

Auctions for Radio Spectrum (C): First-Price Simultaneous Ascending Auctions

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Tainted Auction

UPCOM has discovered that the operator that failed to receive a license in the auction might have been colluding with another bidder. UPCOM does not know which bidder that might have been, but the auction was tainted, and now UPCOM must re-auction the licenses.

The discovery of the potential collusion came about during an investigation into the operator's accounting practices. The investigation resulted in the prosecution of the operator's chief financial officer. The firm unsuccessfully defended the CFO in court, and the resulting court costs drove the firm into bankruptcy. Now the firm has disbanded, and its previous employees have been hired by other firms.

New Auction

Some rules remain the same as in the first auction, namely:

- Each bidder will be awarded at most one license.
- All licenses will be auctioned simultaneously.
- There will be multiple bidding rounds during which all bidders submit their bids simultaneously in each round.
- One bidding round is held every 10 minutes, but the auctioneer can adjust this time as the auction progresses.

- Bids are submitted using the provided forms, which show the license and the bid amount. Bids must be in UP1 million increments.
- Each bidder can bid on as many licenses as it wants in each round.
- Any bidder can choose to not bid during a round by marking the "Pass" boxes in the bid form.
- If a bidder holds the "current" bid on more than one license when the auction ends, UPCOM will decide which license the bidder receives. UPCOM will award the bidder's other license(s) to the next highest bidder on each license.
- If two or more bidders are tied for a license at the end of the auction, and if the tie is not resolved by UPCOM awarding other licenses to one or more of the tied bidders, then UPCOM will re-auction that license using a descending auction.
- If a bidder holds the "current" bid on a license at the end of the auction and does not have the financial resources to pay the bid amount, the bidder is disqualified and UPCOM will award the license to the next highest bidder.
- New entrants can choose to hire a consultant before or during the auction. Consultants provide information on other bidders' likely willingness to pay on particular licenses. A consultant report costs UP2 million.
- Any bidder communicating with another bidder about prices is disqualified and has its financial reserves confiscated.

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However, because of the possible collusion, the regulator has changed some rules. The changed rules are:

- The highest bid on each license becomes “current.” At the end of each round, UPCOM will announce the “current” bids, but will not announce any other bid amounts. UPCOM will not announce the identities of the bidders holding the “current” bids.
- A bidder with the “current” bid on a license may bid on that license again until someone submits a higher bid.
- Bidding continues until the UPCOM decides that activity has slowed, at which time UPCOM will announce the final bidding round.

Note that it is not necessary for each license to

receive a bid in each round.

Scoring

At the end of the auction, each qualified bidder will receive points equal to the difference between the bidder’s willingness to pay for the license it wins, minus the amount the bidder paid for the license and minus any consulting fees. Bidders not receiving a license get zero points. Licensees who purchase a license for more than their willingness to pay receive negative points.

At the end of the game, participants are ranked according to their points and awards are given.

□

Exhibit 1. Specifications for Spectrum Licenses

License	A	B	C	D	E
Spectrum	1850 MHz	1870 MHz	1900 MHz	1915 MHz	1930 MHz
Bandwidth	15 MHz	20 MHz	10 MHz	10 MHz	10 MHz
Current Users	One	None	Two	None	One