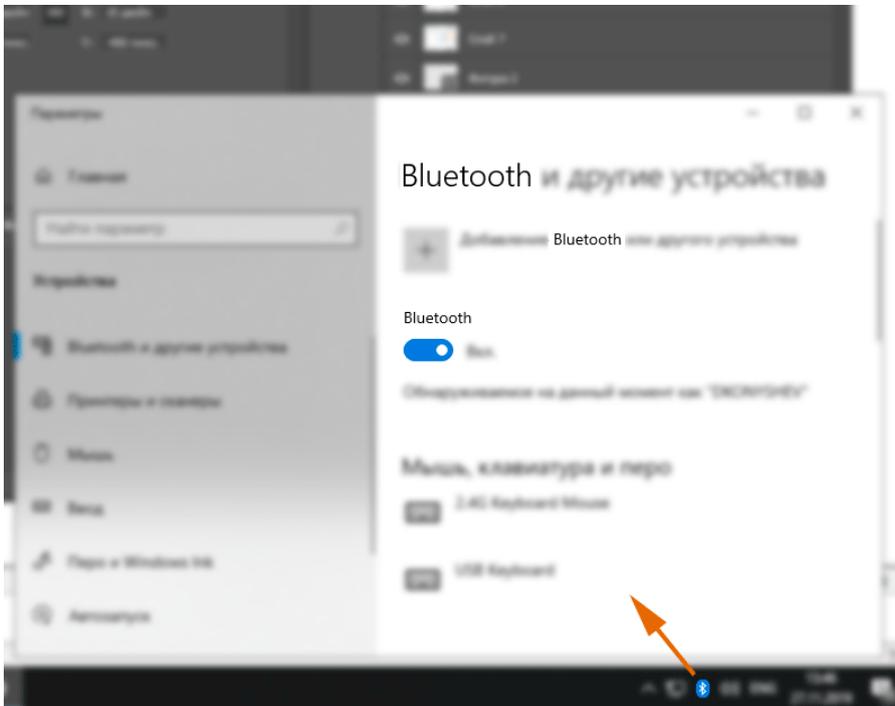


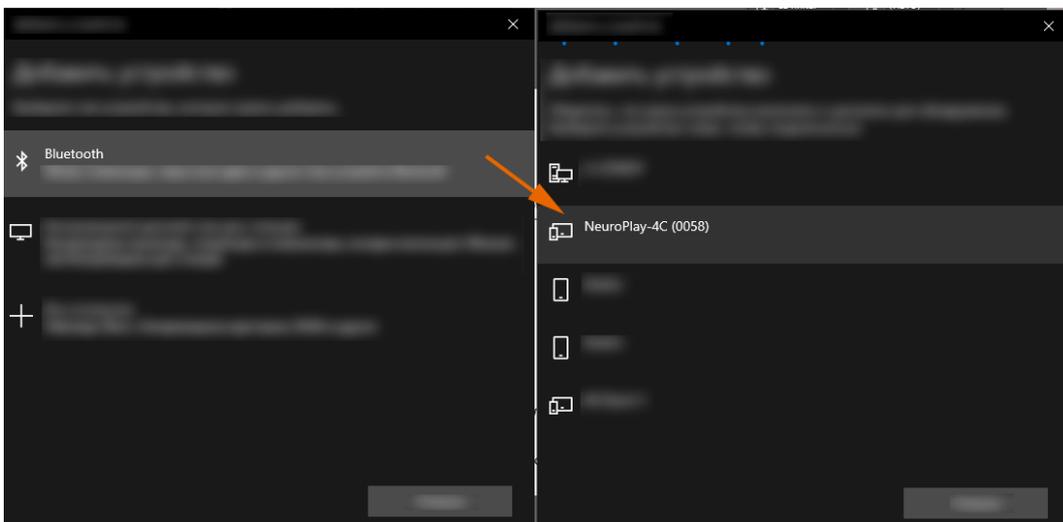
# 1. Device setup on Windows 10 (connection via Bluetooth)

## 1.1 Open Bluetooth devices by using:

- 1) The Bluetooth icon on the taskbar (usually in the lower right corner)
- 2) "Windows key", then type "Bluetooth"
- 3) "Windows key" -> press "gear icon" -> Bluetooth devices



## 1.2 Click "Add new device", then choose "Bluetooth device"



## 1.3 In the search list choose our NeuroPlay device by serial number (can be displayed as NPXX or NGXX).

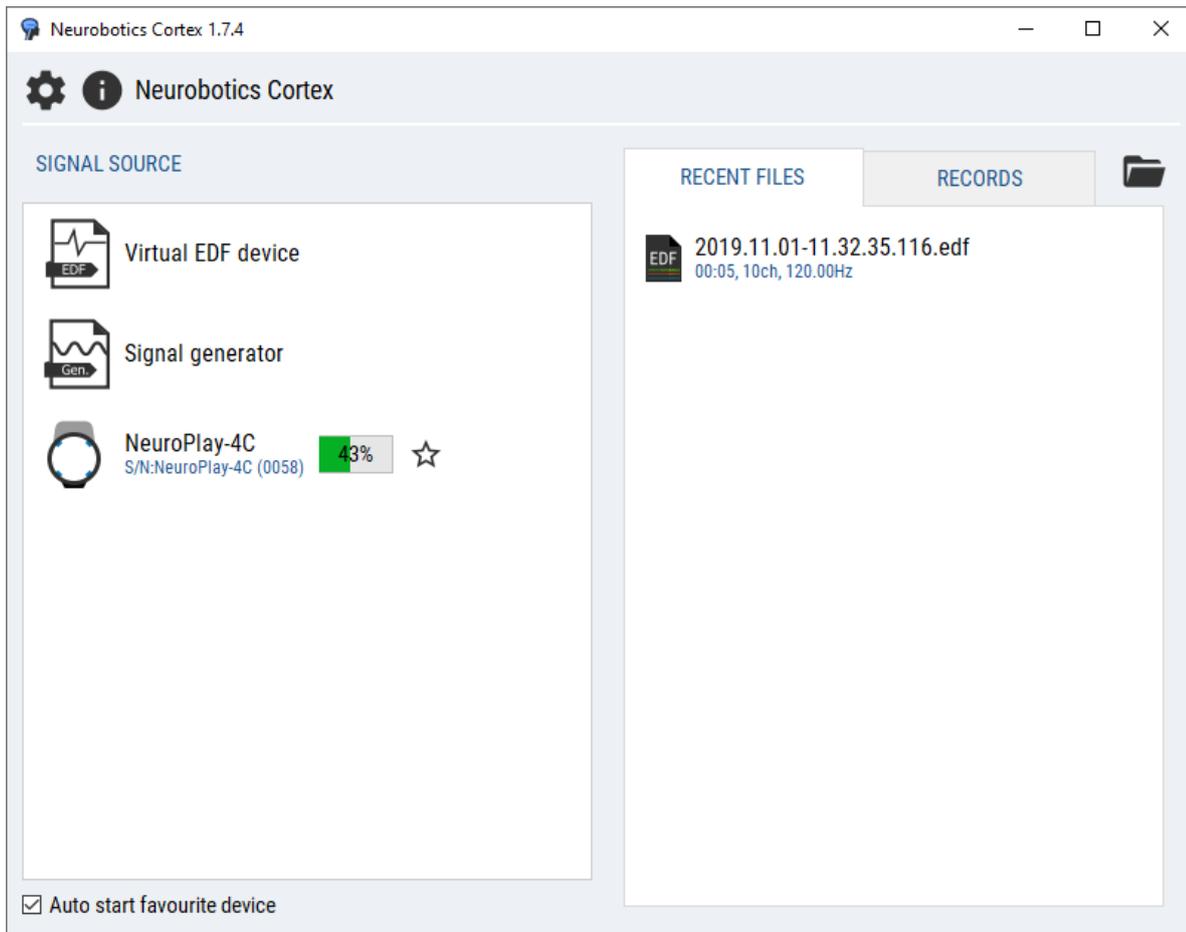
## 1.4 Device status:

- The device blinks once per 3 seconds, if it is active and not transferring data.
- The device blinks rapidly, if it is active and is transferring data.
- Try shaking the device if it doesn't blink (built-in gyroscope wakes it from sleep mode).

If the device is not blinking - charge it with any micro-USB 5V power supply.

## 2. Cortex device startup

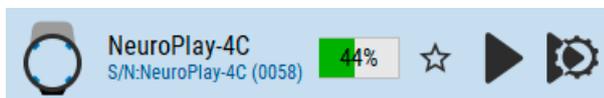
2.1 On the start page the device should appear in the Sources list.



If the device is not in the list, try to:

- 1) Shake the device
- 2) Turn Bluetooth on the computer off and on
- 3) Delete the device from Windows devices list and reconnect again (see 1.2)
- 4) Restart the Cortex application
- 5) Restart the computer

2.2 Hover mouse over the list item.



2.3.1 Press the standard "play" button to use recommended montage settings and start data acquisition and processing.

2.3.2 Press the "play with a gear" button to make custom montage adjustments.

🏠 NeuroPlay-4C

 **Start**

Montage

Auto montage NeuroPlay-4C ▾



Sampling rate, Hz 125 ▾

Nº	Type	Name	G1	G2	Scale	HPF, Hz	LPF, Hz	BSF, Hz
1	EEG	O1	1	0	1	2	40	50
2	EEG	F3	4	0	1	2	40	50
3	EEG	F4	5	0	1	2	40	50
4	EEG	O2	8	0	1	2	40	50



Type : user BSF, Hz Turn off ▾

HPF, Hz Turn off ▾

LPF, Hz Turn off ▾

**Apply**

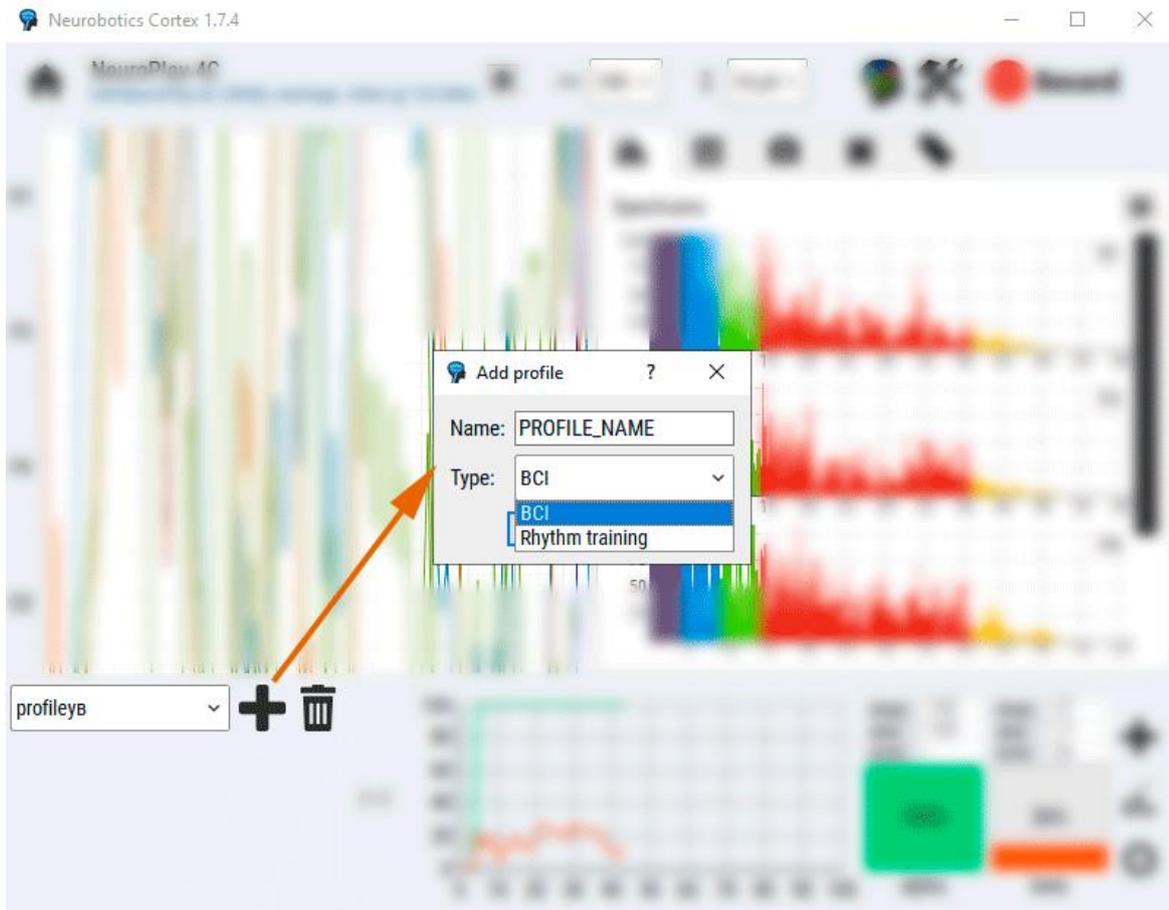
### 3. Data profiles

The combo box on the bottom panel shows the selected profile.

There are 2 types of profiles:

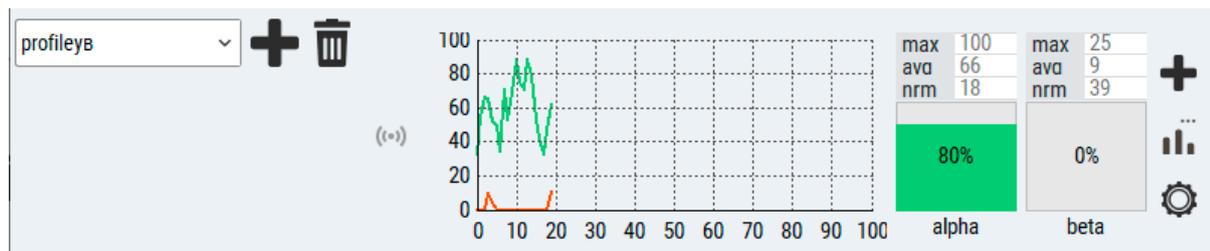
- 1) **BCI** - uses discrete mental states
- 2) **Rhythm training** - processes brain wave rhythms (alpha, beta, etc).

Choose an existing profile in the combobox or create a new one by pressing the plus button.



## 4. Brain rhythms

The bottom panel for this type of profile consists of a time graphic of the rhythms and rhythm bars.



To add a rhythm, press the rightmost plus button.

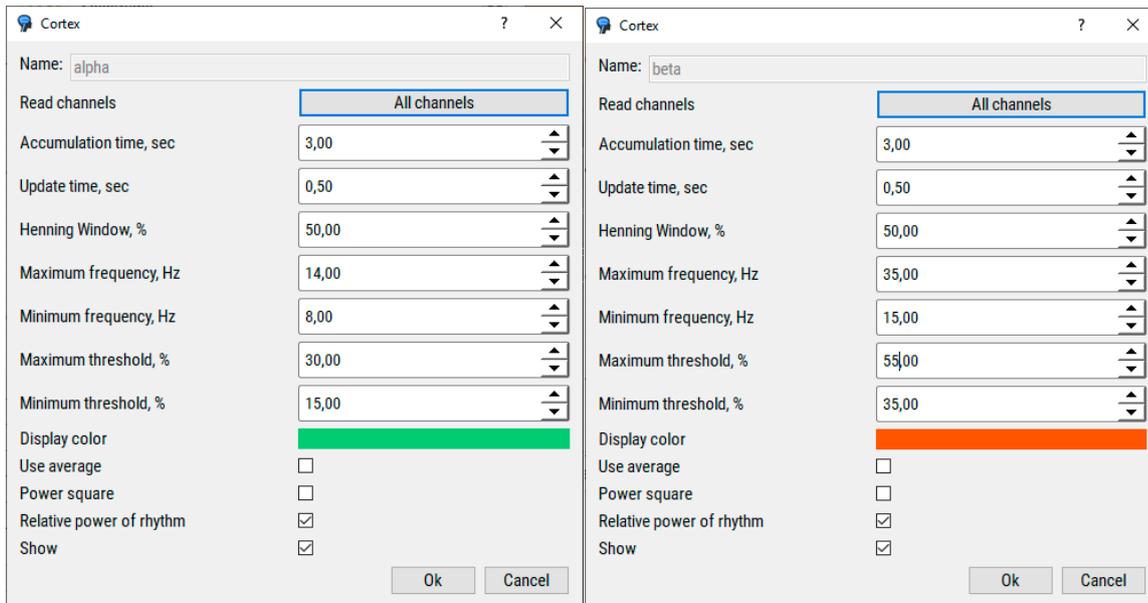
There you can choose from a template or create a custom one.

A rhythm's settings can be shown by double clicking on the corresponding bar.



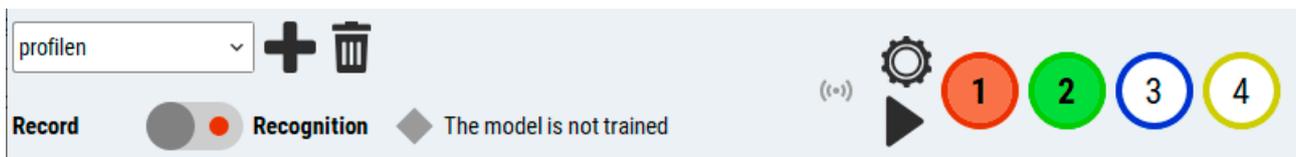
Recommended values for rhythms:

- **Alpha:** 8-14 Hz, with "Relative power of rhythm" enabled, minimum 10%, maximum 30% (min-max should vary for different users).
- **Beta:** 15-35 Hz, with "Relative power of rhythm" enabled, minimum 30%, maximum 50% (min-max should vary for different users).



## 5. Mental states

The bottom panel for this type of profile consists of round colored buttons with a number.



### 5.1. Train mental states

While wearing the NeuroPlay try to make a distinguishable mental state (relaxation, concentration, virtual hand movements, "void", remember something) and press the corresponding mental state button to start recording.

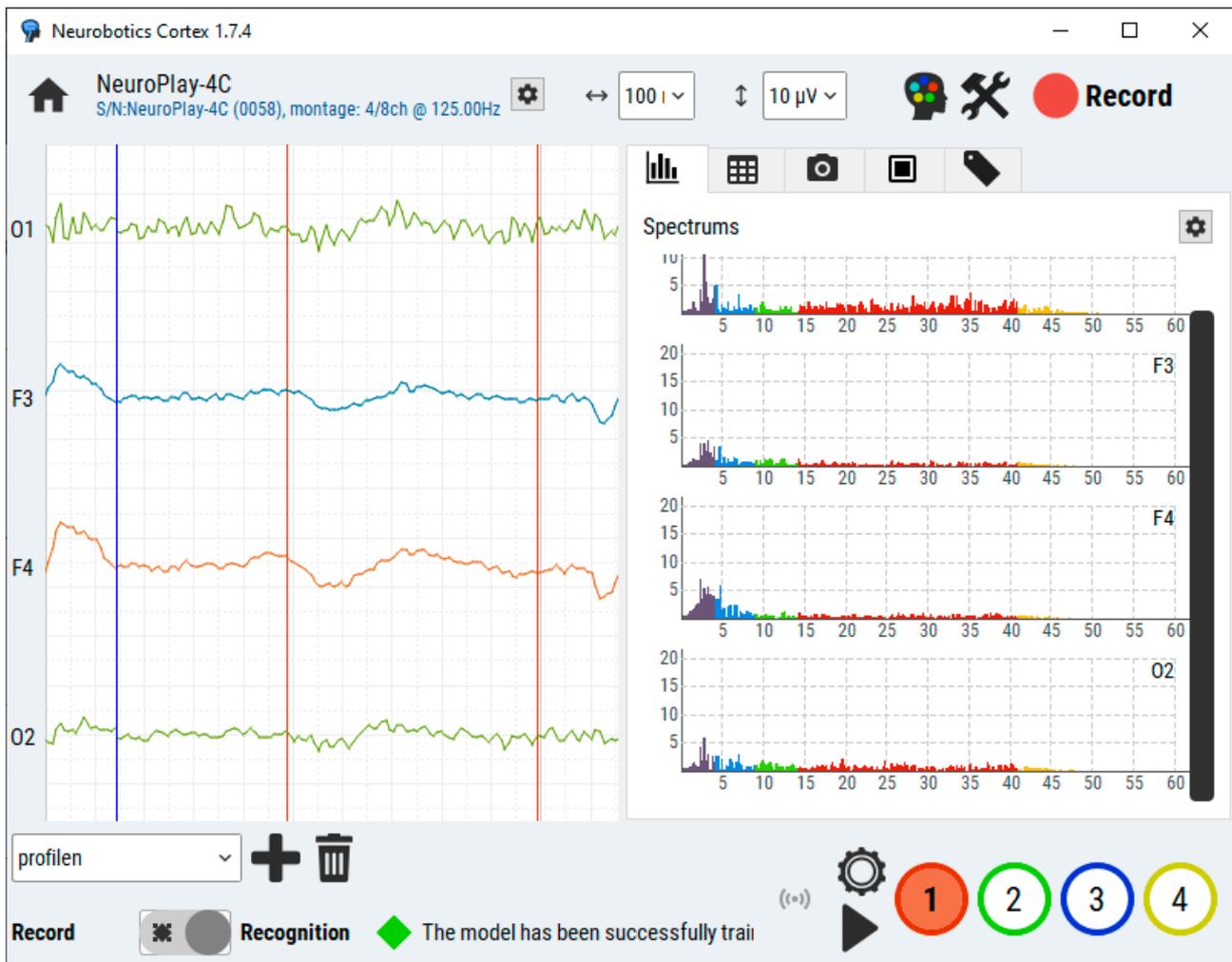
The border of the pressed button serves as record duration indicator.



Make a least 2 states.

Switch mode to "Recognition"

### 5.2. Mental state usage



If the model has trained successfully and the states are easily reproduced by operator – the colored buttons should change according to the mental state.

If a state gets stuck or not controllable – switch to “Record” mode and start again.

It requires practice, so that operator can make distinguishable states that can be recognized by the BCI algorithm.

## 6. Visualizations and API

Cortex serves as an HTTP-server, everything (raw data, mental states, spectrums, brain rhythms) can be grabbed via HTTP-requests. For online demo (Cortex must be running) and API description open “[CORTEX APP FOLDER]/API/Cortex API.html” in a browser.

Visit <http://braincomputer.io> or <http://braincomputer.ru> for visual games and BCI training visualizations.