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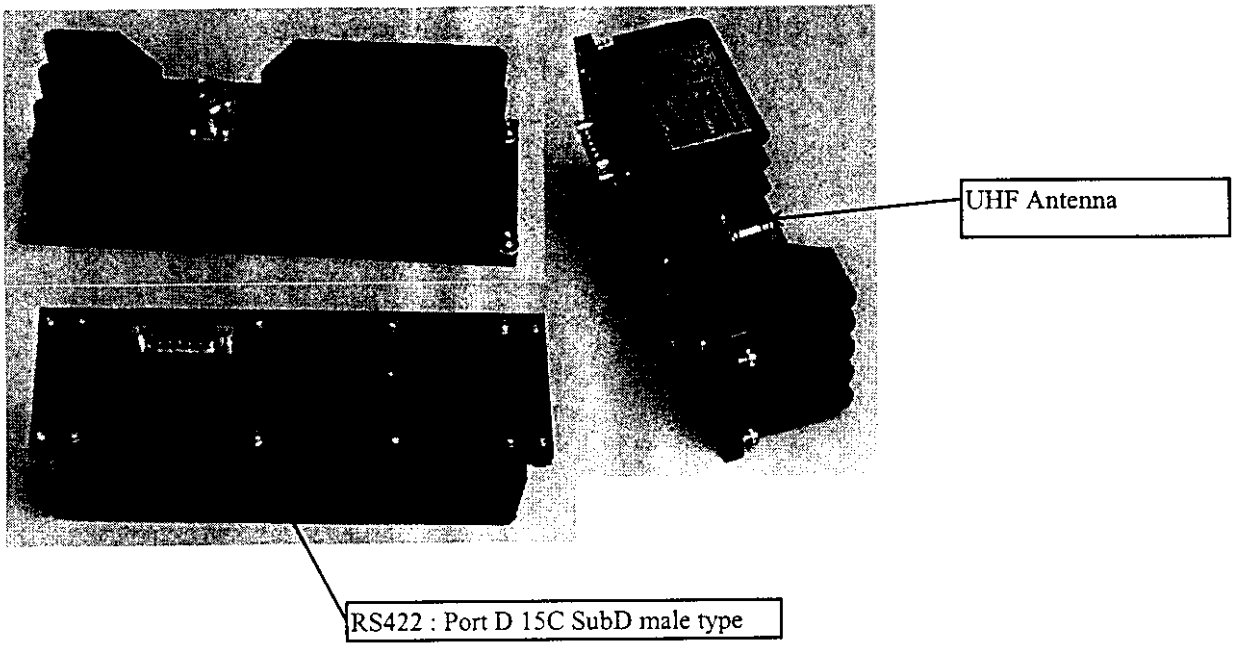
FCC ID: NZI126E1075203C
Item 7 of EXHIBITS

TRANSMITTER FEATURES

And

Programming commands

TDEM MODULE N° 26E1075203B
UHF TRANSMITTER



UHF Data link option

Introduction

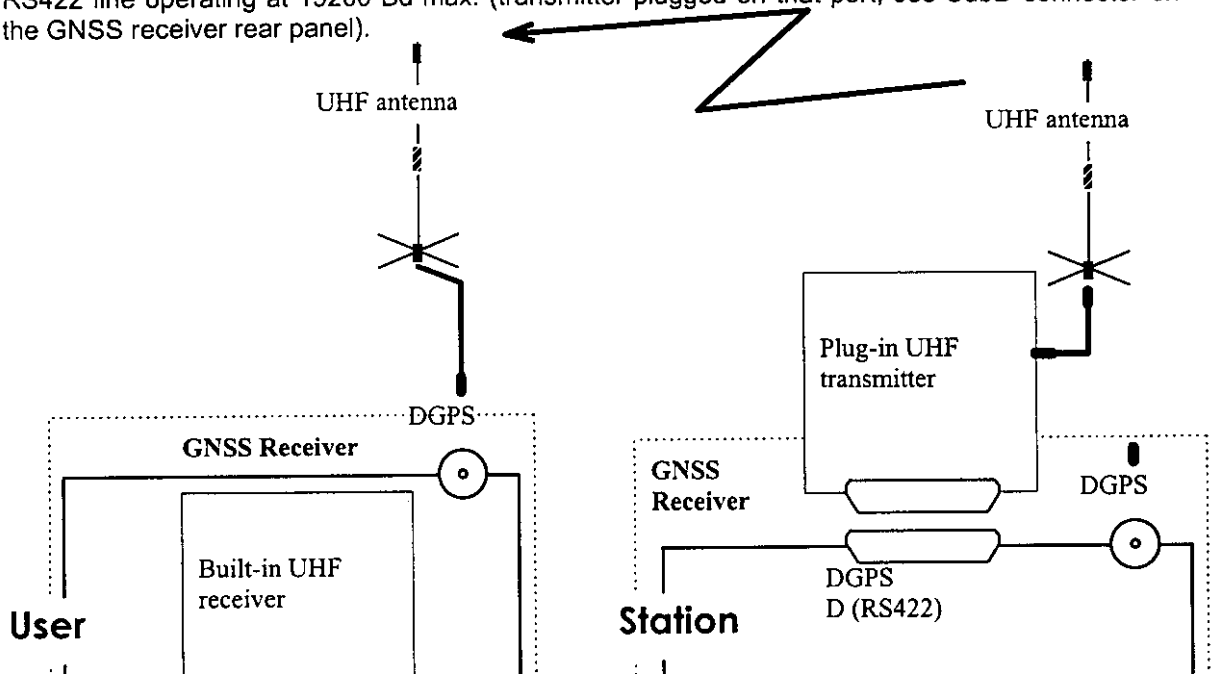
The UHF data link allows operations in the UHF DGNSS, the KART or the LRK® format.

The UHF data link comes as a hardware option, unless you have an Aquarius 500x xK or Aquarius 500x xD receiver, in which case the UHF data link is part of your purchase.

If your initial purchase does not include this option and you buy it later, you will have to make it installed by your usual retailer as this operation requires some technical skills.

The UHF data link consists of a UHF transmitter and a UHF receiver. Typically, the transmitter is installed in a reference station, the receiver in a mobile.

The UHF transmitter or receiver communicates with a DSNP GNSS receiver through a serial RS422 line operating at 19200 Bd max. (transmitter plugged on that port; see SubD connector on the GNSS receiver rear panel).



Installation:

- UHF transmitter

  Installed at the reference station, it is simply plugged onto the SubD 15-C connector located on the rear panel of your receiver (Port D, R422, DGPS). The UHF transmitter is secured on the rear panel by four screws.
- UHF receiver

  Only skilled people can perform this operation as it requires to open the receiver case.

- UHF antenna

  A PROCOM GP450-3 whip antenna is used both at the reference station and at the mobile.The acessory kit consist of :
  - 1 * coaxial cable (6.5m long for the reference station, 30 long for the reciever).
  - 1 * TNC-N adapter.
  - 1 * antenna mast.
  - 1 * stainless bracket ref.33100115.
  - 1* set of Allen wrenches, provided to secure the antenna base on the mast.

  For the installation of this antenna, you sould take the same precaution as with a GPS antenna. As said above, the geographical location of the UHF antenna is not of prime importance for the DGNSS processing as much.

  - Assemble the PROCOM antenna.
  - Slip the coaxial cable into the hollow mast and plug it on the UHF antenna connector.
  - Move up the mast along the coaxial cable to insert it into the antenna base.
  - Tighten the four Allen screws to secure the antenna on the mast.
  - Using the stainless bracket, secure the assembly on the main mast.
  - Connect the other end of the coaxial cable to the DGNSS receiver input using the TNC/N adapter.

Programming Steps:

The transmitter and the receiver may be set up either through the DGNSS receiver or using a dedicated interface box.

Using a DGNSS receiver, refer to the DGNSS receiver user's manual.

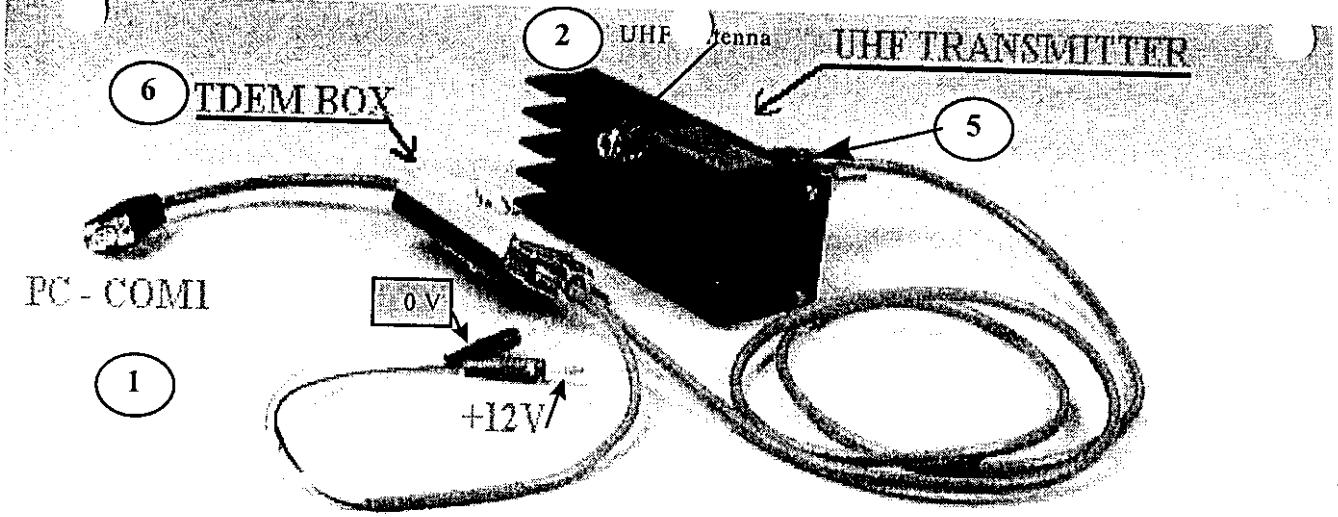
Procedure to set up the transmitter and the receiver using the dedicated interface box.

See connection on the following page.

You may use PC and communication software (WINDOWS TERMINAL or PROCOM) to send the necessary remote commands.

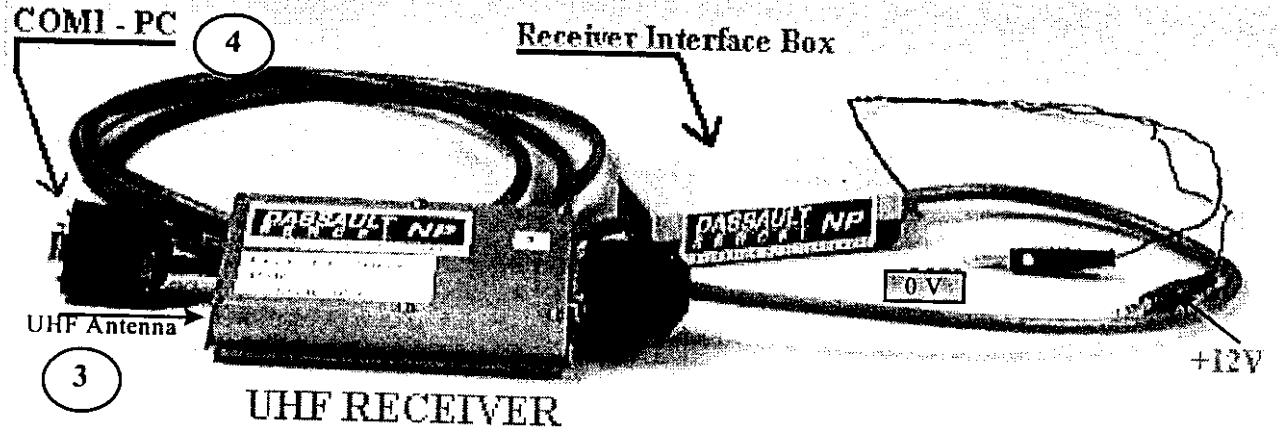
Communication parameters:

Baud rate	: 19200 bps.
Data bits	: 8
Stop Bit	: 1
Parity	: No



NOTA : There is **not** cable in normal condition. The transmitter is directly connected with a DSNP GPS RECEIVER. (5) The cable is only for test.

On the TDEM BOX (6) you can connect an oscilloscope ; synchro signal in sequential transmission



Connect the transmitter to the power suply : +12Volts

Connect the PC to the Canon 15c (1)

Put some attenuator (30dB or 60dB or 90db) on UHF Antenna and a coax. to the UHF Antenna receiver.

With a PC and Windows 3.1, load a TDEM.TRM file in terminal program.
OR
With DOS, use the TRS.exe program.

When the transmiter parameters are OK, you can unconnect the PC during test.

NOTA : There is **not** cable in normal condition. The transmitter is directly connected with a DSNP GPS RECEIVER

Connect the coax. to the UHF reciver antenna (3)

You can connect the PC on Canon 15C (4)

and verify the data reception with the program

TDEM.TRM

1. Frequency modification.

$GPMSK, 458550.0,N,4800,M,1.0<CR,LF>.

Comment: 458550.0 is the desired frequency in KHz.

2. Frequency request.

$GPCRQ,MSK<CR,LF>.

Comment: when the unit receives this command and if the communication parameters are correct, it'll send back the programmed frequency.

3. Power ON (CW mode).

$PDAS,TEST,8,5 <CR,LF>.

Comment: the transmitter will broadcast a non-modulated signal.

4. Frequency center (re-center the transmission in CW mode only).

$PDAS,PSAT,1<CR,LF>.

Comment: that command re-centers the non-modulated signal on the right frequency transmission.

5. Power ON (modulated mode, carrier modulated with pseudo-random code).

$PDAS,TEST,8,6 <CR,LF>.

Comment: that command makes the transmitter broadcast a 511bit pseudo-random code modulated signal.

6. Power OFF.

$PDAS,TEST,8,0 <CR,LF>.

Comment: stop test in progress.

7. BER test (Bit Error Rate test; receiver only).

$PDAS,TEST,8,6 <CR,LF>.

Comment: when receiving that command, the receiver will send back the following:
$PDAS,BER,00000,*6A
where 00000 stand for the number of bits lost .Note that the transmitter must be in modulated mode to test the receiver BER.

8. Unit reset.

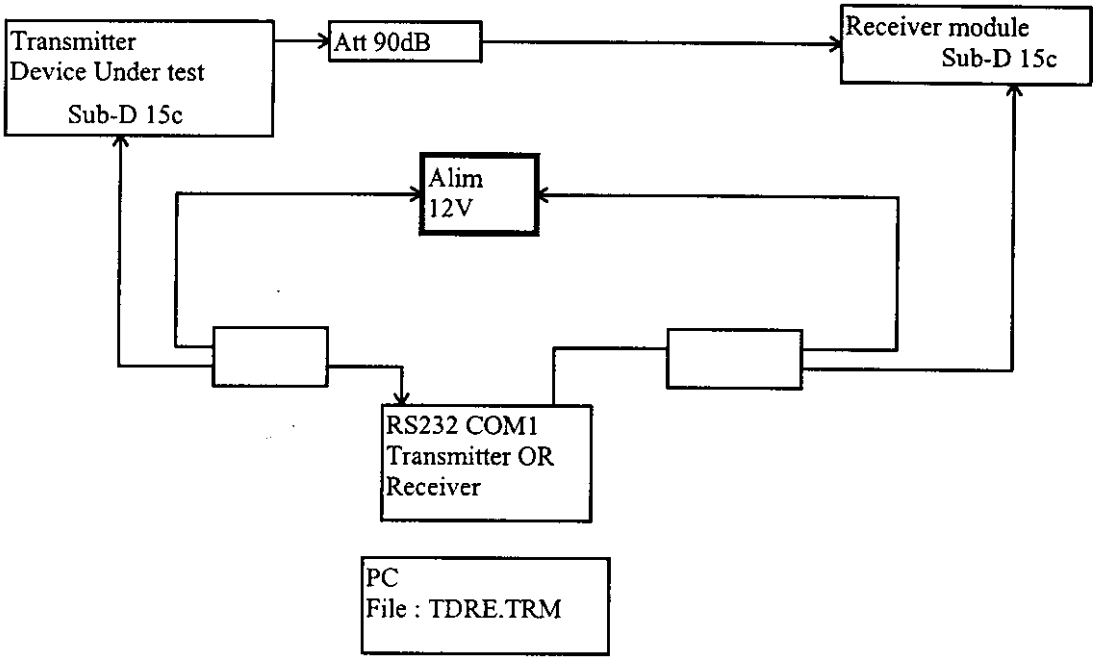
$PDAS,RESET<CR,LF>.

Comment: Restart the unit.

9. Unit version.

$PDAS,IDENT<CR,LF>.

Comment: when receiving that command, the receiver will send back its software version.
Note : to change from transmission mode to another, you must firstly stop the power by sending the command Power OFF.



Command List with UFH Transmitter or UHF Receiver (with TRS.EXE program DOS).

VER →	**$PDAS,IDENT ↵**	version identification
FREQ→	**$GPCRQ,MSK↵**	Frequency
POSFREQ→ Modulation type.	**$GPMSK,444550.0,M,4800,M,1.0↵**	To Change frequency or
DEFAUT →	***$PDAS,DEFLT↵***	*no necessary for test*
RESET →	**$PDAS,RESET↵**	*no necessary for test*
CONF→	**$PDAS,TABLE↵**	*no necessary for test*
PSAT →	**$PDAS,PSAT,1↵**	To center principal frequency
Rec All stations	**$PDAS,NSTRCK,00↵**	*no necessary for test*
511 ON→	**$PDAS,TEST,8,6↵**	Data Transmission ON (511 bits)
TEST OFF→	**$PDAS,TEST,8,0↵**	Stop Transmission
CW ON →	**$PDAS,TEST,8,5↵**	Transmission ON
COEFF NIV →	**$PDAS,TEST,8,7,120,0491,060,2458↵**	*no necessary for test*
CWS ON→	**$PDAS,TEST,8,8↵**	Sequenced Transmission ON
NIV→	**$PDAS,NIV↵**	*no necessary for test*
DAT ON→	**$PDAS,TEST,8,9**	data ON.