RF EXPOSURE EVALUATION REPORT

FCC ID : 2AQ68RPQN4800
Equipment : 5G NR indoor O-RU RPQN-4800
Model Name : RPQN-4800E/I
Applicant : HON LIN Technology Co., Ltd.
11F., No.32, Jihu Rd., Neihu Dist, Taipei City 114, Taiwan R.O.C.
Manufacturer : Fuyu Precision Component Company Limited
Lot M1, Lot F and Lot T1, Quang Chau Industrial Zone, Van Trung Ward, Viet Yen Town, Bac Giang Province, Viet Nam
Standard : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part2.1091 and it complies with applicable limit.

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC evaluation.

The results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Laboratory, the test report shall not be reproduced except in full

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History of this test report

Report No.	Version	Description	Issued Date
FA341102	Rev. 01	Initial issue of report	May 10, 2024

1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	5G NR indoor O-RU RPQN-4800
Model Name	RPQN-4800E/I
FCC ID	2AQ68RPQN4800
Wireless Technology and Frequency Range	5G NR n48 : 3550 MHz ~ 3700 MHz
Mode	5G NR: DFT-s-OFDM/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM

Antenna Information	
External Antenna (E-Sku)	5.15dBi
Internal Antenna (I-Sku)	5.3dBi

Reviewed by: Jason Wang

Report Producer: Paula Chen

2. Maximum RF average output power among production units

Mode		Maximum Average power(dBm)
5G NR	n48_1Tx	24

3. Determination of exemption

Per 1.1307(b)(3), (i) For single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

(A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);

(B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold Pth (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). Pth is given by:

$$\text{Pth (mW)} = \text{ERP}_{20cm}\,(d / 20)^{x} \quad \text{for distance } d \le 20cm$$

$$\text{Pth (mW)} = \text{ERP}_{20cm} \quad \text{for distance } 20cm < d \le 40cm$$

$$x = -log10\left(\frac{60}{ERP_{20cm}\sqrt{f}}\right)$$

$$\text{ERP}_{20cm}\text{(mW)} \quad \begin{matrix} 0.3\ GHz \le f < 1.5\ GHz: & 2040\ f \\ 1.5\ GHz \le f \le 6\ GHz: & 3060 \end{matrix}$$

(C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least λ/2π, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of λ/4 or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	1,920 R^2.
1.34-30	3,450 R^2/f^2.
30-300	3.83 R^2.
300-1,500	0.0128 R^2f.
1,500-100,000	19.2R^2.

4. RF Exposure Evaluation

4.1. Standalone assessment

General Note:

1. Pi means the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm.
2. Pth means the exemption threshold power (Pth) according to the § 1.1307(b)(3)(i)(B) formula for fixed, mobile, or portable RF source i.
3. In this report was used Part1.1307(b)(3)(i)(B) perfrom RF Exposure evaluation.
4. The distance of 20cm is for this device.

<External Antenna_E-Sku>

Band	Antenna Gain (dBi)	Maximum Conducted Power (dBm)	Maximum EIRP (dBm)	Maximum ERP (dBm)	Maximum EIRP (mW)	Maximum ERP (mW)	Pi (dBm)	Pi (mW)	Part1.1307 option(b) Threshold (mW)	Part1.1307 option(b) Pi/Pth
5G NR n48	5.15	24.00	29.2	27.00	822.24	501.19	27.00	501.19	3060.000	0.164

<Internal Antenna_I-Sku>

Band	Antenna Gain (dBi)	Maximum Conducted Power (dBm)	Maximum EIRP (dBm)	Maximum ERP (dBm)	Maximum EIRP (mW)	Maximum ERP (mW)	Pi (dBm)	Pi (mW)	Part1.1307 option(b) Threshold (mW)	Part1.1307 option(b) Pi/Pth
5G NR n48	5.30	24.00	29.3	27.15	851.14	518.80	27.15	518.80	3060.000	0.170

4.2. Collocated assessment

General Note:

1. Either MPE-based exemption may be considered for test exemption for fixed, mobile, or portable device exposure conditions; therefore, the contributions from each exemption in conjunction with the measured SAR (*Evaluatedk* term) shall be used to determine exemption for simultaneous transmission according to Formula (C.1).
2. The sum of the ratios of the applicable terms for MPE-based and MPE shall be less than 1, to determine n48 4TX simultaneous transmission exposure compliance.

$$\sum_{i=1}^{a}\frac{P_i}{P_{\text{th},i}}+\sum_{j=1}^{b}\frac{ERP_j}{ERP_{\text{th},j}}+\sum_{k=1}^{c}\frac{Evaluated_k}{Exposure\ Limit_k}\le 1 \qquad (C.1)$$

<External Antenna_E-Sku>

N48_1Tx Pi/Pth Ratio	Σ (P/Pth Ratio) of n48 4TX
0.164	0.656

<Internal Antenna_I-Sku>

N48_1Tx Pi/Pth Ratio	Σ (P/Pth Ratio) of n48 4TX
0.17	0.680

Conclusion:

According to 47 CFR §1.1307, the RF exposure analysis concludes that the RF Exposure is FCC compliant.