FCC PART 15, SUBPART B and C
TEST REPORT

for

TIMER CONSOLE

MODEL: POLEGRO

Prepared for

FARMTEK, INC.
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WYLIE, TEXAS 75098

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DATE: DECEMBER 7, 2004

	REPORT BODY	APPENDICES					TOTAL
		A	***B***	***C***	***D***	***E***	
PAGES	16	2	2	2	20	19	**61**

TABLE OF CONTENTS

LIST OF APPENDICES

APPENDIX	TITLE
A	Laboratory Recognitions
B	Modifications to the EUT
C	Additional Models Covered Under This Report
D	Diagrams, Charts, and Photos • Test Setup Diagrams • Radiated Emissions Photos • Antenna and Effective Gain Factors
E	Data Sheets

LIST OF FIGURES

FIGURE	TITLE
1	Plot Map and Layout of the 3 Meter Radiated Test Site
2	Plot Map And Layout of the 10 Meter Radiated Test Site

GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced without the written permission of Compatible Electronics, unless done so in full.

This report must not be used to claim product endorsement by NVLAP, NIST or any other agency of the U.S. Government.

Device Tested:	Timer Console Model: Polegro S/N: N/A
Product Description:	See Expository Statement
Modifications:	The EUT was modified in order to meet the specifications. Please see the list located in Appendix B.
Manufacturer:	FarmTek, Inc. 1000-D Highway 78 North Wylie, Texas 75098
Test Dates:	December 2 and 3, 2004
Test Specifications:	EMI requirements CFR Title 47, Part 15 Subpart B; and Subpart C, Sections 15.205, 15207, 15.209 and 15.249
Test Procedure:	ANSI C63.4: 2003
Test Deviations:	The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz - 30 MHz	This test was not performed because the EUT operates on 4 “AA” batteries only and cannot be plugged into the AC public mains.
2	Radiated RF Emissions, 10 kHz - 9300 MHz	Complies with the **Class A** limits of CFR Title 47, Part 15, Subpart B; and the limits of Subpart C, sections 15.205, 15.209, and 15.249.

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Timer Console Model: Polegro. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 2003. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the **Class A** specification limits defined by CFR Title 47, Part 15, Subpart B; and the limits defined in Subpart C, sections 15.205, 15.207, 15.209, and 15.249.

2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI tests described herein were performed at the test facility of Compatible Electronics, 114 Olinda Drive, Brea, California 92823.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

FarmTek, Inc.

Mike Douglas President

Compatible Electronics, Inc.

Kyle Fujimoto Test Engineer
Michael Christensen Lab Manager

2.4 Date Test Sample was Received

The test sample was received on December 1, 2004.

2.5 Disposition of the Test Sample

The sample has not been returned to FarmTek, Inc. as of the date of this report.

2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network
LCD	Liquid Crystal Display

3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this EMI Test Report.

SPEC	TITLE
CFR Title 47, Part 15	FCC Rules – Radio frequency devices (including digital devices)
ANSI C63.4 2003	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description Of Test Configuration - EMI

Setup and operation of the equipment under test.

Specifics of the EUT and Peripherals Tested

For the Transmit Portion: The Timer Console Model: Polegro (EUT) was connected to a 47 ohm termination, 600 ohm termination, and a printer via its input, horn, and output ports, respectively. The EUT was continuously transmitting via a special command.

For the Receive Portion: The Timer Console Model: Polegro (EUT) was connected to a 47 ohm termination, 600 ohm termination, and a printer via its input, horn, and output ports, respectively. The EUT was continuously receiving via special command.

For the Digital Portion: The Timer Console Model: Polegro (EUT) was connected to a 47 ohm termination, 600 ohm termination, and a printer via its input, horn, and output ports, respectively. The EUT was continuously keeping time on the LCD. Note: the emissions were also verified to insure that they did not go higher when the timer was stopped, which caused the printer to print out the time shown on the LCD.

The EUT during the Transmit portion of the test was investigated for emissions to the limits of 15.209 and 15.249.

The EUT during the Receive portion of the test was investigated for emissions to the **Class B** limits CFR Title 47, Part 15, Subpart B.

The EUT during the Digital portion of the test was investigated for emissions to the **Class A** limits CFR Title 47, Part 15, Subpart B.

It was verified during the Transmit and Receive portions that any emission over the 15.209, 15.249 and/or **Class B** limit of CFR Title 47, Part 15, Subpart B was from the Digital portion itself. This was accomplished by turning off the Transmit and/or Receive portion and verifying the emission did not go lower. If the emission did not go lower, it was determined to be from the Digital portion itself.

The final radiated data was taken in the modes described above. Please see Appendix E for the data sheets.

4.1.1 Cable Construction and Termination

Cable 1 This is a 1.5 meter cable connecting the printer to the EUT. It has a 1/8 inch metallic connector at the EUT end and is hard wired into the printer. The cable was bundled to a length of 1 meter.

Cable 2 This is a 2 meter unshielded cable connecting the EUT to a 600 ohm termination. It has a 1/8 inch metallic connector at the EUT end and is hard wired at the other end. The cable was bundled to a length of 40 centimeters.

Cable 3 This is a 1 meter unshielded cable connecting the EUT to a 47 ohm termination. It has a 1/8 inch metallic connector at the EUT end and is hard wired at the other end. The cable was bundled to a length of 40 centimeters.

Cable 4 This is a 2 meter unshielded cable connecting the AC Adapter to the printer. It has a 1/8 inch power connector at the printer end and is hard wired at the other end.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
TIMER CONSOLE (EUT)	FARMTEK, INC.	POLEGRO	N/A	**NWNMI04X**
PRINTER	WEIGHTRONIX	P/N: 9509-13723	E6040323	**N/A**
AC ADPATER FOR PRINTER	N/A	P/N: A48W091500-14/1	N/A	**DoC**

5.2 EMI Test Equipment (Part 1)

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
Radiate Emissions Data Capture Program	Compatible Electronics	2.0	N/A	N/A	N/A
Emissions Program	Compatible Electronics	2.3 (SR19)	N/A	N/A	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08768	June 24, 2004	1 Year
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	3701A22262	June 24, 2004	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650A	2811A01363	June 24, 2004	1 Year
EMI Receiver	Rohde & Schwarz	ESIB40	100172	October 28, 2004	1 Year
Preamplifier	Com-Power	PA-102	1017	January 6, 2004	1 Year
Biconical Antenna	Com Power	AB-900	15227	April 21, 2004	1 Year
Log Periodic Antenna	Com Power	AL-100	16203	February 18, 2004	1 Year
Antenna Mast	Com-Power	AM-100	N/A	N/A	N/A
Turntable	Com-Power	TT-100	N/A	N/A	N/A
Computer	Hewlett Packard	4530	US91912319	N/A	N/A
Monitor	Hewlett Packard	D5258A	TW74500641	N/A	N/A
Loop Antenna	Com-Power	AL-130	17089	September 4, 2004	1 Year
Horn Antenna	Antenna Research	DRG-118/A	1053	January 16, 2004	1 Year
Microwave Preamplifier	Com-Power	PA-122	25195	August 19, 2004	1 Year

5.3 EMI Test Equipment (Part 2)

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
Radiate Emissions Data Capture Program	Compatible Electronics	2.0	N/A	N/A	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08784	June 16, 2004	1 Year
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	3701A22279	June 16, 2004	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650A	2430A00424	June 16, 2004	1 Year
Preamplifier	Com Power	PA-103	1582	March 11, 2004	1 Year
Biconical Antenna	Com Power	AB-900	15226	April 21, 2004	1 Year
Log Periodic Antenna	Com Power	AL-100	16202	February 18, 2004	1 Year
Antenna Mast	Com-Power	AM-100	N/A	N/A	N/A
Turntable	Com-Power	TT-100	N/A	N/A	N/A
Computer	Hewlett Packard	4530	US91912319	N/A	N/A
Monitor	Hewlett Packard	D5258A	TW74500641	N/A	N/A
Horn Antenna	Com Power	AH-118	10073	July 27, 2004	1 Year
Microwave Preamplifier	Com-Power	PA-122	25196	March 4, 2004	1 Year

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and 7.1 of this report for EMI test location.

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was not grounded.

7. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

7.1 Conducted Emissions Test

The spectrum analyzer was used as a measuring meter. The data was collected with the spectrum analyzer in the peak detect mode with the "Max Hold" feature activated. The quasi-peak was used only where indicated in the data sheets. A 10 dB attenuation pad was used for the protection of the spectrum analyzer input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the spectrum analyzer. The output of the second LISN was terminated by a 50 ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4: 2003. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by the Compatible Electronics conducted emissions software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The final qualification data is located in Appendix E.

Test Results:

This test was not performed because the EUT operates on 4 "AA" batteries only and cannot be plugged into the AC public mains.

7.2 Radiated Emissions (Spurious and Harmonics) Test

The spectrum analyzer was used as a measuring meter along with the quasi-peak adapter. Amplifiers were used to increase the sensitivity of the instrument. The Com-Power Preamplifier Model: PA-102 was used for frequencies from 30 MHz to 1 GHz, and the Com-Power Microwave Preamplifier Model: PA-122 was used for frequencies from 1 GHz to 18 GHz. The spectrum analyzer was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer records the highest measured reading over all the sweeps.

The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
9 kHz to 150 kHz	200 Hz	Active Loop Antenna
150 kHz to 30 MHz	9 kHz	Active Loop Antenna
30 MHz to 300 MHz	120 kHz	Biconical Antenna
300 MHz to 1 GHz	120 kHz	Log Periodic Antenna
1 GHz to 9.3 GHz	1 MHz	Horn Antenna

The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4: 2003. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results. The loop antenna was also rotated in the horizontal and vertical axis in order to ensure accurate results.

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 3 meter test distance to obtain final test data for the Transmitter portion and Receiver portion. The EUT was tested at a 10 meter test distance to obtain final test data for the Digital portion. The final qualification data sheets are located in Appendix E.

8. CONCLUSIONS

The Timer Console Model: Polegro meets all of the **Class A** specification limits defined in CFR Title 47, Part 15, Subpart B; and the specification limits of Subpart C, sections 15.205, 15.209, and 15.249.

APPENDIX A

LABORATORY RECOGNITIONS

LABORATORY RECOGNITIONS

Compatible Electronics has the following agency accreditations:

National Voluntary Laboratory Accreditation Program - Lab Code: 200528-0

Voluntary Control Council for Interference - Registration Numbers: R-983, C-1026, R-984 and C-1027

Bureau of Standards and Metrology Inspection - Reference Number: SL2-IN-E-1031

Conformity Assessment Body for the EMC Directive Under the US/EU MRA Appointed by NIST

Compatible Electronics is recognized or on file with the following agencies:

Federal Communications Commission

Industry Canada

Radio-Frequency Technologies (Competent Body)

APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC Class A (digital portion) specifications:

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

Modifications:

Added a ferrite with 1 ½ turns (Fair-Rite P/N: 0431667281) to each cable at the EUT end.

APPENDIX C

ADDITIONAL MODELS COVERED UNDER THIS REPORT

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Timer Console
Model: Polegro
S/N: N/A

There are no additional models covered under this report.

APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

FIGURE 1: PLOT MAP AND LAYOUT OF THE 3 METER RADIATED TEST SITE

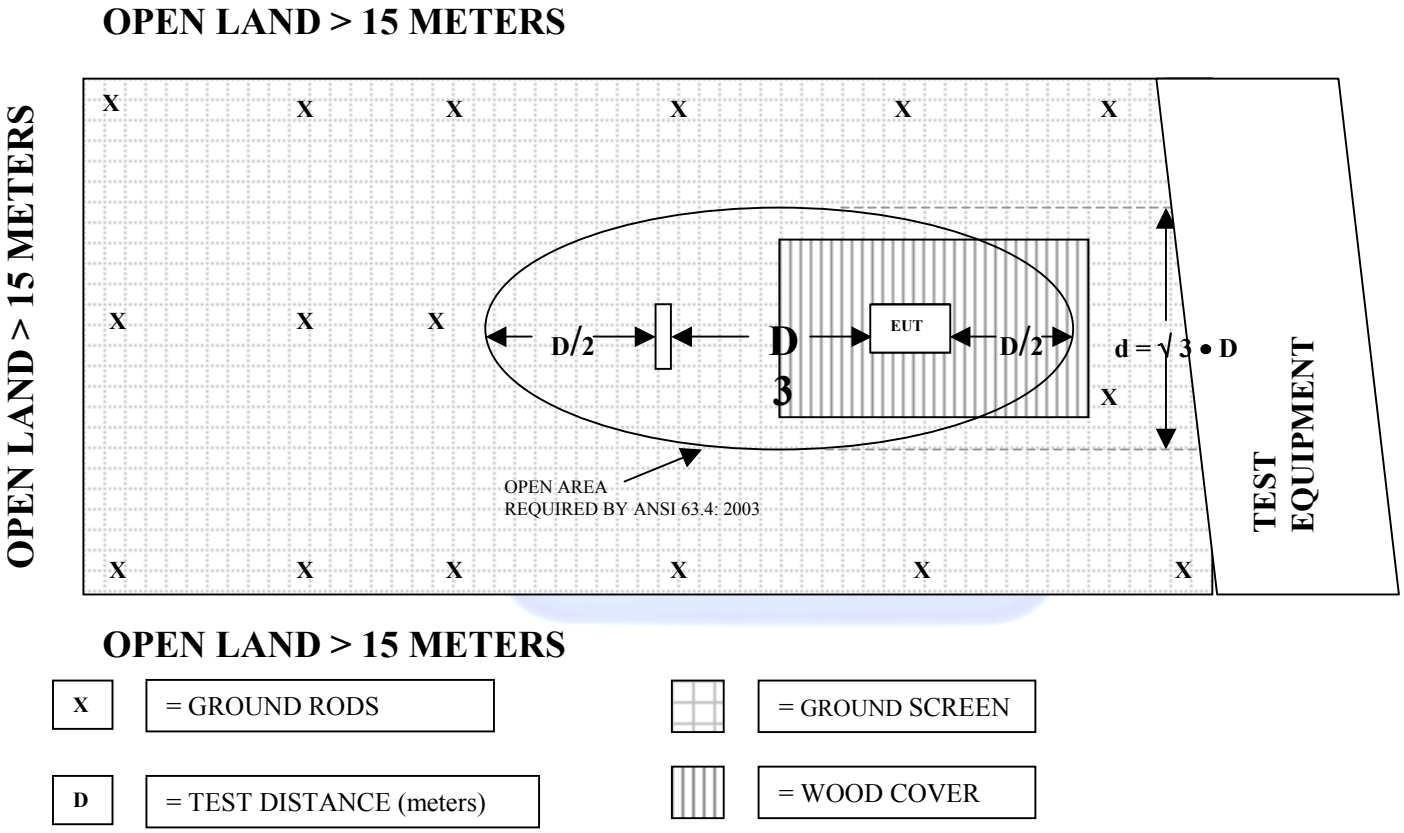
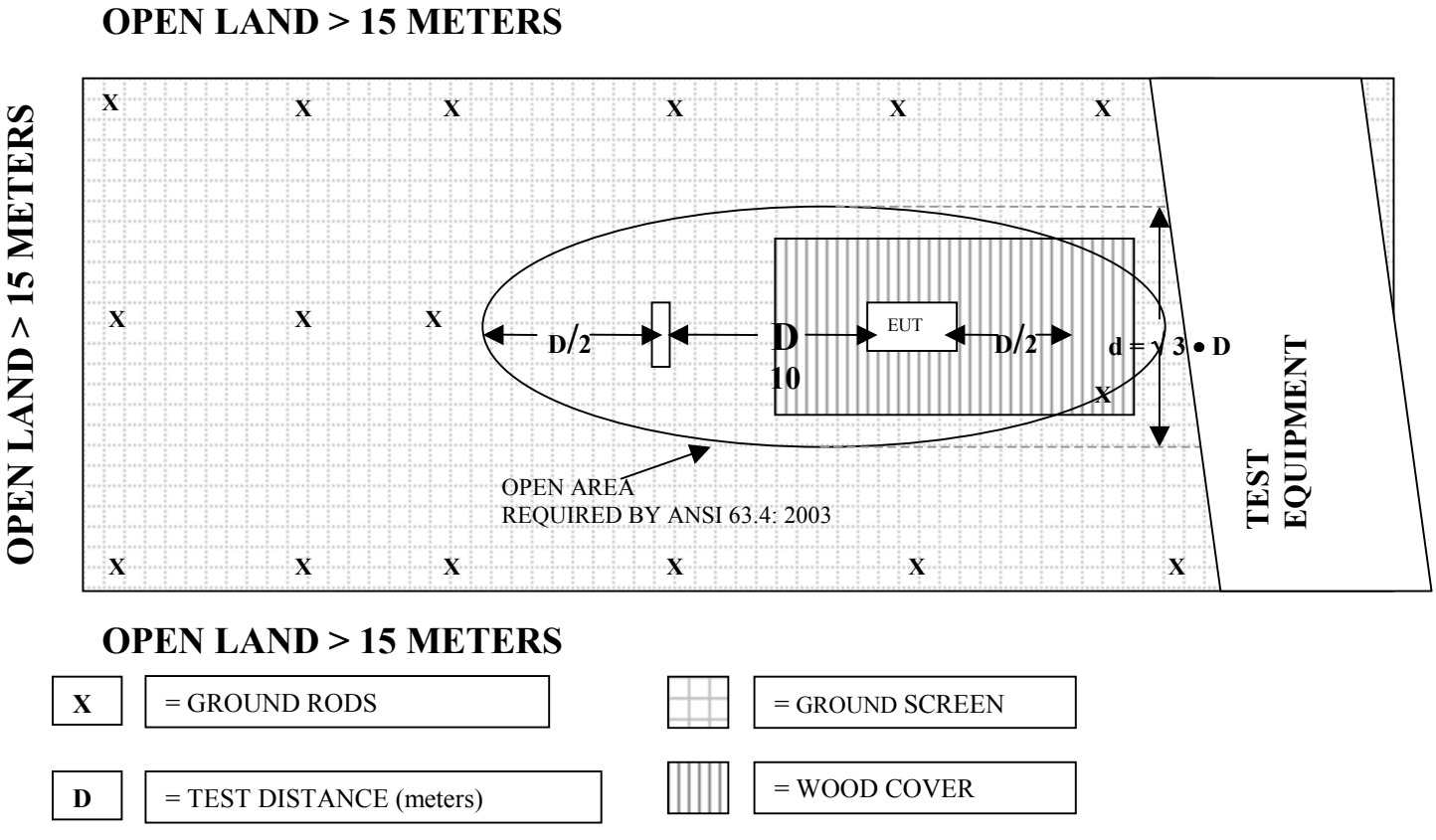


FIGURE 2: PLOT MAP AND LAYOUT OF THE 10 METER RADIATED TEST SITE



COM-POWER AB-900

BICONICAL ANTENNA

S/N: 15227

CALIBRATION DATE: APRIL 21, 2004

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	11.20	120	12.50
35	10.90	125	12.90
40	11.40	140	12.40
45	8.90	150	12.10
50	11.40	160	12.40
60	10.30	175	15.80
70	8.20	180	15.70
80	6.00	200	17.40
90	7.60	250	14.60
100	10.50	300	19.50

COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16203

CALIBRATION DATE: FEBRUARY 18, 2004

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	13.00	700	19.40
400	15.10	800	21.30
500	16.70	900	20.70
600	18.70	1000	22.60

COM-POWER PA-102

PREAMPLIFIER

S/N: 1017

CALIBRATION DATE: JANUARY 6, 2004

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	37.8	300	37.6
40	37.5	350	37.5
50	37.7	400	37.5
60	37.5	450	37.0
70	37.5	500	37.1
80	37.5	550	37.3
90	37.5	600	37.1
100	37.5	650	37.4
125	37.8	700	37.1
150	37.5	750	37.1
175	37.5	800	36.8
200	37.6	850	36.2
225	37.6	900	36.7
250	37.5	950	36.2
275	37.6	1000	35.3

COM-POWER PA-122

MICROWAVE PREAMPLIFIER

S/N: 25195

CALIBRATION DATE: AUGUST 19, 2004

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	30.50	6.0	30.57
1.1	30.24	6.5	30.39
1.2	30.44	7.0	30.08
1.3	30.38	7.5	29.92
1.4	30.11	8.0	28.88
1.5	29.91	8.5	28.08
1.6	29.74	9.0	28.08
1.7	30.26	9.5	29.11
1.8	30.41	10.0	30.21
1.9	30.19	11.0	29.00
2.0	30.37	12.0	29.10
2.5	30.69	13.0	29.77
3.0	31.63	14.0	28.67
3.5	31.61	15.0	29.72
4.0	31.46	16.0	30.54
4.5	31.45	17.0	30.05
5.0	31.33	18.0	28.47
5.5	31.15		

ANTENNA RESEARCH DRG-118/A

HORN ANTENNA

S/N: 1053

CALIBRATION DATE: JANUARY 16, 2004

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	24.4	10.0	38.7
1.5	25.2	10.5	39.0
2.0	28.2	11.0	38.9
2.5	28.5	11.5	41.3
3.0	30.1	12.0	40.5
3.5	31.0	12.5	40.0
4.0	31.2	13.0	40.2
4.5	31.9	13.5	40.5
5.0	33.2	14.0	41.6
5.5	33.7	14.5	44.8
6.0	34.3	15.0	41.4
6.5	35.0	15.5	39.2
7.0	36.7	16.0	39.4
7.5	37.3	16.5	40.9
8.0	37.1	17.0	42.6
8.5	37.3	17.5	45.1
9.0	37.7	18.0	41.7
9.5	38.6		

COM-POWER AL-130

LOOP ANTENNA

S/N: 17089

CALIBRATION DATE: SEPTEMBER 3, 2004

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-40.8	10.7
0.01	-40.9	10.6
0.02	-41.8	9.7
0.05	-42.0	9.5
0.07	-41.5	10.0
0.1	-41.7	9.8
0.2	-44.1	7.4
0.3	-41.6	9.9
0.5	-41.5	10.0
0.7	-41.4	10.1
1	-41.0	10.5
2	-40.6	10.9
3	-40.8	10.7
4	-41.0	10.5
5	-40.4	11.1
10	-40.7	10.8
15	-41.6	9.9
20	-41.3	10.2
25	-43.0	8.5
30	-42.6	8.9

COM-POWER AB-900

BICONICAL ANTENNA

S/N: 15226

CALIBRATION DATE: APRIL 21, 2004

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	11.00	120	13.20
35	10.80	125	13.30
40	11.20	140	12.50
45	9.00	150	12.10
50	11.40	160	12.80
60	10.30	175	15.60
70	8.10	180	15.70
80	5.80	200	16.40
90	7.80	250	14.90
100	11.10	300	24.60

COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16202

CALIBRATION DATE: FEBRUARY 18, 2004

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	12.90	700	19.60
400	14.40	800	21.80
500	17.40	900	20.50
600	18.90	1000	22.70

COM-POWER PA-103

PREAMPLIFIER

S/N: 1582

CALIBRATION DATE: MARCH 11, 2004

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	32.4	300	32.3
40	32.4	350	32.2
50	32.4	400	32.2
60	32.5	450	32.0
70	32.4	500	32.0
80	32.3	550	31.8
90	32.3	600	31.7
100	32.3	650	31.7
125	32.4	700	31.7
150	32.2	750	31.9
175	32.4	800	31.4
200	32.4	850	31.4
225	32.5	900	31.0
250	32.3	950	31.4
275	32.1	1000	31.4

COM-POWER PA-122

MICROWAVE PREAMPLIFIER

S/N: 25196

CALIBRATION DATE: MARCH 4, 2004

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	32.10	6.0	28.90
1.1	32.00	6.5	29.30
1.2	31.80	7.0	29.70
1.3	31.60	7.5	29.80
1.4	31.50	8.0	29.90
1.5	31.40	8.5	30.20
1.6	31.20	9.0	30.30
1.7	31.00	9.5	29.90
1.8	30.80	10.0	29.30
1.9	30.70	11.0	28.50
2.0	30.50	12.0	30.50
2.5	30.00	13.0	31.10
3.0	29.70	14.0	29.90
3.5	29.20	15.0	29.80
4.0	28.60	16.0	29.10
4.5	28.40	17.0	28.00
5.0	28.30	18.0	26.00
5.5	28.50		

COM POWER AH-118

HORN ANTENNA

S/N: 10073

CALIBRATION DATE: JULY 27, 2004

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	25.3	10.0	39.8
1.5	28.3	10.5	38.6
2.0	31.5	11.0	38.5
2.5	31.2	11.5	40.4
3.0	30.4	12.0	42.0
3.5	30.5	12.5	41.7
4.0	30.9	13.0	41.9
4.5	32.0	13.5	43.7
5.0	34.1	14.0	45.5
5.5	33.7	14.5	45.8
6.0	34.2	15.0	40.5
6.5	35.1	15.5	41.8
7.0	37.1	16.0	41.5
7.5	40.4	16.5	40.2
8.0	39.8	17.0	43.3
8.5	38.4	17.5	46.6
9.0	37.5	18.0	47.1
9.5	42.4		

FRONT VIEW

FARMTEK, INC.
TIMER CONSOLE
MODEL: Polegro
FCC SUBPART B AND FCC SUBPART C – RADIATED EMISSIONS – 12-02-04 and 12-03-04

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

FARMTEK, INC.
TIMER CONSOLE
MODEL: Polegro
FCC SUBPART B AND FCC SUBPART C – RADIATED EMISSIONS – 12-02-04 and 12-03-04

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

FRONT VIEW

FARMTEK, INC.
TIMER CONSOLE
MODEL: Polegro
FCC SUBPART B AND FCC SUBPART C – RADIATED EMISSIONS – 12-03-04

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

FARMTEK, INC.
TIMER CONSOLE
MODEL: Polegro
FCC SUBPART B AND FCC SUBPART C – RADIATED EMISSIONS – 12-03-04

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

FRONT VIEW

FARMTEK, INC.
TIMER CONSOLE
MODEL: Polegro
FCC SUBPART B – RADIATED EMISSIONS – DIGITAL PORTION – 12-03-04

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

FARMTEK, INC.
TIMER CONSOLE
MODEL: Polegro
FCC SUBPART B – RADIATED EMISSIONS – DIGITAL PORTION – 12-03-04

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS

DATA SHEETS

FCC 15.249

Farmtek, Inc. Dates: 12/02/04 and 12/03/04
Timer Console Lab: B
Model: Polegro Tested By: Kyle Fujimoto
Configuration: Continuous Transmit Mode

Low Channel

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
903.37	87.31	V	94	-6.69	Peak	1.42	180	
1806.6	45.24	V	74	-28.76	Peak	2.51	180	
1806.6	44.82	V	54	-9.18	Avg	2.51	180	
2709.9	45.2	V	74	-28.8	Peak	1.97	225	
2709.9	40.44	V	54	-13.56	Avg	1.97	225	
3613.2	41.03	V	74	-32.97	Peak	1.82	225	
3613.2	35.11	V	54	-18.89	Avg	1.82	225	
4516.5		V	74	-74	Peak			No Emission
4516.5		V	54	-54	Avg			Detected
5419.8		V	74	-74	Peak			No Emission
5419.8		V	54	-54	Avg			Detected
6323.1		V	74	-74	Peak			No Emission
6323.1		V	54	-54	Avg			Detected
7226.4		V	74	-74	Peak			No Emission
7226.4		V	54	-54	Avg			Detected
8129.7		V	74	-74	Peak			No Emission
8129.7		V	54	-54	Avg			Detected
9033		V	74	-74	Peak			No Emission
9033		V	54	-54	Avg			Detected

FCC 15.249

Farmtek, Inc. Dates: 12/02/04 and 12/03/04
Timer Console Lab: B
Model: Polegro Tested By: Kyle Fujimoto
Configuration: Continuous Transmit Mode

Low Channel

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
903.37	82.62	H	94	-11.38	Peak	1.42	180	
1806.6	42.39	H	74	-31.61	Peak	2.51	225	
1806.6	37.21	H	54	-16.79	Avg	2.51	225	
2709.9	43.29	H	74	-30.71	Peak	2.95	180	
2709.9	38.63	H	54	-15.37	Avg	2.95	180	
3613.2	43.2	H	74	-30.8	Peak	1.73	315	
3613.2	28.74	H	54	-25.26	Avg	1.73	315	
4516.5	41.4	H	74	-32.6	Peak	1.73	270	
4516.5	29.21	H	54	-24.79	Avg	1.73	270	
5419.8		H	74	-74	Peak			No Emission
5419.8		H	54	-54	Avg			Detected
6323.1		H	74	-74	Peak			No Emission
6323.1		H	54	-54	Avg			Detected
7226.4		H	74	-74	Peak			No Emission
7226.4		H	54	-54	Avg			Detected
8129.7		H	74	-74	Peak			No Emission
8129.7		H	54	-54	Avg			Detected
9033		H	74	-74	Peak			No Emission
9033		H	54	-54	Avg			Detected

FCC 15.249

Farmtek, Inc. Dates: 12/02/04 and 12/03/04
Timer Console Lab: B
Model: Polegro Tested By: Kyle Fujimoto
Configuration: Continuous Transmit Mode

Middle Channel

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
912.37	88.51	V	94	-5.49	Peak	1.49	180	
1824.6	46.42	V	74	-27.58	Peak	1.26	180	
1824.6	42.5	V	54	-11.5	Avg	1.26	180	
2736.9	48.02	V	74	-25.98	Peak	2.84	180	
2736.9	44.51	V	54	-9.49	Avg	2.84	180	
3649.2	43.51	V	74	-30.49	Peak	1.29	180	
3649.2	29.27	V	54	-24.73	Avg	1.29	180	
4561.5	43.33	V	74	-30.67	Peak	2.05	180	
4561.5	29.84	V	54	-24.16	Avg	2.05	180	
5473.8	45.84	V	74	-28.16	Peak	2.05	225	
5473.8	33.17	V	54	-20.83	Avg	2.05	225	
6386.1	50.66	V	74	-23.34	Peak	2.05	180	
6386.1	36.3	V	54	-17.7	Avg	2.05	180	
7298.4		V	74	-74	Peak			No Emission
7298.4		V	54	-54	Avg			Detected
8210.7		V	74	-74	Peak			No Emission
8210.7		V	54	-54	Avg			Detected
9123		V	74	-74	Peak			No Emission
9123		V	54	-54	Avg			Detected

FCC 15.249

Farmtek, Inc. Dates: 12/02/04 and 12/03/04
Timer Console Lab: B
Model: Polegro Tested By: Kyle Fujimoto
Configuration: Continuous Transmit Mode

Middle Channel

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
912.37	83.71	H	94	-10.29	Peak	1.5	180	
1824.6	43.92	H	74	-30.08	Peak	1.94	180	
1824.6	39.71	H	54	-14.29	Avg	1.94	180	
2736.9	47.78	H	74	-26.22	Peak	2.65	225	
2736.9	43.59	H	54	-10.41	Avg	2.65	225	
3649.2	40.58	H	74	-33.42	Peak	2.65	225	
3649.2	28.91	H	54	-25.09	Avg	2.65	225	
4561.5	42.07	H	74	-31.93	Peak	2.65	225	
4561.5	29.41	H	54	-24.59	Avg	2.65	225	
5473.8		H	74	-74	Peak			No Emission
5473.8		H	54	-54	Avg			Detected
6386.1		H	74	-74	Peak			No Emission
6386.1		H	54	-54	Avg			Detected
7298.4		H	74	-74	Peak			No Emission
7298.4		H	54	-54	Avg			Detected
8210.7		H	74	-74	Peak			No Emission
8210.7		H	54	-54	Avg			Detected
9123		H	74	-74	Peak			No Emission
9123		H	54	-54	Avg			Detected

FCC 15.249

Farmtek, Inc. Dates: 12/02/04 and 12/03/04
Timer Console Lab: B
Model: Polegro Tested By: Kyle Fujimoto
Configuration: Continuous Transmit Mode

High Channel

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
921.37	85.01	V	94	-8.99	Peak	1.42	180	
1842.6	50.12	V	74	-23.88	Peak	2.38	180	
1842.6	48.43	V	54	-5.57	Avg	2.38	180	
2763.9	50.02	V	74	-23.98	Peak	2.82	180	
2763.9	46.76	V	54	-7.24	Avg	2.82	180	
3685.2	41.45	V	74	-32.55	Peak	2.2	135	
3685.2	31.18	V	54	-22.82	Avg	2.2	135	
4606.5	43.21	V	74	-30.79	Peak	1.89	135	
4606.5	30.04	V	54	-23.96	Avg	1.89	135	
5527.8	46.25	V	74	-27.75	Peak	1.63	135	
5527.8	34.62	V	54	-19.38	Avg	1.63	135	
6449.1		V	74	-74	Peak			No Emission
6449.1		V	54	-54	Avg			Detected
7370.4		V	74	-74	Peak			No Emission
7370.4		V	54	-54	Avg			Detected
8291.7		V	74	-74	Peak			No Emission
8291.7		V	54	-54	Avg			Detected
9213		V	74	-74	Peak			No Emission
9213		V	54	-54	Avg			Detected

FCC 15.249

Farmtek, Inc. Dates: 12/02/04 and 12/03/04
Timer Console Lab: B
Model: Polegro Tested By: Kyle Fujimoto
Configuration: Continuous Transmit Mode

High Channel

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
921.37	83.51	H	94	-10.49	Peak	1.42	180	
1842.6	43.42	H	74	-30.58	Peak	2.54	135	
1842.6	39.62	H	54	-14.38	Avg	2.54	135	
2763.9	46.78	H	74	-27.22	Peak	2.21	225	
2763.9	42.5	H	54	-11.5	Avg	2.21	225	
3685.2	42.42	H	74	-31.58	Peak	2.21	225	
3685.2	28.42	H	54	-25.58	Avg	2.21	225	
4606.5	44.31	H	74	-29.69	Peak	2.21	180	
4606.5	29.34	H	54	-24.66	Avg	2.21	180	
5527.8		H	74	-74	Peak			No Emission
5527.8		H	54	-54	Avg			Detected
6449.1		H	74	-74	Peak			No Emission
6449.1		H	54	-54	Avg			Detected
7370.4		H	74	-74	Peak			No Emission
7370.4		H	54	-54	Avg			Detected
8291.7		H	74	-74	Peak			No Emission
8291.7		H	54	-54	Avg			Detected
9213		H	74	-74	Peak			No Emission
9213		H	54	-54	Avg			Detected

FCC 15.249 and FCC Class B0

Farmtek, Inc. Dates: 12/02/04 and 12/03/04

Timer Console Lab: B

Model: Polegro Tested By: Kyle Fujimoto

Configuration: Continuous Transmit Mode

DIgital Portion Above 1 GHz

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Spurious Emissions
								Detected 1 GHz - 9.3 GHz
								for Both Polarizations

FCC Class B

Farmtek, Inc. Dates: 12/02/04 and 12/03/04
Timer Console Lab: B
Model: Polegro Tested By: Kyle Fujimoto
Configuration: Continuous Receive Mode

Low Channel

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
868.704	39.9	V	46	-6.1	Peak	1	180	
1737.4	43.52	V	74	-30.48	Peak	2.08	225	
1737.4	31.75	V	54	-22.25	Avg	2.08	225	
2606.1	45.47	V	74	-28.53	Peak	2.08	135	
2606.1	33.67	V	54	-20.33	Avg	2.08	135	
3474.8	45.33	V	74	-28.67	Peak	1.74	270	
3474.8	33.53	V	54	-20.47	Avg	1.74	270	
4343.5	47.37	V	74	-26.63	Peak	1.74	225	
4343.5	35.35	V	54	-18.65	Avg	1.74	225	

FCC Class B

Farmtek, Inc. Dates: 12/02/04 and 12/03/04
Timer Console Lab: B
Model: Polegro Tested By: Kyle Fujimoto
Configuration: Continuous Receive Mode

Low Channel

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
868.704	39.7	H	46	-6.3	Peak	1	180	
1737.4	30.8	H	74	-43.2	Peak	1.99	0	
1737.4	22.39	H	54	-31.61	Avg	1.99	0	
2606.1	30.54	H	74	-43.46	Peak	2.05	0	
2606.1	23.56	H	54	-30.44	Avg	2.05	0	
3474.8	36.52	H	74	-37.48	Peak	2.06	180	
3474.8	26.54	H	54	-27.46	Avg	2.06	180	
4343.5	36	H	74	-38	Peak	2.15	270	
4343.5	28.6	H	54	-25.4	Avg	2.15	270	

FCC Class B

Farmtek, Inc. Dates: 12/02/04 and 12/03/04
Timer Console Lab: B
Model: Polegro Tested By: Kyle Fujimoto
Configuration: Continuous Receive Mode

Middle Channel

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
877.685	38.95	V	46	-7.05	Peak	1	180	
1755.38	34.81	V	74	-39.19	Peak	1.54	225	
1755.38	22.52	V	54	-31.48	Avg	1.54	225	
2633.07	37.09	V	74	-36.91	Peak	1.55	270	
2633.07	24.94	V	54	-29.06	Avg	1.55	270	
3510.76	40.5	V	74	-33.5	Peak	1.55	225	
3510.76	24.69	V	54	-29.31	Avg	1.55	225	
4388.45	40.92	V	74	-33.08	Peak	1.55	180	
4388.45	28.54	V	54	-25.46	Avg	1.55	180	

FCC Class B

Farmtek, Inc. Dates: 12/02/04 and 12/03/04
Timer Console Lab: B
Model: Polegro Tested By: Kyle Fujimoto
Configuration: Continuous Receive Mode

Middle Channel

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
877.685	38.35	H	46	-7.65	Peak	1	180	
1755.38	35.01	H	74	-38.99	Peak	2.05	225	
1755.38	22.61	H	54	-31.39	Avg	2.05	225	
2633.07	37.59	H	74	-36.41	Peak	2.01	270	
2633.07	25.24	H	54	-28.76	Avg	2.01	270	
3510.76	40.97	H	74	-33.03	Peak	2.12	225	
3510.76	27.77	H	54	-26.23	Avg	2.12	225	
4388.45	40.59	H	74	-33.41	Peak	2.05	225	
4388.45	28.51	H	54	-25.49	Avg	2.05	225	

FCC Class B

Farmtek, Inc. Dates: 12/02/04 and 12/03/04
Timer Console Lab: B
Model: Polegro Tested By: Kyle Fujimoto
Configuration: Continuous Receive Mode

High Channel

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
886.668	42.59	V	46	-3.41	Peak	1	90	
1773.34	33.97	V	74	-40.03	Peak	1.54	270	
1773.34	22.68	V	54	-31.32	Avg	1.54	270	
2660.01	38.03	V	74	-35.97	Peak	1.54	225	
2660.01	25.24	V	54	-28.76	Avg	1.54	225	
3546.68	41.01	V	74	-32.99	Peak	1.54	270	
3546.68	27.77	V	54	-26.23	Avg	1.54	270	
4433.35	40.37	V	74	-33.63	Peak	1.55	315	
4433.35	28.71	V	54	-25.29	Avg	1.55	315	

FCC Class B

Farmtek, Inc. Dates: 12/02/04 and 12/03/04
Timer Console Lab: B
Model: Polegro Tested By: Kyle Fujimoto
Configuration: Continuous Receive Mode

High Channel

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
886.668	39.29	H	46	-6.71	Peak	1	90	
1773.34	35.37	H	74	-38.63	Peak	1.64	225	
1773.34	22.82	H	54	-31.18	Avg	1.64	225	
2660.01	36.25	H	74	-37.75	Peak	1.2	225	
2660.01	25.85	H	54	-28.15	Avg	1.2	225	
3546.68	40.71	H	74	-33.29	Peak	1.65	180	
3546.68	27.84	H	54	-26.16	Avg	1.65	180	
4433.35	41.29	H	74	-32.71	Peak	1.65	315	
4433.35	28.78	H	54	-25.22	Avg	1.65	315	

FCC Class B

Farmtek, Inc. Dates: 12/02/04 and 12/03/04
Timer Console Lab: B
Model: Poelgro Tested By: Kyle Fujimoto
Configuration: Continuous Receive Mode

DIgital Portion (Non-Harmonics) Above 1 GHz

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Spurious Emissions
								Detected 1 GHz - 5 GHz
								for Both Polarizations

Test Location : Compatible Electronics — Page : 1/1
Customer : FarmTek, Inc. — Date : 12/03/2004
Manufacturer : FarmTek, Inc. — Time : 11:17:39
Eut name : Timer Console — Lab : A
Model : Polegro — Test Distance : 3 Meters
Serial # : N/A
Specification : FCC B
Distance correction factor (20 * log(test/spec) : 0.00
Test Mode : Spurious Radiated Emissions (Tx Portion)
10 kHz to 1 GHz - Vert and Horiz. Polarization
With Fair-Rite P/N: 0431167281 on all cables
Tested By: Kyle Fujimoto

Pol	Freq	Rdng	Cable loss	Ant factor	Amp gain	Cor'd rdg = R	Limit = L	Delta R-L
	MHz	dBuV	dB	dB	dB	dBuV	dBuV/m	dB

No Emissions Found for the Transmit Portion of the EUT. Any emission that came from the digital portion was done to Class A, also the transmitter was turned off and any emission from the digital portion was verified to see the amplitude did not go lower.

COMPATIBLE ELECTRONICS

Test Location : Compatible Electronics — Page : 1/1
Customer : FarmTek, Inc. — Date : 12/03/2004
Manufacturer : FarmTek, Inc. — Time : 11:17:39
Eut name : Timer Console — Lab : A
Model : Polegro — Test Distance : 3 Meters
Serial # : N/A
Specification : FCC B
Distance correction factor (20 * log(test/spec) : 0.00
Test Mode : Spurious Radiated Emissions (Tx Portion)
30 MHz to 1 GHz - Vert and Horiz. Polarization
With Fair-Rite P/N: 0431167281 on all cables
Tested By: Kyle Fujimoto

Pol	Freq	Rdng	Cable loss	Ant factor	Amp gain	Cor'd rdg = R	Limit = L	Delta R-L
	MHz	dBuV	dB	dB	dB	dBuV	dBuV/m	dB

No Emissions Found for the Receiver Portion of the EUT. Any emission that came from the digital portion was done to Class A, also the Receiver was turned off and any emission from the digital portion was verified to see the amplitude did not go lower.

COMPATIBLE ELECTRONICS

Test Location : Compatible Electronics — Page : 1/1
Customer : FarmTek, Inc. — Date : 12/03/2004
Manufacturer : FarmTek, Inc. — Time : 9:42:44
Eut name : Timer Console — Lab : A
Model : Polegro — Test Distance : 10 Meters
Serial # : N/A
Specification : FCC Class A
Distance correction factor (20 * log(test/spec) : 0.00
Test Mode : Spurious Radiated Emissions (Digital Portion)
10 kHz to 1 MHz - Vert. and Horiz. Polarization
With Fair-Rite P/N: 0431167281 on all cables
Tested By: Kyle Fujimoto

Pol	Freq	Rdng	Cable loss	Ant factor	Amp gain	Cor'd rdg = R	Limit = L	Delta R-L
	MHz	dBuV	dB	dB	dB	dBuV	dBuV/m	dB
1V	31.358	47.10	1.33	10.94	32.40	26.97	39.10	-12.13
2V	40.205	49.20	1.50	11.10	32.40	29.41	39.10	-9.69
3H	57.203	39.60	1.77	10.59	32.47	19.49	39.10	-19.61
4V	108.506	47.80	2.41	12.04	32.34	29.91	43.50	-13.59
5H	109.810	34.00	2.43	12.18	32.34	16.26	43.50	-27.24
6V	117.064	51.20	2.51	12.91	32.37	34.26	43.50	-9.24
7V	140.711	46.20	2.73	12.47	32.27	29.13	43.50	-14.37
8V	145.086	46.30	2.76	12.29	32.24	29.12	43.50	-14.38
9H	155.620	44.50	2.82	12.50	32.25	27.58	43.50	-15.92
10V	167.987	49.10	2.87	14.32	32.35	33.95	43.50	-9.55
11V	192.760	52.90	3.04	16.16	32.40	39.70	43.50	-3.80
12V	192.760Qp	50.27	3.04	16.16	32.40	37.07	43.50	-6.43
13H	196.396	54.10	3.07	16.28	32.40	41.05	43.50	-2.45
14H	196.396Qp	52.14	3.07	16.28	32.40	39.09	43.50	-4.41
15V	196.500	48.70	3.07	16.28	32.40	35.66	43.50	-7.84
16H	199.816	51.80	3.10	16.39	32.40	38.89	43.50	-4.61
17V	202.200	53.50	3.12	16.33	32.41	40.54	43.50	-2.96
18V	202.205Qp	51.26	3.12	16.33	32.41	38.30	43.50	-5.20
19V	206.700	51.20	3.16	16.18	32.43	38.11	43.50	-5.39
20H	207.870	53.10	3.17	16.14	32.43	39.97	43.50	-3.53
21H	207.871Qp	49.97	3.17	16.14	32.43	36.84	43.50	-6.66
22V	241.489	49.50	3.37	15.13	32.37	35.63	46.40	-10.77
23V	252.851	40.90	3.41	15.30	32.28	27.34	46.40	-19.06
24V	292.940	33.50	3.72	20.18	32.25	25.15	46.40	-21.25
25V	302.342	42.30	3.82	12.94	32.29	26.76	46.40	-19.64
26V	329.933	44.90	3.99	13.40	32.24	30.04	46.40	-16.36
27H	352.000	44.10	4.12	13.73	32.20	29.75	46.40	-16.65
28H	355.600	42.50	4.16	13.79	32.20	28.25	46.40	-18.15
29V	394.493	39.90	4.55	14.33	32.20	26.58	46.40	-19.82
30H	748.906	44.50	6.49	20.71	31.90	39.81	46.40	-6.59