectrum; or
- negotiate with the adjacent licensee either to employ transmit filtering, or to avoid placing transmitters near the frequency boundary at that location.

In-band issues arising under the technical framework where there are no deployment constraints imposed

The removal of deployment constraints also means that spectrum licensees who want to operate a receiver at a high site will have to:

- place their receivers at a large distance from the geographic boundary; or
- negotiate with the adjacent licensees not to place their transmitters near their own geographic boundaries.

Practical examples of the operation of the technical framework and potential loss of utility of spectrum

It is likely that both point to point and point to multipoint services will be in close proximity to each other. Therefore, it is likely that a high level of negotiation could occur at prime sites. There could also be a proportionate loss of utility of that spectrum at those sites.

Potential spectrum licensees should take such expert technical and other advice as they consider necessary to inform themselves of the technical framework, and the possible effects on their proposed services of the operation of services by other spectrum and apparatus licensees under that framework. Potential spectrum licensees should similarly inform themselves of the possible losses of utility of spectrum to which the operations of other licensees might give rise.

Managing interference between non-spectrum licensed and spectrum licensed devices

The ACA proposes that interference between devices operated under spectrum licences and devices operated under non-spectrum licences will be managed by advisory guidelines made under s.262 of the Act. The guidelines have been developed so as to, generally speaking, provide existing apparatus licensees with the level of protection from other services that they currently enjoy. The guidelines achieve this by specifying compatibility requirements between spectrum licensed services and services operated under other types of licences. The compatibility requirements are essentially a model on the basis of which spectrum and apparatus licensees are expected to develop co-ordination procedures for the management of interference to each others services, using good engineering practice. Licensees who cannot resolve interference problems between themselves may expect the ACA to have regard to the guidelines in dealing with such disputes.

However, the guidelines are not binding either on licensees or the ACA, and the ACA has adopted this approach in order to provide the maximum flexibility for both spectrum and apparatus licensees in how they arrange their affairs so as to avoid interference with each others services. Once again, the ACA is prepared to consider alternative interference management arrangements agreed between spectrum licensees and, where relevant, apparatus licensees. Spectrum licensees should, however, note that the ACA will not give effect to alternative arrangements unless all affected and potentially affected licensees have agreed to the arrangements, and are aware how subsequent trading will impact on any agreements reached.

The ACA recommends that radiocommunications devices be registered at the system design stage to enable apparatus licensees, if they wish, to re-check the coordination and if an obvious error is detected, negotiate directly with the spectrum licensee before further costs are incurred when transmitters are not able to be operated due to interference. Licensees should be aware that it is possible for adjacent licensees to register devices purported to be at the system design stage but never intended to be operated for the purpose of inhibiting the operation of devices through the requirements of coordination. Licensees who observe this activity may wish to take the matter up with the ACCC.

The compatibility requirements that the ACA would normally expect to be maintained in relation to apparatus licensed receivers (including incumbent services during the time of the re-allocation period), are described in the guidelines as follows.

Radiocommunications Advisory Guidelines (Protection of Non-spectrum-licensed Receivers - 28 GHz and 31 GHz Bands) 1998

These guidelines, (see **Attachment 14**) apply to receivers of the following services: fixed service, fixed-satellite service, inter-satellite service, mobile service, earth exploration-satellite (passive) service, fixed-satellite and mobile-satellite

services, fixed point to point service, radioastronomy, space research (deep space) earth stations and space research (passive) stations.

Incumbent receivers (a receiver that has part of the frequency band of its spectrum access, and its location, within designated spectrum space) will require protection for the re-allocation period specified in the Minister's re-allocation declaration for the 31 GHz band. The details of these incumbent services are in the ACA's Register and CD-ROM. An order form is at **Attachment 15**.

In the case of receivers operating under spectrum licences, compatibility requirements are specified in the following advisory guidelines.

Radiocommunications Advisory Guidelines (Managing Interference from Non-spectrum-licensed Transmitters - 28 GHz and 31 GHz Bands) 1998

Broadly speaking, these guidelines (see **Attachment 13**) specify the compatibility requirements that non-spectrum-licensed transmitters should meet in relation to receivers that have been registered for operation in the 28 GHz and 31 GHz bands under spectrum licences. (For a more detailed description of the services to which these guidelines apply, prospective spectrum licensees and non-spectrum licensees should see the guidelines themselves.) Receivers employed by spectrum licensees will be required to operate at a minimum level of performance based on characteristics listed in the guideline. The full characteristics have not been spelt out but may be in the future.

The ACA intends to assume that all receivers operating under spectrum licences have a performance at least equal to this minimum level of performance when settling interference disputes. The ACA intends to settle out-of-band interference occurring across a frequency boundary of a spectrum licence, by giving a first-in-time registration date priority to any devices involved. Note that, excepting for spectrum licences in the 500 MHz band, levels of in-band emissions across a geographic boundary may remain at levels that are in accordance with the core conditions and registration requirements, for the full term of the spectrum licence.

Receiver Performance

As mentioned above, licensees will need to take account of the emission limits permitted under the technical framework when deciding the level of performance they require for their receivers. Receivers will cope with emission levels with differing degrees of success depending on their interference susceptibility performance. For example, a receiver with poor performance would normally deny large amounts of spectrum space for transmitters to use in order to protect it from interference. The ACA does not intend to enforce receiver standards. It is for each licensee to balance the cost of receiver performance against the cost of spectrum space denied to their transmitters.

Poor receiver performance is only a problem when a licensee uses spectrum space belonging to an adjacent licensee. The framework provides for the operation of

28 GHz and 31 GHz Bands Auction

receivers that have an interference susceptibility equal to or better than that achieved by current technology designed according to good engineering practice and the ACA intends for this level of performance to guide the interference settlement process. Receivers with poor interference susceptibility performance can be used, but in those cases, a licensee may have to use part of their own spectrum space as a guard band. For example, interference that results from a receiver having an IF (Intermediate Frequency) bandwidth that is larger than the frequency band of the licence, will be the licensee's responsibility. It is the licensee's responsibility to use receivers in a manner that is both consistent with good engineering practice and effectively copes with the levels permitted under the technical framework.

Interference that the technical framework does not prevent

No matter how rigorous the engineering analysis of a device, there is always a possibility of actual interference when devices are deployed in the field. Under the framework described in this Chapter, it is anticipated that interference will arise in less than one percent of cases. Such interference may be caused by emissions at frequencies either inside or outside licensees' spectrum space.

Licensees are strongly advised before making an interference complaint to attempt to locate the source of any interference by checking the Register of Radiocommunications Licences. This investigation may reveal the cause of the interference and it may be possible to settle the problem without the ACA's intervention. If the ACA becomes involved, licensees may be charged for any work undertaken.

Registering groups of transmitters

Transmitters must be registered (unless exempted). Transmitters must always be registered either as an individual transmitter or as part of a group of transmitters. If two or more transmitters are operated for the purpose of communicating with the same receiver or same group of receivers and they have identical emission characteristics, then those transmitters may be treated as a group for registration purposes. A transmitter may belong to more than one group. Groups are defined to help minimise the work associated with the registration process of similar transmitters, for example, multi-transmitter hub stations. Mobile transmitters, customer transmitters and indoor transmitters are exempted from device registration requirements. Note that transmitters must comply with the operating details entered in the register.

International co-ordination

The ITU Radio Regulations have international treaty status and are binding on Australia. Transmitters operated under a spectrum licence, other than in

accordance with ITU Radio Regulations, must not cause interference to any services of any other country which are operating in accordance with ITU Radio Regulations. If operation of a transmitter does cause harmful interference to overseas services operating in accordance with ITU Radio Regulations, the transmission must cease. Spectrum licensees must also accept interference from any overseas service operating in accordance with ITU regulations. Potential spectrum licensees should note that the ACA will impose such additional licence conditions on spectrum licences as may be necessary to meet its international obligations.

Health and safety

Every spectrum licensee will need to take into account occupational health and safety requirements for radiofrequency devices. Occupational health and safety requirements that concern use of radiofrequency devices are currently the responsibility of the relevant State or Territory Governments.

In addition, licensees will be required to comply with any health exposure standards that may be made by the ACA for the health and safety of persons who operate, work on or use radiocommunications transmitters and receivers.

Environmental and other considerations

Antenna location, height and construction may be regulated by State, Territory or local government legislation. Before planning for a device to operate in a certain location, licensees should investigate the local rules pertaining to the erection of towers and antennas.

Obtaining a permit to operate non-standard devices

A licensee who wishes to operate standard devices under a spectrum licence (that is, equipment that conforms to mandatory ACA standards) will not have to apply to the ACA for permission to do so. However, a permit will be required to operate non-standard devices. These permits may be issued by the ACA under s.167 of the *Radiocommunications Act 1992*, and will only be issued for the term of the licence.

Permits to supply non-standard devices for operation under a spectrum licence may also be issued by the ACA under s.174 of the Act.

Glossary of Terms

ACA	Australian Communications Authority.
accredited person	A person accredited by the ACA to undertake preparation of Interference Impact Certificates and Frequency Assignment Certificates.
active bid(s)	A valid bid in a round or a high bid from the previous round of an auction.
Act	The <i>Radiocommunications Act 1992</i> .
allocation area	The area covered by a lot.
applicant	A person who has submitted the application documents and all required payments, and whose application has been accepted.
auction	Auction held by the ACA to allocate spectrum licences.
bank cheque	A bank cheque issued by a bank licensed to operate in Australia.
BIN	Bidder Identification Number.
carrier	The holder of a carrier licence granted by the ACA under the <i>Telecommunications Act 1997</i> .
closing date	The date identified in the notice published by the ACA inviting people to apply to take part in an auction. This is the last date that application forms will be accepted by the ACA.
Determination	The <i>Radiocommunications (Spectrum Licence Allocation) Determination (No. 2) 1998</i> .
EIRP	Equivalent Isotropically Radiated Power.
eligibility	The bidder's initial eligibility to bid on lots as varied during the auction.
eligibility payment	The amount payable by an applicant based on how much spectrum and its population coverage they hope to win at the auction.
entry fee	The amount payable by an applicant to register for an auction. This has been fixed by the ACA at \$2,000 . The entry fee is not refundable.

Applicant Information Package

<i>initial eligibility</i>	The initial eligibility worked out by an applicant and entered on the applicant's application form.
<i>IIC</i>	Interference Impact Certificate.
<i>ITU</i>	International Telecommunication Union.
<i>LMDS</i>	Local Multipoint Distribution Service.
<i>lot</i>	Spectrum allocation lot. A part of the spectrum covering a specified area and identified in a Marketing Plan as available for allocation.
<i>lot rating</i>	A measure of the value of the lot based on its population and the amount of bandwidth. Lot rating is calculated as the notional population multiplied by the bandwidth in MHz divided by 100,000. The lot rating is fixed by the ACA for a lot and shown in the Marketing Plan as the lot rating for that lot.
<i>Marketing Plan</i>	A <i>Marketing Plan</i> prepared by the ACA under s.39 or 39A of the Act.
<i>performance payment</i>	An amount of money held as a security which an applicant may elect to pay instead of providing a Deed of Financial Security.
<i>RADCOM</i>	The ACA's radiocommunications licensing management system.
<i>roads mobile list</i>	The list giving the names of major roads, the latitude and longitude of the centre location, the effective radius and two sets of coordinates from which sections of the road may be identified, published by the ACA, and copies of which are available from the ACA.
<i>RF</i>	Radiofrequency.
<i>stage</i>	A group of successive rounds of an auction to which the same percentage of eligibility applies.
<i>successful bidder</i>	The applicant who makes the highest final bid on a lot.
<i>towns mobile list</i>	The list giving the names of towns, latitude and longitude of the centre location and the effective radius for each town, published by the ACA, copies of which are available from the ACA.
<i>transmitter</i>	Includes repeater.
<i>working day</i>	A day that is not a Saturday, a Sunday or a public holiday in the

28 GHz and 31 GHz Bands Auction

Australian Capital Territory.

waiver

The option to retain current eligibility, even though the activity from current round bids is less than that necessary to maintain eligibility within the current activity rules.

