

# CB usage in the United States

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In the United States, the Class D Citizens' Radio Service, or Citizens' Band ("CB"), is one of several personal radio services defined by the FCC's Part 95 rules. It is intended to be a two-way voice communication service for use in personal and business activities of the general public, and has a reliable communications range of several miles, though the range is highly dependent on type of radio, antenna and propagation. Class A and B are no longer in existence (the frequencies were folded in to the GMRS radio service), Class C is a Radio Control ("R/C") model service and is covered further down in this article.

CB Radio is most frequently used by long-haul truck drivers for everything from relaying information regarding road conditions, the location of speed traps and other travel information, to basic socializing and friendly chatter.

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## Eligibility

There are no age, citizenship, or license requirements to operate a CB radio in the United States, and the service falls under the "License by Rule" part of the FCC rules (basically, if one follows the rules one is considered licensed). Operators may use any of the authorized 40 CB channels; however, channel 9 is used only for emergency communications or for traveler assistance and the higher number channels are almost exclusively SSB modulation. Use of all channels is on a shared basis. However, foreign governments and their representatives are not eligible to use citizens' band radio within the United States.

Operation is permitted anywhere within the United States and its territories or possessions; as well as anywhere in the world except within the territorial limits of areas where radio services are regulated by a foreign government, or another U.S. agency such as the Department of Defense.

Transmitters must be FCC certified and may not be modified, including modifications to increase output power or to transmit on unauthorized frequencies. Output power is limited to 4 watts for AM transmitters and 12 watts peak envelope power for single sideband (SSB) transmitters. The antenna may not be more than 20 feet (6.1 m) above the highest point of the structure it is mounted to, or the highest point of the antenna must not be more than 60 feet (18.3 m) above the ground (47 CFR 95.408(c)) if installed in a fixed location.<sup>[1]</sup>

AM and SSB modulation is used in the USA, some other countries have similar services in their countries that use FM.

## **Channel assignments**

### **North American/CEPT frequencies**



<b>CB Channel</b>	<b>Frequency</b>	<b>Typical Use (US)</b>
Channel 1	26.965 MHz	
Channel 2	26.975 MHz	
Channel 3	26.985 MHz	
Channel 4	27.005 MHz	Often used for 4x4's/ Off-roading
Channel 5	27.015 MHz	
Channel 6	27.025 MHz	Considered the Super Bowl channel <sup>[2]</sup>
Channel 7	27.035 MHz	
Channel 8	27.055 MHz	
Channel 9	27.065 MHz	Emergency communications or traveler assistance <sup>[3]</sup>
Channel 10	27.075 MHz	Often used by truckers for regional roads
Channel 11	27.085 MHz	
Channel 12	27.105 MHz	
Channel 13	27.115 MHz	Considered the Marine/RV channel
Channel 14	27.125 MHz	Commonly included transmit/receive crystal in many vintage walkie-talkies <sup>[4]</sup>
Channel 15	27.135 MHz	
Channel 16	27.155 MHz	
Channel 17	27.165 MHz	
Channel 18	27.175 MHz	
Channel 19	27.185 MHz	Highway trucker channel Notable as being the center frequency of the band.
Channel 20	27.205 MHz	
Channel 21	27.215 MHz	
Channel 22	27.225 MHz	
Channel 23	27.255 MHz	
Channel 24	27.235 MHz	
Channel 25	27.245 MHz	
Channel 26	27.265 MHz	
Channel 27	27.275 MHz	
Channel 28	27.285 MHz	
Channel 29	27.295 MHz	
Channel 30	27.305 MHz	Depending on local needs, channels numbered above 30 or 35 are generally used with SSB operation.
Channel 31	27.315 MHz	
Channel 32	27.325 MHz	
Channel 33	27.335 MHz	
Channel 34	27.345 MHz	
Channel 35	27.355 MHz	

Channel 36	27.365 MHz	
Channel 37	27.375 MHz	
Channel 38	27.385 MHz	SSB calling channel, LSB mode
Channel 39	27.395 MHz	
Channel 40	27.405 MHz	

To simplify selection of an operating frequency, the Citizens' Band radio spectrum is divided into 40 numbered radio frequency channels from 26.965 to 27.405 MHz, with channels generally spaced 10 kHz apart. Channel numbers are not strictly sequential with frequency; there are gaps for frequencies used by radio-controlled ("R/C") devices.

Furthermore, there is a gap between channel 22 and channel 23 (which was later filled by channels 24 and 25) for historical reasons. 27.235, 27.245 and 27.255 were assigned to Business radio use while the lower spectrum was assigned to the 11 meter amateur (ham) radio band. The 11-meter band became CB Channels 1 to 22, and the last business frequency was channel 23 and shared.

The frequency allocation list shown is supplied by the FCC (Federal Communications Commission) from Part 95 - Subpart D - Rules for Citizens Band (CB) Radio Service.

### Channel usage

Channel 19 is the most commonly used by truck drivers on highways, to the point that some radios even have a dedicated button to bring up channel 19 instantly. In most areas of the U.S. Other channels regionally used for this purpose include 10, 17, and 21.<sup>[5]</sup> Channel 13 is preferred in some areas for marine use<sup>[6]</sup> and for recreational vehicles.<sup>[5]</sup>

Several countries reserve a channel for emergency use, for example, channel 9 in the United States. In CB's heyday in the 1970s, channel 9 was monitored by parties who could relay messages to the authorities, or even directly by the authorities themselves. With the popularity of cellular phones, support for Channel 9 as an emergency channel has diminished, though volunteer organizations such as REACT (Radio Emergency Associated Communications Teams), and private individuals still monitor Channel 9 in some (particularly rural) areas.

## Shared radio services

### Remote control

Among several other services that share the CB frequencies is the Class C Citizens Band service for radio-controlled ("R/C") devices; no voice transmissions are permitted. It has six channels in the 27 MHz band. Five are unused 10 kHz assignments between channels 3/4, 7/8, 11/12, 15/16 and 19/20, and the sixth is shared with Channel 23. R/C transmitters may use up to 4 watts on the first five channels and 25 watts on the last, 27.255 MHz. Some in-house paging systems, and car alarms with a paging feature, also use these frequencies, especially 27.255 where the higher power is permitted.

#### Remote control channels

<b>3A</b>	26.995 MHz
<b>7A</b>	27.045 MHz
<b>11A</b>	27.095 MHz
<b>15A</b>	27.145 MHz
<b>19A</b>	27.195 MHz

The 27 MHz Class C channels are not officially numbered by the FCC. R/C enthusiasts usually designate them by color, and fly different-colored flags from the antenna to show who is on which channel.<sup>[7]</sup> On the other hand, some CB operators illegally use these channels for voice communications, and usually refer to them as an alternate of the closest voice channel below them (such as 3A, as shown in the table). In CB radios whose

channel selector was a multiple-gang rotary switch that presented a binary number to the tuning electronics, it was a common illegal modification to add a toggle switch (or rewire an existing switch, such as the "PA" switch that coupled the microphone to an outside speaker) to modify the low-order bit and thus gain access to the R/C channels.

Because of interference from CB radios, legal or otherwise, the noise level, and the limited number of channels, most "serious" hobby radio-controlled models operate on other bands.<sup>[7]</sup> Interference is especially important for model aircraft where it presents a safety issue.

The Class C service has 50 channels just for model aircraft in the 72.0 – 73.0 MHz range, and 30 more channels for surface models such as cars and boats in the 75.4 – 76.0 MHz range. 0.75 watts is allowed on these numbered channels. Licensed amateur radio operators can use any amateur frequency for R/C, but those enthusiasts tend to use frequencies in their 6-meter band.<sup>[7]</sup>

## Part 15 devices

Many toy R/C cars and wireless keyboards and mice operate on the 27 MHz R/C channels, especially 27.145 MHz. But most of these devices run far less than 4 watts and do not operate under the Class C CB service. Instead, they operate under the FCC's Part 15 rules, which allow a wide variety of low powered devices to use the frequencies from 26.96 to 27.28 MHz, which covers CB Channels 1 through 27. Newer wireless keyboards and mice tend to use Bluetooth technology or frequencies in the 2.4 or 5.8 GHz region. Some R/C devices, especially quadcopters/drones, use cellular data techniques.

Some other of the R/C toys operate on the 49 MHz Part 15 channels, and often a pair of R/C cars will be sold with one on 27.145 and one on 49.860 to avoid interference. This allows less selective, and therefore less expensive, receivers to be used than if they were using channels in the same band.

In the days when CB required a license, some low-powered or toy walkie-talkies were exempt because they operated within Part 15. However, in 1976, the FCC phased in a shift of these 100 mW<sup>[8]</sup> devices to the 49 MHz band, with operation on the CB frequencies to cease in 1983.<sup>[9]</sup> More recently in the 1990s, low-powered handhelds using FM voice on the 27 MHz radio-control channels were also sold to operate legally under Part 15.

Broadband over Power Lines (BPL) technology uses a wide range of HF frequencies to transmit data (3.5 through 30 MHz), which includes the CB frequencies. There is great potential for interference, as power lines were never specifically designed to shield radio frequencies. RF leakage from BPL is regulated under Part 15 and is a big problem for amateur radio operators across all frequencies that the BPL uses.

## ISM devices

Another class of devices operating in the 27 MHz band are ISM (Industrial, Scientific and Medical) devices regulated by the FCC's Part 18 rules. Induction welding of plastics, and some types of diathermy machines commonly operate in this range. These devices are centered around 27.12 MHz with a tolerance of  $\pm 163$  kHz, that is, 26.957 to 27.283 MHz.<sup>[10]</sup>

## Adjacent frequency bands

The Business Radio Service has several channels just above the Citizen's Band, at 27.430, 27.450, 27.470, 27.490, 27.510, and 27.530 MHz.

The federal government has the frequencies from 27.540 up to 28.000. Many civilian agencies use, or used to use, the frequencies 27.575 and 27.585 for low-power use. These frequencies are often used by illegal operators using modified CB or amateur radio equipment.

The 10 meter amateur radio (ham) band runs from 28.000 to 29.700 MHz.

Below the Citizen's Band, the U.S. military has the frequencies from 26.480 to 26.960 MHz. These frequencies are often used by illegal operators using modified CB or amateur radio equipment.

The Civil Air Patrol has 26.620 MHz, though it now uses mostly VHF frequencies.<sup>[11]</sup> In the 1950s through the 1970s CAP volunteers with crystal-controlled CBs would put this frequency in their radios. Currently VHF military frequencies are more often used (the CAP is part of the US Air Force), as among other reasons, VHF radios are easier to acquire through military logistics than CB radios.

The US Coast Guard Auxiliary uses 27.980 MHz, it is similar to the Civil Air Patrol Frequency.

## Enforcement

In the past, FCC actions against violations of CB regulations was minimal. This was often cited as the reason for many of the problems that have plagued the Citizens' Band radio service.

In recent years, the FCC has had a renewed interest in enforcement against "freebanding," the sale and use of illegally modified radios and linear amplifiers. Usually, the FCC issues a Notice of Apparent Liability ("NAL"), a formal citation of violation(s) of the commission's rules and regulations. If the violator responds in a positive and timely manner to the notice, the resolution usually involves a cease-and-desist order. Failure to respond to the commission may provoke a \$10,000 (or higher) fine, seizure of the equipment used, and suspension of licenses in other FCC-regulated services.

Many actions have been taken against freebanding operation between 26 and 30 MHz, including those on military and government allocations adjacent to the Citizen's Band, and on the amateur radio 10-meter band (28 – 29.7 MHz). Actions have also been taken against retailers in the United States for selling linear amplifiers and non-type approved equipment in violation of the commission's rules.

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