

Title: Functional Check of Hand Held Global Positioning System (GPS)

Receiver

1 Scope

Work Instruction for the functional check of a hand held GPS receiver. To be used in the absence of a manufacturers calibration instruction.

2 Preparation

This procedure is designed to check the basic functionality of a hand held GPS receiver and cross-reference hand held GPS location with a known geospatial location.

Equipment required:

- A location with a known accurate GPS latitude & longitude reference recorded in WGS84 and coordinates in DDDMM.MMMM format obtained from the Network Rail GI Portal.

3 Method

3.1 Record serial number and check general condition and record results

3.2 Switch the GPS instrument on ensuring the device is utilising grid referencing system WGS84 and displaying coordinates in DDDMM.MMM format (degrees, minutes, and decimal minutes).

3.3 Allow the instrument to acquire all possible satellites (minimum 5) and stabilise, record the location and stated accuracy.

3.4 Assess the accuracy using the report form in Appendix A. GPS receivers shall display the location to within 0.005 decimal minutes of the reference location (equivalent to 9.27 metres). A further allowance is made for the stated inaccuracy of the handheld GPS receiver at the time of measurement.

An example of the method is contained in appendix B.

Decimal minutes	Metres	Feet
0.0001"	0.1854m	0.608267'
0.001"	1.854m	6.08267'

Feet	Metres	Decimal minutes
1'	0.3048m	0.00016"
10'	3.048m	0.00164"

Metres	Feet	Decimal minutes
1m	3.2808'	0.00054"
10m	32.808'	0.00539"

Conversion table 1

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Appendix A. Hand Held GPS Functional Check Result Sheet

Model No:		Serial Number:	
Date last checked:		Next check due:	
Reference GPS Location Used: Obtained from Network Rail GI Portal			
GPS Coordinates Latitude:		GPS Coordinates Longitude	

Parameter	Limits	Reading	Pass	Fail	Comments
1. Visual Examination	Free from mechanical damage				
2. Number of Satellites	≥5				
3. Record Latitude from GPS	Record details only				
4. Record Longitude from GPS	Record details only				
5. Record stated accuracy	Record details only				
6. Calculate error against reference location	Pass section G of GPS error calculation sheet				

≥ represents less than or equal to

NOTE Failed equipment is to be labelled 'Do Not Use' and quarantined until rectified or scrapped.