IEEE P802.11
Wireless LANs

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| Draft Spec Text Update for Section 32.3.8 (Data field) |
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Abstract

This submission contains modified spec text for Sec. 32.3.8 (Data field) to be incorporated in P802.11bd D0.3. The text reflects the related passed motion (#58) recorded in 11-19/0514r14.

Revisions:

* Rev 0: Initial version of the document.

32. Next Generation V2X (NGV) PHY specification

32.3.8.9 OFDM modulation

32.3.8.9.1 Transmission in NGV format

The time domain waveform of the Data field of a NGV PPDU from transmit chain *iTX*, 1  *iTX*  *NTX* shall be as defined in Equation (32-39).

(32-39)

$$r\_{NGV-Data}^{\left(i\_{TX}\right)}\left(t\right)=\frac{1}{\sqrt{N\_{NGV-Data}^{Tone}N\_{STS}}}\sum\_{n=0}^{N\_{SYM}-1}w\_{T\_{SYM}}\left(t-nT\_{SYM}\right)∙\sum\_{k=-N\_{SR}}^{N\_{SR}}\sum\_{m=1}^{N\_{STS}}\left(\left[Q\_{k}\right]\_{i\_{TX},\left(M+m\right)}Υ\_{k,BW}\left(\tilde{D}\_{k,m,n,BW}+p\_{n+4}P\_{n}^{k}\right)∙exp\left(j2πkΔ\_{F}\left(t-nT\_{SYM}-T\_{GI,Data}-T\_{CS,NGV}\left(M+m\right)\right)\right)\right)$$

where

*pn* is defined in 17.3.5.10 (OFDM modulation)

$P\_{n}^{k}$ is defined in ~~21.3.10.10~~ 32.3.8.8(Pilot subcarriers)

$Υ\_{k,BW}$ is defined in Equation (32-4) and Equation (32-5)

$\tilde{D}\_{k,m,n,BW}$ is the transmitted constellation at subcarrier *k*, space-time stream *m*, and Data field OFDM symbol *n* and is defined in ~~Equation (21-96) to Equation (21-99)~~ Equation (32-40) and Equation (32-41)

$N\_{NGV-Data}^{Tone}$ has the value given in Table 32-8 (Tone scaling factor and guard interval duration values for PHY fields)

$T\_{CS,NGV}(n)$ is given in Table 21-11 (Cyclic shift values for the VHT modulated fields of a PPDU)

$T\_{GI,Data}$ is the guard interval duration. $T\_{GI,Data} = T\_{GI}$.

In a 10 MHz NGV transmission,

 $\tilde{D}\_{k,m,n,10} = \left\{\begin{array}{c}0, k = 0, TBD Pilot location \pm 8, \pm 22\\\tilde{d}\_{M\_{10}^{r}\left(k\right),m,n}, otherwise\end{array}\right.$, (32-40)

where

$M\_{10}^{r}\left(k\right)$ ~~is defined in Equation (21-49)~~

 $M\_{10}^{r}\left(k\right) = \left\{\begin{array}{c}k+28 -28\leq k\leq -23\\k+27 -21\leq k\leq -9\\k+26 -7\leq k\leq -1\\k+25 1\leq k\leq 7\\k+24 9\leq k\leq 21\\k+23 23\leq k\leq 28\end{array}\right.$

In a 20 MHz NGV transmission,

$\tilde{D}\_{k,m,n,20}= \left\{\begin{array}{c}0, k = 0, TBD Pilot location \pm 12, \pm 26, \pm 54\\\tilde{d}\_{M\_{20}^{r}\left(k\right),m,n}, otherwise\end{array}\right.$, (32-41)

where

$M\_{20}^{r}\left(k\right)$ ~~is defined in Equation (21-51)~~

$$M\_{20}^{r}\left(k\right) = \left\{\begin{array}{c}k+58 -58\leq k\leq -55\\k+57 -53\leq k\leq -27\\k+56 -25\leq k\leq -13\\k+55 -11\leq k\leq -2\\k+52 2\leq k\leq 11\\k+51 13\leq k\leq 25\\k+50 27\leq k\leq 53\\k+49 55\leq k\leq 58\end{array}\right.$$

$Q\_{k}$ is a spatial mapping/steering matrix with *NTX* rows and *NSTS* columns for subcarrier *k*. $Q\_{k}$ may be frequency dependent. Refer to the examples of $Q\_{k}$ listed in 19.3.11.11.2 (Spatial mapping) for examples of $Q\_{k}$ that could be used for NGV PPDU. Note that implementations are not restricted to the spatial mapping matrix examples listed in 19.3.11.11.2 (Spatial mapping) and the number of transmit chains *NTX* could be 1 or 2. The beamforming steering matrices are implementation specific.