

March 6, 2002

CKC Certification Services
5473-A Clouds Rest
Mariposa, CA 95338
Attn: Dustin Oaks

SUBJECT: **VTECH MOBILE (ASIA) LIMITED**
FCC ID: P5680-5196-00
Request for Information

Dear Dustin,

On behalf of VTECH Mobile (Asia) Limited is our response to your request for additional information for the subject application as follows:

Item 1: Please provide a new SAR report and include information on the ear spacer used, including thickness.

The SAM phantom used for the SAR evaluation is V4.0C manufactured by SPEAG and is in accordance with IEEE P1528 as described below:

4.4.2 Phantom Shape and Size

4.4.2.1 Anthropomorphic head phantom. The phantom shell is a low-loss dielectric material, with shape and selected dimension parameters from the anthropometric data corresponding to the 90th percentile adult male head as tabulated by the US Army [Gordon et al., 1989]. Since an ear spacer is specified in 4.1.3, the distance between the head and the upper posterior portion of the ear (helix) does not correspond to the Army data (there is no ear/air gap behind the ear of the SAM model versus a gap of 28.8 mm for the 90 percentile man). The shape of the head is derived from the lines and curves as illustrated in Figure D.3 (Annex D2). In order to define a phantom, a three-dimensional clay sculpture was made of a hairless head and neck with dimensions and shape taken from the selected US Army data. The sculpture dimensions were scanned and input into a CAD (computer-aided design) file.

Figure 4-1 shows the front, back and side views of SAM. The point "M" is the reference point for the center of mouth, "LE" is the left ear reference point (ERP), and "RE" is the right ERP. The ERPs are 15 mm posterior to the entrance to ear canal (EEC) along the B-M line (Back-Mouth), as shown in Figure 4-2. The plane passing through the two ear reference points and M is defined as the Reference Plane. The line N-F (Neck-Front) perpendicular to the reference plane and passing through the RE (or LE) is called the Reference Pivoting Line (see Figure 4-3). Line B-M is perpendicular to the N-F line. Both N-F and B-M lines should be marked on the external phantom shell to facilitate handset positioning. Posterior to the N-F line, the thickness of the phantom shell with the shape of an ear is a flat surface 6 mm thick at the ERPs. Anterior to the N-F line, the ear is truncated as illustrated in Figure 4-2. The ear truncation is introduced to avoid the handset from touching the ear lobe, which can cause unstable handset positioning at the cheek. This CAD file is on the compact disc (CD) included as a normative part to this recommended practice. Figures D.4 in Annex D shows cross-sectional views of SAM in planes parallel to the Reference Plane in 10-mm increments up to ± 30 mm away.

Plastic phantom shells are manufactured using the CAD file of the SAM model. The SAM shell is bisected along the mid-sagittal plane into right and left halves. Testing is required on both right and left sides since the location of the peak SAR is initially unknown. The perimeter sidewalls of each phantom half are extended to allow filling with liquid to a depth that is sufficient to minimize reflections from the upper surface (air-liquid interface). A possible perimeter extension implementation is shown in Figure 4-4. For the 300 to 3000 MHz frequency range, reflections are minimized at a depth of at least 15 cm, which is about the distance between the ears of the whole-head model. The liquid depth should be measured from the ERP (inside the SAM phantom) to the air-liquid interface.

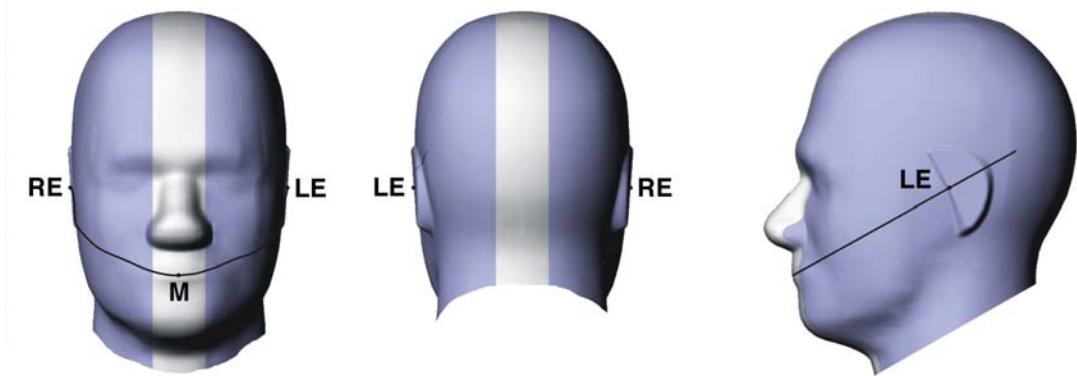


Figure 4-1 – Front, back and side view of SAM (model for the phantom shell)

Note: The center strip including the nose region has a different thickness tolerance.

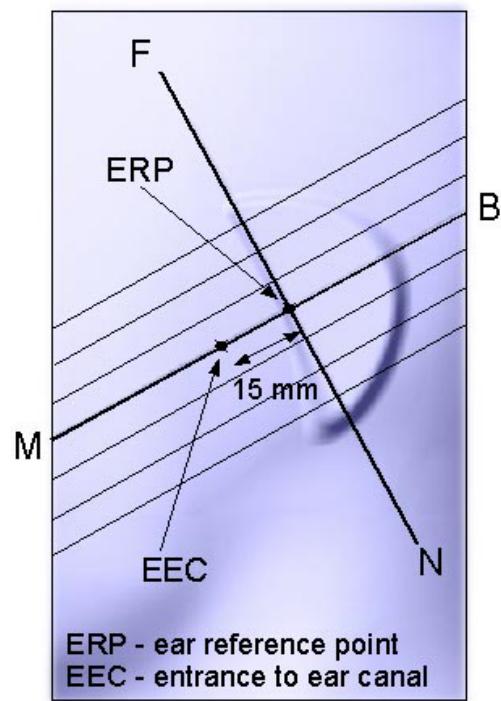


Figure 4-2 - Close up side view of phantom showing the ear region

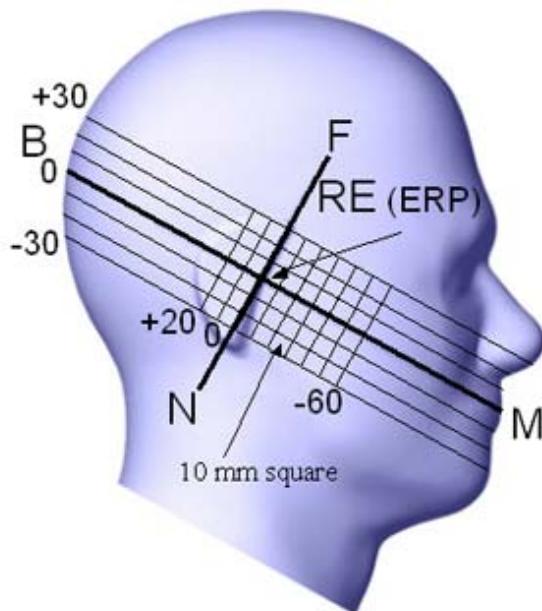


Figure 4-3 – Side view of the phantom showing relevant markings and the 7 cross sectional plane locations (see Annex D.3)

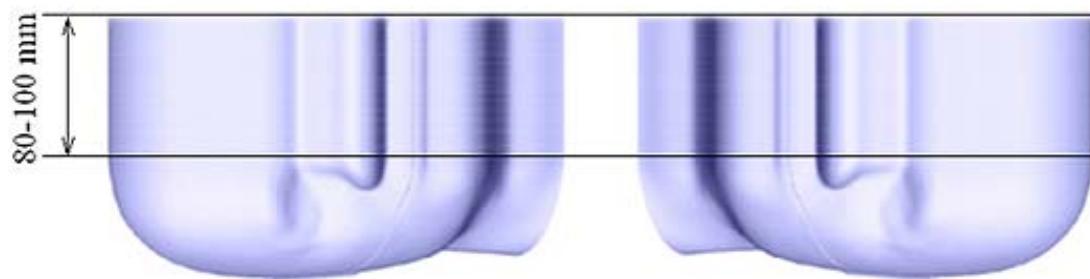


Figure 4-4 – Sagittally bisected phantom with extended perimeter (shown placed on its side for measuring SAR)

4.4.2.2 Phantom Shell. The shell of the phantom including ear spacer should be made of chemical resistant, low permittivity and low loss material with a relative permittivity less than 5 and a loss tangent less than 0.05. The phantom shell shape should have a tolerance of less than ± 0.2 mm with respect to the SAM CAD file. In any area within the projection of the handset, the shell thickness should be 2 ± 0.2 mm, except for the ear and the extended perimeter. The phantom shell shall be made of materials resistive to compounds used for making tissue-equivalent materials as listed in Annex C so in order to maintain ± 0.2 mm tolerances. The low loss (same material as the head shell) ear spacer posterior of the N-F line along the B-M line shall provide a 6 mm spacing from the tissue boundary within a tolerance of less than ± 0.2 mm. For non-critical areas (the central strip containing the nose, as shown in Figure 4-1), the tolerance can be within ± 0.5 mm.

Item 2: The tissue ingredients for the body mixture does not comply with the requirements in Supplement C, please explain.

The tissue ingredients included in Supplement C are provided for reference only. For 1800-2000MHz, a mixture including DGBE was used in order to bring the dielectric parameters of the simulated fluid within the 5% of the required tolerance.

Item 3: The Cheek/Touch test was not performed using the Extended-Life battery, please explain.

During the evaluation it was found that the SAR on the mid channel with the standard battery for both the left and right sides was approximately 1.5dB less in the touch position compared with the tilt position. Further, there was little change in the measured SAR with respect to the two battery configurations in the absence of conducted power variations. Therefore, it is believed, with a high degree of confidence, that the measured SAR in the touch position would be approximately 1.5dB less than the tilt position for the same battery configuration.

If you have any further questions or comments concerning the above, please contact the undersigned.

Sincerely,



Shawn McMillen
General Manager
Celltech Research Inc.
Testing & Engineering Lab

cc: VTECH Mobile (Asia) Limited
7 Layers, Inc.