

# An array of compact cheap CCRs for high-elliptical navigation spacecraft

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This paper covers the results of the calculation and modeling of the CCR array for high-elliptical spacecraft orbiting at middle altitudes of about 36 000 km. The analysis shows that the CCR optimal aperture lies within the range of 12 mm, while the CCR mass is 2.3 g, and the manufacturing accuracy of dihedral angles is low, approximately 1-2 ang.sec. The corresponding FFDP broadening is not critical provided, that the velocity aberration angle is 4 ang.sec. Modern laser stations (like “Tochka”) allow to get a suitable response signal from the array located at the altitude, with the cross section of 200 million sq.m. To achieve the given cross section it is enough to use the array with 2,000 CCRs and the mass of the construction of no greater than 6 kg.