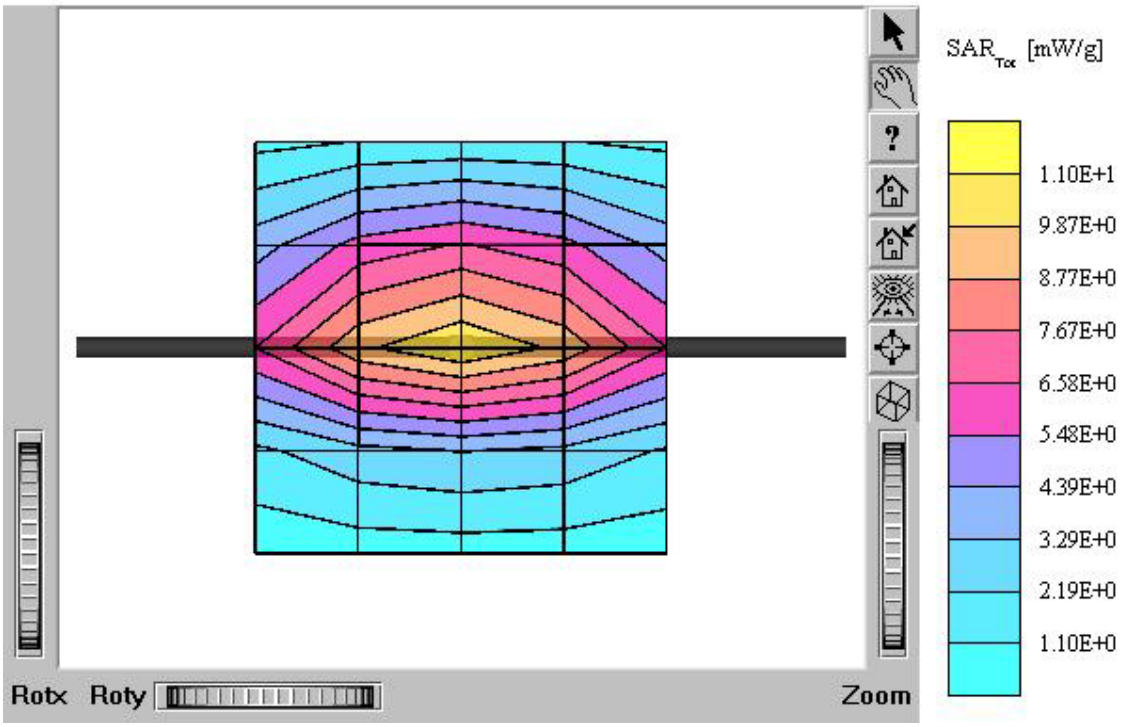
# ATTACHMENT Q – DIPOLE VALIDATION

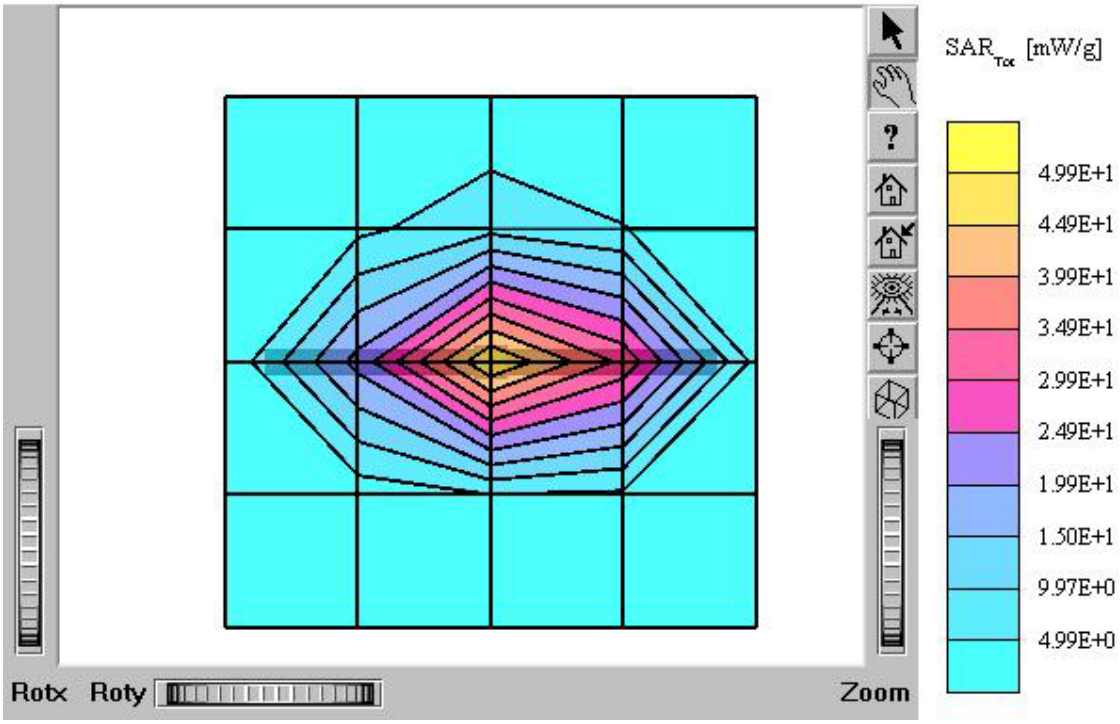
## ■ Validation Data (835MHz Brain)

Dipole 835 MHz
SAM I Phantom; Flat Section; Position: (90°,90°); Frequency: 835 MHz
Probe: ET3DV6 - SN1609; ConvF(6.62,6.62,6.62); Crest factor: 1.0; Brain 835 MHz: $\sigma$ = 0.91 mho/m $\varepsilon_r$ = 42.8 $\rho$ = 1.00 g/cm$^3$
Cubes (2): SAR (1g): 10.3 mW/g ± 0.01 dB, SAR (10g): 6.51 mW/g ± 0.00 dB
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.04 dB
Comment:
835MHz Brain Dipole Validation (D835V2/ S.N: 441)
Antenna Input Power: 30 dBm (1 W)
HCT Co., Ltd. Brain Tissue Simulating Liquid
Liquid Temperature : 21.8℃
Date Tested : February 17, 2004



## ■ Validation Data (1900MHz Brain)

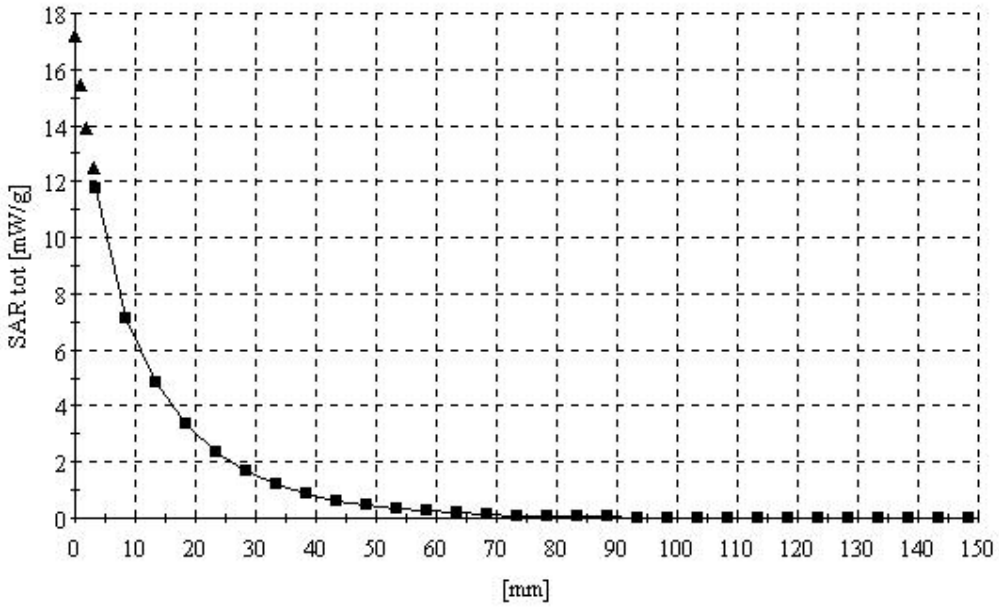
Dipole 1900 MHz
SAM II Phantom; Flat Section; Position: (90°,90°); Frequency: 1900 MHz
Probe: ET3DV6 - SN1609; ConvF(5.29,5.29,5.29); Crest factor: 1.0; Brain 1900 MHz: $\sigma$ = 1.39 mho/m $\varepsilon_r$ = 40.3 $\rho$ = 1.00 g/cm$^3$
Cubes (2): SAR (1g): 40.8 mW/g ± 0.02 dB, SAR (10g): 20.6 mW/g ± 0.00 dB
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.01 dB
Comment:
1900 MHz Brain Dipole Validation (D1900V2/ S.N: 5d032)
Antenna Input Power: 30 dBm (1 W)
HCT Co., Ltd. Brain Tissue Simulating Liquid
Liquid Temperature : 21.4℃
Date Tested : February 18, 2004



# Dipole 835 MHz

SAM I Phantom; Section; Position: ; Frequency: 835 MHz
Probe: ET3DV6 - SN1609; ConvF(6.62,6.62,6.62); Crest factor: 1.0; Brain 835 MHz: $\sigma$ = 0.91 mho/m $\varepsilon_r$ = 42.8 $\rho$ = 1.00 g/cm$^3$
:
Z-Axis: Dx = 0.0, Dy = 0.0, Dz = 5.0

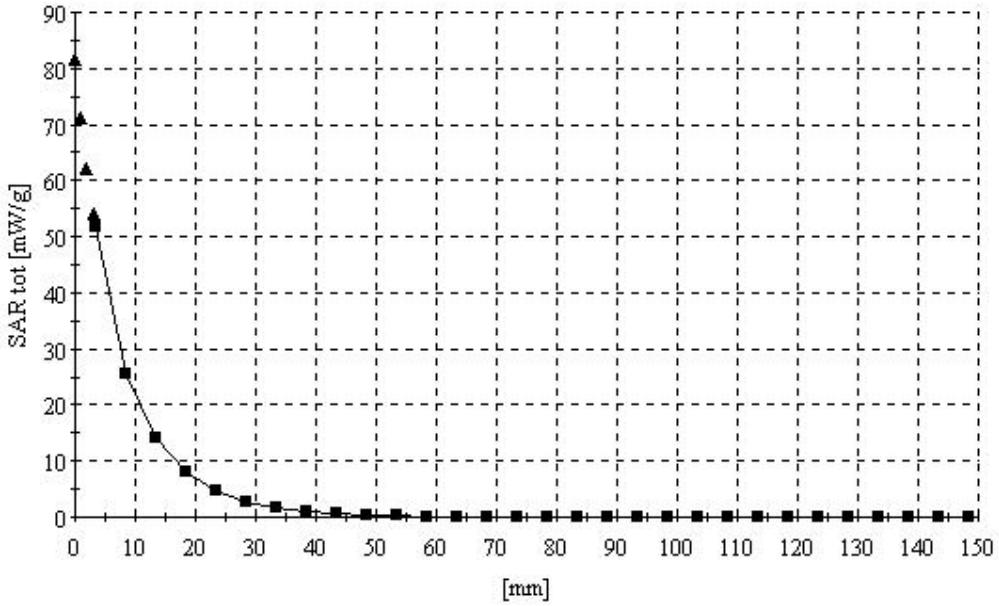
Comment:
835MHz Brain Dipole Validation (D835V2/ S.N: 441)
Antenna Input Power: 30 dBm (1 W)
HCT Co., Ltd. Brain Tissue Simulating Liquid
Liquid Temperature : 21.8℃
Date Tested : February 17, 2004



# Dipole 1900 MHz

SAM II Phantom; Section; Position: ; Frequency: 1900 MHz
Probe: ET3DV6 - SN1609; ConvF(5.29,5.29,5.29); Crest factor: 1.0; Brain 1900 MHz: $\sigma$ = 1.39 mho/m $\varepsilon_r$ = 40.3 $\rho$ = 1.00 g/cm$^3$
:
Z-Axis: Dx = 0.0, Dy = 0.0, Dz = 5.0

Comment:
1900 MHz Brain Dipole Validation (D1900V2/ S.N: 5d032)
Antenna Input Power: 30 dBm (1 W)
HCT Co., Ltd. Brain Tissue Simulating Liquid
Liquid Temperature : 21.4℃
Date Tested : February 18, 2004



■ Dielectric Parameter (835MHz Brain)

Title : TX-130C

SubTitle : CDMA Brain

February 17, 2004 08:36 PM

| Frequency | e' | e'' |
|---|---|---|
| 800.000000 MHz | 43.2189 | 19.7778 |
| 805.000000 MHz | 43.1006 | 19.7647 |
| 810.000000 MHz | 43.0674 | 19.6632 |
| 815.000000 MHz | 42.9732 | 19.6878 |
| 820.000000 MHz | 42.9175 | 19.5782 |
| 825.000000 MHz | 42.8350 | 19.5415 |
| 830.000000 MHz | 42.7677 | 19.5170 |
| 835.000000 MHz | 42.7594 | 19.5288 |
| 840.000000 MHz | 42.6281 | 19.5128 |
| 845.000000 MHz | 42.5744 | 19.5064 |
| 850.000000 MHz | 42.5301 | 19.5286 |
| 855.000000 MHz | 42.4535 | 19.5084 |
| 860.000000 MHz | 42.4122 | 19.4989 |
| 865.000000 MHz | 42.4000 | 19.4809 |
| 870.000000 MHz | 42.3214 | 19.5133 |
| 875.000000 MHz | 42.2740 | 19.5772 |
| 880.000000 MHz | 42.2247 | 19.5804 |
| 885.000000 MHz | 42.2036 | 19.5903 |
| 890.000000 MHz | 42.1343 | 19.5544 |
| 895.000000 MHz | 42.0527 | 19.5578 |
| 900.000000 MHz | 42.0241 | 19.5352 |

■ Dielectric Parameter (1900MHz Brain)

Title : TX-130C

SubTitle : PCS CDMA Brain

February 18, 2004 09:36 AM

| Frequency | e' | e'' |
|---|---|---|
| 1.800000000 GHz | 40.6455 | 12.8883 |
| 1.810000000 GHz | 40.5544 | 12.9681 |
| 1.820000000 GHz | 40.5319 | 12.9895 |
| 1.830000000 GHz | 40.4669 | 13.0714 |
| 1.840000000 GHz | 40.4462 | 13.1009 |
| 1.850000000 GHz | 40.4247 | 13.1459 |
| 1.860000000 GHz | 40.4305 | 13.1703 |
| 1.870000000 GHz | 40.4314 | 13.1945 |
| 1.880000000 GHz | 40.4050 | 13.2031 |
| 1.890000000 GHz | 40.3353 | 13.2310 |
| 1.900000000 GHz | 40.2623 | 13.2015 |
| 1.910000000 GHz | 40.1865 | 13.2342 |
| 1.920000000 GHz | 40.1057 | 13.2438 |
| 1.930000000 GHz | 40.0102 | 13.2696 |
| 1.940000000 GHz | 39.9454 | 13.3082 |
| 1.950000000 GHz | 39.8975 | 13.3833 |
| 1.960000000 GHz | 39.8717 | 13.4317 |
| 1.970000000 GHz | 39.8741 | 13.5025 |
| 1.980000000 GHz | 39.8499 | 13.5231 |
| 1.990000000 GHz | 39.8604 | 13.5585 |
| 2.000000000 GHz | 39.8600 | 13.5892 |

■ Dielectric Parameter (835MHz Muscle)

Title : TX-130C
SubTitle : CDMA Body
February 17, 2004 09:12 AM

| Frequency | e' | e'' |
|---|---|---|
| 800.000000 MHz | 54.4642 | 21.7883 |
| 805.000000 MHz | 54.4723 | 21.7337 |
| 810.000000 MHz | 54.4005 | 21.7079 |
| 815.000000 MHz | 54.3806 | 21.6976 |
| 820.000000 MHz | 54.3301 | 21.6311 |
| 825.000000 MHz | 54.2756 | 21.5667 |
| 830.000000 MHz | 54.2712 | 21.6069 |
| 835.000000 MHz | 54.1735 | 21.5258 |
| 840.000000 MHz | 54.1293 | 21.4372 |
| 845.000000 MHz | 54.1083 | 21.4395 |
| 850.000000 MHz | 54.0104 | 21.3502 |
| 855.000000 MHz | 53.9579 | 21.3212 |
| 860.000000 MHz | 53.9087 | 21.2696 |
| 865.000000 MHz | 53.8275 | 21.2738 |
| 870.000000 MHz | 53.7557 | 21.2425 |
| 875.000000 MHz | 53.7112 | 21.1959 |
| 880.000000 MHz | 53.6457 | 21.2589 |
| 885.000000 MHz | 53.5031 | 21.2823 |
| 890.000000 MHz | 53.4729 | 21.2365 |
| 895.000000 MHz | 53.4134 | 21.2760 |
| 900.000000 MHz | 53.4207 | 21.2683 |

■ Dielectric Parameter (1900MHz Muscle)

Title : TX-130C

SubTitle : PCS CDMA Body

February 18, 2004 09:26 AM

| Frequency | e' | e'' |
|---|---|---|
| 1.850000000 GHz | 53.6413 | 14.8154 |
| 1.855000000 GHz | 53.6325 | 14.8119 |
| 1.860000000 GHz | 53.5839 | 14.8371 |
| 1.865000000 GHz | 53.5256 | 14.8714 |
| 1.870000000 GHz | 53.4598 | 14.8685 |
| 1.875000000 GHz | 53.3733 | 14.9068 |
| 1.880000000 GHz | 53.3602 | 14.9080 |
| 1.885000000 GHz | 53.3204 | 14.9117 |
| 1.890000000 GHz | 53.3083 | 14.9050 |
| 1.895000000 GHz | 53.2640 | 14.8949 |
| 1.900000000 GHz | 53.2418 | 14.9123 |
| 1.905000000 GHz | 53.2421 | 14.9495 |
| 1.910000000 GHz | 53.2028 | 14.9316 |
| 1.915000000 GHz | 53.1665 | 14.9479 |
| 1.920000000 GHz | 53.1762 | 14.9581 |
| 1.925000000 GHz | 53.2105 | 14.9783 |
| 1.930000000 GHz | 53.2153 | 14.9784 |
| 1.935000000 GHz | 53.2172 | 15.0178 |
| 1.940000000 GHz | 53.2010 | 15.0413 |
| 1.945000000 GHz | 53.1986 | 15.0555 |
| 1.950000000 GHz | 53.2336 | 15.0892 |