



RF Exposure Evaluation Report

| | |
|------------------------------|--|
| Application No.: | DNT2507280637R8073-09826 |
| Applicant: | Shenzhen Bilian Electronic Co.,Ltd. |
| Address of Applicant: | Room 501, Building 3, No. 32, Dafu Road, Zhangge Community, Fucheng Street, Longhua District, Shenzhen City, China |
| EUT Description: | 802.11b/g/n 150Mbps 1T1R WLAN SDIO Module |
| Model No.: | BL-M8189NS1 |
| FCC ID: | 2AL6KBL-M8189NS1 |
| Power supply | DC 3.3V |
| Trade Mark: | / |
| | 47 CFR Part 2.1091 |
| Standards: | FCC KDB 447498 D01 v06 |
| Date of Receipt: | 2025/7/28 |
| Date of Test: | 2025/7/28 to 2025/8/13 |
| Date of Issue: | 2025/8/19 |
| Test Result: | PASS |

Prepared By: Wayne Lin (Testing Engineer)



Reviewed By: Tengils Chen (Project Engineer)

Approved By: Yiwee Chen (Manager)

Note: If there is any objection to the results in this report, please submit a written inquiry to the company within 15 days from the date of receiving the report. The test report is effective only with both signature and specialized stamp, and is issued by the company in accordance with the requirements of the "Conditions of Issuance of Test Reports" printed in the attached page. Unless otherwise stated, the results presented in this report only apply to the samples tested this time. Partial reproduction of this report is not allowed unless approved by the company in writing.

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**Report Revise Record**

| Report Version | Revise Time | Issued Date | Valid Version | Notes |
|----------------|-------------|-----------------|---------------|-----------------|
| V1.0 | / | August 19, 2025 | Valid | Original Report |



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1 General Information

1.1 Test Location

| | |
|----------------|---|
| Company: | Dongguan DN Testing Co., Ltd |
| Address: | No. 1, West Fourth Street, South Xingfa Road, Wusha Liwu, Chang'an Town, Dongguan City, Guangdong P.R.China |
| Test engineer: | Wayne Lin |

1.2 General Description of EUT

| | |
|--------------------------|---|
| Manufacturer: | Shenzhen Bilian Electronic Co.,Ltd. |
| Address of Manufacturer: | Room 501, Building 3, No. 32, Dafu Road, Zhangge Community, Fucheng Street, Longhua District, Shenzhen City,China |
| EUT Description:: | 802.11b/g/n 150Mbps 1T1R WLAN SDIO Module |
| Test Model No.: | BL-M8189NS1 |
| Additional Model(s): | / |
| Chip Type: | RTL8189ES |
| Serial Number | PR2507280637R8073 |
| Power Supply | DC 3.3V |
| Trade Mark: | N/A |
| Hardware Version: | V1.1 |
| Software Version: | V1.0 |
| Operation Frequency: | 11b/g/n(HT20): 2412-2462MHz; 11n(HT40):2422-2452MHz |
| Type of Modulation: | DSSS/OFDM |
| Sample Type: | <input type="checkbox"/> Portable Device, <input checked="" type="checkbox"/> Module, <input checked="" type="checkbox"/> Mobile Device |
| Antenna Type: | <input checked="" type="checkbox"/> External, <input type="checkbox"/> Integrated |
| Antenna Gain: | <input checked="" type="checkbox"/> Provided by applicant 3.89dBi |

Remark:

*Since the above data and/or information is provided by the applicant relevant results or conclusions of this report are only made for these data and/or information , DNT is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.



1.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

Lab A:

- FCC, USA

Designation Number: CN1348

- A2LA (Certificate No. 7050.01)

DONGGUAN DN TESTING CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 7050.01.

- Innovation, Science and Economic Development Canada

DONGGUAN DN TESTING CO., LTD. EMC Laboratory has been recognized by ISED as an accredited testing laboratory. CAB identifier is CN0149.

IC#: 30755.

1.4 Measurement Uncertainty (95% confidence levels, k=2)

| No. | Item | Measurement Uncertainty |
|-----|---|--|
| 1 | DTS Bandwidth | ±0.0196% |
| 2 | Maximum Conducted Output Power | ±0.686 dB |
| 3 | Maximum Power Spectral Density Level | ±0.743 dB |
| 4 | Band-edge Compliance | ±1.328 dB |
| 5 | Unwanted Emissions In Non-restricted Freq Bands | 9KHz-1GHz:±0.746dB 1GHz-26GHz: ±1.328dB |

| No. | Item | Measurement Uncertainty |
|-----|---------------------|---------------------------|
| 1 | Conduction Emission | ± 3.0dB (150kHz to 30MHz) |
| 2 | Radiated Emission | ± 4.8dB (Below 1GHz) |
| | | ± 4.8dB (1GHz to 6GHz) |
| | | ± 4.5dB (6GHz to 18GHz) |
| | | ± 5.02dB (Above 18GHz) |



2 RF Exposure Evaluation

2.1 RF Exposure Compliance Requirement

2.1.1 Limits

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm ²) | Averaging time (minutes) |
|--|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| (A) Limits for Occupational/Controlled Exposures | | | | |
| 0.3-3.0 | 614 | 1.63 | *(100) | 6 |
| 3.0-30 | 1842/f | 4.89/f | *(900/f ²) | 6 |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 |
| 300-1500 | / | / | f/300 | 6 |
| 1500-100,000 | / | / | 5 | 6 |
| (B) Limits for General Population/Uncontrolled Exposure | | | | |
| 0.3-1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34-30 | 824/f | 2.19/f | *(180/f ²) | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | / | / | f/1500 | 30 |
| 1500-100,000 | / | / | 1.0 | 30 |

F=frequency in MHz

*=Plane-wave equivalent power density

RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz:614V/m,1.63A/m).

Friis Formula

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

$\pi = 3.1416$

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.



2.1.2 Test Procedure

Software provided by client enabled the EUT to transmit data at lowest, middle and highest channel individually

2.1.3 EUT RF Exposure Evaluation

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.0 / 2.0 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

This confirmed that the device comply with MPE limit.

| Test Mode | Antenna | Freq(MHz) | Power [dBm] |
|-----------|---------|-----------|-------------|
| 11B | Ant1 | 2412 | 16.97 |
| | | 2437 | 18.10 |
| | | 2462 | 16.95 |
| 11G | Ant1 | 2412 | 16.32 |
| | | 2437 | 16.80 |
| | | 2462 | 17.37 |
| 11N20 | Ant1 | 2412 | 16.62 |
| | | 2437 | 17.22 |
| | | 2462 | 14.68 |
| 11N40 | Ant1 | 2422 | 16.04 |
| | | 2437 | 16.34 |
| | | 2452 | 16.64 |

| The Worst Mode | Antenna | Peak output power (dBm) | Target power (dBm) | MAX Target power (dBm) | Antenna gain | | Power Density (S) (mW /cm ²) | Limited of Power Density (S) (mW /cm ²) | Test Result | Distance (cm) |
|----------------|---------|-------------------------|--------------------|------------------------|--------------|----------|--|---|-------------|---------------|
| | | | | | (dBi) | (Linear) | | | | |
| 2.4G Band | | | | | | | | | | |
| 11B | Ant1 | 18.1 | 17±1.5 | 18.5 | 3.87 | 2.438 | 0.0343 | 18.1 | Complies | 20 |

The End Report