

TRIP REPORT

VISIT TO: Allen B. Dumont Laboratories  
Passaic, N. J.

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PERSONS MAKING VISIT: H. J. Evans - Electronics Laboratory  
J. N. Phillips - RTVD Engineering  
J. C. Nonnekens - C.R.T.

Meeting opened by Admiral Patton, Vice President of Dumont. Further address by Mr. Dumont. The highlights of his remarks (apart from giving electrical characteristics, which are given as a resume later in this report) were concerned with the question of cost. There are, according to Mr. Dumont, three main items in the tube cost, namely, bulb, gun, and color sandwich. Right now the Lawrence bulb is around \$55.00, the Dumont RCA 19" bulb  $\pm$  \$50.00. These prices will come down. The gun for a one gun tube might be 50-60 cents as against \$3.00 for a three gun structure. The Lawrence sandwich was \$150.00 and sells now for \$120.00, whereas in laboratory operation the domed mask and the phosphor pattern represent now \$20.00 but in factory would go down to an estimated \$3.00. Therefore, the total material cost in the future might represent  $\pm$  \$20.00.

Note: No shrinkages, labor cost, rework possibilities and other important figures were given.

Mr. Hoagland, chief engineer, pointed out the main electrical advantages of the "Chroma-Sync Teletron." Basically, the tube is similar to the 19" CBS Hytron tube. Photographic techniques are used to lay down the phosphor dots (total 1,314,000 dots arranged in 438,000 triangular groups). The mask is not graded, in other words, printing is done through the same individual mask used in the tube for electron-optical purposes and color selection. The problem of dynamic convergence which, now with the bigger deflection angle, again exists, has been solved by mounting the three coaxial guns closer together, resulting in a smaller color-base circle in the deflection plane.

Note: The bigger deflection angle would a priori give a higher peak-to-peak dynamic convergence voltage, but this should be more than offset by the curvature of the mask in combination with the closer gun-spacing. However, the required voltage is bigger than the 45° RCA voltage. The writer discussed this apparent discrepancy with Mr. Hoagland but no satisfactory explanation was offered.

The advantages of the tube according to Dumont are:

1. Economy of manufacture
2. Mechanical and Electrical ruggedness
3. Freedom from pattern distortion
4. High resolution, good brightness
5. Short overall length
6. Simple common conversion arrangement

The following remarks are in order:

Under 3) we should keep in mind that pattern distortion will also result due to non-uniformity of the mask material. Moreover, there are etching difficulties. Mr. Hoagland admitted that they had engineers out at Buckbee Mears "most of the time" and that they were looking for other better materials.

Under 4) A brightness level of 20 ft. lamberts at 20KV was claimed with beam currents from 200-500ua for the three guns. Taking into account the mask transmission, (413%) this brightness seems difficult to achieve.

Dumont has improved the RCA deflection yoke. This is possible because the so called ideal cosine yoke would give on a planar type screen more pin cushion distortion than on a curved surface.

The main characteristics of the tube are as follows:

Envelope 19" round, face to funnel weld type bulb  
Picture area 185 Sq.inches (as against 160 for 19" RCA)

Phosphor dots 12 mil size, approximately 1,314,000 dots  
Mask dome shaped approximately 438,000 holes

Length 25"  $\pm$  3/8"  
Neck length 9 15/32"  $\pm$  1/4" (1 9/16" shorter than RCA)

Screen voltage 20KV.  
All other static voltages the same as 15" RCA.

Note: The demonstration was given with 21-22 KV.

Deflection angle 60°

Type Designation B1103

As noted above, a demonstration was given consisting of:

1. Standard NTSC color slides
2. 16 mm. color movie (Kodachrome material)
3. Color slides alternating between color and black and white reproduction

During this demonstration, the receiving room was dark. When room lights were switched on, the picture looked washed out, probably because the tube was set too much in front of the cabinet.

The slides were perfect as far as dynamic convergence was concerned. There was an area of  $\pm$  12 square inches at the right hand side which had noticeable color impurity. Whether this was due to shifting of the mask or extraneous fields could not be determined.

The phosphor decays were not at all matched. Especially blue and green were off and, therefore, bad color fringing resulted from moving objects, as, for instance, dancing figures in the 16mm. movie. From this point of view alone, the product would be unacceptable.

J. C. Nonnekens

5/20/54

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cc: R.E. Lee  
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