

Products Evaluated: K40 RD850 Dash Mounted Radar Detector, K40-2000 Remote Radar Detector

Evaluation Location: Fort Worth, TX

Report Number: SML0403-06

Speed Measurement Laboratories Inc. (SML) was asked by K40 Electronics of Elgin, IL to field evaluate its products. As is the standard procedure for SML in all field evaluations, all radar and laser guns were operated by a licensed and certified police officer. This procedure eliminates any doubt as to the authenticity or the results. Traffic officer Matt McClellan of the Fort Worth Police Department operated the various radar and laser guns and radar detector/detectors. Officer McClellan has over ten years experience in traffic enforcement. SML instructed Officer McClellan to operate the radar and laser guns as he does each day in issuing speeding citations.

Location/Methodology: The field evaluation was conducted on a lightly travelled access road of Interstate 820 in west Fort Worth beginning at 9:00 a.m. Orange cones were placed 1/2 mile, 1/4 mile, and 1/8 mile from the radar and laser gun's position, SML's van. SML personnel accompanied three K40 personnel in their test vehicle to substantiate the reported performance of K40's detectors. The test vehicle containing the radar detectors was in commercial radio communication with SML transmission vehicle containing the radar and laser guns. The placement of the distance cones enabled comparison of K40's products to Passport 8500 and Bel 985 detectors in the following categories: constant radar gun transmission and "instant on" transmissions of Ka band at 33.8 GHz, 34.7 GHz, 35.5 GHz, K band at 24.150 GHz, X band at 10.525 GHz, and laser guns at 904 nanometers. Radar detectors were also exposed to two radar detector/detectors, i.e. the VG-2 and Spectre. The VG-2 is looking for local oscillator radar detector radiation at 11.4-11.7 GHz and the Spectre is looking for detector radiation between 13.2-13.6 GHz. It must be noted here that operating a radar detector in a car is **legal** in all states except Virginia, Washington D.C. and all U.S. military reservations. Operating a radar detector in a commercial vehicle, i.e. 18 wheeler, is **illegal** in all states per USDOT Directive, CFR 47 (Code of Federal Regulations), parts 392-392.71 effective February 1995. Consequently, there is little or no enforcement implications for VG-2 and Spectre detection if operating a radar detector in a car. The most current radar and laser guns were used including: Stalker DSR Ka 34.7 GHz, Kustom Signals K band 24.150 GHz Falcon, MPH Z-25 K band with POP, MPH Bee III Ka band at 33.8 GHz with POP, Stalker K band Basic, MPH K-15 X and at 10.525 GHz. Laser Atlanta SpeedLaser 904 nanometer laser gun with pulse rate of 238 pps (pulses per second), Kustom Signals Pro Laser III 904 nanometer at 200 pps, and Stalker LZ-1 laser gun 904 nanometer at 130 pps.

Radar And Laser Gun Unique Features: The radar and laser gun makers acknowledged radar detectors in the mid 1980's with the introduction of the "instant on" feature. This feature was advertised to defeat radar detectors. All radar guns have a momentary trigger. The officer "triggers" the radar gun on for approximately one second and then it immediately turns off. Older radar detectors of that era had a difficult time in detecting the momentary "instant on" transmission. Present day detectors have little or no difficulty in seeing "instant on" operation. The national organization that certifies radar and laser guns the International Association of Chiefs of Police (*theiacp.org*) accepts this "instant on" feature. Recently, MPH Industries (*mphindustries.com*) announced its new Ka and K band momentary transmission feature called POP mode. POP mode transmission is very fast at approximately 67 milliseconds. **However, this mode may not be used in issuing traffic citations as is stated in MPH's Operator's Manual.** POP does not allow the officer to meet the legal requirements of locking a speed reading to legally establish a "visual tracking history" and is advised only to be used in areas of suspected high radar detector use. If an officer sees an excessive speed, they must trigger the radar gun traditionally to obtain a legally accepted speed. This feature is another example of radar gun makers using an anti-radar detector feature to market their product. Laser Atlanta's new "Stealth Mode" is again another example of a laser gun maker introducing a new feature to acknowledge and defeat the proliferation of laser jammers.

This mode has not been approved by the IACP for use in speed enforcement. However, during our field evaluation we look at the performance of detectors against both the POP mode and Stealth Mode.

R E P O R T O F F I E L D E V A L U A T I O N

How Radar And Laser Guns Are Used To Issue Citations: SML hold a master radar and laser gun instructor license and certifies police officers on the use and understanding of radar and laser guns. SML also serves as an active consultant to three of the four radar gun manufacturers. SML assists law enforcement agencies in the U.S., Canada, China, India, and Brazil. Legally, an officer must establish a visual tracking history of a vehicle expected of speeding. This means the officer must be able to visually identify the vehicle by make and model of vehicle prior to assessing its speed with either a radar or laser gun. **The normal maximum distance for an officer to use a radar gun does not exceed 1/4 mile as beyond that point the make and model can not be discerned.** A legal precedent was established by Judge Reginald Stanton, New Jersey Superior Court in 1998 stating a laser gun (LTI) may not be used for targeting at distances greater than 1,000 feet. This restriction was due to the laser gun’s three milliradian, beam divergence. At 1,000 feet the laser’s beam is 36 inches. Judge Stanton ruled that past 1,000 feet the beam diverges to greater dimensions creating a strong likelihood that the beam might strike an adjacent vehicle creating an erroneous reading. Thus the purpose of a radar/laser detector is to provide ample advanced warning of these distances.

Performance Results: We first looked at the performance of all detectors when exposed to radar gun constant on transmissions at 1/4 and 1/2 miles. The test vehicle was stationary at the 1/4 and then the 1/2 mile cone and the radar guns constantly transmitted. SML personnel in the test vehicle then reported if the radar detector gave the correct band identification alert that was consistent and predictable. Then the officer was instructed to operate the radar gun in the “instant on” mode and detector results were reported. **It must be noted that 1/2 mile is twice the distance where an officer can target a vehicle.**

Maximum Range Reception All Bands From Two Miles-Radar Guns in Constant Transmit Mode*

Detector	Ka 33.8 GHz	Ka 34.7 GHz	Ka 35.5 GHz	K 24.150 GHz	X 10.525 GHz
K40-2000	1.8 miles	1.8 miles	1.8 miles	1.8 miles	1.8 miles
K40 RD850	1.8 miles	1.8 miles	1.8 miles	1.9 miles	1.9 miles
Bel 985	1.5 miles	1.8 miles	1.9 miles	1.8 miles	1.9 miles
Escort 8500	1.8 miles	1.8 miles	1.8 miles	1.8 miles	1.9 miles

** two miles seven times the normal target range of police radar guns*

Constant On Detection 1/4 Mile

Detector	33.8 GHz	Ka Band 34.7 GHz	35.5 GHz	K Band 24.150 GHz	X Band 10.525 GHz
K40-2000	Y/F	Y/F	Y/F	Y/F	Y/F
K40 RD850	Y/F	Y/F	Y/F	Y/F	Y/F
Bel 985	Y/F	Y/F	Y/F	Y/F	Y/F
Escort 8500	Y/F	Y/F	Y/F	Y/F	Y/F

Y means response and correct band reported, F means Full Alert of detector

Constant On Detection 1/2 Mile

Detector	33.8 GHz	Ka Band 34.7 GHz	35.5 GHz	K Band 24.150 GHz	X Band 10.525 GHz
K40-2000	Y/F	Y/F	Y/F	Y/F	Y/F
K40 RD850	Y/F	Y/F	Y/F	Y/F	Y/F
Bel 985	Y/F	Y/F	Y/F	Y/F	Y/F
Escort 8500	Y/F	Y/F	Y/F	Y/F	Y/F

Y means response and correct band reported, F means Full Alert of detector

Instant On Detection 1/4 Mile

Detector	33.8 GHz	Ka Band 34.7 GHz	35.5 GHz	K Band 24.150 GHz	X Band 10.525 GHz
K40-2000	Y/F	Y/F	Y/F	Y/F	Y/F
K40 RD850	Y/F	Y/F	Y/F	Y/F	Y/F
Bel 985	Y/F	Y/F	Y/F	Y/F	Y/F
Escort 8500	Y/F	Y/F	Y/F	Y/F	Y/F

Y means response and correct band reported, F means Full Alert of detector

Instant On Detection 1/2 Mile

Detector	33.8GHz	Ka Band 34.7 GHz	35.5 GHz	K Band 24.150 GHz	X Band 10.525 GHz
K40-2000	Y/F	Y/F	Y/F	Y/F	Y/F
K40 RD850	Y/F	Y/F	Y/F	Y/F	Y/F
Bel 985	NR	Y/F	Y/F	Y/F	Y/F
Escort 8500	Y/F	Y/F	Y/F	Y/F	Y/F

Y means response and correct band reported, F means Full Alert of detector NR means no response

POP Mode Ka Band 33.8 GHz MPH Bee III-POP Mode K Band 24.150 MPH Z-25 1/4 Mile

Detector	POP Ka 33.8 GHz	POP Mode K 24.150 GHz
K40-2000	NR	Y/F
K40 RD850	NR	Y/F
Bel 985	NR	NR
Escort 8500	NR	NR

Y means response and correct band reported, F means Full Alert, NR means no response

Laser Jamming By K40 Laser Defuser / Moving Vehicle At 30 mph at 1/8 Mile - Aim Point License Plate

(evaluation of jamming efficiency of standard laser gun, i.e. Stalker LZ-1 and Stealth Mode)

	Stalker LZ-1	Laser Atlanta Stealth Mode*
K40-2000	7/7	0/7

*7/7 means K40 jammed gun 7 of 7 tries, 0 of 7 means no jamming, *Not approved by IACP for use.*

Laser Gun Detection From 1/4 Mile - Test Vehicle Stationary - Aim Point Plate

Detector	Kustom Pro III	Stalker LZ-1	Laser Atlanta
K40-2000	Y/F	Y/F	Y/F
K40 RD850	Y/F	Y/F	Y/F
Bel 985	Y/F	Y/F	Y/F
Escort 8500	Y/F	Y/F	Y/F

Y means response and correct band reported, F means Full Alert, NR means no response

Laser Gun Detection From 1/8 Mile - Test Vehicle Stationary - Aim Point Plate

Detector	Kustom Pro III	Stalker LZ-1	Laser Atlanta
K40-2000	Y/F	Y/F	Y/F
K40 RD850	NR	NR	NR
Bel 985	NR	NR	NR
Escort 8500	NR	NR	NR

Y means response and correct hand reported, F means Full Alert, NR means no response

Detection By VG-2 and Spectre Radar Detector/Detectors

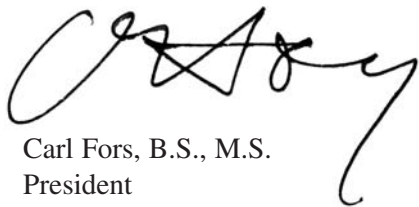
Detector	VG-2	Spectre
K40-2000	Detected at 1487.5 feet	Detected at 491.5 feet
K40 RD850	Was not detected	Detected at 440.6 feet
Bel 985	Was not detected	Detected at 1352 feet
Escort 8500	Was not detected	Detected at 1823 feet

Summary of Results: In our maximum range test, with a beginning distance of two miles from the gun's location, the K40-2000 Dual Undetectable Remote and portable RD850 detector correctly reported and alerted the driver to the use of radar over *seven times* the normal targeting distance of all radar guns on all bands. Both K40 detectors were also the only models we tested that were able to correctly detect and report the presence of the new MPH Z-25 K-band POP mode radar gun. None of the detectors evaluated in our test were able to alert to the MPH Bee III Ka-band 33.8 GHz POP mode radar gun. The K40 RD850 was not detected by the VG-2 and it correctly responded to the presence of the VG-2 with an audible and visual alert. All detectors were detected by the Spectre radar detector detector.

In our laser gun tests, the K40 Laser DefuserPlus equipped K40-2000 remote system successfully jammed the Stalker LZ-1 laser gun 100% of the time while the test vehicle was moving at 30 mph from the normal targeting distance of 1/8th mile (660 feet). It was also the only detector system in our test that was able to detect laser gun use at 1/8th of a mile.

Conclusion: In our test of the industry's top rated radar detectors, no other detector outperformed K40's new portable RD850 or Undetectable Remote System for maximum range reception on all bands from 2 mile. Both K40 detectors provided outstanding performance to all radar guns under all conditions.

This evaluation was conducted in accordance with accepted police practices of operation of radar and laser speed measurement devices as outlines by the International Association of Chiefs and NHTSA. Police officers operating radar and laser guns were currently certified, active duty officers.



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