AIR CHAT USER GUIDE

Launching the program:

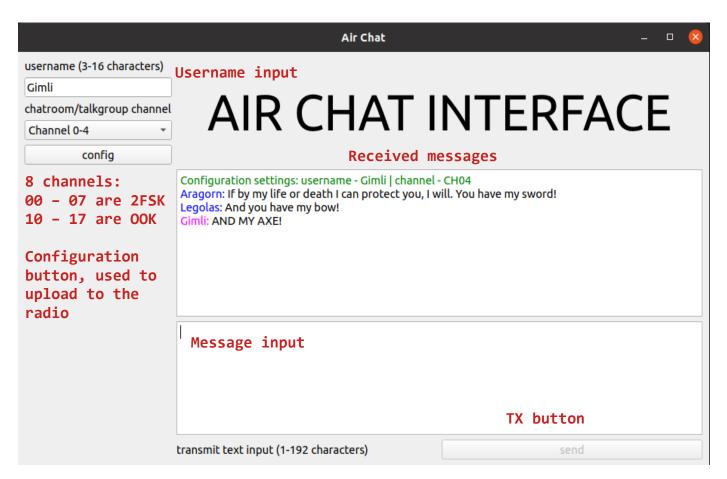
 Determine the interface the serial port is connected to: dmesq | grep tty

Look for the output with the device named cp201x converter in most cases, it will be ttyUSB0

2. Run the Air Chat GUI by typing
 python3 airchat_gui.py /dev/ttyUSB0

(substitute ttyUSB0 with the mounting point on your machine if it is different)

Once launched, the following GUI will appear, and can be used to send/receive messages:



RF Parameters

- 16 channels broken up into 8 2FSK and 8 00K
- Each channel is spaced 200 kHz
- CH 00 starts at 913.05 MHz
- For 2FSK, the signal frequency deviation is 25 kHz
- Baud rate is 9600 for FSK and 4800 for OOK
- Power level is approximately 0 dBm at the antenna port

Protocol

The protocol is the same for both 2FSK and OOK. Each packet is variable length up to 192 ASCII characters.

The basic structure is shown in the figure below:

PREAMBLE (8 Bytes) - 0xAA									
Start of F	rame (4 Bytes) - 0xD3 0x91 0xD3 0x91	PKT LEN	TYPE	SN LEN	DATA				
DATA									
DATA									
END 0xFF									

- END OXFF
- Preamble: 8 bytes long, composed of alternating 1's and 0's (0xAA)
- Start of frame sequence: 4 bytes, 0xD3 0x91 repeated
- Packet length: 1 byte, integer packet length¹
- Type: 1 byte, packet type. RF messages will always be 0x02. Integers 0x00, 0x01, and 0x03 are reserved for internal control data.
- Screen name length: 1 byte, integer length of the user chosen screen name
- Data: variable length, ASCII message data
- End of data sequence: 1 byte, always 0xFF

¹ Packet length starts at the "TYPE" byte

Example TX

Username: "rns"
Message: "test"

| 0xAA |
|------|------|------|------|------|------|------|------|
| 0xD3 | 0x91 | 0xD3 | 0x91 | 0x0A | 0x02 | 0x03 | 0x72 |
| 0x6E | 0x73 | 0×74 | 0x65 | 0x73 | 0x74 | 0×FF | |

Packet length: 0x0A (decimal 10)

[1 byte type, 1 byte SN length, 3 bytes screen name, 4 bytes data, and 1 byte end of data sequence]

Type: 0x02 (RF message)

SN Length: 0x03 ("r", "n", "s",)

Data: ASCII values ("r", "n", "s", "t", "e", "s", "t")

End: 0xFF

Dependencies

sudo apt-get install python3-serial python3-pyqt5

user must be part of the "dialout" group:
sudo adduser USERNAME dialout

where USERNAME is the user to add to the group