

<u>APPLICANT</u>	<u>MANUFACTURER</u>
X-10 USA, Inc. 91 Ruckman Road Closter, NJ 07624	X-10 Electronics Shenzhen Co. Ltd. X-10 Building Labour Industrial District Shenzhen, Xixiang, Bao An Guang Dong, China, 518102

TEST SPECIFICATION: FCC Rules and Regulations Part 15, Subpart C

TEST PROCEDURE: ANSI C63.4:1992

TEST SAMPLE DESCRIPTION

BRANDNAME: X-10

MODEL: XC14A FCC ID: B4SXC14A

TYPE: 2.41 GHz FM Transmitter

FREQUENCY Band: 2.4 GHz to 2.4835 GHz

POWER REQUIREMENTS: 12 VDC derived from AC Adapter

TESTS PERFORMED

- 15.249(a) Radiated Emissions, Fundamental and Harmonics
- 15.294(c) Occupied Bandwidth
- 15.249(c)/15.209 Radiated Emissions, Spurious Case
- 15.207(a) Conducted Emissions

REPORT OF MEASUREMENTS

Applicant: X-10 (USA), Inc.
Device: 2.4 GHz Transmitter
FCC ID: B4SXC14A
Power Requirements: 12 VDC derived from AC Adapter
Applicable Rule Section: Part 15, Subpart C, Section 15.249

TEST RESULTS

- 15.207(a): The radio frequency voltage that was conducted back on to the AC power line on any frequency/frequencies within the bandwidth of 450kHz to 30MHz did not exceed 250 microvolts.
- 15.249(a): The unit operates in the 2.4 GHz –2.4835 GHz band at 1 frequency as follows:
1) 2.41 GHz
- The field strength of the fundamental did not exceed 50mV/M AVERAGE. The field strength of the harmonics did not exceed 500 V/M AVERAGE.
- 15.249(b): Field strength readings were taken at three meters unless otherwise noted.
- 15.249(c): Emissions radiated outside band edges are greater than 50 dB below the specified the level of the fundamental.
- 15.249(d): The peak field strength of any emission did not exceed the maximum permitted average field strength by more than 20dB under any condition of modulation.

EXHIBIT 4

Radiated Emissions, Fundamental & Harmonics

Para. 15.249(a)

(See separate e-file attachment named REfundharm.doc)

EXHIBIT 4

Spurious Emissions

Para. 15.249(c)

(See separate e-file attachment named REspur.doc)

EXHIBIT 4

Occupied Bandwidth

Para. 15.249(c)

(See separate e-file attachment named Occbw.pdf)

EXHIBIT 4

Conducted Emissions

Para. 15.207(a)

(See separate e-file attachment named CEData.pdf)

EQUIPMENT LIST

Radiated Emissions, 30MHz-25GHz

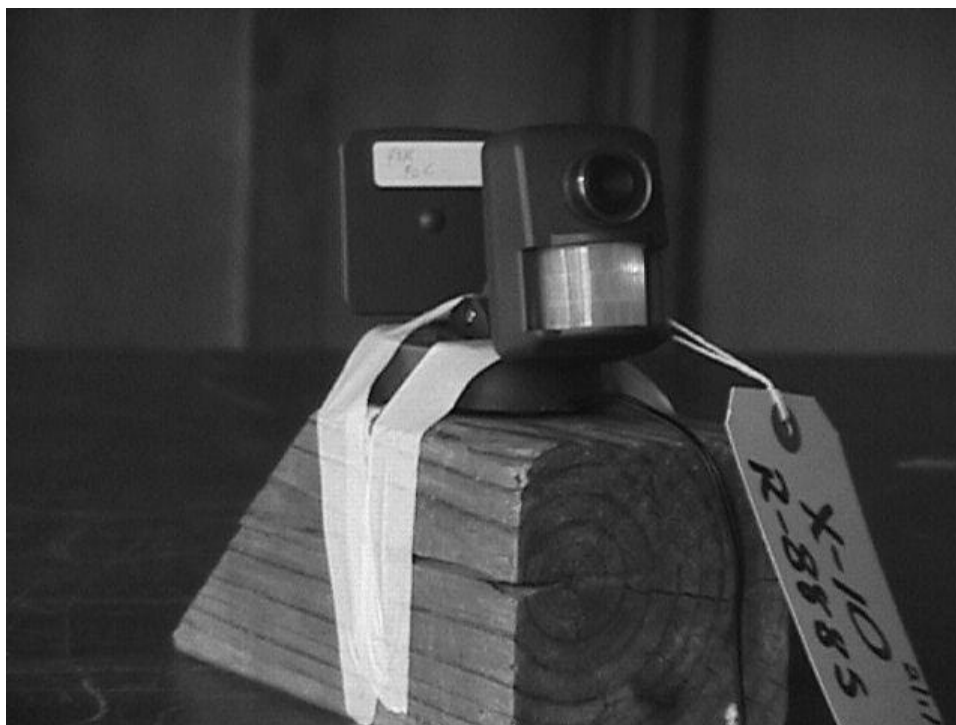
EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
067	Open Area Test Site	Retlif	3 Meter	RNY	09/20/2000	09/20/2003
128C	Double Ridge Guide	Eaton Corporation	1 GHz - 18 GHz	96001	09/18/2000	09/18/2001
129E	High Gain Horn Antenna	Microlab/FXR	18 GHz - 26.5 GHz	K638A	09/18/2000	09/18/2001
133	Broadband Pre-Amplifier	Electro-Metrics	10 kHz - 1 GHz, 26dB	BPA-1000	06/13/2000	06/13/2001
206B	6.0 dB Attenuator	Texscan	0 - 1.0 GHz	FP-50 - 6 dB	06/13/2000	06/13/2001
523	Biconilog	Electro-Mechanics	26 - 2000 MHz	3142B	06/08/2000	06/08/2001
543	Preamplifier	Hewlett Packard	1.0 GHz - 26.5 GHz	8449B	06/16/1999	06/16/2001
712	EMI Test Receiver	Rohde & Schwarz	20 Hz - 26.5 GHz	ESI26	03/01/2000	03/01/2001

Conducted Emissions, 450kHz-30MHz

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
078	LISN	Solar Electronics	10 kHz - 30 MHz	8028-50-TS24BNC	04/27/2000	04/27/2001
091	Shielded Enclosure	Retlif	10 kHz - 1 GHz	Room 6	07/21/2000	07/21/2001
141A	Graphics Plotter	Hewlett Packard	N/A	7470A	03/08/2000	03/08/2001
202	Transient Limiter	Hewlett Packard	.009 MHz - 200 MHz	11947A	07/24/2000	07/24/2001
513	LISN	Solar Electronics	10 kHz - 30 MHz	8028-50-TS24BNC	04/27/2000	04/27/2001
R089	Spectrum Analyzer	Hewlett Packard	30 Hz - 2.9 GHz	8560E	09/16/1999	09/16/2001

Test Setup Photographs

Radiated Emissions

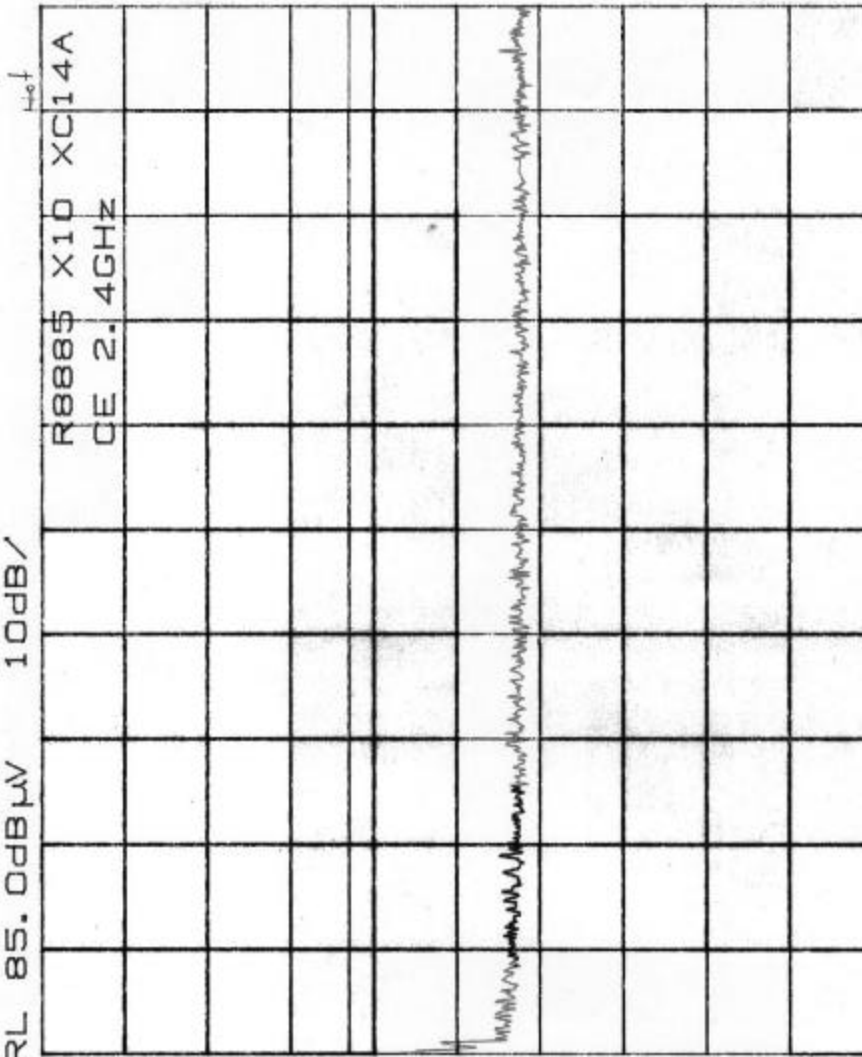


Conducted Emissions



ATTEN 10dB

RL 85.0dBμV 10dB/



START 450kHz STOP 30.00MHz
*RBW 10kHz *VBW 30kHz *SWP 20.0sec

Customer: X-10 (USA)
Test Sample: 2.4GHz Transmitter
Model No.: XC14A FCC ID: B4SXC14A
Test Method: FCC15.207(a) Conducted Emissions, 450kHz-30MHz
Notes: Lead-HOT
Detector=Peak

Date: February 9, 2001 Tech: Peter Lananna Sheet 1 of 2



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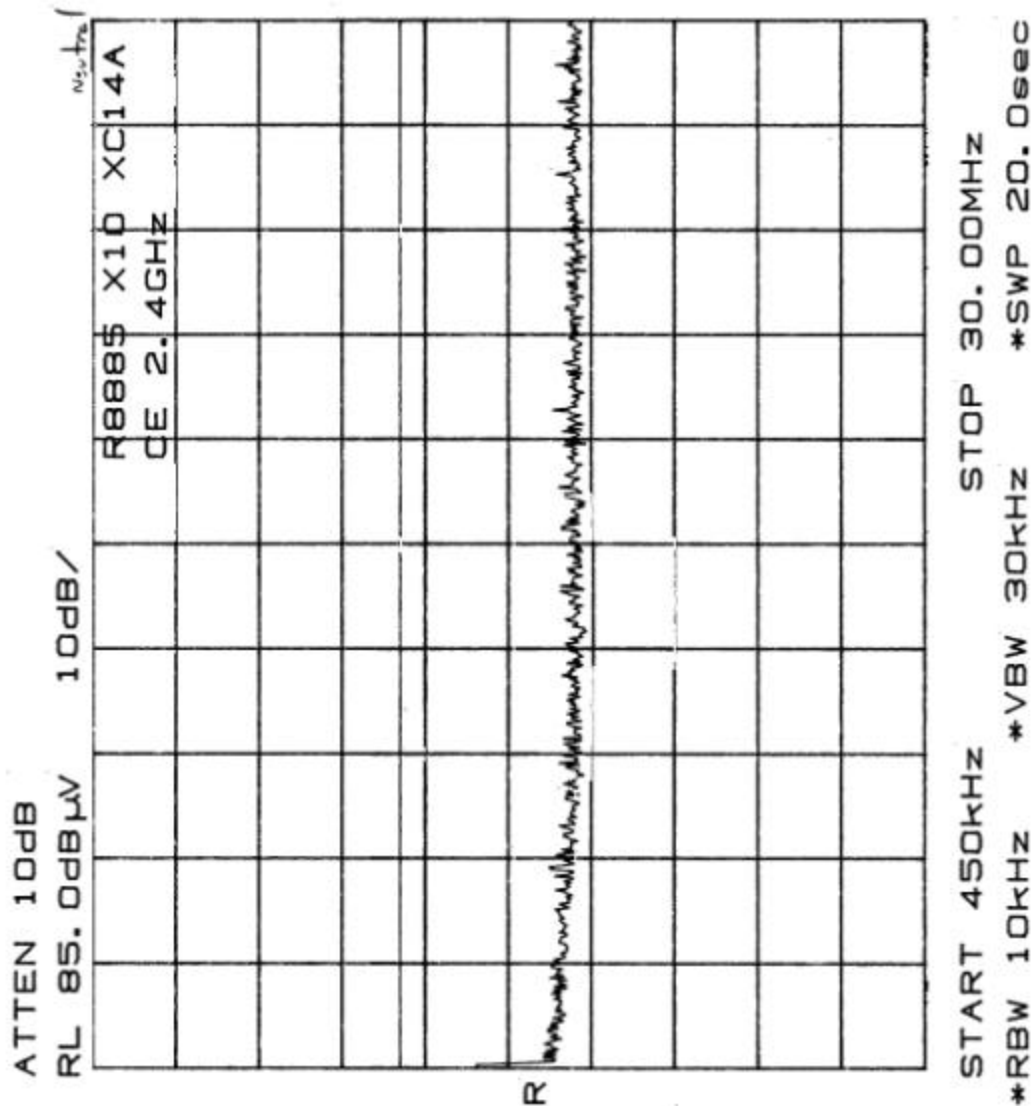
Report No. R-8885-16

Customer:	X-10 (USA)
Test Sample:	2.4GHz Transmitter
Model No:	XC14A FCC ID: B45XC14A
Test Method:	FCC15.207(a) Conducted Emissions, 450kHz-30MHz
Notes:	Lead-NEUTRAL Detector=Peak
Date:	February 9, 2001
Tech:	Peter Lianhua
Sheet:	2 of 2



Retlif Testing Laboratories

Report No. R-8885-16



Test Method:		FCC Part 15 Subpart C Radiated Emissions, Fundamental & Harmonic Emissions					
Customer:		X-10 (USA)			Job No.	R-8885-1b	
Test Sample:		2.4GHz			Paragraph:	15.249	
Model No.:		XC14A			FCC ID:	B4SXC14A	
Operating Mode:		Continuously Transmitting a 2410 MHz Signal					
Technician:		Peter Lananna			Date:	February 8, 2001	
Notes:		Test Distance: 3 Meters Detector: Peak, Unless otherwise specified					
Test Freq.	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
2410	H / 1.5	X	78.2	3.0	81.2	11481.5	50000
	H / 1.0	Y	77.8	3.0	80.8	10964.8	
	H / 1.3	Z	82.3	3.0	85.3	18407.7	
	V / 1.1	X	86.7	3.0	89.7	30549.2	
	V / 1.1	Y	87.8	3.0	90.8	34673.7	
2410	V / 1.3	Z	78.5	3.0	81.5	11885.0	50000
4820	H / 1.0	X	32.0	-4.1	27.9	24.8*	500
	H / 1.0	Y	32.0	-4.1	27.9	24.8*	
	H / 1.0	Z	32.0	-4.1	27.9	24.8*	
	V / 1.0	X	32.0	-4.1	27.9	24.8*	
	V / 1.0	Y	32.0	-4.1	27.9	24.8*	
4820	V / 1.0	Z	32.0	-4.1	27.9	24.8*	500
7230	H / 1.0	X	32.0	-2.0	32.0	39.8*	500
	H / 1.0	Y	32.0	-2.0	30.0	31.6*	
	H / 1.0	Z	32.0	-2.0	30.0	31.6*	
	V / 1.0	X	32.0	-2.0	30.0	31.6*	
	V / 1.0	Y	32.0	-2.0	30.0	31.6*	
7230	V / 1.0	Z	32.0	-2.0	30.0	31.6*	500
9640	H / 1.0	X	33.0	-1.9	31.1	35.9*	500
	H / 1.0	Y	33.0	-1.9	31.1	35.9*	
	H / 1.0	Z	33.0	-1.9	31.1	35.9*	
	V / 1.0	X	33.0	-1.9	31.1	35.9*	
	V / 1.0	Y	33.0	-1.9	31.1	35.9*	
9640	V / 1.0	Z	33.0	-1.9	31.1	35.9*	500
12050	H / 1.0	X	33.0	3.8	36.8	69.2*	500
	H / 1.0	Y	33.0	3.8	36.8	69.2*	
	H / 1.0	Z	33.0	3.8	36.8	69.2*	
	V / 1.0	X	33.0	3.8	36.8	69.2*	
	V / 1.0	Y	33.0	3.8	36.8	69.2*	
12050	V / 1.0	Z	33.0	3.8	36.8	69.2*	500
	The frequency range was scanned from 30 MHz to 25 GHz. All emissions not recorded were more						
	Than 10 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.						
	*=Noise Floor Measurements (Minimum system sensitivity)						



Retlif Testing Laboratories

Retlif Job Number R-8885-1b

Test Method:		FCC Part 15 Subpart C Radiated Emissions, Fundamental & Harmonic Emissions						
Customer:		X-10 (USA)			Job No.		R-8885-1b	
Test Sample:		2.4GHz			Paragraph:		15.249	
Model No.:		XC14A			FCC ID:		B4SXC14A	
Operating Mode:		Continuously Transmitting a 2410 MHz Signal						
Technician:		Peter Lananna			Date:		February 8, 2001	
Notes:		Test Distance: 3 Meters **=Readings taken @ 1 meter, correction factors includes test distance correction. Detector: Peak, Unless otherwise specified						
Test Freq.	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	
14460	H / 1.0	X	33.0	10.8	43.8	154.9*	500	
	H / 1.0	Y	33.0	10.8	43.8	154.9*		
	H / 1.0	Z	33.0	10.8	43.8	154.9*		
	V / 1.0	X	33.0	10.8	43.8	154.9*		
	V / 1.0	Y	33.0	10.8	43.8	154.9*		
14460	V /1.0	Z	33.0	10.8	43.8	154.9*	500	
16870	H / 1.0	X	33.0	15.5	48.5	266.1*	500	
	H / 1.0	Y	33.0	15.5	48.5	266.1*		
	H / 1.0	Z	33.0	15.5	48.5	266.1*		
	V / 1.0	X	33.0	15.5	48.5	266.1*		
	V / 1.0	Y	33.0	15.5	48.5	266.1*		
16870	V /1.0	Z	33.0	15.5	48.5	266.1*	500	
19280	H / 1.0	X	30.0	22.9	52.9	441.6**	500	
	H / 1.0	Y	30.0	22.9	52.9	441.6**		
	H / 1.0	Z	30.0	22.9	52.9	441.6**		
	V / 1.0	X	30.0	22.9	52.9	441.6**		
	V / 1.0	Y	30.0	22.9	52.9	441.6**		
19280	V /1.0	Z	30.0	22.9	52.9	441.6**	500	
21690	H / 1.0	X	30.0	23.2	53.2	457.1**	500	
	H / 1.0	Y	30.0	23.2	53.2	457.1**		
	H / 1.0	Z	30.0	23.2	53.2	457.1**		
	V / 1.0	X	30.0	23.2	53.2	457.1**		
	V / 1.0	Y	30.0	23.2	53.2	457.1**		
21690	V /1.0	Z	30.0	23.2	53.2	457.1**	500	
24100	H / 1.0	X	30.0	23.4	53.4	467.7**	500	
	H / 1.0	Y	30.0	23.4	53.4	467.7**		
	H / 1.0	Z	30.0	23.4	53.4	467.7**		
	V / 1.0	X	30.0	23.4	53.4	467.7**		
	V / 1.0	Y	30.0	23.4	53.4	467.7**		
24100	V /1.0	Z	30.0	23.4	53.4	467.7**	500	
	The frequency range was scanned from 30 MHz to 25 GHz. All emissions not recorded were more							
	Than 10 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.							
	*=Noise Floor Measurements (Minimum system sensitivity)							



Retlif Testing Laboratories

Retlif Job Number R-8885-1b



Retlif Testing Laboratories

Test Method:	FCC Part 15 Subpart C Radiated Emissions, Fundamental & Harmonic Emissions						
Customer:					Job No.		
Test Sample:					Paragraph:		
Model No.:					FCC ID:		
Operating Mode:	Continuously Transmitting a MHz Signal						
Technician:					Date:		
Notes:	Test Distance: 3 Meters Detector: Peak, unless otherwise specified				Duty Cycle: Duty Cycle Correction: - dB		
Test Freq.	Antenna Pol./Height	EUT Orientation	Peak Reading	Correction Factor	Corrected Reading	Converted Reading	Avg. Limit
MHz	(V/H)-Meters	X / Y / Z	dBuV	dB	dBuV/m	uV/m	uV/m
	H /	X					
	H /	Y					
	H /	Z					
	V /	X					
	V /	Y					
	V /	Z					
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The frequency range was scanned from 30 MHz to XX GHz. All emissions not recorded were more							
Than 10 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.							
*=Noise Floor Measurements (Minimum system sensitivity)							



Retlif Testing Laboratories

Retlif Job Number R-

Test Method:	FCC Part 15 Subpart C Radiated Emissions, Fundamental & Harmonic Emissions						
Customer:					Job No.		
Test Sample:					Paragraph:		
Model No.:					FCC ID:	N/A	
Operating Mode:	Continuously Transmitting a MHz Signal						
Technician:					Date:		
Notes:	Test Distance: 3 Meters Detector: Peak, unless otherwise specified				Duty Cycle: Duty Cycle Correction: - dB		
Test Freq.	Antenna Pol./Height	EUT Orientation	Peak Reading	Correction Factor	Corrected Reading	Converted Reading	Avg. Limit
MHz	(V/H)-Meters	X / Y / Z	dBuV	dB	dBuV/m	uV/m	uV/m
	H /	X					
	H /	Y					
	H /	Z					
	V /	X					
	V /	Y					
	V /	Z					
	H /	X					
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	V /	Z					
The frequency range was scanned from 30 MHz to XX GHz. All emissions not recorded were more Than 10 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.							
*=Noise Floor Measurements (Minimum system sensitivity)							



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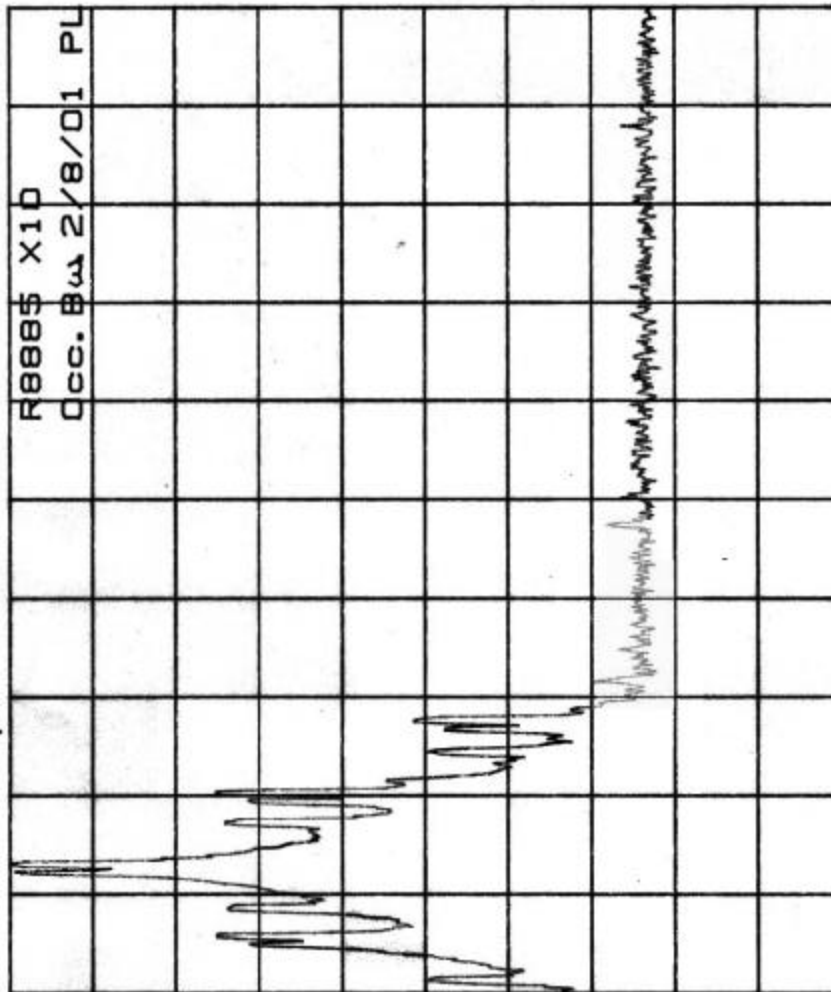
Retlif Job Number R-



Retlif Job Number R-8885-1b

ATTEN 20dB

RL 116.8dBμV 10dB/



START 2.40000GHz STOP 2.48350GHz
*RBW 100kHz *VBW 300kHz SWP 50.0ms

Customer: X-10 (USA)
Test Sample: 2.4GHz Transmitter
Model No.: XC14A FCC ID: B45XC14A
Test Method: FCC15.249(c) Occupied Bandwidth
Notes: Emissions at lower band edge not greater than 50dB(c) from the modulated carrier. Radiated measurement made on OATS. Measurement at band edge meets the limits of FCC15.209.

Date: February 9, 2001 Tech: Peter Lananna Sheet 1 of 1



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