

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 attributes 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 illustrated in figure 1.

Input Signals

Number : 1

Type : Binary (DiscreteTimeDiscreteAmplitude)

Output Signals

Number : 2

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

Example

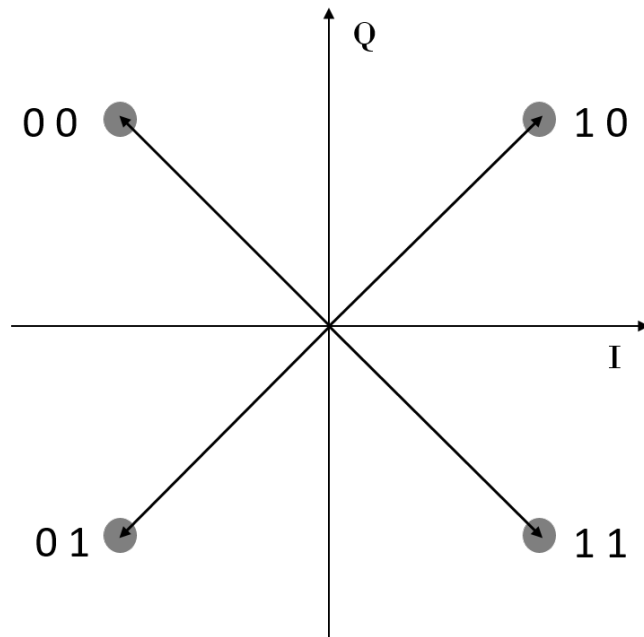


Figure 1: Constellation used to map the signal for m=4

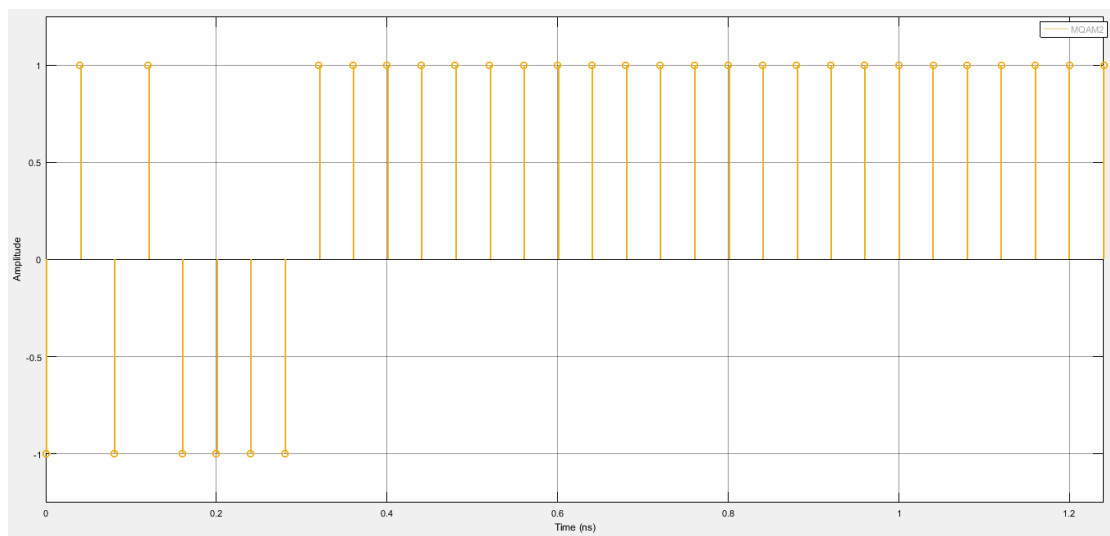


Figure 2: Example of the type of signal generated by this block for the initial binary signal "0100011101010101"