

The Watt Stopper, Inc.

MRD6/MRD8

June 16, 2003

Report No. WATT0014.1

Report Prepared By:



1-888-EMI-CERT

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Test Report



22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Issue Date: June 16, 2003

The Wattstopper, Inc.
Model : MRD6/MRD8
Report No: WATT0014.1

Emissions

Description	Pass	Fail
FCC 15.247, Spurious Radiated Emissions	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FCC 15.247, Output Power	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FCC 15.247, Band Edge Compliance	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FCC 15.247, Spurious Conducted Emissions	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FCC 15.247, Power Spectral Density	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FCC 15.247, Occupied Bandwidth	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FCC 15.247, Dwell Time	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FCC 15.247, Number of Hopping Frequencies	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FCC 15.247, Channel Spacing	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FCC 15.207, Powerline Conducted Emissions	<input checked="" type="checkbox"/>	<input type="checkbox"/>

The equipment was tested in the configuration and mode(s) of operation provided by the client. The specific tests and test levels were specified by the client. Any additional tests, or product configurations that should be tested are the responsibility of the client. Product compliance is the responsibility of the client.

List of Modifications to equipment under test required to meet the requirements:

- See the modifications page of the report.

Deviations to the test standard

- No deviations were made to the test standard

Test Facility

- The measurement facility used to collect the data is located at:
Northwest EMC, Inc.; 22975 NW Evergreen Parkway, Suite 400; Hillsboro, OR 97124
Phone: (503) 844-4066 Fax: 844-3826
This site has been fully described in a report filed with the FCC (Federal Communications Commission), and accepted by the FCC in a letter maintained in our files.

Approved By:

Greg Kiemel, Director of Engineering

This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested, the specific description is noted in each of the individual sections of the test report supporting this certificate of test.

Revision Number	Description	Date	Page Number
00	None		

FCC: The Open Area Test Sites, and conducted measurement facilities, have been fully described in reports filed with the FCC and accepted by the FCC in letters maintained in our files.



TCB: Northwest EMC has been accredited by ANSI to ISO/IEC Guide 65 as a product certifier. We have been designated by the FCC as a Telecommunications Certification Body (TCB). This allows Northwest EMC to certify transmitters to FCC specifications in accordance with 47 CFR 2.960 and 2.962.

NVLAP: Accreditation has been granted to Northwest EMC, Inc. to perform the Electromagnetic Compatibility (EMC) tests described in the Scope of Accreditation. Assessment performed to ISO/IEC 17025. Certificate Number: 200629-0, Certificate Number: 200630-0.



Australia/New Zealand: The National Association of Testing Authorities (NATA), Australia has been appointed by the ACA as an accreditation body to accredit test laboratories and competent bodies for EMC standards. Accredited test reports or assessments by competent bodies must carry the NATA logo. Test reports made by an overseas laboratory that has been accredited for the relevant standards by an overseas accreditation body that has a Mutual Recognition Agreement (MRA) with NATA are also accepted as technical grounds for product conformity. The report should be endorsed with the respective logo of the accreditation body. (A2LA)



TÜV Product Service: Included in TÜV Product Service Group's Listing of Recognized Laboratories. It qualifies in connection with the TÜV Certification after Recognition of Agent's Testing Program for the product categories and/or standards shown in TÜV's current Listing of CARAT Laboratories available from TÜV. A certificate was issued to represent that this laboratory continues to meet TÜV's CARAT Program requirements. Certificate No. USA0302C



TÜV Rheinland: Authorized to carryout EMC tests by order and under supervision of TÜV Rheinland. This authorization is based on "Conditions for EMC-Subcontractors" of November 1992.



NEMKO: Assessed and accredited by NEMKO (Norwegian testing and certification body) for European emissions and immunity testing. As a result of NEMKO's laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification (Authorization No. ELA 119).



Technology International: Assessed in accordance with ISO Guide 25 defining the general international requirements for the competence of calibration and testing laboratories and with ITI assessment criteria LACO196. Based upon that assessment Interference Technology International, Ltd., has granted approval for specifications implementing the EU Directive on EMC (89/336/EEC and amendments). The scope of the approval was provided on a Schedule of Assessment supplied with the certificate and is available upon request.



Industry Canada: Accredited by Industry Canada for performance of radiated measurements. Our open area test sites comply with RSP 100, Issue 7, section 3.3.



VCCI: Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. (*Registration Nos. - Evergreen: C-1071 and R-1025, Trails End: C-694 and R-677, Sultan: C-905, R-871 and R-1172, North Sioux City C-1246, R-1185 and R-1217*)



BSMI: Northwest EMC has been designated by NIST and validated by C-Taipei (BSMI) as a CAB to conduct tests as described in the APEC Mutual Recognition Agreement. License No.SL2-IN-E-1017.



CAB: Designated by NIST and validated by the European Commission as a Conformity Assessment Body (CAB) to conduct tests and approve products to the EMC directive and transmitters to the R&TTE directive, as described in the U.S. - EU Mutual Recognition Agreement



GOST: Northwest EMC, Inc. has been assessed and accredited by the Russian Certification bodies Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC, to perform EMC and Hygienic testing for Information Technology Products. As a result of their laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification



	NVLAP	FCC	NIST	TUV PS	TUV Rheinland	Nemko	Technology International	Industry Canada	BSMI	VCCI	GOST	NATA
IEC 1000-4-2	✓			✓	✓	✓	✓					
IEC 1000-4-3	✓			✓	✓	✓	✓					
IEC 1000-4-4	✓			✓	✓	✓	✓					
IEC 1000-4-5	✓			✓	✓	✓	✓					
IEC 1000-4-6	✓			✓	✓	✓	✓					
IEC 1000-4-8	✓			✓	✓	✓	✓					
IEC 1000-4-11	✓			✓	✓	✓	✓					
IEC 1000-3-2	✓			✓	✓	✓	✓					
IEC 1000-3-3	✓			✓	✓	✓	✓					
AS/NZS 3548	✓											✓
CNS 13438	✓								✓			
ISO/IEC17025	✓			✓	✓	✓	✓		✓			
Radiated Emissions	✓			✓	✓	✓	✓	✓	✓	✓	✓	
Conducted Emissions	✓			✓	✓	✓	✓	✓	✓	✓	✓	
OATS Sites	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
Hillsboro 5-Meter Chamber (EV01)	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
TCB for Licensed Transmitters		✓										
TCB for un-Licensed Transmitters		✓										
Cab for R&TTE			✓									
CAB for EMC			✓									

This chart represents only a partial NVLAP Scope, please reference <http://ts.nist.gov/ts/htdocs/210/214/214.htm> for the full NVLAP Scope of Accreditation

What is measurement uncertainty?

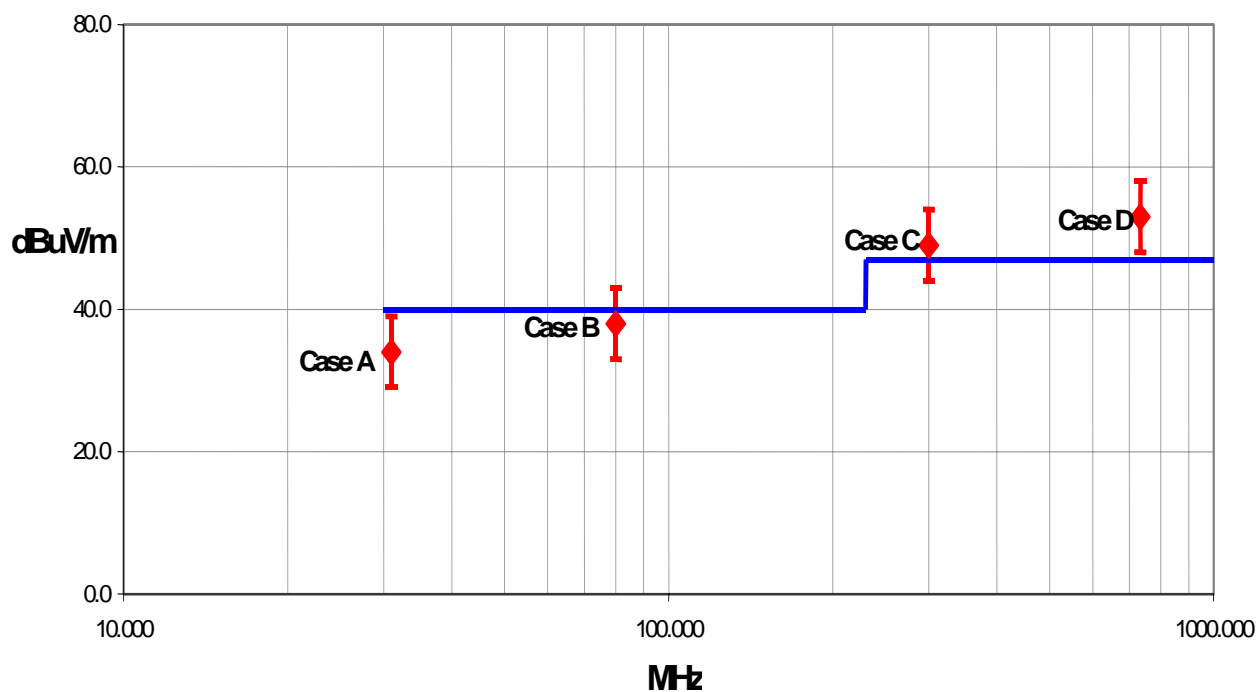
When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. The following statement of measurement uncertainty is used to reflect the accuracy of the measured result as compared with its “true” value. In the case of transient tests (ESD, EFT, Surge, Voltage Dips and Interruptions), the test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements.

The following documents were the basis for determining the uncertainty levels of our measurements:

- “ISO Guide to the Expression of Uncertainty in Measurements”, October 1993
- “NIS81: The Treatment of Uncertainty in EMC Measurements”, May 1994
- “IEC CISPR 16-3 A1 f1 Ed.1: Radio-interference measurements and statistical techniques”, December 2000

How might measurement uncertainty be applied to test results?

If the diamond marks the measured value for the test and the vertical bars bracket the range of + and – measurement uncertainty, then test results can be interpreted from the diagram below.



Test Result Scenarios:

Case A: Product complies.

Case B: Product conditionally complies. It is not possible to say with 95% confidence that the product complies.

Case C: Product conditionally does not comply. It is not possible to say with 95% confidence that the product does not comply.

Case D: Product does not comply.

Radiated Emissions ≤ 1 GHz

Value (dB)

Test Distance	Probability Distribution	Biconical Antenna		Log Periodic Antenna		Dipole Antenna	
		3m	10m	3m	10m	3m	10m
Combined standard uncertainty $u_c(y)$	normal	+ 1.86 - 1.88	+ 1.82 - 1.87	+ 2.23 - 1.41	+ 1.29 - 1.26	+ 1.31 - 1.27	+ 1.25 - 1.25
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k=2)	+ 3.72 - 3.77	+ 3.64 - 3.73	+ 4.46 - 2.81	+ 2.59 - 2.52	+ 2.61 - 2.55	+ 2.49 - 2.49

Radiated Emissions > 1 GHz

Value (dB)

Test Distance	Probability Distribution	Without High Pass Filter		With High Pass Filter	
		3m	10m	3m	10m
Combined standard uncertainty $u_c(y)$	normal	+ 1.29 - 1.25	+ 1.29 - 1.25	+ 1.38 - 1.35	+ 1.38 - 1.35
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k=2)	+ 2.57 - 2.51	+ 2.57 - 2.51	+ 2.76 - 2.70	+ 2.76 - 2.70

Conducted Emissions

Test Distance	Probability Distribution	Value (+/- dB)	
		3m	10m
Combined standard uncertainty $u_c(y)$	normal	1.48	1.48
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k = 2)	2.97	2.97

Radiated Immunity

Test Distance	Probability Distribution	Value (+/- dB)	
		3m	10m
Combined standard uncertainty $u_c(y)$	normal	1.05	1.05
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k = 2)	2.11	2.11

Conducted Immunity

Test Distance	Probability Distribution	Value (+/- dB)	
		3m	10m
Combined standard uncertainty $u_c(y)$	normal	1.05	1.05
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k = 2)	2.10	2.10

Legend

$u_c(y)$ = square root of the sum of squares of the individual standard uncertainties

U = combined standard uncertainty multiplied by the coverage factor: k . This defines an interval about the measured result that will encompass the true value with a confidence level of approximately 95%. If a higher level of confidence is required, then $k=3$ (CL of 99.7%) can be used. Please note that with a coverage factor of one, $u_c(y)$ yields a confidence level of only 68%.

**California****Orange County Facility**

41 Tesla Ave.
Irvine, CA 92618
(888) 364-2378
FAX (503) 844-3826

**Oregon****Evergreen Facility**

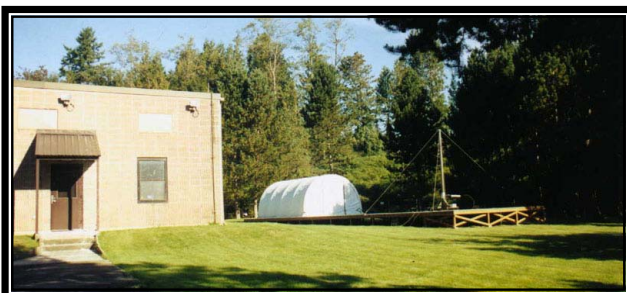
22975 NW Evergreen Pkwy.,
Suite 400
Hillsboro, OR 97124
(503) 844-4066
FAX (503) 844-3826

**Oregon****Trails End Facility**

30475 NE Trails End Lane
Newberg, OR 97132
(503) 844-4066
FAX (503) 537-0735

**South Dakota****North Sioux City Facility**

745 N. Derby Lane
P.O. Box 217
North Sioux City, SD 57049
(605) 232-5267
FAX (605) 232-3873

**Washington****Sultan Facility**

14128 339th Ave. SE
Sultan, WA 98294
(888) 364-2378
FAX (360) 793-2536

Party Requesting the Test

Company Name:	The Watt Stopper Inc.
Address:	6120 Paseo Del Norte, Suite 1-2
City, State, Zip:	Carlsbad, CA 92009
Test Requested By:	Bertrand Debever
Model:	MRD8/MRD6
First Date of Test:	5-30-03
Last Date of Test:	6-16-03
Receipt Date of Samples:	5-30-03
Equipment Design Stage:	Pre-Production
Equipment Condition:	No visual damage.

Information Provided by the Party Requesting the Test

Clocks/Oscillators:	Not provided at time of test.
I/O Ports:	DC and Control

Functional Description of the EUT (Equipment Under Test):

Wall mount unit operating in the 902-928MHz band as a 15.247(f) hybrid system.

Client Justification for EUT Selection:

The product is an engineering sample, representative of the final product.

Client Justification for Test Selection

These tests satisfy the requirements for FCC Certification of the radio transmitter.

Equipment modifications				
Item #	Test	Date	Modification	Note
1	Spurious Radiated Emissions	05-30-2003	No EMI suppression devices were added or modified during this test.	Same configuration as delivered.
2	AC Powerline Conducted Emissions	06-02-2003	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.
3	Output Power	06-06-2003	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.
4	Occupied Bandwidth	06-09-2003	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.
5	Band Edge Compliance	06-09-2003	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.
6	Spurious Conducted Emissions	06-12-2003	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.
7	Channel Spacing	06-12-2003	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.
8	Number of Hopping Frequencies	06-12-2003	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.
9	Dwell Time	06-13-2003	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.
10	Power Spectral Density	06-13-2003	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.

Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

All

Operating Modes Investigated:

Typical

Data Rates Investigated:

Maximum

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

120 VAC, 60 Hz.

Software\Firmware Applied During Test

Exercise software	Standard Production Software	Version	Unknown
Description			
Transmits at all channels.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter	N/A	A35-U0900	N/A
EUT	The Watt Stopper, Inc.	MRD8	N/A
EUT	The Watt Stopper, Inc.	MRD6	N/A

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	PA	2.2	PA	EUT	AC Adapter

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Tektronix	2784	AAO	02/26/2003	24 mo

Test Description

Requirement: Per 47 CFR 15.247(a)(1), the hopping channel carrier frequencies must be separated by a minimum of 25 kHz or the 20dB bandwidth of the hopping channel. The measurement is made with the spectrum analyzer's resolution bandwidth set to greater than or equal to 1% of the span, and the video bandwidth set to greater than or equal to the resolution bandwidth.

Configuration: The carrier frequency separation was measured between each of 5 hopping channels in the middle of the authorized band. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The hopping function of the EUT was enabled.

Completed by:



NORTHWEST
EMC**EMISSIONS DATA SHEET**Rev BETA
01/30/01

EUT: MRD6 / MRD8			Work Order: WATT0014		
Serial Number: N/A			Date: 06/12/03		
Customer: The Watt Stopper, Inc.			Temperature: 23 degrees C		
Attendees: N/A		Tested by: Rod Peloquin	Humidity: 38% RH		
Customer Ref. No.: N/A		Power: 120VAC/60Hz	Job Site: EV06		

TEST SPECIFICATIONS

Specification: CFR 47 Part 15.247(a)(1)	Year: 2003	Method: DA 00-705, ANSI C63.4	Year: 1992
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SAMPLE CALCULATIONS**COMMENTS****EUT OPERATING MODES**

Modulated by PRBS at maximum data rate. Hopping carrier.

DEVIATIONS FROM TEST STANDARD

None

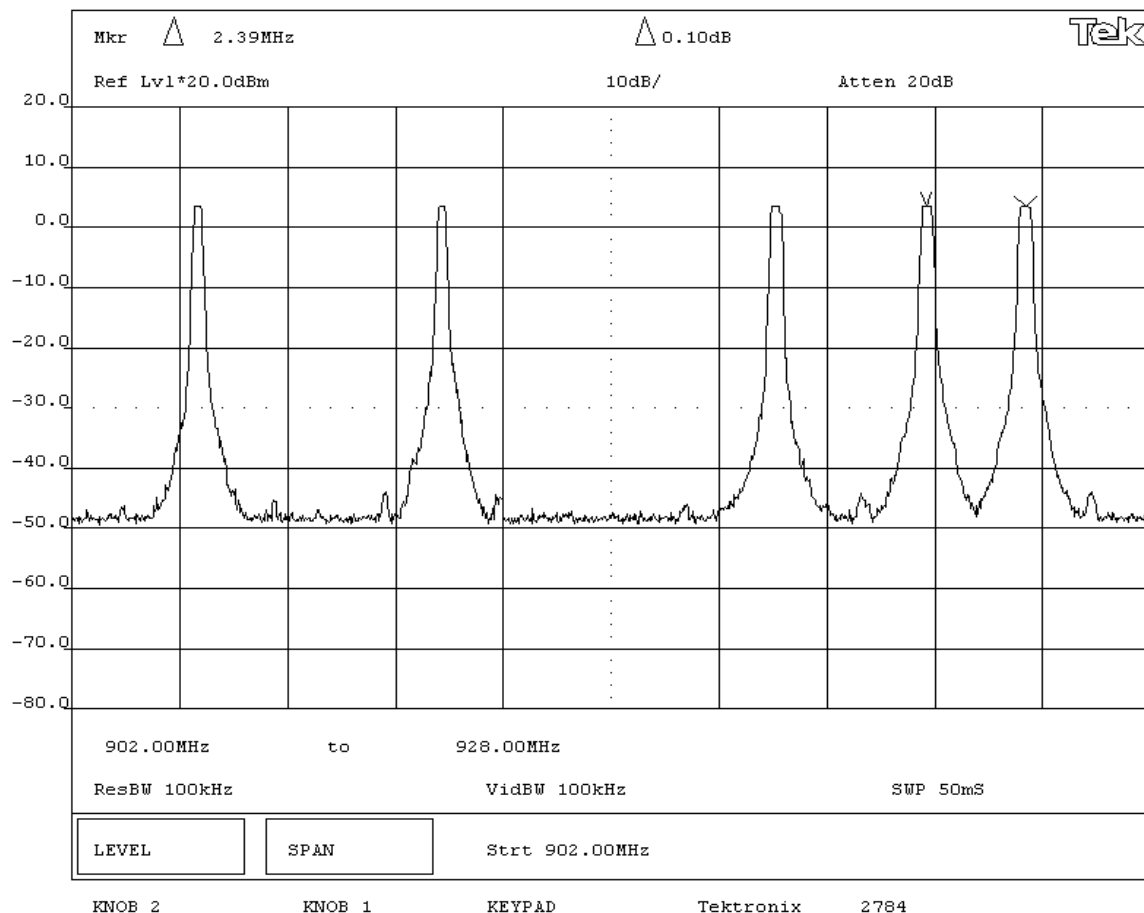
REQUIREMENTS

The hopping channel carrier frequencies shall be separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

RESULTS**CHANNEL SPACING**

Pass

2.39MHz

SIGNATURETested By: **DESCRIPTION OF TEST****Carrier Frequency Separation**

Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

Mid

Operating Modes Investigated:

Typical

Data Rates Investigated:

Maximum

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

120 VAC, 60 Hz.

Software\Firmware Applied During Test

Exercise software	Standard Production Software	Version	Unknown
Description			
Transmits all channels.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter	N/A	A35-U0900	N/A
EUT	The Watt Stopper, Inc.	MRD8	N/A
EUT	The Watt Stopper, Inc.	MRD6	N/A

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	PA	2.2	PA	EUT	AC Adapter

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Tektronix	2784	AAO	02/26/2003	24 mo

Test Description

Requirement: Per 47 CFR 15.247(f), The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a period in seconds equal to the number of hopping channels employed multiplied by 0.4. The measurement is made with the spectrum analyzer's span set to zero, the resolution bandwidth set to 1 MHz, and the video bandwidth set to 7 MHz. The measurement is made in two steps. First, the sweep speed is adjusted to capture the pulse width or dwell time of a single transmission. Then, the sweep speed is set to 2 seconds to count the number of transmissions during that period. The dwell time of a single transmission multiplied by the number of transmissions during a 2 second period equals the average time of occupancy during a 2 second period.

Configuration: The average dwell time per hopping channel was measured at one hopping channel in the middle of the authorized band. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The hopping function of the EUT was enabled.

Completed by:



EMISSIONS DATA SHEET

EUT: MRD6 / MRD8			Work Order: WATT0014		
Serial Number: N/A			Date: 06/16/03		
Customer: The Watt Stopper, Inc.			Temperature: 25 °C		
Attendees: None			Humidity: 34%		
Customer Ref. No.: N/A			Bar. Pressure: 30.15		
Tested by: Rod Peloquin			Power: 120VAC/60Hz		Job Site: EV06
Specification: 47 CFR 15.247(f)		Year: 2003	Method: DA 00-705, ANSI C63.4		Year: 1992

SAMPLE CALCULATIONS

Total Dwell time = (Dwell Time during a single transmission) X (Number of transmissions during a 2 second period)

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate. Hopping carrier.

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a period in seconds equal to the number of hopping channels employed multiplied by 0.4.

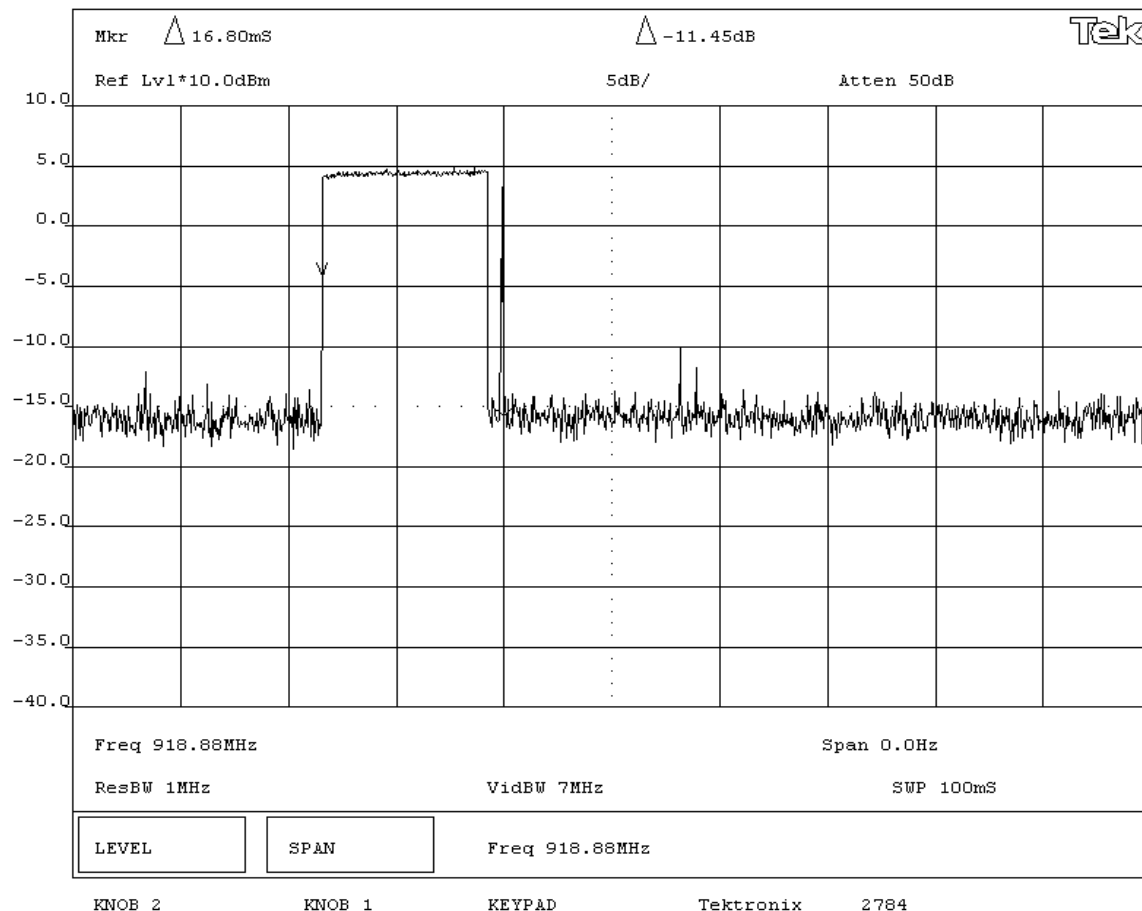
RESULTS	TOTAL DWELL TIME IN 2 SECOND PERIOD	DWELL TIME DURING A SINGLE TRANSMISSION
Pass	168mS	16.8mS


SIGNATURE

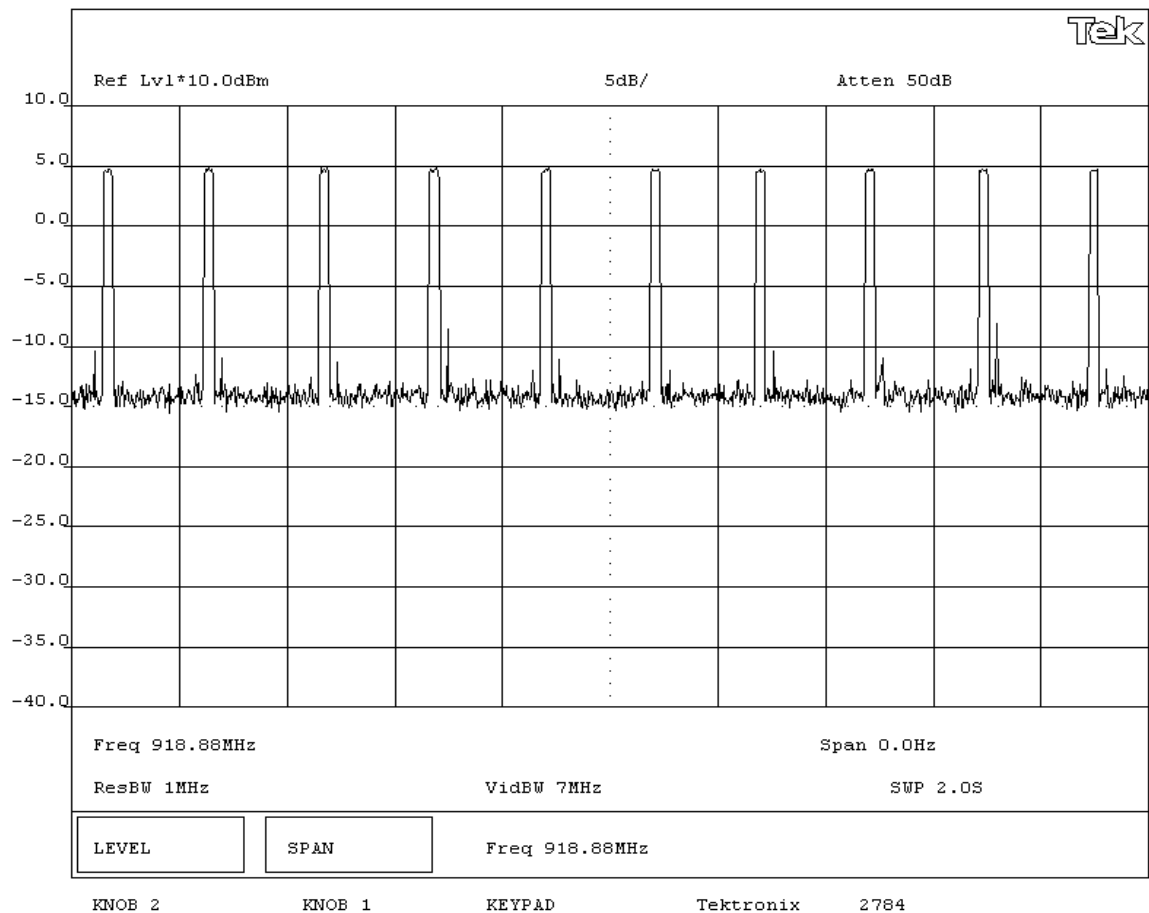
Tested By: 

DESCRIPTION OF TEST

Time of Occupancy (Dwell Time) - Single Transmission



NORTHWEST EMC				EMISSIONS DATA SHEET				BETA 01/30/0	
EUT: MRD6 / MRD8				Work Order: WATT0014					
Serial Number: N/A				Date: 06/16/03					
Customer: The Watt Stopper, Inc.				Temperature: 25 °C					
Attendees: None				Humidity: 34%					
Customer Ref. No.: N/A				Bar. Pressure: 30.15					
Tested by: Rod Peloquin				Power: 120VAC/60Hz				Job Site: EV06	
Specification: 47 CFR 15.247(f)		Year: 2003		Method: DA 00-705, ANSI C63.4		Year: 1992			
SAMPLE CALCULATIONS									
Total Dwell time = (Dwell Time during a single transmission) X (Number of transmissions during a 2 second period)									
COMMENTS									
5 hopping channels									
EUT OPERATING MODES									
Modulated by PRBS at maximum data rate. Hopping carrier.									
DEVIATIONS FROM TEST STANDARD									
None									
REQUIREMENTS									
The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a period in seconds equal to the number of hopping channels employed multiplied by 0.4.									
RESULTS		TOTAL DWELL TIME IN 2 SECOND PERIOD			NUMBER OF TRANSMISSIONS DURING A 2 SECOND PERIOD				
Pass		168mS			10				
SIGNATURE									
 Tested By: _____									
DESCRIPTION OF TEST									
Time of Occupancy (Dwell Time) - Number of transmissions during a 2 second period									



Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

All

Operating Modes Investigated:

Typical

Data Rates Investigated:

Maximum

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

120 VAC, 60 Hz.

Software\Firmware Applied During Test

Exercise software	Standard Production Software	Version	Unknown
Description			
Transmits at all channels.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter	N/A	A35-U0900	N/A
EUT	The Watt Stopper, Inc.	MRD8	N/A
EUT	The Watt Stopper, Inc.	MRD6	N/A

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	PA	2.2	PA	EUT	AC Adapter

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Tektronix	2784	AAO	02/26/2003	24 mo


Test Description

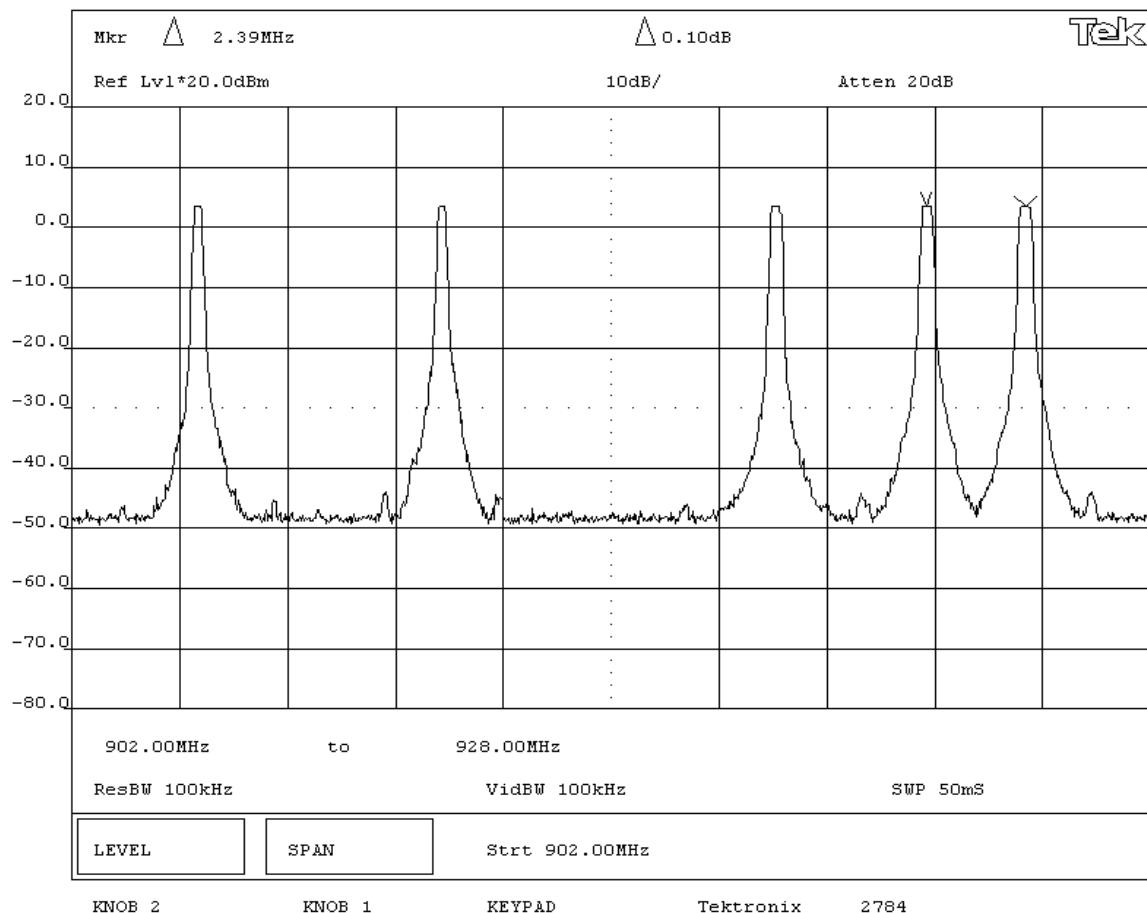
Requirement: The number of hopping channels is required to be measured to allow calculation of total dwell time per 47 CFR 15.247(f). The measurement is made with the spectrum analyzer's resolution bandwidth set to 100 kHz, and the video bandwidth set to greater than or equal to the resolution bandwidth.

Configuration: The number of hopping frequencies was measured across the authorized band. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer.

Completed by:



NORTHWEST EMC				EMISSIONS DATA SHEET				Rev BETA 01/30/01	
EUT: MRD6 / MRD8				Work Order: WATT0014					
Serial Number: N/A				Date: 06/12/03					
Customer: The Watt Stopper, Inc.				Temperature: 23 degrees C					
Attendees: N/A				Tested by: Rod Peloquin		Humidity: 38% RH			
Customer Ref. No.: N/A				Power: 120VAC/60Hz		Job Site: EV06			
TEST SPECIFICATIONS									
Specification: CFR 47 Part 15.247(f)				Year: 2003		Method: DA 00-705, ANSI C63.4		Year: 1992	
SAMPLE CALCULATIONS									
COMMENTS									
EUT OPERATING MODES									
Modulated by PRBS at maximum data rate. Hopping carrier.									
DEVIATIONS FROM TEST STANDARD									
None									
REQUIREMENTS									
To determine dwell time per 15.247(f) the total number of hopping frequencies must be determined									
RESULTS									
				NUMBER OF HOPPING FREQUENCIES					
Pass				5					
SIGNATURE									
 Tested By: _____									
DESCRIPTION OF TEST									
HOPPING CHANNELS									



Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

High

Mid

Low

Operating Modes Investigated:

Typical

Data Rates Investigated:

Typical

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

120VAC/60Hz

Software\Firmware Applied During Test

Exercise software	Standard Production Software	Version	Unknown
Description			
Transmits at low, mid, and high channels.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter	N/A	A35-U0900	N/A
EUT	The Watt Stopper, Inc.	MRD8	N/A
EUT	The Watt Stopper, Inc.	MRD6	N/A

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	PA	2.2	PA	EUT	AC Adapter

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Tektronix	2784	AAO	02/26/2003	24 mo


Test Description

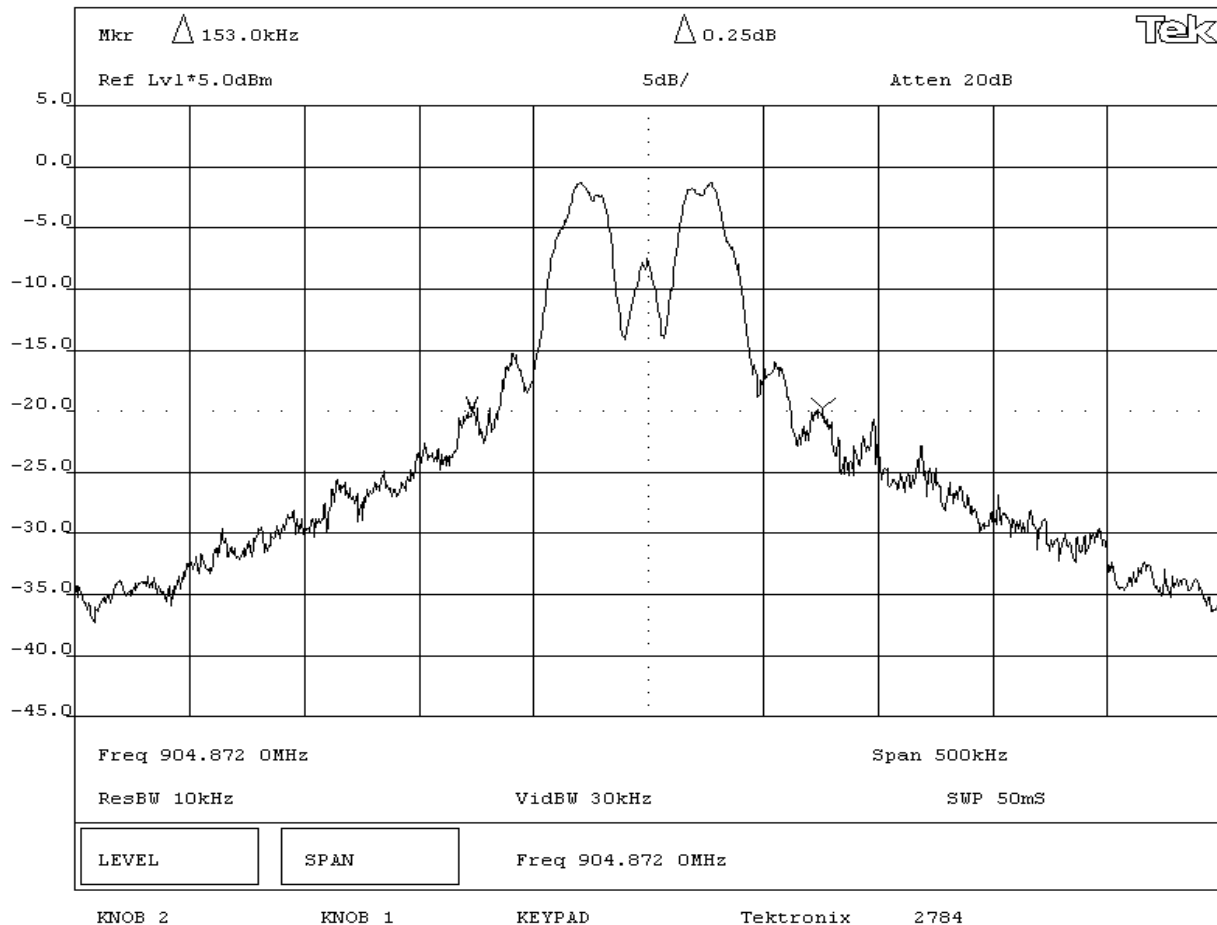
Requirement: Per 47 CFR 15.247(a)(1)(i), the 20 dB bandwidth of a hopping channel must be less than 500 kHz. The measurement is made with the spectrum analyzer's resolution bandwidth set to $\geq 1\%$ of the 20dB bandwidth, and the video bandwidth set to greater than or equal to the resolution bandwidth.


Configuration: The occupied bandwidth was measured with the EUT set to low, medium, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate in a no hop mode.

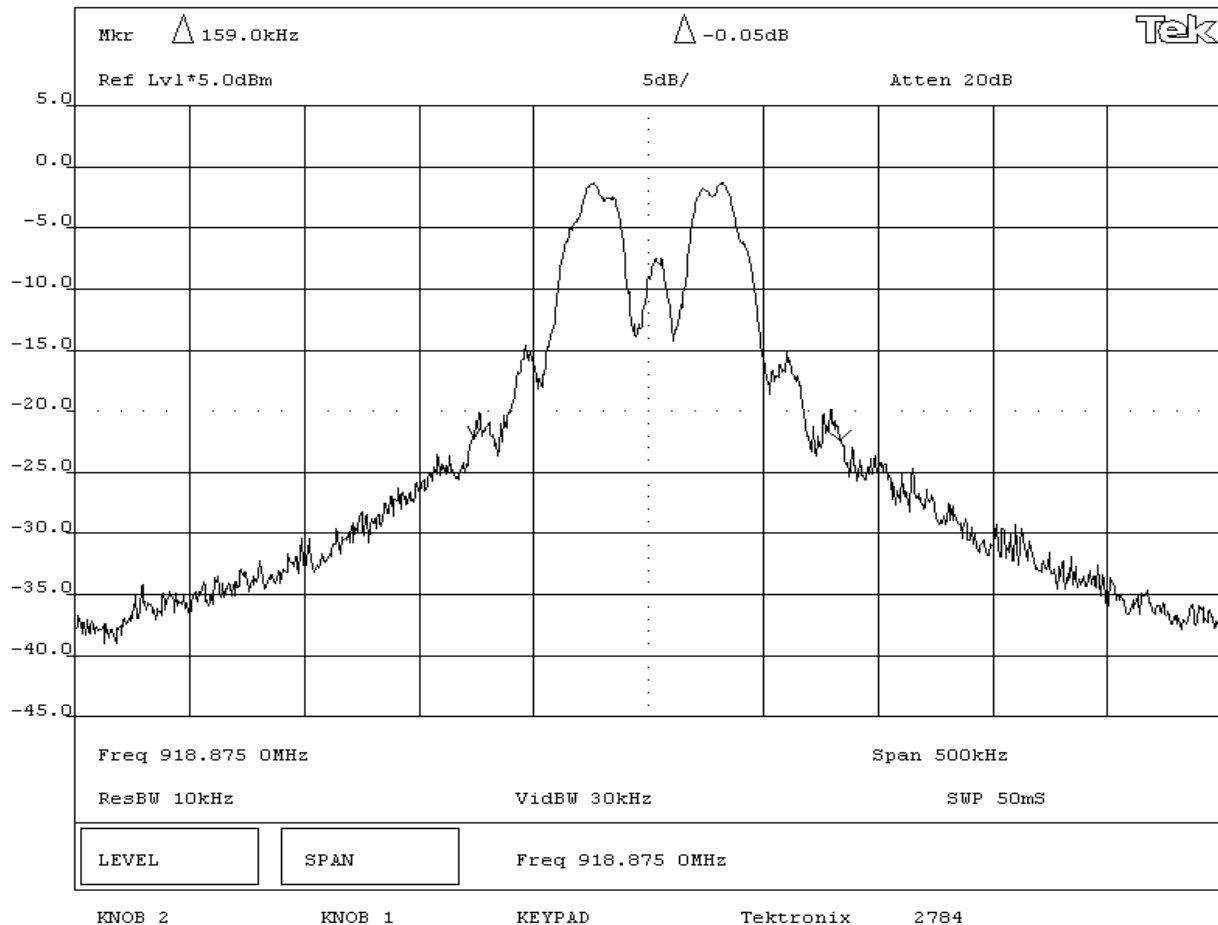
Completed by:




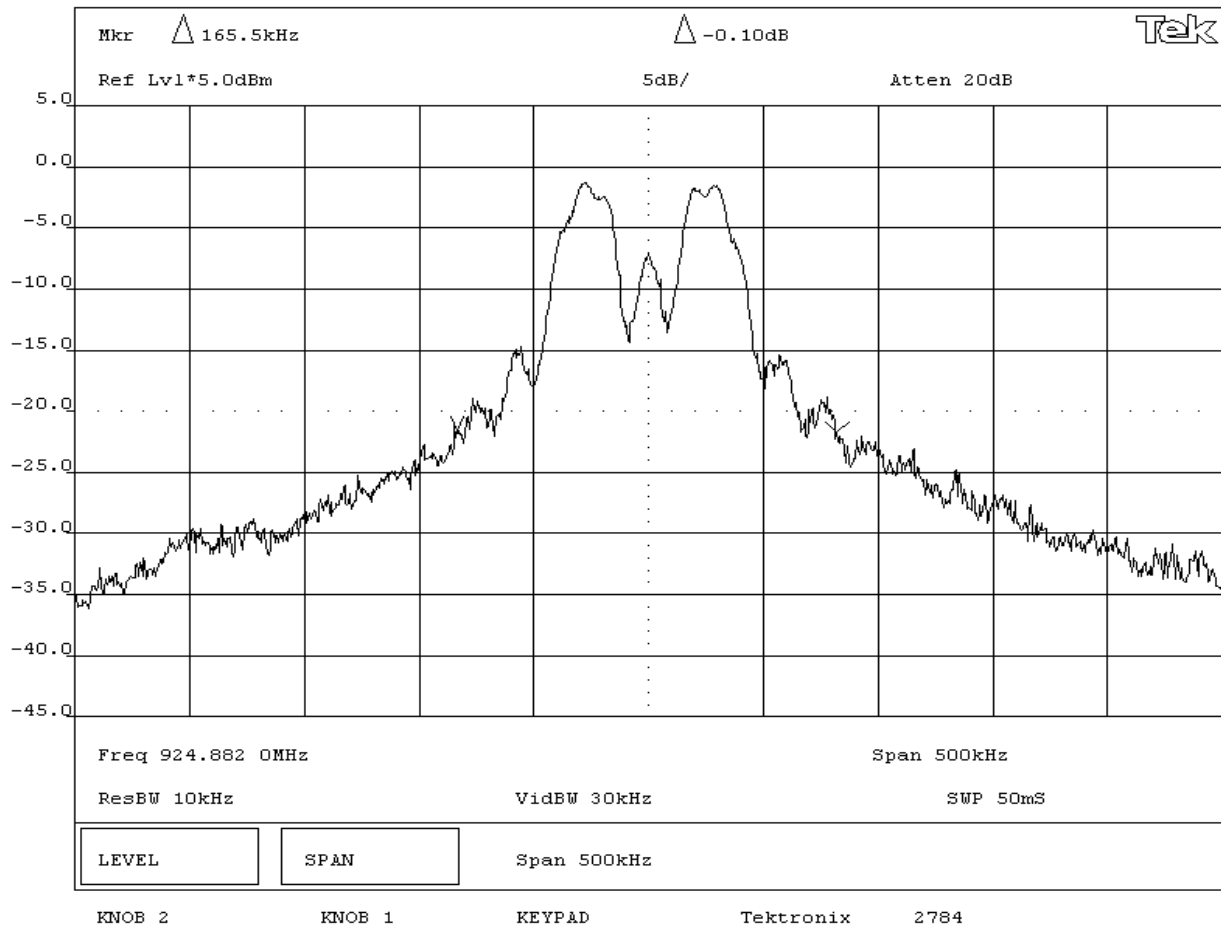
NORTHWEST EMC				EMISSIONS DATA SHEET				Transmitters	
				Occupied Bandwidth				Rev dt11/15/02	
EUT:		MRD6 / MRD8				Work Order:		WATT0014	
Serial Number:		N/A				Date:		06/09/03	
Customer:		The Watt Stopper, Inc.				Temperature:		25 °C	
Attendees:		None				Humidity:		34%	
Customer Ref. No.:		N/A				Bar. Pressure:		29.89	
Tested by:		Rod Peloquin		Power:		120VAC/60Hz		Job Site:	
								EV06	
TEST SPECIFICATIONS									
Specification:		CFR 47 Part 15.247(a)(1)		Year:		2003		Method:	
								DA 00-705, ANSI C63.4	
								Year:	
								1992	
SAMPLE CALCULATIONS									
COMMENTS									
None									
EUT OPERATING MODES									
No hop mode									
DEVIATIONS FROM TEST STANDARD									
REQUIREMENTS									
RESULTS									
Pass					BANDWIDTH				
					153KHz				
SIGNATURE									
<div style="text-align: center;">  </div> <div> Tested By: _____ </div>									
DESCRIPTION OF TEST									
Low Channel									



NORTHWEST		EMISSIONS DATA SHEET		Transmitters	
EMC		Occupied Bandwidth		Rev dt11/15/02	
EUT: MRD6 / MRD8		Work Order: WATT0014			
Serial Number: N/A		Date: 06/09/03			
Customer: The Watt Stopper, Inc.		Temperature: 25 °C			
Attendees: None		Humidity: 34%			
Customer Ref. No.: N/A		Bar. Pressure: 29.89			
Tested by: Rod Peloquin		Power: 120VAC/60Hz		Job Site: EV06	
TEST SPECIFICATIONS					
Specification: CFR 47 Part 15.247(a)(1)		Year: 2003		Method: DA 00-705, ANSI C63.4	
				Year: 1992	
SAMPLE CALCULATIONS					
COMMENTS					
None					
EUT OPERATING MODES					
No hop mode					
DEVIATIONS FROM TEST STANDARD					
REQUIREMENTS					
RESULTS					
Pass		BANDWIDTH			
		159KHz			
SIGNATURE					
<div>Tested By: </div>					
DESCRIPTION OF TEST					
Mid Channel					



EMISSIONS DATA SHEET				Transmitters	
Occupied Bandwidth				Rev dt11/15/02	
NORTHWEST		EUT: MRD6 / MRD8		Work Order: WATT0014	
EMC		Serial Number: N/A		Date: 06/09/03	
		Customer: The Watt Stopper, Inc.		Temperature: 25 °C	
		Attendees: None		Humidity: 34%	
		Customer Ref. No.: N/A		Bar. Pressure: 29.89	
		Tested by: Rod Peloquin		Power: 120VAC/60Hz	
				Job Site: EV06	
TEST SPECIFICATIONS					
Specification: CFR 47 Part 15.247(a)(1)		Year: 2003		Method: DA 00-705, ANSI C63.4	
				Year: 1992	
SAMPLE CALCULATIONS					
COMMENTS					
None					
EUT OPERATING MODES					
No hop mode					
DEVIATIONS FROM TEST STANDARD					
REQUIREMENTS					
RESULTS					
Pass			BANDWIDTH		
			165.5KHz		
SIGNATURE					
 Tested By: _____					
DESCRIPTION OF TEST					
High Channel					



Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

High

Mid

Low

Operating Modes Investigated:

Typical

Data Rates Investigated:

Typical

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

120 VAC, 60 Hz.

Software\Firmware Applied During Test

Exercise software	Standard Production Software	Version	Unknown
Description			
Transmits at low, mid, and high channels.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter	N/A	A35-U0900	N/A
EUT	The Watt Stopper, Inc.	MRD8	N/A
EUT	The Watt Stopper, Inc.	MRD6	N/A

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	PA	2.2	PA	EUT	AC Adapter

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Tektronix	2784	AAO	02/26/2003	24 mo

Test Description

Requirement: Per 47 CFR 15.247(b)(3), the maximum peak output power must not exceed 1 Watt. The measurement is made using either a peak power meter, or a spectrum analyzer using the following settings:


- Resolution bandwidth set to greater than the 6 dB bandwidth of the modulated carrier, and
- The video bandwidth set to greater than or equal to the resolution bandwidth.

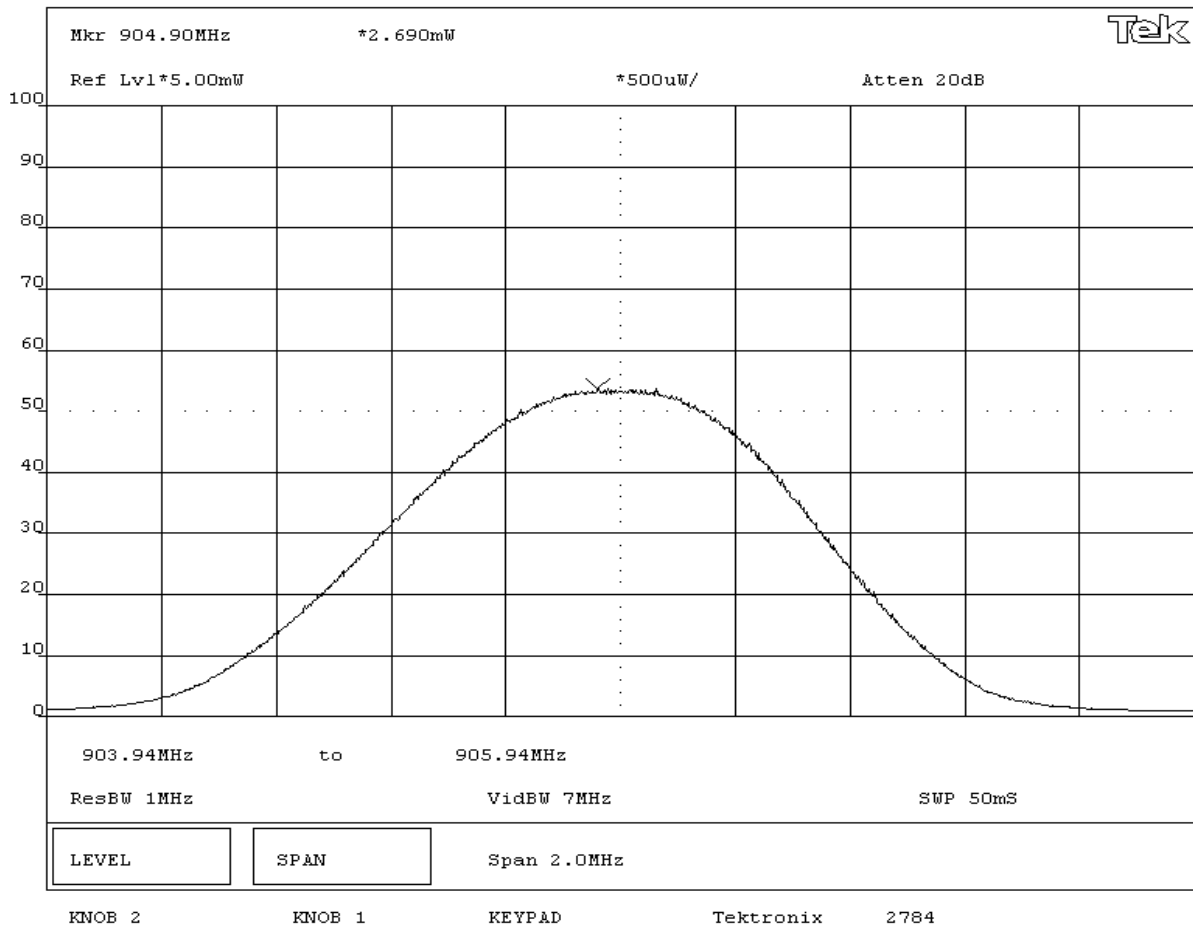
Configuration: The peak output power was measured with the EUT set to low, medium, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was transmitting at its maximum data rate in a no hop mode.


De Facto EIRP Limit: Per 47 CFR 15.247 (b)(4), the EUT meets the de facto EIRP limit of +36dBm.

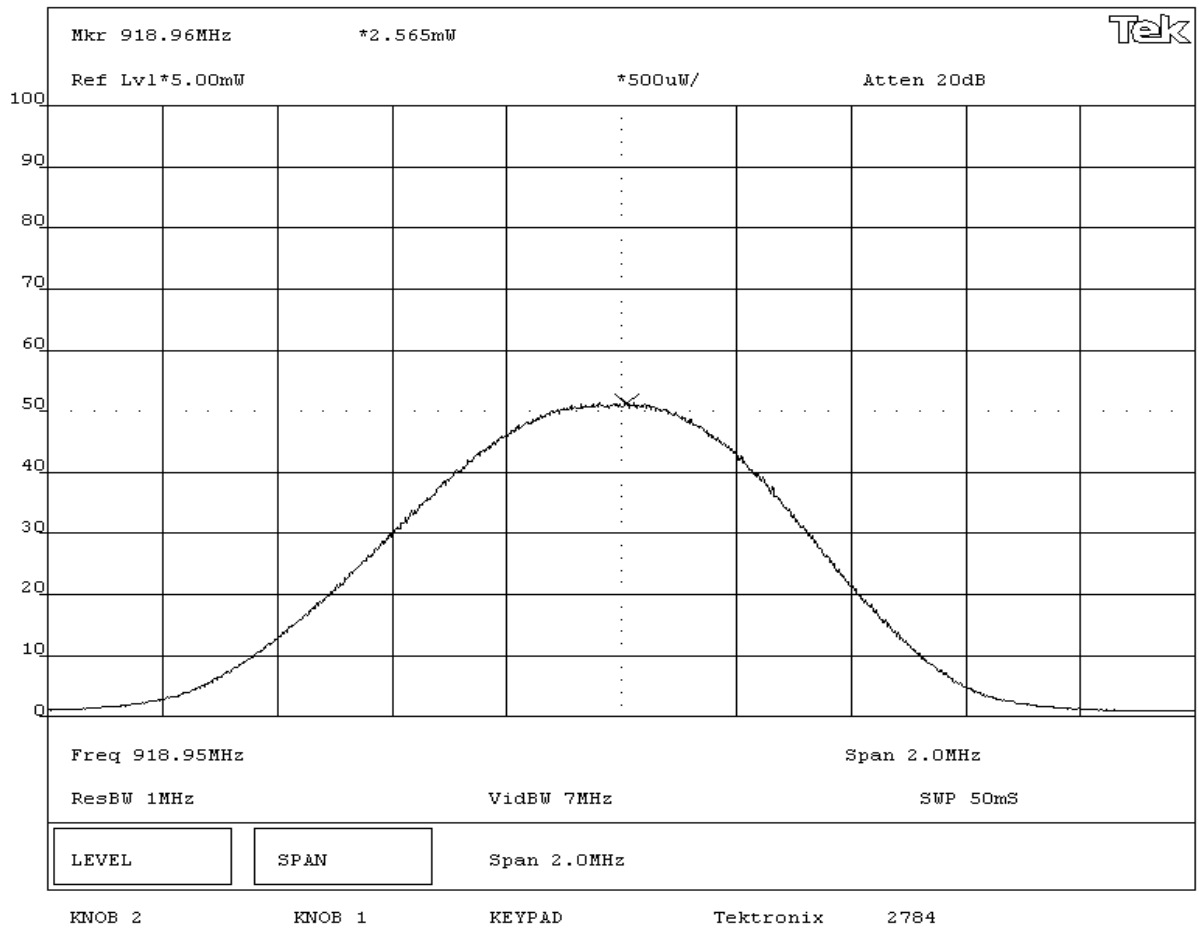
Completed by:




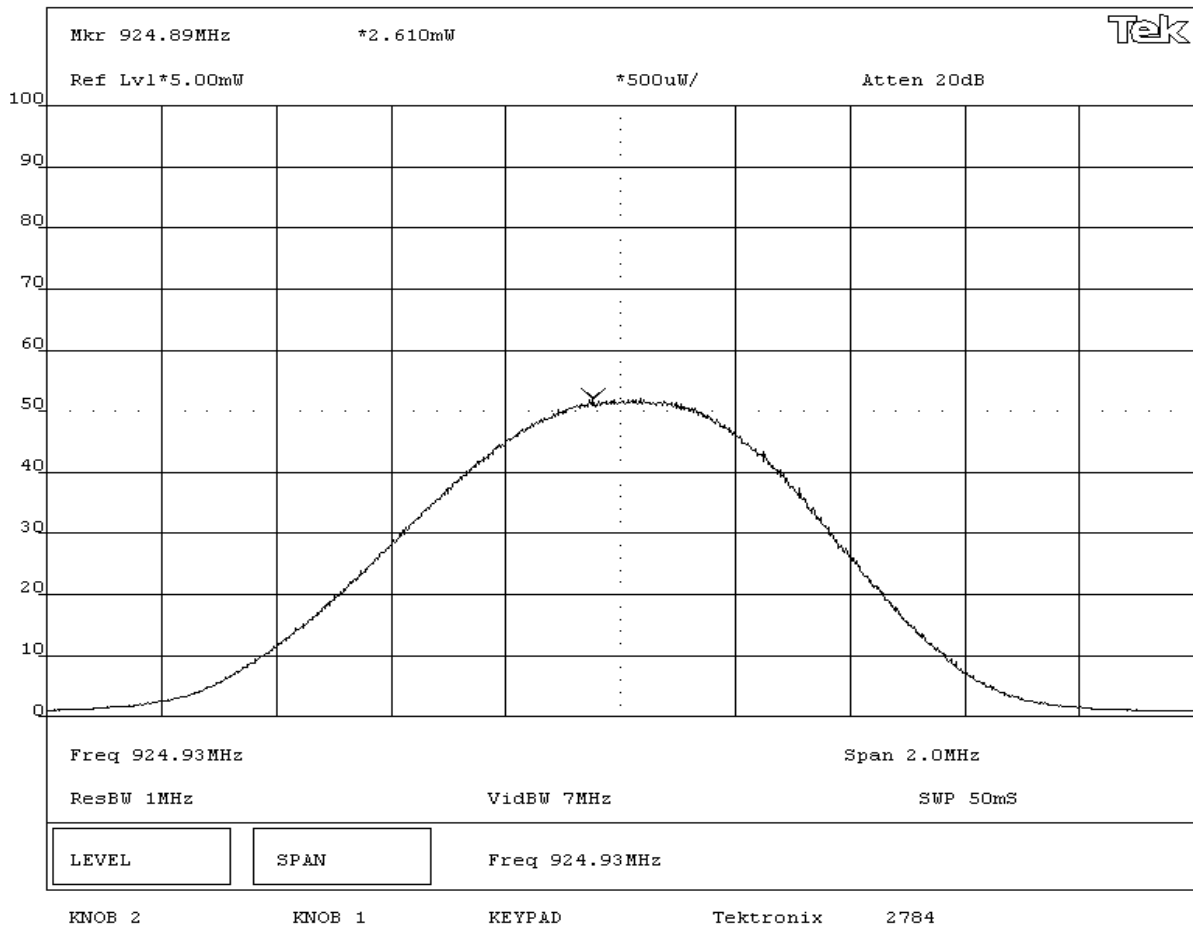
NORTHWEST		EMISSIONS DATA SHEET		Transmitters	
EMC		Output Power			
Rev dt11/15/02					
EUT:	MRD8 / MRD6	Work Order:	WATT0014		
Serial Number:	N/A	Date:	06/06/03		
Customer:	The Watt Stopper, Inc.	Temperature:	25 °C		
Attendees:	None	Humidity:	34%		
Customer Ref. No.:	N/A	Bar. Pressure:	29.89		
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV06
TEST SPECIFICATIONS					
Specification:	CFR 47 Part 15.247(b)(3)	Year:	2003	Method:	DA 00-705, ANSI C63.4
		Year:	1992		
SAMPLE CALCULATIONS					
COMMENTS					
None					
EUT OPERATING MODES					
No hop mode					
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS					
Peak Output Power cannot exceed .25 Watt					
RESULTS					
Pass		AMPLITUDE			
		2.69mW			
SIGNATURE					
<div>  </div> <div> Tested By: _____ </div>					
DESCRIPTION OF TEST					
Low Channel					



NORTHWEST		EMISSIONS DATA SHEET		Transmitters	
EMC		Output Power			
Rev dt11/15/02					
EUT:	MRD8 / MRD6	Work Order:	WATT0014		
Serial Number:	N/A	Date:	06/06/03		
Customer:	The Watt Stopper, Inc.	Temperature:	25 °C		
Attendees:	None	Humidity:	34%		
Customer Ref. No.:	N/A	Bar. Pressure:	29.89		
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV06
TEST SPECIFICATIONS					
Specification:	CFR 47 Part 15.247(b)(3)	Year:	2003	Method:	DA 00-705, ANSI C63.4
		Year:	1992		
SAMPLE CALCULATIONS					
COMMENTS					
None					
EUT OPERATING MODES					
No hop mode					
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS					
Peak Output Power cannot exceed .25 Watt					
RESULTS		AMPLITUDE			
Pass		2.565mW			
SIGNATURE					
<div>  </div> <div> Tested By: _____ </div>					
DESCRIPTION OF TEST					
Mid Channel					



NORTHWEST EMC		EMISSIONS DATA SHEET Output Power		Transmitters Rev dt11/15/02	
EUT:	MRD8 / MRD6	Work Order:	WATT0014		
Serial Number:	N/A	Date:	06/06/03		
Customer:	The Watt Stopper, Inc.	Temperature:	25 °C		
Attendees:	None	Humidity:	34%		
Customer Ref. No.:	N/A	Bar. Pressure:	29.89		
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV06
TEST SPECIFICATIONS					
Specification:	CFR 47 Part 15.247(b)(3)	Year:	2003	Method:	DA 00-705, ANSI C63.4
		Year:	1992		
SAMPLE CALCULATIONS					
COMMENTS					
None					
EUT OPERATING MODES					
No hop mode					
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS					
Peak Output Power cannot exceed .25 Watt					
RESULTS		AMPLITUDE			
Pass		2.61mW			
SIGNATURE					
<div>  </div> <div> Tested By: _____ </div>					
DESCRIPTION OF TEST					
High Channel					



Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

High

Low

Operating Modes Investigated:

Typical

Data Rates Investigated:

Typical

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

120 VAC, 60 Hz.

Software\Firmware Applied During Test

Exercise software	Standard Production Software	Version	Unknown
Description			
Transmits at low, mid, and high channels.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter	N/A	A35-U0900	N/A
EUT	The Watt Stopper, Inc.	MRD8	N/A
EUT	The Watt Stopper, Inc.	MRD6	N/A

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	PA	2.2	PA	EUT	AC Adapter

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Tektronix	2784	AAO	02/26/2003	24 mo


Test Description

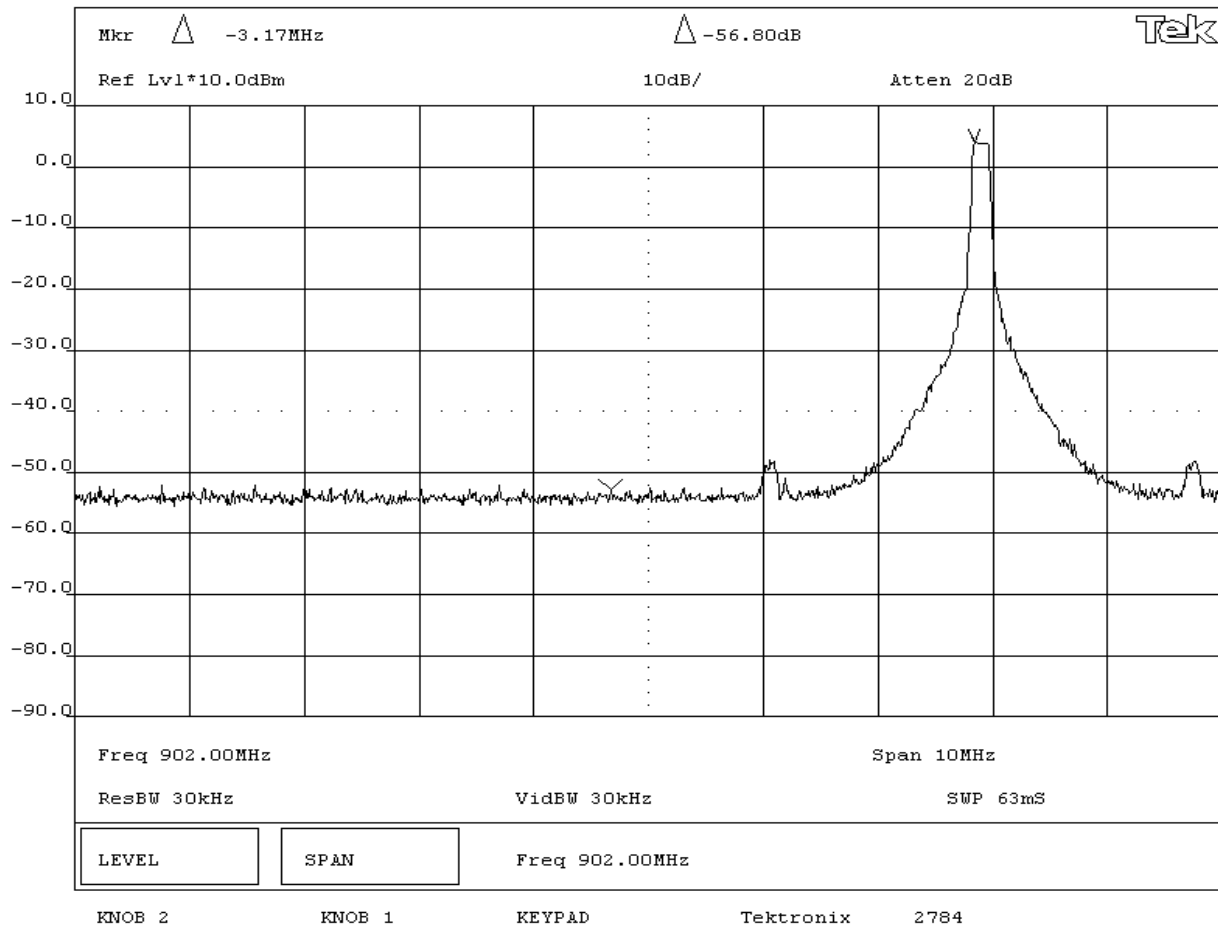
Requirement: Per 47 CFR 15.247(c), in any 100 kHz bandwidth outside the authorized band, the maximum level of radio frequency power must be at least 20dB down from the highest emission level within the authorized band. The measurement is made with the spectrum analyzer's resolution bandwidth set to 100 kHz, and the video bandwidth set to greater than or equal to the resolution bandwidth.


Configuration: The spurious RF conducted emissions at the edges of the authorized band were measured with the EUT set to low and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate in a no hop mode. The channels closest to the band edges were selected. The spectrum was scanned across each band edge from 5 MHz below the band edge to 5 MHz above the band edge.

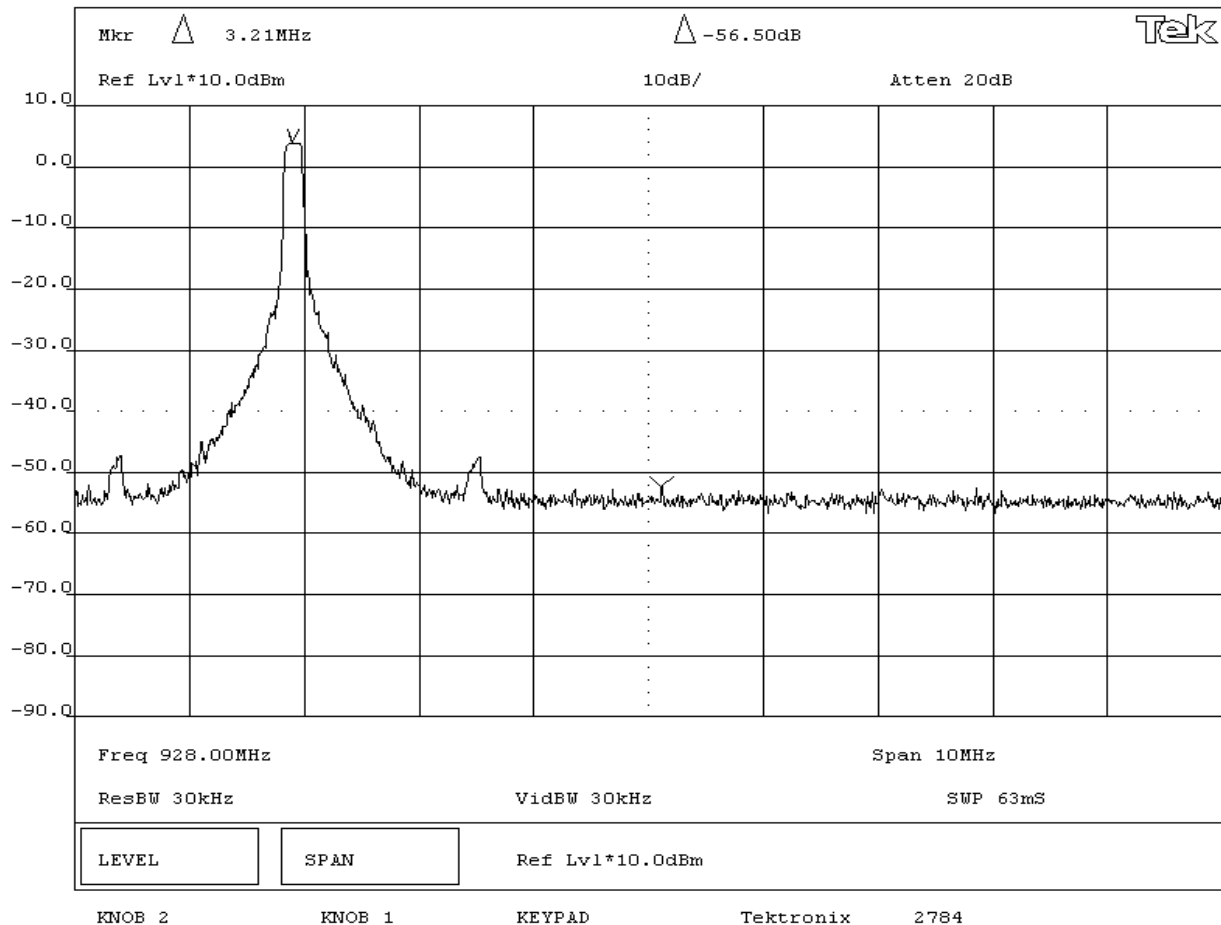
Completed by:



NORTHWEST EMC				EMISSIONS DATA SHEET Band Edge Compliance				Transmitters Rev dt11/15/02	
EUT: MRD6 / MRD8		Serial Number: N/A		Work Order: WATT0014		Date: 06/09/03			
Customer: The Watt Stopper, Inc.		Attendees: None		Temperature: 25 °C		Humidity: 34%			
Customer Ref. No.: N/A		Tested by: Rod Peloquin		Power: 120VAC/60Hz		Bar. Pressure: 30.15		Job Site: EV06	
TEST SPECIFICATIONS									
Specification: CFR 47 Part 15.247 (c)		Year: 2003		Method: DA 00-705, ANSI C63.4		Year: 1992			
SAMPLE CALCULATIONS									
COMMENTS									
None									
EUT OPERATING MODES									
No hop mode									
DEVIATIONS FROM TEST STANDARD									
REQUIREMENTS									
RESULTS									
Pass				AMPLITUDE -56.8db					
SIGNATURE									
 Tested By: _____									
DESCRIPTION OF TEST									
Low Channel									



NORTHWEST EMC		EMISSIONS DATA SHEET Band Edge Compliance		Transmitters Rev dt11/15/02	
EUT:	MRD6 / MRD8	Work Order:	WATT0014		
Serial Number:	N/A	Date:	06/09/03		
Customer:	The Watt Stopper, Inc.	Temperature:	25 °C		
Attendees:	None	Humidity:	34%		
Customer Ref. No.:	N/A	Bar. Pressure:	30.15		
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV06
TEST SPECIFICATIONS					
Specification:	CFR 47 Part 15.247 (c)	Year:	2003	Method:	DA 00-705, ANSI C63.4
Year:		1992			
SAMPLE CALCULATIONS					
COMMENTS					
None					
EUT OPERATING MODES					
No hop mode					
DEVIATIONS FROM TEST STANDARD					
REQUIREMENTS					
RESULTS					
Pass			AMPLITUDE -56.5dB		
SIGNATURE					
<div style="text-align: center;">  Tested By: _____ </div>					
DESCRIPTION OF TEST					
High Channel					



Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

High
Mid
Low

Operating Modes Investigated:

Typical

Data Rates Investigated:

Maximum

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

120 VAC, 60 Hz.

Frequency Range Investigated

Start Frequency	0 MHz	Stop Frequency	10 GHz
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Software\Firmware Applied During Test

Exercise software	Standard Production Software	Version	Unknown
Description			
Transmits at low, mid, and high channels.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter	N/A	A35-U0900	N/A
EUT	The Watt Stopper, Inc.	MRD8	N/A
EUT	The Watt Stopper, Inc.	MRD6	N/A

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	PA	2.2	PA	EUT	AC Adapter

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Tektronix	2784	AAO	02/26/2003	24 mo


Test Description

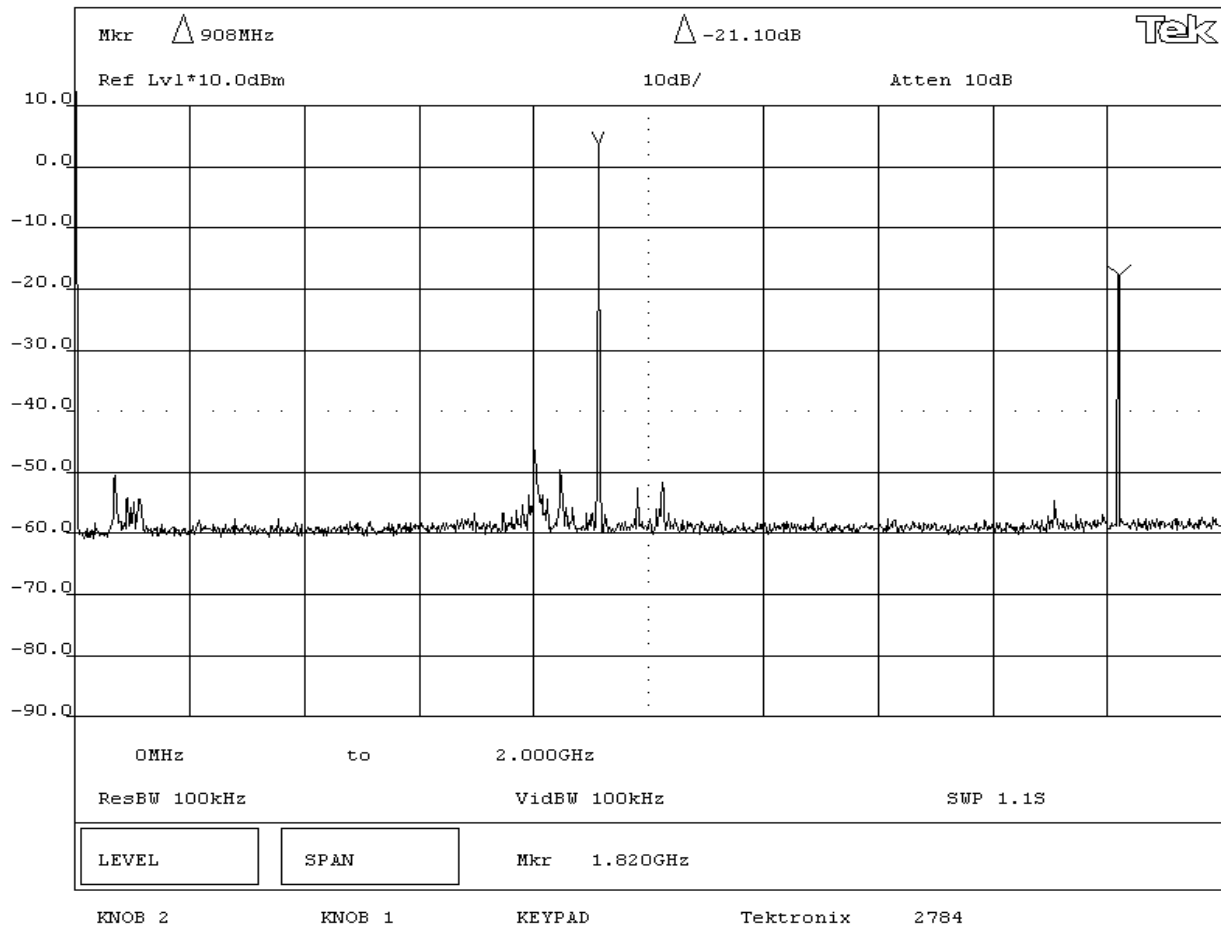
Requirement: Per 47 CFR 15.247(c), in any 100 kHz bandwidth outside the authorized band, the maximum level of radio frequency power must be at least 20dB down from the highest emission level within the authorized band. The measurement is made with the spectrum analyzer's resolution bandwidth set to 100 kHz, and the video bandwidth set to greater than or equal to the resolution bandwidth.


Configuration: The spurious RF conducted emissions were measured with the EUT set to low, medium, and high transmit frequencies. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate in a no hop mode. For each transmit frequency, the spectrum was scanned throughout the specified frequency.

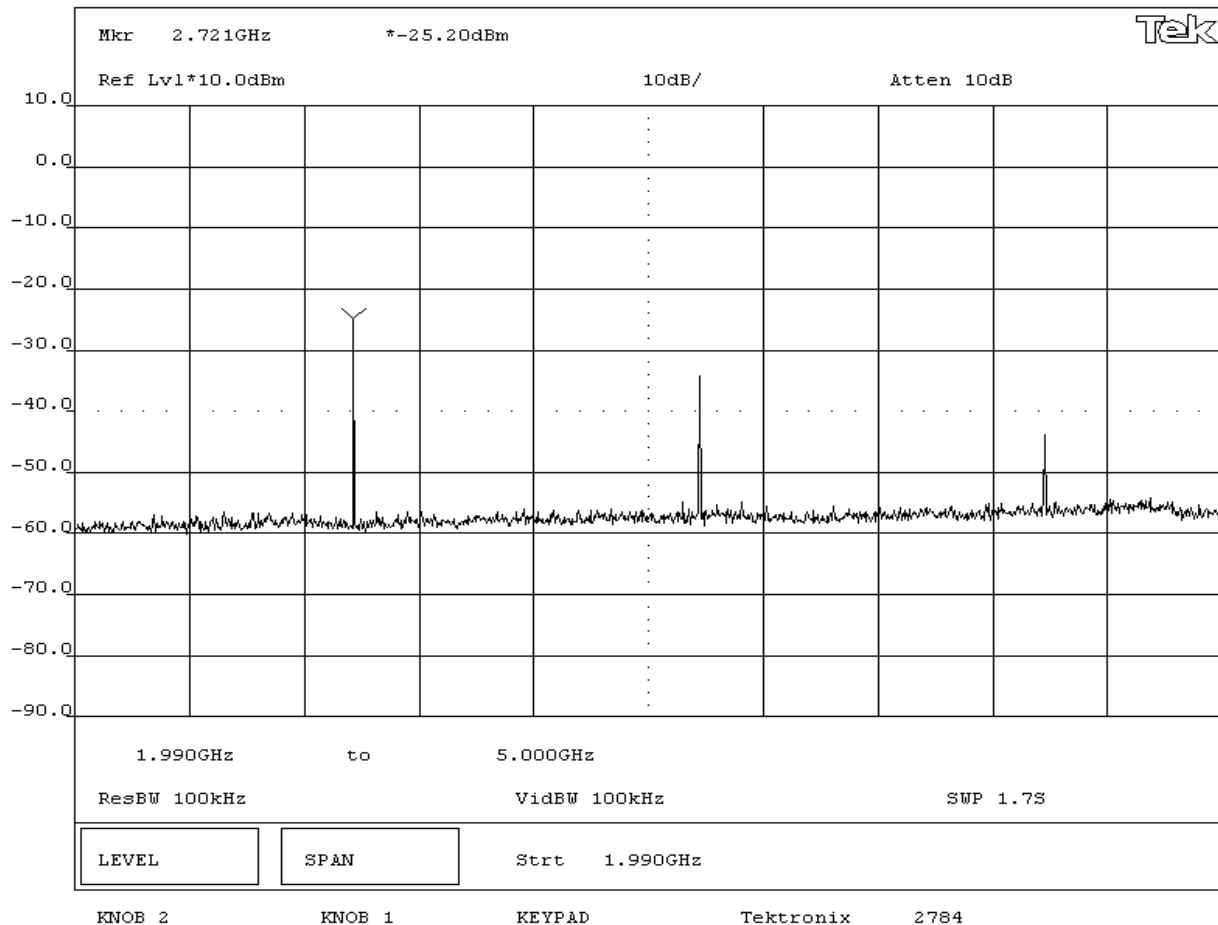
Completed by:




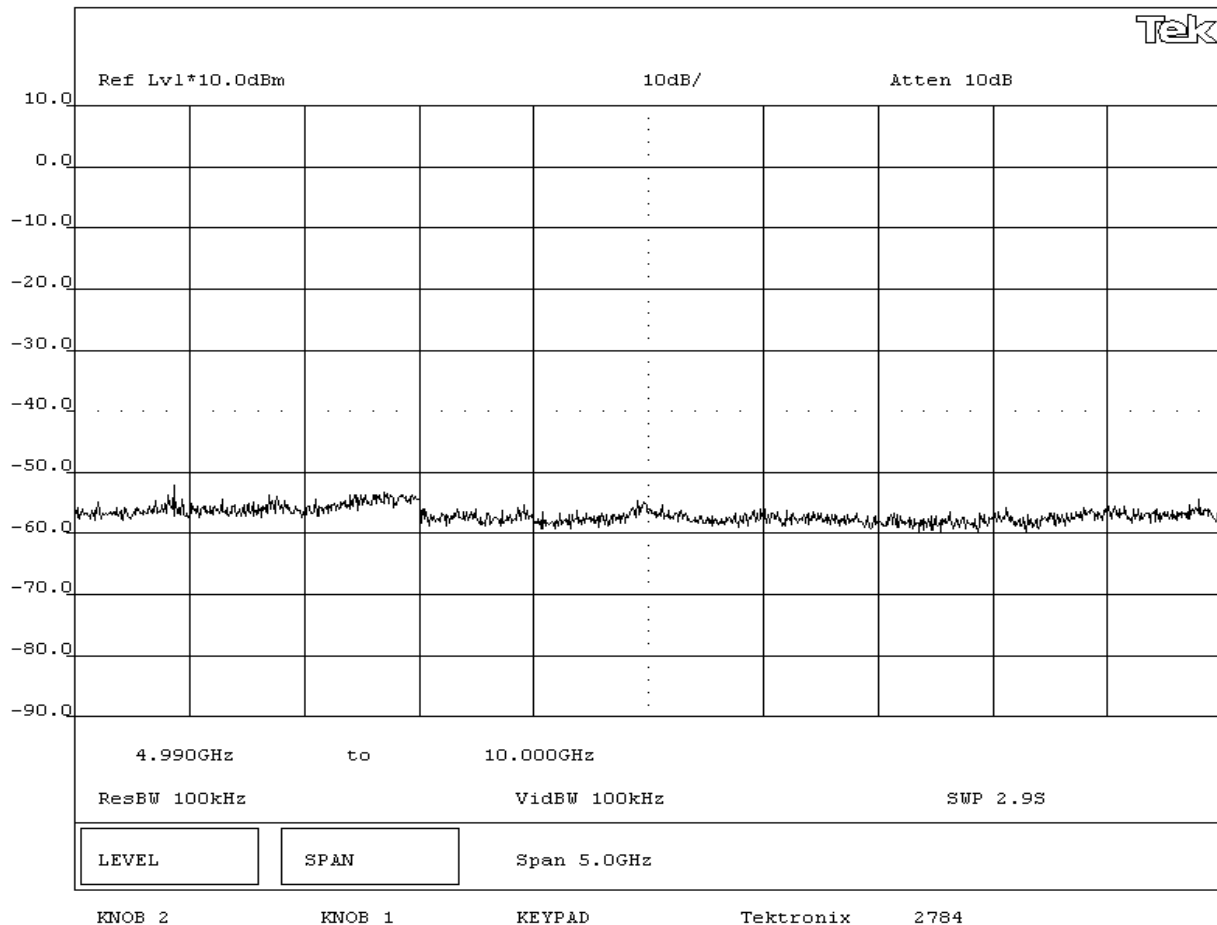
NORTHWEST		EMISSIONS DATA SHEET		Transmitters	
EMC		Antenna Conducted Spurious		Rev dt11/15/02	
EUT: MRD6 / MRD8		Work Order: WATT0014			
Serial Number: N/A		Date: 06/12/03			
Customer: The Watt Stopper, Inc.		Temperature: 25 °C			
Attendees: None		Humidity: 34%			
Customer Ref. No.: N/A		Bar. Pressure: 30.15			
Tested by: Rod Peloquin		Power: 120VAC/60Hz		Job Site: EV06	
TEST SPECIFICATIONS					
Specification: CFR 47 Part 15.247 (c)		Year: 2003		Method: DA 00-705, ANSI C63.4	
				Year: 1992	
SAMPLE CALCULATIONS					
COMMENTS					
None					
EUT OPERATING MODES					
No hop mode					
DEVIATIONS FROM TEST STANDARD					
REQUIREMENTS					
RESULTS					
Pass					
SIGNATURE					
<div>Tested By: </div>					
DESCRIPTION OF TEST					
Low Channel 0MHz-2GHz					




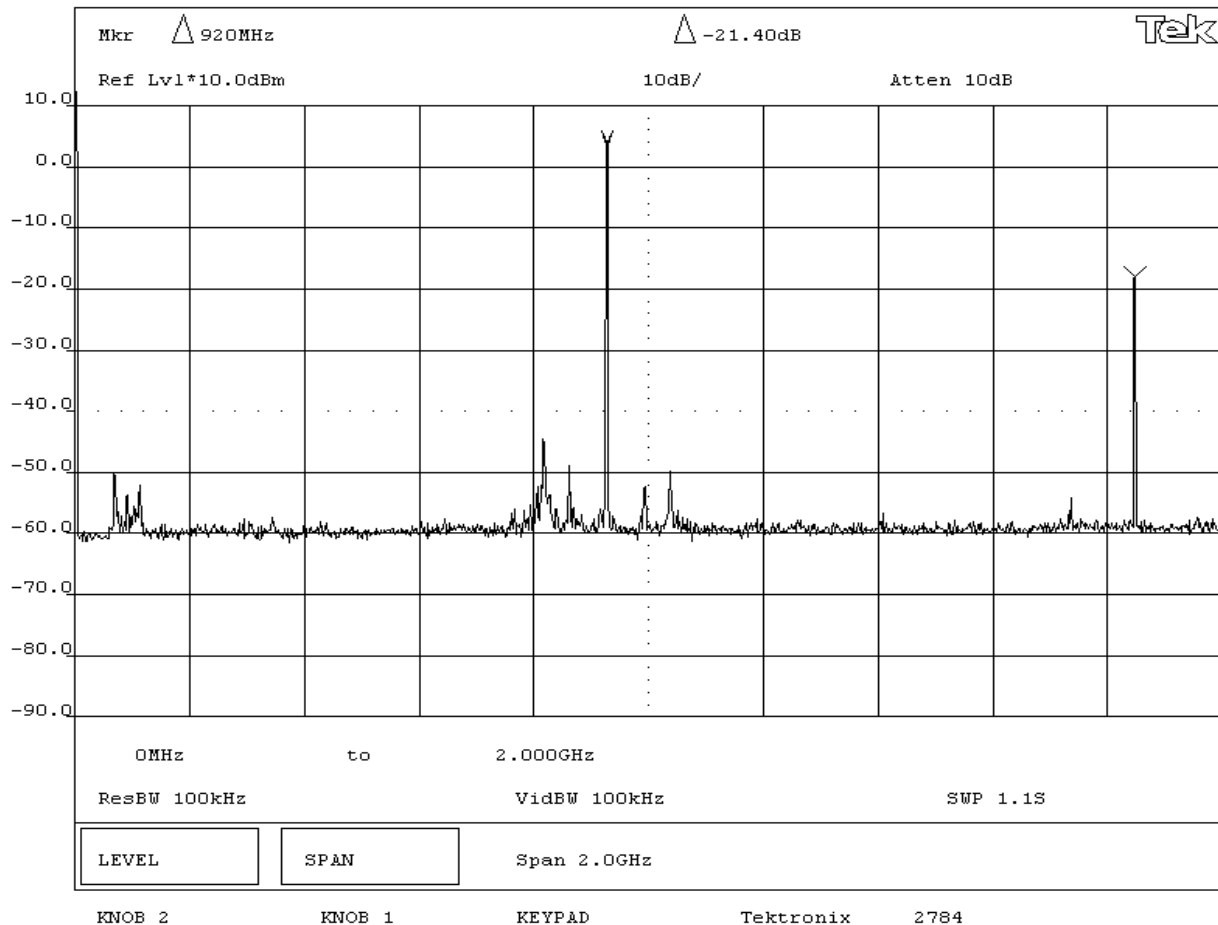
NORTHWEST		EMISSIONS DATA SHEET		Transmitters	
EMC		Antenna Conducted Spurious		Rev dt11/15/02	
EUT: MRD6 / MRD8		Work Order: WATT0014			
Serial Number: N/A		Date: 06/12/03			
Customer: The Watt Stopper, Inc.		Temperature: 25 °C			
Attendees: None		Humidity: 34%			
Customer Ref. No.: N/A		Bar. Pressure: 30.15			
Tested by: Rod Peloquin		Power: 120VAC/60Hz		Job Site: EV06	
TEST SPECIFICATIONS					
Specification: CFR 47 Part 15.247 (c)		Year: 2003		Method: DA 00-705, ANSI C63.4	
				Year: 1992	
SAMPLE CALCULATIONS					
COMMENTS					
None					
EUT OPERATING MODES					
No hop mode					
DEVIATIONS FROM TEST STANDARD					
REQUIREMENTS					
RESULTS					
Pass					
SIGNATURE					
<div>Tested By: </div>					
DESCRIPTION OF TEST					
Low Channel 2GHz-5GHz					




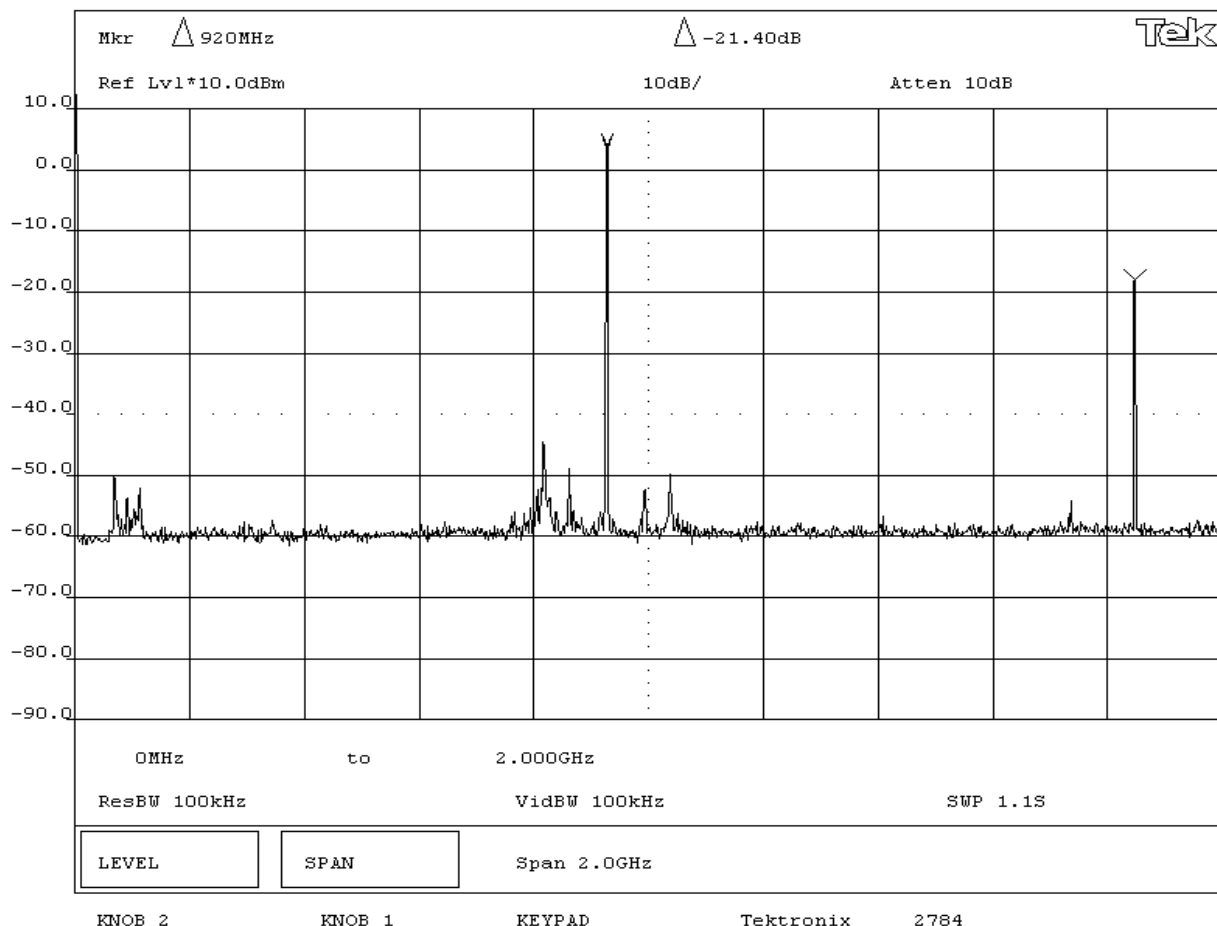
NORTHWEST		EMISSIONS DATA SHEET		Transmitters	
EMC		Antenna Conducted Spurious		Rev dt11/15/02	
EUT:	MRD6 / MRD8	Work Order:	WATT0014		
Serial Number:	N/A	Date:	06/12/03		
Customer:	The Watt Stopper, Inc.	Temperature:	25 °C		
Attendees:	None	Humidity:	34%		
Customer Ref. No.:	N/A	Bar. Pressure:	30.15		
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV06
TEST SPECIFICATIONS					
Specification:	CFR 47 Part 15.247 (c)	Year:	2003	Method:	DA 00-705, ANSI C63.4
				Year:	1992
SAMPLE CALCULATIONS					
COMMENTS					
None					
EUT OPERATING MODES					
No hop mode					
DEVIATIONS FROM TEST STANDARD					
REQUIREMENTS					
RESULTS					
Pass					
SIGNATURE					
<div>Tested By: </div>					
DESCRIPTION OF TEST					
Low Channel 5GHz-10GHz					




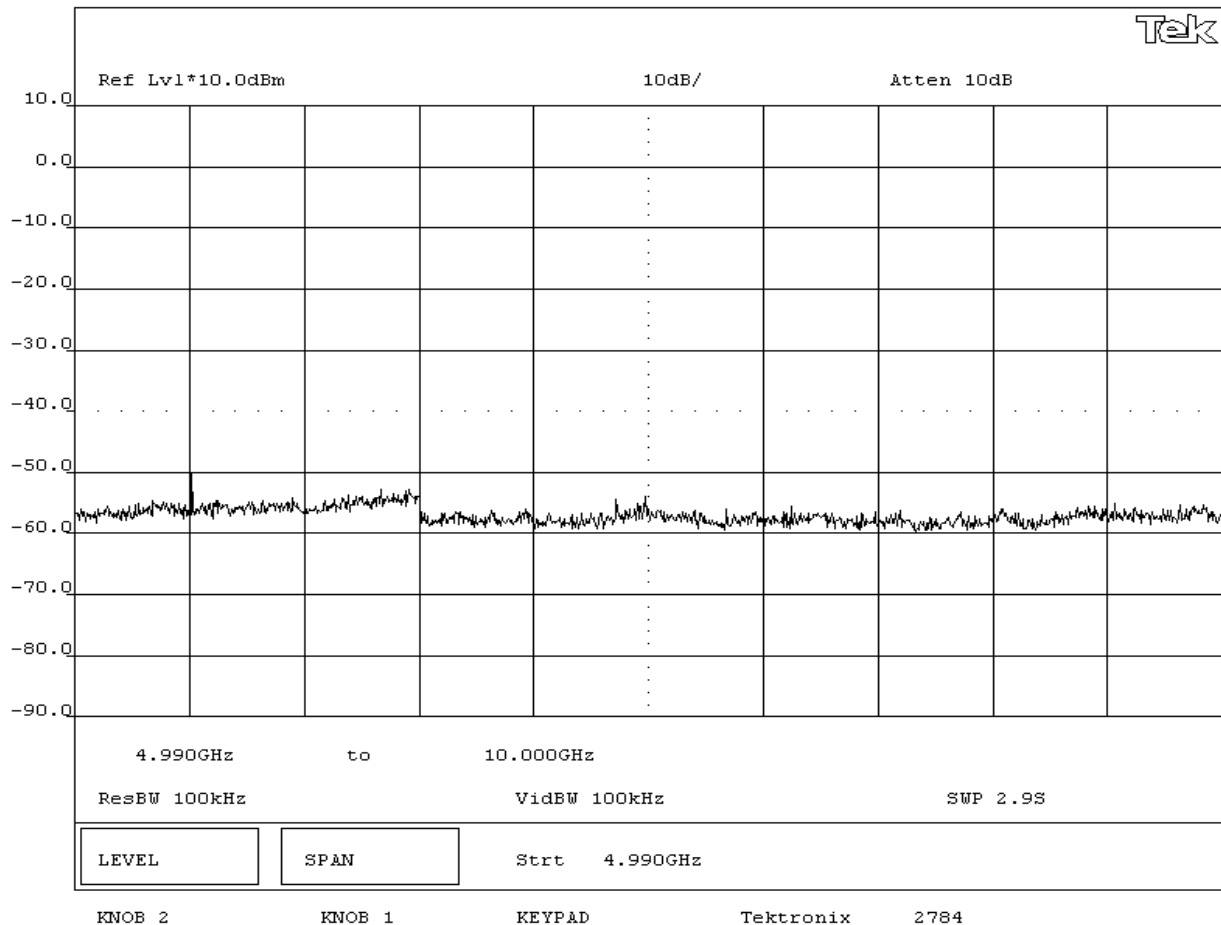
NORTHWEST EMC		EMISSIONS DATA SHEET Antenna Conducted Spurious		Transmitters Rev dt11/15/02	
EUT:	MRD6 / MRD8	Work Order:	WATT0014		
Serial Number:	N/A	Date:	06/12/03		
Customer:	The Watt Stopper, Inc.	Temperature:	25 °C		
Attendees:	None	Humidity:	34%		
Customer Ref. No.:	N/A	Bar. Pressure:	30.15		
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV06
TEST SPECIFICATIONS					
Specification:	CFR 47 Part 15.247 (c)	Year:	2003	Method:	DA 00-705, ANSI C63.4
		Year:	1992		
SAMPLE CALCULATIONS					
COMMENTS					
None					
EUT OPERATING MODES					
No hop mode					
DEVIATIONS FROM TEST STANDARD					
REQUIREMENTS					
RESULTS					
Pass					
SIGNATURE					
<div style="text-align: center;">  Tested By: _____ </div>					
DESCRIPTION OF TEST					
Mid Channel 0MHz-2GHz					




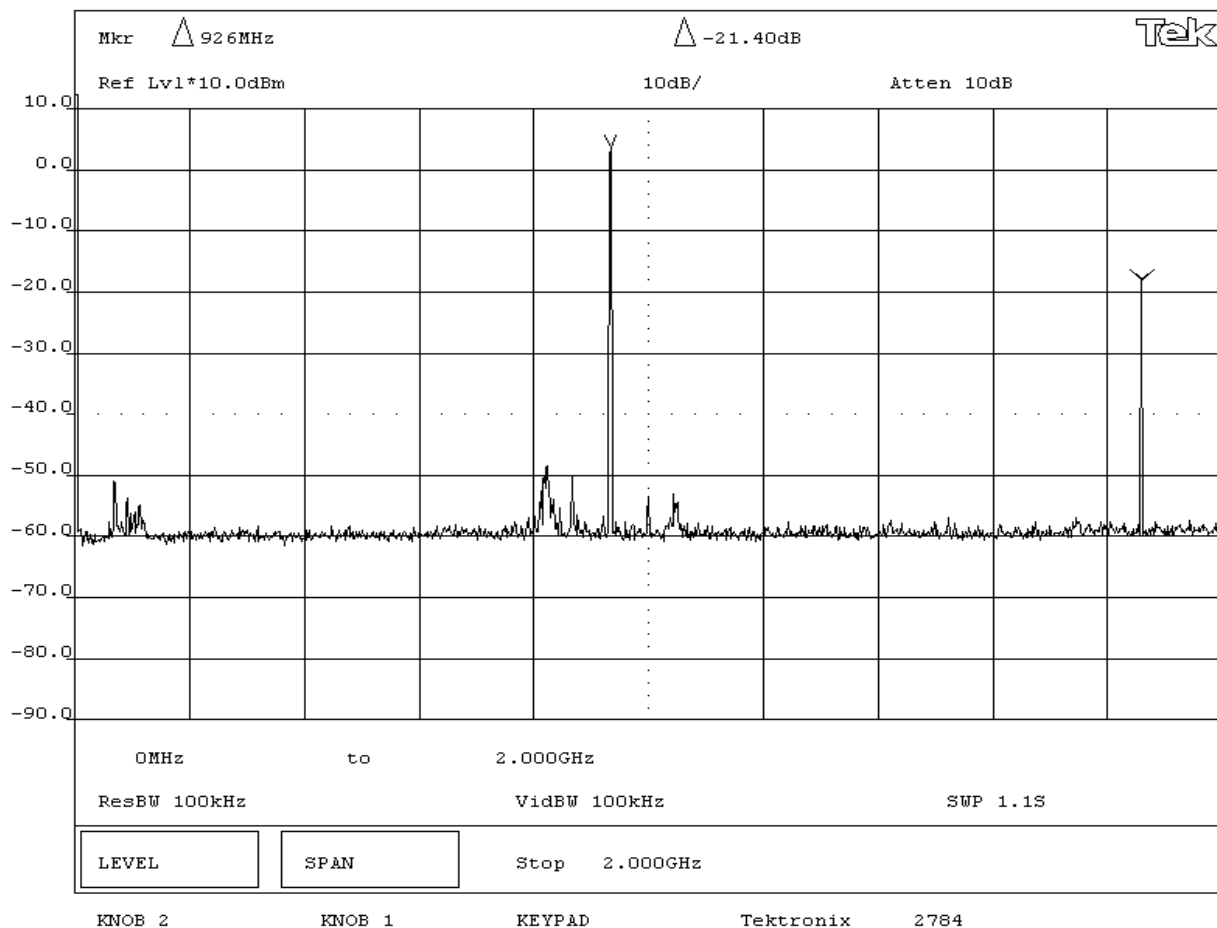
NORTHWEST EMC		EMISSIONS DATA SHEET Antenna Conducted Spurious		Transmitters Rev dt11/15/02	
EUT:	MRD6 / MRD8	Work Order:	WATT0014		
Serial Number:	N/A	Date:	06/12/03		
Customer:	The Watt Stopper, Inc.	Temperature:	25 °C		
Attendees:	None	Humidity:	34%		
Customer Ref. No.:	N/A	Bar. Pressure:	30.15		
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV06
TEST SPECIFICATIONS					
Specification:	CFR 47 Part 15.247 (c)	Year:	2003	Method:	DA 00-705, ANSI C63.4
		Year:	1992		
SAMPLE CALCULATIONS					
COMMENTS					
None					
EUT OPERATING MODES					
No hop mode					
DEVIATIONS FROM TEST STANDARD					
REQUIREMENTS					
RESULTS					
Pass					
SIGNATURE					
<div style="text-align: center;">  Tested By: _____ </div>					
DESCRIPTION OF TEST					
Mid Channel 2GHz-5GHz					




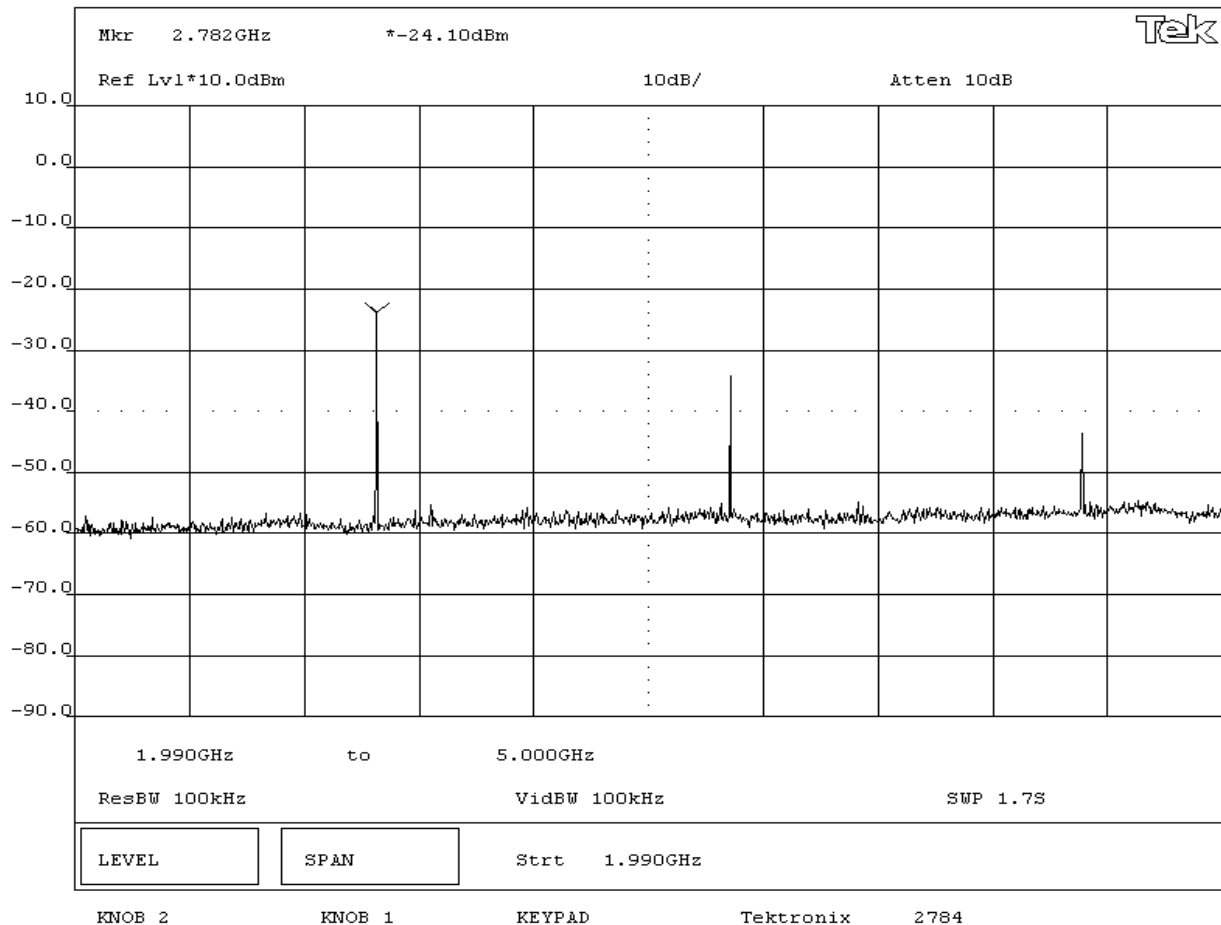
NORTHWEST		EMISSIONS DATA SHEET		Transmitters	
EMC		Antenna Conducted Spurious		Rev dt11/15/02	
EUT: MRD6 / MRD8		Work Order: WATT0014			
Serial Number: N/A		Date: 06/12/03			
Customer: The Watt Stopper, Inc.		Temperature: 25 °C			
Attendees: None		Humidity: 34%			
Customer Ref. No.: N/A		Bar. Pressure: 30.15			
Tested by: Rod Peloquin		Power: 120VAC/60Hz		Job Site: EV06	
TEST SPECIFICATIONS					
Specification: CFR 47 Part 15.247 (c)		Year: 2003		Method: DA 00-705, ANSI C63.4	
				Year: 1992	
SAMPLE CALCULATIONS					
COMMENTS					
None					
EUT OPERATING MODES					
No hop mode					
DEVIATIONS FROM TEST STANDARD					
REQUIREMENTS					
RESULTS					
Pass					
SIGNATURE					
<div>Tested By: </div>					
DESCRIPTION OF TEST					
Mid Channel 5GHz-10GHz					




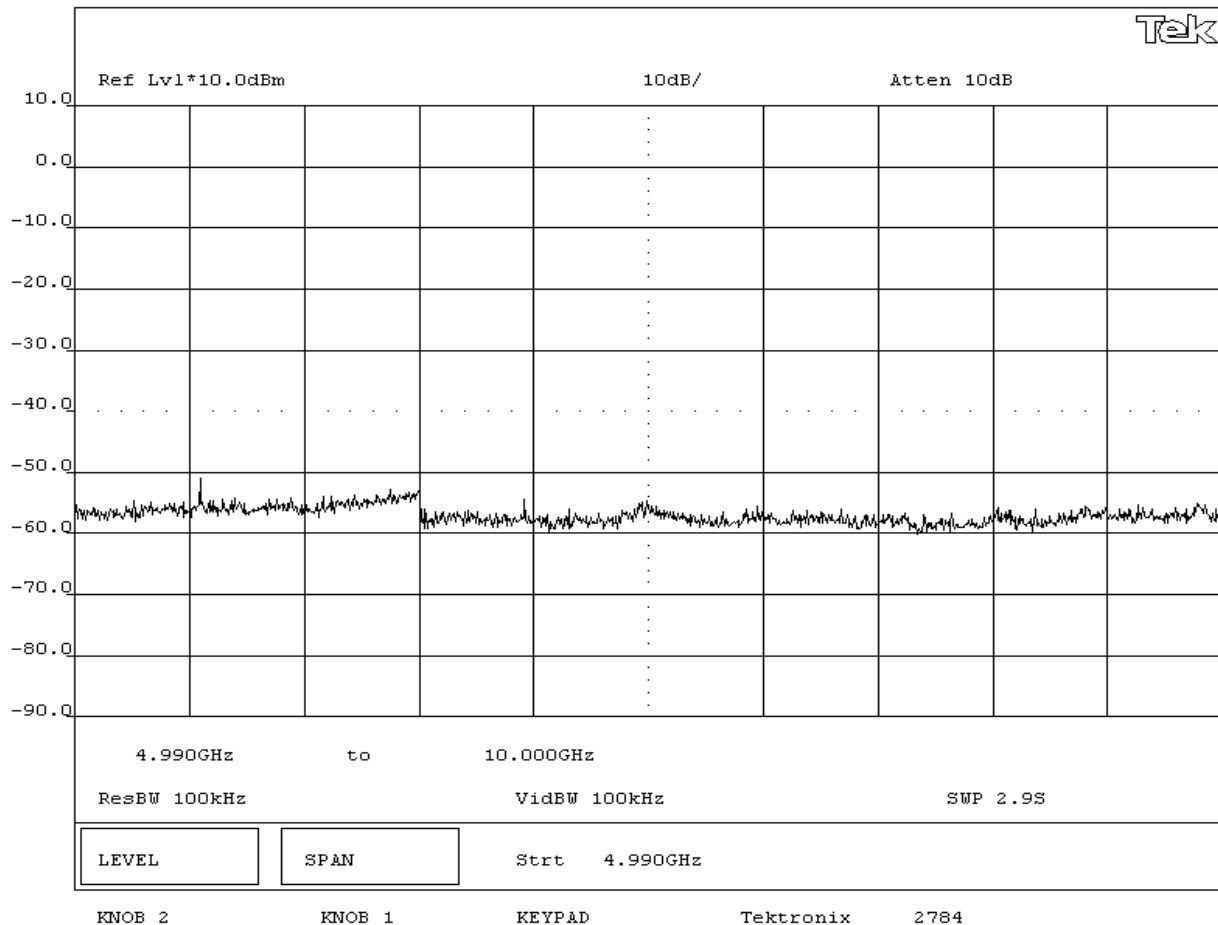
NORTHWEST EMC		EMISSIONS DATA SHEET Antenna Conducted Spurious		Transmitters Rev dt11/15/02	
EUT:	MRD6 / MRD8	Work Order:	WATT0014		
Serial Number:	N/A	Date:	06/12/03		
Customer:	The Watt Stopper, Inc.	Temperature:	25 °C		
Attendees:	None	Humidity:	34%		
Customer Ref. No.:	N/A	Bar. Pressure:	30.15		
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV06
TEST SPECIFICATIONS					
Specification:	CFR 47 Part 15.247 (c)	Year:	2003	Method:	DA 00-705, ANSI C63.4
		Year:	1992		
SAMPLE CALCULATIONS					
COMMENTS					
None					
EUT OPERATING MODES					
No hop mode					
DEVIATIONS FROM TEST STANDARD					
REQUIREMENTS					
RESULTS					
Pass					
SIGNATURE					
<div style="text-align: center;">  Tested By: _____ </div>					
DESCRIPTION OF TEST					
High Channel 0MHz-2GHz					



NORTHWEST		EMISSIONS DATA SHEET		Transmitters	
EMC		Antenna Conducted Spurious		Rev dt11/15/02	
EUT: MRD6 / MRD8		Work Order: WATT0014			
Serial Number: N/A		Date: 06/12/03			
Customer: The Watt Stopper, Inc.		Temperature: 25 °C			
Attendees: None		Humidity: 34%			
Customer Ref. No.: N/A		Bar. Pressure: 30.15			
Tested by: Rod Peloquin		Power: 120VAC/60Hz		Job Site: EV06	
TEST SPECIFICATIONS					
Specification: CFR 47 Part 15.247 (c)		Year: 2003		Method: DA 00-705, ANSI C63.4	
				Year: 1992	
SAMPLE CALCULATIONS					
COMMENTS					
None					
EUT OPERATING MODES					
No hop mode					
DEVIATIONS FROM TEST STANDARD					
REQUIREMENTS					
RESULTS					
Pass					
SIGNATURE					
<div>Tested By: </div>					
DESCRIPTION OF TEST					
High Channel 2GHz-5GHz					



NORTHWEST		EMISSIONS DATA SHEET		Transmitters	
EMC		Antenna Conducted Spurious		Rev dt11/15/02	
EUT: MRD6 / MRD8		Work Order: WATT0014			
Serial Number: N/A		Date: 06/12/03			
Customer: The Watt Stopper, Inc.		Temperature: 25 °C			
Attendees: None		Humidity: 34%			
Customer Ref. No.: N/A		Bar. Pressure: 30.15			
Tested by: Rod Peloquin		Power: 120VAC/60Hz		Job Site: EV06	
TEST SPECIFICATIONS					
Specification: CFR 47 Part 15.247 (c)		Year: 2003		Method: DA 00-705, ANSI C63.4	
				Year: 1992	
SAMPLE CALCULATIONS					
COMMENTS					
None					
EUT OPERATING MODES					
No hop mode					
DEVIATIONS FROM TEST STANDARD					
REQUIREMENTS					
RESULTS					
Pass					
SIGNATURE					
<div>Tested By: </div>					
DESCRIPTION OF TEST					
High Channel 5GHz-10GHz					



Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

High

Mid

Low

Operating Modes Investigated:

Typical

Data Rates Investigated:

Typical

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

Battery

Software\Firmware Applied During Test

Exercise software	Standard Production Software	Version	Unknown
Description			
Transmits at low, mid, and high channels.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
EUT	The Watt Stopper, Inc.	MRD8	N/A
EUT	The Watt Stopper, Inc.	MRD6	N/A
AC Adapter	N/A	A35-U0900	N/A

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	PA	1.2	PA	EUT	AC Mains

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Tektronix	2784	AAO	02/26/2003	24 mo

Test Description

Requirement: Per 47 CFR 15.247(d), the peak power spectral density conducted from the antenna port of a direct sequence transmitter must not be greater than +8 dBm in any 3 kHz band during any time interval of continuous transmission.

Configuration: The peak power spectral density measurements were measured with the EUT set to low, mid, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate using direct sequence modulation. Per the procedure outlined in FCC 97-114, the spectrum analyzer was used as follows:

The emission peak(s) were located and zoom in on within the passband. The resolution bandwidth was set to 3 kHz, the video bandwidth was set to greater than or equal to the resolution bandwidth. The sweep speed was set equal to the span divided by 3 kHz (sweep = (SPAN/3 kHz)). For example, given a span of 1.5 MHz, the sweep should be $1.5 \times 10^6 \div 3 \times 10^3 = 500$ seconds. External attenuation was used and added to the reading. The following FCC procedure was used for modifying the power spectral density measurements:

"If the spectrum line spacing cannot be resolved on the available spectrum analyzer, the noise density function on most modern conventional spectrum analyzers will directly measure the noise power density normalized to a 1 Hz noise power bandwidth. Add 34.8 dB for correction to 3 kHz."

Completed by:



NORTHWEST
EMC**EMISSIONS DATA SHEET**Rev BETA
01/30/01

EUT: MRD6 / MRD8			Work Order: WATT0014		
Serial Number: N/A			Date: 06/12/03		
Customer: The Watt Stopper, Inc.			Temperature: 25 °C		
Attendees: None			Humidity: 34%		
Customer Ref. No.: N/A			Bar. Pressure: 29.89		
Tested by: Rod Peloquin		Power: 120VAC/60Hz		Job Site: EV06	
Specification: 47 CFR 15.247(d)	Year: Most Current	Method: FCC 97-114, ANSI C63.4		Year: 1992	

SAMPLE CALCULATIONS

Meter reading on spectrum analyzer is internally compensated for cable loss and external attenuation.

Power Spectral Density per 3kHz bandwidth = Power Spectral Density per 1 Hz bandwidth + Bandwidth Correction Factor.

Bandwidth Correction Factor = $10 \cdot \log(3\text{kHz}/1\text{Hz})$ **COMMENTS****EUT OPERATING MODES**

Modulated by PRBS at maximum data rate

DEVIATIONS FROM TEST STANDARD

None

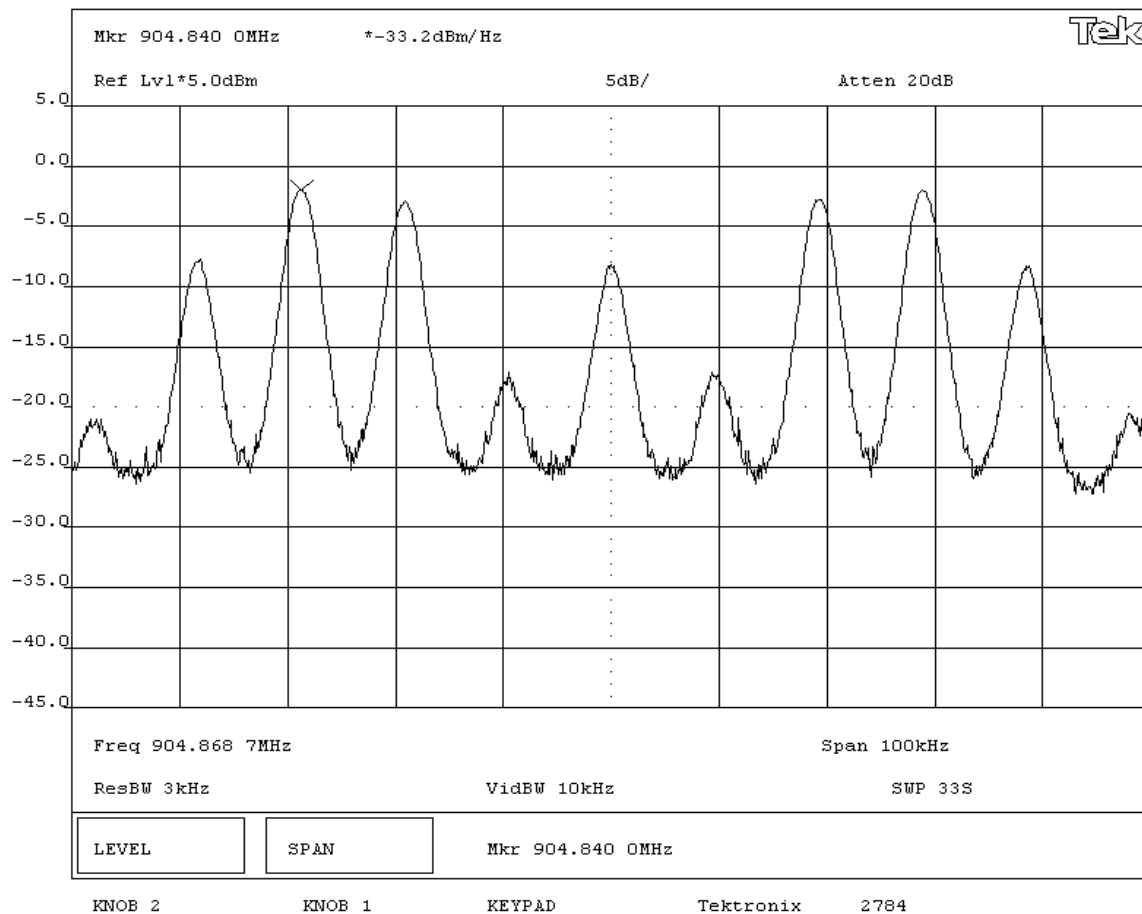
REQUIREMENTS

Maximum peak power spectral density conducted from a hybrid transmitter does not exceed 8 dBm in any 3 kHz band

RESULTS**AMPLITUDE**

Pass

Power Spectral Density = 1.6 dBm / 3kHz

SIGNATURETested By: **DESCRIPTION OF TEST****Power Spectral Density - Low Channel**

NORTHWEST
EMC**EMISSIONS DATA SHEET**Rev BETA
01/30/01

EUT: MRD6 / MRD8			Work Order: WATT0014		
Serial Number: N/A			Date: 06/12/03		
Customer: The Watt Stopper, Inc.			Temperature: 25 °C		
Attendees: None			Humidity: 34%		
Customer Ref. No.: N/A			Bar. Pressure: 29.89		
Tested by: Rod Peloquin			Power: 120VAC/60Hz		Job Site: EV06
Specification: 47 CFR 15.247(d)	Year: Most Current	Method: FCC 97-114, ANSI C63.4		Year: 1992	

SAMPLE CALCULATIONS

Meter reading on spectrum analyzer is internally compensated for cable loss and external attenuation

Power Spectral Density per 3kHz bandwidth = Power Spectral Density per 1 Hz bandwidth + Bandwidth Correction Factor.

Bandwidth Correction Factor = $10 \cdot \log(3\text{kHz}/1\text{Hz})$ **COMMENTS****EUT OPERATING MODES**

Modulated by PRBS at maximum data rate

DEVIATIONS FROM TEST STANDARD

None

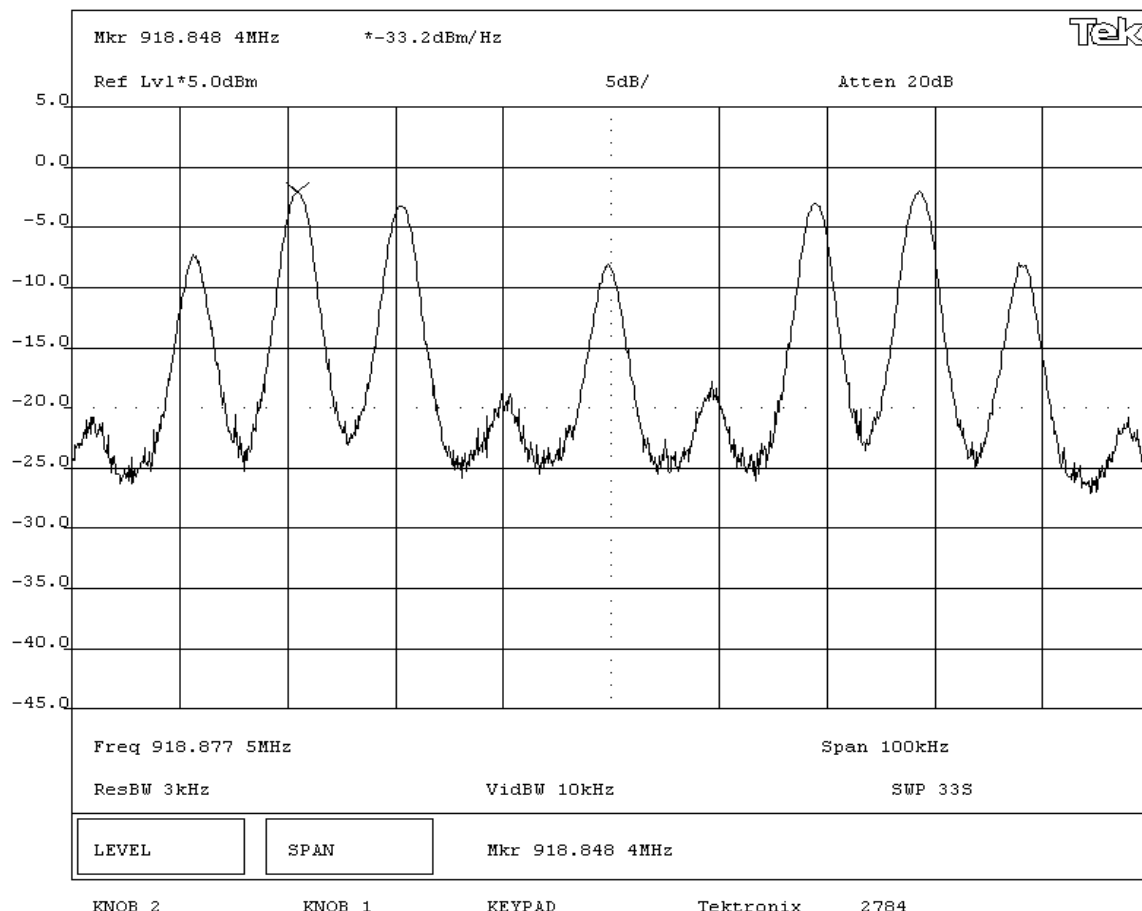
REQUIREMENTS


Maximum peak power spectral density conducted from a hybrid transmitter does not exceed 8 dBm in any 3 kHz band

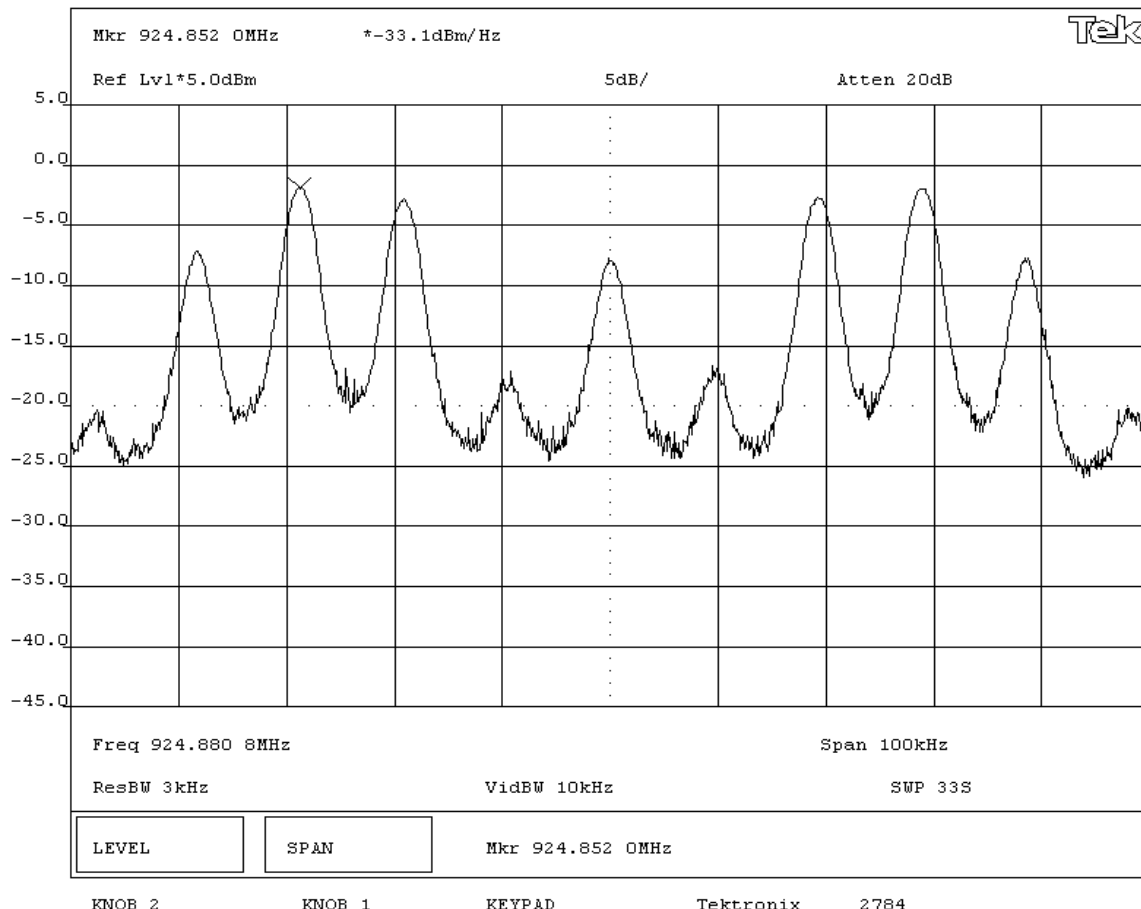
RESULTS**AMPLITUDE**

Pass

Power Spectral Density = 1.6 dBm / 3kHz

SIGNATURETested By: **DESCRIPTION OF TEST****Power Spectral Density - Mid Channel**

NORTHWEST EMC		EMISSIONS DATA SHEET		Rev BETA 01/30/01	
EUT: MRD6 / MRD8			Work Order: WATT0014		
Serial Number: N/A			Date: 06/12/03		
Customer: The Watt Stopper, Inc.			Temperature: 25 °C		
Attendees: None			Humidity: 34%		
Customer Ref. No.: N/A			Bar. Pressure: 29.89		
Tested by: Rod Peloquin		Power: 120VAC/60Hz		Job Site: EV06	
Specification: 47 CFR 15.247(d)		Year: Most Current		Method: FCC 97-114, ANSI C63.4	
				Year: 1992	
SAMPLE CALCULATIONS					
Meter reading on spectrum analyzer is internally compensated for cable loss and external attenuation					
Power Spectral Density per 3kHz bandwidth = Power Spectral Density per 1 Hz bandwidth + Bandwidth Correction Factor.					
Bandwidth Correction Factor = 10*log(3kHz/1Hz)					
COMMENTS					
EUT OPERATING MODES					
Modulated by PRBS at maximum data rate					
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS					
Maximum peak power spectral density conducted from a hybrid transmitter does not exceed 8 dBm in any 3 kHz band					
RESULTS			AMPLITUDE		
Pass			Power Spectral Density = 1.7 dBm / 3kHz		
SIGNATURE					
 Tested By: _____					
DESCRIPTION OF TEST					
Power Spectral Density - High Channel					



Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

High

Mid

Low

Operating Modes Investigated:

Typical

Data Rates Investigated:

Typical

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

120 VAC, 60 Hz.

Frequency Range Investigated

Start Frequency

30 MHz

Stop Frequency

10 GHz

Software\Firmware Applied During Test

Exercise software

Standard Production
Software

Version

Unknown

Description

Transmits low, mid, and high channels

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter	N/A	A35-U0900	N/A
EUT	The Watt Stopper, Inc.	MRD8	N/A

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	PA	2.2	PA	EUT	AC Adapter
Control - 3 each	No	1.0	No	EUT	Unterminated

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Hewlett-Packard	8566B	AAL	01/07/2003	12 mo
Quasi-Peak Adapter	Hewlett-Packard	85650A	AQF	01/07/2003	12 mo
Pre-Amplifier	Amplifier Research	LN1000A	APS	01/06/2003	12 mo
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APJ	01/06/2003	12 mo
Antenna, Biconilog	EMCO	3141	AXE	12/31/2001	36 mo
Antenna, Horn	EMCO	3115	AHC	08/12/2002	12 mo
High Pass Filter	Hewlett Packard	84300-80037	HFE	05/01/2003	12 mo

Test Description

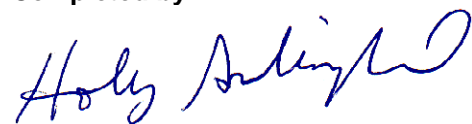
Requirement: The field strength of any spurious emissions or modulation products that fall in a restricted band, as defined in 47 CFR 15.205, is measured. The peak level must comply with the limits specified in 47 CFR 15.35(b). The average level (taken with a 10Hz VBW) must comply with the limits specified in 15.209.

Configuration: The only type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. The EUT was transmitting at its maximum data rate in a no hop mode. For each configuration, the spectrum was scanned from 30 MHz to 10 GHz. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.4:1992). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity. Since the dwell time per channel of the hopping signal was less than 100 ms, the readings obtained with the 10 Hz VBW were further reduced by a "duty cycle correction factor" of 15.5 dB, derived from $20\log(\text{dwell time}/100\text{ms})$, where the EUT's maximum dwell time in any 100mS period was measured to be 16.8 mS.

Bandwidths Used for Measurements

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 – 0.15	1.0	0.2	0.2
0.15 – 30.0	10.0	9.0	9.0
30.0 – 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0
<i>Measurements were made using the bandwidths and detectors specified. No video filter was used.</i>			

Completed by:



NORTHWEST

REV
df3.10
03/10/2003

EMC

OATS DATA SHEET

EUT: MRD8				Work Order: WATT0014			
Serial Number:				Date: 05/30/03			
Customer: The Watt Stopper Inc.				Temperature: 73			
Attendees:				Humidity: 47%			
Cust. Ref. No.:				Barometric Pressure 29.96			
Tested by: Holly Ashkannejhad		Power: 120VAC, 60Hz		Job Site: EV01			

TEST SPECIFICATIONS

Specification: FCC Part 15.247(c)

Method: ANSI C63.4

Year: 2001

Year: 1992

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

COMMENTS

EUT OPERATING MODES

Transmitting low, mid, high channel

DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Run #
Pass	2

Other

Holly Ashkannejhad

Tested By:

80.0

70.0

60.0

50.0

40.0

30.0

20.0

10.0

0.0

10.000

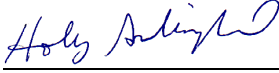
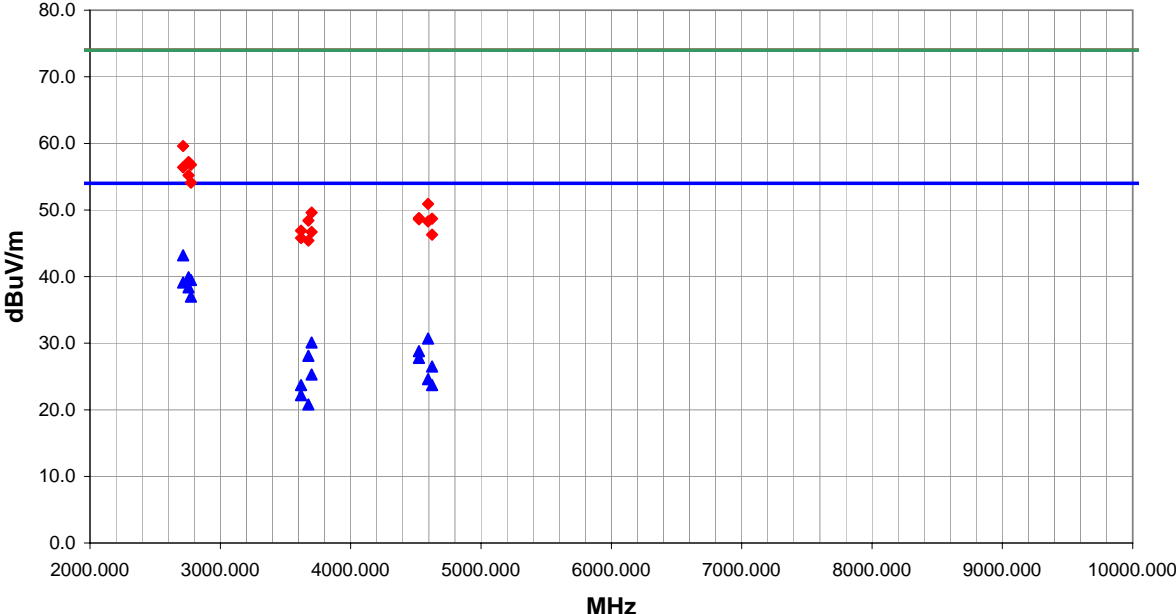
100.000

1000.000

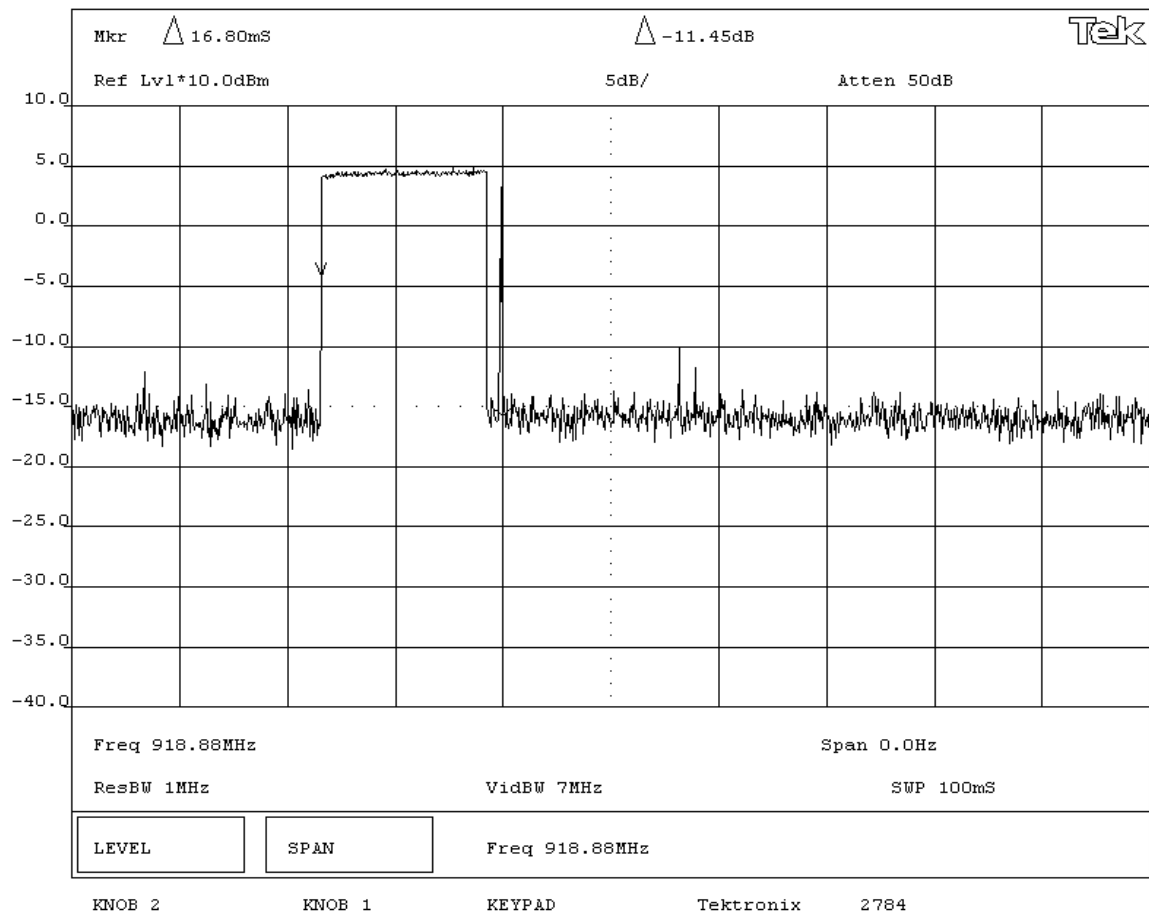
dBuV/m

MHz

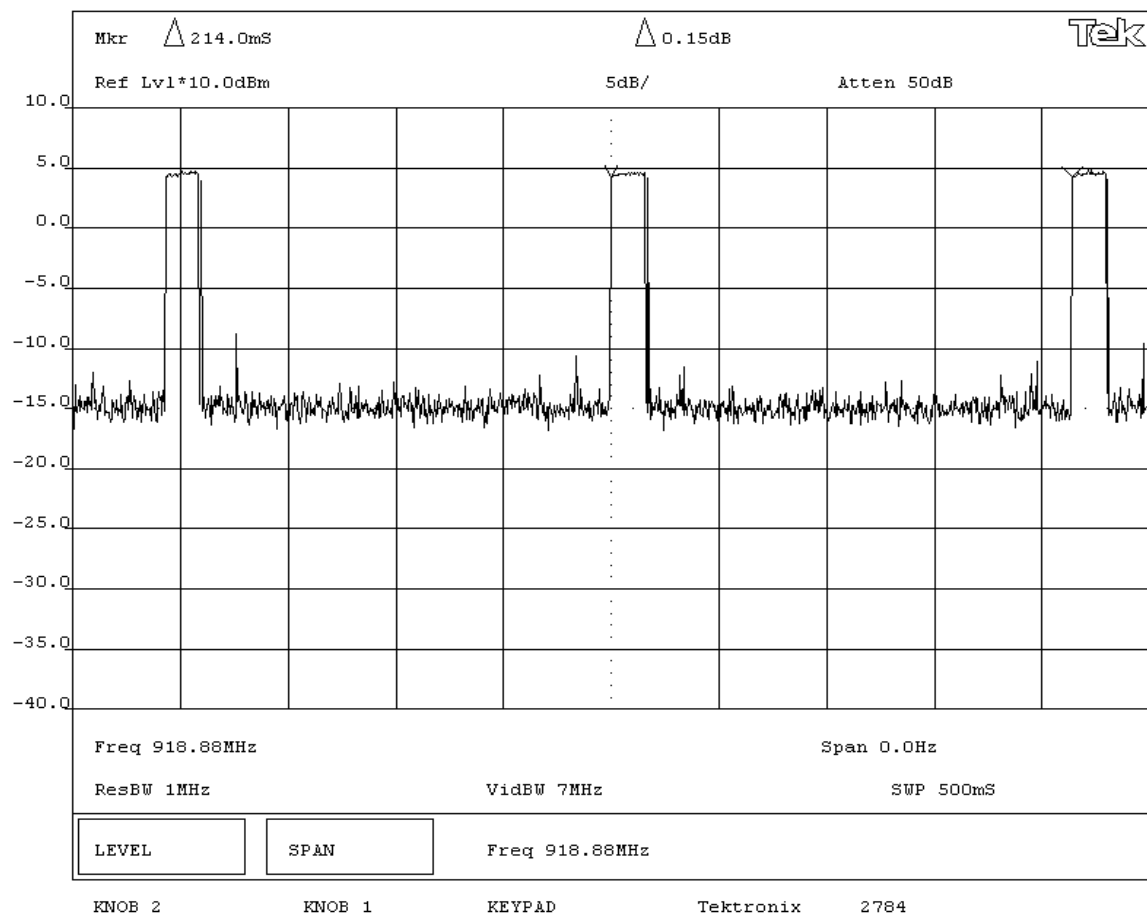
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
609.380	23.1	-7.1	286.0	1.2	3.0	20.0	H-Bilog	QP	0.0	36.0	46.0	-10.0	Low channel
609.606	23.0	-7.1	204.0	1.7	3.0	20.0	V-Bilog	QP	0.0	35.9	46.0	-10.1	Mid channel
609.760	23.0	-7.1	269.0	1.7	3.0	20.0	V-Bilog	QP	0.0	35.9	46.0	-10.1	Mid channel
609.867	23.0	-7.1	350.0	1.2	3.0	20.0	H-Bilog	QP	0.0	35.9	46.0	-10.1	Low channel
170.296	29.5	-18.1	185.0	2.2	3.0	20.0	H-Bilog	QP	0.0	31.4	43.0	-11.6	High channel
170.297	29.1	-18.1	164.0	2.2	3.0	20.0	H-Bilog	QP	0.0	31.0	43.0	-12.0	Low channel
170.296	28.8	-18.1	327.0	1.0	3.0	20.0	V-Bilog	QP	0.0	30.7	43.0	-12.3	Mid channel
170.298	28.8	-18.1	348.0	1.0	3.0	20.0	V-Bilog	QP	0.0	30.7	43.0	-12.3	Low channel
170.294	28.7	-18.1	276.0	2.2	3.0	20.0	H-Bilog	QP	0.0	30.6	43.0	-12.4	High channel
170.298	27.8	-18.1	18.0	1.0	3.0	20.0	V-Bilog	QP	0.0	29.7	43.0	-13.3	Mid channel
960.001	23.4	-3.2	271.0	3.9	3.0	20.0	V-Bilog	QP	0.0	40.2	54.0	-13.8	High channel
960.001	23.3	-3.2	18.0	1.4	3.0	20.0	H-Bilog	QP	0.0	40.1	54.0	-13.9	High channel

NORTHWEST										REV				
EMC										df3.10				
OATS DATA SHEET										03/10/2003				
EUT: MRD8					Work Order: WATT0014									
Serial Number:					Date: 05/30/03									
Customer: The Watt Stopper Inc.					Temperature: 73									
Attendees:					Humidity: 47%									
Cust. Ref. No.:					Barometric Pressure: 29.96									
Tested by: Holly Ashkannejhad					Power: 120VAC, 60Hz					Job Site: EV01				
TEST SPECIFICATIONS														
Specification: FCC Part 15.247(c)										Year: 2001				
Method: ANSI C63.4										Year: 1992				
SAMPLE CALCULATIONS														
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation														
Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator														
COMMENTS														
EUT OPERATING MODES														
Transmitting low, mid, high channel														
DEVIATIONS FROM TEST STANDARD														
No deviations.														
RESULTS														
Pass												Run #		
												4		
Other														
<div style="text-align: right;">  Tested By: </div>														
														
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Duty Cycle Correction Factor	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments	
2714.518	56.9	1.8	295.0	1.3	15.5	0.0	H-Horn	AV	0.0	43.2	54.0	-10.8	Low channel	
2756.694	53.5	1.9	97.0	1.7	15.5	0.0	H-Horn	AV	0.0	39.9	54.0	-14.1	Mid channel	
2774.545	53.1	1.9	240.0	1.3	15.5	0.0	H-Horn	AV	0.0	39.5	54.0	-14.5	High channel	
2714.518	52.8	1.8	269.0	1.2	15.5	0.0	V-Horn	AV	0.0	39.1	54.0	-14.9	Low channel	
2756.694	52.0	1.9	109.0	1.2	15.5	0.0	V-Horn	AV	0.0	38.4	54.0	-15.6	Mid channel	
2774.545	50.6	1.9	24.0	1.2	15.5	0.0	V-Horn	AV	0.0	37.0	54.0	-17.0	High channel	
4594.210	40.9	5.3	174.0	1.6	15.5	0.0	V-Horn	AV	0.0	30.7	54.0	-23.3	Mid channel	
3699.606	41.7	3.9	348.0	1.8	15.5	0.0	H-Horn	AV	0.0	30.1	54.0	-23.9	High channel	
4524.456	39.2	5.1	302.0	1.2	15.5	0.0	V-Horn	AV	0.0	28.8	54.0	-25.2	Low channel	
3675.382	39.8	3.8	203.0	1.9	15.5	0.0	H-Horn	AV	0.0	28.1	54.0	-25.9	Mid channel	
4524.456	38.2	5.1	289.0	1.3	15.5	0.0	H-Horn	AV	0.0	27.8	54.0	-26.2	Low channel	
4624.499	36.6	5.4	305.0	1.3	15.5	0.0	V-Horn	AV	0.0	26.5	54.0	-27.5	High channel	
3699.606	36.9	3.9	50.0	1.2	15.5	0.0	V-Horn	AV	0.0	25.3	54.0	-28.7	High channel	
4594.210	34.8	5.3	47.0	1.3	15.5	0.0	H-Horn	AV	0.0	24.6	54.0	-29.4	Mid channel	
4624.499	33.8	5.4	38.0	1.3	15.5	0.0	H-Horn	AV	0.0	23.7	54.0	-30.3	High channel	
3619.345	35.6	3.6	343.0	1.8	15.5	0.0	H-Horn	AV	0.0	23.7	54.0	-30.3	Low channel	
3619.345	34.1	3.6	52.0	1.2	15.5	0.0	V-Horn	AV	0.0	22.2	54.0	-31.8	Low channel	
3675.382	32.5	3.8	310.0	1.2	15.5	0.0	V-Horn	AV	0.0	20.8	54.0	-33.2	Mid channel	
2714.518	57.8	1.8	295.0	1.3	0.0	0.0	H-Horn	PK	0.0	59.6	74.0	-14.4	Low channel	
2756.694	55.3	1.9	97.0	1.7	0.0	0.0	H-Horn	PK	0.0	57.2	74.0	-16.8	Mid channel	

NORTHWEST EMC				EMISSIONS DATA SHEET				Rev BETA 01/30/01	
EUT: MRD6 / MRD8						Work Order: WATT0014			
Serial Number: N/A						Date: 06/16/03			
Customer: The Watt Stopper, Inc.						Temperature: 25 °C			
Attendees: None						Humidity: 34%			
Customer Ref. No.: N/A						Bar. Pressure: 30.15			
Tested by: Rod Peloquin				Power: 120VAC/60Hz		Job Site: EV06			
Specification: 47 CFR 15.235(c)			Year: 2003		Method: DA 00-705, ANSI C63.4		Year: 1992		
SAMPLE CALCULATIONS									
Duty cycle correction factor (dB) = 20*log (worst case high time / any 100mS period)									
COMMENTS									
EUT OPERATING MODES									
Modulated by PRBS at maximum data rate. Hopping carrier.									
DEVIATIONS FROM TEST STANDARD									
None									
REQUIREMENTS									
The average value of radiated emissions can be reduced by a duty cycle correction factor for comparison to the limit. The duty cycle correction factor is calculated as shown above:									
RESULTS									
Pass						DWELL TIME DURING A SINGLE TRANSMISSION 16.8mS			
SIGNATURE									
Tested By: _____									
DESCRIPTION OF TEST									
Time of Occupancy (Dwell Time) - Single Transmission									



NORTHWEST EMC				EMISSIONS DATA SHEET				BETA 01/30/0	
EUT: MRD6 / MRD8				Work Order: WATT0014					
Serial Number: N/A				Date: 06/16/03					
Customer: The Watt Stopper, Inc.				Temperature: 25 °C					
Attendees: None				Humidity: 34%					
Customer Ref. No.: N/A				Bar. Pressure: 30.15					
Tested by: Rod Peloquin				Power: 120VAC/60Hz				Job Site: EV06	
Specification: 47 CFR 15.235(c)		Year: 2003		Method: DA 00-705, ANSI C63.4		Year: 1992			
SAMPLE CALCULATIONS									
Duty cycle correction factor (dB) = 20*log (worst case high time / any 100mS period)									
COMMENTS									
EUT OPERATING MODES									
Modulated by PRBS at maximum data rate. Hopping carrier.									
DEVIATIONS FROM TEST STANDARD									
None									
REQUIREMENTS									
The average value of radiated emissions can be reduced by a duty cycle correction factor for comparison to the limit. The duty cycle correction factor is calculated as shown above:									
RESULTS									
Pass				NUMBER OF TRANSMISSIONS DURING A 100mS PERIOD 1					
SIGNATURE									
Tested By: _____									
DESCRIPTION OF TEST									
Maximum high time during a 100mS period									



Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

High
Mid
Low

Operating Modes Investigated:

Typical

Data Rates Investigated:

Typical

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

120 VAC, 60 Hz.

Frequency Range Investigated

Start Frequency	30 MHz	Stop Frequency	10 GHz
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Software\Firmware Applied During Test

Exercise software	Standard Production Software	Version	Unknown
Description			
Transmits at low, mid, and high channels.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter	N/A	A35-U0900	N/A
EUT	The Watt Stopper, Inc.	MRD6	N/A

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	PA	2.2	PA	EUT	AC Adapter
Control - 3 each	No	1.0	No	EUT	Unterminated

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Hewlett-Packard	8566B	AAL	01/07/2003	12 mo
Quasi-Peak Adapter	Hewlett-Packard	85650A	AQF	01/07/2003	12 mo
Pre-Amplifier	Amplifier Research	LN1000A	APS	01/06/2003	12 mo
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APJ	01/06/2003	12 mo
Antenna, Biconilog	EMCO	3141	AXE	12/31/2001	36 mo
Antenna, Horn	EMCO	3115	AHC	08/12/2002	12 mo
High Pass Filter	Hewlett Packard	84300-80037	HFE	05/01/2003	12 mo

Test Description

Requirement: The field strength of any spurious emissions or modulation products that fall in a restricted band, as defined in 47 CFR 15.205, is measured. The peak level must comply with the limits specified in 47 CFR 15.35(b). The average level (taken with a 10Hz VBW) must comply with the limits specified in 15.209.

Configuration: The only type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. The EUT was transmitting at its maximum data rate in a no hop mode. For each configuration, the spectrum was scanned from 30 MHz to 10 GHz. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.4:1992). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity. Since the dwell time per channel of the hopping signal was less than 100 ms, the readings obtained with the 10 Hz VBW were further reduced by a "duty cycle correction factor" of 15.5 dB, derived from $20\log(\text{dwell time}/100\text{ms})$, where the EUT's maximum dwell time in any 100mS period was measured to be 16.8 mS.

Bandwidths Used for Measurements

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 – 0.15	1.0	0.2	0.2
0.15 – 30.0	10.0	9.0	9.0
30.0 – 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

Measurements were made using the bandwidths and detectors specified. No video filter was used.

Completed by:



NORTHWEST

EMC

OATS DATA SHEET

REV
df3.10
03/10/2003

EUT: MRD6				Work Order: WATT0010			
Serial Number:				Date: 05/30/03			
Customer: The Watt Stopper Inc.				Temperature: 73			
Attendees:				Humidity: 46%			
Cust. Ref. No.:				Barometric Pressure 30.01			
Tested by: Holly Ashkannejhad		Power: 120VAC, 60Hz		Job Site: EV01			
TEST SPECIFICATIONS							
Specification: FCC Part 15.247(c)				Year: 2001			
Method: ANSI C63.4				Year: 1992			
SAMPLE CALCULATIONS							
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation							
Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator							
COMMENTS							
EUT OPERATING MODES							
Transmitting low, mid, high channel							
DEVIATIONS FROM TEST STANDARD							
No deviations.							
RESULTS						Run #	
Pass						2	
Other							
				Holly Ashkannejhad Tested By:			

80.0

70.0

60.0

50.0

40.0

30.0

20.0

10.0

0.0

10.000

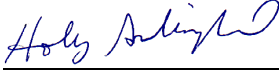
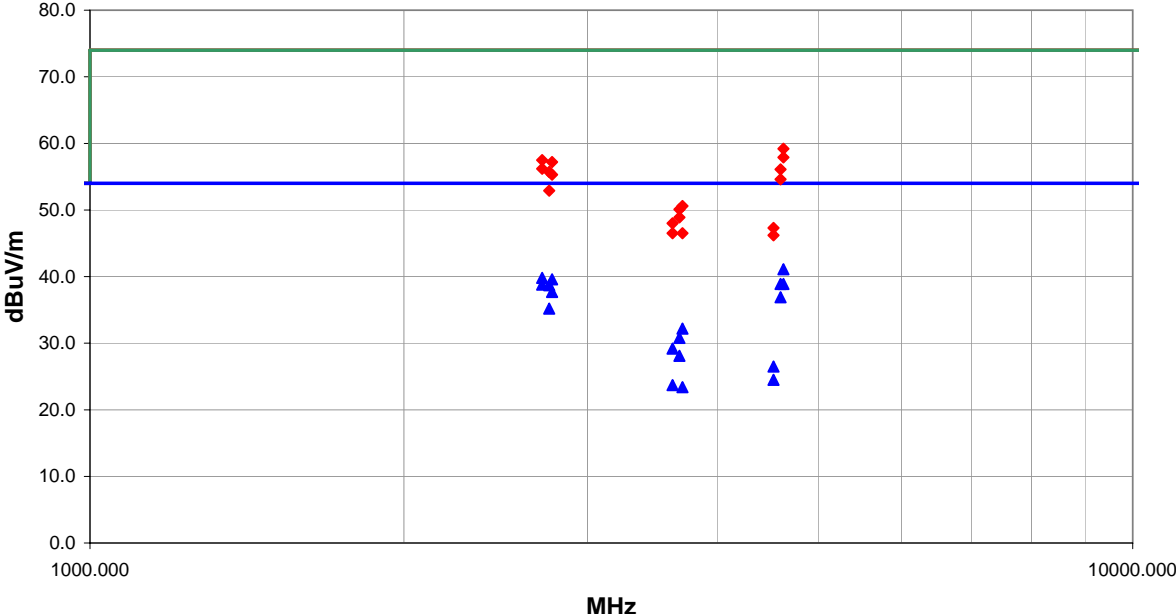
100.000

1000.000

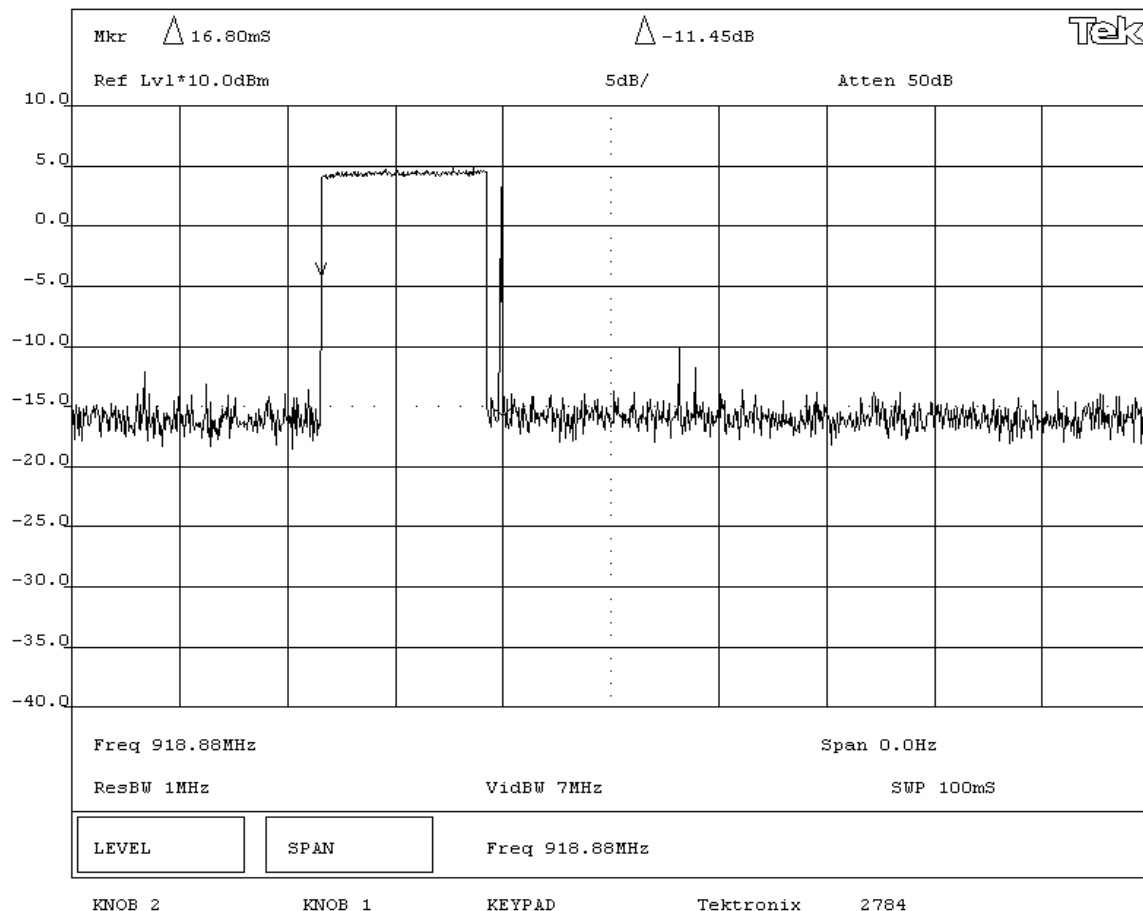
dBuV/m

MHz

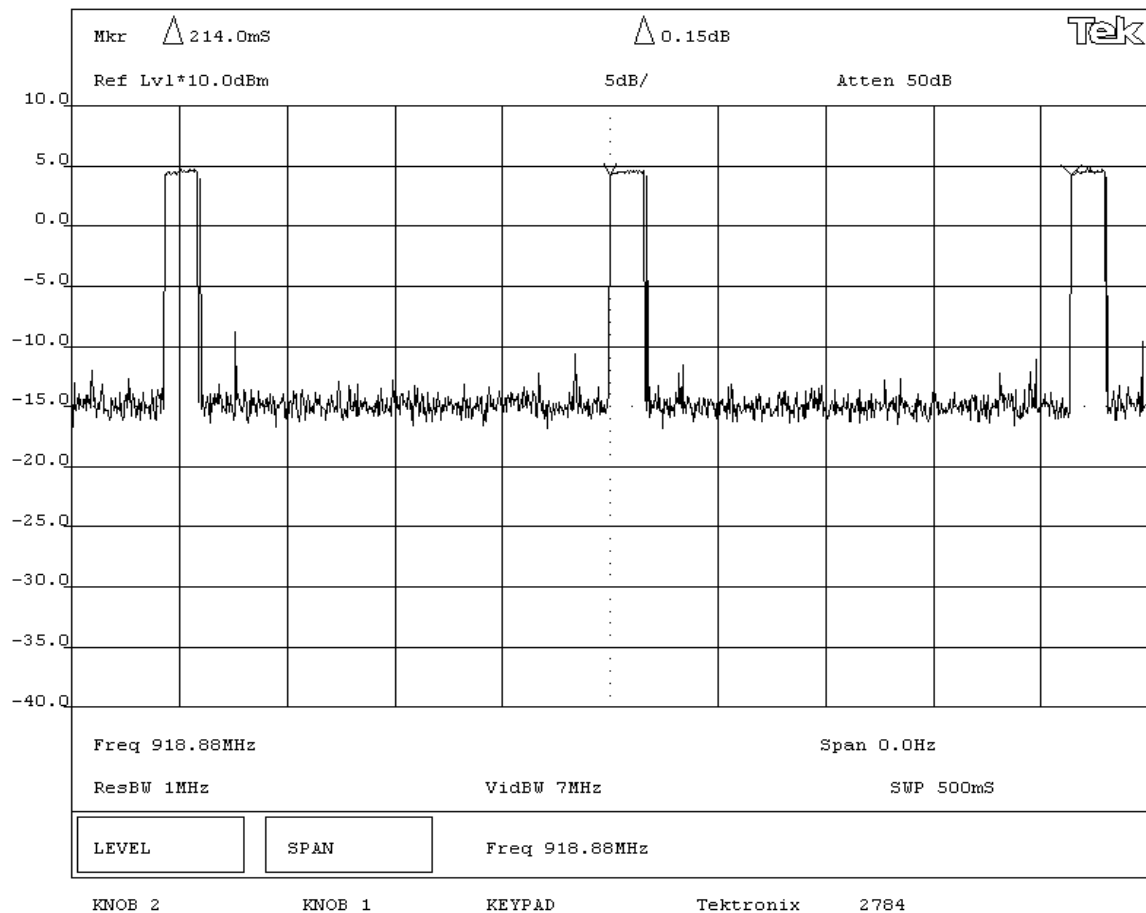
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
609.440	23.1	-7.1	264.0	1.2	3.0	20.0	H-Bilog	QP	0.0	36.0	46.0	-10.0	Low channel
609.282	23.0	-7.1	243.0	1.7	3.0	20.0	V-Bilog	QP	0.0	35.9	46.0	-10.1	Low channel
612.742	22.9	-7.0	267.0	3.3	3.0	20.0	H-Bilog	QP	0.0	35.9	46.0	-10.1	High channel
611.913	22.9	-7.1	76.0	1.7	3.0	20.0	V-Bilog	QP	0.0	35.8	46.0	-10.2	Mid channel
612.365	22.9	-7.1	155.0	1.2	3.0	20.0	H-Bilog	QP	0.0	35.8	46.0	-10.2	Mid channel
613.652	22.8	-7.0	37.0	1.7	3.0	20.0	V-Bilog	QP	0.0	35.8	46.0	-10.2	High channel
276.509	29.1	-14.8	78.0	1.0	3.0	20.0	H-Bilog	QP	0.0	34.3	46.0	-11.7	Mid channel
276.511	29.0	-14.8	75.0	1.0	3.0	20.0	H-Bilog	QP	0.0	34.2	46.0	-11.8	Low channel
276.508	28.4	-14.8	337.0	1.3	3.0	20.0	V-Bilog	QP	0.0	33.6	46.0	-12.4	Low channel
276.510	27.7	-14.8	182.0	1.6	3.0	20.0	V-Bilog	QP	0.0	32.9	46.0	-13.1	Mid channel
170.233	27.6	-18.1	165.0	2.2	3.0	20.0	H-Bilog	QP	0.0	29.5	43.0	-13.5	High channel
170.233	25.8	-18.1	40.0	1.0	3.0	20.0	V-Bilog	QP	0.0	27.7	43.0	-15.3	High channel

NORTHWEST EMC										OATS DATA SHEET				REV df3.10 03/10/2003	
EUT: MRD6							Work Order: WATT0010								
Serial Number:							Date: 05/30/03								
Customer: The Watt Stopper Inc.							Temperature: 73								
Attendees:							Humidity: 46%								
Cust. Ref. No.:							Barometric Pressure: 30.01								
Tested by: Holly Ashkannejhad				Power: 120VAC, 60Hz			Job Site: EV01								
TEST SPECIFICATIONS															
Specification: FCC Part 15.247(c)							Year: 2001								
Method: ANSI C63.4							Year: 1992								
SAMPLE CALCULATIONS															
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation															
Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator															
COMMENTS															
EUT OPERATING MODES															
Transmitting low, mid, high channels															
DEVIATIONS FROM TEST STANDARD															
No deviations.															
RESULTS										Run #					
Pass										4					
Other															
<div style="text-align: right;">  Tested By: </div>															
															
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Duty Cycle Correction Factor	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments		
4624.254	51.2	5.4	19.0	1.2	15.5	0.0	V-Horn	AV	0.0	41.1	54.0	-12.9	High channel		
2714.526	53.5	1.8	308.0	1.2	15.5	0.0	V-Horn	AV	0.0	39.8	54.0	-14.2	Low channel		
2774.701	53.2	1.9	328.0	2.1	15.5	0.0	H-Horn	AV	0.0	39.6	54.0	-14.4	High channel		
4624.254	49.0	5.4	347.0	1.3	15.5	0.0	H-Horn	AV	0.0	38.9	54.0	-15.1	High channel		
4594.506	49.1	5.3	19.0	1.2	15.5	0.0	V-Horn	AV	0.0	38.9	54.0	-15.1	Mid channel		
2714.526	52.5	1.8	356.0	2.2	15.5	0.0	H-Horn	AV	0.0	38.8	54.0	-15.2	Low channel		
2756.704	52.3	1.9	327.0	2.1	15.5	0.0	H-Horn	AV	0.0	38.7	54.0	-15.3	Mid channel		
2774.701	51.3	1.9	17.0	1.2	15.5	0.0	V-Horn	AV	0.0	37.7	54.0	-16.3	High channel		
4594.506	47.1	5.3	346.0	1.2	15.5	0.0	H-Horn	AV	0.0	36.9	54.0	-17.1	Mid channel		
2756.704	48.8	1.9	70.0	1.2	15.5	0.0	V-Horn	AV	0.0	35.2	54.0	-18.8	Mid channel		
3699.419	43.8	3.9	68.0	1.1	15.5	0.0	H-Horn	AV	0.0	32.2	54.0	-21.8	High channel		
3675.396	42.5	3.8	54.0	1.3	15.5	0.0	V-Horn	AV	0.0	30.8	54.0	-23.2	Mid channel		
3619.352	41.1	3.6	30.0	1.1	15.5	0.0	V-Horn	AV	0.0	29.2	54.0	-24.8	Low channel		
3675.396	39.8	3.8	44.0	2.7	15.5	0.0	H-Horn	AV	0.0	28.1	54.0	-25.9	Mid channel		
4524.460	36.9	5.1	23.0	1.2	15.5	0.0	V-Horn	AV	0.0	26.5	54.0	-27.5	Low channel		
4524.460	34.9	5.1	353.0	1.3	15.5	0.0	H-Horn	AV	0.0	24.5	54.0	-29.5	Low channel		
3619.352	35.6	3.6	322.0	2.2	15.5	0.0	H-Horn	AV	0.0	23.7	54.0	-30.3	Low channel		
3699.419	35.0	3.9	245.0	1.2	15.5	0.0	V-Horn	AV	0.0	23.4	54.0	-30.6	High channel		
4624.254	53.8	5.4	19.0	1.2	0.0	0.0	V-Horn	PK	0.0	59.2	74.0	-14.8	High channel		
4624.254	52.5	5.4	347.0	1.3	0.0	0.0	H-Horn	PK	0.0	57.9	74.0	-16.1	High channel		

NORTHWEST EMC				EMISSIONS DATA SHEET				Rev BETA 01/30/01	
EUT: MRD6 / MRD8						Work Order: WATT0010			
Serial Number: N/A						Date: 06/16/03			
Customer: The Watt Stopper, Inc.						Temperature: 25 °C			
Attendees: None						Humidity: 34%			
Customer Ref. No.: N/A						Bar. Pressure: 30.15			
Tested by: Rod Peloquin				Power: 120VAC/60Hz		Job Site: EV06			
Specification: 47 CFR 15.235(c)			Year: 2003		Method: DA 00-705, ANSI C63.4		Year: 1992		
SAMPLE CALCULATIONS									
Duty cycle correction factor (dB) = 20*log (worst case high time / any 100mS period)									
COMMENTS									
EUT OPERATING MODES									
Modulated by PRBS at maximum data rate. Hopping carrier.									
DEVIATIONS FROM TEST STANDARD									
None									
REQUIREMENTS									
The average value of radiated emissions can be reduced by a duty cycle correction factor for comparison to the limit. The duty cycle correction factor is calculated as shown above:									
RESULTS									
						DWELL TIME DURING A SINGLE TRANSMISSION			
Pass						16.8mS			
SIGNATURE									
<div style="border: 1px solid black; height: 40px; width: 100%;"></div>									
Tested By: _____									
DESCRIPTION OF TEST									
Time of Occupancy (Dwell Time) - Single Transmission									



NORTHWEST EMC				EMISSIONS DATA SHEET				BETA 01/30/0	
EUT: MRD6 / MRD8						Work Order: WATT0010			
Serial Number: N/A						Date: 06/16/03			
Customer: The Watt Stopper, Inc.						Temperature: 25 °C			
Attendees: None						Humidity: 34%			
Customer Ref. No.: N/A						Bar. Pressure: 30.15			
Tested by: Rod Peloquin				Power: 120VAC/60Hz		Job Site: EV06			
Specification: 47 CFR 15.235(c)			Year: 2003		Method: DA 00-705, ANSI C63.4		Year: 1992		
SAMPLE CALCULATIONS									
Duty cycle correction factor (dB) = 20*log (worst case high time/ any 100mS period)									
COMMENTS									
EUT OPERATING MODES									
Modulated by PRBS at maximum data rate. Hopping carrier.									
DEVIATIONS FROM TEST STANDARD									
None									
REQUIREMENTS									
The average value of radiated emissions can be reduced by a duty cycle correction factor for comparison to the limit. The duty cycle correction factor is calculated as shown above:									
RESULTS									
Pass						NUMBER OF TRANSMISSIONS DURING A 100mS PERIOD 1			
SIGNATURE									
Tested By: _____									
DESCRIPTION OF TEST									
Maximum high time during a 100mS period									



Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

High

Mid

Low

Operating Modes Investigated:

Typical

Data Rates Investigated:

Typical

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

120VAC, 60Hz

Software\Firmware Applied During Test

Exercise software	Standard Production Software	Version	Unknown
Description			
Transmits low, mid, and high channels			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter	N/A	A35-U0900	N/A
EUT	The Watt Stopper, Inc.	MRD8	N/A

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	PA	2.2	PA	EUT	AC Adapter
Control - 3 each	No	1.0	No	EUT	Unterminated

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
High Pass Filter	TTE	H97-100k-50-720B	HFC	01/02/2003	12 mo
LISN	Solar	9252-50-R-24-BNC	LIN	12/12/2002	12 mo
Spectrum Analyzer	Hewlett-Packard	8566B	AAL	01/07/2003	12 mo
Quasi-Peak Adapter	Hewlett-Packard	85650A	AQF	01/07/2003	12 mo

Test Description

Requirement: Per 47 15.207(d), if the EUT is connected to the AC power line indirectly, obtaining its power from another device that is connected to the AC power line, then it should be tested to demonstrate compliance with the conducted limits of 15.207.


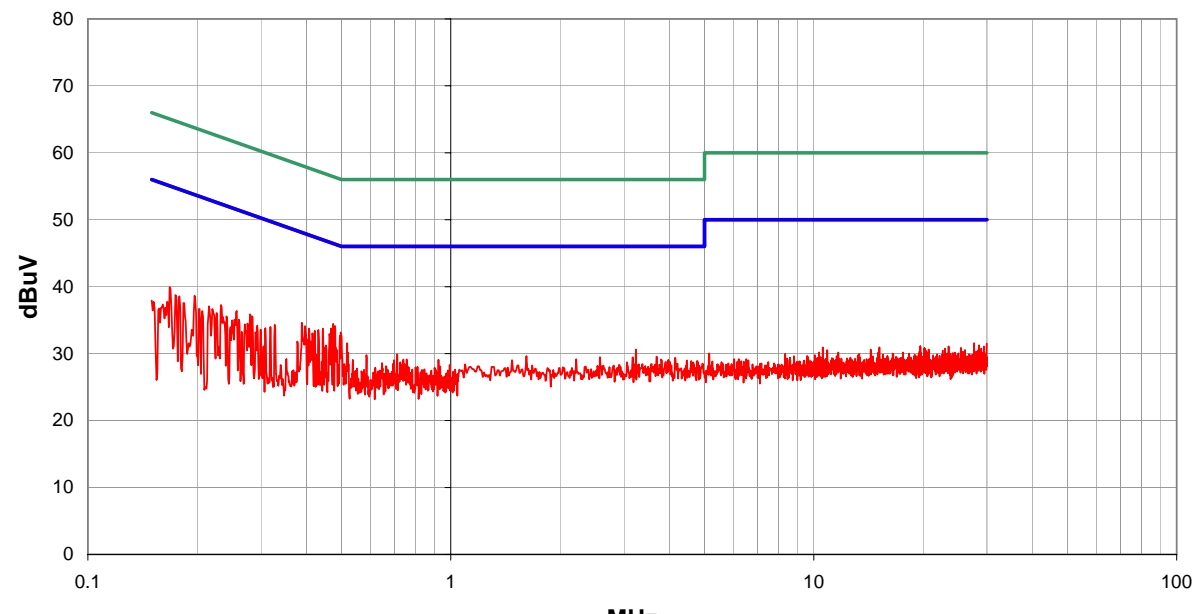
Configuration: The EUT will be powered from a host device that is connected to the AC power line. Therefore, the measurements were made using a wall-bug transformer to power the EUT. The transformer contained no EMC suppression devices. The AC power line conducted emissions were measured with the EUT operating at the lowest, the highest, and a middle channel in the operational band. The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.4-1992.

Completed by:



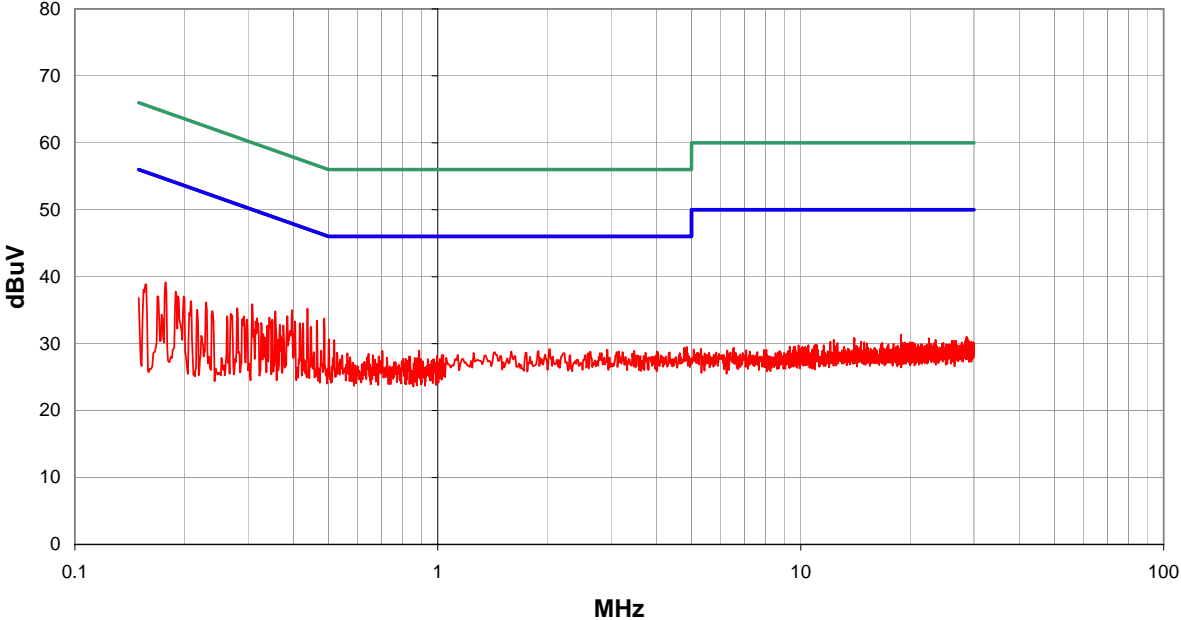
NORTHWEST		CONDUCTED EMISSIONS DATA SHEET					REV d3.10 03/10/2003	
EMC								
EUT: MRD8		Work Order: WATT0014						
Serial Number:		Date: 06/02/03						
Customer: The Watt Stopper Inc.		Temperature: 73						
Attendees:		Humidity: 47%						
Cust. Ref. No.:		Barometric Pressure: 29.96						
Tested by: Holly Ashkannejhad		Power: 120VAC, 60Hz		Job Site: EV01				
TEST SPECIFICATIONS								
Specification: FCC Part 15.207				Year: 2003				
Method: ANSI C63.4				Year: 1992				
SAMPLE CALCULATIONS								
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation								
Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator								
COMMENTS								
EUT OPERATING MODES								
Transmitting low channel								
DEVIATIONS FROM TEST STANDARD								
No deviations.								
RESULTS								
Pass					Line	Run #		
					L1	1		
Other								
					<div>Holly Ashkannejhad</div> <div>Tested By:</div>			
<div><div>80</div><div>70</div><div>60</div><div>50</div><div>40</div><div>30</div><div>20</div><div>10</div><div>0</div><div>dBuV</div></div> <div><div>0.1</div><div>1</div><div>10</div><div>100</div><div>MHz</div></div> <div></div>								

NORTHWEST		CONDUCTED EMISSIONS DATA SHEET				REV d3.10 03/10/2003				
EMC										
EUT: MRD8		Work Order: WATT0014								
Serial Number:		Date: 06/02/03								
Customer: The Watt Stopper Inc.		Temperature: 73								
Attendees:		Humidity: 47%								
Cust. Ref. No.:		Barometric Pressure: 29.96								
Tested by: Holly Ashkannejhad		Power: 120VAC, 60Hz		Job Site: EV01						
TEST SPECIFICATIONS										
Specification: FCC Part 15.207				Year: 2003						
Method: ANSI C63.4				Year: 1992						
SAMPLE CALCULATIONS										
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation										
Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator										
COMMENTS										
EUT OPERATING MODES										
Transmitting low channel										
DEVIATIONS FROM TEST STANDARD										
No deviations.										
RESULTS				Line		Run #				
Pass				N		2				
Other										
				<div>Holly Ashkannejhad</div> <div>Tested By:</div>						
<div><div>80</div><div>70</div><div>60</div><div>50</div><div>40</div><div>30</div><div>20</div><div>10</div><div>0</div></div> <div><div>0.1</div><div>1</div><div>10</div><div>100</div></div> <div>MHz</div> <div>dBuV</div>										
Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)	Detector (blank equal peaks [PK] from scan)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.394	15.6			0.0	0.2	20.0		35.8	48.0	-12.2
0.484	13.0			0.0	0.2	20.0		33.2	46.3	-13.0
0.505	12.7			0.0	0.2	20.0		32.9	46.0	-13.1
0.386	14.5			0.0	0.2	20.0		34.7	48.2	-13.4
0.376	14.7			0.0	0.2	20.0		34.9	48.4	-13.5
0.362	15.0			0.0	0.2	20.0		35.2	48.7	-13.5
0.381	14.1			0.0	0.2	20.0		34.3	48.3	-13.9
0.371	14.1			0.0	0.2	20.0		34.3	48.5	-14.2
0.337	14.5			0.0	0.2	20.0		34.7	49.3	-14.6
0.273	16.2			0.0	0.2	20.0		36.4	51.0	-14.6
0.350	13.8			0.0	0.2	20.0		34.0	49.0	-15.0
0.366	13.4			0.0	0.2	20.0		33.6	48.6	-15.0
0.279	15.4			0.0	0.2	20.0		35.6	50.9	-15.3
0.300	14.7			0.0	0.2	20.0		34.9	50.2	-15.3
0.514	9.8			0.0	0.3	20.0		30.1	46.0	-15.9
0.496	9.7			0.0	0.2	20.0		29.9	46.1	-16.1
0.342	12.8			0.0	0.2	20.0		33.0	49.2	-16.2
0.267	14.7			0.0	0.2	20.0		34.9	51.2	-16.3
3.356	9.0			0.0	0.5	20.0		29.5	46.0	-16.5
0.865	9.1			0.0	0.4	20.0		29.5	46.0	-16.5

NORTHWEST EMC		CONDUCTED EMISSIONS DATA SHEET				REV d3.10 03/10/2003				
EUT: MRD8		Work Order: WATT0014								
Serial Number:		Date: 06/02/03								
Customer: The Watt Stopper Inc.		Temperature: 73								
Attendees:		Humidity: 47%								
Cust. Ref. No.:		Barometric Pressure: 29.96								
Tested by: Holly Ashkannejhad		Power: 120VAC, 60Hz		Job Site: EV01						
TEST SPECIFICATIONS										
Specification: FCC Part 15.207		Year: 2003								
Method: ANSI C63.4		Year: 1992								
SAMPLE CALCULATIONS										
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation										
Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator										
COMMENTS										
EUT OPERATING MODES										
Transmitting mid channel										
DEVIATIONS FROM TEST STANDARD										
No deviations.										
RESULTS										
Pass		Line N		Run # 3						
Other		 Tested By:								
										
Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)	Detector (blank equal peaks [PK] from scan)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.474	14.2			0.0	0.2	20.0		34.4	46.4	-12.0
0.479	13.9			0.0	0.2	20.0		34.1	46.3	-12.2
0.468	13.5			0.0	0.2	20.0		33.7	46.6	-12.8
0.497	12.9			0.0	0.2	20.0		33.1	46.0	-12.9
0.444	13.5			0.0	0.2	20.0		33.7	47.0	-13.2
0.495	12.4			0.0	0.2	20.0		32.6	46.1	-13.4
0.389	14.4			0.0	0.2	20.0		34.6	48.1	-13.5
0.432	13.3			0.0	0.2	20.0		33.5	47.2	-13.7
0.463	12.7			0.0	0.2	20.0		32.9	46.6	-13.7
0.397	13.9			0.0	0.2	20.0		34.1	47.9	-13.8
0.422	13.2			0.0	0.2	20.0		33.4	47.4	-14.0
0.407	13.5			0.0	0.2	20.0		33.7	47.7	-14.0
0.518	11.3			0.0	0.3	20.0		31.6	46.0	-14.4
0.416	12.8			0.0	0.2	20.0		33.0	47.5	-14.5
0.280	15.7			0.0	0.2	20.0		35.9	50.8	-14.9
0.233	17.1			0.0	0.2	20.0		37.3	52.3	-15.1
0.197	18.5			0.0	0.2	20.0		38.7	53.7	-15.1
0.168	19.8			0.0	0.1	20.0		39.9	55.1	-15.1
0.283	15.4			0.0	0.2	20.0		35.6	50.7	-15.1
0.257	16.2			0.0	0.2	20.0		36.4	51.5	-15.1

NORTHWEST		CONDUCTED EMISSIONS DATA SHEET				REV d3.10 03/10/2003						
EMC												
EUT: MRD8		Work Order: WATT0014										
Serial Number:		Date: 06/02/03										
Customer: The Watt Stopper Inc.		Temperature: 73										
Attendees:		Humidity: 47%										
Cust. Ref. No.:		Barometric Pressure: 29.96										
Tested by: Holly Ashkannejhad		Power: 120VAC, 60Hz		Job Site: EV01								
TEST SPECIFICATIONS												
Specification: FCC Part 15.207				Year: 2003								
Method: ANSI C63.4				Year: 1992								
SAMPLE CALCULATIONS												
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation												
Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator												
COMMENTS												
EUT OPERATING MODES												
Transmitting mid channel												
DEVIATIONS FROM TEST STANDARD												
No deviations.												
RESULTS				Line		Run #						
Pass				L1		4						
Other												
				<div>Holly Ashkannejhad</div> <div>Tested By:</div>								
<div><div>80</div><div>70</div><div>60</div><div>50</div><div>40</div><div>30</div><div>20</div><div>10</div><div>0</div></div> <div><div>0.1</div><div>1</div><div>10</div><div>100</div></div> <div>MHz</div> <div>dBuV</div>												
Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.458	16.3			0.0	0.2	20.0				36.5	46.7	-10.2
0.486	15.6			0.0	0.2	20.0				35.8	46.2	-10.4
0.463	15.9			0.0	0.2	20.0				36.1	46.6	-10.5
0.448	15.9			0.0	0.2	20.0				36.1	46.9	-10.8
0.429	16.1			0.0	0.2	20.0				36.3	47.3	-10.9
0.424	16.0			0.0	0.2	20.0				36.2	47.4	-11.2
0.439	15.7			0.0	0.2	20.0				35.9	47.1	-11.2
0.454	15.4			0.0	0.2	20.0				35.6	46.8	-11.2
0.419	15.8			0.0	0.2	20.0				36.0	47.5	-11.4
0.409	15.8			0.0	0.2	20.0				36.0	47.7	-11.6
0.381	16.0			0.0	0.2	20.0				36.2	48.3	-12.0
0.399	15.5			0.0	0.2	20.0				35.7	47.9	-12.1
0.435	14.6			0.0	0.2	20.0				34.8	47.2	-12.3
0.388	15.0			0.0	0.2	20.0				35.2	48.1	-12.9
0.414	14.4			0.0	0.2	20.0				34.6	47.6	-13.0
0.416	14.2			0.0	0.2	20.0				34.4	47.5	-13.1
0.697	12.3			0.0	0.3	20.0				32.6	46.0	-13.4
0.475	12.7			0.0	0.2	20.0				32.9	46.4	-13.5
0.350	14.7			0.0	0.2	20.0				34.9	49.0	-14.1
0.397	13.6			0.0	0.2	20.0				33.8	47.9	-14.1

NORTHWEST		CONDUCTED EMISSIONS DATA SHEET				REV d3.10 03/10/2003			
EMC									
EUT: MRD8		Work Order: WATT0014							
Serial Number:		Date: 06/02/03							
Customer: The Watt Stopper Inc.		Temperature: 73							
Attendees:		Humidity: 47%							
Cust. Ref. No.:		Barometric Pressure: 29.96							
Tested by: Holly Ashkannejhad		Power: 120VAC, 60Hz		Job Site: EV01					
TEST SPECIFICATIONS									
Specification: FCC Part 15.207				Year: 2003					
Method: ANSI C63.4				Year: 1992					
SAMPLE CALCULATIONS									
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation									
Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator									
COMMENTS									
EUT OPERATING MODES									
Transmitting high channel									
DEVIATIONS FROM TEST STANDARD									
No deviations.									
RESULTS									
Pass				Line L1		Run # 5			
Other									
				<div>Holly Ashkannejhad</div> <div>Tested By:</div>					
<div><div>80</div><div>70</div><div>60</div><div>50</div><div>40</div><div>30</div><div>20</div><div>10</div><div>0</div><div>0.1</div><div>1</div><div>10</div><div>100</div><div>MHz</div><div>dBuV</div></div>									
Freq (MHz)	Amplitude (dBuV)		Transducer (dB)	Cable (dB)	External Attenuation (dB)	Detector (blank equal peaks [PK] from scan)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.395	17.7		0.0	0.2	20.0		37.9	48.0	-10.0
0.481	15.6		0.0	0.2	20.0		35.8	46.3	-10.5
0.488	15.2		0.0	0.2	20.0		35.4	46.2	-10.8
0.499	14.5		0.0	0.2	20.0		34.7	46.0	-11.3
0.443	15.4		0.0	0.2	20.0		35.6	47.0	-11.4
0.468	14.7		0.0	0.2	20.0		34.9	46.6	-11.6
0.406	15.8		0.0	0.2	20.0		36.0	47.7	-11.7
0.517	13.9		0.0	0.3	20.0		34.2	46.0	-11.8
0.473	14.3		0.0	0.2	20.0		34.5	46.5	-11.9
0.420	15.3		0.0	0.2	20.0		35.5	47.4	-11.9
0.400	15.6		0.0	0.2	20.0		35.8	47.8	-12.0
0.507	13.6		0.0	0.3	20.0		33.9	46.0	-12.1
0.463	14.0		0.0	0.2	20.0		34.2	46.6	-12.4
0.496	13.3		0.0	0.2	20.0		33.5	46.1	-12.5
0.409	14.8		0.0	0.2	20.0		35.0	47.7	-12.6
0.511	13.1		0.0	0.3	20.0		33.4	46.0	-12.6
0.375	15.4		0.0	0.2	20.0		35.6	48.4	-12.8
0.302	17.0		0.0	0.2	20.0		37.2	50.2	-13.0
0.366	15.2		0.0	0.2	20.0		35.4	48.6	-13.2
0.736	12.4		0.0	0.3	20.0		32.7	46.0	-13.3

NORTHWEST		CONDUCTED EMISSIONS DATA SHEET					REV d3.10 03/10/2003					
EMC												
EUT: MRD8		Work Order: WATT0014										
Serial Number:		Date: 06/02/03										
Customer: The Watt Stopper Inc.		Temperature: 73										
Attendees:		Humidity: 47%										
Cust. Ref. No.:		Barometric Pressure: 29.96										
Tested by: Holly Ashkannejhad		Power: 120VAC, 60Hz		Job Site: EV01								
TEST SPECIFICATIONS												
Specification: FCC Part 15.207				Year: 2003								
Method: ANSI C63.4				Year: 1992								
SAMPLE CALCULATIONS												
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation												
Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator												
COMMENTS												
EUT OPERATING MODES												
Transmitting high channel												
DEVIATIONS FROM TEST STANDARD												
No deviations.												
RESULTS												
Pass					Line	Run #						
					N	6						
Other												
					Holly Ashkannejhad Tested By:							
												
Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.437	15.0			0.0	0.2	20.0				35.2	47.1	-11.9
0.487	13.5			0.0	0.2	20.0				33.7	46.2	-12.5
0.397	14.8			0.0	0.2	20.0				35.0	47.9	-12.9
0.465	13.2			0.0	0.2	20.0				33.4	46.6	-13.2
0.357	14.6			0.0	0.2	20.0				34.8	48.8	-14.0
0.385	13.9			0.0	0.2	20.0				34.1	48.2	-14.1
0.308	15.7			0.0	0.2	20.0				35.9	50.0	-14.1
0.425	12.8			0.0	0.2	20.0				33.0	47.3	-14.3
0.447	12.3			0.0	0.2	20.0				32.5	46.9	-14.4
0.404	13.1			0.0	0.2	20.0				33.3	47.8	-14.5
0.417	12.8			0.0	0.2	20.0				33.0	47.5	-14.5
0.344	13.7			0.0	0.2	20.0				33.9	49.1	-15.2
0.501	10.4			0.0	0.2	20.0				30.6	46.0	-15.4
0.350	13.4			0.0	0.2	20.0				33.6	49.0	-15.4
0.178	19.0			0.0	0.2	20.0				39.2	54.6	-15.4
0.518	10.3			0.0	0.3	20.0				30.6	46.0	-15.4
0.281	15.1			0.0	0.2	20.0				35.3	50.8	-15.5
0.375	12.5			0.0	0.2	20.0				32.7	48.4	-15.7
0.367	12.6			0.0	0.2	20.0				32.8	48.6	-15.8
0.317	13.6			0.0	0.2	20.0				33.8	49.8	-16.0

Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

High

Mid

Low

Operating Modes Investigated:

Typical

Data Rates Investigated:

Typical

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

Battery

Software\Firmware Applied During Test

Exercise software	Standard Production Software	Version	Unknown
Description			
Transmits at low, mid, and high channels.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter	N/A	A35-U0900	N/A
EUT	The Watt Stopper, Inc.	MRD6	N/A

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	PA	2.2	PA	EUT	AC Adapter
Control - 3 each	No	1.0	No	EUT	Unterminated

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Measurement Equipment

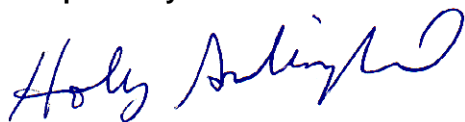
Description	Manufacturer	Model	Identifier	Last Cal	Interval
High Pass Filter	TTE	H97-100k-50-720B	HFC	01/02/2003	12 mo
LISN	Solar	9252-50-R-24-BNC	LIN	12/12/2002	12 mo
Spectrum Analyzer	Hewlett-Packard	8566B	AAL	01/07/2003	12 mo
Quasi-Peak Adapter	Hewlett-Packard	85650A	AQF	01/07/2003	12 mo

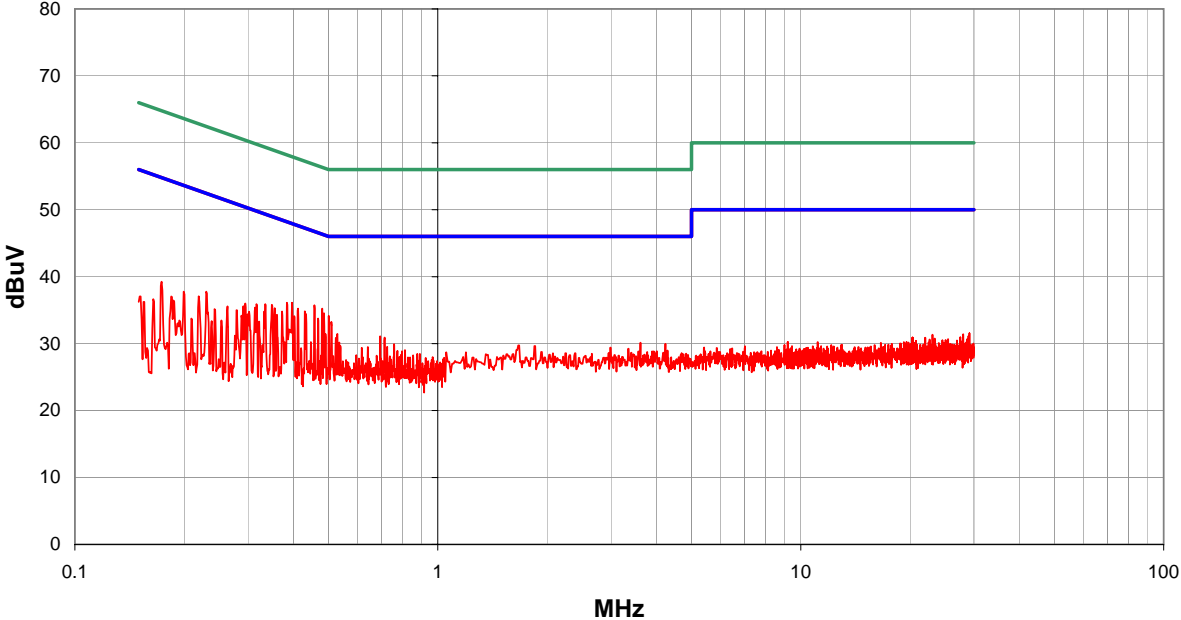
Test Description

Requirement: Per 47 15.207(d), if the EUT is connected to the AC power line indirectly, obtaining its power from another device that is connected to the AC power line, then it should be tested to demonstrate compliance with the conducted limits of 15.207.

Configuration: The EUT will be powered from a host device that is connected to the AC power line. Therefore, the measurements were made using a wall-bug transformer to power the EUT. The transformer contained no EMC suppression devices. The AC power line conducted emissions were measured with the EUT operating at the lowest, the highest, and a middle channel in the operational band. The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.4-1992.

Completed by:

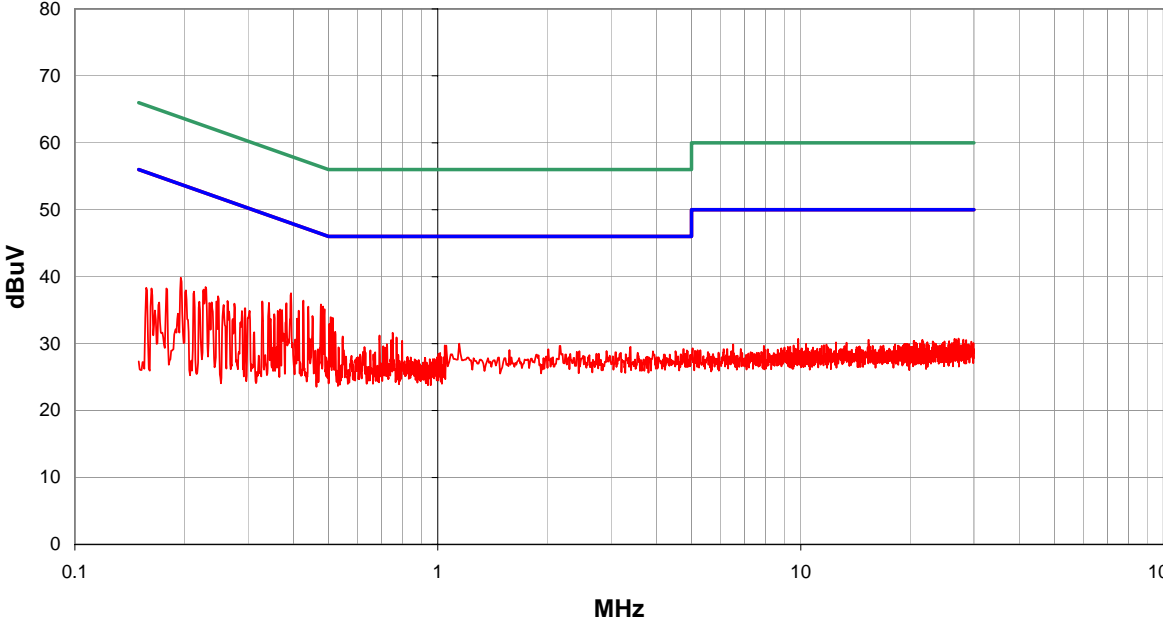


NORTHWEST		CONDUCTED EMISSIONS DATA SHEET				REV d3.10 03/10/2003						
EMC												
EUT: MRD6		Work Order: WATT0010										
Serial Number: N/A		Date: 06/02/03										
Customer: The Watt Stopper Inc.		Temperature: 73										
Attendees:		Humidity: 46%										
Cust. Ref. No.:		Barometric Pressure: 30.01										
Tested by: Holly Ashkannejhad		Power: 120VAC, 60Hz		Job Site: EV01								
TEST SPECIFICATIONS												
Specification: FCC Part 15.207				Year: 2003								
Method: ANSI C63.4				Year: 1992								
SAMPLE CALCULATIONS												
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation												
Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator												
COMMENTS												
EUT OPERATING MODES												
Transmitting low channel												
DEVIATIONS FROM TEST STANDARD												
No deviations.												
RESULTS				Line		Run #						
Pass				L1		1						
Other												
				Holly Ashkannejhad Tested By:								
												
Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.457	15.5			0.0	0.2	20.0				35.7	46.7	-11.0
0.480	15.0			0.0	0.2	20.0				35.2	46.3	-11.1
0.486	14.3			0.0	0.2	20.0				34.5	46.2	-11.7
0.397	15.9			0.0	0.2	20.0				36.1	47.9	-11.8
0.501	13.9			0.0	0.2	20.0				34.1	46.0	-11.9
0.384	15.9			0.0	0.2	20.0				36.1	48.2	-12.1
0.412	15.0			0.0	0.2	20.0				35.2	47.6	-12.4
0.430	14.6			0.0	0.2	20.0				34.8	47.3	-12.4
0.509	13.0			0.0	0.3	20.0				33.3	46.0	-12.7
0.434	14.2			0.0	0.2	20.0				34.4	47.2	-12.8
0.468	13.5			0.0	0.2	20.0				33.7	46.6	-12.8
0.349	15.6			0.0	0.2	20.0				35.8	49.0	-13.2
0.335	15.7			0.0	0.2	20.0				35.9	49.3	-13.4
0.355	15.1			0.0	0.2	20.0				35.3	48.8	-13.5
0.372	14.6			0.0	0.2	20.0				34.8	48.4	-13.6
0.402	13.9			0.0	0.2	20.0				34.1	47.8	-13.7
0.317	15.7			0.0	0.2	20.0				35.9	49.8	-13.9
0.295	15.8			0.0	0.2	20.0				36.0	50.4	-14.4
0.361	14.1			0.0	0.2	20.0				34.3	48.7	-14.4
0.314	15.2			0.0	0.2	20.0				35.4	49.9	-14.5

NORTHWEST		CONDUCTED EMISSIONS DATA SHEET					REV d3.10 03/10/2003					
EMC												
EUT: MRD6		Work Order: WATT0010										
Serial Number: N/A		Date: 06/02/03										
Customer: The Watt Stopper Inc.		Temperature: 73										
Attendees:		Humidity: 46%										
Cust. Ref. No.:		Barometric Pressure: 30.01										
Tested by: Holly Ashkannejhad		Power: 120VAC, 60Hz		Job Site: EV01								
TEST SPECIFICATIONS												
Specification: FCC Part 15.207				Year: 2003								
Method: ANSI C63.4				Year: 1992								
SAMPLE CALCULATIONS												
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation												
Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator												
COMMENTS												
EUT OPERATING MODES												
Transmitting low channel												
DEVIATIONS FROM TEST STANDARD												
No deviations.												
RESULTS												
Pass				Line N		Run # 2						
Other												
				<div>Holly Ashkannejhad</div> <div>Tested By:</div>								
<div><div>80</div><div>70</div><div>60</div><div>50</div><div>40</div><div>30</div><div>20</div><div>10</div><div>0</div></div> <div><div>0.1</div><div>1</div><div>10</div><div>100</div></div> <div>MHz</div> <div>dBuV</div>												
Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.484	14.0			0.0	0.2	20.0				34.2	46.3	-12.0
0.475	14.0			0.0	0.2	20.0				34.2	46.4	-12.2
0.452	13.1			0.0	0.2	20.0				33.3	46.8	-13.5
0.423	13.5			0.0	0.2	20.0				33.7	47.4	-13.7
0.396	14.0			0.0	0.2	20.0				34.2	47.9	-13.7
0.319	15.7			0.0	0.2	20.0				35.9	49.7	-13.8
0.519	11.9			0.0	0.3	20.0				32.2	46.0	-13.8
0.435	13.0			0.0	0.2	20.0				33.2	47.2	-13.9
0.501	11.8			0.0	0.2	20.0				32.0	46.0	-14.0
0.514	11.6			0.0	0.3	20.0				31.9	46.0	-14.1
0.479	11.8			0.0	0.2	20.0				32.0	46.3	-14.3
0.458	11.9			0.0	0.2	20.0				32.1	46.7	-14.6
0.465	11.6			0.0	0.2	20.0				31.8	46.6	-14.8
0.342	13.8			0.0	0.2	20.0				34.0	49.2	-15.2
0.492	10.6			0.0	0.2	20.0				30.8	46.1	-15.3
0.544	10.3			0.0	0.3	20.0				30.6	46.0	-15.4
0.311	14.0			0.0	0.2	20.0				34.2	49.9	-15.7
0.274	15.0			0.0	0.2	20.0				35.2	51.0	-15.8
0.371	12.4			0.0	0.2	20.0				32.6	48.5	-15.9
0.327	13.1			0.0	0.2	20.0				33.3	49.5	-16.2

NORTHWEST		CONDUCTED EMISSIONS DATA SHEET				REV d3.10 03/10/2003				
EMC										
EUT: MRD6		Work Order: WATT0010								
Serial Number: N/A		Date: 06/02/03								
Customer: The Watt Stopper Inc.		Temperature: 73								
Attendees:		Humidity: 46%								
Cust. Ref. No.:		Barometric Pressure: 30.01								
Tested by: Holly Ashkannejhad		Power: 120VAC, 60Hz		Job Site: EV01						
TEST SPECIFICATIONS										
Specification: FCC Part 15.207				Year: 2003						
Method: ANSI C63.4				Year: 1992						
SAMPLE CALCULATIONS										
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation										
Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator										
COMMENTS										
EUT OPERATING MODES										
Transmitting mid channel										
DEVIATIONS FROM TEST STANDARD										
No deviations.										
RESULTS				Line		Run #				
Pass				N		3				
Other										
				Holly Ashkannejhad Tested By:						
Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)	Detector (blank equal peaks [PK] from scan)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.470	14.6			0.0	0.2	20.0		34.8	46.5	-11.7
0.435	14.7			0.0	0.2	20.0		34.9	47.2	-12.2
0.410	14.7			0.0	0.2	20.0		34.9	47.6	-12.7
0.428	14.2			0.0	0.2	20.0		34.4	47.3	-12.9
0.466	13.3			0.0	0.2	20.0		33.5	46.6	-13.0
0.490	12.5			0.0	0.2	20.0		32.7	46.2	-13.4
0.455	13.1			0.0	0.2	20.0		33.3	46.8	-13.4
0.497	12.3			0.0	0.2	20.0		32.5	46.1	-13.5
0.479	12.1			0.0	0.2	20.0		32.3	46.3	-14.0
0.450	12.6			0.0	0.2	20.0		32.8	46.9	-14.0
0.503	11.7			0.0	0.2	20.0		31.9	46.0	-14.1
0.198	19.0			0.0	0.2	20.0		39.2	53.7	-14.5
0.520	11.0			0.0	0.3	20.0		31.3	46.0	-14.7
0.516	10.8			0.0	0.3	20.0		31.1	46.0	-14.9
0.667	10.5			0.0	0.3	20.0		30.8	46.0	-15.2
0.393	12.3			0.0	0.2	20.0		32.5	48.0	-15.5
0.235	16.6			0.0	0.2	20.0		36.8	52.3	-15.5
0.294	14.7			0.0	0.2	20.0		34.9	50.4	-15.5
0.419	11.7			0.0	0.2	20.0		31.9	47.5	-15.5
0.193	18.2			0.0	0.2	20.0		38.4	53.9	-15.5

NORTHWEST		CONDUCTED EMISSIONS DATA SHEET				REV d3.10 03/10/2003						
EMC												
EUT: MRD6		Work Order: WATT0010										
Serial Number: N/A		Date: 06/02/03										
Customer: The Watt Stopper Inc.		Temperature: 73										
Attendees:		Humidity: 46%										
Cust. Ref. No.:		Barometric Pressure: 30.01										
Tested by: Holly Ashkannejhad		Power: 120VAC, 60Hz		Job Site: EV01								
TEST SPECIFICATIONS												
Specification: FCC Part 15.207				Year: 2003								
Method: ANSI C63.4				Year: 1992								
SAMPLE CALCULATIONS												
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation												
Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator												
COMMENTS												
EUT OPERATING MODES												
Transmitting mid channel												
DEVIATIONS FROM TEST STANDARD												
No deviations.												
RESULTS												
Pass				Line L1		Run # 4						
Other												
				<div>Holly Ashkannejhad</div> <div>Tested By:</div>								
<div><div>80</div><div>70</div><div>60</div><div>50</div><div>40</div><div>30</div><div>20</div><div>10</div><div>0</div><div>0.1</div><div>1</div><div>10</div><div>100</div><div>MHz</div><div>dBuV</div></div>												
Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.393	17.9			0.0	0.2	20.0				38.1	48.0	-9.9
0.478	15.8			0.0	0.2	20.0				36.0	46.4	-10.3
0.504	14.9			0.0	0.2	20.0				35.1	46.0	-10.9
0.444	15.6			0.0	0.2	20.0				35.8	47.0	-11.1
0.459	15.1			0.0	0.2	20.0				35.3	46.7	-11.4
0.399	15.9			0.0	0.2	20.0				36.1	47.9	-11.7
0.416	14.8			0.0	0.2	20.0				35.0	47.5	-12.5
0.353	15.7			0.0	0.2	20.0				35.9	48.9	-13.0
0.434	13.8			0.0	0.2	20.0				34.0	47.2	-13.1
0.355	15.2			0.0	0.2	20.0				35.4	48.8	-13.4
0.363	15.0			0.0	0.2	20.0				35.2	48.7	-13.4
0.382	14.5			0.0	0.2	20.0				34.7	48.2	-13.5
0.267	17.5			0.0	0.2	20.0				37.7	51.2	-13.5
0.515	12.1			0.0	0.3	20.0				32.4	46.0	-13.6
0.373	14.5			0.0	0.2	20.0				34.7	48.4	-13.7
0.437	13.0			0.0	0.2	20.0				33.2	47.1	-13.9
0.556	11.8			0.0	0.3	20.0				32.1	46.0	-13.9
0.409	13.2			0.0	0.2	20.0				33.4	47.7	-14.2
0.228	18.1			0.0	0.2	20.0				38.3	52.5	-14.2
0.272	16.3			0.0	0.2	20.0				36.5	51.0	-14.6

NORTHWEST		CONDUCTED EMISSIONS DATA SHEET				REV d3.10 03/10/2003						
EMC												
EUT: MRD6		Work Order: WATT0010										
Serial Number: N/A		Date: 06/02/03										
Customer: The Watt Stopper Inc.		Temperature: 73										
Attendees:		Humidity: 46%										
Cust. Ref. No.:		Barometric Pressure: 30.01										
Tested by: Holly Ashkannejhad		Power: 120VAC, 60Hz		Job Site: EV01								
TEST SPECIFICATIONS												
Specification: FCC Part 15.207				Year: 2003								
Method: ANSI C63.4				Year: 1992								
SAMPLE CALCULATIONS												
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation												
Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator												
COMMENTS												
EUT OPERATING MODES												
Transmitting high channel												
DEVIATIONS FROM TEST STANDARD												
No deviations.												
RESULTS				Line		Run #						
Pass				L1		5						
Other												
				Holly Ashkannejhad Tested By:								
												
Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.394	17.3			0.0	0.2	20.0				37.5	48.0	-10.5
0.477	15.6			0.0	0.2	20.0				35.8	46.4	-10.6
0.483	15.3			0.0	0.2	20.0				35.5	46.3	-10.7
0.426	16.2			0.0	0.2	20.0				36.4	47.3	-10.9
0.488	14.9			0.0	0.2	20.0				35.1	46.2	-11.1
0.440	15.3			0.0	0.2	20.0				35.5	47.1	-11.5
0.507	13.7			0.0	0.3	20.0				34.0	46.0	-12.0
0.514	13.6			0.0	0.3	20.0				33.9	46.0	-12.1
0.383	15.8			0.0	0.2	20.0				36.0	48.2	-12.2
0.414	14.7			0.0	0.2	20.0				34.9	47.6	-12.7
0.452	13.9			0.0	0.2	20.0				34.1	46.8	-12.7
0.343	15.9			0.0	0.2	20.0				36.1	49.1	-13.0
0.503	12.7			0.0	0.2	20.0				32.9	46.0	-13.1
0.328	16.1			0.0	0.2	20.0				36.3	49.5	-13.2
0.372	14.8			0.0	0.2	20.0				35.0	48.4	-13.4
0.368	14.9			0.0	0.2	20.0				35.1	48.6	-13.4
0.362	14.7			0.0	0.2	20.0				34.9	48.7	-13.8
0.196	19.7			0.0	0.2	20.0				39.9	53.8	-13.9
0.409	13.5			0.0	0.2	20.0				33.7	47.7	-13.9
0.229	18.3			0.0	0.2	20.0				38.5	52.5	-14.0

NORTHWEST		CONDUCTED EMISSIONS DATA SHEET					REV d3.10 03/10/2003					
EMC												
EUT: MRD6		Work Order: WATT0010										
Serial Number: N/A		Date: 06/02/03										
Customer: The Watt Stopper Inc.		Temperature: 73										
Attendees:		Humidity: 46%										
Cust. Ref. No.:		Barometric Pressure: 30.01										
Tested by: Holly Ashkannejhad		Power: 120VAC, 60Hz		Job Site: EV01								
TEST SPECIFICATIONS												
Specification: FCC Part 15.207				Year: 2003								
Method: ANSI C63.4				Year: 1992								
SAMPLE CALCULATIONS												
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation												
Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator												
COMMENTS												
EUT OPERATING MODES												
Transmitting high channel												
DEVIATIONS FROM TEST STANDARD												
No deviations.												
RESULTS												
Pass					Line	Run #						
					N	6						
Other												
					<div>Holly Ashkannejhad</div> <div>Tested By:</div>							
<div><div>80</div><div>70</div><div>60</div><div>50</div><div>40</div><div>30</div><div>20</div><div>10</div><div>0</div></div> <div><div>0.1</div><div>1</div><div>10</div><div>100</div></div> <div>MHz</div> <div>dBuV</div>												
Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.479	13.9			0.0	0.2	20.0				34.1	46.4	-12.2
0.392	15.2			0.0	0.2	20.0				35.4	48.0	-12.6
0.401	14.8			0.0	0.2	20.0				35.0	47.8	-12.8
0.513	12.9			0.0	0.3	20.0				33.2	46.0	-12.8
0.435	13.8			0.0	0.2	20.0				34.0	47.2	-13.1
0.507	12.6			0.0	0.3	20.0				32.9	46.0	-13.1
0.485	12.8			0.0	0.2	20.0				33.0	46.3	-13.2
0.467	13.0			0.0	0.2	20.0				33.2	46.6	-13.3
0.418	13.5			0.0	0.2	20.0				33.7	47.5	-13.8
0.459	12.7			0.0	0.2	20.0				32.9	46.7	-13.8
0.475	12.0			0.0	0.2	20.0				32.2	46.4	-14.2
0.231	17.7			0.0	0.2	20.0				37.9	52.4	-14.5
0.423	12.6			0.0	0.2	20.0				32.8	47.4	-14.6
0.497	11.1			0.0	0.2	20.0				31.3	46.1	-14.7
0.263	16.4			0.0	0.2	20.0				36.6	51.3	-14.7
0.287	15.5			0.0	0.2	20.0				35.7	50.6	-14.9
0.188	18.9			0.0	0.2	20.0				39.1	54.1	-15.1
0.325	14.1			0.0	0.2	20.0				34.3	49.6	-15.3
0.442	11.5			0.0	0.2	20.0				31.7	47.0	-15.3
0.427	11.6			0.0	0.2	20.0				31.8	47.3	-15.5