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SONY'S ICF-6500W---THE PERFECT PORTABLE?

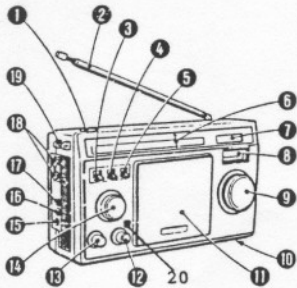
Gerry Thomas

My quest for the perfect MW DX portable has been going on now for several years and has taken me to such radios as TRF's, the GE Superadio, and the Sony ICF-5900W as well as "loaner" tests of the ICF-S5W, RF-2200, RF-2600, etc. To date, however, I've always been less than totally satisfied despite extensive sundry modifications to the portables I've owned.

Because my principal DX obsession is chasing foreign splits, my needs in a portable are somewhat specialized and undoubtedly more stringent than the average radio consumer's. High on the "features" list of my ideal receiver are such things as digital readout (preferably LCD for lower power consumption) with resolution to 1 kHz, switchable selectivity with a sufficiently narrow passband (i.e., around 3 kHz at -6 dB and about 5-7 kHz at -60 dB), a BFO for detecting weak carriers, and, of course, excellent sensitivity. My ideal portable would also have such conveniences as vernier fine tuning, an S-meter, a tone control, an external antenna jack, a dial light, and low power consumption. And, if I were really in a dazed state, I'd also ask for SW coverage for program listening and WWV checks and a good sounding FM section. Oh yeah, I'd also want the radio to be compact and inexpensive. Ahem, obviously I've had to make some compromises in my DX life so far but, at last, things are looking up. The Sony ICF-6500W (with just one modification) comes very close to fulfilling my dreams.

General characteristics

The 6500 is a five-band receiver covering FM, SW in three bands-- 3.9 - 10 MHz, 11.7 - 20 MHz, and 20 - 28 MHz -- as well as MW (the range is internally adjustable; mine now covers 517 - 1654 kHz). It is fairly small in size (11.5" x 6.75" x 4.2") and weight (4 lbs. 1 oz. with its six C-cells) and possesses all of the aforementioned "dream features" except narrow selectivity (which can be remedied). The receiver itself is a single-conversion (dual on SW) superhet with a naked front end (i.e., no tuned stage or RF amp). A discrete FET handles the mixing and the IF is passed through a ceramic filter (a muRata CFU-455H -- 6 kHz at -6 dB, 18 kHz at -40 dB) before IC amplification and diode detection. Audio power is about 1 watt going into a 4-inch speaker and is adequate but not overpowering.



- 1--Momentary light button (illuminates LCD & tuning meter)
- 2--Whip antenna for SW & FM
- 3--Power switch
- 4--RF attenuator for MW & SW
- 5--BFO (fixed frequency)
- 6--Analog dial scale (changes with bands) & pointer
- 7--LCD frequency counter for MW, SW, & FM (MW & SW resolution is 1 kHz)
- 8--Tuning meter (scale is 1 - 10; not an S-meter)
- 9--Tuning knob (push for fast; pull for slow)
- 10--Battery compartment
- 11--4-inch speaker
- 12--Tone control labeled "Music"
- 13--Volume control
- 14--Band selector switch
- 15--DC jack for supplied outboard 9 VDC transformer or optional car battery transformer (DCC-120)
- 16--Earphone jack for supplied dinky phone
- 17--Recording jack (might require optional RK-69A attenuating patch cord, depending on recorder)
- 18--Screw-type external antenna and ground terminals for MW & SW
- 19--Anchors for carrying strap (supplied)
- 20--Location of wide/narrow selectivity switch

R43

---Some additional observations on the ICF-6500W:

1. Since writing the review of the 6500, I've had the opportunity to test it with a 600' mini-Beverage and also within the shadow of a local 5 kw'er. Overloading does occur in these situations with spurs, cross-modulation, and SW feedthrough in places (similar in behavior to the ICF-S5W). However, daytime use with a medium-length random wire or night-time DX'ing barefooted is fine at this location. If you've got a 50 kw'er in your backyard or are intent on using a gargantuan antenna at night, expect these problems... (When will Sony realize that tuned front ends are desirable design features?)
2. Regarding LCD read-out accuracy... it isn't a catastrophe, in my mind at least, if read-out is off a kHz or two because the BFO can be adjusted to zero-beat the carrier for precise frequency readings. Optimal audio will still be off frequency a bit but this is the case with narrow filters anyway. So, if your 6500 is slightly off, I wouldn't advise tearing into the counter circuit; just adjust the BFO (write for details). Address is 3635 Chastain Way, Pensacola, FL 32503.

Oddments

--Gerry Thomas adds a further note to his ICF-6500W review in DXM of Jan. 15, 1983. The overload problems noted when using a random wire with the set has been entirely overcome (even using a 600' wire) using a "T-bar" (or similar) antenna tuning unit which was described in DXM of Sept. 23, 1979.

add to R43

R43-2-1

Overall Performance

The 6500 is really a joy to operate with its digital frequency read-out and its fast/slow tuning knob. Despite the fact that it isn't a "TRF", no unusual overloading problems occur at my location (this might not be true everywhere). Nonetheless, I happen to like tuned RF stages and wish Sony's engineers did also. Spurs do occur at about a half-dozen places on SW but MW is relatively free (there are weak birdies on mine at 540 and 910). Current draw on the 6500 at half volume is about 35-40 mA (70 mA with the momentary dial light on) which puts it about even with a stock TRF (but twice the drain of a Superadio). The owner's manual somewhat surprisingly predicts a battery life of 24 hours with heavy duty cells--I've got over 75 hours on my alkalines and they're still strong. The tone control is a single knob affair with full counter-clockwise providing bass, clockwise treble -- 'tis adequate but my ears prefer even less bass in the full treble position. Finally, the digital read-out on my sample is accurate to within a couple of hundred Hz despite the fact that the owner's manual says read-out could be off by as much as 3 kHz.

MW performance

Before beginning this section, I'd like to say that early on I decided that the 6500 needed better selectivity in order to dig out the splits I enjoy chasing. Therefore, I added a switchable muRata CFS455J ceramic filter (3 kHz at -6 dB, 9 kHz at -70 dB) in cascade with the stock wide muRata and the improvement is quite satisfying on both MW and SW. The CFS455J costs between \$25 and \$40 depending on your supplier (Gilfer carried them in the past; Don Moman, 6815 12th Ave., Edmonton, AB T6K 3J6 also handles them) but is well worth it, in my opinion.

The comparisons I made follow and involve head-to-head duels among the 6500, a 12-655 TRF, and a Superadio. All three were optimally aligned (the 6500 was right on the money off-the-shelf) and compared for selectivity and sensitivity first on late afternoon 10 kHz spacing stations, then on early evening splits.

Even channel DX

*WSB-750 is my usual sensitivity sans selectivity test and all three pulled it in with little trouble. The Superadio's more powerful AF section provided stronger reception at the ear.

*WVOG-600 is a 1 kW'er in New Orleans about 180 miles to the west and "doesn't exist" next to local slopper WHYM-610 if sensitivity and selectivity in a radio are lacking. All three brought in WVOG but the Sony was a hair better than the others in its "wide" selectivity position and still better in the "narrow" mode.

*WNSI-1380 is my high-band checkpoint. Next to local 5 kW WCOA on 1370 this 5 kW'er out of Tampa (about 350 miles) is usually audible but its degree of readability is the critical metric. Again the 6500 provided the best reception with the TRF close behind. For some reason the Superadio was having trouble here and was a distant third. With the narrow passband switched in, the Sony improved further.

*Anquilla-1610. Arrival time in the late afternoon of this one indicates high-end sensitivity so with all three radios tuned to 1610, I sat and waited. The first to produce audio was the 6500, followed about 5 secs later by the TRF, and about 15 secs later by the Superadio. Very close, all told, but the edge goes to the Sony.

Latin American splits

*Dominica-595 at a listed 10 kw is generally at a fair level at my location but interference from Cuba on 600 makes its logging moderately challenging. The TRF produced a clean, crisp signal with only a weak het while the Superadio exhibited intelligible Cuban slop and a heavy het. The 6500 in the "wide" position too produced a het but the Cuban splatter was unintelligible; the "narrow" position produced a clean, easily readable Dominica.

*Honduras-705 at 1 kW is usually very tough here with WLW-700 booming in on the backside of the loop. It was not detectable on any of the stock radios at the time of testing but the narrow passband on the Sony revealed a weak but readable signal.

*Belize-834 is very, easy and came in at a good level with 4 kHz hets on all radios, except the Sony in the narrow mode.

*Anquilla-1505 is a 1 kW'er and usually makes the trip to Florida in the early evenings but was audible only on the Sony in the narrow bandwidth position at the time of testing.

From the preceding comparisons, domestic DX on the three stock radios was pretty equivalent with the narrow mode 6500 the best of all configurations. I'm a little surprised at my Superadio's performance on these tests; it's usually a better performer on the high end (maybe it's getting old). In the splits department, the stock TRF 12-655 was the best performer of all the out-of-the-box portables but was a clear second to the Sony with the narrow passband (incidentally, the narrow muRata filter can be installed in the TRF--see IRCA's tech manual).

SW performance

Sensitivity on the SW bands is very good, even when using only the built-in whip. The 6500's shortcoming (like most consumer SW portables) is in the selectivity arena. Any kind of moderately serious SW listening absolutely demands a narrower filter than the stock one---the narrow muRata works fine and "magically" makes stations appear where none previously were detectable (e.g., 5 kHz away from the powerhouses). SSB is marginally listenable and requires a very fine touch.

FM performance

Because the 6500's AFC is non-defeatable, serious FM DX'ing is not likely; program listening is fine though.

Miscellaneous observations

1. The LCD read-out produces absolutely no (at least to my ears) RFI to compete with DX. (Sony uses an OKI MSM5527RS chip, similar to the one Chuck Hutton recommended for use with the TRF.) Also, if your display is off frequency, correcting it is a fairly major operation (i.e., changing the value of C203 which is tucked away behind the LCD and under three layers of shielding) so you might want to test a sample before purchase.
2. The RF attenuator is about as useful on the 6500 as it is on most radios incorporating one, i.e., not very.
3. Optimal IF alignment is almost impossible because one of the transformers is inaccessible (it's located under a switching bar).
4. The external antenna jack for MW works better than most (especially at midday; it isn't needed at night) because Sony chose to use direct coupling (the external antenna terminates on a tap on the ferrite bar's windings) instead of the indirect (a wrap of wire around the rod) method most makers use. No shift in frequency occurs but signs of overloading can (i.e., many weak birdies on the low end). Incidentally, the 6500's ferrite rod measures 6-1/2" x 3/8"---about the same as the TRF's, shorter than the Superadio's.
5. Band changing is accompanied by dial face changing (as in the ICF-S5W and some Grundigs) and analog read-out is accurate but coarse.
6. The 6500 comes with a relatively worthless owner's manual but a nice little 120-page book entitled "Wave Handbook" which includes MW, SW, and FM logs as well as other information.

Concluding remarks

Clearly, the Sony ICF-6500W with the narrow muRata filter is the closest a radio has come to my ideal portable. A highly modified TRF 12-655 would also fulfill most of my requirements but would not provide extras such as SW and FM bands and vernier fine tuning. Also, after outfitting a TRF with a muRata filter, BFO, dial light, S-meter, digital read-out, a Shotgun, etc., the cost would be very near the price of an unmodified Sony (\$139.95 from 47th St. Photo in NYC; list is \$199.95). All in all, the 6500's not perfect, but it comes close. 73's---GT

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R43

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