



## **Application Notes**

When it comes to perimeter protection, a common misconception among security professionals in today's world, is regarding this subject as something "expensive and complicated". Truth to be said, thanks to the key players in the perimeter protection market it really always was expensive and complicated, partly to maximize profits and partly to keep product knowledge reserved for members of an elite club – those who would spend the money to go through training and certification offered by these key manufacturers.

Our goal is to change this once and for all. In order to do that, we have introduced an extremely affordable (up to 4 times cheaper), extremely easy to use and install (no calibration required) and in a small and attractive footprint (up to 8 times smaller than the competition). Combine all that with an unprecedented 3 year warranty and you have a winner – STR International's award winning Radiy and Agat series microwave perimeter protection devices.

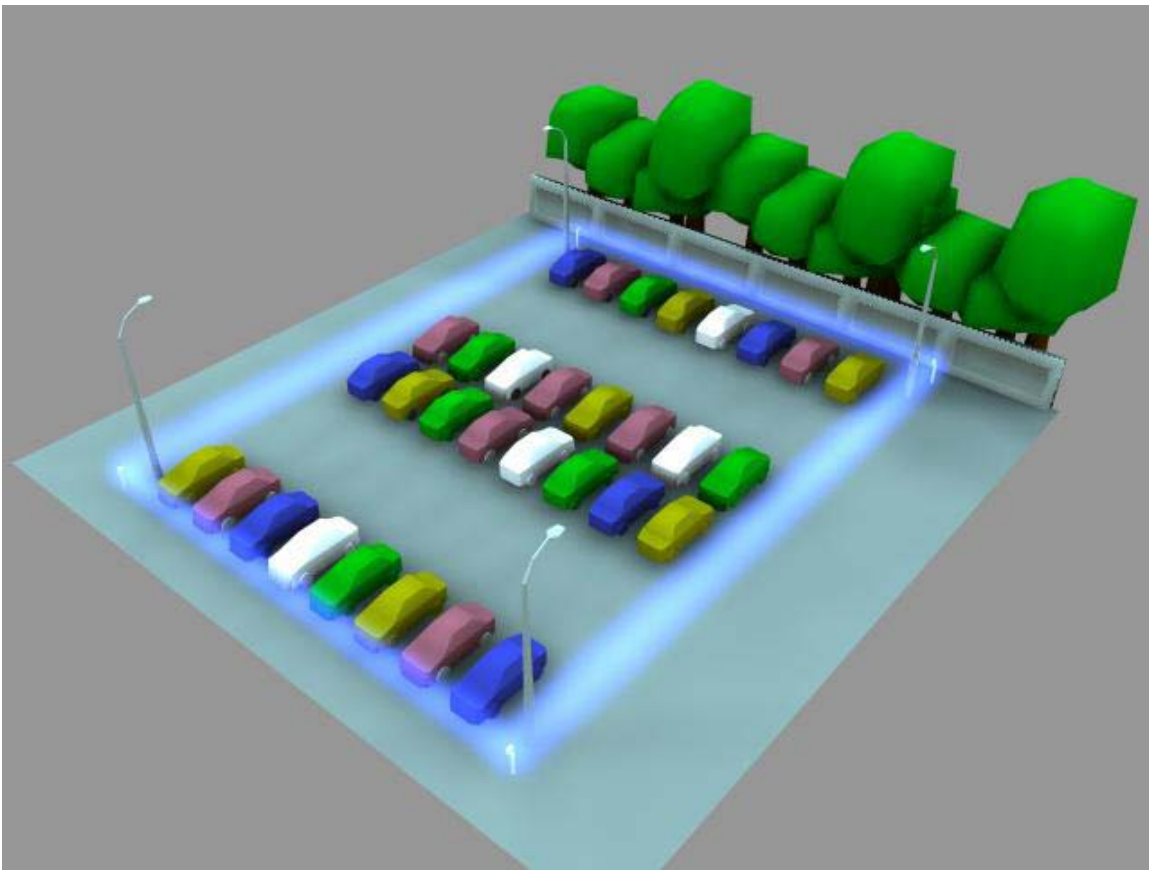
Now our goal is to help you learn about possible ways of use and ease of installation for these devices.

First and foremost try to see the microwave perimeter devices as fancy PIRs with advanced capabilities. When we think about PIRs, we think cheap – this helps to bridge the gap between perimeter protection solutions and regular alarm devices. That being said, if we look at high-end outdoors PIRs from Optex, for example, it would be wrong to compare them to either of our Agat or Radiy series detectors (we've heard enough of "but Optex is cheaper"), as it is not an "apples to apples" comparison. While I suggest to try and perceive our devices as fancy PIRs, they are by no means such – we are talking about high-end digital microwave solutions, with abilities to analyze intruding bodies in its field of detection, as well as adapt itself to changing terrain conditions (snow, sand and etc).

In the following series of diagrams, we will illustrate various uses and ways of utilizing our equipment.

### Stationary bi-static Radiy series devices.

In diagram 1, we will discuss a car parking lot.



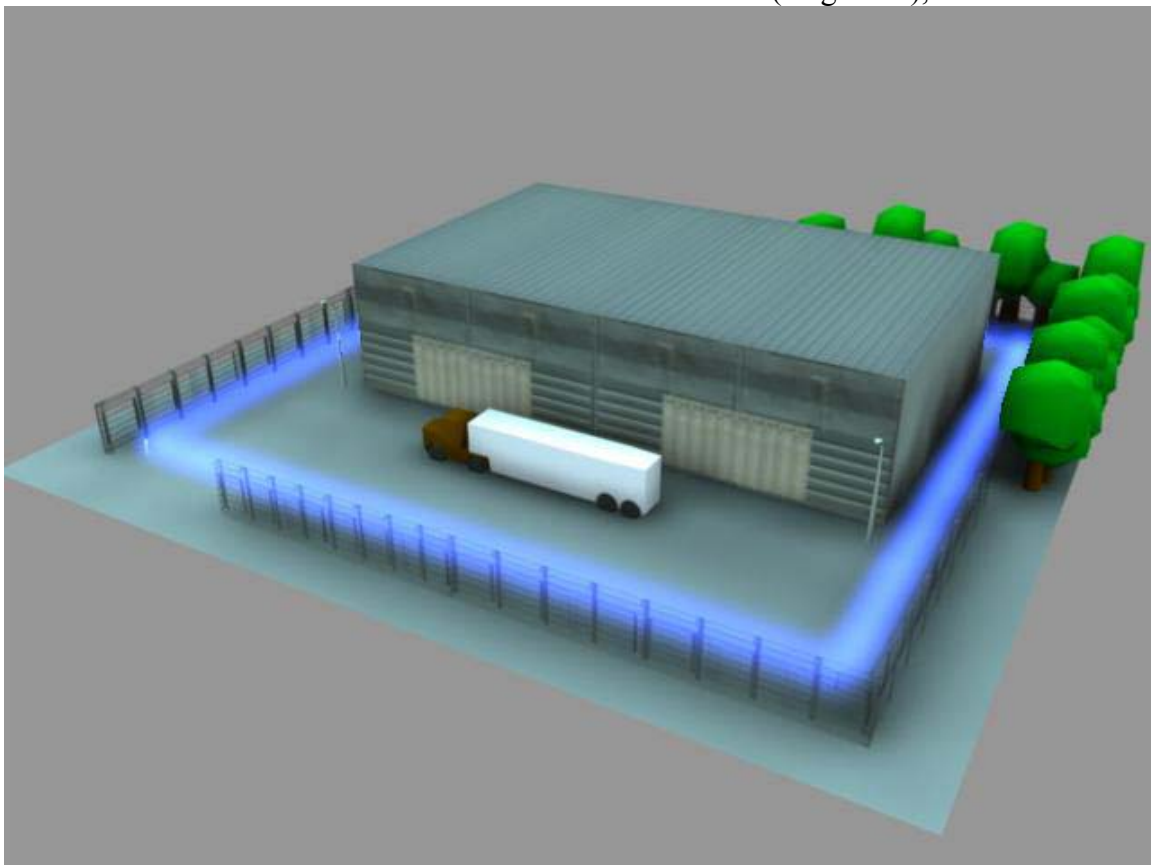
As you can see from the diagram, our goal is to protect 4 sides of the rectangle from possible intrusion. If we were to try and achieve that goal using fence wiring protection, the solution would be very costly and time consuming to install. Utilizing microwave sensors, on an average lot, we can get away with installing 4 pairs, one for each side of the rectangle. The length of the rectangle side would help to determine, which particular device to use (e.g. 1000ft side would require the R-300, a 150ft side would require the Radiy-2/2. If a side is longer than 1000ft, various devices could be used back to back, i.e. if you have a 1600ft side, 1 set of R-300 + 1 set of Radiy-2 installed back to back, would provide you with 1600ft of coverage). Since each device has a 10ft tall and 16ft detection zone, we have an effective “kill zone”, which would allow the system to identify an intruder while he is climbing on to the fence, and continue to output an alarm signal until the suspect clears the “kill zone”. Using stainless steel brackets included with every installation kit, the microwave detectors should be installed on the inner side of the fence posts (to prevent vandalism and to prevent false alarms resulting from people walking outside the fence area).

Power to the detectors can be sourced from lamp posts, using step down adapters (most street lights have 220v power inside), in order to save on cable runs. If no lamp posts exist, cable needs to be run from a central power source, to the detectors. For the alarm output, a number of approaches could be utilized. If a preference is set on wired alarm output, but there is no need for knowing which zone has been breached (each set of detectors can function as a zone, just like PIRs), all the detectors can be daisy-chained into a single thread, sparing the need to run individual wiring from each device. On a higher end application, wireless alarm contacts could be utilized (DSC wireless contacts seem to be a great fit). The actual output can be connected to anything, which supports dry relay output (be it Normally Open or Normally Closed), e.g. alarm panels, sirens, flood light, Digital Video Recorders, building management systems and etc.

A good example of such a project would be an installation done for a large car dealer, where Radiy series detectors were utilized as a first line of defense. The install had complexities related to running the alarm output back to the building – the costs of trenching were high, so DSC wireless alarm contacts helped solve the problem. Power to the detectors was borrowed from close by lamp posts (as suggested in the earlier description). The solution works the following way:

As soon as an intruder enters the detection field of the microwave sensors, a signal is sent to the alarm panel, the DVR and speed domes. The speed domes turn to the preset associated with the zone where the intruder is located, flood lights come on and an on-premise real-time DVR begins recording. If the intruder continues movement in to the parking lot and comes closer to the building, outdoor PIRs installed on the building itself send a signal to the alarm panel, which in turn contacts a central station and a patrol car is being dispatched.

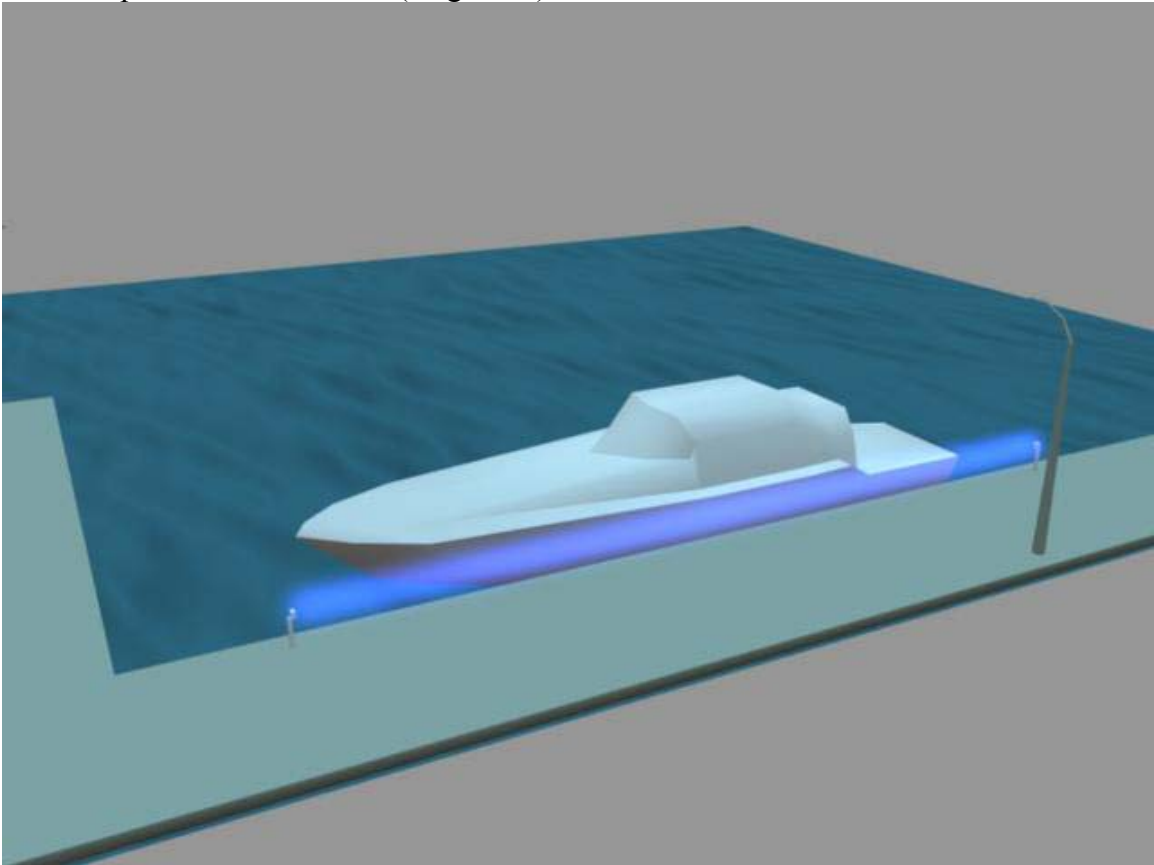
Similar solutions could be utilized in a case of a warehouse (diagram 2),



or a hospital parking area (diagram 3),



a marine pier/boat launch area (diagram 4).

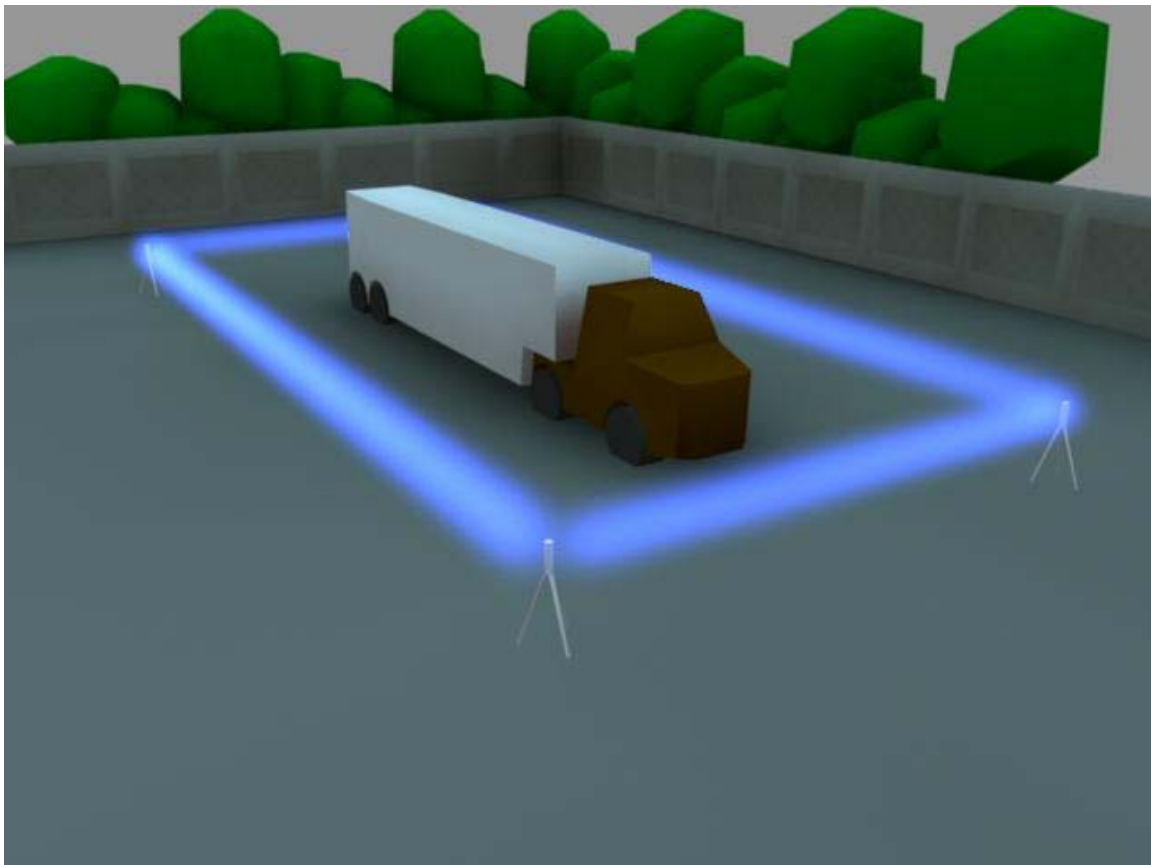


This is a good way of building an inexpensive multi-tier protection system, which utilizes microwave perimeter. The opportunities are limitless.

### Mobile Perimeter protection – Radiy-BRK

In 2004, Israel's main airline, El-Al, was forced to land twice, in Hamilton Airport, just outside of Toronto, because of terror threats. One of the conditions El-Al presented to the management of Hamilton Airport, if they ever wanted to see El-Al planes land there again, was to offer a way to protect the planes once they are parked, until they are ready to take off.

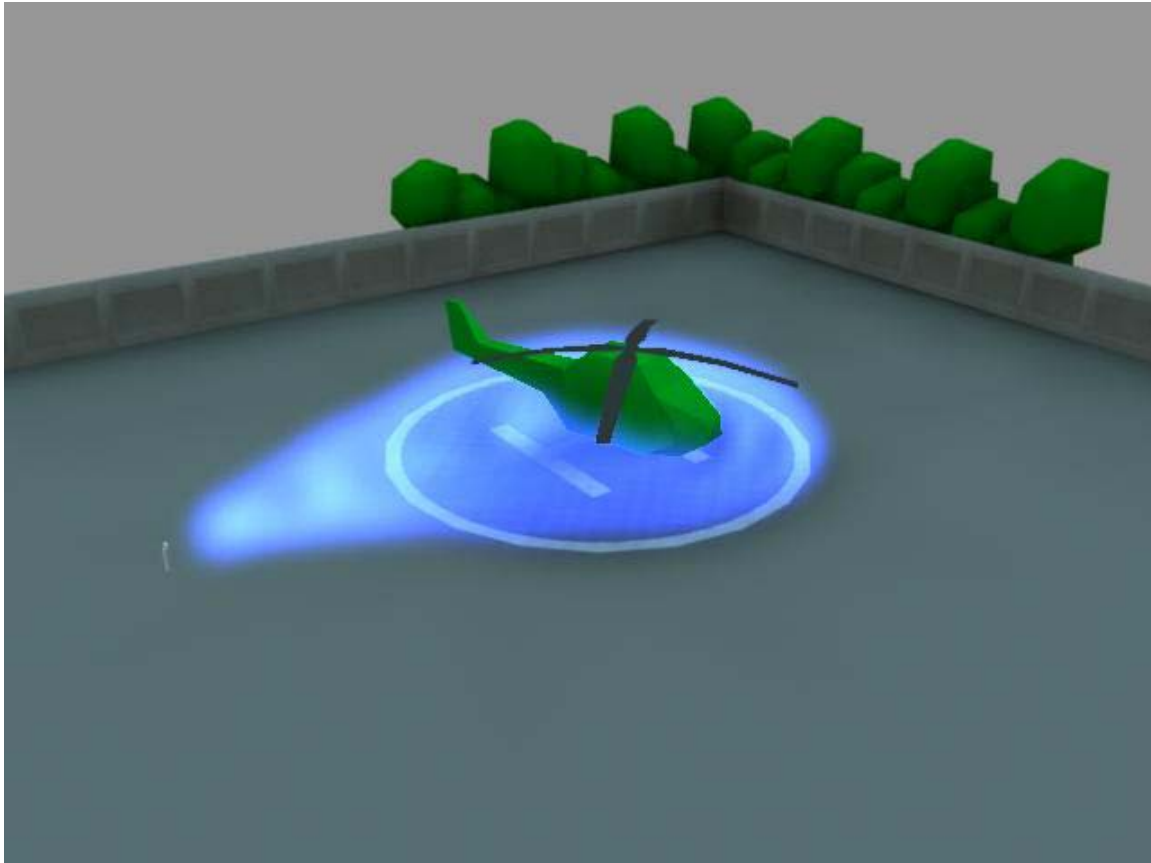
Enter the Radiy-BRK. Lightweight, portable protection solution, which allows to protect an area of up to 1.5sq miles in less than 20 minutes. A basic kit comes with 4 detectors, allowing to establish zones of 300ft between each detector (a Boeing 767-200 is 159ft long and has a wingspan of 156ft), and a remote control device, which works at almost a mile away from the detectors, displaying the number of the zone being breached and sounding an audible alarm. The device also has dry relay output contacts, allowing it to be connected to a stationary alarm panel or any other alarm device. The detectors operate on NiMH batteries, allowing up to 60 days of operation without recharge. The remote control uses a signal rechargeable 12V battery and is able to operate on 12VDC power, if mounted in a stationary scenario. The detectors could be installed on either lightweight tripods (included), attached to auxiliary devices (fence posts, bridge supports, etc) or natural support (trees, etc). In diagram 5, we see a truck protection application. Once the truck is parked, the system is deployed within minutes.



The units could be utilized for VIP protection, vehicles, planes, helicopters, remote locations with no power source and etc.

## Stationary monostatic Agat series volumetric detectors

The Agat series work differently from the Radiy series. While Radiy series detectors use the Doppler effect and digital analysis of the Doppler waves, the Agat series are volumetric detectors, constantly sensing mass and size in the protected field, making them perfect for protecting enclosures, small foot print areas, such as rooftops and helipads and etc. Nowadays, many break-ins into commercial properties are done through the roof, it usually being the unprotected in any way whatsoever. In diagram 6, you can see an example of a helipad being protected.



The Agat series detectors are also great as an add-on to the Radiy series devices. For example, if you have to “turn” a corner and a dead zone/blind spot appears in your detection pattern, a single Agat series device can be used to cover that zone. The Agat-SP5 device features an adjustable detection zone (length) and adjustable sensitivity, allowing it to be used for a variety of applications on a single location. For example, the interior of a warehouse – when it is empty the distance is set far and sensitivity is set high. Once the warehouse fills up, sensitivity is being reduced, in order to avoid the device seeing the boxes as intruders.

The possibilities are limitless. At the price point of the device, it is about the integrators creativity and free thinking – the rest is already here.

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