WORKED EXAMPLES FOR NEW ENTRANT SPECTRUM AUCTION

This document contains examples for the Auction Rules covering the New Entrant Spectrum Auction. The information contained in this document, including any Bids, Clock Prices, and Increments used in the examples, is provided solely for illustrative purposes only.

Section 1   NO EXCESS SUPPLY IN THE FINAL ROUND

Round	Round Price (in S$)	Bids submitted		
		Bidder A	Bidder B	Bidder C
1	35,000,000	35,000,000	35,000,000	35,000,000
2	37,000,000	37,000,000	37,000,000	37,000,000
3	39,000,000	39,000,000	39,000,000	39,000,000
4	41,000,000	41,000,000	41,000,000	**39,500,000**
5	43,000,000	**43,000,000**	**42,000,000**	-

1.1.   In this example, there are three New Entrant Bidders (Bidder A, Bidder B and Bidder C) and we assume in what follows that the Bank Guarantees submitted by each of them is of an aggregate Guaranteed Amount that covers the Bids each of them submits throughout the New Entrant Spectrum Auction (see Sections 2.7.1 and 2.7.2 of the Auction Rules).

1.2.   In the first Round, a Bid is placed on behalf of each New Entrant Bidder at the Reserve Price of S$35,000,000 (see Section 6.2.1 of the Auction Rules). The Round Price is increased by S$2,000,000 for Round 2.

1.3.   In Round 2, New Entrant Bidders can:

(a)   Submit a Bid at the Round Price (see Section 6.2.2(a) of the Auction Rules). If more than one New Entrant Bidder submits a Bid at the Round Price, there will be another Round (Round 3). Only New Entrant Bidders that submit a Bid at the Round Price in the current Round (Round 2) are allowed to submit a Bid in the next Round (Round 3) (see Section 6.3.2).

(b)   Submit an Exit Bid (see Section 6.2.2(b) of the Auction Rules) which needs to be at least equal to the Round Price of the previous Round (S$35,000,000), but strictly less than the current Round Price (Round 2) (S$37,000,000). Exit Bids must be a multiple of S$100.

(c) Not submit any Bid (see Section 6.2.3 of the Auction Rules). Such New Entrant Bidder's highest Bid up to this point (S$35,000,000) will still be valid and may still win (see Section 6.2.5 of the Auction Rules).

1.4. All New Entrant Bidders accept the Round Price in Round 2, and submit a Bid each of S$37,000,000. As such, all three New Entrant Bidders are entitled to submit a Bid in Round 3 (see Sections 6.3.2 and 6.3.3 of the Auction Rules). The Round Price for Round 3 increases to S$39,000,000.

1.5. In Round 3, where all New Entrant Bidders accept the Round Price again, IDA increases the Round Price to S$41,000,000 for Round 4. In Round 4, Bidders A and B accept the Round Price whereas Bidder C submits an Exit Bid below the current Round Price (but above the previous Round Price) of S$39,500,000 (see Section 6.2.2(b) of the Auction Rules).

1.6. As more than one New Entrant Bidder accepted the Round Price in Round 4, Round 5 is scheduled with the Round Price now at S$43,000,000. Bidder A accepts the Round Price in Round 5, whereas Bidder B submits an Exit Bid of S$42,000,000. Note that Bidder C is not allowed to submit a Bid in this Round. However, Bidder C's highest Valid Bid of S$39,500,000 remains valid such that its Bank Guarantee(s) could be drawn upon by IDA if required.

1.7. As only one New Entrant Bidder accepted the Round Price in Round 5, the New Entrant Spectrum Auction closes after this Round 5 (see Section 7.1 of the Auction Rules). The highest Valid Bids submitted by each New Entrant Bidder are shown in the following table.

	Highest Valid Bid (in S$)
Bidder A	43,000,000
Bidder B	42,000,000
Bidder C	39,500,000

1.8. Bidder A submitted the highest Valid Bid and therefore wins the New Entrant Spectrum Lot (see Section 7.2 of the Auction Rules). It is required to pay its winning Bid amount of S$43,000,000 plus any other applicable fees (see Sections 7.9 and 19.3 of the Auction Rules).

EXCESS SUPPLY IN FINAL ROUND

Round	Round Price (in S$)	Bids submitted		
		Bidder A	Bidder B	Bidder C
1	35,000,000	35,000,000	35,000,000	35,000,000
2	37,000,000	37,000,000	37,000,000	37,000,000
3	39,000,000	39,000,000	39,000,000	39,000,000
4	41,000,000	41,000,000	41,000,000	**39,500,000**
5	43,000,000	-	**42,000,000**	-

2.1. In this example, there are three New Entrant Bidders (Bidder A, Bidder B and Bidder C) and we assume in what follows that the Bank Guarantees submitted by each of them is of an aggregate Guaranteed Amount that covers the Bids each of them submits throughout the New Entrant Spectrum Auction.

2.2. In the first Round, a Bid is placed on behalf of each New Entrant Bidder at the Reserve Price of S$35,000,000. The Round Price is increased by S$2,000,000 for Round 2. All New Entrant Bidders accept the Round Price in Round 2 and submit a Bid each at S$37,000,000. This means all three New Entrant Bidders are entitled to submit a Bid in the next round, Round 3. IDA increases the Round Price for Round 3 to S$39,000,000.

2.3. In Round 3, all New Entrant Bidders accept the Round Price again, so IDA increases the Round Price to S$41,000,000 for Round 4. In Round 4, Bidders A and B accept the Round Price whereas Bidder C submits an Exit Bid of S$39,500,000 which is below the current Round Price in Round 4, but above the previous Round Price in Round 3.

2.4. As more than one New Entrant Bidder accepted the Round Price in Round 4, Round 5 is scheduled with the Round Price now at S$43,000,000. Bidder A does not submit a Bid in this Round. Bidder A's highest Valid Bid of S$41,000,000 from the previous Round (Round 4) is still valid such that its Bank Guarantee(s) can be drawn upon by IDA if required. Bidder B submits an Exit Bid in Round 5 of S$42,000,000.

2.5. As no New Entrant Bidder accepted the Round Price in Round 5, the New Entrant Spectrum Auction closes after this Round. The highest Valid Bids submitted by each New Entrant Bidder are shown in the following table.

	Highest Valid Bid (in S$)
Bidder A	41,000,000
Bidder B	42,000,000
Bidder C	39,500,000

2.6. Bidder B submitted the highest Valid Bid and therefore wins the New Entrant Spectrum Lot (see Section 7.2 of the Auction Rules). It is required to pay its winning Bid amount of S$42,000,000 plus any applicable fees (see Sections 7.9 and 19.3 of the Auction Rules).

BEST OFFER ROUND REQUIRED

Round	Round Price (in S$)	Bids submitted		
		Bidder A	**Bidder B**	**Bidder C**
1	35,000,000	35,000,000	35,000,000	35,000,000
2	37,000,000	37,000,000	37,000,000	37,000,000
3	39,000,000	39,000,000	39,000,000	39,000,000
4	41,000,000	40,000,000	40,000,000	40,000,000
Best Offer Round 1	-	40,500,000	40,500,000	**40,200,000**
Best Offer Round 2	-	**40,700,000**	**40,600,000**	-

3.1. In this example, there are three New Entrant Bidders (Bidder A, Bidder B and Bidder C) and we assume in what follows that the Bank Guarantees submitted by each of them is of an aggregate Guaranteed Amount that covers the Bids each of them submits throughout the New Entrant Spectrum Auction.

3.2. In the first Round, a Bid is placed on behalf of each New Entrant Bidder at the Reserve Price of S$35,000,000. The Round Price is increased by S$2,000,000 for Round 2. All New Entrant Bidders accept the Round Price and submit a Bid each at S$37,000,000. This means all three New Entrant Bidders are entitled to submit a Bid in Round 3. IDA increases the Round Price for Round 3 to S$39,000,000.

3.3. In Round 3, all New Entrant Bidders accept the Round Price again, so IDA increases the Round Price to S$41,000,000 for Round 4. In Round 4, all three New Entrant Bidders decide to submit an Exit Bid of S$40,000,000. As no New Entrant Bidders accepted the Round Price in Round 4, there will be no further Rounds (except for Best Offer Rounds) and the New Entrant Spectrum Auction closes (see Section 7.1 of the Auction Rules). In this example, as all three New Entrant Bidders submitted the same highest Valid Bid, a Best Offer Round is required (see Section 7.3 of the Auction Rules).

3.4. All three New Entrant Bidders are eligible to submit a Best Offer Bid in Best Offer Round 1 (see Section 7.3 of the Auction Rules). In the Best Offer Round, a New Entrant Bidder can (see Sections 7.4 and 7.5 of the Auction Rules):

(a) Submit a Best Offer Bid which must be at least as high as the highest Valid Bid which the New Entrant Bidder has submitted thus far, but strictly less than the Round Price of the final Round (Round 4), and a multiple of S$100.

(b) Not submit a Best Offer Bid. In this case, only the New Entrant Bidder's highest Valid Bid thus far will be considered.

3.5. Bidders A and B submit a Bid of S$40,500,000 each, and Bidder C submits a Bid of S$40,200,000. As Bidder A and B submitted the same highest Valid Bid, they are invited to submit another Best Offer Bid in Best Offer Round 2 (see Sections 7.3 and 7.6 of the Auction Rules). In this Best Offer Round 2, Bidder A submits a Best Offer Bid of S$40,700,000 and Bidder B submits a Best Offer Bid of S$40,600,000. As this breaks the tie between Bidders A and B, the New Entrant Spectrum Auction closes after this Best Offer Round 2 (see Section 7.6 of the Auction Rules).

3.6. The following table shows the highest Valid Bids submitted by each New Entrant Bidder. As Bidder A submitted the highest Valid Bid, it wins the New Entrant Spectrum Lot (see Section 7.8 of the Auction Rules) and is required to pay its winning Bid amount of S$40,700,000 plus any applicable fees (see Sections 7.9 and 19.3 of the Auction Rules).

	Highest Valid Bid (in S$)
Bidder A	40,700,000
Bidder B	40,600,000
Bidder C	40,200,000

Section 4 RANDOM TIE-BREAK REQUIRED

Round	Round Price (in S$)	Bids submitted		
		Bidder A	Bidder B	Bidder C
1	35,000,000	35,000,000	35,000,000	35,000,000
2	37,000,000	37,000,000	37,000,000	37,000,000
3	39,000,000	39,000,000	39,000,000	39,000,000
4	41,000,000	40,000,000	40,000,000	40,000,000
Best Offer Round 1	-	40,500,000	40,500,000	**40,200,000**
Best Offer Round 2		**40,600,000**	**40,600,000**	
Best Offer Round 3	-	-	-	-

4.1.   In this example, there are three New Entrant Bidders (Bidder A, Bidder B and Bidder C) and we assume in what follows that the Bank Guarantees submitted by each of them is of an aggregate Guaranteed Amount that covers the Bids each of them submits throughout the New Entrant Spectrum Auction.

4.2.   In the first Round, a Bid is placed on behalf of each New Entrant Bidder at the Reserve Price of S$35,000,000. The Round Price is increased by S$2,000,000 for Round 2. All New Entrant Bidders accept the Round Price and submit a Bid each at S$37,000,000. This means all three New Entrant Bidders are entitled to submit a Bid in Round 3. IDA increases the Round Price for Round 3 to S$39,000,000.

4.3.   In Round 3, all New Entrant Bidders accept the Round Price again, so IDA increases the Round Price to S$41,000,000 for Round 4. In Round 4, all three New Entrant Bidders decide to submit an Exit Bid each of S$40,000,000. As no New Entrant Bidders accepted the Round Price in Round 4, there will be no further Rounds (except for Best Offer Rounds) and the New Entrant Spectrum Auction closes (see Section 7.1 of the Auction Rules).In this example, as all three New Entrant Bidders submitted the same highest Valid Bid, a Best Offer Round is required (see Section 7.3 of the Auction Rules).

4.4.   All three New Entrant Bidders are eligible to submit a Best Offer Bid in Best Offer Round 1. Bidders A and B submit a Bid each of

S$40,500,000, and Bidder C submits a Bid of S$40,200,000. As Bidders A and B submitted the same highest Valid Bid, they are invited to submit another Best Offer Bid in Best Offer Round 2. In this Best Offer Round, Bidders A and B submit the same Bid of S$40,600,000 each. As both Bidders A and B are still tied, they are invited to submit a Bid in the final Best Offer Round. In this final Best Offer Round, neither Bidder A nor Bidder B submits another Best Offer Bid, so they remain tied at the end of the Best Offer Rounds.

4.5. IDA will employ a method of random selection to determine the Winning New Entrant Bidder (see Section 7.6 of the Auction Rules). In this example, a random number generated by a random number generator is randomly assigned to each tied highest Bid and the Bid with the highest random number wins. Assuming the random number assigned to Bidder B's Bid is higher, Bidder B wins and is required to pay its winning Bid amount of S$40,600,000 plus any applicable fees (see Sections 7.9 and 19.3 of the Auction Rules).

WORKED EXAMPLES FOR GENERAL SPECTRUM AUCTION

This document contains examples for the Auction Rules covering the General Spectrum Auction. The information contained in this document, including any Bids, Standing Prices, and Increments used in the examples, is provided solely for illustrative purposes only.

Section 1   EXAMPLE ON EXIT BIDS AND ELIGIBILITY

Category	700 MHz	900 MHz	2.5 GHz	
Available lots (with Winning New Entrant Bidder and all FROR lots exercised)	9	1	9	Overall cap
Remaining Spectrum Cap (in MHz) for an Existing MNO	40 (i.e. 4 lots)	10 (i.e. 1 lot; excluding FROR lot)	n/a	65 (excluding FROR lot)
Round 1				
Standing Price (S$ per lot)	20,000,000	20,000,000	3,000,000	Next round eligibility
Bidder A's Bid (number of lots)	4	1	3	65
Round 2				
Standing Price (S$ per lot)	22,000,000	22,000,000	3,300,000	Next round eligibility
Bidder A's Bid (number of lots)	2	1	0	30
Switch Amount	0	0	0	
Reduction Amount	-20	0	-15	
Exit Bid (number of lots)	2		3	
Exit Price (S$ per lot)	21,000,000		3,100,000	

1.1.   This example assumes that:

(a)   there is a Winning New Entrant Bidder and thus there are no lots available in the 2.3 GHz Category and at most four (4) lots in the 900 MHz Category, respectively (see Sections 9.6.2(b) and (c) of the Auction Rules);

(b)   Bidder A submits an Initial Offer for four (4) lots in the 700 MHz Category, two (2) lots in the 900 MHz Category - including the FROR lot - and three (3) lots in the 2.5 GHz Category (see Section 9.4 of the Auction Rules).

1.2.   In Round 1, Bidder A's Bid is placed automatically on its behalf and consists of the number of lots for each Category for which it submitted an Initial Offer excluding the FROR lot (see Section 14.2.1 of the Auction Rules). Bidder A is an Existing MNO and included two (2) 900 MHz lots in its Initial Offer. One of these lots

is the FROR lot which it is already guaranteed to win at the Reserve Price. The other lot is included in its Round 1 Bid.

1.3. After Round 1 is complete, the value of Excess Demand is calculated with respect to each Category (see Section 14.1.5 of the Auction Rules). Excess Demand is strictly positive in all Categories and thus the Standing Price increases in all Categories by an Increment (see Section 14.1.6 of the Auction Rules).

Exit Bids

1.4. In Round 2, Bidder A, with respect to the 700 MHz Category, decreases the number of lots at the Standing Price in its Bid by two (2) lots, and with respect to the 2.5 GHz Category, also decreases the number of lots at the Standing Price in its Bid by three (3) lots (see Section 14.3.1 of the Auction Rules).

1.5. Bidder A does not increase the number of lots at the Standing Price in its Bid with respect to either of the three Categories, and thus the Switch Amount is zero (0) MHz for each of the three Categories (see Section 14.3.2 of the Auction Rules). The Reduction Amounts are minus twenty (-20) MHz and minus fifteen (-15) MHz for the 700 MHz Category and the 2.5 GHz Category respectively. Bidder A provides an Exit Bid for a number of MHz equal to the difference between the Reduction Amount and the Switch Amount, namely for two (2) lots in the 700 MHz Category and three (3) lots in the 2.5 GHz Category (see Section 14.3.3 of the Auction Rules).

1.6. Bidder A provides an Exit Bid for two (2) lots of the 700 MHz Category, and provides a single Exit Price of S$21,000,000. The Exit Price must be no less than the Standing Price of the last completed Round (S$20,000,000 in Round 1), but must be less than the Standing Price of S$22,000,000. This means that the Exit Price may be equal to or more than S$20,000,000, but must not be equal to S$22,000,000 (see Section 14.3.3 of the Auction Rules).

1.7. Bidder A provides an Exit Bid for three (3) lots of the 2.5 GHz Category, and provides an Exit Price of S$3,100,000. The Exit Price must be no less than the Standing Price of the last completed Round (S$3,000,000 in Round 1), but must be less than the Standing Price of S$3,300,000. This means that the Exit Price may be equal to or more than S$3,000,000, but must not be equal to S$3,300,000 (see Section 14.3.3 of the Auction Rules).

Eligibility

1.8. In Round 1 and in Round 2, Bidder A's Eligibility is the sum of the MHz associated with the lots in the 700 MHz, 900 MHz and 2.5

GHz Categories specified in Bidder A's Initial Offer (excluding the FROR lot), namely 65 MHz (see Section 14.2.4 of the Auction Rules).

1.9.   In Round 3, Bidder A's Eligibility will be 30 MHz, which is Bidder A's Eligibility in Round 2 (65 MHz) less the sum of the MHz associated with the lots for which it submitted Exit Bids in Round 2 across the 700 MHz and 2.5 GHz Categories (35 MHz).

Section 2 EXAMPLE ON SWITCHING WITHIN THE PAIRED CATEGORIES AND ELIGIBILITY

Category	700 MHz	900 MHz	2.5 GHz	
Available lots (with Winning New Entrant Bidder and all FROR lots exercised)	9	1	9	Overall cap
Remaining Spectrum Cap (in MHz) for an Existing MNO	40 (i.e. 4 lots)	10 (i.e. 1 lot; excluding FROR lot)	n/a	65 (excluding FROR lot)
Round 2				
Standing Price (S$ per lot)	22,000,000	22,000,000	3,300,000	Next round eligibility
Bidder A's Bid (number of lots)	2	1	3	45
Round 3				
Standing Price (S$ per lot)	24,200,000	24,200,000	3,630,000	Next round eligibility
Bidder A's Bid (number of lots)	3	0	3	45
Switch Amount	10	0	0	
Reduction Amount	0	-10	0	
Exit Bid (number of lots)	n/a	n/a	n/a	
Exit Price (S$ per lot)	n/a	n/a	n/a	

2.1. This example assumes that:

    (a) there is a Winning New Entrant Bidder and thus there are no lots available in the 2.3 GHz Category, and at most four (4) lots in the 900 MHz Category, respectively;

    (b) all three Existing MNOs include at least one (1) 900 MHz lot in their Initial Offer (the FROR lot), so the number of available lots in the 900 MHz Category is reduced to one (1) lot; and

    (c) Bidder A submits an Initial Offer for two (2) lots in the 700 MHz Category, two (2) lots in the 900 MHz Category - including the FROR lot - and three (3) lots in the 2.5 GHz Category.

2.2. In Round 1, Bidder A's Bid is placed automatically on its behalf and consists of the number of lots for each Category for which Bidder A submitted an Initial Offer (excluding the FROR lot) (see Section 14.2.1 of the Auction Rules). Bidder A is an Existing MNO and included two (2) 900 MHz lots in its Initial Offer. One of these

lots is the FROR lot which it is already guaranteed to win at the Reserve Price. The other lot is included in its Round 1 Bid. After Round 1 is complete, Excess Demand is strictly positive in each Category and thus the Standing Price increases in each Category by an Increment (see Section 14.1.6 of the Auction Rules). In Round 2, all Bidders, including Bidder A, leave the number of lots in their Bids with respect to each Category unchanged from the last completed Round. The Standing Price for each Category thus increases by an Increment again.

2.3.   In Round 3, Bidder A switches one (1) lot from the 900 MHz Category to the 700 MHz Category. With respect to the 700 MHz Category, Bidder A increases the number of lots at the Standing Price in its Bid by one (1) lot. The Switch Amount for the 700 MHz Category is therefore 10 MHz. With respect to the 900 MHz Category, Bidder A decreases the number of lots at the Standing Price in its Bid by one (1) lot. The Reduction Amount for the 900 MHz Category is therefore minus ten (-10) MHz. As the sum of Reduction and Switch Amounts across all categories is zero (0), Bidder A is not required to provide an Exit Price for the lot in the 900 MHz Category (see Section 14.3.3 of the Auction Rules).

2.4.   In Round 4, Bidder A's Eligibility will remain at 45 MHz, which is Bidder A's Eligibility in Round 3 (45 MHz) less the MHz for which the Bidder has provided an Exit Bid in Round 3 across all three Categories (zero (0) MHz).

Section 3   EXAMPLE ON SWITCHING FROM PAIRED TO UNPAIRED AND ELIGIBILITY

Category	700 MHz	900 MHz	2.5 GHz	
Available lots (with Winning New Entrant Bidder and all FROR lots exercised)	9	1	9	Overall cap
Remaining Spectrum Cap (in MHz) for an Existing MNO	40 (i.e. 4 lots)	10 (i.e. 1 lot; excluding FROR lot)	n/a	65 (excluding FROR lot)
Round 2				
Standing Price (S$ per lot)	22,000,000	22,000,000	3,300,000	Next round eligibility
Bidder A's Bid (number of lots)	3	1	5	65
Round 3				
Standing Price (S$ per lot)	24,200,000	24,200,000	3,630,000	Next round eligibility
Bidder A's Bid (number of lots)	1	1	9	65
Switch Amount	0	0	20	
Reduction Amount	-20	0	0	
Exit Bid (number of lots)	n/a	n/a	n/a	
Exit Price (S$ per lot)	n/a	n/a	n/a	

3.1.   This example assumes that:

(a)   there is a Winning New Entrant Bidder and thus there are no lots available in the 2.3 GHz Category and at most four (4) lots in the 900 MHz Category, respectively;

(b)   all three Existing MNOs include at least one (1) 900 MHz in their Initial Offer (the FROR lot), so the number of available lots in the 900 MHz Category is reduced to one (1) lot; and

(c)   Bidder A submits an Initial Offer for three (3) lots in the 700 MHz Category, two (2) lots in the 900 MHz Category - including the FROR lot - and five (5) lots in the 2.5 GHz Category.

3.2.   In Round 1, Bidder A's Bid is placed automatically on its behalf and consists of the number of lots for each Category for which Bidder A submitted an Initial Offer (excluding the FROR lot) (see Section 14.2.1 of the Auction Rules). Bidder A is an Existing MNO and included two (2) 900 MHz lots in its Initial Offer. One of these lots is the FROR lot which it is already guaranteed to win at the

Reserve Price. The other lot is included in its Round 1 Bid. After Round 1 is complete, Excess Demand is strictly positive in each Category and thus the Standing Price increases in each Category by an Increment (see Section 14.1.6 of the Auction Rules). In Round 2, all Bidders, including Bidder A, leave the number of lots in their Bids with respect to each Category unchanged from the last completed Round. The Standing Price for each Category thus increases by an Increment again.

3.3.   In Round 3, Bidder A switches two (2) lots from the 700 MHz Category to four (4) lots in the 2.5 GHz Category. With respect to the 2.5 GHz Category, Bidder A increases the number of lots at the Standing Price in its Bid by four (4) lots. The Switch Amount for the 2.5 GHz Category is therefore 20 MHz. With respect to the 700 MHz Category, Bidder A decreases the number of lots at the Standing Price in its Bid by two (2) lots. The Reduction Amount for the 700 MHz Category is therefore minus twenty (-20) MHz. As the sum of Reduction and Switch Amounts across all categories is zero (0), Bidder A is not required to provide an Exit Price for the lot(s) in the 700 MHz Category.

3.4.   In Round 4, Bidder A's Eligibility will remain at 65 MHz, which is Bidder A's Eligibility in Round 3 (65 MHz) less the MHz for which the Bidder has provided an Exit Bid in Round 3 across all three Categories (zero (0) MHz).

Section 4 SWITCHING FROM PAIRED TO UNPAIRED AND DROP IN ELIGIBILITY

Category	700 MHz	900 MHz	2.5 GHz	
Available lots (with Winning New Entrant Bidder and all FROR lots exercised)	9	1	9	Overall cap
Remaining Spectrum Cap (in MHz) for an Existing MNO	40 (i.e. 4 lots)	10 (i.e. 1 lot; excluding FROR lot)	n/a	65 (excluding FROR lot)
Round 1				
Standing Price (S$ per lot)	20,000,000	20,000,000	3,000,000	Next round eligibility
Bidder A's Bid (number of lots)	3	1	5 SHBs at SP	65
Round 2				
Standing Price (S$ per lot)	22,000,000	22,000,000	3,000,000	Next round eligibility
Bidder A's Bid (number of lots)	1	1	5 SHBs at SP 2 new lots at SP	55
Switch Amount	0	0	10	
Reduction Amount	-20	0	0	
Exit Bid (number of lots)	1	n/a	n/a	
Exit Price (S$ per lot)	21,500,000	n/a	n/a	

SP: Standing Price, SHB: Standing High Bid

4.1. The assumptions in this example (Section 4 Switching from Paired to Unpaired and Drop in Eligibility) are exactly the same as in the previous one (Section 3 Example on Switching from Paired to Unpaired and Eligibility). After Round 1 is complete, the value of Excess Demand is calculated with respect to each Category. Excess Demand is strictly positive in the 700 MHz and 900 MHz Categories and thus the Standing Price increases in these two Categories by an Increment (see Section 14.1.6 of the Auction Rules). Excess Demand is zero (0) in the 2.5 GHz Category, so the Standing Price in this Category remains the same. This means that Bidder A's five (5) lots in the 2.5 GHz Category need to be designated by IDA as Standing High Bids at the Standing Price after Round 1 (see Section 14.4.2(a) of the Auction Rules).

4.2. In Round 2, Bidder A cannot decrease the number of lots at the Standing Price for the 2.5 GHz Category in its Bid compared to Round 1, because the Excess Demand for that Category was zero (0) in Round 1 (see Section 14.4.3 of the Auction Rules). However, Bidder A may increase the number of lots at the Standing Price for

the 2.5 GHz Category in its Bid compared to Round 1 (see Section 14.3.1 of the Auction Rules).

4.3. Bidder A switches two (2) lots from the 700 MHz Category to two (2) lots in the 2.5 GHz Category. The Switch Amount for the 2.5 GHz Category is ten (10) MHz. The Reduction Amount for the two (2) lots from the 700 MHz Category is minus twenty (-20) MHz. As the Switch Amount for the 2.5 GHz Category is only ten (10) MHz, Bidder A is required to provide an Exit Bid for 700 MHz lots covering the shortfall between the Reduction Amount for the 700 MHz Category and the Switch Amount for the 2.5 GHz Category, namely ten (10) MHz. Bidder A provides an Exit Price of S$21,500,000 for one (1) lot in the 700 MHz Category, which is no less than the Standing Price of the last completed Round (S$20,000,000 in Round 1), but is less than the Standing Price of S$22,000,000.

Section 5 SWITCHING FROM PAIRED TO UNPAIRED AND EXIT BID WITHOUT AN EXIT PRICE

Category	700 MHz	900 MHz	2.5 GHz	
Available lots (with Winning New Entrant Bidder and all FROR lots exercised)	9	1	9	Overall cap
Remaining Spectrum Cap (in MHz) for an Existing MNO	40 (i.e. 4 lots)	10 (i.e. 1 lot; excluding FROR lot)	n/a	65 (excluding FROR lot)
Round 1				
Standing Price (S$ per lot)	20,000,000	20,000,000	3,000,000	Next round eligibility
Bidder A's Bid (number of lots)	3	1	5 SHBs at SP	65
Round 2				
Standing Price (S$ per lot)	22,000,000	22,000,000	3,000,000	Next round eligibility
Bidder A's Bid (number of lots)	1	1	5 SHBs at SP 3 new lots at SP	60
Switch Amount	0	0	15	
Reduction Amount	-20	0	0	
Exit Bid (number of lots)	1	n/a	n/a	
Exit Price (S$ per lot)	-	n/a	n/a	

SP: Standing Price, SHB: Standing High Bid

5.1. This example (Section 5 Switching from Paired to Unpaired and Exit Bid without an Exit Price) is based on the same assumptions as those in Section 3 (Example on Switching from Paired to Unpaired and Eligibility). The Bids submitted in Round 1 are also the same. After Round 1 is complete, the value of Excess Demand is calculated with respect to each Category. Excess Demand is strictly positive in the 700 MHz and 900 MHz Categories and thus the Standing Price increases in these two Categories by an Increment (see Section 14.1.6 of the Auction Rules). Excess Demand is zero (0) in the 2.5 GHz Category, so Bidder A's five (5) lots in the 2.5 GHz Category are designated as Standing High Bids at the Standing Price after Round 1.

5.2. Bidder A switches two (2) lots from the 700 MHz Category to three (3) lots in the 2.5 GHz Category. The Switch Amount for the 2.5 GHz Category is fifteen (15) MHz, whereas the Reduction Amount for the 700 MHz Category is minus twenty (-20) MHz. As the Switch Amount for the 2.5 GHz Category is only fifteen (15) MHz, Bidder A is required to provide an Exit Bid for 700 MHz lots covering the difference between the Reduction Amount for the 700

MHz Category and the Switch Amount for the 2.5 GHz Category, namely five (5) MHz. As this is a special case (see Section 14.3.5 of the Auction Rules), Bidder A is not required to submit an Exit Price for its Exit Bid (an Exit Bid without an Exit Price). Its Exit Bid is associated with five (5) MHz for the purpose of determining Eligibility for the next Round.

5.3. In Round 3, Bidder A's Eligibility will be 60 MHz, which is Bidder A's Eligibility in Round 2 (65 MHz) less the sum of the MHz associated with the lots for which it submitted an Exit Bid in the 700 MHz Category in Round 2 (5 MHz).

Section 6 SWITCHING FROM UNPAIRED TO PAIRED AND EXIT BID

Category	700 MHz	900 MHz	2.5 GHz	
Available lots (with Winning New Entrant Bidder and all FROR lots exercised)	9	1	9	Overall cap
Remaining Spectrum Cap (in MHz) for an Existing MNO	40 (i.e. 4 lots)	10 (i.e. 1 lot; excluding FROR lot)	n/a	65 (excluding FROR lot)
Round 1				
Standing Price (S$ per lot)	20,000,000	20,000,000	3,000,000	Next round eligibility
Bidder A's Bid (number of lots)	1	1	9	65
Round 2				
Standing Price (S$ per lot)	22,000,000	22,000,000	3,300,000	Next round eligibility
Bidder A's Bid (number of lots)	3	1	3	55
Switch Amount	20	0	0	
Reduction Amount	0	0	-30	
Exit Bid (number of lots)	n/a	n/a	2	
Exit Price (S$ per lot)	n/a	n/a	3,250,000	

6.1.   This example assumes that:

(a)   there is a Winning New Entrant Bidder and thus there are no lots available in the 2.3 GHz Category and at most four (4) lots in the 900 MHz Category, respectively;

(b)   all three Existing MNOs include at least one (1) 900 MHz lot in their Initial Offer (the FROR lot), so the number of available lots in the 900 MHz Category is reduced to one (1) lot; and

(c)   Bidder A submits an Initial Offer for one (1) lot in the 700 MHz Category, two (2) lots in the 900 MHz Category - including the FROR lot - and nine (9) lots in the 2.5 GHz Category.

6.2.   In Round 1, Bidder A's Bid is placed automatically on its behalf and consists of the number of lots for each Category for which Bidder A submitted an Initial Offer (excluding the FROR lot) (see Section 14.2.1 of the Auction Rules). Bidder A is an Existing MNO and included two (2) 900 MHz lots in its Initial Offer. One of these

lots is the FROR lot which it is already guaranteed to win at the Reserve Price. The other lot is included in its Round 1 Bid.

6.3. After Round 1 is complete, Excess Demand is strictly positive in each Category and thus the Standing Price increases in each Category by an Increment (see Section 14.1.6 of the Auction Rules).

6.4. In Round 2, Bidder A increases its demand by two (2) lots in the 700 MHz Category and reduces its demand by six (6) lots in the 2.5 GHz Category. The Switch Amount for the 700 MHz Category is twenty (20) MHz. The Reduction Amount for the six (6) lots from the 2.5 GHz Category is minus thirty (-30) MHz. As the sum of Switch and Reduction Amounts across all categories is negative, Bidder A is required to submit an Exit Bid to cover the shortfall of ten (10) MHz. As Bidder A only reduced demand in the 2.5 GHz Category, it has to submit an Exit Bid for two (2) lots in this Category. Bidder A provides an Exit Price of S$3,250,000 for two (2) lots in 2.5 GHz, which is no less than the Standing Price of the last completed Round (S$3,000,000 in Round 1), but is less than the Standing Price of S$3,300,000.

6.5. In Round 3, Bidder A's Eligibility will be 55 MHz, which is Bidder A's Eligibility in Round 2 (65 MHz) less the sum of the MHz associated with the lots for which it submitted an Exit Bid in the 2.5 GHz Category in Round 2 (10 MHz).

EXAMPLE ON STANDING HIGH BIDS

Category	700 MHz	900 MHz	2.5 GHz	
Available lots (with Winning New Entrant Bidder and all FROR lots exercised)	9	1	9	Overall cap
Spectrum Cap for an Existing MNO (in MHz)	40 (i.e. 4 lots)	10 (i.e. 1 lot, excluding FROR lot)	n/a	65 (excluding FROR lot)
Spectrum Cap for New Entrant	n/a*	0 (excluding New Entrant Spectrum Lot)*	n/a	15 (excluding New Entrant Spectrum Lot)
Round 5 Bids				Next round eligibility
Round 5 Standing Price	24,320,000	24,320,000	3,650,000	
Bidder A's Bid (lots)	3	1	5	65
Bidder B's Bid (lots)	4	1	2	60
Bidder C's Bid (lots)	4	0	5	65
Bidder D's Bid (lots)	1	0	0	10
Round 6 Bids				Next round eligibility
Round 6 Standing Price	25,540,000	25,540,000	3,840,000	
Bidder A's Bid (lots)	1	1	9	65
Switch Amount			20	
Reduction Amount	-20			
Bidder B's Bid (lots)	2	1	6	60
Switch Amount			20	
Reduction Amount	-20			
Bidder C's Bid (lots)	1	0	6	40
Switch Amount			5	
Reduction Amount	-30			
Exit Bid with an exit price (lots)	2			
Exit Price (S$ per lot)	25,300,000			
Exit Bid without an exit price (lots)	1			
Bidder D's Bid (lots)	0	0	0	0
Switch Amount				
Reduction Amount	-10			
Exit Bid (number of lots)	1			
Exit Price (S$ per lot)	25,200,000			

* In the case of the Winning New Entrant Bidder, as it will already have won the New Entrant Spectrum Lot for a total spectrum quantity of 60 MHz, its overall cap for lots that it can bid for in the Quantity Stage of the General Spectrum Auction would effectively be 15 MHz (i.e., 75 MHz - 60 MHz). This means that, if the Winning New Entrant Bidder participates in the Quantity Stage of the General Spectrum Auction, the maximum number of lots it can bid for in the 700 MHz Category is one (1). It will not be able to bid for any lots in the 900 MHz Category, as it will already have won two (2) lots in the 900 MHz Category as part of the New Entrant Spectrum Lot.

7.1.   This example assumes that:

(a)   there is a Winning New Entrant Bidder (Bidder D) and thus there are no lots available in the 2.3 GHz Category and at most four (4) lots in the 900 MHz Category, respectively; and

(b)   all three Existing MNOs include at least one (1) 900 MHz lot in their Initial Offer (the FROR lot), so the number of available lots in the 900 MHz Category is reduced to one (1) lot.

7.2.   This example begins at the end of Round 5. At that point there is strictly positive Excess Demand in each Category. The Excess Demand is three (3) lots in the 700 MHz Category (the number of lots in that Category in the Bids of the four Bidders (Bidders A, B, C and D), in aggregate, is twelve (12) lots compared to nine (9) available lots). The Excess Demand is one (1) lot in the 900 MHz Category (the number of lots in that Category in the Bids of the four Bidders, in aggregate, is two (2) lots compared to one (1) available lot). The Excess Demand is three (3) lots in the 2.5 GHz Category (the number of lots in that Category in the Bids of the four (4) Bidders, in aggregate, is twelve (12) lots compared to nine (9) available lots).

7.3.   In Round 6, the four Bidders place the following Bids:

(a)   Bidder A switches two (2) lots in the 700 MHz Category to four (4) lots in the 2.5 GHz Category. As the sum of the Reduction Amount and Switch Amount is zero (0), Bidder A is not required to submit an Exit Bid.

(b)   Bidder B switches two (2) 700 MHz lots to four (4) 2.5 GHz lots. As the sum of the Reduction Amount and Switch Amount across all Categories is zero (0), Bidder B is not required to submit an Exit Bid.

(c)   Bidder C reduces the number of lots bid for in the 700 MHz Category by three (3), and increases the

number of lots bid for in the 2.5 GHz Category by one (1). The Reduction Amount in the 700 MHz Category of minus thirty (-30) MHz is not fully offset by the Switch Amount in the 2.5 GHz Category of five (5) MHz. Bidder C needs to submit an Exit Bid for two (2) 700 MHz lots with an Exit Price and an Exit Bid for one (1) 700 MHz lot without an Exit Price. Bidder C places an Exit Price of S$25,300,000 for the Exit Bid that requires an Exit Price. Bidder C's Eligibility for the next Round will be reduced by 25 MHz to 40 MHz.

(d) Bidder D reduces the number of lots bid for in the 700 MHz Category by one (1), and submits an Exit Bid with an Exit Price of S$25,200,000 for this one (1) lot.

7.4. At the end of Round 6, the Excess Demand in the 700 MHz Category is zero (0) in the last completed Round (Round 6), and Excess Demand in that same Category was strictly positive in the immediately preceding Round (Round 5). Nine (9) Standing High Bids (equal to the number of lots available in the 700 MHz Category) are designated based on the following process (see Section 14.4.2 of the Auction Rules):

(a) Lots at the Standing Price are designated as Standing High Bids first. These consist of one (1) lot in Bidder A's Bid, two (2) lots in Bidder B's Bid and one (1) lot in Bidder C's Bid. The price associated with these lots is the Standing Price for Round 6, which is the last completed Round. These are Standing High Bids at the Standing Price (see Section 14.4.2(a) of the Auction Rules). There are now four (4) Standing High Bids and five (5) additional Standing High Bids needed;

(b) Lots for which an Exit Bid was submitted are designated Standing High Bids next, in descending order of the Exit Price (see Section 14.4.2(b) of the Auction Rules). These are Standing High Bids at an Exit Price, and consist of two (2) lots in Bidder C's Bid at an Exit Price of S$25,300,000, and one (1) lot in Bidder D's Bid at an Exit Price of S$25,200,000. There are now seven (7) Standing High Bids and two (2) additional Standing High Bids needed;

(c) IDA next designates two (2) lots switched out of the 700 MHz Category as Standing High Bids. These are Standing High Bids at the Prior Standing Price (see Section 14.4.2(c) of the Auction Rules). Bidder A and Bidder B switched a total of four (4) lots out of the 700

MHz Category, but only two (2) Standing High Bids are needed. Bidder B is selected at random and all two (2) of Bidder B's switched lots are designated as Standing High Bids at the Prior Standing Price (S$24,320,000). Bidder B's switch into the 2.5 GHz Category is therefore denied. As all available lots are covered by Standing High Bids, Bidder A's switch to 2.5 GHz is granted in full and no further Standing High Bids are designated.

(d) As all available lots are covered by Standing High Bids, Bidder C's switch into the 2.5 GHz Category is also granted in full. However, assuming for the purposes of illustration that there are still insufficient Standing High Bids to cover all available lots at this point, IDA will designate the required number of Exit Bids without an Exit Price as Split Standing High Bids at the Prior Standing Price. In this alternative scenario, Bidder C, who submitted an Exit Bid without an Exit Price for one (1) lot in the 700 MHz Category would have its Bid retained and therefore its switch into one (1) 2.5 GHz lot would have been denied (see Section 14.4.2(d) of the Auction Rules).

After Round 6:	Standing High Bids (SHB) 700 MHz	Lots at the Standing Price in 900 MHz	Lots at the Standing Price in 2.5 GHz
Bidder A	1 SHB at Standing Price of S$25,540,000	1	9
Bidder B	2 SHBs at Standing Price of S$25,540,000 2 SHBs at Prior St. Price of S$24,320,000	1	2
Bidder C	1 SHB at Standing Price of S$25,540,000 2 SHB at Exit Price of S$25,300,000		6
Bidder D	1 SHB at Exit Price of S$25,200,000		0

7.5. After the end of Round 6 (the last completed Round), but before the start of Round 7, each Bidder will be notified of its Standing High Bids in the 700 MHz Category (see Section 14.6.2(d) of the Auction Rules).

Section 8   RELEASE OF EXIT BID

Category	700 MHz	900 MHz	2.5 GHz	
Available lots (with Winning New Entrant Bidder and all FROR lots exercised)	9	1	9	Overall cap
Remaining Spectrum Cap (in MHz) for an Existing MNO	40 (i.e. 4 lots)	10 (i.e. 1 lot; excluding FROR lot)	n/a	65 (excluding FROR lot)
Round 7				
Standing Price (S$ per lot)	35,000,000	35,000,000	5,000,000	Next round eligibility
Bidder A's Bid (number of lots)	2	1	6	60
Excess demand	1	1	2	
Round 8				
Standing Price (S$ per lot)	38,000,000	38,000,000	5,500,000	Next round eligibility
Bidder A's Bid (number of lots)	3	1	3	55
Switch Amount	10	0	0	
Reduction Amount	0	0	-15	
Exit Bid (number of lots)	n/a	n/a	1	
Exit Price (S$ per lot)	n/a	n/a	5,400,000	
Excess demand before processing	2	1	0 (- 1 at SP)	
Bidder A's Bid after processing (number of lots)	3	1	3 SHBs at SP 1 SHB at Exit of S$5,400,000	
Excess demand after processing	2	1	0	
Round 9				
Standing Price (S$ per lot)	41,000,000	41,000,000	5,500,000	Next round eligibility
Bidder A's Bid (number of lots)	3	1	3 SHBs at SP 1 SHB at Exit of S$5,400,000	55
Excess demand before processing	2	0	1	

Bidder A's Bid after processing (number of lots)	3	1 SHB at SP	3[1]	
Excess demand after processing	2	0	1	

SP: Standing Price, SHB: Standing High Bid

8.1. This example assumes that:

(a) there is a Winning New Entrant Bidder and thus there are no lots available in the 2.3 GHz Category and at most four (4) lots in the 900 MHz Category, respectively;

(b) all three Existing MNOs include at least one (1) 900 MHz lot in their Initial Offer (the FROR lot), so the number of available lots in the 900 MHz Category is reduced to one (1) lot; and

(c) Bidder A submits an Initial Offer for two (2) lots in the 700 MHz Category, two (2) lots in the 900 MHz Category - including the FROR lot - and six (6) lots in the 2.5 GHz Category.

8.2. In Round 1, Bidder A's Bid is placed automatically on its behalf and consists of the number of lots for each Category for which Bidder A submitted an Initial Offer (excluding the FROR lot) (see Section 14.2.1 of the Auction Rules). Bidder A is an Existing MNO and included two (2) 900 MHz lots in its Initial Offer. One of these lots is the FROR lot which it is already guaranteed to win at the Reserve Price. The other lot is included in its Round 1 Bid.

8.3. After Round 1 is complete, the value of Excess Demand is calculated with respect to each Category. Excess Demand is strictly positive in all Categories and thus the Standing Price increases in all Categories by an Increment (see Section 14.1.6 of the Auction Rules). Demand in the following Rounds 2, 3, 4, 5, 6 and 7 remains unchanged.

8.4. In Round 8, Bidder A decides to reduce its demand for the 2.5 GHz Category by three (3) lots. This is associated with a Reduction Amount of minus fifteen (-15) MHz. At the same time, Bidder A increases its demand for the 700 MHz Category by one (1) lot which is associated with a Switch Amount of ten (10) MHz. As the sum of Switch and Reduction Amounts across all Categories is negative, Bidder A is required to submit an Exit Bid covering five

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[1] Another Bidder, however, switches one (1) lot from the 900 MHz Category to two (2) lots in the 2.5 GHz Category.

(5) MHz. Bidder A provides an Exit Bid for one (1) 2.5 GHz lot at an Exit Price of S$5,400,000.

8.5.   At the end of Round 8, the IDA evaluates Excess Demand for all Categories at the Standing Price. Total demand at the Standing Price for 2.5 GHz lots is only eight (8) which means that the IDA will have to determine Standing High Bids for the 2.5 GHz Category. It first designates all Bids at the Standing Price as Standing High Bids at the Standing Price. As Bidder A bid for three (3) lots at the Standing Price, it will obtain three (3) Standing High Bids at the Standing Price.

8.6.   This means the IDA has to designate one (1) lot in the 2.5 GHz Category as a Standing High Bid at an Exit Price to cover all available lots. Bidder A is the only Bidder to submit an Exit Bid for the 2.5 GHz Category, so its Exit Bid for one (1) lot at an Exit Price of S$5,400,000 is designated as a Standing High Bid at an Exit Price.

8.7.   For Round 9, the Standing Price for all other Categories is increased by an Increment whereas the Standing Price for the 2.5 GHz Category remains unchanged.

8.8.   In Round 9, Bidder A is not allowed to reduce its Standing High Bids in the 2.5 GHz Category. Bidder A decides to keep its demand in all other Categories unchanged as well. Another Bidder, however, switches one (1) lot from the 900 MHz Category to two (2) lots in the 2.5 GHz Category.

8.9.   At the end of Round 9, IDA evaluates Excess Demand at the Standing Price. In the 900 MHz Category, demand at the Standing Price is exactly equal to the supply of one (1) lot. Bidder A's Bid for one (1) lot at the Standing Price is thus designated as a Standing High Bid at the Standing Price in this Category.

8.10.   There is now Excess Demand at the Standing Price in the 2.5 GHz Category. IDA therefore releases all Bids it had designated as Standing High Bids in this Category in Round 8 (see Section 14.4.4(d) of the Auction Rules). This includes Bidder A's Standing High Bids at the Standing Price as well as its Standing High Bid at an Exit Price. Note that this reduces Bidder A's Bid to three (3) lots at the Standing Price in this Category.

Section 9   FREE ELIGIBILITY WHEN RELEASING DENIED SWITCH

Category	700 MHz	900 MHz	2.5 GHz	
Available lots (with Winning New Entrant Bidder and all FROR lots exercised)	9	1	9	Overall cap
Remaining Spectrum Cap (in MHz) for an Existing MNO	40 (i.e. 4 lots)	10 (i.e. 1 lot; excluding FROR lot)	n/a	65 (excluding FROR lot)
Round 7				
Standing Price (S$ per lot)	35,000,000	35,000,000	5,000,000	Next round eligibility
Bidder A's Bid (number of lots)	2	1	2	40
Excess demand	1	1	1	
Round 8				
Standing Price (S$ per lot)	38,000,000	38,000,000	5,500,000	Next round eligibility
Bidder A's Bid (number of lots)	1	1	4	40
Switch Amount	0	0	10	
Reduction Amount	-10	0	0	
Excess demand before processing	0 (- 1 at SP)	2	3	
Bidder A's Bid after processing (number of lots)	1 SHB at SP 1 SHB at Prior SP[2]	1[3]	2	
Excess demand after processing	0	2	1	
Round 9				
Standing Price (S$ per lot)	38,000,000	41,000,000	6,000,000	Next round eligibility
Bidder A's Bid (number of lots)	1 SHB at SP 1 SHB at Prior SP	1	2	40 (inclusive of Free Eligibility)
Excess demand before processing	0	1	1	Free Eligibility
Bidder A's Bid after processing (number of lots)	1 SHB at SP[4]	1[5]	2	10

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[2] Another Bidder also switches one (1) lot from the 700 MHz Category to the 900 MHz Category.

[3] Another Bidder also switches one (1) lot from the 700 MHz Category to the 900 MHz Category.

[4] The other Bidder now switches back one (1) lot from the 900 MHz Category to the 700 MHz Category at the Standing Price.

[5] The other Bidder now switches back one (1) lot from the 900 MHz Category to the 700 MHz Category at the Standing Price.

Excess demand after processing	0	1	1	
Round 10				
Standing Price (S$ per lot)	38,000,000	45,000,000	6,500,000	Next round eligibility
Bidder A's Bid (number of lots)	1 SHB at SP	1	2	30
Exit Bid	n/a	n/a	n/a	10 MHz of Free Eligibility

SP: Standing Price, SHB: Standing High Bid

9.1. This example assumes that:

(a) there is a Winning New Entrant Bidder and thus there are no lots available in the 2.3 GHz Category and at most four (4) lots in the 900 MHz Category, respectively;

(b) all three Existing MNOs include at least one (1) 900 MHz lot in their Initial Offer (the FROR lot), so the number of available lots in the 900 MHz Category is reduced to one (1) lot; and

(c) Bidder A submits an Initial Offer for two (2) lots in the 700 MHz Category, two (2) lots in the 900 MHz Category - including the FROR lot - and two (2) lots in the 2.5 GHz Category.

9.2. In Round 1, Bidder A's Bid is placed automatically on its behalf and consists of the number of lots for each Category for which Bidder A submitted an Initial Offer (excluding the FROR lot) (see Section 14.2.1 of the Auction Rules). Bidder A is an Existing MNO and included two (2) 900 MHz lots in its Initial Offer. One of these lots is the FROR lot which it is already guaranteed to win at the Reserve Price. The other lot is included in its Round 1 Bid.

9.3. After Round 1 is complete, the value of Excess Demand is calculated with respect to each Category. Excess Demand is strictly positive in all Categories and thus the Standing Price increases in all Categories by an Increment (see Section 14.1.6 of the Auction Rules). Demand in the following Rounds 2, 3, 4, 5, 6 and 7 remains unchanged.

9.4. In Round 8, Bidder A submits a Bid to switch one (1) lot in the 700 MHz Category to two (2) lots in the 2.5 GHz Category. As the sum of the Switch and Reduction Amounts across all Categories is zero (0), Bidder A does not need to provide an Exit Bid for the reduction in the 700 MHz Category. In Round 8, another Bidder also

switches one (1) lot from the 700 MHz Category to the 900 MHz Category.

9.5. At the end of Round 8, the IDA evaluates Excess Demand for all Categories at the Standing Price. Total demand at the Standing Price for 700 MHz lots is only eight (8) which means that the IDA will have to determine Standing High Bids for this Category:

(a) It first designates all Bids at the Standing Price as Standing High Bids at the Standing Price. This includes one (1) Standing High Bid at the Standing Price for Bidder A.

(b) In a second step, the IDA designates Exit Bids in the 700 MHz Category as Standing High Bids. However, no Exit Bids were submitted for this Category in Round 8.

(c) IDA next designates one (1) lot switched out of the 700 MHz Category as a Standing High Bid. This is a Standing High Bid at the Prior Standing Price. Bidder A and the other Bidder switched a total of two (2) lots out of the 700 MHz Category, but only one (1) Standing High Bid is needed. Bidder A is selected at random and its switch into the 2.5 GHz Category is denied and the switched lot is retained in the 700 MHz Category and designated as a Standing High Bid at the Prior Standing Price (S$35,000,000). As all available lots are covered by Standing High Bids, the other Bidder's switch to 900 MHz is granted in full and no further Standing High Bids are designated.

9.6. At the end of Round 8, Bidder A holds one (1) Standing High Bid at the Standing Price and one (1) Standing High Bid at the Prior Standing Price in the 700 MHz Category. Its switch into the 2.5 GHz Category is denied and it is now bidding for a total of two (2) lots in this Category. In the 700 MHz Category, Bidder A is holding two Standing High Bids, one at the Standing Price and the other at the Prior Standing Price.

9.7. The Standing Price for the 900 MHz and 2.5 GHz Categories is increased. The Standing Price for the 700 MHz Category remains unchanged. In Round 9, Bidder A is not allowed to change its Standing High Bids in the 700 MHz Category. It also decides to keep its demand for lots in the other Categories unchanged. However, the other Bidder now switches back one (1) lot from the 900 MHz Category to the 700 MHz Category at the Standing Price.

9.8. At the end of Round 9, IDA determines Excess Demand at the Standing Price for all Categories. There is still positive Excess

Demand for the 900 MHz and 2.5 GHz Categories. While demand at the Standing Price in the 700 MHz Category has increased, Excess Demand in this Category remains at zero (0), so IDA can release Standing High Bids in reverse order in which they were designated in Section 9.5 above (see Section 14.4.4(e) of the Auction Rules). Only one Standing High Bid can be released. Bidder A's Standing High Bid at the Prior Standing Price is the first in line to be released. Releasing this Standing High Bid creates Free Eligibility of 10 MHz (determined as the MHz associated with the released lot) (see Section 14.4.5(a) of the Auction Rules). Bidder A will be notified of the Free Eligibility it receives as part of this release. It can use this Free Eligibility to increase its demand at the Standing Price in any Category in the following Round (see Sections 14.4.5(a) and 14.4.6 of the Auction Rules).

9.9.   As there is only Excess Demand for the 900 MHz and 2.5 GHz Categories and no Excess Demand for the 700 MHz Category at the Standing Price, only the Standing Price for the 900 MHz and 2.5 GHz Categories is increased for Round 10.

9.10.   In Round 10, if Bidder A decides not to use its Free Eligibility to increase its demand, it will be required to submit an Exit Bid without an Exit Price for 10 MHz of Free Eligibility. This will reduce its Eligibility for Round 11 by 10 MHz (see Section 14.4.6 of the Auction Rules).

Section 10 FREE ELIGIBILITY FROM RELEASING SPLIT STANDING HIGH BID

Category	700 MHz	900 MHz	2.5 GHz	
Available lots (with Winning New Entrant Bidder and all FROR lots exercised)	9	1	9	Overall cap
Remaining Spectrum Cap (in MHz) for an Existing MNO	40 (i.e. 4 lots)	10 (i.e. 1 lot; excluding FROR lot)	n/a	65 (excluding FROR lot)
Round 7				
Standing Price (S$ per lot)	35,000,000	35,000,000	5,000,000	Next round eligibility
Bidder A's Bid (number of lots)	2	1	2	40
Excess demand	1	1	1	
Round 8				
Standing Price (S$ per lot)	38,000,000	38,000,000	5,500,000	Next round eligibility
Bidder A's Bid (number of lots)	1	1	3	35
Switch Amount	0	0	5	
Reduction Amount	-10	0	0	
Exit Bid (number of lots)	1	n/a	n/a	
Exit Price	n/a	n/a	n/a	
Excess demand before processing	0 (- 1 at SP)	1	3	
Bidder A's Bid after processing (number of lots)	1 SHB at SP 1 Split SHB at prior SP[6]	1	2[7]	
Excess demand after processing	0	1	2	
Round 9				
Standing Price (S$ per lot)	38,000,000	41,000,000	6,000,000	Next round eligibility
Bidder A's Bid (number of lots)	1 SHB at SP 1 Split SHB at prior SP	1	2	35 (inclusive of Free Eligibility)
Excess demand before processing	0	0	2	Free Eligibility
Bidder A's Bid after processing (number of lots)	1 SHB at SP[8]	1 SHB at SP[9]	2	5

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[6] Another Bidder also switches one (1) lot from the 700 MHz Category to the 2.5 GHz Category.

[7] Another Bidder also switches one (1) lot from the 700 MHz Category to the 2.5 GHz Category.

[8] Another Bidder switches one (1) lot from the 900 MHz Category to the 700 MHz Category.

[9] Another Bidder switches one (1) lot from the 900 MHz Category to the 700 MHz Category.

Excess demand after processing	0	0	2	
Round 10				
Standing Price (S$ per lot)	38,000,000	41,000,000	6,500,000	Next round eligibility
Bidder A's Bid (number of lots)	1 SHB at SP	1 SHB at SP	3	35

SP: Standing Price, SHB: Standing High Bid

10.1. This example (Section 10 Free Eligibility from Releasing Split Standing High Bid) is based on the same assumptions as the previous one (Section 9 Free Eligibility when Releasing Denied Switch). After Round 1 is complete, the value of Excess Demand is calculated for each Category. Excess Demand is strictly positive in all Categories and thus the Standing Price increases in all Categories by an Increment (see Section 14.1.6 of the Auction Rules). Demand in the following Rounds 2, 3, 4, 5, 6 and 7 remains unchanged.

10.2. In Round 8, Bidder A submits a Bid to switch one (1) lot in the 700 MHz Category to one (1) lot in the 2.5 GHz Category. As the sum of the Switch and Reduction Amounts across all Categories is negative, the sum of the Switch and Reduction Amounts across 700 MHz and 900 MHz is negative, and the Switch Amount for the 2.5 GHz Category is positive and ends in 5, Bidder A is required to submit an Exit Bid without an Exit Price for one (1) lot in the 700 MHz Category (see Section 14.3.5 of the Auction Rules). This Exit Bid is associated with Eligibility of 5 MHz. Bidder A's Eligibility for the next Round is thus reduced to 35 MHz. In Round 8, another Bidder also switches one (1) lot from the 700 MHz Category to the 2.5 GHz Category.

10.3. At the end of Round 8, the IDA evaluates Excess Demand for all Categories at the Standing Price. Total demand at the Standing Price for 700 MHz lots is only eight (8) which means that the IDA will have to determine Standing High Bids for this Category:

(a) It first designates all Bids at the Standing Price as Standing High Bids at the Standing Price. This includes one (1) Standing High Bid at the Standing Price for Bidder A.

(b) In a second step, the IDA designates Exit Bids in the 700 MHz Category as Standing High Bids. However, no Exit Bids for which the Bidder specified an Exit Price were submitted for this Category in Round 5.

(c) In a third step, the IDA designates Standing High Bids at the Prior Standing Price, by denying switches

out of the 700 MHz Category and retaining the relevant lot(s) in the 700 MHz Category. However, in this case, both Bidder A and the other Bidder had each switched out 5 MHz from the 700 MHz Category to the 2.5 GHz Category while submitting Exit Bids without an Exit Price associated with an Eligibility of 5 MHz. Since both switches out of the 700 MHz Category involved Exit Bids without an Exit Price associated with Eligibility of 5 MHz, IDA does not designate a Standing High Bid at the Prior Standing Price.

(d) In a fourth step, IDA designates one (1) lot from the 700 MHz Category, for which 5 MHz was reduced for purposes of switching to the 2.5 GHz Category and the residual 5 MHz was exempt from the requirement to submit an Exit Price, as a Standing High Bid. This is a Split Standing High Bid at the Prior Standing Price, and even though this is a Standing High Bid for a quantity of 10 MHz of spectrum, nevertheless, Bidder A's Eligibility is reduced by 5 MHz as mentioned in Section 10.2 above (see Section 14.4.2(d) of the Auction Rules). Bidder A and the other Bidder switched a total of two (2) lots out of the 700 MHz Category, but only one (1) Standing High Bid is needed. Bidder A is selected at random and its switched lot is retained and designated as a Split Standing High Bid at the Prior Standing Price (S$35,000,000). As all available lots are covered by Standing High Bids, the other Bidder's switch to 2.5 GHz is granted in full and no further Standing High Bids are designated.

10.4. At the end of Round 8, Bidder A holds one (1) Standing High Bid at the Standing Price and one (1) Split Standing High Bid at the Prior Standing Price in the 700 MHz Category. Its switch into the 2.5 GHz Category is denied and it is now bidding for a total of two (2) lots at the Standing Price in this Category.

10.5. The Standing Price for the 900 MHz and 2.5 GHz Categories is increased. The Standing Price for the 700 MHz Category remains unchanged as there was no Excess Demand at the Standing Price of this Category in the previous Round. In Round 9, Bidder A is not allowed to reduce its Standing High Bids in the 700 MHz Category. It also decides to keep its demand for lots in the other Categories unchanged. However, another Bidder switches one (1) lot from the 900 MHz Category to the 700 MHz Category.

10.6. At the end of Round 9, IDA determines Excess Demand at the Standing Price for all Categories. There is still positive Excess Demand for the 2.5 GHz Category. Excess Demand at the Standing Price is exactly zero (0) in the 900 MHz Category, so all Bids at the Standing Price are designated as Standing High Bids at the Standing Price in this Category. Although Excess Demand in the 700 MHz Category remains at zero (0), demand at the Standing Price for this Category has increased, so IDA can release Standing High Bids in reverse order in which they were designated in Section 10.5 above (see Section 14.4.4(e) of the Auction Rules). In this example, only one Standing High Bid can be released. Bidder A's Split Standing High Bid at the Prior Standing Price is the first in line to be released. Releasing this Split Standing High Bid creates Free Eligibility of 5 MHz (see Section 14.4.5(b) of the Auction Rules). Bidder A will be notified of the Free Eligibility it receives as part of this release. It can use this Free Eligibility to increase its demand at the Standing Price in any Category in the following round. For the avoidance of doubt, the creation of 5 MHz of Free Eligibility does not restore the 5 MHz of Eligibility that Bidder A lost earlier in Round 5 (as mentioned in Section 10.2 above). As such, Bidder A's Eligibility for Round 10 will be 35 MHz, the same as its Eligibility for Round 9.

10.7. As there is only Excess Demand in the 2.5 GHz Category and no Excess Demand for the 700 MHz or 900 MHz Categories at the Standing Price, only the Standing Price for the 2.5 GHz Category is increased for Round 10.

10.8. In Round 10, if Bidder A decides to use its Free Eligibility to increase its demand in the 2.5 GHz Category by one (1) lot, its Eligibility will remain unchanged for Round 11.

Section 11   SWITCH DENIED OWING TO UNPAIRED SPECTRUM CAP

Category	700 MHz	900 MHz	2.3 GHz	2.5 GHz	
Available lots (with all FROR lots exercised)	9	3	8	9	Overall cap
Remaining Spectrum Cap (in MHz) for an Existing MNO	40	20 (excluding FROR lot)	45		90 (excluding FROR lot)
Round 7					
Standing Price (S$ per lot)	35,000,000	20,000,000	5,000,000	5,000,000	Next round eligibility
Bidder A's Bid (number of lots)	4	0	0	9	85
Excess demand	3	0	1	1	
Round 8					
Standing Price (S$ per lot)	38,000,000	20,000,000	5,500,000	5,500,000	Next round eligibility
Bidder A's Bid (number of lots)	1	0	6	0	40 (inclusive of Free Eligibility)
Switch Amount	0	0	30	0	
Reduction Amount	-30	0	0	-45	
Exit Bid (number of lots)				9	
Exit Price (S$ per lot)				5,300,000	
Excess demand before processing	0	0	7	0 (-9 at SP)	Free Eligibility
Bidder A's Bid after processing (number of lots)	1 SHB at SP	0	0	9 SHBs[10] at Exit of S$5,300,000	30
Excess demand after processing	0	0	1	0	
Round 9					
Standing Price (S$ per lot)	38,000,000	20,000,000	6,000,000	5,500,000	Next round eligibility
Bidder A's Bid (number of lots)	1 SHB at SP	0	0	9 SHBs at Exit of S$5,300,000	40

[10] Another Bidder submits an Exit Bid for a single 2.5 GHz lot at an Exit Price of S$5,100,000.

	3 new lots at SP				
Excess demand	3	0	1	0	

SP: Standing Price, SHB: Standing High Bid

11.1. This example assumes that:

(a) there is no Winning New Entrant Bidder and thus there are eight (8) lots available in the 2.3 GHz Category and at most six (6) lots in the 900 MHz Category, respectively;

(b) all three Existing MNOs include at least one (1) 900 MHz lot in their Initial Offer (the FROR lot), so the number of available lots in the 900 MHz Category is reduced to three (3) lots; and

(c) Bidder A submits an Initial Offer for four (4) lots in the 700 MHz Category, one (1) lot in the 900 MHz Category (which is the FROR lot) and nine (9) lots in the 2.5 GHz Category.

11.2. In Round 1, Bidder A's Bid is placed automatically on its behalf and consists of the number of lots for each Category for which Bidder A submitted an Initial Offer (excluding the FROR lot) (see Section 14.2.1 of the Auction Rules). Bidder A is an Existing MNO and included one (1) 900 MHz lot in its Initial Offer which is the FROR lot. No further 900 MHz lots are included in its first Round Bid.

11.3. After Round 1 is complete, the value of Excess Demand is calculated for each Category. Excess Demand is strictly positive in the 700 MHz, 2.3 GHz and 2.5 GHz Categories thus the Standing Price increases in all of these Categories by an Increment (see Section 14.1.6 of the Auction Rules). There is no Excess Demand in the 900 MHz Category, so all 900 MHz lots bid for at the Standing Price in Round 1 are designated as Standing High Bids. Demand in the following Rounds 2, 3, 4, 5, 6 and 7 remains unchanged.

11.4. In Round 8, Bidder A decides to drop the nine (9) 2.5 GHz lots it has been bidding for and submit an Exit Bid for nine (9) lots with an Exit Price of S$5,300,000 in this Category. At the same time, Bidder A switches three (3) 700 MHz lots to six (6) 2.3 GHz lots. Another Bidder submits an Exit Bid for a single 2.5 GHz lot at an Exit Price of S$5,100,000.

11.5. At the end of Round 8, the IDA evaluates Excess Demand for all Categories at the Standing Price. Total demand at the Standing Price for 2.5 GHz is zero (0) which means that the IDA will have to determine Standing High Bids for this Category:

(a) It first designates all Bids at the Standing Price as Standing High Bids at the Standing Price. There are no such Bids.

(b) In a second step, the IDA designates Exit Bids in the 2.5 GHz Category as Standing High Bids in descending price order. Bidder A submitted the highest Exit Price, so its Exit Bid is used to fill the available lots. Designating the nine (9) lots included in its Exit Bid as Standing High Bids at An Exit Price of S$5,300,000 fills all available lots in this Category. No further Exit Bids need to be considered at this point.

11.6. Designating the lots included in Bidder A's Exit Bid as Standing High Bids and allowing Bidder A to switch six (6) lots into the 2.3 GHz Category would violate the spectrum cap of 45 MHz for unpaired spectrum as Bidder A could win up to 75 MHz of unpaired spectrum as a result of this. IDA will therefore have to deny Bidder A's switch into the 2.3 GHz Category. Bidder A will instead receive Free Eligibility of 30 MHz which it can use in the following Round to increase its demand in another Category (see Section 14.4.5(d) of the Auction Rules).

11.7. Excess Demand at the Standing Price is also zero (0) for the 700 MHZ Category. IDA designates all 700 MHz lots bid for at the Standing Price in Round 8 as Standing High Bids at the Standing Price including the one (1) lot bid for by Bidder A. This covers all available lots in this Category.

11.8. The Standing Price for the 2.3 GHz Category is increased. The Standing Price for the 700 MHz, 900 MHz and 2.5 GHz Categories remains unchanged as there was no Excess Demand at the Standing Price of these Categories in the previous Round. In Round 9, Bidder A is not allowed to change its Standing High Bids in the 700 MHz and 2.5 GHz Categories. It decides to use the 30 MHz of Free Eligibility to increase its demand for lots in the 700 MHz Category by three (3). As Bidder A uses all of the Free Eligibility in Round 9, it will maintain its Eligibility of 40 MHz for the next Round.

Section 12 SWITCH PRIORITY

Category	700 MHz	900 MHz	2.3 GHz	2.5 GHz	
Available lots (with all FROR lots exercised)	9	3	8	9	Overall cap
Remaining Spectrum Cap (in MHz) for an Existing MNO	40	20 (excluding FROR lot)	45		90 (excluding FROR lot)
Round 7					
Standing Price (S$ per lot)	35,000,000	20,000,000	5,000,000	5,000,000	Next round eligibility
Bidder A's Bid (number of lots)	2	1 SHB at SP	0	8	70
Excess demand	1	0	1	4	
Round 8					
Standing Price (S$ per lot)	38,000,000	20,000,000	5,500,000	5,500,000	Next round eligibility
Bidder A's Bid (number of lots)	4	1 SHB at SP	4	0	70
Switch Amount	20	0	20	0	
Reduction Amount	0	0	0	-40	
Switch Priority	1		2		
Excess demand before processing	3	0	5	0 (-4 at SP)	
Bidder A's Bid after processing (number of lots)	4	1 SHB at SP	0	4 SHBs at prior SP	
Excess demand after processing	3	0	1	0	

SP: Standing Price, SHB: Standing High Bid

12.1. This example assumes that:

(a) there is no Winning New Entrant Bidder and thus there are eight (8) lots available in the 2.3 GHz Category and at most six (6) lots in the 900 MHz Category, respectively;

(b) all three Existing MNOs include at least one (1) 900 MHz lot in their Initial Offer (the FROR lot), so the

number of available lots in the 900 MHz Category is reduced to three (3) lots; and

    (c)   Bidder A submits an Initial Offer for two (2) lots in the 700 MHz Category, two (2) lots in the 900 MHz Category (one (1) of which is the FROR lot) and eight (8) lots in the 2.5 GHz Category.

12.2.   In Round 1, Bidder A's Bid is placed automatically on its behalf and consists of the number of lots for each Category for which Bidder A submitted an Initial Offer (excluding the FROR lot) (see Section 14.2.1 of the Auction Rules). Bidder A is an Existing MNO and included two (2) 900 MHz lots in its Initial Offer, one of which is the FROR lot. This means its Round 1 Bid only includes one (1) 900 MHz lot.

12.3.   After Round 1 is complete, the value of Excess Demand is calculated with respect to each Category. Excess Demand is strictly positive in the 700 MHz, 2.3 GHz and 2.5 GHz Categories thus the Standing Price increases in all of these Categories by an Increment (see Section 14.1.6 of the Auction Rules). There is no Excess Demand in the 900 MHz Category, so all lots bid for at the Standing Price in Round 1 are designated as Standing High Bids including the one (1) lot that Bidder A bid for in the first Round. Demand in the following Rounds 2, 3, 4, 5, 6 and 7 remains unchanged.

12.4.   In Round 8, Bidder A decides to drop the eight (8) 2.5 GHz lots it has been bidding for and switch them to two (2) 700 MHz lots and four (4) 2.3 GHz lots. The Switch Amounts in 700 MHz (20 MHz) and 2.3 GHz (20 MHz) offset the Reduction Amount in 2.5 GHz (-40 MHz), so Bidder A is not required to submit an Exit Bid for the 2.5 GHz Category. As Bidder A increases its demand in more than one Category, it will have to name a switch priority (1 being the highest priority, 2 the second highest…) for the Categories with positive Switch Amounts (see Section 14.3.4 of the Auction Rules). It submits a switch priority of one (1) for 700 MHz and two (2) for 2.3 GHz. This means that if the IDA has to partially retain the switch from 2.5 GHz, it will deny the switch into 2.3 GHz first if this does not violate any of the spectrum caps and also minimises Free Eligibility.

12.5.   At the end of the Round, the IDA determines Excess Demand for each Category. Total demand at the Standing Price for the 2.5 GHz lots is only five (5), so the IDA needs to designate Standing High Bids in this Category. The other Bidders left their demand unchanged in this Category and bid for a total of five (5) lots at the Standing Price. These lots are designated as Standing High Bids at the Standing Price first. This leaves four (4) lots not covered by

Standing High Bids in this Category. Bidder A is the only Bidder to reduce its demand in this Category, so four (4) lots in the 2.5 GHz Category will be designated as Standing High Bids at the Prior Standing Price from Bidder A. There are a number of possible options to allow the remaining four (4) lots from the 2.5 GHz Category to be switched into the 700 MHz and the 2.3 GHz Categories:

(a) Allow Bidder A to switch the four (4) lots in the 2.5 GHz Category into two (2) lots in the 700 MHz Category;

(b) Allow Bidder A to switch the four (4) lots in the 2.5 GHz Category to four (4) lots in the 2.3 GHz Category;

(c) Allow Bidder A to switch two (2) of the four (4) lots in the 2.5 GHz Category into one (1) lot in the 700 MHz Category, and the other two (2) of the four (4) lots in the 2.5 GHz Category into two (2) lots in the 2.3 GHz Category.

12.6. To decide between these options, IDA uses the following steps in order:

(i) Eliminate all options that lead to violations of the spectrum caps (see Sections 14.3.4 and 14.4.1 of the Auction Rules);

(ii) Eliminate all options that do not lead to the lowest Free Eligibility (see Section 14.3.4 of the Auction Rules); and

(iii) Use the switch priority to choose between the remaining options (see Section 14.3.4 of the Auction Rules).

12.7. Options (a), (b) and (c) do not violate any of the spectrum caps and also do not lead to Free Eligibility being allocated to Bidder A. The IDA will therefore use the switch priority to decide which lots it should deny to Bidder A. Option (a) maximises the number of 700 MHz lots switched into by Bidder A and respects the switch priority best across all possible options. The IDA will therefore deny the switch into 2.3 GHz completely, but allow Bidder A to switch into the 700 MHz Category.

Category	700 MHz	900 MHz	2.3 GHz	2.5 GHz	
Available lots (with all FROR lots exercised)	9	3	8	9	Overall cap
Remaining Spectrum Cap (in MHz) for an Existing MNO	40	20 (excluding FROR lot)	45		90 (excluding FROR lot)
Round 7					
Standing Price (S$ per lot)	35,000,000	35,000,000	5,000,000	5,000,000	Next round eligibility
Bidder A's Bid (number of lots)	2	1	0	8	70
Excess demand	1	1	1	2	
Round 8					
Standing Price (S$ per lot)	38,000,000	38,000,000	5,500,000	5,500,000	Next round eligibility
Bidder A's Bid (number of lots)	1	2	8	0	70
Switch Amount	0	10	40	0	
Reduction Amount	-10	0	0	-40	
Switch Priority		2	1		
Excess demand before processing	0	2	9	0 (-6 at SP)	
Bidder A's Bid after processing (number of lots)	1 SHB at SP	2	2	6 SHBs at prior SP	
Excess demand after processing	0	2	3	0	

SP: Standing Price, SHB: Standing High Bid

13.1. This example (Section 13 Switch Priority Partially Overruled to Minimise Free Eligibility) is based on the same assumptions as the previous one (Section 12 Switch Priority). In Round 8, Bidder A switches one (1) lot from the 700 MHz Category and eight (8) lots from the 2.5 GHz Category to one (1) lot from the 900 MHz Category and eight (8) lots from the 2.3 GHz Category. The sum of Switch and Reduction Amounts across all Categories is zero (0), so Bidder A does not submit an Exit Bid for 700 MHz or 2.5 GHz lots. As Bidder A increases its demand in more than one Category, it will have to name a switch priority. It submits a switch priority of

one (1) for the 2.3 GHz Category and two (2) for the 900 MHz Category. This means that if the IDA has to partially retain these switches, it will allow the switch into the 2.3 GHz Category first before allowing the switch into the 900 MHz Category, provided this does not violate any of the spectrum caps and minimises Free Eligibility.

13.2.   At the end of the Round, the IDA determines Excess Demand for each Category. Excess Demand is zero (0) at the Standing Price in the 700 MHz Category, so IDA designates all lots bid for at the Standing Price as Standing High Bids at the Standing Price. As this covers all available lots in this Category, no further lots need to be retained.

13.3.   There is also excess supply at the Standing Price in the 2.5 GHz Category, so the IDA needs to designate Standing High Bids in this Category. The other Bidders left their demand unchanged in this Category and bid for a total of three (3) lots at the Standing Price. These lots are designated as Standing High Bids at the Standing Price first. This leaves six (6) lots not covered by Standing High Bids in this Category. Bidder A is the only Bidder to reduce its demand in this Category, so some of the lots that Bidder A bid for at the previous Standing Price will need to be retained and some of its switch to the 900 MHz and 2.3 GHz Categories will need to be denied. Six (6) 2.5 GHz lots will be designated as Standing High Bids at the Prior Standing Price from Bidder A. There are a number of possible options to allow Bidder A to switch the (1) one lot in the 700 MHz Category and the remaining two (2) lots in the 2.5 GHz Category into the 900 MHz and/or the 2.3 GHz Categories:

    (a)   Allow Bidder A to switch the one (1) lot in the 700 MHz Category and the two (2) lots in the 2.5 GHz Category into four (4) lots in the 2.3 GHz Category. This option would violate the unpaired spectrum cap of 45 MHz as it might lead to Bidder A winning a total of 50 MHz across the 2.3 GHz and 2.5 GHz Categories;

    (b)   Allow Bidder A to switch the one (1) lot in the 700 MHz Category and the two (2) lots in the 2.5 GHz Category to one (1) lot in the 900 MHz Category and two (2) lots in the 2.3 GHz Category. This option would not violate the unpaired spectrum cap and would also not create any Free Eligibility;

    (c)   Allow Bidder A to switch the one (1) lot in the 700 MHz Category and the two (2) lots in the 2.5 GHz Category to three (3) lots in the 2.3 GHz Category.

This option would not violate the unpaired spectrum cap of 45 MHz. However, it would create 5 MHz of Free Eligibility for the Bidder.

13.4. Option (a) is rejected by the IDA as it violates the unpaired spectrum cap. Option (b) does not lead to Free Eligibility for Bidder A whereas Option (c) does. Option (c) better reflects the switch priority submitted by Bidder A as it allows for more lots being switched into the 2.3 GHz Category. However, as it creates more Free Eligibility than Option (b), IDA will reject it and use Option (b) instead.

Section 14 RETAINED SINGLE UNPAIRED LOT

Category	700 MHz	900 MHz	2.3 GHz	2.5 GHz	
Available lots (with all FROR lots exercised)	9	3	8	9	Overall cap
Remaining Spectrum Cap (in MHz) for an Existing MNO	40	20 (excluding FROR lot)	45		90 (excluding FROR lot)
Round 7					
Standing Price (S$ per lot)	35,000,000	35,000,000	5,000,000	5,000,000	Next round eligibility
Bidder A's Bid (number of lots)	3	1	2	7	85
Excess demand before/after processing	1	1	1	6	
Round 8					
Standing Price (S$ per lot)	38,000,000	38,000,000	5,500,000	5,500,000	Next round eligibility
Bidder A's Bid (number of lots)	2	0	0	0	20
Reduction Amount	-10	-10	-10	-35	
Exit Bid (number of lots)	1	1	2	7	
Exit Price	35,000,000	37,000,000	5,100,000	5,200,000	
Excess demand before processing	0	0	0 (-1 at SP)	0 (-1 at SP)	
Bidder A's Bid after processing (number of lots)	2 SHB at SP	0	1 SHB at Exit of S$5,100,000	1 SHB at Exit of S$5,200,000	
Excess demand after processing	0	0	0	0	

SP: Standing Price, SHB: Standing High Bid

14.1.   This example assumes that:

(a)   there is no Winning New Entrant Bidder and thus there are eight (8) lots available in the 2.3 GHz Category and at most six (6) lots in the 900 MHz Category, respectively;

(b)   all three Existing MNOs include at least one (1) 900 MHz lot in their Initial Offer (the FROR lot), so the number of available lots in the 900 MHz Category is reduced to three (3) lots; and

(c)   Bidder A submits an Initial Offer for three (3) lots in the 700 MHz Category, two (2) lots in the 900 MHz Category (one of which is the FROR lot), two (2) lots in the 2.3 GHz Category and seven (7) lots in the 2.5 GHz Category.

14.2.   In Round 1, Bidder A's Bid is placed automatically on its behalf and consists of the number of lots for each Category for which Bidder A submitted an Initial Offer (excluding the FROR lot) (see Section 14.2.1 of the Auction Rules). Bidder A is an Existing MNO and included two (2) 900 MHz lots in its Initial Offer, one of which is the FROR lot. This means its Round 1 Bid only includes one (1) 900 MHz lot.

14.3.   After Round 1 is complete, the value of Excess Demand is calculated with respect to each Category. Excess Demand is strictly positive in all Categories thus the Standing Price increases in all Categories by an Increment (see Section 14.1.6 of the Auction Rules). Demand in the following Rounds 2, 3, 4, 5, 6 and 7 remains unchanged.

14.4.   In Round 8, Bidder A decides to reduces its demand in all Categories and submits the following Bid:

(a)   In the 700 MHz Category, it reduces its demand at the Standing Price to two (2) lots and submits an Exit Bid for one (1) lot at an Exit Price of S$35,000,000.

(b)   In the 900 MHz Category, it stops bidding for one (1) lot at the Standing Price and submits an Exit Bid for one (1) lot at an Exit Price of S$37,000,000.

(c)   In the 2.3 GHz Category, it stops bidding for two (2) lots and submits an Exit Bid for two (2) lots at an Exit Price of S$5,100,000.

(d)   In the 2.5 GHz Category, it stops bidding for seven (7) lots and submits an Exit Bid for seven (7) lots at an Exit Price of S$5,200,000.

14.5.   At the end of the Round, IDA determines Excess Demand at the Standing Price in all Categories:

(a)   In the 700 MHz Category, Bidders collectively bid for a total of nine (9) lots at the Standing Price. All these lots will be designated as Standing High Bids at the Standing Price. This includes Bidder A's Bid for two (2) lots at the Standing Price. As this covers all available lots, no further Standing High Bids need to be designated.

(b)   In the 900 MHz Category, all Bidders collectively bid for a total of three (3) lots at the Standing Price. All these lots will be designated as Standing High Bids at the Standing Price. As this covers all available lots, no further Standing High Bids need to be designated.

(c)   In the 2.3 GHz Category, Bidders collectively bid for a total of seven (7) lots at the Standing Price. All these lots will be designated as Standing High Bids at the Standing Price. This leaves one (1) lot that needs to be covered by Exit Bids. As Bidder A was the only Bidder to submit an Exit Bid in the Round, one (1) of the lots included in this Exit Bid will be retained and designated as a Standing High Bid at an Exit Price of S$5,100,000.

(d)   In the 2.5 GHz Category, Bidders collectively bid for a total of eight (8) lots at the Standing Price. All these lots will be designated as Standing High Bids at the Standing Price. This leaves one (1) lot that needs to be covered by Exit Bids. As Bidder A was the only Bidder to submit an Exit Bid in the Round, one (1) of the lots included in this Exit Bid will be retained and designated as a Standing High Bid at an Exit Price of S$5,200,000.

14.6.   As there was no Excess Demand in Round 5 and no Bidder received Free Eligibility, the Quantity Stage of the General Spectrum Auction ends after this Round (see Section 16.1 of the Auction Rules). The provisional auction results are summarised in the following table. The Closing Price for the 700 MHz and 900 MHz Categories is the Standing Price in the final Round as this is the lowest amount associated with any Standing High Bid in these Categories (see Section 16.2 of the Auction Rules). In the 2.3 GHz and 2.5 GHz Categories, Bidder A's Exit Prices determine the Closing Price as they are the lowest amounts associated with Standing High Bids in these Categories.

Category	Closing Price	Number of lots provisionally won by Bidder A
700 MHz Category	S$38,000,000	2
900 MHz Category	S$38,000,000	0
2.3 GHz Category	S$5,100,000	1
2.5 GHz Category	S$5,200,000	1

14.7. As Bidder A never bid for exactly one 2.3 GHz or 2.5 GHz lot at any stage of the General Spectrum Auction, it will be allowed to withdraw these two lots. (see Section 16.4 of the Auction Rules). It will need to notify the IDA within two (2) Business Days of the notice of the close of the Quantity Stage of the General Spectrum Auction if it wants to withdraw these Standing High Bids.

Section 15 SIMULTANEOUS SWITCH AND EXIT

Category	700 MHz	900 MHz	2.3 GHz	2.5 GHz	
Available lots (with all FROR lots exercised)	9	3	8	9	Overall cap
Remaining Spectrum Cap (in MHz) for an Existing MNO	40	20 (excluding FROR lot)	45		90 (excluding FROR lot)
Round 6					
Standing Price (S$ per lot)	32,000,000	32,000,000	4,700,000	4,700,000	
Bidder A's Bid (number of lots)	2	1	0	8	70
Excess demand	1	2	1	1	
Round 7					
Standing Price (S$ per lot)	35,000,000	35,000,000	5,000,000	5,000,000	Next round eligibility
Bidder A's Bid (number of lots)	2	0	0	8	60
Reduction Amount		-10			
Exit Bid (number of lots)		1			
Exit Price		34,000,000			
Excess demand	1	1	1	1	
Round 8					
Standing Price (S$ per lot)	38,000,000	38,000,000	5,500,000	5,500,000	Next round eligibility
Bidder A's Bid (number of lots)	0	2	0	5	45 (inclusive of Free Eligibility)
Switch Amount		+20			
Reduction Amount	-20	-	-	-15	
Exit Bid (number of lots)	1			1	
Exit Price	36,000,000			5,200,000	
Excess demand before processing	0 (-1 at SP)	3	1	0 (-2 at SP)	Free Eligibility
Bidder A's Bid after processing (number of lots)	1 SHB at Exit of S$36,000,000	1	0	5 SHB at SP, 1 SHB at Exit of S$5,200,000, 1 SHB at prior SP	5
Excess demand after processing	0	2	1	0	

SP: Standing Price, SHB: Standing High Bid

15.1. This example assumes that:

 (a) there is no Winning New Entrant Bidder and thus there are eight (8) lots available in the 2.3 GHz Category and at most six (6) lots in the 900 MHz Category, respectively;

 (b) all three Existing MNOs include at least one (1) 900 MHz lot in their Initial Offer (the FROR lot), so the number of available lots in the 900 MHz Category is reduced to three (3) lots; and

 (c) Bidder A submits an Initial Offer for two (2) lots in the 700 MHz Category, two (2) lots in the 900 MHz Category (one of which is the FROR lot) and eight (8) lots in the 2.5 GHz Category.

15.2. In Round 1, Bidder A's Bid is placed automatically on its behalf and consists of the number of lots for each Category for which Bidder A submitted an Initial Offer (excluding the FROR lot) (see Section 14.2.1 of the Auction Rules). Bidder A is an Existing MNO and included two (2) 900 MHz lots in its Initial Offer, one of which is the FROR lot. This means its Round 1 Bid only includes one (1) 900 MHz lot.

15.3. After Round 1 is complete, the value of Excess Demand is calculated for each Category. Excess Demand is strictly positive in all Categories thus the Standing Price increases in all Categories by an Increment (see Section 14.1.6 of the Auction Rules). Demand in the following Rounds 2, 3, 4, 5 and 6 remains unchanged.

15.4. In Round 7, Bidder A decides to reduce its demand in the 900 MHz Category by one (1) lot and submits an Exit Bid for one (1) lot at an Exit Price of S$34,000,000. After Round 7 is complete, IDA determines Excess Demand in all Categories. As Excess Demand is still positive in all Categories, the Standing Price for all Categories is increased by an Increment (see Section 14.1.6 of the Auction Rules).

15.5. In Round 8, Bidder A decides to reduce its demand for lots in the 700 MHz and 2.5 GHz Categories while increasing its demand for lots in the 900 MHz Category. In summary, it submits the following Bid:

 (a) In the 700 MHz Category, it reduces its demand at the Standing Price to zero (0) lots. This is associated with a Reduction Amount of -20 MHz.

(b)   In the 900 MHz Category, it increases its demand at the Standing Price from zero (0) to two (2) lots. This is associated with a Switch Amount of 20 MHz.

(c)   In the 2.5 GHz Category, it reduces the number of lots bid for at the Standing Price from eight (8) to five (5) lots. This is associated with a Reduction Amount of -15 MHz.

15.6.   The sum of Switch and Reduction Amounts across all Categories is negative (-15 MHz), so Bidder A is required to place Exit Bids in the 700 MHz and/or the 2.5 GHz Categories. Bidder A would be allowed to submit the following combinations of Exit Bids:

(a)   An Exit Bid for one (1) lot in the 700 MHz Category and an Exit Bid for one (1) lot in the 2.5 GHz Category; or

(b)   An Exit Bid for three (3) lots in the 2.5 GHz Categories.

15.7.   Bidder A submits an Exit Bid for one (1) lot in the 700 MHz Category at an Exit Price of S\$36,000,000 and an Exit Bid for one (1) lot in the 2.5 GHz Category at an Exit Price of S\$5,200,000. This effectively means that Bidder A is requesting to switch one (1) 700 MHz lot and two (2) 2.5 GHz lots to two (2) 900 MHz lots.

15.8.   After Round 8 is complete, IDA determines Excess Demand in all Categories:

(a)   Excess Demand is zero (0) in the 700 MHz Category. As Excess Demand in the 700 MHz Category was strictly positive in Round 7, IDA designates Standing High Bids in this Category. It first designates all lots bid for at the Standing Price as Standing High Bids at the Standing Price. As this only covers eight (8) of the nine (9) available lots in the 700 MHz Category, IDA designates Standing High Bids at an Exit Price in this Category. Bidder A's Exit Bid for one (1) lot at an Exit Price of S\$36,000,000 is the only Exit Bid submitted for this Category in Round 8. IDA designates this Exit Bid as a Standing High Bid at an Exit Price. As this covers all available lots, IDA does not designate any further Standing High Bids in this Category.

(b)   Excess Demand is zero (0) in the 2.5 GHz Category. As Excess Demand was strictly positive in Round 7, IDA designates Standing High Bids in this Category. It first designates all lots bid for at the Standing Price as Standing High Bids at the Standing Price. This

includes Bidder A's five (5) lots at the Standing Price. As this only covers seven (7) of the nine (9) available lots in the 2.5 GHz Category, IDA designates Standing High Bids at an Exit Price in this Category. Bidder A's Exit Bid for one (1) lot at an Exit Price of S$5,200,000 is the only Exit Bid submitted for this Category in Round 8. IDA designates this Exit Bid as a Standing High Bid at an Exit Price. As this only covers eight (8) of the nine (9) available lots, IDA will retain one (1) switched lot and designate it as a Standing High Bid at the Prior Standing Price. As only Bidder A switched out of the 2.5 GHz Category in Round 8, its switch of two (2) 2.5 GHz lots to one (1) 900 MHz lot is denied. Bidder A receives one (1) Standing High Bid at the Prior Standing Price in the 2.5 GHz Category and five (5) MHz of Free Eligibility instead (see Section 14.4.5(c) of the Auction Rules).

(c) Excess Demand is strictly positive in the 900 MHz and 2.3 GHz Categories, so IDA does not designate any Standing High Bids in these Categories.

WORKED EXAMPLES FOR ASSIGNMENT STAGE PHASE 2

This document contains examples for Phase 2 of the Assignment Stage of the General Spectrum Auction. The information contained in this document is provided solely for illustrative purposes only.

Section 1 EXAMPLE OF SEALED BID AUCTION FOR ASSIGNMENT STAGE IN THE 700 MHZ CATEGORY

1.1. The following example assumes that there is no winning New Entrant Bidder and three (3) Winning Bidders. A total of nine (9) lots in the 700 MHz Category are provisionally awarded to the three (3) Winning Bidders as follows:

(a) Bidder A is provisionally awarded three (3) 700 MHz Spectrum Lots;

(b) Bidder B is provisionally awarded four (4) 700 MHz Spectrum Lots; and

(c) Bidder C is provisionally awarded two (2) 700 MHz Spectrum Lots.

1.2. Each Winning Bidder is a Contending Winning Bidder and all segments are contended segments (see Section 17.2.2 of the Auction Rules).

1.3. Given the number of lots assigned to each Winning Bidder, there are six (6) feasible combinations that provide contiguous lots to all Winning Bidders labelled (a) to (f) below (see Section 17.3.2 of the Auction Rules).

700 MHz lots	1	2	3	4	5	6	7	8	9
Lower Band (MHz)	703 - 708	708 - 713	713 - 718	718 - 723	723 - 728	728 - 733	733 - 738	738 - 743	743 - 748
Upper Band (MHz)	758 - 763	763 - 768	768 - 773	773 - 778	778 - 783	783 - 788	788 - 793	793 - 798	798 - 803

Combination a, b, c, d, e, f

Bidder A
Bidder B
Bidder C

1.4. While there are six (6) feasible combinations, each Winning Bidder is confronted with only four (4) different options. For example, Bidder A may be allocated the first three (3) lots in the band, or the last three (3) lots in the band, or three (3) middle lots with Bidder B's four (4) lots at the lower end of the band, or three (3) middle lots with Bidder B's four (4) lots at the higher end of the band. Any

other assignment to Bidder A would not allow Bidder B and Bidder C both to have contiguous spectrum and thus would not be feasible.

1.5. IDA would determine the Assignment Bid Options presented in the following table for each Bidder. Bidders will fill in the Assignment Bid Form with their Bids for individual Assignment Bid Options. If a Bidder does not submit a Bid for a particular Assignment Bid Option, the IDA will treat this as a Bid of S$0 (see Section 17.3.5 of the Auction Rules).

1.6. Bidder A submits an Assignment Bid of S$400 for Assignment Bid Option A_1 and a Bid of S$200 for Assignment Bid Option A_4. Bidder B bids S$200 for B_3 and S$300 for B_4. Bidder C does not submit any Assignment Bids and is therefore deemed to have submitted an Assignment Bid of S$0 for all of its Assignment Bid Options (see Section 17.3.7 of the Auction Rules).

	Assignment Bid Option	Lower Band (MHz)	Upper Band (MHz)	Associated band combinations	Bid amount (S$)
Bidder A	A_1	703 - 718	758 - 773	a, b	400
	A_2	713 - 728	768 - 783	f	0
	A_3	723 - 738	778 -793	c	0
	A_4	733 - 748	788 - 803	d, e	200
Bidder B	B_1	703 - 723	758 - 778	c, d	0
	B_2	713 - 733	768 - 788	e	0
	B_3	718 - 738	773 - 793	a	200
	B_4	728 - 748	783 - 803	b, f	300
Bidder C	C_1	703 - 713	758 - 768	e, f	0
	C_2	718 - 728	773 - 783	b	0
	C_3	723 - 733	778 - 788	d	0
	C_4	738 - 748	793 - 803	a, c	0

1.7. The total amount bid for each band combination is then determined across all Bidders:

(a) The total value of combination a is S$600;

(b) The total value of combination b is S$700;

(c) The total value of combination c is S$0;

(d) The total value of combination d is S$200;

(e) The total value of combination e is S$200; and

(f) The total value of combination f is S$300.

1.8.   The Winning Assignment Bids for this Category are those that yield the highest aggregate value (see 17.3.8 of the Auction Rules). Combination b is the winning combination and determines the final allocation in the band. The outcome of the Assignment Stage for the 700 MHz band is summarised in the following table (see Section 17.3.9 of the Auction Rules).

	Lower Band (MHz)	Upper Band (MHz)	Assignment Price (S$)
Bidder A	703 – 718	758 - 773	400
Bidder B	728 – 748	783 - 803	300
Bidder C	718 – 728	773 - 783	0