

FCC RF Exposure Exemption Report

FCC ID : SQG-CL4490

Equipment : ConnexLink 900MHz 1W RS232
ConnexLink 900MHz 1W RS485
ConnexLink 900MHz 1W RS232/422/485
Refer to section 1.1.1 for more details

Model No. : CL4490-1000-232 ; CL4790-1000-232
CL4490-1000-485 ; CL4790-1000-485
CL4490-1000-PRO
Refer to section 1.1.1 for more details

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 ~ Apr. 25, 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
FA232903	Rev. 01	Initial issue	Jul. 29, 2022

1 General Description

1.1 Information

1.1.1 Product Details

The following models are provided to this EUT.

Model Name	Product Name	Description
CL4490-1000-232	ConnexLink 900MHz 1W RS232	DB-9 Male (RS232)
CL4790-1000-232	ConnexLink 900MHz 1W RS232	DB-9 Male (RS232) / SW different
CL4490-1000-485	ConnexLink 900MHz 1W RS485	Terminal Block (RS485)
CL4790-1000-485	ConnexLink 900MHz 1W RS485	Terminal Block (RS485) / SW different
CL4490-1000-PRO	ConnexLink 900MHz 1W RS232/422/485	DB-9 Female/DIP Switch

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, $\leq P_{th}$

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

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

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 λ is the free-space operating wavelength in meters.

Radio Source Frequency			Minimum Distance			Threshold ERP
F_L MHz		F_H MHz	$\lambda_L / 2\pi$		$\lambda_H / 2\pi$	W
0.3	-	1.34	159 m	-	35.6 m	$1920 R^2$
1.34	-	30	35.6 m	-	1.6 m	$3450 R^2/f^2$
30	-	300	1.6 m	-	159 mm	$3.83 R^2$
300	-	1500	159 mm	-	31.8 mm	$0.0128 R^2f$
1500	-	100000	31.8 mm	-	0.5 mm	$19.2 R^2$

Note: R is the antenna-person separation distance.

2.4 DEVIATION FROM TEST STANDARD AND MEASUREMENT PROCEDURE

None

2.5 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.

2.6 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	28	29	2	31	28.85	32.65	Pass

Note: Minimum separation distance = 20 cm.

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>.

Linkou

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If you have any suggestion, please feel free to contact us as below information.

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