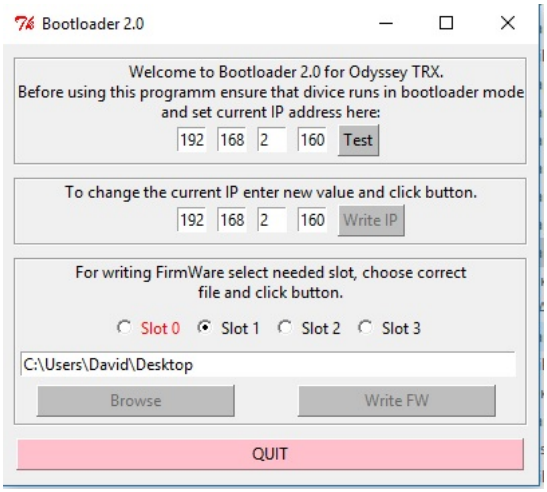
The Bootloader 2.0 for odyssey-2

admin Без рубрики Май, 06, 2018 One Comments

This development is the first step in the implementation of new high-quality software for the Odyssey-2 transceiver. This bootloader is written almost from scratch and is based on its own implementation of Gigabit Ethernet, which will form the basis for the development of a new own protocol of exchange with a PC.



A key feature of this implementation from known analogs is to provide the user with a unique opportunity to download up to three different firmware to the device, which can be used in the normal operation of the transceiver. In addition, it is possible to change the firmware of the bootloader itself.

The control program for the PC is written in Python (2.7.x) that allows you to run it on any operating system. The menu is very simple, intuitive and not requires explanations. Incorrect user actions or errors are displayed in information windows and the blocking system does not allow the user to violate the desired sequence of actions. So, without checking the connection with the transceiver at the current address, the user will not be able to do anything else and the like.

Perhaps, the only thing you need to know as the main feature — this bootloader works exclusively with static addresses assigned by the user to the transceiver.
This is mainly due to the capabilities of future firmware (only static IP) but also to the real practice of using a transceiver, proving that static addressing works much better and more reliably in complex networks.

The new firmware for the microcontroller of the transceiver provides additional functionality — indication of the current IP address of the transceiver and the ability to change the slot number for firmware download using the UP and DWN buttons on the tangent (short presses).

In order to switch to a new bootloader, it is necessary to flash the transceiver with the firmware of the new bootloader using the programmer and flash the microprocessor of the transceiver with a new firmware (from the MCU folder). After that, you can try to run the control program on the PC. The network connection of the computer must be set to the same network as the transceiver's IP, indicated on the display. As usual, in order to stay in the bootloader mode for a long time, it is necessary to turn on the transceiver with the pinned contacts of the iambic key. After changing the current IP transceiver, you also need to reconfigure the connection to the PC so that the network can work with a new IP address, so you can not forget it now — the current IP address is always displayed on the display after the transceiver is turned on.

Operating firmware should be downloaded version 1.11, as they are adapted to work with the new MCU firmware.

Thus, at the moment it is possible to load both existing firmware into the transceiver, with the new HPSDR protocol and the old one, and in the future also the firmware with its own protocol. Switching between the firmware is very simple — in bootloader mode, you can select the required slot for downloading by short presses on the buttons. Also, during the normal reboot of the transceiver, while the bootloader 2.0 is still glows, before the indication of the IP address, it is possible to switch the slot. The slot number displayed on the transceiver display is used only to select the operating firmware when it is loaded. To load the firmware into the memory of the transceiver, the required slot is indicated in the control program on the PC.

In addition, in this bootloader firmware, a test function is implemented to check the output signals of the ExtIO connector — when a PTT signal is applied to the connector, a signal is periodically sent to the control outputs. This allows you to identify faults like impurities, short circuits in the control lines. The signal flow sequence is the following: FPGA_PTT, ANT, TUNE, VNA, UO0, UO1, UO2, UO3, UO4, UO5, UO6.

You can download the source code and the bootloader's firmware here ...
You can download the file of the control program here ...
Firmware version 1.11 ...

« Firmware with support the old openHPSDR protocol for Odyssey-2.

HFPU-100, The Amplifier for Odyssey-2 »