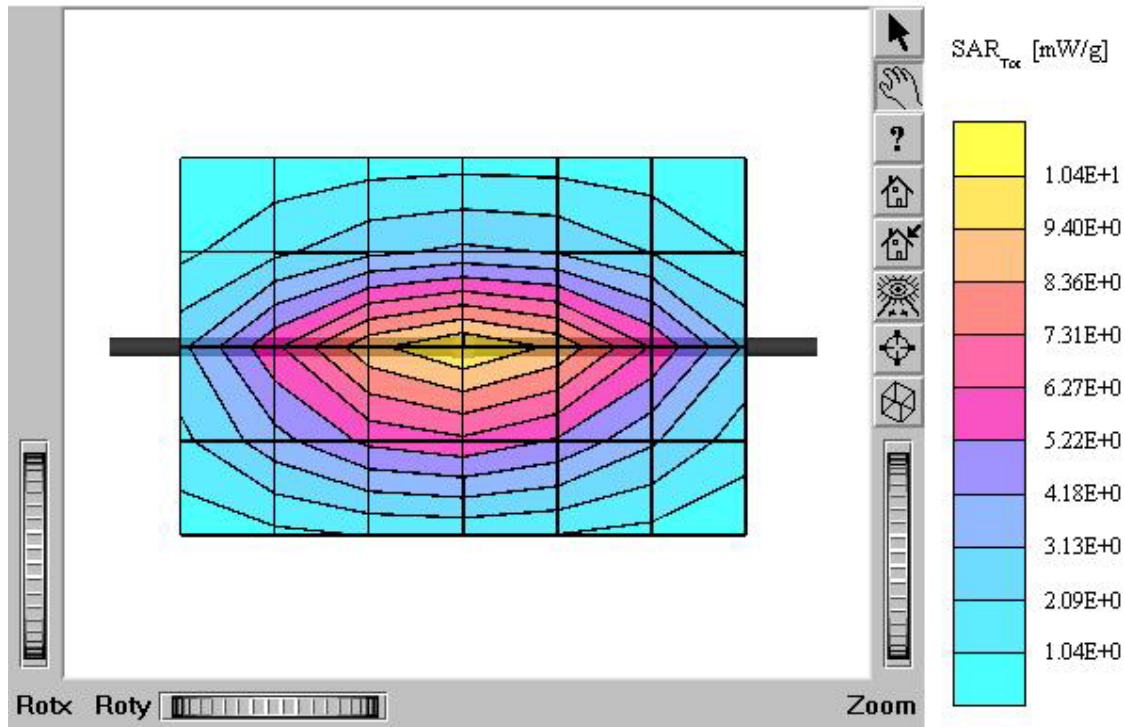


ATTACHMENT Q – DIPOLE VALIDATION

■ Validation Data (835MHz Brain)

Dipole 835 MHz

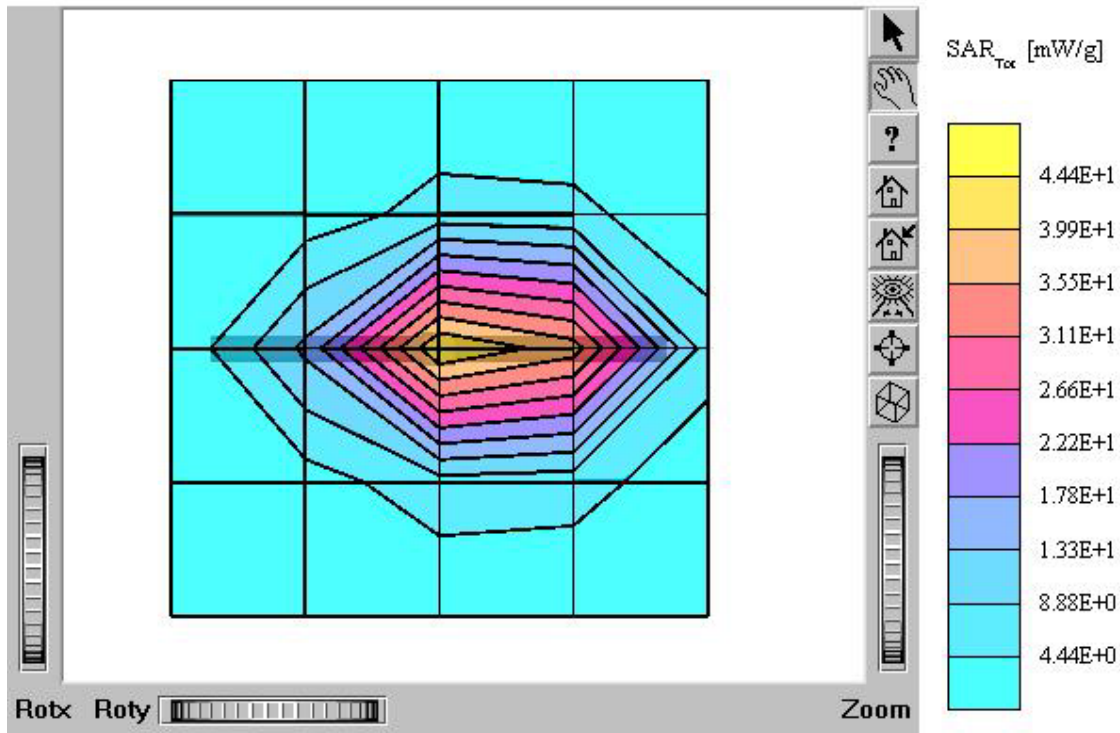
SAM II Phantom; Flat Section; Position: (90°,90°); Frequency: 835 MHz
Probe: ET3DV6 - SN1607; ConvF(6.22,6.22,6.22); Crest factor: 1.0; Head 835 MHz: $s = 0.88$
 $\rho_{\text{ho/m}} e_r = 42.4 r = 1.00 \text{ g/cm}^3$
Cubes (2): SAR (1g): $9.98 \text{ mW/g} \pm 0.04 \text{ dB}$, SAR (10g): $6.36 \text{ mW/g} \pm 0.04 \text{ dB}$
Coarse: $D_x = 20.0, D_y = 20.0, D_z = 10.0$
Powerdrift: 0.01 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 : 21.5°C
Date Tested : November 4, 2004



■ Validation Data (1900MHz Brain)

Dipole 1900 MHz

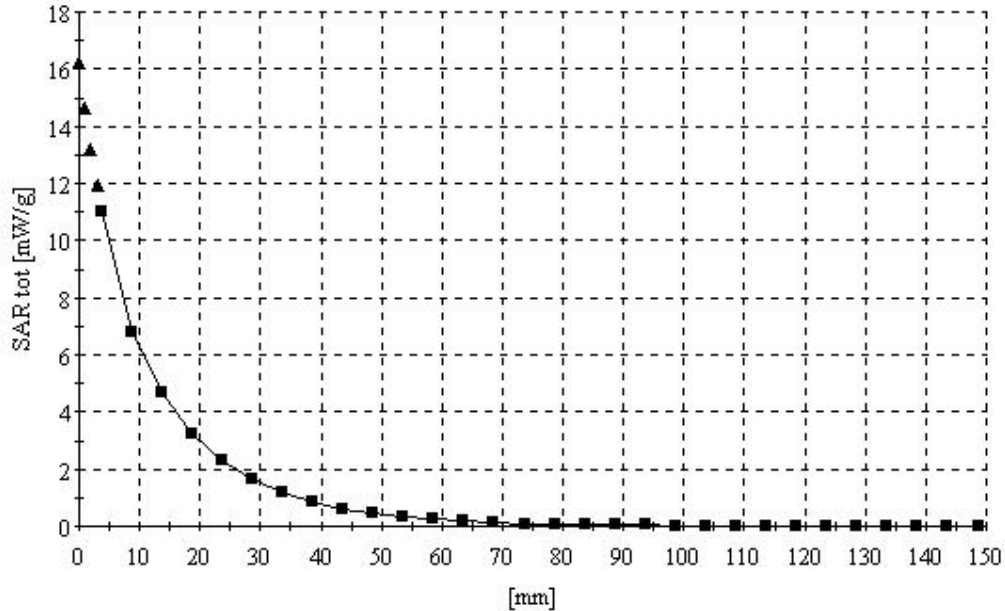
SAM II Phantom; Flat Section; Position: (90°,90°); Frequency: 1900 MHz
Probe: ET3DV6 - SN1609; ConvF(5.34,5.34,5.34); Crest factor: 1.0; Brain 1900 MHz: $s = 1.39$
 $\rho_{ho}/m \epsilon_r = 40.3 \rho = 1.00 \text{ g/cm}^3$
Cubes (2): SAR (1g): $42.3 \text{ mW/g} \pm 0.04 \text{ dB}$, SAR (10g): $21.4 \text{ mW/g} \pm 0.03 \text{ dB}$
Coarse: $D_x = 20.0$, $D_y = 20.0$, $D_z = 10.0$
Powerdrift: 0.04 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°C
Date Tested : November 5, 2004



Dipole 835 MHz

SAM II Phantom; Section; Position: ; Frequency: 835 MHz
Probe: ET3DV6 - SN1607; ConvF(6.22,6.22,6.22); Crest factor: 1.0; Head 835 MHz: $s = 0.88$
 mho/m $\epsilon_r = 42.4$ $r = 1.00 \text{ g/cm}^3$
.
Z-Axis: $D_x = 0.0$, $D_y = 0.0$, $D_z = 5.0$

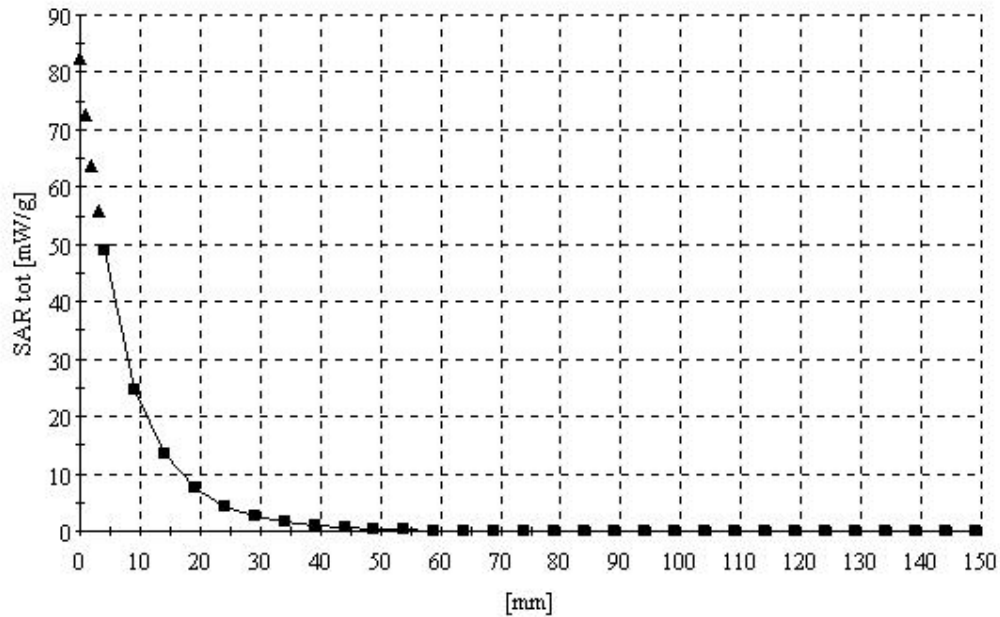
Comment:
835MHz Brain Dipole Validation (D835V2/ S.N: 441)
Antenna Input Power: 30 dBm (1 W)
HCT Co., Ltd. Brain Tissue Simulating Liquid
Liquid Temperature : 21.5°C
Date Tested : November 4, 2004



Dipole 1900 MHz

SAM II Phantom: Section: Position: ; Frequency: 1900 MHz
Probe: ET3DV6 - SN1609; ConvF(5.34,5.34,5.34); Crest factor: 1.0; Brain 1900 MHz: $s = 1.39$
 $\rho_{ho/m} e_r = 40.3 r = 1.00 \text{ g/cm}^3$
:
Z-Axis: $D_x = 0.0, D_y = 0.0, D_z = 5.0$

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°C
Date Tested : November 5, 2004



■ Dielectric Parameter (835MHz Brain)

Title : TX-180
SubTitle : CDMA BRAIN
November 04, 2004 09:44 AM

Frequency	e'	e''
800.000000 MHz	43.0753	18.9877
805.000000 MHz	43.0057	18.9980
810.000000 MHz	42.8733	18.9720
815.000000 MHz	42.7837	18.9776
820.000000 MHz	42.7065	19.0601
825.000000 MHz	42.6267	19.0152
830.000000 MHz	42.5173	19.0482
835.000000 MHz	42.4762	19.0933
840.000000 MHz	42.3696	19.1254
845.000000 MHz	42.3609	19.1294
850.000000 MHz	42.2951	19.1498
855.000000 MHz	42.2007	19.2095
860.000000 MHz	42.1563	19.2235
865.000000 MHz	42.1461	19.1762
870.000000 MHz	42.1004	19.1805
875.000000 MHz	42.0732	19.2098
880.000000 MHz	41.9911	19.1542
885.000000 MHz	41.9757	19.1498
890.000000 MHz	41.9386	19.0718
895.000000 MHz	41.8821	19.0602
900.000000 MHz	41.8218	19.0004

■ Dielectric Parameter (835MHz Brain)

Title : TX-180

SubTitle : PCS BRAIN

November 05, 2004 09:15 AM

Frequency	e'	e''
1.800000000 GHz	40.1678	13.0436
1.806666667 GHz	40.1162	13.0888
1.813333333 GHz	40.0620	13.0993
1.820000000 GHz	40.0675	13.1852
1.826666667 GHz	40.0195	13.2132
1.833333333 GHz	40.0309	13.2769
1.840000000 GHz	40.0234	13.3431
1.846666667 GHz	40.0407	13.3753
1.853333333 GHz	40.0211	13.3914
1.860000000 GHz	40.0356	13.4221
1.866666667 GHz	40.0148	13.4629
1.873333333 GHz	39.9912	13.4512
1.880000000 GHz	39.9679	13.4486
1.886666667 GHz	39.9107	13.4438
1.893333333 GHz	39.8231	13.4469
1.900000000 GHz	39.7453	13.4501
1.906666667 GHz	39.6907	13.4237
1.913333333 GHz	39.5972	13.4467
1.920000000 GHz	39.5196	13.4657
1.926666667 GHz	39.4755	13.4987
1.933333333 GHz	39.4231	13.5225
1.940000000 GHz	39.3853	13.5813
1.946666667 GHz	39.3604	13.6317
1.953333333 GHz	39.3408	13.6845
1.960000000 GHz	39.3435	13.7255

■ Dielectric Parameter (1900MHz Brain)

Title : TX-180
SubTitle : CDMA BODY
November 04, 2004 05:52 PM

Frequency	e'	e''
800.000000 MHz	56.2389	20.8418
805.000000 MHz	56.2328	20.8124
810.000000 MHz	56.1728	20.7577
815.000000 MHz	56.1532	20.7788
820.000000 MHz	56.0262	20.7499
825.000000 MHz	55.9764	20.7877
830.000000 MHz	55.8497	20.7654
835.000000 MHz	55.6998	20.6917
840.000000 MHz	55.6063	20.6750
845.000000 MHz	55.5438	20.5922
850.000000 MHz	55.4684	20.5589
855.000000 MHz	55.4576	20.5772
860.000000 MHz	55.3770	20.5249
865.000000 MHz	55.4090	20.5372
870.000000 MHz	55.3469	20.4999
875.000000 MHz	55.2688	20.5549
880.000000 MHz	55.2272	20.5633
885.000000 MHz	55.0826	20.4165
890.000000 MHz	55.0414	20.4203
895.000000 MHz	55.0121	20.5298
900.000000 MHz	54.9278	20.5768

■ Dielectric Parameter (835MHz Muscle)

Title : TX-180

SubTitle : PCS BODY

November 06, 2004 04:39 PM

Frequency	e'	e''
1.800000000 GHz	51.6353	13.1538
1.806666667 GHz	51.6017	13.1709
1.813333333 GHz	51.6470	13.2343
1.820000000 GHz	51.6060	13.2823
1.826666667 GHz	51.5745	13.3401
1.833333333 GHz	51.6013	13.3904
1.840000000 GHz	51.4714	13.4339
1.846666667 GHz	51.4758	13.4681
1.853333333 GHz	51.4499	13.5886
1.860000000 GHz	51.4016	13.6085
1.866666667 GHz	51.3809	13.7035
1.873333333 GHz	51.3961	13.8060
1.880000000 GHz	51.3476	13.8584
1.886666667 GHz	51.3168	13.9095
1.893333333 GHz	51.2899	13.9679
1.900000000 GHz	51.3027	14.0620
1.906666667 GHz	51.3091	14.1794
1.913333333 GHz	51.3003	14.3139
1.920000000 GHz	51.2446	14.2992
1.926666667 GHz	51.2207	14.3308
1.933333333 GHz	51.2088	14.3552
1.940000000 GHz	51.1779	14.4321
1.946666667 GHz	51.2152	14.4581
1.953333333 GHz	51.2283	14.5732
1.960000000 GHz	51.1552	14.5227