MOTOROLA

October 30, 2000.

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

Re: Form 731 Confirmation Number: EA 98411 with FCC ID: AZ489FT5799.

Dear Mr. Coperich;

Motorola Inc., 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322, herein submits its response to the September 26, 2000 request for information on FCC ID: AZ489FT5799, EA98411 via correspondence number 16307.

Q1. Device has an integral antenna which requires peak ERP measurement data. Technical info in the filing describes device can have 0.236 -750 mW pulse averaged ERP. Please provide the applicable peak ERP measurement data.

A1. Since the ERP is the product of the transmitter RF output power and the free-space radiation gain of the transmitter antenna relative to a dipole antenna, the ERP was determined by antenna radiation measurements performed in an Emmerson & Cummings No. 1203 RF anechoic chamber in our Plantation, FL location. Two measurements were performed.

First a signal generator was attached to an end-fed dipole antenna mounted on a stand atop a turntable, and the radiated output was measured on a vertically polarized receiving antenna to establish a reference level. Second, a radio sample replaced the dipole antenna on the stand. For this sample the antenna on the radio housing was attached to an added cable emanating from the bottom of the radio rather than the transceiver power amplifier. The signal generator was then connected to the cable at the same signal level applied to the reference antenna, and measurements taken at 2-degree intervals as the turntable was rotated. This measurement data is provided in the second column (B) of the attached Microsoft Excel spreadsheet file, and the reference antenna measurement is provided in spreadsheet cell C3.

To determine the reference antenna reading relative to a dipole rather than to the reference antenna it is necessary to adjust the reference reading by the calibrated gain of the reference antenna. This gain value is reported in cell C4 and the difference provides the dipole reference reading given in cell C5. The radio antenna gain relative to a dipole (dBd) was then calculated in column C by taking the difference between the measurement data in column B and the reference reading in cell C5. The maximum value was determined mathematically in cell C6. Further, the data in column C was then plotted as a function of the rotation angle, and the maximum is seen to occur

at an angle of 262 degrees.

After checking antenna calibration, it was determined that the previously reported maximum gain of 0.3 dBd in Exhibit 12.1.B and 0.236 to 750 milliWatts (Pulse average) ERP in Exhibit 12.1.C were overstated; these values should have been -0.55 dBd and 0.21 to 657 milliwats ERP respectively. Consequently a revised Exhibit 12 is attached.

Q2. FYI - The uploaded manual contains a number of empty sections, please submit complete manuals for future filings.

A2. An updated manual is provided as a revised Exhibit 8.

Q3. FYI - SAR report indicates 2.45 dBi and 1.25 dBi antenna gain in extended and retracted positions. Technical info indicates 0.3 dBd (1.94 dBi) as maximum antenna gain; please review and avoid such discrepancies in future filings. Current filing will use measured ERP numbers.

A3. Maximum antenna gain was discussed in our answer to item 1 above. Since the gain of a dipole antenna is 2.15 dB relative to that of an isotropic antenna we use that factor in converting between dBd and dBi.

Q4. Please verify the total ear spacing from device to tissue liquid. SAR report indicates shell thickness and ear spacer thickness. Is the total thickness the sum of the two?

A4. Yes, the total thickness is the sum of the shell thickness and the ear spacer thickness. The total ear spacing from device to tissue liquid is 0.65 cm.

Q5. SAR report and manual describe three body-worn accessories/options, a belt-clip and two leather carry case with belt-clip. Body-worn SAR compliance data is showing compliance for one of the leather carry case only. Please clarify body-worn compliance for all three accessories and if necessary, provide additional body-worn SAR data.

A5. This product offers three body attachment systems: one belt clip and two leather case / belt clip combinations. All accessories were fully investigated as described in section 7.0 of the Rev A SAR report. For example, SAR was examined at the middle of the band with the antenna retracted for each of the three body attachment systems with the results as indicated in the table below; the body attachment system providing the highest SAR, Leather Case / belt clip (NTN9478), was then selected for additional testing over frequency, antenna configuration, type of accessory cable, etc. The highest measured SAR results were then summarized in the SAR report section 7.1.

Body Worn Test Configuration	**Test freq (MHz)**	**Antenna Position**	**Meas. SAR (mW/g)**
Leather case/belt clip (# NTN9478)	813	IN	0.20
Leather case/belt clip (# NTN9479)	813	IN	0.18

Belt clip (# NTN9475)	813	IN	0.19

Q6. The SAR table in Section 7.1 of the SAR report indicates some SAR values have not been included or indicated because they represent lower SAR values. If these configurations have been tested, the SAR numbers should be included as supporting info; otherwise, such configurations would not be considered as tested. Please submit revised table with missing numbers.

A6. The SAR report has been revised and re-issued as Rev A in order to improve the clarity with the following changes:

1-SAR tables 7.1 and 7.2 in the previous report have been consolidated into one table, 7.1 in the Rev A SAR report. Now one table reflects both the measured and maximum calculated SAR levels eliminating the need to cross-reference.

2-Table 7.1 of the Rev A SAR report now includes highest SAR levels for each body position at each of three frequencies across the band and for each of two antenna positions.

Q7. First row of Table in Section 7.2 indicates a body-worn test configuration with 0.21 mW/g SAR, which cannot be identified among the SAR values reported in Section 7.1; please clarify

Note: Output is Unknown ERP. Averaged conducted output measured at 689 mW.

A7. As described above Table 7.1 of the Rev A SAR report now reflects both the measured and maximum calculated SAR levels in one table. The 0.21 mW/g figure is now appropriately included.

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

Regards,
Mike Ramnath
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