



MOTOROLA



Certificate No. 1449-01

CGISS EME Laboratory
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Fort Lauderdale, FL. 33322

S.A.R. EME Test Report

Date of Report: 9/21/04
Report ID: FCC rpt_AZ489FT4869-AMR_DIOS_Rev O_040921_SR582
Report Author: Michael Sailsman (Global EME Regulatory Affairs Liaison)
Resp. Engineer: Deanna Zakharia (Elect. Principal Staff Eng.)
Tested By: NA
Date submitted: 8/16/04
Date/s Tested: NA

Manufacturer: Motorola
Sector/Group/Div.: Motorola South - ARAD
DUT Description: Transmitter one pulse meter UHF, 100mW, 12.5KHz
Test TX mode(s): NA
FCC ID(s): AZ489FT4869
Trade Name/Model(s): F4714A
Classification: General Population/Uncontrolled
Exposure Category: IEEE 1-g and 10-g
Max. Power output: 120mW
TX Frequency Bands: 450-470MHz
Test Frequency/s: NA
Model(s) Tested: NA
Model(s) Certified: F4714A
Serial Number(s): NA

Note: Consistent with the ISO/IEC 17025 recommendation this report shall not be reproduced in part without written approval from an officially designated representative of the Motorola EME Laboratory.
Based on the information and the testing results provided herein, the undersigned certifies that when used as stated in the operating instructions supplied, said product complies with all applicable national and international reference standards and guidelines.

Signature on file – Deanna Zakharia for Ken Enger

9/21/2004

Ken Enger

Date Approved

Senior Resource Manager, Product Safety and EME Director, Phone: 954-723-6299



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This device is designed to comply with the following national and international standards and guidelines.

- United States Federal Communications Commission, Code of Federal Regulations; 47CFR part 2 sub-part J
- IEEE 1528, 2003 "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques,"
- American National Standards Institute (ANSI) / Institute of Electrical and Electronic Engineers (IEEE) C95. 1-1992
- Institute of Electrical and Electronic Engineers (IEEE) C95.1-1999 Edition
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998
- Ministry of Health (Canada) Safety Code 6. Limits of Human Exposure to Terminal frequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz, 1999
- Australian Communications Authority Terminal communications (Electromagnetic Radiation - Human Exposure) Standard 2003
- ANATEL, Brazil Regulatory Authority, Resolution No. 303 of July 2, 2002 "Regulation of the limitation of exposure to electrical, magnetic, and electromagnetic fields in the radio frequency range between 9KHz and 300 GHz." and "Attachment to resolution # 303 from July 2, 2002"

This report presents product description and non test MPE compliance justification for the device stated herein.

Product Description:



FCC ID: AZ489FT4869 model F4714A is an automatic meter reader (AMR) transmitter operating in the 450-470MHz band. This device incorporates frequency modulated DPSK signaling with 12.5KHz channel separation. The device utilizes a logic circuit interface that is used to trigger a single pulse-type meter. The maximum transmission duty cycle of this device is based on a one second pulse transmitted once every 4 hours (0.06% - 30 minute time averaged). The nominal power of this device is 100mW with a maximum output power of 120mW. This device uses a fixed external ½ wave wire antenna and is powered by a 3.6V Lithium Ion battery. The intended use is mounted on a wall or installed in a pit per the user manual instructions. While this product will be marketed to and used by employees solely for work related operations such as public agencies and utilities, it also meets the General Population/Uncontrolled limits. 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 and wireless data devices.



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Offered accessories

Antenna Model	Description
1587508V79	450-470MHz 1/2 wave antenna; 10cm; 0dBd
FHN6584A	Pit antenna kit

Justification for test exclusion:

The following conservative power density free-space formula, as referenced in OET Bulletin 65, Edition 97-01, 1997, was used to determine if the potential power density of this product could exceed the MPE limits for the general population/uncontrolled exposure classification.

$$S = \frac{P_t G_t}{4\pi d^2} F$$

S is the power density at d distance away from an antenna with an output power of Pt and gain of Gt. To provide a conservative estimate of the power density the factor F should be set to 4 to account for the superposition of a reflected and a line-of-sight wave. This would result in twice the E field, or four times the power density. This is a conservative approach, since it assumes perfect reflection and no added path loss of the reflected signal.

This formula is applicable if the user is in the far-field, and it gives a conservative over estimation if the person is in the near field.

Using this equation with F = 4 offers "a truly worst-case prediction of power density".

The example presented below applies the worst case parameters for this device to the above formula and demonstrates compliance to the applicable standard.

Input variables:

Maximum Power output = 0.120

Duty Cycle (30 minutes time averaged limit) = 0.06%

Lowest Frequency = 450MHz

Antenna gain = 0dBd

Distance (cm) = 20

Result = 8.7E-05 mW/cm^2

Conclusion:

The maximum permissible exposure for uncontrolled environments is 0.30 mW/cm^2 and 1.5 mW/cm^2 for controlled environments. Based on time averaging the conservative calculated compliance results presented herein does not exceed the applicable exposure limits for both controlled and uncontrolled environments. No additional compliance assessments are hereby required.