



To: Kwok Chan, FCC  
From: Paul Moller, Motorola, Inc.  
Subject: FCC ID IHDT5YA1 hand SAR  
Date: September 29, 1998

cc: John Kalenowsky, Motorola, Inc.

Portable cellular phone FCC ID IHDT5YA1 was measured for total radiated power in the presence of a human phantom complete with a hand holding the phone. The phone was positioned on a full body measurement phantom per the instructions in the Motorola users manual for the subject phone. Total radiated power was measured without a hand holding the phone, and then as a second measurement with a phantom hand holding the phone in a normal position. One can see the placement of the phantom hand relative to the subject phone in picture A. The phantom hand has the same dimensions as a real human hand, and is made of a pliable shell that is filled with tissue simulant. The tissue simulant is the same as is used in the head phantom. The dielectric constant is 40 and the conductivity is 0.85 S/m. The phantom is placed inside of an anechoic chamber capable of performing full spherical scans of the phones radiation characteristics, specifically total radiated power. The difference in total radiated with and without the phantom hand is then measured for both the antenna retracted and extended cases. This difference in total radiated power is then the maximum power that is deposited in the hand. The phone was set to transmit on maximum power (0.5 Watt) in analog mode. Since digital mode average transmit power (0.17 Watt) is less than the analog power, total radiated power was not measured in digital mode.

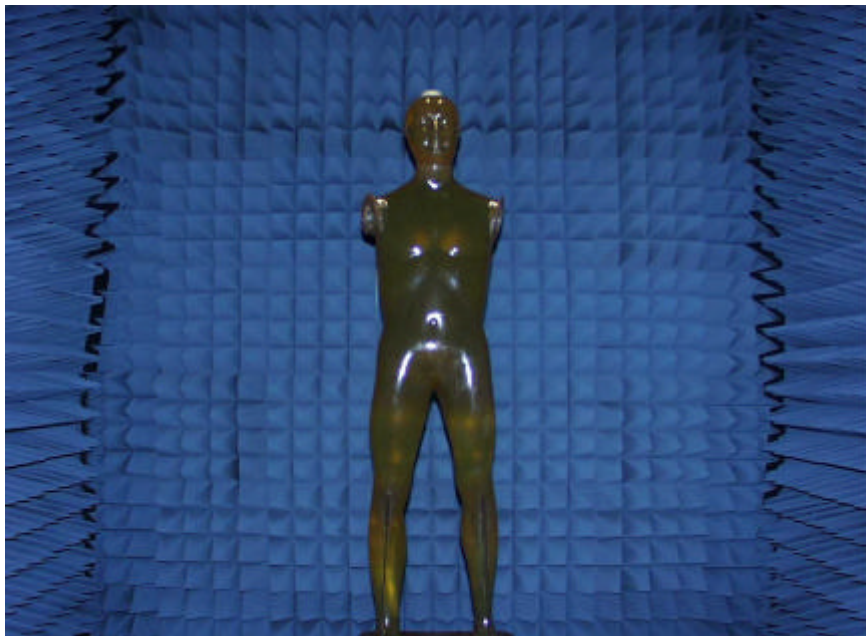
For the subject phone, the maximum power deposited in the hand was found to be less than 10mW for both the antenna retracted and extended positions. These results were measured on channel 991 which is the same channel as had the maximum SAR in the head phantom. Federal Communications Commission rule §2.1093(d)(2), the ANSI/IEEE C95.1 1992 and the NCRP Report Number 86 specify the maximum exposure limit in the hand of 4 W/kg as averaged over any 10 grams of tissue for portable devices being used within 20cm of the user in the uncontrolled environment. More than 40mW of total power deposited in the hand would be required for the limit of 4 W/kg averaged over 10 grams to be exceeded. Since the total power deposited in the hand for the test phone is less than 40mW, the standard is not exceeded. Included are two pictures. Picture A shows the subject phone in the normal talk position with the phantom hand in the test position. Picture B shows the full body phantom in the anechoic chamber.

If you have any further questions please feel free to contact me directly at 847-523-5210.

Paul Moller



Picture A



Picture B