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Supplement to SAR Test Report for Motorola portable cellular phone (FCC ID IHDT56KV2)

Prepared by:
Thomas Knipple
Motorola Mobile Devices Product Safety Laboratory
Libertyville, 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 IHDT56KV2). The requested information is addressed below in the same numbering sequence received.

9. The maximum cell band head SAR was measured on 8-27-09 and 8-29-09. The parameters of the tissue fluid used on these dates do not meet the tighter specs required when the probe calibration is more than 50 MHz from the measured band (as is the case in this instance). Please address (if levels are corrected, please provide a sample calculation explaining the correction).

Response:

9. The below SAR results were corrected for tissue conductivity that was measured at or below the nominal target. Corrections were performed using the data provided in FCC KDB 450824. No correction was made for permittivity, since the measured tissue value already represents a conservative result in the measured SAR. Values are provided for both the highest phone-radio only SAR position, and the highest SAR position for summation with the secondary colocated transmitter.

Highest Head SAR Configurations, Corrected SAR for Tissue Dielectric Parameters					
f **(MHz)**	**Description**	***10 g SAR value***		***1 g SAR value***	
		Extrapolated Measurement (W/kg)	**Corrected Measurement (W/kg)**	**Extrapolated Measurement (W/kg)**	**Corrected Measurement (W/kg)**
GSM 850	Right Head Cheek Position, Channel 190	0.23	0.23	0.30	0.30
GSM 850 + WI-FI			*0.30*		*0.46*
GSM 850	Left Head 15° Tilt Position, Channel 190	0.18	0.18	0.24	0.24
GSM 850 + WI-FI			0.21		0.29
WCDMA 850	Right Head Cheek Position, Channel 4180	0.39	0.39	0.51	0.51
WCDMA 850 + WI-FI			0.46		0.67
WCDMA 850	Right Head 15° Tilt Position, Channel 4180	0.36	0.36	0.48	0.48
WCDMA 850 + WI-FI			*0.38*		*0.51*

Corrected SAR measurement results at the highest possible output power, measured in a head position against the ICNIRP and ANSI SAR Limit.

To correct for tissue parameters measured outside the limits specified by KDB 450824, the following compensation formula per Annex F of IEC 62209-2 is used:

$$\Delta SAR = S_{\varepsilon_r} \cdot \Delta\varepsilon_r + S_\sigma \cdot \Delta\sigma$$

where S_{ε_r} and S_σ are sensitivity coefficients, representing the sensitivity of SAR to permittivity and conductivity, and $\Delta\varepsilon_r$ and $\Delta\sigma$ are the percent difference of the tissue parameters from their respective target values. For the test frequency of 835 MHz, using linear interpolation between the 800 MHz and 900 MHz sensitivity coefficients given in Attachment 1 of KDB 450824 results in sensitivity coefficients of

$$S_{\varepsilon_r} = -0.563 \text{ and } S_\sigma = +0.583$$

The final adjusted SAR value is then calculated as:

$$SAR_{Corrected} = \frac{SAR_{Measured}}{1 + \Delta SAR}$$

KDB 450824 states on page 3, 6th sentence, that "the tissue dielectric parameters measured for routine measurements should be less than the target ε_r and higher than the target σ values to minimize SAR underestimations." Therefore, since the measured ε_r was already less than the target value, there is no need to use this in the calculation of the corrected SAR value. The correction calculation need only to account for σ, since it is not greater than the target. ΔSAR can then be calculated as:

$$\Delta SAR = (+0.583) \cdot \left(\frac{0.90 - 0.90}{0.90} \right) = 0.00\%$$

Note that for tissue parameters measured at the nominal target, adjustment calculations for $\Delta\varepsilon_r$ and $\Delta\sigma$ result in values of 0% adjustment for SAR calculations, and thus no change in SAR results is found.