

623.4.023.4.028

1, . . . 1, . . . 1, . . . 1, . . . 2

1

2

1.

[1, 2-5].

(20)
 (); 8...10 . ()
 10 [7].
2. IPADS (,
 , 2004 -).
 : 5 :
 : -4 ;
 -2 ;
 (), -0,4 (0-03,8) ;
 (), ();
 : 10 :
 -7 ;
 ' [6]. -3 ;
 (-0,4 (0-03,8) .
) -10 (-
 () 65°...+65°); 5 - « » .
 PADS 2 Ferranti -
 () - (X, Y,) .
2.1. , , -
 , , 5 .
 (,)
 AN/USQ-70.
 : DS AN/USQ-70 PADS TAMAM
 (, 1981...2004 .), IPADS (, 2004 -
), PADS 2 ((,
 1985 .), "PADS " (, 1988 .)
 DS AN/USQ-70 "Litton"
 : (;
 : - 120 ,
 () - ,
 40 , AN/USQ-70 , 2...3 ,
 (, Y), () 2...3 [7].
 ()
 (8...10), (20),
 (2 10).
 (), :
 8...10 . - ;

0,07...0,1% ; - 5...15 ;
 - ; 5000 ;
 - "Zinger", "Honeywell".
 - ; (-
) , .
 . ; ,
 (: ,
 4).

2.2.

, - , ().
 - ;
 , ;
 : ; -
 - ; ()
 - ; ().
 - ; -
 - ; :
 - .

LLN-80, MAPS ().
 LLN-80 "Litton" () ;
 , , .
 , .
 , .
 , -
 , : -100
 LLN-80 90 : -Sense (, 2007), 3-
 CMA3000 VTI Technologies
 (, 2009),
 0,3% ; LSM320HAY30 STMicroelectronics (,
 -0,1%. 2010).
 1987 . LSM320HAY30
 , MAPS :
 (modular azimuth position system) [8].
 MAPS
 (-)

7...10 () 4 , ±2g/±4g/±8g 30 / 6000
 0,15...0,25% , /
 - 7...10 10 , :

-40 + 85 .
2,7 3,6 .

40...50 ,

10 ,
[9].

- ;
- ;
- ;
- ;

2.4. ()

2.3.

"LORAN-C", "LORAN-D", " -2", " -2 "

. 1 [9].

()

I

LNS-202 (), -4, 15 55
()
15 55 (1980 .,):
- 15 . - 1 .
- 150 .
FNA-615

0,3%
LNS-202 (1985 .)

"GPS".
0,5%

2000 .),

(LITEF,),

LLN-G1

(TACTICAL NAVIGATION SYSTEM)
() (. 2).

1,3%

5...7

9200...10000

10,2...13,6 .

2

).

10 ,

/	
"	"
,	,
3700-7400	185 , 1°
10	

1...5 .
GPS
()
).

GPS
() S/

2.5.

() – , , , , ,
, - , -
() –

, GPS ,
1575,42 (41-) 1227,6 (42-).
(V),
(– recision,),
V.

GPS ()
(). GALILEO/EGNOS
Compass Navigation Satellite System (SNSS,
-) [10-15].

(V), / (Coarse
Acgution –).
(V) (S –
Precise Positioning Service)

NAVSTAR

(4
,
)
24

/ ,
(SPS – Standard
Positioning Service). , S

55 ...65 ,

GPS,
24
7...12
GPS

0,95
22 , – 27,7 0,09 ,
SPS (/)
100 0,34 .
PS
8 , SPS – 40 ()
SPS 300 .

(
Service Availability)
SPS

(V). (, ,).
 , GALILEO
 (V) :
 / , -
 , 6 (GPS
 2) [14].

2,5 , .
 , GPS. , . . .
 , (), GPS
 GPS:
 - ();
 - ;
 - ;
 - ;
 - ;
 - ;
 - : 2.6.
 - ()

- , , (, ,
 ; + + , +),
 - ,
 25-30 , — :
 10 ; - LNS-202, GPS
 - , 15...20 ,
 ;
 - "Northrop",
 - GPS.
 GPS / -
 30 ;
 - "Texas Instruments"
 "GPS",
 GPS GALILEO, 30 / .

modular azimuth position system hybrid (MAPSH),
 GPS [16].
 4 , 8 GALILEO -
 - 50 . RLG (Ring Laser Gyro)
 (accelerometer). . 2
 (GALILEO, GPS,),
 30

GPS VMS

(MEMS) –
« -2»

RS-422,

GPS

IMU,

.3.

3

« - » ("Shoot & Scoot"),
2 .



MAPS-GPS, :

- 1 – ; 2 –
- 3 – GPS; 4 – GPS;
- 5 – VMS (Vehicle Motion Sensor)

« - »,

MAPSH

8...15 .

- 10 ;
- 0,67 (;
- 0,34) ;

MAPS

10

UTM British National Grid
Coordinates.

NAVSYS

Corporation [17] – GPS/INS ()

IMU

	UNITS	HG1700	Crista
		33 cu in	1.6 cu in
		32 oz	0.7 oz
		8 w	0.7 w
	\pm°/s	1000	300
	ppm	150	25000
	ppm	150	N/A
	$^\circ/\text{hour}$	2	500
	μrad	500	3000
	μrad	100	N/A
	μrad	80	80
	$^\circ/\text{Rt-hr}$	0.1	3
	$\pm g$	50	10
	ppm	300	25000
	ppm	500	N/A
	mg	1.0	15000
	μrad	500	3000
	μrad	100	N/A
	m/s	0.0024	0.0003
	($\mu\text{g}/\text{Rt-Hz}$)	150	400

- ;
 - .4
 .
 4

	1	50

(GPS -)
 GPS ,)
 GPS (,)
).
 (,)
 (,)
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 , , ()
 3. ()
) ,)
 , :
 , •
 , (,) ;
 , •
 ,

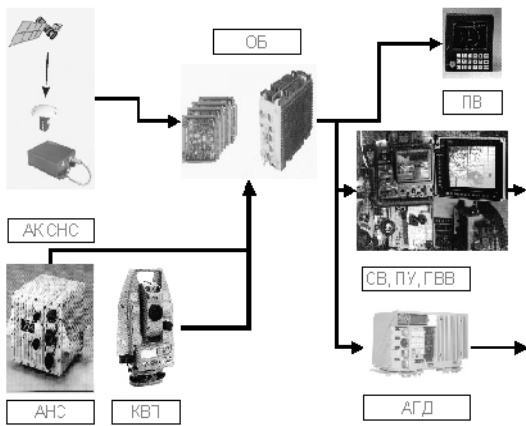
[18].

(.3):

- - ;
- - ;
- - / ;
- - ;
- - ;
- - ;
- -



.4. FCS-61, MAPS-GPS



.3.

4.

FCS-61

10 () ,

FCS-61

.5.

5

	200...9990
	10
	0,1%
	4000 .
	18...32 , 60

(" " ") " " " [19].

1.

100%

2020 .

(Fire Control Computer).

FCS-61 [18],

M60A3, .4.

- 2. ...
- 3. EGNOS, EUROFIX, GPS LORAN-C, « », ...
- 4. () 1. ... / , 2009. – 3. – . 43–49. 2. „ ... / , 2009. – 3. – . 49–58. 3. Fax, A., Volk, C. *The Role of NSD Technologies in Achieving Advantage in Asymmetrical Conflicts* / Northrop Grumman Corporation Navigations Systems into [www.nsd.es.northropgrumman.com] 4. ...
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12.
- 2005. - 4. - . 35. // /
13.
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15.
- , 2000. //
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ANALYSIS OF WORLD TRENDS OF NAVIGATION SYSTEMS PROGRESS FOR THE ARMY

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In the article the analysis of world trends of the navigation systems progress in the armies of the world leading countries is conducted. It was done for adoption of their experience at making of the perspective navigation systems for armament and military materiel of the Army of Ukraine Armed Forces.

Keywords: navigation support, navigation equipment, surface moving object, navigation information.

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