

FCC RF Exposure Exemption Report

FCC ID : SQG-MSD45N
Equipment : 45 Series Pluggable module
Model No. : MSD45N
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. 07, 2022
Tested Date : Mar. 18 ~ Mar. 30, 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 |
|-------------|---------|---------------|---------------|
| FA371704-12 | Rev. 01 | Initial issue | Apr. 20, 2022 |

1 RF Exposure Test Exemptions

1.1 1-mW TEST EXEMPTION

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

1.2 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, $\leq P_{th}$

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

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

| 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 |

1.3 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 ² f |
| 1500 | - | 100000 | 31.8 mm | - | 0.5 mm | 19.2 R ² |

1.4 DEVIATION FROM TEST STANDARD AND MEASUREMENT PROCEDURE

None

1.5 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. |

1.6 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 |
|-----------------------|-------------------------------|-------------------|--------------------|------------|-----------|--------------------------------------|-----------|
| 2412~2462 | 18.15 | 18.5 | 2.79 | 21.29 | 19.14 | 34.86 | Pass |
| 5180~5240 | 16.45 | 16.5 | 3.9 | 20.4 | 18.25 | 34.86 | Pass |
| 5745~5825 | 16.42 | 16.5 | 3.9 | 20.4 | 18.25 | 34.86 | Pass |
| 5260~5320 | 17.77 | 18 | 4 | 22 | 19.85 | 34.86 | Pass |
| 5500~5720 | 18.13 | 18.5 | 4 | 22.5 | 20.35 | 34.86 | Pass |

Note:

Minimum separation distance = 20 cm.

2 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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(R.O.C.)

Kwei Shan

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No.3-1, Lane 6, Wen San 3rd
St., Kwei Shan Dist., Tao Yuan
City 33381, Taiwan (R.O.C.)
No.2-1, Lane 6, Wen San 3rd
St., Kwei Shan Dist., Tao Yuan
City 33381, Taiwan (R.O.C.)

Kwei Shan Site II

Tel: 886-3-271-8640

No.14-1, Lane 19, Wen San 3rd
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City 333, Taiwan (R.O.C.)

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

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