ATTACHMENT Q – DIPOLE VALIDATION

■ Validation Data (835MHz Head)

Test Laboratory: HCT

835 Dipole Validation test: Input power(1W)
Liquid Temperature : 21.8℃
Date Tested : August 28, 2006

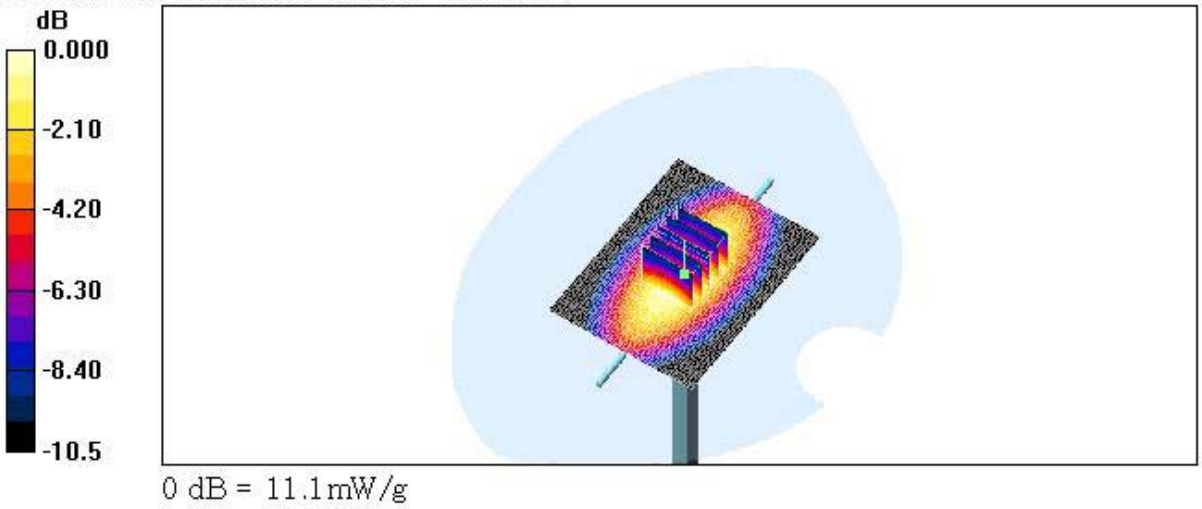
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:441
Program Name: Validation

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; $\sigma = 0.876$ mho/m; $\varepsilon_r = 41.1$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section ;Measurement SW: DASY4, V4.7 Build 44

DASY4 Configuration:
- Probe: ET3DV6 - SN1607; ConvF(6.29, 6.29, 6.29); 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) = 11.1 mW/g

Validation 835 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 116.6 V/m; Power Drift = -0.025 dB
Peak SAR (extrapolated) = 15.1 W/kg
SAR(1 g) = 10.2 mW/g; SAR(10 g) = 6.72 mW/g
Maximum value of SAR (measured) = 11.1 mW/g



0 dB = 11.1mW/g

■ Validation Data (1900MHz Head)

Test Laboratory: HCT

1900 Dipole Validation test: Input power(1W)
Liquid Temperature : 21.8℃
Date Tested : August 28, 2006

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

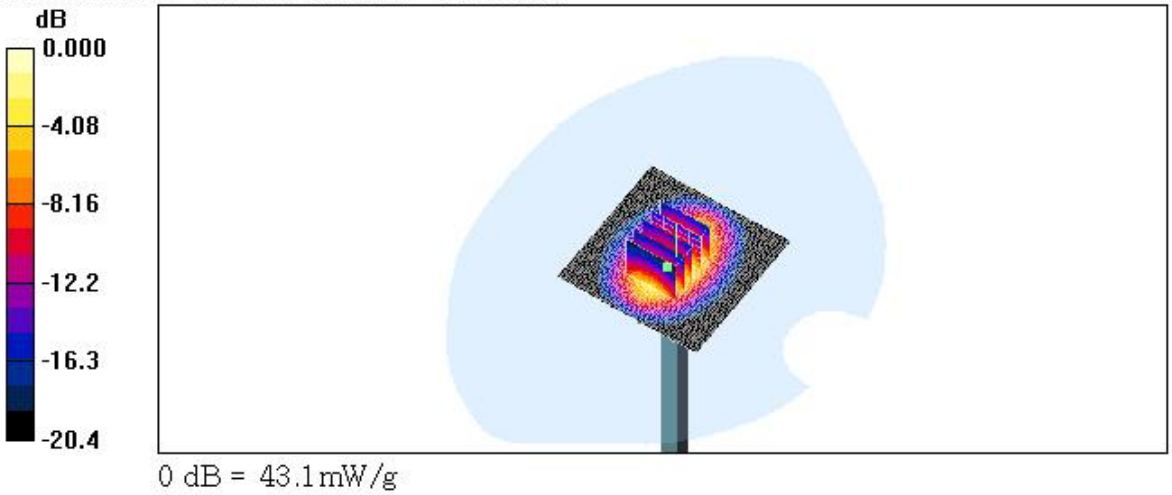
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.41 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ;Measurement SW: DASY4, V4.7 Build 44

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) = 45.1 mW/g

Dipole 1900MHz Validation/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 175.9 V/m; Power Drift = -0.004 dB
Peak SAR (extrapolated) = 88.4 W/kg
SAR(1 g) = 39.8 mW/g; SAR(10 g) = 19.7 mW/g

Maximum value of SAR (measured) = 43.1 mW/g



0 dB = 43.1mW/g

■ Dielectric Parameter (835MHz Head)

Title : C1100

SubTitle : GSM835(HEAD)

August 29, 2006 09:40 AM

Frequency	e'	e''
800.000000 MHz	41.5513	18.8608
805.000000 MHz	41.4340	18.8669
810.000000 MHz	41.3683	18.8594
815.000000 MHz	41.3235	18.8464
820.000000 MHz	41.2558	18.8239
825.000000 MHz	41.2206	18.8776
830.000000 MHz	41.1535	18.8501
835.000000 MHz	41.1274	18.8535
840.000000 MHz	41.1128	18.8954
845.000000 MHz	41.0991	18.8640
850.000000 MHz	41.0435	18.8652
855.000000 MHz	40.9805	18.9097
860.000000 MHz	41.0066	18.8673
865.000000 MHz	40.9574	18.8465
870.000000 MHz	40.9104	18.8659
875.000000 MHz	40.8895	18.8676
880.000000 MHz	40.7837	18.8688
885.000000 MHz	40.7442	18.8009
890.000000 MHz	40.6712	18.8382
895.000000 MHz	40.5797	18.7916
900.000000 MHz	40.5385	18.7112

■ Dielectric Parameter (835MHz Body)

Title : C1100

SubTitle : GSM835(BODY)

August 29, 2006 11:20 AM

Frequency	e'	e''
800.000000 MHz	53.7198	21.4218
805.000000 MHz	53.6979	21.4051
810.000000 MHz	53.6368	21.4022
815.000000 MHz	53.5997	21.3686
820.000000 MHz	53.5135	21.3359
825.000000 MHz	53.4492	21.3293
830.000000 MHz	53.4754	21.3403
835.000000 MHz	53.4224	21.3132
840.000000 MHz	53.3440	21.2738
845.000000 MHz	53.2957	21.2240
850.000000 MHz	53.2957	21.2439
855.000000 MHz	53.2384	21.1655
860.000000 MHz	53.1972	21.1573
865.000000 MHz	53.1251	21.1501
870.000000 MHz	53.0941	21.1064
875.000000 MHz	53.1431	21.0754
880.000000 MHz	53.0709	21.0742
885.000000 MHz	52.9802	21.0485
890.000000 MHz	52.9648	21.0104
895.000000 MHz	52.9113	21.0081
900.000000 MHz	52.8554	20.9964

■ Dielectric Parameter (1900MHz Head)

Title : C1100

SubTitle : GSM1900(Head)

August 29, 2006 02:10 PM

Frequency	e'	e''
1.850000000 GHz	40.6722	13.0783
1.855000000 GHz	40.6091	13.0781
1.860000000 GHz	40.5922	13.1207
1.865000000 GHz	40.5032	13.1495
1.870000000 GHz	40.4711	13.1719
1.875000000 GHz	40.4319	13.2201
1.880000000 GHz	40.4234	13.2453
1.885000000 GHz	40.3930	13.2548
1.890000000 GHz	40.3745	13.2865
1.895000000 GHz	40.3768	13.2806
1.900000000 GHz	40.3706	13.3163
1.905000000 GHz	40.3839	13.3721
1.910000000 GHz	40.4214	13.3728
1.915000000 GHz	40.3992	13.4008
1.920000000 GHz	40.3855	13.4232
1.925000000 GHz	40.3977	13.4433
1.930000000 GHz	40.4224	13.4369
1.935000000 GHz	40.4092	13.4319
1.940000000 GHz	40.3935	13.4316
1.945000000 GHz	40.3726	13.4409
1.950000000 GHz	40.3272	13.4577

■ Dielectric Parameter (1900MHz Body)

Frequency	e'	e''
1.800000000 GHz	53.1207	14.1748
1.810000000 GHz	53.1290	14.2146
1.820000000 GHz	53.1215	14.2716
1.830000000 GHz	53.0663	14.3669
1.840000000 GHz	53.0559	14.4192
1.850000000 GHz	53.0282	14.4906
1.860000000 GHz	52.9845	14.4964
1.870000000 GHz	52.9325	14.5356
1.880000000 GHz	52.8944	14.5517
1.890000000 GHz	52.8413	14.5492
1.900000000 GHz	52.7709	14.5340
1.910000000 GHz	52.7218	14.5363
1.920000000 GHz	52.6328	14.5290
1.930000000 GHz	52.5839	14.5904
1.940000000 GHz	52.4723	14.6094
1.950000000 GHz	52.4190	14.6616
1.960000000 GHz	52.4334	14.7375
1.970000000 GHz	52.4951	14.8302
1.980000000 GHz	52.4815	14.8566
1.990000000 GHz	52.5059	14.8864
2.000000000 GHz	52.4850	14.9200

■ GPRS Validation Data (835MHz Head)

Test Laboratory: HCT

835 Dipole Validation test: Input power(1W)
Liquid Temperature : 21.6 ℃
Date Tested : October 26, 2006

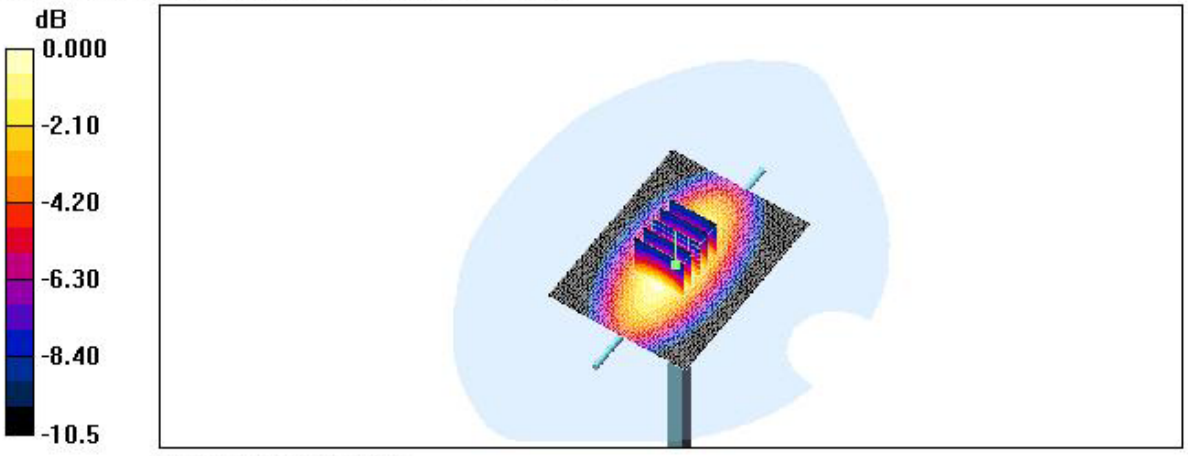
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:441
Program Name: Validation 835 MHz

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; $\sigma = 0.877$ mho/m; $\varepsilon_r = 41.1$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section ;Measurement SW: DASY4, V4.6 Build 23

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.85, 6.85, 6.85); Calibrated: 2006-03-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2006-02-23
- Phantom: SAM 835/900 MHz; Type: SAM

Validatoin 835 MHz/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 10.5 mW/g

Validatoin 835 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 112.6 V/m; Power Drift = 0.046 dB
Peak SAR (extrapolated) = 14.4 W/kg
SAR(1 g) = 9.72 mW/g; SAR(10 g) = 6.35 mW/g
Maximum value of SAR (measured) = 10.6 mW/g



0 dB = 10.6mW/g

■ GPRS Validation Data (1900MHz Head)

Test Laboratory: HCT

1900 Dipole Validation test: Input power(1W)
Liquid Temperature : 21.6 ℃
Date Tested : October 26, 2006

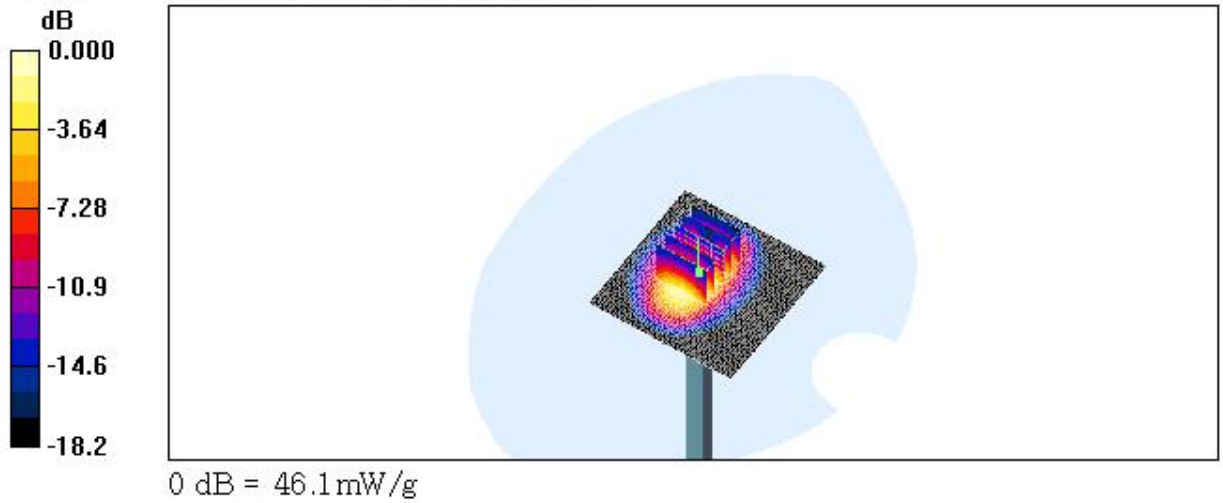
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d032
Program Name: Validation 1900 MHz

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.46 mho/m; ε_r = 40; ρ = 1000 kg/m^3
Phantom section: Flat Section ;Measurement SW: DASY4, V4.6 Build 23

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(5.16, 5.16, 5.16); Calibrated: 2006-03-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2006-02-23
- Phantom: SAM 1800/1900 MHz; Type: SAM

Validation 1900MHz/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 50.4 mW/g

Validation 1900MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 177.7 V/m; Power Drift = 0.004 dB
Peak SAR (extrapolated) = 75.1 W/kg
SAR(1 g) = 41.5 mW/g; SAR(10 g) = 21.6 mW/g
Maximum value of SAR (measured) = 46.1 mW/g



0 dB = 46.1 mW/g

■ GPRS Dielectric Parameter (835MHz Head)

Title : C1100
SubTitle : GSM835(Head)
October 26, 2006 08:40 AM

Frequency	e'	e''
800.000000 MHz	41.5210	18.8690
805.000000 MHz	41.4339	18.8669
810.000000 MHz	41.3856	18.8440
815.000000 MHz	41.3453	18.8084
820.000000 MHz	41.3030	18.8217
825.000000 MHz	41.2443	18.8869
830.000000 MHz	41.1410	18.8430
835.000000 MHz	41.1328	18.8730
840.000000 MHz	41.1143	18.8637
845.000000 MHz	41.1088	18.8613
850.000000 MHz	41.0653	18.8694
855.000000 MHz	40.9900	18.9070
860.000000 MHz	41.0363	18.8998
865.000000 MHz	40.9628	18.8653
870.000000 MHz	40.9077	18.8565
875.000000 MHz	40.9082	18.8622
880.000000 MHz	40.7923	18.8813
885.000000 MHz	40.7497	18.8544
890.000000 MHz	40.6777	18.8264
895.000000 MHz	40.6227	18.7691
900.000000 MHz	40.5321	18.7230

■ GPRS Dielectric Parameter (835MHz Body)

Frequency	e'	e''
800.000000 MHz	53.5927	21.3181
805.000000 MHz	53.5482	21.3329
810.000000 MHz	53.4746	21.3578
815.000000 MHz	53.4617	21.3275
820.000000 MHz	53.3926	21.2783
825.000000 MHz	53.3221	21.2691
830.000000 MHz	53.3590	21.2935
835.000000 MHz	53.2968	21.2704
840.000000 MHz	53.2647	21.2367
845.000000 MHz	53.2379	21.2450
850.000000 MHz	53.2372	21.2328
855.000000 MHz	53.2158	21.1630
860.000000 MHz	53.2078	21.1858
865.000000 MHz	53.1734	21.1643
870.000000 MHz	53.1480	21.1076
875.000000 MHz	53.1310	21.1279
880.000000 MHz	53.1526	21.0379
885.000000 MHz	53.0344	21.0385
890.000000 MHz	53.0578	21.0063
895.000000 MHz	52.9914	20.9983
900.000000 MHz	52.9441	20.9830

■ GPRS Dielectric Parameter (1900MHz Head)

Title : C1100

SubTitle : GSM1900(Head)

October 26, 2006 03:20 PM

Frequency	e'	e''
1.800000000 GHz	40.4248	13.4909
1.810000000 GHz	40.3745	13.5386
1.820000000 GHz	40.3424	13.5444
1.830000000 GHz	40.3123	13.6345
1.840000000 GHz	40.2846	13.7014
1.850000000 GHz	40.2449	13.7516
1.860000000 GHz	40.1913	13.8014
1.870000000 GHz	40.1348	13.8017
1.880000000 GHz	40.0687	13.8086
1.890000000 GHz	39.9922	13.7835
1.900000000 GHz	39.9694	13.7934
1.910000000 GHz	39.8930	13.8023
1.920000000 GHz	39.8365	13.8077
1.930000000 GHz	39.8078	13.8221
1.940000000 GHz	39.7866	13.8733
1.950000000 GHz	39.7257	13.9389
1.960000000 GHz	39.7112	13.9737
1.970000000 GHz	39.7003	14.0388
1.980000000 GHz	39.6575	14.0895
1.990000000 GHz	39.6659	14.1000
2.000000000 GHz	39.5739	14.1221

■ GPRS Dielectric Parameter (1900MHz Body)

Frequency	e'	e''
1.800000000 GHz	52.8076	13.7182
1.810000000 GHz	52.7721	13.7941
1.820000000 GHz	52.7416	13.8729
1.830000000 GHz	52.6377	13.9475
1.840000000 GHz	52.6229	14.0096
1.850000000 GHz	52.5635	14.0391
1.860000000 GHz	52.4788	14.0987
1.870000000 GHz	52.4197	14.1399
1.880000000 GHz	52.3827	14.1473
1.890000000 GHz	52.3115	14.1825
1.900000000 GHz	52.2883	14.2250
1.910000000 GHz	52.2429	14.2882
1.920000000 GHz	52.2115	14.3603
1.930000000 GHz	52.1819	14.4203
1.940000000 GHz	52.1532	14.4942
1.950000000 GHz	52.1459	14.5772
1.960000000 GHz	52.1041	14.6207
1.970000000 GHz	52.0613	14.6763
1.980000000 GHz	52.0169	14.7088
1.990000000 GHz	51.9441	14.7436
2.000000000 GHz	51.9063	14.7528