

TenTec RX340 vs. AOR AR7030, Racal RA1772 and Icom IC-R75:

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## Comparison test

The purpose of this comparison is to attempt to find out which of these fine receivers is the most capable at locations with nearby strong or very strong transmitters. With my main DX interest geared toward the reception of weak trans Atlantic stations on the mediumwave band, the main focus will be on how well the receivers perform in this band. The 1200 kW NRK Kvitsøy transmitter on 1314 kHz, just 30 kilometers to the north northwest of my location, is a real



challenge for the frontend of any receiver. During the test I've used various antennas ranging from a high signal level beverage pointed to the southwest to a small Pennant. While the Pennant usually has 1314 kHz at the S9+50dB level, the beverage normally pulls in Kvitsøy with S9+75dB. At and near local sunset even stronger signals have been noted with the most extreme level at S9+95dB.

### ***RX340 vs. AR7030***



Before I got the TenTec RX340 on loan, my only receiver was an AOR AR7030. The RX340 is deceptively simple to use. Mastering the basic functions is easy, however, it will take days and weeks to discover how to best utilize this receiver in a particular listening session. My first impression was that this was a superb receiver well suited for mediumwave DXing. The RX340 is excellent for Sync AM scanning and detects faint carriers both visually and audible, even in the presence of strong nearby signals. Its

passband tuning capabilities is another of the strong points. With time I came to discover that this receiver has several shortcomings, some of them serious. It is a shame that the excellent Sync AM detection capability is let down by the inability to keep the sync on those weak signals. SSB DXing is unpleasant when using filter widths narrower than 4.0 kHz, mainly because of the much poorer than expected audio but also because the digital filters do not exhibit impressive ultimate selectivity. The main shortcoming is, surprisingly, the inability of the frontend to handle very strong signals.

In the table below I've compared some of the important DX related features of the RX340 and the AR7030. I've used a scale ranging between 1 and 10 where 1 is useless or very poor while 10 is excellent.

	<b>RX340</b>	<b>AR7030</b>	<b>Comment</b>
Sensitivity	<b>8+</b> Good / very good	<b>8</b> Good / very good	No real differences noted when hearing audio from very weak stations, RX340 is, however, much better suited for quickly detecting carriers using SAM
Selectivity / filters	<b>8+</b> Good / very good	<b>6</b> OK / good	Using a 4.4 kHz filter and PBT tuning the RX340 seemed as selective as when I used the stock 2.1 kHz filter of the AR7030. Ultimate rejection of the filters in both receivers could have been significantly better.
Frontend	<b>8</b> (*2) Good (*this result is when a very strong signal, typically S9+75dB or more is present)	<b>6</b> (*4) OK / good (*applies to either one very strong signal or several strong signals, e.g. 10 stations with a signal of at least S9+40dB)	With most antennas the AR7030 handled the huge signal on 1314 kHz worse than the RX340. The problem was not that I noticed an abundance of mixing products (not expected either with the high IP3 of this receiver), but rather desensitization (blocking), particularly in the frequency range 1220-1400 kHz. The AR7030 did much better when I added an external preselector (a Palstar MW-550P). While there may be other reasons, I believe the need for additional signal amplification following the noisy (but high IP3) first mixer could be the cause of the blocking problem. On antennas where Kvitsøy had a signal of S9+75dB or more the RX340 exhibited serious problems. While the AR7030 deteriorated gradually with increasing signal levels, the frontend of the RX340 failed quickly when exceeding that signal level. Mixing products were noted on all 9 kHz spacings above 1611 kHz. Only white noise (no audio) was noted on 1314 kHz! With lower signal levels the RX340 performed well and I could occasionally hear trans Atlantic stations on 1300 and 1330 kHz, something which was never possible with the AR7030.
Audio quality	<b>5</b> OK	<b>8+</b> Very good	For such an expensive receiver audio quality, particularly with SSB filters narrower than 4.0 kHz, is downright poor and certainly one of the major shortcomings of the RX340. AR7030 has very good audio in SSB and good to very good AM audio. This advantage in audio quality IMHO nearly nullifies the advantages the RX340 gained by having better selectivity.
Scanning	<b>9+</b> Excellent	<b>9-</b> (*5) Very good when using the remote, otherwise only OK.	
User friendliness	<b>8/9</b> Good / very good	<b>8</b> (*5) Good / very good when	To use the AR7030 efficiently requires the use of the remote. That said the remote is easy to operate. The RX340 has a nice layout of the controls on the

		using the remote, only OK when using the controls on the receiver.	receiver and is very easy to use. Unfortunately there are some minor nags, such as not remembering some important settings (filter width, step value) when going back and forth between the various tuning modes (AM, SAM, LSB and so on).
Portability	7	9+	AR7030 is small and easy to take to a DX pedition. RX340 doesn't have much weight either but it is housed in a much larger box.
Performance / price	3	6	RX340 is far too expensive considering the performance it delivers. Both sensitivity and selectivity could have been slightly better, but the main downsides are the relatively poor audio and the not very "bulletproof" frontend. The stock AR7030 has an acceptable price/performance ratio but will benefit from better filters.

**Racal RA1772**



RA1772 was produced by Racal for a relatively short period in the 70'ies, just before the transition to microcontrolled receivers. In several ways it is the ultimate of what was possible to achieve at the time. Even today there are not many receivers which will outperform the RA1772. Of course user friendliness has become better over the years and features such as memories and fixed (user selectable) step scanning are simple not there. The successors RA1778 (in particular the US version RA6778), RA1779 and RA1792 were the next steps towards more modern receivers.

	RA1772	Comment
Sensitivity	9- Very good	Carriers detected sooner than on the RX340, sometimes audio too. Otherwise not much separating the receivers.
Selectivity / filters	9 Very good / excellent	The separate 3 kHz USB and LSB filters provide for surprisingly good selectivity and notable better than what the RX340 can offer despite having many more filters to choose from.
Frontend	9+ Excellent	Far fewer problems with 1314 kHz than AR7030 and RX340. A strong mixing product on 1665 kHz (2*1314 – 963) from NRK/YLE

		was noted with an S9 signal on RX340. This was S2 on the RA1772 and could not be heard at all when the internal preselector was engaged.
Audio quality	<b>9</b> Very good / excellent	RA1772 with the 6 kHz AM filter has the best audio I've heard from a communication receiver. Very good dynamic and detailed sound. SSB audio is crisp and about as good as the AR7030.
Scanning	<b>5</b> OK	RA1772 cannot step with steps larger than 0.1 kHz. Steps of 1 and preferably 10 kHz would have helped a lot in increasing the efficiency of manual scanning. That said it only takes 2-3 seconds to get from one end of a MHz tuning range to the other. The tuning wheel is precise and well balanced.
User friendliness	<b>7+</b>	It is easy to use the RA1772 and there are relatively few controls. The tuning wheel is nearly perfect. Selecting bandwidth and tuning mode (ISB, CW, LSB, USB, AM, FSK) is simple. The lack of direct frequency entry and passband tuning is noticeable when you have used such features on other receivers.
Portability	<b>3</b>	RA1772 is large and heavy (22 kg) and can be difficult to transport.
Performance / price	<b>9+</b>	It is possible to obtain an RA1772 fairly cheaply, prices are usually in the range GBP 250-700, depending on the condition and which filters and other options are installed. The build quality and performance is excellent.

## Icom R75

R75 has been on the market since 1999. This is a fairly small receiver which packs lots of features at a low price. The DSP module with its automatic notch filter is a must. The DSP noise reduction facility could perhaps have been more efficient. What makes this receiver attractive in addition to the low price is that most of the shortcomings can be eliminated. An otherwise excellent design has a few weaknesses, several of which are addressed by the modifications offered by

Kiwa Electronics. With those modifications installed this receiver has good audio, a usable sync AM feature, and is at least as sensitive for mediumwave DX as any other receiver I've tried. Surprisingly the receiver has a better frontend than most other well regarded receivers, particularly when considering that the MW attenuation pad has been completely removed. The addition of good crystal filters in the second and third IFs will make this set hard to beat.



	<b>R75</b>	<b>Comment</b>
Sensitivity	<b>9</b> Very good / excellent	Without the use of preamp1 this receiver is at least as sensitive as the RA1772. A few very weak signals are occasionally received better by the RA1772, however, it is more common that the R75 has the edge.
Selectivity / filters	<b>9</b> Very good / excellent	My R75 has the stock filters in the second (9.01 MHz) and third (455 kHz) IFs. Additionally the third IF has a Kiwa 3.7 kHz with a very high ultimate rejection, this filter often performs better than the stock

		2.4 kHz filters. The 15 kHz filter in the 450 kHz IF (the AM/FM part of the third IF) has been replaced by a 4.2 kHz filter. In SSB selectivity is very good (similar to the RA1772). In AM audio is noted earlier on the R75.
Frontend	<b>8</b> (*6) Good (*applies to either one very strong signal or several strong signals, e.g. 10 stations with a signal of at least S9+40dB)	Somewhat better than the AR7030 on frequencies near 1314 kHz, no desensitiation noted. With the EWE or Pennant antennas preamp1 can be used without any problems. A few weak mixing products noted on frequencies above 1600 kHz when Kvitsøy has a signal exceeding S9+75 dB.
Audio quality	<b>8</b> Good	Good quality SSB audio, AM audio could have been better with the narrower bandwidths.
Scanning	<b>8/9</b> Good / very good	Very good for LSB or USB scanning. AM or Sync AM scanning is not that pleasant and not as efficient as SSB scanning as trans Atlantic stations near strong European signals could be overlooked.
User friendliness	<b>8/9</b>	R75 has a short learning curve and is very easy to use.
Portability	<b>9</b>	Small and fairly light receiver which is easy to take to a DX pedition
Performance / price	<b>10</b>	A new R75 with the DSP module currently has a price tag from just above US\$500 and upwards at retailers in the USA. Even when you include the cost of the Kiwa modifications, this receiver is an excellent buy. Add a couple of InRad filters and you have a receiver which will be hard to beat on performance and still will cost less than a stock AR7030. Compare it to the much higher priced RX340 and you will still be very impressed.