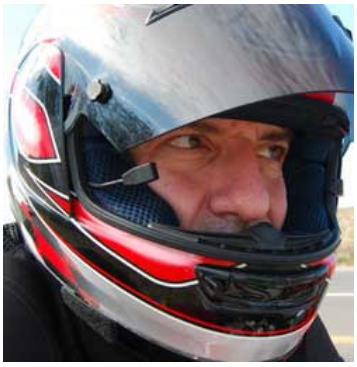
Motor Cycle Models

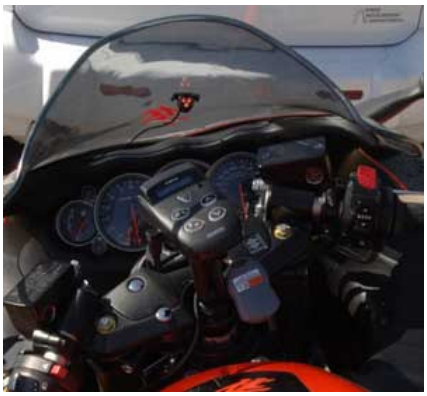
A neglected market for radar detectors has been the motorcycle market. The conception of tattoos and rowdy bikers has been replaced by professionals putting down big money for their rides. The problems of warning riders have been many. Riding noise silences traditional radar detectors. Most helmet sound systems have proven ineffective. Small radar detection warning lights can hardly been seen. Many have tried with external speaker jacks on their radar detectors to amplify warning alerts with powered handlebar speakers. Still...no luck. Our experience with this goes back to the mid-1980's when we were ask to consult with bike manufacturers. We even attended their dealer conventions. The problem remained unsolved until recent, new technologies and detectors entered the motorcycle market.

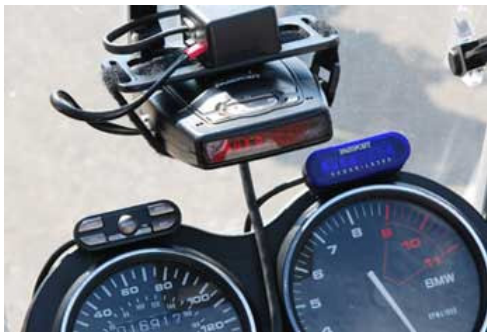
Legal Speeding Enterprises, www.legalspeeding.com, was one of the first to introduce an illuminated led stalk attached to the helmet receiving wireless alerts from detectors. It let drivers know visually of an approaching danger. Others have come and gone with this idea, Legal Speeding remains.



Another new entry to this market is AdaptivTechnologies. They are the vendor of a well thought out weatherproof radar detector designed for bikes with large buttons easy to use with gloves and large visual alerts on the handle bars or windshield with wireless interface to helmet sound. Click on their logo to find out more. Their unique detector is called the TPX. It mounts to any handlebar with their custom mounts and has proven its performance by attending three SML field tests. It tested well in our Annual Radar Detector test and is truly designed for motorcycles.

Escort has not stood still and offers effective and innovative models for the motorcycle market. Pictured to the left is their model Passport ci with wireless interface to led stalks and helmet sound systems. Its large displays give drivers visual and audible alerts easily recognized and understood. Escort's laser shifters are an attractive offering of the ci. Blinder's protection is easily mounted under the headlight for the front and below the seat for the rear giving proven laser protection. speed@speedinglimits.com





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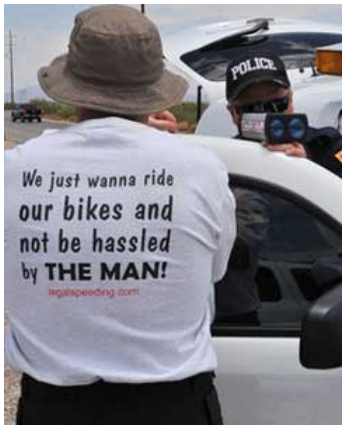

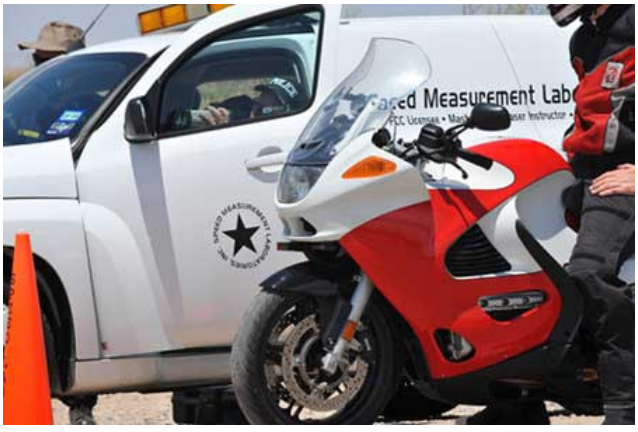

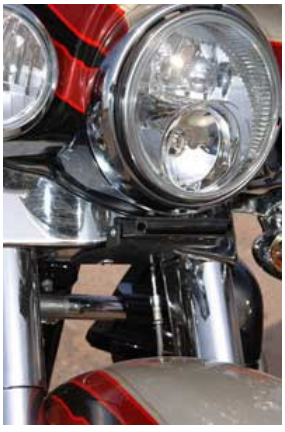

ADAPTIV TECHNOLOGIES · BELTRONICS · BLINDER · Cobra · ESCORT · K40 · 1stRadarDetectors · Valentine One · WHISTLER

To test radar detection we considered the normal range officers use to issue speed violations. Remember, we teach this. Officers must establish a valid visual tracking history meaning they must be able to identify the make and model of a specific vehicle they estimate to be speeding. They validate this observation with a radar or laser gun at a range no greater than 1/4 mile in most instances. In the stationary mode, officers should take a tracking history of the suspect vehicle and confirm it with the radar or laser gun in the continual tracking mode. They must take at least two speed readings and listen to the Doppler audio of the radar gun. In the moving mode, they should wait until the suspect vehicle moves to the left window or "target" window from the "fast/lock" middle window to take enforcement action. They must listen to their Doppler audio, check the patrol speed indicated by the radar gun in the right "patrol" speed window against the speed indicated by their speedometer, and take no enforcement action if vehicle is outside of the +2/-2 mph speeding window in the specifications set forth in USDOT HS 809 812 for radar and USDOT HS 809 811 for laser guns.

To measure the radar detector's ability to correctly identify the transmitted band of radar and to measure the signal strength of their reports, we set cones at 1 1/2 mile and 1 mile. If a detector did not alert at 1 1/2 mile, the test was repeated at 1 mile. All detectors reported at 1 1/2 mile. Drivers must have time to adjust their speeds thus the cones set at long distances. A vehicle traveling at 80 mph will cover some 117.6 feet/sec., 80 mph x 1.4666=117.6 feet/sec., and it takes the human body a total of 1.65 seconds to recognize and then act on the alert. This means at 80 mph it will take some 193.88 feet to begin adjusting speed after an alert. Each detector was in the stationary position with all other detectors off. Each radar band, i.e. X=10.525 GHz, K=24.150 GHz, and Ka at 34.7 GHz was used in both the instant on and constant transmit modes. Instant on transmissions were some 3 seconds and constant on transmissions were 10 seconds. Each detector was given three tries on instant on and three tries at constant on. To be acceptable, each detector must be able to alert at least one mile. The results follow: Y means the detector correctly alerted to the proper band. Signal strength is indicated in numbers. Maximum signal strength of each detector is in parenthesis next to each model. Bel and Passport models have a maximum signal strength of (6) on Ka band instead of (7). Police officers operated radar guns and SML staff or police officers rode in participant cars and reported the results. K40 along with Uniden did not participate in the field testing as their new models were not ready at the time of testing. Their results will be added later. Tiger Lily models combine detectors in a system approach with the last letters indicating the radar detector. Unless there was a variance, the results are the same. Serial numbers were recorded of the samples tested. r means remote. Contact us at speed@speedinglimits.com.

			1 Mile			
Detector	**X band**		**K band**		**Ka band**	
	Instant	Contsant	Instant	Contsant	Instant	Contsant
Adaptiv Tech TPX (6)	y/4	y/4	y/4	y/5	y/4	y/5
	y/4	y/4	y/4	y/5	y/4	Y/5
	y/4	y/4	y/4	y/3	y/4	y/5
Bel STi (7)	y/5	y/6	y/7	y/5	y/6	y/6
	y/5	y/5	y/7	y/5	y/6	y/6
	y/5	y/5	y/5	y/5	y/6	y/6
Bel RX 65 (7)	y/5	y/6	y/5	y/5	y/4	y/6
	y/6	y/6	y/6	y/6	y/4	y/4
	y/5	y/6	y/6	y/6	y/4	y/4
Cobra XRS 9950(5)	y/2	y/2	y/1	y/1	y/3	y/3
	y/2	y/2	y/1	y/2	y/3	y/3
	y/2	y/1	y/1	y/2	y/3	y/3
Cobra XRS R9G (5)	y/2	y/2	y/1	y/1	y/3	y/3
	y/2	y/3	y/3	y/2	y/3	y/3
	y/2	y/3	y/3	y/3	y/3	y/3
Passport 9500i (7)	y/4	y/4	y/7	y/7	y/6	y/6
	y/4	y/4	y/6	y/7	y/6	y/6
	y/4	y/4	y/7	y/7	y/6	y/6
Passport 9500ci (7 r	y/4	y/4	y/6	y/6	y/5	y/5
	y/3	y/4	y/5	y/6	y/5	y/5
	y/5	y/4	y/5	y/6	y/5	y/5
Valentine One (8)	y/5	y/5	y/7	y/8	y/8	y/8
	y/5	y/5	y/8	y/7	y/7	y/7
	y/5	y/5	y/7	y/8	y/8	y/8
Whistler XRT 695 (9)	y/8	y/7	y/9	y/9	y/7	y/7
	y/8	y/8	y/9	y/9	y/7	y/8
	y/8	y/8	y/9	y/9	y/7	y/9

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Summary: The last state to use X band radar guns was New Jersey. They took them out of service. Fifty of the fifty states use K or Ka band radar guns with forty-one (41) states standardizing on Ka band at the following frequencies: 33.8 GHz, 34.7 GHz, 35.5 GHz. The predominant frequency is 34.7 GHz. With 99.99% accuracy you will not encounter X band radar guns in the United States or Canada. Of the four American makers of radar guns, no one makes X band anymore. In order for a radar detector to give you adequate advanced warning, it must alert you to radar ahead at least 1 ½ miles in our field testing. This range will vary with elevation, humidity, and competing microwave signals. Your range will be less. We concentrated on radar detector's maximum signal strength on K and Ka bands. *See Long Range page for more details*.

We averaged the reporting of radar detectors compared to their maximum signal strength with the following results on K and Ka bands: Passport 9500i-99%, Valentine One-95%, Whistler XTR-695-92%, Beltronics STi-91%. Only the Passport 9500i and Beltronics STi reported 100% of signal strength on Ka band followed closely by Valentine One at 96%. All detectors tested firmly reported all three bands at 1 ½ miles, Whistler XTR-695 was the only detector reporting 100% of signal strength on K band followed by Passport 9500i at 97%, and Valentine One at 94%. These figures mean, for example, the Passport 9500i reported 99% of its maximum signal strength on K and Ka bands.

Laser

Laser is a relative new technology first patented to Laser Technologies Inc., in 1989. Einstein theorized laser in 1917 and Theodore Maiman developed the first working laser in 1960. As with radar, it was slow to move into law enforcement's arsenal against speeders. German scientist Heinrich C. Hertz in 1887 confirmed British mathematician James Clark Maxwell's 1860 discovery of microwaves traveling at the speed of light being 186.282.4 miles per second or 32.9 round trips from Los Angeles to New York in one second. Scottish engineer Watson Watt developed the Doppler Principle, named after Austrian physicist Christian Doppler of 1842, applied to radar for World War II use in 1935.

Laser uses infrared light rather than radar's microwave. It's precise beam divergence of only 18" at 500 feet compared to an X band radar gun of 159 feet. You can't see it. It's outside the human visual spectrum of 390-780 nanometers transmitting at 904 nanometers. You can't see the infrared light from your television remote, but it's there. To get the idea, park your car 200 feet down the street from your house on a dark night. Point a laser pointer at the your car's front and then a flashlight. You'll see the laser pointer can be aimed at specific areas of your car. The flashlight, simulated radar gun, can't. It covers the entire car and then some. Law enforcement is dramatically increasing laser use. First laser guns were bulky and heavy. They couldn't be used shooting through the windshield or in inclement weather. Now, lasers are less than a pound, binocular, can be shot through the windshield and used in bad weather. Some laser's tell the operator they are being jammed and Laser Atlanta claims its Stealth Mode can't be jammed. Honolulu, HI has no radar guns, only laser. Big cities opt for laser as radar is of no use in rush hour traffic. Motor officers now swear by their laser guns. Radar detector's problem was to detect laser and give advanced notification of its use. They still can't. If you get a laser alert, you usually get a ticket. The further you are away from the laser gun, the better chances of you getting a warning. Laser is aimed at your front license plate or where it should be. First test vehicles were at the 1,000 foot cone and with laser first at the windshield three times where the detector was located and then three times at laser's aim point, the front bumper. Next, test vehicles moved to the 500 foot cone and again fired three times first at the windshield and then at the front bumper. We used the Kustom Pro Laser III set in the range mode and a LTI TruSpeed laser gun. As a benchmark, a Blinder M-25 laser counter measure was used. It has receivers and transmitters located next the front bumper. Y means the detector detected laser. N means the detector did not detect laser. r means remote. PRS STi r comes from Tiger Lily and is a combination unit with a remote Bel STi detector. Contact us at speed@speedinglimits.com.

Detector	1000 feet		500 feet		Detector	1000 feet		500 feet	
	windshield	plate	windshield	plate		windshield	plate	windshield	plate
TPX	y	y	y	y	Cobra XRS	y	y	y	y
	y	y	y	y		y	y	Y	n
	y	y	y	y		y	n	y	n
Bel RX 65	y	y	y	y	Bel STi	y	y	y	n
	y	n	y	n		y	y	y	n
	y	n	y	n		y	n	y	n
Blinder	y	y	n	y	Escort 9500i	y	y	y	y
	y	y	n	y		y	y	y	y
	y	y	n	y		y	y	y	y
PRSSTi (r)	y	n	y	y	Valentine One	y	y	y	y
	y	n	y	n		y	y	y	y
	y	y	y	n		y	y	y	y
Whistler 695	y	n	y	n	Cobra XRSR9G	y	y	n	n
	y	y	y	n		y	y	n	n
	y	y	y	n		y	y	n	n

The laser receiver's location is critical. Blinder's laser receiver is located where the laser is aimed on the bumper. When laser is aimed at the windshield at 500 feet it did not alert. Its receiver is not there. Conversely, with laser was pointed at the detectors mounted on the windshield they alerted to laser. In many cases, with laser was aimed at the bumper, especially at 500 feet, windshield mounted detectors did not alert to laser. You must understand laser's beam width. At 1,000 feet the laser beam is 36" wide meaning many detectors reported it regardless of the laser's aiming point. At 500 feet, the laser's beam is only 18" meaning many detectors did not report it as they could not see it. The exception here was *AdaptivTechnologies TPX* as it is mounted on a motor cycle which is much smaller then a car. We tested Whistler's Laser Signature ID. We found it to be accurate when exposed to many laser guns. It correctly reported the following pulse rates: LTI 20/20-125, LTI Ultralyte LR-120, LTI TruSpeed-120, Kustom Pro II-238, Kustom Pro III-200, Kustom ProLite-200, Stalker LZ-1-130, Laser Atlanta Speedlaser-238, Laser Atlanta Stealth-70, and a hand held laser tester-360. The LSID feature eliminates laser false alerts. Only the dash mount Valentine One and Passport 9500i saw laser each time.

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Summary: The Valentine One and the Passport 9500i were the only two detectors mounted in test vehicles to see laser transmissions each of the twelve transmissions regardless of the aiming point on the vehicle or the distance from the laser gun.