M-QAM Mapper

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This block does the mapping of the binary signal using a m-QAM modulation. It accepts one input signal of the binary type and it produces two output signals which are a sequence of 1's and -1's.

Input Parameters

- m{4}
  (m should be of the form 2^n with n integer)

- iqAmplitudes{{ 1.0,   1.0 }, { -1.0,   1.0 }, { -1.0,   -1.0 }, { 1.0,   -1.0 }}

Methods

MQamMapper(vector<Signal *> &InputSig, vector<Signal *> &OutputSig) :Block(InputSig, OutputSig) {};

  void initialize(void);

  bool runBlock(void);

  void setM(int mValue);

  void setIqAmplitudes(vector<t_iqValues> iqAmplitudesValues);

Functional Description

In the case of m=4 this block atributes to each pair of bits a point in the I-Q space. The constellation used is defined by the *iqAmplitudes* vector. The constellation used in this case is ilustrated in figure 1.

Input Signals

Number : 1

Type : Binary (DiscreteTimeDiscreteAmplitude)

Output Signals

Number : 2

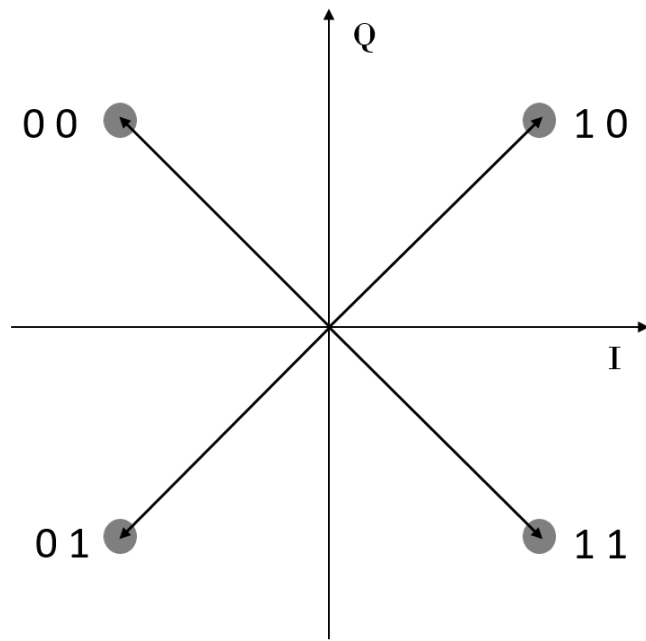**Type** : Sequence of 1's and -1's (DiscreteTimeDiscreteAmplitude)

Example

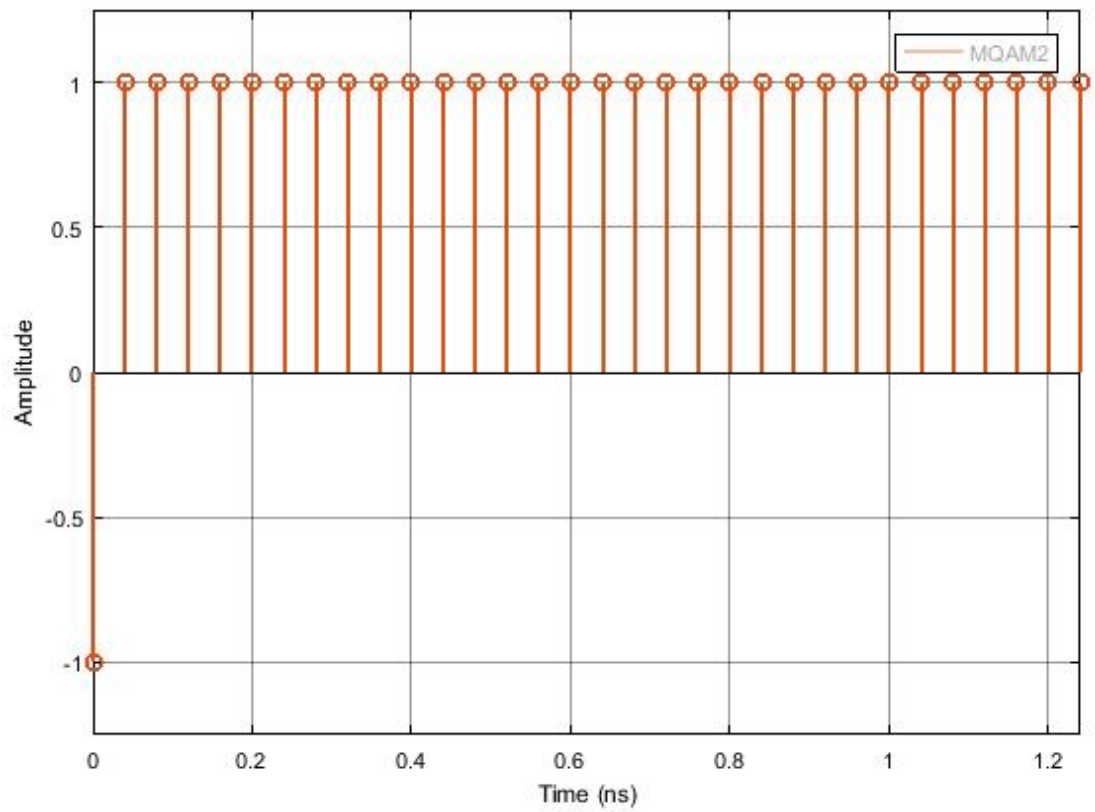Figure 1: Constellation used to map the signal for m=4

Figure 2: Example of the type of signal generated by this block for the initial binary signal 0100...