

RF Exposure Report

Report No.: SABHQC-WTW-P20110170A

FCC ID: B3QT99H209

Test Model: T99H209

Received Date: 2021/12/3

Test Date: 2022/1/14

Issued Date: 2022/2/23

Applicant: BROTHER INDUSTRIES, LTD.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
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**FCC Registration /
Designation Number:** 723255 / TW2022

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Release Control Record

| Issue No. | Description | Date Issued |
|-----------------------|-------------------|-------------|
| SABHQC-WTW-P20110170A | Original release. | 2022/2/23 |

1 Certificate of Conformity

Product: IEEE802.11a/b/g/n/ac (1x1)+BT 5.0 Combo Module

Brand: Brother

Test Model: T99H209

Sample Status: Engineering sample

Applicant: BROTHER INDUSTRIES, LTD.

Test Date: 2022/1/14

Standards: FCC Part 2 (Section 2.1091)

References Test Guidance KDB 447498 D01 General RF Exposure Guidance v06

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

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Approved by : Clark Lin , **Date:** 2022/2/23
Clark Lin / Technical Manager

2 RF Exposure

2.1 Limits for Maximum Permissible Exposure (MPE)

| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm ²) | Average Time (minutes) |
|---|-------------------------------|-------------------------------|-------------------------------------|------------------------|
| 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

2.2 MPE Calculation Formula

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

where

Pd = power density in mW/cm²

Pout = 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

2.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user.

So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

| Antenna No. | Antenna Net Gain (dBi) | Frequency Range (GHz) | Antenna Type | Connector Type |
|-------------|------------------------|-----------------------|--------------|----------------|
| 1 | 3.65 | 2.4~2.4835 | PCB | None |
| | 3.98 | 5.15~5.85 | | |

*The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

2.5 Calculation Result

WLAN 2.4GHz & Bluetooth was copied from the original test report (Report No.: SABHQC-WTW-P20110170).

| Operation Mode | Max Power (dBm) | Max Power (mW) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm ²) | Limit (mW/cm ²) | Pass/Fail |
|----------------------|-----------------|----------------|--------------------|---------------|-------------------------------------|-----------------------------|-----------|
| WLAN 2.4GHz | 20.91 | 123.31 | 3.65 | 20 | 0.05685 | 1 | Pass |
| WLAN 5GHz (U-NII-1) | 20.93 | 95.499 | 3.98 | 20 | 0.0475 | 1 | Pass |
| WLAN 5GHz (U-NII-2A) | 20.84 | 95.94 | 3.98 | 20 | 0.04772 | 1 | Pass |
| WLAN 5GHz (U-NII-2C) | 20.74 | 97.051 | 3.98 | 20 | 0.04828 | 1 | Pass |
| WLAN 5GHz (U-NII-3) | 20.72 | 103.276 | 3.98 | 20 | 0.05137 | 1 | Pass |
| Bluetooth | 7.04 | 5.058 | 3.65 | 20 | 0.00233 | 1 | Pass |

NOTE:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

Conclusion:

The formula of calculated the MPE is:

$$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

$$WLAN\ 5GHz + Bluetooth = 0.05137 / 1 + 0.00233 / 1 = 0.05370$$

Therefore the maximum calculations of above situations are less than the "1" limit.

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