IEEE P802.11
Wireless LANs

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To:	Mr. Vic Hayes, Chairman IEEE 802.11, Standard Working Groups for WLAN
Cc:	Mr. Naftali Chayat, 802.11 TGa Chairman
	Mr. Tadao Kobayashi Chairman of HSWA Subcommittee of MMAC-PC
	Mr. K. Koga, MMAC, Japan
Date:	July 02, 1999
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Subject:	Alignment of physical layer between IEEE 802.11a and HIPERLAN type 2 as well as time schedule of HIPERLAN type 2
Reference:	Your Liaison Letter dated May 6, 1999

Dear IEEE 802.11 Officers and Members,

Thank you very much for your Liaison Letter of May 06, 1999 on " An update on 802.11a OFDM PHY status". The Plenary of the ETSI Project BRAN would like to inform you on the outcome of the BRAN#14 meeting in June 1999 regarding the technical specifications of the HIPERLAN type 2 physical layer and the issues addressed in your Liaison Letter.

In the current BRAN meeting we decided on all baseband parameters and made decisions or working assumptions on almost all RF parameters. We intend to finalise these parameters during our interim meeting on September 1-3, 1999 and to approve the Draft PHY Technical Specification at BRAN#15 in October 1999 for publication by ETSI Secretariat. The most important issues relevant to harmonisation of physical layer between two communities are given as follows.

1) The PHY Group confirmed the structure of the preamble as given in our last Liaison Letter and presented at the 802.11 interim meeting in Tokyo. We adopted the following short symbol as the B16 symbol (in your notation $S_{-26\ldots26}$) proposed by the MMAC Ethernet-WG for MMAC, IEEE802.11a and HIPERLAN type 2 preambles.

   $SB_{-26\ldots26}$ = sqrt(13/6)*{ 0, 0, 1+j, 0, 0, 0, -1-j, 0, 0, 0, 1+j, 0, 0, 0, -1-j, 0, 0, 0, -1-j, 0, 0, 0, 1+j, 0, 0, 0, **0**, 0, 0, 0, -1-j, 0, 0, 0, -1-j, 0, 0, 0, 1+j, 0, 0, 0, 1+j, 0, 0, 0, 1+j, 0, 0, 0, 1+j, 0, 0}

   The scaling factor sqrt(13/6) is applied in order that all parts of the preamble have an equal power. This could result in optimal exploitation of the preamble. We hope you will adopt this modification in your specifications.
2) The fixed pilot patterns designed jointly with 802.11a at the Orlando meeting was confirmed by the PHY Group. In addition we decided for a per-OFDM-symbol pilot scrambling/de-scrambling as addressed in your Liaison Letter.

3) The MSB/LSB swapping used in Draft Standard P802.11a/5.5 was adopted by the HIPERLAN type 2 PHY Group. In this way, the interleaving permutation laws for both standards are fully harmonised.
4) The signal points of the BPSK constellation in our PHY Technical Specification are aligned with your proposal, i.e. they lie along the "I" quadrature axis. This has also been applied to the sub-carriers of the long training sequence (in our notation C64 symbol) as presented by our expert team at the 802.11 interim meeting in Tokyo.

Besides some minor differences that are mainly due to different MAC protocols and different topologies used by the two systems, three communities 802.11a/MMAC/BRAN could harmonise the biggest and the most important parts of the physical layer for OFDM based WLAN systems worldwide. All members of these communities could be proud on this achievement. During the harmonisation process HIPERLAN type 2 PHY group benefited very much from the expertise of the 802.11a and MMAC communities that enhanced the design of our physical layer. We would like to thank you and also MMAC members for co-operation and patient in this time and hope that we continue our fruitful co-operation in the future. We apologise for the absence of our expert team in your current meeting because of other commitments they have.

Sincerely,

Jamshid Khun-Jush,
Chairman ETSI Project BRAN and PHY TS Rapporteur


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