Class 2 Permissive Change

FCC ID: EF4 SST00116

DXS-80 Carbon Monoxide Alarm Transmitter

Submitted by: Linear LLC
1950 Camino Vide Roble, Suite 150
Carlsbad, California 92008
760-438-7138
760-438-7043 (FAX)

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Product ID: EF4 SST00116

DXS-80 Carbon Monoxide Alarm Transmitter

STATEMENT OF ATTESTATION

Model: DXS-80 Carbon Monoxide Alarm Transmitter

FCC ID: EF4 SST00116

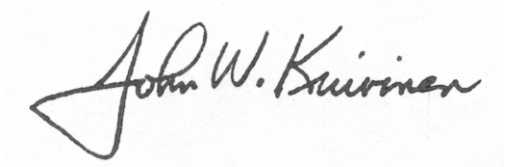
The original vendor of carbon monoxide (CO) detector was unable to provide a suitable detector within a reaonsable time frame. Linear decided to go with a different CO detector head but this entailed a major redesign. The new CO detector is based on the 3 volt operated DXS-73 (EF4 SST00113) smoke alarm transmitter PCB.

The equipment under test is a Part 15 low power wireless carbon monoxide alarm transmitter. It can be used with the 315 MHz DVS, DXR or PERS family of alarm receivers. Every 1.1 hours this transmitter sends a supervisory signal and battery report.

This equipment has been tested in accordance with the requirements contained in the appropriate Commission regulations. To the best of my knowledge, these tests were performed using measurement procedures consistent with industry or commission standards and demonstrate that the equipment complies with the appropriate standards. Each unit manufactured, imported or marketed, as defined in the Commission's regulations, will conform to the sample(s) tested within the variations that can be expected due to quantity production and testing on a statistical basis.

I further certify that the necessary measurements were made by Linear LLC, 1950 Camino Vide Roble, Suite 150, Carlsbad, California. 92008.

Certified by:



_____

John W. Kuivinen, P.E.
Regulatory Compliance Engineer

Date: July 16, 2007

LABEL FACSIMILE

Linear Corp. requests authority to use the label as depicted, in accord with Section 2.925(e) of the Commission's Rules, follows herein.

FCC ID: EF4 SST00116
Linear LLC
Model: DXS-80, CO Alarm
Frequency: 315 MHz

Request for Authorization of Section 2.925(e)

The device for which Linear seeks authority is small in size and has other safety related mandatory UL text. The small size of the product and minimum text size of the UL warnings and cautions does not lend itself to the placement of a label in accord with the FCC and IC labeling requirements.

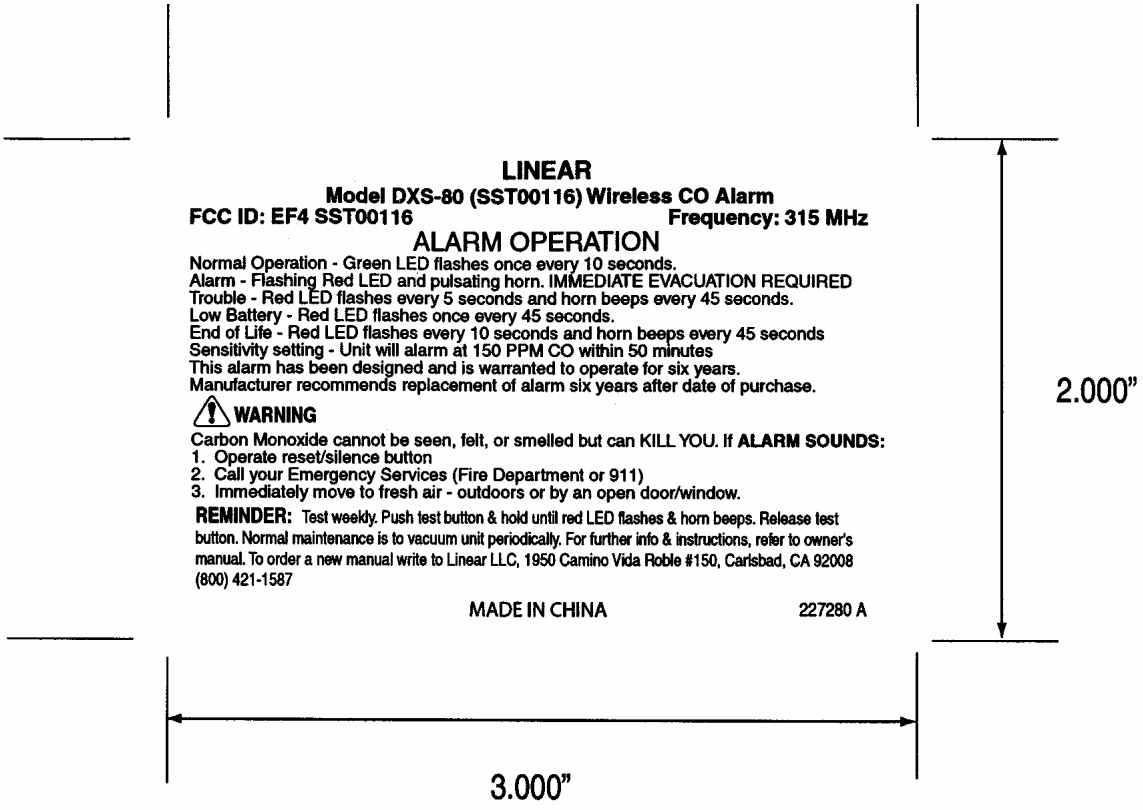
Accordingly, Linear requests authority to place upon the device an identification label such as the one depicted herein identified as LABEL FACSIMILE.

The additional information which is normally required to be included with the FCC Identification Number in accord with Part 15 of the Commission's Rules shall be located herein as a portion of the draft manual attached hereto.

Accordingly, in accord with Section 2.925(e) of the Commission's Rules and past Commission decisions, Linear hereby requests authority to label its devices in the manner described herein.

The user instruction manual will have the full text of the FCC disclaimer printed in a prominent location at the end of the installation instructions as follows:

> This device complies with FCC Part 15 and Industry Canada Rules and Regulations. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received , including interference that may cause undesired operation.



LABEL,MODEL/OPERATION,DXS-80
LINEAR P/N: 227280 A
MATERIAL: 60 LB. WHITE COATED PAPER, ADHESIVE BACKED
INK (PERMANENT): BLACK
SCALE: 1-1
NOTE 1: ALL MATERIALS MUST BE UL RECOGNIZED

This device complies with FCC Rules Part 15. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation

LINEAR LIMITED WARRANTY

This Linear product is warranted against defects in material and workmanship for twenty-four (24) months. **This warranty extends only to wholesale customers** who buy direct from Linear or through Linear's normal distribution channels. **Linear does not warrant this product to consumers.** Consumers should inquire from their selling dealer as to the nature of the dealer's warranty, if any. **There are no obligations or liabilities on the part of Linear LLC for consequential damages arising out of or in connection with use or performance of this product or other indirect damages with respect to loss of property, revenue, or profit, or cost of removal, installation, or reinstallation.** All implied warranties, including implied warranties for merchantability and implied warranties for fitness, are valid only until warranty expires. **This Linear LLC Warranty is in lieu of all other warranties express or implied.**

All products returned for warranty service require a Return Product Authorization Number (RPA#). Contact Linear Technical Services at 1-800-421-1587 for an RPA# and other important details

IMPORTANT!!!

Linear radio controls provide a reliable communications link and fill an important need in portable wireless signaling. However, there are some limitations which must be observed.

- For U.S. installations only: The radios are required to comply with FCC Rules and Regulations as Part 15 devices. As such, they have limited transmitter power and therefore limited range.
- A receiver cannot respond to more than one transmitted signal at a time and may be blocked by radio signals that occur on or near their operating frequencies, regardless of code settings.
- Changes or modifications to the device may void FCC compliance.
- Infrequently used radio links should be tested regularly to protect against undetected interference or fault.
- A general knowledge of radio and its vagaries should be gained prior to acting as a wholesale distributor or dealer, and these facts should be communicated to the ultimate users.

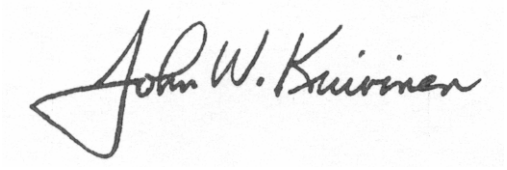
Summary of Test Results
in accord with FCC Rules Part 15 and C63.4-2004

Equipment Model:	SST00116
Transmitter Tested to C63.4-1992 Section:	FCC Rules 15.231
Field Strength at a distance of 3 meters:	4316 uV/Mtr (- 2.9 dB below limit) @ 315 MHz
Peak to Average Ratio:	20 dB - Fixed Duty Cycle
Test Conditions:	Radiated (Sections 11 & 13)
Transmitter: Transmitter Frequency:	315 MHz Nominal (Factory Tuned Only)
Bandwidth (20 dB down)	< 0.010% of Center Freq.
Frequency Tolerance:	N/A (Nominal +/- 0.125 MHz)
Frequency Stability:	N/A (Nominal +/- 0.125 MHz)
Transmitter Spurious at 3 meters: (Worst Harmonic)	192 uV/Mtr (- 10 dB below limit)
Frequency:	945 MHz
Momentary Operation (Yes/No)	No
Holdover time after manual release:	N/A
Duration of alarm transmission after activation: the CO detector is in an alarm condition.	1.0 second transmission every 20 seconds only when

Attestation:

The radio apparatus identified in the application has been subject to all the applicable test conditions specified in FCC Rules Part 15 and all of the requirements of the Standard have been met.

Regulatory Compliance Engineer



John W. Kuivinen, P.E. _____ Date: __ July 16, 2007 _

Radio Standard Specification
Low Power Communication Devices
C63.4-2004 and FCC Rules Part 15

1.0 General:

1.2, Exclusions to TV Broadcast Freq.	Complies

2.0 Related Documents:

Reference Documents for Application:	CFR 47, FCC Rules Part 15

3.0 Test Equipment:

Supply Voltage:	One 3 volt CR123A lithium or equivalent
Test Equipment List	See Section 6
Signal Detector:	Peak with 20 dB peak to average conversion.

4.0 Certification and Test Results:

Summary of Results per	See Section 2 of this Report

5.0 General Technical Requirements:

5.1 Testing Methods:	Peak Signal pulse modulated A1D signal.
5.1 Reference Standard:	C63.4-2004 (FCC Procedure)
5.2 Modulation:	Pulse Positon A1D, AM Modulation
5.3 Type of Antenna:	Integral to transmitter PCB - tuned loop
5.4 External Controls:	Push Button - Manual Test Activation Button No user serviceable parts except for replacement of battery.
5.5 Accessories:	NONE
5.6 TX Bandwidth:	<0.010 % (See Section 7)
5.7 Equipment Labels:	See Section 2
5.8 Manual Disclaimer:	See attached draft copy of manual (Section 9)
5.9 Usage Restrictions:	Digital Pulse Code Only

6.0 Transmitter Characteristics and Tests:

6.1 Momentary Operated Devices:	Complies
6.1(a) Types of Signals:	Manual Push to Transmit, Test Signal Only
6.1(a) Automatic Activation:	Yes, status transmissions every 1.1 hours.
6.1(a) Five Second Max. upon release:	Complies
6.1(b) Field Strengths:	Per Section 7: 315 MHz = 6042 uV/Mtr at 3 meters.
6.1(c) Bandwidth (20 dB down)	<0.010 % Complies
6.1(d) Frequency Stability	N/A per regulations +/- 0.125 MHz Maximum Error
6.1(e) Reduced Field Strength	N/A
6.2 Non-Momentary Operated Devices:	N/A
6.2.1 Frequency Bands:	Refer to Section 7
6.3 Restricted Bands:	Complies
6.5 Pulsed Operation:	Complies (20 dB Peak/Average) See Section 7
6.6 Wireline Conducted Emissions:	N/A
7.0 Receivers	N/A
8.0 Self Certification:	N/A
9.0 AC Wireline Conducted Emissions:	N/A
10.0 Terminated Measurement Method:	N/A
11.0 Radiated Measurement Method:	See Section 7
11.1 Measuring Distance:	Complies
11.2 Open Field Test Site:	Complies, C63.4-2004
11.3 Equipment Test Platform:	See Section 7
11.4 Measurement Method:	Complies, See Section 6
12.0 DC Power Consumption Methods:	N/A
13.0 Near Field Measurement for < 30 MHz:	N/A
14.0 Test Report Submission:	See Attached

1.0 GENERAL DESCRIPTION

The DXS-80 is a battery powered, low profile, UL Listed carbon monoxide detector with an RF transmitter. The DXS-80 mates the System Sensor W3-CO detector with a Linear DX coded transmitter. The transmitter is connected to the W3-CO via a four pin header on the detector's main PCB. The W3-CO provides power, ground and signals for alarm and low battery to the transmitter. The DXS-80 is intended for use with Linear security and personal reporting consoles such as the DVS-2400, DUAL-824, PERS-2400 and PERS-3600.

1.1 POWER SUPPLY

One lithium cell, type CR123A, provides power to both the detector and transmitter at a nominal voltage of 3.0 VDC. Batteries manufactured by Duracell, Panasonic, Varta and Sanyo will be listed for use in this product.

The detector with the RF transmitter will operate until end of life, 6 years, at room temperature without battery replacement.

2.0 DETECTOR CHARACTERISTICS

2.1 CO TECHNOLOGY

The W3-CO utilizes an electrochemical CO sensing element, and therefore has certain performance limitations. The CO sensing element has a typical life of 6 years from the date of manufacture. The CO sensing element has a carbon filter that provides resistance to false alarms caused by cross-interference gasses, but the filter can be saturated, and so the product should not be installed in locations where high concentrations of these gasses are present. Cross-interference gasses include, but are not limited to: Methane, Butane, Heptane, Ethyl Acetate, Isopropyl Alcohol, Carbon Dioxide, Ammonia, Ethanol, Toluene, Trichloroethane, and Acetone. Only a cloth moistened with water should be used to clean the W3-CO housing. The movement of gases into the sensing element can be impaired if a sealant blocks the porous surface of the CO sensor. The W3-CO should not be exposed to aerosol products such as furniture polish, paint or varnish that can coat the CO sensing element and render it inoperative.

2.2 MICROCONTROLLER

This microcontroller features a 10 bit ADC for interfacing to CO sensing circuit. During normal operation, the microcontroller is powered down with an external crystal used as a wake up timer. The detector will wake up and sample the CO sensing circuit every 10 seconds.

2.3 CO SENSING CIRCUIT

The CO sensing circuit is continuously powered. The output of the CO circuit is sent to one of the inputs of the 10 bit ADC aboard the microcontroller.

2.4 LOW BATTERY LOAD

The low battery test load is a constant current source designed to simulate the current draw of the entire detector in alarm. The circuit's current consumption is independent of the battery voltage. This circuit is activated by the microcontroller at power up and before each status update every 65 minutes. Once active the microcontroller will perform an ADC measurement on an internal voltage reference in order to determine the battery voltage.

2.5 TEST SWITCH

The test switch is a mechanical switch that pulls an interrupt enabled port of the microcontroller low. The microcontroller filters the signal on this port to verify that the interrupt signal is not caused by noise.

2.6 PIEZO DRIVER

The piezo driver circuit is used to oscillate the piezo. The circuit uses a hex inverter to drive the piezo in a self-resonant mode. The microcontroller turns the circuit on and off to generate the UL2034/UL2075 temporal tone.

2.7 MECHANICAL

The detector base design allows for access to the battery without removing the housing. The housing provides an opening for the visual LED indicators and to depress the test switch.

2.8 MOUNTING

The sensor attaches directly to a mounting base. The mounting base provides mounting slots for single gang, 3-1/2" and 4-1/2" octagon back boxes, if applicable. Two each mounting screws and plastic anchors are supplied.

2.9 GENERAL SPECIFICATIONS

Color	Off White
Finish	Lightly Textured
Dimensions	Diameter 5.3" Height 2.0" including mounting base.
Regulatory	UL 2075

3.0 CO DETECTOR OPERATION

3.1 SENSING ELEMENT

The W3-CO is a carbon monoxide detector based on an electrochemical gas cell that converts a CO concentration in the ambient air to a direct current. The cell is sampled approximately every 10 seconds and automatically checked for a trouble condition. The electrochemical gas cell is not user serviceable, and cannot be replaced; at the end of its useful life the entire unit must be replaced. The gas cell cannot be electrically supervised for sensitivity.

3.2 SENSITIVITY

UL 2075 / UL 2034 Compliant.

3.3 POWER ON RESET (POR)

When a battery is inserted into the detector, the low battery load will be turned on and the battery voltage will be measured. If it is less than or equal to 2.7V, the detector will continue to sample the battery voltage every 1 second until the voltage is greater than 2.7V. No other action will be taken until that time. This prevents a used battery from being installed and generating a low battery trouble shortly thereafter. Once the battery voltage is confirmed to be greater than 2.7V, normal operation of the gas detector begins. During POR the detector wait approximately 30 seconds for the gas cell to stabilize, and during this time both LED's blink once every ten seconds, but the gas cell is not sampled.

3.4 BROWN OUT RESET (BOR)

In the event of a battery removal, the microcontroller features a brown out reset (BOR). This feature will prevent the microcontroller from running astray. The BOR feature includes a hysteresis. Once power has been reapplied, the detector will power up using the standard POR sequence.

3.5 CELL SUPERVISION

The gas cell cannot be supervised for sensitivity, but is supervised for open circuit faults once every minute. If a fault condition is detected, the detector is in trouble. In trouble, the red LED will flash once every 5 seconds, and the sounder will chirp once every 45 seconds, and Status A will be set low, and Status B will be set high. Cell trouble is non-latching. Cell supervision will preempt a low battery condition, and will be preempted by an alarm condition.

3.6 CO ALARM

When the detector enters a CO alarm, both output pins 1 and 3 will be set low. The piezo is operated at 3.3kHz with the temporal 4 sound pattern per UL2034. The sound pressure level shall meet a minimum of 85dBA @ 10 ft per UL2034 / UL2075. The green LED will turn off, while the red LED will flash at the increased rate of approximately 10ms every 1 second. The alarm is non-latching. When the CO level returns to a normal level, the horn will stop sounding, the LEDs will return to the state in accordance with the state of the detector. CO Alarm will preempt both low battery and cell trouble.

3.7 TEST SWITCH

The test switch can be used to check the functionality of the circuitry. If the detector is not in a trouble mode or end of life and the test switch is depressed for 1 second, the green LED will turn off while the red LED will flash once per second. Simultaneously, the alarm status pins 1 and 3 will be pulled low. If the test button remains depressed for more than 3 seconds, the built in piezo will sound with the temporal 4 pattern per UL 2034 / UL 2075. When the test switch is released, the LED and piezo will return to the standby mode (within 0.5 seconds max.). If the detector is in a trouble mode and the test switch is depressed, the test switch will be ignored.

3.8 ALARM SILENCE

When the test switch is depressed momentarily during a CO alarm (below 350 ppm), the piezo will be disabled for 7 minutes. Above 350 ppm, the alarm silence function is inoperative. If the detector comes out of alarm before the 7 minute delay expires, the 7 minute counter will be re-initialized. If CO concentration increases to a higher concentration, the detector will exit alarm silence. The alarm silence function does not affect the visible LED indication.

3.9 LOW BATTERY

When a battery is first inserted, a low battery test is performed. If the battery does not pass this test, the unit gives no indication of operation: the unit does not initiate a low battery status update and the LEDs do not blink at all. A unit that passes the initial low battery test then tests for a low battery condition once every 65 minutes. The battery voltage has to be at or below 2.7V nominally for two consecutive low battery tests before a low battery condition is indicated by output pin 1 being set high and pin 3 set Low. The green LED will turn off and the red LED will blink every 45 seconds.

If the detector goes into alarm, the LED blink will match the alarm condition. Once the low battery condition is present for 7 days, the piezo will begin to chirp. The piezo will chirp every 45 seconds for an additional 30 days, after which the piezo, LED's, output pins 1 and 3 lines will be set high, while CO operations continue. If an alarm is detected after this event, the unit will attempt a full alarm signal. However, in this mode of operation, neither CO sensitivity nor alarm function are guaranteed.

3.10 LED OPERATION

	Red LED	Green LED
Power On Reset	Blinks every 10 seconds 4 times	Blinks every 10 seconds, 4 times
Standby	Off	Blinks every 10 sec.
Alarm/Test	Blinks once every second	Off
Low Battery	Blinks once every 45 seconds	Off
CO End of Life	Blinks once every 10 seconds	Off

3.11 PIEZO OPERATION

Power On Reset	Off
Standby	Off
Alarm/Test	Temporal 4 pattern.
Low Battery	After 7 days, chirps every 45 seconds for 30 days
CO End of Life	One chirp every 45 seconds

3.12 OUTPUT PIN CONFIGURATION

	Pin 1	Pin 3
Standby	High	High
Alarm/Test	Low	Low
Low Battery	Low	High

4.0 RF TRANSMITTER CHARACTERISTICS

4.1 TRANSMISSION TYPES

Alarm, Status, Low Battery, Test.

4.2 ALARM TRANSMISSION

An alarm transmission is sent 20 seconds after the CO detector piezo begins to signal an alarm and the detector's alarm output line goes high. During the alarm event the transmitter will resend a transmission every 20 seconds. This continues as long as the detector is in the alarm state.

An Alarm Restore transmission is not sent after the detectors alarm line returns to low. The user will have to clear the alarm manually at the receiver or console.

4.3 LOW BATTERY TRANSMISSION

The battery status is sent with Alarm and Status transmissions. Test transmissions are disabled when the battery is low. In a low battery condition the test switch serves to silence the low battery chirp for 12 hours.

4.4 STATUS TRANSMISSION

A status transmission is sent approximately every 1.1 hours

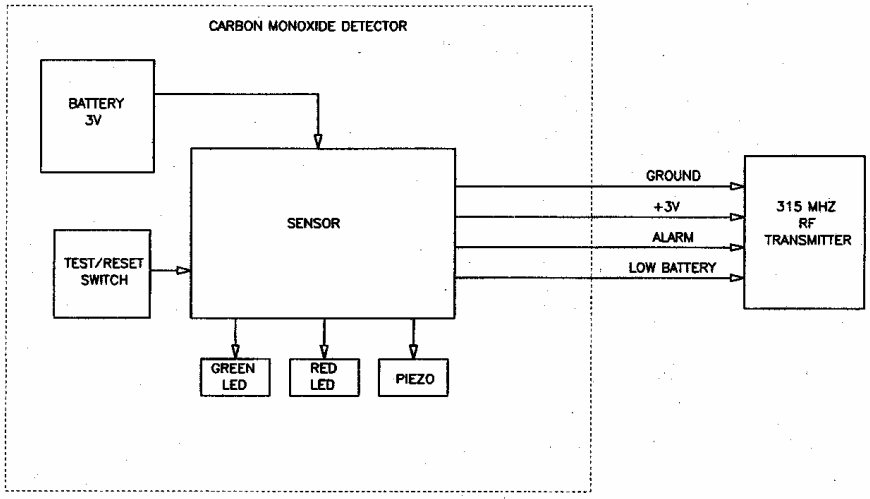
4.5 TEST TRANSMISSION (LEARNING TRANSMITTER INTO A RECEIVER)

1) Place the receiver into the learn mode (See receiver instruction manual for learning mode details).

2) Press the test button in the smoke detector and release it after the alarm beeps. A test signal (Alarm bit not set) will be transmitted a few seconds after the button is released. To test an alarm signal (Alarm bit set) hold the test button and an alarm transmission will be sent in 20 seconds.

4.6 RF TRANSMITTER SPECIFICATIONS

PCB Assembly	Size: 2.74" X .83" X .75" approximately (including height of antenna). Interfaces with smoke detector via a four pin connector.
Frequency:	315 MHz ± 125 kHz
Encoding Format:	DX Supervised
System Range:	350 feet, open air, typical.
Operating Voltage:	3 Volts. Detector supplies power to transmitter PCB
Status Supervision:	A status signal is transmitted every 1.1 hours ±10%
Transmitter Timing:	Alarm transmission is sent 20 seconds after receiving a continuous alarm signal from the detector and at 20 second intervals as long as the detector is in alarm. *Note: The reset function does not stop these transmissions.*
Temperature Range:	-20°C to 60°C



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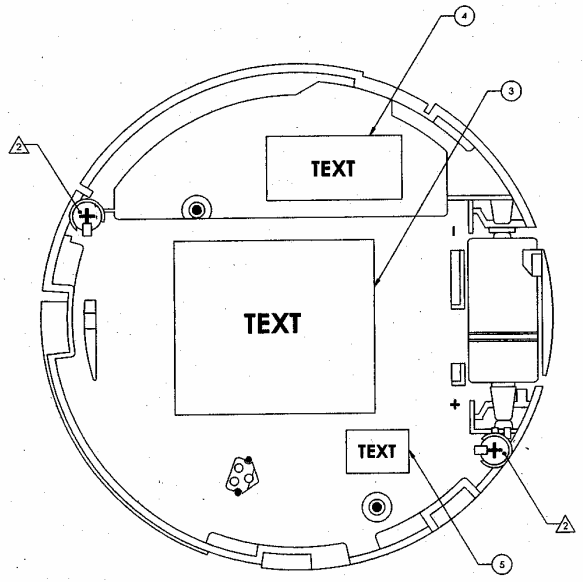
CAD OPERATOR: B. NYHUS	DATE 15MAY06	TITLE: BLOCK DIAGRAM, DXS-80	
CHECKED:	DATE 6/20/07		
APPROVED:	DATE 6-21-07	SIZE: B	DRAWING NO.: 227109 REV.: A
APPROVED:	DATE	SCALE: NONE	Wed Jun 20, 2007 SHEET: 1 OF 1

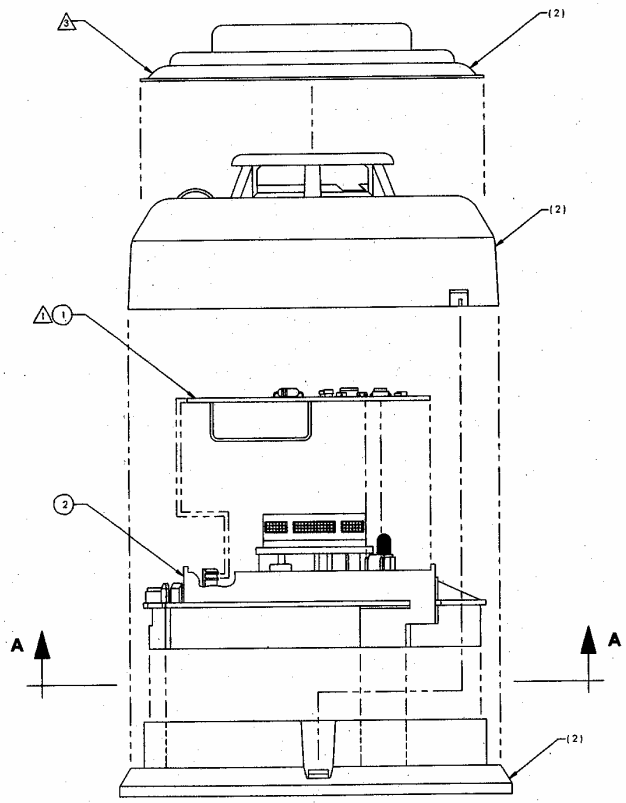
NOTES: (UNLESS OTHERWISE SPECIFIED)

1. SECURE THE TRANSMITTER PCB ASSEMBLY (ITEM 1) TO THE DETECTOR PCB (PART OF ITEM 2), BY INSERTING THE FOUR PIN HEADER ON THE DETECTOR PCB THROUGH THE FOUR HOLES IN THE TRANSMITTER PCB AND SOLDER. FIT THE END OF THE TRANSMITTER PCB INTO THE SLOTTED POST IN THE DETECTOR BASE (PART OF ITEM 2) AS SHOWN.
2. SECURE THE BASE AND THE TOP COVER WITH THE TWO SCREWS (ALL PARTS OF ITEM 2).
3. AFTER TEST IS COMPLETE, PRESS THE YELLOW PROTECTIVE COVER ONTO THE TOP OF THE DETECTOR (PART OF ITEM 2). -01 ASSEMBLY ONLY.



VIEW A-A
SOME PARTS OMITTED FOR CLARITY

REV	DESCRIPTION	DATE	APPROVED
X2	REVISED PER REDLINES VJ	06SEP06	
A	PRODUCTION RELEASE PER ECO #10181 ML	10/17/06	B. NYHUS
B	REVISE PER ECO #10408 MS		



SEE SEPARATE PARTS LIST

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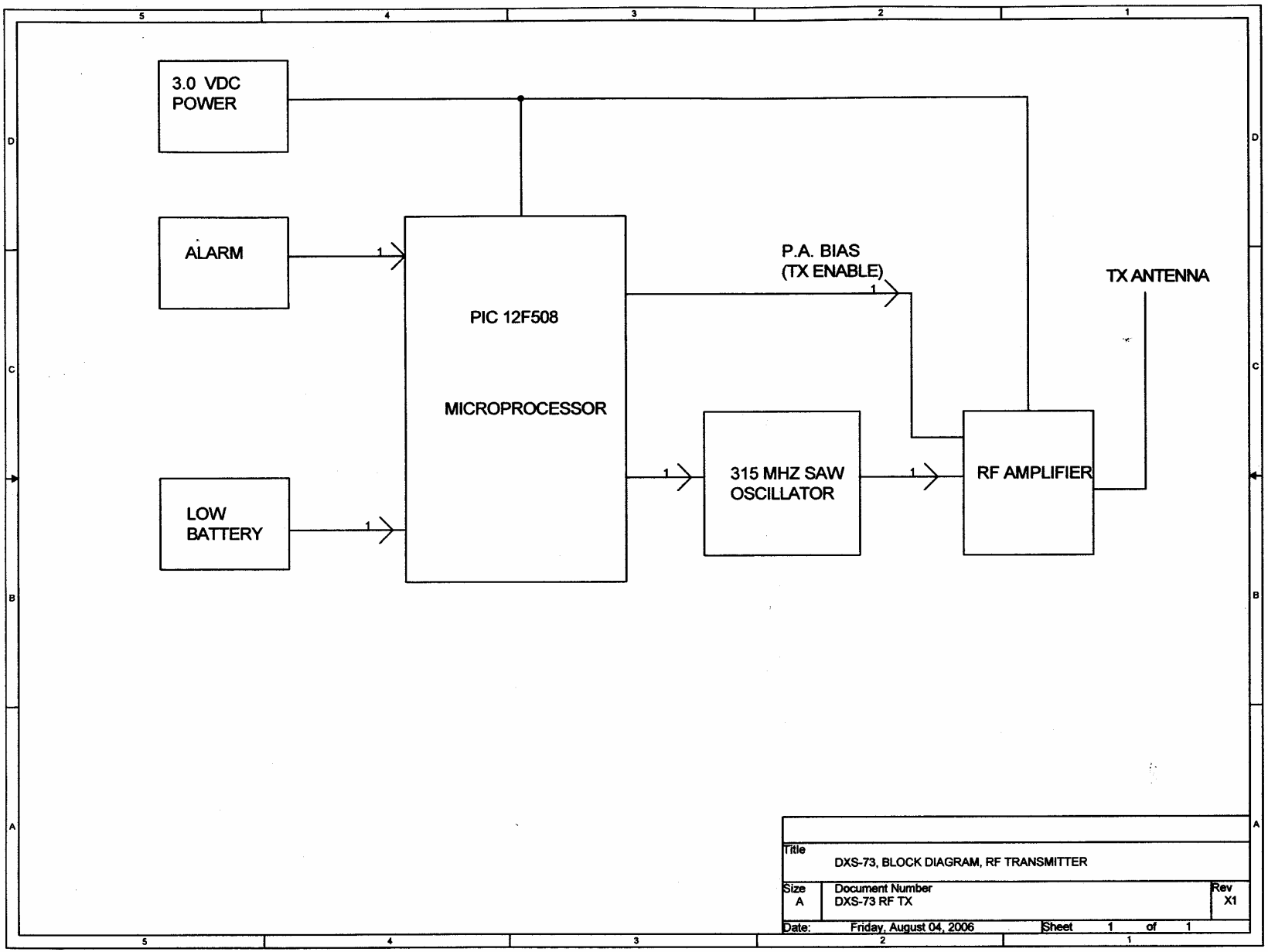
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE INCHES [MM]. TOLERANCES: DECIMALS XX±0.01 [.3] XXX±.005 [.13] ANGLES: ±0.5° ROUNDNESS: 0.005 [.13] FLATNESS: ±.005 [.13] CONCENTRICITY: 0.005 [.13]	PROJECT:		Linear.
	CAD OPERATOR: V. JARA	DATE 7/18/2006	
	CHECKED: C. ACEPA	DATE 10/16/06	TITLE: ASSY, MECH, DXS-73
MATERIAL:	APPRD VEN: B. NYHUS	DATE 10/17/06	SIZE: D; DRAWING NO.: 225910; REV: B
FINISH:	APPRD VEN:	DATE	SCALE: NONE; SHEET: 1 OF 1
DO NOT SCALE DRAWING	APPRD VEN:	DATE	
	APPRD VEN:	DATE	


3.0 VDC
POWER
ALARM
LOW
BATTERY
PIC 12F508
MICROPROCESSOR
P.A. BIAS
(TX ENABLE)
315 MHZ SAW
OSCILLATOR
RF AMPLIFIER
TX ANTENNA
1
Title
DXS-73, BLOCK DIAGRAM, RF TRANSMITTER
Size
A
Document Number
DXS-73 RF TX
Rev
X1
Date:
Friday, August 04, 2006
Sheet
1
of
1

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
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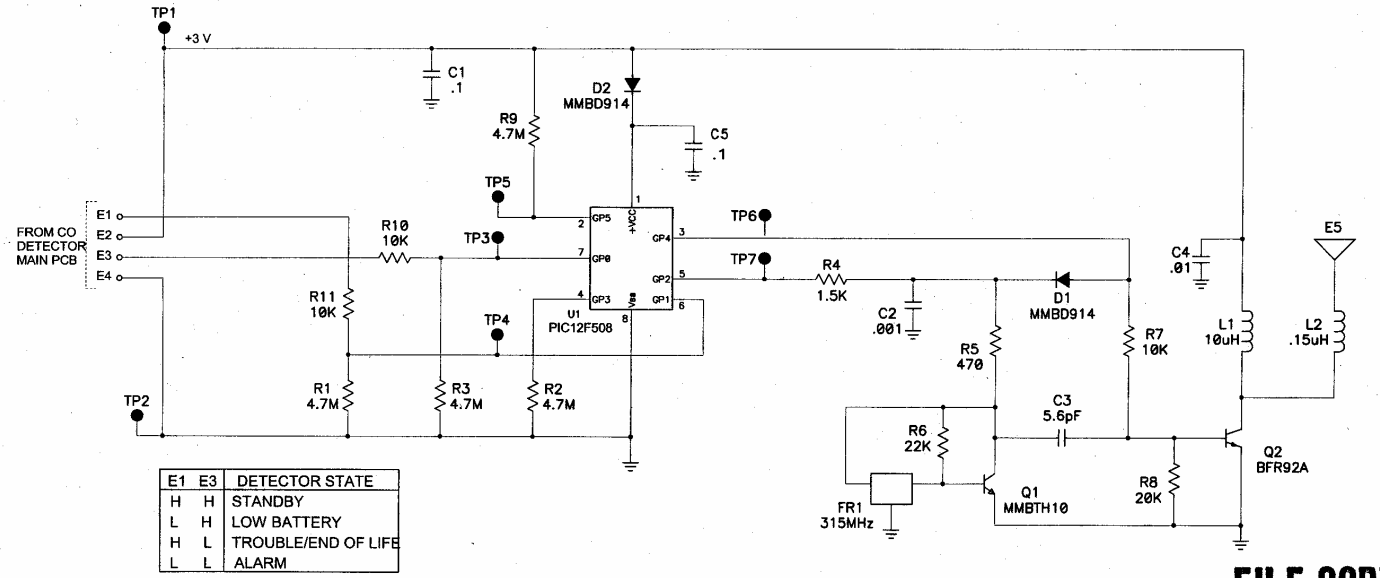


E1	E3	DETECTOR STATE
H	H	STANDBY
L	H	LOW BATTERY
H	L	TROUBLE/END OF LIFE
L	L	ALARM

FILE COPY

3. ALL RESISTOR VALUES ARE IN OHMS.
2. ALL CAPACITOR VALUES ARE IN MICROFARADS.
1. THIS SCHEMATIC TO BE USED IN CONJUNCTION WITH APPROPRIATE ASSEMBLY DRAWING AND PARTS LIST.

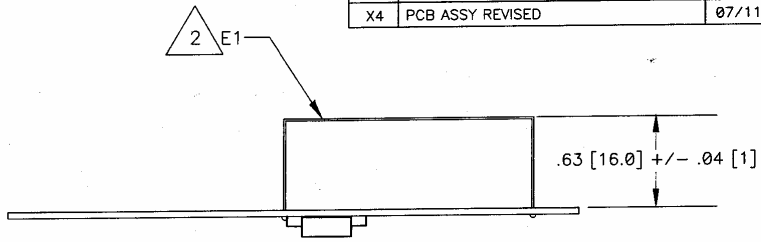
NOTES: (UNLESS OTHERWISE SPECIFIED)

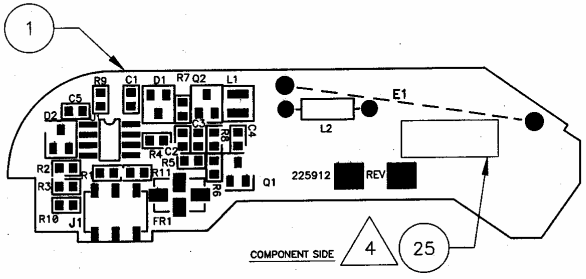
CAD OPERATOR: B. NYHUS	DATE 11OCT06	Linear CARLSBAD, CA
CHECKED: K. WARREN	DATE 10/20/07	TITLE: SCHEMATIC,DXS-80
APPROVED:	DATE	SIZE: B / DRAWING NO.: 227110 / REV.: A
APPROVED:	DATE	SCALE: NONE / Wed Jun 20, 2007 / SHEET: 1 OF 1

NOTES: (UNLESS OTHERWISE SPECIFIED)

1. MARK ASSEMBLY DASH NUMBER AND REVISION LETTER USING .12 [3.0] HIGH CHARACTERS, PERMANENT INK, CONTRASTING COLOR, APPROXIMATELY WHERE SHOWN.
2. BEND ANTENNA WIRE, E1 AND SOLDER TO PCB AS SHOWN.
3. COAT ENTIRE ASSEMBLY EXCEPT CONNECTOR (J1) WITH CONFORMAL COATING (ITEM 24).
4. PLACE DATE CODE LABEL (ITEM 25) APPROXIMATELY WHERE SHOWN.

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
X1	ENGINEERING RELEASE		
X2	PCB REVISED	06/20/06	
X3	PCB REVISED	07/09/06	
X4	PCB ASSY REVISED	07/11/06	





SEE SEPARATE PARTS LIST

UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE INCHES [MM]: TOLERANCES: DECIMALS .XX+/-.02 [.5] .XXX+/-.005 [.30] ANGLES: +/-.5 DEG ROUNDNESS:+/-.005 [.13] FLATNESS:+/-.005 [.13] CONCENTRICITY:+/-.005 [.13]	PROJECT:	Linear. 2055 CORTE DEL NOGAL • CARLSBAD, CA 92009	
MATERIAL:	CAD OPERATOR: KMC	DATE 04/27/06	TITLE: DXS/DXT-73
	CHECKED:	DATE	
FINISH:	APPROVED:	DATE	SIZE: B / DRAWING NO.: 225912 / REV.: X4
	APPROVED:	DATE	SCALE: NONE / DO NOT SCALE DRAWING / SHEET: 1 OF 1

PRINTED 16-Jul-07 10:14 AM LINEAR LLC

EFFECTIVITY DATE: ALL S I N G L E L E V E L B I L L S O F M

PARENT PART: SST00116 F/G DXS-80,CO DETECTOR W/XMTR
ASSY QTY: 1 REV: A SOURCE CODE: P ECN: 10408 ECN DATE: 20-Jun

ITEM NO	COMPONENT PART NUMBER	REV PR	CODE	DESCRIPTION COMM	S C	T Y	S P	A B	P L	S B	UM	EXTENDED QTY PER
0001	225910-03	A		ASSY,MECH,DXS-80								
		NP		99	P	*	P	*	P		EA	1
0002	961-022	A		BAG,BUBBLE,12" X 14"								
		PPCM5		DD	P	1	P		P		EA	1
0003	110939-001	E		CARTON,ROOM STATION,DMC1,WHITE								
		NP		DC	P	*	P	*	P		EA	1
0004	227113	A		LABEL,PACKING BOX,DXS-80								
		NP		CE	P	*	P	*	P		EA	1
0005	220198	A		FOAM,POLYSTYRENE,3' X 6' X 1"								
		PPCNP		DC	P	1	P	*	P		EA	0
				FLOOR STOCK								
0006	216633	B		BOX,SHIPPING,12.87 X 10.25 X 14.25								
		PPCNP		DC	P	1	P	*	P		EA	0.083333
0007	811460	A		LABEL,BAR,MSTR CTN,DXS-80								
		NP		CE	P	*	P	*	P		EA	0.083333
0008	208766	C		BOX,SHIPPING,21.77 X 15.51 X 13.98								
		PPC99		CU	P	1	P	*	P		EA	0.041667
0009	911460	A		LABEL,BAR,SHPG CTN,DXS-80								
		NP		CE	P	*	P	*	P		EA	0.041667
0014	227112	A		INSTR,INSTL,DXS-80								
		NP		CE	P	*	P	*	P		EA	1
0015	227739	Y #		INSTR,INSTL,DXS-80,SPANISH								
		NP		CE	P	*	P	*	P		EA	1
0016	228082	Y #		ADDENDUM,CO ALARM PROGRAMMING								
		NP		DC	P	*	P	*	P		EA	1
0017	228061	A		LABEL,MODEL/OPS,DXS-80,SPANISH								
		NP		CE	P	*	P	*	P		EA	1
0990	227104	C		F/G CO/SMOKE ALARM								
		NP		DC	P	*	P	*	P		EA	0
				REFERENCE ONLY								
0991	227108	A		SPECS,DXS-80								
		NP		DC	P	*	P	*	P		EA	0
				REFERENCE ONLY								
0992	227109	A		BLOCK DIAGRAM,DXS-80								
		NP		DC	P	*	P	*	P		EA	0
				REFERENCE ONLY								
0993	711460	A		LABEL,UPC,SINGLE BOX,DXS-80								
		NP		CE	P	*	P	*	P		EA	0
				REFERENCE ONLY								

NOTES:

PROD REL·ECO 10408 20JUN07 REV A

PRINTED 16-Jul-07 10:14 AM LINEAR LLC

EFFECTIVITY DATE: ALL S I N G L E L E V E L B I L L S O F M

PARENT PART: 225910-03 ASSY,MECH,DXS-80
ASSY QTY: 1 REV: A SOURCE CODE: P ECN: 10408 ECN DATE: 20-Jun

ITEM NO	COMPONENT PART NUMBER		REV PR	CODE	DESCRIPTION COMM	S	T	S	A	P	S	UM	EXTENDED QTY PER
0001	225912-03		A		ASSY,PCB,DXS-80								
			NP		99	P	*	P	*	P		EA	1
0002	232067		A		CO,ALARM,SYSTEM,SENSOR,W3-C0								
			NP		DY	P	*	P	*	P		EA	1
0003	227280		A		LABEL,MODEL/OPERATION,DXS-80								
			NP		CE	P	*	P	*	P		EA	1
0004	227350	Y	#		LABEL,UL,MARK,DXS-80								
			NP		CE	P	*	P	*	P		EA	1
0005	202847		D		LABEL,WARR/DATE,1 YEAR,GRAY								
			PPC99		CE	X	1	P	E	P		EA	1
0990	225910		B		ASSY,MECH,DXS-73								
			NP		DC	P	*	P	*	P		EA	0
					REFERENCE ONLY								
0991	227111		A		TEST PROC,DXS-80								
			NP		DC	P	*	P	*	P		EA	0
					REFERENCE ONLY								

NOTES:

PROD REL ECO 10408 20JUN07 REV A

PRINTED 16-Jul-07 10:14 AM LINEAR LLC

EFFECTIVITY DATE: ALL S I N G L E L E V E L B I L L S O F M

PARENT PART: 225912-03 ASSY,PCB,DXS-80
ASSY QTY: 1 REV: A SOURCE CODE: P ECN: 10408 ECN DATE: 20-Jun

ITEM NO	COMPONENT PART NUMBER	REV PR	CODE	DESCRIPTION COMM	S T S A P S C Y P B L B	UM	EXTENDED QTY PER
0001	225911	B		PCB,DXS-73			
		NP		DB	P * P * P	EA	1
0002	227115-01	A		ASSY,UP,DXS-80,V1.0			
		NP		99	P * P * P	EA	1
				U1			
0003	212828	C		RSONATR,315MHZ,RO,1 PORT,SAW,SM-2			
		PPC99		EV	P 1 P E P	EA	1
				FR1			
0005	104129	C		WIRE,18,SLD,BARE,BULK			
		PPC99		ES	X 1 S E P	FT	0.230000
				E1			
0008	203687	B		XSTR,NPN,MMBTH10,SOT-23			
		PPC99		EN	P 1 P E P	EA	1
				Q1			
0009	219134	B		XSTR,NPN,BFR92A,SOT-23			
		PPCNP		EN	P 1 P * P	EA	1
				Q2			
0010	205011-001	E		DIODE,MMBD914,SWITCH,SOT-23			
		PPC99		BF	P 1 P E P	EA	2
				D1,2			
0011	109295-103	D		INDCTR,CER,10UH,FERR,1008LS,10%,SMD			
		PPC99		BR	P 1 P E P	EA	1
				L1			
0012	213017	B		INDCTR,.15UH,ENCAP,24AWG,10%			
		PPC99		BP	P 1 P E P	EA	1
				L2			
0013	213383-475	A		RES,CHIP,1/16W,4.7M,0603,5%			
		PPCNP		DQ	P 1 P * P	EA	4
				R1,2,3,9			
0014	213383-152	A		RES,CHIP,1/16W,1.5K,0603,5%			
		PPCNP		DQ	P 1 P * P	EA	1
				R4			
0015	213383-471	A		RES,CHIP,1/16W,470,0603,5%			
		PPCNP		DQ	P 1 P * P	EA	1
				R5			
0016	213383-223	A		RES,CHIP,1/16W,22K,0603,5%			
		PPCNP		DQ	P 1 P * P	EA	1
				R6			
0017	213383-103	A		RES,CHIP,1/16W,10K,0603,5%			
		PPCNP		DQ	P 1 P * P	EA	3
				R7,10,11			
0018	213383-203	A		RES,CHIP,1/16W,20K,0603,5%			
		PPCNP		DQ	P 1 P * P	EA	1
				R8			
0020	213419	E		CAP,CER,C,16V104P,X7R,10%,0603			
		PPCNP		AO	P 1 P * P	EA	2
				C1,5			

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EFFECTIVITY DATE: ALL S I N G L E L E V E L B I L L S O F M

PARENT PART: 225912-03 ASSY,PCB,DXS-80
ASSY QTY: 1 REV: A SOURCE CODE: P ECN: 10408 ECN DATE: 20-Jun

ITEM NO	COMPONENT PART NUMBER	REV PR	CODE	DESCRIPTION COMM	S T S A P S C Y P B L B	UM	EXTENDED QTY PER
0021	213391	C		CAP,CER,C,50V102P,X7R,10%,0603			
		PPCNP		AO	P 1 P E P	EA	1
				C2			
0022	219554	C		CAP,CER,C,50V5R6P,NPO,.25PF,0603			
		PPCNP		AO	P 1 P * P	EA	1
				C3			
0023	213390	C		CAP,CER,C,50V103P,X7R,10%,0603			
		PPCNP		AO	P 1 P * P	EA	1
				C4			
0024	200610	A		COATING,CONFORM,PC-28 (3.5KG/CAN)			
		PPC99		DV	X 1 S E P	CN	0
				FLOOR STOCK			
0025	200691	B		LABEL,DATE CODE,PRODUCTION,.5"X.2"			
		PPC99		CE	X 1 S E P	EA	1
0990	225912	B		ASSY,PCB,DXS-73			
		NP		DC	P * P * P	EA	0
				REFERENCE ONLY			
0991	227110	A		SCHEM,DXS-80			
		NP		DC	P * P * P	EA	0
				REFERENCE ONLY			
0992	227111	A		TEST PROC,DXS-80			
		NP		DC	P * P * P	EA	0
				REFERENCE ONLY			

NOTES:

PROD REL ECO 10408 20JUN07 REV A

END OF REPORT

TESTING INSTRUMENTATION AND EQUIPMENT LIST

SPECTRUM ANALYZERS:

H.P.	HP8562A	1KHz to 22GHz		
	S/N 2913A03742		Calibrated	04/07
			Due	04/08

ANTENNAS:

(2)	Ailtech DM105A T1		20-200 MHz		Tuned Dipole
	S/N 93412-105 and 93412-114		Calibrated 4/07	Due:	4/08
(2)	Ailtech DM105A T2		140-400 MHz	Tuned Dipole	
	S/N 93413-113 and 93413-117		Calibrated 4/07	Due:	4/08
(2)	Ailtech DM105A T3		400-1000 MHz	Tuned Dipole	
	S/N 93413-105 and 93414-111		Calibrated 4/07	Due	4/08
(2)	AH Systems	SAS-200/511	1-12.4 GHz		Log Periodic
	S/N 118 and 124, P/Ns 2069				
(1)	AH Systems	SAS-200/540	20-330 MHz		Biconical
	S/N 367	P/N 2052			

INSTRUMENTATION:

H.P.	HP8656B RF Generator	100 KHz - 990 MHz	
	S/N A4229590	Calibrated	4/07
		Due	4/08
Solar Electronics Line Impedance Stabilization Network, Type			
	8012-50-R-24-BNC	Calibrated:	4/07
	S/N 8379585	Due:	4/08
HP 8447D	Broadband preamplifier, 0.1-1300 MHz		
	S/N 2443A03660	Calibrated: 4/07	
		Due: 4/08	
Mini-Circuits	ZFL-2000 broadband preamplifier, 10-3000 MHz		
	S/N Lin 001	Calibrated: 4/07	
		Due: 4/08	

ACCESSORIES:

(2) Ailtech Rulers calibrated in MHz
4 Meter ABS Antenna Mast and Trolley
Tektronix C5C Scope Camera
Eighty Centimeter Tall, Motorized Wooden Turntable
BNC to BNC Cables - as-required

(2)	25' RG-214/U Low-loss Coaxial Cable	
	S/N- LIN001 & LIN002	Calibrated: 4/07
		Due: 4/08

(2) 3' RG-55/U Low-loss Coaxial Cable, calibarated as part of the preamplifiers. Automatically taken into account when used with the above itemized range preamplifiers.

MEASUREMENT OF RADIO FREQUENCY EMISSION OF CONTROL AND SECURITY ALARM DEVICES FCC RULES PART 15, C63.4-2004TEST PROCEDURE

I. INTRODUCTION

As part of a continuing series of quality control tests to ensure compliance with all applicable Rules and Regulations, this enclosure details the test procedures for certain radio control devices. Testing was performed at a test site located on the property of Linear LLC, 1950 Camino Vida Roble, Suite 150, Carlsbad, California 92008-6517.

II. MEASUREMENT FACILITY DESCRIPTION

The test facility is a specially prepared area adequately combining the desirability of an interference free location with the convenience of nearby 120 volt power outlets, thus completely eliminating the incidence of inverter hash, so often a problem with field measurements.

III. DESCRIPTION OF SUPPORTING STRUCTURES

For Measuring Equipment - The antenna is supported on a trolley that can be raised and lowered on a mast by means of remote control to any level between 1 meter and 4 meters above the ground. For measurements at 3 meters, an antenna height (center of dipole) of about 1 meter generally yields the greatest field strength. For measurements at 1 meter, an antenna height equal to the device under test generally yields the greatest field strength. Usually, horizontal polarization yields the greatest field strength for both 1 and 3 meter measurements.

For Equipment Under Test (EUT): The equipment to be tested is supported by a wooden turntable at a height of eighty centimeters. A two axis swivel at the top of the turntable permits the unit under test to be manually oriented in the position of maximum received signal strength. The turntable can be rotated by remote control.

Test Configuration - All transmitters were located eighty centimeters above ground, at a distance of three meters from the antenna. They were each oriented for maximum radiation by rotating the turntable. The antenna was then moved vertically along the mast for optimum reception in both horizontal and vertical planes. Where no emissions were found, the antenna was also moved to one meter distance to improve system sensitivity.

From 1 GHz to 3 GHz, a Mini-Circuits ZFL-2000 broadband RF preamplifier is used instead of the HP 8447D. In many cases, the antenna is moved in to a distance of 1 meter to enhance test range sensitivity after the 3-meter data is observed. A theoretical 9.54dB improvement is realized. Please see Excel data spreadsheet for details. For a particular device and frequency, the EUT to antenna distance is specified in the Report of Measurements.

Correction of Measured Values - The spectrum analyzer calibration is in units of dBm absolute. Published antenna factor, measured cable loss and preamplifier gain are in units of dB. All equipment is referenced to a 50-ohm characteristic impedance; therefore, any impedance terms will factor out of any calculations. Also, balun loss is included in the antenna factor, so this term will not appear in any calculation.

To obtain field strength, the reference (50 ohm system) 1 uV = 0 dBuV = -107 dBm is used.

For a given frequency: antenna factor, cable loss, preamplifier gain (if used) and a 9.54 dB gain factor (3 meters to 1 meter field strength conversion) when required are factored into the spectrum analyzer reading, resulting in a field strength in units of dBm.

Field strength reading (dBm) + 107 dB = dBuV, using 0 dBuV = 1 uV/meter at a specified distance as reference.

All of the equipment was calibrated to NBS-traceable factory specifications prior to the date of measurement.

IV **MEASUREMENT PROCEDURE**

Transmitters

1. Set the DIP-switch rockers of the transmitter (if needed) to all ON, jam the button in the ON position, and place the transmitter on the test stand.
2. Tune the antenna (if required).
3. Tune the spectrum analyzer.
4. Adjust the antenna height and polarization for peak field strength.
5. Rotate the turntable to orient the transmitter for the highest reading.
6. Record the observed peak emission.
7. Record the screen image (if required).

Spectrum Analyzer Control Settings:

Tuning:	As required
Bandwidth	100 KHz for Field Strength,
Scan Width:	100 KHz/div (may be different when tuning or adjusting display for photographs)
Input Attenuator:	10 dB
Scan Time:	50 mSec. sweep
Reference Level:	0 dBm
Display Mode:	Log 10 dB/division
Video Filter:	OFF
Scan Mode:	Internal
Scan Trigger:	Auto

REPORT OF MEASUREMENTS

LINEAR LLC
FCC ID: EF4 SST00116
Model: DXS-80 Carbon Monoxide Alarm Transmitter

The enclosed documents reflect the requirements contained generally within the code of Federal Regulations, Title 47, Parts 2 and 15 as most recently published October 1, 2006 and all other applicable revisions made by the Commission since that time.

The specific rule sections for which the enclosed documents demonstrate compliance or rely upon to demonstrate compliance with the Commission's application and technical standards are as follows:

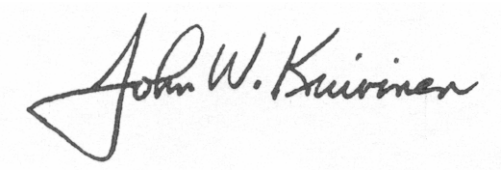
15.201-15.207, 15.231, Subpart C, Intentional Radiators.

Test Procedure C63.4-2004, Section 13, Measurement of Intentional Radiators was used for the testing of this device.

In accord with Section 2.948 of the Commission's Rules, a Test Site submittal is on file with the Commission and a Letter of Acceptance dated March 17, 2006 (Registration Number 90767) is a portion of the Commission's records.

A test site submittal is on file with Industry Canada. The Industry Canada file number is 1078. Dated April, 2006.

All of the information contained within this documentation is true, correct, and complete to the best of my knowledge.



_____ _ July 16, 2007 _
John W. Kuivinen, P.E. Date
Regulatory Compliance Engineer

DURATION OF RF TRANSMISSIONS

DXS-80

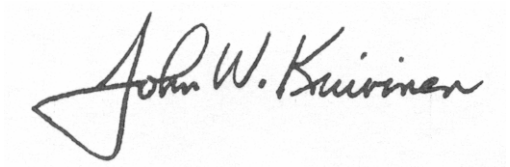
CARBON MONOXIDE ALARM TRANSMITTER

This transmitter is normally automatically activated. It is externally triggered using a locally annunciated carbon monoxide alarm. As such, it may be operated continuously by the user (FCC Rules 15.231(a)(4)) during the pendancy of the alarm.

When the test push button is pressed, due to battery constraints and an accidental continuous activation causing interference to the system, the maximum length transmission for a single press of the test pushbutton is one second.

If the push button is quickly pressed and released, the transmitter will cease transmitting after one second. FCC Rules 15.231 (a)(1) allows no longer than 5 seconds upon the release of a manually activated transmitter.

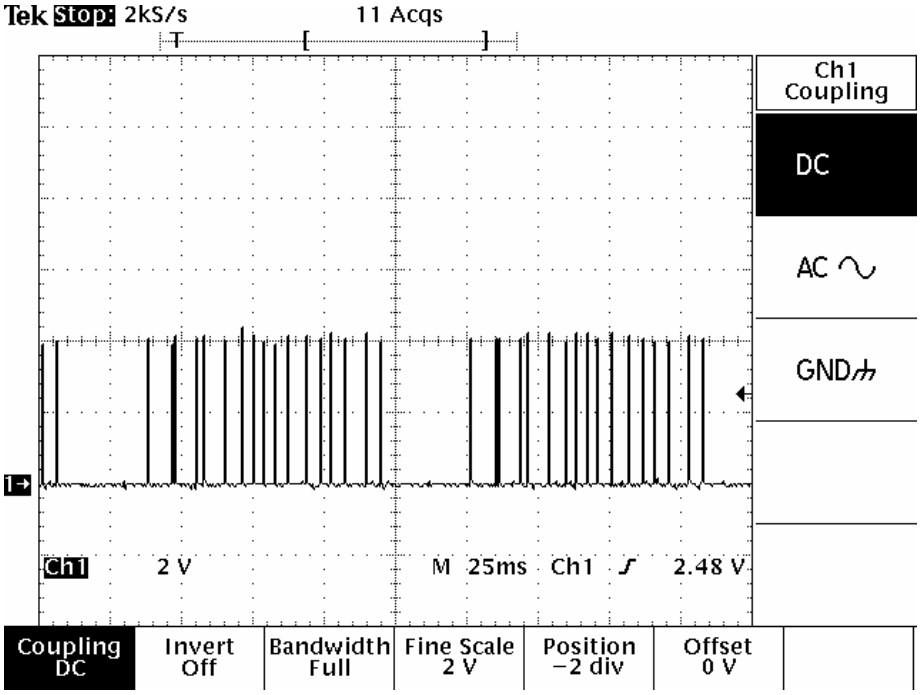
Signed:



John W. Kuivinen, P.E.
Regulatory Compliance Engineer

Transmitter Duty Cycle Calculations and Time Domain Information

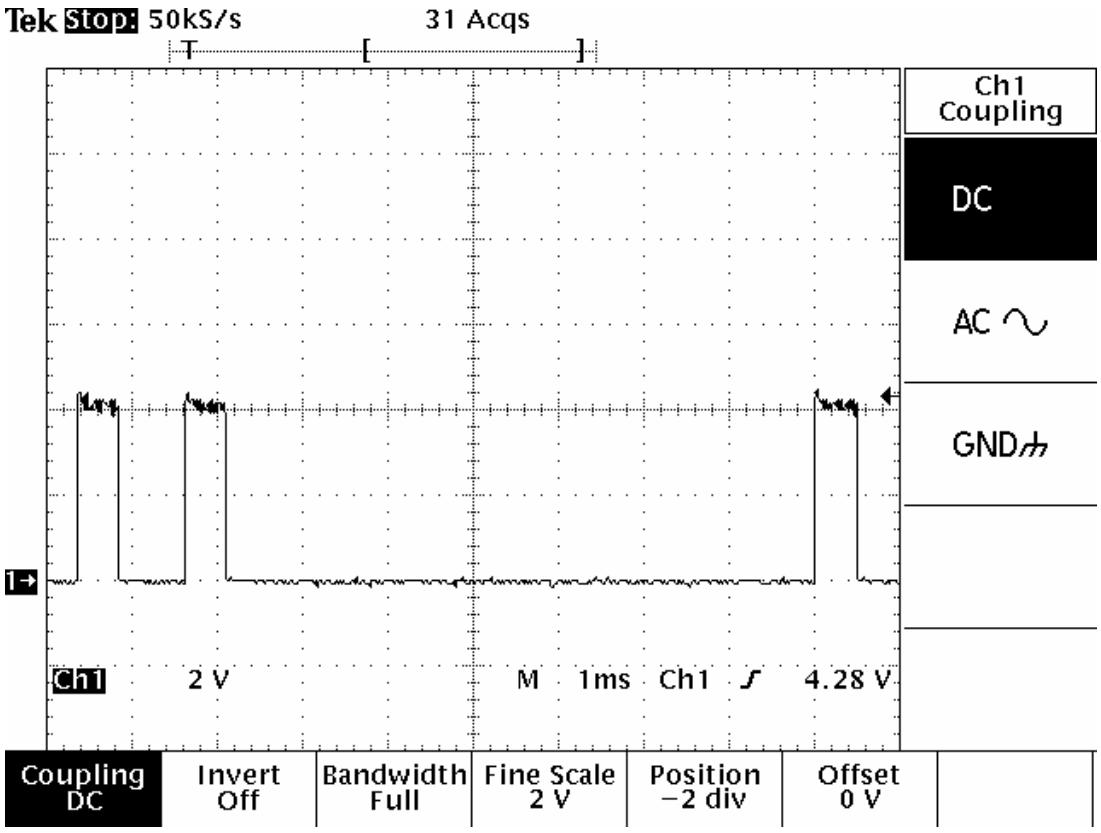
DXS Data Format



17 BITS / DATA WORD + 3 BLANK FRAMES BETWEEN WORDS

DATA WORD = 20 X 5000 USEC = 100 MILLISECONDS FOR NOMINAL DATA WORD FRAME

TWO DATA WORDS SHOWN ABOVE



INDIVIDUAL DATA PULSES, QUATERNARY ENCODED DATA FORMAT
500 MICRO SECONDS FOR EACH DATA PULSE
TIME DURATION FOR EACH PULSE IS FIXED
3 DATA PULSES SHOWN ABOVE

Transmitter Duty Cycle Calculations and Time Domain Information DX / DXS Data Format

Worst case duty cycle is computed because coded pulse position type A1D modulation is used. Data rate is seventeen 500 uSec pulses in any 100 mSec. time window.

During transmission, the transmitter sequentially emits a group of 17 encoded pulses in the form of a pulse-keyed carrier. The data stream consists of preamble and encoded data string.

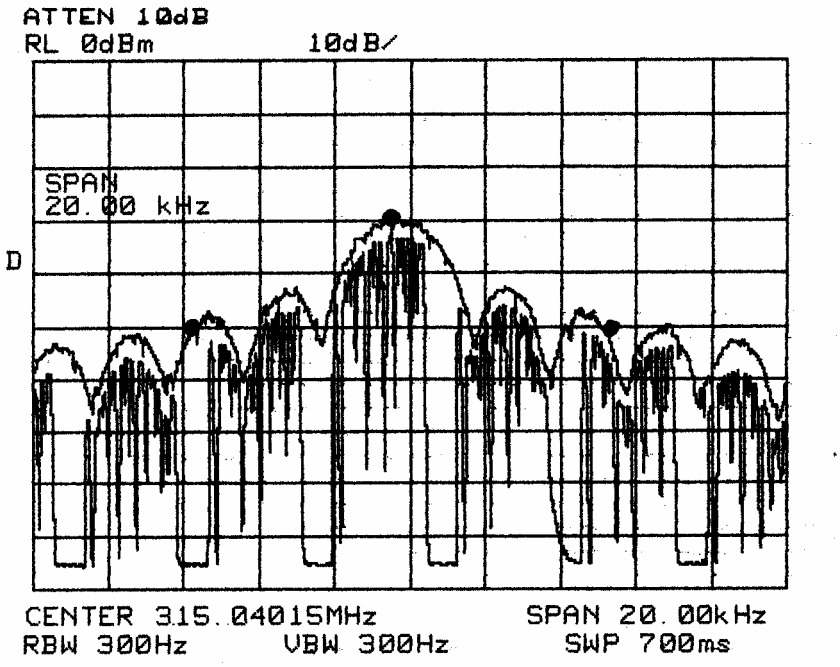
REAL TIME ANALYSIS:

Description	Total Time	"On" Time
Total Transmission	17 x 500 uSec. = 8.5 E-3 Sec on time	

In compliance with FCC Rules 15.35(c), the following duty cycle factor is used for all field strength calculations. A 100 mSec. full word time window is selected with the worst case programmable on time ratio.

$$\frac{\text{8.5 E-3 On time}}{\text{100 E-3 Total time}} = \text{8.5 E-2 on time per 100 mSec. time window}$$

20 log (8.5E-2) = -21.4 dB 20 dB Duty Cycle Ratio (Per FCC Rules)



DEVICE: DXS-80 Carbon Monoxide Alarm Transmitter

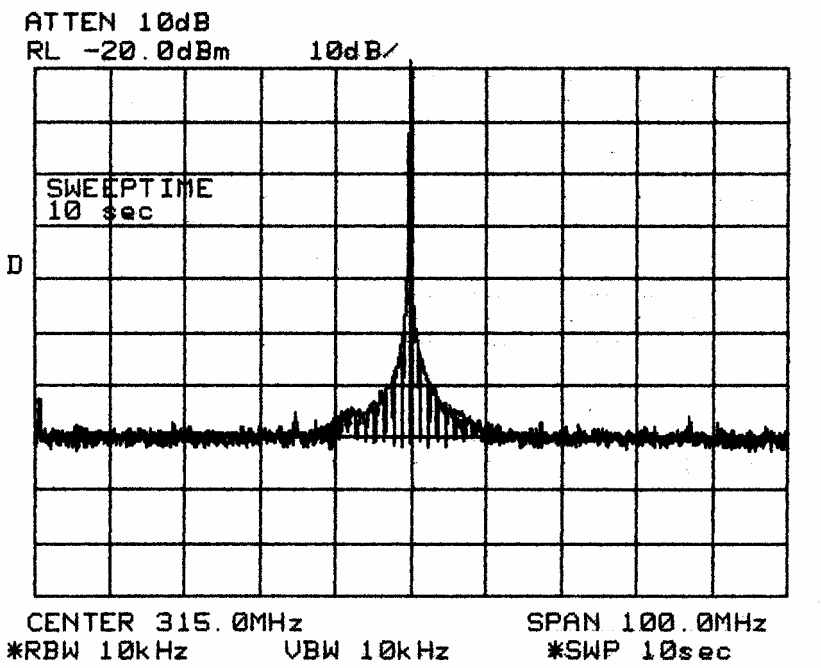
PHOTOGRAPH: Occupied Bandwidth

CONDITIONS: Transmitter Fundamental. A1D Modulation - Pulse Position Modulation. Fixed Duty Cycle. SAW oscillator frequency determining element.

SPECTRUM ANALYZER CONTROL SETTINGS

CENTER FREQUENCY:	315 MHz	INPUT ATTENUATION:	-10 dB
SCAN WIDTH:	2.0 KHz / Div.	PREAMPLIFIER GAIN:	0 dB
SCAN TIME:	0.7 Sec / Div.	LOG REF. LEVEL:	-10 dBm
RF BANDWIDTH:	0.3 KHz		
ANTENNA:	6" Whip Ant. at Analyzer Input	TUNED TO:	N/A
ANTENNA DISTANCE:	0.25 Meters	ANTENNA HEIGHT:	N/A
SYSTEM NOISE FLOOR:	N/A		

NOTES: Per 15.231(c), Occupied Bandwidth (20 dB down) is less than +/- 8 KHz. This is less than 0.010% of the center frequency. FCC Rules, 15.231(c) devices must be less than 0.25% of center frequency. This device therefore complies with 15.231(c).



DEVICE: DXS-80 Carbon Monoxide Alarm Transmitter

PHOTOGRAPH: Transmitter Spurious Emissions +/-50 MHz of the tuned center freq. Peak of RF signal set to top of screen.

CONDITIONS: Transmitter Fundamental. A1D Modulation, SAW tuned frequency.

SPECTRUM ANALYZER CONTROL SETTINGS

CENTER FREQUENCY: 315 MHz INPUT ATTENUATION: -10 dB

SCAN WIDTH: 10 MHz/ Div. PREAMPLIFIER GAIN: 0 dB

SCAN TIME: 1.0 Sec. / Div. LOG REF. LEVEL: -20 dBm

RF BANDWIDTH: 10 KHz

ANTENNA: 6" Whip Antenna on Analyzer Input TUNED TO: N/A

ANTENNA DISTANCE: 0.25 Meters ANTENNA HEIGHT: N/A

SYSTEM NOISE FLOOR: N/A

No emissions occur outside of the of the rated center freq. except for harmonic spurious signals.

REPORT OF MEASUREMENTS

Applications for control,security alarm,door opener or remote switch

Description: 315.0 MHz transmitter DX format Supervised

DATE: July 12, 2007

ITEM TESTED: CO Alarm Transmitter, Sample No. 1
MANUFACTURER: Linear LLC
TRADE NAME:
PRODUCT ID: EF4 SST00116

DISTANCE AT WHICH MEASURED: 3 meters, DUT 0.8 meters above ground
REFERENCE: 15.231
MEASUREMENT PROCEDURE: C63.4-2004

RADIATION:

A	B	C		D		E		F	G	H	I	J	K	L	M	N	P	Q
Tuned Frequency MHz	Emission Frequency MHz	Ambient Level dBm		FCC Limit dBm		Meter Reading dBm	UUT & Ant. Pos.**	Antenna Factor dB	Cable Loss dB	Amp Gain dB	Dist Fac dB	Duty Cycle dB	Emission Data dBm/mtr	Emission Data dBuV/mtr	Emission Data uV/M	FCC Limit uV/M	dB:FCC	FREQ. MHz
315.00	315.00	-71.20		-31.18		-34.1	H H	18.6	1.2	0.0	0.00	20.0	-34.30	72.70	4315.19	6042.00	-2.92	315.00
	630.00	-72.84	*	-49.54	*	-65.4	H H	26.0	1.7	0.0	9.54	20.0	-67.24	39.76	97.27	604.00	-15.86	630.00
	945.00	-68.94	*	-53.44	*	-63.4	H H	29.4	2.2	0.0	9.54	20.0	-61.34	45.66	191.87	604.00	-9.96	945.00
	1260.00	-91.54	*	-30.84	*	-41.2	H H	26.8	2.6	20.4	9.54	20.0	-61.74	45.26	183.23	604.00	-10.36	1260.00
	1575.00	-88.64	*	-33.74	*	-60.1	H H	28.7	3.0	19.8	9.54	20.0	-77.74	29.26	29.04	604.00	-26.36	1575.00
	1890.00	-86.94	*	-35.44	*	-72.8	H H	30.0	3.3	19.7	9.54	20.0	-88.74	18.26	8.18	604.00	-37.36	1890.00
	2205.00	-85.14	*	-37.92	*	-62.2	H H	30.8	3.6	18.3	9.54	20.0	-75.64	31.36	36.98	605.00	-24.28	2205.00
	2520.00	-84.04	*	-43.14	*	-80.9	H H	31.7	3.8	14.2	9.54	20.0	-89.14	17.86	7.82	604.00	-37.76	2520.00
	2835.00	-82.94	*	-46.94	*	#N/A	H H	32.4	4.2	11.5	9.54	20.0	#N/A	#N/A	#N/A	604.00	#N/A	2835.00
	3150.00	-82.04	*	-59.34	*	#N/A	H H	33.1	4.4	0.0	9.54	20.0	#N/A	#N/A	#N/A	604.00	#N/A	3150.00

NOTES:
* 1 meter measurement corrected to 3 meters
** Device (UUT) and antenna position = H (horizontal) or V (Vertical)

The spectrum was searched from 25 to 3500 MHz
No other emissions were observed except those shown on this page.

15.207 Conducted Emissions Not Applicable- Battery Powered

Transmitter is identical to DXS-73 (SST00113)
No Changes JWK

TESTED BY DATE

John W Kuzmow 7/12/07

ENGINEER DATE

FILE NAME: SST116_X1A.XLS DISK NAME: FCC DATA

REPORT OF MEASUREMENTS

Applications for control,security alarm,door opener or remote switch

Description:	315.0 MHz transmitter DX format Supervised
DATE:	July 12, 2007
ITEM TESTED:	CO Alarm Transmitter, Sample No. 2
MANUFACTURER:	Linear LLC
TRADE NAME:	
PRODUCT ID:	EF4 SST00116
DISTANCE AT WHICH MEASURED:	3 meters, DUT 0.8 meters above ground
REFERENCE:	15.231
MEASUREMENT PROCEDURE:	C63.4-2004
RADIATION:	

A	B	C		D		E		F	G	H	I	J	K	L	M	N	P	Q
Tuned Frequency MHz	Emission Frequency MHz	Ambient Level dBm		FCC Limit dBm		Meter Reading dBm	UUT & Ant. Pos.**	Antenna Factor dB	Cable Loss dB	Amp Gain dB	Dist Fac dB	Duty Cycle dB	Emission Data dBm/mtr	dBuV/mtr	uV/M	FCC Limit uV/M	dB:FCC	FREQ. MHz
315.00	315.00	-71.20		-31.18		-36.2	H H	18.6	1.2	0.0	0.00	20.0	-36.40	70.60	3388.44	6042.00	-5.02	315.00
	630.00	-72.84	*	-49.54	*	-66.7	H H	26.0	1.7	0.0	9.54	20.0	-68.54	38.46	83.75	604.00	-17.16	630.00
	945.00	-68.94	*	-53.44	*	-58.5	H H	29.4	2.2	0.0	9.54	20.0	-56.44	50.56	337.29	604.00	-5.06	945.00
	1260.00	-91.54	*	-30.84	*	-46.7	H H	26.8	2.6	20.4	9.54	20.0	-67.24	39.76	97.27	604.00	-15.86	1260.00
	1575.00	-88.64	*	-33.74	*	-57.9	H H	28.7	3.0	19.8	9.54	20.0	-75.54	31.46	37.41	604.00	-24.16	1575.00
	1890.00	-86.94	*	-35.44	*	-61.8	H H	30.0	3.3	19.7	9.54	20.0	-77.74	29.26	29.04	604.00	-26.36	1890.00
	2205.00	-85.14	*	-37.92	*	-61.0	H H	30.8	3.6	18.3	9.54	20.0	-74.44	32.56	42.46	605.00	-23.08	2205.00
	2520.00	-84.04	*	-43.14	*	-67.8	H H	31.7	3.8	14.2	9.54	20.0	-76.04	30.96	35.32	604.00	-24.66	2520.00
	2835.00	-82.94	*	-46.94	*	#N/A	H H	32.4	4.2	11.5	9.54	20.0	#N/A	#N/A	#N/A	604.00	#N/A	2835.00
	3150.00	-82.04	*	-59.34	*	#N/A	H H	33.1	4.4	0.0	9.54	20.0	#N/A	#N/A	#N/A	604.00	#N/A	3150.00

NOTES:

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15.207 Conducted Emissions Not Applicable- Battery Powered

Transmitter is identical to DXS-73 (SST00113). No Changes.

JWK

TESTED BY

DATE

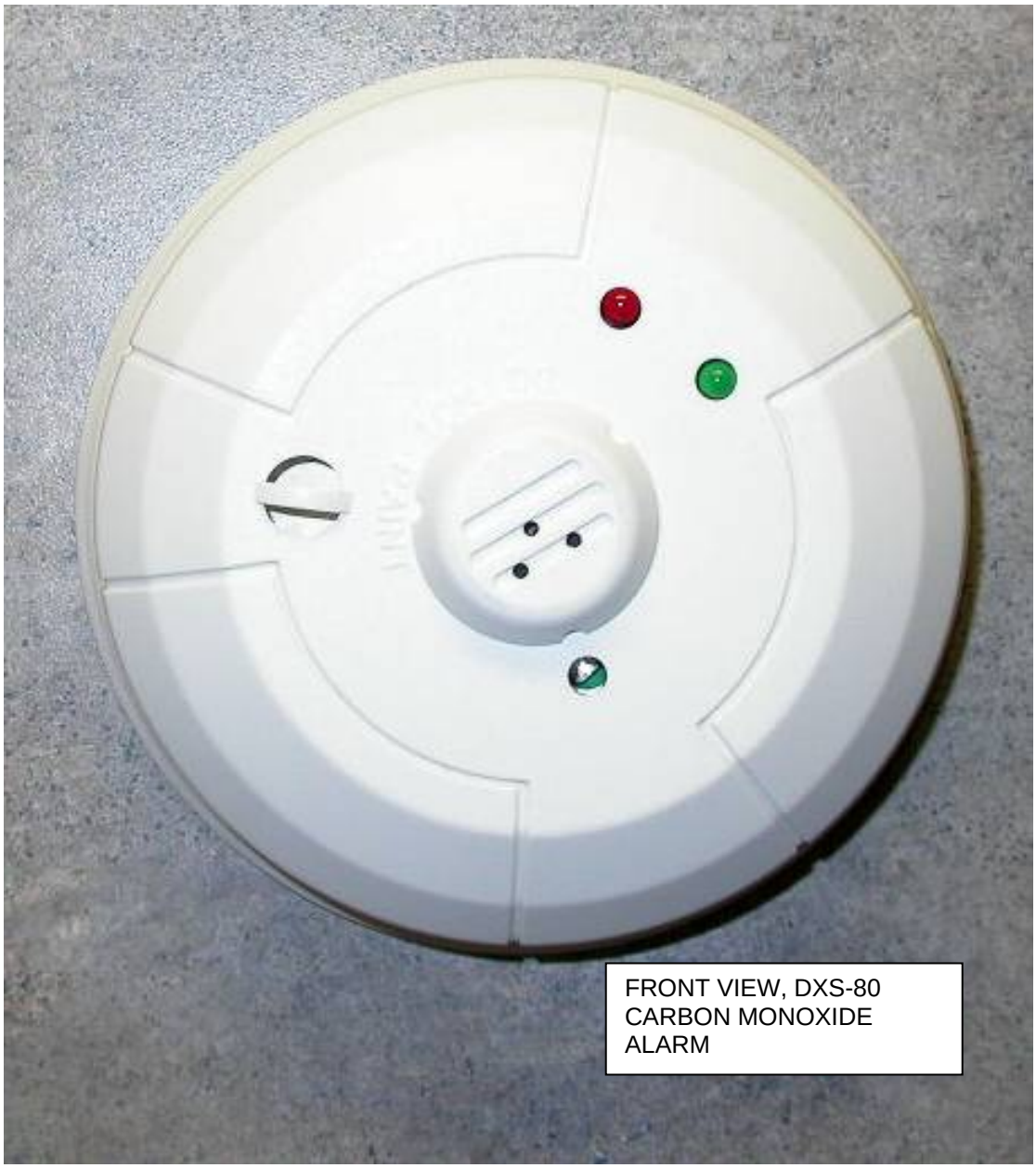
John W. Kuerner

ENGINEER

7/12/07

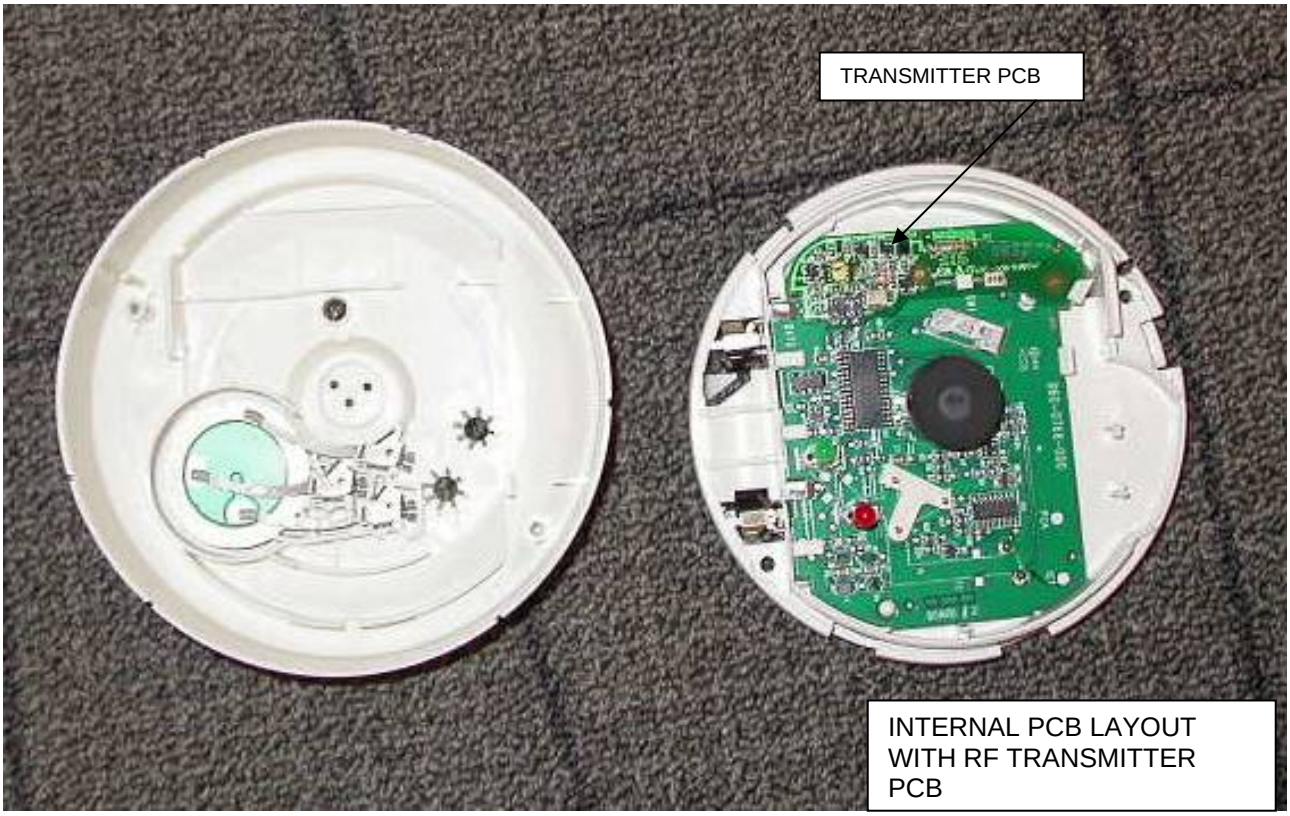
DATE

FILE NAME: SST116_X2A.XLS DISK NAME: FCC DATA

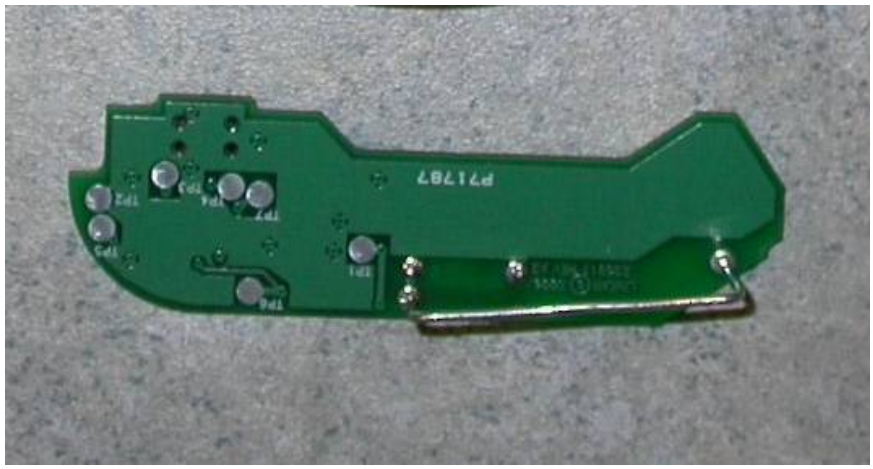


FRONT VIEW, DXS-80
CARBON MONOXIDE
ALARM

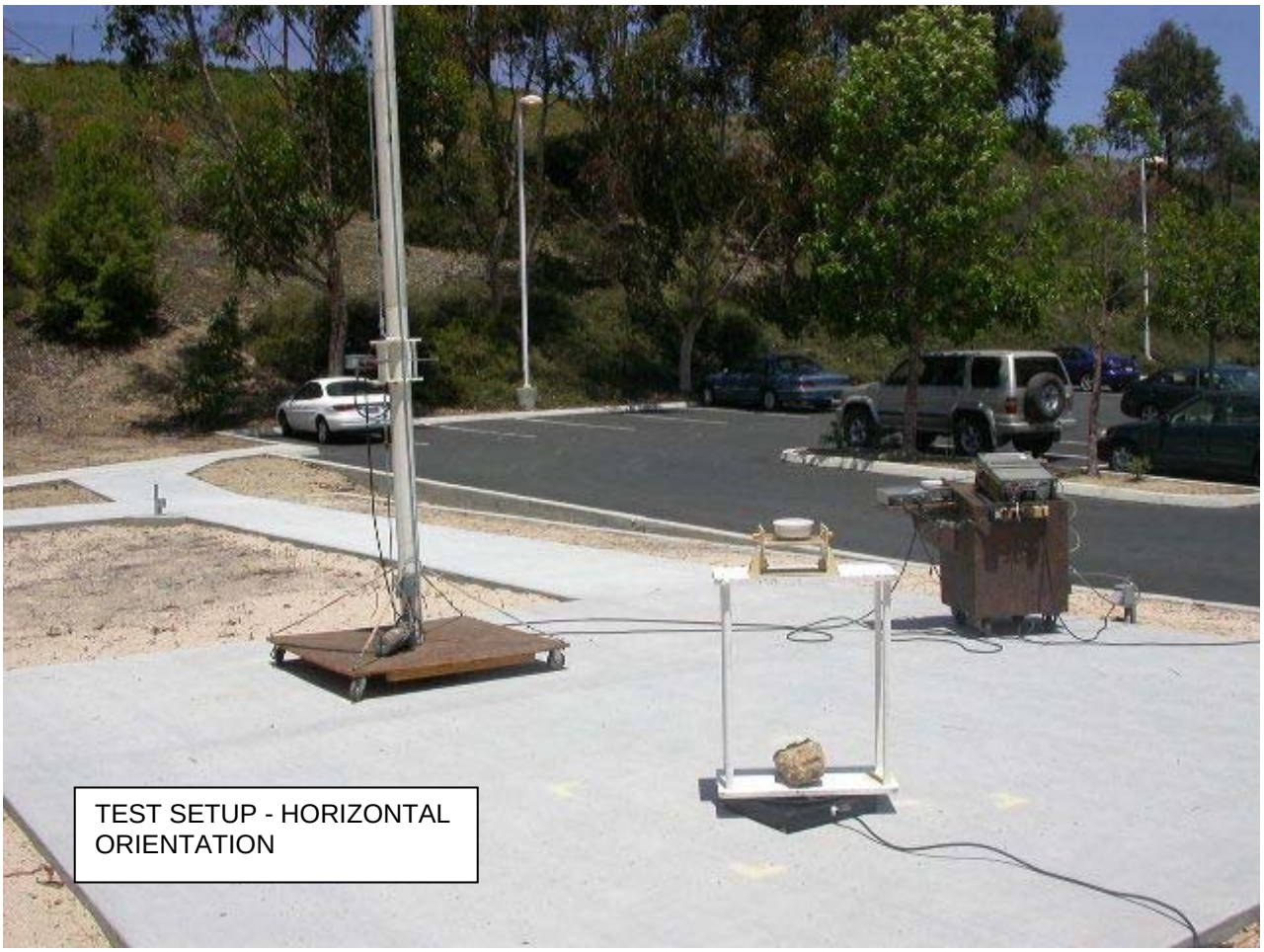

ENGINEERING
SAMPLE
FOR
EVALUATION
PURPOSE ONLY!
FCC and Canada Regulatory Information in this Area
REAR VIEW, DXS-80
CARBON MONOXIDE ALARM
FCC / IC LABEL PLACED
APPROX. AS SHOWN


TRANSMITTER PCB
INTERNAL PCB LAYOUT WITH RF TRANSMITTER PCB

RF TRANSMITTER PCB
FRONT AND BACK VIEWS



TEST SETUP - VERTICAL ORIENTATION



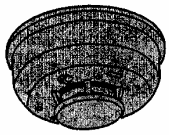
TEST SETUP - HORIZONTAL ORIENTATION

DXS-73

SIGNALING UL LISTED

DXS FORMAT By Linear

WIRELESS PHOTOELECTRIC SMOKE ALARM



Installation Instructions

Linear®
(760) 439-7000
USA & Canada (800) 421-1587 & (800) 392-0123
Toll Free FAX (800) 469-1340
www.linearcorp.com

PRODUCT DESCRIPTION

The DXS-73 is a photoelectric smoke alarm with a built-in transmitter designed for use with Linear's DXS and DX Format receivers. When smoke is detected, the alarm sounds a loud local alarm. Twenty seconds after the local alarm sounds, the built-in transmitter sends a digitally coded wireless signal to its companion receiver. The wireless signal will be repeated every 20 seconds as long as smoke is still present.

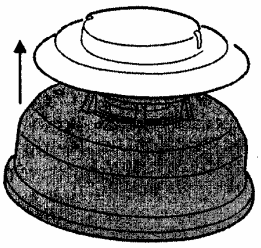
The digital DXS code format features over a million possible codes. The DXS transmitters are precoded at the factory to unique codes, so no field coding is required. The DXS-73 can send three different codes: alarm, test and low battery status.

For versatility, *any transmitter can be programmed into any receiver channel.* **Receivers must be programmed to the transmitter's code before system testing and operation.** Refer to the receiver's instructions for details on programming.

The unit is powered by a 3-volt lithium battery. The battery is supplied with the transmitter and can power the unit for up to five years. Every hour, the DXS-73 will send a status transmission to the receiver. The hourly signal updates the receiver to the transmitter's condition. By monitoring status transmissions, the receiver can determine if a transmitter has a low battery. If the battery voltage drops below a preset level the alarm will sound low battery beeps and a low battery signal will be sent to the receiver with status reports (some receivers can report low battery status, others cannot).

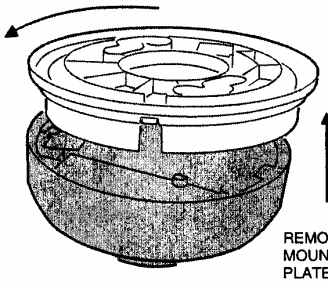
REMOVE PROTECTIVE COVER

REMOVE PROTECTIVE COVER AND DISCARD



REMOVE MOUNTING PLATE

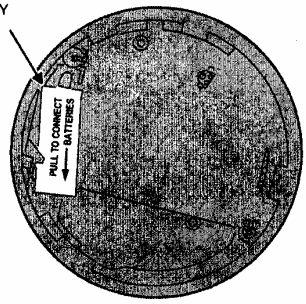
TWIST MOUNTING PLATE TO UNLOCK



REMOVE MOUNTING PLATE

REMOVE BATTERY TAB

REMOVE BATTERY TAB TO APPLY POWER

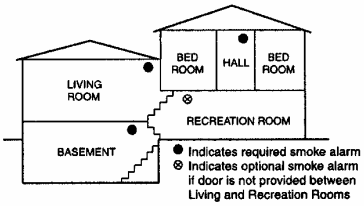


A 3-VOLT LITHIUM BATTERY TYPE 123 IS SUPPLIED

CHOOSE ALARM LOCATION

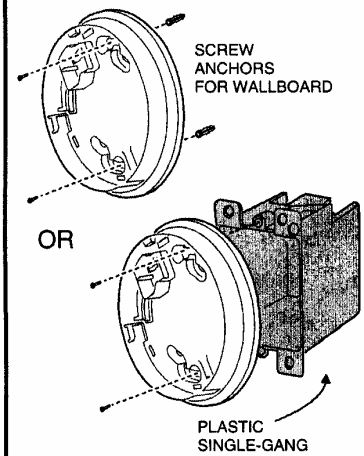
READ THE NFPA 72 STANDARD FOR SMOKE ALARM LOCATION ON THE BACK OF THESE INSTRUCTIONS

DETERMINE THE PROPER LOCATION FOR THE ALARM



Current studies have shown smoke alarms may not awaken all sleeping individuals, and that is the responsibility of individuals in the household that are capable of assisting others to provide assistance to those who may not be awakened by the alarm sound, or to those who may be incapable of safely evacuating the area unassisted.

INSTALL MOUNTING PLATE



SCREW ANCHORS FOR WALLBOARD

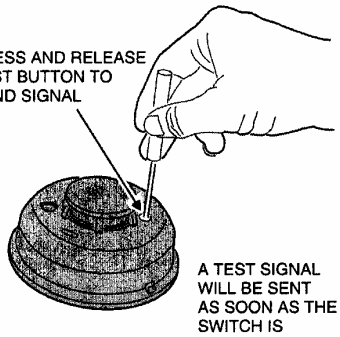
OR

PLASTIC SINGLE-GANG ELECTRICAL BOX

PROGRAM RECEIVER

REFER TO RECEIVER'S INSTRUCTIONS TO PREPARE RECEIVER TO ACCEPT THE TRANSMITTER'S CODE

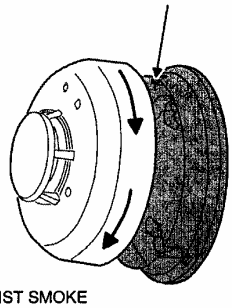
PRESS AND RELEASE TEST BUTTON TO SEND SIGNAL



A TEST SIGNAL WILL BE SENT AS SOON AS THE SWITCH IS RELEASED

MOUNT ALARM ON PLATE

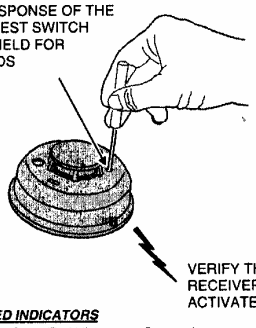
MATCH ALIGNMENT TABS IN PLATE WITH TABS IN COVER



TWIST SMOKE ALARM CLOCKWISE TO LOCK ONTO MOUNTING PLATE

TEST SYSTEM

TO TEST AN ACTUAL FIRE ALARM RESPONSE OF THE SYSTEM, TEST SWITCH **MUST** BE HELD FOR 20 SECONDS



VERIFY THAT RECEIVER ACTIVATES

LED INDICATORS

At Power up = Green/Red blinks every 5 seconds
Standby = Green blinks every 10 seconds
Alarm = Red blinks every 1 second
Maintenance = Red blinks every 5 seconds
Low Battery = Red blinks every 45 seconds

LOW BATTERY CONDITION

When the alarm detects a low battery, the sounder will chirp and the red LED will blink every 45 seconds. The green LED will be off. Pressing the test switch will silence the chirp for 12 hours but will not affect the LEDs. During this silence period, the test switch is disabled. If an alarm condition occurs while the detector is in this chirp silence mode, the alarm will sound. Once the alarm condition has been removed and the detector returns to the standby state, the low battery chirp will resume every 45 seconds.

STANDARD FOR ALARM LOCATION

The DXS-73 should be installed in accordance with National Fire Protection Association (NFPA) Standard 72, which reads as follows:

2-1.1.1 Smoke alarms shall be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms and on each additional story of the family living unit including basements and excluding crawl spaces and unfinished attics. In new construction, a smoke alarm shall be installed in each sleeping room.

2-1.1.2 For family living units with one or more split levels (i.e., adjacent levels with less than one full story separation between levels), a smoke alarm required by 2-1.1.1 shall suffice for an adjacent lower level, including basements. (Exception: Where there is an intervening door between one level and the adjacent lower level, a smoke alarm shall be installed on the lower level.)

- ✔ Ceiling mounted smoke alarms should be located in the center of the room or hall, or not less than 4 inches from any wall. When the alarm is mounted on a wall, the top of the alarm should be 4 to 12 inches from the ceiling.
- ✔ Do not install smoke alarms where normal ambient temperatures are above 100°F (37.8°C), or below 40°F (4°C). Also, do not locate alarm in front of air conditioners, heating registers, or other locations where normal air circulation will keep smoke from entering the detector.

A-2.5.2.1 Smoke Detection - Are More Smoke Alarms Desirable? The required number of smoke alarms might not provide reliable early warning protection for those areas separated by a door from the areas protected by the required smoke alarms. For this reason, it is recommended that the householder consider the use of additional smoke alarms for those areas for increased protection. The additional areas include the basement, bedrooms, dining room, furnace room, utility room, and hallways not protected by the required smoke alarms. The installation of smoke alarms in kitchens, attics (finished or unfinished), or garages is not normally recommended, as these locations occasionally experience conditions that can result in improper operation.

Smoke alarms are not to be used with detector guards unless the combination has been evaluated and found suitable for the purpose.

FIRE PREVENTION AND ESCAPE

The purpose of an early warning smoke alarm is to detect the presence of fire in its early stages, and sound an alarm giving the occupants more time to exit the premise before the smoke reaches a dangerous concentration level.

Fires start even with the best of housekeeping and fire prevention procedures. Fire is an unexpected event. Early warning detection alerts occupants in time to act.

KNOW FIRE HAZARDS. No detection device can protect life in all situations. Therefore, safeguards should be taken to avoid such potentially dangerous situations as: smoking in bed, leaving children home alone, cleaning with flammable liquids such as gasoline.

The best fire protection is minimizing fire hazards through proper storage of materials and general good housekeeping techniques. A cluttered basement, attic, or other storage area is an open invitation to fire.

Careless use of combustible materials and electrical appliances, or overloading of electrical outlets are other prime causes in starting fires.

It is most important that explosive and/or fast burning materials be eliminated from the home, if at all possible.

Even after proper precautions have been taken, fires can start. *Be prepared.*

IN CASE OF FIRE. Leave immediately. Don't stop to pack or search for valuables. In heavy smoke, hold your breath and stay low - crawl if necessary. The clearest air is usually at the floor.

If you have to go through a closed door, carefully feel the door and door knob to see if undue heat is present. If they seem relatively cool, brace your foot against the bottom of the door with your hip against the door and one hand against the top edge. Open it slightly. If a rush of hot air is felt, slam the door quickly and latch it. Unvented fire tends to build up considerable pressure. Be sure all the household realizes and understands this danger.

Use your neighbor's phone or a street fire alarm box. *The job of extinguishing the fire should be left to the professionals. Too many unforeseen things can occur when inexperienced people try to extinguish a fire.*

BE PREPARED. Perform fire drills regularly. Use them to assure recognition of an alarm signal. For your protection, simulate different circumstances (smoke in hall, in living room, etc.). Then have everyone react to the situation.

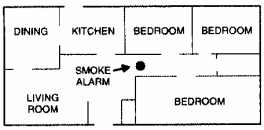
Draw a floor plan and show two exits from each room. Frequently a knotted rope or ladder from a window will serve this purpose. It is important that children be instructed carefully, because they tend to hide in times of crisis.

It is imperative that one meeting place outside the home be established. You should insist that everyone meet there during an alarm. This will eliminate the tragedy of someone re-entering the house for a missing member who is actually safe.

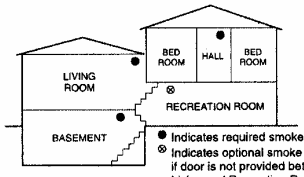
If you have children and/or invalids residing in your household, you can help your fire department. Most fire departments have window decals available for use in children's or invalid's bedrooms. Properly used, these decals will quickly identify sleeping quarters of these individuals and show the fire department where to look first for members of your household.

- ✔ Additional information on Household Fire Warning is available at nominal cost from: The National Fire Protection Association, Batterymarch Park, Quincy, MA 02269. Request Standard No. NFPA 72

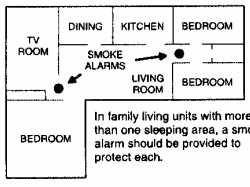
EXAMPLE ALARM LOCATIONS



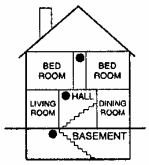
A smoke alarm should be located between the sleeping area and the rest of the family living unit.



● Indicates required smoke alarm
⊗ Indicates optional smoke alarm if door is not provided between Living and Recreation Rooms



In family living units with more than one sleeping area, a smoke alarm should be provided to protect each.



A smoke alarm should be located on each story.

LINEAR LIMITED WARRANTY

This Linear product is warranted against defects in material and workmanship for twelve (12) months. **This warranty extends only to wholesale customers** who buy direct from Linear or through Linear's normal distribution channels. **Linear does not warrant this product to consumers.** Consumers should inquire from their selling dealer as to the nature of the dealer's warranty, if any. **There are no obligations or liabilities on the part of Linear LLC for consequential damages arising out of or in connection with use or performance of this product or other indirect damages with respect to loss of property, revenue, or profit, or cost of removal, installation, or reinstallation.** All implied warranties, including implied warranties for merchantability and implied warranties for fitness, are valid only until Warranty Expiration Date. **This Linear LLC Warranty is in lieu of all other warranties express or implied.**

All products returned for warranty service require a Return Product Authorization Number (RPA#). Contact Linear Technical Services at 1-800-421-1587 for an RPA# and other important details

IMPORTANT!!!

Linear radio controls provide a reliable communications link and fill an important need in portable wireless signaling. However, there are some limitations which must be observed.

- * For U.S. installations only: The radios are required to comply with FCC Rules and Regulations as Part 15 devices. As such, they have limited transmitter power and therefore limited range.
- * A receiver cannot respond to more than one transmitted signal at a time and may be blocked by radio signals that occur on or near their operating frequencies, regardless of code settings.
- * Changes or modifications to the device may void FCC compliance.
- * Infrequently used radio links should be tested regularly to protect against undetected interference or fault.
- * A general knowledge of radio and its vagaries should be gained prior to acting as a wholesale distributor or dealer, and these facts should be communicated to the ultimate users.

 225917 X8