MRTA DIGITAL RECEIVER

MITRE

DESCRIPTION

The Modernization Receiver Test Asset (MRTA) Digital Receiver unit ensures that a test capability is available to support signal verification at contractor facilities, Cape Canaveral, and on orbit.

The Digital Receiver unit is a stand-alone VME product capable of real-time simultaneous digitized L_1 and L_2 signals processing. The MRTA RF/IF/ADC unit provides the required Low Voltage Differential Signaling (LVDS) digital inputs.

This unit allows acquisition, code/carrier tracking and demodulation of legacy and modernized GPS signals. In a single-SV mode, it can perform signal quality measurements of each code signal on both L_1 and L_2. In multiple-SV mode, the unit can perform receiver functions including calculation of the PVT solution. Control and configuration are accomplished through TCP/IP using a Java GUI. Real-time operation is managed by the VxWorks RTOS.

The unit consists of multiple VME boards including a COTS NAV computer, custom digital downconversion board, multiple custom correlator boards, and a custom acquisition board. A custom sub-backplane board allows reliable high-speed data transfer between the custom boards.

This unit also allows future demonstration of the Direct Acquisition (DIRAC) ASIC currently under development.

FEATURES

- Simultaneous processing of digitized L_1 and L_2 inputs
- Performs acquisition, code/carrier tracking and demodulation of legacy and modernized GPS signals (no crypto)
- Performs signal quality measurements in single-SV mode
- Performs calculation of PVT solution in multiple-SV mode
- Supports sampling rate of 26 MHz
- Supports future L_5 augmentation

APPLICATIONS

- Processing digitized GPS signals at L_1 and L_2
- DIRAC ASIC demonstration

FOR FURTHER INFORMATION CONTACT:

NAVSTAR, GPS Joint Program Office
DSN: 833-6507 or 310-363-0734