

## XE1610-MPM-2

### OEM GPS Measurement Platform Module

### Reference Design

#### GENERAL DESCRIPTION

The XE1610-MPM-2 reference module is a measurement platform that adds the unique FirstGPS® location technology to your power-, cost-, and space-sensitive portable product. This GPS receiver provides high position and speed accuracy performances as well as high sensitivity and tracking capabilities even in urban conditions. It enables a small form factor package and it is designed to simplify the embedded system integration process. With this solution you are faster to market with a proven design.

The FirstGPS architecture consists primarily of two integrated circuits and FirstGPS software. It provides a GPS measurement platform that performs the processor-intensive GPS tracking and processing tasks and enables the host CPU-based software to calculate the actual position, velocity and time (PVT) solutions at its own pace, without burdening the other applications running on the device. The architecture is CPU- and OS-independent, and needs only 2 MIPS from the host CPU during steady-state tracking and 4 MIPS during acquisition. Several ports to popular CPU/RTOS already exist and have been validated in OEM customer's products

#### REFERENCE

XE1610-OEMMPM2

#### KEY PRODUCT FEATURES

- High sensitivity: to -143 dBm tracking, superior urban canyon performances
- Position accuracy: < 5m CEP (50%) without SA (horizontal)
- Warm Start is under 32 seconds (50%)
- Hot Start is under 12 seconds (50%)
- Ultra low power: 8 mA @ 3 Volts, full power
- Small form factor and low cost solution
- Ready-to-plug solution. Easily integrated into existing systems
- PPS output
- 4 up to 7 wires interface
- Small form factor, 25 x 29 x 6.5mm
- 25 mW power consumption
- Weight 6g, including a shield

#### APPLICATIONS

- Automotive
- Asset management/tracking
- Digital cameras
- Palmtop, Laptop, PDA
- Location Based Services enabled devices
- Handheld receivers

**HARDWARE**

The XE1610-MPM-2 reference module packages this architecture in a small form factor, approximately 25mm x 29mm. It typically consumes 25 mW of power. The module is a miniature board containing a FirstGPS specific hardware core based on the XE16BB10 digital signal processor and an RF IC. The module performs the GPS signal collection function and outputs data over its serial port to the host processor running the FirstGPS software. The software then computes the PVT solution as required by the host application. The XE1610-MPM-2 module is compatible with active 3.3V antennas,

**SOFTWARE**

The FirstGPS software controls the operation of the XE1610-MPM-2 module and the host-based navigation platform. It is a unique host-based architecture that allows flexible integration of GPS with other real-time software tasks. FirstGPS software runs on the host CPU and provides access to GPS information via an Application Programming Interface (API). A simple call of an API function returns the requested GPS information. The software takes care of all interfacing with the XE1610-MPM-2 module. No serial port protocol is required for the customer's application. The customer application has priority over FirstGPS and there is no time critical interrupt from the GPS hardware. FirstGPS software can survive periods of up to 5 seconds where the customer application has total control of the CPU.

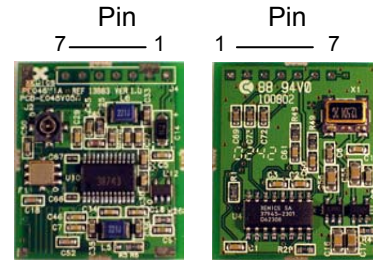
**PERFORMANCE SPECIFICATIONS**

- General: L1 Frequency, C/A code
- Update rate: 1Hz (with enough processor time)
- Accuracy Position: < 5 meters CEP 50%
- Velocity: 0.1 m/sec
- Acquisition time for ARM7/Nucleus environment:
  - Reacquisition: < 2 sec
  - Hot Start: 12 sec on average
  - Warm Start: 32 sec on average
  - Cold Start: 120 sec on average

Actual performance numbers are host environment dependent and may vary with other CPU/RTOS

**INTERFACES, DIMENSIONS**

Pin#	Description
1	VCC – Power Supply 3 to 3.6 V
2	GND
3	RX – Receive Data Serial Port
4	PPS – Pulse Per Second output
5	TX – Transmit Data Serial Port
6	VCCcore – Regulated supply (sense)
7	SHDN VCC RF – RF Shutdown pin (high RF on)



- RF connector: H.FL-R-SMT (10), 50 Ohm
- Serial port TX/RX: CMOS compatible
- PSS output: one pulse per second with the rising edge pulse synchronized with UTC
- Protocol: FirstGPS Software Library

Dimensions: 25 x 29 x 6.5 mm  
 Weight: 6 gr with a shield

**HOST ENVIRONMENT**

XE1610-MPM-2 requirements from host environment

- CPU: 2 – 4 MIPS
- RAM: 90 – 100Kbytes for release
- ROM/Flash: 200 – 256Kbytes for release

Host Processor	Host RTOS
ARM7	Nucleus
StrongARM	WinCE, PocketPC
XScale	PocketPC
Pentium	Win98/2K/NT/XP
Others MCU/RTOS combination on request	

