



GLOBAL NAVIGATION SATELLITE SYSTEM

GLONASS

Open Service Performance Standard (OS PS)

APPENDIX E
GLONASS Space Service Volume Characteristics

Revision 1.0

Korolev
2023

(This page intentionally left blank.)

TABLE OF CONTENTS:

E.1 Space Service Volume4

E.1 Space Service Volume

GLONASS characteristics for Space Service Volume (SSV) are provided in the following table E.1 and are illustrated on the associated figure E.1.

Table E.1 – GLONASS SSV Characteristics

Definitions	Notes	
Lower Space Service Volume: 2000 to 8000 km altitude	Signals broadcast by four GLONASS SVs are available simultaneously for the majority of the time; however, GLONASS signals over the limb of the Earth are considerably more important. Orbit determination accuracies within 1 m are feasible (for post-processed solution).	
Upper Space Service Volume: 8000 to 36000 km altitude	Signals of nearly all GLONASS SVs received over the limb of the Earth. Accuracies ranging from 20 to 200 meters are feasible (for post-processed solution) depending on receiver sensitivity and oscillator stability.	

Parameter	Value	
User Range Error¹	1.4 m	
Signal Carrier Frequency^{2,3}		
L1	1602 ± 0.5625 MHz (1598,0625 - 1605,375 MHz)	
L2	1246 ± 0.4375 MHz (1242,9375 - 1248,625 MHz)	
L3	1202,025 MHz	
Minimum Received Signal Power (for GEO)^{2,3}	0 dBi RCP antenna at GEO	Reference Off-Boresight Angle
L1	-179 dBW	26°
L2	-178 dBW	34°
L3	-178 dBW	34°
Signal availability^{2,3,4}		
MEO ⁵ at 8000 km	At least 1 signal	4 or more signals
L1	59,1%	64%
L2, L3	100%	66%
Upper Space Service Volume	At least 1 signal	4 or more signals
L1	70%	2,7%
L2, L3	100%	29%
Note 1: This value represents pseudorange accuracy, not the final user position error, which is dependent on many mission-specific factors such as orbit geometry and receiver design.		
Note 2: Open access FDMA signals in L1 and L2 (L1OF, L2OF) and open access CDMA signal in L3 (L3OC).		
Note 3: L1 and L2 signals are transmitted by all GLONASS-M and GLONASS-K satellites. The L3 signal is transmitted by seven GLONASS-M satellites (GLONASS-M No. 755 – 761) and all operational GLONASS-K satellites.		
Note 4: Assumes that there is at least one GLONASS satellite in view for a space vehicle in the Upper Space Service Volume.		
Note 5: Availability for 8000 km altitude MEO is given as the worst site level in the Lower Space Service Volume domain.		

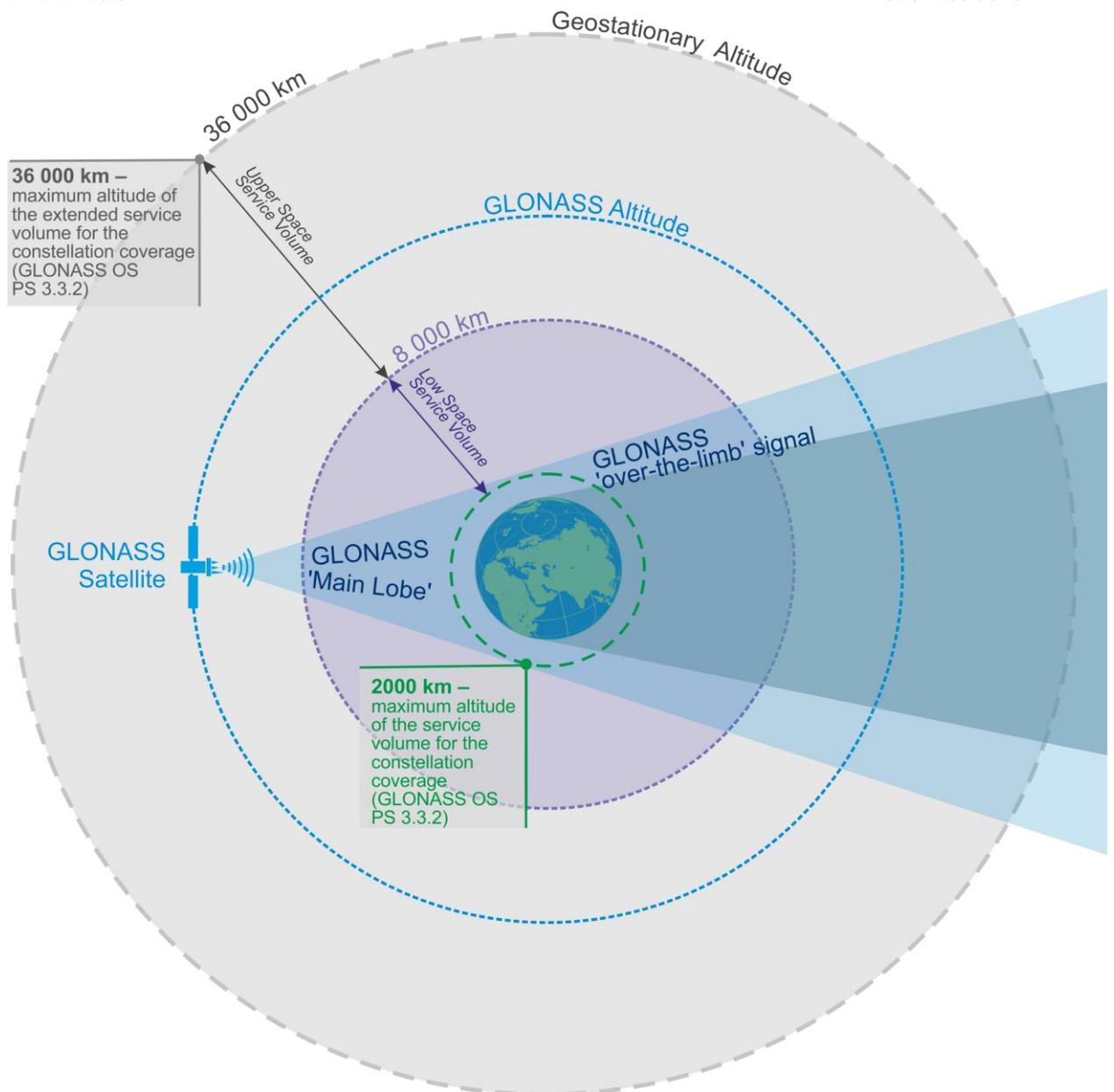


Figure E.1 – GLONASS Space Service Volume