

GNU RADIO : EMETTEUR HF 433MHZ

Objectifs : Utiliser GNU RADIO et un RTL-SDR pour décoder les informations envoyés par un module AUREL433

1. CODE C DE L EMETTEUR

```
#include <12F629.h>

#FUSES NOWDT           //No Watch Dog Timer
#FUSES INTRC_IO       //Internal RC Osc, no CLKOUT
#FUSES NOCPD          //No EE protection
#FUSES NOPROTECT      //Code not protected from reading
#FUSES MCLR           //Master Clear pin enabled
#FUSES NOPUT          //No Power Up Timer
#FUSES NOBROWNOUT     //No brownout reset
#FUSES BANDGAP_HIGH
#use delay(clock=4000000)
#use rs232(baud=9600,parity=N,xmit=PIN_A2,rcv=PIN_A3,bits=8,errors)

#define BPmarche PIN_A4
#define BParret PIN_A5

void main()
{

    setup_timer_0(RTCC_INTERNAL|RTCC_DIV_1);
    setup_timer_1(T1_DISABLED);
    setup_comparator(NC_NC);
    setup_vref(FALSE);
    printf("debut");
    // TODO: USER CODE!!
do{
    //si appui su BP marche envoie d'un 'M'
    if(!input(BPmarche)) putc('M'); en binaire M= 01001101
    //si appui sur BParret envoie d'un 'A'
    if(!input(BParret)) putc('A');en binaire A=01000001
```

```
}while(1);

}
```

2. GRC

The screenshot shows the GNU Radio Companion (GRC) interface. The main block diagram consists of the following blocks:

- RTL-SDR Source**: Sample Rate (sps): 3.2M, Ch0: Frequency (Hz): 433M, Ch0: Freq. Corr. (ppm): 0, Ch0: DC Offset Mode: Off, Ch0: IQ Balance Mode: Off, Ch0: Gain Mode: Manual, Ch0: RF Gain (dB): 20, Ch0: IF Gain (dB): 20, Ch0: BB Gain (dB): 20.
- WX GUI FFT Sink**: Title: FFT Plot, Sample Rate: 3.2M, Baseband Freq: 433M, Y per Div: 10 dB, Y Divs: 10, Ref Level (dB): 0, Ref Scale (p2p): 2, FFT Size: 1.024k, Refresh Rate: 15, Notebook: r60.0, Freq Set Varname: None.
- AM Demod**: Channel Rate: 44.1k, Audio Decimations: 10, Audio Pass: 15k, Audio Stop: 16k.
- WX GUI Scope Sink**: Title: Scope Plot, Sample Rate: 3.2M, Notebook: r60.1, Trigger Mode: Auto, Y Axis Label: Counts.

The **FFT Plot** shows a spectrum with a prominent peak at approximately 433 MHz. The **Scope Plot** shows a square wave signal, indicating the demodulated audio or data stream.

3. MESURES

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The **Scope Plot** shows a square wave signal, indicating the demodulated audio or data stream.