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MIMOS' WiWi Technology Platform expected to drive broadband penetration

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The MIMOS WiWi Technology Platform

After over a year in gestation, MIMOS' WiWi Technology Platform was launched in Petaling Jaya on 13 August by Tuan Haji Fadillah Yusof, Deputy Minister of Science, Technology & Innovation.

The device incorporates both a 2.4GHz WiFi radio for local coverage of say a village square, a home or an office and a 2.3GHz WiMAX radio for the backhaul connection the WiMAX base station.

Its WiMAX range is from 1.76 to 3.05 km (2.36 km average) depending on radial angular direction in relation to the base station antenna, whilst it serves as a WiFi 802.11 b/g access point with an average radial coverage of between 210 and 708 m (487 m average) also depending on the radial angular direction in relation to the antenna in a polar plot.

The WiWi platform is expected to help in the nationwide deployment of the government's Broadband to the General Population (BBGP) initiative. Under the government's National Broadband Implementation Strategy, BBGP aims to provide speeds of between 100Kbps to 1 Mbps especially in sub-urban and rural areas using a variety of wired or wireless connections, whilst the strategy's High Speed Broadband (HSBB) component aims to provide speeds of up to 10Mbps and 100Mbps to residential and commercial premises respectively and mostly in urban areas.

"With 16 million Internet users overall, or 63% household penetration, the statistics show that more and more people in Malaysia are adopting broadband, so much so that it's perceived more as a necessity than a luxury," said Haji Fadillah.

The platform is expected to help drive growth in Malaysia's household broadband penetration which currently stands at 24%. still far short of the National Broadband Implementation Strategy's target of 50% by the end of 2010.

Formally known as the Malaysian Institute of Microelectronic Systems, MIMOS now is Malaysia's national applied research centre in frontier technologies..

"Designed as an alternative for last kilometre connectivity, MIMOS WiWi (WiFi – WiMAX) is an environmentally-friendly, plug-and-play instant broadband hotspot technology platform for cheaper and more affordable connectivity per user, as it provides multiple PC connections using existing WiFi connectivity for fixed, portable or mobile wireless connectivity for all Malaysians," said MIMOS president and chief executive officer, Dato' Abdul Wahab Abdullah.

It supports the latest WiMAX 802.16e-2005 profile using Scalable Orthogonal Frequency Division Multiple Access – Time Division Duplex (SOFDMA-TDD) multiplexing scheme which uses a subchannel structure that scales with bandwidth which provides an optimal tradeoff between protection against multipath signals and Doppler shift, and design cost/complexity, all of which contribute to a spectral efficiency that is much higher than competing systems, with potential for even greater improvements in the future.

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It also supports 2 x 1 MIMO (Multiple Input, Multiple Output) which can either improve speeds, increase range and reduce interference, whilst OFDMA is a multiple-access method which allows for simultaneous transmissions to and from several users and several more advantages – for example sub-channelisation gain, loading gain, more efficient scheduling, and a frequency reuse factor of one.

It incorporates IPv6 (Internet Protocol version 6) and IPv4 Enhanced Multicasting Support which enables the transmission of a single copy of a multi-cast video stream to multiple users, which saves on costly bandwidth. A traditional off-the-shelf WiFi access-point router would throttle multi-cast traffic to a base rate of 1 Mbps, which results in poor quality video viewing, especially when there are multiple simultaneous viewers, each of whom receives a separate video stream. IPv6 voice-over-IP mobility ensures seamless handoff as the user moves between the coverage of different base stations

It also has a 10/100 Base-T RJ-45 port for connection to ADSL, HSPA or other technology modems as the backhaul.

The WiWi access point is made and marketed by Penang-based CEEDTec, MIMOS' first technology recipient, which has received an order for 100,000 units. CEEDTec's CT730 router platform based on MIMOS' Gen 1.5 technology platform was chosen for use in a nationwide UK WiMAX/WiFi network due to be deployed this third quarter. CEEDTec had collaborated with WDSI International and Meshhopper Wireless Networks on this deployment. MIMOS presented CEEDTec managing director, Heng Fook Main with special recognition award.



CEEDTech's Heng Fook Main (right) receives MIMOS award from Deputy Minister Haji Fadillah

As a frontier technology researcher and developer, MIMOS does not sell these products directly but offers to transfer the technology to recipients which qualify.



The three WiMAX operators, MIMOS, Deputy Minister Hj. Fadillah and CEEDTec with the WiWi platform

At the same time, MIMOS exchanged collaboration agreements with three of Malaysia's 2.3GHz WiMAX licensees – namely REDtone International, Packet One Networks Malaysia (P1) and Asiaspace.

The three will use the WiWi access point to extend the coverage of their broadband services, to promote the potential of broadband technology to help transform societies in line with the governments broadband's vision, to develop IT solutions which will enable affordable access to information and to deploy

MIMOS WiWi Technology Platforms at their existing sites.

"For a long time now, Malaysian operators have had to rely on imported equipment and believe me, is something is wrong, it's a nightmare to get the overseas supplier to resolve the problem but now with a home-grown product built and made here, we can more easily work with CEEDTec to solve any problems which may arise," said Datuk Abdul Ghani Abdullah, chairman of Asiaspace.

"The WiWi routers will enhance the deployment of our WiMAX service in Sabah and Sarawak," said Zainal Amanshah, REDtone chief executive officer. "With today's launch of MIMOS WiWi, we've achieved another milestone in positioning Malaysia as a key regional and global WiMAX hub," said Michael Lai, Packet One chief executive officer.

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