

DATE: 16 April 2006

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

**AS/NZS EMC Test Report**  
for  
**Galcon Galil Control**


Equipment under test:

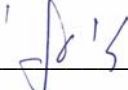
**Fertilizer System**

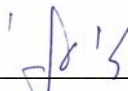
**FERTIMIX\*, FERTIGAL\*\*, FERTIJET\*\***

\* See customer's declaration on page 4.

\* See customer's declaration on page 5.

Written by:   
D. Shidlow, Documentation

Approved by:   
I. Raz, Test Engineer

Approved by:   
I. Raz, EMC Laboratory Manager

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# 1. General Information

## 1.1 Administrative Information

Manufacturer:	Galcon Galil Control
Manufacturer's Address:	Kibbutz Kfar Blum Upper Galilee D.N. 12150 Israel Tel: +972-4-690-0222 Fax: +972-4-690-2727
Manufacturer's Representative:	Shay Shtekelmacher Eyal Lubenfeld
Equipment Under Test (E.U.T):	Fertilizer System
Equipment Model No.:	FERTIMIX*, FERTIGAL**, FERTIJET**
Equipment Serial No.:	Not designated
Date of Receipt of E.U.T:	03.05.05
Start of Test:	03.05.05
End of Test:	09.05.05
Test Laboratory Location:	I.T.L (Product Testing) Ltd. Kfar Bin Nun, ISRAEL 99780
Test Specifications:	See Section 2

\* See customer's declaration on following page.

\*\* See customer's declaration on page 5.

4/07/2005

## DECLARATION


I HEREBY DECLARE THAT THE FOLLOWING  
PRODUCTS:

FERTIMIX

ARE IDENTICAL ELECTRONICALLY, PHYSICALLY,  
AND MECHANICALLY TO:

FERTIMIX 3", 60m/h

Please relate to them all (from an EMC point of view) as the  
same product.

Thank you,  
Signature. 

SARI RAZILI  
C.E.O. GALCON

# Galcon גלילקון

Computerized Irrigation Controllers      מְעוּדָוּת מְרִירָה מְאֻמָּת

18 May 2005

Galcon irrigation produces three models of irrigation systems, Fertimix, Fertigal and Fertijet.

The model tested by I.T.L. was a Fertimix in maximum configuration (highest electric power, internal electrical devices and control system.)

The Fertimix system includes the Fertigal system as an integral part and the Fertigal system includes the Fertijet system as an integral part.

The differences between the systems:

1. Engine electric power: the maximum electric power in the tested Fertimix system, all engines are C.E. approved
2. Internal electrical devices: the Fertimix integrates the maximum amount of these devices ( solenoids, conductors, sensors and counters)

All these systems operate with the Galileo controllers Models 2000, 32/16.



Sari Rabin  
C.E.O. Galcon Irrigation Controllers

## 1.2 Abbreviations and Symbols

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

AC	alternating current
ARA	Antenna Research Associates
Aux	auxiliary
Avg	average
CDN	coupling-decoupling network
cm	centimeter
dB	decibel
dBm	decibel referred to one milliwatt
db $\mu$ V	decibel referred to one microvolt
db $\mu$ V/m	decibel referred to one microvolt per meter
DC	direct current
EMC	electromagnetic compatibility
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
QP	quasi-peak
PC	personal computer
RF	radio frequency
RE	radiated emission
sec	second
V	volt

### **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.), 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), File No. IC 4025.
6. TUV Product Services, England, ASLLAS No. 97201.
7. Nemko (Norway), Authorization No. ELA 207.

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 | <b>AS/NZS CISPR 22: 2004</b> | <i>Information technology equipment — Radio disturbance characteristics — Limits and methods of measurement</i>  |
| 2.2 | <b>CISPR 16-1: 1999</b>      | <i>Specification for Radio Disturbance and Immunity Measuring Apparatus and Methods. Part 1. Radio Disturbance and Immunity Measuring Apparatus</i>                          |
| 2.3 | <b>CISPR 16-2: 1999</b>      | <i>Specification for Radio Disturbance and Immunity Measuring Apparatus and Methods. Part 2. Methods of measurement of disturbances and immunity</i>                         |
| 2.4 | <b>ANSI C63.4-2003</b>       | <i>American National Standards for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.</i> |



### **3. Test Site Description**

#### **3.1 Location**

The tests were performed at Galcon Galil Control Manufacturing facility,  
Kibbutz Kfar Blum,  
Upper Galilee,  
D.N 12150, Israel  
Telephone: + 972- 4 – 690-0222 , Fax: + 972- 4 – 690-2727

#### **3.2 Test Equipment**

See details in Section 6.

## 4. Summary of Test Results

Test	Results
<p><b>Conducted Emissions</b> AS/NZS CISPR 22: 2004, Class A</p>	<p>The E.U.T met the performance requirements of the specification.</p> <p>The margin between the emission levels and the specification limit is, in the worst case, 3.5 dB for the phase 1 line at 1.40 MHz.</p> <p>The margin between the emission levels and the specification limit is, in the worst case, 1.7 dB for the phase 2 line at 1.4 MHz.</p> <p>The margin between the emission levels and the specification limit is, in the worst case, 6.8 dB for the phase 3 line at 2.90 MHz.</p> <p>The margin between the emission levels and the specification limit is, in the worst case, 11.8 dB for the phase line (Control Panel) at 1.63 MHz and 11.8 dB at 1.63 MHz for the neutral line (Control Panel).</p>
<p><b>Radiated Emissions</b> AS/NZS CISPR 22: 2004, Class A</p>	<p>The E.U.T met the performance requirements of the specification.</p> <p>The margin between the emission level and the specification limit was 1.8 dB in the worst case at the frequency of 44.23 MHz, horizontal polarization.</p>

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

The **FERTIMIX** is a top level fertigation machine that is specifically designed for low-capacity soil-less cultivation.

The **FERTIMIX** is an in-line unit, where all of the irrigation water passes through a tank and mixes with fertilizer. The injection of the fertilizer to the tank is obtained by a set of up to 8 venturi type injectors which are controlled by electro-valves. The mixture of water and fertilizer then pumped back to high pressure for downstream irrigation.

The **FERTIMIX** differs from its fellow products *Fertigal* and *Fertijet* by the smooth and steady level of EC and pH that it produces on its very near downstream. Its mostly recommended applications are when using inert substrate such as Rockwool® or Perlite® or when the proportion between the plant weight and its substrate weight is around 1:1 (low capacity).

The major parts of the **FERTIMIX** are:

1. Water inlet, water meter
2. Fill valve
3. Mixing tank
4. Mixer pump
5. Main irrigation pump
6. Manual by-pass
7. Water outlet
8. Float valve
9. Venturi fertilizer injectors
10. EC-pH unit
11. EC-pH sampling cup and Electrodes
12. Tank level sensor
13. Electrical control box

## 6. List of Test Equipment

### 6.1 Emission Tests

The equipment indicated below by an “X” was used for testing Conducted Emission and (CE) and Radiated Emission (RE).

Test equipment calibration is in accordance with ITL Q.A. Procedure PM 110 "Calibration Control Procedure", which complies with ISO 9002 and ISO/IEC Guide 17025

Instrument	Manufacturer	Model	Serial No.	Used in Test	
				CE	RE
Dipole Antenna Set	CDI	A100	597		
Signal Generator	Marconi	2022D	119196015		
LISN	Fischer	FCC-LISN-2A	127		
LISN	Fischer	FCC-LISN-2A	128		
Spectrum Analyzer	HP	8591E	3414U01226	X	X
RF Amplifier	HP	8447F	3113A04961		
Close Field Probe	HP	HP11941A	2807A03046		
Close Field Probe	HP	HP11940A	2650A04587		
Receiver	HP	85420E/85422E	3427A00103/34	X	X
Antenna - Biconical	ETS	3109	000-2-3244		X
Antenna - Log Periodic	ARA	LPD-2010/A	1037		X
Antenna - Log Periodic	ARA	LPD-2010/A	1038		
Antenna Mast	ARA	AAM-4A			
Turntable	ARA	ART-1001/4			
Mast & Table Controller	ARA	ACU-2/5	1001		
Standard Impedance Network	Xitron	2520	7002		
Power Analysis System	Xitron	2503A	2005		
AC Power Source	Behlman	ACP			
CDN Network	FCC	FCC-801-T4	64		
CDN Network	FCC	FCC-801-T2	60		
Voltage Probe	ITL	ITL-100		X	

## 7. E.U.T. Performance Verification

### 7.1 Mode of Operation

During EMC test all irrigation systems were operated according standard field conditions as it is required for customers:

Water inlet connected to water source to maintain required pressure and flow rates.

Water outlet connected to external valve to maintain real field conditions.

Fertilizer injectors connected to external tanks to simulate real fertigation conditions.

Electric power supply provided by standard connection wiring of irrigation system, including grounding connection.

All operations maintained automatically by local controller and remote PC according to the watering and fertigation programs.

Irrigation and fertigation valves were operated by the control system.

On-line control of watering, conductivity (EC), acidity (Ph) and water temperature levels was provided.

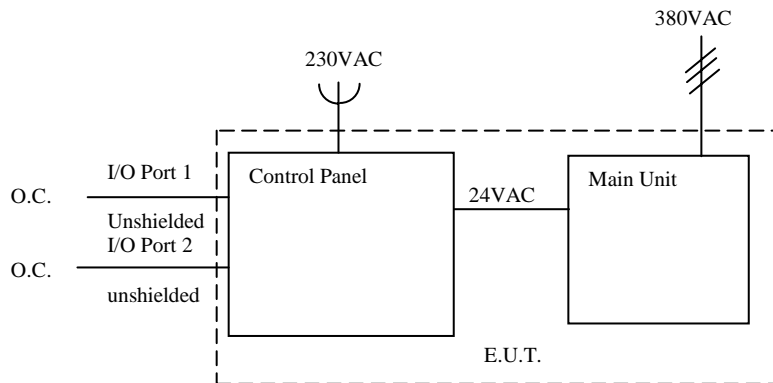


Figure 1. Test Set-up

## 8. Conducted Emission

### 8.1 Test Specification

0.15-30 MHz, AS/NZS CISPR 22: 2004, CLASS A

### 8.2 Test Procedure

The E.U.T operation mode and test set-up are as described in Section 7.1.

The main unit of the E.U.T was powered from three phase 380 VAC / 50 Hz. The emissions were measured using a voltage probe as described in Section 6.2 of CISPR 22. The voltage probe was grounded to the E.U.T. ground point at the power cable plug.

The control panel of the E.U.T was powered from 230 VAC / 50 Hz. The emissions were measured using a voltage probe as described in Section 6.2 of CISPR 22. The voltage probe was grounded to the E.U.T. ground point at the power cable plug.

A frequency scan between 0.15 and 30 MHz was performed at 9 kHz I.F. band width, and using peak detection.

The spectral components having the highest level on each line were measured using a quasi-peak and average detector.

The configuration tested is shown in *Figure 14. Conducted Emission Test.*

### 8.3 Test Results

The E.U.T complies with the AS/NZS CISPR 22: 2004, Class A specification requirements.

The margin between the emission levels and the specification limit is, in the worst case, 3.5 dB for the phase 1 line at 1.40 MHz.

The margin between the emission levels and the specification limit is, in the worst case, 1.7 dB for the phase 2 line at 1.4 MHz.

The margin between the emission levels and the specification limit is, in the worst case, 6.8 dB for the phase 3 line at 2.90 MHz.

The margin between the emission levels and the specification limit is, in the worst case, 11.8 dB for the phase line (Control Panel) at 1.63 MHz and 11.8 dB at 1.63 MHz for the neutral line (Control Panel).

The details of the highest emissions are given in *Figure 2 to Figure 11.*

## Conducted Emission

E.U.T Description      Fertilizer System  
 Type                      FERTIMIX  
 Serial Number:         Not designated

Specification:    AS/NZS CISPR 22: 2004, Class A  
 Lead:              Phase 1  
 Detectors:        Quasi-peak ,Average,

Frequency (MHz)	Quasi-peak Result* (dB $\mu$ V)	Specification (dB $\mu$ V)	Pass/Fail	Margin (dB)
1.40	69.5	73.0	Pass	-3.5
2.95	62.4	73.0	Pass	-10.6
3.89	53.0	73.0	Pass	-20.0
6.30	49.0	73.0	Pass	-24.0
7.10	38.7	73.0	Pass	-34.3
10.70	46.0	73.0	Pass	-27.0

**Figure 2. Detectors: QUASI-PEAK**

Frequency (MHz)	Average Result** (dB $\mu$ V)	Specification (dB $\mu$ V)	Pass/Fail	Margin (dB)
1.40	54.5	60.0	Pass	-5.5
2.95	54.4	60.0	Pass	-5.6
3.89	47.9	60.0	Pass	-12.1
6.30	43.4	60.0	Pass	-16.6
7.10	33.2	60.0	Pass	-26.8
10.70	40.9	60.0	Pass	-19.1

**Figure 3. Detectors: AVERAGE .**

\*Quasi-peak Result = Quasi-peak Amplitude + Voltage Probe Correction Factor

\*\*Average Result = Average Amplitude + Voltage Probe Correction Factor

# Conducted Emission

E.U.T Description    Fertilizer System  
 Type                    FERTIMIX  
 Serial Number:        Not designated

Specification:    AS/NZS CISPR 22: 2004, Class A  
 Lead:                Phase 2  
 Detectors:         Quasi-peak ,Average,

Frequency (MHz)	Quasi-peak Result* (dB μV)	Specification (dB μV)	Pass/Fail	Margin (dB)
1.40	71.3	73.0	Pass	-1.7
2.95	62.6	73.0	Pass	-10.4
3.89	50.2	73.0	Pass	-22.8
6.30	44.4	73.0	Pass	-28.6
7.10	39.6	73.0	Pass	-33.4
10.70	47.6	73.0	Pass	-25.4

**Figure 4. Detectors: QUASI-PEAK**

Frequency (MHz)	Average Result** (dBμV)	Specification (dB μV)	Pass/Fail	Margin (dB)
1.40	57.9	60.0	Pass	-2.1
2.95	54.8	60.0	Pass	-5.2
3.89	44.7	60.0	Pass	-15.3
6.30	39.4	60.0	Pass	-20.6
7.10	33.8	60.0	Pass	-26.2
10.70	42.3	60.0	Pass	-17.7

**Figure 5. Detectors: AVERAGE**

\*Quasi-peak Result = Quasi-peak Amplitude + Voltage Probe Correction Factor

\*\*Average Result = Average Amplitude + Voltage Probe Correction Factor



## Conducted Emission

E.U.T Description    Fertilizer System  
 Type                    FERTIMIX  
 Serial Number:        Not designated

Specification:    AS/NZS CISPR 22: 2004, Class A  
 Lead:                Phase 3  
 Detectors:        Quasi-peak ,Average,

Frequency (MHz)	Quasi-peak Result* (dB μV)	Specification (dB μV)	Pass/Fail	Margin (dB)
1.40	58.3	73.0	Pass	-14.7
2.90	63.6	73.0	Pass	-9.4
3.89	52.5	73.0	Pass	-20.5
6.30	43.4	73.0	Pass	-29.6
7.10	40.4	73.0	Pass	-32.6
10.70	48.4	73.0	Pass	-24.6

**Figure 6. Detectors: QUASI-PEAK**

Frequency (MHz)	Average Result** (dBμV)	Specification (dB μV)	Pass/Fail	Margin (dB)
1.40	49.4	60.0	Pass	-10.6
2.90	53.2	60.0	Pass	-6.8
3.89	47.3	60.0	Pass	-12.7
6.30	39.6	60.0	Pass	-20.4
7.10	34.5	60.0	Pass	-25.5
10.70	40.0	60.0	Pass	-20.0

**Figure 7. Detectors: AVERAGE**

\*Quasi-peak Result = Quasi-peak Amplitude + Voltage Probe Correction Factor

\*\*Average Result = Average Amplitude + Voltage Probe Correction Factor

## Conducted Emission

E.U.T Description    Fertilizer System  
 Type                    FERTIMIX  
 Serial Number:        Not designated

Specification:    AS/NZS CISPR 22: 2004, Class **A**  
 Lead:              Phase (Control Panel)  
 Detectors:        Quasi-peak ,Average,

Frequency (MHz)	Quasi-peak Result* (dB μV)	Specification (dB μV)	Pass/Fail	Margin (dB)
1.63	61.2	73.0	Pass	-11.8
2.20	50.0	73.0	Pass	-23.0
7.10	40.5	73.0	Pass	-32.5
10.70	39.3	73.0	Pass	-33.7
15.00	39.6	73.0	Pass	-33.4
25.00	38.1	73.0	Pass	-34.9

**Figure 8. Detectors: QUASI-PEAK**

Frequency (MHz)	Average Result** (dBμV)	Specification (dB μV)	Pass/Fail	Margin (dB)
1.63	43.3	60.0	Pass	-16.7
2.20	43.7	60.0	Pass	-16.3
7.10	33.2	60.0	Pass	-26.8
10.70	32.9	60.0	Pass	-27.1
15.00	33.0	60.0	Pass	-27.0
25.00	31.7	60.0	Pass	-28.3

**Figure 9. Detectors: AVERAGE**

\*Quasi-peak Result = Quasi-peak Amplitude + Voltage Probe Correction Factor

\*\*Average Result = Average Amplitude + Voltage Probe Correction Factor

## Conducted Emission

E.U.T Description    Fertilizer System  
 Type                    FERTIMIX  
 Serial Number:        Not designated

Specification:    AS/NZS CISPR 22: 2004, Class A  
 Lead:              Neutral (Control Panel)  
 Detectors:        Quasi-peak ,Average,

Frequency (MHz)	Quasi-peak Result* (dB μV)	Specification (dB μV)	Pass/Fail	Margin (dB)
1.63	61.2	73.0	Pass	-11.8
2.20	50.0	73.0	Pass	-23.0
7.10	40.5	73.0	Pass	-32.5
10.70	39.3	73.0	Pass	-33.7
15.00	39.6	73.0	Pass	-33.4
25.00	38.1	73.0	Pass	-34.9

**Figure 10. Detectors: QUASI-PEAK**

Frequency (MHz)	Average Result** (dBμV)	Specification (dB μV)	Pass/Fail	Margin (dB)
1.63	43.3	60.0	Pass	-16.7
2.20	43.7	60.0	Pass	-16.3
7.10	33.2	60.0	Pass	-26.8
10.70	32.9	60.0	Pass	-27.1
15.00	33.0	60.0	Pass	-27.0
25.00	31.7	60.0	Pass	-28.3

**Figure 11. Detectors: AVERAGE**

\*Quasi-peak Result = Quasi-peak Amplitude + Voltage Probe Correction Factor

\*\*Average Result = Average Amplitude + Voltage Probe Correction Factor

## 9. Radiated Emission

### 9.1 Test Specification

30-1000 MHz, AS/NZS CISPR 22: 2004, CLASS A

### 9.2 Test Procedure

The E.U.T operation mode and test set-up are as described in section 7.1.

A preliminary measurement to characterize the E.U.T.'s emission frequencies was performed using a short electrical monopole.

The E.U.T. was probed at all it's surfaces to identify the worst emitting surface. The center of the E.U.T. was selected as the worst emitting surface.

The frequency range 30-1000 MHz was scanned using a Spectrum Analyzer.

To enable the signal-to background noise ratio greater than 6 dB, the antenna was placed 1.5 meter from the E.U.T.

During the test a minimum distance of at least 1 meter was maintained between each surface of the E.U.T. and the adjacent wall or conducting surface. A minimum distance of 1 meter was also maintained between the edges of the test antenna and the adjacent wall or conducting objects.

Special attention was given to the list of frequencies that were recorded in the characterization phase.

The specification limit was adjusted from 30 meters distance to 1.5 meter distance by adding to the original limit factor of:  $20 \log 30/1.5 = 26$  dB.

The configuration tested is shown in the photograph, *Figure 15. Radiated Emission Test.*

### 9.3 Test Results

The E.U.T met the requirements of the AS/NZS CISPR 22: 2004, Class A specification requirements.

The margin between the emission level and the specification limit is 1.8 dB in the worst case at the frequency of 44.23 MHz, horizontal polarization.

The details of the highest emissions are given in *Figure 12 to Figure 13.*

## Radiated Emission

E.U.T Description    Fertilizer System  
 Type                    FERTIMIX  
 Serial Number:        Not designated

Specification: AS/NZS CISPR 22: 2004, Class A

Antenna Polarization: Horizontal

Frequency range: 30 MHz to 1000 MHz

Test distance: 1.5 meters, Height: 1.25m

Detectors: Quasi-peak

Freq. (MHz)	Reading (dB $\mu$ V)	Correction Factors		Result (dB $\mu$ V/m)	Specification (dB $\mu$ V/m)	Margin (dB)
		Antenna AF (dB)	Cable CF (dB)			
33.27	31.1	12.0	0.2	43.3	56.0	-12.7
36.87	41.9	12.0	0.2	54.1	56.0	-1.9
44.23	42.3	11.7	0.2	54.2	56.0	-1.8
60.90	32.3	10.3	0.2	42.8	56.0	-13.2
66.40	38.0	10.6	0.3	48.9	56.0	-7.1
146.60	34.7	13.1	0.4	48.2	56.0	-7.8
155.10	32.3	12.7	0.4	45.4	56.0	-10.6
160.40	31.8	12.7	0.4	44.9	56.0	-11.1
171.40	29.0	13.8	0.4	43.2	56.0	-12.8
298.60	27.1	21.5	0.5	49.1	63.0	-13.9
331.80	22.5	12.5	0.6	35.6	63.0	-27.4
404.20	27.7	14.2	0.6	42.5	63.0	-20.5
464.10	25.2	14.9	0.6	40.7	63.0	-22.3

**Figure 12. Radiated Emission. Antenna Polarization: HORIZONTAL.  
 Detectors: 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.*



## 11. Set Up Photographs

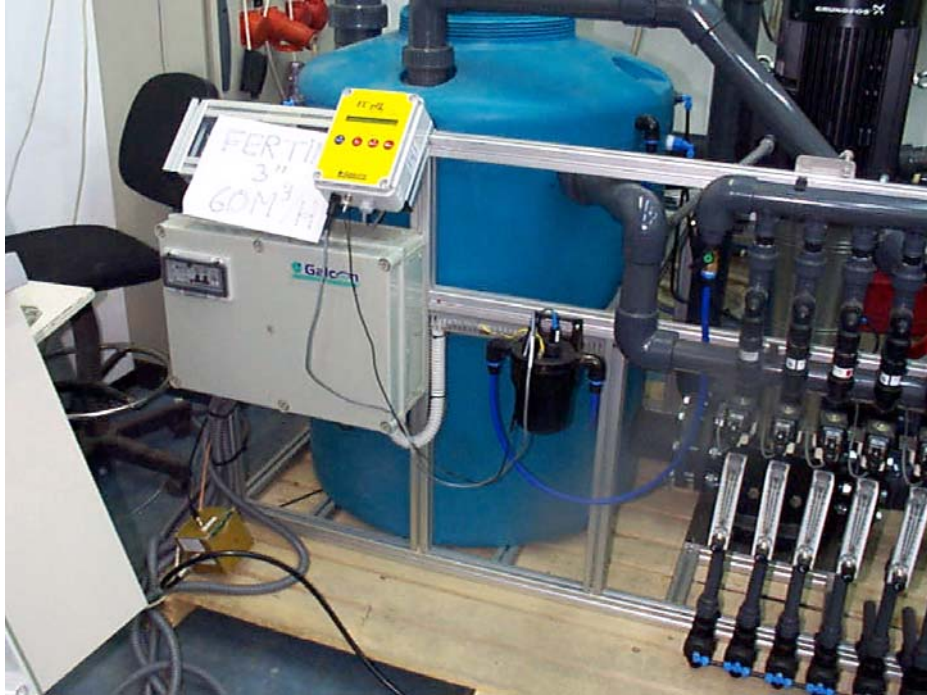
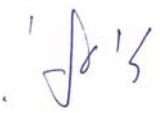



Figure 14. Conducted Emission Test



Figure 15. Radiated Emission Test

## 12. Signatures of the E.U.T.'s Test Engineers

Test	Test Engineer Name	Signature	Date
Conducted Emissions	I. Raz		16.06.06
Radiated Emissions	I. Raz		16.06.06



### 13. APPENDIX A - CORRECTION FACTORS

#### 13.1 Correction factors for CABLE

from EMI receiver  
to test antenna

FREQUENCY (MHz)	CORRECTION FACTOR (dB)	FREQUENCY (MHz)	CORRECTION FACTOR (dB)
10.0	0.1	1200.0	1.4
20.0	0.1	1400.0	1.5
30.0	0.2	1600.0	1.5
40.0	0.2	1800.0	1.7
50.0	0.2	2000.0	1.7
60.0	0.2	2300.0	2.0
70.0	0.3	2600.0	2.1
80.0	0.3	2900.0	2.2
90.0	0.3		
100.0	0.3		
150.0	0.4		
200.0	0.4		
250.0	0.4		
300.0	0.5		
350.0	0.6		
400.0	0.6		
450.0	0.6		
500.0	0.7		
600.0	0.8		
700.0	0.8		
800.0	1.0		
900.0	1.1		
1000.0	1.1		

**NOTES:**

1. The cable type is RG-214.
2. The overall length of the cable is 5.5 meters.

**13.2 Correction factors for LOG PERIODIC ANTENNA**

**Type LPD 2010/A  
at 3 and 10 meter ranges.**

**Distance of 3 meters**

<b>FREQUENCY (MHz)</b>	<b>AFE (dB/m)</b>
200.0	9.1
250.0	10.2
300.0	11.4
400.0	14.5
500.0	15.2
600.0	17.3
700.0	19.0
850.0	20.1
1000.0	22.2

**Distance of 10 meters**

<b>FREQUENCY (MHz)</b>	<b>AFE (dB/m)</b>
200.0	9.0
250.0	10.1
300.0	11.2
400.0	14.4
500.0	15.2
600.0	17.2
700.0	19.0
850.0	20.1
1000.0	22.1

**NOTES:**

1. Antenna serial number is 1038.
2. The above lists are located in file number 38M30.ANT for a 3 meter range, and file number 38M100.ANT for a 10 meter range.
3. The files mentioned above are located on the disk marked "Radiated Emission Test EMI Receiver".

**13.3 Correction factors for BICONICAL ANTENNA**  
**Type BCD-235/B,**  
**at 3 meter range**

<b>FREQUENCY</b> (MHz)	<b>AFE</b> (dB/m)
20.0	19.4
30.0	14.8
40.0	11.9
50.0	10.2
60.0	9.1
70.0	8.5
80.0	8.9
90.0	9.6
100.0	10.3
110.0	11.0
120.0	11.5
130.0	11.7
140.0	12.1
150.0	12.6
160.0	12.8
170.0	13.0
180.0	13.5
190.0	14.0
200.0	14.8
210.0	15.3
220.0	15.8
230.0	16.2
240.0	16.6
250.0	17.6
260.0	18.2
270.0	18.4
280.0	18.7
290.0	19.2
300.0	19.9
310	20.7
320	21.9
330	23.4
340	25.1
350	27.0

**NOTES:**

1. Antenna serial number is 1041.
2. The above list is located in file 19BC10M1.ANT on the disk marked "Radiated Emissions Tests EMI Receiver".

**13.4 Correction factors for BICONICAL ANTENNA  
Type 3109,  
1.0 meter range**

<b>FREQUENCY (MHz)</b>	<b>AFE (dB/m)</b>
20.0	11.1
30.0	12.0
40.0	12.0
50.0	11.4
60.0	10.3
70.0	10.7
80.0	8.3
90.0	9.0
100.0	10.0
110.0	11.6
120.0	13.6
130.0	14.2
140.0	13.5
150.0	12.7
160.0	12.7
170.0	13.6
180.0	15.3
190.0	14.6
200.0	14.7
210.0	15.3
220.0	15.8
230.0	17.0
240.0	18.0
250.0	18.1
260.0	18.0
270.0	17.5
280.0	18.2
290.0	19.7
300.0	21.8

**NOTES:**

1. Antenna serial number is 3244.
2. The above list is located in file 44BIC10M1.ANT on the disk marked "Radiated Emissions Tests EMI Receiver"

**13.5 Correction factors for BICONICAL ANTENNA  
Type 3109,  
3 meter range**

<b>FREQUENCY (MHz)</b>	<b>AFE (dB/m)</b>
20.0	18.4
30.0	14.0
40.0	12.3
50.0	10.6
60.0	8.3
70.0	8.7
80.0	7.2
90.0	8.6
100.0	10.1
110.0	11.2
120.0	11.8
130.0	12.3
140.0	12.7
150.0	12.5
160.0	12.4
170.0	12.1
180.0	12.2
190.0	12.8
200.0	13.7
210.0	14.5
220.0	15.4
230.0	15.9
240.0	16.3
250.0	16.7
260.0	17.1
270.0	17.2
280.0	17.5
290.0	18.1
300.0	18.9

**NOTES:**

1. Antenna serial number is 3244.
2. The above list is located in file 44BIC3M1.ANT on the disk marked "Radiated Emissions Tests EMI Receiver"

**13.6 Correction factors for Voltage Probe  
Model ITL-100**

<b>FREQUENCY</b> (MHz)	<b>Insertion Loss</b> (dB)
0.15	32.7
0.20	31.6
0.30	30.7
0.70	30.2
1.00	30.0
3.00	29.9
5.00	29.8
7.00	29.6
10.00	29.4
15.00	29.1
20.00	28.7
25.00	28.3
30.00	28.2