

**Intertek Testing Services NA Inc.**

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**EXHIBIT 2**

**SYSTEM TEST CONFIGURATION**

**2.0 System Test Configuration**

**2.1 Justification**

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANZI C63.4 (1992).

For maximizing emissions, the system was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. This step by step procedure for maximizing emissions led to the data reported.

The unit was operated standalone and placed in the center of the turntable.

**2.2 EUT Exercising Software**

The software was running in a mode where the relay would be switched on and off. This would be similar to the normal functioning of the unit.

## Intertek Testing Services NA Inc.

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### 2.3 Special Accessories

There are no special accessories necessary for compliance of this product.

*Confirmed by:*

*Andrew J. Bellezza*  
*Engineering Team Leader, ITE*  
*Intertek Testing Services NA Inc.*  
*Agent for Challenger, Division of Wayne Dalton Corporation*

*Andrew J. Bellezza* Signature

*August 3, 1978* Date

## Intertek Testing Services NA Inc.

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### 2.4 Equipment Modification

Any modifications installed previous to testing by Challenger, Division of Wayne Dalton Corporation will be incorporated in each production model sold/leased in the United States.

No modifications were installed by Intertek Testing Services NA Inc.

*Confirmed by:*

*Andrew J. Bellezza  
Engineering Team Leader, ITE  
Intertek Testing Services NA Inc.  
Agent for Challenger, Division of Wayne Dalton Corporation*

*Andrew J. Bellezza* \_\_\_\_\_ Signature  
*August 3, 1978* \_\_\_\_\_ Date

## Intertek Testing Services NA Inc.

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### 2.5 Support Equipment List and Description

The FCC ID's for all equipment, plus descriptions of all cables used in the tested system (included inserted cards, which have grants) are:

Enter Support Equipment

Martec

M/N: 02-5011 Receiver

S/N: Not Labeled

FCC ID: Pending Approval (FON02-5011)

Martec Transmitter

M/N: 02-5006

S/N: Not Labeled

FCC ID: Pending Approval (FON02-5006)

**Intertek Testing Services NA Inc.**

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**EXHIBIT 3**

**EMISSION RESULTS**

**3.0 Emission Results**

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs, data tables and graphical representations of the emissions are included.

### 3.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$\begin{aligned} FS &= RA + AF + CF - AG \text{ where} \\ FS &= \text{Field Strength in dB}\mu\text{V/m} \\ RA &= \text{Receiver Amplitude (including preamplifier) in dB}\mu\text{V} \\ CF &= \text{Cable Attenuation Factor in dB} \\ AF &= \text{Antenna Factor in dB} \\ AG &= \text{Amplifier Gain in dB} \end{aligned}$$

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:

$$\begin{aligned} FS &= RR + LF \text{ where} \\ FS &= \text{Field Strength in dB}\mu\text{V/m} \\ RR &= RA - AG \text{ in dB}\mu\text{V} \\ LF &= CF + AF \text{ in dB} \end{aligned}$$

Assume a receiver reading of 52.0 dB $\mu$ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB $\mu$ V/m. This value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ V/m.

$$\begin{aligned} RA &= 52.0 \text{ dB}\mu\text{V/m} \\ AF &= 7.4 \text{ dB} \end{aligned}$$

$$\begin{aligned} RR &= 23.0 \text{ dB}\mu\text{V} \\ CF &= 1.6 \text{ dB} \end{aligned}$$

$$\begin{aligned} LF &= 9.0 \text{ dB} \\ AG &= 29.0 \text{ dB} \end{aligned}$$

$$\begin{aligned} FS &= RR + LF \\ FS &= 23 + 9 = 32 \text{ dB}\mu\text{V/m} \\ \text{Level in } \mu\text{V/m} &= \text{Common Antilogarithm } [(32 \text{ dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m} \end{aligned}$$



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**3.2 Radiated Emission Configuration Photograph**

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

No Radiated emissions were detected above the measuring equipment noise floor, which is at least 6 dB below the applicable limit.

**TEST PERSONNEL:**

Andrew T. Seligson For JLM  
Tester Signature

James Milner, EMI Compliance Engineer  
Typed/Printed Name

8/13/98  
Date

# Intertek Testing Services

## Emissions Site 3 Boxborough, MA

Table:1

Company: MARTEC

Model: 02-5011

Notes: Reciever

### FCC Class B Radiated Emissions

Antenna Polarity	Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB)	Net at 3 meter (dBuV/m)	Class B Limit (dBuV/m)	Margin (dB)

No Radiated emissions were detected above the measuring equipment noise floor, which is at least 6 dB below the applicable limit.

Test Engineer: James Milner

Test Date: 06-26-1998

**Intertek Testing Services NA Inc.**

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**3.4 Line Conducted Configuration Photograph**

The data on the following page lists the significant emission frequencies, the limit, and the margin of compliance. Numbers with a minus sign are below the limit.

No conducted emissions were detected above the measuring equipment noise floor of 22  $\mu$ V.

\* All readings are peak unless stated otherwise.

**TEST PERSONNEL:**

Andrew T. Bellego for JLM  
Tester Signature

James Milner, EMI Compliance Engineer  
Typed/Printed Name

8/13/98  
Date

# Intertek Testing Services

## Emissions Site 3 Boxborough, MA

Table:2

Company: MARTEC

Model: 02-5011

Notes: Reciever

### FCC Class B Conducted Emissions

Frequency (MHz)	Reading Side A (dBuV)	Reading Side B (dBuV)	Class B Limit (dBuV)	Margin (dB)

No conducted emissions were detected above  
the measuring equipment noise floor of 22  $\mu$ V.

Test Engineer: James Milner

Test Date: 06-26-1998