

Table 1. Anatomic human models used in this paper. The tissues used in the models are a set of those listed in Table 2.

Model	gender	age (year)	weight (kg)	height (m)	Head maximum axis (mm)	Number of tissues used in the model
Hugo	Male	38	-	1.87	270	32
Duke	Male	34	72.4	1.77	242	77
Ella	Female	26	58.7	1.63	214	76
Billie	Female	11	35.4	1.47	194	75
Dizzy	Male	8	26.0	1.40	200	66
Thelonius	Male	6	19.3	1.17	186	76
Roberta	Female	5	17.8	1.09	180	66

Table 2. An overview of the human tissues with their correspondent dielectric properties (permittivity and electrical conductivity) at 298 MHz. More details can be found in [Gabriel et al., 1996; Hasgall et al., 2013].

Tissue	Permittivity	Elec. Cond. (S/m)	Tissue	Permittivity	Elec. Cond. (S/m)
Adrenal Gland	62.4717	0.8507	Larynx	46.8079	0.5518
Air	1.0000	0	Liver	53.5713	0.6089
Bile	74.9470	1.6690	Lung	24.7978	0.3560
Blood	65.6889	1.3155	Lung (Deflated)	56.2308	0.6482
Blood Vessel Wall	48.3569	0.5365	Lung (Inflated)	24.7978	0.3560
Bone	13.4463	0.0825	Lymphnode	62.4717	0.8507
Bone (Cancellous)	23.1810	0.2152	Mandible	13.4463	0.0825
Bone (Cortical)	13.4463	0.0825	Medulla Oblongata	59.8188	0.9720
Bone Marrow (Red)	12.1392	0.1747	Meniscus	46.8079	0.5518
Bone Marrow (Yellow)	5.7608	0.0278	Midbrain	59.8188	0.9720
Brain	59.8188	0.9720	Mucous Membrane	58.2291	0.7700
Brain (Grey Matter)	60.0902	0.6914	Muscle	58.2291	0.7700
Brain (White Matter)	43.8209	0.4127	Nerve	36.9512	0.4178
Breast Fat	5.5425	0.0327	Ovary	61.3970	0.9447
Breast Gland	62.4717	0.8507	Pancreas	62.4717	0.8507
Bronchi	45.3354	0.6104	Patella	13.4463	0.0825
Bronchi lumen	1.0000	0	Penis	48.3569	0.5365
Cartilage	46.8079	0.5518	Pharynx	1.0000	0
Cerebellum	59.8188	0.9720	Pineal Body	62.4717	0.8507
Cerebrospinal Fluid	72.7841	2.2239	Placenta	65.6889	1.3155
Cervix	52.5984	0.7988	Pons	59.8188	0.9720
Commissura Anterior	43.8209	0.4127	Prostate	64.8751	0.9931
Commissura Posterior	43.8209	0.4127	Salivary Gland	62.4717	0.8507
Connective Tissue	48.0008	0.5366	SAT (Subcutaneous Fat)	11.7482	0.0764
Diaphragm	58.2291	0.7700	Seminal vesicle	64.8751	0.9931
Ductus Deferens	48.3569	0.5365	Skin	49.9015	0.6404
Dura	47.9910	0.8031	Skull	13.4463	0.0825
Epididymis	64.8751	0.9931	Small Intestine	69.8628	1.8393
Esophagus	68.7433	0.9714	Small Intestine Lumen	58.2291	0.7700
Esophagus Lumen	1.0000	0	Spinal Cord	36.9512	0.4178
Eye (Cornea)	61.4307	1.1500	Spleen	66.5770	0.9679
Eye (Lens)	38.3800	0.3526	Stomach	68.7433	0.9714
Eye (Sclera)	58.9339	0.9748	Stomach Lumen	58.2291	0.7700
Eye (Vitreous Humor)	69.0169	1.5175	Tendon\Ligament	48.0008	0.5366
Eye Lens (Cortex)	48.9723	0.6474	Testis	64.8751	0.9931
Eye Lens (Nucleus)	38.3800	0.3526	Thalamus	60.0902	0.6914
Fat	11.7482	0.0764	Thymus	62.4717	0.8507
Fat (Average Infiltrated)	11.7482	0.0764	Thyroid Gland	62.4717	0.8507
Fat (Not Infiltrated)	5.6354	0.0395	Tongue	58.9339	0.7443
Gallbladder	62.9668	1.1165	Tooth	13.4463	0.0825
Heart Lumen	65.6889	1.3155	Tooth (Dentine)	13.4463	0.0825
Heart Muscle	69.3907	0.9029	Tooth (Enamel)	13.4463	0.0825
Hippocampus	60.0902	0.6914	Trachea	45.3354	0.6104
Hypophysis	62.4717	0.8507	Trachea Lumen	1.0000	0
Hypothalamus	62.4717	0.8507	Ureter\Urethra	48.3569	0.5365
Intervertebral Disc	46.8079	0.5518	Urinary Bladder	20.1029	0.3166
Kidney	70.5905	1.0209	Urinary Bladder Wall	20.1029	0.3166
Kidney (Cortex)	70.5905	1.0209	Uterus	66.2878	1.0378
Kidney (Medulla)	70.5905	1.0209	Vagina	65.0740	0.8095
Large Intestine	65.0740	0.8095	Vertebrae	13.4463	0.0825
Large Intestine Lumen	58.2291	0.7700			

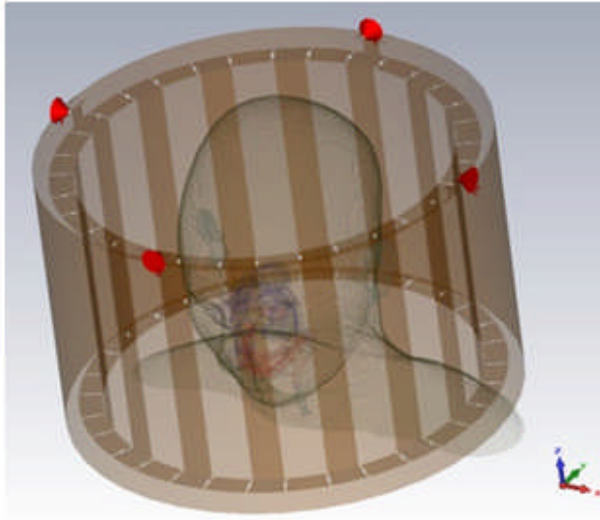
Table 3. B_1^+ [μT] and SAR [W/Kg] in anatomic human calf models

	avg(B_1^+)	max(SAR)	max(SAR) after scaling avg(B_1^+) to 1 μT
Hugo, M, 38 y	0.55	0.84	2.76
Duke, M, 34 y	0.65	1.03	2.43
Ella, F, 26 y	0.68	0.93	2.02
Billie, F, 11 y	1.04	1.29	1.19
Dizzy, M, 8 y	1.32	2.10	1.20
Thelonius, M, 6 y	1.37	1.89	1.01
Roberta, F, 5 y	1.46	1.72	0.80

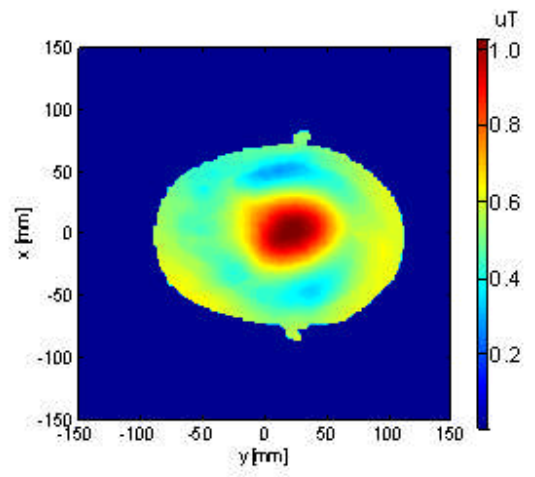
Table 4. B_1^+ [μT] and SAR [W/Kg] in anatomic human head models

	avg(B_1^+)	max(SAR)	max(SAR) after scaling avg(B_1^+) to 1 μT	max(SAR) for GRE sequence
Hugo, M, 38 y	0.52	0.51	1.88	1.13
Duke, M, 34 y	0.63	0.76	1.91	1.15
Ella, F, 26 y	0.56	0.62	2.00	1.21
Billie, F, 11 y	0.62	0.91	2.3	1.39
Dizzy, M, 8 y	0.63	0.86	2.12	1.28
Thelonius, M, 6 y	0.72	0.96	1.85	1.12
Roberta, F, 5 y	0.67	0.96	2.10	1.27

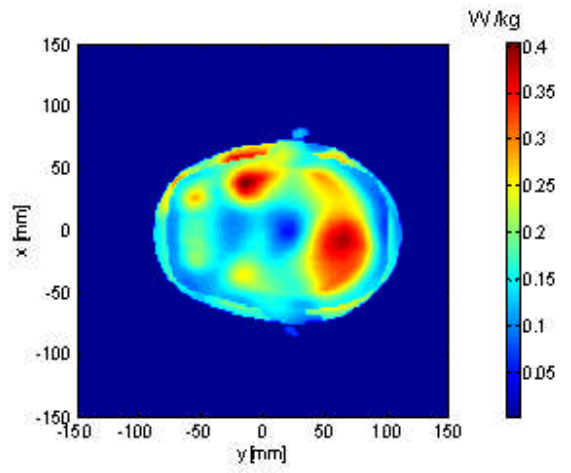
Figure 2



(a)

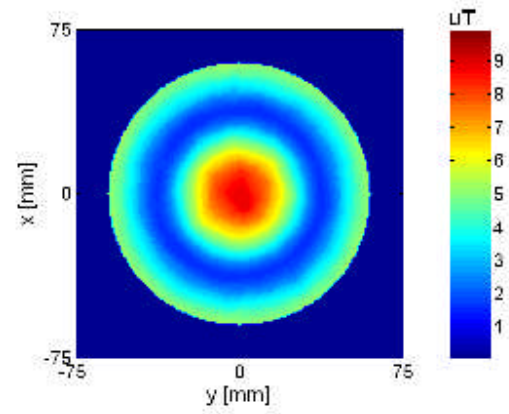
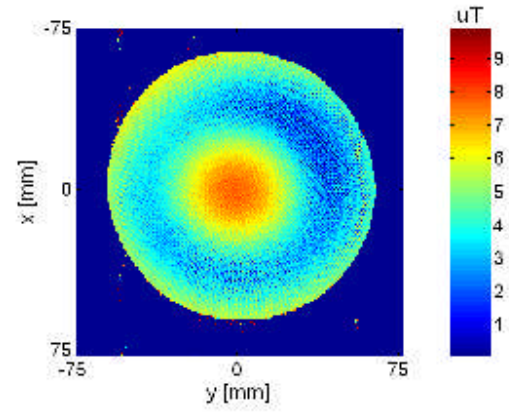
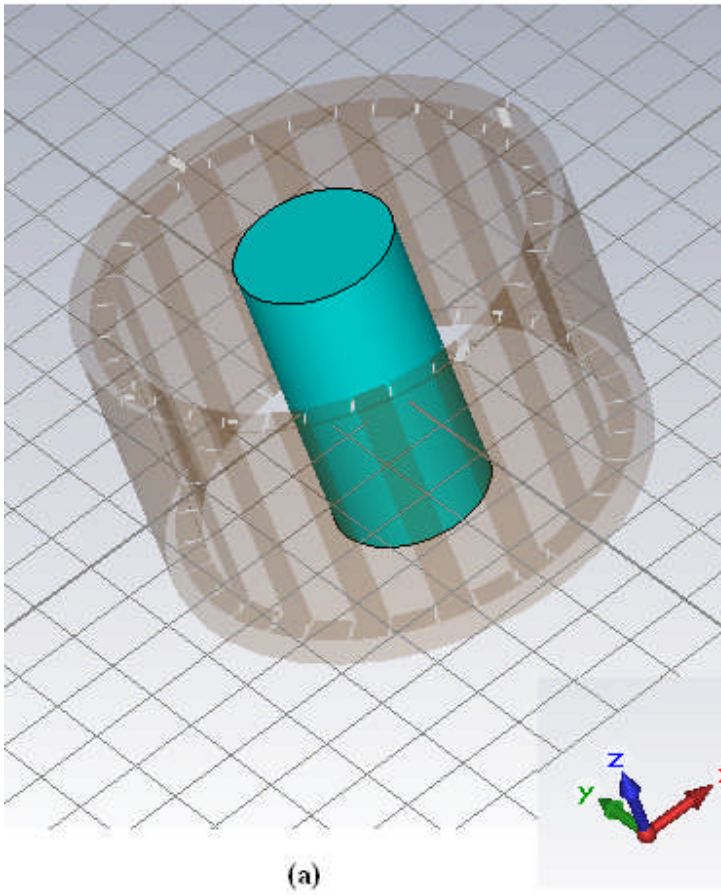


(b)



(c)

Figure 3



(a)

(b)

(c)