SM204, SM205 Sniffer Hunt Kits
INFORMATION BRIEF

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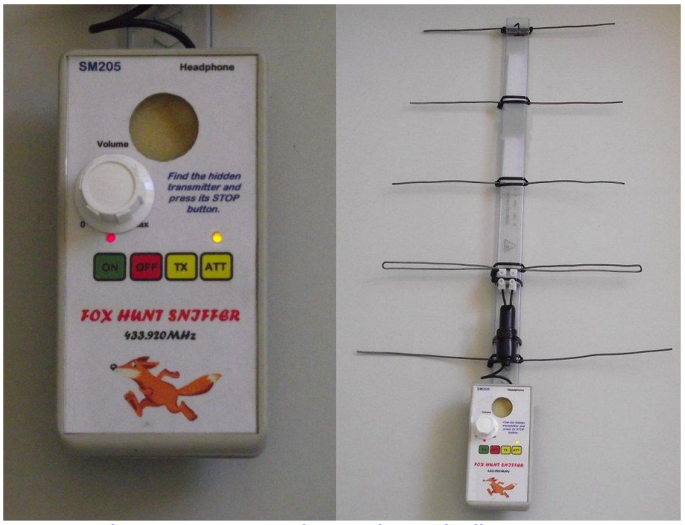
The SM204 Transmitter



The SM205 Receiver & homebuilt antenna

The Alian Electronics SM204, SM205 Sniffer Hunt Kits

This project works five ways:

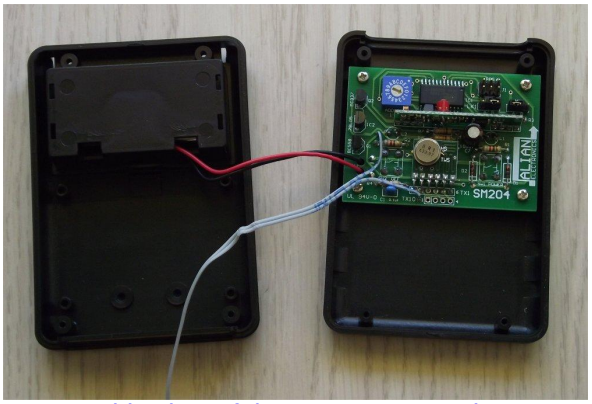
- It is a worthy soldering and construction project for the hobbyist
- It is creates an understanding the dynamics of a software controlled transmitter and receiver.
- It provides an exercise in basic Beam antenna construction.
- It teaches people about the dynamics of how UHF radio works at close quarters.
- It is a fun pastime for adults and kids alike to become involved with radio at a base level.

THE TRANSMITTER

The project consists of a Transmitter, about the size of a cigarette packet that may be hidden in a park or garden. It transmits an easily identifiable sound at about two milliwatts giving it an active range of between 100 and 250 metres, depending upon where it was planted.

The **SM204** is no ordinary transmitter in that between transmitter bursts, it also receives. This means that if someone sends the correct control code they can stop and start the transmitter from where it is hidden. There are 16 different control codes that can be used. This means that up to 16 transmitters could be hidden in a park and activated one at a time for 16 separate sniffer hunt events.

The SM204 operates from a common 9V battery. It can also be set up to automatically turn itself off after a fixed time delay.



Inside view of the SM204 Transmitter

THE RECEIVER

The **SM205** is a matching receiver. It has a small audio amplifier, volume control and speaker which allows the operator to listen out for an SM204 transmitter. It does not have much audio output, but hat is ok, as the unit is at its best when a simple headset is plugged in. This way you can hear the signals more clearly while others around you won't listen in and follow you.

It needs a directional antenna to work. Building this antenna is part of the fun of the project, as plans are provided for a simple 5-element beam that can be made from a few old wire coat hangers, a stick and some cable ties. Matching is done using a standard TV balun provided with the kit. If the antenna gets bent or stomped on by accident, then a repair only takes a few seconds

When you get close to the concealed transmitter, the signal in the headset can become too-strong to get a proper direction fix as the receiver becomes overloaded. That's when the operator pushes the **ATT** button which will greatly 'attenuate' the receiver sensitivity, making it possible to track the transmitter right down to the last metre.

Built inside the SM205 receiver is a small transmitter module and a code selection switch. It can be uses to Activate a hidden transmitter unit with a matching code.

If it has been left on in error, the SM205 will also turn itself off after half an hour to save the battery.

Rear view of the receiver

WHY CLOSE-RANGE UHF?

There are several reasons why the system is on UHF. It operates on 433.920 MHz, which is inside the Amateur 70cm band, but it is also on the LIPD (Low interference potential device) frequency which permits low power operation without any licensing requirements by the operators. This also means it is ok for kids and non-radio amateurs to use.

The 2 milliwatt transmission is not a great output, but this is quite enough to be a challenge in a public park, a section of bushland, or even a large back yard. This means that there tends to be a large number of short-range events for many people to enjoy, rather than fewer long-range hunts that requires more specialised equipment and perhaps motor vehicles. This system does become a great stepping stone to hone skills for those who may wish to move-on to bigger events and other radio bands.

Being UHF, the antennas are small and very directional, making it easy to hold and work with at close quarters. Many kids and even Scout & Guide groups have had a lot of fun with this equipment.

Lastly, price is an important consideration for these kits. On this UHF frequency we can use low-cost Transmit and Receive RF modules that are pre-built, tuned and ready to use.

HOW TO CONDUCT A SNIFFER HUNT

The transmitter receiver units can be used in several ways, depending upon the sort of company who is present.

One-On-One

In its simplest form, someone first activates, then hides a transmitter behind a bush or in a tree. Then a second person goes looking for the hidden transmitter. This can be done against a stopwatch to help measure operator skill.

A team event

A larger event can be staged where one transmitter is activated, then a whole bunch of people look for it simultaneously. The first person to physically pick-up and torn off the transmitter wins.

This can be a lot of fun and works well if all operators are new to the sport. There is one problem to look out for, whereby in any group there will be different skill levels. The 'best' operator may win almost all the time, while others may not get much of a chance at making a successful DF find.

A better method is to have quite a few two-person hunts in a series of rounds. In this way it can be like a chess tournament where the winners from the first round play other winners in the second round, while a game loosers continue to play against other game loosers. It makes for a lot of smaller contests, but everybody gets a fair go and gradually competes against others of a similar skill level to themselves. At the end you get a proper ranking of skill and prizes can be awarded.

THE KITS

Both the transmitter and receiver are separate kits that may be built and purchased separately. Each kit has full instructions, parts lists and lots of images to assist with the assembly process.

It is recommended that individual kit builders should buy one of each kit. There are a couple of good reasons for this. The first one is that having built either a receiver or a transmitter, you can use one to test the performance of the other. Once built, a single transmitter and receiver can be used around the home to practise your skills. Lastly, if you join others who have assembled the kit, then having some extra transmitters around at a DF event can make the day more interesting as more transmitters can be hidden before the events begin.

THE $20 GUARANTEE

The Transmitter and Receiver kits have detailed instructions and good quality circuit boards, so anyone who can hold a 15 watt soldering iron should be able to put them together in a few hours. However, if a transmitter or receiver kit is put together in any reasonable way and it fails to work, then get the unit to Alian Electronics and for $20 (plus applicable postage) we will get it going and send it back.