

February 15, 2001

Elite Electronic Engineering, Inc.
1516 Center Circle
Downers Grove, IL 60515

Attn: Mr. Richard King

Dear Richard:

Enclosed you will find the revised report of measurements the Sekonic Wireless Light Meter, Model L-358, Serial No. n/a, FCC ID: PFK-358-01.

I trust that you will find the enclosed 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 Sekonic Corporation 7-24-12, Oizum-Gakeun-Cho Nerima-Ku, Tokyo 178-8686 JAPAN	MANUFACTURER SAME
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TEST SPECIFICATION: FCC Rules and Regulations Part 15, Subpart C, Para. 15.231

TEST PROCEDURE: ANSI C63.4:1992

TEST SAMPLE DESCRIPTION

BRANDNAME: Sekonic MODEL: L-358

TYPE: Wireless Light Meter

POWER REQUIREMENTS: 3VDC Internal Battery

FREQUENCY BAND OF OPERATION: 344MHz to 354MHz (32 Discrete Channels)

MODULATION: Pulsed (On/Off Keying)

TYPE OF TRANSMISSION: Control Signal (Pulse Recognition Codes)

TESTED FREQUENCIES: 344MHz, 348.97MHz and 353.97MHz

FCC ID: PFK-358-01

APPLICABLE RULE SECTION: Part 15, Subpart C, Section 15.231

TESTS PERFORMED

- Spurious Emissions
- Field Strength of Fundamental
- Occupied Bandwidth, 0.25% of Fundamental Frequency
- Duty Cycle Determination

TEST SAMPLE OPERATION

The EUT is battery operated and was tested with new batteries installed. The device is normally manually operated and transmits a 3 packet burst control signal. Normal operation of the EUT complies with the parameters required in Part 15, Subpart C, Section 15.231. For testing purposes only the EUT was configured to continuously transmit.

TEST SAMPLE / TEST PROGRAM

- C The transmitter is manually activated.
- C The transmitter does not perform periodic transmissions at regularly predetermined intervals.
- C The device can not be employed for RC purposes involving security.
- C The fundamental field strength at 344MHz did not exceed 7250.01FV/M (Average) at a test distance of 3 meters.
The fundamental field strength at 348.97MHz did not exceed 7457.08FV/M (Average) at a test distance of 3 meters.
The fundamental field strength at 353.97MHz did not exceed 7665.42FV/M (Average) at a test distance of 3 meters.
- C The field strength of harmonic and spurious emissions did not exceed 725.0FV/M or 500FV/M as applicable at 344MHz.
The field strength of harmonic and spurious emissions did not exceed 745.71FV/M or 500FV/M as applicable at 348.97MHz.
The field strength of harmonic and spurious emissions did not exceed 766.54FV/M or 500FV/M as applicable at 353.97MHz.
- C The device can operate at 32 discrete frequencies over the range of 344 to 354MHz. The device was tested at the frequencies of 344MHz, 348.97MHz and 353.97MHz. The bandwidth of emissions did not exceed 0.25% of the operating frequency and was determined as follows:

Fundamental Frequency	=	344MHz
0.25% of Center Frequency	=	0.86MHz
0.86 divided by 2	=	0.43MHz
Bandwidth Range	=	Fundamental Frequency + and - 0.43MHz
344MHz - 0.43MHz	=	343.57MHz
344MHz + 0.43MHz	=	344.43MHz
Bandwidth Range	=	343.57MHz - 344.43MHz

Fundamental Frequency	=	348.97MHz
0.25% of Center Frequency	=	0.87MHz
0.87 divided by 2	=	0.435MHz
Bandwidth Range	=	Fundamental Frequency + and - 0.435MHz
348.97MHz - 0.435MHz	=	348.535MHz
348.97MHz + 0.435MHz	=	349.405MHz

$$\text{Bandwidth Range} = 438.53\text{MHz} - 349.41\text{MHz}$$

TEST SAMPLE / TEST PROGRAM (continued)

Bandwidth Calculations continued:

$$\begin{aligned} \text{Fundamental Frequency} &= 353.97\text{MHz} \\ 0.25\% \text{ of Center Frequency} &= 0.88\text{MHz} \\ 0.88 \text{ divided by } 2 &= 0.442\text{MHz} \\ \text{Bandwidth Range} &= \text{Fundamental Frequency} + \text{and} - 0.442\text{MHz} \\ 353.97\text{MHz} - 0.442\text{MHz} &= 353.528\text{MHz} \\ 353.97\text{MHz} + 0.442\text{MHz} &= 354.412\text{MHz} \\ \text{Bandwidth Range} &= 353.53\text{MHz} - 354.41\text{MHz} \end{aligned}$$

C The device uses an internal antenna.

C Radiated Emissions from the EUT were measured in all three axis. Worst case emissions were found with the EUT in the vertical upright position. This orientation is also the position in which the device will normally be used. The attached Radiated Emissions test data is representative of this worst case orientation.

DETERMINATION OF FIELD STRENGTH LIMITS

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

Fundamental Frequency: 344MHz

Where F is the frequency in MHz, the formula for calculating the maximum permitted fundamental field strength for the band 260-470MHz, FV/m at 3 meters is as follows:

$$\begin{aligned} 41.6667(F) - 7083.3333 &= \text{Field Strength Limit (FV/m)} \\ 41.6667 \times 343.99 &= 14332.92813 \\ 14332.92813 - 7083.3333 &= 7249.59 \\ \text{Field Strength Limit} &= 7250 \text{ FV/m} \end{aligned}$$

The maximum permitted unwanted emission level is 20dB below the maximum permitted fundamental level.

TEST SAMPLE / TEST PROGRAM (continued)

Field Strength Calculations continued:

Fundamental Frequency: 348.97MHz

Where F is the frequency in MHz, the formula for calculating the maximum permitted fundamental field strength for the band 260-470MHz, FV/m at 3 meters is as follows:

$$\begin{aligned} 41.6667(F) - 7083.3333 &= \text{Field Strength Limit (FV/m)} \\ 41.6667 \times 348.97 &= 14540.4283 \\ 14540.4283 - 7083.3333 &= 7457.094999 \\ \text{Field Strength Limit} &= 7457.09 \text{ FV/m} \end{aligned}$$

The maximum permitted unwanted emission level is 20dB below the maximum permitted fundamental level.

Fundamental Frequency: 353.97MHz

Where F is the frequency in MHz, the formula for calculating the maximum permitted fundamental field strength for the band 260-470MHz, FV/m at 3 meters is as follows:

$$\begin{aligned} 41.6667(F) - 7083.3333 &= \text{Field Strength Limit (FV/m)} \\ 41.6667 \times 353.97 &= 14748.7618 \\ 14748.7618 - 7083.3333 &= 7665.428499 \\ \text{Field Strength Limit} &= 7665.42 \text{ FV/m} \end{aligned}$$

The maximum permitted unwanted emission level is 20dB below the maximum permitted fundamental level.

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.

Fundamental Frequency: 344MHz

Transmitter On Time	=	5.81 milliseconds (maximum)
Transmitter Cycle Time	=	26.45 milliseconds
Transmitter Duty Cycle	=	22.1 %
On Time divided by Cycle Time	=	Duty Cycle Factor
5.81 divided by 26.45	=	0.219
0.219 converted to dB (LOG ₁₀ .219)20	=	-13.1dB
<i>Duty Cycle Factor</i>	=	<i>-13.1dB</i>

Fundamental Frequency: 348.97MHz

Transmitter On Time	=	6.90 milliseconds (maximum)
Transmitter Cycle Time	=	26.69 milliseconds
Transmitter Duty Cycle	=	2.59 %
On Time divided by Cycle Time	=	Duty Cycle Factor
6.90 divided by 26.69	=	0.258
0.258 converted to dB (LOG ₁₀ .258)20	=	-11.749dB
<i>Duty Cycle Factor</i>	=	<i>-11.75dB</i>

Fundamental Frequency: 353.97MHz

Transmitter On Time	=	6.90 milliseconds (maximum)
Transmitter Cycle Time	=	26.69 milliseconds
Transmitter Duty Cycle	=	2.59 %
On Time divided by Cycle Time	=	Duty Cycle Factor

$$\begin{aligned} 6.90 \text{ divided by } 26.69 &= 0.258 \\ 0.258 \text{ converted to dB (LOG}_{10} .258)20 &= -11.749\text{dB} \\ \textit{Duty Cycle Factor} &= \textit{-11.75dB} \end{aligned}$$

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

TEST SAMPLE / TEST PROGRAM (continued)

SPECTRUM ANALYZER

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.

GENERAL NOTES

1. All readings were taken utilizing a peak detector function at a test distance of 3 meters.
2. The duty cycle was applied to the peak readings in order to determine the average value of the emissions.
3. The frequency range was scanned from 30MHz to 3.6GHz. Emission levels closest to the specified limit are listed on the attached data sheet.

EQUIPMENT LISTS

Field Strength of Fundamental

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
4202	Biconilog	EMCO	26 MHz - 2 GHz	3142	7/10/00	7/10/01
4895	Spectrum Analyzer	Hewlett Packard	9kHz - 22GHz	8593EM	2/17/00	2/17/01
4921	Graphics Plotter	Hewlett Packard	N/A	7550A	4/25/00	4/25/01
713	EMI Test Receiver	Rohde & Schwarz	20 Hz - 26.5 GHz	ESI26	3/9/00	3/9/01

Occupied Bandwidth

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
713	EMI Test Receiver	Rohde & Schwarz	20 Hz - 26.5 GHz	ESI26	3/9/00	3/9/01

Spurious Emissions

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
3116	Pre-Amplifier	Miteq	0.1 GHz - 18 GHz	AFS42-35	11/7/00	11/7/01
3117	Power Supply	B&K Precision	0-30 Vdc, 3.0 A	1630	2/23/00	2/23/01
3258	Double Ridge Guide	EMCO	1 - 18 GHz	3115	4/6/00	4/6/01
4202	Biconilog	EMCO	26 MHz - 2 GHz	3142	7/10/00	7/10/01
4895	Spectrum Analyzer	Hewlett Packard	9kHz - 22GHz	8593EM	2/17/00	2/17/01
4921	Graphics Plotter	Hewlett Packard	N/A	7550A	4/25/00	4/25/01
713	EMI Test Receiver	Rohde & Schwarz	20 Hz - 26.5 GHz	ESI26	3/9/00	3/9/01



Delta 1 [T1]

RBW 1 MHz RF Att 10 dB

Ref Lvl
87 dBuV

-4.56 dB

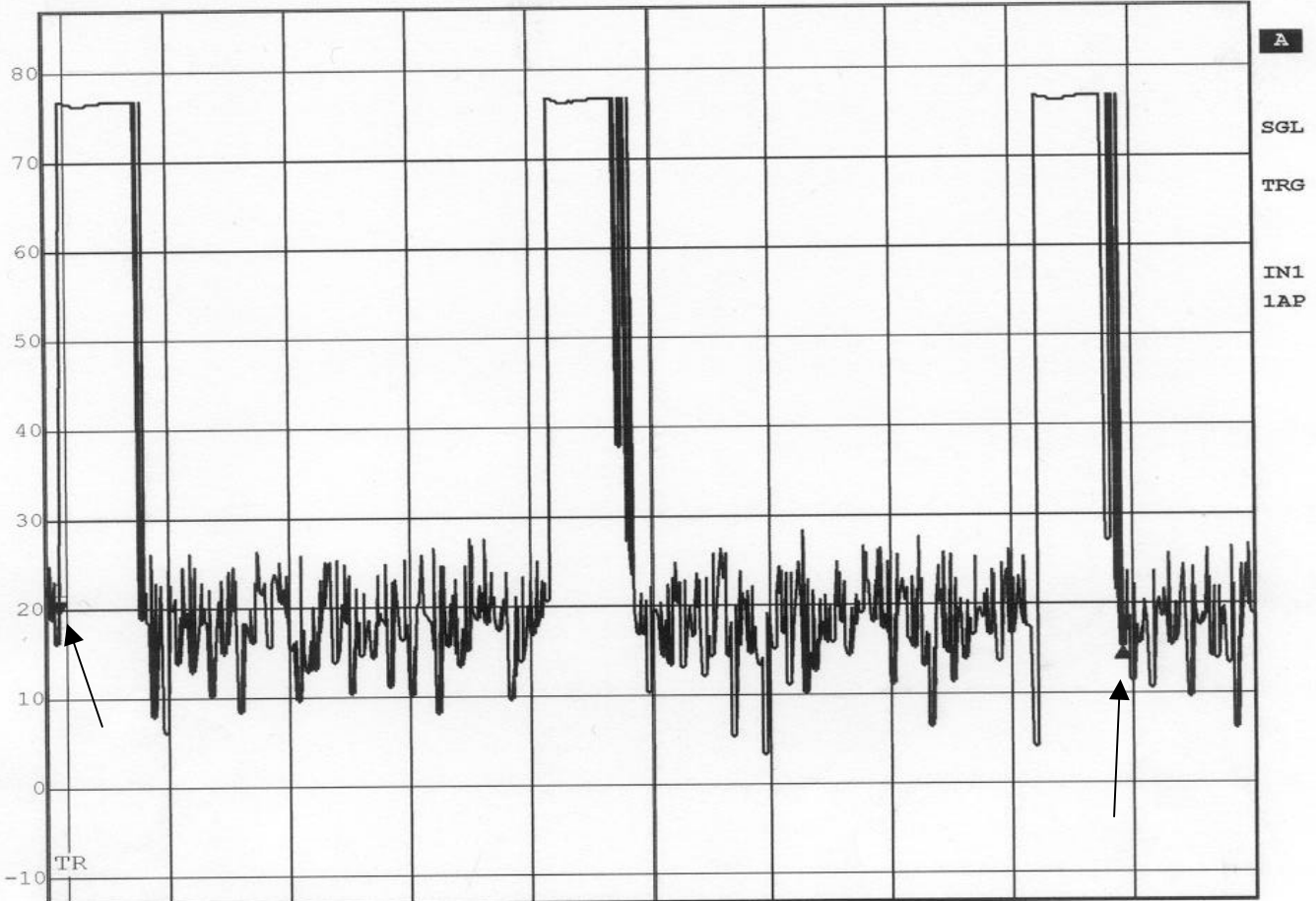
VBW 1 MHz

26.452906 ms

SWT 30 ms

Unit

dBuV



Center 344.04 MHz

3 ms/

Date: 3.JAN.2001 13:26:27

Customer: Sekonic Corporation
 Test Sample: Wireless Light Meter
 Model No: L-608
 Test Method: Duty Cycle Plots CH16 344 MHz
 Notes:

Date: 1/4/2001 Tech: T. Firkowski Sheet 1 of 3



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Delta 1 [T1]

RBW 10 kHz RF Att 10 dB

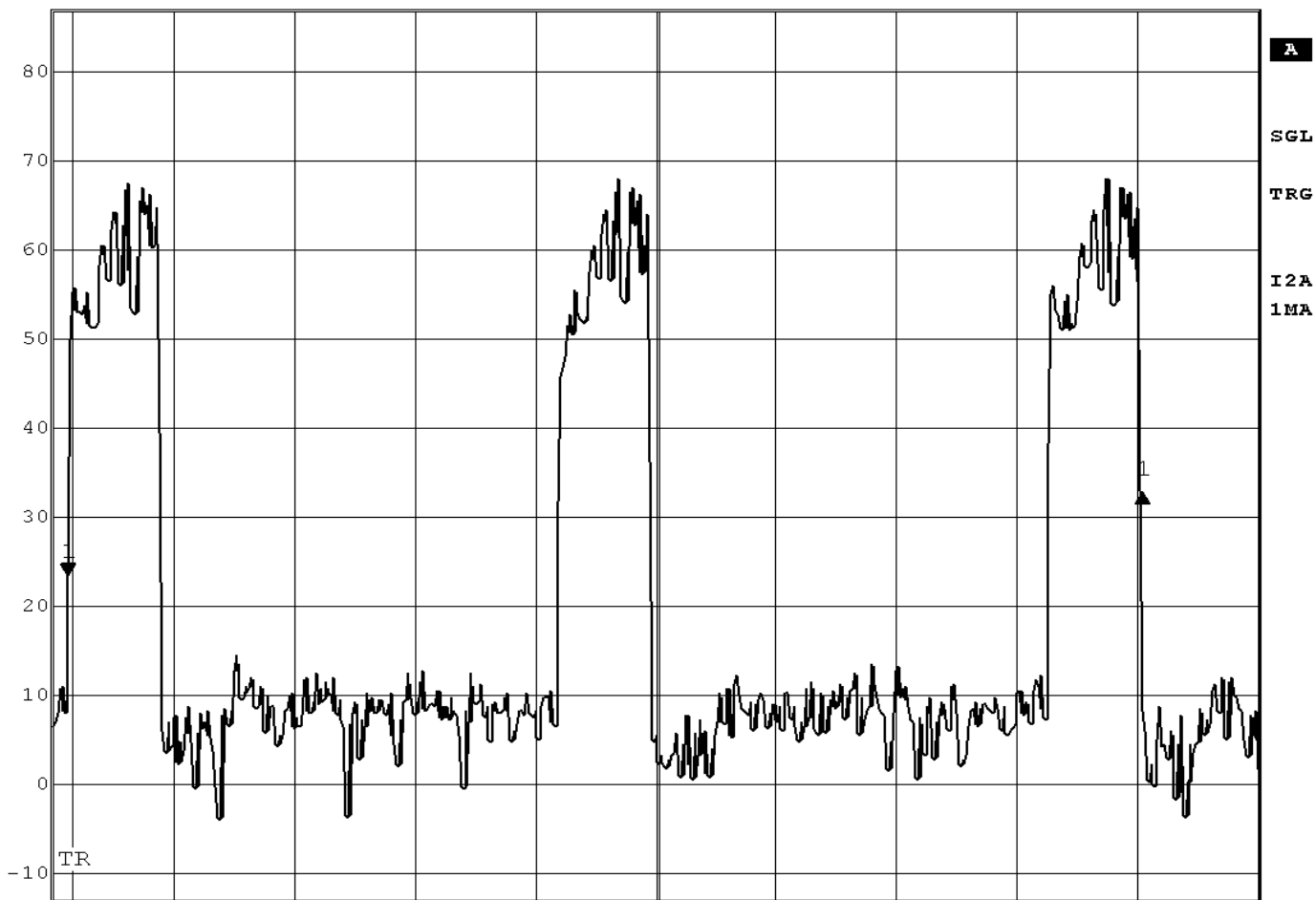
Ref Lvl 9.08 dB

VBW 10 kHz

87 dB μ V 26.737475 ms

SWT 30 ms

Unit dB μ V



Center 348.9739479 MHz 3 ms/

Date: 28.JAN.2001 11:05:31

Customer: Sekonic Corporation
 Test Sample: Wireless Light Meter
 Model No: L-608
 Test Method: Duty Cycle Plots CH22 348.97 MHz
 Notes:

Date: 1/28/2001 Tech: T. Firkowski Sheet 2 of 3



Retlif Testing Laboratories

Report No. R-3720N2

Spurious Emissions

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
3116	Pre-Amplifier	Miteq	0.1 GHz - 18 GHz	AFS42-35	11/7/00	11/7/01
3117	Power Supply	B&K Precision	0-30 Vdc, 3.0 A	1630	2/23/00	2/23/01
3258	Double Ridge Guide	EMCO	1 - 18 GHz	3115	4/6/00	4/6/01
4202	Biconilog	EMCO	26 MHz - 2 GHz	3142	7/10/00	7/10/01
4895	Spectrum Analyzer	Hewlett Packard	9kHz - 22GHz	8593EM	2/17/00	2/17/01
4921	Graphics Plotter	Hewlett Packard	N/A	7550A	4/25/00	4/25/01
713	EMI Test Receiver	Rohde & Schwarz	20 Hz - 26.5 GHz	ESI26	3/9/00	3/9/01

Occupied Bandwidth

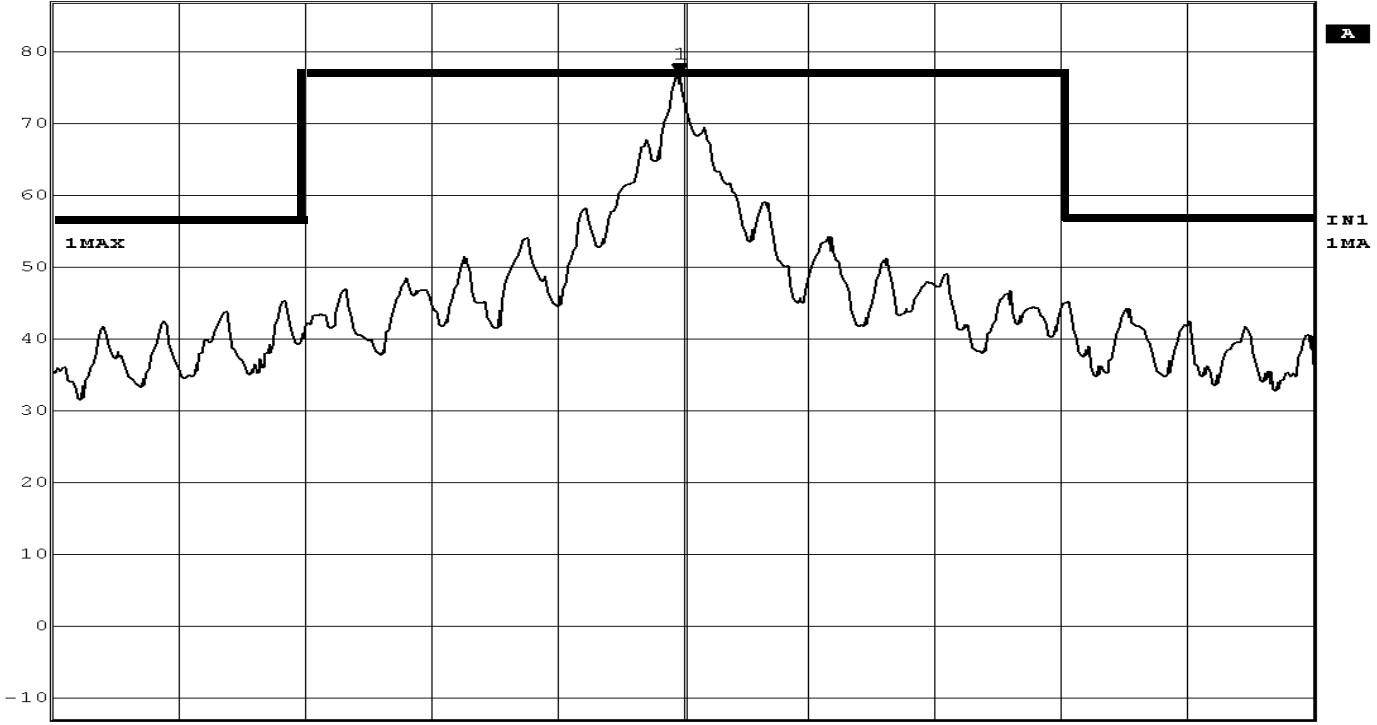
EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
713	EMI Test Receiver	Rohde & Schwarz	20 Hz - 26.5 GHz	ESI26	3/9/00	3/9/01

Field Strength of Fundamental

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
4202	Biconilog	EMCO	26 MHz - 2 GHz	3142	7/10/00	7/10/01
4895	Spectrum Analyzer	Hewlett Packard	9kHz - 22GHz	8593EM	2/17/00	2/17/01
4921	Graphics Plotter	Hewlett Packard	N/A	7550A	4/25/00	4/25/01
713	EMI Test Receiver	Rohde & Schwarz	20 Hz - 26.5 GHz	ESI26	3/9/00	3/9/01



Marker 1 [T1] RBW 10 kHz RF Att 10 dB
 Ref Lvl 76.77 dBµV VBW 100 kHz
 87 dBµV 335.80579396 MHz SWT 35 ms Unit dBµV



Center 335.81 MHz 139.9208333 kHz/ Span 1.399208333 MHz

Date: 4.JAN.2001 10:18:56

Customer: Sekonic Corporation
 Test Sample: Wireless Light Meter
 Model No: L-608
 Test Method: Occupied Bandwidth, FCC Part 15, Subpart C Para: 15.231(c)
 Notes:

Date: 1/4/2001 Tech: T. Firkowski Sheet 1 of 3



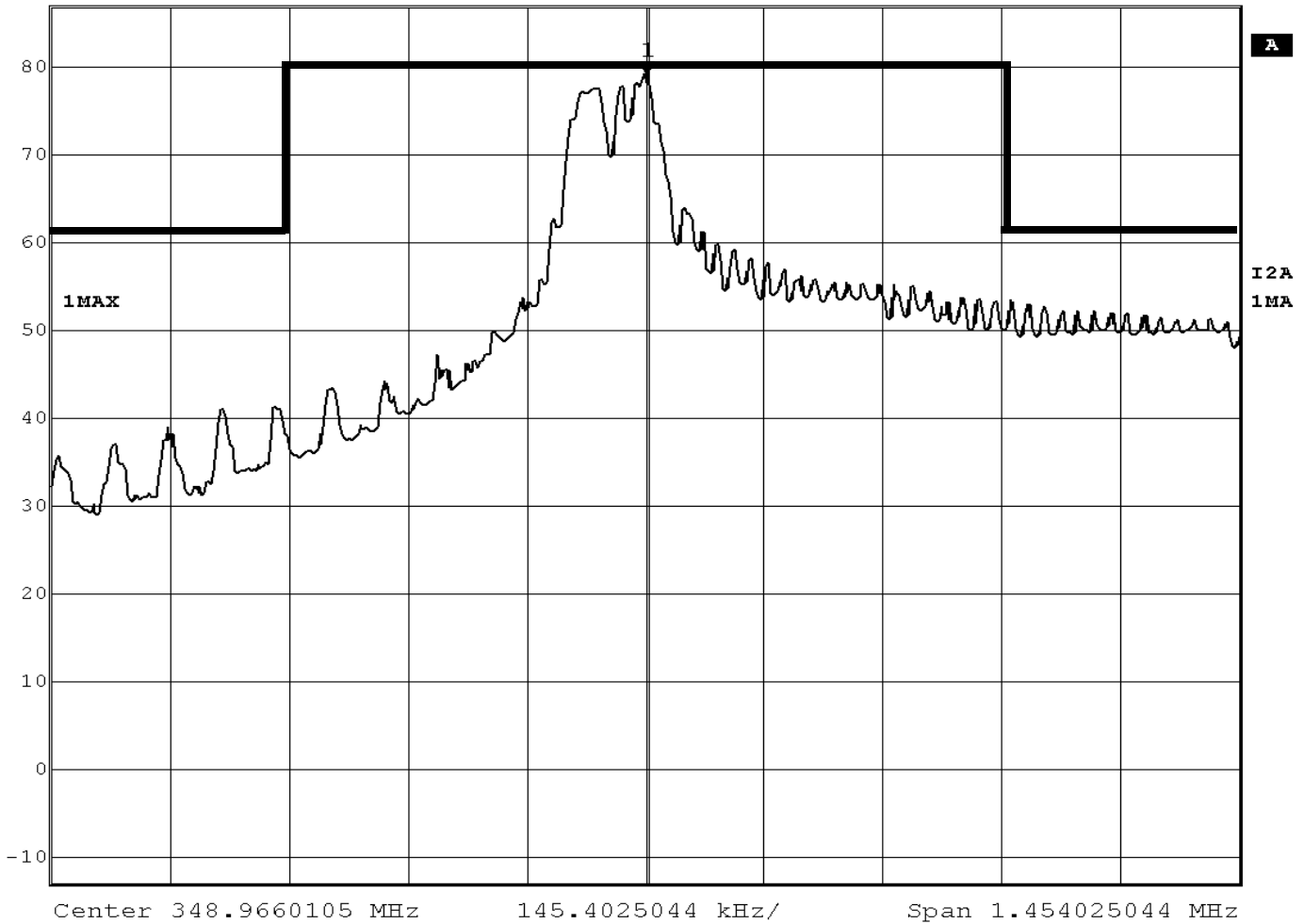
Retlif Testing Laboratories

Report No. R-3720N2



Marker 1 [T1] RBW 10 kHz RF Att 10 dB

Ref Lvl 79.00 dBµV VBW 10 kHz
87 dBµV 348.96601051 MHz SWT 37 ms Unit dBµV



Date: 27.JAN.2001 15:18:14

Customer: Sekonic Corporation
 Test Sample: Wireless Light Meter
 Model No: L-608
 Test Method: Occupied Bandwidth, FCC Part 15, Subpart C Para: 15.231(c)
 Notes:

Date: 1/27/2001 Tech: T. Firkowski Sheet 2 of 3



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Marker 1 [T1]

RBW 10 kHz RF Att 10 dB

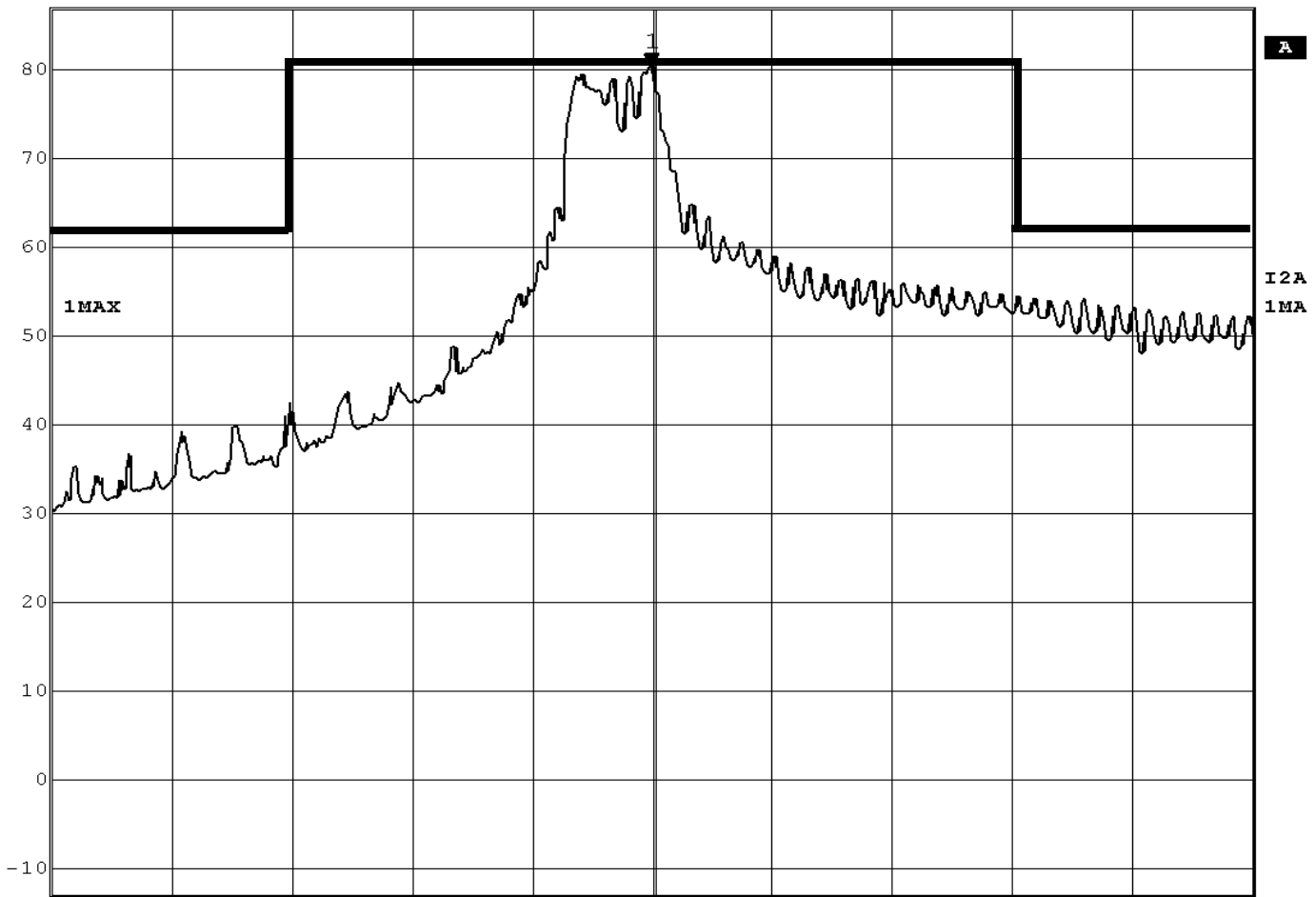
Ref Lvl 80.47 dBμV

VBW 10 kHz

87 dBμV 353.96209957 MHz

SWT 37 ms

Unit dBμV



Center 353.9635774 MHz 147.4848239 kHz/ Span 1.474848239 MHz

Date: 27.JAN.2001 15:16:33

Customer: Sekonic Corporation
 Test Sample: Wireless Light Meter
 Model No: L-608
 Test Method: Occupied Bandwidth, FCC Part 15, Subpart C Para: 15.231(c)
 Notes:

Date: 1/27/2001 Tech: T. Firkowski Sheet 3 of 3



Retlif Testing Laboratories

Report No. R-3720N2

RETLIF TESTING LABORATORIES

TABULAR DATA SHEET

TEST METHOD: Spurious Emissions (30MHz to 3.6GHz)

CUSTOMER: Sekonic Corporation

JOB NO: R-3720N1

TEST SAMPLE: Wireless Light Meter

MODEL NO: L-358

SERIAL NO: n/a

TEST SPECIFICATION: FCC Part 15, Subpart C Paragraph: 15.231(b) & 15.205

OPERATING MODE: Continuously Transmitting

TECHNICIAN: T. Firkowski

DATE: 1/28/01

NOTES: Detector Function: Peak @ 3m Fundamental Frequency: 344.00 MHz (CH 16)

TRANSMIT FREQUENCY	TEST FREQUENCY	ANTENNA/EUT POSITION	METER READING	CORRECTION FACTOR	DUTY CYCLE CORRECTION FACTOR	CORRECTED READING	CONVERTED READING	LIMIT @ 3 METERS
MHz	MHz	Polarization/Axis	dBuV	dB	dB	dBuV/m	uV/m	uV/m
344.00	688.00	---	---	---	---	---	---	725.00
	1032.00	---	---	---	---	---	---	500.00
	1376.00	---	---	---	---	---	---	500.00
	1720.00	---	---	---	---	---	---	500.00
	2064.00	---	---	---	---	---	---	725.00
	2408.00	---	---	---	---	---	---	725.00
	2752.00	---	---	---	---	---	---	500.00
	3096.00	---	---	---	---	---	---	725.00
344.00	3440.00	---	---	---	---	---	---	725.00

No Spurious Emissions or Harmonics were observed within the specified test distance throughout the given frequency spectrum.

RETLIF TESTING LABORATORIES

TABULAR DATA SHEET

TEST METHOD: Spurious Emissions (30MHz to 3.6GHz)

CUSTOMER: Sekonic Corporation

JOB NO: R-3720N1

TEST SAMPLE: Wireless Light Meter

MODEL NO: L-358

SERIAL NO: n/a

TEST SPECIFICATION: FCC Part 15, Subpart C Paragraph: 15.231(b) & 15.205

OPERATING MODE: Continuously Transmitting

TECHNICIAN: T. Firkowski

DATE: 1/28/01

NOTES: Detector Function: Peak @ 3m Fundamental Frequency: 348.97 MHz (CH 22)

TRANSMIT FREQUENCY	TEST FREQUENCY	ANTENNA/EUT POSITION	METER READING	CORRECTION FACTOR	DUTY CYCLE CORRECTION FACTOR	CORRECTED READING	CONVERTED READING	LIMIT @ 3 METERS
MHz	MHz	Polarization/ Axis	dBuV	dB	dB	dBuV/m	uV/m	uV/m
348.97	697.95	---	---	---	---	---	---	745.71
	1046.92	---	---	---	---	---	---	500.00
	1395.90	---	---	---	---	---	---	500.00
	1744.87	---	---	---	---	---	---	745.71
	2093.84	---	---	---	---	---	---	745.71
	2442.82	---	---	---	---	---	---	745.71
	2791.79	---	---	---	---	---	---	500.00
	3140.77	---	---	---	---	---	---	745.71
348.97	3489.74	---	---	---	---	---	---	745.71

No Spurious Emissions or Harmonics were observed within the specified test distance throughout the given frequency spectrum.

RETLIF TESTING LABORATORIES

TABULAR DATA SHEET

TEST METHOD: Spurious Emissions (30MHz to 3.6GHz)

CUSTOMER: Sekonic Corporation

JOB NO: R-3720N1

TEST SAMPLE: Wireless Light Meter

MODEL NO: L-358

SERIAL NO: n/a

TEST SPECIFICATION: FCC Part 15, Subpart C Paragraph: 15.231(b) & 15.205

OPERATING MODE: Continuously Transmitting

TECHNICIAN: T. Firkowski

DATE: 1/28/01

NOTES: Detector Function: Peak @ 3m Fundamental Frequency: 353.97 MHz (CH 32)

TRANSMIT FREQUENCY	TEST FREQUENCY	ANTENNA/EUT POSITION	METER READING	CORRECTION FACTOR	DUTY CYCLE CORRECTION FACTOR	CORRECTED READING	CONVERTED READING	LIMIT @ 3 METERS
MHz	MHz	Polarization/ Axis	dBuV	dB	dB	dBuV/m	uV/m	uV/m
353.97	707.94	---	---	---	---	---	---	766.54
	1061.90	---	---	---	---	---	---	500.00
	1415.87	---	---	---	---	---	---	500.00
	1769.84	---	---	---	---	---	---	766.54
	2123.81	---	---	---	---	---	---	766.54
	2477.78	---	---	---	---	---	---	766.54
	2831.75	---	---	---	---	---	---	500.00
	3185.71	---	---	---	---	---	---	766.54
353.97	3539.68	---	---	---	---	---	---	766.54

No Spurious Emissions or Harmonics were observed within the specified test distance throughout the given frequency spectrum.

