IEEE P802.11
Wireless LANs

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| 6.6.1 Phase hopping |
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| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Yutaka Murakami | Panasonic | 600 Saedo-cho, Tsuzuki-ku, Yokohama 224-8539, Japan | +81 45 938 3045 | murakami.ytk@jp.panasonic.com |

Abstract

This document proposes specification text for subclause 6.6.1 of the SFD describing phase hopping [1].

**3. Definitions, acronyms, and abbreviations**

**3.3 Abbreviations and acronyms**

*Insert the following abbreviations into 3.3 in alphabetic order:*

OLSM open loop spatial multiplexing

PH phase hopping

*Insert the following subclause in 25.6:*

**25.6.1 Phase hopping**



**Figure 25-x** — **Block diagram for open loop precoding and phase hopping**

SU-MIMO with two spatial streams supports open loop spatial multiplexing (OLSM) with phase hopping (PH) as one mode of OLSM. When applied PH improves reception quality in EDMG PHY. Figure 25-x shows the block diagram related to PH which is composed of open loop precoder and phase hopping blocks.

The stream of complex numbers, *pi*,*l*; where *l*=0,1, generated by the constellation mapper is the input of the open loop precoder where *i* is an index of symbol and *l* is an index of spatial stream, and produces as output the stream of complex numbers *qi*,*l*. The stream of complex numbers *qi*,*l* is defined as follows:



where *F* is an open loop precoding matrix.

The stream of complex numbers *qi*,*l* generated by the open loop precoder is the input of the phase hopping block which produces as output the stream of complex numbers *ri*,*l*. The stream of complex numbers *ri*,*l* is defined as follows:



where *X*(*i*) is a phase change matrix and *W*(*i*) is a matrix related to PH in Figure 25-x.

The stream of complex numbers *ri*,*l* is transmitted through multiple DMG antennas.

The phase change matrix *X*(*i*) and an open loop precoding matrix *F* are indicated in the Phase Hopping field and the Open Loop Precoding field of the EDMG-Header-A for SU PPDU are shown as follows.

When the Phase Hopping field of the EDMG-Header A for SU PPDU is valid, the phase change matrix is defined as follows.

If the Phase Hopping field is set to 1, phase hopping is applied and the phase change matrix *X*(*i*) is



Otherwise, the phase hopping is not applied and the phase change matrix *X*(*i*) is



When the Open Loop Precoding field of the EDMG-Header A for SU PPDU is valid, the open loop precoding matrix is defined as follows.

If the Phase Hopping field is set to 1, the open loop precoding matrix *F* is



Otherwise, the open loop precoding matrix *F* is



**References:**

1. 11-15-1358-09-00ay-11ay-specification-framework-for-tgay