



MOTOROLA

March 25, 2004

Supplement to SAR Test Report for Motorola portable cellular phone (FCC ID IHDT56EQ1)

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Summary of FCC request for additional information

There was a request for additional information regarding Motorola's SAR Test Report for Motorola portable cellular phone (FCC ID IHDT56EQ1). The requested information is addressed below in the same numbering sequence received.

2. Please submit the SAR data plots.

Response: Please see Appendix 1 for the SAR plots

3. There is a typo on p.6 of the SAR report: the 900 MHz validation test results taken 2/14/04 should be 11.32, per the data plot.

Response: Please look at the below updated table.

<i>f</i> (MHz)	Description	SAR (W/kg), 1gram	Dielectric Parameters		Ambient Temp (°C)	Tissue Temp (°C)
			ϵ_r	σ (S/m)		
900	Measured, 02/12/04	11.31	42.0	0.99	20.0	19.7
	Measured, 02/13/04	11.62	41.6	0.98	20.0	19.6
	Measured, 02/14/04	11.32	41.6	0.98	20.0	19.5
	Measured, 02/24/04	11.00	41.4	0.96	20.0	20.2
	Recommended Limits	11.6	41.5 ±5%	0.97 ±5%	18-25	18-25
1800	Measured, 02/14/04	40.45	38.9	1.36	20.0	19.2
	Measured, 02/15/04	40.00	38.8	1.37	20.0	18.9
	Measured, 02/24/04	40.80	39.7	1.36	20.0	19.5
	Recommended Limits	39.7	40.0 ±5%	1.4 ±5%	18-25	18-25

Appendix 1

Requested SAR plots

S50U31224Z

Ch# 190 / Pwr Step: 5

Antenna Position: Internal

Type of Modulation: GSM

Battery Model #: AANN4285A

DEVICE POSITION (cheek or rotated): Cheek

Accessory Model #:

R# 2 TP-1106 SUGAR SAM Expanded (Rev. 2)-9Jan03 Phantom; Left Hand Section; Position: (90°,180°); Frequency: 836 MHz

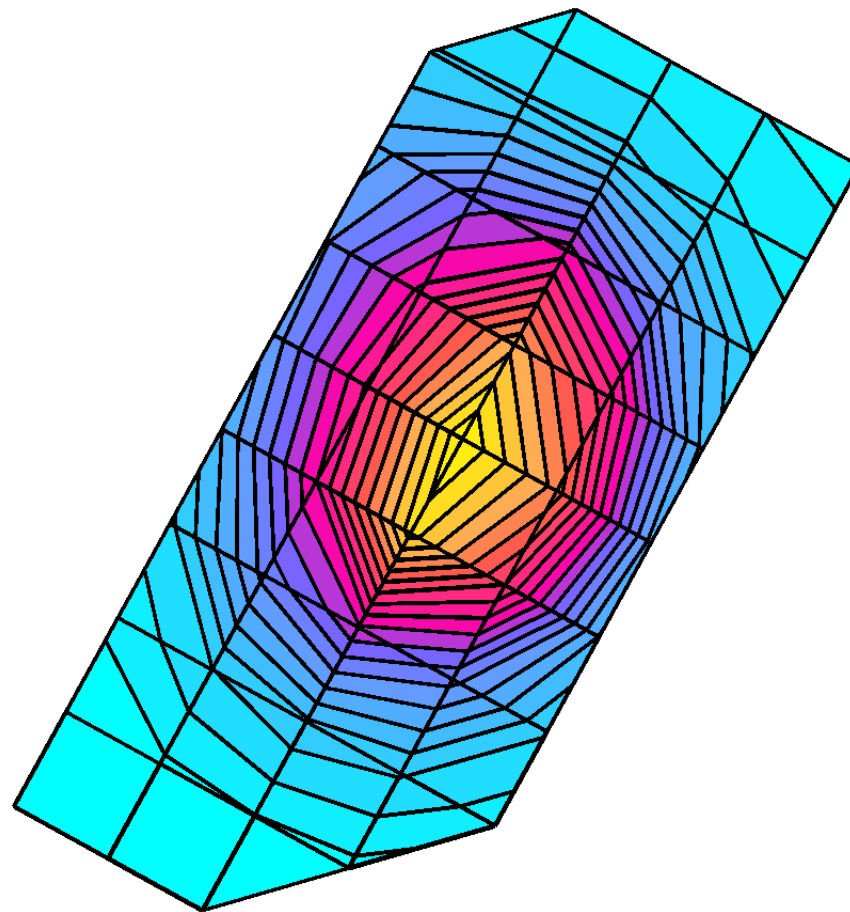
Probe: ET3DV6 - SN1522 - IEEE Head; ConvF(4.70,4.70,4.70); Crest factor: 8.0; 835 MHz Head & Body: $\sigma = 0.93$ mho/m $\epsilon_r = 42.9$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 1.11 mW/g, SAR (10g): 0.754 mW/g, (Worst-case extrapolation)

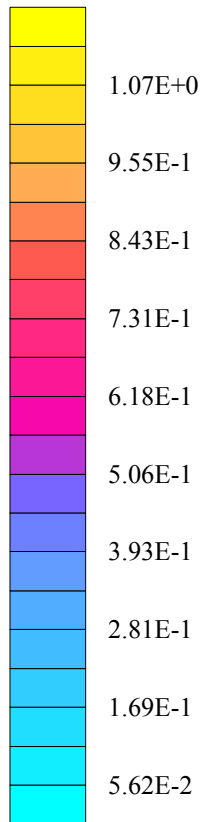
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0

Penetration depth: 14.9 (14.2, 15.7) [mm]

Powerdrift: -0.04 dB



SAR_{Tot} [mW/g]



S50U31224Z

Ch# 190 / Pwr Step: 5

Antenna Position: Internal

Type of Modulation: GSM

Battery Model #: AANN4285A

DEVICE POSITION (cheek or rotated): CHEEK

Accessory Model #:

R# 2 TP-1106 SUGAR SAM Expanded (Rev. 2)-9Jan03 Phantom; Right Hand Section; Position: (90°,180°); Frequency: 836 MHz

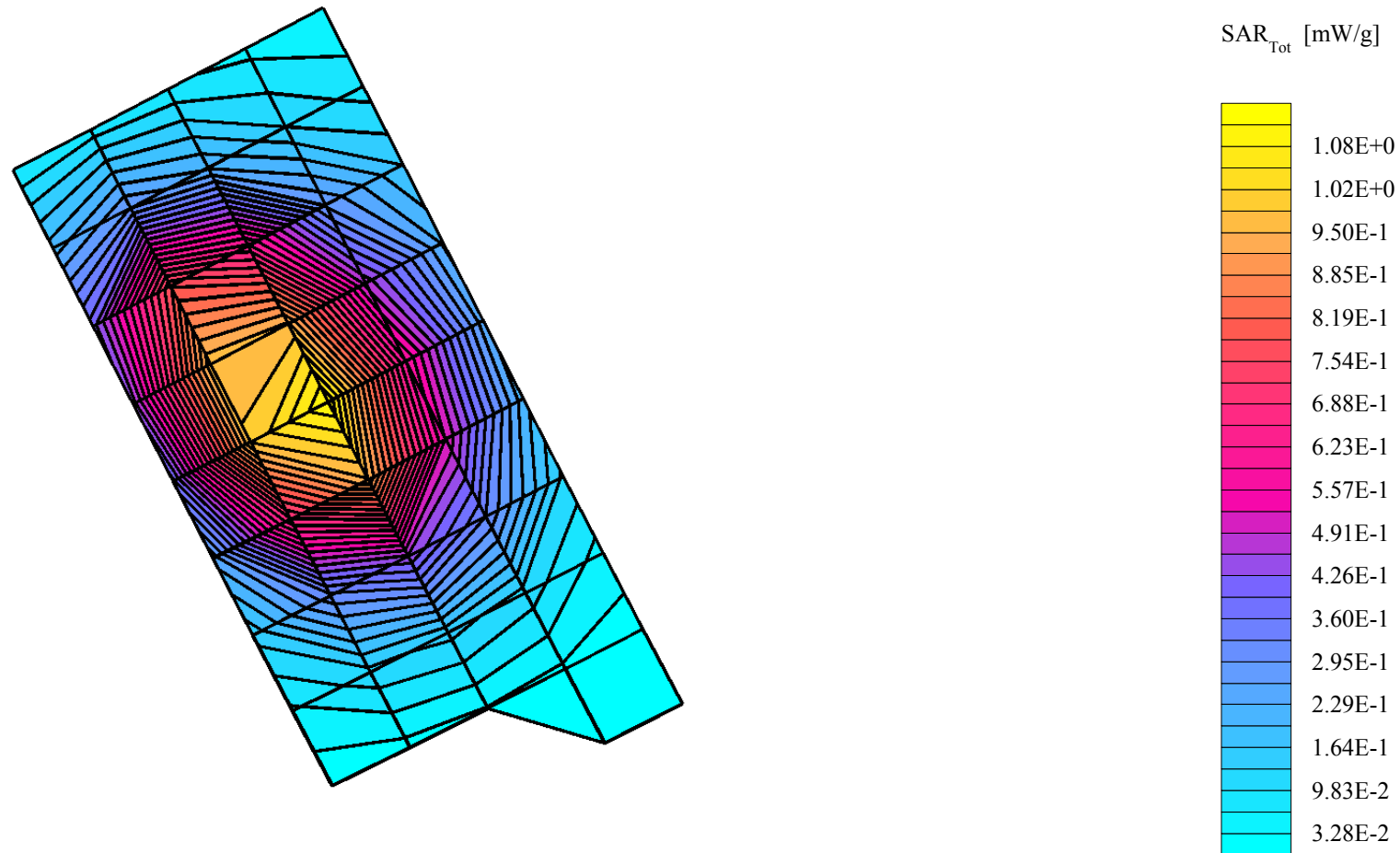
Probe: ET3DV6 - SN1522 - IEEE Head; ConvF(4.70,4.70,4.70); Crest factor: 8.0; 835 MHz Head & Body: $\sigma = 0.93$ mho/m $\epsilon_r = 42.9$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 1.15 mW/g, SAR (10g): 0.770 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0

Penetration depth: 14.2 (13.3, 15.1) [mm]

Powerdrift: -0.20 dB



S50U31224Z

Ch# 190 / Pwr Step: 5

Antenna Position: Internal

Type of Modulation: GSM

Battery Model #: AANN4285A

DEVICE POSITION (cheek or rotated): ROTATED

Accessory Model #:

R# 2 TP-1106 SUGAR SAM Expanded (Rev. 2)-9Jan03 Phantom; Left Hand Section; Position: (90°,180°); Frequency: 848 MHz

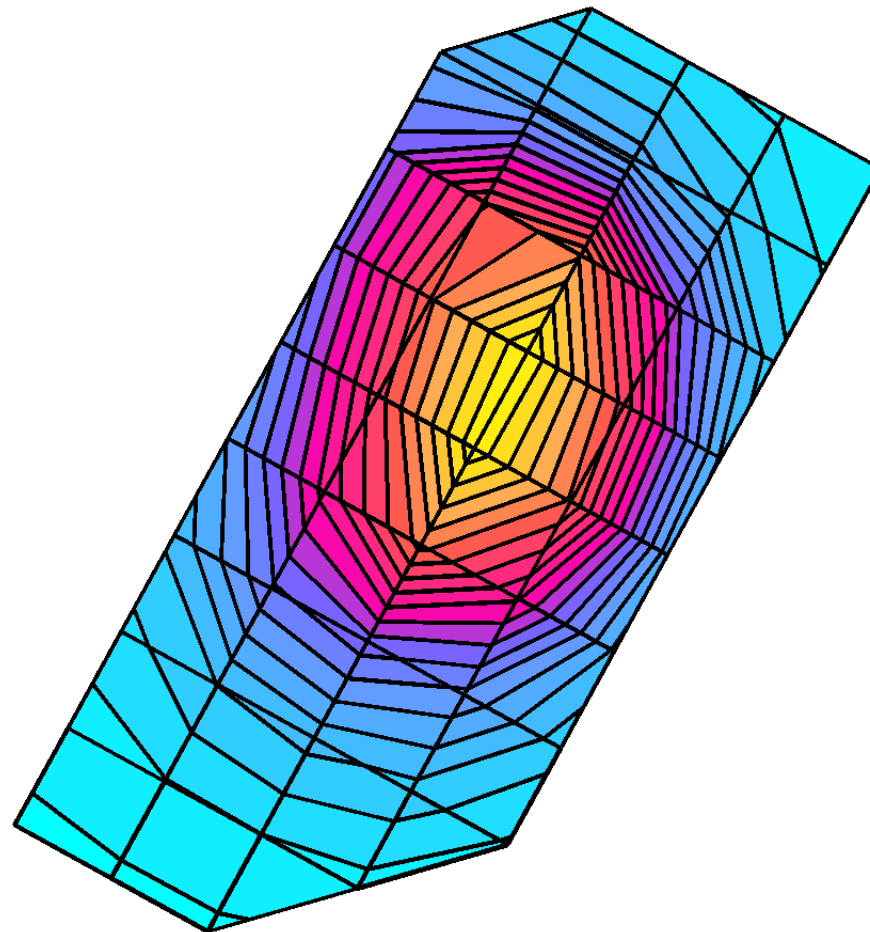
Probe: ET3DV6 - SN1522 - IEEE Head; ConvF(4.70,4.70,4.70); Crest factor: 8.0; 835 MHz Head & Body: $\sigma = 0.93$ mho/m $\epsilon_r = 42.9$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.650 mW/g, SAR (10g): 0.447 mW/g, (Worst-case extrapolation)

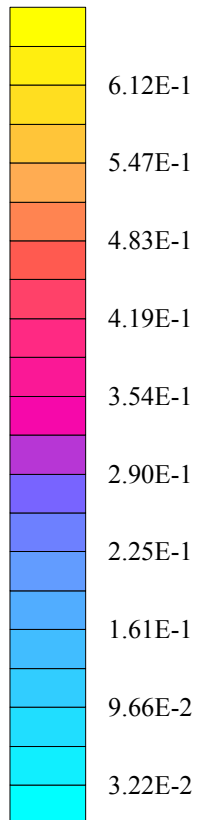
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0

Penetration depth: 15.0 (14.2, 15.8) [mm]

Powerdrift: -0.01 dB



SAR_{Tot} [mW/g]



S50U31224Z

Ch# 190 / Pwr Step: 5

Antenna Position: Internal

Type of Modulation: GSM

Battery Model #: AANN4285A

DEVICE POSITION (cheek or rotated): ROTATED

Accessory Model #:

R# 2 TP-1106 SUGAR SAM Expanded (Rev. 2)-9Jan03 Phantom; Right Hand Section; Position: (90°,180°); Frequency: 848 MHz

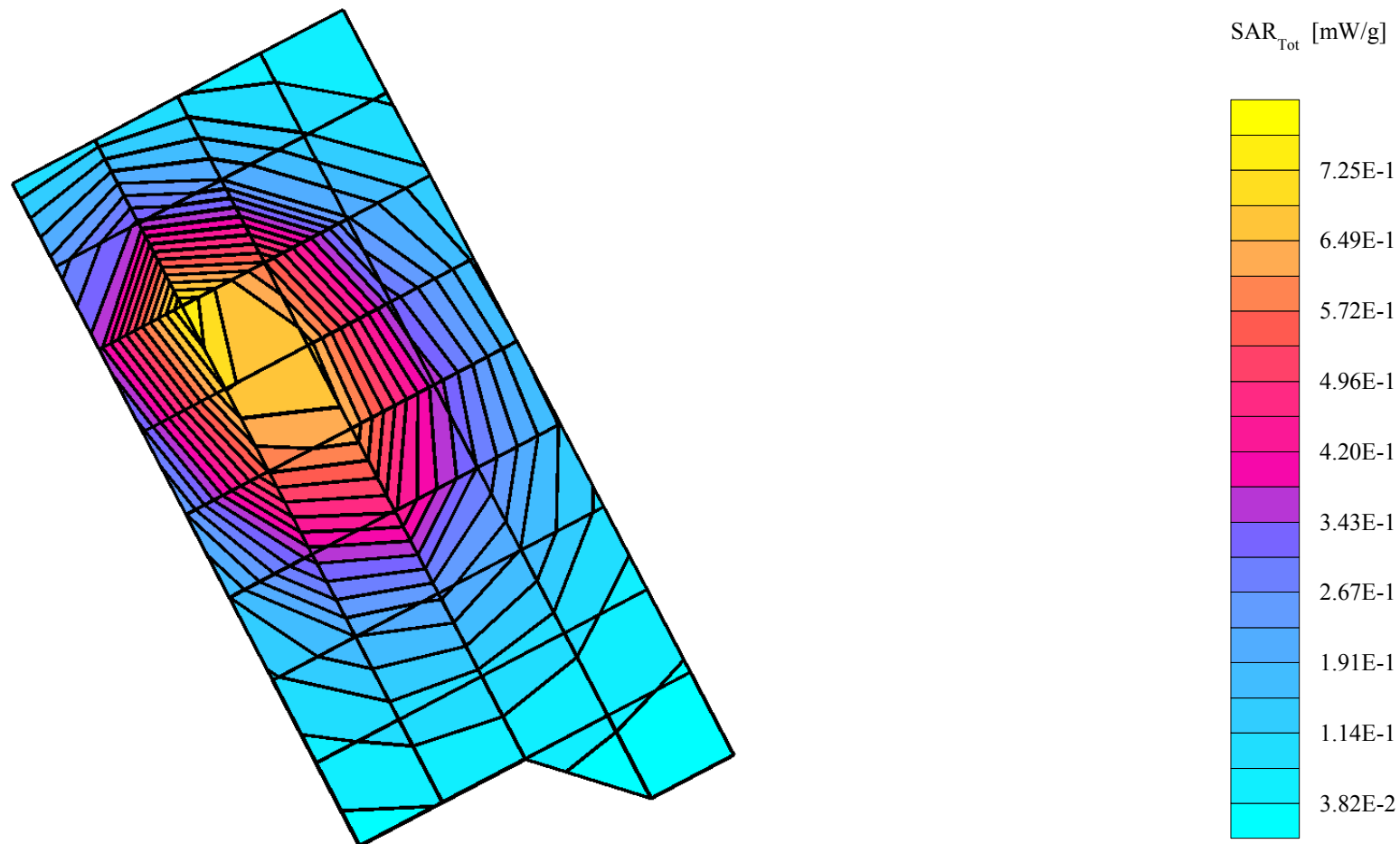
Probe: ET3DV6 - SN1522 - IEEE Head; ConvF(4.70,4.70,4.70); Crest factor: 8.0; 835 MHz Head & Body: $\sigma = 0.93$ mho/m $\epsilon_r = 42.9$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.756 mW/g, SAR (10g): 0.491 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0

Penetration depth: 11.5 (10.8, 12.5) [mm]

Powerdrift: -0.03 dB



S50U31224X

Ch# 661 / Pwr Step: 0 OTA

Type of Modulation: 1900 GSM

DEVICE POSITION (cheek or rotated): CHEEK

Accessory Model #: NONE

R# 2 TP-1235 GLYCOL SAM Expanded (Rev. 2)-9Jan03 Phantom; Left Hand Section; Position: (90°,180°); Frequency: 1880 MHz

Probe: ET3DV6 - SN1522 - IEEE Head; ConvF(3.40,3.40,3.40); Crest factor: 8.0; 1880 MHz Head & Body: $\sigma = 1.45$ mho/m $\epsilon_r = 38.6$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.396 mW/g, SAR (10g): 0.210 mW/g, (Worst-case extrapolation)

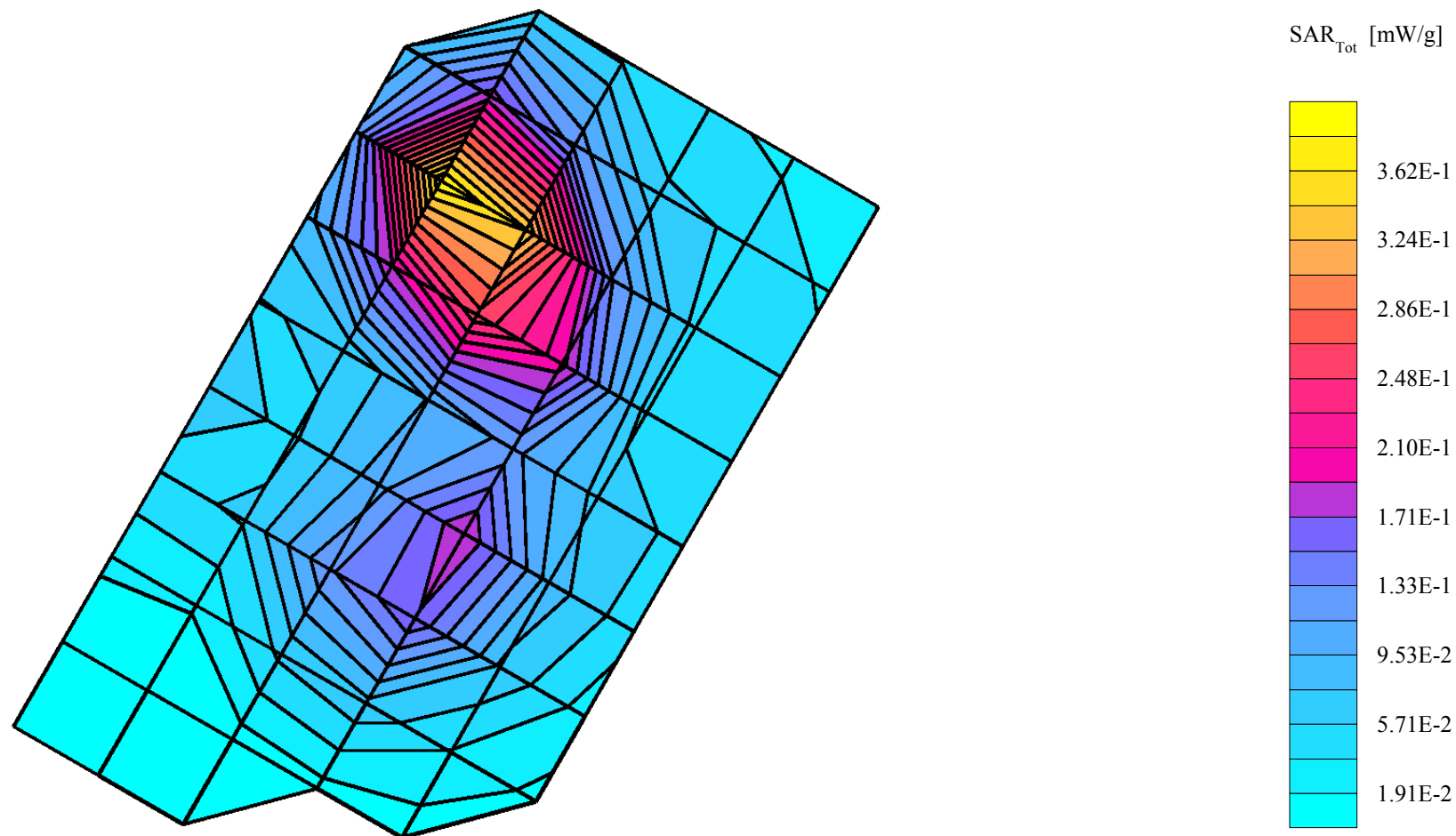
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0

Penetration depth: 7.8 (7.4, 8.6) [mm]

Powerdrift: 0.13 dB

Antenna Position: INTERNAL

Battery Model #: AAANN4285A



S50U31224X

Ch# 661 / Pwr Step: 0 OTA

Type of Modulation: 1900 GSM

DEVICE POSITION (cheek or rotated): CHEEK

Accessory Model #: NONE

R# 2 TP-1235 GLYCOL SAM Expanded (Rev. 2)-9Jan03 Phantom; Right Hand Section; Position: (90°,180°); Frequency: 1880 MHz

Probe: ET3DV6 - SN1522 - IEEE Head; ConvF(3.40,3.40,3.40); Crest factor: 8.0; 1880 MHz Head & Body: $\sigma = 1.45$ mho/m $\epsilon_r = 38.6$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.559 mW/g, SAR (10g): 0.279 mW/g, (Worst-case extrapolation)

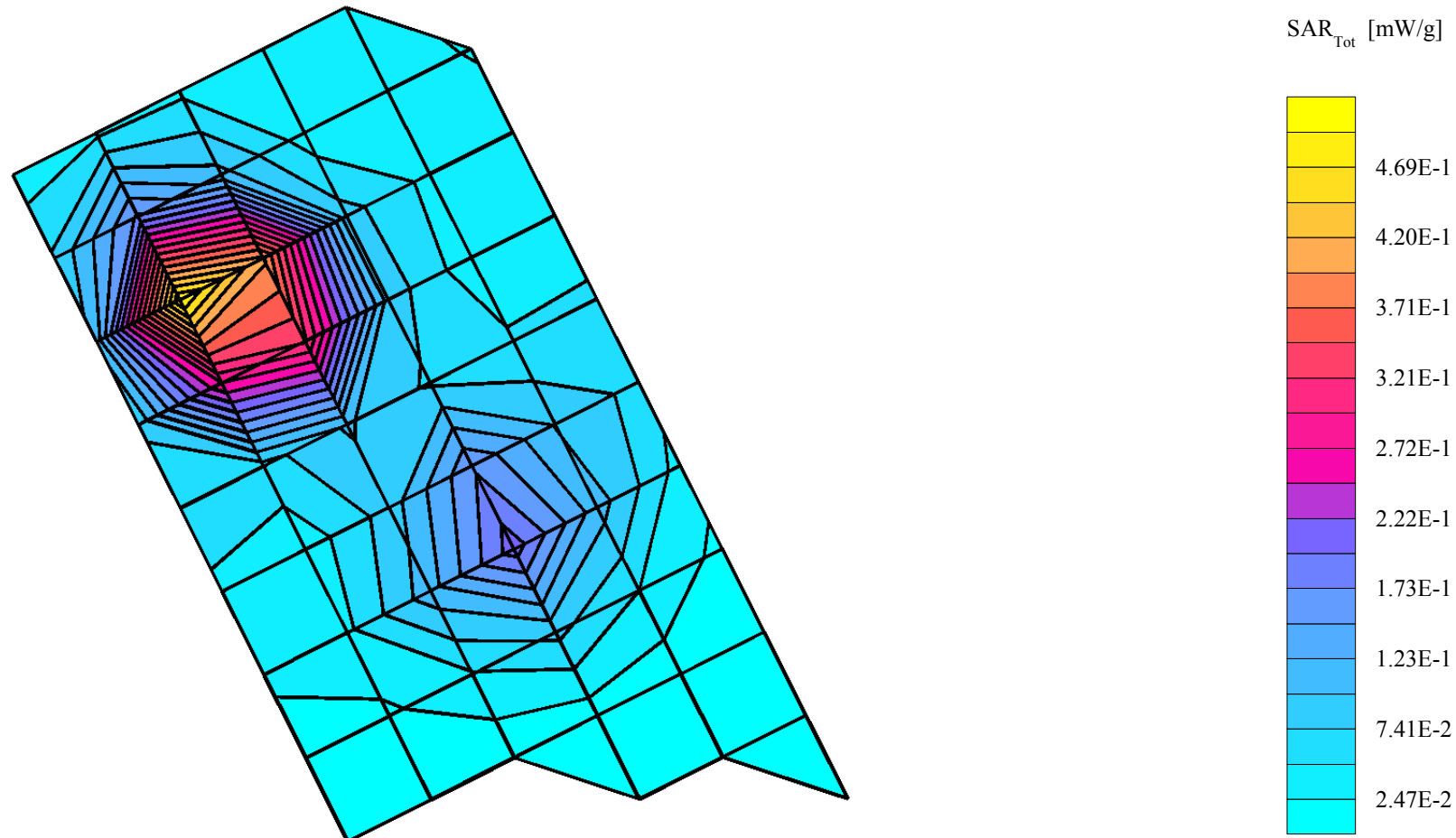
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0

Penetration depth: 8.3 (8.0, 8.9) [mm]

Powerdrift: -0.10 dB

Antenna Position: INTERNAL

Battery Model #: AAANN4285A



S50U31224X

Ch# 661 / Pwr Step: 0 OTA

Type of Modulation: 1900 GSM

DEVICE POSITION (cheek or rotated): TILTED

Accessory Model #: NONE

R# 2 TP-1235 GLYCOL SAM Expanded (Rev. 2)-9Jan03 Phantom; Left Hand Section; Position: (90°,180°); Frequency: 1880 MHz

Probe: ET3DV6 - SN1522 - IEEE Head; ConvF(3.40,3.40,3.40); Crest factor: 8.0; 1880 MHz Head & Body: $\sigma = 1.45$ mho/m $\epsilon_r = 38.6$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.437 mW/g, SAR (10g): 0.232 mW/g, (Worst-case extrapolation)

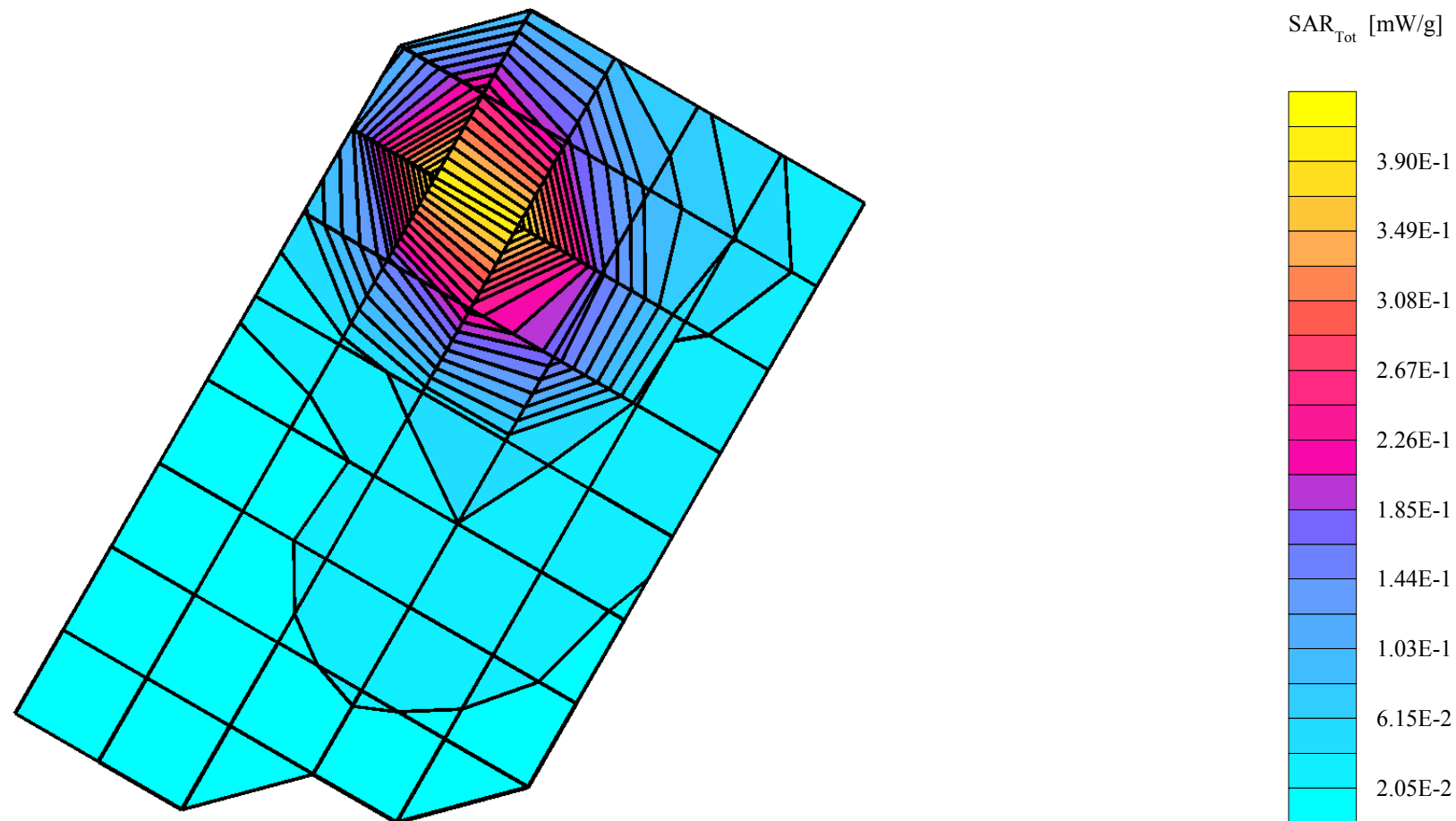
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0

Penetration depth: 8.1 (7.7, 8.9) [mm]

Powerdrift: -0.06 dB

Antenna Position: INTERNAL

Battery Model #: AAANN4285A



S50U31224X

Ch# 661 / Pwr Step: 0 OTA

Type of Modulation: 1900 GSM

DEVICE POSITION (cheek or rotated): TILTED

Accessory Model #: NONE

R# 2 TP-1235 GLYCOL SAM Expanded (Rev. 2)-9Jan03 Phantom; Right Hand Section; Position: (90°,180°); Frequency: 1880 MHz

Probe: ET3DV6 - SN1522 - IEEE Head; ConvF(3.40,3.40,3.40); Crest factor: 8.0; 1880 MHz Head & Body: $\sigma = 1.45$ mho/m $\epsilon_r = 38.6$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.579 mW/g, SAR (10g): 0.287 mW/g, (Worst-case extrapolation)

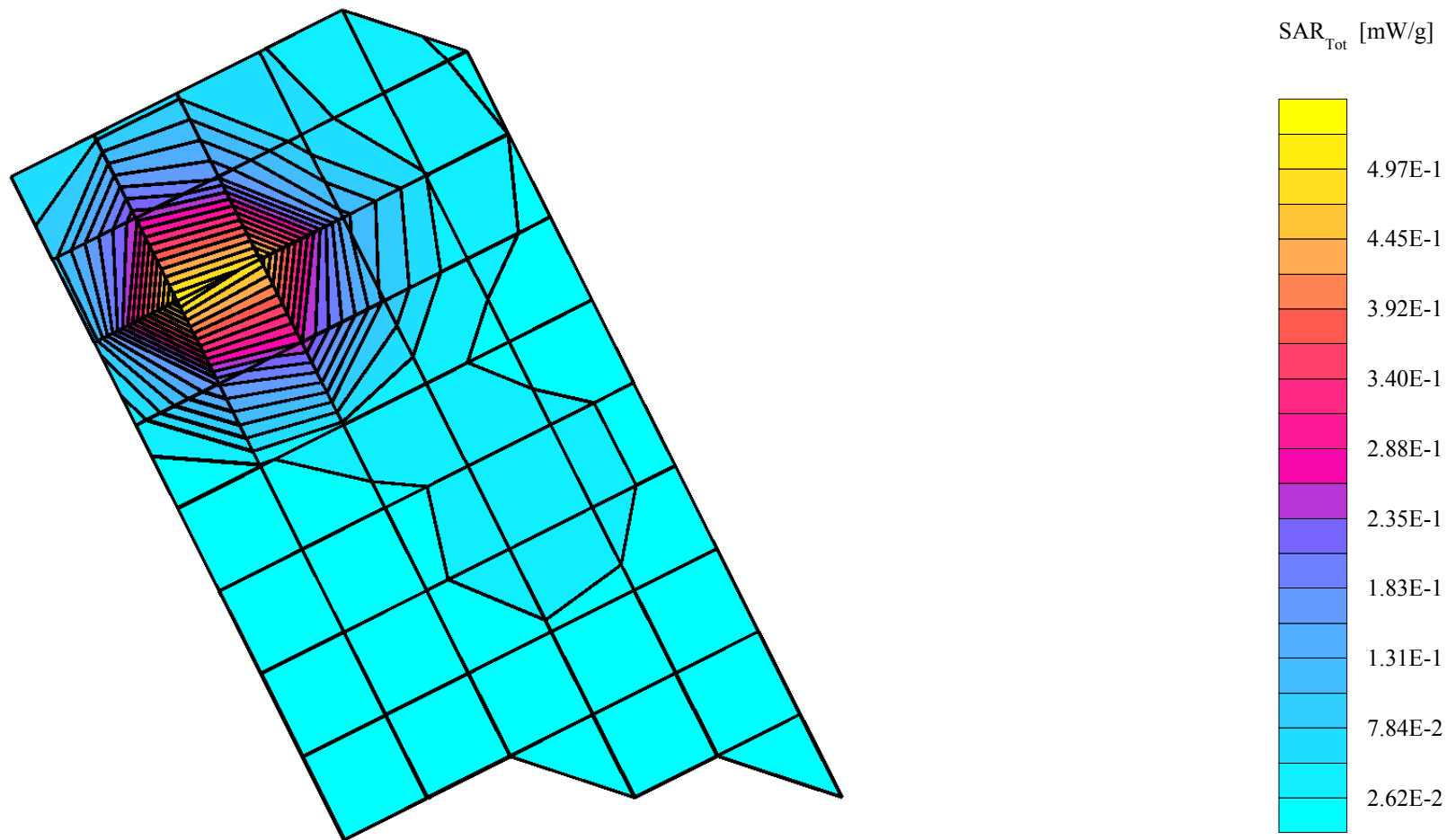
Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0

Penetration depth: 8.2 (7.8, 8.9) [mm]

Powerdrift: -0.07 dB

Antenna Position: INTERNAL

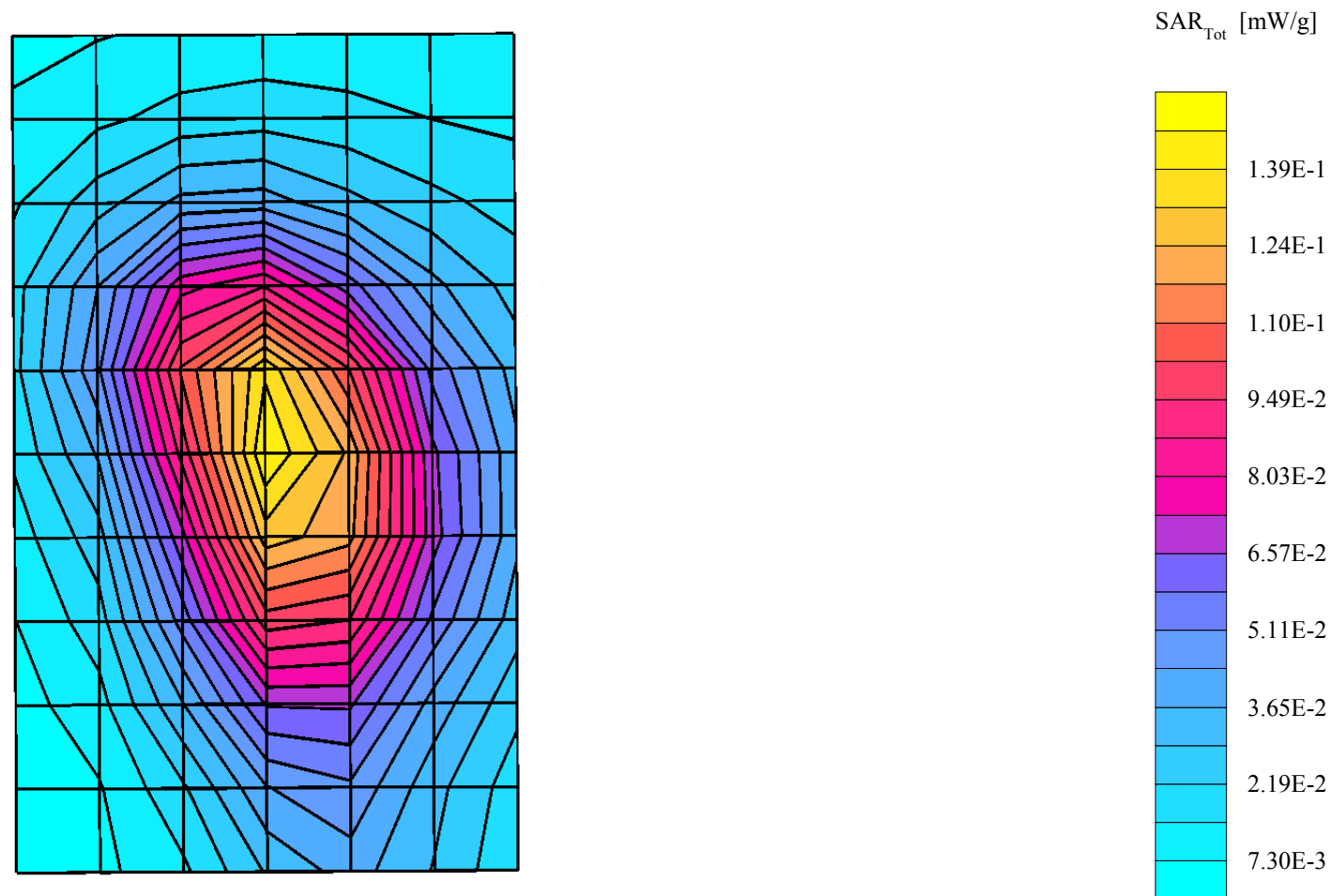
Battery Model #: AAANN4285A



S50U31224Z

Ch# 190 Pwr Step: 5 (OTA)
Type of Modulation: 850 GSM
Accessory Model #: 15 mm front of phone
R2 Amy Twin Phantom Rev.3 Phantom; section 2 Section; Position: (0°,0°); Frequency: 837 MHz
Probe: ET3DV6 - SN1522 - FCC Body; ConvF(4.40,4.40,4.40); Crest factor: 8.0; 835 MHz Head & Body: $\sigma = 0.97$ mho/m $\epsilon_r = 53.2$ $\rho = 1.00$ g/cm³
Cube 7x7x7: SAR (1g): 0.146 mW/g, SAR (10g): 0.100 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Penetration depth: 14.5 (13.7, 15.5) [mm]
Powerdrift: 0.02 dB

Antenna Position: INTERNAL
Battery Model #: AANN4285A



S50U31224X

Ch# 661 / Pwr Step: 0 OTA

Antenna Position: INTERNAL

Type of Modulation: 1900 GSM

Battery Model #: AANN5285A

Accessory Model # = FRONT OF PHONE 15MM FROM PHANTOM

R2 Amy Twin Phantom Rev.3 Phantom; section 1 Section; Position: (0°,0°); Frequency: 1880 MHz

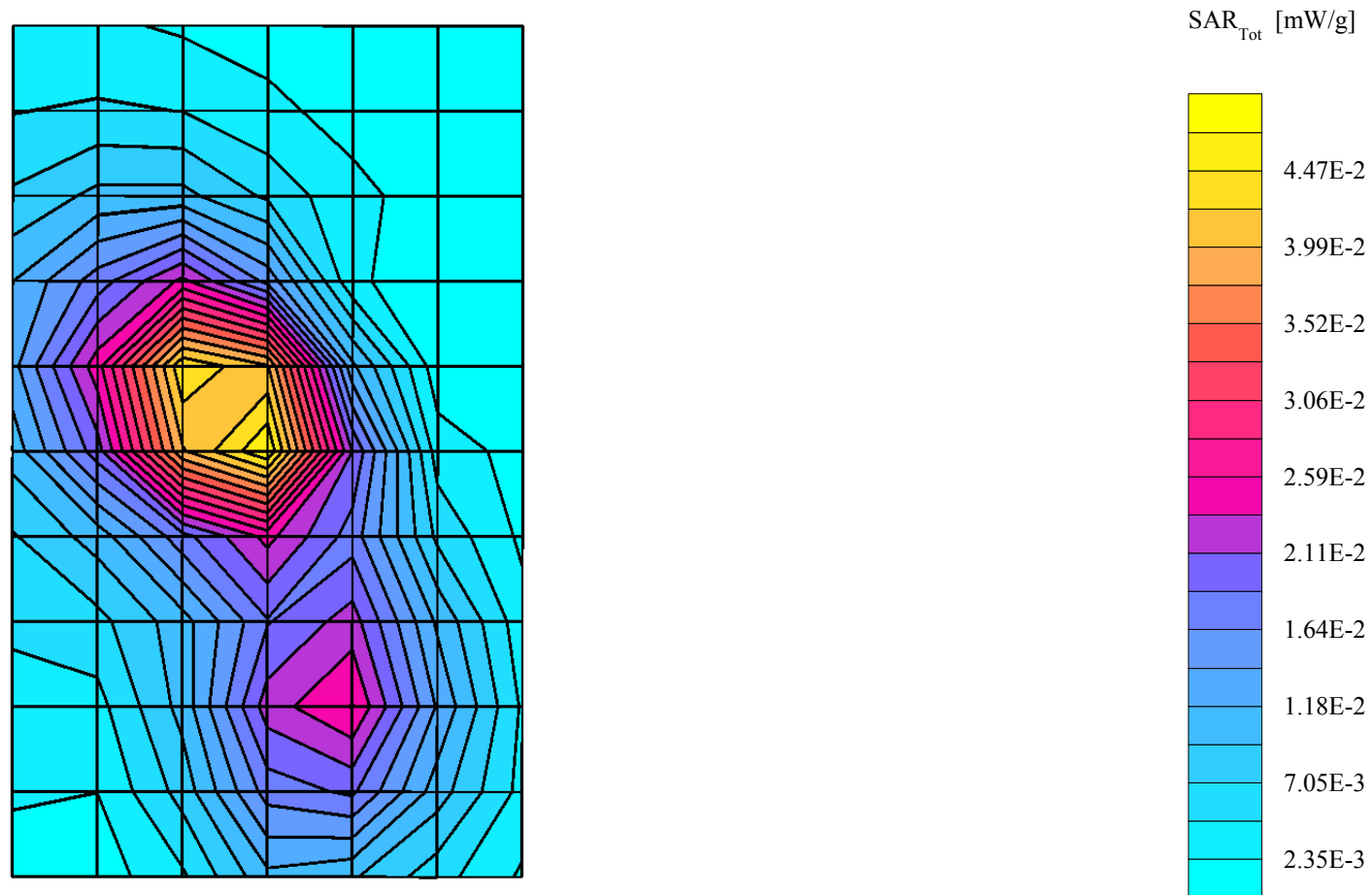
Probe: ET3DV6 - SN1522 - FCC Body; ConvF(3.10,3.10,3.10); Crest factor: 8.0; 1880 MHz Head & Body: $\sigma = 1.59$ mho/m $\epsilon_r = 50.8$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.0518 mW/g, SAR (10g): 0.0294 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Penetration depth: 9.4 (8.4, 11.0) [mm]

Powerdrift: 0.17 dB

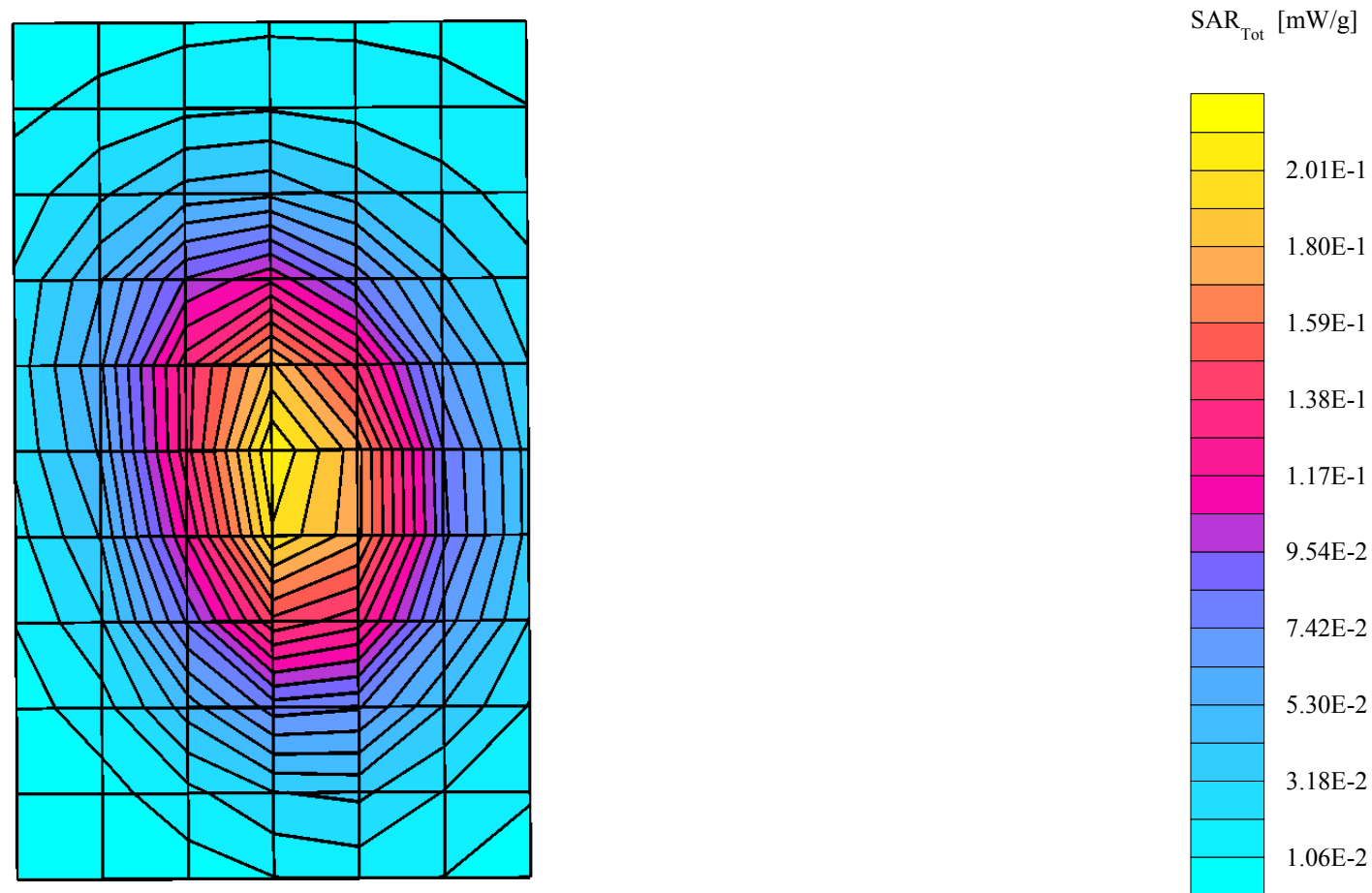


S50U31224Z

Ch# 190 / Pwr Step: 5 (OTA)
Type of Modulation: GSM850
Accessory Model #: 15mm back of phone

Antenna Position: internal
Battery Model #: AANN4285A

R2 Amy Twin Phantom Rev.3 Phantom; section 2 Section; Position: (0°,0°); Frequency: 837 MHz
Probe: ET3DV6 - SN1522 - FCC Body; ConvF(4.40,4.40,4.40); Crest factor: 8.0; 835 MHz Head & Body: $\sigma = 0.97$ mho/m $\epsilon_r = 53.5$ $\rho = 1.00$ g/cm³
Cube 7x7x7: SAR (1g): 0.215 mW/g, SAR (10g): 0.147 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Penetration depth: 14.8 (13.7, 15.9) [mm]
Powerdrift: -0.03 dB

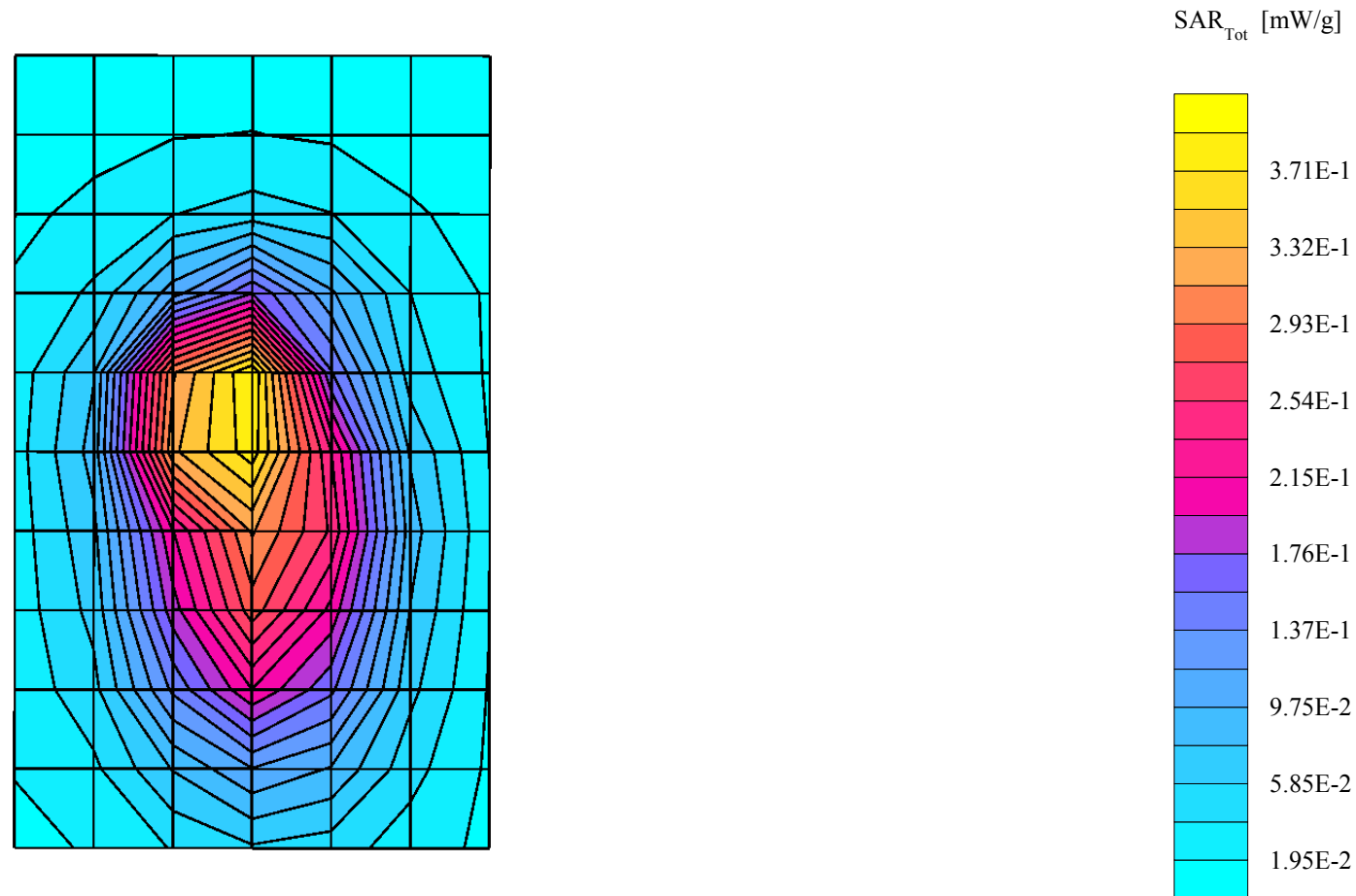


S50U31224X

Ch# 661 / Pwr Step: 0 OTA
Type of Modulation: 1900 GSM
Accessory Model # = BACK OF PHONE 15MM FROM PHANTOM

Antenna Position: INTERNAL
Battery Model #: AANN5285A

R2 Amy Twin Phantom Rev.3 Phantom; section 1 Section; Position: (0°,0°); Frequency: 1880 MHz
Probe: ET3DV6 - SN1522 - FCC Body; ConvF(3.10,3.10,3.10); Crest factor: 8.0; 1880 MHz Head & Body: $\sigma = 1.59$ mho/m $\epsilon_r = 50.8$ $\rho = 1.00$ g/cm³
Cube 7x7x7: SAR (1g): 0.458 mW/g, SAR (10g): 0.256 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Penetration depth: 9.3 (8.4, 10.7) [mm]
Powerdrift: -0.03 dB



S50U31224F

Ch# 128 Pwr Step: burst1=5, burst2=5 (OTA)

Type of Modulation: 850 GSM gprs

Accessory Model #: 1in back of phone

R4 - Amy Twin Phantom Rev.4 (22Aug02) Phantom; section 1 Section; Position: (0°,0°); Frequency: 824 MHz

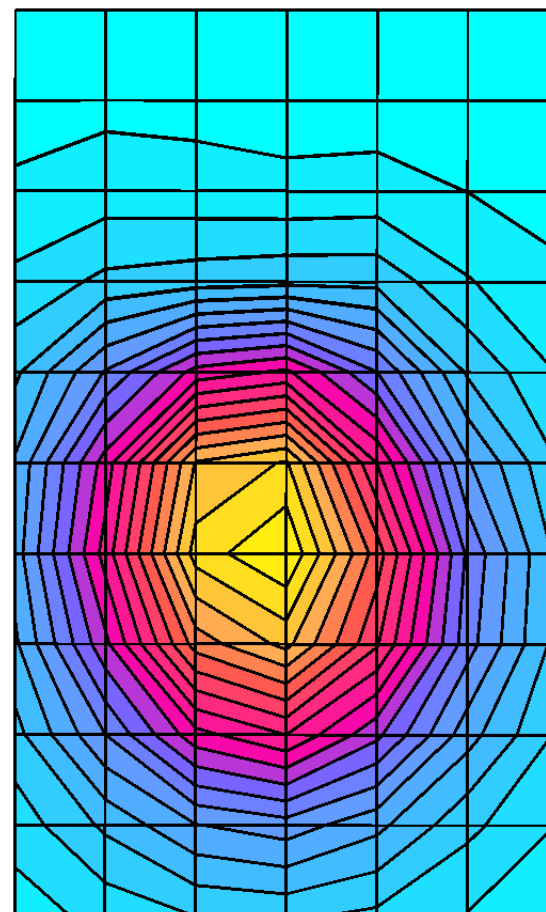
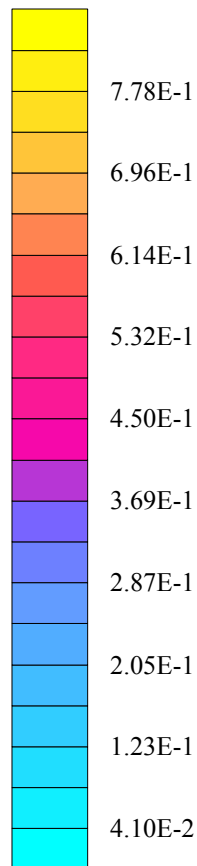
Probe: ET3DV6 - SN1514 - FCC Body.2; ConvF(6.10,6.10,6.10); Crest factor: 4.0; 835 MHz Head & Body: $\sigma = 0.98$ mho/m $\epsilon_r = 54.5$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.818 mW/g, SAR (10g): 0.581 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Penetration depth: 15.9 (13.4, 18.7) [mm]

Powerdrift: -0.09 dB

Antenna Position: INTERNAL
Battery Model #: AANN4285ASAR_{Tot} [mW/g]

S50U3124QF

Ch# 661 Pwr Step: 0 (OTA)

Type of Modulation: 1900 GPRS

Accessory Model #: 1" from back of phone

R4 - Amy Twin Phantom Rev.4 (22Aug02) Phantom; section 2 Section; Position: (0°,0°); Frequency: 1880 MHz

Probe: ET3DV6 - SN1514 - FCC Body.2; ConvF(4.70,4.70,4.70); Crest factor: 8.0; 1880 MHz Head & Body: $\sigma = 1.58$ mho/m $\epsilon_r = 51.4$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.463 mW/g, SAR (10g): 0.257 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Penetration depth: 9.5 (8.7, 10.8) [mm]

Powerdrift: -0.04 dB

Antenna Position: INTERNAL

Battery Model #: AANN4285A

