

International Benchmarking: USA

Lower 700 MHz band

History of the band

In 2002, the FCC declared the reallocation of the 698-746 MHz spectrum band (the lower 700 MHz band) that had been allocated for televised broadcasting.¹ The reallocation of the lower 700 MHz band was made possible by a conversion of television broadcasting from an analog transmission system to a digital transmission system² for spectrum efficiency. In the FCC's historical view, the flexible use allocation adopted for the lower band would allow service providers to be tailor technology use of the spectrum to provide new services.³

The FCC noted that prior to the allocation, there had been a tremendous growth in new wireless services and demand for spectrum and that there were sparse amounts of unencumbered spectrum for new uses and users save for segments with a few megahertz each that was insufficient for high volume operations. Its adoption of a flexible use approach to the allocation was considered consistent with their legislative requirements under the Communications Act which required affirmative findings that flexible use allocations were consistent with international agreements, in the public interest, would not deter investment in communications services and systems or technology development, and would not cause harmful interference for users.⁴

Allocation history

In September 2002, the FCC completed an initial auction of the lower 700 MHz band's C and D blocks (710-716/740-746 MHz and 716-722 MHz bands).⁵ 484 out of 740 available licences were won by bidders for a gross auction revenue of \$116.1 million USD.

In June 2003, the FCC completed a subsequent auction of the lower 700 MHz band's C and D blocks.⁶ 251 out of 256 available licences were won by bidders for a gross auction revenue of \$62.9 million USD.

In July 2005, the FCC completed a subsequent auction of the lower 700 MHz band's C block.⁷ The remaining 5 licences were won by 3 bidders for a gross auction revenue of \$460,700 USD.

In March 2008, the FCC completed an initial auction of the lower 700 MHz band's A, B, D, and E blocks alongside Blocks of C and D of the upper 700 MHz band (746-806 MHz).⁸ 1090 out of 1099 licences were won by 101 bidders for a gross auction revenue of \$19.1 billion USD.

¹ [Lower 700 MHz Service | Federal Communications Commission \(fcc.gov\)](#)

² In 2013, the ACMA undertook similar reallocation activities in the [700 MHz band](#).

³ Page 2, [Microsoft Word - 14479.doc \(fcc.gov\)](#)

⁴ Page 9, *ibid*.

⁵ [Auction 44: Lower 700 MHz Band | Federal Communications Commission \(fcc.gov\)](#)

⁶ [Auction 49: Lower 700 MHz Band | Federal Communications Commission \(fcc.gov\)](#)

⁷ [Auction 60: Lower 700 MHz Band | Federal Communications Commission \(fcc.gov\)](#)

⁸ [Auction 73: 700 MHz Band | Federal Communications Commission \(fcc.gov\)](#)

In July 2011, the FCC completed a subsequent auction of the lower 700 MHz band's A and B blocks. All 16 licences were won by 7 bidders for a gross auction revenue of \$20.4 million.

Assignments in the band

The FCC allocated three 12 MHz blocks (A-C) of paired spectrum and two 6 MHz blocks (D-E) of unpaired spectrum. Licences in blocks A,B,D, and E were allocated under the FCC's Economic Area Grouping (EAG) which are an aggregation of Economic service areas⁹ and cover multiple states per area. Licences in block C were allocated under Cellular Market Areas (CMA's) which provides 734 services areas of varying sizes consisting of metropolitan and rural services areas.¹⁰

For licence terms, the FCC initially adopted an initial licence expiration date of 2015, which it claimed to be eight years after the earliest date that incumbent broadcasters may be required to vacate the lower 700 MHz band. At present, the FCC decided that initial authorisations will be granted for a maximum of ten years from June 2009, with an exemption for broadcast licensees.¹¹

All licences were granted a right to renewal expectancy subject to meeting performance requirements for the flexible use licences. The FCC adopted requirements for licensees to demonstrative substantial service which includes:

- > the construction of four permanent links per one million people in a service area for fixed point-to-point services;
- > the demonstration of coverage for 20% of the population in a service area for fixed point-to-multipoint services ;
- > demonstration of 20% population coverage for mobile services.¹²

The FCC also indicated that it would permit secondary market trading of licenses subject to legislative requirements. It noted that such allowances provide mechanisms for parties, such as small businesses and rural telephone companies to negotiate agreements to modify the geographic and spectral scope of any given licensees.

Currently, the assignments demonstrate three groupings based on the 88 licensees' current holdings:

- > Tier 1 licensees, or licensees holding above 1000 MHz, comprise of approximately 67% of the band.
- > Tier 2 licensees, or licensees holding above 100 MHz, comprise of approximately 14% of the band.
- > Tier 3 licensees, or licensees holding below 100 MHz, comprise of approximately 16%

⁹ Economic Areas are a grouping scheme that FCC delineated from a similar scheme utilised by the U.S.'s Department of Commerce (see [FCC Areas | Federal Communications Commission](#))

¹⁰ See [CMA.pdf | Powered by Box](#) and [d000565a.pdf | Powered by Box](#) for CMA and EAG groupings for the lower 700 MHz band.

¹¹ [47 CFR 27.13](#)

¹² Page 57-56 [Microsoft Word - 14479.doc \(fcc.gov\)](#).

800 MHz Cellular

History of the band

In the US, the most common use for the 800 MHz cellular service spectrum is mobile voice and data services.

The FCCC notes that Cellular Service spectrum dates back to 1981 when it set aside for 40 MHz for initial licensing. It divided the spectrum into what is now the CMA grouping scheme. The FCC has divided the spectrum into two blocks, initially awarded A-Block spectrum to non-wireline carriers and awarding B-Block spectrum awarded to a local wireline carrier that provided landline telephone services in a CMA.

When originally allocating the spectrum in the 1980s, the FCC initially allocated the spectrum through comparative hearings, a quasi-judicial forum where parties filed competing applications and argued why their case should be awarded spectrum over the competing party. These comparative hearings were conducted for licences in CMAs 1-30, which cover major metropolitan areas (such as New York, Atlanta, or Seattle). After the first 30 CMAs were awarded, the FCC adopted rules in 1984 and 1986 to issue the remaining licences via lotteries. Majority of licences were issued by 1991, with the remaining licences to be auctioned at a later time. In 1986, the Commission allocated an additional 5 MHz of spectrum for each channel block raising the total amount of spectrum per block to a total of 25 MHz.

Initially, the FCC issued singular Cellular Service licences for each channel block in a CMA. The initial licence was provided for five-year period to expand coverage within the CMA. After the five-year period, remaining areas reverted to the FCC for re-licensing to additional parties. The FCC routinely conducted administrative allocations or auctions for reassigning unserved CMAs back to the market.

The FCC conducted multiple reforms to streamline regulation which included introducing a substantial use test and changes to record-keeping rules and power limits.¹³

Allocation history

In January 1997, the FCC completed a subsequent auction of the 800 MHz band. All 14 licences were won by 10 bidders for a gross auction revenue of \$1.8 million USD.¹⁴

In June 2002, the FCC completed an subsequent auction of the 800 MHz band. All 3 licences were allocated for a gross auction revenue of \$15.9 million USD.¹⁵

In June 2008, the FCC completed a subsequent auction of the 800 MHz band. 1 licence was won with no unsold licences for a gross auction revenue of \$25,002 USD.¹⁶

¹³ [Cellular Reform | Federal Communications Commission \(fcc.gov\)](#).

¹⁴ [Auction 12: Cellular Unserved | Federal Communications Commission \(fcc.gov\)](#)

¹⁵ [Auction 45: Cellular RSA | Federal Communications Commission \(fcc.gov\)](#).

¹⁶ [Auction 77: Closed Cellular Unserved | Federal Communications Commission \(fcc.gov\)](#)/

Assignments in the band

Currently, the assignments demonstrate three groupings based on the 188 licensees' current holdings:

- > Tier 1 licensees, or licensees holding above 1000 MHz, comprise of approximately 65% of the band.
- > Tier 2 licensees, or licensees holding above 100 MHz, comprise of approximately 14% of the band.
- > Tier 3 licensees, or licensees holding below 100 MHz, comprise of approximately 11%

1800 MHz, 2 GHz (PCS/AWS)**History of the band***AWS bands*

Advanced Wireless Services is the term the FCC uses for radiocommunications services licensed in bands across the 1700-2200 MHz, similar to some frequency bands designated in Australia for mobile services. The FCC has designated multiple services for wireless broadband and satellite services. With relevance to ESL spectrum, this section focuses on the history of the AWS-1 (1710-1755/2110-2155 MHz) and AWS-3 (1695-1710 MHz; 1755-1780/2155-2180 MHz) bands as the predominant use is for wireless broadband services.

In consultation, the FCC noted that commenters anticipate services that make up AWS will employ bandwidth-intensive functions including high-speed data transfer and inter access, and will offer multimedia applications such as full-motion video, with the expectation that demand will rapidly increase once these applications are made available to end-users.¹⁷

For the AWS-1 band, the FCC completed an initial auction in September 2006. 104 bidders won 1087 out of 1122 licences with a gross auction revenue of \$13.9 billion USD.¹⁸

The FCC completed a subsequent auction of AWS-1 and Broadband Personal Communication Services (PCS) spectrum in August 2008. 16 Bidders won 53 out of 55 licences for a gross auction revenue of \$23.5 million USD.

For the AWS-3 band, the FCC completed an initial auction in January 2015. 31 bidders won all 1611 licences with a gross auction revenue of \$44.9 billion USD.¹⁹

PCS band

Broadband PCS (1850-1990 MHz) is commonly used for mobile voice and data services, including cell phone, text messaging, and Internet. The use of the band dates back to 1989

¹⁷ [Microsoft Word - 23031.doc \(fcc.gov\)](#)

¹⁸ [Auction 66: Advanced Wireless Services \(AWS-1\) | Federal Communications Commission \(fcc.gov\)](#).

¹⁹ [Auction 97: Advanced Wireless Services \(AWS-3\) | Federal Communications Commission \(fcc.gov\)](#).

when the FCC received several petitions for rulemaking to allow additional spectrum for ‘emerging technologies’.

In March 1995, the FCC completed an initial auction of the A and B blocks with a total bandwidth of 60 MHz. 18 bidders won all 99 licences with a gross auction revenue of \$7 billion USD.²⁰

In May 1996, the FCC completed an initial auction of C block PCS spectrum with a total bandwidth of 30 MHz available. 89 bidders won all 493 available licences with a gross auction revenue of \$13.4 billion USD.²¹

In July 1996, the FCC completed a subsequent auction of C block PCS spectrum. 7 bidders won 18 licences with a gross auction revenue of \$1.2 billion USD.²²

In January 1997, the FCC completed a subsequent auction of D, E, and F block spectrum. 125 bidders won 1427 licences with a gross auction revenue of \$2.5 billion USD.²³

In April 1999, the FCC completed a subsequent auction of C, D, E, and F block spectrum. 57 bidders won 302 licences with a gross auction revenue of \$532 million USD.²⁴

In January 2001, the FCC completed a subsequent auction of C and F block Broadband PCS spectrum. 35 bidders won 422 licences with a gross auction revenue of \$16.8 billion USD.²⁵

In February 2005, the FCC completed a subsequent auction with 24 bidders winning 217 licences for a gross auction revenue of \$2 billion USD.

In February 2007, the FCC completed a subsequent auction with 12 bidders winning 33 licences for a gross auction revenue of \$13.9 million USD.

The FCC completed a subsequent auction of AWS-1 and Broadband Personal Communication Services (PCS) spectrum in August 2008. 16 Bidders won 53 out of 55 licences for a gross auction revenue of \$23.5 million USD.

Current assignments in the PCS, AWS-1 and AWS-3 bands

Currently, the assignments demonstrate three groupings based on the x licensees’ current holdings:

- > Tier 1 licensees, or licensees holding above 1000 MHz, comprise of approximately of the band.
- > Tier 2 licensees, or licensees holding above 100 MHz, comprise of approximately of the band.
- > Tier 3 licensees, or licensees holding below 100 MHz, comprise of approximately

²⁰ [Auction 4: Broadband PCS A And B Block | Federal Communications Commission \(fcc.gov\)](#)

²¹ [Auction 5: Broadband PCS C Block | Federal Communications Commission \(fcc.gov\)](#)

²² [Auction 10: Broadband PCS C Block Reauction | Federal Communications Commission \(fcc.gov\)](#)

²³ [Auction 11: Broadband PCS D, E, & F Block | Federal Communications Commission \(fcc.gov\)](#)

²⁴ [Auction 22: C, D, E, And F Block Broadband PCS | Federal Communications Commission \(fcc.gov\)](#)

²⁵ [Auction 35: C And F Block Broadband PCS | Federal Communications Commission \(fcc.gov\)](#)

2.5 GHz

History of the band

The 2.5 GHz band (2496-2690 MHz) is currently split between 5G commercial mobile services and the educational broadband televisions use which was previously the only considered use of the band prior to the FCC's decision to reform the regulatory framework managing this frequency band.²⁶

The FCC considered this band to be significant in making more spectrum to enable 5G services in the commercial market. The proposed changes to the frequency band form part of the Commission's strategy to make additional high-band (24 GHz), mid-band (3.7-4.2 GHz) and low-band (900 MHz) bands available for the rollout of 5G services.

In October 2009, the FCC completed an initial auction for Broadband Radio Service spectrum. 10 bidders won 61 licences for a gross auction revenue of \$19.4 million USD.

In August 2022, the FCC completed a subsequent auction for 2.5 GHz band spectrum. 63 bidders won 7872 for a gross auction revenue of \$427.8 million USD.

Current assignments of the band

Wireless Communication Service (2.3 GHz)

History of the band

The Wireless Communication Service (WCS) is in the 2305-2320/2345-2360 MHz frequency band. The band is split between cellular networks and satellite radio users. The band's most common use of cellular spectrum is mobile voice and data services such calls, text messaging and internet browsing.

Cellular spectrum is allocated in four blocks for a total of 40 MHz of paired and unpaired spectrum:

- **A block:** 2305-2310/2350-2355 MHz
- **B block:** 2310-2315/2355-2360 MHz
- **C block:** 2315-2320 MHz
- **D block:** 2345-2350 MHz

In April 1997, the FCC completed an initial auction of WCS cellular spectrum. 17 bidders won 125 licences for a gross auction revenue of \$14.9 million USD.

Current assignments

²⁶ [FCC-19-62A1.pdf](#)

3500 MHz band

History of the band

*Citizen Broadband Radio Service*²⁷²⁸

In 2020, the FCC authorised the use of 150 MHz for commercial spectrum users called the Citizens Broadband Radio Service (CBRS). The band is administered through a tiered shared access system to facilitate small cell deployment and spectrum sharing. The FCC established a government/non-government sharing arrangement that affords incumbent users interference protection from spectrum sharing with protections granted to use cases such as Fixed Satellite Service and some grandfathered terrestrial wireless operations in the upper part of the 3.5 GHz band.

Prior to the introduction of spectrum sharing arrangements, the FCC identified that the 3550-3650 MHz band was allocated for the Radiolocation Service and the Aeronautical Radionavigation Service on a primary basis for federal use, overseen by the National Telecommunications and Information Administration (NTIA). The FCC also noted that other use cases included fixed/mobile high-powered Defence radar systems and FSS use cases for non-federal use. The 3650-3700 MHz band was allocated for terrestrial non-federal use, authorised through non-exclusive nationwide licences requiring registration of individual fixed and base stations.

To facilitate spectrum sharing, the FCC established a three-tier prioritisation scheme to manage users of the spectrum. This system is administered by an automated frequency coordinator, or Spectrum Access System, to support assignment for priority access licensees and general authorised access licensees. The tiers are designated as follows:

- **Tier 1: Incumbent Access:** These users included authorised federal users, FSS earth stations, and grandfathered wireless broadband licensees for a finite period and receive protection from harmful interference from priority access and general authorised access licensees
- **Tier 2: Priority Access:** These licences are licensed on a county-by-county basis through competitive bidding. Each PAL consists of a 10 MHz channel within the 3550-3650 MHz band for 10-year renewable licences. These licensees receive protection from General Authorised Access licensees.
- **Tier 3: General Authorised Access:** These licences are licensed-by-rule to permit open, flexible access for the widest possible use.

In August 2020, the FCC completed an initial auction of Priority Access Licences of the 3.5 GHz band. 228 bidders won 20625 licences for a gross auction revenue of \$4.8 billion USD.²⁹

*3.45 GHz service*³⁰

²⁷ [FCC Releases Rules for Innovative Spectrum Sharing in 3.5 GHz Band | Federal Communications Commission](#)

²⁸ [3.5 GHz Band Overview | Federal Communications Commission \(fcc.gov\)](#)

²⁹ [Auction 105: 3.5 GHz Band | Federal Communications Commission \(fcc.gov\)](#)

³⁰ [FCC Opens 100 Megahertz of Mid-Band Spectrum for 5G | Federal Communications Commission](#)

The FCC auctioned additional spectrum to support Congressional and Commission objectives to make more mid-band spectrum available for 5G services. Noting that the band has incumbent federal use cases, the FCC opened up the band for commercial wireless use on a shared basis within the 3.45-3.55 GHz band.

In January 2022, the FCC completed an initial auction of the 3.45 GHz service. 23 bidders won 4041 licences for a gross auction revenue of \$22.5 billion USD.

Current assignments

Market Environment

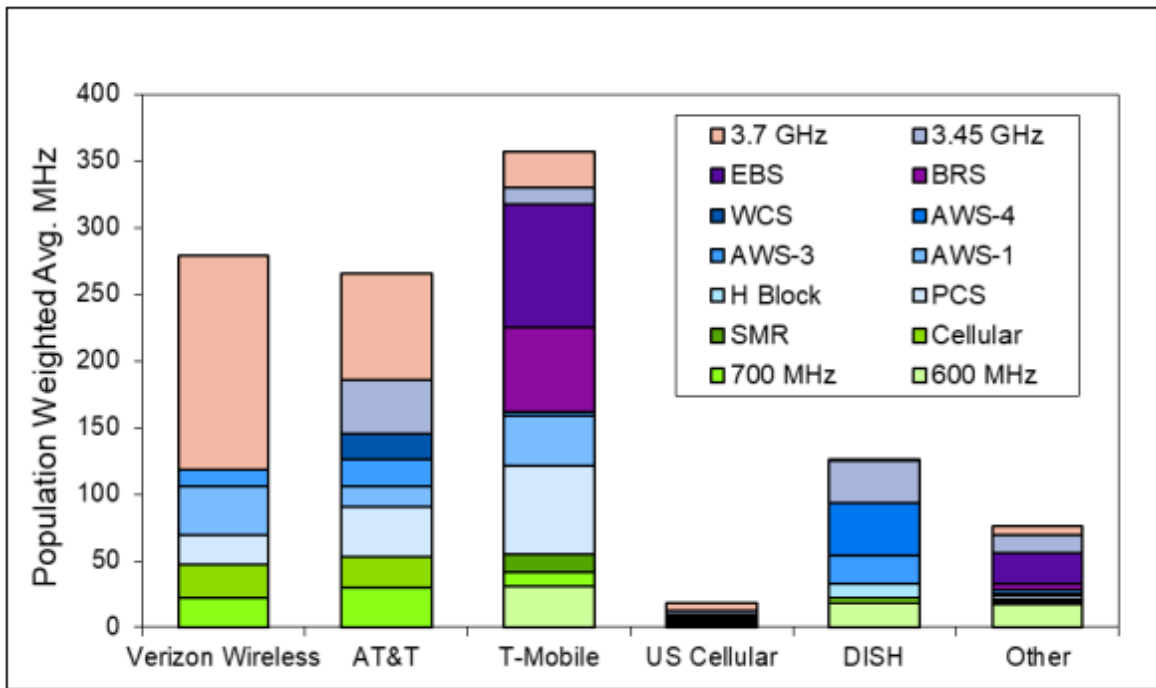
Current/Future trends

MNOs/market structure

Percentage Spectrum Holdings, Measured on a MHz-POPs Basis
by Licensee, by Frequency Band

Spectrum	600 MHz	700 MHz	Cellular	SMR	PCS	H Block	AWS-1	AWS-3	AWS-4	WCS	BRS	EBS	3.45	3.7 GHz
AT&T	0.0%	42.2%	44.6%	0.0%	29.0%	0.0%	16.1%	33.4%	0.0%	99.0%	0.0%	0.0%	40.1%	28.5%
DISH	26.3%	6.6%	0.0%	0.0%	0.0%	100.0%	0.0%	34.7%	100.0%	0.0%	0.0%	0.0%	31.0%	0.0%
T-Mobile	44.9%	15.0%	0.1%	96.5%	51.0%	0.0%	41.5%	5.4%	0.0%	0.0%	93.1%	79.9%	11.9%	9.8%
VZW	0.1%	31.1%	47.9%	0.0%	17.2%	0.0%	40.4%	20.2%	0.0%	0.0%	0.0%	0.0%	0.0%	57.4%
UScellular	2.5%	3.3%	3.8%	0.0%	1.1%	0.0%	0.8%	1.7%	0.0%	0.0%	0.0%	0.0%	3.8%	1.8%
Other	26.1%	1.7%	3.7%	3.5%	1.7%	0.0%	1.4%	4.6%	0.0%	1.0%	6.9%	20.1%	13.2%	2.5%

Staff estimates as of July 2022. Numbers may not sum to 100% due to rounding. Abbreviations for spectrum bands: Cellular, SMR (Specialized Mobile Radio Service), PCS (Personal Communications Service), BRS (Broadband Radio Service), and EBS (Educational Broadband Service).

Spectrum Holdings by Band Weighted by Population

Staff estimates as of July 2022.

Secondary Market³¹

The FCC has permitted secondary market mechanisms like spectrum leasing since the early 2000s. Prior to this, the FCC permitted transfer arrangements which included:

- Transfer portions of a licensee's right to use frequency bands across their service area (**disaggregation**)
- Transferring rights to use frequency bands in portions of their service area (**partitioning**);
- A combination of partitioning and disaggregation.

The FCC noted in a Notice for Proposed Rule-Making in November 2000, that the regulatory regime at the time which included transfer arrangements, and service rules and barriers for spectrum usage and spectrum leasing, was potentially not sufficient in incentivising or providing licensees with the ability to respond to opportunities for meeting the growing demand for existing and new wireless services.³²

In 2003, the FCC authorised most licensees with 'exclusive rights' to their assignment spectrum to enter into spectrum leasing arrangements.³³ The FCC created two different mechanisms:

³¹ [Secondary Markets Initiative and Spectrum Leasing | Federal Communications Commission \(fcc.gov\)](#)

³² [NPRM: Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets.](#)

³³ [Report and Order and Further Notice of Proposed Rulemaking: Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets.](#)

- **“Spectrum manager” leasing:** This option enables parties to enter into arrangements without Commission approval as long as the licensee retains both *de jure* control (legal control/ownership) and *de facto* control (operational/working control) over the leased spectrum pursuant to relevant standards.
- ***De facto* transfer leasing:** This option permits parties to enter into long-term or short-term leasing arrangements pursuant to approval from the Commission. This option requires the licensee to retain *de jure* control while *de facto* control is transferred to lessee for the term of the lease.

In 2004 and 2005, the FCC made changes to the approval procedures to shorten the timelines for approvals of spectrum leasing applications.

The FCC has currently registered an approximate 23,000 leases as of July 2024 across low-band and mid-band frequencies for wireless mobile.³⁴

³⁴ 600 MHz; 700 MHz; Cellular; SMR; Broadband PCS; AWS-1; AWS-3; AWS-4; H-block; WCS; BRS; EBS ; 3.7 GHz; 3.45 GHz (see Fig.II.B.9 in the [FCC 2022 Communications Marketplace Report](#)).

Appendix A: Current assignments in frequency bands³⁵

Table 1: Lower 700 MHz band

Licensees	Frequency Block	# licences	Total holdings (MHz)	Licence winners	Frequency Block	# licences	Total holdings (MHz)
AST Telecom, LLC d/b/a Bluesky	A/B	2	24 MHz	Nex-Tech Wireless, LLC	B/C	16	192 MHz
AT&T Mobility Spectrum LLC	A/B/C/E	578	6930 MHz	Nsight Spectrum, LLC	B/C	18	216 MHz
Acadiana Cellular General Partnership	B/C	4	48 MHz	Northern New Mexico Telecom, Inc.	C	1	12 MHz
Agri-Valley Communications, Inc.	B/C	2	24 MHz	Orcas Power and Light Cooperative	A	1	12 MHz
Advantage Cellular Systems, Inc.	C	1	12 MHz	Oregon Rsa #2, Inc.	A/B	2	24 MHz
American Samoa Telecommunications Authority	C	1	12 MHz	Pioneer Telephone Cooperative, Inc.	A	1	12 MHz
Arctic Slope Telephone Association Cooperative, Inc.	C	1	12 MHz	PTI Pacifica Inc.	A/B	3	36 MHz
AT&T Spectrum Frontiers LLC	C/D	8	90 MHz	Puerto Rico Telephone Company, Inc.	A/B	8	96 MHz
Bascom Advanced Services, Inc. dba Bascom Long Distance	B	1	12 MHz	Panhandle Telecommunication Systems, Inc.	B/C	2	24 MHz
Blackfeet Tribe	B	1	12 MHz	Panhandle Telephone Cooperative, Inc.	B/C	2	24 MHz
Border to Border Communications, Inc.	C	1	12 MHz	Pine Cellular Phones, Inc.	B	2	24 MHz
Cellular South Licenses, LLC	A/B/C	11	132 MHz	Public Service Wireless Services, Inc.	B/C	5	60 MHz

³⁵ Unless otherwise stated, current assignments are sourced by data provided by the FCC's [Universal Licensing System](#) as of July 2024. Auction results may not wholly reflect the results provided in this Appendix and there may be minor discrepancies as a result of licence activity. Licences displayed in the FCC database are presumed to be issued by CMA.

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Chevron USA Inc.	A/B/E	3	30 MHz	Raicom, Inc.	B/C	2	24 MHz
Custer Telephone Cooperative, Inc	A/B	2	24 MHz	Red River Rural Telephone Association, Inc.	B/C	2	24 MHz
Cellco Partnership	B/C	2	24 MHz	Reservation Telephone Cooperative	B	1	12 MHz
Commnet of Nevada, LLC	B	1	12 MHz	RigNet, Inc.	C	1	12 MHz
Comporium Wireless, LLC	B	1	12 MHz	SAL Spectrum, LLC	A/B	3	36 MHz
Cross Telephone Company, L.L.C.	B	1	12 MHz	Sagebrush Cellular, Inc.	B	2	24 MHz
Docomo Pacific, Inc.	C	2	24 MHz	SBI License Corporation	B/C	2	24 MHz
Data-Max Wireless, LLC	B	1	12 MHz	Silver Star Telephone Company, Inc.	B	1	12 MHz
East Kentucky Network, LLC d/b/a Appalachian Wireless	B/C	10	120 MHz	Sky Com 700 MHz, LLC	B	2	24 MHz
FiberTower Spectrum Holdings LLC	B	3	36 MHz	Smith Bagley, Inc.	B	2	24 MHz
FTC Management Group, Inc.	B/C	3	36 MHz	San Carlos Apache Telecommunications Utility, Inc.	C	2	24 MHz
Hardy Cellular Telephone Company	A	1	12 MHz	Southwest Texas Telephone Company	C	1	12 MHz
Horry Telephone Cooperative, Inc.	A	1	12 MHz	T-Mobile License LLC	A	52	624 MHz
Infrastructure Networks Inc	A	4	48 MHz	The Alaska Wireless Network, LLC	A	1	12 MHz
Iowa Rsa No. 9 Limited Partnership	B	1	12 MHz	Triangle Communication System Inc	B/C	7	84 MHz
James Valley Cooperative Telephone Company	A/B	3	36 MHz	Union Telephone Company	A/B/C	10	120 MHz
King Street Wireless, LP	A/B	152	1824 MHz	UNITED STATES CELLULAR OPERATING COMPANY LLC	A/B	1	12 MHz

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Kansas #15 Limited Partnership	C	1	12 MHz	USCOC NEBRASKA/KANSAS, LLC	A/B/C	18	216 MHz
Kudzu Networks, Inc.	B	1	12 MHz	USCOC OF CENTRAL ILLINOIS, LLC	A/B/C	10	120 MHz
Liberty Mobile USVI Inc.	A/B/C/D	6	66 MHz	USCOC OF GREATER IOWA, LLC	A/B/C	24	288 MHz
Lafayette MSA Limited Partnership	C	1	12 MHz	USCOC OF GREATER MISSOURI, LLC	A/C	12	144 MHz
Lake Mobility LLC	B	1	12 MHz	USCOC OF GREATER NORTH CAROLINA, LLC	A/B	6	72 MHz
Liberty Mobile Puerto Rico Inc.	B/C/D	16	186 MHz	USCOC OF GREATER OKLAHOMA, LLC	A/C	3	36 MHz
Louisiana RSA No. 8 Limited Partnership	B/C	6	72 MHz	USCOC OF LACROSSE, LLC	A	1	12 MHz
MAINE RSA #1, INC.	B/C	6	72 MHz	United Wireless Communications, Inc.	B/C	5	60 MHz
Mark Twain Communications Company	C	2	24 MHz	USCOC OF GREATER IOWA, LLC	B	2	24 MHz
Mid-Rivers Telephone Cooperative, Inc.	C	4	48 MHz	USCOC OF RICHLAND, INC.	B	1	12 MHz
Manifest Wireless L.L.C.	E	168	1008 MHz	VTel Wireless, Inc.	B/C	5	60 MHz
NE Colorado Cellular, Inc.	A/B/C	14	128 MHz	VTX Communications, LLC	C	3	36 MHz
New Cingular Wireless PCS, LLC	A/B/D/E	347	4110 MHz	WUE, Inc	B	1	12 MHz
Nextel West Corp.	A/B	84	1008 MHz	Wes-Tex Telecommunications, Ltd.	C	1	12 MHz
Nemont Communications, Inc.	B/C	7	84 MHz	WSS, L.L.C.	C	2	24 MHz

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Table 2: 800 MHz cellular

Licence winners	Frequency Block	# licences	Total holdings (MHz)	Licence winners2	Frequency Block3	# licences4	Total holdings (MHz)
ALLTEL Communications Of North Carolina Limited Partnership	A/B	2	50 MHz	Muskegon Cellular Partnership	B	1	25 MHz
Alltel Corporation	A/B	279	6975 MHz	Ne Colorado Cellular, Inc.	A	4	100 MHz
Anderson Celltelco	A	1	25 MHz	New Cingular Wireless Pcs, Llc	A/B	310	7750 MHz
Arctic Slope Telephone Association Cooperative, Inc.	A	1	25 MHz	Nh #1 Rural Cellular, Inc.	A	3	75 MHz
AST Telecom, LLC D/B/A Bluesky	A	1	25 MHz	NEW MEXICO RSA 6-I PARTNERSHIP	B	1	25 MHz
AT&T Mobility Of Galveston LLC	A	2	50 MHz	NEW MEXICO RSA NO. 5 LIMITED PARTNERSHIP	B	1	25 MHz
At&T Mobility Spectrum, Llc	A/B	285	7125 MHz	New York Rsa 2 Cellular Partnership	B	1	25 MHz
At&T Mobility Wireless Operations Holdings Inc.	A	8	200 MHz	New York Smsa Limited Partnership	B	3	75 MHz
Athens Cellular, Inc.	A	1	25 MHz	North Central Rsa 2 Of North Dakota Limited Partnership	B	2	50 MHz

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Acadiana Cellular General Partnership	B	3	75 MHz	North Dakota 5-Kidder Limited Partnership	B	2	50 MHz
Airtouch Cellular	B	3	75 MHz	NORTH DAKOTA RSA NO. 3 LIMITED PARTNERSHIP	B	1	25 MHz
Allentown Smsa Limited Partnership	B	1	25 MHz	Northeast Pennsylvania Smsa Limited Partnership	B	1	25 MHz
ALLTEL Communications Of Arkansas RSA #12 Cellular Limited Partnership	B	1	25 MHz	NORTHEASTERN GEORGIA RSA LIMITED PARTNERSHIP	B	2	50 MHz
Alltel Communications Of Lacrosse Limited Partnership	B	1	25 MHz	Northwest Dakota Cellular Of North Dakota Limited Partnership	B	1	25 MHz
American Samoa Telecommunications Authority	B	1	25 MHz	Northwest Missouri Cellular Limited Partnership	B	1	25 MHz
Bangor Cellular Telephone, L.P.	A	1	25 MHz	Nsight Spectrum, Llc	B	4	100 MHz
Badlands Cellular Of North Dakota Limited Partnership	B	1	25 MHz	Omaha Cellular Telephone Company	A	2	50 MHz
Bell Atlantic Mobile Systems Llc	A/B	26	650 MHz	Otz Telecommunications, Llc	A	1	25 MHz
Bismarck Msa Limited Partnership	B	1	25 MHz	Ohio Rsa 5 Limited Partnership D/B/A Alltel	B	1	25 MHz

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Blanca Telephone Company	B	2	50 MHz	Ohio Rsa 6 Limited Partnership D/B/A Alltel	B	1	25 MHz
Bristol Bay Cellular Partnership	B	1	25 MHz	Oklahoma City Smsa Limited Partnership	B	1	25 MHz
California Rural Service Area #1, Inc.	A	3	75 MHz	Oklahoma Independent Rsa 7 Partnership	B	1	25 MHz
Cedar Rapids Cellular Telephone, L.P.	A	1	25 MHz	Oklahoma Rsa 3 Limited Partnership	B	1	25 MHz
Cellco Partnership	A/B	259	6475 MHz	Oklahoma Rsa 9 Limited Partnership	B	1	25 MHz
Charleston-North Charleston Msa Limited Partnership	A/B	2	50 MHz	Oklahoma Western Telephone Company	B	1	25 MHz
Commnet Cellular Inc.	A/B	39	975 MHz	Onvoy Spectrum, LLC	B	1	25 MHz
Commnet Four Corners, Llc	A	11	275 MHz	Optimera Holdings, Inc.	B	1	25 MHz
Commnet Of Nevada, LLC	A	5	125 MHz	OREGON RSA #2, INC.	B	3	75 MHz
Cordova Wireless Communications, Llc	A	2	50 MHz	Orlando Smsa Limited Partnership	B	4	100 MHz
Custer Telephone Cooperative, Inc.	A/B	2	50 MHz	Pascagoula Cellular Partnership	A	1	25 MHz
California Rsa No. 4 Limited Partnership	B	1	25 MHz	Petersburg Cellular Partnership	A	1	25 MHz
Carolina West Wireless, Inc.	B	2	50 MHz	Pittsfield Cellular Telephone Company	A	1	25 MHz

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Cellular Network Partnership, An Oklahoma Limited Partnership	B	5	125 MHz	Panhandle Telecommunication Systems, Inc.	B	1	25 MHz
Cellular South Licenses, Llc	B	9	225 MHz	Pennsylvania Rsa 1 Limited Partnership	B	1	25 MHz
Chattanooga Msa Limited Partnership	B	1	25 MHz	Pennsylvania Rsa No. 6 (I) Limited Partnership	B	1	25 MHz
Chicago SMSA LP	B	6	150 MHz	PENNSYLVANIA RSA NO. 6 (II) LIMITED PARTNERSHIP	B	1	25 MHz
Cingular Wireless Of Texas Rsa #11 Limited Partnership	B	1	25 MHz	Pine Belt Cellular, Inc.	B	1	25 MHz
Cingular Wireless Of Texas Rsa #16 Limited Partnership	B	1	25 MHz	Pine Telephone Company, Inc. Dba Pine Cellular Phones, Inc.	B	1	25 MHz
Commnet Of Arizona, LLC	B	1	25 MHz	Pinnacles Cellular, Inc.	B	1	25 MHz
Copper Valley Wireless, Llc	B	1	25 MHz	Pti Pacifica Inc.	B	1	25 MHz
Cross-Valliant Cellular Partnership	B	1	25 MHz	Puerto Rico Telephone Company, Inc.	B	12	300 MHz
Docomo Pacific, Inc.	A	2	50 MHz	Racine Cellular Telephone Company	A	1	25 MHz
Dubuque Cellular Telephone, L.P.	A	1	25 MHz	Rural Cellular Corporation	A/B	25	625 MHz
Excomm, LLC	A/B	14	350 MHz	REDDING MSA LIMITED PARTNERSHIP	B	1	25 MHz

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East Kentucky Network, LLC D/B/A Appalachian Wireless	B	2	50 MHz	RSA 1 LIMITED PARTNERSHIP D/B/A CHAT MOBILITY	B	1	25 MHz
Elbert County Wireless, Llc	B	1	25 MHz	Rsa 7 Limited Partnership	B	1	25 MHz
Farmers Cellular Telephone Company, Inc.	A	1	25 MHz	Santa Barbara Cellular Systems, Ltd	A	1	25 MHz
Florida Rsa No. 2b (Indian River) Limited Partnership	B	2	50 MHz	Sbi License Corporation	A	1	25 MHz
Fresno Msa Limited Partnership	B	6	150 MHz	Smith Bagley, Inc.	A	1	25 MHz
Gadsden Celltelco Partnership	A	1	25 MHz	Springfield Cellular Telephone Company	A	1	25 MHz
Gte Mobilnet Of Florence, Alabama Incorporated	A	1	25 MHz	St. Joseph Celltelco	A	1	25 MHz
Gila River Cellular General Partnership	B	1	25 MHz	Sacramento Valley Limited Partnership	B	10	250 MHz
Gold Creek Cellular Of Montana Limited Partnership	B	19	475 MHz	SAGEBRUSH CELLULAR, INC.	B	2	50 MHz
Gte Mobilnet Of California Limited Partnership	B	6	150 MHz	Seattle Smsa Limited Partnership	B	4	100 MHz
Gte Mobilnet Of Fort Wayne Limited Partnership	B	1	25 MHz	Sioux City Msa Limited Partnership	B	1	25 MHz

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Gte Mobilnet Of Indiana Limited Partnership	B	6	150 MHz	St. Lawrence Seaway Rsa Cellular Partnership	B	1	25 MHz
Gte Mobilnet Of Indiana Rsa #3 Limited Partnership	B	1	25 MHz	T-Mobile License Llc	A	1	25 MHz
Gte Mobilnet Of Indiana Rsa #6 Limited Partnership	B	1	25 MHz	Tampnet Usa Llc	A/B	2	50 MHz
Gte Mobilnet Of South Texas Limited Partnership	B	3	75 MHz	Texas Rsa 18 Limited Partnership	A/B	2	50 MHz
Gte Mobilnet Of Terre Haute Limited Partnership	B	1	25 MHz	Telalaska Cellular, Inc.	B	3	75 MHz
Gte Mobilnet Of Texas Rsa #17 Limited Partnership	B	1	25 MHz	Teleguam Holdings, Llc	B	1	25 MHz
Houma/Thibodaux Cellular Partnership	A	1	25 MHz	Texas Rsa 11b Limited Partnership	B	1	25 MHz
Hardy Cellular Telephone Company	B	4	100 MHz	Texas Rsa 20b1 Limited Partnership	B	1	25 MHz
Iowa Rsa No. 12 Limited Partnership	A	1	25 MHz	Texas Rsa 6 Limited Partnership	B	1	25 MHz
Iowa Rsa No. 9 Limited Partnership	A	1	25 MHz	Texas Rsa 7b1 Limited Partnership	B	1	25 MHz
Idaho 6-Clark Limited Partnership	B	1	25 MHz	Texas Rsa 9b1 Limited Partnership	B	1	25 MHz
Illinois RSA 6 And 7 Limited Partnership	B	2	50 MHz	Texas Rsa No. 2 Limited Partnership	B	1	25 MHz

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Indiana Rsa #1 Limited Partnership	B	1	25 MHz	The Alaska Wireless Network, Llc	A/B	22	550 MHz
Indiana Rsa 2 Partnership	B	1	25 MHz	Thumb Cellular Llc	B	1	25 MHz
Inland Cellular Llc	B	4	100 MHz	Tisdale Telephone Company, Llc	B	1	25 MHz
Iowa 8-Monona Limited Partnership	B	1	25 MHz	Topeka Smsa Limited Partnership	B	1	25 MHz
Jacksonville Cellular Telephone Company	A	1	25 MHz	Tyler/Longview/Marshall Msa Limited Partnership	B	2	50 MHz
Kenosha Cellular Telephone, L.P.	A	1	25 MHz	Topeka Cellular Telephone Company, Inc.	A	1	25 MHz
Kansas #15 Limited Partnership	B	1	25 MHz	Tuscaloosa Cellular Partnership	A	1	25 MHz
Kentucky Rsa No. 1 Partnership	B	1	25 MHz	Union Telephone Company	A/B	6	150 MHz
Liberty Mobile Puerto Rico Inc.	A	11	275 MHz	United States Cellular Operating Company Llc	A	11	275 MHz
Liberty Mobile Usvi Inc.	A	2	50 MHz	Uscoc Nebraska/Kansas, Llc	A/B	15	375 MHz
Lafayette Msa Limited Partnership	B	2	50 MHz	Uscoc Of Central Illinois, Llc	A/B	7	175 MHz
Lake Mobility Llc	B	1	25 MHz	Uscoc Of Greater Iowa, Llc	A/B	16	400 MHz
Leaco Rural Telephone Cooperative, Inc.	B	1	25 MHz	Uscoc Of Greater Missouri, Llc	A/B	11	275 MHz
Los Angeles Smsa Limited Partnership	B	2	50 MHz	Uscoc Of Greater North Carolina, Llc	A/B	15	375 MHz

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Louisiana Rsa No. 7 Cellular General Partnership	B	1	25 MHz	Uscoc Of Greater Oklahoma, Llc	A/B	11	275 MHz
Louisiana Rsa No. 8 Limited Partnership	B	1	25 MHz	Uscoc Of Lacrosse, Llc	A	1	25 MHz
Lubbock Smsa Limited Partnership	B	5	125 MHz	Uscoc Of Oregon Rsa #5, Inc.	A	1	25 MHz
Madison Cellular Telephone Company	A	1	25 MHz	Uscoc Of Virginia Rsa #3, Inc.	A	8	200 MHz
Maine Rsa #1, Inc.	A	4	100 MHz	Uscoc Of Washington-4, Inc.	A	1	25 MHz
Madison Smsa Limited Partnership	B	3	75 MHz	Uintah Basin Electronic Telecommunications, Llc D/B/A Strata Networks	B	1	25 MHz
Maine Rsa #4, Inc.	B	1	25 MHz	United States Cellular Operating Company Of Knoxville	B	4	100 MHz
Mcdaniel Cellular Telephone Company	B	1	25 MHz	United States Cellular Operating Company Of Medford	B	2	50 MHz
Milwaukee Smsa Limited Partnership	B	5	125 MHz	Uscoc Of Cumberland, Llc	B	3	75 MHz
Missouri Rsa 11/12 Limited Partnership	B	2	50 MHz	Uscoc Of Richland, Inc.	B	1	25 MHz
Missouri Rsa 2 Limited Partnership	B	1	25 MHz	Verizon Wireless Of The East Lp	A/B	19	475 MHz
Missouri Rsa 4 Limited Partnership	B	1	25 MHz	Verizon Americas Llc	B	8	200 MHz
Missouri Rsa 8 Limited Partnership	B	1	25 MHz	Vermont Rsa No. 2-B2, Inc.	B	1	25 MHz

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Missouri Rsa 9b1 Limited Partnership	B	1	25 MHz	Windy City Cellular Llc	A	1	25 MHz
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PCS band

Licence winners	Frequency Block	# licences	Total holdings (MHz)	Licence winners	Frequency Block	# licences	Total holdings (MHz)

AWS-1 Band (1710-1755/2110-2155 MHz)

Licence winners	Frequency Block	# licences	Total holdings (MHz)	Licence winners	Frequency Block	# licences	Total holdings (MHz)

AWS-3 Band

Licence winners	Frequency Block	# licences	Total holdings (MHz)	Licence winners	Frequency Block	# licences	Total holdings (MHz)

WCS Band

Licence winners	Frequency Block	# licences	Total holdings (MHz)	Licence winners	Frequency Block	# licences	Total holdings (MHz)

3.5 GHz band

Licence winners	Frequency Block	# licences	Total holdings (MHz)	Licence winners	Frequency Block	# licences	Total holdings (MHz)
