Abstracts

Design of a Geostationary Microwave Precipitation Radiometer

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The Geostationary Microwave Precipitation Radiometer will be a passive microwave radiometer system to be flown on the NASA Geostationary Earth Observatory. This instrument will provide microwave images for meteorology. It will measure radiation from the Earth and its atmosphere in seven frequency bands from 37 to 220 GHz. The instrument will have a 4.4x4.0 m offset parabolic antenna which will be mechanically scanned to provide images of the Earth in /spl ap/ 2 hours. The radiometer system uses a low-loss quasi-optical frequency multiplexer. This multiplexer divides the input signal into four separate focal planes for the different radiometers. Conventional low-noise heterodyne mixer systems were used for most of the radiometers. However, because of the narrow bandwidths required in the 54 and 118 GHz radiometers, new low noise mm-wave amplifiers were used in the first stage of these radiometers. Also in the 54 and 118 GHz radiometers, multi-channel filterbanks were used to provide the required spectral information for atmospheric sounding.

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