Szinuszus árameloszlású dipólus távoltéri térerőssége

$$E_\vartheta = j\frac{60\pi}{\lambda}\frac{e^{-j\beta r}}{r}\sin\vartheta\int_{-l}^{+l} I(z')e^{j\beta z'\cos\vartheta}dz' = j\frac{60\pi}{\lambda}\frac{e^{-j\beta r}}{r}\sin\vartheta\int_{-l}^{+l} I_m\sin\left[\beta\left(l-|z'|\right)\right]e^{j\beta z'\cos\vartheta}dz'$$

$$E_\vartheta = j\frac{60\pi}{\lambda}\frac{e^{-j\beta r}}{r}\sin\vartheta\cdot I_m\left[\int_{-l}^{0}\sin\left[\beta\left(l+z'\right)\right]e^{j\beta z'\cos\vartheta}dz' + \int_{0}^{+l}\sin\left[\beta\left(l-z'\right)\right]e^{j\beta z'\cos\vartheta}dz'\right]$$

$$E_\vartheta = j\frac{60\pi}{\lambda}\frac{e^{-j\beta r}}{r}\sin\vartheta\cdot I_m\left[\int_{0}^{+l}\sin\left[\beta\left(l-z'\right)\right]e^{-j\beta z'\cos\vartheta}dz' + \int_{0}^{+l}\sin\left[\beta\left(l-z'\right)\right]e^{j\beta z'\cos\vartheta}dz'\right]$$

$$E_\vartheta = j\frac{60\pi}{\lambda}\frac{e^{-j\beta r}}{r}\sin\vartheta\cdot I_m\left[\int_{0}^{+l}\sin\left[\beta\left(l-z'\right)\right]\left[e^{j\beta z'\cos\vartheta}+e^{-j\beta z'\cos\vartheta}\right]dz'\right]$$

$$E_\vartheta = j\frac{60\pi}{\lambda}\frac{e^{-j\beta r}}{r}\sin\vartheta\cdot I_m\left[\int_{0}^{+l}\frac{e^{j\beta l}\cdot e^{-j\beta z'}-e^{-j\beta l}\cdot e^{j\beta z'}}{2j}\left[e^{j\beta z'\cos\vartheta}+e^{-j\beta z'\cos\vartheta}\right]dz'\right]$$

$$E_\vartheta = j\frac{60\pi}{\lambda}\frac{e^{-j\beta r}}{r}\sin\vartheta\cdot I_m\frac{1}{2j}\left[\begin{array}{l} e^{j\beta l}\int_{0}^{+l}e^{j\beta z'(\cos\vartheta-1)}+e^{-j\beta z'(\cos\vartheta+1)}dz' - \\ -e^{-j\beta l}\int_{0}^{+l}e^{j\beta z'(\cos\vartheta+1)}+e^{-j\beta z'(\cos\vartheta-1)}dz' \end{array}\right]$$

$$E_\vartheta = j\frac{60\pi}{\lambda}\frac{e^{-j\beta r}}{r}\sin\vartheta\cdot I_m\frac{1}{2j}\left[\int_{0}^{+l}2j\sin\left[\beta l-\beta z'(\cos\vartheta-1)\right]+2j\sin\left[\beta l-\beta z'(\cos\vartheta+1)\right]dz'\right]$$

$$E_\vartheta = j\frac{60\pi}{\lambda}\frac{e^{-j\beta r}}{r}\sin\vartheta\cdot I_m\left[\frac{-\cos\left[\beta l+\beta z'(\cos\vartheta-1)\right]}{+\beta(\cos\vartheta-1)}\Bigg|_0^l + \frac{-\cos\left[\beta l-\beta z'(\cos\vartheta+1)\right]}{-\beta(\cos\vartheta+1)}\Bigg|_0^l\right]$$

$$E_\vartheta = j\frac{60\pi}{\lambda}\frac{e^{-j\beta r}}{r}\sin\vartheta\cdot I_m\left[\frac{-\cos[\beta l\cos\vartheta]+\cos[\beta l]}{+\beta(\cos\vartheta-1)} + \frac{-\cos[-\beta l\cos\vartheta]+\cos[-\beta l]}{-\beta(\cos\vartheta+1)}\right]$$

$$E_\vartheta = j\frac{60\pi}{\lambda}\frac{e^{-j\beta r}}{r}\sin\vartheta\cdot I_m\cdot$$

$$\cdot\left[\frac{\{-\cos[\beta l\cos\vartheta]+\cos[\beta l]\}\cdot[-(\cos\vartheta+1)]+\{-\cos[-\beta l\cos\vartheta]+\cos[-\beta l]\}\cdot[(\cos\vartheta-1)]}{-\beta(\cos^2\vartheta-1)}\right]$$

$$E_\vartheta = j\frac{60\pi}{\lambda}\frac{e^{-j\beta r}}{r}\sin\vartheta\cdot I_m\cdot\left[\frac{2\{\cos[\beta l\cos\vartheta]-\cos[\beta l]\}}{\beta\sin^2\vartheta}\right]$$

$$E_\vartheta = j60\frac{e^{-j\beta r}}{r}I_m\cdot\left[\frac{\{\cos[\beta l\cos\vartheta]-\cos[\beta l]\}}{\sin\vartheta}\right]$$