

How to...

SPIRENT HELP SHEETS

**This help sheet explains the
Repeatability Test using the GSS6400 RPS
(static GPS signals)**

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GSS6400 RPS (static GPS signals) system.



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Test Method

In this test a GPS antenna was used with a splitter, to split the signal in two directions (see figure 1).

This method ensures that the GPS receiver and the GSS6400 receive exactly the same signal. The first direction was to an attached GPS receiver that calculated the positions and plotted the positions on the screen. The second direction was to a GSS6400 RPS (GPS only) which recorded the data.

The antenna had a good view of the sky, and the test lasted 10 minutes.

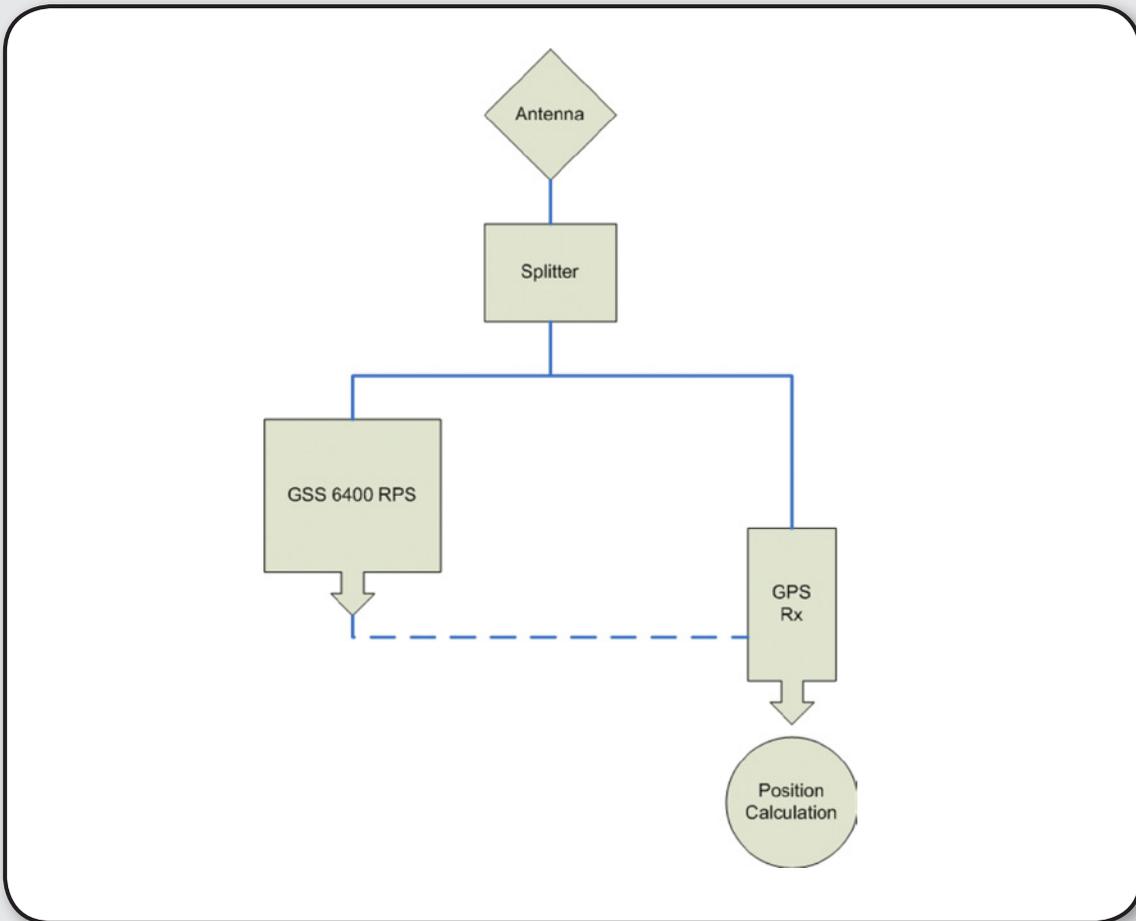
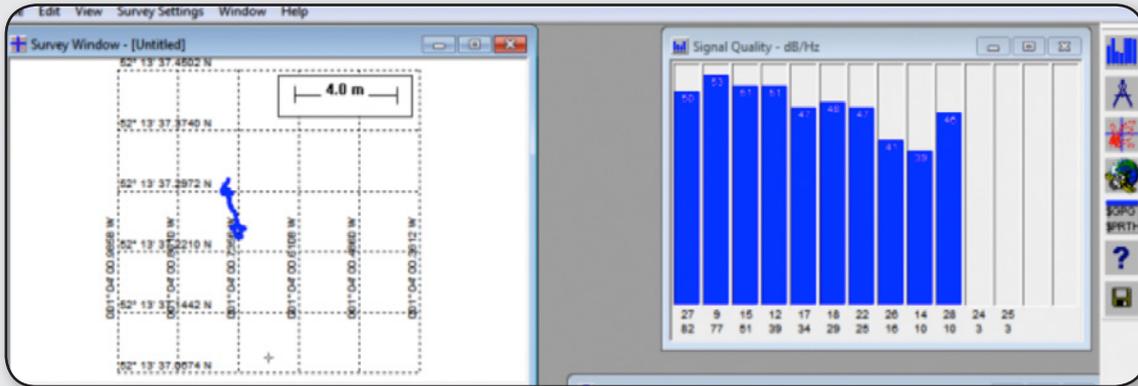


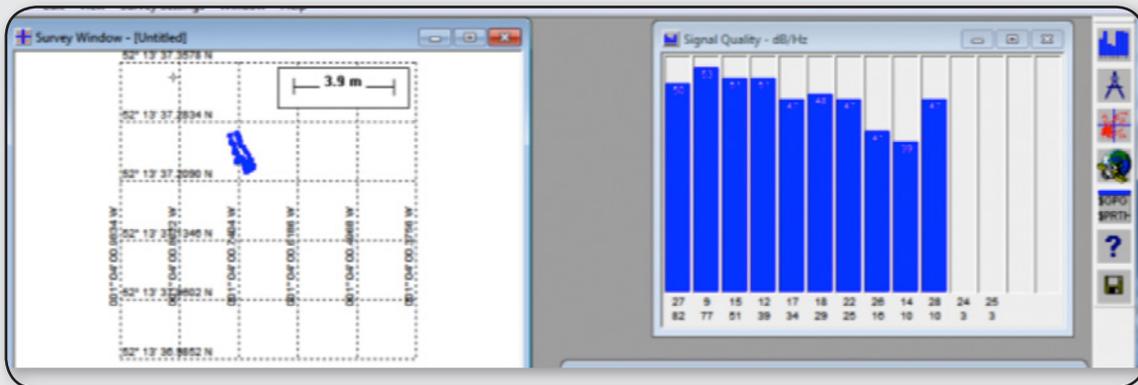
Figure 1

Accuracy compared to Live signals

The position plot below shows the positions output for each second over the 10 minute period, from the LIVE signal. The bar graph on the right shows the carrier to noise ratio of the ten satellites being tracked at the end of test.



The data stored on the GSS6400 RPS was then played back into the same GPS receiver. The results were plotted in exactly the same way. Note that the GPS receiver was completely reset between the two tests, as in general a GPS system can take a long time to obtain a fix if the GPS time has appeared to go backwards. Note also that power was applied to the GSS6400 for 5 minutes prior to performing the playback.

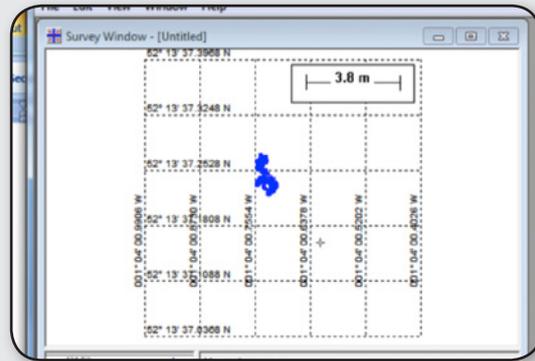
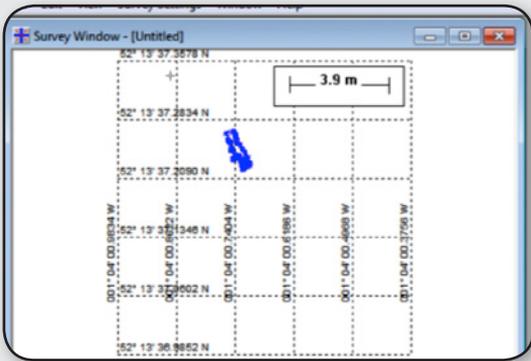


It can be seen that the positions are accurate to the metre level. In fact the internally calculated positions have the following standard deviations.

	Latitude Std deviation (m)	Longitude Std deviation (m)
Live signal	0.684 m	0.219 m
Played back signal	0.440 m	0.236 m

It can be seen that the two standard deviations are very similar. Also note that in comparing the CNo levels between the 'live' and 'played back' signals, again all satellites are within 1 dB at this instant.

Repeatability of played back data from the GSS6400



The three screen shots above show the SAME data played back three times from the GSS6400 RPS. Again the signals are positions are repeatable at the sum metre level. The standard deviations between the three tests are given below.

	Latitude Std deviation (m)	Longitude Std deviation (m)
Live signal	0.684 m	0.219 m
Played back signal	0.440 m	0.236 m
Played back signal (2)	0.479 m	0.223 m
Played back signal (3)	0.4174 m	0.198 m

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+44 1803 546325

globalsales@spirent.com

www.spirent.com/positioning

Spirent Federal Systems

+1 714 692 6565

info@spirentfederal.com

www.spirentfederal.com

