

# Retlif Testing Laboratories

795 Marconi Avenue, Ronkonkoma, NY 11779  
631-737-1500 - Fax: 631-737-1497

BRANCH LABORATORIES  
101 New Boston Road  
Goffstown, NH 03045  
603-497-4600 Fax 603-497-5281  
WASHINGTON  
REGULATORY OFFICE  
703-533-1614 Fax 703-533-1612



April 5, 2006

Lutron Electronics Co., Inc.  
7200 Suter Road  
Coopersburg, PA 18036

Dear Mr. Larry Carmen:

Enclosed you will find Retlif Testing Laboratories Test Results Number R-11378 documenting the results covering the testing which was performed on your 431 MHz - 437 MHz RF Motorized Roller Shade Transceiver, Part Number: RF-EDU-10 and Model Number: SVQ-EDUH1-10. This testing was performed and the test results generated in accordance with your Purchase Order Number NP 0058239. Refer to the Test Program Summary page for an overview of all testing performed.

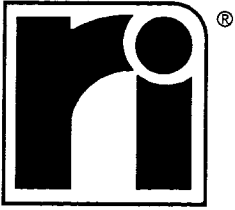
Thank you for the opportunity to be of service to you. Should you have any questions regarding the enclosed test results or the actual testing of your sample, please do not hesitate to contact me.

Sincerely,

Retlif Testing Laboratories

Michelle White  
EMC Publications Supervisor  
mwhite@retlif.com

Enc. (as stated)



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## Commercial Test Results

On

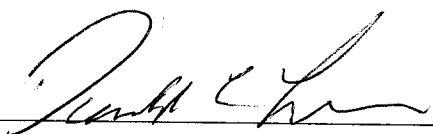
431 MHz - 437 MHz RF  
Motorized Roller Shade Transceiver

**Customer Name:** Lutron Electronics Co., Inc.  
**Customer P.O.:** NP 0058239  
**Date of Results:** March 31, 2006  
**Test Results Number No.:** R-11378  
**Test Start Date:** March 24, 2006  
**Test Finish Date:** March 28, 2006  
**Test Technician:** R. Soodoo  
**Test Engineer:** D. Lerner  
**Supervisor:** R. Reitz  
**Results Prepared By:** D. Harter

Our letters, procedures and reports are for the exclusive use of the customer to whom they are addressed and their communication or the use of the name of Retlif Testing Laboratories must receive our prior written approval. Our letters, procedures and reports apply only to the sample tested and are not necessarily indicative of the qualities of apparently identical or similar products. The letters, procedures and reports and the name of Retlif Testing Laboratories or insignia are not to be used under any circumstances in advertising to the public. This report shall not be reproduced, except in full, without the prior written approval of Retlif Testing Laboratories. The only official copy of this document is the signed original provided by Retlif Testing Laboratories.

## Certification and Signatures

We certify that this report is a true representation of the results obtained from the tests of the equipment stated. We further certify that the measurements shown in this report were made in accordance with the procedures indicated and vouch for the qualifications of all Retlif Testing Laboratories personnel taking them.



Donald C. Lerner  
EMC Test Engineer



Richard J. Reitz  
Laboratory Manager

### Non-Warranty Provision

The testing services have been performed, findings obtained, and reports prepared in accordance with generally accepted laboratory principles and practices. This warranty is in lieu of all others, either expressed or implied.

### Non-Endorsement

This test report contains only findings and results arrived at after employing the specific test procedures and standards listed herein. It is not intended to constitute a recommendation, endorsement or certification of the product or material tested. This test report may not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.



**Retlif Testing Laboratories**

Test Results No. R-11378

## Test Program Summary

**Test Results Number:** R-11378  
**Customer:** Lutron Electronics Co., Inc.  
**P.O. Number:** NP 0058239  
**Test Sample:** 431 MHz - 437 MHz RF Motorized Roller Shade Transceiver  
**Part Number:** RF-EDU-10  
**Model Number:** SVQ-EDUH1-10

### Test Specification:

FCC Part 15, Federal Communications Commissions Part 15, Radio Frequency Devices, Subpart B and Subpart C, Unintentional Radiators.

### Mode of Operation:

- (1) The 431 MHz - 437 MHz RF Motorized Roller Shade Transceiver was tested at 431 MHz and 437 MHz for continuous transmission of a CW signal.
- (2) The 431 MHz - 437 MHz RF Motorized Roller Shade Transceiver was tested in receiver mode (Standby Mode).

### Acceptability Criteria:

Not applicable.

### Test Methods:

The following table depicts the test methods that were performed on the 431 MHz - 437 MHz RF Motorized Roller Shade Transceiver and the corresponding test results:

Testing Date(s)	Test Method	FCC Paragraph	Test Results
March 24, 2006	Occupied Bandwidth	15.231(c)	Complied
March 24, 2006	Duty Cycle	15.35	Complied
March 27, 2006	Fundamental and Harmonics	15.231(b)	Complied
March 27, 2006	Spurious	15.109(a), 15.231(b)	Complied
March 27, 2006	Conducted Emissions	15.107(a), 15.207(a)	Complied



**Retlif Testing Laboratories**

Test Results No. R-11378

## Revision History

Revision

Date

Pages Affected



**Retlif Testing Laboratories**

Test Results No. R-11378

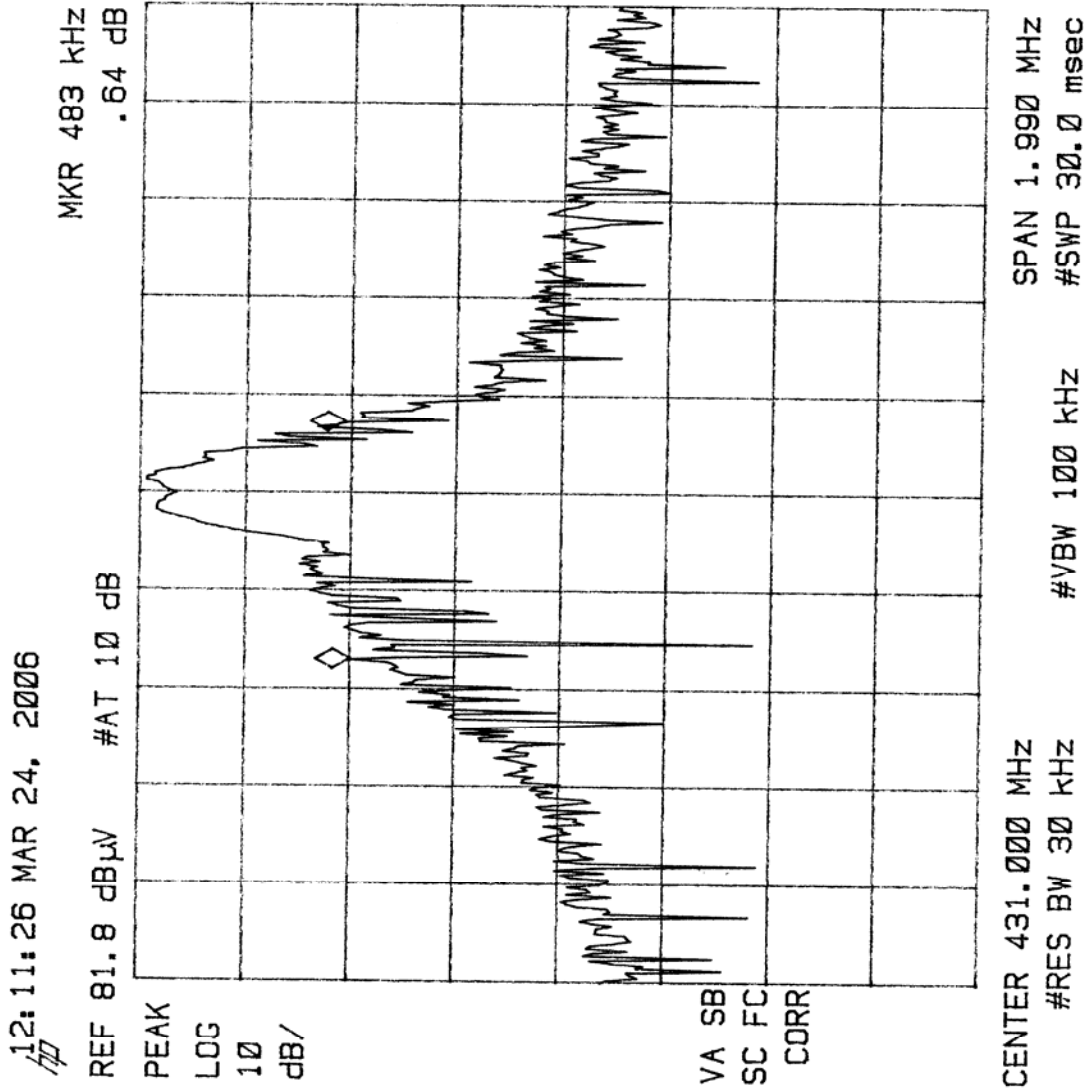
Occupied Bandwidth  
431 MHz Transmitter  
Test Data



**Retlif Testing Laboratories**

Test Results No. R-11378

①



**Test Method:** FCC Part 15, Subpart C, 15.231(c), Occupied Bandwidth.

**Notes:** Measured Bandwidth of 483 kHz does not exceed 0.25% of center frequency at the 20 dBc points (1.076 MHz)

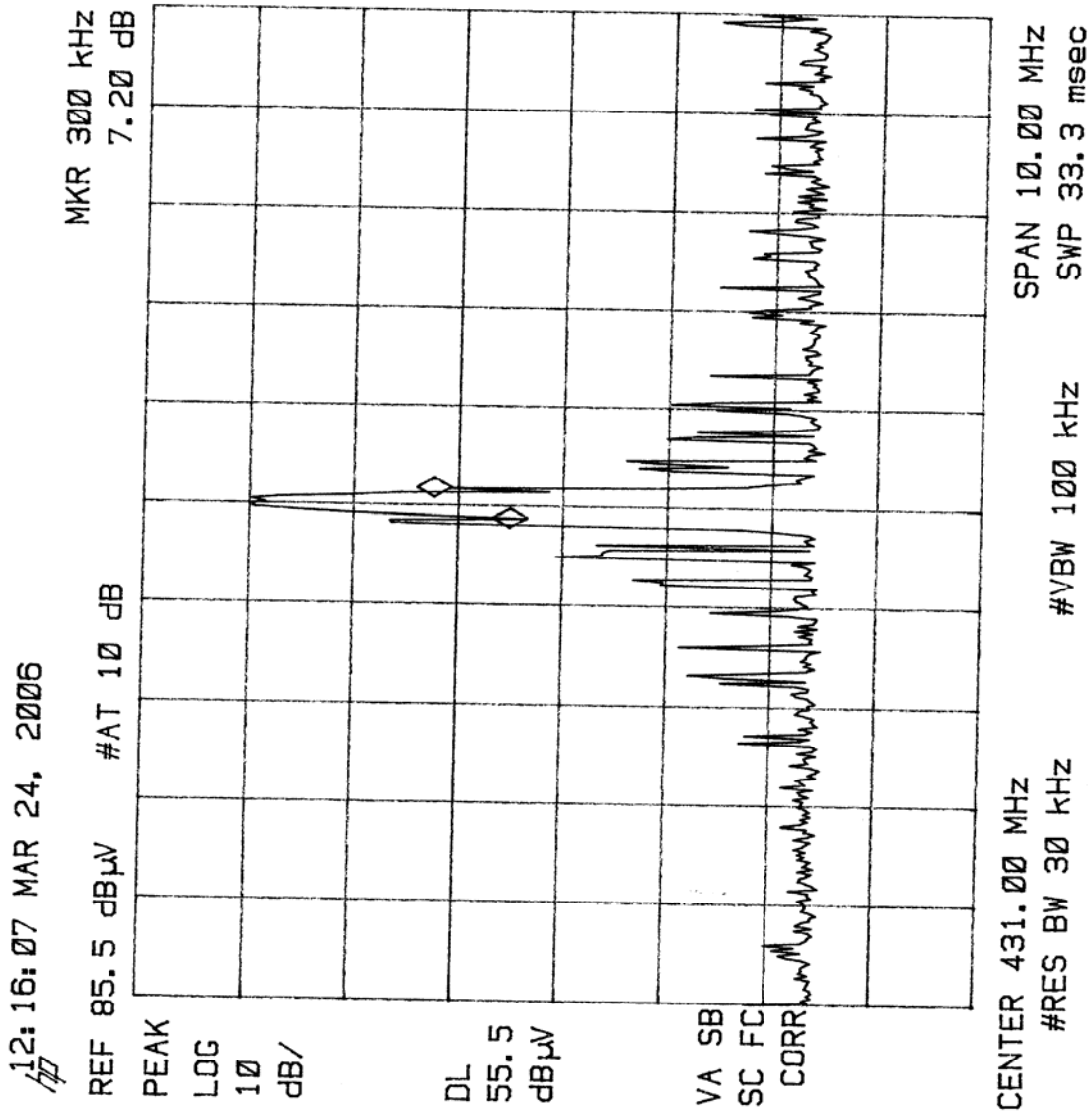
**Notes:** EUT transmitting at 431 MHz.

Customer	Lutron Electronics Co., Inc.		
Test Sample	431 - 437 MHz RF Motorized Roller Shade Transceiver		
Part Number	RF-EDU-10 Model No.: SVQ-EDUH1-10		
Date: March 25, 2006.	Tech: R. Soodoo	Sheet 1 of 2	



**Retlif Testing Laboratories**  
 Test Results No. R-11378

2



**Test Method:** FCC Part 15, Subpart C, 15.231(c), Occupied Bandwidth.

**Notes:** Bandwidth does not exceed 0.25% of center frequency at the 20 dBc points (1.076 MHz)

**Notes:** EUT transmitting at 431 MHz.

Customer	Lutron Electronics Co., Inc.		
Test Sample	431 - 437 MHz RF Motorized Roller Shade Transceiver		
Part Number	RF-EDU-10 Model No.: SVQ-EDUH1-10		
Date: March 25, 2006.	Tech: R. Soodoo	Sheet 2 of 2	



**Retlif Testing Laboratories**

Test Results No. R-11378

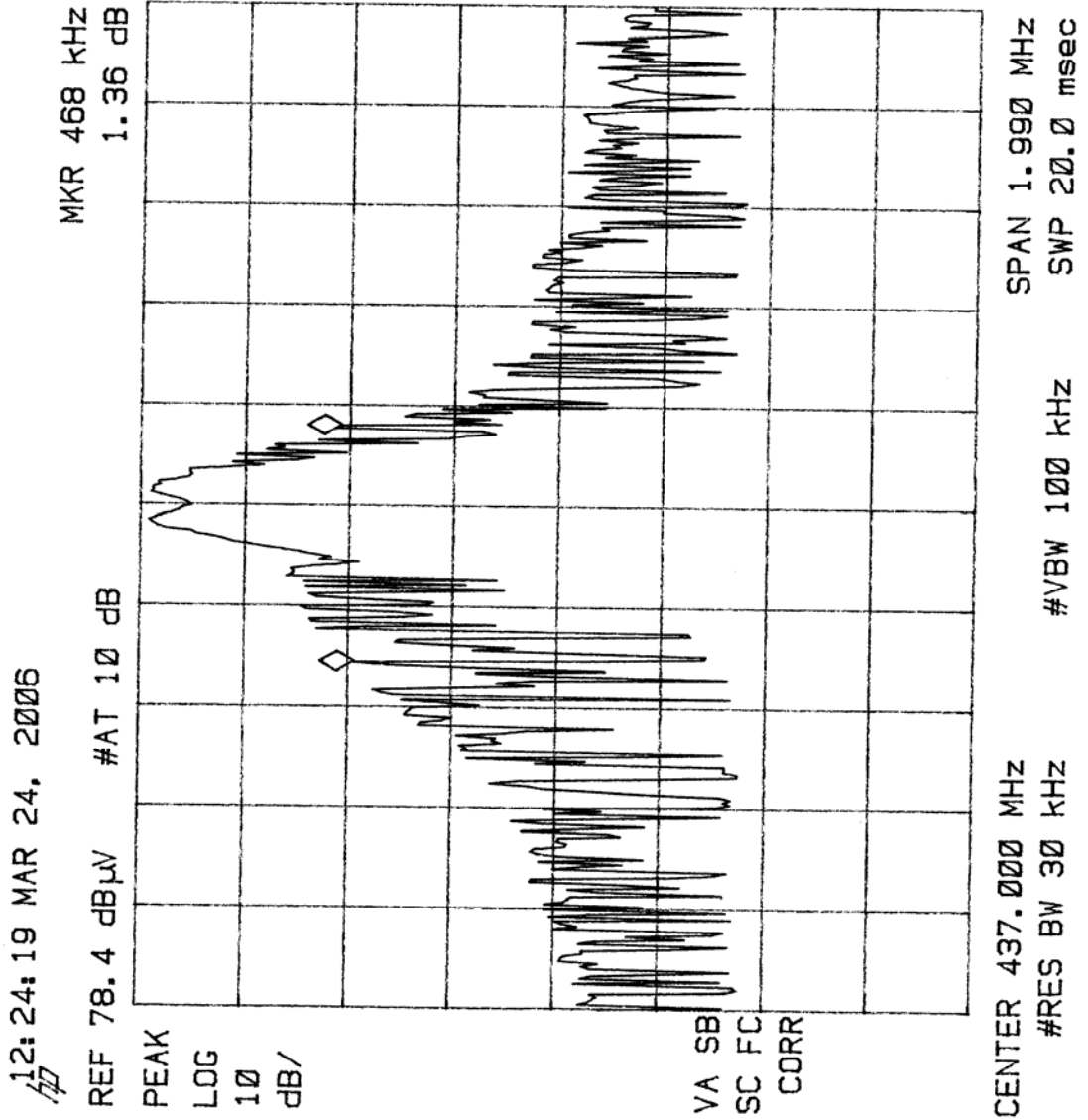


Occupied Bandwidth  
437 MHz Transmitter  
Test Data



**Retlif Testing Laboratories**

Test Results No. R-11378



**Test Method:** FCC Part 15, Subpart C, 15.231(c), Occupied Bandwidth.

**Notes:** Measured Bandwidth of 468 kHz does not exceed 0.25% of center frequency at the 20 dBc points (1.093 MHz)

**Notes:** EUT transmitting at 437 MHz.

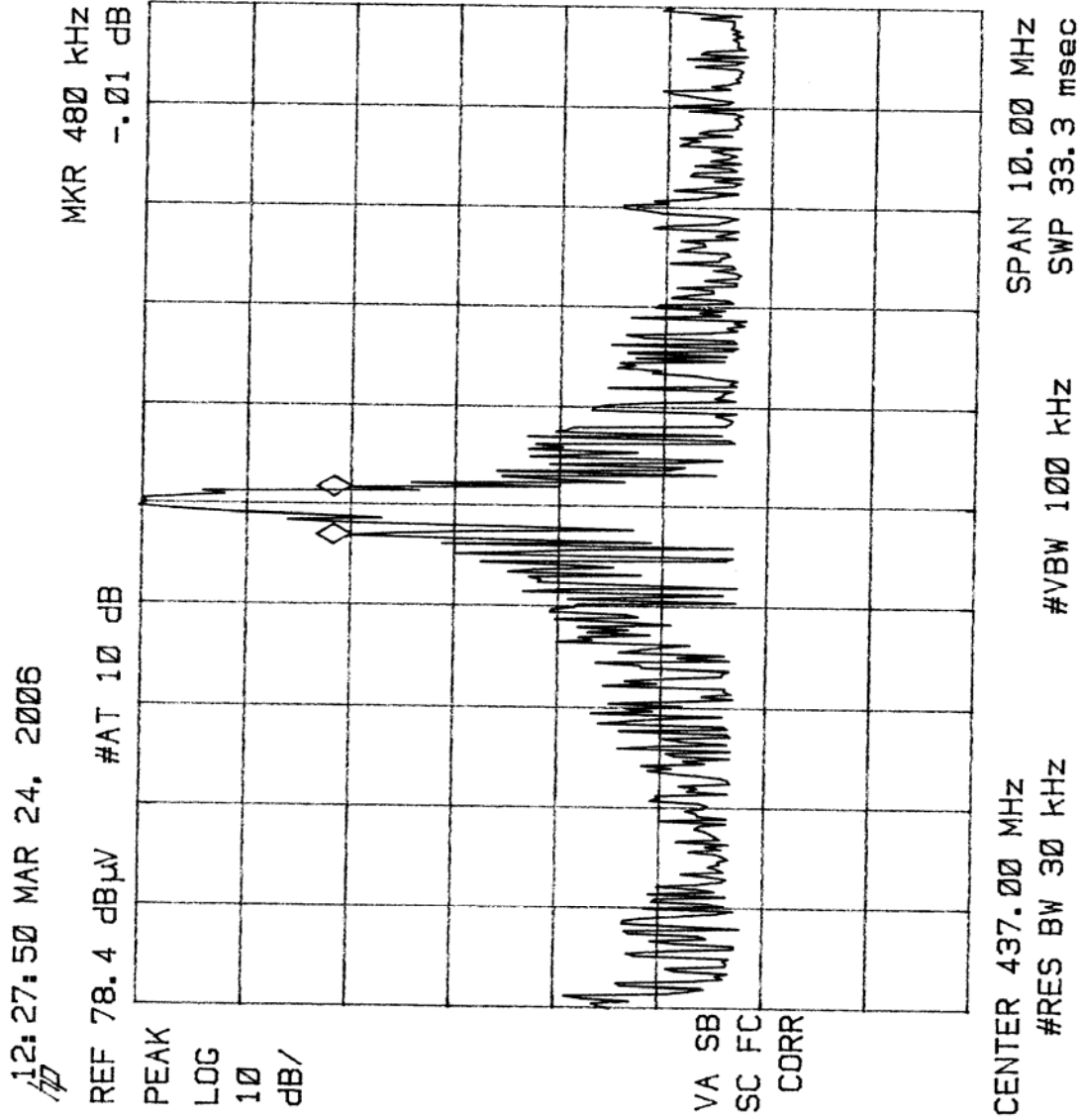
Customer	Lutron Electronics Co., Inc.		
Test Sample	431 - 437 MHz RF Motorized Roller Shade Transceiver		
Part Number	RF-EDU-10 Model No.: SVQ-EDUH1-10		
Date: March 25, 2006.	Tech: R. Soodoo	Sheet 1 of 2	



**Retlif Testing Laboratories**

Test Results No. R-11378

①



**Test Method:** FCC Part 15, Subpart C, 15.231(c), Occupied Bandwidth.

**Notes:** Bandwidth does not exceed 0.25% of center frequency at the 20 dBc points (1 MHz)

**Notes:** EUT transmitting at 437 MHz.

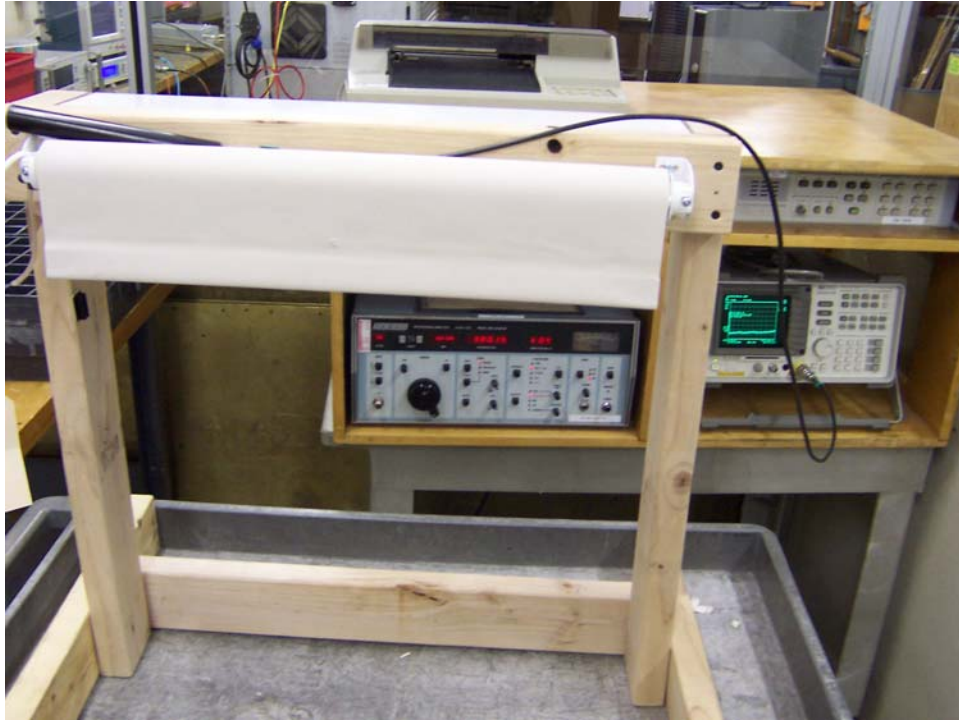
Customer	Lutron Electronics Co., Inc.		
Test Sample	431 - 437 MHz RF Motorized Roller Shade Transceiver		
Part Number	RF-EDU-10 Model No.: SVQ-EDUH1-10		
Date: March 25, 2006.	Tech: R. Soodoo	Sheet 2 of 2	



**Retlif Testing Laboratories**

Test Results No. R-11378

**Test Photograph  
Occupied Bandwidth**



Test Setup



**Retlif Testing Laboratories**

Test Results No. R-11378

## EQUIPMENT LIST

### FCC Part 15, Subpart C, 15.231(c), Occupied Bandwidth

<b>EN</b>	<b>Type</b>	<b>Manufacturer</b>	<b>Description</b>	<b>Model No.</b>	<b>Cal Date</b>	<b>Due Date</b>
091	Shielded Enclosure	Retlif	10 kHz - 1 GHz	Room 6	10/15/2005	10/15/2006
141A	Graphics Plotter	Hewlett Packard	N/A	7470A	2/9/2006	2/9/2007
544	EMC Analyzer	Hewlett Packard	9.0 kHz - 1.8 GHz	8591EM	12/15/2005	12/15/2006



**Retlif Testing Laboratories**

Test Results No. R-11378

Fundamental and Harmonics  
431 MHz Transmitter  
Test Data



**Retlif Testing Laboratories**

Test Results No. R-11378

<b>Test Method:</b>	FCC Part 15, Subpart C, Radiated Emissions, Fundamental & Harmonic Emissions, 15.231(b).						
<b>Customer:</b>	Lutron Electronics Co., Inc.			<b>Job No.</b>	R-11378		
<b>Test Sample:</b>	431 MHz - 437 MHz RF Motorized Roller Shade			<b>Paragraph:</b>	15.231(b)		
<b>Part/ Model No.:</b>	RF-EDU-10 / SVQ-EDUH1-10			<b>Serial No.</b>	N/A		
<b>Operating Mode:</b>	EUT continuously transmitting a 431 MHz CW signal.			<b>FCC ID No.</b>	JPZ0039		
<b>Technician:</b>	R. Soodoo			<b>Date:</b>	March 27, 2006.		
<b>Notes:</b>	Test Distance: 3 Meters			Temperature: 26.7°C		Humidity: 23 %	
	Detector: Peak, unless otherwise specified						
Frequency	Antenna Pol./Height	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading	Converted Reading	Peak Limit
MHz	(V/H)/Meters	Degrees	dBuV	dB	dBuV/m	uV/m	uV/m
431.0	H / 1.0	158.0	100.1	-0.8	99.3	92257.1	108392.7
431.0	V / 1.0	0.0	91.2	-0.8	90.4	33113.1	108392.7
862.0	H / 1.0	158.0	62.0	7.6	69.6	3020.0	10839.3
862.0	V / 1.0	158.0	56.7	7.6	64.3	1640.6	10839.3
1293.0	H / 1.0	292.0	52.0	-4.0	48.0	251.2	10839.3
1293.0	V / 1.0	292.0	49.2	-4.0	45.2	182.0	10839.3
1724.0	H / 1.0	180.0	47.0	-2.6	44.4	*166.0	10839.3
1724.0	V / 1.0	180.0	47.0	-2.6	44.4	*166.0	10839.3
2155.0	H / 1.0	180.0	47.0	-1.0	46.0	*199.5	10839.3
2155.0	V / 1.0	180.0	47.0	-1.0	46.0	*199.5	10839.3
2586.0	H / 1.0	180.0	47.0	-1.8	45.2	*182.0	10839.3
2586.0	V / 1.0	180.0	47.0	-1.8	45.2	*182.0	10839.3
3017.0	H / 1.0	180.0	47.0	-0.2	46.8	*218.8	10839.3
3017.0	V / 1.0	180.0	47.0	-0.2	46.8	*218.8	10839.3
3448.0	H / 1.0	180.0	47.0	1.4	48.4	*263.0	10839.3
3448.0	V / 1.0	180.0	47.0	1.4	48.4	*263.0	10839.3
3879.0	H / 1.0	180.0	47.0	2.4	49.4	*295.1	5000.0
3879.0	V / 1.0	180.0	47.0	2.4	49.4	*295.1	5000.0
4310.0	H / 1.0	180.0	47.0	3.5	50.5	*335.0	10839.3
4310.0	V / 1.0	180.0	47.0	3.5	50.5	*335.0	10839.3
The frequency range was scanned from 431 MHz to 4.31 GHz.							
All emissions not recorded were more than 20 dB below the specified limit.							
Emissions from the EUT do not exceed the specified limits.							
* = Noise Floor Measurements (minimum system sensitivity).							



**Retlif Testing Laboratories**

Test Results No. R-11378

<b>Test Method:</b>	FCC Part 15, Subpart C, Radiated Emissions, Fundamental & Harmonic Emissions, 15.231(b).						
<b>Customer:</b>	Lutron Electronics Co., Inc.			<b>Job No.</b>	R-11378		
<b>Test Sample:</b>	431 MHz - 437 MHz RF Motorized Roller Shade			<b>Paragraph:</b>	15.231(b)		
<b>Part/ Model No.:</b>	RF-EDU-10 / SVQ-EDUH1-10			<b>Serial No.</b>	N/A		
<b>Operating Mode:</b>	EUT continuously transmitting a 431 MHz CW signal.			<b>FCC ID No.</b>	JPZ0039		
<b>Technician:</b>	R. Soodoo			<b>Date:</b>	March 27, 2006.		
<b>Notes:</b>	Test Distance: 3 Meters			Duty Cycle: 10 %			
	Detector: Peak, unless otherwise specified			Duty Cycle Correction: -20.0dB			
Frequency	Antenna Pol./Height	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading	Converted Reading	Average Limit
MHz	(V/H)-Meters	X / Y / Z	dBuV	dB	dBuV/m	uV/m	uV/m
431.0	H / 1.0	158.0	99.3	-20.0	79.3	9225.7	10839.3
431.0	V / 1.0	0.0	90.4	-20.0	70.4	3311.3	10839.3
862.0	H / 1.0	158.0	69.6	-20.0	49.6	302.0	1083.9
862.0	V / 1.0	158.0	64.3	-20.0	44.3	164.1	1083.9
1293.0	H / 1.0	292.0	48.0	-20.0	28.0	25.1	1083.9
1293.0	V / 1.0	292.0	45.2	-20.0	25.2	18.2	1083.9
1724.0	H / 1.0	180.0	44.4	-20.0	24.4	16.6	1083.9
1724.0	V / 1.0	180.0	44.4	-20.0	24.4	16.6	1083.9
2155.0	H / 1.0	180.0	46.0	-20.0	26.0	20.0	1083.9
2155.0	V / 1.0	180.0	46.0	-20.0	26.0	20.0	1083.9
2586.0	H / 1.0	180.0	45.2	-20.0	25.2	18.2	1083.9
2586.0	V / 1.0	180.0	45.2	-20.0	25.2	18.2	1083.9
3017.0	H / 1.0	180.0	46.8	-20.0	26.8	21.9	1083.9
3017.0	V / 1.0	180.0	46.8	-20.0	26.8	21.9	1083.9
3448.0	H / 1.0	180.0	48.4	-20.0	28.4	26.3	1083.9
3448.0	V / 1.0	180.0	48.4	-20.0	28.4	26.3	1083.9
3879.0	H / 1.0	180.0	49.4	-20.0	29.4	29.5	500.0
3879.0	V / 1.0	180.0	49.4	-20.0	29.4	29.5	500.0
4310.0	H / 1.0	180.0	50.5	-20.0	30.5	33.5	1083.9
4310.0	V / 1.0	180.0	50.5	-20.0	30.5	33.5	1083.9
The frequency range was scanned from 431 MHz to 4.31 GHz.							
All emissions not recorded were more than 20 dB below the specified limit.							
Emissions from the EUT do not exceed the specified limits.							
* = Noise Floor Measurements (minimum system sensitivity).							



**Retlif Testing Laboratories**

Test Results No. R-11378



Fundamental and Harmonics  
437 MHz Transmitter  
Test Data



**Retlif Testing Laboratories**

Test Results No. R-11378

<b>Test Method:</b>	FCC Part 15, Subpart C, Radiated Emissions, Fundamental & Harmonic Emissions, 15.231(b).						
<b>Customer:</b>	Lutron Electronics Co., Inc.				<b>Job No.</b>	R-11378	
<b>Test Sample:</b>	431 MHz - 437 MHz RF Motorized Roller Shade Transceiver.				<b>Paragraph:</b>	15.231(b)	
<b>Part/ Model No.:</b>	RF-EDU-10 / SVQ-EDUH1-10				<b>Serial No.</b>	N/A	
<b>Operating Mode:</b>	EUT continuously transmitting a 437 MHz CW signal.				<b>FCC ID No.</b>	JPZ0039	
<b>Technician:</b>	R. Soodoo				<b>Date:</b>	March 27, 2006.	
<b>Notes:</b>	Test Distance: 3 Meters			Temperature: 26.7°C		Humidity: 23 %	
	Detector: Peak, unless otherwise specified						
Frequency	Antenna Pol./Height	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading	Converted Reading	Peak Limit
MHz	(V/H)/Meters	Degrees	dBuV	dB	dBuV/m	uV/m	uV/m
437.0	H / 1.0	158.0	99.5	-0.7	98.8	87096.4	108392.7
437.0	V / 1.0	158.0	93.4	-0.7	92.7	43151.9	108392.7
874.0	H / 1.0	158.0	60.0	7.6	67.6	2398.8	10839.3
874.0	V / 1.0	158.0	53.0	7.6	60.6	1071.5	10839.3
1311.0	H / 1.0	158.0	47.0	-4.0	43.0	141.3	5000.0
1311.0	V / 1.0	315.0	48.3	-4.0	44.3	164.1	5000.0
1748.0	H / 1.0	180.0	47.0	-2.6	44.4	*166.0	10839.3
1748.0	V / 1.0	180.0	47.0	-2.6	44.4	*166.0	10839.3
2185.0	H / 1.0	180.0	47.0	-1.0	46.0	*199.5	10839.3
2185.0	V / 1.0	180.0	47.0	-1.0	46.0	*199.5	10839.3
2622.0	H / 1.0	180.0	47.0	-1.6	45.4	*186.2	10839.3
2622.0	V / 1.0	180.0	47.0	-1.6	45.4	*186.2	10839.3
3059.0	H / 1.0	180.0	47.0	0.2	47.2	*229.1	10839.3
3059.0	V / 1.0	180.0	47.0	0.2	47.2	*229.1	10839.3
3496.0	H / 1.0	180.0	47.0	3.4	50.4	*331.1	10839.3
3496.0	V / 1.0	180.0	47.0	3.4	50.4	*331.1	10839.3
3933.0	H / 1.0	180.0	47.0	2.4	49.4	*295.1	5000.0
3933.0	V / 1.0	180.0	47.0	2.4	49.4	*295.1	5000.0
4370.0	H / 1.0	180.0	47.0	3.5	50.5	*335.0	5000.0
4370.0	V / 1.0	180.0	47.0	3.5	50.5	*335.0	5000.0
The frequency range was scanned from 437 MHz to 4.37 GHz.							
All emissions not recorded were more than 20 dB below the specified limit.							
Emissions from the EUT do not exceed the specified limits.							
* = Noise Floor Measurements (minimum system sensitivity).							



**Retlif Testing Laboratories**

Test Results No. R-11378

<b>Test Method:</b>	FCC Part 15, Subpart C, Radiated Emissions, Fundamental & Harmonic Emissions, 15.231(b).						
<b>Customer:</b>	Lutron Electronics Co., Inc.				<b>Job No.</b>	R-11378	
<b>Test Sample:</b>	431 MHz - 437 MHz RF Motorized Roller Shade Transceiver.				<b>Paragraph:</b>	15.231(b)	
<b>Part/ Model No.:</b>	RF-EDU-10 / SVQ-EDUH1-10				<b>Serial No.</b>	N/A	
<b>Operating Mode:</b>	EUT continuously transmitting a 437 MHz CW signal.				<b>FCC ID No.</b>	JPZ0039	
<b>Technician:</b>	R. Soodoo				<b>Date:</b>	March 27, 2006.	
<b>Notes:</b>	Test Distance: 3 Meters			Duty Cycle: 11 %			
	Detector: Peak, unless otherwise specified			Duty Cycle Correction: -19.2dB			
Frequency	Antenna Pol./Height	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading	Converted Reading	Average Limit
MHz	(V/H)-Meters	X / Y / Z	dBuV	dB	dBuV/m	uV/m	uV/m
437.0	H / 1.0	158.0	98.8	-19.2	79.6	9549.9	10839.3
437.0	V / 1.0	158.0	92.7	-19.2	73.5	4731.5	10839.3
874.0	H / 1.0	158.0	67.6	-19.2	48.4	263.0	1083.9
874.0	V / 1.0	158.0	60.6	-19.2	41.4	117.5	1083.9
1311.0	H / 1.0	158.0	43.0	-19.2	23.8	15.5	500.0
1311.0	V / 1.0	315.0	44.3	-19.2	25.1	18.0	500.0
1748.0	H / 1.0	180.0	44.4	-19.2	25.2	18.2	1083.9
1748.0	V / 1.0	180.0	44.4	-19.2	25.2	18.2	1083.9
2185.0	H / 1.0	180.0	46.0	-19.2	26.8	21.9	1083.9
2185.0	V / 1.0	180.0	46.0	-19.2	26.8	21.9	1083.9
2622.0	H / 1.0	180.0	45.4	-19.2	26.2	20.4	1083.9
2622.0	V / 1.0	180.0	45.4	-19.2	26.2	20.4	1083.9
3059.0	H / 1.0	180.0	47.2	-19.2	28.0	25.1	1083.9
3059.0	V / 1.0	180.0	47.2	-19.2	28.0	25.1	1083.9
3496.0	H / 1.0	180.0	50.4	-19.2	31.2	36.3	1083.9
3496.0	V / 1.0	180.0	50.4	-19.2	31.2	36.3	1083.9
3933.0	H / 1.0	180.0	49.4	-19.2	30.2	32.4	500.0
3933.0	V / 1.0	180.0	49.4	-19.2	30.2	32.4	500.0
4370.0	H / 1.0	180.0	50.5	-19.2	31.3	36.7	500.0
4370.0	V / 1.0	180.0	50.5	-19.2	31.3	36.7	500.0
The frequency range was scanned from 437 MHz to 4.37 GHz.							
All emissions not recorded were more than 20 dB below the specified limit.							
Emissions from the EUT do not exceed the specified limits.							
*=-Noise Floor Measurements (minimum system sensitivity).							



**Retlif Testing Laboratories**

Test Results No. R-11378

Spurious Emissions  
EUT In Receiver Mode  
Test Data



**Retlif Testing Laboratories**

Test Results No. R-11378

<b>Test Method:</b>	FCC Part 15, Subpart B, Class B, Radiated Emissions, 30 MHz to 2 GHz, Paragraph 15.109(a)							
<b>Customer:</b>	Lutron Electronics Co., Inc.				<b>Job No.</b>	R-11378		
<b>Test Sample:</b>	431 MHz - 437 MHz RF Motorized Roller Shade Transceiver.							
<b>Part/ Model No.:</b>	RF-EDU-10 / SVQ-EDUH10-10				<b>Serial No.</b>	N/A		
<b>Operating Mode:</b>	Standby mode				<b>FCC ID No.</b>	JPZ0039		
<b>Technician:</b>	R. Soodoo				<b>Date:</b>	March 27, 2006.		
<b>Notes:</b>	Test Distance: 3 Meters		Temp: 26.7°C		Humidity: 23%			
	Detector: Quasi-Peak Below 1 GHz, Peak above 1 GHz							
Test Freq.	Antenna Position	EUT Orientation	Meter Readings	Correction Factor	Corrected Reading	Converted Reading	LIMIT	
MHz	(V/H) / Meters	Degrees	dBuV	dB	dBuV/m	uV/m	uV/m	
30.00							100	
88.00							100	
88.00							150	
		No emissions observed at the specified test distance.						
216.00							150	
216.00							200	
960.00							200	
960.00							500	
2000.0							500	
	The EUT was scanned from 30 MHz to 2 GHz							
	The emissions observed from the EUT do not exceed the specified limits. Emissions not recorded							
	were more than 20dB under the specified limit							



**Retlif Testing Laboratories**

Test Results No. R-11378

Spurious Emissions  
431 MHz Transmitter  
Test Data



**Retlif Testing Laboratories**

Test Results No. R-11378



Spurious Emissions  
437 MHz Transmitter  
Test Data



**Retlif Testing Laboratories**

Test Results No. R-11378





**Test Photographs  
Radiated Emissions**



Test Setup, Front View



Test Setup, Rear View



**Retlif Testing Laboratories**

Test Results No. R-11378

## EQUIPMENT LIST

### FCC Part 15, Subpart C, Radiated Emissions

<b>EN</b>	<b>Type</b>	<b>Manufacturer</b>	<b>Description</b>	<b>Model No.</b>	<b>Cal Date</b>	<b>Due Date</b>
067	Open Area Test Site	Retlif	3 Meter	RNY	10/1/2003	10/1/2006
133	Broadband Pre-Amplifier	Electro-Metrics	10 kHz - 1 GHz, 26dB	BPA-1000	6/9/2005	6/9/2006
141C	Cable	Retlif	1 GHz ~ 18 GHz	1 METER, BLUE	1/4/2006	1/4/2007
141D	Cable	Retlif	1 GHz ~ 18 GHz	10 METER, BLACK	1/4/2006	1/4/2007
206B	6.0 dB Attenuator	Texscan	0 - 1.0 GHz	FP-50 - 6 dB	6/9/2005	6/9/2006
4003	Double Ridge Guide	Tensor	1 GHz - 18 GHz	4015	3/27/2006	3/27/2007
523	Biconilog	Electro-Mechanics	26 - 2000 MHz	3142B	11/10/2005	11/10/2006
543	Preamplifier	Hewlett Packard	1.0 GHz - 26.5 GHz	8449B	9/9/2005	9/9/2007
544	EMC Analyzer	Hewlett Packard	9.0 kHz - 1.8 GHz	8591EM	12/15/2005	12/15/2006
617	Interference Analyzer	Electro-Metrics	10 kHz - 1 GHz	EMC-30	2/21/2006	2/21/2007
723	H.P. Filter	Mini-Circuits	1 GHz	BHP-1000	7/20/2005	7/20/2006
763	Spectrum Analyzer	Agilent	30 Hz - 13.2 GHz	E4405B	8/16/2005	8/16/2006



**Retlif Testing Laboratories**

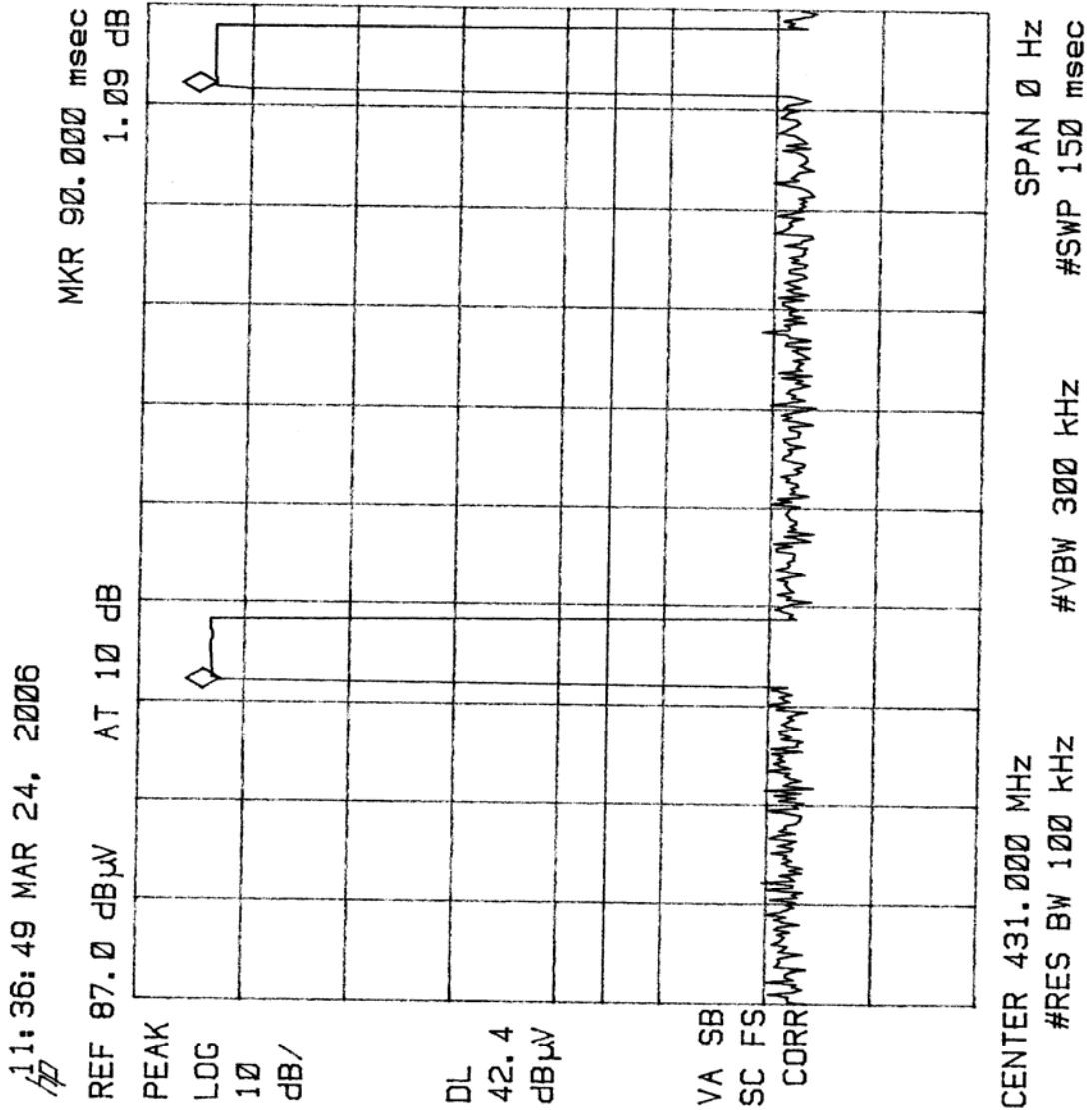
Test Results No. R-11378

Duty Cycle  
431 MHz Transmitter  
Test Data



**Retlif Testing Laboratories**

Test Results No. R-11378



**Test Method:** FCC Part 15.35, Duty Cycle Determination.

**Notes:** Measurement of cycle time = 90 mSec.

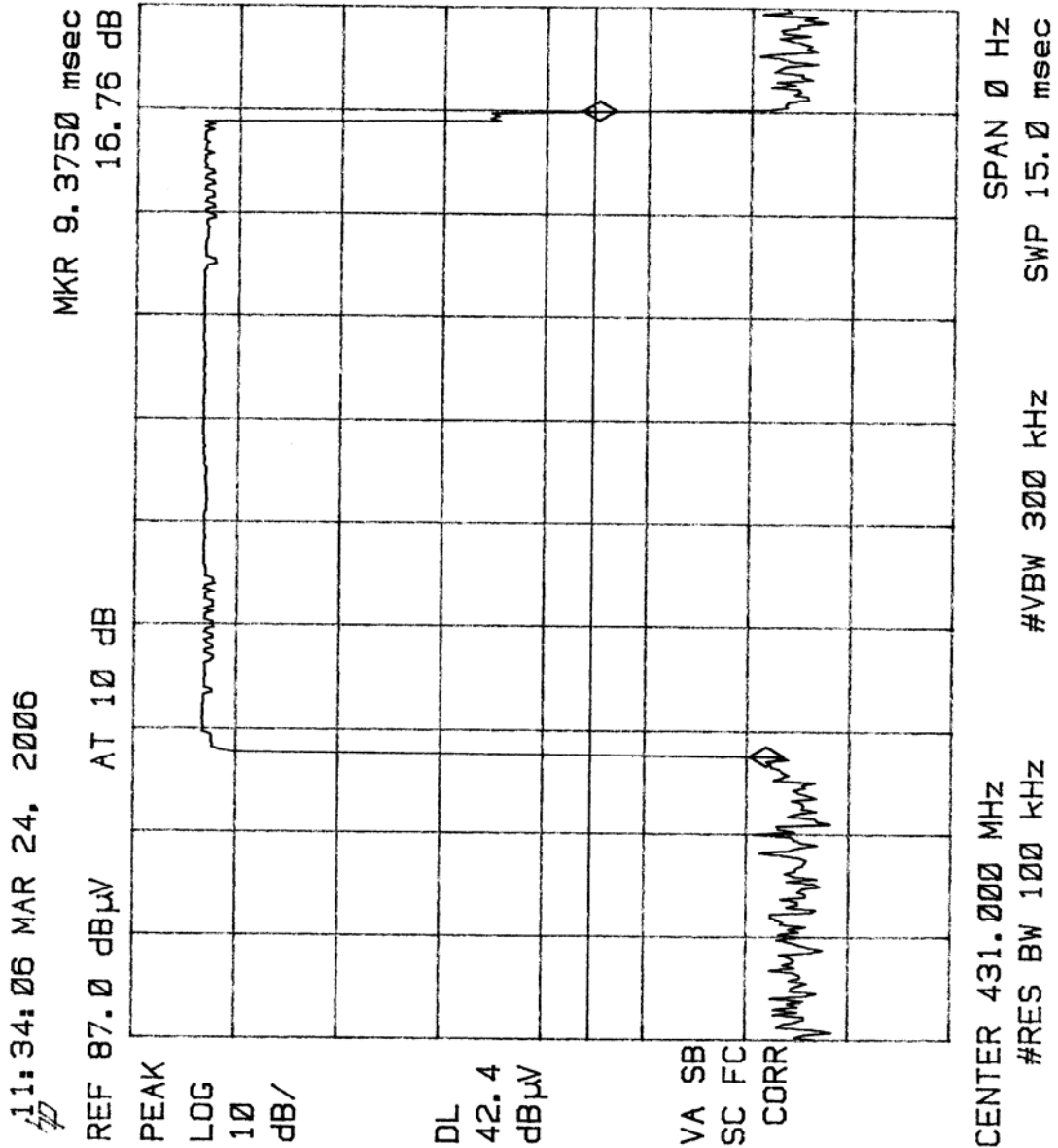
**Notes:** EUT transmitting at 431 MHz.

Customer	Lutron Electronics Co., Inc.		
Test Sample	431 - 437 MHz RF Motorized Roller Shade Transceiver		
Part Number	RF-EDU-10	Model No.:	SVQ-EDUH1-10
Date: March 25, 2006.	Tech: R. Soodoo	Sheet 1 of 2	



**Retlif Testing Laboratories**

Test Results No. R-11378



**Test Method:** FCC Part 15.35, Duty Cycle Determination.

**Notes:** Measurement of 1 large pulse = 9.375mSec.

**Notes:** Duty cycle = (9.375mSec) / (90mSec) = 0.10 = 10%  
= 20 log 0.10 = -20 dB

Customer	Lutron Electronics Co., Inc.		
Test Sample	431 - 437 MHz RF Motorized Roller Shade Transceiver		
Part Number	RF-EDU-10	Model No.:	SVQ-EDUH1-10
Date: March 25, 2006.	Tech: R. Soodoo	Sheet 2 of 2	



**Retlif Testing Laboratories**

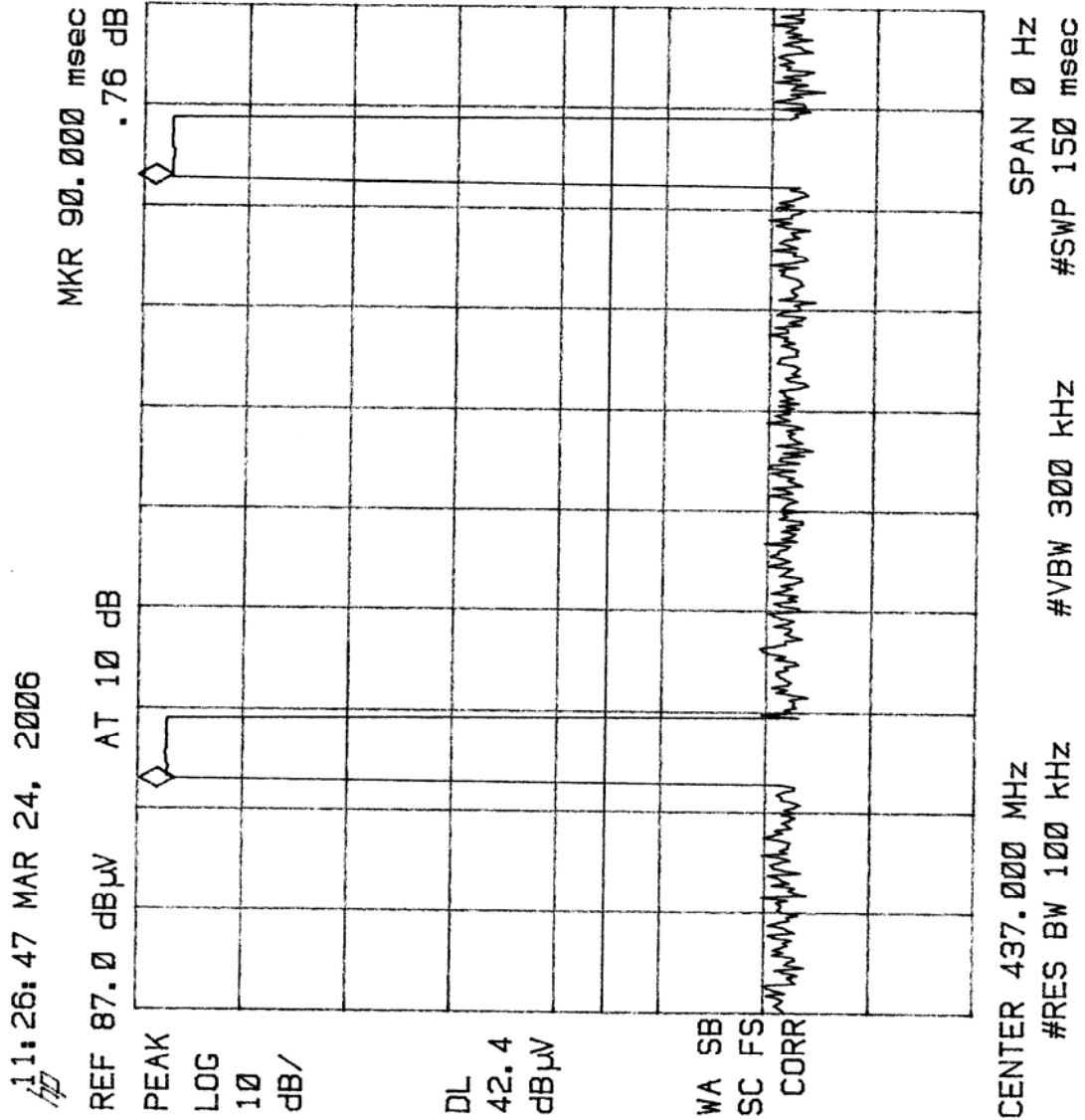
Test Results No. R-11378

Duty Cycle  
437 MHz Transmitter  
Test Data



**Retlif Testing Laboratories**

Test Results No. R-11378



**Test Method:** FCC Part 15.35, Duty Cycle Determination.

**Notes:** Measurement of cycle time = 90 mSec.

**Notes:** EUT transmitting at 437 MHz.

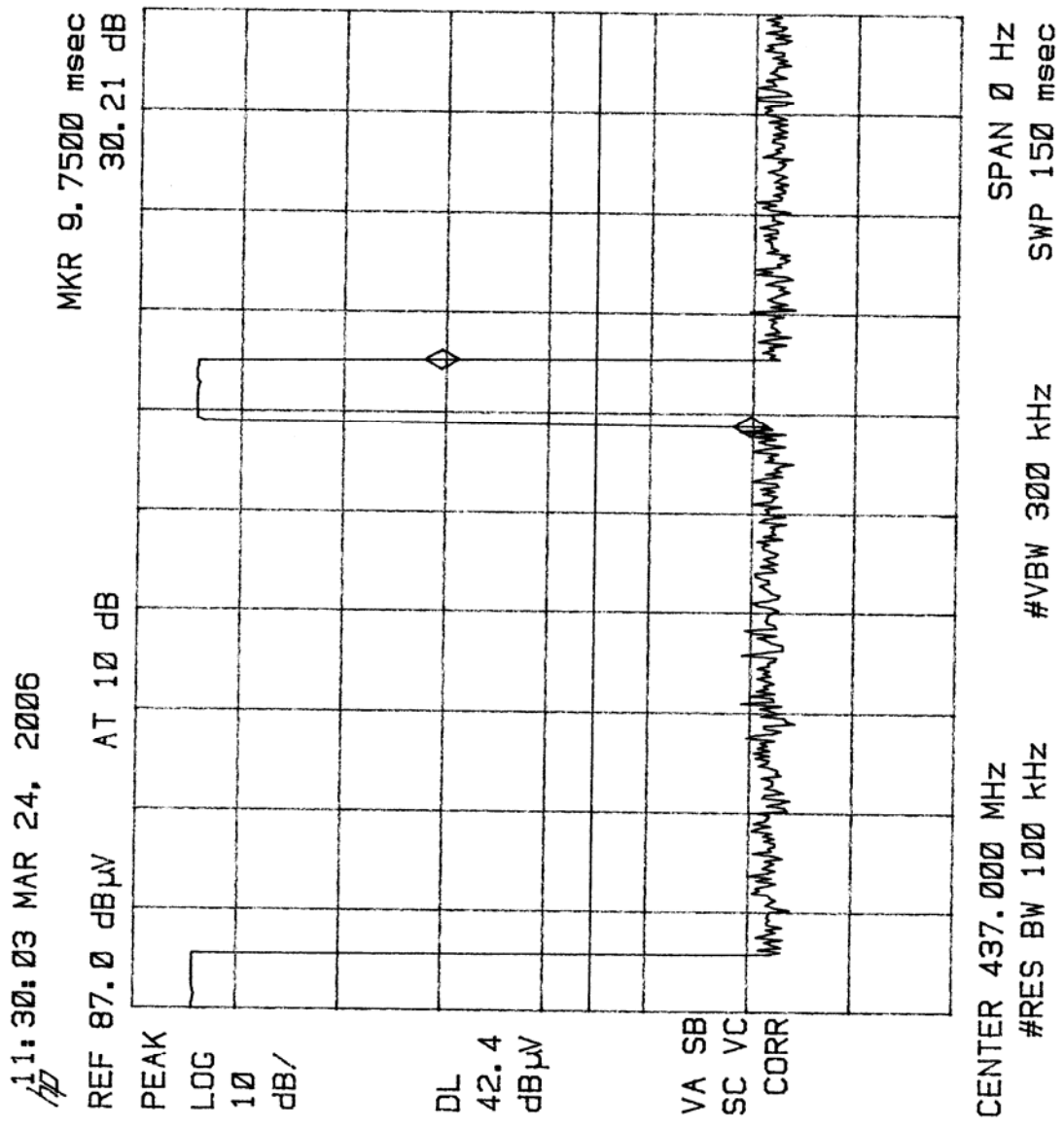
Customer	Lutron Electronics Co., Inc.		
Test Sample	431 - 437 MHz RF Motorized Roller Shade Transceiver		
Part Number	RF-EDU-10	Model No.:	SVQ-EDUH1-10
Date: March 25, 2006.	Tech: R. Soodoo	Sheet 1 of 2	



**Retlif Testing Laboratories**

Test Results No. R-11378





**Test Method:** FCC Part 15.35, Duty Cycle Determination.  
Measurement of 1 large pulse = 9.75mSec.

**Notes:** Duty cycle = (9.75mSec)/ (90mSec) = 0.11 = 11%  
= 20 log 0.11 = -19.2 dB

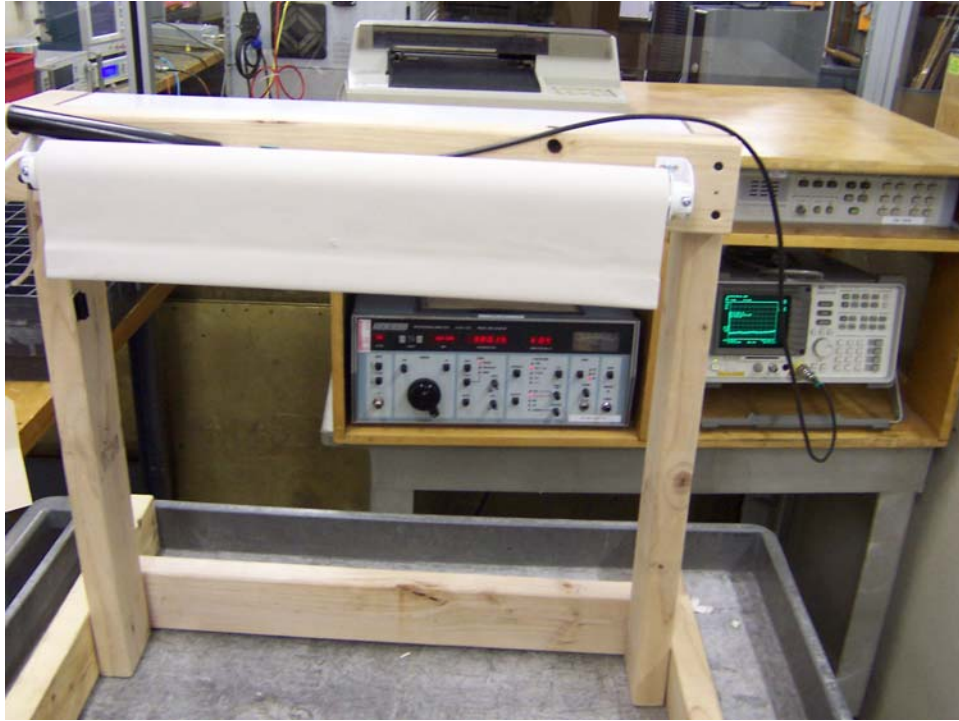
Customer	Lutron Electronics Co., Inc.		
Test Sample	431 - 437 MHz RF Motorized Roller Shade Transceiver		
Part Number	RF-EDU-10	Model No.:	SVQ-EDUH1-10
Date: March 25, 2006.	Tech: R. Soodoo	Sheet 2 of 2	



**Retlif Testing Laboratories**

Test Results No. R-11378

**Test Photograph  
Duty Cycle**



Test Setup



**Retlif Testing Laboratories**

Test Results No. R-11378

## EQUIPMENT LIST

### FCC Part 15.35, Duty Cycle Determination

<b>EN</b>	<b>Type</b>	<b>Manufacturer</b>	<b>Description</b>	<b>Model No.</b>	<b>Cal Date</b>	<b>Due Date</b>
091	Shielded Enclosure	Retlif	10 kHz - 1 GHz	Room 6	10/15/2005	10/15/2006
141A	Graphics Plotter	Hewlett Packard	N/A	7470A	2/9/2006	2/9/2007
544	EMC Analyzer	Hewlett Packard	9.0 kHz - 1.8 GHz	8591EM	12/15/2005	12/15/2006



**Retlif Testing Laboratories**

Test Results No. R-11378

FCC Part 15, Subpart C, Section 15.207, Conducted Emissions, Power Leads,  
150 kHz to 30 MHz  
Transmitter mode Test Data

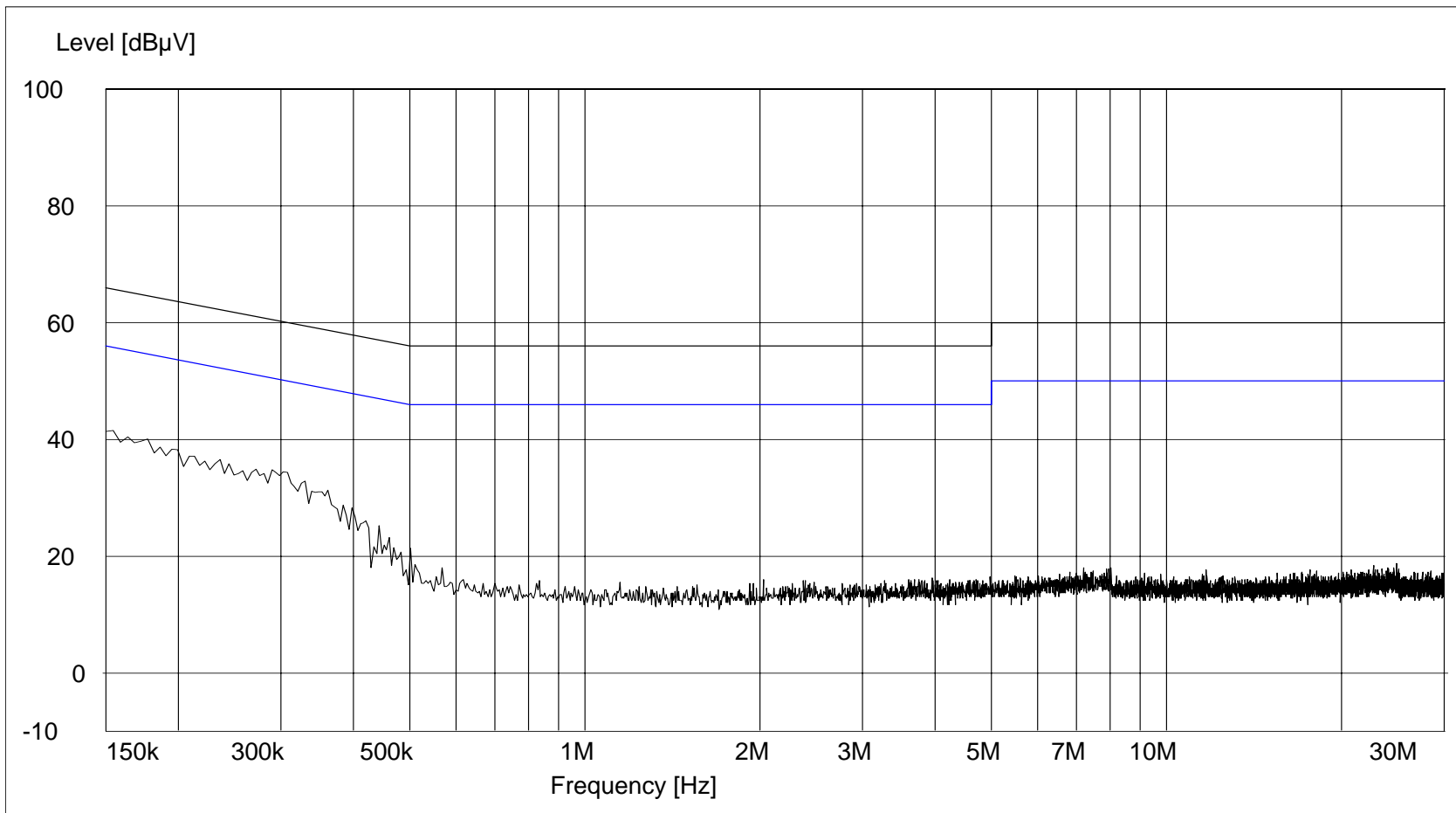


**Retlif Testing Laboratories**

Test Results No. R-11378

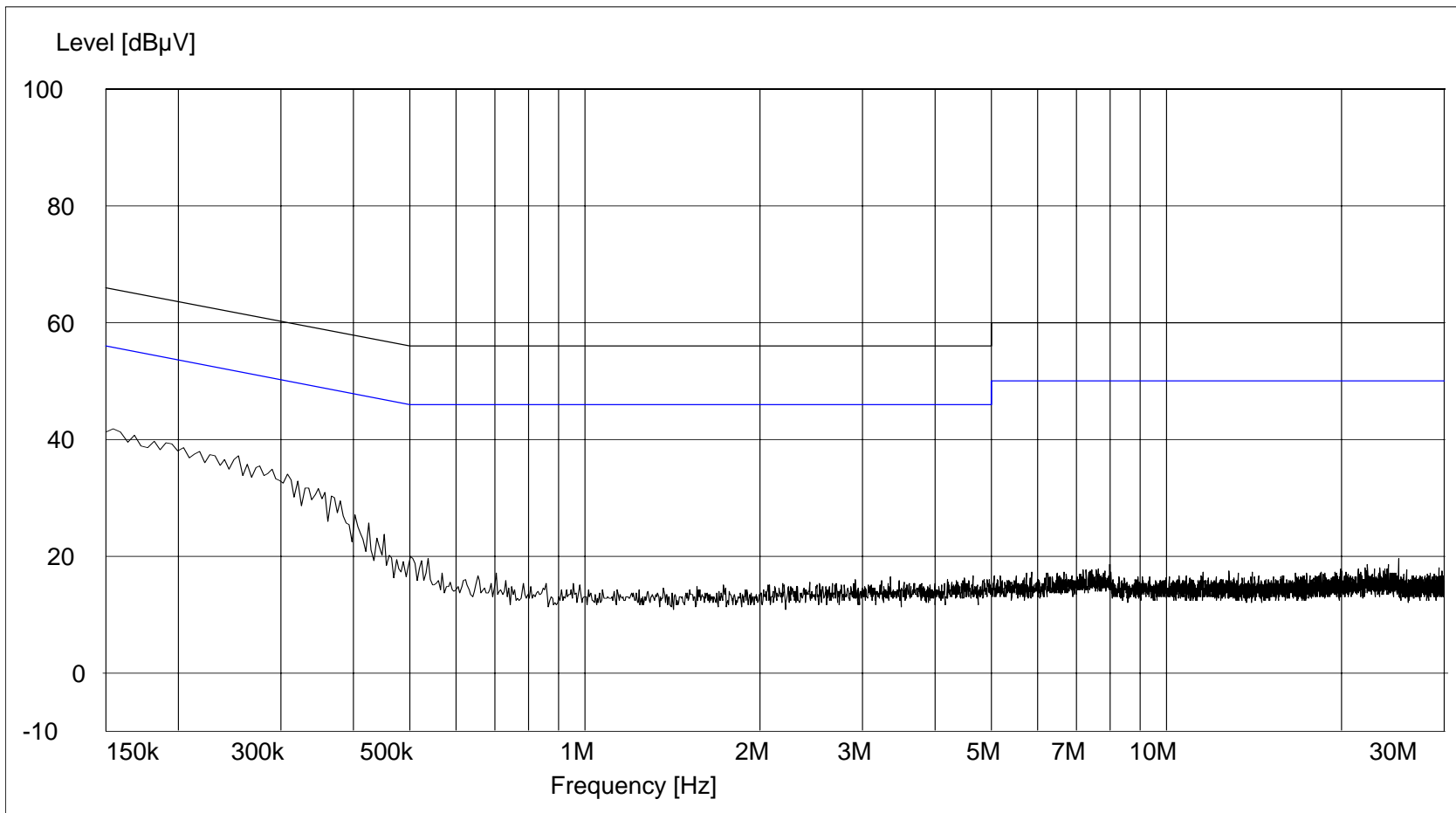
FCC Part 15, Subpart C, Conducted Emissions, 150 KHz to 30 MHz

Customer: Lutron Electronics Co., Inc.  
Test Sample: 431 MHz - 437 MHz RF Motorized Roller Shade Transceiver.  
Part Number: RF-EDU-10 / Model Number: SVQ-EDUH1-10  
Test Specification: FCC Part 15, Subpart C, Section 15.207(a).  
Mode of Operation: EUT continuously transmitting a 431 MHz CW signal.  
Lead Tested: 115 VAC/60 Hz Hot input to EUT.  
Technician / Date: R. Soodoo / March 27, 2006.  
Detector / Notes: Peak / Peak emissions pass the average limit.



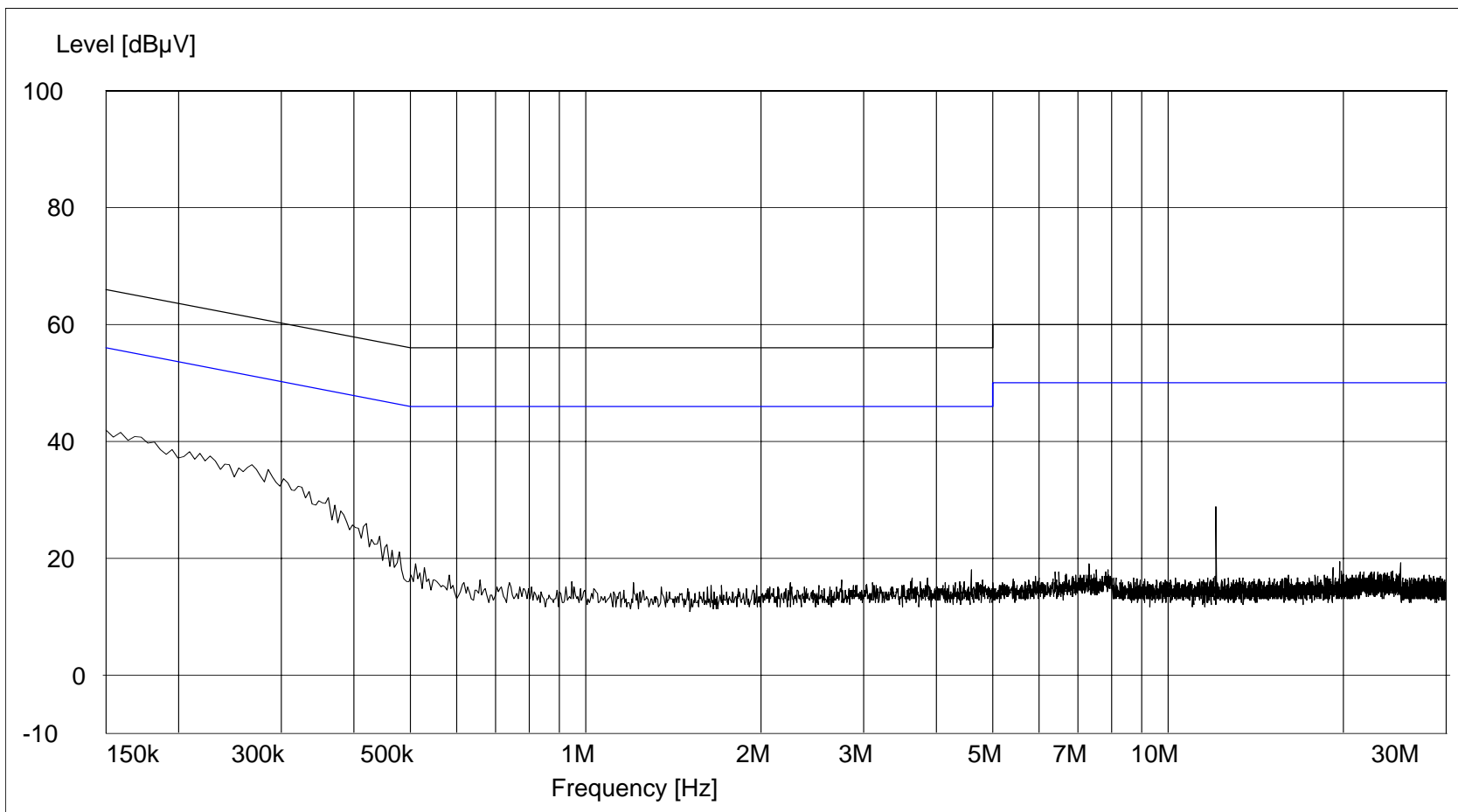
FCC Part 15, Subpart C, Conducted Emissions, 150 KHz to 30 MHz

Customer: Lutron Electronics Co., Inc.  
Test Sample: 431 MHz - 437 MHz RF Motorized Roller Shade Transceiver.  
Part Number: RF-EDU-10 / Model Number: SVQ-EDUH1-10  
Test Specification: FCC Part 15, Subpart C, Section 15.207(a).  
Mode of Operation: EUT continuously transmitting a 431 MHz CW signal.  
Lead Tested: 115 VAC/60 Hz Neutral input to EUT.  
Technician / Date: R. Soodoo / March 27, 2006.  
Detector / Notes: Peak / Peak emissions pass the average limit.



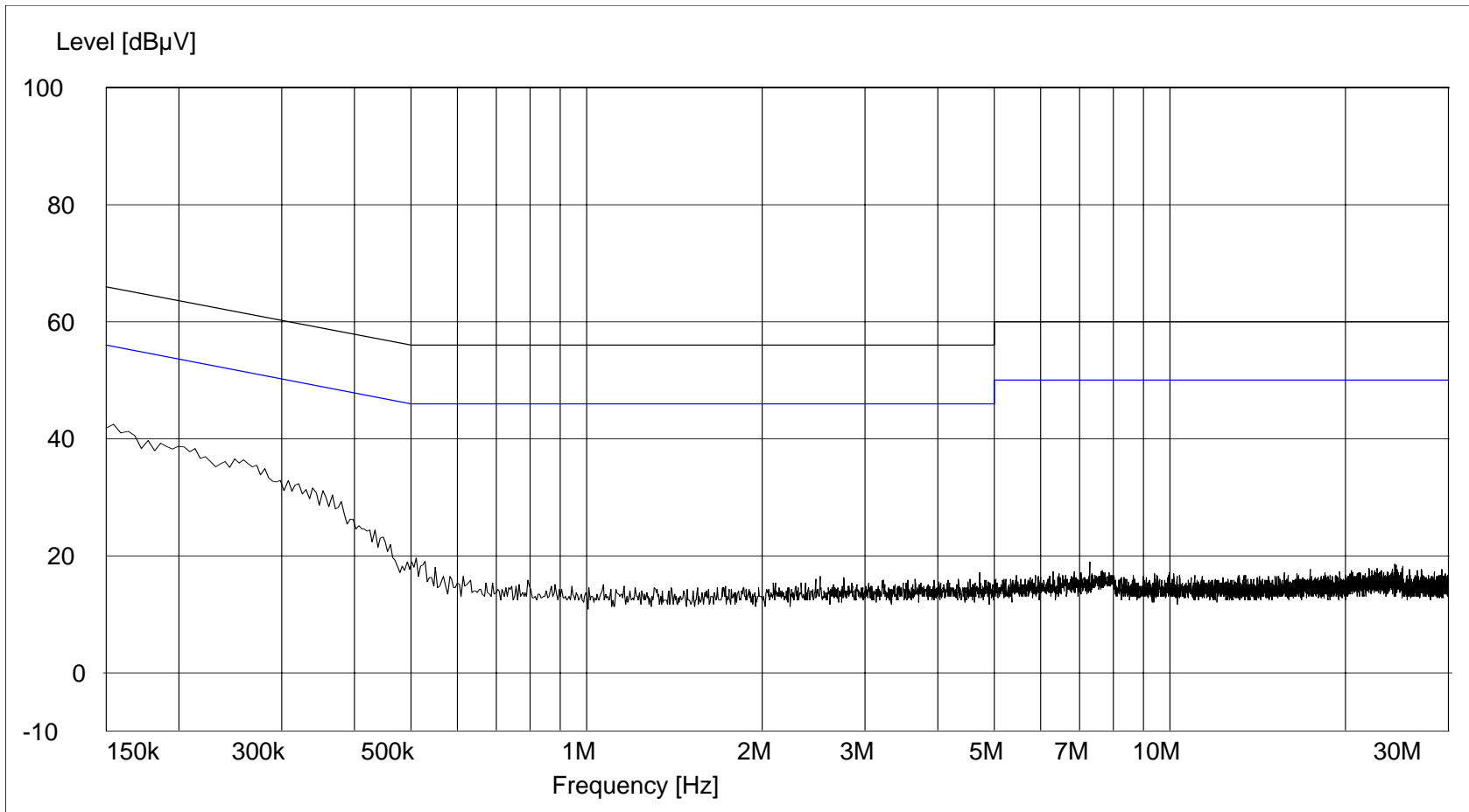
FCC Part 15, Subpart C, Conducted Emissions, 150 KHz to 30 MHz

Customer: Lutron Electronics Co., Inc.  
Test Sample: 431 MHz - 437 MHz RF Motorized Roller Shade Transceiver.  
Part Number: RF-EDU-10 / Model Number: SVQ-EDUH1-10  
Test Specification: FCC Part 15, Subpart C, Section 15.207(a).  
Mode of Operation: EUT continuously transmitting a 437 MHz CW signal.  
Lead Tested: 115 VAC/60 Hz Hot input to EUT.  
Technician / Date: R. Soodoo / March 27, 2006.  
Detector / Notes: Peak / Peak emissions pass the average limit.



FCC Part 15, Subpart C, Conducted Emissions, 150 KHz to 30 MHz

Customer: Lutron Electronics Co., Inc.  
Test Sample: 431 MHz - 437 MHz RF Motorized Roller Shade Transceiver.  
Part Number: RF-EDU-10 / Model Number: SVQ-EDUH1-10  
Test Specification: FCC Part 15, Subpart C, Section 15.207(a).  
Mode of Operation: EUT continuously transmitting a 437 MHz CW signal.  
Lead Tested: 115 VAC/60 Hz Neutral input to EUT.  
Technician / Date: R. Soodoo / March 27, 2006.  
Detector / Notes: Peak / Peak emissions pass the average limit.





FCC Part 15, Subpart B, Section 15.107(a), Conducted Emissions, Power Leads,  
150 kHz to 30 MHz  
(Standby mode) Test Data

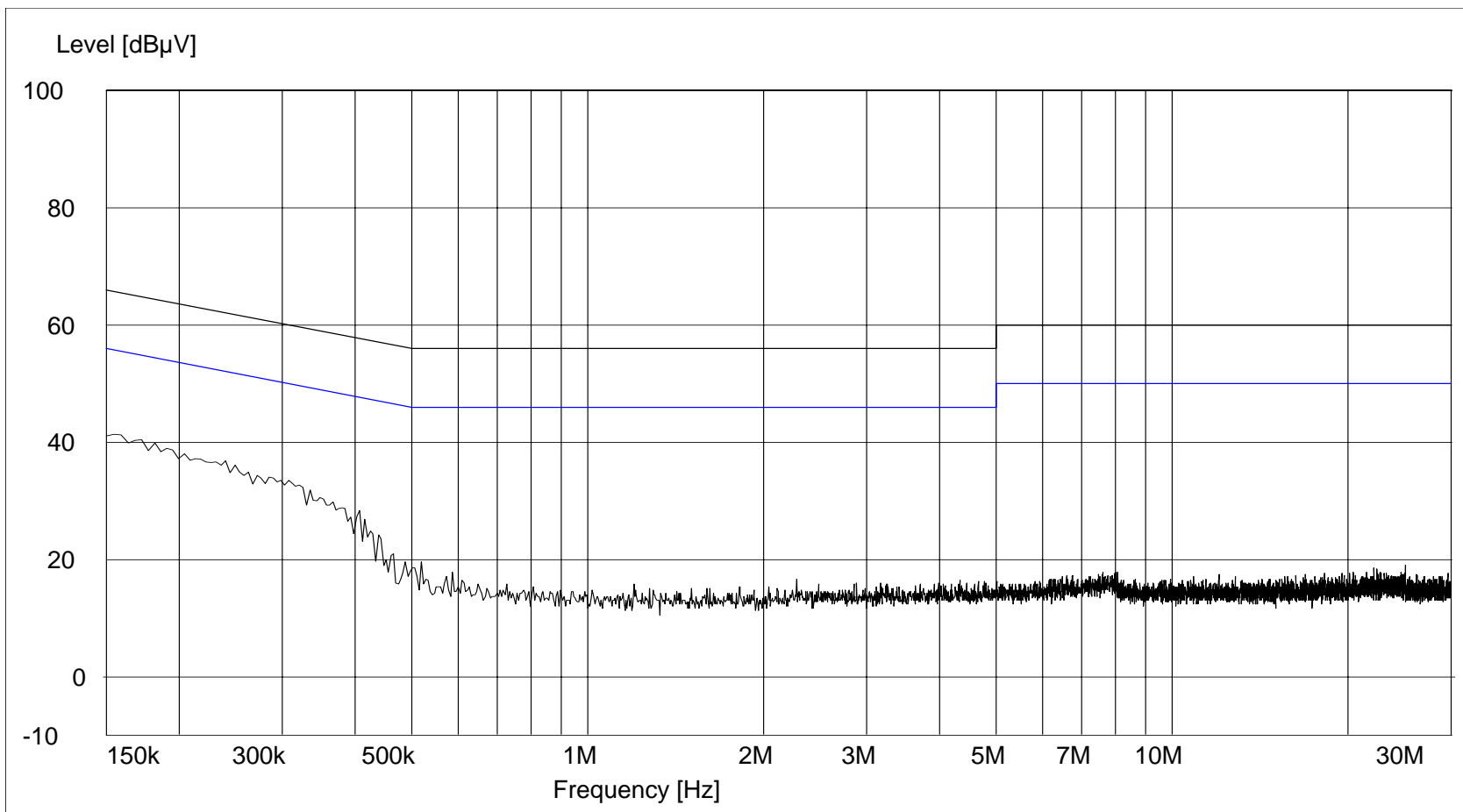


**Retlif Testing Laboratories**

Test Results No. R-11378

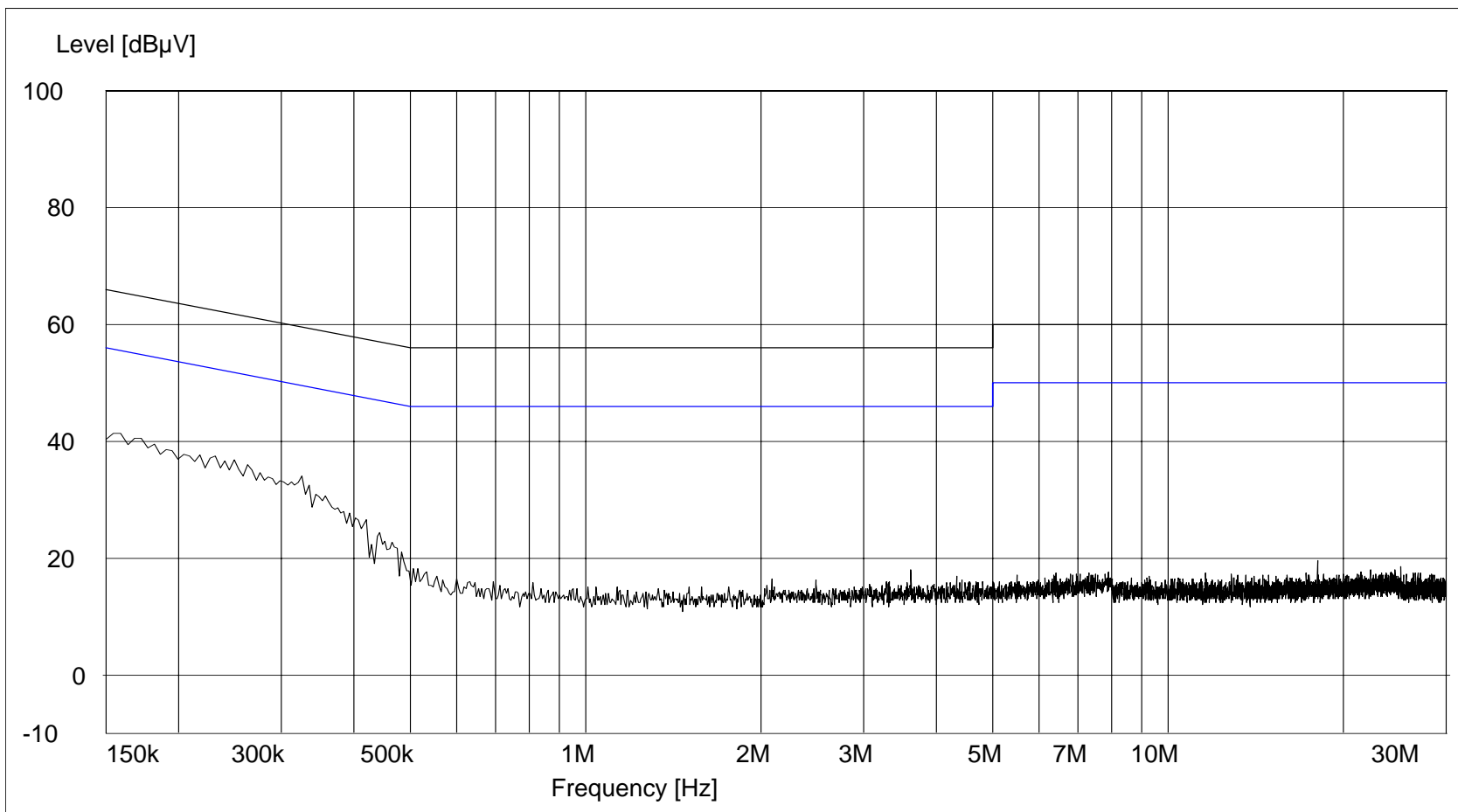
FCC Part 15, Subpart B, Class B, Conducted Emissions, 150 KHz to 30 MHz

Customer: Lutron Electronics Co., Inc.  
Test Sample: 431 MHz - 437 MHz RF Motorized Roller Shade Transceiver.  
Part Number: RF-EDU-10 / Model Number: SVQ-EDUH1-10  
Test Specification: FCC Part 15, Subpart B, Section 15.107(a). Class B  
Mode of Operation: Standby mode  
Lead Tested: 115 VAC/60 Hz Hot input to EUT.  
Technician / Date: R. Soodoo / March 27, 2006.  
Detector / Notes: Peak / Peak emissions pass the average limit.

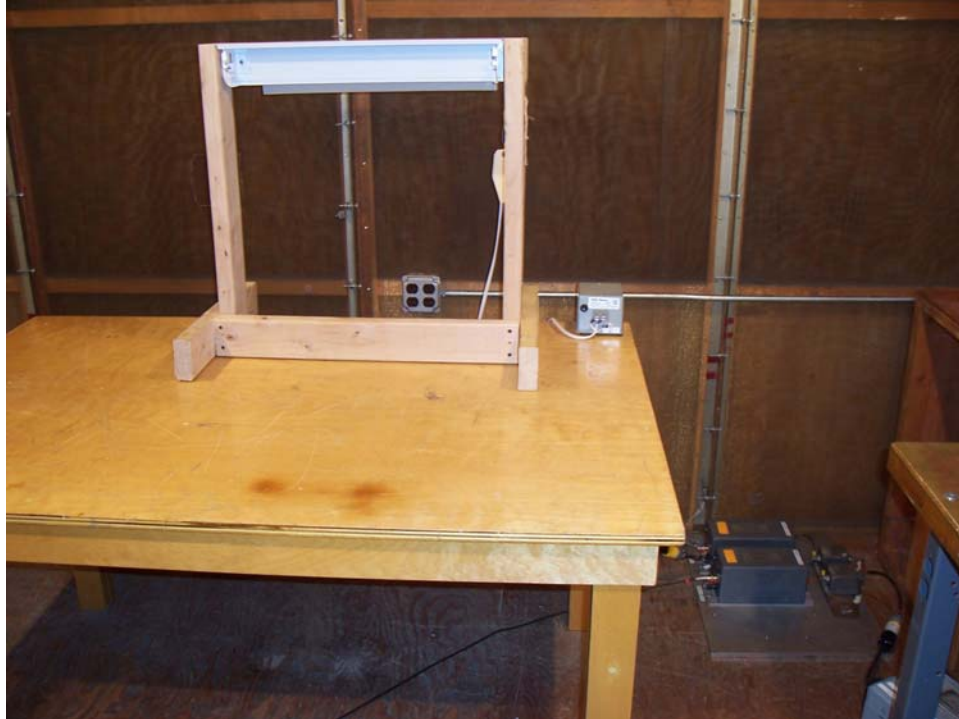


FCC Part 15, Subpart B, Class B, Conducted Emissions, 150 KHz to 30 MHz

Customer: Lutron Electronics Co., Inc.  
Test Sample: 431 MHz - 437 MHz RF Motorized Roller Shade Transceiver.  
Part Number: RF-EDU-10 / Model Number: SVQ-EDUH1-10  
Test Specification: FCC Part 15, Subpart B, Section 15.107(a). Class B  
Mode of Operation: Standby mode  
Lead Tested: 115 VAC/60 Hz Neutral input to EUT.  
Technician / Date: R. Soodoo / March 27, 2006.  
Detector / Notes: Peak / Peak emissions pass the average limit.



**Test Photographs  
Conducted Emissions**



Test Setup, Front View



Test Setup, Rear View



**Retlif Testing Laboratories**

Test Results No. R-11378

## EQUIPMENT LIST

FCC Part 15, Subpart B, Class B, Conducted Emissions, 150 kHz to 30 MHz

<b>EN</b>	<b>Type</b>	<b>Manufacturer</b>	<b>Description</b>	<b>Model No.</b>	<b>Cal Date</b>	<b>Due Date</b>
078	LISN	Solar Electronics	10 kHz - 30 MHz	8028-50-TS24BNC	5/27/2005	5/27/2006
079	LISN	Solar Electronics	10 kHz - 30 MHz	8028-50-TS24BNC	5/27/2005	5/27/2006
091	Shielded Enclosure	Retlif	10 kHz - 1 GHz	Room 6	10/15/2005	10/15/2006
712	EMI Test Receiver	Rohde & Schwarz	20 Hz - 26.5 GHz	ESI26	10/15/2005	10/15/2006
829	10 DB Atten. (50 ohm)	Narda	DC - 11 GHz, 20W	768-10	5/6/2005	5/6/2006



**Retlif Testing Laboratories**

Test Results No. R-11378