# MPE TEST REPORT

| | |
|---|---|
| **Applicant** | Smawave Technology Co. ,Ltd |
| **FCC ID** | 2AU8HSRU820 |
| **Product** | 5G ODU_NA |
| **Brand** | Smawave |
| **Model** | SRU820 |
| **Report No.** | R2408A1126-M1 |
| **Issue Date** | October 25, 2024 |

Eurofins TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC 47 CFR Part 1 1.1310.** The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Wei Fang ying　　Fan Guangchang

*Prepared by: Wei Fangying*　　*Approved by: Fan Guangchang*


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# 1 Test Laboratory

## 1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **Eurofins TA Technology (Shanghai) Co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

## 1.2 Test Facility

**FCC (Designation number: CN1179, Test Firm Registration Number: 446626)**

Eurofins TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

## 1.3 Testing Location

| | |
|---|---|
| Company: | Eurofins TA Technology (Shanghai) Co., Ltd. |
| Address: | Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China |
| City: | Shanghai |
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## 1.4 Laboratory Environment

| | |
|---|---|
| Temperature | Min. = 18°C, Max. = 25°C |
| Relative humidity | Min. = 20%, Max. = 80% |
| Ground system resistance | < 0.5 Ω |
| Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards. | |

# 2 Description of Equipment Under Test

**Client Information**

| | |
|---|---|
| **Applicant** | Smawave Technology Co. ,Ltd |
| **Applicant address** | 2/F, Building 8, 1001 North Qinzhou Road，Xuhui District, Shanghai, China |
| **Manufacturer** | Smawave Technology Co. ,Ltd |
| **Manufacturer address** | 2/F, Building 8, 1001 North Qinzhou Road，Xuhui District, Shanghai, China |

**General Technologies**

| **EUT Description** | | | |
|---|---|---|---|
| Model | SRU820 | | |
| IMEI | 864419070034704 | | |
| Hardware Version | V1.0 | | |
| Software Version | SRU820-EUN-V1.0.0 | | |
| Frequency | Band | TX (MHz) | RX (MHz) |
| | LTE Band 48 | 3550 ~ 3700 | 3550 ~ 3700 |
| | NR Band n48 | 3550 ~ 3700 | 3550 ~ 3700 |
| | NR Band n77 Subset 1 | 3450 ~ 3550 | 3450 ~ 3550 |
| | NR Band n77 Subset 2 | 3700 ~ 3980 | 3700 ~ 3980 |
| | NR Band n78 Subset 1 | 3450 ~ 3550 | 3450 ~ 3550 |
| | NR Band n78 Subset 2 | 3700 ~ 3800 | 3700 ~ 3800 |
| UL CA Band | CA_48B; CA_48C | | |
| Date of Testing | August 20, 2024~ September 10, 2024 | | |
| Date of Sample Received | August 15, 2024 | | |
| Note:<br>1. The EUT is sent from the applicant to Eurofins TA and the information of the EUT is declared by the applicant.<br>2. All indications of Pass/Fail in this report are opinions expressed by Eurofins TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. | | | |

# 3 Maximum Tune up and Antenna Gain

The numeric gain (G) of the antenna with a gain specified in dB is determined by
Numeric gain (G)=10^(antenna gain/10)

| Band | Maximum Tune up Power | | Antenna Gain (dBi) | Numeric Gain |
|---|---|---|---|---|
| | (dBm) | (mW) | | |
| LTE Band 48 | 25.00 | 316.228 | 19.42 | 87.498 |
| CA_48B | 25.00 | 316.228 | 19.42 | 87.498 |
| CA_48C | 25.00 | 316.228 | 19.42 | 87.498 |
| NR Band n48 | 25.00 | 316.228 | 19.42 | 87.498 |
| NR Band n77 (PC2) | 28.00 | 630.957 | 19.42 | 87.498 |
| NR Band n77 (PC3) | 25.50 | 354.813 | 19.42 | 87.498 |
| Note:<br>According to TCB workshop October, 2014 RF Exposure Procedures Update (Overlapping LTE Bands):<br>Results for NR n78 Subset 1 (Frequency range: 3450 ~ 3550 MHz) is covered by NR n77 Subset 1 (Frequency range: 3450 ~ 3550 MHz); NR n78 Subset 2 (Frequency range: 3700 ~ 3800 MHz) is covered by NR n77 Subset 2 (Frequency range: 3700 ~ 3980 MHz) due to similar frequency range, same maximum tune up limit and same channel bandwidth. | | | | |

# 4 MPE Limit

According to section 1.1310 of FCC 47 CFR Part 1, limits for maximum permissible exposure (MPE) are as following.

TABLE 1 – LIMITS FOR MAXIMUN PERMISSIBLE EXPOSURE (MPE)

| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm2) | Averaging Time (minutes) |
|---|---|---|---|---|
| (A) Limits for Occupational/Controlled Exposures | | | | |
| 0.3-3.0 | 614 | 1.63 | *(100) | 6 |
| 3-30 | 1842/f | 4.89/f | *(900/f2) | 6 |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 |
| 300-1500 | | | f/300 | 6 |
| 1500-100,000 | | | 5 | 6 |
| (B) Limits for General Population/Uncontrolled Exposure | | | | |
| 0.3-1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34-30 | 824/f | 2.19/f | *(180/f2) | 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

Note1. Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational / controlled limits apply provided he or she is made aware of the potential for exposure.

Note2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.
The maximum permissible exposure for 1500~100,000MHz is 1.0. So

| Band | The Maximum Permissible Exposure ($mW/cm^2$) |
|---|---|
| LTE Band 48 | 1.000 |
| CA_48B | 1.000 |
| CA_48C | 1.000 |
| NR Band n48 | 1.000 |
| NR Band n77 | 1.000 |

# 5 RF Exposure Evaluation Result

RF exposure evaluation method is based on KDB 447498 D01，this calculation is based on the conducted power, maximum power and antenna gain with provides the minimum separation distance. The formula shown below is from OET Bulletin 65 Edition 97-01 Per KDB 447498 D01:

$$S= PG / 4\pi R^2$$

Where: S = power density (in appropriate units, e.g. $mW/cm^2$)

P = Time-average maximum tune up procedure (in appropriate units, e.g., mW)

G = the numeric gain of the antenna

R = distance to the center of radiation of the antenna (20 cm = limit for MPE)

| Band | Maximum Tune up (dBm) | Antenna Gain (dBi) | PG (dBm) | PG (mW) | 4∏* Limit Value | Min. Distance (cm) | Safety Distance (cm) | Result ($mW/cm^2$) | Limit Value ($mW/cm^2$) | Conclusion |
|---|---|---|---|---|---|---|---|---|---|---|
| LTE Band 48 | 25.00 | 19.42 | 44.420 | 27669.416 | 12.566 | 46.924 | 66.282 | 0.501 | 1.000 | Pass |
| CA_48B | 25.00 | 19.42 | 44.420 | 27669.416 | 12.566 | 46.924 | | 0.501 | 1.000 | Pass |
| CA_48C | 25.00 | 19.42 | 44.420 | 27669.416 | 12.566 | 46.924 | | 0.501 | 1.000 | Pass |
| NR Band n48 | 25.00 | 19.42 | 44.420 | 27669.416 | 12.566 | 46.924 | | 0.501 | 1.000 | Pass |
| NR Band n77 (PC2) | 28.00 | 19.42 | 47.420 | 55207.744 | 12.566 | **66.282** | | 1.000 | 1.000 | Pass |
| NR Band n77 (PC3) | 25.50 | 19.42 | 44.920 | 31045.596 | 12.566 | 49.704 | | 0.562 | 1.000 | Pass |

Note: **π**= 3.1416

Safety Distance = Max. (Min. Distance)

Result = PG / 4π Safety Distance $^2$

So the limit is kept.

Note: For mobile or fixed location transmitters, minimum separation distance is 66.282 cm, even if calculations indicate EMF distance is less.

**IMPORTANT NOTE:** To comply with the FCC RF exposure compliance requirements, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. No change to the antenna or the device is permitted. Any change to the antenna or the device could result in the device exceeding the RF exposure requirements and void user's authority to operate the device.

# ANNEX A: The EUT Appearance

**The EUT Appearance are submitted separately.**

********END OF REPORT ********