

PARTICULARS OF OPERATION

Frequency (State Whether kHz or MHz) (A)	POWER			EMISSION (E)	MODULATING SIGNAL (F)	NECESSARY BANDWIDTH (kHz) (G)
	(B)	(C)	(D)			
864.1-868.1 MHz	1 watt	1 watt	peak	various	voice/data	100 kHz
901-902 MHz	1 watt	1 watt	peak	various	voice/data	100 kHz
902-928 MHz	1 watt	1 watt	peak	various	voice/data	26 MHz
930-931 MHz	1 watt	1 watt	peak	various	voice/data	100 kHz
940-941 MHz	1 watt	1 watt	peak	various	voice/data	100 kHz
944-948 MHz	1 watt	1 watt	peak	various	voice/data	1 MHz
1850-1990 MHz	1 watt	1 watt	peak	various	voice/data	50 MHz
2110-2150 MHz	1 watt	1 watt	peak	various	voice/data	10 MHz
2160-2200 MHz	1 watt	1 watt	peak	various	voice/data	10 MHz
2400-2483.5 MHz	1 watt	1 watt	peak	various	voice/data	50 MHz
3300-3500 MHz	1 watt	1 watt	peak	various	voice/data	50 MHz
5725-5850 MHz	1 watt	1 watt	peak	various	voice/data	50 MHz
12700-13250 MHz	1 watt	1 watt	peak	various	voice/data	50 MHz

INTRODUCTION AND STATEMENT OF QUALIFICATION

Cable Television Laboratories, Inc. (CableLabs) is a consortium of cable television operators that was formed in 1988 to undertake research and development in areas of common interest. Its members provide service to 85% of the cable television subscribers in the U.S. and 45% of those in Canada. CableLabs has a permanent staff of more than 30 located at its headquarters in Boulder, Colorado, and at the Advanced Television Test Center in Alexandria, Virginia, including a technical staff that is experienced and knowledgeable in the cable, broadcast and telephone industries.

In January of 1991, CableLabs established a subcommittee of its Technical Advisory Committee to study how the cable television industry may fit into the PCS business. This group has established four specific goals that are intended to provide direction and focus for the cable industry in this regard:

1. Prepare an "advisory" to members regarding modifications or modest incremental capital expenditures that may be required in fiber-coaxial entertainment infrastructures in order to best position operators for potential PCS business opportunities, despite current regulatory, technical, and economic/market uncertainties.
2. Conduct studies and experiments of technical factors bearing on spectrum issues, including support for the National Cable Television Association (NCTA), the trade organization for the cable industry in the United States.
3. Hire a prime contractor to manage technical system development and integration including the specific goal of establishing guidelines for spectrum/infrastructure interface equipment and other key parameters of systems operations.
4. Conduct joint planning with the NCTA and top industry executives to identify business opportunities and possible roles for the cable industry in the PCS business. This work will serve as a guide to CableLabs technical programs.

The primary thrust of most cable operators is to position their networks for transport between PCS network elements. Some are interested in providing full-service PCS. The service definition for each cable operator varies significantly and so do the requirements to serve each segment. However, it is essential to define PCS in order to establish a framework for network design. One such definition of PCS simply stated is low-power, low-cost person-to-person communications.

To support our member companies (20 of which have already filed with the FCC for their own PCN experimental licenses), CableLabs is conducting a wide range of research projects to facilitate a technical platform for the cable industry's potential entry into PCS.

Based upon the initial results of a number of paper studies, it seems very likely that the evolving local broadband structures of the cable television operators will provide an

opportunity for cost-effective provisioning of the numerous small low-power cells that will be required for wireless PCS. One approach that is being studied is the use of cable television infrastructure to create distributed antennas. Other approaches are focused on integrating the PCS components with the cable television plant. The rapid deployment of fiber in the cable television plant will also have a significant effect.

In order to validate CableLabs' paper studies and to further enhance the cable industry's general understanding of the PCS option, CableLabs has a requirement to test, demonstrate, and evaluate alternative PCS technologies as well as technologies for integrating PCS and cable.

TECHNICAL PROPOSAL

Three access schemes have surfaced as likely candidates: Frequency Division Multiple Access (FDMA), Time Division Multiple Access (TDMA), and Code Division Multiple Access (CDMA), also known as spread spectrum. For the transport provider, each scheme represents unique challenges, particularly with regard to the efficient use of network infrastructures and start-up investment requirements. CableLabs proposes using all three access schemes to determine the transport capacities and limitations within existing cable television networks.

CableLabs proposes to perform its experiments at our laboratory at Suite 500, 1050 Walnut Street, Boulder, Colorado 80302 (40° 01' 00" latitude, 105° 16' 40" longitude) and at various locations within and around the city limits of Boulder, Colorado. Our Boulder facility includes a state of the art CATV headend and simulated distribution plant that is well-suited for conducting a wide variety of PCS overlay experiments.

Relying on current and projected equipment availability, testing is planned to be conducted within the following frequency bands:

- 864.1-868.1 MHz
- 901-902 MHz
- 902-928 MHz
- 930-931 MHz
- 940-941 MHz
- 944-948 MHz
- 1850-1990 MHz
- 2110-2150 MHz
- 2160-2200 MHz
- 2400-2483.5 MHz
- 3300-3500 MHz
- 5725-5850 MHz
- 12,700-13,250 MHz

Throughout its testing, CableLabs will monitor any interference with other users of the frequency bands and cease operations immediately if solutions for removing the interference cannot be found. To minimize the potential for interference, CableLabs has engaged Richardson, Texas-based Comsearch to conduct a frequency inventory study within a 35-mile radius of our Boulder laboratory at a cost of \$7,380.

CableLabs will comply with the Station records' requirements of Sections 5.163 to 5.165 of the Commission's Rules.

OBJECTIVES OF THE EXPERIMENT

The overall objective of the testing is to develop information regarding the suitability of cable television networks as transport providers for PCS. CableLabs plans two areas of emphasis:

1. **Investigate a means of transporting PCS traffic over cable television networks.** CableLabs is examining network architecture issues, such as the ramifications of PCS on cable's existing topology; propagation; delay; cell size; the need for fiber-to-the-radio base station versus a hybrid fiber/coax configuration; and switch deployment, including centralized and distributed switching functionality.
2. Investigate the technical characteristics of various radio and ancillary technologies for providing PCS. This work will include joint tests with equipment manufacturers and cable field tests and demonstrations. CableLabs is also working with several contractors to support a PCS Systems Integrator role to facilitate the process of defining the network design and field testing. Furthermore, CableLabs is evaluating spectrum issues regarding the potential provision of PCS.

CONTRIBUTIONS TO THE RADIO ART

CableLabs submits that the proposed program of experimentation will contribute to the development of wireless communications techniques, develop knowledge with respect to the uses of existing cable television infrastructures in the provisioning of PCS, and assist the commission in its regulatory decisions concerning the implementation of PCS. Specifically, tests of various access schemes will provide data with respect to the ability to carry PCS traffic over existing cable television delivery systems of different designs.