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CB to 10

—part XIII: the Lafayette Telsat SSB-75

This rig makes a very versatile all-mode mobile transceiver when converted to 10 meters. The price has come down remarkably from its original offering. Its basic specifications are: 23 channels, all modes (USB, LSB, AM), minimum 12 W PEP output, an i-f crystal filter, and ±600-Hz fine-tune capability. The rig has 10 crystals, which are divided into two groups for frequency synthesis: a group of six crystals in the 24-MHz range with 50-kHz spacing, and a group of 4 crystals from 14.910 MHz to 14.950 MHz. After checking the block diagrams for the different modes, I decided to replace the 24-MHz crystals. Also, the 14.950-MHz crystal should be replaced by a 14.940-MHz crystal in order to get even 10-kHz spacing from channel to channel (originally 10-10-20-10 kHz). Every crystal of the first group yields four channels on 10 meters.

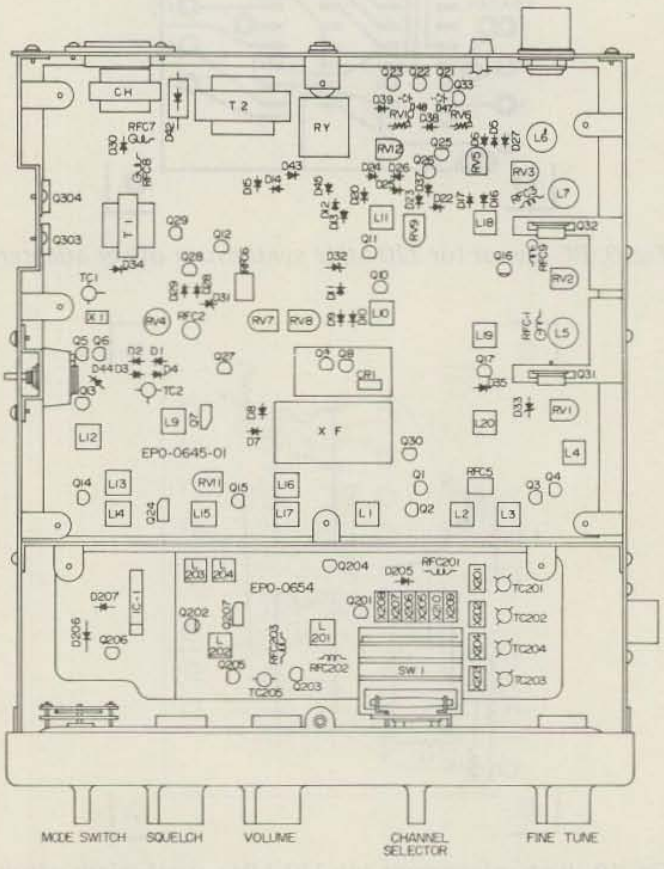

Fig. 1. Telsat SSB-75 parts location diagram.

The formula $f_X = f_{op} + 11.275\ MHz - 14.910\ MHz$, where f_{op} = required operating frequency in MHz, gives the frequency for the crystals in the 24-MHz range. Remember: Each of these crystals gives four operating frequencies.

Example: The frequency 28.500 MHz shall be on channel one. Which crystal is necessary? $f_X = 28.500\ MHz + 11.275\ MHz - 14.910\ MHz = 24.865\ MHz$. This crystal replaces X205 as shown in the parts location diagram, Fig. 1. This crystal is in action from channel 1 to 4 on the selector switch. X206 responds to channels 5-8; X207 to channels 9-12; X208 to 13-16; X209 to 17-20; and X210 supplies 21, 22, no operation, and 23.

If you want all 23 channels in an uninterrupted order, all you do is add 40 kHz to the previous crystal's frequency.

Example: For 28.500 to 28.730-MHz coverage, you'll need:

X205: 24.865 MHz
X206: 24.905 MHz
X207: 24.945 MHz
X208: 24.985 MHz
X209: 25.025 MHz
X210: 25.065 MHz

No operation is possible on 28.720 MHz (between channel 22 and 23) because of the switching arrangement.

If you want to listen occasionally to OSCAR 7, just use a 25.835-MHz crystal for X210. Thus, channel 23 receives the 29.502-MHz beacon, and channels 21 and 22 receive 29.480 MHz and 29.470 MHz, respectively, in the CW subband.

If you prefer the *73 Magazine* band plan (channel 1 at 28.965 MHz), you need to replace only the following crystals:

X205: 25.330 MHz
X206: 25.380 MHz
X207: 25.430 MHz
X208: 25.480 MHz
X209: 25.530 MHz
X210: 25.580 MHz

Crystal X204 remains unchanged, so delete step 1 in the following instructions. This set of crystals gives you the first 23 channels of the *73* band plan.

Some portions of the transceiver must be realigned, but the only components that must be changed are the crystals. A satisfactory alignment can

be achieved using only a wattmeter and a 10 meter transceiver. You should have no problems if you follow these instructions.

1. Replace X204 with 14.940-MHz crystal.
2. Replace X205 through X210 as required.
3. Set mode switch to USB.
4. Plug in the microphone and turn the rig on. Turn the squelch fully counterclockwise.
5. Connect a 10 meter antenna through the wattmeter.
6. Provide a strong signal on one of the planned operating frequencies.
7. If you hear the signal already, rotate L201 clockwise until the signal disappears, and then counterclockwise until the signal returns. Continue one-half turn counterclockwise past the point of return of the signal. Go to step 9 if you were able to complete this step. If not, continue with step 8.
8. If you don't hear the signal, rotate L201 counterclockwise until you hear it, or check the frequency and strength of your reference signal. Go back to step 7.
9. Reduce the 10 meter reference signal amplitude until you barely hear it.
10. Adjust L202, L203, and L204 for best reception. Reduce reference signal level as required.
11. Adjust L18 and L19 for best reception.
12. Repeat steps 10 and 11.
13. Set mode switch to AM.
14. Press microphone push-to-talk button and adjust L2, L3, L4, L5, L7, and L6 for maximum indication on the wattmeter.
15. Repeat step 14 until power output is between 4 and 8 Watts.
16. Set mode switch to LSB.
17. Increase reference signal level until a weak signal is received. A slight frequency correction might be necessary.
18. Adjust L12 through L17 for best reference signal reception.
19. Remove reference signal and repeat steps 11 and 18 for maximum noise.

That's it! If you find it complicated—try it. It's really no problem.

The retuning was successful if there is practically no difference in noise received when you switch back and forth between USB and LSB and power output is nearly constant whether on upper or lower sideband. Better results might be obtained, however, if you have access to sophisticated test equipment.

The time required for the conversion/alignment is less than one hour.

Originally, the fine tuning control varied only the receive frequency. Soldering wire a to wire b (Fig. 2) provides fine tuning for transmit, as well.

I found this conversion very handy for strictly mobile use. For portable or fixed use, however, replacement of X201 through X204 with a 14.910-to-15.010 MHz vfo is feasible and certainly worthwhile. This will provide a 100-kHz-wide segment for each of crystals X205 through X210.

You will be surprised how often you get a DX contact with only 10 W PEP. Talking with W6s and W7s while driving around in upstate New York is "normal," and a contact with South America, the Caribbean, or even South Africa is not a rarity. Good DX! ■

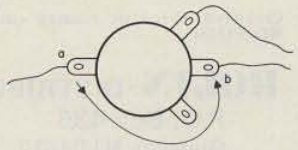

Fig. 2. Fine-tuning potentiometer.

✓ Reader Service—see page 323.