

World's Best Radar Detector: BEL XR vs. Valentine One

How They Were Rated Them

They were rated by awarding points, with a total of 200 possible: 140 for radar performance and 20 maximum points each for features, ergonomics and resistance to false alarms. Radar points were weighted: X band: 5 points, K band: 20 points. All three of the commonly used Ka-band frequencies were tested, each of which had a maximum of 15 points, giving Ka band a total of 45 points.

Radar points were totaled from their performances from the two test sites. Here's the results.

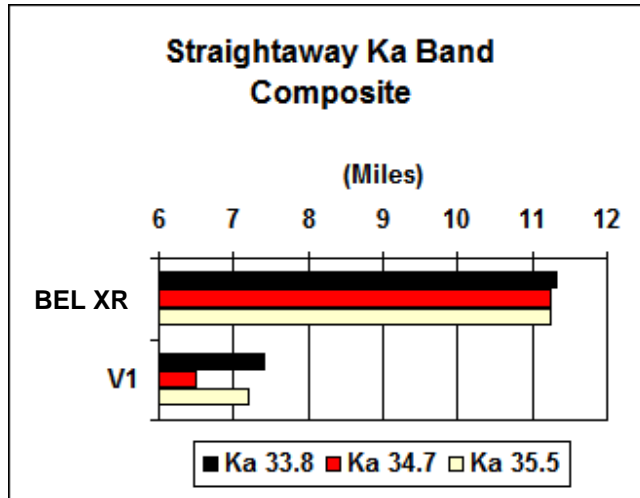


Valentine One 146 points 2nd Place

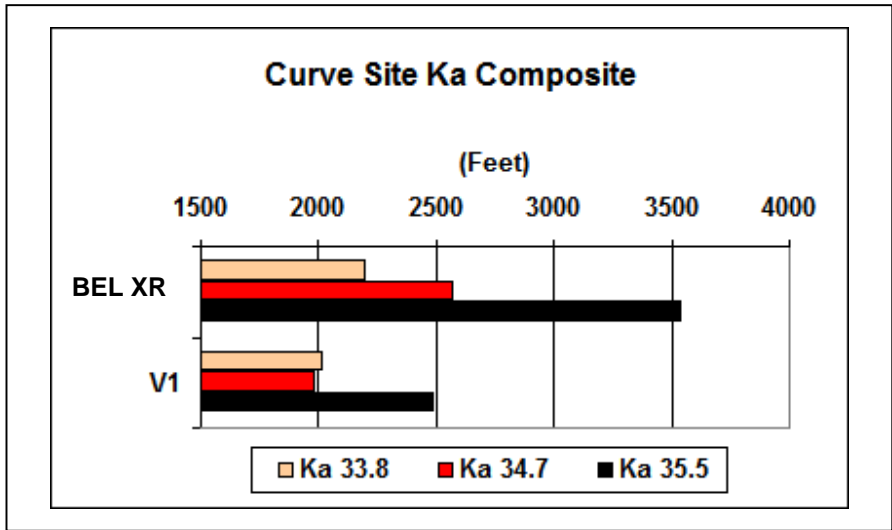
The Valentine One celebrated its 15th birthday in 2006. Aside from a couple of new features--laser detection, for example--and some updated subassemblies and revised software, it's much the same as it was in 1991.

The Valentine One turned in excellent X- and K-band scores, equaling the BEL XR at the Straightaway Test Site at 11.3 miles. But it faltered a bit on Ka band.

Would this matter in town? Nope. But it could on the open road some night, with light traffic, few targets and a Ka-band-equipped police car rolling toward you.



The Valentine One showed similar difficulties at the Curve Test Site. Although its X- and K-band scores were excellent, again it lagged well behind the BEL on Ka-band. It was noticeably weaker on the two most commonly used frequencies, 34.7 GHz (23 percent less range) and 35.5 GHz (30 percent less range). These two are used by nearly 95 percent of all Ka-band police radar guns. (This includes all Decatur Electronics models and those from Kustom Signals, whose units are the most widely sold and thus, the most frequently encountered on highways in Australia, New Zealand, China and dozens of other countries.)



That wasn't the Valentine One's most troubling shortcoming, however. (Seven miles of range at this site is still well beyond what I'd expect from any detector.) That occurred at the Curve Test Site when the V1 strangely failed to alert on K band even when parked next to

the radar. The "All Bogeys" display indicated that it was operating normally but it was dead on K band. That ended testing for the day. After purchasing a second sample, also with the latest software, the test was repeated and this unit was used for the Straightaway Test as well.

Once the tests were completed and with the first Valentine One now repaired, it was time to do a heat test on two BEL XR units and the pair of Valentine One units. Both models have metal cases and are controlled by DSP chips, in theory not the optimal combination for sunny climates in summertime. Any electronics wizard knows why: DSP chips routinely fail when exposed to temperatures approaching 170° Fahrenheit. (Why do you think PCs have cooling fans?)

During testing, that first Valentine One had spent the entire test in an air-conditioned vehicle with outside temperatures hovering in the mid-seventies. It was exposed to direct sunlight for the duration, as were all the units, but save for a half-hour lunch break with the target car parked with windows up and A/C off, all the detectors were kept cool.

For the heat test, two of each model were placed on the dash of the test car, a new Audi A4, powered them up and left them running. The car windows remained closed, the engine off. (It's worth noting that the BEL XR is so well shielded that it wasn't detected by a Valentine One sitting next to it. The V1's high sensitivity leads it to alert to many poorly-shielded detectors from hundreds of feet away.) At 20-minute intervals a calibrated digital pyrometer was used to record the temperature of each detector's housing and also the car's interior temperature. Ambient temperatures during the test ranged from 78 degrees F to 93 degrees F.

The results were surprising. The housings of both the Valentine One units reached 153 degrees F within 58 minutes. The BEL's climbed to 154 degrees F in 62 minutes. At that point one shut itself down, displaying a "Service Required" warning message. The other followed suit after 80 minutes, having reached a temperature of 163 degrees F. A test verified that neither was detecting any band of radar. This behavior is normal for DSP-driven equipment, at least for gear that's sophisticated enough to have some sense of self-preservation. Rather than suffer permanent damage, the unit takes a rest and notifies the user.

The two Valentine One units were checked next. Neither indicated any sign of trouble, showing the normal "All Bogy" display. But the first unit was dead on both K and Ka bands, the other on X and K bands.

As expected, once the engine was turned on and the air conditioning cranked up, both BEL's resumed normal operation within 8 minutes.

The Valentine Ones were not quite so resilient. One unit remained dead on K band, the other stayed dead on X and K bands. This was surprising: the heat test asked nothing from the detectors that they don't encounter daily in routine service. An hour on the dash in mild spring weather is anything but an extreme test.

The fact that this expensive radar detector has no self-test diagnostics that'll warn you of an internal failure is surprising for a model that touts itself as the best ever made. The first clue you'll have could well be flashing red or blue lights in your mirrors. However, that doesn't account for the Valentine One's second-place ranking in this test. It earned that by virtue of some unfortunate gaps in its radar performance, by its so-so ergonomics and a noticeable lack of features.

So does this make the Valentine One the world's second-best radar detector? The Valentine One did extremely well for a 1991 design. In the fast-paced world of consumer electronics, 2000 is ancient history and 1991 might as well be prehistoric.



BEL XR
194 points
First Place

In early 2002 Beltronics had a question: Given the choice, what characteristics would the perfect high-end radar detector have? "Superior sensitivity, high resistance to false alarms, good feature set and a metal case to make it seem rugged. Make the color black to cut down on windshield glare. Put the major controls where you can reach and identify them by touch and backlight them too, so you can find them at night,".

Apparently BEL listened. Four years later arrived the BEL XR. It's housed in a robust, black magnesium case and has front-mounted backlit controls --an industry first for a dash-mount detector.



The BEL XR is a completely new platform with dual front antennas and a host of other unique design elements. Although BEL doesn't make a big deal of it, the reason for most of these is to make the BEL XR immune to radar detector detectors, particularly the Spectre (a.k.a. Stalcar)RDD. When the test BEL XR was powered up next to a current-model Spectre Mk III on the dash and the Spectre never uttered a peep. The BEL XR was also found it to be highly resistant to false alarms. The BEL XR also excelled at its primary mission--ferreting out distant radar signals. It spotted all five radars from over 11.25 miles

away. It trounced the Valentine One on Ka band, by far the most critical radar band to detect. And unlike the Valentine One, the BEL has self-test diagnostics to warn you if it's feeling poorly. Even discounting its RDD-proof capability and extreme sensitivity, the BEL XR could well merit the title as the Swiss Army Watch of super-premium radar detectors.