ATTACHMENT Q – DIPOLE VALIDATION

■ Validation Data (835MHz Head)

Test Laboratory: HCT

835 Dipole Validation test: Input power(1W)
Liquid Temperature : 21.6 ℃
Date Tested : April 10, 2006

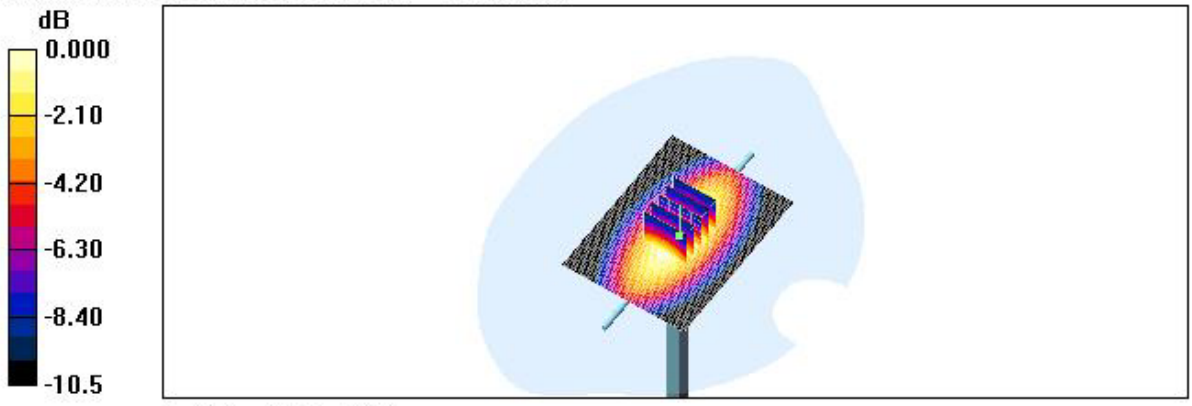
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:441
Program Name: Validation

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; $\sigma = 0.879$ mho/m; $\varepsilon_r = 41.9$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1607; ConvF(6.18, 6.18, 6.18); Calibrated: 2005-08-30
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2006-03-17
- Phantom: SAM 835/900 MHz; Type: SAM

Validation 835 MHz/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 10.8 mW/g

Validation 835 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 114.8 V/m; Power Drift = -0.019 dB
Peak SAR (extrapolated) = 14.6 W/kg
SAR(1 g) = 10 mW/g; SAR(10 g) = 6.6 mW/g
Maximum value of SAR (measured) = 10.8 mW/g



0 dB = 10.8mW/g

■ Validation Data (1900MHz Head)

Test Laboratory: HCT

1900 Dipole Validation test: Input power(1W)
Liquid Temperature : 21.8 ℃
Date Tested : April 11, 2006

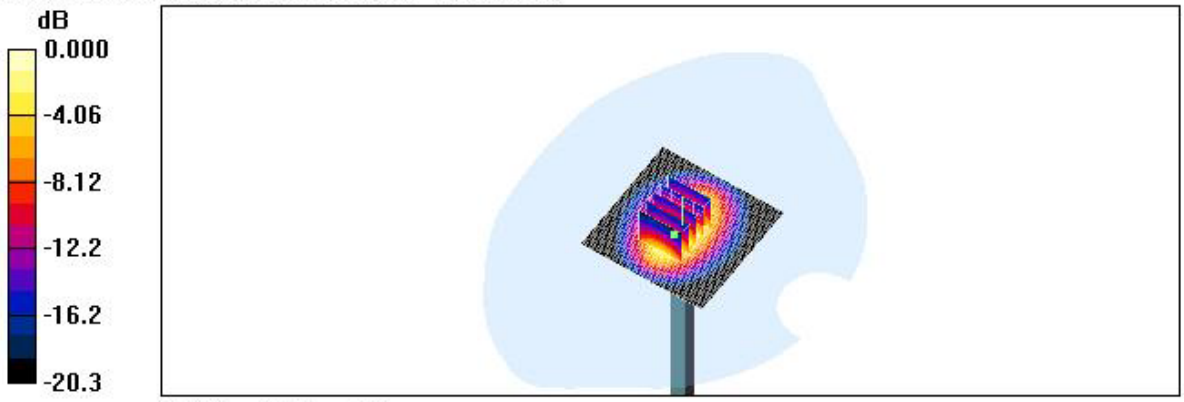
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d032
Program Name: Validation

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.45 mho/m; ε_r = 40; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1607; ConvF(5.14, 5.14, 5.14); Calibrated: 2005-08-30
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2006-03-17
- Phantom: SAM 1800/1900 MHz; Type: SAM

Dipole 1900MHz Validation/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 46.6 mW/g

Dipole 1900MHz Validation/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 187.5 V/m; Power Drift = 0.033 dB
Peak SAR (extrapolated) = 73.4 W/kg
SAR(1 g) = 40.6 mW/g; SAR(10 g) = 20.8 mW/g
Maximum value of SAR (measured) = 45.4 mW/g



0 dB = 45.4mW/g

■ Dielectric Parameter (835MHz Head)

Title : PN-218

SubTitle : CDMA835 Head

April 10, 2006 09:16 AM

Frequency	e'	e''
800.000000 MHz	42.4513	18.9751
805.000000 MHz	42.4287	18.9091
810.000000 MHz	42.3122	18.8913
815.000000 MHz	42.2675	18.9720
820.000000 MHz	42.2139	18.9211
825.000000 MHz	42.0670	18.9501
830.000000 MHz	42.0135	18.9478
835.000000 MHz	41.9040	18.9300
840.000000 MHz	41.8333	18.9331
845.000000 MHz	41.6923	18.9044
850.000000 MHz	41.6733	18.8623
855.000000 MHz	41.5950	18.8274
860.000000 MHz	41.5626	18.8412
865.000000 MHz	41.4756	18.8402
870.000000 MHz	41.3723	18.8138
875.000000 MHz	41.2878	18.8128
880.000000 MHz	41.2917	18.7660
885.000000 MHz	41.1598	18.7846
890.000000 MHz	41.0883	18.7657
895.000000 MHz	41.0821	18.7130
900.000000 MHz	41.0117	18.7094

■ Dielectric Parameter (1900MHz Head)

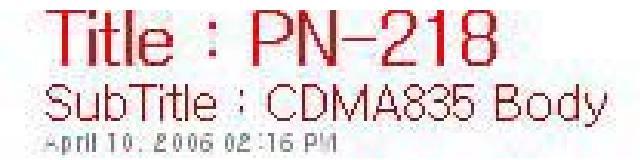
Title : PN-218

SubTitle : PCS1900 Head

April 11, 2006 10:01 AM

Frequency	e'	e''
1.800000000 GHz	40.4545	13.4296
1.810000000 GHz	40.3910	13.4763
1.820000000 GHz	40.3586	13.5068
1.830000000 GHz	40.3085	13.6186
1.840000000 GHz	40.3013	13.6940
1.850000000 GHz	40.2618	13.7591
1.860000000 GHz	40.2070	13.7975
1.870000000 GHz	40.1691	13.7890
1.880000000 GHz	40.1337	13.8063
1.890000000 GHz	40.0634	13.7678
1.900000000 GHz	39.9938	13.7568
1.910000000 GHz	39.9523	13.7459
1.920000000 GHz	39.8841	13.7707
1.930000000 GHz	39.8518	13.7754
1.940000000 GHz	39.8221	13.8411
1.950000000 GHz	39.7539	13.9411
1.960000000 GHz	39.7318	13.9690
1.970000000 GHz	39.7277	14.0621
1.980000000 GHz	39.7142	14.0990
1.990000000 GHz	39.6564	14.1123
2.000000000 GHz	39.6295	14.1346

■ Dielectric Parameter (835MHz Body)



Frequency	e'	e''
800.000000 MHz	55.2501	21.3944
805.000000 MHz	55.2403	21.3678
810.000000 MHz	55.1666	21.3190
815.000000 MHz	55.1204	21.3736
820.000000 MHz	55.1077	21.3313
825.000000 MHz	55.0267	21.3144
830.000000 MHz	54.9768	21.3475
835.000000 MHz	54.8942	21.3483
840.000000 MHz	54.9230	21.3187
845.000000 MHz	54.8511	21.3707
850.000000 MHz	54.8404	21.3775
855.000000 MHz	54.7933	21.3434
860.000000 MHz	54.6997	21.3274
865.000000 MHz	54.6988	21.3520
870.000000 MHz	54.6733	21.3103
875.000000 MHz	54.5302	21.3091
880.000000 MHz	54.5483	21.2511
885.000000 MHz	54.4774	21.2229
890.000000 MHz	54.4001	21.2028
895.000000 MHz	54.3387	21.1665
900.000000 MHz	54.2512	21.0884

■ Dielectric Parameter (1900MHz Body)

Title : PN-218

SubTitle : PCS1900 Body

April 11, 2006 02:29 PM

Frequency	e'	e''
1.800000000 GHz	54.0111	13.6016
1.810000000 GHz	53.8951	13.6954
1.820000000 GHz	53.8001	13.7932
1.830000000 GHz	53.6728	13.8109
1.840000000 GHz	53.6170	13.8568
1.850000000 GHz	53.4943	13.9273
1.860000000 GHz	53.3838	13.9841
1.870000000 GHz	53.3136	14.0307
1.880000000 GHz	53.2673	14.0889
1.890000000 GHz	53.1611	14.1190
1.900000000 GHz	53.0985	14.1862
1.910000000 GHz	53.0508	14.2473
1.920000000 GHz	53.0254	14.3027
1.930000000 GHz	52.9885	14.3511
1.940000000 GHz	52.9842	14.4126
1.950000000 GHz	52.9759	14.4598
1.960000000 GHz	52.9421	14.5352
1.970000000 GHz	52.9178	14.5727
1.980000000 GHz	52.8651	14.6125
1.990000000 GHz	52.7857	14.6678
2.000000000 GHz	52.7395	14.6952

■ Validation Data (835MHz Head)

Test Laboratory: HCT

835 Dipole Validation test: Input power(1W)
Liquid Temperature : 21.8 ℃
Date Tested : April 29, 2006

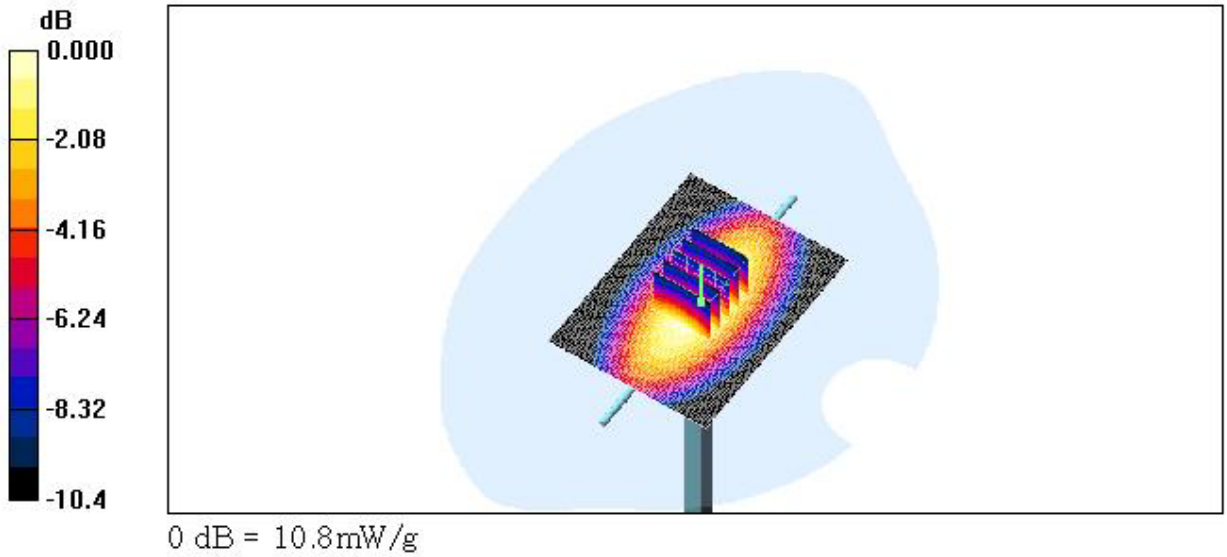
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; $\sigma = 0.885$ mho/m; $\varepsilon_r = 42.4$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1607; ConvF(6.18, 6.18, 6.18); Calibrated: 2005-08-30
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2006-03-17
- Phantom: SAM 835/900 MHz; Type: SAM

Validation 835 MHz/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 10.7 mW/g

Validation 835 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 113.9 V/m; Power Drift = -0.031 dB
Peak SAR (extrapolated) = 14.6 W/kg
SAR(1 g) = 10 mW/g; SAR(10 g) = 6.62 mW/g
Maximum value of SAR (measured) = 10.8 mW/g



0 dB = 10.8mW/g

■ Validation Data (1900MHz Head)

Test Laboratory: HCT

1900 Dipole Validation test: Input power(1W)
Liquid Temperature : 21.8 ℃
Date Tested : April 29, 2006

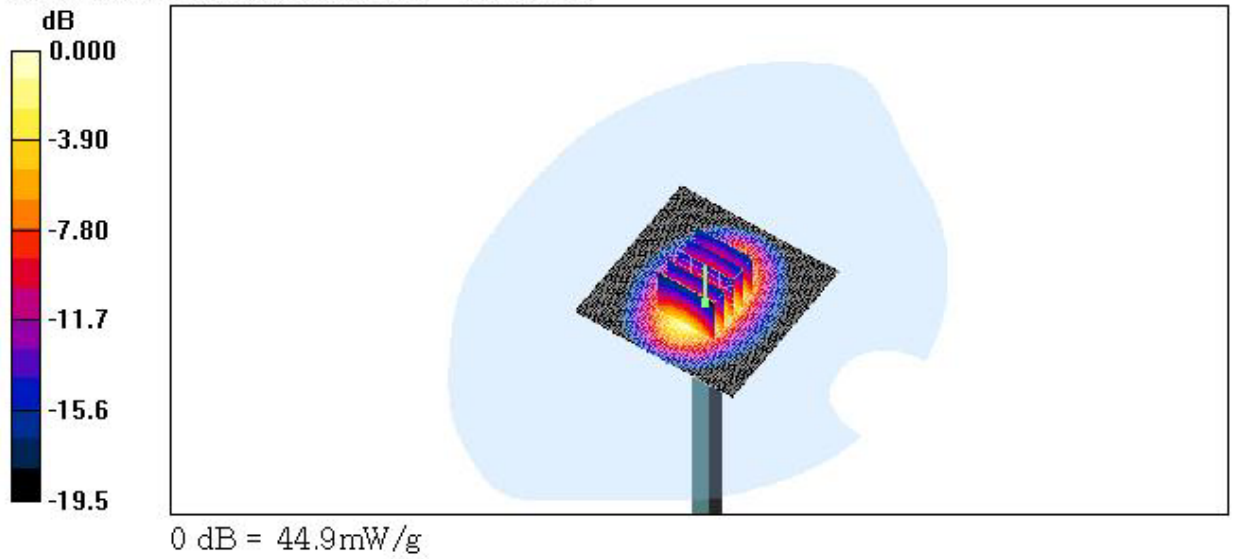
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.46 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1607; ConvF(5.14, 5.14, 5.14); Calibrated: 2005-08-30
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2006-03-17
- Phantom: SAM 1800/1900 MHz; Type: SAM

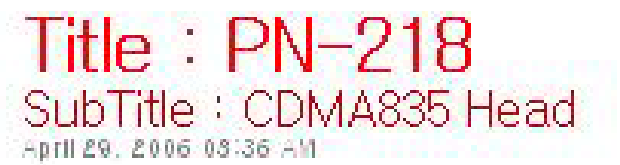
Dipole 1900MHz Validation/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 49.6 mW/g

Dipole 1900MHz Validation/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 185.2 V/m; Power Drift = -0.039 dB
Peak SAR (extrapolated) = 72.8 W/kg
SAR(1 g) = 40.7 mW/g; SAR(10 g) = 21.1 mW/g
Maximum value of SAR (measured) = 44.9 mW/g



0 dB = 44.9mW/g

■ Dielectric Parameter (835MHz Head)



Frequency	e'	e''
800.000000 MHz	42.9096	18.9793
805.000000 MHz	42.8654	18.9613
810.000000 MHz	42.7410	18.9228
815.000000 MHz	42.6790	18.9105
820.000000 MHz	42.6037	18.9984
825.000000 MHz	42.5159	18.9988
830.000000 MHz	42.4824	19.0370
835.000000 MHz	42.3914	19.0544
840.000000 MHz	42.3364	19.0826
845.000000 MHz	42.3416	19.1349
850.000000 MHz	42.2815	19.1745
855.000000 MHz	42.1896	19.1714
860.000000 MHz	42.1725	19.2085
865.000000 MHz	42.1339	19.1696
870.000000 MHz	42.0601	19.1822
875.000000 MHz	42.0137	19.1463
880.000000 MHz	41.9708	19.1198
885.000000 MHz	41.8825	19.0570
890.000000 MHz	41.8964	19.0644
895.000000 MHz	41.7970	18.9763
900.000000 MHz	41.7689	18.9569

■ Dielectric Parameter (1900MHz Head)

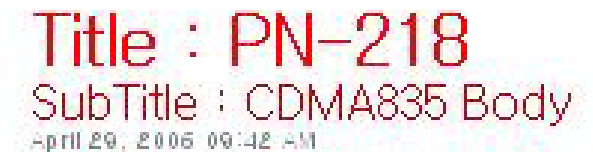
Title : PN-218

SubTitle : PCS1900 Head

April 29, 2006 10:26 AM

Frequency	e'	e''
1.800000000 GHz	40.4552	13.4108
1.810000000 GHz	40.3853	13.4523
1.820000000 GHz	40.3644	13.5062
1.830000000 GHz	40.3085	13.6186
1.840000000 GHz	40.2936	13.6866
1.850000000 GHz	40.2973	13.7671
1.860000000 GHz	40.2557	13.8455
1.870000000 GHz	40.2291	13.8355
1.880000000 GHz	40.1457	13.8439
1.890000000 GHz	40.1200	13.7856
1.900000000 GHz	40.0587	13.7689
1.910000000 GHz	39.9788	13.7407
1.920000000 GHz	39.8900	13.7431
1.930000000 GHz	39.8637	13.7617
1.940000000 GHz	39.8098	13.8135
1.950000000 GHz	39.7465	13.8984
1.960000000 GHz	39.7243	13.9621
1.970000000 GHz	39.6866	14.0717
1.980000000 GHz	39.7245	14.1364
1.990000000 GHz	39.6743	14.1565
2.000000000 GHz	39.6433	14.1726

■ Dielectric Parameter (835MHz Body)



Frequency	e'	e''
800.000000 MHz	54.9584	21.1219
805.000000 MHz	54.9260	21.0944
810.000000 MHz	54.8707	21.0641
815.000000 MHz	54.7642	21.0751
820.000000 MHz	54.7824	21.0858
825.000000 MHz	54.7046	21.0755
830.000000 MHz	54.6327	21.1078
835.000000 MHz	54.6313	21.1470
840.000000 MHz	54.5823	21.2033
845.000000 MHz	54.5623	21.2156
850.000000 MHz	54.5348	21.2631
855.000000 MHz	54.4998	21.2587
860.000000 MHz	54.4504	21.2706
865.000000 MHz	54.4541	21.3053
870.000000 MHz	54.3994	21.2974
875.000000 MHz	54.2827	21.2922
880.000000 MHz	54.2950	21.2856
885.000000 MHz	54.1917	21.2123
890.000000 MHz	54.1497	21.1847
895.000000 MHz	54.0751	21.1123
900.000000 MHz	53.9782	21.0078

■ Dielectric Parameter (1900MHz Body)

Title : PN-218

SubTitle : PCS1900 Body

April 29, 2006 11:12 AM

Frequency	e'	e''
1.800000000 GHz	54.0111	13.6016
1.810000000 GHz	53.8951	13.6954
1.820000000 GHz	53.8001	13.7932
1.830000000 GHz	53.6728	13.8109
1.840000000 GHz	53.6170	13.8568
1.850000000 GHz	53.4943	13.9273
1.860000000 GHz	53.3838	13.9841
1.870000000 GHz	53.3136	14.0307
1.880000000 GHz	53.2673	14.0889
1.890000000 GHz	53.1611	14.1190
1.900000000 GHz	53.0985	14.1862
1.910000000 GHz	53.0508	14.2473
1.920000000 GHz	53.0254	14.3027
1.930000000 GHz	52.9885	14.3511
1.940000000 GHz	52.9842	14.4126
1.950000000 GHz	52.9759	14.4598
1.960000000 GHz	52.9421	14.5352
1.970000000 GHz	52.9178	14.5727
1.980000000 GHz	52.8651	14.6125
1.990000000 GHz	52.7857	14.6678
2.000000000 GHz	52.7395	14.6952