



**MOTOROLA**

July 17, 2002

**Subject:** Supplement to SAR Test Report for Motorola portable cellular phone (FCC ID IHDT5CK1)

**Reference:**

Correspondence Reference Number: 220716.IHD

Confirmation Number: TC1286

Date of Original Email: 07/16/2002

**Prepared by:**

Firass Badaruzzaman, SAR Engineer

Motorola Personal Communications Sector Product Safety Laboratory

Harvard, Illinois

Andrew Bachler, Principal Staff Engineer

Motorola Personal Communications Sector

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 IHDT5CK1). The requested information is addressed below in the same numbering sequence received.

1) Justification for the reduced number of configurations/frequencies tested. Alternatively, please provide SAR data from additional test configurations/frequencies. Please also address the number of frequency points and tests with the extended battery.

**Response:** The testing was performed in each configuration / frequency band per the FCC OET Bulletin 65 Supplement C 01-01 standard, which states:

*"The device should be tested on the left and right side of the head phantom in the "Cheek/Touch" and "Ear/Tilt" positions. When applicable, each configuration should be tested with the antenna in its fully extended and fully retracted positions. These test configurations should be tested at the high, middle and low frequency channels of each operating mode; for example, AMPS, CDMA, and TDMA. If the SAR measured at the middle channel for each test configuration (left, right, Cheek/Touch, Tile/Ear, extended and retracted) is at least 2.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s)." (Appendix D: SAR Measurement Procedures - Page 42).*

In Configuration / frequency band where measured SAR was below this threshold, additional tests were not required.

2) 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 IEEE 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 completing various studies to determine what these values should be for our products. We expect to

have a complete uncertainty budget per IEEE P1528 available prior to the ratification of IEEE P1528. Per item #13 of the *OET 65 Supplement C EAB Part 22/24 SAR Review Reminder Sheet 01/2002* handed out during the February, 2002 TCB council meeting, the tabulated total measurement uncertainty is nominal until the IEEE Std 1528 is completed. The 12% overall RSS uncertainty of measurement previously stated in the section 3.1 breaks down into the following line items:

<b><u>Probe Uncertainty</u></b>	<b><u>±%</u></b>
Isotropy error	7.2
Calibration error	3.3
Spatial resolution	0.5
<b><u>SAR Evaluation</u></b>	<b><u>±%</u></b>
Conductivity measurement	5.0
Environmental errors	1.0
<b><u>Peak SAR Evaluation</u></b>	<b><u>±%</u></b>
Probe positioning	1.0
Volumetric averaging	4.2
Device positioning	6.0

Total: 12.0%

3) Justification for the conversion factors used. CF numbers used were not consistent between SAR plots and not always in agreement with numbers stated in the calibration certificates. Please clarify.

**Response:** The conversion factors used for head and body measurements agree with the additional conversion factors shown in (Appendix 4: page 39) of the original SAR report.

4) Statement clarifying transmitter tune range and maximum power. The tech specs and operational description seem to differ. Please see op. desc. Transmitter Tech. Charact. Exhibit 12B, General information Exhibit 12A and SAR report Exhibit 11 page 3. Please clarify.

**Response:** The generic power and transmitter tune range in Exhibit 12 is in error and will be updated in future filings. The descriptions in Exhibit 11 are correct. Both conducted and radiated transmitter power levels are also provided in Exhibit 6.

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

**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.