Thus:

$$V^{PSD_X}(\omega,t) \equiv V^{Sig}(\omega,t) \otimes V^{Ref}(\omega,t)$$
$$= \tfrac{1}{2} V_o^{Sig}(\omega) \cdot V_o^{Ref}\left[\cos\left\{2\omega t + \left(\varphi_S(\omega) + \varphi_R\right)\right\} + \cos\left\{\left(\varphi_S(\omega) - \varphi_R\right)\right\}\right]$$

and:

$$V^{PSD_Y}(\omega,t) \equiv V^{Sig}(\omega,t) \otimes V_{\pi/2}^{Ref}(\omega,t)$$
$$= -\tfrac{1}{2} V_o^{Sig}(\omega) V_o^{Ref}\left[\sin\left\{2\omega t + \left(\varphi_S(\omega) + \varphi_R\right)\right\} - \sin\left\{\left(\varphi_S(\omega) - \varphi_R\right)\right\}\right]$$

Next, we (deliberately) choose to set the ***reference*** amplitude to: $V_o^{Ref} \equiv \sqrt{2} = 1.4142\ Volts$
{*i.e.* set the ***RMS*** ***reference*** amplitude to: $V_{o_{RMS}}^{Ref} \equiv \tfrac{1}{\sqrt{2}} V_o^{Ref} = 1.0000\ Volts$ }.

Then, the two *PSD* ***product*** signals become:

$$V^{PSD_X}(\omega,t) \equiv V^{Sig}(\omega,t) \otimes V^{Ref}(\omega,t)$$
$$= +\tfrac{1}{\sqrt{2}} V_o^{Sig}(\omega)\left[\cos\left\{2\omega t + \left(\varphi_S(\omega) + \varphi_R\right)\right\} + \cos\left\{\left(\varphi_S(\omega) - \varphi_R\right)\right\}\right]$$

and:

$$V^{PSD_Y}(\omega,t) \equiv V^{Sig}(\omega,t) \otimes V_{\pi/2}^{Ref}(\omega,t)$$
$$= -\tfrac{1}{\sqrt{2}} V_o^{Sig}(\omega)\left[\sin\left\{2\omega t + \left(\varphi_S(\omega) + \varphi_R\right)\right\} - \sin\left\{\left(\varphi_S(\omega) - \varphi_R\right)\right\}\right]$$

Thus, note that the ***RMS*** output signal amplitude is: $V_{o_{RMS}}^{Sig}(\omega) \equiv \tfrac{1}{\sqrt{2}} V_o^{Sig}(\omega)$

Thus, the two *PSD* ***product*** signals can be expressed in terms of their ***RMS*** amplitudes as:

$$V^{PSD_X}(\omega,t) \equiv V^{Sig}(\omega,t) \otimes V^{Ref}(\omega,t)$$
$$= V_{o_{RMS}}^{Sig}(\omega)\left[\cos\left\{2\omega t + \left(\varphi_S(\omega) + \varphi_R\right)\right\} + \cos\left\{\left(\varphi_S(\omega) - \varphi_R\right)\right\}\right]$$

and:

$$V^{PSD_Y}(\omega,t) \equiv V^{Sig}(\omega,t) \otimes V_{\pi/2}^{Ref}(\omega,t)$$
$$= -V_{o_{RMS}}^{Sig}(\omega)\left[\sin\left\{2\omega t + \left(\varphi_S(\omega) + \varphi_R\right)\right\} - \sin\left\{\left(\varphi_S(\omega) - \varphi_R\right)\right\}\right]$$