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DATE: 2 February 2021

I.T.L. (PRODUCT TESTING) LTD.

Test Report According to EN 62311: 2019

for

Pointer Telocation

Equipment under test:

Fleet Management Device

CR400B LTE

Tested by: _____
M. Zohar

Approved by: _____
D. Shidlowsky

TABLE OF CONTENTS

1. General Information

Administrative Information

Manufacturer:	Pointer Telocation
Manufacturer's Address:	14 Hamelacha, PO Box 11473 Roash Haain, Israel Tel: +972 73 2622320
Manufacturer's Representative:	Igor Rogov
Equipment Under Test (E.U.T):	Fleet Management Device
Equipment Model No.:	CR400B LTE
Equipment Serial No.:	Not designated
Date of Receipt of E.U.T:	November 23, 2020
Start of Test:	November 23, 2020
End of Test:	November 23, 2020
Test Laboratory Location:	I.T.L (Product Testing) Ltd. 1 Batsheva St., Lod ISRAEL 7120101
Test Specifications:	EN 62311: 2019

Abbreviations and Symbols

The following abbreviations and symbols are applicable to this test report:

A/m	ampere per meter
AC	alternating current
AM	amplitude modulation
ARA	Antenna Research Associates
Aux	auxiliary
Avg	average
CDN	coupling-decoupling network
cm	centimeter
dB	decibel
dBm	decibel referred to one milliwatt
dbµV	decibel referred to one microvolt
dbµV/m	decibel referred to one microvolt per meter
DC	direct current
EFT/B	electrical fast transient/burst
EMC	electromagnetic compatibility
ESD	electrostatic discharge
E.U.T.	equipment under test
GHz	gigahertz
HP	Hewlitt Packard
Hz	Hertz
kHz	kilohertz
kV	kilovolt
LED	light emitting diode
LISN	line impedance stabilization network
m	meter
mHn	millihenry
MHz	megahertz
msec	millisecond
N/A	not applicable
per	period
QP	quasi-peak
PC	personal computer
RF	radio frequency
RE	radiated emission
sec	second
V	volt
V/m	volt per meter
VRMS	volts root mean square

List of Accreditations

The EMC laboratory of I.T.L. is accredited by the following bodies:

1. The American Association for Laboratory Accreditation (A2LA) (U.S.A.), Certificate No. 1152.01.
2. The Federal Communications Commission (FCC) (U.S.A.), FCC Designation Number IL1005.
3. The Israel Ministry of the Environment (Israel), Registration No. 1104/01.
4. Department of Innovation, Science and Economic Development (ISED) Canada, CAB identifier: IL1002

I.T.L. Product Testing Ltd. is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this test report have been determined in accordance with I.T.L.'s terms of accreditation unless stated otherwise in the report.

2. Applicable Documents

2.1	**Council Recommendation 1999/519/EC**	*Limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz), Official Journal L 199 of 30 July 1999*
2.2	**EN 62311: 2019**	*Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz – 300 GHz)*

3. Test Site Description

3.1 Location:

The Electromagnetic Compatibility Test Facility of I.T.L. (Product testing) Ltd. Is located at
Telrad Industrial Park, Lod, 7120101 Israel.

Telephone: +972-8-9153100

Fax: +972-8-9153101

3.2 Shielded Room:

A Modular Shielded Room, Type 20 SpaceSaver, manufactured by ETS, consisting of a Main Room and a Control Room.

The dimensions of the Main Room are: length: 7.0 m, width: 3.0 m, height: 3.0 m.

The shielding performance is:

magnetic field: 60 dB at 10 kHz rising linearly to 100 dB at 100 kHz,

electric field: better than 110 dB between 50 MHz and 1 GHz,

plane wave: 110 dB between 50 MHz and 1 GHz.

All the power lines entering the shielded room are filtered.

3.3 Open Site:

The OATS is located on a one floor-building roof. The OATS consists of 3 meter and 10 meter ranges, using a 21.5m X 8.5m solid metal ground plane, a remote controlled turntable and an antenna mast.

3.4 Ground Plane:

The ground plane is made from steel plates, which are welded continuously together. The Ground plane is lies and welded on welded steel construction with vias to allow for water drainage. All the power, control, and signal lines to the turntable and the 3 m and 10m antenna mast outlets are routed in shielded conduits under the plane to the control building.

3.5 Antenna Mast:

ETS model 2070-2. The antenna position and polarization are remote controlled via Fiber Optical Link using ETS/EMCO Dual Controller Type 2090. The antenna position is adjustable between 1-4 meters. Pressurized air is used to power changing the polarity of the antenna.

3.6 Turntable:

ETS model 2087 series. The position of the turntable is remote-controlled via Fiber Optic Link, using ETS/EMCO Dual Controller Type 2090. The turntable is mounted in a pit and its surface is flush with the Open Site Ground Plane. Brushes near the periphery of the turntable ensure good conductive connection to the ground plane. The Turntable maximum load is 1250 Kg.

3.7 EMI Receiver:

Type ESCI7, manufactured by Rohde & Schwarz, being in full compliance with CISPR 16-1-1 requirements.

3.8 E.U.T. Support:

Table mounted E.U.T.s are supported during testing on 80 cm high all plastic table.

3.9 Test Equipment:

See details in Section 6.

4. Summary of Test Results

Test	Results
Electric Field Strength EN 62311: 2019, Clause 4	The E.U.T. met the specification requirements.

5. Equipment Under Test (E.U.T.) Description

The Cellocator CR-400 is Cellocator's next generation fleet and security management device, and is based on the LTE Cat M1 network with 2G fallback.

The CR-400 is a high quality, yet cost effective and easy to install device, with built-in BLE connectivity and LED indicators. It is equipped with a large rechargeable backup battery (1000mAh) and includes basic driver behavior capabilities and built-in motion sensors that enable movement and towing detection to endure improved compliance with vehicle security requirements.

6. List of Test Equipment

6.1 Emission Tests

The below equipment was used for testing Electric Field Strength per EN 62311: 2019, Clause 4

Test equipment calibration is in accordance with ITL Q.A. Procedure PM 110 "Calibration Control Procedure", which complies with ISO/IEC Guide 17025.

Instrument	Manufacturer	Model	Serial No.
Istotropic Field Probe	AR	FP2080	23190
Istotropic Field Monitor	AR	FM2000	23294

7. Mode of Operation

1. The E.U.T. contains a BLE chip & 4G CE approved module transceivers.
2. The evaluation was performed while the 2 transceivers were activated simultaneously at the following frequencies: BLE at 2440MHz, 4G cellular at 725MHz.
3. To determine “worst case” emissions the distance between the probe to the E.U.T. was 0m.

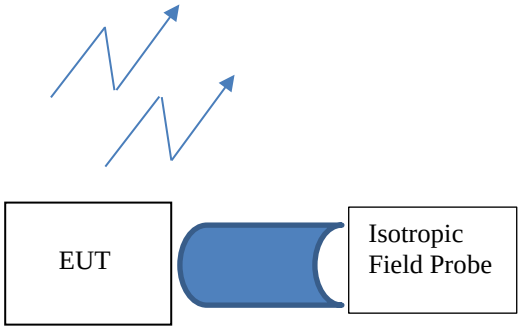

Figure 1. Test Set-Up

8. Electric Field Strength

8.1 Test Specification

EN 62311: 2019; Clause 4; Annex III of Council Recommendation 1999/519/EC

8.2 Test Procedure

(Temperature (20°C)/ Humidity (55%RH))
An isotropic field probe with the range switch set on the most sensitive scale was used. The probe was moved progressively closer to the regions of higher field strength. The field measurements were performed at the normal user position. The electric component of the electromagnetic field was measured.

8.3 Limit

For 400M-2000MHz frequencies:
E-field strength (V/m) = 1.375* $f^{½}$
(f as indicated in the frequency range)
For 4G cellular (LTE band): E-field strength (V/m) = 1.375*$725^{½}$=37.0V/m

For above from 2000MHz frequencies:
E-field strength (V/m)= 61.0 V/m

8.4 Test Results

The E.U.T. met the requirements of EN 62311: 2019.

Measured E field	"Worst Case" Limit	Margin
(V/m)	(V/m)	(V/m)
8.4	37.0	-28.6

Figure 2. Results for 4G Cellular& BLE

9. Set Up Photographs

Figure 3. E-Field Strength Test

10. Correction Factors

Correction factors for E-Field Probe ITL # 1231

Frequency (MHz)	E Ref. (V/m)	Reading (V/m)	Requirements (V/m)	Deviation (%)
10.0	10.0	N.A.	10±41%	N.A.
50.0	10.0	N.A.	10±41%	N.A.
100.0	10.0	9.1	10±41%	-9.0
200.0	10.0	9.2	10±41%	-8.0
400.0	10.0	11.0	10±41%	+10.0
600.0	10.0	9.0	10±41%	-10.0
800.0	10.0	7.1	10±41%	-29.0
1000.0	10.0	9.8	10±41%	-2.0
1300.0	10.0	9.2	10±41%	-8.0
1600.0	10.0	8.3	10±41%	-17.0
1900.0	10.0	11.2	10±41%	+12.0
2200.0	10.0	9.1	10±41%	-9.0
2500.0	10.0	12.1	10±41%	+21.0
2800.0	10.0	8.8	10±41%	-12.0
3100.0	10.0	9.8	10±41%	-2.0
3400.0	10.0	9.4	10±41%	-6.0
3700.0	10.0	8.9	10±41%	-11.0
4000.0	10.0	9.4	10±41%	-6.0
4300.0	10.0	10.8	10±41%	+8.0
4600.0	10.0	9.2	10±41%	-8.0
4900.0	10.0	7.8	10±41%	-22.0
5200.0	10.0	7.6	10±41%	-24.0
5500.0	10.0	7.4	10±41%	-26.0
5800.0	10.0	8.3	10±41%	-17.0
6000.0	10.0	9.8	10±41%	-2.0