STL Electronics Ltd.

Application
For
Certification
(FCC ID: MRISI983)

Transmitter with Computer Peripheral

WO# 0213097
TL/Sandy
October 8, 2002

Intertek Testing Services Hong Kong Ltd.
2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.
Tel: (852) 2173 8888 Fax: (852) 2785 5487

LIST OF EXHIBITS

MEASUREMENT/TECHNICAL REPORT

STL Electronics Ltd. - MODEL: Sharper Image Design SI983
FCC ID: MRISI983

October 8, 2002

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

Equipment Type: Low Power Transmitter with Computer Peripheral (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 [12-18-01 Edition] provision.

Report prepared by:

Tommy Leung
Intertek Testing Services
2/F., Garment Center,
576, Castle Peak Road,
HONG KONG.
Phone: 852-2173-8538
Fax: 852-2371-0521

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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
Test Report	Bandwidth Plot	bw.pdf
External Photo	External Photo	external photos.doc
Internal Photo	Internal Photo	internal photos.pdf
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 transceiver operating at 926 MHz. The EUT is powered from the USB port of the computer. It is designed to control a robot through 926MHz RF link. When the user input the command, data and voice from the computer connected to the EUT, EUT received the information from PC and transmit a RF signal with the command to the remote Robot by FSK modulation. The remote Robot receive the information, it will be action according to the received signal.

This remote control also has a 2.4GHz receiver to receive the audio & video signal from the remote robot. The robot will be certified under another FCC ID.

Antenna Type : Internal, Integral

For electronic filing, the brief circuit description is saved with filename: descri1.pdf, descri2.pdf .

1.2 Related Submittal(s) Grants

This is two related application for certification of a transmitter portion and computer peripheral. The receiver portion associated with the EUT is subjected to verification procedure.

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.

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 USB port of the computer.

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 frequency range from 463MHz to 9.3GHz was searched for spurious emissions from the device for transmitter mode. Only those emissions reported were detected. All other emissions were at least 20 dB below the applicable limits.

The frequency range from 30MHz to 1GHz was searched for spurious emissions from the device for PC mode. Only those emissions reported were detected. All other emissions were at least 20 dB below the applicable limits.

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, will see the button control screen. It can be control the robot by clicking the buttons on the screen.

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 STL Electronics 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.

2.6 Support Equipment List and Description

Refer List:

1. HP Computer Model: D3397A
   S/N: SG54500246 FCCID: K4UVECTRAVL5
2. Hitachi Monitor Model: CM643ET DOC Product
3. HP Mouse Model: M-S34
   S/N: LCA53438640 FCCID: DZL210582
4. HP Printer Model: C2642A
   S/N: SG67B131RY FCCID: B94C2642X
5. CD-ROM Model: CDU311
   S/N: 5049187 FCCID: AK8CDU31110
6. MODEM Model: 6800CN
   FCCID: BFJ9D907-00038
7. HP Keyboard Model: E03633QLUS
   FCCID: CIGEO3614
8. Capture Card Model: B7878
9. 2 x 1m telephone line with termination
10. 1 x serial cable with 1m long
11. 1 x parallel cable with 1m long
12. USB cable with 1m long
13. S-Video / Audio cable with 1m long
14. Software: STL Robot

Confirmed by:

Tommy Leung
Assistant Supervisor
Intertek Testing Services Hong Kong Ltd.
Agent for STL Electronics Ltd.

Signature

October 8, 2002 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 dB µV/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
48.013 MHz

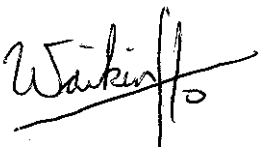
For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos.doc

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 1.0 dB

TEST PERSONNEL:



Signature

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

October 8, 2002
Date

Company: STL Electronics Ltd. Date of Test: September 16, 2002
Model: Sharper Image Design SI983
Mode: TX

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)
H	926.248	79.1	22.8	16	85.9	94	-8.1
H	463.122	32.6	16.8	16	33.4	46	-12.6
H	1389.368	53.6	24.2	34	43.8	54	-10.2
H	1852.996	46.9	26.5	34	39.4	54	-14.6
H	2315.615	40.7	29.1	34	35.8	54	-18.2
H	2778.751	41.5	29.1	34	36.6	54	-17.4
H	3241.876	46.2	31.4	34	43.6	54	-10.4

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

Company: STL Electronics Ltd. Date of Test: September 16, 2002
Model: Sharper Image Design SI983
Mode: PC

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	42.011	29.5	11.7	16	25.2	40.0	-14.8
V	48.013	43.1	11.9	16	39.0	40.0	-1.0
V	54.011	40.3	11.7	16	36.0	40.0	-4.0
V	60.013	43.8	9.9	16	37.7	40.0	-2.3
V	66.011	39.2	8.5	16	31.7	40.0	-8.3
V	72.010	43.0	7.1	16	34.1	40.0	-5.9
V	78.010	37.3	6.3	16	27.6	40.0	-12.4
V	84.010	43.9	6.7	16	34.6	40.0	-5.4
V	108.010	33.8	12.2	16	30.0	43.5	-13.5
V	114.010	40.4	12.6	16	37.0	43.5	-6.5
V	120.012	35.2	12.8	16	32.0	43.5	-11.5
V	126.012	32.4	12.6	16	29.0	43.5	-14.5
V	156.128	32.6	12.4	16	29.0	43.5	-14.5
V	210.012	29.9	11.8	16	25.7	43.5	-17.8

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 is used for the emission over 1000MHz.

Test Engineer: Ben W. K. Ho

3.4 Conducted Emission Configuration Photograph

Worst Case Line-Conducted Configuration
at
0.875 MHz

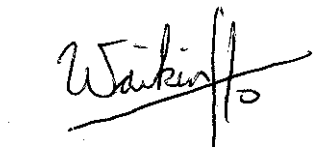
For electronic filing, the worst case line-conducted configuration photograph are saved with filename: conducted photos.doc

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 16.3 dB

TEST PERSONNEL:



Signature

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

October 8, 2002
Date

EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

4.0 Equipment Photographs

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

EXHIBIT 5

PRODUCT LABELLING

5.0 **Product Labelling**

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

EXHIBIT 6

TECHNICAL SPECIFICATIONS

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.

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 bandedge plot.

8.1 Bandedge Plot

For electronic filing, the plot shows the fundamental emission when modulated is saved with filename: bw.pdf. From the plot, the field strength of any emissions appearing between the band edges and up to 10 kHz above and below the band edges are attenuated at least 50dB below the level of the unmodulated carrier. It fulfil the requirement of 15.249(c).