

3rd VERSIM Workshop 2008
Tihany, Hungary
15th – 20th September 2008

POSTER

UltraMSK: A VLF radio receiver

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UltraMSK is a software defined VLF radio receiver. The receiver records the amplitude and phase of minimum shift keying (MSK) modulated, fixed frequency, VLF communication transmissions. By utilizing a precision 1 pulse per second (PPS) signal from a GPS unit, the UltraMSK receiver has excellent phase stability on both long and short term time scales. This makes the receiver suitable for use in a wide range of applications involving the long range remote sensing of the lower ionosphere. Such applications include the monitoring of solar flares, whistler and relativistic electron precipitation, and many other atmospheric and space weather events that result in ionospheric modifications at D-region altitudes. The receiver software runs on standard personal computer hardware using readily available multichannel audio sound cards. These cards are capable of digitizing the VLF signal at sampling rates of up to 96 or even 192 kHz, enabling the receiver's operation to extend into the lower LF range if required. UltraMSK receivers are in use by individual researchers around the world and in global scale collaborative networks such as AARDDVARK.