APPLIED WIRELESS ID

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Technical Reference

LR-2000 Reader Application – Preventing RF Field Overlap in Neighboring Readers

Change History

Version	Date	Author	Comments
1.0	13 July 2009	L. Hickcox	First release.

In some installations, like parallel lanes of a parking facility, the RF fields of neighboring LR-2000 readers may overlap. This may reduce the read range of the readers. To maintain full rated read range, we offer the following suggestions. These options apply to the LR-911 long-range reader as well. See the diagram for the shape of the effective RF field.

Option 1 -- Spacing

Install the readers with enough distance between them so that the fields do not overlap. Experiment first, before mounting the readers, to assure absence of RF field overlap. Camera tripods are a convenient way to support readers while testing at the site.

Option 2 -- Aiming

Aim the neighboring readers apart somewhat to eliminate overlap of their RF fields. Test the read range of both readers while changing the aiming, and observe when the range becomes normal.

Option 3 -- Shielding

Install metal shielding between the readers to prevent field overlap. Experiment with large sheets of aluminum foil. Sheet metal formed as a shield may be effective. Or mount the readers in shallow metal housings whose sides are 4 inches or more from the edges of the readers; remove the metal door. Use The Housing Company's Model PCH196 Lexan housing, lined inside with aluminum foil.

Option 4 -- Eliminating Reflection

Metal (even rebar inside concrete) in the effective RF field in front of one reader may reflect RF to a neighboring reader. To prevent reflection, either aim the reader away from the metal, or change the mounting location of either reader.

Option 5 -- Reducing RF Power

Connect a PC to the reader using the RS-232 adapter cable in the LR-2000KIT or LR-911KIT Installation Kit. From www.awid.com/support, click on the link for "FTP website, log into the site, click on "Access Control" > "Downloads" > LR. Get the LR program; select "Save" or "Run". In the program, lower the RF Power Level by sliding the scale adjuster, or by entering the desired field reduction between 0 and 255. Reduce the RF power level for both neighboring readers about the same amount, but not so much as to reduce performance of the readers measurably.

Option 6 -- Using LR-2000HiLoMA

LR-2000HiLoMA is a set of two units – a master reader and a remote antenna. Using the supplied coaxial connector, these two units may be mounted as much as 6 feet apart. The HiLo set is programmed with a duty cycle that allows only one unit to radiate its RF field ay any instant. Therefore the two units can not interfere with each other, and their RF field will never overlap. For an application where the two units may be within 6 feet of each other, this is an assured solution. (LR-911HiLoMA is also available.)

Notes: (a) To test for field overlap, remove power from one reader. Then check for full rated range with the other reader.

(b) Loss of read range because of overlapping RF fields is temporary. Read range recovers when overlap is removed.