



**MOTOROLA**

July 11, 2002

Supplement to SAR Test Report for Motorola portable cellular phone (FCC ID IHDT56CA1)

Prepared by:

Steven Hauswirth, Senior Staff Engineer

Motorola Personal Communications Sector Product Safety Laboratory

Harvard, Illinois

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 IHDT56CA1). The requested information is addressed below in the same numbering sequence received.

Based on your response to correspondence 4093 the FCC requests that you address the following items.

Regarding your response to SAR question 1 please provide additional information regarding the SAR drift of the device. Please provide conducted power versus time plots, and an explanation describing why the SAR drift is not consistent between tests. To justify the extrapolation performed please provide focused SAR measurement using the shortest possible scan times. Data at the two highest drift configurations is considered sufficient.

A SAR time sweep was performed after the probe was placed at the phantom origin, located at the center of the phantom ear. This time sweep allows us to measure the SAR over a 40 minute time period. Appendix 1 contains the measured SAR plot vs. time. It can be seen that the maximum localized SAR was 0.8138 W/kg and the minimum localized SAR was 0.773 W/kg. This is a 0.224dB difference. This is in line with our previously reported drift values of ~0.3 dB.

It can also be seen that, over a very short period of time, the localized SAR differs by ~0.12dB depending on exactly when the measurement occurs. This explains why the previously measured drifts is not consistent between the individual tests.

To justify the SAR extrapolation, an abbreviated SAR scan was performed on the two channels/configurations that previously resulted in the highest measured drift. This was done by placing a fully charged battery into the phone and performing a SAR scan with:

- A reference measurement
- A coarse with 15cm grid spacing
- A “move to interpolated max” to move the probe to the max of the coarse scan
- The battery was replaced with a new fully charged battery
- A 5x5x7 cube scan

The results are included in appendix 2 and can then be compared to the previously reported results:

f (MHz)	Channel	Previously Reported Measured Drift	Previously Reported Extrapolated (W/kg)	Abbreviated Measured (W/kg)	% Difference
Analog 800	384	-0.31	0.67	0.596	11.00%
Digital 1900	2	-0.37	1.481	1.47	0.70%

It can be seen that the resulting values were within our reported measurement uncertainty, 12%, from the original extrapolated values. This demonstrates that the SAR extrapolation is an appropriate conservative approach to determine the maximum SAR at the full battery capacity.

# **Appendix 1**

## **SAR Time Sweep**

sn: 021502526

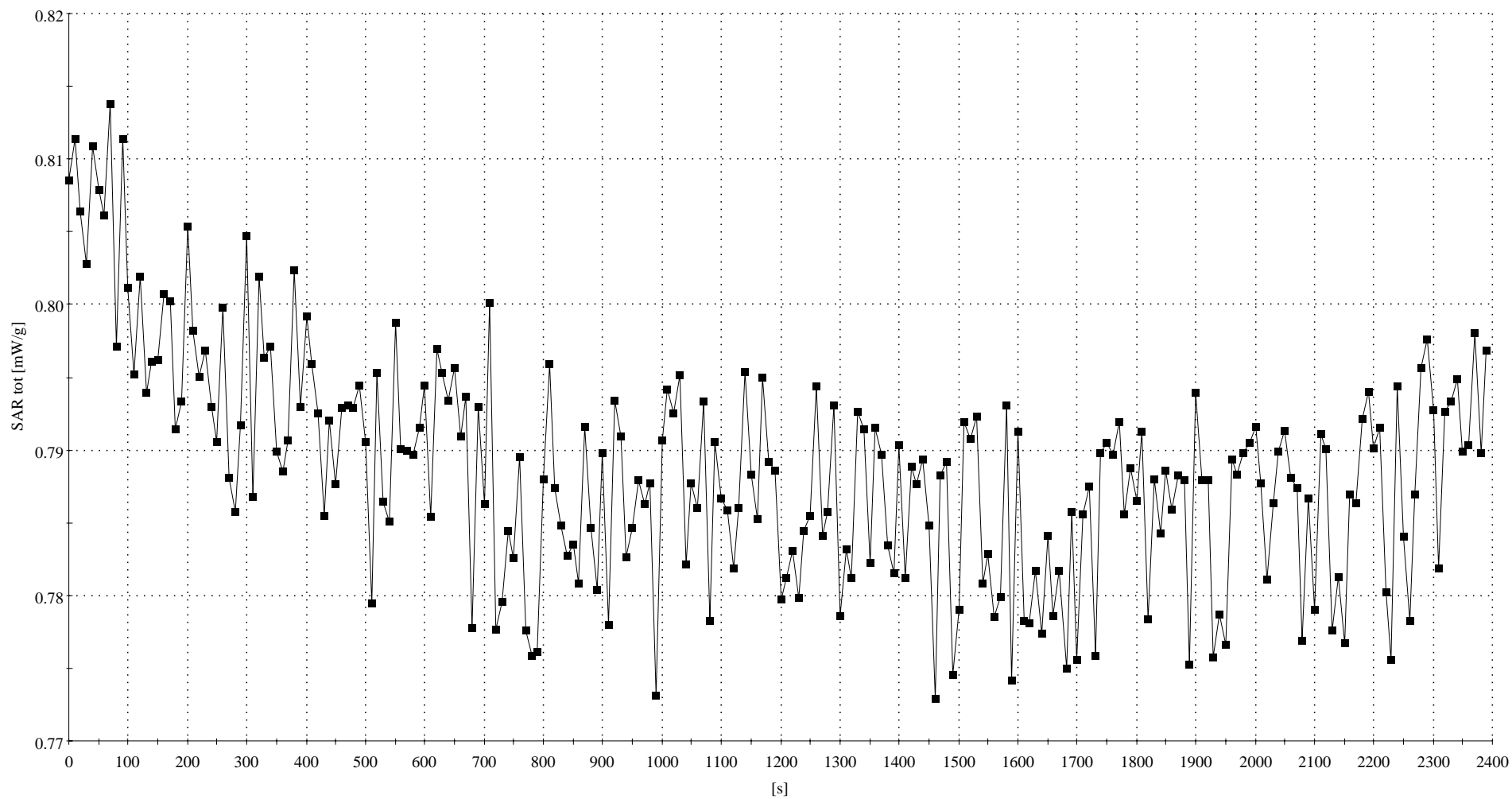
Ch# 384 / Pwr Step: 2 / Type of Modulation: 800 ANALOG

R4 TP-1131 Sugar SAM (rev. 4) 26Apr02 Phantom; Section; Position: ; Frequency: 837 MHz

Probe: ET3DV6R - SN1513 - IEEE Head; ConvF(6.20,6.20,6.20); Crest factor: 1.0; 835 MHz Head & Body:  $\sigma = 0.90$  mho/m  $\epsilon_r = 41.4$   $\rho = 1.00$  g/cm<sup>3</sup>

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Time sweep:



## **Appendix 2**

### **Abbreviated SAR Scan Results**

sn: 021502526

Ch# 384 / Pwr Step: 2 / Type of Modulation: 800 ANALOG

DEVICE POSITION: 15 Degree Tilt

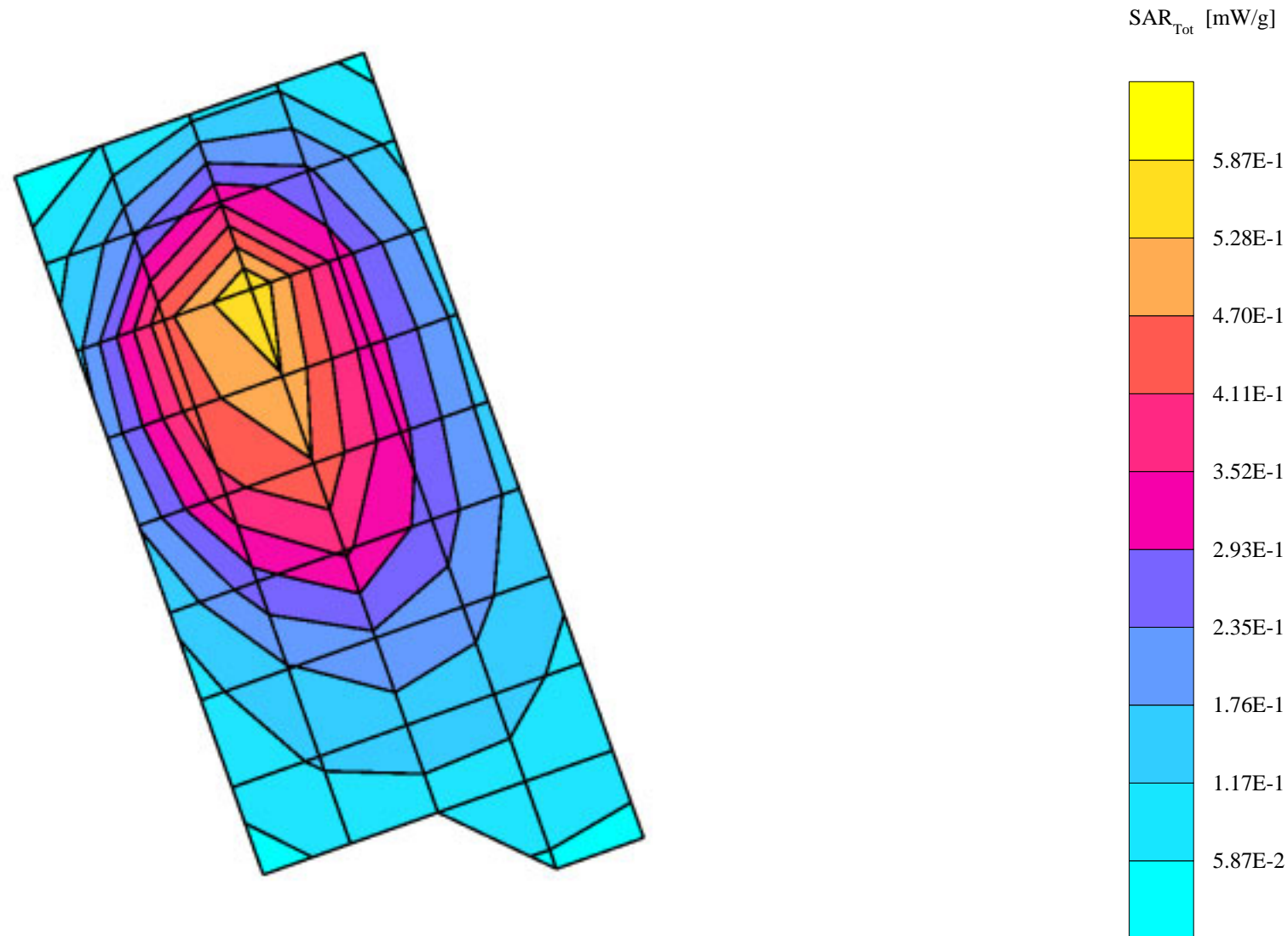
R4 TP-1131 Sugar SAM (rev. 4) 26Apr02 Phantom; Right Hand Section; Position: (90°,180°); Frequency: 837 MHz

Probe: ET3DV6R - SN1513 - IEEE Head; ConvF(6.20,6.20,6.20); Crest factor: 1.0; 835 MHz Head & Body:  $\sigma = 0.90$  mho/m  $\epsilon_r = 41.4$   $\rho = 1.00$  g/cm<sup>3</sup>

Cube 5x5x7: SAR (1g): 0.596 mW/g, (Worst-case extrapolation)

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

Penetration depth: 13.1 (12.6, 13.7) [mm]



sn: 021502526

Ch# 2 / Pwr Step: 2 / Type of Modulation: TDMA 1900

DEVICE POSITION: 15 degree Rotated

R4 TP-1105 GLYCOL (rev.3) Phantom; Left Hand Section; Position: (90°,180°); Frequency: 1850 MHz

Probe: ET3DV6R - SN1513 - IEEE Head; ConvF(5.00,5.00,5.00); Crest factor: 3.0; 1880 MHz Head & Body:  $\sigma = 1.43$  mho/m  $\epsilon_r = 38.0$   $\rho = 1.00$  g/cm<sup>3</sup>

Cube 5x5x7: SAR (1g): 1.47 mW/g, SAR (10g): 0.849 mW/g, (Worst-case extrapolation)

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

Penetration depth: 9.6 (9.4, 10.0) [mm]

