

Signal Communications Limited

Application
For
Certification
(FCC ID: NAGCCU-980806)

Camera Control Unit
October 17, 1998

WO# 9807785
Billy C. M. Chow/at
October 17, 1998

- 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.
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FCC ID: NAGCCU-980806

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MEASUREMENT/TECHNICAL REPORT

**Signal Communications Limited - MODEL: TeleEye Pro Camera Control Unit
CCU-1**

FCC ID: NAGCCU-980806

October 17, 1998

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

Equipment Type: Camera Control Unit (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 B for unintentional radiator - the new 47 CFR [10-1-96 Edition] provision.

Report prepared by:

C. K. Lam
Intertek Testing Services
2/F., Garment Center,
576, Castle Peak Road,
Hong Kong.
Phone: 852-2746-8218
Fax: 852-2785-5487

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List of attached file

Exhibit type	File Description	filename
Cover Letter	Letter of Agency	letter.pdf
Test Report	Test Report	report.doc
Operation Description	Technical Description	descrip.pdf
Test Setup Photo	Radiated Emission	radiated.jpg
Test Setup Photo	Conducted Emission	conduct1.jpg, conduct2.jpg
Test Report	Conducted Emission Test Result	conduct.pdf
External Photo	External Photo	ophoto1.jpg, ophoto2.jpg
Internal Photo	Internal Photo	iphoto1.jpg, iphoto2.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

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EXHIBIT 1

GENERAL DESCRIPTION

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1.0 **General Description**

1.1 Product Description

The Camera Control Unit provides remote and local control of the camera system. For the local control of the camera system, this unit consists of three main control switches (Lens, Pan/Tilt & Environment). For Lens Control switches, they provide the function Iris open/close, Zoom wide/tele and Focus near/far. For Pan/Tilt control switches, they provide the function up/down, left/right and auto. For the Environment Control switches, they provide the function washer and wiper. For the remote control of the camera system, it can be executed by running the software PTZ-control in Personal Computer. All the control function in the remote mode is the same as in the local mode.

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

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1.2 Related Submittal(s) Grants

This is a single Application for Certification. No simultaneous filings under Part 15.

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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 (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.

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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 a typical fashion (as a customer would normally use it), and in the confines as outlined in C63.4 (1992.)

The EUT was powered from 9V AC/DC Adaptor only.

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 on a 3½" disk, was inserted into Drive A and was installed into the harddisk.

Once the program was loaded, the camera can be controlled by using the mouse. For simplicity of testing, the unit was setted to move continuously.

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2.3 Special Accessories

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

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2.4 Equipment Modification

Any modifications installed previous to testing by Signal Communications Limited 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 & Description

- Refer List:
1. HD COMPUTER: Model: D3397A
S/N: SG54500246
FCCID: K4UVECTRAVL5
 2. HP MONITOR: Model: D2804A
S/N: KR53185780
FCCID: CSYSC-428VSP
 3. HP MOUSE: Model: M-S34
S/N: LCA53438640
FCCID: DZL210582
 4. HP KEYBOARD: Model: E03633QLUS
FCCID: CIGE03614
 5. 2x AC/AC adaptor 9V 1000mA
 6. Shield cable DB 9 female to DB9 male
 7. 6 pins plug for Pan/Tilt Control
 8. 4 pins plug for Environment Control
 9. 5 pins plug for Lens Outputs
 10. Philips TV 1 set
 11. JVC Video Camera
 12. 2x AC/AC Adaptor 20VAC 750mA, Model: TK-S241U
 13. Dummy Load for Environment Control

Confirmed by:

C. K. Lam
Assistant Manager
Intertek Testing Services
Agent for Signal Communications Limited



Signature

October 17, 1998 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 follows:

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

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

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 μ V/m

RR = RA - AG in dB μ V

LF = CF + AF in dB

Assume a receiver reading of 52.0 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, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

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

$$AF = 7.4 \text{ dB} \quad RR = 23.0 \text{ dB}\mu\text{V}$$

$$CF = 1.6 \text{ dB} \quad LF = 9.0 \text{ dB}$$

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

$$FS = RR + LF$$

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

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

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3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission

82.944 MHz

For electronic filing, test configuration photographs are saved with filename: radiated.jpg.

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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 17.7 dB

TEST PERSONNEL:



Tester Signature _____

Billy C. M. Chow, Electronics Engineer
Typed/Printed Name

October 17, 1998
Date

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Company: Signal Communications Limited
Model: TeleEye Pro Camera Control Unit CCU-1

Date of Test: September 18, 1998

Table 1

Radiated Emissions

Polarity	Frequency (M H z)	Reading (dB _μ V)	Antenna Factor (dB)	Pre- Amp Gain (dB)	Net at 3m (dB _μ V /m)	Lim it at 3m (dB _μ V /m)	M argin (dB)
V	36.864	27.5	10	16	21.5	40.0	-18.5
H	46.081	25.8	11	16	20.8	40.0	-19.2
H	55.296	25.7	11	16	20.7	40.0	-19.3
H	64.512	27.2	9	16	20.2	40.0	-19.8
H	73.728	31.7	6	16	21.7	40.0	-18.3
H	82.944	31.3	7	16	22.3	40.0	-17.7
H	119.808	26.1	13	16	23.1	43.5	-20.4
H	129.024	24.9	13	16	21.9	43.5	-21.6

- Notes:
1. Peak Detector Data
 2. No other harmonic or spurious were detected at a test distance of 3 meter.
 3. Negative value in the margin column shows emission below limit.

Test Engineer: Billy C. M. Chow

3.4 Line Conducted Configuration Photograph

Worst Case Line-Conducted Configuration

0.4600 MHz

For electronic filing, test configuration photographs are saved with filename:
conduct1.jpg & conduct2.jpg.

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3.5 Line Conducted Emission Configuration 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 23.6 dB

* All readings are peak unless stated otherwise.

TEST PERSONNEL:



Tester Signature

Billy C. M. Chow, Electronics Engineer
Typed/Printed Name

October 17, 1998
Date

INTERTEK TESTING SERVICES

Company: Signal Communications Limited
Model: TeleEye Pro Camera Control Unit CCU-1

Date of Test: Date of Test

Graph 1

Conducted Emissions Section 15.107 Requirements

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Company: Signal Communications Limited
Model: TeleEye Pro Camera Control Unit CCU-1

Date of Test: September 18, 1998

Table 2

Conducted Emissions
Section 15.107 Requirements

EXHIBIT 4
EQUIPMENT PHOTOGRAPHS

4.0 **Equipment Photographs**

For electronic filing, photographs of the tested EUT are saved with filename: ophoto1.jpg, ophoto2.jpg for external photo, and iphoto1.jpg, iphoto2.jpg for internal photo.

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EXHIBIT 5

PRODUCT LABELLING

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5.0 **Product Labelling**

For electronic filing, the FCC ID label and 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, block diagram and schematics of the camera control unit are saved with filename: circuit.pdf and block.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.