

# The Anytone AT-5555

## Multi-mode 28MHz mobile transceiver

Rob Mannion G3XFD has been enjoying operating on the 28MHz band using a budget priced multi-mode rig – and the band's beginning to show signs of 'waking up' he says!

I've never forgotten 1968 – the year I came on the air as G3XFD – and one particular highlight of the year for me was the great DX available on 28MHz (10m). In those days my main station (most of us used 'separates' in those days) consisted of a KW *Vanguard* transmitter running 50W a.m. or c.w.

Incidentally, I should have mentioned the the Geloso variable frequency oscillator that the *Vanguard* was constructed around was running out of 'steam' – radio frequency (r.f.) drive – on 28MHz. So, in reality I was lucky to get 35W input to my lovely old transmitter.

The other half of my station was formed by the Eddystone 750 double superhet receiver. It too was 'running out of steam' up on 28MHz and the r.f. control usually had to be turned right up to maximum gain.

However, in late summer 1968 the signals being received from all over the world were booming in. They were incredibly strong! I remember working a station who used to call, "CQ" from Rhodesia and made sure everyone knew that he didn't want to work "Any Box 88" stations (Russians and other Communist Bloc stations). My antenna was very simple in those days – just a short wire antenna but I 'worked the world' with ease.

To be quite frank, the DX I worked during the wonderfully persistent conditions on 28MHz in the latter half of 1968 has never re-appeared for me! In one afternoon I **worked all continents** using a.m. and my



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(probable) 35W – and everyone else was doing the same. It was a truly thrilling experience to work Hawaii and get "5&9" and then be called by VK (Australia) and ZL (New Zealand) stations!

It was quite disappointing when 10m settled down into the doldrums again – with only the occasional burst of activity. Despite this, the 28MHz band has always been fascinating to me – and always full of surprises!

Despite never repeating my successes of 1968 – even by the time I had a KW2000A single sideband (s.s.b.) transceiver, I've never lost interest in the band. So, when I heard that the Anytone AT-5555 28MHz budget priced multi-mode transceiver was to be available – just as 10m is 'waking up' – I knew this was a review for the Editor to undertake.

### The Rig Described

The Anytone AT-5555 clearly shows its origins as a transceiver designed for the CB radio market on 27MHz. However, all of the transceivers sold by Nevada in Portsmouth are being programmed for the 28 to 29.7MHz Amateur band. Although Nevada were preparing the rigs for the Amateur bands – I was in a hurry and we asked to have the first one and program it ourselves.

The 'AT-5555s on sale to customers

will be programmed so that one bank of channels is allocated for repeater use with the narrow band frequency modulated (n.b.f.m.) repeaters on 10m. (More about this later).

Unusually, the microphone connection is mounted on the left side of the transceiver casing, although I didn't find this location to be difficult – but it did seem a little odd at first. The transceiver is smart looking and although it is clearly a CB radio design there are many controls on the front panel (see Fig. 1) that will be familiar to most of us.

I won't bore everybody by explaining all the controls one-by-one as they are fairly standard for a CB rig. Instead I'll mention those that may be unfamiliar. The first unfamiliar facility is the public address (PA) mode. This requires the connection of an external loudspeaker but as there's only 4W of audio available it wouldn't be very useful outdoors – loud enough to shout at a nearby driver perhaps!

The second unfamiliar control is the infamous 'Echo' facility often found on CB rigs. If like me you've heard operators on the 27MHz using the Echo facility it can sound absolutely ridiculous! However, I took the opportunity (while the transceiver was connected to a dummy load) to monitor the quality of speech on f.m. with a very

small amount of Echo running. The result was quite interesting!

Although I would be extremely careful (and very unlikely to use it anyway) using the Echo facility on the Amateur bands it's worthwhile mentioning that a **very small** amount of Echo (known as reverberation) can enhance the audio quality. Indeed, broadcast studio engineering can involve a great deal of planning to allow very small amounts of reverberation within a studio. In this way a 'flat' sounding broadcast transmission is avoided.

The **Clarifier** control (which has 'fine' and 'coarse' settings on the 'AT-5555 plays an extremely important role operating the transceiver as – unlike most modern Amateur Radio transceivers, this rig does not have a continuously tuning variable frequency oscillator (v.f.o.). Instead, it uses a rotary channel switch selector controlling the frequency of the main phase-locked loop synthesiser. The Clarifier comes into play when the transmission being received is 'between' the synthesiser step.

The transceiver is a true multi-mode rig and provides amplitude modulation (a.m.), c.w. (Morse), narrow band frequency modulation (n.b.f.m. - normally referred to as f.m.) and single sideband (s.s.b.). I was rather intrigued to find that the 'AT-5555 could operate c.w. – but more on the point later.

The brightly lit light liquid crystal display (l.c.d.) is very large and clear. It was obviously made that way, bearing in mind the bright daylight conditions in vehicles. In fact, it was one brightest and clearest displays I've come across and I found it ideal for my purposes.

The receiver section uses a double superhet design with a 10MHz first intermediate frequency (i.f.) and a 455kHz second i.f. Low level modulation is used for s.s.b. and high level for a.m. transmissions. Variable capacitance modulation is employed for n.b.f.m. modulation.

### On The Air

I was very keen to get the 'AT-5555 on the air but I ran into a few problems. My good friend **Phil Ciotti G3XBZ** was standing by to undertake some tests between us (we're only about 4.8km (3 miles) apart. Unfortunately, as I had the very first rig available we hadn't then programmed it so that it could work split frequency with 29MHz repeaters.

Another problem occurred that led me to believe that I was getting r.f. feed-back in my shack. Whenever I transmitted I found that I was getting

audio feedback – but oddly, there seemed to be none of the squeaks and squeals associated with r.f. getting into an audio stage. In fact, it was very clean audio.

Discussing the problem with the *PW* Technical Editor **Tex Swann G1TEX** we decided it was switching fault of some kind. However, it wasn't a fault! The technical staff at Nevada found it was an audio monitoring mode that had been inadvertently switched on and it was soon switched off again.

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Fig. 2: The rather spartan back panel, has little more than a d.c. power socket, an SO-239 antenna socket and two 3.5mm jack sockets, one for the external speaker and the other for a Morse key.

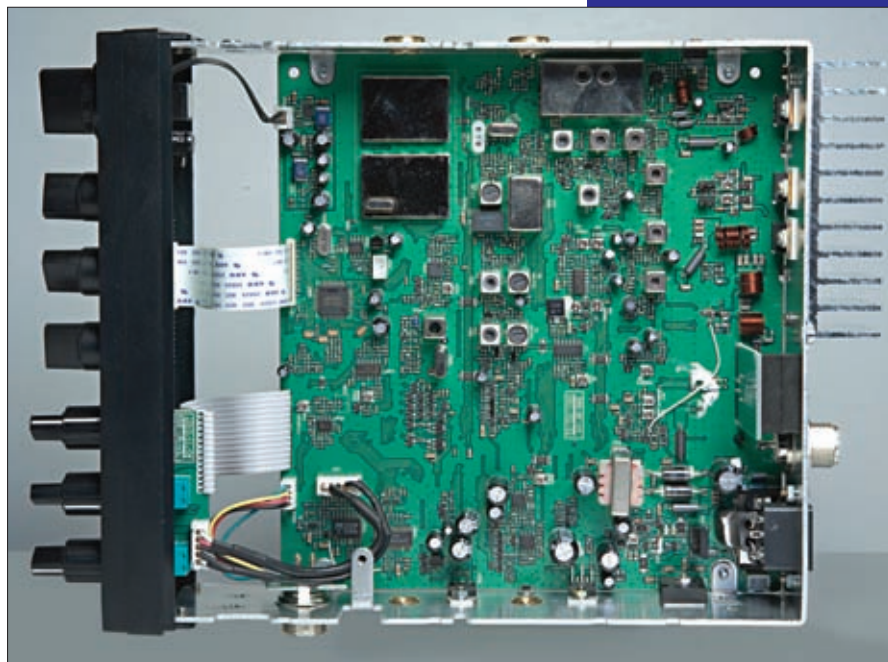


Fig. 3: A very clean single main board takes care of all functions. All power transistors and amplifiers are attached to the wall of the chassis. The r.f. p.a. stages are at the top and are coupled to the heat sink.

For my on-air tests I was using a long wire antenna with my little LDG automatic antenna tuner (a.a.t.u.) placed on top of the 'AT-5555. I had a great number of contacts on 10m –



some were local and some were with other stations in the UK looking for n.b.f.m. (f.m.) contacts on 29.6MHz.

I worked several stations on the Isle of Wight and then came across a perplexing problem! Phil G3XBZ could hear me on 10m – but I couldn't hear him! Indeed, we seem to have an r.f. version of 'The Bermuda Triangle' between us because we have great difficulty working each other on **any** of the h.f. bands! Despite this, we have no problems whatsoever on 70 or 144MHz!

### Bournemouth QSO Via Switzerland!

Ever resourceful, Phil suggested that as we could both hear the 10m Swiss repeater (it's often quite a strong signal here in the south west) he would call me on the repeater. I then duly gave him a "5&9" reports and we both burst out laughing as we'd just managed to contact each other over a pathway of well over 1600km (1000 miles) when we were less than 5km apart in Bournemouth!

Despite our problems working each other directly, Phil G3XBZ was able to evaluate my voice and the speech quality on the AT-5555 as being "very good" on f.m. and s.s.b. Later I was also able to work several stations using a.m. and hearing the differential sideband phasing distortion caused by propagation, brought back many memories.

Later – with the help of Nevada, Tex G1TEX programmed the 10m repeater frequencies and offsets into the rig for me and I then enjoyed several QSOs via the Swiss repeater. I've heard a number of American 10m repeaters but have yet to manage a QSO – but it won't be long before I do!

As I was intrigued at the provision of c.w. on the rig, I listened to some QSOs at the lower end of the band. Operating the rig on c.w. is simple and straightforward. I then used the rig to monitor the International Beacon Project (IBP) beacons on 28.200MHz and it proved to be both very sensitive and selective, whenever southern European stations appeared (literally from nowhere) to swamp the band. Ten metres can be like that at times!

I thoroughly enjoyed having the AT-5555 running on stand-by in my shack. I would either leave it on the 29.6MHz f.m. calling frequency or on 28.200MHz listening for the IBP beacons. Leaving it tuned to 28.200MHz gives a good indication of the general state of propagation but I have been surprised at times when someone from Middle Europe has popped out of nowhere on

## Manufacturer's Specifications

### General

Frequency range:	28 to 29.7MHz (programmed by Nevada before despatch). Available in selectable Bands (A, B, C, D, E, F).
Channels:	60 (programmable) channels in each band.
Frequency control:	Phase-locked synthesiser.
Frequency steps:	(selectable) 10Hz, 100Hz, 1kHz, 10kHz.
Operating temperature range:	-30°C to +50°C.
Input voltage:	13.8V nominal, 15.9V maximum. (11.7V minimum on transmit).
Current consumption:	Transmit (a.m. full modulation) 5A, receiver (squelched) 600mA. Transmit (s.s.b.) 21W p.e.p. 6A.
Dimensions:	280 x 250 x 60mm.
Weight:	2.8kg (6.8lb)
Antenna connector:	SO239 u.h.f. type.

### Transmitter

Power output:	a.m., c.w. and f.m. 12W output, 21W s.s.b. 21W p.e.p.
Modulation:	Low level modulation (s.s.b.), amplitude modulation. Variable capacitance modulation (f.m.).
Intermodulation distortion:	s.s.b. 3rd order, more than -25dB, 5th order, more than -35dB.
Carrier suppression (s.s.b.):	-55dB.
Unwanted sideband:	-50dB.
Microphone:	Dynamic microphone with p.t.t., Up/Down control and ASQ control.

### Receiver

Frequency response:	(a.m. and f.m.) 450Hz to 2.5kHz.
Sensitivity:	s.s.b.: 0.25µV for 10dB (S+N)/N at greater than 500mW of audio output. a.m.: 1µV for 10dB (S+9)/N at greater than 500mW of audio output. f.m. 1µV for 20dB for (S+N)/N at greater than 500mW of audio output.
Selectivity:	(a.m. and f.m.) 6dB at 3kHz, 50dB at 9kHz. (s.s.b.) 6dB at 2.1kHz, 60dB at 3.3.kHz.
Image rejection:	More than 65dB.
Intermediate frequencies:	(a.m./f.m.) 1st i.f. 10.695MHz, 455kHz 2nd i.f. (s.s.b.) 10.695MHz).
Adjacent channel rejection:	(a.m./f.m.) 60dB, (s.s.b.) 70dB).
Radio frequency gain control:	Adjustable gain to -45dB.
Automatic gain control (a.g.c.):	Less than 10dB change in a.f. output for inputs from 10 to 100,000µV.
Squelch control:	Adjustable, threshold less than 0.5µV. Automatic squelch Control (ASQ) only on a.m./f.m.
Automatic noise limiter:	Switchable.
Noise blanker:	(r.f. type), effective on a.m., f.m. and s.s.b.
Audio output:	4W into 8Ω.
Frequency response:	300Hz to 2.8kHz (using 8Ω built-in speaker). External speaker 8Ω. (internal speaker disabled when external speaker connected).



Fig. 4: The programming interface and software CDROM. Unusually you have to remove the covers, to fit the interface into a small p.c.b. mounted socket just visible to the right of the upper flat ribbon cable in Fig. 3.

f.m. – so it's a good idea to monitor both channels.

The AT-5555 is excellent value for money and I've been impressed with its performance and it's a real 'fun' rig. Even after the 10m activity has 'peaked' (if it ever does!) I've found that (except for Phil G3XBZ and I working directly!) the band is a great place to meet up

with friends. In fact, it's been a tradition in many clubs to have local nets on 28MHz and I have no doubt they'll be joined by DX stations popping up from nowhere to join them very soon! (I've already worked friends who've bought the AT-5555 and I'm sure I'll be working more very soon!).

My thanks go to **Mike Devereux G3SED** of Nevada for the loan of the review transceiver, which costs £149.95 plus P&P. It was great fun to use!