

## Appendix C

# Applications for New Services

The following is a list of companies that have applied to the Federal Communications Commission for licenses (both operational and experimental) in four new services: Broadcasting-Satellite Service-Sound (BSS-Sound); direct broadcasting satellites (DBS); low-Earth orbiting satellites (LEOS); and personal communication networks (PCN).

### *Broadcasting-Satellite Service-Sound*

Company	Band	Status	Comments
<b>Afrispace</b> (WorldSpace)	1470-1530 MHz, 29.9-30.0 GHz	Experimental—granted Operational—pending	Experimental license to broadcast direct radio services all over Africa and the Middle East. Trying to prove that direct, high-quality radio broadcasts will work over large regions. Plans to lease channels to governments and will donate capacity to the World Health Organization.*
Radio-Satellite Corp.	1545-1559 MHz, 1646.5-1660.5 MHz	Pending	Applications to use American Mobile Satellite Corp. satellites for digital audio broadcasting service.
Satellite CD Radio	1470-1530 MHz	Pending	Two satellites and hundreds of terrestrial transmitters, which would broadcast up to 100 compact disc-quality radio program channels nationwide.
Strother Communications	225-2700 MHz	Pending	No specific band was requested, just the allocation of 48 MHz in the range listed.

### *Direct Broadcast Satellite<sup>2</sup>*

Company	Band <sup>3</sup>	Status <sup>4</sup>	Comments
Advanced Communications	12.2-12.7 GHz	Granted	Will provide entertainment programming, as well as two full-time transponders, cost free, to the Foundation for Educational Advancement Today.
Continental Satellite Corp.	12.2-12.7 GHz	Granted	Plans to operate largely or exclusively on a common carrier basis.
Direct Broadcast Satellite Corp.	12.2-12.7 GHz	Granted	No programming information available.
Direcstsat Corp.	12.2-12.7 GHz	Granted	Plans to lease transponders to other providers
Dominion Video Satellite, Inc.	12.2-12.7 GHz	Granted	Plans to focus on educational programming.
Echostar Satellite Corp.	12.2-12.7 GHz	Granted	Will provide entertainment (pay-per-view movies, comedy, and children's programming) plus religious programming.
Hughes Communication	12.2-12.7 GHz	Granted	Plans to operate as a common carrier.
Tempo Satellite, Inc.	12.2-12.7 GHz	Pending <sup>5</sup>	Expected to be the DBS platform to which the K Prime Partner venture would migrate.
United States Satellite Broadcasting Co.	12.2-12.7 GHz	Granted	Plans to use 3 satellites to deliver 11 channels of diversified entertainment programming nationwide. It is the highest powered DBS service yet proposed.

<sup>1</sup>Mary Lu Carnevale, "FCC Gives License to WorldSpace for Radio Satellite," *Wall Street Journal*, June 24, 1991, p. B1.

<sup>2</sup>All information on DBS bandwidths and status are from "Crowded DBS Field Awaits Orbit/Channel Allocations by Fee," *The DBS Report*, June 1990, pp. 1, 7-8,

<sup>3</sup>This range was preset as the band for DBS services by the FCC.

<sup>4</sup>All DBS applications are for operational systems.

<sup>5</sup>The FCC is holding capacity in reserve until a character qualification issue is resolved.

*Low-Earth Orbiting Satellite<sup>6</sup>*

Company	Band	Status	Comments
Constellation Communications, Inc.	<b>1610- 1625.5 MHz</b> (uplink), and 2483.5-2500 MHz (downlink)	Pending for both operational and experimental licenses	Aries system of 48 satellites would include position determination/reporting, two-way telephony, dispatch voice, facsimile, and data collection, distribution, and control services.
Ellipsat	1610- 1626.5 MHz (uplink), and 2483.5-2500 MHz (downlink)	Pending	Ellipso unit will connect to a cellular phone-converting 800-MHz cellular to the 2.5/1.6-GHz Radiodetermination-Satellite Service (RDSS) bands.
Leosat	148-149 MHz (uplink) and 137-138 MHz (downlink)	Pending	Planning to provide communications for an intelligent vehicle highway system (IVHS).
Loral Cellular Systems Corp.	1610-1626.5 MHz, 2483.5-2500 MHz	Pending	The Globalstar system will use 24 satellites for U.S. coverage (48 for global coverage) and will provide RDSS, voice and data communications using Code Division Multiple Access (CDMA) spread spectrum. They have three alternative spectrum proposals, with feeder links in the C-band. Loral is jointly owned by Loral Aerospace and Qualcomm.
Motorola, Inc.	<b>1610- 1626.5 MHz<sup>7</sup></b>	Pending	The Iridium system would use 77 satellites to provide mobile and portable phone service to any location on Earth. Planned startup in 1997.
Orbital Communications Corp.	<b>137-38 MHz</b> and <b>148-149.9 MHz</b>	Experimental—granted Operational—pending	Requesting a 370-kHz band in the frost range (downlink) and a 478-kHz band in the second (uplink). The Orbcomm system would be used for low-cost, low-speed data transmissions.
Starsys, Inc.	<b>137-38 MHz</b> and <b>148-149.9 MHz</b>	Pending	The Starnet system will use the same bandwidths as Orbcomm, providing data services.
TRW, Inc.	29.5 -30.0 GHz <b>19.7 -20.2 GHz</b> <b>1610-1625.5 MHz</b> <b>2483.5-2500 MHz</b>	Pending	The 12-satellite Odyssey system (operating at medium earth orbits) plans to provide voice, radiolocation, messaging, and data services using CDMA spread spectrum modulation.
Volunteers in Technical Assistance, Inc. (VITA)	<b>137-138 MHz</b> <b>148-149.9 MHz</b> , <b>400.15-401 MHz</b>	Operational—pending Experimental—granted	VITA is a nonprofit organization that plans to offer data services, including file transfer. The system would offer services in health, education, and technical assistance primarily for developing countries. Experimental system has been operating since 1990, and system is planned to be operational in 1993-94.

<sup>6</sup>All bandwidth information for LEO satellites is from Federal Communications Commission, "An Inquiry Relating to Preparation for the International Telecommunication Union World Administrative Radio Conference for Dealing With Frequency Allocations in Certain Parts of the Spectrum," Gen Docket No. 89-554, *Supplemental Notice of Inquiry*, 6 FCC Rcd 1914 (1991); and "TRW, Loral/Qualcomm Venture . . ." *Telecommunications Reports*, vol. 57, No. 24, June 17, 1991, pp. 28-30.

<sup>7</sup>Andrew Jenks, "Flurry of Low Earth Orbit Filings Flood the FCC," *Washington Technology*, vol. 6, No. 6, June 13, 1991, p. 9.

**Personal Communication Services**

Company	Band	Status <sup>9</sup>	Comments
Adelphia Cable Communications	902-928, 1850-1990, 2400-2483.5 MHz, 12.7 -13.5 GHz	Pending	Personal communication services (PCS) test by cable company using fiber optic in Pittsburgh, Miami, Buffalo, and Tequesta, FL.
Advanced Cordless Technologies	930.5 MHz (paging), 902-928, and 940-941 MHz. Also 864-868.1 MHz	Granted	Using CT2 technology in New York City. Second application (864-868 MHz) granted for use in Monticello, NY.
Advanced Mobilecom Technologies, Inc.	901-902,930-931, 940-941 MHz (902-928: Part 15 Spread spectrum device)	Granted	Two simultaneous applications granted: one in Boston and one in Miami-Ft. Lauderdale.
Advanced Wireless Communications, Inc.	849-851,864-868, 894-896,901-902, 930-931,940-941, 1850-1990 MHz	Pending	Tests of CT2 and PCN systems, testing possible sharing with air-to-ground in San Francisco and Cincinnati.
American Personal Communications, Inc.	901-902,930-931, 940-941 MHz.	Granted	Partnership with the <i>Washington Post</i> to provide service in and around Washington, DC.
	Also 1850-1990 MHz	Granted	A second application has been granted to test services in Washington, DC and Baltimore, MD.
American Telezone	2400-2483.5 MHz	Granted	For use in eastern Texas, using Part 15 telepoint service. Application also granted for southern California.
Ameritech Direct Communications, Inc.	1850-1990 MHz	Granted	Spread spectrum in Chicago.
Associated PCN Corp.	1850-1990 MHz	Granted	For use in Los Angeles, using spread spectrum. Pending application for the same technology and frequency for New York, Chicago, and Washington, DC.
Atlantic Cellular Co., L.P.	902-928,931-932, 941-948, 1850-1990MHz	Pending	PCN equipment test in Manchester, NH, Providence, RI, and Boston. A second application is pending for a PCS test in San Francisco and San Jose.
AT&T	1850-1990 MHz	Granted	Research of different types of PCN equipment in Chester, NJ.
AT&T	5.9-6.4 GHz	Pending	Systems would use existing microwave relay towers to trial PCN hardware and software in Boston, Atlanta, and Los Angeles.
Barden Communications, Inc.	902-928, 1850-1990, 2400-2483.5,5725-5850 MHz, 12.7 -13.5 GHz	Pending	PCS test by cable company using fiberoptic in Detroit.
Bell Atlantic Mobile Systems, Inc.	902-928,1850-1990, 2400-2483.5 MHz	Pending	Development of PCS equipment for Pittsburgh, Philadelphia, Bedminister, NJ, and Washington, DC.
BellSouth Enterprises, Inc.	866-869,902-928, 1850-1990 MHz Also 846.5-849 MHz	Granted	Two separate applications granted. First in Atlanta, second in Athens, GA. CT2 in Athens, using cellular frequencies.

<sup>8</sup>All information on PCS was provided in Federal Communications Commission "PCS Experimental Applications by Filed Date," May 30, 1991, unpublished document.<sup>9</sup>All applications are for experimental systems.

*Personal Communication Service<sup>8</sup>*

Company	Band	Status <sup>9</sup>	Comments
Bell South Services, Inc.	<b>864-869,902-928, 1850-1990 MHz</b>	Granted	Tests of wireless Access Business Systems in Birmingham, AL and Atlanta.
BNR, Inc. (Subsidiary of Northern Telecom)	<b>864-868,902-928,930-960, 1850-1990,2400-2483.5, 5725 -5850 MHz</b>	Pending	CT2 and PCN in Richardson, TX, Mountain View, CA, and ResearchTriangle Park, NC. Also have an application pending for a 1-day demo of equipment (nationwide) on same frequencies.
Cable TV of East Providence, Inc.	902-928,1850-1990,2400-2483.5, 5725 -5850 MHz	Pending	Use of cable to tie cells together in East Providence, RI.
Cable USA, Inc.	<b>866-868, 1850-1990 MHz</b>	Granted	CT2 and PCN in Omaha, Kearney, Grand Island, and Hastings, NE.
Cablevision	902-928,2400-2483S,W25- <b>5850 MHz</b> and <b>12.7-13.5 GHz</b>	Granted	PCN interfacing with existing cable system in Cleveland, New York City, Chicago, and Boston.
CASCO Cable Television, Inc.	<b>902-928,1850-1990,2400-2483.5,5725-5850 MHz</b>	Pending	Cable used to tie cells together in Brunswick, ME.
<b>Cellular 21, Inc.</b>	<b>866-868 MHz</b> and <b>940-941 MHz</b>	Granted	Two applications have been granted. The first (866-868 MHz) was for a test of British equipment in Gillet, PA and Elmira-Ithaca, NY. The second (940-941 MHz) was for a 50-mile radius around the Empire State Building, with only one base station.
Cellular General, Inc.	<b>866-868 MHz</b>	Granted	A test of British equipment in Deerfield, FL.
Cellular Services, Inc.	<b>901-902,930-931,940-941, 1850-1990 MHz</b>	Pending	PCS test in Los Angeles.
Cencom Cable Associates, Inc.	<b>1850-2120 MHz</b> , <b>12.7-13.5 GHz</b>	Pending	Development of PCS equipment by cable company using fiber optic in Riverside, CA, Alhambra, CA, Olivette, MO, and Fultondale, AL.
<b>Cincinnati</b> Bell Telephone Co.	<b>864-868, 1850-1990 MHz</b>	Pending	CT2 and PCN test in Cincinnati.
Citizens Utilities Company of CA	902-928, 1850-1990 MHz	Pending	Development to replace local loop in Elk Grove, CA.
COMCAST Corp. “	902-928,1850-1990,2400-2483.5 MHz and 12.7-13.5 GHz	Pending	Cable will be used to tie cells together in Indianapolis, Baltimore, Philadelphia, West Palm Beach, and Los Angeles.
Continental Cablevision of California, Inc.	1850-1990 MHz and 12.7-13.5 GHz	Granted	Uses cable to tie cells together in Stockton, CA.
Continental Cablevision of Jacksonville, Inc.	<b>1850-1990 MHz</b> and 12.7-13.5 GHz	Granted	Uses cable to tie cells together in Jacksonville, MS.
Continental Cablevision of Massachusetts, Inc.	1850-1990 MHz and 12.7-13.5 GHz	Granted	Uses cable to tie cells together in Boston.
Cox Enterprises, Inc.	902-928,2400-2483.5,5725-5850, and 1850-1990 MHz	Granted	For use in San Diego and New York City.
Cylink Corp.	<b>902-928,2400-2483.5,5725-5850 MHz</b>	Pending	Nationwide demo of Part 15 devices,
Dial Page, L.P.	866.1 -868.1 MHz	Pending	Test of foreign equipment in High Point, NC.

<sup>8</sup>All information on PCS was provided in Federal Communications Commission “PCS Experimental Applications by Filed Date,” May 30, 1991, unpublished document.  
<sup>9</sup>All applications are for experimental systems.

**Personal Communication Service<sup>8</sup>**

Company	Band	Status <sup>9</sup>	Comments
Digital Spread Spectrum Technologies, Inc.	<b>902-928,2400-2483.5,5725-5850, and 1850-1990 MHz</b>	Granted	PCN and Part 15 devices in San Jose and San Francisco.
Easyphone, Inc.	<b>864-866, and 930-960 MHz</b>	Granted	CT2 in San Francisco and Los Angeles.
Ericsson Paging Systems, Inc.	<b>940-952 MHz</b>	Granted	A wireless PBX system, in building, for use in Washington, DC, and Anaheim, CA.
General Instrument Corp.	864-868, 902-928, 1850-1990, 2400-2483.5 MHz	Pending	Development of PCS equipment in Hatboro, PA.
Graphic Scanning Corp.	1910-1920 MHz	Granted	Application granted for Detroit, White Plains, New York City, and Chicago.
GTE Mobile Communications	849-851, and 894-896 MHz	Pending	Test will cover the continental U.S. near Airfone stations. Will use CT2 to test the potential use of air-to-ground frequencies for CT2 use.
Hewlett Packard Co.	<b>864-868 MHz</b>	Pending	Test of foreign equipment at own office in Camel, IN.
Intermedia Communications of Florida, Inc.	<b>1850-1990 MHz</b>	Pending	Development of PCS by cable company in Tampa and Orlando.
LDH International, Inc.	901-902, 902-928, 930-931, 940-941, 2400-2483.5, 5725-5850 MHz and 27.5-21.14 and 28.5-29.14 GHz	Granted	For Greenville, NC, Denver CO and Atlanta.
Linktel Communications, Inc.	<b>1850-1990 MHz</b>	Pending	PCN in San Diego, Palm Springs, Phoenix, and Las Vegas.
LiTel Telecommunications Corp.	<b>2400-2483.5, 5725-5850 MHz</b>	Granted	2400-MHz band for communication between users and base station, 5700-MHz band used to tie base stations together. Both bands Part 15 Spread spectrum device. For use in Columbus, OH.
LiTel Telecommunications Corp.	<b>864-868, 902-928, 930-960, 1850-1990, 2400-2483.5, 5725-5850 MHz</b>	Pending	PCS test in Cleveland and Cincinnati. Local Area Telecommunications, Inc.
Matrix Personal Communications, Inc.	<b>1850-1990 MHz</b>	Pending	PCN in San Juan, Puerto Rico.
Matrix Personal Communications, Inc.	<b>901-902, 930-931, and 940-941 MHz</b>	Granted	For use in Chicago.
McCaw Cellular Communications, Inc.	<b>864.1 -868.1 MHz</b>	Granted	For use in Orlando, Seattle, and West Palm Beach. CT2 service and equipment would be converted to cellular frequencies later.
Media General Cable of Fairfax County, Inc.	<b>902-928, 1850-1990, 2400-2483.5, 5725-5850 MHz</b>	Pending	Development of PCS equipment by cable company in Fairfax, VA.
Micronet, Inc.	<b>864-868 MHz</b>	Pending	Test of foreign equipment in Lancaster, Jamison, and Philadelphia, PA, and Austin, Dallas, and Houston, Texas.  Test of equipment within office in Duluth, GA. Also has a pending application for 862-864 MHz in various locations nationwide.

<sup>8</sup>All information on PCS was provided in Federal Communications Commission, "PCS Experimental Applications by Filed Date," May 30, 1991, unpublished document.<sup>9</sup>All applications are for experimental systems.

*Personal Communication Service<sup>8</sup>*

Company	Band	Status <sup>9</sup>	Comments
Motorola, Inc.	1850-1990 MHz	Granted	For use in Chicago and Atlanta, using spread spectrum. Motorola also has an application pending in the 864-868 MHz band (test of PCS at factory in Chicago).
MTEL PCN, Inc.	1850-1990 MHz	Granted	For use in Dallas-Ft. Worth area.
Novatel Communications, Inc.	940-952 MHz	Pending	
NYNEX Science & Technology	1850-1990 MHz	Granted	For use in Boston, New York City, and White Plains, NY.
Omni-Point Data Co., Inc.	902-928, 2400-2483.5, and 5725-5850 MHz	Granted	CT2 service covering continental United States.
Pacific Telesis Group	614-806, 824-849, 869-894, 849-851, 894-896, 901-902, 930-931, 940-941, 902-928, 1850-1990, 2110-2130, 2160-2180, 2400-2483.5 MHz	Granted	Use in San Francisco, Chicago, Dallas, New York City, and Los Angeles.
PCN America, Inc. (Millicom)	1850-1990 MHz	Granted	A test of a spread spectrum digital system in Houston and Orlando.
PCS Network, Inc.	901-902, 940-942 MHz	Granted	For use in Boston, Philadelphia, and New York City.
Personal Communications Network Services of New York, Inc.	1850-1990 MHz	Granted	For New York City and Newark, using spread spectrum.
Personal Communications Network Services of New York	940-952 MHz	Pending	Wireless PBX in New York City.
Pertel, Inc.	902-928, 2100-2483.5, 5735-5850, 1850-1990 MHz, and 12.7-13.5 GHz	Granted	Used in Philadelphia, Cleveland, and Pittsburgh. Cable is used to tie cells together.
Prime II Management, Inc.	902-928, 941-948, 1270-1350, 1850-1990, 2400-2483.5, 5725-5850 MHz	Pending	Development of PCS equipment by cable company in Anchorage, Atlanta, Chicago, Las Vegas, and Houston.
SCS Mobilecom, Inc.	1850-1990 MHz	Pending	Spread spectrum in Long Island, NY.
Satcom, Inc.	866-868, 1850-1990 MHz	Granted	Testing in rural areas around Spokane, WA, Missoula, MT, and Billings, MT.
Tele-Financing Corp., Inc.	1850-1990 MHz	Pending	PCN in Appleton, WI.
Telepoint Personal Communications, Inc.	940-941 MHz	Granted	CT2 demonstration system in Atlantic City.
Tel/Logic Inc.	1850-1990 MHz	Pending	CDMA spread spectrum, in Pittsburgh and Dallas-Ft. Worth.
Time Warner Cable Group	902-928, 1850-1990, 2400-2483.5, 5725-5850 MHz and 12.7-13.2, and 17.7-19.7 GHz	Granted	In New York City, St. Petersburg, Cincinnati, and Columbus, using cable to tie cells together.
Timex Communications Corp.	864.15-868.05 MHz (902-28 MHz Part 15)	Granted	For use within the Timex Building in Middlebury, CT

<sup>8</sup>All information on PCS was provided in Federal Communications Commission, "PCS Experimental Applications by Filed Date," May 30, 1991, unpublished document.<sup>9</sup>All applications are for experimental systems.

*Personal Communication Services<sup>8</sup>*

Company	Band	Status <sup>9</sup>	Comments
Unicell Corp.	940-948 MHz	Granted	For use in Boston.
United Artists Cable Corp.	866-868,901-928,930-931,940-941, 1710-1850,1850-1990,1990-2110,2110-2200,2200-2290, 2400-2483.5 MHz	Pending	PCN in Denver, Baton Rouge, Westchester, NY, Oakland, and Tulsa.
USA Mobile Communication, Inc. II	788-794, 800-806 MHz	Granted	For use in Indianapolis, Cincinnati, Louisville, Toledo, Cleveland, and Columbus.
Viacom International, Inc. ,	900-901,902-928,930-931,940-941, 1850-1990, 2400-2483.5, 5725-5850 MHz and 12.7-13.5 GHz	Pending	

<sup>8</sup>All information on PCS was provided in Federal Communications Commission, "PCS Experimental Applications by Filed Date," May 30, 1991, unpublished document.  
<sup>9</sup>All applications are for experimental systems.