

 <b style="font-size: 24pt; margin-left: 10px;">MOTOROLA</b>	 <b>TESTING CERT # 2518.01</b>
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**FCC ID: AZ489FT4888**  
**DECLARATION OF COMPLIANCE: MPE ASSESSMENT**

<b>Enterprise Mobility Solution (EMS)</b> EME Test Laboratory 8000 West Sunrise Blvd Fort Lauderdale, FL. 33322	<b>Date of Report:</b> 7/27/09 <b>Report Revision:</b> Rev. O <b>Report ID:</b> SR7446_MPE rpt_DIOS_UHF_Rev O_090727.
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<p><b>Responsible Engineer:</b> Kim Uong (Principal Staff EME Test Engineer)  <b>Report Author:</b> Kim Uong (Principal Staff EME Test Engineer)  <b>Date(s) Tested:</b> 7/23/09  <b>Manufacturer/Location:</b> Motorola, Israel - South  <b>Date submitted for test:</b> 6/8/09  <b>DUT Description:</b> PICCOLO XR DC UHF (FLE5532A/V347CU) 430-450MHZ                  12.5kHz.  <b>Test TX mode(s):</b> NA - MPE calculation  <b>Max. Power output:</b> 108 mW  <b>TX Frequency Bands:</b> 430-450MHz  <b>Signaling type:</b> FM  <b>Model(s) Tested:</b> F4614B  <b>Model(s) Certified:</b> F4614B  <b>Serial Number(s):</b> NA - MPE calculation  <b>Classification:</b> General Population/Uncontrolled  <b>Rule Part(s):</b> 90</p> <p><b>Approved Accessories:</b>  <b>Antenna(s):</b>                  8588540V02 (V208AH), 1/4 wave Whip, 450-470MHz, 1.7dBi                  8588540V02 (V208AJ), 1/4 wave Whip, 450-470MHz, 1.7dBi                  8588540V03 (V208AL), 1/4 wave Whip, 430-470MHz, 1.7dBi                  8588540V03 (V208AK), 1/4 wave Whip, 430-470MHz, 1.7dBi</p>	
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**Final RF Exposure Results:**  
**Highest calculated power density = 0.08 mW/cm<sup>2</sup>**

The results are compliant to the FCC General population/Uncontrolled exposure limits of 0.29-0.30 mW/cm<sup>2</sup> for the frequency ranges of 430-450 MHz, per 47 CFR §1.1310 titled "Radio frequency radiation exposure limits".  
The results are compliant to the ICNIRP General population/Uncontrolled exposure limits of 0.22-0.23 mW/cm<sup>2</sup> for the frequency range of 430-450 MHz, per ICNIRP (1998) Guidelines for limiting exposure in time-varying electric, magnetic, and electromagnetic fields (up to 300GHz), and IEEE C95.1-2005.

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 the national and international reference standards and guidelines listed in section 2.0 of this report. This report shall not be reproduced without written approval from an officially designated representative of the Motorola EME Laboratory.

I attest to the accuracy of the data and assume full responsibility for the completeness of these measurements.  
 This reporting format is consistent with the suggested guidelines of the TIA TSB-159 April 2006  
 The results and statements contained in this report pertain only to the device(s) evaluated herein.

Signature on file Deanna Zakharia EMS EME Lab Senior Resource Manager, Laboratory Director,  Approval Date: 7/27/09	Certification Date: 7/27/09 Certification No.: L1090630
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**REVISION HISTORY**

Date	Revision	Comments
7/27/09	0	Original release

## 1.0 Product and System Description

FCC ID AZ489FT4888 model F4614B is the Distributed I/O System (DIOS) that's a self-sustained system designed to function within the IRRInet irrigation control product line. This DIOS device consists of the Piccolo Interface Unit (PIU) and the Piccolo-XR units. The PIU and the Piccolo-XR are portable devices, which are used in the fixed installations. The PIU uses one of its communication ports to link to the host application and radio communication to link to the Piccolo-XR units.

This DIOS device is capable of operating in the 430-450MHz band. The rated conducted power is 100mW. The maximum conducted output power is 108mW (with the 1.7dBi gain antenna)

## 2.0 Evaluation methods

MPE numerical assessment which is used to evaluate the RF exposure of this device is based on a maximum antenna gain of 1.7dBi. Only one antenna was selected for assessment since all antennas have the same gain and the results would be the same.

According to OET Bulletin 65 Edition 97-01 Section 2, calculations can be made to predict RF field strength and power density levels around typical RF sources. For example, in the case of a single radiating antenna, a prediction for power density in the far-field of the antenna can be made by use of the general Equations (1) or (2) below. These equations are generally accurate in the far-field of an antenna but will over-predict power density in the near field, where they could be used for making a "worst case" or conservative prediction.

$$S = P G / 4 \pi r^2 = \text{EIRP} / 4 \pi r^2 \quad (1)$$

Where: S = power density (mW/cm<sup>2</sup>)  
 P = Power input into antenna (mW)  
 G = numeric gain of antenna (dBi).  
 r = distance to centre of radiation (cm)  
 EIRP = Effective (isotropic) radiated power

Or

$$S = \frac{P_t G_t}{4\pi d^2 L} F = \frac{c P_m G_t}{4\pi d^2 L} F \quad (2)$$

Equation (2) accounts for the maximum duty cycle of the signal, and the factor, F, to provide a worst-case prediction of power density per FCC OET Bulletin 65, Edition 97-01 1997.

Where: S = power density (mW/cm<sup>2</sup>)  
 P<sub>t</sub> = Total output power (W) = maximum output power, P<sub>m</sub>, scaled by the maximum duty cycle of the signal, c.  
 G<sub>t</sub> = power gain of the antenna in the direction of interest relative to an isotropic radiator (dBi).  
 L = cable loss (dB)  
 d = distance from the antenna (cm)  
 F = 2.56

### 3.0 MPE Analysis

Tx Frequency (MHz)	Env./ User Category	MPE Spec Limit (mW/cm <sup>2</sup> )		Duty Cycle (%)	Max Power (mW)	Antenna #	Ant Gain (dBi)	Cable Loss, L (dB)	Dist. d (cm)	MPE Calc. (mW/cm <sup>2</sup> )
		FCC	ICNIRP							
430	Uncontrolled	0.29	0.22	100%	108	8588540V03	1.7	0	20	0.08
450	Uncontrolled	0.30	0.23	100%	108	8588540V03	1.7	0	20	0.08

Note: A conservative 0dB cable loss was used for the MPE compliance calculation.

### 4.0 Conclusion:

The MPE results per the assessment above are compliant to the FCC General population/Uncontrolled RF exposure limits per 47 CFR §1.1310 titled “Radio frequency radiation exposure limits”.

The MPE results are also compliant to the ICNIRP General population/Uncontrolled exposure limits, per ICNIRP (1998) Guidelines for limiting exposure in time-varying electric, magnetic, and electromagnetic fields (up to 300GHz) and IEEE C95.1-2005.