



# Nemko

**Test Report:** 3W07229


**Applicant:** Desa International  
PO Box 90004  
2901 Industrial Ave  
Bowling Green KY  
42102

**Equipment Under Test:  
(EUT)** 6023TX Wireless Transmitter

**FCC ID:** BJ4-60WRC23TX

**In Accordance With:** **FCC Part 15, Subpart C, 15.231**

**Tested By:** Nemko Canada Inc.  
303 River Road, R.R. 5  
Ottawa, Ontario K1V 1H2



**Authorized By:** Kevin Carr, EMC Specialist

**Date:** 27 June 2003

**Total Number of Pages:** 22

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## Section 1. Summary of Test Results

### 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 Part 15, Subpart C. All tests were conducted using measurement procedure ANSI C63.4-1992. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC.

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".



TESTED BY: \_\_\_\_\_  
Glen Westwell, Wireless Technologist

DATE: 27 June 2003

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This report applies only to the items tested.

*EQUIPMENT: 6023TX*

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**Summary Of Test Data**

<b>Name of Test</b>	<b>Para. Number</b>	<b>Results</b>
Transmission Requirements	15.231(a)	Complies
Radiated Emissions	15.231(b)	Complies
Occupied Bandwidth	15.231(c)	Complies
Frequency Tolerance	15.231(d)	NA
Periodic Alternate Field Strength Requirements	15.231(e)	NA
Powerline Conducted Emissions	15.207	Complies

Note:

**Test Conditions:**

**Indoor**                      Temperature: 23°C  
   Humidity: 51%

**Outdoor**                     Temperature: 30°C  
   Humidity: 51%

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## **Section 2.        Equipment Under Test**

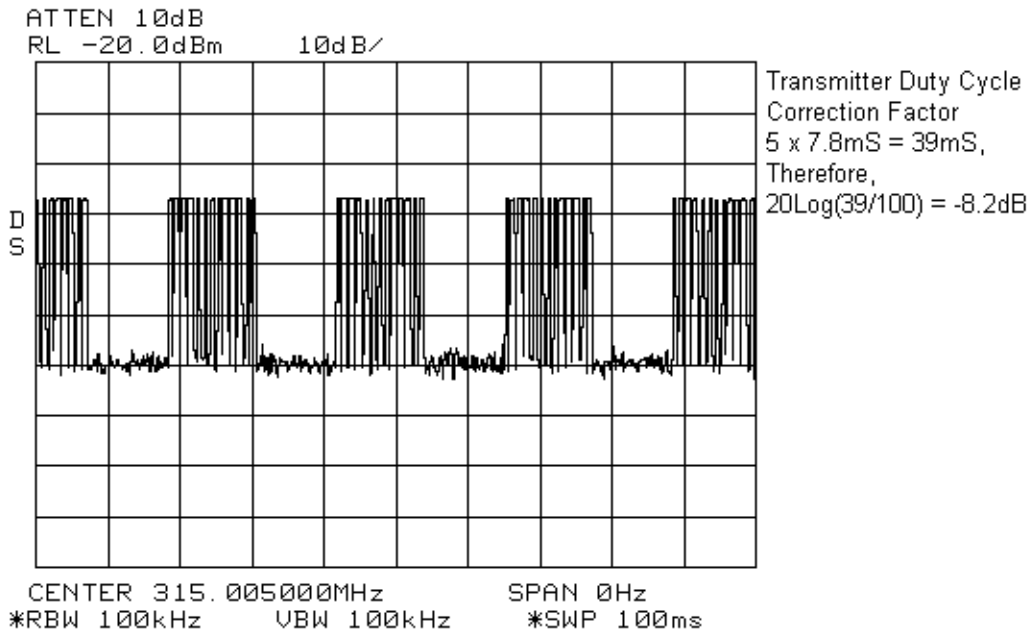
### **General Equipment Information**

<b>Manufacturer:</b>	Desa International
<b>Equipment</b>	315 MHz Wireless Transmitter
<b>Model No.:</b>	6023TX
<b>Serial No.:</b>	None
<b>Date Received In Laboratory:</b>	17 June 2003
<b>Nemko Identification No.:</b>	#1
<b>Transmit Frequency:</b>	315MHz Fixed
<b>Modulation:</b>	Pulse Carrier On Off (PCM)
<b>Emission Designator:</b>	28K8L1D





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### Section 3. Transmission Requirements

Para. No.: 15.231(a)

<b>Test Performed By: Glen Westwell</b>	<b>Date of Test: 20 June 2003</b>
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**Minimum Standard:** 15.231(a) Continuous transmissions such as voice, video or data transmissions are not permitted.

15.231(a)(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds after being released.

15.231(a)(2) A transmitter activated automatically shall cease transmission within 5 seconds of activation.

15.231(a)(3) Periodic transmissions at regular pre-determined intervals are not permitted. However polling or supervisory transmissions to determine system integrity of transmitters used in security or safety applications are allowed if the periodic rate of transmission does not exceed one transmission of not more than one second duration per hour for each transmitter.

15.231(a)(4) Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm.

**Test Results:** Complies

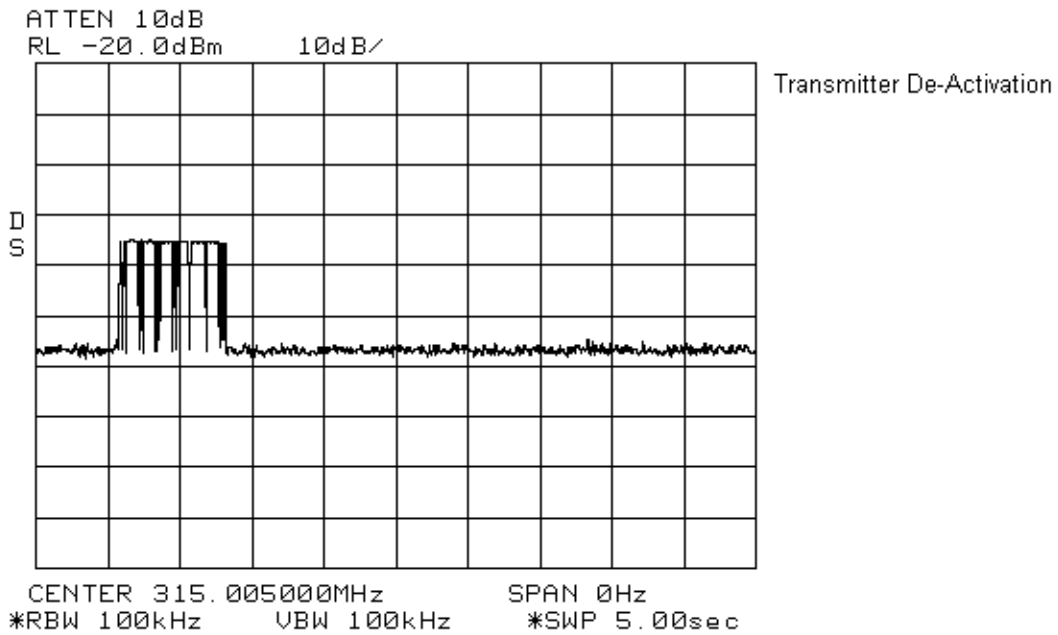
**Test Data:** Compliance was determined by verification of technical specifications and a functional test on the equipment.

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### Rationale for Compliance with Transmission Requirements

- 15.231(a)(1) : The transmitter is deactivated immediately upon releasing the push button switch (see plot below).
- 15.231(a)(2) : No automatic activation.
- 15.231(a)(3) : No periodic, polling, or supervision transmissions.
- 15.231(a)(4) : NA



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**Section 4. Radiated Emissions**

Para. No.: 15.231(b)

<b>Test Performed By: Glen Westwell</b>	<b>Date of Test: 20 June 2003</b>
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**Minimum Standard:**

Fundamental Frequency (MHz)	Field Strength of Fundamental ( $\mu\text{V/m @ 3m}$ )	Field Strength of Spurious Emissions ( $\mu\text{V/m @ 3m}$ )
40.66 - 40.70	2,250	225
70-130	1, 250	125
130-174	1,250 to 3,750*	125 to 375
174-260 (note 1)	3,750	375
260-470 (note 1)	3,750 to 12,500*	375 to 1,250
Above 470	12,500	1,250

Restricted Band Limits		
Frequency (MHz)	Field Strength ( $\mu\text{V/m @ 3m}$ )	Field Strength (dB $\mu\text{V/m @ 3m}$ )
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above 960	500	54.0

**Test Results:** Complies

**Test Data:** As per attached tabulated data.

- All spurious and harmonic emissions were search to the 10<sup>th</sup> harmonic.
- The EUT was searched on 3 orthogonal axis for maximum emission detection.
- The EUT AC power was varied +/-15% for worst case emissions.

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**Test Data - Radiated Emissions**

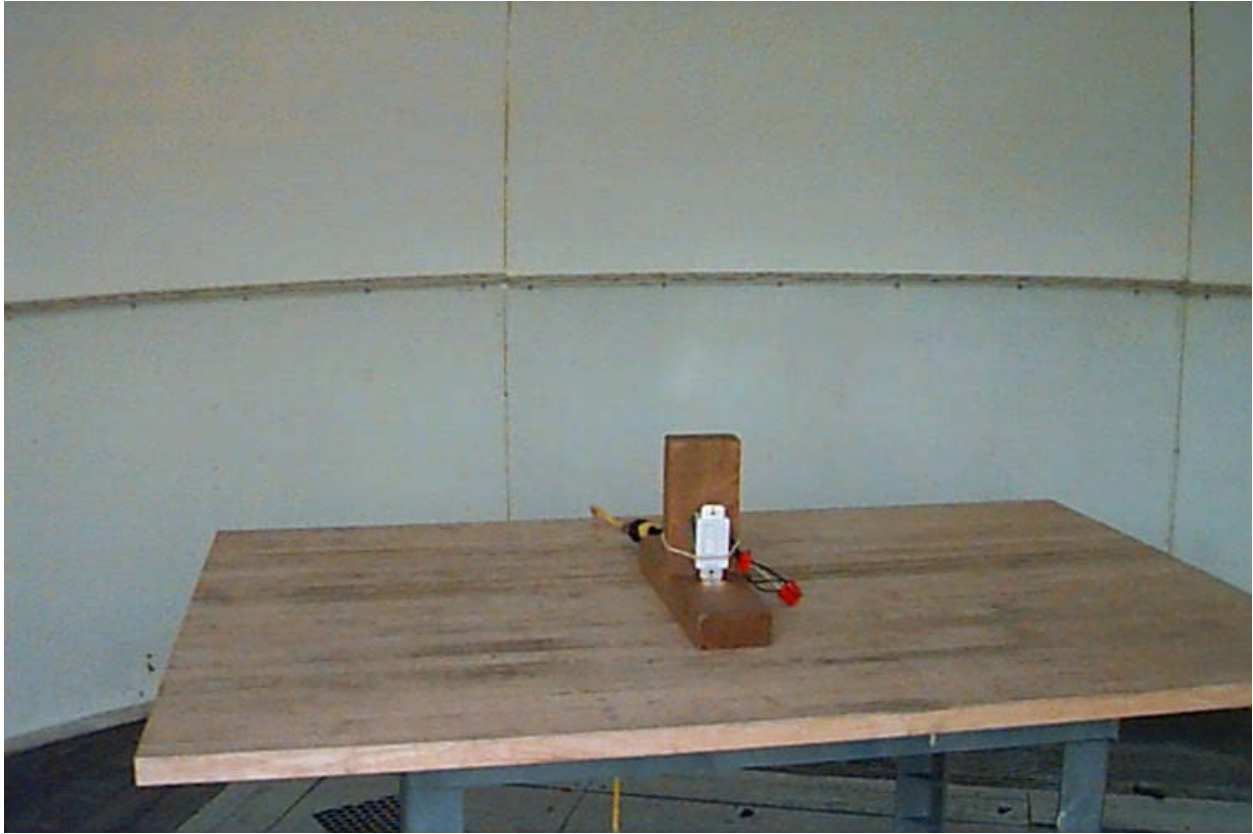
Test Distance (meters) :3		Range: A		Receiver: Spectrum Analyzer 8565E		RBW(kHz): 100		Detector: Peak	
Freq. (MHz)	Ant. *	Pol. (V/H)	RCVD Signal (dBµV/m)	Ant. Factor (dB)**	Amp. Gain (dB)***	Duty Cycle (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
315	LP	V	58	17.1		-8.2	66.9	75.6	8.7
315	LP	H	61.3	17.5		-8.2	70.6	75.6	5.0
630	LP	V	39.8	22.9		-8.2	54.5	55.6	1.1
630	LP	H	39.3	23.9		-8.2	55.0	55.6	0.6
945	LP	V	55.5	28.7	45.7	-8.2	30.3	55.6	25.3
945	LP	H	53.0	29.1	45.7	-8.2	28.2	55.6	27.4

**Notes:**  
 L/P = Log-Periodic  
 All emissions up to the tenth harmonic were searched. Only those within 20 dB of the limit were reported.

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**OATS Set Up**



*EQUIPMENT: 6023TX*

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**Section 5. Occupied Bandwidth**

**Para. No.: 15.231(c)**

<b>Test Performed By: Glen Westwell</b>	<b>Date of Test: 20 June 2003</b>
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**Minimum Standard:** 15.231(c) The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

**Test Results:** Complies

**Test Data:** See attached graph.



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**Section 6. Powerline Conducted Emissions**

Para. No.: 15.207 (a)

Test Performed By: Glen Westwell	Date of Test: 23 June 2003
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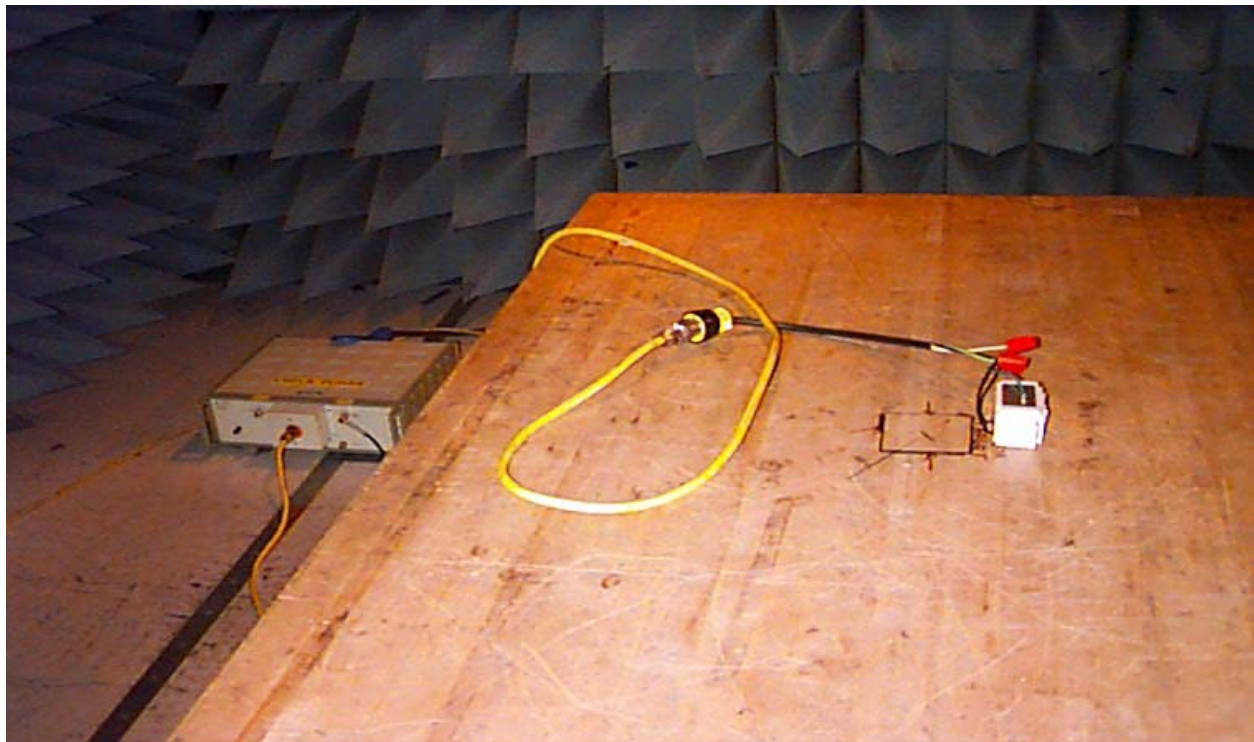
**Minimum Standard:**

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\* Decreases with the logarithm of the frequency.

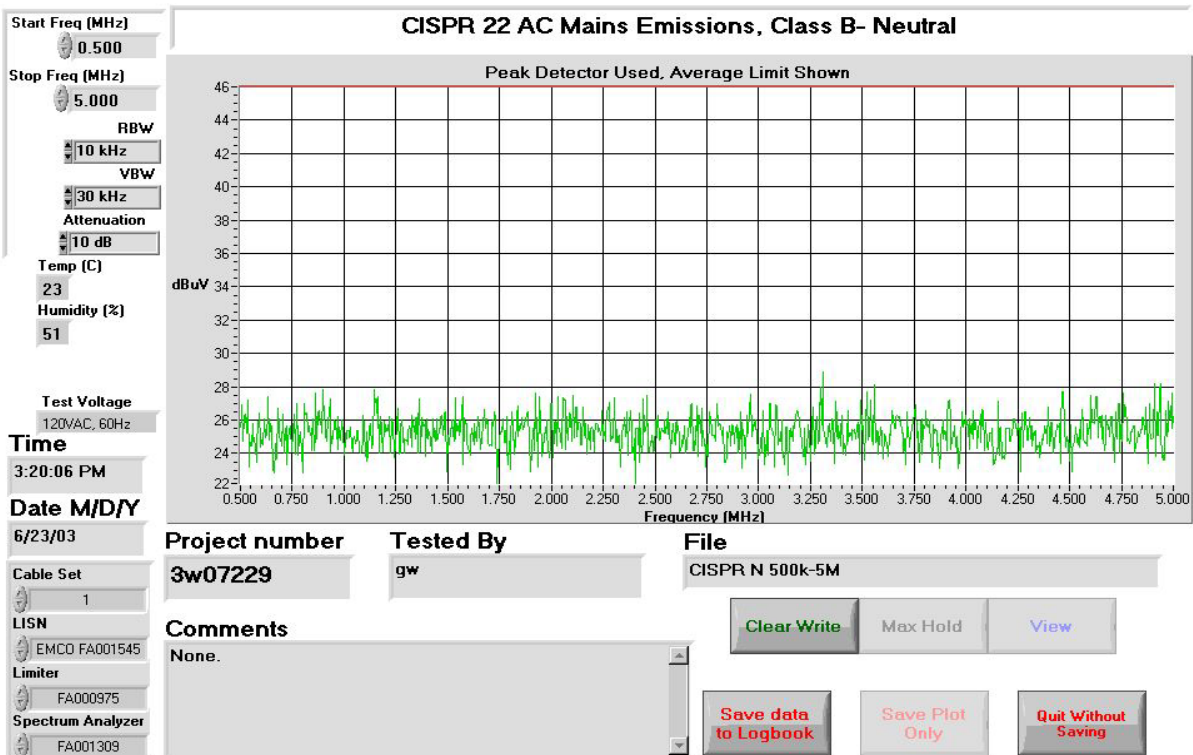
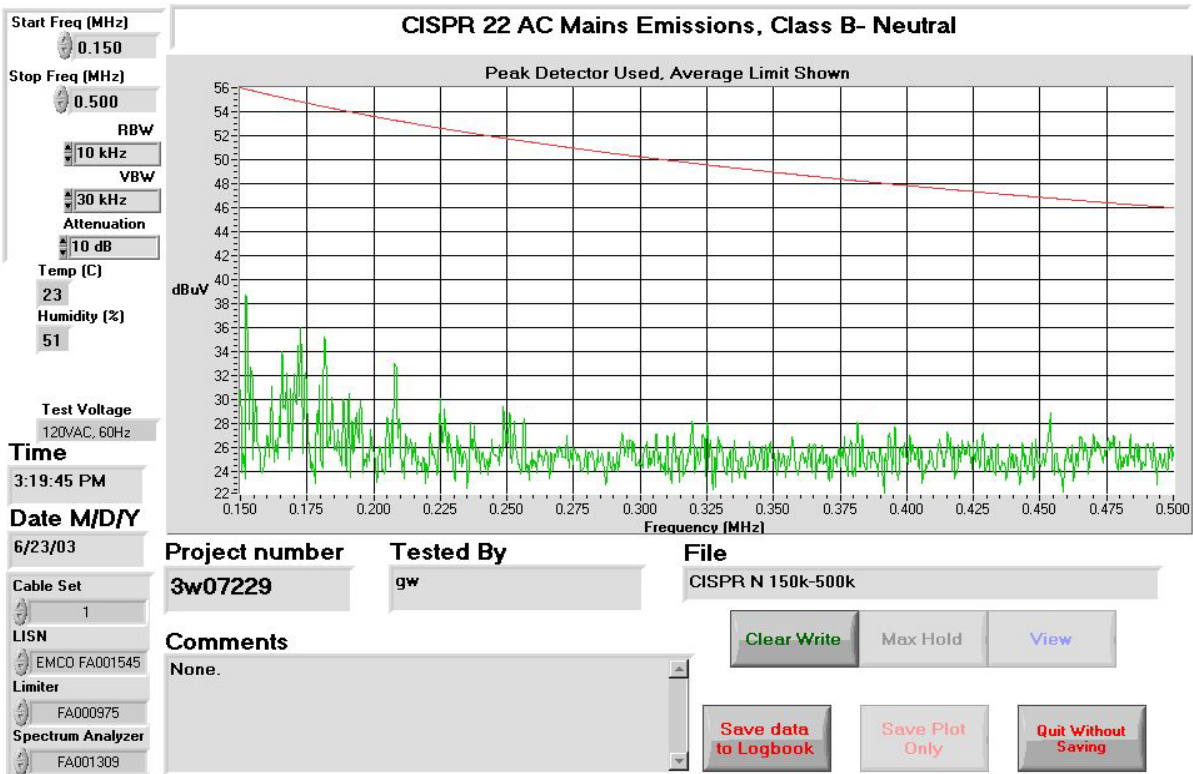
**Test Results:** Complies.

**Measurement Data:** See attached table & graph(s).

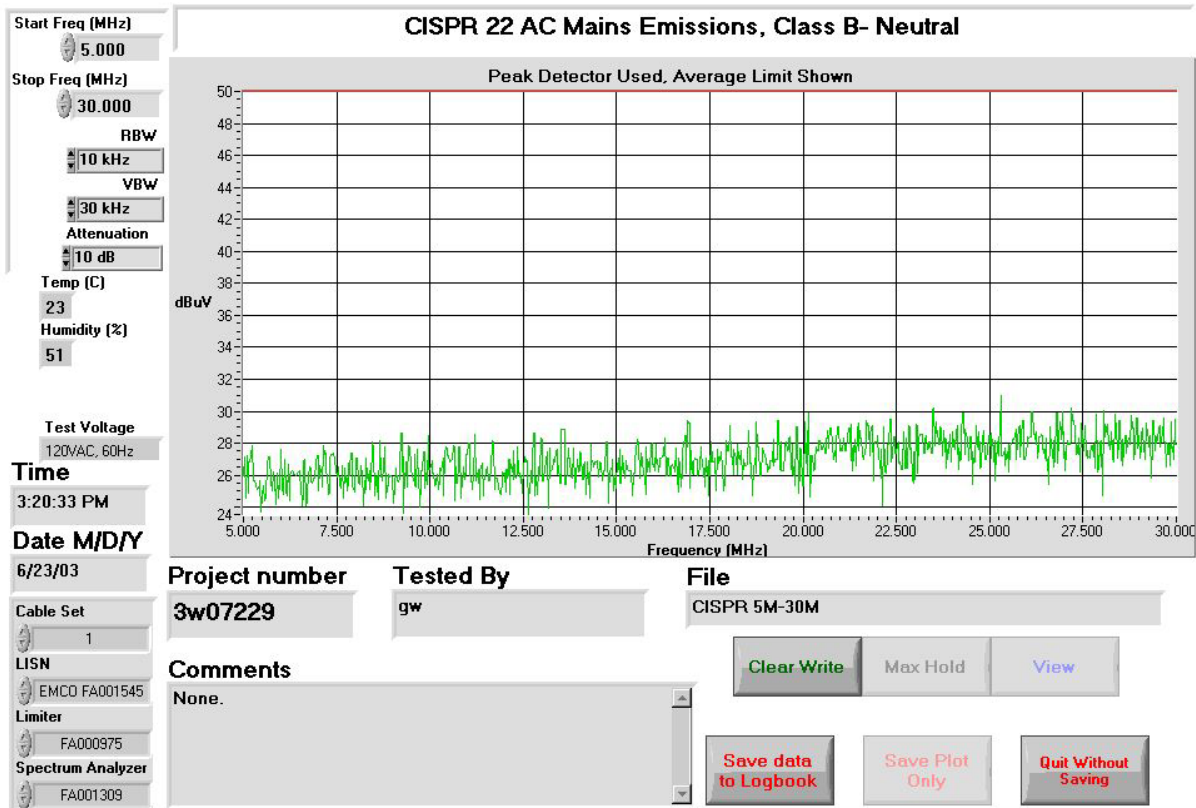




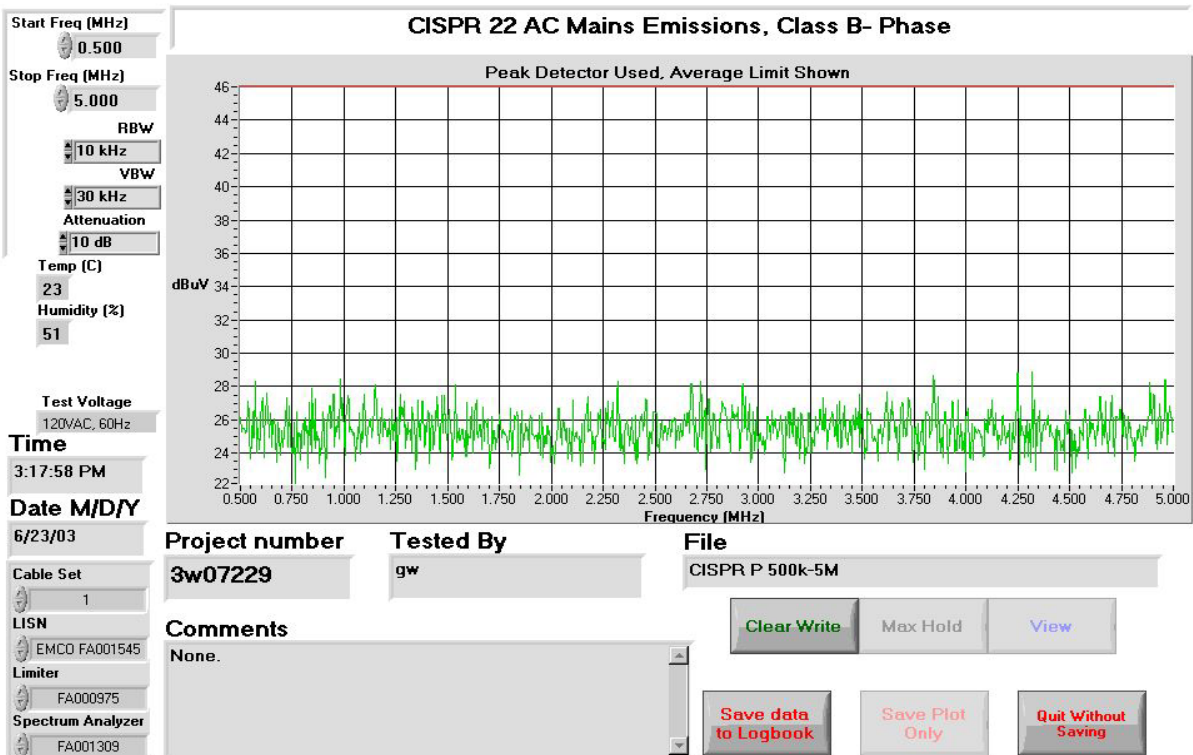
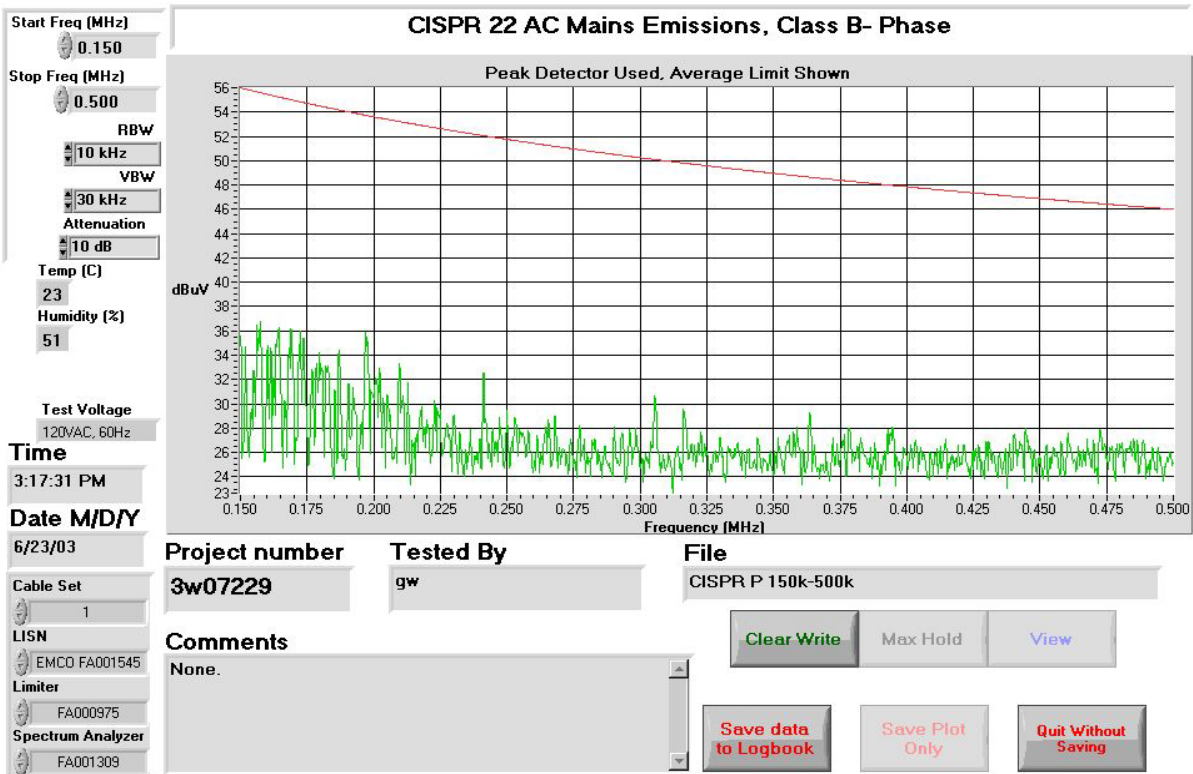
EQUIPMENT: 6023TX



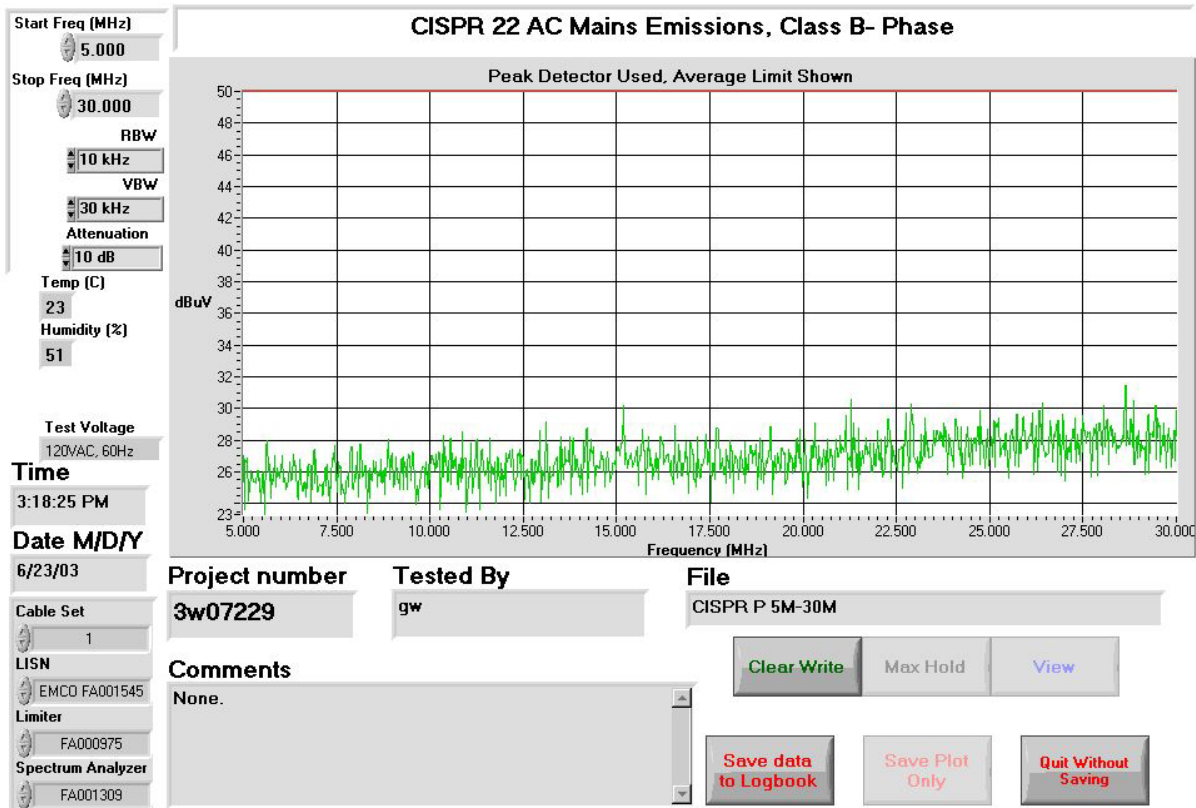
EQUIPMENT: 6023TX



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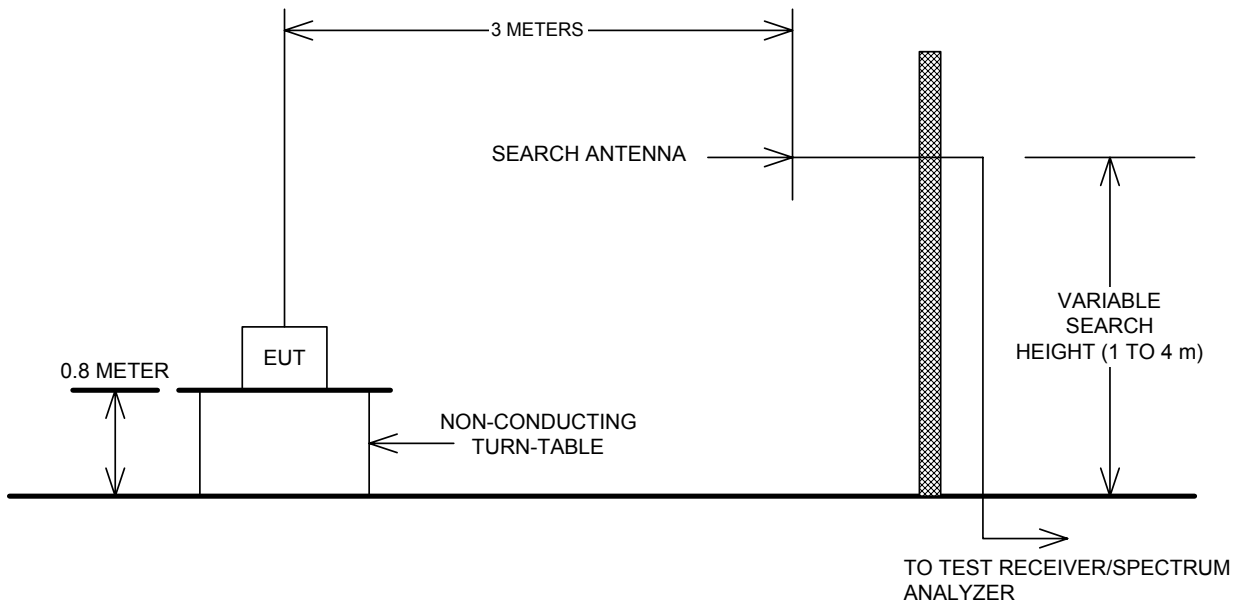
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**Section 6. Block Diagrams**

**Outdoor Test Site For Radiated Emissions**



The spectrum was searched up to the 10th harmonic of the fundamental frequency of operation.

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**Section 7. Test Equipment List**

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.
1 Year	Spectrum Analyzer	Hewlett Packard	8565E	FA000981	15 Jul 02	15 Jul 03
1 Year	Horn Antenna	EMCO #2	3115	FA000825	09 Dec 02	09 Dec 03
1 Year	Log Periodic Antenna #1	EMCO	LPA-25	FA000477	Aug. 23/02	Aug. 23/03
1 Year	RF AMP	JCA	4-8 GHz	FA001497	18 June 03	18 June 04
1 Year	RF AMP	JCA	2-4 GHz	FA001496	18 June 03	18 June 04
1 Year	RF AMP	JCA	1-2 GHz	FA001498	18 June 03	18 June 04
1 Year	LISN	EMCO	4825/2	FA001545	Oct. 25/02	Oct. 25/03
1 Year	Spectrum Analyzer	Hewlett-Packard	8566B	FA001309	June. 05/03	June. 05/04
1 Year	Spectrum Analyzer Display	Hewlett-Packard	85662A	FA001309	June. 05/03	June. 05/04

NA: Not Applicable  
NCR: No Cal Required  
COU: CAL On Use