FCC PART 15, SUBPART B and C
TEST REPORT

for

WIRELESS VALVE CONTROLLER

MODEL: WVC-XXX

Prepared for

HUNTER INDUSTRIES, INC.
1940 DIAMOND STREET
SAN MARCOS, CALIFORNIA 92069

Prepared by: _____

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DATE: JANUARY 31, 2003

	REPORT BODY	APPENDICES					TOTAL
		A	***B***	***C***	***D***	***E***	
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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 or any other agency of the U.S. Government.

Device Tested: Wireless Valve Controller
Model: WVC-XXX
S/N: N/A

Product Description: See Expository Statement.

Modifications: The EUT was not modified during the testing.

Manufacturer: Hunter Industries, Inc.
1940 Diamond Street
San Marcos, California 92069

Test Date: December 18, 2002

Test Specifications: EMI requirements
CFR Title 47, Part 15 Subpart B; and Subpart C, Sections 15.205, 15.209, and 15.249

Test Procedure: ANSI C63.4: 1992

Test Deviations: The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 450 kHz - 30 MHz	This test was not performed because the EUT operates on a nine volt battery only and cannot be plugged into the AC public mains.
2	Radiated RF Emissions, 10 kHz - 9300 MHz	Complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and 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 Wireless Valve Controller Model: WVC-XXX. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 1992. 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 B** specification limits defined by CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 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

Hunter Industries, Inc.

Tom Kadien	Senior Electrical Engineer
Peter Woytowitz	Engineering Manager

Compatible Electronics, Inc.

Kyle Fujimoto	Test Engineer
Kirit Ramani	Test Engineer
Michael Christensen	Test Engineer

2.4 Date Test Sample was Received

The test sample was received on December 15, 2002.

2.5 Disposition of the Test Sample

The sample was returned to Hunter Industries, Inc. on January 15, 2003.

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

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 1992	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

The Wireless Valve Controller Model: WVC-XXX-E (EUT) is a battery-operated device that was placed 0.8 meters high on the non-conductive test table. There were four DC latching solenoids connected to the EUT. The antenna is soldered onto the PCB of the EUT. The EUT was continuously transmitting and receiving.

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

4.1.1 Cable Construction and Termination

Cables 1-2 These are 1 meter cables connecting the EUT to the first DC latching solenoid. They are hard wired at each end.

Cables 3-4 These are 1 meter cables connecting the EUT to the second DC latching solenoid. They are hard wired at each end.

Cables 5-7 These are 1 meter cables connecting the EUT to all four latching solenoids. They are hared wired at each end.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
WIRELESS VALVE CONTROLLER (EUT)	HUNTER INDUSTRIES, INC.	WVC-XXX	N/A	**M3UWVC**

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Radiated Emissions Manual Test – Radiated	Compatible Electronics	N/A	N/A	N/A	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08784	June 14, 2002	June 14, 2003
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	3701A22279	June 14, 2002	June 14, 2003
Spectrum Analyzer – Quasi-Peak Adapter	Hewlett Packard	85650A	2430A00424	June 14, 2002	June 14, 2003
Preamplifier	Com Power	PA-102	1017	Dec. 31, 2001	Dec. 31, 2002
Biconical Antenna	Com Power	AB-100	1548	Sept. 19, 2002	Sept. 19, 2003
Log Periodic Antenna	Com Power	AL-100	16089	Oct. 4, 2002	Oct. 4, 2003
Computer	Hewlett Packard	D5251A 888	US74458128	N/A	N/A
Printer	Hewlett Packard	C5886A	SG7CM1P090	N/A	N/A
Monitor	Hewlett Packard	D5258A	DK74889705	N/A	N/A
Loop Antenna	Com-Power	AL-130	17070	June 19, 2002	June 19, 2003
Horn Antenna	Antenna Research	DRG-118/A	1053	Jan. 13, 2002	Jan. 13, 2003
Microwave Preamplifier	Com-Power	PA-122	25195	Jan. 7, 2002	Jan. 7, 2003

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 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 above 1 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: 1992. 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.

Radiated Emissions (Spurious and Harmonics) Test (con't)

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. The final qualification data sheets are located in Appendix E.

8. CONCLUSIONS

The Wireless Valve Controller Model: WVC-XXX meets all of the **Class B** specification limits defined in CFR Title 47, Part 15, Subpart B; and 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 15.249 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.

No modifications were made to the EUT during the testing.

APPENDIX C

ADDITIONAL MODELS COVERED UNDER THIS REPORT

ADDITIONAL MODELS COVERED UNDER THIS REPORT

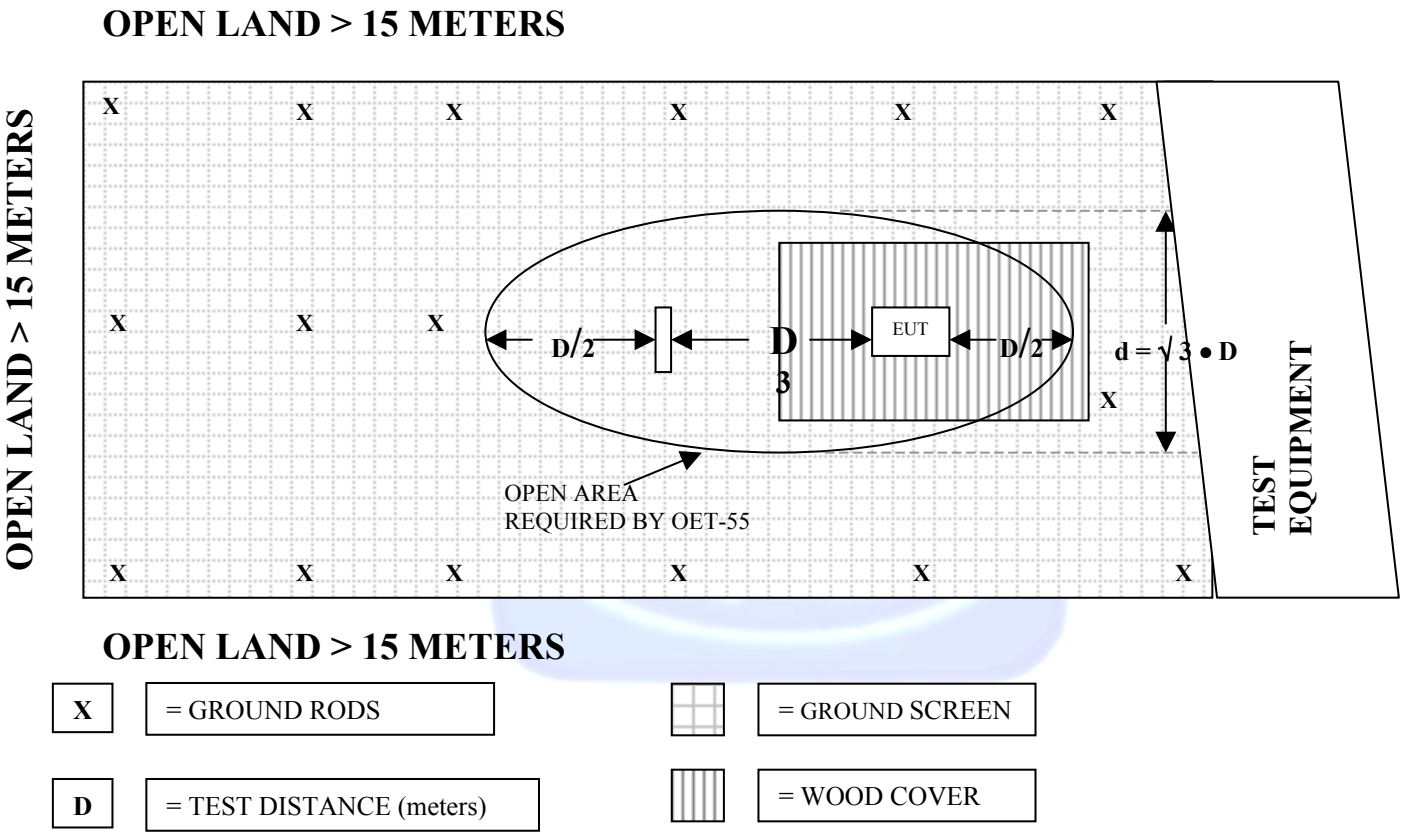
USED FOR THE PRIMARY TEST	Wireless Valve Controller Model: WVC-XXX S/N: N/A

There were no additional models covered under this report.

APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

FIGURE 1: PLOT MAP AND LAYOUT OF RADIATED SITE



COM-POWER AB-100

BICONICAL ANTENNA

S/N: 01548

CALIBRATION DATE: SEPTEMBER 19, 2002

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	14.30	120	10.70
35	14.00	125	11.40
40	13.70	140	12.70
45	12.00	150	12.50
50	11.40	160	12.90
60	9.70	175	14.10
70	8.30	180	14.70
80	7.60	200	15.10
90	7.80	250	16.90
100	8.60	300	19.10

COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16089

CALIBRATION DATE: OCTOBER 4, 2002

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	13.10	700	17.70
350	14.40	750	19.60
400	14.30	800	20.50
450	15.70	850	21.20
500	16.60	900	21.20
550	16.60	950	22.50
600	17.30	1000	24.60
650	18.80		

COM-POWER PA-102

PREAMPLIFIER

S/N: 1017

CALIBRATION DATE: DECEMBER 31, 2001

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	38.5	300	38.5
40	38.5	350	38.4
50	38.5	400	38.2
60	38.5	450	37.8
70	38.5	500	38.0
80	38.5	550	38.2
90	38.3	600	38.2
100	38.3	650	38.0
125	38.6	700	38.1
150	38.5	750	37.7
175	38.4	800	37.4
200	38.5	850	37.9
225	38.5	900	37.2
250	38.4	950	36.8
275	38.4	1000	37.3

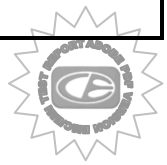
COM-POWER PA-122

MICROWAVE PREAMPLIFIER

S/N: 25195

CALIBRATION DATE: JANUARY 7, 2002

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	33.7	9.5	31.8
1.1	33.4	10.0	32.2
1.2	33.1	11.0	31.4
1.3	33.1	12.0	30.2
1.4	33.2	13.0	32.9
1.5	32.5	14.0	33.9
1.6	32.7	15.0	32.4
1.7	32.3	16.0	32.2
1.8	32.3	17.0	31.5
1.9	31.4	18.0	32.2
2.0	32.8	19.0	31.2
2.5	33.3	20.0	31.3
3.0	31.7	21.0	31.7
3.5	31.6	22.0	29.7
4.0	31.2		
4.5	31.2		
5.0	31.0		
5.5	31.3		
6.0	32.1		
6.5	32.1		
7.0	31.8		
7.5	32.0		
8.0	33.1		
8.5	32.0		
9.0	30.8		



ANTENNA RESEARCH DRG-118/A

HORN ANTENNA

S/N: 1053

CALIBRATION DATE: JANUARY 13, 2002

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	25.5	9.5	39.1
1.5	26.6	10.0	39.7
2.0	29.4	10.5	40.9
2.5	30.4	11.0	40.7
3.0	31.2	11.5	42.4
3.5	32.3	12.0	42.6
4.0	32.9	12.5	42.4
4.5	33.0	13.0	41.5
5.0	34.8	13.5	41.0
5.5	35.2	14.0	40.5
6.0	36.4	14.5	43.6
6.5	36.6	15.0	43.7
7.0	38.8	15.5	43.3
7.5	38.8	16.0	42.8
8.0	38.0	16.5	43.0
8.5	38.1	17.0	42.7
9.0	39.9	17.5	44.0
		18.0	41.8

COM-POWER AL-130

LOOP ANTENNA

S/N: 17070

CALIBRATION DATE: JUNE 19, 2002

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-40.4	11.1
0.01	-40.3	11.2
0.02	-41.2	10.3
0.05	-41.6	9.9
0.07	-41.4	10.1
0.1	-41.7	9.8
0.2	-44.0	7.5
0.3	-41.6	9.9
0.5	-41.3	10.2
0.7	-41.4	10.1
1	-40.9	10.6
2	-40.6	10.9
3	-40.5	11.0
4	-40.8	10.7
5	-40.2	11.3
10	-40.7	10.8
15	-41.4	10.1
20	-41.6	9.9
25	-41.7	9.8
30	-42.9	8.6

FRONT VIEW

HUNTER INDUSTRIES, INC.
WIRELESS VALVE CONTROLLER
MODEL: WVC-XXX
FCC SUBPART B AND C - RADIATED EMISSIONS – 12-17-02 and 12-18-02

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

HUNTER INDUSTRIES, INC.
WIRELESS VALVE CONTROLLER
MODEL: WVC-XXX
FCC SUBPART B AND C - RADIATED EMISSIONS – 12-17-02 and 12-18-02

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	HUNTER INDUSTRIES, INC.	DATE	12/17/02
EUT	WIRELESS VALVE CONTROLLER	DUTY CYCLE	N/A %
MODEL	WVC-XXX	PEAK TO AVG	N/A dB
S/N	N/A	TEST DIST.	3 Meters
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi-Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
921.7500	64.8	QP	H	1.0	0	X	LOW	21.8	5.4	0.0	0.0	0.0	**92.0**	**-2.0**	**94.0**	
921.7500	53.7	QP	H	1.0	0	Y	LOW	21.8	5.4	0.0	0.0	0.0	**80.9**	**-13.1**	**94.0**	
921.7500	59.2	QP	V	1.0	180	X	LOW	21.8	5.4	0.0	0.0	0.0	**86.4**	**-7.6**	**94.0**	
921.7500	64.5	QP	V	1.0	0	Y	LOW	21.8	5.4	0.0	0.0	0.0	**91.7**	**-2.3**	**94.0**	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	HUNTER INDUSTRIES, INC.	DATE	12/17/02
EUT	WIRELESS VALVE CONTROLLER	DUTY CYCLE	N/A %
MODEL	WVC-XXX	PEAK TO AVG	N/A dB
S/N	N/A	TEST DIST.	3 Meters
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi-Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
1843.5000	45.6	A	H	1.0	0	X	LOW	28.5	3.4	31.9	0.0	0.0	**45.6**	**-8.4**	**54.0**	
1843.5000	46.3	A	H	2.0	0	Y	LOW	28.5	3.4	31.9	0.0	0.0	**46.3**	**-7.7**	**54.0**	
1843.5000	48.4	A	V	1.0	0	X	LOW	28.5	3.4	31.9	0.0	0.0	**48.4**	**-5.6**	**54.0**	
1843.5000	48.0	A	V	1.0	0	Y	LOW	28.5	3.4	31.9	0.0	0.0	**48.0**	**-6.0**	**54.0**	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	HUNTER INDUSTRIES, INC.	DATE	12/17/02
EUT	WIRELESS VALVE CONTROLLER	DUTY CYCLE	N/A %
MODEL	WVC-XXX	PEAK TO AVG	N/A dB
S/N	N/A	TEST DIST.	3 Meters
TEST ENGINEER	KYLE FUJIMOTO	LAB	D

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi-Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
2765.2500	44.6	A	H	1.0	0	X	LOW	30.8	4.4	32.5	0.0	0.0	**47.3**	**-6.7**	**54.0**	
2765.2500	41.4	A	H	1.0	0	Y	LOW	30.8	4.4	32.5	0.0	0.0	**44.1**	**-9.9**	**54.0**	
2765.2500	41.7	A	V	1.0	180	X	LOW	30.8	4.4	32.5	0.0	0.0	**44.4**	**-9.6**	**54.0**	
2765.2500	44.8	A	V	2.0	0	Y	LOW	30.8	4.4	32.5	0.0	0.0	**47.5**	**-6.5**	**54.0**	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	**HUNTER INDUSTRIES, INC.**	**DATE**	**12/17/02**
EUT	**WIRELESS VALVE CONTROLLER**	**DUTY CYCLE**	**N/A %**
MODEL	**WVC-XXX**	**PEAK TO AVG**	**N/A dB**
S/N	**N/A**	**TEST DIST.**	**3 Meters**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi-Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
3687.0000	43.1	A	H	2.0	0	X	LOW	32.5	5.1	31.5	0.0	0.0	**49.3**	**-4.7**	**54.0**	
3687.0000	43.3	A	H	1.0	0	Y	LOW	32.5	5.1	31.5	0.0	0.0	**49.5**	**-4.5**	**54.0**	
3687.0000	43.5	A	V	1.0	0	X	LOW	32.5	5.1	31.5	0.0	0.0	**49.7**	**-4.3**	**54.0**	
3687.0000	40.1	A	V	1.0	90	Y	LOW	32.5	5.1	31.5	0.0	0.0	**46.3**	**-7.7**	**54.0**	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	**HUNTER INDUSTRIES, INC.**	**DATE**	**12/17/02**
EUT	**WIRELESS VALVE CONTROLLER**	**DUTY CYCLE**	**N/A %**
MODEL	**WVC-XXX**	**PEAK TO AVG**	**N/A dB**
S/N	**N/A**	**TEST DIST.**	**3 Meters**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi-Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
4608.7500	41.3	A	H	1.0	90	X	LOW	34.4	5.9	31.2	0.0	0.0	**50.4**	**-3.6**	**54.0**	
4608.7500	41.9	A	H	1.0	180	Y	LOW	34.4	5.9	31.2	0.0	0.0	**51.0**	**-3.0**	**54.0**	
4608.7500	39.8	A	V	1.0	180	X	LOW	34.4	5.9	31.2	0.0	0.0	**48.9**	**-5.1**	**54.0**	
4608.7500	40.1	A	V	1.0	90	Y	LOW	34.4	5.9	31.2	0.0	0.0	**49.2**	**-4.8**	**54.0**	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

No Harmonics Nor Emissions Found After the 5th Harmonic

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Test location: Compatible Electronics
Customer : HUNTER INDUSTRIES, INC. Date : 12/17/2002
Manufacturer : HUNTER INDUSTRIES, INC. Time : 11.32
EUT name : WIRELESS VALVE CONTROLLER Model: WPC-XXX
Specification: Fcc_B Test distance: 3.0 mtrs Lab: D
Distance correction factor(20*log(test/spec)) : 0.00
Test Mode : RADIATED SPURIOUS EMISSIONS - TRANSMIT MODE
10 kHz TO 9300 MHz - VERTICAL POLARIZATION
TEMPERATURE 55 DEGREES F., RELATIVE HUMIDITY 75%
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	31.05	44.90	0.72	14.24	38.50	21.36	40.00	-18.64
2V	32.12	43.90	0.74	14.17	38.50	20.32	40.00	-19.68
3V	33.10	44.00	0.76	14.11	38.50	20.38	40.00	-19.62
4V	36.29	50.90	0.83	13.92	38.50	27.15	40.00	-12.85
5V	37.30	52.40	0.85	13.86	38.50	28.61	40.00	-11.39
6V	41.49	53.50	0.93	13.19	38.50	29.12	40.00	-10.88
7V	45.60	45.10	1.01	11.93	38.50	19.54	40.00	-20.46
8V	49.74	47.50	1.09	11.43	38.50	21.53	40.00	-18.47
9V	57.96	39.50	1.18	10.05	38.50	12.23	40.00	-27.77
10V	109.55	44.50	1.68	9.60	38.41	17.36	43.50	-26.14
11V	321.11	33.90	3.28	13.65	38.46	12.38	46.00	-33.62
12V	351.26	38.40	3.41	14.40	38.39	17.81	46.00	-28.19
13V	916.91	43.10	5.34	21.64	37.06	33.01	46.00	-12.99
14V	918.12	42.30	5.36	21.67	37.06	32.28	46.00	-13.72
15V	919.36	43.00	5.39	21.70	37.05	33.05	46.00	-12.95
16V	924.27	45.10	5.49	21.83	37.01	35.41	46.00	-10.59
17V	925.51	43.10	5.51	21.86	37.00	33.48	46.00	-12.52
18V	926.72	50.10	5.53	21.89	36.99	40.54	46.00	-5.46

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Test location: Compatible Electronics
Customer : HUNTER INDUSTRIES, INC. Date : 12/17/2002
Manufacturer : HUNTER INDUSTRIES, INC. Time : 13.32
EUT name : WIRELESS VALVE CONTROLLER Model: WPC-XXX
Specification: Fcc_B Test distance: 3.0 mtrs Lab: D
Distance correction factor(20*log(test/spec)) : 0.00
Test Mode :
RADIATED SPURIOUS EMISSIONS - TRANSMIT MODE
10 kHz TO 9300 MHz - HORIZONTAL POLARIZATION
TEMPERATURE 62 DEGREES F., RELATIVE HUMIDITY 65%
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
1H	31.05	41.10	0.72	14.24	38.50	17.56	40.00	-22.44
2H	32.10	41.80	0.74	14.17	38.50	18.22	40.00	-21.78
3H	33.10	44.10	0.76	14.11	38.50	20.48	40.00	-19.52
4H	36.24	41.20	0.82	13.93	38.50	17.45	40.00	-22.55
5H	37.26	40.10	0.85	13.86	38.50	16.31	40.00	-23.69
6H	41.41	43.80	0.93	13.22	38.50	19.45	40.00	-20.55
7H	45.55	42.70	1.01	11.93	38.50	17.15	40.00	-22.85
8H	49.69	45.90	1.09	11.44	38.50	19.93	40.00	-20.07
9H	57.96	41.00	1.18	10.05	38.50	13.73	40.00	-26.27
10H	916.96	39.90	5.34	21.64	37.06	29.82	46.00	-16.18
11H	918.16	33.70	5.36	21.67	37.05	23.68	46.00	-22.32
12H	919.40	36.00	5.39	21.70	37.04	26.05	46.00	-19.95
13H	924.31	42.60	5.49	21.83	37.01	32.91	46.00	-13.09
14H	925.55	38.70	5.51	21.86	37.00	29.08	46.00	-16.92
15H	926.72	43.70	5.53	21.89	36.99	34.14	46.00	-11.86

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Test location: Compatible Electronics
Customer : HUNTER INDUSTRIES, INC. Date : 12/17/2002
Manufacturer : HUNTER INDUSTRIES, INC. Time : 15.03
EUT name : WIRELESS VALVE CONTROLLER Model: WPC-XXX
Specification: Fcc_B Test distance: 3.0 mtrs Lab: D
Distance correction factor(20*log(test/spec)) : 0.00
Test Mode : RADIATED SPURIOUS EMISSIONS - RECEIVE MODE
10 kHz TO 1000 MHz - VERTICAL POLARIZATION
TEMPERATURE 54 DEGREES F., RELATIVE HUMIDITY 71%
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	32.11	47.00	0.74	14.17	38.50	23.42	40.00	-16.58
2V	33.16	48.30	0.76	14.11	38.50	24.67	40.00	-15.33
3V	36.26	46.20	0.83	13.92	38.50	22.45	40.00	-17.55
4V	37.30	46.20	0.85	13.86	38.50	22.41	40.00	-17.59
5V	41.42	41.70	0.93	13.22	38.50	17.34	40.00	-22.66
6V	44.51	47.60	0.99	12.17	38.50	22.26	40.00	-17.74
7V	45.57	48.20	1.01	11.93	38.50	22.64	40.00	-17.36
8V	48.66	47.90	1.07	11.56	38.50	22.03	40.00	-17.97
9V	49.70	46.70	1.09	11.44	38.50	20.73	40.00	-19.27
10V	59.03	45.20	1.19	9.86	38.50	17.75	40.00	-22.25
11V	61.12	44.40	1.21	9.54	38.50	16.65	40.00	-23.35
12V	62.16	43.50	1.22	9.40	38.50	15.62	40.00	-24.38
13V	66.25	46.50	1.26	8.83	38.50	18.09	40.00	-21.91
14V	70.39	46.90	1.31	8.27	38.50	17.98	40.00	-22.02
15V	74.53	45.10	1.39	7.98	38.50	15.97	40.00	-24.03
16V	120.07	54.20	1.76	10.71	38.54	28.13	43.50	-15.37
17V	160.04	52.00	2.12	12.90	38.46	28.56	43.50	-14.94
18V	360.07	40.70	3.46	14.38	38.36	20.18	46.00	-25.82
19V	368.68	37.10	3.51	14.36	38.33	16.65	46.00	-29.35
20V	398.19	39.60	3.69	14.30	38.21	19.39	46.00	-26.61
21V	921.67	45.40	5.43	21.76	37.03	35.57	46.00	-10.43

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Test location: Compatible Electronics
Customer : HUNTER INDUSTRIES, INC. Date : 12/17/2002
Manufacturer : HUNTER INDUSTRIES, INC. Time : 15.55
EUT name : WIRELESS VALVE CONTROLLER Model: WPC-XXX
Specification: Fcc_B Test distance: 3.0 mtrs Lab: D
Distance correction factor(20*log(test/spec)) : 0.00
Test Mode : RADIATED SPURIOUS EMISSIONS - RECEIVE MODE
10 kHz TO 1000 MHz - HORIZONTAL POLARIZATION
TEMPERATURE 51 DEGREES F., RELATIVE HUMIDITY 81%
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
1H	32.13	45.70	0.74	14.17	38.50	22.11	40.00	-17.89
2H	33.18	46.90	0.76	14.11	38.50	23.27	40.00	-16.73
3H	36.28	40.50	0.83	13.92	38.50	16.75	40.00	-23.25
4H	37.32	44.60	0.85	13.86	38.50	20.81	40.00	-19.19
5H	40.43	41.50	0.91	13.55	38.50	17.46	40.00	-22.54
6H	41.44	43.40	0.93	13.21	38.50	19.04	40.00	-20.96
7H	44.53	46.80	0.99	12.16	38.50	21.45	40.00	-18.55
8H	45.59	43.80	1.01	11.93	38.50	18.24	40.00	-21.76
9H	48.70	51.40	1.07	11.56	38.50	25.53	40.00	-14.47
10H	61.13	39.10	1.21	9.54	38.50	11.35	40.00	-28.65
11H	62.16	40.40	1.22	9.40	38.50	12.52	40.00	-27.48
12H	66.25	42.30	1.26	8.83	38.50	13.89	40.00	-26.11
13H	70.39	41.10	1.31	8.27	38.50	12.18	40.00	-27.82
14H	74.53	37.80	1.39	7.98	38.50	8.67	40.00	-31.33
15H	160.08	45.00	2.12	12.91	38.46	21.57	43.50	-21.93
16H	368.71	37.50	3.51	14.36	38.33	17.05	46.00	-28.95
17H	921.72	42.30	5.43	21.76	37.03	32.47	46.00	-13.53

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Test location: Compatible Electronics
Customer : HUNTER INDUSTRIES, INC. Date : 12/18/2002
Manufacturer : HUNTER INDUSTRIES, INC. Time : 9.55
EUT name : WIRELESS VALVE CONTROLLER Model: WVC
Specification: Fcc_B Test distance: 3.0 mtrs Lab: D
Distance correction factor(20*log(test/spec)) : 0.00
Test Mode : RADIATED SPURIOUS EMISSIONS - RECEIVE MODE
1000 MHz TO 9300 MHz - VERTICAL POLARIZATION
TEMPERATURE 51 DEGREES F., RELATIVE HUMIDITY 68%
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	1843.38	38.10	3.40	28.50	31.90	38.10	54.00	-15.90
2V	2765.07	37.90	4.40	30.80	32.50	40.60	54.00	-13.40
3V	3686.76	38.40	5.10	32.50	31.50	44.50	54.00	-9.50
4V	4608.15	38.00	5.90	34.40	31.20	47.10	54.00	-6.90

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Test location: Compatible Electronics
Customer : HUNTER INDUSTRIES, INC. Date : 12/18/2002
Manufacturer : HUNTER INDUSTRIES, INC. Time : 9.05
EUT name : WIRELESS VALVE CONTROLLER Model: WVC
Specification: Fcc_B Test distance: 3.0 mtrs Lab: D
Distance correction factor(20*log(test/spec)) : 0.00
Test Mode : RADIATED SPURIOUS EMISSIONS - RECEIVE MODE
1000 MHz TO 9300 MHz - HORIZONTAL POLARIZATION
TEMPERATURE 45 DEGREES F., RELATIVE HUMIDITY 80%
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
1H	1843.38	41.30	3.40	28.50	31.90	42.40	54.00	-11.60
2H	2765.07	39.50	4.40	30.80	32.50	42.20	54.00	-11.80
3H	3686.76	40.10	5.10	32.50	31.50	46.20	54.00	-7.80
4H	4608.15	39.00	5.90	34.40	31.20	48.10	54.00	-5.90