Mapping grade receivers and mobile devices cover a wide range of accuracy and cost. They are defined by their tight integration of GPS and GIS processes for data collection update. Key characteristics are the ability to -
* Collect distinct point, line and polygon features
* Record attributes or information for each feature
* Enforce data integrity via standardized input methods during data collection/update and
* Export GPS data into standard GIS storage formats for integration with other GIS datasets.

Below is a general overview of the Trimble line of mapping grade receivers with increasing accuracy and cost.

Juno, Nomad, XC, XB
The GPS receiver is embedded on a computer chip. This lowest range of accuracy is comparable to that of a recreational or consumer grade unit such as a Garmin. However, it is noted, the Garmin lacks the ability to collect GIS-ready data as defined above.

Geo XM
Slightly higher accuracy levels are achieved by the ability to filter out GPS signals by PDOP, elevation mask & SNR as signals are received.

GeoXT, ProXT
Multipath signals can be filtered out via the addition of Trimble Everest Multipath Technology. Signals from the satellite are oriented in a left-handed chirality, which reverse upon bounce. This technology filters out right-handed, bounced signals.

GeoXH, ProXH
The internal antenna is able to receive dual-frequency carrier signals. When combined with rigorous data collection and H-Star processing, sub-foot accuracy is attainable. An optional, external Zephyr antenna has superior magnetic shielding to further minimize multipath signals and receiver noise. Sub-8" accuracy is possible. This accuracy approaches that seen in survey grade, yet survey grade devices lack the ability to collect GIS ready data.

ProXRT
H-Star post-processing can yield sub-foot (30 cm) to 10 cm accuracy depending on proximity to a base station. Real-time accuracy of 10 cm is possible with VRS corrections, or Omnistar HP service. Omnistar XP provides 20 cm accuracy in real-time, and Omnistar VBS provides sub-meter accuracy in real-time.

The table shows reported horizontal accuracies based on post-processing method and at Trimble recommended settings.

								Pro series	
Correction method	**GPS XC card**	**GPS XB card**	**Juno™ ST**	**GeoXM™**	**GeoXT™**	**GeoXH™**	**Pro XRS**	**ProXT™**	**ProXH™**
Autonomous	15 m	15 m	15 m	15 m	15 m	15 m	15 m	15 m	15 m
Real-time differential	n/a	2-5 m + 1ppm	2-5 m + 1ppm	1-3 m + 1ppm	< 1 m 1ppm	< 1 m 1ppm	1 - 5 m + 1ppm	< 1 m + 1ppm	< 1 m 1ppm
Postprocessed code phase differential	2-5 m + 1ppm	2-5 m + 1ppm	2-5 m + 1ppm	1-3 m + 1ppm	< 1 m + 1ppm	< 1 m + 1ppm	0.5 m + 1ppm	< 1 m + 1ppm	< 1 m + 1ppm
H-Star processing	n/a	n/a	n/a	n/a	n/a	See footnote[1]	n/a	n/a	See footnote[2]
Postprocessed carrier phase differential	n/a	n/a	n/a	n/a	0.3 m + 5ppm	0.01-0.1 m + 1ppm	0.01 - 0.3 m + 1ppm	0.01 - 0.3 m + 5ppm	0.01 - 0.1 m + 1ppm

[1] < 0.3 m with internal antenna; <0.2 m with Zephyr™ antenna (3 dual-frequency base stations within 200 km)

[2] < 0.3 m with internal antenna; <0.2 m with Zephyr antenna (3 dual-frequency base stations within 200 km)

PPM is one part per million. It is known that the distance between the base and the rover affects accuracy. At a degradation of 1 ppm, 100 mm (10 cm) of degradation occurs for every 100 km between the base station and rover.