Abstracts

Improvements in Light Modulators of the Traveling-Wave Type

I.P. Kaminow, R. Kompfner and W.H. Louisell. "Improvements in Light Modulators of the Traveling-Wave Type." 1962 Transactions on Microwave Theory and Techniques 10.5 (Sep. 1962 [T-MTT]): 311-313.

Wide-band modulation of light by means of the electro-optic effect requires a traveling-wave type of interaction, with the modulation field traveling with the same phase velocity as the light in some suitably proportioned structure. If electro-optic material is lossy at the modulation frequencies, the modulating field is strongly attenuated with a resultant low-modulation efficiency. A scheme is analyzed here in which power is continuously fed into the light-carrying guide to make up for the attenuation as the wave progresses down the guide. By suitably tapering the coupling and the uncoupled propagation constant, the electric field can be maintained constant in the light-carrying guide and the "coupled" propagation constant in this guide can be maintained in synchronism with the light wave, thereby increasing the modulation efficiency.

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