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APPLICATION FOR FCC CERTIFICATION

Sennheiser Electronic Corp

Digital 1000 Microphone Transmitter

Model: Digital 1000

FCC ID: DMOBD10URD

Report # J99009698

Number of Pages: 14 + data pages

Date of Report: April 19, 1999

NVLAP®

FCC Part 15.249 Tx Cert, Ver 5/97k:\..\fcc\15249.cer

Table of Contents

0.0 **Summary of Test Results**

Sennheiser - MODEL: SK 1093-D
FCC ID: DMOBD10URD

TEST	REFERENCE	RESULTS
Radiated Emission	15.249	Complies
Conducted Emission	15.207	Not Applicable (See Section 3.5)
Antenna Requirement	15.203	Complies

Test Engineer:_____ Date: 6/1/99

Xi-Ming Yang

Site Manager: _____ Date: 6/1/99

David Chernomordik

1.0 General Description

1.1 Product Description

The EUT is a wireless microphone transmitter.

Please refer to the attached technical description for details.

1.2 Related Submittal(s) Grants

This is an Application for Certification of a low power transmitter. One transmitter is included in this Application. This specific report details the emission characteristics of transmitter.

The FCC ID for the receiver associated with this transmitter is DMOBD10URD. The receivers are subject to the DoC process.

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (1992). All measurements were performed in Open Area Test Sites. Preliminary scans were performed in the Open Area Test Sites only to determine worst case modes. For each scan, the procedure for maximizing emissions in Appendices D and E were followed. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is Site 1. This test facility and site measurement data have been fully placed on file with the FCC and NVLAP accredited.

2.0 System Test Configuration

2.1 Justification

For emission testing, the equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). During testing, all cables were manipulated to produce worst case emissions.

For the measurements, the EUT is attached to a cardboard box (if necessary) and placed on the wooden turntable. If the EUT attaches to peripherals, they are connected and operational (as typical as possible). The EUT is wired to transmit full power.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance.

2.2 EUT Exercising Software

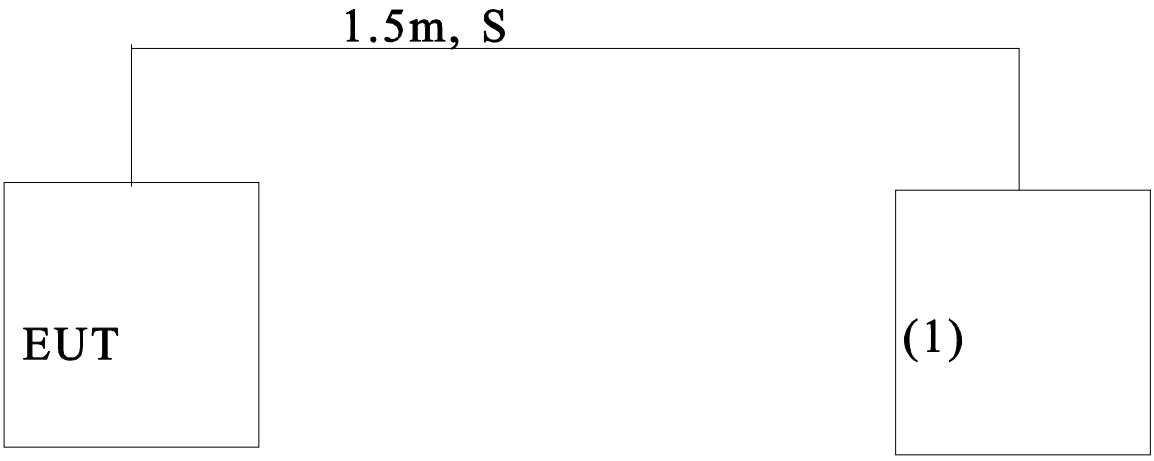
The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

For emissions testing, the units were setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing.

2.3 System Test Configuration

2.3.1 Support Equipment

Item #	Description	Model No.	Serial No.	FCC ID
1	Microphone	-	N/A	N/A



2.3.2 Block Diagram of Test Setup

* = EUT ** = No ferrites on video cable	**S** = Shielded; **U** = Unshielded	**F** = With Ferrite

2.4 Equipment Modification

Any modifications installed previous to testing will be incorporated in each production model sold/leased in the United States.

No modifications were installed by Intertek Testing Services.

2.5 Additions, deviations and exclusions from standards

No additions, deviations or exclusion have been made from standard.

3.0 **Emission Results**

AC line conducted emission measurements were performed from 0.45 MH to 30 MHz. Analyzer resolution is 10 kHz or greater.

Radiated emission measurements were performed from 30 MHz to 5000 MHz. Analyzer resolution is 100 kHz or greater for 30 MHz to 1000 MHz, 1 MHz for >1000 MHz.

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included. All measurements were performed with peak detection unless otherwise specified.

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:

FS = RA + AF + CF - AG

where FS = Field Strength in dB(μV/m)
RA = Receiver Amplitude (including preamplifier) in dB(μV)
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB/m
AG = Amplifier Gain in dB

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:-

FS = RR + LF

where FS = Field Strength in dB(μV/m)
RR = RA - AG in dB(μV)
LF = CF + AF in dB

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

RA = 52.0 dB(μV) AF = 7.4 dB/m
RR = 23.0 dB(μV) CF = 1.6 dB
LF = 9.0 dB AG = 29.0 dB

FS = RR + LF
FS = 23 + 9 = 32 dB(μV/m)

Level in μV/m = Common Antilogarithm {[32 dB(μV/m)]/20} = 39.8 μV/m

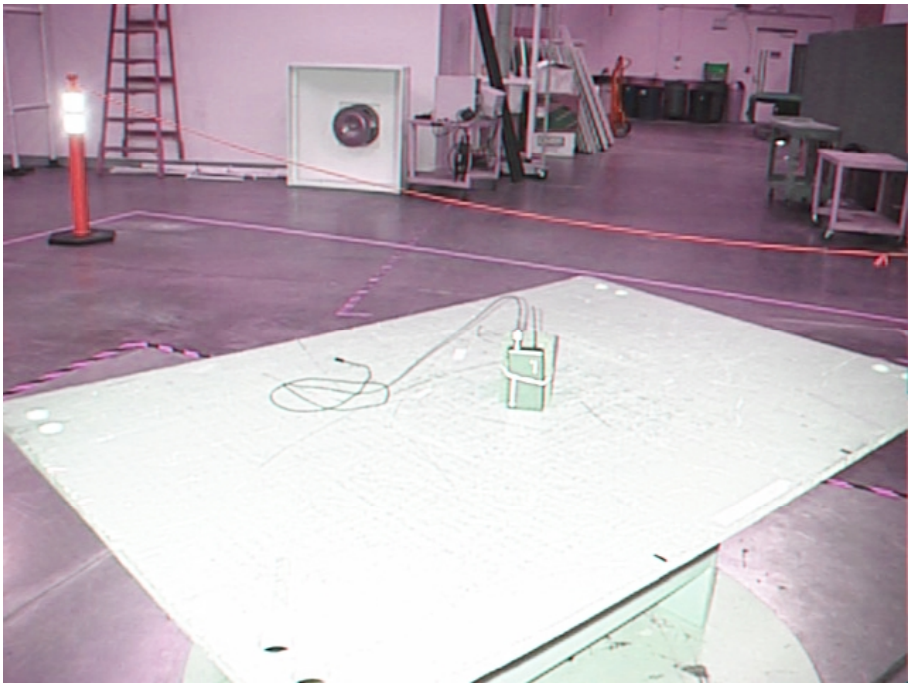
3.3 Radiated Emission Data

The data attached as Exhibit 7 lists the significant emission frequencies, the limit and the margin of compliance.

Results:	**Passed** by 9.7 dB at 416 MHz

Note: a) All emissions not reported are at least 20 dB below the limits

3.4 Radiated Emissions Configuration Photograph



3.5 Conducted Emission Data

The data attached as Exhibit 7 lists the significant emission frequencies, the limit and the margin of compliance.

Results:	**Not applicable, the EUT is a battery powered device.**

Note: a) A complete scan from 0.45 - 30 MHz was made.

4.0 Out of Band Emission Plot

The following plots show the relative spurious emission level of the transmitter.

Plot #	Description
1	902 - 928 MHz, Low Channel
2	928 - 2000 MHz, Low Channel
3	2000 - 10000 MHz, Low Channel
4	902 - 928 MHz, Middle Channel
5	928 - 2000 MHz, Middle Channel
6	2000 - 10000 MHz, Middle Channel
7	902 - 928 MHz, High Channel
8	928 - 2000 MHz, High Channel
9	2000 - 10000 MHz, High Channel

See Exhibit 7 for actual plots.

5.0 **Antenna Requirement**

Y	The transmitter uses a permanently connected antenna.
	The antenna is affixed to the EUT using a unique connector which allows for replacement of a broken antenna, but does NOT use a standard antenna jack or electrical connector.
	The EUT requires professional installation. Please refer to the attached documentation for details).

6.0 List of Exhibits

Exhibit 1 **ID Label Format**

Exhibit 2 **ID Label Location**

Exhibit 3 **Equipment Photographs**

Exhibit 4 **Block Diagram**

Exhibit 5 **Circuit Diagram**

Exhibit 6 **Instruction Manual**

Exhibit 7 **Test Data**