

July 9, 2001

Federal Communications Commission
Equipment Authorization Branch
7435 Oakland Mills Road
Columbia, MD 21046

Dear Sir/Madam:

Enclosed you will find an application for Certification of a PocketWizard Max Intentional Radiator, FCC ID: KDS-PW2-001. Certification is requested to the requirements of Part 15, Subpart C of the Commission's rules. This application is being filed by Retlif Testing Laboratories on behalf of LPA Design.

I trust that you will find the enclosed application to be complete; however, should you have any questions or require any additional information, please feel free to contact us.

Very truly yours,

RETLIF TESTING LABORATORIES

Scott Wentworth
Manager

Enc. (as stated)

APPLICANT

LPA Design
1350 Shelburne Road
South Burlington, VT 05403

MANUFACTURER

Test Report No. R-3378N
FCC ID: KDS-PW2-001
SAME

Test Report No. R-3378N
FCC ID: KDS-PW2-001

TEST SPECIFICATION: FCC Rules and Regulations Part 15, Subpart C, Para. 15.231
Test Report No. R-3378N
FCC ID: KDS-PW2-001

TEST PROCEDURE: ANSI C63.4:1992

Test Report No. R-3378N
FCC ID: KDS-PW2-001

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FCC ID: KDS-PW2-001

TEST SAMPLE DESCRIPTION

Test Report No. R-3378N
FCC ID: KDS-PW2-001

BRANDNAME: PocketWizard Max MODEL: N/A
Test Report No. R-3378N
FCC ID: KDS-PW2-001

Test Report No. R-3378N
FCC ID: KDS-PW2-001

TYPE: Intentional Radiator - Transceiver

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Test Report No. R-3378N
FCC ID: KDS-PW2-001

POWER REQUIREMENTS: 3VDC (Internal Battery or External Power Supply)
Test Report No. R-3378N
FCC ID: KDS-PW2-001

Test Report No. R-3378N
FCC ID: KDS-PW2-001

FREQUENCY OF OPERATION RANGE: 344MHz to 354MHz

Test Report No. R-3378N
FCC ID: KDS-PW2-001

TEST FREQUENCIES: 346.5MHz and 349.0MHz

Test Report No. R-3378N
FCC ID: KDS-PW2-001

TESTS PERFORMED

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Para. 15.231(a), Radiated Emissions, Fundamental and Harmonics
Test Report No. R-3378N
FCC ID: KDS-PW2-001

Para. 15.231(c), Occupied Bandwidth

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Para. 15.207(a), Conducted Emissions

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Test Report No. R-3378N
FCC ID: KDS-PW2-001

REPORT OF MEASUREMENTS

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Applicant:

LPA Design

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Device:

Transceiver

Test Report No. R-3378N
FCC ID: KDS-PW2-001

FCC ID:

KDS-PW2-001

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Power Requirements: 3VDC (Internal Battery or External Power Supply)

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Applicable Rule Section: Part 15, Subpart C, Section 15.231

Test Report No. R-3378N
FCC ID: KDS-PW2-001

REPORT OF MEASUREMENTS (continued)

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Test Report No. R-3378N
FCC ID: KDS-PW2-001

TEST RESULTS

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Test Report No. R-3378N
FCC ID: KDS-PW2-001

15.231 (a) - The device is a transceiver for remote control of photographic strobes.

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FCC ID: KDS-PW2-001

Test Report No. R-3378N
FCC ID: KDS-PW2-001

15.231 (a)(1) &- The transmitter is manually operated and ceases transmission less than 5

15.231 (2) seconds after deactivation.

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Test Report No. R-3378N
FCC ID: KDS-PW2-001

15.231 (a)(3) - The transmitter does not perform periodic transmissions at regularly predetermined

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FCC ID: KDS-PW2-001

intervals.

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Test Report No. R-3378N
FCC ID: KDS-PW2-001

15.231 (a)(4)-

The device is not employed for RC purposes involving security.

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Test Report No. R-3378N
FCC ID: KDS-PW2-001

15.231 (b) - The field strength at 346.5MHz did not exceed 77.3 dB μ V/M (7,328 μ V/M).

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FCC ID: KDS-PW2-001

The field strength at 349.0MHz did not exceed 77.4 dB μ V/M (7,413 μ V/M).

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FCC ID: KDS-PW2-001

The requirements of section 15.35 for averaging pulsed emissions and for

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FCC ID: KDS-PW2-001

limiting peak emissions were met.

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FCC ID: KDS-PW2-001

The field strength of harmonic and spurious emissions did not exceed

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732 μ V/M or 741 μ V/M.

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Test Report No. R-3378N
FCC ID: KDS-PW2-001

15.231 (c) - The device operates over a frequency range of 344MHz to 354MHz. The

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sample was tested at 346.5MHz and 349.0MHz. The bandwidth of emissions

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FCC ID: KDS-PW2-001

did not exceed 0.25% of the operating frequency.

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FCC ID: KDS-PW2-001

REPORT OF MEASUREMENTS (continued)

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Test Report No. R-3378N
FCC ID: KDS-PW2-001

DETERMINATION OF FIELD STRENGTH LIMITS

Test Report No. R-3378N
FCC ID: KDS-PW2-001

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

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Test Report No. R-3378N
FCC ID: KDS-PW2-001

Frequency Tested: 346.5MHz

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Frequency	Limit
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Test Report No. R-3378N
FCC ID: KDS-PW2-001

F1 = 260 3750 = L1

Test Report No. R-3378N
FCC ID: KDS-PW2-001

$$Fo = 346.5 \quad Lo$$

Test Report No. R-3378N
ECC ID: KDS-PW2-001

F2 = 470 12500 = L2

Test Report No. R-3378N
FCC ID: KDS-PW2-001

The formula below was utilized to determine the limits:

Test Report No. R-3378N
FCC ID: KDS-PW2-001

$$\text{Limit} = L1 + [(F0-F1)(L2-L1)/(F2-F1)]$$

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Solving yields:

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Fundamental Limit = 7,328 μ V/M (AVERAGE) @ 3 Meters

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Harmonic Limit = 732 μ V/M (AVERAGE) @ 3 Meters

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Frequency Tested: 349.0MHz

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Frequency	Limit
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Test Report No. R-3378N
FCC ID: KDS-PW2-001

F1 = 260 3750 = L1

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Fo = 349.0 Lo

Test Report No. R-3378N
FCC ID: KDS-PW2-001

F2 = 470 12500 = L2

Test Report No. R-3378N
FCC ID: KDS-PW2-001

The formula below was utilized to determine the limits:

Test Report No. R-3378N
FCC ID: KDS-PW2-001

$$\text{Limit} = L1 + [(F0-F1)(L2-L1)/(F2-F1)]$$

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Solving yields:

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Fundamental Limit = 7,413 μ V/M (AVERAGE) @ 3 Meters

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Harmonic Limit = 741 μ V/M (AVERAGE) @ 3 Meters

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Test Report No. R-3378N
FCC ID: KDS-PW2-001

REPORT OF MEASUREMENTS (continued)

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Test Report No. R-3378N
FCC ID: KDS-PW2-001

DETERMINATION OF DUTY CYCLE

Test Report No. R-3378N
FCC ID: KDS-PW2-001

The analyzer was set for a frequency span of 0Hz. The sweep time was then adjusted in order to

Test Report No. R-3378N
FCC ID: KDS-PW2-001

display one full pulse train. The transmitter on time was then summed and compared to the time for

Test Report No. R-3378N
FCC ID: KDS-PW2-001

one full cycle in order to obtain the duty cycle.

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Transmitter On Time = 0.450 milliseconds (maximum)

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Transmitter Cycle Time = 5.350 milliseconds

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Transmitter Duty Cycle = 0.0841

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FCC ID: KDS-PW2-001

*See Attached Duty Cycle Timing Diagram

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FCC ID: KDS-PW2-001

Test Report No. R-3378N
FCC ID: KDS-PW2-001

SPECTRUM ANALYZER DESENSITIZATION CONSIDERATIONS

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Due to the nature of the emissions being measured, care was taken to ensure that the resolution

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FCC ID: KDS-PW2-001

bandwidth of the spectrum analyzer was adequate to provide accurate measurements.

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Test Report No. R-3378N
FCC ID: KDS-PW2-001

GENERAL NOTES

Test Report No. R-3378N
FCC ID: KDS-PW2-001

1. All readings were taken utilizing a peak detector function at

a test distance of 3 meters.

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Test Report No. R-3378N
FCC ID: KDS-PW2-001

2. The duty cycle was applied to the peak readings in order to

determine the average value of the emissions.

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Test Report No. R-3378N
FCC ID: KDS-PW2-001

3. The frequency range for radiated emissions was scanned from 30

MHz to 3.6 GHz. The frequency range for conducted emissions

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was scanned from 450 kHz to 30 MHz.

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EQUIPMENT LIST

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FCC ID: KDS-PW2-001

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Radiated Emissions

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Test Report No. R-3378N
FCC ID: KDS-PW2-001

EN	Type	Manufacturer	Frequency Range	Model No.	Cal Date	Due Date
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Test Report No. R-3378N
FCC ID: KDS-PW2-001

3116 Pre-Amplifier

Miteq

0.1 GHz - 18 GHz

AFS42-35

12/3/98

12/3/99

Test Report No. R-3378N
FCC ID: KDS-PW2-001

3118 Broadband Pre-Amplifier Electro-Metrics 10 KHz - 1 GHz BPA-1000 6/24/98 6/24/99

Test Report No. R-3378N
FCC ID: KDS-PW2-001

3258 Double Ridge Guide EMCO 1 - 18 GHz 3115 4/3/98 4/3/99

Test Report No. R-3378N
FCC ID: KDS-PW2-001

4029 Open Area Test Site

Retlif

3 / 10 Meters

RNH

6/15/98

6/15/99

Test Report No. R-3378N
FCC ID: KDS-PW2-001

4202 Biconilog

EMCO

26 MHz - 2 GHz

3142

6/10/98

6/10/99

Test Report No. R-3378N
FCC ID: KDS-PW2-001

4895 Spectrum Analyzer Hewlett Packard 9kHz - 22GHz 8593EM 9/18/98 9/18/99

Test Report No. R-3378N
FCC ID: KDS-PW2-001

4896 Graphics Plotter

Hewlett Packard

N/A

7470A

8/23/98

8/23/99

Test Report No. R-3378N
FCC ID: KDS-PW2-001

EQUIPMENT LIST

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Conducted Emissions

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Test Report No. R-3378N
FCC ID: KDS-PW2-001

EN	Type	Manufacturer	Frequency Range	Model No.	Cal Date	Due Date
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Test Report No. R-3378N
FCC ID: KDS-PW2-001

3107 Spectrum Analyzer Advantest 10 KHz - 3 GHz 4131B 2/9/98 2/9/99

Test Report No. R-3378N
FCC ID: KDS-PW2-001

4027 LISN

Solar Electronics 10 KHz - 30 MHz 9252-50-R-24BNC 6/24/98 6/24/99

Test Report No. R-3378N
FCC ID: KDS-PW2-001

4028	Isolation Transformer	Acme	N/A	120x240	1/24/98	1/24/99
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Test Report No. R-3378N
FCC ID: KDS-PW2-001

4050 Transient Limiter Hewlett Packard 9 KHz - 200 MHz 11970K 12/9/98 12/9/99

Test Report No. R-3378N
FCC ID: KDS-PW2-001

4896 Graphics Plotter

Hewlett Packard N/A

7470A

8/23/98 8/23/99

Test Report No. R-3378N
FCC ID: KDS-PW2-001

Test Report No. R-3378N
FCC ID: KDS-PW2-001