



**GEOSTAR**  
N A V I G A T I O N

GeoS-1 & GeoS-1M – combined  
GLONASS/GPS receivers for  
mass-market

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# GLONASS market status

- ❑ The modern and competitive GLONASS/GPS receivers available for OEM/ODM companies shall become a key milestone on the way to create a real commercial market out of GLONASS.
- ❑ For now the existing GLONASS/GPS receivers are not able to meet the needs of consumer devices manufacturers.
- ❑ The leaders (like U-Blox, SiRF, ..) have not yet shown their interest to the mass market for devices with GLONASS.
- ❑ Commercial market needs a range of GLONASS/GPS receivers designed for specific applications.

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# Navigation market triggers

## For GPS and for GLONASS:

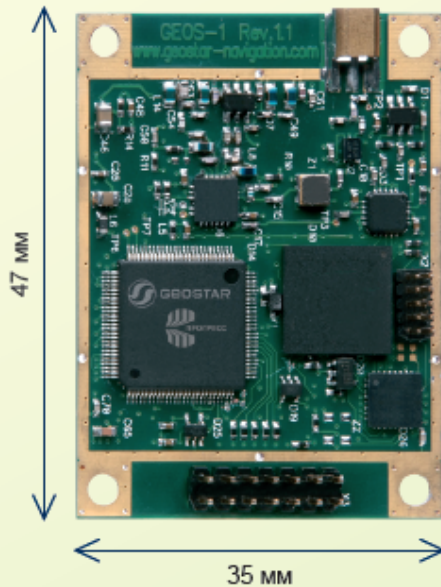
- ❑ The cost of chip-sets
- ❑ Dimensions of chip-sets
- ❑ Power consumption of chip-sets

## Only for GLONASS:

- ❑ Openness and accessibility of the technology
- ❑ "Free" export for GLONASS technology and for the products with GLONASS
- ❑ Be comparable with GPS equipment in performance, key features and price.
- ❑ Promotion of the GLONASS system and the real feasible advantages which it brings to the GNSS market and for the final customers.

# GeoS-1

## GeoS-1 (OEM): Combined GPS/GLONASS receiver



24 channels

Short TTFF

36 sec in «cold» start, 29 sec in «warm» start,  
4 sec in «hot» start, 1 sec Reacquisition

High Positioning Accuracy

< 3 m (horizontal), < 5 m (vertical)

High Sensitivity

Up to -180dBW in tracking

Programmable Output Data Rate

Up to 5 Hz

Low Power Consumption

400 mW in active mode, 20 uW in battery mode

- Market price (w/s) – 80\$
- Certified («BOEHTECT» "32 State Scientific and Research Institute of Measurements" (FGU "32 GNII))
- In serial production
- Applications: automotive tracking and tracing systems

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## GeoS-1 key competitive advantages

- GEOS-1 has no analogues in Russia and abroad on the set of parameters in the category of mass GLONASS / GPS navigation receivers (L1).
- GEOS-1 can be produced in 8 (eight) modifications in order to fit in the maximum number of possible applications.
- GEOS-1 was designed with the active participation of "M2M telematics" company – the manufacturer of telematics equipment and one of the largest consumers of GLONASS / GPS navigation receivers in Russia. M2M experience and expertise in running telematics systems on the whole territory of Russia were critical for testing and debugging of the GeoS-1 firmware.
- Serially produced.
- Many companies across the world with special interest to GLONASS are testing GeoS-1. We have test customers in UK, Canada, China, Taiwan, Israel, Germany, New Zealand, France.
- GeoS-1 was exhibited at Cebit'09 and Navitech'09 (Russia). The results of the fairs are receiving over 70 direct requests for the samples purchase (30% of requests came from foreign companies). After the testing, clients made repeat orders.
- Selected for the GEOS-1 form factor as a separate module allows developers to reduce the costs of integration for niche applications.

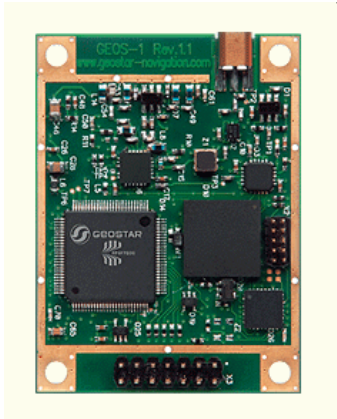
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# The method we use for GEOS-1 laboratory and field tests

- Test on a GLONASS / GPS simulator
  - Dynamic test w.o. filtration in a car together with the standard reference GPS and competitive GLONASS/GPS receivers
  - Days-long tests in static under adverse receiving conditions.
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# GEOS-1 Test Kit

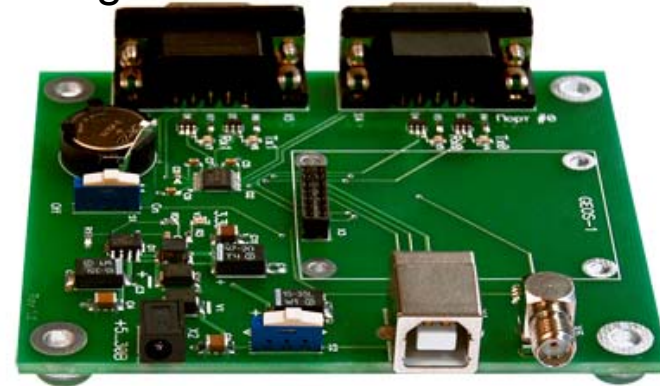
Navigation receiver GEOS-1



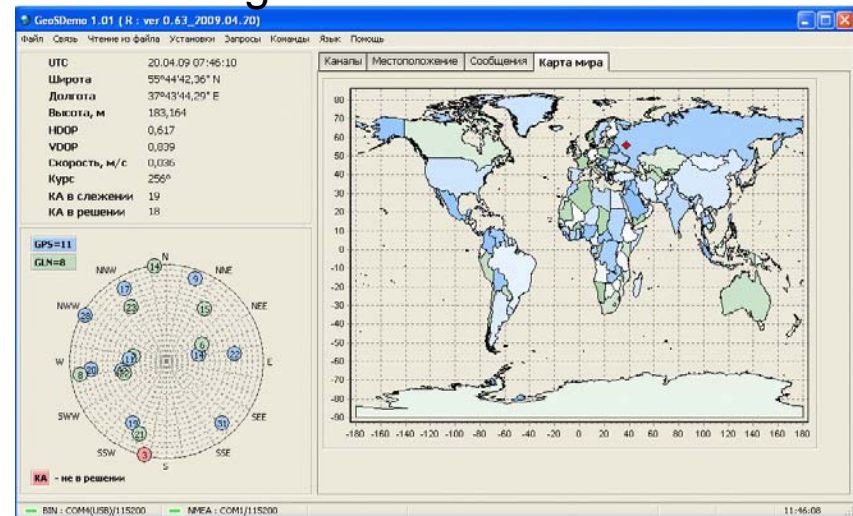
Technical support:

- WEB site in Russian, English and Chinese.
- Potential customers can view the complete set of the documentation before purchasing GEOS-1 both in Russian and English languages.
- The site contains information on the GLONASS system and explains the advantages of GLONASS / GPS technology

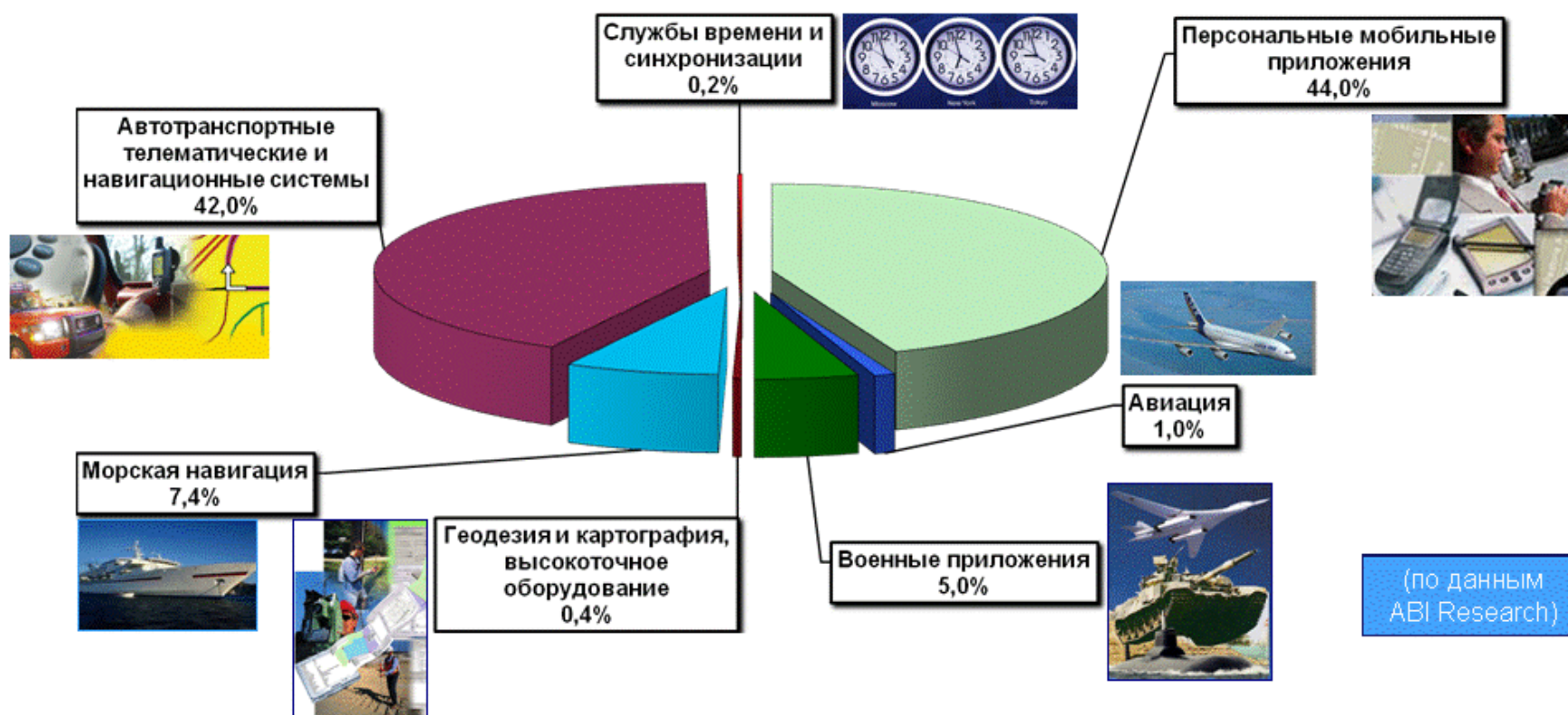
Evaluation board for testing and configuration of the GEOS-1



Demo software (for PC) for testing and configuration of the GEOS-1



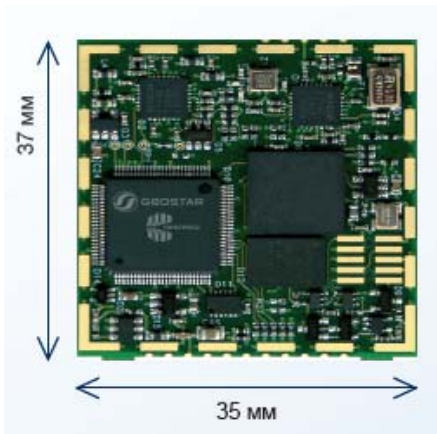
# Navigation receivers market segmentation



- 80% of the total market now are closed for GLONASS due to the absence of the proper components for integration in the most popular segments of portable electronics.



# GEOS - 1M



In September 2009 GEOSTAR navigation presented another product - GLONASS/GPS receiver GEOS-1M, which is a modification of GEOS-1 but has important improvements in the key characteristics:

- Dimensions 35x35x3 mm
- Power consumption 350 mW
- SMD – one side mounting.
- Price w.s. 60\$
- Applications: automotive tracking and tracing systems, portable radio transmitters, PND

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# Key development priorities for GeoS combined multi-GNSS receivers

- Power consumption reduction, flexible power saving modes, additional functionality: SBAS, Galileo, Compass
- Sensitivity increase in detection and in tracking modes
- Further improvement of reliability and quality of the positioning in adverse receiving conditions
- Dimensions reduction
- Technological readiness for high volume production
- Economical and technological justification for GPS/GLONASS vs. GPS.