A method to reduce E/M interference noises using DSP for small-size antenna onboard spacecraft

Takashi Iwai [1], Toshimi Okada [2], Yasumasa Kasaba [3], Keigo Ishisaka [4]

[1] Electronics and Informatics,Toyama Pref,Univ, [2] Electronics and Infomatics,Toyama Pref Univ, [3] Toyama Prefectural Univ., [4] Electronics and Informatics, Toyama Pref. Univ.

Very long dipole antenna system has been used in the space plasma wave measurement. Short antenna causes decrease of the sensitivity and large interference from other instruments in the spacecraft. In this paper we summarize a method to reduce E/M interference noises using DSP. We use 'median filtering method' in order to remove periodic instrumental noises caused by other instruments from the unstable plasma wave data. This method can divide the noises and the signals overlapping in the spectral and time space by relatively small amount of calculation. We confirm its basic performance by theoretical and numerical analyses. We also prove the real-time noise rejection by a test instrument with DSP.