Optical Hybrid

April 9, 2017

This block simulates an optical hybrid. It accepts two input signals corresponding to the signal and to the local oscillator. It generates four output complex signals separated by 90° in the complex plane. Figure 1 shows a schematic representation of this block.
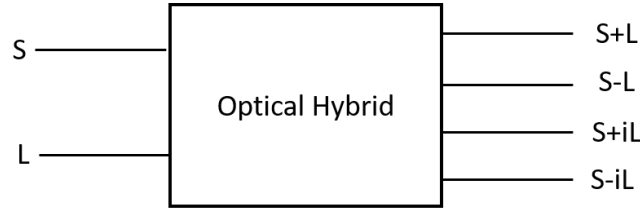

Figure 1: Schematic representation of an optical hybrid

Input Parameters

- outputOpticalPower{ 1e-3 }

- outputOpticalWavelength{ 1550e-9 }

- outputOpticalFrequency{ SPEED_OF_LIGHT / wavelength }

- powerFactor{0.5}

Methods

OpticalHybrid()

OpticalHybrid(vector<Signal *> &InputSig, vector<Signal *> &OutputSig) :Block(InputSig, OutputSig)

void initialize(void)

bool runBlock(void)

void setOutputOpticalPower(double outOpticalPower)

void setOutputOpticalPower_dBm(double outOpticalPower_dBm)

void setOutputOpticalWavelength(double outOpticalWavelength)

void setOutputOpticalFrequency(double outOpticalFrequency)

void setPowerFactor(double pFactor)

Functional description

This block accepts two input signals corresponding to the signal to be demodulated (S) and to the local oscillator (L). It generates four output optical signals given by $powerFactor \times (S + L)$, $powerFactor \times (S - L)$, $powerFactor \times (S + iL)$, $powerFactor \times (S - iL)$. The input parameter $powerFactor$ assures the conservation of optical power.

Input Signals

Number: 2

Type: Optical (OpticalSignal)

Output Signals

Number: 4

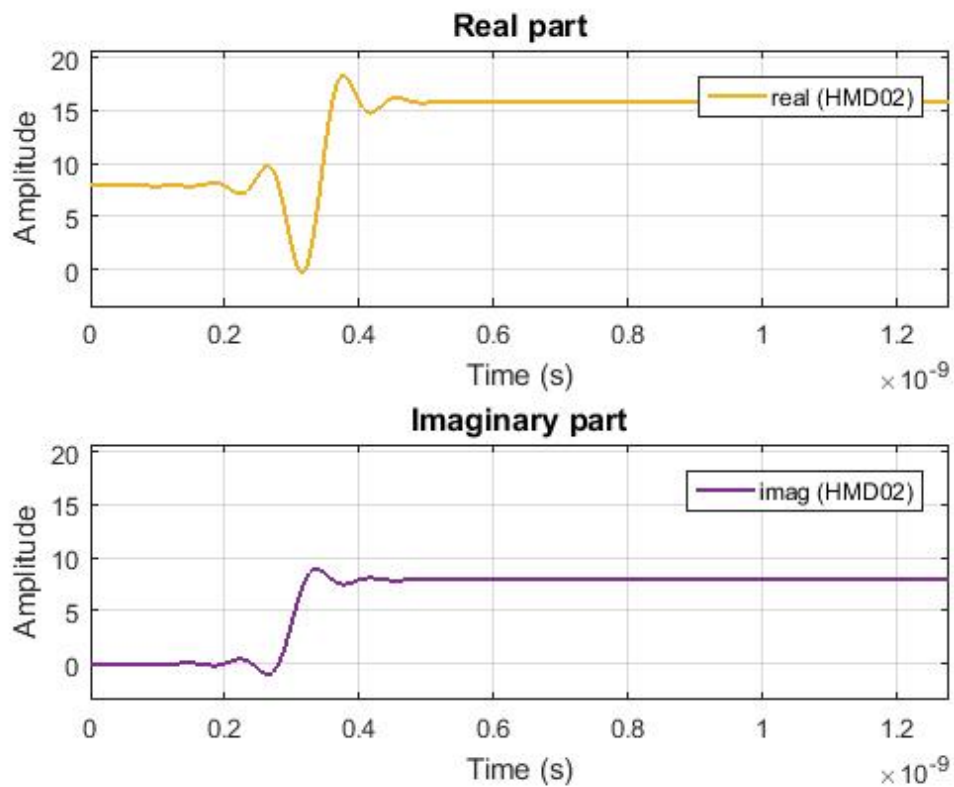**Type:** Optical (OpticalSignal)

Examples

Figure 2: Example of one of the output signals of this block for a binary sequence 01

Sugestions for future improvement