

IDT Sonicvision Limited

Application
For
Certification

Music Sphere - Wireless Remote Speaker (Transmitter Unit)

(FCC ID: S92WRS368TXV1)

0505854
DL/ Sandy Lee
May 25, 2005

- The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
- This report shall not be reproduced except in full without prior authorization from Intertek Testing Services Hong Kong Limited.
- For Terms And Conditions of the services, it can be provided upon request.
- The evaluation data of the report will be kept for 3 years from the date of issuance.

Intertek Testing Services Hong Kong Ltd.

2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.
Tel: (852) 2173 8888 Fax: (852) 2741 1693 Website: www.hk.intertek-etlsemko.com

LIST OF EXHIBITS

INTRODUCTION

<i>EXHIBIT 1:</i>	Summary of Tests
<i>EXHIBIT 2:</i>	General Description
<i>EXHIBIT 3:</i>	System Test Configuration
<i>EXHIBIT 4:</i>	Measurement Results
<i>EXHIBIT 5:</i>	Equipment Photographs
<i>EXHIBIT 6:</i>	Product Labelling
<i>EXHIBIT 7:</i>	Technical Specifications
<i>EXHIBIT 8:</i>	Instruction Manual
<i>EXHIBIT 9:</i>	Confidentiality Request

INTERTEK TESTING SERVICES

Table of Contents

1.0 <u>Summary of test results</u>	2
2.0 <u>General Description</u>	4
2.1 Product Description	4
2.2 Related Submittal(s) Grants	5
2.3 Test Methodology	5
2.4 Test Facility	5
3.0 <u>System Test Configuration</u>	7
3.1 Justification	7
3.2 EUT Exercising Software	7
3.3 Support Equipment List and Description	8
3.4 Measurement Uncertainty	9
3.5 Equipment Modification	9
4.0 <u>Measurement Results</u>	11
4.1 Maximum Conducted Output Power at Antenna Terminals	11
4.2 Hopping Channel 20 dB RF Bandwidth	12
4.3 Minimum Number of Hopping Frequencies	13
4.4 Minimum Hopping Channel Carrier Frequency Separation	14
4.5 Average Channel Occupancy Time	15
4.6 Out of Band Radiated Emissions	16
4.7 Out of Band Radiated Emissions	17
4.8 Transmitter Radiated Emissions in Restricted Bands	18
4.9 Field Strength Calculation	19
4.10 Radiated Emission Configuration Photograph	20
4.11 Radiated Emission Data	21
4.12 AC Line Conducted Emission	25
4.13 Line Conducted Configuration Photograph	26
4.14 Line Conducted Emission Configuration Data	27
4.15 Radiated Emissions from Digital Section of Transceiver (Transmitter)	28
4.16 Transmitter Duty Cycle Calculation and Measurements	30
5.0 <u>Equipment Photographs</u>	32
6.0 <u>Product Labelling</u>	34
7.0 <u>Technical Specifications</u>	36
8.0 <u>Instruction Manual</u>	38
9.0 <u>Confidentiality Request</u>	40

INTERTEK TESTING SERVICES

List of attached file

Exhibit type	File Description	filename
Cover Page	Confidentiality Request	request.pdf
Test Report	Test Report	report.pdf
Operation Description	Technical Description	descri1.pdf, descri2.pdf
Test Setup Photo	Radiated Emission	config photos.doc
Test Report	Maximum Output Power Plot	hmaxop.pdf
Test Report	20 dB Bandwidth Plot	h20dB.pdf
Test Report	Minimum Number of Hopping Frequencies	hchno.pdf
Test Report	Minimum Hopping Channel Carrier Frequency Separation	hfsepa.pdf
Test Report	Average Channel Occupancy Time	havetime.pdf
Test Report	Out Band Antenna Conducted Emission Plot	hobantcon.pdf
Test Report	Duty Cycle Calculation and Measurement	hdcc.pdf
Test Setup Photo	Conducted Emission	config photos.doc
Test Report	Conducted Emission Test Result	conduct.pdf
External Photo	External Photo	external photos.doc
Internal Photo	Internal Photo	internal photos.doc
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
SUMMARY OF TEST RESULTS

INTERTEK TESTING SERVICES

1.0 Summary of Test

**IDT Sonicvision Limited - MODEL: Oregon Scientific WRS368
FCC ID: S92WRS368TXV1**

TEST	REFERENCE	RESULTS
Max. Output Power	15.247(b)	Pass
Min. No. of Hopping Frequencies	15.247(a)(1)	Pass
Min. Hopping Channel Carrier Frequency Separation	15.247(a)(1)	Pass
Average Time of Occupancy	15.247(a)(1)	Pass
Out of Band Antenna Conducted Emission	15.247(c)	Pass
Radiated Emission in Restricted Bands	15.247(c)	Pass
AC Conducted Emission	15.207	Pass
Radiated Emission from Digital Part	15.109	Pass
Antenna Requirement	15.203	Pass (See Notes)

Notes: The EUT uses a permanently attached antenna which, in accordance to Section 15.203, is considered sufficient to comply with the provisions of this section.

EXHIBIT 2
GENERAL DESCRIPTION

INTERTEK TESTING SERVICES

2.0 **General Description**

2.1 Product Description

The Equipment Under Test (EUT) is a transmitter unit of 2.4GHz Music Sphere Wireless Remote Speaker System operating between 2403.384 and 2479.156MHz. The EUT is powered by 9V d.c. (AC 120V 60Hz input, DC 9V 300mA output adaptor). Up to 3 audio sources can be plugged into this unit. Analog audio signal will then convert into digital signal and pass to 2.4GHz wireless RF module using frequency hopping technique for transmission. 15 hop channels out of 38 channels will be used at one time. If the performance of the channel is poor, it will swap to another channel. On the wireless remote speaker, user can select to playback one of the three audio source. Also, the speaker unit can transmit control signal (received from IR remote control) to the EUT through the RF channel. The EUT will then transmit IR control signal to the corresponding audio product.

Antenna Type : Integral, Internal

The circuit descriptions are saved with filename: descri1.pdf and descri2.pdf.

INTERTEK TESTING SERVICES

2.2 Related Submittal(s) Grants

This is an application for Certification of a DSS-Part 15 Spread Spectrum Transmitter. The receiver portion associated with this transmitter is exempted from technical requirement of this Part.

The wireless remote speaker unit associated with this EUT has FCC ID: S92WRS368RXV1 and will be filed at the same time.

2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2001). 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. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application. All other measurements were made in accordance with the procedures in part 2 of CFR 47.

2.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated 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 3
SYSTEM TEST CONFIGURATION

INTERTEK TESTING SERVICES

3.0 **System Test Configuration**

3.1 Justification

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables were manipulated to produce worst case emissions. It was powered by AC 120V 60Hz input, DC 9V 300mA output adaptor.

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. Detector function is in peak mode. 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. Analyzer resolution is 100 kHz or greater for frequencies below 1000MHz. The resolution is 1MHz or greater for frequencies above 1000MHz.

Radiated emission measurement was performed from the lowest radio frequency signal generated in the device which is greater than 9kHz to 25GHz.

3.2 EUT Exercising Software

There were no special software to exercise the device. Once powered up, the unit transmits the typical signal. For simplicity of testing, the unit was set to transmit continuously.

INTERTEK TESTING SERVICES

3.3 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:

HARDWARE:

The unit was operated standalone. AC adaptor (provided with the unit) was used to power the device. The description is listed below.

Model: KU35-9-300D

Input: AC 120V 60Hz, 7W

Output: DC 9V 300mA

CABLES:

- (1) 1 x audio cable with 1.8m long
- (2) 1 x audio cable with 1.4m long and RCA connector and 22k Ω terminator x 2

OTHERS:

- (1) Cassette Player

INTERTEK TESTING SERVICES

3.4 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

3.5 Equipment Modification

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

No modifications were installed by ETL Division, Intertek Testing Services Hong Kong Ltd.

All the items listed under section 3.0 of this report are confirmed by:

Confirmed by:

*Derek Leung
Assistant Manager
Intertek Testing Services Hong Kong Ltd.
Agent for IDT Sonicvision Limited*



Signature

May 25, 2005 Date

EXHIBIT 4
MEASUREMENT RESULTS

INTERTEK TESTING SERVICES

Applicant: IDT Sonicvision Limited
Model: Oregon Scientific WRS368

Date of Test: April 15, 2005

4.0 Measurement Results

4.1 Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b) :

- ☐ The antenna power of the EUT was connected to the input of a power meter. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.
- ☒ The antenna port of the EUT was connected to the input of a spectrum analyzer. The analyzer was set for RBW>20dB bandwidth and power was read directly in dBm. External attenuation and cable loss were compensated for using the OFFSET function of the analyzer.

For antennas with gains of 6 dBi or less, maximum allowed transmitter output is 0.125 watt (+21 dBm).

Antenna Gain = 3.2 dBi		
Frequency (MHz)	Output in dBm	Output in mWatt
2403.384	16.47	44.36
2441.976	15.68	36.98
2478.576	15.34	34.20

Cable loss : 0.5 dB External Attenuation : N/A dB

Cable loss, external attenuation: ☐ included in OFFSET function
☒ added to SA raw reading

dBm max. output level = 16.47 dBm (21 dBm or less)

Please refer to the attached plots for details:

Plot H1a: Low Channel Output Power
Plot H1b: Middle Channel Output Power
Plot H1c: High Channel Output Power

For electronic filing, the above plots are saved with filename: hmaxop.pdf.

For RF Safety, the information is shown on the user manual: manual.pdf.

INTERTEK TESTING SERVICES

Applicant: IDT Sonicvision Limited
Model: Oregon Scientific WRS368

Date of Test: April 15, 2005

4.2 Hopping Channel 20 dB RF Bandwidth, FCC Rules 15.247(a)(1):

The center frequency of the analyzer was set to the hopping channel under investigation. The RBW of the spectrum analyzer was chosen so that the display was a result of the hopping channel modulation, rather than the internal response of the analyzer. The RBW was chosen to be as close as possible to the emission bandwidth of the EUT. The RBW shall be $\geq 1\%$ of the 20 dB bandwidth.

Channel (Frequency, MHz)		20 dB Bandwidth (kHz)
Low:	2403.384	1776
Middle:	2442.276	1764
High:	2479.156	1752

Refer to the following plots for 20 dB bandwidth sharp:

Plot H2a: Low Channel 20 dB RF Bandwidth

Plot H2b: Middle Channel 20 dB RF Bandwidth

Plot H2c: High Channel 20 dB RF Bandwidth

For electronic filing, the above plots are saved with filename: h20dB.pdf.

INTERTEK TESTING SERVICES

Applicant: IDT Sonicvision Limited
Model: Oregon Scientific WRS368

Date of Test: April 15, 2005

4.3 Minimum Number of Hopping Frequencies, FCC Rule 15.247(a)(1)(iii) :

The RF passband of the EUT was divided into approximately equal bands. With the analyzer set to MAX HOLD readings were taken for 2-3 minutes in each band. The channel peaks so recorded were added together, and the total number compared to the minimum number of channels required in the regulation.

No. of hopping channels	15
-------------------------	----

Minimum Requirements: at least 15 non-overlapping channels for 2400MHz-2483.5MHz.

For electronic filing, the above plots are saved with filename: hchno.pdf.

INTERTEK TESTING SERVICES

Applicant: IDT Sonicvision Limited
Model: Oregon Scientific WRS368

Date of Test: April 15, 2005

4.4 Minimum Hopping Channel Carrier Frequency Separation, FCC Ref: 15.247(a)(1) :

Using the DELTA MARKER function of the analyzer, the frequency separation between two adjacent channels was measured and compared against the limit.

[] 25 kHz [x] 20 dB bandwidth of hopping channel: 1776kHz

Channel Separation	2060 kHz
--------------------	----------

Plot H4: Channel 24 and Channel 25

Requirement: The frequency separation is more than 20dB bandwidth of hopping channel.

For electronic filing, the above plots are saved with filename: hfsepa.pdf.

INTERTEK TESTING SERVICES

Applicant: IDT Sonicvision Limited
Model: Oregon Scientific WRS368

Date of Test: April 15, 2005

4.5 Average Channel Occupancy Time, FCC Ref: 15.247(a)(1)(iii)

The spectrum analyzer center frequency was set to one of the known hopping channels. The SWEEP was set to 10ms, the SPAN was set to ZERO SPAN, and the TRIGGER was set to VIDEO. The time duration of the transmission so captured was measured with the MARKER DELTA function.

The SWEEP was then set to the time required by the regulation (20 seconds for 902-928 MHz devices, if the 20dB bandwidth is less than 250kHz, 10 seconds for 902-928 MHz if the 20dB bandwidth is or greater than 250kHz, "0.4 seconds x Number of hopping channels employed" seconds for 2400-2483.5 MHz, 30 seconds for 5725-5850 MHz). The analyzer was set to SINGLE SWEEP, the total ON time was added and compared against the limit (0.4 seconds).

Average 0.4 seconds maximum occupancy in 6 seconds, (0.4sec. x 15) for 2400MHz-2483.5MHz.

Average Occupancy Time = $4660\mu\text{s} \times 75$	350 ms
--	--------

Refer to attached spectrum analyzer plots H5a-e.

For electronic filing, the above plots are saved with filename: havetime.pdf.

INTERTEK TESTING SERVICES

Applicant: IDT Sonicvision Limited
Model: Oregon Scientific WRS368

Date of Test: April 15, 2005

4.6 Out of Band Radiated Emissions, FCC Rule 15.247(c):

In any 100 kHz bandwidth outside the EUT passband, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20 dB below that of the maximum in-band 100 kHz emission, or else shall meet the general limits for radiated emissions at frequencies outside the passband, whichever results in lower attenuation.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the passband.

Refer to the following plots for out of band conducted emissions data:

Plot H6a.1- H6a.2: Low Channel Emissions
Plot H6b.1- H6b.2: Middle Channel Emissions
Plot H6c.1- H6c.2: High Channel Emissions
Plot H6d.1- H6d.2: Modulation Products Emissions*

The plots showed the 2nd harmonic and modulation products at the band edges of 2400 MHz and 2483.5 MHz. In addition, all spurious emission and up to the tenth harmonic was measured and they were found to be at least 20 dB below the highest level of the desired power in the passband.

Furthermore, delta measurement technique for measuring bandedge emissions was incorporated in the test of the edge at 2483.5MHz.

*These 3 plots are shown the worst-case which has been already considered between enable and disable the hopping function of the EUT.

For electronic filing, the above plots are saved with filenames: hobantcon.pdf.

INTERTEK TESTING SERVICES

Applicant: IDT Sonicvision Limited
Model: Oregon Scientific WRS368

Date of Test: April 15, 2005

4.7 Out of Band Radiated Emissions (for emissions in 2.5 above that are less than 20 dB below carrier), FCC Rule 15.247(c):

For out of band emissions that are close to or that exceed the 20dB attenuation requirement described in the specification, radiated measurements were performed at a 3m separation distance to determine whether these emissions complied with the general radiated emission requirement.

The EUT was placed on a non-conductive turntable at a height of approximately 1 meter above the ground plane of a 3 meter open test site. For each frequency investigated, the turntable was rotated 360 degrees, and the search antenna was raised and lowered in both horizontal and vertical polarizations, in an attempt to maximize the signal. The maximum level was recorded, along with the search antenna polarity (Vertical or Horizontal).

- ☒ Not required, all emissions more than 20dB below fundamental
- ☐ See attached data sheet

INTERTEK TESTING SERVICES

Applicant: IDT Sonicvision Limited
Model: Oregon Scientific WRS368

Date of Test: April 15, 2005

4.8 Transmitter Radiated Emissions in Restricted Bands, FCC Rule 15.35(b), (c):

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

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

INTERTEK TESTING SERVICES

Applicant: IDT Sonicvision Limited
Model: Oregon Scientific WRS368

Date of Test: April 15, 2005

4.9 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 dB μ V/m

RA = Receiver Amplitude (including preamplifier) in dB μ V

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:

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

Example

Assume a receiver reading of 62.0 dB μ 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. 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 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$RA = 62.0 \text{ dB}\mu\text{V}$$

$$AF = 7.4 \text{ dB}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$PD = 0 \text{ dB}$$

$$AV = -10 \text{ dB}$$

$$FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 \text{ dB}\mu\text{V/m}$$

$$\text{Level in mV/m} = \text{Common Antilogarithm } [(32 \text{ dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m}$$

INTERTEK TESTING SERVICES

Applicant: IDT Sonicvision Limited
Model: Oregon Scientific WRS368

Date of Test: April 15, 2005

4.10 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
at
61.442 MHz

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: config photos.doc

INTERTEK TESTING SERVICES

Applicant: IDT Sonicvision Limited
Model: Oregon Scientific WRS368

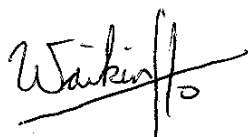
Date of Test: April 15, 2005

4.11 Radiated Emission Data

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

Judgement : Passed by 5.2 dB compare with the peak limit

TEST PERSONNEL:



Tester Signature

Ben W. K. Ho, Compliance Engineer
Typed/Printed Name

May 25, 2005
Date

INTERTEK TESTING SERVICES

Applicant: IDT Sonicvision Limited
Model: Oregon Scientific WRS368
Mode : TX-Channel 0

Date of Test: April 15, 2005

Table 1

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB μ V/m)	Average Factor (-dB)	Average at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
V	*4805.704	48.0	34	34.9	48.9	24.7	24.2	54	-29.8
V	*12014.260	44.1	34	40.5	50.6	24.7	25.9	54	-28.1
V	*19222.816	39.0	34	45.3	50.3	24.7	25.6	54	-28.4

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. 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 used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Test Engineer: Ben W. K. Ho

INTERTEK TESTING SERVICES

Applicant: IDT Sonicvision Limited
Model: Oregon Scientific WRS368
Mode : TX-Channel 19

Date of Test: April 15, 2005

Table 2

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Factor (-dB)	Average at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
V	*4883.092	48.5	34	34.9	49.4	24.7	24.7	54	-29.3
V	*7324.638	44.7	34	37.9	48.6	24.7	23.9	54	-30.1
V	*12207.730	44.4	34	40.5	50.9	24.7	26.2	54	-27.8
V	*19532.368	38.9	34	45.3	50.2	24.7	25.5	54	-28.5

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. 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 used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Test Engineer: Ben W. K. Ho

INTERTEK TESTING SERVICES

Applicant: IDT Sonicvision Limited
Model: Oregon Scientific WRS368
Mode : TX-Channel 37

Date of Test: April 15, 2005

Table 3

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Factor (-dB)	Average at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
V	*4959.872	48.7	34	34.9	49.6	24.7	24.9	54	-29.1
V	*7439.808	45.3	34	37.9	49.2	24.7	24.5	54	-29.5
V	*12399.680	44.4	34	40.5	50.9	24.7	26.2	54	-27.8
V	*19839.488	39.0	34	45.3	50.3	24.7	25.6	54	-28.4

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. 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 used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Test Engineer: Ben W. K. Ho

INTERTEK TESTING SERVICES

Applicant: IDT Sonicvision Limited
Model: Oregon Scientific WRS368

Date of Test: April 15, 2005

4.12 AC Line Conducted Emission, FCC Rule 15.207:

☐ Not required; battery operation only

☒ Test data attached

INTERTEK TESTING SERVICES

Applicant: IDT Sonicvision Limited
Model: Oregon Scientific WRS368

Date of Test: April 15, 2005

4.13 Line Conducted Configuration Photograph

Worst Case Line-Conducted Configuration
at
24.575 MHz

For electronic filing, the worst case line conducted configuration photographs are saved with filename: config photos.doc

INTERTEK TESTING SERVICES

Applicant: IDT Sonicvision Limited
Model: Oregon Scientific WRS368

Date of Test: April 15, 2005

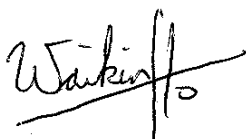
4.14 Line Conducted Emission Data

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

Judgement : Passed by 19.0 dB margin

For electronic filing, the worst case line conducted emission data are saved with filename: conduct.pdf

TEST PERSONNEL:



Tester Signature

Ben W. K. Ho, Compliance Engineer
Typed/Printed Name

May 25, 2005
Date

INTERTEK TESTING SERVICES

Applicant: IDT Sonicvision Limited
Model: Oregon Scientific WRS368

Date of Test: April 15, 2005

4.15 Radiated Emissions from Digital Section of Transceiver (Transmitter) and Class B Personal Computer Peripheral, FCC Ref: 15.109

- ☐ Not required - No digital part
- ☒ Test results are attached
- ☐ Included in the separated DOC report.

INTERTEK TESTING SERVICES

Applicant: IDT Sonicvision Limited
Model: Oregon Scientific WRS368

Date of Test: April 15, 2005

Table 4

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
V	36.867	38.8	16	10.0	32.8	40.0	-7.2
V	49.152	35.2	16	11.0	30.2	40.0	-9.8
V	61.442	40.8	16	10.0	34.8	40.0	-5.2
V	67.852	41.4	16	8.0	33.4	40.0	-6.6
V	110.525	33.6	16	14.0	31.6	43.5	-11.9
V	135.176	32.9	16	14.0	30.9	43.5	-12.6
V	172.035	28.2	16	18.0	30.2	43.5	-13.3
V	196.653	30.5	16	16.0	30.5	43.5	-13.0
V	215.045	28.6	16	17.0	29.6	43.5	-13.9
V	227.342	27.5	16	18.0	29.5	46.0	-16.5
V	245.765	25.2	16	20.0	29.2	46.0	-16.8

- NOTES: 1. Quasi-peak detector is used for the emission below or equal to 1000 MHz.
2. All measurements were made at 3 meters. 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.

Test Engineer: Ben W. K. Ho

INTERTEK TESTING SERVICES

Applicant: IDT Sonicvision Limited
Model: Oregon Scientific WRS368

Date of Test: April 15, 2005

4.16 Transmitter Duty Cycle Calculation and Measurements, FCC Rule 15.35(b), (c)

The EUT antenna output port was connected to the input of the spectrum analyzer. The analyzer center frequency was set to EUT RF channel carriers. The SWEP function on the analyzer was set to ZERO SPAN. The transmitter ON time was determined from the resultant time-amplitude display:

Base Unit:

Duty cycle (DC) = Maximum ON time is 4.66ms/80ms

Duty cycle correction, dB = $20 \cdot \log(\text{DC})$
= $20 \cdot \log(0.0583)$
= -24.7 dB

X	See attached spectrum analyzer chart(s) for transmitter timing Base Unit: Plot H7
	See transmitter timing diagram provided by manufacturer
	Not applicable, duty cycle was not used.

For electronic filing, the above plots are saved with filenames: hdcc.pdf.

EXHIBIT 5
EQUIPMENT PHOTOGRAPHS

5.0 **Equipment Photographs**

For electronic filing, the photographs are saved with filename: external photos.doc & internal photos.doc

EXHIBIT 6
PRODUCT LABELLING

6.0 **Product Labelling**

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

EXHIBIT 7
TECHNICAL SPECIFICATIONS

7.0 **Technical Specifications**

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

EXHIBIT 8
INSTRUCTION MANUAL

INTERTEK TESTING SERVICES

8.0 **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 9
CONFIDENTIALITY REQUEST

9.0 **Confidentiality Request**

The applicant would like to have confidential protection of the following documents:

- Schematic
- Block Diagram
- Technical Descriptions

For electronic filing, the request letter is saved with filename: request.pdf.