



Global Product Certification
EMC-EMF Safety Approvals

EMC Technologies Pty Ltd

ABN 82 057 105 549
176 Harrick Road, Keilor Park
Victoria 3042, Australia

Telephone +61 3 9365 1000
Facsimile +61 3 9331 7455
Email emc-general@emctech.com.au
Web www.emctech.com.au

47 CFR Part 2.1091
Radiofrequency radiation exposure evaluation:
Mobile devices

Report Number: M180429-8B

Device under Test: Laserforce Base Station

Model: LF901

Tested For: Laserforce International Pty Ltd

Date of Issue: 3 April 2019

This document must not be copied or reproduced, except in full without the
written permission of the Manager, EMC Technologies Pty Ltd

www.emctech.com.au



Table of Contents

1	INTRODUCTION.....	4
2	GENERAL INFORMATION.....	4
3	TEST SAMPLE DESCRIPTION and TEST SETUP DETAILS	4
4	COMPLIANCE CRITERIA.....	5
5	EVALUATION.....	5
6	CONCLUSION	5

This document must not be copied or reproduced, except in full without the written permission of the Manager, EMC Technologies Pty Ltd

www.emctech.com.au



EMC-EMF Safety Approvals

47 CFR Part 2.1091
Radiofrequency radiation exposure evaluation: Mobile devices

Report Number: M180429-8B

Test Sample: Laserforce Base Station
Model Number: LF901
Manufacturer: Laserforce International Pty Ltd

Equipment Type: Intentional Radiator (Transceiver)

Tested for: Laserforce International Pty Ltd
Address: 55 Ipswich Road, Brisbane QLD 4102
Contact: Paul McGougan
Phone: +61 7 3891 6337
Email: paul@laserforcetag.com

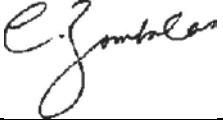
Standard: FCC Title 47, Part 2.1091
Radiofrequency radiation exposure evaluation: mobile devices.

447498 D01 General RF Exposure Guidance v06
RF exposure procedures and equipment authorization policies
for mobile and portable devices.

Result: The LF901 complied with RF exposure requirements of FCC
Title 47, Part 2.1091.

Assessment Date: 12th September 2018


Assessed by: Emad Mansour
EMR/EME Test Engineer
EMC Technologies Pty Ltd


Checked by: Chris Zombolas
Technical Director
EMC Technologies Pty Ltd

This document must not be copied or reproduced, except in full without the
written permission of the Manager, EMC Technologies Pty Ltd

1 INTRODUCTION

The LF901 Laserforce Base Station was assessed against the requirements of FCC Title 47, Part 2.1091 to ascertain if the device would meet the applicable RF exposure limits without further measurements.

Testing was performed by EMC Technologies Pty Ltd on the Laserforce Base Station, Model LF901, manufactured by Laserforce International Pty Ltd.

2 GENERAL INFORMATION

(Information supplied by the Client)

The Equipment Under Test (EUT) was identified as follows:

Test Sample:	Laserforce Base Station
Model Name:	LF901
Manufacturer:	Laserforce International Pty Ltd
Power Supply:	Internal DC Battery
Radio Module:	Nordic nRF24E1
Operating Band:	2.4 GHz
Modulation:	GFSK
Antenna type:	PCB chip antenna
Peak Output Power	-2.37 dBm (0.58 mW) ERP

Note1: For peak output power refer to Report M180429-4 (issued by EMC Technologies Pty Ltd).

3 TEST SAMPLE DESCRIPTION

(Information supplied by the Client)

A laser tag vest (including phaser gun) worn by player that communicates wirelessly with the Laserforce Base Station unit

This document must not be copied or reproduced, except in full without the written permission of the Manager, EMC Technologies Pty Ltd

4 COMPLIANCE CRITERIA

Mobile devices that operate in the Cellular Radiotelephone Service, the Personal Communications Services, the Satellite Communications Services, the General Wireless Communications Service, the Wireless Communications Service, the Maritime Services and the Specialized Mobile Radio Service authorized under subpart H of part 22 of this chapter, parts 24, 25, 26 and 27 of this chapter, part 80 of this chapter (ship earth stations devices only) and part 90 of this chapter are subject to routine environmental evaluation for RF exposure prior to equipment authorization or use if:

- They operate at frequencies of 1.5 GHz or below and their effective radiated power (ERP) is 1.5 watts or more, or
- If they operate at frequencies above 1.5 GHz and their ERP is 3 watts or more.

Unlicensed personal communications service devices, unlicensed millimeter wave devices and unlicensed NII devices authorized under §§ 15.253, 15.255, and 15.257, and subparts D and E of part 15 of this chapter are also subject to routine environmental evaluation for RF exposure prior to equipment authorization or use if their ERP is 3 watts or more or if they meet the definition of a portable device as specified in § 2.1093(b) requiring evaluation under the provisions of that section.

5 EVALUATION

The device is an unlicensed personal communications service and therefore the maximum allowed ERP to meet RF exposure limits was 3 watts.

The maximum radiated power for standalone transmitter is presented below:

Radio Module	Frequency Band	Maximum Peak power (mW)
Nordic nRF24E1	2.4 GHz	0.58 mW

$$\text{Peak output power} = -2.37 \text{ dBm} = 0.58 \text{ mW} \leq 3 \text{ W}$$

As the peak output power was less than the threshold the device was exempt from RF exposure evaluation according to 47 CFR 2.1091 (c)(2).

6 CONCLUSION

As the LF901 Laserforce Base Station peak output power was within the required limit it was deemed to comply with the radiation exposure limits of §2.1091. Further measurements were not required.