Cert. No. 1152.01
Electrical (EMC)

DATE: 16 April 2006

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

FCC EMC/Radio Test Report

for

Galcon Galil Control

Equipment under test:

DC Radio Controller

(For Transmitter Section)

10,001

Written by: _____
D. Shidlowsky, Documentation

Approved by: _____
E. Pitt, Test Engineer

Approved by: _____
I. Raz, EMC Laboratory Manager

Measurement/Technical Report for
Galcon Galil Control

Equipment under test:

DC Radio Controller

(For Transmitter Section)

FCC ID: SZ810001

DATE: 16 April 2006

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

Class B verification: Class A verification Class I change:

Equipment type: Radio Telemetry Transmitter
Request Issue of Grant:
__x__ Immediately upon completion of review

Limits used:
CISPR 22: Part 15: X

Measurement procedure used is ANSI C63.4-2003.

Application for Certification
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Applicant for this device:
(different from "prepared by")
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TABLE OF CONTENTS

1. General Information

1.1 Administrative Information

Manufacturer:	Galcon Galil Control
Manufacturer's Address:	Kibbutz Kfar Blum D.N. 12150 Israel Tel: +972-4-690-0222 Fax: +972-4-690-2727
Manufacturer's Representative:	Shay Shtekelmacher Eitain Gabay
Equipment Under Test (E.U.T):	DC Radio Controller
Equipment Model No.:	10,001
Equipment Serial No.:	516415
Date of Receipt of E.U.T:	13.02.06
Start of Test:	13.02.06
End of Test:	13.02.06
Test Laboratory Location:	I.T.L (Product Testing) Ltd. Kfar Bin Nun, ISRAEL 99780
Test Specifications:	FCC Part 15, Sub-Part C

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

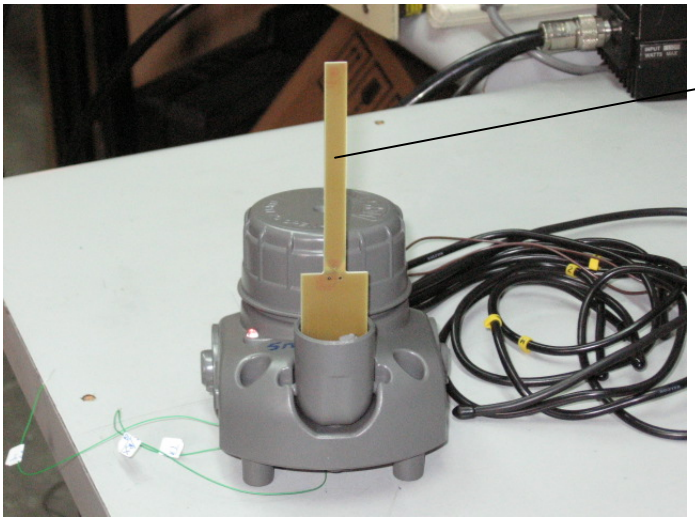
I.T.L. Product Testing Ltd. is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this test report have been determined in accordance with I.T.L.'s terms of accreditation unless stated otherwise in the report.

1.3 Product Description

See details in ITL test report no. E58570.00

Description of change:

The antenna was changed from the original antenna to a new one (See photograph of the new antenna below).



1.4 Test Methodology

Both conducted and radiated testing were 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 December 12, 2003).
I.T.L.'s EMC Laboratory is also accredited by A2LA, certificate No. 1152.01.

1.6 Measurement Uncertainty

Radiated Emission

The Open Site complies with the ±4 dB Normalized Site Attenuation requirements of ANSI C63.4-2003. In accordance with Paragraph 5.4.6.1 of this standard, this tolerance includes instrumentation calibration errors, measurement technique errors, and errors due to site anomalies.

2. Product Labeling

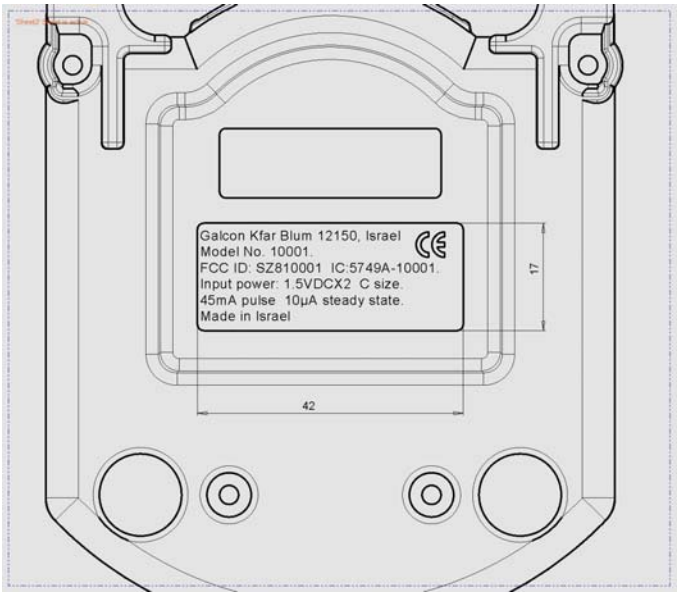


Figure 1. FCC Label

3. System Test Configuration

3.1 Justification

See ITL test report no. E58570.00.
Spurious radiated emissions re-testing and band edge testing were performed according to correspondence with Timco dated 26 September 2005. See Appendix B Correspondence.

3.2 EUT Exercise Software

See ITL test report no. E58570.00.

3.3 Special Accessories

See ITL test report no. E58570.00.

3.4 Equipment Modifications

See ITL test report no. E58570.00.

3.5 Configuration of Tested System

The configuration of the tested system is described below.

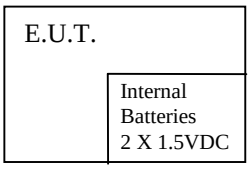


Figure 2. Configuration of Tested System

4. Block Diagram

4.1 Schematic Block/Connection Diagram

Intentionally Blank for Reasons of Confidentiality

4.2 Theory of Operation

See ITL test report no. E58570.00.

5. Radiated Measurement Photo

Figure 3. Radiated Emission Test

6. Field Strength of Fundamental

6.1 Test Specification

F.C.C., Part 15, Subpart C, Section 15.249(a)

6.2 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 (916.005MHz) and Peak Detection.
The turntable and antenna mast were adjusted for maximum level reading on the EMI receiver.
The measurement was performed for vertical and horizontal polarizations of the test antenna.

The final average result is:

Peak Level(dBμV/m) + E.U.T. Duty Cycle Factor, in 100msec time window (dB) which shall not exceed the limit in Section 15.249(a).

The Peak field strength shall not exceed the average limit by more than 20 dB.

6.3 Measured Data

JUDGEMENT: Passed by 0.4 dB

The EUT met the FCC Part 15, Subpart C, Section 15.249(a) specification requirements.

The details of the highest emissions are given in Figure 4 to Figure 5.

TEST PERSONNEL:

Tester Signature: _____ Date: 20.04.06

Typed/Printed Name: E. Pitt

Field Strength of Fundamental

E.U.T Description	DC Radio Controller
Model Number	10,001
Serial Number:	516415

Specification: F.C.C., Part 15, Subpart C 15.249(a)

Antenna Polarization: Horizontal

Test Distance: 3 meters Detector: Peak

Freq. (MHz)	Pol. V/H	Peak Reading (dBµV/m)	Peak Specification (3) (dBµV/m)	Margin (dB)
916.00	H	98.98	114.0	-15.02
916.00	V	99.64	114.0	-14.36

Figure 4. Field Strength of Fundamental. Antenna Polarization: HORIZONTAL/VERTICAL. Detector: 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.

"Peak Reading" includes "Correction Factors.

"Correction factors" = Antenna Correction Factor + Cable Loss

Field Strength of Fundamental

E.U.T Description DC Radio Controller
Model Number 10,001
Serial Number: 516415

Specification: F.C.C., Part 15, Subpart C 15.249(a)

Antenna Polarization: Horizontal
Test Distance: 3 meters Detector: Peak

Freq. (MHz)	Pol. V/H	Peak Reading (1) (dBµV/m)	D.C.F. (2) (dB)	Final Result (3) (dBµV/m)	AVG. Specification (dBµV/m)	Margin (dB)
916.00	H	98.98	-6.0	92.98	94.0	-1.02
916.00	V	99.64	-6.0	93.64	94.0	-0.36

Figure 5. Field Strength of Fundamental. Antenna Polarization: HORIZONTAL/VERTICAL. Detector: 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.

(1) "Peak Amp." includes "Correction Factors.
"Correction Factors" = Antenna Correction Factor + Cable Loss.

(2) "Duty Cycle Factor (D.C.F.)= $20\log\frac{50}{100} = -6.0dB$

(See Section 4.2 of ITL test report no. E58570.00).

(3) "Final Result" = "Peak Reading" +D.C.F. (dB).

6.4 Test Instrumentation Used, Field Strength of Fundamental

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3411A00102	February 22, 2006	1 year
RF Section	HP	85420E	3427A00103	February 22, 2006	1 year
Antenna Log Periodic	ARA	LPD-2010/A	1038	October 17, 2005	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
Printer	HP	ThinkJet 2225	2738508357.0	N/A	N/A

7. Spurious Radiated Emission Data Below 1 GHz

7.1 Spurious Radiated Emission 9kHz-1000 MHz

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 2.

The frequency range 9kHz-1000 MHz was scanned, and the list of the highest emissions was verified and updated accordingly.

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-30 MHz, the loop antenna was rotated on its vertical axis. The antenna height (center of loop) was 1 meter.

In the frequency range 30-1000 MHz, the readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization.

Verification of the E.U.T emissions was based on the following methods:

Turning the E.U.T on and off.

Using a frequency span less than 10 MHz.

Observation of the signal level during turntable rotation. Background noise is not affected by the rotation of the E.U.T.

During this test the E.U.T. was operated in continuous transmission to enable better detection of signals.

7.2 Measured Data

JUDGEMENT: Passed by 11.8 dB

The signals in the band 9 kHz – 30 MHz were 20dB below the specification limit.

The margin between the emission level and the specification limit is 11.8 dB in the worst case at the frequency of 147.46 MHz, horizontal polarization.

The EUT met the requirements of the F.C.C. Part 15, Subpart C, Section 15.249 specification.

The details of the highest emissions are given in Figure 6 to Figure 9.

TEST PERSONNEL:

Tester Signature: _____ Date: 20.04.06

Typed/Printed Name: E. Pitt

Radiated Emission

E.U.T Description DC Radio Controller
Model Number 10,001
Serial Number: 516415

Specification: F.C.C., Part 15, Subpart C: Section15.249

Antenna Polarization: Horizontal Frequency range: 30 to 1000 MHz
Test Distance: 3 meters Detector: Peak, Quasi-peak

Frequency (MHz)	Peak Amp (dBµV/m)	QP Amp (dBµV/m)	Correction (dB)	Specification (dBµV/m)	Margin (dB)
147.46	35.8	31.7	14.5	43.5	-11.8
191.69	33.6	29.0	16.4	43.5	-14.5
221.18	36.9	32.0	18.3	46.0	-14.0
250.68	37.4	32.7	20.3	46.0	-13.3
309.66	32.8	27.4	15.9	46.0	-18.6
339.15	34.3	28.4	17.0	46.0	-17.6

Figure 6. Spurious Radiated Emission. Antenna Polarization: HORIZONTAL. Detector: 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.

Radiated Emission

E.U.T Description	DC Radio Controller
Model Number	10,001
Serial Number:	516415

Specification: F.C.C., Part 15, Subpart C: Section15.249

Antenna Polarization: Horizontal
Frequency range: 30 to 1000 MHz
Test Distance: 3 meters
Detector: Peak, Quasi-peak

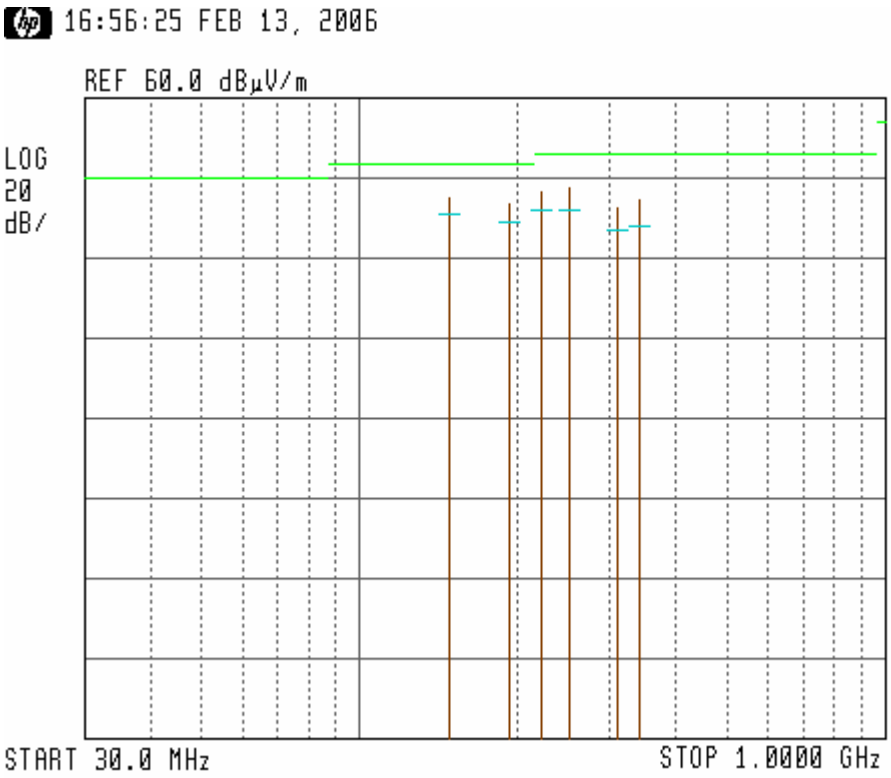


Figure 7. Radiated Emission. Antenna Polarization: HORIZONTAL Detectors: Peak, Quasi-peak

Note:

1. *Horizontal axis shows logarithmic frequency scale.*
2. *The vertical axis shows amplitude (in dB µV/m).*
3. *Peak detection is designated by the top of each vertical line.*
4. *Quasi-peak detection is designated by the first dash mark (from the top) of each vertical line.*

Radiated Emission

E.U.T Description DC Radio Controller
Model Number 10,001
Serial Number: 516415

Specification: F.C.C., Part 15, Subpart C: Section 15.249

Antenna Polarization: Vertical
Test Distance: 3 meters
Frequency range: 30 to 1000 MHz
Detector: Peak, Quasi-peak

Frequency (MHz)	Peak Amp (dBµV/m)	QP Amp (dBµV/m)	Correction (dB)	Specification (dBµV/m)	Margin (dB)
117.97	30.0	25.2	13.2	43.5	-18.3
147.46	31.8	26.3	14.4	43.5	-17.2
191.69	33.0	27.4	16.4	43.5	-16.1
309.66	32.2	27.2	15.9	46.0	-18.8
339.15	33.6	28.3	17.0	46.0	-17.7
412.88	36.5	30.9	19.3	46.0	-15.1

Figure 8. Spurious Radiated Emission. Antenna Polarization: VERTICAL. Detector: 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.

Radiated Emission

E.U.T Description	DC Radio Controller
Model Number	10,001
Serial Number:	516415

Specification: F.C.C., Part 15, Subpart C: Section15.249

Antenna Polarization: Horizontal
Test Distance: 3 meters
Frequency range: 30 to 1000 MHz
Detector: Peak, Quasi-peak

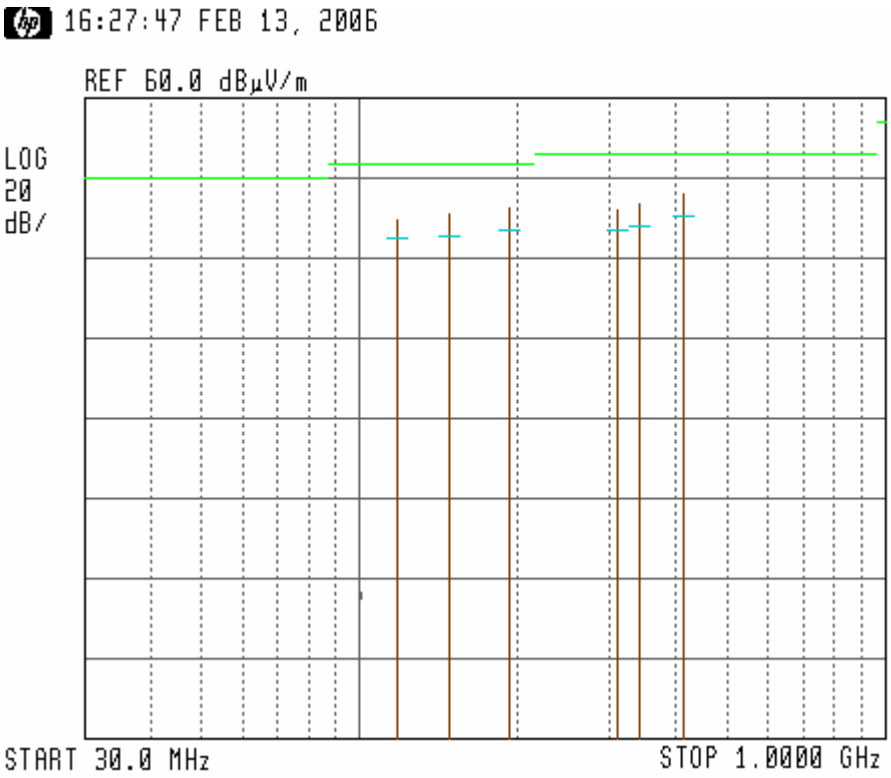


Figure 9. Radiated Emission. Antenna Polarization: HORIZONTAL Detectors: Peak, Quasi-peak

Note:

1. *Horizontal axis shows logarithmic frequency scale.*
2. *The vertical axis shows amplitude (in dB µV/m).*
3. *Peak detection is designated by the top of each vertical line.*
4. *Quasi-peak detection is designated by the first dash mark (from the top) of each vertical line.*

7.3 Test Instrumentation Used, Radiated Measurements

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3411A00102	February 22, 2006	1 year
RF Section	HP	85420E	3427A00103	February 22, 2006	1 year
Antenna Bioconical	ARA	BCD 235/B	1041	March 14, 2005	1 year
Antenna Log Periodic	ARA	LPD-2010/A	1038	October 17, 2005	1 year
Active Loop Antenna	EMCO	6502	9506-2950	October 17, 2005	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
Printer	HP	ThinkJet 2225	2738508357.0	N/A	N/A

7.4 Field Strength Calculation

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

$$[dB\mu v/m]\ FS = RA + AF + CF$$

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

8. Spurious Radiated Emission Above 1 GHz

8.1 Spurious Radiated Emission Above 1 GHz

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, 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 emission levels were compared to the requirement of Section 15.249.

In the frequency range 1-2.9 GHz, a computerized EMI receiver complying to CISPR 16 requirements and a High Pass Filter were used. The test distance was 3 meters.

In the frequency range 2.9-9.5 GHz, a spectrum analyzer including a low noise amplifier was used. The test distance was 3 meters. During peak measurements, the I.F. bandwidth was 1 MHz, and video bandwidth 3 MHz. During average measurements, the I.F. bandwidth was 1 MHz and video bandwidth was 100 Hz.

The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization.

The configuration tested is shown in Figure 2.

8.2 Test Data

JUDGEMENT: Passed by 2.7 dB

The margin between the emission level and the specification limit is 2.7 dB in the worst case at the frequency of 1832.00 MHz, vertical polarization.

The EUT met the requirements of the F.C.C. Part 15, Subpart C Section 15.249, specification.

The details of the highest emissions are given in Figure 10 to Figure 11.

TEST PERSONNEL:

Tester Signature: _____ Date: 20.04.06

Typed/Printed Name: E. Pitt

Spurious Radiated Emission Above 1 GHz

E.U.T Description	DC Radio Controller
Model Number	10,001
Serial Number:	516415

Specification: F.C.C., Part 15, Subpart C, 15.249

Antenna Polarization: Horizontal/Vertical

Frequency range: 1.0 GHz to 9.5 GHz

Test Distance: 3 meters

Detector: Peak

Freq. (MHz)	Peak Reading (dBµV/m)	Polarization (H/L)	Peak. Specification (dB µV/m)	Peak. Margin (dB)
1832.00	53.9**	H	74.0	-20.1
2748.00	53.2**	H	74.0	-20.8
3664.00	59.2*	H	74.0	-14.8
4580.00	54.8*	H	74.0	-19.2
1832.00	55.6**	V	74.0	-18.4
2748.00	46.3**	V	74.0	-27.7
3664.00	53.5*	V	74.0	-20.5
4580.00	46.3*	V	74.0	-27.7
5496.00	54.8*	V	74.0	-19.2

Figure 10. Spurious Radiated Emission. Antenna Polarization: HORIZONTAL/Vertical. Detector: Peak

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.

"Peak Reading" includes correction factor.

* "Correction Factor" = Antenna Factor + Cable Loss- Preamplifier Gain

** "Correction Factor" = Antenna Factor + Cable Loss

Spurious Radiated Emission Above 1 GHz

E.U.T Description	DC Radio Controller
Model Number	10,001
Serial Number:	516415

Specification: F.C.C., Part 15, Subpart C, 15.249

Antenna Polarization: Horizontal/Vertical

Frequency range: 1.0 GHz to 9.5 GHz

Test Distance: 3 meters

Detector: Average

Freq. (MHz)	Average Result (dBµV/m)	Polarization (H/L)	Average Specification (dB µV/m)	Average Margin (dB)
1832.00	49.7**	H	54.0	-4.3
2748.00	47.5**	H	54.0	-6.5
3664.00	49.6*	H	54.0	-4.4
4580.00	45.1*	H	54.0	-8.9
1832.00	51.3**	V	54.0	-2.7
2748.00	41.6**	V	54.0	-12.4
3664.00	43.4*	V	54.0	-10.6
4580.00	44.7*	V	54.0	-9.3
5496.00	36.7*	V	54.0	-17.3

Figure 11. Spurious Radiated Emission. Antenna Polarization: HORIZONTAL/VERTICAL. Detector: Average

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.

"Average Reading" includes correction factor.

*"Correction Factor" = Antenna Factor + Cable Loss- Preamplifier Gain

** "Correction Factor" = Antenna Factor + Cable Loss

8.3 Test Instrumentation Used, Spurious Radiated Measurements Above 1 GHz

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
Receiver	HP	85422E	3411A00102	February 22, 2006	1 year
RF Section	HP	85420E	3427A00103	February 22, 2006	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
Printer	HP	ThinkJet2225	2738508357	N/A	N/A
Antenna-Log Periodic	A.H.System	SAS-200/511	253	January 24, 2005	2 year
Low Noise Amplifier	DBS MICROWAVE	LNA-DBS-0411N313	013	October 16, 2005	1 year
Spectrum Analyzer	HP	8592L	3926A01204	February 6, 2006	1 year

9. Band Edge Spectrum

[In Accordance with section 15.249]

9.1 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-metallic table, 0.8 meters above the ground. The configuration tested is shown in Figure 3.

The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization.

During measurements, the IF BW was 120 kHz and VBW was 300 kHz.

9.2 Results table

E.U.T. Description: DC Radio Controller
Model No.: 10,001
Serial Number: 516415
Specification: FCC Part 15, Subpart C (15.249)

Operation Frequency (MHz)	Band Edge Frequency (MHz)	Spectrum Level (dBµV/m)	Specification (dBµV/m)	Margin (dB)
916.0	902.0	34.0	46.0	-12.0
916.0	928.0	35.7	46.0	-10.3

Figure 12 Band Edge Spectrum

JUDGEMENT: Passed by 10.3 dB

TEST PERSONNEL:

Tester Signature: _____ Date: 20.04.06

Typed/Printed Name: E. Pitt

9.3 Test Equipment Used.

Band edge Spectrum

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
Receiver	HP	85422E	3411A00102	February 22, 2006	1 year
RF Section	HP	85420E	3427A00103	February 22, 2006	1 year
Antenna Log Periodic	ARA	LPD-2010/a	1038	October 17, 2005	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
Printer	HP	ThinkJet2225	2738508357	N/A	N/A

Figure 13 Test Equipment Used

10. APPENDIX A - CORRECTION FACTORS

10.1 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".

10.2 Correction factors for CABLE

from EMI receiver to test antenna at 3 meter range.

FREQUENCY (GHz)	CORRECTION FACTOR (dB)
1.0	1.2
2.0	1.6
3.0	2.0
4.0	2.4
5.0	3.0
6.0	3.4
7.0	3.8
8.0	4.2
9.0	4.6
10.0	5.0
12.0	5.8

NOTES:

1. The cable type is RG-8.

2. The overall length of the cable is 10 meters.

10.3 Correction factors for CABLE

from EMI receiver to test antenna

FREQUENCY (MHz)	CORRECTION FACTOR (dB)
10.0	0.2
20.0	0.2
30.0	0.2
40.0	0.2
50.0	0.3
60.0	0.4
70.0	0.4
80.0	0.4
90.0	0.5
100.0	0.5
150.0	0.6
200.0	0.6
250.0	0.7
300.0	0.8
350.0	0.9
400.0	1.0
450.0	1.1
500.0	1.2
600.0	1.3
700.0	1.4
800.0	4.4
900.0	1.5
1000.0	1.5

FREQUENCY (MHz)	CORRECTION FACTOR (dB)
1200.0	1.6
1400.0	1.8
1600.0	2.1
1800.0	2.2
2000.0	2.3
2300.0	2.8
2600.0	2.7
2900.0	3.1

NOTES:

1. The cable type is RG-214.

2. The overall length of the cable is 5.5 meters.

10.4 Correction factors for CABLE

from spectrum analyzer to test antenna above 2.9 GHz

FREQUENCY (GHz)	CORRECTION FACTOR (dB)	FREQUENCY (GHz)	CORRECTION FACTOR (dB)
1.0	1.9	14.0	9.1
2.0	2.7	15.0	9.5
3.0	3.5	16.0	9.9
4.0	4.2	17.0	10.2
5.0	4.9	18.0	10.4
6.0	5.5	19.0	10.7
7.0	6.0	20.0	10.9
8.0	6.5	21.0	11.2
9.0	7.0	22.0	11.6
10.0	7.5	23.0	11.9
11.0	7.9	24.0	12.3
12.0	8.3	25.0	12.6
13.0	8.7	26.0	13.0

NOTES:

1. The cable type is SUCOFLEX 104 E manufactured by SUHNER.

2. The cable is used for measurements above 2.9 GHz.

3. The overall length of the cable is 10 meters.

10.5 Correction factors for CABLE

from EMI receiver to test antenna at 10 meter range.

FREQUENCY (MHz)	CORRECTION FACTOR (dB)
10.0	0.3
20.0	0.8
30.0	0.9
40.0	1.2
50.0	1.4
60.0	1.6
70.0	1.8
80.0	1.9
90.0	2.0
100.0	2.1
150.0	2.6
200.0	3.2
250.0	3.8
300.0	4.2
350.0	4.6
400.0	5.1
450.0	5.3
500.0	5.6
600.0	6.3
700.0	7.0
800.0	7.6
900.0	8.0
1000.0	8.7

FREQUENCY (MHz)	CORRECTION FACTOR (dB)
1200.0	9.8
1400.0	10.0
1600.0	11.3
1800.0	12.2
2000.0	13.1
2300.0	14.5
2600.0	15.9
2900.0	16.4

NOTES:

1. The cable type is RG-214.

2. The overall length of the cable is 34 meters.

3. The above data is located in file 34M10MO.CBL on the disk marked "Radiated Emissions Tests EMI Receiver".

10.6 Correction factors for LOG PERIODIC ANTENNA

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

Distance of 3 meters

FREQUENCY (MHz)	AFE (dB/m)
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

FREQUENCY (MHz)	AFE (dB/m)
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 38M3O.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".*

10.7 Correction factors for BICONICAL ANTENNA

Type BCD-235/B, at 3 meter range

FREQUENCY (MHz)	AFE (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".

10.8 Correction factors for ACTIVE LOOP ANTENNA

Model 6502
S/N 9506-2950

FREQUENCY	Magnetic Antenna Factor	Electric Antenna Factor
(MHz)	(dB)	(dB)
.009	-35.1	16.4
.010	-35.7	15.8
.020	-38.5	13.0
.050	-39.6	11.9
.075	-39.8	11.8
.100	-40.0	11.6
.150	-40.0	11.5
.250	-40.0	11.6
.500	-40.0	11.5
.750	-40.1	11.5
1.000	-39.9	11.7
2.000	-39.5	12.0
3.000	-39.4	12.1
4.000	-39.7	11.9
5.000	-39.7	11.8
10.000	40.2	11.3
15.000	-40.7	10.8
20.000	-40.5	11.0
25.000	-41.3	10.2
30.000	42.3	9.2

10.9 Correction factors for LOG PERIODIC ANTENNA

Type SAS-200/511
at 3 meter range.

FREQUENCY (GHz)	ANTENNA FACTOR (dB)
1.0	24.9
1.5	27.8
2.0	29.9
2.5	31.2
3.0	32.8
3.5	33.6
4.0	34.3
4.5	35.2
5.0	36.2
5.5	36.7
6.0	37.2
6.5	38.1

FREQUENCY (GHz)	ANTENNA FACTOR (dB)
7.0	38.6
7.5	39.2
8.0	39.9
8.5	40.4
9.0	40.8
9.5	41.1
10.0	41.7
10.5	42.4
11.0	42.5
11.5	43.1
12.0	43.4
12.5	44.4
13.0	44.6

NOTES:

1. Antenna serial number is 253.

2. The above lists are located in file number SAS3M0.ANT for a 3 meter range.

3. The files mentioned above are located on the disk marked "Antenna Factors".

10.10 Correction factors for BICONICAL ANTENNA

Type 3109,
1.0 meter range

FREQUENCY (MHz)	AFE (dB/m)
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"

10.11 Correction factors for BICONICAL ANTENNA

Type 3109,
3 meter range

FREQUENCY (MHz)	AFE (dB/m)
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"

11. APPENDIX B - CORRESPONDENCE

Date: 26/09/2005
From: Sid Sanders
To: EMC
Subject: RE: Permissive Change for Galcon DC Radio Controller and DC Radio Programmer
26 September 2005
David,
This is a Class II change and you must re-test the radiated emissions and the bandedge requirements.
Regards,
Sid
-----Original Message-----
From: Emc [mailto:emc@itl.co.il]
Sent: Monday, September 26, 2005 11:02 AM
To: Sid Sanders (E-mail)
Subject: Permissive Change for Galcon DC Radio Controller and DC Radio Programmer
Importance: High
Hi Sid,

1. We hope that Timco has survived the last hurricane and all staff and their families are OK.
2. We were informed by Galcon Galil Control that they are interested in changing the antennas of two of their products that were authorized by TIMCO for FCC ID.
3. The products are:
    1. DC Radio Controller FCC ID: SZ810001
    2. DC Radio Programmer FCC ID: SZ810000
4. Questions:
    1. Is this a Permissive Change Class II?
    2. If so, which tests need to be repeated?
    3. If this is only a Permissive Change Class I, what tests need to be performed?
5. Shaike (EMC Laboratory Manger) is on vacation for the next two weeks so I have to submit the questions.

Thank you for your assistance
Regards
David Shidlowsky
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