The equation (7) in "A Single-Step Localization Method in the Presence of Unknow Mutual Coupling" can be derived according to the following equation, where $\odot$ denotes the Hadamard product, u_k and α_k $(k = 1, 2, \cdots, m-1)$.

$$
\begin{aligned}
&\tilde{\mathbf{a}}(\mathbf{p}) = \mathbf{C}\mathbf{a}(\mathbf{p}) \\
&= \begin{pmatrix}
1 + c_1\beta(\mathbf{p}) + \cdots + c_{m-1}\beta(\mathbf{p})^{m-1} \\
\vdots \\
c_k + c_{k-1}\beta(\mathbf{p}) + \cdots + c_1\beta(\mathbf{p})^{k-2} + \beta(\mathbf{p})^{k-1} + c_1\beta(\mathbf{p})^{k} + \cdots + c_{m-1}\beta(\mathbf{p})^{k+m-2} \\
\vdots \\
c_{m-1} + c_{m-2}\beta(\mathbf{p}) + \cdots + c_1\beta(\mathbf{p})^{m-2} + \beta(\mathbf{p})^{m-1} + c_1\beta(\mathbf{p})^{m} + \cdots + c_{m-1}\beta(\mathbf{p})^{2m-2} \\
\vdots \\
c_{m-1}\beta(\mathbf{p})^{M-2m-1} + \cdots + c_1\beta(\mathbf{p})^{M-m-1} + \beta(\mathbf{p})^{M-m} + c_1\beta(\mathbf{p})^{M-m-1} + \cdots + c_{m-1}\beta(\mathbf{p})^{M-1} \\
\vdots \\
c_{m-1}\beta(\mathbf{p})^{M-2m-1+k} + \cdots + c_1\beta(\mathbf{p})^{M-m-1+k} + \beta(\mathbf{p})^{M-m+k} + c_1\beta(\mathbf{p})^{M-m+k-1} + \cdots + c_{m-1}\beta(\mathbf{p})^{M-1} \\
\vdots \\
c_{m-1}\beta(\mathbf{p})^{M-m} + \cdots + c_1\beta(\mathbf{p})^{M-2} + c_{m-1}\beta(\mathbf{p})^{M-1}
\end{pmatrix} \\
&= \begin{pmatrix}
1 + \sum_{j=1}^{m-1} c_j\beta(\mathbf{p})^{j} \\
\vdots \\
\sum_{j=1}^{k-1} c_j\beta(\mathbf{p})^{-j} + 1 + \sum_{j=1}^{m-1} c_j\beta(\mathbf{p})^{j} \\
\vdots \\
\sum_{j=1}^{m-1} c_j\beta(\mathbf{p})^{-j} + 1 + \sum_{j=1}^{m-1} c_j\beta(\mathbf{p})^{j} \\
\vdots \\
\sum_{j=1}^{m-1} c_j\beta(\mathbf{p})^{-j} + 1 + \sum_{j=1}^{m-1} c_j\beta(\mathbf{p})^{j} \\
\vdots \\
\sum_{j=1}^{k-1} c_j\beta(\mathbf{p})^{-j} + 1 + \sum_{j=1}^{m-k-1} c_j\beta(\mathbf{p})^{j} \\
\vdots \\
1 + \sum_{j=1}^{m-1} c_j\beta(\mathbf{p})^{-j}
\end{pmatrix}
\odot
\begin{pmatrix}
1 \\ \beta(\mathbf{p}) \\ \vdots \\ \beta(\mathbf{p})^{k-1} \\ \vdots \\ \beta(\mathbf{p})^{M-1}
\end{pmatrix}
= \left[1 + \sum_{j=1}^{m-1} c_j\left(\beta(\mathbf{p})^{j} + \beta(\mathbf{p})^{-j}\right)\right]
\begin{pmatrix}
u_1 \\ \vdots \\ u_{m-1} \\ 1 \\ \vdots \\ 1 \\ \alpha_1 \\ \vdots \\ \alpha_{m-1}
\end{pmatrix}
\odot \mathbf{a}(\mathbf{p})
\end{aligned}
\tag{1}
$$

$$
\begin{aligned}
u_k &= \frac{1 + \sum_{j=1}^{k-1} c_j \beta(\mathbf{p})^{-j} + \sum_{j=1}^{m-1} c_j \beta(\mathbf{p})^{j}}{1 + \sum_{j=1}^{m-1} c_j \beta(\mathbf{p})^{-j} + \sum_{j=1}^{m-1} c_j \beta(\mathbf{p})^{j}} \\
\alpha_k &= \frac{1 + \sum_{j=1}^{m-1} c_j \beta(\mathbf{p})^{-j} + \sum_{j=1}^{m-1-k} c_j \beta(\mathbf{p})^{j}}{1 + \sum_{j=1}^{m-1} c_j \beta(\mathbf{p})^{-j} + \sum_{j=1}^{m-1} c_j \beta(\mathbf{p})^{j}}
\end{aligned}
\tag{2}
$$