

Product Evaluated: K40 Laser Defuser EX2
Evaluation Date: 28 September 2007
Evaluation Location: Stan Roberts Senior Road, El Paso, TX
Report Date: 1 October 2007
Report Number: SML0710-6



Speed Measurement Laboratories Inc. (SML) was asked by K40 Electronics of Elgin, IL to field evaluate its revised Laser Defuser EX2 laser counter measure. The revised sample was a pre-production engineering sample. 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. Senior Cpl Ralph Nicholes of the El Paso ISD Police Department reported performance of the sample. SML's staff engineer Dave Adams, E.E. and Carl Fors of SML assisted. The Laser Defuser EX2 is composed of two mounted transponders containing a laser receiver and transmitter coupled with an in-car audible and visual driver warning system.



Methodology: Cones were located at 1000 feet and 500 feet from the transmission point of all laser guns. A cosine angle of less than 1° was noted. The new sample was mailed to SML prior to the test. Laser guns used were: Kustom Signals Pro Laser III (pps 200), Stalker LZ-1 (pps130), Laser Technology LTI Ultralyte LR (pps 100), and Laser Atlanta Speed Laser (pps 238). The Speed Laser was in non-stealth mode. Prior to testing the K40 sample, all laser guns were tested for accuracy and each acquired a target reporting speed and distance of the target vehicles. Laser reception and reporting was confirmed on the sample prior to testing. The laser guns were operated in the “single shot” modes aimed at the front license plate. Recent court decisions have mandated laser guns be aimed at the front of the vehicle only and not the outside headlights. Police programs reflect this change. All laser guns comply with Performance Specifications Lidar Manual, USDOT/NHTSA, June 2004 DOT HS 809 811. All laser guns appear on the approved list of laser guns as published by the International Association of Chiefs of Police, Consumer Products List, www.theiacp.org. Most notably the decision by Judge Reginald Stanton, New Jersey Superior Court mandated laser guns may not be used past 1000 feet and should only be aimed at the front of the vehicle to diminish the possibility of laser's 3 milliradian beam divergence producing a “sweep” error in erroneously acquiring an adjacent vehicle. Dave Adams set up a special digital video recorder with proper nanometer filtering to observe the transmissions of the K40 sample. This has become standard procedure for SML field testing as it verifies the operation of the laser transponders.

Testing Procedures: The Laser Defuser sample was mounted to the front license plate brackets. Levels and mounting supplies were supplied by SML. Commercial radios were installed in the test vehicle. The test vehicle was first driven toward the Kustom Pro Laser III with the product “off” and a speed distance measurement of the test vehicle was made to insure proper operation of the laser gun. The test vehicle operator drove toward the 500 and 1000 foot cones and would count down, “three, two, one” as he arrived at the respective cone. The test vehicle was traveling at 30 mph. The K40 sample was exposed to three attempts per gun at the 1000 foot cone and three attempts at the 500 foot cone. Operators would fire the laser guns listening to the radio when the test vehicle arrived at the respective cone. The aiming point was the license plate of the vehicle. The operator would then report to SML staff if





he had received a distance and speed reading from the laser gun. The operator would operate all laser guns in their “single shot” modes as is standard operating procedure as outlined in law enforcement training programs. If he did not receive a distance and speed reading, he would report it to SML staff recording the results. If the laser reported a distance and speed, this information was recorded. The tem-



perature was 84° F and road conditions were dry. Testing began at 0900 hrs. The sample was exposed to a total of twenty-four laser encounters. If there were any questions concerning the accuracy of a specific reading of the laser gun, the run was replicated.

Results: The letter “J” means the sample jammed the laser gun with no speed nor distance shown by the laser gun. If the laser received a speed and distance measurement on the target vehicle, 28/472 would mean the laser gun showed the officer a speed of 28 mph at a distance of 472 feet. Jamming efficiency is shown as a percentage. “Y” means the sample alerted the driver to laser use via the in-cabin LED and speaker.

Laser Gun	1000 Foot Cone		500 Foot Cone	
	Result	Alert	Result	Alert
<i>Kustom Pro Laser III</i>	J	Y	J	Y
	J	Y	J	Y
	J	Y	J	Y
Jamming Efficiency Kustom Pro Laser III = 100%				
<i>Stalker LZ-1</i>	J	Y	J	Y
	J	Y	J	Y
	J	Y	J	Y
Jamming Efficiency Stalker LZ-1 = 100%				
<i>LTI Ultralyte LR</i>	J	Y	28/410	Y
	J	Y	J	Y
	J	Y	26/410	Y
Jamming Efficiency LTI Ultralyte LR = 67%				
<i>Laser Atlanta Speed Laser (Non Stealth Mode)</i>	J	Y	J	Y
	J	Y	J	Y
	J	Y	J	Y
Jamming Efficiency Laser Atlanta Speed Laser = 100%				

Jamming Efficiency All Distances, All Guns = 22 of 24 tries = 92%

Alert Efficiency All Distances, All Guns = 24 of 24 tries = 100%



Product Performance: K40's new Laser Defuser EX2 successfully jammed all laser guns during multiple runs in our field testing with laser guns aimed at the recommended 1,000 foot targeting range. It solidly received laser and faithfully alerted the driver every time to laser use. The K40 sample performed as advertised compared to previously tested K40 pre-production samples. The new sample shows K40's commitment of offering a quality product to their customers. Some other manufacturers do not share this commitment. In all attempts, Dave Adams, E.E. video taped the sample's performance with a special infrared filter insuring the product was transmitting when it encountered a laser gun. Further, the test vehicle driver confirmed via radio the product was receiving a laser signal as the in-cabin K40 LED and speaker would become active. It must be noted, that targeting with laser is a very difficult task for officers and holding the targeting reticle on a specific location on the target vehicle is difficult without a tripod. In some cases, this difficulty in holding the laser target indicator on a specific part of the vehicle resulted in the laser obtaining a speed and distance measurement by the laser gun as it struck many points on the target vehicle. In this case, the K40 samples were outside the transmission reception window of the K40 transponders. Considering the targeting difficulty, it is difficult, if not impossible, for any laser counter measure to obtain a 100% jamming efficiency. However, in 100% of all cases the K40 sample did give the driver a visual and audible warning of laser's use. Considering the field performance of the K40 sample, SML awards K40 its Performance Certification Seal of Approval and allows the company to display the trademarked SML logo as registered with the United States Patent and Trademark Office, Reg. No. 2,928,737 on its products for a period of one year from the date of this report. This logo may only be applied to products and models field tested by SML. SML neither condones, nor condemns the use of products it field evaluates.

Attested To This 1st Day of October 2007

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 FCC License RS Radiolocation KNNN392
 Certified Master Radar Laser Instructor

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