

# SOKKIA

# GRX2



## Руководство по эксплуатации

# SOKKIA

## GRX2

7011-0784

2012

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FCC	.....	C-2
	.....	C-4
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(WEEE) .....		C-7
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Sokkia.

Sokkia

Sokkia

(“ ”).



**COPYRIGHT ( )**

Sokkia

Fragmented text at the bottom of the page, including various punctuation marks and the word 'Sokkia'.



---

Sokkia.

Sokkia,

Sokkia.

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

Sokkia. Windows®

Microsoft.

Bluetooth®

Bluetooth SIG, Inc.,

Sokkia

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SOKKIA

SOKKIA

SOKKIA

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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

Sokkia

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( ), -

:

---

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

*Connection*

*Frequency*

**Enter**

**Enter (     ).**



---

•  
•

Lined writing area consisting of 25 horizontal lines for text entry.



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



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

DGPS Differential GPS ( , . . .  
 GPS) ,

---

DGPS

- (RTK)  
RTK

DGPS

( )

RTK

(RTCM

( )

RTK

OmniSTAR), (WAAS, EGNOS, MSAS).

RTK ( ).

( ) -  
RTK

10 15

• - ( - Geometric Dilution of Precision GDOP)

- GPS (DGPS RTK)

Sokkia.

(DGPS)

(WAAS, EGNOS .)

GPS

GPS

(RAIM)

(226 )

GPS

( ( ) ),

WGS-84,

SD

RTK ( )

RTK

GRX2:

(WAAS, EGNOS )

(DGPS) RTK ( DGPS ) GPS  
RTK

- 
- - 
  - 
  -

GRX2

226-

:

- 
- 
- 

(COM )

- 
- 

- 
- 
- 

Bluetooth

GSM/GPRS ( )

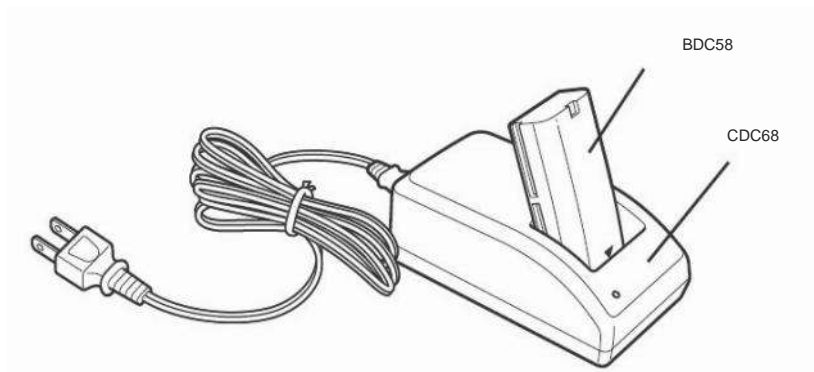
CDMA ( )

( )



GRX2

( . 1-2),



. 1-2.

GRX2

BDC58

CDC68.

2,5

5

/

•

“ ”,

•

/

•

•



. 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

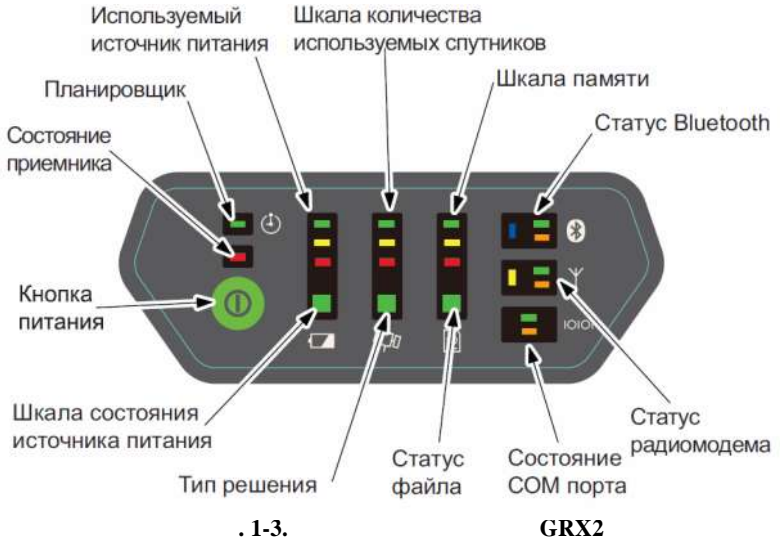
GRX2

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

GSM/GPRS

CDMA ( )

## GRX2



- - 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.

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	1	1 20
	3 10	3-10

. 1-2.

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

. 1-2.

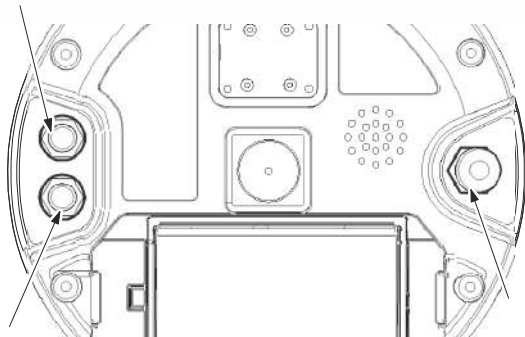
	-	
	25	25
		,
		-
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		,
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		,
		.

GRX2



GRX Utility

,  
 ,  
 ( 30 ( ) )  
 ).  
 ( )  
 GRX2 ( . 1-4 . 1-17):  
 . - ;



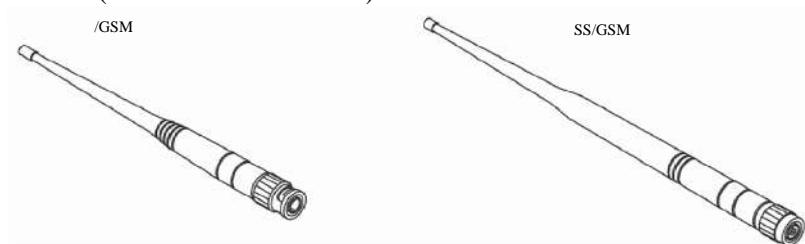
. 1-4.

GRX2

GRX2

( . 1-5).  
GSM

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

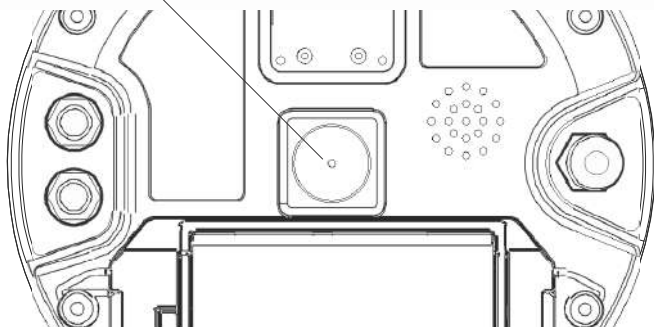


. 1-5.



( . 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

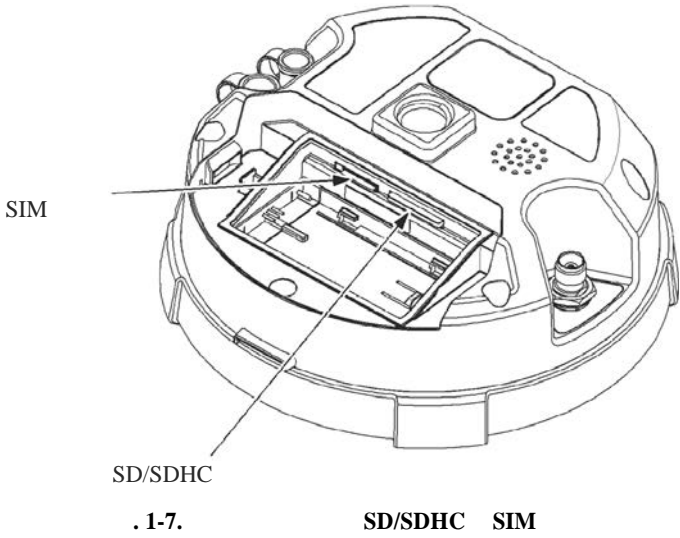
SIM

).

GSM,  
GSM

SIM

GRX Utility. SIM

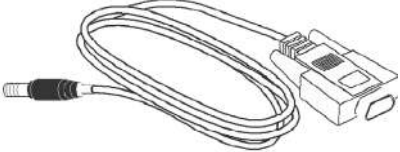


GRX2

. 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.

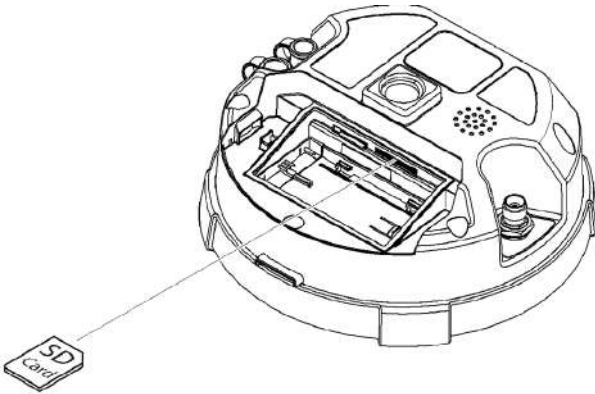
**SD/SDHC ( . 2-2):**

1.





2. . 2-6. . . “ ”
3. SD/SDHC



. 2-2. SD/SDHC



SD/SDHC

SIM ( . 2-3):

SIM

(CSD),

. SIM

GPRS

EDGE

IP



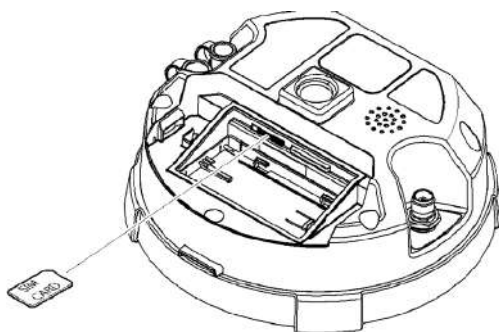
SIM

(CSD)

/

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

SIM  
SIM



. 2-3.

SIM

SIM

2,5

5



500

80%

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

2,5 ,

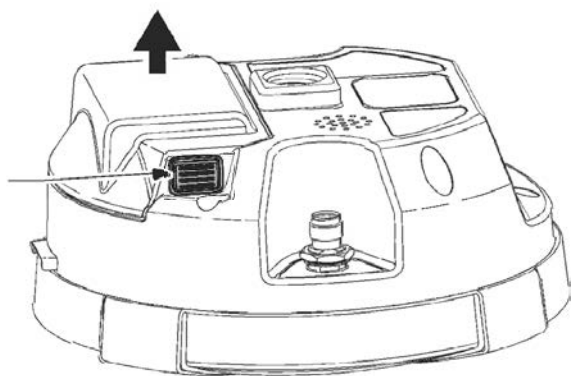
GRX2

7,5 ( ).

- 1.

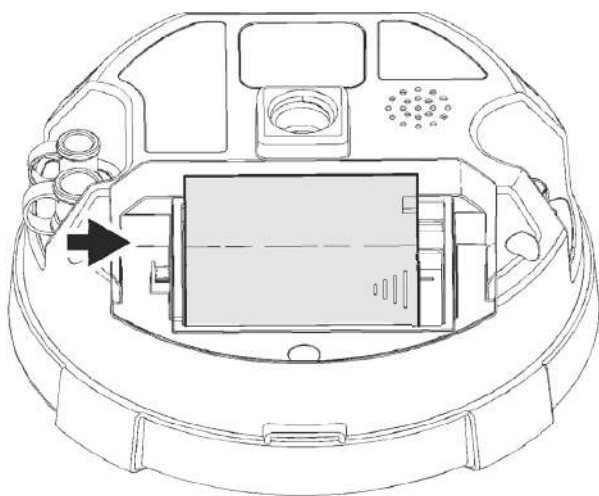
:  
GRX2.

2.



. 2-4.

3.



. 2-5.

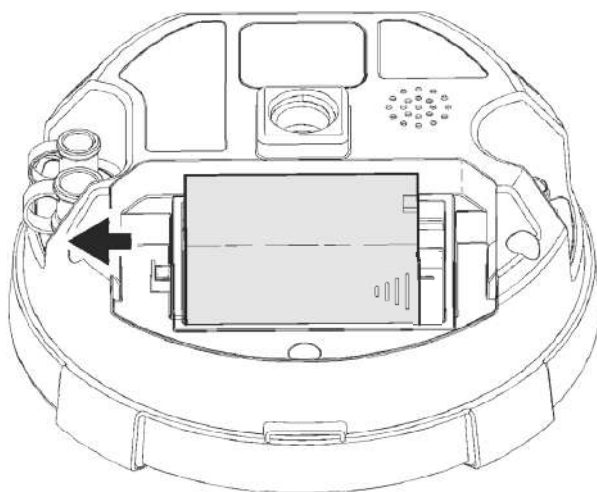
---

4.

:

1.

2.



. 2-6.

3.




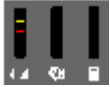


/

**GRX2**

1

3 10

. 2-1.

	-	
	1	
	3 10	
	10 20	
	20 25	
	25	

GRX Utility

GRX Utility,



- Bluetooth,  
( / )
- RS232

## RS232

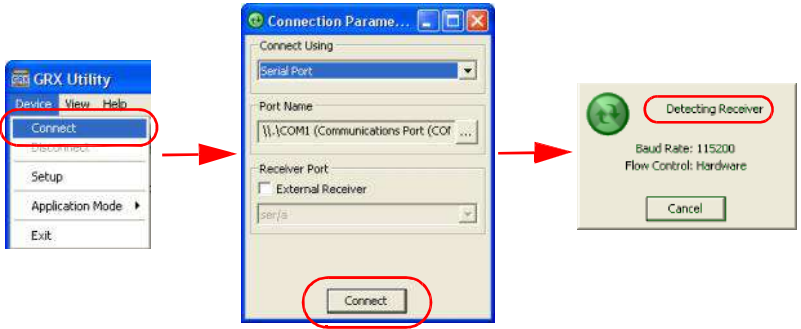
- 1.
2. RS232  
( 1)
3. GRX Utility.
4. **Device Application mode Receiver**  
**Managing.** /



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”

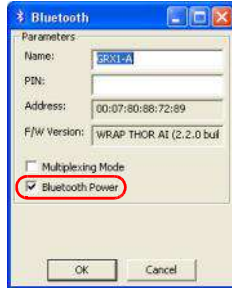
1-5,

. 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.**

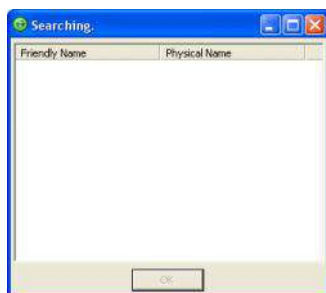
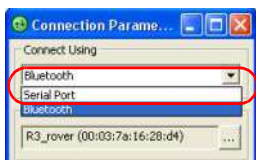
**Connection**

**Parameters.**

Bluetooth,

*Connect Using*

Bluetooth



. 2-8.

**Bluetooth**

5.

Bluetooth

*Select Port*

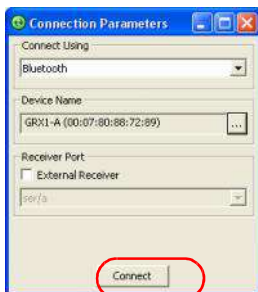
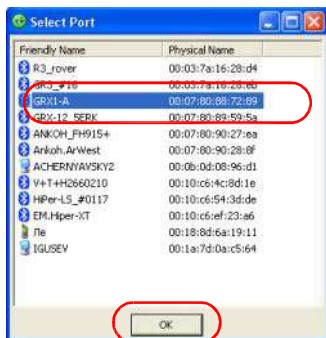
**OK.**

*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.

•

“

”

. 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

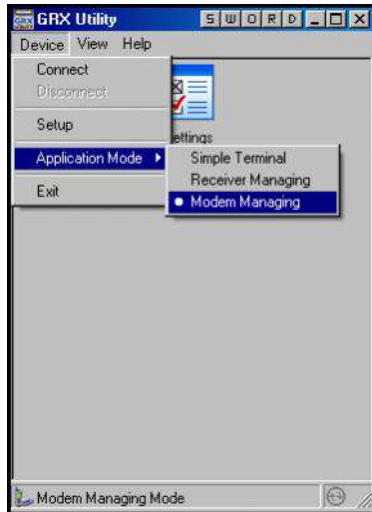
Bluetooth.

2.

GRX Utility.

**Device Application**  
**Device Connect.**

**Mode Modem Managing.**

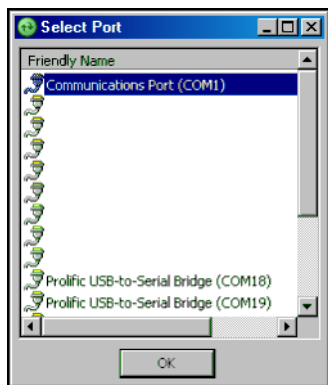


. 3-1.

3.

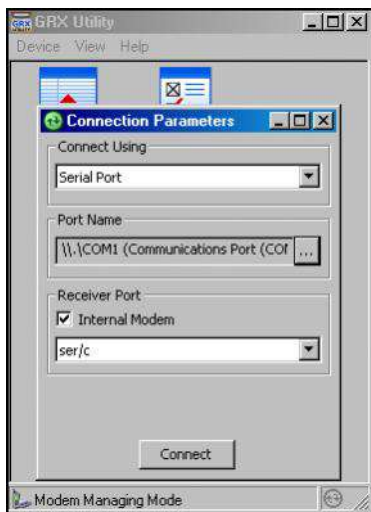
COM

4. COM ,  
OK.



. 3-2. COM

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



. 3-3.

---

6. GRX Utility



. 3-4.

GRX Utility



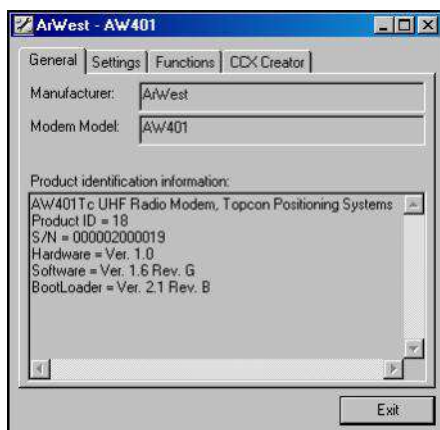
25

- 
1. GRX Utility GRX2 Modem Managing ( )



. 3-5.

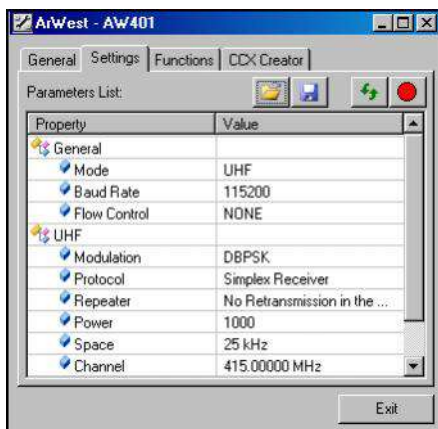
2. (Digital AW401),  
*General*



. 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

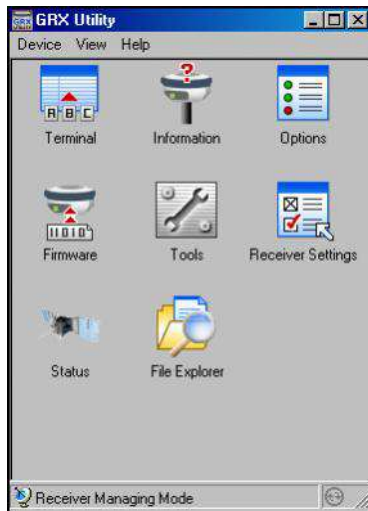
- 

-



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

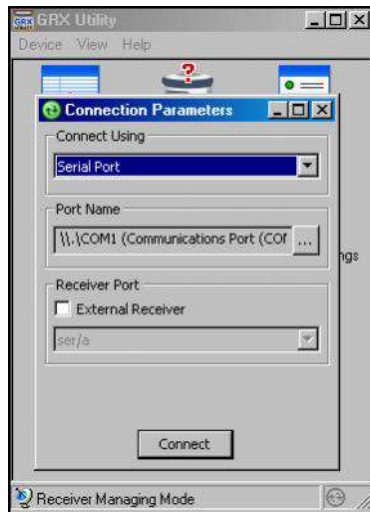
Bluetooth,

- *Port name* –

/

- *Port name*

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



. 3-9.

## GRX Utility

( . 3-10).



. 3-10.

GRX Utility

7.

## Receiver Settings.

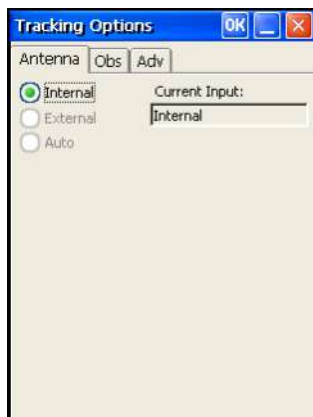


. 3-11.

8.

**Tracking**

( . 3-12).



. 3-12.

9.

**Observation***Elevation mask*

(

) 15

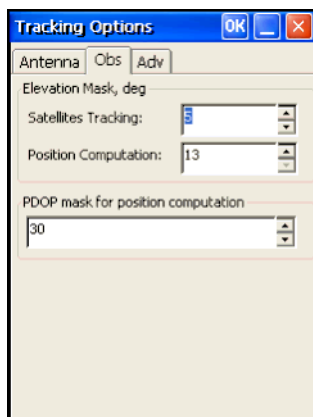
,

,

( . 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* –

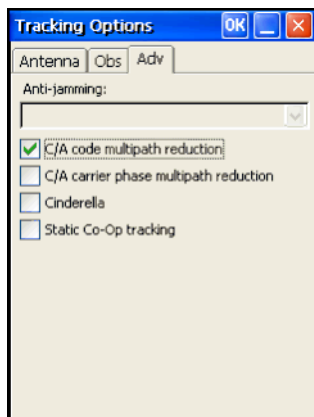
- *C/A carrier phase multipath reduction* –

- *Cinderella* –  
Cinderella,

24

GPS.

- *Static Co-Op tracking* –



. 3-14.

11.

**Seed****Auto**

( . 3-15

. 3-16),

**OK.**

- *Enable Auto Seed* ( ):

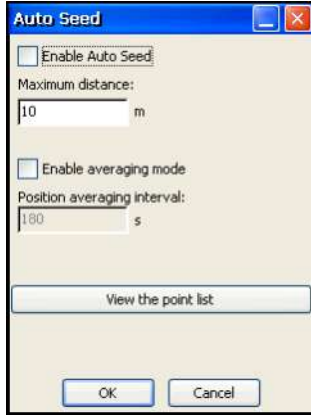
RTK

- *Maximum distance:*

- *Enable averaging mode:*



Position averaging interval.



. 3-15.

- **View the point list,**

*GRX Utility.*

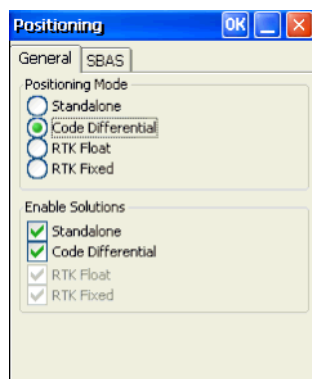
12.

**Positioning,**

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

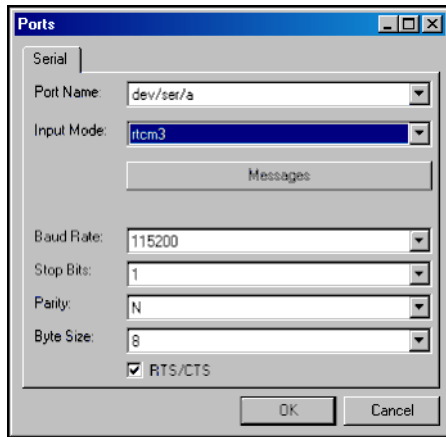
- *Positioning Mode* –  
Standalone; RTK  
RTK float RTK fixed.
- *Enable Solutions* –
  - Standalone – 3D
  - Code differential –
  - RTK float –

– 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.

□

“

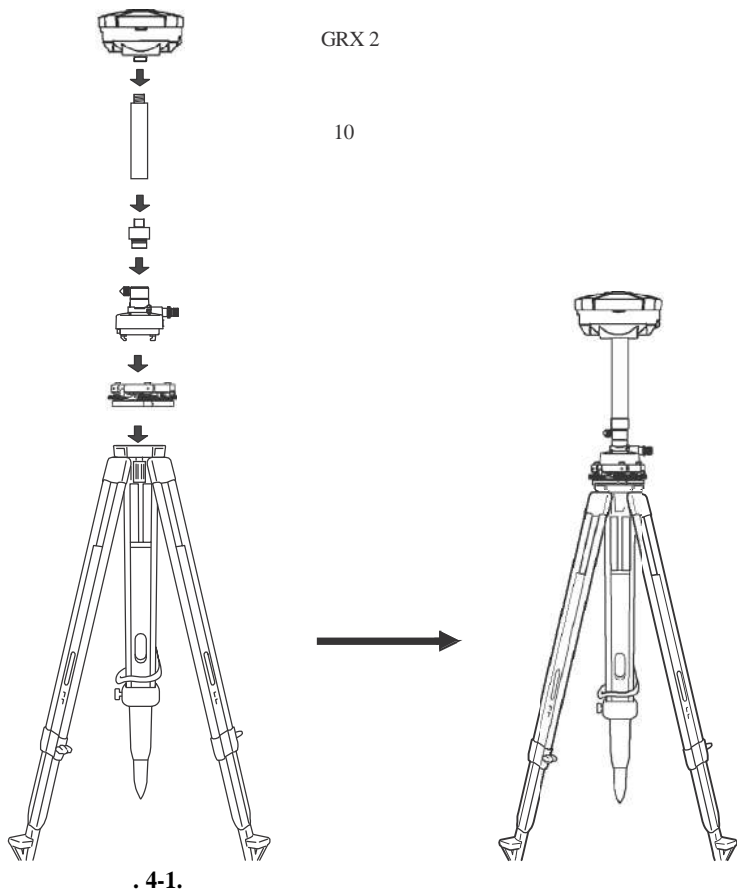
”

. 4-3.

( . 4-1):

1.

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

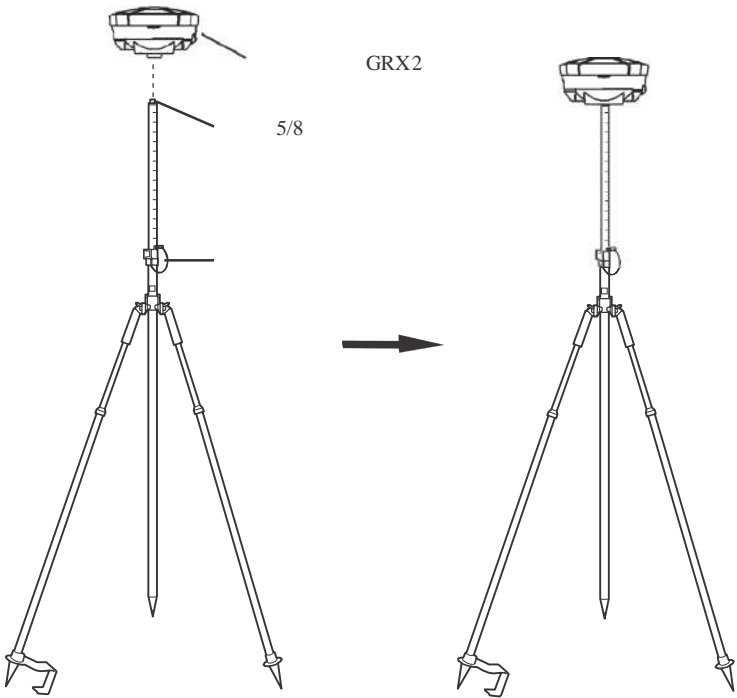




( . 4-2 . 4-3):



1. GRX2 (5/8 )



. 4-2.

GRX2

## 2:

3D

- 
- 
- 
- 
- 

GPS/

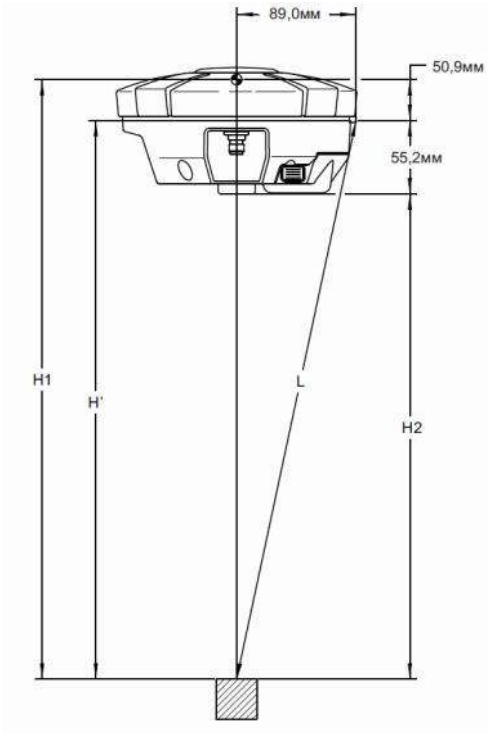
GPS/

-

1.

( .4-3 .4-5).

2.



.4-3.

- L:

- H':

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

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

- H2:  $(H2 = H' - 55,2)$

. 4-1.

	L1	L2
	106,1	102,3

( , , ).

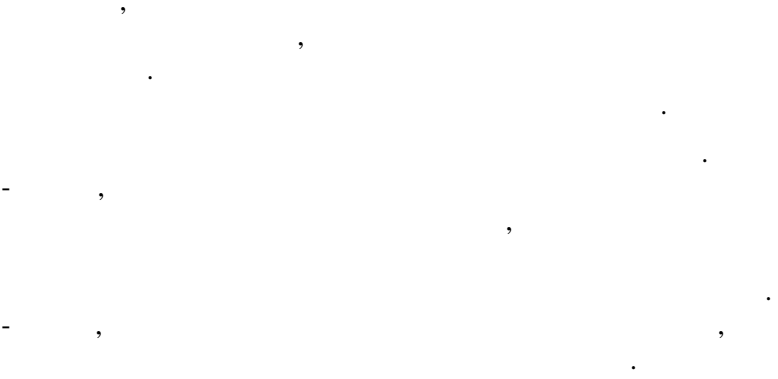
(5-30

(DOP)



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15



( , Spectrum Survey Field).

# **& Go) (Stop**

(stop & go) .  
*Spectrum Survey Field.*







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 ,  
 (GPS,  
 Bluetooth ),  
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 Sokkia  
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 .

## GRX Utility

### GRX Utility

1. GRX Utility. “ ” . 2-9.

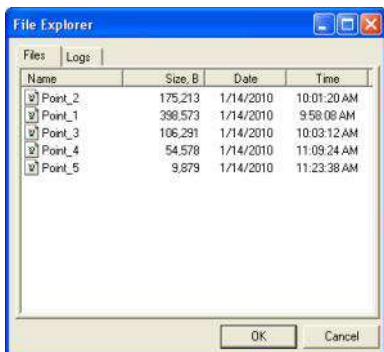


2.



*File Explorer,*

( . 5-1).



. 5-1. File Explorer

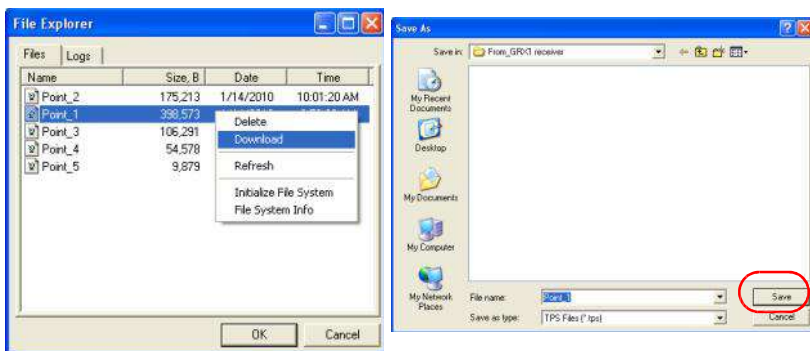
3.

*Download.*

*Save As*

( . 5-2).

*Save,*

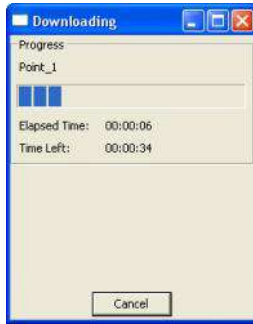


. 5-2.



4.

*Downloading,*



. 5-3.

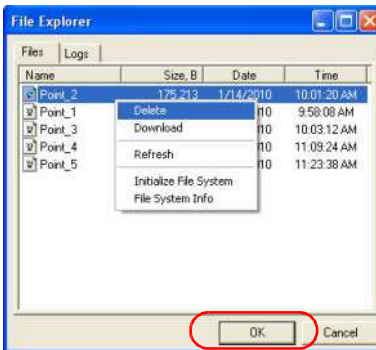
## GRX Utility

1 2,  
. 5-1.

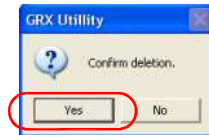
*File Explorer*

*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

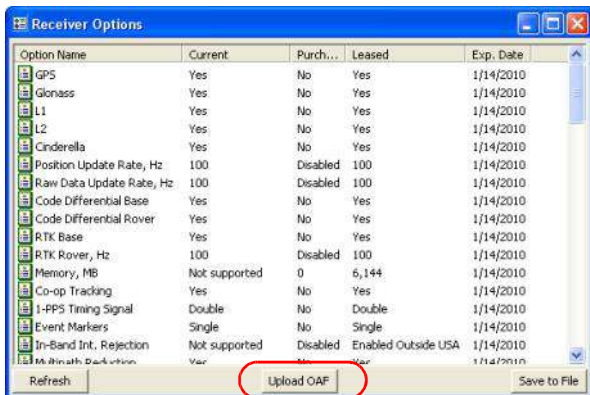
GRX Utility.

1. GRX Utility. “ . 2-9.

- 2.



***Receiver Options,***



. 5-5.

Sokkia.

Sokkia: options@sokkia.com

1.

1 2,

“ . 5-5.

2.

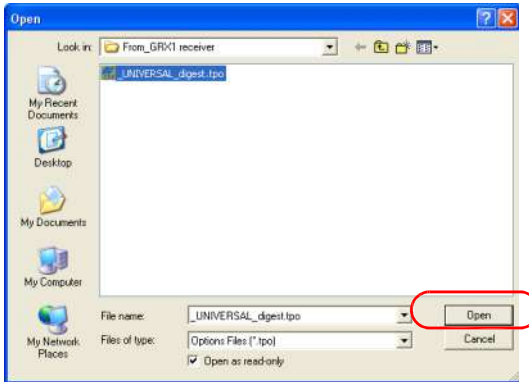
**Upload OAF**

**Receiver**

**Options** ( . 5-5).

3.

**Open** ( . 5-6).



. 5-6.

4.

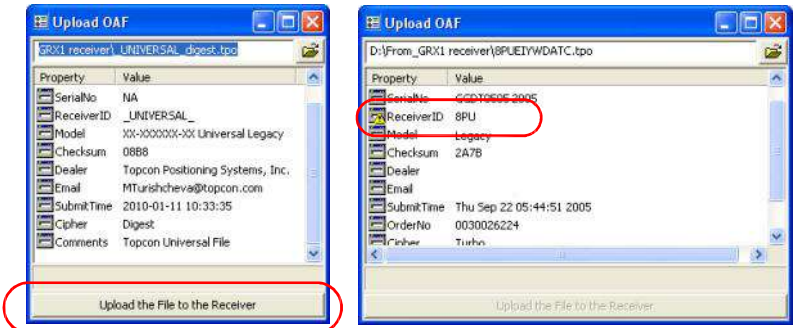
**GRX Utility**

**Upload OAF**

ID



## 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 ( )

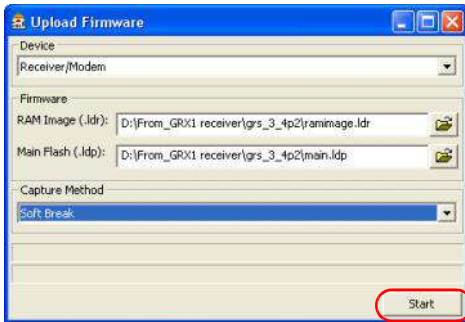
GRX, :

1. GRX Utility. “ . 2-9.

2.  Firmware

### Upload Firmware,

3. *Device* “Receiver/modem”.
4. *Capture Method* “Soft Break” ( ).
5. *RAM* *Flash*



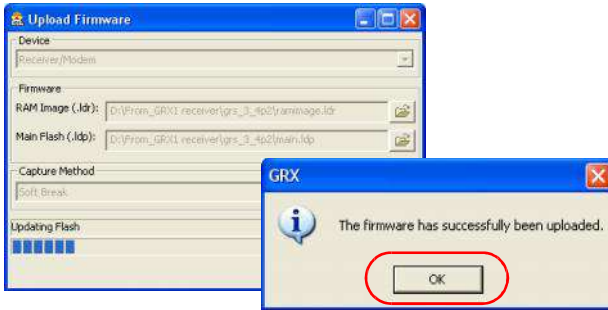
. 5-9.



- 6.
- 7.

Start.

OK.



. 5-10.

# (NVRAM)

(NVRAM)

NVRAM

NVRAM

NVRAM

NVRAM

NVRAM

( 15 ),

NVRAM

# NVRAM

## GRX Utility

1. GRX Utility. “ . 2-9.

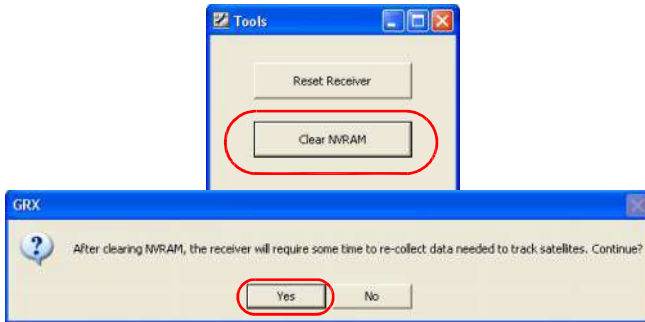
- 2.



Tools

*Tools,*

NVRAM



. 5-11. Tools

3. Clear NVRAM, Yes,



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GRX2.

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Sokkia,

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Sokkia.

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(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).



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- / “ . 2-5.

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• ” . 2-5. “

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⇒ ,

Sokkia.

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GRX2.

⇒ :

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• “ GRX2” . 1-10 “  
” . A-12.

⇒ .

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- 1. **GRX Utility.**
  - 2. **Configuration Receiver Ports.**
  - 3. **Input**
- “Command”.



” . 2-14.



(L1/L2, GPS/GLONASS)

- “ ” . 5-4.

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Sokkia

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*GRX Utility.*



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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

⇒

⇒

⇒

⇒ COM

- , ,
- , ,
- , , Sokkia ,
- , 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 ( #: )**



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“PWR”.

Sokkia



2(C)

- 1.
- 2.
- 3.

RS232 ( . “ . RS232”  
2-10).

**Configuration Receiver General.**

*Turn on/off Slots*

Slot 2(C).

**Bluetooth**

**Bluetooth**



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Bluetooth

Bluetooth

2-11.



Bluetooth.

1. Bluetooth, Bluetooth manager.
2. Bluetooth.

## GRX Utility

GRX Utility.

### GRX Utility



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Sokkia



Bluetooth, ,

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Bluetooth.

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Bluetooth.

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GRX2 - A.



- “ ” .5-4.
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- 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,

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3.

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4.

5.

24

Sokkia

Sokkia.

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

“ ”: <http://www.gsi.ru>



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Bluetooth

GSM ( ),

Sokkia Topcon

226-

SD/SDHC.

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NOTICE

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NOTICE

PDOP

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NOTICE

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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
<b>NMEA</b>	
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
<b>DGPS</b>	
	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

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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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**Spectrum ( ) Spread**

. -4

. A-4.

Spread Spectrum

( / )	902 - 928 M ( ) 915 - 925 ( )
	, FHSS
	5 ,
	128
	100
	FSK, 64
	135
	- , -
	, ,
	FH915, FH915+
<b>(TX)</b>	
	250 (24dBm) / 1 (30dBm),
<b>(RX)</b>	
	-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"> <li>• GMSK/DBPSK – 9600</li> <li>• DQPSK – 19200</li> </ul>
12,5	<ul style="list-style-type: none"> <li>• GMSK/DBPSK – 4800</li> <li>• DBPSK – 9600</li> </ul>
	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; ;

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**(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		





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Sokkia

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Sokkia.

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NOTICE

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RTK

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RTK

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• Sokkia,

**FCC**

(FCC)

FCC

OET65.

) : , , ( 20 .  
15 FCC.

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: GRX2

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

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RSS-102

1.

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(2)

2.

3.

B

6,

: [www.hc-sc.gc.ca/rpb](http://www.hc-sc.gc.ca/rpb).

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GRX2/U 2.4dBi

410-440MHz ANTENEX/G420BN

440-470MHz CENTURION/EVR450

GRX Utility



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**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,

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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