



Retlif Testing Laboratories

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February 9, 2001

Chamberlain
2111 Lakeland Avenue
Ronkonkoma, NY 11779

Attention: Mr. Mickey Nguyen

Dear Sir:

Enclosed you will find test data and test equipment lists from Retlif Testing Laboratories Job Number R-8859 which covers the additional Duty Cycle for FCC Part 15, Subpart C evaluation testing recently performed on your Transmitter, Model No.TC-1. This testing was performed under your purchase order number 412399

Thank you for the opportunity to be of service to you. Should you have any questions regarding the enclosed test data, please do not hesitate to contact us.

Very truly yours,

RETLIF TESTING LABORATORIES

Michelle White
Administrative Coordinator

Enc. (as stated)

Test Method:	FCC Part 15 Subpart C, Spurious Case Radiated Emissions, Paragraph 15.209(a)		
Customer:	Chamberlain	Job No.	R-8859
Test Sample:	300/310MHz transmitter		
Model No.:	TC-1	Serial No.	1088
Operating Mode:	Continuously transmitting a 300MHz signal.		
Technician:	Peter Lananna	Date:	January 3, 2001

Notes: Test Distance: 3 Meters Temp:3C Humidity: 46%
 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
88.00							100
88.00							150

No emissions observed at specified test distance.

216.00							150
216.00							200
960.00							200
960.00							500
3000.0							500

The EUT was scanned from 30 MHz to 3 GHz

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-8859

Test Method:	FCC Part 15 Subpart C Radiated Emissions, Fundamental & Harmonic Emissions						
Customer:	Chamberlain				Job No.	R-8859	
Test Sample:	300/310MHz transmitter				Paragraph:	15.231	
Model No.:	TC-1				FCC ID:		
Operating Mode:	Continuously Transmitting a 300 MHz Signal						
Technician:	Peter Lananna <i>PLA</i>				Date:	January 3, 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
300	H / 1.0	X	66.6	-4.4	62.2	1288.2	54200
	H / 1.0	Y	78.7	-4.4	74.3	5188.0	
	H / 1.3	Z	77.4	-4.4	73.0	4466.8	
	V / 1.8	X	78.6	-4.4	74.2	5128.6	
	V / 1.0	Y	64.9	-4.4	60.5	1059.3	
300	V / 1.8	Z	72.9	-4.4	68.5	2660.7	54200
600	H / 2.0	X	41.9	3.1	45.0	177.8	5420
	H / 1.3	Y	44.9	3.1	48.0	251.2	
	H / 1.5	Z	44.1	3.1	47.2	229.1	
	V / 1.0	X	44.4	3.1	47.5	237.1	
	V / 2.3	Y	40.3	3.1	43.4	147.9	
600	V / 1.0	Z	43.7	3.1	46.8	218.8	5420
900	H / 1.0	X	21.0	8.2	29.2	28.8*	5420
	H / 1.0	Y	21.0	8.2	29.2	28.8*	
	H / 1.0	Z	21.0	8.2	29.2	28.8*	
	V / 1.0	X	21.0	8.2	29.2	28.8*	
	V / 1.0	Y	21.0	8.2	29.2	28.8*	
900	V / 1.0	Z	43.0	8.2	51.2	363.1	5420
1200	H / 2.0	X	54.9	-3.3	51.6	380.2	5000
	H / 1.3	Y	54.9	-3.3	51.6	380.2	
	H / 1.0	Z	47.9	-3.3	44.6	169.8	
	V / 1.3	X	56.8	-3.3	53.5	473.2	
	V / 2.0	Y	52.3	-3.3	49.0	281.8	
1200	V / 1.3	Z	54.0	-3.3	50.7	342.8	5000
1500	H / 1.8	X	53.8	-0.7	53.1	451.9	5000
	H / 2.0	Y	54.1	-0.7	53.4	467.7	
	H / 1.0	Z	30.0	-0.7	29.3	29.2*	
	V / 1.3	X	51.1	-0.7	50.4	331.1	
	V / 2.3	Y	49.6	-0.7	48.9	278.6	
1500	V / 1.5	Z	51.3	-0.7	50.6	338.8	5000
	The frequency range was scanned from 30 MHz to 3 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-8859

Test Method:	FCC Part 15 Subpart C Radiated Emissions, Fundamental & Harmonic Emissions						
Customer:	Chamberlain				Job No.	R-8859	
Test Sample:	300/310MHz transmitter				Paragraph:	15.231	
Model No.:	TC-1				FCC ID:		
Operating Mode:	Continuously Transmitting a 300 MHz Signal						
Technician:	Peter Lananna				Date:	January 3, 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
1800	H / 1.5	X	51.3	3.1	54.4	524.8	5420
	H / 1.3	Y	51.1	3.1	54.2	512.9	
	H / 1.5	Z	47.8	3.1	50.9	350.8	
	V / 1.3	X	51.0	3.1	54.1	507.0	
	V / 1.5	Y	47.9	3.1	51.0	354.8	
1800	V / 1.8	Z	49.0	3.1	52.1	402.7	5420
2100	H / 1.0	X	30.0	0.9	30.9	35.1*	5420
	H / 1.0	Y	30.0	0.9	30.9	35.1*	
	H / 1.0	Z	30.0	0.9	30.9	35.1*	
	V / 1.0	X	30.0	0.9	30.9	35.1*	
	V / 1.0	Y	30.0	0.9	30.9	35.1*	
2100	V / 1.0	Z	30.0	0.9	30.9	35.1*	5420
2400	H / 1.0	X	30.0	3.0	33.0	44.7*	5420
	H / 1.0	Y	30.0	3.0	33.0	44.7*	
	H / 1.0	Z	30.0	3.0	33.0	44.7*	
	V / 1.0	X	30.0	3.0	33.0	44.7*	
	V / 1.0	Y	30.0	3.0	33.0	44.7*	
2400	V / 1.0	Z	30.0	3.0	33.0	44.7*	5420
2700	H / 1.0	X	30.0	5.7	35.7	61.0*	5000
	H / 1.0	Y	30.0	5.7	35.7	61.0*	
	H / 1.0	Z	30.0	5.7	35.7	61.0*	
	V / 1.0	X	30.0	5.7	35.7	61.0*	
	V / 1.0	Y	30.0	5.7	35.7	61.0*	
2700	V / 1.0	Z	30.0	5.7	35.7	61.0*	5000
3000	H / 1.0	X	30.0	6.4	36.4	66.1*	5420
	H / 1.0	Y	30.0	6.4	36.4	66.1*	
	H / 1.0	Z	30.0	6.4	36.4	66.1*	
	V / 1.0	X	30.0	6.4	36.4	66.1*	
	V / 1.0	Y	30.0	6.4	36.4	66.1*	
3000	V / 1.0	Z	30.0	6.4	36.4	66.1*	5420
	The frequency range was scanned from 30 MHz to 3 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-8859

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Customer:	Chamberlain				Job No.	R-8859	
Test Sample:	300/310MHz transmitter				Paragraph:	15.231	
Model No.:	TC-1				FCC ID:		
Operating Mode:	Continuously Transmitting a 300 MHz Signal						
Technician:	Peter Lananna				Date:	January 3, 2001	
Notes:	Test Distance: 3 Meters				Duty Cycle: 40%		
	Detector: Peak, unless otherwise specified				Duty Cycle Correction: - 8.0 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
300	H / 1.0	X	62.2	-8.0	54.2	512.9	5420
	H / 1.0	Y	74.3	-8.0	66.3	2065.4	
	H / 1.3	Z	73.0	-8.0	65.0	1778.3	
	V / 1.8	X	74.2	-8.0	66.2	2041.7	
	V / 1.0	Y	60.5	-8.0	52.5	421.7	
300	V / 1.8	Z	68.5	-8.0	60.5	1059.3	5420
600	H / 2.0	X	45.0	-8.0	37.0	70.8	542
	H / 1.3	Y	48.0	-8.0	40.0	100.0	
	H / 1.5	Z	47.2	-8.0	39.2	91.2	
	V / 1.0	X	47.5	-8.0	39.5	94.4	
	V / 2.3	Y	43.4	-8.0	35.4	58.9	
600	V / 1.0	Z	46.8	-8.0	38.8	87.1	542
900	H / 1.0	X	29.2	-8.0	21.2	11.5*	542
	H / 1.0	Y	29.2	-8.0	21.2	11.5*	
	H / 1.0	Z	29.2	-8.0	21.2	11.5*	
	V / 1.0	X	29.2	-8.0	21.2	11.5*	
	V / 1.0	Y	29.2	-8.0	21.2	11.5*	
900	V / 1.0	Z	51.2	-8.0	43.2	144.5	542
1200	H / 2.0	X	51.6	-8.0	43.6	151.4	500
	H / 1.3	Y	51.6	-8.0	43.6	151.4	
	H / 1.0	Z	44.6	-8.0	36.6	67.6	
	V / 1.3	X	53.5	-8.0	45.5	188.4	
	V / 2.0	Y	49.0	-8.0	41.0	112.2	
1200	V / 1.3	Z	50.7	-8.0	42.7	136.5	500
1500	H / 1.8	X	53.1	-8.0	45.1	179.9	500
	H / 2.0	Y	53.4	-8.0	45.4	186.2	
	H / 1.0	Z	29.3	-8.0	21.3	11.6*	
	V / 1.3	X	50.4	-8.0	42.4	131.8	
	V / 2.3	Y	48.9	-8.0	40.9	110.9	
1500	V / 1.5	Z	50.6	-8.0	42.6	134.9	500
	The frequency range was scanned from 30 MHz to 3 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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Customer:	Chamberlain				Job No.	R-8859	
Test Sample:	300/310MHz transmitter				Paragraph:	15.231	
Model No.:	TC-1				FCC ID:		
Operating Mode:	Continuously Transmitting a 300 MHz Signal						
Technician:	Peter Lananna				Date:	January 3, 2001	
Notes:	Test Distance: 3 Meters				Duty Cycle: 40%		
	Detector: Peak, unless otherwise specified				Duty Cycle Correction: - 8.0 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
1800	H / 1.5	X	54.4	-8.0	46.4	208.9	542
	H / 1.3	Y	54.2	-8.0	46.2	204.2	
	H / 1.5	Z	50.9	-8.0	42.9	139.6	
	V / 1.3	X	54.1	-8.0	46.1	201.8	
	V / 1.5	Y	51.0	-8.0	43.0	141.3	
1800	V / 1.8	Z	52.1	-8.0	44.1	160.3	542
2100	H / 1.0	X	30.9	-8.0	22.9	14.0*	542
	H / 1.0	Y	30.9	-8.0	22.9	14.0*	
	H / 1.0	Z	30.9	-8.0	22.9	14.0*	
	V / 1.0	X	30.9	-8.0	22.9	14.0*	
	V / 1.0	Y	30.9	-8.0	22.9	14.0*	
2100	V / 1.0	Z	30.9	-8.0	22.9	14.0*	542
2400	H / 1.0	X	33.0	-8.0	25.0	17.8*	542
	H / 1.0	Y	33.0	-8.0	25.0	17.8*	
	H / 1.0	Z	33.0	-8.0	25.0	17.8*	
	V / 1.0	X	33.0	-8.0	25.0	17.8*	
	V / 1.0	Y	33.0	-8.0	25.0	17.8*	
2400	V / 1.0	Z	33.0	-8.0	25.0	17.8*	542
2700	H / 1.0	X	35.7	-8.0	27.7	24.3*	500
	H / 1.0	Y	35.7	-8.0	27.7	24.3*	
	H / 1.0	Z	35.7	-8.0	27.7	24.3*	
	V / 1.0	X	35.7	-8.0	27.7	24.3*	
	V / 1.0	Y	35.7	-8.0	27.7	24.3*	
2700	V / 1.0	Z	35.7	-8.0	27.7	24.3*	500
3000	H / 1.0	X	36.4	-8.0	28.4	26.3*	542
	H / 1.0	Y	36.4	-8.0	28.4	26.3*	
	H / 1.0	Z	36.4	-8.0	28.4	26.3*	
	V / 1.0	X	36.4	-8.0	28.4	26.3*	
	V / 1.0	Y	36.4	-8.0	28.4	26.3*	
3000	V / 1.0	Z	36.4	-8.0	28.4	26.3*	542
	The frequency range was scanned from 30 MHz to 3 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-8859

EQUIPMENT LIST

FCC 15.209 Radiated Emissions, 30-3000 MHz

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
133	Broadband Pre-Amplifier	Electro-Metrics	10 kHz - 1 GHz, 26dB	BPA-1000	06/13/2000	06/13/2001
141	Spectrum Analyzer	Hewlett Packard	100 Hz - 40 GHz	8566B	08/03/2000	02/03/2001
141A	Graphics Plotter	Hewlett Packard	N/A	7470A	03/08/2000	03/08/2001
141B	Quasi-Peak Adaptor	Hewlett Packard	100 Hz - 1 GHz	85650A	08/02/2000	02/02/2001
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
617	Interference Analyzer	Electro-Metrics	10 kHz - 1 GHz	EMC-30	01/17/2000	01/17/2001



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EQUIPMENT LIST

FCC 15.231 Radiated Emissions, Fundamental and Harmonics

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
133	Broadband Pre-Amplifier	Electro-Metrics	10 kHz - 1 GHz, 26dB	BPA-1000	06/13/2000	06/13/2001
141	Spectrum Analyzer	Hewlett Packard	100 Hz - 40 GHz	8566B	08/03/2000	02/03/2001
141A	Graphics Plotter	Hewlett Packard	N/A	7470A	03/08/2000	03/08/2001
141B	Quasi-Peak Adaptor	Hewlett Packard	100 Hz - 1 GHz	85650A	08/02/2000	02/02/2001
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
617	Interference Analyzer	Electro-Metrics	10 kHz - 1 GHz	EMC-30	01/17/2000	01/17/2001



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