



Geospatial Applications: Comparing GPS Receivers for Mobile Agricultural Application

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Choosing a global positioning system (GPS) receiver for mobile applications can be a complicated decision because several companies sell GPS receivers and most companies have several models. The choices become more complicated because companies often market a GPS receiver with other components, such as light bars and yield monitors. To make a sound decision, categorize the GPS receivers by specifications to help understand each unit's capabilities.

How often the GPS position is recalculated is referred to as frequency. A standard measure of frequency is hertz and means "cycles per second." If the GPS receiver is listed as 5 hertz, it recalculates its position five times per second. Guidance systems require GPS receivers with at least 5 hertz. If the equipment is used for row-crop planting or cultivation, the GPS receiver may need a higher frequency.

GPS satellites continually broadcast on two frequencies. The standard positioning service (SPS) is the standard level of positioning broadcast on one frequency (L1) and is available continuously to any user worldwide. The precise positioning service (PPS) is the most accurate level of positioning and is broadcast on a second frequency (L2). It is available continuously, but only to authorized U.S. and foreign governments and eligible civil users. Dual-frequency GPS receivers are more accurate than single-frequency receivers and are more suitable to mobile GPS applications.

There are several correction signals available, including WAAS, U.S. Coast Guard Beacon, Omnistar and Starfire. GPS receivers capable of receiving more types of correction signals are more versatile.

GPS receivers should be capable of connecting to portable computers for real-time geographic information system (GIS) use. GPS receivers connect to portable hand-held (PDAs) and tablet computers with serial or USB connections. Real-time GIS is used for marking field boundaries and other locations.

GPS Receivers for Mobile Agricultural Applications

Manufacturer and Model	Hertz	Single or Dual Frequency	DGPS Options	Output Options	Cost Range
Ag Leader GPS 4100	10 Hz	L1, L2	WAAS/Omnistar	7-pin Conxall	\$4,000.00
Trimble AgGPS 214	10 Hz	L1, L2	WAAS/RTK	3- RS 232 Ports	\$4,000.00
Case AccuGuide 252	10 Hz	L1, L2	WAAS/Starfire/RTK	3- RS 232 Ports	\$4,000.00
Beeline Arro	10 Hz	L1, L2	WAAS/Omnistar	1- RS 232 Port	\$6,000.00
John Deere StarFire/SF1 Upgrade to SF2/RTK	5 Hz	L1, L2	WAAS/Starfire/RTK	2- RS 232 Ports	\$4,500.00
Satloc SLXg3 Combo	5 Hz	L1	WAAS/Omnistar/US Coast Guard	2- RS 232 Ports	\$3,000.00
Satloc Mini Max	5 Hz	L1	WAAS/US Coast Guard	2- RS 232 Ports	\$2,400.00
Raven Invicta 310	10 Hz	L1	WAAS/US Coast Guard/Omnistar	2- RS 232 Ports	\$3,800.00
Raven Invicta 110	10 Hz	L1	WAAS	9-pin Circular	\$1,800.00
Raven Invicta 210	10 Hz	L1	WAAS/US Coast Guard	2-RS 232 Ports	\$2,300.00
Garmin GPS 16	5 Hz	L1	WAAS	1- RS 232 Port	\$200.00
Raven Invicta 115	10 Hz	L1	WAAS	8-pin Circular	\$1,800.00
Case AccuGuide 114	1 Hz	L1	WAAS/Omnistar	2- RS 232 Ports	\$3,000.00
Trimble AgGPS 114	1 Hz	L1	WAAS/Omnistar	2- RS 232 Ports	\$3,000.00
Trimble AgGPS 132	10 Hz	L1	WAAS/Coast Guard	2- RS 232 Ports	\$3,000.00
RHS Inc. Outback	5 Hz	L1	WAAS	1- RS 232 Port	\$575.00
Ag Leader GPS 1000 Plus	1 Hz	L1	WAAS/Omnistar	7-pin Conxall	\$800.00
Raven RPR 100S GPS	1 Hz	L1	WAAS	7-pin Circular	\$700.00
Midtech RX360p	5 Hz	L1	WAAS	1- RS 232 Port	\$1,500.00
Midtech RX400p	5 Hz	L1	WAAS/US Coast Guard	1- RS 232 Port	\$2,800.00
Cultiva GPSMark II2	5 Hz	L1	WAAS/Omnistar/US Coast Guard		\$2,000.00
Cultiva GPSMark III	5 Hz	L1	WAAS/Omnistar/US Coast Guard		\$3,600.00