"B" KIT by CARD-KIT ELECTRONICS

READ the article; all Fø's are in MHz-unless otherwise noted...

As stated in the announcement (Vol. 16, pg. 8) the principles used in the development of the "B" Kit are quite simple. All PLL Chips using a .455 off-set shift, can be reversed in their shifting direction.

The VCO output is normally used during receive as the Local Oscillator (L.O.) Frequency. During transmit it is shifted up by .455 and combined with the Reference Oscillator Frequency (Ref. F) of 10.24, to generate the Transmitter Frequency (TX-F).

During receive the L.O. Freq. is beat with the incoming RF signal which creates the 1st Intermediate Frequency (IF) 10.695... This 1st IF is then beat with the Ref. F. (10.24) to create the 2nd IF of .455... The 2nd IF is then rectified/detected and the .455 is filtered out to create the Audio Frequency (AF)...

However, there is a second frequency that can be received that if it is allowed to combine with the Ref. F will also create a 2nd IF of .455... This frequency is referred to as the Anti-Image Frequency.

This is what occurs: Symbol-)(, = Mixed or Combined with..

IMAGE..... 27.075)(16.380 = 10.695)(10.24 = 455KHz
ANTI-IMAGE.... 26.165)(16.380 = 9.785)(10.24 = 455KHz

The Anti-Image is prevented from entering the 2nd Mixer Stage by a ceramic or crystal filter. This filter passes the 10.695 and blocks the 9.785...

Now, if we change the direction of shift on the PLL Chip, the L.O. is 455KHz higher than normal during receive. Transmit is 455KHz lower than normal.

Example: 27.075 (Ch-10) becomes 26.620 TX-Fø.

During receive the VCO Output of L.O. Frequency 16.380 becomes 16.835... Now to look at it graphically...

IMAGE..... 27.530)(16.835 = 10.695)(10.24 = 455KHz
ANTI-IMAGE.... 26.620)(16.835 = 9.785)(10.24 = 455KHz

Now the Anti-Image becomes desirable and the Image is undesirable frequency. Since the 1st IF of 9.785 is blocked by the 10.7 ceramic filter, it must be replaced.

The above information is strictly to remove any mystery about what the "B Kit" is designed to accomplish. Namely to reverse the direction of PLL shift and switch filters.

At present, there is one other requirement needed within the unit to be modified, besides having a 455KHz offset shift. The unit must also have a tuning tank preceeding the ceramic filter. This requirement will hopefully be eliminated in the future, and add more units to list of those modifiable.

This change to the "B Kit" has already been tested. Delay is getting the necessary components to replace the filters.

Additional units made possible to modify by the component change will be featured in up-coming volumes of "Secret CB".

Order your kit from Selman Enterprises - ask for Kit #136"B".

GENERAL INSTRUCTIONS:

Before starting your modification you should decide if you wish to make a straight installation, which gives frequencies 26.510 thru 26.950 in 10KHz steps. Or to be compatible with older sets and have 26.515 thru 26.955 also. All that is needed is to install the SPDT switch provided or mount the variable capacitor on one of the existing switches.

If you do not wish the 26.515 thru 26.955, omit all instructions under 5KHz OFFSET and do CHANNEL CONVERSION only.

How to make up the SPDT switch is illustrated in "Secret CB"; Vol-14, Pg. 21... "B Kit" will use both a new switch and capacitor; Capacitor is smaller in size, but same value; Switch now has only two terminals. ...When making up the switch it is advisable to first solder wires to it, then solder the capacitor...

EQUIPMENT REQUIRED:

As written these modifications call for a Counter and Signal Generator. We realize that many persons don't own a Sig. Gen. but there is an alternative.

Instead of modifying one unit, do two at the same time! Make the complete installation in both units except the receiver tuning. (Use one of the units as a Sig. Gen. as you calibrated it with Counter). Put one on a separate power supply, set at a distance from the other. Install a 50 ohm, 4W dummy load, avail. at R/S., and there is your Sig. Gen...Key it up and do your alignment on the other, then reverse units.. Note: Turn volume down on the receiving unit to prevent feedback.

MOUNTING HINTS:

1. Since extra space is almost non-existant in the smaller units it is difficult to mount any kit. But usually in most units just above the PLL Chip on the chassis there is sufficient space to mount the epoxy pack of the "B Kit". If you wish to add the 5K OFFSET; may have to use an existing switch (NB, etc.); or use SPDT switch provided.
2. When mounting the Epoxy pack leave the washer on the inside of the chassis. Only the outer locking nut will be outside.
3. When you are ready to mount the Epoxy Pack permanently bring out the wires of the pack on the side next to the PCB. Also, it is helpful to put a blob of silicon glue on each side of the switch toward the ends. This will isolate the pack from chassis and also help in securing tightly.
4. When punching, drilling or otherwise preparing the cover: allow space for the switches to toggle without making contact with the covers. If you wish to make your finished product neat and professional, you might use a piece of patching rubber (Black) to cover the hole. Using a spur type leather punch (generally the largest spur) punch a hole in the center of a small patch. This will fit over the barrel of the switch like a switch boot. Then install covers, not only looks good - but helps lock the nut..

SERVICE HINTS:

If the switch becomes intermittent, remove nuts and washer. You will find a collar mode of masking tape on the switch, move this up to form a type of cup around the barrel. Fill the barrel and 'cup' with lighter fluid, toggle the switch back and forth until the problem clears up. Shake out the excess and replace...

NOTE: IF ANY TECHNICAL ASSISTANCE IS NEEDED TO COMPLETE THE MOD OR IF YOU THINK YOU HAVE A FAULTY KIT. - CALL THE NUMBER LISTED ON THE KIT. "CARD KIT" ELECTRONICS WILL BE HAPPY TO ASSIST.....