BC-221, part of SCR-211 Frequency Meter Set

For about half a century BC-221 has been used as reference generator or frequency meter in the many communication and ham labs worldwide. BC-221 was produced through WWII by several manufacturers in 25 different models. Basically it is a three-tube two-band heterodyne frequency meter, covering the range from 125 kHz to 20 MHz. Internal oscillator covers from 125 to 250 kHz, in the low band, and 2.0 to 4.0 MHz, in the high band; fundamental and harmonics are used to get the full coverage. The dial has 50,000 division; the individual calibration book lists 5,250 points on the low band and 6,000 points on the high one. Exact frequency reading may be obtained by interpolation. Accuracy can be checked at a number of listed points against the harmonics of the internal 1,00 MHz Xtal oscillator. Overall accuracy is granted within 0.034%, even at the lowest temperature of -30ºC; average accuracy is assumed to be within one half of the above value. Batteries are hosted in a chest into the lower part of the cabinet. For fixed operation, a compact AC power supply can be fitted into the battery compartment.

The various models, from Bendix, Cardwell, Philco, Rauland and Zenith, differ from each other for more or less significative details: metal or wooden case; AM modulation option; type of tubes and circuit details; spare parts supplied. The complete description of each model can be found in the TM 11-300 technical manual.

The BC-221 is an examples of top engineering. Compact and rugged, it could virtually operate in any field environment, still retaining a precision hard to find in the best laboratory instrumentation. Coils were treated against moisture, LC resonating circuits were thermally compensated, the variable capacitor was a masterpiece for its smooth anti-backlash worm gear drive.