

A Garmin Geko 201 GPS (connected to the development boards via an RS232 connector) was set to output GPS NMEA data. The GPS used WAAS differential and reported an accuracy of between three and seven meters during the test.

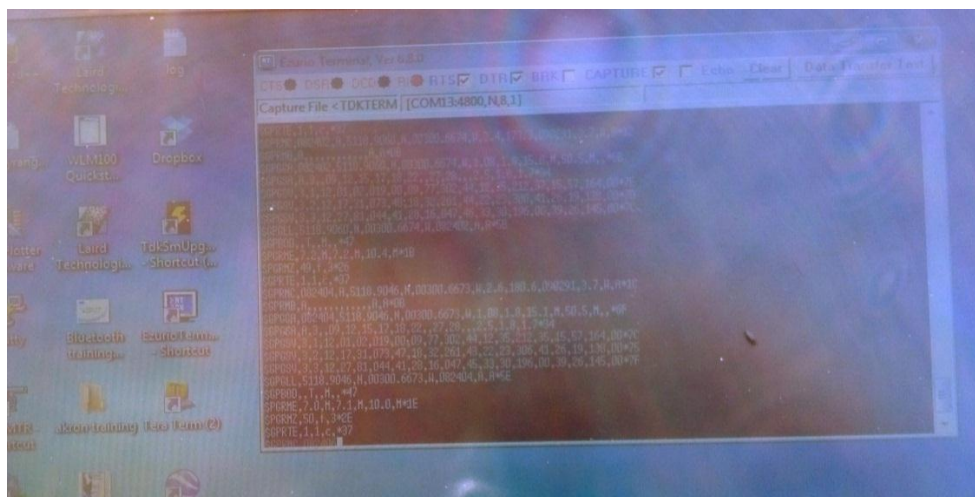


Figure 3: Laptop receiving NMEA data

TEST PROCEDURE

The following test procedures were followed:

1. Established a connection between the two Bluetooth modules.
2. Ensured that GPS positioning (NMEA) data was successfully being communicated (and displayed on the laptop screen) from the mobile module to the static module.
3. The mobile module was moved progressively further from the static module to the point where NMEA data was no longer being received by the static module.



Figure 4 and 5: Start location (left) and end location (right)

4. The log file (with raw NMEA sentences) was saved.
5. The file was converted into a KML file using the following website: <http://www.gpsvisualizer.com/>.
6. The KML file was loaded into Google Earth for evaluation.

TEST RESULTS

The following results emerged from the range test:

- The KML file showed that NMEA data sent from the mobile module was received by the static module at a maximum of 1,150 meters.
- An NMEA string was sent approximately every second.
- Data arrived at the static module at regular intervals up until the final string was received.
- 20 seconds after the last NMEA string was received, the connection dropped.



Figure 6: Recorded GPS plot points and yellow line measuring the distance from start to finish

CONCLUSION

This range test was conducted with close to ideal conditions: good line of sight, minimal Wi-Fi interference, and no physical obstructions. In addition, the test was performed at a very low data rate. Range is greatly reduced when modules are used indoors or in a more urban environment.

Despite this fact, these test results indicate that Bluetooth can potentially extend beyond PAN technology.