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DMR on the Cheap

> ***Hey!*** Updated on 2021-05-10: Found the COTRE website and added links.

> The **COTRE CO01D** is a real DMR radio capable of DMR Tier I and Tier II operation for cheap on Amazon.

Introduction

While looking for a duplex DMR hotspot, I happened to find the COTRE CO01D radio on Amazon. The listing looked really suspicious. It claimed to be a DMR radio and was selling for much less than other DMR radios. The price was low enough that even if the item didn't turn out as advertised, it would still be worth it to play with it over a weekend.

Prepurchase investigation

Some searching of FCC records leads to the filing. The CO01D is made by a company called Shenzhen Chaoshangyou Lepao Technology Co. which goes by the name COTRE in the US. This filing indicates 3 radio modes, 11K0F3E, 7K60F1D and 7K60F1E.

Emission	Description
11K0F3E	Narrow band FM voice
7K60F1D	Narrow band digital data
7K60F1E	Narrow band digital voice

Well that looks as though it **might** do DMR. Interestingly, the filing indicates that it is a rebranding of another radio the GOCOM GD501 whose FCC filing includes internal photos.

Looking at the internal photos reveals that this radio is unlike any other DMR radio I've looked at. There are very few components. It looks as though this radio uses an IC called the A6 produced by Auctus which must be some super all in one SoC plus RF transceiver IC. The only other components are some amplifiers in the RF block an audio amplifier and a chip which does VOX. This simple design might explain the low price.

I still was worried that this radio would not be able to communicate with typical amateur gear for three reasons. First, while there is a hint that the radio is reprogrammable from the Amazon product pictures, but there isn't a website for this radio that I could locate. Second, this radio might only be able to do DMR Tier I which would make it incapable of working with a hotspot or a DMR repeater. Third, who knows if it even has a codec for AMBE.

Purchase

I was able to purchase the radio from Amazon for a very reasonable $20 with same day shipping. The page indicated a normal price of $50, so who knows if this price will remain.

First impressions

Included in the box were the radio, antenna, battery, charger, belt clip and instruction booklet. The instructions point to programming in different parts, but there was no included programming cable.

To make matters worse, the included antenna is not a standard connector. It is just some sort of fine pitched screw. I was hoping to do some testing with a dummy load or an attenuator attached, but without a standard connector that isn't happening.

Without a display I was hesitant to transmit over the air with the radio.

I played around with the buttons and followed along with the user guide. The interface is a bit wonky. There are no dials only a few buttons.

The power button requires you to press and hold for about 2 seconds to turn the radio on. Changing channels is done by hitting the menu button then the +/- buttons to switch channels. Adjusting the volume is a little easier just hit the +/- buttons. Since there is no display and no knob, you can get the status of the radio by pressing the power button briefly which causes the radio to read off the current status.

Testing it out

I was able to program the radio which I will detail separately.

The radio is capable of regular wideband FM (25kHz) in addition to the listed narrowband FM in the FCC filing. Both simplex and repeater operation with CTCSS was possible. And I was able to hit the local repeaters. The

DMR surprisingly works without any issues. Simplex, hotspot and repeaters all work. The radio has a normal AMBE vocoder and the transmissions went back and forth with my Anytone D878UV without a hitch. I was able to listen in on other transmissions without a problem either. No problems with BER, but the ERP seems low in comparison to my Anytone(S5 vs S9+).

Pros

This little radio actually has a few things going for it.

- Cheap $20(Amazon shows it discounted from $50)
- Light (135g)
- Small (definitely would fit in a pocket)
- Actually does DMR!

Cons

There are definitely some downsides.

- Antenna connector is non-standard
- Changing channels is awkward
- Changing the volume is slightly less awkward
- Lack of support/programming software
- Only supports 70cm band
- 16 channels

Final thoughts

It surprised me by being a real DMR radio for so little money.

Will I keep it? You bet.

Will it replace my Anytone? No.

The best use for this radio in my opinion are for the ham that wants to try DMR, but doesn't want to spend a lot of money. This radio has the potential to open the doors to DMR for hams like the Baofeng radios did for analog FM.

The other use for this radio is what I have planned for it. It is the perfect around the house/yard radio to communicate with your hotspot. If you only use a few talk groups, it could work brilliantly.