Abstracts

Noise Figure of HTS JJ MMIC Downconverter at 12GHz

K. Suzuki, S. Yoshikawa, K. Yamaguchi, K. Hayashi, S. Fujino, T. Takenaka, T. Mitsuzuka, Y. Enomoto, K. Imai, F. Suginoshita and N. Yazawa. "Noise Figure of HTS JJ MMIC Downconverter at 12GHz." 1993 MTT-S International Microwave Symposium Digest 93.3 (1993 Vol. III [MWSYM]): 1429-1432.

We report here the first deliberately made high temperature superconductivity (HTS) monolithic microwave integrated circuit (MMIC) for down-converting direct broadcast satellite (DBS) signals. A YBa/sub 2/Cu/sub 3/O/sub 7-delta/(YBCO) step-edge microbridge Josephson junction (JJ), two 12GHz YBCO microstrip bandpass filters, a 1GHz YBCO filter, and current bias and voltage monitor circuits are successfully combined into a 20mm x 20mm MgO substrate and integrated into a frequency downconverter. The YBCO downconverter and a GaAs low noise amplifier(LNA) for intermediate frequency (IF=1GHz) are combined into a microwave cryostat and characterized by receiving direct broadcast satellite (DBS) signals. The noise figure has been first measured for such YBCO JJ MMIC downconverter as a subsystem. The dependence of noise figure and IF output on temperature, bias voltage and LO power has been studied. We have successfully demonstrated clear pictures of DBS bellow 40K.

❑ Return to main document.