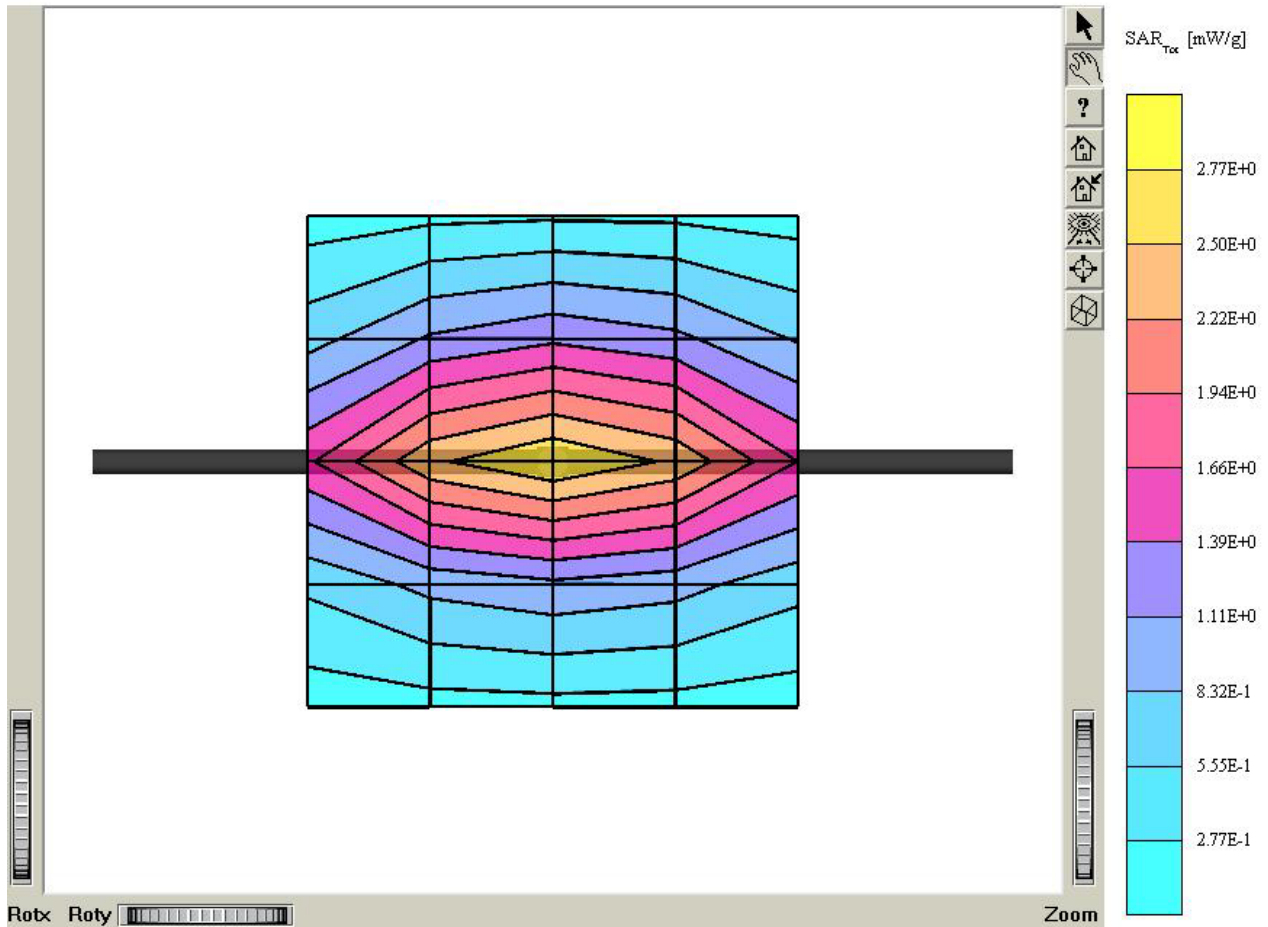


ATTACHMENT Q – DIPOLE VALIDATION

■ Validation Data (835MHz Brain)

Dipole 835 MHz

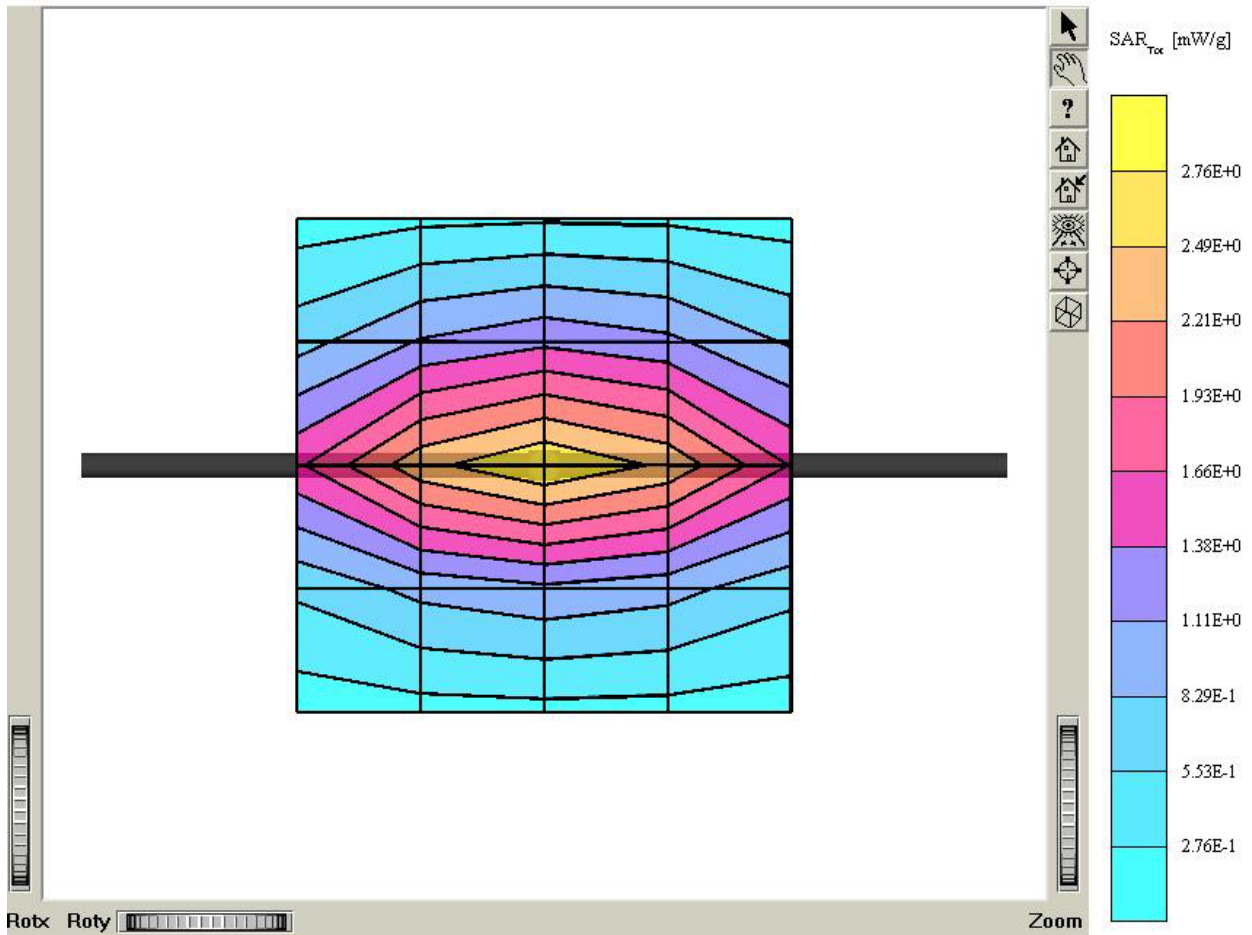
SAM 1 Phantom; Flat Section; Position: (90°, 90°); Frequency: 835 MHz
Probe: ET3DV6 - SN1609; ConvF(6.50,6.50,6.50); Crest factor: 1.0; Brain 835 MHz: $s = 0.90 \text{ mho/m}$, $\epsilon_r = 41.1$, $r = 1.00 \text{ g/cm}^3$
Cubes (2): SAR (1g): $2.58 \text{ mW/g} \pm 0.01 \text{ dB}$, SAR (10g): $1.63 \text{ mW/g} \pm 0.00 \text{ dB}$, Worst-case extrapolation
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: 24dBm (0.25W)
HCT Co., Ltd. Brain Tissue Simulating Liquid
Liquid Temperature : $22.1 \text{ }^\circ\text{C}$
Date Tested: November 5, 2002



■ Validation Data (835MHz Brain)

Dipole 835 MHz

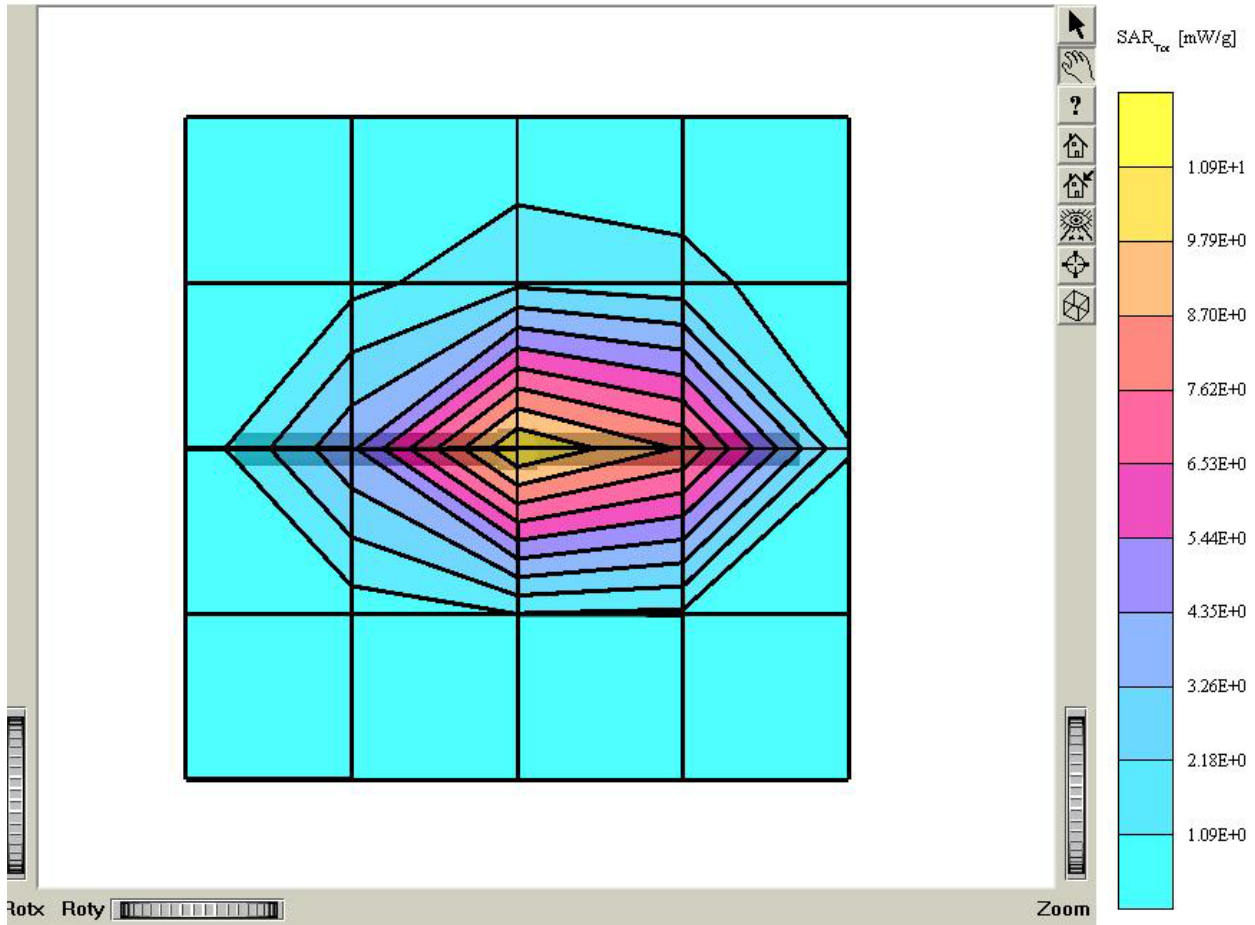
SAM 1 Phantom: Flat Section; Position: (90°,90°); Frequency: 835 MHz
Probe: ET3DV6 - SN1609; ConvF(6.50,6.50,6.50); Crest factor: 1.0; Brain 835 MHz: $s = 0.89 \text{ mho/m}$, $\epsilon_r = 41.0$, $\rho = 1.00 \text{ g/cm}^3$
Cubes (2): SAR (1g): $2.57 \text{ mW/g} \pm 0.01 \text{ dB}$, SAR (10g): $1.63 \text{ mW/g} \pm 0.00 \text{ dB}$, Worst-case extrapolation
Coarse: $D_x = 20.0$, $D_y = 20.0$, $D_z = 10.0$
: Powerdrift: 0.00 dB
Comment:
835MHz Brain Dipole Validation (D835V2/ S.N: 441)
Antenna Input Power: 24dBm (0.25W)
HCT Co., Ltd. Brain Tissue Simulating Liquid
Liquid Temperature : 22.5 °C
Date Tested: November 7, 2002



■ Validation Data (1900MHz Brain)

Dipole 1900 MHz

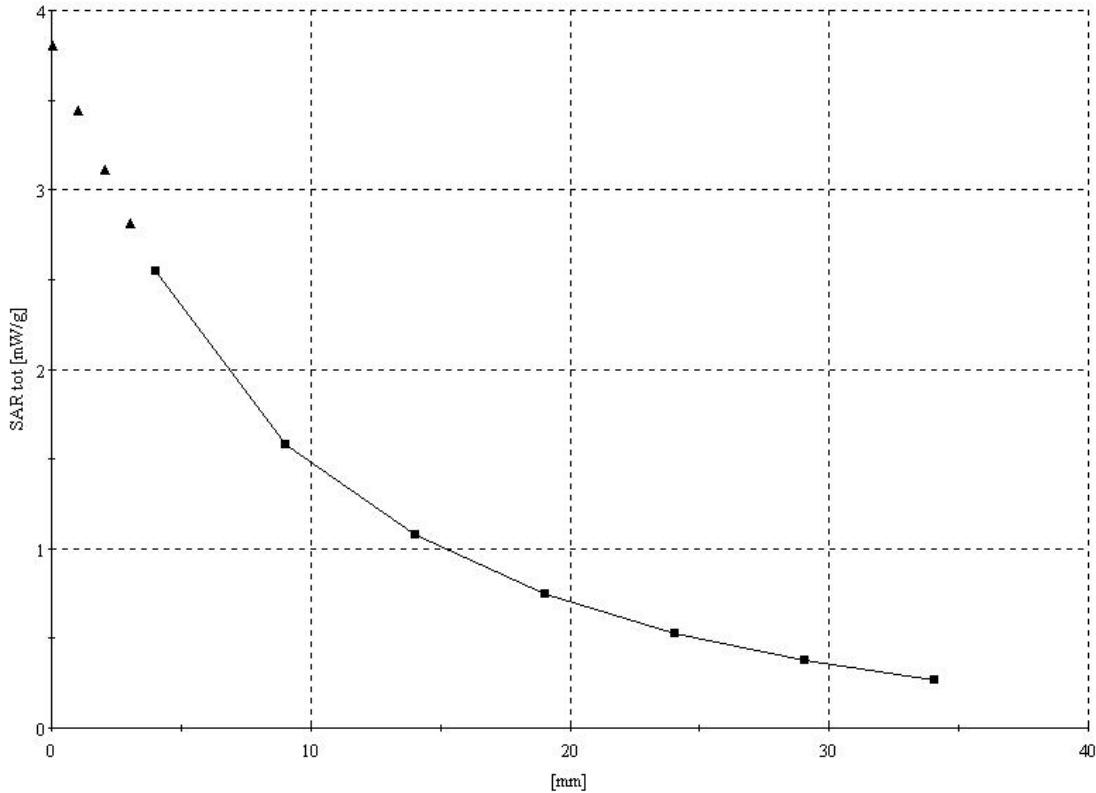
SAM II Phantom; Flat Section; Position: (90°,90°); Frequency: 1900 MHz
Probe: ET3DV6 - SN1609; ConvF(5.40,5.40,5.40); Crest factor: 1.0; Brain 1900 MHz: $s = 1.42 \text{ mho/m}$, $\rho = 38.8 \text{ g/cm}^3$
Cubes (2): SAR (1g): $10.2 \text{ mW/g} \pm 0.01 \text{ dB}$, SAR (10g): $5.14 \text{ mW/g} \pm 0.01 \text{ dB}$, Worst-case extrapolation
Coarse: $D_x = 20.0$, $D_y = 20.0$, $D_z = 10.0$
: Powerdrift: 0.01 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 : 22.3 °C
Date Tested: November 8, 2002



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/cm³
Cubes (2): SAR (1g): 2.58 mW/g ± 0.01 dB, SAR (10g): 1.63 mW/g ± 0.00 dB ,Worst-case extrapolation
Cube 5x5x7: Dx = 8.0, Dy = 8.0, Dz = 5.0

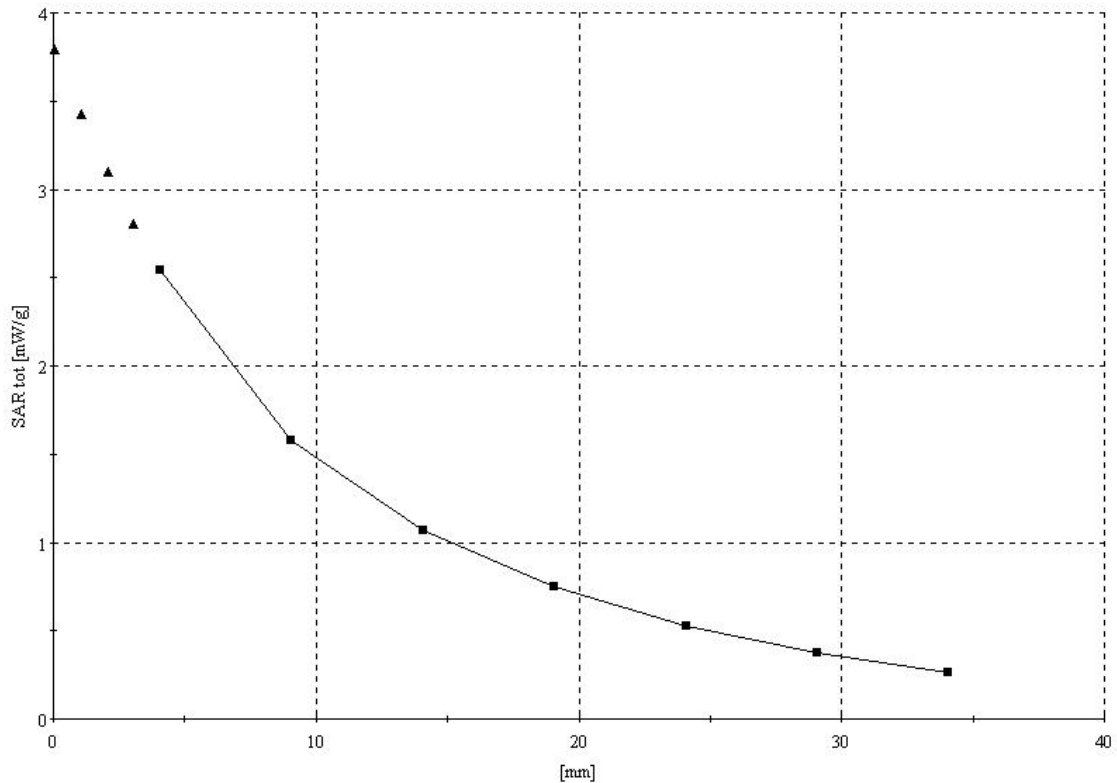
Comment:
835MHz Brain Dipole Validation (D835V2/ S.N: 441)
Antenna Input Power: 24dBm (0.25W)
HCT Co., Ltd. Brain Tissue Simulating Liquid
Liquid Temperature : 22.1 °C
Date Tested: November 5, 2002



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; $s = 0.89 \text{ mho/m}$, $\epsilon_r = 41.0$, $\rho = 1.00 \text{ g/cm}^3$
Cubes (2); SAR (1g): $2.57 \text{ mW/g} \pm 0.01 \text{ dB}$, SAR (10g): $1.63 \text{ mW/g} \pm 0.00 \text{ dB}$, Worst-case extrapolation
Cube 5x5x7; Dx = 8.0, Dy = 8.0, Dz = 5.0

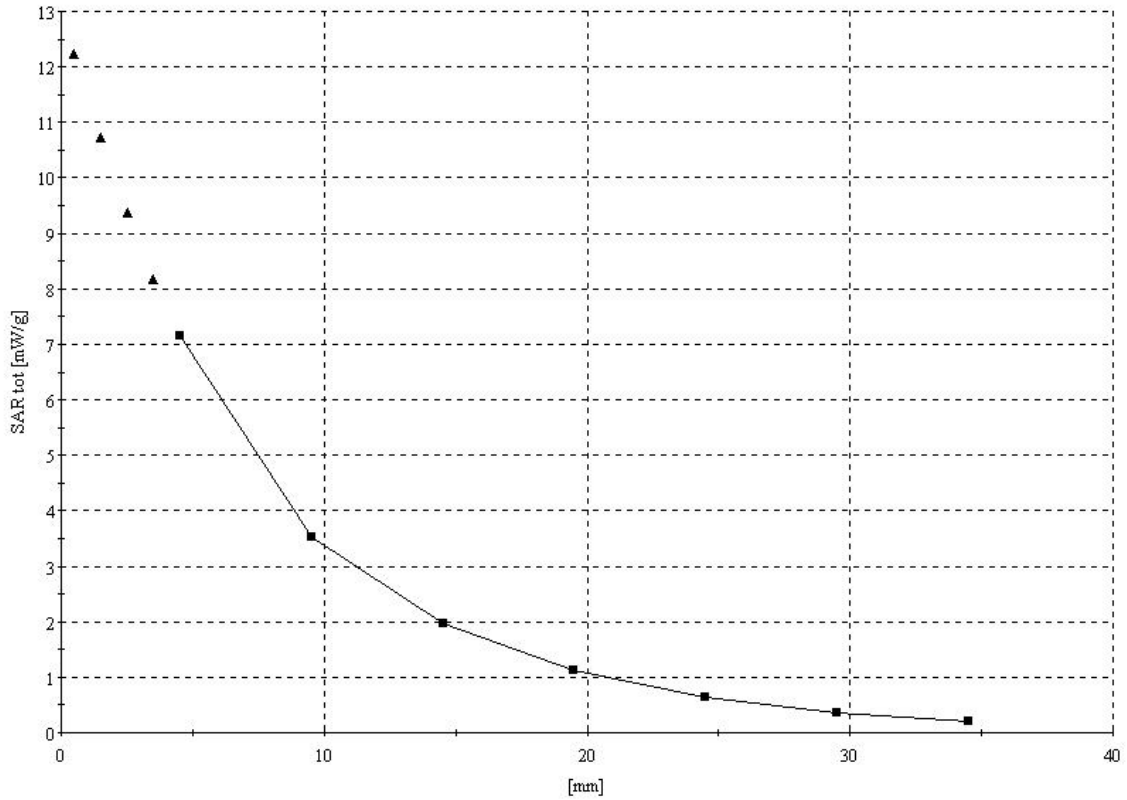
Comment:
835MHz Brain Dipole Validation (D835V2/ S.N: 441)
Antenna Input Power: 24dBm (0.25W)
HCT Co., Ltd. Brain Tissue Simulating Liquid
Liquid Temperature : 22.5 °C
Date Tested: November 7, 2002



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: $s = 1.42 \text{ mho/m}$, $e_r = 38.8$, $r = 1.00 \text{ g/cm}^3$
Cubes (2): SAR (1g): $10.2 \text{ mW/g} \pm 0.01 \text{ dB}$, SAR (10g): $5.14 \text{ mW/g} \pm 0.01 \text{ dB}$, Worst-case extrapolation
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 : 22.3 °C
Date Tested: November 8, 2002



■ Dielectric Parameter (835MHz Brain)

FCC ID: PP4TX-55C**SubTitle: 835MHz Brain (AMPS)**

November 05, 2002 08:14 AM

Frequency	e'	e''
750.000000 MHz	41.4385	19.4233
755.000000 MHz	41.1692	19.4066
760.000000 MHz	40.8075	19.4594
765.000000 MHz	40.4794	19.5381
770.000000 MHz	40.1845	19.5976
775.000000 MHz	39.9169	19.6173
780.000000 MHz	39.7908	19.7906
785.000000 MHz	39.6874	19.8688
790.000000 MHz	39.6553	19.9177
795.000000 MHz	39.7369	19.8935
800.000000 MHz	39.9202	19.8864
805.000000 MHz	40.0760	19.8201
810.000000 MHz	40.3368	19.7903
815.000000 MHz	40.4991	19.7205
820.000000 MHz	40.7055	19.6224
825.000000 MHz	40.9087	19.5402
830.000000 MHz	41.0522	19.4789
835.000000 MHz	41.0901	19.3254
840.000000 MHz	41.1603	19.2163
845.000000 MHz	41.0744	19.1098
850.000000 MHz	40.9908	19.0454
855.000000 MHz	40.7667	18.9906
860.000000 MHz	40.5058	18.9781
865.000000 MHz	40.2573	18.9633
870.000000 MHz	39.8334	18.9985
875.000000 MHz	39.5042	19.0685
880.000000 MHz	39.1887	19.1200
885.000000 MHz	38.8019	19.1716
890.000000 MHz	38.4383	19.2025
895.000000 MHz	38.2119	19.3050
900.000000 MHz	38.0788	19.4506

■ Dielectric Parameter (835MHz Brain)

FCC ID: PP4TX-55C**SubTitle: 835MHz Brain (CDMA)**

November 07, 2002 09:15 AM

Frequency	e'	e''
750.000000 MHz	41.3818	19.1514
755.000000 MHz	41.0620	19.1604
760.000000 MHz	40.6997	19.2092
765.000000 MHz	40.3671	19.3130
770.000000 MHz	40.0925	19.3632
775.000000 MHz	39.8307	19.4051
780.000000 MHz	39.6918	19.5274
785.000000 MHz	39.5758	19.6433
790.000000 MHz	39.6060	19.7217
795.000000 MHz	39.6874	19.6987
800.000000 MHz	39.8452	19.7209
805.000000 MHz	40.0212	19.6505
810.000000 MHz	40.2214	19.6376
815.000000 MHz	40.4592	19.5704
820.000000 MHz	40.6757	19.4918
825.000000 MHz	40.8137	19.3857
830.000000 MHz	41.0055	19.2701
835.000000 MHz	41.0036	19.2023
840.000000 MHz	41.0552	19.0262
845.000000 MHz	40.9998	18.9541
850.000000 MHz	40.9014	18.8741
855.000000 MHz	40.6888	18.7863
860.000000 MHz	40.4500	18.7791
865.000000 MHz	40.1950	18.7773
870.000000 MHz	39.8117	18.8123
875.000000 MHz	39.4336	18.8868
880.000000 MHz	39.0831	18.8838
885.000000 MHz	38.7279	18.9578
890.000000 MHz	38.3660	19.0835
895.000000 MHz	38.1314	19.1197
900.000000 MHz	37.9819	19.2411

■ Dielectric Parameter (1900MHz Brain)

FCC ID: PP4TX-55C

SubTitle: 1900MHz Brain

November 08, 2002 09:17 AM

Frequency	e'	e''
1.700000000 GHz	39.6634	12.9434
1.710000000 GHz	39.6132	13.0085
1.720000000 GHz	39.5608	13.0563
1.730000000 GHz	39.5403	13.0979
1.740000000 GHz	39.5247	13.1242
1.750000000 GHz	39.4956	13.1306
1.760000000 GHz	39.4717	13.1493
1.770000000 GHz	39.4218	13.1375
1.780000000 GHz	39.3664	13.1658
1.790000000 GHz	39.3246	13.1741
1.800000000 GHz	39.2437	13.1908
1.810000000 GHz	39.2132	13.2289
1.820000000 GHz	39.1276	13.2732
1.830000000 GHz	39.1019	13.3444
1.840000000 GHz	39.0561	13.3948
1.850000000 GHz	39.0042	13.4131
1.860000000 GHz	38.9590	13.4454
1.870000000 GHz	38.9506	13.4580
1.880000000 GHz	38.9281	13.4942
1.890000000 GHz	38.8767	13.5247
1.900000000 GHz	38.8328	13.4944
1.910000000 GHz	38.7668	13.5168
1.920000000 GHz	38.7417	13.5136
1.930000000 GHz	38.6845	13.5047
1.940000000 GHz	38.6345	13.5559
1.950000000 GHz	38.5796	13.6249
1.960000000 GHz	38.5213	13.6816
1.970000000 GHz	38.5182	13.7494
1.980000000 GHz	38.4579	13.8076
1.990000000 GHz	38.4437	13.8185
2.000000000 GHz	38.4182	13.8283

■ Dielectric Parameter (835MHz Muscle)

FCC ID: PP4TX-55C**SubTitle: 835MHz Body**

November 09, 2002 09:40 AM

Frequency	e'	e''
750.000000 MHz	54.5479	21.6876
755.000000 MHz	54.2535	21.7826
760.000000 MHz	54.0057	21.8802
765.000000 MHz	53.7402	21.9309
770.000000 MHz	53.4818	22.0092
775.000000 MHz	53.3495	22.0867
780.000000 MHz	53.2020	22.1111
785.000000 MHz	53.1504	22.1730
790.000000 MHz	53.1446	22.1612
795.000000 MHz	53.1839	22.1111
800.000000 MHz	53.2741	22.0433
805.000000 MHz	53.4240	21.9203
810.000000 MHz	53.5729	21.8310
815.000000 MHz	53.7582	21.7844
820.000000 MHz	53.9084	21.5808
825.000000 MHz	54.0475	21.4762
830.000000 MHz	54.1968	21.3118
835.000000 MHz	54.1621	21.2536
840.000000 MHz	54.2142	21.1307
845.000000 MHz	54.1684	21.0995
850.000000 MHz	54.1258	21.0454
855.000000 MHz	53.9331	21.0808
860.000000 MHz	53.7689	21.0413
865.000000 MHz	53.5445	21.1222
870.000000 MHz	53.2817	21.2072
875.000000 MHz	52.9859	21.2519
880.000000 MHz	52.6847	21.3577
885.000000 MHz	52.4130	21.4899
890.000000 MHz	52.1656	21.5657
895.000000 MHz	52.0020	21.6471
900.000000 MHz	51.8314	21.7313

■ Dielectric Parameter (1900MHz Muscle)

FCC ID: PP4TX-55C**SubTitle: 1900MHz Body**

November 09, 2002 12:09 AM

Frequency	e'	e''
1.700000000 GHz	53.2694	14.4224
1.710000000 GHz	53.2397	14.4466
1.720000000 GHz	53.2536	14.5127
1.730000000 GHz	53.2122	14.5355
1.740000000 GHz	53.1983	14.5578
1.750000000 GHz	53.1534	14.5802
1.760000000 GHz	53.1105	14.5719
1.770000000 GHz	53.1031	14.6037
1.780000000 GHz	53.0543	14.5973
1.790000000 GHz	52.9779	14.6295
1.800000000 GHz	52.9398	14.6441
1.810000000 GHz	52.8812	14.6878
1.820000000 GHz	52.8502	14.7189
1.830000000 GHz	52.8015	14.7439
1.840000000 GHz	52.7745	14.7831
1.850000000 GHz	52.7381	14.8053
1.860000000 GHz	52.6971	14.8610
1.870000000 GHz	52.7221	14.8619
1.880000000 GHz	52.6895	14.8778
1.890000000 GHz	52.6366	14.8651
1.900000000 GHz	52.5947	14.8430
1.910000000 GHz	52.5370	14.8576
1.920000000 GHz	52.5028	14.8367
1.930000000 GHz	52.4771	14.8628
1.940000000 GHz	52.4449	14.8878
1.950000000 GHz	52.4205	14.9423
1.960000000 GHz	52.3980	14.9698
1.970000000 GHz	52.3856	15.0135
1.980000000 GHz	52.3836	15.0547
1.990000000 GHz	52.3664	15.0780
2.000000000 GHz	52.3645	15.1266