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TESTING Cert No.1152.01

DATE: 19 March 2013

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

FCC Radio Test Report

for

Elpas Solutions Ltd.*

Equipment under test:

Elpas LF BUS Reader

5-ALA000125-12*

* See customer's letters/declaration on pages 5-6.

Written by: _____
D. Shidlowsky, Documentation

Approved by: _____
A. Sharabi, Test Engineer

Approved by: _____
I. Raz, EMC Laboratory Manager

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Measurement/Technical Report for

Elpas Solutions Ltd.

Elpas LF BUS Reader

5-ALA000125-12

FCC ID: O4X5-ALA00125

IC: 1467G-5ALA00125

This report concerns: Original Grant: X
Class I change:
Class II change:

Equipment type: Part 15 Low Power Transmitter Below 1705 kHz

47CFR15 Section 15.205; 15.209

Application for Certification
prepared by:
Ishaishou Raz
ITL (Product Testing) Ltd.
Kfar Bin Nun
D.N. Shimshon 99780
Israel
e-mail Sraz@itl.co.il

Applicant for this device:
(different from "prepared by")
Meir Erenkrantz
Elpas Solutions Ltd.
30 Habarzel Street
Tel-Aviv 69710
Israel
Tel: +972-3-768-1410
Fax: +972-3-768-1415
e-mail: MErenkrantz@tycoint.com

TABLE OF CONTENTS

1. General Information

1.1 Administrative Information

Manufacturer:	Elpas Solutions Ltd.*
Manufacturer's Address:	P.O.B. 13132 30 Habarzel St. Tel Aviv 69710 Israel Tel: +972-03-7681400 Fax: +972-03-7681415
Manufacturer's Representative:	Avi Manela
Equipment Under Test (E.U.T):	Elpas LF BUS Reader
Equipment Model No.:	5-ALA000125-12 **
Equipment Serial No.:	Not Designated
Date of Receipt of E.U.T:	13.12.10
Start of Test:	13.12.10
End of Test:	14.12.10
Test Laboratory Location:	I.T.L (Product Testing) Ltd. Kfar Bin Nun, ISRAEL 99780
Test Specifications:	FCC Part 15 Subpart C RSS-GEN Issue 3

* See customer's letter on following page.
** See customer's declaration on page 6.

Elpas
From Tyco Security Products

Elpas Solutions Ltd.
23 Habarzel Street
Tel-Aviv 69710, Israel

Tele: +972 3 768 1400
Fax: +972 3 768 1415
www.elpas.com

From: Meir Erenkrantz, Elpas Solutions Ltd. (Formerly Visonic Technologies (1993) Ltd.)

MErenkrantz@tycoint.com

To Whom It May Concern,

As our new letterhead indicates, we have recently changed the name of our business from Visonic Technologies (1993), Ltd to Elpas Solutions, Ltd. The name change is due to a corporate merger between Visonic Technologies and Tyco Security Products.

There has been no change in management or in our current product offering; therefore we would like to keep our current

IC number.

Sincerely,

Michael Wasserstein

General Manager, Elpas
VP Location Based Security, Tyco Security Products

Elpas
From Tyco Security Products

Elpas Solutions Ltd.
23 Habarzel Street
Tel-Aviv 69710, Israel

Tele: +972 3 768 1400
Fax: +972 3 768 1415
www.elpas.com

We, the undersigned,

Company: **Elpas Solutions, Ltd.**
Address: **23 Habarzel Street, Tel Aviv 69710**
Country: **Israel**
Telephone number: **+972-3-768-1400**
Fax number: **+972-3-768-1415**

certify and declare under our sole responsibility that the tested unit was 5-ALA000125-12 and Door Exciter 485 is its former name and no changes have been made to the unit since it was originally tested in December 2010.

Reissued by:	
Tel-Aviv, Israel March 12, 2013	Michael Wasserstein General Manager

1.2 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.), Registration No. 90715.
3. The Israel Ministry of the Environment (Israel), Registration No. 1104/01.
4. The Voluntary Control Council for Interference by Information Technology Equipment (VCCI) (Japan), Registration Numbers: C-1350, R-1285.
5. Industry Canada (Canada), IC File No.: 46405-4025; Site No. IC 4025B-1.
6. TUV Product Services, England, ASLLAS No. 97201.

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.

1.3 Product Description

The Elpas LF BUS Exciter is a supervised 125 kHz field emitter. The device is used for adding real-time location visibility to Elpas RTLS Security, Safety & Visibility solutions or 3rd party healthcare management systems.

The LF BUS Exciter is easily attached to either solid or hollow walls and is designed to generate a continuous, user-adjustable, electromagnetic, spherical shaped field up to 1.5m/5ft in radius that can be used to cover a single interior doorway. Optionally, up to four LF BUS Exciters can be deployed in 'Primary–Secondary' star or daisy-chain topologies to cover large double-doors or architectural complex indoor entrance/exit areas.

Should an individual or asset bearing an Elpas Active RFID Tag enter the exciter's electromagnetic field; the tag is prompted to transmit a message indicating its presence at this location. The messages are received by nearby Elpas RF IP/BUS Readers or by Elpas Local Controllers and can either be locally processed or relayed over wired or wireless Ethernet/Wi-Fi networks to a RTLS host application such as Eiris Enterprise Software for triggering location alerts or for identifying the tag's precise location and status.

The LF BUS Exciter also contains an I/O port that enables the monitoring of one alarm sensor and control of either one digital open collector output or one 26-bit Wiegand device.

1.4 Test Methodology

Radiated testing was performed according to the procedures in ANSI C63.4: 2003. Radiated testing was performed at an antenna to EUT distance of 3 meters.

1.5 Test Facility

The radiated emissions tests were performed at I.T.L.'s testing facility at Kfar Bin-Nun, Israel. This site is a FCC listed test laboratory (FCC Registration No. 90715, date of listing September 06, 2009).
I.T.L.'s EMC Laboratory is also accredited by A2LA, certificate No. 1152.01.

1.6 Measurement Uncertainty

Radiated Emission

Radiated Emission (CISPR 11, EN 55011, CISPR 22, EN 55022, ANSI C63.4) for open site 30-1000MHz:

Expanded Uncertainty (95% Confidence, K=2):

± 4.96 dB

2. System Test Configuration

2.1 Justification

The E.U.T. was tested in the horizontal position simulating the actual mounting position of the unit.

2.2 EUT Exercise Software

The EUT was tested with the standard system software.

2.3 Special Accessories

No special accessories were needed.

2.4 Equipment Modifications

No modifications were needed in order to achieve compliance

2.5 Configuration of Tested System

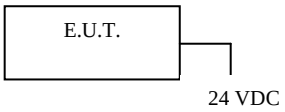

Figure 1. Configuration of Tested System

3. Test Set-up Photo

Figure 2. Radiated Emission Test

4. Average Factor Calculation

1. Pulse period = N/A
2. Pulse duration = N/A
3. Burst duration = N/A
4. Time between bursts = N/A
5. $$\text{Average Factor} = 20\log\left[\frac{\text{Pulse duration}}{\text{Pulse period}} \times \frac{\text{burst duration}}{100\text{msec}} \times \text{Num of burst within } 100\text{msec}\right]$$

$$\text{Average Factor} = 20\log\left[\frac{1}{1}\times 1\right] = 0dB$$

5. Field Strength of Fundamental 125 kHz Transmitter

5.1 Test Specification

F.C.C., Part 15, Subpart C, Section 15.209

5.2 Test Procedure

The E.U.T. operation mode and test set-up are as described in Section 3.

The E.U.T. was placed on a non-conductive table, 0.8 meters above the O.A.T.S. ground plane.
The EMI receiver was set to the E.U.T. Fundamental Frequency (125 kHz) and Peak Detection.
The distance between the E.U.T. and test antenna was 3 meters.

The turntable and antenna were adjusted for maximum level reading on the EMI receiver. The loop antenna was rotated on its vertical axis. The antenna height (center of loop) was 1 meter.

5.3 Test Results

JUDGEMENT: Passed by 3.7 dB

The EUT met the FCC Part 15, Subpart C, Section 15.209 specification requirements.

The details of the highest emissions are given in Figure 3.

TEST PERSONNEL:

Tester Signature: _____ Date: 20.03.13

Typed/Printed Name: A. Sharabi

Field Strength of Fundamental

E.U.T Description	Elpas LF BUS Reader
Model Number	5-ALA000125-12
Part Number:	Not Designated

Frequency (MHz)	Peak Reading (dBµV/m)	Specification (dBµV/m)	Margin (dB)
0.125	101.97	105.67	-3.70

Figure 3. Field Strength of Fundamental

Note: Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

$$L_{im300m} = 25.67 \text{ dBµV/m}$$

$$L_{im3m} = 25.67 \text{ dBµV/m} + 80.0 \text{ dBµV/m} = 105.67 \text{ dBµV/m}$$

Field Strength of Fundamental

E.U.T Description	Elpas LF BUS Reader
Model Number	5-ALA000125-12
Part Number:	Not Designated

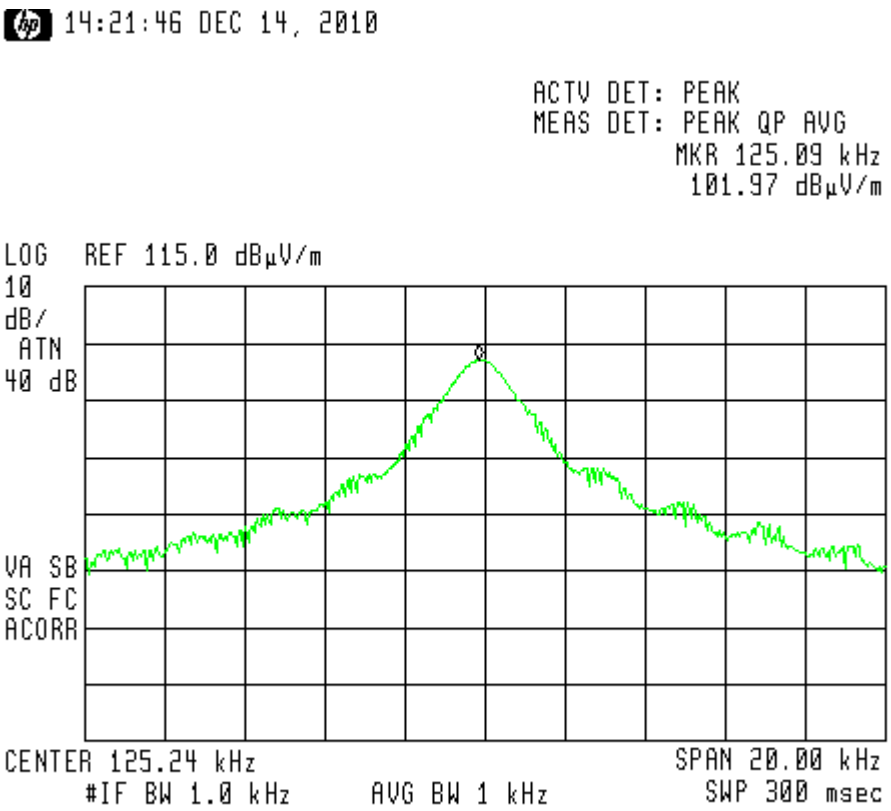

Figure 4. Field Strength of Fundamental

$$L_{im300m} = 25.67\ dB\mu V/m$$

$$L_{im3m} = 25.67\ dB\mu V/m + 80.0\ dB\mu V/m = 105.67\ dB\mu V/m$$

5.4 Test Instrumentation Used, Field Strength of Fundamental

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	November 24, 2010	1 year
RF Section	HP	85420E	3705A00248	November 24, 2010	1 year
Passive Loop Antenna	EMCO	6509	9702-1411	October 19, 2010	1 year
Antenna Mast	ARA	AAM-4A	1001	N/A	N/A
Turntable	ARA	ART-1001/4	1001	N/A	N/A
Mast & Table Controller	ARA	ACU-2/5	1001	N/A	N/A

5.1 Field Strength Calculation

The field strength is calculated directly by the EMI Receiver software, and a "Correction Factors" data disk, using the following equation:

FS = RA + AF + CF

FS: Field Strength [dBµv/m]
RA: Receiver Amplitude [dBµv]
AF: Receiving Antenna Correction Factor [dB/m]
CF: Cable Attenuation Factor [dB]

Example: FS = 30.7 dBµV (RA) + 14.0 dB (AF) + 0.9 dB (CF) = 45.6 dBµV

No external pre-amplifiers are used.

6. Radiated Emission, 9 kHz – 30 MHz

6.1 Test Specification

9 kHz-30 MHz, FCC, Part 15, Subpart C, Section 209

6.2 Test Procedure

The E.U.T. operation mode and test set-up are as described in Section 3.

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, 0.8 meters above the ground. The configuration tested is shown in Figure 1.

The frequency range 9 kHz-30 MHz was scanned.

The emissions were measured using a computerized EMI receiver complying to CISPR 16 requirements. The specification limits and applicable correction factors are loaded to the receiver via a 3.5" floppy disk.

In the frequency range 9 kHz-30MHz, the loop antenna was rotated on its vertical axis. The antenna height (center of loop) was 1 meter at a distance of 3 meters.

The E.U.T. was operated at the frequency of 125 kHz. This frequency was measured using a peak detector.

6.3 Test results

JUDGEMENT: Passed by 15.7 dB

The EUT was tested and it met the requirements of the FCC Part 15, Subpart C, specification.

TEST PERSONNEL:

Tester Signature: _____ Date: 20.03.13

Typed/Printed Name: A. Sharabi

Radiated Emission

E.U.T Description	Elpas LF BUS Reader
Type	5-ALA000125-12
Serial Number:	Not Designated

Specification: FCC Part 15, Subpart C

Antenna: 3 meters distance

Frequency range: 9 kHz to 30 MHz
Detectors: Peak

Frequency (MHz)	**Peak Reading** (dBµV/m)	**Average Factor** (dB)	**Average Reading** (dBµV/m)	**Average Specification** (dBµV/m)	**Margin** (dB)
0.375	64.69	0.0	64.69	96.12	-31.43
0.625	55.95	0.0	55.95	71.69	-15.74
0.875	49.50	0.0	49.50	68.73	-19.23
1.125	44.12	0.0	44.12	66.58	-22.46

Figure 5. Radiated Emission. Detectors: Peak, Quasi-peak

Note: Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

6.4 Test Instrumentation Used, Radiated Measurements

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	November 25, 2010	1 year
RF Section	HP	85420E	3705A00248	November 25, 2010	1 year
Passive Loop Antenna	EMCO	6509	9702-1411	October 19, 2010	1 year
Antenna Mast	ARA	AAM-4A	1001	N/A	N/A
Turntable	ARA	ART-1001/4	1001	N/A	N/A
Mast & Table Controller	ARA	ACU-2/5	1001	N/A	N/A

6.5 Field Strength Calculation

The field strength is calculated directly by the EMI Receiver software, and a "Correction Factors" data disk, using the following equation:

$$FS = RA + AF + CF$$

FS: Field Strength [dBµv/m]
RA: Receiver Amplitude [dBµv]
AF: Receiving Antenna Correction Factor [dB/m]
CF: Cable Attenuation Factor [dB]

Example: FS = 30.7 dBµV (RA) + 14.0 dB (AF) + 0.9 dB (CF) = 45.6 dBµV

No external pre-amplifiers are used.

7. Bandwidth

7.1 Test Procedure

The E.U.T. was operated at its maximum carrier power measured under normal test conditions.

The span of the analyzer was set to 10 kHz. The resolution bandwidth was set to 1 kHz and the video bandwidth was set to 3 kHz.

The E.U.T. bandwidth was measured.

7.2 Test Results

The measured bandwidth appears in Figure 6.

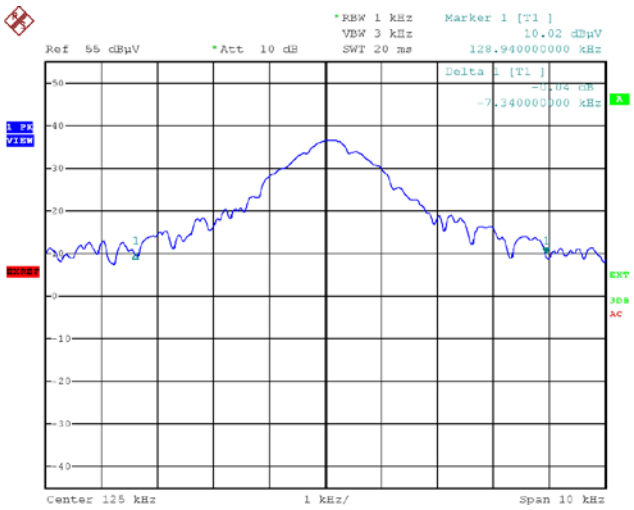

Figure 6. Bandwidth

7.3 Test Instrumentation Used, Radiated Measurements

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	Rohde & Schwarz	ESCI7	100724	July 15, 2010	1 year

8. APPENDIX A - CORRECTION FACTORS

8.1 Correction factors for CABLE

from EMI receiver to test antenna at 3 meter range.

FREQUENCY (MHz)	CORRECTION FACTOR (dB)
10.0	0.3
20.0	0.6
30.0	0.8
40.0	0.9
50.0	1.1
60.0	1.2
70.0	1.3
80.0	1.4
90.0	1.6
100.0	1.7
150.0	2.0
200.0	2.3
250.0	2.7
300.0	3.1
350.0	3.4
400.0	3.7
450.0	4.0
500.0	4.3
600.0	4.7
700.0	5.3
800.0	5.9
900.0	6.3
1000.0	6.7

FREQUENCY (MHz)	CORRECTION FACTOR (dB)
1200.0	7.3
1400.0	7.8
1600.0	8.4
1800.0	9.1
2000.0	9.9
2300.0	11.2
2600.0	12.2
2900.0	13.0

NOTES:

1. The cable type is RG-214.

2. The overall length of the cable is 27 meters.

3. The above data is located in file 27MO3MO.CBL on the disk marked "Radiated Emission Tests EMI Receiver".

8.2 Correction factors for PASSIVE LOOP ANTENNA

Model 6509
S/N 9702-1411

FREQUENCY (MHz)	Magnetic Antenna Factor (dBµV/m)	Electric Antenna Factor (dBµV/m)
0.05	99.9	101.1
0.08	92.5	93.9
0.35	86.9	88.2
0.5	81.9	83.1
0.9	84.6	83.2
2.0	84.0	85.3
10.0	83.1	84.5

9. Comparison requirements FCC with Industry Canada

FCC Specification	According FCC Standard	IC Standard
Radiated Emission	FCC Part 15.209	RSS GEN Issue 3 Clause 7.2.5