

TALK

SOUND

FROM THE MAKERS OF "SCOTCH" BRAND MAGNETIC TAPE

BULLETIN No. 1

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EXPLANATION OF CURVE GRAPHS

(Codes: SR-GA, SR-GB, SR-GC)

SR-GA shows the effect of the bias on frequency response. These curves were obtained with a constant audio recording current and with a bias frequency of 40 kilocycles per second. (The actual number bias ampere turns is, of course, dependent upon the particular recording head used, but the effect of changes of bias will be substantially the same for various types of heads.) It may be seen that, in general, the higher the bias current used the poorer the high frequency response relative to the low frequency response. The bias is not normally chosen in order to adjust the frequency response, but rather the primary function of the bias current is to minimize distortion. For this purpose, the correct bias current is chosen by taking data similar to that shown in SR-GC.

SR-GB shows the effect of speed on frequency response. Nearly all of the factors affecting high frequency response are not frequency dependent but rather dependent upon the recorded wave length; that is to say, twice as high a frequency may be recorded at twice the speed. The general way in which the response changes with speed is shown in SR-GB for a particular value of bias current.

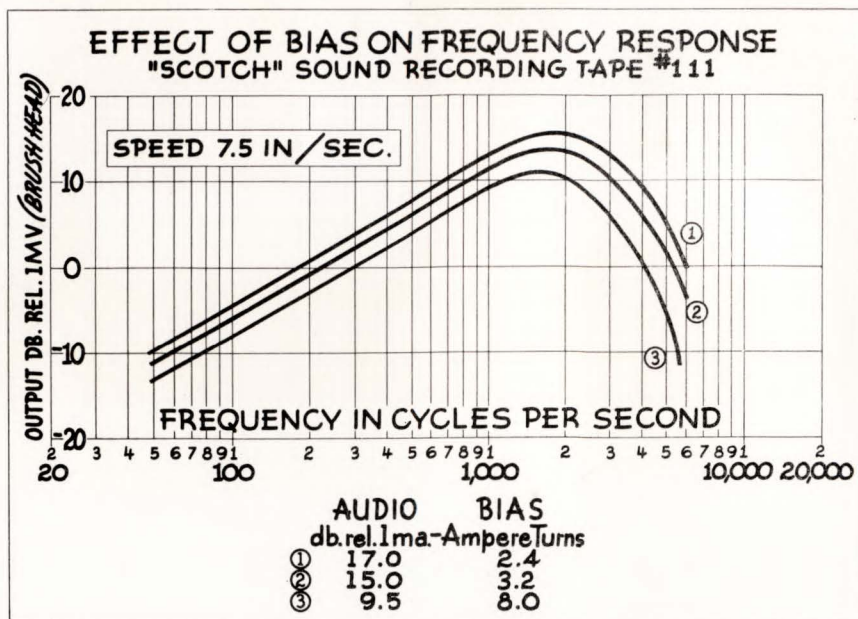
In both SR-GA and SR-GB it should be noted that the actual frequency response shown may not be that obtained in a different recording system. The frequency response is dependent upon several factors such as the head used, the recording gap, the reproducing gap, the tape characteristics, azimuthal orientation of the heads, etc. Thus, these curves should not be used as a basis for design but are rather an indication of the type of response which may be expected and the way this response will be affected by speed, bias, and type of tape.

SR-GC shows distortion as the third harmonic distortion at a recorded frequency of 400 cycles per second and the value of the distortion as a function of the output level is indicated for several bias currents. These four curves are distributed around the optimum value of bias current. The bias current for "SCOTCH" Sound Recording Tapes Types No. 101 and No. 111 is not particularly critical; substantially similar results are obtained for bias currents 50% above and below the optimum value.

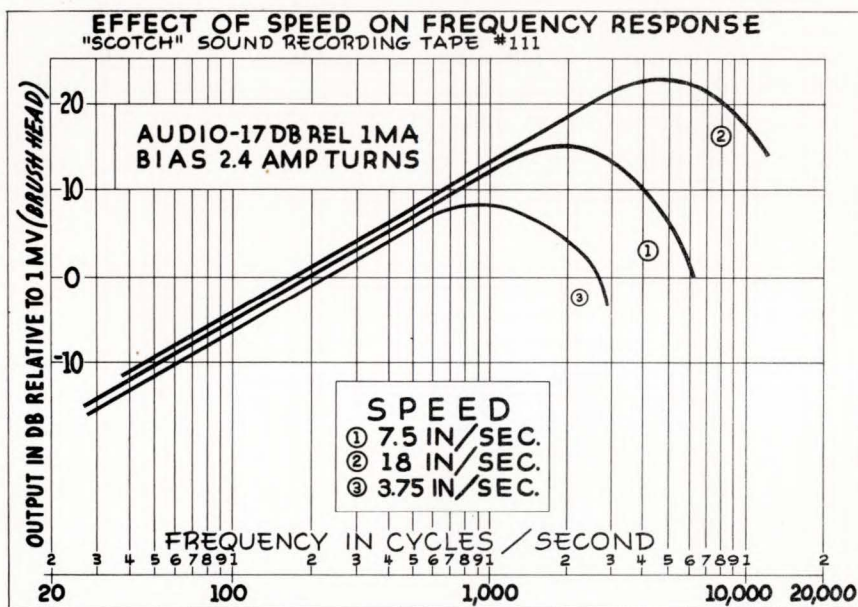
Magnetic Products Division

3M
COMPANY

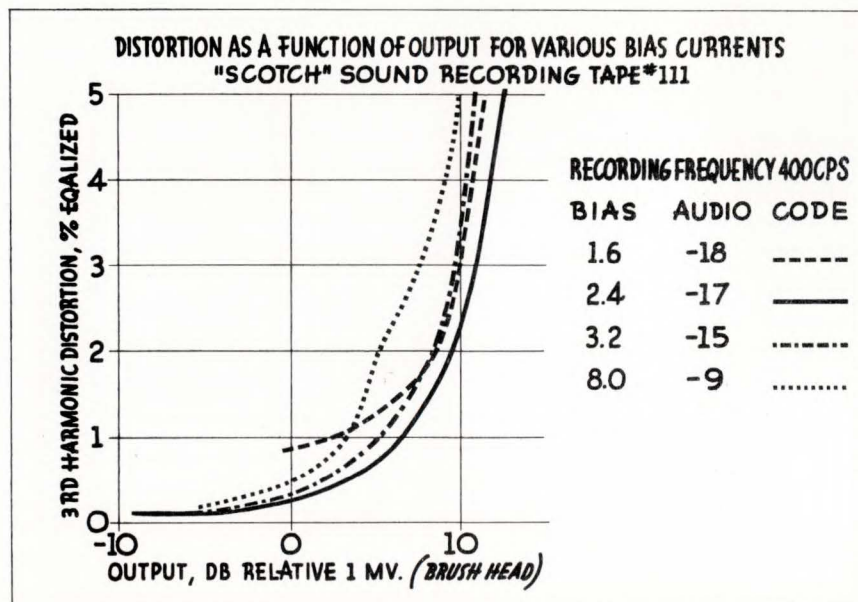
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SR-GA



SR-GB



SR-GC