



AEGIS LABS INC.

Mobile Approval
Test Report
And Application for Grant of Equipment Authorization

Pertaining To:

EUT	FCC ID:
Turf Guard Wireless Monitoring System MN: Pedestal Repeater Unit	TLMSOIL2

Configuration
Soil Moisture, Salt, and Temperature Sensor

MEASUREMENTS PERFORMED IN ACCORDANCE WITH

Regulatory Standard(s)
47 CFR Part 15, Subpart C Section 15.247
Test Method: ANSI C63.4: 2003 American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz



Certificate Number: 1111.01

APPLICANT:

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Capo Beach, California 92624

Contact(s): Mr. Jason Hill

PREPARED BY:

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Test Report #: JLHLB-050817F
Test Report Revision: None

	REPORT BODY	APPENDICES	TOTAL PAGES
		<i>A</i>	
PAGES	16	42	58

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APPENDICES

A

Test Data



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1.0 CERTIFICATION OF TEST DATA

Aegis Labs, Inc. operates as both a Nevada and California Corporation with no organizational or financial relationship with any company, institution, or private individual.

Testing and engineering functions provided by Aegis Labs are furnished through the use of part-time, full-time or consulting engineers with the appropriate qualifications to carry out their duties. The intended purpose of this test report is to describe the measurement procedure and to determine whether the equipment under test "EUT" complies with both the conducted and radiated limits. Limits for emissions testing are described under Subpart C of Part 15 of the FCC rules.

The data, data evaluation and equipment configuration represented herein are a true and accurate representation of the Equipment Under Test (EUT) under the requirements specified in the emissions standard as described below. The test results contained in this report are only representative of the test sample tested as described in Section 3.0 of this report. Certification of the EUT is required as a prerequisite to marketing as defined in Part 2 of the FCC Rules.

Report Prepared By:

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Aegis Labs, Inc

02/13/06

Date:

Report Reviewed By:

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Aegis Labs, Inc.

02/13/06

Date:

Report Approved By:

Steve J. Kuiper
Quality Assurance Manager
Aegis Labs, Inc.

02/13/06

Date:

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2.0 SUMMARY OF TEST RESULTS

The test results provided within this report indicate that the EUT has been found to be in **COMPLIANCE** with the test specifications based upon the following RF compliance standards:

Pass/Fail determination is based upon the nominal values of the test data.

(902-928 MHz)

EMISSIONS STANDARD			
FCC Part 15 Section	Description	Results	Comments
15.247(a)(1)(i)	The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz	PASSED	902.5 MHz = 160 kHz 915.5 MHz = 157 kHz 927 MHz = 175 kHz
15.247(a)(1)(i)	if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies	PASSED	See Data Sheets
15.247(a)(1)	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz	PASSED	915.5 MHz = 493 kHz
15.247(a)(1)(i)	the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period	PASSED	902.5 MHz = 11.67 ms 915.5 MHz = 11.67 ms 927 MHz = 10.83 ms
15.247(b)(2)	The maximum peak output power of the intentional radiator shall not exceed 1 watt for systems employing at least 50 hopping channels	PASSED	902.5 MHz = 21.00 dBm = 125.89 mW 915.5 MHz = 21.99 dBm = 158.12 mW 927 MHz = 23.50 dBm = 223.87 mW
15.247(c)	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.	PASSED	See Data Sheets
15.247(c)	Radiated emissions, which fall in the restricted bands, as defined in Sec. 15.205(a), must also comply with the radiated emission limits specified in Sec. 15.209(a). All others must be < -20dBc.	PASSED	See Data Sheets
15.207	AC Conducted Emissions	PASSED	See Data Sheets
15.209	Radiated Emissions (30-1000 MHz)	PASSED	See Data Sheets



3.0 ADMINISTRATIVE DATA AND TEST DESCRIPTION

DEVICE TESTED:	ITE Type: Turf Guard Wireless Monitoring System Model Number(s): Pedestal Repeater Unit Serial Number: TGRepeater FCC ID: TLMSOIL2
TEST DATE (S):	August 16- December 13, 2005
DATE EUT RECEIVED:	August 16, 2005
ORIGIN OF TEST SAMPLE(S):	Pre-Production Unit
RESPONSIBLE PARTY:	JLH Labs 35231 Camino Capistrano Capo Beach, California 92624
CLIENT CONTACT:	Mr. Jason Hill
MANUFACTURER:	JLH Labs
TEST LOCATION:	Aegis Labs, Inc. 32231 Trabuco Creek Road Trabuco Canyon, CA 92678 Conducted Site #2 Radiated Site #2
A2LA CERTIFICATE:	1111.01, Valid through February 28, 2006
PURPOSE OF TEST:	To demonstrate compliance with the relevant standards described in Section 2.0 of this report.
TEST(S) PERFORMED:	Refer to Table in Section 2.0 of this report.

All calibration vendors were responsible for certifying Aegis Labs, Inc. test equipment as per the manufacturer's specifications and that the equipment is calibrated using instruments and standards where the accuracy is traceable to the National Institute of Standards and Technology (NIST). Calibration of all test equipment conforms to ANSI/NCSL Z540-1 and ISO 10012-1 and/or ISO/IEC Guide 17025 compliance (Additionally, other pertinent test equipment will carry MIL-STD-45662A). All calibration documents are on file with Aegis Labs, Inc., with copies provided upon request.



4.0 DESCRIPTION OF EUT

4.1 EUT Description

Equipment Under Test (EUT)	
Trade Name:	Turf Guard Wireless Monitoring System
Model Number:	Pedestal Repeater Unit
Frequency Range:	902.5-927 MHz
Type of Transmission:	902-928 MHz FSK
Transfer Rate:	19.2 kbps
Number of Channels:	(902.5-927 MHz)= 50
Modulation Type:	FSK
Antenna Type:	Case Mountable Whip
Antenna Gain (See Note 2):	Linx Technologies @ 902.5-927 MHz = 2.2 dBi
Transmit Output Power:	Please see Appendix A (Data Sheets) for actual output power.
Power Supply:	Alkaline Batteries – In Ground Supplied AC-DC converter 6V output
Number of External Test Ports Exercised:	1 Antenna Port

The Turf Guard Wireless Monitoring System is a wireless soil moisture, temperature and salinity sensor that wirelessly reports sensor readings & above ground configurations that relay data across large areas.

The in-ground devices are buried beneath the turf grass directly in the soil medium. During operation these devices periodically transmit sensor readings in short digital messages. These messages are received by the pedestal repeaters and relayed over a multi-hop mesh network to the master collection point. During operation each node will transmit a sensor reading every 5 minutes. Each node maintains an internal clock in order to remain on the correct frequency hopping schedule. If a node is reset or determines it has lost synchronization, it will search for the correct synchronization channel by transmitting search messages on each channel until a reply is heard or a time limit expires. If a node is out of synch for an excessive period of time, it will reset itself.

NOTE 1: For a more detailed description, please refer to the manufacture's specifications or User's Manual.

NOTE 2: The EUT was tested with a set of antennas. (Refer to the antenna specifications exhibits).

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4.1.1 Channel Number and Frequencies

Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
1	902.5	26	915
2	903	27	915.5
3	903.5	28	916
4	904	29	916.5
5	904.5	30	917
6	905	31	917.5
7	905.5	32	918
8	906	33	918.5
9	906.5	34	919
10	907	35	919.5
11	907.5	36	920
12	908	37	920.5
13	908.5	38	921
14	909	39	921.5
15	909.5	40	922
16	910	41	922.5
17	910.5	42	923
18	911	43	923.5
19	911.5	44	924
20	912	45	924.5
21	912.5	46	925
22	913	47	925.5
23	913.5	48	926
24	914	49	926.5
25	914.5	50	927



4.2 EUT Configuration

The EUT was configured as described in section 4.1 of this test report. Each unit that comprises the EUT system was tested individually. Both the In Ground Unit and Pedestal Repeater Unit were found to comply with the specifications.



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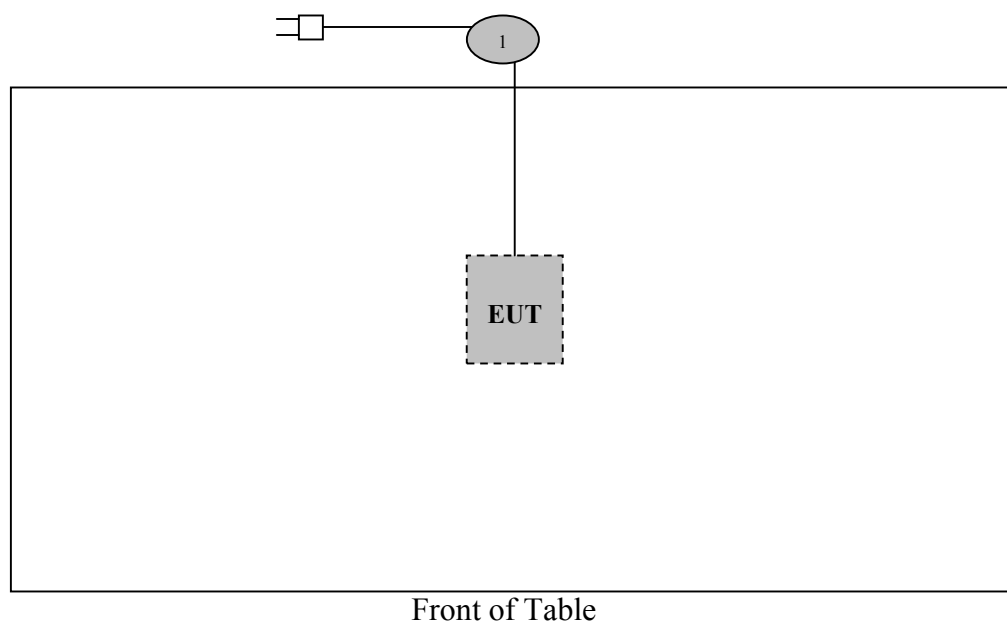
4.3 List of EUT, Sub-Assemblies, and Host Equipment

LIST OF EUT AND SUB-ASSEMBLIES			
Equipment Name	Manufacturer	Model Number	Serial Number
Turf Guard Wireless Monitoring System	JLH Labs	Pedestal Repeater Unit	TGRepeater
EUT Sub-Assemblies			
Antenna	Linx Technologies	ANT-916-PW-QW	N/A

NOTE: All the power cords of the above support equipment are standard non-shielded, 1.8 meters long.



4.4 I/O Cabling Diagram and Description



NOTE: Only the pedestal unit had an external antenna. The In Ground unit has an internal wire antenna.

Cable 1: This is a 1.5-foot generic power cord connecting the EUT to 120VAC. The cable is bundled to a length of one meter.



5.0 TEST EQUIPMENT AND TEST SETUPS

The test equipment settings and functions are selected using the guidance of ANSI C63.4-2003. All test equipment setups and operations during conducted and radiated emissions testing are in accordance with this reference document.

5.1 AC Power Line Conducted Emissions

During conducted emissions measurements, a spectrum analyzer was used as the measuring instrument along with a preselector and quasi-peak detector. A 10 dB attenuation pad was used for the protection of the spectrum analyzer input stage. The conducted emissions from the EUT in the frequency range from 150 kHz to 30 MHz were captured for graphical display through the use of automated LABVIEW EMI measurement software. All graphical readings were measured in the “Peak” mode only to reduce testing time. Upon completion of the graphical scan, the test lab personnel performed the conducted measurement scan manually using the spectrum analyzer front panel keys. All peak measurements coming within 3 dB of the limit line were “Averaged” and/or “Quasi-Peaked” and denoted appropriately in the EXCEL spreadsheet.

The Equipment Under Test (EUT) was configured as a system with peripherals connected, so that at least one interface port of each type is connected to one external peripheral when tested for conducted emissions according to ANSI C63.4: 2003. Excess power cord length was wrapped in a bundle 30 to 40 centimeters in length near the center of the cord. The EUT was tested in a tabletop configuration.

The emission readings for Line 1 and Line 2 are highlighted on the data sheets in Appendix A. The graphical scans only reflects peak readings while the tabulated data sheets reflect peak, average, and/or quasi-peak readings which ever applies.



5.2 Spurious Radiated Emissions

A spectrum analyzer was used as the measuring instrumentation along with a preselector and quasi-peak-detector. The pre-amplifiers were used to increase the sensitivity of the instrument. The spectrum analyzer was used in the peak detector mode with the “max-hold” feature activated and in Positive Peak mode. In this mode, the spectrum analyzer records the highest measured reading over all the sweeps. The quasi-peak detector was used only for those readings, which are marked accordingly in the data sheet. The effective measurement bandwidth used for the radiated emissions test was 120 kHz for (30 MHz- 1000 MHz). The spectrum analyzer operated such that the modulation of the signal was filtered out to set the analyzer in linear mode. For testing beyond 1000 MHz a spectrum analyzer capable of taking reading above 1000 MHz was connected to the high frequency amplifier, where these measurement readings were taken with the transducer placed at a 3-meter test distance from the EUT.

The Open Area Test Sites (OATS) was used for radiated emission testing. These test sites are designed according to ANSI C63.4: 2003 and ANSI C63.7: 1992 guidelines. The Measurements were conducted in accordance with ANSI C63.4: 2003 and ANSI C63.7: 1992 requirements.

Broadband biconical, log periodic, and horn antennas were used as transducers during the measurement reading phase. The frequency spans were wide (30 MHz-88 MHz, 88 MHz- 216 MHz, 216 MHz- 300 MHz, and 300 MHz- 1000 MHz). After 1000 MHz the horn antenna was used to measure emissions. The emission readings in both horizontal and vertical polarities are highlighted on the data sheets in Appendix A.

5.3 Conducted Emissions at the Antenna Port

A power meter was used as the measuring instrumentation along with an attenuator and/or filter connected to the EUT antenna port. The attenuator and filters are used to ensure that the front end of the measurement instrument is not overloaded by the fundamental transmission. . The instruments recorded the measured readings with the bandwidths (video and resolution) set in accordance with the FCC Rules and regulations.

For the power out measurements a peak power meter was used along with a peak power sensor with a wide enough bandwidth to capture the entire fundamental transmission.

The measured readings are on the data sheets in Appendix A.



5.4 Test and Measurement Equipment Used

TEST EQUIPMENT USED					
Equipment Name	Manufacturer	Model Number	Serial Number	Calibration Due Date	Calibration Cycle
Spectrum Analyzer	Agilent	8564EC	4046A00387	08/15/06	1 Year
Preamp	Miteq	JS42-01001800-25-10P	815980	07/21/06	1 Year
High Pass Filter	Micro-Tronics	HPM13835	001	09/17/06	2 Year
Horn Antenna	EMCO	3115	2230	02/06/06	1 Year
Cable	Semflex	60637	S1L29BFS1348	04/11/06	1 Year
Temperature/Humidity Monitor	Dickson	TH550	7255185	N/A	N/A
Power Meter	Anritsu	ML2487A	6K00001785	04/12/06	1 Year
Wide Bandwidth Sensor	Anritsu	MA2491A	31193	04/12/06	1 Year
12dB Attenuator	Narda	4779-12	203	08/06/06	1 Year
EMI Receiver - RF Section	Hewlett Packard	8546A	3737A00407	09/02/06	1 Year
EMI Receiver - RF Filter Section	Hewlett Packard	85460A	3704A00399	09/02/06	1 Year
Antenna - Biconical	EMCO	3110	9108-1421	05/17/06	1 Year
Antenna - Log Periodic	EMCO	3148	4947	05/11/06	1 Year
LISN (EUT)	FCC	FCC-LISN-50-25-2	9931	02/06/06	1 Year
LISN (Access)	Com-Power	LI-200	12019	07/05/07	1 Year
LISN (Access)	Com-Power	LI-200	12018	07/05/07	1 Year



6.0 SAMPLE CALCULATIONS

If a preamplifier is used during the Radiated Emissions Testing, it is required that the amplifier gain be subtracted from the Spectrum Analyzer (Meter) Reading. In addition, a correction factor for the antenna, cable and a distance factor, if any, must be applied to the Meter Reading before a true field strength reading can be obtained. In the Automatic Mode of A.R.M.S. measurements, these considerations are automatically presented as a part of the printout. In the case of manual measurements and for greater efficiency and convenience, usage of the calibration correction factors in the Appendices is necessary to calculate the Corrected Meter Reading. These correlation factors for each meter reading, shall be modified to reflect these correlation factors at each frequency value so that the meter readings can be compared directly to the modified specification limit. This modified specification limit is referred to as the "Corrected Meter Reading Limit" (CML).

The equation shall be derived in the following manner:

$$\text{Corrected Meter Reading} = \text{Meter Reading} + F + C - G - D$$

Where, F = Antenna Factor

C = Cable Factor

G = Amplifier Gain

D = Distance Factor

Therefore, the equation for determining the Corrected Meter Reading Limit (CML) is:

$$\text{CML} = \text{Specification Limit} - F - C + G + D$$

For the manual mode of measurement, a table of corrected meter reading limits shall be used to permit immediate comparison of the meter reading to determine if the measured emission amplitude exceeded the specification limit at that specific frequency. There shall be two calculation sheets done, one for three meter and one for ten-meter measurement distances, where applicable. The correction factors for the antenna and the amplifier gain are attached in the Appendices.



6.0 Sample Calculations (Continued)

Peak Transmit Power Output:

A correction factor for the cable must be applied to the Conducted Power before a true power reading can be obtained. This is referred to as the “Corrected Power” (CP).

The equation shall be derived in the following manner:

$$\text{Corrected Power Reading} = \text{Conducted Power Reading} + C$$

Where, C = Cable Factor

The conducted power is taken in units of dBm. To obtain units of mW the following equation is used:

$$\text{mW} = 10^{(\text{dBm}/10)}$$



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7.0 MODIFICATIONS AND RECOMMENDATIONS

No modifications were made to the EUT.



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APPENDIX A

TEST DATA

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AC POWER LINE CONDUCTED EMISSIONS TEST RESULTS

CLIENT:	JLH Labs	DATE:	12/13/05
EUT:	Turf Guard Wireless Monitoring System	PROJECT NUMBER:	JLHLB-050816
MODEL NUMBER:	Pedestal Repeater Unit	TEST ENGINEER:	JC
SERIAL NUMBER:	TGRepeater	SITE #:	2
CONFIGURATION:	Tested "Pedestal Repeater" unit.	TEMPERATURE:	17 C
		HUMIDITY:	45% RH
		TIME:	1:50 PM

Standard:	FCC CFR 47, Part 15.207
Description:	AC Power Line Conducted Emissions
Results:	Passes the conducted limits by -11.92@ 0.3400 MHz

Conducted Limits		
Frequency (MHz)	Quasi-Peak Limit (dBuV)	Average Limit (dBuV)
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

NOTE: During preliminary scans, there wasn't any difference which channel was used with the EUT; therefore only the mid channel was used for final testing.

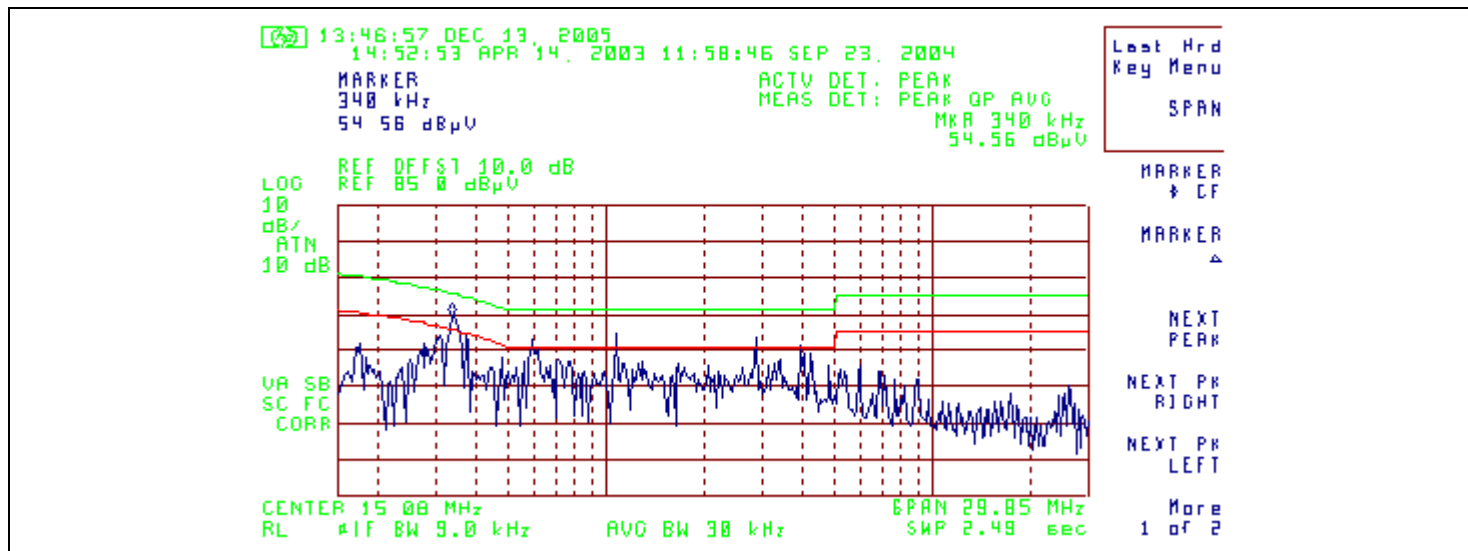
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AC Power Line Conducted Emissions Test Results (Continued)

CONDUCTED EMISSIONS – LINE 1						
Freq. (MHz)	Meter Reading (dBuV)	Detector (PK/QP/AV)	Average Limit (dBuV)	Average Delta(dB)	Quasi-Peak Limit (dBuV)	Quasi-Peak Delta(dB)
0.3200	48.96	PK	51.14	-2.18	61.14	-12.18
0.3200	35.01	AV	51.14	-16.13	61.14	-26.13
0.3400	54.56	PK	50.57	3.99	60.57	-6.01
0.3400	38.65	AV	50.57	-11.92	60.57	-21.92
0.3700	49.28	PK	49.71	-0.43	59.71	-10.43
0.3700	31.47	AV	49.71	-18.24	59.71	-28.24
0.5900	47.51	PK	46.00	1.51	56.00	-8.49
0.5900	29.77	AV	46.00	-16.23	56.00	-26.23
1.0700	49.28	PK	46.00	3.28	56.00	-6.72
1.0700	24.81	AV	46.00	-21.19	56.00	-31.19
2.8800	48.52	PK	46.00	2.52	56.00	-7.48
2.8800	27.12	AV	46.00	-18.88	56.00	-28.88

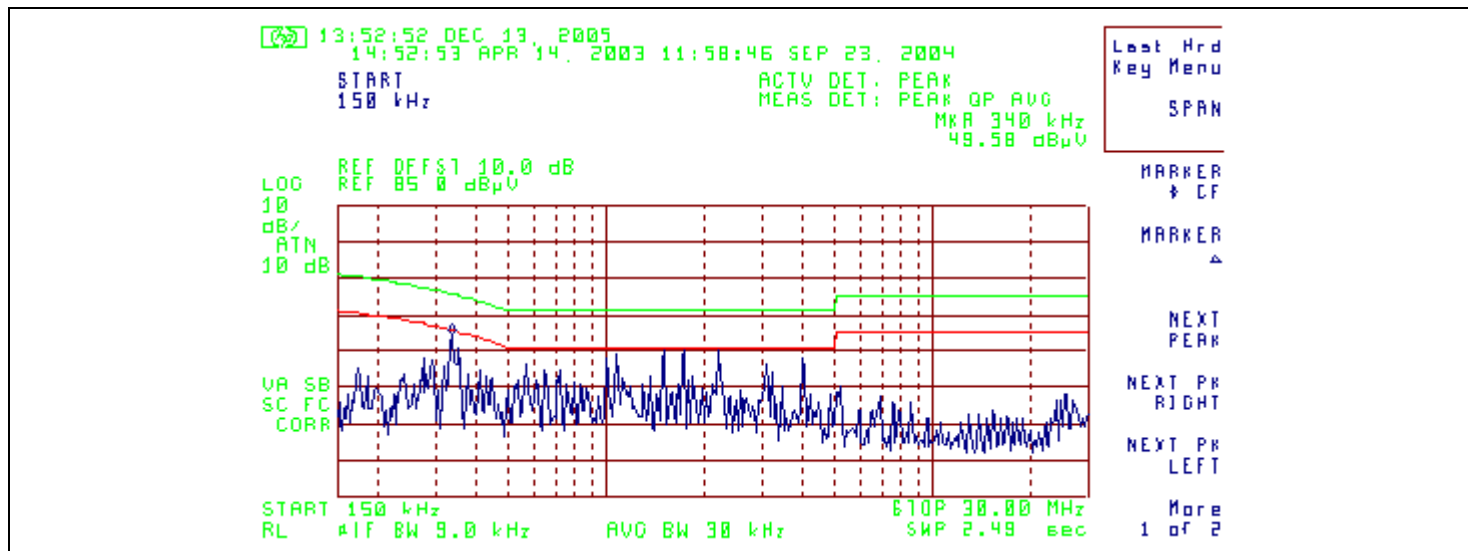




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AC Power Line Conducted Emissions Test Results (Continued)

CONDUCTED EMISSIONS - LINE 2						
Freq. (MHz)	Meter Reading (dBuV)	Detector (PK/QP/AV)	Average Limit (dBuV)	Average Delta(dB)	Quasi-Peak Limit (dBuV)	Quasi-Peak Delta(dB)
0.3400	49.58	PK	50.57	-0.99	60.57	-10.99
0.3400	31.56	AV	50.57	-19.01	60.57	-29.01
1.0000	43.15	PK	46.00	-2.85	56.00	-12.85
1.0000	20.60	AV	46.00	-25.40	56.00	-35.40
1.0700	43.78	PK	46.00	-2.22	56.00	-12.22
1.0700	18.52	AV	46.00	-27.48	56.00	-37.48
1.5000	44.69	PK	46.00	-1.31	56.00	-11.31
1.5000	25.48	AV	46.00	-20.52	56.00	-30.52
1.7400	44.86	PK	46.00	-1.14	56.00	-11.14
1.7400	25.74	AV	46.00	-20.26	56.00	-30.26
2.2200	44.67	PK	46.00	-1.33	56.00	-11.33
2.2200	24.36	AV	46.00	-21.64	56.00	-31.64





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SPURIOUS RADIATED EMISSIONS TEST RESULTS

CLIENT:	JLH Labs	DATE:	12/12/05
EUT:	Turf Guard Wireless Monitoring System	PROJECT NUMBER:	JLHLB-050816
MODEL NUMBER:	Pedestal Repeater Unit	TEST ENGINEER:	JC
SERIAL NUMBER:	TGRepeater	SITE #:	2
CONFIGURATION:	Tested "Pedestal Repeater" unit.	TEMPERATURE:	19 C
		HUMIDITY:	27% RH
		TIME:	2:00 PM

Standard:	FCC Pt. 15.209
Description:	Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Sec. 15.209.
Results:	Passes the radiated limits by $-7.89@ 250.03$ MHz (Horizontal antenna polarization)

Radiated Limits	
Frequency (MHz)	Quasi-Peak Limit (dBuV)
30-88	40
88-216	43.52
216-960	46.02
960-1000	54

NOTE: During preliminary scans, there wasn't any difference which channel was used with the EUT; therefore only the mid channel was used for final testing.

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Spurious Radiated Emissions Test Results (Continued)

RADIATED EMISSIONS - Horizontal Antenna Polarization

<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>		<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +/-FAIL</i>
37.32	7.72	400	135			25.07	40.00	-14.93
50.09	19.11	350	45			31.98	40.00	-8.02
80.46	17.70	350	315			25.79	40.00	-14.21
134.99	14.19	300	45			30.44	43.50	-13.06
186.97	15.21	300	180			34.02	43.50	-9.48
250.03	17.81	275	135			38.11	46.00	-7.89
300.03	12.33	250	225			28.73	46.00	-17.27
375.06	13.39	250	135			31.54	46.00	-14.46
386.03	12.88	250	180			31.14	46.00	-14.86
500.07	15.50	200	180			37.80	46.00	-8.20

RADIATED EMISSIONS - Vertical Antenna Polarization

<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>		<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +/-FAIL</i>
33.93	10.72	100	0			28.01	40.00	-11.99
61.06	17.65	100	45			26.41	40.00	-13.59
134.91	12.42	100	135			28.06	43.50	-15.44
187.02	13.86	100	0			33.64	43.50	-9.86
250.02	15.11	100	90			36.41	46.00	-9.59
300.03	4.43	100	90			21.83	46.00	-24.17
375.06	7.30	100	0			26.75	46.00	-19.25
386.03	13.96	225	135			33.17	46.00	-12.83
500.05	9.20	300	135			30.80	46.00	-15.20



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SPURIOUS RADIATED EMISSIONS TEST RESULTS

CLIENT:	JLH Labs	DATE:	11/07/05
EUT:	Turf Guard Wireless Monitoring System	PROJECT NUMBER:	JLHLB-050816
MODEL NUMBER:	Pedestal Repeater Unit	TEST ENGINEER:	JC/RJ
SERIAL NUMBER:	TGRepeater	SITE #:	1 & 2
CONFIGURATION:	Tested "Pedestal Repeater" unit.	TEMPERATURE:	15 C
		HUMIDITY:	48% RH
		TIME:	9:00 AM

Standard:	FCC CFR 47, Part 15.247(c)
Description:	Radiated emissions, which fall in the restricted bands, as defined in Sec. 15.205(a), must also comply with the radiated emission limits specified in Sec. 15.209(a). All others must be < -20dBc.
Results:	Passes (See Data Sheets)

Unwanted Spurious Emissions Limits			
Frequency (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m) (Emissions in the restricted bands)	Field Strength (dBm/MHz) (Emissions outside the restricted bands)
Above 960	500	54.00 (Average) 74.00 (Peak)	< -20 dBc

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Spurious Radiated Emissions Test Results (Continued)

*Fundamental Measurements for "Pedestal Repeater" unit (902.5-927 MHz)
Channels Low, Mid, & High
Continuous TX at Antenna port
Aegis Labs, Inc. File #: JLHLB-050816-07*

RADIATED EMISSIONS - Horizontal Antenna Polarization

Freq. (MHz)	Meter Reading (dBuV)	Antenna Height (cm)	Azimuth (degrees)	Quasi pk or AVG (dBuV)	Preamp Factor (dB)	Cable Factor (dB)	Ant. Factor (dB)	Corrected Reading (dBuV)	Limits (dBuV)	Diff (dB) +=FAIL
902.49	79.72	250	270					107.71		
915.57	79.31	250	270					107.80		
927.03	79.40	250	315					108.22		

RADIATED EMISSIONS - Vertical Antenna Polarization

Freq. (MHz)	Meter Reading (dBuV)	Antenna Height (cm)	Azimuth (degrees)	Quasi pk or AVG (dBuV)	Preamp Factor (dB)	Cable Factor (dB)	Ant. Factor (dB)	Corrected Reading (dBuV)	Limits (dBuV)	Diff (dB) +=FAIL
902.49	92.24	125	180					120.37		
915.49	92.57	125	180					120.89		
926.99	91.72	125	90					120.15		



Spurious Radiated Emissions Test Results (Continued)

*Band Edge Field Strength Measurements for "Pedestal Repeater" unit (902.5-927 MHz)
Channels Low, Mid, & High
Continuous TX at Antenna port
Aegis Labs, Inc. File #: JLHLB-050816-07*

RADIATED EMISSIONS - Horizontal Antenna Polarization

<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>	<i>Preamp Factor (dB)</i>	<i>Cable Factor (dB)</i>	<i>Ant. Factor (dB)</i>	<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
901.95	51.52	250	270					79.49	87.71	-8.22
928.09	46.82	250	315					75.63	88.22	-12.59

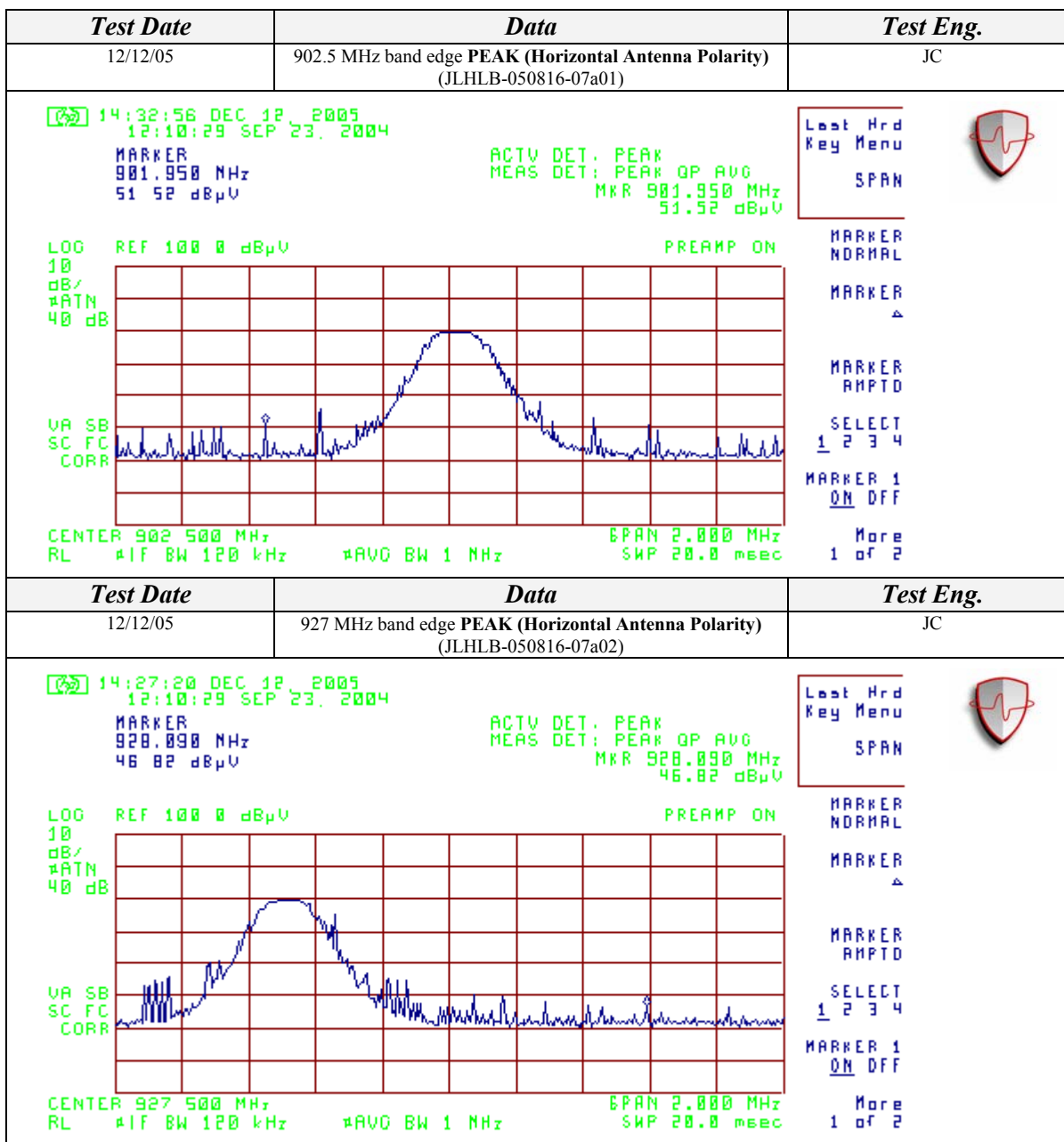
RADIATED EMISSIONS – Vertical Antenna Polarization

<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>	<i>Preamp Factor (dB)</i>	<i>Cable Factor (dB)</i>	<i>Ant. Factor (dB)</i>	<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
901.98	64.35	125	180					92.48	100.37	-7.89
928.01	55.30	125	90					83.72	100.15	-16.43



AEGIS LABS INC.

Spurious Radiated Emissions Test Results (Continued)

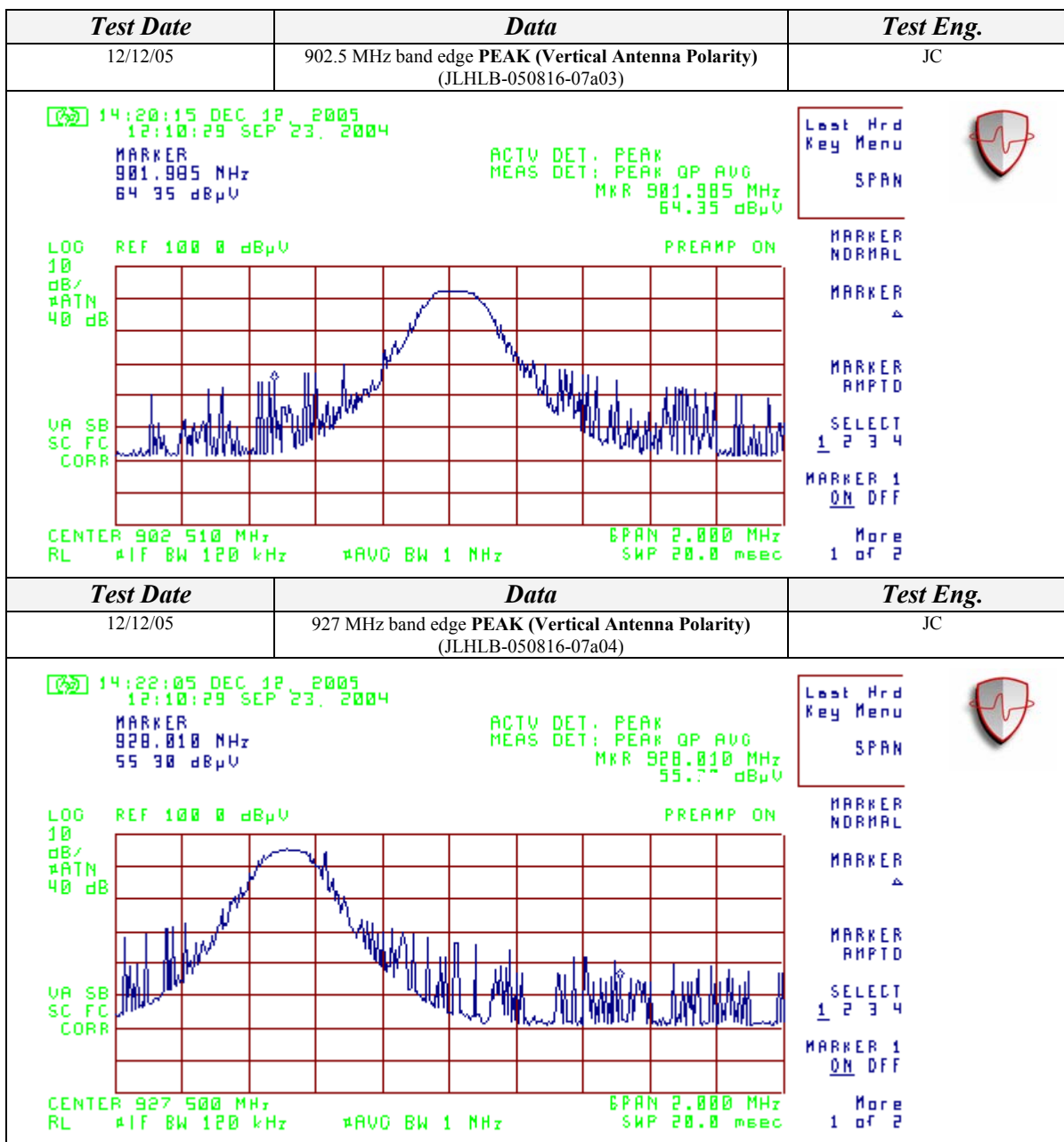


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AEGIS LABS INC.

Spurious Radiated Emissions Test Results (Continued)



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Report Number: JLHLB-050817F
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Spurious Radiated Emissions Test Results (Continued)

*Spurious Emissions Measurements for "Pedestal Repeater" unit (902.5-927 MHz)
Channels Low, Mid, & High
Continuous TX at Antenna port
Aegis Labs, Inc. File #: JLHLB-050816-04*

RADIATED EMISSIONS - Horizontal Antenna Polarization											
Freq. (MHz)	Meter Reading (dBuV)	Antenna Height (cm)	Azimuth (degrees)	Quasi pk or AVG (dBuV)		Preamp Factor (dB)	Cable Factor (dB)	Ant. Factor (dB)	Corrected Reading (dBuV)	Limits (dBuV)	Diff (dB) +=FAIL
EUT in Continuous Transmit Mode on Low Channel (902.5 MHz)											
1804.50	92.33	100	270			51.24	1.73	27.74	70.56	87.71	-17.15
2706.75	80.83	100	270			51.07	2.14	29.85	61.75	74.00	-12.25
2706.75				63.76	A	51.07	2.14	29.85	44.68	54.00	-9.32
3609.00	64.17	100	45			50.68	2.48	31.88	47.85	74.00	-26.15
3609.00				54.38	A	50.68	2.48	31.88	38.06	54.00	-15.94
4511.25	64.50	100	45			50.78	2.78	33.04	49.54	74.00	-24.46
4511.25				53.98	A	50.78	2.78	33.04	39.02	54.00	-14.98
5413.50	70.67	100	0			50.94	3.06	34.87	57.66	74.00	-16.34
5413.50				54.90	A	50.94	3.06	34.87	41.89	54.00	-12.11
6315.75	70.50	100	45			50.79	3.32	35.33	58.36	87.71	-29.35
7218.00	62.83	100	0			50.17	3.57	36.88	53.11	74.00	-20.89
7218.00				51.88	A	50.17	3.57	36.88	42.16	54.00	-11.84
8120.25	59.83	100	0			49.86	3.79	38.68	52.45	74.00	-21.55
8120.25				48.36	A	49.86	3.79	38.68	40.98	54.00	-13.02
9022.50	56.17	100	90			49.84	4.01	38.09	48.43	74.00	-25.57
9022.50				44.04	A	49.84	4.01	38.09	36.30	54.00	-17.70



Spurious Radiated Emissions Test Results (Continued)

RADIATED EMISSIONS - Horizontal Antenna Polarization											
Freq. (MHz)	Meter Reading (dBuV)	Antenna Height (cm)	Azimuth (degrees)	Quasi pk or AVG (dBuV)		Preamp Factor (dB)	Cable Factor (dB)	Ant. Factor (dB)	Corrected Reading (dBuV)	Limits (dBuV)	Diff (dB) +=FAIL
EUT in Continuous Transmit Mode on Mid Channel (915.5 MHz)											
1831.10	89.67	100	225			51.23	1.75	27.83	68.01	87.80	-19.79
2746.65	81.67	100	315			51.04	2.15	29.94	62.72	74.00	-11.28
2746.65				64.46	A	51.04	2.15	29.94	45.51	54.00	-8.49
3662.20	64.67	100	0			50.67	2.50	32.02	48.52	74.00	-25.48
3662.20				54.42	A	50.67	2.50	32.02	38.27	54.00	-15.73
4577.75	64.50	100	45			50.79	2.80	33.26	49.78	74.00	-24.22
4577.75				53.67	A	50.79	2.80	33.26	38.95	54.00	-15.05
5493.30	72.83	100	180			50.97	3.09	34.90	59.85	87.80	-27.95
6408.85	67.17	100	45			50.74	3.35	35.36	55.14	87.80	-32.66
7324.40	61.83	100	45			50.08	3.60	36.78	52.13	74.00	-21.87
7324.40				51.57	A	50.08	3.60	36.78	41.87	54.00	-12.13
8239.77	56.67	100	45			49.81	3.82	38.47	49.15	74.00	-24.85
8239.77				45.49	A	49.81	3.82	38.47	37.97	54.00	-16.03
9155.50	60.83	100	90			49.88	4.04	38.04	53.03	74.00	-20.97
9155.50				46.15	A	49.88	4.04	38.04	38.35	54.00	-15.65
EUT in Continuous Transmit Mode on High Channel (927 MHz)											
1854.38	91.67	100	225			51.22	1.76	27.90	70.11	88.22	-18.11
2781.59	89.50	100	180			51.02	2.17	30.02	70.67	74.00	-3.33
2781.59				64.25	A	51.02	2.17	30.02	45.42	54.00	-8.58
3708.80	68.33	100	270			50.66	2.52	32.14	52.33	74.00	-21.67
3708.80				54.54	A	50.66	2.52	32.14	38.54	54.00	-15.46
4636.00	76.83	100	225			50.79	2.82	33.46	62.33	74.00	-11.67
4636.00				64.17	A	50.79	2.82	33.46	49.67	54.00	-4.33
5563.20	86.67	100	180			50.97	3.11	34.94	73.75	88.22	-14.47
6490.40	73.33	100	135			50.70	3.37	35.40	61.40	88.22	-26.82
7417.60	71.67	100	45			50.00	3.63	36.68	61.98	74.00	-12.02
7417.60				54.95	A	50.00	3.63	36.68	45.26	54.00	-8.74
8344.80	64.17	100	45			49.78	3.85	38.28	56.52	74.00	-17.48
8344.80				54.17	A	49.78	3.85	38.28	46.52	54.00	-7.48
9272.00	61.00	100	45			49.91	4.07	37.99	53.14	88.22	-35.08



Spurious Radiated Emissions Test Results (Continued)

RADIATED EMISSIONS - Vertical Antenna Polarization											
Freq. (MHz)	Meter Reading (dBuV)	Antenna Height (cm)	Azimuth (degrees)	Quasi pk or AVG (dBuV)		Preamp Factor (dB)	Cable Factor (dB)	Ant. Factor (dB)	Corrected Reading (dBuV)	Limits (dBuV)	Diff (dB) +=FAIL
EUT in Continuous Transmit Mode on Low Channel (902.5 MHz)											
1804.50	86.33	100	90			51.24	1.73	27.86	64.68	100.37	-35.69
2706.75	81.50	100	225			51.07	2.14	30.05	62.62	74.00	-11.38
2706.75				64.52	A	51.07	2.14	30.05	45.64	54.00	-8.36
3609.00	65.67	100	225			50.68	2.48	31.88	49.35	74.00	-24.65
3609.00				54.84	A	50.68	2.48	31.88	38.52	54.00	-15.48
4511.25	65.17	100	45			50.78	2.78	33.13	50.31	74.00	-23.69
4511.25				48.13	A	50.78	2.78	33.13	33.27	54.00	-20.73
5413.50	60.00	100	45			50.94	3.06	34.68	46.80	74.00	-27.20
5413.50				45.27	A	50.94	3.06	34.68	32.07	54.00	-21.93
6315.75	66.67	100	180			50.79	3.32	35.25	54.46	100.37	-45.91
7218.00	64.33	100	225			50.17	3.57	36.77	54.50	74.00	-19.50
7218.00				52.12	A	50.17	3.57	36.77	42.29	54.00	-11.71
8120.25	60.67	100	45			49.86	3.79	38.81	53.41	74.00	-20.59
8120.25				50.50	A	49.86	3.79	38.81	43.24	54.00	-10.76
9022.50	58.67	100	0			49.84	4.01	38.47	51.31	74.00	-22.69
9022.50				45.94	A	49.84	4.01	38.47	38.58	54.00	-15.42



Spurious Radiated Emissions Test Results (Continued)

RADIATED EMISSIONS - Vertical Antenna Polarization											
Freq. (MHz)	Meter Reading (dBuV)	Antenna Height (cm)	Azimuth (degrees)	Quasi pk or AVG (dBuV)		Preamp Factor (dB)	Cable Factor (dB)	Ant. Factor (dB)	Corrected Reading (dBuV)	Limits (dBuV)	Diff (dB) +=FAIL
EUT in Continuous Transmit Mode on Mid Channel (915.5 MHz)											
1831.10	98.17	100	225			51.23	1.75	27.96	76.65	100.89	-24.24
2746.65	88.67	100	180			51.04	2.15	30.14	69.92	74.00	-4.08
2746.65				63.56	A	51.04	2.15	30.14	44.81	54.00	-9.19
3662.20	75.83	100	225			50.67	2.50	32.02	59.68	74.00	-14.32
3662.20				64.46	A	50.67	2.50	32.02	48.31	54.00	-5.69
4577.75	72.17	100	135			50.79	2.80	33.33	57.52	74.00	-16.48
4577.75				54.44	A	50.79	2.80	33.33	39.79	54.00	-14.21
5493.30	78.67	100	315			50.97	3.09	34.70	65.49	100.89	-35.40
6408.85	71.17	100	90			50.74	3.35	35.33	59.10	100.89	-41.79
7324.40	68.83	100	180			50.08	3.60	36.71	59.06	74.00	-14.94
7324.40				53.96	A	50.08	3.60	36.71	44.19	54.00	-9.81
8239.77	65.00	100	225			49.81	3.82	38.62	57.63	74.00	-16.37
8239.77				54.42	A	49.81	3.82	38.62	47.05	54.00	-6.95
9155.50	57.33	100	45			49.88	4.04	38.31	49.80	74.00	-24.20
9155.50				44.07	A	49.88	4.04	38.31	36.54	54.00	-17.46
EUT in Continuous Transmit Mode on High Channel (927 MHz)											
1854.38	89.83	100	45			51.22	1.76	28.05	68.42	100.15	-31.73
2781.59	88.50	100	45			51.02	2.17	30.22	69.87	74.00	-4.13
2781.59				63.98	A	51.02	2.17	30.22	45.35	54.00	-8.65
3708.80	73.33	100	270			50.66	2.52	32.14	57.33	74.00	-16.67
3708.80				64.40	A	50.66	2.52	32.14	48.40	54.00	-5.60
4636.00	77.50	100	270			50.79	2.82	33.51	63.04	74.00	-10.96
4636.00				64.40	A	50.79	2.82	33.51	49.94	54.00	-4.06
5563.20	86.33	100	315			50.97	3.11	34.74	73.21	100.15	-26.94
6490.40	74.67	100	135			50.70	3.37	35.39	62.73	100.15	-37.42
7417.60	76.17	100	270			50.00	3.63	36.65	66.45	74.00	-7.55
7417.60				63.58	A	50.00	3.63	36.65	53.86	54.00	-0.14
8344.80	64.67	100	225			49.78	3.85	38.45	57.19	74.00	-16.81
8344.80				54.71	A	49.78	3.85	38.45	47.23	54.00	-6.77
9272.00	70.33	100	225			49.91	4.07	38.17	62.66	100.15	-37.49



Spurious Radiated Emissions Test Results (Continued)

*Spurious Emissions Measurements for "Pedestal Repeater" unit (902.5-927 MHz)
Channels Low, Mid, & High
Continuous RX at Antenna port
Aegis Labs, Inc. File #: JLHLB-050816-08*

RADIATED EMISSIONS - Horizontal Antenna Polarization

<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>	<i>Preamp Factor (dB)</i>	<i>Cable Factor (dB)</i>	<i>Ant. Factor (dB)</i>	<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
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EUT in Continuous Receive Mode

No Frequencies Found

RADIATED EMISSIONS - Vertical Antenna Polarization

<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>	<i>Preamp Factor (dB)</i>	<i>Cable Factor (dB)</i>	<i>Ant. Factor (dB)</i>	<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
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EUT in Continuous Receive Mode

No Frequencies Found



AEGIS LABS INC.

SPURIOUS RADIATED EMISSIONS TEST RESULTS

CLIENT:	JLH Labs	DATE:	12/12/05
EUT:	Turf Guard Wireless Monitoring System	PROJECT NUMBER:	JLHLB-050816
MODEL NUMBER:	Pedestal Repeater Unit	TEST ENGINEER:	JC
SERIAL NUMBER:	TGRepeater	SITE #:	2
CONFIGURATION:	Tested "In Ground" unit.	TEMPERATURE:	12 C
		HUMIDITY:	27% RH
		TIME:	8:50 AM

Standard:	FCC CFR 47, Part 15.247(c)
Description:	Radiated emissions, which fall in the restricted bands, as defined in Sec. 15.205(a), must also comply with the radiated emission limits specified in Sec. 15.209(a). All others must be < -20dBc.
Results:	Passes (See Data Sheets)

Unwanted Spurious Emissions Limits			
Frequency (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m) (Emissions in the restricted bands)	Field Strength (dBm/MHz) (Emissions outside the restricted bands)
Above 960	500	54.00 (Average) 74.00 (Peak)	< -20 dBc

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Report Number: JLHLB-050817F
FCC ID: TLMSOIL2



Spurious Radiated Emissions Test Results (Continued)

*Fundamental Measurements for "In Ground" unit (902.5-927 MHz)
Channels Low, Mid, & High
Continuous TX at Antenna port
Aegis Labs, Inc. File #: JLHLB-050816-07*

RADIATED EMISSIONS - Horizontal Antenna Polarization

Freq. (MHz)	Meter Reading (dBuV)	Antenna Height (cm)	Azimuth (degrees)	Quasi pk or AVG (dBuV)	Preamp Factor (dB)	Cable Factor (dB)	Ant. Factor (dB)	Corrected Reading (dBuV)	Limits (dBuV)	Diff (dB) +=FAIL
902.48	74.00	250	90					101.99		
915.49	77.71	250	90					106.20		
927.03	76.00	250	180					104.82		

RADIATED EMISSIONS – Vertical Antenna Polarization

Freq. (MHz)	Meter Reading (dBuV)	Antenna Height (cm)	Azimuth (degrees)	Quasi pk or AVG (dBuV)	Preamp Factor (dB)	Cable Factor (dB)	Ant. Factor (dB)	Corrected Reading (dBuV)	Limits (dBuV)	Diff (dB) +=FAIL
902.53	74.76	200	0					102.90		
915.52	75.35	200	0					103.67		
927.00	71.45	200	225					99.88		



Spurious Radiated Emissions Test Results (Continued)

*Band Edge Field Strength Measurements for "In Ground" unit (902.5-927 MHz)
Channels Low, Mid, & High
Continuous TX at Antenna port
Aegis Labs, Inc. File #: JLHLB-050816-07*

RADIATED EMISSIONS - Horizontal Antenna Polarization

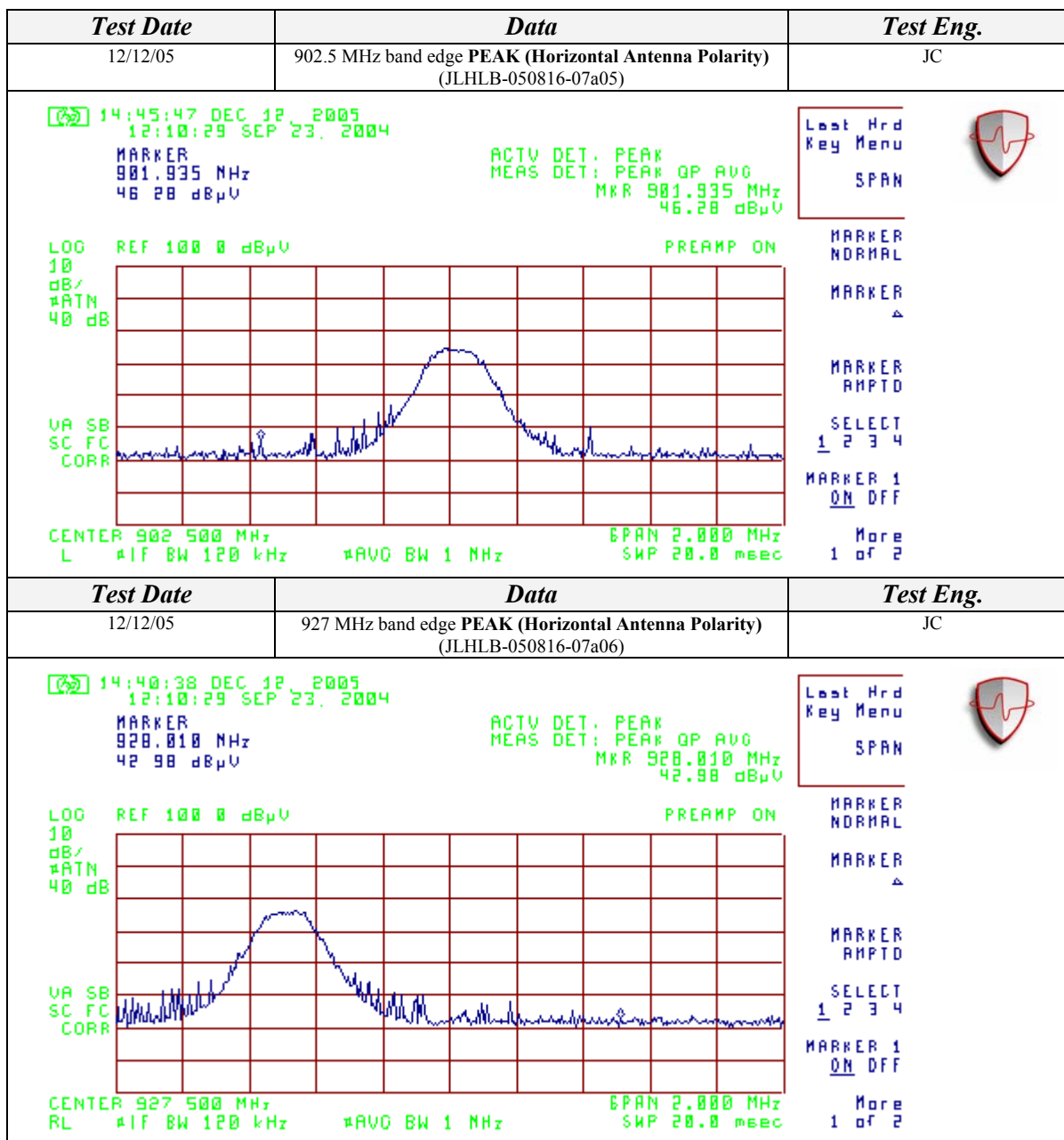
<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>	<i>Preamp Factor (dB)</i>	<i>Cable Factor (dB)</i>	<i>Ant. Factor (dB)</i>	<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
901.93	46.28	250	90					74.25	81.99	-7.74
928.01	42.98	250	180					71.79	84.82	-13.03

RADIATED EMISSIONS – Vertical Antenna Polarization

<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>	<i>Preamp Factor (dB)</i>	<i>Cable Factor (dB)</i>	<i>Ant. Factor (dB)</i>	<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
901.97	45.85	200	0					73.98	82.90	-8.92
928.12	43.53	200	225					71.95	79.88	-7.93



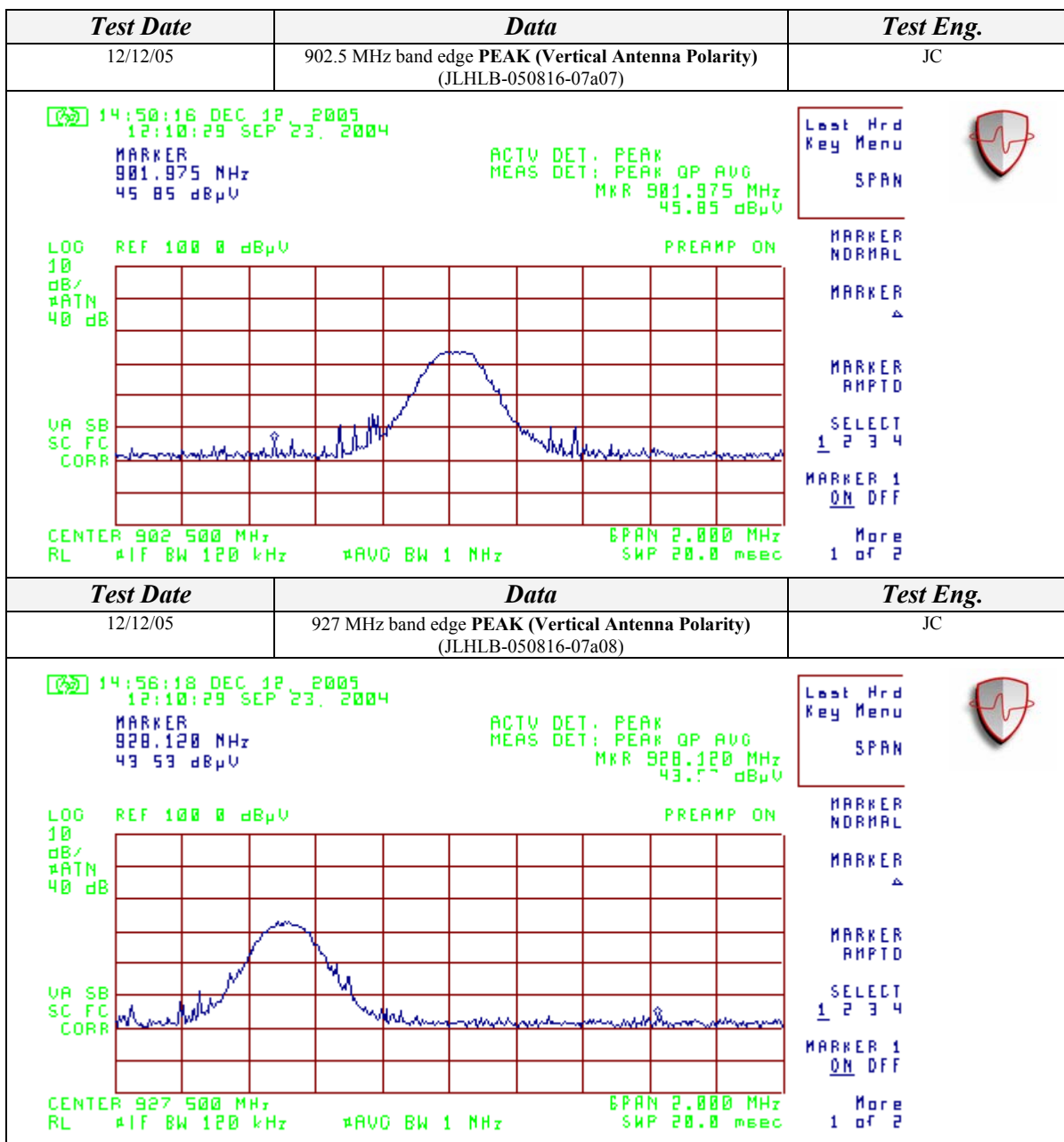
Spurious Radiated Emissions Test Results (Continued)





AEGIS LABS INC.

Spurious Radiated Emissions Test Results (Continued)



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Report Number: JLHLB-050817F
FCC ID: TLMSOIL2



Spurious Radiated Emissions Test Results (Continued)

*Spurious Emissions Measurements for "In Ground" unit (902.5-927 MHz)
Channels Low, Mid, & High
Continuous TX at Antenna port
Aegis Labs, Inc. File #: JLHLB-050816-06*

RADIATED EMISSIONS - Horizontal Antenna Polarization											
Freq. (MHz)	Meter Reading (dBuV)	Antenna Height (cm)	Azimuth (degrees)	Quasi pk or AVG (dBuV)		Preamp Factor (dB)	Cable Factor (dB)	Ant. Factor (dB)	Corrected Reading (dBuV)	Limits (dBuV)	Diff (dB) +=FAIL
EUT in Continuous Transmit Mode on Low Channel (902.5 MHz)											
1804.50	78.67	100	270			46.43	2.67	27.74	62.64	81.99	-19.35
2706.75	86.83	150	0			46.72	3.21	29.85	73.18	74.00	-0.82
2706.75				51.07	A	46.72	3.21	29.85	37.42	54.00	-16.58
3609.00	69.00	100	0			46.82	3.72	31.88	57.79	74.00	-16.21
3609.00				49.74	A	46.82	3.72	31.88	38.53	54.00	-15.47
4511.25	71.83	100	270			46.53	4.21	33.04	62.55	74.00	-11.45
4511.25				48.96	A	46.53	4.21	33.04	39.68	54.00	-14.32
5413.50	67.67	125	225			46.60	4.60	34.87	60.54	74.00	-13.46
5413.50				48.68	A	46.60	4.60	34.87	41.55	54.00	-12.45
6315.75	67.33	100	90			46.60	4.99	35.33	61.04	81.99	-20.95
7218.00	63.17	100	90			45.97	5.34	36.88	59.42	74.00	-14.58
7218.00				46.91	A	45.97	5.34	36.88	43.16	54.00	-10.84
8120.25	55.83	125	315			45.21	5.68	38.68	54.99	74.00	-19.01
8120.25				44.79	A	45.21	5.68	38.68	43.95	54.00	-10.05
9022.50	53.50	100	270			44.79	6.02	38.09	52.82	74.00	-21.18
9022.50				42.85	A	44.79	6.02	38.09	42.17	54.00	-11.83



Spurious Radiated Emissions Test Results (Continued)

RADIATED EMISSIONS - Horizontal Antenna Polarization											
Freq. (MHz)	Meter Reading (dBuV)	Antenna Height (cm)	Azimuth (degrees)	Quasi pk or AVG (dBuV)		Preamp Factor (dB)	Cable Factor (dB)	Ant. Factor (dB)	Corrected Reading (dBuV)	Limits (dBuV)	Diff (dB) +=FAIL
EUT in Continuous Transmit Mode on Mid Channel (915.5 MHz)											
1831.10	79.50	100	225			46.46	2.68	27.83	63.54	86.20	-22.66
2746.65	77.67	150	315			46.73	3.24	29.94	64.12	74.00	-9.88
2746.65				49.52	A	46.73	3.24	29.94	35.97	54.00	-18.03
3662.20	63.17	125	315			46.80	3.75	32.02	52.14	74.00	-21.86
3662.20				46.29	A	46.80	3.75	32.02	35.26	54.00	-18.74
4577.75	61.33	125	135			46.54	4.24	33.26	52.30	74.00	-21.70
4577.75				45.85	A	46.54	4.24	33.26	36.82	54.00	-17.18
5493.30	60.50	100	315			46.60	4.64	34.90	53.43	86.20	-32.77
6408.85	59.00	100	135			46.55	5.02	35.36	52.83	86.20	-33.37
7324.40	53.33	100	225			45.86	5.38	36.78	49.62	74.00	-24.38
7324.40				40.39	A	45.86	5.38	36.78	36.68	54.00	-17.32
8239.77	46.83	100	270			45.11	5.73	38.47	45.92	74.00	-28.08
8239.77				38.77	A	45.11	5.73	38.47	37.86	54.00	-16.14
9155.50	42.50	100	315			44.78	6.05	38.04	41.81	74.00	-32.19
9155.50				37.41	A	44.78	6.05	38.04	36.72	54.00	-17.28
EUT in Continuous Transmit Mode on High Channel (927 MHz)											
1854.38	77.17	100	225			46.49	2.68	27.90	61.27	84.82	-23.55
2781.59	80.17	150	135			46.74	3.26	30.02	66.71	74.00	-7.29
2781.59				64.54	A	46.74	3.26	30.02	51.08	54.00	-2.92
3708.80	65.67	125	270			46.79	3.78	32.14	54.80	74.00	-19.20
3708.80				55.06	A	46.79	3.78	32.14	44.19	54.00	-9.81
4636.00	64.00	100	270			46.55	4.27	33.46	55.19	74.00	-18.81
4636.00				54.72	A	46.55	4.27	33.46	45.91	54.00	-8.09
5563.20	66.33	100	225			46.62	4.67	34.94	59.32	84.82	-25.50
6490.40	58.67	100	135			46.51	5.06	35.40	52.61	84.82	-32.21
7417.60	58.00	100	270			45.77	5.42	36.68	54.33	74.00	-19.67
7417.60				49.42	A	45.77	5.42	36.68	45.75	54.00	-8.25
8344.80	50.83	100	315			45.02	5.77	38.28	49.86	74.00	-24.14
8344.80				38.43	A	45.02	5.77	38.28	37.46	54.00	-16.54
9272.00	51.33	100	315			44.77	6.08	37.99	50.63	84.82	-34.19



Spurious Radiated Emissions Test Results (Continued)

RADIATED EMISSIONS - Vertical Antenna Polarization											
Freq. (MHz)	Meter Reading (dBuV)	Antenna Height (cm)	Azimuth (degrees)	Quasi pk or AVG (dBuV)		Preamp Factor (dB)	Cable Factor (dB)	Ant. Factor (dB)	Corrected Reading (dBuV)	Limits (dBuV)	Diff (dB) +=FAIL
EUT in Continuous Transmit Mode on Low Channel (902.5 MHz)											
1804.50	77.33	100	0			46.43	2.67	27.86	61.42	82.90	-21.48
2706.75	82.83	100	135			46.72	3.21	30.05	69.38	74.00	-4.62
2706.75				51.72	A	46.72	3.21	30.05	38.27	54.00	-15.73
3609.00	64.50	100	135			46.82	3.72	31.88	53.29	74.00	-20.71
3609.00				46.54	A	46.82	3.72	31.88	35.33	54.00	-18.67
4511.25	69.17	100	90			46.53	4.21	33.13	59.99	74.00	-14.01
4511.25				51.82	A	46.53	4.21	33.13	42.64	54.00	-11.36
5413.50	64.17	100	225			46.60	4.60	34.68	56.86	74.00	-17.14
5413.50				47.58	A	46.60	4.60	34.68	40.27	54.00	-13.73
6315.75	64.83	100	90			46.60	4.99	35.25	58.47	82.90	-24.43
7218.00	60.67	100	180			45.97	5.34	36.77	56.80	74.00	-17.20
7218.00				46.13	A	45.97	5.34	36.77	42.26	54.00	-11.74
8120.25	52.50	100	270			45.21	5.68	38.81	51.78	74.00	-22.22
8120.25				39.39	A	45.21	5.68	38.81	38.67	54.00	-15.33
9022.50	48.67	100	225			44.79	6.02	38.47	48.37	74.00	-25.63
9022.50				38.23	A	44.79	6.02	38.47	37.93	54.00	-16.07



Spurious Radiated Emissions Test Results (Continued)

RADIATED EMISSIONS - Vertical Antenna Polarization											
Freq. (MHz)	Meter Reading (dBuV)	Antenna Height (cm)	Azimuth (degrees)	Quasi pk or AVG (dBuV)		Preamp Factor (dB)	Cable Factor (dB)	Ant. Factor (dB)	Corrected Reading (dBuV)	Limits (dBuV)	Diff (dB) +=FAIL
EUT in Continuous Transmit Mode on Mid Channel (915.5 MHz)											
1831.10	73.33	100	270			46.46	2.68	27.96	57.50	83.67	-26.17
2746.65	76.83	150	45			46.73	3.24	30.14	63.48	74.00	-10.52
2746.65				50.28	A	46.73	3.24	30.14	36.93	54.00	-17.07
3662.20	65.83	100	45			46.80	3.75	32.02	54.80	74.00	-19.20
3662.20				47.36	A	46.80	3.75	32.02	36.33	54.00	-17.67
4577.75	64.17	100	90			46.54	4.24	33.33	55.21	74.00	-18.79
4577.75				51.32	A	46.54	4.24	33.33	42.36	54.00	-11.64
5493.30	61.50	100	180			46.60	4.64	34.70	54.24	83.67	-29.43
6408.85	58.50	100	45			46.55	5.02	35.33	52.30	83.67	-31.37
7324.40	56.83	100	315			45.86	5.38	36.71	53.05	74.00	-20.95
7324.40				50.46	A	45.86	5.38	36.71	46.68	54.00	-7.32
8239.77	49.67	100	270			45.11	5.73	38.62	48.91	74.00	-25.09
8239.77				43.88	A	45.11	5.73	38.62	43.12	54.00	-10.88
9155.50	49.67	100	315			44.78	6.05	38.31	49.25	74.00	-24.75
9155.50				42.13	A	44.78	6.05	38.31	41.71	54.00	-12.29
EUT in Continuous Transmit Mode on High Channel (927 MHz)											
1854.38	70.33	100	225			46.49	2.68	28.05	54.57	79.88	-25.31
2781.59	78.67	100	90			46.74	3.26	30.22	65.41	74.00	-8.59
2781.59				64.23	A	46.74	3.26	30.22	50.97	54.00	-3.03
3708.80	66.67	100	315			46.79	3.78	32.14	55.80	74.00	-18.20
3708.80				59.29	A	46.79	3.78	32.14	48.42	54.00	-5.58
4636.00	66.33	100	90			46.55	4.27	33.51	57.56	74.00	-16.44
4636.00				54.93	A	46.55	4.27	33.51	46.16	54.00	-7.84
5563.20	65.00	100	225			46.62	4.67	34.74	57.79	79.88	-22.09
6490.40	57.83	100	180			46.51	5.06	35.39	51.76	79.88	-28.12
7417.60	55.17	100	135			45.77	5.42	36.65	51.47	74.00	-22.53
7417.60				45.03	A	45.77	5.42	36.65	41.33	54.00	-12.67
8344.80	50.33	100	0			45.02	5.77	38.45	49.53	74.00	-24.47
8344.80				38.11	A	45.02	5.77	38.45	37.31	54.00	-16.69
9272.00	50.67	100	135			44.77	6.08	38.17	50.15	79.88	-29.73



Spurious Radiated Emissions Test Results (Continued)

*Spurious Emissions Measurements for "In Ground" unit (902.5-927 MHz)
Channels Low, Mid, & High
Continuous RX at Antenna port
Aegis Labs, Inc. File #: JLHLB-050816-08*

RADIATED EMISSIONS - Horizontal Antenna Polarization

<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>	<i>Preamp Factor (dB)</i>	<i>Cable Factor (dB)</i>	<i>Ant. Factor (dB)</i>	<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
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EUT in Continuous Receive Mode

No Frequencies Found

RADIATED EMISSIONS - Vertical Antenna Polarization

<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>	<i>Preamp Factor (dB)</i>	<i>Cable Factor (dB)</i>	<i>Ant. Factor (dB)</i>	<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
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EUT in Continuous Receive Mode

No Frequencies Found



AEGIS LABS INC.

PEAK TRANSMIT POWER

CLIENT:	JLH Labs	DATE:	12/12/05
EUT:	Turf Guard Wireless Monitoring System	PROJECT NUMBER:	JLHLB-050816
MODEL NUMBER:	Pedestal Repeater Unit	TEST ENGINEER:	JC
SERIAL NUMBER:	TGRepeater	SITE #:	2
CONFIGURATION:	Tested "Pedestal Repeater" unit.	TEMPERATURE:	21 C
		HUMIDITY:	35% RH
		TIME:	11:50 AM

Standard:	FCC CFR 47, Part 15.247(b)(2)
Description:	The maximum peak output power of the intentional radiator shall not exceed 1 watt for systems employing at least 50 hopping channels
Results:	See Data Sheet

Peak Transmit Power Limits	
Frequency (MHz)	Output Power (W)
902-928	1

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Report Number: JLHLB-050817F
FCC ID: TLMSOIL2



Peak Transmit Power (Continued)

Channel	Frequency (MHz)	Average Power (dBm)	Average Power (mW)	Peak Power (dBm)	Peak Power (mW)
Low	902.5	18.57	71.94	21.00	125.89
Mid	915.5	19.77	94.84	21.99	158.12
High	927	22.73	187.50	23.50	223.87

NOTE: The output power measurement is conducted.



AEGIS LABS INC.

20 dB EMISSIONS BANDWIDTH

CLIENT:	JLH Labs	DATE:	12/12/05
EUT:	Turf Guard Wireless Monitoring System	PROJECT NUMBER:	JLHLB-050816
MODEL NUMBER:	Pedestal Repeater Unit	TEST ENGINEER:	JC
SERIAL NUMBER:	TGRepeater	SITE #:	2
CONFIGURATION:	Tested "Pedestal Repeater" unit.	TEMPERATURE:	22 C
		HUMIDITY:	31% RH
		TIME:	12:15 PM

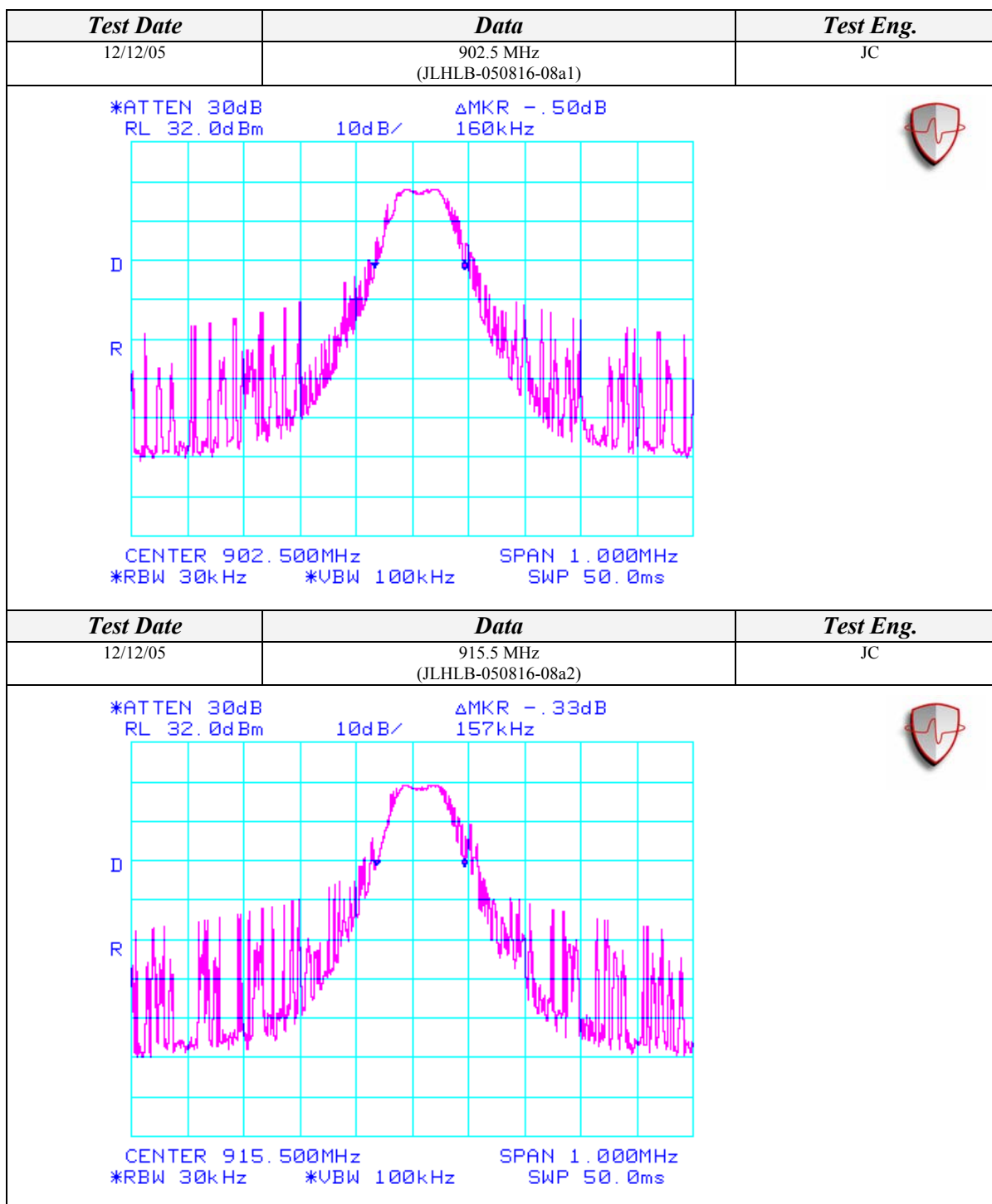
Standard:	FCC CFR 47, Part 15.247(a)(1)(i)
Description:	The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz
Results:	See Data Sheets

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AEGIS LABS INC.

20 dB Emissions Bandwidth (Continued)

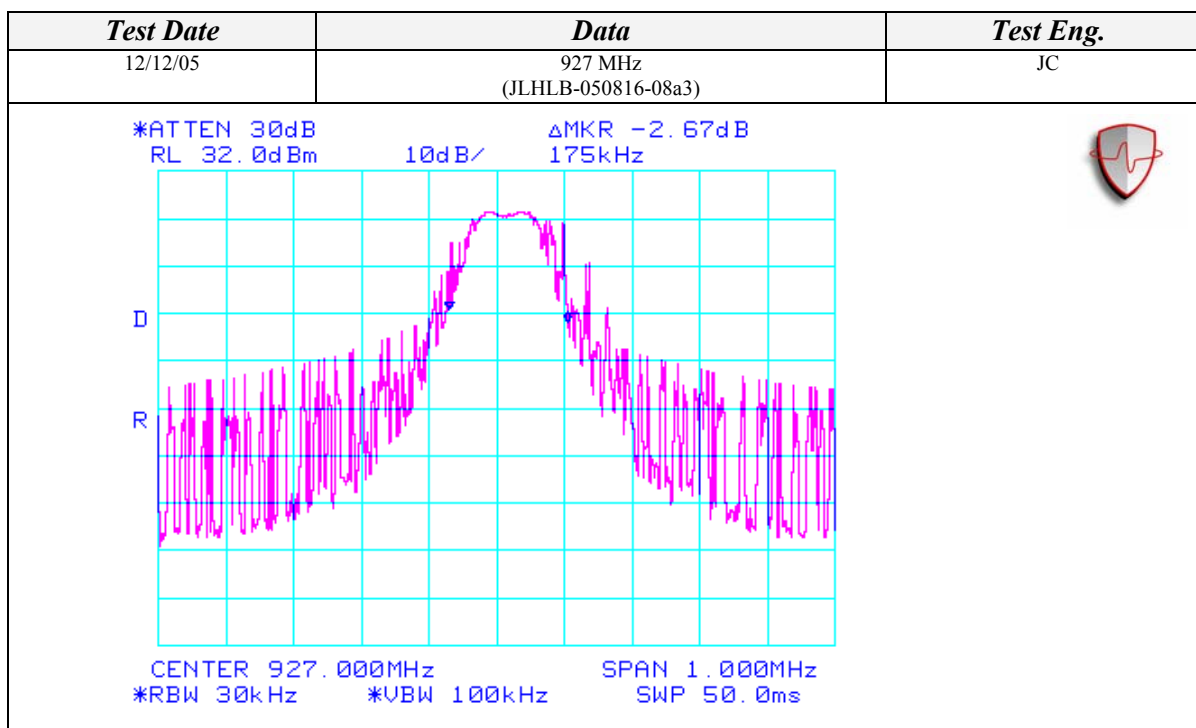


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AEGIS LABS INC.

20 dB Emissions Bandwidth (Continued)



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AEGIS LABS INC.

NUMBER OF HOPPING FREQUENCIES

CLIENT:	JLH Labs	DATE:	12/12/05
EUT:	Turf Guard Wireless Monitoring System	PROJECT NUMBER:	JLHLB-050816
MODEL NUMBER:	Pedestal Repeater Unit	TEST ENGINEER:	JC
SERIAL NUMBER:	TGRepeater	SITE #:	2
CONFIGURATION:	Tested "Pedestal Repeater" unit.	TEMPERATURE:	22 C
		HUMIDITY:	31% RH
		TIME:	12:15 PM

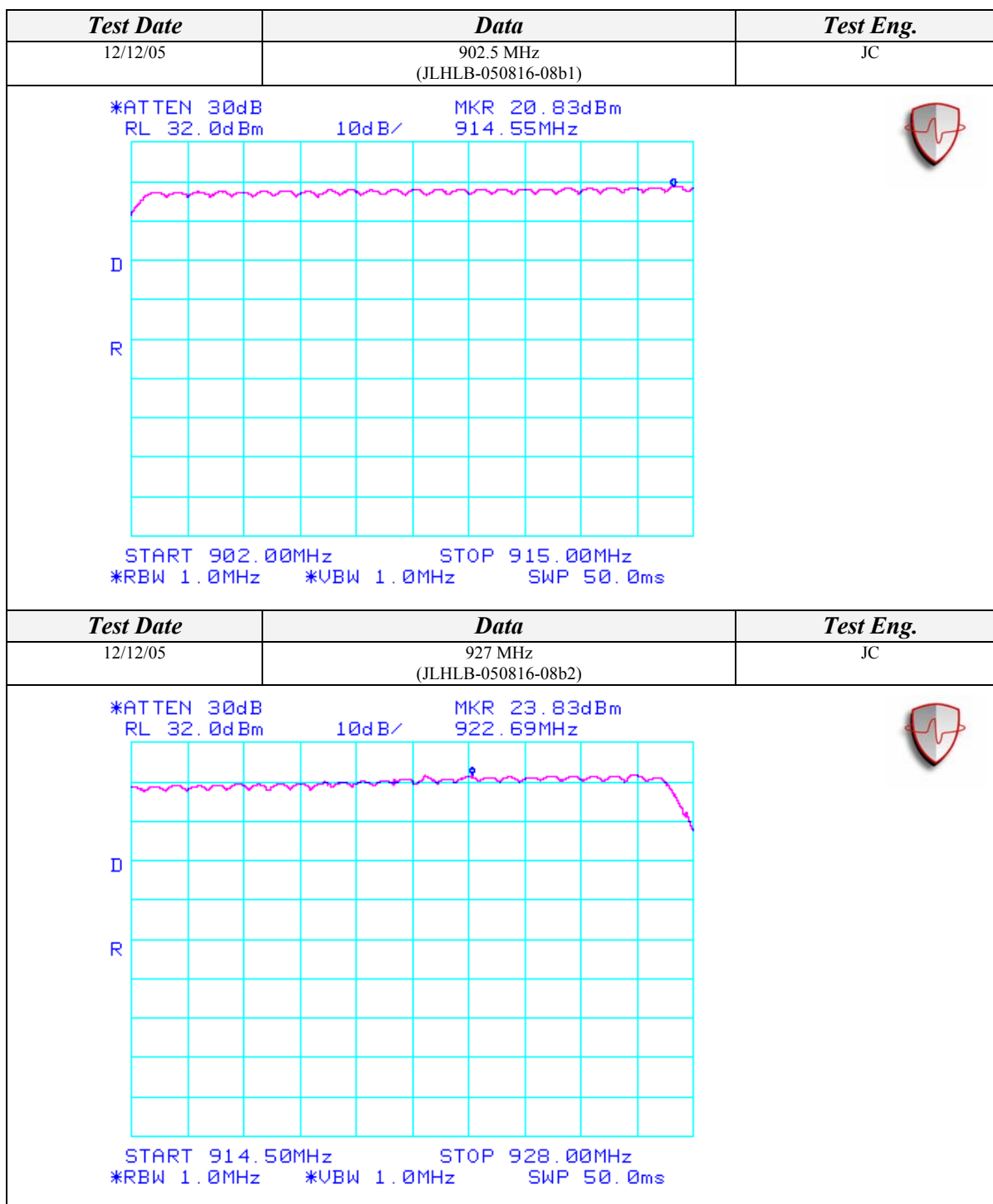
Standard:	FCC CFR 47, Part 15.247(a)(1)(i)
Description:	if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies.
Results:	See Data Sheets

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AEGIS LABS INC.

Number of Hopping Frequencies (Continued)



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AEGIS LABS INC.

CARRIER FREQUENCY SEPARATION

CLIENT:	JLH Labs	DATE:	12/12/05
EUT:	Turf Guard Wireless Monitoring System	PROJECT NUMBER:	JLHLB-050816
MODEL NUMBER:	Pedestal Repeater Unit	TEST ENGINEER:	JC
SERIAL NUMBER:	TGRepeater	SITE #:	2
CONFIGURATION:	Tested "Pedestal Repeater" unit.	TEMPERATURE:	22 C
		HUMIDITY:	31% RH
		TIME:	12:15 PM

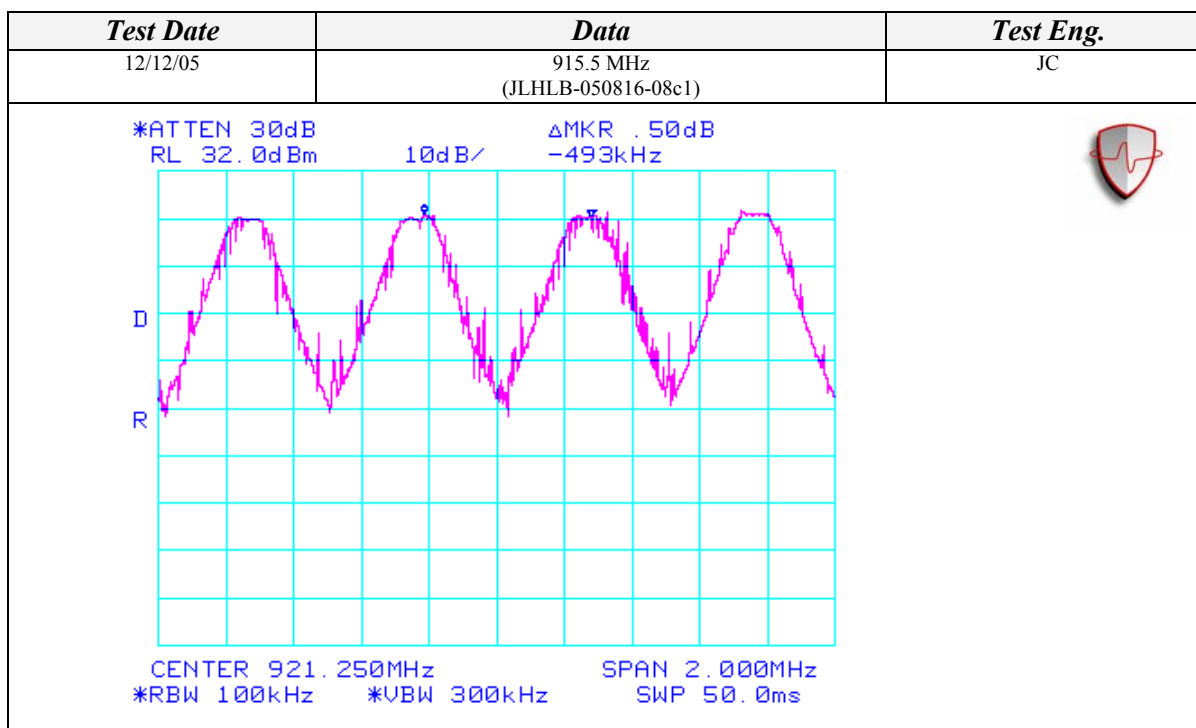
Standard:	FCC CFR 47, Part 15.247(a)(1)
Description:	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz
Results:	See Data Sheets

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AEGIS LABS INC.

Carrier Frequency Separation (Continued)



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AEGIS LABS INC.

AVERAGE TIME OF OCCUPANCY

CLIENT:	JLH Labs	DATE:	12/12/05
EUT:	Turf Guard Wireless Monitoring System	PROJECT NUMBER:	JLHLB-050816
MODEL NUMBER:	Pedestal Repeater Unit	TEST ENGINEER:	JC
SERIAL NUMBER:	TGRepeater	SITE #:	2
CONFIGURATION:	Tested "Pedestal Repeater" unit.	TEMPERATURE:	22 C
		HUMIDITY:	31% RH
		TIME:	12:15 PM

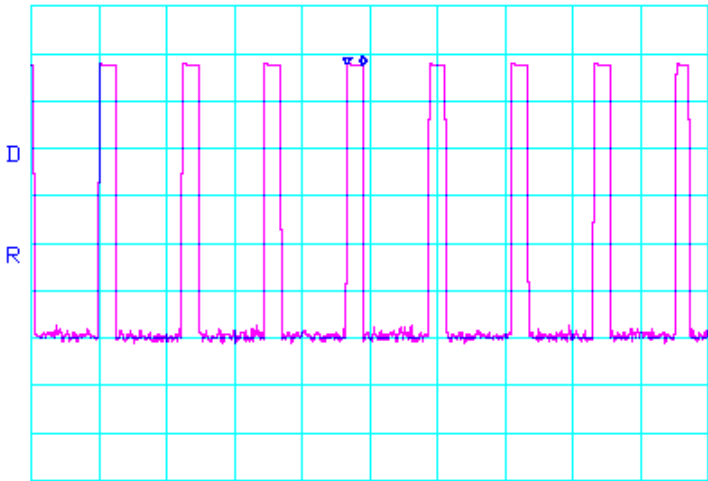
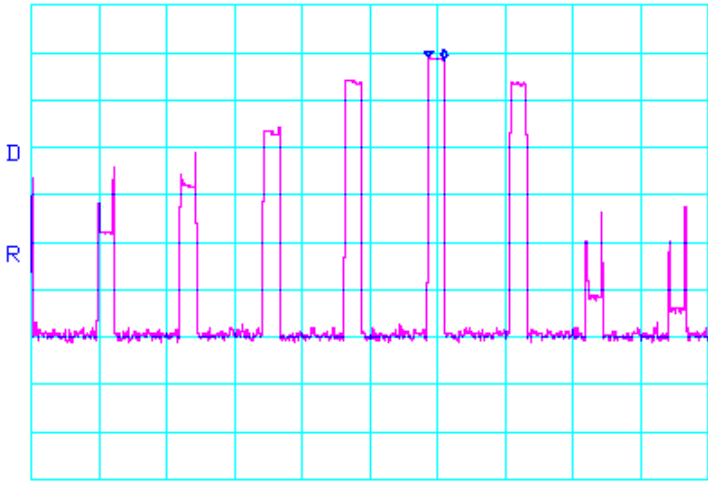
Standard:	FCC CFR 47, Part 15.247(a)(1)(i)
Description:	the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period
Results:	See Data Sheets

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AEGIS LABS INC.

Average Time of Occupancy (Continued)

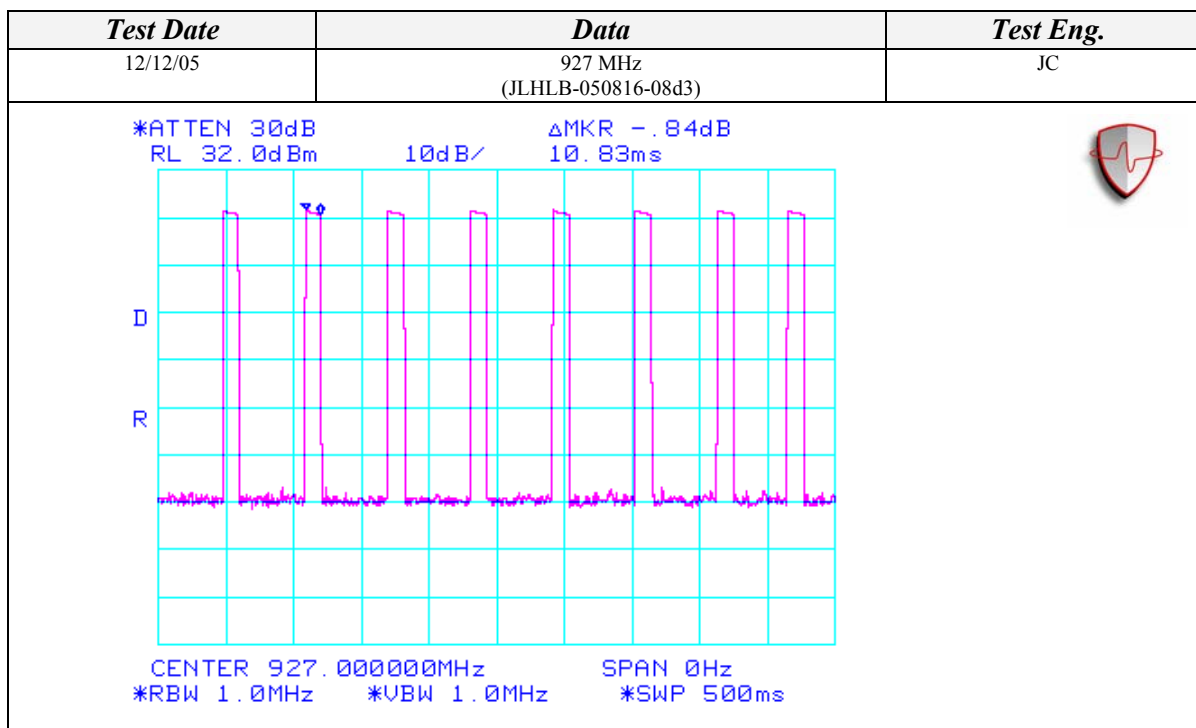
Test Date	Data	Test Eng.
12/12/05	902.5 MHz (JLHLB-050816-08d1)	JC
<div><div><div>*ATTEN 30dB RL 32.0dBm 10dB/</div><div>ΔMKR -.33dB 11.67ms</div></div><div>CENTER 902.508333MHz SPAN 0Hz *RBW 1.0MHz *VBW 1.0MHz *SWP 500ms</div></div>		
Test Date	Data	Test Eng.
12/12/05	915.5 MHz (JLHLB-050816-08d2)	JC
<div><div><div>*ATTEN 30dB RL 32.0dBm 10dB/</div><div>ΔMKR -.50dB 11.67ms</div></div><div>CENTER 915.000000MHz SPAN 0Hz *RBW 1.0MHz *VBW 1.0MHz *SWP 500ms</div></div>		

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AEGIS LABS INC.

Average Time of Occupancy (Continued)



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AEGIS LABS INC.

CONDUCTED OUT OF BAND EMISSIONS

CLIENT:	JLH Labs	DATE:	12/12/05
EUT:	Turf Guard Wireless Monitoring System	PROJECT NUMBER:	JLHLB-050816
MODEL NUMBER:	Pedestal Repeater Unit	TEST ENGINEER:	JC
SERIAL NUMBER:	TGRepeater	SITE #:	2
CONFIGURATION:	Tested "Pedestal Repeater" unit.	TEMPERATURE:	22 C
		HUMIDITY:	31% RH
		TIME:	12:15 PM

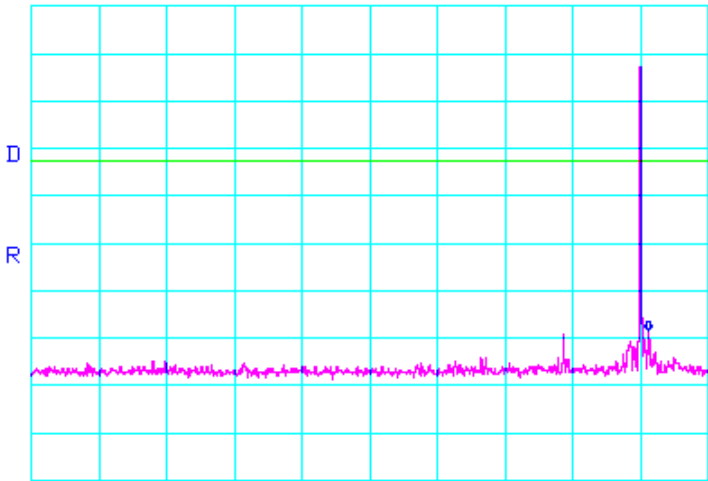

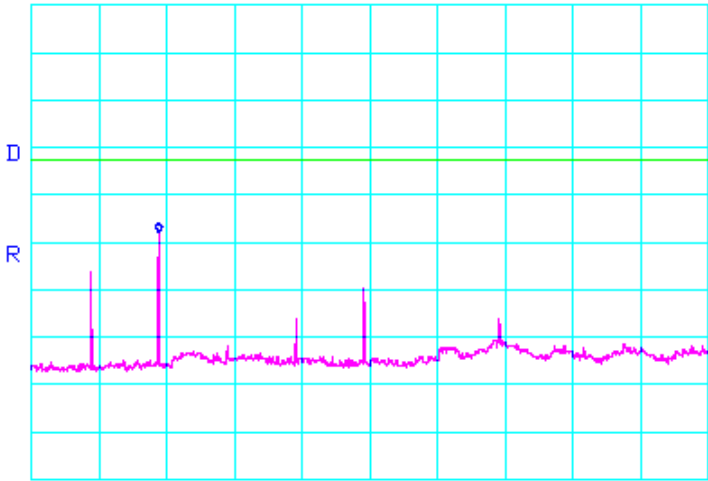

Standard:	FCC CFR 47, Part 15.247(c)
Description:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

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Report Number: JLHLB-050817F
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AEGIS LABS INC.

Conducted Out Of Band Emissions (Continued)

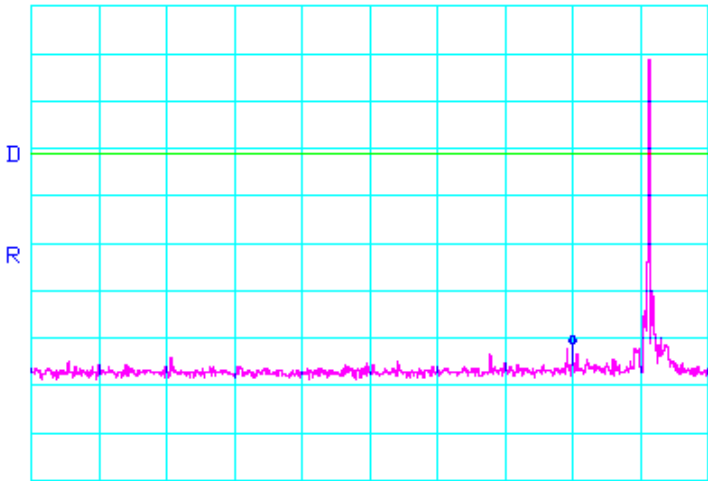
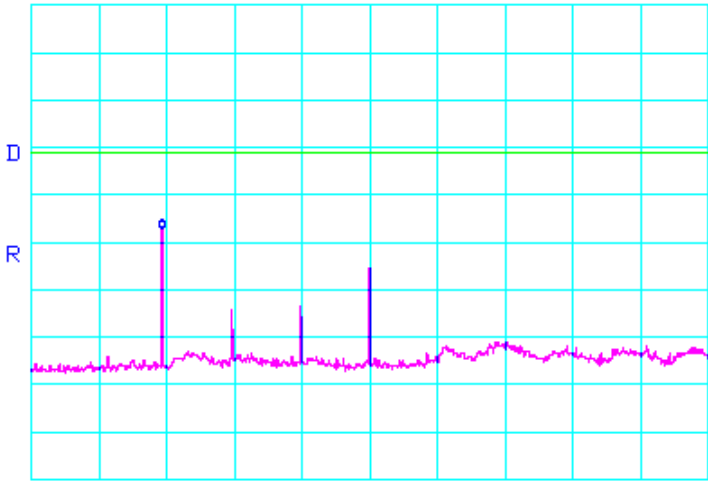
Test Date	Data	Test Eng.
12/12/05	902.5 MHz (JLHLB-050816-08e01)	JC
<div><div><div>*ATTEN 30dB RL 32.0dBm 10dB/</div><div>MKR -36.50dBm 914.3MHz</div></div><div></div><div>START 30.0MHz STOP 1.0000GHz *RBW 100kHz *VBW 300kHz SWP 540ms</div></div> <div></div>		
Test Date	Data	Test Eng.
12/12/05	902.5 MHz (JLHLB-050816-08e02)	JC
<div><div><div>*ATTEN 30dB RL 32.0dBm 10dB/</div><div>MKR -15.83dBm 2.695GHz</div></div><div></div><div>START 1.000GHz STOP 10.000GHz *RBW 100kHz *VBW 300kHz SWP 5.00sec</div></div> <div></div>		

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FCC ID: TLMSOIL2



AEGIS LABS INC.

Conducted Out Of Band Emissions (Continued)

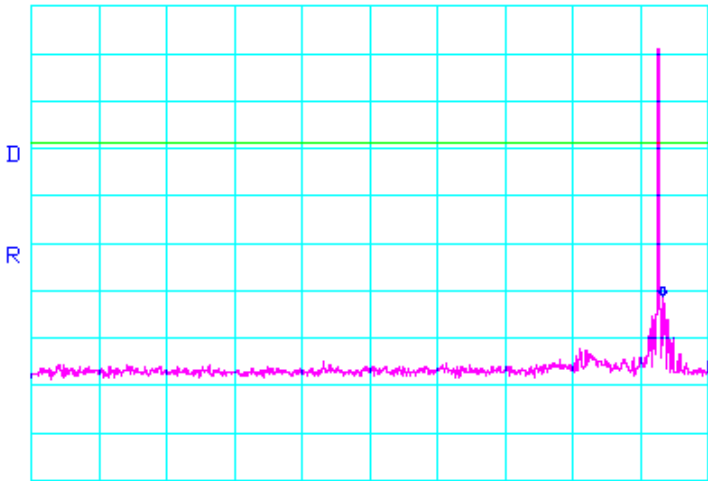

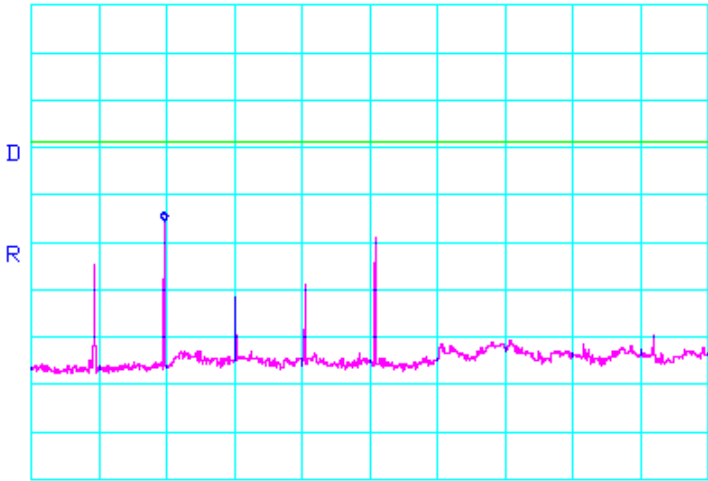

Test Date	Data	Test Eng.
12/12/05	915.5 MHz (JLHLB-050816-08e03)	JC
<div><div><div>*ATTEN 30dB RL 32.0dBm 10dB/</div><div>MKR -39.50dBm 806.0MHz</div></div><div></div><div>START 30.0MHz STOP 1.0000GHz *RBW 100kHz *VBW 300kHz SWP 540ms</div></div> <div><div></div><div></div></div>		
Test Date	Data	Test Eng.
12/12/05	915.5 MHz (JLHLB-050816-08e04)	JC
<div><div><div>*ATTEN 30dB RL 32.0dBm 10dB/</div><div>MKR -15.17dBm 2.740GHz</div></div><div></div><div>START 1.000GHz STOP 10.000GHz *RBW 100kHz *VBW 300kHz SWP 5.00sec</div></div> <div><div></div><div></div></div>		

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FCC ID: TLMSOIL2



AEGIS LABS INC.

Conducted Out Of Band Emissions (Continued)

Test Date	Data	Test Eng.
12/12/05	927 MHz (JLHLB-050816-08e05)	JC
<div><div><div>*ATTEN 30dB RL 32.0dBm 10dB/</div><div>MKR -29.17dBm 935.3MHz</div></div><div></div><div>START 30.0MHz STOP 1.0000GHz *RBW 100kHz *VBW 300kHz SWP 540ms</div></div> <div></div>		
Test Date	Data	Test Eng.
12/12/05	927 MHz (JLHLB-050816-08e06)	JC
<div><div><div>*ATTEN 30dB RL 32.0dBm 10dB/</div><div>MKR -13.50dBm 2.770GHz</div></div><div></div><div>START 1.000GHz STOP 10.000GHz *RBW 100kHz *VBW 300kHz SWP 5.00sec</div></div> <div></div>		

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