



## Signal Communications Ltd.

Application  
For  
Certification  
**(FCC ID: NAGSCVX-030821)**

TeleEye III+ Video Recording Transmitter  
October 7, 2003

0313957  
DL/ Sandy  
October 7, 2003

- 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) 2371 0521 Website: [www.hk.intertek-etlsemko.com](http://www.hk.intertek-etlsemko.com)

---

# INTERTEK TESTING SERVICES

---

## LIST OF EXHIBITS

### *INTRODUCTION*

<i>EXHIBIT 1:</i>	General Description
<i>EXHIBIT 2:</i>	System Test Configuration
<i>EXHIBIT 3:</i>	Emission Results
<i>EXHIBIT 4:</i>	Equipment Photographs
<i>EXHIBIT 5:</i>	Product Labelling
<i>EXHIBIT 6:</i>	Technical Specifications
<i>EXHIBIT 7:</i>	Instruction Manual

---

## INTERTEK TESTING SERVICES

---

### MEASUREMENT/TECHNICAL REPORT

#### Signal Communications Ltd.

Brand Name/ Model: TeleEye/ VX-16008, VX-4001, VX-4002, VX-8002, VX-8004, VX-16004  
CAMERIO/ VX-16008, VX-4001, VX-4002, VX-8002, VX-8004, VX-16004  
FCC ID: NAGSCVX-030821

October 7, 2003

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

Equipment Type: Computer Peripheral (example: computer, printer, modem, etc.)  
\_\_\_\_\_

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

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

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [08-20-02 Edition] provision.  
\_\_\_\_\_

Report prepared by:

Derek Leung  
Intertek Testing Services  
2/F., Garment Center,  
576, Castle Peak Road,  
HONG KONG.  
Phone: 852-2173-8504  
Fax: 852-2371-0521

---

# INTERTEK TESTING SERVICES

---

## Table of Contents

1.0 <b><u>General Description</u></b> .....	2
1.1 Product Description .....	2
1.2 Related Submittal(s) Grants .....	2
1.3 Test Methodology .....	3
1.4 Test Facility .....	3
2.0 <b><u>System Test Configuration</u></b> .....	5
2.1 Justification .....	5
2.2 EUT Exercising Software .....	5
2.3 Special Accessories .....	5
2.4 Equipment Modification .....	5
2.5 Measurement Uncertainty .....	5
2.6 Support Equipment List and Description .....	6
3.0 <b><u>Emission Results</u></b> .....	8
3.1 Field Strength Calculation .....	9
3.2 Radiated Emission Configuration Photograph .....	10
3.3 Radiated Emission Data .....	11
3.4 Conducted Emission Configuration Photograph .....	13
3.5 Conducted Emission Data .....	14
4.0 <b><u>Equipment Photographs</u></b> .....	18
5.0 <b><u>Product Labelling</u></b> .....	20
6.0 <b><u>Technical Specifications</u></b> .....	22
7.0 <b><u>Instruction Manual</u></b> .....	24

---

## INTERTEK TESTING SERVICES

---

List of attached file

Exhibit type	File Description	filename
Test Report	Test Report	report.pdf
Operation Description	Technical Description	descri.pdf
Test Setup Photo	Radiated Emission	radiated photos.doc
Test Setup Photo	Conducted Emission	conducted photos.doc
Test Report	Conducted Emission Test Result	conducted.pdf
External Photo	External Photo	external photos.doc
Internal Photo	Internal Photo	internal photos.doc
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit1.pdf, circuit2.pdf, circuit3.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf

**INTERTEK TESTING SERVICES**

---

**EXHIBIT 1**

**GENERAL DESCRIPTION**

---

## INTERTEK TESTING SERVICES

---

### 1.0 General Description

#### 1.1 Product Description

The Equipment Under Test (EUT) is a video recording transmitter which is a one-plug module on LAN and the Internet for remote and local video monitoring and recording. The EUT is powered by AC 100-240V 50/60Hz input, DC 12V output adaptor. It provides simultaneous remote monitoring, recording and playback. Users can keep track of live video and play back recorded video from any remote locations. It can support up to 16 video and alarm inputs and 4 relay switches. Also it has the features of password protection on connection and settings and built-in real time clock.

The Models bearing the following model numbers have the following difference:

<u>Model No.</u>	<u>Features</u>
VX-4001, VX-4002	Support 4 video channels, 4 alarm inputs
VX-8002, VX-8004	Support 8 video channels, 8 alarm inputs
VX-16004, VX-16008	Support 16 video channels, 16 alarm inputs

The transmitter's features will be enabled by both software and hardware as indicated in block diagram and circuit diagram. The difference in these models is in the No. of encoder PCB, and necessary component but same PCB layout in main board.

The VX-16008 is full component version.

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

#### 1.2 Related Submittal(s) Grants

This is an application for certification of a computer peripheral.

## INTERTEK TESTING SERVICES

---

### 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 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.



**INTERTEK TESTING SERVICES**

---

**EXHIBIT 2**  
**SYSTEM TEST CONFIGURATION**

---

## INTERTEK TESTING SERVICES

---

### 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 AC 100-240V 50/60Hz input, DC 12V output adaptor.

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 model VX-16008 is the full version and its test data is demonstrated on the report.

#### 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. The software, contained in a CD ROM, was inserted into CD Drive and was installed into the hard disk.

Once the program was loaded, the cameras will capture images and the images will be shown on the monitor and recorded in the hard disk.

#### 2.3 Special Accessories

Shielded cables are necessary for compliance of this product.

#### 2.4 Equipment Modification

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

No modifications were installed by Intertek Testing Services.

#### 2.5 Measurement Uncertainty

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

## INTERTEK TESTING SERVICES

---

### 2.6 Support Equipment List and Description

- Refer List
- |                                                                                             |                                                                                   |                                                                            |                                                     |                                                                       |                                                          |
|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------------------|
| 1. Compaq Computer<br>Model: D510S<br>S/N: 3Z2AKN9ZJ023<br>DOC Product                      | 2. TopVision LCD Monitor<br>Model: 03761428<br>S/N: M0034H02390020<br>DOC Product | 3. Compaq Keyboard<br>Model: KB-0133<br>S/N: B55940EGANR0CE<br>DOC Product | 4. Compaq Mouse<br>Model: M-S69<br>FCCID: JNZ211443 | 5. HP Printer<br>Model: C2642A<br>S/N: SG67B131RY<br>FCCID: B94C2642X | 6. Hayes Modem<br>Model: 6800CN<br>FCCID: BFJ9D907-00038 |
| 7. DF 112 (PAL) Camera with 3m long cable and 12V d.c. output adaptor                       |                                                                                   |                                                                            |                                                     |                                                                       |                                                          |
| 8. Alarm Box                                                                                |                                                                                   |                                                                            |                                                     |                                                                       |                                                          |
| 9. HDD Cartridge with 40G HDD                                                               |                                                                                   |                                                                            |                                                     |                                                                       |                                                          |
| 10. RS-232/RS-485 converter                                                                 |                                                                                   |                                                                            |                                                     |                                                                       |                                                          |
| 11. 1 x shielded RJ45 LAN cable (crossover) with 3.3m long                                  |                                                                                   |                                                                            |                                                     |                                                                       |                                                          |
| 12. 16 x 3m shielded BNC cable with 75ohm terminator                                        |                                                                                   |                                                                            |                                                     |                                                                       |                                                          |
| 13. 1 x 8m shielded BNC cable                                                               |                                                                                   |                                                                            |                                                     |                                                                       |                                                          |
| 14. 1 x 3.6m shielded Alarm & SW cable                                                      |                                                                                   |                                                                            |                                                     |                                                                       |                                                          |
| 15. 1 x 3m shielded Modem cable                                                             |                                                                                   |                                                                            |                                                     |                                                                       |                                                          |
| 16. 1 x 3m shielded AUX cable                                                               |                                                                                   |                                                                            |                                                     |                                                                       |                                                          |
| 17. Adaptor: Input: AC 100-240V 50/60Hz<br>Output: DC 12V 5.0A 60W<br>Model: UE60-120500SPA |                                                                                   |                                                                            |                                                     |                                                                       |                                                          |
| 18. Software: TeleEye III+ VX                                                               |                                                                                   |                                                                            |                                                     |                                                                       |                                                          |
| 19. TV receiver                                                                             |                                                                                   |                                                                            |                                                     |                                                                       |                                                          |
| 20. 1 x 3m shielded TV cable                                                                |                                                                                   |                                                                            |                                                     |                                                                       |                                                          |

Confirmed by:

*Derek Leung*  
Supervisor  
Intertek Testing Services Hong Kong Ltd.  
Agent for Signal Communications Ltd.



\_\_\_\_\_  
Signature

\_\_\_\_\_  
October 7, 2003

\_\_\_\_\_  
Date

**INTERTEK TESTING SERVICES**

---

**EXHIBIT 3**  
**EMISSION RESULTS**

## INTERTEK TESTING SERVICES

---

### 3.0 **Emission Results**

Data included were result from 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.

---

## INTERTEK TESTING SERVICES

---

### 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 $\mu$ V/m

RA = Receiver Amplitude (including preamplifier) in dB $\mu$ V

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB

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 $\mu$ V/m

RR = RA - AG in dB $\mu$ V

LF = CF + AF in dB

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.

$$RA = 52.0 \text{ dB}\mu\text{V/m}$$

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

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

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

$$FS = RR + LF$$

$$FS = 23 + 9 = 32 \text{ dB}\mu\text{V/m}$$

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

## **INTERTEK TESTING SERVICES**

---

### 3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission

364.470 MHz

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos.doc.

## INTERTEK TESTING SERVICES

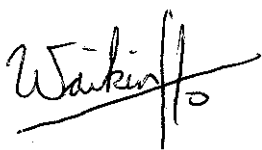
---

### 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 by 0.9 dB

#### **TEST PERSONNEL:**



---

*Tester Signature*

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

October 7, 2003  
*Date*



## INTERTEK TESTING SERVICES

---

Company: Signal Communications Ltd.  
Model: TeleEye/ VX-16008

Date of Test: September 13, 2003

Table 1

### Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	75.000	39.7	6.3	16	30.0	40.0	-10.0
H	150.000	34.4	11.9	16	30.3	43.5	-13.2
H	199.530	27.5	17.3	16	28.8	43.5	-14.7
H	224.999	32.9	11.8	16	28.7	46.0	-17.3
H	233.160	42.4	11.4	16	37.8	46.0	-8.2
H	300.000	46.3	14.3	16	44.6	46.0	-1.4
H	332.000	45.7	14.6	16	44.3	46.0	-1.7
H	364.470	46.2	14.9	16	45.1	46.0	-0.9
H	431.940	40.7	16.3	16	41.0	46.0	-5.0
H	465.003	32.8	16.8	16	33.6	46.0	-12.4
H	599.994	41.7	18.6	16	44.3	46.0	-1.7
H	638.110	29.0	19.2	16	32.2	46.0	-13.8

- 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. Interconnecting cabling or wiring was connected to one of each type of functional port of the EUT, and each cable or wire was terminated in a device typical of actual usage. Additional connecting cables or wires were added to the EUT to determine the effect these cables or wires had on emissions from the EUT. The number of additional cables or wires were limited to the condition where the addition of another cable or wire did not significantly affect the emission level, i.e. varies less than 2 dB, provided that the emission level remains compliant. These additional cables or wires need not be terminated.

Test Engineer: Ben W. K. Ho

## INTERTEK TESTING SERVICES

---

### 3.4 Conducted Emission Configuration Photograph

Worst Case Line-Conducted Configuration  
at  
0.53 MHz

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

## INTERTEK TESTING SERVICES

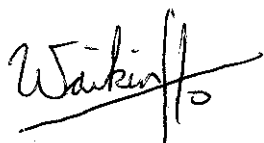
---

### 3.5 Conducted Emission Data

For electronic filing, the graph and data table of conducted emission is saved with filename: conducted.pdf.

Judgement: Passed by 5.7 dB

#### **TEST PERSONNEL:**



---

*Signature*

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

October 7, 2003  
*Date*

## INTERTEK TESTING SERVICES

---

Company: Signal Communications Ltd.  
Model: TeleEye/ VX-16008

Date of Test: September 13, 2003

Graph 1

### **Conducted Emissions Section 15.107 Requirements**

## INTERTEK TESTING SERVICES

---

Company: Signal Communications Ltd.  
Model: TeleEye/ VX-16008

Date of Test: September 13, 2003

Table 2

### **Conducted Emissions Section 15.107 Requirements**

**INTERTEK TESTING SERVICES**

---

**EXHIBIT 4**

**EQUIPMENT PHOTOGRAPHS**

## INTERTEK TESTING SERVICES

---

### 4.0 Equipment Photographs

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

**INTERTEK TESTING SERVICES**

---

**EXHIBIT 5**

**PRODUCT LABELLING**



## INTERTEK TESTING SERVICES

---

### 5.0 **Product Labelling**

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

**INTERTEK TESTING SERVICES**

---

**EXHIBIT 6**

**TECHNICAL SPECIFICATIONS**

## INTERTEK TESTING SERVICES

---

### 6.0 Technical Specifications

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

**INTERTEK TESTING SERVICES**

---

**EXHIBIT 7**  
**INSTRUCTION MANUAL**

## INTERTEK TESTING SERVICES

---

### 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.