

ATTACHMENT Q – DIPOLE VALIDATION

■ Validation Data (835MHz Head)

Test Laboratory: HCT

835 Dipole Validation test: Input power(1W)

Liquid Temperature : 21.7 °C

Date Tested : April 03, 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: $f = 835 \text{ MHz}$; $\sigma = 0.892 \text{ mho/m}$; $\epsilon_r = 41.8$; $\rho = 1000 \text{ kg/m}^3$

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: $\Delta x = 15\text{mm}$, $\Delta y = 15\text{mm}$

Maximum value of SAR (interpolated) = 10.8 mW/g

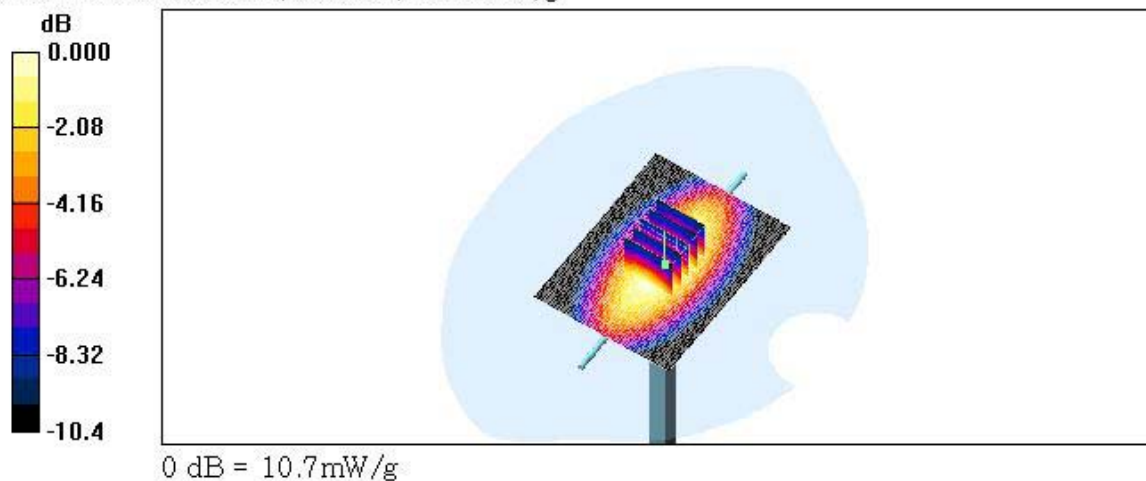
Validation 835 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $\Delta x = 8\text{mm}$, $\Delta y = 8\text{mm}$, $\Delta z = 5\text{mm}$

Reference Value = 115.1 V/m; Power Drift = -0.138 dB

Peak SAR (extrapolated) = 14.4 W/kg

SAR(1 g) = 9.93 mW/g; SAR(10 g) = 6.56 mW/g

Maximum value of SAR (measured) = 10.7 mW/g



■ Validation Data (1900MHz Head)

Test Laboratory: HCT

1900 Dipole Validation test: Input power(1W)

Liquid Temperature : 21.6 °C

Date Tested : April 04, 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; $\sigma = 1.45$ mho/m; $\epsilon_r = 40.1$; $\rho = 1000$ kg/m³

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: $\Delta x = 15$ mm, $\Delta y = 15$ mm

Maximum value of SAR (interpolated) = 48.6 mW/g

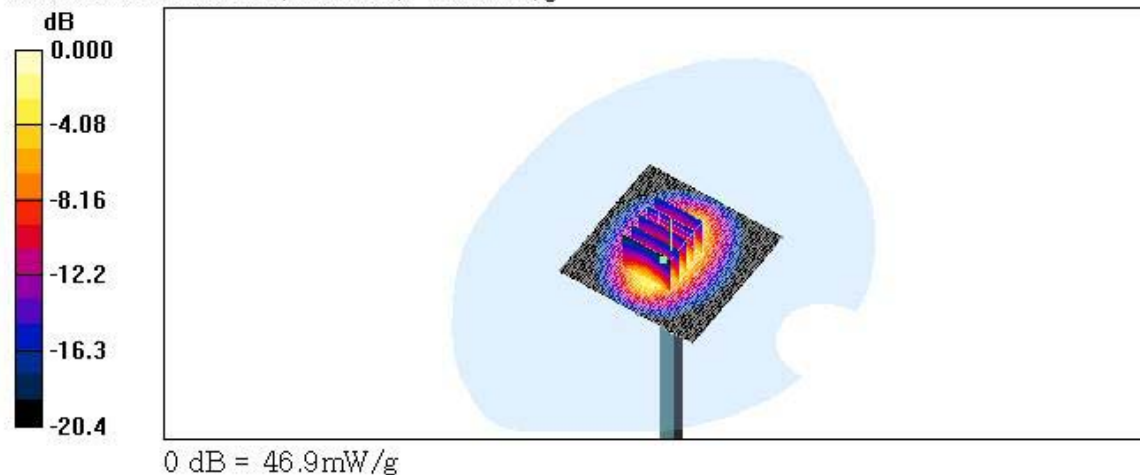
Dipole 1900MHz Validation/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $\Delta x = 8$ mm, $\Delta y = 8$ mm, $\Delta z = 5$ mm

Reference Value = 188.7 V/m; Power Drift = -0.009 dB

Peak SAR (extrapolated) = 75.9 W/kg

SAR(1 g) = 41.8 mW/g; SAR(10 g) = 21.3 mW/g

Maximum value of SAR (measured) = 46.9 mW/g



■ Validation Data (835MHz Head)

835 Dipole Validation test: Input power(1W)
Liquid Temperature : 21.7 °C
Date Tested : April 17, 2006

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

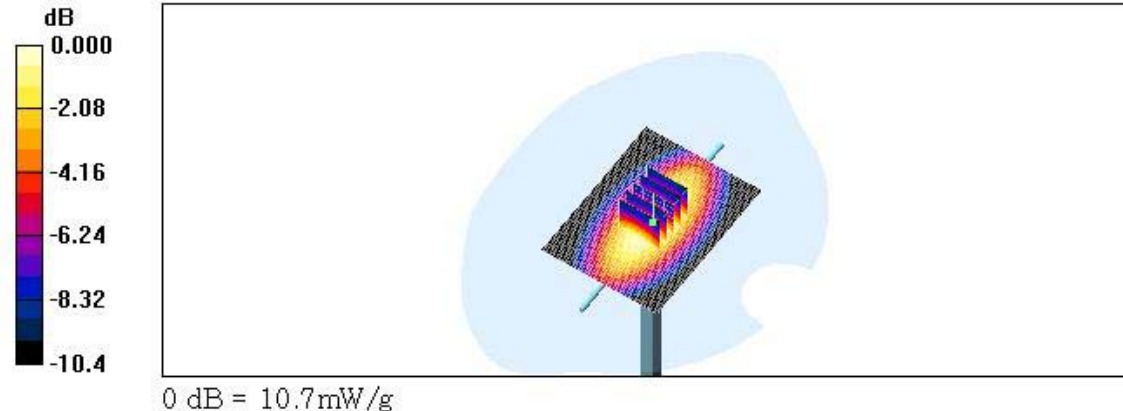
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.89 \text{ mho/m}$; $\epsilon_r = 42.1$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

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: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (interpolated) = 10.6 mW/g

Validation 835 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 113.2 V/m; Power Drift = -0.036 dB
Peak SAR (extrapolated) = 14.3 W/kg
SAR(1 g) = 9.87 mW/g; SAR(10 g) = 6.52 mW/g
Maximum value of SAR (measured) = 10.7 mW/g



■ Validation Data (1900MHz Head)

1900 Dipole Validation test: Input power(1W)

Liquid Temperature : 21.7 °C

Date Tested : April 17, 2006

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:xxx

Program Name: Validation

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1900 \text{ MHz}$; $\sigma = 1.45 \text{ mho/m}$; $\epsilon_r = 39.9$; $\rho = 1000 \text{ kg/m}^3$

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: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 47.1 mW/g

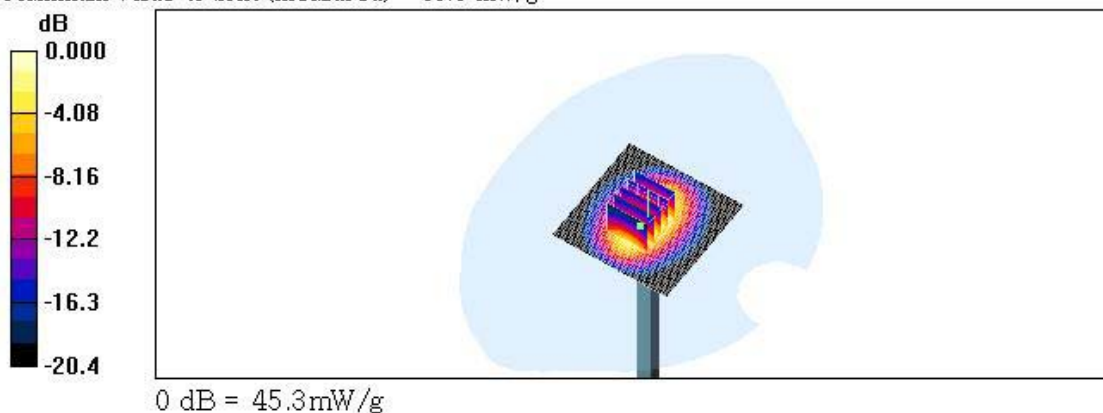
Dipole 1900MHz Validation/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 189.2 V/m; Power Drift = 0.050 dB

Peak SAR (extrapolated) = 73.2 W/kg

SAR(1 g) = 40.4 mW/g; SAR(10 g) = 20.7 mW/g

Maximum value of SAR (measured) = 45.3 mW/g



■ Dielectric Parameter (835MHz Head)

Title : PN-320

SubTitle : CDMA835 Head

April 03, 2006 11:21 AM

Frequency	e'	e''
800.000000 MHz	42.4120	19.2689
805.000000 MHz	42.3408	19.2583
810.000000 MHz	42.2534	19.2631
815.000000 MHz	42.2005	19.1943
820.000000 MHz	42.1169	19.2042
825.000000 MHz	42.0010	19.2074
830.000000 MHz	41.9326	19.2241
835.000000 MHz	41.8239	19.2048
840.000000 MHz	41.7444	19.1361
845.000000 MHz	41.6300	19.1614
850.000000 MHz	41.6008	19.1523
855.000000 MHz	41.5136	19.1186
860.000000 MHz	41.4927	19.0973
865.000000 MHz	41.4023	19.1166
870.000000 MHz	41.3211	19.0928
875.000000 MHz	41.2158	19.0866
880.000000 MHz	41.2137	19.0154
885.000000 MHz	41.0887	19.1061
890.000000 MHz	41.0171	19.0660
895.000000 MHz	40.9752	19.0227
900.000000 MHz	40.9066	18.9877

■ Dielectric Parameter (1900MHz Head)

Title : PN-320

SubTitle : PCS1900 Head

April 04, 2006 10:50 AM

Frequency	e'	e''
1.800000000 GHz	40.4458	13.3062
1.810000000 GHz	40.3663	13.3723
1.820000000 GHz	40.3225	13.4194
1.830000000 GHz	40.2731	13.5523
1.840000000 GHz	40.2766	13.6547
1.850000000 GHz	40.2689	13.7607
1.860000000 GHz	40.2137	13.8176
1.870000000 GHz	40.1954	13.8206
1.880000000 GHz	40.1462	13.8164
1.890000000 GHz	40.1227	13.7477
1.900000000 GHz	40.0742	13.7047
1.910000000 GHz	39.9784	13.6572
1.920000000 GHz	39.8632	13.6471
1.930000000 GHz	39.8252	13.6529
1.940000000 GHz	39.7732	13.7216
1.950000000 GHz	39.7029	13.8322
1.960000000 GHz	39.6970	13.9209
1.970000000 GHz	39.6949	14.0484
1.980000000 GHz	39.7107	14.0983
1.990000000 GHz	39.6736	14.1422
2.000000000 GHz	39.6397	14.1366

■ Dielectric Parameter (835MHz Body)

Title : PN-320

SubTitle : CDMA835 Body

April 03, 2006 04:45 PM

Frequency	e'	e''
800.000000 MHz	55.2971	21.3661
805.000000 MHz	55.3016	21.3798
810.000000 MHz	55.2139	21.3245
815.000000 MHz	55.1656	21.3120
820.000000 MHz	55.1285	21.3574
825.000000 MHz	55.0891	21.3472
830.000000 MHz	54.9928	21.3305
835.000000 MHz	54.9428	21.3302
840.000000 MHz	54.9303	21.3380
845.000000 MHz	54.8703	21.3635
850.000000 MHz	54.8104	21.3560
855.000000 MHz	54.7371	21.3103
860.000000 MHz	54.6866	21.3215
865.000000 MHz	54.6597	21.3346
870.000000 MHz	54.6078	21.3356
875.000000 MHz	54.5191	21.3080
880.000000 MHz	54.4917	21.2838
885.000000 MHz	54.4421	21.2686
890.000000 MHz	54.3412	21.2683
895.000000 MHz	54.3276	21.1919
900.000000 MHz	54.2167	21.1336

■ Dielectric Parameter (1900MHz Body)

Title : PN-320

SubTitle : PCS1900 Body

April 04, 2006 04:12 PM

Frequency	e'	e''
1.800000000 GHz	54.5887	13.6032
1.810000000 GHz	54.5386	13.7092
1.820000000 GHz	54.4734	13.7587
1.830000000 GHz	54.3926	13.8453
1.840000000 GHz	54.3497	13.9015
1.850000000 GHz	54.2790	13.9171
1.860000000 GHz	54.1860	13.9542
1.870000000 GHz	54.0974	14.0213
1.880000000 GHz	54.0214	14.0442
1.890000000 GHz	53.9079	14.1033
1.900000000 GHz	53.8121	14.1356
1.910000000 GHz	53.7700	14.1953
1.920000000 GHz	53.7341	14.2938
1.930000000 GHz	53.6611	14.3509
1.940000000 GHz	53.6137	14.4320
1.950000000 GHz	53.6035	14.4997
1.960000000 GHz	53.5224	14.5261
1.970000000 GHz	53.4799	14.5635
1.980000000 GHz	53.4851	14.5913
1.990000000 GHz	53.4283	14.6438
2.000000000 GHz	53.3765	14.6845

■ Dielectric Parameter (835MHz Head)**Title : PN-320****SubTitle : 835 MHz HEAD**

April 17, 2006 10:01 AM

Frequency	e'	e''
800.000000 MHz	42.6535	19.2353
805.000000 MHz	42.6385	19.1978
810.000000 MHz	42.5094	19.2138
815.000000 MHz	42.4330	19.2584
820.000000 MHz	42.4110	19.1487
825.000000 MHz	42.3467	19.1901
830.000000 MHz	42.2501	19.1875
835.000000 MHz	42.1147	19.1542
840.000000 MHz	42.0708	19.1062
845.000000 MHz	41.9411	19.0833
850.000000 MHz	41.9006	19.0769
855.000000 MHz	41.7722	19.0134
860.000000 MHz	41.7214	19.0005
865.000000 MHz	41.6365	19.0080
870.000000 MHz	41.5408	19.0086
875.000000 MHz	41.4020	18.9615
880.000000 MHz	41.3600	18.9473
885.000000 MHz	41.2476	18.9642
890.000000 MHz	41.2110	18.9788
895.000000 MHz	41.1352	18.9256
900.000000 MHz	41.1012	18.9101

■ Dielectric Parameter (1900MHz Head)**Title : PN-320****SubTitle : 1900 MHz HEAD**

April 17, 2006 11:31 AM

Frequency	e'	e''
1.800000000 GHz	40.2951	13.3501
1.810000000 GHz	40.2416	13.4128
1.820000000 GHz	40.1901	13.4468
1.830000000 GHz	40.1649	13.5497
1.840000000 GHz	40.1490	13.6405
1.850000000 GHz	40.1292	13.7030
1.860000000 GHz	40.1198	13.7557
1.870000000 GHz	40.0626	13.7690
1.880000000 GHz	39.9998	13.7622
1.890000000 GHz	39.9375	13.6983
1.900000000 GHz	39.8719	13.6794
1.910000000 GHz	39.8210	13.6635
1.920000000 GHz	39.7449	13.6942
1.930000000 GHz	39.7189	13.7223
1.940000000 GHz	39.6679	13.7966
1.950000000 GHz	39.6223	13.8674
1.960000000 GHz	39.6072	13.9062
1.970000000 GHz	39.5814	14.0113
1.980000000 GHz	39.5531	14.0705
1.990000000 GHz	39.5155	14.0739
2.000000000 GHz	39.4917	14.0832

■ Dielectric Parameter (835MHz Body)

Title : PN-320

SubTitle : 835MHz BODY

April 17, 2006 03:31 PM

Frequency	e'	e''
800.000000 MHz	55.0488	21.2151
805.000000 MHz	55.0297	21.1935
810.000000 MHz	54.9396	21.1296
815.000000 MHz	54.9277	21.1846
820.000000 MHz	54.9004	21.1940
825.000000 MHz	54.8180	21.1566
830.000000 MHz	54.7577	21.2061
835.000000 MHz	54.6918	21.1909
840.000000 MHz	54.7079	21.2447
845.000000 MHz	54.6068	21.2757
850.000000 MHz	54.5923	21.3289
855.000000 MHz	54.5595	21.3014
860.000000 MHz	54.5193	21.3094
865.000000 MHz	54.4954	21.3003
870.000000 MHz	54.4420	21.3241
875.000000 MHz	54.3397	21.2596
880.000000 MHz	54.3036	21.2663
885.000000 MHz	54.2056	21.2069
890.000000 MHz	54.1900	21.1795
895.000000 MHz	54.0878	21.1179
900.000000 MHz	54.0269	21.0514

■ Dielectric Parameter (1900MHz Body)

Title : PN-320

SubTitle : 1900 MHz BODY

April 17, 2006 02:26 PM

Frequency	e'	e''
1.800000000 GHz	52.2894	13.5918
1.810000000 GHz	52.2467	13.6765
1.820000000 GHz	52.2022	13.7521
1.830000000 GHz	52.1447	13.8429
1.840000000 GHz	52.1516	13.9389
1.850000000 GHz	52.1117	13.9825
1.860000000 GHz	52.0814	14.0467
1.870000000 GHz	52.0695	14.1090
1.880000000 GHz	52.0388	14.1918
1.890000000 GHz	52.0163	14.2852
1.900000000 GHz	52.0647	14.3510
1.910000000 GHz	52.0824	14.4119
1.920000000 GHz	51.9672	14.4465
1.930000000 GHz	52.0093	14.4706
1.940000000 GHz	52.1249	14.4985
1.950000000 GHz	52.1642	14.5350
1.960000000 GHz	52.1110	14.5819
1.970000000 GHz	52.1072	14.6332
1.980000000 GHz	52.0946	14.6390
1.990000000 GHz	52.0684	14.7155
2.000000000 GHz	52.0012	14.7056