

PURPOSE OF PROCUREMENT: The purpose of the procurement is to acquire Radio signal Automatic Detection software for the existing monitoring system to improve the situational awareness in radio spectrum and to enhance radio monitoring capabilities. To fulfil the objectives the software must have the required functionality and work together with the existing Rohde & Schwarz Receivers as follows:
EB200, EM200, PR200, PR100, EM550, UMS400 and DDF255.

License quantity **2**;

License type **perpetual**;

All licences are registered for **Estonian Defence Forces**;

Licences include technical support (warranty) and software updates for **two years**;

After the end of the warranty period, extending software support is possible.

Software user training on-site for **3** persons is included in price;

Description of the software: The radio signal automatic detection software can control the receivers of existing frequency monitoring network. The monitoring tasks are entered into the software (the frequency ranges and the parameters) and the measurement cycles are automatically performed according to tasks. The results are stored on the central server or on local computer as needed. As a result of the procurement, both server software and control software will be procured. Crucial capability of the software is automatic signal detection to automate the daily work.

Requirements for the software:

No	Feature	Parameters	
1.	Purpose	Automatic Detection of Radiofrequency Signals	
2.	Language	Estonian or English	

3.	Functionality: Automatic detection of signals	<p>The software must be able to distinguish the radio signal from the noise in at least three ways:</p> <ul style="list-style-type: none"> a) According to the shape of the signals – The software must contain samples from well-known signals. b) Using the mask method – a signal drawn by user. c) Using the machine learning method – a signal found by the user is used as a teaching input. 	
5.	Functionality: Automatic detection of signals	<p>At least the following information is recorded about automatically detected signals:</p> <ul style="list-style-type: none"> a) Frequency (ITU SM.377-4). b) Signal bandwidth (ITU SM.443-5). c) Signal strength (dBμV, dBm). d) Signal to noise ratio (SNR). e) Correlation with the compared sample. 	
6.	Functionality: Automatic detection of signals	The system can compare detected signals with EFIS allocations (European Frequency Information System).	
7.	Functionality: Demodulation of signals	Demodulation, audio recording and playback of known signals must be possible.	
8.	Functionality: Data storage	The collection of information on the detected signals is done either on a local computer or on a central server, as needed.	
9.	Functionality: Data storage	The database of the central server must contain historical information about measurement results and be able to visualize it both statistically and as spectral images through queries.	

10.	Functionality: Automation of measurements	The software must enable the automation and scheduling of measurements based on pre-filled tasks.	
11.	Compatibility	Runs on Windows 10 and 11 operating system.	
12.	Compatibility	Compatible with Rohde & Schwarz Receivers as follows: EB200, EM200, PR200, PR100, EM550, UMS400, DDF255	
13.	Compatibility	Must be able to control a minimum of six (6) receivers simultaneously, including direction finders.	
14.	Visualization	The geographical location information must be visualized in the map view.	
15.	Visualization	It must be possible to visualize the spectral shape of detected radio from data storage.	
15.	Visualization	Must support the waterfall spectrum display format.	
16.	User rights	There must be means that access to the system is only for authorized users.	