

## Equipment Review

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### THE KENWOOD TM-2550A/2570A TWO-METRE FM TRANSCEIVERS

These transceivers have been released as updated replacements of the TR-7950 series, two metre FM transceivers. The TR-7950 was reviewed in the July 1983 issue of *Amateur Radio*. The new transceivers retain all of the desirable features of the old models while introducing several updates that again put Kenwood into the lead with two metres FM. Perhaps the outstanding achievement is putting 70 watts output (the 2570A) into a mobile size package.

The TM-2550A is rated at 45 watts output which is the same as the original TR-7950. This review will concentrate on the higher powered model.

#### TM-2550A/2570A DESCRIPTION

These two metre FM transceivers have identical features except for the difference in power output. Because of this, the higher powered version is slightly larger because of the increased size of the final amplifier heat sink. Overall dimensions are 180 x 60 x 215 mm (WHD), for the 2550A, and 250 mm (D) for the 2570A. Weight is 2 and 2.35 kilograms respectively. In addition to the larger heat sink, the 70 watt model also has an in-built cooling fan which is thermostatically controlled.

Full coverage of the two metre band is provided in five kilohertz steps. Required frequencies are selected by entering them on the keyboard, then transferred to one of the memories. Memories are selected by the large right "tuning" knob. Any one of the memories can be designated a priority channel with the receiver sampling this every five seconds and sounding a loud double beep if the channel is active. Also, any of the memories can be selected to be skipped during the memory scan.

The LCD display has been greatly expanded on the new transceivers. The old TR-7950 used an LED S-meter and LEDs to indicate reverse repeater operation, the centre tuning indicator and the priority channel selection. These are now all incorporated into the LCD display.

The S-meter is particularly good with 24 calibration points as against only seven on the old 7950. Just how the S-meter actually works out in practice will be covered later in the test section. However, the greatest update in the new models is the list of options. As our review transceivers were not actually fitted with any of these, I can only describe them and then leave the choice to you.

First is an option that will be taken up by amateurs with impaired sight, the VS-1 voice synthesiser. At the touch of a button, this will announce the frequency, memory channel selected as well as information on the optional call

systems possibly fitted.

Next, the MU-1 "Digital Channel Link System". This wondrous sounding gadget performs all sort of magic tricks, however, it is necessary to have two (or more) similarly equipped transceivers to make things work. Firstly, if it becomes necessary to change frequency, the DCL searches for a clear channel, then returns to the original channel and informs the other transceiver and they then both change to the new frequency, completely automatically. If the CD-10 call sign display unit is connected to the transceiver, stations who have called you will have their call signs displayed on the screen. I hope in the future to obtain a pair of the complete DCL plus call display units and actually try them out. If any readers have had experience with them, please let me know.

#### ON THE AIR

With a transmit current drain of 16 amps, a solid power supply is required. Kenwood recommend their PS-50, which is rated at 20 amps output. I used my Icom PS-15 and also Yaesu FP-707 power supplies and both supplied the required current with no trouble. The 2550A requires just under 10 amps on transmit, so a 10 amp supply should suffice so long as you keep your transmissions to reasonable length.

Selecting frequencies, repeater offset and then entering them into the memory is very easy. As each number or function is selected, a beep is heard to indicate that the command has been accepted.

Comprehensive scanning facilities are provided. The memory scan can be programmed to stop on a busy channel for either a preset time of up to about 10 seconds or at the conclusion of the transmission. Selected channels can be skipped during the scan by means of the "lock-out" facility.

Two types of band scan are available. First, a full band scan and second a programmed scan. The upper and lower points of this are entered into memory 'd' and memory 'u'. Scanning direction can be reversed simply by pressing either the up or down buttons on the microphone. Scanning speed can be increased by holding these buttons down. Another of the nice features is the centre stop facility. This means that scanning will only stop when the signal is properly tuned onto the frequency.

One of the nice features on these new units is the rear illumination of the front panel. For night time mobile operation this certainly sets a new standard. All keyboard buttons and other control

labels feature this in a translucent green — very nice!

Received audio quality from the larger-than-average internal speaker is quite good. The speaker is mounted in the top of the cabinet, good for mobile operation so long as it is not firing up into the underside of the dashboard. With a good quality external speaker, the received audio is exceptionally good.

Transmit audio was checked with two microphones, the supplied MC-42S hand-held with up/down scanning buttons and the MC-60A desk type. The hand-held produced crisp clear audio while the extended response of the MC-60 was reported as "broadcast quality." I am pleased to see that Kenwood have fitted a now-standard eight pin microphone connector which is compatible with other current models. The locally supplied earlier model, the TR-7950, had, for some reason, a six pin connector which caused many compatibility problems. Strangely though, the Trio model of the same transceiver had an eight pin connector.

Transmit tests were carried out over extended periods to check retention of output power. Many transceivers tested show a falling-off of power after a short time. Both of these transceivers delivered consistent power over several hours of testing.

Operation was also checked at supply voltages below 13.8 volts. Power output fell slowly down to about 10 volts and at this point, the 45 watt model was down to 20 watts, and the 70 watt unit was down to 35 watts. Below this voltage things died rather rapidly.

#### ON TEST

The following test equipment was used to produce the figures obtained during these tests.

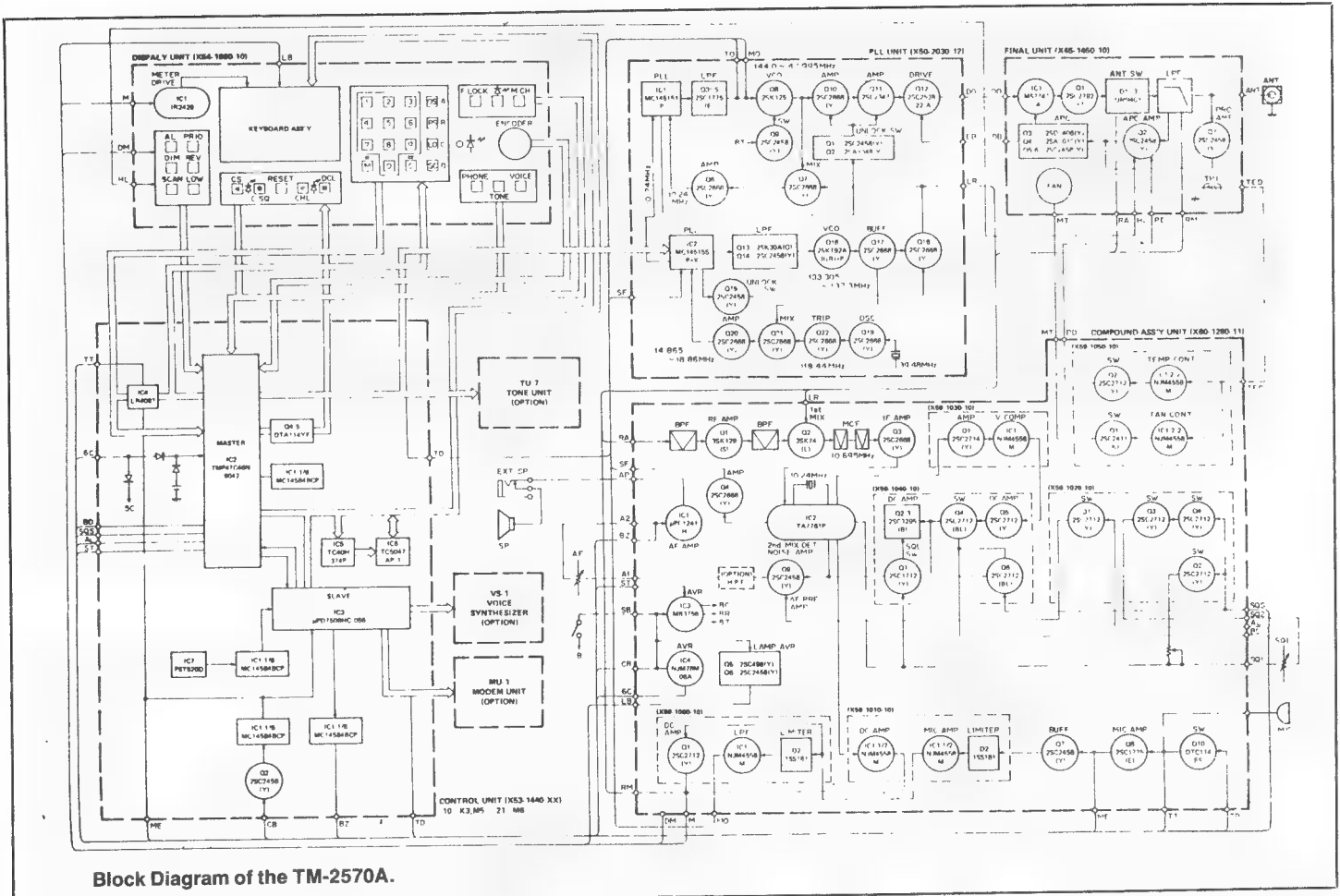
Yaesu YP-150 terminating RF power meter, Marconi TF-957/1 terminating RF power meter, Marconi TF-995A/5 signal generator, Daven audio power output meter, AWA F242A noise and distortion meter. All tests were carried out with a regulated 13.8 volts applied to the transceivers unless otherwise stated.

#### Transmit Power Output

The two transceivers were checked with the following results.

#### TM-2550A

POWER O/P HIGH	POWER O/P LOW
47 watts	4.5 watts
9.7 amps	3.2 amps



**Block Diagram of the TM-2570A.**

**TM-2570A**  
 65 watts  
 15.8 amps

4.7 watts  
 3.3 amps

It is noted that the low power output setting is adjustable over a fairly wide range. The above figures were taken with the factory set power and no attempt was made to alter this.

**Receiver Tests**

The S-meter was checked first. The new LCD bargraph has two indicators per S-point, with calibration points at 1, 3, 5, 7, and 9. There are then six indicators to show S9+.

S1	S3	S5	S7	S9	//	////	/////
1.25	1.6	2.0	2.5	3.1	4.0	5.0	6.3 uV

This works out to 2 dB per S-point or about 1 dB per *l*. This again shows that S-meters are very different on VHF transceivers compared to HF equipment. As many signals are obviously stronger than 6.3 uV, this strength indicator is only useful for relatively weak input levels.

Receiver sensitivity was checked at 146 MHz with the following results.

RF INPUT	SINAD	S/N RATIO
.1 uV	20 dB	15 dB
.2 uV	22 dB	18 dB
.5 uV	27 dB	24 dB
1 uV	35 dB	30 dB

Full quieting was reached at about 2 uV with a noise output of -44 dBm.

Receiver audio output was checked by feeding the extension speaker output to an eight ohm terminating power meter with the noise and distortion meter bridging this.

Max Power Output	3.25 watts	28 percent distortion
	2.00 watts	1.5 percent distortion
	.50 watts	.8 percent distortion

These figures are rather better than the specified 1.5 watts at five percent distortion, but I still think that a mobile transceiver of this type should have at least five watts output at below five percent distortion.

Received current drain was checked. The 2550A was .6 amps squelched to .8 amps with one watt of tone output. Relative figures for the 2570A .8 amps and 1 amp.

Frequency stability and accuracy for both transmitter and receiver were checked and found to be better than 100 Hz under all conditions.

**INSTRUCTION MANUAL**

As I mentioned in my recent review of the TS-440S, Kenwood instruction manuals have improved somewhat of late. I hope they do not stop at this point because there is still a long way to go.

The addition of some good definition photographs of the internal layout would be useful, as would a printed circuit layout. I know that much of the information is included in the optional workshop manual, but as the cost of these is now about \$30, this may be beyond many tight-budgets.

However, the following information is included: Controls and their functions; Installation; Operation; Maintenance and adjustment; Operational accessories; Block diagram and specifications.

Operational instructions are very well written and cover a commendable 17 pages. With all of the optional calling systems, much of this information might not be required for normal operation, but it is handy to have it just the same.

The maintenance and adjustment section does not go into anything of a highly technical nature. It contains hints on battery connection, microprocessor reset and lithium battery replacement, a factory agent job, and then adjustments on such things as the low power RF output set and microphone gain control.

**CONCLUSIONS**

These are both excellent transceivers and are certainly worth consideration if you require a high powered, two metre FM rig. Their somewhat large size perhaps makes them more suitable for a base station operation rather than for mobile use. Kenwood produce a range of compact FM transceivers that will fit into the limited space available in modern cars. If you are trying to decide between the 45 and 70 watt version, I would recommend the higher power version because of its superior final stage cooling. With the larger heat sink and built in cooling fan, it actually runs cooler than the lower powered version.

Thanks to John Hill of Emtronics, Melbourne Division for the loan of the TM-2570A and to Kenwood Electronics Australia Pty Ltd, via Eastern Communications for the loan of the TM-2550A.

**EVALUATION AND ON-AIR TEST AT A GLANCE of the Kenwood TM- 2570A ... Serial No 7031506**

- APPEARANCE**  
 Packaging \*\*\* Single carton full of foam box insert.  
 Weight and Size \*\*\* Not the smallest or lightest. For mobile use you might prefer one of the smaller units.  
 External Finish \*\*\* Very well finished. Although the all black-colour scheme is a bit sombre.  
 Construction Quality \*\*\* Well put together with good quality components.

- FRONT PANEL**  
 Location of Controls \*\*\* There are 19 knobs or push buttons, plus a 16 button keyboard. Quite a feat to fit them all in.  
 Size of Controls \*\*\* Due to the above, buttons are small and hard to operate, especially under mobile conditions.  
 Labelling \*\*\* With the fully illuminated front panel, all labelling is very clear and concise.

#### Status Indicators

\*\*\* On air, centre tune, repeater offset, etc.

#### LCD READOUT

\*\*\* Lots of information presented. Illumination could be brighter.

#### RECEIVER OPERATION

##### Memories

\*\*\* There are 23 memories with frequency, repeater offset, and even telephone numbers (not much use in Australia).

##### S-meter

\*\*\* The bar-graph representation is good. Like most VHF equipment, the range is limited.

##### Spurious Responses

\*\*\* Excellent. Strong signal handling and rejection of out of band signals is top class.

##### Sensitivity

\*\*\* Excellent. See Test Section.

##### Received Audio

\*\*\* Internal speaker is good and top mounted. With external speaker — very smooth quality.

#### TRANSMIT OPERATION

##### Power Output

\*\*\* For size of unit, very good. The 70 watt version is the highest powered mobile unit available.

##### Transmit Audio

\*\*\* With supplied hand-microphone — good. With optional MC-60 microphone — excellent.

##### Cooling (2570A)

\*\*\* With built-in fan and adequate heat sink — excellent.

##### Cooling (2550A)

\*\*\* Actually runs warmer than the higher powered model.

##### Metering

\*\* Power output indicator only.

#### Manual

##### Owners Book

\*\* Better than many. Operation covered very well but more information needed.

#### OVERALL RATING

\*\*\* It seems we are never totally happy with any thing, but overall performance is excellent so long as you have the space to fit it in.

#### RATING CODE

\* Poor, \*\* Satisfactory, \*\*\* Very Good, \*\*\*\* Excellent

# JOTA 1986

Greetings once again to all and especially to anybody who has decided to, or been asked to, operate a JOTA station this month.

The 29th Jamboree-on-the-Air will be held over the weekend of October 18- 19, 1986, beginning at 0001 hours **Local Time** on the Saturday. JOTA will conclude at 2359 **Local Time** on Sunday. Stations may operate for all, or any part of this period.

Either you have every thing under control or, as in most cases, you hope that all will be okay on the day. We know any effort to assist will be much appreciated. Remember these annual events that happened previously for us are still new to the next generation.

If you can go portable at a JOTA location, even though you may not stay long, it is the kind of public relations exercise that is good for both participants.

This year, the Scout and Guide Movement has decided to be the party to initiate a station. It is hoped they will have success and not receive too many "knock-backs" from potential operators.

One highlight of the day will be the Chief Scout/Governor-General's broadcast from Canberra. (Dural station will avoid last years failure by a VHF relay link if required owing to poor propagation). Reliable VHF communication is good over the mountains and into VK1.

Do not forget, the JOTA station fills in the log and report sheets, supplied by your Scout/Guide Leader. You do not have to fill them in but they are necessary for final assessing of the success of JOTA activities.

During discussion regarding the day, ask how many guests you can expect and if a leader will always be present. If possible always require a pole-tower or tree to be needed for one end of your dipole. This is a favourite pastime for the troops and especially ends up with their flag atop

## SPECIFICATIONS FOR CONSTRUCTING PIPE FOR A FOREIGN GOVERNMENT

All pipe is to be made of a long hole, surrounded by plastic or metal centred around the hole. All pipe is to hollow throughout the entire length. Do not use holes of different length than the pipe.

The inside diameter must not exceed the outside diameter, otherwise the hole will be on the outside.

All pipes over 500 feet in length should have the words "Long Pipe" printed clearly on each end, so the contractor will know that it is a long pipe. Pipes over two miles in length must also have the words "Long Pipe" painted in the middle, so the contractor will not have to walk the entire length of the pipe to determine whether or not it is a long pipe or a short pipe.

All pipes over six inches in diameter must have the words "Large Pipe" painted on it, so the contractor will not mistake it for a small pipe.

Flanges must be used on all pipes. Flanges must have holes for bolts quite separate from the big hole in the middle.

When ordering 90, 45 or 30 degree elbows, be sure to specify right hand or left hand, otherwise you will end up going the wrong way.

Be sure to specify to your vendor whether you want level, uphill or downhill pipe. If you use downhill pipe for going uphill, the water will flow the wrong way.

All couplings should have either right hand or left hand threads, but do not mix the threads, otherwise as the coupling is being screwed at one pipe, it is being unscrewed at the other.

Contributed by Bill VK3CFL, via Bruce Bathols VK3UV