Abstracts

A Simple and Rugged Wide-Band Gas Discharge Detector for Millimeter Waves

P.J.W. Severin and A.G. van Nie. "A Simple and Rugged Wide-Band Gas Discharge Detector for Millimeter Waves." 1966 Transactions on Microwave Theory and Techniques 14.9 (Sep. 1966 [T-MTT]): 431-436.

Detection of 4 and 2 millimeter waves by a small, low-pressure, anomalous burning glow discharge in He or Ne is described. The responsivity and the noise equivalent power are discussed. Typical values are presented in a table: the former is found to be about 50 V/W, the latter about 5 μW. The device is linear over about 30 dB, it has a LF bandwidth of about 50 kc/s and the same tube can be used both for detection of 4 and 2 mm waves by simply raising the applied dc potential a few volts. Since the device is very rugged it can withstand a high local oscillator power, so that in a synchronous detection circuit the noise equivalent power can be about 10/sup -11/ W at 1 c/s bandwidth.

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