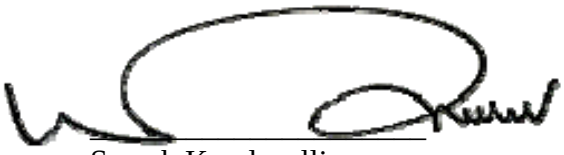
Test Certificate

A sample of the following product received on June 8, 2011 and tested on May 13, 16 and 17, 2011 complied with the requirements of,

- **EN 301 489-1 V1.8.1 "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements"**
- **EN 301 489-17 V2.1.1 "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment; Part 17: Specific conditions for Broadband Data Transmission Systems"**

given the measurement uncertainties as detailed in Elliott report R83310.

Ubiquiti Networks
Model PicoStation5



Suresh Kondapalli
Senior Engineer

_____
Ubiquiti Networks

_____
Printed Name

ACCREDITED
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. 94538-2435
510-578-3500 Phone
510-440-9525 Fax

EMC Test Report

EN 301 489-1 v1.8.1

Model: PicoStation5

COMPANY:	Ubiquiti Networks 91 E. Tasman Drive San Jose, CA 95134
TEST SITE(S):	41039 Boyce Road. Fremont, CA. 94538-2435
REPORT DATE:	May 23, 2011
FINAL TEST DATES:	May 13, 16 and 17, 2011

AUTHORIZED SIGNATORY

Suresh Kondapalli
Senior Engineer
Elliott Laboratories

A2LA ACCREDITED
Testing Cert #2016.01

REVISION HISTORY

Rev#	Date	Comments	Modified By
-	06-08-2011	First release	

TABLE OF CONTENTS

SCOPE

The European Committee for Electrotechnical Standardization (CENELEC), the European Telecommunications Standards Institute (ETSI) and the International Electrotechnical Commission (IEC) publish standards regarding the electromagnetic compatibility of electronic devices. Electromagnetic compatibility tests have been performed on the Ubiquiti Networks model PicoStation5 in accordance with these standards. The tests were performed in accordance with the current, published versions of the basic standards referenced in the following standards, as outlined in Elliott Laboratories test procedures. The test data has been provided as an appendix to this report for reference.

Standard	Title	Date
EN 301 489-1	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements	2008-04 (V1.8.1)
EN 301 489-17	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment; Part 17: Specific conditions for Broadband Data Transmission Systems	2009-05 (V2.1.1)

OBJECTIVE

The objective of the manufacturer is to declare conformity with one of the essential requirements of the R&TTE Directive 1999/5/EC. In order to demonstrate compliance, the manufacturer or a contracted laboratory makes measurements and takes the necessary steps to ensure that the equipment complies with the appropriate technical standards.

STATEMENT OF COMPLIANCE

The tested sample of Ubiquiti Networks model PicoStation5, given the performance criteria as specified by the manufacturer, complied with the requirements of the following standards:

Standard/Regulation	Version	Standard Date
EN 301 489-1	1.8.1	2008-04
EN 301 489-17	2.1.1	2009-05

The test results recorded herein are based on a single type test of the Ubiquiti Networks model PicoStation5 and therefore apply only to the tested sample. The sample was selected and prepared by Jennifer Sanchez of Ubiquiti Networks

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product that could result in increased emissions 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 STANDARD

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

TEST RESULTS

The following tests were performed on the Ubiquiti Networks model PicoStation5. The results are based upon performance criteria defined by the manufacturer. The actual test results and associated performance criteria are contained within an appendix of this report.

EMISSIONS TESTING

Test	Port	Basic Standard	Level (Margin)	Status
Radiated Emissions 30MHz – 6GHz	Enclosure	EN 55022	N/A – Note 1	
Conducted Emissions 0.15 – 30MHz	AC Power	EN 55022	N/A – Note 2	
Harmonic Current Emissions		EN 61000-3-2	N/A – note 2	
Voltage Fluctuations		EN 61000-3-3	N/A – note 2	
Conducted Emissions 0.15 – 30MHz	DC Power	EN 55022	N/A – Note 3	
Conducted Emissions 0.15 – 30 MHz	Telecommunications Ports	EN 55022	N/A – Note 4	

Note 1 This test is only applicable to ancillary equipment. The radiated emissions requirements for radio equipment are covered under the Radio standard.
Note 2 The EUT does not have an AC power port
Note 3 The EUT does not have a DC power port that would connect to a cable longer than 3m.
Note 4 The EUT does not have any telecommunication ports that connect to cables longer than 3m

IMMUNITY TESTING

Test	Basic Standard	Level Required	Level Tested	Criterion Met	Status
ElectroStatic Discharge	EN 61000-4-2	4 kV CD, 8 kV AD	4 kV CD, 8 kV AD	A / TT / TR	Complied
Radio frequency Electromagnetic Field	EN 61000-4-3	80-1400 MHz 1400-2700 MHz 3 V/m 80% 1 KHz AM	80-1400 MHz 1400-2700 MHz 3 V/m 80% 1 KHz AM	A / CT / CR	Complied
Fast Transients AC Power Ports	EN 61000-4-4	N/A – Note 1			
Fast Transients DC Power Ports	EN 61000-4-4	N/A – Note 2			
Fast Transients Telecommunications / Signal / Control Ports	EN 61000-4-4	N/A – Note 3			
Surge, AC Power Port	EN 61000-4-5	N/A – Note 1			
Surge Transients Telecommunications Ports (indoor cables)	EN 61000-4-5	N/A – Note 4			
Surge Transients Telecommunications Ports (outdoor cables)	EN 61000-4-5				
Vehicular Surges	ISO 7637-1, ISO 7637-2	N/A – Note 5			
Radio Frequency Common Mode AC Power Ports	EN 61000-4-6	N/A – Note 1			
Radio Frequency Common Mode DC Power Ports	EN 61000-4-6	N/A – Note 2			
Radio Frequency Common Mode Telecommunications/ Signal / Control Ports	EN 61000-4-6	N/A – Note 3			
Voltage Dips and Interrupts	EN 61000-4-11	N/A – Note 1			

Note 1 The EUT does not have any AC power port.
Note 2 The EUT does not have any DC power ports.
Note 3 The EUT does not have any signal ports that are intended to connect to cables longer than 3m in length
Note 4 The EUT does not have any interface ports that would connect to long distance telecommunications lines.
Note 5 The EUT is not intended to be used in a vehicular environment

MEASUREMENT UNCERTAINTIES

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the test results be included in the report. The measurement uncertainties given below are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a 95% confidence level and were calculated in accordance with NAMAS document LAB 34. For emissions tests, the uncertainties were calculated using the approach described in CISPR 16-4-2:2003 and the levels were found to be below levels of Ucispr and therefore no adjustment of the data for measurement uncertainty is required.

Measurement Type	Measurement Unit	Frequency Range	Expanded Uncertainty
Conducted Emissions	dBuV	0.15 to 30 MHz	± 2.4 dB
Radiated Emissions	dBuV/m	30 to 1000 MHz	± 3.6 dB
AC Current Harmonics	Amps	50 to 2,000 Hz	± 0.12 %
AC Voltage Flicker	Voltage	N/A	± 0.12 %
	Pst, Plt	N/A	± 3.46 %
Radiated Immunity	V/m	80 – 2500 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	0.15 –80 MHz	-12.64 %, +13.33 %
RF Common Mode (BCI method)	Vrms	0.15 –80 MHz	-13.45 %, +15.32 %
Voltage Dips	Voltage	N/A	± 2.32 %
	Timing	N/A	± 0.08mS

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Ubiquiti Networks model PicoStation5 is a Access Point that is designed for wireless networking. 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 EUT is 15 Volts, 800mAmps.

The sample was received on June 8, 2011 and tested on May 13, 16 and 17, 2011. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
Ubiquiti Networks	PicoStation5	5GHz Access Point	00156DE831C4	SWX-B5

OTHER EUT DETAILS

The following EUT details should be noted: Current sample (2011-2362) should be used for immunity testing

ENCLOSURE

The EUT enclosure is primarily constructed of fabricated plastic. It measures approximately 4 cm wide by 4 cm deep by 33.5 cm high.

MODIFICATIONS

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

SUPPORT EQUIPMENT

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

Company	Model	Description	Serial Number	FCC ID
Ubiquiti Networks	UBI-POE-15-8	POE Injector	n/a	n/a
Dell	Vostro	PC Laptop	2011-2297	n/a

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

Company	Model	Description	Serial Number	FCC ID
Dell	Inspiron 2200	PC Laptop	Elliott EMC Laptop# 3	n/a

EUT INTERFACE PORTS

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

Port		Cable(s)		
From	To	Description	Shielded/Unshielded	Length(m)
LAN(EUT)	POE	Cat. 5	Unshielded	2
POE Injector(POE)	Remote PC Laptop	Cat. 5	Unshielded	2

EUT OPERATION

During emissions testing the EUT was pinging to the remote laptop.

During immunity testing the system was configured in a transmit-receive mode. EUT was pinged from remote laptop through wired and over the air link.

The system was not monitored for unintentional transmissions as the purpose of testing was to evaluate the new enclosure. Based on no degradation of performance in the transmit-receive operation Ubiquiti considered that previous tests results for both transmit-receive performance and monitoring for unintentional transmissions during the tests on the enclosure port remained representative.

Normal operation is indicated by the continuous ping through the remote laptop.

The performance criteria applied during immunity testing were:
Criterion A: During and after testing the EUT shall continue to ping during and after the application of the test.

EMISSIONS TEST SITE

GENERAL INFORMATION

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 below 1 GHz. They are registered with the VCCI and are on file with the FCC.

Site	Location
Chamber 3	41039 Boyce Road Fremont, CA 94538-2435

Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent requirements.

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 network cable connected through an ISN appropriate to the type of cable employed.

RADIATED EMISSIONS CONSIDERATIONS

The FCC has determined that radiated measurements made in non-anechoic shielded enclosure are not suitable for determining levels of radiated emissions. Radiated measurements are performed in an Open Area Test Site or anechoic chamber, as defined in CISPR 16-1-4. The test site is maintained free of conductive objects within the defined elliptical area. Site correction factors for antennas, cables, amplifiers, etc. used during measurements are given in an appendix of this report.

EMISSIONS MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1-1 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

The receivers utilize either a Rohde & Schwarz EZM Spectrum Monitor/Controller or contain an internal Spectrum Monitor/Controller to view and convert the receiver measurements to the field strength at an antenna or voltage developed at the LISN measurement port, which is then compared directly with the appropriate specification limit. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are printed in a graphic and/or tabular format, as appropriate. A personal computer is used to record all measurements made with the receivers.

The Spectrum Monitor provides a visual display of the signal being measured. In addition, the controller or a personal computer runs automated data collection programs that control the receivers. 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 microhenry 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 biconical antenna is used to cover the range from 30 MHz to 300 MHz and a log periodic antenna is utilized from 300 MHz to 1000 MHz. Narrowband tuned dipole antennas are used over the entire 30 to 1000 MHz frequency range for precision measurements of field strength. Above 1000 MHz, a horn antenna is used. The antenna calibration factors are included in site factors that are programmed into the test receivers.

ANTENNA MAST AND EQUIPMENT TURNTABLE

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

ANSI C63.4 specifies that the test height above ground for table mounted 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.

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, 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.

RADIATED EMISSIONS

Radiated emissions measurements are performed in two phases as well. 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 regulation specified on page 1. One or more of these is with the antenna polarized vertically while the one or more of these is 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. 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 is a phase in which 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.

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 TEST DESCRIPTIONS

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.

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 EN 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 EN61000-4-3 basic EMC publication.

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

EN 61000-4-2 specifies 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 a 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.

EN 61000-4-3 specifies that a tabletop EUT 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 EN 61000-4-3 tests, the EUT is positioned in a shielded anechoic test chamber to reduce reflections from the internal surfaces of the chamber. During the EN 61000-4-4 tests, the EUT is positioned over a ground reference plane or in a shielded chamber in conformance with this requirement.

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 1KHz or 400Hz sine wave to a depth of 80% for the swept frequency test in accordance with EN 61000-4-3.

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.

Appendix A Test Equipment Calibration Data

Radiated Emissions, 30 - 1,000 MHz, 13-May-11

Manufacturer	Description	Model	Asset #	Cal Due
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1549	6/4/2011
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	4/13/2012
Com-Power Corp.	Preamplifier, 30-1000 MHz	PAM-103	2380	4/13/2012

Conducted Emissions - AC Power Ports, 13-May-11

Manufacturer	Description	Model	Asset #	Cal Due
EMCO	LISN, 10 kHz-100 MHz	3825/2	1293	3/1/2012
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1594	5/27/2011
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	4/13/2012

Radiated Immunity, 80 - 1,000, 1,400 - 2,700 MHz, 16-May-11

Manufacturer	Description	Model	Asset #	Cal Due
Werlatone	Directional Coupler, 1000-3000 MHz, 30dB, 100w	C6710	1532	N/A
Werlatone	Directional Coupler, 0.1-1000 MHz, 40dB, 500w	C6021	1533	N/A
Instruments For Industry	Amplifier 80 - 1000 MHz (200W CW)	CMC-200	1546	N/A
ETS Lindgren	Biconilog Antenna 26 MHz - 3 GHz, Radiated Immunity Only	3140B	1775	N/A
EMCO	Antenna, Horn, 1-18 GHz (SA40-Purple)	3115	1779	3/31/2012
Rohde & Schwarz	Power Meter, Dual Channel	NRVD	1787	12/23/2011
Amplifier Research	Amplifier, 25w, 0.8-4.2GHz	25S1G4AM3	1805	N/A
Agilent	MXG Analog Signal Generator	N5181A	2146	1/26/2012
Rohde & Schwarz	Power Sensor, 1 uW-100 mW, DC-18 GHz, 50ohms	NRV-Z51	2152	11/6/2011

ESD, 17-May-11

Manufacturer	Description	Model	Asset #	Cal Due
Elliott Laboratories	ESD, Vertical Plane, 19-3/4 x 19-3/4	ESD, VP, 19-3/4 x 19-3/4	610	N/A
Schaffner	ESD Gun, 100pF-1500 ohm & 150pF-330 ohm tips	NSG-438	1424	8/9/2011

Appendix B Test Data Log Sheets

ELECTROMAGNETIC EMISSIONS

TEST LOG SHEETS

AND

MEASUREMENT DATA

T83199 Pages 20 - 28

Client:	Ubiquiti Netorks	Job Number:	J82980
Model:	PicoStation5	T-Log Number:	T83199
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Emissions Standard(s):	FCC, EN 301-489-1 v1.8.1,EN 301-489-17 V2.1.1,	Class:	A

EMC Test Data

For The

Ubiquiti Netorks

Model

PicoStation5

Date of Last Test: 5/17/2011

Client:	Ubiquiti Netorks	Job Number:	J82980
Model:	PicoStation5	T-Log Number:	T83199
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Immunity Standard(s):	EN 301-489-1 v1.8.1,EN 301-489-17 V2.1.1, EN	Environment:	Cover sheet

Electrostatic Discharge (EN 61000-4-2)

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: 5/17/2011 1:19
Test Engineer: Peter Sales
Test Location: Fremont EMC Lab #1
Config. Used: 1
Config Change: None
EUT Voltage: 230V/50Hz

General Test Configuration

For table-top equipment, the EUT and all local support equipment were located on a 0.5-mm thick insulating layer above a horizontal coupling plane, 80 cm above a ground reference plane.

Unless otherwise stated, ten discharges at each voltage, and polarity, were applied to each test point listed. Contact discharges were applied to coupling planes and conductive surfaces of the EUT. Air discharges were applied to any non-conductive surfaces of the EUT. The VCP was located on the table top for table top devices and 80cm above the ground plane for floor standing equipment.

Ambient Conditions:

Temperature: 21 °C
Relative Humidity: 35 %
Pressure: 1008 mb

Summary of Results - Electrostatic Discharges

Run #	Port	Test Level		Performance Criteria		Comments
		Required	Applied	Required	Met / Result	
1	Enclosure	4kV CD 8kV AD	4kV CD 8kV AD	B	A / 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:	Ubiquiti Netorks	Job Number:	J82980
Model:	PicoStation5	T-Log Number:	T83199
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Immunity Standard(s):	EN 301-489-1 v1.8.1,EN 301-489-17 V2.1.1, EN	Environment:	Cover sheet

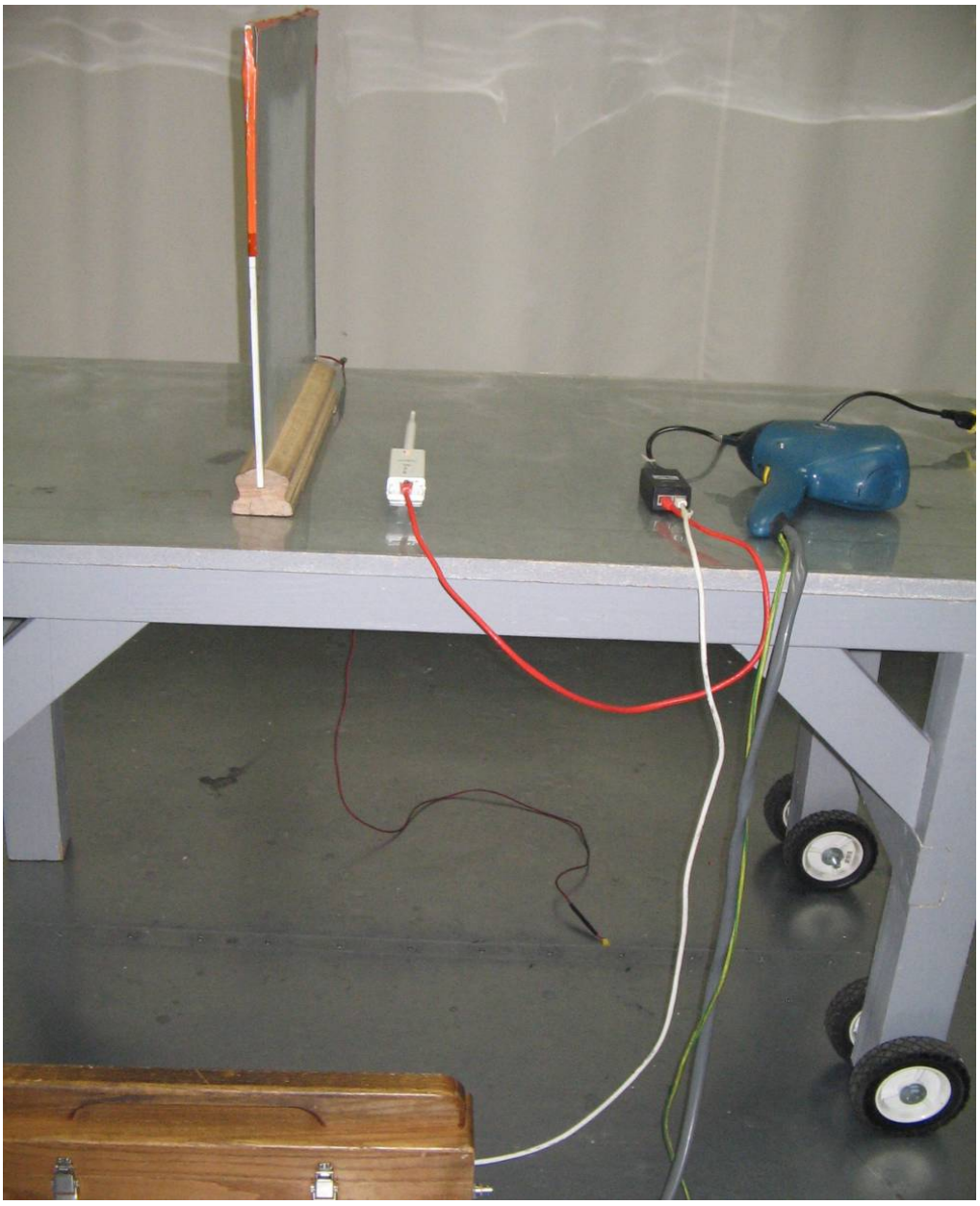
Run #1: Electrostatic Discharge

Indirect Discharges (To Coupling Planes)	Positive Polarity (kV)				Negative Polarity (kV)			
Contact Mode	Level 1 2	Level 2 4	Level 3 6	Level 4 8	Level 1 2	Level 2 4	Level 3 6	Level 4 8
Vertical Coupling Plane (VCP) located 10cm from the front, rear, left and right sides of the EUT	X	X			X	X		
Horizontal Coupling Plane (HCP) located 10cm from the front, rear, left and right sides of the EUT	X	X			X	X		

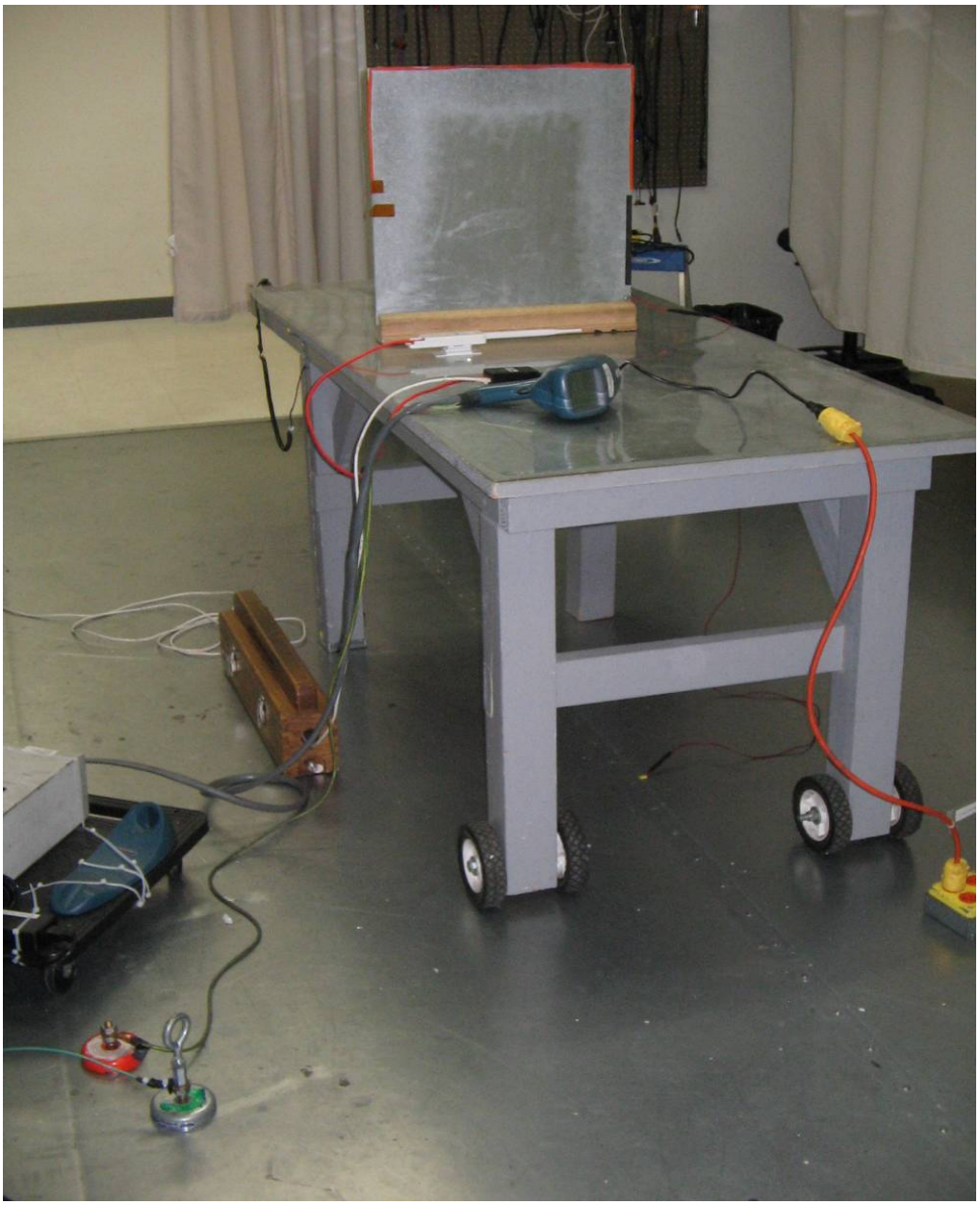
Direct Discharges (To the EUT)	Positive Polarity (kV)				Negative Polarity (kV)			
Contact Mode	Level 1 2	Level 2 4	Level 3 6	Level 4 8	Level 1 2	Level 2 4	Level 3 6	Level 4 8
POE Port	X	X			X	X		
POE Port on POE Adapter	X	X			X	X		
LAN Port on POE Adapter	X	X			X	X		
Air Discharge Mode	Level 1 2	Level 2 4	Level 3 8	Level 4 15	Level 1 2	Level 2 4	Level 3 8	Level 4 15
Seams of EUT	ND	ND	ND		ND	ND	ND	
Seams of POE Adapter	ND	ND	ND		ND	ND	ND	

Note:	An "X" indicates that the unit continued to operate as intended. The EUT continue to ping during and after the application of the test.
Note:	ND: No discharge was possible due to the lack of a discharge path to ground from the test point. HCP: Horizontal Coupling Plane. VCP: Vertical Coupling Plane

Client:	Ubiquiti Netorks	Job Number:	J82980
Model:	PicoStation5	T-Log Number:	T83199
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Immunity Standard(s):	EN 301-489-1 v1.8.1,EN 301-489-17 V2.1.1, EN	Environment:	Cover sheet



Client:	Ubiquiti Netorks	Job Number:	J82980
Model:	PicoStation5	T-Log Number:	T83199
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Immunity Standard(s):	EN 301-489-1 v1.8.1,EN 301-489-17 V2.1.1, EN	Environment:	Cover sheet



Client:	Ubiquiti Netorks	Job Number:	J82980
Model:	PicoStation5	T-Log Number:	T83199
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Immunity Standard(s):	EN 301-489-1 v1.8.1,EN 301-489-17 V2.1.1, EN	Environment:	Cover sheet

Radiated Immunity (EN 61000-4-3)

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 23:27 Config. Used: 1
Test Engineer: Peter Sales Config Change: None
Test Location: Fremont Chamber #6 EUT Voltage: 230V/50Hz

General Test Configuration

The EUT and all local support equipment were located on a turntable in an anechoic chamber. All remote support equipment was located outside the chamber. Interface cabling to the remote support equipment was routed along the floor and, where possible, passed through ferrite clamps at the exit point from the chamber.

Ambient Conditions:

Temperature: 21 °C
Rel. Humidity: 35 %

Summary of Results-Radiated Immunity

Run #	Port	Test Level		Performance Criteria		Comments
		Required	Applied	Required	Met / Result	
EN 301 489-1 V1.8.1 Requirements						
1	Enclosure	80-1000 MHz 1.4GHz-2.7GHz 1kHz 80% AM 3 V/m	80-1000 MHz 1.4GHz-2.7GHz 1kHz 80% AM 3 V/m	A	A / 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:	Ubiquiti Netorks	Job Number:	J82980
Model:	PicoStation5	T-Log Number:	T83199
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Immunity Standard(s):	EN 301-489-1 v1.8.1,EN 301-489-17 V2.1.1, EN	Environment:	Cover sheet

Run #1: Radiated Immunity, 80-1000, 1,400-2,700 MHz (EN61000-4-3)

Frequency:	80-1000 MHz	1.4-2.7 GHz
Step Size:	1 %	1 %
Dwell time:	2874 ms	2874 ms
Field Uniformity:	1.5m x 1.5m	1.5m x 1.0m
Test Distance:	2m	2m

Modulation Details	
Modulating Frequency:	1 kHz
Modulation:	AM
Depth / Deviation:	80%

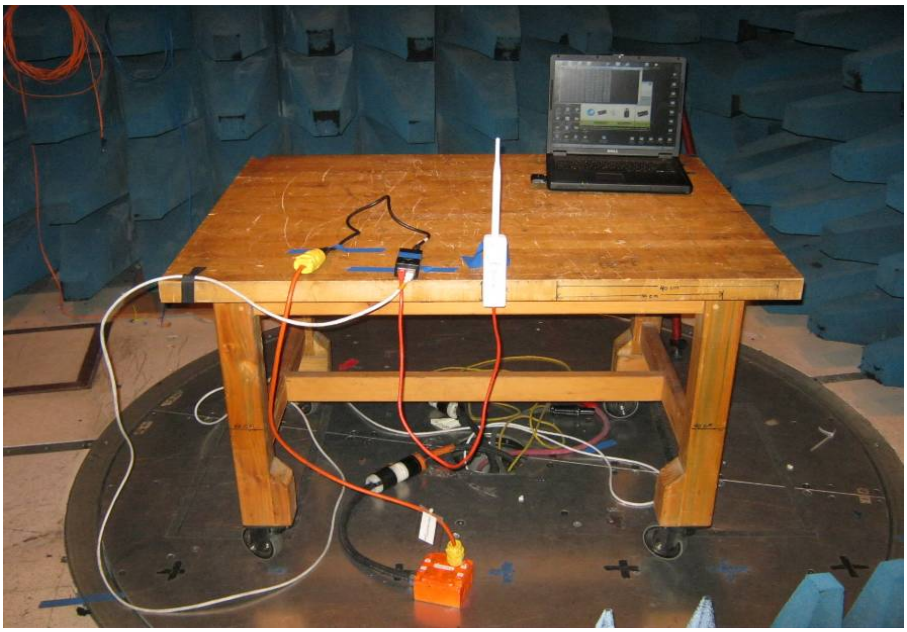
Frequency	Level	Front		Left Side		Rear		Right		Top		Bottom	
Range (MHz)	V/m	Vert.	Horiz.	Vert.	Horiz.	Vert.	Horiz.	Vert.	Horiz.	Vert.	Horiz.	Vert.	Horiz.
80-1000	3	X	X	X	X	X	X	X	X	N/A	N/A	N/A	N/A
1400-2700	3	X	X	X	X	X	X	X	X	N/A	N/A	N/A	N/A

Test files used for this run:
The following calibration files from U:\EMC Stuff\RI Playback Files FT\CH6\2010\80-1000 MHz (April 2010)\ were used:
Position A 1.55m 80 MHz - 1000 MHz H 3Vm.crf
Position A 1.55m 80 MHz - 1000 MHz V 3Vm.crf
The following calibration files from U:\EMC Stuff\RI Playback Files FT\CH6\2010\1-2.7 GHz (April 2010)\ were used:
Position B 1.3m High 1000 MHz - 2700 MHz H 3Vm.crf
Position B 1.3m High 1000 MHz - 2700 MHz V 3Vm.crf

Note:	An "X" indicates that the unit continued to operate as intended. The EUT continue to ping during and after the application of the test.

Client:	Ubiquiti Netorks	Job Number:	J82980
Model:	PicoStation5	T-Log Number:	T83199
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Immunity Standard(s):	EN 301-489-1 v1.8.1,EN 301-489-17 V2.1.1, EN	Environment:	Cover sheet

Client:	Ubiquiti Netorks	Job Number:	J82980
Model:	PicoStation5	T-Log Number:	T83199
		Account Manager:	Susan Pelzl
Contact:	Jennifer Sanchez		
Immunity Standard(s):	EN 301-489-1 v1.8.1,EN 301-489-17 V2.1.1, EN	Environment:	Cover sheet



End of Report

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