

General Description

This IP cell presents a model for an air interface between an RFID Reader and a Tag at an operating frequency of 13,56 MHz. It provides a model for designing HF RFID circuits.

This cell can be used to simulate the magnetic field strength at the tag from 80mA/m to 5 A/m and can modulate the amplitude up to 100%. Following parameters serve as input parameters: radius of tag and reader antenna and number of turns, distance between reader and tag.

The model consists of three parts. First part is the Reader model which consists of a sine wave current source with a frequency of 13,56MHz and an input to modulate the amplitude of this signal. The second part is the air interface. The last part is the tag which is realized by a resonant circuit.

Ratings, Parameters and Condition

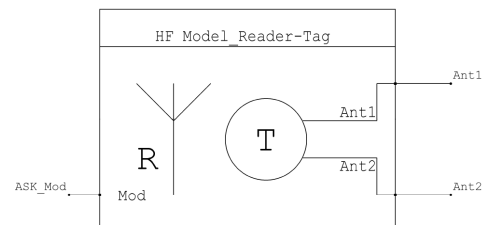
Parameter	Symbol	Min	Typ	Max	Unit	Comment
distance	d	0		0,5	m	Between Tag and Reader
Magnetic field intensity	H_T	0,08		5	A/m	at Tag
Antenna voltage	V_{ANT}	4		240	V	Peak voltage, steady state
Modulation signal (ASK)	Mod	0		1	-	0..100%
Additional Parameters Reader/Tag						
Radius Tag	r_{Tag}		3,4		cm	
Turns Tag	n_{Tag}		4		-	ISO 10373-7
Radius Reader	r_{Reader}		200		cm	
Turns Reader	n_{Reader}		1		-	
Resistance (Tag)	R_{Tag}		1		Ohm	ISO 10373-7
Inductance (Tag)	L_{Tag}		3,5		uH	ISO 10373-7
Inductance (Reader)	L_{Reader}		0,12		uH	

*.. higher voltage possible (adaption of tag resonant circuit)

IO-Description

Interface	I/O	Function	Comment
ANT1	Input	Antenna	Signal
ANT2	Input	Antenna	Signal
Mod	Input	ASK Modulation	1 = 100%

Symbol / external schematic



Dieses Projekt wird mit Mitteln des Europäischen Sozialfonds (ESF) gefördert. Es erzeugt einen gemeinschaftlichen Mehrwert „Investition in Ihre Zukunft“.