APPLIED WIRELESS ID

Applied Wireless Identifications Group, Inc.
18300 Sutter Blvd., Morgan Hill, CA 95037 • Voice 1-408-825-1100 • Fax 1-408-782-7402 • www.awid.com

Technical Reference

Long-Range Readers – Questions for System Planning

Change History

Version	Date	Author	Comments
1.0	23 May 2011	L. Hickcox	First release.

When you plan a system using AWID's long-range readers, it may help to have an organized method to cover the items that contribute to a good solution. The questions below provide a check list for the most important points.

Overview

- Is the application for motor vehicles (cars, trucks, trailers, loads), or for wheelchairs and gurneys, or for people carrying tags? -- *For* vehicles*, see questions below. For* wheelchairs *and* gurneys*, see AWID's Technical Reference on ADA applications. For* people*, see AWID's UA-612 wall-mounted UHF reader, and discussion of the LR-2000 reader at doorways.*
- Is the purpose of the installation to identify vehicles or to identify individual people? – or a combination of vehicles and people? -- *Any of AWID's UHF readers may fit the application. But for people, use the 2 hand-held cards (not tags).*
- Is the purpose to operate a gate or door (access control), or to track movement or identify location of vehicles and/or people (mustering)? -- *This information helps to focus on the related questions.*
- Do vehicles pass in one direction or both directions in the lane? – and through the gate? -- *This tells us if 1 or 2 readers are needed at the gate, and where the readers and tags must be located.*

Tag Technology -- *These questions indicate whether the technology should be active-tag or passive-tag.*

- How fast will vehicles move through the tag-reading location (the "sweet spot") and through the gate area?
- Is there a gate (to slow or stop the approaching vehicles)?
- How far from the reader must the vehicles' tags be read?
- How wide is the lane in which vehicles will pass through the tag-reading location and the gate?
- Are the vehicles driving in well defined lanes? – or in a large open space for maneuvering?
- Are the size and visibility of the tag important? Is limited life of a tag's battery a factor?
- Are the size and visibility of the antenna array important. Is a single small unit for antenna and reader a factor?
- What is the customer's budget for the installation?

Reader Type -- *These questions indicate which distinct model of the LR-2000 reader family is recommended.*

- In what country will the reader be installed? – *Installation in the European Community requires the* LR-2200 *reader.*
- What are the types of vehicles that will be tagged? – passenger cars (including sports cars, sedans, vans, pickups and SUVs), delivery trucks, utility trucks, tractor-trailers, off-highway machines? -- *Different vehicles require different reader locations.*
- Are all vehicles the same type? – or is there a mixture of vehicle types? -- *This may require LR-2000HiLoMA reader set.*
- Will both vehicle tags and hand-held cards be used? -- *LR-2000HiLoMA reader set is convenient for mixed tags and cards.*
- Will trucks be tagged? – permanently or temporarily? – or will the gate be opened manually (that is, by a guard pressing a switch)? -- *Trucks may need a separate reader (in the HiLo set), unless the driver can reach the lower reader used by cars.*
- How wide is the lane in which vehicles will approach the tag-reading location (the "sweet spot")? -- *The HiLo reader set can be aimed horizontally to cover a wider area.*
- Do vehicles approach the gate in a straight line through the tag-reading location ("sweet spot")? – or is the lane curved (like a turn from a through-street into a driveway)? -- *The HiLo's 2 units can be spread apart to read cars from different angles.*
- Is the lane's grade constant at the "sweet spot"? Or is there a change in grade, like the top or bottom of a ramp? -- *The HiLo set is ideal when the reader's RF field must be spread out vertically to cover tags at different heights in the vehicles.*

Reader Location -- *These questions indicate where the reader may be mounted most conveniently.*

- Is there a structure above the lane to mount the reader? – like a horizontal beam, or a header above the doorway, or a ceiling?
- Is there a wall at the side of the lane?
- For a vehicle entrance into a structure, is the opening in a wall that extends to the left and/or right of the opening?
- Is there an existing pole, post or pedestal on one side of the lane at the "sweet spot"?
- If the reader will be at the side of the lane, can the reader be at the left (driver's) side? -- *This is more comfortable for the driver and more natural. It is easier for the driver to align the driving path with the left edge of the lane.*
- Can a side-mounted reader be near the edge of the lane? -- *To read best, the car's tag and the reader should face each other.*
- Is there room to install the reader a vehicle-length before the gate or door? -- *This lets the car keep moving up to the gate.*
- How fast do vehicles go in the tag-reading location? -- *Can drivers be trained (persuaded) to drive no more than 15 m.p.h.?*
- Will vehicles stop while waiting for the gate or door to open? -- *This depends upon gate operation speed, and distance between the reader and the gate.*

Reader Mounting

- Will the reader by mounted flat against a wall (non-adjustable), or on an adjustable bracket? -- *This depends upon the application and the vehicle types – see AWID's Technical Reference, "Application – Mixed Cars and Trucks".*
- Can the post have a square cross-section, rather than circular -- *AWID's LR-MB bracket mounts most easily on a flat surface.*

Protective Housing -- *AWID requires a Lexan housing for long-range readers in certain conditions.*

- Will the reader be mounted outdoors *and* exposed directly to weather (rain or snow)? -- *The housing protects against water condensation inside the reader. Lexan plastic assures minimal reduction in RF field strength through the housing's door.*
- Will the reader be exposed to bright sunlight in a hot environment? -- *The housing keeps the reader at ambient temperature.*
- Are aesthetics or vandalism an issue at the site? -- *The Lexan housing removes the reader from view or unauthorized access.*

Credential Type (Tag or Card)

- Are credentials to be permanently attached to the vehicles, or to be portable for use in different vehicles at different times?
- Are credentials to be always present in vehicles, or for temporary or occasional use?
- Are credentials to be attached to the vehicle during reading, or held between fingertips?
- Are credentials to be inside or outside vehicles? -- *Here are the characteristics of each UHF tag and card type.*

WS-UHF .. permanent, adhered to windshield, inside vehicle (destroyed if peeled off) – for reader at side of lane or overhead.

RV-UHF .. permanent, adhered to shell of rear-view mirror, inside vehicle (destroyed if peeled off) – for reader overhead.

VT-UHF .. portable, clipped in place, inside vehicle – for reader at side of lane or overhead.

HT-UHF .. portable, hung inside vehicle or hand-held – for reader overhead if on rear-view mirror post, or in any location if held in fingertips.

MT-UHF .. permanent or portable or temporary, fastened or adhered or hand-held, inside or outside vehicle – for reader in any location.

CS-UHF ... portable or temporary, hand-held inside or outside vehicle – for reader in any location.

GR-UHF .. portable or temporary, hand-held inside or outside vehicle – for reader in any location.

Tag Location on Vehicles

- Will the installer test for best tag location and orientation? -- *AWID's Installation Kit makes tag testing quick and simple at the site. Most vehicles need no individual testing; a few cars may call for individual trials with different tags types.*

DC Power Supply

- Will the power supply be located near the reader, or near the controller's panel? -- *In all cases the power supply is separate and dedicated to each individual reader. There is no wiring between the power supply and the controller panel.*
- Will the power supply be installed inside a metal enclosure (like the gate motor housing or a cabinet)? -- *Almost all power supplies use switching technology, which generates spurious RF. The metal cabinet may block this RF from the reader.*
- Will the straight-line distance between the power supply and the reader, and also the length of the cable connecting them, be 12 feet or *more*? -- *In this 12 foot distance, spurious RF from the power supply should be reduced to a very small amount.*
- Is there a 120 VAC grounded 3-pin receptacle available where the power supply will be installed? -- *It is OK to use a plug-in DC module if its specifications meet AWID's requirements. If there is no AC receptacle, the power supply must be wired to an AC power source.*
- Does the DC power supply include a back-up battery? -- *Battery-backup is ideal for reliable reader operation.*
- Will the installer provide specified power supplies? -- *AWID advises on manufacturers and models for best performance.*

Cable

- Will the power supply be located near the reader, or near the controller's panel? -- *If the power supply is near the panel, a single cable may be used (18/6 overall-shielded). If the power supply is not near the panel, separate cables may be needed (for power, 18/2; for Wiegand data, 22/4 – both* overall-shielded!*).*
- Will the cable be bunched wires or twisted-pair? -- *If twisted-pair, special Wiegand wiring prevents cross-talk on data lines.*
- Will the cables be run in metal conduit, or in trays, or direct-burial, or … ? -- *Besides cable shielding, physical separation from other cables with potentially noisy control lines or power lines is advised.*
- Will the installer provide specified cables? -- *AWID advises on specifications for best performance.*

Related Products

- Will doors for people in buildings have access control using the same UHF cards as in vehicles? Does the customer want to use a single card for both applications? -- *AWID's small UA-612 UHF reader uses the same cards as the long-range reader.*
- Will the proposed system have a combination of UHF readers – LR-2000, LR-2000HiLoMA and UA-612? -- *These compatible products can be used together in a system for access control or gate control, using the same UHF tags or cards.*