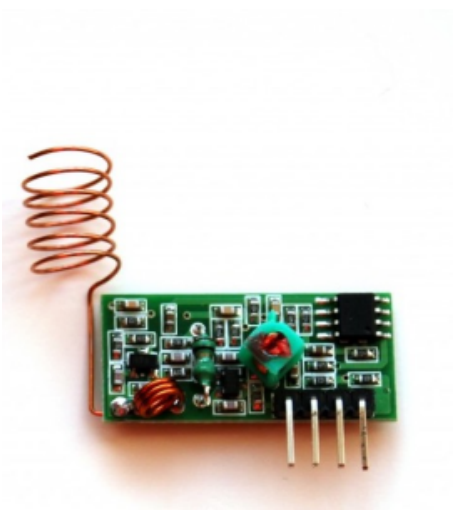
RF Transmitter/Receiver

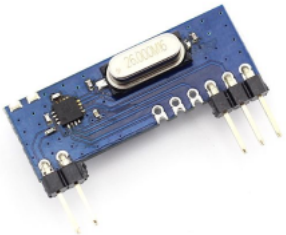
Receiver Specifications

Detail	Specification	Image
Product Model	XD-RF-5V	
Operating voltage	5V	
Quiescent Current	4 mA	
Receiving frequency	433.92MHZ	
Receiver sensitivity	-105DB	
Pinout from left right	VCC, DATA,DATA,GND	

Simular Product:

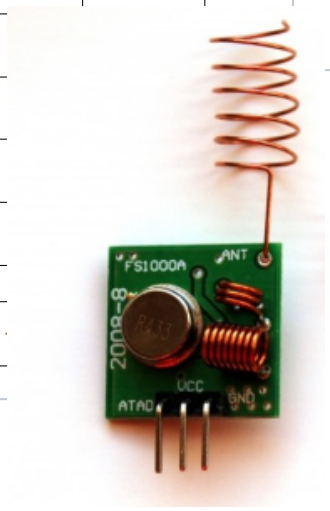
https://www.ebay.com/sch/i.html?_from=R40&_trksid=m570.l1313&_nkw=433Mhz+superheterodyne+receiver&_sacat=0

https://www.seeedstudio.com/433MHz-ASK-OOK-Super-heterodyne-Receiver-module-p-2205.html

	Image
Electrical Characteristics	

Parameter	Condition	Min.	Typical	Max.	Unit
Operating Voltage(DC)	RF-R-ASK	3.6	5	5.5	V
Operating Current	RF-R-ASK /5V/315MHz RF-R-ASK /5V/433.92MHz		3 5	4 6	mA mA
Sleep current			3		uA
Operating Frequency	RF-R-ASK-315 RF-R-ASK-433		315 433.92		MHz
Sensitivity	315MHz Date Rate 1K 433.92MHz Date Rate 1K		-108 -108		
Receive bandwidth			300		
Operating temperature		0.3 -20			

Transmitter Specifications

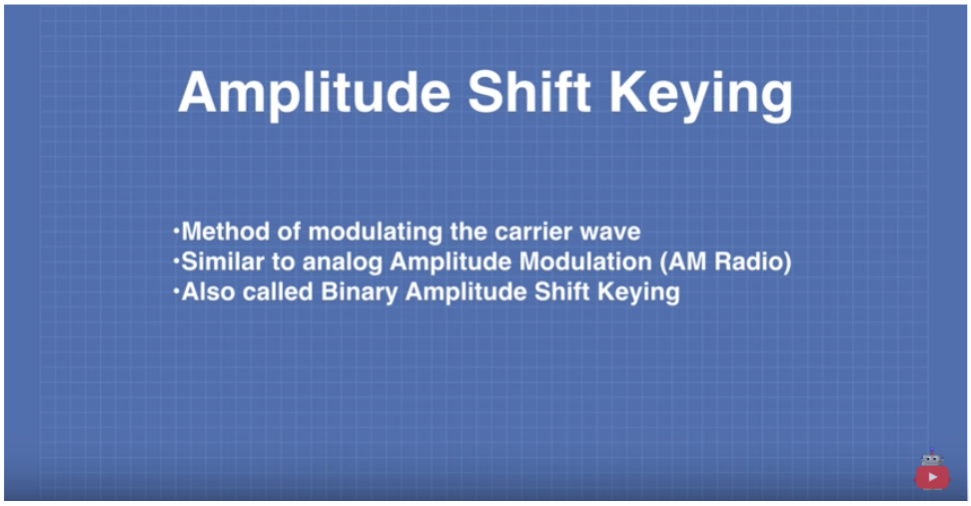
Detail	Specification	Image
Product Model	XD-FST	
Launch distance	20-200 meters (different voltage, different results)	
Operating voltage	3.5-12V	
Operating mode	AM	
Transfer rate	4KB / S	
Transmitting power	10mW	
Transmitting frequency	433M	
Pinout from left right	DATA; VCC; GND	

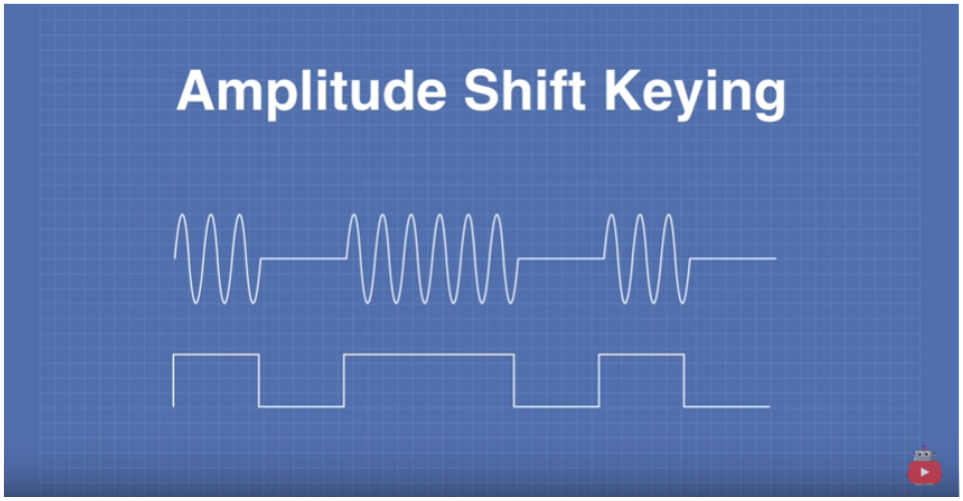
Antenna

Length should be cut to a 1/2 to a 1/4 of the wavelength. Since our wavelength is 69.24 cm. A 1/4 of that would be 17.31 cm. The antenna can be coiled to make it shorter.

How does it work?

Our RF signal will use Amplitude Shift Keying.





A digital 1 turns the carrier on while a digital 0 turns tit off.

Sample Code

```
// ask_transmitter.pde
// -*- mode: C++ -*-
// Simple example of how to use RadioHead to transmit messages
// with a simple ASK transmitter in a very simple way.
// Implements a simplex (one-way) transmitter with an TX-C1 module

#include <RH_ASK.h>
#include <SPI.h> // Not actually used but needed to compile

//RH_ASK (uint16_t speed=2000, uint8_t rxPin=11, uint8_t txPin=12, uint8_t pttPin=10, bool pttInverted=false)
RH_ASK driver(2000, D2, D1, D6); // ESP8266 or ESP32: do not use pin 11 or 2

//Connect data to pin 5/D1

void setup()
{
    Serial.begin(115200);
    Serial.println("\n\nrfSender Started\n\n");
    if (!driver.init()){
         Serial.println("init failed");
    }
    //driver.setModeTx();
    Serial.println("Initialized");
}

void loop()
{
    Serial.println("Sending hello");
    const char *msg = "hello";

    driver.send((uint8_t *)msg, strlen(msg));
    driver.waitPacketSent();
    delay(1000);
}
```

```
// ask_receiver.pde
// -*- mode: C++ -*-
// Simple example of how to use RadioHead to receive messages
// with a simple ASK transmitter in a very simple way.
// Implements a simplex (one-way) receiver with an Rx-B1 module

#include <RH_ASK.h>
#include <SPI.h> // Not actually used but needed to compile

//RH_ASK (uint16_t speed=2000, uint8_t rxPin=11, uint8_t txPin=12, uint8_t pttPin=10, bool pttInverted=false)
RH_ASK driver(2000, D1, D2, D6); // ESP8266 or ESP32: do not use pin 11 or 2

//Connect data to pin 5/D1

void setup()
{

    Serial.begin(115200);
    Serial.println("\n\nrfReceiver Started\n\n");
    if (!driver.init()){
         Serial.println("init failed");
    }
    Serial.println("Initialized");

}

void loop()
{

    uint8_t buf[RH_ASK_MAX_MESSAGE_LEN];
    uint8_t buflen = sizeof(buf);

    if (driver.recv(buf, &buflen)) // Non-blocking
    {

      // Message with a good checksum received, dump it.
//      driver.printBuffer("Got:", buf, buflen);

      Serial.print("Message Received: ");
      Serial.println((char*)buf);

    }
}
```

Reference

Reference	URL
Spec Sheet	http://www.mantech.co.za/Datasheets/Products/433Mhz_RF-TX&RX.pdf
How 433MHz RF Tx-Rx Modules Work & Interface with Arduino	https://lastminuteengineers.com/433mhz-rf-wireless-arduino-tutorial/
Complete Guide for RF 433MHz Transmitter/Receiver Module With Arduino	https://randomnerdtutorials.com/rf-433mhz-transmitter-receiver-module-with-arduino/
Using Inexpensive 433 MHz RF Modules with Arduino	https://www.youtube.com/watch?v=b5C9SPVlU4U
Radio Head Library	http://www.airspayce.com/mikem/arduino/RadioHead/
RF Sniffer	https://www.electroschematics.com/13682/433mhz-rf-sniffer/
RC Switch Library	https://github.com/sui77/rc-switch
Reverse Engineering RF Remote Control	https://www.instructables.com/id/Reverse-Engineer-RF-Remote-Controller-for-IoT/
rtl_433	https://github.com/merbanan/rtl_433

USING AN RTL-SDR AND RTL_433 TO DECODE VARIOUS DEVICES	https://www.rtl-sdr.com/tag/433-mhz/