



**Signal Communications Ltd.**

Application  
For  
Certification  
**(FCC ID: NAGSCNF-040113)**

TeleEye III+ Network Camera

0404514  
DL/ Sandy Lee  
July 6, 2004

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# INTERTEK TESTING SERVICES

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# INTERTEK TESTING SERVICES

## MEASUREMENT/TECHNICAL REPORT

Signal Communications Ltd. - MODEL: TeleEye NF610  
CAMERIO NF610

FCC ID: NAGSCNF-040113

July 6, 2004

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 [12-08-03 Edition] provision.

Report prepared by:

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## INTERTEK TESTING SERVICES

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### 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	circuit.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf

# **INTERTEK TESTING SERVICES**

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## **EXHIBIT 1**

### **GENERAL DESCRIPTION**

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### 1.0 **General Description**

#### 1.1 Product Description

The Equipment Under Test (EUT) is a Network Camera. The EUT is powered by AC 100-240V 50/60Hz input, DC 12V output adaptor. The EUT has a built-in web server to conducted with standard web browsers over the Internet or LAN. After connect link between the Internet/LAN and the EUT, user can access the remote video signal and alarm signal. Besides, the EUT also allow the user directly connect the colour TV to the EUT by the BNC cable.

The Model: CAMERIO NF610 is the same as the Model: TeleEye NF610 is in hardware aspect. The difference in model number serves as marketing strategy.

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.

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### 1.3 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. 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.



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

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### 2.0 **System Test Configuration**

#### 2.1 Justification

The system was configured for testing in typical fashions (as a customer would normally use it), and in the confines as outlined in ANSI C63.4 (2001). Two typical testing modes were selected, including TV mode and PC live with alarm on mode. At both of above testing modes, the switching adaptor is used to simulate the switch operation. The tested results of these two testing modes are representing.

The EUT is powered by AC 120V.

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.

#### 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 cable is 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.

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### 2.6 Support Equipment List and Description

Refer List:

- |   |   |
|---|---|
| 1. IBM Computer (Model: NetVista)<br>S/N: S99GMHN1<br>DOC Product   | 1. HP Monitor (Model: D2813)<br>S/N: TW63600424<br>FCCID: A3KM043 |
| 2. Philips LCD Monitor (Model: 150B4CG)<br>S/N: CX000409301774<br>DOC Product   | 2. IBM Keyboard (Model: KB-0225)<br>S/N: 1203496<br>DOC Product   |
| 3. Compaq Keyboard (Model: KB-0133)<br>S/N: B55940EGANR0CE<br>DOC Product   | 3. IBM Mouse (Model: MU29J)<br>S/N: 23-067135<br>DOC Product      |
| 4. Compaq Mouse (Model: M-S69)<br>FCCID: JNZ211443  | 4. TAMCO Television<br>(Model: TC-5110R)                          |
| 5. HP Printer (Model: C2642A)<br>S/N: SG67B131RY<br>FCCID: B94C2642X  |   |
| 6. Hayes Modem (Model: 6800CN)<br>FCCID: BFJ9D907-00038   |   |
| 7. HITACHI Television (Model: C15-F200Q)  |   |
| 8. Terminator: 720Ω resistive terminator  |   |
| 9. Switching Adaptor: DC-12V1A67  |   |
| 10. AC-DC adaptor (Model: UE60-120500SPA)<br>Sample No.: UE030321CN1-A<br>Input: 100-240VAC~50/60Hz<br>Output: 12VDC 5.0A |   |
| 11. Software: TeleEye III WRS3-AD Version 8.12  |   |
| 12. 2 x 1m telephone line with termination  |   |
| 13. 1 x serial cable with 1m long   |   |
| 14. 1 parallel cable with 1m long   |   |
| 15. 1 x 1.5m shielded BNC cable with video output connector   |   |
| 16. 4-Wire cable with length least than 1.5m  |   |
| 17. Ethernet cable with length least than 1.5m  |   |

Confirmed by:

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



\_\_\_\_\_  
Signature

\_\_\_\_\_  
July 6, 2004

\_\_\_\_\_  
Date

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

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### 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.

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### 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 below:

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

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.

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

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

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

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

$$FS = RR + LF$$

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

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

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### 3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission  
at  
64.138 MHz

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

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### 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 13.8 dB

#### **TEST PERSONNEL:**



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*Signature*

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

July 6, 2004

*Date*



## INTERTEK TESTING SERVICES

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Applicant: Signal Communications Ltd.  
Model: TeleEye NF610  
Mode: PC Live with Alarm on

Date of Test: June 9, 2004

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)
V	53.876	28.1	11.7	16	23.8	40.0	-16.2
V	56.724	29.6	11.0	16	24.6	40.0	-15.4
V	64.138	32.3	9.9	16	26.2	40.0	-13.8
V	113.974	30.6	12.6	16	27.2	43.5	-16.3
V	114.243	31.5	12.6	16	28.1	43.5	-15.4
V	114.871	31.3	12.6	16	27.9	43.5	-15.6

- 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 is used for the emission over 1000MHz.

Test Engineer: Ben W. K. Ho

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Applicant: Signal Communications Ltd.  
Model: TeleEye NF610  
Mode: TV

Date of Test: June 9, 2004

Table 2

### 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)
V	53.876	28.2	11.7	16	23.9	40.0	-16.1
V	56.724	29.6	11.0	16	24.6	40.0	-15.4
V	64.138	31.5	9.9	16	25.4	40.0	-14.6
V	113.974	30.2	12.6	16	26.8	43.5	-16.7
V	114.243	31.3	12.6	16	27.9	43.5	-15.6
V	114.871	31.2	12.6	16	27.8	43.5	-15.7

- 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 is used for the emission over 1000MHz.

Test Engineer: Ben W. K. Ho

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### 3.4 Conducted Emission Configuration Photograph

Worst Case Line-Conducted Configuration  
at  
0.595 MHz

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

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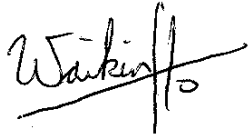
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### 3.5 Conducted Emission Data

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

Judgement: Passed by 7.1 dB

#### **TEST PERSONNEL:**



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*Signature*

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

July 6, 2004  
*Date*

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Applicant: Signal Communications Ltd.  
Model: TeleEye NF610

Date of Test: June 9, 2004

Graph 1

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

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Applicant: Signal Communications Ltd.  
Model: TeleEye NF610

Date of Test: June 9, 2004

Table 2

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

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**EXHIBIT 4**

**EQUIPMENT PHOTOGRAPHS**

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### 4.0 Equipment Photographs

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



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**EXHIBIT 5**  
**PRODUCT LABELLING**

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### 5.0 **Product Labelling**

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

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**EXHIBIT 6**

**TECHNICAL SPECIFICATIONS**

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### 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.

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

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### 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.