MEASUREMENT AND TECHNICAL REPORT

AWAREPOINT CORPORATION
4275 Executive Square
La Jolla, CA 92037

DATE: 14 June 2006

This Report Concerns:	Original Grant: X	Class II Change:
Equipment Type:	Awarepoint Bridge, Model B1	
Deferred grant requested per 47 CFR 0.457(d)(1)(ii)?	Yes: **Defer until:**	No: X
Company Name **agrees to notify the Commission by:** **of the intended date of announcement of the product so that the grant can be issued on that date.**	N/A	
Transition Rules Request per 15.37?	Yes:	No: X*

(*) FCC Part 15, Paragraph(s) **15.107(a), 15.109(a), 15.209(a), 15.247(a), 15.247(b), 15.247(c), and 15.247(d)**
(*) Canadian Specification(s) **RSS-210 A8.1(1), RSS-210 A8.4(2), and RSS-210 A8.5**

Report Prepared by:

TÜV AMERICA, INC
10040 Mesa Rim Road
San Diego, CA 92121-2912
Phone: 858 678 1400
Fax: 858 546 0364

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TÜV AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone 858 678 1400 FAX 858 546 0364

1.0 GENERAL INFORMATION

1.1 Product Description

General Equipment Description:			
EUT Description:	Wireless Mesh Network To Wired Network Bridge for an Indoor Positioning System		
EUT Name:	"Awarepoint Bridge"		
Model No.:	B1	Serial No.:	(varies)
Product Options:	--		
Configurations and modes to be tested:	Normal Operation		

EUT Specifications							
Length:	7.5"	Width:	4.1"	Height:	1.1"	Weight:	14 oz.

Power Requirements (*Regulations require testing to be performed at typical power ratings in the countries of intended use. (i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively))*

Voltage:	120	(If battery powered, make sure battery life is sufficient to complete testing.)	
# of Phases:	1		
Current (Amps/phase(max)):	0.5	Current (Amps/phase(nominal)):	0.25

EUT Power Cable

Permanent	OR	X	Removable
Shielded	OR		Unshielded
Not Applicable		2	Length (in meters):

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EUT Interface Ports and Cables

Interface				Shielding								
Type	Analog	Digital	Qty	Yes	No	Type	Termination	Connector Type	Port Termination	Length (in meters)	Removable	Permanent
EXAMPLE: *RS232*	*X*		*2*	X		*Foil over braid*	*Coaxial*	*Metallized 9-pin D-Sub*	*Characteristic Impedance*	*6*	X	
Ethernet		X	1		X	N/A	Twisted Pair	RJ-45	Common Mode	2	X	

EUT Operating Modes to be Tested -- list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing.

Normal Operation (default when unit is powered)

EUT System Components -- List and describe all EUT components . For FCC testing a minimum configuration is required. (i.e. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc.)

Description	Model #	Serial #	FCC ID #
Bridge is self-contained	--	--	--

Oscillator Frequencies

Frequency	***Derived Frequency***	***Component # / Location***	***Description of Use***
8Mhz	--	GreenY1 / front, above center slot	Atmel Microcontroller xtal
16MHz	2.4GHz	GreenY2 / front, Right of center slot	Chipcon xtal
16MHz	--	RedY1 / Center	Atmel Microcontroller xtal
20MHz	--	RedY3/ Bottom Left	Ethernet MAC xtal

Power Supply

Manufacturer	***Model #***	***Serial #***	***Type***		
Cincon Electronics	TR1509	N/A	Switched-mode:X	(Frequency)	--
			Linear:	Other:	

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1.2 Related Submittal Grant

None

1.3 Tested System Details

The FCC ID's for all equipment, plus descriptions of all cables used in the tested system are:

None

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1.4 Test Methodology

Purpose of Test: To demonstrate compliance with the following tests.

Test Summary					
Frequency ragne tested: 30 MHz to 25 GHz.					
		Summary of Results			
Test Description	**Paragraph Number**	**Low Channel**	**Mid Channel**	**High Channel**	**Pass/Fail**
Bandwidth	15.247(a)(2) RSS-210 A8.1(1)	N/A	N/A	1.5 MHz	Pass
Band Edge	15.247(a)(1)(i) RSS-210 A8.1(1)	Meets requirements	N/A	Meets requirements	Pass
RF Output Power	15.247(b) RSS-210 A8.4 (2)	N/A	N/A	0.00061108 W	Pass
Radiated Spurious Emissions – Restricted Bands (1GHz to 25GHz)	15.247(c)/ 15.209(a) RSS-210 A8.5	N/A	55.23 dBuV/m (pk) @ 4960 MHz	N/A	Pass
Peak Power Spectral Density	15.247(d)	--	>20 dB below	--	Pass
Radiated Emissions (30 to 1000 MHz)	15.209(a) RSS-210 A8.5	N/A	No Detectable Emissions	N/A	Pass
Receiver Spurious Emissions	15.109(a)	N/A	28.6 dBuV/m (pk) @ 112 MHz	N/A	Pass
Conducted Emissions	15.107(a)	N/A	-0.5 dB @ 0.590 MHz	N/A	Pass

Testing was performed according to the procedures in FCC/ANSI C63.4 and CSA 108.8-M1983.

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1.5 Test Facility

The open area test site and conducted measurement data were tested by:

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10040 Mesa Rim Road
San Diego, CA 92121-2912
Phone: 858 678 1400
Fax: 858 546 0364

The Test Site Data and performance comply with ANSI C63.4 and are registered with the FCC, 7435 Oakland Mills Road, Columbia Maryland 21046. All Measurement Data is acquired according to the content of FCC Measurement Procedure and ANSI C63.4, unless supplemented with additional requirements as noted in the test report.

2.0 SYSTEM TEST CONFIGURATION

2.1 Justification

The EUT was initially tested for FCC emissions in the following configuration:

See Test Setup Photos Exhibit

2.2 EUT Exercise Software

None

2.3 Special Accessories

None

2.4 Equipment Modifications

None

2.5 Configuration of Test System

See Test Setup Photos Exhibit

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3.0 BANDWIDTH EQUIPMENT/DATA
BAND EDGE EQUIPMENT/DATA
RF OUTPUT POWER EQUIPMENT/DATA
RADIATED SPURIOUS EMISSIONS EQUIPMENT/DATA
PEAK POWER SPECTRAL DENSITY EQUIPMENT/DATA
RADIATED EMISSIONS EQUIPMENT/DATA
RECEIVER SPURIOUS EMISSIONS EQUIPMENT/DATA
CONDUCTED EMISSIONS EQUIPMENT/DATA

Test Conditions: BANDWIDTH: FCC Part 15.247(a)(2) and RSS-210 A8.1(1)
BAND EDGE: FCC Part 15.247(a)(1)(i) and RSS-210 A8.1(1)
RF OUTPUT POWER: FCC Part 15.247(b) and RSS-210 A8.4(2)
RADIATED SPURIOUS EMISSIONS: FCC Part 15.209(a), 15.247(c), and RSS-210 A8.5
PEAK POWER SPECTRAL DENSITY: FCC Part 15.247(d)
RADIATED EMISSIONS: FCC Part 15.209(a) and RSS-210 A8.5
RECEIVER SPURIOUS EMISSIONS: FCC Part 15.109(a)
CONDUCTED EMISSIONS: FCC Part 15.107(a)

The following measurements were performed at the San Diego Testing Facility:

☐ **- Test not applicable**

■ - Roof (Small Open Area Test Site)
■ - Canyon #1 (10- and 30-Meter Open Area Test Site), Carroll Canyon, San Diego

Test Equipment Used:

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Date Cal'ed
3115	453	Double Ridge Antenna	EMCO	9412-4364	08/05
AMF-5D-010180-35-10P	6784	RF Amplifier	Miteq	838079	Verified
Micropore 190	6787	10' Coaxial Cable	United Microwave	AA-190-03.00.0	N/A
Micropore 190	6789	30' Coaxial Cable	United Microwave	AA-190-030.00.0	N/A
BRM50702	6815	2.4 to 2.5 GHz Band Reject Filter	Micro-Tronics	008	N/A
E4440A	7500	Spectrum Analyzer	Hewlett Packard	MY43362168	12/05
LPB 2520/A	739	Antenna, Bilog	Antenna Research	1170	07/05
ESVS 30	6732	EMI Test Receiver	Rhode & Schwarz	833825/003	11/05
ESHS 20	6528	EMI Test Receiver	Rohde & Schwarz	837055/001	04/06
CAT-20	6714	20 dB Attenuator	Mini-Circuits	--	Verified
FCC-LISN-50-25-2	6836	LISN	Fischer Custom Comm.	5024	08/05

Remarks: One year calibration cycle for all test equipment and sites.

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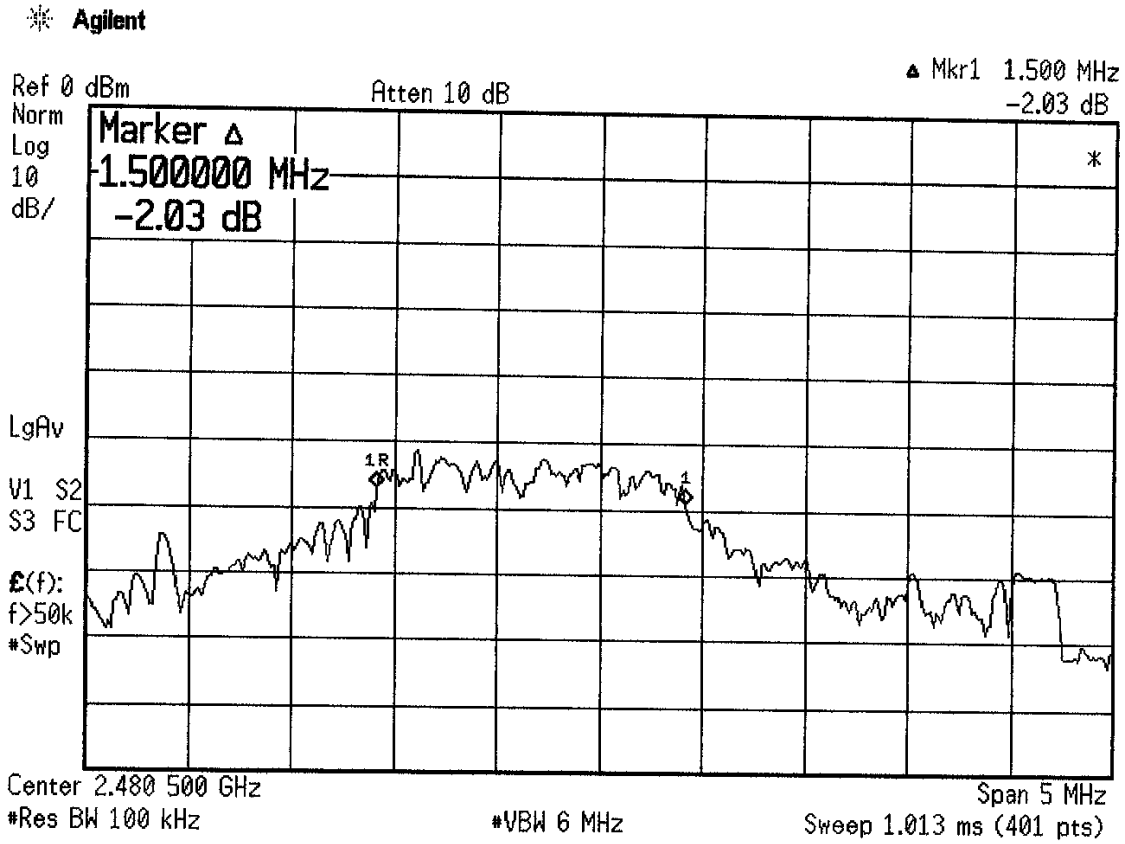
BANDWIDTH: FCC Part 15.247(a)(2) and RSS-210 A8.1(1)



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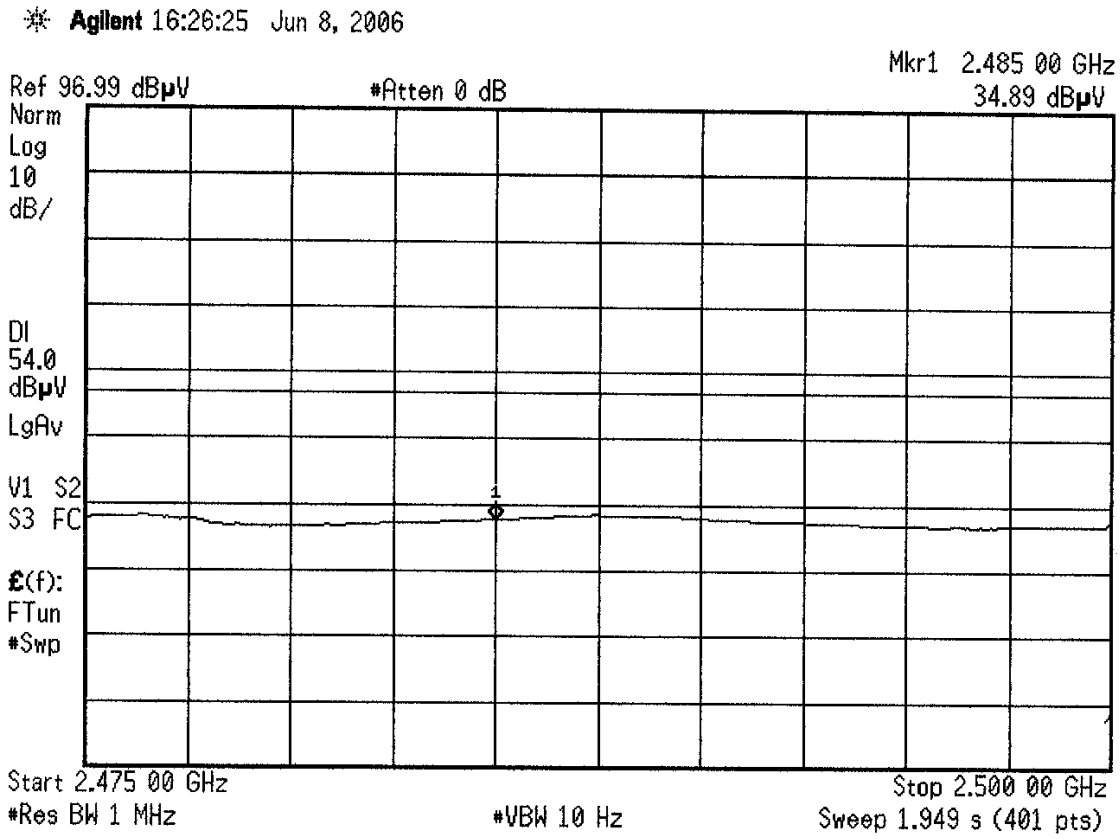
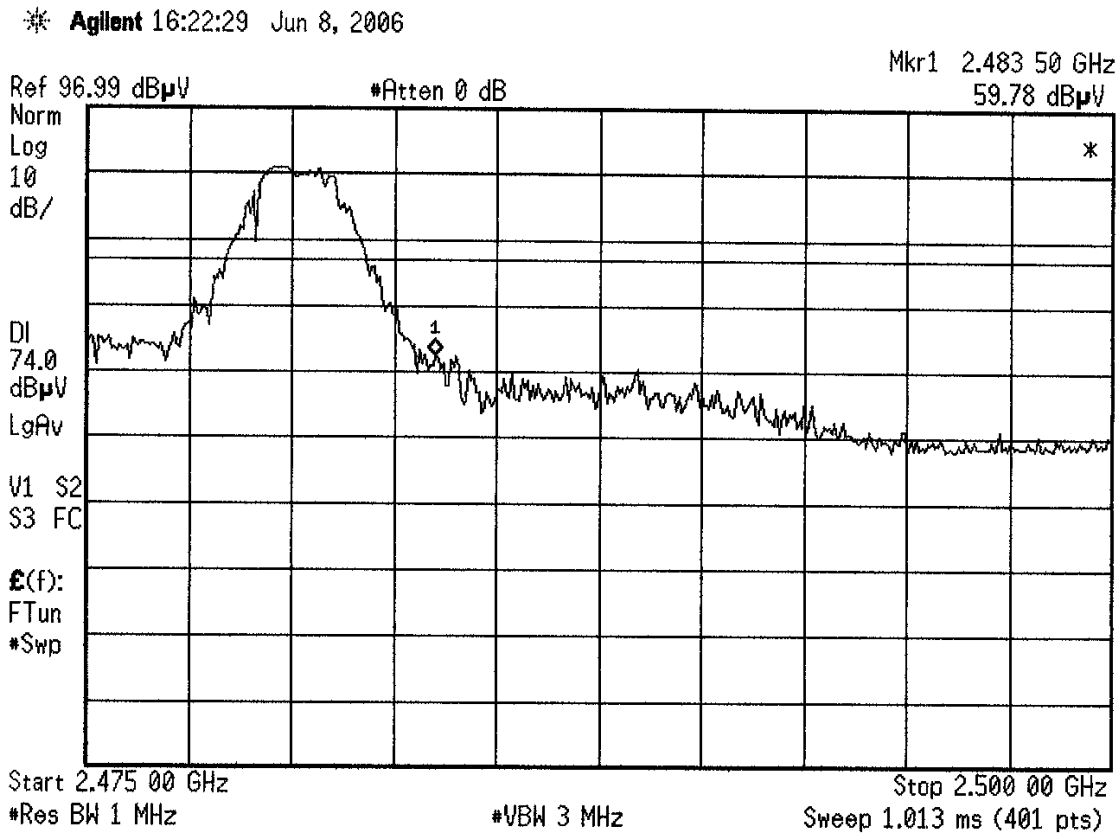
BAND EDGE (Average): FCC Part 15.247(a)(1)(i) and RSS-210 A8.1(1)



BAND EDGE (Peak): FCC Part 15.247(a)(1)(i) and RSS-210 A8.1(1)



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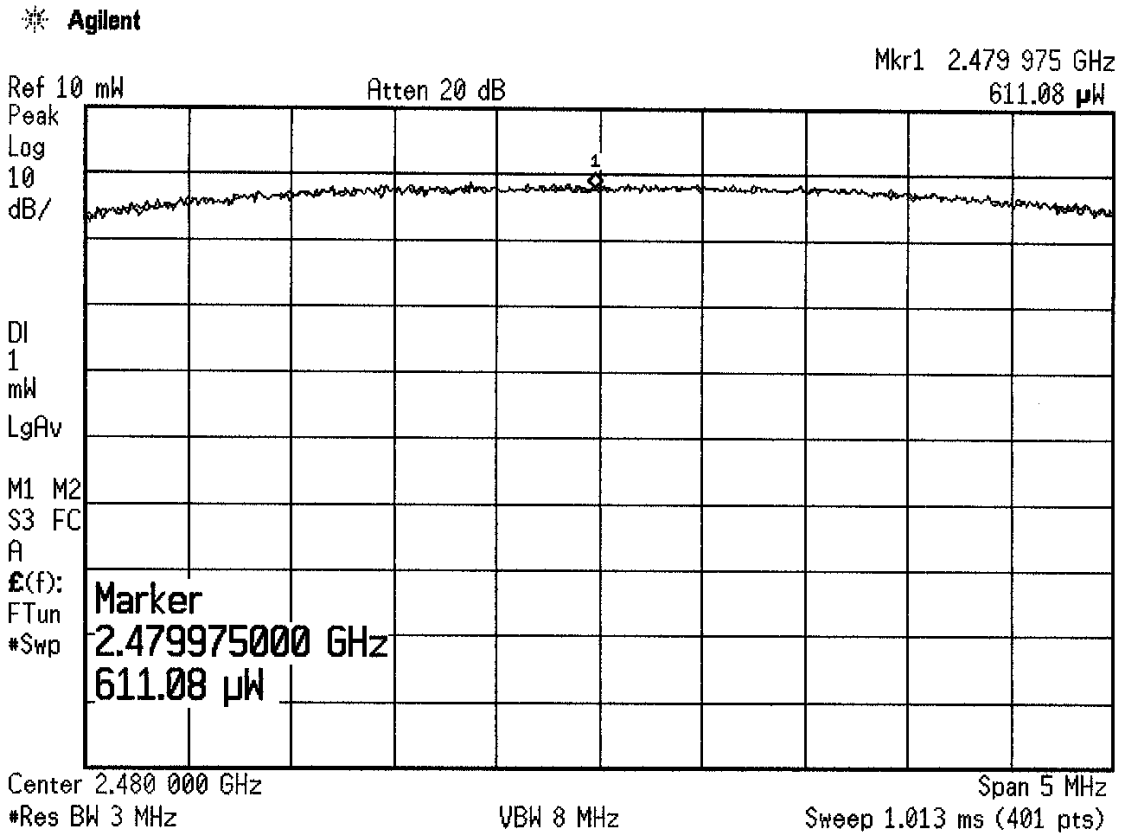
RF OUTPUT POWER: FCC Part 15.247(b) and RSS-210 A8.4(2)



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RADIATED SPURIOUS EMISSIONS: FCC Part 15.209(a), 15.247(c), and RSS-210 A8.5

REPORT No: SC602695 TESTER: William Dey SPEC: FCC Part 15 para 15.247/15.209(a)

CUSTOMER: Awarepoint Corporation TEST DIST: 3 Meters

E U T: Awarepoint Transceiver Model No. B1 TEST SITE: Roof

EUT MODE: Normal Operation BICONICAL: N/A

DATE: June 8, 2006 LOG: N/A

NOTES: no other emissions found OTHER: 453

above 1GHz: RBW & VBW 1 MHz for Pk; RBW 1MHz and VBW 10Hz for AVG

below 1GHz: RBW & VBW 100 kHz for Pk; RBW 100kHz and VBW 10Hz for AVG

CF = Antenna Factor + Cable Loss - Preamplifier Gain + Preselector Loss

v.beta1a

FREQ (MHz)	VERTICAL (dBuv) pk	av	HORIZONTAL (dBuv) pk	av	CF (dB/m)	MAX LEVEL (dBuV/m) pk	av	SPEC LIMIT (dBuV/m) pk	av	MARGIN (dB) pk	av	EUT Rotation	Antenna Height	Notes
2480	54.5		51.85		34.4	**88.9**	**34.4**			88.91	34.4	0	1	Fundamental
4960	55.23	33.6	44.7	32.4	-0.4	**54.9**	**33.2**	74	54	-19.1	-20.8	180	1	
7440	43.65	31.22	42.31	30.85	7.6	**51.3**	**38.8**	74	54	-22.7	-15.2	180	1	ambient
9920	42.75	32.07	41.78	31.25	9.5	**52.2**	**41.6**	74	54	-21.8	-12.4	0	1	ambient
12400	42.82	32.18	41.24	31.24	13.5	**56.4**	**45.7**	74	54	-17.7	-8.29	0	1	ambient

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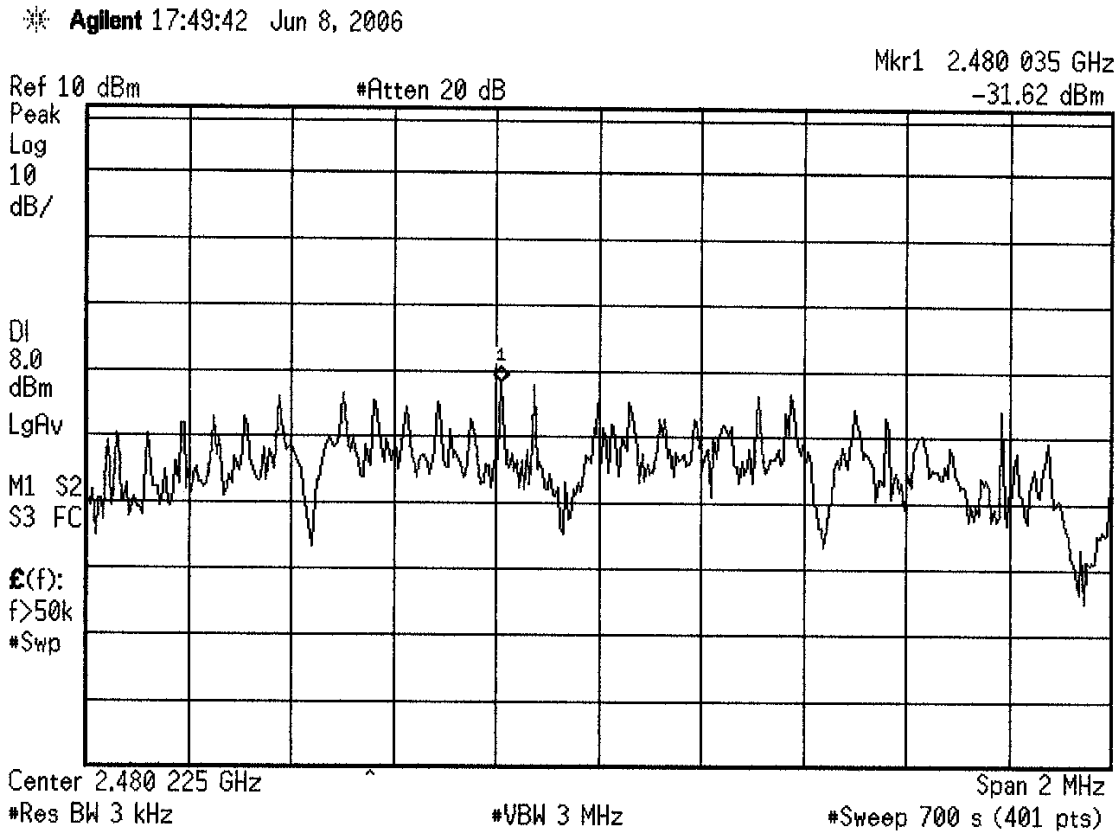
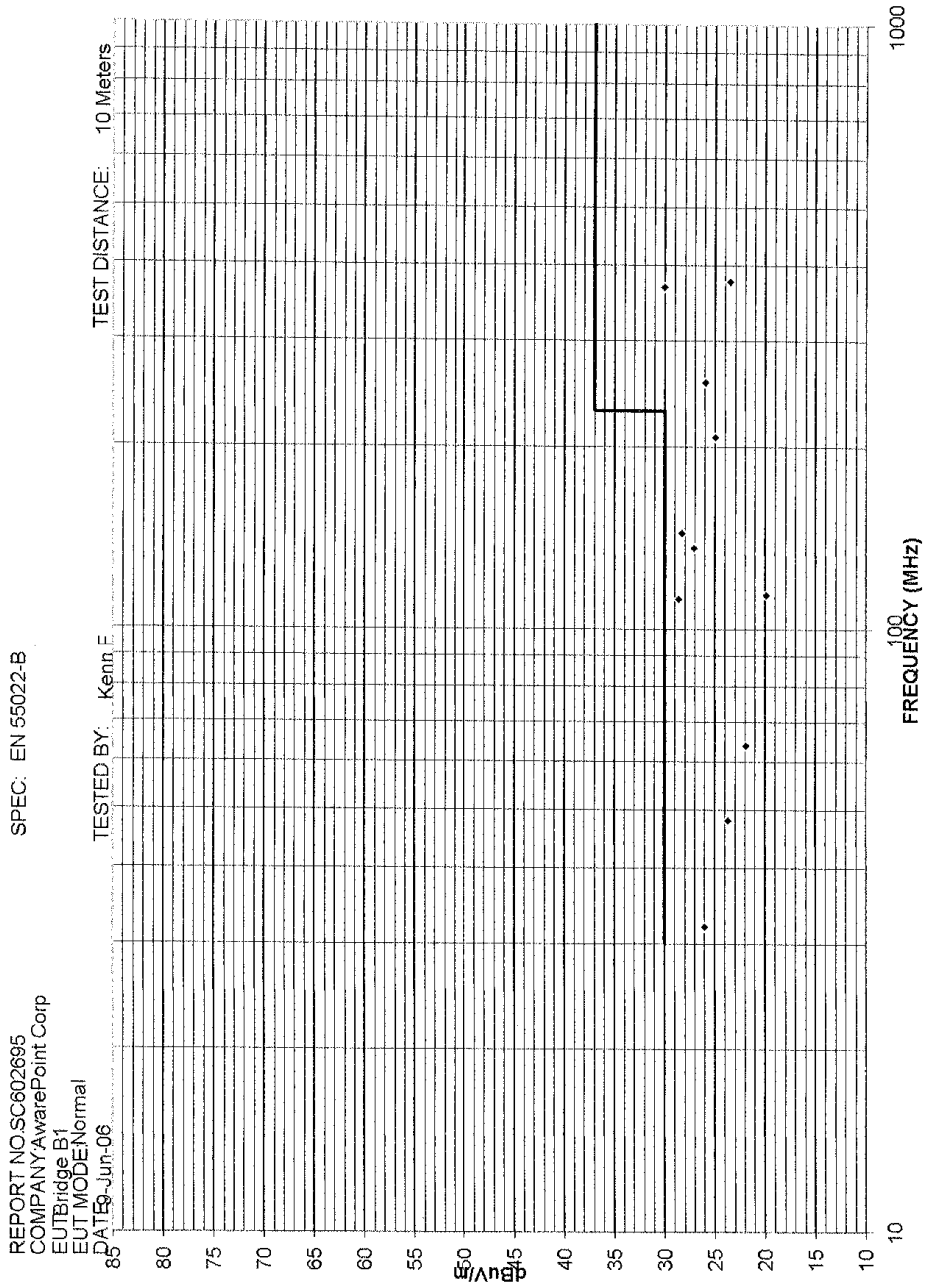
PEAK POWER SPECTRAL DENSITY: FCC Part 15.247(d)



RECEIVER SPURIOUS EMISSIONS: FCC Part 15.109(a)



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RECEIVER SPURIOUS EMISSIONS: FCC Part 15.109(a)

REPORT No: SC602695 SPEC: EN 55022-B

CUSTOMER: AwarePoint Corp TEST DIST: 10 Meters

E U T: Bridge B1 TEST SITE: 1

EUT MODE: Normal BICONICAL: 739

DATE: 9-Jun-06 TESTED BY: Kenn F LOG PERIODIC: 739

NOTES: Quasi-Peak with 120 KHz measurement bandwidth. RCVR: 6732

Temperature: 65 Relative Humidity: 59%

ver 1.8b

EUT MARGIN -1.4 dB at 112 MHz

FREQUENCY (MHz)	VERTICAL measured (dBuv)	HORIZONTAL measured (dBuV)	CORRECTION FACTOR (dB/m)	MAXIMUM CORRECTED (dBuV/m)	SPECIFIED LIMIT (dBuV/m)	EUT MARGIN (dB)	EUT ROTATION (degrees)	ANTENNA HEIGHT (meters)	NOTE
31.99	6.2	0	19.8	26.0	30	-4.0	0	1	
48.00	6	-0.5	17.7	23.7	30	-6.3	0	1	Ferrites on Power line
64.00	10.5	4	11.4	21.9	30	-8.1	0	2.5	Ferrites on Power line
112.00	14.8	3.5	13.8	28.6	30	-1.4	144	1	Ferrites on Power line
114.00	5	6	13.9	19.9	30	-10.1	7	4	Ferrites on Power line
136.00	14.7	4	12.4	27.1	30	-2.9	225	1	Ferrites on Power line
144.00	15.2	16.8	11.5	28.3	30	-1.7	95	4	2x Ferrites on Power line 1 ferrites on Ethernet cable.
208.00	11.1	10.6	13.9	25.0	30	-5.0	100	1	2x Ferrites on Power line 1 ferrites on Ethernet cable.
256.00	6.4	9.3	16.6	25.9	37	-11.1	105	3.3	2x Ferrites on Power line 1 ferrites on Ethernet cable.
368.00	8.2	10.4	19.6	30.0	37	-7.0	141	2	2x Ferrites on Power line 1 ferrites on Ethernet cable.
376.00	3.4	4	19.5	23.5	37	-13.5	233	2.6	2x Ferrites on Power line 1 ferrites on Ethernet cable.

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CONDUCTED EMISSIONS: FCC Part 15.107(a)

TUV AMERICA
Conducted Emissions

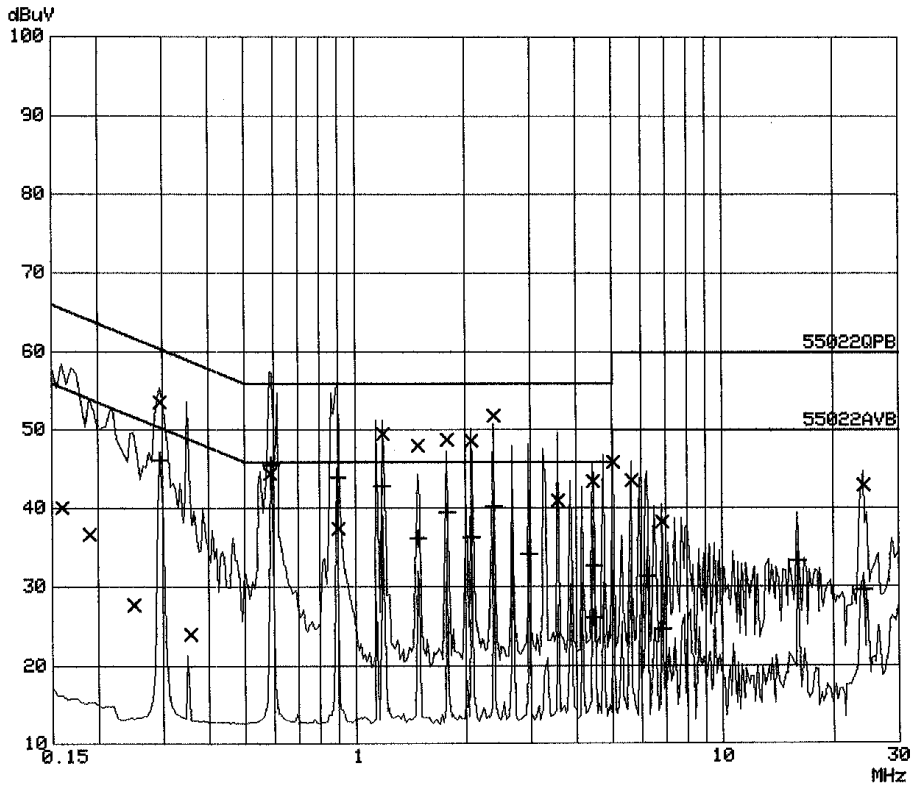
EUT:	AwarePoint B1
Manuf:	AwarePoint Corporation
Op Cond:	normal operation
Operator:	W. Dey
Test Spec:	EN55022 Class B
Comment:	115VAC 60Hz Line 1
	SC602695
Date:	08. Jun 06 12:22

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	1M	5k	10k	PK+AV	1s	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK+AV	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	10k	30M	20dBLISN

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 25
Acc Margin: 20dB



CONDUCTED EMISSIONS: FCC Part 15.107(a)

TUV AMERICA
Conducted Emissions

EUT:	AwarePoint B1
Manuf:	AwarePoint Corporation
Op Cond:	normal operation
Operator:	W. Dey
Test Spec:	EN55022 Class B
Comment:	115VAC 60Hz Line 1
	SC602695
Date:	08. Jun 06 12:22

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.16000	40.1	65.5
0.19000	36.6	64.1
0.25000	27.8	61.8
0.29500	53.6	60.3
0.35500	24.0	58.8
0.58500	44.5	56.0
0.90000	37.3	56.0
1.19000	49.6	56.0
1.48000	48.0	56.0
1.78000	48.8	56.0
2.07000	48.7	56.0
2.37500	51.9	56.0
3.57000	41.0	56.0
4.44500	43.5	56.0
5.05000	45.9	56.0
5.64500	43.5	60.0
6.83000	38.2	60.0
24.15500	42.9	60.0

Frequency MHz	AV Level dBuV	AV Limit dBuV
0.29500	46.1	50.3
0.59000	45.5	46.0
0.89000	43.9	46.0
1.18500	42.9	46.0
1.48000	36.1	46.0
1.78000	39.5	46.0
2.07000	36.3	46.0
2.37500	40.2	46.0
2.96500	34.2	46.0
4.44500	26.1	46.0
4.45500	32.7	46.0
6.23500	31.4	50.0
6.83000	24.6	50.0
16.00000	33.2	50.0
24.15000	29.5	50.0

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CONDUCTED EMISSIONS: FCC Part 15.107(a)

TUV AMERICA
Conducted Emissions

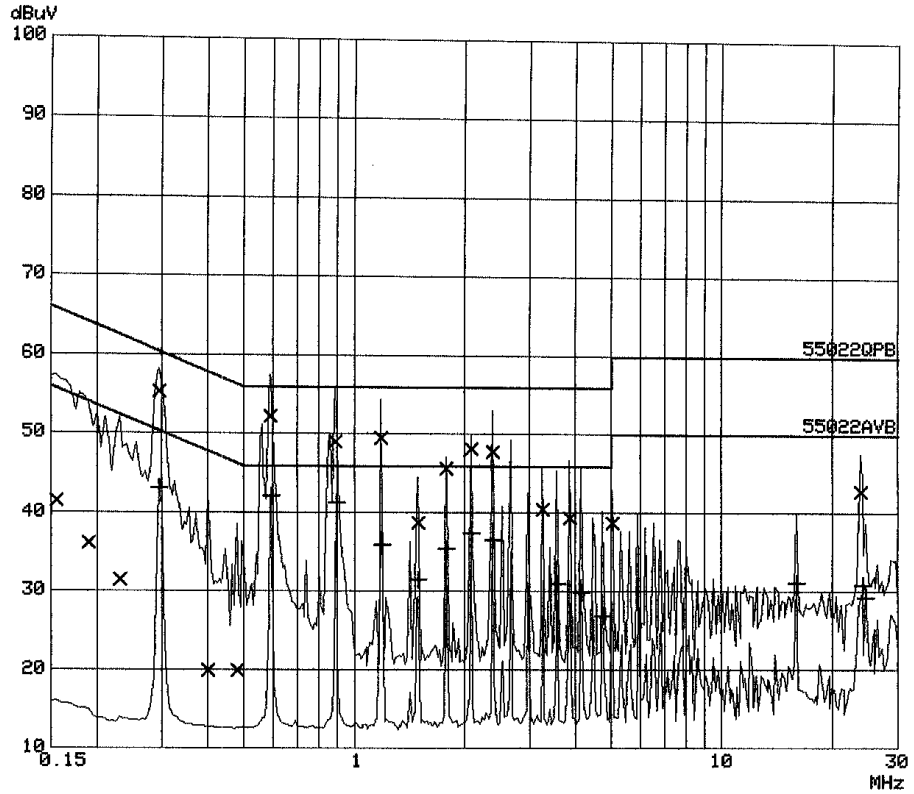
EUT:	AwarePoint B1
Manuf:	AwarePoint Corporation
Op Cond:	normal operation
Operator:	W. Dey
Test Spec:	EN55022 Class B
Comment:	115VAC 60Hz Line 2
	SC602695
Date:	08. Jun 06 12:36

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	1M	5k	10k	PK+AV	1s	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK+AV	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	10k	30M	20dBLISN

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 25
Acc Margin: 20dB



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CONDUCTED EMISSIONS: FCC Part 15.107(a)

TUV AMERICA
Conducted Emissions

EUT:	AwarePoint B1
Manuf:	AwarePoint Corporation
Op Cond:	normal operation
Operator:	W. Dey
Test Spec:	EN55022 Class B
Comment:	115VAC 60Hz Line 2
	SC602695
Date:	08. Jun 06 12:36

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.15500	41.6	65.7
0.19000	36.1	64.1
0.23000	31.5	62.4
0.29500	55.3	60.3
0.40000	19.9	57.8
0.48000	19.9	56.4
0.59000	52.2	56.0
0.88500	49.1	56.0
1.18500	49.6	56.0
1.49000	38.8	56.0
1.77500	45.6	56.0
2.08000	48.2	56.0
2.38000	47.8	56.0
3.25500	40.5	56.0
3.86500	39.4	56.0
5.05000	38.7	56.0
23.84000	42.8	60.0

Frequency MHz	AV Level dBuV	AV Limit dBuV
0.29500	43.2	50.3
0.59500	42.2	46.0
0.89000	41.3	46.0
1.19000	35.9	46.0
1.48500	31.5	46.0
1.78000	35.4	46.0
2.08000	37.4	46.0
2.38000	36.5	46.0
3.56000	30.9	46.0
4.16000	29.8	46.0
4.75500	26.8	46.0
16.00000	31.0	50.0
24.15500	30.8	50.0
24.61500	29.2	50.0

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4.0 ATTESTATION STATEMENT

GENERAL REMARKS:

(*) Receiver Spurious Emissions: FCC Part 15.109(a) - added ferrites to power line and Ethernet cable.
(*) Band Edge: FCC Part 15.247(a)(1)(i) and RSS-210 A8.1(1) - measurements taken with correction factors applied to spectrum analyzer.
(*) RF Output Power: FCC Part 15.247(b) and RSS-210 A8.4(2) - measurements taken with correction factors applied to spectrum analyzer.
(*) Peak Power Spectral Density: FCC Part 15.247(d) - measurements taken with correction factors applied to spectrum analyzer.

SUMMARY:

All tests were performed per: CFR 47, Part(s) 15.107(a), 15.109(a), 15.209(a), 15.247(a), 15.247(b), 15.247(c), and 15.247(d)
Canadian Specification(s) RSS-210 A8.1(1), RSS-210 A8.4(2), and RSS-210 A8.5

■ - Performed*

The Equipment Under Test

■ - Fulfills the requirements of: CFR 47, Part(s) CFR 47, Part(s) 15.107(a), 15.109(a), 15.209(a), 15.247(a), 15.247(b), 15.247(c), and 15.247(d)
Canadian Specification(s) RSS-210 A8.1(1), RSS-210 A8.4(2), and RSS-210 A8.5

Testing Start Date: 08 June 2006

Testing End Date: 09 June 2006

- TÜV AMERICA, INC. -

Reviewing Engineer:

David Gray
(EMC Engineer In Charge)

Test Engineer:

William Dey
(EMC Technician)

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