

**RADIOCOMMUNICATIONS EQUIPMENT
COMPLIANCE ASSESSMENT TO**

**RADIOCOMMUNICATIONS EQUIPMENT (GENERAL) RULES 2021
(Schedule 4 – Standard in relation to human exposure to electromagnetic energy)
&
RADIOFREQUENCY FIELDS EXPOSURE STANDARD
NZS 2772.1:1999**

Client:	CNC3D Pty Ltd
Address:	3/24 Spencer Road, Nerang, QLD 4211, Australia
Report Number:	0927CNC_2.1_MPE(RCM)
Date of Assessment	23 Sep 2022
File Number:	CNC220405

Equipment Name:	Nighthawk CNC Controller
Equipment Model No:	2.1
Equipment Trade/Brand Name:	CNC3D
Equipment Description:	Nighthawk CNC Controller

Result:	COMPLIES (General Public Exposure, Non-Aware User)
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Assessed by:	Phillip Kane
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Approved by:	Colin Gan
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Date of Issue:	27 Sep 2022
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Results appearing herein relate only to the sample(s) assessed through the submitted test report(s).

This report is issued errors and omissions exempt and is subject to withdrawal at Austest Laboratories discretion.

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EQUIPMENT DETAILS	
MANUFACTURER:	CNC3D Pty Ltd
MODEL:	2.1
OPERATING FREQUENCY:	<u>Bluetooth:</u> 2400-2483.5 MHz ^{Note 1} <u>WiFi:</u> 2400-2483.5 MHz ^{Note 2}
TRANSMITTER POWER INTO ANTENNA:	<u>Bluetooth:</u> 3.0 dBm (2 mW) ^{Note 1} <u>WiFi:</u> 16.0 dBm (40 mW) ^{Note 2}
TYPE OF ANTENNA:	Single integral monopole antenna ^{Note 3}
ANTENNA GAIN:	3.0 dBi ^{Note 3}
TRANSMISSION CAPABILITY:	Single transmission only possible.

Notes:

1. BT data extracted from FCC TCB Grant "esp32-wroom-32u_fcc_bt_certificate.pdf", dated 22 Jan 2018 for the ESP32-WROOM_32U BT/WiFi module [FCC ID: 2AC7Z-ESP32WROOM32U] provided by client.
2. WiFi data extracted from FCC TCB Grant "esp32-wroom-32u_fcc_wi-fi_bt4.0_certificate.pdf", dated 17 Jan 2018 for the ESP32-WROOM_32U BT/WiFi module [FCC ID: 2AC7Z-ESP32WROOM32U] provided by client.
3. Data extracted from product manual "nighthawk-controller-manual.pdf" provided by client.

Maximum Permissible Exposure (MPE) Assessment

An advisory statement is to be included in the installation and user manual clearly indicating that adequate access restriction is necessary for the protection of the general public by ensuring that members of the public are kept at a minimum safety distance from the transmission point (generally referring to the transmit antenna or structure).

MPE Limit

- Equivalent Plane Wave Power Flux Density limit given in Table 4 (for the General Public) of the ARPANSA, Radiation Protection Series S-1 (Rev.1).
- Equivalent Plane Wave Power Flux Density limit given in Table 6 (for the General Public) of NZS 2772.1:1999.

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Assessment of Single Transmissions

Since the mean power delivered to the integral antenna in Bluetooth mode is **less than 20 mW** (in the frequency range 100 kHz to 6 GHz) the EUT automatically complies with the ARPANSA, Radiation Protection Series S-1 (Rev.1) (as detailed in Table 1 of the RPS S-1 Advisory Note: Compliance of mobile or portable transmitting equipment (100 kHz to 300 GHz)) and with NZS 2772.1:1999 (as detailed in Clause 8.6.3.2 of NZS 2772.1:1999) in Bluetooth LE mode without need for further assessment.

Since the mean power delivered to the antenna exceeds 20 mW in WiFi mode (in the frequency range 100 kHz to 6 GHz), the **minimum safety distances** are as indicated in the following table.

Mode	Transmit Frequency Band (MHz)	Mean Power Level (W)	Antenna Gain (dBi)	Minimum Safety Distance (m)	Incident Power Density	
					Calculated (W/m ²)	Limit (W/m ²)
WiFi	2400- 2483.5	0.03981	3.0	0.2	0.16	10.00

Austest Summary and Recommendations

The equipment complies with the Radiocommunications Equipment (General) Rules 2021 (Schedule 4 – Standard in relation to human exposure to electromagnetic energy), Compliance Level 2, and the Radiofrequency Field Exposure Standard NZS 2772.1:1999 for General Public Exposure, Non-Aware User, when the indicated **minimum safety distance of 20 cm** is adhered to and shall bear the RCM when compliance with all other applicable RCM requirements is met.

If compliance is sought for model numbers other than those listed in the test report, then the compliance folder must hold additional documentation, demonstrating the equivalence of the products between the different model numbers.

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