

ALABAMA not only has 14 FM stations on the air, but it has the most powerful of all FM stations. It is WBRC-FM, an RCA installation just completed on Red Mountain, near Birmingham. The transmitting radius of 200 miles gives primary service coverage over an area of about 125,000 square miles. This station is unique in another respect. It is owned, together with WBRC and WBRC-TV now under construction, by a woman, Mrs. Eloise Smith Hanna.

The transmitter has an output of 50 kw., but the effective radiation is stepped up to 546 kw. by the use of an 8-bay Pylon antenna.

Except for the modulator and driver sections, the design of this equipment departs radically from conventional transmitters, the 1, 3 and the 10-kw RF amplifier employ grounded-grid RF circuits with concentric-line construction. All three stages have 7C24 tubes.

The 50-kw. stage is comprised of two 5592 tubes and there is enough space to walk through to the area at the rear. Electrically and mechanically, each of the two final sections form an integral part of the grounded-grid circuit. This construction eliminates neutralization and RF radiation that would affect the RF circuits in adjacent units. The base of the enclosure forms a plenum chamber for cooling air, and contains the control wiring and high-voltage bus. The plate line is tuned by shorting bars carrying contact fingers which move vertically along the center conductor. Motor driven lead screws actuate the shorting bars, with the control located on the front panel. Input tuning is accomplished by two flat-plate air capacitors, One motor-driven and other operated manually. For output coupling, motor driven loops are used, with series capacitors for reactance tuning. The amplifiers feed equal load impedances, also individually motor-controlled, providing easy load balancing and smooth adjustment of output power. At the top right are the transmission-line monitor and harmonic attenuator. The latter, used to insure maximum suppression of harmonic radiation, consists of a pre-tuned low-pass filter capable of 38 db attenuation.

In case of any appreciable change in signal intensity, the transmission-line monitor actuates relays which shut down the transmitter. A reclosing mechanism then puts the transmitter on the air again. If the fault persists, the process is repeated, locking out after the third unsuccessful attempt.

While this installation was being made, a similar transmitter was under construction for WTMJ-FM Milwaukee, with 349-kw. effective radiation. These are the first FM transmitters of such high power rating to go on the air.