

ATTACHMENT Q – DIPOLE VALIDATION

Validation Data (835MHz Head)

Test Laboratory: HCT

835 Dipole Validation test: Input power(1W)
Liquid Temperature : 21.6°C
Date Tested : February 2, 2007

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

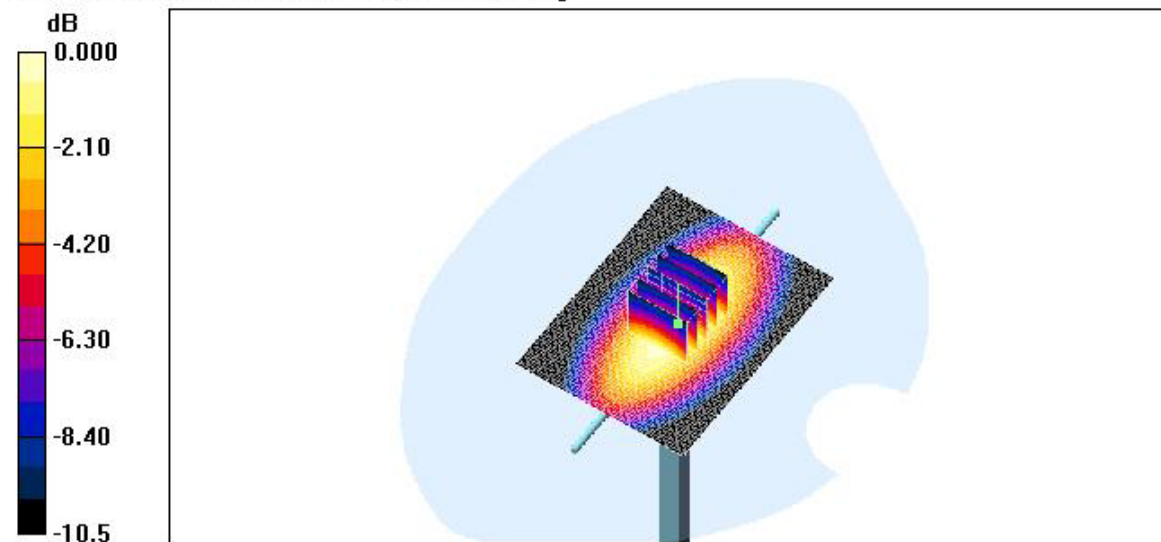
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.874 \text{ mho/m}$; $\epsilon_r = 40.8$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 53

DASY4 Configuration:

- Probe: ET3DV6 - SN1798; ConvF(6.73, 6.73, 6.73); Calibrated: 2006-08-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn447; Calibrated: 2006-11-17
- 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) = 10.5 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 = 112.3 V/m; Power Drift = -0.089 dB
Peak SAR (extrapolated) = 14.0 W/kg
SAR(1 g) = 9.51 mW/g; SAR(10 g) = 6.24 mW/g
Maximum value of SAR (measured) = 10.3 mW/g



0 dB = 10.3mW/g

Validation Data (1900MHz Head)

Test Laboratory: HCT

1900 Dipole Validation test: Input power(1W)
Liquid Temperature : 21.6°C
Date Tested : February 2, 2007

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; $\epsilon_r = 38.3$; $\rho = 1000$ kg/m³
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 53

DASY4 Configuration:

- Probe: ET3DV6 - SN1798; ConvF(5.6, 5.6, 5.6); Calibrated: 2006-08-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn447; Calibrated: 2006-11-17
- Phantom: SAM 1800/1900 MHz; Type: SAM

Dipole 1900MHz Validation/Area Scan (61x61x1): Measurement grid: $dx=15$ mm, $dy=15$ mm
Maximum value of SAR (interpolated) = 51.6 mW/g

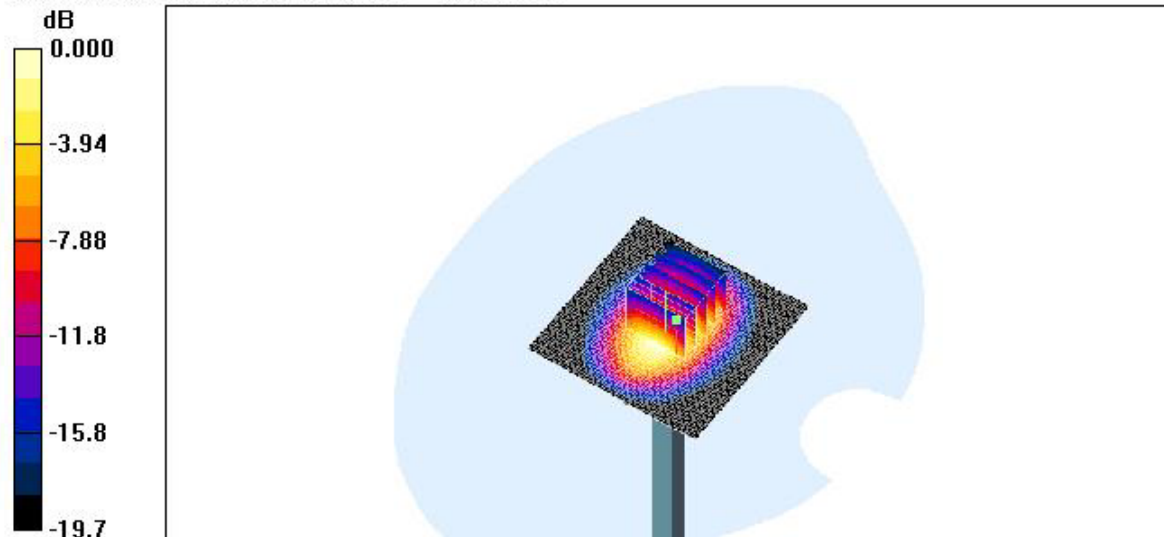
Dipole 1900MHz Validation/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 194.4 V/m; Power Drift = -0.037 dB

Peak SAR (extrapolated) = 74.8 W/kg

SAR(1 g) = 42.7 mW/g; SAR(10 g) = 22.2 mW/g

Maximum value of SAR (measured) = 47.9 mW/g



0 dB = 47.9mW/g

Validation Data (835MHz Head)

Test Laboratory: HCT

835 Dipole Validation test: Input power(1W)
Liquid Temperature : 22.1 °C
Date Tested : April 30, 2007

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

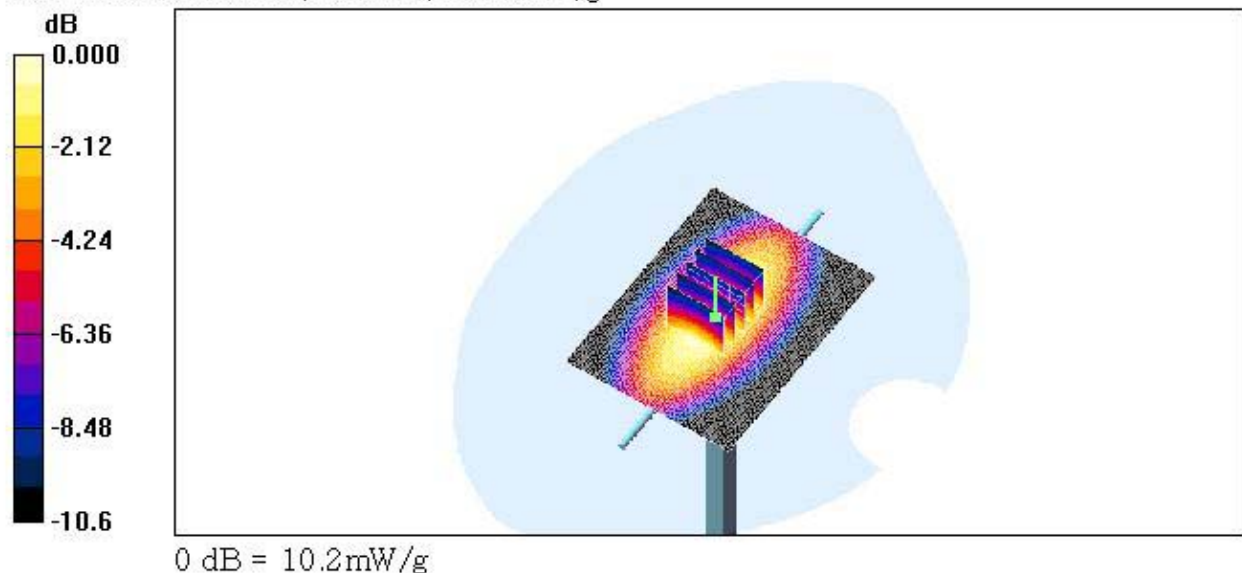
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.874 \text{ mho/m}$; $\epsilon_r = 39.8$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 53

DASY4 Configuration:

- Probe: ET3DV6 - SN1607; ConvF(6.38, 6.38, 6.38); Calibrated: 2007-02-21
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2006-11-15
- 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) = 10.1 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 = 110.0 V/m; Power Drift = 0.129 dB
Peak SAR (extrapolated) = 14.1 W/kg
SAR(1 g) = 9.5 mW/g; SAR(10 g) = 6.21 mW/g
Maximum value of SAR (measured) = 10.2 mW/g



Validation Data (1900MHz Head)

Test Laboratory: HCT

1900 Dipole Validation test: Input power(1W)

Liquid Temperature : 22.1 °C

Date Tested : April 30, 2007

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; $\epsilon_r = 38.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 53

DASY4 Configuration:

- Probe: ET3DV6 - SN1607; ConvF(5.27, 5.27, 5.27); Calibrated: 2007-02-21

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn446; Calibrated: 2006-11-15

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

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

Maximum value of SAR (interpolated) = 45.6 mW/g

Dipole 1900MHz Validation/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

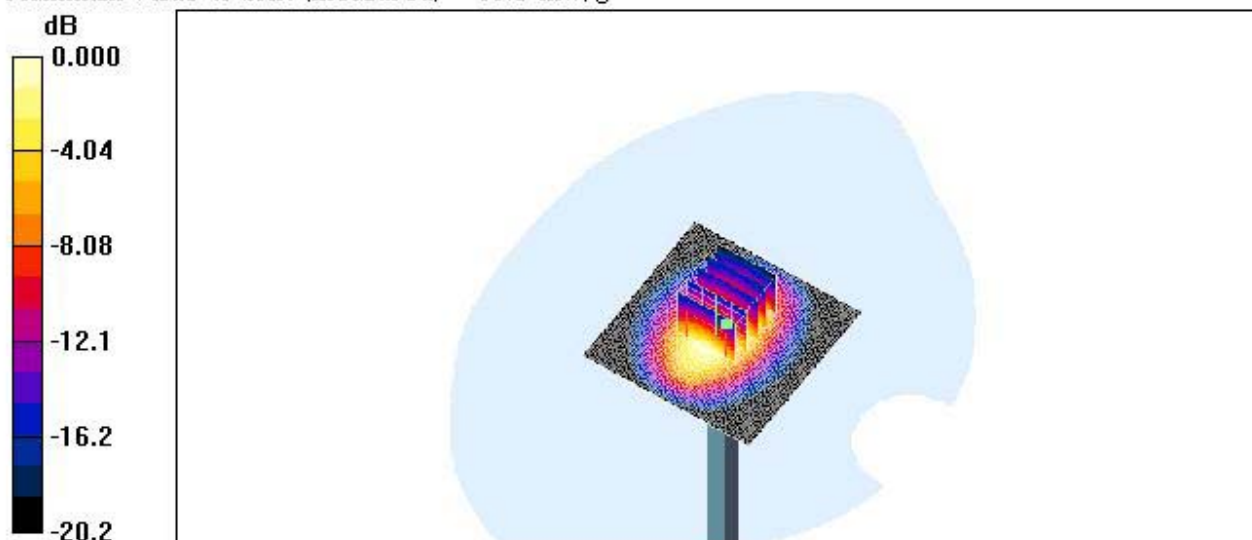
$dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 183.9 V/m; Power Drift = -0.011 dB

Peak SAR (extrapolated) = 69.4 W/kg

SAR(1 g) = 38.8 mW/g; SAR(10 g) = 20 mW/g

Maximum value of SAR (measured) = 43.2 mW/g



0 dB = 43.2mW/g

Dielectric Parameter (835MHz Head)

Title : MV140

SubTitle : CDMA835(HEAD)

February 02, 2007 09:51 AM

Frequency	e'	e''
800.000000 MHz	41.1249	18.8879
805.000000 MHz	41.0420	18.8533
810.000000 MHz	41.0131	18.8155
815.000000 MHz	40.9603	18.8059
820.000000 MHz	40.8325	18.7902
825.000000 MHz	40.8413	18.7856
830.000000 MHz	40.7530	18.7706
835.000000 MHz	40.7714	18.8156
840.000000 MHz	40.7160	18.8178
845.000000 MHz	40.7113	18.7750
850.000000 MHz	40.6549	18.7676
855.000000 MHz	40.6046	18.7791
860.000000 MHz	40.5878	18.7608
865.000000 MHz	40.5286	18.7342
870.000000 MHz	40.4875	18.7333
875.000000 MHz	40.4126	18.7522
880.000000 MHz	40.3573	18.7304
885.000000 MHz	40.2429	18.6910
890.000000 MHz	40.1929	18.6984
895.000000 MHz	40.1482	18.6697
900.000000 MHz	40.0781	18.6192

Dielectric Parameter (835MHz Body)

Title : MV140

SubTitle : CDMA835(BODY)

February 02, 2007 12:10 PM

Frequency	e'	e''
800.000000 MHz	53.5416	21.3018
805.000000 MHz	53.4771	21.3238
810.000000 MHz	53.4505	21.3212
815.000000 MHz	53.4178	21.2982
820.000000 MHz	53.3625	21.2722
825.000000 MHz	53.2661	21.2835
830.000000 MHz	53.2869	21.3084
835.000000 MHz	53.2445	21.2783
840.000000 MHz	53.2092	21.2349
845.000000 MHz	53.2273	21.2161
850.000000 MHz	53.1787	21.2216
855.000000 MHz	53.1446	21.1459
860.000000 MHz	53.1498	21.1749
865.000000 MHz	53.0780	21.1677
870.000000 MHz	53.0590	21.0982
875.000000 MHz	53.0656	21.1099
880.000000 MHz	53.0610	21.0620
885.000000 MHz	52.9951	21.0323
890.000000 MHz	52.9704	20.9978
895.000000 MHz	52.9261	20.9920
900.000000 MHz	52.8847	20.9643

Dielectric Parameter (1900MHz Head)

Title : MV140

SubTitle : PCS1900(HEAD)

February 02, 2007 03:30 PM

Frequency	e'	e''
1.800000000 GHz	38.7317	13.5602
1.810000000 GHz	38.6754	13.6059
1.820000000 GHz	38.6147	13.5913
1.830000000 GHz	38.5810	13.5850
1.840000000 GHz	38.5401	13.6250
1.850000000 GHz	38.4836	13.6268
1.860000000 GHz	38.3962	13.6742
1.870000000 GHz	38.3496	13.6737
1.880000000 GHz	38.3295	13.6957
1.890000000 GHz	38.2972	13.7252
1.900000000 GHz	38.2778	13.7497
1.910000000 GHz	38.2231	13.7959
1.920000000 GHz	38.1675	13.7960
1.930000000 GHz	38.1174	13.8457
1.940000000 GHz	38.0906	13.8371
1.950000000 GHz	38.0298	13.8472
1.960000000 GHz	37.9813	13.8934
1.970000000 GHz	37.9125	13.8917
1.980000000 GHz	37.8506	13.9266
1.990000000 GHz	37.8695	13.9506
2.000000000 GHz	37.8211	13.9715

Dielectric Parameter (1900MHz Body)

Title : MV140

SubTitle : PCS1900(BODY)

February 02, 2007 05:58 PM

Frequency	e'	e''
1.800000000 GHz	52.3228	14.4994
1.810000000 GHz	52.2579	14.5699
1.820000000 GHz	52.2201	14.6356
1.830000000 GHz	52.1574	14.6400
1.840000000 GHz	52.1274	14.7429
1.850000000 GHz	52.1636	14.7778
1.860000000 GHz	52.1236	14.7852
1.870000000 GHz	52.0769	14.7951
1.880000000 GHz	52.0254	14.8385
1.890000000 GHz	51.9851	14.8436
1.900000000 GHz	51.9044	14.8458
1.910000000 GHz	51.8370	14.9050
1.920000000 GHz	51.7832	14.9490
1.930000000 GHz	51.7406	14.9834
1.940000000 GHz	51.7218	15.0181
1.950000000 GHz	51.7203	15.0659
1.960000000 GHz	51.6814	15.0980
1.970000000 GHz	51.6841	15.1421
1.980000000 GHz	51.6936	15.1799
1.990000000 GHz	51.6428	15.1667
2.000000000 GHz	51.6108	15.1756

Dielectric Parameter (835MHz Head)

Title : MV140

SubTitle : CDMA835(Head)

~print 30. 2007 03:51 ~M

Frequency	e'	e''
800.000000 MHz	39.6266	18.8672
805.000000 MHz	39.6512	18.9270
810.000000 MHz	39.7056	18.9139
815.000000 MHz	39.7758	18.8804
820.000000 MHz	39.7837	18.8736
825.000000 MHz	39.7709	18.8668
830.000000 MHz	39.7632	18.8378
835.000000 MHz	39.7792	18.8181
840.000000 MHz	39.6849	18.8125
845.000000 MHz	39.7055	18.7298
850.000000 MHz	39.5653	18.7375
855.000000 MHz	39.4641	18.6941
860.000000 MHz	39.2739	18.6555
865.000000 MHz	39.1569	18.6181
870.000000 MHz	39.0065	18.6008
875.000000 MHz	38.7993	18.5345
880.000000 MHz	38.6376	18.5171
885.000000 MHz	38.4903	18.4914
890.000000 MHz	38.3123	18.5096
895.000000 MHz	38.2574	18.4500
900.000000 MHz	38.1643	18.4800

Dielectric Parameter (835MHz Body)

Title : MV140
SubTitle : CDMA835(BODY)
April 30, 2007 12:10 PM

Frequency	e'	e''
800.000000 MHz	55.2475	21.1326
805.000000 MHz	55.1951	21.1794
810.000000 MHz	55.1049	21.1490
815.000000 MHz	55.0592	21.0973
820.000000 MHz	55.0044	21.0495
825.000000 MHz	54.9871	21.0553
830.000000 MHz	54.8835	21.0652
835.000000 MHz	54.8342	21.0828
840.000000 MHz	54.7571	21.0666
845.000000 MHz	54.7408	21.0335
850.000000 MHz	54.7187	21.0846
855.000000 MHz	54.6681	21.0427
860.000000 MHz	54.6211	21.0647
865.000000 MHz	54.5666	21.0356
870.000000 MHz	54.5621	21.0360
875.000000 MHz	54.4955	21.0121
880.000000 MHz	54.4548	20.9837
885.000000 MHz	54.4277	20.9875
890.000000 MHz	54.4336	20.9253
895.000000 MHz	54.3071	20.8999
900.000000 MHz	54.3522	20.8805

Dielectric Parameter (1900MHz Head)

Title : MV140
SubTitle : PCS1900(Head)
-April 30, 2007 03:30 PM

Frequency	e'	e''
1.850000000 GHz	38.9077	13.2989
1.855000000 GHz	38.8641	13.3104
1.860000000 GHz	38.8372	13.3533
1.865000000 GHz	38.8348	13.4258
1.870000000 GHz	38.8290	13.4824
1.875000000 GHz	38.7858	13.4344
1.880000000 GHz	38.7736	13.5127
1.885000000 GHz	38.7608	13.5704
1.890000000 GHz	38.7227	13.5817
1.895000000 GHz	38.7361	13.6468
1.900000000 GHz	38.7272	13.6754
1.905000000 GHz	38.7270	13.6749
1.910000000 GHz	38.7116	13.6780
1.915000000 GHz	38.7051	13.6902
1.920000000 GHz	38.6875	13.6889
1.925000000 GHz	38.6232	13.7111
1.930000000 GHz	38.5928	13.7121
1.935000000 GHz	38.5848	13.7108
1.940000000 GHz	38.5566	13.7282
1.945000000 GHz	38.5358	13.7613
1.950000000 GHz	38.5305	13.7174

Dielectric Parameter (1900MHz Body)

Title : MV140

SubTitle : PCS1900(Body)

April 30, 2007 05:53 PM

Frequency	e'	e''
1.850000000 GHz	52.1208	14.6205
1.855000000 GHz	52.1436	14.6409
1.860000000 GHz	52.1126	14.6652
1.865000000 GHz	52.1015	14.6828
1.870000000 GHz	52.0745	14.7144
1.875000000 GHz	52.0778	14.7267
1.880000000 GHz	52.0506	14.7407
1.885000000 GHz	52.0450	14.7501
1.890000000 GHz	52.0145	14.7673
1.895000000 GHz	52.0420	14.7724
1.900000000 GHz	51.9823	14.7440
1.905000000 GHz	52.0313	14.7801
1.910000000 GHz	51.9824	14.8070
1.915000000 GHz	51.9584	14.8009
1.920000000 GHz	51.9698	14.8454
1.925000000 GHz	51.9436	14.8559
1.930000000 GHz	51.9327	14.8668
1.935000000 GHz	51.9185	14.8736
1.940000000 GHz	51.9161	14.9164
1.945000000 GHz	51.9096	14.9307
1.950000000 GHz	51.8958	14.9482