APPLICANT	MANUFACTURER
X-10 (USA), Inc. 91 Ruckman Road Closter, NJ 07624-0420	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, Para. 15.231

TEST PROCEDURE: ANSI C63.4-1992

TEST SAMPLE DESCRIPTION

BRANDNAME: X-10 (USA), Inc. MODEL: CM19A

TYPE: Pulsed Transmitter

POWER REQUIREMENTS: +5 VDC derived from Host PC via USB

FREQUENCY OF OPERATION: 312 MHz

TESTS PERFORMED

Para. 15.207(a), Conducted Emissions

Para. 15.231(a), Radiated Emissions, Fundamental and Harmonics

Para. 15.231(b), Radiated Emissions, Spurious Case

Para. 15.231(b), Duty Cycle Determination

Para. 15.231(c), Occupied Bandwidth

REPORT OF MEASUREMENTS

Applicant: X-10 (USA), Inc.

Device: Pulsed Transmitter

FCC ID: B4SCM19A

Power Requirements: +5 VDC derived from Host PC via USB

Applicable Rule Section: Part 15, Subpart C, 15.231

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.

15.231 (a): This device is used as a remote control transmitter.

15.231 (a)(1) & 15.231(a)(2): The transmitter is manually operated and ceases transmission within 5 seconds after deactivation.

15.231 (a)(3): The transmitter does not perform periodic transmissions.

15.231 (b): The fundamental field strength did not exceed 5920 µV/M (Average) at a test distance of 3 meters. In addition, the requirements of section 15.35 for averaging pulsed emissions and for limiting peak emissions were met.

The field strength of harmonic and spurious emissions did not exceed 592 µV/M (AVERAGE).

DETERMINATION OF FIELD STRENGTH LIMITS

The field strength limits shown below are found in Section 15.231.

Frequency			Limit		
F1	=	260	3750	=	L1
Fo	=	312	Lo		
F2	=	470	12500	=	L2

The formula below was utilized to determine the limits:

Limit = L1 + [(Fo-F1)(L2-L1)/(F2-F1)]

Solving yields:

Fundamental Limit = 5920 µV/M (AVERAGE) @ 3 Meters

Harmonic Limit = 592 µV/M (AVERAGE) @ 3 Meters

DUTY CYCLE DETERMINATION

Theunit'sRFoutputwas directly coupled to the input of the spectrum analyzer. The analyzer was set for a frequency span of 0Hz. The sweep time was then adjusted in order to display one full pulse train. The transmitter on time was then summed and comparedtothe time for one full cycle in order to obtain the duty cycle.(See plots for additional information)

Transmitter On Time	=	31.125 milliseconds (maximum- worst case in 100 ms)
Transmitter Cycle Time	=	94.5
Transmitter Duty Cycle	=	32.9 %

CALCULATION:

1 Large Pulse	=	10.5 milliseconds
33 x 625 µs (small pulse)	=	20.625 milliseconds
10.5 + 20.625	=	32.9 milliseconds
Duty Cycle	=	32.9 %
Correction Factor = 20 log(0.248)	=	-9.6

SPECTRUM ANALYZER DESENSITIZATION CONSIDERATIONS

Due to the nature of the emissions being measured, care was taken to ensure that the resolution bandwidth of the spectrum analyzer was adequate to provide accurate measurements. The following formula was utilized:

Setting pulsedesensitizationequaltozeroand utilizing the minimum observed pulse width of 20µs yields a minimum required bandwidth of 33.3 kHz. FCC specified bandwidths of 100kHz and 1MHz were utilized below and above 1GHz, respectively.

1. All readings were taken utilizing a peak detector function at a test distance of 3 meters.

2. The duty cyclewasappliedto the peak readings in order to determine the average value of the emissions.

3. The frequency range was scanned from 30 MHz to 3.1 GHz. All emissions not reported were more than 20 dB below the specified limit.

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
067	Open Area Test Site	Retlif	3 Meter	RNY	9/20/00	9/20/03
076	LISN	Solar Electronics	10 kHz - 30 MHz	8012-50-R-24BNC	2/9/01	2/9/02
088A	Conical Log Spiral	Electro-Mechanics	200 MHz - 1 GHz	3101	1/3/01	1/3/02
128C	Double Ridge Guide	Eaton Corporation	1 GHz - 18 GHz	96001	9/18/00	9/18/01
133	Broadband Pre-Amplifier	Electro-Mertics	10 kHz - 1 GHz, 26dB	BBA-1000	6/13/00	6/13/01
141A	Graphics Plotter	Hewlett Packard	N/A	7470A	3/5/01	3/5/02
202	Transient Limiter	Hewlett Packard	.009 MHz - 200 MHz	11947A	7/24/00	7/24/01
206B	6.0 dB Attenuator	Texscan	0 - 1.0 GHz	FP-50 - 6 dB	6/13/00	6/13/01
338A	Signal Generator	Hewlett Packard	500 kHz - 1024 MHz	8640B	7/28/00	7/28/01
456	LISN	Solar Electronics	DC - 60 Hz	9409-50-R-24	7/26/00	7/26/01
523	Biconilog	Electro-Mechanics	26 - 2000 MHz	3142B	6/8/00	6/8/01
543	Preamplifier	Hewlett Packard	1.0 GHz - 26.5 GHz	8449B	6/16/99	6/16/01
617	Interference Analyzer	Electro-Metrics	10 kHz - 1 GHz	EMC-30	2/27/01	2/27/02
7016	EMC Analyzer	Hewlett Packard	9kHz - 1.8GHz	8591EM	3/6/01	3/6/02
712	EMI Test Receiver	Rohde & Schwarz	20 Hz - 26.5 GHz	ES126	3/1/00	6/1/01

FCC 15.207(a)

Conducted Emissions

Please refer to separate electronic file named cedata.pdf

FCC 15.231(b)

RADIATED EMISSIONS, FUNDAMENTAL & SPURIOUS CASE

See separate e-file attachment named REfundharm.pdf and REspur.pdf

FCC 15.231(c)

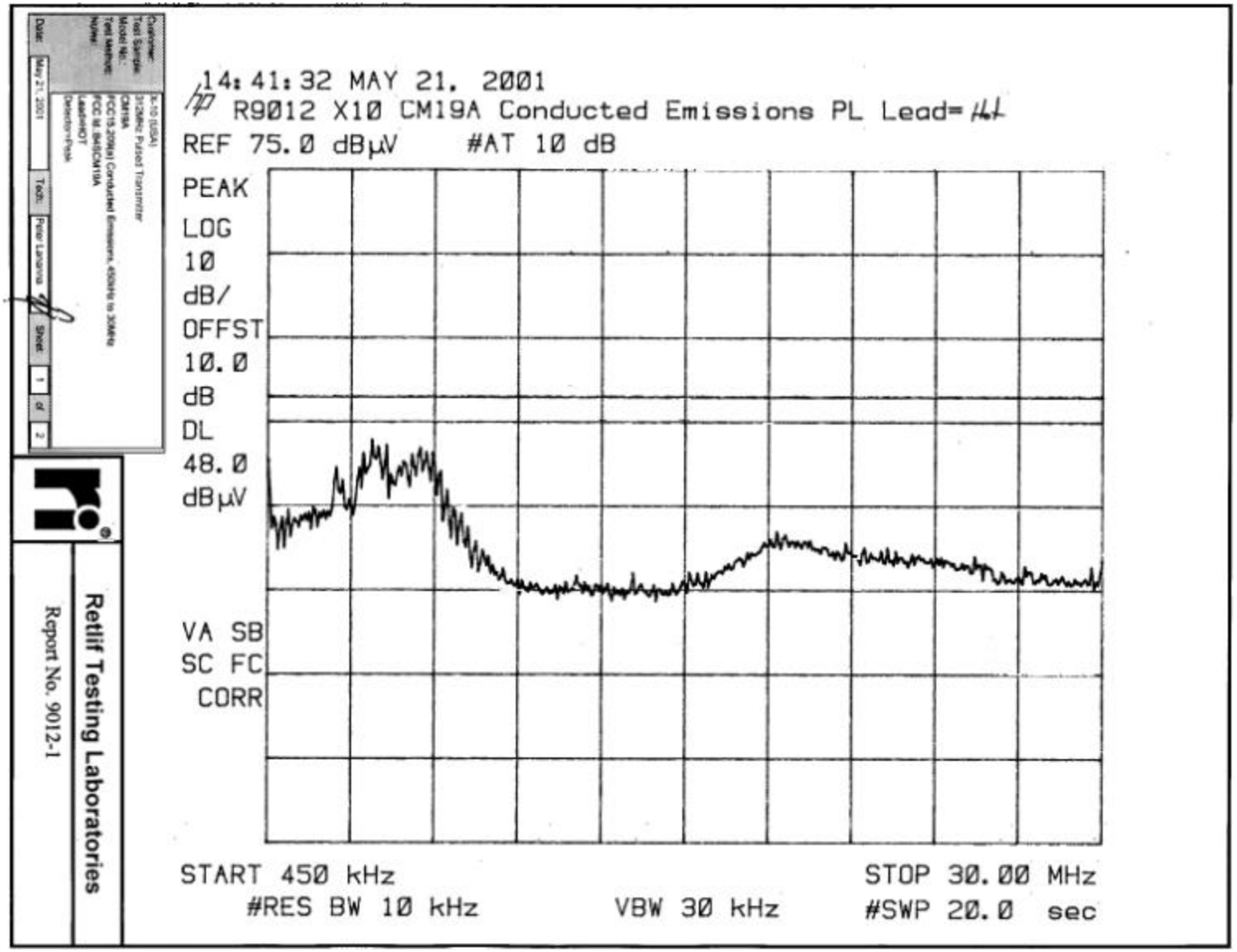
OCCUPIED BANDWIDTH

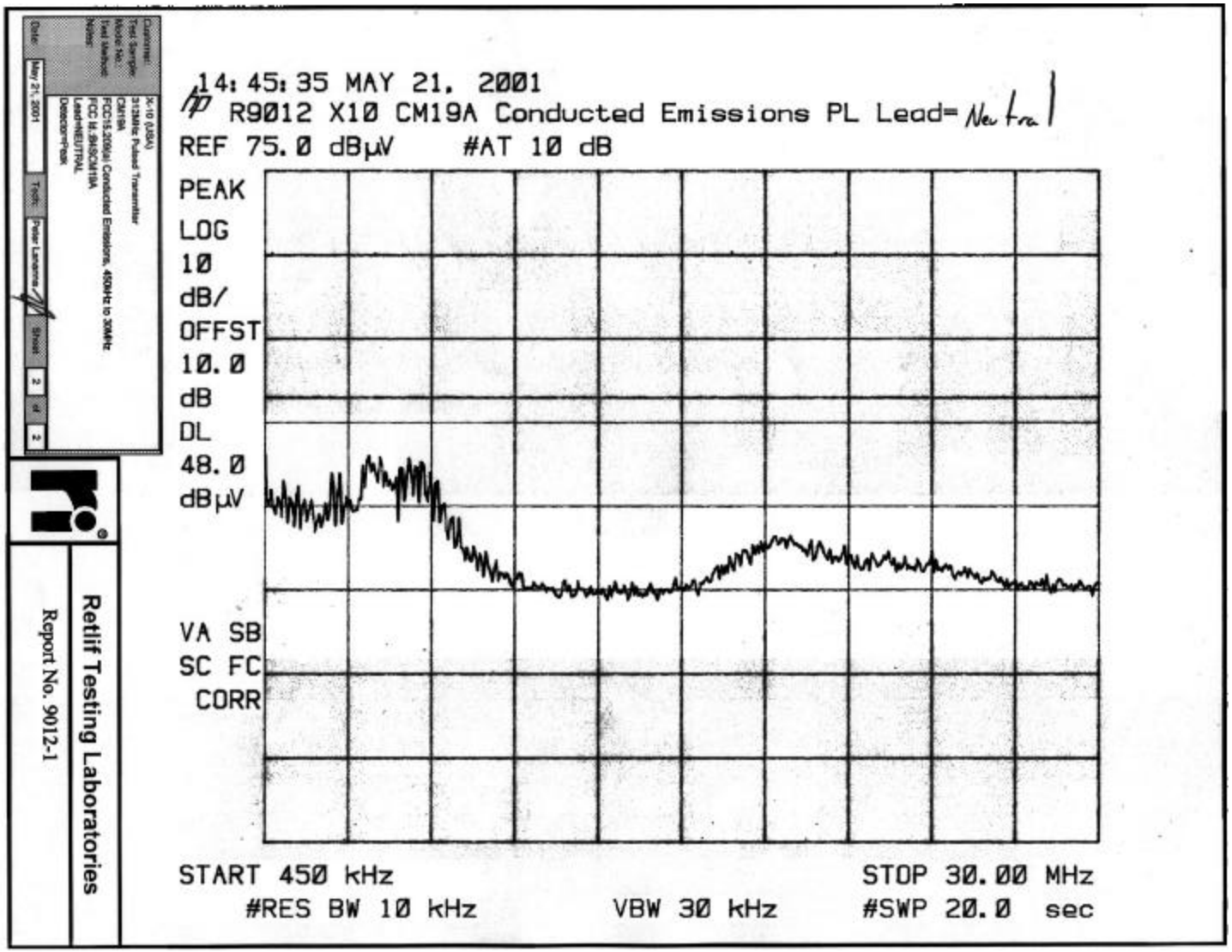
Please refer to separate electronic file named Occbw.pdf

FCC 15.231(c)

DUTY CYCLE

Please refer to separate electronic file named Dutycycle.pdf

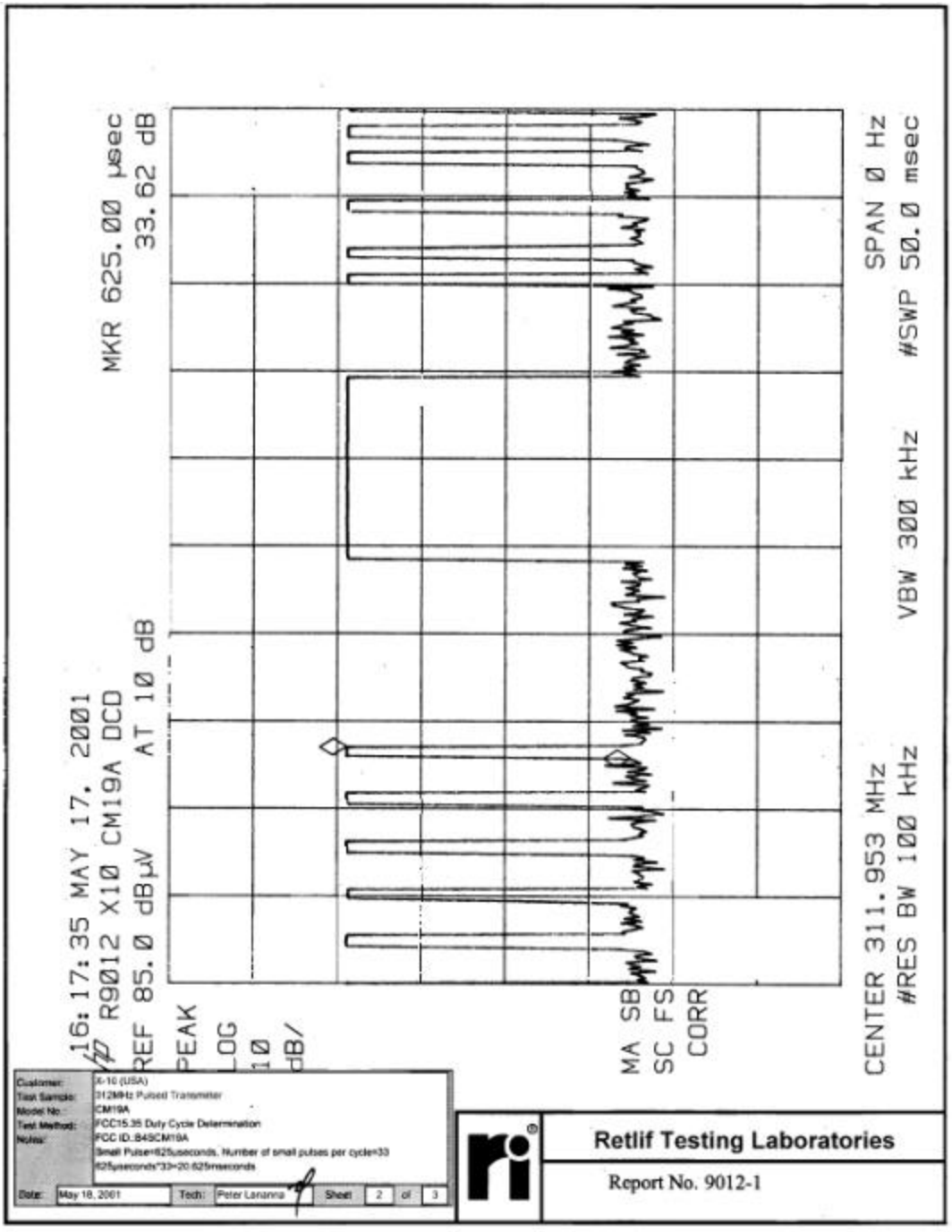

Examiner:
Test Sample:
Model No.:
Test Method:
Note:
Date:
May 21, 2001
Test:
Peter Lanzara
Sheet:
1
of
2
14:41:32 MAY 21, 2001
R9012 X10 CM19A Conducted Emissions PL Lead= #1
REF 75.0 dBµV
#AT 10 dB
PEAK
LOG
10
dB/
OFFST
10.0
dB
DL
48.0
dBµV
VA SB
SC FC
CORR
START 450 kHz
#RES BW 10 kHz
VBW 30 kHz
STOP 30.00 MHz
#SWP 20.0 sec
Retlif Testing Laboratories
Report No. 9012-1


Customer:
Test Sample:
Model No:
Test Method:
Notes:
X-10 (USA)
CM19A
FCC 15.209(a) Conducted Emissions, 450kHz to 30MHz
Lead=NEUTRAL
Detector=Peak
Date:
May 21, 2001
Tech:
Peter Lanzone
Shield
2
of
2
14: 45: 35 MAY 21, 2001
R9012 X10 CM19A Conducted Emissions PL Lead= Neutral
REF 75.0 dBµV
#AT 10 dB
PEAK
LOG
10
dB/
OFFST
10.0
dB
DL
48.0
dBµV
VA SB
SC FC
CORR
START 450 kHz
#RES BW 10 kHz
VBW 30 kHz
STOP 30.00 MHz
#SWP 20.0 sec
Retlif Testing Laboratories
Report No. 9012-1

Customer:	X-10 (USA)
Test Sample:	312MHz Pulsed Transmitter
Model No.:	CM19A
Test Method:	FCC15.35 Duty Cycle Determination
Notes:	FCC Id:B4SCM19A Large Pulse=10.5mseconds
Date: May 21, 2001	Tech: Peter Lananna Sheet 1 of 3

Retlif Testing Laboratories

Report No. 9012-1

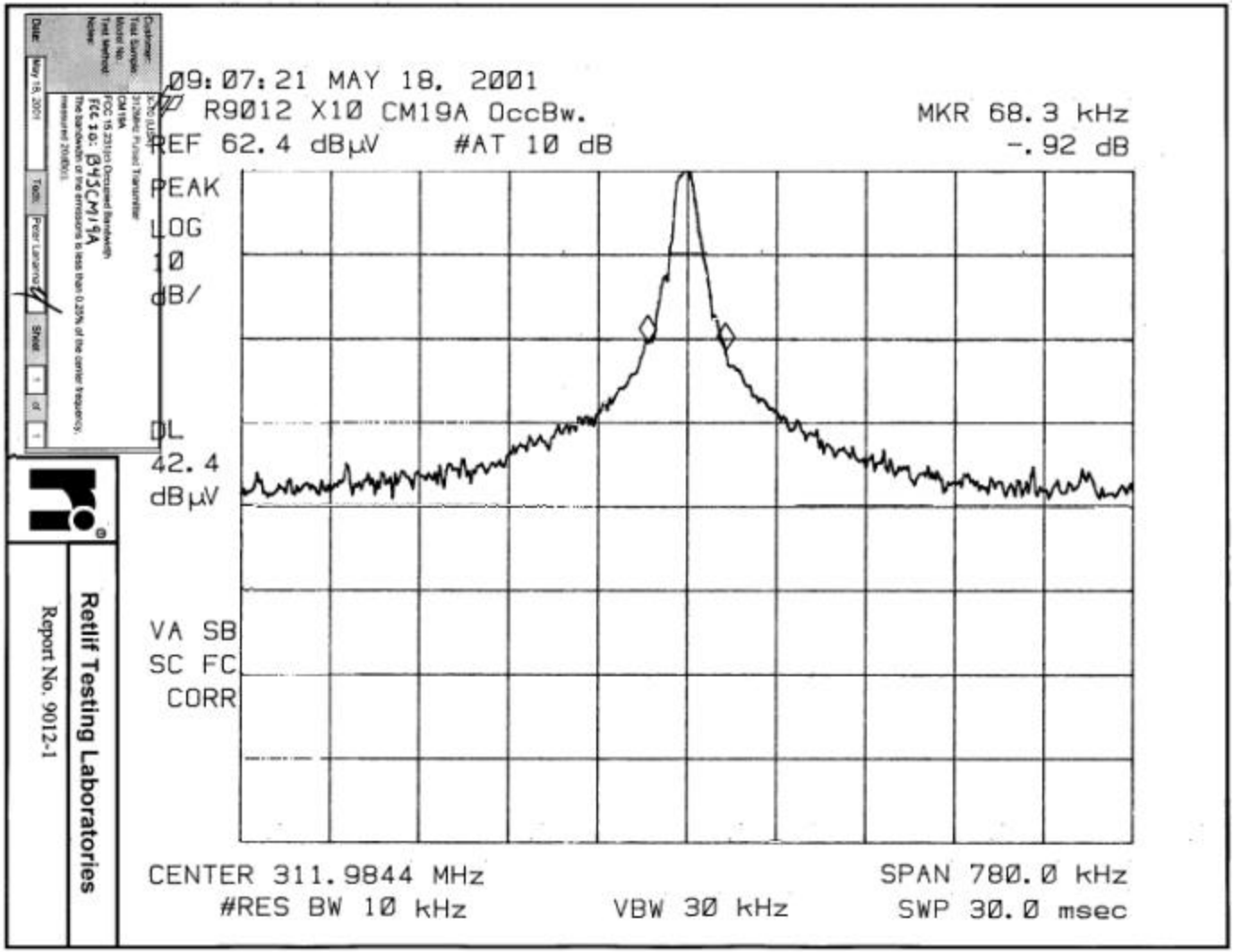

MKR 625.00 µsec
33.62 dB
16: 17: 35 MAY 17, 2001
R9012 X10 CM19A DCD
REF 85.0 dBµV
AT 10 dB
PEAK
LOG
10
dB/
MA SB
SC FS
CORR
CENTER 311.953 MHz
#RES BW 100 kHz
VBW 300 kHz
SPAN 0 Hz
#SWP 50.0 msec
Customer: X-10 (USA)
Test Sample: 312MHz Pulsed Transmitter
Model No.: CM19A
Test Method: FCC15.35 Duty Cycle Determination
Notes: FCC ID: B4SCM19A
Small Pulse=625useconds. Number of small pulses per cycle=33
625useconds*33=20.625mseconds
Date: May 18, 2001
Tech: Peter Lananna
Sheet 2 of 3
Retlif Testing Laboratories
Report No. 9012-1

Customer:	X-10 (USA)
Test Sample:	312MHz Pulsed Transmitter
Model No:	CM19A
Test Method:	FCC15.35 Duty Cycle Determination
Notes:	FCC ID.B4SCM19A Cycle time=94.5mseconds (20.625ms+10.5ms)/94.5ms=32.9%, 20log(32.9%)=-9.6dB

Date: May 16, 2001 Tech: Peter Lananna Sheet 3 of 3

Retlif Testing Laboratories

Report No. 9012-1


09:07:21 MAY 18, 2001
R9012 X10 CM19A OccBw.
MKR 68.3 kHz
REF 62.4 dBµV
#AT 10 dB
-.92 dB
PEAK
LOG
10
dB/
DL
42.4
dBµV
VA SB
SC FC
CORR
CENTER 311.9844 MHz
#RES BW 10 kHz
VBW 30 kHz
SPAN 780.0 kHz
SWP 30.0 msec
Customer:
Test Sample:
Model No:
Test Method:
Notes:
CM19A
FCC 15.231(c) Occupied Bandwidth
FCC 15: B45CM19A
The bandwidth of the emissions is less than 0.25% of the center frequency, measured 20dB/c
Date:
May 18, 2001
Tech:
Peter Lanzano
Shield
of
Retlif Testing Laboratories
Report No. 9012-1

Test Method:	FCC Part 15 Subpart C Radiated Emissions, Fundamental & Harmonic Emissions		
Customer:	X-10	**Job No.**	R-9012-1
Test Sample:	312MHz Transmitter	**Paragraph:**	15.231
Model No.:	CM19A	**FCC ID:**	B4SCM19A
Operating Mode:	Continuously Transmitting a 312MHz Signal		
Technician:	Peter Lananna	**Date:**	May 21, 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	Peak Limit
MHz	(V/H)/Meters	X / Y / Z	dBuV	dB	dBuV/m	uV/m	uV/m
312	H / 1.0	X	67.8	-4.0	63.8	1548.8	59200
|	H / 1.0	Y	65.3	-4.0	61.3	1161.4	|
|	H / 1.0	Z	68.2	-4.0	64.2	1621.8	|
|	V / 2.0	X	65.3	-4.0	61.3	1161.4	|
|	V / 2.0	Y	66.3	-4.0	62.3	1303.2	|
312	V / 2.0	Z	60.7	-4.0	56.7	683.9	59200
624	H / 1.3	X	46.6	3.2	49.8	309.0	5920
|	H / 1.0	Y	43.0	3.2	46.2	204.2	|
|	H / 1.3	Z	47.1	3.2	50.3	327.3	|
|	V / 1.0	X	44.4	3.2	47.6	239.9	|
|	V / 2.0	Y	44.1	3.2	47.3	231.7	|
624	V / 1.5	Z	46.9	3.2	50.1	319.9	5920
936	H / 1.3	X	39.5	7.4	46.9	221.3	5920
|	H / 1.3	Y	38.8	7.4	46.2	204.2	|
|	H / 1.0	Z	37.0	7.4	44.4	166.0	|
|	V / 1.3	X	35.5	7.4	42.9	139.6	|
|	V / 1.0	Y	41.0	7.4	48.4	263.0	|
936	V / 2.3	Z	37.8	7.4	45.2	182.0	5920
1248	H / 1.0	X	40.0	-5.6	34.4	52.5*	5000
|	H / 1.0	Y	40.0	-5.6	34.4	52.5*	|
|	H / 1.0	Z	40.0	-5.6	34.4	52.5*	|
|	V / 1.0	X	40.0	-5.6	34.4	52.5*	|
|	V / 1.0	Y	40.0	-5.6	34.4	52.5*	|
1248	V / 1.0	Z	40.0	-5.6	34.4	52.5*	5000
1560	H / 1.0	X	40.0	-4.4	35.6	60.3*	5000
|	H / 1.0	Y	40.0	-4.4	35.6	60.3*	|
|	H / 1.0	Z	40.0	-4.4	35.6	60.3*	|
|	V / 1.0	X	40.0	-4.4	35.6	60.3*	|
|	V / 1.0	Y	40.0	-4.4	35.6	60.3*	|
1560	V / 1.0	Z	40.0	-4.4	35.6	60.3*	5000
	The frequency range was scanned from 30 MHz to 3.1 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)						

Test Method:	FCC Part 15 Subpart C Radiated Emissions, Fundamental & Harmonic Emissions		
Customer:	X-10	**Job No.**	R-9012-1
Test Sample:	312MHz Transmitter	**Paragraph:**	15.231
Model No.:	CM19A	**FCC ID:**	B4SCM19A
Operating Mode:	Continuously Transmitting a 312MHz Signal		
Technician:	Peter Lananna	**Date:**	May 21, 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	Peak Limit
MHz	(V/H)-Meters	X / Y / Z	dBuV	dB	dBuV/m	uV/m	uV/m
1872	H /	X	36.0	-2.4	33.6	47.9*	5920
|	H /	Y	36.0	-2.4	33.6	47.9*	|
|	H /	Z	36.0	-2.4	33.6	47.9*	|
|	V /	X	36.0	-2.4	33.6	47.9*	|
|	V /	Y	36.0	-2.4	33.6	47.9*	|
1872	V /	Z	36.0	-2.4	33.6	47.9*	5920
2184	H /	X		-1.3			5920
|	H /	Y		-1.3			|
|	H /	Z		-1.3			|
|	V /	X		-1.3			|
|	V /	Y		-1.3			|
2184	V /	Z		-1.3			5920
2496	H /	X		-0.1			5920
|	H /	Y		-0.1			|
|	H /	Z		-0.1			|
|	V /	X		-0.1			|
|	V /	Y		-0.1			|
2496	V /	Z		-0.1			5920
2808	H /	X		1.5			5000
|	H /	Y		1.5			|
|	H /	Z		1.5			|
|	V /	X		1.5			|
|	V /	Y		1.5			|
2808	V /	Z		1.5			5000
3120	H /	X		3.5			5920
|	H /	Y		3.5			|
|	H /	Z		3.5			|
|	V /	X		3.5			|
|	V /	Y		3.5			|
3120	V /	Z		3.5			5920
	The frequency range was scanned from 30 MHz to 3.1 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)						

Test Method:	FCC Part 15 Subpart C Radiated Emissions, Fundamental & Harmonic Emissions		
Customer:	X-10	**Job No.**	R-9012-1
Test Sample:	312MHz Transmitter	**Paragraph:**	15.231
Model No.:	CM19A	**FCC ID:**	B4SCM19A
Operating Mode:	Continuously Transmitting a 312MHz Signal		
Technician:	Peter Lananna	**Date:**	May 21, 2001

Notes: Test Distance: 3 Meters — Duty Cycle: 32.9%

Detector: Peak, unless otherwise specified — Duty Cycle Correction: - 9.6 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
312	H /	X					5920
|	H /	Y					|
|	H /	Z					|
|	V /	X					|
|	V /	Y					|
312	V /	Z					5920
624	H /	X					592
|	H /	Y					|
|	H /	Z					|
|	V /	X					|
|	V /	Y					|
624	V /	Z					592
936	H /	X					592
|	H /	Y					|
|	H /	Z					|
|	V /	X					|
|	V /	Y					|
936	V /	Z					592
1248	H /	X					500
|	H /	Y					|
|	H /	Z					|
|	V /	X					|
|	V /	Y					|
1248	V /	Z					500
1560	H /	X					500
|	H /	Y					|
|	H /	Z					|
|	V /	X					|
|	V /	Y					|
1560	V /	Z					500

The frequency range was scanned from 30 MHz to 3.1 GHz. All emissions not recorded were more Than 10 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.

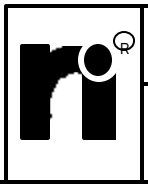
*=Noise Floor Measurements (Minimum system sensitivity)

Test Method:	FCC Part 15 Subpart C Radiated Emissions, Fundamental & Harmonic Emissions		
Customer:	X-10	**Job No.**	R-9012-1
Test Sample:	312MHz Transmitter	**Paragraph:**	15.231
Model No.:	CM19A	**FCC ID:**	B4SCM19A
Operating Mode:	Continuously Transmitting a 312MHz Signal		
Technician:	Peter Lananna	**Date:**	May 21, 2001

Notes: Test Distance: 3 Meters — Duty Cycle: 32.9%

Detector: Peak, unless otherwise specified — Duty Cycle Correction: -9.6 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
1872	H /	X					592
|	H /	Y					|
|	H /	Z					|
|	V /	X					|
|	V /	Y					|
1872	V /	Z					592
2184	H /	X					592
|	H /	Y					|
|	H /	Z					|
|	V /	X					|
|	V /	Y					|
2184	V /	Z					592
2496	H /	X					592
|	H /	Y					|
|	H /	Z					|
|	V /	X					|
|	V /	Y					|
2496	V /	Z					592
2808	H /	X					500
|	H /	Y					|
|	H /	Z					|
|	V /	X					|
|	V /	Y					|
2808	V /	Z					500
3120	H /	X					592
|	H /	Y					|
|	H /	Z					|
|	V /	X					|
|	V /	Y					|
3120	V /	Z					592
	The frequency range was scanned from 30 MHz to 3.1 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-9012-1

Test Method:	FCC Part 15 Subpart C, Spurious Case Radiated Emissions, Paragraph 15.209(a)		
Customer:	X-10	**Job No.**	R-9012-1
Test Sample:	312MHz Transmitter		
Model No.:	CM19A	**FCC Id.**	B4SCM19A
Operating Mode:	Continuously transmitting a 312MHz signal.		
Technician:	Peter Lananna	**Date:**	May 18, 2001

Notes: Test Distance: 3 Meters Temp:28C Humidity:32%
Detector: Quasi-Peak 30 MHz to 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
|							|
40.9	V/1.0	180	30	-6.9	23.1	14.3	|
80.0	V/1.0	090	35	-12.5	22.5	13.3	|
84.1	V/1.0	022	39	-12.1	26.9	22.1	|
|							|
88.00							100
88.00							150
|							|
100.3	V/1.0	293	48	-10.5	37.5	75.0	|
109.0	V/1.0	157	39	-10.4	28.6	26.9	|
115.0	H/1.5	293	42	-10.9	31.1	29.9	|
121.1	V/1.0	248	45	-11.4	33.6	47.9	|
130.0	V/1.0	203	40	-11.6	28.4	26.3	|
135.2	V/1.0	225	38	-11.4	26.6	21.4	|
147.7	V/1.0	270	38	-10.4	27.6	24.0	|
183.4	V/1.0	022	32	-8.6	23.4	14.8	|
|							|
216.00							150
216.00							200
|							|
229.3	H/1.0	112	39	-6.6	32.4	41.7	|
234.5	H/1.0	270	35	-6.4	28.6	26.9	|
253.3	H/1.0	157	40	-5.8	34.2	51.3	|
801.9	V/1.0	180	25	6.6	31.6	38.0	|
903.1	V/1.0	293	27	8.3	35.3	58.2	|
|							|
960.00							200
960.00							500
I							|
1000.0	V/1.0	315	50.9	-6.4	44.5	167.9	|
I							|
3120.0							500
	The EUT was scanned from 30 MHz to 3.2GHz						
	The emissions observed from the EUT do not exceed the specified limits. Emissions not recorded						
	were more than 10dB under the specified limit						

Retlif Testing Laboratories

Retlif Job Number R-9012-1