Uni-Art Precise Products Ltd.

Application
For
Certification
(FCC ID: MVARS950-001T)

Transmitter

WO# 9908541
DY/kl
September 20, 1999

FCC ID: MVARS950-001T

LIST OF EXHIBITS

MEASUREMENT/TECHNICAL REPORT

Uni-Art Precise Products Ltd. - MODEL: ARKON RS951

FCC ID: MVARS950-001T

September 20, 1999

This report concerns (check one:) Original Grant X Class II Change _____

Equipment Type: Low Power Transmitter (example: computer, printer, modem, etc.)

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes ___ No X

If yes, defer until: _____
date

Company Name agrees to notify the Commission by: _____
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes ___ No X

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [10-1-98 Edition] provision.

Report prepared by:

Daniel Yau
Intertek Testing Services
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Cover Letter	Letter of Agency	letter.pdf
Test Report	Test Report	report.doc
Operation Description	Technical Description	descri.pdf
Test Setup Photo	Radiated Emission	radiated1.jpg, radiated2.jpg
Test Setup Photo	Conducted Emission	conduct1.jpg, conduct2.jpg, conduct3.jpg
Test Report	Bandwidth Plot	bw.pdf
Test Report	Conducted Emission Test Result	conduct.pdf
External Photo	External Photo	ophoto1.jpg, ophoto2.jpg
Internal Photo	Internal Photo	iphoto1.jpg, iphoto2.jpg, iphoto3.jpg, iphoto4.jpg, iphoto5.jpg
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf

EXHIBIT 1

GENERAL DESCRIPTION

1.0 General Description

1.1 Product Description

The equipment under test (EUT) is a RF 900 MHz stereo wireless headphone system with tuning frequency from 911.5 MHz to 913.5 MHz. The EUT is powered by AC/DC adaptor. The charger output jack is used to charge the headphone receiver. The front of the transmitter has a tuning switch to tune the transmitting frequency. And, at the rear, there is a audio cord to connect the audio source, such as CD. The audio signal is frequency modulated to a RF signal and then transmits to receiver.

The Model : RCA WHP160 is the same as the Model : ARKON RS951 in hardware aspect. The difference in model number serves as marketing strategy.

The brief circuit description of transmitter portion is saved with filename: descri.pdf
The brief circuit description is listed as follows:

- IC 1 and associated circuit act as ALC Amplifier.
- IC 2 and associated circuit act as Stereo multiplexer.
- IC 3 and associated circuit act as 12V Regulator.
- IC 4A and associated circuit act as Charge switch.
- IC 4C and associated circuit act as Auto Power.
- IC 4D and associated circuit act as Power control.
- UHF module act as moduator and frequency transmitter.

The following list is contained in the UHF module.

- D101, R101 and associated circuit act as frequency modulator.
- Q101, DR and associated circuit act as VCO.
- L102, C109 and associated circuit act as bandpass filter.
- Q102 and associated circuit act as RF AMP.
- L104-106, C115, C116 and associated circuit act as antenna matching network.

1.2 Related Submittal(s) Grants

This is a single application for certification of a transmitter. The FCC ID of the receiver associated with this transmitter is MVARS950-001R.

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (1992), The measurements were performed in shield room and open area test site respectively. 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 emission data is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been fully placed on file with the FCC.

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 ANSI C63.4 (1992.)

The EUT was powered from a 120V AC to 12V DC Adaptor.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). For maximizing emissions, the EUT 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 in Exhibit 3.0.

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

2.2 EUT Exercising Software

There was no special software to exercise the device. Once the switch is turned ON, the unit transmits the typical signal. For simplicity of testing, the unit was wired to transmit continuously.

2.3 Special Accessories

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

2.4 Equipment Modification

Any modifications installed previous to testing by Uni-Art Precise Products Ltd. will be incorporated in each production model sold/leased in the United States.

No modifications were installed by Intertek Testing Services.

2.5 Support Equipment List and Description

This product was tested in a standalone configuration.

- Auxiliary input of EUT connected to a walkman through 1.8 meter cable (Provided by ITS)

All the items listed under section 2.0 of this report are

Confirmed by:

Daniel Yau
Technical Manager- Home Entertainment Electronics
Intertek Testing Services
Agent for Uni-Art Precise Products Ltd.

_____Signature

September 20, 1999 Date

EXHIBIT 3

EMISSION RESULTS

3.0 **Emission Results**

Data is included 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.

3.1 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

FS = RA + AF + CF - AG + PD + AV

where FS = Field Strength in dBµV/m
RA = Receiver Amplitude (including preamplifier) in dBµV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB
PD = Pulse Desensitization in dB
AV = Average Factor in -dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

FS = RA + AF + CF - AG + PD + AV

3.1 Field Strength Calculation (cont'd)

Example

Assume a receiver reading of 62.0 dBμV 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. The pulse desensitization factor of the spectrum analyzer was 0 dB, and the resultant average factor was -10 dB. The net field strength for comparison to the appropriate emission limit is 32 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 62.0 dBμV
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
PD = 0 dB

AV = -10 dB

FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 dBμV/m

Level in mV/m = Common Antilogarithm [(32 dBμV/m)/20] = 39.8 μV/m

3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission

at 4559.010 MHz

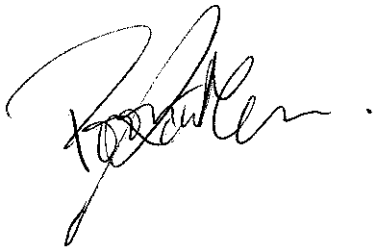
For electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated1.jpg and radiated2.jpg.

3.3 Radiated Emission Data

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.

Judgement: Passed with 6.8 dB margin

TEST PERSONNEL:



Signature

Prudence S. M. Poon, Compliance Engineer
Typed/Printed Name

September 20,1999
Date

Company: Uni-Art Precise Products Ltd. Date of Test: August 25, 1999
Model: ARKON RS951
Worst-Case Operating Mode: Transmitting (Lower Frequency Band)

Table 1

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
V	911.802	56.5	32.0	16	72.5	94.0	-21.5
V	1823.604	50.8	26.0	34	42.8	54.0	-11.2
V	*2735.406	51.4	26.0	34	43.4	54.0	-10.6
V	*3647.208	54.1	25.5	34	45.6	54.0	-8.4
V	*4559.010	55.2	26.0	34	47.2	54.0	-6.8

Notes: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna and average detector are used for the emission over 1000MHz.

*Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak detector data for frequencies below 1000 MHz and average detector data for frequencies over 1000 MHz.

Test Engineer: Prudence S. M. Poon

Company: Uni-Art Precise Products Ltd. Date of Test: August 25, 1999
Model: ARKON RS951
Worst-Case Operating Mode: Transmitting (Upper Frequency Band)

Table 2

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
V	913.514	55.5	32.0	16	71.5	94.0	-22.5
V	1827.028	55.6	20.0	34	41.6	54.0	-12.4
V	*2740.542	54.7	22.0	34	42.7	54.0	-11.3
V	*3654.056	54.2	24.0	34	44.2	54.0	-9.8
V	*4567.570	54.9	26.0	34	46.9	54.0	-7.1

Notes: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna and average detector are used for the emission over 1000MHz.

*Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak detector data for frequencies below 1000 MHz and average detector data for frequencies over 1000 MHz.

Test Engineer: Prudence S. M. Poon

3.4 Line Conducted Configuration Photograph

Worst Case Line-Conducted Configuration

For electronic filing, the worst case line conducted configuration photographs are saved with filename: conduct1.jpg to conduct3.jpg

Company: Uni-Art Precise Products Ltd. Date of Test: August 25, 1999
Model: ARKON RS951

Conducted Emissions
Section 15.107 Requirements

For electronic filing, the conducted emission test result is saved with filename : Conduct.pdf.

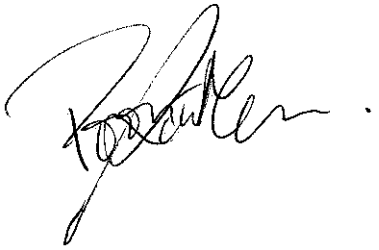
3.5 Line Conducted Emission Configuration Data

The data on the following pages list the significant emission frequencies, the limit, and the margin of compliance.

Judgement : Passed by more than 20 dB margin

*All reading are peak unless stated otherwise.

TEST PERSONNEL:



_____
Signature

Prudence S. M. Poon, Compliance Enginner
Typed/Printed Name

September 20,1999
Date

EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

4.0 Equipment Photographs

For electronic filing, the photographs are saved with filename: ophoto1.jpg to ophoto2.jpg and iphoto1.jpg to iphoto5.jpg.

EXHIBIT 5

PRODUCT LABELLING

5.0 **Product Labelling**

For electronic filing, the FCC ID label artwork and location is saved with filename: label.pdf

EXHIBIT 6

TECHNICAL SPECIFICATIONS

6.0 Technical Specifications

For electronic filing, the block diagram and schematics are saved with filename: block.pdf and circuit.pdf respectively.

EXHIBIT 7

INSTRUCTION MANUAL

7.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

EXHIBIT 8

MISCELLANEOUS INFORMATION

8.0 Miscellaneous Information

This miscellaneous information includes details of the measured bandwidth, the test procedure and calculation of factors such as pulse desensitization and averaging factor.

8.1 **Measured Bandwidth**

The plot saved in bw.pdf shows the fundamental emission. From the plot, the fundamental is observed within the frequency band 902-928 MHz.

Figure 8.0 Bandwidth

8.2 Discussion of Pulse Desensitization

The determination of pulse desensitivity was made in accordance with Hewlett Packard Application Note 150-2, *Spectrum Analysis ... Pulsed RF*.

Pulse desensitivity is not applicable for this device. Since the transmitted frequency is a continue signal.

8.3 Calculation of Average Factor

The average factor is not applicable for this device as the transmitted signal is a continue signal.

8.4 Emissions Test Procedures

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 rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 - 1992.

The transmitting equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The antenna height and polarization are varied during the testing to search for maximum signal levels.

Detector function for radiated emissions is in 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. A detailed description for the calculation of the average factor can be found in Exhibit 8.3.

The frequency range scanned is from the lowest radio frequency signal generated in the device which 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.

8.4 Emissions Test Procedures (cont'd)

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, fully charged battery is used.

Conducted measurements are made as described in ANSI C63.4 - 1992.

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 Note 150-2. A discussion of whether pulse desensitivity is applicable to this unit is included in this report (See Exhibit 8.2). Above 1000 MHz, a resolution bandwidth of 1 MHz is used.

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, 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.