Table S1 Previous studies have reported the MA performance and nanoparticle size of $ZnFe_2O_4$@C-based absorbers

Maximum RL (dB)	Thickness(mm)	Efficient bandwidth (GHz)	nanoparticle size	Reference
-37.8	2.0	3.5	200-300nm	[26]
-40.7	2.5	3.7	10-20nm	[27]
-37.1	1.4	3.8	~280nm	[28]
-29.9	1.3	4.0	~500-700nm	[29]
--31.9	4.8	6.7	200-400nm	[30]
-28.8	2.0	5.9	~10μm	[31]
-46.2	2.0	2.6	~4nm	This work

Table S2 Impedance matching characteristic for $ZnFe_2O_4$ and $ZnFe_2O_4$@SiO_2