# B22-3730 RFID/NFC Module Antenna

Antenna principle:

The overall functionality can be separated into three basic functions:

1. Transmit power: The radiated magnetic field has to be maximized considering the radiation and datasheet limits, especially the limits for the radiation of the harmonics (up to 1GHz).

2. Transmit data: The 10% or 100% ASK modulated data signal has to be transmitted in such way, that every card is able to receive it. The signal shape and timing (i.e. the Q-factor) has to be considered.

3. Receive data: The cards answer has to be delivered to the receive input of the Micore.

## Schematic of a directly matched antenna:
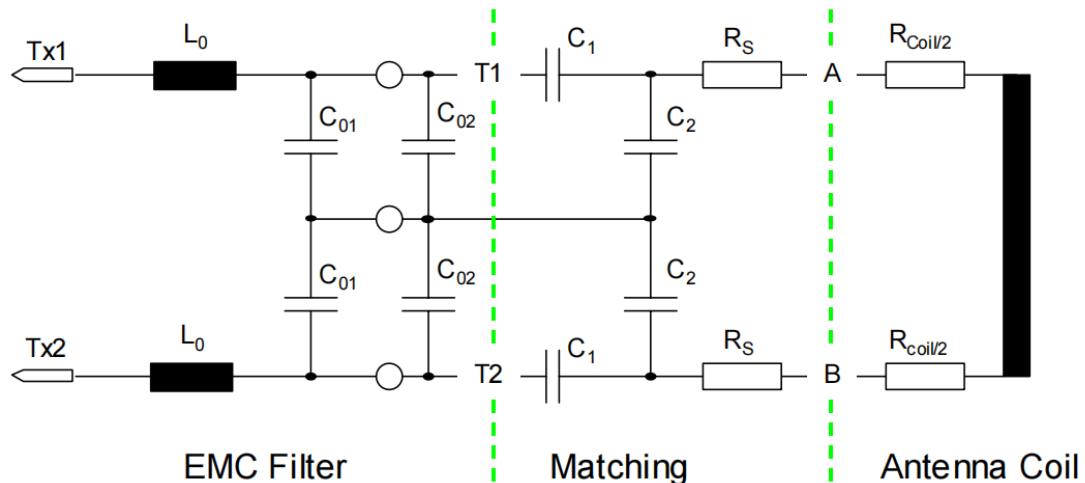
L0 = 470nH
C01+C02 = 120pf
C1 = 47pf
C2 = 120pf+27pf
Rs = 2R

Antenna coil :

Antenna coil View:
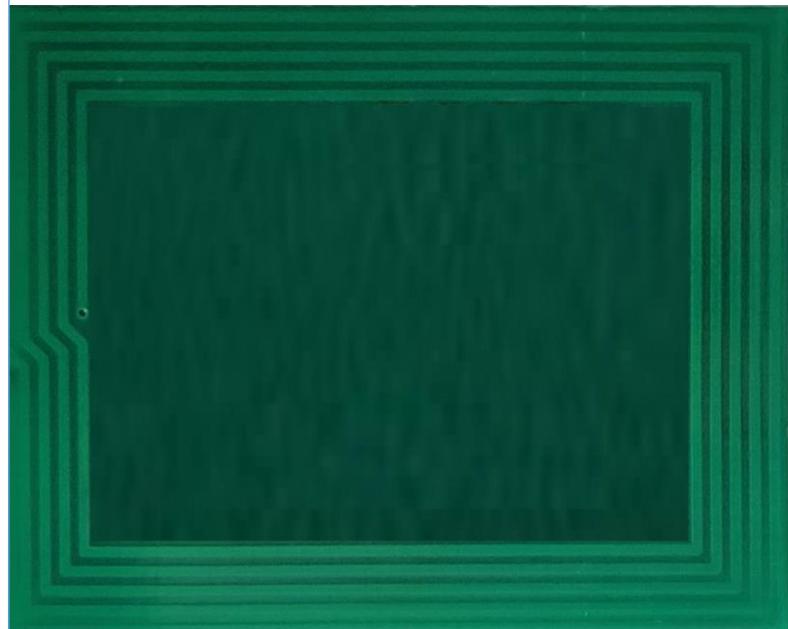
Antenna coil SIZE:35.5*28.7mm
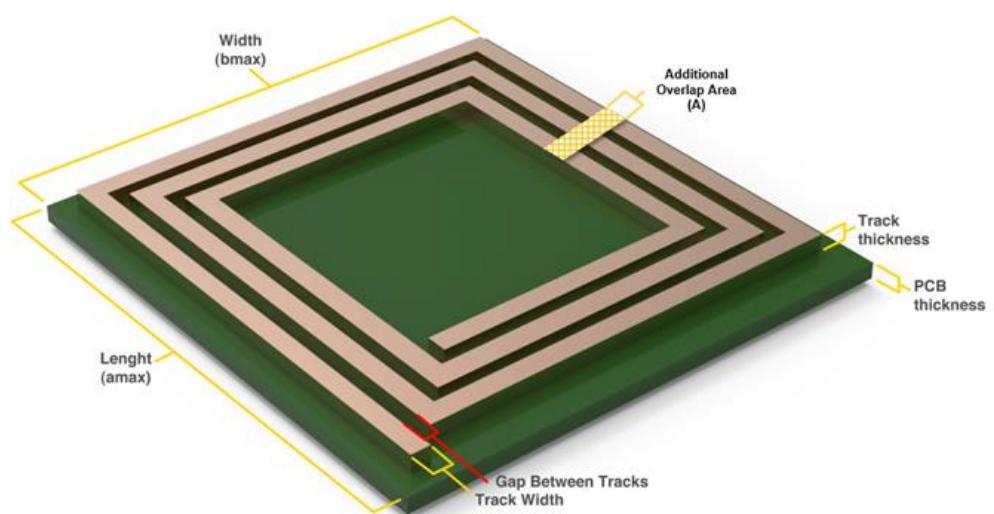
Antenna coil calculation:

Lenght (amax)	35.5	mm
Width (bmax)	28.7	mm
Track width (w)	500	µm
Gap between tracks (g)	380	µm
Additional Overlap area (A)	0	mm^2
Track Thickness	35	µm
Number of turns (N)	5	
Turn Exponent (E)	1.66	
PCB Thickness	1	mm
εr	4.3	

Inductance (Lant)	1484	nH
Overal capacitance (Cant)	1.7	pF
Overal resistance (Rant)	1.29	Ω
Self resonance frequency (fres)	99.581	MHz

Antenna measure（view from TX1 and TX2）:

	频率(Hz)	RL (dB)	RP (°)	|Z| (Ω)	Rs (Ω)	Xs (Ω)	Theta	SWR
M								
1	13,825,152	-13.19	103.51	45.3	41.4	18.5	24.1	1.56:1