

Mobile phone jammer

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A **mobile phone jammer** is an instrument used to prevent cellular phones from receiving signals from base stations. When used, the jammer effectively disables cellular phones. These devices can be used in practically any location, but are found primarily in places where a phone call would be particularly disruptive because silence is expected.

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History

The rapid proliferation of cell phones at the beginning of the 21st century to near ubiquitous status eventually raised problems such as their potential use to invade privacy or contribute to rampant and egregious academic cheating. In addition public backlash was growing against the intrusive disruption cell phones introduced in daily life. While older analog cell phones often suffered from chronically poor reception and could even be disconnected by simple interference such as high frequency noise, increasingly sophisticated digital phones have led to more elaborate counters. Cell phone jamming devices are an alternative to more expensive measures against cell phones, such as Faraday cages, which are mostly suitable as built in protection for structures. They were originally developed for law enforcement and the military to interrupt communications by criminals and terrorists. Some were also designed to foil the use of certain remotely detonated explosives. The civilian applications were apparent, so over time many companies originally contracted to design jammers for government use switched over to sell these devices to private entities. Since then, there has been a slow but steady increase in their purchase and use, especially in major metropolitan areas.

Operation

As with other radio jamming, cell phone jammers block cell phone use by sending out radio waves along the same frequencies that cellular phones use. This causes enough interference with the communication between cell phones and towers to render the phones unusable. On most retail phones, the network would simply appear out of range. Most cell phones use different bands to send and receive communications from towers (called frequency division duplexing, FDD). Jammers can work by either disrupting phone to tower frequencies or tower to phone frequencies. Smaller handheld models block all bands from 800MHz to 1900MHz within a 30-foot range (9 meters). Small devices tend to use the former method, while larger more expensive models may interfere directly with the tower. The radius of cell phone jammers can range from a dozen feet for pocket models to kilometers for more dedicated units. The TRJ-89 jammer can block cellular communications for a

5-mile (8 km) radius.^[1]

Interestingly enough, less energy is required to disrupt signal from tower to mobile phone, than the signal from mobile phone to the tower (also called base station), because the base station is located at larger distance from the jammer than the mobile phone and that is why the signal from the tower is not as strong.^[2]

Older jammers sometimes were limited to working on phones using only analog or older digital mobile phone standards. Newer models such as the double and triple band jammers can block all widely used systems (CDMA, iDEN, GSM, et al.) and are even very effective against newer phones which hop to different frequencies and systems when interfered with. As the dominant network technology and frequencies used for mobile phones vary worldwide, some work only in specific regions such as Europe or North America.

Components of a jammer include:

Antenna

Every jamming device has an antenna to send the signal. Some are contained within an electrical cabinet. On stronger devices, antennas are external to provide longer range and may be tuned for individual frequencies.

Circuitry

The main electronic components of a jammer are:

- Voltage-controlled oscillator — Generates the radio signal that will interfere with the cell phone signal
- Tuning circuit — Controls the frequency at which the jammer broadcasts its signal by sending a particular voltage to the oscillator
- Noise generator — Produces random electronic output in a specified frequency range to jam the cell-phone network signal (part of the tuning circuit)
- RF amplification (gain stage) — Boosts the power of the radio frequency output to high enough levels to jam a signal

Power supply

Smaller jamming devices are battery operated. Some look like cell phone and use cell-phone batteries. Stronger devices can be plugged into a standard outlet or wired into a vehicle's electrical system.

The jammer's effect can vary widely based on factors such as proximity to towers, indoor & outdoor settings, presence of buildings and landscape, even temperature and humidity play a role.

There are concerns that crudely designed jammers may disrupt the functioning of medical devices such as pacemakers. However, like cell phones, most of the devices in common use operate at low enough power output (<1W) to avoid causing any problems.

Legalities

Since these jammers actively broadcast radio signals, they may or may not be legal to possess or operate based on the specific laws of the area one is in.

- Armenia : legal^[*citation needed*]

- Australia: illegal to operate, supply or possess^[3]
- Belgium: illegal to sell, possess and operate (licensed part of the spectrum).
- Canada: illegal, except by federal law-enforcement agencies who have obtained approval^[4]
- People's Republic of China: Used by the Education government department as a method of thwarting cheating in schools. During major end of year exams, mobile phone jammers are used in areas surrounding high schools to prevent students inside from receiving calls or text messages, which may be used for illicit purposes. In some municipalities however, rather than the use of jammers, mobile signal towers close to schools are temporarily shut down for the duration of the week as exams are in progress.
- Czech Republic: illegal.
- Denmark: illegal.
- Finland: illegal.
- France: France legalized cell-phone jammers in (movie) theaters and other places with performances in 2004. Abandoned due to complaints regarding emergency calls. Still legally used inside jails.
- Germany: illegal, but installation in jails has been proposed.
- India: Government, Religious Places, Prisons and Educational Institution use jammers.
- Iran: illegal to operate for civilians but allowed for police forces and military. It is however legal to *own* such units, which can be bought in electronic markets without a licence. In most jails, libraries and university classrooms such jammers are already in use. In the 2009–2010 Iranian election protests, police forces used cellphone and Bluetooth jammers.
- Ireland: illegal to operate. Legally used inside prisons by the Irish Prison Service.
- Italy: technically not illegal to own, but illegal to operate, since the Italian law specifically prohibits to disturb radio and telephone communications. GSM jammers are however legal to be used in places like hospitals, churches, movie theatres and other places with performances, and other buildings where and when the use of mobile telephones may result in a leak of sensitive information: on such occasions, jammers are legal as long as their operation doesn't interfere with electronic medical equipment (such as pace-makers) and allows mobile phones to make emergency calls. Tri-Band Jammers are reserved to, and in use with, the police forces and are being experimented in prisons.
- Japan: illegal to use, but legal to own. Buying of mobile short range versions is allowed. Use of fixed high output jammers with long range is illegal, with fines of up to max \$250,000USD and/or 5 years in prison.
- Mexico: legal inside jails, often used also in churches and hospitals.
- New Zealand: legal inside jails.^[5]
- Norway: illegal to own and operate. The police and the military can use jammers in situations in which it is necessary.
- Pakistan: legal inside banks, often used also in libraries.
- Poland: legal to trade and own, while not operational; illegal to use in public (licensed part of the spectrum); illegal to cause interference to 3rd party communication (without notice and permission); legal to use on own property with small power (both above clauses apply).
- Slovakia: illegal.
- Sweden: illegal. Legal inside jails and for military use.
- Switzerland: illegal.
- Turkey: illegal. Only the police and the military use jammers.
- Ukraine: legal, planned to be used in schools^[6]
- United Kingdom: illegal to use, but legal to own. Installation in jails has been proposed^[7]
- United States: Cell phone blocking devices are used by federal officials under certain circumstances. Privacy rights of property owners may affect the policy and application of law within buildings. The FCC may issue a permit that waives the law for private use. For radio communications, it is illegal to operate, manufacture, import, or offer for sale, including advertising (Communications Act of 1934).^[8] Blocking radio communications in public can carry fines of up to \$11,000 or imprisonment of up to one year.^[9] The Homeland Security Act of 2002 may override the Communications Act of 1934.^[10]

Notes and references

- ↑ How Stuff Works: How Cell Phone Jammers Work (<http://electronics.howstuffworks.com/cell-phone-jammer.htm>)
- ↑ How Cell Phone Jammers Work (<http://www.jammer-store.com/how-mobile-jammers-works.html>)
- ↑ ComLaw Management - Series- Notification that the Australian Communications and Media Authority prohibits the operation or supply, or possession for the purpose of operation or supply, of specified devices (<http://www.comlaw.gov.au/comlaw/management.nsf/lookupindexpagesbyid/IP200507767?OpenDocument>)
- ↑ Radiocommunication Act of Canada (<http://laws.justice.gc.ca/eng/R-2/FullText.html>)
- ↑ Cellphone jamming technology will be placed in all NZ prisons | NATIONAL | NEWS | tvnz.co.nz (<http://tvnz.co.nz/view/page/411749/1314563>)
- ↑ Мобилки на тестах заставят замолчать (<http://www.jammer.su/mobilki-na-testax-zastavyat-zamolchat.html>)
- ↑ BBC News | Jam mobile phone signals in prisons, says inspector (<http://news.bbc.co.uk/1/hi/uk/8373557.stm>)
- ↑ Communications Act of 1934: as amended by Telecom Act of 1996 (<http://www.fcc.gov/Reports/1934new.pdf>)
- ↑ FCC: Wireless Services: Cellular Services: Operations: Blocking & Jamming (http://wireless.fcc.gov/services/index.htm?job=operations_2&id=cellular)
- ↑ http://news.cnet.com/Company-challenges-FCC-rules-on-cell-phone-jamming-gear/2100-1036_3-6139854.html

External links

- Devices Enforce Cellular Silence, Sweet but Illegal (<http://www.nytimes.com/2007/11/04/technology/04jammer.html>) November 4, 2007 *NY Times*
- Silent but Deadly, the Jammer's Revenge on Mobile Prattlers (http://technology.timesonline.co.uk/tol/news/tech_and_web/gadgets_and_gaming/article2889295.ece) November 18, 2007 *The Sunday Times*
- Cellular Phone Jammer A Report (<http://cellularphonejammer.com>) November 19 2008

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