Abstracts

An all-cryogenic low phase-noise hybrid K-band oscillator for satellite communications

S. Vitusevich, K. Schieber, N. Klein, I.S. Ghosh and M. Spinnler. "An all-cryogenic low phase-noise hybrid K-band oscillator for satellite communications." 2001 MTT-S International Microwave Symposium Digest 01.3 (2001 Vol. III [MWSYM]): 1977-1980 vol.3.

Within the frame of the German research programme "High-temperature superconductor systems for satellite communication", a low phase-noise K-band oscillator, based on space qualified technology, materials and parts, has been developed. Our approach is an all-cryogenic hybrid oscillator based on a sapphire whispering-gallery mode resonator and a low-noise PHEMT amplifier. Despite the simple concept of the oscillator, phase noise values superior to quartz stabilized oscillators operating at the same frequency have been achieved. In addition to low phase noise, the oscillator possesses mechanical and electrical frequency tunability. This type of oscillator shows potential to greatly enhance the performance of the carrier frequency generation in future satellite payloads.

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