



*The secret they don't want you to know: When traffic radar shows a speed reading, it does not indicate which vehicle is being clocked.*

# The Truth about Speed Enforcement

How radar and laser guns measure your speed • Why they make mistakes  
How they are used unfairly • How to protect yourself

## Radar

### How traffic radar works

Traffic radar units send out a wide radar beam that's similar to an invisible spotlight. The radar beam widens as it travels, and measures several hundred feet wide at a distance of one-half mile. So a traffic radar unit simultaneously “sees” virtually all cars in sight. The radar beam hits oncoming cars, and is reflected back to the radar unit, which can calculate speeds from those reflections.

Radar can be used from a police car that's either stationary or moving, since it does not require precise aiming to clock traffic speeds. There are also hand-held units that can be operated from a car, motorcycle, or an officer standing at the side of the road.



*Since radar does not require precise aiming, it is even used by unmanned speed trailers.*

### How far away can radar clock you?

Radar range depends on the size and shape of the vehicle. Radar can track a large truck from over one mile away, even too far to be seen by eye. But some sports cars bounce back such a weak signal that they must be within 500 feet to be clocked.



*Radar speed readings caused by distant trucks are a common source of undesired tickets.*

### How radar makes mistakes

Although traffic radar receives reflected signals from all cars within range, it has no way to display all the different speeds, and no way to even decide which car is traveling which speed. In fact, traffic radar displays only a single number, usually the speed of the strongest reflected signal.

If all vehicles were identical, the strongest reflection would be from the closest car. But different vehicles reflect different amounts of the radar signal.

### Radar's most common error: mistaken identity

Because of this inherent flaw of traffic radar, an officer could be looking at your car while his radar unit is actually clocking the speed of a large truck far down the road—perhaps even out of sight. And since his radar doesn't tell him which vehicle it is reading, the police officer might mistakenly think that you are responsible for the speed displayed. And give a ticket to you instead of the truck driver.



More than a dozen technical errors for traffic radar have also been documented, but mistaken identity (technically called a “target identification error”) is by far the most common.

### The bottom line

Tickets can be given anywhere, for any reason, at any time.

# Laser

## How laser works

Laser works very differently from radar. The laser gun sends out a beam of laser light that is so narrow and precise it must be aimed with an optical sight, like those used by sharpshooters. The operator looks through the sight, aims



Laser guns are aimed with a sight, like a rifle.

at a specific vehicle, and pulls the trigger, sending out a beam of light. When this beam is reflected back to the laser unit, the unit provides a speed reading. Because of the narrow beams, laser units are hand-held, and can only be used from a stationary position.

## Common laser errors

Both human error and the nature of laser light contribute to errors. For example, laser can only be used at a distance of a thousand feet. This does not give much time for aiming or vehicle identification. Environmental and usage conditions also affect laser. Rain, fog, and snow can lead to false readings, as

can reflections of laser light from highway structures and other vehicles.

As with any complex electronic device, there can be technical malfunctions and miscalibrations. It's even possible for the optical sight to be misaligned, so the operator aims at one vehicle, and clocks another.

Laser is inherently more difficult to use and sensitive to environmental conditions. In fact, because of inaccuracies, some jurisdictions have refused to give laser judicial notice, which is required before a device is authorized to be used for measuring speed by law enforcement agencies.

# Radar and Laser: Fair or unfair?

## Why radar and laser are used: it's not always about safety

When a driver is blatantly ignoring safe driving techniques (i.e., speeding through school zones or weaving in and out of traffic) police are rightfully enforcing traffic safety laws. But more often than not, traffic radar is not about safety. It's about revenue.



The fact is, radar and laser speed measurement are used to make it easier to give traffic tickets. They are often set up in areas where there are no safety or traffic problems, simply high traffic volume. Many times they are set up to monitor the speed of every vehicle that passes.

And enforcement is often highly selective, with almost all vehicles exceeding an often unreasonably-low posted speed limit, but only a few vehicles stopped.

## Safety, or revenue?

Many times, speed enforcement is motivated by revenue, not safety. The virtually perfect conviction rate

of radar and laser clocked tickets has balanced more than one town's budget. One town in West Virginia with a population of only 3,200 issued more than 18,000 tickets in a single year, booking almost \$4 million in revenue.

## The high cost to the motorist

The cost of a single ticket can add up to thousands of dollars. The fine itself can range from \$200 to \$400 or more, with insurance increases that can add as much as \$1,000 to \$1,500 in additional premiums. Many people pay traffic fines out of convenience, never realizing that insurance companies treat payment of fines as a reason to increase your premiums, regardless of whether you were guilty or not.

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# How to protect yourself with a radar and laser detector

Fortunately, there is help. Modern radar and laser detectors are effective tools to defend against unfair tickets.

Today's radar detectors are high-performance, high-technology devices. In the last decade, advances in microcircuitry, signal processing and chip design have led to the design of premium radar detectors which virtually eliminate false alarms and provide longer range warning of radar and laser with great accuracy.

## How a radar detector works

A radar detector is simply a receiver tuned to detect the presence of the radar and laser frequencies used by traffic monitors. When it picks up one of these signals, the detector warns you. There are three different radar bands approved by the FCC in use by traffic monitoring units: X, K, and Ka band.

X-band

K-band

Ka-band

Laser

## How detectors provide advanced warning

Can a radar detector find police radar before it finds you? The answer is yes.

Suppose you're heading right into the beam of a radar trap. To measure your speed, the radar beam has to hit you and be reflected back to the radar unit, returning with enough strength to be sensed by the calculating circuitry.

Your radar detector, however, has a job that's considerably easier, since the signal only has to travel one way to reach you. As a result, you'll be able to detect radar before it can detect you.

## Radar can't work around curves. But radar detectors can.

A radar beam acts like the beam from a flashlight on a foggy night. The person holding the flashlight can't see you until the beam makes a direct hit. But you can see the beam through the fog—as it reflects off moisture and dust in the air—long before it falls on you.

In much the same way, police radar can't "see" you over a hill or around a corner, because there's no way for the

beam to hit your car and bounce back. But your radar detector can pick up reflections from the microwave beam well before it hits you directly. You can "see" it before it "sees" you.

## "Instant-on" radar and laser

One technique can be hard to defend against, the so-called "Instant-on." Here, the radar or laser unit is in a stand-by mode until a vehicle approaches. It is not emitting a beam—so your detector can't find it. Then, when you are within range, the operator switches the unit on and it calculates your speed within one second.

A good radar detector protects you by warning you when the operator "zaps" one of the cars up ahead. The detector has to be sensitive enough to pick up these brief, weak signals. And reliable enough so you don't interpret them as random false alarms and ignore them.

## Photo radar

Approximately 200 short-range stationary photo radar units are in use around the country. Fortunately, a good radar detector can provide advanced warning of these new systems.

## Types of radar and laser detectors

### Conventional, Windshield-mounted

Most radar detectors are portable, and mount in seconds to your car's windshield with a suction cup mount. A power cord plugs into your car's lighter socket to provide power for the unit.



Escort Passport 8500 radar and laser detector.

### Cordless, Windshield-mounted

Cordless detectors are powered by batteries instead of a car cord, and are a great choice for drivers who move the detector from car to car, and for business travelers.



Escort Solo S2 cordless radar and laser detector.

### Custom-installed

A custom-installed radar and laser detector is a multi-piece system that can be mounted in your car's dashboard. It is discreet, remarkably effective and very easy to use.



Escort SRX custom-installed radar-laser detector.

# How to select a radar and laser detector

## When choosing a radar detector, you should focus on . . .

- **High Sensitivity:** A good detector is very “sensitive.” This means the unit is able to pick up weak and distant signals.
- **Excellent Selectivity:** A good detector is also very “selective.” This means that the unit has the ability to pick out the right signals and reject the rest.
- **Superior Alert System:** A good detector has warning systems that are easy to use and easy to understand.
- **Full Coverage of Radar and Laser:** A good detector covers laser plus all three radar bands (X, K, and Ka), detecting conventional as well as “instant-on” and “POP” signals.
- **Quality and ease of use:** A good detector has high-quality construction with a clearly visible display, intuitive controls, and durable mounts and cords.

## Beware of false and misleading claims and advertising

Inexpensive detectors use design shortcuts to meet lower price points, but at a high cost to the user. Inferior performance and frequent false alarms make these radar detectors ineffective and distracting.

### Get the facts

Some makers of low-end detectors make deceptive and misleading claims about features and performance. You’ll see:

- Misleading claims of 9-band, 10-band, or 11 band coverage. Only three FCC-approved radar bands are in use.
- Offers of reimbursing speeding fines. If you read the fine print, you’ll see the exclusions and limitations that make these virtually useless.

# Radar and laser detector users and legality

## Who uses radar detectors?

Radar detectors are used by millions of motorists. Far from being dangerous drivers, a national research study found that detector users were safer than other drivers, driving on average an additional five years between accidents.

And although you may associate the use of a radar detector with highway driving, in fact most tickets are given on secondary roads, and most veteran detector users never drive without one.

## Different drivers, same protection

No matter what kind of driver you are, no matter where you drive, there is a premium detector that is right for you:

- **The Car Enthusiast** chooses the ultra-performance Escort Passport 8500 X50 for his sedan, and the custom-installed Passport SRX for his sports car.
- **The Soccer Mom** keeps her Escort Passport Solo S2 in her SUV. It provides peace of mind when she is transporting the kids on secondary roads where speed limits often change frequently.
- **The Commuter** uses his Escort Passport 8500 X50 every day, knowing that speed traps can appear on back roads as well as on the freeway.
- **The Business Traveler** carries his cordless Escort Solo S2 in his briefcase, to protect him from different speed limits and enforcement used by different cities.

## Are radar detectors legal?

Yes! Radar and laser detectors are legal in non-commercial vehicles in 49 states (all except Virginia and Washington D.C.).

You have the right to use a radar and laser detector. In fact, in a ruling defending the right of motorists to use radar detectors, a Superior Court judge wrote, *“If government seeks to use clandestine and furtive methods to monitor citizen actions, it can ill afford to complain should the citizen insist on a method to effect his right to know he is under such surveillance.”*

In other words, if the government is going to monitor you with radar, you have the right to use a radar detector to know when they are monitoring you.