



FCC Class II Permissive Change Test Report (RF Evaluation)

For the
Axiometric, LLC
MM8 Module
FCC ID: VE4-MM8-P

May 6, 2014

WLL Report: 13425-01

Axiometric, LLC
6200 Old Dobbin Lane
Ste 150
Columbia, MD 21045

Prepared by:

WASHINGTON LABORATORIES, LTD.
7560 LINDBERGH DRIVE
GAITHERSBURG, MARYLAND 20879



Testing Certificate AT-1448

FCC Class II Permissive Change Test Report (RF Evaluation)

For the
Axiometric, LLC
MM8 Module

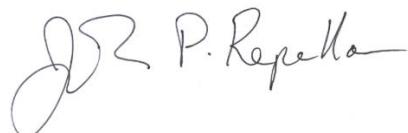
May 6, 2014
WLL Report # 13425-01

Prepared by:



James Ritter
EMC Compliance Engineer

Reviewed by:



John P. Repella
EMC & Wireless Lab Manager

Abstract

This Permissive class II report has been prepared on behalf of Axiometric, LLC for the MM8 Module to document the findings of the RF evaluation on the MM8 module. The purpose of this evaluation is to establish that this device qualifies for a SAR exclusion under CFR 47 2.1093 in accordance with the procedures of KDB 447498 and to remove the 20cm personnel restriction from the FCC grant notice.

This report documents the results of testing to the requirements of:

- CFR Title 47 CFR Sections 1.1307, 2.1091, and 2.1093

References:

- 447498 D01 General RF Exposure Guidance v05r02
- FCC knowledge database reply – tracking number 281928

The Evaluation was performed by Washington Laboratories, Ltd, 7560 Lindbergh Drive, Gaithersburg, MD 20879. Washington Laboratories, Ltd. has been accepted as an EMC Conformity Assessment Body (CAB) under the United States/European Union Memorandum of Agreement. Washington Laboratories, Ltd. is accredited by ACCLASS under Testing Certificate AT-1448.

Revision History	Reason	Date
Rev 0	Initial Release	May 6, 2014

Table of Contents

1	Introduction	1
2	Device Details.....	1
3	Conditions of Compliance.....	1
4	RF Evaluation.....	1
4.1	SAR Exclusion.....	1
4.2	SAR Exclusion Calculations	2
5	RF Evaluation Summary	2
Appendix A		3
A1.	FCC knowledge database reply – tracking number 281928	3

1 Introduction

This report has been prepared on behalf of Axiometric, LLC for the MM8 Module to show that this transmitter complies with the SAR Exclusion requirements as stated in CFR 47 2.1093 and KDB publication 447498 and to remove the 20cm restriction from the FCC grant notice. This module will be used in a portable host.

Testing supporting this evaluation was performed at Washington Laboratories, Ltd, 7560 Lindbergh Drive, Gaithersburg, MD 20879. Washington Laboratories, Ltd. has been accepted as an EMC Conformity Assessment Body (CAB) under the United States/European Union Memorandum of Agreement. Washington Laboratories, Ltd. is accredited with ACLASS under Testing Certificate AT-1448.

2 Device Details

The original grant under FCC ID: VE4-MM8 listed the conducted output power as 0.233W. No changes (hardware or software) have been made to this module from the original filing. The FCC ID has been changed to VE4-MM8-P to support a portable version of this module.

3 Conditions of Compliance

Platform: The module is to be used in the Axiometric SMiRF Handheld as host.

Restrictions: In accordance with the KDB inquiry tracking number 281928 the user manual must have a statement that the device be used in such a way as the user extremities will be 30mm from the antenna.

Antenna shall have a maximum gain of 0dBi and be omnidirectional.

4 RF Evaluation

4.1 SAR Exclusion

According to KDB 447498 Paragraph 4.3.1 section 1 the SAR exclusion formula for antennas located less than <50mm is as follows:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{(\text{GHz})}}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR}_{25} \text{ where}$

- $f_{(\text{GHz})}$ is the RF channel transmit frequency in GHz*
- Power and distance are rounded to the nearest mW and mm before calculation²⁶*
- The result is rounded to one decimal place for comparison*
- 3.0 and 7.5 are referred to as the numeric thresholds*

4.2 SAR Exclusion Calculations

For this device the antenna to personnel distance will be 30mm per manufacturer declaration and FCC KDB inquiry response tracking number 281928 (included in appendix).

Maximum power will be 233mW (from previous grant).

Antenna Gain will be 0dBi.

An extremity SAR reference number of 7.5 will be used (10g-SAR) as this is a handheld device.

Thus:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{\text{Gain}}] \leq 7.5$$

$$[(233)/(30)] \cdot [\sqrt{0.928}] \leq 7.5$$

$$[(7.77)] \cdot [0.963] \leq 7.5$$

7.48 (rounded to 7.5) ≤ 7.5 (EUT is eligible for SAR exclusion)

5 RF Evaluation Summary

As this device complies with the requirements for SAR exclusion no further RF evaluation or exposure reporting is required.

Note: As no hardware or software changes have occurred to this module originally approved as a full module under FCC ID: VE4-MM8 no actual RF testing was utilized for this report, only data from the original VE4-MM8 grant listing.

Appendix A

A1. FCC knowledge database reply – tracking number 281928

FCC response on 04/15/2014

Based upon the information provided, it is understood that the typical use-case of this EUT would result in a distance of approximately 40mm between the antenna and user's extremities. Under such conditions, operating at 233mW and 928 MHz, a test exclusion value of 5.6 would be calculated (per KDB Publication 447498 D01 4.3.1(1)). As such, this EUT's typical use-case would qualify for the test exclusion outlined in the referenced publication. However, it is requested that the EUT's user manual be updated to reflect that this EUT is approved for typical usage conditions, with the user's extremity at least 30mm from the antenna.