

**AUCTION OF  
WIRELESS BROADBAND SPECTRUM  
RIGHTS**

**INFORMATION MEMORANDUM**

25 February 2005

INFO-COMMUNICATIONS DEVELOPMENT AUTHORITY  
REPUBLIC OF SINGAPORE

## **Important Notice**

***Terms and expressions used in this Important Notice are as defined in this Information Memorandum.***

This Information Memorandum has been prepared in connection with the proposed grant of WBA Spectrum Rights pursuant to the Telecommunications (Radio-communication) Regulations. This Information Memorandum is for informational purposes only. It is made available on the express understanding that it will be used for the sole purpose of assisting an interested person in deciding whether it wishes to proceed with a further investigation of possible participation in the Auction.

This Information Memorandum is not intended to form any part of the basis of any investment decision or other evaluation of any decision to participate in the Auction and should not be considered as a recommendation by IDA or IDA's advisers to participate in the Auction. Each interested person must make its own independent assessment of the potential value of a WBA Spectrum Right after making such investigation as it may deem necessary. All information contained in this Information Memorandum may be updated or amended at any time.

While the information contained in this Information Memorandum is believed to be accurate as at the time of posting on IDA's website, it has not been independently verified by IDA or its advisers. Neither IDA nor any of IDA's advisers nor any of their respective directors, partners, officers or employees make any representation or warranty (express or implied) nor has nor will have any responsibility or liability in relation to the accuracy or completeness of the information contained in this Information Memorandum or any other written or oral information made available to any interested person or its advisers. Any responsibility or liability in respect of any such information or any inaccuracy in this Information Memorandum or omission from this Information Memorandum is expressly disclaimed.

This Information Memorandum does not constitute an offer or invitation to participate in the Auction.

**Each recipient of this Information Memorandum should consult its own professional advisers as to financial, legal, tax and other matters concerning any potential participation in the Auctions or any grant of a WBA Spectrum Right.**

## TABLE OF CONTENTS

CONTENTS	PAGE
<b>(A) GENERAL INFORMATION .....</b>	<b>1</b>
1. INTRODUCTION .....	1
2. WIRELESS BROADBAND ACCESS (“WBA”) .....	2
3. RATIONALE FOR AUCTION APPROACH .....	2
4. SPECTRUM AVAILABLE AT THE AUCTION .....	3
5. DETERMINATION AS TO WHETHER THE AUCTION WILL PROCEED.....	3
6. APPLICATIONS AND INITIAL OFFERS.....	4
7. ASSOCIATED BIDDER GROUPS.....	5
8. ESTABLISHING A NEW ENTITY/CONSORTIA.....	6
9. GOING PRICE IN FIRST ROUND .....	6
10. BASE YEAR CHARGE(S), APPLICATION AND PROCESSING FEES AND ANNUAL CHARGE(S) PAYABLE FOR WBA SPECTRUM LOT(S) FOR THE DURATION OF THE WBA SPECTRUM RIGHTS.....	7
11. MAXIMUM NUMBER OF WBA SPECTRUM LOTS PER BIDDER .....	7
12. OUTCOME OF THE AUCTION.....	7
13. WBA SPECTRUM RIGHTS, FBO LICENCES AND STATION/NETWORK LICENCES....	8
14. DURATION OF WBA SPECTRUM RIGHTS.....	9
15. SPECTRUM TRADING.....	10
16. NO MORATORIUM .....	10
17. ROLL OUT SCHEDULE .....	10
18. RADIO FREQUENCY INTERFERENCE .....	11
19. HEALTH AND SAFETY ISSUES.....	11
<b>(B) TIMETABLE .....</b>	<b>12</b>
<b>(C) INTRODUCTION TO THE AUCTION FRAMEWORK AND THE BIDDING PROCEDURE .....</b>	<b>12</b>
1. THE AUCTION.....	13
2. BIDDING PROCEDURE .....	17
<b>(D) THE REGULATORY REGIME IN SINGAPORE.....</b>	<b>20</b>
1. THE REGULATORY AUTHORITY .....	20
2. RELEVANT LEGISLATION.....	20
3. THE IDA ACT .....	20
4. THE TELECOMMUNICATIONS ACT .....	20
5. THE TELECOMMUNICATIONS (RADIO-COMMUNICATION) REGULATIONS .....	21
6. THE TELECOM COMPETITION CODE .....	21
7. COPIF .....	22
<b>(E) QUERIES.....</b>	<b>22</b>
<b>(F) SCHEDULES</b>	

## **(A) GENERAL INFORMATION**

### **1. Introduction**

1.1 The Info-communications Development Authority of Singapore (“IDA”) is the authority in charge of regulating and promoting the information and communication technology industry in Singapore. Pursuant to the Telecommunications (Radio-communication) Regulations, IDA will offer for allocation Wireless Broadband Access (“WBA”) radio-frequency spectrum lots (together “WBA Spectrum Lots” and each a “WBA Spectrum Lot”) in the 2.5 GHz and 2.3 GHz bands by way of the process described in this Information Memorandum (“Auction”). Each Bidder which is awarded one or more WBA Spectrum Lots in the Auction will be granted one WBA Spectrum Right in respect of such WBA Spectrum Lot(s). A WBA Spectrum Right will permit the Bidder granted such WBA Spectrum Right to use the WBA Spectrum Lot(s) it is awarded in the Auction to operate a WBA telecommunication system for the purposes of providing WBA telecommunication services in relation to that WBA Spectrum Right, provided that the successful Bidder has or obtains the necessary Facilities-Based Operator Licence (“FBO Licence”) for such operations. This Information Memorandum contains important information that interested persons should read and understand for the purpose of the Auction.

1.2 This Information Memorandum contains:

- an overview of the WBA Spectrum Lots offered for allocation in the Auction and the WBA Spectrum Rights that will be granted in respect thereof;
- a review of associated policy issues;
- an indicative timetable; and
- a description of the application process.
- Unless expressly specified otherwise, terms and expressions used in this Information Memorandum are defined in the Auction Rules (please see “Auction of Wireless Broadband Spectrum Rights – Auction Rules” released by IDA on 25 February 2005).

## **2. Wireless Broadband Access (“WBA”)**

2.1 In the Auction, WBA refers to wireless broadband access technologies whereby the location of the end-user termination and network access points to be connected are fixed, nomadic or mobile. WBA networks are designed to deliver high-speed communication services, with each WBA base station generally serving an area of up to several square kilometres. There are various proprietary solutions that have been developed for WBA technologies. The World Interoperability for Microwave Access Forum (“WiMAX”), was set up to promote the deployment of WBA access by using a global standard, IEEE 802.16, and to certify interoperability of products and technologies. WBA technologies are able to operate in various frequency bands including the 1.9 GHz, 2.1 GHz, 2.3 GHz, 2.5 GHz and 3.5 GHz bands.

2.2 Arising from IDA’s auction of Third Generation Spectrum Rights (“3G Auction”), IDA undertook not to issue new 3G Spectrum Rights before 1 January 2006 (“Moratorium Period”). The 3G Spectrum Rights refer to the “right to use specific parts of radio frequency spectrum for the provision of 3G mobile communication services”.

2.3 IDA remains committed to the Moratorium Period. In this connection, because the purpose of the 3G Auction was to allocate spectrum for the delivery of *mobile* wireless communication services, IDA will only permit a successful bidder in the Auction to use its allocated spectrum for the launch of *stationary fixed* services with *limited mobility* end-user speeds up to 10km/h during the Moratorium Period. After the Moratorium Period, all wireless broadband access technologies are allowed to be launched.

## **3. Rationale for Auction Approach**

3.1 The auction methodology has been chosen to be the mechanism to allocate WBA spectrum. This takes into account that spectrum is a scarce and finite resource and that a market-based allocation approach, such as an auction, is more effective in ensuring spectrum optimisation by operators. An auction will be a more efficient, objective and transparent approach for allocating scarce resources because it relies on market forces to allocate scarce resources to those who value them most.

#### **4. Spectrum Available at the Auction**

4.1 A total of twenty-five WBA Spectrum Lots, comprising an aggregate of fifteen 6 MHz WBA Spectrum Lots located in the 2500 - 2690 MHz spectrum frequency band and an aggregate of ten 5 Mhz WBA Spectrum Lots located in the 2300 - 2350 MHz spectrum frequency band, will be made available for allocation in the Auction. Bidders will bid for specific lots, deciding which lots to bid for and how much to bid for them.

4.2 Please refer to Schedule 1 to this Information Memorandum for details of the WBA Spectrum Lots available for allocation in the Auction.

#### **5. Determination as to whether the Auction will Proceed**

5.1 IDA has the discretion whether to proceed with the Auction. If more than one Initial Offer is received in respect of each of the twenty-five WBA Spectrum Lots, the Auction will proceed. If there is only up to one Initial Offer received for each of the twenty-five WBA Spectrum Lots, IDA will not proceed with the Auction and instead grant WBA Spectrum Rights in respect of the relevant WBA Spectrum Lots at a Base Year Charge equal to the Administrative Fee.

5.2 In the event that the total number of Initial Offers received by IDA does not exceed twenty-five, but there is more than one Initial Offer received in respect of any of the twenty-five WBA Spectrum Lots, IDA may take the following action:

- (a) IDA may propose an allocation plan. In doing so, IDA will seek to allocate the WBA Spectrum Lots to the Bidders on a "closest fit" basis. However, nothing shall limit IDA's discretion to allocate in such manner as it considers appropriate. For the avoidance of doubt, a Bidder that submits an Initial Offer for any WBA Spectrum Lot in either of the 2.5 GHz or 2.3 GHz bands, may be allocated a WBA Spectrum Lot in the other of these two bands, although IDA will, to the extent possible, allocate a WBA Spectrum Lot within the same 2.5 GHz or 2.3 GHz band as indicated in the Initial Offer. IDA will inform each of the Bidders individually of the WBA Spectrum Lots that has been allocated to that Bidder. Where all the Bidders agree to accept the WBA Spectrum Lots as allocated by IDA, the Auction will not proceed. The Base Year Charge payable for the WBA Spectrum Lots as allocated by IDA shall be equal to the Administrative Fee;
- (b) In the event that any Bidder rejects the WBA Spectrum Lots that IDA has allocated to that Bidder, the Auction will proceed in respect of all twenty-five WBA Spectrum Lots;

(c) Notwithstanding paragraph (b) above, a Bidder who submits an Initial Offer for Uncontested WBA Spectrum Lot(s) (i.e. where IDA only receives one Initial Offer for that WBA Spectrum Lot) may elect not to bid for any of the Uncontested WBA Spectrum Lots for which it submits an Initial Offer, provided that the Bidder agrees that upon the close of the Auction:

(i) it may not be allocated such Uncontested WBA Spectrum Lot(s) for which it elects not to bid; and

(ii) IDA may in its discretion allocate to that Bidder any WBA Spectrum Lot(s) in lieu of such Uncontested WBA Spectrum Lot(s). In this regard, a Bidder that submits an Initial Offer for any WBA Spectrum Lot in either of the 2.5 GHz or 2.3 GHz bands, may be allocated a WBA Spectrum Lot in the other of these two bands.

5.3 If the Auction proceeds, all twenty-five WBA Spectrum Lots will be included in the Auction, irrespective of the Initial Offers made for each of the relevant WBA Spectrum Lots, and whether or not it was an Uncontested WBA Spectrum Lot for which the relevant Bidder elected not to bid for. Please refer to Section 12.3 for the Base Year Charge payable in the case where the Auction proceeds.

## **6. Applications and Initial Offers**

6.1 In order to participate in the Auction, a person must submit an Application Form (accompanied by the documents specified in the Application Form), an Initial Offer Document and a Bank Guarantee (copies of which are respectively set out in Appendices 1, 2 and 3 to the Auction Rules).

6.2 IDA will determine: (a) whether the Application Form (accompanied by the documents specified in the Application Form), Initial Offer Document and Bank Guarantee are in compliance with the Auction Rules; and (b) whether a person submitting such documents should be registered as a Bidder and entitled to participate in the Auction.

6.3 IDA, when deciding whether such person should be registered as a Bidder in the Auction, may take into account, among other things:

(a) whether, in the opinion of IDA, such person has demonstrated that it has the financial and technical capability to acquire a WBA Spectrum Right and operate a WBA telecommunication system for the purposes of providing WBA telecommunication services in relation to that WBA Spectrum Right;

- (b) whether, in the opinion of IDA, such person is an Associated Bidder in relation to any other person(s) which submitted an Application Form;
- (c) whether it would be in the public interest for such person to be granted a WBA Spectrum Right; and
- (d) all or any facts, circumstances or matters which IDA considers to be relevant including the financial or personal probity and standing of such person or any company in the same corporate group as such person or any director or shareholder of such company.

6.4 A WBA Spectrum Right will only be granted to a company incorporated in Singapore under the Companies Act (Cap. 50), or such other person IDA considers appropriate.

## **7. Associated Bidder Groups**

7.1 IDA is concerned to ensure that Bidders participating in the Auction are independent entities whose policy and operational decision-making processes are not influenced by any common shareholders or other connections.

7.2 IDA has the discretion to determine whether two or more persons which submit Application Forms are Associated Bidders in relation to each other. No more than one member of an Associated Bidder Group may participate in the Auction unless all members of that Associated Bidder Group have undertaken to IDA to reorganise themselves so as to cease to be Associated Bidders by such date as is specified by IDA. The Auction Rules contain guidelines as to the level of cross-shareholdings and other connections between such persons which will not, alone, result in such persons being determined to be Associated Bidders in relation to each other. Persons submitting Application Forms must provide supporting documentation to establish their independence.

7.3 If after a WBA Spectrum Right has been provisionally awarded or granted, IDA determines that the holder of that WBA Spectrum Right was an Associated Bidder during the Auction, IDA reserves its right to take such actions as IDA considers appropriate, including revoking the provisional award or refusing the grant of that WBA Spectrum Right in accordance with the Auction Rules and pursuant to IDA's powers under the Telecommunications (Radio-communication) Regulations.



## **8. Establishing a New Entity/Consortia**

8.1 IDA appreciates that a person or a consortium may wish to participate in the Auction but may not have established an entity which complies with the applicable requirements (see Section 1.4 of the Auction Rules) at the time the Application Form and Initial Offer Document must be submitted. It is not necessary for such an entity to have been established in order for a Bidder to participate in the Auction.

8.2 In the case of a consortium, one member of the consortium will represent the consortium in the Auction and participate in the Auction as a Bidder. IDA will treat such a representative as though it were participating in the Auction on the Bidder's behalf and shall not have any dealings with, or responsibility to, any other member of the consortium.

8.3 It is the responsibility of that Bidder, if successful in the Auction, to ensure that an appropriate entity owned and controlled by the Bidder, or by the consortium, in accordance with the information provided to IDA and complying with the applicable requirements (see Section A.6 of the Information Memorandum) is established before the deadline for the grant of the relevant WBA Spectrum Right set out in the Auction Rules.

8.4 The Application Form submitted in respect of any consortium must provide details of all members of the consortium, including details of their ownership and control structure. These details will be considered by IDA in determining whether the person which submits the relevant Application Form (as representative of the relevant consortium) is an Associated Bidder for the purposes of the Auction. All members of such a consortium must sign the schedule to the Application Form and must agree to comply with the Auction Rules, in particular the prohibitions on disclosure of information and collusion.

## **9. Going Price in First Round**

9.1 The Going Price in the first Round of the Auction for each WBA Spectrum Lot is S\$1,000.00, which price is exclusive of the applicable GST.

## **10. Base Year Charge(s), Application and Processing Fees and Annual Charge(s) Payable for WBA Spectrum Lot(s) for the Duration of the WBA Spectrum Rights**

10.1 In the first year of the duration of a WBA Spectrum Right, in respect of each WBA Spectrum Lot, the successful Bidder shall pay the Base Year Charge comprising the Administrative Fee and, if the Auction proceeds, the Going Price in the Final Round or the successful Exit Price, as the case may be. The Administrative Fee payable is S\$13,500.00 and S\$13,200.00 for each 2.5 GHz and 2.3 GHz WBA Spectrum Lot respectively, excluding the applicable GST.

10.2 In addition, an Application and Processing Fee of S\$2,700.00 will be payable by the successful Bidders to IDA in respect of each WBA Spectrum Lot included in a WBA Spectrum Right awarded to them under the Auction or otherwise allocated to them by IDA if the Auction does not proceed.

10.3 Annual Charge(s) shall be payable by each successful Bidder to IDA in respect of each WBA Spectrum Lot allocated to it under the Auction. Such Annual Charge(s) shall be payable from the second year for the duration of a WBA Spectrum Right in accordance with the terms and conditions of the WBA Spectrum Right, and shall be exclusive of GST. The Annual Charge for a WBA Spectrum Lot shall be an amount equal to the Administrative Fee and compounded annually by an amount of 2.5 per cent starting from the second year (i.e. in the case of a 2.5 GHz WBA Spectrum Lot, S\$13,837.50 for the second year, S\$14,183.44 for the third year and so forth; and in the case of a 2.3 GHz WBA Spectrum Lot, S\$13,530.00 for the second year, and S\$13,868.25 for the third year and so forth).

## **11. Maximum Number of WBA Spectrum Lots per Bidder**

11.1 No Bidder may bid for or be granted more than six WBA Spectrum Lots, and no Bidder which is a member of the SingTel Group or StarHub Group may bid for or be granted more than four WBA Spectrum Lots, under the Auction. Each Bidder which is successful in the Auction will be granted one WBA Spectrum Right which will be in respect of all the WBA Spectrum Lots awarded to it pursuant to the Auction.

## **12. Outcome of the Auction**

12.1 In the case where the Auction proceeds, the outcome of the Auction will determine:

- (a) the allocation of the WBA Spectrum Lot(s) to the successful Bidders; and

(b) the Base Year Charge for each WBA Spectrum Lot allocated under that Auction.

12.2 The WBA Spectrum Lots in the Auction will be awarded as follows:

- (i) subject to the limits specified in Section A.11 of the Information Memorandum, each Bidder which submitted a Valid Bid at the respective Going Prices in the Final Round will be provisionally awarded a WBA Spectrum Right in respect of the specific WBA Spectrum Lots for which its Valid Bid was submitted;
- (ii) in the event that there are any WBA Spectrum Lots not awarded in accordance with paragraph (i) above, then such WBA Spectrum Lots will be provisionally awarded to the Bidder(s) which submitted Valid Bids specifying the highest Exit Price(s);
- (iii) in the event that more than one Bidder submitted Valid Bids in relation to any WBA Spectrum Lot specifying the same Exit Price under paragraph (ii) above, a random draw method will be used to select the Bidder to which the relevant WBA Spectrum Lot will be provisionally awarded; and
- (iv) in the event that any Bidder elects not to bid for Uncontested WBA Spectrum Lot(s), IDA will in its discretion provisionally award to that Bidder such Uncontested WBA Spectrum Lot(s) or any WBA Spectrum Lot(s) in lieu of such Uncontested WBA Spectrum Lot(s). In this regard, a Bidder that submits an Initial Offer for any WBA Spectrum Lot in either of the 2.5 GHz or 2.3 GHz bands, may be allocated a WBA Spectrum Lot in the other of these two bands.

12.3 The Base Year Charge for WBA Spectrum Lots awarded to Bidders submitting Valid Bids in the Final Round in accordance with paragraph 12.2(i) above, shall be equal to the Going Price in the Final Round and the Administrative Fee of that WBA Spectrum Lot. The Base Year Charge for a WBA Spectrum Lot awarded to Bidders who submitted Exit Prices in any Round in accordance with paragraphs 12.2(ii) and/or 12.2(iii) above, shall be equal to the Exit Price submitted by the Bidder to which such WBA Spectrum Lot is awarded and the Administrative Fee of that WBA Spectrum Lot. The Base Year Charge for a WBA Spectrum Lot awarded pursuant to paragraph (iv) above shall be equal to the Administrative Fee of the WBA Spectrum Lot awarded.

### **13. WBA Spectrum Rights, FBO Licences and Station/Network Licences**

13.1 A WBA Spectrum Right will constitute the grant of a right to use specific parts of radio frequency spectrum for operating a WBA telecommunication system for the

purposes of providing WBA telecommunication services in relation to that WBA Spectrum Right.

13.2 Bidders which are granted a WBA Spectrum Right in this Auction will not be issued a new FBO Licence pursuant to the grant of the WBA Spectrum Right if they are already holders of an existing FBO Licence. They must however modify the scope of their systems and services under their existing FBO Licences.

13.3 If successful Bidders do not hold an FBO Licence at the time they are provisionally awarded a WBA Spectrum Right, such successful Bidders must apply for an FBO Licence within thirty Business Days of the provisional award of a WBA Spectrum Right. Such FBO Licences must be obtained before services are provided using the WBA Spectrum Lots specified in a WBA Spectrum Right granted to such Bidder.

13.4 All holders of FBO Licences will be required to pay the annual FBO Licence fees, currently set at one per cent of annual gross turnover. Please refer to IDA's website, under the section on Policy & Regulation, Licensing, for a template of an FBO Licence.

13.5 In addition, successful Bidders which are granted a WBA Spectrum Right in the Auction will be required to apply for, and obtain, Station/Network Licence(s) before operating WBA telecommunication systems to provide WBA telecommunication services using the WBA Spectrum Lots specified in the WBA Spectrum Rights granted to such Bidders. The fees payable on such Station/Network Licences are prescribed in the First Schedule of the Telecommunications (Radio-communication) Regulations.

13.6 The WBA Spectrum Rights are granted by IDA pursuant to the powers granted to IDA under the Info-communications Development Authority of Singapore Act (Cap. 137A) ("IDA Act"), the Telecommunications Act (Cap. 323) ("Telecommunications Act") and the Telecommunications (Radio-communication) Regulations. A template of the WBA Spectrum Right is attached as Appendix 4 to the Auction Rules.

#### **14. Duration of WBA Spectrum Rights**

14.1 The WBA Spectrum Rights granted in the Auction will be valid for a period of ten years. There is no commitment by IDA that the WBA Spectrum Rights in respect of the WBA Spectrum Lots awarded under the Auction will be extended for any period, if at all.

14.2 If there is any grant of an extension of the WBA Spectrum Rights, or if there is any new allocation exercise for WBA Spectrum Lots, there is no commitment by IDA that the same number of WBA Spectrum Lots will be re-allocated in that subsequent allocation exercise to the successful Bidders in the Auction or that the same Administrative Fee, Going Price(s), Base Year Charge(s) or Annual Charge(s) will apply in respect of such WBA Spectrum Lots.

14.3 It is expected that WBA Spectrum Rights awarded under the Auction or otherwise allocated by IDA if the Auction does not proceed, will be effective as of 1 June 2005. If the procedure for award of the WBA Spectrum Rights is completed at an earlier date, the WBA Spectrum Rights may become effective on such date as IDA may determine.

## **15. Spectrum Trading**

15.1 IDA will permit the trading of spectrum rights allocated pursuant to the grant of a WBA Spectrum Right. Spectrum trading will be subject to:

- (a) approval from IDA;
- (b) any restriction and condition or other requirements imposed or specified by IDA; and
- (c) the relevant provisions of the Telecommunications (Radio-communication) Regulations and Code of Practice for Competition in the Provision of Telecommunication Services ("Telecom Competition Code").

## **16. No Moratorium**

16.1 IDA may allocate further WBA Spectrum Lots for the provision of WBA or any other telecommunication services at any time, and does not commit to any moratorium period during which no such allocation will take place. However, IDA will give at least 3 months notice prior to the commencement of any further allocation exercise.

## **17. Roll Out Schedule**

17.1 Successful bidders will be required to provide publicly available WBA telecommunication services using the allocated WBA Spectrum Lot(s) within:

- (a) 18 months in the case of WBA Spectrum Lot(s) in the 2.5 GHz band; and
- (b) 36 months in the case of WBA Spectrum Lot(s) in the 2.3 GHz band.

## **18. Radio Frequency Interference**

18.1 Successful Bidders using WBA spectrum will be required to co-ordinate among themselves and with neighbouring countries' network operators to avoid frequency interference problems. IDA will only intervene in cases where operators are unable to resolve these problems themselves. IDA will however continue to manage and co-ordinate frequency usage between different services and at the Government level.

18.2 Please refer to Schedule 2 to this Information Memorandum on the recommended technical guidelines in deploying WBA networks.

## **19. Health and Safety Issues**

19.1 The health hazards from exposure to electromagnetic fields are still largely unknown. This Information Memorandum does not express any view or opinion on such matters. Successful Bidders are expected to be apprised of and comply with any guidelines, recommendations or other standards that may be issued by the relevant ministries or statutory boards and/or internationally recognised expert bodies in this field.

## **(B) TIMETABLE**

1. The timetable set out below is indicative only of the expected timing of certain key events prior to the start of the Auction. The Auction Rules contain provisions relating to the notice which will be given of certain dates and events in relation to the Auction process.

2. Please note that IDA may at any time change any of the times or dates and/or shorten or extend the time periods set out in the Auction Rules upon giving at least 24 hours notice, save in emergency situations where such changes may be made without notice.

	<b>Date</b>
<b>Information Memorandum</b>	
Issue of Information Memorandum	25 February 2005
Latest date for submission of queries	16 March 2005
<b>Pre-Auction Milestones</b>	
Submission of Application Form, Initial Offer Document and Bank Guarantee	7 April 2005
Announcement of Applications received	8 April 2005
Announcement of whether the Auction will take place	14 April 2005
Information Session	18 April 2005
Trial Auction	20 April 2005
Notification Date	25 April 2005
<b>Auction</b>	
Auction Start Date	27 April 2005

## **(C) INTRODUCTION TO THE AUCTION FRAMEWORK AND THE BIDDING PROCEDURE**

This introduction is intended only to provide an overview of some of the main features of the Auction. Any person interested in participating in the Auction should familiarise itself with the Auction Rules and should seek appropriate independent legal and other advice in respect of the Auction Rules.

## **1. The Auction**

1.1 To be registered as a Bidder entitled to participate in the Auction, an interested person must, by 6.00 pm on the Application Date in accordance with the Auction Rules:

- (a) submit to IDA its Application Form and its Initial Offer Document, specifying Initial Offers in respect of up to six WBA Spectrum Lots, or up to four WBA Spectrum Lots in the case of an Initial Offer by a member of the SingTel Group or StarHub Group; and
- (b) deposit a Bank Guarantee with the IDA to cover the Initial Guaranteed Amount of S\$200,000.00.

1.2 In the event that the aggregate value of all Valid Bids submitted by a Bidder in a Round equals or exceeds S\$200,000.00, an Additional Bank Guarantee for an amount of S\$200,000.00 must be submitted by such Bidder to IDA.

1.3 IDA has the discretion whether to proceed with the Auction. Please refer to Section A.5 of this Information Memorandum for further details.

1.4 If IDA determines that the Auction will proceed, details of the Auction timetable and a list of all Bidders participating will be notified to Bidders. An Information Session and a Trial Auction will be held to allow Bidders to familiarise themselves with the procedures for the Auction. At the Trial Auction the Authorised Representatives will be taken through the Bidding Procedure.

1.5 Only Authorised Representatives will be permitted to attend the Trial Auction and the second part of the Information Session on behalf of the Bidder they represent. Additional representatives of the Bidders will also be permitted to attend the first part of the Information Session, provided that no more than twenty-five persons attend on behalf of any particular Bidder.

1.6 A timetable showing the expected timing of the Auction and related matters is set out in Section B of this Information Memorandum. Details of the timing and location of the Trial Auction and the Information Session will be provided to Bidders at least one Business Day in advance.

### **1.7 Auction Framework**

1.7.1 The Auction will be conducted in accordance with the Auction Rules. Bidders will participate in the Auction at the Auction Location. During a Session no change



will be permitted in a Bidder's Authorised Representatives present at the Auction Location.

1.7.2 In the Auction, all the lots on offer are auctioned simultaneously, rather than in sequence. Each Bidder must specify in its Initial Offer Document the WBA Spectrum Lots for which it submits an Initial Offer, up to a maximum of six WBA Spectrum Lots, and up to four in the case of a Bidder which is a member of the SingTel Group or StarHub Group.

1.7.3 The number of Bidding Rights assigned to a Bidder in the first Round of the Auction is equal to the number of WBA Spectrum Lots that Bidder submits an Initial Offer for in its Initial Offer Document, except where that Bidder elects not to bid for Uncontested WBA Spectrum Lots. In such event, the number of Bidding Rights assigned to that Bidder in the first Round of the Auction will be equal to the number of WBA Spectrum Lots the Bidder specifies in its Initial Offer Document less the number of Uncontested WBA Spectrum Lots for which that Bidder elects not to bid for.

1.7.4 The Auction will consist of a series of Rounds. In the first Round, a Bidder must specify that it will accept the Going Price (which will be S\$1,000.00) on the WBA Spectrum Lots as specified by that Bidder in its Initial Offer Document. Alternatively, a Bidder may choose to bid for different lots from that specified in its Initial Offer Document, and accept the Going Price (which will be S\$1,000.00) on its new choice of lots. For the avoidance of doubt, a Bidder that submits an Initial Offer for any WBA Spectrum Lot in either of the 2.5 GHz or 2.3 GHz bands, is not precluded from choosing to bid for a WBA Spectrum Lot in the other of these two bands.

1.7.5 In each subsequent Round, a Bidder must:

- (a) submit one or more Valid Bids at the Going Price;
- (b) submit one or more Valid Bids at an Exit Price;
- (c) exercise one or more available Waivers; and/or
- (d) exercise one or more Withdrawals, provided that in relation to each Bidding Right retained by the Bidder for every Withdrawal, the Bidder in that Round also:
  - (i) submits a Valid Bid at the Going Price and/or at an Exit Price;

- (ii) exercises a Waiver; or
- (iii) the Bidder declines to exercise the Bidding Right, whereupon that Bidder's number of Bidding Rights will be reduced accordingly for the purpose of the following subsequent Round.

1.7.6 In any case, a Bidder can only submit Valid Bids up to the maximum number permitted by the total number of its Bidding Rights (which can never be more than six, or four in the case of a Bidder which is a member of the SingTel Group or StarHub Group).

1.7.7 A Valid Bid at the Going Price shall be legally binding until the Bidder exercises a Withdrawal in respect of that Valid Bid. A Valid Bid at an Exit Price shall be legally binding until IDA has provisionally awarded that WBA Spectrum Lot to another Bidder.

1.7.8 In the first Round, a Bidder's number of Bidding Rights will be equal to the number of WBA Spectrum Lots for which that Bidder submitted Initial Offers, except for the case where that Bidder elects not to bid for Uncontested WBA Spectrum Lots, whereby the number of Bidding Rights will equal the number of WBA Spectrum Lots specified in its Initial Offer Document less such number of Uncontested WBA Spectrum Lots for which that Bidder elects not to bid for.

1.7.9 In subsequent Rounds, a Bidder's number of Bidding Rights is maintained if, for each Bidding Right, it submits a Valid Bid at the Going Price or exercises a Waiver.

1.7.10 Submission of a Valid Bid at an Exit Price will reduce the Bidder's number of Bidding Rights correspondingly and that Bidder will remain bound by that Valid Bid at that Exit Price.

1.7.11 A Bidder is liable for a Withdrawal Penalty if the Bidder exercises a Withdrawal on a particular WBA Spectrum Lot and:

- (a) no other Bidder submits a Valid Bid in a subsequent Round on the same WBA Spectrum Lot; or
- (b) one or more Bidders submit Valid Bids in a subsequent Round on the same WBA Spectrum Lot but:

- (i) none of the subsequent Valid Bids are higher than the withdrawn bid (irrespective of whether the subsequent Valid Bids are also withdrawn); and
- (ii) the successful bid price on the WBA Spectrum Lot at the close of the Auction is less than the withdrawn bid.

1.7.12 The Withdrawal Penalty is an amount that shall be calculated as follows:

- (a) in the case of paragraph (a) above, the difference between the value of the withdrawn bid and S\$1000.00; and
- (b) in the case of paragraph (b) above, the difference between the value of the withdrawn bid and the value of the next subsequent highest Valid Bid (irrespective of whether the next subsequent highest Valid Bid is withdrawn or is the successful bid price).

1.7.13 The length of each Round and the break between Rounds will be determined by IDA. Each Round will be no less than fifteen minutes and the break between Rounds will be no less than twenty minutes.

1.7.14 The Going Price in the first Round will be S\$1,000.00. The Going Price in subsequent Rounds will be notified before the start of each Round. The Bid Increment in a Round will be S\$1,000.00 or up to twenty-five per cent of the Going Price in the immediately preceding Round, as IDA may determine in its discretion.

1.7.15 Before the start of each Round, Bidders will be notified of, amongst other things, the aggregate number of Bidding Rights, and the Valid Bid(s), Waiver(s), Exit(s) or Withdrawal(s) for each specific WBA Spectrum Lot in the immediately preceding Round. The Auction will be closed the first time a Round ends during which there is only one Valid Bid submitted for each lot and no Waivers are exercised.

1.7.16 The Auction will close simultaneously in relation to all WBA Spectrum Lots.

## **1.8 Results of the Auction**

1.8.1 IDA will announce the results of the Auction within two Business Days (or such longer time as IDA deems appropriate which will be no more than four Business Days) of the announcement of the close of the Auction.

1.8.2 WBA Spectrum Rights will be granted following payment by a Bidder in full of the relevant Base Year Charge and Application and Processing Fee, any Withdrawal Penalty incurred, plus any Forfeitures imposed on the Bidder. If a Bidder fails to pay such amount within the specified period, that Bidder will not be granted a WBA Spectrum Right.

## **1.9 Forfeiture and Exclusion**

1.9.1 IDA may determine that a Bidder will forfeit amounts up to the amount of its Bank Guarantee (including any Additional Bank Guarantee) for breaches of the Auction Rules and other conduct prejudicial to the Auction.

1.9.2 Bidders can be excluded from the Auction by notice from IDA in certain circumstances, including collusion between Bidders and conduct prejudicial to the Auction.

## **2. Bidding Procedure**

2.1 The Auction will be conducted using a manual Bidding Procedure. The bidding instructions relating to the Bidding Procedure will be given to all Bidders no later than at the Information Session.

2.2 The Bidding Procedure will make use of messengers who, on behalf of IDA, will collect Valid Bid Forms, Recess requests and written messages from Authorised Representatives.

2.3 The messengers will also deliver to the Authorised Representatives the information to be notified by IDA to Bidders during the Auction, such as the Round results.

2.4 Envelopes and a sealing mechanism for envelopes will ensure the confidentiality of the information delivered by the messengers. A receipt system will be used to document that a Bidder has submitted an envelope and that a Bidder has received information from IDA.

2.5 A signalling and clock system will remind Authorised Representatives of the start and end of each Round and each Session.

2.6 For purposes of the Bidding Procedure, Authorised Representatives will be supplied with printed forms to be used to submit Valid Bid Forms and request a Recess.

2.7 Valid Bids must be received from Bidders during the relevant Round using the Bidding Procedure. If a Bidder wishes to submit a Valid Bid in a Round, it is the Bidder's responsibility to ensure that it submits its Valid Bid Form to IDA before the end of that Round. Rounds will not be extended to provide extra time. IDA assumes no responsibility for bids not received during the proper time period.

2.8 A Bidder help-desk for queries relating to the Bidding Procedure will be available at the Auction Location during the Auction.

(DISCLAIMER: Neither IDA nor any of its officers or employees or its advisers makes any representation nor warranty (express or implied) nor accepts nor will accept any responsibility or liability whatsoever as to, or in relation to, any errors resulting from or relating to the Bidding Procedure. In no event shall IDA or any of its officers or employees or its advisers be liable for any damages whatsoever resulting from or relating to the existence, furnishing, functioning or use of the Bidding Procedure. No obligation or liability whatsoever on the part of IDA or its officers or employees or its advisers will arise from the advice or service provided in connection with the Bidding Procedure.

Bidders are solely responsible for ensuring the security of their bids and that only their Authorised Representatives submit bids on their behalf. Neither IDA nor any of its officers or employees or its advisers will accept any responsibility or liability whatsoever for any of these matters.)

## **2.9 Auction Location Site Logistics**

2.9.1 The Auction will be held at the Auction Location. Prior to the Information Session, IDA will notify Bidders of the address of the Auction Location and the procedures relating to access to the Auction Location.

2.9.2 At the Auction Location, each Bidder will have a separate bidding room. Only a Bidder's Authorised Representatives will have access to that Bidder's bidding room, and the Authorised Representatives will be permitted to lock the bidding room at the end of each Session.

2.9.3 The Authorised Representatives will only be allowed to gain access to the Auction Location shortly before the beginning of a Session. The Authorised Representatives will only be allowed to be present in their respective bidding rooms during a Session and in the period between a Morning Session and an Afternoon Session, where these Sessions are on the same Business Day. Bidding rooms will be cleaned only in the presence of the Authorised Representatives.

2.9.4 The Authorised Representatives will be able to communicate with the Bidder they represent from the Auction Location. For such purposes, the bidding rooms will have installed telephone lines, and in addition Authorised Representatives may use their own mobile telephones and fax machines. The Authorised Representatives will be permitted to fax to the Bidder they represent the Round result information received from IDA as well as copies of the Valid Bid Forms and Recess requests they submit to IDA.

2.9.5 Each Bidder's bidding room will be equipped with the following:

- (a) two telephone lines;
- (b) two desks; and
- (c) six chairs.

2.9.6 In addition, a Bidder will be allowed to equip its bidding room with the following equipment (which must be provided by the Bidder at the Bidder's cost):

- (a) mobile telephones;
- (b) personal computers;
- (c) laptop computers;
- (d) fax machines;
- (e) photocopiers;
- (f) encryption devices; and
- (g) flip charts.

2.9.7 The Bidders and their Authorised Representatives may only bring other equipment or communication or electronic devices to the Auction Location with the prior approval of IDA.

2.9.8 Any equipment (other than mobile telephones and laptop computers) to be provided by a Bidder in the Bidder's bidding room, including any hardware or software to be installed on such equipment, must be installed prior to the Auction Start Date, and such installation will be co-ordinated and supervised by IDA.

2.9.9 Further details regarding the Auction Location site logistics for the Auction will be provided no later than at the Information Session for the Auction.

## **(D) THE REGULATORY REGIME IN SINGAPORE**

### **1. The Regulatory Authority**

1.1 IDA is the authority in charge of regulating the information and communication technology industry in Singapore. IDA is a statutory board under the purview of the Ministry of Information, Communications and the Arts.

### **2. Relevant Legislation**

2.1 There is various legislation and subsidiary legislation that is relevant to WBA Spectrum Rights. Persons interested in being granted a WBA Spectrum Right should ensure that they familiarise themselves with such legislation and seek independent legal and other appropriate advice in respect of such legislation.

2.2 The relevant legislation includes (but is not limited to):

- (a) the IDA Act;
- (b) the Telecommunications Act; and
- (c) the Telecommunications (Radio-communication) Regulations.

2.3 There are also various codes of practice governing the field of telecommunications, which include (but are not limited to):

- (a) the Telecom Competition Code 2005; and
- (b) the Code of Practice for Info-Communications Facilities in Buildings ("COPIF").

### **3. The IDA Act**

3.1 The IDA Act sets out the functions and powers of IDA with regard to the licensing and regulation of telecommunication systems and services in Singapore.

### **4. The Telecommunications Act**

4.1 The Telecommunications Act is the primary legislation relating to telecommunications. The Telecommunications Act empowers IDA to grant licences for the provision of telecommunication services and to regulate the telecommunication industry in Singapore. It also authorises IDA to make regulations governing the classes of licences to be granted by IDA and the conditions for their grant, as well as the control and regulation of interference by radiowaves, electrical

and other telecommunication means in Singapore. Offences and penalties relating to the unlawful operation of telecommunication systems or services are also stipulated in the Telecommunications Act.

## **5. The Telecommunications (Radio-communication) Regulations**

5.1 The Telecommunications (Radio-communication) Regulations was gazetted on 2 March 2001 and came into force on that date in place of the repealed Radio-Communication Regulations (which was gazetted in August 1994).

5.2 The Telecommunications (Radio-communication) Regulations set out the regulatory framework by which IDA exercises licensing and regulatory functions in respect of the allocation, management and use of radio frequency spectrum in Singapore.

5.3 All Bidders participating in the Auction should familiarise themselves with the Telecommunications (Radio-communication) Regulations.

## **6. The Telecom Competition Code 2005**

6.1 The Telecom Competition Code first came into force on 29 September 2000. On 18 February 2005, IDA issued a revised Telecom Competition Code 2005, which will come into effect on 4 March 2005. The Telecom Competition Code 2005 sets out a comprehensive regulatory framework for the development of fair and effective competition in the telecommunication industry in Singapore.

6.2 The licensing framework adopted by IDA under the Telecommunications Act, for providing telecommunication services, is divided into the following categories of licensees:

- (a) Facilities-based licensees;
- (b) Services-based licensees;
- (c) Telecommunication equipment dealer licensees; and
- (d) Self-provisioning licensees.

6.3 The Telecom Competition Code applies to the categories of licensees listed in (a), (b), and (c) above, albeit to varying degrees in recognition that certain licensees should be obliged to comply with more stringent obligations by virtue of the extent of their control over the market.



## **7. COPIF**

7.1 The COPIF came into effect on 15 September 2000 and sets out detailed specifications and guidelines for telecommunication facilities in buildings to ensure that architects and construction professionals include in new and re-furbished buildings adequate in-building cabling facilities and space required for the operation of installations and plants used by the public telecommunication licensees and telecommunication system licensees in providing info-communication services to building occupants.

7.2 The Telecom Competition Code and COPIF are available on the IDA website.

### **(E) QUERIES**

1. All queries relating to this Information Memorandum and/or the Auction should be made in writing and sent by post or fax directly to IDA to be received by IDA no later than 6.00pm on 16 March 2005. All queries should be addressed to the following person and sent to the following address:

Info-communications Development Authority of Singapore  
8 Temasek Boulevard #14-00  
Suntec Tower 3  
Singapore 038988  
Fax No: (65) 211 2116

For the attention of: Mr Andrew J. Haire

All queries should be marked: WBA Auction Queries

2. Please note that all queries must be made in writing. No responses will be given to verbal queries. An electronic version must also be sent by e-mail to loh\_oon\_sien@ida.gov.sg. IDA is under no obligation to respond to any queries made. IDA may publish any queries and the answers provided on its website at <http://www.ida.gov.sg>. The identity of the person raising the query will not be published.

3. Any person considering participating in the Auction should not assume that their application to participate in, their participation in, or the results of, the Auction will be kept confidential. Queries raised by any person must be made in accordance with this Information Memorandum and the Auction Rules. IDA may also publicly announce information relating to the Auction and/or the award of WBA Spectrum Rights either during or following the close of the Auction or the relevant procedure, without consulting any interested persons.

## SCHEDULE 1

### 2.3 GHz and 2.5 GHz WBA Spectrum Lots

Number of WBA Spectrum Lot	Starting Frequency ( MHz )	Ending Frequency ( MHz )	Frequency Block ( MHz )	Administrative Fee
1	2300.0	2305.0	5	S\$13,200
2	2305.0	2310.0	5	S\$13,200
3	2310.0	2315.0	5	S\$13,200
4	2315.0	2320.0	5	S\$13,200
5	2320.0	2325.0	5	S\$13,200
6	2325.0	2330.0	5	S\$13,200
7	2330.0	2335.0	5	S\$13,200
8	2335.0	2340.0	5	S\$13,200
9	2340.0	2345.0	5	S\$13,200
10	2345.0	2350.0	5	S\$13,200
11	2516.0	2522.0	6	S\$13,500
12	2522.0	2528.0	6	S\$13,500
13	2540.0	2546.0	6	S\$13,500
14	2546.0	2552.0	6	S\$13,500
15	2564.0	2570.0	6	S\$13,500
16	2570.0	2576.0	6	S\$13,500
17	2576.0	2582.0	6	S\$13,500
18	2582.0	2588.0	6	S\$13,500
19	2588.0	2594.0	6	S\$13,500
20	2594.0	2600.0	6	S\$13,500
21	2636.0	2642.0	6	S\$13,500
22	2642.0	2648.0	6	S\$13,500
23	2660.0	2666.0	6	S\$13,500
24	2666.0	2672.0	6	S\$13,500
25	2672.0	2678.0	6	S\$13,500

Band Plans of Singapore and Neighbouring countries

2.3 GHz band		2.5 GHz band	
Singapore		Singapore	Neighbouring countries <sup>1</sup>
2300	1	2504	FDD 1
2305	2	2510	
2310	3	2516	11
2315	4	2522	
2320	5	2528	FDD 2
2325	6	2534	
2330	7	2540	13
2335	8	2546	
2340	9	2552	TDD
2345	10	2558	
2350		2564	15
		2570	
		2576	17
		2582	
		2588	19
		2594	
		2600	TDD
		2606	
		2612	TDD
		2618	
		2624	FDD 1'
		2630	
		2636	21
		2642	
		2648	FDD 2'
		2654	
		2660	23
		2666	
		2672	25
		2678	
			TDD
		2688	

<sup>1</sup> The proposed FDD and TDD allocations are subject to change without notice

## **SCHEDULE 2**

### **Technical Guidelines for deployment of WBA networks**

#### **1. General**

- 1.1 These guidelines are provided to assist operators with the co-existence and co-ordination of their WBA networks in the 2.3 GHz and 2.5 GHz bands. Operators are encouraged to take into account these guidelines, as well as implement further enhancements to suit their particular network deployment.
- 1.2 These guidelines may be subject to further review and revision.

#### **2. Emission Limits**

- 2.1 Operators should attenuate the power of any emissions outside of their frequency band of operation below the transmitter power (P) measured in watts. For base stations and mobile stations, the attenuation should be not less than  $43 + 10 \log (P)$  dB at the channel edge based on a resolution bandwidth of 1 MHz or greater.
- 2.2 When an emission outside of the operator's authorised bandwidth causes harmful interference, greater attenuation than specified in this section may be required.

#### **3. Signal Strength Limits**

- 3.1 At any location on the border of an operator's geographical service area, the predicted or measured median field strength should not exceed 47 dB $\mu$ V/m. This field strength is to be measured at 1.5 meters above the ground over the channel bandwidth.