

129 GHz SIS Mixer Receiver for Korean VLBI Network

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We have developed superconducting mixer receivers for 129 GHz VLBI observation in Korean VLBI Network(KVN). The developed mixer has a radial waveguide probe with simple transmission line LC transformer as a tuning circuit to its 5 series-connected junctions, which can have 125-165 GHz as operation RF frequency. For IF signal path a high impedance quarter-wavelength line connects the probe to one end of symmetric RF chokes. DSB receiver noise of the mixer was about 40 K over 4-6 GHz IF band whereas we achieved about uncorrected SSB noise temperature of 70 K and better than 10dB IRR in 2SB configuration with 8-10 GHz IF band. Insert-type receiver cartridges using the mixers have been assembled for all three KVN stations.