TEST REPORT

Report No.: HK12080263-2

Citiwell International Inc.

Application
For
Certification
(Original Grant)
(FCC ID: VPC-89367)

Transceiver

Prepared and Checked by:

Signed On File
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Date: Aug 31, 2012

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GENERAL INFORMATION

Citiwell International Inc.
BRAND NAME: EyeSpy Xplorer, MODEL: 89365
FCC ID: VPC-89367

Grantee:	Citiwell International Inc.
Grantee Address:	55 Administration Road, Unit #30, Concord, Canada.
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Manufacturer:	N/A
Manufacturer Address:	N/A
Brand Name:	EyeSpy Xplorer
Model:	89365
Type of EUT:	Transceiver
Description of EUT:	Eyespy Xplorer Display
Serial Number:	N/A
FCC ID:	VPC-89367
Date of Sample Submitted:	Aug 06, 2012
Date of Test:	Aug 06, 2012 to Aug 10, 2012
Report No.:	HK12080263-2
Report Date:	Aug 31, 2012
Environmental Conditions:	Temperature: +10 to 40°C Humidity: 10 to 90%

SUMMARY OF TEST RESULT

Citiwell International Inc.
BRAND NAME: EyeSpy Xplorer, MODEL: 89365
FCC ID: VPC-89367

TEST SPECIFICATION	REFERENCE	RESULTS
Maximum Peak Output Power	15.247(b), (c) / RSS-210 A8.4	N/A
Hopping Channel Carrier Frequencies Separation	15.247(e) / RSS-210 A8.1	N/A
20dB Bandwidth of the Hopping Channel	15.247(a) / RSS-210 A8.1	N/A
Number of Hopping Frequencies	15.247(e) / RSS-210 A8.1	N/A
Average Time of Occupancy of Hopping Frequency	15.247(e) / RSS-210 A8.1	N/A
Antenna Conducted Spurious Emissions	15.247(d) / RSS-210 A8.5	N/A
Radiated Spurious Emissions	15.247(d) / RSS-210 A8.5	N/A
RF Exposure Compliance	15.247(i) / RSS-Gen 5.6	N/A
Transmitter Power Line Conducted Emissions	15.207 / RSS-Gen 7.2.4	Pass
Transmitter Field Strength	15.227 / RSS-310 3.8	N/A
Transmitter Field Strength	15.229 / RSS-210 A2.7	N/A
Transmitter Field Strength, Bandwidth and Timing Requirement	15.231(a) / RSS-210 A1.1.1	N/A
Transmitter Field Strength, Bandwidth and Timing Requirement	15.231(e) / RSS-210 A1.1.5	N/A
Transmitter Field Strength and Bandwidth Requirement	15.239 / RSS-210 A2.8	N/A
Transmitter Field Strength and Bandwidth Requirement	15.249 / RSS-210 A2.9	Pass
Transmitter Field Strength and Bandwidth Requirement	15.235 / RSS-310 3.9	N/A
Receiver / Digital Device Radiated Emissions	15.109 / RSS-210 2.5	N/A
Digital Device Conducted Emissions	15.107 / ICES-003	N/A

Note: 1. The EUT uses a permanently attached antenna which, in accordance to section 15.203, is considered sufficient to comply with the pervisions of this section.
2. Pursuant to FCC part 15 Section 15.215(c), the 20 dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over excepted variations in temperature and supply voltage were considered.

Table of Contents

1.0 General Description

1.1 Product Description

The equipment under test (EUT) is a 2.4GHz transceiver (Display unit). The EUT is powered by once 3.7VDC rechargeable Li-Polymer battery. The EUT has an ON/OFF switch and five buttons. When the EUT is switched on, the EUT will link up with once RC Tank unit. The EUT can receive video/ sound signals from the RC Tank unit through 2.4GHz transceiver and it can store the video/ sound data onto the SD memory card. The USB port is used for charging only.

Antenna Type : Internal, Integral for Display Unit

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

1.2 Related Submittal(s) Grants

The Certification procedure of transceiver (with FCC ID: VPC-89366) for this transceiver is being processed as the same time of this application.

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2009). All radiated measurements were performed in an Open Area Test Site. Preliminary scans were performed in the Open Area Test Site 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.

1.4 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 placed on file with the FCC.

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 (2009).

The device was powered by 3.7VDC rechargeable Li-Polymer battery.

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 unit was operated standalone / with computer system and placed in the center / rear of the turntable. Since the unit can transmit during charging mode, both standalone and charging with computer system are tested, and only worst case was presented in this test report.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was mounted to a plastic stand if necessary and placed on the wooden turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

2.2 EUT Exercising Software

There was no special software to exercise the device. Once the unit is powered up, it transmits the RF signal continuously.

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 Citiwell International Inc. will be incorporated in each production model sold/leased in the United States.

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

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

Lenovo Notebook (Model: SL500; S/N: ML-DXMM3) (Provided by Intertek)
Smart-Drive External 1394 HDD (Provided by Intertek)
1 x USB cable with length of 0.7m long (Provided by Intertek)
1 x 1394 cable with length of 0.8m long (Provided by Intertek)
1 x USB charging cable with length of 1.14m with ferrite core
(Provided by Applicant)

3.0 Emission Results

Data is included of the 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 Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any), Average Factor (optional) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF - AG - 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
AV = Average Factor 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 dBµV/m
RR = RA - AG - AV in dBµV
LF = CF + AF in dB

Assume a receiver reading of 52.0 dBµV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB are added. The amplifier gain of 29 dB and average factor of 5 dB are subtracted, giving a field strength of 27 dBµV/m. This value in dBµV/m was converted to its corresponding level in µV/m.

RA = 52.0 dBµV/m
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
AV = 5.0 dB
FS = RR + LF
FS = 18 + 9 = 27 dBµV/m

RR = 18.0 dBµV
LF = 9.0 dB

Level in µV/m = Common Antilogarithm [(27 dBµV/m)/20] = 22.4 µV/m

3.2 Radiated Emission Configuration Photograph

The worst case in radiated emission was found at 14664 MHz

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

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.

Judgment: Passed by 3.8 dB

3.4 Conducted Emission Configuration Photograph

The worst case in line-conducted emission was found at 15.36 MHz

For electronic filing, the worst case line-conducted configuration photographs are saved with filename: conducted photo.pdf.

3.5 Conducted Emission Data

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

Judgment: Pass by 10.0 dB

Company: Citiwell International Inc. Date of Test: 10 Aug 2012
Model: 89365
Worst-Case Operating Mode: Transmitting – Display unit

Table 1

Radiated Emissions
Pursuant to FCC Part 15 Section 249 Requirement

Lowest Channel

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Average Factor (dB)	Calculated at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	2406.000	87.1	33	29.4	83.5	0	83.5	94.0	-10.5
H	4812.000	44.6	33	34.9	46.5	0	46.5	54.0	-7.5
V	7218.000	43.0	33	37.9	47.9	0	47.9	54.0	-6.1
V	9624.000	41.1	33	40.4	48.5	0	48.5	54.0	-5.5
V	12030.000	41.9	33	40.5	49.4	0	49.4	54.0	-4.6
V	14436.000	43.1	33	40.0	50.1	0	50.1	54.0	-3.9

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	2406.000	87.1	33	29.4	83.5	114.0	-30.5
H	4812.000	44.6	33	34.9	46.5	74.0	-27.5
V	7218.000	43.0	33	37.9	47.9	74.0	-26.1
V	9624.000	41.1	33	40.4	48.5	74.0	-25.5
V	12030.000	41.9	33	40.5	49.4	74.0	-24.6
V	14436.000	43.1	33	40.0	50.1	74.0	-23.9

NOTES: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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 sign in the column shows value below limit.

4. Horn antenna is used for the emission over 1000MHz.

Company: Citiwell International Inc. Date of Test: 10 Aug 2012
Model: 89365
Worst-Case Operating Mode: Transmitting – Display unit

Table 2

Radiated Emissions
Pursuant to FCC Part 15 Section 249 Requirement

Middle Channel

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Average Factor (dB)	Calculated at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	2444.000	87.0	33	29.4	83.4	0	83.4	94.0	-10.6
H	4888.000	44.9	33	34.9	46.8	0	46.8	54.0	-7.2
V	7332.000	42.6	33	37.9	47.5	0	47.5	54.0	-6.5
V	9776.000	41.2	33	40.4	48.6	0	48.6	54.0	-5.4
V	12220.000	42.0	33	40.5	49.5	0	49.5	54.0	-4.5
V	14664.000	44.8	33	38.4	50.2	0	50.2	54.0	-3.8

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	2444.000	87.0	33	29.4	83.4	114.0	-30.6
H	4888.000	44.9	33	34.9	46.8	74.0	-27.2
V	7332.000	42.6	33	37.9	47.5	74.0	-26.5
V	9776.000	41.2	33	40.4	48.6	74.0	-25.4
V	12220.000	42.0	33	40.5	49.5	74.0	-24.5
V	14664.000	44.8	33	38.4	50.2	74.0	-23.8

NOTES: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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 sign in the column shows value below limit.

4. Horn antenna is used for the emission over 1000MHz.

Company: Citiwell International Inc. Date of Test: 10 Aug 2012
Model: 89365
Worst-Case Operating Mode: Transmitting – Display unit

Table 3

Radiated Emissions
Pursuant to FCC Part 15 Section 249 Requirement

Highest Channel

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Average Factor (dB)	Calculated at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	2478.000	87.2	33	29.4	83.6	0	83.6	94.0	-10.4
H	4956.000	44.7	33	34.9	46.6	0	46.6	54.0	-7.4
V	7434.000	42.5	33	37.9	47.4	0	47.4	54.0	-6.6
V	9912.000	41.3	33	40.4	48.7	0	48.7	54.0	-5.3
V	12390.000	42.3	33	40.5	49.8	0	49.8	54.0	-4.2
V	14868.000	44.6	33	38.4	50.0	0	50.0	54.0	-4.0

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	2478.000	87.2	33	29.4	83.6	114.0	-30.4
H	4956.000	44.7	33	34.9	46.6	74.0	-27.4
V	7434.000	42.5	33	37.9	47.4	74.0	-26.6
V	9912.000	41.3	33	40.4	48.7	74.0	-25.3
V	12390.000	42.3	33	40.5	49.8	74.0	-24.2
V	14868.000	44.6	33	38.4	50.0	74.0	-24.0

NOTES: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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 sign in the column shows value below limit.

4. Horn antenna is used for the emission over 1000MHz.

4.0 Equipment Photographs

For electronic filing, the photographs are saved with filename: external photos.pdf and internal photos.pdf.

5.0 Product Labelling

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

6.0 Technical Specifications

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

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.

8.0 Miscellaneous Information

The miscellaneous information includes details of the test procedure and measured bandwidth.

8.1 Measured Bandwidth

From the following plots, they show that the fundamental emissions are confined in the specified band (2400MHz to 2483.5MHz). In case of the fundamental emissions are within two standard bandwidths from the bandedge, the delta measurement technique is used for determining bandedge compliance. Standard bandwidth is the bandwidth specified by ANSI C63.4 (2009) for frequency being measured.

Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50dB below the level of the fundamental or to the general radiated emissions limits in Section 15.209, whichever is the lesser attenuation, which meet the requirement of part 15.249(d).

8.2 Discussion Pulse Desensitivity

Pulse desensitivity is not applicable for this device. Since the transmitter transmits the RF signal continuously.

8.3 Calculation of Average Factor

The average factor is not applicable for this device as the transmitted signal is a continuously signal.

8.4 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services Hong Kong Ltd. in the measurements of transmitter operating under the Part 15, Subpart C rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 (2009).

The transmitting equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjusted through all three orthogonal axis to obtain maximum emission levels. The antenna height and polarization are also varied during the testing to search for maximum signal levels. The height of the antenna is varied from one to four meters.

Detector function for radiated emissions is in peak mode. Average readings, when required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings. A detailed description for the calculation of the average factor can be found in Exhibit 8.3.

The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower. For line conducted emissions, the range scanned is 150 KHz to 30 MHz.

8.4 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully charged battery is used.

Conducted measurements were made as described in ANSI C63.4 (2009).

The IF bandwidth used for measurement of radiated signal strength was 100 kHz or greater when frequency is below 1000 MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. A discussion of whether pulse desensitivity is applicable to this unit is included in this report (See Exhibit 8.2). Above 1000 MHz, a resolution bandwidth of 1 MHz is used.

Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the forbidden bands and above 1 GHz, signals are acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling, unless otherwise reported. Measurements taken at a closer distance are so marked.

9.0 Confidentiality Request

For electronic filing, a preliminary copy of the confidentiality request is saved with filename: request.pdf.

10.0 **Equipment List**

1) Radiated Emissions Test

Equipment	EMI Test Receiver	Log Periodic Antenna	Biconical Antenna
Registration No.	EW-2500	EW-0446	EW-2512
Manufacturer	ROHDESCHWARZ	EMCO	EMCO
Model No.	ESCI	3146	3104C
Calibration Date	Feb 24, 2011	Oct 31, 2011	Nov 15, 2011
Calibration Due Date	Feb 24, 2013	Apr 30, 2013	May 15, 2013

Equipment	14m Double Shield RF Cable (20MHz - 6GHz)	14m Double Shield RF Cable (20MHz to 6GHz)	Spectrum Analyzer
Registration No.	EW-2528	EW-2074	EW-2188
Manufacturer	RADIALL	RADIALL	AGILENTTECH
Model No.	nm / br5d / sma 14m	N(m)-RG142-BNC(m) L= 14M	E4407B
Calibration Date	Nov 29, 2011	Jan 13, 2012	Sep 26, 2011
Calibration Due Date	Dec 14, 2012	Jan 14, 2013	Sep 26, 2012

Equipment	Double Ridged Guide Antenna (1GHz - 18GHz)
Registration No.	EW-1133
Manufacturer	EMCO
Model No.	3115
Calibration Date	Mar 02, 2011
Calibration Due Date	Sep 02, 2012

2) Bandedge Measurement

Equipment	EMI Test Receiver
Registration No.	EW-2500
Manufacturer	ROHDESCHWARZ
Model No.	ESCI
Calibration Date	Feb 24, 2011
Calibration Due Date	Feb 24, 2013