

# CL1800 Single-Chip 802.11n SoC



## Dual Band, High Performance 3x3 802.11n with Transmit Beam Forming MIMO SoC for Wireless HD Video Solutions

Celeno's CL1800 incorporates all the key components required to meet the needs of the growing WiFi multimedia home networking market. The powerful CL1800 System on Chip (SoC) is a highly integrated chip combining 802.11n baseband, radio and powerful CPU. These unique features make the CL1800 ideal for cost sensitive, high performance Telco and Retail applications such as multi-room digital video recorders (DVR) and WiFi networked set top boxes and TVs.

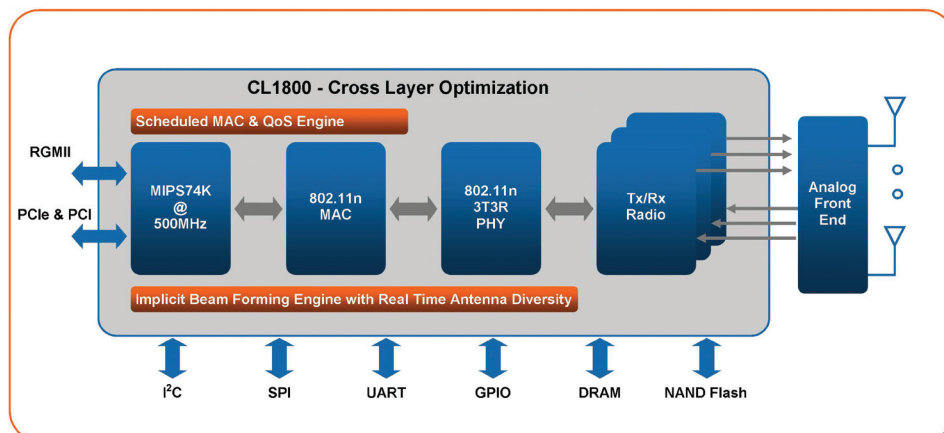
### Benefits

- **Wirelessly links multimedia devices throughout the home:**
  - 120Mbps video throughput with zero packet error rate at the edge of the house
  - 8 concurrent HD streams
  - Enables variety of home network topologies with multiple video sources, e.g., multi-room DVR
- **Future-proof Access Point technology:**
  - Consistent high performance independent of client chipset, driver and antenna design
  - Optimized cost structure utilizing smart access point technology and low cost clients
- **Carrier-grade self installation and remote management models**

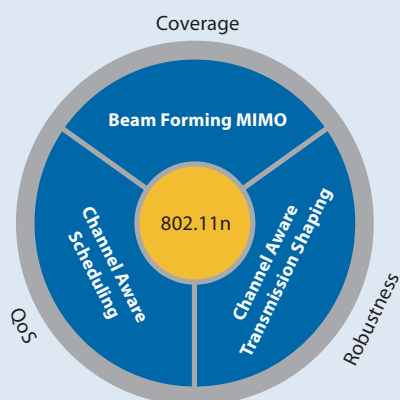


### Applications

- IPTV and Cable home gateway video distribution
- Multi room DVR
- WiFi enabled Hybrid DVB-S/C/T and set top boxes
- Multi room gaming
- Wireless TV for over the top content
- Media server PC, NAS content sharing
- Wireless HDMI extenders



### Celeno OptimizAIR™ Technology



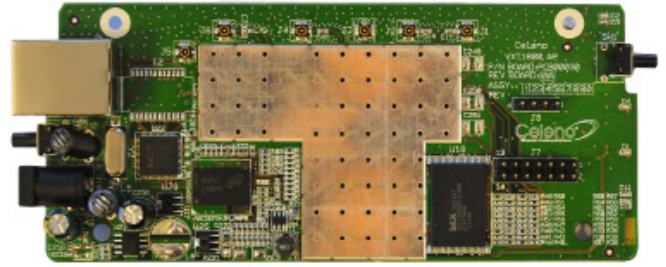
Powered by the OptimizAIR™ technology the Celeno CL1800 delivers multiple, concurrent HD streams to client devices independently of the 802.11n client chipset (even to single stream, single antenna clients).

OptimizAIR™ combines several innovative technologies that work together intricately at all layers to achieve the full-home, robust throughput needed for HD video streaming. These include Transmit Beam Forming MIMO for increased range, Scheduled Access MAC to support multiple clients with the appropriate QoS, channel aware rate selection for zero packet error rate, real time antenna diversity for robustness and interference resiliency with fast channel selection and dynamic 20/40MHz operation. The OptimizAIR™ expert system is driving up the performance by real time packet-by-packet channel estimation for fully channel-aware silicon.

## Features

- **802.11n compliant 3T3R MAC/BB/RF**
  - 2.4Ghz / 5Ghz Dual Band
  - Up to 3 spatial streams
  - 20Mhz/40Mhz channel bandwidth
  - 450Mbps PHY data rate
  - WiFi Compliant: WPA2/WMM/WMM Power Save/WPS/WPS2
  - Advanced power management to support CoC 2013/2014
- **Integrated Celeno's OptimizAir technologies suite**
  - Implicit (client agnostic) or Explicit beam forming for up to 9 db gain
  - Real-time channel aware adaptive rate eliminates retransmission and packet loss
  - TDM-like Scheduled MAC for guaranteed QoS without collisions
  - Whole-home QoS supporting triple play (voice, video and data) with traffic shaping and admission control to enhance basic WMM
  - Superior interference immunity:
    - Dynamic channel selection
    - Advanced PHY-level interference detection and automatic channel scanning
- **Rich set of host interfaces: PCI/PCIe/RGMII/MII/USB**
  - Allows easy integration into gateways, DVRs, set-top-boxes and other CE devices
- **Supports up to 8 different concurrent HD streams**
- **Carrier grade feature set**
  - IGMP snooping, Multicast to Unicast translation and WDS support for seamless IPTV network integration
  - WPS – WiFi Protected Setup for simple setup and security configuration
  - HTTP-based GUI management and software upgrades
  - Remote management based on SNMP and TR-069 standards
- **High Performance CPU**
  - MIPS32 74k, 500Mhz Clock with 64KB I-cache, 32KB D-Cache
  - Offloads processing overhead from the host CPU
  - Allows application and data-path layer user customization

## CL91800VXT Reference Design



## Specifications

Standards	802.11a/b/g/n/d/e/h/i/k/
WiFi	WMM, WMM-PS, WPA, WPA2, WPS, WPS2
Encryption	AES, TKIP, WEP64/128
Baseband	3x3, 2x3
RF	2.4Ghz, 4.9Ghz – 5.85Ghz
Modulations	BPSK, QPSK, 16-QAM, 64-QAM
FEC	1/2, 2/3, 3/4, 5/6
Max PHY Rate	450Mbps
Channel Bandwidth	20Mhz, 40Mhz
Management	TR-69, SNMP, WEB Based
Data Path Interfaces	MII/RGMII/USB2.0/PCI/PCIe
Package	Green/RoHS compliant TFBGA 448 ball (17mmx17mm)
Temperature	-10°~70° C

## Ordering Information

P/N	Radio
CL 1820	2T3R
CL 1830	3T3R



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