Global EMC Inc. Labs

MPE Evaluation

As per

Industry Canada Safety Code 6

&

FCC Part 15 Subpart C: 2010 15.247i

FCC Part 1, Section 1.1310 Table 1 (B)

Wireless Video Transmitter

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Testing produced for

minewise Technology Ltd. "Technology that pays it's way"

See Appendix A for full customer & EUT details.

Industry Canada
LAB REGISTRATION #6844A-1

FCC REGISTRATION #612361

ACCREDITED TESTING LABORATORY CERTIFICATE #2565.01

Table of Contents

Report Scope

This report addresses the EMC certification testing and test results of the DVLINK (Wireless video monitoring system), herein referred to as EUT (Equipment Under Test) performed at Global EMC Labs.

The EUT was evaluated for compliance against the following standards:

IC Safety Code 6 & FCC Part 1, Section 1.1310 Table 1 (B)

Test procedures, results, justifications, and engineering considerations, if any, follow later in this report.

The results contained in this report relate only to the item(s) tested.

This report does not imply product endorsement by A2LA or any other accreditation agency, any government, or Global EMC Inc.

Opinions/interpretations expressed in this report, if any, are outside the scope of Global EMC Inc accreditation. Any opinions expressed do not necessarily reflect the opinions of Global EMC Inc, unless otherwise stated.

Summary

The results contained in this report relate only to the item(s) tested.

EUT FCC Certification #, FCC ID:	Z6X-DVLINK
EUT Industry Canada Certification #, IC:	9978A-DVLINK
EUT Passed all tests performed.	Yes (see test results summary)
Tests conducted by	Ashwani Malhotra

Client	**Minewise Technology Ltd.**
Product	**Z6X-DVLINK / 9978A-DVLINK**
Standard(s)	**RSS 210 Issue 8:2010 / FCC Part 15 Subpart C 15:2010**

Test Results Summary

Standard/Method	Description	Class/Limit	Result
FCC 15.247(i) IC Safety code 6	Maximum Permissible Exposure	> 20 cm separation.	Pass See justification and calculations
Overall Result			**PASS**

All tests were performed by Ashwani Malhotra

If the product as tested or otherwise complies with the specification, the EUT is deemed to comply with the requirement and is deemed a 'PASS' grade. If not 'FAIL' grade will be issued. Note that 'PASS' / 'FAIL' grade is independent of any measurement uncertainties. A 'PASS' / 'FAIL' grade within measurement uncertainty is marked with a '*'.

Justifications, Descriptions, or Deviations

The following justifications for tests not performed or deviations from the above listed specifications apply:

For maximum permissible exposure, this device operates at less than 27.85 dbm at 902 – 928 MHz and is operated at greater than 20 cm from the body. No testing is required, however worst case calculated exposure compliance follows later in this report.

Applicable Standards, Specifications and Methods

ANSI C63.4:2003	- Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
ANSI C63.10:2009	- American national standard for testing unlicensed wireless devices
CFR 47 FCC 15	- Code of Federal Regulations – Radio Frequency Devices
CISPR 22:1997	- Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement
ICES-003:2004	- Digital Apparatus - Spectrum Management and Telecommunications Policy Interference-Causing Equipment Standard
ISO 17025:2005	- General Requirements for the competence of testing and calibration laboratories
RSS 210:2010	- Issue 7: Spectrum Management and Telecommunications Policy. Radio Standards Specification Low Power License-Exempt Radio communication Devices

Sample calculation(s)

Margin = limit – (received signal + antenna factor + cable loss – pre-amp gain)
Margin = 50.5dBuV/m – (50dBuV + 10dB + 2.5dB – 20dB)
Margin = 8.5 dB

Document Revision Status

Revision 1 – Nov 2, 2011 – Initial report release.
Revision 2 – Dec 2, 2011 – Updated photos section. This report replaces the Revision 1 issued on Nov 2, 2011 in its entirety.

Definitions and Acronyms

The following definitions and acronyms are applicable in this report.
See also ANSI C63.14.

AE – Auxiallary Equipment.

BW – Bandwidth. Unless otherwise stated, this is refers to the 6 dB bandwidth.

EMC – Electro-Magnetic Compatibility

EMI – Electro-Magnetic Immunity

EUT – Equipment Under Test

ITE – Information Technology Equipment with a primary function(s) of entry, storage, display, retrieval, transmission, processing, switching, or control, of data.

LISN – Line impedance stabilization network

NCR – No Calibration Required

RF – Radio Frequency

Testing Facility

Testing for EMC on the EUT was carried out at Global EMC labs in Toronto, Ontario, Canada. The testing lab consists of a 3m semi-anechoic chamber calibrated to be able to allow measurements on an EUT with a maximum width or length of up to 2m and height up to 3m. The chamber is equipped with a turn table that is capable of testing devices up to 3300lb in weight. This facility is capable of testing products that are rated for 120 Vac and 240Vac single phase, or 208 Vac 3 phase input. DC capability is also available. The chamber is equipped with an antenna mast that controls polarization and height from the control room adjoining the shielded chamber. Radiated emissions measurements are performed using a Bilog, and Horn antenna where applicable. Conducted emissions, unless otherwise stated, are performed using a LISN.

Calibrations and Accreditations

The measurement site used is registered with Federal Communications Commission (FCC) and Industry Canada (IC). This site is calibrated for Normalized Site Attenuation (NSA) using test procedures outlined in ANSI C63.4 “Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz”. The semi-anechoic chamber is lined with ferrite tiles and absorption cones to minimize any undesired reflections. All measuring equipment is calibrated on an annual or bi-annual basis as listed for each respective test.

Testing Environmental Conditions and Dates

Following were the environmental conditions in the facility during time of testing –

Date	Test	Init.	Temperature (ºC)	Humidity (%)	Pressure (kPa)
Oct 21 – 25, 2011	All	AM	22.5 – 24.2 ºC	39.1%-43.2%	100.0 -100.7 kPa

Detailed Test Results Section

Maximum Permissible Exposure

Purpose

The purpose of this test is to ensure that the RF energy intentionally transmitted, in terms of power density emitted from the EUT at a stated operating distance does not exceed the limits listed below as defined in the applicable test standard, as calculated based upon readings obtained during testing. This helps protect human exposure to excessive RF fields.

Limit(s) and Method

The limits, as defined in FCC 15.247(i) and FCC 1.1310 Table 1 (B) limits for general public exposure was applied. The limit for the frequency range of 1.5 GHz to 100 GHz was applied. This is a limit of 1.0 mW/ cm^2. The distance used for calculations was 20cm.

Results

The EUT passed the requirements. The worst case calculated power density was 0.062 mW/cm^2, this is significantly under the 1.0 mW/cm^2 requirement.

Calculations

Method 1 (conducted power)

$P_d = (P_t*G) / (4*pi*R^2)$
Where Pt = 16.39 dbm or 43.55 mW as per Peak power conducted output
Where G = 8.55 dBi, or numerically 7.16
Where R = 20 cm

$P_d = (43.55 \times 7.16) / (4 \times pi \times 20cm^2)$
$P_d = 311$ mW / 5026.54 cm^2
$P_d = 0.062$ mW/cm^2

Appendix A – EUT Summary

General EUT Description

EUT Details	
Manufacturer	Minewise Technology Ltd.
EUT Model number	DVLink
Equipment Category	Wireless video monitoring system
Basic EUT Functionality	EUT is installed in a commercial environment and video is monitored on the receiver.
Input Voltage and Frequency	24Vdc, 1A (to be supplied by end user). No AC/DC adaptor is sold with the unit.
Connectors available on EUT	None for RF, 1 for power 1 for video camera.
Peripherals Required for Test	None.
Release type	Final
Intentional Radiator Frequency	920 MHz (902 MHz – 928 MHz band per 15.247)

Note the EUT is considered to have been received the date of the commencement of the first test, unless otherwise stated. For a close-up picture of the EUT, see 'Appendix B – EUT & Test Setup Photographs'.

Appendix B – EUT and Test Setup Photographs

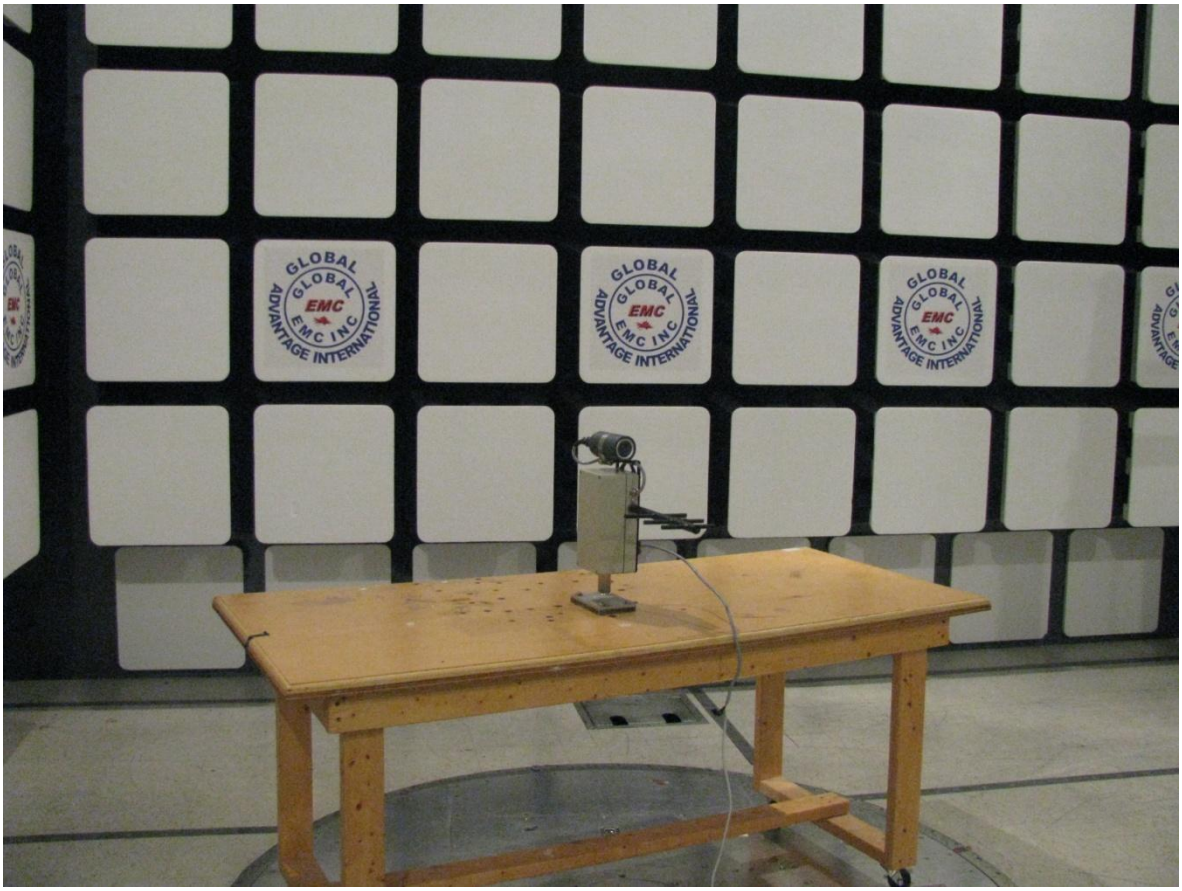

Figure 1 – Radiated emission setup

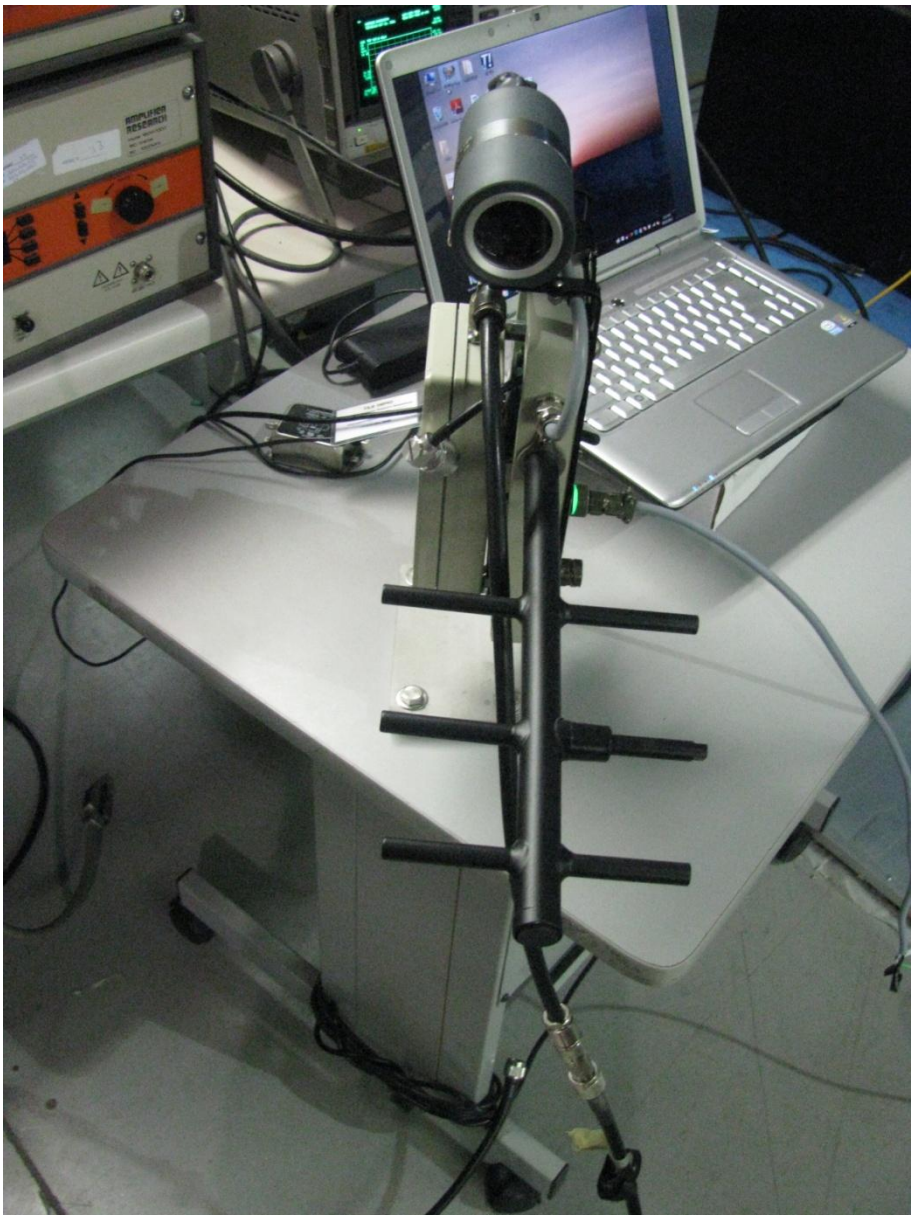

Figure 2 – Conducted power output setup

Note: These photos are for information purposes only. Also refer to PDF files that are separate from this test report.