The Technical Materiel Corporation
Mamaroneck New York

LET'S TALK CALIBRATION!

or

TO QUOTE A FAMOUS SLOGAN - "YOU CAN TEACH A PARROT TO SAY 'JUST AS GOOD' BUT HE WON'T KNOW WHAT HE'S TALKING ABOUT".

1. The GPR-90 is a general coverage receiver, and a real good one, but it is NOT a frequency meter.

2. People who require frequency meters should buy frequency meters - not make them double as communications receivers.

3. Let's lock the GPR-90 bandspread dial at 100 and forget it for the time being. The main tuning dial now covers the following range in frequency:

Band 1	-	.54	to	1.4	Mcs	- 10 Kcs per division
Band 2	-	1.4	to	3.3	Mcs	- 20 Kcs per division
Band 3	-	3.2	to	5.6	Mcs	- 25 Kcs per division
Band 4	-	5.4	to	9.7	Mcs	- 50 Kcs per division
Band 5	-	9.5	to	17.8	Mcs	- 100 Kcs per division
Band 6	-	17.3	to	31.5	Mcs	- 100 Kcs per division

Please note that in order to change frequency 10 Kcs on Band 1, you move the dial marking about 1/32nd of an inch - and to move 100 Kcs on Band 6, you move the dial marking about 1/16th of an inch. Movement at the hub is infinitesimal.

NOW COMES THE DIFFICULTY:

Remember that the GPR-90 is a general coverage receiver. It must maintain its sensitivity and selectivity, i.e., tracking, over almost 1 Mc on Band 1 and 14 Mcs on Band 6. If the GPR-90 was an Amateur Band Receiver only, it would be required to track only from 28 to 29.7 Mcs at its highest frequency, a total of 1.7 Mcs and on "Twenty Meters" only from 14.000 to 14.350 Mcs - an excursion of only 350 Kcs. Obviously, the latter is a darn sight easier to do. WHY? - Because coils and condensers can only be made to certain tolerances. These tolerances do not bother you over a small range but can really hurt over a wide excursion. Notice that on "Twenty", movement of the dial marker 1/16 inch changes your frequency 100 Kcs on one-quarter of the Amateur band.

NOW COMES ANOTHER PROBLEM:

PARALLAX. The GPR-90 dial has a very fine fiduciary - (high class word for indicator line). This line is placed as close to the dial as possible without rubbing. As long as you look at the line "Straight On", everything is okay - but look at it from left or right and you get a different reading - hence PARALLAX.

The coils in the GPR-90 are made to the most exacting standards, and the condensers are calibrated every 10% of rotation. Accuracy of each point is ± (1 mmf + 1.%) of tabulated value. At these prices you "can't hardly get 'em any better". Minute variations of these components in a general coverage receiver over a large excursion can result in a one-half dial division error, 1/32 inch to 1/64 inch in marking movement.

SO LET'S GO BACK TO THE BANDSPREAD DIAL:

We provide real fine hairlines on the main tuning dial and we have just said they can be off 1/32 to 1/64 inch, add PARALLAX, and your bandspread can very possibly be off when you set the main dial exactly at the hairline. Now, because your bandspread dial does what it's supposed to do, i.e., spread the band, the error is much more noticeable.

SO HOW DO I SET MY BANDSPREAD?

Well - if you lock your bandspread at 100 and set the main tuning dial at the hairline, you will be pretty close; but if you want frequency-meter accuracy, you had better use a crystal calibrator - calibrated against WWV - or any crystal that has an identifiable signal in the band you are working. Set your bandspread dial first to the crystal frequency and then rotate the main tuning dial until the signal is audible. Then your GPR-90 becomes a frequency-meter over any reasonable excursion of the bandspread dial - BUT LOOK OUT - make sure the 100 Kc calibrator is zero beat with WWV or make sure that the crystal you use has the accuracy you expect, because even crystals have tolerances. .005% is darn good, so is .01% for amateur work and .01% at 30 Mcs is 3 Kcs.

Now - having read this opus - we want to tell you that the oscillator in any of the six bands in the GPR-90 may be adjusted at any point in these bands to exceptional accuracy without removing the receiver from the cabinet. The air trimmers can be reached through the six holes underneath the cabinet with an insulated screwdriver - BUT DON'T TURN 'EM FAR - in fact, hardly breathe on them because that's what you're talking about.

Any receiver can go off a hairbreadth in shipment. We're no exception - and we don't provide moveable fiduciaries either! But be careful - because the GPR-90 is calibrated as well or better than any other general coverage receiver on the market.