Metalink's WLAN*Plus*™
Powering Home Networks Beyond Data

WLAN*Plus* provides a best–of-breed solution for supporting the new breed of home wireless networks. Based on a high-throughput IEEE 802.11n-compliant wireless LAN technology, with transmission speeds reaching 300 Mbps, WLAN*Plus* offers complete and reliable coverage throughout the home. With a wide range of chipsets and reference designs including single-band, dual-band, concurrent dual band and SoC with integrated network processor, it offers the best match for various 802.11n applications ranging from Residential Gateways, Access Points and Routers to PC cards, STBs, DMAs and wireless HDTVs.

Supporting the high-end requirements of data networks and HD multimedia delivery over wireless networks, WLAN*Plus* offers not only the best support for current mainstream applications like data networking but also support for emerging applications like HDTV delivery, gaming and VoIP.

WLAN*Plus* is the only CE-grade 802.11n technology currently available in the market. With its competitive pricing, WLAN*Plus* is the natural choice for the new wireless home infrastructure.

Legend

A=Concurrent Dual Band Residential Gateway (WLAN*Plus*™)
B=Media Center (WLAN*Plus*™)
1. HDTV Thin Client (WLAN*Plus*™)
2. Wireless Stereo Speakers
3. Cordless Phone (2.4GHz)
4. Microwave Oven (2.4GHz)
5. Wireless Stereo System
6. Wireless VOIP Phone
7. Media Adapter/PDA (WLAN*Plus*™)
8. PC (Legacy 802.11a/b/g)
9. Laptop (WLAN*Plus*™)
10. Laptop (Legacy 802.11a/b/g)
11. HDTV Thin Client (WLAN*Plus*™)
12. HDTV Thin Client (WLAN*Plus*™)
13. PC (WLAN*Plus*™)

www.MTLK.com

Metalink Broadband

Advancing the standard

WLAN*Plus* technology combines the most demanding optional specifications of the 802.11n standard with proprietary algorithms that outperform other solutions when used at either one end or both ends of the wireless link. WLAN*Plus* supports transmission rates of up to 300 Mbps, while extending the network's coverage to eliminate any dead spots within the house. It is fully compliant with IEEE's 802.11n approved draft and supports both 2.4GHz and 5GHz frequency bands.

Backwards compatibility with 802.11 a/b/g based legacy devices is ensured, while supporting the most demanding emerging applications such as multiple HDTV streaming. WLAN*Plus* complies with 802.11h (radar detection), 802.11i (security) and 802.11e Quality of Service (QoS) standards. Furthermore, Metalink is committed to the future Wi-Fi Alliance CE-grade certification, as it becomes available.

Metalink is taking a leadership position in IEEE and Wi-Fi alliance activities. As part of this activity Metalink has developed IEEE's official Compliance Generator for 802.11n interoperability testing, which has been added as an annex to the approved standard draft.

Doubling the coverage with guaranteed QoS

WLAN*Plus* features a unique Maximum Likelihood (ML) MIMO decoder, which doubles the network coverage and an advanced Forward Error Correction (FEC) scheme using Low Density Parity Check (LDPC) technology, which provides additional coding gain. WLAN*Plus* offers the best 5GHz performance in the market and sophisticated QoS mechanisms, such as Enhanced Distribution Channel Access (EDCA) with Admission Control and Fast Link Adaptation (FLA) to guarantee QoS and optimize home performance. Dynamic Link Adaptation (DLS) saves up to 50 percent on airtime, significantly increasing the network's efficiency. DLS is well suited for home networking architectures, where every CE device should be able to communicate with any other CE device in the house.

Selected by major operators and vendors

WLAN*Plus* has been tested and evaluated by major operators, CE vendors and chip vendors worldwide, and found as the only solution that meets the demanding requirements associated with new wireless home networks.

It is the only current technology that has been proven to support the strict packet error rate, jitter, latency and throughput requirements for high quality HD video streaming. WLAN*Plus* outperforms other solutions achieving industry lowest packet error rate with best performance for full home coverage.

Key Advantages

- **Superior Performance**
  - Superior MIMO detector - Metalink's MIMO detector's (slicer) gain over traditional decoding can be as high as 5dbs, which is equivalent to ~40% improvement in range, approximately doubling the coverage area.
  - Advanced FEC (Forward Error Correction) scheme - WLAN*Plus* offers the use of LDPC (Low Density Parity Check) as an optional FEC scheme, resulting in the addition of up to 3dB of SNR (Signal to Noise Ratio), which can be used to transmit over greater distances and / or at higher bit rates. This means that the range is effectively extended by 30% or that it offers a 30% increase in speed over the range offered by comparable products without such a feature.
  - Optimized solution for video applications - Metalink is the best solution for contemporary latency-critical application such as IPTV and gaming, which require UDP packets. Quality video transfer requires minimal delay, constant throughput and, most importantly, zero packet loss (because in UDP, a lost packet cannot be restored).

    Metalink's solution is the optimal solution for wireless video applications because it is capable of UDP transfers with zero PER and minimal delay and at a constant throughput.
  - Low interference 5GHz band support - In addition to superior performance in the 2.4GHz band, Metalink is a pioneer and leader in 5GHz band. Through special RF design, WLAN*Plus* provides the best 5GHz band support in the market. It does not interfere with microwave ovens, baby monitors, cordless phones, Bluetooth devices or 11b/g networks. In contrast to 2.4GHz band's 3 channels, it doubles the throughput via channel bonding using 2 out of the more than 20 channels available. WLAN*Plus* is compliant with CE certification.
  - Dynamic Link Setup (DLS) - DLS saves on airtime, increases network efficiency, and is well suited for home environment architectures, where every CE device should be able to communicate with any other CE in the household. This technology allows a data stream to be sent from one station to another without going through an access point, which would require doubling the bandwidth.
- **Superior Quality of Service**
  - EDCA plus Admission Control - WLAN*Plus* offers a bandwidth guarantee by supporting EDCA with optional Admission Control (AC).
  - Fast Link Adaptation (FLA) - WLAN*Plus* provides a dynamic QoS mechanism that adapts the bit rate based on actual packet-error rates. This feature ensures that the CE device's connection rate adapts rapidly and dynamically to environmental shifts and changing Access Point distances.
- **Superior Architecture**
  - Integrated MAC - WLAN*Plus* includes full implementation of an integrated MAC, dramatically reducing the required processing power and memory allocation from the application host processor. This simplifies integration with consumer electronics devices and reduces total product costs.
  - 2 x 3 MIMO - optimized cost / performance 2 x 3 MIMO architecture consisting of two chips supporting the dual band operation. Spatial diversity gain between a 2 x 2 MIMO configuration and a 2 x 3 MIMO configuration is 4 to 5dB, resulting in an increased 30% reach for home environments equivalent to an increase of ~80% in coverage area.

WLAN*Plus* MtW8171 / MtW8151 Key Features

- Fully compliant with the IEEE 802.11n approved draft
- 2 x 3 MIMO architecture
- Dual band support – 2.4GHz / 5GHz
- Two-chip solution
  - MtW8171 – 2 x 3 802.11n MAC / BB
  - MtW8151 – 2 x 3 2.4GHz / 5GHz 802.11n RFIC
- Backward compatibility with legacy devices - 802.11 a/b/g
  - Supports Mixed-mode to enhance performance while interoperating with legacy devices
- PHY transmission rates of up to 300Mbps
  - Maximum Likelihood (ML) MIMO decoder doubles coverage area
  - Channel bonding, supports 20MHz and 40MHz channels
  - Advanced Coding (LDPC) extends coverage area by up to 70%
  - Space Time Block Coding (STBC)
- Enhanced MAC Efficiency through Frame Aggregation and Block Acknowledge
- Fast Link Adaptation for throughput maximization under QoS and delay constraints
- Advanced Security Scheme, 802.11i-compliant
- Advanced QoS Scheme, 802.11e-compliant with admission control support
- Compliance with 802.11h for radar detection
- Pb-free and RoHS-compliant designs

Reference Designs

Different reference design types are supported:

1. Dual Band Standard mPCI

The standard mPCI (type IIIB) supports configurable dual band operation.

2. Dual Band High Performance mPCI

The design of the high performance mPCI is based on discrete components and includes two dual band PAs.

3. Single Band 2.4GHz High Performance mPCI

Suited for cost-effective Router (AP) and client applications.

4. Single Band 5GHz High Performance mPCI

Suited for 5GHz bridge applications for existing 2.4GHz routers and cost-effective CE station devices.

5. Concurrent Dual Band 2.4GHz and 5GHz High Performance Reference Design

Suited for concurrent 2.4GHz and 5GHz operation.

6. Dual Band High Performance Card bus

Suited for add-on dual band (2.4GHz and 5GHz) 802.11n connectivity for laptops.

Technical Specifications

Frequency Band:	2.400–2.485GHz 4.900–5.950GHz
Network Standards:	802.11n 802.11a/b/g
Data Rates:	802.11a—6 to 54Mbps 802.11b—1 to 11Mbps 802.11g—6 to 54Mbps 802.11n—Up to 300Mbps
Modulation Modes:	(OFDM)—BPSK, QPSK, 16QAM and 64QAM (DSSS)—DBPSK, DQPSK, CCK
Channel Code (FEC):	Convolution Code Advance Coding (LDPC)
Security:	Compatible with 802.11i 64-bit/128-bit key WEP, AES, TKIP, WPA, WPA2
QoS:	Compatible with 802.11e EDCA, EDCA w/Admission Control Direct Link Setup (DLS) Fast Link Adaptation
Host Interface	Cardbus, mPCI, PCI 2.3
Peripheral Interface	UART, GPIOs, LEDs
Operating Voltage	MtW8151 RFIC – 3.0V ± 10% MtW8171 BB – 1.2V ± 5%, 3.3V ± 10%
Package	MtW8151 RFIC – 88 pin QFN, 10*10mm, 0.4mm pitch MtW8171 BB – 225 pin LFBGA, 13*13mm, 0.8mm pitch

ABOUT METALINK

Metalink Ltd. (NASDAQ: MTLK) is a leading provider of high performance wireless and wireline broadband communication silicon solutions. Metalink's WLAN and DSL technologies are designed to enable true broadband connectivity in every home, and its products revolutionize the broadband experience by facilitating the convergence of telecommunication, networking and entertainment.

Headquartered in Yakum, Israel, the company has subsidiaries in Atlanta (US), South Korea, and Japan as well as an office in China. Metalink has been certified to the latest revision (2000) of the ISO9001 International Standard.

V 160507

Yakum Business Park Israel 60972
Tel: +972 9 960 5555
Fax: +972 9 960 5544
E-mail: info@MTLK.com

www.MTLK.com

METALINK Broadband