

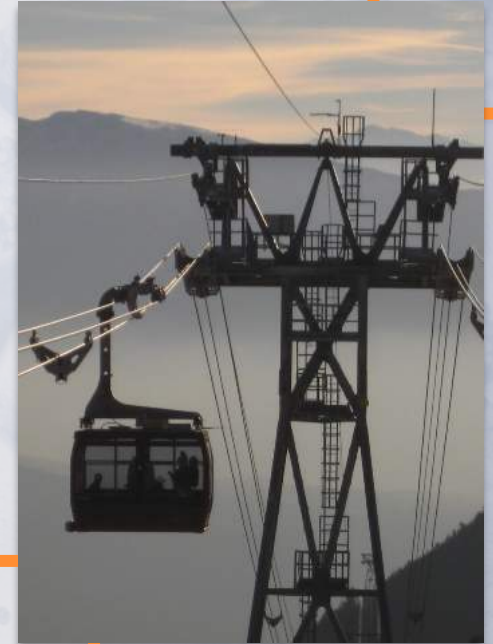


TRAINING SESSION



SESSION AGENDA

1. **Geocube System main features**
2. **Presentation of equipment**
3. **General operating principles**
4. **Installing a new project**
5. **User interface**
6. **Operating a Geocube system**

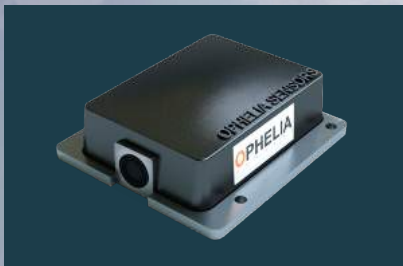


A REAL-TIME & PRECISE MONITORING SOLUTION

- Monitor slow, low-amplitude displacements
- Set up a continuous survey of millimetric deformations of infrastructure and ground movements
- Operate large networks of monitored points
- Remotely access and download data in real-time



WHAT IS THE EQUIPMENT YOU RECEIVED?



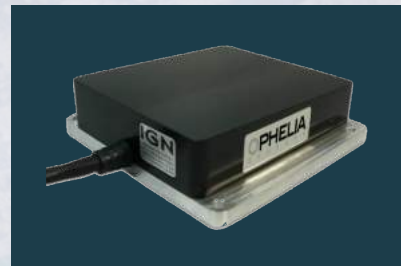
Geocube

- GNSS receptor with radio communication
- Installed in positions to be monitored and fixed reference
- 5V – 14.6V DC powering
- Requires radio antenna



Geoport

- Communication gateway to collect Geocube information through radio and transmit it through 3G/LTE
- Installed in location that allows radio connection with Geocubes
- 5V – 18V DC powering
- Requires SIM card (3G/LTE) and radio antenna



Geoscope

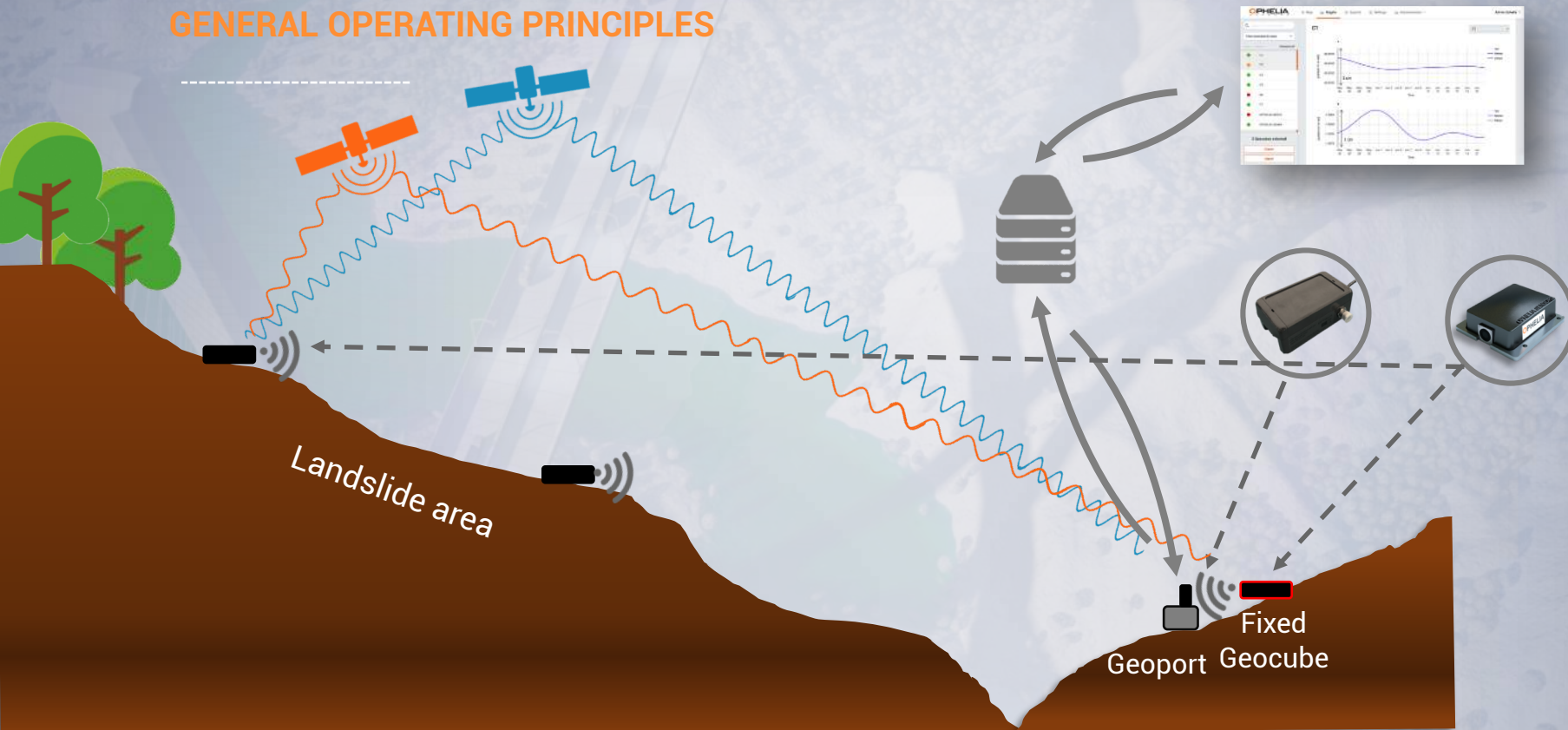
- Communication device to set Geocube and Geoport parameters locally and test the radio network
- Mobile device used during the installation phase
- USB powering
- Requires radio antenna



Miscellaneous

- Radio antennas
- Power packs
- Masts
- Other

GENERAL OPERATING PRINCIPLES



INSTALLING A NEW PROJECT (I) First steps

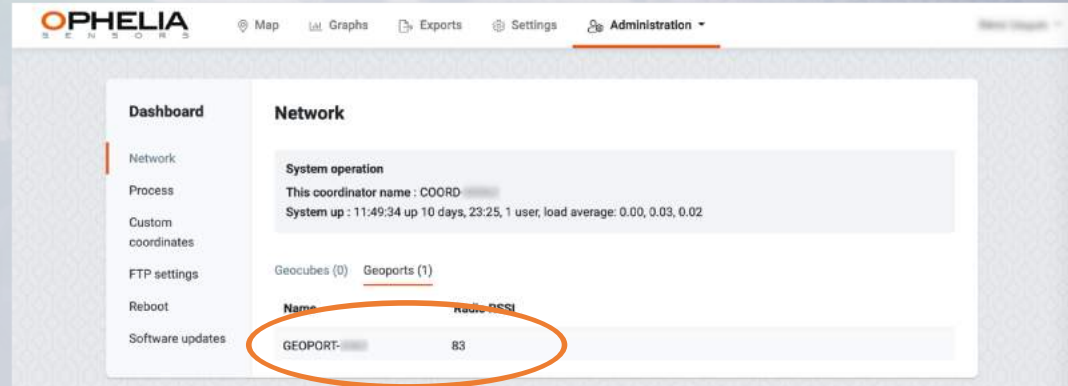
- Download Geosight Manual (<https://ophelia-sensors.com/products>)
- Download and install Geosight program (<https://ophelia-sensors.com/products>)
- Locate Buccaneer to USB extensions
- Remove PIN protection from SIM card
- Know the APN of your SIM card provider
- Insert SIM card in Geoport
- Connect antennas to Geocubes, Geoport and Geoscope
- Locate the PA Manual and Installation Manual, received by mail
- Connect to your User Interface

Product & system information
Operating principle & network architecture
Datasheet
Geo3 user manual
Geosight user manual
Download Geosight software (Windows)
Download Geosight software (Mac)
Configure a radio network



INSTALLING A NEW PROJECT (II) Configuring a Geoport

- Connect Geoport to computer using USB extension
- Launch Geosight
- Set APN corresponding to your service provider
- Check LED flashes slowly
- Check that Geoport appears on your user interface after a few minutes



INSTALLING A NEW PROJECT (III) Detecting Geocubes

- Power Geocubes
- Press "Detect" on the Process page
- Check new Geocubes are added to your project on the Network page

Dashboard

- Network
- Process**
- Custom coordinates
- FTP settings
- Reboot
- Software updates

Process

Geocube radio detection
Discover Geocubes within radio range of Geoports.

Detect

Dashboard

- Network**
- Process
- Custom coordinates
- FTP settings
- Reboot
- Software updates

Network

System operation
This coordinator name : COORD-
System up : 11:44:51 up 11 days, 23:20, 1 user, load average: 0.17, 0.92, 0.88

Geocubes (9) Geoports (1) Filter Geocubes

State	Name	Serial name	Moving	Status	Geoport	Properties
●	OPHELIA-00184	OPHELIA-00184	UNUSED	Geocube is not part of the process	GEOPORT-0083	Show
●	OPHELIA-00159	OPHELIA-00159	UNUSED	Geocube is not part of the process	GEOPORT-0083	Show

INSTALLING A NEW PROJECT (IV) Setting a process

- Click on "Define" on the Process page
- Select Geocubes to be used as fixed/reference for your project
- Select Mobile property for measurement points and associate it with one of the Fixed Geocubes previously defined
- Enter custom Geocube names if necessary
- Set calculation frequency (30s unless otherwise necessary)
- Press "Define"

Define process ✕

Serial name	Moving property	Custom name	Fixed Geocube
OPHELIA-00159	<div style="border: 1px solid orange; border-radius: 50%; padding: 2px; display: inline-block;"> UNUSED <input checked="" type="checkbox"/> ORIGIN MOBILE </div>	<input type="text" value="Custom1"/>	OPHELIA-00159 ▾
OPHELIA-00182	UNUSED ▾	<input type="text" value="OPHELIA-00182"/>	OPHELIA-00159 ▾
OPHELIA-00183	UNUSED ▾	<input type="text" value="OPHELIA-00183"/>	OPHELIA-00159 ▾
OPHELIA-00184	UNUSED ▾	<input type="text" value="OPHELIA-00184"/>	OPHELIA-00159 ▾
OPHELIA-00189	UNUSED ▾	<input type="text" value="OPHELIA-00189"/>	OPHELIA-00159 ▾
OPHELIA-00216	UNUSED ▾	<input type="text" value="OPHELIA-00216"/>	OPHELIA-00159 ▾

Calculation frequency ⓘ

 sec.

Cancel Define

INSTALLING A NEW PROJECT (V) Checking radio network

- Connect the Geoscope to your computer and launch Geosight
- Geoscope first detects all powered devices in its immediate surroundings
- Once completed, click on "Select all" and press "Test link RSSI" to check radio signal strength between each device
- When performing a definitive installation, you can run the Test and save the results in a csv file

RSSI > -70 dBm	good
-70 dBm > RSSI > -85 dBm	weak
-85 dBm > RSSI	very weak

The screenshot shows the Ophelia Geosight interface. At the top, the Ophelia logo is visible. Below it, there is a table with the following data:

Device 1	Device 2	RSSI
Geoscope-0001	Ophelia-01048	-86 dBm
Ophelia-01048	Geoscope-0001	-83 dBm

The 'select all' button in the top left of the table is circled in orange. Below the table, there is a section titled 'Signal strength (RSSI) from Ophelia-01048 to Geoscope-0001' with buttons for 'Show links on a map' and 'Details'. Below this are two buttons: 'Test link RSSI' (highlighted in blue) and 'Save as CSV'. At the bottom, there is a list of actions: 'Range test', 'Spectrum analyzer', 'Configuration', and 'Properties'.

INSTALLING A NEW PROJECT (V) Changing radio subnetworks

- When using several Geoports on a single project to link each Geocube to a unique Geoport
- Select device and press "Configuration"
- Enter a new name for network ID and press write



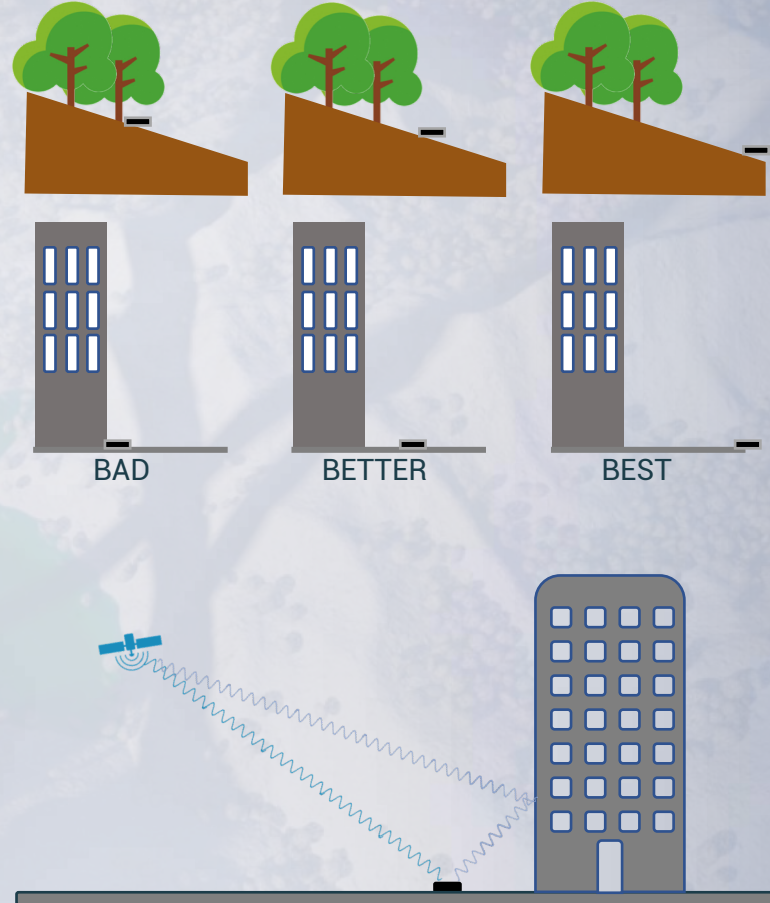
- Devices can only communicate with the devices using the same Network ID (Geocubes, Geoports and Geoscope)
- Keep track of the Network ID used and create a simple system (e.g. "212" for all devices linked to Geoport-0212)

The screenshot shows the Ophelia web interface. At the top, there's a table with columns for device names and signal strength. The table contains two rows: 'Geoscope-0001' with a signal strength of '-86 dBm' and 'Ophelia-01048' with a signal strength of '-83 dBm'. Below the table, there's a section titled 'Signal strength (RSSI) from Ophelia-01048 to Geoscope-0001' with a 'Test link RSSI' button and a 'Save as CSV' button. A list of devices is shown below, with 'Geoscope-0001' and 'Ophelia-01048' circled in orange. On the right side, there are buttons for 'Range test', 'Spectrum analyzer', 'Configuration', and 'Properties'.

The screenshot shows the 'Geoscope-0001' configuration window. It has a title bar with three colored buttons (red, yellow, green) and the text 'Geoscope-0001'. Below the title bar, it says 'You are configuring Geoscope-0001'. There are three rows of configuration fields, each with a 'Read' and 'Write' button. The first row is 'Last Packet RSSI' with a value of '86' and a unit of '-dBm'. The second row is 'Network ID' with a value of '07DA', which is circled in orange. The third row is 'Channel' with a value of '12'.

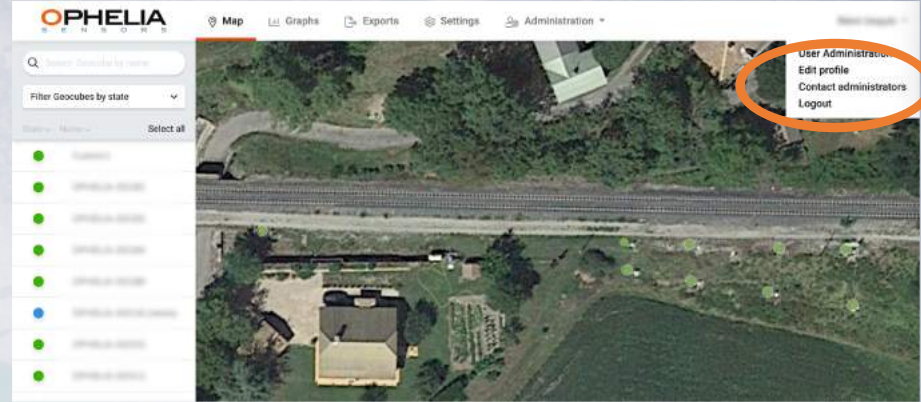
INSTALLING A NEW PROJECT (VI) Recommendations

- If possible, place Geocubes where there is a maximum sky view. A poor sky view will lead to discontinuous and imprecise data
- Check radio connections are robust enough for the whole network using the Geoscope
- Placing Geocubes a meter above ground-level enhances radio connections and improves satellite reception
- Fixed Geocube is key for all calculations. Pay special attention to sky view, powering and connection to Geoport
- Avoid nearby metal/glass structures since they reflect satellite signals (multipaths)



USER INTERFACE (I) Managing users

- To create a new user, press “User Administration” and then “Create new user”
- Fill in data for the new account :
 - user : will not have access to Administration tab
 - Admin : will have full access and be able to change parameters of the project
- Press “Add”, an e-mail will be generated inviting the new user to lo on the site



Register new user

Name

E-Mail Address

Role

Choose Role
admin
user

Cancel Add

USER INTERFACE (II) Setting an FTP link

- Go to "Administration" and "FTP settings"
- Click on the checkbox and fill up the information regarding your FTP server
- Once completed, press "Save"
- Position and sensor files will be transferred to your server at the set rate
- You can also download the data manually on the "Exports" tab which will generate a csv file

FTP settings

Enable FTP client
Use this service for pushing data on external FTP server.

Rate
10 minutes

Login Password
kylia

Server address Port Path
149.202.53.58 21 /

Projection type
Geocentric Cartesian (x,y,z)

Save

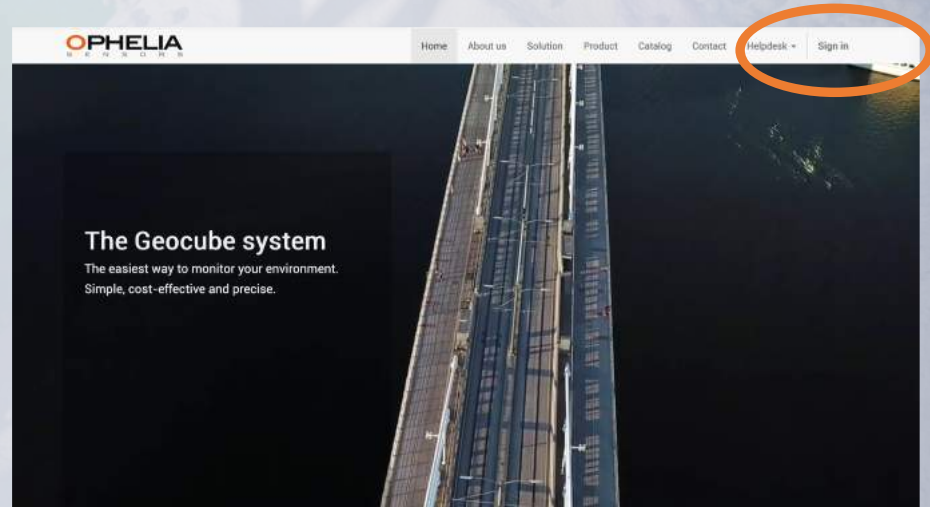
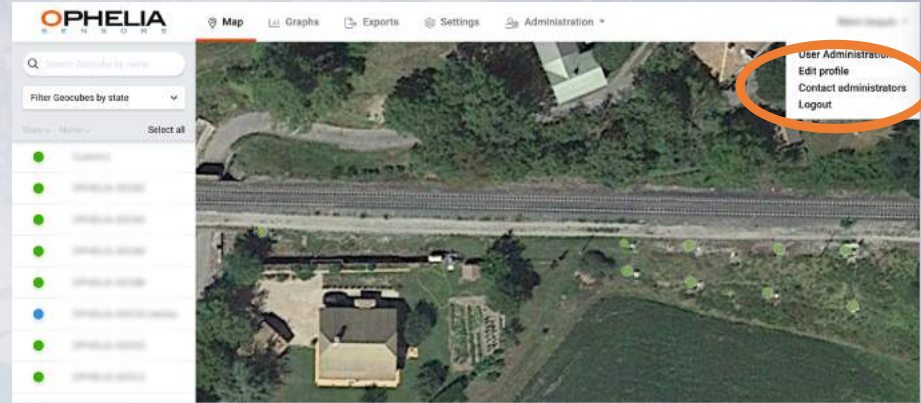
OPERATING A GEOCUBE SYSTEM (I) Keeping contact with Ophelia

- On the User Interface, you can generate a mail by clicking "Contact administrators"

Mail sent to the administrator if you are a user

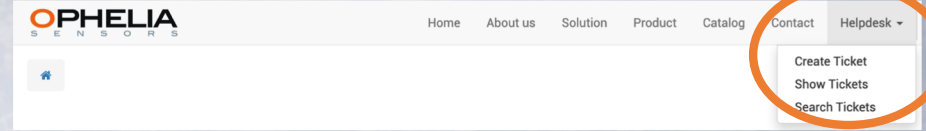
Mail sent to Ophelia if you are an administrator

- In addition, the project administrator has received a mail to log on to the administrative platform located at :
ophelia-sensors.com



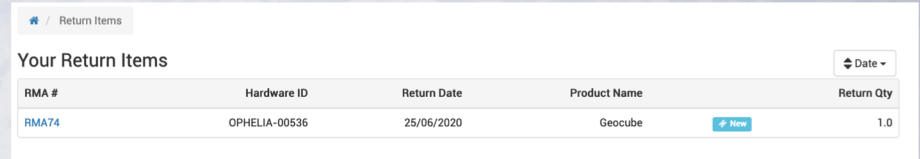
OPERATING A GEOCUBE SYSTEM (II) Helpdesk

- Once logged onto the administrative platform you can generate a Helpdesk ticket for any issue (technical, inquiry,...)
- Click on "Helpdesk" to manage or add an issue
- To add a ticket, just fill up the requested information and press "Submit"
- You can follow up on the advance of your inquiry through the same canal

A screenshot of the Ophelia Helpdesk ticket creation form. The form fields are: Customer (Rafael Nadal), Email (rafael.nadal@gransiam.com), Phone (empty), Category (Technical), Subject (No position), Hardware serial number (Ophelia-01456), Description (No position calculated since 3rd of February at 13h00), Priority (Middle), and Attach Files (Parcourir... Aucun fichier sélectionné). A green 'Submit' button is at the bottom. Below the button, it says 'Multiple files can be attach'.

OPERATING A GEOCUBE SYSTEM (II) RMA

- After raising an issue through the Helpdesk, If one of your devices is damaged or dysfunctional, Ophelia will issue a RMA
- You can follow up on the different stages of your RMAs through the same portal by pressing RMA on the landing page.



The screenshot shows a web interface for 'Return Items'. At the top, there is a breadcrumb 'Return Items' with a home icon. Below it is the heading 'Your Return Items' and a 'Date' dropdown menu. The main content is a table with the following columns: RMA #, Hardware ID, Return Date, Product Name, and Return Qty. A single row of data is visible, with a 'New' button next to the Product Name.

RMA #	Hardware ID	Return Date	Product Name	Return Qty
RMA74	OPHELIA-00536	25/06/2020	Geocube New	1.0



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