February 21, 2000

RESPONSE TO SAR QUESTIONS

(Correspondence Reference Number: 12262)

Federal Communications Commission
Authorization and Evaluation Division
7435 Oakland Mills Road
Columbia, Maryland 21046

Re: Application for Cellular/PCS Transceiver Certification (EA96148)

Kwok Chan & Joe Dichoso:

Purpose:

This document responds to questions on the submission for the IHDT5ZS1 (EA96148) application.

Description:

To facilitate the response to SAR questions, the following includes the original text and the highlighted response.

From: Joe Dichoso
jdichoso@fcc.gov
FCC Application Processing Branch

Re: FCC ID IHDT5ZS1
Applicant: Motorola Inc
Correspondence Reference Number: 12262
731 Confirmation Number: EA96148
Date of Original E-Mail: 02/18/2000

Motorola, EA 96148 -

1. N/A

2. The requested output for AMPS and CDMA appear to be based on conducted output. Measured ERP should be used for the grant - 407 mW for AMPS and 235 mW for CDMA, ERP for both.

3. SAR report indicated this device has a standard battery and 2 extended battery. The manual indicates a standard and a slim battery. Please verify the battery options and confirm that the battery options will not result in device performance changes or operating configuration issues that could cause SAR to exceed those reported in this filing for head and body-worn configurations.

Response: Exhibit 11 is incorrect in stating that there is a total of 3 battery options. There is in fact only two, as the manual indicates, the standard and the slim. The SAR tests were conducted with the "standard" battery. The slim battery does not affect the attachment to the belt clip of the distance of the phone's body or antenna to the head and thus should not affect the SAR values.

4. The manual describes a 3-watt vehicle kit. Please clarify if this vehicle kit is a part of this filing. If so, compliance with MPE limits for 2.1091 needs to be addressed. At 3 watts conducted output, it would not be categorically excluded from routine MPE.

Response: The vehicle kit is NOT part of this filing. The manual clarifies that the existing vehicle kit is not compatible.

5. FYI: dipole validation result is a little off between reported and numbers on SAR plot. Minor, no need to respond.

6. SAR report has dielectric constant of 45.1 and conductivity of 0.85 S/m for head tissue material, the SAR plots are indicating substantially different tissue dielectric properties. Some dielectric constant values are exceeding reported (and recommended) values by more than 10%. Existing discussions from standards organizations generally recommend deviations to not exceed 5%, especially for dielectric constant. Please clarify the effect of these variations on SAR compliance for this device, especially those tests with results higher than 1.0 W/kg.

Response: Exhibit 11 indicates the dielectric parameters that were used in the SAR plot that had the highest result. The SAR plots has different values because the left hand talk position and right hand talk position tests were done on different phantoms. We used the correct parameters for each phantom at the time the tests were done.

There were only two plots included in Exhibit 11 that had SAR results higher than 1.0 W/kg. The first of these was the plot that indicated the dielectric constant of 45.1 and the conductivity of 0.85 S/m, this is the plot that had the highest resulting SAR value. The other plot had a dielectric of 49.2 and a conductivity of 0.87 S/m. Both of these tests had dielectric values within 10% of the recommended value given on the FCC subcommittee 34 web page (recommend dielectric = 48.3).

7. The conducted output indicated in the SAR results table for retracted antenna configuration is 130 mW for both AMPS and CDMA modes. This is substantially lower than values reported elsewhere for this filing, please clarify.

Response: The numbers in Exhibit 11 are the correct numbers. Below is a table showing the output power numbers as per our internal quality check. The filing reports the worst case conditions for output power and did not specify the difference between the antenna extended and retracted.

The power cutback on our phone is the following:

Mode:	Max. Ant Up Power (dBm)	Max. Ant Dn Power (dBm)
Analog	26.7	21.1
CDMA	24.5	21.1

8. FYI: Please use muscle equivalent tissue parameters to address hand issues in the future, no need to respond for the current filing, should not be an issue if hand absorption is only 6 mW (see next item).

9. The SAR report indicated less than 6 mW of total power was absorbed by the hand. The photo indicated the hand is covering the antenna or could be in direct contact with the antenna. The 6 mW reported is substantially lower than typically expected for the indicated hand configuration, please confirm and/or clarify if necessary. Please also verify if both antenna extended and retracted configurations were tested.

Response: The SAR in the hand measurements were done on low, mid and high channels with the antenna extended and retracted. The highest resulting number was 5.58mW on channel 384 with the antenna extended. Note: Power is reduced when the antenna is retracted.

10. Please include appropriate operating instructions and caution statements in users manual to alert users that body-worn operating configurations were tested for SAR compliance using a specific Motorola holster, which provides one inch separation (as described in the SAR report) between the device, including its antenna whether extended or retracted, and user's body to ensure compliance. Other holsters and body-worn configurations that have not been tested may not comply with SAR limit and should be avoided.

Response: The following is a part of the updated users manual safety information:

Safety Information

IMPORTANT: Read this information before using your wireless handheld phone.

Exposure to Radio Frequency Signals

Your wireless handheld portable telephone is a low power radio transmitter and receiver. When it is ON, it receives and also sends out radio frequency (RF) signals.
In August 1996, The Federal Communications Commission (FCC) adopted RF exposure guidelines with safety levels for handheld wireless phones. Those guidelines are consistent with safety standards previously set by both U.S. and international standards bodies:

- American National Standards Institute (ANSI) IEEE. C95. 1-1992
- National Council on Radiation Protection and Measurement (NCRP). Report 86
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1996
- Ministry of Health (Canada), Safety Code 6

Those standards were based on comprehensive and periodic evaluations of the relevant scientific literature. For example, over 120 scientists, engineers, and physicians from universities, government health agencies, and industry reviewed the available body of research to develop the ANSI Standard (C95.1).
The design of your phone complies with the FCC guidelines (and those standards). For additional information concerning exposure to radio frequency signals, see the statement by the FDA at the end of this user guide.
To maintain compliance with FCC RF exposure guidelines, if you wear a handset on your body, use the Motorola-supplied or approved carrying case, holster, or other body-worn accessory. If you do not use a body-worn accessory, ensure the antenna is at least one inch (2.5 centimeters) from your body when transmitting. Use ofnon-Motorola accessories may violate FCC RF exposure guidelines.

Antenna Care

Use only the supplied or an approved replacement antenna. Unauthorized antennas, modifications, or attachments could damage the phone and may violate FCC regulations.

Proposed Grant Comment: Output is ERP. SAR compliance for body-worn operating configurations was tested with a specific Motorola holster, as described in the filing. Appropriate operating instructions must be provided to users for satisfying body-worn SAR compliance.

Kwok Chan

Contact Information:

Thank you for this special consideration. Please contact me by telephone at (847) 523-6167, by facsimile at (847) 523-2350, or by e-mail (A.Bachler@motorola.com), if there are questions or additional information needed concerning this filing.

Regards,

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