

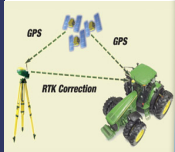
Network RTK Coverage Guide

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Created by PPN

Guidelines



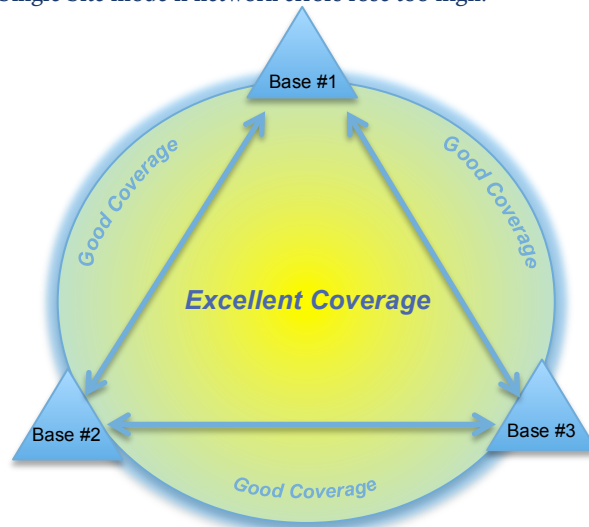
Coverage Guidelines:

- Network RTK software models the RTK corrections by combining the data from multiple bases around the user to create RTK data from a virtual base station as if it came from a base station nearby.
- Because the errors can be modeled better by using the surrounding bases, Network RTK can cover larger areas than traditional, single-site base stations.
- We have learned that under extreme conditions, stress is put on the network models when the base spacing is too large causing satellites to be dropped from the network RTK solution.

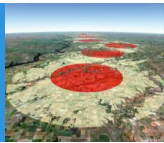
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Calculating Network Strength: Coverage Method #1

- To test network strength in an area, first determine the 3 closest base stations that make up a triangle that surrounds the users location.
- Check the distance between each base station making up the triangle.
- If any of the distances are greater than the recommended minimum spacing (see table below) method #2 must be used to determine if the user could reliably fall back to Single Site mode if network errors rose too high.



Calculating



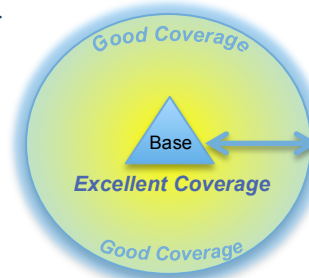
Calculating Coverage:

- Due to constantly varying conditions it is impossible to represent absolute parameters.
- Based on our experiences over the past 5 years we feel the following guidelines are a very good approximation of what to expect.
- With a network RTK coverage there are 2 different methods; one to test for network strength in the user's area and the second to test distance from nearest base if the network strength is not adequate.

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Calculating Distance from Base: Coverage Method #2

- Use the mapping software to estimate the distance from the user and the nearest PPN base station.
- If the distance is greater than the recommended spacing in a users area, we need to look at options for installing one or more additional base stations to fill in the coverage as needed.



Mapping Tools



Key Items:

- To find the coordinates of a base station use our UGridd site and click on a site <http://www.ugridd.com/Projects/Prairie>
- Use these Lat/Lon coordinates to input into something like Scribblemaps.com. Radius circles can be drawn and new sites can be mapped
- These maps can be saved as a .KML file which can be loaded into Google earth for easy viewing and sharing
- To Measure between locations use Google earth as there is a simple measuring tool in the top toolbar of the program

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Coverage Distance Assumptions

- Our original assumptions were based on RTK Networks built in other parts of the world (i.e. US Midwest, Europe and Australia).
- We have since learned that our Northern Latitudes see far greater space related errors than we expected based on the experiences of these more southern networks.
- PPN now recommends spacing should be:
 - Southern Ontario
 - Method #1 – 80kms between base stations
 - Method #2 – 30-35km radius from nearest base station
 - Central Prairies
 - Method #1 – 70kms between base stations
 - Method #2 – 25-30km radius from nearest base station
 - Northern Prairies
 - Method #1 – 60kms between base stations
 - Method #2 – 20-25km radius from nearest base station