

SOKKIA

GRX2



Руководство по эксплуатации

SOKKIA

GRX2

7011-0784

2012

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Sokkia.

Sokkia

Sokkia

(“ ”).



COPYRIGHT ()

Sokkia

Sokkia.

Sokkia,

Sokkia.

GRX2™, Spectrum Survey Office™, Spectrum
Link™, Spectrum Survey Field™, SHC2500™ GRX Utility™

Sokkia. Windows®

Microsoft.

Bluetooth®

Bluetooth SIG, Inc.,

Sokkia

SOKKIA

SOKKIA

SOKKIA

SOKKIA

(Sokkia)

Sokkia.

Sokkia

Sokkia.

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Sokkia.

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 Sokkia (
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 Sokkia,
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 Sokkia
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 Sokkia
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 (), -
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 :

File Exit **File ()** **Exit ()**.
Connection

Frequency

Enter

Enter ().



•
•

Lined writing area consisting of 22 horizontal lines.

GRX2

(GRX2
C/A),

GPS L1, L2, C/A, L2C GLONASS L1, L2,



. 1-1.

GRX2

GPS

- GPS -

(<http://tycho.usno.navy.mil/>)

(<http://www.navcen.uscg.gov/>).

-

(<http://www.glonass-ianc.rsa.ru/>).

-

GPS

20

(, ,).
 • - , ,
) (.
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 ()
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 (“ ”,
 , , -
) . -
 ,
 , .
 (GPS),
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DGPS Differential GPS (, . . .
 GPS) ,

DGPS

- (RTK)
RTK

DGPS

()

- RTK

(RTCM

),

()

- RTK

(-

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,
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 (,
 OmniSTAR),
 (WAAS, EGNOS, MSAS).
 RTK ().
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 RTK
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 10 15 .
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 • - (, , ,)
 - Geometric Dilution of
 Precision (GDOP)
 - GPS (DGPS RTK)
 ,
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Sokkia.

(DGPS)

(WAAS, EGNOS .)

GPS

GPS

(RAIM)

(226)

GPS

(()),

WGS-84,

SD

RTK ()

RTK

GRX2:

(WAAS, EGNOS)

(DGPS) RTK (DGPS) GPS
RTK

-
- -
 -
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GRX2

226-

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-
-
-

(COM)

-
-
-

Bluetooth

-
-
-

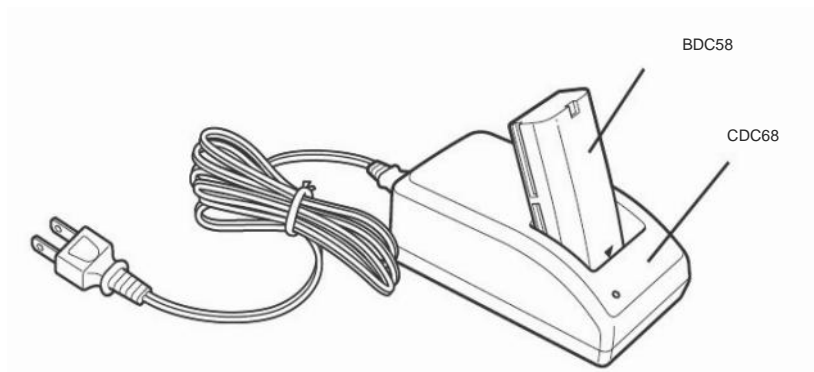
GSM/GPRS ()

CDMA ()

()

GRX2

(. 1-2),



. 1-2.

GRX2

BDC58

CDC68.

2,5

5

/

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“ ”,

•

/

•

•

. 1-1.

1		-20°C +50°C
1	1	-20°C +45°C
1	6	-20°C +40°C
6	1	-20°C +35°C

• BDC58

GRX2

GRX2

SD SIM

GSM (

Bluetooth

GRX2

- TX/RX
- TX/RX
- TX/RX

GSM/GPRS

CDMA ()

GRX2



. 1-3.

GRX2

- - 50%.
 - - 25%, 50%.
 - - 10%, 25%.
 - - 10%.
- :
- - 8 .
 - - 7,25 , 8 .
 - - 6,5 , 7,25 .

- - 6,5 .

- -

- -

- -

- - 8 .

- -6 7 .

- -4 5 .

- -3 .

- -

- - DGPS RTK.

- - RTK

- - 50%.

- - 25%, 50%.

- - 10%, 25%.

- - 10%.

- / / -0%

- -

- -

- Bluetooth
- Bluetooth
- Bluetooth
- Bluetooth
- Bluetooth.
- Bluetooth.
- GSM.
-
-
-
-
- COM
- COM
-
-
- GRX2.

. 1-2.

	-	
	1	1 20
	3 10	3-10

. 1-2.

	-	
	10 20	10-20 , , , . : .
	20 25	20-25 , , . . : . , 25 . . Sokkia "GRX Utility", .

. 1-2.

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	25	25
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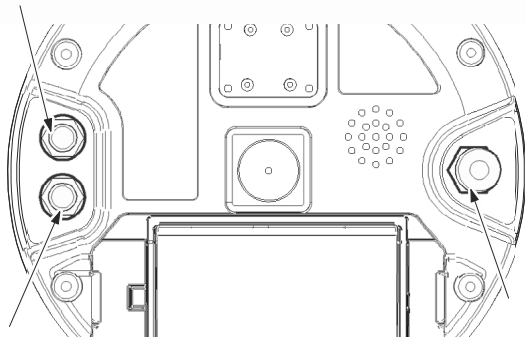
GRX2



GRX Utility

(30 ()).

GRX2 (. 1-4 . 1-17):



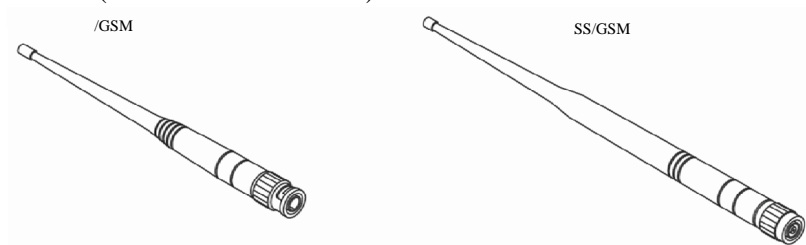
. 1-4.

GRX2

(. 1-5).
GSM

GRX2

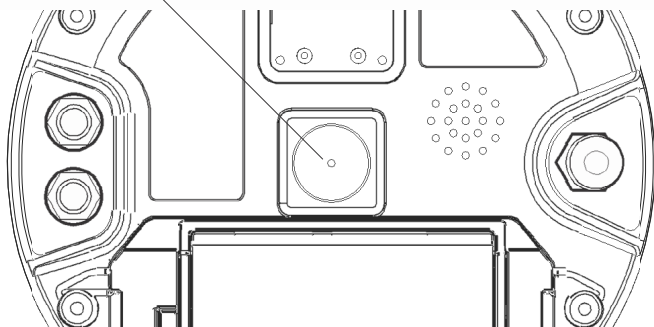
- : BNC : 410–440 440–470 .
- SS (Spread Spectrum): TNC () .



. 1-5.

(. 1-6),

5/8"



. 1-6.

GRX2

SD/SDHC SIM

SD/SDHC SIM

SD/SDHC

(. 1-7).

SD/SDHC,

- SD/SDHC,
Bluetooth. SD

Sokkia

SD/SDHC

FAT16

FAT32,

SIM

SIM

SIM

GSM

SIM

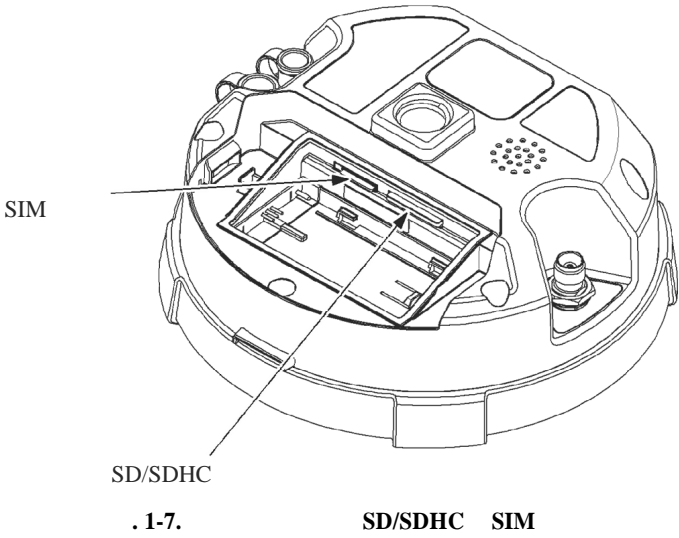
).

GSM,

GSM

SIM

GRX Utility. SIM

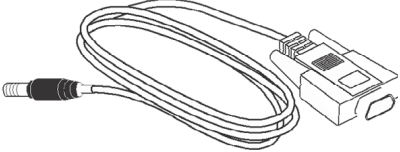


GRX2

. 1-3.

. 1-3.

GRX2

<p>()</p>	

,

- (BDC58) - (4300 A ,
7.2) - 2 .
- (CDC68)
- (73113/A/B/C) CDC68 (,)
- (DOC133, 72693) SHC250/
SHC2500/PC
- CD
- ()

GRX2

Sokkia

Sokkia

GRX2,

Sokkia

-
- 10
- SD/SDHC
- 3,7

(OAF)

Sokkia
(OAF),

Sokkia,

Sokkia

- (GPS/ L1; GPS/ L2)
- 1 ()
- (5, 10, 20)
- RTK 1 , 5 , 10 20
- RTCM/CMR /
-
-
- (WAAS)
- (RAIM)



-
-



GRX2,

:



“ Sokkia” . 2-2.



SIM

: SD/SDHC /

“ SD/SDHC SIM ”
 . 2-3.



“ ” . 2-5.



Bluetooth

“ ” . 2-11.



(

3)

“ ” . 2-14.

Sokkia

Utility, GRX

- GRX Utility

GRX Utility

CD-ROM

GRX Utility

GRX Utility

Windows®

GRX Utility: Microsoft® Windows XP / Vista/7

RS-232C

Bluetooth.

GRX Utility.

GRX Utility:

1. Utility, GRX
GRX Utility.zip.
2. **GRX_UTILITY.exe** GRX Utility.
3. **GRX_UTILITY.exe,**



. 2-1. **GRX Utility**

GRX Utility,
*.exe.

Delete.

GRX Utility

Bluetooth.

btconf.ini.

Bluetooth

GRX Utility

SD/SDHC SIM

SD/SDHC SIM

SD/SDHC

; SIM

GSM

SD/SDHC

Sokkia

; SIM

SD/SDHC,

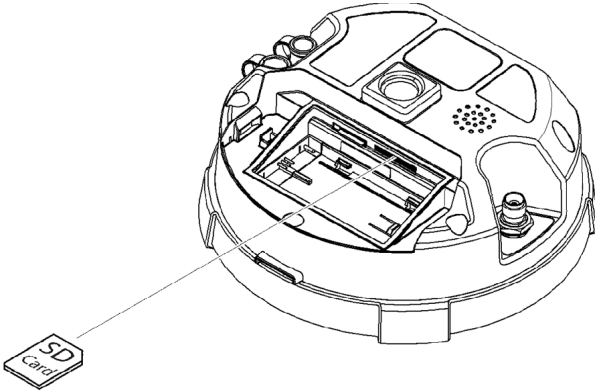
FAT16/FAT32.

Bluetooth.

SD/SDHC (. 2-2):

1.

2. . 2-6. “ ”
3. SD/SDHC



. 2-2. SD/SDHC



SD/SDHC

SIM (. 2-3):

SIM

(CSD),

. SIM

GPRS

EDGE

IP



SIM

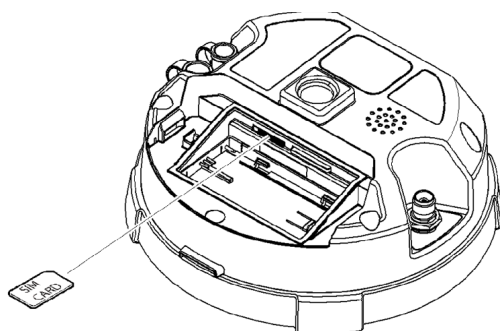
(CSD)

/

- 1.
- 2.
- 3.
- 4.

SIM

SIM



. 2-3.

SIM

SIM

2,5

5



500

80%

-
- 1.
 - 2.
 - 3.
 - 4.

2,5 ,

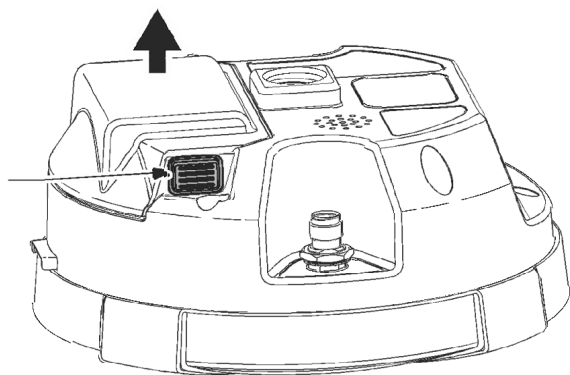
GRX2

7,5 ().

- 1.

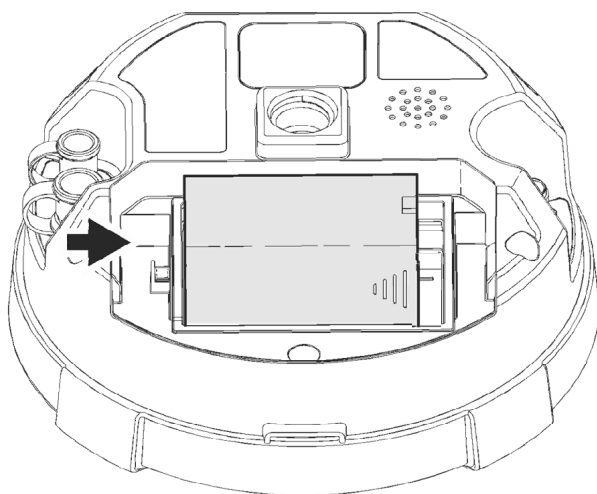
:
GRX2.

2.



. 2-4.

3.



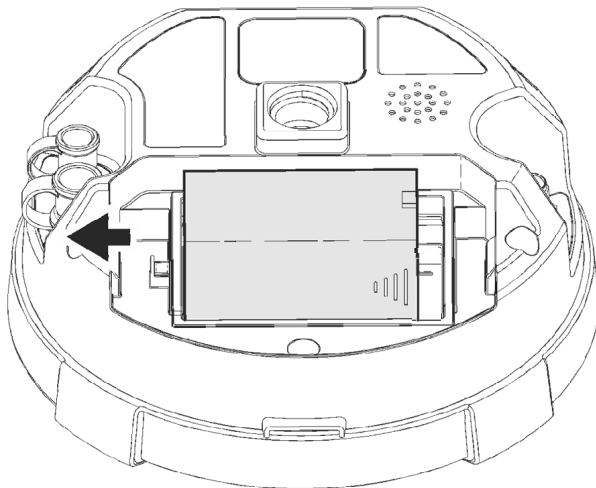
. 2-5.

4.

:

1.

2.



. 2-6.

3.


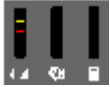


/

GRX2

1

3 10

. 2-1.

	-	
	1	
	3 10	
	10 20	
	20 25	
	25	

GRX Utility

GRX Utility,

- Bluetooth,
(/)

- RS232

RS232

1.

2. RS232

(1)

3. GRX Utility.

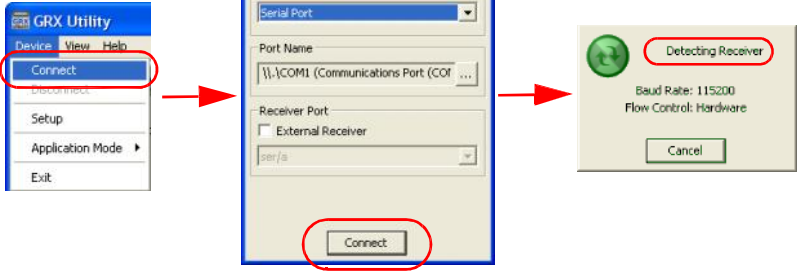
4. **Device Application mode Receiver**
Managing. /



5. **Device Connect.**
Connection Parameters.

Connect.

Detecting Receiver.



. 2-7.

RS232

6.

Device Disconnect:



GRX2



*External Receiver
Connection Parameters.*

GRX2

Bluetooth,

Bluetooth;

, SHC250

USB-Bluetooth

PCMCIA-Bluetooth.

Bluetooth,

Bluetooth).

Bluetooth

RS-232

(

RS232”

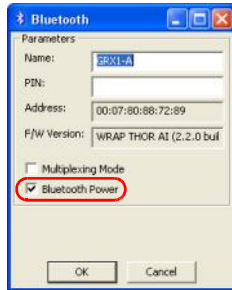
1-5,

. 2-10).

“



Bluetooth:



Bluetooth Power.

OK,

Bluetooth

RS-232

(. 6 “

RS232” . 2-10).

Bluetooth,

Bluetooth

1.

2.

3.

**Device Application mode
Receiver Managing.**

GRX Utility.



4.

Device Connect.

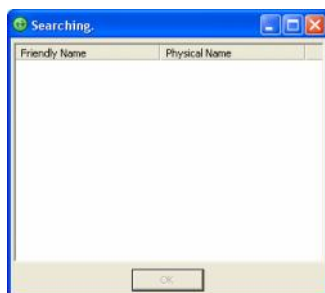
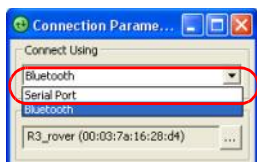
Connection

Parameters.

Bluetooth,

Connect Using

Bluetooth



. 2-8.

Bluetooth

5.

Bluetooth

Select Port

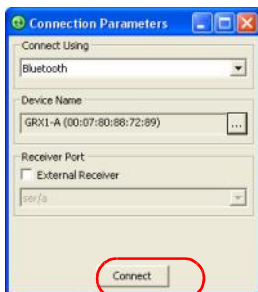
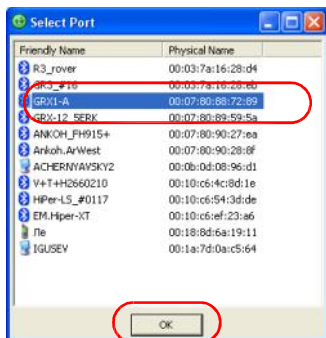
OK.

Connection

Parameters

Connect.

Detecting Receiver.



. 2-9.

/

Bluetooth

6.

/

Device Disconnect:



- GPS 30
- GPS 12,5 ;
- 2,5

NVRAM.

- 1.
- 2.
3. 15 ,



15 ,
 (NVRAM). “
 RAM Flash .”
 . 5-8.

-
- :
- -
- NVRAM,
- (OAF).
 -
 - NVRAM.
 -



GRX2

- RTK, ,
- GPS/ ,
- (, GSM/ GPRS CDMA) ,
- GPS ,
- (/) ,
- (, Spectrum Survey Office).

RTK



2.



RTK

RTK

“

”

. 3-9.

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“

”

. 3-5:



,

RTK

“

GRX2”

. 4-1.



2.



“

”

. 3-9.



,

“

GRX2”

. 4-1.

Spectrum Survey Field.

GRX Utility -

Sokkia

Utility

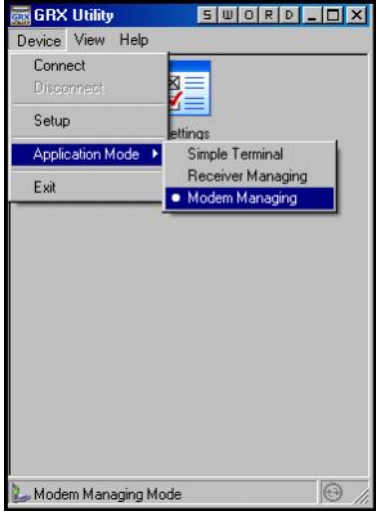
GRX.

GRX

:

- Bluetooth.
-
-
- Windows 2000
- GRX Utility
- (RS-232) Bluetooth

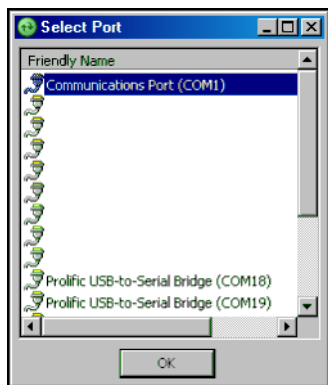
1. RS-232 Bluetooth.
2. GRX Utility. **Device Application**
Mode Modem Managing. Device Connect.



. 3-1.

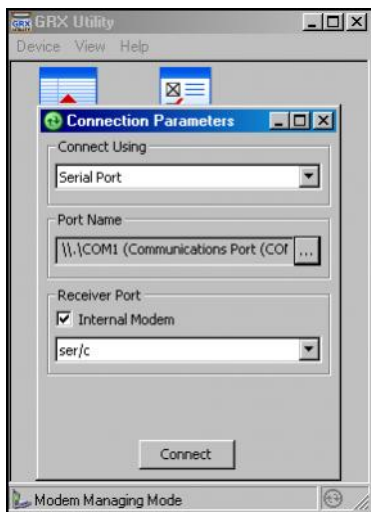
3. COM

4. COM ,
OK.



. 3-2. COM

5. C. GRX2
Internal Modem
ser/c. **Connect.**



. 3-3.

6. GRX Utility



. 3-4.

GRX Utility



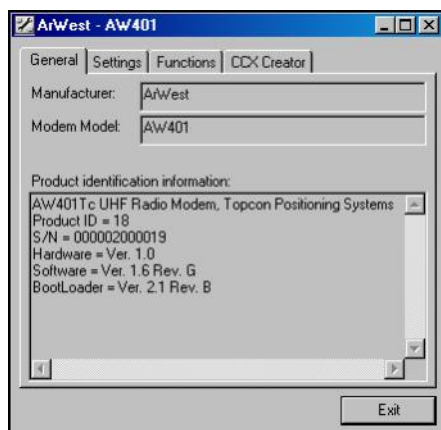
25

1. GRX Utility GRX2 Modem Managing ()



. 3-5.

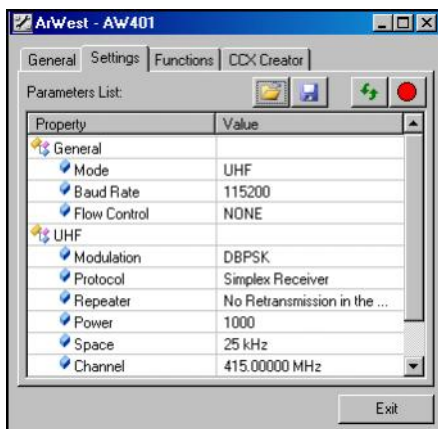
2. (Digital AW401),
General



. 3-6.

3. *Settings*,
(. . 3-7 . 3-6).

(



. 3-7.

- *Mode* – GSM/CDMA.

Baud rate –

38400



115200

GPS.

- *Flow Control* –

/

- *Modulation* –

GMSK,
DBPSK,

GMSK.

Simplex,
Trimble

PDL,

- *Protocol* –

(GMSK).

Simplex

- *Repeater* –

(Simplex).

- *Power* –

(10 1).

- *Space* –

- *Channel* –

• *Scrambler* –

(
GMSK).

• *FEC* – ()

()

. 3-1.

. 3-1.

		12.5	25
DBPSK ()	Differential Binary Phase Shift Keying	4,8	9,6
DQPSK	Differential Quadrature Phase Shift Keying	9,6	19,2
D8PSK ()	Eight Phase Shift Keying	14,4	28,8
16QAM ()	Sixteen Quadrature Amplitude Modulation	19,2	38,4
GMSK	Minimal Shift Keying with Gaussian Filtering	4,8	9,6
4FSK ()	Four Level Frequency Shift Keying	9,6	19,2

GRX Utility,

GRX Utility

RTK

RTK

GRX2

RTK

-

- RTK

RTK ().

-

- RTK

RTK

GRX Utility,

- Bluetooth,
()

- RS232

GRX Utility -

Sokkia

GRX Utility.

GRX Utility

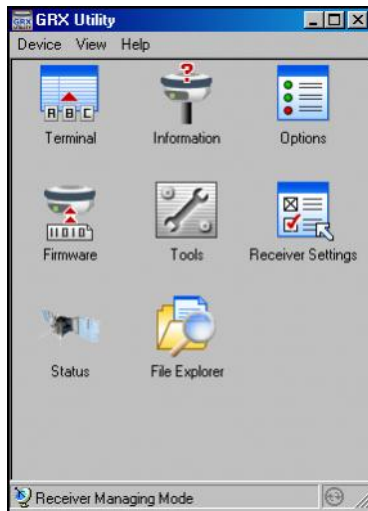
-

-



GRX Utility.

1. “ ” . 2-9.
2. GRX Utility
GRX Utility.



. 3-8. GRX Utility

3. **Device Application Mode Receiver Managing.**
4. **Device Connect.**
5. *Connection Parameters* :

- *Connect Using* – , Bluetooth.



Bluetooth

GRX Utility

Bluetooth

Bluetooth

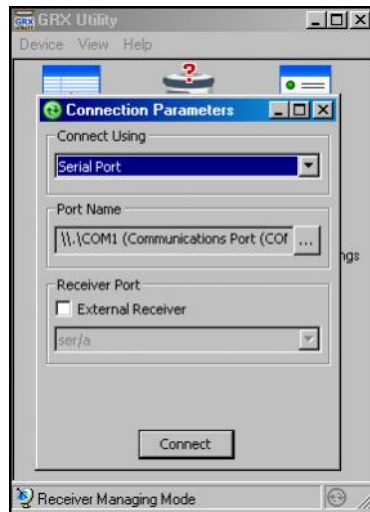
Bluetooth,

- *Port name* –

/

Port name

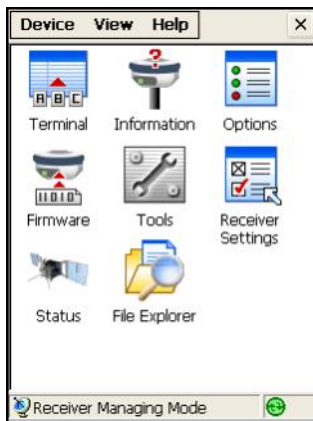
6. **Connect** (. 3-9).



. 3-9.

GRX Utility

(. 3-10).

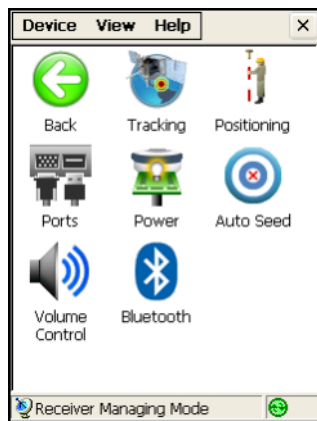


. 3-10.

GRX Utility

7.

Receiver Settings.

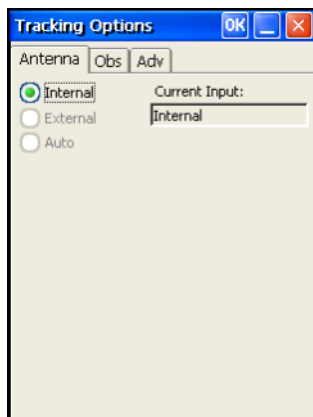


. 3-11.

8.

Tracking

(. 3-12).



. 3-12.

9.

Observation*Elevation mask*

(

) 15 ,

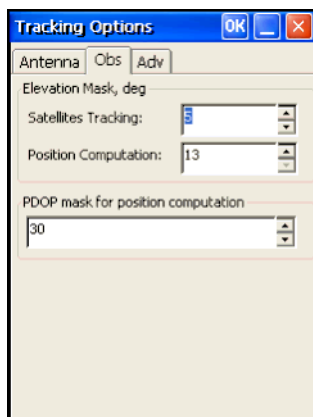
,

,

(. 3-13),

PDOP mask

(

PDOP),**OK.**

. 3-13.

,

10. *Advanced.*

OK (. 3-14 . 3-15).

- *Anti-jamming* –

GPS, GLONASS, L1, L2.

- *C/A code multipath reduction* –

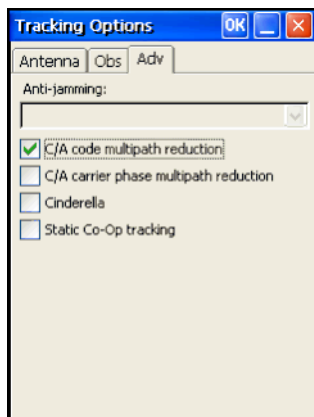
- *C/A carrier phase multipath reduction* –

- *Cinderella* –

Cinderella, 24

GPS.

- *Static Co-Op tracking* –



. 3-14.

11.

Seed**Auto**

(. 3-15

. 3-16),

OK.

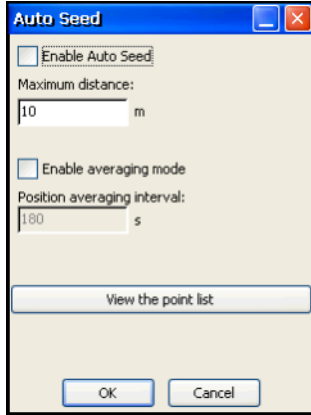
- *Enable Auto Seed* ():

RTK

- *Maximum distance:*

- *Enable averaging mode:*

Position averaging interval.



. 3-15.

- **View the point list,**

GRX Utility.

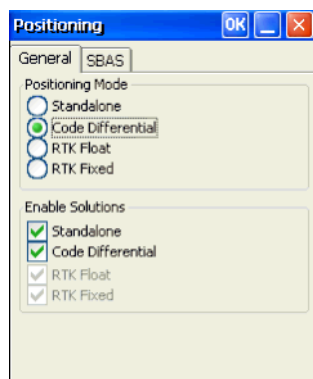
12.

Positioning,

OK (. 3-16 . 3-17).

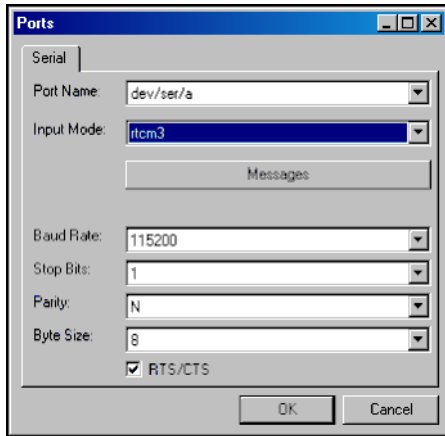
- *Positioning Mode* –
Standalone; RTK
RTK float RTK fixed.
- *Enable Solutions* –
– Standalone – 3D
– Code differential –
– RTK float –

– RTK fixed –



. 3-16.

13. RTK , **Ports**, OK (. 3-17 . 3-18).



. 3-17.



14. , **OK.**

GRX Utility
NVRAM.

GRX Utility.

15. RTK **Status** (. 3-18 . 3-19), , -

10-30 Spread Spectrum . , GSM

Data Link

60 .

(%);

- () ;
 - ()
 - () -
- Link Quality 100%.



Status	
Position	Data Link
Data Link	1
Data Link Identifier	ser/d
Decoder	RTCM 3.0
Ref Station	0000
Link Quality	100%
DLink Delay	1
Received Messages	380
Corrupt Messages	0

. 3-18. Status - Data Link

16.

Device Disconnect, Device Exit,
GRX Utility.



Sokkia
Spectrum Survey Field.
Spectrum Survey Field
Spectrum Survey Field.



GRX2

GPS

“

”

. 2-14).

(

1:

RTK

□

“

”

. 4-1.

□

“

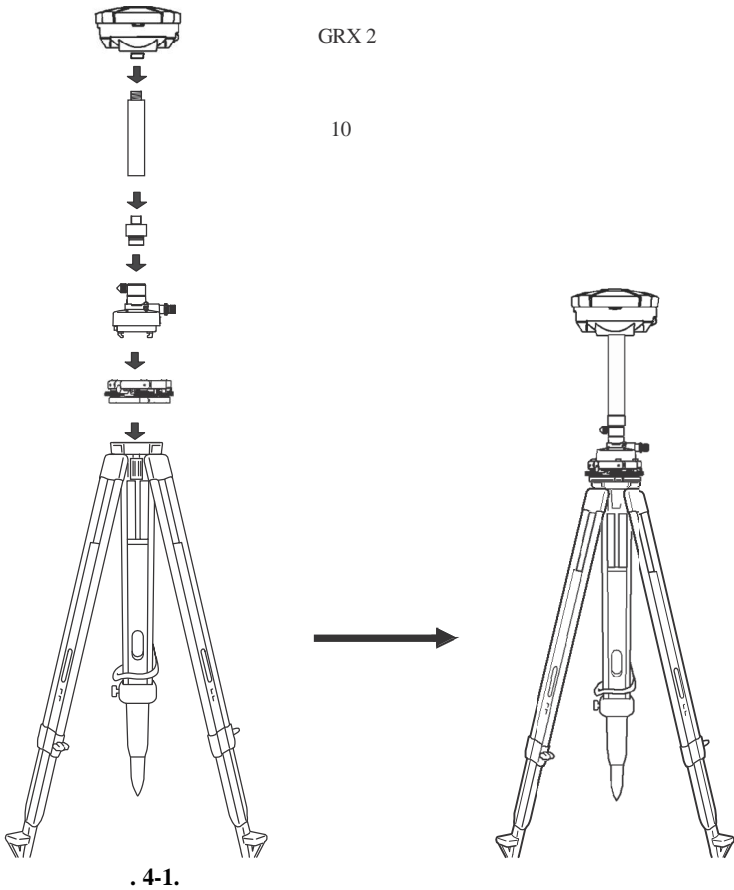
”

. 4-3.

(. 4-1):

1.

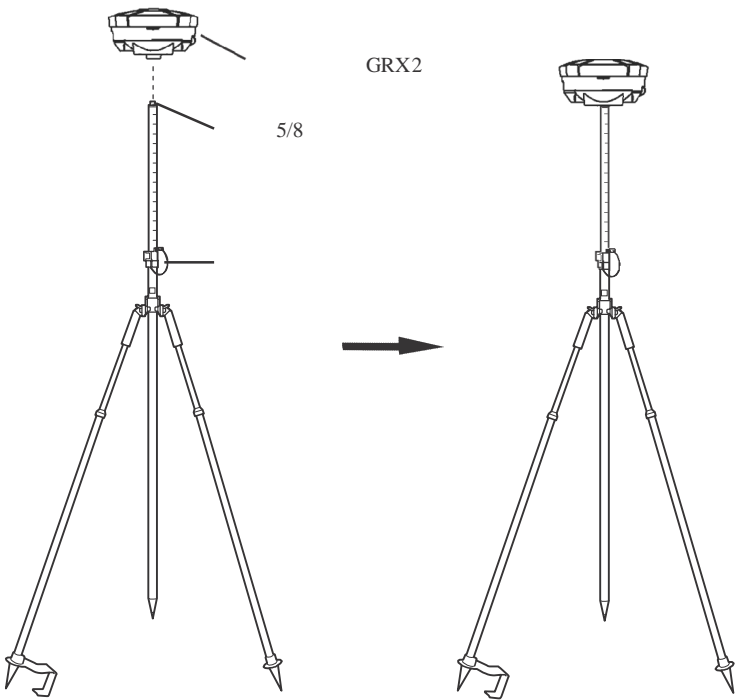
2. .
3. .
4. (10).
5. (10) GRX2.
6. .
7. , .
8. (,).



(. 4-2 . 4-3):



1. GRX2 (5/8)



. 4-2.

GRX2

2:

3D

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•

•

“ ” GPS/

GPS/

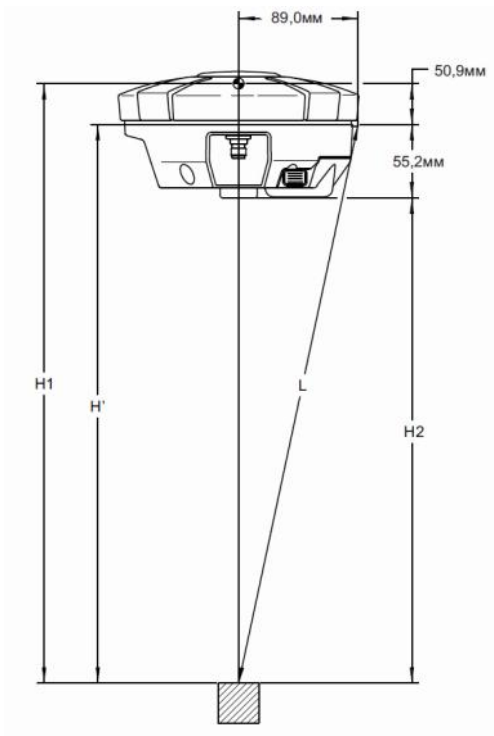
•

“ ”

1.

(.4-3 .4-5).

2.



.4-3.

- L:

- H':

- $H' = \sqrt{L^2 - (89)^2}$

- H1:

$$(H1 = H' + 50,9)$$

- H2:

$$= H' - 55,2 \quad (H2)$$

. 4-1.

	L1	L2
	106,1	102,3

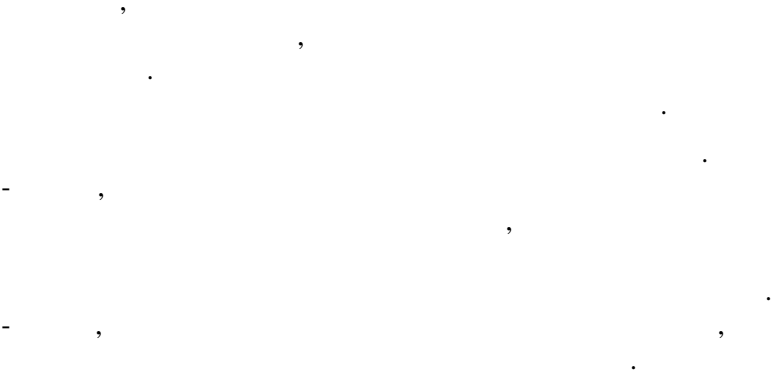
(, ,).

) (5-30

(DOP)

-
-
-
-

15



(, Spectrum Survey Field).

& Go) (Stop

(stop & go) .
Spectrum Survey Field.

,
 .
 -
 ,
 ,
 .
 ,
 ,
 (GPS,
 Bluetooth),
 ,
 Sokkia
 ,
 .

GRX Utility

GRX Utility

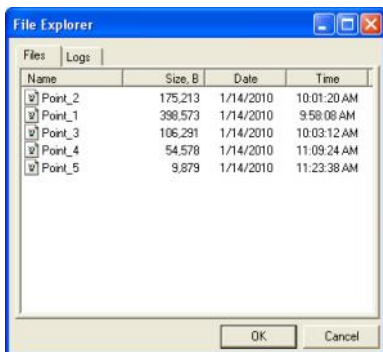
1. GRX Utility. “ ” . 2-9.

2.



File Explorer,

(. 5-1).



. 5-1. File Explorer

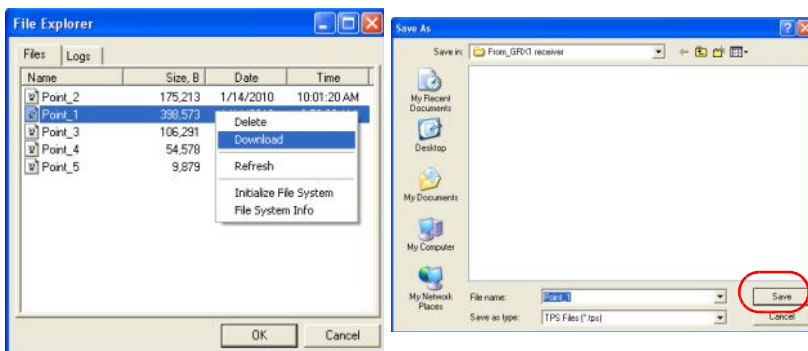
3.

Download.

Save As

(. 5-2).

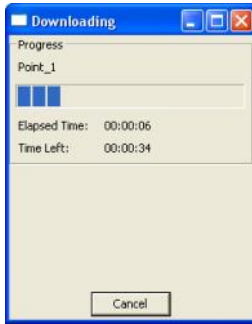
Save,



. 5-2.

4.

Downloading,



. 5-3.

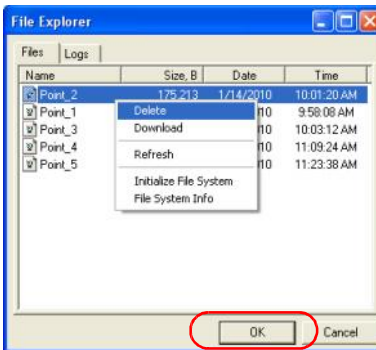
GRX Utility

1 2,
. 5-1.

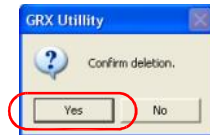
File Explorer

Delete.

Yes.



. 5-4.



SD/SDHC 20-25 (. .1-2 , . 1-14).

- SS –

- N –

L1:

$$SS = 183 + 22 * N$$

L1 L2:

$$SS = 230 + 44 * N$$

- (L1, L1/L2 . .), ;

- ;
- /

Sokkia

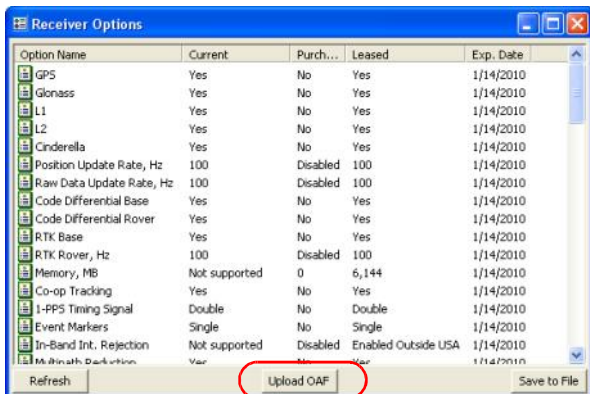
GRX Utility.

1. GRX Utility. “ . 2-9.

- 2.



Receiver Options,



. 5-5.

Sokkia.

Sokkia: options@sokkia.com

1.

1 2,

“

”

. 5-5.

2.

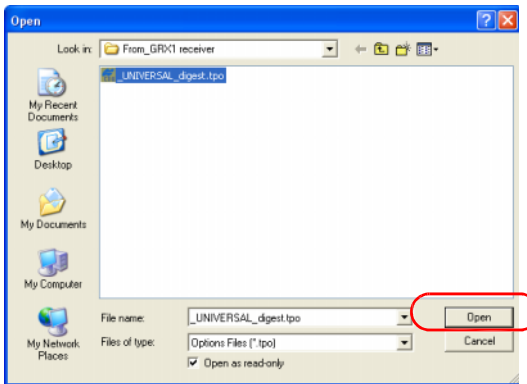
Upload OAF

Receiver

Options (. 5-5).

3.

Open (. 5-6).



. 5-6.

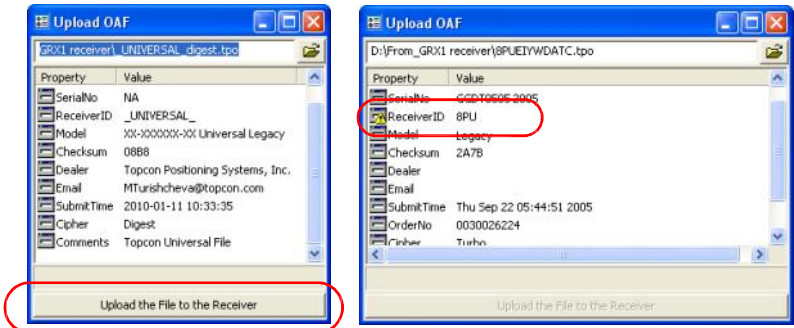
4.

GRX Utility

ID

Upload OAF

Upload the File to the Receiver



. 5-7.

5. *File to the Receiver.*

Upload the

6.

GRX Utility

(. . 5-8).

Yes.



. 5-8.

?

• ramimage.ldr – RAM

• main.ldr – Flash

GRX,

1.

GRX Utility. “
” . 2-9.

2.



Upload Firmware,

3.

Device

“Receiver/modem”.

4.

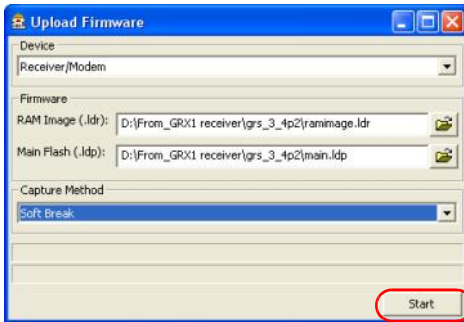
Capture Method

“Soft Break” ().

5.

RAM

Flash



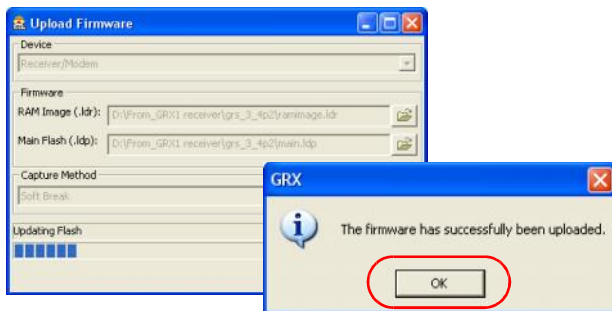
. 5-9.

6.

Start.

7.

OK.



. 5-10.

(NVRAM)

(NVRAM)

NVRAM

NVRAM

NVRAM

NVRAM

NVRAM

(15),

NVRAM

NVRAM

GRX Utility

1. GRX Utility. “ . 2-9.

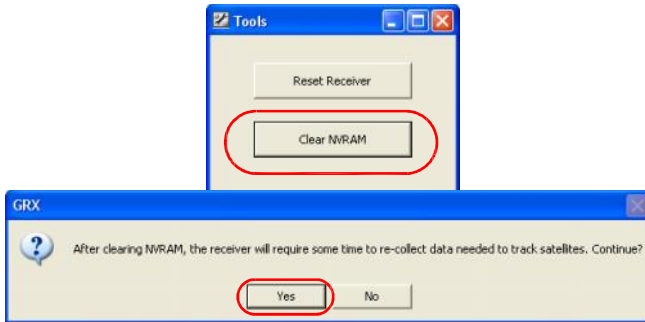
- 2.



Tools

Tools,

NVRAM



. 5-11. Tools

3. Clear NVRAM, Yes,

GRX2.



Sokkia,

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-
-

Sokkia.

-
-

(Tools **Reset receiver**).

GRX Utility

GRX Utility

(**Configuration Receiver**,

Set all parameters to defaults).

- NVRAM (. “ RAM Flash .” . 5-8).
- (Tools Initialize file system). SD/SDHC . - , . , : “ ,” . 6-3. , : “ ,” . 6-5. “ ,” . 6-5. “ ,” . 6-5. “ RTK,” . 6-6. “ ,” . 6-8. Bluetooth: “ GRX Utility : Can’t find receiver (,),” . 6-9. “ GRX Utility : Open COM# port failed: Access is denied (#:),” . 6-10. “ GRX Utility : Open COM# port failed: Access is denied (#:),” . 6-10. “ ,” . 6-11.

Bluetooth

Bluetooth

,
” . 6-11.

,
“GRX Utility” .
. 6-12.

- “ ” .
1. GRX Utility
(. “ ” . 2-9).
 2. **Configuration Receiver.**
 3. **General Power**
Charger. “Auto”.
Auto
Apply.



NVRAM
(. “ RAM Flash
.” . 5-8).



- ,
- .



- / “ . 2-5.

• ” . 2-5. “

⇒ ,

⇒ ,

Sokkia.

,

,
GRX2.

⇒ :

• , -

• .

• “ GRX2” . 1-10 “
” . A-12.

⇒ .

,

:



1.

GRX Utility.

2.

Configuration Receiver Ports.

3.

Input

“Command”.



” . 2-14.



(L1/L2, GPS/GLONASS)

•

“ ” . 5-4.

•

Sokkia

•

GRX Utility.



(

1.

GRX Utility. “

” . 2-9.

2.

Configuration Advanced
Multipath Reduction.

Apply.

RTK



GRX Utility



3.

3.



“

”

. 5-4.

Sokkia

GRX Utility.



- “ ” . 2-14.



1. GRX Utility. “ ” . 2-9.
2. **Configuration** **Advanced**
Ports.



(PDOP/GDOP).

PDOP.



-
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Sokkia





- “ .3-5.”



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-



- ().
- ,
- ().



- SD/SDHC -
- “ SD/SDHC SIM ”
- .2-3.
- “ .5-5.”

⇒

- / “ ” (.5-1 “ GRX Utility” . 5-3).

Bluetooth

Bluetooth, GRX2.

receiver (GRX Utility) : Can't find

⇒

⇒

- , -
- .

⇒

- ,
- Sokkia ,

⇒ COM ,

- GRX Utility.
- , RS232 ,
- “ ” . 2-11.



1. (cmd).
(" . 2-9)

GRX Utility.

2. **Configuration Receiver Ports.**
3. *Input* , "Command".



GRX Utility



- D : 115200 baud rate, 8 data bits, 1 stop bit, no parity, no handshaking.
- D RTS/CTS handshaking ().



- (D).
- " " . 5-4.
- Sokkia
- *GRX Utility.*

GRX Utility

: Open

COM# port failed: Access is denied (#:)



-
-



-
-
-
-

“PWR”.

Sokkia



2(C)

- 1.
- 2.
- 3.

RS232 (. “ . RS232”
2-10).

Configuration Receiver General.

Turn on/off Slots

Slot 2(C).

Bluetooth

Bluetooth



-
-

Bluetooth
Bluetooth

2-11.



Bluetooth.

1. Bluetooth, Bluetooth manager.
2. Bluetooth.

GRX Utility

GRX Utility.

GRX Utility



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Sokkia



Bluetooth, ,

()

Bluetooth.

-

Bluetooth.

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GRX2 - A.



- “ ” .5-4.
- Sokkia



1. **Connection** **Cancel**
Connecting to device **Stop.**
2. GRX Utility **Tools** **Options.**
3. **Ok.**
4. **File** **Connect.**

Sokkia.

.6-1.

Sokkia

- 1-800-4-Sokkia 1-800-476-5542
- 1-866-4-Topcon 1-866-486-7266

(. 6-1).

. 6-1.

	...
(, ,)	support@topcon.com
	support@topcon.com
(OAF)	support@topcon.com
RTK	support@topcon.com
GRX Utility	support@topcon.com
...	support@topcon.com
“ ”	service@gsi.ru



1.

GRX Utility **Help** **About**
Save to file.

2.

GRX Utility,

3.

/

4.

5.

24

Sokkia

Sokkia.

Sokkia: <http://www.sokkia.com>

“ ”: <http://www.gsi.ru>



Bluetooth

GSM (),

Sokkia Topcon

226-

SD/SDHC.

NOTICE

6

15

NOTICE

PDOP

NOTICE

GRX2

. A-1

. A-1.

	Sokkia Sokkia
	184 () 95 ()
	1,10 ()
	, /
	5/8-11,
	: /

. A-1.

()

	22
	-20 +65°C (); -40 +65°C ();
	-45°C +70°C
	100%
	IP67
	BDC58, - ,4300 () / 7,2
	195
	2,5
	7,5 (20°C / Bluetooth) /
	1
	6 18

. A-1.

()

	4 ()
	CDC68
	NVRAM 10
/	
	Bluetooth V2.1 x 2- () RS-232C x 1
	COM1: 4800 115200 (RS) 115200 () Bluetooth: 115200 (SPP / Single Channel)
	(BNC TNC , RS232C
NMEA	
NMEA	2.1, 2.2, 2.3, 3.0
	GGA, GLL, GNS, GRS, GSA, GST, GSV, HDT, RMC, VTG, ZDA, ROT, GMP
	1 , 5 , 10 , 20
DGPS	
	RTCM SC104 Ver 2.1, 2.2, 2.3, 3.0, 3.1
RTCM	1, 3, 9, 31, 32, 34;
	10 (); 20 , 50 100 ()
RTCM	10 (); 20 , 50 100 ()
	0 90 ()

. A-1.

()

RTK	
	CMR2/CMR+, RTCM SC104 Ver 2.2, 2.3, 3.0 3.1
RTCM	3, 18, 19, 20, 21, 22;
	OTF (L1, L1/L2)
	50 32
	5 10
CMR/RTCM	1 (); 5, 10, 20 ()
	0 90 ()
	() ()
	1 (); 5, 10, 20 ()
	L1: 3 +0.8ppm ()/ 5 +0.5ppm () L1+L2: 3 +0.5ppm ()/4 +1ppm ()
	L1+L2: 3 +0.5ppm ()/ 5 +0.5ppm ()
	L1+L2: 10 +1ppm ()/15 +1ppm ()
RTK	L1+L2: 10 +1ppm ()/ 15 +1ppm ()
DGPS	<0,5
“ ”	<40
“ ”	<20 () <1

GPS

. A-2

GPS

. A-2.

GPS

()	
GRX2 :	G: GPS L1 GD: GPS L1/L2 GG:GPS/GLONASS L1 GGD: GPS/GLONASS L1/L2
/ / :	FH915 + TX/RX FH915 + TXUHF + GSM + GSM + CDMA
()	
()	226 (G, GG, GD, GGD) L1 GPS, L1/L2 GPS, L1 , L1 GPS + L1 , WAAS/EGNOS,
	GPS/GLONASS, L1/L2 C/A WAAS/EGNOS/MSAS/QZSS ,
()	
/	: ,
- (o-op tracking)	/ , , , ,
()	
WAAS/EGNOS/ MSAS	()
()	

. A-2.

GPS

()

	TPS, NMEA, RTCM, CMR
	<p>20 RTK ()</p> <p>10 RTCM SC104 2.1, 2.2, 2.3, 3.0, 3.1 I/O. RTCM</p> <p>(RAIM)</p> <p>CMR CMR+.</p>
<hr/>	
	SD/SDHC
	SD/SDHC
	0,05 86400 ,

Cinderella,
GPS

GPS

24

Cinderella
Sokkia.

Bluetooth

. A-3

Bluetooth.

. A-3.

Bluetooth

	10 (), 50 ()
	1
	SPP ()

. A-3.

Bluetooth ()

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Spread Spectrum ()

. -4

. A-4.

Spread Spectrum

(/)	902 - 928 M () 915 - 925 ()
	FHSS
	5 ,
	128
	100
	FSK, 64
	135
	- , -
	, ,
	FH915, FH915+
(TX)	
	250 (24dBm) / 1 (30dBm),
(RX)	
	-105 dBm 10-4 BER
	105 dBm

. A-4.

Spread Spectrum

	RS232
	9600, 19200, 38400, 57600 ,
	9600, 10200, 17000, 51000 . FH915; FH915+
	FEC (15,7),
	, ,
	TNC,
	2,5 dBi

GRX2

. A-5

. A-5. {

GRX2

(/ /)	410-470
	GMSK, DBPSK DQPSK
	12,5 /25
25	<ul style="list-style-type: none"> • GMSK/DBPSK – 9600 • DQPSK – 19200
12,5	<ul style="list-style-type: none"> • GMSK/DBPSK – 4800 • DBPSK – 9600
	115200

. A-5. {

GRX2

GSM/GPRS ()

. A-6

GSM/GPRS,

. A-6.

GMS/GPRS

	EGSM:900/1800
	0,6 (850); 2 (900); 1 (1800/1900)
GPRS	8; 85,6 ; B GSM 07.10 ; CS1-CS4;
CSD	14,4 ;
SMS	MO/MT Text PDU; ;

(BDC58)

. A-7

BDC58.

. A-7.

	7,2
	4,3A
()	38 x 70 x 40
	195

(CDC68)

. A-8

CDC68.

. A-8.

:	100 - 240
(25°C):	(4 25°C, .)
:	0 40°C
:	-20 65°C
()	94 102 36
	170

GRX2 3 :

. A-9, . A-10 . A-12 . A-11 . A-13

. A-9.

	BNC	I/O	I/O	RF/GSM
FH915/915+	TNC,	I/O	I/O	RF/GSM

- 5-
(. A-1).



. A-1.

. A-10

. A-10.

1	Power_GND	P	,
2	Power_INP	P	
3			

. A-10.

()

		.	
4			
5			

C-RS232

(RS232) - 8- -
(. A-2).



. A-2.

()

RS232

. A-11

. A-11.

(RS232)

		.	
1			
2	RXD		
3	TXD		
4	GND	I/O	
5	GND	I/O	
6			
7	RTS		
8	CTS		





Sokkia



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100°



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Sokkia.



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Sokkia.



NOTICE

RTK

1.

RTK

2.

- , :
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• -
- Sokkia,

FCC

(FCC)

FCC

OET65.

,
(
: , ,
) 20 .
15 FCC.

1.

2.

FCC. 15

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-
-





: GRX2

	Sokkia
	Topcon Positioning Systems, Inc.
	7400 National Drive, Livermore, CA 94550
	+925-245-8300

()

RSS-102

1.

: (1)

(2)

2.

3.

B

6,

: www.hc-sc.gc.ca/rpb.

2,4

2,4

- 50

GRX2/U 2.4dBi

410-440MHz ANTENEX/G420BN

440-470MHz CENTURION/EVR450

GRX Utility

1999/5/EC

(1999/5/EEC)

- EN 301 489-1 V1.8.1 (2008-04)
- EN 301 489-5 V1.3.1 (2002-08)
- EN 301 489-17 V1.3.2 (2008-04)
- EN 300 328 V1.7.1 (2006-10)
- EN 300 113-2 v1.4.1 (2007-07)
- EN 62311:2008
- EN 60950-1:2001 + A11:2004



(WEEE)

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Sokkia

Sokkia,

Sokkia

Sokkia,

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Sokkia

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SOKKIA



ISO 9001:2000
FM 6 844 8

GRX2 Руководство по эксплуатации
№: 7011-0784 Версия А 1/10