

Supplementary Table 1

Supplementary Table 1. Summary of procedures for fabrications

Process		Purpose	Required time for 10 devices	Equipment	Progress level (%)
1	Preparation of photoresist coated glass	Sampling for transfer	1 hours	Clean room Spin-coater	10
2	Baking	Stabilization, remove solvent	0.5 hours	Clean room Hotplate	20
3	Photo lithography	Patterning for stretchable circuits	1 hours	Clean room Mask aligner	40
4	Photoresist development		0.5 hours	Clean room	50
5	Copper etching		1 hours	Clean room	60
6	Baking	Stabilization, remove solvent	0.5 hours	Clean room Hotplate	65
7	Components transfer	Active components integration	5 hours	Soldering Iron Microscope	80
8	PDMS encapsulation	System packaging	10 hours	Vacuum oven	100

Supplementary Table 2

Supplementary Table 2. Summary of customized TX antenna specification

Cage image		Cage dimension*	Distance of top & bottom coils	Antenna dimension*		Inductance of Antenna		Required capacitance	
				Top**	Bottom***	Top**	Bottom***	Top**	Bottom***
1		20 x 30 x 13	8 cm	19 x 29	16 x 25	660 nH	670 nH	120 pF	167 pF
2		20 x 38 x 16	12 cm	20 x 37	16 x 29	780 nH	780 nH	102 pF	147 pF
3		34x 39 x 21	6 cm	34 x 36	29 x 29	940 nH	1.00 µH	85 pF	110 pF
4		Inner box 18 x 18 x 30 Outer box 41 x 41 x 30	14 cm	18 x 18	16 x 16	485 nH	580 nH	164 pF	189 pF
5		40 x 40 x 30	3 cm	41 x 41	37 x 37	1.04 µH	1.42 µH	74 pF	79 pF
6		28 x 28 x 30	5 cm	30 x 30	26 x 26	760 nH	1.23 µH	100 pF	92 pF

All values are ±5% tolerance.

*dimension: (width) x (length) x (height) or (width) x (length); unit: cm

**Top coil material: Copper stripes (2.54 cm wide; 0.635 mm thick)

***Bottom coil material: 8-Gauge bare copper wire