



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](mailto:speed@speedinglimits.com).

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



**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 1/2 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 1/2 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.