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Supplement to SAR Test Report for Motorola portable cellular phone (FCC ID IHDP56LQ1).

Prepared by:
Katerina Bruggemann
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 IHDP56LQ1). The requested information is addressed below in the same numbering sequence received.

a. The SAR report shows that the WCDMA Release 6 Subtest output responses are flat- they do not exhibit the reductions associated with standard MPR implementation. Please explain.

Response:

Maximum Power Reduction (MPR)

According to 3GPP 25.101 sub-clause 6.2.2, the maximum output power is allowed to be reduced by following the table.

Table 6.1A: UE maximum output power with HS-DPCCH and E-DCH

UE transmit channel configuration	CM (dB)	MPR (dB)
For all combinations of; DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH	$0 \leq CM \leq 3.5$	MAX (CM-1, 0)
Note 1: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.		

The device supports MPR to solve linearity issues (ACLR or SEM) due to the higher peak-to-average ratios (PAR) of the HSUPA signal. This prevents saturating the full range of the TX DAC inside of device and provides a reduced power output to the RF transceiver chip according to the Cubic Metric (a function of the combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH).

When E-DPDCH channels are present, the beta gains on those channels are reduced first to try to get the power under the allowed limit. If the beta gains are lowered as far as possible, then a hard limiting is applied at the maximum allowed level.

The SW currently recalculates the cubic metric every time the beta gains on the E-DPDCH are reduced. The cubic metric will likely get lower each time this is done. However, there is no reported reduction of maximum output power in the HSUPA mode since the device also provides a mechanism to compensate for the power back-off by increasing the gain of TX_AGC in the transceiver (PA) device.

The end effect is that the DUT output power is identical to the case where there is no MPR in the device.

b. The SAR report must include a statement justifying the inclusion of front body SAR data at 1.5cm and 2.5cm (i.e., to cover potential accessories which position the EUT in that manner). Please revise and resubmit.

Response:

Both sides of the device were tested for Body SAR for the purpose of including the SAR evaluation for body-worn accessories that support the device with the front side facing the user. FCC SAR Report Rev 2 has been revised.

c. The low channel AWS WCDMA LH touch and the low channel WiFi RH tilt SAR measurements both show a power drift > 0.5 dB. Please address.

Response:

For AWS WCDMA LH touch, the extrapolation Extrapolated SAR = Measured SAR * 10^(-drift/10) has been performed. The SAR reported at the end of the measurement process by the DASY4™ measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process. This is the most conservative SAR because it corresponds to the average output power at the beginning of the SAR test. This extrapolation has been done because when the DUT is operating properly it may exhibit a slump in radiated power and SAR over time.

For WIFI RH Tilt, the SAR measurement on the WIFI signal which is aperiodic by nature. The measured drift was a positive drift, which indicates that the power measured at the end of the SAR scan was higher than the power measured at the beginning of the scan. Since the final SAR value is determined from the measurements at the end of the scan, the higher drift results in a more conservative SAR result.

d. The Note on p.14/111 of the SAR report states that the SAR-to-peak-location separation ratio for LH touch AWS plus WiFi SAR is less than 0.3, and references Appendix 2 for further information, but no additional information can be found in Appendix 2 with respect to this situation. Please provide further justification for not performing simultaneous transmission volume SAR scans.

Response:

Please see the next page of this Supplement Response. The FCC SAR Report Rev 2 has been revised to include the page at the end of Appendix 2.

The guidelines provided in "SAR Evaluation Consideration for Handsets with Multiple Transmitters and Antennas" (KDB publication 648474 - D01 v01r05) were utilized for evaluation of the need for simultaneous transmission SAR testing. These guidelines direct that if the SAR-to-peak location separation ratio for two simultaneously transmitting antennas is < 0.3 then SAR evaluation for simultaneous transmission is not required. For CDMA 800 and Wi-Fi in the Left Head Cheek position the SAR-to-peak-location separation is 0.295, and thus no testing was performed to determine the aggregate 1 g SAR in this configuration. SAR plots with the Wi-Fi SAR overlaid upon the CDMA 800 SAR are provided below.

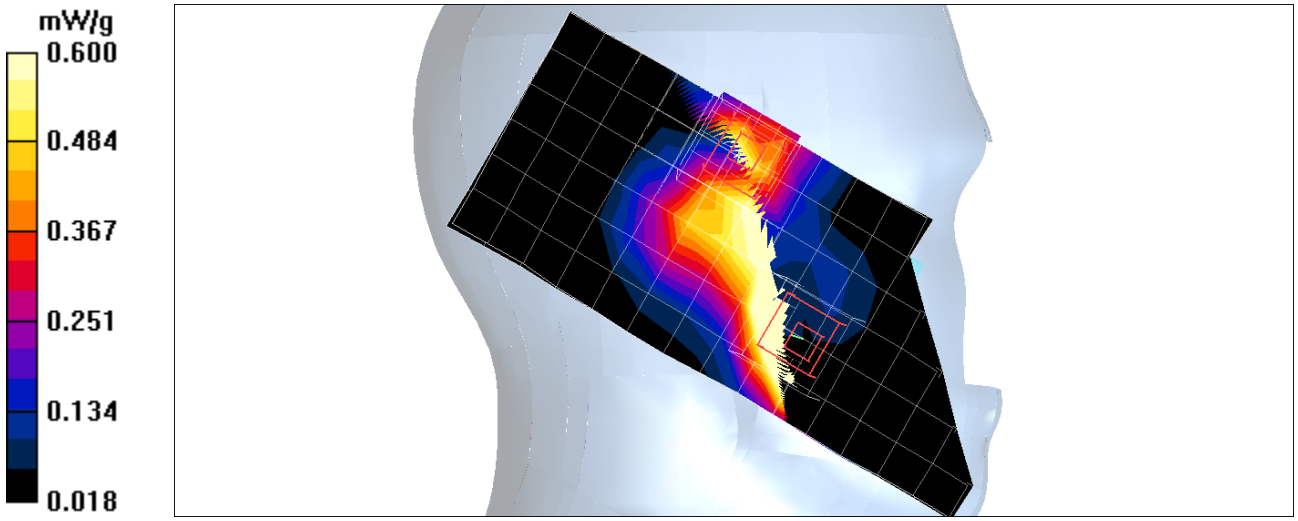
Serial: 352795040045451; Slider: Closed; Procedure Notes: Pwr Step: Continuous; Battery Model #: SNN5819B DEVICE POSITION: CHEEK; Communication System: Wi-Fi 2450; Frequency: 2412 MHz; Communication System Channel Number: 1; Duty Cycle: 1:1; Medium: 2450 Glycol Head; Medium parameters used: f = 2450 MHz; σ = 1.83 mho/m; ε_r = 37.4; ρ = 1000 kg/m^3

Left Head Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 29.6 V/m; Power Drift = 0.017 dB; Peak SAR (extrapolated) = 2.09 W/kg; **SAR(1 g) = 1.28 mW/g; SAR(10 g) = 0.739 mW/g;** Maximum value of SAR (measured) = 1.42 mW/g **(X=0.065 m, Y=0.263 m, Z= -0.172 m)**

Serial: 352795040045444; Slider Closed; Procedure Notes: Pwr Step: All up; Battery Model #: SNN5819B DEVICE POSITION CHEEK; Communication System: 3G/WCDMA 1700; Frequency: 1732.5 MHz; Communication System Channel Number: 1413; Duty Cycle: 1:1; Medium: 1730 Glycol Head; Medium parameters used: f = 1730 MHz; σ = 1.4 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3

Left Head Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm; Reference Value = 14.4 V/m; Power Drift = -0.297 dB; Peak SAR (extrapolated) = 1.14 W/kg; **SAR(1 g) = 0.579 mW/g; SAR(10 g) = 0.290 mW/g;** Maximum value of SAR (measured) = 0.643 mW/g **(X=0.0419 m, Y=0.329 m, Z= -0.171 m)**

Distance between the peaks = 6.99 cm
SAR-to-peak location separation ratio = (1.28 + 0.62) / 6.99 = 0.272



WCDMA 1700 WIFI SAR-to-peak-location separation ratio