Denote t_i as the amount of time to transmit one input bit x_i across the DMC. The random variable $\mathscr{T}$ is the time to send such a bit and the mean of $\mathscr{T}$ is represented by $E(\mathscr{T})$. The mutual information in units of *bits per second* $I_t(X,Y)$ considering the transmission time cost for a DMC is

$$I_t(X,Y) = \frac{I(X,Y)}{E\{\mathscr{T}\}}. \tag{7}$$

The capacity C_t in unites of bits per second for a DMC [22] is given by Equation (8),

$$C_t = \max \frac{I(X,Y)}{E\{\mathscr{T}\}}. \tag{8}$$

Substitute Equation (6) into Equation (8), we have

$$C_t = \frac{\log_2(1+\frac{A^2}{\delta^2})}{2E\{\mathscr{T}\}}. \tag{9}$$

The derivation of $E\{\mathscr{T}\}$ is intuitive based on the description of the DSSS in [4] and TH-DSSS in Section 3. Then, Theorem 2 is proved. □