

The Sony TR-6500 versus the Realistic "TRF"

--Some comparisons and impressions

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While flipping through a Sony radio catalogue a while back, we came across the Sony TR-6500, an AM-only portable that boasted of a "tuned RF amplifier (that) provides clear and sensitive AM reception over long distances--even in mountainous areas." The catalogue's illustration of the TR-6500 showed a radio of about the same physical size and general configuration as the Realistic "TRF," and a call to a local Sony dealer revealed an identical price--\$29.95. So far, the potential of the Sony seemed pretty promising. But what about selectivity? There was no mention of that in the catalogue's blurb, although it did point out the Sony's "full fidelity" sound. Hmm, cause for concern? But wait a minute. The less expensive (\$19.95) Sony TFM-6100W, an AM/FM portable, features a ceramic filter in the AM section. Surely an AM-only portable costing \$10.00 more and designed specifically for long distance reception would also have some provision for better than average selectivity. The possibility that the popular Realistic "TRF" was facing a worthy challenger certainly crossed our minds at this point. But, on the other hand, why hadn't we heard of the TR-6500 before now? At the time, to our knowledge, no one in the major clubs was using the Sony. Whether the TR-6500 had been overlooked by MW DX'ers or we had simply missed earlier critiques wasn't known, but curiosity demanded that the Sony be given a hands-on test. (Locating a TR-6500 in stock on the Gulf Coast was impossible and one ultimately was ordered from Memphis.)

Before describing the results of the comparison tests between the Realistic and the Sony, we'd like to put forth a word of caution. Having come in contact with several Realistics, we were keenly aware of the fact that the Realistics vary considerably along the dimensions of sensitivity and selectivity and that the "TRF" we'd be using for the comparison tests had slightly better than average selectivity for this model. Similarly, the test Sony represented only one example of the TR-6500.

Specifications

	<u>Sony</u>	<u>Realistic</u>
Circuit:	Superhet w/TRF amplifier	Superhet w/TRF amplifier
Semiconductors:	9 transistors 5 diodes 1 thermistor	1 FET 7 transistors 10 diodes
Dimensions:	6-3/4"(H) 8-7/8"(W) 2-5/8"(D)	7-5/8"(H) 9-1/4"(W) 2-3/4"(D)
Weight (w/batteries):	2 lbs. 9 oz.	2 lbs. 12.8 oz.
Color:	Black & metallic grey	Black, grey, & metallic grey
Power:	AC or 4 "AA"	AC or 4 "C"
Speaker:	3-3/4"	3"
Tone control:	High/Low	Continuous
Ext. ant. jack:	NO	YES (but of minimal value w/untuned ant.)
Accessories:	Earphone	Earphone
Price:	\$29.95	\$29.95

Non-performance impressions

Both cabinets are physically attractive with the Realistic having a somewhat "sleek" appearance when compared with the Sony's more squared-off, rugged look. Both have a fixed carrying handle that is integral with the cabinet. All controls are located on the right side of the cabinets with the Sony employing a rotary potentiometer and a two-position slide switch for the volume and tone controls, respectively, whereas the Realistic uses slide potentiometers for these functions. The frequency scale of the Sony is on a rotating (direct drive, horizontal axis) drum with a fixed indicator while the Realistic's frequency scale is stationary and has a moving (via string and pulley) scale pointer. Removing the backs of the radios resulted in the impression of better component quality in the Sony. As just one example, the Sony's three-ganged variable capacitor is of the air-gap type and larger than the miniature, mylar-gap variable capacitor used in the Realistic.

Sensitivity and Selectivity

Without the proper test equipment it was difficult to determine positively which of the two radios was the more sensitive. At no time during the comparison tests when a station was audible on one radio but not the other could this advantage be attributed solely to a difference in sensitivity or signal-to-noise ratio. In fact, it was usually the case that a difference in selectivity resulted in a station's audibility or inaudibility. The audio quality of the Sony was, however, better than that of the Realistic, which was due, at least in part, to the Sony's larger speaker. Regarding gain, or audio output, the Sony was definitely superior. For example, at midday, the Cuban on 720 kHz (CMGN) was rated as being "weak" in level on the Realistic but "fair to good" on the Sony (with both radios at full gain and equipped with fresh batteries). This gain advantage was evident across the band and over several days of testing and, in combination with the Sony's better audio quality, occasionally made monitoring a station somewhat easier than on the Realistic. A look at the circuitry of the Sony (a schematic for the Sony was not available, even from the local authorized service center) revealed at least a contributing factor in the Sony's superior gain--the Sony employs three levels of IF amplification whereas the Realistic uses but two.

This additional level of IF amplification also indicates a design philosophy difference between Sony and Radio Shack on the matter of improving selectivity. While neither of the authors of this review can be considered to be well-versed in radio engineering principles, those who are knowledgeable about such matters (e.g., Wm. I. Orr, author of Radio Handbook) point out some expected differences between the Realistic's two IF stages and tuned crystal method of improving selectivity and the Sony's three IF stage approach. According to Orr, adding additional IF stages improves the shape factor (but not the width) of the resulting passband. That is, the Sony's -60dB and -6dB points should more closely approach the "ideal" ratio of 1.0 (i.e., skirts are vertical) than those of the Realistic's sharper-peaked, broader-skirted crystal system. The critical question remained, though, "Was the Sony's passband narrow enough (even with a superior shape factor) to outperform the Realistic?" In a word--No. In every instance, the Realistic exhibited less adjacent channel splash than did the Sony. In some instances, (e.g., Antigua-1165 kHz), the Realistic at times produced a readable signal while only garbled noise was audible on the Sony. Again, a word of caution: The Sony we tested would come very close in selectivity to some of the lesser Realistics we've seen and undoubtedly could be significantly improved by installing a set of transistors, a ceramic filter, etc. If this (easily correctable) selectivity shortcoming were the only drawback of the Sony, its purchase might be worthwhile. Unfortunately, operating the Sony is another problem.

Operating considerations

Tuning--While the Sony's direct drive, tuning drum is very good-looking (electric blue on black) and more durable than the Realistic's dial string system, its thumb-wheel tuning knob is a full blown, pain in the patoot. Tuning split frequencies was almost impossible and we found it necessary to install an 8:1 drive vernier knob to conduct these tests. On the high end of the frequency scale, even 10 kHz gradations required the touch of a pickpocket. Here, the Realistic's forefinger and thumb tuning knob is vastly superior.

Frequency read-out--On frequency read-out, the Sony proved to be a real match for the Realistic--both were horrible. Nothing need be said about the Realistic's notoriously poor read-out and accuracy, but the Sony's read-out was about 8 kHz low at 540 kHz and 50 kHz high at 1550 kHz. Furthermore, a minimum parallax error of 20 kHz was average on the Sony (although, at the high end (1500 kHz), the indicator line could, by tilting the cabinet, be made to center on any frequency from 1400-1600 kHz!).

Conclusions

While the Sony we tested did enjoy some advantages over the Realistic (e.g., a sturdier looking cabinet, superior audio quality and gain, and apparently better component quality), it cannot be said that the Sony outperformed the Realistic in actual DX'ing situations. In fact, it was always the case that if a station was audible on one radio but not the other, the radio receiving the signal was the Realistic. Another point that should be considered involves the fact that the frequency read-out of the Realistic can be fairly easily improved and its external antenna jack can be made functional by simple tuning devices. On the other hand, correcting the Sony's shortcomings requires a little more effort--but, is far from impossible. In fact, after conducting these tests, the Sony's components were removed from its somewhat cramped cabinet and placed in a more spacious enclosure, its tuning drum was replaced with a 5-1/2" circular dial scale (allowing 5 kHz read-out across the band), and an external antenna tuner and vernier tuning knob were added. These modifications greatly improved the Sony's operation and could be adapted to any portable or table model radio...but that's another story.