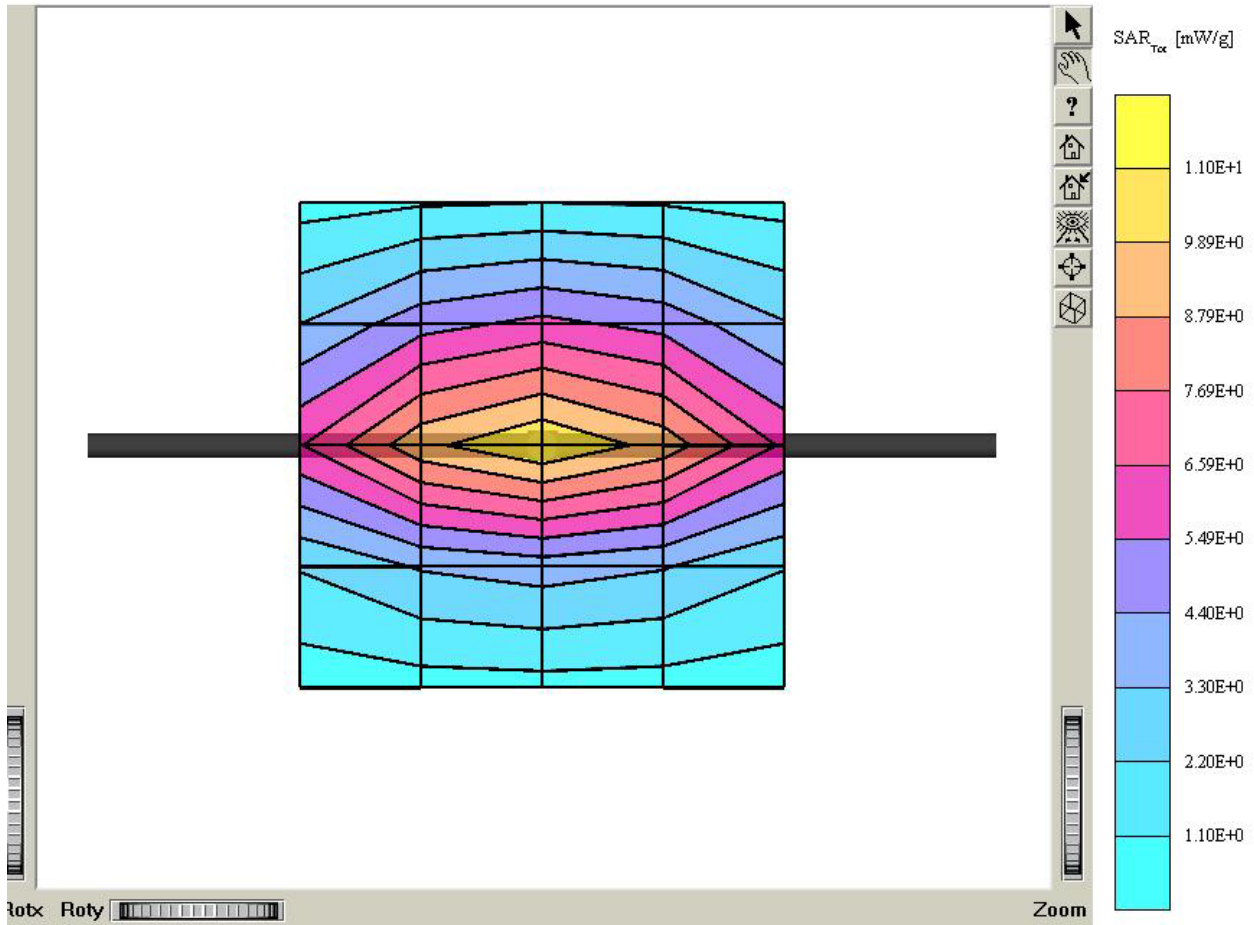


## ATTACHMENT Q – DIPOLE VALIDATION

## ■ Validation Data (835MHz Brain)

### Dipole 835 MHz

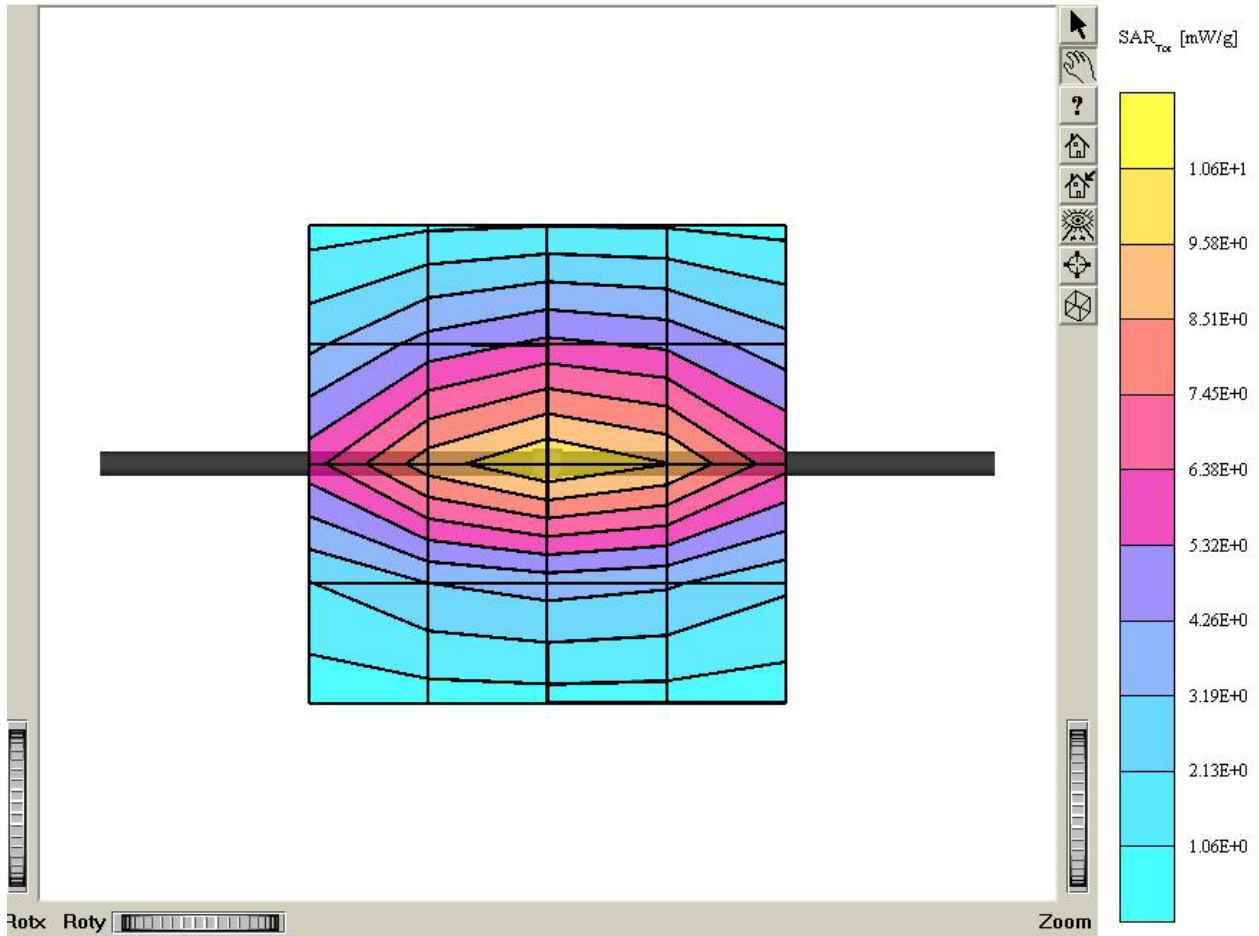
SAM 1 Phantom; Flat Section; Position: (90°,90°); Frequency: 835 MHz  
Probe: ET3DV6 - SN1609; ConvF(6.50,6.50,6.50); Crest factor: 1.0; Brain 835 MHz:  $s = 0.90 \text{ mho/m}$ ,  $\epsilon_r = 41.5$ ,  $r = 1.00 \text{ g/cm}^3$   
Cubes (2): SAR (1g):  $10.3 \text{ mW/g} \pm 0.01 \text{ dB}$ , SAR (10g):  $6.56 \text{ mW/g} \pm 0.01 \text{ dB}$   
Coarse:  $D_x = 20.0$ ,  $D_y = 20.0$ ,  $D_z = 10.0$   
Powerdrift: 0.02 dB  
Comment:  
835MHz Brain Dipole Validation (D835V2/ S.N: 441)  
Antenna Input Power: 30 dBm (1W)  
HCT Co., Ltd. Brain Tissue Simulating Liquid  
Liquid Temperature : 21.7°C  
Date Tested: February 4, 2003



## ■ Validation Data (835MHz Brain)

### Dipole 835 MHz

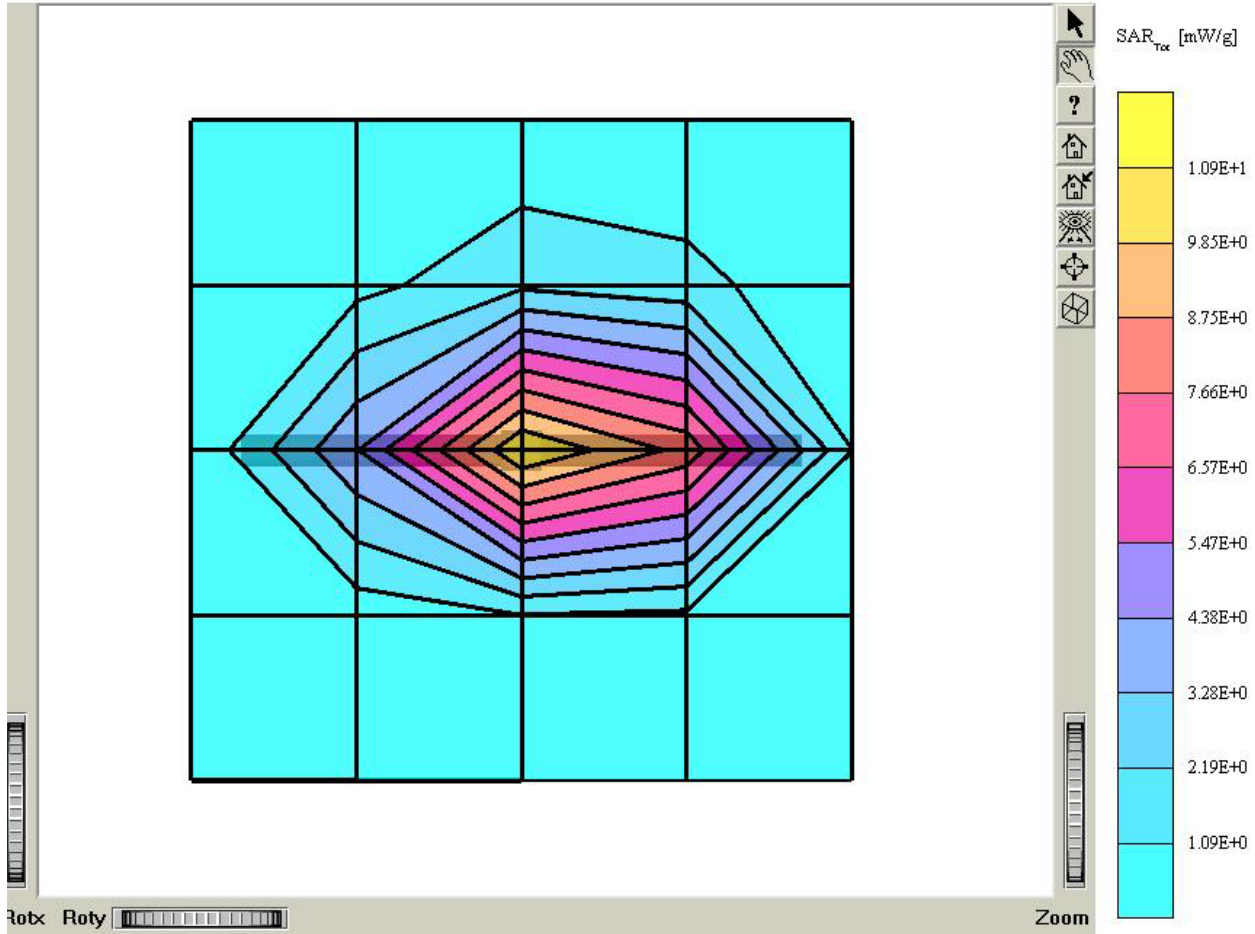
SAM 1 Phantom; Flat Section; Position: (90°,90°); Frequency: 835 MHz  
Probe: ET3DV6 - SN1609; ConvF(6.50,6.50,6.50); Crest factor: 1.0; Brain 835 MHz:  $s = 0.90$  mho/m  $\epsilon_r = 41.1$   $r = 1.00$  g/cm<sup>3</sup>  
Cubes (2): SAR (1g): 10.2 mW/g  $\pm 0.01$  dB, SAR (10g): 6.47 mW/g  $\pm 0.01$  dB  
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0  
: Powerdrift: 0.04 dB  
Comment:  
Antenna Input Power: 30 dBm (1W)  
HCT Co., Ltd. Brain Tissue Simulating Liquid  
Liquid Temperature : 21.4 °C  
Date Tested: February 5, 2003



## ■ Validation Data (1900MHz Brain)

### Dipole 1900 MHz

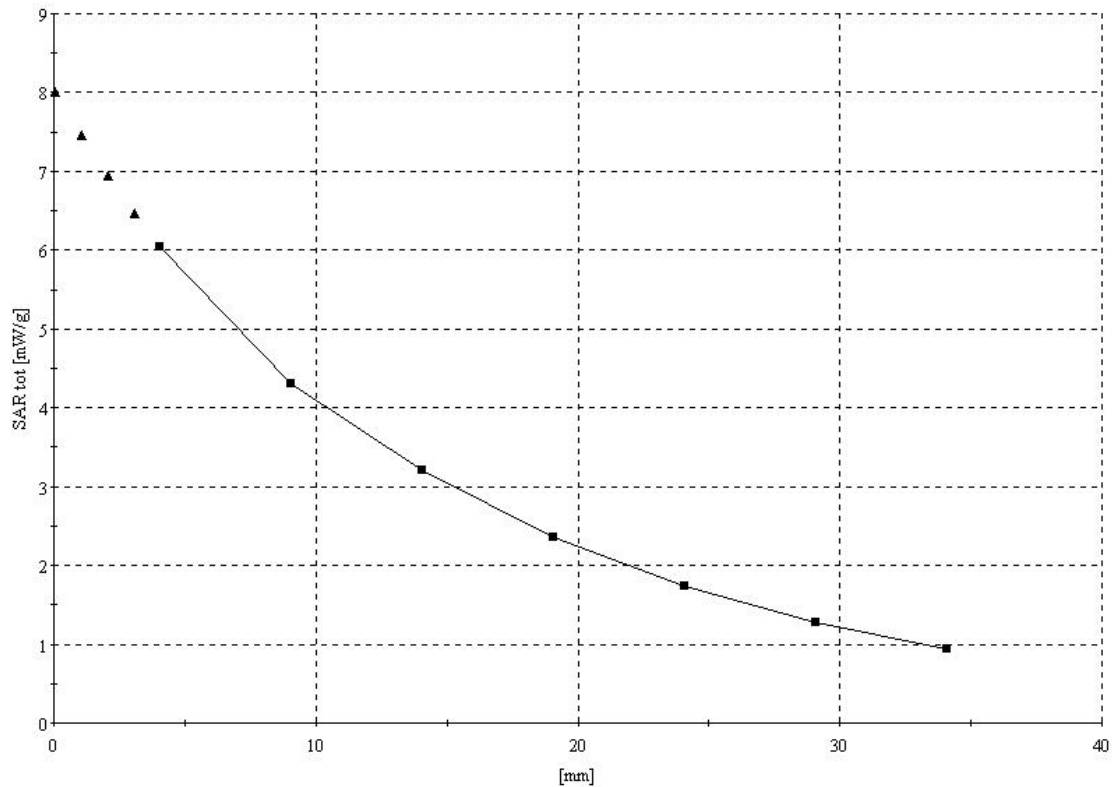
SAM II Phantom: Flat Section: Position: (90°,90°); Frequency: 1900 MHz  
Probe: ET3DV6 - SN1609; ConvF(5.40,5.40,5.40); Crest factor: 1.0; Brain 1900 MHz:  $s = 1.42 \text{ mho/m}$ ,  $\epsilon_r = 38.9$ ,  $\rho = 1.00 \text{ g/cm}^3$   
Cubes (2): SAR (1g):  $10.2 \text{ mW/g} \pm 0.01 \text{ dB}$ , SAR (10g):  $5.13 \text{ mW/g} \pm 0.00 \text{ dB}$   
Coarse:  $D_x = 20.0$ ,  $D_y = 20.0$ ,  $D_z = 10.0$   
: Powerdrift:  $-0.01 \text{ dB}$   
Comment:  
1900MHz Brain Dipole Validation (D1900V2/ S.N: 5d017)  
Antenna Input Power: 24dBm (0.25W)  
HCT Co., Ltd. Brain Tissue Simulating Liquid  
Liquid Temperature : 21.6 °C  
Date Tested: February 6, 2003



Dipole 835 MHz

SAM 1 Phantom: Flat Section; Position: (90°,90°); Frequency: 835 MHz  
Probe: ET3DV6 - SN1609; ConvF(6.50,6.50,6.50); Crest factor: 1.0; Brain 835 MHz:  $s = 0.90 \text{ mho/m}$ ,  $\rho = 41.5 \text{ g/cm}^3$   
Cubes (2): SAR (1g):  $10.3 \text{ mW/g} \pm 0.01 \text{ dB}$ , SAR (10g):  $6.56 \text{ mW/g} \pm 0.01 \text{ dB}$   
Cube 5x5x7:  $D_x = 8.0$ ,  $D_y = 8.0$ ,  $D_z = 5.0$

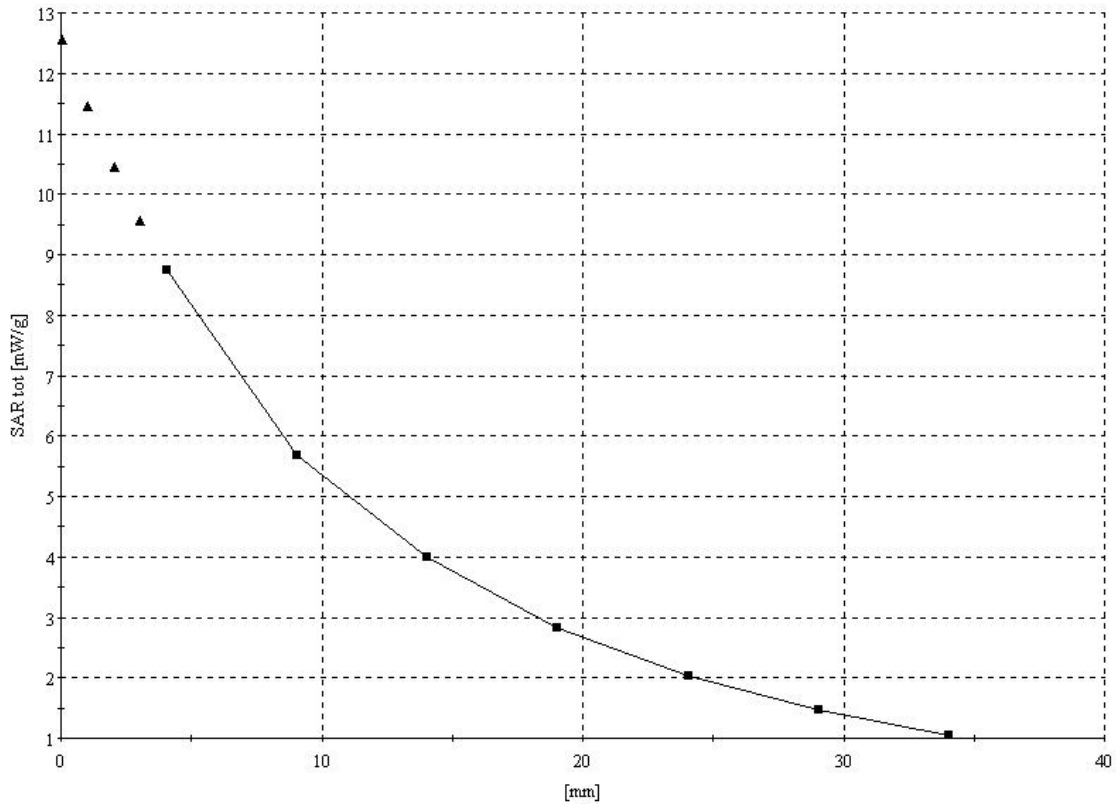
Comment:  
835MHz Brain Dipole Validation (D835V2/ S.N: 441)  
Antenna Input Power: 30 dBm (1W)  
HCT Co., Ltd. Brain Tissue Simulating Liquid  
Liquid Temperature : 21.7 °C  
Date Tested: February 4, 2003



Dipole 835 MHz

SAM 1 Phantom; Flat Section; Position: (90°, 90°); Frequency: 835 MHz  
Probe: ET3DV6 - SN1609; ConvF(6.50,6.50,6.50); Crest factor: 1.0; Brain 835 MHz:  $s = 0.90 \text{ mho/m}$ ,  $\epsilon_r = 41.1$ ,  $r = 1.00 \text{ g/cm}^3$   
Cubes (2): SAR (1g):  $10.2 \text{ mW/g} \pm 0.01 \text{ dB}$ , SAR (10g):  $6.47 \text{ mW/g} \pm 0.01 \text{ dB}$   
Cube 5x5x7:  $D_x = 8.0$ ,  $D_y = 8.0$ ,  $D_z = 5.0$

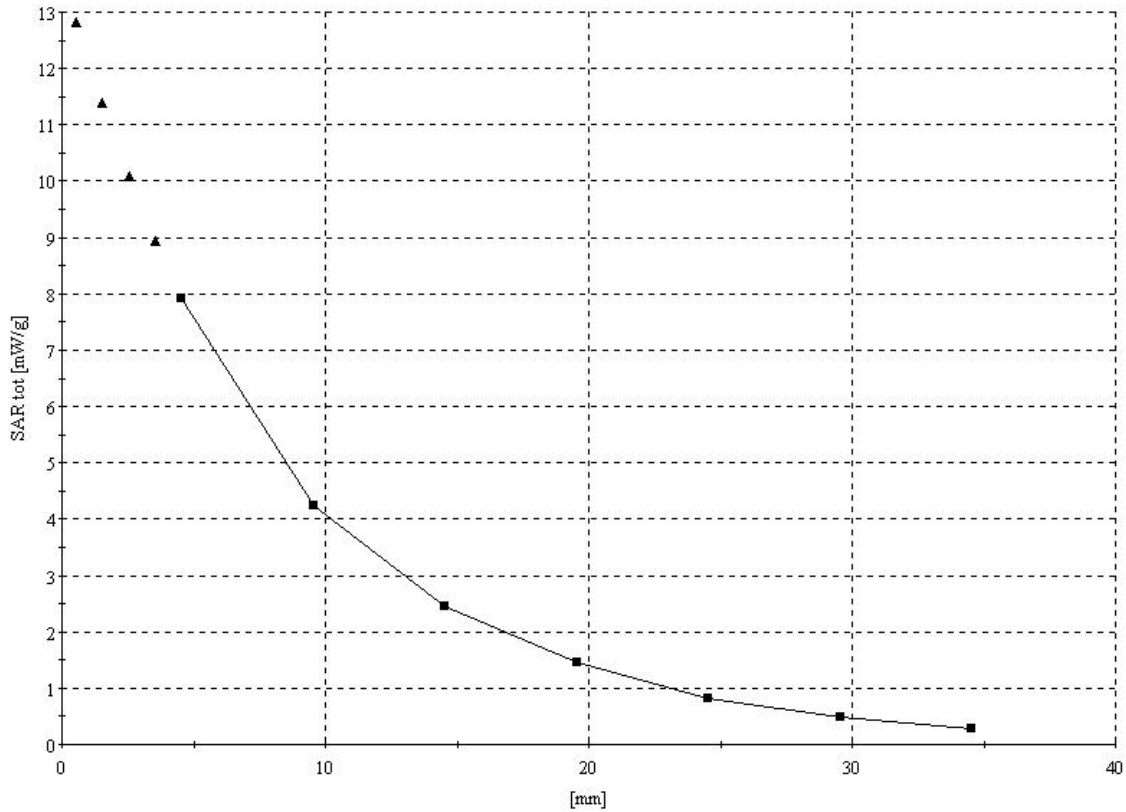
Comment:  
Antenna Input Power: 30 dBm (1W)  
HCT Co., Ltd. Brain Tissue Simulating Liquid  
Liquid Temperature : 21.4 °C  
Date Tested: February 5, 2003



Dipole 1900 MHz

SAM II Phantom: Flat Section; Position: (90°, 90°); Frequency: 1900 MHz  
Probe: ET3DV6 - SN1609; ConvF(5.40,5.40,5.40); Crest factor: 1.0; Brain 1900 MHz:  $s = 1.42 \text{ mho/m}$ ,  $\epsilon_r = 38.9$ ,  $r = 1.00 \text{ g/cm}^3$   
Cubes (2): SAR (1g):  $10.2 \text{ mW/g} \pm 0.01 \text{ dB}$ , SAR (10g):  $5.13 \text{ mW/g} \pm 0.00 \text{ dB}$   
Cube 5x5x7:  $D_x = 8.0$ ,  $D_y = 8.0$ ,  $D_z = 5.0$

Comment:  
1900MHz Brain Dipole Validation (D1900V2/ S.N: 5d017)  
Antenna Input Power: 24dBm (0.25W)  
HCT Co., Ltd. Brain Tissue Simulating Liquid  
Liquid Temperature : 21.6 °C  
Date Tested: February 6, 2003



■ Dielectric Parameter (835MHz Brain)

**Title: TX-60B**

**SubTitle: 835MHz Brain**

February 04, 2003 09:24 AM

Frequency	e'	e''
800.000000 MHz	41.7608	19.4784
805.000000 MHz	41.7127	19.4188
810.000000 MHz	41.6288	19.4235
815.000000 MHz	41.5716	19.4425
820.000000 MHz	41.5321	19.4246
825.000000 MHz	41.5250	19.3290
830.000000 MHz	41.4788	19.3401
<b>835.000000 MHz</b>	<b>41.5017</b>	<b>19.3688</b>
840.000000 MHz	41.4432	19.3674
845.000000 MHz	41.3664	19.3713
850.000000 MHz	41.3470	19.3903
855.000000 MHz	41.2190	19.3883
860.000000 MHz	41.1606	19.4081
865.000000 MHz	41.0329	19.3965
870.000000 MHz	40.9808	19.3944
875.000000 MHz	40.8666	19.3496
880.000000 MHz	40.7731	19.3197
885.000000 MHz	40.6274	19.3307
890.000000 MHz	40.5380	19.3059
895.000000 MHz	40.4465	19.2871
900.000000 MHz	40.4044	19.2643



■ Dielectric Parameter (835MHz Brain)**Title: TX-60B****SubTitle: 835MHz Brain**

February 05, 2003 08:56 AM

Frequency	e'	e''
800.000000 MHz	41.4837	19.3786
805.000000 MHz	41.4195	19.3355
810.000000 MHz	41.4228	19.3392
815.000000 MHz	41.2985	19.3453
820.000000 MHz	41.2698	19.3044
825.000000 MHz	41.1673	19.3212
830.000000 MHz	41.1252	19.3216
835.000000 MHz	41.0501	19.2945
840.000000 MHz	40.9663	19.2702
845.000000 MHz	40.9069	19.2917
850.000000 MHz	40.8431	19.2937
855.000000 MHz	40.7409	19.2654
860.000000 MHz	40.6983	19.2619
865.000000 MHz	40.6632	19.2463
870.000000 MHz	40.5846	19.2534
875.000000 MHz	40.5150	19.2176
880.000000 MHz	40.4911	19.2498
885.000000 MHz	40.4080	19.1785
890.000000 MHz	40.3506	19.2104
895.000000 MHz	40.3019	19.2000
900.000000 MHz	40.2433	19.1531

■ Dielectric Parameter (1900MHz Brain)

Title: TX-60B

SubTitle: 1900MHz Brain

February 06, 2003 09:14 AM

Frequency	e'	e''
1.700000000 GHz	39.5716	13.0607
1.710000000 GHz	39.7040	13.1673
1.720000000 GHz	39.8903	13.2626
1.730000000 GHz	40.0218	13.2881
1.740000000 GHz	40.1081	13.3198
1.750000000 GHz	40.0588	13.2361
1.760000000 GHz	39.9205	13.1417
1.770000000 GHz	39.7017	13.1001
1.780000000 GHz	39.4538	13.0777
1.790000000 GHz	39.2045	13.0943
1.800000000 GHz	39.0633	13.1716
1.810000000 GHz	39.0265	13.2894
1.820000000 GHz	39.0831	13.4291
1.830000000 GHz	39.2192	13.5528
1.840000000 GHz	39.3950	13.6595
1.850000000 GHz	39.5335	13.7178
1.860000000 GHz	39.6106	13.6951
1.870000000 GHz	39.5398	13.6564
1.880000000 GHz	39.4036	13.6026
1.890000000 GHz	39.1847	13.5102
1.900000000 GHz	38.9262	13.4834
1.910000000 GHz	38.7002	13.4763
1.920000000 GHz	38.5586	13.5584
1.930000000 GHz	38.4637	13.6557
1.940000000 GHz	38.5457	13.7847
1.950000000 GHz	38.6538	13.9197
1.960000000 GHz	38.8274	14.0258
1.970000000 GHz	38.9999	14.0867
1.980000000 GHz	39.0610	14.0924
1.990000000 GHz	39.0363	14.0251
2.000000000 GHz	38.8928	13.9320

■ Dielectric Parameter (835MHz Muscle)

**Title: TX-60B**

**SubTitle: 835MHz Body**

February 05, 2003 09:26 AM

Frequency	e'	e''
800.000000 MHz	55.2527	21.2106
805.000000 MHz	55.1293	21.1861
810.000000 MHz	55.0113	21.1715
815.000000 MHz	54.8215	21.1557
820.000000 MHz	54.6922	21.1916
825.000000 MHz	54.5531	21.1644
830.000000 MHz	54.4242	21.1899
835.000000 MHz	54.3678	21.1669
840.000000 MHz	54.3287	21.1874
845.000000 MHz	54.2901	21.1911
850.000000 MHz	54.2895	21.1914
855.000000 MHz	54.3318	21.2459
860.000000 MHz	54.3413	21.2686
865.000000 MHz	54.3738	21.2928
870.000000 MHz	54.4347	21.3053
875.000000 MHz	54.4233	21.3236
880.000000 MHz	54.4240	21.3155
885.000000 MHz	54.4539	21.2852
890.000000 MHz	54.4024	21.2760
895.000000 MHz	54.3613	21.2102
900.000000 MHz	54.2827	21.1809

## ■ Dielectric Parameter (1900MHz Muscle)

**Title: TX-60B****SubTitle: 1900MHz Body**

February 06, 2003 09:41 AM

Frequency	e'	e''
1.700000000 GHz	53.9452	14.2514
1.710000000 GHz	53.8889	14.3086
1.720000000 GHz	53.8763	14.3037
1.730000000 GHz	53.8526	14.3453
1.740000000 GHz	53.7959	14.3628
1.750000000 GHz	53.8045	14.3588
1.760000000 GHz	53.7601	14.4035
1.770000000 GHz	53.6953	14.4216
1.780000000 GHz	53.6656	14.4395
1.790000000 GHz	53.6252	14.4854
1.800000000 GHz	53.5782	14.5337
1.810000000 GHz	53.5412	14.5699
1.820000000 GHz	53.5032	14.6109
1.830000000 GHz	53.4788	14.6439
1.840000000 GHz	53.4643	14.6940
1.850000000 GHz	53.4341	14.6995
1.860000000 GHz	53.4375	14.7484
1.870000000 GHz	53.3859	14.8031
1.880000000 GHz	53.2979	14.8436
1.890000000 GHz	53.2525	14.8681
1.900000000 GHz	53.2126	14.8806
1.910000000 GHz	53.1810	14.9079
1.920000000 GHz	53.1274	14.9450
1.930000000 GHz	53.0833	14.9628
1.940000000 GHz	53.0589	14.9955
1.950000000 GHz	53.0415	15.0220
1.960000000 GHz	52.9664	15.0707
1.970000000 GHz	52.9660	15.1108
1.980000000 GHz	52.9555	15.1462
1.990000000 GHz	52.9578	15.1510
2.000000000 GHz	52.8988	15.2267