

Test Certificate

A sample of the following product received on May 11, 2011 and tested on May 11, 12, 13, 15 and 16, 2011 complied with the requirements of,

- Subpart B of Part 15 of FCC Rules for Class A digital devices
- Industry Canada Interference Causing Equipment Standard ICES 003, dated February 2004 (Class A)
- VCCI Regulations For Voluntary Control Measures of radio interference generated by Information Technology Equipment, dated April 2010 (Class A).
- EN 55022:2006 including amendment A1:2007, "Information technology equipment Radio disturbance characteristics – Limits and methods of measurement" (Class A)
- CISPR 22:2008 "Information technology equipment Radio disturbance characteristics Limits and methods of measurement" (Class A)
- EN 55024:1998 including amendments A1:2001 and A2:2003 "Information technology equipment Immunity characteristics, Limits and method of measurement."
- CISPR 24:1997 including amendments A1:2001 and A2:2002 "Information technology equipment – Immunity characteristics, Limits and method of measurement."

given the measurement uncertainties detailed in Elliott report R83303.

Ubiquiti Networks Model AirCam

Wayne Fisher Engineering Team Lead Ubiquiti Networks

Printed Name



Testing Cert #2016.01

Elliott Laboratories is accredited by the A2LA, certificate number 2016.01, to perform the test(s) listed in this certificate. This certificate shall not be reproduced, except in its entirety, without the written approval of Elliott Laboratories

> Elliott Laboratories www.elliottlabs.com

41039 Boyce Road Fremont, CA. 94538 510-578-3500 Phone 510-440-9525 Fax



EMC Test Report

Class A Information Technology Equipment Class A Digital Device

FCC Part 15; Industry Canada ICES 003 VCCI Regulations 2010 EN 55022:2006 + A1:2007; CISPR 22:2008 EN 55024:1998 +A1:2001 +A2:2003 CISPR 24:1997 + A1:2001 + A2:2002 Product Name: Security Camera Model: AirCam

> COMPANY: Ubiquiti Networks 91 E. Tasman Drive San Jose, CA 95134

TEST SITE(S): Elliott Laboratories 41039 Boyce Road Fremont, CA. 94538-2435

TEST LABORATORY ID #: US0027 REPORT DATE: May 26, 2011 FINAL TEST DATES: May 11, 12, 13, 15 and 16, 2011

AUTHORIZED SIGNATORY:

Wayne Fisher Engineering Team Lead Elliott Laboratories, An NTS Company



Elliott Laboratories is accredited by the A2LA, certificate number 2016.01, to perform the test(s) listed in this report, except where noted otherwise. This report shall not be reproduced, except in its entirety, without the written approval of Elliott Laboratories

REVISION HISTORY

Rev#	Date	Comments	Modified By
-	05-26-2011	First release	

TABLE OF CONTENTS

REVISION HISTORY	3
TABLE OF CONTENTS	4
SCOPE	6
OBJECTIVE	6
STATEMENT OF COMPLIANCE	7
DEVIATIONS FROM THE STANDARDS	
INFORMATION TECHNOLOGY EQUIPMENT EMISSIONS TEST RESULTS	8
CONDUCTED EMISSIONS (MAINS PORT)	8
CONDUCTED EMISSIONS (TELECOMMUNICATIONS PORTS)	
RADIATED EMISSIONS	
INFORMATION TECHNOLOGY EQUIPMENT IMMUNITY TEST RESULTS	
MEASUREMENT UNCERTAINTIES	
EQUIPMENT UNDER TEST (EUT) DETAILS	
GENERAL	
OTHER EUT DETAILS	
ENCLOSURE	
MODIFICATIONS SUPPORT EQUIPMENT	
EUT INTERFACE PORTS	
EUT OPERATION	
EMISSIONS TESTING	
RADIATED AND CONDUCTED EMISSIONS	13
RADIATED EMISSIONS CONSIDERATIONS	13
CONDUCTED EMISSIONS CONSIDERATIONS	
EMISSIONS MEASUREMENT INSTRUMENTATION	
RECEIVER SYSTEM	
INSTRUMENT CONTROL COMPUTER	
LINE IMPEDANCE STABILIZATION NETWORK (LISN)	14
IMPEDANCE STABILIZATION NETWORK (ISN)	
FILTERS/ATTENUATORS	
ANTENNAS	
ANTENNA MAST AND EQUIPMENT TURNTABLE	
INSTRUMENT CALIBRATION	
EMISSIONS TEST PROCEDURES	
EUT AND CABLE PLACEMENT	
CONDUCTED EMISSIONS (MAINS) CONDUCTED EMISSIONS (TELECOMMUNICATION PORTS)	10
RADIATED EMISSIONS (SEMI-ANECHOIC AND/OR OATS TEST ENVIRONMENT)	
Preliminary Scan	
Final Maximization	
RADIATED EMISSIONS (FREE-SPACE TEST ENVIRONMENT)	18
Preliminary Scan	
Final Maximization	18
SAMPLE CALCULATIONS	
SAMPLE CALCULATIONS - CONDUCTED EMISSIONS	
SAMPLE CALCULATIONS - RADIATED EMISSIONS	
IMMUNITY TESTING	
GENERAL INFORMATION	20

IMMUNITY MEASUREMENT INSTRUMENTATION	20
ELECTROSTATIC DISCHARGE TEST SYSTEM	
ELECTROMAGNETIC FIELD TEST SYSTEM	20
ELECTRICAL FAST TRANSIENT/BURST TEST SYSTEM	20
SURGE TEST SYSTEM	20
CONDUCTED INTERFERENCE TEST SYSTEM	20
VOLTAGE VARIATION TEST SYSTEM	
INSTRUMENT CALIBRATION	21
IMMUNITY TEST PROCEDURES	21
EQUIPMENT PLACEMENT	21
APPLICATION OF ELECTROSTATIC DISCHARGES	22
APPLICATION OF ELECTROMAGNETIC FIELD	
APPLICATION OF ELECTRICAL FAST TRANSIENTS	22
APPLICATION OF SURGES	
APPLICATION OF CONDUCTED INTERFERENCE	22
APPLICATION OF VOLTAGE VARIATIONS	
APPENDIX A TEST EQUIPMENT CALIBRATION DATA	
APPENDIX B TEST DATA	25
APPENDIX C PRODUCT LABELING REQUIREMENTS	66
APPENDIX D USER MANUAL REGULATORY STATEMENTS	67
APPENDIX E ADDITIONAL INFORMATION FOR VCCI	68
APPENDIX F ADDITIONAL INFORMATION FOR AUSTRALIA AND NEW ZEALAND	69
APPENDIX G BASIC AND REFERENCE STANDARDS	70
SUBPART B OF PART 15 OF FCC RULES FOR DIGITAL DEVICES.	70
VCCI REGULATIONS FOR INFORMATION TECHNOLOGY EQUIPMENT, DATED APRIL 2009	70
EN 55022:2006 INCLUDING AMENDMENT A1:2007	
EN 55024:1998 INCLUDING AMENDMENTS A1:2001 AND A2:2003	72
CISPR 24:1997 INCLUDING AMENDMENTS A1:2001 AND A2:2002	73
END OF REPORT	74

SCOPE

Governments and standards organizations around the world have published requirements regarding the electromagnetic compatibility (EMC) of electronic equipment. Testing has been performed on the Ubiquiti Networks model AirCam, pursuant to the following standards.

Standard	Title	Standard Date
FCC Part 15, Subpart B	Radio Frequency Devices	October 2009 as Amended
ICES-003, Issue 4	Digital apparatus	2004
VCCI V-3	VCCI Regulations For Voluntary Control Measures of radio interference generated by Information Technology Equipment	April 2010
CISPR 22	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement	2008
EN 55022	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement	2006 + A1:2007
EN 55024	Information technology equipment – Immunity characteristics, Limits and method of measurement	1998 +A1:2001 +A2:2003
CISPR 24	Information technology equipment – Immunity characteristics, Limits and method of measurement	1997 +A1:2001 +A2:2002

All measurements and evaluations have been in accordance with these specifications, test procedures, and measurement guidelines as outlined in Elliott Laboratories test procedures, and in accordance with the standards referenced therein (refer to Appendix G).

OBJECTIVE

The objective of Ubiquiti Networks is to:

- declare conformity with the essential requirements of the EMC directive 2004/108/EC using the harmonized standard(s) referenced in this report;
- declare conformity with the electromagnetic compatibility (EMC) regulatory arrangement of the Australian Communications and Media Authority (ACMA);
- verify compliance with FCC requirements for digital devices and Canada's requirements for digital devices;
- verify compliance to the Japanese VCCI requirements for Information Technology Equipment;

STATEMENT OF COMPLIANCE

The tested sample of Ubiquiti Networks model AirCam complied with the requirements of:

Standard/Regulation	Equipment Type/Class	Standard Date
Subpart B of Part 15 of the FCC Rules (CFR title 47)	Class A	2009 as amended
ICES-003, Issue 4	Class A	2004
VCCI Regulations V-3	Class A	2010
EN 55022	Class A	2006 + A1:2007
CISPR 22 Edition 6	Class A	2008
EN55024	-	1998 +A1:2001 +A2:2003
CISPR 24	-	1997 +A1:2001 +A2:2002

This report is suitable for demonstrating compliance with the EMC requirements in Australia and New Zealand. Refer to Appendix F for more details.

The test results recorded herein are based on a single type test of the Ubiquiti Networks model AirCam and therefore apply only to the tested sample(s). The sample was selected and prepared by Jennifer Sanchez of Ubiquiti Networks.

Maintenance of compliance is the responsibility of the company. Any modification of the product that could result in increased emissions or susceptibility should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different enclosure, different line filter or power supply, harnessing and/or interface cable changes, etc.).

DEVIATIONS FROM THE STANDARDS

No deviations were made from the published requirements listed in the scope of this report.

INFORMATION TECHNOLOGY EQUIPMENT EMISSIONS TEST RESULTS

The following emissions tests were performed on the Ubiquiti Networks model AirCam. The measurements were extracted from the data recorded during testing and represent the highest amplitude emissions relative to the specification limits. The complete test data is provided in the appendices of this report.

CONDUCTED EMISSIONS (MAINS PORT)

Frequency Range Operating Voltage	Standard/Section	Requirement	Measurement	Margin	Status
0.15-30 MHz, 110V, 50Hz	FCC § 15.107(b) VCCI Table 4.1 CISPR 22 Table 1 EN 55022 Table 1 (Class A)	0.15-0.5 MHz: 79 dBµV QP 66 dBµV Av 0.5-30 MHz: 73 dBµV QP 60 dBµV Av	37.0dBµV @ 19.709MHz	-23.0dB	Complied

CONDUCTED EMISSIONS (TELECOMMUNICATIONS PORTS)

The EUT does not have any telecommunication ports.

RADIATED EMISSIONS

Frequency Range	Standard/Section	Requirement	Measurement	Margin	Status	
30-1000 MHz	EN 55022 Table 5 CISPR 22 Table 5 FCC §15.109(g) VCCI Table 4.5 Class A	30 – 230, 40 dBµV/m 230 – 1000, 47 dBµV/m (10m limit)	37.0dBµV/m @189.01 MHz	-3.0dB	Complied	
1000-2000 MHz Note 1	FCC §15.109(b) Class A	49.5 dBµV/m Av 69.5 dBµV/m Pk (10m limit)	34.4dBµV/m @1600.0 MHz	-15.1dB	Complied	
1000-6000 MHz Note 1	EN 55022 Table 7 CISPR 22 Table 7 VCCI Table 4.7 (Free-Space Measurement) Class A	1 – 3GHz 56 dBμV/m Av 76 dBμV/m Pk 3 – 6GHz 60 dBμV/m Av 80 dBμV/m Pk (3m limit)	43.0dBµV/m @1600.0 MHz	-13.0dB	Complied	
Note 1 As the highest frequency generated in the EUT was declared to be between 108 MHz and 500 MHz, the upper frequency for radiated measurements was 2 GHz.						
Note 2 As the highest frequency of the internal sources of the EUT was declared to be above 1 GHz, the upper frequency for radiated measurements was 5 times the highest frequency or 6 GHz, whichever is less. For this device the highest frequency measured was 6 GHz.						

INFORMATION TECHNOLOGY EQUIPMENT IMMUNITY TEST RESULTS

The following tests were performed on the Ubiquiti Networks model AirCam. The results are based upon performance criteria defined by the company and as detailed in this test report.

Test	Basic Standard	Level Tested	Criterion Required	Criterion Met	Status
ESD	EN 61000-4-2 IEC 61000-4-2	4 kV CD 8 kV AD	В	A	Complied
RF EM Field AM 80% AM 1kHz	EN 61000-4-3 IEC 61000-4-3	80-1000 MHz 3 V/m	А	А	Complied
EFT, AC Power Port	EN 61000-4-4	1 kV	В	A	Complied
EFT, DC Power Port	IEC 61000-4-4		N/A – N	lote 1	
EFT, Signal Ports	IEC 01000-4-4		N/A – N	ote 2	-
Surge, AC Power Port	EN 61000-4-5	1 kV DM, 2 kV CM 1.2/50 μs	В	A	Complied
Surge, DC Power Port	IEC 61000-4-5				
Surge, Signal Ports			N/A – N	lote 2	
RF, conducted continuous, Signal Ports		N/A – Note 2			
RF, conducted continuous, AC Power Port	EN 61000-4-6 IEC 61000-4-6	0.15-80 MHz, xx Vrms 80% AM 1kHz	А	A	Complied
RF, conducted continuous, DC Power Port			N/A – N	lote 1	
Power Frequency Magnetic Field	EN 61000-4-8 IEC 61000-4-8	N/A – Note 3			
Voltage Dips and Interrupts (50/60Hz)	EN 61000-4-11 IEC 61000-4-11	>95%, 0.5 cycles 30%, 30 cycles >95%, 300 cycles	B C C	A A C	Complied Note 4
 Note 1 The EUT does not have any DC power ports Note 2 Ubiquiti Networks stated that the EUT's interface ports are not intended to connect to longer than 3m. Note 3 Ubiquiti Networks stated that the EUT does not contain any components susceptible to 50Hz magnetic fields. Note 4 The 30%/30-period and 95%/300-period dips at an AC supply frequency of 60Hz result in a dip and interruption of the same time duration as the 30%/25-period and 95%-250-period dips at an AC voltage of 230V/50Hz specified in EN 55024. Although the use durations of 30 and 300 cycles at a 60Hz frequency for this test is a technical deviation from the EN 55024 standard it produces the same time duration dip and, therefore, it is considered an equivalent test. 					

MEASUREMENT UNCERTAINTIES

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below were calculated using the approach described in CISPR 16-4-2:2003 using a coverage factor of k=2, which gives a level of confidence of approximately 95%. The levels were found to be below levels of *U*cispr and therefore no adjustment of the data for measurement uncertainty is required.

Measurement Type	Measurement Unit	Frequency Range	Expanded Uncertainty
Conducted Emissions	dBuV or dBuA	150kHz – 30MHz	± 2.2 dB
Radiated Electric Field	dBuV/m	30 – 1000 MHz	± 3.6 dB
Radiated Electric Field	dBuv/III	1000 – 40,000 MHz	± 6.0 dB
Radiated Immunity	V/m	80 – 2700 MHz	- 26.3%, + 29.97%
ESD	KV	N/A	± 8.6%
Fast Transients	Voltage	N/A	± 5.98 %
	Timing	N/A	± 8.60 %
Surge	Voltage	N/A	± 4.92 %
RF Common Mode (CDN method)	Vrms	N/A	-12.64 %, +13.33 %
RF Common Mode (BCI method)	Vrms	N/A	-13.45 %, +15.32 %
Voltage Dips	Voltage	N/A	± 2.32 %
Voltage Dips	Timing	N/A	± 0.08mS

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Ubiquiti Networks model AirCam is a Security camera that is designed to stream live video. Since the EUT would be placed on a table top during operation, the EUT was treated as table-top equipment during testing to simulate the end-user environment. The electrical rating of the AirCam is 24 Vdc, 1 Amp. The electrical rating of the POE Adapter is 100-240V, 50-60Hz, 0.5A.

The sample was received on May 11, 2011 and tested on May 11, 12, 13, 15 and 16, 2011. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
Ubiquiti	AirCam	Security Camera	4	N/A
Networks				
Ubiquiti	UBI-POE-24-1	POE Adapter	1010-0001765	N/A
Networks				

OTHER EUT DETAILS

The following EUT details should be noted: EUT is a POE device.

ENCLOSURE

The EUT enclosure is primarily constructed of plastic. It measures approximately 6 cm wide by 16 cm deep by 6 cm high.

MODIFICATIONS

No modifications were made to the EUT during the time the product was at Elliott.

SUPPORT EQUIPMENT

No local support equipment was used during emissions testing.

The following equipment was used as remote support equipment for testing:

Company	Model	Description	Serial Number	FCC ID
Dell	Vostro	PC Laptop	32709455821	-

EUT INTERFACE PORTS

Por	rt	Cable(s)			
From	То	Description	Shielded/Unshielded	Length (m)	
POE(EUT)	POE Injector	Cat. 5	Unshielded	0.5	
AC Power(POE Injector)	AC Mains	3 Wire	Unshielded	1	
LAN(POE Injector)	PC Laptop	Cat. 5	Unshielded	2	

The I/O cabling configuration during emissions testing was as follows:

EUT OPERATION

During emissions testing the EUT was streaming live video.

During immunity testing the EUT was steaming live video. Normal operation is indicated by the EUT continuously streaming live video displayed on the PC Laptop and shall be monitored by the PC Laptop.

The performance criteria applied during immunity testing were:

Criterion A: During and after testing the EUT shall continue to show the video stream on the PC Laptop.

Criterion B: During application of the transient test, degradation of performance including loss of signal is allowed provided that the EUT self-recovers to normal operation after testing without any operator intervention.

Criterion C: Loss of function is allowed provided that normal operation can be restored by operator intervention.

EMISSIONS TESTING

RADIATED AND CONDUCTED EMISSIONS

Final test measurements were taken at the Elliott Laboratories Anechoic Chambers listed below. The test sites contain separate areas for radiated and conducted emissions testing. The sites conform to the requirements of ANSI C63.4: 2003 American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz and CISPR 16-1-4:2007 - Specification for radio disturbance and immunity measuring apparatus and methods Part 1-4: Radio disturbance and immunity measuring apparatus Ancillary equipment Radiated disturbances. They are registered with the VCCI and are on file with the FCC and Industry Canada.

Site	Reg	sistration Num	bers	Location
Site	VCCI	FCC	Canada	Location
Chamber 3	R-1683 G-58 C-1795 T-1639	769238	IC 2845B-3	41039 Boyce Road Fremont, CA 94538-2435

RADIATED EMISSIONS CONSIDERATIONS

Radiated emissions measurements were made with the EUT powered from a supply voltage within the expected tolerances of each nominal operating voltage/frequency for each geographical regions covered by the scope of the standards referenced in this report.

CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions testing is performed in conformance with ANSI C63.4 and CISPR 22.

Mains port measurements are made with the EUT connected to the public power network through nominal, standardized RF impedance, which is provided by a line impedance stabilization network, known as a LISN. A LISN is inserted in series with each current-carrying conductor in the EUT power cord.

Telecommunication port measurements are made with the unshielded network cable connected through an impedance stabilization network (ISN) appropriate to the type of cable employed. Where no suitable ISN is available measurements are made using a capacitive voltage probe (CVP) and a current probe. If shielded cables are specified for the port under test the measurement is made of the noise voltage on the shield of the cable via a 100 ohm resistor.

EMISSIONS MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1-1:2006 is used for emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 7 GHz. These receivers allow both ease of measurement and high accuracy to be achieved. The receivers have Peak, Average, and CISPR (Quasi-peak) detectors built into their design so no external adapters are necessary. The receiver automatically sets the required bandwidth for the CISPR detector used during measurements.

For measurements above the frequency range of the receivers, a spectrum analyzer is utilized because it provides visibility of the entire spectrum along with the precision and versatility required to support engineering analysis. Average measurements above 1000 MHz are performed on the spectrum analyzer using the linear-average method with a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz.

INSTRUMENT CONTROL COMPUTER

Measurements are converted to the field strength at an antenna or voltage developed at the LISN (or ISN) measurement port, which is then compared directly with the appropriate specification limit under software control of the test receivers and spectrum analyzers. This provides added accuracy since all site correction factors, such as cable loss and antenna factors are added automatically.

LINE IMPEDANCE STABILIZATION NETWORK (LISN)

Line conducted emission measurements utilize a fifty micro-Henry Line Impedance Stabilization Network as the monitoring point. The LISN used also contains a 250-uH CISPR adapter. This network provides for calibrated radio-frequency noise measurements by the design of the internal low-pass and high-pass filters on the EUT and measurement ports, respectively.

IMPEDANCE STABILIZATION NETWORK (ISN)

Telecommunication port conducted emission measurements utilize an Impedance Stabilization Network with a 150-ohm termination impedance and specific longitudinal conversion loss as the voltage monitoring point. This network provides for calibrated radio-frequency noise measurements by the design of the internal circuitry on the EUT and measurement ports, respectively. For current measurements, a current probe with a uniform frequency response and less than 1-ohm insertion impedance is used.

FILTERS/ATTENUATORS

External filters and precision attenuators are often connected between the receiving antenna or LISN and the receiver. This eliminates saturation effects and non-linear operation due to high-amplitude transient events.

ANTENNAS

A bilog antenna or combination of biconical and log periodic antennas are used to cover the range from 30 MHz to 1000 MHz. Narrowband tuned dipole antennas may be used over the entire 30 to 1000 MHz frequency range for precision measurements of field strength. Above 1000 MHz, horn antennas are used. The antenna calibration factors are included in site factors that are programmed into the test receivers or data collection software.

ANTENNA MAST AND EQUIPMENT TURNTABLE

The antennas used to measure the radiated electric field strength are mounted on a nonconductive antenna mast equipped with a motor drive to vary the antenna height.

ANSI C63.4, CISPR 22 and KN22 specify that the test height above ground for tablemounted devices shall be 80 centimeters. Floor-mounted equipment shall be placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material up to 12-mm thick if the device is normally used on a non-conductive floor. During radiated measurements, the EUT is positioned on a motorized turntable in conformance with this requirement.

INSTRUMENT CALIBRATION

All test equipment is regularly checked to ensure that performance is maintained in accordance with the company's specifications. An appendix of this report contains the list of test equipment used and calibration information.

EMISSIONS TEST PROCEDURES

EUT AND CABLE PLACEMENT

The standards require that interconnecting cables be connected to the available ports of the unit and that the placement of the unit and the attached cables simulate the worst case orientation that can be expected from a typical installation, so far as practicable. To this end, the position of the unit and associated cabling is varied within the guidelines of ANSI C63.4, CISPR 22 and KN22, and the worst-case orientation is used for final measurements.

CONDUCTED EMISSIONS (MAINS)

Conducted emissions are measured at the plug end of the power cord supplied with the EUT. Excess power cord length is wrapped in a bundle between 30 and 40 centimeters in length near the center of the cord. Preliminary measurements are made to determine the highest-amplitude emission relative to the specification limit for all the modes of operation. Placement of system components and varying of cable positions are performed in each mode. A final peak-mode scan is then performed in the position and mode for which the highest emission was noted on all current carrying conductors of the power cord. Emissions that have peak values close to the specification limit are also measured in the quasi-peak and average detection modes to determine compliance except when the amplitude of the emission when measured with the quasi-peak detector is more than 10 dB below the specification limit for average measurements. In this case only quasi-peak measurements are performed.

CONDUCTED EMISSIONS (TELECOMMUNICATION PORTS)

Conducted emissions voltages are measured at a point 80 cm from the EUT. If conducted emission currents are measured, the current probe is located 70 cm from the EUT. Preliminary measurements are made to determine the highest-amplitude emission relative to the specification limit for all the modes of operation. Placement of system components and varying of cable positions are performed in each mode. A final peak-mode scan is then performed in the position and mode for which the highest emission was noted. Emissions that have peak values close to the specification limit are also measured in the quasi-peak and average detection modes to determine compliance except when the amplitude of the emission when measured with the quasi-peak detector is more than 10 dB below the specification limit for average measurements. In this case only quasi-peak measurements are performed.

RADIATED EMISSIONS (SEMI-ANECHOIC and/or OATS TEST ENVIRONMENT)

Radiated emissions measurements in a semi-anechoic environment are performed in two phases (preliminary scan and final maximization). Final maximization may be performed on an OATS.

Preliminary Scan

A preliminary scan of emissions is conducted in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed from 30 MHz up to the frequency required by the regulations specified on page 1. One or more of these are performed with the antenna polarized vertically and one or more of these are performed with the antenna polarized horizontally. During the preliminary scans, the EUT is rotated through 360°, the antenna height is varied and cable positions are varied to determine the highest emission relative to the limit. A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions if required. Other methods used during the preliminary scan for EUT emissions involve scanning with near-field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

Final Maximization

During final maximization, the highest-amplitude emissions identified in the spectral search are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. The azimuth that results in the highest emission is then maintained while varying the antenna height from one to four meters. The result is the identification of the highest amplitude for each of the highest peaks. Each recorded level is corrected in the receiver using appropriate factors for cables, connectors, antennas, and preamplifier gain. Emissions that have values close to the specification limit may also be measured with a tuned dipole antenna to determine compliance.

For measurements above 1GHz every effort is made to ensure the EUT remains within the cone of radiation of the measurement antenna (i.e. 3dB beam-width of the antenna). This may include rotating the product and/or angling the measurement antenna.

When Testing above 18 GHz, the receive antenna is located at 1 meter from the EUT and the antenna height is restricted to a maximum of 2.5m. Maximum emissions are found within this restricted range because emission levels decrease over distance and as the antenna is raised above 2.5m, the distance from the EUT increases. As a result of the increased measurement distance, at antenna heights above 2.5m, lower emission levels are measured as compared to emissions levels measured at antenna heights at 2.5m and below.

RADIATED EMISSIONS (FREE-SPACE TEST ENVIRONMENT)

Anechoic material is placed on the floor between the EUT and the measurement antenna and behind the EUT to ensure that the test site complies with the requirements of CISPR 16 for measurements of radiated field strength above 1GHz in a free-space environment.

The measurements are made in two phases (preliminary scan and final maximization).

Preliminary Scan

A preliminary scan of emissions is conducted in which all significant EUT frequencies are identified with the system in one or more given modes of operation. Scans are performed from 1 GHz up to the frequency required with the antenna polarized vertically and repeated with the antenna polarized horizontally. During the preliminary scans, the EUT is rotated through 360° with the measurement antenna set at a height equal to the center height of the EUT. If necessary additional scans are performed with the antenna height adjusted up and down to ensure the measurement antenna illuminates the entire height of the EUT. A peak detector is used for the preliminary scan and results compared to the average limit.

Final Maximization

During final maximization, the highest-amplitude emissions identified in the preliminary scan are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. For small EUT fitting within the beam-width of the measurement antenna, the azimuth resulting in the highest emission is the maintained, and the measurement antenna is positioned at a fixed height for final measurements.

For large EUT not fitting within the beam-width of the measurement antenna, the azimuth that results in the highest emission is then maintained while varying the antenna height from one meter up to the height of the top of the EUT (when necessary). A second rotation of the EUT at the new height may be performed to ensure the highest field strength is obtained.

Peak and average measurements are made of the signal with the level maximized for EUT azimuth and, where necessary, antenna height. Each recorded level is corrected by test software using appropriate factors for cables, connectors, antennas, and preamplifier gain.

SAMPLE CALCULATIONS

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

Receiver readings are compared directly to the conducted emissions specification limit (decibel form). The calculation is as follows:

$$R_r - S = M$$

where:

 R_r = Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED EMISSIONS

Receiver readings are compared directly to the specification limit (decibel form). The receiver internally corrects for cable loss, preamplifier gain, and antenna factor. The calculations are in the reverse direction of the actual signal flow, thus cable loss is added and the amplifier gain is subtracted. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements. A distance factor, when used for electric field measurements, is calculated by using the following formula:

$$F_d = 20*LOG_{10} (D_m/D_s)$$

where:

 F_d = Distance Factor in dB D_m = Measurement Distance in meters D_s = Specification Distance in meters

Measurement Distance is the distance at which the measurements were taken and Specification Distance is the distance at which the specification limits are based. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

The margin of a given emission peak relative to the limit is calculated as follows:

$$R_c = R_r + F_d$$

and

 $M = R_c - L_s$

where:

 R_r = Receiver Reading in dBuV/m

 F_d = Distance Factor in dB

 R_c = Corrected Reading in dBuV/m

 L_S = Specification Limit in dBuV/m

M = Margin in dB Relative to Spec

IMMUNITY TESTING

GENERAL INFORMATION

Final tests were performed at the Elliott Laboratories Test Sites located at 41039 Boyce Road, Fremont, CA 94538-2435. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent CENELEC and IEC standards.

All immunity tests were performed with the host system operating from an AC source voltage within the operating ranges specified for the product, meeting the requirement detailed in EN 55024 / CISPR 24 section 6.1 and, where appropriate, KN24.

IMMUNITY MEASUREMENT INSTRUMENTATION

ELECTROSTATIC DISCHARGE TEST SYSTEM

An ESD generator is used for all testing. It is capable of applying electrostatic discharges in both contact discharge mode to 8 kV and air discharge mode to 16.5 kV in both positive and negative polarities in accordance with the IEC/EN/KN 61000-4-2 basic EMC publication.

ELECTROMAGNETIC FIELD TEST SYSTEM

A signal generator and power amplifiers are used to provide a signal at the appropriate power and frequency to an antenna to obtain the required electromagnetic field at the position of the EUT in accordance with the IEC/EN/KN 61000-4-3 basic EMC publication.

ELECTRICAL FAST TRANSIENT/BURST TEST SYSTEM

An electrical fast transient/burst generator is used for all testing. It is capable of applying the required fast transient immunity test levels to the mains at any phase angle with respect to the mains voltage waveform and to attached cables via a capacitive coupling clamp in accordance with the IEC/EN/KN 61000-4-4 basic EMC publication.

SURGE TEST SYSTEM

A surge generator is used for all testing. It is capable of providing the required surge immunity test levels to the mains port at any phase angle with respect to the mains line voltage waveform or to the signal port in accordance with the IEC/EN/KN 61000-4-5 basic EMC publication.

For I/O line surges a surge coupling network is used to couple the output from the generator to the I/O lines. The generator can generate the CWG $(1.2/50\mu S)$ and CCITT $(70/100\mu S)$ waveforms as required by the IEC/EN/KN 61000-4-5 basic standard.

CONDUCTED INTERFERENCE TEST SYSTEM

A signal generator and power amplifier are used to provide a signal at the appropriate power and frequency through a coupling network to obtain the required electromagnetic signal on the power cord and attached cables of the EUT in accordance with the IEC/EN/KN 61000-4-6 basic immunity standard.

VOLTAGE VARIATION TEST SYSTEM

A power-line disturbance simulator and variable transformer are used for all testing. These two units are, when used together, capable of simulating mains voltage variations between 0 and 100% for periods up to 100 seconds in duration in accordance with the IEC/EN/KN 61000-4-11 basic EMC standard.

INSTRUMENT CALIBRATION

All test equipment is regularly checked to ensure that performance is maintained in accordance with the company's specifications. An appendix of this report contains the list of test equipment used and calibration information.

IMMUNITY TEST PROCEDURES

EQUIPMENT PLACEMENT

The basic standards for evaluating immunity to electrostatic discharges specify that a tabletop EUT shall be placed on a non-conducting table 80 centimeters above a ground reference plane and that floor-mounted equipment shall be placed on an insulating support approximately 10 centimeters above a ground plane. During the tests, the EUT is positioned over a ground reference plane in conformance with this requirement. For tabletop equipment, a 1.6 by 0.8 meter metal sheet is placed on the table and connected to the ground plane via a metal strap with two 470-kOhm resistors in series. The EUT and attached cables are isolated from this metal sheet by 0.5-millimeter thick insulating material.

The basic standards for evaluating immunity to radiated electric fields specify that a tabletop EUT be placed on a non-conducting table 80 centimeters high and that floor-mounted equipment may be mounted on non-conductive supports 0.05 to 0.15m high. During the IEC 61000-4-3 tests, the EUT is positioned in a shielded anechoic test chamber to reduce reflections from the internal surfaces of the chamber.

The basic standards for evaluating immunity electrically fast transient bursts specify that the EUT and attached cables be placed on an insulating support 10 centimeters above a ground reference plane. During the tests, the EUT was positioned on a table with a ground reference plane or on the floor in conformance with this requirement.

The basic standards for evaluating immunity to surge transients do not specify positioning of the EUT. The EUT was therefore placed on a table or on the floor.

The basic standards for evaluating immunity to conducted rf disturbances specify that the EUT be placed on an insulating support 10 centimeters above a ground reference plane and that the attached cables be maintained between 30 and 50 millimeters above this plane where possible. During the tests, the EUT was positioned on a table with a ground reference plane or on the floor in conformance with this requirement.

The basic standards for evaluating immunity to voltage dips and interruptions do not specify positioning of the EUT. The EUT was therefore placed on a table or on the floor.

APPLICATION OF ELECTROSTATIC DISCHARGES

The points of application of the test discharges directly to the EUT are determined after consideration of the parts of the EUT that are accessible to the operator during normal operation. Contact and air discharges are applied to the EUT, contact discharges to conducting surfaces and air-gap discharges to insulating surfaces. Contact discharges are also applied to the coupling planes to simulate nearby ESD events.

APPLICATION OF ELECTROMAGNETIC FIELD

The electromagnetic field is established at the front edge of the EUT.

The frequency range is swept through the frequency range of the test using a power level necessary to obtain the required field strength at the EUT. The field is amplitude modulated using a 1-kHz sine wave to a depth of 80% for the swept frequency test in accordance with the applicable basic standard(s).

The test is repeated with each of the four sides of the EUT facing the field-generating antenna. For small, portable products the test is also performed with the top and bottom sides of the EUT facing the antenna.

APPLICATION OF ELECTRICAL FAST TRANSIENTS

The application of the test voltage to the EUT is made to the cable connected to the power port under test via discrete capacitors and through a capacitive coupling clamp in the case of cables connected to signal ports.

APPLICATION OF SURGES

The application of the surge to the EUT's AC or DC power port is made to the power cable attached to the unit via the coupling/decoupling network within the surge generator.

For coupling to unshielded signal lines a coupling network is used to give the correct coupling path (resistor and capacitor/spark gap) to the line under test. Coupling to shielded signal lines is made directly to the shield at the far end of the cable, with the cable length set to the shorter of 20m or the maximum specified cable length. Whenever possible a decoupling network is placed in series with the I/O line under test and the support equipment to ensure that any susceptibility observed is due to the EUT and not the support equipment. Decoupling networks are not available for high-speed signal lines.

APPLICATION OF CONDUCTED INTERFERENCE

The application of the test voltage to the EUT is made through either a coupling decoupling network (CDN), by direct injection, or through an inductive coupling clamp as appropriate to the cable being tested. The frequency range is swept from 0.15 to 80 MHz using a power level necessary to obtain the specified interference voltage.

APPLICATION OF VOLTAGE VARIATIONS

The applications of the variations in mains voltage to the EUT are made through the AC power cable attached to the unit.

Appendix A Test Equipment Calibration Data

Manufacturer Conducted Emissions	Description - AC Power Ports, 12-May-11	Model	Asset #	<u>Cal Due</u>
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1401	4/21/2012
Rohde & Schwarz Fischer Custom	EMI Test Receiver, 20 Hz-7 GHz LISN, 25A, 150kHz to 30MHz,	ESIB7 FCC-LISN-50-25-2-	1630 2001	4/13/2012 9/16/2011
Comm	25 Amp,	09	2001	0/10/2011
	30 - 6,000 MHz, 12-May-11			
Hewlett Packard	Microwave Preamplifier, 1- 26.5GHz	8449B	785	5/26/2011
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/21/2012
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	5/14/2011
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1549	6/4/2011
Rohde & Schwarz Com-Power Corp.	EMI Test Receiver, 20 Hz-7 GHz Preamplifier, 30-1000 MHz	ESIB7 PAM-103	1630 2380	4/13/2012 4/13/2012
	•		2000	H/13/2012
Radiated Immunity, 80 EMCO) - 1,000 MHz, 13-May-11	3143	190	N/A
Werlatone	Antenna, Biconilog Transmitting Directional Coupler, 80-1000 MHz, 40dB, 200W	C3910	180 917	N/A N/A
Rohde & Schwarz	Power Sensor, 1uW-100mW, DC-18 GHz, 50ohms	NRV-Z51	1069	7/19/2011
Rohde & Schwarz	Power Meter, Dual Channel	NRVD	1539	9/13/2011
Anritsu	Signal Generator, 10MHz- 20GHz	68347C	1785	11/22/2011
Amplifier Research	Amplifier, 250W, 80-1000 MHz	250A1000	1809	N/A
	(IEC/EN 61000-4-6), 15-May-11			
Rohde & Schwarz	Signal Generator, 9 kHz-1.04 GHz	SMY01	168	11/11/2011
Fischer Custom Comm.	Decoupling Network,.15 - 230 MHz	F-203I-DCN	605	N/A
Instruments For Industry	Power Supply Control Module	P.S. 5000 / 28 / 40	639	N/A
Rohde & Schwarz	Power Meter, Single Channel	NRVS	1290	11/29/2011
Fischer Custom Comm.	M3 Network, 150 kHz-230 MHz	FCC-801-M3-25A	1581	5/19/2011
Bird Electronics Corp.	6 dB, 100 W Attenuator	100-A-FFN-06	1596	6/28/2011
Fischer Custom Comm.	150-50 ohm adapter, 1/2, 0.15 to 80 MHz	FCC-801-150-50	1600	5/11/2012
Fischer Custom Comm.	150-50 ohm adapter, 1/2, 0.15 to 80 MHz	FCC-801-150-50	1601	5/11/2012
Rohde & Schwarz	Pwr Sensor 300 uW - 30 Watts (+ 25dB pad)	NRV-Z54	1788	7/19/2011
Hevi-Duty	Transformer 208V-220V 60Hz only "SV KN Kit 12"	HS5F3AS	2209	N/A
EFT, 15-May-11				
Fischer Custom Comm.	Decoupling Network,.15 - 230 MHz	F-203I-DCN	605	N/A
EM Test AG Hevi-Duty	EFT Generator Transformer 208V-220V 60Hz	UCS 500 M6 HS5F3AS	1585 2209	N/A N/A
i levi-Duty	only "SV KN Kit 12"		2209	N/A

<u>Manufacturer</u> VDI, 15-May-11	Description	<u>Model</u>	Asset #	Cal Due
Fischer Custom Comm.	Decoupling Network,.15 - 230 MHz	F-203I-DCN	605	N/A
EM Test AG Hevi-Duty	VDI Generator Transformer 208V-220V 60Hz only "SV KN Kit 12"	UCS 500 M6 HS5F3AS	1585 2209	N/A N/A
ESD, 15-May-11				
Schaffner	ESD Gun	NSG-435	1491	2/7/2012
Elliott Laboratories	ESD, Vertical Plane, 19-3/4 x 19- 3/4	ESD, VP, 19-3/4 x 19-3/4	1664	N/A
Hevi-Duty	Transformer 208V-220V 60Hz only "SV KN Kit 12"	HS5F3AS	2209	N/A
Surge, 16-May-11 EMC Partner	Surge	Transient 2000 IN6	2203	8/3/2011
	Suige	Transient 2000 INO	2203	0/3/2011

Appendix B Test Data

T83139 Pages 26 - 65

©Elliott

EMC Test Data

An LALC	3 company		
Client:	Ubiquiti Networks	Job Number:	J83025
Model:	AirCam	T-Log Number:	T83139
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Emissions Standard(s):	EN 55022, VCCI & KN22	Class:	А
Immunity Standard(s):	EN 55024, KN24	Environment:	Radio

EMC Test Data

For The

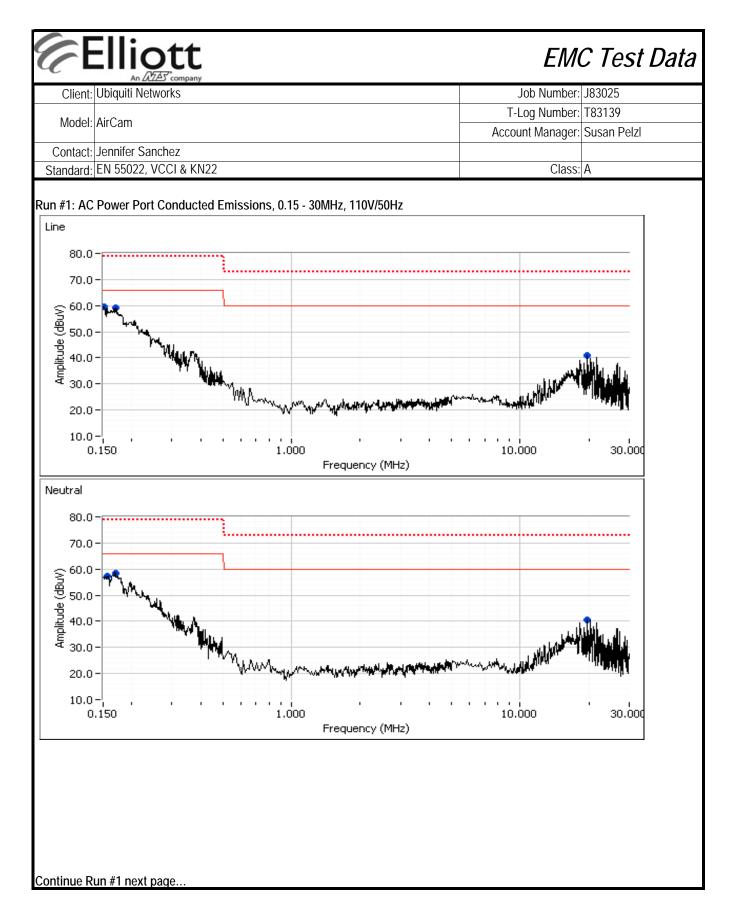
Ubiquiti Networks

Model

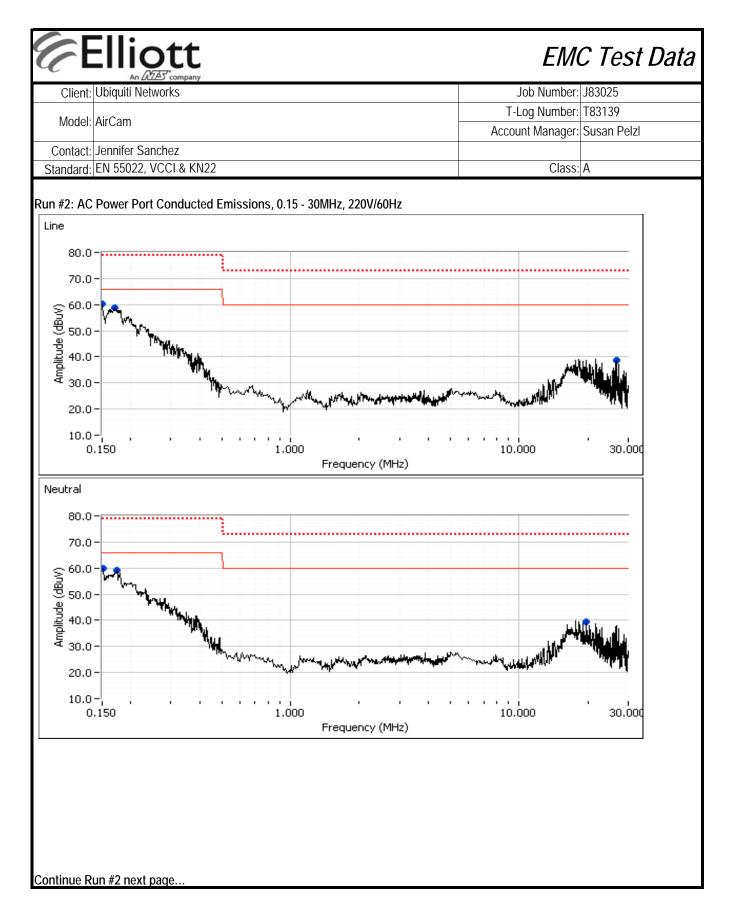
AirCam

Date of Last Test: 5/15/2011

Elliott EMC Test Data Client: Ubiquiti Networks Job Number: J83025 T-Log Number: T83139 Model: AirCam Account Manager: Susan Pelzl Contact: Jennifer Sanchez Standard: EN 55022, VCCI & KN22 Class: A Conducted Emissions (Elliott Laboratories Fremont Facility, Semi-Anechoic Chamber) Test Specific Details Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above. Date of Test: 5/11/2011 Config. Used: 1 Test Engineer: Peter Sales Config Change: None Test Location: Fremont Chamber #3 EUT Voltage: 220V/60Hz, 110V/50Hz General Test Configuration For tabletop equipment, the EUT was located on a wooden table inside the semi-anechoic chamber, 40 cm from a vertical coupling plane and 80cm from the LISN. A second LISN was used for all local support equipment. Remote support equipment was located outside of the semi-anechoic chamber. Any cables running to remote support equipment where routed through metal conduit and when possible passed through a ferrite clamp upon exiting the chamber. Ambient Conditions: Temperature: 21 °C Rel. Humidity: 34 % Summary of Results Run # Test Performed Margin Limit Result CE, AC Power, 110V/50Hz Class A 37.0dBuV @ 19.709MHz (-23.0dB) 1 Pass 2 CE, AC Power, 220V/60Hz Class A 54.1dBµV @ 0.169MHz (-24.9dB) Pass Modifications Made During Testing No modifications were made to the EUT during testing Deviations From The Standard No deviations were made from the requirements of the standard.



Client:	An (4)	D tt					EMO	C Test Dat
	Ubiquiti Net	works					Job Number:	J83025
	·						T-Log Number:	T83139
Model:	AirCam						Account Manager:	
Contact:	Jennifer Sa	nchez						
Standard:	EN 55022, '	VCCI & KN22)				Class:	A
		t Conducted				z (continue) s. average limit)	
Frequency	Level	AC		ss A	Detector	Comments)	
MHz		Line	Limit	Margin	QP/Ave	Comments		
0.151	<u>dBµV</u> 59.4	Line Line 1	66.0					
0.151	<u> </u>	Line 1	66.0 66.0	-6.6 -6.7	Peak Peak			
0.174	59.3 58.5	Neutral	66.0	-6.7 -7.5	Peak			
0.167	58.5 57.4	Neutral						
			66.0	-8.6	Peak			
19.710 19.709	40.8 40.6	Line 1 Neutral	60.0 60.0	-19.2 -19.4	Peak Peak			
		verage readi		-17.4	F Cak			
Frequency	Level	AC		ss A	Detector	Comments		
MHz	dBµV	Line	Limit	Margin	QP/Ave			
19.709	37.0	Neutral	60.0	-23.0	AVG	AVG (0.10s)		
0.167	55.7	Neutral	79.0	-23.3	QP	QP (1.00s)		
19.710	36.5	Line 1	60.0	-23.5	AVG	AVG (0.10s)		
0.174	55.0	Line 1	79.0	-24.0	QP	QP (1.00s)		
0.174	54.0	Line 1	79.0	-24.0	QP	QP (1.003) QP (1.00s)		
0.151	52.8	Neutral	79.0	-26.2	QP	QP (1.003) QP (1.00s)		
0.157	33.0	Neutral	66.0	-20.2	AVG	AVG (0.10s)		
19.709	39.7	Neutral	73.0	-33.3	QP	QP (1.00s)		
0.174	39.7	Line 1	66.0	-33.3	AVG	AVG (0.10s)		
19.710	32.0	Line 1	73.0	-33.4	QP	QP (1.00s)		
0.151	<u> </u>		66.0		AVG			
		Line 1		-34.9		AVG (0.10s)		
0.159	29.4	Neutral	66.0	-36.6	AVG	AVG (0.10s)		



E		ott					EMO	C Test Data
Client:	An 22 Ubiquiti Netv	を [*] company WORKS					Job Number:	J83025
							T-Log Number:	T83139
Model:	AirCam						Account Manager:	Susan Pelzl
Contact:	Jennifer Sar	nchez						
Standard:	EN 55022, V	/CCI & KN22					Class:	A
Run #2: AC	Power Port	Conducted	Emissions,	0.15 - 30MH	z, 220V/60H	Z		
Droliminary	u noak roadir	nas canturer	l durina pro	-scan (neak	readings ve	s. average limit	0	
Frequency		AC		ss A	Detector	Comments	9	
MHz	dBµV	Line	Limit	Margin	QP/Ave			
0.152	60.2	Line 1	66.0	-5.8	Peak			
0.153	59.9	Neutral	66.0	-6.1	Peak			
0.176	59.3	Neutral	66.0	-6.7	Peak			
0.169	58.7	Line 1	66.0	-7.3	Peak			
19.710	39.6	Neutral	60.0	-20.4	Peak			
26.610	38.8	Line 1	60.0	-21.2	Peak			
Final quasi	-peak and a	/erage readi	ngs					
Frequency	Level	AC		ss A	Detector	Comments		
MHz	dBµV	Line	Limit	Margin	QP/Ave			
0.169	54.1	Line 1	79.0	-24.9	QP	QP (1.00s)		
26.610	34.3	Line 1	60.0	-25.7	AVG	AVG (0.10s)		
19.710	33.4	Neutral	60.0	-26.6	AVG	AVG (0.10s)		
0.176	52.1	Neutral	79.0	-26.9	QP	QP (1.00s)		
0.152	52.0	Line 1	79.0	-27.0	QP	QP (1.00s)		
0.153	51.3	Neutral	79.0	-27.7	QP	QP (1.00s)		
26.610	37.8	Line 1	73.0	-35.2	QP QP	QP (1.00s)		
19.710 0.169	37.2	Neutral	73.0 66.0	-35.8	AVG	QP(1.00s)		
0.169	29.0 27.0	Line 1 Line 1	66.0	-37.0 -39.0	AVG	AVG (0.10s) AVG (0.10s)		
0.132	26.6	Neutral	66.0	-39.0	AVG	AVG (0.103) AVG (0.10s)		
0.153	26.2	Neutral	66.0	-39.8	AVG	AVG (0.103) AVG (0.10s)		



Job Number: T-Log Number: Account Manager: Class:	T83139 Susan Pelzl
Account Manager: Class:	Susan Pelzl
Class	
	A
	A
pany	_
	pany

EMC Test Data

	All 2022 Company		
Client:	Ubiquiti Networks	Job Number:	J83025
Model	AirCam	T-Log Number:	T83139
wouer.	All Call	Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Standard:	EN 55022, VCCI & KN22	Class:	А

Radiated Emissions

(Elliott Laboratories Fremont Facility, Semi-Anechoic Chamber)

Test Specific Details

Elliott

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 5/11/2011 Test Engineer: Peter Sales Test Location: Fremont Chamber #3 Config. Used: 1 Config Change: None EUT Voltage: 220V/60Hz

General Test Configuration

The EUT and any local support equipment were located on the turntable for radiated emissions testing. Any remote support equipment was located outside the semi-anechoic chamber. Any cables running to remote support equipment where routed through metal conduit and when possible passed through a ferrite clamp upon exiting the chamber.

The test distance and extrapolation factor (if applicable) are detailed under each run description.

Note, preliminary testing indicates that the emissions were maximized by orientation of the EUT and elevation of the measurement antenna. Maximized testing indicated that the emissions were maximized by orientation of the EUT, elevation of the measurement antenna, and manipulation of the EUT's interface cables.

Ambient Conditions:

Temperature:	21 °C
Rel. Humidity:	34 %

Summary of Results

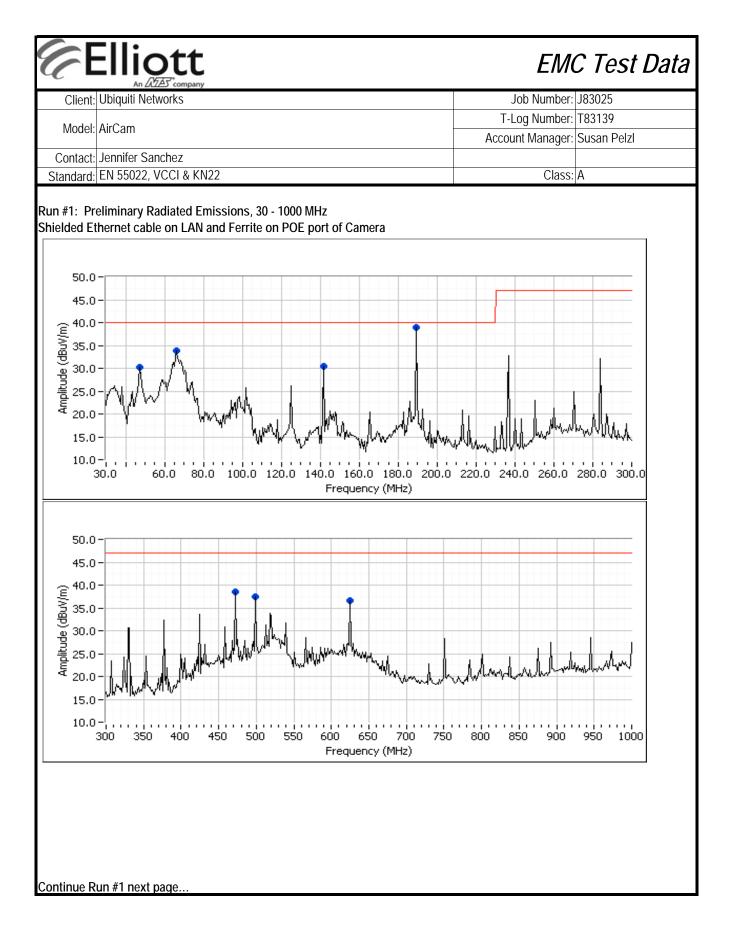
Run #	Test Performed	Limit	Result	Margin
1	Radiated Emissions	Class A	Doco	37.0dBµV/m @ 189.01MHz
I	30 - 1000 MHz, Preliminary	Class A	Pass	(-3.0dB)
2	Radiated Emissions	Class A	Docc	37.0dBµV/m @ 189.01MHz
Z	30 - 1000 MHz, Maximized	Class A	Pass	(-3.0dB)
2	Radiated Emissions	FCC Class A	Pass	34.4dBµV/m @ 1600.0MHz
3	1 GHz - 2 GHz Maximized	FUU UIASS A	Pd55	(-15.1dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.



Client:	Ubiquiti Net	works					Job Number: J83025		
Madal	AirCom						T·	Log Number: T8	3139
wodel:	AirCam						Acco	unt Manager: Su	san Pelzl
Contact:	Jennifer Sar	nchez							
Standard:	EN 55022, \	/CCI & KN	22					Class: A	
	eliminary Ra			- 1000 MHz	(continue)				
			·		、 <i>,</i>				
	Fre	quency Ra	inge	Test D	Distance	Limit D	istance	Extrapolation	Factor
	30) - 1000 M	Hz		10	1	0	0.0	
	/ peak readir				Datastas	A _!	LL - Salat		
requency	Level	Pol		5022 A	Detector	Azimuth	Height	Comments	
MHz 189.006	dBµV/m 38.9	v/h V	Limit 40.0	Margin -1.1	Pk/QP/Avg Peak	degrees 61	meters 1.0		
65.749	33.9	V	40.0	-1.1	Peak	174	1.0		
472.516	33.9 38.5	H	40.0	-0.1 -8.5	Peak	72	2.0		
141.758	30.5	V	47.0	-0.5	Peak	120	2.0		
500.003	37.5	H	40.0	-9.5	Peak	120	1.5		
45.554	30.3	V	40.0	-9.7	Peak	104	2.5		
525.873	36.7	H	47.0	-10.3	Peak	70	1.5	1	
equency MHz	Level dBµV/m	Pol v/h	EN 55 Limit	5022 A Margin	Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments	
189.006	авµv/ш 37.0	V	40.0	-3.0	QP	60	1.0	QP (1.00s)	
500.003	37.0	H	47.0	-9.8	QP	104	1.5	QP (1.003)	
141.758	28.8	V	40.0	-11.2	QP	119	1.5	QP (1.00s)	
65.749	28.6	V	40.0	-11.4	QP	174	1.5	QP (1.00s)	
472.516	35.5	Н	47.0	-11.5	QP	72	2.0	QP (1.00s)	
625.873	22.7	Н	47.0	-24.3	QP	70	1.5	QP (1.00s)	
		readings (includes ma	•	of EUT interfa	ace cables)	istones		Factor
		<u>quency Ra</u>) - 1000 M			Distance			Extrapolation 0.0	Facioi
	50	J - 1000 IVI	ΠZ		10	I	0	0.0	
requency	Level	Pol	EN 5	5022 A	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
189.006	37.0	V	40.0	-3.0	QP	60	1.0	QP (1.00s)	
00.003	37.2	H	47.0	-9.8	QP	104	1.5	QP (1.00s)	
41.758	28.8	V	40.0	-11.2	QP	119	1.5	QP (1.00s)	
65.749	28.6	V	40.0	-11.4	QP	174	1.5	QP (1.00s)	
	35.5	Н	47.0	-11.5	QP	72	2.0	QP (1.00s)	
472.516	55.5								

Client:	Ubiquiti Netv	vorks					Job Number: J83025		
Model:	AirCam	AirCam						Log Number:	
								unt Manager:	Susan Pelzl
	t: Jennifer Sanchez I: EN 55022, VCCI & KN22 Class: A						Δ		
nuaru.	210 00022, 0							01033.	/ .
#3: Ma	aximized Rea	adings, 10	00 - 2000 M	IHz					
70.0	-								
60.0	-					_	_		
>									
: 50.0 	-								
40.0	-								
30.0						1	1		
50.0			h , mh	When a					
				N. R. J.		Bern Abert Re	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	he she was the she	the second from the
20.0	-mountain	introng ?	1/4/204	W. Contraction	Met and the second second	ANTIMA CONTRACT			
		ent marked		W. Law .	/**#_^*/*## F **/***~,	(DOWN CONTRACT			
10.0	-	and the state of the	1000,000		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	A DAMAGE AND BUT D			
0.0	-				1000	100	1700		
10.0 0.0	-	00 12	200 130	JO 1400	1500	1600	1700	1800 19	
10.0 0.0	-	00 12	200 130	JO 1400	1500 Frequency (M	1600	1700	1800 19	
10.0 0.0	-	00 12	200 130	JU 1400 F	1500 Frequency (M	1600 IHz)	1700	1800 19	900 200
10.0 0.0	- .000 11 Free	quency Ra	nge 130	JU 14UU F Test D	1500 Frequency (M Distance	1600 IHz) Limit D	istance	Extrapolat	tion Factor
10.0 0.0	- .000 11 Free	00 12	nge 130	JU 14UU F Test D	1500 Frequency (M	1600 IHz)	istance	1800 19	tion Factor
10.0 0.0 :	- .000 11 Free 100	quency Ra 00 - 2000 N	nge //Hz	JU 1400 F Test D	1500 Frequency (M Distance 3	1600 IHz) Limit D	istance 0	Extrapolat	tion Factor
10.0 0.0 1	- .000 11 Free 100 peak readir	quency Ra 00 - 2000 N	nge //Hz red during p	JU 1400 F Test D	istance 3 ak readings	1600 IHz) Limit D	istance 0 limit)	Extrapolat	tion Factor
10.0 0.0 1 1 <u>ninary</u> Jency	- .000 11 Free 100	quency Ra 00 - 2000 M ngs captur	nge //Hz red during p	Test D	1500 Frequency (M Distance 3	1600 IHz) Limit D 1 Vs. average Azimuth	istance 0	Extrapolat	tion Factor
10.0 0.0 1 1 <u>ninary</u> Jency Hz	- .000 11 Free 100 peak readir Level	quency Ra 00 - 2000 M ngs captur Pol	nge MHz red during p	Test D	1500 Frequency (M Distance 3 ak readings v Detector	1600 IHz) Limit D 1 Vs. average Azimuth	istance 0 limit) Height	Extrapolat	ion Factor
10.0 0.0 1 1 1 1 1 10.0 10.0 10.0 10.0	Free peak readir Level dBµV/m	quency Ra 00 - 2000 M ngs captur Pol v/h	nge MHz ed during p FC Limit	Test D Test D pre-scan (pea	1500 Frequency (M Distance 3 ak readings v Detector Pk/QP/Avg	Limit D Limit D 1 Vs. average Azimuth degrees	istance 0 limit) Height meters	Extrapolat	ion Factor
10.0 0.0 1 1 1 1 1 1 2 0.060	- .000 11 Free 100 peak readir Level dBµV/m 34.7 34.1	uu 12 quency Ra 00 - 2000 M ngs captur Pol V/h H V	nge //Hz red during p FC Limit 49.5 49.5	Test D Test D Dre-scan (pea CC A Margin -14.8 -15.4	1500 Frequency (M Distance 3 Ak readings v Detector Pk/QP/Avg Peak Peak	Limit D Limit D /s. average Azimuth degrees 71 2	istance 0 limit) Height neters 1.0 1.0	Extrapolat	tion Factor 0.5
10.0 0.0 1 1 1 1 1 2 .060	- .000 11 Free 100 peak readir Level dBµV/m 34.7 34.1 Free	quency Ra ou 2000 M ngs captur Pol v/h H V quency Ra	red during p Fed during p FC Limit 49.5 49.5	Test D Test D Dre-scan (pea CC A Margin -14.8 -15.4 Test D	1500 Frequency (M Distance 3 Detector Pk/QP/Avg Peak Peak Peak	Limit D Limit D 1 vs. average Azimuth degrees 71 2 Limit D	istance 0 limit) Height meters 1.0 1.0 istance	Extrapolat Comments Extrapolat	tion Factor
10.0 0.0 1 1 1 1 10.0 1 10.0 10.0 10.0	- .000 11 Free 100 peak readir Level dBµV/m 34.7 34.1 Free	uu 12 quency Ra 00 - 2000 M ngs captur Pol V/h H V	red during p Fed during p FC Limit 49.5 49.5	Test D Test D Dre-scan (pea CC A Margin -14.8 -15.4 Test D	1500 Frequency (M Distance 3 Ak readings v Detector Pk/QP/Avg Peak Peak	Limit D Limit D /s. average Azimuth degrees 71 2	istance 0 limit) Height meters 1.0 1.0 istance	Extrapolat Comments Extrapolat	tion Factor 0.5
10.0 0.0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	- .000 11 Free 100 peak readir Level dBμV/m 34.7 34.1 Free 100	uu 12 quency Ra 00 - 2000 M ngs captur Pol v/h H V V quency Ra 00 - 2000 M	red during p Fed during p FC Limit 49.5 49.5	Test D Test D Dre-scan (pea CC A Margin -14.8 -15.4 Test D	1500 Frequency (M Distance 3 Detector Pk/QP/Avg Peak Peak Peak	Limit D Limit D 1 vs. average Azimuth degrees 71 2 Limit D	istance 0 limit) Height meters 1.0 1.0 istance	Extrapolat Comments Extrapolat	tion Factor
10.0 0.0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	- .000 11 Free 100 Peak readir Level dBμV/m 34.7 34.1 Free 100 and average	quency Ra quency Ra 00 - 2000 M ngs captur Pol v/h H V quency Ra 00 - 2000 M readings	nge AHz red during p E Limit 49.5 49.5 nge AHz	Test D Test D Dre-scan (pea CC A Margin -14.8 -15.4 Test D	1500 Frequency (M istance 3 Ak readings v Detector Pk/QP/Avg Peak Peak Vistance 3	Limit D Limit D /s. average Azimuth degrees 71 2 Limit D 1	istance 0 limit) Height meters 1.0 1.0 1.0 istance 0	Extrapolat Comments Extrapolat Extrapolat	tion Factor
10.0 0.0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	- - - - - - - - - - - - - -	quency Ra quency Ra 10 - 2000 M 10 - 2000 M	red during p red during p FC Limit 49.5 49.5 nge MHz	Test D Test D pre-scan (pea CC A Margin -14.8 -15.4 Test D CC A	1500 Frequency (M Distance 3 Ak readings v Detector Pk/QP/Avg Peak Peak Vistance 3 Detector	Limit D Limit D /s. average Azimuth degrees 71 2 Limit D 1 Azimuth	istance 0 limit) Height 1.0 1.0 istance 0 Height	Extrapolat Comments Extrapolat	tion Factor
10.0 0.0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	- .000 11 Free 100 peak readir Level dBµV/m 34.7 34.1 Free 100 and average Level dBµV/m	quency Ra quency Ra 00 - 2000 M ngs captur Pol v/h H V quency Ra 00 - 2000 M readings Pol v/h	red during p red during p FC Limit 49.5 49.5 Nge AHz FC Limit	Test D Test D pre-scan (peace CC A Margin -14.8 -15.4 Test D CC A Margin	1500 requency (M istance 3 ak readings v Detector Pk/QP/Avg Peak Peak istance 3 Detector Pk/QP/Avg	Limit D Limit D 1 /s. average Azimuth degrees 71 2 Limit D 1 Azimuth degrees	istance 0 limit) Height neters 1.0 1.0 istance 0 Height meters	Extrapolat Comments Extrapolat Extrapolat Comments Comments	tion Factor
10.0 0.0 1 1 10.0 1 10.0 1 10.0 1 10.0 1 10.0 1 10.0 1 10.0 1 10.0 1 10.0 1 10.0 1 10.0 1 10.0 1 10.0 1 11.0 10.0 11 11.0 10.0 11 11.0 10.0 11 11.0 10.0 11 11.0 10.0 11 11.0 10.0 11 11.0 10.0 11 11.0 10.0 11 11.0 10.0 11 11.0 10.0 11.0 10.0 11.0 10.0 11.0 10.0 11.0 10.0 11.0 10.00	- .000 11 Free 100 peak readir Level dBµV/m 34.7 34.1 Free 100 and average Level dBµV/m 34.4	uu 12 quency Ra 10 - 2000 M ngs captur Pol v/h H V quency Ra 10 - 2000 M readings Pol v/h H	red during p red during p FC Limit 49.5 49.5 nge AHz FC Limit 49.5	Test D Test D pre-scan (pea CC A Margin -14.8 -15.4 Test D CC A Test D CC A Test D	1500 requency (M istance 3 Ak readings v Detector Pk/QP/Avg Peak Peak istance 3 Detector Pk/QP/Avg AVG	Limit D Limit D 1 vs. average Azimuth degrees 71 2 Limit D 1 Azimuth degrees 72	istance 0 Height neters 1.0 1.0 istance 0 Height meters 1.0	Extrapolat Comments Extrapolat Extrapolat Comments RB 1 MHz;V	tion Factor 0.5 tion Factor 0.5 /B 10 Hz;Pk
10.0 0.0 10.0 10.0 11 10.0 11 10.0 11 10.0 11 10.00	- .0000 11 Free 100 Peak readir Level dBµV/m 34.7 34.1 Free 100 and average Level dBµV/m 34.4 37.5	uu 12 <u>quency Ra</u> <u>ngs captur</u> Pol v/h H V <u>quency Ra</u> <u>pol</u> <u>v/h</u> <u>readings</u> Pol v/h H H H	200 13L nge /Hz red during p FC Limit 49.5 49.5 nge /Hz FC Limit 49.5 69.5	Test D Test D pre-scan (pea CC A Margin -14.8 -15.4 Test D CC A Margin -25.4 CC A -15.1 -32.0	1500 requency (M istance 3 ak readings v Detector Pk/QP/Avg Peak Peak istance 3 Detector Pk/QP/Avg AVG PK	Limit D Limit D 1 vs. average Azimuth degrees 71 2 Limit D 1 Azimuth degrees 72 72	istance 0 limit) Height meters 1.0 1.0 istance 0 Height meters 1.0 1.0	Extrapolat Comments Extrapolat Extrapolat Comments RB 1 MHz;V RB 1 MHz;V	iion Factor 0.5 tion Factor 0.5 (B 10 Hz;Pk /B 3 MHz;Pk
10.0 0.0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	- .000 11 Free 100 peak readir Level dBµV/m 34.7 34.1 Free 100 and average Level dBµV/m 34.4	uu 12 quency Ra 10 - 2000 M ngs captur Pol v/h H V quency Ra 10 - 2000 M readings Pol v/h H	red during p red during p FC Limit 49.5 49.5 nge AHz FC Limit 49.5	Test D Test D pre-scan (pea CC A Margin -14.8 -15.4 Test D CC A Test D CC A Test D	1500 requency (M istance 3 Ak readings v Detector Pk/QP/Avg Peak Peak istance 3 Detector Pk/QP/Avg AVG	Limit D Limit D 1 vs. average Azimuth degrees 71 2 Limit D 1 Azimuth degrees 72	istance 0 Height neters 1.0 1.0 istance 0 Height meters 1.0	Extrapolat Comments Extrapolat Comments Extrapolat -10 Comments RB 1 MHz;V RB 1 MHz;V RB 1 MHz;V RB 1 MHz;V	iion Factor 0.5 tion Factor 0.5 (B 10 Hz;Pk /B 3 MHz;Pk

An AZAS company		
Client: Ubiquiti Networks	Job Number:	
Model: AirCam	T-Log Number:	
	Account Manager:	Susan Pelzl
Contact: Jennifer Sanchez		
Standard: EN 55022, VCCI & KN22	Class:	A

(je l	Elliott An DES' company	EMC Test Data		
	Ubiquiti Networks	Job Number:	J83025	
Model:	AirCom	T-Log Number:	T83139	
wouer.	AllCall	Account Manager:	Susan Pelzl	
Contact:	Jennifer Sanchez			
Standard:	EN 55022, VCCI & KN22	Class:	A	



EMC Test Data

	An Z(ZZZ) company		
Client:	Ubiquiti Networks	Job Number:	J83025
Madal	AirCam	T-Log Number:	T83139
wouer.	All Call	Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Standard:	EN 55022, VCCI & KN22	Class:	А

Radiated Emissions (Free-Space)

(Elliott Laboratories Fremont Facility, Chamber Configured for Free-Space Measurements)

Test Specific Details

Elliott

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 5/11/2011 Test Engineer: Peter Sales Test Location: Fremont Chamber #3 Config. Used: 1 Config Change: None EUT Voltage: 220V/60Hz

General Test Configuration

Anechoic material was placed on the floor between the EUT and the measurement antenna and behind the EUT to ensure that the test site complies with the requirements of CISPR 16 for measurements of radiated field strength above 1GHz in a free-space environment. The EUT and any local support equipment were located on the turntable for radiated emissions testing. Any remote support equipment was located outside the semi-anechoic chamber. Any cables running to remote support equipment where routed through metal conduit and when possible passed through a ferrite clamp upon exiting the chamber.

The test was performed at a test distance of 3 meters.

Ambient Conditions:

Temperature:	21 °C
Rel. Humidity:	34 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	Free Space Radiated Emissions	Class A	Dece	43.0dBµV/m @ 1600.0MHz
Ι	1 - 6 GHz, Preliminary	Class A	Pass	(-13.0dB)
C	Free Space Radiated Emissions	Class A	Deee	43.0dBµV/m @ 1600.0MHz
Z	1 - 6 GHz, Maximized	Ciass A	Pass	(-13.0dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

	Ellic	ott						EM	C Test L
Client:	Ubiquiti Netv	vorks						Job Number:	J83025
	·						T-	Log Number:	
Model:	AirCam							unt Manager:	
Contact	Ionnifor Son	ennifer Sanchez						unt manager.	
							Class:	۸	
	eliminary Re							CIASS:	А
80.0 70.0 (m(Ang) 50.0 40.0 40.0 30.0 20.0 10.0	- - - - 	Jum	ljonensjo Bryn	m Royal and	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
10.0	.000 150	00 20	00 250	0 3000		4000	4500	5000 59	
1					3500 requency (M	4000 IHz)	4000		500 6000
1	Free	quency Ra	nge	F Test D	requency (Mistance	IHz) Limit D	istance	Extrapolat	tion Factor
	Fred 100	quency Ra 10 - 6000 N	nge 1Hz	F Test D	Frequency (M istance 3	IHz) Limit D	istance 3	Extrapolat	
eliminary	Free 100 peak readin	quency Ra 10 - 6000 N ngs captur	nge 1Hz red during p	F Test D re-scan (pea	requency (M istance 3 ak readings v	IHz) Limit D /s. average	istance 3 limit)	Extrapolat 0	tion Factor
eliminary equency	Frec 100 peak readin Level	quency Ra 10 - 6000 M 1 gs captur Pol	nge 1Hz re d during p Cla	F Test D re-scan (pea ss A	Frequency (M istance 3 ak readings v Detector	IHz) Limit D ((x. average Azimuth	istance 3 limit) Height	Extrapolat	tion Factor
eliminary equency MHz	Free 100 peak readin Level dBµV/m	quency Ra 00 - 6000 M ngs captur Pol v/h	nge 1Hz e d during p Cla Limit	F Test D re-scan (pea ss A Margin	requency (M istance 3 ak readings v Detector Pk/QP/Avg	Hz) Limit D /s. average Azimuth degrees	istance 3 Iimit) Height meters	Extrapolat 0	tion Factor
eliminary equency MHz 600.000	Free 100 peak readin Level dBµV/m 42.2	quency Ra 10 - 6000 M igs captur Pol v/h V	nge IHz red during p Cla Limit 56.0	F Test D re-scan (pea ss A Margin -13.8	requency (M istance 3 ak readings Detector Pk/QP/Avg Peak	Hz) Limit D /s. average Azimuth degrees 166	istance 3 limit) Height meters 1.0	Extrapolat 0	tion Factor
eliminary equency MHz 600.000 300.790	Free 100 peak readin Level dBµV/m 42.2 37.3	quency Ra 10 - 6000 M igs captur Pol V/h V V	nge /Hz red during p Cla Limit 56.0 56.0	F Test D re-scan (pea ss A Margin -13.8 -18.7	requency (M istance 3 ak readings v Detector Pk/QP/Avg Peak Peak	Hz) Limit D /s. average Azimuth degrees 166 141	istance 3 limit) Height meters 1.0 1.0	Extrapolat 0	tion Factor
eliminary equency MHz 600.000 300.790 200.020	Free 100 peak readin Level dBµV/m 42.2 37.3 36.6	quency Ra 10 - 6000 M Igs captur Pol V/h V V V V	nge /Hz ed during p Cla Limit 56.0 56.0 56.0	F Test D re-scan (pea ss A Margin -13.8 -18.7 -19.4	requency (M istance 3 ak readings v Detector Pk/QP/Avg Peak Peak Peak	Hz) Limit D /s. average Azimuth degrees 166 141 359	istance 3 Iimit) Height meters 1.0 1.0 1.0	Extrapolat 0	tion Factor
eliminary equency MHz 600.000 300.790 200.020 400.310	Free 100 peak readin Level dBμV/m 42.2 37.3 36.6 35.6	quency Ra 10 - 6000 M 10 - 6000 M 10 - 6000 M 10 - 600 M 10 - 6000 M 10 - 600 M 10 - 700 M 10 - 70	nge 1Hz red during p Cla Limit 56.0 56.0 56.0 56.0	F Test D re-scan (pea ss A Margin -13.8 -18.7 -19.4 -19.4 -20.4	requency (M istance 3 ak readings v Detector Pk/QP/Avg Peak Peak Peak Peak Peak	Hz) Limit D /s. average Azimuth degrees 166 141 359 6	istance 3 Iimit) Height meters 1.0 1.0 1.0 1.0	Extrapolat 0	tion Factor
eliminary equency MHz 600.000 300.790 200.020 400.310 750.010	Free 100 peak readin Level dBμV/m 42.2 37.3 36.6 35.6 35.4	quency Ra 10 - 6000 M 10gs captur Pol V/h V V V V V V V V	nge MHz ed during p Cla Limit 56.0 56.0 56.0 56.0 56.0 56.0	F Test D re-scan (pea ss A Margin -13.8 -18.7 -19.4 -20.4 -20.6	requency (M istance 3 ak readings Detector Pk/QP/Avg Peak Peak Peak Peak Peak Peak	Hz) Limit D /s. average Azimuth degrees 166 141 359 6 359	istance 3 limit) Height meters 1.0 1.0 1.0 1.0 1.0 1.0	Extrapolat 0	tion Factor
liminary equency MHz 00.000 00.790 00.020 00.310 50.010 76.430	Free 100 peak readin Level dBμV/m 42.2 37.3 36.6 35.6 35.6 35.4 35.4	quency Ra 10 - 6000 M 195 captur Pol V/h V V V V V V V V V V	nge MHz ed during p Cla Limit 56.0 56.0 56.0 56.0 56.0 56.0 56.0	F Test D re-scan (pea ss A Margin -13.8 -18.7 -19.4 -20.4 -20.6 -20.6	requency (M istance 3 betector Pk/QP/Avg Peak Peak Peak Peak Peak Peak Peak Peak	Hz) Limit D /s. average Azimuth degrees 166 141 359 6 359 159	istance 3 Iimit) Height meters 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Extrapolat 0 Comments	tion Factor
eliminary equency MHz 500.000 300.790 200.020 400.310 750.010 976.430 ak and av	Free 100 peak readin Level dBμV/m 42.2 37.3 36.6 35.6 35.6 35.4 35.4 yerage readi	quency Ra 10 - 6000 M ngs captur Pol v/h V V V V V V V V V V V	nge AHz ced during p Cla Limit 56.0 56.0 56.0 56.0 56.0 56.0 0 56.0 ding maxim	F Test D re-scan (pea ss A -13.8 -13.8 -18.7 -19.4 -20.4 -20.6 -20.6 -20.6 ization of tu	requency (M istance 3 ak readings Detector Pk/QP/Avg Peak Peak Peak Peak Peak Peak Peak Peak	Hz) Limit D /s. average Azimuth degrees 166 141 359 6 359 6 359 159 nuth and ant	istance 3 Iimit) Height meters 1.0 1.0 1.0 1.0 1.0 1.0 tenna heigh	Extrapolat 0 Comments	tion Factor
equency MHz 000.000 000.790 000.20 000.310 750.010 76.430 00 00 00 00 00 00 00 00 00 00 00 00 0	Free 100 peak readin Level dBμV/m 42.2 37.3 36.6 35.6 35.6 35.4 35.4 yerage readi Level	quency Ra 10 - 6000 M 10 - 6000 M 10 - 6000 M Pol V/h V V V V V V V V V V Pol Pol V V V V V V V V V V V V V	nge /Hz ed during p Cla Limit 56.0 56.0 56.0 56.0 56.0 56.0 56.0 tding maxim Cla	F Test D re-scan (pea ss A Margin -13.8 -18.7 -19.4 -20.4 -20.6 -20.6 -20.6 ization of tu ss A	requency (M istance ak readings v Detector Pk/QP/Avg Peak Peak Peak Peak Peak Peak Peak Peak	Limit D /s. average Azimuth degrees 166 141 359 6 359 6 359 159 159 159 159 159 159 159 1	istance 3 Height meters 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Extrapolat 0 Comments	tion Factor
eliminary equency MHz 500.000 200.020 400.310 750.010 750.010 776.430 ak and av equency MHz	Free 100 peak readin Level dBμV/m 42.2 37.3 36.6 35.6 35.6 35.4 35.4 yerage readi	quency Ra 10 - 6000 M ngs captur Pol v/h V V V V V V V V V V V	nge AHz ced during p Cla Limit 56.0 56.0 56.0 56.0 56.0 56.0 0 56.0 ding maxim	F Test D re-scan (pea ss A Margin -13.8 -18.7 -19.4 -20.4 -20.6 -20.6 -20.6 ization of tu	requency (M istance 3 ak readings v Detector Pk/QP/Avg Peak Peak Peak Peak Peak Peak Peak Peak	Hz) Limit D /s. average Azimuth degrees 166 141 359 6 359 6 359 159 nuth and ant Azimuth degrees	istance 3 Iimit) Height meters 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Extrapolat 0 Comments 	tion Factor
liminary equency MHz 000.000 000.790 000.20 000.310 50.010 76.430 076.430 076.430 076.430 000010 000010	Free 100 peak readin Level dBμV/m 42.2 37.3 36.6 35.6 35.6 35.4 35.4 yerage readi Level dBμV/m	quency Ra 10 - 6000 M 10 - 6000 M 10 - 6000 M 10 - 600 M 10 - 70 M	nge MHz ed during p Cla Limit 56.0 56.0 56.0 56.0 56.0 56.0 56.0 0 56.0 1ding maxim Cla Limit	F Test D re-scan (pea ss A Margin -13.8 -18.7 -19.4 -20.4 -20.6 -20.6 -20.6 ization of tu ss A Margin	requency (M istance ak readings v Detector Pk/QP/Avg Peak Peak Peak Peak Peak Peak Peak Peak	Limit D /s. average Azimuth degrees 166 141 359 6 359 6 359 159 159 159 159 159 159 159 1	istance 3 Height meters 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Extrapolat 0 Comments	ion Factor .0 /B 10 Hz;Pk
liminary quency MHz 00.000 00.790 00.020 00.310 50.010 76.430 k and av quency MHz 00.040	Free 100 peak readin Level dBµV/m 42.2 37.3 36.6 35.6 35.4 35.4 yerage readi Level dBµV/m	quency Ra 10 - 6000 M 10gs captur Pol V/h V V V V V V V V V V N V V V V V V V V V V V V V	nge MHz ed during p Cla Limit 56.0 56.0 56.0 56.0 56.0 56.0 0 56.0 tding maxim Cla Limit 56.0	F Test D re-scan (pea ss A Margin -13.8 -18.7 -19.4 -20.4 -20.6 -20.6 -20.6 -20.6 -ization of tu ss A Margin -13.0	requency (M istance 3 ak readings Detector Pk/QP/Avg Peak Peak Peak Peak Peak Peak Peak Peak	Hz) Limit D /s. average Azimuth degrees 166 141 359 6 359 6 359 159 nuth and ant Azimuth degrees 168	istance 3 Iimit) Height meters 1.0 1.0 1.0 1.0 1.0 1.0 1.0 tenna height Height meters 1.0	Extrapolat 0 Comments 1 t) Comments RB 1 MHz;V	/B 10 Hz;Pk /B 10 Hz;Pk
liminary quency MHz 00.000 00.790 00.020 00.310 50.010 76.430 k and av quency MHz 00.040 99.940	Free 100 peak readin Level dBµV/m 42.2 37.3 36.6 35.6 35.6 35.4 35.4 yerage readi Level dBµV/m 43.0 35.4 35.4 35.4	quency Ra 10 - 6000 M 10gs captur Pol V/h V V V V V V V V V V V V V	nge MHz ed during p Cla Limit 56.0 56.0 56.0 56.0 56.0 56.0 cla Limit 56.0 56.0 56.0 cla	F Test D re-scan (pea ss A Margin -13.8 -18.7 -19.4 -20.4 -20.6 -20.6 -20.6 ization of tu ss A Margin -13.0 -20.6 -23.5	requency (M istance 3 ak readings Detector Pk/QP/Avg Peak Peak Peak Peak Peak Peak Peak Peak	Hz) Limit D Zs. average Azimuth degrees 166 141 359 6 359 159 04th and ant Azimuth degrees 168 9 360	istance 3 Iimit) Height meters 1.0 1.0 1.0 1.0 1.0 1.0 tenna height Height meters 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Extrapolat 0 Comments 	/B 10 Hz;Pk /B 10 Hz;Pk /B 10 Hz;Pk
liminary equency MHz 00.000 00.790 00.020 00.310 50.010 76.430 ik and av equency MHz 00.040 99.940 02.150	Free 100 peak readin Level dBµV/m 42.2 37.3 36.6 35.4 35.4 verage readi Level dBµV/m 43.0 35.4	quency Ra 10 - 6000 M 10 - 6000 M 10 - 6000 M 10 - 6000 M 10 - 600 M 10	nge MHz ed during p Cla Limit 56.0 56.0 56.0 56.0 56.0 56.0 Uding maxim Cla Limit 56.0 56.0 56.0 56.0	F Test D re-scan (pea ss A Margin -13.8 -18.7 -19.4 -20.4 -20.6 -20.6 -20.6 ization of tu ss A Margin -13.0 -20.6 -23.5 -24.5	requency (M istance 3 ak readings Detector Pk/QP/Avg Peak Peak Peak Peak Peak Peak Peak rntable azim Detector Pk/QP/Avg AVG AVG AVG AVG	Hz) Limit D /s. average Azimuth degrees 166 141 359 6 359 159 0 159 159 159 159 159 159 159 159 159 159	istance 3 Iimit) Height meters 1.0 1.0 1.0 1.0 1.0 tenna height Height meters 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Extrapolat 0 Comments 1 Comments 1 Comments RB 1 MHz;V RB 1 MHz;V RB 1 MHz;V RB 1 MHz;V	/B 10 Hz;Pk /B 10 Hz;Pk /B 10 Hz;Pk /B 10 Hz;Pk /B 10 Hz;Pk /B 10 Hz;Pk
liminary equency MHz 00.000 00.790 00.020 00.310 50.010 76.430 ik and av equency MHz 00.040 99.940 02.150 68.800	Free 100 peak readin Level dBµV/m 42.2 37.3 36.6 35.6 35.4 35.4 35.4 verage readi Level dBµV/m 43.0 35.4 32.5 31.5 29.0	quency Ra 10 - 6000 M 10 - 6000 M 10 s captur Pol V/h V V V V V V V V V V V V V	nge MHz ed during p Cla Limit 56.0 56.0 56.0 56.0 56.0 56.0 Cla Limit 56.0 56.0 56.0 56.0 56.0 56.0 56.0 56.0	F Test D re-scan (pea ss A Margin -13.8 -18.7 -19.4 -20.4 -20.6 -20.6 -20.6 ization of tu ss A Margin -13.0 -20.6 -23.5 -24.5 -27.0	requency (M istance ak readings Detector Pk/QP/Avg Peak Peak Peak Peak Peak Peak Peak Peak	Hz) Limit D /s. average Azimuth degrees 166 141 359 6 359 159 nuth and ant Azimuth degrees 168 9 360 140 9	istance 3 limit) Height meters 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Extrapolat 0 Comments 1 t) Comments RB 1 MHz;V RB 1 MHz;V RB 1 MHz;V RB 1 MHz;V RB 1 MHz;V RB 1 MHz;V RB 1 MHz;V	tion Factor .0 /B 10 Hz;Pk /B 10 Hz;Pk /B 10 Hz;Pk /B 10 Hz;Pk /B 10 Hz;Pk /B 10 Hz;Pk
liminary equency MHz 00.000 00.790 00.020 00.310 75.010 76.430 ak and av equency MHz 00.040 99.940 00.2150 68.800 78.560	Free 100 peak readin Level dBμV/m 42.2 37.3 36.6 35.6 35.6 35.4 yerage readi Level dBμV/m 43.0 35.4 35.4 35.4 35.4 35.4 35.4 35.4 35.4	quency Ra 10 - 6000 M 10gs captur Pol V/h V V V V V V V V V V V V V	nge AHz red during p Cla Limit 56.0 56.0 56.0 56.0 56.0 cla Limit 56.0 56.0 56.0 56.0 56.0 56.0 56.0 56.0	F Test D re-scan (pea ss A Margin -13.8 -18.7 -19.4 -20.4 -20.6 -20.6 -20.6 ization of tu ss A Margin -13.0 -20.6 -23.5 -24.5	requency (M istance 3 ak readings Detector Pk/QP/Avg Peak Peak Peak Peak Peak Peak Peak rntable azim Detector Pk/QP/Avg AVG AVG AVG AVG	Hz) Limit D /s. average Azimuth degrees 166 141 359 6 359 159 159 159 159 159 159 159 1	istance 3 Iimit) Height meters 1.0 1.0 1.0 1.0 1.0 tenna heigh Height meters 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Extrapolat 0 Comments 1 Comments RB 1 MHz;V RB 1 MHz;V	tion Factor .0 /B 10 Hz;Pk /B 10 Hz;Pk /B 10 Hz;Pk /B 10 Hz;Pk /B 10 Hz;Pk /B 10 Hz;Pk
equency MHz 500.000 300.790 200.020 20	Free 100 peak readin Level dBµV/m 42.2 37.3 36.6 35.6 35.4 35.4 yerage readi Level dBµV/m 43.0 35.4 32.5 31.5 29.0 27.6	quency Ra 10 - 6000 M 10gs captur Pol V/h V V V V V V V V V V V V V	nge MHz ed during p Cla Limit 56.0 56.0 56.0 56.0 56.0 Cla Limit 56.0 56.0 56.0 56.0 56.0 56.0 56.0 56.0	F Test D re-scan (pea ss A Margin -13.8 -18.7 -19.4 -20.4 -20.6 -20.6 -20.6 -20.6 ization of tu ss A Margin -13.0 -20.6 -23.5 -24.5 -24.5 -27.0 -28.4	requency (M istance 3 ak readings Detector Pk/QP/Avg Peak Peak Peak Peak Peak Peak Peak Peak	Hz) Limit D /s. average Azimuth degrees 166 141 359 6 359 159 nuth and ant Azimuth degrees 168 9 360 140 9	istance 3 Iimit) Height meters 1.0 1.0 1.0 1.0 1.0 1.0 tenna height Height meters 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Extrapolat 0 Comments	ion Factor .0 /B 10 Hz;Pk /B 10 Hz;Pk
eliminary equency MHz 500.000 300.790 200.020 400.310 750.010 750.010 750.010 750.010 750.010 750.010 750.010 750.010 750.010 764.30 600.040 199.940 302.150 768.800 778.560 500.130 301.260	Free 100 peak readin Level dBµV/m 42.2 37.3 36.6 35.4 35.4 verage readi Level dBµV/m 43.0 35.4 32.5 31.5 29.0 27.6 46.3	quency Ra 10 - 6000 M 10gs captur Pol V/h V V V V V V V V V V V V V	nge MHz ed during p Cla Limit 56.0 56.0 56.0 56.0 56.0 56.0 56.0 56.0	F Test D re-scan (pea ss A Margin -13.8 -18.7 -19.4 -20.4 -20.6 -20.6 -20.6 -20.6 ization of tu ss A Margin -13.0 -20.6 -23.5 -24.5 -27.0 -28.4 -29.7	requency (M istance 3 betector Pk/QP/Avg Peak Peak Peak Peak Peak Peak Peak Peak	Hz) Limit D /s. average Azimuth degrees 166 141 359 6 359 159 0 159 0 159 0 159 0 159 0 168 9 360 140 9 158 168	istance 3 Iimit) Height meters 1.0 1.0 1.0 1.0 1.0 1.0 1.0 tenna heigh Height meters 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Extrapolat 0 Comments 1 Comments 1 Comments RB 1 MHz;V RB 1 MHz;V	ion Factor .0 /B 10 Hz;Pk /B 10 Hz;Pk
eliminary equency MHz 500.000 300.790 200.020 400.310 750.010 976.430 ak and av equency MHz 500.040 400.040 199.940 302.150 768.800 978.560 500.130 301.260 400.030	Free 100 peak readin Level dBµV/m 42.2 37.3 36.6 35.6 35.4 35.4 verage readi Level dBµV/m 43.0 35.4 32.5 31.5 29.0 27.6 46.3 43.4	quency Ra 10 - 6000 M 10 - 6000 M 10 - 6000 M 10 - 6000 M 10 - 600 M 10	nge MHz ed during p Cla Limit 56.0 56.0 56.0 56.0 56.0 56.0 56.0 56.0	F Test D re-scan (pea ss A Margin -13.8 -18.7 -19.4 -20.4 -20.6 -20.6 -20.6 -20.6 -20.6 -20.6 -20.6 -20.6 -20.6 -20.6 -20.6 -23.5 -24.5 -24.5 -27.0 -28.4 -29.7 -32.6	requency (M istance 3 Detector Pk/QP/Avg Peak Peak Peak Peak Peak Peak Peak Peak	Hz) Limit D /s. average Azimuth degrees 166 141 359 6 359 159 159 159 159 159 159 159 1	istance 3 Iimit) Height meters 1.0 1.0 1.0 1.0 1.0 1.0 tenna heigh Height meters 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Extrapolat 0 Comments 1 Comments 1 Comments RB 1 MHz;V RB 1 MHz;V	ion Factor .0 /B 10 Hz;Pk /B 3 MHz;Pk
eliminary equency MHz 600.000 300.790 200.020 400.310 750.010 976.430 eak and av equency	Free 100 peak readin Level dBμV/m 42.2 37.3 36.6 35.6 35.4 35.4 yerage readi Level dBμV/m 43.0 35.4 32.5 31.5 29.0 27.6 46.3 43.4 42.7	quency Ra 10 - 6000 M 10 - 6000 M 10 - 6000 M 10 - 6000 M 10 - 600 M 10	nge AHz red during p Cla Limit 56.0 56.0 56.0 56.0 56.0 56.0 56.0 56.0	F Test D re-scan (pea ss A Margin -13.8 -18.7 -19.4 -20.4 -20.6 -20.6 -20.6 ization of tu ss A Margin -13.0 -20.6 -23.5 -24.5 -24.5 -27.0 -28.4 -29.7 -32.6 -33.3	requency (M istance 3 ak readings Detector Pk/QP/Avg Peak Peak Peak Peak Peak Peak Peak Peak	Hz) Limit D /s. average Azimuth degrees 166 141 359 6 359 159 nuth and ant Azimuth degrees 168 9 360 140 9 158 168 140 9	istance 3 Iimit) Height meters 1.0 1.0 1.0 1.0 1.0 tenna heigh Height meters 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Extrapolat 0 Comments Comments Comments RB 1 MHz;V RB 1 MHz;V	ion Factor .0 /B 10 Hz;Pk /B 3 MHz;Pk /B 3 MHz;Pk

EMC Test Data

Client:	Ubiquiti Networks	Job Number:	J83025
Madal	AirCam	T-Log Number:	T83139
wouer.	Alicalli	Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Standard:	EN 55022, VCCI & KN22	Class:	А

Run #2: Maximized Readings from Run #1 (1 - 6 GHz, EN 55022)

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 6000 MHz	3	3	0.0

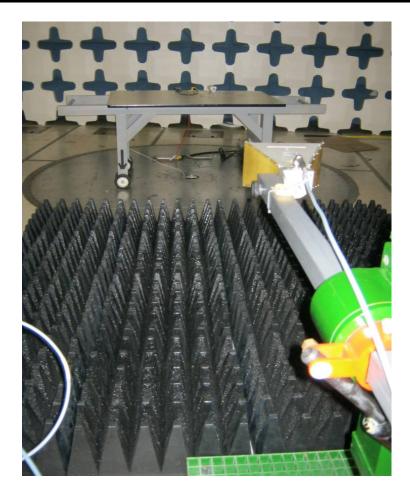
Final Peak and average readings

(including maximization of turntable azimuth, antenna height, and manipulation of cable positions)

Frequency	Level	Pol	Clas	ss A	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1600.040	43.0	V	56.0	-13.0	AVG	168	1.0	RB 1 MHz;VB 10 Hz;Pk
2400.040	35.4	V	56.0	-20.6	AVG	9	1.0	RB 1 MHz;VB 10 Hz;Pk
1600.130	46.3	V	76.0	-29.7	PK	168	1.0	RB 1 MHz;VB 3 MHz;Pk
2400.030	42.7	V	76.0	-33.3	PK	9	1.0	RB 1 MHz;VB 3 MHz;Pk

	Elliott An AZAS [*] company	EMC Test Data
Client:	Ubiquiti Networks	Job Number: J83025
	AirCam	T-Log Number: T83139 Account Manager: Susan Pelzl
Contact:	Jennifer Sanchez	
Standard:	EN 55022, VCCI & KN22	Class: A

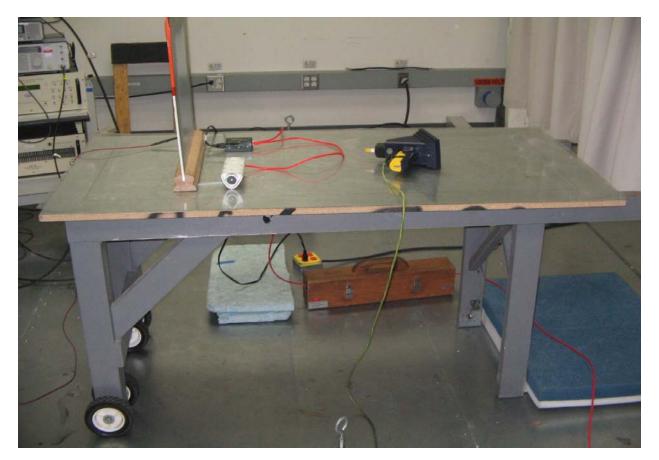
Client:	Ubiquiti Networks	Job Number:	J83025
Madalı	AirCam	T-Log Number:	T83139
wouer.	All Call	Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Standard:	EN 55022, VCCI & KN22	Class:	A



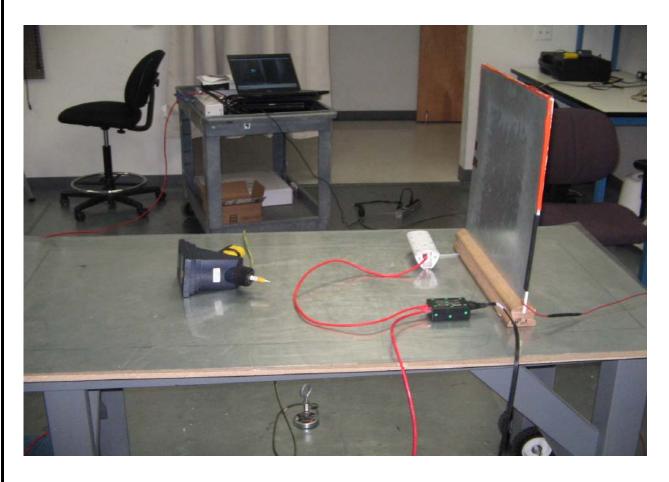
C	Ellio	tt company				ΕΛ	AC Test Data
		Ubiquiti Networks AirCam				umber:	
					T-Log Nu Account Ma		
Immu	Contact: unity Standard(s):	Jennifer Sanchez EN 55024, KN24	<u>.</u>		Enviroi	nment:	Radio
		Ele	ctrostatic Dis	scharge (EN	61000-4-2)		
•	becific Details bjective: The obje listed abo		ession is to perform	final qualification	testing of the EUT w	ith resp	ect to the specification
Test E	of Test: 5/15/201 ngineer: Chris Gro ocation: Fremont	oat	Config. Used: 7 Config Change: 1 EUT Voltage: 2	none			
For table-	I Test Configut top equipment, th plane, 80 cm abov	e EUT and all loca		it were located or	n a 0.5-mm thick insu	lating la	yer above a horizontal
applied to	coupling planes a	and conductive su	rfaces of the EUT.	Air discharges we		n-condu	ontact discharges were ictive surfaces of the EUT. g equipment.
The deter declaratio		e test point being a	a part of a conductiv	e or non-conduct	ive surface was base	d on the	e manufacturer's
Ambier	nt Conditions:		Temperature: Relative Humidity: Pressure:	21 °C 33 % 1016 mb			
Summa	ry of Results	- Electrostatic	: Discharges				
Run #	Port		Level Applied	Performar Required	nce Criteria Met / Result		Comments
1	Enclosure	4kV CD 8kV AD	4kV CD 8kV AD	В	A / Pass	Re	efer to Individual Run
No modifi Deviatio	cations Made E ications were mad ons From The ions were made fr	e to the EUT durir	•				

Client: Ubiquiti Networks						Number:		
Model: AirCam					Ŭ,	Number:		
Contact: Jennifer Sanchez					Account N	vianager:	Susan P	eizi
Immunity Standard(s): EN 55024, KN24					Envi	ronment:	Radio	
In #1: Electrostatic Discharge								
Indirect Discharges		Positive	Polarity			Negative	e Polarity	
(To Coupling Planes)		(k					V)	
Contact	Level 1	Level 2	Level 3	Level 4	Level 1	Level 2	Level 3	Level 4
Mode	2	4	6	8	2	4	6	8
ertical Coupling Plane (VCP) located 10cm from the	Х	Х			Х	Х		
ont, rear, left and right sides of the EUT								
orizontal Coupling Plane (HCP) located 10cm from e front, rear, left and right sides of the EUT	Х	Х			Х	Х		
Direct Discharges		Positive	Polarity			Negative	e Polarity	
(To the EUT)		(k	V)			(k	.V)	
Contact	Level 1	Level 2	Level 3	Level 4	Level 1	Level 2	Level 3	Level 4
Mode	2	4	6	8	2	4	6	8
r Cam	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
E Injector	Ň	V			Ň	V		
DE Port N Port	X X	X X			X X	X X		
			1	A			1	
Air Discharge Mode	Level 1	Level 2 4	Level 3 8	Level 4 15	Level 1 2	Level 2 4	Level 3 8	Level 4 15
Cam	2	-	0	15	2	7	0	15
p Side	ND	ND	ND		ND	ND	ND	
ft Side	ND	ND	ND		ND	ND	ND	
ght Side	ND	ND	ND		ND	ND	ND	
ack Side ront Side	ND ND	ND ND	ND ND		ND ND	ND ND	ND ND	
DE Injector	ND	ND	ND		ND	ND	ND	
C Power Input	ND	ND	ND		ND	ND	ND	
op Side	ND	ND	ND		ND	ND	ND	
oft Side	ND	ND	ND		ND	ND	ND	
ght Side	ND	ND	ND		ND	ND	ND	
ick Side ont Side	ND ND	ND ND	ND ND		ND ND	ND ND	ND ND	
	ND	ND	ND		ND	ND	ND	
Note: An "X" indicates that the unit continued to ope	erate as ir	ntended	The vide	o stream	was cont	inuously	displayed	on the
There was no loss of video stream reported b						,	1 5	
Note: ND: No discharge was possible due to the lac	k of a dis	charge n	ath to aro	und from	the test r	noint		

An ZAZA) company		
Client:	Ubiquiti Networks	Job Number:	J83025
Model:	AirCam	T-Log Number:	T83139
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Immunity Standard(s):	EN 55024, KN24	Environment:	Radio



An LATAS	company		
Client:	Ubiquiti Networks	Job Number:	J83025
Model:	AirCam	T-Log Number:	T83139
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Immunity Standard(s):	EN 55024, KN24	Environment:	Radio



4	Ellio	tt				EMC Test Data
	Client:	Ubiquiti Networks				ber: J83025
	Model:	AirCam				iber: T83139 iger: Susan Pelzl
	Contact:	Jennifer Sanchez				
Imm	nunity Standard(s):	EN 55024, KN24			Environm	nent: Radio
		Ra	adiated Imm	unity (EN 61	1000-4-3)	
	pecific Details Dbjective: The obje listed ab		ssion is to perform	final qualification	testing of the EUT with	respect to the specification
Test E	e of Test: 5/13/201 Engineer: Hong Ste Location: Fremont	enerson	Config. Used: Config Change: EUT Voltage:	None		
The EUT located o		ort equipment were er. Interface cabling	to the remote sup			e support equipment was or and, where possible, passed
	ent Conditions:	Rel. H	perature: 22 lumidity: 33			
	hary of Results-	Test I		Performar	nce Criteria	
Run #	Port	Required	Applied	Required	Met / Result	Comments
<u>EN 5502</u> 1	24 Requirements Enclosure	80-1000 MHz 1kHz 80% AM 3 V/m	80-1000 MHz 1kHz 80% AM 3 V/m	А	A / Pass	
	cations Made I	0 0	g testing			

ŒEI		tt								EN	IC T	est L	Data
		Ubiquiti I	Vetworks							Number:			
	Model:	AirCam								Number:		<u></u>	
	Contact	lonnifor	Canabaz					1	Account N	Manager:	Susan P	elzl	
Immunity Sta		Jennifer							Envi	ronment:	Radio		
ininianity Sta	10010(3).	LN 3302								ioninent.	Radio		
Run #1: Radiate	d Immun	ity, 80-?1	?? MHz (EN61000	-4-3)								
			equency:)0 MHz								
			tep Size:		%								
			vell time:	2874									
			niformity:		x 1.5m								
		Test L	Distance:	2	.5								
			Mod	ulation D	etails								
		Modu	Ilating Fre										
				dulation:									
			Depth / D	eviation:	80%								
Frequency Range (MHz)	Level		ont		Side		ear		ght		ор		ttom
Rande (MHZ)		1/		1/	I I a ul -	\/ a mb				\/ a mb			
80-1000 Test files used for The following calil	oration file								Horiz. X)-1000 M	Vert. N/A Hz (Oct 2	Horiz. N/A 2010)\ we	Vert. N/A re used:	Horiz N/A
80-1000 Test files used for The following calil 2.5m tip 2.5m tip Note: An "X" ir	3 this run: oration file of Antenr of Antenr	X es from U na to the f na to the f nat the ur	X :\EMC St ield 1.55r ield 1.55r it continu	X uff\RI Pla n High 80 n High 80 ed to ope	X nyback Fil 0 MHz - 1 0 MHz - 1	X es FT\CH 000 MHz 000 MHz	X 11\80-100 H 3Vm.c V 3Vm.c	X 0 MHz\80 rf f	X)-1000 M	N/A Hz (Oct 2	N/A 2010)\ we	N/A re used:	

An ZAZA	company		
Client:	Ubiquiti Networks	Job Number:	J83025
Model:	AirCam	T-Log Number:	T83139
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Immunity Standard(s):	EN 55024, KN24	Environment:	Radio

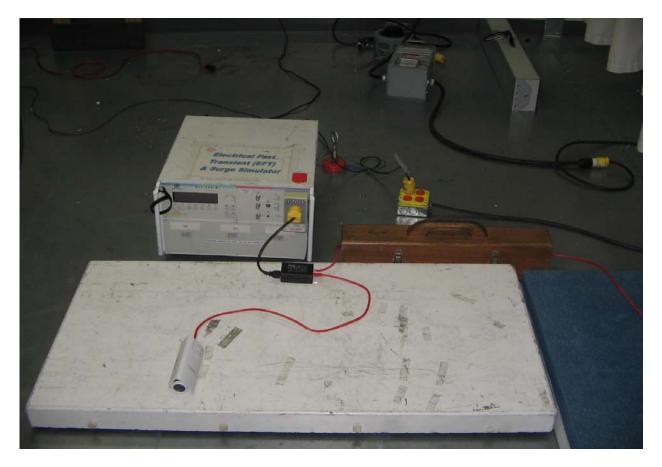




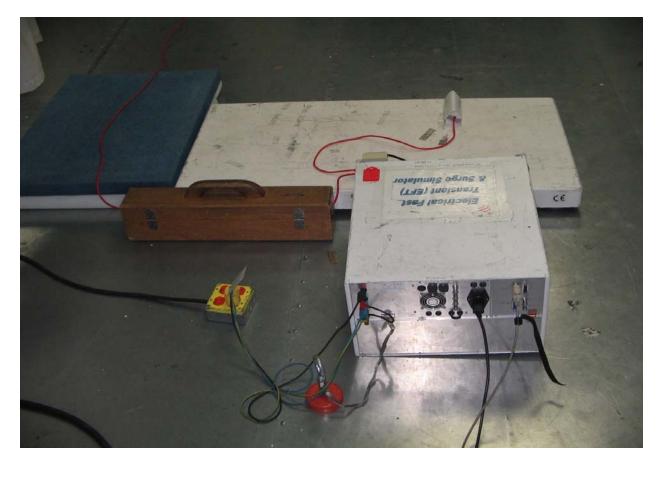
	Ellio	tt				EMC Test Dat
	Client:	Ubiquiti Networks			Job I	Number: J83025
	Model:	AirCam			T-Log I	Number: T83139
					Account N	lanager: Susan Pelzl
		Jennifer Sanchez				
Imm	nunity Standard(s):	EN 55024, KN24			Envir	onment: Radio
Date Test E Test Genera The EUT and the	listed ab e of Test: 5/15/201 Engineer: Chris Gr Location: Fremont al Test Configu F system was locat coupling/decouplin	ove. 1 10:13 oat EMC Lab #1 Iration ed 10 cm above a g g network. Interfere	Config. Used: Config Change: EUT Voltage: ground reference ence was coupled	1 none 220V/60Hz plane. A 0.5m lon d onto the cables c	g power cord was u	with respect to the specification used between the EUT's power po ts identified in the test data tables the trench.
		berature: 22 Humidity: 33				
	Port	Test L			nce Criteria	Comments
Run #						
Run #	AC PUWEI	±IKV	±IKV	D	AT Pass	
	Port AC Power	Test L Required ± 1 kV	Level Applied ± 1 kV	Performar Required B	nce Criteria Met / Result A / Pass	Comments Refer to Individual Rur

	Client: Ubiquiti Ne	etworks					Job	Number:	J83025	
	Model: AirCam							Number:		
						1	Account M	Manager:	Susan P	elzl
	Contact: Jennifer Sa									
Imn	nunity Standard(s): EN 55024,	KN24					Envi	ronment:	Radio	
un #1:	: EFT/B Testing									
		Tes	st Parame	ters						
	Waveform: 5					t Period:				
	Repetition Frequency: 5	kHz (2.5 kHz @	4 kV)		Bur	st Width:	15 ms			
	Applied			Dositivo	Polarity			Nogative	e Polarity	
	Location			r usilive (k					v)	
	Loodion				- /				- /	
	Power Line		Level 1	Level 2	Level 3	Level 4	Level 1	Level 2	Level 3	Level 4
	AC Power Port(s)	F 11	0.5	1.0	2.0	4.0	0.5	1.0	2.0	4.0
	Line + Neutral + Protective (3-Wire AC Power Port		Х	Х			Х	Х		
		/								
	I/O		Level 1	Level 2	Level 3	Level 4	Level 1	Level 2	Level 3	Level 4
	Port		0.25	0.5	1.0	2.0	0.25	0.5	1.0	2.0
	none									
Note:	An "X" indicates that the unit	continued to one	orato as ir	tondod	Thouido	o stroom	was cont	inuoucluu	dicplayod	on the [
NULC.	There was no loss of video si							inuousiy	uspiayeu	
Note:	The ports are intended to cor					e product	t standar	d only req	uires the	test to b
	performed on cables exceedi				,			5		
Note 1.	The interface cables for the l									
1010 1										
		toston.								
	owing interface ports were not					Doocon				
	Port(s)	he ports are inter	nded to c	onnect to	cables le	Reason		oth and th	e produc	t standar

An //7/A	5 company		
Client:	Ubiquiti Networks	Job Number:	J83025
Model:	AirCam	T-Log Number:	T83139
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Immunity Standard(s):	EN 55024, KN24	Environment:	Radio



An 4745	company		
Client:	Ubiquiti Networks	Job Number:	J83025
Model:	AirCam	T-Log Number:	T83139
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Immunity Standard(s):	EN 55024, KN24	Environment:	Radio



Model: AirCam T-Log Number: T83139 Contact: Jennifer Sanchez Immunity Standard(s): EN 55024, KN24 Environment: Radio Surge (EN 61000-4-5) Test Specific Details Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification Interview of this test session is to perform final qualification testing of the EUT with respect to the specification Date of Test: 5/16/2011 13:13 Config. Used: 1 Test Engineer: David Bare Config Change: None Test Configuration The EUT and all local support equipment were located on a bench. Ambient Conditions: Test Level Reference Criteria Comments Modifications Made During Testing Modifications Made During Testing Modifications were made to the EUT during testing Deviations From The Standard		Client:	Company Ubiquiti Networks			Job Numb	er: J83025
Contact: Jennifer Sanchez Immunity Standard(s): EN 55024, KN24 Environment: Radio Surge (EN 61000-4-5) Test Specific Details Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above. Date of Test: 5/16/2011 13:13 Config. Used: 1 Test Engineer: David Bare Config Change: None Test Location: Fremont EMC Lab #1 EUT Voltage: 220V, 60Hz General Test Configuration The EUT and all local support equipment were located on a bench. Ambient Conditions: Test Level Performance Criteria Run # Port Test Level Performance Criteria 1 AC Power ± 2 kV CM ± 2 kV CM B A / Pass 1 AC Power ± 1 kV DM B A / Pass Modifications were made to the EUT during testing Deviations From The Standard							
Immunity Standard(s): EN 55024, KN24 Environment: Radio Surge (EN 61000-4-5) Test Specific Details Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above. Date of Test: 5/16/2011 13:13 Config. Used: 1 Test Engineer: David Bare Config Change: None Test Location: Freemont EMC Lab #1 EUT Voltage: 220V, 60Hz General Test Configuration The EUT and all local support equipment were located on a bench. Ambient Conditions: Test Level Performance Rel. Humidity: 34 % Summary of Results Run # Port Test Level Performance Criteria Comments 1 AC Power ± 2 kV CM ± 2 kV CM B A / Pass	-					Account Manag	er: Susan Pelzl
Surge (EN 61000-4-5) Test Specific Details Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above. Date of Test: 5/16/2011 13:13 Config. Used: 1 Test Engineer: David Bare Config Change: None Test Engineer: David Bare Config Change: None Test Location: Fremont EMC Lab #1 EUT Voltage: 220V, 60Hz General Test Configuration The EUT and all local support equipment were located on a bench. Ambient Conditions: Termperature: 22 °C Rel. Humidity: 34 % Summary of Results 1 AC Power ± 2 kV CM ± 2 kV CM general Met / Result Comments 1 AC Power ± 2 kV CM ± 1 kV DM B A / Pass Modifications Made During Testing No modifications were made to the EUT during testing Deviations From The Standard Deviations From The Standard	Immi					Environmo	nt: Dadio
Test Specific Details Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above. Date of Test: 5/16/2011 13:13 Config. Used: 1 Test Engineer: David Bare Config Change: None Test Location: Fremont EMC Lab #1 EUT Voltage: 220V, 60Hz General Test Configuration The EUT and all local support equipment were located on a bench. Ambient Conditions: Temperature: 22 °C Rel. Humidity: 34 % Summary of Results Test Level Performance Criteria 1 AC Power ± 2 kV CM ± 2 kV CM 1 AC Power ± 1 kV DM B A / Pass Modifications Made During Testing No modifications were made to the EUT during testing Deviations From The Standard Deviations From The Standard		unity Standard(S).	LN 33024, KN24			Liwioline	
Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification is test above. Date of Test: 5/16/2011 13:13 Config. Used: 1 Test Engineer: David Bare Config Change: None Test Location: Fremont EMC Lab #1 EUT Voltage: 220V, 60Hz General Test Configuration Test Location: Fremont EMC Lab #1 The EUT and all local support equipment were located on a bench. Ambient Conditions: Temperature: 22 °C Rel. Humidity: 34 % Summary of Results Test Level Performance Criteria Run # Port Test Level Performance Criteria 1 AC Power ± 2 kV CM ± 1 kV DM B A / Pass Modifications Made During Testing No modifications were made to the EUT during testing Deviations From The Standard Deviations From The Standard				Surge ((EN 61000-4	-5)	
Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above. Date of Test: 5/16/2011 13:13 Config. Used: 1 Test Engineer: David Bare Config Change: None Test Location: Fremont EMC Lab #1 EUT Voltage: 220V, 60Hz General Test Configuration The EUT and all local support equipment were located on a bench. Ambient Conditions: Temperature: 22 °C Rel. Humidity: 34 % Summary of Results Test Level Performance Criteria Run # Port Test Level Performance Criteria 1 AC Power ± 2 kV CM ± 1 kV DM B A / Pass Modifications Made During Testing No modifications were made to the EUT during testing Deviations From The Standard Eut during testing	Toct Sr	pocific Dotails					
Test Engineer: David Bare Config Change: None Test Location: Fremont EMC Lab #1 EUT Voltage: 220V, 60Hz General Test Configuration EUT and all local support equipment were located on a bench. Ambient Conditions: Temperature: 22 °C Rel. Humidity: 34 % Summary of Results Performance Criteria Comments 1 AC Power ± 2 kV CM ± 2 kV CM B A / Pass Modifications Made During Testing No modifications were made to the EUT during testing Deviations From The Standard	-	bjective: The obje		ession is to perform	n final qualificatior	n testing of the EUT with r	espect to the specification
Test Engineer: David Bare Config Change: None Test Location: Fremont EMC Lab #1 EUT Voltage: 220V, 60Hz General Test Configuration EUT and all local support equipment were located on a bench. Ambient Conditions: Temperature: 22 °C Rel. Humidity: 34 % Summary of Results Performance Criteria Comments 1 AC Power ± 2 kV CM ± 2 kV CM B A / Pass Modifications Made During Testing No modifications were made to the EUT during testing Deviations From The Standard EUT during testing	Date	of Test: 5/16/201	1 13:13	Config. Used:	1		
General Test Configuration The EUT and all local support equipment were located on a bench. Ambient Conditions: Temperature: 22 °C Rel. Humidity: 34 % Summary of Results Run # Port Test Level Performance Criteria Comments 1 AC Power ± 2 kV CM ± 1 kV DM ± 1 kV DM B A/ Pass Modifications Made During Testing No modifications were made to the EUT during testing Deviations From The Standard	Test E	ngineer: David Ba	are	Config Change:	None		
The EUT and all local support equipment were located on a bench. Ambient Conditions: Temperature: 22 °C Rel. Humidity: 34 % Summary of Results Run # Port Test Level Performance Criteria Comments 1 AC Power ± 2 kV CM ± 2 kV CM B A / Pass Modifications Made During Testing No modifications were made to the EUT during testing Deviations From The Standard	Test L	ocation: Fremont	EMC Lab #1	EUT Voltage:	220V, 60Hz		
The EUT and all local support equipment were located on a bench. Ambient Conditions: Temperature: 22 °C Rel. Humidity: 34 % Summary of Results: Performance Criteria Run # Port Test Level Performance Criteria Comments 1 AC Power ± 2 kV CM ± 1 kV DM ± 1 kV DM B Additications Made During Testing No modifications were made to the EUT during testing Deviations From The Standard	Genera	I Test Confiau	Iration				
Rel. Humidity: 34 % Summary of Results Performance Criteria Comments Run # Port Test Level Performance Criteria Comments 1 AC Power ± 2 kV CM ± 2 kV CM B A / Pass 1 AC Power ± 1 kV DM ± 1 kV DM B A / Pass Modifications Made During Testing No modifications were made to the EUT during testing Deviations From The Standard		•		e located on a ben	ch.		
Rel. Humidity: 34 % Summary of Results Port Test Level Performance Criteria Comments 1 AC Power ± 2 kV CM ± 2 kV CM B A / Pass 1 AC Power ± 1 kV DM ± 1 kV DM B A / Pass Modifications Made During Testing No modifications were made to the EUT during testing Deviations From The Standard							
Summary of Results Run # Port Test Level Required Performance Criteria Required Comments 1 AC Power ± 2 kV CM ± 1 kV DM ± 2 kV CM ± 1 kV DM B A / Pass Modifications Made During Testing No modifications were made to the EUT during testing Deviations From The Standard	Ambier	nt Conditions:					
Run # Port Test Level Required Performance Criteria Required Comments 1 AC Power ± 2 kV CM ± 1 kV DM ± 2 kV CM ± 1 kV DM B A / Pass Modifications Made During Testing No modifications were made to the EUT during testing Deviations From The Standard			Rel. H	Humidity: 34	%		
Run # Poit Required Applied Required Met / Result 1 AC Power ± 2 kV CM ± 1 kV DM ± 2 kV CM ± 1 kV DM B A / Pass Modifications Made During Testing No modifications were made to the EUT during testing Deviations From The Standard							
Required Applied Required Met / Result 1 AC Power ± 2 kV CM ± 1 kV DM ± 2 kV CM ± 1 kV DM B A / Pass Modifications Made During Testing No modifications were made to the EUT during testing Deviations From The Standard	Summa	ary of Results				nce Criteria	
1 AC Power ± 1 kV DM B A / Pass Modifications Made During Testing No modifications were made to the EUT during testing Deviations From The Standard		2					Comments
Modifications Made During Testing No modifications were made to the EUT during testing Deviations From The Standard		2	Required	Applied			Comments
No modifications were made to the EUT during testing Deviations From The Standard	Run #	Port	Required ± 2 kV CM	Applied ± 2 kV CM	Required	Met / Result	Comments
Deviations From The Standard	Run #	Port	Required ± 2 kV CM	Applied ± 2 kV CM	Required	Met / Result	Comments
	Run # 1 Modific	Port AC Power cations Made [Required ± 2 kV CM ± 1 kV DM	Applied ± 2 kV CM ± 1 kV DM	Required	Met / Result	Comments
	Run # 1 Modific	Port AC Power cations Made [Required ± 2 kV CM ± 1 kV DM	Applied ± 2 kV CM ± 1 kV DM	Required	Met / Result	Comments
	Run # 1 Modific No modif	Port AC Power cations Made I ications were mad	Required ± 2 kV CM ± 1 kV DM During Testing le to the EUT durin	Applied ± 2 kV CM ± 1 kV DM	Required	Met / Result	Comments
	Run # 1 Modific No modif Deviati	Port AC Power cations Made I ications were mad ons From The	Required ± 2 kV CM ± 1 kV DM During Testing le to the EUT durin Standard	Applied ± 2 kV CM ± 1 kV DM	Required B	Met / Result	Comments
	Run # 1 Modific No modif	Port AC Power cations Made I ications were mad ons From The	Required ± 2 kV CM ± 1 kV DM During Testing le to the EUT durin Standard	Applied ± 2 kV CM ± 1 kV DM	Required B	Met / Result	Comments
	Run # 1 Modific No modif Deviati	Port AC Power cations Made I ications were mad ons From The	Required ± 2 kV CM ± 1 kV DM During Testing le to the EUT durin Standard	Applied ± 2 kV CM ± 1 kV DM	Required B	Met / Result	Comments
	Run # 1 Modific No modif Deviati	Port AC Power cations Made I ications were mad ons From The	Required ± 2 kV CM ± 1 kV DM During Testing le to the EUT durin Standard	Applied ± 2 kV CM ± 1 kV DM	Required B	Met / Result	Comments
	Run # 1 Modific No modif Deviati	Port AC Power cations Made I ications were mad ons From The	Required ± 2 kV CM ± 1 kV DM During Testing le to the EUT durin Standard	Applied ± 2 kV CM ± 1 kV DM	Required B	Met / Result	Comments
	Run # 1 Modific No modif Deviati	Port AC Power cations Made I ications were mad ons From The	Required ± 2 kV CM ± 1 kV DM During Testing le to the EUT durin Standard	Applied ± 2 kV CM ± 1 kV DM	Required B	Met / Result	Comments
	Run # 1 Modific No modif Deviati	Port AC Power cations Made I ications were mad ons From The	Required ± 2 kV CM ± 1 kV DM During Testing le to the EUT durin Standard	Applied ± 2 kV CM ± 1 kV DM	Required B	Met / Result	Comments
	Run # 1 Modific No modif Deviati	Port AC Power cations Made I ications were mad ons From The	Required ± 2 kV CM ± 1 kV DM During Testing le to the EUT durin Standard	Applied ± 2 kV CM ± 1 kV DM	Required B	Met / Result	Comments
	Run # 1 Modific No modif Deviati	Port AC Power cations Made I ications were mad ons From The	Required ± 2 kV CM ± 1 kV DM During Testing le to the EUT durin Standard	Applied ± 2 kV CM ± 1 kV DM	Required B	Met / Result	Comments

Client: Ubiquiti Networks					Job	Number:	J83025	
Model: AirCam						Number:		
					Account I	Manager:	Susan P	elzl
Contact: Jennifer Sanchez								
Immunity Standard(s): EN 55024, KN24					Envi	ronment:	Radio	
in #1: Surge Immunity, Power Line C Power Port								
	est Parameters]		
Waveform: 1.2/50µS]		
Impedance: 12 Ohms (C	common Mode)	, 2 Ohms	(Differen	tial Mode)	J		
Applied		Docitivo	Polarity			Nogativ	e Polarity	
Location			V)			<u>v</u>	:V)	
						· ·	ŕ	
Power	Level 1	Level 2	Level 3	Level 4	Level 1	Level 2	Level 3	Level 4
Line Line to Line (Differential Mode)	0.5	1.0	2.0	4.0	0.5	1.0	2.0	4.0
Line to Line (Differential Mode)	v	v			v	v		
<u> </u>	X	X X			X X	X X		
	X	X			X	X		
270°	X	X			X	x		
Line to PE (Common Mode)								
	Х	Х	Х		Х	Х	Х	
90°	X	X	X		X	X	X	
180°	X	X	X		x	X	X	
270°	Х	X	X		X	X	X	
Neutral to PE (Common Mode)		-						
	Х	Х	Х		Х	Х	Х	
<u> </u>	X	X	X		X	X	X	
	X	X	X		X	X	X	
180°			~ ~		L ^	~		

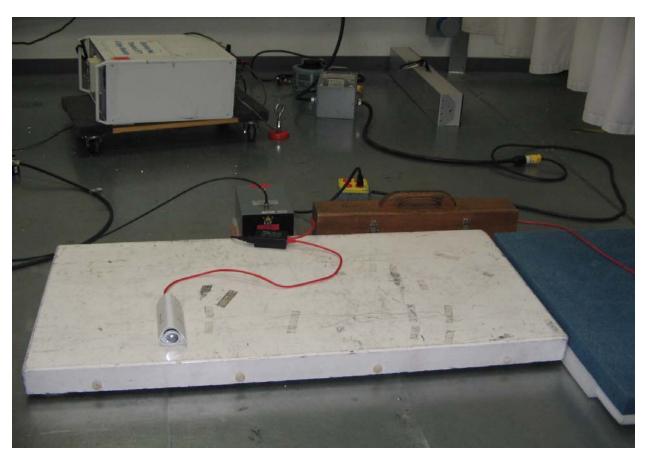
An LATA	company		
Client:	Ubiquiti Networks	Job Number:	J83025
Model:	AirCam	T-Log Number:	T83139
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Immunity Standard(s):	EN 55024, KN24	Environment:	Radio



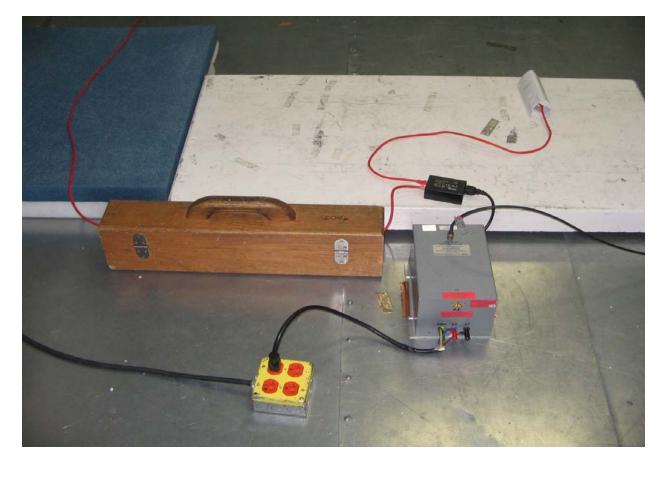
4		company					
		Ubiquiti Networks AirCam			Job Nu T-Log Nu		J83025
	woder:	AllCall					Susan Pelzl
		Jennifer Sanchez					
Immi	unity Standard(s):	EN 55024, KN24			Enviroi	nment:	Radio
		Co	onducted Imr	munity (EN	61000-4-6)		
•	becific Details bjective: The obje listed ab	ective of this test se	ession is to perform	final qualificatior	n testing of the EUT w	ith resp	ect to the specification
Test E	of Test: 5/15/201 ngineer: Chris Gr .ocation: Fremont	oat	Config. Used: Config Change: EUT Voltage:	none			
	•						e also placed on the cated 3 to 5 cm above the
round re	support. All inter eference plane.	face cabling betwee Temp Rel. F	een the EUT and th perature: 22 Humidity: 34	e coupling and d			•
round re Ambier	support. All inter eference plane. Int Conditions: ary of Results	face cabling betwee Temp Rel. F - Conducted Ir	perature: 22 Humidity: 34	e coupling and d °C %			cated 3 to 5 cm above the
round re Ambier	support. All inter eference plane.	face cabling between Temp Rel. H - Conducted Ir Test Required	een the EUT and th perature: 22 Humidity: 34 mmunity Level Applied	e coupling and d °C %	ecoupling network(s)		•
round re	support. All inter eference plane. Int Conditions: ary of Results	face cabling between Temp Rel. H - Conducted Ir Test	een the EUT and th perature: 22 Humidity: 34 mmunity Level	e coupling and d °C % Performa	ecoupling network(s)	were lo	cated 3 to 5 cm above the

Ellio	tt				E	MC Test Data
	Ubiquiti Networks				Job Number:	J83025
Model:	AirCam		_		T-Log Number: count Manager:	
Contact: Immunity Standard(s):	Jennifer Sanchez EN 55024, KN24				Environment:	Radio
Run #1: Conducted Susc	eptibility (EN61000-4-6)					
Test Level:			on Details	1.1.1.		
Step Size: Dwell time:	1 % 2874 ms		equency: odulation: Deviation:	1 kHz AM 80%		
Frequency Range	Port Under Test	Injection Method		0070	Commer	ts
MHz		,				
0.15 - 80	AC Power	M3 CDN	was conti	nuously dis	splayed on the F	ended The video stream PC laptop. There was no monitoring software.
		nex A of the standar	rd.	Reason		e at the spot frequencies
	requires the test t					nufacvturer states that these

An UTAS	company		
Client:	Ubiquiti Networks	Job Number:	J83025
Model:	AirCam	T-Log Number:	T83139
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Immunity Standard(s):	EN 55024, KN24	Environment:	Radio



An UZAS	company		
Client:	Ubiquiti Networks	Job Number:	J83025
Model:	AirCam	T-Log Number:	T83139
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Immunity Standard(s):	EN 55024, KN24	Environment:	Radio

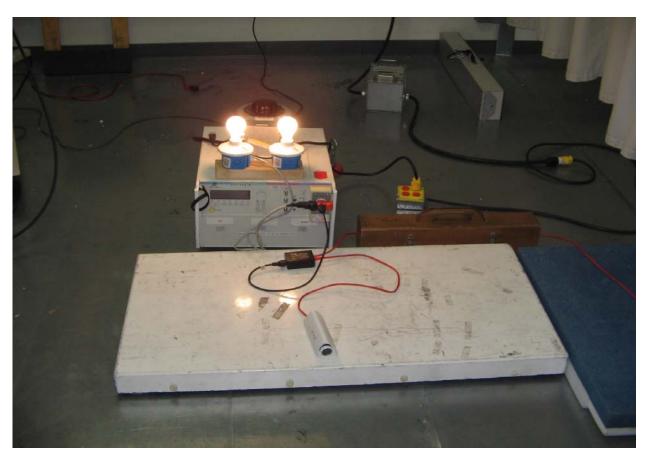


	Ellio	company				
	Client:	Ubiquiti Networks			Job	Number: J83025
	Model:				T-Log	J Number: T83139
					Account	Manager: Susan Pelzl
		Jennifer Sanchez				la sur la Da lla
Imm	nunity Standard(s):	EN 55024, KN24			Env	vironment: Radio
		Voltag	e Dips and I	nterrupts (E	EN 61000-4-1	1)
est S	pecific Details					
C	Dbjective: The objec listed abc		ession is to perform	n final qualification	testing of the EU	T with respect to the specification
Date	e of Test: 5/15/201 ²	1 10.13	Config. Used:	1		
	Engineer: Chris Gro		Config Change:			
	Location: Fremont			220V/60Hz & 23	30V/50Hz	
10001						
10011			Ū.			
Genera	al Test Configu					
Genera				-conductive benc	h.	
Genera The EUT	al Test Configu T and all local suppo	ort equipment were	e located on a non-		h.	
Genera The EUT	al Test Configu	ort equipment were Temp	e located on a non- perature: 22	°C	h.	
Genera The EUT	al Test Configu T and all local suppo	ort equipment were Temp	e located on a non-	°C	h.	
Genera The EUT Ambie	al Test Configu T and all local suppo ent Conditions:	ort equipment were Temp	e located on a non- perature: 22	°C	h.	
Genera he EUT Ambier	al Test Configu T and all local support ent Conditions: hary of Results	ort equipment were Temp	e located on a non- perature: 22 Humidity: 34	°C %		Community
Genera The EUT Ambier Summa Run #	al Test Configu T and all local support ont Conditions: ary of Results Port	ort equipment were Temp Rel. H	e located on a non- perature: 22 Humidity: 34	°C %	h. nce Criteria Met / Result	Comments
Genera The EUT Ambie Gumma Run #	al Test Configu T and all local suppo ent Conditions: ary of Results Port 24 and KN24	ort equipment were Temp Rel. F Test I Required	e located on a non- perature: 22 Humidity: 34 Level	°C % Performa	nce Criteria	Comments
Genera The EUT Ambie Summa Run #	al Test Configu T and all local support ont Conditions: ary of Results Port	ort equipment were Temp Rel. F Required	e located on a non- perature: 22 Humidity: 34 Level Applied	°C % Performa	nce Criteria	
Genera The EUT Ambie Summa Run #	al Test Configu T and all local suppo ent Conditions: ary of Results Port 24 and KN24	ort equipment were Temp Rel. H Required th standards) >95%	e located on a non- perature: 22 Humidity: 34 Level Applied	°C % Performa	nce Criteria	220V/60Hz nominal
Genera The EUT Ambie Ambie Summa Run # EN 5502 tests list 1	al Test Configu T and all local support art Conditions: Port Port 24 and KN24 ted below cover bot AC power	ort equipment were Temp Rel. H Required th standards) >95% ½ period	e located on a non- perature: 22 Humidity: 34 Level Applied	°C % Performa Required B	nce Criteria Met / Result A / Pass	220V/60Hz nominal (½ period at 60Hz = 8.33 ms)
Genera The EUT Ambie Ambie Summa Run # EN 5502 tests list	al Test Configu T and all local support ont Conditions: ary of Results Port Port 24 and KN24 ted below cover bot	ort equipment were Temp Rel. H Required th standards) >95%	e located on a non- perature: 22 Humidity: 34 Level Applied >95% ½ period	°C % Performa Required	nce Criteria Met / Result	220V/60Hz nominal (½ period at 60Hz = 8.33 ms) 220V/60Hz nominal
Genera he EUT Ambie Ambie Run # EN 5502 1 1	al Test Configu T and all local support ent Conditions: ary of Results Port 24 and KN24 ted below cover bot AC power AC power	ort equipment were Temp Rel. F Required th standards) >95% ½ period 30%	e located on a non- perature: 22 Humidity: 34 Level Applied >95% ½ period 30%	°C % Performa Required B C	nce Criteria Met / Result A / Pass A / Pass	220V/60Hz nominal (½ period at 60Hz = 8.33 ms) 220V/60Hz nominal (30 periods at 60 Hz = 500 ms) 220V/60Hz nominal
Genera The EUT Ambie Ambie Summa Run # EN 5502 tests list 1	al Test Configu T and all local support art Conditions: Port Port 24 and KN24 ted below cover bot AC power	ort equipment were Temp Rel. F Required th standards) >95% ½ period 30% 30 periods	e located on a non- perature: 22 Humidity: 34 Level Applied >95% ½ period 30% 30 periods	°C % Performa Required B	nce Criteria Met / Result A / Pass	220V/60Hz nominal (½ period at 60Hz = 8.33 ms) 220V/60Hz nominal (30 periods at 60 Hz = 500 ms) 220V/60Hz nominal (300 periods at 60 Hz = 5 sec)
Genera The EUT Ambie Ambie Run # EN 5502 tests list 1 1	al Test Configu T and all local support ent Conditions: ary of Results Port 24 and KN24 ted below cover bot AC power AC power	ort equipment were Temp Rel. H Required th standards) >95% ½ period 30% 30 periods >95% 300 periods	e located on a non- perature: 22 Humidity: 34 Level Applied >95% ½ period 30% 30 periods >95% 300 periods	°C % Performa Required B C	nce Criteria Met / Result A / Pass A / Pass	220V/60Hz nominal (½ period at 60Hz = 8.33 ms) 220V/60Hz nominal (30 periods at 60 Hz = 500 ms) 220V/60Hz nominal (300 periods at 60 Hz = 5 sec) 230V50Hz nominal
Genera The EUT Ambie Ambie Run # EN 5502 tests list 1 1	al Test Configu T and all local support ent Conditions: ary of Results Port 24 and KN24 ted below cover bot AC power AC power	ort equipment were Temp Rel. H Required th standards) >95% ½ period 30% 30 periods >95% 300 periods >95%	e located on a non- perature: 22 Humidity: 34 Level Applied >95% 300 periods >95% 300 periods >95%	°C % Performa Required B C	nce Criteria Met / Result A / Pass A / Pass	220V/60Hz nominal ($\frac{1}{2}$ period at 60Hz = 8.33 ms) 220V/60Hz nominal (30 periods at 60 Hz = 500 ms) 220V/60Hz nominal (300 periods at 60 Hz = 5 sec) 230V50Hz nominal Additional voltage dip at 230V/50
Genera The EUT Ambie Summa Run # EN 5502 tests list 1 1 1	al Test Configu T and all local support art Conditions: Port 24 and KN24 ted below cover bot AC power AC power AC power	ort equipment were Temp Rel. H Required th standards) >95% ½ period 30% 30 periods >95% 300 periods	e located on a non- perature: 22 Humidity: 34 Level Applied >95% ½ period 30% 30 periods >95% 300 periods	°C % Performa Required B C C	nce Criteria Met / Result A / Pass A / Pass C / Pass	220V/60Hz nominal (½ period at 60Hz = 8.33 ms) 220V/60Hz nominal (30 periods at 60 Hz = 500 ms) 220V/60Hz nominal (300 periods at 60 Hz = 5 sec) 230V50Hz nominal

The 30%/30-period and 95%/300-period dips at an AC voltage of 220V/60Hz required by KN24 result in the same dip time duration (but at a lower voltage) as the 30%/25-period and 95%-250-period dips at an AC voltage of 230V/50Hz required by EN 55024. The results of the 30%/30-period and 95%/300-period dips tests performed at an operating voltage of 220V/60Hz are considered representative of the results that would be obtained performing the EN 55024 30%/25-period and 95%/250-period dips at an AC supply frequency of 50Hz. Although the use of 60Hz and 30/300 cycles for this test is a technical deviation from the standard it produces the same duration dip and, therefore, it is considered an equivalent test.

An ATAS co			EMC Test Data
	biquiti Networks		Job Number: J83025
Model: A	irCam		T-Log Number: T83139
Contact: 16	ennifer Sanchez		Account Manager: Susan Pelzl
Immunity Standard(s): E			Environment: Radio
Modifications Made Du No modifications were made	• •	1	
Deviations From The S No deviations were made from	m the requirements of the	e standard.	
Run #1: Voltage Dips and Ir) Volts 60 Hz	
Voltage Dips/Time		1	
% / ms or % / periods	Port Under Test	Interrupt Voltage	Comments
>95% ½ period	AC Power	0	The unit continued to operate as intended The video stream was continuously displayed on the PC laptop There was no loss of video stream reported by the monitoring software.
30% 30 periods	AC Power	154	The unit continued to operate as intended The video stream was continuously displayed on the PC laptop There was no loss of video stream reported by the monitoring software.
- F		1	The unit stopped and rebooted. The video stream
>95% 300 periods	AC Power	0	stopped(froze) being displayed on the PC laptop. Operator intervention was needed to restart the PC Laptop video stream There was a loss of video streat reported by the monitoring software.
>95% 300 periods			stopped(froze) being displayed on the PC laptop. Operator intervention was needed to restart the PC Laptop video stream There was a loss of video stread
>95% 300 periods Nominal Operating	Voltage of EUT: 230	0 0 Volts 50 Hz	stopped(froze) being displayed on the PC laptop. Operator intervention was needed to restart the PC Laptop video stream There was a loss of video streat reported by the monitoring software.
>95% 300 periods			stopped(froze) being displayed on the PC laptop. Operator intervention was needed to restart the PC Laptop video stream There was a loss of video stread

Job Number: J83025
T-Log Number: T83139
Account Manager: Susan Pelzl
Environment: Radio



Appendix C Product Labeling Requirements

The following information has been provided to clarify notification, equipment labeling requirements and information that must be included in the operator's manual. These requirements may be found in the standards/regulations listed in the scope of this report.

Label Location

The required label(s) must be in a *conspicuous location* on the product, which is defined as any location readily visible to the user of the device without the use of tools.

Label Attachment

The label(s) must be *permanently attached* to the product, which is defined as attached such that it can normally be expected to remain fastened to the equipment during the equipment's expected useful life. A paper gum label will generally <u>not</u> meet this condition.

United States Class A Label

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

European and Australian Class A Label

Warning - This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Japanese Class A Label

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用する と電波妨害を引き起こすことがあります。この場合には使用者が適切な対策 を講ずるよう要求されることがあります。 VCCI-A

The English translation for the labeling text is: *This is a Class A product. In a domestic* environment this product may cause radio interference in which case the user may be required to take adequate measures.

Industry Canada

For ICES-003 (digital apparatus), the product must be labeled with a notice indicating compliance e.g.

This Class A digital apparatus complies with Canadian ICES-003

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada

If there is limited space on the product then the text may be placed in the manual:

Appendix D User Manual Regulatory Statements

Where special accessories, such as shielded cables, are required in order to meet the emission limits, appropriate instructions regarding the need to use such accessories must be contained on the first page of text concerned with the installation of the device in the operator's manual.

A requirement by FCC regulations, and recommended for all regulatory markets, is a cautionary statement to the end user that changes or modifications to the device not expressly approved by you, the manufacturer, could void their right to operate the equipment.

United States Class A Manual Statement

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Note: Additional information about corrective measures may also be provided to the user at the company's option.

The FCC has indicated that the radio interference statement be bound in the same manner as the operator's manual. Thus, a loose-leaf insert page in a bound or center-spine and stapled manual would <u>not</u> meet this condition.

European and Australian Class A Manual Statement

Warning - This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Note: This statement is not required if it is provided on a label affixed to the product.

Japanese Class A Manual Statement

この装置は、情報処理装置等電波障害自主規制協議会(VCCI)の基準 に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波 妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ず るよう要求されることがあります。

The English translation for the text is: *This is Class A product based on the standard of the Voluntary Control Council For Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.*

Appendix E Additional Information for VCCI

The VCCI requires a notification for each product sold with the VCCI label. A notification letter on your company letterhead with 2 copies of Form 1 must be sent to the VCCI in Japan at the following address:

Voluntary Control Council for Interference by Information Technology Equipment NOA Building, 7th Floor 3-5 Azabudai 2-chome, Minato-ku, Tokyo 106-0041, Japan

You may also submit the form electronically on the VCCI web site http://www.vcci.or.jp/vcci_e/member/index.html. Go to "Documents and Forms, Report of Compliance" in Members only section. Enter your username and password and click "OK". Then click "Please click here if you submit report of compliance electronically" to open the submission form. Fill all required columns and click "CONFIRM" after making sure everything is filled properly.

Appendix F Additional Information for Australia and New Zealand

In Australia, an application to use the C-Tick mark must be made by the importer of the product. The importer must hold a Declaration of Conformity and compliance folder, of which this report forms a part, for each product sold with a C-Tick mark.

The European harmonized standards and international (CISPR/IEC) standards are acceptable for demonstrating compliance with the Australian/New Zealand compliance framework. This is explained in the document "Electromagnetic Compatibility - Information for suppliers of electrical and electronic products in Australia and New Zealand", dated July 2003. While this document is being revised information can be found on the Australian Communications and Media Authority (ACMA) website by following links from their homepage (http://www.acma.gov.au/WEB/HOMEPAGE/pc=HOME) to EMC compliance & labeling regulatory arrangements.

Appendix G Basic and Reference Standards

Subpart B of Part 15 of FCC Rules for digital devices.

FCC Part 15 Subpart B references the use of 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*" for the purposes of evaluating the radiated and conducted emissions from digital devices.

VCCI Regulations For Information Technology Equipment, dated April 2009

The VCCI Regulations For Voluntary Control Measures of radio interference generated by Information Technology Equipment make reference to the following National and International standards for the purposes of making measurements. Elliott's test procedures associated with measurements against VCCI rules use these standards in addition to the procedures laid out in the VCCI regulations.

Standard	Description / Title
CISPR 22: Ed 5.2:2006	Information Technology Equipment - Radio disturbance characteristics - Limits and
	methods of measurement
CISPR 16-1-1 Ed2.1:2006	Specification for radio disturbance and immunity measuring apparatus and method –
	Part 1-1: Radio disturbance and immunity measuring apparatus – Measuring
	apparatus.
CISPR 16-1-2 Ed1.2:2006	Specification for radio disturbance and immunity measuring apparatus and methods –
	Part 1-2: Radio disturbance and immunity measuring apparatus – Measuring
	apparatus – Ancillary equipment – Conducted disturbances
CISPR 16-1-4 Ed2.0:2007	Specification for radio disturbance and immunity measuring apparatus and methods
	-Part 1-4: Radio disturbance and immunity measuring apparatus - Ancillary
	equipment – Radio disturbances
CISPR 16-2-3 Ed1.0:2003	Specification for radio disturbance and immunity measuring apparatus and methods –
	Part 2-3: Methods of measurement of disturbance and immunity – Radiated
	disturbance measurements
CISPR 16-4-2 Ed1.0:2003	Specification for radio disturbance and immunity measuring apparatus and methods –
	Part 4-2: Uncertainties, statistics and limit modeling – Uncertainty in EMC
	measurements
ANSI C63.4:2003	American National Standard for Method of Measurement of Radio Noise Emissions
	from Low Voltage Electrical and Electronic Equipment in the Range 9kHz to 40
	GHz.

EN 55022:2006 including amendment A1:2007

EN 55022:2006 references various international and European standards to be used when making the required measurements. The references all cite dated versions of the standards, therefore the editions cited are used.

International and	Description	Standard Used
EN equivalent		
standard		
CISPR 16-1-1 2003	Specification for radio disturbance and immunity measuring	CISPR 16-1-1 2003
EN 55016-1-1 2004	apparatus and methods Part 1-1: Radio disturbance and immunity	
	measuring apparatus - Measuring apparatus	
CISPR 16-1-2 2003	Specification for radio disturbance and immunity measuring	CISPR 16-1-2 2003
+ A1 2004	apparatus and methods Part 1-2: Radio disturbance and immunity	+ A1 2004
EN 55016-1-2 2004	measuring apparatus - Ancillary equipment - Conducted	
+ A1 2005	disturbances	
CISPR 16-1-4:2003	Specification for radio disturbance and immunity measuring	CISPR 16-1-4:2003
+ A1 2004	apparatus and methods Part 1-4: Radio disturbance and immunity	+ A1 2004
EN 55016-1-4: 2004	measuring apparatus - Ancillary equipment - Radiated	
+ A1: 2005	disturbances	
CISPR 16-4-2 2003	Specification for radio disturbance and immunity measuring	CISPR 16-4-2 2003
EN 55016-4-2 2004	apparatus and methods Part 4-2: Uncertainties, statistics and limit	
	modelling - Uncertainty in EMC measurements	
Unless the internation	al publication has been modified by common modifications, indicated	by (mod), either the
intentional or the EN s	standard may be used. Where the EN standard differs from the intenti	onal standard then the
EN version is used. F	or all of the standards listed above there are no common modification	s therefore Elliott
makes use of the inter	national version of all standards listed.	

EN 55024:1998 including amendments A1:2001 and A2:2003

EN 55024 references various European standards to be used when making the required measurements. When the referenced standard is cited by version (date or revision) then that version is used except where noted. In instances where the standards are referenced without citing the version to be used, the current versions (or its international equivalent) are used.

Referenced standard	Description	Standard Used
IEC 61000-4-2 1995	Electromagnetic compatibility (EMC) Part 4: Testing and	IEC 61000-4-2:2008
EN 61000-4-2 1995	measurement techniques -" Section 2: Electrostatic discharge	EN 61000-4-2:2009
EN 01000-4-2 1995	1 0	EN 01000-4-2.2009
TEC (1000 4 2 1005	immunity test	HEC (1000 4 2 200)
IEC 61000-4-3 1995	Section 3: Radiated, radio-frequency, electromagnetic field	IEC 61000-4-3:2006
(mod)	immunity test	EN 61000-4-3:2006
EN 61000-4-3 1996		
IEC 61000-4-4 1995	Section 4: Electrical fast transient/burst immunity test	IEC 61000-4-4:2004
EN 61000-4-4 1995		EN 61000-4-4:2004
IEC 61000-4-5 1995	Section 5: Surge immunity test	IEC 61000-4-5:2005
EN 61000-4-5 1995		EN 61000-4-5:2006
IEC 61000-4-6 1996	Section 6: Immunity to conducted disturbances, induced by	IEC 61000-4-6:2008
EN 61000-4-6 1996	radio-frequency fields	EN 61000-4-6:2009
IEC 61000-4-8 1993	Section 8: Power frequency magnetic field immunity test	IEC 61000-4-8 1993
EN 61000-4-8 1993		A1:2000
		EN 61000-4-8:1993
		A1:2001
IEC 61000-4-11:1994	Section 11: Voltage dips, short interruptions and voltage	IEC 61000-4-11:2004
EN 61000-4-11:1994	variations immunity tests	EN 61000-4-11:2004
Although all of the refe	rences to the standards are dated references, all of the basic EN 61	000-4-x standards
	24 have been superseded by more recent versions. As the date of w	
the older versions of sta	andards, the EN / IEC versions of these basic standards as detailed	in the third column are
used.		
	indures, the Erv / IEC versions of these basic standards as detailed	in the third column are

CISPR 24:1997 including amendments A1:2001 and A2:2002

CISPR 24 references various IEC basic standards to be used when making the required measurements. When the referenced standard is cited by version (date or revision) then that version is used except where noted. In instances where the standards are referenced without citing the version to be used, the current versions are used.

Referenced standard	Description	Standard Used
IEC 61000-4-2 1995	Electromagnetic compatibility (EMC) Part 4: Testing and measurement techniques -" Section 2: Electrostatic discharge	IEC 61000-4-2:2008
	immunity test	
IEC 61000-4-3 1995	Section 3: Radiated, radio-frequency, electromagnetic field	IEC 61000-4-3:2006
	immunity test	
IEC 61000-4-4 1995	Section 4: Electrical fast transient/burst immunity test	IEC 61000-4-4:2004
IEC 61000-4-5 1995	Section 5: Surge immunity test	IEC 61000-4-5:2005
IEC 61000-4-6 1996	Section 6: Immunity to conducted disturbances, induced by radio-	IEC 61000-4-6:2008
	frequency fields	
IEC 61000-4-8 1993	Section 8: Power frequency magnetic field immunity test	IEC 61000-4-8 1993
		A1:2000
IEC 61000-4-11	Section 11: Voltage dips, short interruptions and voltage	IEC 61000-4-
1994	variations immunity tests	11:2004
Although all of the references to the standards are dated references, all of the basic IEC 61000-4-x standards		
referenced by CISPR 24 have been superseded by more recent versions. As the date of withdrawal has passed for		
the older versions of standards, the versions of these basic standards as detailed in the third column are used.		

File: R83303

End of Report

This page is intentionally blank and marks the last page of this test report.