

**Plans and Procedures for the Experimental Testing of the FCC Package Bidding
System for the 700 MHz Band Auction: Test #2**

Submitted by Cybernomics Inc. under Subcontract FCC-00-003

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I. Overview

Cybernomics Inc. has designed new experiments and trained new subjects to verify the algorithms and rules of the FCC Package Auction for the 700 MHz Band Auction. As before, the test environment uses human bidders to submit strategic bids into the auction system designed by the FCC and implemented by Computech. The bidders have an incentive to discover and exploit any weaknesses in the system, since they will be paid based on the success of the bids they make in the auction vis-à-vis other participants. In addition, they will be given a monetary bounty for any errors they find in the software implementation of the auction rules. Thus, real people with real incentives will be providing Cybernomics and Computech with feedback on the system operation. We have also developed a backend software system to verify the results found by Computech in the test.

The new experimental design has been developed to test the new rule changes that are part of the new Package auction system. The new experiments include budget constrained bidders and system optimum that exacerbate the threshold problem.

II. Experimental Procedure

As before, the Computech system will be tested in the Economic Science Laboratory (ESL) at the University of Arizona using methods in Experimental Economics. The auctions that will be conducted at ESL will use human subjects who will participate in a series of auctions. The subjects will be motivated to participate by being paid based on the success of the bids they make in the auction. Each subject will be paid the difference between their private values for any license they obtain, minus the cost of winning that license in the auction. The private values of each license to each subject will be induced. That is, each license and several packages of licenses will have monetary values for the subjects. They get these values if they win the licenses. Of course they must pay their bids for the license package they win. In the tables below, we supply the values for 30 bidders in two environments. Values are stated in experimental dollars that can be redeemed in our experiment at a rate of 100,000 experimental dollars equals one US dollar. Thus, in Table 1, subject 9 has a value of 200,000,000 experimental dollars for license 10MHz- Northeast.

Table 1
Value Parameters (Values are stated in Millions of Experimental Dollars)

Case 2

Subjects →

Licence	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10-NE	50	44	50	47	22	36	32	47	4	29	25	3	3	3	3
10-MA	14	36	7	19	26	36	6	18	4	17	24	13	13	13	13
10-SE	12	17	7	18	16	25	6	21	15	18	20	7	7	7	7
10-GL	18	8	11	19	18	4	9	20	18	9	6	19	19	19	19
10-CM	11	5	30	2	16	9	20	30	27	12	5	12	12	12	12
10-P	43	33	2	39	8	47	21	47	24	40	5	42	42	42	42
20-NE	100	49	57	61	70	80	37	91	94	46	53	46	46	46	46
20-MA	82	80	48	90	100	79	10	4	7	6	73	41	41	41	41
20-SE	15	13	50	19	7	26	21	8	7	34	6	18	18	18	18
20-GL	10	38	5	28	18	40	22	33	11	10	15	18	18	18	18
20-CM	60	33	2	60	8	18	56	60	38	45	8	8	8	8	8
20-P	57	58	18	59	56	17	73	57	58	104	2	10	10	10	10
10 – ALL	217	NA	217	217	NA	NA	217	NA	NA	NA	NA	NA	NA	NA	NA
20- SE, CM, P	204	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10-MA, CE, CM	NA	111	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
20 – ALL	NA	434	NA	NA	NA	434	NA	434	NA	NA	NA	NA	NA	NA	NA
10 – SE, CM, P	NA	NA	157	102	NA	102	NA	102	NA	NA	NA	NA	NA	NA	NA
10 – NE, MA SE	NA	NA	NA	NA	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
20 - NE, SE GL	NA	NA	NA	NA	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10 – P 20 – SE, CM	NA	NA	NA	NA	NA	NA	174	NA	NA	NA	NA	NA	NA	NA	NA
20 – GL, CM P	NA	NA	NA	NA	NA	NA	NA	NA	194	NA	NA	NA	NA	NA	NA
10 NE 20 – NE	NA	NA	NA	NA	NA	NA	NA	NA	167	NA	NA	NA	NA	NA	NA
20 – NE, MA SE	NA	NA	NA	NA	NA	NA	NA	NA	NA	240	NA	NA	NA	NA	NA
10 – NE, SE, GL	NA	NA	NA	NA	NA	NA	NA	NA	NA	95	NA	NA	NA	NA	NA
10 – GL, CM, P	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	97	NA	NA	NA	NA
10 – GL 20 - GL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	167	NA	NA	NA	NA

III. **Reporting Process**

Cybernomics will issue a report after each auction day. The report will consist of any anomalies in the results and potential errors discovered by subjects. The report will also consist of remarks by subjects on screen displays and any other hard to understand interfaces. Any rule inconsistencies or potential loopholes will be reported if found. We will also provide a report on the backend check of winners and eligibility.