



Date: August 21, 2001

Mr. Joe Dichoso
Authorization & Evaluation Division
Federal Communications Commission Laboratory
7435 Oakland Mills Road
Columbia, MD 21046

Re: Form 731 Confirmation Number: EA101428 with FCC ID: AZ489FT5808.

Dear Mr. Dichoso;

Motorola Inc., 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322, herein submits its response to the July 31, 2001 request for information on FCC ID: AZ489FT5808, EA101428 via Correspondence Number 20117.

- 1) Attached is a duplicate confidentiality request exhibit to replace the damaged exhibit.
- 2) When this transceiver interfaces to a computer for data transfer it functions as a wireless modem that, in view of the definition of a peripheral device in 47 CFR 15.3(r), might be considered to function as a peripheral device. 47 CFR Part 15.101(d) permits equipment authorization for peripheral devices by Verification in lieu of either the Declaration of Conformity or the Grant of Certification procedures noted in your letter. Since the transceiver functionality was filed under the Verification procedure pursuant to 47 CFR 15.101(b), we considered verification to be appropriate for the peripheral functionality as well and performed Part 15 assessment both as a peripheral and as a receiver.
- 3) In accordance with your request for photos showing the circuit board with the shields removed, attached exhibit 9 (revised) is provided which adds Figures 9-5, 9-6 and 9-7.
- 4) As requested additional measurements of ERP were made at high-level settings of output power and the results are provided in Figure 6.49 of attached Exhibit 6.8 (Revised). In addition measurements were performed at the azimuthal angle for maximum ERP at various lower power levels, for both types of U500 power amplifier, by programming U506 to various step attenuator settings. During normal operation, to minimize interference from unwanted emissions, the linear transmitter lineup ERP is reduced in steps from the maximum setting to 34 dB attenuation so linear scaling of

ERP (i.e. - a constant antenna gain factor) and power amplifier interchangeability is a concern for optimum system operation. It was observed there was a high degree of ERP linear scaling accuracy; over the approximately 5 dB output power range of 226 to 686 milliwatts the deviation from linearity was measured to be 0.1 dB (2.45%).

These additional measurements included the low-level operational setting that was used for the data originally submitted, with the linear scalability results provided in the graph in attached new Figure 6.51. This data shows a high degree of output radiation linearity over the entire output power operating range. Further, the 2 power amplifiers used for U500 are seen to have identical characteristics over a large 2000:1 operating power range. Isolator U507 in the transmitter lineup (See Figure 4-4 in Exhibit 4.4) contributes to this linear characteristic as it not only serves to isolate the final power amplifier from antenna impedance perturbations, it serves to isolate the antenna from power amplifier U500 characteristics.

As stated in Exhibit 6.8B, the slope of a line in Figure 6-51 is equal to the antenna gain factor. It was found that over the 34 dB range the antenna factor was 0.35dB less in the highest-level 5 dB range when compared to the lowest-level 5dB range. Exhibit 12 (Revised) is attached to re-state the lower antenna gain factor to be consistent with the range in this additional measurement data was requested.

- 5) Motorola respectfully asserts that additional SAR performance measurements are not needed using the alternate power amplifier module. It has been demonstrated in the immediately preceding paragraphs on ERP that the alternate power amplifier module did not change radiation performance at the levels used for measuring SAR. As a result Motorola affirms that there is no increase in SAR for all operating modes and configurations using the alternate power amplifier module.

Three batteries and 2 associated battery covers were listed in paragraph 3.0. It is noted that the battery is not interposed between the user and the radio (see Figure 3-3 in Exhibit 3), even when mounted in the carry holster, so the choice of battery does not affect the separation distance between the antenna and the body. Measurements were performed for all batteries in each position, and the data in Tables 7.1 through 7.3 of the SAR Report comprising Exhibit 11 is reported for only the one battery type relevant to the Maximum Calculated SAR for the head, face and abdomen positions respectively.

The Maximum Calculated SAR was measured to be 1.39 W/kg as reported in Table 7.1 of the SAR report. This was determined to occur with the radio positioned at the left ear position as shown in Figure 1 therein.

Though it is possible to simultaneously connect both an audio accessory and a data cable to the radio this combination of body-worn accessories was not tested as the radio does not simultaneously function in both data and as a phone or push-to-talk 2-way radio. Further, combinations of two more of either of these types of body worn accessories is not practical since only one jack is available on the radio for an audio connection, and it would be difficult for a person to use more than one body-worn audio accessory at a time. Further, it was assumed that testing only at the abdomen was relevant for the body-worn audio accessories, and that testing at the face or head was irrelevant.

Table 7.3 of the SAR Report contains the data for one representative data cable and one representative audio cable when the radio was positioned at the abdomen (see SAR Report Figure 3) using the only carry holder accessory listed in paragraph 3.0 of the SAR Report. The dominant factor in SAR measurement at the abdomen is the separation distance provided by the holster, not the accessory cables. The greatest Calculated SAR in this position is reported in Table 7.3 as 0.88 W/kg. Further, it is clear from comparing the data in SAR Report Tables 1 and 3 that the Maximum Calculated SAR occurred at the ear position where a user would not wear a data or an audio cable.

Contact me at (954) 723-5793 if you require any additional information.

Regards,
Mike Ramnath
FCC Liaison
Email: emr003@email.mot.com

Attachments:
Confidentiality request
Exhibit 6.8 (Revised)
Exhibit 9 (Revised)
Exhibit 12 (Revised)