IEEE P802.11
Wireless LANs

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| DCM π/2-BPSK EVM Requirement |
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Abstract

This submission proposes EVM requirements for DCM π/2-BPSK signals.

**Discussion**

* Frequency domain diversity for transmissions over 2.16+2.16 GHz or 4.32+4.32 GHz channels.
* After LDPC encoding, encoded bits of each space-time stream are broken into two groups (for a given block): $\left(c\_{0}^{1}, c\_{1}^{1}\cdots c\_{N-1}^{1}\right)$ and $\left(c\_{0}^{2}, c\_{1}^{2}\cdots c\_{N-1}^{2}\right)$. Each pair of bits $\left(c\_{k}^{1},c\_{k}^{2}\right)$ is modulated as follows:

$$d\_{k}^{1}=\frac{1}{\sqrt{2}}\left(\left(2×c\_{k}^{1}-1\right)+j\left(2×c\_{k}^{2}-1\right)\right)e^{jπ{k}/{2}}$$

$$d\_{k}^{2}=\frac{1}{\sqrt{2}}\left(\left(2×c\_{k}^{1}-1\right)-j\left(2×c\_{k}^{2}-1\right)\right)e^{jπ{k}/{2}}$$

Each symbol $d\_{k}^{1}$ or $d\_{k}^{2}$ is a QPSK symbol.

* With appropriate combining at the receiver, for an AWGN channel, the performance of DCM π/2-BPSK signals transmitted over 2.16+2.16 GHz or 4.32+4.32 GHz channels is the same as BPSK (due to a 3 dB gain obtained due to noise averaging). Impact of RF impairments is approximately the same as for BPSK modulations. EVM requirements for DCM π/2-BPSK signals should thus be aligned with the corresponding BPSK signals coded with the same code rates.

**Modifications**

Modify Table 94 (D2.0, page 473) as follows

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| **MCS** | **Modulation** | **Code rate** | **EVM value [dB]** |
| 2 | DCM π/2-BPSK | 1/2  | -7 |
| 3 | DCM π/2-BPSK | 5/8 | -9 |
| 4 | DCM π/2-BPSK | 3/4 | -10 |
| 5 | DCM π/2-BPSK | 13/16 | -12 |
| 6 | DCM π/2-BPSK | 7/8 | -13 |