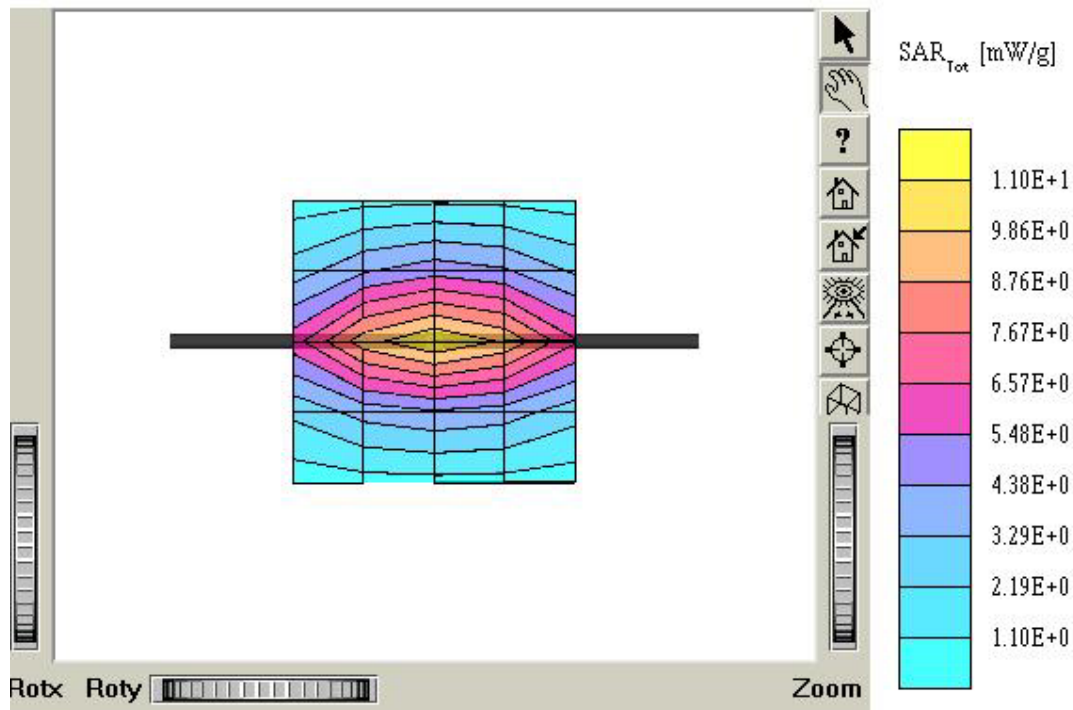


ATTACHMENT Q – DIPOLE VALIDATION

■ Validation Data (835MHz Brain)

Dipole 835 MHz

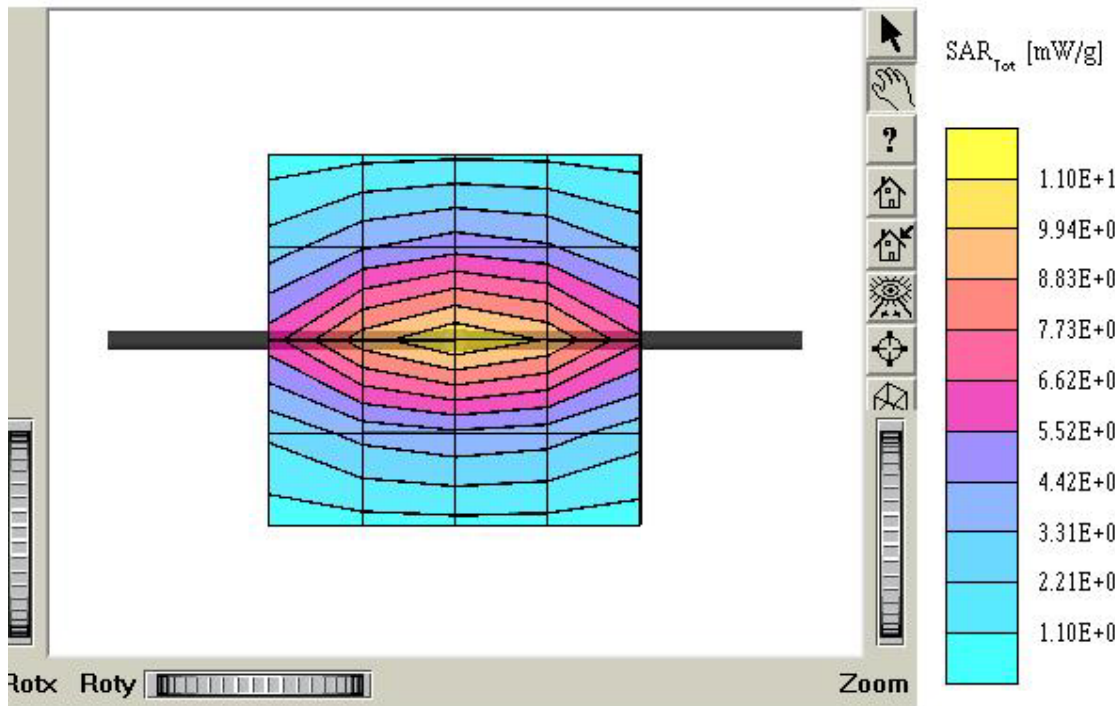
SAM I Phantom; Flat Section; Position: (90°,90°); Frequency: 835 MHz
 Probe: ET3DV6 - SN1609; ConvF(6.50,6.50,6.50); Crest factor: 1.0; Brain 835 MHz: $s = 0.89$
 $\rho_{\text{ho/m}} = 42.4$ $r = 1.00$ g/cm³
 Cubes (2): SAR (1g): $10.2 \text{ mW/g} \pm 0.03 \text{ dB}$, SAR (10g): $6.46 \text{ mW/g} \pm 0.02 \text{ dB}$
 Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
 : Powerdrift: 0.00 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 : 21.5 °C
 Date Tested: March 24, 2003



■ Validation Data (835MHz Brain)

Dipole 835 MHz

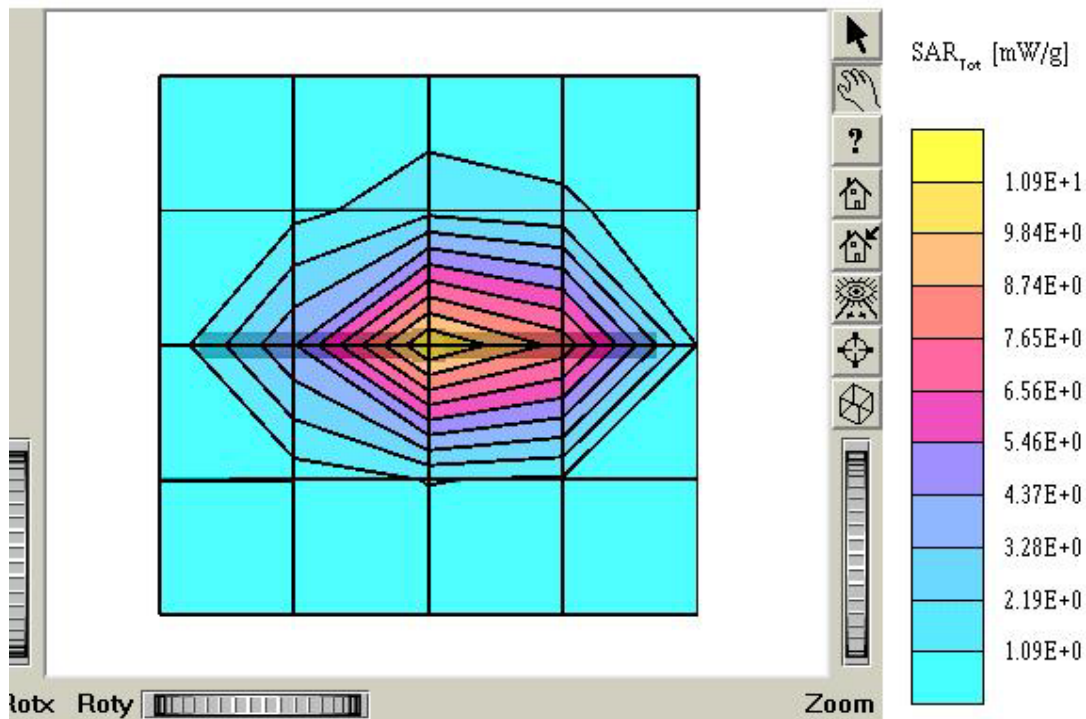
SAM I Phantom: Flat Section; Position: (90°,90°); Frequency: 835 MHz
Probe: ET3DV6 - SN1609; ConvF(6.50,6.50,6.50); Crest factor: 1.0; Brain 835 MHz: $s = 0.90$
 $\text{mho/m } e_r = 42.7$ $r = 1.00 \text{ g/cm}^3$
Cubes (2): SAR (1g): $10.3 \text{ mW/g} \pm 0.00 \text{ dB}$, SAR (10g): $6.55 \text{ mW/g} \pm 0.00 \text{ dB}$
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: 30 dBm (1W)
HCT Co., Ltd. Brain Tissue Simulating Liquid
Liquid Temperature : 21.2 °C
Date Tested: March 25, 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: $s = 1.43$
 $\text{mho/m } e_r = 38.9$ $r = 1.00 \text{ g/cm}^3$
Cubes (2): SAR (1g): $10.2 \text{ mW/g} \pm 0.00 \text{ dB}$, SAR (10g): $5.11 \text{ mW/g} \pm 0.01 \text{ dB}$
Coarse: $D_x = 20.0$, $D_y = 20.0$, $D_z = 10.0$
: Powerdrift: -0.02 dB
Comment:
1900MHz Brain Dipole Validation (D1900V2/ S.N: 5d017)
Antenna Input Power: 24dBm (0.25W)
HCT Co., Ltd. Brain Tissue Simulating Liquid
Liquid Temperature : 21.2°C
Date Tested: March 26, 2003



Dipole 835 MHz

SAM I 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: $s = 0.89$ $\rho/m e_r = 42.4 r = 1.00 g/cm^3$ Cubes (2): SAR (1g): $10.2 mW/g \pm 0.03 dB$, SAR (10g): $6.46 mW/g \pm 0.02 dB$ Cube 5x5x7: $D_x = 8.0, D_y = 8.0, D_z = 5.0$

:

Comment:

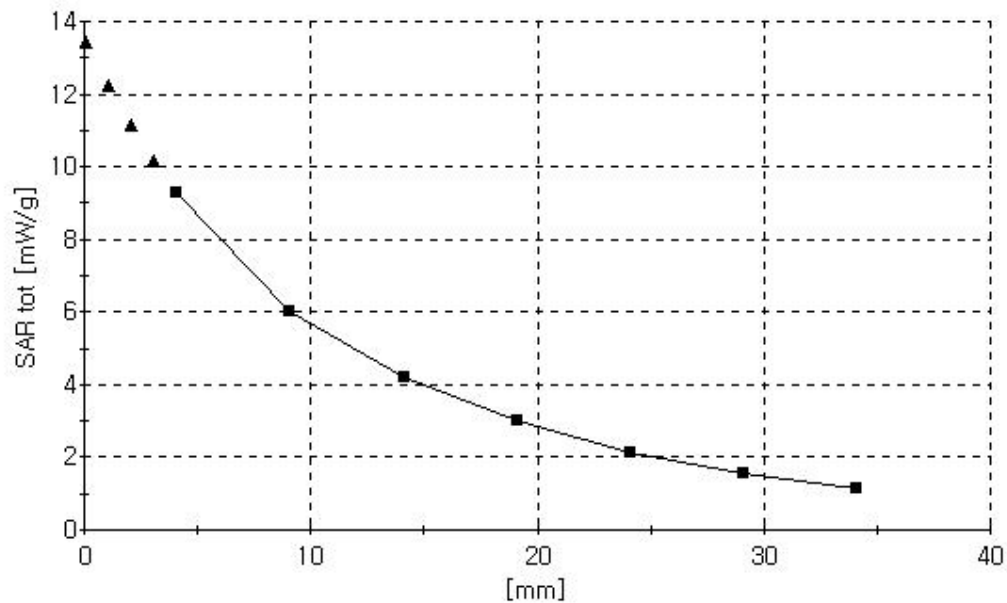
835MHz Brain Dipole Validation (D835V2/ S.N: 441)

Antenna Input Power: 30 dBm (1W)

HCT Co., Ltd. Brain Tissue Simulating Liquid

Liquid Temperature : 21.5 °C

Date Tested: March 24, 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: $s = 0.90$ $\rho_{\text{ho}}/\text{m g} = 42.7$ $r = 1.00 \text{ g/cm}^3$ Cubes (2): SAR (1g): $10.3 \text{ mW/g} \pm 0.00 \text{ dB}$, SAR (10g): $6.55 \text{ mW/g} \pm 0.00 \text{ dB}$ Cube 5x5x7: $D_x = 8.0$, $D_y = 8.0$, $D_z = 5.0$

:

Comment:

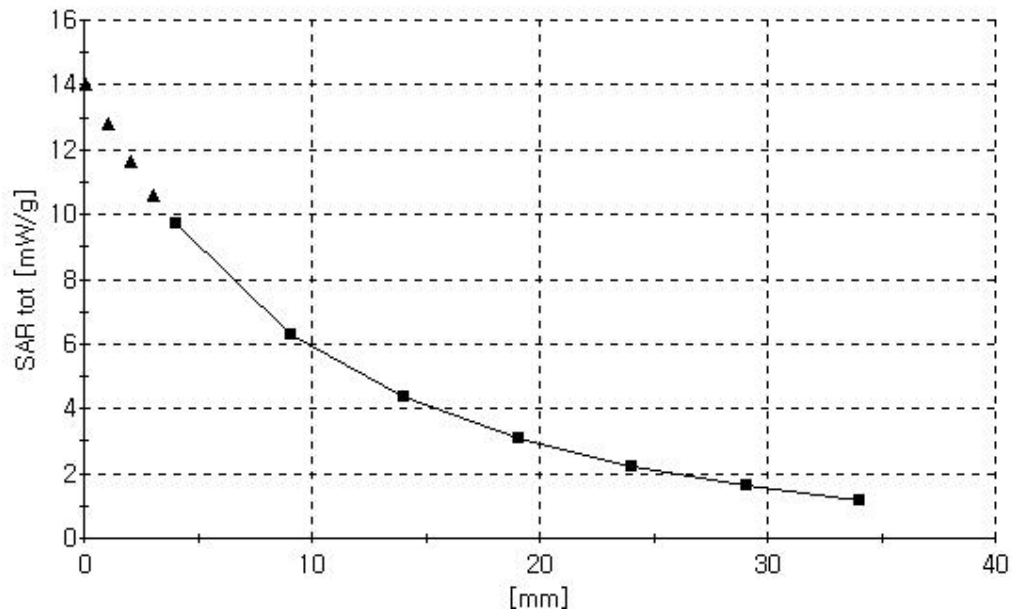
835MHz Brain Dipole Validation (D835V2/ S.N: 441)

Antenna Input Power: 30 dBm (1W)

HCT Co., Ltd. Brain Tissue Simulating Liquid

Liquid Temperature : 21.2 °C

Date Tested: March 25, 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: $s = 1.43$ $\rho_{ho}/m_e = 38.9$ $r = 1.00$ g/cm³Cubes (2): SAR (1g): 10.2 mW/g ± 0.00 dB, SAR (10g): 5.11 mW/g ± 0.01 dB

Cube 5x5x7: Dx = 8.0, Dy = 8.0, Dz = 5.0

.

Comment:

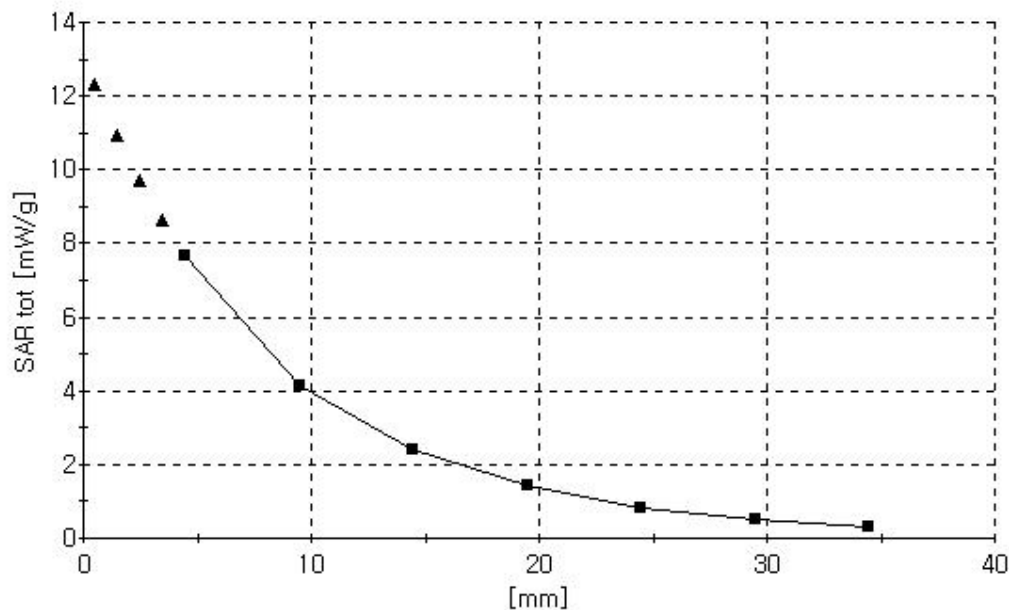
1900MHz Brain Dipole Validation (D1900V2/ S.N: 5d017)

Antenna Input Power: 24dBm (0.25W)

HCT Co., Ltd. Brain Tissue Simulating Liquid

Liquid Temperature : 21.2 °C

Date Tested: March 26, 2003



■ Dielectric Parameter (835MHz Brain)

Title: TX-95C**SubTitle: AMPS BARAIN**

March 24, 2003 09:39 AM

Frequency	e'	e''
800.000000 MHz	42.9112	19.1423
805.000000 MHz	42.8527	19.1491
810.000000 MHz	42.7885	19.0928
815.000000 MHz	42.6836	19.1561
820.000000 MHz	42.6413	19.1319
825.000000 MHz	42.6216	19.1655
830.000000 MHz	42.5186	19.1642
835.000000 MHz	42.4429	19.1239
840.000000 MHz	42.3960	19.1807
845.000000 MHz	42.3307	19.1694
850.000000 MHz	42.2924	19.1402
855.000000 MHz	42.1976	19.1277
860.000000 MHz	42.2060	19.1472
865.000000 MHz	42.1566	19.1424
870.000000 MHz	42.0921	19.1524
875.000000 MHz	42.0399	19.0979
880.000000 MHz	41.9926	19.1083
885.000000 MHz	41.9111	19.1188
890.000000 MHz	41.8477	19.0691
895.000000 MHz	41.8127	19.0612
900.000000 MHz	41.7273	19.0488

■ Dielectric Parameter (835MHz Brain)

Title: TX-95C**SubTitle: CDMA BRAIN**

March 26, 2003 09:49 AM

Frequency	e'	e''
800.000000 MHz	43.1747	19.4620
805.000000 MHz	43.1269	19.4309
810.000000 MHz	43.0471	19.3983
815.000000 MHz	42.9654	19.4315
820.000000 MHz	42.9001	19.4224
825.000000 MHz	42.8653	19.4422
830.000000 MHz	42.8013	19.4119
835.000000 MHz	42.7145	19.3728
840.000000 MHz	42.6404	19.4462
845.000000 MHz	42.6404	19.4454
850.000000 MHz	42.5845	19.4295
855.000000 MHz	42.5266	19.4041
860.000000 MHz	42.5189	19.4056
865.000000 MHz	42.4210	19.4131
870.000000 MHz	42.3621	19.4093
875.000000 MHz	42.3275	19.3475
880.000000 MHz	42.2546	19.3587
885.000000 MHz	42.2034	19.3382
890.000000 MHz	42.1559	19.3269
895.000000 MHz	42.1106	19.3202
900.000000 MHz	42.0003	19.2937

■ Dielectric Parameter (1900MHz Brain)

Title: TX-95C**SubTitle: PCS CDMA BRAIN**

March 26, 2003 09:16 AM

Frequency	e'	e''
1.700000000 GHz	39.6198	12.9868
1.710000000 GHz	39.6639	13.0755
1.720000000 GHz	39.7393	13.1514
1.730000000 GHz	39.8111	13.1817
1.740000000 GHz	39.8203	13.1982
1.750000000 GHz	39.7861	13.1446
1.760000000 GHz	39.6976	13.1173
1.770000000 GHz	39.5616	13.1007
1.780000000 GHz	39.4232	13.0927
1.790000000 GHz	39.2730	13.1382
1.800000000 GHz	39.1610	13.1737
1.810000000 GHz	39.1126	13.2772
1.820000000 GHz	39.1400	13.3438
1.830000000 GHz	39.1927	13.4546
1.840000000 GHz	39.2238	13.5175
1.850000000 GHz	39.2915	13.5303
1.860000000 GHz	39.3115	13.5328
1.870000000 GHz	39.2731	13.5265
1.880000000 GHz	39.1614	13.5157
1.890000000 GHz	39.0307	13.5057
1.900000000 GHz	38.8827	13.4987
1.910000000 GHz	38.7557	13.5179
1.920000000 GHz	38.6561	13.5735
1.930000000 GHz	38.5705	13.6207
1.940000000 GHz	38.6058	13.7086
1.950000000 GHz	38.6398	13.7968

■ Dielectric Parameter (835MHz Muscle)

Title: TX-95C
SubTitle: AMPS BODY
March 24, 2003 09:15 AM

Frequency	e'	e''
800.000000 MHz	53.7470	20.6854
805.000000 MHz	53.6466	20.6940
810.000000 MHz	53.5423	20.6704
815.000000 MHz	53.4496	20.7384
820.000000 MHz	53.3971	20.7418
825.000000 MHz	53.3223	20.7255
830.000000 MHz	53.2558	20.7286
835.000000 MHz	53.1681	20.6846
840.000000 MHz	53.1462	20.6831
845.000000 MHz	53.1085	20.6655
850.000000 MHz	53.0616	20.6351
855.000000 MHz	53.0126	20.6112
860.000000 MHz	52.9397	20.6072
865.000000 MHz	52.9092	20.5983
870.000000 MHz	52.8835	20.5718
875.000000 MHz	52.8272	20.5463
880.000000 MHz	52.7944	20.5386
885.000000 MHz	52.7388	20.5238
890.000000 MHz	52.6877	20.5181
895.000000 MHz	52.6216	20.4974
900.000000 MHz	52.5338	20.4854

■ Dielectric Parameter (835MHz Muscle)**Title: TX-95C****SubTitle: CDMA BODY**

March 26, 2003 09:36 AM

Frequency	e'	e''
800.000000 MHz	53.8531	20.5351
805.000000 MHz	53.7694	20.4817
810.000000 MHz	53.6962	20.4703
815.000000 MHz	53.5973	20.4459
820.000000 MHz	53.4581	20.4755
825.000000 MHz	53.3549	20.4759
830.000000 MHz	53.2896	20.4851
835.000000 MHz	53.2084	20.4617
840.000000 MHz	53.1324	20.4643
845.000000 MHz	53.0839	20.4190
850.000000 MHz	53.0594	20.4519
855.000000 MHz	53.0786	20.4683
860.000000 MHz	53.0628	20.4757
865.000000 MHz	53.0830	20.4909
870.000000 MHz	53.0744	20.4843
875.000000 MHz	53.0919	20.4890
880.000000 MHz	53.0982	20.4764
885.000000 MHz	53.1008	20.4387
890.000000 MHz	53.0880	20.4279
895.000000 MHz	53.0324	20.4126
900.000000 MHz	52.9499	20.3925

■ Dielectric Parameter (1900MHz Muscle)

Title: TX-95C**SubTitle: PCS CDMA BODY**

March 26, 2003 09:38 AM

Frequency	e'	e''
1.700000000 GHz	52.1425	14.2565
1.710000000 GHz	52.0968	14.2784
1.720000000 GHz	52.0644	14.2827
1.730000000 GHz	52.0492	14.3242
1.740000000 GHz	51.9884	14.3336
1.750000000 GHz	51.9693	14.3386
1.760000000 GHz	51.9316	14.3805
1.770000000 GHz	51.9187	14.4238
1.780000000 GHz	51.9007	14.4496
1.790000000 GHz	51.8470	14.4908
1.800000000 GHz	51.8216	14.5374
1.810000000 GHz	51.8012	14.5620
1.820000000 GHz	51.7816	14.6148
1.830000000 GHz	51.7164	14.6453
1.840000000 GHz	51.6834	14.6775
1.850000000 GHz	51.6370	14.7001
1.860000000 GHz	51.6268	14.7419
1.870000000 GHz	51.5700	14.7812
1.880000000 GHz	51.5417	14.8427
1.890000000 GHz	51.4846	14.8403
1.900000000 GHz	51.4355	14.8493
1.910000000 GHz	51.4031	14.8832
1.920000000 GHz	51.3492	14.9509
1.930000000 GHz	51.2894	14.9459
1.940000000 GHz	51.2521	14.9641
1.950000000 GHz	51.2300	14.9974