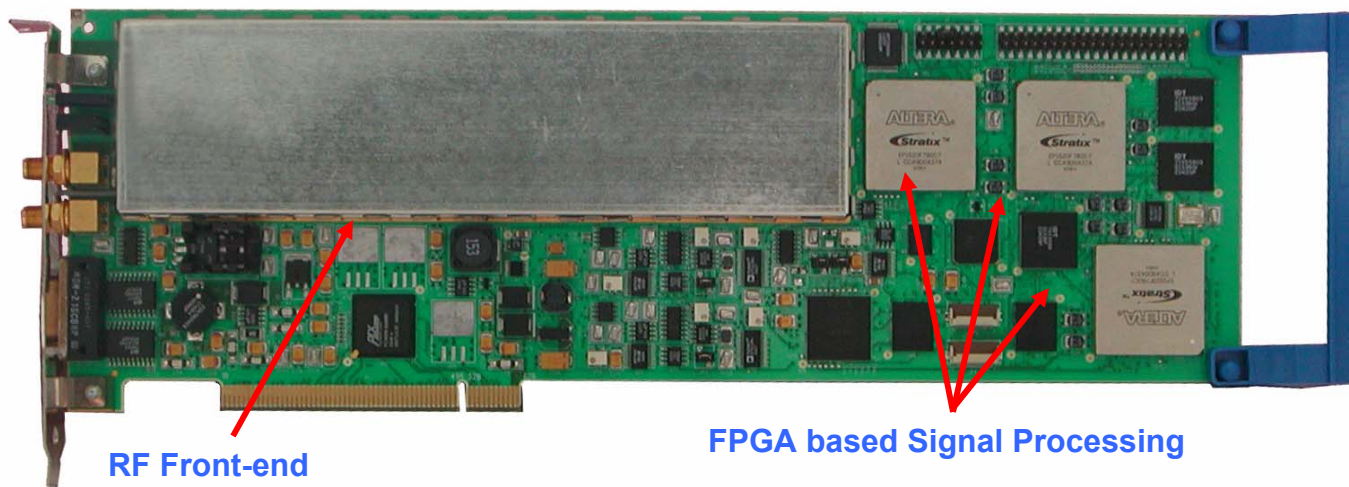


Orbital Network Engineering

1011 series Digital Tracking Receiver Systems



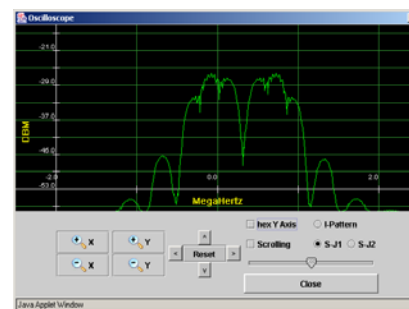
Key Features

- Tri-Band coverage
 - E/S 2185 - 2485 MHz
 - Upper L 1700 - 1850 MHz
 - Lower L 1429 - 1545 MHz
- Wide Dynamic Range -90 to -10 db
- Wide IF Bandwidth Range 50 kHz to 30 MHz
- AFC Tracking
- Calibration not required
- FPGA Based Components
 - Multi-mode demodulator
 - Digital Diversity Combiner
 - Bit synchronizers
 - Frame Synchronizers
 - Decommulator
 - Custom user signal processing applications
- Integrated spectral analysis & data displays

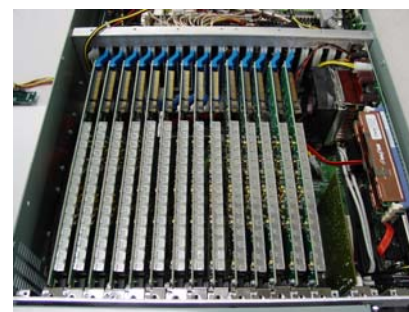
FPGA Resource	101	201	301
Logical Elements	55,920	83,580	100,960
RAM bits	5.0M	8.3M	8.5M
DSP Blocks	30	34	38
Embedded Multipliers	240	272	304
Phase Locked Loops	18	26	30

Capabilities

ONE presents a truly remarkable receiver and telemetry processing system. This single PCI card can provide a complete solution from RF reception to formatted data processing in modern telemetry applications. The ONE 1011 RF section employs a digital signal processor based (DSP) multi-band receiver with on board Field Programmable Gate Array (FPGA) signal processing capability. Three performance levels of processing are available to support the most demanding performance requirements. Available components include a multi-mode demodulator, 20 Mbps bit synchronizer, integrated frame synchronizer, PCM Decom, and a Digital Diversity Combiner. All options come with direct data access for use with visualization tools.



Sample spectral analysis display



Typical multi-channel application

ONE 1011 Series Digital Tracking Receiver Systems

Application	101	201	301
Multi-Mode Demod	•	•	•
Bit Synchronizer	•	•	•
Frame Synchronizer		•	•
PCM Decommulator			•
Diversity Combiner			•

ONE provides a comprehensive set of applications supporting digital telemetry signal processing within our FPGA hardware suites. Available applications are hosted based upon the amount of FPGA resources required for the application on the ONE-1011 board. The table at left provides an overview of resource requirements and application hosting on the available models.

ONE has applied state-of-the-art RF and digital signal processing technology to achieve an integrated single board telemetry processing system.

The ONE 1011 provides analog and digital AGC processing resulting in a wide dynamic range of operation. AGC outputs are available from both the AGC detector and the AGC AM signal.

The use of digital Finite Impulse Response filters (FIR) allows for an unlimited number of bandwidths to be programmed.

With the DSP based algorithms including FIR filters, multi-stage recursive decimation filters, Modulated Numerically Controlled Oscillators (MNCO) and DSP implemented Phase-Locked Loops (PLL), the ONE 1011 has no need for calibration and tuning.

Ordering Information

Systems implemented using the ONE 1011 series are available in single and multi channel systems.

Card level products are available in quantity by special arrangement.

Contact ONE for price and availability.

Parameter	Specification
Input Frequency Range	Lower L Band 1429 - 1545 MHz Upper L Band 1700 - 1850 MHz E/S-Band 2185 - 2485 MHz
IF Bandwidth	50 KHz to 30 MHz, programmable to 4 digit resolution
Frequency Tuning Resolution	50.0 kHz steps
IF Rejection	55 dB min, > -60 dB typical
Dynamic Range	-90 to -10 dB
VSWR Ratio	2.0:1 Max, 1.5:1 typical in band
Noise Figure	10 dBm, maximum
Maximum Safe Input	+10 dBm
PM Deviation Range	0.3 to 2.5 radians, programmable
Demodulation Modes	FM/FSK/PM/BPSK/QPSK/OQPSK/SQPSK selectable
Locking Threshold	4 dB Eb/N0 (BPSK)
Nominal Impedance	50 Ohms
Spurious Rejection	50 dB
AFC Tracking	+/- 500kHz of programmed center frequency with 10kHz frequency resolution
AGC Time Constants	0.1 msec, 10 msec, 100 msec, or 1.0 sec, selectable
AM Out	AC coupled AM AGC detector output, 50 KHz frequency response, 5 Vpp bipolar, full scale
AGC Level Detector Out	DC coupled from 0 to -5 VDC for min to max RF attenuation
Down converter Outputs	RF buffered 70 MHz output

ONE supports continuous improvement so our specifications are subject to change without notice.