

ATTACHMENT Q – DIPOLE VALIDATION

■ Validation Data (835MHz Head)

Test Laboratory: HCT

835 Dipole Validation test: Input power(1W)

Liquid Temperature : 21.7℃

Date Tested : July 25, 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: $f = 835 \text{ MHz}$; $\sigma = 0.874 \text{ mho/m}$; $\epsilon_r = 40.8$; $\rho = 1000 \text{ kg/m}^3$

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: DAE4 Sn447; Calibrated: 2005-11-30

- Phantom: SAM 835/900 MHz; Type: SAM

Validatoin 835 MHz/Area Scan (61x81x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 10.5 mW/g

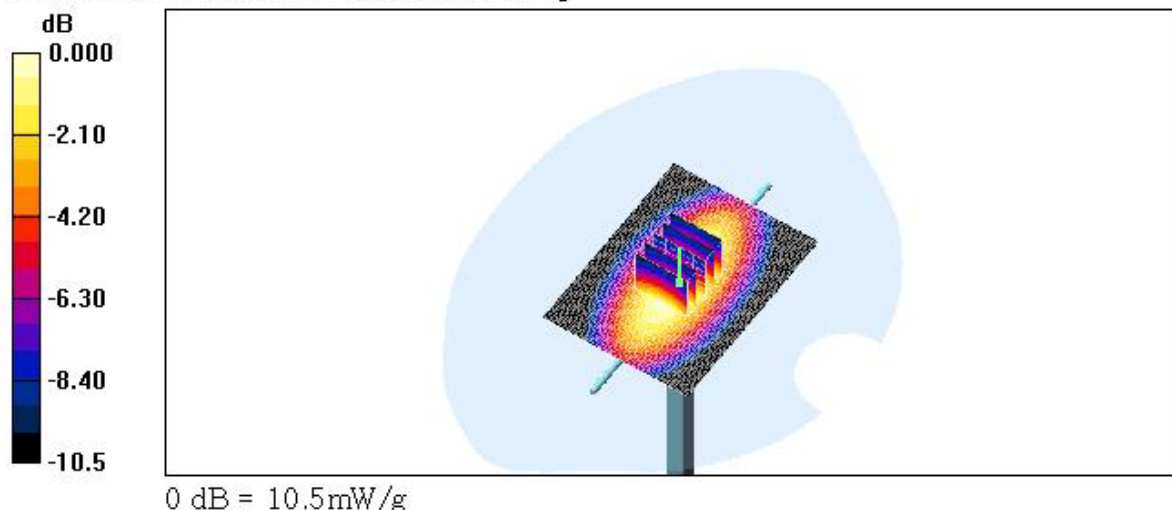
Validatoin 835 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 113.3 V/m; Power Drift = -0.006 dB

Peak SAR (extrapolated) = 14.2 W/kg

SAR(1 g) = 9.71 mW/g; SAR(10 g) = 6.37 mW/g

Maximum value of SAR (measured) = 10.5 mW/g



■ Validation Data (1900MHz Head)

Test Laboratory: HCT

1900 Dipole Validation test: Input power(1W)

Liquid Temperature : 21.7 °C

Date Tested : July 25, 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; $\sigma = 1.46$ mho/m; $\epsilon_r = 38.2$; $\rho = 1000$ kg/m³

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: DAE4 Sn447; Calibrated: 2005-11-30

- Phantom: SAM 1800/1900 MHz; Type: SAM

Validation 1900MHz/Area Scan (61x61x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 51.1 mW/g

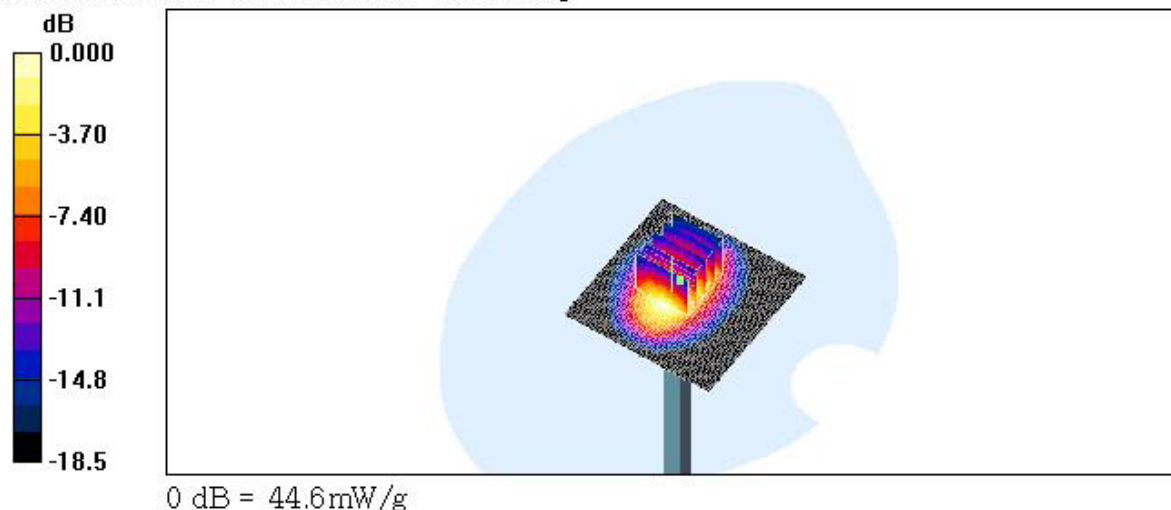
Validation 1900MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 185.7 V/m; Power Drift = -0.023 dB

Peak SAR (extrapolated) = 71.0 W/kg

SAR(1 g) = 40.6 mW/g; SAR(10 g) = 21.4 mW/g

Maximum value of SAR (measured) = 44.6 mW/g



■ Validation Data (835MHz Head)

Test Laboratory: HCT

835Dipole Validation test: Input power(1W)

Liquid Temperature : 21.9 °C

Date Tested : August 09, 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: $f = 835 \text{ MHz}$; $\sigma = 0.873 \text{ mho/m}$; $\epsilon_r = 40.8$; $\rho = 1000 \text{ kg/m}^3$

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: DAE4 Sn447; Calibrated: 2005-11-30

- Phantom: SAM 835/900 MHz; Type: SAM

Validatoin 835 MHz/Area Scan (61x81x1): Measurement grid: $\Delta x = 15\text{mm}$, $\Delta y = 15\text{mm}$

Maximum value of SAR (interpolated) = 10.4 mW/g

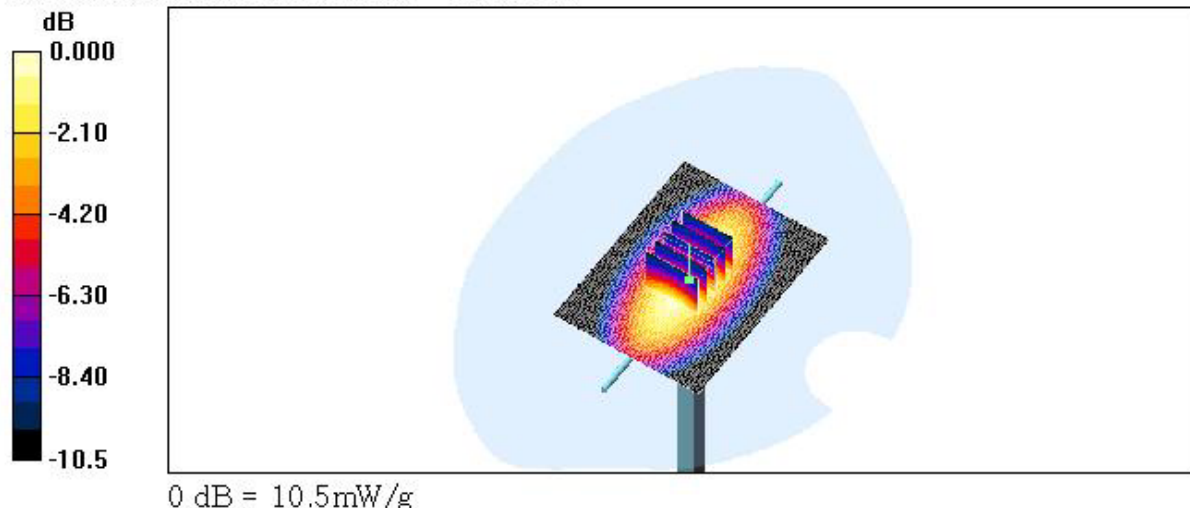
Validatoin 835 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $\Delta x = 8\text{mm}$, $\Delta y = 8\text{mm}$, $\Delta z = 5\text{mm}$

Reference Value = 113.5 V/m; Power Drift = -0.012 dB

Peak SAR (extrapolated) = 14.3 W/kg

SAR(1 g) = 9.7 mW/g; SAR(10 g) = 6.36 mW/g

Maximum value of SAR (measured) = 10.5 mW/g



■ Validation Data (1900MHz Head)

Test Laboratory: HCT

1900Dipole Validation test: Input power(1W)

Liquid Temperature : 21.9 °C

Date Tested : August 09, 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: $f = 1900 \text{ MHz}$; $\sigma = 1.45 \text{ mho/m}$; $\epsilon_r = 39.6$; $\rho = 1000 \text{ kg/m}^3$

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: DAE4 Sn447; Calibrated: 2005-11-30

- Phantom: SAM 1800/1900 MHz; Type: SAM

Validation 1900MHz/Area Scan (61x61x1): Measurement grid: $\Delta x = 15\text{mm}$, $\Delta y = 15\text{mm}$

Maximum value of SAR (interpolated) = 49.8 mW/g

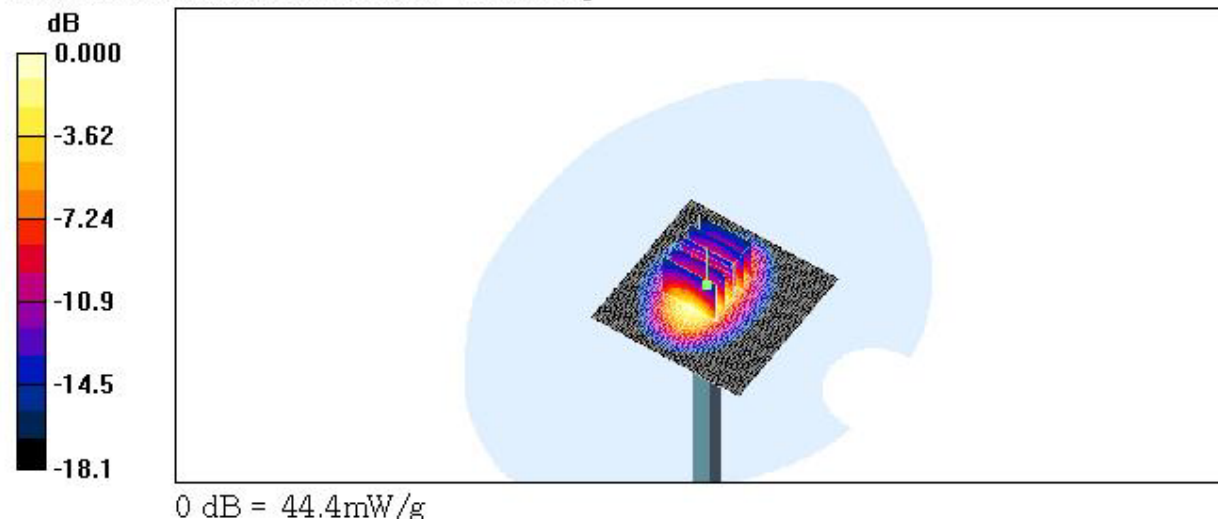
Validation 1900MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $\Delta x = 8\text{mm}$, $\Delta y = 8\text{mm}$, $\Delta z = 5\text{mm}$

Reference Value = 185.6 V/m; Power Drift = -0.029 dB

Peak SAR (extrapolated) = 69.8 W/kg

SAR(1 g) = 39.9 mW/g; SAR(10 g) = 21.1 mW/g

Maximum value of SAR (measured) = 44.4 mW/g



■ Dielectric Parameter (850MHz Head)

Title : EZ700D

SubTitle : GSM835

July 25, 2006 07:40 AM

Frequency	e'	e''
800.000000 MHz	41.1904	18.8489
805.000000 MHz	41.1132	18.8774
810.000000 MHz	41.0685	18.8221
815.000000 MHz	40.9710	18.8457
820.000000 MHz	40.9497	18.8116
825.000000 MHz	40.9231	18.8532
830.000000 MHz	40.8402	18.8203
835.000000 MHz	40.8352	18.8190
840.000000 MHz	40.7644	18.8045
845.000000 MHz	40.7840	18.7756
850.000000 MHz	40.7517	18.7818
855.000000 MHz	40.6412	18.7997
860.000000 MHz	40.6527	18.7732
865.000000 MHz	40.6092	18.7318
870.000000 MHz	40.5303	18.7414
875.000000 MHz	40.4924	18.7495
880.000000 MHz	40.4705	18.7230
885.000000 MHz	40.3674	18.6901
890.000000 MHz	40.2913	18.7296
895.000000 MHz	40.2017	18.6839
900.000000 MHz	40.1314	18.6333

■ Dielectric Parameter (1900MHz Head)

Title : EZ700D

SubTitle : GSM1900

July 25, 2006 01:30 PM

Frequency	e'	e''
1.800000000 GHz	38.6100	13.5892
1.810000000 GHz	38.6081	13.6244
1.820000000 GHz	38.5616	13.6586
1.830000000 GHz	38.5247	13.6663
1.840000000 GHz	38.4841	13.6912
1.850000000 GHz	38.4599	13.7362
1.860000000 GHz	38.4304	13.7606
1.870000000 GHz	38.3768	13.7727
1.880000000 GHz	38.3160	13.7807
1.890000000 GHz	38.2750	13.8095
1.900000000 GHz	38.2367	13.8073
1.910000000 GHz	38.2106	13.8329
1.920000000 GHz	38.1793	13.8531
1.930000000 GHz	38.1365	13.8484
1.940000000 GHz	38.1124	13.8906
1.950000000 GHz	38.0385	13.8795
1.960000000 GHz	38.0203	13.8862
1.970000000 GHz	37.9781	13.9313
1.980000000 GHz	37.9464	13.9410
1.990000000 GHz	37.8828	13.9941
2.000000000 GHz	37.8898	14.0023

■ Dielectric Parameter (850MHz Body)

Title : EZ700D

SubTitle : GSM835(Body)

July 25, 2006 11:52 AM

Frequency	e'	e''
800.000000 MHz	55.1192	20.7112
805.000000 MHz	55.0233	20.6399
810.000000 MHz	54.8935	20.6271
815.000000 MHz	54.9618	20.5988
820.000000 MHz	55.0240	20.6450
825.000000 MHz	55.0938	20.6648
830.000000 MHz	55.0984	20.7467
835.000000 MHz	55.1184	20.7335
840.000000 MHz	55.1328	20.7330
845.000000 MHz	55.1417	20.7452
850.000000 MHz	55.1752	20.7911
855.000000 MHz	55.1625	20.7995
860.000000 MHz	55.1753	20.7870
865.000000 MHz	55.1285	20.7866
870.000000 MHz	55.1335	20.7230
875.000000 MHz	55.0542	20.7301
880.000000 MHz	55.0260	20.7013
885.000000 MHz	54.9088	20.6868
890.000000 MHz	54.8936	20.6059
895.000000 MHz	54.8651	20.5045
900.000000 MHz	54.7507	20.4490

■ Dielectric Parameter (1900MHz Body)

Title : EZ700D

SubTitle : GSM1900(Body)

July 25, 2006 04:03 PM

Frequency	e'	e''
1.800000000 GHz	53.1112	14.1976
1.810000000 GHz	53.1053	14.2461
1.820000000 GHz	53.0763	14.2783
1.830000000 GHz	53.0470	14.3947
1.840000000 GHz	53.0490	14.4362
1.850000000 GHz	53.0029	14.5277
1.860000000 GHz	52.9738	14.5497
1.870000000 GHz	52.9270	14.5660
1.880000000 GHz	52.9097	14.5888
1.890000000 GHz	52.8355	14.5909
1.900000000 GHz	52.7819	14.5857
1.910000000 GHz	52.7192	14.5967
1.920000000 GHz	52.6644	14.5868
1.930000000 GHz	52.6107	14.6271
1.940000000 GHz	52.5934	14.6811
1.950000000 GHz	52.5583	14.7448
1.960000000 GHz	52.5270	14.7871
1.970000000 GHz	52.5575	14.8655
1.980000000 GHz	52.5310	14.8819
1.990000000 GHz	52.4922	14.9251
2.000000000 GHz	52.4829	14.9329

■ Dielectric Parameter (850MHz Head)

Title : EZ700D

SubTitle : GSM835

August 09, 2006 11:50 AM

Frequency	e'	e''
800.000000 MHz	41.1600	18.8569
805.000000 MHz	41.0977	18.8600
810.000000 MHz	41.0658	18.8121
815.000000 MHz	40.9603	18.8059
820.000000 MHz	40.9609	18.8138
825.000000 MHz	40.9271	18.8098
830.000000 MHz	40.8224	18.7937
835.000000 MHz	40.8369	18.7871
840.000000 MHz	40.8042	18.8352
845.000000 MHz	40.7979	18.7510
850.000000 MHz	40.7027	18.7542
855.000000 MHz	40.6427	18.7684
860.000000 MHz	40.6189	18.7622
865.000000 MHz	40.5715	18.7424
870.000000 MHz	40.5022	18.7494
875.000000 MHz	40.4884	18.7708
880.000000 MHz	40.4089	18.7357
885.000000 MHz	40.2996	18.7147
890.000000 MHz	40.2742	18.7047
895.000000 MHz	40.2044	18.6930
900.000000 MHz	40.1144	18.6087

■ Dielectric Parameter (850MHz Body)**Title : EZ700D****SubTitle : GSM835(Body)**

August 09, 2006 03:12 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 Head)

Title : EZ700D

SubTitle : GSM1900

August 09, 2006 05:20 PM

Frequency	e'	e''
1.800000000 GHz	39.8287	13.3664
1.810000000 GHz	39.7708	13.4153
1.820000000 GHz	39.7455	13.5049
1.830000000 GHz	39.7667	13.6081
1.840000000 GHz	39.7954	13.6818
1.850000000 GHz	39.8081	13.7224
1.860000000 GHz	39.8155	13.7720
1.870000000 GHz	39.8074	13.7616
1.880000000 GHz	39.7920	13.7620
1.890000000 GHz	39.7094	13.7122
1.900000000 GHz	39.6005	13.6712
1.910000000 GHz	39.5027	13.6598
1.920000000 GHz	39.3796	13.6626
1.930000000 GHz	39.3270	13.7036
1.940000000 GHz	39.3018	13.7803
1.950000000 GHz	39.2878	13.8672
1.960000000 GHz	39.3089	13.9604
1.970000000 GHz	39.3282	14.0485
1.980000000 GHz	39.3505	14.1076
1.990000000 GHz	39.3436	14.1121
2.000000000 GHz	39.3177	14.0999

■ Dielectric Parameter (1900MHz Body)

Title : EZ700D
SubTitle : GSM1900(Body)
August 09, 2006 03:35 PM

Frequency	e'	e''
1.800000000 GHz	53.2003	14.1572
1.810000000 GHz	53.1539	14.2223
1.820000000 GHz	53.1466	14.2752
1.830000000 GHz	53.1160	14.3778
1.840000000 GHz	53.1237	14.4176
1.850000000 GHz	53.0939	14.4906
1.860000000 GHz	53.0244	14.5410
1.870000000 GHz	53.0321	14.5734
1.880000000 GHz	53.0019	14.5819
1.890000000 GHz	52.9352	14.5766
1.900000000 GHz	52.8595	14.5475
1.910000000 GHz	52.8088	14.5362
1.920000000 GHz	52.6964	14.5429
1.930000000 GHz	52.6504	14.5685
1.940000000 GHz	52.5977	14.6119
1.950000000 GHz	52.5734	14.6835
1.960000000 GHz	52.5486	14.7523
1.970000000 GHz	52.5875	14.8588
1.980000000 GHz	52.5695	14.9069
1.990000000 GHz	52.5720	14.9174
2.000000000 GHz	52.5579	14.9767