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GPS INDUSTRIES, LLC

MPE REPORT

SCOPE OF WORK

MPE CALCULATION
ON THE V3-1004QN

REPORT NUMBER

105040967LEX-001b

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MPE TEST REPORT

Report Number: 105040967LEX-001b
Project Number: G105040967

Report Issue Date: 5/17/2022

Product Name: V3-1004QN

Standards: FCC Part 1.1310 Limits for Maximum
Permissible Exposure (MPE)

RSS-102 Issue 5 RF Field Strength Limits for
Devices Used by the General Public

Tested by:
Intertek Testing Services NA, Inc.
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Lexington, KY 40510
USA

Client:
GPS INDUSTRIES, LLC
1074 N. Orange Ave.
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USA

Report prepared by



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1 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 4.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested **complies** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

2 Test Summary

| Section | Test full name | Result |
|---------|--|--------|
| 8 | FCC Part 1.1310 Limits for Maximum Permissible Exposure (MPE) (Limits for General Population / Uncontrolled Exposure) | Pass |
| | RSS-102 Issue 5 RF Field Strength Limits (For Devices Used by the General Public) | Pass |



3 Client Information

This product was tested at the request of the following:

| Client Information | |
|------------------------------|--|
| Client Name: | GPS INDUSTRIES, LLC |
| Address: | 1074 N. Orange Ave. Sarasota, FL 34236 USA |
| Contact: | Bruce Tenerowicz |
| Telephone: | +1 (803) 295-8082 |
| Email: | Bruce.Tenerowicz@clubcar.com |
| Manufacturer Information | |
| Manufacturer Name: | GPS INDUSTRIES, LLC |
| Manufacturer Address: | 1074 N. Orange Ave. Sarasota, FL 34236 USA |



4 Description of Equipment under Test and Variant Models

| Equipment Under Test | |
|---|---|
| Product Name | V3-1004QN |
| Model Number | V3-1004QN |
| Serial Number | 861364040466987 |
| Hardware Version | Rev D. |
| Software Version | Android build number vdu3-eng 7.1.1 v1.83 1_83 |
| Supported Transmit Bands | LTE Bands 2, 4, 5, 7, 12, 13, 25, 26, 29, 30, 41, 66 WCDMA Bands II, IV, V |
| Antenna | Taoglas P/N FXUB63.54.0150C |
| Embedded Module | Quectel EM06 |
| Embedded Module FCCID | XPYTOBYL201 with XMR201906EM06A |
| Receive Date | 4/26/2022 |
| Test Start Date | 4/26/2022 |
| Test End Date | 5/12/2022 |
| Device Received Condition | Good |
| Test Sample Type | Production |
| Rated Voltage | 12VDC |
| Description of Equipment Under Test (provided by client) | |
| The V3-1004QN is a mobile golf information system with an embedded wireless module. | |

4.1 Variant Models:

There were no variant models covered by this evaluation.



5 FCC Limits

§ 1.1310: The criteria listed in table 1 shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

Part 1.1310 Limits for Maximum Permissible Exposure (MPE)

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm ²) | Averaging time (minutes) |
|--|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| (A) Limits for Occupational/Controlled Exposures | | | | |
| 0.3–3.0 | 614 | 1.63 | *(100) | 6 |
| 3.0–30 | 1842/f | 4.89/f | *(900/f ²) | 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/f ²) | 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

NOTE 1 TO TABLE 1: 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.

NOTE 2 TO TABLE 1: 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.



6 RSS-102 Issue 5 Exposure Limits:

Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)

| Frequency Range (MHz) | Electric Field (V/m rms) | Magnetic Field (A/m rms) | Power Density (W/m ²) | Reference Period (minutes) |
|------------------------|--------------------------|-----------------------------------|-----------------------------------|----------------------------|
| 0.003-10 ²¹ | 83 | 90 | - | Instantaneous* |
| 0.1-10 | - | 0.73/ $f^{0.5}$ | - | 6** |
| 1.1-10 | 87/ $f^{0.5}$ | - | - | 6** |
| 10-20 | 27.46 | 0.0728 | -2 | 6 |
| 20-48 | 58.07/ $f^{0.25}$ | 0.1540/ $f^{0.25}$ | 8.944/ $f^{0.5}$ | 6 |
| 48-300 | 22.06 | 0.05852 | 1.291 | 6 |
| 300-6000 | 3.142 $f^{-0.3417}$ | 0.008335 $f^{-0.3417}$ | 0.02619 $f^{-0.6834}$ | 6 |
| 6000-15000 | 61.4 | 0.163 | 10 | 6 |
| 15000-150000 | 61.4 | 0.163 | 10 | 616000/ $f^{1.2}$ |
| 150000-300000 | 0.158 $f^{0.5}$ | 4.21 x 10 ⁻⁴ $f^{0.5}$ | 6.67 x 10 ⁻⁵ f | 616000/ $f^{1.2}$ |

Note: f is frequency in MHz.

* Based on nerve stimulation (NS).

** Based on specific absorption rate (SAR).



7 Test Procedure

An MPE evaluation was performed in order to show that the device was compliant with the general population exposure limits from FCC §2.1091 and RSS-102 Issue 5. The maximum power density was calculated for each transmitter band at a separation distance of 20cm using the maximum declared output power including tune up tolerance.

The maximum output power was taken from the original equipment authorization of module FCCID XMR201906EM06A, provided by the client. Intertek did not measure these values, and deviations from these values may affect compliance.

The antenna gain was taken from the datasheet of Taoglas P/N FXUB63.54.0150C, provided by the client. Intertek did not measure these values, and deviations from these values may affect compliance.

For each transmitter the maximum RF exposure at a 20 cm distance using the formula:

$$ConductedPower_{mW} = 10^{ConductedPower_{dBm}/10}$$

$$PowerDensity = \frac{ConductedPower_{mW} \times Ant.Gain}{4\pi \times (20_{cm})^2}$$



8 Results:

The calculated maximum power density at 20cm distance was equal to or less than the required limits for general population exposure for FCC Part 1.1310 and RSS-102 Issue 5.

| Duty Cycle | 100 (%) | | Duty Cycle Adjusted Cond. Output Power (dBm) | Antenna Gain (dB) | MPE Value (mW/cm ²) | MPE Limit (mW/cm ²) |
|------------------|--------------------|--|---|----------------------|------------------------------------|------------------------------------|
| Separation Dist. | 20 (cm) | | | | | |
| Operating Mode | Frequency (MHz) | Declared Max Cond. Power (Inc. Tolerance) (dBm) | Duty Cycle Adjusted Cond. Output Power (dBm) | Antenna Gain (dB) | MPE Value (mW/cm ²) | MPE Limit (mW/cm ²) |
| WCDMA Band II | 1852.4 | 24.00 | | 4.6 | 0.1441 | 1.0000 |
| WCDMA Band IV | 1712.4 | 24.00 | | 4.6 | 0.1441 | 1.0000 |
| WCDMA Band V | 826.4 | 24.00 | | 4.5 | 0.1408 | 0.5509 |
| LTE B2 | 1850.7 | 24.00 | | 4.6 | 0.1441 | 1.0000 |
| LTE B4 | 1710.7 | 24.00 | | 4.6 | 0.1441 | 1.0000 |
| LTE B5 | 824.7 | 24.00 | | 4.5 | 0.1408 | 0.5498 |
| LTE B7 | 2502.5 | 24.00 | | 4.0 | 0.1255 | 1.0000 |
| LTE 12 | 699.7 | 24.00 | | 4.5 | 0.1408 | 0.4665 |
| LTE B13 | 779.5 | 24.00 | | 4.5 | 0.1408 | 0.5197 |
| LTE B25 | 1850.7 | 24.00 | | 4.6 | 0.1441 | 1.0000 |
| LTE B26 | 814.7 | 24.00 | | 4.5 | 0.1408 | 0.5431 |
| LTE B30 | 2307.5 | 24.00 | | 4.7 | 0.1475 | 1.0000 |
| LTE B41 | 2498.5 | 24.00 | | 4.4 | 0.1376 | 1.0000 |
| LTE B66 | 1710.7 | 24.00 | | 4.6 | 0.1441 | 1.0000 |

FCC MPE Data

| Duty Cycle | 100 (%) | | Duty Cycle Adjusted Cond. Output Power (dBm) | Antenna Gain (dB) | MPE Value (W/m ²) | MPE Limit (W/m ²) |
|------------------|--------------------|--|---|----------------------|----------------------------------|----------------------------------|
| Separation Dist. | 20 (cm) | | | | | |
| Operating Mode | Frequency (MHz) | Declared Max Cond. Power (Inc. Tolerance) (dBm) | Duty Cycle Adjusted Cond. Output Power (dBm) | Antenna Gain (dB) | MPE Value (W/m ²) | MPE Limit (W/m ²) |
| WCDMA Band II | 1852.4 | 24.00 | 24.00 | 4.6 | 1.4412 | 4.4803 |
| WCDMA Band IV | 1712.4 | 24.00 | | 4.6 | 1.4412 | 4.2460 |
| WCDMA Band V | 826.4 | 24.00 | | 4.5 | 1.4084 | 2.5807 |
| LTE B2 | 1850.7 | 24.00 | | 4.6 | 1.4412 | 4.4775 |
| LTE B4 | 1710.7 | 24.00 | | 4.6 | 1.4412 | 4.2431 |
| LTE B5 | 824.7 | 24.00 | | 4.5 | 1.4084 | 2.5771 |
| LTE B7 | 2502.5 | 24.00 | | 4.0 | 1.2552 | 5.5028 |
| LTE 12 | 699.7 | 24.00 | | 4.5 | 1.4084 | 2.3033 |
| LTE B13 | 779.5 | 24.00 | | 4.5 | 1.4084 | 2.4797 |
| LTE B25 | 1850.7 | 24.00 | | 4.6 | 1.4412 | 4.4775 |
| LTE B26 | 814.7 | 24.00 | | 4.5 | 1.4084 | 2.5557 |
| LTE B30 | 2307.5 | 24.00 | | 4.7 | 1.4748 | 5.2060 |
| LTE B41 | 2498.5 | 24.00 | | 4.4 | 1.3764 | 5.4968 |
| LTE B66 | 1710.7 | 24.00 | | 4.6 | 1.4412 | 4.2431 |

RSS-102 Issue 5 MPE Data



9 Revision History

| Revision Level | Date | Report Number | Prepared By | Reviewed By | Notes |
|----------------|-----------|-------------------|-------------|-------------|----------------|
| 0 | 5/17/2022 | 105040967LEX-001b | B.L. | JTS | Original Issue |
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