

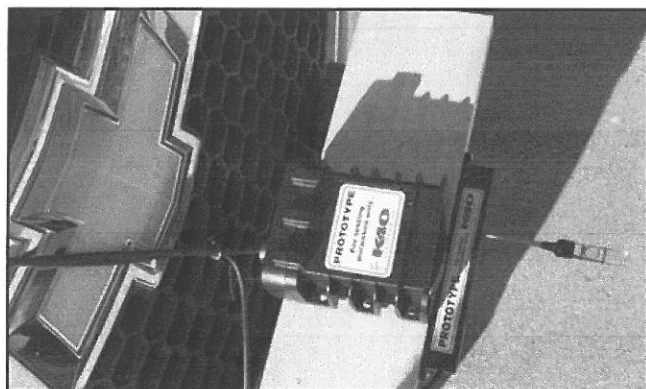
Report Number: SML 0711-184  
Client: K-40 Electronics Inc  
Report Date: 24 July 2011  
Testing Dates: 9 July, 16 July, 23 July 2011



**Background:** K-40 sent by overnight delivery its Prototypes “For Testing Only” of their RL 100, and RL 360 (remote) models the week of 20 June 2011. Prior to making a production decision, K-40 wanted to field test its products to independently verify their performance. Due to the large number of foreign observers at Speed Measurement Laboratories Inc. (SML) Annual Radar Detector Test it was judged prudent not to test the samples sent to SML by K-40 during our Annual Test of 24-26 June 2011. This decision was based on security reasons. Field testing of the provided Prototypes in Fort Worth was delayed by SML’s teaching at a major police academy, meeting with lawyers of the El Paso Prosecutor’s Office, testifying for the State of New Mexico as a “court recognized” expert witness in radar and laser, and speaking/exhibiting at the Texas Chief’s of Police, ISD Convention. These other activities had been planned.



In order to properly field test the provided products mounting platforms, front and rear, had to be constructed for the remote

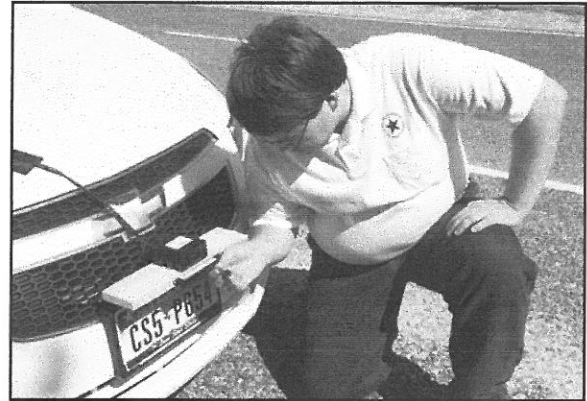


radar receivers and the Laser Defusers of the RL 360 remote model sent to SML by K-40. Additional time was consumed by wiring the remote components correctly including the GPS module, speaker, remote controller to a 12 VDC grounded power source on SML’s Chevrolet Cruze. The wiring was checked in SML’s laboratory with radar and laser guns prior to installation on the Chevrolet Cruze. Additional time was consumed by properly black taping of the external wiring of the remote model RL 360

provided to SML by K-40. Field testing of the models was assisted by Fort Worth SML staff and replicated testing performed on other models during SML’s Annual Radar Detector Test. All test results of the performance of K-40 Prototypes remains in strict confidence and has not, nor will be, shared with others.

**Manuals Provided:** The K-40 manuals were very easy to understand. Their understandability is complimented as many Operator’s Manuals are difficult to understand by the customer. The wording used in the K-40 manuals shows attention to detail and a complete Americanization of directions. However, the wiring difficulty of the RL 360 requires professional installation.

**Radar Reception:** A cones were placed at 1 mile for the Radar Reception Testing. Several different radar guns were used being MPH K-15 X band at 10.525 GHz, Decatur Handheld Directional K and at 24.150 GHz, and a Stalker II Ka band at 34.7 GHz, Kustom Talon hand held at 35.5 GHz and a MPH Bee III at 33.8 GHz. The duration of exposure to each radar band was for three seconds. Each provided prototype was given two tries on each band.



1 mile	RL 100	RL 360
K-15 X band	Reported X band	Reported X band
	Reported K band	Reported X band
Decatur K band	Reported K band	Reported K band
	Reported K band	Reported K band
Stalker Ka at 34.7 GHz	Reported Ka band	Reported Ka band
	Reported Ka band	Reported Ka band
Talon Handheld at 35.5 GHz	Reported Ka band	Reported Ka band
	Reported Ka band	Reported Ka band
MPH BEE III at 33.8 GHz	Reported Ka band	Reported Ka band
	Reported Ka band	Reported Ka band

Both the RL 100 and the RL 360 correctly identified and reported radar guns encountered.

**Category Summary and Recommendations:** All radar and laser guns used during the field evaluation of K-40 “Prototype” samples appear on the International Association of Chiefs of Police, IACP, Conforming Product List (CPL), see [www.iacp.org](http://www.iacp.org). This is the most current listing of October 21, 2010 and of 4 July 2011 remains current and unchanged. This means the radar and laser guns have been tested and approved for police use using DOT HS 809 812 (radar) and DOT HS 809 811 (laser) performance specifications as affirmed by NHTSA (National Highway Traffic Safety Administration), IACP and the United States National Bureau of Standards and Technology, NIST. Governments from around the world use the CPL in selecting radar and laser guns used in speed enforcement activities.

**Laser Reception:** Cones were placed at 1,500 feet, 1,000 feet, and 500 feet for this test. Three miliradian laser guns were used being the Kustom Signals Prolaser III and the Laser Technologies Inc LTI Ultralite LR. They are the two most sold and used laser guns in the United States and elsewhere. At 1,500 feet the 3 miliradian beam of the laser’s is 54” wide with a radius of 27”. At 1,000 feet the laser beam is 36” wide with a radius of 18” and at 500 feet the laser beam is 18” wide with a radius of 9”.

One would expect the detectors would report laser at 1,500 feet and possibly 1,000 feet, but not at 500 feet considering the beam width at both distances. It could be expected the laser receiver is located mid-point between the license plate screws on the Model RL 360 would report laser at

500 feet. Operators were told to aim at the front license plate with laser guns in the range mode as the test vehicles were not moving. At 500 feet with the small beam width of 18" it is expected

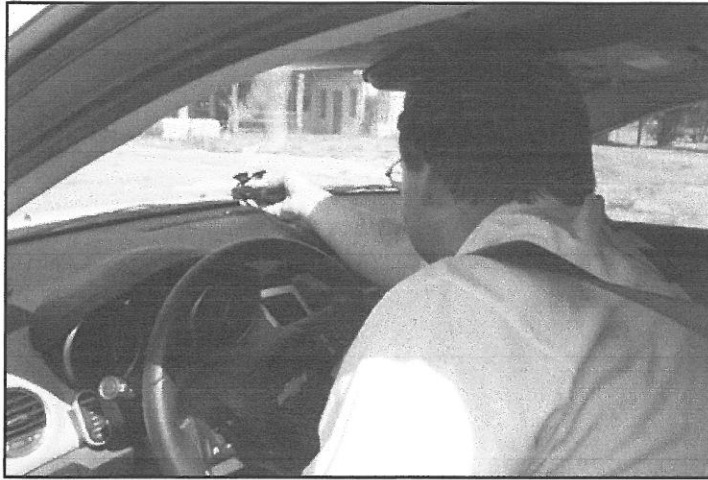


the detector would not report laser, i.e. RL 100 as it's mounting position is the dashboard or windshield. D means the detector detected and reported laser. ND means the detector did not detect nor report laser. When the Laser Defuser was tested the test vehicle was told to drive at 30 mph and count down 3, 2, 1, when it arrived at the 1,000 ft. cone. At this distance the laser guns were aimed at the front license plate. During the Laser Defuser test If the laser gun recorded a distance and speed of the vehicle it was told to stop and the distance recorded in feet. J means the speed and distance was not displayed. If the laser gun obtained a reading of speed and distance it is recorded in feet under the 500 ft. category. Each gun was operated twice during this evaluation. Remember at 230 feet the 3 miliradian laser beam is only 8.6 inches wide with a radius of 4.3 inches which is outside the location of the Laser Defuser which is mounted on top of the license plate.

	Laser Gun	1,500 ft.	1,000 ft.	500 ft.
RL 100	Kustom Pro Laser III	D, D	D, D	ND, ND
	Ultralyte LR B	D, D	D, D	ND, ND
RL 360	Kustom Pro Laser III	D, D	D, D	D, D
	Ultralyte LR B	D, D	D, D	D, D
Laser Defuser	Kustom Pro Laser III		J	J/221/234 ft.
	Ultralyte LR B		J	J/238/215 ft.

As is predictable, the RL 100 and RL 360 reported laser use based on their mounted positions. The RL 360 did report laser use at 500 feet as it is located adjacent to the laser gun's aiming point which is the license plate. The Laser Defusers did interfere both laser guns getting a speed and distance reading, but uncovered, meaning the laser gun reported both speed and distance, at very short ranges.

**Federal Communication Commission Verbiage:** The sample units presented to us for field

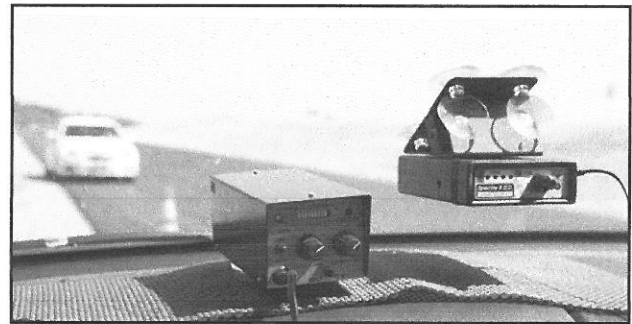


evaluation by K-40 did have the necessary verbiage and FCC ID numbers affixed. Although they were clearly labeled "Prototype, For testing purposes only" K-40's experience with marketing radar detection systems clearly shows by the verbiage of: *"This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2) This device must accept any interference received including interference that may cause*

*undesired operation."* Both samples did have affixed this verbiage. Without such labels, production samples may not be sold in the United States.

**Radar Detector Detectors-**We used two radar detector detectors being the VG-2 pictured left and Spectre III pictured right. The two RDDs were provided by law enforcement personnel.

We set a cone at 1,500 feet with the test vehicle containing the RL 100 and the RL 360 being stationary at the cone. The test vehicle was in commercial radio communication with the transmit vehicle, note FCC Radio License for SML is **WPJQ839**. If the detector was not detected at 1,500 feet it was told to drive toward the transmit vehicle at 30 mph. Once detected, the vehicle was told to stop and the distance recorded by laser in the range mode. There were two tries for each sample provided: RL 100 and RL 360. The results follow with ND meaning the detector was Not Detected. If the detector was detected, D, the detection distance is reported in feet. Each detector was given two tries on each RDD.



Detector	VG-2	Spectre III
K-40-RL 100	D/540 ft. & 606 ft.	ND, ND
K-40-RL 360	D/248 ft. & 221 ft.	ND, ND

**Category Summary and Recommendations:** The basic question here is will both the RL 100 and RL 360 provide protection to the driver when encountering a RDD. Neither the RL 100 nor the RL 360 showed any invisibility to the VG-2 radar detector detector. However, both were invisible to the Spectre III RDD. The VG-2 has not been sold nor manufactured for over ten years. In the field one will find very few and the emphasis by all radar detector makers is to become invisible to the Spectre series of RDDs. In the United States, the use of radar detectors in car is legal in all states with the exception of Virginia, Washington, D.C. and U.S. Military



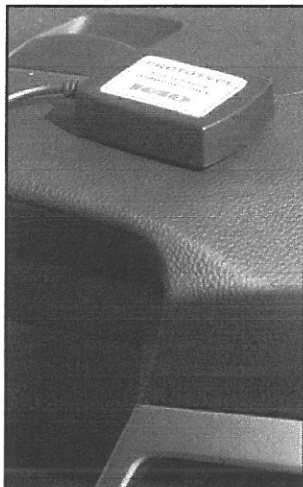
Installations (DOD Directive 6055.4, E3, 11.3). The use of radar detectors in commercial vehicles including 18 wheelers is banned in all states as of February 1995, per United States Department of Transportation directive, CFR 47, parts 392, 392.71.

**K and Ka Band POP-**For the POP testing we used the MPH Z-25 K band hand held and the MPH Bee III two piece unit transmitting at Ka 33.8 GHz. POP is advertised as a mode that radar detectors have difficulty in detecting. The duration of the POP transmissions is a mere 67 ms (milliseconds). However, the Operators Manual of the POP radar guns clearly states that the speeds recorded by POP Mode can not be used to issue a speeding ticket. The POP Mode must be operated in the stationary position and the radar gun operator can't "lock" displayed speeds thus *"not establishing a legal, visual tracking history."* Don't expect to encounter a POP mode while you drive. A cone was placed at 1,000 feet and one at the 500 feet distance from the transmit vehicle. The test vehicle containing the RL 100 and the RL 360 was told to drive at 30 mph toward the 500 foot cone. The driver counted down "3,2,1" with "1" being when he was at the 500 foot cone. At the 500 foot cone, the K and Ka POP radar guns were triggered. NR means the detector did not report a K or Ka band signal. D means the detector did detect the POP mode of either the K or Ka POP radar gun. Each detector was given two runs toward the POP radar guns. 28/NR means the radar gun clocked the target vehicle at 28 mph and NR means the radar detector did not report a particular frequency. Both detectors were set to the "POP Radar Band" setting as prescribed in the Instruction Manuals which are Item #6 for the RL 100 and Item #4 for the RL 360. Detectors were run at the POP guns with the Customized setting contained in the Operator's Manuals with POP setting "on and "off." The results show the results with the POP Radar Band on as specified in the manuals.



Detector	K POP	Ka POP
RL 100	31/D	29/NR
	29/D	30/NR
RL 360	28/D	27/NR
	28/D	28/NR

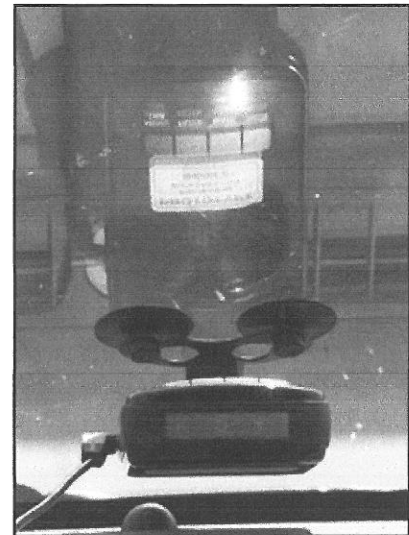
**Category Summary and Recommendations:** The RL 100 and RL 360 did detect the K band POP Mode transmissions. However, neither detected nor reported the Ka band, 33.8 GHz, POP transmissions. Three states of the fifty in the United States have accepted POP mode by state contract and they are Iowa, Nevada, and Oregon. Having a state contract does not mean individual police departments have to order the particular radar gun. It only means the state has accepted state contract pricing on the particular radar gun for purchasing purposes.



**Quiet Ride and Marking Locations:** Both the RL 100 and the RL 360 have internal or external GPS modules. The GPS is important as it tells the detector its location. Drivers can "Mark" locations such as

*“school zones, speed cameras, or redlight camera intersections.”* We wanted to test and evaluate both **Quiet Ride** and **Marking Locations** of both detectors. First we tested the described **Mark Location** feature of both detectors. According to the Operator’s Manual, you can depress and release the Mark button on the RL 100 or the RL 360. The display or the speaker says *ALRT LOC* meaning Alert Lock. When you return to the *Marked* location at 1,500 feet you will hear a *“Bing Bong”* tone and the display or speaker will report ALRT Loc. At the marked location, you will hear a single *Bing* tone. We tested this by having the test vehicle driver mark a present location and then driving away for one mile. On both returns the test vehicle driver reported hearing both the 1,500 foot warning and the marked location warning. If you need to remove previously *Marked* locations simply press and release the mark button at the *Marked* location. Unique to the market, the RL 100 and the RL 360 do not contain a computer memory of locations of red light cameras in the country. Most detector makes offer upgrades via USB interfaces with computers. Both the RL 100 and the RL 360 do not do this and you have to use the *old fashion way* of marking locations. In many cases this is a blessing.

The **Quiet Ride** feature was next. The factory setting is to eliminate any audible false alerts you may receive at speeds of less than 25 mph. Remember, the detector has GPS so it knows how fast you are traveling. The minimum setting can be adjusted. We tested this feature twice at an automatic door opener at Kroger. A traditional detector will alert to the automatic door opener’s K band transmission with both audible and visual warnings. However, the **Quiet Ride** feature of the RL 100 and the RL 360 will automatically mute this annoyance if you are below the pre-set speed. This display will still show the signal’s reception as shown in the picture. This is truly a unique feature for any detector and an innovative use of GPS technology.



This completes our evaluation of the RL 100 and RL 360 pre-production engineering prototypes provided us K-40 Inc. We have been field evaluating products for over fifteen years. We do not sell the products we evaluate! Seldom, if any, products we field evaluate that are intended for retail distribution perform *“as advertised.”* This is not the case with K-40’s RL 100 and RL 360. All features described in the Instruction Manuals were easy to understand and all of the features worked *“as advertised.”* The announcement of the RL 100 and RL 360 show tremendous understanding of the radar detector industry and considerable thought has been given to the features of each model. Both models make unique, important, and sensible use of GPS technology in an uncomplicated manner. They are truly *“plug”* and *“play”* ready!

Attested for accuracy find signature below, 26 July 2011.



Carl Fors, B.S., M.S., President  
Speed Measurement Laboratories Inc.