

OOK Poor man's monitoring tool

Introduction

Brief description of how to use a SAW transceiver to monitor and decode ASK/OOK datagrams.

Hardware

Use of as RX433 Receiver or if available RX433-TX433 Transceiver board (see SAW Devices and OOK vx.x.pdf ,
NB: only the receiver part is used)

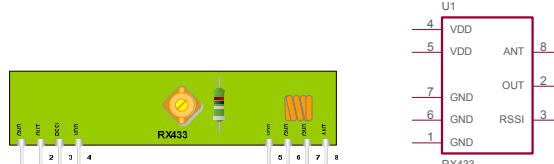


Figure 1: RX433 Transmitter

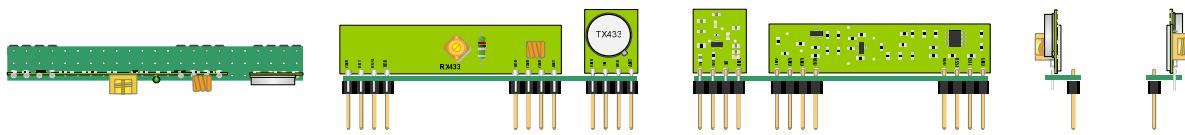


Figure 2: RX433-TX433 Transceiver board

Hardware configuration

Audio Capture

See: <http://davehouston.org/learn.htm>.

The RX433 receiver output is to be adapted for audio connection

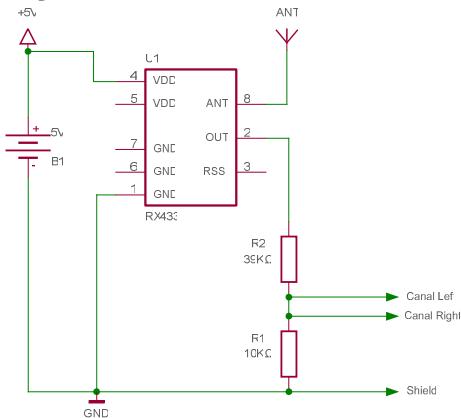


Figure 3: RX433 OOK Monitor - Logical

Signal	RX433	Audio Plug
+5V	VDD (74)	
GND	GND (1,6,7)	Shield
OOK Receive	OUT (2)	
Antenna	ANT (8)	
Canal Left		Tip
Canal Right		Ring

Table 1: RX433-Audi plug OOK Monitor – Connections

3,5mm Audio plug

An audio stereo plug is used to connect the host application (in my case may IMAC audio in connector)

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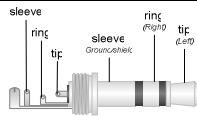


Figure 4: 3,5mm Audio plug

IMAC connection (Audio In)

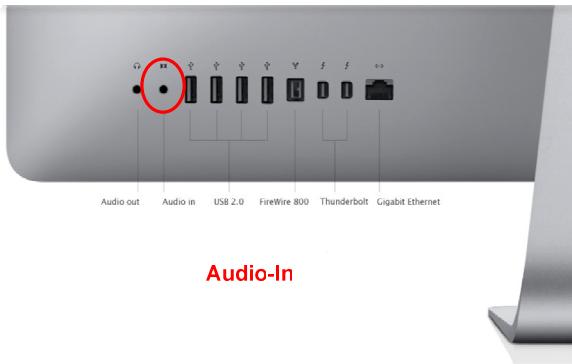


Figure 5: IMAC Audio-In connection

Physical set-up using the Transceiver board

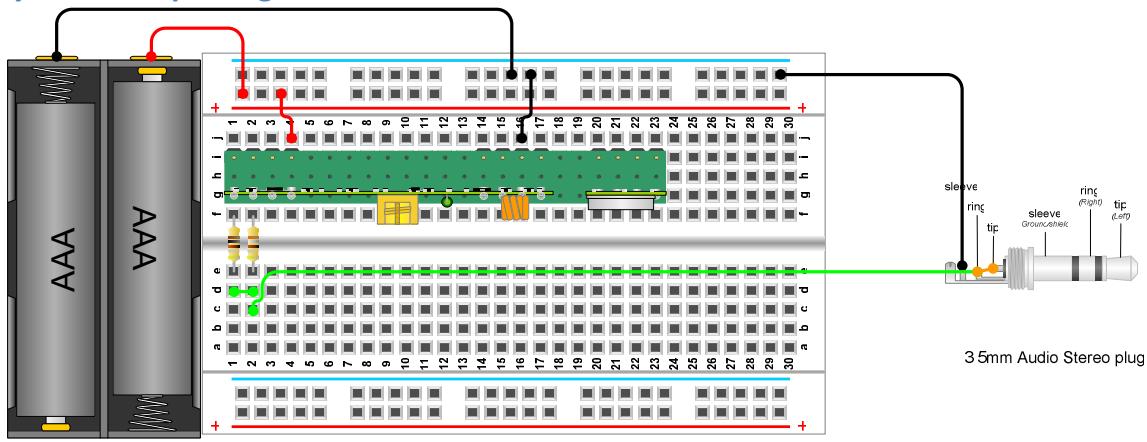


Figure 6: OOK Audio monitoring set-up

Software

Install

Audacity software should be installed (currently running on IMAC Mavericks v 10.9.5)



Audacity : <http://audacityteam.org/download/mac> or <http://sourceforge.net/projects/audacity/>
(Current version is 2.1.0)

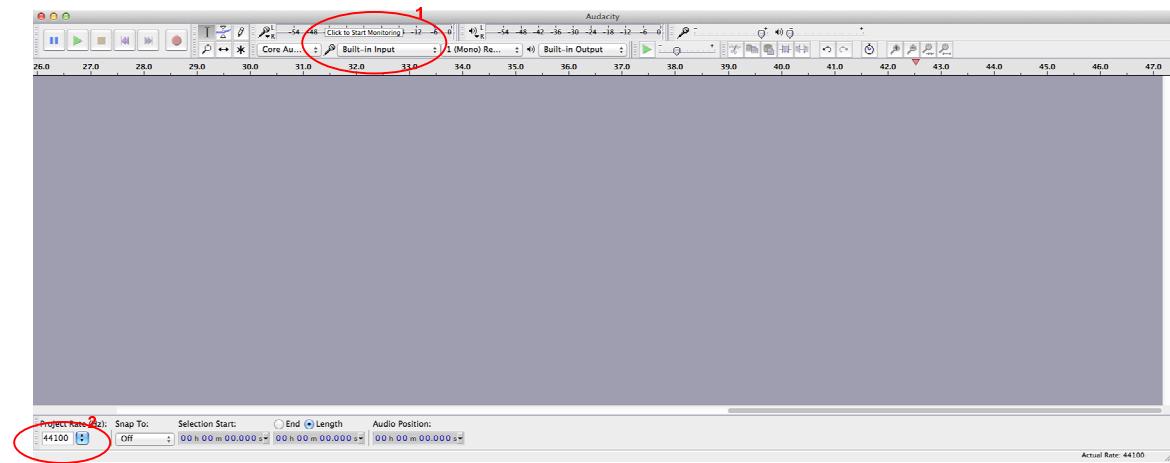
Connect

Activate the transceiver and connect the audio plug to the Audio in jack

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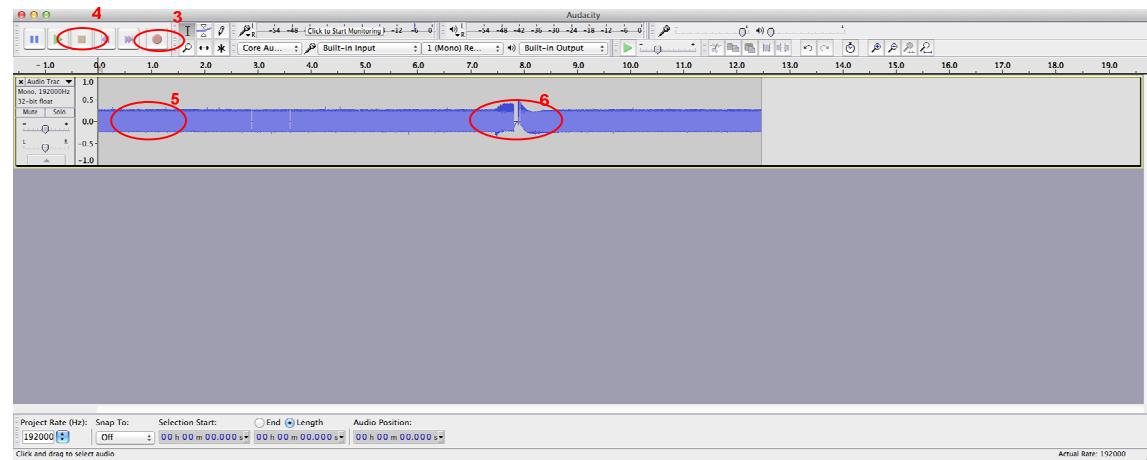
Configure the software

Start Audacity



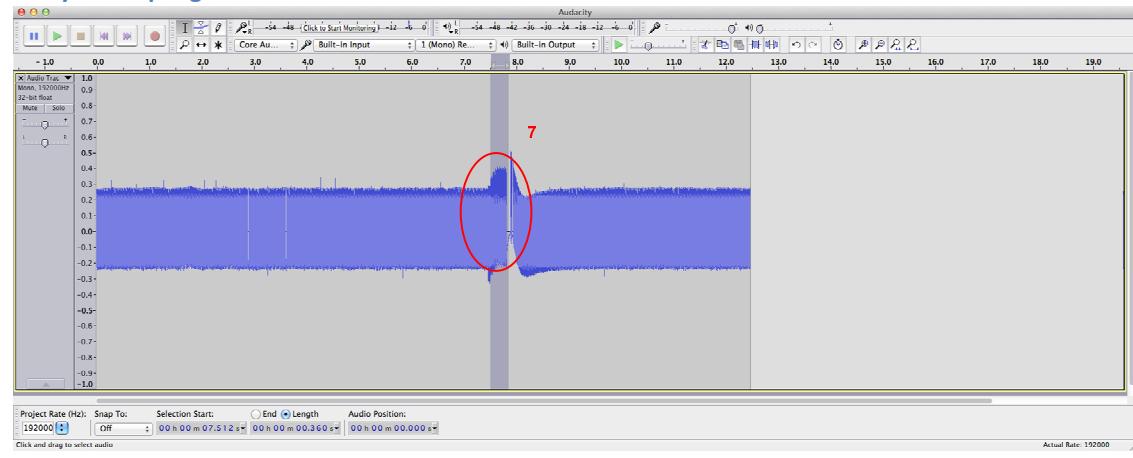
1. Ensure that the input is using the built-in jack
2. Ensure that the project rate sampling allows sufficient granularity (for instance 192000)

Start sampling



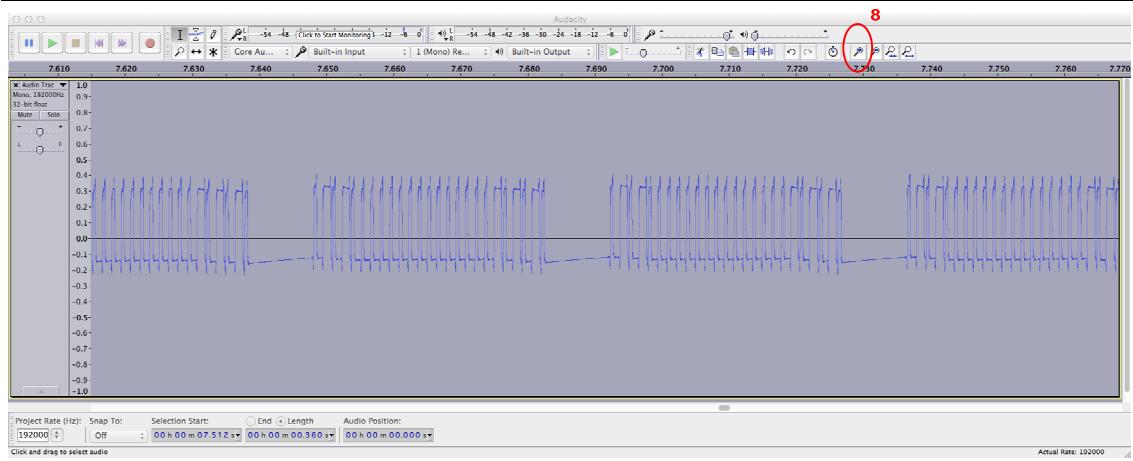
3. Start the recording
4. Stop the recording
5. Look that my environment is quite noisy!
6. Activate a OOK device (here old KAKU switch command)

Analyse sampling

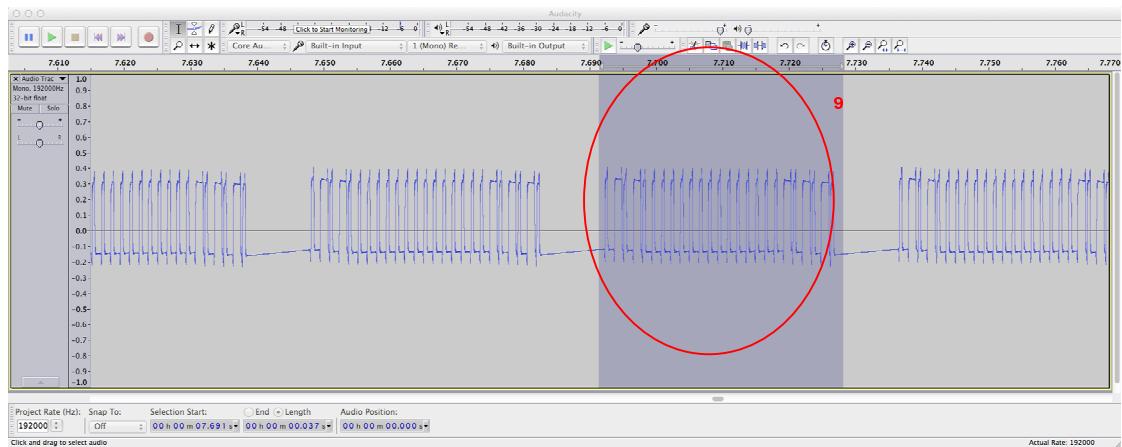


7. Use the mouse left button to select the interesting zone

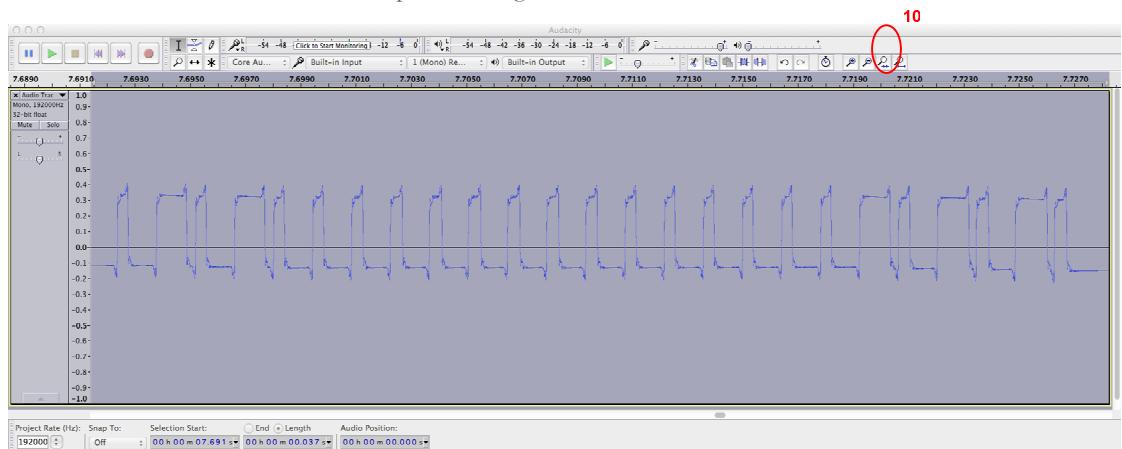
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8. Use the zoom button several times to have a better view of the fetched data

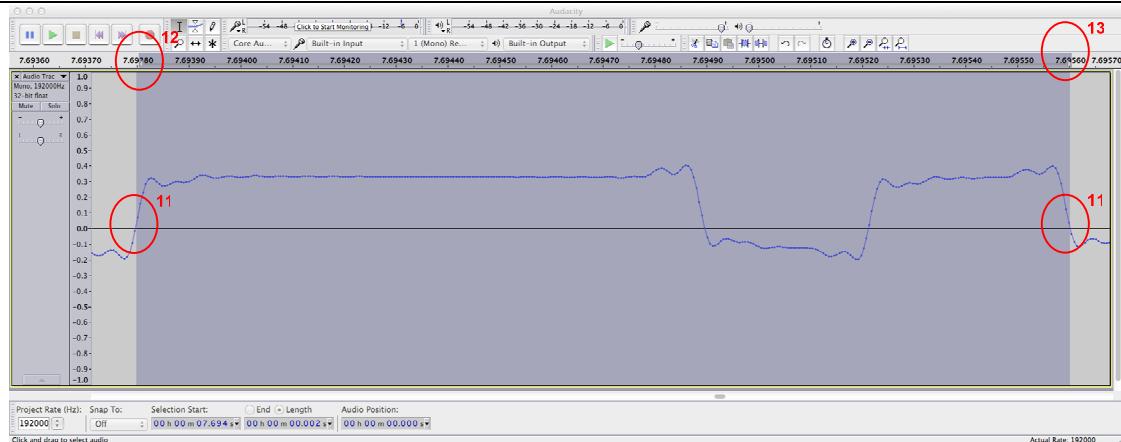


9. Use the mouse to select on specific datagram



10. Use the “Fit to selection” button to zoom on the datagram

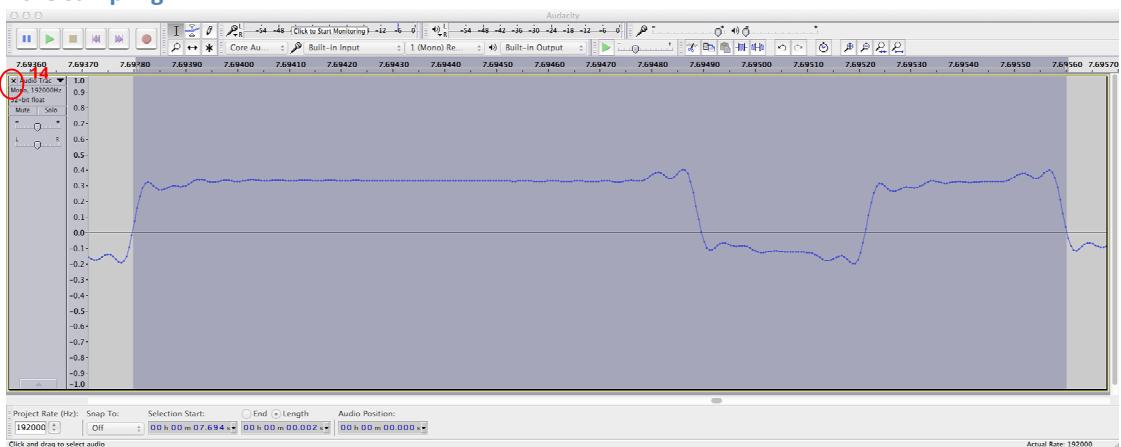
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11. Using the mouse button left and the fit to selection button, zoom on the zone to measure
12. Record the beginning time of the measure (here 7.69380)
13. Record the end time of the measure (here 7.69560)

Result is $7.69560 - 7.69380 = 180$ or $1800\mu s$, which in our case (old KAKU protocol) represents $3T+2T$ or $5T$ meaning that $1T$ is $360\mu s$.

Clear the sampling



14. Clear the trace to start a new sampling by using the X button.
- OOooo -