

January 21, 2000

RESPONSE TO SAR QUESTIONS

(Correspondence Reference Number: 11299)

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

Re: Application for Cellular/PCS Transceiver Certification (EA95622)

Kwok Chan & Frank Coperich:

Purpose:

This document responds to Correspondence Reference Number 11299, SAR questions on the IHDT5ZY1 (EA95622) application.

Description:

To facilitate the response to SAR questions, the following includes the original text and the highlighted response. A draft copy of a revised User's manual document is also included.

Re:	FCC ID IHDT5ZY1	
Applicant:		Motorola Inc
Correspondence Reference Number:		11299
731 Confirmation Number:		EA95622
Date of Original E-Mail:		01/04/2000

1. The filing is requesting 3.0 W conducted output, based on measurements. The RF exposure information exhibit is indicating a maximum output of 3.8 W. The discrepancy needs to be resolved.

RESPONSE:

The 3.8 W is the maximum that a transceiver can produce. The product is actually phased at 3.0 W. To ensure absolute worst case MPE evaluation, calculations assume 3.1 Watts conducted power.

2. "Transmitter Operation Description" section of exhibit 12, Technical Descriptions paragraph, indicates the entire transmitter is capable of 6.3 W of maximum output. Previous section, "Description", indicates the transmitter is designed to be used with a 3 dB gain roof (vehicle) mounted antenna with 3 W maximum output (less than 6 W EIRP). The RF exposure information exhibit is indicating a maximum EIRP of 5.0 W with 1.2 dB of combined antenna gain and cable loss (no specific antenna gain specified, but implying a minimum of 1.8 dB cable loss). Please clarify discrepancies.

RESPONSE:

The 6.3 Watt level refers to the maximum power that the transmit section (PA device) of the transceiver can produce. Losses between this point and the antenna port are 2.65 dB. This leaves about 0.5 dB headroom to ensure that the transceiver can be "phased" for 3.0 W at the antenna port. The antenna installation guidelines chart includes combination line loss and antenna gain which apply to all installations.

3. At higher than 1.5 W ERP (2.46 W EIRP), this transmitter is not categorically excluded from routine MPE evaluation for demonstrating compliance. The "Technical Description" section has already defined the design of this transmitter is for used with a 3 dB gain roof-mount antenna for vehicle operations. The normal operating

conditions for evaluating RF exposure with respect to MPE limits, in this case, would be the intended 3 dBi antenna(s) over a metal ground plane. The following alternatives may be considered -

(a) Applicant demonstrates MPE compliance with respect to the type(s) of antennas intended for this transmitter for supporting worst case exposure conditions. Depending on the final information supplied and whether it is to be installed by vehicle manufacturers and its dealers with clearly defined installation requirements, we may need to include the minimum cable loss, maximum antenna gain, antenna types and lengths (or ones tested) on the grant for purposes of satisfying MPE requirements. Antennas with substantially equivalent performance and physical constructions will be allowed.

(b) The applicant specifically requests for an exclusion from routine MPE evaluation with supporting reasons - usually due to transmitter configuration(s) that cannot be properly tested because of technical reasons and difficulties or other factors that will result in RF exposure conditions substantially lower than the applicable limits. In such cases, worst case estimates may be considered according to maximum output power, feasibility of the intended installation and operating requirements for satisfying MPE compliance, maximum antenna gain, antenna type, antenna length that may affect exposure conditions and associated cable losses etc. These similar requirements will be considered as grant conditions for satisfying compliance.

(c) The provided manual information indicates this transmitter is intended for installation by automobile manufacturers. If the intended type(s) of antennas are known, it would be easier to perform MPE for demonstrating compliance, which will most likely result in less restrictive grant conditions. If there is supporting information to demonstrate it can qualify for an exclusion from routine MPE evaluation due to technical reasons, more restrictive installation and operating conditions are likely for the grant. If the exposure conditions cannot be clearly defined, it may be necessary to require the grantee to coordinate and ensure MPE compliance with automobile manufacturers.

RESPONSE:

Motorola reviewed all eleven vehicle installation scenarios currently planned by the OEM automobile manufacturer. In these installations, line loss varied from 6.8 to 9.1 dB. Antennas are typically unity gain (1.5 dB) ¼ wave ground planes, combination antennas, or low gain patch antennas. To accommodate the FCC RF exposure guidelines, for all of these installations and future installation scenarios, Motorola provides an antenna installation guideline chart. This chart provides the recommended distance between all nearby persons and the antenna, for various antenna gain and line loss situations. Please refer to the draft copy of the user (installer) manual.

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,

Andrew J. Bachler
FCC Liaison
Cellular Subscriber Sector
600 N. U.S. Highway 45
Libertyville, IL 60048-5343