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REPORT OF MEASUREMENTS
FOR
LAB PARTNERS ASSOCIATES, INC.

FLASH CONTROL TRANSCEIVER

MODEL: POCKETWIZARD PLUS II

FCC ID: KDS-PW2-103
IC: 2170A-PW103

Company Name:	Lab Partners Associates, Inc
Date of Report:	January 23, 2008
Test Report No:	R-4955N-1
Test Start Date:	January 14, 2008
Test Finish Date:	January 15, 2008
Test Technician:	Matthew Seamans
Lab Supervisor:	Todd Hannemann
Report Prepared By:	Jamie Ramsey

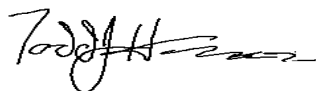
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Scott Wentworth
Branch Manager
NVLAP Approved Signatory



Todd Hannemann
Laboratory Supervisor

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Test Report No. R-4955N-1
FCC ID: KDS-PW2-103
IC: 2170A-PW103

APPLICANT Lab Partners Associates, Inc 41 IDX Drive South Burlington, VT 05403	
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TEST SPECIFICATIONS: FCC Rules and Regulations Part 15, Subpart C, Para. 15.231
RSS 210, Issue 7

TEST PROCEDURE: ANSI C63.4:2003/RSS-210, Issue 7

PURPOSE:

The purpose of this test program was to demonstrate compliance of the PocketWizard PLUS II Transceiver to the requirements of FCC Part 15.231 and RSS, 210, Issue 7.

TEST SAMPLE DESCRIPTION:

BRANDNAME: PocketWizard

MODEL: PocketWizard PLUS II

TYPE: Flash Control Transceiver

POWER REQUIREMENTS: 3VDC via 120VAC, 60Hz AC/DC Power Adapter

FREQUENCY OF OPERATION: 344.04MHz

MODULATION: OOK (On/Off Keying)

TYPE OF TRANSMISSION: Control Signal (Pulse Recognition Codes)

APPLICATION: Remote Triggering of Flashpack

FREQUENCIES TESTED: 344.04MHz

TESTS PERFORMED:

15.231 (b)/RSS-210 Annex 1, Spurious Radiated Emissions (30MHz to 3.6GHz)

15.231 (b)/RSS-210 Annex 1, Field Strength of Fundamental

15.231 (c) Occupied Bandwidth, 0.25% of Fundamental Frequency

RSS-210, Annex 1, A1.1.3, 99% bandwidth, 0.25% of Center Frequency

Duty Cycle Determination

TEST SAMPLE OPERATION:

The device is normally manually operated and transmits a control signal for remote triggering of a flashpack. Normal operation of the EUT complies with the parameters required in Part 15, Subpart C, Section 15.231 and RSS 210 for momentary operated devices. For testing purposes only the EUT was configured to continuously transmit.

TEST SAMPLE / TEST PROGRAM

- The transmitter is manually activated and employs a switch that automatically deactivates the transmitter within 5 seconds of being released.
- The transmitter does not perform periodic transmissions at regularly predetermined intervals.
- The device can not be employed for RC purposes involving security.
- The device uses an external permanently attached rubber coated helix coiled spring antenna.
- The fundamental field strength at 344.04MHz did not exceed 725 μ V/M (Average) at a test distance of 3 meters.
- The peak value of fundamental emissions did not exceed a peak field strength limit corresponding to 20dB above the maximum permitted average limit.
- The field strength of harmonic and spurious emissions did not exceed 725 μ V/M or 500 μ V/M as applicable for a fundamental frequency of 344.04MHz.
No harmonic or spurious emissions were observed within 10dB of the specified limit at test distances of 1 or 3 meters.
- Radiated Emissions from the EUT were measured in all three axis. The attached Radiated Emissions test data is representative of the worst case orientation.

TEST SAMPLE / TEST PROGRAM (continued)

- The device operates at 344.04. The 20dB bandwidth and 99% bandwidth of emissions did not exceed 0.25% of the center operating frequency and was determined as follows:

Fundamental Frequency	=	344.04MHz
0.25% of Center Frequency	=	0.860MHz
0.860 divided by 2	=	0.430MHz
Bandwidth Range	=	Fundamental Frequency + and - 0.430MHz
344.04MHz - 0.430MHz	=	343.61MHz
344.04MHz + 0.430MHz	=	344.47MHz
Bandwidth Range	=	343.61MHz - 344.47MHz

DETERMINATION OF FIELD STRENGTH LIMITS

The field strength limits shown below were calculated as instructed in Section 15.231.

Fundamental Frequency: 344.04MHz

Where F is the frequency in MHz, the formula for calculating the maximum permitted fundamental field strength for the band 260-470MHz, $\mu\text{V/m}$ at 3 meters is as follows:

$41.6667(F) - 7083.3333$	=	Field Strength Limit ($\mu\text{V/m}$)
41.6667×344.04	=	14335.011
$14335.011 - 7083.3333$	=	7252
Field Strength Limit	=	$7252\mu\text{V/m} = 77.21\text{dBuV/M}$

The maximum permitted unwanted emission level is 20dB below the maximum permitted fundamental level which equals $725\mu\text{V/m} = 57.21\text{dBuV/M}$.

TEST SAMPLE / TEST PROGRAM (continued)

DETERMINATION OF DUTY CYCLE

The transmitter controls were adjusted to maximize the transmitted duty cycle. 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 compared to the time for one full cycle in order to obtain the duty cycle. As the cycle time exceeded 100msec then 100msec was used as the cycle time. The on times were determined as follows:

The transmitter pulse train consisted of multiple pulse bursts. The individual pulses within each burst were measured and summed in order to obtain the total “on time”.

Fundamental Frequency: 344.04MHz

Transmitter On Time	=	1.074milliseconds
Transmitter Cycle Time	=	100milliseconds
Transmitter Duty Cycle	=	1.074%
On Time divided by Cycle Time	=	Duty Cycle Factor
1.074 divided by 100	=	0.01074
0.01074 converted to dB ($\text{LOG}_{10} .01074$)20	=	-39.37
<i>Duty Cycle Factor</i>	=	<i>-39.37dB</i>

Duty Cycle Factor Determination Plots are included with this application as a separate attachment.

Test Methods

15.231 (b) Fundamental & Spurious Radiated Emissions

The test sample was placed on a 80cm high wooden test stand which was located 3 meters from the test antenna on an FCC listed open area test site. Emissions from the EUT were maximized by rotating the test sample and adjusting the test sample orientation and antenna polarization. The maximized peak field strength of each emission was measured and recorded and compared to the limit specified in 15.35 (b) (peak limit corresponds to 20dB above the maximum permitted average limit). The duty cycle factor was applied to the peak readings in order to determine the average field strength of the emissions for comparison to the specified average limits.

Test Results: The worst case maximum peak field strength of the fundamental frequency at 344.04MHz was 91.45dBuV/M which met the peak limit of 97.21dBuV. The maximum average field strength at 344.04MHz was 52.08dBuV which met the specified average limit of 77.21dBuV. No harmonic/spurious frequencies were observed above the noise floor of the test equipment which was a minimum of 10dB below the specified limit.

15.231 (c) Occupied Bandwidth

The test sample was placed on a test bench and configured to transmit its normal modulated signal at maximum power. The spectrum analyzers resolution bandwidth, sweep rate and span were adjusted for the frequency being measured. The upper and lower frequency points corresponding to levels 20dB down from the peak of the modulated carrier frequency were used to determine the occupied bandwidth.

Test Results: The bandwidth of the emission at 344.04MHz was less than 0.25% of the center frequency and met the requirements of 15.231 (c).

RSS 210, A1.1.3, 99% Bandwidth

The test sample was placed on a test bench and configured to transmit its normal modulated signal at maximum power. The spectrum analyzers resolution bandwidth, sweep rate and span were adjusted for the frequency being measured. Using the spectrum analyzer 99% bandwidth function the 99% bandwidth of the modulated carrier frequency was measured and recorded.

Test Results: The 99% bandwidth of the emission at 344.04MHz was less than 0.25% of the center frequency and met the requirements of RSS-210.

15.207 (a) AC Line Conducted Emissions

The test sample was placed on a 0.8m high wooden test stand above the floor of the test area (ground plane). The rear of the test sample was aligned flush with the rear of the test stand. The test stand was situated such that the test sample was located 0.4m from all other grounded surfaces. The power cord of the test sample was connected to an artificial mains network (LISN). The spectrum analyzer was connected to the RF port of the LISN and peak/quasipeak and average measurements were taken in the frequency range of 150kHz to 30MHz on each the hot and neutral leads.

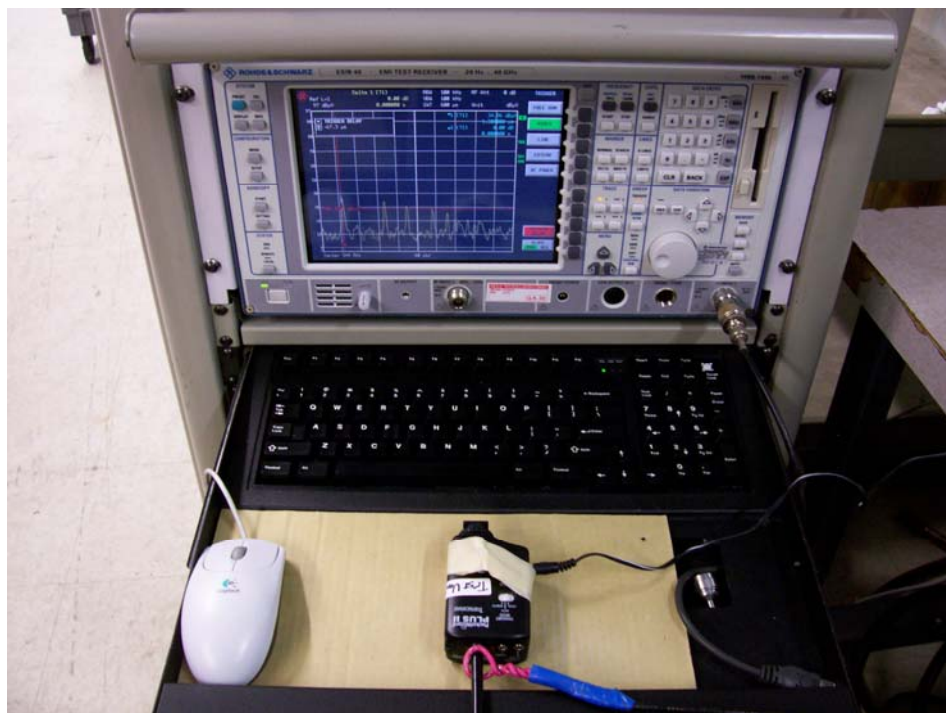
Test Results: The AC line conducted emissions met the limit specified in 15.207 (a).

Radiated Emissions Setup Photographs

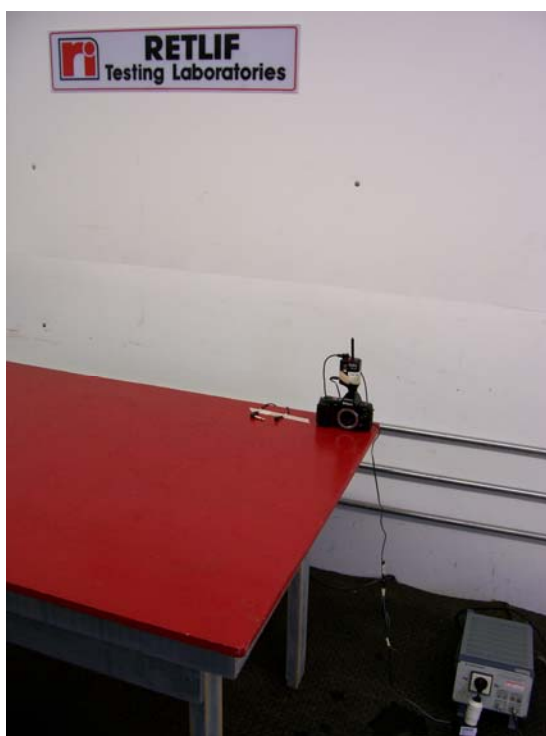


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Occupied/99% Bandwidth Setup Photograph



Conducted Emissions Setup Photograph



R-4955N-1
FCC ID: KDS-PW-103
IC: 2170A-PW103

EQUIPMENT LIST

Fundamental & Spurious Radiated Emissions

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
3116	Pre-Amplifier	Miteq	0.1 GHz - 18 GHz	AFS42-35	8/27/2007	8/27/2008
3117	Power Supply	B&K Precision	0-30 Vdc, 3.0 A	1630	1/23/2007	1/23/2008
3258	Double Ridge Guide	EMCO	1 - 18 GHz	3115	11/14/2007	11/14/2008
4029B	Test Site Attenuation	Retlif	3 / 10 Meters	RNH	6/20/2007	6/20/2008
5053	Biconilog	EMCO	26 MHz - 3 GHz	3142C	10/4/2007	10/4/2008
R425A	Spectrum Analyzer	Agilent	100 Hz - 26.5GHz	E7405A;A	3/6/2007	4/23/2008

Conducted Emissions

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
5030D	10 DB Atten. (50 ohm)	Narda	DC - 12.4 GHz	757C-10	1/25/2007	1/25/2008
7032	LISN	Rohde & Schwarz	N/A	ESH 3-Z5	10/19/2007	10/19/2008
R425A	Spectrum Analyzer	Agilent	100 Hz - 26.5GHz	E7405A;A	3/6/2007	4/23/2008

Occupied Bandwidth and Duty Cycle

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
5070	EMI Test Receiver	Rohde & Schwarz	20Hz - 40GHz	ESIB40	12/7/2007	12/7/2008

99% Bandwidth

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
5070	EMI Test Receiver	Rohde & Schwarz	20Hz - 40GHz	ESIB40	12/7/2007	12/7/2008

Test Report No. R-4955N-1
FCC ID: KDS-PW2-103
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RETLIF TESTING LABORATORIES

TABULAR DATA SHEET

Test Method:	Fundamental Field Strength		
Customer:	LPA Design, Inc.	Job No:	R-4955N-1
Test Sample:	PocketWizard PLUS II Transceiver		
Model No:	PocketWizard PLUS II	Serial No:	N/A
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.231(b)		
Operating Mode:	Continuously Transmitting		
Technician:	M.Seamans	Date:	January 16, 2008
Notes:	Corrected peak readings meet peak limit (20dB above average limit) per 15.35		

[illegible]

RETLIF TESTING LABORATORIES

TABULAR DATA SHEET

Test Method:	Spurious Emissions 30MHz to 3.6GHz		
Customer:	LPA Design, Inc.	Job No:	R-4955N-1
Test Sample:	PocketWizard PLUS II Transceiver		
Model No:	PocketWizard PLUS II	Serial No:	N/A
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.231(b)		
Operating Mode:	Continuously Transmitting		
Technician:	M.Seamans	Date:	1/15/2008
Notes:	Fundamental Frequency: 344.04MHz		

[illegible]

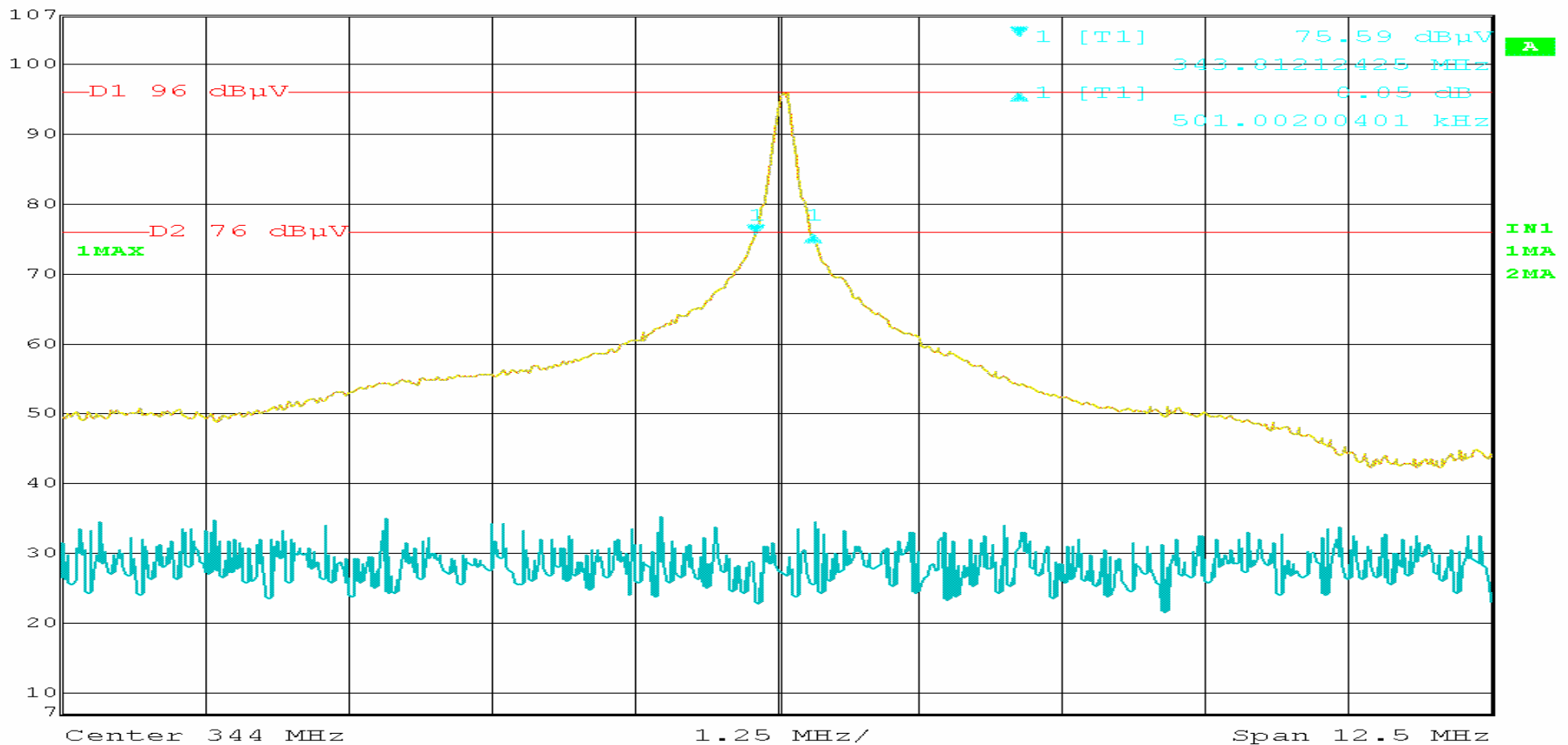
RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Occupied Bandwidth		
Customer:	LPA Design, Inc.	Test Sample:	PocketWizard PLUS II Transceiver
Model No:	PocketWizard PLUS II	Serial No:	N/A
Test Specification:	FCC Part 15, Subpart C	15.231(c)	Job No: R-4955N-1
Operating Mode:	Continuously Transmitting		Technician: M. Seamans
Notes:	Transmit Frequency 344.04 MHz		Date: 1/15/2008



Delta 1 [T1] RBW 100 kHz RF Att 20 dB
 Ref Lvl 107 dBμV 0.05 dB VBW 100 kHz
 501.00200401 kHz SWT 7.5 ms Unit dBμV

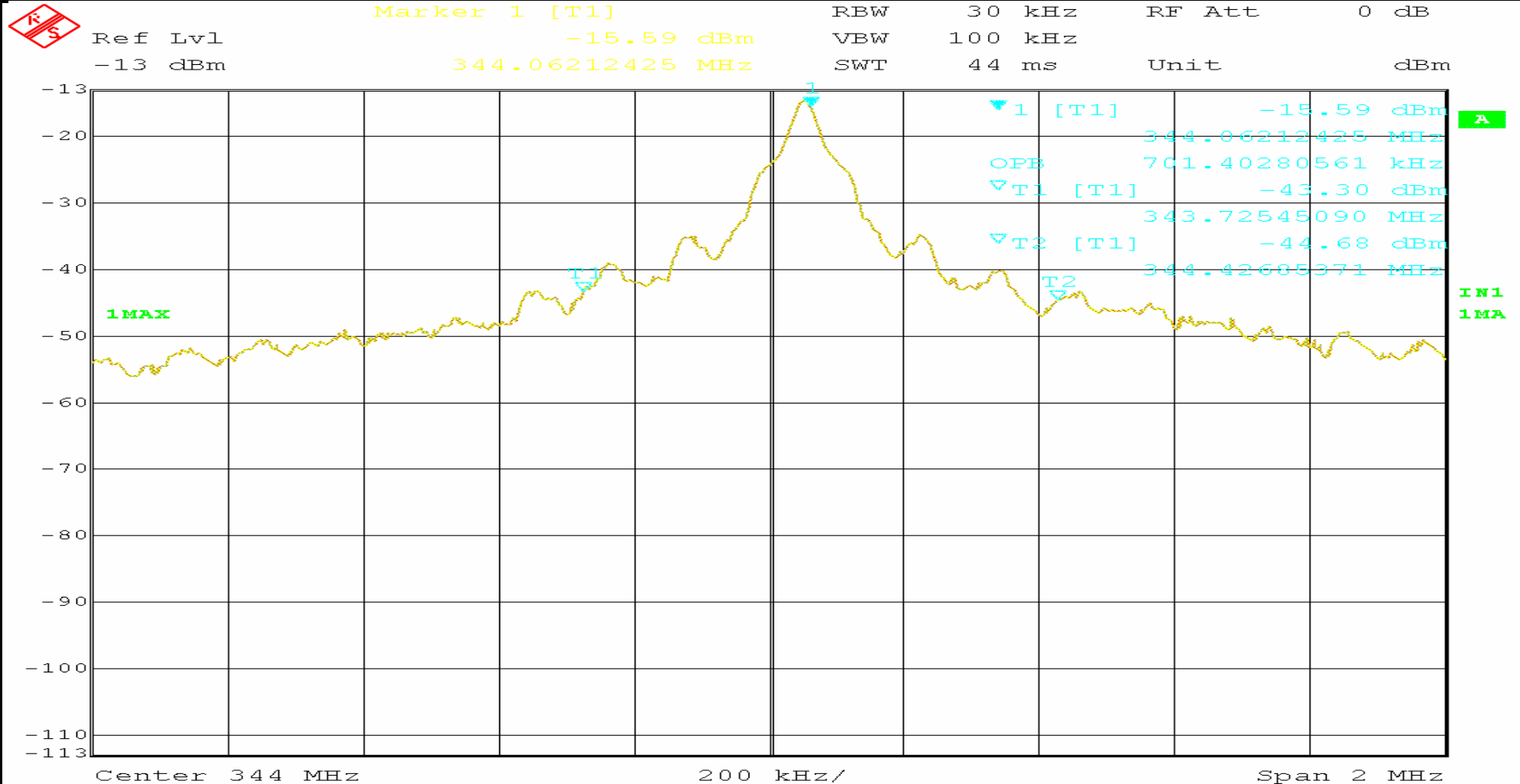


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RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	99% Bandwidth		
Customer:	LPA Design, Inc.	Test Sample:	PocketWizard PLUS II Transceiver
Model No:	PocketWizard PLUS II	Serial No:	N/A
Test Specification:	RSS-210		Job No:
Operating Mode:	Continuously Transmitting		Technician:
Notes:	Transmit Frequency 344.04 MHz, 99% OBW : 701.402 kHz		Date:



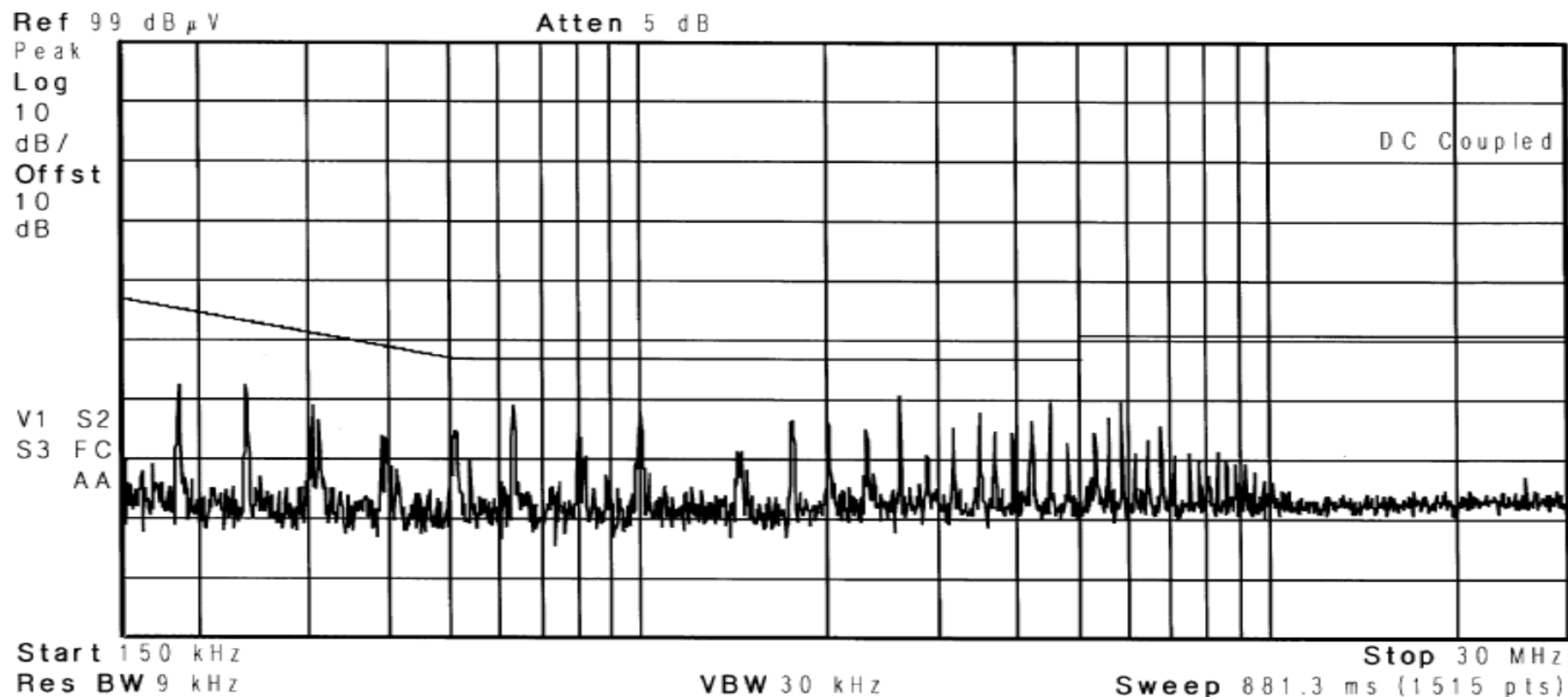
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RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Conducted Emissions 150 kHz to 30 MHz		
Customer:	LPA Design, Inc.	Test Sample:	PocketWizard PLUS II Transceiver
Model No:	PocketWizard PLUS II	Serial No:	N/A
Test Specification:	FCC Part 15, Subpart C	Paragraph:	15.207 (a)
Operating Mode:	Continuously Transmitting		
Notes:	Lead Tested: 120 VAC 60 Hz Hot Peak Readings to Average Limits.		
Job No:	R-4955N-1		
Technician:	M. Seamans		
Date:	January 14, 2008		

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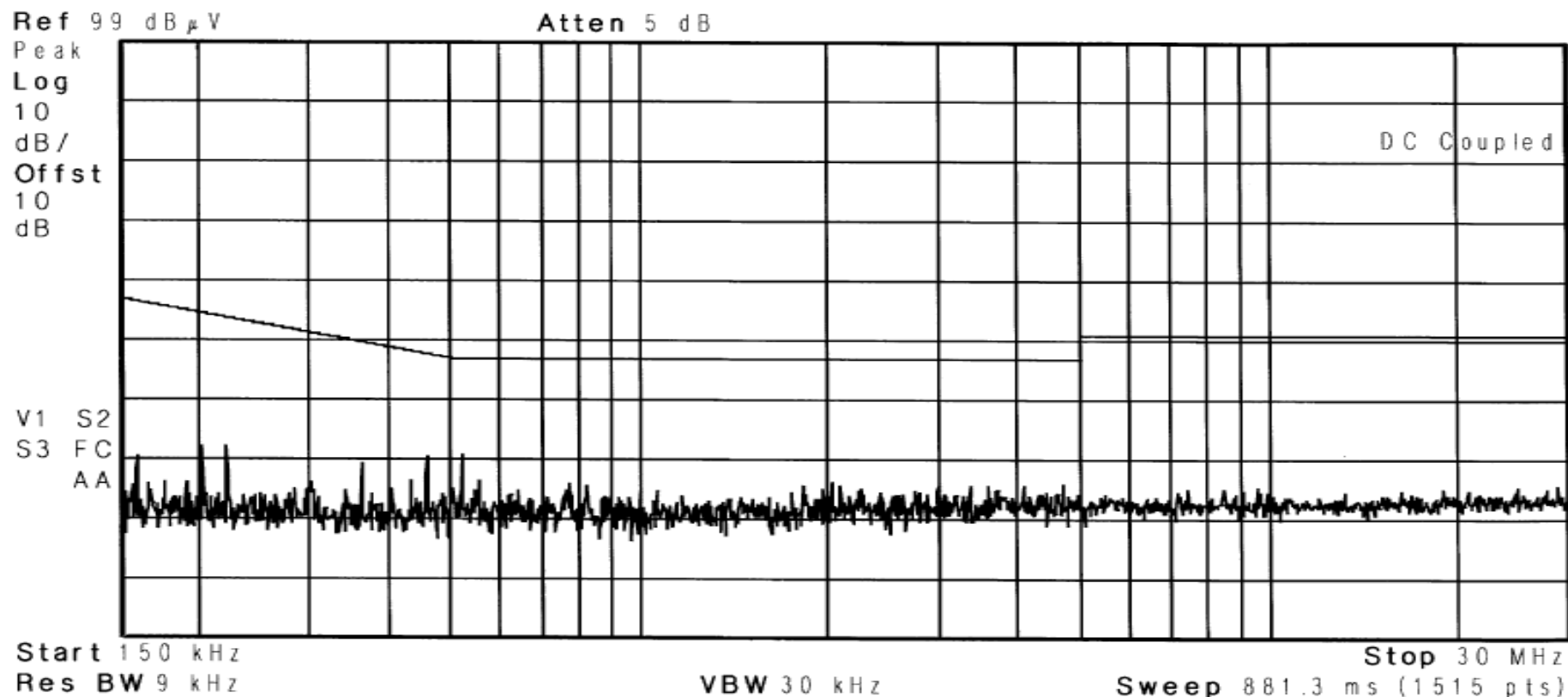


RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Conducted Emissions 150 kHz to 30 MHz		
Customer:	LPA Design, Inc.	Test Sample:	PocketWizard PLUS II Transceiver
Model No:	PocketWizard PLUS II	Serial No:	N/A
Test Specification:	FCC Part 15, Subpart C	Paragraph:	15.207 (a)
Operating Mode:	Continuously Transmitting		
Notes:	Lead Tested: 120VAC 60Hz Neutral Peak Readings to Average Limits		

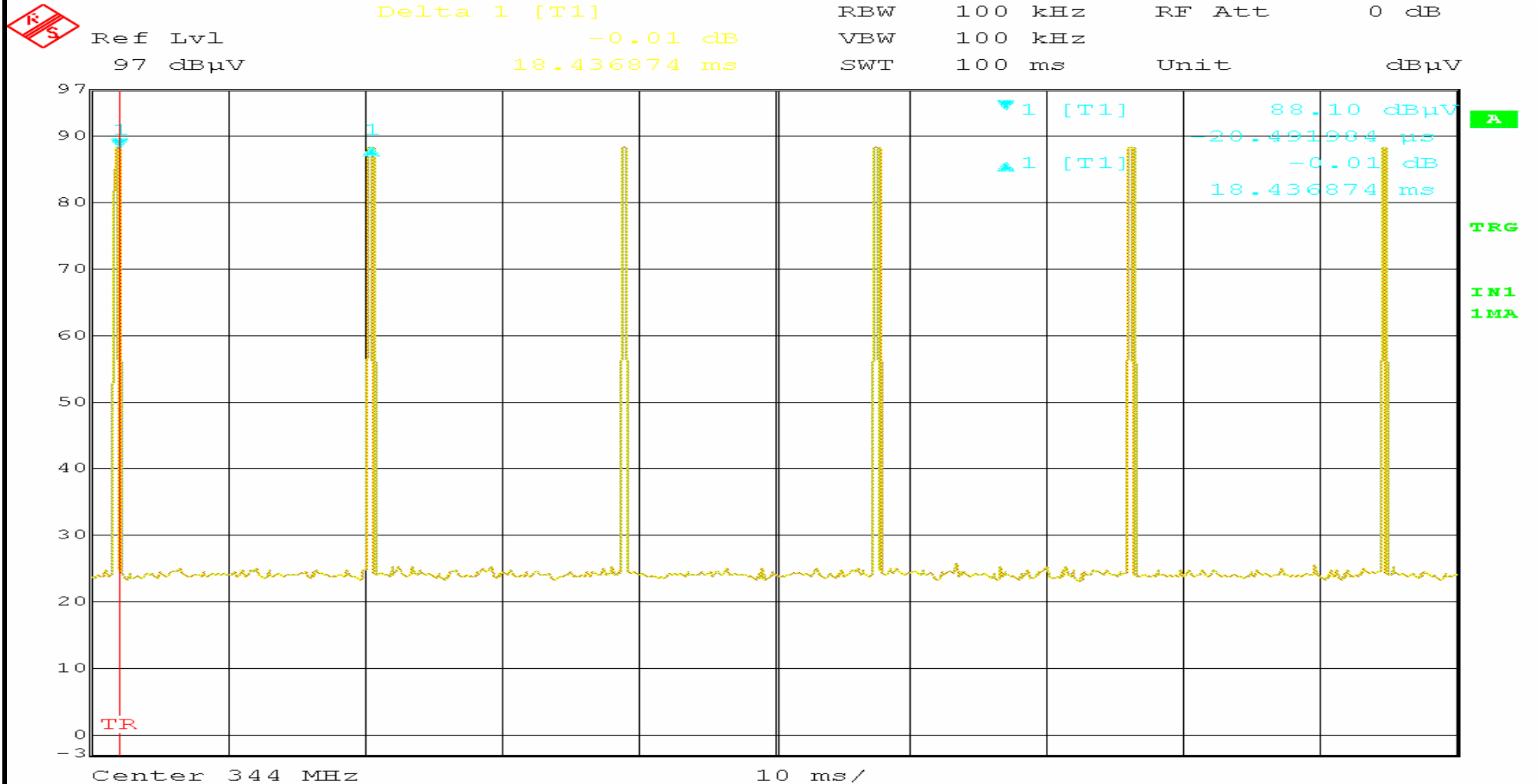
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RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Duty Cycle Plots		
Customer:	LPA Design, Inc.	Test Sample:	PocketWizard PLUS II Transceiver
Model No:	PocketWizard PLUS II	Serial No:	N/A
Test Specification:	FCC Part 15, Subpart C	15.231(b)	Job No: R-4955N-1
Operating Mode:	Continuously Transmitting		Technician: M. Seamans
Notes:	Fundamental Frequency: 344.04MHz		Date: 1/15/2008

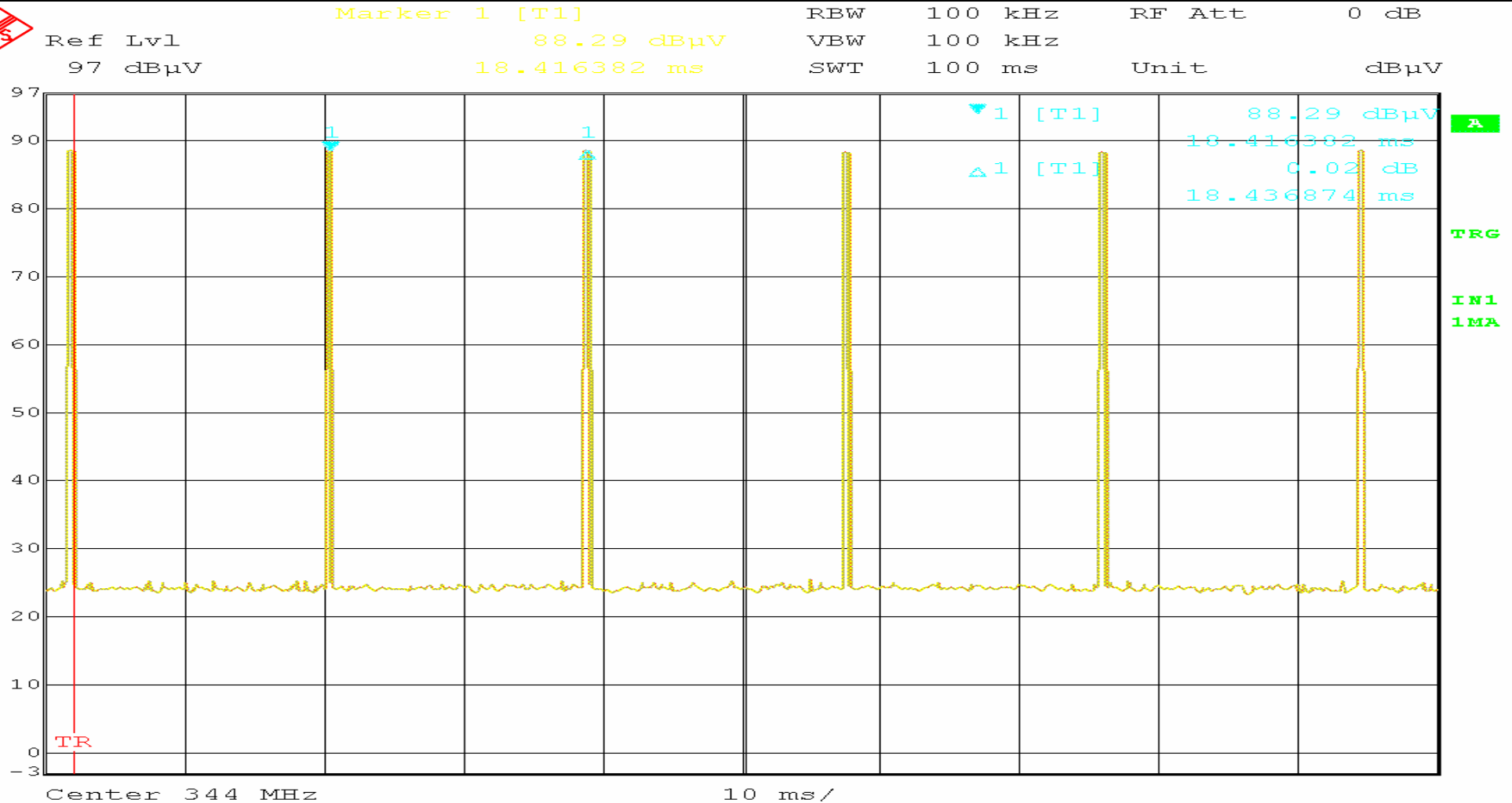


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RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Duty Cycle Plots		
Customer:	LPA Design, Inc.	Test Sample:	PocketWizard PLUS II Transceiver
Model No:	PocketWizard PLUS II	Serial No:	N/A
Test Specification:	FCC Part 15, Subpart C	15.231(b)	Job No: R-4955N-1
Operating Mode:	Continuously Transmitting		Technician: M. Seamans
Notes:	Fundamental Frequency: 344.04MHz		Date: 1/15/2008

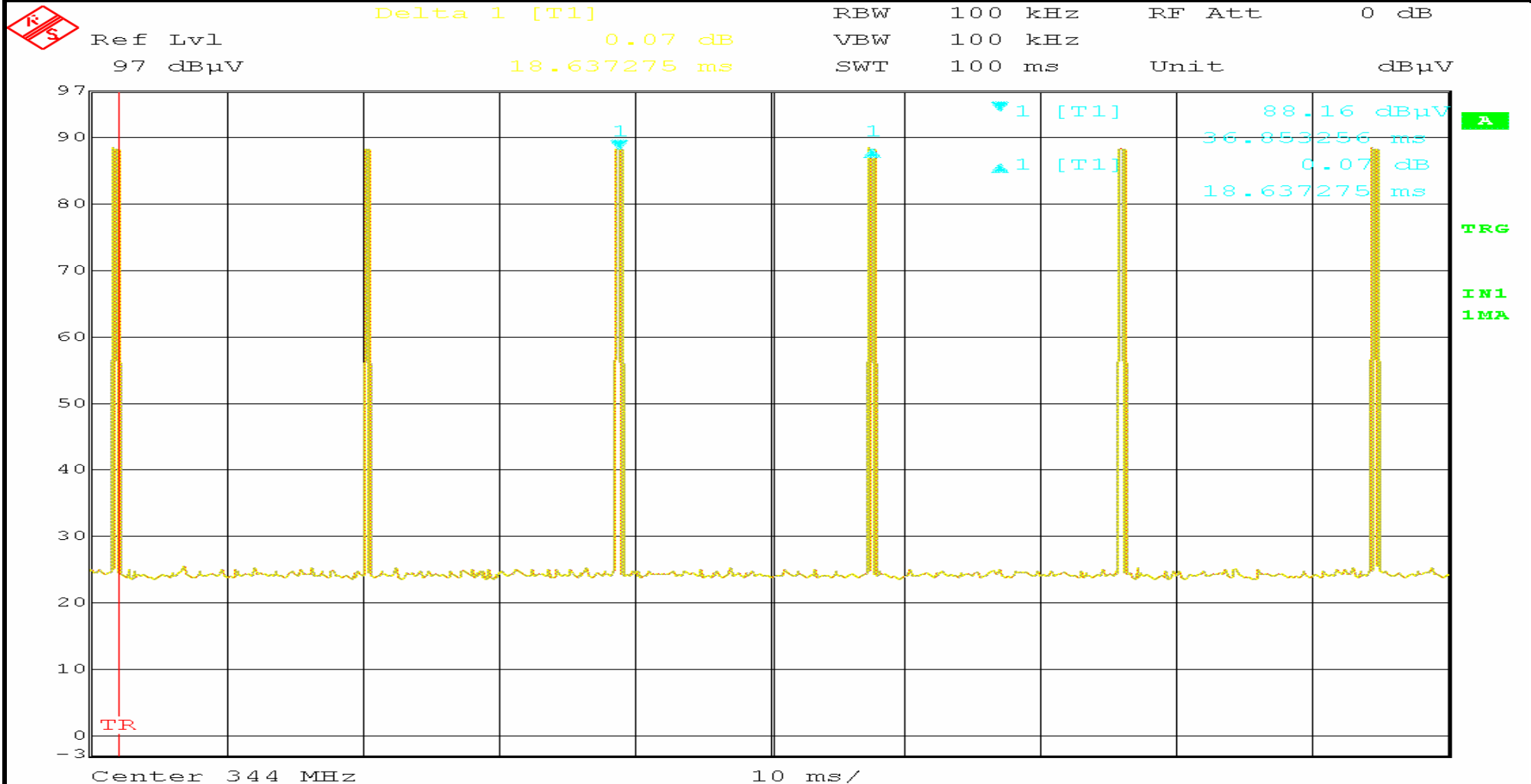


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RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Duty Cycle Plots		
Customer:	LPA Design, Inc.	Test Sample:	PocketWizard PLUS II Transceiver
Model No:	PocketWizard PLUS II	Serial No:	N/A
Test Specification:	FCC Part 15, Subpart C	15.231(b)	Job No: R-4955N-1
Operating Mode:	Continuously Transmitting		Technician: M. Seamans
Notes:	Fundamental Frequency: 344.04MHz		Date: 1/15/2008



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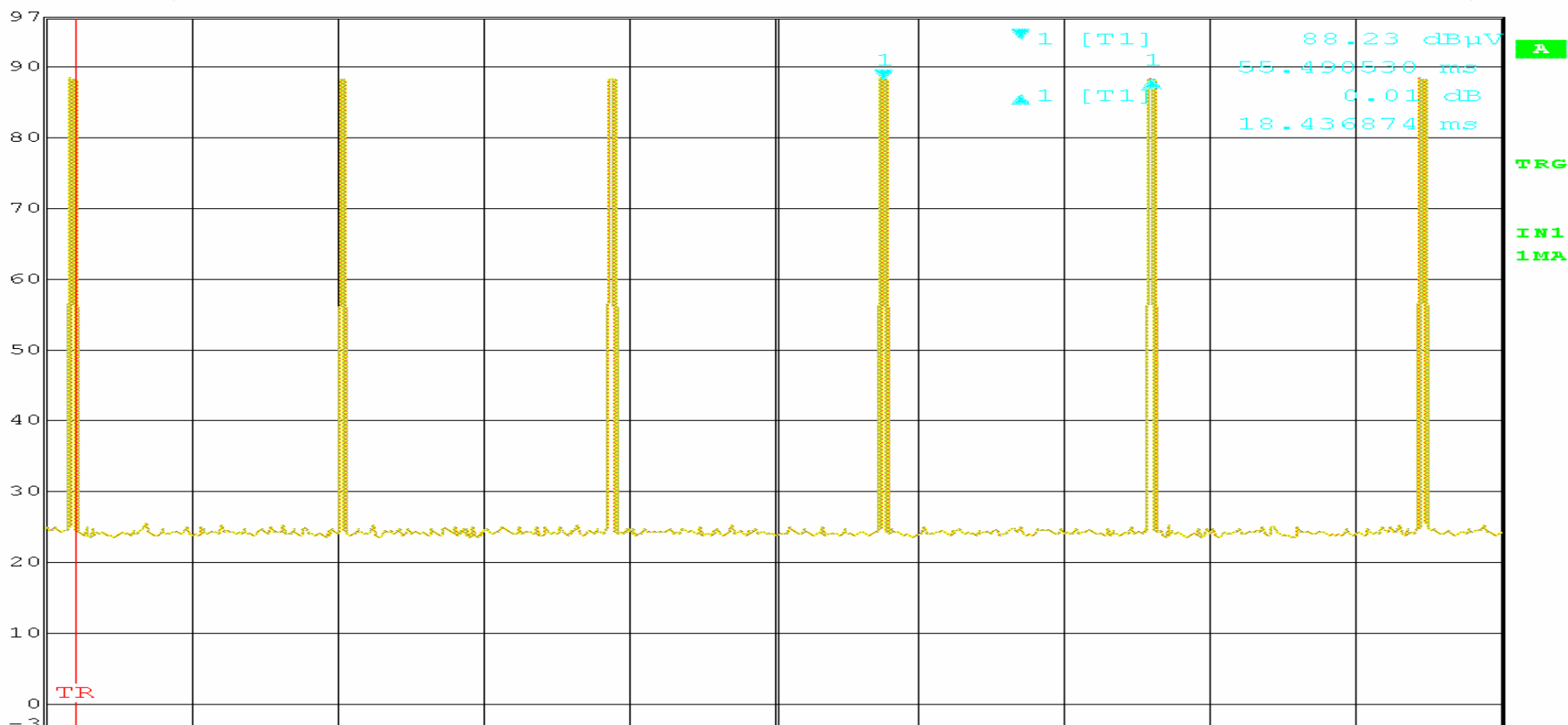
RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Duty Cycle Plots		
Customer:	LPA Design, Inc.	Test Sample:	PocketWizard PLUS II Transceiver
Model No:	PocketWizard PLUS II	Serial No:	N/A
Test Specification:	FCC Part 15, Subpart C	15.231(b)	Date:
Operating Mode:	Continuously Transmitting 0.5 & 1.0		
Notes:	Fundamental Frequency: 344.04MHz		



Ref Lvl 97 dBμV
 Delta 1 [T1] 0.01 dB
 18.436874 ms
 RBW 100 kHz
 VBW 100 kHz
 SWT 100 ms
 RF Att 0 dB
 Unit dBμV



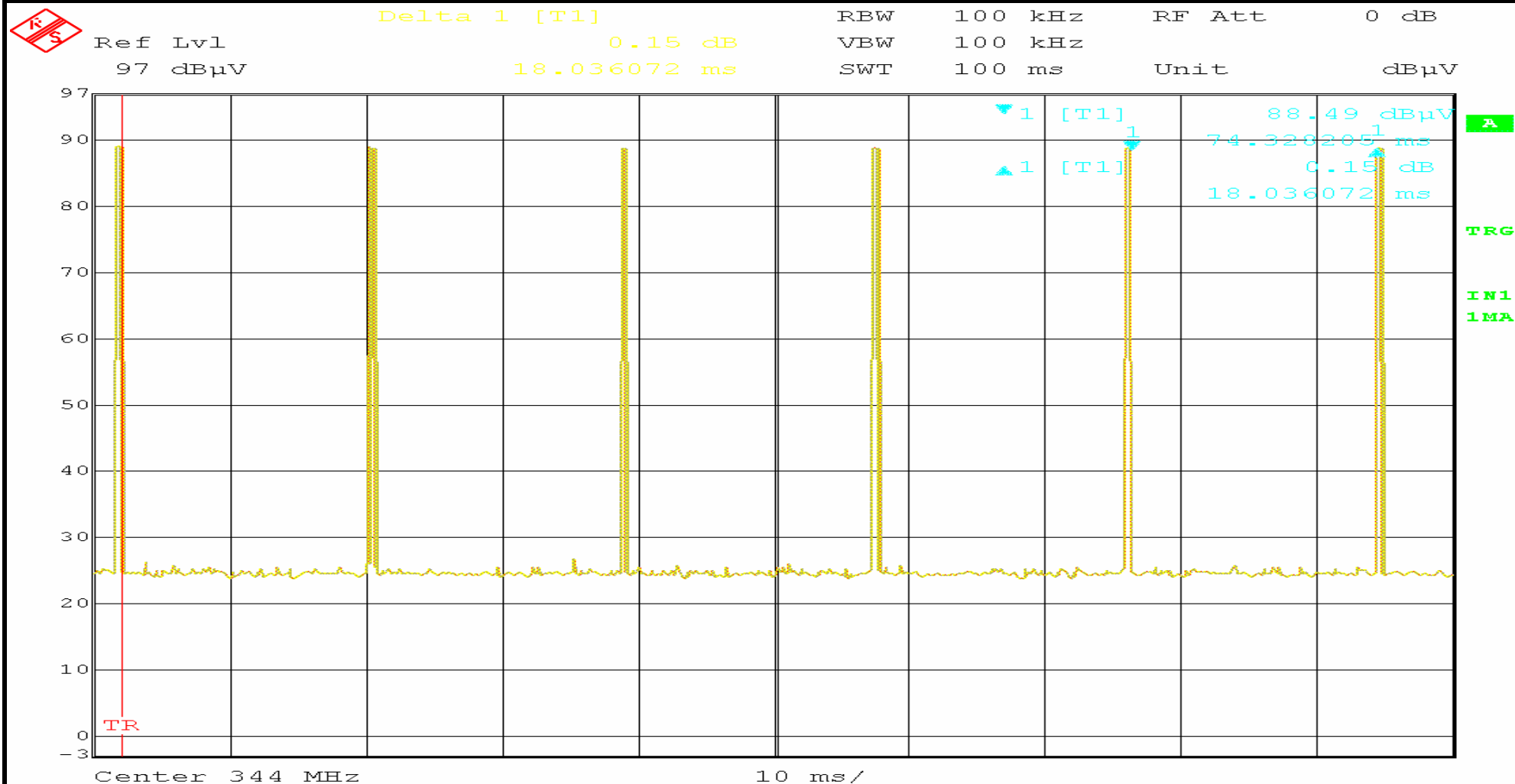
Center 344 MHz

10 ms/

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EMISSIONS DATA SHEET

Test Method:	Duty Cycle Plots				
Customer:	LPA Design, Inc.	Test Sample:	PocketWizard PLUS II Transceiver	Job No:	R-4955N-1
Model No:	PocketWizard PLUS II	Serial No:	N/A	Technician:	M. Seamans
Test Specification:	FCC Part 15, Subpart C 15.231(b)			Date:	1/15/2008
Operating Mode:	Continuously Transmitting				
Notes:	Fundamental Frequency: 344.04MHz				

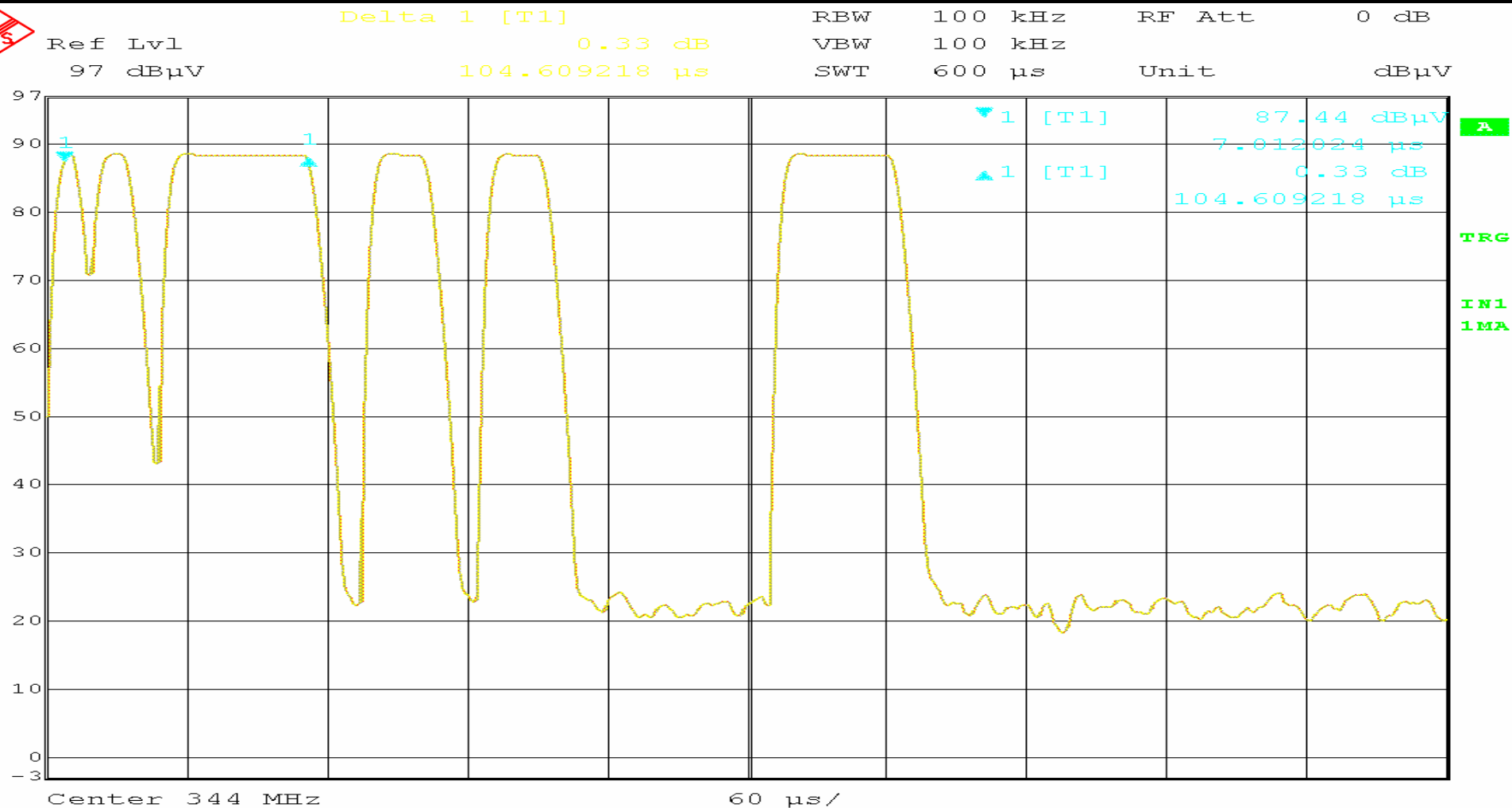


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RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Duty Cycle Plots		
Customer:	LPA Design, Inc.	Test Sample:	PocketWizard PLUS II Transceiver
Model No:	PocketWizard PLUS II	Serial No:	N/A
Test Specification:	FCC Part 15, Subpart C	15.231(b)	Job No: R-4955N-1
Operating Mode:	Continuously Transmitting		Technician: M. Seamans
Notes:	Fundamental Frequency: 344.04MHz		Date: 1/15/2008

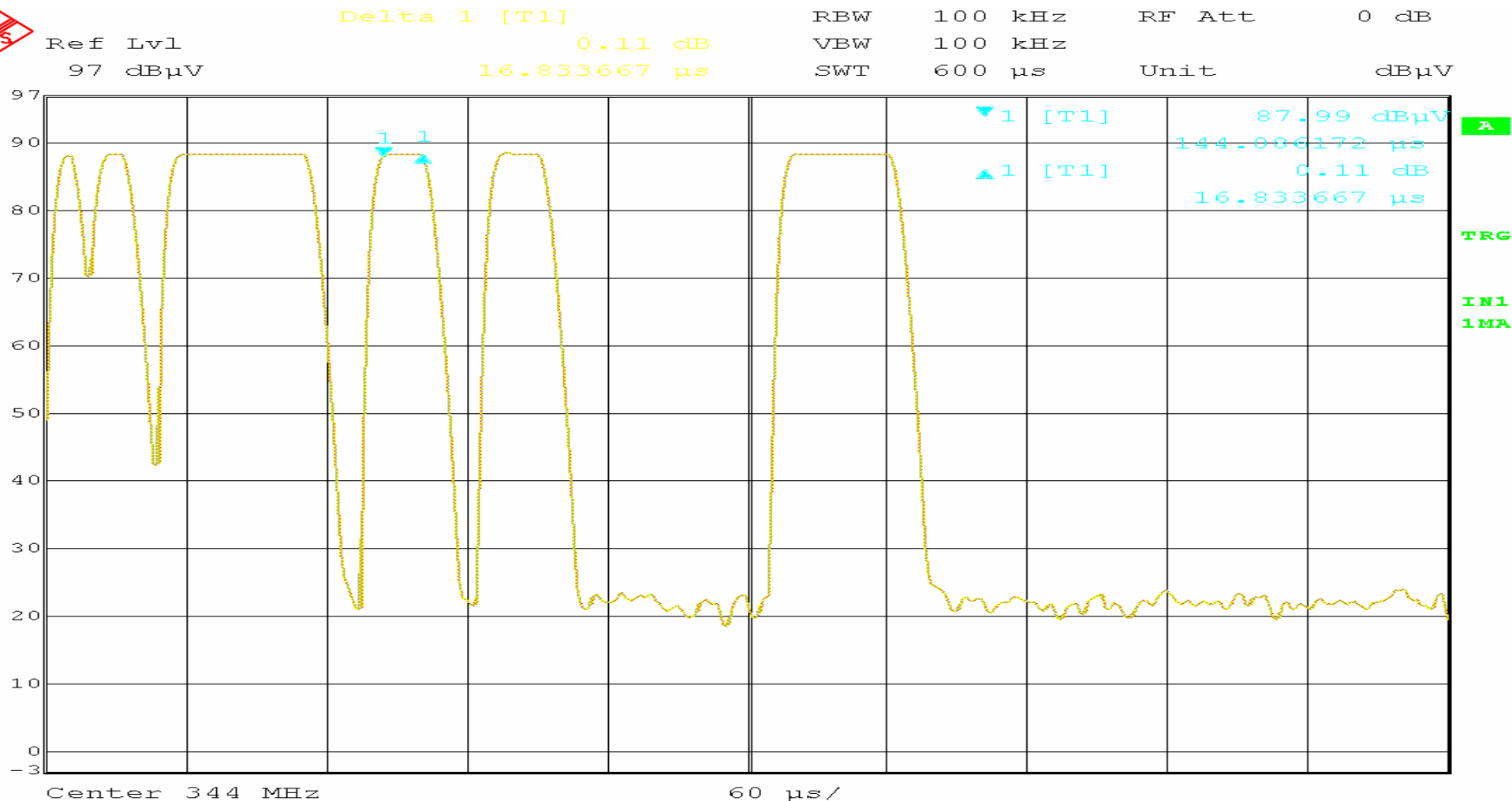


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RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Duty Cycle Plots		
Customer:	LPA Design, Inc.	Test Sample:	PocketWizard PLUS II Transceiver
Model No:	PocketWizard PLUS II	Serial No:	N/A
Test Specification:	FCC Part 15, Subpart C	15.231(b)	Job No: R-4955N-1
Operating Mode:	Continuously Transmitting		Technician: M. Seamans
Notes:	Fundamental Frequency: 344.04MHz		Date: 1/15/2008

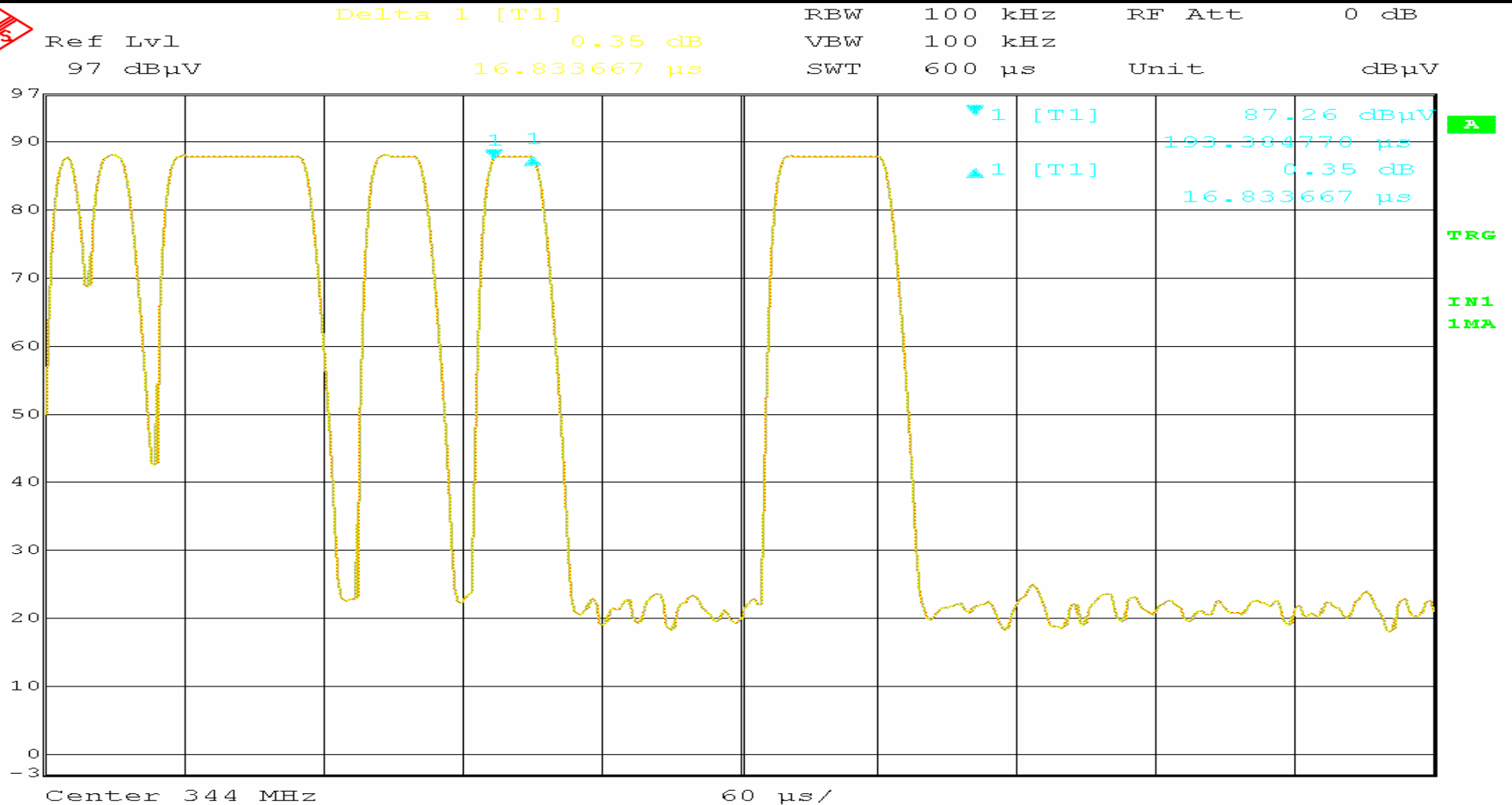


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RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Duty Cycle Plots		
Customer:	LPA Design, Inc.	Test Sample:	PocketWizard PLUS II Transceiver
Model No:	PocketWizard PLUS II	Serial No:	N/A
Test Specification:	FCC Part 15, Subpart C	15.231(b)	Job No: R-4955N-1
Operating Mode:	Continuously Transmitting		Technician: M. Seamans
Notes:	Fundamental Frequency: 344.04MHz		Date: 1/15/2008



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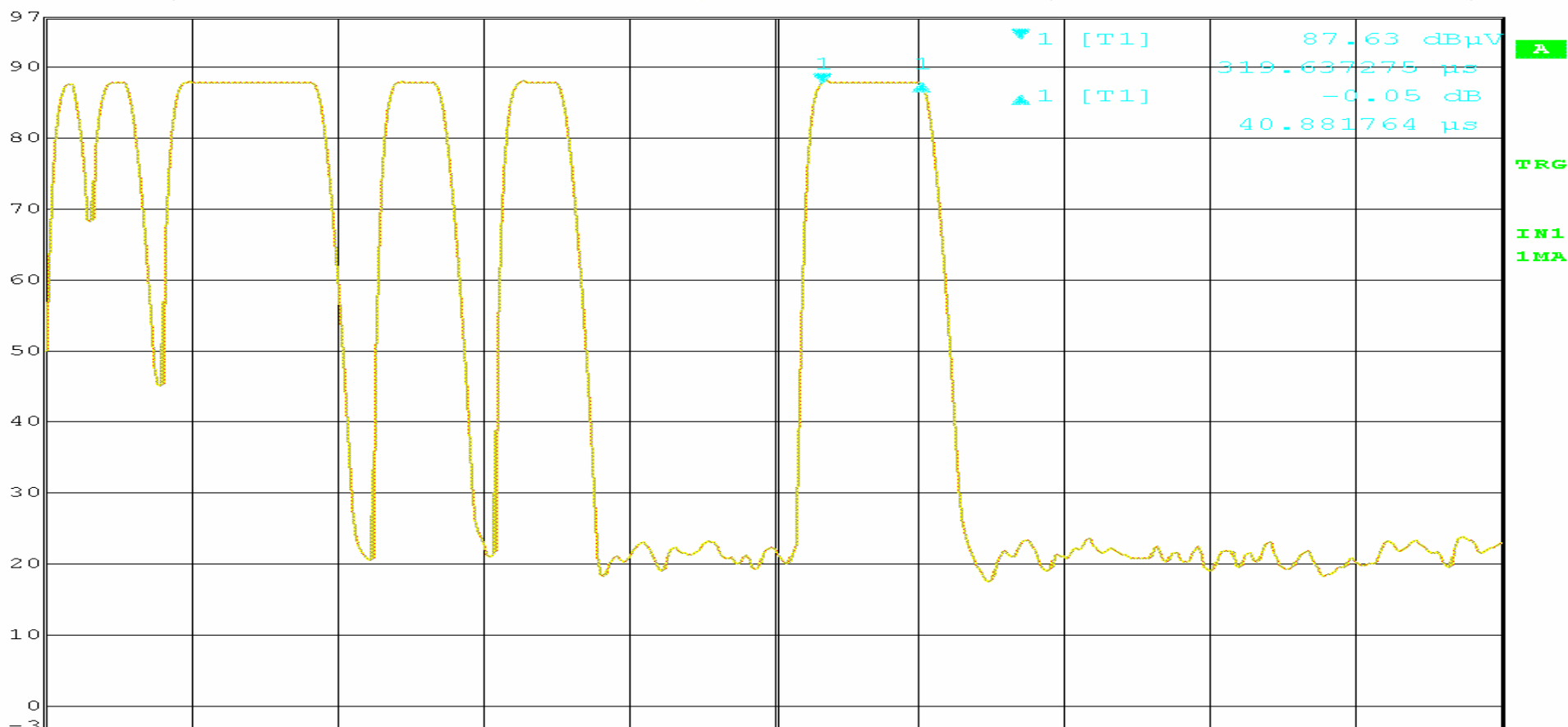
RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Duty Cycle Plots		
Customer:	LPA Design, Inc.	Test Sample:	PocketWizard PLUS II Transceiver
Model No:	PocketWizard PLUS II	Serial No:	N/A
Test Specification:	FCC Part 15, Subpart C	15.231(b)	Job No: R-4955N-1
Operating Mode:	Continuously Transmitting		Technician: M. Seamans
Notes:	Fundamental Frequency: 344.04MHz		Date: 1/15/2008



Delta 1 [T1] RBW 100 kHz RF Att 0 dB
 Ref Lvl -0.05 dB VBW 100 kHz
 97 dBµV 40.881764 µs SWT 600 µs Unit dBµV



Center 344 MHz

60 µs/

Date: 15.JAN.2008 13:26:24