OZONE AND CO RADIOMETER WITH SPECTROMETER BASED ON A MULTICHANNEL DIRECT CONVERSION RECEIVER

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A new radiometer for atmosphere Ozone and CO monitoring is designed and constructed at the Institute of Radio Astronomy of National Academy of Sciencies of Ukraine. The Radiometer consists of a high-sensitivity heterodyne receiver of 109600 – 115400 MHz range and a spectrometer. An original approach which allows to design and construct the spectrometer with very flexible structure is proposed. Application of a multichannel direct conversion receiver instead of traditional filter bank receiver is the main idea of the spectrometer. As it is known the selectivity of a direct conversion receiver is totally determined by its low-pass filter, which central frequency is determined by a frequency of its local oscillator. So it is very easy to provide the same bandwidth for a number of such low-pass filters. Central frequencies of different channels are determined by the choice of the local oscillator frequencies. Such solution simplifies significantly the construction of the spectrometer and provides the identical characteristics of the spectrometer channels, manufacturability, and simplicity of adjustment. The details of the spectrometer construction as well as the results of testing will be discussed.