11-4 Electronic Memory Tube SB-256

The electronic memory tube SB-256, known in previous reports as "selectron," is an electrostatic storage tube for registering on-off signals, devised for use in high speed digital computing machines and other information handling machines. It has a capacity of 256 memory elements, any one of which is accessible without scanning or disturbing the registration of the others. The present laboratory model is three inches in diameter and seven inches long. It uses a 40-pin base which may be plugged into a special socket. The most critical of its supply voltages may vary as much as 25 percent without interfering with proper functioning. The total power dissipation is about forty watts. The tube operates entirely as an on-off device; there are no amplitude sensitive quantities involved in its operation.

With this type of selective storage tube, the writing or recording requires no previous erasure and is effected in less than 10 microseconds per element. The storage period is indefinitely long, because the electron stream replaces charge losses by leakage which would otherwise gradually dissipate the record. The reading or reproduction can be accomplished in a few microseconds notice, and may be repeated indefinitely without injury to the record. An output signal of 40 microamperes is obtained, and the input control circuits supply only reactive power.

Continuing our development of the selective storage tube during 1949, we have devised improved methods of parts fabrication and new techniques for assembly, suitable for small-quantity laboratory construction of the tubes. More than a dozen tubes have now been made and tested, and promising reliability on life test has been obtained. One

Dynamic life test equipment for SB-256 storage tubes.

pair of tubes has now operated about 1500 hours, under dynamic life test conditions similar to computer use, with no sign of a change in performance, and these tubes are still operating.

We have received several orders for SB-256 selective storage tubes from various research and development groups engaged in the computing field. The first of these orders was from International Business Machines Company. Sample tubes were sent to them and to the University of Illinois. Other orders for samples have been received from Engineering Associates, Inc., and from research groups at the University of Michigan, the University of Toronto and the Bureau of Standards. Complete information on the tube has been turned over to the RCA Victor Division at Lancaster, and they are estimating market possibilities and probable cost of early production. They have indicated that our design may be suitable for initial commercial production with comparatively little change.

Reference: *"The Selectron - A Tube for Selective Electrostatic Storage," Jan Rajchman, RCA LABORATORIES DIVISION NEWS, August, 1949.*

For further information refer to:

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