

Nemko Test Report: 2L0570RUS1

Applicant: Westhold Corporation
8430 Via Sonoma #49
La Jolla, California 92037

**Equipment Under Test:
(E.U.T.)** TX-LI BPSK Transmitter

FCC ID: NKBTXLI-01

In Accordance With: **FCC Part 15, Subpart C, Paragraph 15.209**
General Limits For Low Power Transmitters

Tested By: Nemko U.S.A..
11696 Sorrento Valley Road, Suite F
San Diego, CA 92121

Authorized By: 
John L. Griffin, Director of Laboratory Operations

Date: 19 December, 2002

Total Number of Pages: 13

EQUIPMENT: TX-LI BPSK Transmitter
FCC ID: NKBTXLI-01

Table Of Contents

Table Of Contents	2
Section 1.....	
Summary Of Test Results	3
Section 2.....	
General Equipment Specification	5
Section 3.....	
Radiated Emissions	7
Section 4.....	
Test Equipment List	11
ANNEX A TEST DIAGRAMS	12

EQUIPMENT: TX-LI BPSK Transmitter
FCC ID: NKBTXLI-01

Section 1. Summary Of Test Results

Manufacturer: Westhold Corporation
Model No.: TX-LI BPSK Transmitter
Serial No.: None

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 15, Subpart C for low power devices. All tests were conducted using measurement procedure ANSI C63.4-1992. Radiated Emissions were made on an open area test site.



New Submission



Production Unit



Class II Permissive Change



Pre-Production Unit



Equipment Code

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE.

See " Summary of Test Data".



NVLAP LAB CODE: 2001116-0

TESTED BY: Ricky Hill DATE: 10/04/02

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This report applies only to the items tested.

EQUIPMENT: TX-LI BPSK Transmitter
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Summary Of Test Data

NAME OF TEST	PARA. NO.	RESULT
Powerline Conducted Emissions	15.207	N/A
Radiated Emissions	15.209	Complies

Footnotes For N/A's:

The device is battery powered.

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Section 2. General Equipment Specification

Frequency Range: 10.770 MHz

Operating Frequency(ies) of Sample: 10.770 MHz

Integral Antenna

Yes



No



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Theory of Operation

Please refer to separate confidential exhibit.

System Diagram

Please refer to separate confidential exhibit.

EQUIPMENT: TX-LI BPSK Transmitter
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NAME OF TEST: Radiated Emissions	PARA. NO.: 15.209
TESTED BY: Ricky Hill	DATE:10/04/02

Minimum Standard: The field strength of emissions from the device shall not exceed the following limits.

Fundamental (MHz)	Field Strength (μV/m)	Field Strength (dBμV)
0.009 - 0.490	2400/F(kHz) @ 300m	—
0.490 - 1.705	24000/F(kHz) @ 30m	—
1.705 - 30	30 @ 30m	—
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above 960	500	54.0

Test Results: Complies. The worst-case emission level is 45.2 dBμV/m @ 10m at 10.77 MHz. This is 4.3 dB below the specification limit.

Measurement Data: (Procedure ANSI C63.4-1992)

Maximizing Emission Levels:

For hand held equipment or equipment that may be mounted in a variety of positions, the E.U.T. was tested on three orthogonal axis to determine orientation of worst-case emission levels. Below 30 MHz an active loop antenna is used at a fixed height of 1 meter. The loop is rotated about it's vertical axis to obtain worst-case results.

Spectrum Searched:

The spectrum was searched from the lowest frequency generated in the E.U.T. up to 1000 MHz, or the 10th harmonic of the fundamental emission.

Near-Field Measurement:

Emissions below 30 MHz are measured in the near-field and an extrapolation factor of 40 dB per decade is used to determine the 10m limit.

Example: Measurement Distance = 10m
Specification Distance = 300m

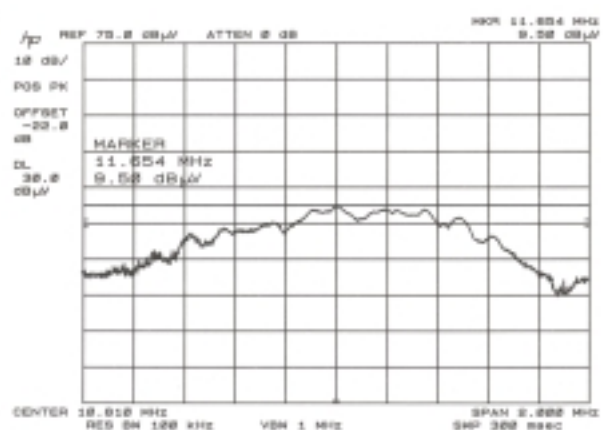
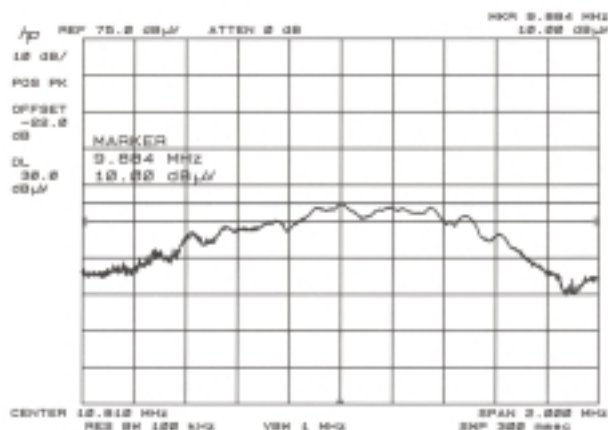
10m Limit: Specified limit (at 300m) - $(40 \log \frac{10}{300})$

Thus for measurement at 10m the specified limit is increased by 59 dB.

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FCC, Part 15C, Radiated Emissions Data Sheet
(3m Open Area Test Site)Client: **Westhold**
EUT: **Transmit Unit**
Model #: **RMS TX-LI**Conducted by: **Ricky Hill**
Date of Test: **10/04/02**
Frequency Range: **10-1000MHz**

Frequency (MHz)	Spectrum Analyzer Reading at 3m (dBμV)	Antenna Polarization (vertical or horizontal)	Amp. Gain & Cable Loss, Distance & Antenna Factor Correction for 3m (dB/m)	Total Interference Level at 3 m (dBμV/m)	Emission Spec. Limit at 3 m (dBμV/m)	Difference Margin (dB)
10.770	4.5		40.7	45.2	49.5	-4.3
64.680	10.3	v	9.8	20.1	40.0	-19.9
86.180	7.7	v	10.3	18.0	40.0	-22.0
NO OTHER HARMONICS OR EMISSIONS FOUND						

20dB Bandwidth Plots (low and high)



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FCC PART 15, SUBPART C

PARAGRAPH 15.209

PROJECT NO.:

ANNEX A

EQUIPMENT: TX-LI BPSK Transmitter

FCC ID: NKBTXLI-01

Radiated Photographs



EQUIPMENT: TX-LI BPSK Transmitter

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Radiated Photographs



EQUIPMENT: TX-LI BPSK Transmitter
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Device Type	Model Number	Asset Number	✓ If Used
<i>Pre-Amplifier</i>			
Amplifier, HP	8449A	317	
Amplifier, HP	8447F OPT.H64	242	
Amplifier, HP	8447F	603	
<i>Antennas OATS #1 (North)</i>			
Antenna, Biconical	EMCO 3104	0116	✓
Antenna, Log Periodic	3116	0111	✓
Antenna, Ridged Guide	3115		
<i>Antenna, Loop</i>	<i>ALR 25M</i>	<i>0113</i>	✓
<i>Antennas OATS #2 (South)</i>			
Antenna, Biconical	EMCO 3104		
Antenna, Log Periodic			
Antenna, Ridged Guide	3115		
<i>Spectrum Analyzer / Receiver</i>			
Quasi-Peak Adapter, HP	85650A	533	
Spectrum Analyzer Display, HP	85662A	404	System
Spectrum Analyzer, HP	8566B	104	✓ #
RF Preselector, HP	85685A	403	1
Quasi-Peak Adapter, HP	85650A	438	
Spectrum Analyzer Display, HP	85662A	422	System
Spectrum Analyzer, HP	8568B	107	#
			2
Quasi-Peak Adapter, HP	85650A	676	
Spectrum Analyzer Display, HP	85662A	675	System
Spectrum Analyzer, HP	8568B	674	#
			3
Quasi-Peak Adapter, HP	85650A	421	
Spectrum Analyzer Display, HP	85662A	534	System
Spectrum Analyzer, HP	8568B	535	#
			4
Quasi-Peak Adapter, HP	85650A	538	
Spectrum Analyzer Display, HP	85662A	537	System
Spectrum Analyzer, HP	8566B	711	#
RF Preselector, HP	85685A	673	5
Spectrum Analyzer, Advantest	R3261A	523	
			System #6
Receiver, Electro Metrics	CPR-25	245	
			System #7
Receiver, DSI	RX 200		
			System #8

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FCC PART 15, SUBPART C

PARAGRAPH 15.209

PROJECT NO.:

ANNEX A

EQUIPMENT: TX-LI BPSK Transmitter

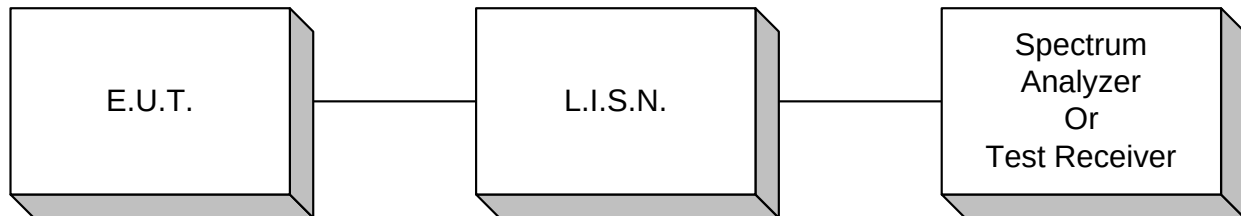
FCC ID: NKBTXLI-01

ANNEX A

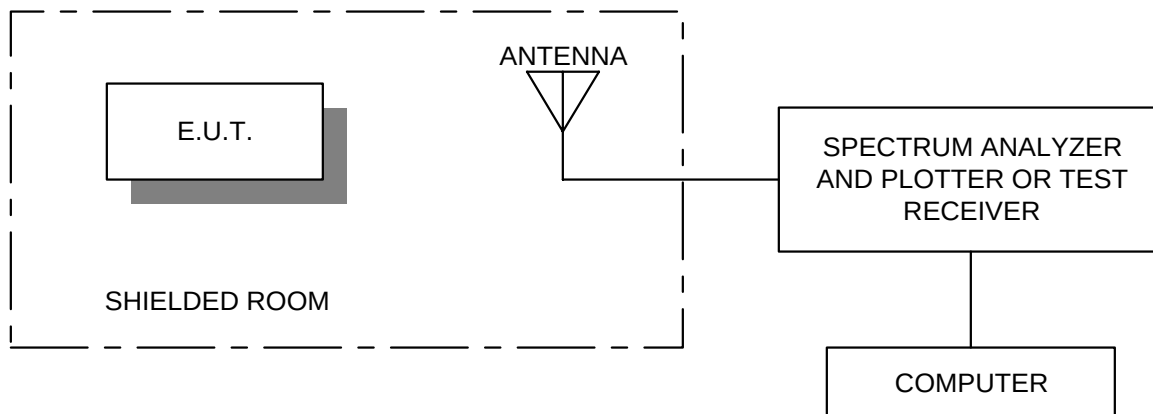
TEST DIAGRAMS

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Conducted Emissions



Radiated Prescan



Test Site For Radiated Emissions

