# FCC RF EXPOSURE REPORT

*For*

**Hyperion PCBA**

**MODEL NUMBER: DBWIFIBLE06, DBWIFIBLE07**

**REPORT NUMBER: 4791405137-1-RF-3**

**ISSUE DATE: November 21, 2024**

**FCC ID: QVHDBWIFIBLE06**

*Prepared for*

**FCC: Dyson Inc**
**FCC: 1330 W Fulton St 5th Fl, Chicago Illinois, 60607 United States**

*Prepared by*

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Revision History

| Rev. | Issue Date | Revisions | Revised By |
|---|---|---|---|
| V0 | November 21, 2024 | Initial Issue | |

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# 1. ATTESTATION OF TEST RESULTS

**Applicant Information**

| | |
|---|---|
| Company Name: | FCC: Dyson Inc |
| Address: | FCC: 1330 W Fulton St 5th Fl, Chicago Illinois, 60607 United States |

**Manufacturer Information**

| | |
|---|---|
| Company Name: | FCC: Dyson Technology Limited |
| Address: | FCC: Tetbury Hill Malmesbury Wiltshire SN16 0RP United Kingdom |

**EUT Information**

| | |
|---|---|
| EUT Name: | Hyperion PCBA |
| Model: | DBWIFIBLE06 |
| Series Model: | DBWIFIBLE07 |
| Model difference: | Please refer to section 4 |
| Brand: | Dyson |
| Sample Received Date: | August 21, 2024 |
| Sample ID: | 7527212 |
| Date of Tested: | August 27, 2024 to November 21, 2024 |

| APPLICABLE STANDARDS | |
|---|---|
| **STANDARD** | **TEST RESULTS** |
| **447498 D04 Interim General RF Exposure Guidance v01** | **PASS** |

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## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with 47 CFR FCC Part 1 Subpart I, section 1.1307 and KDB 447498 D04 Interim General RF Exposure Guidance v01.

## 3. FACILITIES AND ACCREDITATION

| | |
|---|---|
| Accreditation Certificate | **A2LA (Certificate No.: 4102.01)**<br>UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA.<br>**FCC (FCC Designation No.: CN1187)**<br>UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules<br>**ISED (Company No.: 21320)**<br>UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED.<br>The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046.<br>**VCCI (Registration No.: G-20192, C-20153, T-20155 and R-20202)**<br>UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793.<br>Facility Name:<br>Chamber D, the VCCI registration No. is G-20192 and R-20202<br>Shielding Room B, the VCCI registration No. is C-20153 and T-20155 |

Note 1: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

Note 2: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

Note 3: For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30MHz had been correlated to measurements performed on an OFS.

# 4. DESCRIPTION OF EUT

| | | |
|---|---|---|
| EUT Name | | Hyperion PCBA |
| Model | | DBWIFIBLE06 |
| Series Model | | DBWIFIBLE07 |
| Model difference | | DBWIFIBLE07 has the same RF technical construction including circuit diagram, PCB Layout, all electrical construction and mechanical construction with DBWIFIBLE06. The only difference lies is DBWIFIBLE06 has heating function, but DBWIFIBLE07 hasn't. All these changes do not degrade the unwanted emissions of the certified product. We have pre-test two models and select the worst model DBWIFIBLE06 to test and perform in the report. |
| Product Description (BLE) | Frequency Range: | 2402 MHz to 2480 MHz |
| | Type of Modulation: | GFSK |
| | Data Rates: | 1Mbps |
| Product Description (2.4G WLAN) | Frequency Range: | 2412 MHz to 2462 MHz |
| | Type of Modulation: | IEEE 802.11b: DSSS(CCK, DQPSK, DBPSK)<br>IEEE 802.11g/n: OFDM(64-QAM, 16-QAM, QPSK, BPSK) |
| | Radio Technology: | IEEE 802.11b/g/n HT20 |
| Product Description (5G RLAN) | Frequency Range: | 5180 MHz to 5240 MHz<br>5260 MHz to 5320 MHz<br>5500 MHz to 5720 MHz<br>5745 MHz to 5825 MHz |
| | Type of Modulation: | IEEE 802.11a: OFDM(64QAM, 16QAM, QPSK, BPSK)<br>IEEE 802.11n: OFDM(64QAM, 16QAM, QPSK, BPSK) |
| | Radio Technology: | IEEE 802.11a/n HT20/n HT40 |
| Normal Test Voltage: | | DC 20 V |

# 5. REQUIREMENT

**LIMIT AND CALCULATION METHOD**

According to 447498 D04 Interim General RF Exposure Guidance v01,

2.1.4 MPE-Based Exemption

An alternative to the SAR-based exemption is provided in § 1.1307(b)(3)(i)(C), for a much wider frequency range, from 300 kHz to 100 GHz, applicable for separation distances greater or equal to λ/2π, where λ is the free-space operating wavelength in meters. The MPE-based test exemption condition is in terms of ERP, defined as the product of the maximum antenna gain and the delivered maximum time-averaged power.10 For this case, a RF source is an RF exempt device if its ERP (watts) is no more than a frequency-dependent value, as detailed tabular form in Appendix B. These limits have been derived based on the basic specifications on Maximum Permissible Exposure (MPE) considered for the FCC rules in § 1.1310(e)(1).

**MPE-based Exemption**

$$P_{\text{th}}\ (\text{mW}) = ERP_{20\ \text{cm}}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases} \qquad (\text{B.1})$$

$$P_{\text{th}}\ (\text{mW}) = \begin{cases} ERP_{20\ \text{cm}}(d/20\ \text{cm})^{x} & d \le 20\ \text{cm} \\ ERP_{20\ \text{cm}} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases} \qquad (\text{B.2})$$

where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\ \text{cm}}\sqrt{f}}\right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20cm}$ is per Formula (B.1).

## CALCULATED RESULTS

**For Single RF Source**

| Operating Mode | Max. Tune up Power | Max. Antenna Gain | EIRP | ERP | ERP | Distance | Limit Threshold |
|---|---|---|---|---|---|---|---|
| | (dBm) | (dBi) | (dBm) | (dBm) | (mW) | (cm) | (mW) |
| BLE | 3.5 | 4.04 | 7.54 | 5.39 | 3.459 | 20 | 3060 |
| WIFI2.4G | 18.0 | 4.04 | 22.04 | 19.89 | 97.499 | 20 | 3060 |
| WIFI5G | 16.0 | 4.38 | 20.38 | 18.23 | 66.527 | 20 | 3060 |

Note:
1. The calculated distance is 20 cm.
2. The power comes from operation description.
3. The EUT does not support simultaneous operation.

**END OF REPORT**