ELECTROMAGNETIC COMPATIBILITY

EMC TEST REPORT

FCC 47 CFR PART 15 SUBPART E (NII)
&
INDUSTRY CANADA RSS-210 ISSUE 6

FOR

ITRONIX CORPORATION

MODEL: IX325-CWLBT

IX325 SERIES RUGGED TABLET PC

WITH

CISCO AIR-CB21AG-A-K9 802.11ABG WLAN (PCMCIA)

FCC ID: KBCIX325-CWLBT

IC: 1943A-IX325ab

Test Report Serial Number

040505KBC-F631-E15EW

Test Report Issue Number

E631EW-042006-R0

Test Lab

Celltech Compliance Testing & Engineering Lab
(Celltech Labs Inc.)
1955 Moss Court
Kelowna, BC
Canada
V1Y 9L3

DECLARATION OF COMPLIANCE

Test Lab	**CELLTECH LABS INC.** Testing and Engineering Services 1955 Moss Court Kelowna, B.C. Canada V1Y 9L3	**Company**	**ITRONIX CORPORATION** 12825 E. Mirabeau Parkway Spokane Valley, WA 99216 United States
Phone:	250-448-7047		
Fax:	250-448-7048		
e-mail:	info@celltechlabs.com		
web site:	www.celltechlabs.com		

Lab Registration No.(s):	FCC:	714830	IC:	3874
Rule Part(s):	FCC:	§15.407; §2.1091; §1.1310	IC:	RSS-210 Issue 6 Annex 8
Device Classification:	FCC:	Unlicensed National Information Infrastructure TX (NII)	IC:	Low Power License-Exempt Transmitter
Device Identification:	FCC: ID:	KBCIX325-CWLBT	IC:	1943A-IX325ab

DUT Description:		
Model:	IX325-CWLBT	
Device Description:	Rugged Tablet PC	
Internal Transmitter(s):	Cisco AIR-CB21AG-A-K9 802.11abg WLAN (PCMCIA)	
Tx Frequency Range(s):	802.11a	5180 - 5250 MHz (UNII-1)
		5250 - 5320 MHz (UNII-2)
Data Rates:	6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps	
Max. RF Output Power Measured:	0.0385 Watts - 15.85 dBm - Channel 36 (5180 MHz) - 6 Mbps	
Max. Radiated Carrier RF Power Measured:	111.10 dBuV/m (PK) @ 3 meters - Channel 64 (5320 MHz, 1000 kHz RBW)	
Maximum Radiated Spurious RF Power*:	63.52 dBuV/m (AV) @ 3 meters - Channel 64 (15957.15 MHz, 1000 kHz RBW)	
Worst-case Conducted Transmitter Spurious Emissions*:	-31.28 dBm - Channel 36 (54 Mbps, 25982.08 MHz)	
Worst-case Conducted Receiver Spurious Emissions*:	-68.55 dBm - Channel 64 (25050.83 MHz)	
Mode(s) of Operation:	OFDM (Orthogonal Frequency Division Multiplexing)	
Modulation Type(s):	BPSK, QPSK, 16QAM, 64QAM, DBPSK, DQPSK, CCK	
Antenna Type(s):	Dual-band Diversity Monopole Antenna (embedded on PC Card PCB)	
Power Source(s):	Stationary: 75 Watt AC Power Adapter	
	11.1 V Internal Lithium-ion Battery, 3600 mAh (Model: T8M-E)	
	11.1 V External Second Lithium-ion Battery, 3600 mAh (Model: T8S-E)	

***Emission with lowest margin to the applicable limit**

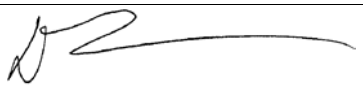
ATTESTATIONS

This wireless device has demonstrated compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in FCC 47 CFR Part 15E and Industry Canada RSS-210 Issue 6.

I attest to the accuracy of the data. All measurements reported herein were performed by me or were under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

This test report shall not be reproduced partially, or in full, without the prior written approval of Celltech Labs Inc.

The results and statements contained in this report pertain only to the device(s) evaluated.

	**Duane M. Friesen, C.E.T.** **EMC Manager** **Celltech Labs Inc.**

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FIGURES

PHOTOGRAPHS

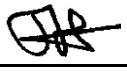
TEST SUMMARY

Appendix	Test Description	Procedure Reference	Limit Reference	Test Start Date	Test End Date	Result
Referenced Standard: FCC CFR Title 47 Part 15						
B	26 dB / 99% Emission Bandwidth	FCC DA 02-2138	Reference only	24Oct05	24Oct05	na
C	Transmitter Output Power	FCC DA 02-2138	§15.407(a) (1), (2)	24Oct05	24Oct05	Pass
D	Peak Excursion Ratio	FCC DA 02-2138	§15.407(a) (6)	24Oct05	24Oct05	Pass
E	Conducted Transmitter Spurious Emissions	RSS-GEN 7.2.3.1	Reference only	14Nov05	14Nov05	na
G	Radiated Spurious Emissions	FCC 97-114	§15.407(b) (1), (2) & (6)	3Oct05	25Oct05	Pass
H	Restricted Band Emissions	FCC 97-114	§15.407 (b) (6) §15.205 (a), (b) §15.209 (a)	3Oct05	18Nov05	Pass
I	Peak Power Spectral Density	FCC DA 02-2138	§15.407(a) (1) & (2)	25Oct05	25Oct05	Pass
J	Conducted Powerline Emissions	ANSI C63.4	§15.407 (b) (6) §15.207	16Nov05	16Novl05	Pass
Referenced Standard: IC RSS-210 Issue 6						
B	26 dB / 99% Emission Bandwidth	RSS-GEN 4.4.1	Reference only	24Oct05	24Oct05	Pass
C	Transmitter Output Power	RSS-210 Annex 9.2 §(1)&(2); RSS-GEN 4.6	RSS-210 Annex 9.2 §(1)&(2)	24Oct05	24Oct05	Pass
E	Conducted Transmitter Spurious Emissions	RSS-GEN 7.2.3.1	Reference only	14Nov05	14Nov05	na
F	Conducted Receiver Spurious Emissions	RSS-GEN 7.2.3.1	RSS-GEN §6 (b)	15Nov05	17Nov05	Pass
G	Radiated Spurious Emissions	RSS-212, ANSI C63.4	RSS-210 Annex 9.3 §(1)&(2)	3Oct05	25Oct05	Pass
H	Restricted Band Emissions	RSS-212, ANSI C63.4	RSS-210 §2.2	3Oct05	18Nov05	Pass
I	Peak Power Spectral Density	RSS-210 § 10	RSS-210 Annex 9.5 §(1) & (2), §(b)	25Oct05	25Oct05	Pass
J	Conducted Powerline Emissions	RSS-212, ANSI C63.4	RSS-GEN 7.2.2	16Nov05	16Novl05	Pass

REVISION LOG

Issue No.	Description	Implemented By	Implementation Date
E631EW-042006-R0	Initial Release	Jonathan Hughes	20Apr06

SIGNATORIES

Prepared By		December 02, 2005
Name/Title	Duane M. Friesen, C.E.T. / EMC Manager	Date
Reviewed By		April 20, 2006
Name/Title	Jonathan Hughes / General Manager	Date

1.0 SCOPE

This report outlines the measurements made and results collected during the electromagnetic emissions testing of the Itronix Corporation Model: IX325-CWLBT Rugged Tablet PC with Cisco AIR-CB21AG-A-K9 802.11abg WLAN PCMCIA Card utilizing an embedded dual-band diversity PCB antenna. As defined by the manufacturer, the WLAN is designed to operate in North America with the 5180-5320 MHz band addressed in this report. The 2412-2462 MHz and 5745-5825 MHz operating bands are addressed in a separate report for Subpart E of the requirements. The results were applied against the EMC requirements and limits outlined in the technical rules and regulations set forth in the Federal Communication Commission Code of Federal Regulations Title 47 Part 15 Subpart E and Industry Canada RSS-210 Issue 6.

2.0 REFERENCES

2.1 Normative References

ANSI/ISO 17025:1999	General Requirements for competence of testing and calibration laboratories
IEEE/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
IEEE/ANSI Std C95.1-1999	American National Standard Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields
CFR Title 47 Part 2:2005	Code of Federal Regulations Title 47: Telecommunication Part 2: Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
CFR Title 47 Part 15:2005	Code of Federal Regulations Title 47: Telecommunication Part 15: Radio Frequency Devices
FCC Public Notice DA 00-705	Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems March 30, 2000
FCC Public Notice DA 02-2138	Measurement Procedure Updated for Peak Transmit Power in the Unlicensed National Information Infrastructure (U-NII) Bands August 30, 2002
FCC Knowledge Database Pub.	558074 (May 10, 2005)
IC Spectrum Management & Telecommunications Policy	Radio Standards Specification RSS-GEN 4.4.1 General Requirements and Information for Certification of Radiocommunication Equipment - Issue 1, September 2005 RSS-212 Issue 1 (Provisional) - Test Facilities & Test Methods for Radio Equipment RSS-210 Issue 6 - Low Power Licence-Exempt Radiocommunication Devices - September 2005 RSS-102 Issue 2 - Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) - November 2005

TERMS AND DEFINITIONS

AVG	Average
CFR	Code of Federal Regulations
dB	decibel
dBm	dB referenced to 1 mW
dBuV	dB referenced to 1 uV
DUT	Device under Test
dBc	dB down from carrier
EBW	Emission Bandwidth
EMC	Electromagnetic Compatibility
FCC	Federal Communication Commission
HP	Hewlett Packard
HPF	High Pass Filter
Hpol	Horizontal Polarization
IC	Industry Canada
kHz	kilohertz
LNA	Low Noise Amplifier
m	meter
MHz	Megahertz
Mbps	megabits per second
na	not applicable
n/a	not available
PK	Peak
PPSD	Peak Power Spectral Density
QP	Quasi-peak
RBW	Resolution Bandwidth
R&S	Rohde & Schwarz
RSS	Radio Standard Specification
SA	Spectrum Analyzer
TPC	Transmit Power Control
VBW	Video Bandwidth
Vpol	Vertical Polarization
WLAN	Wireless Local Area Network

3.0 FACILITIES AND ACCREDITATIONS

The facilities used in collecting the test results outlined in this report are located at 1955 Moss Court, Kelowna, British Columbia, Canada, V1Y 9L3. The radiated and conducted emissions sites conform to the requirements set forth in ANSI C63.4 and are filed and are listed with the FCC under Registration Number 714830 and Industry Canada under File Number IC 3874.

4.0 GENERAL INFORMATION

4.1 Applicant Information

Company Name:	**Itronix Corporation**
Address:	12825 E. Mirabeau Parkway
	Spokane Valley, WA 99216
	United States

4.2 DUT Description

The DUT consisted of the Itronix Rugged Tablet PC Model: IX325-CWLBT with Cisco AIR-CB21AG-A-K9 802.11abg WLAN PCMCIA Card installed in the PCMCIA slot. The embedded dual-band monopole diversity PCB antenna is located at the protruding end of the PCMCIA card. Photographs of the DUT placement and construction are shown in Appendix A.

Device:	Rugged Tablet PC			
Model:	IX325-CWLBT			
Serial Number:	ZZGEG5073ZZ9781			
Identifier(s):	FCC ID:	KBCIX325-CWLBT	IC:	1943A-IX325ab
Power Source(s):	Delta Electronics 75 Watt AC-DC Power Supply Model: ADP-75 FB B Rev 00 (S/N: UCT030200307)			
	Internal Lithium-ion 11.1 V 3600 mAh Battery Model: T8M-E			
	External Second Lithium-ion 11.1 V 3600 mAh Battery Model: T8S-E			

Device:	WLAN PCMCIA Card (802.11abg)			
Model:	CISCO AIR-CB21AG-A-K9			
Serial No(s):	FOC0853N07U, FOC0852NKWN			
Rule Part(s):	FCC:	§15.247; §2.1091; §1.1310	IC:	RSS-210 Issue 6 Annex 8
Classification:	FCC ID:	Unlicensed National Information Infrastructure TX (NII)	IC:	Low Power License-Exempt Transmitter
Power Source:	Powered from the internal PC power supply			

Device:	Embedded Dual-Band Monopole Diversity PCB antenna (Transmit/Receive & Receive)
Model:	n/a (Integral to AIR-CB21AG-A-K9 WLAN PCB)
Gain:	2.0 dBi (horizontal)

4.3 Co-Located Equipment

Device:	2.4GHz FHSS Bluetooth Transmitter	**Model:**	Micro-Star International Co. Ltd. MS-6837
Device:	Internal PIFA Bluetooth Antenna 3	**Manufacturer:**	Well Green Technology

Device:	GPS Receiver Module	**Model:**	Leadtek Model LR9805
Device:	GPS Antenna (Receive only)	**Model:**	Sarantel 101401040/2004UK

4.4 Cable Descriptions

ROUTING		Length	Model	Terminations		Shield Type	Shield Termination		Suppression
From	To	m		End 1	End 2		End 1	End 2	
PC modem port	Unterminated	1.0	n/a	RJ-11	RJ-11	None	na	na	None

4.5 Support Equipment

The following equipment was used in support of the DUT.

CO-LOCATED SUPPORT EQUIPMENT LIST		
MANUFACTURER	MODEL	DESCRIPTION
D-Link	DE-809TC/	Ethernet hub
YNG YUH	YP-040	Hub power supply
MLi	699	Speakers
Polk Audio	n/a	Speaker-microphone
	K8255	Keyboard
Sanwa Supply	MA-MBUSB	Mouse

4.6 Clock Frequencies

4.6.1 DUT Clock Frequencies

Device:	Rugged Tablet PC
Clocks:	n/a
Name:	WLAN PCMCIA Card
Clocks:	n/a
Name:	PCB Antenna (WLAN)
Clocks:	None

4.6.2 Co-Located Clock Frequencies

Device:	Peripherals
Clocks:	n/a

4.7 Mode(s) of Operation Tested

Customer supplied the software was used to set the WLAN card in the appropriate mode, channel, and power level for the specific measurement. The following are the minimum settings used:

Tx Frequency Range:	Mode a: 5180 - 5250 MHz, 5250 - 5320 MHz Ch. 36 (5180 MHz), Ch. 52 (5260 MHz) & Ch. 64 (5320 MHz) measured unless otherwise noted
Software Power Gain Settings:	802.11a set to power setting of 17.0 / 0 for 6 mbps, 14.0 / 0 for 54 mbps
RF Peak Conducted Output Power Tested:[1]	**802.11a** / 6 Mbps / 54 Mbps 5180 MHz: 15.85 dBm / 13.50 dBm 5260 MHz: 15.73 dBm / 12.60 dBm 5320 MHz: 15.38 dBm / 12.59 dBm
Modes / Data Rates Tested:[2]	802.11a (6, 54 Mbps checked in prescan) (6 Mbps determined to be worst-case spurious and used unless otherwise noted)
Mode(s) of Operation:	OFDM
Modulation Type(s):	BPSK, QPSK, 16QAM, 64QAM, DBPSK, DQPSK, CCK
Power Source(s) Tested:	All tests were performed with the AC Power Adapter powering the DUT

Note 1: Peak power measured and integrated per FCC Public Notice DA 02-2138 Peak conducted output power measurement Option 2, Method 1

Note 2: Turbo mode available at module level but not enabled when installed in IX325 Tablet PC per Itronix Corp.

4.7.1 DUT Exercising Software Description

The DUT was configured and exercised using customer supplied test software that allows an operator to set the parameters of the WLAN operation. The settings used are described in each appendix. Unless otherwise noted the power gain settings were set as described in section 5.6 with the worst-case data rate as described in the same section. Software power settings were set as defined by the manufacturer for typical operation.

4.8 Configuration Description

The DUT was configured, as described by the client as being representative of what would be delivered to a final customer. This configuration included the WLAN and internal antenna as described in section 5.2 installed in a typical manner. More specific details may be included in each appendix.

4.8.1 Configuration Justification

The DUT was tested in a configuration described by the client as being worst-case but typical of normal use.

Prescan measurements were made with the WLAN in mode a. The lowest and highest bit rates where tested. The lowest, highest and mid-band channels in the lower frequency band applicable to mode a were investigated. In addition, the three orthogonal DUT orientations were used to determine worse case orientation. From this preliminary data, it was determined that the lowest rate, along with a “Short Edge Up” orientation produced the highest spurious emissions (or highest carrier if no significant difference in spurious emissions were found). Software power settings were made based on information received from the manufacturer. These settings were described as those needed to set the DUT to its highest marketed power. Unless otherwise specified in the applicable appendices, these settings (or higher) were used for the measurements described in this report.

5.0 PASS/FAIL CRITERIA

Unless otherwise noted in the Appendices, the pass/fail criteria is the limit set forth in the reference standards. A DUT is considered to have passed the requirements, if the data collected during the described measurement procedure is less than or equal to the specified limits as defined. The pass/fail statements made in this report only apply to the unit tested.

APPENDICES

Appendix A - DUT Photographs

Photograph A-1 - Front of IX325 Tablet PC

Photograph A-2 - Back of IX325 Tablet PC

Photograph A-3 - WLAN Card Installed (cover removed)

Photograph A-4 - WLAN PCMCIA Card

Appendix B - Emission Bandwidth Measurement

B.1. REFERENCES

Normative Reference Standard	FCC CFR 47 §15.407
Procedure Reference	FCC DA 02-2138 Appendix A - Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E - August 30, 2002 RSS-GEN 4.4.1 General Requirements and Information for Certification of Radiocommunication Equipment

B.2. LIMITS

FCC CFR 47 §15.407 IC RSS-210 §Annex 9	*No specified limit: Used for reference only and for determination of other specified limits*

B.3. ENVIRONMENTAL CONDITIONS

Temperature	25 ± 3 ºC
Humidity	35 ± 5 % RH
Barometric Pressure	uncontrolled

B.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00015	Agilent	E4408B	Spectrum Analyzer	24Jan05	24Jan06
Customer supplied	n/a	n/a	1ft. RG223/U RF Cable	n/a	n/a
00076	Pasternack	PE7014-30	30dB 2 Watt Attenuator	na*	na

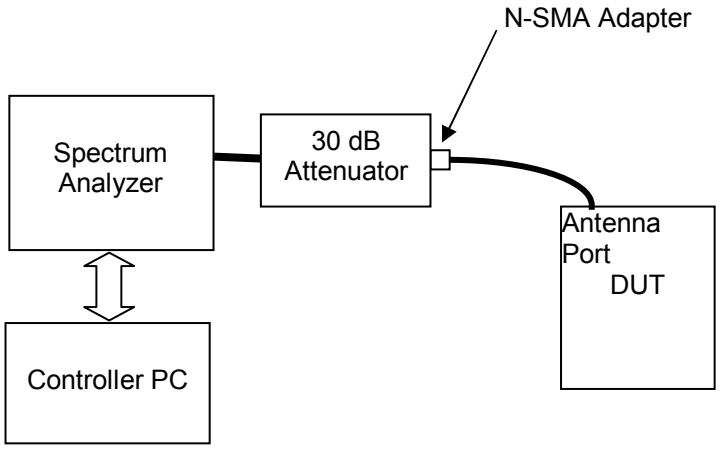
*Verification made prior to measurement

B.5. MEASUREMENT EQUIPMENT SETUP

Measurement Equipment Connections	The equipment was connected as shown in the setup drawing in B.6.
Measurement Equipment Settings	To evaluate the emission bandwidth, software and a PC controller were used to set the spectrum analyzer using the following setting: RBW – 300 kHz (~ 1% of EBW) VBW – 1 MHz Span – 50 MHz Detector – Peak Average – off Trace - View Offset – appropriate for external attenuation (-31.4 dB)
Measurement Procedure	A PC controller was used to record the spectrum analyzer display with the above settings. Software was used to determine the peak level and the points on either side of this peak that were 26 dB lower. The frequency difference between these two points was calculated and reported as the –26 dB emission bandwidth. The software also integrated the power within the span measured and determined frequency points along the trace that represents the first 0.05% and last 0.05% of the total power. Using these points as upper and lower limits, the band representing the center 99% of the power is determined and its width recorded as the 99% emission bandwidth.

B.6. SETUP DRAWING

Figure B.6-1 - Setup Drawing



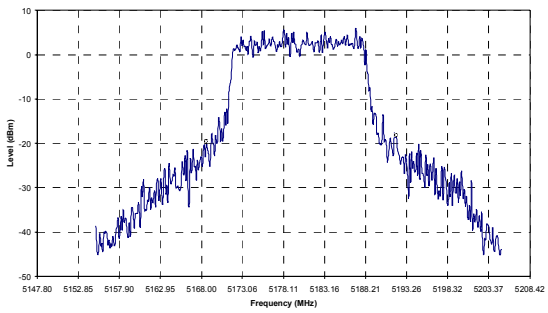
B.7. DUT OPERATING DESCRIPTION

Measurements were made at three channels throughout the lower band applicable for Mode a (5180 - 5320 MHz) with both the lowest and highest data rates. (6 & 54 mbps)

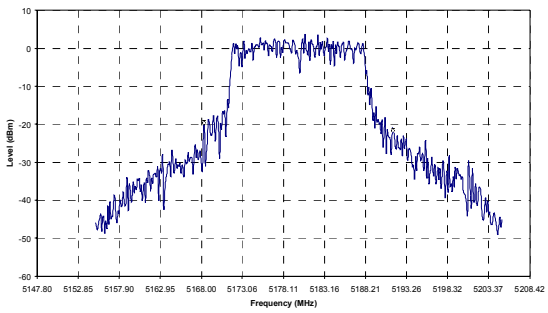
B.8. TEST RESULTS

B.8.1. Mode a -26 dB Emission Bandwidth

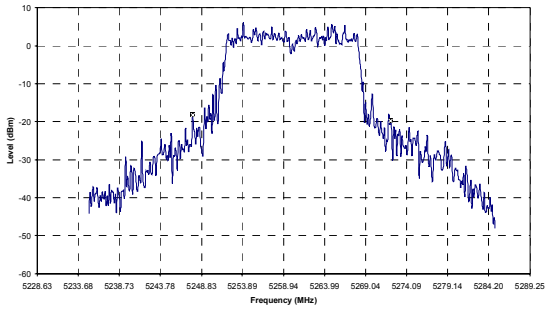
CISCO WLAN abg Setting 17.0 & 0 6 mbps, Frequency = 5180 MHz, Mode a,
-26 dB Emission Bandwidth = 23.38 MHz with an RBW of 300 kHz



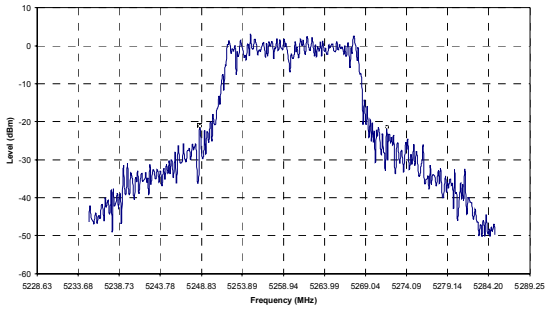
CISCO WLAN abg Setting 14.0 & 0 54 mbps, Frequency = 5180 MHz, Mode a,
-26 dB Emission Bandwidth = 23.25 MHz with an RBW of 300 kHz



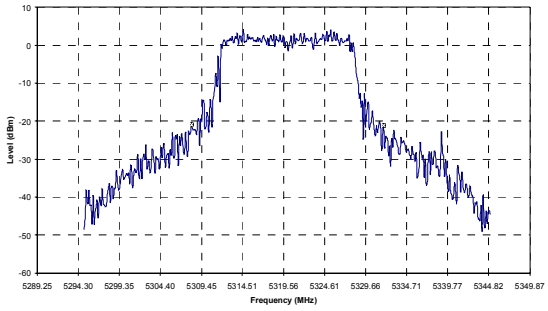
CISCO WLAN abg Setting: 17.0 & 0 6 mbps, Frequency = 5260 MHz, Mode a,
-26 dB Emission Bandwidth = 24.38 MHz with an RBW of 300 kHz



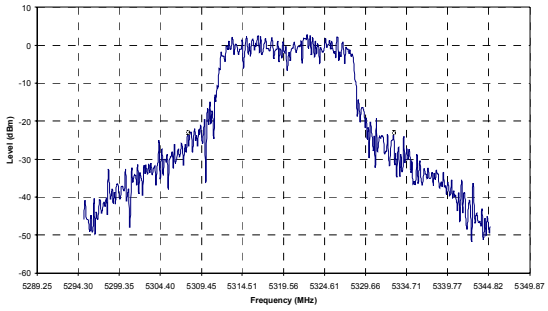
CISCO WLAN abg Setting 14.0 & 0 54 mbps, Frequency = 5260 MHz, Mode a,
-26 dB Emission Bandwidth = 23.00 MHz with an RBW of 300 kHz



CISCO WLAN abg Setting: 17.0 & 0 6 mbps, Frequency = 5320 MHz, Mode a,
-26 dB Emission Bandwidth = 23.63 MHz with an RBW of 300 kHz

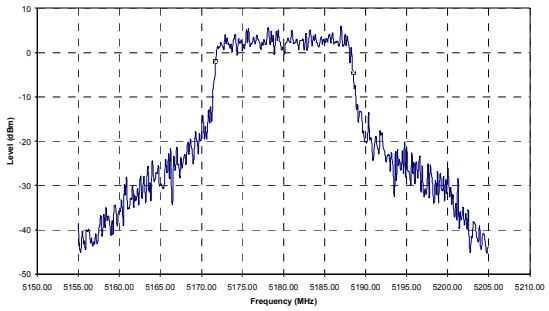


CISCO WLAN abg Setting: 14.0 & 0 54 mbps, Frequency = 5320 MHz, Mode a,
-26 dB Emission Bandwidth = 25.38 MHz with an RBW of 300 kHz

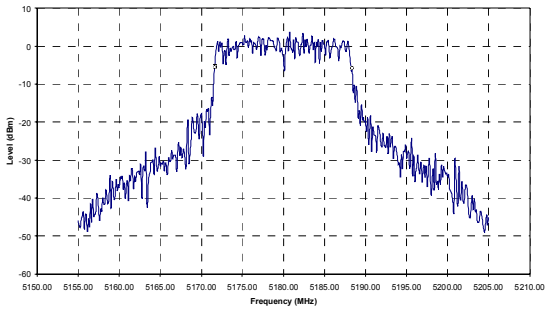


B.8.2. Mode a 99% Emission Bandwidth

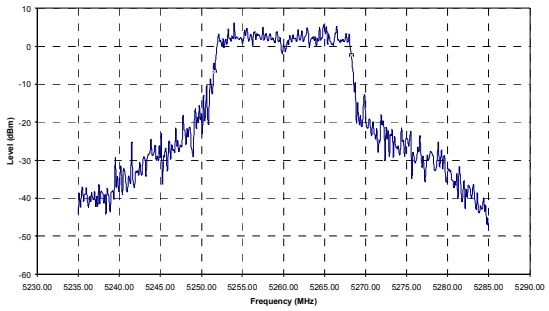
CISCO WLAN abg Setting 17.0 & 0 6 mbps: Emission Bandwidth
Frequency = 5180 MHz, Mode a, 99% EBW = 16.75 MHz



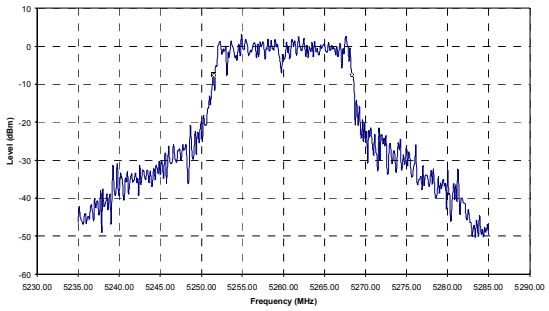
CISCO WLAN abg Setting 14.0 & 0 54 mbps: Emission Bandwidth
Frequency = 5180 MHz, Mode a, 99% EBW = 16.75 MHz



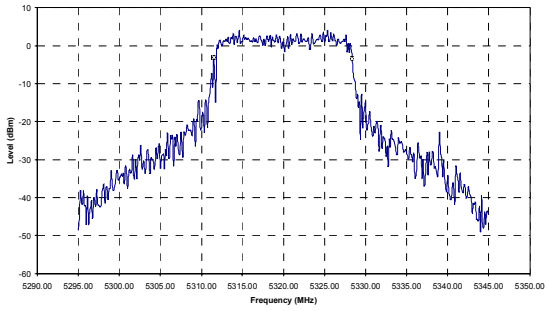
CISCO WLAN abg Setting: 17.0 & 0 6 mbps: Emission Bandwidth
Frequency = 5260 MHz, Mode a, 99% EBW = 16.63 MHz



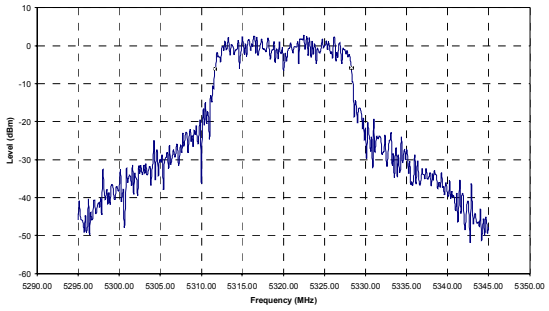
CISCO WLAN abg Setting 14.0 & 0 54 mbps: Emission Bandwidth
Frequency = 5260 MHz, Mode a, 99% EBW = 16.88 MHz



CISCO WLAN abg Setting: 17.0 & 0 6 mbps: Emission Bandwidth
Frequency = 5320 MHz, Mode a, 99% EBW = 16.88 MHz



CISCO WLAN abg Setting: 14.0 & 0 54 mbps: Emission Bandwidth
Frequency = 5320 MHz, Mode a, 99% EBW = 16.63 MHz



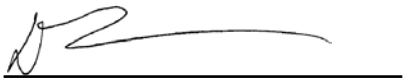
Channel	Channel Frequency	-26 dB Bandwidth		99% Bandwidth	
		6 mbps	54 mbps	6 mbps	54 mbps
	(MHz)	(MHz)	(MHz)	(MHz)	(MHz)
36	5180	23.38	23.25	16.75	16.75
52	5260	24.38	23.00	16.63	16.88
64	5320	23.63	25.38	16.88	16.63

B.9. PASS/FAIL

No pass/fail criteria specified for this measurement. For reference only.

B.10. SIGN-OFF

I attest to the accuracy of the data. All measurements reported herein were performed by me and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements.



Duane M. Friesen, C.E.T.
EMC Manager
Celltech Labs Inc.

24Oct05
Date

Appendix C - Transmitter Output Power Measurement

C.1. REFERENCES

Normative Reference Standard	FCC CFR 47 §15.407(a) (1), &(2)
Procedure Reference	FCC DA 02-2138 Appendix A - Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E - August 30, 2002 IC RSS-210 Annex 9.2 §(1)&(2) - Low-power License-exempt Radiocommunications Devices

C.2. LIMITS

C.2.1. FCC CFR

§15.407(a) (1):	*For the band 5.15 – 5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10logB, where B is the 26-dB emission bandwidth in MHz….*
§15.407(a) (2):	*For the band 5.25 – 5.35 GHz, and 5.47 – 5.725 bands, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11dBm + 10logB, where B is the 26 dB emission bandwidth in megahertz…*

C.2.2. IC RSS-210 Note4

§A9.2 (1):	*For the band 5150 – 5250 MHz, the maximum equivalent isotropic radiated output power (e.i.r.p.) shall not exceed 200 mW or 10 + 10logB, dBm, whichever is less. B is the 99% emission bandwidth in MHz….*
§A9.2 (2):	*For the band 5205 – 5350 MHz, and 5470 – 5725 bands, the maximum conducted output power shall not exceed 250 mW or 11dBm + 10log$_{10}$B, dBm, whichever is less. ….. The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10log$_{10}$B, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz…*

Note 1: The -26 dB & 99% emission bandwidth for each channel is outlined in Appendix B of this report.
Note 2: In reference to information provided by the manufacturer and outlined in section 4.2 of this report, the transmitting antenna used has a direction gain less than 6 dBi.
Note 3: Peak power spectral density is outlined in Appendix I of this report.
Note 4: In reference to IC RSS-Gen, 4.6 paragraph 4, conducted power measurements were made at the antenna port and the measured value applied to the e.i.r.p limit.

C.3. ENVIRONMENTAL CONDITIONS

Temperature	25 ± 3 ºC
Humidity	35 ± 5 % RH
Barometric Pressure	uncontrolled

C.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00015	Agilent	E4408B	Spectrum Analyzer	24Jan05	24Jan06
Customer supplied	n/a	n/a	1ft. RG223/U RF Cable	n/a	n/a
00076	Pasternack	PE7014-30	30dB 2 Watt Attenuator	na*	na

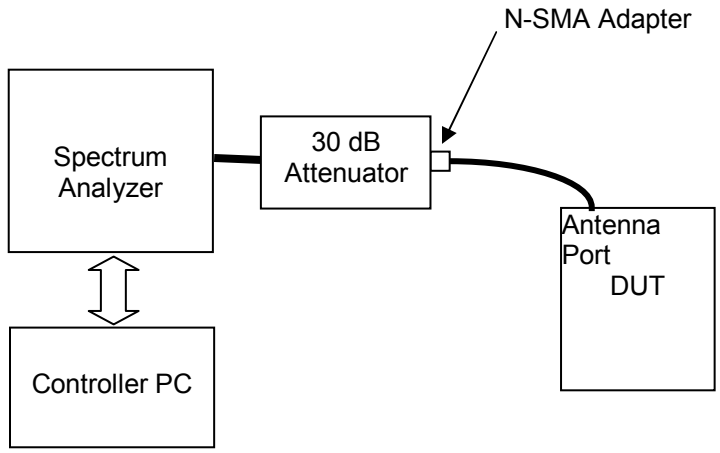
*Verification made prior to measurement

C.5. MEASUREMENT EQUIPMENT SETUP

Measurement Equipment Connections	The equipment was connected as shown in the setup drawing in C.6.
Measurement Equipment Settings	To evaluate the maximum peak power, with the following spectrum analyzer settings were used:
	[x] Option 2 Method 1 RBW – 1 MHz VBW – 3 MHz Detector – Sample Display - Linear Averaging – On, Power, 100 traces Trace - Write Span -25 MHz Offset – appropriate for external attenuation (-31.4 dB) [ ] Option 2 Method 3 RBW – 1 MHz VBW – 3 MHz Detector – Sample Display - Linear Averaging – off Trace - Max Hold Span -25 MHz Offset – appropriate for external attenuation (-31.4 dB)
Measurement Procedure	A PC controller was used to record the spectrum analyzer display with the above settings. Software was used to integrate the values recorded within the –26dB band. The resulting channel power was recorded and reported herein.

C.6. SETUP DRAWING

Figure C.6-1 - Setup Drawing

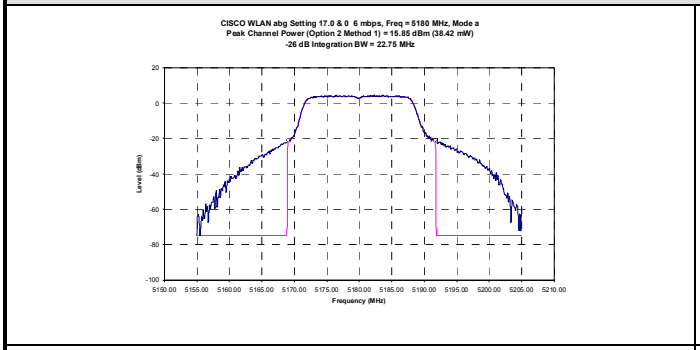


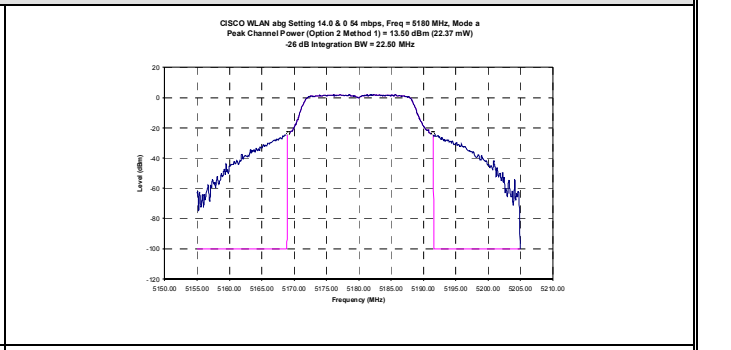
C.7. DUT OPERATING DESCRIPTION

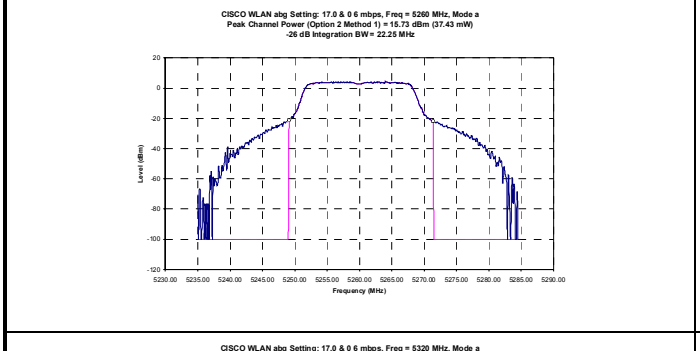
Measurements were made at three channels throughout the lower band applicable for Mode a (5180 - 5320 MHz) and at both the highest and lowest applicable data rates.

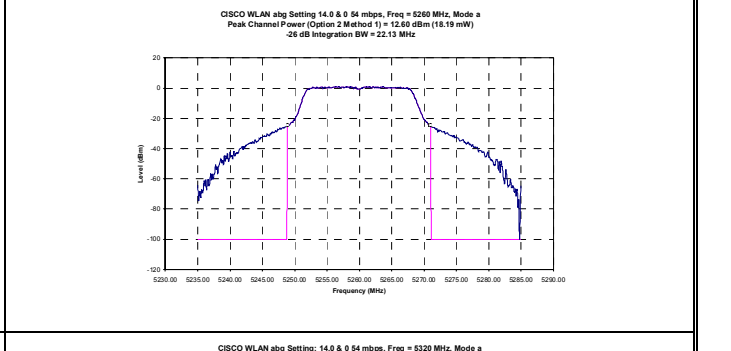
C.8. TEST RESULTS

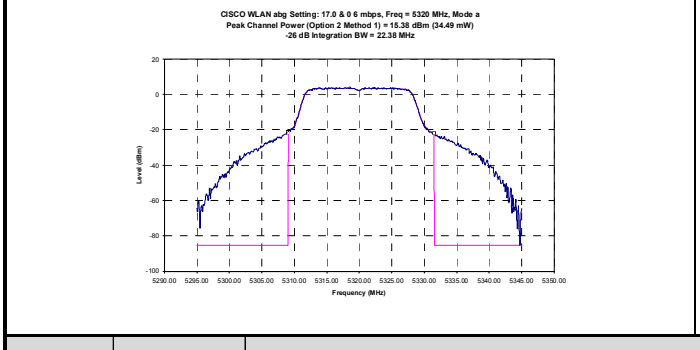
C.8.1. Conducted Output Power (-26 dB Bandwidth)

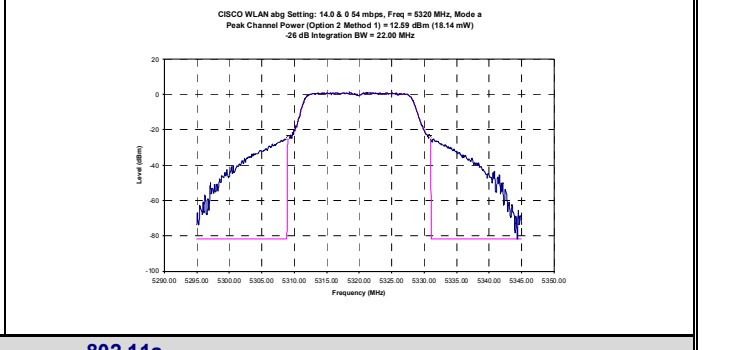








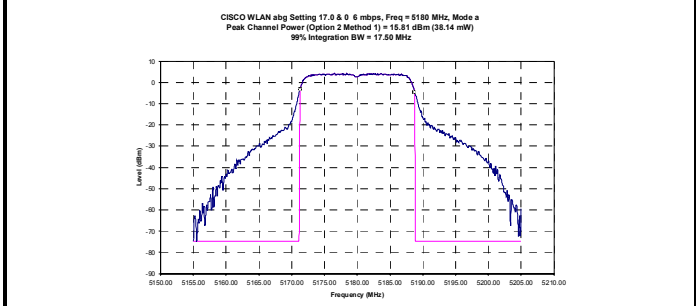


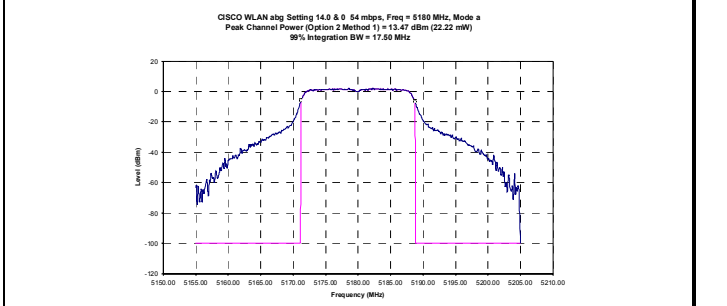


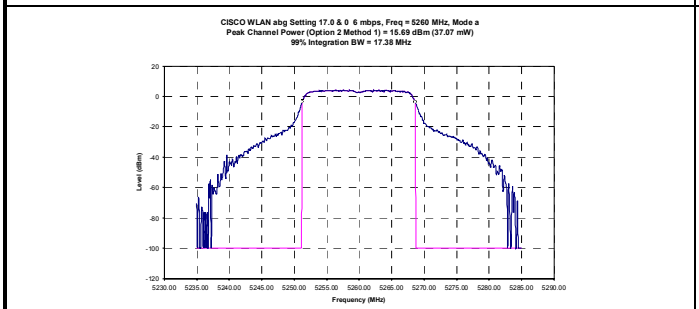
Channel	Frequency	802.11a										
		Data Rate	Peak Conducted Power		Integration Bandwidth	-26 dB Emission Bandwidth (B)		Limit[1]				Pass/Fail
								Limit 1[2]		Limit 1[3]		
	MHz	Mb/s	dBm	Watts	MHz	MHz	10logB	dBm[4]	dBm[5]	mW	dBm[6]	
CH36 (Low)	5180	6	15.85	0.03840	22.75	23.38	13.69	4	17.69	50	**17**	Pass
		54	13.50	0.0224	22.50	23.25	13.66	4	17.66	50	**17**	Pass
CH52 (Mid)	5260	6	15.73	0.0374	22.25	24.38	13.87	11	24.87	250	**24**	Pass
		54	12.60	0.0182	22.13	23.00	13.62	11	24.62	250	**24**	Pass
CH64 (High)	5320	6	15.38	0.0345	22.38	23.63	13.73	11	24.73	250	**24**	Pass
		54	12.59	0.0181	22.00	25.38	14.04	11	25.04	250	**24**	Pass

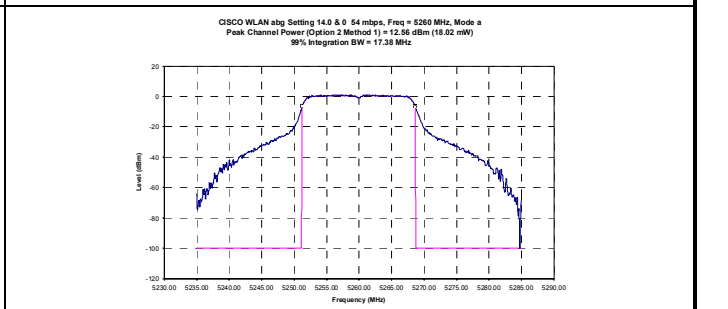
Note 1: Applicable limit is the minimum value between Limit 1 & Limit 2.
Note 2: Limit based on dBm[4] + 10logB = dBm[5]
Note 3: Limit based on 10log(mW) = dBm[6]

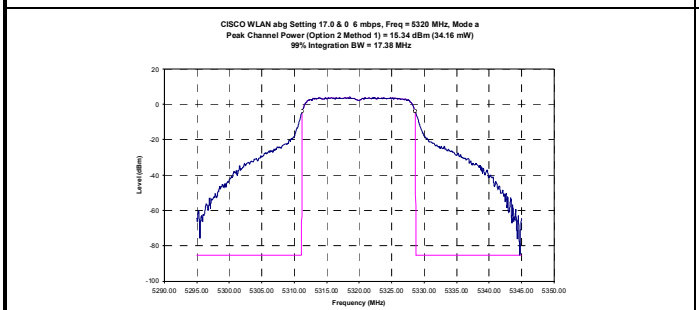
C.8.2. Conducted Output Power (99% Bandwidth)

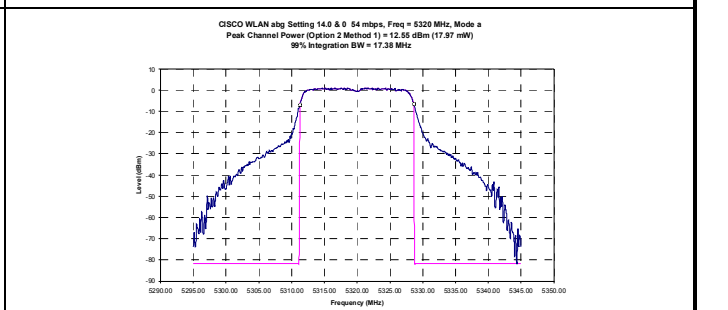












Channel	Frequency	802.11a										
		Data Rate	Peak Conducted Power		Integration Bandwidth	99% dB Emission Bandwidth (B)		Limit[1]				Pass/Fail
								Limit 1[2]		Limit 1[3]		
	MHz	Mb/s	dBm	Watts	MHz	MHz	10logB	dBm[4]	dBm[5]	mW	dBm[6]	
CH36 (Low)	5180	6	15.81	0.0381	17.50	16.75	12.24	10	**22.24**	200	23	Pass
		54	13.47	0.0222	17.50	16.75	12.24	10	**22.24**	200	23	Pass
CH52 (Mid)	5260	6	15.69	0.0371	17.38	16.63	12.21	11	**23.21**	250	24	Pass
		54	12.56	0.0180	17.38	16.88	12.27	11	**23.27**	250	24	Pass
CH64 (High)	5320	6	15.34	0.0342	17.38	16.88	12.27	11	**23.27**	250	24	Pass
		54	12.55	0.0180	17.38	16.63	12.21	11	**23.27**	250	24	Pass

Note 1: Applicable limit is the minimum value between Limit 1 & Limit 2.
Note 2: Limit based on $dBm^4 + 10logB = dBm^5$
Note 3: Limit based on $10log(mW) = dBm^6$

C.9. PASS/FAIL

In reference to the results outlined in C.8 the DUT passes the requirements as stated in the reference standards as follows:

FCC 15.407 (a) (1): The maximum conducted output power over the 5180 - 5250 MHz frequency range did not exceed 50 mW or 4 dBm+10logB (with B=EBW in MHz).

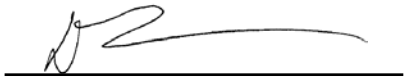
The maximum power within the 5180 - 5320 MHz frequency range was measured for Channel 36 (5180 MHz, 6 mbps) with a power of 15.85 dBm vs. a limit of 17 dBm (50 mW) [15.81 dBm vs. a limit of 22.24dBm (200 mW) for Industry Canada].

FCC 15.407 (a) (2): The maximum conducted output power over the 5250 - 5320 MHz frequency range did not exceed 250 mW or 11 dBm+10logB (with B=EBW in MHz).

The maximum power within the 5250 - 5320 MHz frequency range was measured for Channel 52 (5260 MHz, 6 mbps) with a power of 15.73 dBm vs. a limit of 24 dBm (250 mW) [15.69 dBm vs. a limit of 23.27dBm (250 mW) for Industry Canada].

C.10. SIGN-OFF

I attest to the accuracy of the data. All measurements reported herein were performed by me and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements.



Duane M. Friesen, C.E.T.
EMC Manager
Celltech Labs Inc.

24Oct05
Date

Appendix D - Peak Excursion Ratio Measurement

D.1. REFERENCES

Normative Reference Standard	FCC CFR 47§15.407 (a) (6)
Procedure Reference	FCC DA 02-2138 Appendix A - Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E August 30, 2002

D.2. LIMITS

FCC CFR 47§15.407 (a) (6)	*The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.*

D.3. ENVIRONMENTAL CONDITIONS

Temperature	25 ± 3 ºC
Humidity	35 ± 5 % RH
Barometric Pressure	uncontrolled

D.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00015	Agilent	E4408B	Spectrum Analyzer	24Jan05	24Jan06
Customer supplied	n/a	n/a	1ft. RG223/U RF Cable	n/a	n/a
00076	Pasternack	PE7014-30	30dB 2 Watt Attenuator	na*	na

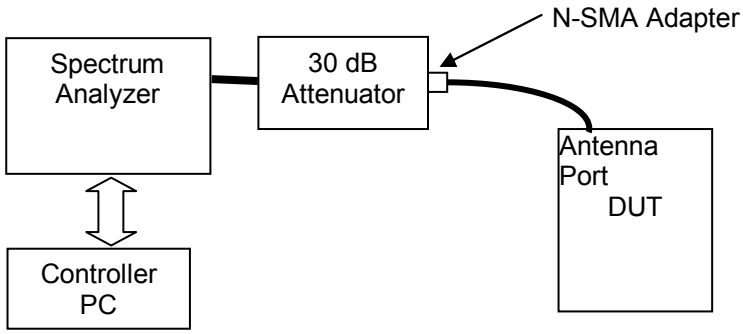
*Verification made prior to measurement

D.5. MEASUREMENT EQUIPMENT SETUP

MEASUREMENT EQUIPMENT CONNECTIONS	The equipment was connected as shown in the setup drawing in D.6.	
MEASUREMENT EQUIPMENT SETTINGS	To evaluate the peak excursion ratio, two measurements need to be made.	
	Trace 1 Settings: RBW – 1 MHz VBW – 3 MHz Detector – Peak Averaging – off Max Hold – on	
	Trace 2 Settings: [x] Option 2 Method 1 RBW – 1 MHz VBW – 3 MHz Detector – Sample Display - Linear Averaging – On, Power, 100 traces Trace - Write Span -25 MHz Offset – appropriate for external attenuation (-31.4 dB)	[x] Option 2 Method 1 RBW – 1 MHz VBW – 3 MHz Detector – Sample Display - Linear Averaging – off Trace - Max Hold Span -25 MHz Offset – appropriate for external attenuation (-31.4 dB)
Measurement Procedure	A PC controller was used to record the spectrum analyzer display with the above settings. Software was used to determine the difference between the two traces at the maximum peak value within their emission bandwidth.	

D.6. SETUP DRAWINGS

Figure D.6-1 - Setup Drawing

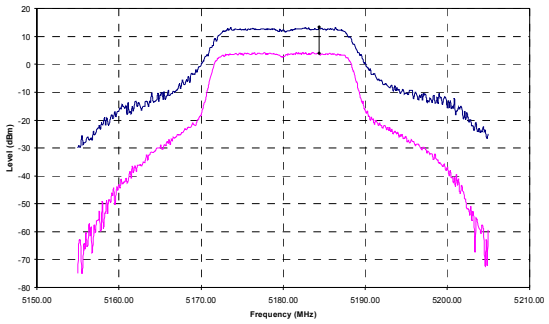


D.7. DUT OPERATING DESCRIPTION

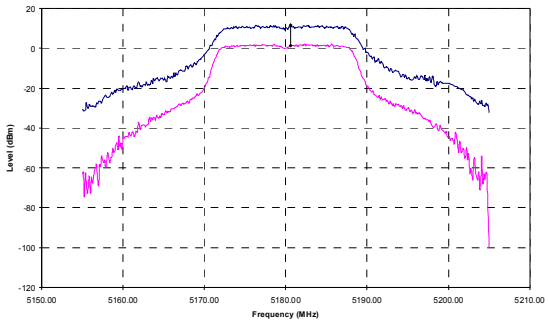
Measurements were made at three channels throughout the lower band applicable for Mode a (5180 - 5320 MHz) with the lowest and highest data rates.

D.8. TEST RESULTS

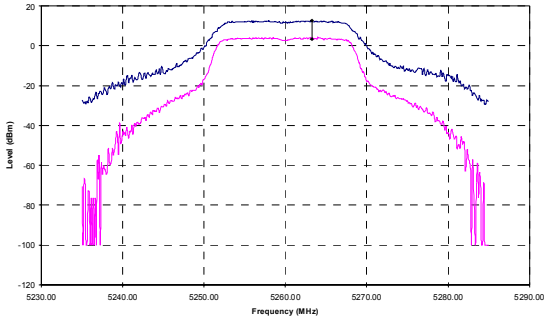
CISCO WLAN abg Setting 17.0 & 0 6 mbps, Freq = 5180 MHz, Mode a
Peak Excursion = 9.53 dB at 5169.3745 MHz



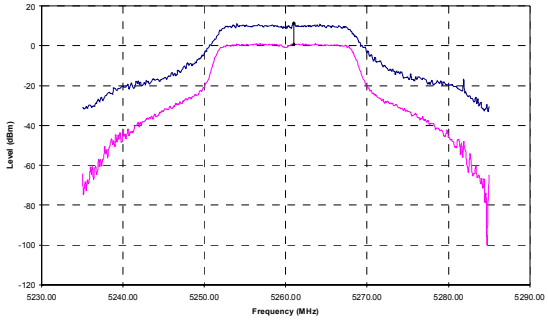
CISCO WLAN abg Setting 14.0 & 0 54 mbps, Freq = 5180 MHz, Mode a
Peak Excursion = 10.18 dB at 5191.375 MHz



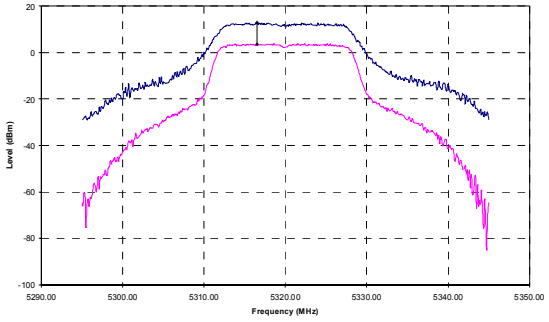
CISCO WLAN abg Setting: 17.0 & 0 6 mbps, Freq = 5260 MHz, Mode a
Peak Excursion = 9.34 dB at 5249.75 MHz



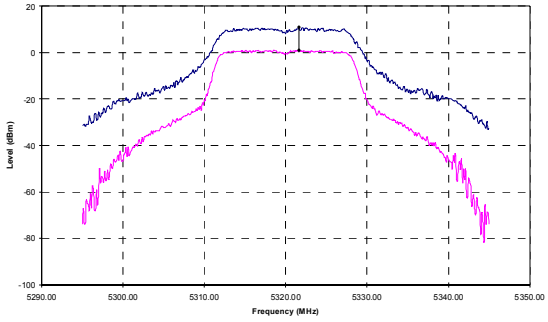
CISCO WLAN abg Setting 14.0 & 0 54 mbps, Freq = 5260 MHz, Mode a
Peak Excursion = 10.42 dB at 5271 MHz



CISCO WLAN abg Setting: 17.0 & 0 6 mbps, Freq = 5320 MHz, Mode a
Peak Excursion = 9.32 dB at 5309.7505 MHz



CISCO WLAN abg Setting: 14.0 & 0 54 mbps, Freq = 5320 MHz, Mode a
Peak Excursion = 9.97 dB at 5309.625 MHz



Channel	Channel Frequency	Peak Excursion Ratio		Limit	Pass/Fail
		6 mbps	54 mbps		
	(MHz)	(dB)	(dB)	(dB)	
36	5180	9.53	10.18	13	Pass
52	5260	9.34	10.42	13	Pass
64	5320	9.32	9.97	13	Pass

D.9. PASS/FAIL

In reference to the results outlined in D.8 the DUT passes the requirements as stated in the reference standards as follows:

FCC CFR 47§15.407 (a) (6): The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

A maximum peak excursion of 10.42 dB was the highest measurement determined and was found at 5271 MHz with Channel 52 transmitting.

D.10. SIGN-OFF

I attest to the accuracy of the data. All measurements reported herein were performed by me and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements.

Duane M. Friesen, C.E.T.
EMC Manager
Celltech Labs Inc.

24Oct05
Date

Appendix E - Conducted Transmitter Spurious Emissions Measurement

E.1. REFERENCES

Normative Reference Standard	IC RSS-210§A9.3 (1) (2)
Procedure Reference	IC RSS-GEN§4.7

E.2. LIMITS

*IC RSS-210§A9.3 (1) (2)**	*(1) For transmitters operating in the 5150 – 5250 MHz band: all emissions outside of the 5150 - 5350 MHz band shall not exceed –27 dBm/MHz e.i.r.p.*
	(2) For transmitters operating in the 5250 – 5350 MHz band: all emissions outside of the 5150 – 5350 GHz band shall not exceed an EIRP of –27 dBm/MHz…

*Reference only

E.3. ENVIRONMENTAL CONDITIONS

Temperature	25 ± 3 ºC
Humidity	35 ± 5 % RH
Barometric Pressure	uncontrolled

E.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00015	Agilent	E4408B	Spectrum Analyzer	24Jan05	24Jan06
Customer supplied	n/a	n/a	1ft. RG223/U RF Cable	n/a	n/a
00076	Pasternack	PE7014-30	30dB 2 Watt Attenuator	na*	na

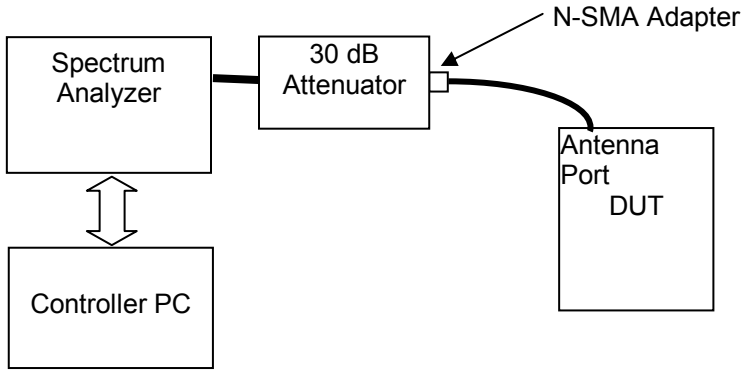
*Verification made prior to measurement

E.5. MEASUREMENT EQUIPMENT SETUP

MEASUREMENT EQUIPMENT CONNECTIONS	The equipment was connected as shown in the setup drawing in E.6.
MEASUREMENT EQUIPMENT SETTINGS	RBW – 1 MHz VBW – 1 MHz Span – Carrier region – 0.6 MHz / 5 bands, Outside carrier region - 22 GHz / 12 bands Detector – Peak Averaging – off Max Hold – on
Measurement Procedure	A PC controller was used to record the spectrum analyzer display with the above settings. It was used to set the spans and collect the data. Software was used to present a graphical presentation of the combined data collected for each channel.

E.6. SETUP DRAWINGS

Figure E.6-1 - Setup Drawing

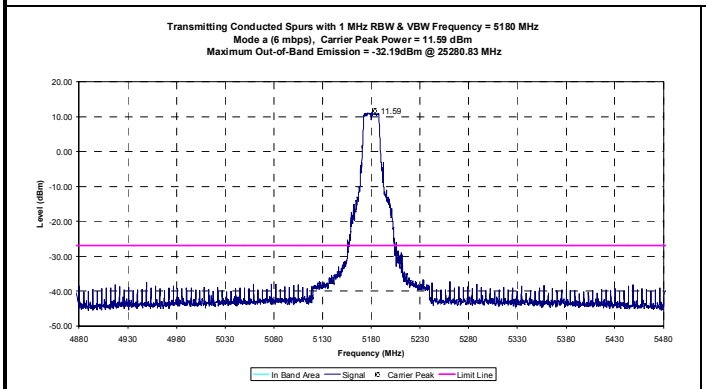


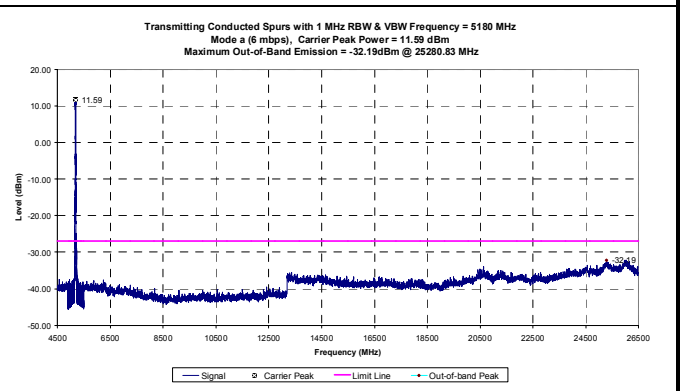
E.7. DUT OPERATING DESCRIPTION

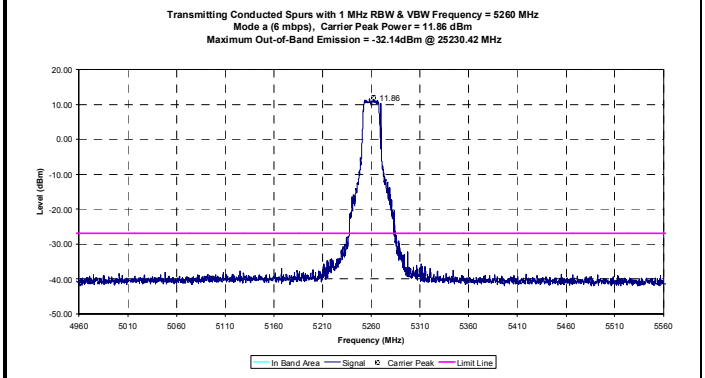
Measurements were made at three channels throughout the lower band applicable for Mode a (5180 - 5320 MHz) and at both the highest and lowest applicable data rates.

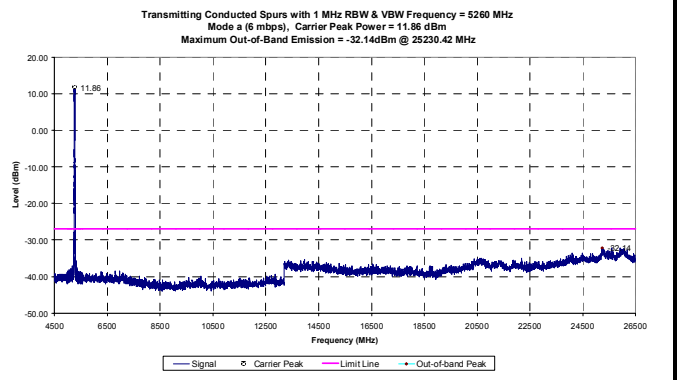
E.8. TEST RESULTS

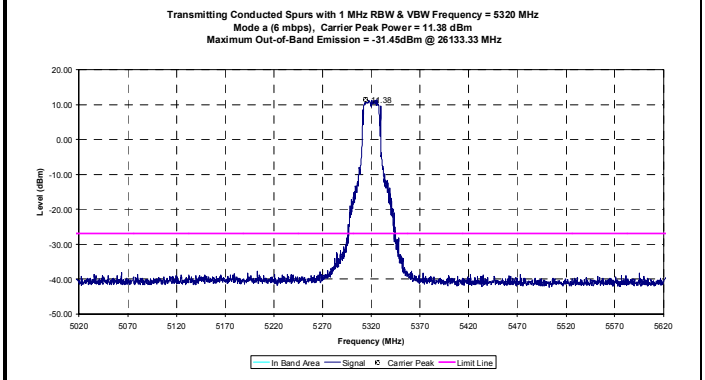
E.8.1. 6 Mbps

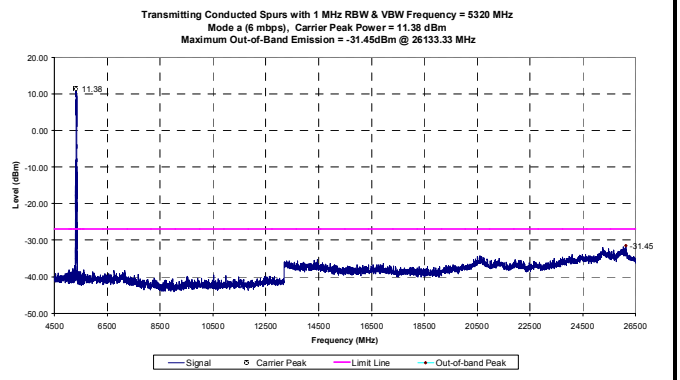




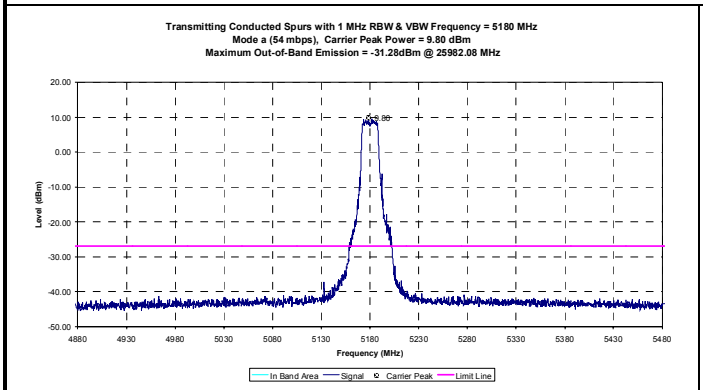


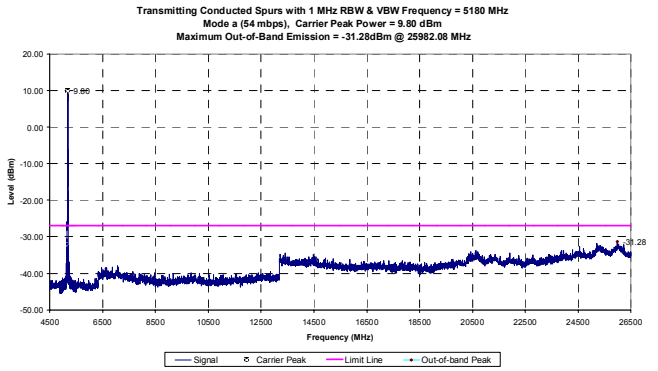


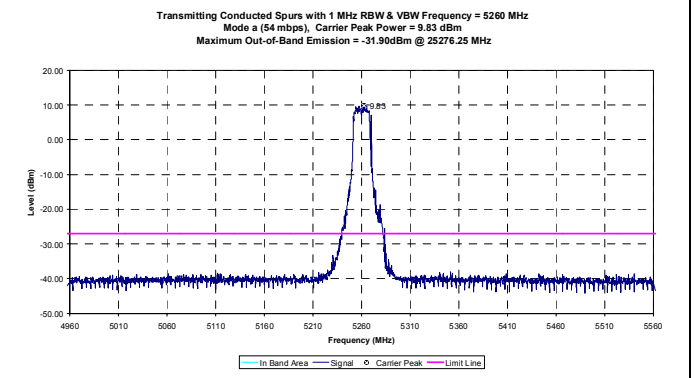


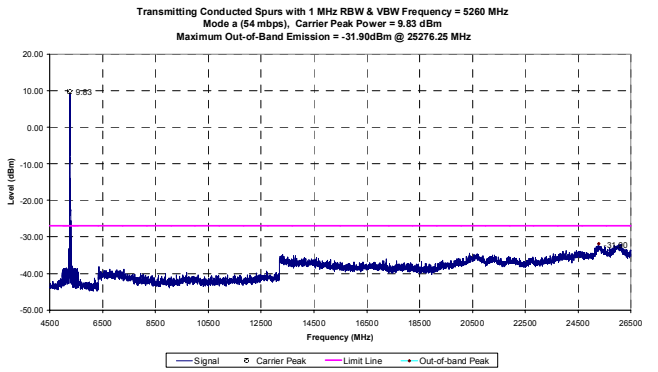


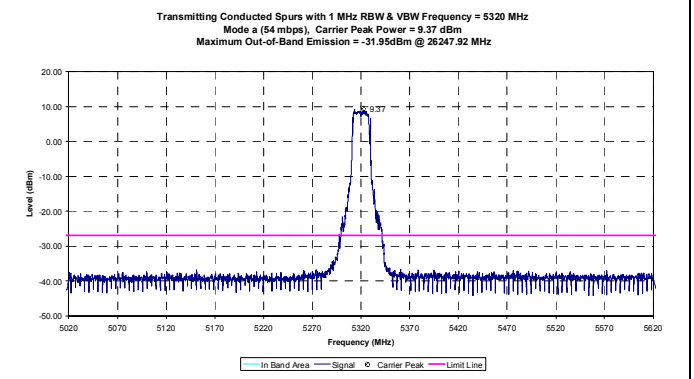
E.8.2. 54 Mbps

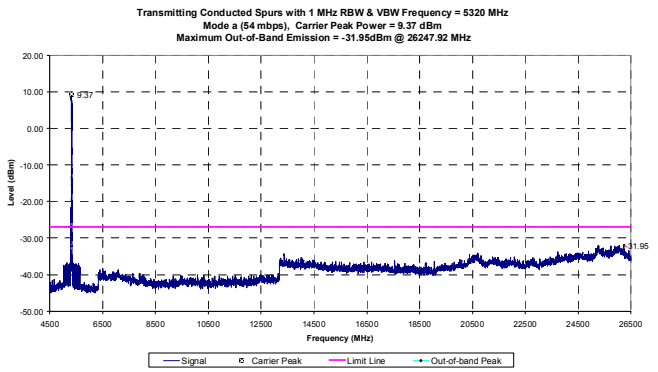












E.8.3. Summary

Channel	Channel Frequency	Highest Conducted Out-of-band Transmit Spurious Emission			
		6 mbps		54 mbps	
	(MHz)	Frequency (MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)
36	5180	25280.83	-32.19	25982.08	-31.28
52	5260	25230.42	-32.14	25276.25	-31.90
64	5320	26133.33	-31.45	26247.92	-31.95

E.9. PASS/FAIL

The conducted transmitter spurious emissions measurements were made for reference only for use in the determination of final OATS field strength measurements.

E.10. SIGN-OFF

I attest to the accuracy of the data. All measurements reported herein were performed by me and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements.

Duane M. Friesen, C.E.T.
EMC Manager
Celltech Labs Inc.

14Nov05
Date

Appendix F - Conducted Receiver Spurious Emissions Measurement

F.1. REFERENCES

Normative Reference Standard	IC RSS-GEN§6 (b)
Procedure Reference	IC RSS-GEN§4.8 (b)

F.2. LIMITS

IC RSS-GEN§6	*(b) If a conducted measurement is made, no spurious output signals appearing at the antenna terminals shall exceed 2 nanowatts per 4 kHz spurious frequency in the band 30-1000 MHz, or 5 nanowatts above 1 GHz.*

F.3. ENVIRONMENTAL CONDITIONS

Temperature	25 ± 3 ºC
Humidity	35 ± 5 % RH
Barometric Pressure	uncontrolled

F.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00015	Agilent	E4408B	Spectrum Analyzer	24Jan05	24Jan06
Customer supplied	n/a	n/a	1ft. RG223/U RF Cable	n/a	n/a
00076	Pasternack	PE7014-30	2x2dB 2 Watt Attenuator	na*	na

*Verification made prior to measurement

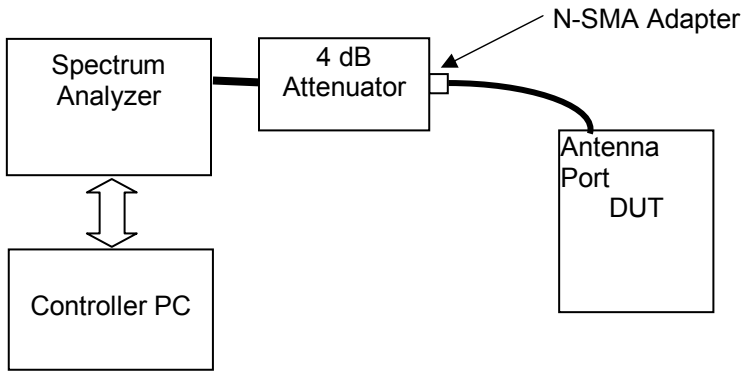
F.5. MEASUREMENT EQUIPMENT SETUP

MEASUREMENT EQUIPMENT CONNECTIONS	The equipment was connected as shown in the setup drawing in F.6.
MEASUREMENT EQUIPMENT SETTINGS	RBW – 100 kHz* VBW – 1 MHz Span – Carrier region – 0.6 MHz / 5 bands, Outside carrier region - 22 GHz / 12 bands Detector – Peak Averaging – off Max Hold – on Sweeps - 20
Measurement Procedure	A PC controller was used to record the spectrum analyzer display with the above settings. It was used to set the spans and collect the data. Software was used to present a graphical presentation of the combined data collected for each channel.

*100 kHz RBW vs. 4 kHz (specified in the reference document) used to reduce test time

F.6. SETUP DRAWINGS

Figure F.6-1 - Setup Drawing

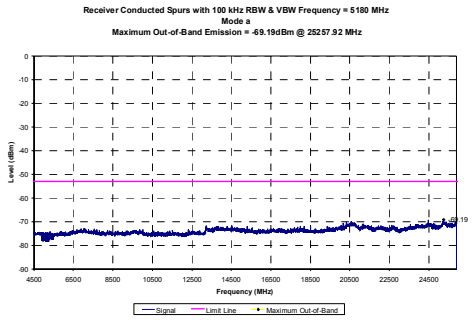


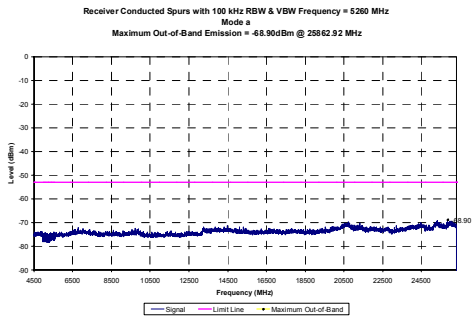
F.7. DUT OPERATING DESCRIPTION

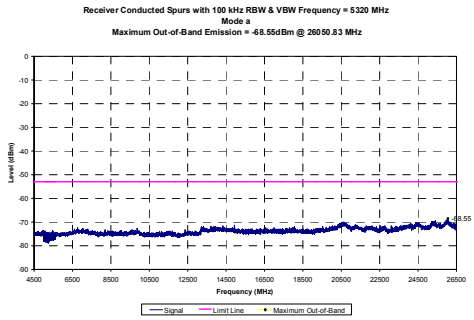
Measurements were made at three channels throughout the lower band applicable for Mode a (5180 - 5320 MHz), (low and high for reference only). Measurements were made at both available receive antenna ports.

F.8. TEST RESULTS

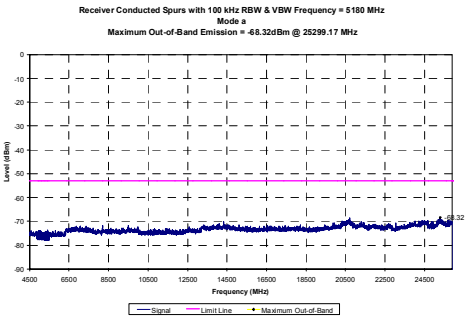
Main Antenna Port

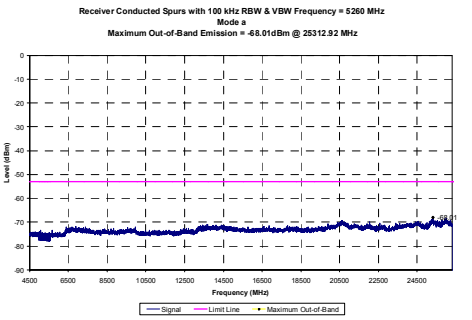


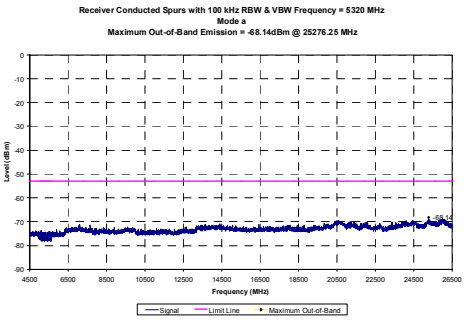




Auxiliary Antenna Port







Channel	Channel Frequency (MHz)	Highest Conducted Out-of-band Spurious Emission		Limit		Margin	Pass/Fail
		Frequency (MHz)	Level (dBm)	(nanowatts)	(dBm)	(dB)	
Auxiliary Antenna Port							
36	5180	25257.92	-69.19	5	-53	16.19	Pass*
52	5260	25862.92	-68.90	5	-53	15.90	Pass
64	5320	26050.83	-68.55	5	-53	15.55	Pass*
Auxiliary Antenna Port							
36	5180	25299.17	-68.32	5	-53	15.32	Pass*
52	5260	25312.92	-68.01	5	-53	15.01	Pass
64	5320	25276.25	-68.14	5	-53	15.14	Pass*

*Reference only

F.9. PASS/FAIL

In reference to the results outlined in F.8, the DUT passes the requirements as stated in the reference standards as follows:

IC RSS-GEN (6) (b): If a conducted measurement is made, no spurious output signals appearing at the antenna terminals shall exceed 2 nanowatts per 4 kHz spurious frequency in the band 30-1000 MHz, or 5 nanowatts above 1 GHz.

No emissions where measured below 1 GHz. The emission above 1 GHz , with the lowest margin was measured at 25862.92 MHz, with a level of –68.90 dBm vs. the limit of -53 dBm (5 nW), resulting in a 15.90 dB margin for the main antenna port and –68.01 dBm @ 25312.92 MHz vs the limit of –53 dBm (5 nW) for the auxiliary antenna port resulting in a 15.01 dB margin.

F.10. SIGN-OFF

I attest to the accuracy of the data. All measurements reported herein were performed by me and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements.

Duane M. Friesen, C.E.T.
EMC Manager
Celltech Labs Inc.

15Nov05
Date

Appendix G - Radiated Spurious Emissions Measurement

G.1. REFERENCES

Normative Reference Standard	FCC CFR 47 §15.407(b) (1) & (2)*
Procedure Reference	ANSI C63.4; FCC 97-114

*Compliance to the requirements of FCC CFR 47 §15.407(b) (6) is outlined in Appendix H, as the limits are the same as the restricted bands.

G.2. LIMITS

G.2.1. FCC CFR 47

FCC CFR 47 §15.407(b)	*Undesirable Emissions Limits: …… the peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:* *(1) For transmitters operating in the 5.15 – 5.25 GHz band: all emissions outside of the 5.15 – 5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz*.* *(2) For transmitters operating in the 5.25 – 5.35 GHz band: all emissions outside of the 5.15 – 5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz*…* *(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Section 15.209.*

* Free space field strengths were calculated and used as field strength limits using the following formulae:
Field Strength (dBuV/m) = 20 * log (sqrt [((30 * Power (watts)) / (distance (m) ^2 * 10^6)])
Resulting in a field strength limit of 68.23 dBuV/m when measured with a RBW of 1 MHz.

FCC CFR 47 §15.209

Frequency	Field Strength		Measurement Distance
MHz	uV/m	dBuv/m	Meters
.009 – 0.490	2400/F(kHz)	48.52 – 13.80	300
0.490 – 1.705	24000/F(kHz)	33.80 – 22.97	30
1.705 – 30.0	30	29.54	30
30 – 88	100	40.00	3
88 – 216	150	43.52	3
216 - 960	200	46.02	3
Above 960	500	53.98	3

(b) In the emission table above, the tighter limit applies at the band edges.

Note: Spurious emissions within the restricted bands are reported in Appendix H.

G.3. ENVIRONMENTAL CONDITIONS

Temperature	uncontrolled
Humidity	uncontrolled
Barometric Pressure	uncontrolled

G.4. EQUIPMENT LIST

RECEIVING EQUIPMENT

ID	ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
1	00072	EMCO	2075	Mini-mast	na	na
2	00073	EMCO	2080	Turn Table	na	na
3	00071	EMCO	2090	Multi-Device Controller	na	na
4	00085	EMCO	6502	Loop Antenna	12Aug05	12Aug06
5	00050	Chase	CBL-6111A	Bilog Antenna	08Feb05	08Feb06
6	00034	ETS	3115	Double Ridged Guide Horn	11Aug05	11Aug06
7	00161/00166	Waveline	899/801-KF	Standard Gain Horn	na	na
8	00163	Waveline	899	Standard Gain Horn	na	Na
9	00051	HP	8566B	Spectrum Analyzer RF Section	12Apr05	12Apr06
10	00049	HP	85650A	Quasi-Peak Adapter	13Apr05	13Apr06
11	00047	HP	85685A	RF Preselector	13Apr05	13Apr06
12	00015	Agilent	4408B	Spectrum Analyzer	24Jan05	24Jan06
13	00115	Miteq	J54-00102600-35-5A	LNA	08Jun04	08Jun06
14	00093	Microtronics	HPM50111	High Pass Filter	08Jun04	08Dec05
15	00119	INMAT	18AH-10	10dB attenuator	08Jun04	08Dec05
16	00192	Agilent	8493C	6dB attenuator	01Jul05	01Jul06
17	00038	Agilent	8493C	3dB attenuator	01Jul05	01Jul06
18	000048	GORE	n/a	Microwave Cable (RX)	28Mar05	28Mar06
19	00121	Andrew	FSJ4-50B	Microwave Cable (RX)	12Aug05	12Aug06
20	00130	Andrew	FSJ1-50A	Microwave Cable (RX)	12Aug05	12Aug06
21	00088	HP	11970A	Harmonic mixer	na	na
22	00094	HP	11975A	Preamplifier	na	na

G.5. MEASUREMENT EQUIPMENT SETUP

MEASUREMENT EQUIPMENT CONNECTIONS

The measurement equipment was connected as shown in the G.6. A number of antennas were used to cover the applicable frequency range test. The ranges in which each antenna was used are as follows:

Frequency Range	Spectrum Analyzer Asset #	LNA/Filter/Attenuator Asset #	Antenna Asset #
10kHz - 30 MHz	00051/00049/00047	none	00085
30 MHz – 1 GHz	00051/00049/00047	none	00050
1 GHz – 2 GHz	00051/00047	none	00034
2 GHz – 3 GHz*	00051	00119/00192/00038/00115	00034
3 GHz – 7 GHz*	00051	00093/00119/00192/00038/ 00115	00034
7 GHz – 18 GHz	00015	00093/00119/00192/00038/ 00115	00034
18 GHz – 26.5 GHz	00015	00115	00161/00166
26.5 GHz – 40 GHz	00051	none	00088/00163

* Attenuators used as required

MEASUREMENT EQUIPMENT SETTINGS

The spectrum analyzer was set to the following settings:

Frequency Range	RBW	VBW	Detector
MHz	kHz	kHz	
0.009 – 0.150	0.200	10	Peak*
0.150 – 30	9	30	Peak*
30 – 1000	100	300	Peak*
> 1000	1000	1000	Peak*

*As a worst-case measurement, the average/QP limit was applied to measurements made with a peak detector, unless otherwise noted. Average measurements were performed with video averaging using a VBW of 30 Hz.

G.6. SETUP DRAWING

Figure G.6-1 - Setup Drawing (≤26.5 GHz)

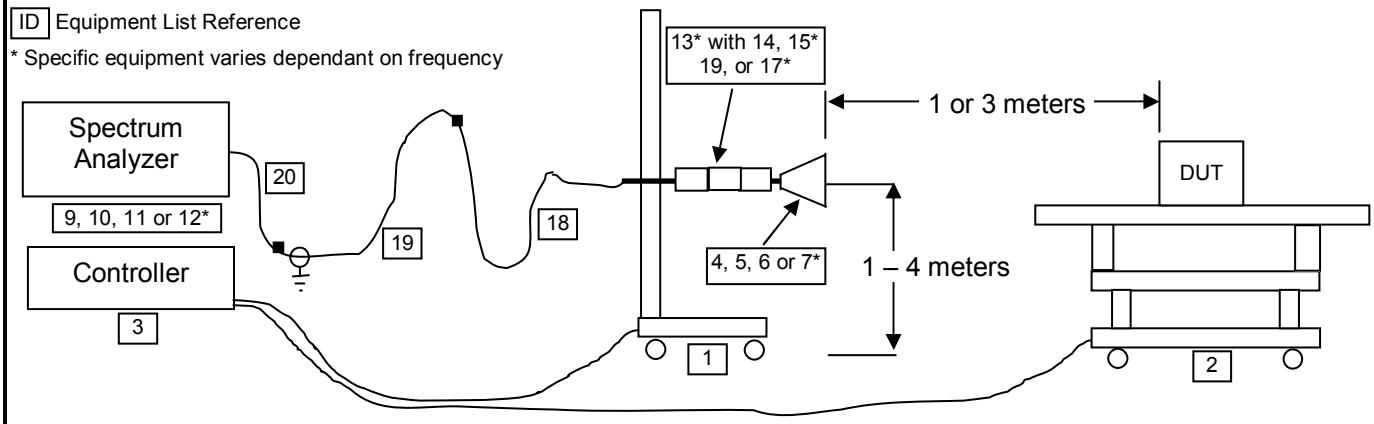
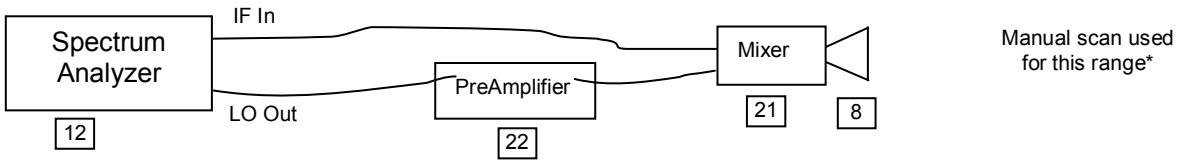


Figure G.6-2 - Setup Drawing (≥26.5 GHz)

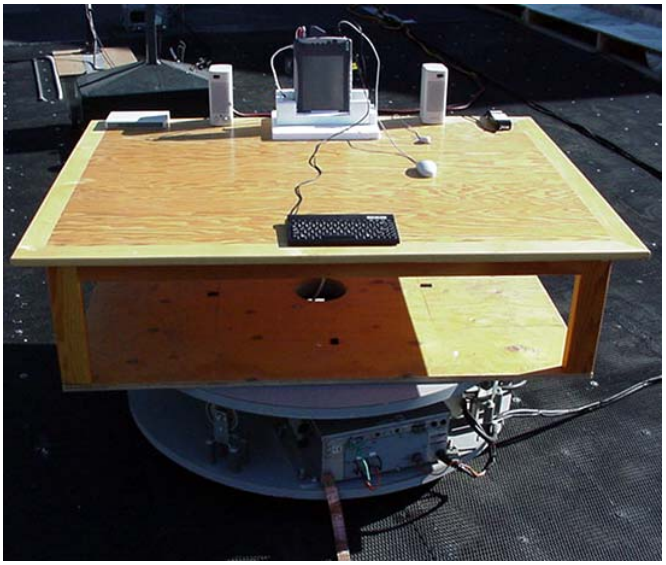


G.7. SETUP PHOTOGRAPHS

Photograph G.7-1- 3115 Horn @ 3 m

Photograph G.7-2- Waveline Horn with LNA @ 1m

Photograph G.7-3- DUT Configuration



G.8. DUT OPERATING DESCRIPTION

The worst-case data rate was determined from prescan investigations. Measurements were made at three channels throughout the lower band applicable for Mode a.

G.9. TEST RESULTS

G.9.1. Mode a (lower band) - Channel 36 Out-of-Band Spurious Emission Field Strengths @ Specified Distance (not within restricted bands)

Project Number:	632	**Standard:**	FCC15.407b
Company:	Itronix	**Test Start Date:**	3-Oct-05
Product:	IX325 with CISCO a/b/g WLAN	**Test End Date:**	25-Oct-05

Channel	Polarity	Distance	Rx Antenna	Frequency	SA Level	Noise Floor	Rx AF	Rx CL	Other Rx	Total Rx CF	Field Strength	Detector	Limit Distance	Limit Distance Correction	Calculated Limit	Margin	Pass/Fail
		m		MHz	dBuV		dB/m	dB	dB	dB/m	dBuV/m	(PK/QP/AV)	m	dB	dBuV/m	dB	
UNII-CH36	H	3	Bilog SN1607	913.95	26.40	*	23.88	4.13	0.00	28.01	54.41	PK	3.00	0.00	66.02	11.61	PASS
UNII-CH36	H	3	Bilog SN1607	913.95	14.20	*	23.88	4.13	0.00	28.01	42.21	QP	3.00	0.00	46.02	3.81	PASS
UNII-CH36	H	3	Horn SN6267	1886.91	30.30	*	27.09	5.92	0.00	33.01	63.31	PK*	3.00	0.00	68.23	4.92	PASS
UNII-CH36	H	1	Horn SN6267	**10359.38**	45.72		38.10	7.84	-16.50	29.43	75.15	PK	3.00	9.54	97.77	22.62	PASS
UNII-CH36	H	1	Horn SN6267	**10360.00**	34.46		38.10	7.84	-22.50	23.43	57.89	AV	3.00	9.54	77.77	19.88	PASS
UNII-CH36	H	1	Horn SN6267	13423.10	39.04	*	40.44	9.25	-31.38	18.31	57.35	PK*	3.00	9.54	77.77	20.42	PASS
UNII-CH36	H	1	Waveline_899	**25899.70**	39.16		40.50	15.00	-35.53	19.97	59.13	PK*	3.00	9.54	77.77	18.64	PASS
UNII-CH36	V	3	Bilog SN1607	122.07	24.20	*	11.88	2.11	0.00	13.99	38.19	PK*	3.00	0.00	43.52	5.33	PASS
UNII-CH36	V	3	Bilog SN1607	317.95	25.10	*	14.16	2.65	0.00	16.81	41.91	PK*	3.00	0.00	46.02	4.11	PASS
UNII-CH36	V	3	Bilog SN1607	450.01	24.00	*	17.50	2.86	0.00	20.36	44.36	PK*	3.00	0.00	46.02	1.66	PASS
UNII-CH36	V	3	Bilog SN1607	815.72	24.90	*	22.66	3.94	0.00	26.60	51.50	PK	3.00	0.00	66.02	14.52	PASS
UNII-CH36	V	3	Bilog SN1607	815.72	13.70	*	22.66	3.94	0.00	26.60	40.30	QP	3.00	0.00	46.02	5.72	PASS
UNII-CH36	V	3	Bilog SN1607	844.43	25.80	*	23.08	4.00	0.00	27.08	52.88	PK	3.00	0.00	66.02	13.14	PASS
UNII-CH36	V	3	Bilog SN1607	844.43	13.90	*	23.08	4.00	0.00	27.08	40.98	QP	3.00	0.00	46.02	5.04	PASS
UNII-CH36	V	3	Horn SN6267	3462.85	45.10		31.07	8.60	-32.11	7.55	52.65	PK*	3.00	0.00	68.23	15.58	PASS
UNII-CH36	V	1	Horn SN6267	**10357.70**	42.06		38.10	7.84	-22.50	23.43	65.49	PK*	3.00	9.54	77.77	12.28	PASS
UNII-CH36	V	1	Horn SN6267	14517.65	39.88	*	41.68	9.75	-31.60	19.84	59.72	PK*	3.00	9.54	77.77	18.06	PASS
UNII-CH36	V	1	Waveline_899	**25899.70**	39.90		40.50	15.00	-35.53	19.97	59.87	PK*	3.00	9.54	77.77	17.90	PASS

For frequency bands above 26.5 GHz, manual scans at a 1-2 cm distance were made with no emissions observed.

Notes:
*PK denotes QP or Average limits applied to emissions measured with a peak detector
BOLD signifies the highest signal measured near a carrier harmonic frequency
No DUT emissions levels were measured above those reported
*Field Strength limit derived from using the free space formulae with the EIRP Limit

Formulae:
Total CF = Antenna Factor + Cable Factor + Other Factor (Amplifier Gain, filter loss, etc)
Field Strength = SA Reading + Total CF
Limit Distance Correction = 40*log(d1/d2) for F<30 MHz, 20*log(d1/d2) for F> 30 MHz:
where d1 is the measurement distance, d2 is the published limit distance
Limit = Specified Limit + Limit Distance Correction
Margin = Limit - Field Strength
Field Strength Limit = 20*LOG((SQRT((30*(10^(EIRP /10))/1000)/(d1^2))*1000000))
where d1 is the measurement distance in meters, EIRP is the EIRP limit in dBm

G.9.2. Mode a (Channel 52) - Out-of-Band Spurious Emission Field Strengths @ Specified Distance (not within restricted bands)

Project Number:	632	**Standard:**	FCC15.407b
Company:	Itronix	**Test Start Date:**	3-Oct-05
Product:	IX325 with CISCO a/b/g WLAN	**Test End Date:**	25-Oct-05

Channel	Polarity	Distance	Rx Antenna	Frequency	SA Level	Noise Floor	Rx AF	Rx CL	Other Rx	Total Rx CF	Field Strength	Detector	Limit Distance	Limit Distance Correction	Calculated Limit	Margin	Pass/Fail
		m		MHz	dBuV		dB/m	dB	dB	dB/m	dBuV/m	(PK/QP/AV)	m	dB	dBuV/m	dB	
UNII-CH52	H	3	Bilog SN1607	810.31	26.00	*	22.61	3.90	0.00	26.51	52.51	PK	3.00	0.00	66.02	13.51	PASS
UNII-CH52	H	3	Bilog SN1607	810.31	13.70	*	22.61	3.90	0.00	26.51	40.21	QP	3.00	0.00	46.02	5.81	PASS
UNII-CH52	H	3	Bilog SN1607	839.10	25.30	*	22.85	3.98	0.00	26.83	52.13	PK	3.00	0.00	66.02	13.89	PASS
UNII-CH52	H	3	Bilog SN1607	839.10	13.90	*	22.85	3.98	0.00	26.83	40.73	QP	3.00	0.00	46.02	5.29	PASS
UNII-CH52	H	3	Bilog SN1607	850.51	25.40	*	23.31	4.04	0.00	27.35	52.75	PK	3.00	0.00	66.02	13.27	PASS
UNII-CH52	H	3	Bilog SN1607	850.51	13.90	*	23.31	4.04	0.00	27.35	41.25	QP	3.00	0.00	46.02	4.77	PASS
UNII-CH52	H	3	Horn SN6267	1889.56	33.10	*	27.10	5.92	0.00	33.02	66.12	PK*	3.00	0.00	68.23	2.11	PASS
UNII-CH52	H	3	Horn SN6267	3504.05	53.70		31.16	8.64	-32.14	7.67	61.37	PK*	3.00	0.00	68.23	6.86	PASS
UNII-CH52	H	1	Horn SN6267	**10527.00**	38.99		38.06	7.91	-10.49	35.49	74.48	PK*	3.00	9.54	77.77	3.29	PASS
UNII-CH52	H	1	Waveline_899	**26298.10**	37.70		40.50	15.34	-35.53	20.31	58.01	PK*	3.00	9.54	77.77	19.76	PASS
UNII-CH52	V	3	Bilog SN1607	174.17	25.10	*	10.07	2.29	0.00	12.36	37.46	PK*	3.00	0.00	43.52	6.06	PASS
UNII-CH52	V	3	Bilog SN1607	450.63	25.10	*	17.50	2.87	0.00	20.37	45.47	PK	3.00	0.00	66.02	20.55	PASS
UNII-CH52	V	3	Bilog SN1607	450.63	13.90	*	17.50	2.87	0.00	20.37	34.27	QP	3.00	0.00	46.02	11.75	PASS
UNII-CH52	V	3	Bilog SN1607	678.55	25.30	*	20.90	3.63	0.00	24.53	49.83	PK	3.00	0.00	66.02	16.19	PASS
UNII-CH52	V	3	Bilog SN1607	678.55	13.60	*	20.90	3.63	0.00	24.53	38.13	QP	3.00	0.00	46.02	7.89	PASS
UNII-CH52	V	3	Bilog SN1607	815.57	25.60	*	22.67	3.94	0.00	26.61	52.21	PK	3.00	0.00	66.02	13.81	PASS
UNII-CH52	V	3	Bilog SN1607	815.57	13.60	*	22.67	3.94	0.00	26.61	40.21	QP	3.00	0.00	46.02	5.81	PASS
UNII-CH52	V	3	Bilog SN1607	829.60	25.90	*	22.30	3.99	0.00	26.29	52.19	PK	3.00	0.00	66.02	13.83	PASS
UNII-CH52	V	3	Bilog SN1607	829.60	13.90	*	22.30	3.99	0.00	26.29	40.19	QP	3.00	0.00	46.02	5.83	PASS
UNII-CH52	V	3	Bilog SN1607	911.11	26.80	*	23.82	4.14	0.00	27.96	54.76	PK	3.00	0.00	66.02	11.26	PASS
UNII-CH52	V	3	Bilog SN1607	911.11	14.10	*	23.82	4.14	0.00	27.96	42.06	QP	3.00	0.00	46.02	3.96	PASS
UNII-CH52	V	3	Bilog SN1607	928.73	26.20	*	24.45	4.11	0.00	28.56	54.76	PK	3.00	0.00	66.02	11.26	PASS
UNII-CH52	V	3	Bilog SN1607	928.73	13.90	*	24.45	4.11	0.00	28.56	42.46	QP	3.00	0.00	46.02	3.56	PASS
UNII-CH52	V	3	Bilog SN1607	951.53	24.40	*	24.92	4.21	0.00	29.13	53.53	PK	3.00	0.00	66.02	12.49	PASS
UNII-CH52	V	3	Bilog SN1607	951.53	13.50	*	24.92	4.21	0.00	29.13	42.63	QP	3.00	0.00	46.02	3.39	PASS
UNII-CH52	V	3	Horn SN6267	1896.71	30.05	*	27.13	5.93	0.00	33.06	63.11	PK*	3.00	0.00	68.23	5.12	PASS
UNII-CH52	V	3	Horn SN6267	3503.90	51.70		31.16	8.64	-32.14	7.67	59.37	PK*	3.00	0.00	68.23	8.86	PASS
UNII-CH52	V	1	Horn SN6267	**10518.13**	37.32		38.06	7.91	-16.49	29.48	66.80	PK*	3.00	9.54	77.77	10.97	PASS
UNII-CH52	V	1	Horn SN6267	14395.40	39.81	*	41.67	9.70	-31.42	19.95	59.76	PK*	3.00	9.54	77.77	18.02	PASS
UNII-CH52	V	1	Waveline_899	**26298.10**	38.74		40.50	15.34	-35.53	20.31	59.05	PK*	3.00	9.54	77.77	18.72	PASS

For frequency bands above 26.5 GHz, manual scans at a 1-2 cm distance were made with no emissions observed.

Notes:
*PK denotes QP or Average limits applied to emissions measured with a peak detector
BOLD signifies the highest signal measured near a carrier harmonic frequency
No DUT emissions levels were measured above those reported
*Field Strength limit derived from using the free space formulae with the EIRP Limit

Formulae:
Total CF = Antenna Factor + Cable Factor + Other Factor (Amplifier Gain, filter loss, etc)
Field Strength = SA Reading + Total CF
Limit Distance Correction = 40*log(d1/d2) for F<30 MHz, 20*log(d1/d2) for F> 30 MHz:
where d1 is the measurement distance, d2 is the published limit distance
Limit = Specified Limit + Limit Distance Correction
Margin = Limit - Field Strength
Field Strength Limit = 20*LOG((SQRT((30*(10^(EIRP /10))/1000)/(d1^2))*1000000))
where d1 is the measurement distance in meters, EIRP is the EIRP limit in dBm

G.9.3. Mode a (Channel 64) - Out-of-Band Spurious Emission Field Strengths @ Specified Distance (not within restricted bands)

Project Number:	632	**Standard:**	FCC15.407b
Company:	Itronix	**Test Start Date:**	3-Oct-05
Product:	IX325 with CISCO a/b/g WLAN	**Test End Date:**	25-Oct-05

Channel	Polarity	Distance	Rx Antenna	Frequency	SA Level	Noise Floor	Rx AF	Rx CL	Other Rx	Total Rx CF	Field Strength	Detector	Limit Distance	Limit Distance Correction	Calculated Limit	Margin	Pass/Fail
		m		MHz	dBuV		dB/m	dB	dB	dB/m	dBuV/m	(PK/QP/AV)	m	dB	dBuV/m	dB	
UNII-CH64	H	3	Bilog SN1607	839.84	25.60	*	22.89	3.97	0.00	26.86	52.46	PK	3.00	0.00	66.02	13.56	PASS
UNII-CH64	H	3	Bilog SN1607	839.84	13.90	*	22.89	3.97	0.00	26.86	40.76	QP	3.00	0.00	46.02	5.26	PASS
UNII-CH64	H	3	Horn SN6267	1889.77	30.25	*	27.10	5.93	0.00	33.02	63.27	PK*	3.00	0.00	68.23	4.95	PASS
UNII-CH64	H	3	Horn SN6267	3467.23	45.80		31.08	8.58	-32.11	7.55	53.35	PK*	3.00	0.00	68.23	14.88	PASS
UNII-CH64	H	3	Horn SN6267	3546.36	51.60		31.27	8.73	-32.17	7.84	59.44	PK*	3.00	0.00	68.23	8.79	PASS
UNII-CH64	V	3	Bilog SN1607	449.98	25.40	*	17.50	2.86	0.00	20.36	45.76	PK	3.00	0.00	66.02	20.26	PASS
UNII-CH64	V	3	Bilog SN1607	449.98	13.90	*	17.50	2.86	0.00	20.36	34.26	QP	3.00	0.00	46.02	11.76	PASS
UNII-CH64	V	3	Bilog SN1607	811.09	25.80	*	22.62	3.90	0.00	26.53	52.33	PK	3.00	0.00	66.02	13.69	PASS
UNII-CH64	V	3	Bilog SN1607	811.09	13.80	*	22.62	3.90	0.00	26.53	40.33	QP	3.00	0.00	46.02	5.69	PASS
UNII-CH64	V	3	Bilog SN1607	815.30	25.60	*	22.68	3.94	0.00	26.62	52.22	PK	3.00	0.00	66.02	13.80	PASS
UNII-CH64	V	3	Bilog SN1607	815.30	13.90	*	22.68	3.94	0.00	26.62	40.52	QP	3.00	0.00	46.02	5.50	PASS
UNII-CH64	V	3	Bilog SN1607	833.72	25.40	*	22.52	3.97	0.00	26.49	51.89	PK	3.00	0.00	66.02	14.13	PASS
UNII-CH64	V	3	Bilog SN1607	833.72	13.80	*	22.52	3.97	0.00	26.49	40.29	QP	3.00	0.00	46.02	5.73	PASS
UNII-CH64	V	3	Bilog SN1607	839.93	25.60	*	22.90	3.97	0.00	26.87	52.47	PK	3.00	0.00	66.02	13.55	PASS
UNII-CH64	V	3	Bilog SN1607	839.93	13.90	*	22.90	3.97	0.00	26.87	40.77	QP	3.00	0.00	46.02	5.25	PASS
UNII-CH64	V	3	Bilog SN1607	928.74	26.80	*	24.45	4.11	0.00	28.56	55.36	PK	3.00	0.00	66.02	10.66	PASS
UNII-CH64	V	3	Bilog SN1607	928.74	13.80	*	24.45	4.11	0.00	28.56	42.36	QP	3.00	0.00	46.02	3.66	PASS
UNII-CH64	V	3	Horn SN6267	2393.51	34.75	*	28.18	6.79	-23.16	11.82	46.57	PK*	3.00	0.00	68.23	21.66	PASS
UNII-CH64	V	3	Horn SN6267	3431.44	45.50		31.00	8.51	-32.14	7.37	52.87	PK*	3.00	0.00	68.23	15.36	PASS
UNII-CH64	V	3	Horn SN6267	5698.00	40.20	*	34.23	11.93	-32.22	13.94	54.14	PK*	3.00	0.00	68.23	14.09	PASS
UNII-CH64	V	3	Horn SN6267	6840.00	34.10	*	34.94	13.32	-32.18	16.08	50.18	PK*	3.00	0.00	68.23	18.05	PASS

For frequency bands above 26.5 GHz, manual scans at a 1-2 cm distance were made with no emissions observed.

Notes:
*PK denotes QP or Average limits applied to emissions measured with a peak detector
BOLD signifies the highest signal measured near a carrier harmonic frequency
No DUT emissions levels were measured above those reported
*Field Strength limit derived from using the free space formulae with the EIRP Limit

Formulae:
Total CF = Antenna Factor + Cable Factor + Other Factor (Amplifier Gain, filter loss, etc)
Field Strength = SA Reading + Total CF
Limit Distance Correction = 40*log(d1/d2) for F<30 MHz, 20*log(d1/d2) for F> 30 MHz:
where d1 is the measurement distance, d2 is the published limit distance
Limit = Specified Limit + Limit Distance Correction
Margin = Limit - Field Strength
Field Strength Limit = 20*LOG((SQRT((30*(10^(EIRP /10))/1000)/(d1^2))*1000000))
where d1 is the measurement distance in meters, EIRP is the EIRP limit in dBm

G.10. PASS/FAIL

In reference to the results outlined in G.9, the DUT passes the requirements as stated in the reference standards as follows:

FCC 15.407 (b) (1, 2): All emissions outside the 5.15 - 5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.

The emission above 1 GHz , outside a restricted band, with the lowest margin to the theoretical limit was measured at 3 meters, in the horizontal polarization with Channel 52 transmitting. The frequency was 1889.56 MHz, with a corrected peak field strength of 66.12 dBuV/m vs. the calculated average limit of 68.23 dBuV/m, resulting in a 2.11 dB margin.

FCC 15.407 (b) (6): Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Section 15.209.

The emission below 1 GHz , outside a restricted band, with the lowest margin to the limit was measured at 3 meters, in the vertical polarization with Channel 36 transmitting. The frequency was 450.01 MHz, with a corrected peak field strength of 44.36 dBuV/m vs. the average limit of 46.02 dBuV/m, resulting in a 1.66 dB margin.

G.11. SIGN-OFF

I attest to the accuracy of the data. All measurements reported herein were performed by me and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements.

Russell Pipe
Senior Compliance Technologist
Celltech Labs Inc.

25Oct05
Date

Appendix H - Restricted Band Emissions Measurement

H.1. REFERENCES

Normative Reference Standard	FCC CFR 47 §15.407 (b) (6) (FCC CFR 47 §15.209 (a)), FCC CFR 47 §15.407 (b) (7) (FCC CFR 47 §15.205 (a) (b))
Procedure Reference	FCC 97-114

H.2. LIMITS

FCC CFR 47 §15.407

(b) (6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Section 15.209

FCC CFR 47 §15.209

(a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency	Field Strength		Measurement Distance
MHz	uV/m	dBuv/m	Meters
.009 – 0.490	2400/F(kHz)	48.52 – 13.80	300
0.490 – 1.705	24000/F(kHz)	33.80 – 22.97	30
1.705 – 30.0	30	29.54	30
30 – 88	100	40.00	3
88 – 216	150	43.52	3
216 - 960	200	46.02	3
Above 960	500	53.98	3

(b) In the emission table above, the tighter limit applies at the band edges.

FCC CFR 47 §15.407

(b) (7) The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.

FCC CFR 47 §15.205

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
[1] 0.495–0.505	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225	123–138	2200–2300	14.47–14.5
8.291–8.294	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675	156.7–156.9	2655–2900	22.01–23.12
8.41425–8.41475	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025	240–285	3345.8–3358	36.43–36.5
12.57675–12.57725	322–335.4	3600–4400	[2]
13.36–13.41.			

[1] Until February 1, 1999, this restricted band shall be 0.490–0.510 MHz.
[2] Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions of 15.35 apply to these measurements.

H.3. ENVIRONMENTAL CONDITIONS

Temperature	uncontrolled
Humidity	uncontrolled
Barometric Pressure	uncontrolled

H.4. EQUIPMENT LIST

RECEIVING EQUIPMENT

ID	ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
1	00072	EMCO	2075	Mini-mast	na	na
2	00073	EMCO	2080	Turn Table	na	na
3	00071	EMCO	2090	Multi-Device Controller	na	na
4	00085	EMCO	6502	Loop Antenna	12Aug05	12Aug06
5	00050	Chase	CBL-6111A	Bilog Antenna	08Feb05	08Feb06
6	00034	ETS	3115	Double Ridged Guide Horn	11Aug05	11Aug06
7	00161/00166	Waveline	899/801-KF	Standard Gain Horn	na	na
8	00163	Waveline	899	Standard Gain Horn	na	Na
9	00051	HP	8566B	Spectrum Analyzer RF Section	12Apr05	12Apr06
10	00049	HP	85650A	Quasi-Peak Adapter	13Apr05	13Apr06
11	00047	HP	85685A	RF Preselector	13Apr05	13Apr06
12	00015	Agilent	4408B	Spectrum Analyzer	24Jan05	24Jan06
13	00115	Miteq	J54-00102600-35-5A	LNA	08Jun04	08Jun06
14	00093	Microtronics	HPM50111	High Pass Filter	08Jun04	08Dec05
15	00119	INMAT	18AH-10	10dB attenuator	08Jun04	08Dec05
16	00192	Agilent	8493C	6dB attenuator	01Jul05	01Jul06
17	00038	Agilent	8493C	3dB attenuator	01Jul05	01Jul06
18	00048	GORE	n/a	Microwave Cable (RX)	28Mar05	28Mar06
19	00121	Andrew	FSJ4-50B	Microwave Cable (RX)	12Aug05	12Aug06
20	00130	Andrew	FSJ1-50A	Microwave Cable (RX)	12Aug05	12Aug06
21	00088	HP	11970A	Harmonic mixer	na	na
22	00094	HP	11975A	Preamplifier	na	na

H.5. MEASUREMENT EQUIPMENT SETUP

MEASUREMENT EQUIPMENT CONNECTIONS

The measurement equipment was connected as shown in the H.6. A number of antennas were used to cover the applicable frequency range test. The ranges in which each antenna was used are as follows:

Frequency Range	Spectrum Analyzer Asset #	LNA/Filter/Attenuator Asset #	Antenna Asset #
10kHz - 30 MHz	00051/00049/00047	none	00085
30 MHz – 1 GHz	00051/00049/00047	none	00050
1 GHz – 2 GHz	00051/00047	none	00034
2 GHz – 3 GHz	00051	00119/00192/00038/00115	00034
3 GHz – 7 GHz*	00051	00093/00119/00192/00038/ 00115	00034
7 GHz – 18 GHz	00015	00093/00119/00192/00038/ 00115	00161/00166
18 GHz – 26.5 GHz	00015	00115	00161/00166
26.5 GHz – 40 GHz	00051	none	00088/00163

* Attenuators used as required

MEASUREMENT EQUIPMENT SETTINGS

The spectrum analyzer was set to the following settings:

Frequency Range	RBW	VBW	Detector
MHz	kHz	kHz	
0.009 – 0.150	0.200	10	Peak*
0.150 – 30	9	30	Peak*
30 – 1000	100	300	Peak*
> 1000	1000*	1000	Peak*

*As a worst-case measurement, the average/QP limit was applied to measurements made with a peak detector, unless otherwise noted. Average measurements were performed with video averaging using a VBW of 30 Hz.

H.6. SETUP DRAWING

Figure H.6-1 - Setup Drawing (≤26.5 GHz)

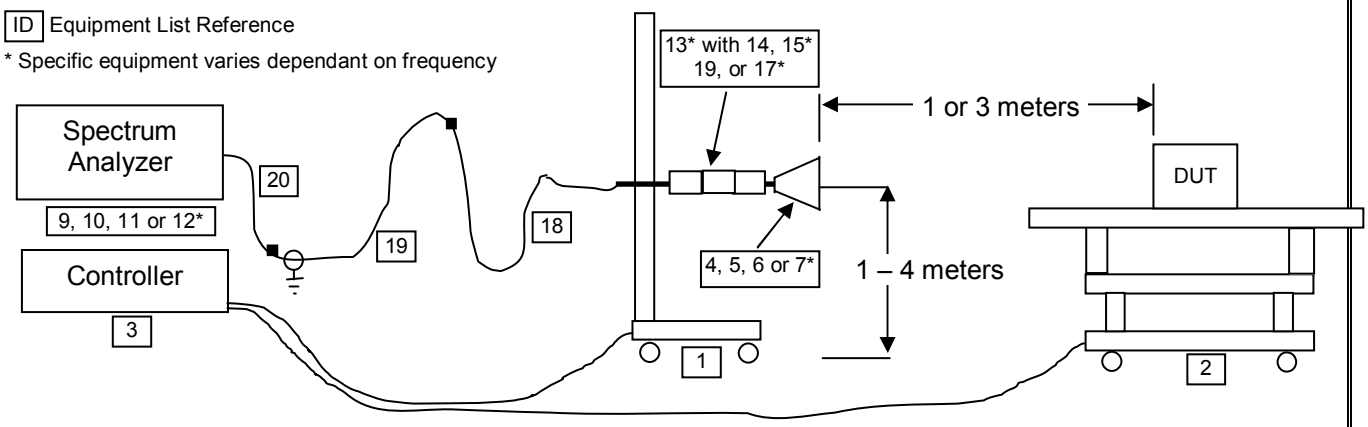
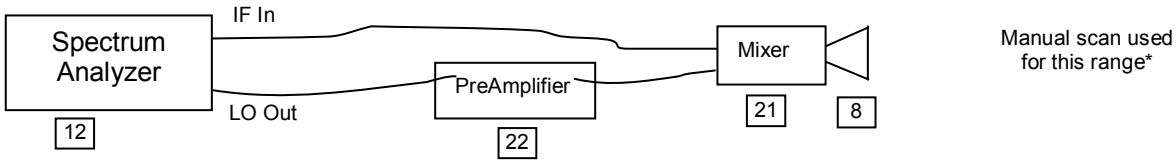


Figure H.6-2 - Setup Drawing (≥26.5 GHz)



H.7. SETUP PHOTOGRAPHS

Photograph H-1 - Loop Antenna (10kHz - 30 MHz) @ 3m

Photograph H-2 - Bilog Antenna (30 MHz - 1 GHz) @ 3m

Photograph H-3 - 3115 Horn @ 3 m

Photograph H-4 - 3115 Horn with LNA/Filter @ 1m

Photograph H-5 - Waveline Horn with LNA @ 1m

Photograph H-6 - DUT Configuration

H.8. DUT OPERATING DESCRIPTION

The worst-case data rate was determined from prescan investigations. Measurements were made at three channels throughout the lower band applicable for Mode a.

H.9. TEST RESULTS

H.9.1. Mode a (lower band) - Fundamental Field Strengths @ Specified Distance (1 MHz RBW)

Project Number: 632 **Standard:** FCC15.407a
Company: Itronix **Test Start Date:** 3-Oct-05
Product: IX325 with CISCO a/b/g WLAN **Test End Date:** 18-Nov-05

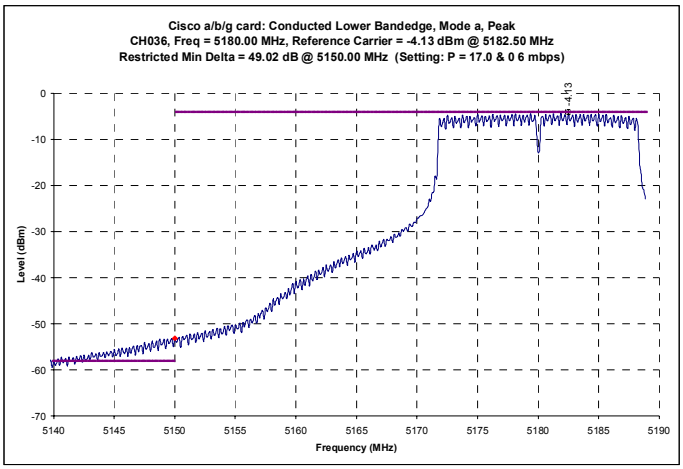
Short edge Up 17.0 Mode a1 6 mbps Carrier Field Strengths

Channel	Polarity	Measurement Distance	Antenna	Frequency	SA Level	Noise Floor	AF	CL	Other	Total CF	Field Strength	Detector	RBW
		m		MHz	dBuV		dB/m	dB	dB	dB/m	dBuV/m		kHz
UNII-CH36	H	3	Horn SN6267	5180.00	63.85		33.70	11.32	0.00	45.03	108.88	PK	1000
UNII-CH36	H	3	Horn SN6267	5180.00	53.95		33.70	11.32	0.00	45.03	98.98	AV	1000
UNII-CH36	V	3	Horn SN6267	5180.00	59.50		33.70	11.32	0.00	45.03	104.53	PK	1000
UNII-CH36	V	3	Horn SN6267	5180.00	48.95		33.70	11.32	0.00	45.03	93.98	AV	1000
UNII-CH52	H	3	Horn SN6267	5260.00	63.75		33.82	11.31	0.00	45.13	108.88	PK	1000
UNII-CH52	H	3	Horn SN6267	5260.00	53.25		33.82	11.31	0.00	45.13	98.38	AV	1000
UNII-CH52	V	3	Horn SN6267	5260.00	59.60		33.82	11.31	0.00	45.13	104.73	PK	1000
UNII-CH52	V	3	Horn SN6267	5260.00	48.80		33.82	11.31	0.00	45.13	93.93	AV	1000
UNII-CH64	H	3	Horn SN6267	5320.00	65.30		33.91	11.89	0.00	45.80	111.10	PK	1000
UNII-CH64	H	3	Horn SN6267	5320.00	54.90		33.91	11.89	0.00	45.80	100.70	AV	1000
UNII-CH64	V	3	Horn SN6267	5320.00	60.35		33.91	11.89	0.00	45.80	106.15	PK	1000
UNII-CH64	V	3	Horn SN6267	5320.00	49.10		33.91	11.89	0.00	45.80	94.90	AV	1000

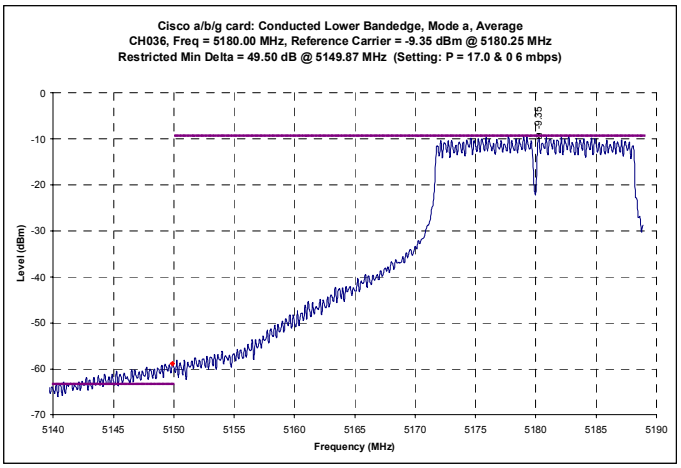
Formulae:
Total CF = AF + CL + Other
Field Strength = SA Level + Total CF

H.9.2. Mode a (lower band) - Lower Band-edge Emission Field Strengths @ Specified Distance

Channel 36 Mode a - Conducted Peak Band-edge Plots



Channel 36 Mode a - Conducted Average Band-edge Plots



Channel 36 Mode a - Calculated Band-edge (Restricted) Field Strengths

BU Card Short edge Up 17.0&0 Mode a1 6 mbps

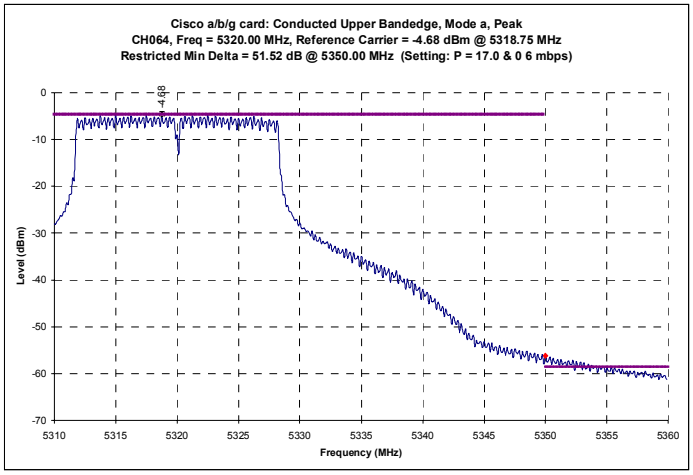
Channel	Polarity	Distance	Frequency	Carrier Radiated Field Strength	Delta Marker	Calculated Bandedge Field Strength	Duty Cycle Correction	Corrected Bandedge Field Strength	Specified Limit	Specified Limit Distance	Limit Distance Correction	Calculated Limit	Margin	Pass/Fail
		m	MHz	dBuV/m	dB	dBuV/m	dB	dBuV/m	dBuV/m	m	dB	dBuV/m	dB	
UNII-CH36	H	3	5150.00	108.88	49.02	59.86	0.00	59.86	73.98	3.00	0.00	73.98	14.12	PASS
UNII-CH36	H	3	5149.87	98.98	49.50	49.48	0.00	49.48	53.98	3.00	0.00	53.98	4.50	PASS
UNII-CH36	V	3	5150.00	104.53	49.02	55.51	0.00	55.51	73.98	3.00	0.00	73.98	18.47	PASS
UNII-CH36	V	3	5149.87	93.98	49.50	44.48	0.00	44.48	53.98	3.00	0.00	53.98	9.50	PASS

Formulae:
Calculated Bandedge Field Strength (dBuV/m) = Carrier Radiated Field Strength (dBuV/m) + Delta Marker (dB)
Duty Cycle Correction (dB) = 20 * log (time on / total time)
Corrected Bandedge Field Strength (dBuV/m) = Calculated Bandedge Field Strength (dBuV/m) + Duty Cycle Correction (dB)
Limit Distance Correction = 20 * log (measurement distance / limit distance)
Calculated Limit (dBuV/m) = Specified Limit (dBuV/m) + Limit Distance Correction (dB)
Margin (dB) = Corrected Limit (dBuV/m) – Corrected Bandedge Field Strength (dBuV/m)

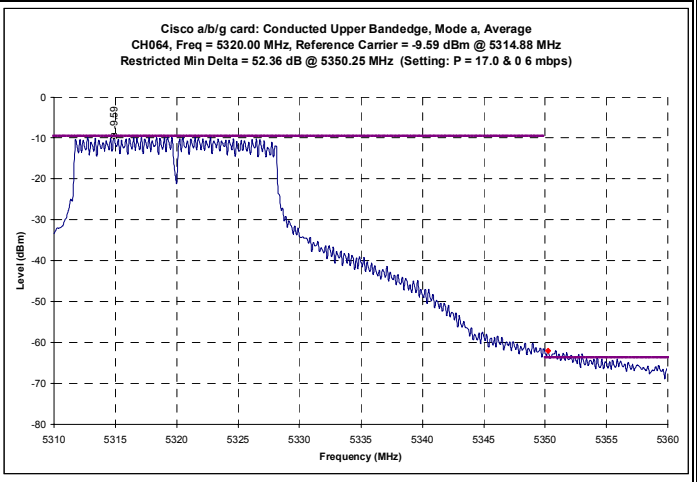
Note: Measurements and calculation reference the Marker-Delta Method described in FCC Public Notice DA 00-705

H.9.3. Mode a (lower band, 6 mbps) - Upper Band-edge Emission Field Strengths @ Specified Distance

Channel 64 Mode a - Conducted Peak Band-edge Plots



Channel 64 Mode a - Conducted Average Band-edge Plots



Channel 64 Mode a - Calculated Band-edge (Restricted) Field Strengths

BU Card Short edge Up 17.0&0 Mode a1 6 mbps

Channel	Polarity	Distance	Frequency	Carrier Radiated Field Strength	Delta Marker	Calculated Bandedge Field Strength	Duty Cycle Correction	Corrected Bandedge Field Strength	Specified Limit	Specified Limit Distance	Limit Distance Correction	Calculated Limit	Margin	Pass/Fail
		m	MHz	dBuV/m	dB	dBuV/m	dB	dBuV/m	dBuV/m	m	dB	dBuV/m	dB	
UNII-CH64	H	3	5350.00	111.10	51.52	59.58	0.00	59.58	73.98	3.00	0.00	73.98	14.39	PASS
UNII-CH64	H	3	5350.25	100.70	52.36	48.34	0.00	48.34	53.98	3.00	0.00	53.98	5.63	PASS
UNII-CH64	V	3	5350.00	106.15	51.52	54.63	0.00	54.63	73.98	3.00	0.00	73.98	19.34	PASS
UNII-CH64	V	3	5350.25	94.90	52.36	42.54	0.00	42.54	53.98	3.00	0.00	53.98	11.43	PASS

Formulae:
Calculated Bandedge Field Strength (dBuV/m) = Carrier Radiated Field Strength (dBuV/m) + Delta Marker (dB)
Duty Cycle Correction (dB) = 20 * log (time on / total time)
Corrected Bandedge Field Strength (dBuV/m) = Calculated Bandedge Field Strength (dBuV/m) + Duty Cycle Correction (dB)
Limit Distance Correction = 20 * log (measurement distance / limit distance)
Calculated Limit (dBuV/m) = Specified Limit (dBuV/m) + Limit Distance Correction (dB)
Margin (dB) = Corrected Limit (dBuV/m) – Corrected Bandedge Field Strength (dBuV/m)

Note: Measurements and calculation reference the Marker-Delta Method described in FCC Public Notice DA 00-705

H.9.4. Mode a (lower band) - Channel 36 Out-of-Band Spurious Emission Field Strengths @ Specified Distance (within restricted bands)

Project Number:	632	Standard:	FCC15.407b
Company:	Itronix	Test Start Date:	3-Oct-05
Product:	IX325 with CISCO a/b/g WLAN	Test End Date:	25-Oct-05

Channel	Polarity	Distance	Rx Antenna	Frequency	SA Level	Noise Floor	Rx AF	Rx CL	Other Rx	Total Rx CF	Field Strength	Detector	Limit Distance	Limit Distance Correction	Calculated Limit	Margin	Pass/Fail
		m		MHz	dBuV		dB/m	dB	dB	dB/m	dBuV/m	(PK/QP/AV)	m	dB	dBuV/m	dB	
UNII-CH36	H	3	Bilog SN1607	405.11	25.30	*	16.90	2.80	0.00	19.71	45.01	PK	3.00	0.00	66.02	21.01	PASS
UNII-CH36	H	3	Bilog SN1607	405.11	13.80	*	16.90	2.80	0.00	19.71	33.51	QP	3.00	0.00	46.02	12.51	PASS
UNII-CH36	H	3	Horn SN6267	1060.50	22.35	*	24.57	4.42	0.00	28.98	51.33	AV	3.00	0.00	53.98	2.65	PASS
UNII-CH36	H	3	Horn SN6267	1189.29	28.60	*	24.83	4.66	0.00	29.50	58.10	PK	3.00	0.00	73.98	15.88	PASS
UNII-CH36	H	3	Horn SN6267	1184.00	16.00	*	24.82	4.66	0.00	29.48	45.48	AV	3.00	0.00	53.98	8.50	PASS
UNII-CH36	H	3	Horn SN6267	1393.97	34.35	*	25.26	5.04	0.00	30.31	64.66	PK	3.00	0.00	73.98	9.32	PASS
UNII-CH36	H	3	Horn SN6267	1393.29	16.60	*	25.26	5.04	0.00	30.30	46.90	AV	3.00	0.00	53.98	7.08	PASS
UNII-CH36	H	3	Horn SN6267	1528.17	32.90	*	25.60	5.29	0.00	30.89	63.79	PK	3.00	0.00	73.98	10.19	PASS
UNII-CH36	H	3	Horn SN6267	1525.24	16.65	*	25.59	5.28	0.00	30.87	47.52	AV	3.00	0.00	53.98	6.46	PASS
UNII-CH36	H	3	Horn SN6267	1700.91	32.50	*	26.32	5.63	0.00	31.95	64.45	PK	3.00	0.00	73.98	9.53	PASS
UNII-CH36	H	3	Horn SN6267	1708.40	16.30	*	26.35	5.64	0.00	31.98	48.28	AV	3.00	0.00	53.98	5.70	PASS
UNII-CH36	H	1	Horn SN6267	2364.97	34.35	*	28.13	6.72	-23.16	11.69	46.04	PK*	3.00	9.54	63.52	17.48	PASS
UNII-CH36	H	1	Horn SN6267	2489.89	36.10	*	28.33	6.94	-23.15	12.13	48.23	PK*	3.00	9.54	63.52	15.29	PASS
UNII-CH36	H	3	Horn SN6267	5395.58	33.50	*	34.03	11.97	-32.17	13.83	47.33	PK*	3.00	0.00	53.98	6.65	PASS
UNII-CH36	H	1	Horn SN6267	8354.55	38.34	*	37.37	6.91	-32.06	12.22	50.56	PK*	3.00	9.54	63.52	12.96	PASS
UNII-CH36	H	1	Horn SN6267	15420.50	39.16	*	38.11	10.17	-32.36	15.91	55.07	PK*	3.00	9.54	63.52	8.45	PASS
UNII-CH36	H	1	Horn SN6267	**15541.05**	39.95		37.74	10.22	-11.02	36.94	76.89	PK	3.00	9.54	83.52	6.63	PASS
UNII-CH36	H	1	Horn SN6267	**15539.50**	24.90		37.74	10.22	-11.02	36.94	61.84	AV	3.00	9.54	63.52	1.68	PASS
UNII-CH36	H	1	Horn SN6267	17795.30	38.52		45.87	11.09	-33.38	23.57	62.09	PK	3.00	9.54	83.52	21.43	PASS
UNII-CH36	H	1	Horn SN6267	17790.65	28.03		45.83	11.09	-33.38	23.53	51.56	AV	3.00	9.54	63.52	11.96	PASS
UNII-CH36	H	1	Waveline_899	20720.00	38.67		40.30	12.16	-35.59	16.87	55.54	PK*	3.00	9.54	63.52	7.98	PASS
UNII-CH36	H	1	Waveline_899	23612.90	39.63		40.40	13.22	-35.56	18.07	57.70	PK*	3.00	9.54	63.52	5.83	PASS
UNII-CH36	V	3	Bilog SN1607	135.74	23.70	*	12.31	2.17	0.00	14.48	38.18	PK*	3.00	0.00	43.52	5.34	PASS
UNII-CH36	V	3	Horn SN6267	1058.70	30.30	*	24.56	4.41	0.00	28.97	59.27	PK	3.00	0.00	73.98	14.71	PASS
UNII-CH36	V	3	Horn SN6267	1054.60	16.00	*	24.55	4.41	0.00	28.96	44.96	AV	3.00	0.00	53.98	9.02	PASS
UNII-CH36	V	3	Horn SN6267	1124.46	35.50	*	24.70	4.56	0.00	29.25	64.75	PK	3.00	0.00	73.98	9.22	PASS
UNII-CH36	V	3	Horn SN6267	1123.69	16.05	*	24.70	4.56	0.00	29.25	45.30	AV	3.00	0.00	53.98	8.68	PASS
UNII-CH36	V	3	Horn SN6267	1159.74	29.55	*	24.77	4.63	0.00	29.41	58.96	PK	3.00	0.00	73.98	15.02	PASS
UNII-CH36	V	3	Horn SN6267	1150.35	16.05	*	24.75	4.59	0.00	29.34	45.39	AV	3.00	0.00	53.98	8.59	PASS
UNII-CH36	V	3	Horn SN6267	1520.51	30.60	*	25.57	5.27	0.00	30.83	61.43	PK	3.00	0.00	73.98	12.55	PASS
UNII-CH36	V	3	Horn SN6267	1518.09	16.20	*	25.56	5.26	0.00	30.82	47.02	AV	3.00	0.00	53.98	6.96	PASS
UNII-CH36	V	3	Horn SN6267	1689.27	30.15	*	26.27	5.59	0.00	31.86	62.01	PK	3.00	0.00	73.98	11.97	PASS
UNII-CH36	V	3	Horn SN6267	1690.98	16.30	*	26.27	5.60	0.00	31.87	48.17	AV	3.00	0.00	53.98	5.81	PASS
UNII-CH36	V	1	Horn SN6267	2275.65	39.10		27.99	6.59	-23.16	11.42	50.52	PK*	3.00	9.54	63.52	13.00	PASS
UNII-CH36	V	1	Horn SN6267	2327.22	35.95	*	28.07	6.66	-23.17	11.56	47.51	PK*	3.00	9.54	63.52	16.01	PASS
UNII-CH36	V	1	Horn SN6267	2807.18	34.50	*	29.40	7.50	-23.12	13.78	48.28	PK*	3.00	9.54	63.52	15.24	PASS
UNII-CH36	V	1	Horn SN6267	2813.04	34.35	*	29.42	7.51	-23.13	13.80	48.15	PK*	3.00	9.54	63.52	15.37	PASS
UNII-CH36	V	3	Horn SN6267	5393.08	35.80	*	34.02	11.93	-32.17	13.79	49.59	PK*	3.00	0.00	53.98	4.39	PASS
UNII-CH36	V	1	Horn SN6267	9021.55	39.13	*	37.96	7.22	-32.06	13.12	52.25	PK*	3.00	9.54	63.52	11.27	PASS
UNII-CH36	V	1	Horn SN6267	11603.85	38.35	*	38.69	8.41	-31.82	15.28	53.63	PK*	3.00	9.54	63.52	9.89	PASS
UNII-CH36	V	1	Horn SN6267	15372.55	38.60	*	38.31	10.15	-32.34	16.12	54.72	PK*	3.00	9.54	63.52	8.81	PASS
UNII-CH36	V	1	Horn SN6267	17915.45	38.39	*	46.94	11.13	-33.45	24.63	63.02	PK	3.00	9.54	83.52	20.50	PASS
UNII-CH36	V	1	Horn SN6267	17921.70	28.06	*	47.00	11.14	-33.46	24.68	52.74	AV	3.00	9.54	63.52	10.78	PASS
UNII-CH36	V	1	Waveline_899	20684.15	40.29		40.30	12.15	-35.59	16.86	57.15	PK*	3.00	9.54	63.52	6.37	PASS
UNII-CH36	V	1	Waveline_899	23732.00	39.82		40.40	13.27	-35.56	18.11	57.93	PK*	3.00	9.54	63.52	5.59	PASS

For frequency bands above 26.5 GHz, manual scans at a 1-2 cm distance were made with no emissions observed.

Notes:
*PK denotes QP or Average limits applied to emissions measured with a peak detector
BOLD signifies the highest signal measured near a carrier harmonic frequency
No DUT emissions levels were measured above those reported
Formulae:
Total CF = Antenna Factor + Cable Factor + Other Factor (Amplifier Gain, filter loss, etc)
Field Strength = SA Reading + Total CF
Limit Distance Correction = 40*log(d1/d2) for F<30 MHz, 20*log(d1/d2) for F> 30 MHz:
where d1 is the measurement distance, d2 is the published limit distance
Limit = Specified Limit + Limit Distance Correction

No out-of-band emissions attributed to the DUT were measured within the restricted bands above the levels noted.

H.9.5. Mode a (lower band) - Channel 52 Out-of-Band Spurious Emission Field Strengths @ Specified Distance (within restricted bands)

Project Number:	632	**Standard:**	FCC15.407b
Company:	Itronix	**Test Start Date:**	3-Oct-05
Product:	IX325 with CISCO a/b/g WLAN	**Test End Date:**	25-Oct-05

Channel	Polarity	Distance	Rx Antenna	Frequency	SA Level	Noise Floor	Rx AF	Rx CL	Other Rx	Total Rx CF	Field Strength	Detector	Limit Distance	Limit Distance Correction	Calculated Limit	Margin	Pass/Fail
		m		MHz	dBuV		dB/m	dB	dB	dB/m	dBuV/m	(PK/QP/AV)	m	dB	dBuV/m	dB	
UNII-CH52	H	3	Bilog SN1607	125.02	24.40		12.00	2.11	0.00	14.11	38.51	PK*	3.00	0.00	43.52	5.01	PASS
UNII-CH52	H	3	Bilog SN1607	408.31	25.80	*	17.03	2.81	0.00	19.84	45.64	PK	3.00	0.00	66.02	20.38	PASS
UNII-CH52	H	3	Bilog SN1607	408.31	13.80	*	17.03	2.81	0.00	19.84	33.64	QP	3.00	0.00	46.02	12.38	PASS
UNII-CH52	H	3	Horn SN6267	1077.95	32.35	*	24.60	4.48	0.00	29.08	61.43	PK	3.00	0.00	73.98	12.55	PASS
UNII-CH52	H	3	Horn SN6267	1075.04	16.05	*	24.60	4.47	0.00	29.06	45.11	AV	3.00	0.00	53.98	8.87	PASS
UNII-CH52	H	3	Horn SN6267	1171.65	31.35	*	24.80	4.64	0.00	29.44	60.79	PK	3.00	0.00	73.98	13.19	PASS
UNII-CH52	H	3	Horn SN6267	1164.09	16.05	*	24.78	4.64	0.00	29.42	45.47	AV	3.00	0.00	53.98	8.51	PASS
UNII-CH52	H	3	Horn SN6267	1213.42	31.50	*	24.88	4.71	0.00	29.59	61.09	PK	3.00	0.00	73.98	12.89	PASS
UNII-CH52	H	3	Horn SN6267	1208.76	16.10	*	24.87	4.70	0.00	29.57	45.67	AV	3.00	0.00	53.98	8.31	PASS
UNII-CH52	H	3	Horn SN6267	1345.69	31.35	*	25.16	4.97	0.00	30.13	61.48	PK	3.00	0.00	73.98	12.50	PASS
UNII-CH52	H	3	Horn SN6267	1342.53	16.25	*	25.15	4.96	0.00	30.12	46.37	AV	3.00	0.00	53.98	7.61	PASS
UNII-CH52	H	3	Horn SN6267	1478.27	29.45	*	25.44	5.19	0.00	30.63	60.08	PK	3.00	0.00	73.98	13.90	PASS
UNII-CH52	H	3	Horn SN6267	1473.01	16.20	*	25.43	5.19	0.00	30.61	46.81	AV	3.00	0.00	53.98	7.17	PASS
UNII-CH52	H	3	Horn SN6267	1586.22	31.20	*	25.84	5.38	0.00	31.22	62.42	PK	3.00	0.00	73.98	11.55	PASS
UNII-CH52	H	3	Horn SN6267	1584.71	16.30	*	25.83	5.38	0.00	31.22	47.52	AV	3.00	0.00	53.98	6.46	PASS
UNII-CH52	H	3	Horn SN6267	2341.55	35.25	*	28.10	6.69	-23.17	11.61	46.86	PK*	3.00	0.00	53.98	7.12	PASS
UNII-CH52	H	3	Horn SN6267	2684.31	35.15	*	28.98	7.26	-23.14	13.10	48.25	PK*	3.00	0.00	53.98	5.73	PASS
UNII-CH52	H	3	Horn SN6267	2874.42	34.45	*	29.63	7.62	-23.11	14.13	48.58	PK*	3.00	0.00	53.98	5.40	PASS
UNII-CH52	H	3	Horn SN6267	4940.00	38.70	*	33.29	10.77	-32.30	11.77	50.47	PK*	3.00	0.00	53.98	3.51	PASS
UNII-CH52	H	1	Horn SN6267	11521.75	38.52	*	38.66	8.37	-31.85	15.18	53.70	PK*	3.00	9.54	63.52	9.82	PASS
UNII-CH52	H	1	Horn SN6267	13391.05	39.88		40.36	9.23	-31.43	18.16	58.04	PK*	3.00	9.54	63.52	5.48	PASS
UNII-CH52	H	1	Horn SN6267	15460.00	38.67	*	37.95	10.19	-32.35	15.78	54.45	PK*	3.00	9.54	63.52	9.07	PASS
UNII-CH52	H	1	Horn SN6267	**15779.08**	36.74		37.48	10.33	-11.16	36.65	73.39	PK	3.00	9.54	83.52	10.13	PASS
UNII-CH52	H	1	Horn SN6267	15566.35	28.00		37.71	10.23	-17.01	30.93	58.93	AV	3.00	9.54	63.52	4.59	PASS
UNII-CH52	H	1	Horn SN6267	17977.45	38.74	*	47.50	11.16	-33.43	25.22	63.96	PK	3.00	9.54	83.52	19.56	PASS
UNII-CH52	H	1	Horn SN6267	17982.20	28.16	*	47.54	11.16	-33.43	25.27	53.43	AV	3.00	9.54	63.52	10.09	PASS
UNII-CH52	H	1	Waveline_899	20567.50	39.96		40.30	12.11	-35.59	16.81	56.77	PK*	3.00	9.54	63.52	6.75	PASS
UNII-CH52	H	1	Waveline_899	**21038.80**	38.21		40.30	12.28	-35.59	16.99	55.20	PK*	3.00	9.54	63.52	8.32	PASS
UNII-CH52	H	1	Waveline_899	23818.45	39.97		40.40	13.30	-35.55	18.14	58.11	PK*	3.00	9.54	63.52	5.41	PASS
UNII-CH52	V	3	Bilog SN1607	325.90	25.10	*	14.44	2.65	0.00	17.08	42.18	PK*	3.00	0.00	46.02	3.84	PASS
UNII-CH52	V	3	Horn SN6267	1556.39	31.80	*	25.72	5.34	0.00	31.05	62.85	PK	3.00	0.00	73.98	11.12	PASS
UNII-CH52	V	3	Horn SN6267	1550.02	16.25	*	25.69	5.33	0.00	31.02	47.27	AV	3.00	0.00	53.98	6.71	PASS
UNII-CH52	V	3	Horn SN6267	1707.55	29.55	*	26.34	5.63	0.00	31.98	61.53	PK	3.00	0.00	73.98	12.45	PASS
UNII-CH52	V	3	Horn SN6267	1703.13	16.30	*	26.33	5.63	0.00	31.96	48.26	AV	3.00	0.00	53.98	5.72	PASS
UNII-CH52	V	3	Horn SN6267	2236.23	35.20	*	27.93	6.53	-23.17	11.29	46.49	PK*	3.00	0.00	53.98	7.49	PASS
UNII-CH52	V	3	Horn SN6267	2353.52	38.25		28.12	6.70	-23.17	11.65	49.90	PK*	3.00	0.00	53.98	4.08	PASS
UNII-CH52	V	3	Horn SN6267	2847.61	34.40	*	29.54	7.53	-23.12	13.95	48.35	PK*	3.00	0.00	53.98	5.63	PASS
UNII-CH52	V	3	Horn SN6267	4906.11	36.00	*	33.21	10.66	-32.29	11.58	47.58	PK*	3.00	0.00	53.98	6.40	PASS
UNII-CH52	V	3	Horn SN6267	4955.07	40.30		33.33	10.78	-32.27	11.83	52.13	PK*	3.00	0.00	53.98	1.85	PASS
UNII-CH52	V	3	Horn SN6267	5042.18	42.30		33.49	10.97	-32.25	12.22	54.52	PK	3.00	0.00	73.98	19.46	PASS
UNII-CH52	V	3	Horn SN6267	5042.18	25.70		33.49	10.97	-32.25	12.22	37.92	AV	3.00	0.00	53.98	16.06	PASS
UNII-CH52	V	3	Horn SN6267	5394.60	36.80	*	34.03	11.95	-32.17	13.81	50.61	PK*	3.00	0.00	53.98	3.37	PASS
UNII-CH52	V	1	Horn SN6267	8302.95	38.73	*	37.29	6.89	-32.07	12.12	50.85	PK*	3.00	9.54	63.52	12.68	PASS
UNII-CH52	V	1	Horn SN6267	11495.80	38.43	*	38.65	8.36	-31.87	15.13	53.56	PK*	3.00	9.54	63.52	9.96	PASS
UNII-CH52	V	1	Horn SN6267	13389.10	39.65	*	40.35	9.23	-31.43	18.15	57.80	PK*	3.00	9.54	63.52	5.72	PASS
UNII-CH52	V	1	Horn SN6267	15358.40	39.88	*	38.36	10.14	-32.33	16.17	56.05	PK*	3.00	9.54	63.52	7.47	PASS
UNII-CH52	V	1	Horn SN6267	**15773.40**	38.82		37.49	10.33	-17.17	30.65	69.47	PK	3.00	9.54	83.52	14.05	PASS
UNII-CH52	V	1	Horn SN6267	15782.50	27.92		37.48	10.33	-17.16	30.65	58.57	AV	3.00	9.54	63.52	4.95	PASS
UNII-CH52	V	1	Horn SN6267	17983.90	39.10	*	47.56	11.16	-33.43	25.28	64.38	PK	3.00	9.54	83.52	19.14	PASS
UNII-CH52	V	1	Horn SN6267	17987.85	28.29	*	47.59	11.16	-33.44	25.32	53.61	AV	3.00	9.54	63.52	9.92	PASS
UNII-CH52	V	1	Waveline_899	**21038.80**	38.10		40.30	12.28	-35.59	16.99	55.09	PK*	3.00	9.54	63.52	8.43	PASS
UNII-CH52	V	1	Waveline_899	23920.95	39.81		40.40	13.34	-35.55	18.18	57.99	PK*	3.00	9.54	63.52	5.53	PASS

For frequency bands above 26.5 GHz, manual scans at a 1-2 cm distance were made with no emissions observed.

Same notes as H.9.1

H.9.6. Mode a (lower band) - Channel 64 Out-of-Band Spurious Emission Field Strengths @ Specified Distance (within restricted bands)

Project Number: 632 **Standard:** FCC15.407b
Company: Itronix **Test Start Date:** 3-Oct-05
Product: IX325 with CISCO a/b/g WLAN **Test End Date:** 25-Oct-05

Channel	Polarity	Distance	Rx Antenna	Frequency	SA Level	Noise Floor	Rx AF	Rx CL	Other Rx	Total Rx CF	Field Strength	Detector	Limit Distance	Limit Distance Correction	Calculated Limit	Margin	Pass/Fail
		m		MHz	dBuV		dB/m	dB	dB	dB/m	dBuV/m	(PK/QP/AV)	m	dB	dBuV/m	dB	
UNII-CH64	H	3	Bilog SN1607	332.58	26.90	*	14.70	2.65	0.00	17.35	44.25	PK	3.00	0.00	66.02	21.77	PASS
UNII-CH64	H	3	Bilog SN1607	332.58	14.20	*	14.70	2.65	0.00	17.35	31.55	QP	3.00	0.00	46.02	14.47	PASS
UNII-CH64	H	3	Bilog SN1607	403.97	25.90	*	16.86	2.80	0.00	19.66	45.56	PK	3.00	0.00	66.02	20.46	PASS
UNII-CH64	H	3	Bilog SN1607	403.97	13.90	*	16.86	2.80	0.00	19.66	33.56	QP	3.00	0.00	46.02	12.46	PASS
UNII-CH64	H	3	Horn SN6267	1041.48	29.70	*	24.53	4.39	0.00	28.92	58.62	PK	3.00	0.00	73.98	15.36	PASS
UNII-CH64	H	3	Horn SN6267	1040.13	16.05	*	24.52	4.39	0.00	28.91	44.96	AV	3.00	0.00	53.98	9.02	PASS
UNII-CH64	H	3	Horn SN6267	1061.16	29.60	*	24.57	4.42	0.00	28.98	58.58	PK	3.00	0.00	73.98	15.39	PASS
UNII-CH64	H	3	Horn SN6267	1064.12	16.05	*	24.57	4.43	0.00	29.00	45.05	AV	3.00	0.00	53.98	8.93	PASS
UNII-CH64	H	3	Horn SN6267	1101.86	29.55	*	24.65	4.50	0.00	29.15	58.70	PK	3.00	0.00	73.98	15.28	PASS
UNII-CH64	H	3	Horn SN6267	1101.00	16.05	*	24.65	4.49	0.00	29.14	45.19	AV	3.00	0.00	53.98	8.79	PASS
UNII-CH64	H	3	Horn SN6267	1344.95	30.85	*	25.16	4.96	0.00	30.12	60.97	PK	3.00	0.00	73.98	13.01	PASS
UNII-CH64	H	3	Horn SN6267	1340.55	16.20	*	25.15	4.96	0.00	30.11	46.31	AV	3.00	0.00	53.98	7.67	PASS
UNII-CH64	H	3	Horn SN6267	1506.77	29.55	*	25.51	5.26	0.00	30.77	60.32	PK	3.00	0.00	73.98	13.66	PASS
UNII-CH64	H	3	Horn SN6267	1505.96	16.25	*	25.51	5.26	0.00	30.76	47.01	AV	3.00	0.00	53.98	6.97	PASS
UNII-CH64	H	3	Horn SN6267	1709.67	29.85	*	26.35	5.64	0.00	31.99	61.84	PK	3.00	0.00	73.98	12.14	PASS
UNII-CH64	H	3	Horn SN6267	1704.74	16.35	*	26.33	5.63	0.00	31.96	48.31	AV	3.00	0.00	53.98	5.67	PASS
UNII-CH64	H	3	Horn SN6267	2274.60	35.10	*	27.99	6.59	-23.16	11.42	46.52	PK*	3.00	0.00	53.98	7.46	PASS
UNII-CH64	H	3	Horn SN6267	2744.48	33.95	*	29.18	7.36	-23.12	13.42	47.37	PK*	3.00	0.00	53.98	6.61	PASS
UNII-CH64	H	3	Horn SN6267	4953.55	45.40	*	33.32	10.78	-32.28	11.82	57.22	PK	3.00	0.00	73.98	16.76	PASS
UNII-CH64	H	3	Horn SN6267	4953.55	20.80	*	33.32	10.78	-32.28	11.82	32.62	AV	3.00	0.00	53.98	21.36	PASS
UNII-CH64	H	3	Horn SN6267	5111.95	43.60	*	33.60	11.13	-32.22	12.51	56.11	PK	3.00	0.00	73.98	17.87	PASS
UNII-CH64	H	3	Horn SN6267	5111.95	25.70	*	33.60	11.13	-32.22	12.51	38.21	AV	3.00	0.00	53.98	15.77	PASS
UNII-CH64	H	3	Horn SN6267	5428.54	30.50	*	34.08	11.72	-32.13	13.66	44.16	PK*	3.00	0.00	53.98	9.82	PASS
UNII-CH64	H	1	Horn SN6267	9060.40	39.02	*	37.96	7.24	-32.06	13.13	52.15	PK*	3.00	9.54	63.52	11.37	PASS
UNII-CH64	H	1	Horn SN6267	9407.60	38.27	*	37.90	7.40	-32.02	13.28	51.55	PK*	3.00	9.54	63.52	11.98	PASS
UNII-CH64	H	1	Horn SN6267	**10642.60**	45.24		38.10	7.97	-16.45	29.61	74.85	PK	3.00	9.54	83.52	8.67	PASS
UNII-CH64	H	1	Horn SN6267	**10640.55**	32.96		38.09	7.97	-16.45	29.61	62.57	AV	3.00	9.54	63.52	0.95	PASS
UNII-CH64	H	1	Horn SN6267	13346.40	39.97	*	40.24	9.21	-31.53	17.92	57.89	PK*	3.00	9.54	63.52	5.63	PASS
UNII-CH64	H	1	Horn SN6267	15471.00	39.81	*	37.91	10.19	-32.37	15.72	55.53	PK*	3.00	9.54	63.52	7.99	PASS
UNII-CH64	H	1	Horn SN6267	15956.30	49.77		37.28	10.41	-17.25	30.45	80.22	PK	3.00	9.54	83.52	3.30	PASS
UNII-CH64	H	1	Horn SN6267	15957.15	29.60		37.28	10.41	-14.25	33.45	63.05	AV	3.00	9.54	63.52	0.47	PASS
UNII-CH64	H	1	Horn SN6267	17811.10	38.73	*	46.01	11.10	-33.40	23.71	62.44	PK*	3.00	9.54	63.52	1.08	PASS
UNII-CH64	H	1	Waveline_899	20676.45	40.57		40.30	12.15	-35.59	16.85	57.42	PK*	3.00	9.54	63.52	6.10	PASS
UNII-CH64	H	1	Waveline_899	**21277.80**	39.01		40.30	12.37	-35.58	17.08	56.09	PK*	3.00	9.54	63.52	7.43	PASS
UNII-CH64	H	1	Waveline_899	23982.25	39.99		40.40	13.37	-35.55	18.21	58.20	PK*	3.00	9.54	63.52	5.32	PASS
UNII-CH64	V	3	Horn SN6267	1061.71	29.65	*	24.57	4.42	0.00	28.99	58.64	PK	3.00	0.00	73.98	15.34	PASS
UNII-CH64	V	3	Horn SN6267	1060.74	16.05	*	24.57	4.42	0.00	28.98	45.03	AV	3.00	0.00	53.98	8.95	PASS
UNII-CH64	V	3	Horn SN6267	1131.57	31.70	*	24.71	4.55	0.00	29.26	60.96	PK	3.00	0.00	73.98	13.02	PASS
UNII-CH64	V	3	Horn SN6267	1134.68	16.10	*	24.72	4.55	0.00	29.27	45.37	AV	3.00	0.00	53.98	8.61	PASS
UNII-CH64	V	3	Horn SN6267	1147.34	29.65	*	24.75	4.58	0.00	29.32	58.97	PK	3.00	0.00	73.98	15.01	PASS
UNII-CH64	V	3	Horn SN6267	1150.54	16.10	*	24.75	4.59	0.00	29.34	45.44	AV	3.00	0.00	53.98	8.53	PASS
UNII-CH64	V	3	Horn SN6267	1206.93	29.35	*	24.87	4.70	0.00	29.57	58.92	PK	3.00	0.00	73.98	15.06	PASS
UNII-CH64	V	3	Horn SN6267	1201.43	16.10	*	24.86	4.68	0.00	29.54	45.64	AV	3.00	0.00	53.98	8.33	PASS
UNII-CH64	V	3	Horn SN6267	1466.24	32.00	*	25.41	5.18	0.00	30.59	62.59	PK	3.00	0.00	73.98	11.39	PASS
UNII-CH64	V	3	Horn SN6267	1459.38	16.20	*	25.40	5.17	0.00	30.57	46.77	AV	3.00	0.00	53.98	7.21	PASS
UNII-CH64	V	3	Horn SN6267	2342.09	35.30	*	28.10	6.69	-23.17	11.61	46.91	PK*	3.00	0.00	53.98	7.07	PASS
UNII-CH64	V	3	Horn SN6267	3818.41	31.70	*	32.00	9.21	-32.29	8.92	40.62	PK*	3.00	0.00	53.98	13.36	PASS
UNII-CH64	V	3	Horn SN6267	4954.85	50.50		33.33	10.78	-32.27	11.83	62.33	PK	3.00	0.00	73.98	11.65	PASS
UNII-CH64	V	3	Horn SN6267	4954.85	22.70		33.33	10.78	-32.27	11.83	34.53	AV	3.00	0.00	53.98	19.45	PASS
UNII-CH64	V	1	Horn SN6267	9138.45	38.89	*	37.94	7.28	-32.07	13.15	52.04	PK*	3.00	9.54	63.52	11.48	PASS
UNII-CH64	V	1	Horn SN6267	**10640.10**	38.65		38.09	7.97	-13.45	32.61	71.26	PK	3.00	9.54	83.52	12.26	PASS
UNII-CH64	V	1	Horn SN6267	10640.35	27.75		38.09	7.97	-13.45	32.61	60.36	AV	3.00	9.54	63.52	3.16	PASS
UNII-CH64	V	1	Horn SN6267	13335.50	39.79	*	40.21	9.21	-31.54	17.88	57.67	PK*	3.00	9.54	63.52	5.85	PASS
UNII-CH64	V	1	Horn SN6267	15442.80	39.47	*	38.02	10.18	-32.33	15.86	55.33	PK*	3.00	9.54	63.52	8.19	PASS
UNII-CH64	V	1	Horn SN6267	**15961.10**	38.56		37.28	10.42	-14.25	33.45	72.01	PK	3.00	9.54	83.52	11.52	PASS
UNII-CH64	V	1	Horn SN6267	15968.20	29.06		37.27	10.42	-14.26	33.43	62.49	AV	3.00	9.54	63.52	1.03	PASS
UNII-CH64	V	1	Horn SN6267	17982.30	39.10	*	47.54	11.16	-33.43	25.27	64.37	PK	3.00	9.54	83.52	19.15	PASS
UNII-CH64	V	1	Horn SN6267	17983.90	28.33	*	47.56	11.16	-33.43	25.28	53.61	AV	3.00	9.54	63.52	9.91	PASS
UNII-CH64	V	1	Waveline_899	20515.75	39.97		40.30	12.09	-35.59	16.79	56.76	PK*	3.00	9.54	63.52	6.76	PASS
UNII-CH64	V	1	Waveline_899	**21277.80**	37.76		40.30	12.37	-35.58	17.08	54.84	PK*	3.00	9.54	63.52	8.68	PASS
UNII-CH64	V	1	Waveline_899	22737.40	39.57		40.40	12.90	-35.57	17.73	57.30	PK*	3.00	9.54	63.52	6.22	PASS
UNII-CH64	V	1	Waveline_899	23918.80	40.00		40.40	13.34	-35.55	18.18	58.18	PK*	3.00	9.54	63.52	5.34	PASS

For frequency bands above 26.5 GHz, manual scans at a 1-2 cm distance were made with no emissions observed.

Notes the same as H.9.1

H.10. PASS/FAIL

In reference to the results outlined in H.9, the DUT passes the requirements as stated in the reference standards as follows:

FCC 15.205 (a) (b) and 15.209 (a): No emissions were measured within the restricted bands as outlined in 15.205 that exceeded the limits stated in 15.209.

The emission within a restricted band, with the lowest margin to the limit was measured at 1 meter, in the horizontal polarization with Channel 64 transmitting. The frequency was 15957.15 MHz, with a corrected average field strength of 63.05 dBuV/m vs. the average limit of 63.52 dBuV/m, resulting in a 0.47 dB margin.

H.11. SIGN-OFF

I attest to the accuracy of the data. All measurements reported herein were performed by me and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements.

Russell Pipe
Senior Compliance Technologist
Celltech Labs Inc.

25Oct05
Date

Appendix I - Peak Power Spectral Density Measurement

I.1. REFERENCES

Normative Reference Standard	FCC CFR 47 §15.407(a) (1), &(2)
Procedure Reference	FCC DA 02-2138 Appendix A - Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E - August 30, 2002

I.2. LIMITS

I.2.1. FCC CFR

§15.407(a) (1):	*For the band 5.15 – 5.25 GHz…. the peak spectral density shall not exceed 4 dBm in any 1-MHz band.*
§15.407(a) (2):	*For the band 5.25 – 5.35 GHz…. the peak spectral density shall not exceed 11 dBm in any 1-MHz band.*
§15.407(h) (1):	*…. A TPC mechanism is not required for systems with an e.i.r.p of less than 500 mW.**

I.2.2. IC RSS-210 Annex 9

A9.2 § (1):	*For the band 5150 – 5250 MHz…. The e.i.r.p spectral density shall not exceed 10 dBm in any 1-MHz band.*
A9.2 § (2):	*For the band 5250 – 5305 MHz…. The e.i.r.p spectral density shall not exceed 11 dBm in any 1-MHz band. …..In addition, devices with maximum e.i.r.p greater than 500 mW shall implement TPC …..**

* The device has an e.i.r.p lower than 500 mW therefore implementation of TPC is not required, as the highest conducted power measured for these bands was 37.4 mW (FCC), 37.1 mW (IC).

I.3. ENVIRONMENTAL CONDITIONS

Temperature	25 ± 3 ºC
Humidity	35 ± 5 % RH
Barometric Pressure	uncontrolled

I.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00015	Agilent	E4408B	Spectrum Analyzer	24Jan05	24Jan06
Customer supplied	n/a	n/a	1ft. RG223/U RF Cable	n/a	n/a
00076	Pasternack	PE7014-30	30dB 2 Watt Attenuator	na*	na*

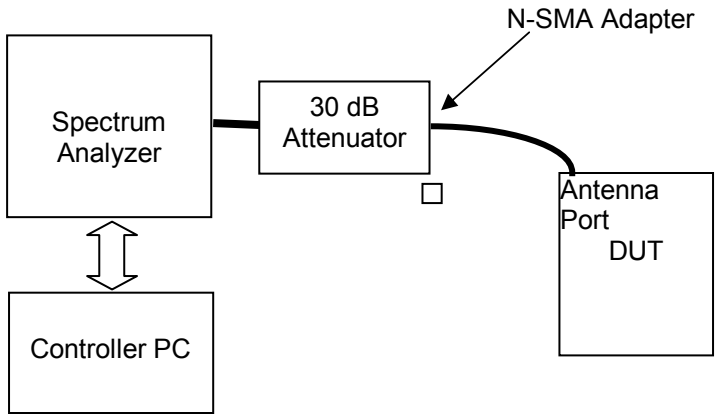
*Verification made prior to measurement

I.5. MEASUREMENT EQUIPMENT SETUP

Measurement Equipment Connections	The equipment was connected as shown in the setup drawing in I.6.	
Measurement Equipment Settings	To evaluate the peak power spectral density, software and a PC controller were used to set the spectrum analyzer using the following setting:	
	[ ] Method 1 RBW – 1 MHz VBW – 3 MHz Detector – Peak Display - Log Averaging – On, Power, 100 traces Trace - Max Hold Span -25 MHz Offset – appropriate for external attenuation (-31.4 dB)	[x] Method 2 RBW – 1 MHz VBW – 3 MHz Detector – Sample Display - Log Averaging – On, Power, 100 traces Trace - Write Span -25 MHz Offset – appropriate for external attenuation (-31.4 dB)
Measurement Procedure	A PC controller was used to record the spectrum analyzer display with the above settings as described in the FCC Appendix A Guidelines document.	

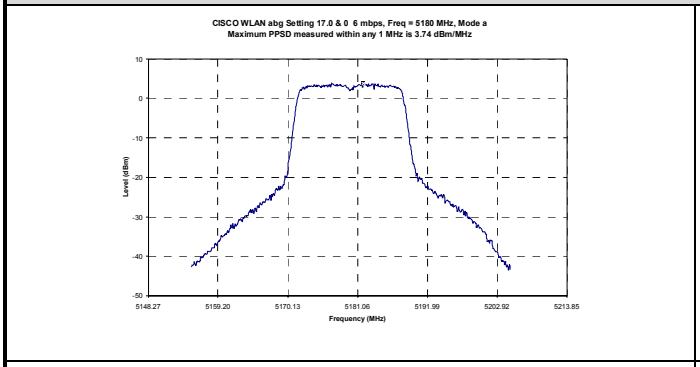
I.6. SETUP DRAWING

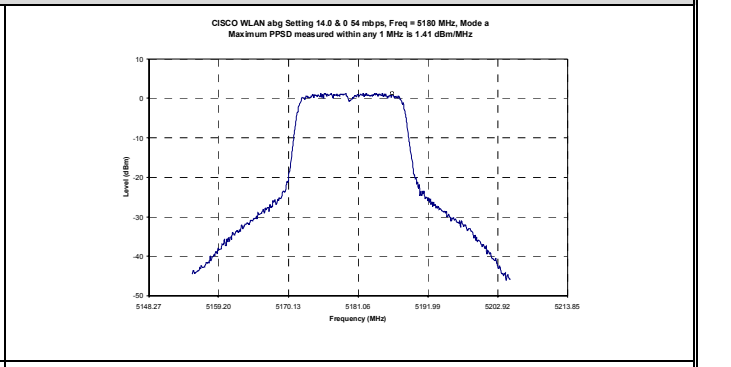
Figure I.6-1 - Setup Drawing

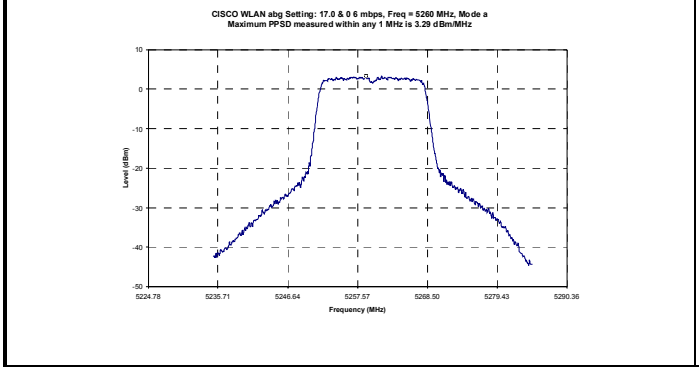


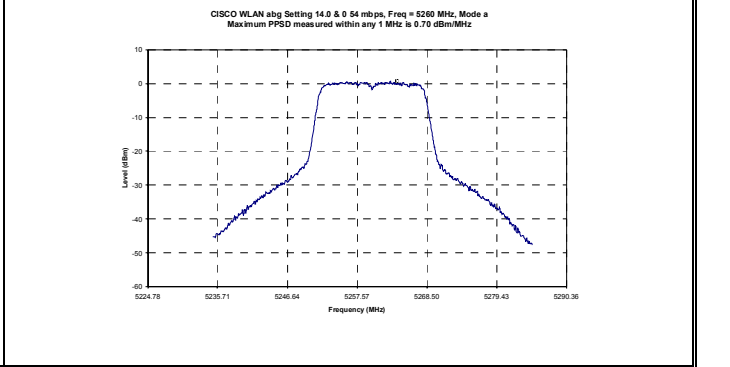
I.7. TEST RESULTS

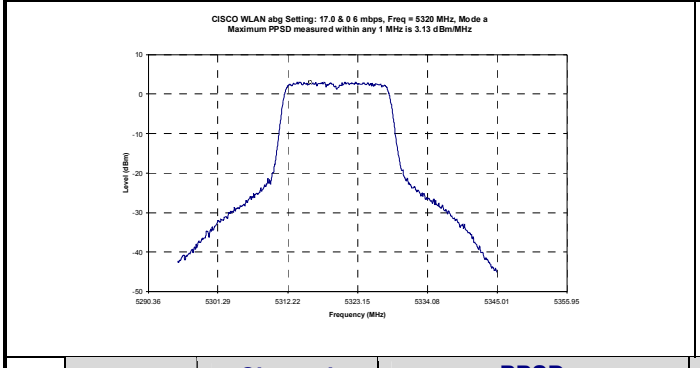
I.7.1. Mode a (lower band)

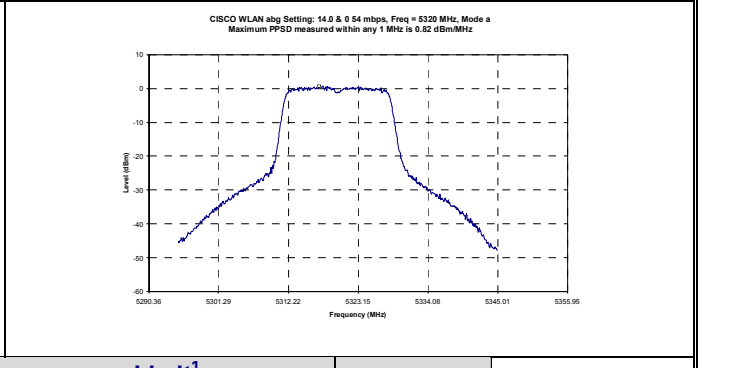












Channel	Channel Frequency	PPSD		Limit[1]		Pass / Fail
		6 mbps	54 mbps	FCC	IC	
	MHz	dBm	dBm	dBm[3]	dBm[3]	
36	5180	3.74	1.41	4	10	Pass
52	5260	3.29	0.70	11	11	Pass
64	5320	3.13	0.82	11	11	Pass

Note 1: If the PPSD exceeds Limit 2 by more than 3 dB, the applicable Limit 3 is reduced by the amount it exceeds.
Note 2: Limit based on 10logB where B is the emission bandwidth

I.8. PASS/FAIL

In reference to the results outlined in I.7, the DUT passes the requirements as stated in the reference standards as follows:

FCC 15.407 (a) (1):
For the band 5.15 – 5.25 GHz, the peak power spectral density shall not exceed +4 dBm in any 1 MHz band.

FCC 15.407 (a) (2):
For the band 5.25 – 5.35 GHz, the peak power spectral density shall not exceed +11 dBm in any 1 MHz band.

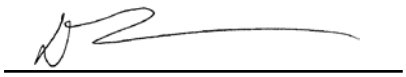
RSS 210 A9.2 (1):
For the band 5150 – 5250 MHz, the peak power spectral density shall not exceed +10 dBm in any 1 MHz band.

RSS 210 A9. 2 (2):
For the band 5250 – 5350 GHz, the peak power spectral density shall not exceed +11 dBm in any 1 MHz band.

The highest PPSD value measured within the 5.15 – 5.25 GHz band was 3.74 dBm/ MHz. The highest PPSD value measured within the 5.25 – 5.35 GHz band was 3.29 dBm/ MHz.

I.9. SIGN-OFF

I attest to the accuracy of the data. All measurements reported herein were performed by me and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements.



Duane M. Friesen, C.E.T.
EMC Manager
Celltech Labs Inc.

25Oct05
Date

Appendix J - Conducted Powerline Emissions Measurement

J.1. REFERENCES

Normative Reference Standard	CFR 47 FCC Part 15 §15.407 (6) (CFR 47 FCC Part 15 §15.207)
Procedure Reference	ANSI C63.4

J.2. LIMITS

§15.407(b) (6): *…. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in Section 15.207.*

§15.207: *Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each powerline and ground at the power terminal.*

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.50 – 5.0	56	46
5.0 – 30.0	60	50

*Decreases logarithmically with frequency.

J.3. ENVIRONMENTAL CONDITIONS

Temperature	25 ± 3 ºC
Humidity	35 ± 5 % RH
Barometric Pressure	uncontrolled

J.4. EQUIPMENT LIST

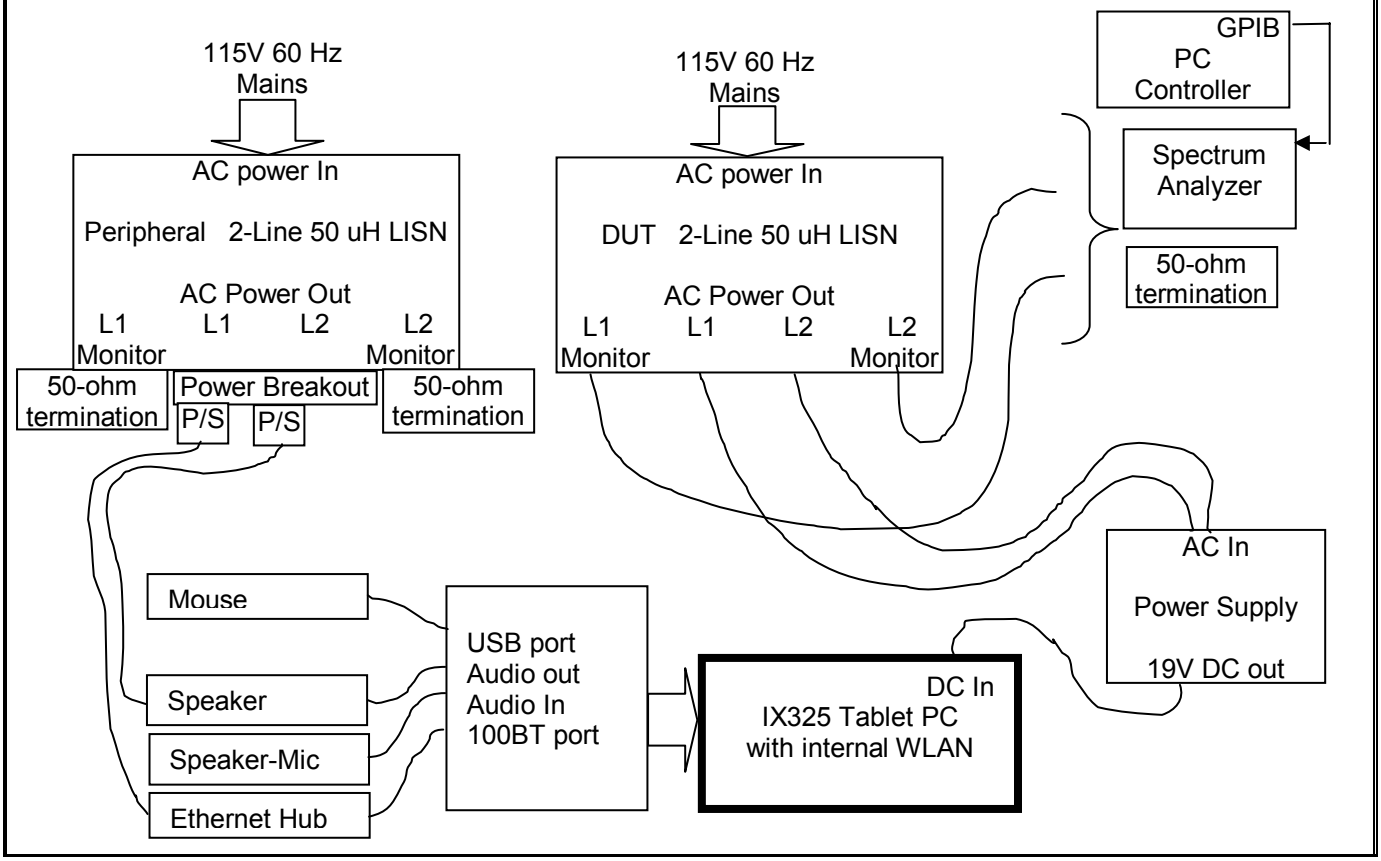
ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00049	HP	85650A	Quasi-Peak Adapter	13Apr05	13Apr06
00047	HP	85685A	RF Preselector	13Apr05	13Apr06
00051	HP	8566B	Spectrum Analyzer RF Section	12Apr05	12Apr06
00083	EMCO	3825/2	Line Impedance Stabilization Network	26Apr05	26Apr06
00084	EMCO	3825/2	Line Impedance Stabilization Network	26Apr05	26Apr06

J.5. MEASUREMENT EQUIPMENT SETUP

MEASUREMENT EQUIPMENT CONNECTIONS	The conducted emissions were measured on each of the two AC powerline leads connected to the DUT's power supply brick. A two line LISN was used to make this measurement. A drawing of the equipment setup is shown in J.7
MEASUREMENT EQUIPMENT SETTINGS	Each of the monitor ports from the 2-line LISN was connected in turn to the spectrum analyzer. The port not connected to the analyzer was terminated in a 50-ohm load. A prescan of the peak emission levels was made of the 150 kHz – 30 MHz range split into 4 equal frequency bands. The following were the spectrum analyzer settings: Start Frequency and Stop Frequency set by software for each of the four bands RBW: 100 kHz VBW: 300 kHz Sweep: 500 mS The resulting data from each band was corrected and collected by software and presented in the graphical representations shown in J.9 for the two leads. The frequency points with peak values within 20 dB of the average limit were selected and software was used to control the analyzer to optimize the signal for each type of detector (peak, quasi-peak and average). This data was corrected by the software is presented in the tables shown in section J.9.

J.6. SETUP DRAWING

Figure J.6-1 - Setup Drawing



J.7. SETUP PHOTOS

Photograph J-1 - AC Powerline Conducted Emission Cable Placement

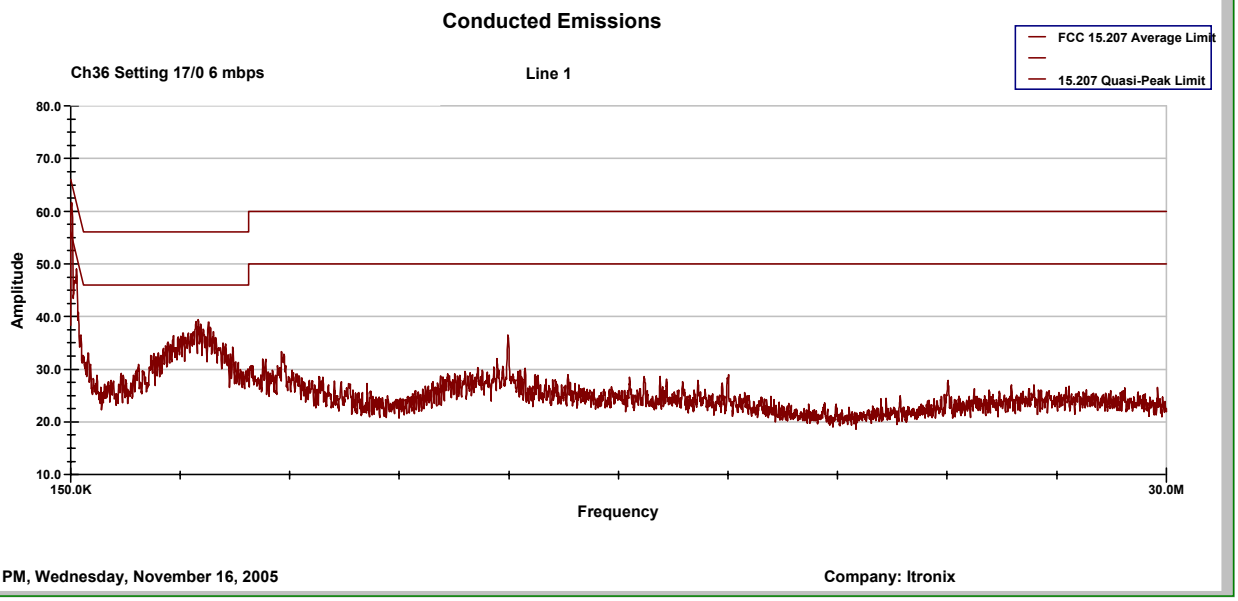
Photograph J-2 - AC Powerline Conducted Emission Configuration

J.8. DUT OPERATING DESCRIPTION

WLAN:	The WLAN was set to transmit at full power on Channel 36, Mode a 6 Mb/s
PC:	Other than operating the WLAN software and running MS windows, no PC exercising was performed.
Peripherals:	All peripherals were active, but no specific traffic was initiated.

J.9. TEST RESULTS

J.9.1. Line 1 Conducted Emissions



Project Number: 632
Company: Itronix
Product: IX325 with CISCO a/b/g WLAN

Standard: FCC 15.207
Test Start Date: 16-Nov-05
Test End Date: 16-Nov-05

Line 1 Conducted Emissions

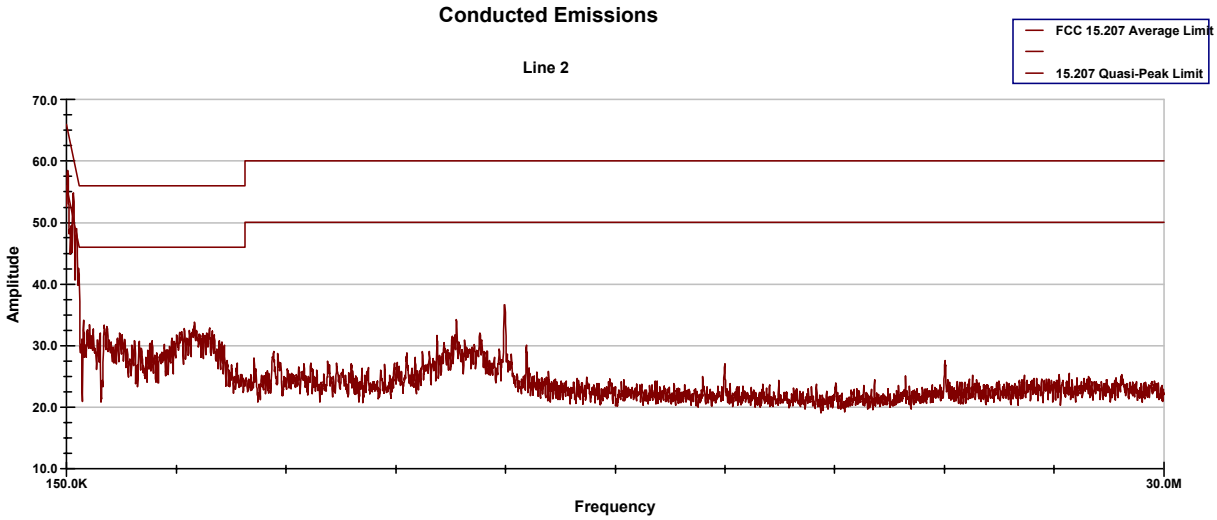
Frequency	Uncorrected Reading			Correction Factor	Corrected Emission Level			Quasi-Peak Limit	Quasi-Peak Margin	Average Limit	Average Margin	Pass/Fail
	Peak	Quasi-Peak	Average		Peak	Quasi-Peak	Average					
MHz	dBuV	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dBuV	dB	
0.159	67.50	55.99	28.80	-1.99	65.52	54.01	26.81	65.51	11.51	55.51	28.70	Pass
0.172	65.30	54.07	25.59	-1.78	63.52	52.29	23.81	64.89	12.60	54.89	31.07	Pass
0.179	63.30	52.76	25.20	-1.67	61.63	51.09	23.52	64.52	13.44	54.52	31.00	Pass
0.188	62.20	51.60	24.61	-1.55	60.65	50.05	23.05	64.12	14.08	54.12	31.07	Pass
0.204	61.10	50.78	36.60	-1.39	59.71	49.39	35.21	63.45	14.06	53.45	18.24	Pass
0.208	60.00	49.53	23.01	-1.35	58.65	48.18	21.66	63.29	15.11	53.29	31.63	Pass
3.653	45.50	30.85	15.24	-0.30	45.20	30.55	14.94	56.00	25.45	46.00	31.06	Pass
17.919	35.70	22.51	17.17	-0.39	35.31	22.12	16.78	60.00	37.88	50.00	33.22	Pass
23.950	33.90	17.56	10.96	-0.45	33.45	17.11	10.50	60.00	42.89	50.00	39.50	Pass

Corrected Emission Level (dBuV) = Uncorrected Reading (dBuV) + Correction Factor (dB)
Margin (dB) = Limit (dBuV) - Corrected Emission Level (dBuV)

Calculations

CF = Correction Factor
Emission Level = Measured Level + correction factor
Margin = Limit – Emission Level

J.9.2. Line 2 Conducted Emissions



Project Number: 632
Company: Itronix
Product: IX325 with CISCO a/b/g WLAN

Standard: FCC 15.207
Test Start Date: 16-Nov-05
Test End Date: 16-Nov-05

Line 2 Conducted Emissions

Frequency	Uncorrected Reading			Correction Factor	Corrected Emission Level			Quasi-Peak Limit	Quasi-Peak Margin	Average Limit	Average Margin	Pass/Fail
	Peak	Quasi-Peak	Average		Peak	Quasi-Peak	Average					
MHz	dBuV	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dBuV	dB	
0.156	67.20	56.05	28.92	-2.05	65.16	54.01	26.88	65.67	11.66	55.67	28.79	Pass
0.164	65.80	55.44	27.67	-1.91	63.89	53.53	25.76	65.26	11.73	55.26	29.50	Pass
0.171	64.10	53.74	25.93	-1.79	62.31	51.95	24.14	64.90	12.95	54.90	30.76	Pass
0.187	62.10	52.23	22.99	-1.58	60.53	50.66	21.41	64.15	13.50	54.15	32.74	Pass
0.196	61.40	50.56	22.33	-1.49	59.91	49.07	20.84	63.80	14.73	53.80	32.96	Pass
0.324	50.20	40.38	9.70	-0.74	49.46	39.64	8.96	59.60	19.96	49.60	40.64	Pass
0.335	51.80	42.23	37.43	-0.72	51.08	41.51	36.72	59.32	17.81	49.32	12.61	Pass
0.474	43.10	34.39	30.65	-0.50	42.60	33.89	30.15	56.44	22.55	46.44	16.29	Pass
11.999	43.70	42.17	40.97	-0.34	43.36	41.83	40.63	60.00	18.17	50.00	9.37	Pass
23.949	33.30	15.72	9.56	-0.44	32.86	15.28	9.12	60.00	44.72	50.00	40.88	Pass

Corrected Emission Level (dBuV) = Uncorrected Reading (dBuV) + Correction Factor (dB)
Margin (dB) = Limit (dBuV) - Corrected Emission Level (dBuV)

Calculations

CF = Correction Factor
Emission Level = Measured Level + correction factor
Margin = Limit – Emission Level

J.10. PASS/FAIL

In reference to the results outlined in J.9 the DUT passes the requirements as stated in the reference standards as follows:

The RF voltage measured in reference to ground on each of the power line conductors does not exceed the limits as outline in FCC 15.207.

The emission measured on Line 1 with the least margin to the limit measured with a QP detector at 0.159 MHz and a margin of 11.51 dB. The emission measured on Line 2 with the least margin to the limit was measured with a QP detector at 0.156 MHz with a margin of 11.66 dB.

J.11. SIGN-OFF

I attest to the accuracy of the data. All measurements reported herein were performed by me and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements.

Russell Pipe
Senior Compliance Technologist
Celltech Labs Inc.

16Nov05
Date

END OF DOCUMENT