

**N =2**

$$W = \begin{bmatrix} 1 & 1 \\ 1 & -1 \end{bmatrix}$$

**N =3**

$$W = \begin{bmatrix} 1 & 1 & 1 \\ 1 & -0.5 - j 0.866 & -0.5 + j 0.866 \\ 1 & -0.5 + j 0.866 & -0.5 - j 0.866 \end{bmatrix}$$

**N =4**

$$W = \begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & -j & -1 & j \\ 1 & -1 & 1 & -1 \\ 1 & j & -1 & -j \end{bmatrix}$$

**N =5**

$$W =$$

1	1	1	1	1
1	0.31 - 0.95i	-0.81 - 0.59i	-0.81 + 0.59i	0.31 + 0.95i
1	-0.81 - 0.59i	0.31 + 0.95i	0.31 - 0.95i	-0.81 + 0.59i
1	-0.81 + 0.59i	0.31 - 0.95i	0.31 + 0.95i	-0.81 - 0.59i
1	0.31 + 0.95i	-0.81 + 0.59i	-0.81 - 0.59i	0.31 - 0.95i

**N =6**

$$W =$$

1	1	1	1	1	1
1	0.5 - 0.87i	-0.5 - 0.87i	-1	-0.5 + 0.87i	0.5 + 0.87i
1	-0.5 - 0.87i	-0.5 + 0.87i	1	-0.5 - 0.87i	-0.5 + 0.87i
1	-1	1	-1	1	-1
1	-0.5 + 0.87i	-0.5 - 0.87i	1	-0.5 + 0.87i	-0.5 - 0.87i
1	0.5 + 0.87i	-0.5 + 0.867i	-1	-0.5 - 0.87i	0.5 - 0.87i