

IV - Site Description

Introduction

The following is a description of the test procedure used by Intertek Testing Services in the measurements of transmitters operating under Part 15, Subpart C, General Requirements.

A. **Test Set-Up:** The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 (1992).

1. The test site is a Plastic/Fiberglass structure with a groundplane. The site has attenuation characteristics that meet the requirements of ANSI C63.4 (1992). Information on the site has been filed with the FCC as required by Rule 2.948. The address of the site is 70 Codman Hill Road, Boxborough, MA 01719.
2. Power to the site is nominal line voltage of 117 V_{AC} and 230 V_{AC}, 60 Hz.
3. The equipment under test (EUT) is placed on a wooden turntable, which is four feet in diameter and approximately one meter in height above the groundplane. During the radiated emissions test, the turntable is rotated 360 degrees and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The antenna height and polarization are also varied during the search for maximum signal levels. The height of the antenna is varied from one meter to four meters. Body-worn, hand-held and small portable devices are mounted on a non-conductive box and emissions are investigated on three orthogonal axis.
4. Detector function for radiated emissions is in peak or quasi-peak mode. Average readings, when required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings according to the following formula:

$$\text{Averaging Factor in dB} = 20 \text{ LOG (duty cycle)}$$

The time period over which the duty cycle is measured is 100 msec. The worst-case (highest percentage on) duty cycle is used and described specifically in the data section. The duty cycle is measured by placing the spectrum analyzer in zero scan (receiver mode) and linear mode at maximum bandwidth (3 MHz at 3 dB down) and viewing the resulting time domain signal output from the analyzer on a Tektronix 465 Oscilloscope. The oscilloscope is used because of its superior time base and triggering facilities.

5. Antennas used below 1000 MHz were EMCO Model 3142 Biconolog Antennas and Compliance Design Inc. Model A100 tuned Dipole Antennas. For measurements between 1000 MHz and 18000 MHz above 1 GHz, an EMCO Model: 3115 Horn Antenna is used. The Antennas used are listed in the Test Equipment Summary.
6. The field strength measuring equipment used included:

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V - Measurement Equipment

The following equipment was used to make measurements for emissions testing:

| Description | Manufacturer | Model | Serial # | Cal Due |
|-------------------|-------------------|--------------------|------------|------------|
| ANTENNA | EMCO | 3142 | 9711-1223 | 10/12/2000 |
| RECEIVER | HEWLETT PACKARD | 8542E | 3625A00188 | 01/19/2001 |
| RF FILTER | HEWLETT PACKARD | 85420E | 3427A00177 | 01/19/2001 |
| PREAMPLIFIER | MITEQ | NSP 4000-NF | 507145 | 11/25/2000 |
| MIXER, 140-220GHZ | MILLITECH | MSH-05-8FDGSN 8807 | 017 | |
| MIXER, 50-75GHZ | MILLITECH | MHB-15-R00W0 8203 | 019 | |
| MIXER, 33-50GHZ | MILLITECH | MHB-22-R00W0 8203 | 013 | |
| MIXER, 110-170GHZ | MILLITECH | MHB-06-R00WN 8807 | 022 | |
| MIXER, 75-110GHZ | MILLITECH | MHB-10-R00W0 8203 | 015 | |
| LISN | SOLAR ELECTRONICS | 8012-50-R-24-BNC | 865575 | 04/20/2001 |
| HORN ANTENNA | EMCO | 3115 | 9602-4675 | 11/04/2000 |

7. The frequency range to be scanned is from the lowest radio frequency signal generated in the device that is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency, or 40 GHz, whichever is lower. For line-conducted emissions, the range scanned is 450 kHz to 30 MHz.
8. The EUT is warmed up for 15 minutes prior to the test. AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new battery is used.
9. Conducted measurements were made as described in ANSI C63.4 (1992). An IF bandwidth of 9 kHz is used, and peak or quasi-peak detection is employed.
10. The IF bandwidth used for measurement of radiated signal strength was 100 kHz or greater below 1000 MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application No. 150-2. A discussion of whether pulse desensitivity is applicable to this unit is included in this report. Above 1000 MHz, a bandwidth of 1 MHz is generally used.
11. Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the forbidden bands and above 1 GHz (where no preamplifier is used), signals are acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling, but those measurements taken at a closer distance are so marked.

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12. For measurements made in the 9 kHz to 30 MHz range, a distance of 30 meters was used unless a good signal-to-noise ratio could not be obtained. In that case, a closer distance was used and that distance is so marked in the data table.

VI – Summary of Equipment Under Test

| | |
|--|-------------------------|
| 1 Manufacturer: | Harmonix Corporation |
| 2 Grantee: | Harmonix Corporation |
| 3 Model No.: | EK6HOC3JH-SGM |
| 4 Trade Name: | GigaLINK™ |
| 5 Serial No.: | |
| 6 Date of Test: | May 24, 25 & 26, 2000 |
| 7 Frequencies to which device can be tuned: | 59.16 to 63.60 GHz |
| 8 Can customer tune device? | NO |
| 9 Detailed description of operation pursuant to 15.209: | See Section II - 15.209 |
| 10 Applicable emissions limits: | 15.255, 15.209 |
| 11 Additional Comments: | |

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VII - Configuration Information

Equipment Under Test: Communications Transceiver

Model: EK6HOC3JH-SGM

Serial No.:

FCC Identifier: O2700000-30-30

Support Equipment:

COMMS Analyzer

* Remotely Located *

Manufacturer: Hewlett Packard
Model: 37717C
Serial Number: GB00000407

OC3port Plus

* Remotely Located *

Manufacturer: Fluke
Model: OC3P2S
Serial Number: 7468001

ITE Power Supply

* Remotely Located *

Manufacturer: Ault Inc
Model: SW 108
Serial Number: Not Labeled

Power Supply

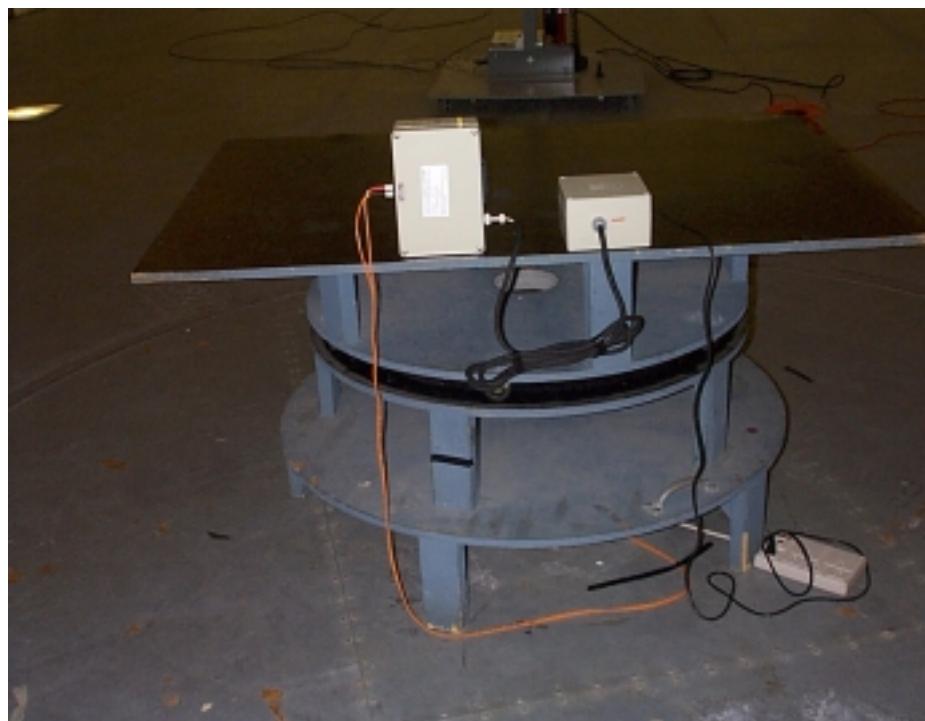
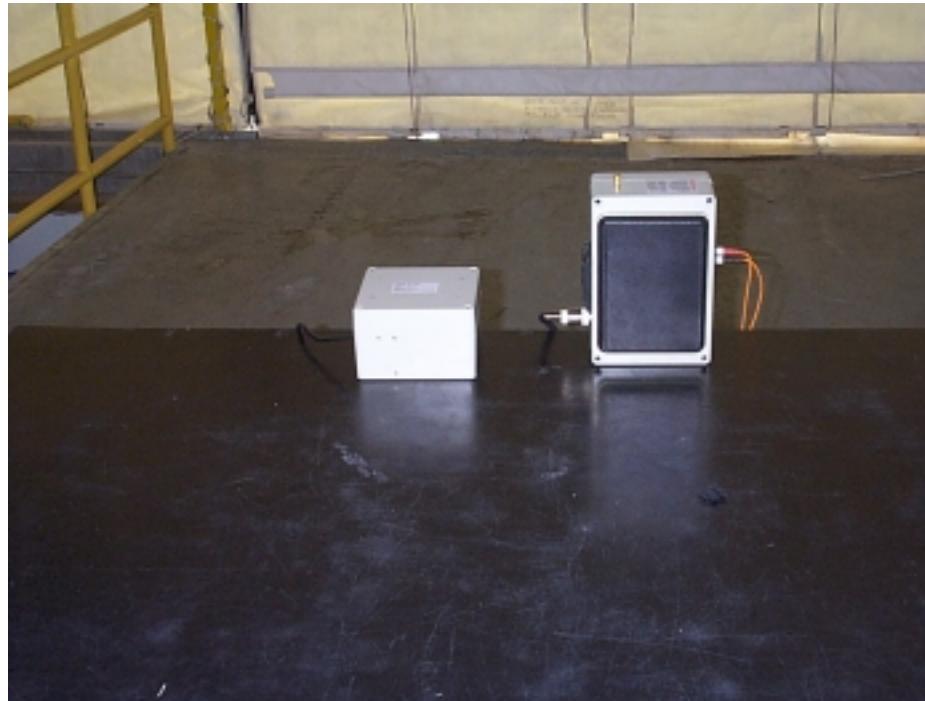
Manufacturer: Harmonix
Model: Not Labeled
Serial Number: Not Labeled

Cables:

| QTY | Description | Shield Description | Hood Description | Length (m) |
|-----|-------------|--------------------|------------------|------------|
| 2 | Fiber-optic | Unshielded | Plastic | 5 |
| 1 | Power Cord | Unshielded | Plastic | 2 |

VIII - Configuration Photographs

Worst-Case Radiated Emissions





Worst-Case Line-Conducted Emissions

