

**EXHIBIT 1**

**Frequency Chart**

<b>Interactive MMDs System Frequencies</b>				
FCC Form 442 Page 2 Item 4(A)				
(All frequencies are in MHz)				
<b>Headend: Omnidirectional outgoing path Channel Frequencies</b>				
<b>FREQUENCY</b>	<b>CHANNEL / BLOCK</b>			
2512 - 2548	A2- A4, B1- B4			
2554 - 2644	C2-C4, D1-D4, E1-E4, F1-F4			
2650 - 2658	H1			
2662 - 2668	H2			
2680 - 2686	H3			
<b>Remotes: Return path Channel Frequencies</b>				
<b>INTERACTIVE FREQUENCY</b>	<b>FOR BLOCK</b>		<b>FOR BLOCK</b>	<b>INTERACTIVE FREQUENCY</b>
2686.0625	A1		A1	2686.0625
2686.1875	B1		A2	2687.0625
2686.3125	C1		A3	2688.0625
2686.4375	D1		A4	2689.0625
2686.5625	E1			
2686.6875	F1		B1	2686.1875
2686.8125	G1		B2	2687.1875
			B3	2688.1875
2687.0625	A2		B4	2689.1875
2687.1875	B2			
2687.3125	C2		C1	2686.3125
2687.4375	D2		C2	2687.3125
2687.5625	E2		C3	2688.3125
2687.6875	F2		C4	2689.3125
2687.8125	G2			
			D1	2686.4375
2688.0625	A3		D2	2687.4375
2688.1875	B3		D3	2688.4375
2688.3125	C3		D4	2689.4375
2688.4375	D3			
2688.5625	E3		E1	2686.5625
2688.6875	F3		E2	2687.5625
2688.8125	G3		E3	2688.5625
			E4	2689.5625
2689.0625	A4			
2689.1875	B4		F1	2686.6875
2689.3125	C4		F2	2687.6875
2689.4375	D4		F3	2688.6875
2689.5625	E4		F4	2689.6875
2689.6875	F4			
2689.8125	G4		G1	2686.8125
			G2	2687.8125
			G3	2688.8125
			G4	2689.8125
Arranged by Frequency		Arranged by block		

**EXHIBIT 2**

**Narrative Statement**

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The purpose of the project is to test technical parameters for the development of a digital downconverter in field operation and for starting a manufacturing center. All tests will be conducted by a licensed FCC engineer. The following will be test parameters:

1. Distance of transmitted signal,  
Analog vs. Digital signal.
2. Digital vs. Analog Interference.
3. Field gain in Analog,  
Field gain in Digital,  
And addressability.
4. Interference of Digital signal vs. Foreign signal.
5. Antenna size and performance in Digital format.
6. Field affect of digital downconverter variations caused  
by temperature over periods of time.
7. Condensation or water leakage due to rain, snow and ice  
build-up.

In summary, the project will result in the building of a factory to manufacture a low cost digital downconverter for the system operator and lower installation cost to consumers.

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## **A. Overview**

The purpose of this request for an Experimental License is to develop and test an interactive MMDS and ITFS system. Orion Broadcasting Systems, Inc. ("Orion") will set up this test site for the extensive test and analysis of a newly developed interactive system, using a digital down-converter supplied by Bestcor Broadcasting Systems, Inc. For wireless cable systems to compete with "hard wired" cable systems, innovative use of technology that brings the benefits of interactive television to the public is essential.

Orion wishes to bring this innovative technology to residents of the Atlantic City, New Jersey area, where Orion currently operates a wireless cable system. As the operator of the Atlantic City wireless cable system, Orion currently holds the rights to use most of the MMDS and ITFS frequencies authorized for use in this market. Accordingly, Orion can ensure that its use of this Experimental Station will not interfere with the operation of any other nearby MMDS or ITFS station operating on the frequencies proposed for use by this Experimental Station. Moreover, to the extent that Orion is already authorized to use certain of these frequencies from the location proposed in this application, Orion will make only limited use of those frequencies in connection with this Experimental Station. In addition, to further protect against causing interference to the ITFS stations licensed in the area, the Experimental Station will use a directional antenna oriented away from the current transmit sites of those ITFS stations.

## **B. Interactive Television**

### **1. The basic idea**

Interactive Television requires a "return path" for the data that makes up the "viewer's response." This response could be an answer to a test question, a vote for a political proposal, or any of hundreds of possible query-response scenarios.

### **2. The System consists of:**

- i. Programming with viewer response requirements as a part of the programming and/or a special viewer response text channel.**
  - a. Programming will be generated by major program suppliers in the future.**

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- b. For the purpose of this Experimental License, programming will be generated locally for interactive response. This programming must be developed and tested along with the hardware design since it is an entirely new field. The programming will be referred to as Viewer Response Programming (VRP).
- ii. The Headend
  - a. System Computer
  - b. Encoders/Transmitter
  - c. Diplexer
  - d. Return Data Receiver
- iii. The Antenna
- iv. The transmission path and impairments
- v. The viewer's equipment
  - a. The viewer's antenna
  - b. The viewer's transmitter/receiver
  - c. The viewer's set top converter/decoder
  - d. Remote control device or keypad
- 3. The process
  - i. The Viewer Response Programming (VRP) elicits a response from the viewer who punches a button on a remote control device or keypad.
  - ii. The response is bundled with the viewer's identification number and held in a data buffer.
  - iii. At a specified time, the data is sent to the head-end using specific frequencies from the table in Exhibit 1, through the transmitter and antenna at the viewer's location.

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- iv. The data is received and decoded at the headend and the response is processed as required.
- v. If outside services are required (i.e. ordering a pizza), the outside vendor is sent a database listing, via modem, of the name of the viewer (now a customer), the phone number and/or address as required, and the item ordered.

Orion intends to use the Experimental Station in the manner described above. The extent of the services Orion will offer will depend on the demand for those services and the practical issues involved in providing those services, as determined by the results from the earlier stages of the experimental program.

**C. Additional applications of interactive technology**

There are hundreds of potential applications of this technology. This Experimental License will enable the licensee to test equipment that has the potential to break new ground and the results could be applicable to hard wired cable systems, IVDS, and other video distribution systems. We do not intend to present an exhaustive list here; one purpose of the Experimental License is to present the target audience with options that test the real life "useability" or viewer acceptance of some of these interactive applications.

**D. The licensee hopes that the experiment will enable it to answer questions such as the following:**

- 1. Is this system cost-effective?
- 2. What is the maximum number of responses that can be processed per second? Per minute?
  - i. What would be the average length of responses for various uses (i.e. pizza order vs. response to an essay question)?
  - ii. What is the best protocol to maximize throughput?
  - iii. Will this change when the number of users changes?

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3. How can a system operator set up a system that would be the most flexible in terms of future operational requirements?
4. Is this system useful in the education field?
  - i. Will student viewers participate using the response method?
  - ii. Will the feedback be timely, and augment or detract from the classroom instruction?
5. Will people order pizza through their TV?
6. Is home security a viable use of the interactive system?
7. Is digitizing voice (or other sound) practical for this system?
8. Will people play interactive video games with this system?
9. Can it be used effectively for job interviewing or employment searching?
10. Can it be used effectively as a dating or introduction service?
11. Will viewers play games -- educational games or typical video games -- with this service?
12. Can data (computer to computer) connections be established with this system?
13. Is this system useful for municipal applications such as prisoner parole monitoring?
14. Can messaging between viewers be accomplished with this system (e.g. as a bulletin board)?
15. What is the effect of transmission impairments on the direct path?
16. What is the effect of transmission impairments on the return path signal?



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17. What are the sources of interference to this system?
18. What is the effect of polarization on transmission?
19. Will this system cause interference to the normal MMDS or ITFS channels?
20. Will this system cause interference to any other service?
21. What is the maximum effective distance the remote (viewer) locations may operate?
22. What interference threshold can be tolerated?
23. What is the normal error rate?
24. What is the overall reliability of the system?
25. Can the responses be intercepted by electronic eavesdropping?
  - i. Within the system or
  - ii. Outside the system
26. Can the responses be encrypted?
27. Is the system encryption secure enough for financial transactions to be a part of the capability of the system?

Hundreds of other questions will be generated by answers or partial answers to these questions. The applicant is prepared to provide reports to the FCC at regular intervals on the progress of this experiment.

**E. Number of remote test locations**

Orion hopes to place remote viewer systems to conduct this testing with remote units eventually numbering between five and ten thousand. Some units will be set aside for municipal testing, educational only, and "Beta testing" or internal testing only. The exact percentage breakdown for these categories has not been determined as of this date.

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**G. Conclusion**

A grant of this request will enable Orion to investigate the answers to these and other questions. It will enable a thorough testing of new hardware and development of Viewer Response Programming (VRP) pieces of equipment together and test the system in the actual environment where they must operate. If successful, the system will be a significant step forward and will lead to additional services for the public.

During the duration of this experiment, Orion intends to transmit video programming to subscribers to help determine the commercial value of the equipment and the VRP being tested through this experiment. Accordingly, Orion herein requests authority to conduct limited market studies pursuant to Sections 5.202(j) and 5.206 of the Commission's Rules.

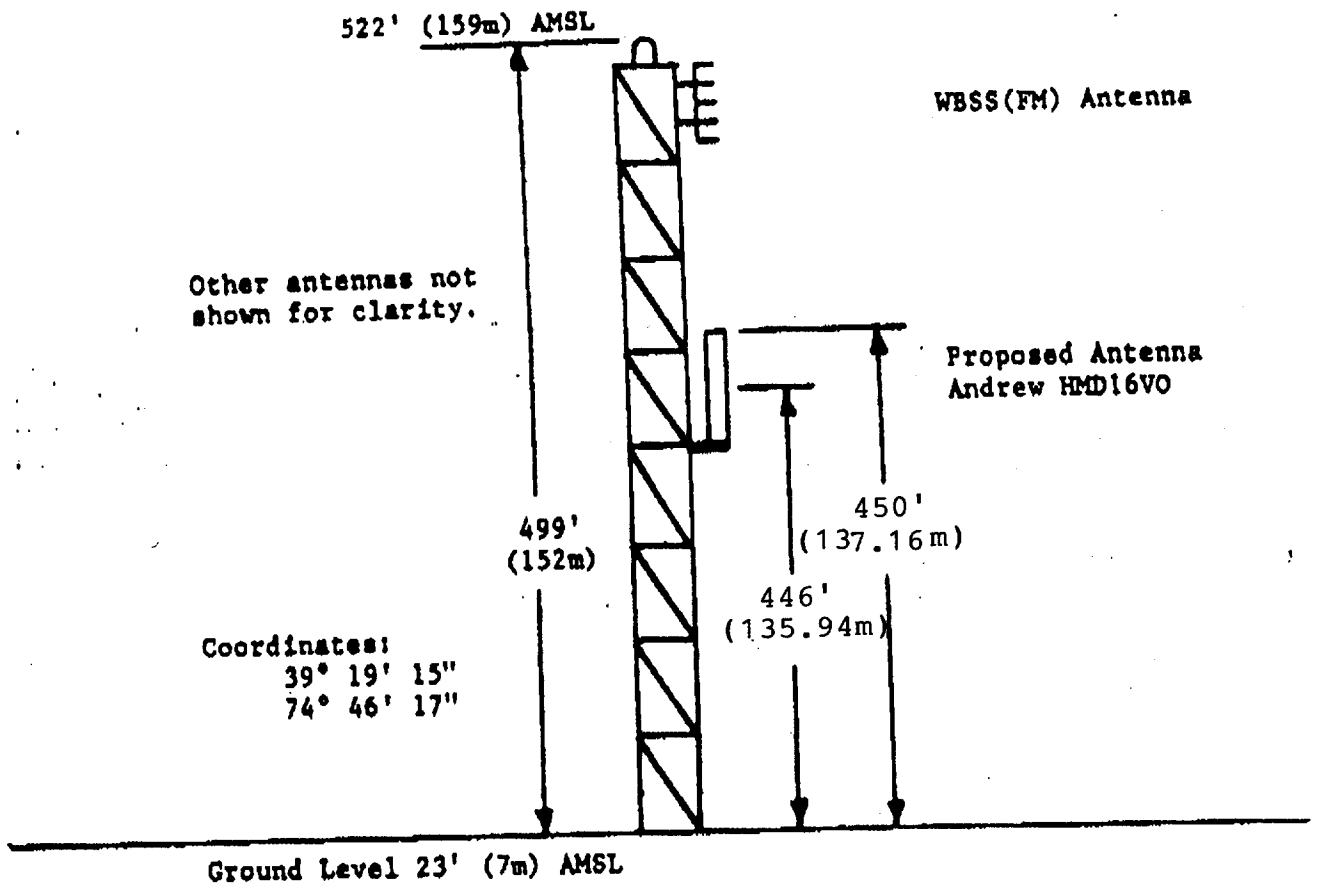
These market studies will assist in determining the optimum price and marketing strategy for the products being tested in the study, which, if proven to be commercially viable, would be used in connection with the provision of wireless cable service. The Commission has said it intends to "enhance the viability and competitive stature of wireless cable." Report in MM Docket 89-600, 67 RR2d 1771, 1797 (1990), and has recognized the need to "take all possible steps to encourage and facilitate competitive multichannel video delivery systems" such as wireless cable. Notice of Proposed Rulemaking and Notice of Inquiry, 5 FCC Red at 971, 971 (1990). Orion's proposed market studies would promote the development of the wireless cable industry and they are therefore consistent with the Commission's goals.

Pursuant to Section 5.151 of the Commission's Rules, Orion will use every precaution to ensure that its operations will not cause harmful interference to any other licensed station and it will use the lower power levels consistent with its experimental program. If its operations cause harmful interference to another station, Orion will cease transmitting and will not resume transmitting until it is certain that such resumption will not cause further interference. However, as discussed above, the likelihood of causing interference to other stations is minimized since Orion is already authorized, by license or lease, to use most of the frequencies proposed for use by this Experimental Station and the Station will use a directional antenna oriented away from the current transmit sites of nearby ITFS stations.

EXHIBIT 3

Tower Sketch

FAA Study No.  
89-AEA-0896-0E



Coordinates:  
39° 19' 15"  
74° 46' 17"

Ground Level 23' (7m) AMSL

Atlantic City, NJ Transmitter Site

Not drawn to scale.

Sum of metric elevations may not agree because of rounding.

ORION BROADCASTING SYSTEMS, INC.  
Corbin City, New Jersey