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FCC/IC Test Report on

PocketWizard Mini TT1 Transceiver
Model: TT1-N-US

Customer Name: LPA Design, Inc.

Customer P.O: D1219

Date of Report: December 8, 2010

Test Report No: R-5328N-1, Rev. A

Test Start Date: April 21, 2010

Test Finish Date: April 23, 2010

Test Technician: M. Seamans

Laboratory Supervisor: T. Hannemann

Branch Manager: S. Wentworth

Report Prepared By: J. Ramsey

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Technical Information

APPLICANT	MANUFACTURER
Name: LPA Design, Inc.	Name: LPA Design, Inc.
Address: 41 IDX Drive, Suite 265	Address: 41 IDX Drive, Suite 265
City, State, Zip: South Burlington, VT 05403	City, State, Zip: South Burlington, VT 05403

TEST SPECIFICATION:

FCC Rules and Regulations Part 15, Subpart C, Section 15.231

Radio Standards Specification, RSS-210, Issue 7, June, 2007 and RSS-GEN, Issue 2, June 2007

TEST PROCEDURE: ANSI C63.4:2003

Test Sample Description

TEST SAMPLE: PocketWizard Mini TT1 Transceiver

BRANDNAME(s): PocketWizard

MODEL: TT1-N-US

FCC ID: KDS-PW3-007

IC : 2170A-PW3007

TYPE: Wireless Flash Control

POWER REQUIREMENTS: 3VDC via two AA batteries

FREQUENCY OF OPERATION: 340MHz to 354MHz

Support Equipment

Description	Manufacturer	Model Number	Serial Number
Digital Camera	Fujifilm Corp.	Finepix S5 Pro	73A01917
Flash/Light	Nikon	Speedlight SB-600	N/A

Tests Performed

The test methods performed on the PocketWizard MiniTT1 Transceiver are shown below:

FCC Part 15, Subpart C	Industry Canada RSS-210 Issue 7, June 2007	Industry Canada RSS-GEN Issue 2, June 2007	Test Method
15.231(b)	A1.1.2(1)	N/A	Field Strength of Emissions
15.231(b)(2)	A1.1.2(2)	4.5	Duty Cycle Determination
15.231(b)(3)	A1.1.2(3)	N/A	Field Strength of Spurious Emissions
15.231(c)	A1.1.3	N/A	Bandwidth of Emission
N/A	N/A	4.10	Receiver Spurious Emissions

General Test Requirements

1. The measurement procedures of ANSI C63.4:2003 were utilized as specified in FCC Part 15, Subpart C, Section 15.31(a)(3) and IC RSS-GEN Section 4.1.
2. All radiated emissions measurements were performed on an Open Area Test Site (OATS), listed with the FCC and IC, in accordance with FCC Section 15.31(d) and IC Section 4.2.
3. The level of the fundamental field strength was recorded with a new battery installed in the EUT, in accordance with FCC Section 15.231(e) and IC Section 4.3(e).
4. All measurements were performed at the specified 3 meter test distance as required by FCC Section 15.31(f) and IC Section 7.25.
5. The EUT was rotated throughout 360 degrees for all radiated emissions measurements as specified in FCC Section 15.31(f)(5) and IC Section 4.3(h).
6. All readily accessible EUT controls were adjusted in such a manner as to maximize the level of emissions in accordance with FCC Section 15.31(g) and IC Section 4.3(h).
7. Appropriate accessories were attached to all EUT ports during the performance of radiated emissions measurements as required by FCC Section 15.31(i) and IC Section 4.3(d).
8. The EUT operated over the frequency range of 340 MHz to 354 MHz. A total range of 14 MHz. Testing was performed with the device operating at
 - a. 3 frequencies, 1 at the top, 1 in the middle and 1 at the bottom of the range of operation in accordance with FCC Section 15.31(m) and IC Section 4.3(f)(g).
9. The frequency spectrum was investigated from the lowest frequency generated in the device up to the 10th harmonic of the highest fundamental frequency in accordance with FCC Section 15.33(a)(1) and IC Section 4.9.
10. All measurements were taken with a peak detector function as specified in FCC Section 15.35(a) and IC Section 4.4. The duty cycle, calculated in accordance with FCC Section 15.35(c) and IC Section 4.5, was applied to the peak readings in order to obtain the average value of emissions. The peak value of emissions was verified to meet the 20 dB requirement of FCC Section 15.35(b) and IC Section 7.2.1.

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.



Scott Wentworth
Branch Manager
NVLAP Approved Signatory



Todd Hannemann
Laboratory Supervisor
iNARTE Certified ATL-0255-T

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 must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

Revision History

Revisions to this document are listed below; the latest revised document supersedes all previous issues of this document.

Revision	Date	Pages Affected
-	November 22, 2010	Original Release
A	December 8, 2010	2, 9

Requirements and Test Results

Requirement:

FCC Section 15.231(a) - Periodic operation in the band 40.66 - 40.7 MHz and above 70 MHz

The provisions of this Section are restricted to periodic operation within the band 40.66-40.7 MHz and above 70 MHz. Except as shown in Paragraph (e) of this Section, the intentional radiator is restricted to the transmissions of a control signal such as those used with alarm systems, door openers, remote switches, etc. Continuous transmissions, voice, video and the radio control of toys are not permitted. Data is permitted to be sent with a control signal.

IC RSS-210, A1.1 - Momentarily Operated Devices

The frequency bands and field strength limits in Tables 4 and 5 are only for the transmission of a control signal such as that used with alarm systems, door openers, remote switches, etc. Radio control of toys or model aircrafts, and continuous transmissions such as voice or video are not permitted except as provided in A1.1.5. Data is permitted to be sent with a control signal.

- Results:
The device operates over the frequency range of 340 MHz to 354 MHz and is used for the transmission of a control signal in the photography industry for remote flash control.

Requirement:

FCC Sections 15.231(a)(1)-(5)

Periodic operation in the band 40.66 - 40.7 MHz and above 70 MHz

The following conditions were met in order to comply with the provisions for momentary operation:

IC RSS-210, A1.1.1(a)-(d) - Types of Momentary Signals

The following conditions were met in order to comply with the provisions for momentary operation:

FCC 15.231(a)(1): A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

IC A1.1.1(a): A manually operated transmitter shall employ a push-to-operate switch and be under manual control at all transmission times. When released, the transmitter shall cease transmission (holdover time of up to 5 seconds of operation).

- Results:
The device is a manually operated, push to operate transmitter under manual control. The device ceased transmission within 5 seconds of deactivation.

FCC 15.231(a)(2): A transmitter activated automatically shall cease transmission within 5 seconds after activation.

IC A1.1.1(b): A transmitter activated automatically shall cease transmission with 5 seconds after activation, (i.e. maximum 5 seconds of operation).

- Results:
Transmission is not automatically activated.

Requirements and Test Results (con't)

FCC 15.231(a)(3): Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.

IC A1.1.1(c): Periodic transmissions at regular predetermined intervals are not permitted, except as provided in A1.1.5. However, polling or supervision transmissions, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed 2 seconds per hour for each transmitter.

- Results:
The transmitter does not perform periodic transmissions.

FCC 15.231(a)(4): Intentional radiators which are employed for radio control purposes during emergencies involving fire, security and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition.

IC A1.1.1(d): Intentional radiators employed for radio control purposes during emergencies involving fire, security of goods (e.g. burglar alarms), and safety-of-life, when activated to signal an alarm, may operate during the interval of the alarm condition.

- Results:
This device is not employed for radio control purposes during emergencies involving fire, security and safety for life.

FCC 15.231(a)(5): Transmission of set-up information for security systems may exceed the transmission duration limits in paragraphs (a)(1) and (a)(2) of this section, provided such transmission are under the control of a professional installer and do not exceed ten seconds after a manually operated switch is released or a transmitter is activated automatically. Such set-up information may include data.

- Results:
The device is not employed for security systems.

Requirements and Test Results (con't)

Requirement:

FCC Section 15.231(b) - Field Strength of Emissions

In addition to the provisions of Section 15.205, the field strength of emissions from intentional radiators operated under this Section shall not exceed the limits specified in Table 1.

IC RSS-210, A1.1.2(1) - Field Strengths and Frequency Bands

The field strength of emissions from momentarily operated intentional radiators shall not exceed the limits specified in Table 1:

Table 1 - Test Limits, Field Strength of Emissions

Fundamental Frequency (MHz)	Field Strength of Fundamental microvolts/meter @3 meters (watts, e.i.r.p.) Quasi Peak or Average	Field Strength of Spurious Emissions microvolts/meter @3 meters Quasi Peak or Average
40.66 to 40.70	2,250	225
70 to 130	1,250 (470 nW)	125
130 to 174	1,250 to 3,750**	125 to 375**
174 to 260	3,750 (4.2 μ W)	375
260 to 470	3,750 to 12,500**	375 to 1,250**
Above 470	12,500 (47 μ W)	1,250
**Linear Interpolations For 130-174 MHz: FS (microvolts/m) = (56.82 x F) - 6,136 For 260-470 MHz: FS (microvolts/m) = (41.67 x F) - 7,083 The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.		

The Fundamental and Harmonic Emissions limits for a device operating at 340 MHz, 347 MHz and 354 MHz are listed in Table 2.

Table 2 - Fundamental and Harmonic Limits

Frequency of Operation MHz	Fundamental μ V/m	Harmonics μ V/m
340.0	7083.4	708.34
347.0	7375.1	737.51
354.0	7666.7	766.67

- Results:
The Fundamental and Harmonics field strengths did not exceed the limits specified in Table 2 at a test distance of 3 meters. See Table 3 for the Fundamental and Harmonic emissions test results.

Requirements and Test Results (con't)

Field Strength Calculation:

The final average field strength of the emission was calculated by subtracting the duty cycle factor in dB from the maximized corrected peak reading in dBuV/m.

The maximized peak field strength of the emission was obtained as follows:

$$P_C = M_R + C_F$$

Where:

P_C = Corrected Peak Reading in dB μ V/m

M_R = Uncorrected Meter Reading in dB μ V

C_F = Correction Factor in dB (Antenna Factor + Cable Loss)

The final average field strength of the emission was obtained as follows:

$$A_F = P_C - D_F$$

Where:

A_F = Average Field Strength in dB μ V/m

P_C = Corrected Peak Reading in dB μ V/m

D_F = Duty Cycle Factor in dB

Example: For the frequency of 340 MHz:

$$M_R = 73.98 \text{ dB}\mu\text{V}$$

$$C_F = 18.08 \text{ dB}$$

$$P_C = 73.98 \text{ dBuV} + 18.08 \text{ dB} = 92.06 \text{ dB}\mu\text{V/m}$$

$$D_F = 21.85 \text{ dB}$$

$$A_F = 92.06 \text{ dBuV/m} - 21.85 \text{ dB} = 70.21 \text{ dBuV/m}$$

$$70.21 \text{ dBuV/m} = 3239.66 \text{ uV/m}$$

Table 3 - Fundamental and Harmonics Test Results

Fundamental Frequency MHz	Maximum Fundamental μ V/m	Maximum Harmonics μ V/m
340.0	3239.66	No Harmonics observed
347.0	3475.36	No Harmonics observed
354.0	2591.19	No Harmonics observed

Requirements and Test Results (con't)

Requirement:

FCC Section 15.231(b)(2) - Duty Cycle Determination-Pulsed Operation

Intentional radiators operating under the provisions of the Section shall demonstrate compliance with the limits on the field strength emissions, as shown in Table 1, based on the average value of the measured emissions. As an alternative, compliance with the limits in the Table 1 may be based on the use of measurement instrumentation with a CISPR quasi-peak detector. The specific method of measurement employed shall be specified in the application for equipment authorization. If average emission measurements are employed, the provisions in Section 15.35 for averaging pulsed emissions and for limiting peak emissions apply. Further, compliance with the provisions of Section 15.205 shall be demonstrated using the measurement instrumentation specified in that Section.

IC RSS-GEN, Paragraph 4.5, Pulsed Operation

When the field strength (or envelope power) is not constant or when it is in pulses, and an average detector is specified to be used, the value of field strength or power shall be determined by averaging over one complete pulse train, including blanking intervals within the pulse train, as long as the pulse train does not exceed 0.1 seconds. In cases where the pulse train exceeds 0.1 seconds, the average value (of field strength or output power) shall be determined during a 0.1 second interval during which the field strength or power is at its maximum value.

The unit's RF output was coupled to the input of the spectrum analyzer. The analyzer was set for a frequency span of 0 Hz. 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. The pulse train exceeded 100msec so 100msec was used as the cycle time and the period with the "worst case" on time was used to calculate the duty cycle. (See plots for additional information).

- Results:
The emissions did not exceed the limits specified in Table 1. See below for the exact method of calculating the average field strength.

Transmitter On Time = 100 milliseconds (maximum per cycle)
Transmitter Cycle Time = 8.08 milliseconds (100 ms maximum)
Transmitter Duty Cycle = 8.08 %

CALCULATION

On time for 1 Pulse Burst = 4.04 milliseconds
4.04 x 2 pulse bursts in 100msec = 8.08 milliseconds
Total on Time = 8.08 milliseconds
Duty Cycle (8.08/100) = 8.08 %
Correction Factor = 20 log (0.0808) = 21.85 dB

Requirements and Test Results (con't)

Requirement:

FCC Section 15.231(b)(3) - Field Strength of Spurious Emissions

The limits on the field strength of the spurious emissions specified in Table 1 are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in Table 1 or to the general limits shown in Section 15.209, whichever limit permits a higher field strength.

IC RSS-210, A1.1.2(3) - Field Strength of Unwanted Emissions

The limits on the field strength of unwanted emissions in Table 4 of RSS-210 are based on the fundamental frequency of the intentional radiator. Unwanted emissions shall be attenuated to the limits shown in Table 2 of RSS-210 or to the limits shown in Table 4 of RSS-210, whichever is less stringent.

- Results:
No spurious emissions were observed within 10 dB of the specified limit.

Requirement:

FCC Section 15.231(c) - Bandwidth of Emissions

The bandwidth of the emissions shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

- Results:
The emission bandwidth was measured and did not exceed the specified limits. See Table 3 for the occupied bandwidth test results.

Table 4 – Occupied Bandwidth Test Results

Fundamental Frequency MHz	Occupied Bandwidth kHz	Occupied Bandwidth Limit kHz
340.0	428.85	850 kHz
347.0	424.85	867.5 kHz
354.0	424.85	885 kHz

Requirements and Test Results (con't)

IC RSS-210, A1.1.3 - Bandwidth of Momentary Signals

For the purpose of Section A1.1, the 99% bandwidth shall be no wider than 0.25% of the center frequency for devices operating between 70-900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency.

- Results:
The emission bandwidth was measured and did not exceed the specified limits. See Table 3 for the occupied bandwidth test results.

Table 5 – 99% Bandwidth Test Results

Fundamental Frequency MHz	99% Bandwidth kHz	Occupied Bandwidth Limit kHz
340.0	845.691	850 kHz
347.0	837.675	867.5 kHz
354.0	845.691	885 kHz

Equipment Lists

FCC Section 15.231(b) - Field Strength of Emissions IC RSS-210, A1.1.2(1) - Field Strength and Frequency Bands

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
3130	20 dB Attenuator	Narda	DC - 18 GHz	768-20	1/11/2010	1/11/2011
4029B	Test Site Attenuation	Retlif	3 / 10 Meters	RNH	6/25/2009	6/25/2010
5070	EMI Test Receiver	Rohde & Schwarz	20 Hz - 40 GHz	ESIB40	1/14/2009	5/14/2010
8165	Biconilog	EMCO	26 - 2000 MHz	3142	11/12/2009	11/12/2010

FCC Section 15.231(b)(2) - Duty Cycle Determination - Pulsed Operation IC RSS-210, A1.1.2(2), RSS-GEN, 4.5 - Pulsed Operation

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
3130	20 dB Attenuator	Narda	DC - 18 GHz	768-20	1/11/2010	1/11/2011
5070	EMI Test Receiver	Rohde & Schwarz	20 Hz - 40 GHz	ESIB40	1/14/2009	5/14/2010

FCC Section 15.231(b)(3) - Field Strength of Spurious Emissions IC RSS-210, A1.1.2(3) - Field Strength of Unwanted Emissions

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
3116	Pre-Amplifier	Miteq	0.1 GHz - 18 GHz	AFS42-35	1/12/2010	1/12/2011
3117	Power Supply	B&K Precision	0-30 Vdc, 3.0 A	1630	1/31/2010	1/31/2011
4029B	Test Site Attenuation	Retlif	3 / 10 Meters	RNH	6/25/2009	6/25/2010
5070	EMI Test Receiver	Rohde & Schwarz	20 Hz - 40 GHz	ESIB40	1/14/2009	5/14/2010
8165	Biconilog	EMCO	26 - 2000 MHz	3142	11/12/2009	11/12/2010
R425B	Spectrum Analyzer	Agilent	100 Hz - 26.5 GHz	E7405A;A	5/11/2009	5/11/2010

FCC Section 15.231(c) - Bandwidth of Emission IC RSS-210, A1.1.3 - Bandwidth of Momentary Signals

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
3130	20 dB Attenuator	Narda	DC - 18 GHz	768-20	1/11/2010	1/11/2011
5070	EMI Test Receiver	Rohde & Schwarz	20 Hz - 40 GHz	ESIB40	1/14/2009	4/14/2011

**FCC Section 15.231(b) - Field Strength of Emissions
IC RSS-210, A1.1.2(1) - Field Strength and Frequency Bands**

Photographs



Test Configuration



Horizontal Antenna Polarization, 30 to 1000 MHz



Vertical Antenna Polarization, 30 to 1000 MHz

**FCC Section 15.231(b) - Field Strength of Emissions
IC RSS-210, A1.1.2(1) - Field Strength and Frequency Bands**

Test Data

RETLIF TESTING LABORATORIES

TABULAR DATA SHEET

Test Method:	Fundamental Field Strength		
Customer:	LPA Design, Inc.	Job No:	R-5328N-1
Test Sample:	Nikon PocketWizard Mini TT1 Transceiver		
Model No:	TT1-N-US	Serial No:	1NU000017
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.231(b)		
Operating Mode:	Continuously Transmitting		
Technician:	M.Seamans	Date:	April 23, 2010
Notes:	Corrected peak readings meet peak limit (20dB above average limit) per 15.35		

[illegible]

**FCC Section 15.231(b)(2) - Duty Cycle Determination - Pulsed Operation
IC RSS-210, A1.1.2(2), RSS-GEN, 4.5 - Pulsed Operation**

Test Photograph



Test Setup

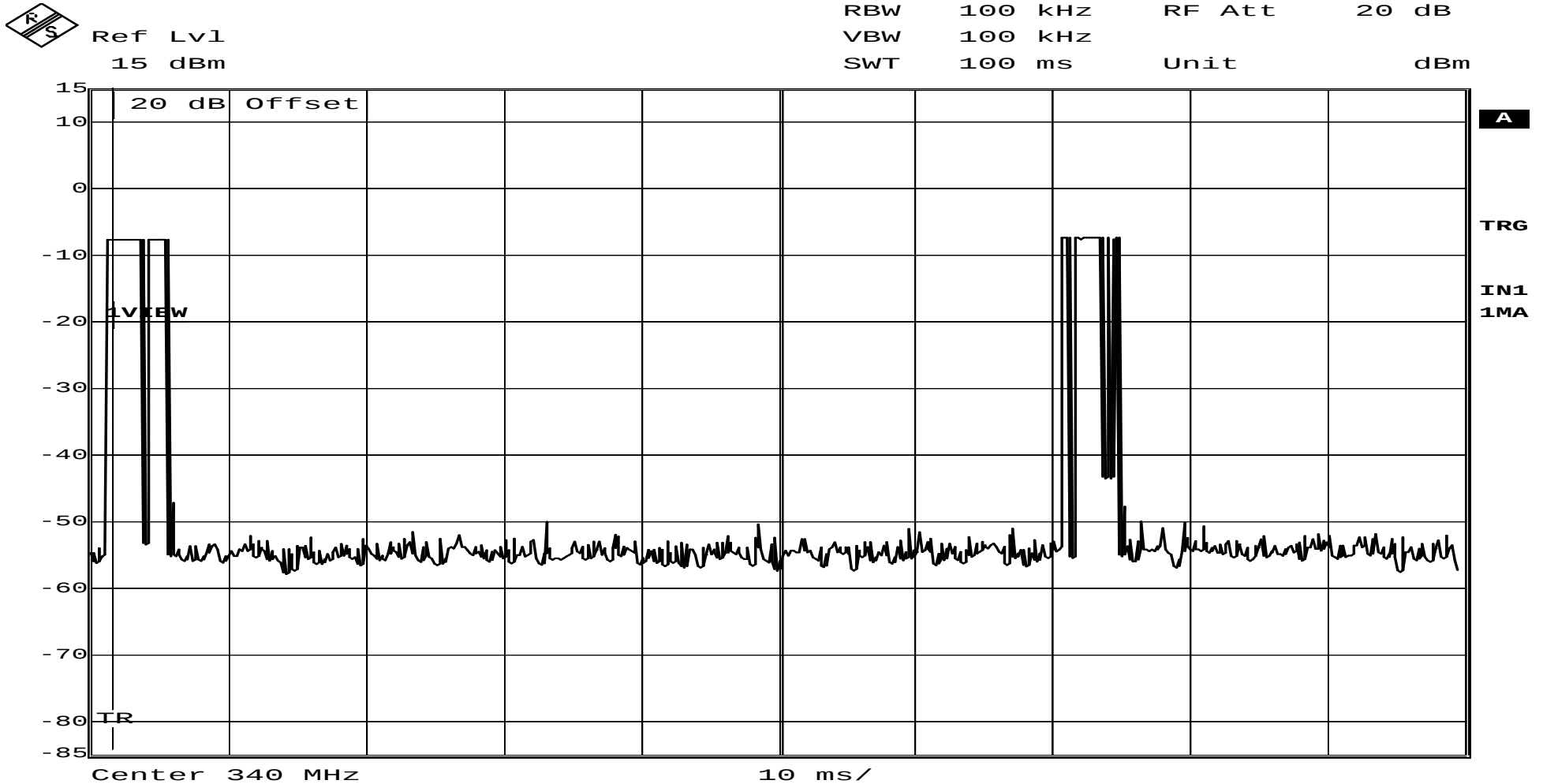
**FCC Section 15.231(b)(2) - Duty Cycle Determination - Pulsed Operation
IC RSS-210, A1.1.2(2), RSS-GEN, 4.5 - Pulsed Operation**

Test Data

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Duty Cycle Plots		
Customer:	LPA Design, Inc.	Test Sample:	Nikon PocketWizard Mini TT1 Transceiver
Model No:	TT1-N-US	Serial No:	1NU000017
Test Specification:	FCC Part 15, Subpart C	15.231(b)	Date: 4/21/2010
Operating Mode:	Continuously Transmitting		
Notes:	Maximum Duty Cycle		

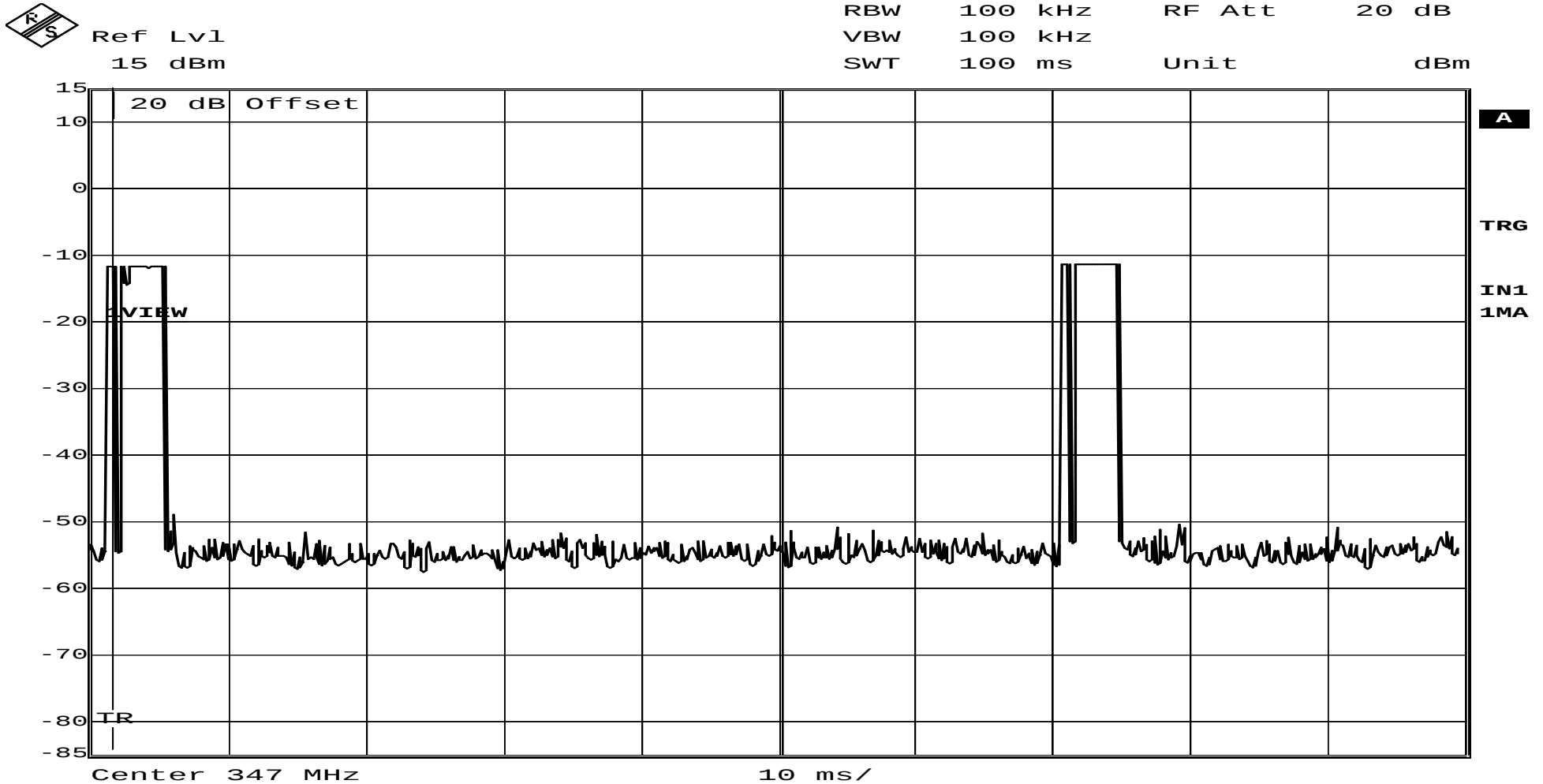


Date: 21.APR.2010 15:35:47

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Duty Cycle Plots		
Customer:	LPA Design, Inc.	Test Sample:	Nikon PocketWizard Mini TT1 Transceiver
Model No:	TT1-N-US	Serial No:	1NU000017
Test Specification:	FCC Part 15, Subpart C	15.231(b)	Job No: R-5328N-1
Operating Mode:	Continuously Transmitting		Technician: M. Seamans
Notes:	Maximum Duty Cycle		Date: 4/21/2010

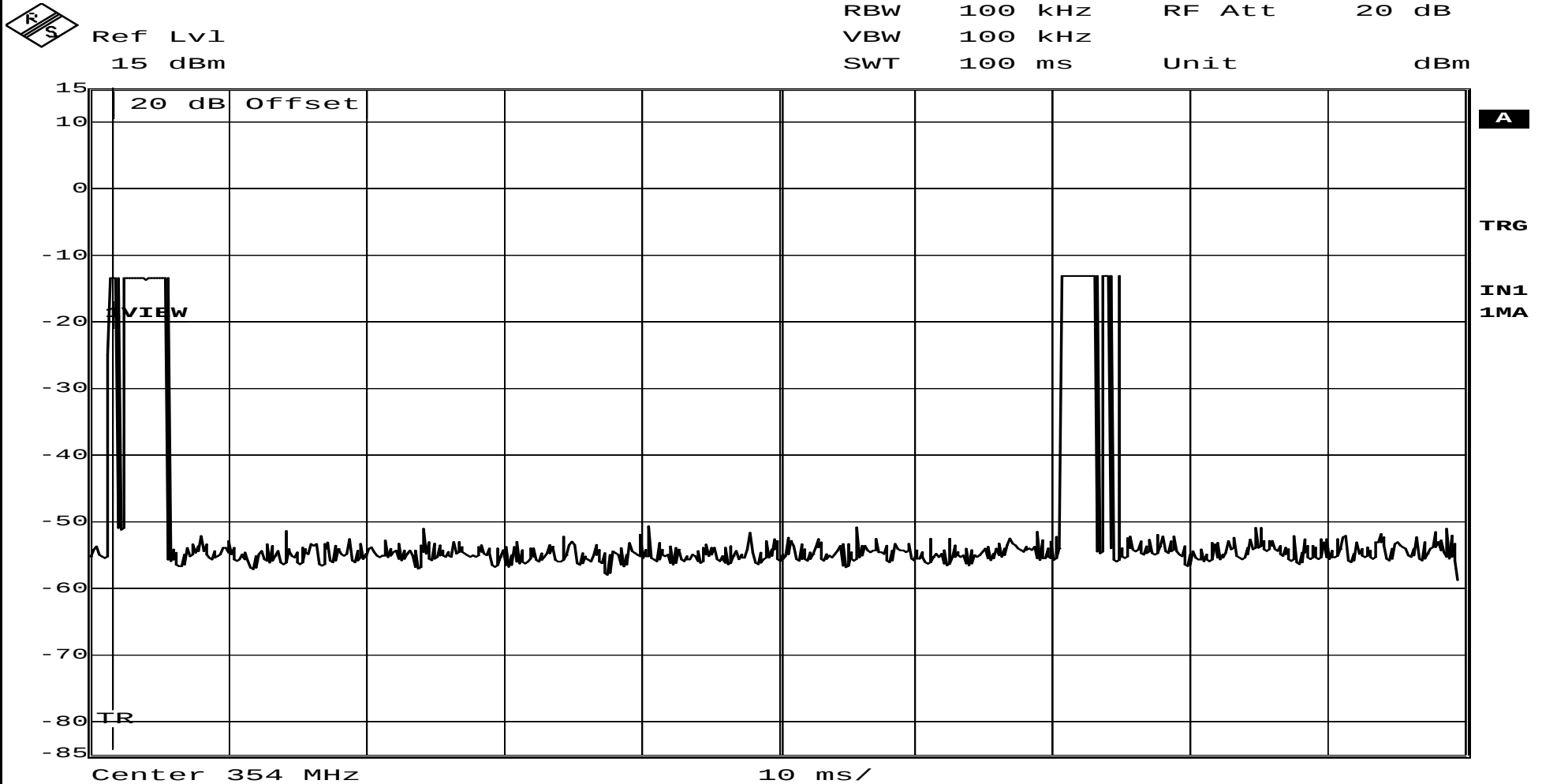


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RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Duty Cycle Plots		
Customer:	LPA Design, Inc.	Test Sample:	Nikon PocketWizard Mini TT1 Transceiver
Model No:	TT1-N-US	Serial No:	1NU000017
Test Specification:	FCC Part 15, Subpart C	15.231(b)	Date: 4/21/2010
Operating Mode:	Continuously Transmitting		
Notes:	Maximum Duty Cycle		

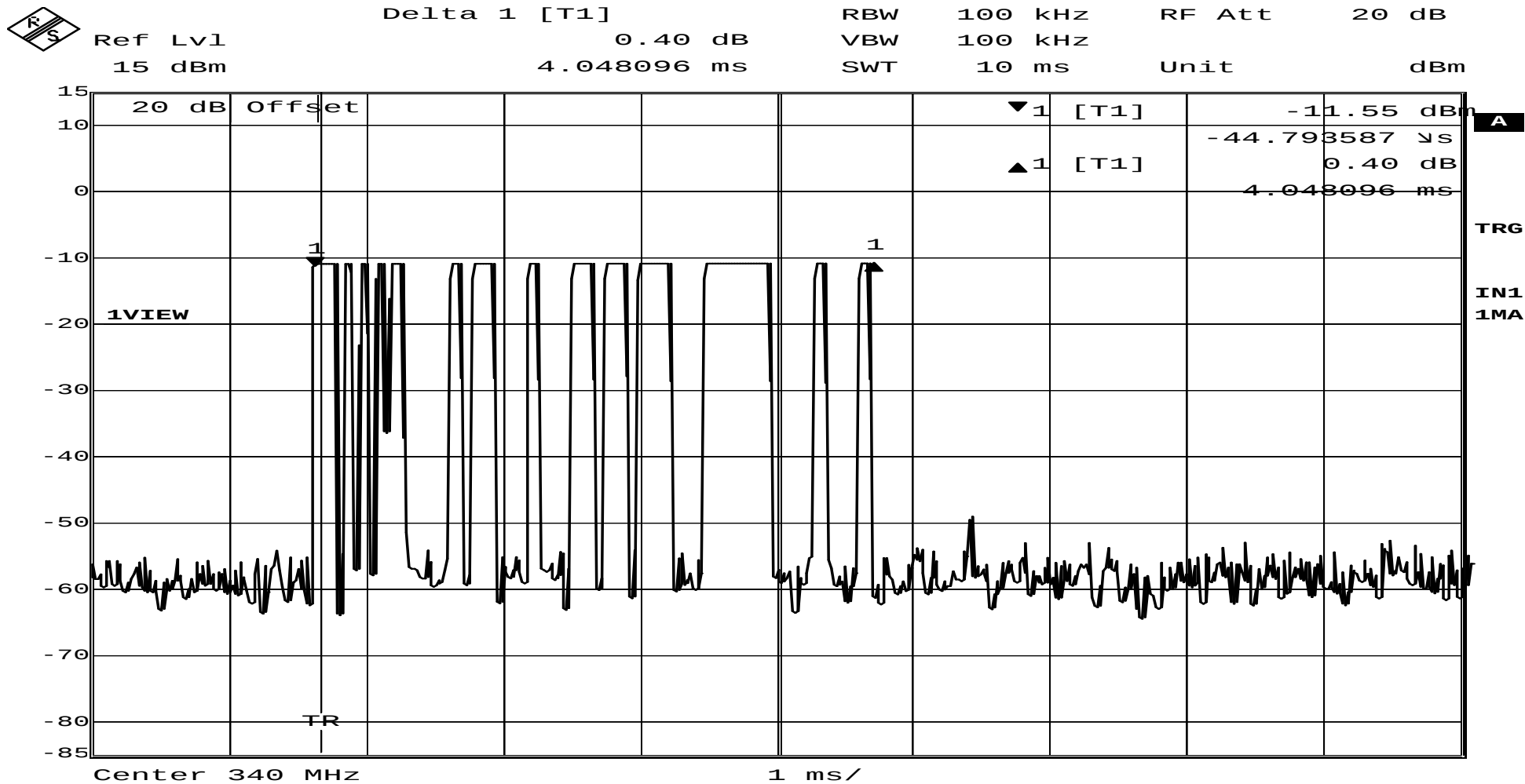


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RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Duty Cycle Plots		
Customer:	LPA Design, Inc.	Test Sample:	Nikon PocketWizard Mini TT1 Transceiver
Model No:	TT1-N-US	Serial No:	1NU000017
Test Specification:	FCC Part 15, Subpart C	15.231(b)	Job No: R-5328N-1
Operating Mode:	Continuously Transmitting		Technician: M. Seamans
Notes:	Maximum Duty Cycle		Date: 4/21/2010

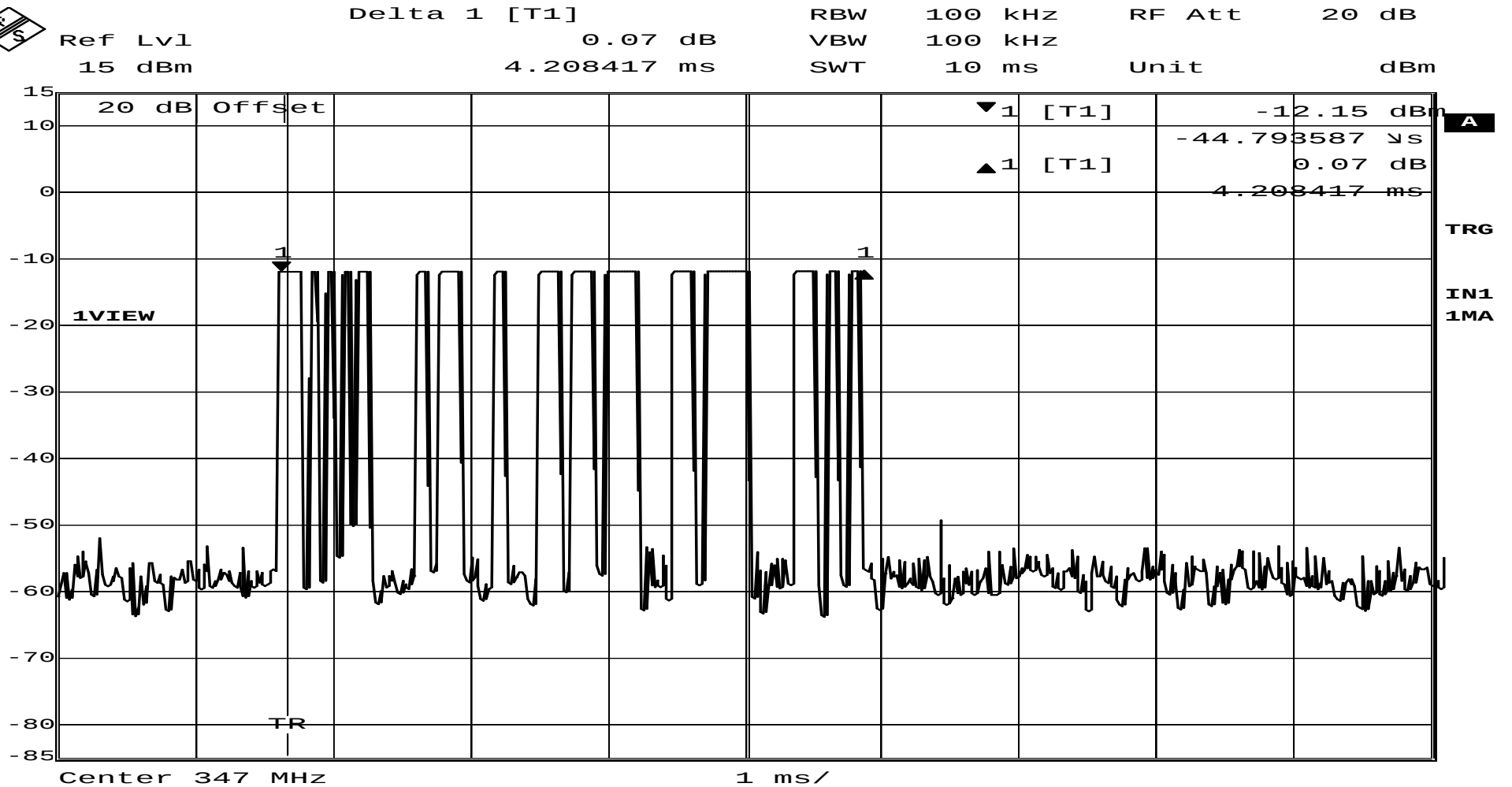


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RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Duty Cycle Plots		
Customer:	LPA Design, Inc.	Test Sample:	Nikon PocketWizard Mini TT1 Transceiver
Model No:	TT1-N-US	Serial No:	1NU000017
Test Specification:	FCC Part 15, Subpart C	15.231(b)	Job No: R-5328N-1
Operating Mode:	Continuously Transmitting		Technician: M. Seamans
Notes:	Maximum Duty Cycle		Date: 4/21/2010

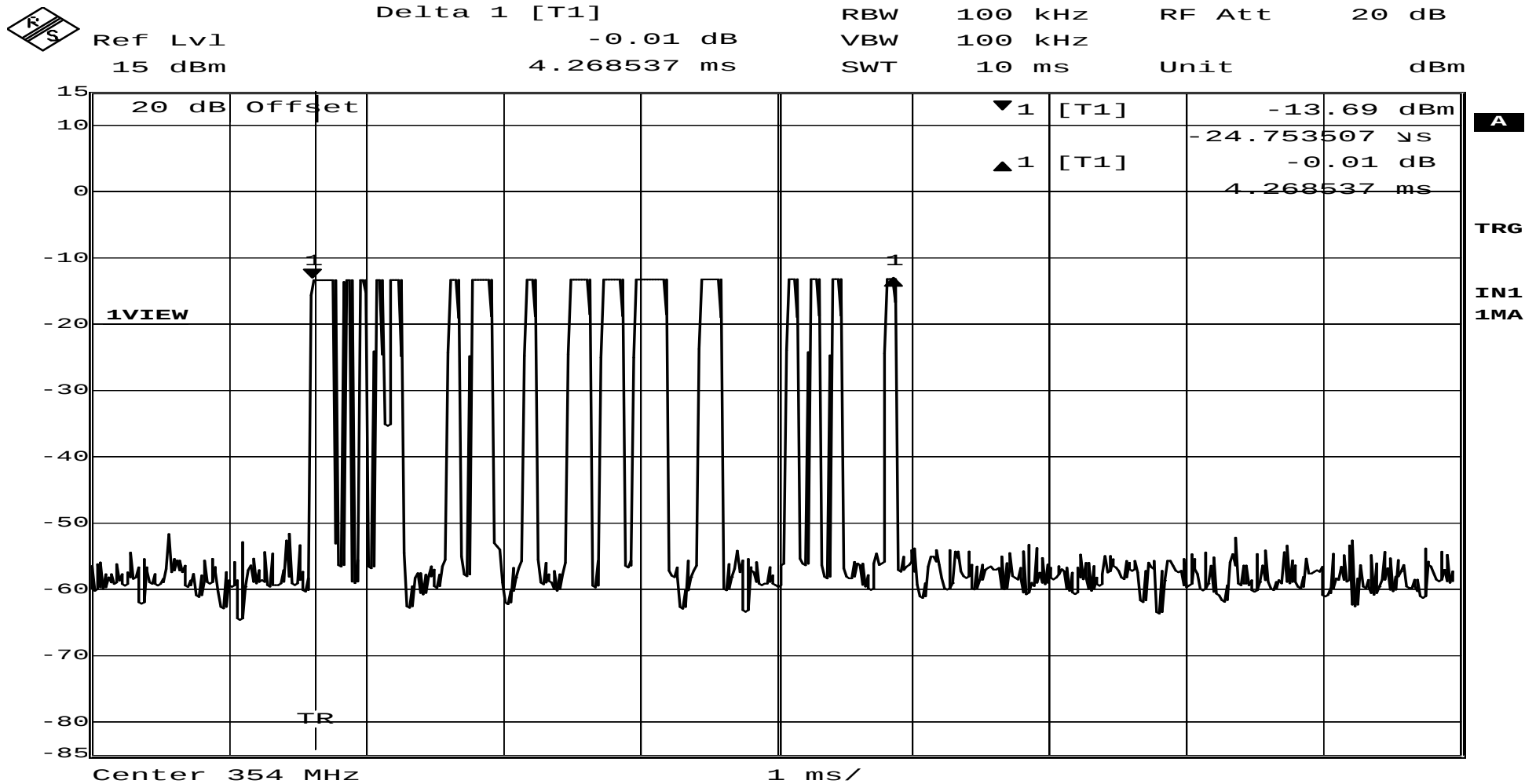


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RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Duty Cycle Plots		
Customer:	LPA Design, Inc.	Test Sample:	Nikon PocketWizard Mini TT1 Transceiver
Model No:	TT1-N-US	Serial No:	1NU000017
Test Specification:	FCC Part 15, Subpart C	15.231(b)	Job No: R-5328N-1
Operating Mode:	Continuously Transmitting		Technician: M. Seamans
Notes:	Fundamental Frequency: 340 MHz		Date: 4/21/2010



Date: 21.APR.2010 15:37:58

**FCC Section 15.231(b)(3) - Field Strength of Spurious Emissions
IC RSS-210, A1.1.2(3) - Field Strength of Unwanted Emissions**

Test Photographs



Test Configuration



Horizontal Antenna Polarization, 30 to 1000 MHz



Vertical Antenna Polarization, 30 to 1000 MHz



Horizontal Antenna Polarization, 1 to 4 GHz



Vertical Antenna Polarization, 1 to 4 GHz

**FCC Section 15.231(b)(3) - Field Strength of Spurious Emissions
IC RSS-210, A1.1.2(3) - Field Strength of Unwanted Emissions**

Test Data

RETLIF TESTING LABORATORIES

TABULAR DATA SHEET

Test Method:	Spurious Emissions 30MHz to 3.6GHz		
Customer:	LPA Design, Inc.	Job No:	R-5328N-1
Test Sample:	Nikon PocketWizard Mini TT1 Transceiver		
Model No:	TT1-N-US	Serial No:	1NU000017
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.231(b)		
Operating Mode:	Continuously Transmitting		
Technician:	M.Seamans	Date:	4/23/2010
Notes:	Fundamental Frequency: 340 MHz		

[illegible]

RETLIF TESTING LABORATORIES

TABULAR DATA SHEET

Test Method:	Spurious Emissions 30MHz to 3.6GHz		
Customer:	LPA Design, Inc.	Job No:	R-5328N-1
Test Sample:	Nikon PocketWizard Mini TT1 Transceiver		
Model No:	TT1-N-US	Serial No:	1NU000017
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.231(b)		
Operating Mode:	Continuously Transmitting		
Technician:	M.Seamans	Date:	4/23/2010
Notes:	Fundamental Frequency: 347 MHz		

[illegible]

RETLIF TESTING LABORATORIES

TABULAR DATA SHEET

Test Method:	Spurious Emissions 30MHz to 3.6GHz		
Customer:	LPA Design, Inc.	Job No:	R-5328N-1
Test Sample:	Nikon PocketWizard Mini TT1 Transceiver		
Model No:	TT1-N-US	Serial No:	1NU000017
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.231(b)		
Operating Mode:	Continuously Transmitting		
Technician:	M.Seamans	Date:	4/23/2010
Notes:	Fundamental Frequency: 354 MHz		

[illegible]

**FCC Section 15.231(c) - Bandwidth of Emission
IC RSS-210, A1.1.3 - Bandwidth of Momentary Signals**

Test Photograph



Test Setup

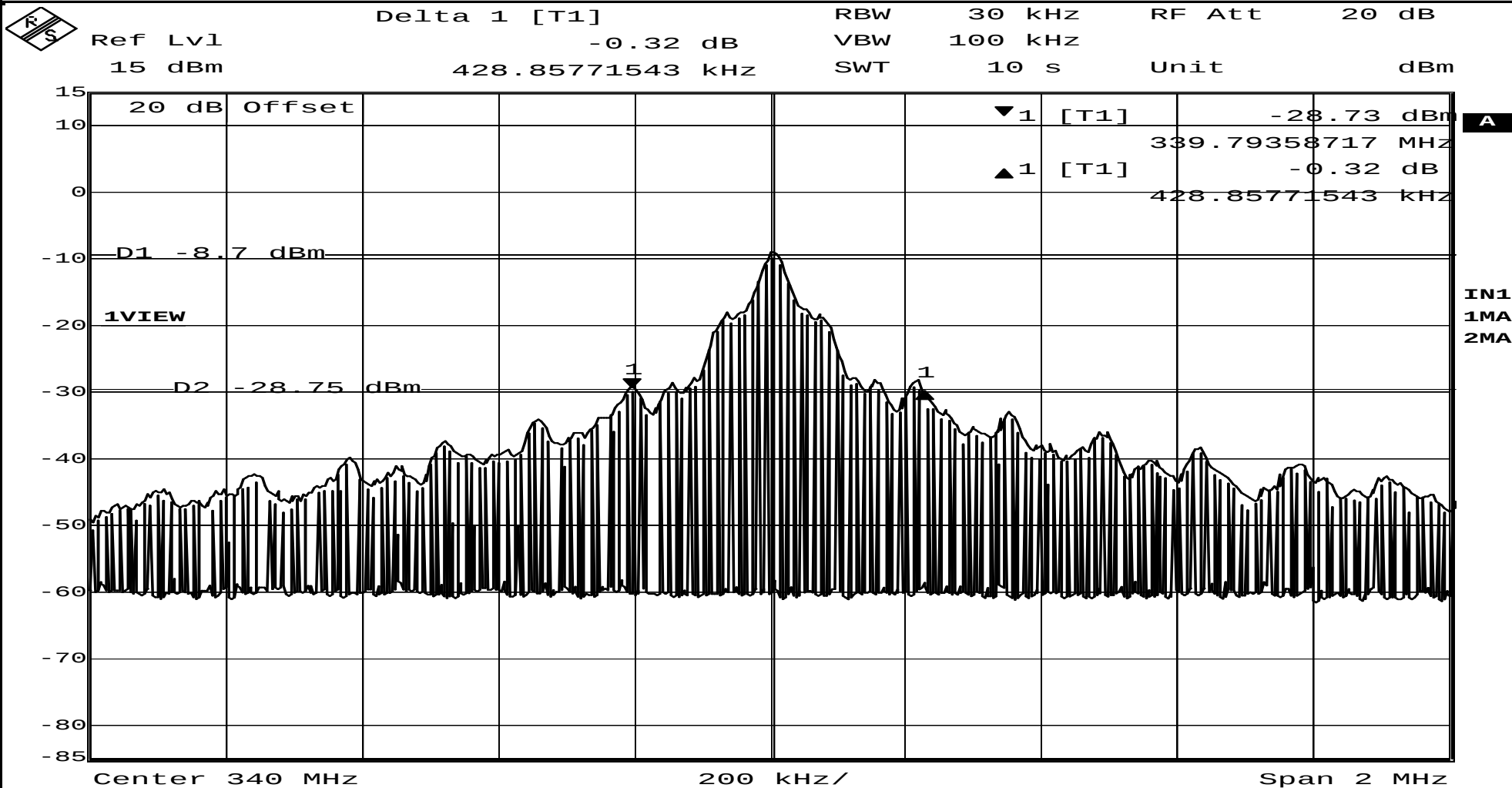
**FCC Section 15.231(c) - Bandwidth of Emission
IC RSS-210, A1.1.3 - Bandwidth of Momentary Signals**

Test Data

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Occupied Bandwidth		
Customer:	LPA Design, Inc.	Test Sample:	Nikon PocketWizard Mini TT1 Transceiver
Model No:	TT1-N-US	Serial No:	1NU000017
Test Specification:	FCC Part 15, Subpart C	15.231(c)	Job No: R-5328N-1
Operating Mode:	Continuously Transmitting		Technician: M. Seamans
Notes:	Transmit Frequency 340 MHz Occupied Bandwidth: 428.857 kHz		
Date:	4/21/2010		

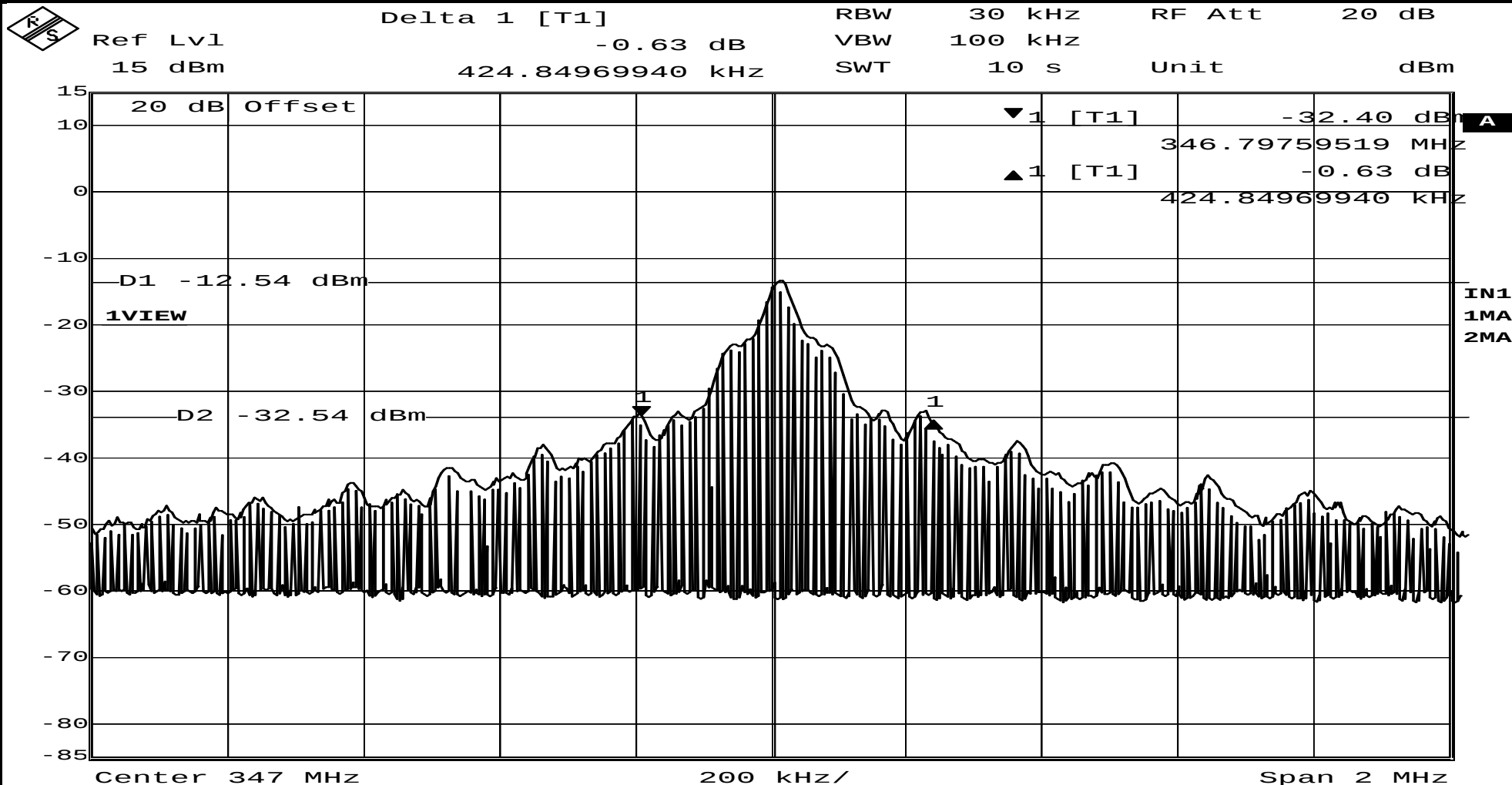


Date: 21.APR.2010 14:33:51

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Occupied Bandwidth		
Customer:	LPA Design, Inc.	Test Sample:	Nikon PocketWizard Mini TT1 Transceiver
Model No:	TT1-N-US	Serial No:	1NU000017
Test Specification:	FCC Part 15, Subpart C	15.231(c)	Job No: R-5328N-1
Operating Mode:	Continuously Transmitting		Technician: M. Seamans
Notes:	Transmit Frequency 347 MHz Occupied Bandwidth: 424.849 kHz		
Date:	4/21/2010		

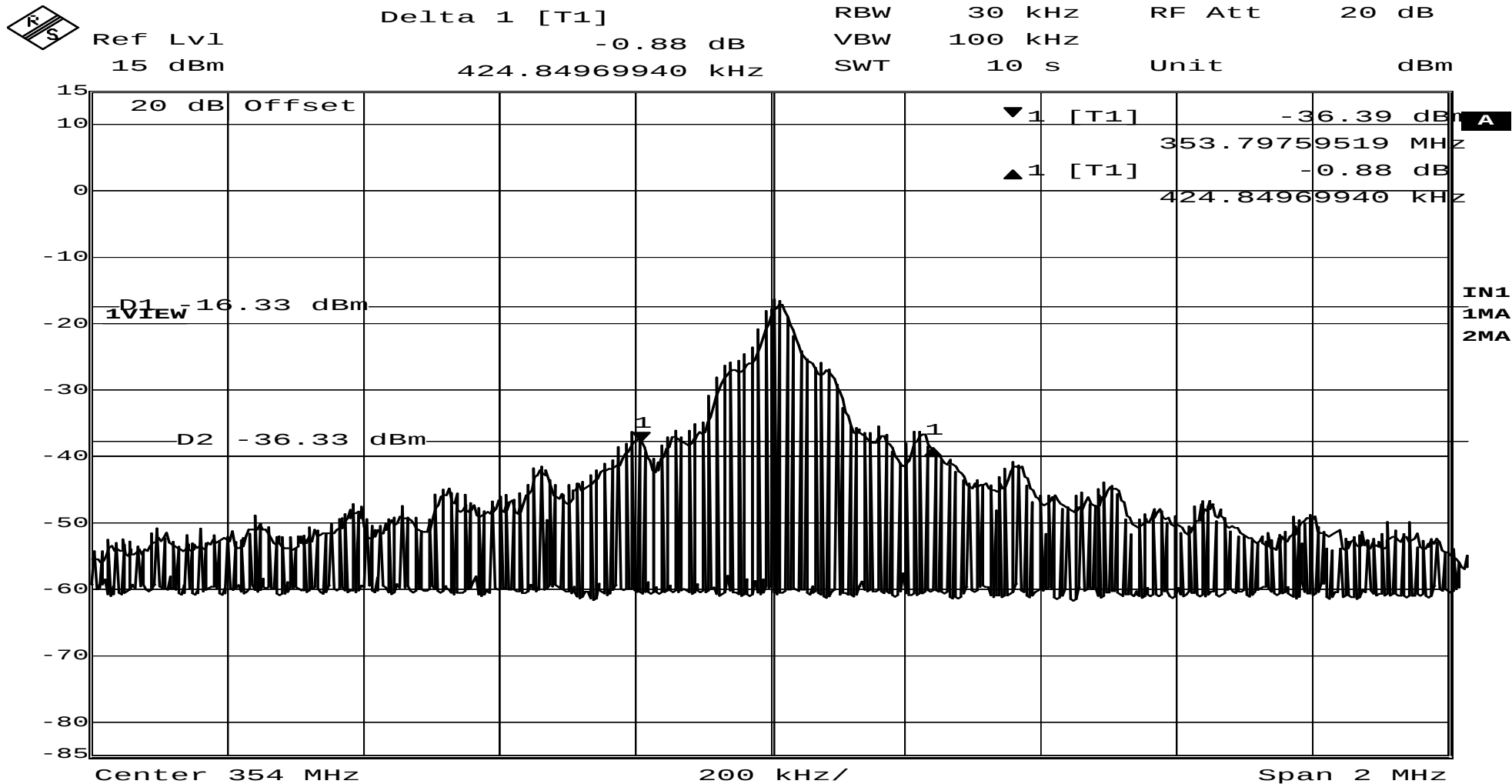


Date: 21 APR 2010 14:26:34

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Occupied Bandwidth		
Customer:	LPA Design, Inc.	Test Sample:	Nikon PocketWizard Mini TT1 Transceiver
Model No:	TT1-N-US	Serial No:	1NU000017
Test Specification:	FCC Part 15, Subpart C	15.231(c)	Date: 4/21/2010
Operating Mode:	Continuously Transmitting		
Notes:	Transmit Frequency 354 MHz Occupied Bandwidth: 424.849 kHz		

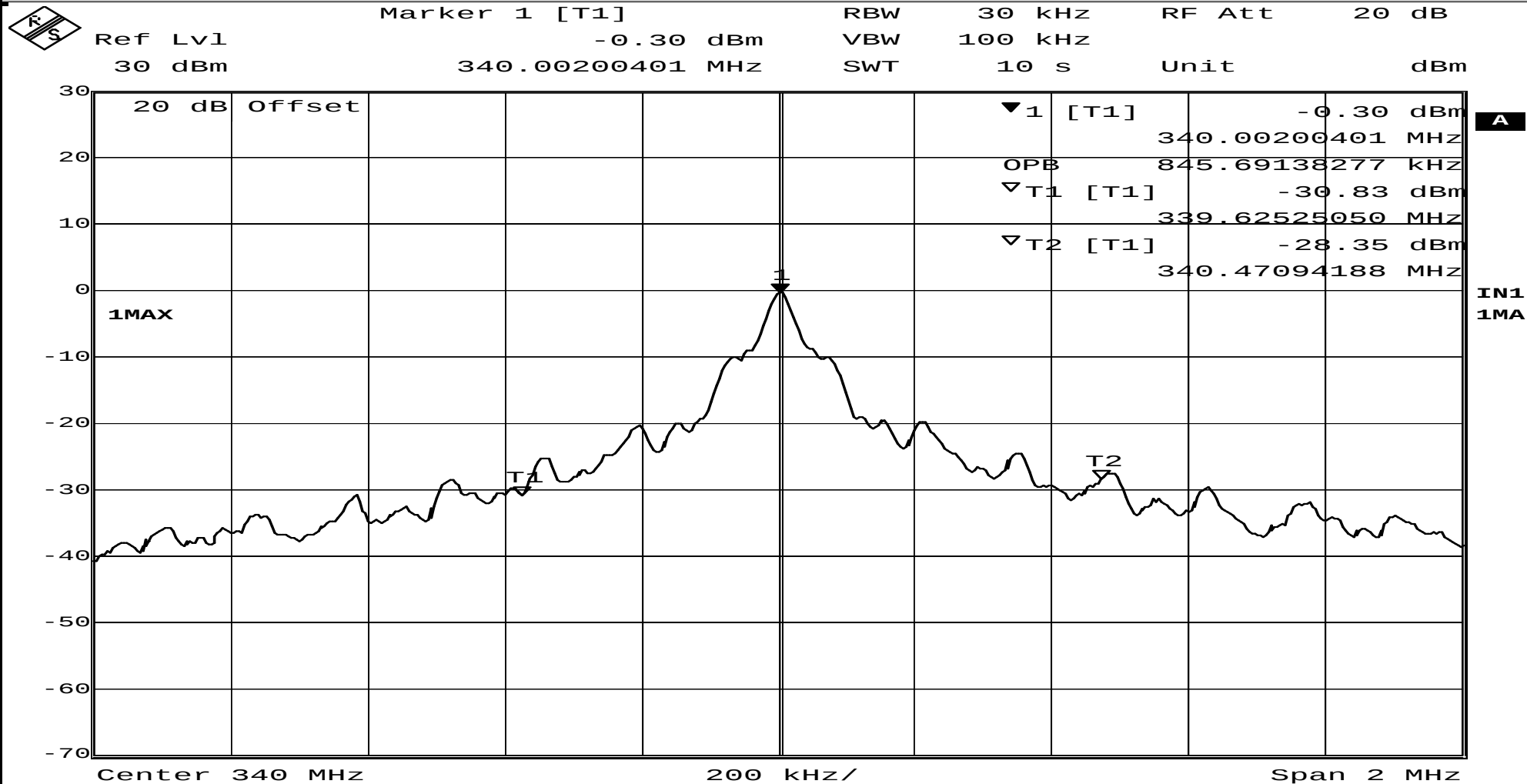


Date: 21 APR 2010 14:16:09

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	99% Bandwidth		
Customer:	LPA Design, Inc.	Test Sample:	Nikon PocketWizard Mini TT1 Transceiver
Model No:	TT1-N-US	Serial No:	1NU000017
Test Specification:	RSS-210		Job No:
Operating Mode:	Continuously Transmitting		Technician:
Notes:	Transmit Frequency 340.0 MHz, 99% BW 845.691 kHz		Date:

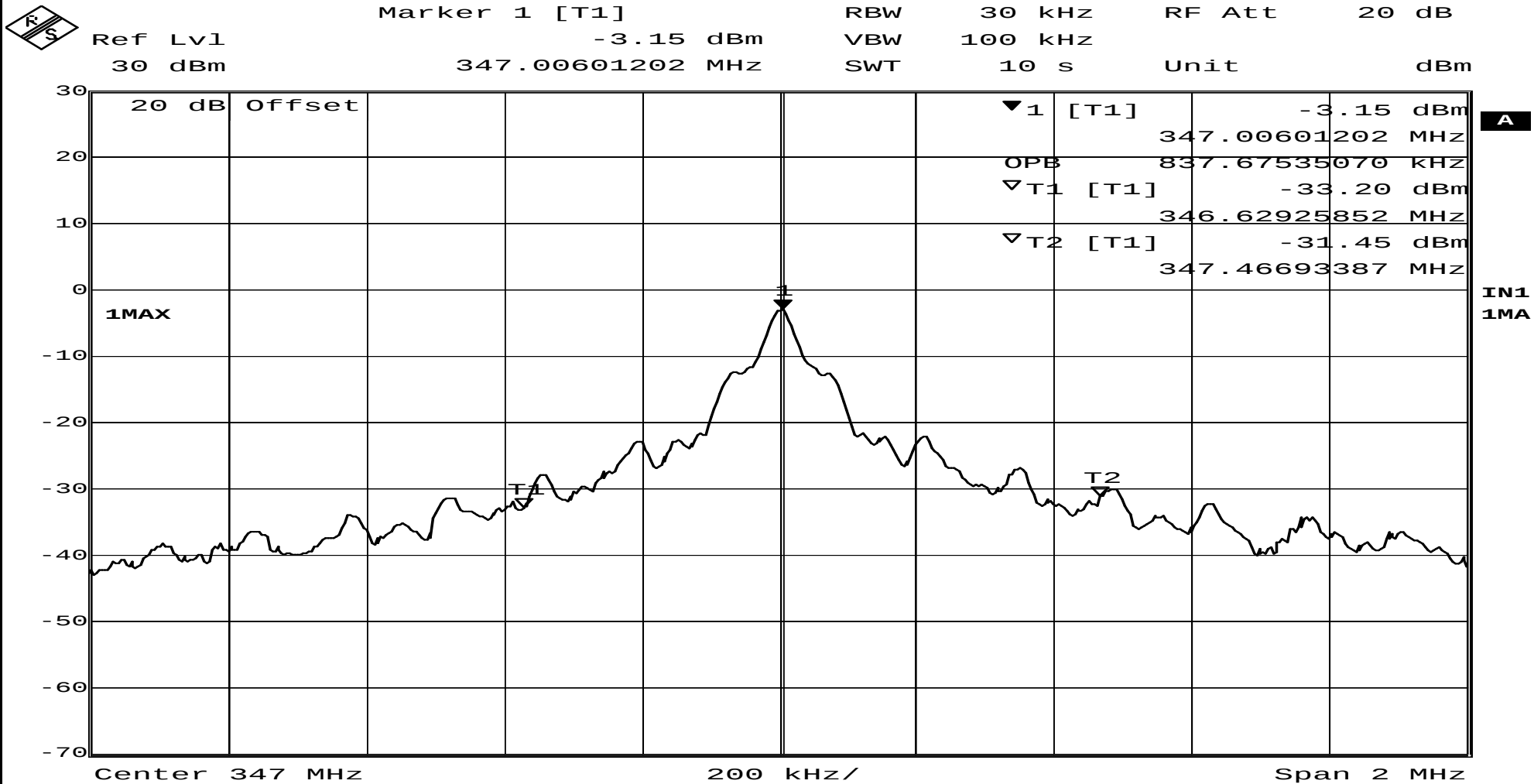


Date: 21.APR.2010 13:30:15

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	99% Bandwidth		
Customer:	LPA Design, Inc.	Test Sample:	Nikon PocketWizard Mini TT1 Transceiver
Model No:	TT1-N-US	Serial No:	1NU000017
Test Specification:	RSS-210		Job No:
Operating Mode:	Continuously Transmitting		Technician:
Notes:	Transmit Frequency 347.0 MHz, 99% BW 837.675 kHz		Date:

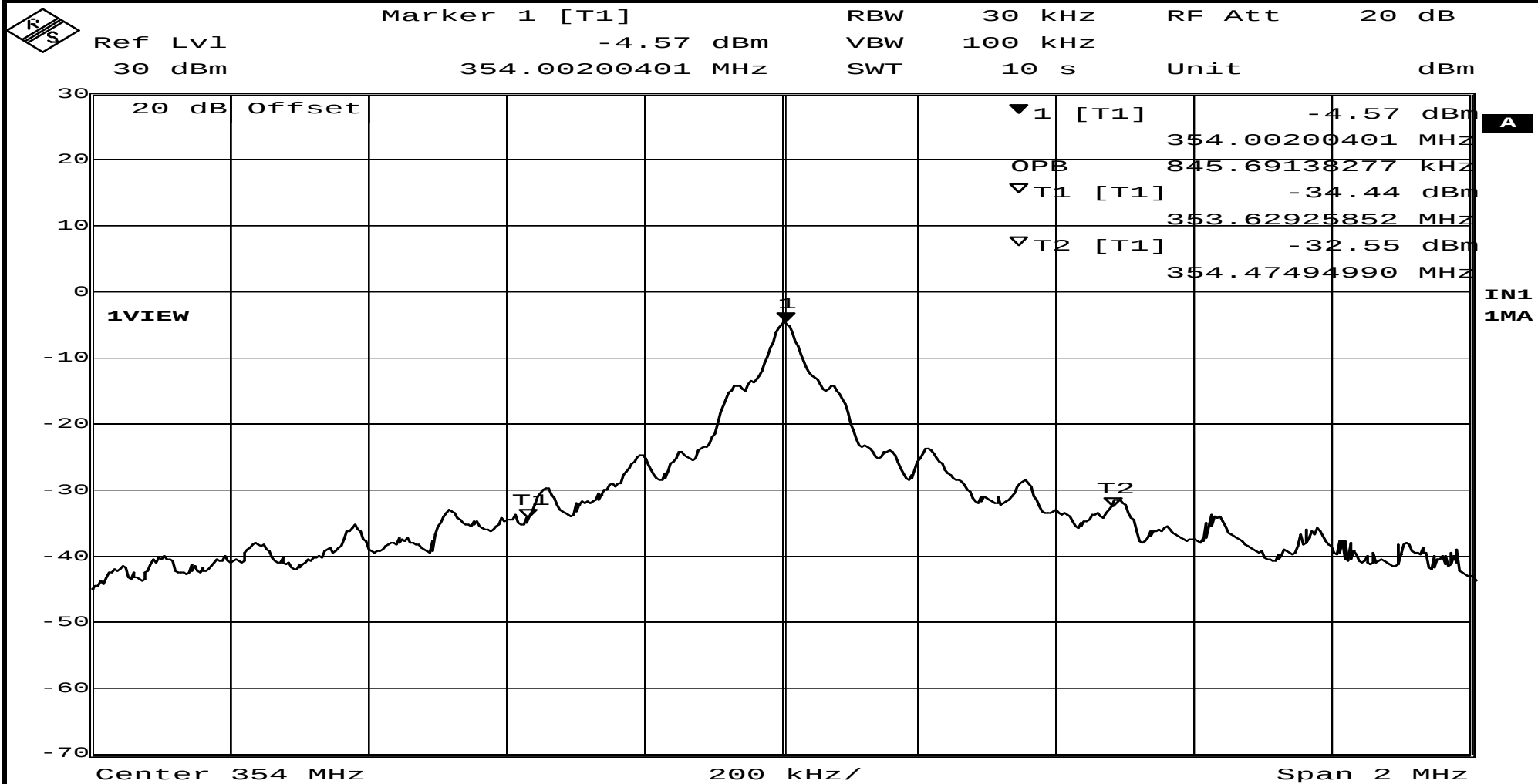


Date: 21.APR.2010 13:34:09

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	99% Bandwidth		
Customer:	LPA Design, Inc.	Test Sample:	Nikon PocketWizard Mini TT1 Transceiver
Model No:	TT1-N-US	Serial No:	1NU000017
Test Specification:	RSS-210		Job No:
Operating Mode:	Continuously Transmitting		Technician:
Notes:	Transmit Frequency 354.0 MHz, 99% BW 845.691 kHz		Date:



Date: 21.APR.2010 13:40:55

IC RSS-GEN, 4.10 - Field Strength of Receiver Spurious Emissions

Test Photographs



Horizontal Antenna Polarization, 30 to 2000 MHz



Vertical Antenna Polarization, 30 to 2000 MHz

IC RSS-GEN, 4.10 - Field Strength of Receiver Spurious Emissions

Test Data

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Radiated Emissions 30 MHz to 2 GHz		
Customer	LPA Design, Inc.	Job No.	R-5328N-2
Test Sample	Nikon PocketWizard Mini TT1 Transceiver		
Model No.	TT1-N-US	Serial No.	1NU000017
Test Specification:	RSS-Gen n/a		
Operating Mode:	Receiving Signal		
Technician:	M. Seamans	Date:	April 23, 2010
Notes:	Test Distance: 3 Meters Detector: Quasi-Peak<1000 MHz Average>1000 MHz		

Test Frequency	Antenna Position	Turntable Position	Uncorrected Reading	Correction Factor	Corrected Reading					Limit at 3 Meters
MHz	(H/V) - Height	Degrees	dBuV	dB	dBuV/m					dBuV/m
30.00	-	-	-	-	-					40.0
	-	-	-	-	-					
35.00	H-1m	0.0	5.46	16.44	21.90	*				
35.00	V-1m	0.0	7.86	16.44	24.30	*				
	-	-	-	-	-					
88.00	-	-	-	-	-					40.0
88.00	-	-	-	-	-					43.5
	-	-	-	-	-					
110.00	H-1m	0.0	6.17	10.13	16.30	*				
110.00	V-1m	0.0	7.97	10.13	18.10	*				
195.00	H-1m	0.0	6.90	12.20	19.10	*				
195.00	V-1m	0.0	7.40	12.20	19.60	*				
205.00	H-1m	0.0	6.84	12.46	19.30	*				
205.00	V-1m	0.0	6.64	12.46	19.10	*				
	-	-	-	-	-					
216.00	-	-	-	-	-					43.5
216.00	-	-	-	-	-					46.0
	-	-	-	-	-					
600.00	H-1m	0.0	7.72	23.78	31.50	*				
600.00	V-1m	0.0	7.82	23.78	31.60	*				
	-	-	-	-	-					
960.00	-	-	-	-	-					46.0
960.00	-	-	-	-	-					54.0
	-	-	-	-	-					
995.00	H-1m	0.0	8.41	29.59	38.00	*				
995.00	V-1m	0.0	8.41	29.59	38.00	*				
	-	-	-	-	-					
2000.00	-	-	-	-	-					54.0

All EUT emissions observed and recorded were more than 10 db below the specified limit throughout the given frequency spectrum. * This emission is not from the EUT. It is a measurement of minimum measurement system sensitivity (Noise Floor).