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³ THE Authority On Radio AOR3000 SCANNER ³
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I saw a question posed in the latest issue of Monitoring Times, Dear Bob 'what is the difference between a scanner and a scanning receiver?' Well maybe that individual is better off with a less brain intensive hobby, such as flower arranging.

A question however that seems rather pertinent when dealing with the AOR3000 is, 'What is the difference between the 3000 and all the other portable domestic scanners on the market?' Well in this article I hope to address that question, and also give you an insight into the beast itself.

A WOLF IN SHEEPS CLOTHING?

Yes it is rather, it has been said that you should never judge a book by it's cover, and on first impressions, the 3000 does not look like very good value for money. After all, the box looks cheap, mainly because it is cheap, the front panel controls look like they were designed to be used by a nimble fingered youngster, and overall the perceived value seems much lower than the asking price, currently

UK 765.00 POUNDS STERLING

USA 995.00 US DOLLARS

HOW DO THEY GET AWAY WITH IT?

Well, from the outset, the original AOR2001 set the scanner world by storm, it was not the box, not the price. No, the success was firmly based upon two factors, superb coverage, and superb sensitivity. Up to this time no one had produced a scanning radio that obviously had been designed with these two factors firmly at the top of the shopping list.

BUT IS THIS WHAT I NEED IN A SCANNER?

Yes of course it is dummy! think of this, if your scanner cannot cover a certain frequency band of interest, then you can't listen to it. And if your scanner is as deaf as a post, then even if you are sat on a distant but active frequency, then you won't be able to hear it either. All other determining factors MUST be further down the list from these two.

ALL MODES, BUT ISN'T ALMOST EVERYONE ON NFM?

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Give me a break fella. All normal international aircraft both civil and military usually talk on AM for a start. And outside of the normal 118.00 to 136/8 MHz area you can find a whole mess of USAF aircraft chatting on rather strange and discrete allocations. Outside of the USA, many countries use AM all over the spectrum, the UK being a good example as 80% of the countries police vehicles transmit ONLY on AM. SSB, well admittedly a little more unusual to find interesting traffic. I discount the heavy amateur use of SSB, mainly because as I am one I can assure you that whatever mode you choose, you would be hard pushed to find anything of interest going on. BLAH BLAH BLAH QSY QSL QRT No thank you very much!

WFM, well you have the FM commercial radio stations, television and radio broadcast links, and the USAF Airborne Command Post aircraft c/s SILK PURSE, COMPASS CALL etc who just love WFM.

CW, well yes you have me on this one, I can think of no earthly reason who you would want to scan or listen to CW. But better to have it than not to. And you could be an old salty seadog radio operator keeping his hand in on the traffic of the high seas 'AH, JIM LAD!'

ANY SCAN STEP BETWEEN 50Hz and 100KHz

Once again, wherever you are on the face of this planet, and what ever radio system you are listening to, with this feature you will be able to track their channel plan perfectly.

NO SET BANDS, BUT I LIKE SET BANDS ALL THE GOOD STUFF IS IN THEM, AND IT MAKES THE RADIO EASIER TO OPERATE

Well in that case old son I humbly suggest you stick with your UNIDEN/BEARCAT because the AOR3000 is an entirely different beast, thank heavens.

I have owned scanners that have preprogrammed band limits that cannot normally be expanded. God, how frustrating, I always wanted to know what I was missing.

A WORLD CLASS RADIO FOR THE WORLD MARKET

So we should gather by now that the 3000 is NOT made for the USA market or the JAPANESE market, but the world market. One radio covers the whole spectrum from 100KHz straight through to 2036MHz no gaps and any mode or channel step you care to use.

SENSITIVITY

Most banded scanners have their front end's tuned to each band centre, the smaller the band, the greater the sensitivity they can achieve. Try using the same front end technology on a radio that covers over 2GHz and you end up with a receiver so deaf that if you were sat on the hood of a police car in heavy radio conversation the receiver would still not be

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fully quieted. AOR quite rightly were not keen on re-inventing the wheel or for that matter trying to squeeze a quart out of a pint pot. They opted for an altogether different approach, a high gain, very low noise GaAsFET front-end protected by a bank of no less than 15 bandpass filters!

THE OLD BANDPASS APPROACH

Bandpass filtering is not a new approach by any means, many radio's use them to block out traffic from adjacent bands. The 3000 has a whole bank of them (an incredible 15) that are automatically switched in as required as you scan around the spectrum. This approach allows for maximum gain while maintaining good selectivity across it's entire range. There are a great number of scanners currently on the market that boast impressive coverage, a good example is the ICOM R-7000, what it makes up for in coverage it most defiantly loses in sensitivity, just try switching in the GHz button and see what you pick up over 1300MHz! Not a lot I think you will find. The 3000 on the other hand has sensitivity figures that hold up pretty good, right up to the 2000MHz area. And this is a first for scanners. Remember, it's no good having the coverage if you can't hear the traffic!

BYLINE #1

The usual trade-off for wide coverage without overload problems is to have a front end that is not over sensitive, i.e. the TANDY 2004/5/6. AOR seemed unhappy with having their scanner branded as a so-so performer, therefore the 15 bandpass filters block most of the adjacent strong traffic that usually stomp all over receivers with a HOT front end.

DESIGN PHILOSOPHY

THE CASE

Now we have established where the AOR team were going, let's discuss the towns they forgot to visit.

As in the 2001 and 2002, AOR still keep churning out models in the same dreadful plastic case. I realise that designing a custom injection moulding is expensive, but as AOR have sold thousands and thousands of scanners using the same case, you would have thought the investment had been recovered, and the introduction of the 3000 would have been a good time to start afresh. But no, where the 2001 had one main circuit board, the 2002 had two, and yes the 3000 has three. It's a pretty tight fit, with the middle board completely sandwiched between the other two. Repairing it would be a nightmare, but as the Japanese have a knack of making things that work, I hope this will not be a problem.

GUESS MY WEIGHT!

As in all previous AOR press releases, the 3000 was rumoured then publicly displayed almost two years before the general public got to buy

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one. As mentioned by me in a previous article, AOR are keen on publishing the birth weight even before the baby is born.

DELAYS

Firstly there were strong rumours that AOR had some technical difficulties, not surprising when you consider what's crammed into that tiny box. Then we heard a test batch kept losing their minds, or should I say memories. And then when the first batch arrived, the public were not at the top of the list. Well then who was?

MOD

Ministry Of Defence, the word 'MOD' is an umbrella term that happily covers everyone from the armed forces to a whole gamete of covert listening establishments, not least of which was GCHQ. This stands for Government Communications Headquarters. GCHQ had near wet their pants at the thought of the imminent arrival of these tasty little 3000's. The official UK importers seemed powerless not to let them have every unit that tricked into the country in those early months. To the MOD a radio this capable and at this price was a steal, and in comparison to the asking price of a RACAL, was almost a disposable asset. When the MOD had gorged themselves, the doors were open for the public to part with their hard earned cash.

I'M STILL UNCONVINCED

Even the superb specs and coverage was not enough to persuade me into a purchasing decision, no way was I going back to those silly little toytown controls after the R-7000, a bit deaf it may be, but I still loved those mansize buttons that had only one function, and can be stabbed at without the need for great accuracy, especially after six pints of lager.

I OWN A COMPUTER, AND I ALWAYS THOUGHT THAT THE 3000 WOULD BE RATHER ACCEPTABLE UNDER COMPUTER CONTROL.

Reading through the 3000 sales blurb, I noticed that it had a true RS-232 DB25 socket on the rear of the case. AHA, the possibilities now seem far more appealing.

I WANT, I WANT, I WANT AN AOR3000 PLEASE SANTA

The local shops had them in limited quantities, I bought one straight away, it was faulty, and had the strange habit of locking up and erasing all 400 memories in the process. Not daunted, the shop swapped over the unit for a perfect worker. I hated the case and the buttons, but loved the coverage, modes and sensitivity which blew the poor old ICOM clean out of the water.

SOFTWARE, SOFTWARE, MY KINGDOM FOR SOME SOFTWARE

Writing my own was out, basically because it's over my head. So a long phonecall to AOR, located STEVE, a software man who spoke superb English,

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and was not only helpful, but also said he had just completed the IBM PC/XT/AT software for the 3000, And did I want to buy it. Short of getting the next Japan air Jumbo jet out to the factory, I quickly sent the money via bank transfer.

KEEPING AN EYE ON 'POSTIE'

Every morning I watched the postman pass by my mailbox, until about two weeks after sending the cash it arrived. One 360K disk and a manual. Boy I thought this can't be much of a program to fit on one 360K floppy.

WRONG AGAIN

It was superb, it worked first time, gave me full control over all the existing features, as well as access to extra memories each of which can have a written comment attached, so you know exactly what you've stopped on. The signal strength was translated into a nice blue bar that whizzed up and down the left side of the screen. The extensive use of colour made it easy on the eyes, and the ease with which the modes and other options could be changed from the keyboard, made it easy on the brain. You get ten custom search banks, with the option to lock out any frequencies that annoy you (very clever AND handy feature). With a few key strokes you can download all 400 frequencies from the computer into the 3000 memory banks, so no more punching in 400 sets of info with your little pinkie. And to top off all the features you already get with the scanner, comes the spectrum display.

A PICTURE TELLS A THOUSAND WORDS (who wrote that crap?)

Basically you enter in the lower and upper frequency, mode and step. You are then prompted to say whether you want to sweep this area once only, or again and again, wiping the screen each time. Or again and again adding each new spike over the top of existing ones. And finally do you want to see this graphical representation in bars or dots. When you have answered these few questions, a graph is drawn on your vdu, and the scanner starts sweeping, every time a signal is detected a line shoots up and records the activity, meanwhile the scanner is off finding more active channels. And the end of a sweep you may printout a rather tasty looking graph. Now pretty it most certainly is, and generally it gives you an indicator as to how much activity there is in your searched area. But as the program will not halt on an active channel, and as the graph does not tell the the exact frequencies that had activity on them. Therefore I fail to see the exact logic behind this option. It does however impress friends who don't have this feature, which in these times of competitive living makes it worthwhile just for that fact.

Another option on the regular scan section, is that you can select three types of scan. Firstly you can set the delay to commence when the squelch opens (R-7000), when the squelch closes (MOST SCANNERS), or set to log activity on your memories and give you either a screen or printed report of activity together with the percentage of activity on each

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channel, now this is a very handy feature, especially if you are trying to sort out a new and frustrating trunking system in your area.

Overall, it makes the scanner for me, I never take the 3000 mobile, mainly because it would break my heart if some sod pinched it. At home I run it off the computer all the time. It runs great under desqview, so I can now scan, while writing a letter, whilst blasting the towelheads in my F-19!

LET'S HAVE A LOOK AT THE OLD SCOREBOARD

100% COVERAGE
100% MODE OPTIONS
100% SENSITIVITY
100% SELECTIVITY
100% COMPUTER CONTROL
40% FRONT PANEL CONTROLS
20% CASING
20% OWNERS MANUAL

THE CONTROLS

Maybe Japanese people have tiny fingers, or better eyesight than the rest of us. This is the only excuse for those bloody awful little buttons, many of which now have multiple functions accessed by the SECOND FUNCTION BUTTON. This I also find most annoying, as the desire to quickly change modes cannot be achieved with the 3000, it is a tiresome affair that requires multiple key presses and the scrolling through the full set of mode options, but more of this later.

THE DISPLAY

Well the 2001 and 2002 had nasty and hard to read ones, both with a little pixie light set at the right-hand side, this bulb was guaranteed to illuminate about 60% of the display, which I always found handy! The 3000 though, has a very nice fully backlit lime green display, more information is shown and the signal strength is now included actually on the LCD as a series of blocks that increase in relation to the incoming signal intensity.

ANTENNA SOCKET

I have never been able to take American scanners seriously, mainly because of three points:

- (1) They never ever push RF technology to the limit.
- (2) They still insist on using cheap and cruddy 10.7MHz first I.F.'s.
- (3) They keep using that bloody disgraceful Motorola car radio socket on the rear. And why, well there's nothing cheaper on the market, and they say the US market finds it an easy plug to work with. I know Tandy thought they were really breaking new ground with the PRO-2004

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when they installed a BNC socket on the back, GASP, what a novelty!

THE 3000'S ANTENNA SOCKET

The 3000 has a single BNC socket, earlier serial numbers had two, one for HF, and one from 30MHz upwards. Mine has one, but I would have preferred two, as swapping BNC plugs all the time is going to do the socket a power of good!

And what of that single socket, it looks a little cheap to me, silver plated would have been nice, after all we are looking at over 2GHz, cripes that's almost microwave technology.

TAPE RECORDER FACILITY

On the rear is an essential eight pin din socket to control not only the constant gain tape audio output, but also a welcome remote tape drive activator, both of which work well. And of course with remote activation you don't need to buy a VOX tape recorder.

SPEAKER

The usual underpowered and weedy internal speaker that directs most of it's output into the carpet is accompanied by an external speaker jack.

SCAN/SEARCH SPEED

Whereas the 2001 and the 2002 scanning speeds were somewhat snail like (master of understatement), the 3000 races along at 20 CH/PER/SEC. It is worth pointing out that as the 3000 is multimode, therefore the circuits have to detect not only a carrier, but the correct mode has to be switched in.

THE ALL IMPORTANT I.F.'s

A radio engineer will never take seriously a radio that has a first I.F. of 10.7MHz. Basically because such a low frequency is bound not only to let all kinds of rubbish through. More importantly, false images will appear all over the place, this get's mighty confusing to the operator. In the UK, Uniden/Bearcat scanners are well known to 'false image' the 155MHz A.M. Police traffic into the upper end of the VHF aircraft band.

The 3000 has the following WELL chosen I.F.'s

736.23, (352.23) (198.63) 45.0275, 455KHz

BYLINE #2

The only reason why the Regency TURBOSCAN models could achieve over forty channels a second, is because the front end was only looking to detect one mode, in this case NFM. The 3000 on the other hand has AM NFM WFM CW USB and LSB to check for.

SHIFT

A feature I believe is currently unique. Basically you enter in a frequency offset, i.e. minus 45MHz for the UK cellular bands, when stopped on an active output, you can easily check the signal strength of the input,

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just by hitting the shift key. This feature although undocumented, is available under computer control.

PRIORITY

As you get 400 channels split up into four banks of a 100 each, therefore you get four separate priority channels.

DELAY/HOLD

Under computer control you get a wide choice of both scan delays and delay times, in fact you can enter in the exact delay time you prefer. Running the 3000 barefoot, i.e. without the aid of a computer, you still get the opportunity to lock out annoying channels in search mode, note I said search and NOT scan. Also you can change the delay function to timer start at the beginning of a conversation, or to frescan, whereby the 3000 will restart the scan after a preset time, even if traffic is still present.

BEEP

Yes it has a beep. Some people hate them, some love them. Either way this one can be easily switched on or off as is your desire.

TIMER/CLOCK/SLEEP/ALARM

The 3000 has a clock and built in timer/sleep/alarm functions, but in all honesty I have never used any of them, but i'm sure they work just fine.

HEADPHONE SOCKET

Set in the lower left hand corner is a 3.5MM standard headphone socket.

ATTENUATOR

Another rather unusual feature is that you can select whether you want to attenuate each memory on an individual basis, very handy if you have local channels of interest and because the scanner is so sensitive you are also picking up distant users who keep breaking through the squelch.

THE LCD DISPLAY UNDER COMPUTER CONTROL

With the 2002 when you had managed to get the funny and completely non standard multi-way connector to interface via a hardware adaptor into your computer, the display went dead and the red led marked remote, lights up. With the 3000 when you attach the simple lead to your computer, a legend marked 'SEND' illuminates in the LCD window, but unusually, all other display functions such as frequency, mode and signal strength still display, which is most comforting, if not just to confirm that your computer is actually doing something.

INTERNAL CONTROLS

Lifting the lid reveals a few new buttons not found in previous models.

(1) Reset, there is a little black push to make button, that will reset the scanner back to the factory default. And wipe all your memories in the

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process

(2) A pair of slide switches that used together will switch in or out the 100KHz to 30MHz r.f. amplifier, useful if you intend to listen to HF on anything over a 30 foot outside longwire antenna.

(3) a BAUDRATE switch. This doubles the RS-232 transfer rate. Although the AOR scanner control package will only run on the lower factory preset speed.

IN THE BOX

(1) A basic and rather naff instruction manual.

(2) A mains adaptor.

(3) A D.C. lead for the car, useful mainly because AOR still insist on using the same non standard DC connector plug and socket arrangement found in all previous models.

(4) The usual little telescopic whip. Not a lot of use on anything but very local or powerful traffic. But very handy for use in radio workshops for scopes, signal generators etc.

(5) No mobile bracket, which is bloody annoying.

BYLINE #3

I have been aware for many years that scanning magazines are very diplomatic in their reviews of scanners and amateur radio's. This is especially true if the product under scrutiny happens to come from one of Japans big producers, i.e. KENWOOD, ICOM, YAESU. Advertising revenue you see pays for all the other pages of waffle, and editors are loathed to put the nose out of any consistant benefactor that takes out full page adverts on a regular basis. I don't have this problem, far from it, I live thousands of miles away from the USA, so a lynching party would have to hire an aircraft to come get me. I don't get paid, so I've no money to lose if I upset somebody. In fact uploading this all the way from the UK will cost me, but who said freedom of speech comes cheap.

I wont bore you with the usual magazine review of it's more normal features, just to say if you want a hot receiver that will EASILY go anywhere, do most anything and work fine with an IBM MS-DOS type computer, then for my money, this has to be the one. AOR have really pulled out the technology stops this time around. And if it's good enough for our respective government listning establishments, then it should be good enough for what you want.

The guys at AOR in Japan know I am writing this, and are eager to see the finished article, I think I have been honest about both the good points, and the bad points. If I just said great great great, then my article would be about as much use to a prospective purchaser as a one legged Irishman in an arse kicking contest.

NEXT TIME ROUND

If and when the AOR**** comes out, I demand it's in a decent box with

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buttons big enough for the average punter, then and only then will AOR get 100% but as it stands I give them 80% for the 3000 which is a better score than I would give anything else on the market. If you are thinking of making the plunge, and you want more info, then you know where I am. If you have one, then I would appreciate hearing your views on it.

My next article will probably be about the Standard AX-700 scanner. Beautiful case, great controls, a real dream of a panadaptor. But a really crap scanner. In fact it is the complete opposite to the 3000 in most respects, maybe these people ought to get together and really take the market by storm!

I see my articles are getting heavily downloaded, but by who. I have no idea as you lazy sods let me spend all my free time scribbling away, and you cannot even bother to leave me a message. TUSH TUSH.

Happy Scanning Nigel Ballard