



June 24, 2002

Supplement to SAR Test Report for Motorola portable cellular phone (FCC ID: IHDT56CF1)

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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 IHDT56CF1). The requested information is addressed below in the same numbering sequence received.

1) Please provide justification for the conversion factors for 835MHz-Head for probe S/N 1508. The calibration factors shown on the calibration documents with a CF of 6.35 do not agree with the SAR plots CF of 6.5. Also, for the body measurements the calibration certificate states that a CF of 5.0 was given at 1800 MHz. The SAR plots show 5.0 was used for testing at 1900 MHz. Provide new SAR data as appropriate.

RESPONSE: The conversion factors for 835 MHz – Head for probe SN 1508, used for the SAR plots are in accordance with the 'Additional Conversion Factors' provided by SPEAG on page 11 of the Calibration Certificate.

Since the conversion factor for both 1800 & 1900 MHz head is the same '5.41' (Original SAR report "Probe SN1508 Attached Calibration Certificate), it is also true for body worn that both 1800 and 1900 MHz share the same conversion factor of '5.0'

2) Please provide the SAR plots corresponding to the maximum SAR in AMPS mode Ch. 991 Left Head Tilt position and Ch. 991 Right Head Cheek/Touch position. We could not locate these plots.

RESPONSE: Please refer to appendix 1.

3) Please provide a measurement uncertainty budget that meets the IEEE draft 1528 or the FCC/OET Bulletin 65 Supp. C (2001). Please state when these values will be available.

RESPONSE: Motorola is working on developing an uncertainty budget per the format shown in IEEE P1528. We have received many suggested values for various line items in the budget from SPEAG™. In order to verify that these values were determined per the methods indicated in IEEE P1528, we have requested, from SPEAG™, how these values were determined. Subsequently, there has been a lot of input from various members of the committee suggesting that certain line items be changed. Also, values for the line items under the *Test Sample Related* section of the budget are device specific and must be determined by the test location. Motorola is currently performing various studies to determine what these values should be for our products. We expect to have a complete uncertainty budget per IEEE P1528 available in late July, 2002.

4) Please update the users manual for body-worn statement. The use of belt clips or holsters with metallic components must be addressed.

RESPONSE: Motorola does not endorse the use of non-Motorola body-worn accessories. As stated in the manual, "Use of non-Motorola-approved accessories may exceed FCC/Health Canada RF exposure guidelines." Any future Motorola body-worn accessories, whether they contain metal or not, will be evaluated for compliance prior to shipment.

5) Clarification if the substitution method was used for the radiated power measurement. Substitution method does not appear to have been used according to the procedure provided. Provided new data using the substitution method if not.

RESPONSE: Yes, the radiated power measurement procedure uses the dipole substitution method.

6) Additional descriptive information of the SAR measurement system to meet Supplement C Appendix B part II recommendations. Please include details of the E-field probe, scan procedures, calculations, Robot, computer, and SAM phantom used.

RESPONSE: The DASY v3.1 system specified in section 3.1 of the original filing SAR Test report was utilized within the intended operations as set by the SPEAG™ setup. The default style of "coarse" and "cube" scans were chosen and use for measurements. The grid spacing of the course scan was 15cm as shown in the SAR plots. Please refer to the DASY manual for additional information on SAR scanning procedures and algorithms used.

7) SAR system manufacturer system verification data.

RESPONSE: Please refer to Appendix 2.

8) Clarification of maximum conducted power of the device. For the AMPS mode the occupied BW and conducted power measurements do not agree. For the two digital modes the statement of 28 dBm in the operational description disagrees with the conducted power measurements.

RESPONSE: In the test report (exhibit 6), please refer directly to the "RF POWER OUTPUT" section for the maximum conducted power levels. These measurements are taken by equipment specifically designed for precise power measurements using the phone described in exhibit 11. In addition, the "RF power output" procedure includes precise compensation for connector and adapter losses. Similarly, Motorola agrees that the 28 dBm statement in the Operational Description (exhibit 12) is applicable only as a general reference.

9) Please correct the table in Exhibit 11 page 5. It appears the dielectric parameters are switched.

RESPONSE: Please refer to Appendix 3.

Appendix 1

SAR Distribution Plots – SAM Phantom Head

SN 5281E239

Ch# 991 / Pwr Step: 2 / Antenna Position: Fixed / Type of Modulation: 800 Analog / Battery Model #: SNN5528A / DEVICE POSITION: 15 degree Tilted SIM'T TEMP:

When Measured = 22.1 °C After Test = 21.8 °C

R1: TP-1005 SUGAR (rev. 3) Phantom; R2 Homer Left Head Section; Position: (90°,180°); Frequency: 824 MHz

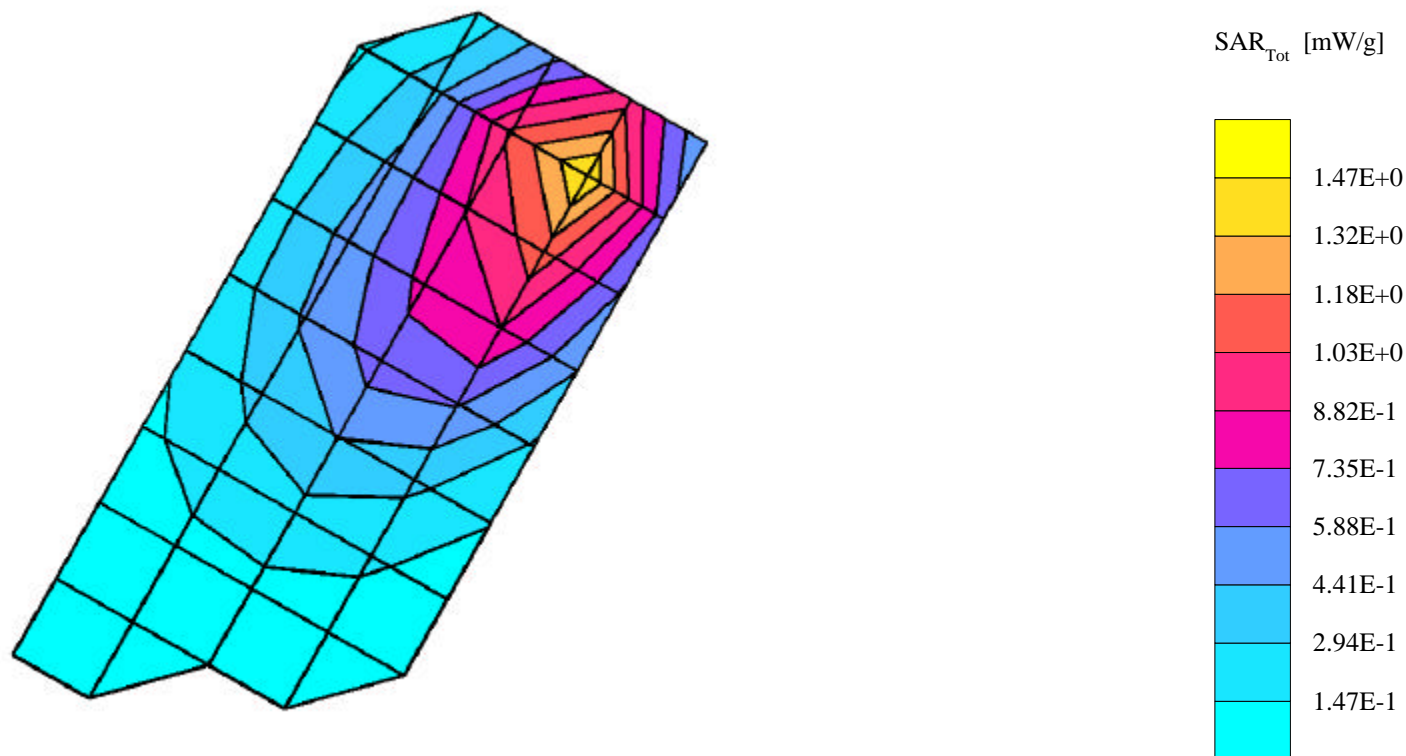
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(6.50,6.50,6.50); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.92$ mho/m $\epsilon_r = 42.4$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 1.47 mW/g, SAR (10g): 0.864 mW/g, (Worst-case extrapolation)

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

Penetration depth: 10.7 (10.1, 11.5) [mm]

Powerdrift: 0.10 dB



SN 5281E239

Ch# 991 / Pwr Step: 2 / Antenna Position: Fixed / Type of Modulation: Analog / Battery Model #: SNN5582A / SIM'T TEMP: When Measured = 22.1 °C After Test = 22 °C

R1: TP-1005 SUGAR (rev. 3) Phantom; R2 Marge Right Head Section; Position: (90°,180°); Frequency: 824 MHz

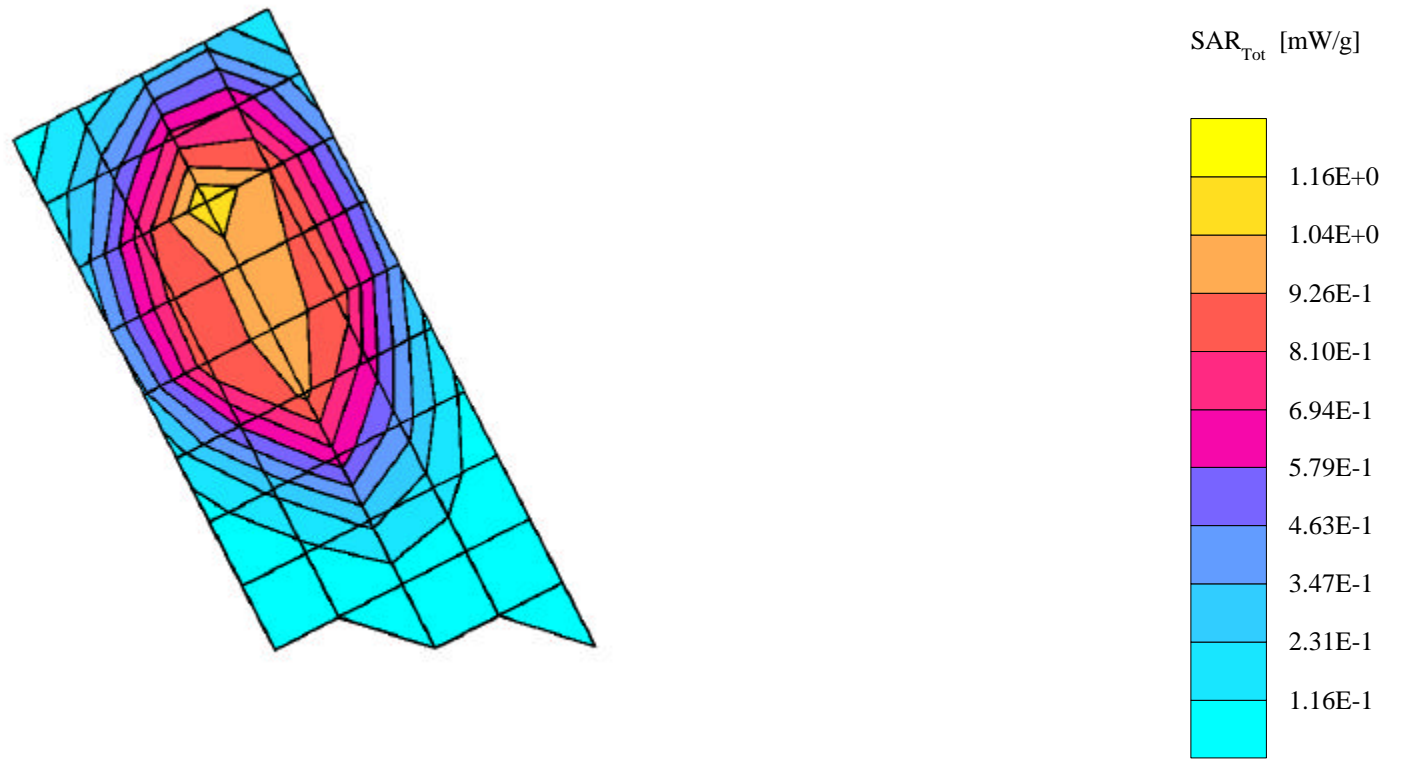
Probe: ET3DV6 - SN1508 - IEEE Head; ConvF(6.50,6.50,6.50); Crest factor: 1.0; 835 MHz Head & Body: $\sigma = 0.92$ mho/m $\epsilon_r = 42.5$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 1.15 mW/g, SAR (10g): 0.773 mW/g, (Worst-case extrapolation)

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

Penetration depth: 13.4 (12.8, 14.1) [mm]

Powerdrift: 0.09 dB



Appendix 2

Dipole Correlation Certificate

Interim Dipole Correlation Certificate

FCD-0359, Rev.001

| | | | |
|-----------------------|-------------------------|------------------------|----------|
| Dipole Serial Number: | 277(TR) | Last Calibration Date: | 4-Jan-01 |
| Dipole Type (MHz): | D1800V2 w/ Teflon Rings | Calibration Due: | 4-Jan-03 |
| | | Manufacturer: | SPEAG |

-Manufacturer's Original Calibration Information-

Dipole to be correlated: [Serial Number: 277(TR)]

| | |
|---|----------|
| 1g SAR normalized to 1W forward power (mW/g): | 45.2mW/g |
| Relative Dielectric: | 40.0 |
| Conductivity: | 1.71 |
| Probe Serial Number: | 1507 |
| Forward Power: | 250mW |

Primary Dipole Referenced: [Serial Number: 246(TR)]

| | |
|---|-----------|
| 1g SAR normalized to 1W forward power (mW/g): | 38.8 mW/g |
| Relative Dielectric: | 39.6 |
| Conductivity: | 1.37 |
| Probe Serial Number: | 1507 |
| Forward Power: | 250 mW |

-Correlation Method Utilized- per DOI-1265

(select one)

By Similarity: By Transfer Calibration:

-Measured Data-

Probe S/N: 1375 Conductivity (meas.): 1.38
Robot Cell #: BVD-4 Permittivity (meas.): 38.4

Primary Standard (average of 0-degree & 90-degree 1g cubes):

9.819 mW/g (if required) (if required)

Secondary Standard (average of 0-degree & 90-degree 1g cubes):

9.665 mW/g (if required) (if required)

-NEW Correlated Target-

| | |
|---|-----------|
| 1g SAR normalized to 1W forward power (mW/g): | 38.8 mW/g |
| Relative Dielectric: | 39.6 |
| Conductivity: | 1.37 |

Approved by: *Antonia Ferencik* Date: 3/8/02

Comments:

Secondary dipole measured +1.5 % from primary dipole.

Appendix 3

Dielectric Parameter Table

| <i>f</i> (MHz) | Tissue type | Limits / Measured | Dielectric Parameters | | |
|-------------------|-------------|----------------------|-----------------------|----------------|-----------|
| | | | ϵ_r | σ (S/m) | Temp (°C) |
| 835 | Head | Measured, 05/23/2002 | 42.40 | 0.92 | 22.10 |
| | | Recommended Limits | 41.50 | 0.90 | 20-25 |
| | | Measured, 05/24/2002 | 41.70 | 0.91 | 22.30 |
| | | Recommended Limits | 41.50 | 0.90 | 20-25 |
| | | Measured, 05/28/2002 | 42.00 | 0.92 | 22.30 |
| | | Recommended Limits | 41.50 | 0.90 | 20-25 |
| | | Measured, 05/29/2002 | 42.50 | 0.92 | 22.20 |
| | | Recommended Limits | 41.50 | 0.90 | 20-25 |
| | Body | Measured, 05/28/2002 | 53.40 | 0.97 | 22.30 |
| | | Recommended Limits | 55.20 | 0.97 | 20-25 |
| | | Measured, 05/29/2002 | 53.40 | 0.97 | 22.20 |
| | | Recommended Limits | 55.20 | 0.97 | 20-25 |
| 1880 | Head | Measured, 05/23/2002 | 38.40 | 1.47 | 21.60 |
| | | Recommended Limits | 40.00 | 1.40 | 20-25 |
| | | Measured, 05/24/2002 | 39.20 | 1.46 | 22.00 |
| | | Recommended Limits | 40.00 | 1.40 | 20-25 |
| | | Measured, 05/24/2002 | 38.40 | 1.47 | 22.00 |
| | | Recommended Limits | 40.00 | 1.40 | 20-25 |
| | Body | Measured, 05/28/2002 | 53.30 | 1.56 | 21.10 |
| | | Recommended Limits | 53.30 | 1.52 | 20-25 |