



Plextek

Ultra-Narrow Band (UNB) Telemetry

'Ultra-Narrow Band' describes a communications technology pioneered by Plextek in the UK specifically for the machine to machine (M2M) market.

The technology enables low data rate communication over long distances at significantly lower power levels than is possible with conventional radio technology. UNB enables low power and low cost radio links for a wide range of applications.

Plextek has successfully used UNB technology in automotive, security and metering applications.

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Electronics Design and Consultancy



Markets

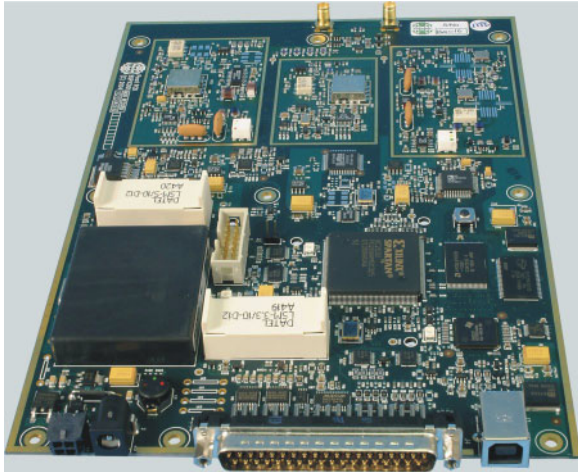
The requirement to connect remote telemetry, sensor or alarm equipment spans domestic and industrial markets. Systems are required that offer wide area coverage for domestic metering applications, utility monitoring and control, industrial sensors, alarms and process control. Other applications may also require long range, low power, point to point connections. UNB is equally suited either for point to multi point, where there are a small number of basestations and a large number of outstations, or to bridge a link between two locations. Outstations are well suited to battery operation due to the low power consumption.

UNB Modem Products

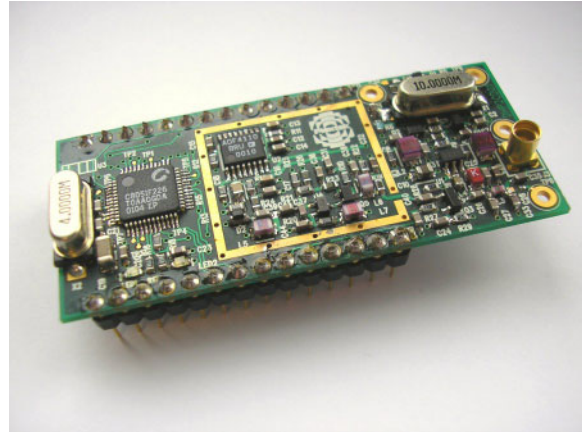
'Off the shelf' UNB technology products are currently being developed by Plextek and will be available for purchase in Q1 2006. These will include point to point and point to multi point hardware and software system solutions.

Custom Design Services

For applications where a higher level of integration is required with other electronic systems or where custom system requirements dictate, UNB technology can be customised by the Plextek design team.



UNB Basestation PCB



Endpoint PCB

UNB System Parameters

Typical UNB system parameters:-

- Long range (10km)
- Low average power consumption (<1mA)
- Long battery life (2yrs with a D cell)
- High basestation to endpoint ratio (1:1 to 1:10,000)
- Two-way
- VHF or UHF

UNB – Technology

At the heart of the UNB system is the core technology, developed by Plextek, which enables the identification and demodulation of very narrow band signals. This is done with a combination of patented efficient DSP algorithms, incorporating fast fourier transforms, phase trajectory tracking techniques and the use of powerful coding schemes.

Basestation

In a point to multi point system it is necessary to use a basestation, as shown above. The basestation comprises a high performance DSP transceiver. As standard, the PCB comes in three frequency band options; 174MHz, 433MHz and 868MHz.

The receiver architecture is a single conversion receiver with an IF of 10.7MHz. The analogue IF is undersampled by an ADC to a lower digital IF and subsequently down-converted to baseband for demodulation.

The processing is split between an FPGA and TI DSP. USB and serial port connections are available.

Endpoint

In a point to point system, or as the endpoint in a point to multi point system, low cost endpoints based around an integrated transceiver and a small microprocessor are required. The algorithms used for UNB have been designed in order to enable the performance advantages of UNB to be achieved on such a low cost platform.

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