

The Analysis of Matrix Photodetectors Application for Scanning Systems

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Abstract. The paper deals with the design concept of the equipment and its functioning used for remote sensing of water areas. Various constructions of the device have been analyzed according to modern requirements for this class of equipment. The article shows that the usage of matrix photodetectors allows to achieve the required signal-to-noise ratio. A scheme of the apparatus involving optical-mechanical scanning combined with the matrix photodetector is offered. It is demonstrated that the application of matrix photodetectors with relevant characteristics for a scanning system enables the required signal-to-noise ratio for the model of radiation from water surface in defined spectral bands by means of redundant quantity of light-sensitive elements. The interpolation algorithm of signal processing from the photodetector which allows to reduce data flow with minimized geometrical distortion is described. The results of modeling showed that the offered conception of the apparatus will be effective for remote sensing of the World Ocean. A device involving the offered scheme will be sufficient for modern metrological requirements.

Key words: Earth remote sensing, ocean colour, scanning system, matrix photodetector, interpolation algorithm