

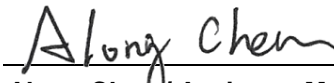
# FCC RF Exposure Report

**FCC ID** : KQL-AC4490  
**Equipment** : 902 - 928 MHz FHSS, 0 - 1 W, MMCX  
902 - 928 MHz FHSS, 0 - 1 W, MMCX, Long Range  
**Model No.** : AC4490-1000M  
AC4790-1000M  
AC4490LR-1000M  
AC4790LR-1000M  
**Brand Name** : Laird Connectivity  
**Applicant** : Laird Connectivity LLC  
**Address** : W66N220 Commerce Court, Cedarburg, WI 53012  
United States Of America  
**Standard** : 47 CFR FCC Part 2.1091  
**Received Date** : Mar. 29, 2022  
**Tested Date** : Mar. 29 ~ Jul. 08, 2022

We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by:

Approved by:

  
\_\_\_\_\_  
Along Chen / Assistant Manager

  
\_\_\_\_\_  
Gary Chang / Manager

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## Release Record

Report No.	Version	Description	Issued Date
FA232902	Rev. 01	Initial issue	Sep. 22, 2022

# 1 General Description

## 1.1 Information

### 1.1.1 Product Details

The following models are provided to this EUT.

Brand Name	Model Name	Product Name	Description
Laird Connectivity	AC4490-1000M	902 - 928 MHz FHSS, 0 - 1 W, MMCX	---
	AC4790-1000M	902 - 928 MHz FHSS, 0 - 1 W, MMCX	Different FW
	AC4490LR-1000M	902 - 928 MHz FHSS, 0 - 1 W, MMCX, Long Range	Add LNA with Different FW
	AC4790LR-1000M	902 - 928 MHz FHSS, 0 - 1 W, MMCX, Long Range	Add LNA with Different FW

✦ The above models, model AC4490LR-1000M were chosen for final test and only its data was recorded in this report.

## 2 RF Exposure Test Exemptions

### 2.1 1-mW TEST EXEMPTION

Available maximum time-averaged power is no more than 1 mW.

### 2.2 SAR-BASED EXEMPTION

This exemption is applicable to the frequency range between 300 MHz and 6 GHz, with test separation distances between 0.5 cm and 40 cm, and for all RF sources in fixed, mobile, and portable device exposure conditions.

The maximum time-averaged power or effective radiated power (ERP), whichever is greater,  $\leq P_{th}$

$$P_{th} \text{ (mW)} = ERP_{20cm}(d/20)^x \quad d \leq 20cm$$

$$P_{th} \text{ (mW)} = ERP_{20cm} \quad 20 \text{ cm} < d \leq 40cm$$

The maximum time-averaged power or effective radiated power (ERP), whichever is greater,  $\leq P_{th}$

$$P_{th} \text{ (mW)} = ERP_{20cm}(\text{mW}) = 2040f \quad 0.3\text{GHz} \leq f < 1.5 \text{ GHz}$$

$$P_{th} \text{ (mW)} = ERP_{20cm}(\text{mW}) = 3060 \quad 1.5\text{GHz} \leq f < 6 \text{ GHz}$$

Frequency (MHz)	Power Thresholds	
	mW	dBm
663	1353	31.31
699	1426	31.54
704	1436	31.57
777	1585	32.00
824	1681	32.26
902	1840	32.65
1500 ~ 6000	3060	34.86

### 2.3 MPE-BASED EXEMPTION

For a much wider frequency range, from 300 kHz to 100 GHz, applicable for separation distances greater or equal to  $\lambda/2\pi$ , where  $\lambda$  is the free-space operating wavelength in meters.

Radio Source Frequency			Minimum Distance			Threshold ERP
F <sub>L</sub> MHz		F <sub>H</sub> MHz	$\lambda_L / 2\pi$		$\lambda_H / 2\pi$	W
0.3	-	1.34	159 m	-	35.6 m	1920 R <sup>2</sup>
1.34	-	30	35.6 m	-	1.6 m	3450 R <sup>2</sup> /f <sup>2</sup>
30	-	300	1.6 m	-	159 mm	3.83 R <sup>2</sup>
300	-	1500	159 mm	-	31.8 mm	0.0128 R <sup>2</sup> f
1500	-	100000	31.8 mm	-	0.5 mm	19.2 R <sup>2</sup>

Note: R is the antenna-person separation distance.

## 2.4 REFERENCE GUIDANCE

447498 D04 Interim General RF Exposure Guidance v01

## 2.5 DEVIATION FROM TEST STANDARD AND MEASUREMENT PROCEDURE

None

## 2.6 MEASUREMENT UNCERTAINTY

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

Parameters	Uncertainty
Conducted power	±0.808 dB

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

## 2.7 EXEMPTION CALCULATION

Frequency Range (MHz)	Maximum Conducted Power (dBm)	Rated Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)	SAR-Based Exemption Thresholds (dBm)	Pass/ Fail
902 ~ 928	27.95	28.5	2.50	31	28.85	32.65	Pass

Note:

1. Minimum separation distance = 20 cm.
2. Exemption Threshold (dBm) =  $10 * \log ( 2040 * 0.902 ) = 32.65 \text{ dBm}$

### 3 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website <http://www.icertifi.com.tw>.

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