the features of the equipment? Perhaps one day!

Conclusions

If you are in the market for a $7000/$8000 transceiver (half your luck) then the IC-775 DSP would have to be on your short list of possibilities. With the 200 watt power output capability there is really no need for a 400 watt linear, the difference is almost imperceptible.

ICOM have looked at the requirements of the amateur looking for a top line transceiver very closely and have come up with a rig that should please the most particular.

A good range of optional filters allows the demanding operator to optimise the transceiver for DX or contest use. Filters available include the FL-101, 250 Hz at -6 dB for narrow CW, price $158.76; the FL-102, 6 kHz at -6 dB for wide SSB, medium AM or narrow FM, price $117.60; and the FL-223 with a 1.9 kHz at -6 dB band pass for narrow SSB, priced at $141.12. All of these filters are for use in the 9 MHz IF.

There are two filters available for use in the 455 kHz IF. These are the FL-53A, a 250 Hz CW filter priced at $298.70; and the FL-222, a 1.9 kHz narrow SSB filter at $346.92. While these filters are not cheap they are reported to have superb characteristics. It was unfortunate that no options were installed in our review transceiver.

What would I change with the IC-775 DSP if I had the opportunity? Not much, I have to admit. Perhaps the feature that disappoints the most is the second receiver. There is no provision to use the receiver outside the band pass filter used with the main receiver so you can really only use it within the confines of the chosen amateur band. Pity that ICOM don't offer an optional band pass filter for the second receiver as Yaesu have done with the FT-1000. Also, you are stuck with the same IF selectivity as you have chosen for the main receiver. I guess it's all a matter of price, but I think ICOM could well extend their options list to include some of the above facilities.

My thanks to **Daycom Communications Pty Ltd** for the loan of the review transceiver. **ar**

■ **Transceivers**

ICOM IC-22S Revisited Modifications to 48 Channels

Clem Maloof VK2AMA describes another method of getting even more out of this classic transceiver.*

The humble IC-22S 2 metre FM mobile transceiver has earned a special place in history. It was the first to offer a synthesised VCO, doing away with the large number of expensive crystals. It uses a rotary switch to change channels so you don't drive off the road, you simply count the clicks. Over the years there have been many modifications to improve the 22S, including extra channels.

Over some twenty years the author has been tinkering and fixing the occasional dry joint. One such modification was to add diodes to receive the Hornsby ARC Morse beacon on 144.850 MHz. This channel is represented by a dot on the dial.

This set was designed to operate from 146.00 to 148.00 MHz in +600 or -600 kHz offsets. It will, however, work quite well in simplex mode down to 144.400, which is the lower limit of the VCO.

The author uses a scheme which utilises the HI/LO power switch to provide the 25 kHz or 50 kHz selection with the centre position being power OFF.

Here's how:

1. Remove the (brown) high power ALC biasing wire from the central terminal of the HI/LO switch and connect it to the Tx 9 V point on the main board, that is to the same point as the lower wire on the switch (white).
2. Remove the white wire from the switch and relocate it to the 9 V rail of the PLL/VCO board. It is connected to the common contact of the rotary switch (red wire).
3. Connect the reverse side of the D0 pin on the PLL/VCO board to the vacant central pin of the HI/LO switch.
4. Disconnect the purple wire (R149 wiper contact) from the switch, insulate the wire (no low power bias is now available).
5. The blanked out position on the dial can be used for 146.000, eliminating all 22 diodes on the D6 rail. This is achieved by using a

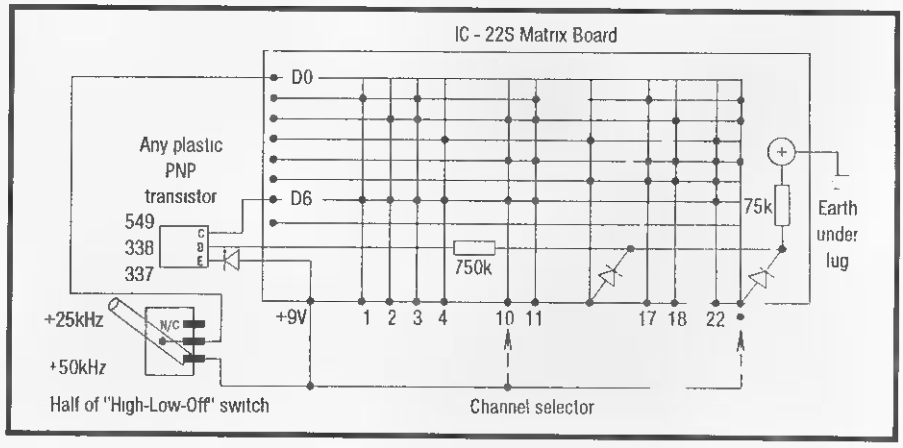

Fig 1 — IC-22S switching modifications.

Frequency	Octal	Binary	Frequency	Octal	Binary	Frequency	Octal	Binary
144.400	0	00000000	145.600	60	00110000	146.800	140	01100000
144.425	1	00000001	145.625	61	00110001	146.825	141	01100001
144.450	2	00000010	145.650	62	00110010	146.850	142	01100010
144.475	3	00000011	145.675	63	00110011	146.875	143	01100011
144.500	4	00000100	145.700	64	00110100	146.900	144	01100100
144.525	5	00000101	145.725	65	00110101	146.925	145	01100101
144.550	6	00000110	145.750	66	00110110	146.950	146	01100110
144.575	7	00000111	145.775	67	00110111	146.975	147	01100111
144.600	10	00001000	145.800	70	00111000	147.000	150	01101000
144.625	11	00001001	145.825	71	00111001	147.025	151	01101001
144.650	12	00001010	145.850	72	00111010	147.050	152	01101010
144.675	13	00001011	145.875	73	00111011	147.075	153	01101011
144.700	14	00001100	145.900	74	00111100	147.100	154	01101100
144.725	15	00001101	145.925	75	00111101	147.125	155	01101101
144.750	16	00001110	145.950	76	00111110	147.150	156	01101110
144.775	17	00001111	145.975	77	00111111	147.175	157	01101111
144.800	20	00010000	146.000	100	01000000	147.200	160	01110000
144.825	21	00010001	146.025	101	01000001	147.225	161	01110001
144.850	22	00010010	146.050	102	01000010	147.250	162	01110010
144.875	23	00010011	146.075	103	01000011	147.275	163	01110011
144.900	24	00010100	146.100	104	01000100	147.300	164	01110100
144.925	25	00010101	146.125	105	01000101	147.325	165	01110101
144.950	26	00010110	146.150	106	01000110	147.350	166	01110110
144.975	27	00010111	146.175	107	01000111	147.375	167	01110111
144.000	30	00011000	146.200	110	01001000	147.400	170	01111000
144.025	31	00011001	146.225	111	01001001	147.425	171	01111001
144.050	32	00011010	146.250	112	01001010	147.450	172	01111010
144.075	33	00011011	146.275	113	01001011	147.475	173	01111011
144.100	34	00011100	146.300	114	01001100	147.500	174	01111100
144.125	35	00011101	146.325	115	01001101	147.525	175	01111101
144.150	36	00011110	146.350	116	01001110	147.550	176	01111110
144.175	37	00011111	146.375	117	01001111	147.575	177	01111111
144.200	40	00100000	146.400	120	01010000	147.600	200	10000000
144.225	41	00100001	146.425	121	01010001	147.625	201	10000001
144.250	42	00100010	146.450	122	01010010	147.650	202	10000010
144.275	43	00100011	146.475	123	01010011	147.675	203	10000011
144.300	44	00100100	146.500	124	01010100	147.700	204	10000100
144.325	45	00100101	146.525	125	01010101	147.725	205	10000101
144.350	46	00100110	146.550	126	01010110	147.750	206	10000110
144.375	47	00100111	146.575	127	01010111	147.775	207	10000111
144.400	50	00101000	146.600	130	01011000	147.800	210	10001000
144.425	51	00101001	146.625	131	01011001	147.825	211	10001001
144.450	52	00101010	146.650	132	01011010	147.850	212	10001010
144.475	53	00101011	146.675	133	01011011	147.875	213	10001011
144.500	54	00101100	146.700	134	01011100	147.900	214	10001100
144.525	55	00101101	146.725	135	01011101	147.925	215	10001101
144.550	56	00101110	146.750	136	01011110	147.950	216	10001110
144.575	57	00101111	146.775	137	01011111	147.975	217	10001111

Chart 1 — IC-22S diode matrix frequency chart.

forward biased PNP transistor as a switch with its emitter on the 9 V rail and its collector on the D6 rail. The base is connected as shown in Fig 1.

Use a plastic transistor as it will minimise the risk of short circuits. When selecting a frequency lower than 146.00, such as 144.950, the D6 rail is low. The channel switch automatically removes the forward bias on the transistor switch. If more than one simplex channel is required below 146.000, then each channel has to be isolated with diodes as drawn in Fig 1. In the author's case no additional diodes were required since only 144.950 was incorporated.

In conclusion, 48 out of the 50 valid 25 kHz channels are now available to the author. Not bad for the old rig!

A detailed print out of the diode matrix is included to assist you in programming the diode matrix board.

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