



SKUDRA SERVER v.5.3.61 user guide

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2 Introduction

Skudra Server software module purpose is to provide radio control monitoring function operators with frequency user information, current radio monitoring information and historical radio monitoring information in the most effective way.

The system provides an opportunity to visualize and analyze monitoring data, thus helping to perform more efficient monitoring and control of the radio frequency spectrum. The system also collects information about the hardware and equipment used in monitoring and other measurements, their technical data and other important information. The Skudra Server application is regularly updated and renewed, so there may be situations when one of the described functionalities works partially or is temporarily unavailable.

3 Getting started with SKUDRA Server

You can work with the app using one of the web browsers (e.g. Google Chrome or Microsoft Edge). You can activate the home screen in:

1. Type in the address line of the browser: <https://skudra/>

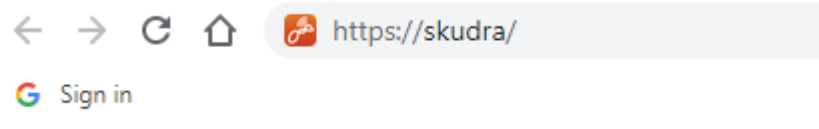


fig. 3. 1Command line entry

By choosing the access path described in the first two points, in the next step we get to the login screen, where the user name and password must be entered.

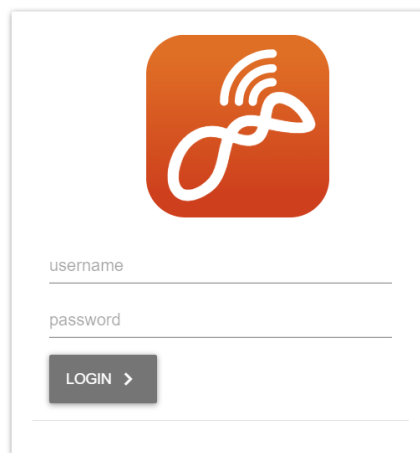


fig. 3. 2Login screen

In order for a VASES employee to become an authorized user of Skudra Server , it is necessary to contact the main specialist of RMD, who will assign the user an account.

After successful authorization, a start screen appears with several sections, the actions of which are described in the following points (content points 3-9).

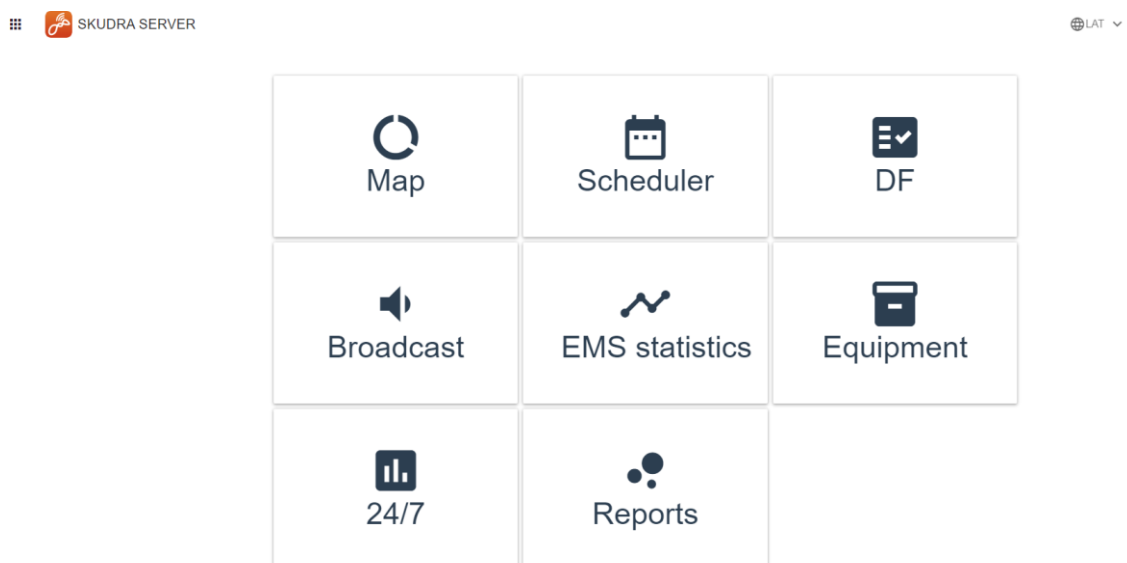


fig. 3. 3SKUDRA Server home screen with menus

4 Map

The "Map" section shows current and historical information about all individual frequencies registered during monitoring with the SKUDRA Patrol program from fixed monitoring points or mobile monitoring. Both registered users and NRS.

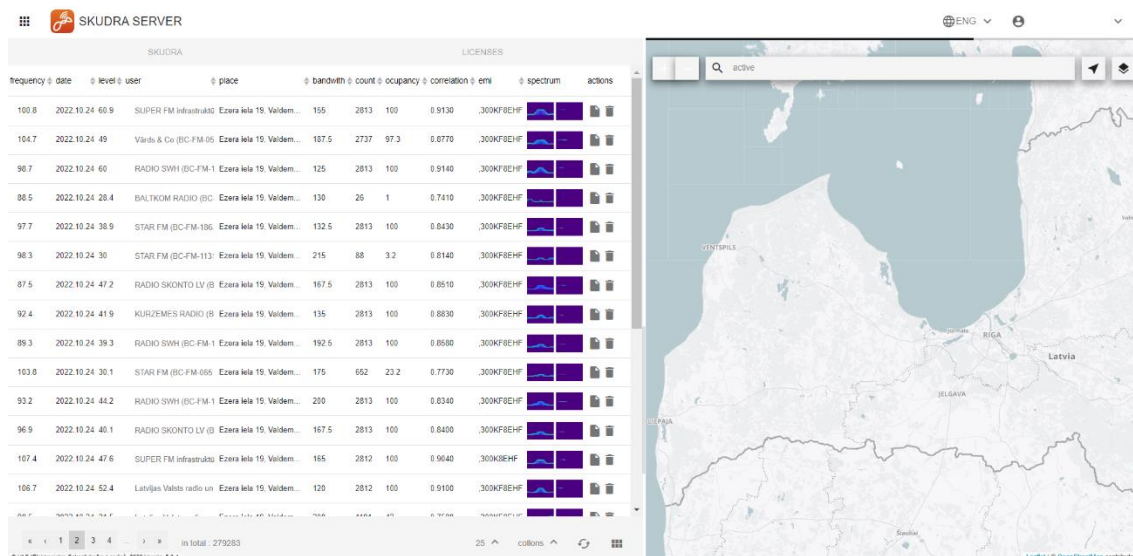


fig. 4. 1Monitoring data and map


The amount of data in the columns can be changed by zooming in or out of the map on the right side of the screen. This can be done both by scrolling the mouse wheel, placing the cursor over the map beforehand, and also by using the + and – (to scale) buttons in the left, upper corner of the map. When you zoom in on Riga, the columns will show only the information registered in Riga's fixed RMP, or mobile monitoring data, if they were made within the zoomed-in map. Likewise in other regions.

fig. 4. 2Data arrangement in columns

The left side of the screen with the data arranged in columns. Data in columns can be sorted in ascending or descending order by clicking on the column headings.

The columns show the following information:

1. Frequency, the use of which is fixed during monitoring.
2. Start date of the monitoring during which the frequency is fixed.
3. Signal level dBμV /m.
4. User. The data in this column are active links to user permission information (see 3.3). It can also be as NRS without additional data.

license: BC-FM-174 V4 

license company: SUPER FM infrastruktūra


valid from: 2021-07-19

valid to: 2029-07-18

licenses status: ACTIVE

licenses coment: Izniegta uz VASES iniciatīvas, ņemot vērā iepriekš uz diviem mēnešiem izsniegto atļauju

ASSIGNMENTS 1 CONNECTIONS 185

TABLE VIEW 

Frequency TX/RX:	100.8
Bandwidth:	300 kHz
Azimuth:	0.0
Emi:	300KF8EHF
Power:	30.0
Polarization:	V
Adress:	Ļībagu pag., Talsu nov. 57.206886 22.630986
Height Effective:	40
Equipment:	PA 500, Virtuālais ražotājs
Created At:	
Updated At:	

BACK CLOSE

fig. 4. 3User authorization data

5. The fixed monitoring point or place from which the monitoring was carried out.
6. Frequency average bandwidth.
7. The number of times the frequency was fixed during monitoring.
8. Frequency occupancy in percent of the total monitoring time.
9. The correlation threshold indicates how reliably the frequency corresponds to a sample spectrum . The higher, the more likely.
10. Class of electromagnetic radiation.
11. Accumulated spectrum and bandwidth images and occupancy graph. The information in this column also contains active links (see Fig. 3.4).

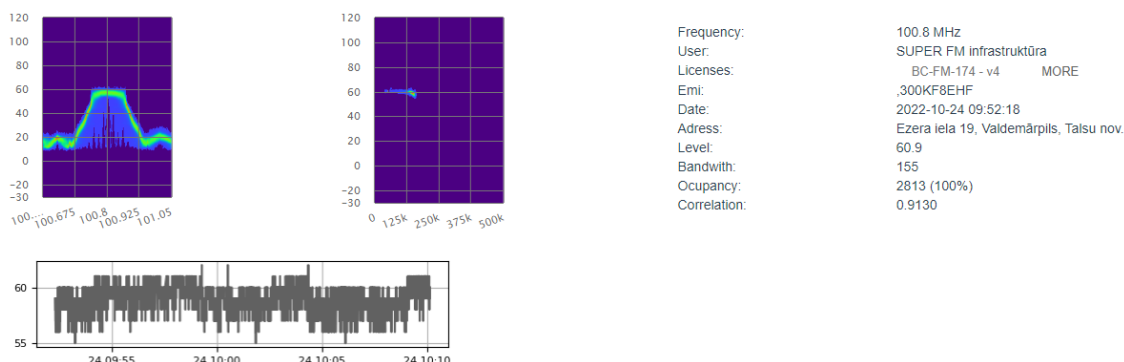


fig. 4. 4Accumulated spectrum, bandwidth and occupancy schedule

12. You can get more detailed information about the measurement by clicking on the "go to event" icon (see fig. 3.5). And it is also possible to correct or delete the measurement.

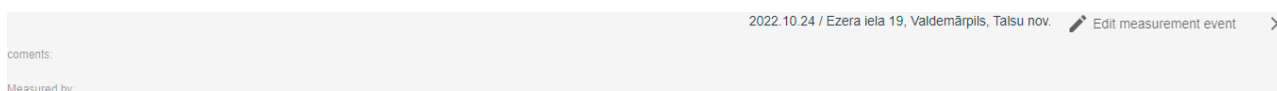


fig. 4. 5Detailed information about the measurement

The number of columns can be changed by pressing the "Columns" button on the bottom edge and selecting the required number of columns in the additional window .

92	2022.10.24	30.1	Latvijas Valsts radio un	Ezera iela 19, Valdem...	237.5	2185	77.7	0.7170	,300KF8EHF			
93.2	2022.10.24	44.2	RADIO SWH (BC-FM-1	Ezera iela 19, Valdem...	200	2813	100	0.8340	,300KF8EHF			
107.4	2022.10.24	47.6	SUPER FM infrastruktū	Ezera iela 19, Valdem...	165	2812	100	0.9040	,300KF8EHF			
99.4	2022.10.24	42.6	Radio TEV (BC-FM-112	Ezera iela 19, Valdem...	122.5	2813	100	0.8650	,300KF8EHF			
105.4	2022.10.24	28.4	RADIO SWH (BC-FM-3	Ezera iela 19, Valdem...	12	1	0.1	0.6690	,300KF8EHF			
95.9	2022.10.24	37.3	Latvijas Valsts radio un	Ezera iela 19, Valdem...	120	2813	100	0.8660	,300KF8EHF			
91.1	2022.10.24	46.9	Latvijas Valsts radio un	Ezera iela 19, Valdem...	115	2813	100	0.8680	,300KF8EHF			
87.5	2022.10.24	47.2	RADIO SKONTO LV (B	Ezera iela 19, Valdem...	167.5	2813	100	0.8510	,300KF8EHF			
103.2	2022.10.24	45	SUPER FM infrastruktū	Ezera iela 19, Valdem...	173.5	2813	100	0.8550	,300KF8EHF			

Columns

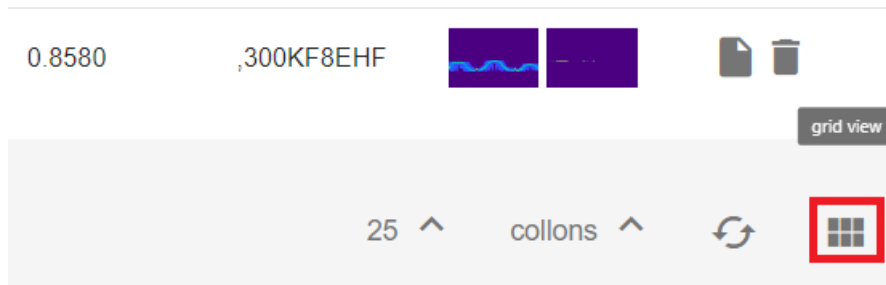
☒ Frequency
☒ Date
☒ Level
☒ User
☒ Place
☒ Bandwith
☒ Count
☒ Occupancy
☒ Correlation
☒ Emi
☒ Spectrum
☒ Actions

« 1 2 » in total : 30

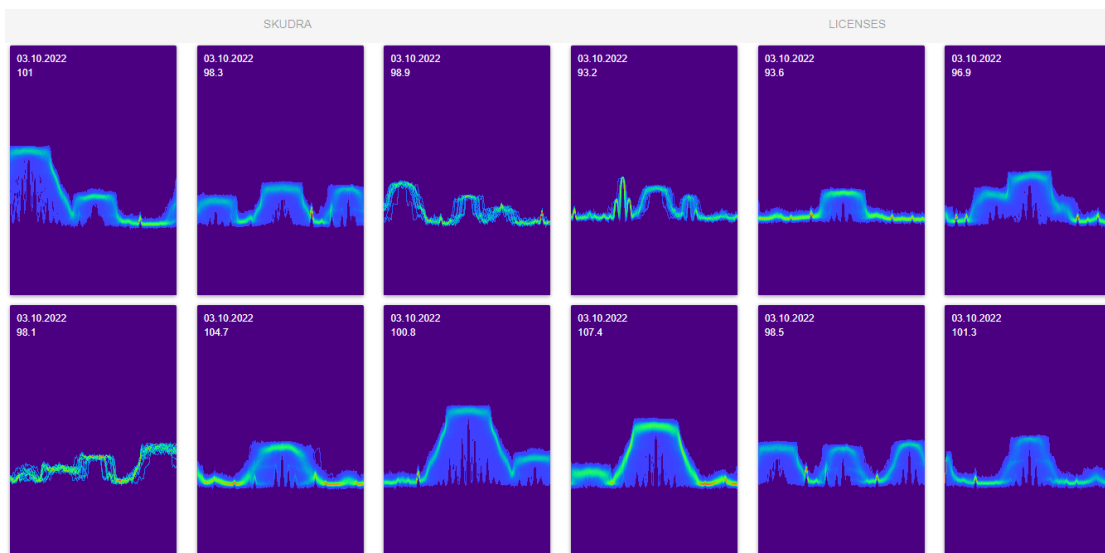
25 ^ collons ^

fig. 4. 6Changing the number of columns

The display of information on the side of the columns can be changed by clicking on the "Grid display" button at the bottom of the page

*fig. 4. 7Grid view button*

Now, on the left side of the screen, instead of columns, pictures of the spectrum accumulated in the measurements for each frequency are displayed.

*fig. 4. 8Grid representation*

Details can be obtained by clicking on any of the pictures.

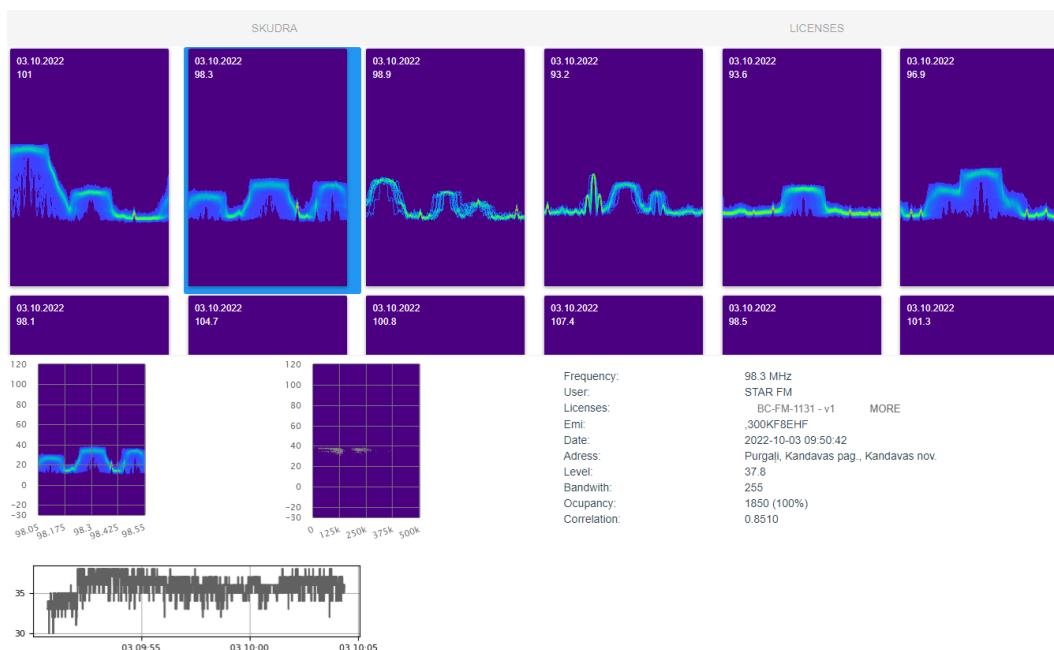


fig. 4.9 Detailing in grid representation

In the upper right corner of the screen, above the map, there is a search menu window.

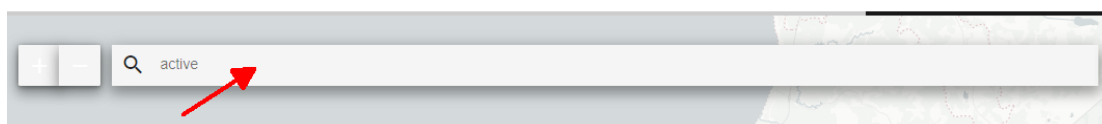


fig. 4.10 Location of the search window

When you left click mouse on it, it scrolls down, and you can enter search/filter parameters (frequency, user, level) to select information.

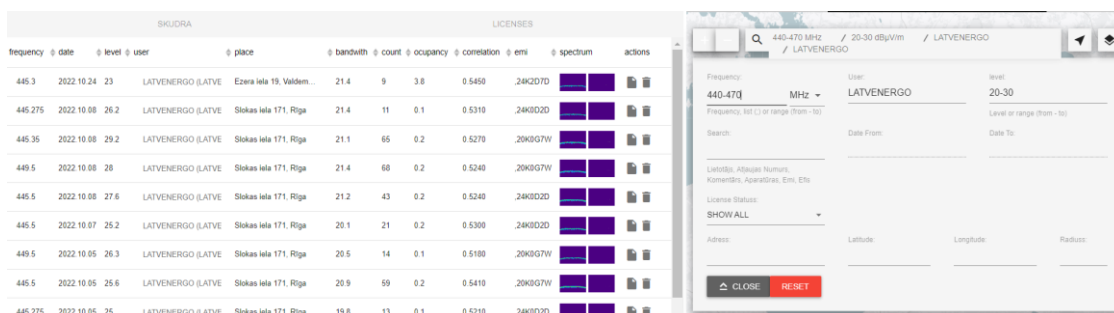


fig. 4.11 Search window

Searching information - frequency, level, date can be entered in the fields with a limitation from – to, thus expanding the search range. After entering the data in the search fields, the filtered information appears in the columns on the left side of the screen.

Next to the search window are two square buttons :



att. 4.12 Pelengācijas un kartes izklājuma pogas

By pressing the DF layout button, an additional window opens , in which, by default, the names of Riga monitoring points are displayed:

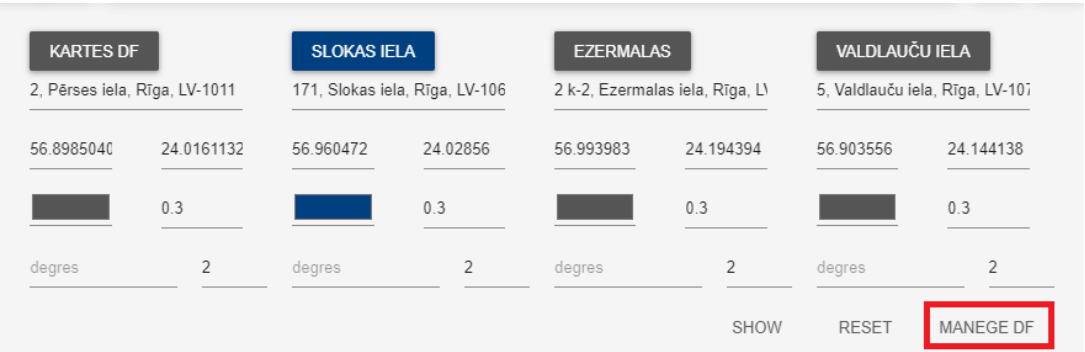


fig. 4. 13DF pop-up window

To add other Latvian points, press "MANAGE DF":

KARTES DF	SLOKAS IELA	EZERMALAS	VALDLAUČU IELA
2, Pārses iela, Rīga, LV-1011	171, Slokas iela, Rīga, LV-106	2 k-2, Ezermalas iela, Rīga, LV-1006	5, Valdlauču iela, Rīga, LV-1076
56.8985040 24.0161132	56.960472 24.02856	56.993983 24.194394	56.903556 24.144138
<div style="background-color: #333; width: 20px; height: 10px;"></div> 0.3	<div style="background-color: #0056b3; width: 20px; height: 10px;"></div> 0.3	<div style="background-color: #333; width: 20px; height: 10px;"></div> 0.3	<div style="background-color: #333; width: 20px; height: 10px;"></div> 0.3
degres 2	degres 2	degres 2	degres 2
<input checked="" type="checkbox"/> use this	<input checked="" type="checkbox"/> use this	<input checked="" type="checkbox"/> use this	<input checked="" type="checkbox"/> use this

DAUGAVPILS	LIEPĀJA	RĒZEKNE	VALMIERA
87, Strādnieku iela, Daugavpils	93, Brīvības iela, Liepāja, LV-3401	41, Kr. Valdemāra iela, Rēzekne, LV-4601	7, Gaujas iela, Valmiera, LV-401
55.879078 26.555067	56.524428 56.524428	56.514389 27.330889	57.535709 25.420158
<div style="background-color: #333; width: 20px; height: 10px;"></div> 0.3	<div style="background-color: #333; width: 20px; height: 10px;"></div> 0.3	<div style="background-color: #333; width: 20px; height: 10px;"></div> 0.3	<div style="background-color: #333; width: 20px; height: 10px;"></div> 0.3
degres 2	degres 2	degres 2	degres 2
<input type="checkbox"/> use this	<input type="checkbox"/> use this	<input type="checkbox"/> use this	<input type="checkbox"/> use this

VENTSPILS
77, Inženieru iela, Ventspils, LV-3601
57.383138 21.549866
<div style="background-color: #333; width: 20px; height: 10px;"></div> 0.3
degres 2
<input type="checkbox"/> use this

Leaflet | © OpenStreetMap contributors

SHOW RESET CLOSE

fig. 4. 14DF Management window

Now you can add or remove the points needed for data analysis in the table. Instead of the fixed points, you can also record longitude and latitude degrees, so you can see the bearing picture from any other point in Latvia where monitoring with direction determination has been carried out. It is also possible to change the color of each dot's outline:

PĒRSES IELA	SLOKAS IELA	EZERMALAS	VALDLAUČU IELA
2, Pārses iela, Rīga, LV-1011	171, Slokas iela, Rīga, LV-1067	2 k-2, Ezermalas iela, Rīga, LV-1006	5, Valdlauču iela, Rīga, LV-1076
56.951958 24.123882	56.960472 24.02856	56.993983 24.194394	56.903556 24.144138
<div style="background-color: #c00; width: 20px; height: 10px;"></div> 0.3	<div style="background-color: #0056b3; width: 20px; height: 10px;"></div> 0.3	<div style="background-color: #008000; width: 20px; height: 10px;"></div> 0.3	<div style="background-color: #90ee90; width: 20px; height: 10px;"></div> 0.3
grādi 2	grādi 2	grādi 2	grādi 2
<input checked="" type="checkbox"/> lietot	<input checked="" type="checkbox"/> lietot	<input checked="" type="checkbox"/> lietot	<input checked="" type="checkbox"/> lietot

DAUGAVPILS	LIEPĀJA	RĒZEKNE
87, Strādnieku iela, Daugavpils, LV-5417	93, Brīvības iela, Liepāja, LV-3401	41, Kr. Valdemāra iela, Rēzekne, LV-4601
55.879078 26.555067	56.524428 56.524428	56.514389 27.330889
<div style="background-color: #333; width: 20px; height: 10px;"></div> 0.3	<div style="background-color: #333; width: 20px; height: 10px;"></div> 0.3	<div style="background-color: #333; width: 20px; height: 10px;"></div> 0.3

207

R

229

G

42

B

fig. 4. 15Options for changing the colors of the directional beams

In the fields "Degrees" write the results of measurements, in the next cell the tolerance \pm . By default, the tolerance is ± 2 . In the example picture, the map of surveying results from all Riga monitoring points. It can be both zoomed in and out.

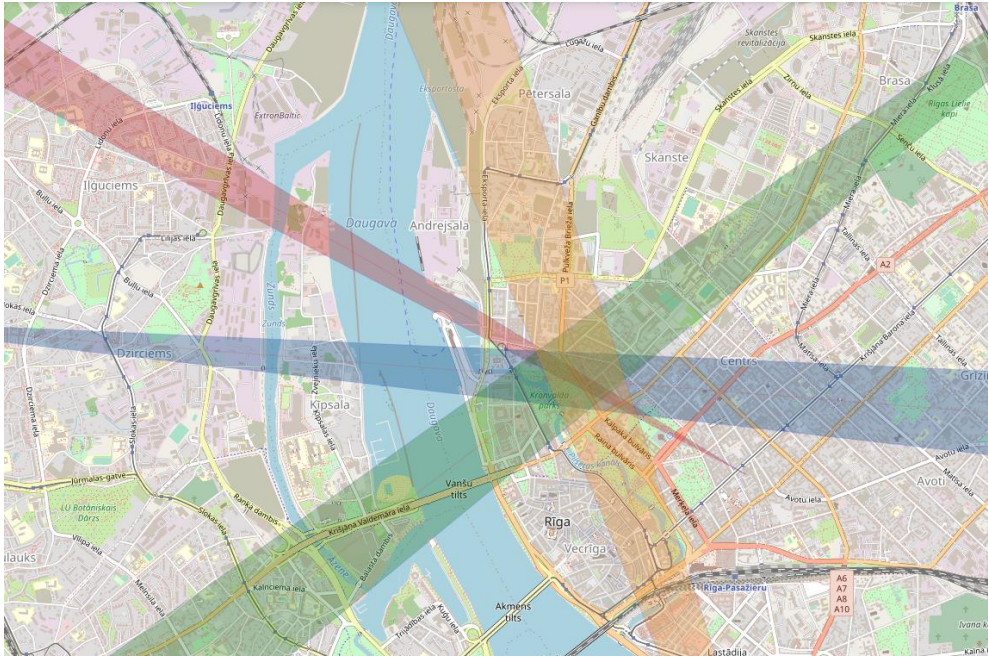


fig. 4. 16Map of bearing

The map layout button allows you to select map layers and overlays:

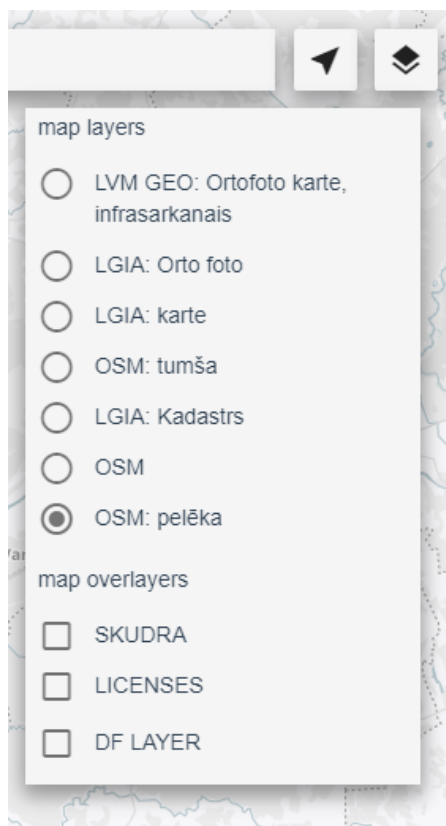


fig. 4. 17Map layout options

To return to the initial view, the "CLEAR" and "CLOSE" buttons must be pressed on the DF layout screen.

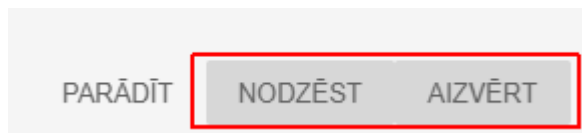


fig. 4. 18How to return to the home screen

5 24/7

the "24/7" section of Skudra Server , you can view the measurements made during monitoring with Skudra Patrol within the limits of whole ranges together with the spectrum diagram of the waterfall.

When opening the section , columns with range monitoring diets are visible on the left, and a map that can be zoomed in or out on the right. Highlighting one of the lines on the left side at the bottom of the screen below the map, a spectrum diagram of the waterfall appears, which can also be zoomed in or out:

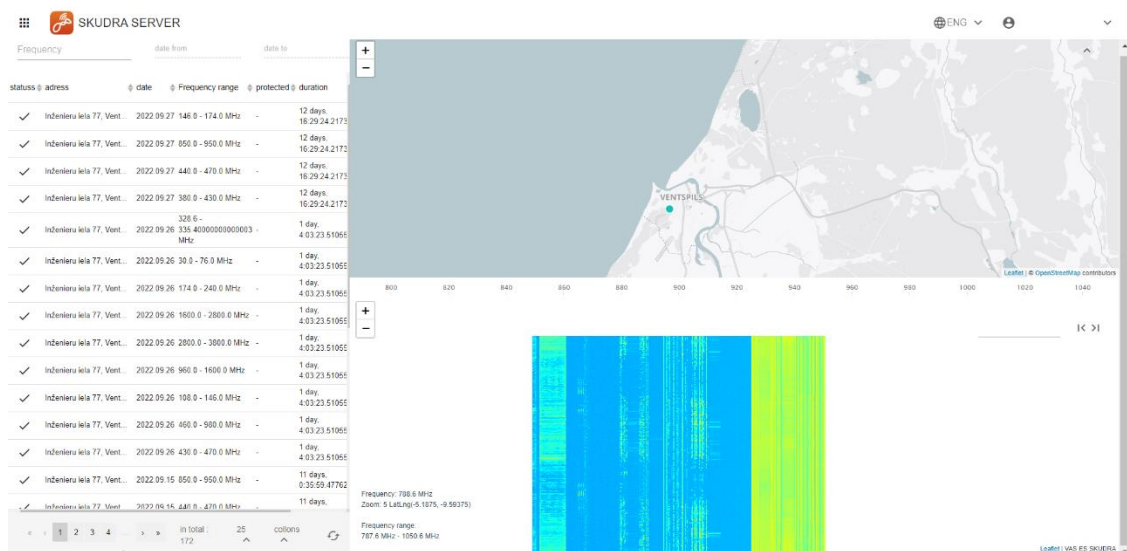


fig. 5. 1Range monitoring data, map and waterfall spectrogram

In the data columns, you can see information about the point from which the measurements were made. Frequency range and monitoring date and duration.

Frequency		date from		date to	
status	address	date	Frequency range	protected	duration
✓	Inženieru iela 77, Vent...	2022.09.27	146.0 - 174.0 MHz	-	12 days, 16:29:24.21735
✓	Inženieru iela 77, Vent...	2022.09.27	850.0 - 950.0 MHz	-	12 days, 16:29:24.21735
✓	Inženieru iela 77, Vent...	2022.09.27	440.0 - 470.0 MHz	-	12 days, 16:29:24.21735
✓	Inženieru iela 77, Vent...	2022.09.27	380.0 - 430.0 MHz	-	12 days, 16:29:24.21735

fig. 5. 2Range monitoring detail

Dragging the mouse cursor over the spectrogram of the waterfall changes the information about the frequency and signal level in the field next to the spectrogram.

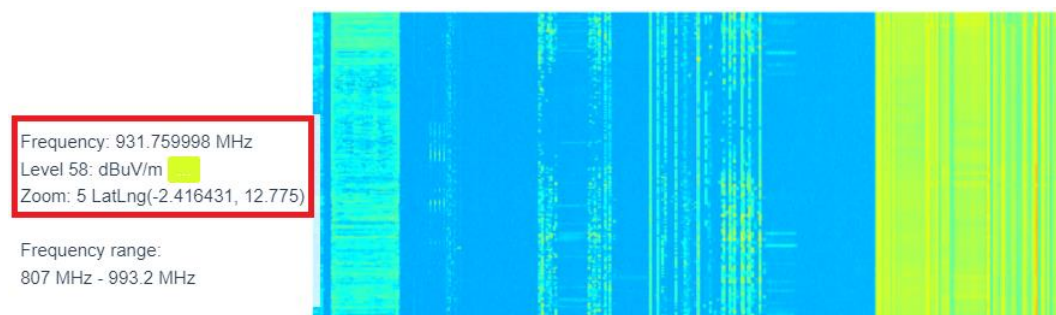


fig. 5. 3Waterfall spectrogram information

6 Broadcasting

Monitoring of broadcast ranges is performed at fixed points with the help of frequency spectrum analyzer ETL and the results are automatically saved on the Skudra Server website after the end of the measurements. With ETL, measurements of broadcasting stations and DVBT signal levels, scanning of broadcasting and DVBT ranges, as well as deviations and MPX measurements of broadcasting stations are performed. You can get to the broadcast measurement results directly from the Skudra Server environment by clicking on the "Broadcast" icon,

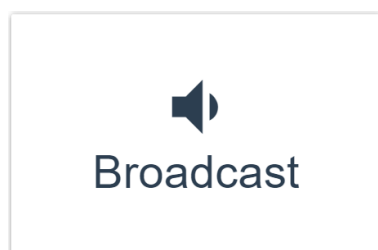


fig. 6. 1Broadcast icon SKUDRA Server

When opening one of the menus, we arrive at a page with signal level measurements of broadcast stations (dBuV /m).

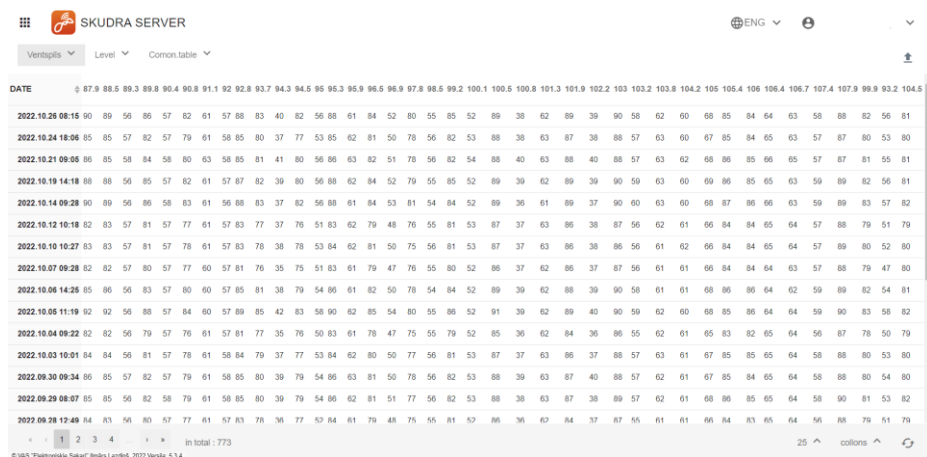


fig. 6. 2Measurements of broadcast station levels

In the left, upper corner of the screen, you can choose which monitoring point's measurements to view.



fig. 6. 3Selection of monitoring point

Next to that, you can choose what kind of measurements you want to review (level, direction, deviation, scan, DVB-T scan, DVB-T level or MPX).

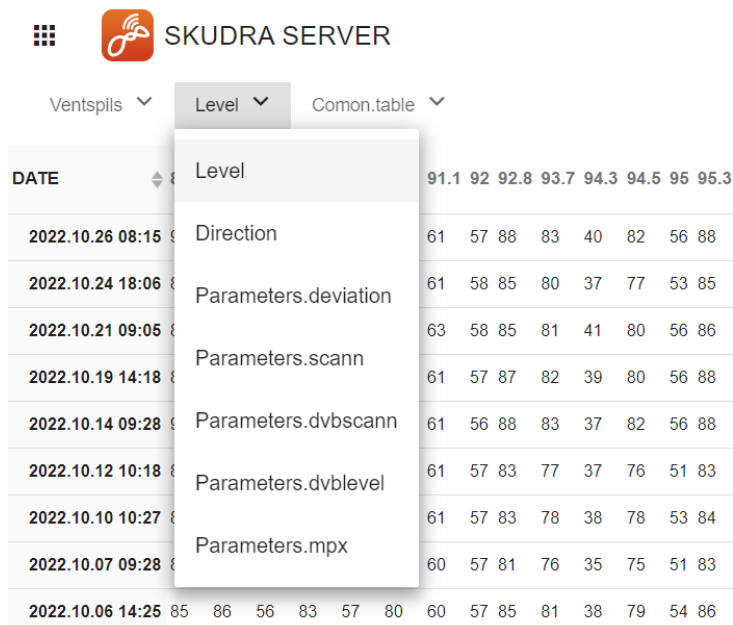


fig. 6. 4Choice of measurement type

For measurements, with some exceptions, it is possible to choose the arrangement of the data in a table or graphical representation.

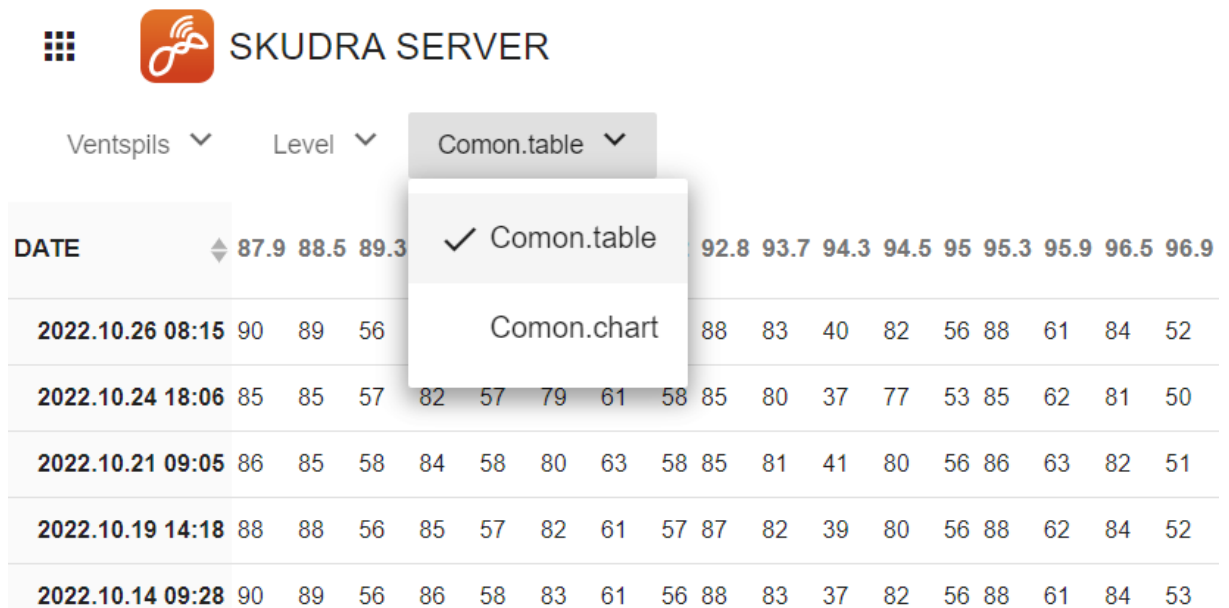


fig. 6. 5Arrangement of data in a table

Only graphical display is for broadcast scan and DVB-T scan measurements. Below is the broadcast scan schedule. When you move the cursor over the circles of the graph, you can see information about the level at different points.

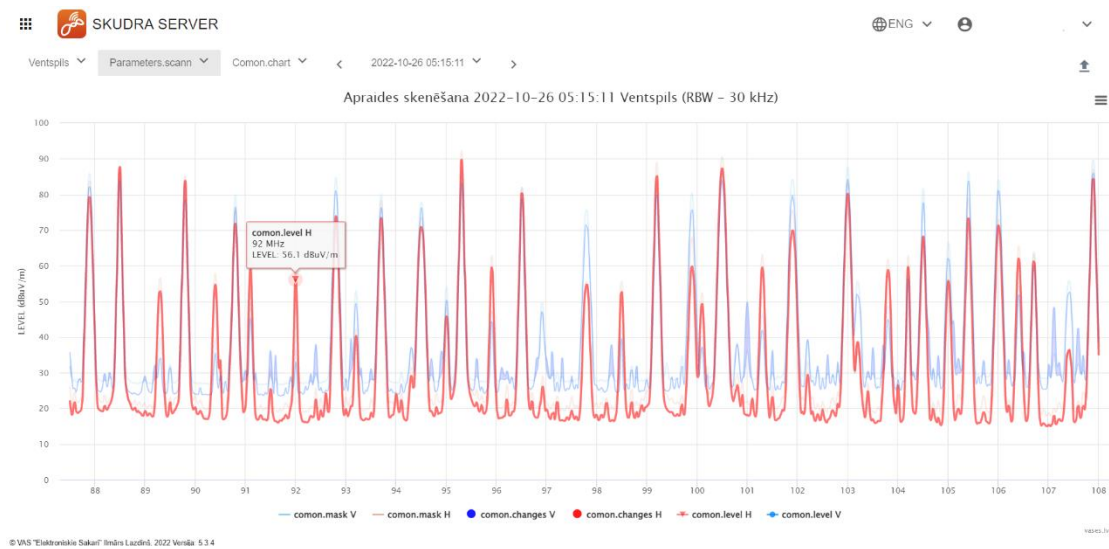


fig. 6. 6Broadcast station scanning schedule

DVB-T broadcast scan schedule.

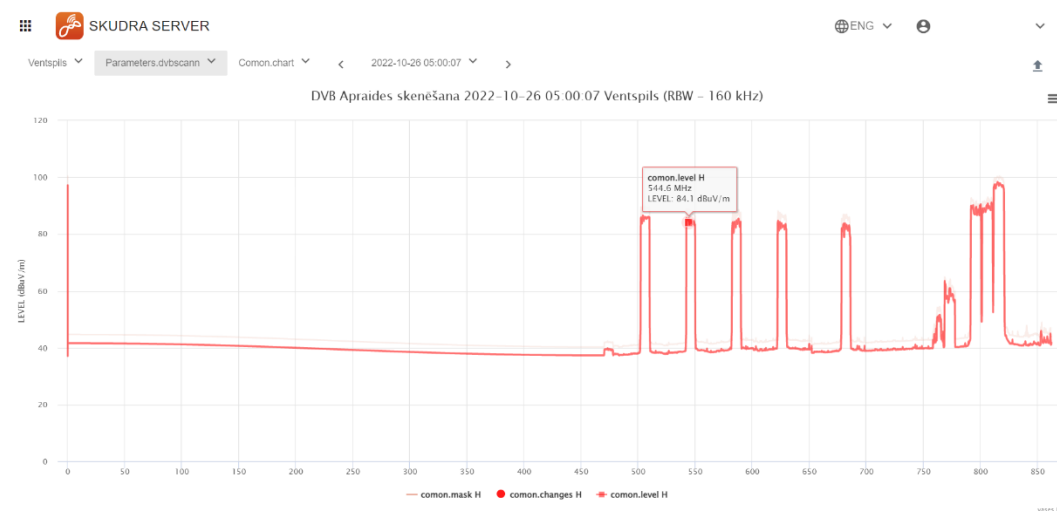


fig. 6. 7Scan schedule for DVB-T stations

In the graphs of the levels of broadcasting stations, it is possible to view the graphic changes of the levels of individual stations over a longer period of time. Before that, you must select a specific frequency in the field next to "Schedule". Also in this graph, by following the line with the cursor, it is possible to see the values at different points of the circle.

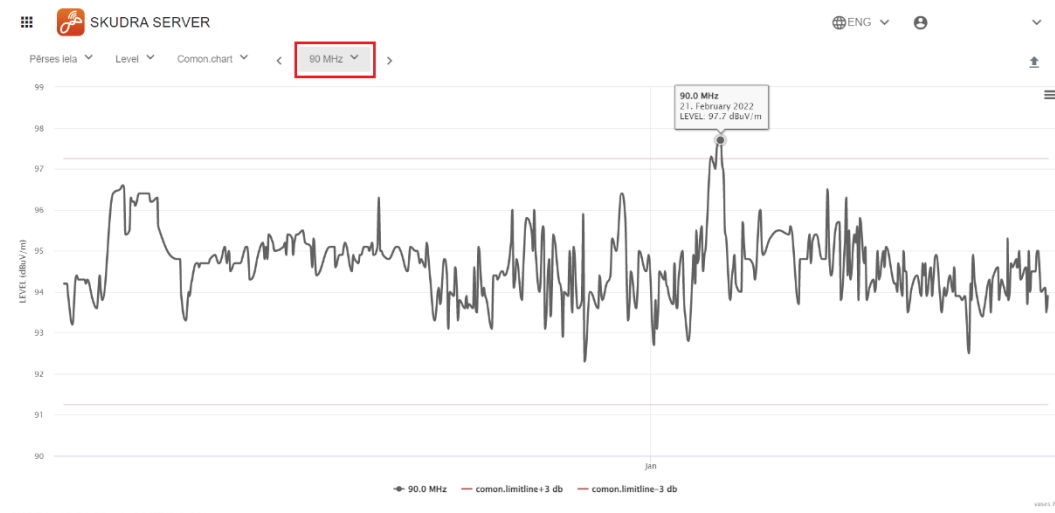


fig. 6. 8A schedule of individual broadcast station level changes during the period

In the table view, it is possible to change the number of columns on the screen, excluding frequencies from the list.

fig. 6. 9Changing the number of columns in a table

Location directions of broadcasting stations at monitoring points are made with other hardware (not ETL) and are described in the Argus software, as defined monitoring measurements. After they are done, special csv format files are prepared at the points and imported into the Skudra Server environment. This is to be done by clicking on the "Add new measurement" button in the upper right corner of the "Broadcast" page.

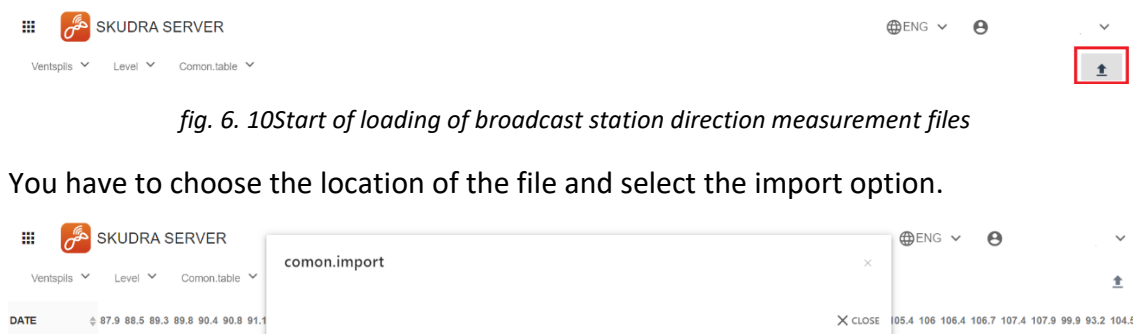


fig. 6. 10Start of loading of broadcast station direction measurement files

You have to choose the location of the file and select the import option.



fig. 6. 11File loading process

N/A.

7 DF (Direct Finding / direction measurements)

In section DF, are stored direction measurements made at monitoring points with the Skudra Patrol software, with a condition that the operation of Skudra Patrol with direction finding equipment is possible at monitoring point and the setting to send data to Skudra Server is activated.

The DF section is activated by entering the Skudra Server website and clicking on the corresponding "DF" icon.

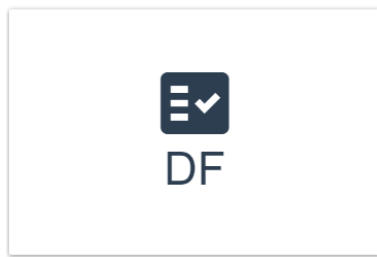



fig. 7. 1 Directional measurement icon in Skudra Server

A window appears with the ID numbers, locations, times and ranges of the saved measurements.

chose	ID	address	date	Frequency range	actions
	9440	Lapinas, Grobības pag., Grobības nov.	2022.10.19 15:51:09	140 - 174 MHz, 300 - 430 MHz, 87.5 - 108 MHz, 440 - 470 MHz, 850 - 950 MHz	
	9419	Lapinas, Grobības pag., Grobības nov.	2022.10.07 13:12:04	140 - 174 MHz, 300 - 430 MHz, 87.5 - 108 MHz, 440 - 470 MHz, 850 - 950 MHz	
	9418	Lapinas, Grobības pag., Grobības nov.	2022.10.07 13:09:34	140 - 174 MHz, 300 - 430 MHz, 87.5 - 108 MHz, 440 - 470 MHz, 850 - 950 MHz	
	9062	Olupes, Mārupes nov.	2022.06.08 10:19:06	442 - 443 MHz	
	9060	Bērzlāpis, Grīnās, Olaines pag., Olaines nov.	2022.05.25 10:20:42	440 - 450 MHz	
	9058	Olupes, Mārupes nov.	2022.05.25 09:33:16	440 - 450 MHz	
	9057	Olupes, Mārupes nov.	2022.05.25 09:35:50	442 - 443 MHz	
	8967	Lapinas, Grobības pag., Grobības nov.	2022.05.03 18:32:25	140 - 174 MHz, 300 - 430 MHz, 1000 - 1080 MHz, 87.5 - 108 MHz, 440 - 470 MHz	
	8937	Gantību dambis 11B, Rīga	2022.04.18 20:29:56	423 - 425 MHz	
	8936	Gantību dambis 11B, Rīga	2022.04.18 20:32:27	423 - 425 MHz	
	8935	Gantību dambis 11B, Rīga	2022.04.18 20:22:20	423 - 425 MHz	
	8934	Pērses iela 2, Rīga	2022.04.18 20:11:18	423 - 425 MHz	
	8933	Gantību dambis 11B, Rīga	2022.04.18 20:09:13	423 - 425 MHz	
			2022.04.18 19:56:55	423 - 425 MHz	

fig. 7. 2 Directional measurement data table

In the next step, highlight the required line and press the "CHOSE" button on the upper left corner of the screen.

 SKUDRA SERVER

search

CHOSE

chose	ID	adress	date	Frequency range
✓	9440	Lapiņas, Grobiņas pag., Grobiņas nov.	2022.10.19 15:51:09 2022.10.19 15:49:19	146 - 174 MHz 380 - 430 MHz 87.5 - 108 MHz 440 - 470 MHz 850 - 950 MHz
	9419	Lapiņas, Grobiņas pag., Grobiņas nov.	2022.10.07 13:12:04 2022.10.18 12:32:23	146 - 174 MHz 380 - 430 MHz 87.5 - 108 MHz 440 - 470 MHz 850 - 950 MHz
	9418	Lapiņas, Grobiņas pag., Grobiņas nov.	2022.10.07 13:09:34 2022.10.07 13:08:45	146 - 174 MHz 380 - 430 MHz 87.5 - 108 MHz 440 - 470 MHz 850 - 950 MHz
	9092	Ošupes, Mārupes nov.	2022.06.08 10:16:08 2022.06.08 11:16:44	442 - 443 MHz
	9060	Bērziņš, Grēnes, Olaines pag., Olaines nov.	2022.05.25 10:20:42	440 - 450 MHz

fig. 7. 3A path to directional measurement detail

Details of direction finding measurement and map with frequency direction, if frequency direction finding was successful appears, which you can zoom in and zoom out.

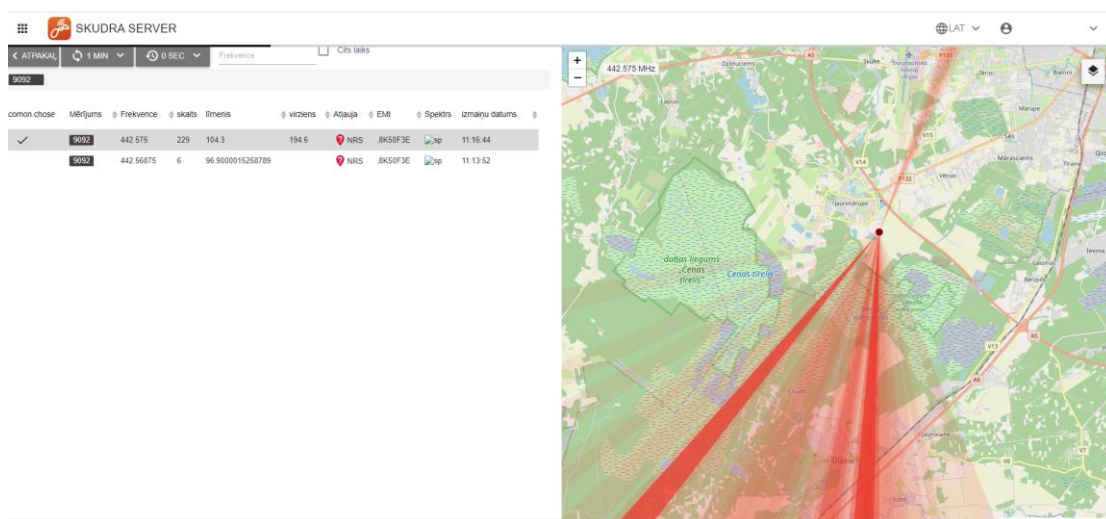


fig. 7. 4Detailing of direction measurements with a survey map

You can return to the list using the "BACK" button

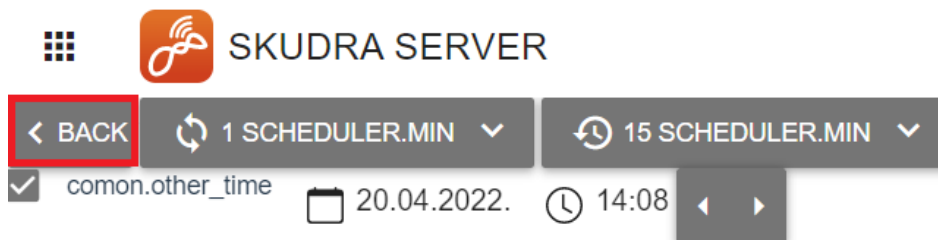


fig. 7. 5Return to the DF home screen

8 Equipment

The Equipment section of the system gathers information about the equipment at the disposal of the monitoring department, which is used in the work process. Here you can find information about equipment location and calibration dates, as well as equipment instructions and calibration certificates, etc.

The Equipment section of the System is available to all users registered in the System in reading mode.

You can get to the equipment registry directly from the SKUDRA Server environment by clicking on the "Equipment" icon,

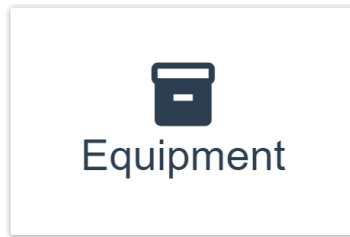


fig. 8. 1Equipment registry icon for SKUDRA Server

Opening one of the menus, we get to the list of equipment. The columns contain information about inventory number, name, type, material responsible person, user, location, calibration data and technical documentation or user manual.

equipment.nr	equipment.name	equipment.es_type	equipment.responsible	user	equipment.place	equipment.calibration	equipment.calibrationdate	equipment.calibrationvalid_to	equipment.verification	equipment.verificationdate	equipment.verificationvalid_to	equipment.status	equipment.files	action
3174	Jaudis mērītājs/14.4356A (kompakts ar pārbaudāmību)	equipment.receiver	Uldis Almona	Uldis Almona	Eiņports iela 5	✓	2022.02.20	2022.02.20	2025.02.20	—	✓	✓		
	Kabeļa Schwarzbeck AK 651SE 12 m	equipment.other	Uldis Almona	Uldis Almona	Eiņports iela 5	✓	2022.02.25	2022.02.25	2024.02.25	—	✓	✓		
	Kabeļa Schwarzbeck AK 651SE 12 m	equipment.other	Uldis Almona	Uldis Almona	Eiņports iela 5	✓	2022.02.25	2022.02.25	2024.02.25	—	✓	✓		
	Kabeļa Schwarzbeck AK 651SE 12 m	equipment.other	Uldis Almona	Jurģis Tūbovs	Eiņports iela 5	✓	2022.02.25	2022.02.25	2024.02.25	—	✓	✓		
3175	Brīdītāja mācītāja mācītāja 28A, SCHWABERGER OLA 9119 (1 GHz - 5 GHz)	equipment.antenna	Uldis Almona	Jurģis Tūbovs	Eiņports iela 5	✓	2021.12.14	2021.12.14	2024.02.14	—	✓	✓	SBAS119_user_manual.pdf - 1546255	
3223	Specializēta mobilo sakaru tīklu mērītāja sistēma R&S TSM	equipment.receiver	Uldis Almona	Jurģis Tūbovs	Eiņports iela 5	✓	2022.02.07	2022.02.07	2025.02.07	—	✓	✓		
3221	Schwarzbeck FNA2 1515 (940- 500MHz)	equipment.antenna	Uldis Almona	Uldis Almona	Eiņports iela 5	✓	2019.07.13	2019.07.13	—	✓	✓	✓	FNA2_1515_certificate-1-1_2017.pdf - 252727	
2754	Portatīvās radio mērītāja sistēma PR100	equipment.receiver	Vijačevs Vijačevs	Jūta Jūta	Rācine	✓	2020.12.09	2023.12.09	—	✓	✓	✓	PR100_a_n_100310_09.12.2020.pdf - 422987	
3172	Portatīvās radio mērītāja PR100	equipment.receiver	Vijačevs Vijačevs	Jūta Jūta	Valmiera	✓	2020.12.11	2020.12.11	2023.12.11	—	✓	✓	PR100_101141_VNP203.pdf - 369537	
3189	TV/FM apraides mērītāja ETL	equipment.spectrumanalyzer	Imāns Laciņš	Imāns Laciņš	Valmiera	✓	2017.10.20	2024.10.20	—	✓	✓	✓	test.docx - 11436 ETL_SN_103582_Cal_Sert_No_20-300443486_Date_20_10_2017.pdf - 138224	
3287	Antena USA 9116	equipment.antenna	Uldis Almona	Kārlis Pūlis	Eiņports iela 5	✓	2020.09.28	2023.09.28	—	✓	✓	✓	USA9116_9116-537_28.09.2020.pdf - 407629	
3287	Antena VNA 51316	equipment.antenna	Uldis Almona	Kārlis Pūlis	Eiņports iela 5	✓	2020.09.28	2023.09.28	—	✓	✓	✓	VNA51316_9116-537_28.09.2020.pdf - 417183	
3287	Antena H1340	equipment.antenna	Uldis Almona	Kārlis Pūlis	Eiņports iela 5	✓	2020.10.13	2023.10.13	—	✓	✓	✓	H1340_101000_13.10.2020.pdf - 559557	
													H1340_101000_13.10.2020.pdf - 774209	

fig. 8. 2Equipment Registry Master Table

By highlighting one of the lines, a details with all the above information and a link to the documentation can be downloaded for familiarization purposes.

equipment.nr: 3189 - TV/FM apraides mērītāja ETL

equipment.nr

3189

equipment.serial

103582

equipment.name

TV/FM apraides mērītāja ETL

equipment.es_type

equipment.spectrumanalyzer

start

2014.02.03

equipment.responsible

user

equipment.place

Valmiera (Gaujas iela 7, Valmiera)

equipment.status

equipment.ok

equipment.tocalibration

equipment.calibration

valid from

2017.10.20

valid to

2020.10.20

equipment.certificate

equipment.toverification

equipment.noverification

equipment.files

test.docx

11.17 KB 2022.03.22 10:03:00

ETL_SN_103582_Cal_Sert_No_20-300443486_Date_20_10_2017.pdf

134.98 KB 2022.01.19 14:01:00

EDIT

CLOSE

fig. 8. 3Single line detailing

The required number of columns can be turned on and off by pressing the "COLUMNS" menu in the lower right corner of the page.

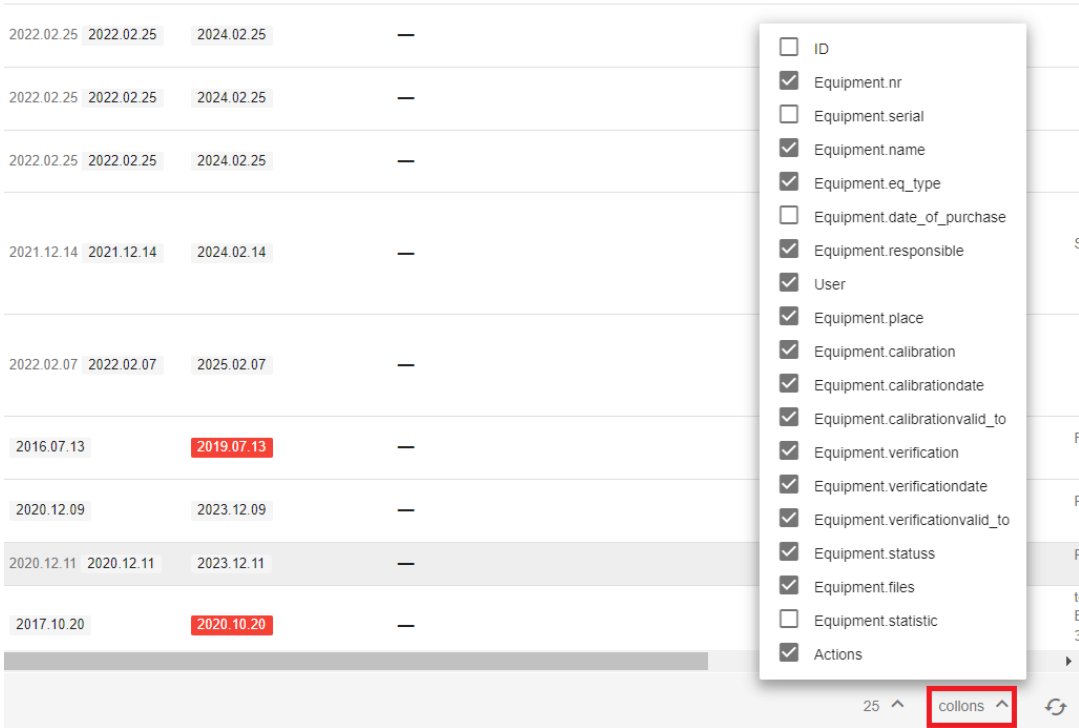


fig. 8. 4Option to change the number of columns

Adding new hardware is described in the RUNIS user manual.

9 Scheduler

This module is intended for Skudra Patrol measurement task planning from on user interface to all registered Skudra Patrol instances.

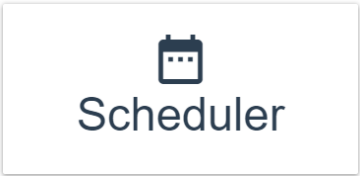


fig. 9-1 Scheduler icon SKUDRA Server

Scheduler consist on 3 sections, where each section main functionality will be described in this chapter.



fig. 9-2 Scheduler sections

10 Measurement units

MEASUREMENT UNITS						
SEARCH						
ID	HOST	STATUS	RECEIVER	IP ADDRESS	LATITUDE	LONGITUDE
29	Perseus	OFF	EM550	10.0.50.2.19005	56.952	24.1243
30	Ezermalas	OFF	EB500	10.0.50.22.19005	56.9939	24.1944
31	Valmiera	OFF	EB500	10.0.50.102.19005	57.5357	25.4202
32	Rezekne	OFF	EB500	10.0.50.62.19005	56.5145	27.3308
33	Daugavpils	OFF	EB500	10.0.50.72.19005	55.879	26.5553
34	GROBINA-PC	OFF	EB500	10.0.50.162.19005	56.5024	21.0773
35	p-intarsk	OFF	PR100	10.242.2.101.19005	56.9729	24.1089

fig. 10-1 8.1 Measurement unit section

In this section user can see all registered Skudra Patrol instances, their parameters and location, in table and map view. Each instance has following parameters:

- Host – PC host name where is installed Skudra Patrol;
- Status – status of Skudra Patrol instance, options are OFF/ON;
- Receiver – Skudra Patrol instance used receiver;
- IP address – ip address to Skudra Patrol instance;
- Latitude – Skudra patrol instance locations latitude (in WGS84);
- Longitude – Skudra patrol instance locations longitude (in WGS84);

Each Skudra Patrol instance have unique record in database, if in Skudra Patrol is changed on of listed parameter (Host, Receiver, IP address) new instance record will be created. When Skudra Patrol instance is set to remote, status update is send to server.

11 Measurement

MEASUREMENTS												
SEARCH												
NAME	FREQUENCY RANGE	RECEIVER	CHANNEL STEP	ATTENUATION	LICENSE LEVEL	NARROWBAND DET	WIDEBAND DET	MASK DET.	SPECTROGRAMS	STATISTICS	SCHEDULER DF_TRIGGERING	SPIKES DET.
smd146	146 MHz 174 MHz	PR100	100kHz/200kHz	30 dB LowDistortion	30 km 10 dBuV/m	0.6 dB 15	OFF	OFF	OFF	OFF	OFF	OFF
dvb-t1	500 MHz 700 MHz	PR100	100kHz/200kHz	30 dB LowDistortion	30 km 10 dBuV/m	OFF	True 15 p-intarsk-test_grobina	OFF	OFF	OFF	OFF	OFF
SMD420	420 MHz 430 MHz	PR100	6.25kHz/25kHz	OFF dB LowDistortion	30 km 10 dBuV/m	0.6 dB 10	OFF	OFF	OFF	OFF	OFF	OFF
FM	87.5 MHz 108 MHz	PR100	100kHz/200kHz	On dB LowDistortion	30 km 10 dBuV/m	0.6 dB 15	OFF	RealFM 100kHz/200kHz 87.5-108 MHz	SKUDRA SERVER	OFF	OFF	OFF
400 tactical	400 MHz 510 MHz	EB500	6.25kHz/25kHz	5 dB Normal	30 km 10 dBuV/m	0.7 dB 15	OFF	OFF	SKUDRA SERVER	5	OFF	OFF
tactical	230 MHz 320 MHz	EB500	6.25kHz/25kHz	5 dB Normal	30 km 10 dBuV/m	0.6 dB 15	OFF	OFF	SKUDRA SERVER	5	OFF	OFF
FM	87.5 MHz 108 MHz	PR100	100kHz/200kHz	On dB LowDistortion	30 km 10 dBuV/m	0.6 dB 15	OFF	OFF	SKUDRA SERVER	10	OFF	OFF
PMR 400-440	400 MHz 440 MHz	EB500	6.25kHz/25kHz	5 dB Normal	30 km 10 dBuV/m	0.6 dB 15	OFF	OFF	SKUDRA SERVER	5	OFF	OFF
jamTest	750 MHz 850 MHz	PR100	10MHz/100MHz	OFF dB LowDistortion	30 km 10 dBuV/m	OFF	OFF	OFF	SKUDRA SERVER	OFF	OFF	Noise level: 3 Car. specificity(dB) 5 Carrier spacing(from-to, kHz) - GPS (30-180)
new	30 MHz 3000 MHz		100kHz/200kHz	30 dB LowDistortion	30 km 10 dBuV/m	0.6 dB 15	OFF	OFF	OFF	OFF	OFF	OFF

fig. 11-1 Measurement section

Measurement section consist of user defined measurement tasks. Users with corresponding rights can add, change and remove measurement tasks. It also provides functionality to search defined tasks, it is possible to search by – Name, frequency range start, stop frequency, receiver name.

fig. 11-2 Measurement edit window

Editing Skudra Patrol measurement task will show up form for creating and editing tasks, task form corresponds to all the same range definition form in Skudra Patrol, for more details see Skudra Patrol user manual “3.2. Range definition section”.

fig. 11-3 Skudra Patrol Range definition section

when connecting to Skudra Patrol instance to Server it also send available ML models and spectrum Masks on this instance, see “3.6. Machine learning section” and “3.7. Masks

section". After connecting instance it is possible to assign responding ML models and Masks, that means, if Instance is disconnected, it is not possible to add it to task.

12 Schedule

Schedule section allows to plan predefined tasks to registered Skudra Patrol Instances.

SCHEDULEMEASUREMENTSMEASUREMENT UNITS

MEASUREMENTS

search

NAME	FREQUENCY RANGE	RECEIVER	CHANEL STEP
(11) smd146	146 MHz 174 MHz	PR100	100kHz/200kHz
(10) dvb-t1	500 MHz 700 MHz	PR100	100kHz/200kHz
(9) SMD420	420 MHz 430 MHz	PR100	6.25kHz/25kHz
(8) FM	87.5 MHz 108 MHz	PR100	100kHz/200kHz
(5) 400 tactical	400 MHz 510 MHz	EB500	6.25kHz/25kHz
(4) tactical	230 MHz 320 MHz	EB500	6.25kHz/25kHz
(3) FM	87.5 MHz 108 MHz	PR100	100kHz/200kHz
(2) PMr 400-440	400 MHz 440 MHz	EB500	6.25kHz/25kHz
(1) jamTest	750 MHz 850 MHz	PR100	10MHz/100MHz

REFRESH

< 15.06.2022 >

DAYWEEKMONTHTODAY

	Wed 15 June	19:00	20:00	21:00	22:00	23:00	Thu 16 June	00:00	01:00	02:00	03:00	04:00
▼ DAUGAVPILS												
EB500							(34) PMr 400-440 / EB500					
							400 - 440 MHz					
							(32) 400 tactical / EB500					
							400 - 510 MHz					
▼ EZERMALAS												
EB500												
▼ GROBINA-PC												
EB500							(26) tactical / EB500					
							1400 channels					
							230 - 320 MHz					
▼ P-INTARSK												
PR100												
▼ PERSES												
EM550												
▼ REZEKNE												
EB500							(28) tactical / EB500					
							1400 channels					
							230 - 320 MHz					
▼ VALMERA												
EB500												

fig. 12-4 Repeated task

it is also possible to plan repeated task, repeating period options are following:

- Every time at ...;
- Every week on current weak day;
- Every month on current month day;

And also last measurement date, until which date all repeated tasks will be created.

By changing task start and stop date it will show in task list overlapping tasks.

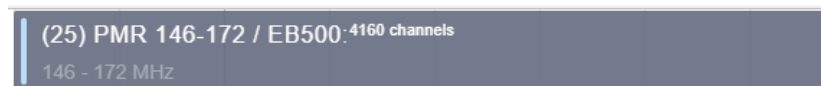


fig. 12-5 Saved tasks represents color-coded statuses: grey – saved, not sent. Blue – sent and accepted.

13 Reports

This module is intended for conducting reports on monitoring activities, as well as on current events in the company and industry, both in Latvia and around the world. Access to the section is through the Skudra Server app by clicking on the "Reports" icon.

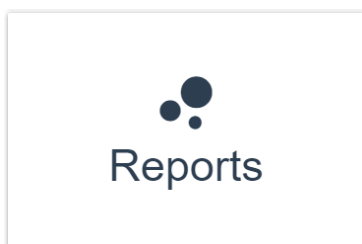


fig. 13. 1Reports icon SKUDRA Server

A window appears where you can select the type of report. They are MONITORING, ACTIVITIES and SKUDRA PATROL. You can also choose a reporting period.

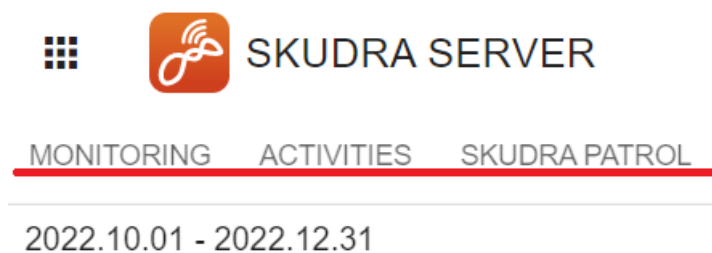


fig. 13. 2 Selection of report type

MONITORING. Graphical information about fixed and mobile monitoring reports drawn up in the defined period.

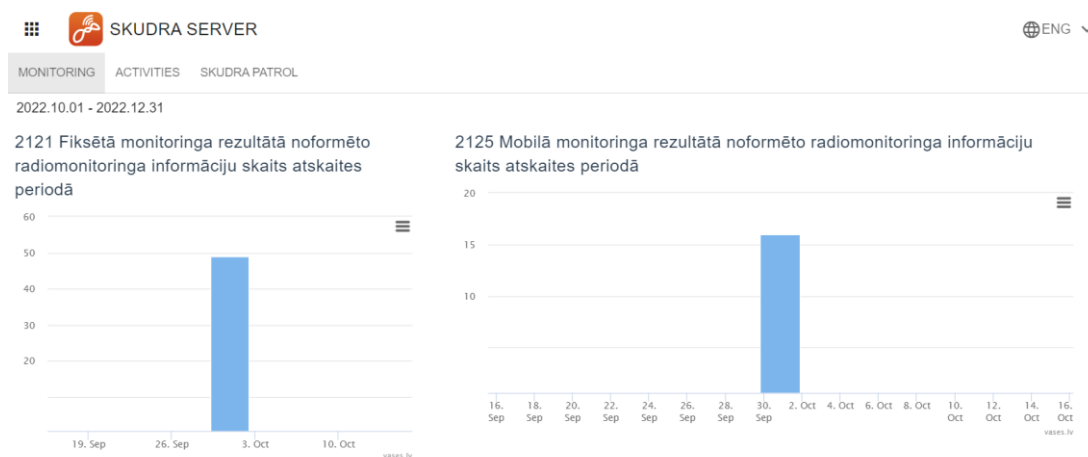


fig. 13. 3 Monitoring reports window

ACTIVITIES. Information about current events in the company, industry and binding regulatory acts. The activity section is used as a system for recording daily and other important tasks, the textual information of which is used to create various reports. It is possible to add classifiers from the Administration environment.

MONITORING ACTIVITIES SKUDRA PATROL					
2022.10.01 - 2022.12.31					
documents date_of_issue	documents classification	documents classification_sub	reports types	reports content	user actions
2022.10.21	Sadarbība LV	SM	reports monthly	Dalība sanāksmē Satiksmes ministrijā. SM gatavo informatīvu ziņojumu par būvniecības atļiegumiem atbilstībā uz elektronisko sakaru tīkliem. Ziņojuma saturs būs nesekars VAS ES- Izmaiņas atbilstībā uz vertikalās projektiem nav plānotas.	RUD Edit Balode
2022.10.20	Eksperti LV		reports monthly	Profesiju dienu ietvaros Guntars Savičs prezentēja radiosakaru inženiera profesiju Oļānes 1. vidusskolas 5. klases skolniekiem, lai skolnieki gūtu ieskatu profesijas ietvarā.	RUD Edit Balode
2022.10.20	Sadarbība LV	Cit	reports monthly	Pēc Valsts policijas pārstāvju lūguma organizēts operatīvas izbraukums, lai sniegtu tehnisku atbalstu, potenciālo pieredzēju veiktāru un saglabātu policijas operācijas laikā sastādīt ar automatizētu zādzību. Pēc sākotnējās informācijas policijas pārstāvjiem bija aizdomas par iespējamu radiosakaru slāpētāja izmantošanu noziedzuma izdarīšanas laikā. Operatīvi tika organizēts izbraukums un koordinēta mobilā monitoringa veikšana, kā arī specializētās sistēmas Inovomobils tehnisko iespēju realizēšana stratēģiski izvēlētos ceļa posmos, lai fiksētu iespējamo sakaru slāpētāju klātbūtni. Veiktā monitoringa laikā uzdevotajās monitoringa vietās radiosakaru slāpētāju signālu klātbūtnē netika konstatēta.	RUD Edit Balode

fig. 13. 4 Current information window or ACTIVITIES

The list can be exported as an xls file by pressing the button "EXPORT" in the upper right corner of the screen

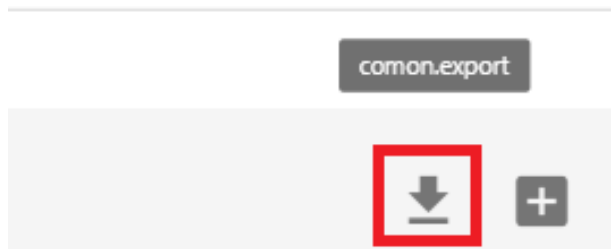


fig. 13. 5Option to export current information

As a result, the downloaded files folder shows:

1	RUD aktivitāšu atskaite par laika periodu no 2022-07-01 līdz 2022-09-30						
2	Nodala	Datums	Tips	Klasifikators	Apakšklasifikators	Apraksts	Darbinieks
3	RUD	2022-09-21	Gada	Normatīvie akti		Satiksmes ministrijai sniegts viedoklis par MK noteikumu projektu "Numerācijas pārvaldīša	Edīte Balode
4	RUD	2022-09-26	Gada	ETSI standarti		LVS sniegts viedoklis par jaunu ETSI standartu projektu EN 301 489-17 V3.2.5 (ElectroMagne	Edīte Balode
5	RUD	2022-09-26	Gada	Jaunās funkcijas	Mākslīgais intelekts	Pēc VARAM aicinājuma Māris Čamans deleģēts par atbildīgo no VAS ES puses, lai padziļināt	Edīte Balode
6	RUD	2022-09-26	Gada	Komerccdarbība/ attīstība		Drona projekta ietvaros šajā nedēļā plānoti testa lidojumi.	Edīte Balode
7	RUD	2022-09-26	Gada	Starptautiskās darba grupas, pasāk	CEPT	ECC FM22 darba grupai iesniegts input dokuments par Latvijas pozīciju mobilo sakaru tīklu	Edīte Balode
8	RUD	2022-09-26	Gada	Komerccdarbība/ attīstība		Sagatavots nodevums par individuālā mērķa izpildi saistībā ar "Inovomobils" papildus piev	Edīte Balode
9	RUD	2022-09-22	Gada	Uzraudzība pasākumos	TMS	VAS ES veica spektra izmantošanas aktivitātes "Starptautiskās sacensības autošosejā MOTUL	Edīte Balode
10	RUD	2022-09-22	Gada	Normatīvie akti		Ar Aizsardzības ministriju, Tieslietu ministriju un Vides aizsardzības un reģionālās attīstības	Edīte Balode
11	RUD	2022-09-22	Gada	Jaunās funkcijas	Kvantu tīkli	Kvantu tīklu projektā notikusi tikšanās ar projekta partneriem. Pārrunāts jautājums par pro	Edīte Balode
12	RUD	2022-09-22	Gada	Jaunās funkcijas	5G koridori	Tikšanās ar Rīgas biznesa skolas profesoru, lai pārrunātu, kuru 5G koridoru projekta uzdevu	Edīte Balode
13	RUD	2022-09-22	Gada	Jaunās funkcijas	5G koridori	5G koridoru projekta kick off sanāksme ar Eiropas komisiju un Igaunijas partneriem.	Edīte Balode
14	RUD	2022-09-19	Gada	Komerccdarbība/ attīstība		No SAF tehnikas saņemtas visas nepieciešamās iekārtas dronam. Šodien plānots visu salikt	Edīte Balode
15	RUD	2022-09-19	Gada	Starptautiskā sadarbība	Ārvalstu partneri	Lietuvas regulatora pārstāvjī plāno veidot jaunu numerācijas datu bāzi, tādēļ ir ieinteresēti	Edīte Balode
16	RUD	2022-09-18	Gada	Normatīvie akti		Satiksmes Ministrija lūdz sniegt viedokli par MK noteikumu projekta "Radioiekārtu atbilst	Edīte Balode
17	RUD	2022-09-19	Gada	Jaunās funkcijas		Darbs pie projekta pieteikuma sagatavošanas attiecībā uz publisko mobilo sakaru pārkāpju	Edīte Balode
18	RUD	2022-09-18	Gada	Komerccdarbība/ attīstība		Ar Daini, Artūru, Kārli un Montu tiek runāts par iespējamā Eiropas finansējuma (piemēram,	Edīte Balode

fig. 13. Appearance of the 6information export xls format file

SKUDRA PATROL. Still to be clarified. Gets to the screen from the main SKUDRA Server window.

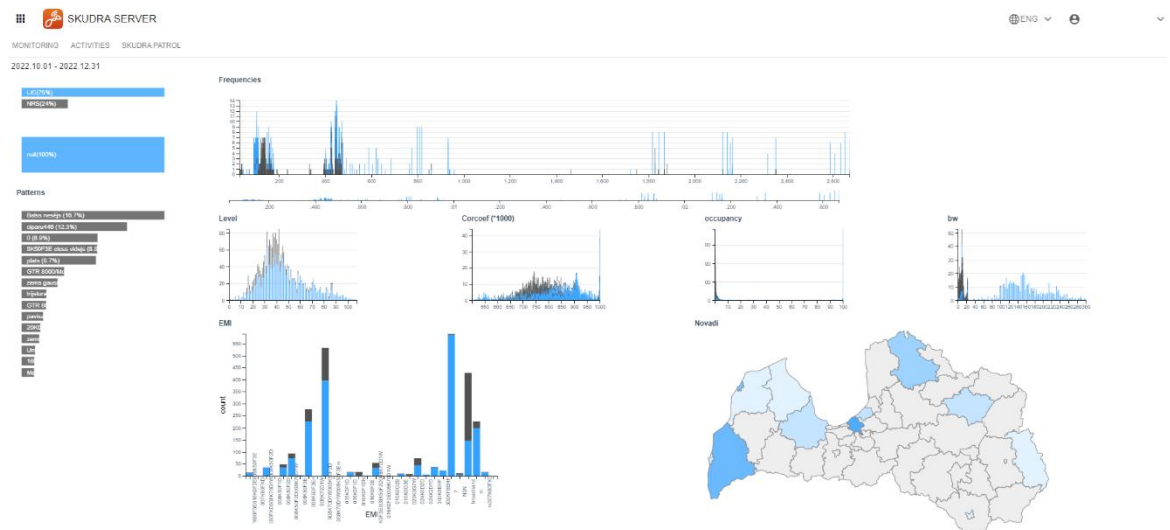


fig. 13. 7SKUDRA Patrol window in the SKUDRA Server app.

14 Sample spectra

After logging in to Skudra Server , in the upper right corner of the screen, next to the user name, there is a down arrow, which when pressed brings up the " Sample Spectra " menu.

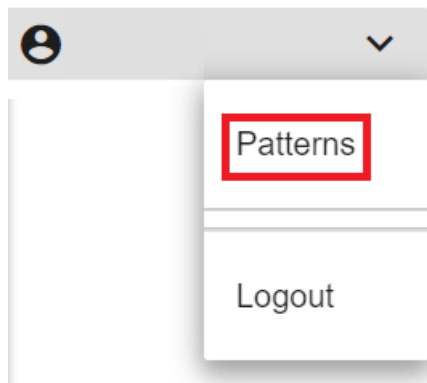


fig. 14.1 Sample spectra menu button

Selecting " Sample spectra " opens a window showing lines with the basic information of the so-called sample spectra . When you move the cursor over one of the rows, the spectrogram, radiation class and name appear on the right side of the screen. The monitoring program Skudra Patrol uses sample spectra in its operation , that is, it compares the frequency parameters recorded in daily measurements with one of the sample spectra .

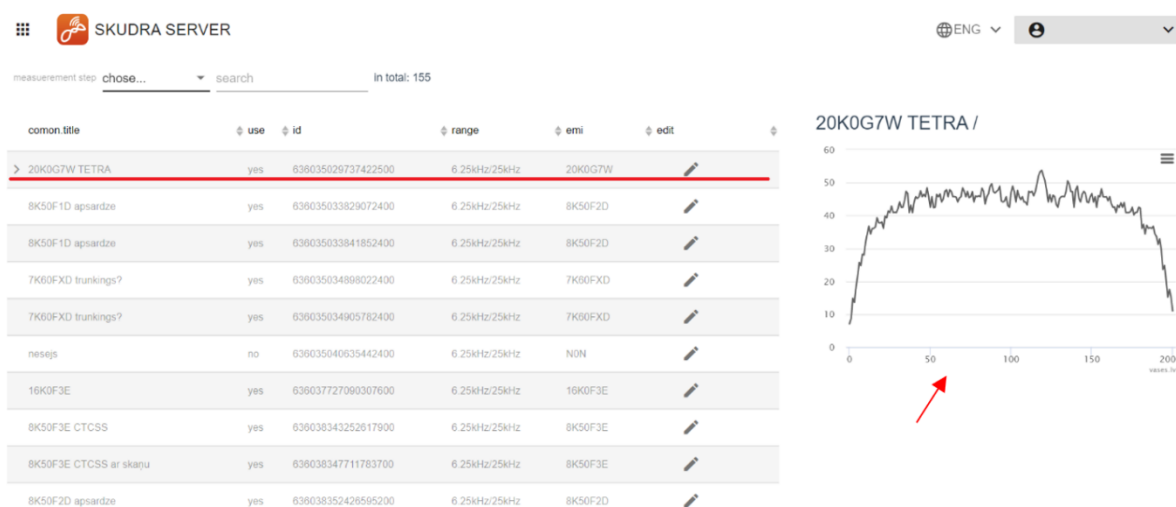


fig. 14.2 Table of sample spectra and spectrograms

15 Appendix

16 Abbreviations and terms used.

VASES – State joint-stock company "Elektroniskie sakari"

RUNIS – information system of the radio frequency monitoring department

RMP – radio monitoring point

EMI – electromagnetic radiation

EMS – electromagnetic situation

NRS – Unidentified Radio Signal

DF – Direction Finding , determination of direction

TMS – transportable monitoring station