



May 23, 2001

Steve Dayhoff and Kwok Chan
Authorization & Evaluation Division
Federal Communications Commission Laboratory
7435 Oakland Mills Road
Columbia, MD 21046

Re: Form 731 Confirmation Number: EA 100436 with FCC ID: AZ489FT4844.

Gentlemen;

Motorola Inc., 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322, herein submits its response to the May 18, 2001 request for information on FCC ID: AZ489FT4844, EA100436 via correspondence number 19334.

Q1. The differences in head and body dielectric parameters are about - 30% in dielectric constant and 8% in conductivity. The increase in conductivity may not cover the substantial decrease in dielectric constant. Please either re-test, or find ways to selectively re-test to show compliance for the head configurations.

A1. Motorola has historically used Muscle mixture for face measurements as disclosed to the FCC in all prior SAR Test Reports for portable two way radios; this practice has never before been questioned and is considered valid for the following reasons:

1. Muscle solution has higher conductivity and should yield overestimation of SAR.
2. In the area of interest at feed of the antenna generally contains the eye which has conductivity values closer to muscle than brain.
3. Separation of the phantom to allow muscle mixture in the body and brain mixture in the head would be difficult.
4. The location of maximum SAR is generally found at body worn positions. The small size and curved shape of the head, in addition to the additional loading by the hand generally lead to reduced coupling to the antenna and therefore lower SAR measurements when compared with the body worn positions.
5. The impact of the increased permittivity on the probe sensitivity should be minimal due to the broadband characteristics of the miniature dipoles.

Q2. You only provided 2 SAR numbers for this device with 3 antenna configurations, 3 body-worn accessories and 2 battery options. It operates in the 403-470 MHz band, almost 70 MHz is not narrow band. Each configuration should be tested at high, middle and low frequency channels. Those 2 SAR numbers were obtained with 2 of the 3 available antennas, one for head and one for body. This is not sufficient for demonstrating SAR compliance. Please review the SAR reports for the EA98411 and EA98633 applications, re-test and fix the SAR report as we had discussed in these two previous filings (specifically Section 7).

A2. To facilitate FCC review of the application Motorola typically presents the highest measured and calculated SAR by body position; results of all scans are contained in the DASY output files and are available upon request. For this product the SAR report indicates in section 5.0, "All antennas, batteries, and accessories listed in section 3.0 were included in the SAR search pattern over transmit frequency band to determine the combination providing the highest SAR results." A total of 16 SAR scans were performed in order to determine the highest SAR configuration by body position; these final results are summarized in section 7.0 of the SAR report with the corresponding DASY output plots contained in Appendix A . For your clarification, the Table below contains additional test results performed at that time:

Frequency (MHz)	Antenna Type	Battery Type	Body-worn Accessory	Body Position	Measured SAR (mW/g)
436.425	PMAE4003	JMNN4023	JMZN4019	Abdomen	4.07
436.425	PMAE4003	JMNN4024	JMZN4019	Abdomen	2.33
436.425	NAE6483	JMNN4023	JMZN4019	Abdomen	5.28
436.425	NAE6483	JMNN4024	JMZN4019	Abdomen	3.52
436.425	PMAE4003	JMNN4023	JMZN4421	Abdomen	3.18
436.425	NAE6483	JMNN4023	JMZN4421	Abdomen	5.49
436.425	NAE6483	JMNN4023	JMZN4023	Abdomen	2.87
403.425	PMAE4002	JMNN4023	JMZN4421	Abdomen	1.86
469.975	NAE6483	JMNN4023	JMZN4421	Abdomen	3.58
469.975	PMAE4003	JMNN4023	JMZN4019	Abdomen	6.28
403.425	PMAE4002	JMNN4023	None	Face	1.0
469.975	PMAE4003	JMNN4023	None	Face	3.99

Q3. The last 2 pages of the SAR report for belt-clip photos and configurations have problems. Please re-submit those two pages again and also identify the differences between the two leather carry cases and identify the separation distances for all body-worn configurations (only one has been shown in the test setup figure).

A3. The belt-clip photos and configurations depicted in the SAR Report are copied and appended to the end of this response report.

The differences between the two leather carry cases are as follows:

JMZN4019 - Radio inserts from bottom of case with a snap full bottom flap.

JMZN4421 – Radio inserts from top of case with a plastic side zipper and small side snap strap.

The separation distances for all body-worn configurations are in the following table:

Body Worn Configuration	Battery	Antenna	Test Freq. (MHz)	Distance (cm)	Measured SAR (mW/g)
JMZN4019 (Leather Case)	JMNN4023	PMAE4003	469.975	2.5	6.28
JMZN4421 (Leather Case)	JMNN4023	PMAE4003	469.975	2.6	6.40
JMZN4023 (Plastic Holder)	JMNN4023	NAE6483	436.425	2.9	2.87

Q4. All 3 antennas should be tested for both head and body configurations. If there are supporting info to demonstrate these configurations can be selectively tested to show compliance, it should be clearly explained in the SAR report. It will be up to us to review and determine if that would be acceptable. Please address how the battery options could affect either head or body SAR compliance.

A4. All 3 antennas were tested for both head and body configurations; this data including battery variation impact is contained in response A2 Table (above). This data supports and demonstrates compliance to all configurations.

Q5. The SAR does not comply with the general population SAR limit. Please show how the users are going to be trained on RF exposure requirements to satisfy the occupational exposure limit.

A5. This device will be marketed to and used by employees of public safety agencies, e.g. police, fire and emergency medical, solely for work-related operations. User training is the responsibility of these agencies, who can be expected to employ the usage instructions, safety information and operational cautions set forth in the user's manual, instructional sessions or other means. Motorola also makes available to its customers training classes on the proper use of two-way radios.

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

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

Illustration of Body-worn Accessories

The purpose of this appendix is to illustrate the body-worn carry accessories for the FM Portable Radio JMUD1021A.

Photos 1, 2 and 3 illustrate the JMZN4023A plastic carry holder with a swivel belt clip.



Photo 1
Front view



Photo 2
Side view

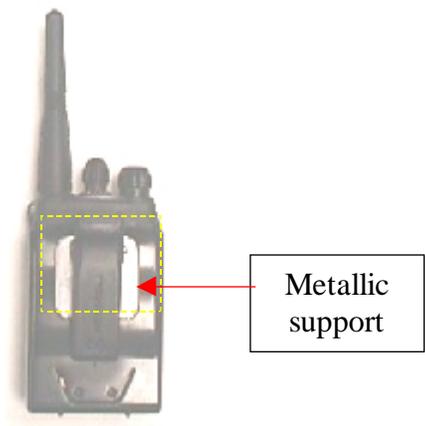


Photo 3
Rear view

Photos 4, 5 and 6 illustrate the JMZN4421B soft leather carry holder with a swivel belt clip.



Photo 4
Front view



Photo 5
Side view

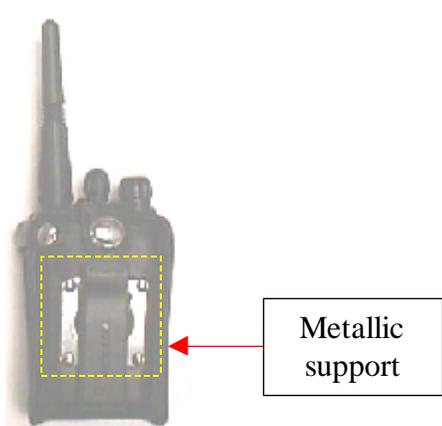


Photo 6
Rear view

Photos 7, 8 and 9 illustrate the JMZN4019A soft leather carry holder with a swivel belt clip



Photo 7
Front view



Photo 8
Side view



Photo 9
Rear view

Metallic support