

RF Exposure Lab

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CERTIFICATE OF COMPLIANCE MPE EVALUATION

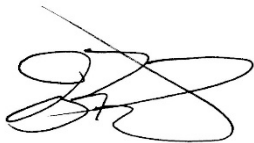
Tait International Limited
245 Wooldridge Road
Harewood
Christchurch 8051
New Zealand

Dates of Test: March 26, 2025
Test Report Number: MPE.20250303
Revision B
Lab Designation Number: US1195

FCC ID:	CASTMCN0B
Model:	TMCN0B
Test Sample:	Engineering Unit Same as Production
Equipment Type:	Wireless High Power Multiband Mobile Radio
Classification:	Mobile Transmitter
TX Frequency Range:	136 – 174 MHz, 378 – 520 MHz, 762 – 870 MHz, 896 – 941 MHz
Frequency Tolerance:	± 2.5 ppm
Maximum RF Output:	150 MHz (B1) – 47.0 dBm; 450 MHz (HK, H7) – 46.1 dBm; 700 MHz (K5) – 44.8 dBm; 800 MHz (K5) – 45.5 dBm; 900 MHz (L3) – 44.8 dBm Conducted
Signal Modulation:	P25, DMR, Analogue
Antenna Type:	External
Application Type:	Certification
KDB Test Methodology:	KDB 447498 D01 v06
FCC Rules:	47 CFR 1.1310, 47 CFR 1.1307 & 47 CFR 2.1091
Maximum Power Density Value:	0.70 mW/cm ²
Maximum E-Field Value:	51.21 V/m
Maximum H-Field Value:	0.14 A/m
Separation Distance:	90 cm for Body

This wireless mobile and/or portable device has been shown to be compliant for RF exposure requirements for controlled environment/occupational limits specified in 47 CFR 1.1310, 47 CFR 2.1307, 47 CFR 2.1091 & KDB447498 (See test report).

I attest to the accuracy of the data. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.



Jay M. Moulton
Vice President



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Comment/Revision	Date
Original Release	March 26, 2025
Revision A – Correct Model and ID	April 1, 2025
Revision B – Correct Model in section 2	April 2, 2025

Note: The latest version supersedes all previous versions listed in the above table. The latest version shall be used.

1. Introduction

This measurement report shows compliance of the Tait International Limited Model TMCN0B Wireless High Power Multiband Mobile Radio with 47 CFR 1.1310, 47 CFR 1.1307, 47 CFR 2.1091 & KDB447498.

2. Characteristics of the Evaluation

2.1 Requirements and Methods

RF exposure assessment of the Tait International Limited Model TMCN0B Wireless High Power Multiband Mobile Radio.

Requirements	Frequency Bands
47 CFR 1.1310 Radio Frequency (RF) Radiation Exposure Limits, 47 CFR 1.1307 Actions Which May Have A Significant Environmental Effect & 47 CFR 2.1091 Radio Frequency Radiation Exposure Evaluation: Mobile Device.	136 – 174 MHz 378 – 520 MHz 762 – 800 MHz 806 – 870 MHz 896 – 941 MHz

3. Data Supplied by the Applicant

3.1 Applicant

Name/Company: Tait International Limited
Address: 245 Wooldridge Road, Harewood, Christchurch 8051
Country: New Zealand

3.2 US Representative

Name: Mark Reeves, Senior System Design Engineer
Company: Tait North America, Inc.
Address: 1315 W Sam Houston Parkway N, Suite 140, Houston, TX
Country: USA
FRN: 0033506585

3.3 Identification of Item Evaluated

Product: Wireless High Power Multiband Mobile Radio
Model: TMCN0B
Manufacturer: Tait International Limited

4. Evaluation Results

Abbreviations used in the RESULTS column of the following tables are:

C	Compliant with requirements
NC	Not Compliant with requirements
NA	Not Applicable
NE	Not Evaluated

Document/Standard	Results
47 CFR 1.1310 Radio Frequency (RF) Radiation Exposure Limits, 47 CFR 1.1307 Actions Which May Have A Significant Environmental Effect & 47 CFR 2.1091 Radio Frequency Radiation Exposure Evaluation: Mobile Device.	C

5. Summary

Considering the results of the performed analysis and evaluation, stated in Appendix A and B, the item under evaluation is **IN COMPLIANCE** with the specifications listed in Section 2.1 "Requirements and Methods".

Appendix A

Host Analysis

A.1. Device

The device is in a mobile exposure condition (antenna-to-user distance > 20 cm).

Main/Primary Transmitter:

PTT Transmitter:

Type of Equipment : Wireless High Power Multiband Mobile Radio
Model : TMCN0B
Antennas Evaluated : LM04-GA31/007-00105-00 (4.5 dBi Gain 136-174 MHz);
LM04-GA32/007-00106-00 (4.15 dBi Gain 380-470 MHz);
LM04-GA30/007-00104-00 (4.5 dBi Gain 480-505 MHz);
SW1495-MB14 (5.15 dBi Gain 824-896 MHz);
DSW1402-MB14 (0.15 dBi Gain 896-941 MHz)
Cable Use for Install: : Not Specified
Minimum Cable Loss: : No Cable Loss was used for the evaluation. Therefore,
any cable/length could be used for the installation.
Output power : See Table below

Frequency Band	Mode	Frequency Range (MHz)	Maximum Conducted output power (dBm)	Maximum Conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	EIRP (mW)
150 MHz	PTT	136-174	47.0	50,000	50%	25,000	4.50	2.83	70,794.6
450 MHz	PTT	378-470	46.1	40,000	50%	20,000	4.15	2.65	53,088.4
450 MHz	PTT	480-520	46.1	40,000	50%	20,000	4.50	2.88	57,544.0
700 MHz	PTT	762-800	44.8	30,000	50%	15,000	5.15	3.30	49,545.0
800 MHz	PTT	806-870	45.5	35,000	50%	17,500	5.15	3.33	58,210.3
900 MHz	PTT	896-941	44.8	30,000	50%	15,000	0.15	1.05	15,667.5

Worst Case Considerations:

- Minimum Antenna-to-user distance: 90 cm
 - o Any antenna-to-user distance > 90 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Maximum Antenna gains: Varies based on Table on Page 7
 - o Any antenna gains below the specified would be covered by the analysis included in this report as far as it would provide better exposure conditions.

Appendix B

RF Exposure Assessment

B.1 Maximum Permissible Exposure (MPE) Limits

B.1.1 FCC MPE Limits

Normative document:

- 47 CFR 1.1310 Radio Frequency (RF) Radiation Exposure Limits, 47 CFR 1.1307 Actions Which May Have A Significant Environmental Effect & 47 CFR 2.1091 Radio Frequency Radiation Exposure Evaluation: Mobile Device.

Reference levels:

The table below is excerpted from Table 1 of 47 CFR 1.1310 Radio Frequency (RF) Radiation Exposure Limits:

Frequency Range (MHz)	E-field strength (V/m)	H-field strength (A/m)	Power Density (S) (mW/cm ²)	Averaging Time (minutes)
0.3-3.0	614	1.63	100	30
3.0-30	1842/f	4.89/f	900/f ²	30
30-300	61.4	0.163	1.0	30
300-1,500	--	--	f/300	30
1,00-100,000	--	--	5.0	30

Note: f is frequency in MHz.

MPE limits:

Frequency Band	Mode	Frequency Range (MHz)	Reference frequency (MHz)	MPE limit S _{eq} (mW/cm ²)	E-Field Strength (V/m)	H-Field Strength (A/m)
150 MHz	PTT	136-174	174	1.00	61.4	0.163
450 MHz	PTT	378-470	470	1.57	N/A	N/A
450 MHz	PTT	480-520	520	1.73	N/A	N/A
700 MHz	PTT	762-800	800	2.67	N/A	N/A
800 MHz	PTT	806-870	870	2.90	N/A	N/A
900 MHz	PTT	896-941	941	3.14	N/A	N/A

B.2 RF Exposure Assessment – Individual Transmitters

B.2.1 Introduction

Calculations to predict power density levels in the far-field of the antenna are made by use of the following equation:

$$S = \frac{P \cdot G}{4\pi R^2} = \frac{EIRP}{4\pi R^2}$$

where: S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units, e.g. mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna (in appropriate units, e.g. cm)

B.2.2 RF Exposure Assessment for TMCN0B Wireless High Power Multiband Mobile Radio

FCC Requirements

Frequency Band	Mode	Frequency Range (MHz)	EIRP (mW)	Evaluation distance (R) (cm)	Power Density (S _{eq}) $S = \frac{P \cdot G}{4\pi R^2} = \frac{EIRP}{4\pi R^2}$ (mW/cm ²)	MPE limit (S _{lim}) (mW/cm ²)	Compliance (S _{eq} < S _{lim}) (mW/cm ²)
150 MHz	PTT	136-174	70,794.6	90	0.70	1.00	COMPLIANT
450 MHz	PTT	378-470	53,088.4	90	0.52	1.57	COMPLIANT
450 MHz	PTT	480-520	57,544.0	90	0.57	1.73	COMPLIANT
700 MHz	PTT	762-800	49,545.0	90	0.49	2.67	COMPLIANT
800 MHz	PTT	806-870	58,210.3	90	0.57	2.90	COMPLIANT
900 MHz	PTT	896-941	15,667.5	90	0.15	3.14	COMPLIANT

Frequency Band	Mode	Frequency Range (MHz)	EIRP (mW)	Evaluation distance (R) (cm)	E-Field Strength (V/m)	E-Field limit	Compliance
150 MHz	PTT	136-174	70,794.6	90	51.21	61.4	COMPLIANT

Frequency Band	Mode	Frequency Range (MHz)	EIRP (mW)	Evaluation distance (R) (cm)	H-Field Strength (A/m)	H-Field limit	Compliance
150 MHz	PTT	136-174	70,794.6	90	0.14	0.163	COMPLIANT