KAGUYA (SELENE) LRS/WFC instrument and initial results of plasma wave observations in a high frequency range

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The lunar explorer, KAGUYA (SELENE), was lounched on September 14, 2007 and was injected into a lunar orbit at an altitude of about 100 km on Oct 18, 2007. The antennas for LRS (Lunar Radar Sounder) were successfully expanded on October 30, 2007.
The waveform capture (WFC) instrument[1] is one of the subsystems of the Lunar Radar Sounder (LRS)[2] on board the KAGUYA spacecraft. The WFC on board KAGUYA measures two components of electric wave signals detected by the two orthogonal 30 m tip-to-tip antennas from 100Hz to 1MHz at about 60 of earth's radii in the solar wind, in the magnetosphere, and in the lunar wake.
The WFC is a software receiver in which most of the functions are realized by a DSP (digital signal processor) and PDCs (programmable down converters) implemented on the WFC board.
In the present paper, we briefly introduce its hardware system and some initial results obtained by the WFC observation, especially, wave observations in a high frequency range including wavelength of a kilometer rage will be introduced.

References
[1] Y. Kasahara, Y. Goto, K. Hashimoto, T. Imachi, A. Kumamoto, T. Ono, and H. Matsumoto, Plasma Wave Observation Using Waveform Capture in the Lunar Radar Sounder on board the SELENE Spacecraft, Earth, Planets and Space, 2008, (in press).
[2] T. Ono, A. Kumamoto, Y. Yamaguchi, A. Yamaji, T. Kobayashi, Y. Kasahara, and H. Oya, Instrumentation and Observation Target of the Lunar Radar Sounder (LRS) Experiment on-board the SELENE Spacecraft, Earth, Planets and Space, 2008, (in press).