Rotating type miniature camera phone multi-focal-length optical system

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Abstract

We have designed a practical mass produced rotating type miniature camera phone multi-focal-length optical system.
The compact and short system, with 3 magnification, 1.3 megapixel sensor elements and total length of less than
10.7 mm, is described and evaluated in detail. Using Zemax lens design software, we start the design with thin lenses
first order layout, and then spherical thick lenses, to aspherical lenses. Plastic lens materials are used whenever
applicable, and diffractive lens elements are also employed to optimize the design. The beam spot diagrams and
modulation transfer function of our design are found appropriate for good optical qualities.

Keyword：camera phone, lens design, multi-focal-length optical system, miniature size, rotating type system