

## Monitoring of subionospheric radio wave propagation within the Romanian part of INFREP European network (Part II)

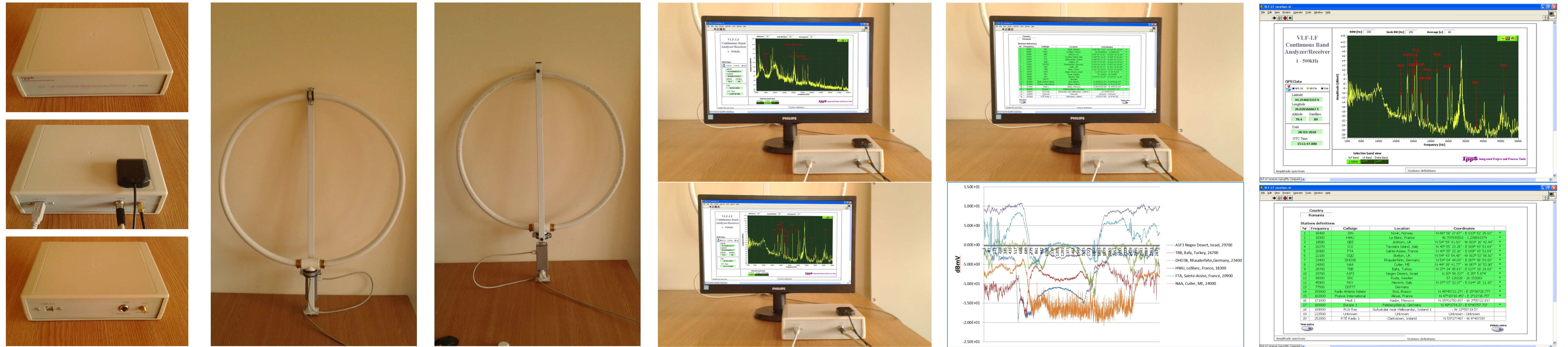
### New VLF/LF receiver system

The new VLF/LF continuous band receiver is a computer-based spectrum analyzer designed to monitor radio transmissions within the 1 kHz–500 kHz frequency range. The system consists of a loop antenna, a signal preamplifier, an analog front-end, a GPS module for precise timing, and an analog-to-digital converter that streams data directly to a computer.

Data acquisition is performed via a USB interface, while a dedicated software application processes the incoming signals and provides real-time information on signal levels at selected monitoring frequencies corresponding to known transmitters.

The software includes a graphical user interface (GUI) that displays the amplitude spectrum of the received signals, along with time and geographical information. It also allows the user to define and manage a list of monitored transmitters, including parameters such as central frequency, call sign, and location.

Peak signal amplitudes are automatically detected, time-stamped using GPS synchronization, and stored as daily files at user-defined intervals. The data are saved in ASCII format, with tab-separated columns, ensuring easy access and compatibility with further processing tools.

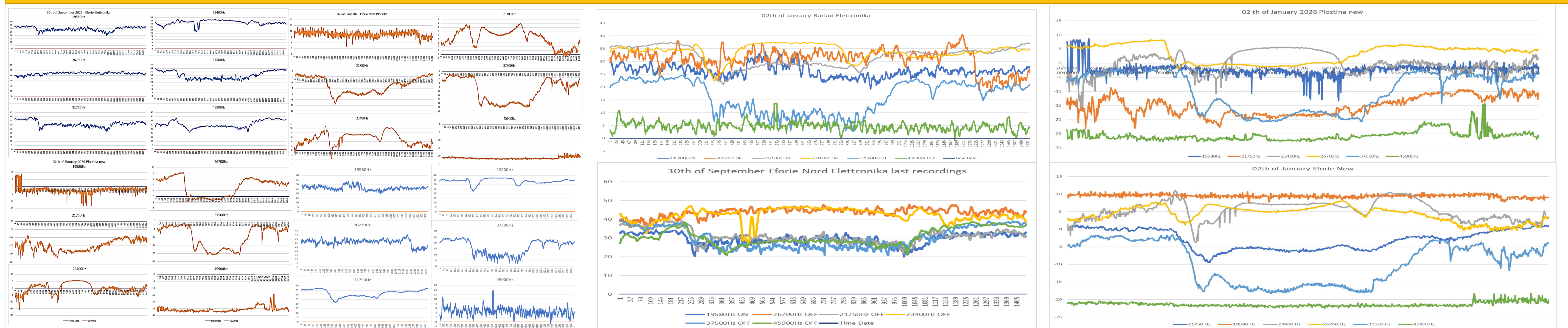


Remote access to the system is enabled via the VNC, TeamViewer and AnyDesk applications, allowing users to control the receiver and retrieve data from the field in real time.

### Mounting moments of the new VLF/LF receiver system



### Data visualization and comparison



### Conclusions:

- The Romanian INFREP network provides reliable monitoring of subionospheric VLF/LF signals and ionospheric disturbances.
- The newly developed receiver continuous data recording, but there are a lot of questions related to the new data. Especially related to the amplitude values.
- The system is currently in the **testing and validation phase**.
- At present, data transfer to INFREP is performed **manually** (via physical storage media).
- A key next step is the implementation of an **automated data transmission system**.
- Future work will focus on enabling **near real-time data availability** and optimizing data flow.

### Acknowledgement:

This paper was carried out within Nucleu Program SOL4RISC, supported by MCI, project no PN23360201, and PNRR-DTEClimate Project nr. 760008/30.12.2022, Component Project Reactive, supported by Romania - National Recovery and Resilience Plan

### How to cite:

Moldovan, I. A., Toader, V. E., Mihai, A., Manea, L., Anghel, M., Eichelberger, H. U., Boudjada, M. Y., Nina, A., Moldovan, A. S., Biagi, P. F., and Ionescu, C.: Monitoring of subionospheric radio wave propagation within the Romanian part of INFREP European network, EGU General Assembly 2026, Vienna, Austria, 3–8 May 2026, EGU26-6679, <https://doi.org/10.5194/egusphere-egu26-6679>, 2026.