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Coherent searches for periodic gravitational waves from unknown isolated sources and Scorpius X-1: results from the second LIGO science run KEITA KAWABE, LIGO Hanford Observatory, California Institute of Technology, LIGO SCIENTIFIC COLLABORATION — We present results from two searches for periodic gravitational waves using the most sensitive few hours of data from the second LIGO science run. The first search targets isolated previously unknown neutron stars and covers the entire sky in a frequency band between 160 and 728.8 Hz assuming a frequency derivative less than 4E-10 Hz/s. The second search targets the accreting neutron star in the low-mass X-ray binary system Scorpius X-1 and covers the band 464-484 Hz and the band 604-624 Hz, as well as two orbit parameters. With these analyses we present the first broad-band wide parameter space upper limits on periodic gravitational waves from coherent search techniques. The methods utilized here lay the foundations for upcoming hierarchical searches of more sensitive data which may detect astrophysical signals.

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