MOTOROLA

23 November, 2009

Updated SAR Test Report for Motorola H24 Transceiver Module (*FCC ID IHDT56KL2)*

Prepared by:
Steven Hauswirth, Distinguished Member of the Technical Staff
Motorola Personal Communications Sector Product Safety & Compliance Laboratory
Libertyville, Illinois

The Motorola Personal Communications Sector Product Safety & Compliance Laboratory has evaluated the H24 Transceiver Module (FCC ID IHDT56KL2) as a mobile device per 47 CFR §1.1310 titled "Radiofrequency radiation exposure limits", generally referred to as MPE limits.

In 47 CFR § 2.1091, paragraph (b) defines a mobile device as "a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons." This product is intended to be installed into a vehicle such that the unit is physically secured at one location. In the installation guide supplied with the product, Motorola has made the following statement: "**IMPORTANT**: To meet the FCC's RF Exposure Guidelines, the antenna should be installed so there is at least 20 cm of separation between the body of the user and nearby persons and the antenna". Based on the installation of the transceiver and the antenna, the transmitters radiating structure is more than 20 centimeters from the user. Thus, this product is a "mobile device" as defined in section § 2.1091 paragraph (b).

Table 1 (B) of 47 CFR §1.1310 lists the limits for MPE for the General Population. Since the mobile cellular phone operates in the 800MHz cellular band and 1900MHz PCS band, the listed limit of f/1500 applies. The lowest transmit frequency for this product is 824.04 MHz, resulting in a MPE limit of 0.549 mW/cm^2.

The MPE of a radiating structure can be calculated by knowing the transmit EIRP and the distance at which MPE is being calculated. In this case MPE will be calculated at 20 cm, which is the minimum separation between the body of the user and nearby persons and the antenna.

The maximum transmit power for this product in the 800 MHz cellular band is 2.73 Watts (GSM mode). When installed using a combined cable loss and antenna gain of a maximum of **3.2 dBi**, the maximum EIRP will be less than 7.0 Watts. The maximum sourced based time-averaged transmit power for this product in the 800 MHz cellular band is 0.513 Watts (GPRS Class 11 mode). The model used for calculating power density in OET Bulletin 65, Edition 97-01, is the spherical model. Using this spherical model and the preceding antenna gain, **0.546 mW/cm^2** is achieved at a distance of 20 cm from the antenna at 824.04MHz. This is below the limit of 0.549 mW/cm^2.

The maximum transmit power and time-averaged transmit power for this product in the 1700 MHz cellular band is 0.294 Watts (WCDMA mode). When installed using a combined cable loss and antenna gain of a maximum of **5.25 dBi**, the maximum EIRP will be less than 1.0 Watt. Using the spherical model and the preceding antenna gain, **0.501 mW/cm^2** is achieved at a distance of 20 cm from the antenna at 1711.2 MHz. This is below the limit of 1.00 mW/cm^2. Therefore, by requiring the user and nearby persons to remain at least 20 cm from the antenna, the MPE is not exceeded.

The maximum transmit power for this product in the 1900 MHz cellular band is 1.28 Watts (GSM mode). When installed using a combined cable loss and antenna gain of a maximum of **1.9 dBi**, the maximum EIRP will be less than 2.0 Watts. The maximum sourced based time-averaged transmit power for this product in the 1900 MHz cellular band is 0.275 Watts (WCDMA mode). Using the spherical model and the preceding antenna gain, **0.217 mW/cm^2** is achieved at a distance of 20 cm from the antenna at 1850.2 MHz. This is below the limit of 1.00 mW/cm^2. Therefore, by requiring the user and nearby persons to remain at least 20 cm from the antenna, the MPE is not exceeded.