

Field	Example	Comments
Sentence ID	\$GPGGA	
UTC Time	092204.99 9	hhmmss.sss
Latitude	4250.5589	ddmm.mmmm
N/S Indicator	S	N = North, S = South
Longitude	14718.508 4	dddmm.mmmm
E/W Indicator	E	E = East, W = West
Position Fix	1	0 = Invalid, 1 = Valid SPS, 2 = Valid DGPS, 3 = Valid PPS
Satellites Used	4	Satellites being used (0-12)
HDOP	38466	Horizontal dilution of precision
Altitude	38552	Altitude in meters according to WGS-84 ellipsoid
Altitude Units	M	M = Meters
Geoid Separation		Geoid separation in meters according to WGS-84 ellipsoid
Separation Units		M = Meters
DGPS Age		Age of DGPS data in seconds
DGPS Station ID	0	
Checksum	*1F	
Terminator	CR/LF	

Example (signal not acquired): \$GPGGA,235947.000,0000.0000,N,00000.0000,E,0,00,0.0,0.0,M,,,,0000*00

Example (signal acquired): \$GPGGA,092204.999,4250.5589,S,14718.5084,E,1,04,24.4,19.7,M,,,,0000*1F

Field	Example	Comments
Sentence ID	\$GPGSA	
Mode 1	A	A = Auto 2D/3D, M = Forced 2D/3D
Mode 1	3	1 = No fix, 2 = 2D, 3 = 3D
Satellite used 1	1	Satellite used on channel 1
Satellite used 2	20	Satellite used on channel 2
Satellite used 3	19	Satellite used on channel 3
Satellite used 4	13	Satellite used on channel 4
Satellite used 5		Satellite used on channel 5
Satellite used 6		Satellite used on channel 6
Satellite used 7		Satellite used on channel 7
Satellite used 8		Satellite used on channel 8
Satellite used 9		Satellite used on channel 9
Satellite used 10		Satellite used on channel 10
Satellite used 11		Satellite used on channel 11
Satellite used 12		Satellite used on channel 12
PDOP	14702	Position dilution of precision
HDOP	38466	Horizontal dilution of precision
VDOP	11720	Vertical dilution of precision
Checksum	*0A	
Terminator	CR/LF	

Example (signal not acquired): \$GPGSA,A,1,,,,,,,,,0.0,0.0,0.0*30

Example (signal acquired): \$GPGSA,A,3,01,20,19,13,,,,,,,,,40.4,24.4,32.2*0A

Field	Example	Comments
Sentence ID	\$GPGSV	
Number of messages	3	Number of messages in complete message (1-3)
Sequence number	1	Sequence number of this entry (1-3)
Satellites in view	10	
Satellite ID 1	20	Range is 1-32
Elevation 1	78	Elevation in degrees (0-90)
Azimuth 1	331	Azimuth in degrees (0-359)
SNR 1	45	Signal to noise ration in dBHZ (0-99)
Satellite ID 2	1	Range is 1-32
Elevation 2	59	Elevation in degrees (0-90)
Azimuth 2	235	Azimuth in degrees (0-359)
SNR 2	47	Signal to noise ration in dBHZ (0-99)
Satellite ID 3	22	Range is 1-32
Elevation 3	41	Elevation in degrees (0-90)
Azimuth 3	69	Azimuth in degrees (0-359)
SNR 3		Signal to noise ration in dBHZ (0-99)
Satellite ID 4	13	Range is 1-32

Elevation 4	32	Elevation in degrees (0-90)
Azimuth 4	252	Azimuth in degrees (0-359)
SNR 4	45	Signal to noise ration in dBHZ (0-99)
Checksum	*70	
Terminator	CR/LF	

Example (signal not acquired): \$GPGSV,1,1,01,21,00,000,*4B

Example (signal acquired): \$GPGSV,3,1,10,20,78,331,45,01,59,235,47,22,41,069,,13,32,252,45*70

Field	Example	Comments
Sentence ID	\$GPRMC	
UTC Time	092204.99	
UTC Time	9	hhmmss.sss
Status	A	A = Valid, V = Invalid
Latitude	4250.5589	ddmm.mmmm
N/S Indicator	S	N = North, S = South
Longitude	14718.508	
Longitude	4	dddmm.mmmm
E/W Indicator	E	E = East, W = West
Speed over ground	0.00	Knots
Course over ground	0.00	Degrees
UTC Date	211200	DDMMYY
Magnetic variation		Degrees
Magnetic variation		E = East, W = West
Checksum	*25	
Terminator	CR/LF	

Example (signal not acquired): \$GPRMC,235947.000,V,0000.0000,N,00000.0000,E,,,041299,,*1D

Example (signal acquired): \$GPRMC,092204.999,A,4250.5589,S,14718.5084,E,0.00,89.68,211200,,*25

Field	Example	Comments
Sentence ID	\$GPGLL	
Latitude	4250.5589	ddmm.mmmm
N/S Indicator	S	N = North, S = South
Longitude	14718.508	
Longitude	4	dddmm.mmmm
E/W Indicator	E	E = East, W = West
UTC Time	092204.99	
UTC Time	9	hhmmss.sss
Status	A	A = Valid, V = Invalid
Checksum	*2D	
Terminator	CR/LF	

Example (signal not acquired): \$GPGLL,0000.0000,N,00000.0000,E,235947.000,V*2D

Example (signal acquired): \$GPGLL,4250.5589,S,14718.5084,E,092204.999,A*2D

Field	Example	Comments
Sentence ID	\$GPVTG	
Course	89.68	Course in degrees
Reference	89.68	T = True heading
Course		Course in degrees
Reference	89.68	M = Magnetic heading
Speed	0.00	Horizontal speed
Units	N	N = Knots
Speed	0.00	Horizontal speed
Units	K	K = KM/h
Checksum	*5F	
Terminator	CR/LF	

Example (signal not acquired): \$GPVTG,,T,,M,,N,,K*4E

Example (signal acquired): \$GPVTG,89.68,T,,M,0.00,N,0.0,K*5F