EXHIBIT 4

Report of Measurements

Technical Report FCC 2.1033(b)(4)

Equipment Manufacturer/Applicant:	RainWise, Inc. P.O. Box 443 Bar Harbor, ME 04609-0443
FCC Rules Part:	Part 15, Subpart C
FCC Identifier:	GTS418T
Test Sample:	418MHz Transmitter
Model Number:	418T
Operating Instructions:	See Exhibit 1
Block Diagram/Schematic:	See Exhibit 3
Report of Measurements:	See Exhibit 4
Photographs/Label:	See Exhibit 5

Conducted Emissions - Not applicable; EUT was battery powered.

Radiated Emissions - The frequency range of 30MHz to 10GHz was scanned and all signals not reported were more than 10db below the specified limit.

I HEREBY CERTIFY THAT: The measurements shown here were made in accordance with the applicable procedures. I assume full responsibility for the accuracy and completeness of these measurements and vouch for the qualifications of all persons taking them. On the basis of the measurements made, the device tested has demonstrated compliance with Part 15 of the FCC Rules.

Scott Wentworth
Manager

FCC PART 15, SUBPART C, INTENTIONAL RADIATORS

15.201 a) N/A

b) FCC Certification Required

15.203 Antenna Requirement

The antenna is permanently attached to the (EUT) transmitter.

15.205 Restricted Bands of Operation

EUT Compliant

15.209 Conducted Limits - N/A, EUT is battery operated

15.209 Generic Requirements - N/A

15.231 a) Not applicable per Section e)

b) Not applicable - refer to Section e)

Average limits used.

Other measurement equipment detector functions are allowed.

c) Bandwidth 0.25% of center frequency

0.25% of 418MHz = 1.045 ÷ 2 = 0.5225MHz

BW = ± 0.5225MHz at 20dB down

d) New battery used

e) Field Strength Measurement

	Average based Limit		
Frequency	μV/m	=	dBμV/m
418MHz	4333.33	=	72.3
Spurious emissions	433.33	=	52.3

GENERAL INFORMATION AND CALCULATIONS

DUTY FACTOR

Duty Factor (DF)	=	Pulse Width (sec.)	X	Pulse Rate (pps)
DF	=	.009	X	33.0
DF	=	.297		

RADIATED FIELD STRENGTH

Field Strength limits were derived from the chart given in Section 15.231 (e).

Limit for emissions on the fundamental = 4133.33μV/m @ 3 m = 72.326dBμV/m

Limit for emissions on harmonics = 413.33μV/m @ 3 m = 52.326dBμV/m

SAMPLE CALCULATION

In the data presentation, the emission levels were recorded in dB, converted to μV in order to apply the Duty Factor, and then converted back to dB for comparison to the limit.

1. Field Strength (FS) = Recorded Emission Level X Duty Factor

   FS = 630.95μV/m X .297 DF

   FS = 187.39μV/m

2. dBμV/m = 20 X (log of μV/m)

   dBμV/m = 20 X (log of 187.39)

   dBμV/m = 20 X 2.2727

   dBμV/m = 45.4549

   dBμV/m = 45.46

Test Procedure Used

The test procedure used for testing follows the guidelines specified in the applicable FCC specification and general industry practices. Although test procedures may sometimes have to be modified to address the needs of specific test samples, the following forms the basis for the testing program:

Radiated Emissions - Radiated emissions testing was performed over the frequency range of 30MHz to 10,000MHz on the Open Area Test Site. The EUT was placed 80 cm above the ground plane on a nonmetallic test stand with a remote controlled turntable. A spectrum analyzer and EMI receiver were connected to the measurement antenna, which was mounted on a remote controlled four meter tall antenna mast. The frequency range was scanned and each EUT emission observed was maximized by: (1) Raising and lowering the measurement antenna. (2) Rotating the measurement antenna to both the horizontal and vertical polarizations, and (3) Rotating the test sample. The maximized emissions observed that were within 10dB of the specified limit were recorded on the enclosed data.

RADIATED EMISSIONS EQUIPMENT LIST

EN	Model No.	Type	Manufacturer	Frequency Range	Serial No.	Cal Date	Due Date
3118	BPA-1000	Pre-AMPLIFIER	Electro-Metrics	10kHz - 1000MHz	139	07/10/97	07/10/98
3258	3115	Double Ridge Guide Antenn	Electro-Mechanics Co.	1GHz-18GHz	2438	04/04/97	04/04/98
4201	3143	Biconilog Antenna	EMCO	26MHz-1.1GHz	9612-1330	12/03/96	06/03/98
4895	8593EM	Spectrum Analyzer	Hewlett Packard	9 kHz - 22 GHz	3624A00162	08/07/97	08/07/98
4896	7470A	Plotter	Hewlett Packard	N/A	2308A67727	08/22/97	08/22/98

RETLIF TESTING LABORATORIES

TABULAR DATA SHEET

TEST METHOD: RADIATED FIELD STRENGTH TRANSMITTER

CUSTOMER: RainWise, Inc. JOB No.: R-3219N

TEST SAMPLE: 418MHz Transmitter, FCC ID: GTS418T

MODEL No.: 418T SERIAL No.: N/A

TEST SPECIFICATION: FCC Rules and Regulations Part 15, Subpart C PARAGRAPH: 15.231(e)

OPERATING MODE: EUT modified to transmit continuously, for testing purposes only.

TECHNICIAN: J. Monahan DATE: 3-6-98

NOTES: -3- meter test distance. All emission levels were recorded using the Peak Detector Function.

OPERATING FREQUENCY	MEASUREMENT FREQUENCY	METER READING	MEASUREMENT FACTOR	CORRECTED PEAK READING	CONVERTED PEAK READING	READING WITH DUTY FACTOR	CONVERTED READING W/ DF	LIMIT @ 3 M
MHz	MHz	dBµV	dB	dBµV/m	µV/m	µV/m	dBµV/m	dBµV/m
418.0	418.0	82.2	0.1	82.3	13031.67	3870.41	71.76	72.3
	836.0	42.9	9.1	52.0	398.1	118.24	41.46	52.0
	1254.0	21.8	25.2	47.0	223.87	66.49	36.46	52.0
	1672.0	31.0	25.0	56.0	630.96	187.40	45.46	54.0
	2090.0	30.0	27.0	57.0	707.95	210.26	46.46	52.0
	2508.0	25.0	28.0	53.0	446.68	132.66	42.46	52.0
	2925.0	25.2	29.8	55.0	562.34	168.53	44.53	52.0
	3343.0	26.2	29.8	56.0	630.96	187.40	45.46	52.0
	3761.0	27.0	33.0	60.0	1000.00	297.00	49.46	54.0
	4180.0	-----	-----	-----	-----	-----	-----	

DATA SHEET 1 OF 1

Report No.: R-3219N

FCC ID: GTS418T

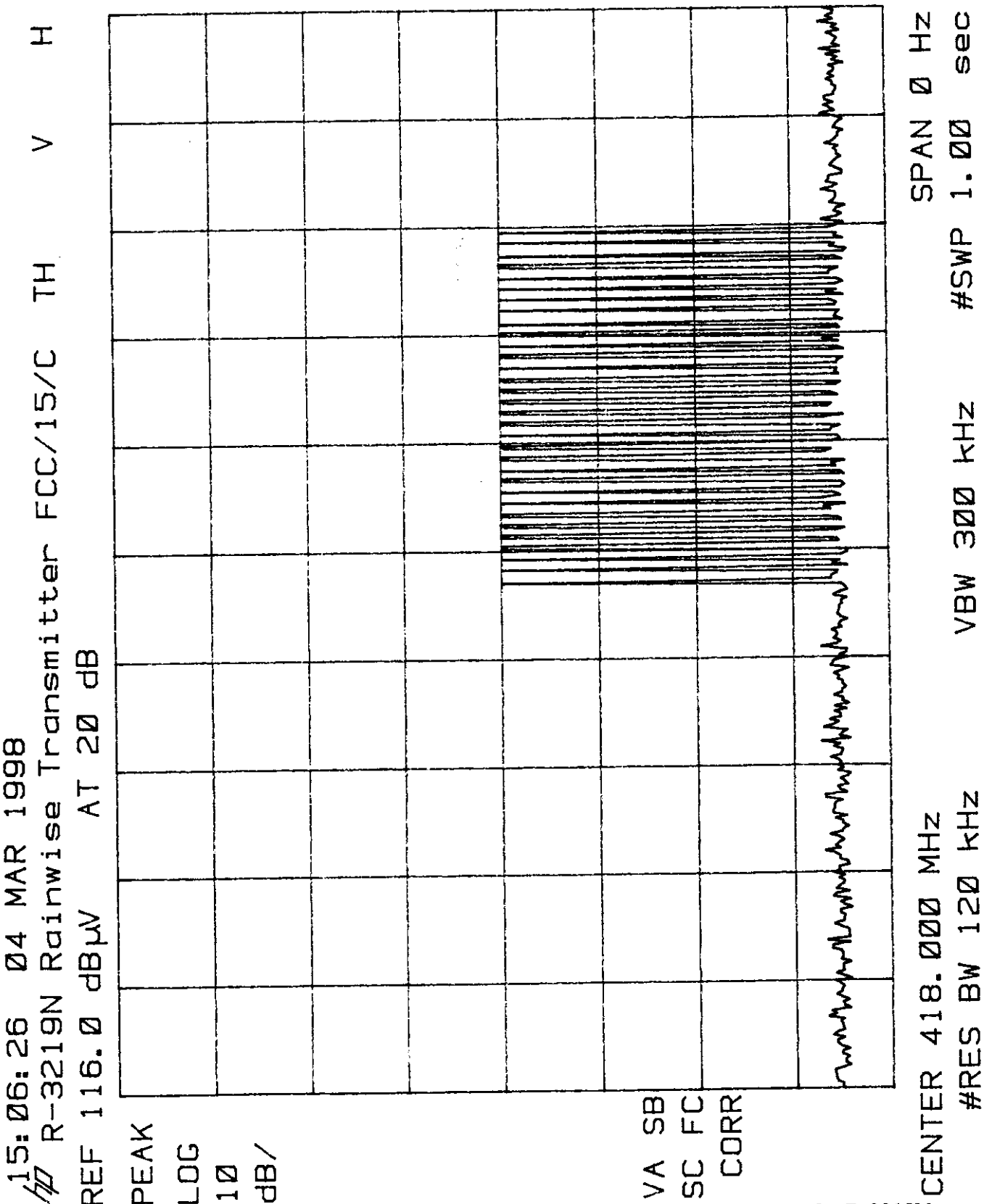
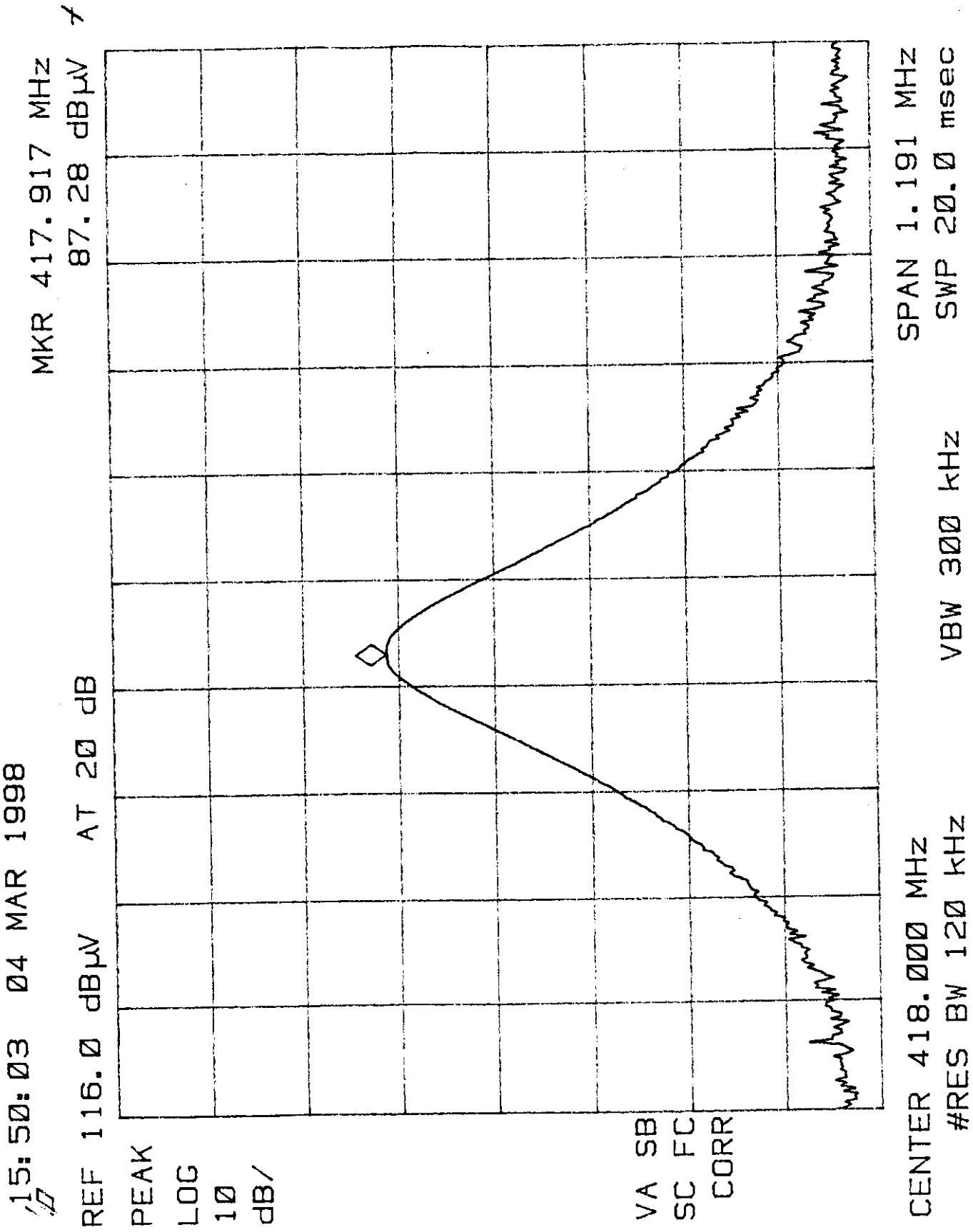

15:06:26 04 MAR 1998
R-3219N Rainwise Transmitter FCC/15/C TH V H
REF 116.0 dBµV AT 20 dB
PEAK
LOG
10
dB/
VA SB
SC FC
CORR
CENTER 418.000 MHz
#RES BW 120 kHz
VBW 300 kHz
#SWP 1.00 sec
SPAN 0 Hz

EXHIBIT 5

Equipment Photographs and Label


15:50:03 04 MAR 1998
MKR 417.917 MHz
87.28 dBµV
REF 116.0 dBµV
AT 20 dB
PEAK
LOG
10
dB/
VA SB
SC FC
CORR
SPAN 1.191 MHz
SWP 20.0 msec
VBW 300 kHz
CENTER 418.000 MHz
#RES BW 120 kHz

Retlif Testing Laboratories

795 Marconi Avenue, Ronkonkoma, N.Y. 11779 (516) 737- 1500 - FAX 516-737-1497
(Branch Office)
101 New Boston Road, Goffstown, N.H. 03045 (603) 497-4600 - FAX (603) 497-5281

TO: FCC Application Processing Branch
ATTENTION: **Joe Dichoso x 214**
FROM: Retlif Testing Laboratories, Goffstown, NH, John Monahan
REFERENCE: Information request dated June 3, 1998,
concerning Certification Application for
FCC ID: GTS418T

SUBJECT: Response to indicated items, **Reference Number 959**

1.0 Schematic and Photograph of the Sensor Interface accompany this letter. The Sensor Interface contains the circuitry for automatically limiting operation of the EUT. An addition to the original Description of Circuit Functions is included. This contains more detail on the operation and control of the EUT.

2.0 Additional plots are included showing the worst case transmission for any 100 msec time frame. Calculations of the duty factor are included on a separate sheet. A Radiated Emissions data sheet with new Duty Cycle Factor is included.

3.0 The original testing was performed using a Biconilog antenna for measurements below 1000MHz and a Double Ridge Guide antenna for measurements above 1000MHz up to 18GHz. Test antennas were mounted on a remote controlled mast located 3 meters from the EUT. All measurements were maximized by manipulation of the antenna and rotation of the EUT test stand.
The photograph contained in the report is not indicative of the antenna position. The photo was taken of some evaluation testing and does not show the actual setup. Photos of the correct setup are included with this letter.

We hope that this response is complete and supplies all the information that was requested.

When it is convenient for you, we would appreciate confirmation that this letter and the accompanying information have been received.

Sincerely,

J. Monahan
Retlif Testing Laboratories

FCC LABORATORY
Jun 22

RainWise® Inc.
P.O. BOX 443 - BAR HARBOR, MAINE 04609-0443 - (207) 288-5169

VISIT OUR WEBSITE AT www.rainwise.com

To: **John Monahan** Fax #: **603 497 5281**

From: **Michael A. Vietti** **RainWise Fax #: (207) 288-3477** Date: **March 6, 1998**

Please call (207) 288-5169 if there are any problems with this transmission. Total Pages: **1**

Dear Mr. Monahan;

The following is a discussion of the duty cycle that RainWise will be using with the 418 MHz transmitter that your company is currently testing.

The timing for the duty cycle is derived from a 3.64MHz crystal which, in the worst case, has an accuracy of 100 parts per million.

The transmitter is driven on by the UART in the microprocessor. The UART is operating at 4800 bits per second (BAUD) which means that each time the transmitter is on, the duration is 1/4800 or 2.083E-04 sec. The UART outputs for each word a start bit, 8 data bits (byte) and a stop bit. The period of the duty cycle consists of a 10 bit word + the complimented of the10 bit word + 5.5millisec delay. During this period, the transmitter is on for two start bits and 8 data bits. The transmitter is off during the stop bits. Therefore, the total on time for the transmitter is; 2.083E-04 sec * 10 bits = 2.083E-03 sec. The period is; 2.083E-04sec * 20 bits + 5.5 *E-03 = 9.67E-03 sec. The duty cycle is; 2.083E-03/9.67E-03 = 21.5%.

The total time that the transmitter is on even though two bytes are being output is because the second byte is the compliment of the first which, for the purposes of this letter, means that the sum of the bits for which the transmitter is on for both bytes is eight. The complimented data is for our error checking. Actual measurements at the output of the receiver confirm these calculations.

Please do not hesitate to call me if you have any questions.

Sincerely yours

RainWise Inc.

Michael A. Vietti

Michael A. Vietti
V.P. Engineering

FCC ID: GTS418T

RainWise Inc.
P.O. BOX 443 / BAR HARBOR, MAINE 04609-0443 / (207) 288-5169

Addenda to the Description of the Circuit Functions

This document expands further the description of the Circuit Functions initially submitted with RainWise Application.

The control of the transmitter is via software code executed by the microprocessor shown in the Sensor Interface schematic. The bit stream is software generated from the clock in the microprocessor. The processor contains all of the necessary hardware. The output of the port pin for the transmitter is inverted through the transistor T8. In addition, the FET switch T4 must be put in the on state by the latch U15 which is operated by the microprocessor.

The connector J4 attaches to the connector J2 on the TXM LINX trans. board via a three wire cable. There is no user access to the control of the transmitter.

Control and limiting of the transmitter is done entirely by the microprocessor based on the following. The battery voltage is measured before transmission through the analog input #0 to determine the next transmission interval. When the battery voltage is above 6.03 volts, data is transmitted every 30 seconds. With the encoding scheme mentioned in the previous document, each record requires 9.67 milliseconds to output. As stated before, this amounts to 0.367 seconds total transmission time for the normal 30 second output interval. Between 5.82 and 6.03 volts, the transmission interval is every 60 seconds. There are 61 records output for a total transmission time of 0.598 seconds. Between 5.25 and 5.82 volts, the transmission interval lengthens to a max of 116 seconds. During transmission, 103 records are output for a total transmission time of 0.996 seconds. When the battery voltage falls below 5.25 volts, there will be no transmission from the unit until the battery voltage has recovered to 5.55 volts. During this time, the unit remains dormant only measuring the battery voltage. When the microprocessor has determined to lengthen the transmission interval, say from 30 to 60 seconds, this is done by adding an one extra record to each until the number of data records is 61. The same procedure happens for lengthening the transmission time to 103 records.

DETERMINATION of DUTY CYCLE FACTOR

Duty Cycle Factor was derived from use of the instructions found in ANSI C63.4-1992 section 10, for devices with a pulse train which exceeds 100msec.

The DCF is found by averaging the sum of the pulse widths over the 100ms width with the highest average value.

DCF = sum of pulse widths in one period divided by the length of the period.

To find the average detector field strength, multiply the Peak - Detector field strength ,in uV/m, by the DCF.

EXAMPLES:

1.
a. Sum of the pulse widths over 100ms = 15.8
b. Length of period = 100ms
c. DCF = a/b
d. DCF = 0.158

2.
a. Peak level of emission in uV/m = 13031.67
b. DCF = 0.158
c. Average level of emission in uV/m is then equal to a x b.
d. Avg uV/m level = 2059.00 uV/m.

DATA:

The associated data is found on the pages accompanying this page.

DETERMINATION of DUTY CYCLE FACTOR (continued)

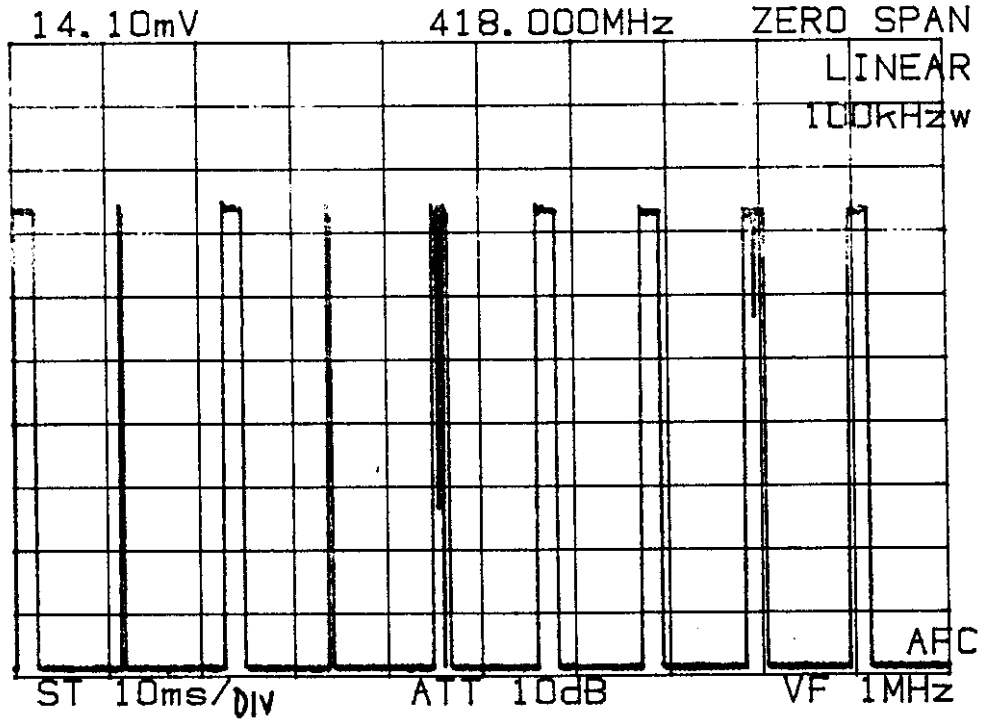
Pulse Widths in 100 msec Period

Pulse No.	Pulse Width (msec)
1	2.2
2	0.2
3	2.5
4	0.3
5	1.8
6	2.3
7	2.2
8	1.9
9	2.4

418 MHz TRANSMITTER PULSE OUTPUT

TIME DURATION OF COMPLETE SCAN:

100ms



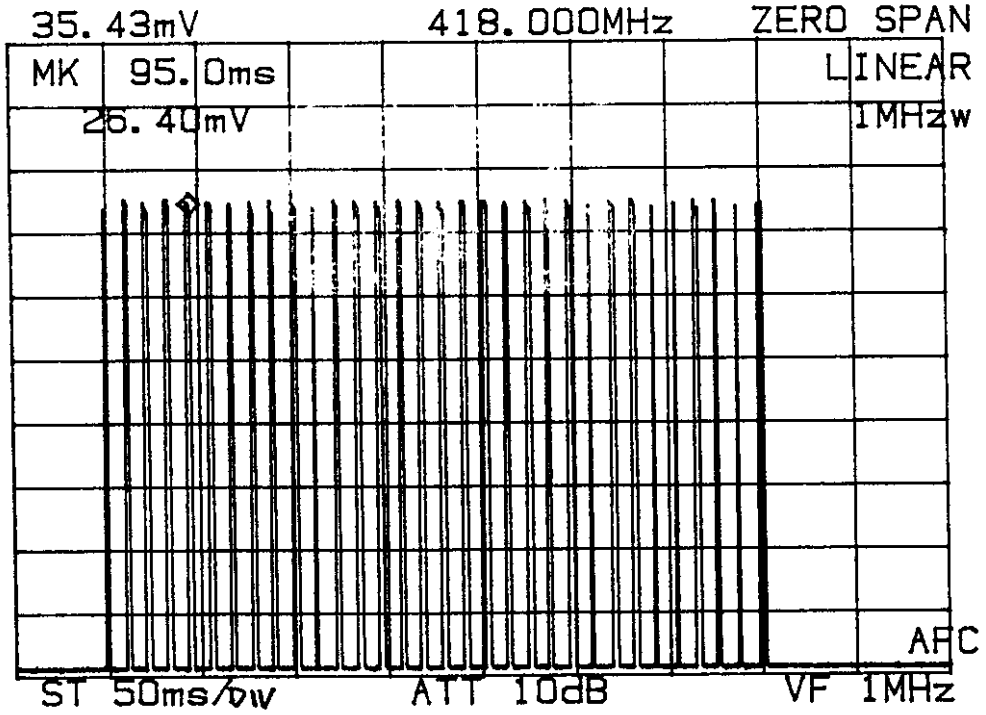
100ms PERIOD

FCC ID# GTS418T

REPORT R-3219N
Retlif Testing Laboratories

418 MHz TRANSMITTER PULSE OUTPUT

TIME DURATION OF COMPLETE SCAN: **500ms**



PULSE TRAIN

FCC ID# GTS418T

Retlif Testing Laboratories

REPORT R-3219N

RETLIF TESTING LABORATORIES

TABULAR DATA SHEET

TEST METHOD:	RADIATED FIELD STRENGTH TRANSMITTER		
CUSTOMER:	RainWise, Inc.	JOB No.:	R-3219N
TEST SAMPLE:	418MHz Transmitter. FCC ID: GTS418T		
MODEL No.:	418T	SERIAL No.:	N/A
TEST SPECIFICATION:	FCC Rules and Regulations Part 15, Subpart C	PARAGRAPH:	15.231(e)
OPERATING MODE:	EUT modified to transmit continuously, for testing purposes only.		
TECHNICIAN:	J. Monahan	DATE:	3-6-98 updated 6-15-98
NOTES:	Carrier Frequency = 418MHz, Peak Detector used, Taken @ 3m Antenna distance.		

MEASUREMENT FREQUENCY	METER READING	*CORRECTED PEAK READING	CONVERTED PEAK READING	DUTY CYCLE FACTOR	CORRECTED AVG. READING	AVERAGE LIMIT	CONVERTED AVG. READING	AVERAGE LIMIT CONVERTED
MHz	dBuV	dBuV/m	uV/m	uV	uV/m	uV/m	dBuV/m	dBuV/m
418.0	82.2	82.3	13031.69	0.158	2059.0	4133.33	66.273	72.326
836.0	42.9	52.0	398.10	0.158	62.899	413.33	35.973	52.326
1254.0	21.8	47.0	223.87	0.158	35.371	413.33	30.973	52.326
1672.0	31.0	56.0	630.95	0.158	99.690	500.00	39.973	53.979
2090.0	30.0	57.0	707.95	0.158	111.856	413.33	40.973	52.326
2508.0	25.0	53.0	446.68	0.158	70.576	413.33	36.973	52.326
2925.0	25.2	55.0	562.34	0.158	88.849	413.33	38.973	52.326
3343.0	26.2	56.0	630.96	0.158	99.691	413.33	39.973	52.326
3761.0	27.0	60.0	1000.00	0.158	158.0	500.00	43.973	53.979
4180.0	-----	-----	-----	-----	-----	-----	-----	-----

Range scanned to tenth Harmonic of EUT. No emissions observed above the specified Average Limit.

*Corrected Peak Reading = Meter Reading + Measurement System Correction Factor

Report No.: R-3219N

RESPONSE TO ITEM 3 OF INFORMATION REQUEST

REFERENCE NUMBER 959 FOR FCC ID: GTS418T

The photo originally included in this application was not the actual test setup used for measurements. The photo, of some of the preliminary testing, was intended for our use only. The photo was not caught during a review of the application.

Enclosed are some photos of the correct setup used for testing of the EUT.

RainWise Inc.
P.O. BOX 443 - BAR HARBOR, MAINE 04609-0443 - (207) 288-5169

VISIT OUR WEBSITE AT www.rainwise.com

To: **John Monahan**

Fax #: **603 497 5281**

From: **Michael A. Vietti** **RainWise Fax #: (207) 288-3477** Date: **March 6, 1998**

Please call (207) 288-5169 if there are any problems with this transmission. Total Pages: **1**

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Please do not hesitate to call me if you have any questions.

Sincerely yours

RainWise Inc.

Michael A. Vietti

Michael A. Vietti
V.P. Engineering

DETERMINATION of DUTY CYCLE FACTOR

Duty Cycle Factor was derived from use of the instructions found in ANSI C63.4-1992 section 10, for devices with a pulse train which exceeds 100msec.

The DCF is found by averaging the sum of the pulse widths over the 100ms width with the highest average value.

DCF = sum of pulse widths in one period divided by the length of the period.

To find the average detector field strength, multiply the Peak - Detector field strength ,in uV/m, by the DCF.

EXAMPLES:

1.
a. Sum of the pulse widths over 100ms = 15.8
b. Length of period = 100ms
c. DCF = a/b
d. DCF = 0.158

2.
a. Peak level of emission in uV/m = 13031.67
b. DCF = 0.158
c. Average level of emission in uV/m is then equal to a x b.
d. Avg uV/m level = 2059.00 uV/m.

DATA:

The associated data is found on the pages accompanying this page.

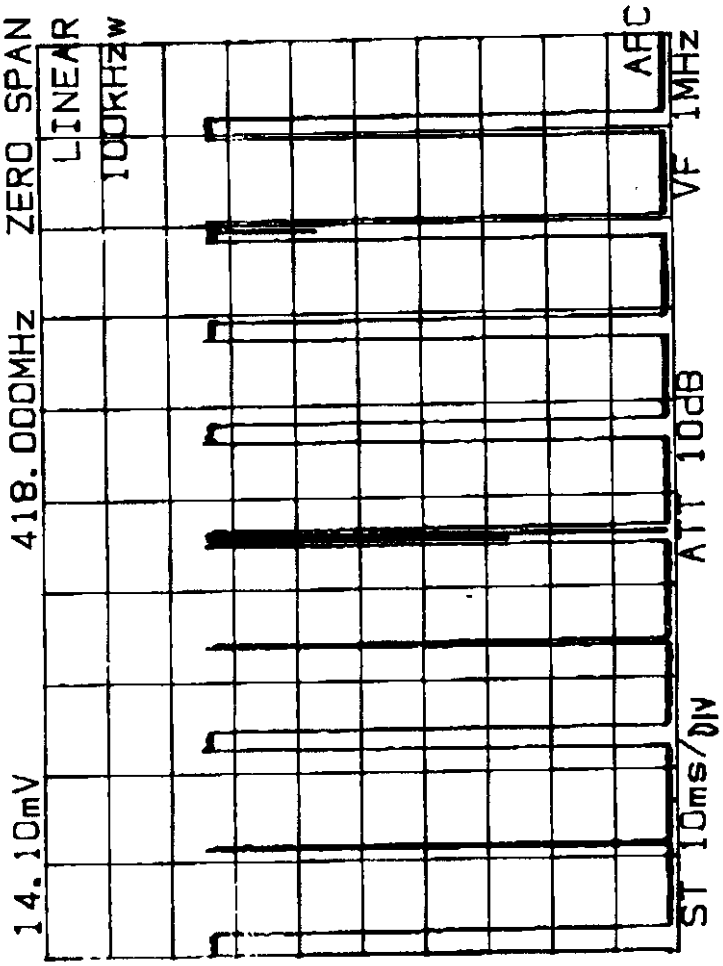
DETERMINATION of DUTY CYCLE FACTOR (continued)

Pulse Widths in 100 msec Period

Pulse No.	Pulse Width (msec)
1	2.2
2	0.2
3	2.5
4	0.3
5	1.8
6	2.3
7	2.2
8	1.9
9	2.4

418 MHz TRANSMITTER PULSE OUTPUT

TIME DURATION OF COMPLETE SCAN: **100ms**



100ms PERIOD

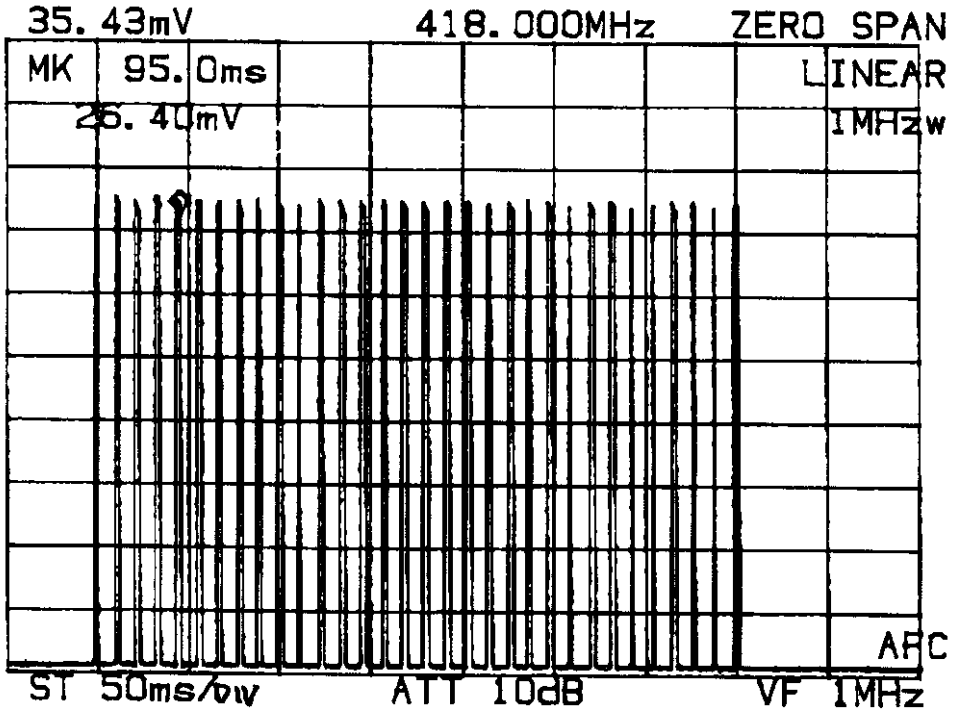
FCC ID# GTS418T

Retlif Testing Laboratories

REPORT R-3219N

418 MHz TRANSMITTER PULSE OUTPUT

TIME DURATION OF COMPLETE SCAN: **500ms**



PULSE TRAIN

FCC ID# GTS418T

Retlif Testing Laboratories

REPORT R-3219N

Jun-17-98 04:43P RETLIF NH 6034975281 P.08

RETLIF TESTING LABORATORIES

TABULAR DATA SHEET

TEST METHOD: RADIATED FIELD STRENGTH TRANSMITTER

CUSTOMER: RainWise, Inc. JOB No.: R-3219N

TEST SAMPLE: 418MHz Transmitter, FCC ID GTS418T

MODEL No.: 418T SERIAL No.: N/A

TEST SPECIFICATION: FCC Rules and Regulations Part 15, Subpart C PARAGRAPH: 15.231(e)

OPERATING MODE: EUT modified to transmit continuously, for testing purposes only.

TECHNICIAN: J. Monahan DATE: 3-6-98 updated 6-15-98

NOTES: Carrier Frequency = 418MHz, Peak Detector used. Taken @ 3m Antenna distance.

MEASUREMENT FREQUENCY	METER READING	*CORRECTED PEAK READING	CONVERTED PEAK READING	DUTY CYCLE FACTOR	CORRECTED AVG. READING	AVERAGE LIMIT	CONVERTED AVG READING	AVERAGE LIMIT CONVERTED
MHz	dBuV	dBuV/m	uV/m	uV	uV/m	uV/m	dBuV/m	dBuV/m
418.0	82.2	82.3	13031.69	0.158	2059.0	4133.33	66.273	72.326
836.0	42.9	52.0	398.10	0.158	62.899	413.33	35.973	52.326
1254.0	21.6	47.0	223.87	0.158	35.371	413.33	30.973	52.326
1672.0	31.0	56.0	630.95	0.158	99.690	500.00	39.973	53.979
2090.0	30.0	57.0	707.95	0.158	111.858	413.33	40.973	52.326
2508.0	25.0	53.0	446.68	0.158	70.576	413.33	36.973	52.326
2925.0	25.2	55.0	562.34	0.158	88.849	413.33	38.973	52.326
3343.0	26.2	56.0	630.96	0.158	99.691	413.33	39.973	52.326
3761.0	27.0	60.0	1000.00	0.158	158.0	500.00	43.973	53.979
4180.0	---	---	---	---	---	---	---	---

Range scanned to tenth Harmonic of EUT. No emissions observed above the specified Average Limit.

*Corrected Peak Reading = Meter Reading + Measurement System Correction Factor

DATA SHEET 1 OF 1

Report No.: R-3219N

FCC ID: GTS418T