

AWA and the Teleradio

by

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Part 4 – The Coming of Single Side Band

In the mid 1960s an agreement came into force, namely that the HF communication systems would change from AM to SSB. This decision by the Government imposed new design criteria, including greater oscillator stability and narrow IF bandpass filters. To allow for the change over period when both AM and SSB would be used, (including marine emergency frequencies which remained AM) the sets should have the option of receiving AM signals and generating pseudo AM transmission signals (A3H).

Initially AWA designed and manufactured its own transceivers, but with the closure of works at Ashfield, Sydney in the late 1970s, AWA took to selling rebadged sets made by other manufactures. These sets will be listed. In these latter days of AWA, their policy seems to have been to group any low power HF transceiver, from hand-helds up, under the banner of Teleradio.

a) Teleradio Models SS70, SS70A (Both type 1N62570) and SS70F (Early 1970s)

The SS70 was the first of the fully solid state set designed for the Royal Flying Doctor Service and other fixed or mobile radiotelephone land operating services. It was a SSB transceiver, but could receive AM and transmit an AM compatible signal if the AM compatible kit was fitted. The standard set covered a frequency range of 2 to 10MHz, but to special order it could be supplied with lower operating frequencies, down to 1.6MHz. On transmit the nominal output power was 25 watts (p.e.p two tone rating) into a 50 ohms impedance load. The standard set operated from a 12V accumulator with a receive current less than 180mA and transmit current drain typically 4A. For portable use there was a carrying frame into which a nickel-cadmium battery pack was also fitted. There were six frequency channels, both the transmitter and receiver being crystal controlled. The receiver IF frequency was 455kHz [40]. Figure 1 shows the set. The controls from left to right are speech/tone switch (in the tone position a distorted tone is employed to modulate the carrier for netting purposes), fine tune or clarifier (only available on the SS70 model), channel switch, volume/on/off control, and AM/SSB switch. On transmission a transmit light (upper left) blinks with the modulation signal.



Figure 1. The SS70 single sideband transceiver.

Figure 2 shows the system in block diagram form. With exception of the 2nd and 3rd IF amplifiers and transmitter driver and final amplifier, all the other stages are used for both transmission and reception. To change from receive to transmit four relays were used, these relays energised when the microphone press to talk button was operated.

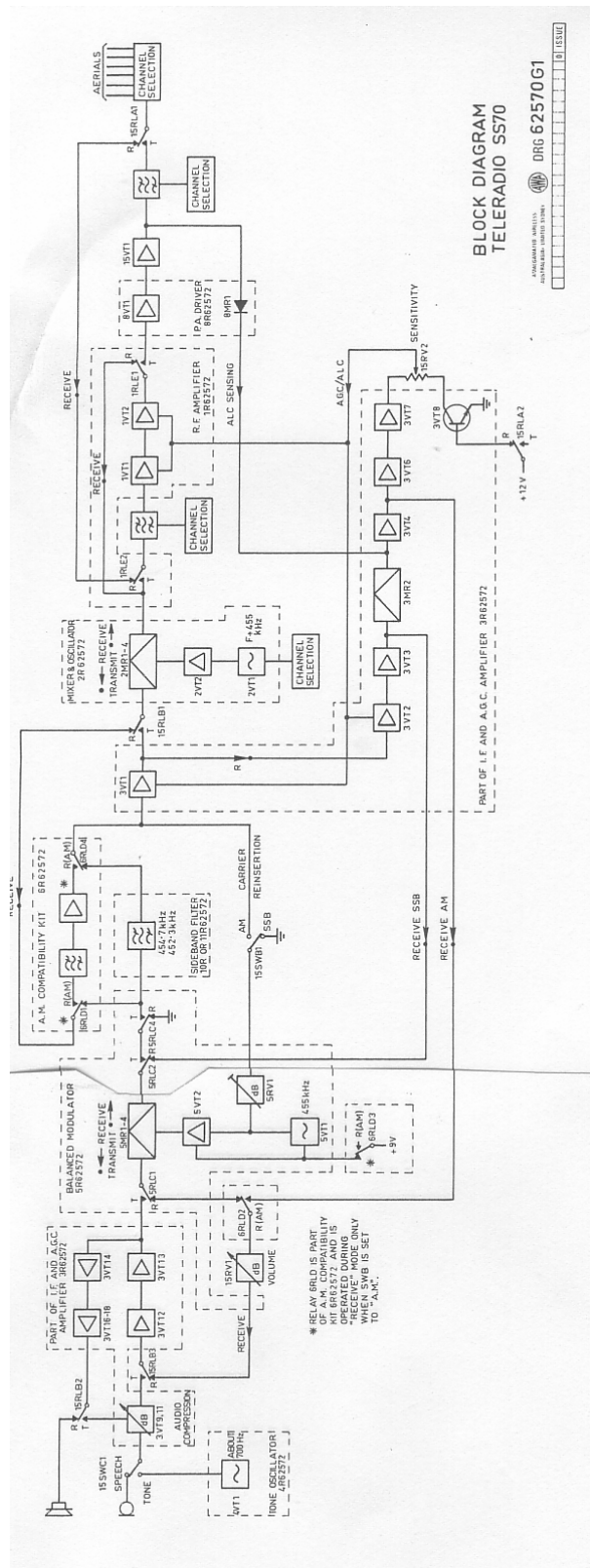


Figure 2. Block diagram of the SS70 Teleradio showing the sharing of modules between transmitter and receiver.

TELEVISION RECEIVER

POWER SUPPLY

TUNER

VIDEO AMPLIFIER

AUDIO AMPLIFIER

REMARKS:

1. ALL RESISTORS ARE IN OHMS UNLESS OTHERWISE SPECIFIED.

2. ALL CAPACITORS ARE IN P.F. UNLESS OTHERWISE SPECIFIED.

3. ALL TUBES ARE 6X4, 6X5, 6X6, 6X7, 6X8, 6X9, 6X10, 6X11, 6X12, 6X13, 6X14, 6X15, 6X16, 6X17, 6X18, 6X19, 6X20, 6X21, 6X22, 6X23, 6X24, 6X25, 6X26, 6X27, 6X28, 6X29, 6X30, 6X31, 6X32, 6X33, 6X34, 6X35, 6X36, 6X37, 6X38, 6X39, 6X40, 6X41, 6X42, 6X43, 6X44, 6X45, 6X46, 6X47, 6X48, 6X49, 6X50, 6X51, 6X52, 6X53, 6X54, 6X55, 6X56, 6X57, 6X58, 6X59, 6X60, 6X61, 6X62, 6X63, 6X64, 6X65, 6X66, 6X67, 6X68, 6X69, 6X70, 6X71, 6X72, 6X73, 6X74, 6X75, 6X76, 6X77, 6X78, 6X79, 6X80, 6X81, 6X82, 6X83, 6X84, 6X85, 6X86, 6X87, 6X88, 6X89, 6X90, 6X91, 6X92, 6X93, 6X94, 6X95, 6X96, 6X97, 6X98, 6X99, 6X100.

COMPONENTS:

RESISTORS: 10K, 15K, 20K, 25K, 30K, 35K, 40K, 45K, 50K, 55K, 60K, 65K, 70K, 75K, 80K, 85K, 90K, 95K, 100K, 110K, 120K, 130K, 140K, 150K, 160K, 170K, 180K, 190K, 200K, 220K, 240K, 260K, 280K, 300K, 330K, 360K, 390K, 420K, 450K, 480K, 510K, 540K, 570K, 600K, 630K, 660K, 690K, 720K, 750K, 780K, 810K, 840K, 870K, 900K, 930K, 960K, 990K, 1M, 1.1M, 1.2M, 1.3M, 1.4M, 1.5M, 1.6M, 1.7M, 1.8M, 1.9M, 2M, 2.2M, 2.4M, 2.6M, 2.8M, 3M, 3.3M, 3.6M, 3.9M, 4.2M, 4.5M, 4.8M, 5.1M, 5.4M, 5.7M, 6M, 6.3M, 6.6M, 6.9M, 7.2M, 7.5M, 7.8M, 8.1M, 8.4M, 8.7M, 9M, 9.3M, 9.6M, 9.9M, 10M, 11M, 12M, 13M, 14M, 15M, 16M, 17M, 18M, 19M, 20M, 22M, 24M, 26M, 28M, 30M, 33M, 36M, 39M, 42M, 45M, 48M, 51M, 54M, 57M, 60M, 63M, 66M, 69M, 72M, 75M, 78M, 81M, 84M, 87M, 90M, 93M, 96M, 99M, 100M.

TABLE:

ITEM	DESCRIPTION	QTY	REMARKS
1	6X4	1	POWER SUPPLY
2	6X5	1	TUNER
3	6X6	1	VIDEO AMPLIFIER
4	6X7	1	AUDIO AMPLIFIER
5	6X8	1	REMARKS

Figure 3. Circuit schematic for the SS70 Teleradio

b) Teleradio Model TR105 (late 1970s) and the Model 3(late 1960s) both AWA NZ

The Model TR105 appears to be a SSB version of the earlier PACKSETs being a 5 watt portable unit issued to search and rescue people. It mainly operated on the standard S&R and police frequencies, two channels allowed, the night and day frequencies for the service. A speaker microphone was used. The set was powered from a separate battery pack containing 8, “D” size batteries, the whole supplied in a light weight carry bag. Figure 4 shows the transceiver [38].

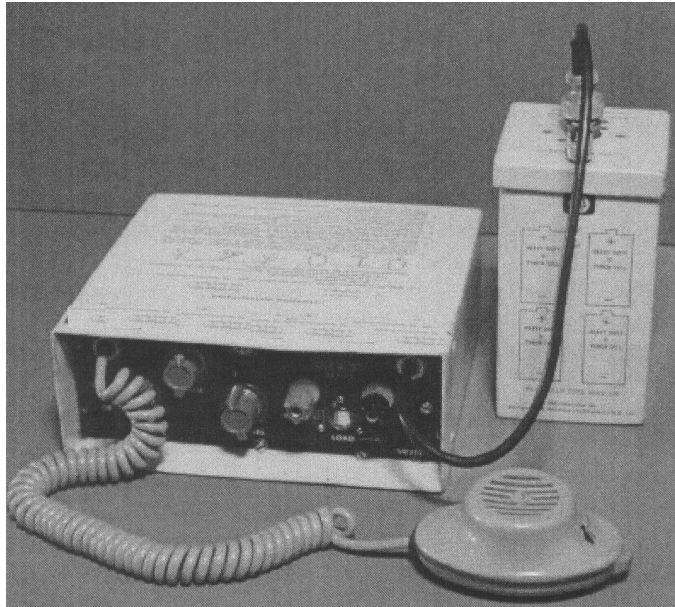


Figure 4. The TR105 set designed for emergency operations.

c) Teleradio Model 110 (AWA NZ designed set)

Little has been discovered on this set. It is believed to be a SSB set of AWA NZ design. The front panel layout has some resemblance to the Model 80 AM set. There is no broadcast receiver included in the set. A photograph of the transceiver is shown in Figure 5 [41].



Figure 5. Teleradio Model 110H

d) Teleradio Model SS200 (Type 1N62073. Designed 1968)& Model SS220 (Type 3N62073. Designed 1970)

The SS220 was a high power hybrid set having an output power of 100 watts (p.e.p) and covering the frequency range 2 to 15 MHz. The RF output stage was two type 6883/B valves in parallel. The receiver was a double conversion superheterodyne with IF frequencies of 1790 and 200 kHz [42]. There was a separate power supply pack for mobile or AC mains operation. Remote control facilities were available as an option. Figure 6 shows the set.



Figure 6. The Model SS200 Teleradio

It appears that the SS200 had some technical problems and the SS220 was an improved version to eliminate these [43]. The new look set is shown in Figure 7.

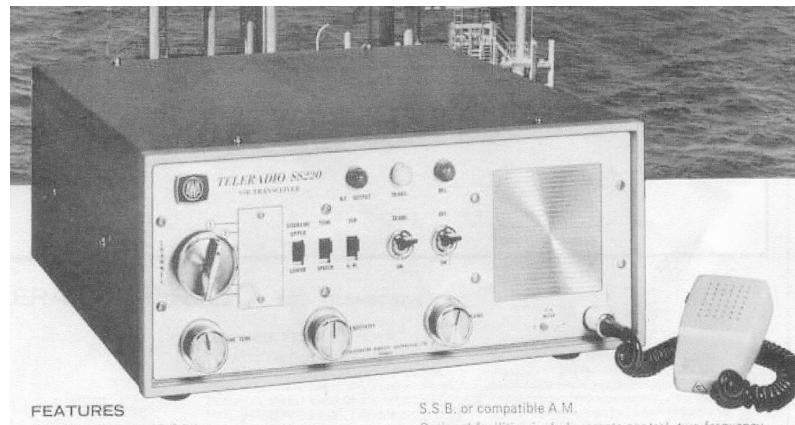


Figure 7. Teleradio Model SS220

e) Rebadged sets

Sets from other manufactures marketed by AWA under the Teleradio brand name. These sets were -

- i) Teleradio 40C being a rebadged Amalgamated Telecommunications (A' AASIA) Pty.Ltd (ATA) set, the Sea Com 40C. It is interesting that AWA kept the same designation. See Figure 8.



Figure 8. The ATA Model 40C on the left and the rebadged AWA 40C on the Right [44].

- ii) Teleradio 75A. While a manual has been located there is no indication of who was the original set manufacturer. The set employs a number of Motorola integrated circuits, such as the MC1550G [45].
- iii) Teleradio SS90 being a rebadged Racal Model 7928 (See Figure 9)



Figure 9. Rebadged Racal 7928 set sold as the SS90 Teleradio

- iii) Teleradios SS100, SS120 and SS50 being rebadged PCM Hawk (SS100) and Kestral (SS120) sets. The sets were identical except the Kestral being the marine version automatically changed to AM on the 2182kHz emergency frequency. The SS50 was a low power version of the Hawk. Figure 10 shows the SS120.



Figure 10. Teleradio Model SS120

- iv) Teleradio SS140. While a manual has been located there is no indication of who was the original set manufacturer. The set employs integrated circuits still in use today in communications equipment.
- v) Teleradio SS901 being a rebadged Racal 7948A

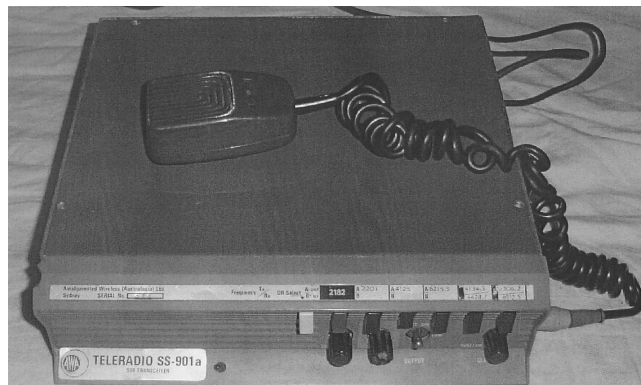


Figure 11. Teleradio Model SS901

- vi) For hand-held transceivers and small CB style marine sets, produced specifically for owners of small boats AWA rebadged a number of Uniden sets, but generally the Uniden type numbers are not known. The AT 102, AT051 and AT503 were all hand-held 27MHz marine AM sets, while the AT513 and AT516 were 27Mhz CB style AM sets for marine work. See Figure 12.

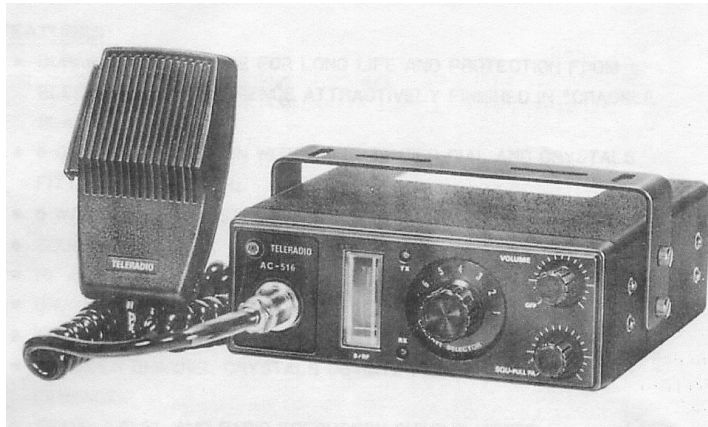


Figure 12. AT516 marine set

Other known rebadged 27MHz marine Unidens sets are -

- a) AC5112 a 10 channel AM and the AC5112S Figure 13 (a), a 10 channel AM/SSB transceiver (Uniden type UT-524R).
- b) SSB618 a 18 channel AM/SSB transceiver (Figure 13 (b)).
- c) GT85S is a AM/SSB set that is identical in appearance to the AC5112S set listed above, but with reduced number of channels (Figure 13 (c)).



Figure 13. Three marine transceivers, AC5112S, SS618 and GT85S

Conclusions

Over a period of almost 5 decades AWA marketed a range of quality HF transceiver products under the brand name of Teleradio. The early sets, although primitive by today's standards, provided a needed service, communications to people in remote locations, whether on sea or land. This was particularly true of the WW II era, a time of national crisis and here the Teleradio set proved its worth in being a highly rugged and reliable set under the most extreme conditions. Because the number of models produced by both AWA in Australia and AWA NZ have been so numerous, it is probable that some have been missed. The authors would be pleased to receive information, including photographs and technical information on the missing Teleradios omitted from this series of articles.

References

- [38] Service Manual Single Sideband Teleradio SS70 & SS70A, Type 1N62570. Handbook No. 62570R.
- [39] Communication with Fred Iliff.
- [40] <http://homepages.ihug.co.nz/~abrill/Exhibits/AWA%20TR105%20HF/TR105.htm>
- [41] <http://www.shlrc.mq.edu.au/~robinson/Teleradio/>
- [42] Instruction Manual Teleradio SS200, Type 1N62073, Handbook No. 62073R.

[43] Instruction Manual Teleradio SS220, Type 3N62073.

[44] Photos supplied by Michael Kane VK4ZKT

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