

PERSONAL COMMUNICATOR CONVERSION 49 MHZ

This conversion is useful to keep tabs on the kids as it enables you to monitor the unlicensed "kiddie-talkie" frequencies which are: 49.830, 49.845, 49.860, 49.875, and 49.890 Mhz. Legitimate ham radio operations can also be done by using crystals in the 13.100 Mhz to 13.200 Mhz range instead of the one specified in the instructions which follow. Caution: do not operate in the 50-54 Mhz ham 6 meter band unless you have a Technician class license.

The following conversion was done to a Midland 13-830 which is found in SAMS CB volume 120. A partial list of similar radios follows with the appropriate SAMS volume number in case you don't have this particular volume handy.

Hygain 3077	CB125	Lafayette HB750	CB134	Midland 13-857B	CB136
2683	CB138	Telsat 1050	CB139	Pearce Simpson	
2680--2681	CB148	Micro 223A	CB142	Tiger Mark II	CB125
2682	CB157	HB650	CB144	Tiger 40A	CB208
2701	CB165	Midland 13-882C	CB119	RCA 14T300	CB163
Kraco KCB2330B	CB116	13-830	CB120	Truetone CYS4732A-77	CB121
KCB2320A	CB152	13-888B	CB129	MCC4434B-67	CB122
KCB2320B	CB153	13-955	CB135		

Many other models of this Cybernet design having a PLL-02A with 3 crystals also exist but were not produced in sufficient quantities to be in SAMS.

This conversion requires a frequency counter, wattmeter, signal generator and an oscilloscope having a usable response to 50 Mhz (rating flat to 35 or 40Mhz.) The principle of this conversion is to select the sum of the oscillators instead of the difference frequency the unit was designed to operate on.

Crystal change: remove X101 (11.8066) and replace with 12.255 Mhz. (any crystal between 12.215 and 12.290 should be okay). Tune T101 (VCO) downward so that DC voltage of 1.5V appears when chan selector is on channel 1 on TP-8. DC voltage should be around 3.5V on TP-8 when chan selector is on ch 23. Next tune T111 for strongest 38Mhz sinewave at TP-3 using oscilloscope as indicator.

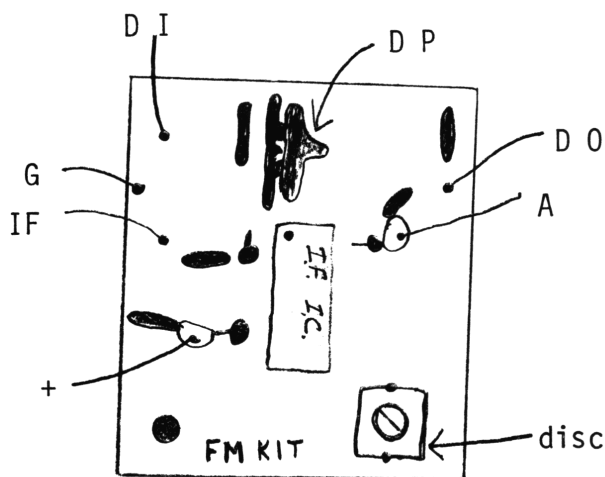
Receiver conversion: remove C154 and change to 5pf. Remove T105 from circuit board and remove its internal capacitor and reinstall T105. You should now be able to put a 49 Mhz band signal into the ant jack and hear it. Peak T104 and T105 for strongest S-meter indication. Do not tamper with the IF cans as you don't want to throw them off frequency-their alignment should be the same as they had when the unit was a CB! Sensitivity will not be real good at this time as other parts in the antenna tuning circuit for the transmitter which have not yet been retuned also affect the receivers sensitivity.

Transmitter conversion: remove C124 and replace with 33pf. Remove L103 so that you can remove its internal capacitor and reinstall L103 to the circuit board. Next remove L104 so its internal capacitor can be discarded. When L104 is soldered back in place add 15pf across the same pins the internal cap was tied to. Coil T102 also needs its internal capacitor removed and to have 15pf soldered to the same pins that the internal cap had been tied to. Change C141 to 39pf. Change C143 to 22pf. Note-T103 does not have an internal capacitor to remove even though one is shown in the SAMS. Remove C146 and do not replace. Change C149 to 68pf. Remove R202 as it is unnecessary. Remove L106 to alter it by cutting its bottom plastic to remove two turns. L106 will have 2½ turns left when it is reinstalled. Remove C153-do not replace. L109 needs to be cut down to 3½ turns-these come off the top of the winding the easiest. Change C151 to 220pf. Change C152 to 150pf. Change R132 to a 22pf capacitor. Cut down L110 at the top to 2½ turns. Add a hole at circuit trace point 21 for a 50pf capacitor to ground. Wind a 3 turn coil identical in size to L116 and use it in place of the jumper wire from test point 5B to the antenna connector. Change C1 (on the S0239) to 27 pf. Use the oscilloscope to peak each xmtr coil (mic keyed) from L103 thru L110 making sure that the 49 Mhz signal is being peaked!

Best performance of the transmitter is obtained if L106 is turned downward a little from the maximum wattage position-set it at not more than 5.5 watts. Most of the coils will tune up somewhere near the original positions except for T105 which will have its best peak about 2 turns above the coil form top. Now when you peak T105 and T104 for strongest S-meter received signal from the signal generator you will find the sensitivity to be better.

Now you can set the overall frequency to either 0 or 5 Khz on the end digit of your frequency counter depending which channel you need to match up to in your "kiddie-talkie". (Some kiddie-talkies have the actual frequency on the crystal and others will be labeled at one-third the operating frequency-example:16.610 on the crystal is for 49.830 Mhz.) Tune C119 to set the desired frequency. It probably will be necessary to change C118 to another value-try capacitors in the range of 22 pf to 39 pf until you can tune C119 to the desired frequency.

To improve the squelch sensitivity you can change R181 to 33K. You are now ready to change the unit from AM to FM. Remove D105 and put a jumper wire from the foil that the cathode (banded end) of D105 formerly was tied to to connect to +12V. A handy point for the +12V is test point 9. Remove C177-the audio coupling capacitor from the AM detector to the volume control. Put a jumper wire from circuit trace point 46 to the audio output of the FM KIT circuit board. Install another jumper wire from the IF Input of the FM KIT board to the base of Q119. (Do not remove any connections around Q119). Audio for making the FM KIT modulate the xmit frequency can be obtained at the unused terminal of the PA jack. Put your jumper lead from the PA jack to the Deviation Input of the FM KIT. The FM KITs Deviation Output goes to test point 8 of the former CB rig. Power for the FM KIT can be picked up at test point 9 for the +12V. The ground foil of the FM KIT is to be tied to negative circuit board ground of the rig. For best results adjust the 20K trimpot of the FM KIT for 5Khz deviation if you have a way of measuring it. (It is factory set at 5Khz in the test rig so it should be okay if you don't have a deviation meter). The discriminator coil of the FM KIT can be tuned for clearest sound of a received signal if you don't have a FM signal generator or for maximum noise in the absense of a signal (squelch open). Adjustment of the discriminator coil should be within ¼ turn of the factory setting on the FM KIT. FM conversion increases RF power output somewhat and improves receiver sensitivity considerably.



- D I deviation input from PA jack
- D P deviation pot (set for 5 Khz)
- G ground to circuit board negative
- IF IF input from base of Q119
- D O deviation output to TP8
- A audio out to vol control
- + 12 volts from TP9
- disc discriminator can tuning

(above drawing does not show all parts-just enough to aid in identifying hookup)
 To mount FM KIT remove chassis mounting screw between RV103 and IC102, drill out hole to 1/8" or 3/16" and use 1" long bolt with 3 nuts as a standoff mount. The FM KIT should be mounted parts side up so D P and disc are accessible for adjustment.