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TESTING Cert No.1152.01

DATE: 1 December 2020

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

Test Report According to EN 303 413 V1.1.1 (2017)

For

Pointer Telocation

Equipment under test:

Asset Tracking Device

Cellotrack Power LTE EU

Tested by: _____
M. Zohar

Approved by: _____
D. Shidlowsky

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1. General Information

1.1 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):	Asset Tracking Device
Equipment Model No.:	Cellotrack Power LTE EU
Equipment Serial No.:	Not designated
Date of Receipt of E.U.T:	November 08, 2020
Start of Test:	November 08, 2020
End of Test:	November 08, 2020
Test Laboratory Location:	I.T.L (Product Testing) Ltd. 1 Batsheva St., Lod ISRAEL 7120101
Test Specifications:	EN 303 413 V1.1.1: 2017 (See *Note below)

*Note - The E.U.T. contains a CE approved GNSS receiver module manufactured by Telit Wireless Solutions, model no. SE868-V3 (See Manufacturer DoC on following page.)
Accordingly, as agreed upon with the customer, only spurious emissions testing was performed.

Telit

EU DECLARATION OF CONFORMITY [20424DOC00076A]

1 **SE868-V3** (product name)

2 Telit Wireless Solutions -3131 RDU Center Dr. Suite 135 Morrisville, NC 27560 USA R&D Center -27422 Portola Parkway Suite 320 Foothill Ranch, CA 92610 (manufacturer)

3 This declaration of conformity is issued under the sole responsibility of the manufacturer

4 GNSS L1 receiver Wireless Module

SW Version(s) SS5e_5.7.7-P1_N96_HG

Operating frequency bands and related max radio-frequency power transmitted:

1559-1607 MHz Receiver only

5 The object of the declaration described above is in conformity with the relevant Community harmonisation: European Directive 2014/53/EU (RED)

6 The conformity with the essential requirements set out in Art.3 of the 2014/53/EU has been demonstrated against the following harmonized standards:

Harmonized Standard reference	Article of Directive 2014/53/EU
EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013	3.1 (a): Health and Safety of the User
Draft ETSI 301 489-1 v2.2.0 & 301 489-19 v2.1.0	3.1 (b): Electromagnetic Compatibility
ETSI 303 413 v1.1.1	3.2: Effective use of spectrum allocated

7 The conformity assessment procedure referred to in Article 17 and detailed in Annex III of Directive 2014/53/EU has been followed with the involvement of the following Notified Body:

Compatible electronics, Inc., 114 Olinda Drive - Brea, California 92823 - United States, Notified Body No: 1925

Thus, CE is placed on the product

8 The product can be considered compliant to the essential requirements set out in Art.3 of 2014/53/EU only in combination with the above-mentioned SW version(s).

9 The Technical Documentation (TD) relevant to the product described above and which supports this Declaration of Conformity, is held at: Telit Communications S.p.A., Via Stazione di Prosecco, 5/b - 34010 Sgonico – TRIESTE – ITALY

Trieste, **2017-10-16**

Group CFO, Corporate
Eran Edri

VP R&D GNSS
Georgia Frousiakis

EU-Type Examination Certificate No. 20170905124625

Technical Documentation: 30424TCF00055A

www.Telit.com/RED

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Cap. Soc. € 3.000.000
Partita IVA 03711600266
Cod.Fisc. 03711600266
Nr. R.E.A. TS-120027

Società soggetta all'attività
di direzione e coordinamento
da parte di Telit Communications PLC
con sede in Londra (art.2497 bis C.C.)

Società con socio unico
(Telit Communications PLC)

Mod 243 2017-02 Rev.1- This declaration is issued according to 768/2008/EC

1.2 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
CBW	channel bandwidth
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	Hewlett 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

1.3 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	**EN 303 413 V1.1.1 (2017)**	*Satellite Earth Stations and Systems (SES); Global Navigation Satellite System (GNSS) receivers; Radio equipment operating in the 1 164 MHz to 1 300 MHz and 1 559 MHz to 1 610 MHz frequency bands; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU*

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 150 cm high all plastic table.

3.9 Test Equipment:

See details in Section 6.

4. Summary of Test Results

Test	Results
Spurious Emissions EN 303 413 V1.1.1 (2017) Section 4.2.2., Section 5.5	The E.U.T met the performance requirements of the specification.

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

The CelloTrack product line is designed for advanced asset tracking and remote monitoring, featuring enhanced functionality with full fleet management capabilities, robustness and ease of installation, suitable for a wide variety of asset management applications.
The CelloTrack product line is available in two variants – a standalone version and a power version, which includes extended battery life and the ability to connect external sensors via two configurable GPIOs. Models are suitable for 2G, 3G and 4G (LTE) cellular communication technologies.

6. List of Test Equipment

6.1 Radio Tests

The equipment listed below were used for testing according to EN 303 413 V1.1.1 (2017), Sections 4.2.2, 5.5.

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.
EMI Receiver	R&S	ESCI7	100724
Spectrum Analyzer	HP	8564E	3442A00275
EMI Receiver	HP	8542E	3906A00276
RF Filter Section	HP	85420E	3705A00248
EMI Test Receiver	R&S	ESN	835420/008
Spectrum Analyzer	HP	8593EM	3536A00120ADI
Biconical Antenna	EMCO	3110B	9912-3337
Log Periodic Antenna	EMCO	3146	9505-4081
1G-18GHz Horn Antenna	ETS	3115	29845
Low Noise Amplifier	Narda	DBS-0411N313	13
Low Noise Amplifier	Sophia Wireless	LNA28-B	232
Semi Anechoic Civil Chamber	ETS	S81	SL 11643
Signal Generator	Wiltron	6747B	278007

7. E.U.T. Mode of Operation

1. The E.U.T contain a CE certified GPS receiver module. (See manufactorer's DoC)
2. The evaluation was performed in receive mode.

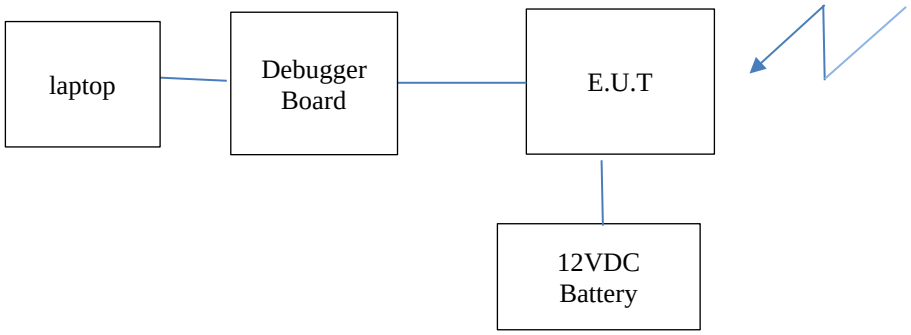

Figure 1. Test Set-Up

8. Spurious Emissions

8.1 Test Specification

EN 303 413 V1.1.1 (2017) Sections 4.2.2, 5.5

8.2 Test Procedure

(Temperature (20°C)/ Humidity (58%RH))

The test was performed in the frequency band 30MHz –12.75GHz.

For 30.0MHz-1000.0MHz range:

A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 1.5 meters above the ground. The distance between the E.U.T and the testing antenna was 3 meters.
The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization.
The frequency range 30.0MHz-1000.0MHz was scanned.

For 1000.0MHz-8,300.0MHz range:

The E.U.T was placed in the chamber and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 1.5 meters above the ground. The distance between the E.U.T and the testing antenna was 3 meters.
The readings were maximized by adjusting the turntable azimuth between 0-360° and the antenna polarization.
The frequency range 1000.0 MHz-8,300.0MHz was scanned.

For all the tests a RMS detector was used.

The E.U.T. was replaced by a substitution antenna. The substitution antenna was driven by a signal generator operating in C.W. Mode. The height of the test antenna was adjusted for maximum level.

The input signal of the substitution antenna was adjusted to the level that produced a receiver reading equal to the level noted while the spurious emissions of the E.U.T. were measured.

The above tests were performed in both horizontal and vertical polarizations.

The receiver was set to the lowest operating frequency and to the highest operating frequency.

The spurious emission was calculated as follows:

Signal Generator Level (dBm) – Cable Loss (dB) + Substitution Antenna Gain (dBi/dBd).

The E.U.T was evaluated in Rx mode.

8.3 Test Limit

The unwanted emissions in the spurious domain shall not exceed the values given in the next table. In case of equipment with antenna connectors, these limits apply to emissions at the antenna port (conducted). For emissions radiated by integral antenna equipment (without antenna connectors), these limits are e.r.p. for emissions up to 1 GHz and as e.i.r.p. for emissions above 1 GHz.

Frequency range	Maximum power	Measurement bandwidth
30 MHz to 1 GHz	-57 dBm	100 kHz
1 GHz to 8.3 GHz	-47 dBm	1 MHz

8.4 Test Results

The E.U.T met the requirements of EN 303 413 V1.1.1 (2017) Sections 4.2.2, 5.5 specification.

No emissions were detected above the spectrum analyzer noise level which is at least 6dB margin below the limit.

9. Set Up Photographs

Figure 2 Spurious Emission Test, 1000-8,300MHz

10. APPENDIX A - CORRECTION FACTORS

10.1 Correction factors for RF OATS CABLE 35m

Frequency (MHz)	E.U.T loss (dB)
30.0	-1.3
50.0	-1.7
100.0	-2.6
200.0	-3.7
300.0	-4.7
400.0	-5.5
500.0	-6.3
600.0	-7.0
700.0	-7.6
800.0	-8.4
900.0	-9.0
1000.0	-9.6

10.2 Correction factor for RF CABLE for Semi Anechoic Chamber

ITL # 1841

Frequency (GHz)	Loss Result (dB)
0.5	-1.0
1.0	-1.4
1.5	-1.7
2.0	-2.0
2.5	-2.3
3.0	-2.6
3.5	-2.8
4.0	-3.1
4.5	-3.3
5.0	-3.6
5.5	-3.7
6.0	-4.0
6.5	-4.4
7.0	-4.7
7.5	-4.8
8.0	-5.0
8.5	-5.1
9.0	-5.6
9.5	-5.8
10.0	-6.0
10.5	-6.2
11.0	-6.2
11.5	-6.0
12.0	-6.0
12.5	-6.1
13.0	-6.3
13.5	-6.5
14.0	-6.7
14.5	-7.0
15.0	-7.3
15.5	-7.5
16.0	-7.6
16.5	-8.0
17.0	-8.0
17.5	-8.1
18.0	-8.2
18.5	-8.2
19.0	-8.3
19.5	-8.6
20.0	-8.5

NOTES:

1. The cable is manufactured by Commscope

2. The cable type is 0623 WBC-400, serial # G020132 and 10m long

10.3 Correction factors for Horn ANTENNA

Model: 3115
Antenna serial number: 29845
3 meter range

FREQUENCY (GHz)	AFE (dB/m)	FREQUENCY (GHz)	AFE (dB/m)
0.75	25	9.5	38
1.0	23.5	10.0	38.5
1.5	26.0	10.5	38.5
2.0	29.0	11.0	38.5
2.5	27.5	11.5	38.5
3.0	30.0	12.0	38.0
3.5	31.5	12.5	38.5
4.0	32.5	13.0	40.0
4.5	32.5	13.5	41.0
5.0	33.0	14.0	40.0
5.5	35.0	14.5	39.0
6.0	36.5	15.0	38.0
6.5	36.5	15.5	37.5
7.0	37.5	16.0	37.5
7.5	37.5	16.5	39.0
8.0	37.5	17.0	40.0
8.5	38.0	17.5	42.0
9.0	37.5	18.0	42.5

10.4 Correction factors for Log Periodic Antenna
Model: 3146
Antenna serial number: 9505-4081

Frequency [MHz]	**ITL 1349 AF [dB/m]**
200	11.31
250	11.85
300	14.47
400	15.12
500	17.69
600	18.45
700	20.52
800	20.77
900	21.97
1000	23.21

11.5 Correction factors for Biconical Antenna
Model: 3110B
Antenna serial number: 9912-3337

Frequency [MHz]	ITL 1356 AF [dB/m]
30	14.77
35	13.46
40	12.57
45	11.62
50	10.87
60	9.19
70	9.52
80	9.55
90	9.27
100	10.20
120	11.18
140	12.02
160	12.62
180	13.44
200	14.82

11. APPENDIX B - MEASUREMENT UNCERTAINTY

Unwanted Emissions, conducted	**± 25.53% or ±0.99dB, Up to 2.9GHz and ± 26.91% or ±1.03dB from 2.9GHz to 12.75GH**
All emissions, radiated	**±4.58dB Up to 2.9GHz, and ±2.92dB from 2.9GHz to 12.75GHz**