

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION**

WASHINGTON, D.C. 20554

Dolby Encoders

July 10, 1974

THE COMMISSION ISSUED THE FOLLOWING PUBLIC NOTICE:

*Commission Authorizes Use of Dolby Encoder by FM Broadcast
Stations*

Under date of May 31, 1974, the Commission sent the following letter to Dolby Laboratories, Inc.

"We have reviewed the question of the employment of the Dolby 324 B-Type Broadcast Encoder by FM broadcast stations licensed by the Commission, and will not object to its use.

"It is our understanding that, in the current model of the 324 encoder circuits designed to reduce the effective degree of preemphasis to 25 microseconds, and those producing Type B encoding operate simultaneously at all times—that it is impossible, without internal changes, to utilize this apparatus in an operating mode where only the preemphasis adjusting circuits are effective. Our concurrence in the use of this encoder is given on the express condition that all units furnished to and installed in FM broadcast stations are arranged to function in this manner.

"When FM broadcast stations conduct transmitter performance measurements pursuant to Section 73.254 of our rules the Dolby 324 B-Type Broadcast Encoder should be removed from the circuit, or effectively by-passed."

Some recent publicity concerning this action appears to reflect a misunderstanding of its nature and effect. Accordingly, we believe a clarification may be helpful.

First, it should be emphasized that we have not amended §73.317(a)(2) of our rules, which requires the audio response of an FM broadcast transmitter be shaped in accordance with a 75 microsecond preemphasis curve. We have no present intention of doing so. Existing receivers incorporate complementary 75 microsecond deemphasis circuits. Any substantial reduction in the amount of transmitter preemphasis, alone, would result in a more or less serious "roll off" in the response of these receivers at higher audio frequencies.

Second, we are permitting, not requiring the use of the Dolby encoder. In this respect our policy is the same as that which has applied heretofore with respect to the use of other kinds of active audio processing equipment, such as the same type of limitations on Dolby employed by FM stations.

The Dolby unit which we have indicated as acceptable for use by FM broadcast stations incorporates circuitry which, in effect, cancels a

portion of the transmitter preemphasis. However, the unit is so constructed that this circuitry is effective only when Type 3 encoding is employed. The encoding process raises the level of the higher audio frequencies relative to lower frequencies by an amount which varies inversely with the average level of the audio signal, the maximum "boost" occurring at low modulation levels, with virtually none at high levels of modulation. While this process, therefore, does not fully compensate for the lower effective degree of fixed preemphasis employed, we have satisfied ourselves that this combination of techniques results in a transmitted signal which will be reproduced by a conventional receiver with no apparent loss in high frequency response.

We have not determined, nor do we believe, that a listener to a Dolby equipped FM station would enjoy fully compatible reception if he were to modify his FM receiver solely by changing the amount of deemphasis from 75 to 25 microseconds.

Improvements in signal-to-noise ratio attained through the use of Dolby equipment should be apparent to listeners in areas where the received signal is comparatively weak. Such areas are generally quite distant from the station being received. The maximum improvement in signal-to-noise ratio can be achieved only when the receiver is equipped with complementary Dolby circuitry. However, the carrier of an FM station with the Type 324 encoder, with the lower effective degree of preemphasis which its use entails, may be modulated at a higher average level than would otherwise be the case. When this is done, the noise performance of conventional receivers tuned to the station will improve.

Dolby techniques operate only to reduce the effect of inherent noise developed within the FM receiver. In distant areas where such a reduction might otherwise be useful, the limitation on the ability to receive a particular FM station satisfactorily may be imposed not by receiver noise, but by interference from other co-channel or adjacent channel FM stations.