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New Compact Low-Frequency Radio Observatory LWA-Niyodo

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The low-frequency radio observatories at frequencies below 100 MHz are widely distributed around the world, and some of them operate the daily observations of natural radio emissions from the Sun and Jupiter. Monitoring the low-frequency radio emissions requires three equally separated observatories around the world. While most of the low-frequency radio observatories are located in Europe and the US, there are fewer of the observatories in Japan. We built a new compact low-frequency radio observatory located in Niyodogawa-cho, Kochi, Japan. The observatory called LWA-Niyodo consists of eight bow-tie antennas (originally designed for the Long Wavelength Array station One in New Mexico, US), in which each antenna receives two perpendicular linearly polarized radio waves. Currently, these signals are combined into two channels using two 8-to-1 analog combiners. With two independent receivers of the Software Defined Radios (SDRs) and Raspberry Pi systems, we have operated the daily observations since March 2024. This receiver is based on Jupiter's radio receiver onboard the KOSEN-1 CubeSat. In this presentation, we report the detailed specifications of the LWA-Niyodo and highlight some early observations.