



## Remote Real-Time On-line Demonstration of mmVu<sup>®</sup> Software (RODEM)

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## What is RODEM?

- RODEM is a demonstration of the following Gemini Navsoft Technologies (GNT's) mmVu<sup>®</sup> software products;
  - Real-time processing: mmVu<sup>®</sup> Solver, mmVu<sup>®</sup> Server, mmVu<sup>®</sup> Synergizer
  - Post-processing: mmVu<sup>®</sup> LabCue, mmVu<sup>®</sup> LabTime, mmVu<sup>®</sup> LabSync
- RODEM is offered for you to evaluate the performance of GNT's mmVu<sup>®</sup> software.
- RODEM can be implemented either in a real-time or post-processed mode.
- RODEM can be setup using either your hardware at your site or GNT's test facilities at the GNT head office in Canada.
- RODEM is offered for free.
- mmVu<sup>®</sup> Client (Demo) software displaying the results in real-time is also offered by GNT for free.
- You will be responsible for the cost of the hardware setup and Internet connection in your location.

## What does RODEM demonstrate to you?

- Performance and capabilities of mmVu<sup>®</sup> software products
- GNSS data processing results
- Results and analysis with mmVu<sup>®</sup> Client (Demo) software

## How to apply a free RODEM

- Complete the application form attached and send it to GNT.

## How does RODEM work?

- Step 1: Select one of GNT's mmVu<sup>®</sup> software products and type of RODEM that fits your needs.
- Step 2: Complete the application form and send it to GNT.
- Step 3: Set up reference and monitored GNSS receivers and antennas at your site, in case you are using your hardware.
- Step 4: Set up global Internet communication links for data streaming.
- Step 5: Install mmVu<sup>®</sup> Client (Demo) software at your computer.
- Step 6: Introduce a controlled displacement to a monitored station antenna in case RODEM is implemented using your hardware.
- Step 7: Monitor the displacement using mmVu<sup>®</sup> Client (Demo) software.

## Limited RODEM

- RODEM shall not be used for commercial purposes or third party demonstrations.
- RODEM may not be available in all cases due to technical reasons such as limitations on Internet connection or your network access.
- GNT disclaims all responsibility arisen from commercial uses of RODEM.

## RODEM Setup and Instruction

### I. Real-time processing software RODEM using your hardware set up in your site

#### 1. RODEM Hardware preparation and set up at your site

Hardware preparation	RODEM Software		
	mmVu® Solver	mmVu® Server	mmVu® Synergizer
GNSS receivers & Antennas	Single frequency (SF) (2 sets)	Dual frequency (DF) (2 sets)	Single frequency(1set) Dual frequency (1 set)
Data rate	1Hz (Higher data rate can be accommodated after consultation with GNT.)		
	Brand (Other compatible, or RTCM v.3 supported dual-frequency receivers may qualify.)		
	Reference station: 1 Monitored station: 1	Reference station: 1 Monitored station: 1	Reference station: 1 (DF) Monitored station: 1 (SF)
RODEM Number of Baselines	Single baseline (Large number of baselines can be accommodated after consultation with GNT)		
RODEM Baseline length	Up to 10 km (Longer baseline lengths can be accommodated after consultation with GNT)		
Communication	Serial to Ethernet Device Server (if your receivers do not have an Ethernet communication port)		
	Internet connection secured for test period		
Power supply	Secured for test period		
Computer	Any computer for RODEM (O/S: Windows) in which mmVu® Client (Demo) software is to be installed		

#### 2. RODEM site selection

- Preferably open sky environment
- Reference station: Stationary and stable location
- Monitored station: A location where controlled displacements can be introduced

#### 3. RODEM Communication Network

- Global Internet network is used for communication and data streaming.
- Data streaming between your site and GNT's site should not be interrupted during RODEM.
- RODEM may not be available in case when a firewall has been set up to protect your internal network.



#### 4. RODEM Instructions

- Step 1: Set up reference and monitored GNSS receivers and antennas at your locations.  
You may utilize an existing hardware set-up if the hardware is compatible.
- Step 2: Allow us to access your GNSS receivers at your location so that the original data from these receivers could be streamed into our computer at GNT’s head office in Canada through global Internet communication.
- Step 3: Introduce a horizontal or vertical displacement at the monitored receiver at anytime by moving the antenna.  
It is recommended to use a device such as the translation linear positioner to move the antenna of the monitored receiver by a specific amount.
- Step 4: Run mmVu<sup>®</sup> Client (Demo) at your computer to display the results in real-time.  
The mmVu<sup>®</sup> real-time processing software at the GNT head office processes the data and feeds the results back to mmVu<sup>®</sup> Client (Demo) at your computer through Internet.

## II. Real-time processing software RODEM using GNT’s test facilities

### 1. RODEM preparation in you site

Hardware preparation	RODEM Software		
	mmVu <sup>®</sup> Solver	mmVu <sup>®</sup> Server	mmVu <sup>®</sup> Synergizer
Computer	Any computer for RODEM (O/S: Windows) in which mmVu <sup>®</sup> Client (Demo) software is to be installed		
Communication	Internet connection secured for test period		

### 2. RODEM Communication Network

- Global Internet network is used for communication and data streaming.
- Internet connection should not be interrupted during RODEM so that GNT’s RODEM computer could feed the result to your computer.
- RODEM may not be available in case that a firewall system has been set up to protect internal network.

### 3. RODEM Instructions

- Step 1: Access our RODEM computer through Internet from your computer.
- Step 2: Point your browser to GNT website (www.gemini-navsoft.com) for live video streaming.
- Step 3: Watch a horizontal or vertical displacement introduced by us at the monitored station using the translation linear positioner.
- Step 4: Run mmVu<sup>®</sup> Client (Demo) at your computer to display the results in real-time.  
The mmVu<sup>®</sup> real-time processing software at the GNT head office processes the data and feeds the results back to the mmVu<sup>®</sup> Client (Demo) at your computer.



### III. Post-processing software RODEM

#### 1. RODEM Instructions

- Step 1: Collect data for post-processing using your GNSS hardware. At some point you will introduce a displacement by a specific amount and collect some more data.
- Step 2: Once the data collection is finished, convert the data to the RINEX format and send it to us.
- Step 3: Using the mmVu<sup>®</sup> post-processing software GNT will generate a processing report showing the displacement.

#### 2. Instructions for Post-processing Data Collection

- 1) Use data sampling interval of 10 seconds or higher.

Note: mmVu<sup>®</sup> post-processing software covers either short or long baselines. If the length of baseline is longer than 100km, we normally recommend a higher data rate (e.g., 1 Hz).

If you are working on a few kilometre baselines, a lower data rate (e.g., 10 sec) will be ok.

- 2) Select a site with minimum obstructions, preferably open sky environment.

Note: mmVu<sup>®</sup> post-processing software performs well even under challenging conditions such as multipath-rich environment, significant high difference between stations, and long-baselines.

- 3) Collect minimum 3 days of data prior to the introduction of a displacement.

Note: mmVu<sup>®</sup> Dual-processor Engine (our proprietary TDD and DDC filters) converge quickly in a few minutes or hours depending on testing conditions.

To achieve the highest precision of the filters, we normally recommend initial convergence time (i.e., just one time) for a few days.

Once mmVu<sup>®</sup> is stabilized, normally you don't need any re-initialization of the filters even if you have a long period of data gap.

- 4) Collect minimum 5 days of data after the introduction of a displacement.

Note: To evaluate the full accuracy of mmVu<sup>®</sup> post-processing software, we normally recommend to collect a sufficient time of data.

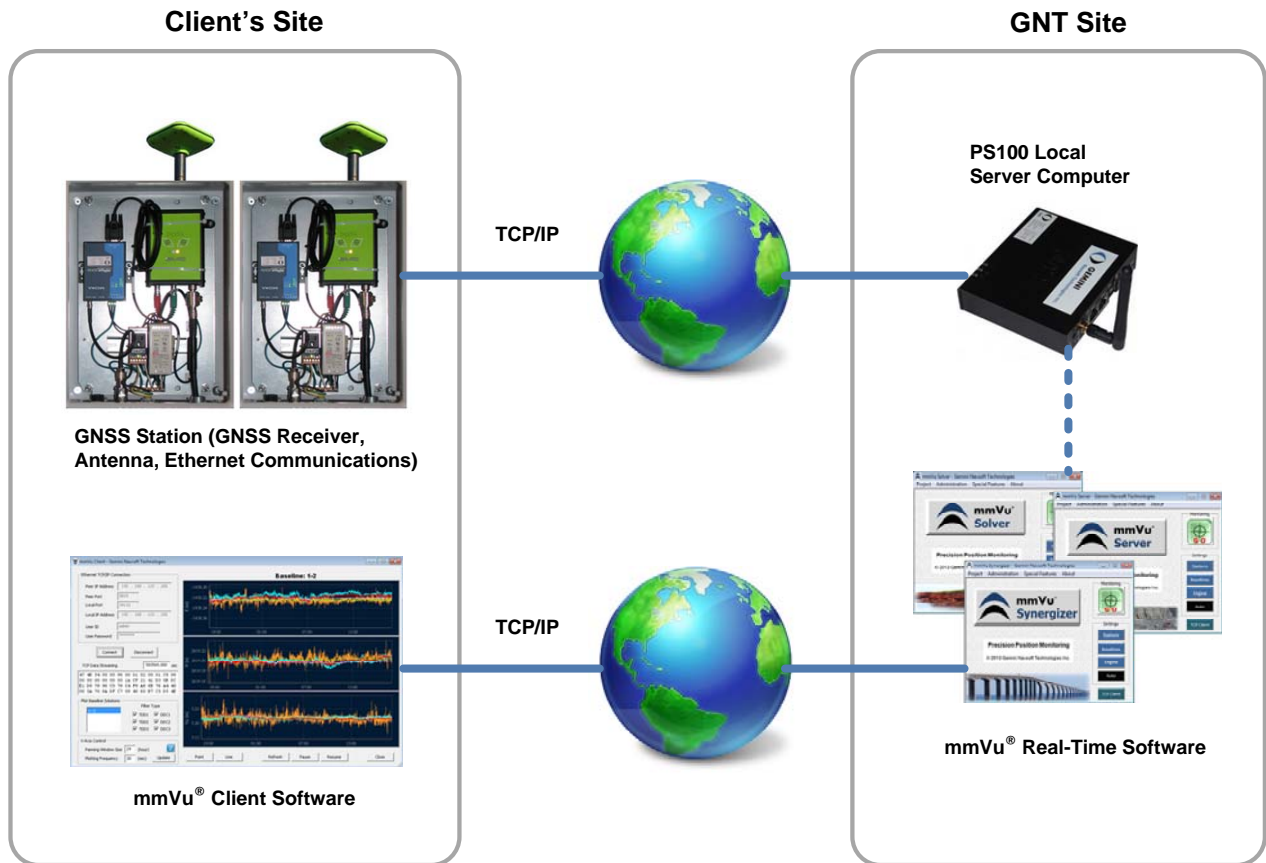
- 5) Use the web site below to transfer the RINEX files to us.

Web site: [www.transferbigfiles.com](http://www.transferbigfiles.com)



**RODEM Diagram**

Real-time processing software RODEM using your hardware set up in your site



**RODEM Support Team**

Contact our RODEM Support Team below if you have any question and technical problem during the RODEM.

- Technical Support: [supports@gemini-navsoft.com](mailto:supports@gemini-navsoft.com)
- Sales & Marketing: [sales@gemini-navsoft.com](mailto:sales@gemini-navsoft.com)



**RODEM Application Form**

**Applicant Information**

Company Name			
Address	City		Country
Contact Name			Tel. No.
Division / Title			Fax No.
Date (dd/mm/yyyy)			e-mail

**RODEM Information**

RODEM Type	Real-time RODEM		Software Name	
	Post-processing RODEM			
RODEM Site	My site		GNT site	
Location	City			
RODEM Period (dd/mm/yyyy)	From		To	
	(Maximum RODEM period: 4 weeks)			
GNSS Receivers	Brand		No. of receivers	
No. of baselines		Approx. baseline length (m)		
Other information if any				