

FCC RF EXPOSURE EVALUATION REPORT

Product Name: Computador de Bordo
Trade Mark: solinftec
Model No.: MAG100R
Report Number: 180516002RFC-2
Test Standards: FCC 47 CFR Part 1 Subpart I
FCC ID: 2AQWE-GC170424
Test Result: PASS
Date of Issue: March 1, 2019

Prepared for:

TECSOIL AUTOMACAO E SISTEMAS S.A.
RUA ABRAHAO VINHAS, 242, SALA 1 E 2, ARACATUBA, Brazil

Prepared by:

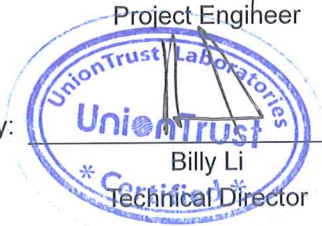
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Shenzhen UnionTrust Quality and Technology Co., Ltd.

Version

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1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	TECSOIL AUTOMACAO E SISTEMAS S.A.
Address of Applicant:	RUA ABRAHAO VINHAS, 242, SALA 1 E 2, ARACATUBA, Brazil
Manufacturer:	TECSOIL AUTOMACAO E SISTEMAS S.A.
Address of Manufacturer:	RUA ABRAHAO VINHAS, 242, SALA 1 E 2, ARACATUBA, Brazil

1.2 EUT INFORMATION

Product Name:	Computador de Bordo	
Model No.:	MAG100R	
Add. Model No.:	N/A	
Trade Mark:	solinftec	
DUT Stage:	Identical Prototype	
EUT Supports Function:	UTRA Bands:	Band II/ Band IV/ Band V
Sample Received Date:	May 13, 2018	
Sample Tested Date:	May 13, 2018 to September 5, 2018	

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

For WCDMA		
Support Networks:	WCDMA, HSDPA, HSUPA	
Type of Modulation:	WCDMA	BPSK
	HSDPA:	QPSK
	HSUPA:	QPSK
Frequency Range:	WCDMA Band V:	826.4-846.6 MHz
	WCDMA Band II:	1852.4-1907.6 MHz
	WCDMA Band IV:	1712.4-1752.6 MHz
Max RF Output Power:	WCDMA Band V:	22.86 dBm
	WCDMA Band II:	23.41dBm
	WCDMA Band IV:	22.38dBm
Antenna Type:	External Antenna	
Antenna Gain:	6 dBi	

1.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC 47 CFR Part 1 Subpart I

All test items have been performed and recorded as per the above standards

1.5 TEST LOCATION

All tests were performed at:

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China 518109
Telephone: +86 (0) 755 2823 0888
Fax: +86 (0) 755 2823 0886

1.6 TEST FACILITY

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L9069

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

IC-Registration No.: 21600-1

The 3m Semi-anechoic chamber of Shenzhen UnionTrust Quality and Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 21600-1.

A2LA-Lab Certificate No.: 4312.01

Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC Accredited Lab.

Designation Number: CN1194
Test Firm Registration Number: 259480

1.7 DEVIATION FROM STANDARDS

None.

1.8 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

2. EQUIPMENT LIST

Please refer to the RF test report.

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China

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E-mail: info@uttlab.com

[Http://www.uttlab.com](http://www.uttlab.com)

3. MPE EVALUATION

3.1 REFERENCE DOCUMENTS FOR EVALUATION

No.	Identity	Document Title
1	FCC 47 CFR Part 1 Subpart I	PROCEDURES IMPLEMENTING THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969
2	KDB 447498 D01 General RF Exposure Guidance v06	RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES

3.2 MPE COMPLIANCE REQUIREMENT

3.2.1 Limits

According to §1.1307(b)(1), system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

Limits for Occupational / Controlled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	F/300	6
1500-100000	/	/	5	6

Limits for General Population / Uncontrolled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times 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)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-100000	/	/	1	30

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

3.2.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

3.3 MPE CALCULATION METHOD

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

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, the power gain factor is normally numeric gain.

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

3.4 MPE CALCULATION RESULTS

Note: For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

3.4.1 For WWAN

For WCDMA function, operating at Band II/ IV/ V for BPSK and QPSK

3.4.1.1 Antenna Type:

Chain 0: External Antenna

3.4.1.2 Antenna Gain:

Chain 0: 6 dBi

WCDMA FDD Band	Freq.	Declared maximum conducted output power	Max. positive tolerance according manufacturer	Antenna Gain	Calculated maximum EIRP	Duty cycle	Equivalent EIRP	MPE Limit	MPE Value
	(MHz)	(dBm)	(dBm)	(dBi)	(dBm)	(%)	(mW)	(mw/cm ²)	
II	1852.4-1907.6	22	2	6	30	100	1000.0000	1	0.1989
IV	1712.4-1752.6	23	2	6	31	100	1258.9254	1	0.2504
V	826.4-846.6	22	2	6	30	100	1000.0000	0.5493	0.1989

Note 1: Calculated maximum EIRP = Declared maximum conducted output power + Max. positive tolerance according manufacturer + Antenna Gain.

Note 2: Declared maximum EIRP = $10^{\left(\frac{\text{Calculated maximum EIRP}}{10}\right)}$.

Note 3: Equivalent EIRP = Declared maximum EIRP * Duty cycle.

Note 4: Margin = MPE Limit - MPE Value.

APPENDIX 1 PHOTOS OF TEST SETUP

N/A

APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photos.

*** End of Report ***

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of UnionTrust, this report can't be reproduced except in full.
