# Test Report

**Report No.:** E20240509968801-01-2

| | |
|---|---|
| Customer: | Comba Telecom Network Systems Limited |
| Address: | Flat/Rm 10, 3/F, Bio-Informatics Ctr, 2 Science Park West Avenue, HK Science Park, Pak Shek Kok, N.T. Hong Kong |
| Sample Name: | Public Safety DAS |
| Sample Model: | RH78V3-B |
| Receive Sample Date: | May 9, 2024 |
| Test Date: | May 14, 2024 ~ May 22, 2024 |
| Reference Document: | FCC PART 90§90.223-RF exposure |
| Test Result: | PASS |
| FCC ID: | PX8RH78V3-B |

| Prepared by: | Reviewed by: | Approved by: |
|---|---|---|
| Zheng Qin | Chen Yuxia | Wang Hui |

GRG METROLOGY & TEST GROUP CO., LTD.

Issued Date: June 25,2024.

GRG METROLOGY & TEST GROUP CO., LTD.
Address: Park,No.9,Wu Ke East 3rd Road,WuHou District,ChengDu,610045,People's Republic of China
Tel：(+86) 028-86496437 FAX：(+86) 028-86496423 Web：http://www.grgtest.com

# Statement

1. The report is invalid without "special seal for inspection and testing"; some copies are invalid; The report is invalid if it is altered or missing; The report is invalid without the signature of the person who prepared, reviewed and approved it.

2. The sample information is provided by the client and responsible for its authenticity; The content of the report is only valid for the samples sent this time.

3. When there are reports in both Chinese and English, the Chinese version will prevail when the language problems are inconsistent.

4. If there is any objection concerning the report, please inform us within 15 days from the date of receiving the report.

5. Without the agreement of the laboratory, the client is not authorized to use the test results for unapproved propaganda.

6. The test report without CMA approval mark is only used for scientific research, teaching, internal quality control and other purposes.

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# REPORT ISSUED HISTORY

| Report Version | Report No. | Description | Compile Date |
|---|---|---|---|
| 1.0 | E20240509968801-01-2 | Original Issue | 2024-06-07 |

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**---------- The following blanks ----------**

1. Applicant information

1.1. Client information

| | |
|---|---|
| Name: | Comba Telecom Network Systems Limited |
| Address: | Flat/Rm 10, 3/F, Bio-Informatics Ctr, 2 Science Park West Avenue, HK Science Park, Pak Shek Kok, N.T. Hong Kong |

1.2. Manufacturer and Factory

| | |
|---|---|
| Manufacture Name: | Comba Network Systems Company Limited |
| Address: | No. 10 Shenzhou Road, Guangzhou Science City, Guangzhou 510663, Guangdong, P.R.China |
| Factory: | Comba Telecom Technology (Guangzhou) Ltd. |
| Address: | No. 6 Jinbi Road, Economics and Technology Development District, Guangzhou, Guangdong, China |

2. General description of EUT

2.1. Basic description of EUT

| | |
|---|---|
| Product Name: | Public Safety DAS |
| Product Model: | RH78V3-B |
| Trade Name: | Comba |
| Power Supply: | Typical working voltage: AC 110V, 50/60Hz |
| Power cord: | AC power cord |
| Frequency Band: | 700MHz Band:<br>Downlink: 769MHz ~ 775MHz, Uplink: 799MHz ~805MHz<br>800MHz Band:<br>Downlink: 851MHz ~862MHz, Uplink: 806MHz ~ 817MHz |
| Nominal Output Power: | Downlink: 33±1dBm<br>Uplink: 27±1dBm |
| Nominal System Gain: | Downlink: 90±2dB<br>Uplink: 90±2dB |
| EUT Operating Temperature: | -33°C to +55°C |
| Operating Humidity: | 5% to 95% |
| Antenna Type: | N/A① |

NOTE 1: This EUT is a Broadband device, which belongs to Class B signal booster.

NOTE 2: ① The EUT does not provide antenna by manufacturer's statement, but it is required that the sum of antenna gain and cable loss shall not exceed 3dBi for downlink and 9 dBi for uplink when the project is used by manufacturer's statement.

NOTE 3: According to the customer's requirements, the purpose of this test is to add 1MHz to the original operating frequency range according to FCC rules, which means that the original 800MHz operating frequency range (Downlink: 851MHz~861MHz, Uplink: 806MHz~816MHz) has been changed to (Downlink: 851MHz~862MHz), Uplink: 806MHz ~ 817MHz)；

3. Assessment result summary

| Item | Assessment Requirement | Assessment Method |
|---|---|---|
| RF exposure | FCC PART 90§90.223 | FCC PART 1.1307(b)<br>FCC PART 2.1091<br>FCC PART 2.1093 |

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4. Laboratory

4.1. Laboratory

The tests & measurements refer to this report were performed by GRG METROLOGY & TEST GROUP CO., LTD.

Testing Certificate Number: 2861.02


Add. : Park,No.9,Wu Ke East 3rd Road,WuHou District,ChengDu,610045,People's Republic of China

P.C. : 610045

Tel : (+86) 028-86496437

Fax : (+86) 028-86496423


4.2. Accreditations

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

| | |
|---|---|
| **USA:** | A2LA(Certificate #2861.02) |

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5. Radio frequency radiation exposure

5.1. Applicable Standard

According to the requirements of FCC PART 90 § 90.223, the test method of RF exposure is based on FCC PART 1.1307(b), FCC PART 2.1091 and FCC PART 2.1093, so RF exposure is calculated.

5.2. Limits for Maximum Permissible Exposure (MPE)

The limits are shown in Table 4-1.

Table 4-1 Limits for General Population/Uncontrolled Exposure

| Frequency Range (MHz) | Electric Field (V/m rms) | Magnetic Field (A/m rms) | Power Density ($W/m_2$) | Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes) |
|---|---|---|---|---|
| 0.3-1.34 | 614 | 1.63 | (100)* | 30 |
| 1.34-30 | 824/f | 2.19/f | ($180/f_2$)* | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | -- | -- | f/1500 | 30 |
| 1500-100,000 | -- | -- | 1.0 | 30 |

Note: *f*=frequency in MHz; *=Plane-wave equivalent power density

Prediction of MPE limit at given distance, equations from OET Bulletin 65, Edition 97 - 01:

$S = (P * G) / (4 * \pi * R^2)$ (where PG = EIRP) Where:

S = power density

P= power input to antenna

G= numeric gain of the antenna

R= distance to the center of radiation of the antenna

5.3. Test results

Devices that operate under CFR47 Part 90 are subject to routine environmental evaluation for RF exposure prior to equipment authorization or use if they operate at frequencies of 1.5 GHz or below and limit for power density for general population/uncontrolled exposure is *f*/1500 $W/m^2$. The maximum output power by manufacturer statement is not more than 34dBm for Downlink and 28dBm for Uplink, the sum of antenna gain shall not exceed 3dBi for downlink and 9 dBi for uplink by manufacturer's statement, therefore, in this report, MPE adopts the maximum output power evaluation, so it has the following assessment:

5.3.1. 700MHz Band (769MHz ~ 775MHz, Uplink: 799MHz ~805MHz):

5.3.1.1. Downlink

| | |
|---|---|
| Prediction frequency (MHz): | 769.0 |
| Maximum peak output power at antenna input terminal (dBm): | 34.0 |
| Maximum peak output power at antenna input terminal (W): | 2.5 |
| Maximum antenna gain (dBi): | 3.0 |
| Maximum RF output power (W): | 5.0 |
| MPE limit for uncontrolled exposure at predication frequency ($W/m^2$): S= f/1500=769/1500 | 0.51 |

R1= $\sqrt{\frac{PG}{4\pi S}}=\sqrt{\frac{5.0}{0.51*4*3.14}}\approx 0.88$m

Conversely, when R>0.88m, and S< $\frac{PG}{4\pi R^2}$ =$\frac{5.0}{4*3.14*0.88\text{^}2}$≈0.51(W/m$^2$)

5.3.1.2. Uplink

| | |
|---|---|
| Prediction frequency (MHz): | 799.0 |
| Maximum peak output power at antenna input terminal (dBm): | 28.0 |
| Maximum peak output power at antenna input terminal (W): | 0.63 |
| Maximum antenna gain (dBi): | 9.0 |
| Maximum RF output power (W): | 5.0 |
| MPE limit for uncontrolled exposure at predication frequency (W/ m²):<br>S= f/1500=799.0/1500 | 0.53 |

R1= $\sqrt{\frac{PG}{4\pi S}}$=$\sqrt{\frac{5.0}{0.53*4*3.14}}$≈0.87m

Conversely, when R>0.87m, and S< $\frac{PG}{4\pi R^2}$ =$\frac{5.0}{4*3.14*0.87\text{^}2}$≈0.53(W/m$^2$)

5.3.2. 800MHz Band (851MHz ~862MHz, Uplink: 806MHz ~ 817MHz):

5.3.2.1. Downlink

| | |
|---|---|
| Prediction frequency (MHz): | 851 |
| Maximum peak output power at antenna input terminal (dBm): | 34.0 |
| Maximum peak output power at antenna input terminal (W): | 2.5 |
| Maximum antenna gain (dBi): | 3.0 |
| Maximum RF output power (W): | 5.0 |
| MPE limit for uncontrolled exposure at predication frequency (W/ m²):<br>S= *f*/1500=851/1500 | 0.57 |

R1= $\sqrt{\frac{PG}{4\pi S}}$=$\sqrt{\frac{5.0}{0.57*4*3.14}}$≈0.84m

Conversely, when R>0.84m, and S< $\frac{PG}{4\pi R^2}$ =$\frac{4.79}{4*3.14*0.84\text{^}2}$≈0.57(W/m$^2$)

5.3.2.2. Uplink

| | |
|---|---|
| Prediction frequency (MHz): | 806 |
| Maximum peak output power at antenna input terminal (dBm): | 28.0 |
| Maximum peak output power at antenna input terminal (W): | 0.63 |
| Maximum antenna gain (dBi): | 9.0 |
| Maximum RF output power (W): | 5.0 |

MPE limit for uncontrolled exposure at predication frequency (W/ m²): 0.54
S= *f*/1500=806/1500

R1= $\sqrt{\frac{PG}{4\pi S}}=\sqrt{\frac{5.0}{0.54*4*3.14}}\approx 0.86$m

Conversely, when R>0.86m, and S< $\frac{PG}{4\pi R^2}=\frac{5.0}{4*3.14*0.86\text{^}2}\approx 0.54(W/m^2)$

5.4. Test Results

The above all, when the Maximum antenna gain is 4dBi for downlink and the shortest distance from the human specific is 0.88m, the device is compliant with the requirement MPE limit for uncontrolled exposure.

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**Appendix A. Photographs of EUT**

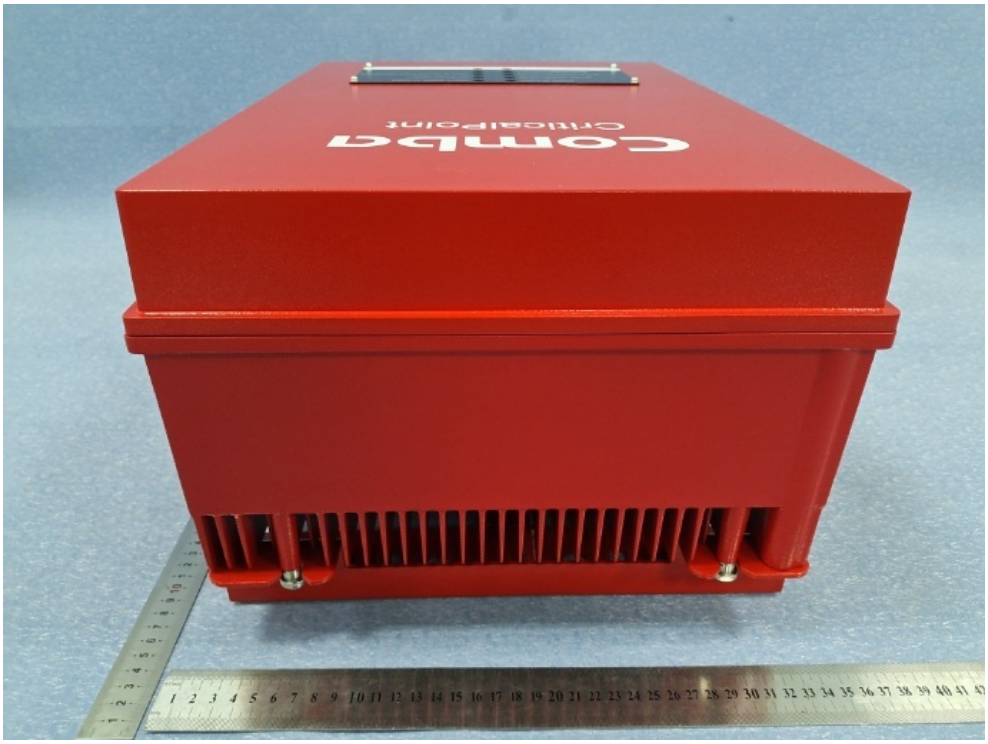
**A.1 External photos**


Top surface

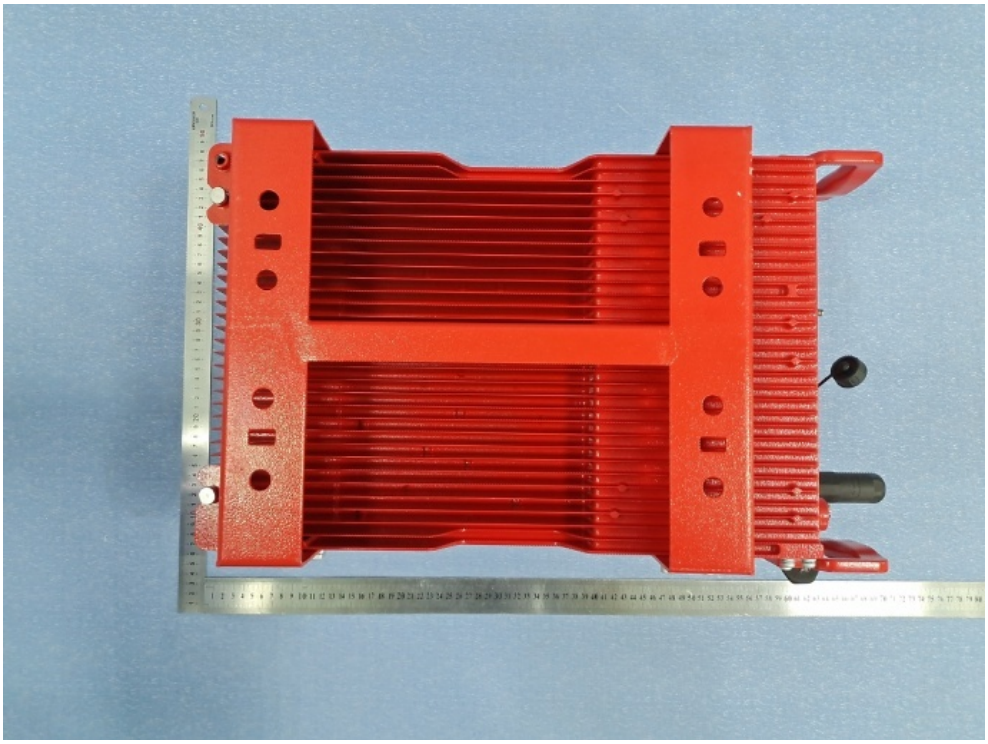
Front surface


Side surface-1


Side surface-2




Behind surface



Bottom surface

**---------- End of Report ----------**