

RADAR AND LASER EXPLAINED

To understand how a Radar Detector works, you have to understand what Radar and Laser are and how they differ.

Radar

Radar (**R**Adio **D**etection **A**nd **R**anging) is a method of determining the location and speed of an object. Radar works by transmitting very high frequency radio/micro waves and measuring the time it takes for them to bounce off the targeted object and return. Police worldwide use a variety of different radar devices, all using specific bands to detect and monitor speeding motorists. Listed below are the frequencies radar operates on and what to set your detector to according to your state/country:

State	K Band 24.050-24.250 GHz	Ka Band 33.400-36.00 GHz	Ku Band 13.150-13.650 GHz
	On/Off	USA/Intl	On/Off
WA	On	On-Intl	Off
QLD	On	On	Off
NSW	On	Off	Off
TAS	On	Off	Off
VIC	On	On	Off
NT	On	Off	Off
SA	On	On	Off
NZ	Off	On	Off

K Band

K band radars have been around since the 1970's and operate on a single frequency. The K band signal is sent from either handheld, car mounted or photo radars. It is fairly easy to detect as it uses a small band-width, but is also the band that automatic doors use. This can cause false alerts when you drive past shopping centres or petrol stations. The Kustom Falcon handheld radar gun at full power (50mW) can be detected as far away as 7km using the BEL PRO RX65.

Ka Band

Ka band radars have been around since the late 1980's and are commonly seen in the form of handheld, car mounted or photo radar (multanova). Ka band is the hardest radar band to detect as it has the most frequencies to scan for. The Stalker Ka handheld radar gun at full power (50mW) can be detected as far away as 7km using the BEL PRO RX65.

Ku Band

Ku band radars have been around since the 1980's and are not used in Australia or New Zealand. It is used in Europe, Asia and possibly soon in Northern America. Having Ku band on your detector is a handy feature if you drive overseas.

Laser

Laser (Light **A**mplification by **S**timulated **E**mission of **R**adiation) sometimes called Lidar (**L**ight **D**etection **A**nd **R**anging) is also a method of determining the location and speed of an object, but differs slightly to radar. Rather than send out a radio/microwave it sends out a beam of light, which has a much high frequency than radio/microwaves. It is completely safe as it sends out a very low power beam (about 5% of the power your TV remote outputs) and has an accurate speed-reading within 7tenths of a second. Over this time frame it has taken well over 50 individual readings to accurately measure you speed. To get a warning the radar detector needs to make contact with this beam of light, so placement of your detector is crucial considering that at 150meters the laser beam is only 45centimeters in diameter. Listed below is the frequency laser operates on and what to set your detector to according to your state/country:

State	Laser 904nm On/Off
WA	On
QLD	On
NSW	On
TAS	On
VIC	On
NT	On
SA	On
NZ	On

RADAR AND LASER DEVICES

Radar and Laser devices are constantly being developed to try and keep the police at least one step ahead of the motorists. Below are some of the types of radar and laser device's being used within Australia and New Zealand.

Laser

Laser Technologies Inc Ultralyte series is the most commonly used handheld laser guns. Handheld laser guns are now the unit of choice as they are much more accurate than a handheld radar gun and much harder for radar detectors to detect.



Camera

Multanova is a photo radar system designed to eliminate the need for a police officer and is setup by a radar operator. It is an automated system that records a photograph of the speeding vehicle, and later issues a speeding ticket via mail. Operating on the Ka band at a low 2.5mW output, it is hard to detect and is usually disguised against a pole, tree or street sign.



Traffipax are another company linked with Multanova's parent company Robot. They operate in much the same way as the Multanova but on the K band.



Gatso cameras are essentially the same as a Multanova, being a photo radar system. They also operate on a low voltage output but on the K band. They are generally setup in vehicles, generally white panelvans and now blue 4x4, as they are less noticeable.



Lasercam as the name suggests, uses a laser signal rather than a radar signal to measure speed and then records a photograph of the speeding vehicle. They are setup either on tripods or as fixed pole top cameras.



Car Mounted

Kustom Signals are a popular car mounted radar that operates on K or Ka band. They operate on a higher output signal to the camera radars so are easier to detect. The round transceiver is normally mounted in the corner of the dashboard and either driver or passenger can operate the unit in a number of different modes. Some handheld radars also have car mounts so they can be used in or out of a vehicle.



MODES OF OPERATION

Tracking or Transit Mode

This is where your car is locked in and tracked for a number of seconds.

This method is usually the method of choice as it is easy to operate and highly accurate.

Instant ON or Pulsed Mode

This is a method of momentarily triggering the radar gun "on" and then triggering the gun "off". The normally occurs is less than a couple of seconds. Instant on triggers were developed, in part, to combat radar detector use. Some radar detectors don't report "instant on" at distances greater than 300 metres.

POP Mode

POP was introduced in 1999 by MPH Industries as the new way to beat radar detectors. POP mode works by sending out a quick burst of pulse radar at approximately 67 milliseconds. It gives the radar operator a reading before the radar detector can react. POP can operate on K or Ka band radar, as it isn't so much the band but the system itself that is unique. There is a flaw that even MPH Industries admit, which is that it is accurate but not nearly as accurate as using a radar in normal tracking mode. It is recommended to be used only to give a quick indication to the radar operator as to whether a vehicle is speeding or not. If it is, then the radar operator should switch to tracking mode (not POP mode) and record a proper reading.

VASCAR

VASCAR stands for **V**isual **A**verage **S**peed **C**omputer **A**nd **R**ecorder and is a timing device that times your vehicle from one predetermined point to another. It is like a stopwatch and puts out no signal. By inputting the time you start at point "A" and the times you reach point "B", your speed is averaged out by the computer and recorded. No radar detector can warn you of VASCAR.

Aircraft Enforcement

In some parts of the country police routinely use aircraft to obtain speed-readings. Often a good giveaway is the large painted white lines on the Highway or Freeway. These painted lines are used by observers in the aircraft to measure the time it takes you to cross over them. They then radio a waiting patrol unit ahead with your speed and vehicle description.

Pacing

The oldest method of obtaining a speed-reading. Simply by following you in the patrol car and matching your speed to theirs for a short distance, they can obtain the speed of your vehicle and pull you over.