

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

EMC TEST REPORT
FOR THE
ITRONIX RUGGED LAPTOP PC MODEL: IX260PNLA580BT
WITH THE
SIERRA WIRELESS AIRCARD 580 DUAL-BAND CDMA PCMCIA MODEM

TRSN 022305KBC-T616-M24C
Issue 1.0

Celltech Compliance Testing & Engineering Lab
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April 28, 2005

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DECLARATION OF COMPLIANCE

Test Lab CELLTECH LABS INC. Testing and Engineering Services 1955 Moss Court Kelowna, B.C. Canada V1Y 9L3 Phone: 250-448-7047 Fax: 250-448-7048 e-mail: info@celltechlabs.com web site: www.celltechlabs.com		Applicant Information ITRONIX CORPORATION 801 South Stevens Street Spokane, WA 99204 United States	
laboratory Registration No.(s):		FCC: 714830	IC: IC 3874
Rule Part(s):	FCC:	Dual Band CDMA	§2; §22H; §24E
	IC:	Dual Band CDMA	RSS-133 Issue 2 Revision 1, RSS-132 Issue 1 (Provisional)
Device Classification:	FCC:	Dual Band CDMA	- PCS Licensed Transmitter (PCB)
		Dual Band CDMA	- 800 MHz Cellular Telephones Employing New Technologies - 2 GHz Personal Communication Services
Device Identification:	FCC ID: KBCIX260PNLA580BT	IC ID: 1943A-IX260Pf	
DUT Description:			
Model:	IX260PNLA580BT		
Device Description:	Rugged Laptop PC with internal transmitter		
Internal Transmitter:	Sierra Wireless AirCard 580 Dual-Band CDMA PCMCIA Modem		
Tx Frequency Range(s):	Dual Band CDMA	Cellular	824.7 - 848.31 MHz
		PCS	1851.25 - 1908.75 MHz
Max. RF Output Power:	Dual Band CDMA	Cellular	+23.61 dBm (Conducted)
		PCS	+25.07 dBm (Conducted)
Modulation Type(s):	Dual Band CDMA	QPSK	
Power Source(s):	90 Watt AC Power Adapter (Model: ADP-90AB)		
	11.1 V Lithium-ion Battery, 6.0 Ah (Model: A2121-2)		
	12 V Vehicle Battery (for Vehicle Cradle)		

This wireless mobile 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 Parts 2, 22H, 24E, Industry Canada RSS-132 Issue 1 (Provisional), RSS 133 Issue 2 Revision 1; and ANSI TIA/EIA-603-C-2004.

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.

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Russell Pipe
Senior Compliance Technologist
Celltech Labs Inc.



Duane M. Friesen
EMC Manager
Celltech Labs Inc.



Applicant:	Itronix Corporation	FCC ID:	KBCIX260PNLA580BT	IC ID:	1943A-IX260Pf	
Rugged Laptop PC with Sierra Wireless AirCard 580 Dual-Band CDMA Modem			Model:	IX260PNLA580BT		
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TEST SUMMARY						
Referenced Standard: FCC CFR Title 47 Part 2, 22H						
Appendix	Test Description	Procedure Reference	Limit Reference	Test Start Date	Test End Date	Result
B	Conducted RF Output Power	ANSI/TIA/EIA-603-C, §2.1046 (a)	none	30Mar05	30Mar05	na
C	Cellular CDMA Occupied Bandwidth and Block-Edge	§2.1049 (h), §22.917 (b)	§22.905, §22.917 (a)	30Mar05	30Mar05	Pass
D	Cellular CDMA Spurious Emissions at Antenna Port	ANSI/TIA/EIA-603-C, §2.1051 (h)	§22.917 (a)	30Mar05	30Mar05	Pass
E	Cellular CDMA Frequency Stability / Temperature Variation	ANSI/TIA/EIA-603-C, §2.1055 (a) (1)	§22.355	na	na	Pass*
Referenced Standard: FCC CFR Title 47 Part 2, 24E						
B	Conducted RF Output Power	ANSI/TIA/EIA-603-C, §2.1046 (a)	none	30Mar05	30Mar05	na
F	PCS CDMA Occupied Bandwidth and Block-Edge	§2.1049 (h), §24.232 (b)	§24.229, §24.232(a)	30Mar05	30Mar05	Pass
G	PCS CDMA Spurious Emissions at Antenna Port	ANSI/TIA/EIA-603-C, §2.1051 (h)	§24.232(a)	30Mar05	30Mar05	Pass
H	PCS CDMA Frequency Stability / Temperature Variation	ANSI/TIA/EIA-603-C, §2.1055 (a) (1)	§24.235	na	na	Pass*
Referenced Standard: IC RSS-132						
B	Conducted RF Output Power	ANSI/TIA/EIA-603-C, §5.1.3	SRSP-503 §5.1.3	30Mar05	30Mar05	Pass
C	Cellular CDMA Occupied Bandwidth and Block-Edge	ANSI/TIA/EIA-603-C, §6.5	§6.5	30Mar05	30Mar05	Pass
D	Cellular CDMA Spurious Emissions at Antenna Port	ANSI/TIA/EIA-603-C, §6.5	§6.5	30Mar05	30Mar05	Pass
E	Cellular CDMA Frequency Stability / Temperature Variation	ANSI/TIA/EIA-603-C, §6.3	§6.3	na	na	Pass*
I	Receiver Spurious Emissions	ANSI/TIA/EIA-603-C, §6.6	§6.6 (b)	30Mar05	30Mar05	Pass
Referenced Standard: IC RSS-133						
B	Conducted RF Output Power	ANSI/TIA/EIA-603-C, §6.2	§6.2	30Mar05	30Mar05	Pass
F	PCS CDMA Occupied Bandwidth and Block-Edge	ANSI/TIA/EIA-603-C, §6.3	§6.3	30Mar05	30Mar05	Pass
G	PCS CDMA Spurious Emissions at Antenna Port	ANSI/TIA/EIA-603-C, §6.3	§6.3	30Mar05	30Mar05	Pass
H	PCS CDMA Frequency Stability / Temperature Variation	ANSI/TIA/EIA-603-C, §7	§7	na	na	Pass*
J	Receiver Spurious Emissions	ANSI/TIA/EIA-603-C, §9	§9	30Mar05	30Mar05	Pass

*Pass/Fail referenced to PCTEST measurement report serial no. 22/24.221125616.PNF.

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REVISION LOG

Issue	Description	Implemented By	Implementation Date
1.0	Initial Release	Jon Hughes	28Apr05

SIGNATORIES

Prepared By:		April 28, 2005
Name/Title	Duane M. Friesen, C.E.T. / EMC Manager	Date
Approved By:		April 28, 2005
Name/Title	Jon Hughes / General Manager	Date

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1.0 SCOPE

This report outlines the measurements made and results collected during electromagnetic emissions testing of the Sierra Wireless AirCard 580 Dual-Band CDMA PCMCIA Modem. The Dual-Band CDMA Modem has an onboard antenna and an RF output port. When utilized, the RF output port disconnects the transmitter from the onboard antenna. For the purpose of this report, only the RF output port was investigated based on the Itronix IX260+ Rugged Laptop PC does not utilize the onboard antenna, but uses an external dipole antenna on the LCD display connected to the modem RF output port via RF cable. The measurement results were applied against the applicable 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 2, 22 Subpart H, and 24 Subpart E; and Industry Canada Radio Standards Specifications RSS-132 Issue 1 (Provisional) and RSS-133 Issue 2 Revision 1.

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
ANSI/TIA/EIA-603-C:2004	Land Mobile FM or PM Communication Equipment Measurement and Performance Standards
CFR Title 47 Part 2:2004	Code of Federal Regulations Title 47: Telecommunication Part 2: Frequency Allocations and Radio Treaty Matters; General Rules and Regulations Part 22: Public Mobile Services Part 24: Personal Communication Services
IC Spectrum Management & Telecommunications Policy	Radio Standards Specification RSS-102 Issue 1 (Provisional) - Evaluation Procedure for Mobile and Portable Radio Transmitters with respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields RSS-132 Issue 1 (Provisional) - 800 MHz Cellular Telephones Employing New Technologies RSS-133 Issue 2, Revision 1 - Personal Communication Services
PCTEST Measurement Report	Serial Number: 22/24.221125616.PNF

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3.0 TERMS AND DEFINITIONS

AVG	Average
CDMA	Code Division Multiple Access
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 (-26 dBc)
EIRP	Effective Isotropic Radiated Power
ERP	Effective Radiated Power
EMC	Electromagnetic Compatibility
FCC	Federal Communication Commission
FHSS	Frequency Hopping Spread Spectrum
HP	Hewlett Packard
HPF	High Pass Filter
Hpol	Horizontal Polarization
Hz	Hertz
IC	Industry Canada
IX260+	Itronix Model IX260PNLA580BT Laptop PC
kHz	kilohertz
LNA	Low Noise Amplifier
m	meter
MHz	Megahertz
Mbps	megabits per second
na	not applicable
n/a	not available
nW	nanowatt
OBW	Occupied Bandwidth (99%)
OET	Office of Engineering
PCS	Personal Communication System
PK	Peak
Ppm	Parts per million
PPSD	Peak Power Spectral Density
QP	Quasi-peak
RBW	Resolution Bandwidth
R&S	Rohde & Schwarz
RSS	Radio Standard Specification
SA	Spectrum Analyzer
VBW	Video Bandwidth
Vpol	Vertical Polarization
WLAN	Wireless Local Area Network

4.0 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 with the requirements set forth in ANSI C63.4 and are filed and listed with the FCC under Registration Number 714830 and Industry Canada under File Number IC 3874.

Applicant:	Itronix Corporation	FCC ID:	KBCIX260PNLA580BT	IC ID:	1943A-IX260Pf	
Rugged Laptop PC with Sierra Wireless AirCard 580 Dual-Band CDMA Modem				Model:	IX260PNLA580BT	
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5.0 GENERAL INFORMATION

5.1 Applicant Information

Company Name:	Itronix Corporation
Address:	801 South Stevens Street
	Spokane, WA 99204
	United States

5.2 DUT Description

The DUT consisted of the Sierra Wireless AirCard 580 Dual-Band CDMA PCMCIA Modem installed in the Itronix IX260+ Rugged Laptop PC. The Laptop PC supplied the modem with power and control signals. Photographs of the DUT placement and construction are shown in Appendix A.

Device:	Dual-Band PCS/Cellular CDMA PCMCIA Modem	
Model:	Sierra Wireless AirCard 580	
Serial Number:	60209FB5	
Rule Part(s):	FCC:	§1.1310 Table 1(b); §2.1091; §22.913; §22.917; §24.232(b); §24.238
	IC:	RSS-132 Issue 1 (Provisional); RSS-133 Issue 2
Classification(s):	FCC:	PCS Licensed Transmitter (PCB)
	IC:	800 MHz Cellular Telephones employing New Technologies (RSS-132)
		2 GHz Personal Communication Services (RSS-133)
Power Source:	Powered from the internal PC power bus	

Device:	IX260+ Rugged Laptop PC		
Model:	IX260PNLA580BT		
Serial Number(s):	ZZGEG4196ZZ6480		
Identifier(s):	FCC ID:	KBCIX260PNLA580BT	IC ID: 1943A-IX260Pf
Power Source:	Delta Electronics Model ADP-90AB Rev B 90 Watt AC-DC power supply		

5.3 Cable Descriptions

ROUTING		Length	Model	Terminations		Shield Type	Shield Termination		Suppression
From	To	m		End 1	End 2		End 1	End 2	
na									

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5.4 Support Equipment

The following equipment was used in support of the DUT.

Co-located Support Equipment List		
Manufacturer	Model	Description
na		

5.5 Clock Frequencies

5.5.1 DUT Clock Frequencies

Device:	Dual-Band PCS/Cellular CDMA PCMCIA Modem
Clocks:	n/a

5.5.2 Co-Located Clock Frequencies

Device:	Rugged Laptop PC
Clocks:	1.6 GHz processor

5.6 Mode(s) of Operation Tested

5.6.1 Dual-Band CDMA Modem

Customer supplied software was used to set the CDMA Modem to the appropriate channel and power level for the specific measurement. Measurements were made with the CDMA modem set to each of low, mid, and high channel in each band, or on a mid channel, as applicable for the rule part being evaluated. The following settings were used for each channel.

5.6.1.1 Cellular CDMA

TX Frequency Range:	824.7 - 848.31 MHz Ch. 1013 (824.700 MHz) (low), Ch. 384 (836.52 MHz) (mid) & Ch. 777 (848.310 MHz) (high) measured unless otherwise noted
Software Power Gain Settings:	Set by manufacturer software or CDMA test set communications for "all ups"
Modulation Type(s):	QPSK

5.6.1.2 PCS CDMA

TX Frequency Range:	1851.25 - 1908.75 MHz Ch. 25 (1851.25 MHz) (low), Ch 600 (1880 MHz) (mid) & Ch. 1175 (1908.75 MHz) (high) measured unless otherwise noted
Software Power Gain Settings:	Set by manufacturer software or CDMA test set communications for "all ups"
Modulation Type(s):	QPSK

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5.6.2 DUT Exercising Software Description

The DUT was configured and exercised during conducted testing using customer supplied Directed Test Version 2.8 test software, that allowed an operator to place the Dual-Band CDMA modem in an “all ups” mode. The modem manufacturer described this mode as one in which the modem transmitted at its maximum power level.

5.7 Configuration Description

The DUT was configured, as described by the client as being representative of what would be delivered to a final customer. More specific details may be included in each appendix.

5.7.1 Configuration Justification

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

6.0 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 within the specified limits as defined. The pass/fail statements made in this report only apply to the unit tested.

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Appendix A - Photographs

A.1. DUT PHOTOGRAPHS

Photograph A.1-1 - Dual-Band CDMA PCMCIA Modem Card



Photograph A.1-2 - CDMA Modem installed in PC



Photograph A.1-3 - Sierra Wireless AirCard 580 CDMA Modem



Antenna RF Port (note: modem manufacturer's factory antenna is disabled when RF cable is connected to RF port)

Applicant:	Itronix Corporation	FCC ID:	KBCIX260PNLA580BT	IC ID:	1943A-IX260Pf	
Rugged Laptop PC with Sierra Wireless AirCard 580 Dual-Band CDMA Modem				Model:	IX260PNLA580BT	
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Appendix B - CDMA Conducted RF Output Power Measurement

B.1. REFERENCES

Normative Reference Standard	FCC CFR 47 §2.1046
Procedure Reference	ANSI/TIA/EIA-603-B , FCC CFR 47 §2.1046 (a)

B.2. LIMITS

	None - reference data
--	-----------------------

B.3. ENVIRONMENTAL CONDITIONS

Temperature	25.2 +/- 2 °C
Humidity	35 +/- 2 %
Barometric Pressure	96.34 kPa

B.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00008	Gigatronics	8652A	Power Meter	30Apr04	30Apr05
00011	Gigatronics	80701A	Power Sensor	08Oct04	08Oct05
00107	HP	8491C	Attenuator	n/a	n/a

*Cable and attenuator verified with power meter prior to use

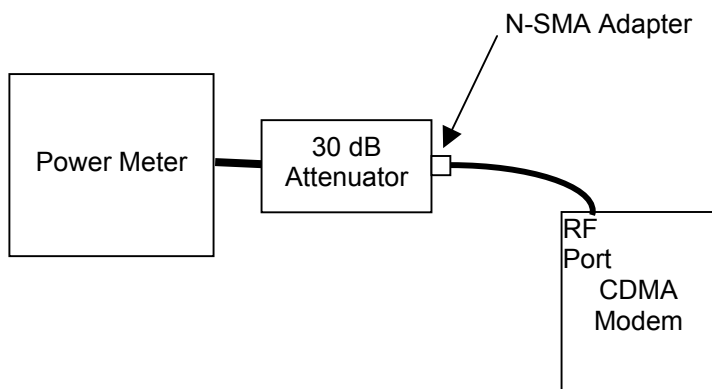
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B.5. MEASUREMENT EQUIPMENT SETUP

Measurement Equipment Connections	The equipment was connected as shown in the setup drawing in B.6.
Measurement Equipment Settings	Power Meter Settings: Mode - MAP Frequency compensation set for carrier frequency Offset set appropriately to compensate for any attenuator or cable losses
Measurement Procedure	The RF conducted power levels for both PCS and cellular bands were measured at the DUT antenna connector port using a Gigatronics 8652A Universal Power Meter in mean average power mode. An offset was entered into the power meter to correct for the losses of the attenuator and cable installed between the output port and the power sensor input. The DUT test software was used to set it to transmit in the CDMA "always up" power control mode.

B.6. SETUP DRAWING

Figure B.6-1 - Setup Drawing



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B.7. DUT OPERATING DESCRIPTION

Power measurements were made of each channel in both the cellular and PCS bands, with the CDMA modem set appropriately as described in section 5.7.

B.8. TEST RESULTS

Mode	Channel	Frequency	Conducted Power
Cellular CDMA	1013	824.70 MHz	+23.41 dBm
	384	836.52 MHz	+23.39 dBm
	777	848.31 MHz	+23.61 dBm
PCS CDMA	25	1851.25 MHz	+24.41 dBm
	600	1880.00 MHz	+25.07 dBm
	1175	1908.75 MHz	+24.62 dBm

B.9. PASS/FAIL

There is no modular pass/fail criterion for this measurement. Applicable limits in ERP/EIRP are in place once the modem is connected to an antenna. The application of these limits is covered in the reports issued for the specific installation.

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.



Russell Pipe
Senior Compliance Technologist
Celltech Labs Inc.

30Mar05
Date

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Appendix C - Cellular CDMA Occupied Bandwidth and Block-Edge Measurement

C.1. REFERENCES

Normative Reference Standard	FCC CFR 47 §22.917 (a)
Procedure Reference	FCC CFR 47 §2.1049 (h), §22.917 (b)

C.2. LIMITS

FCC CFR 47 §22.917	(a) Out of Band Emissions. The mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) on any frequency twice or more than twice the fundamental frequency by: at least $43 + 10 \log P$ dB
--------------------	--

*Referenced to FCC CFR 47 §22.905 Channel Assignment for:

Block A ... 824.040 MHz to 834.990 MHz

Block B ... 846.510 MHz to 848.970 MHz

C.3. ENVIRONMENTAL CONDITIONS

Temperature	25.2 +/- 2 °C
Humidity	35 +/- 2 %
Barometric Pressure	96.34 kPa

C.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00015	Agilent	E4408B	Spectrum Analyzer	24Jan05	24Jan06
00008	Gigatronics	8652A	Power Meter	30Apr04	30Apr05
00011	Gigatronics	80701A	Power Sensor	08Oct04	08Oct05
00107	HP	8491C	Attenuator	n/a	n/a

*Cable and attenuator verified with power meter prior to use

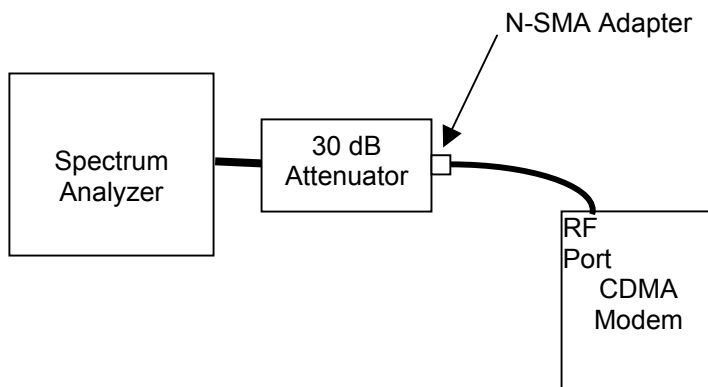
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Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

C.5. MEASUREMENT EQUIPMENT SETUP

Measurement Equipment Connections	The equipment was connected as shown in the setup drawing in C.6.
Measurement Equipment Settings	Spectrum Analyzer Settings: Detector: Peak Resolution Bandwidth: 30 kHz or 10 kHz* Video Bandwidth: 30 kHz Offset: Set to compensate for losses in through the 30 dB attenuator and attachment RF cable. * Pursuant to §22.917 (b), the RBW used may be less than 1% of the EBW and the resulting emission level corrected with a factor equal to $10 * \log (1\%EBW/RBW)$
Measurement Procedure	The conducted RF emission level was measured using a spectrum analyzer connected to the RF output port through a 30 dB attenuator and RF cable. A power meter was used to determine the loss through the cable and attenuator prior to their use with the spectrum analyzer. This loss was offset with factors applied internally in the analyzer. The DUT test software was used to set the modem to transmit in the CDMA "always up" power control mode, on the channels closest to the edge of the licensed band.

C.6. SETUP DRAWING

Figure C.6-1 - Setup Drawing



C.7. DUT OPERATING DESCRIPTION

Occupied Bandwidth and Block-Edge measurements were made of the upper and lower channels within the cellular band, with the CDMA modem set appropriately as described in section 5.7.

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

C.8. TEST RESULTS

Figure C.8-1 - Channel 1013 (824.7 MHz) Lower Cellular CDMA Occupied Bandwidth

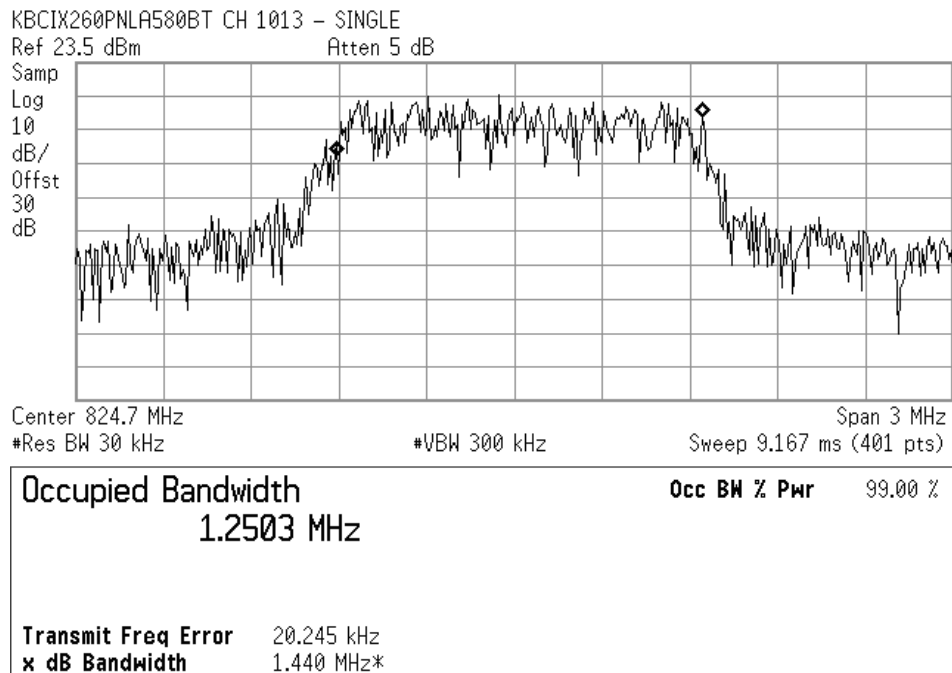
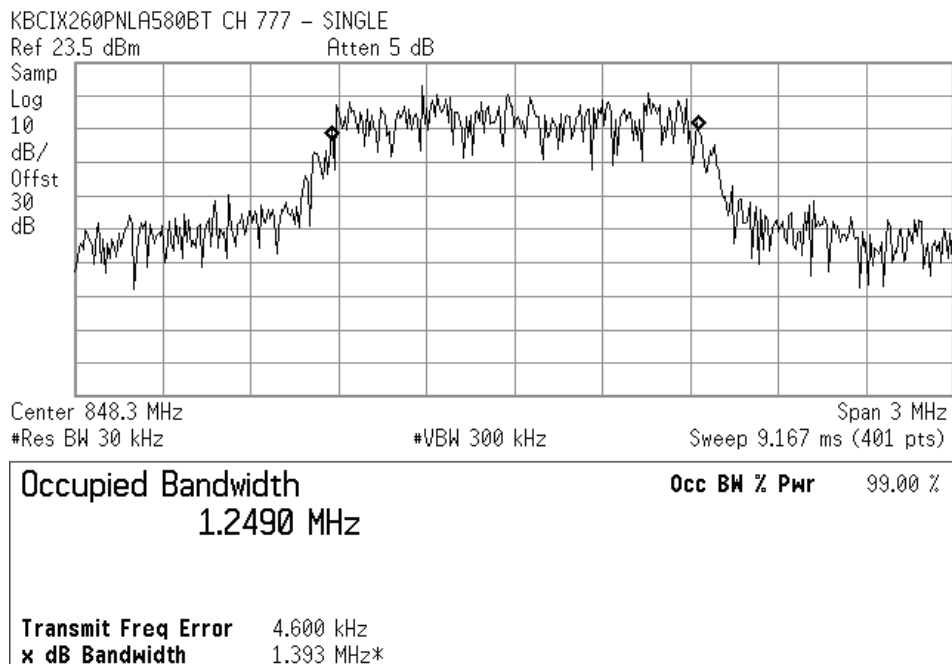


Figure C.8-2 - Channel 777 (848.31 MHz) Upper Cellular CDMA Occupied Bandwidth



Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

Figure C.8-3 - Channel 1013 (824.7 MHz) Lower Cellular CDMA Band-edge at 824.0 MHz

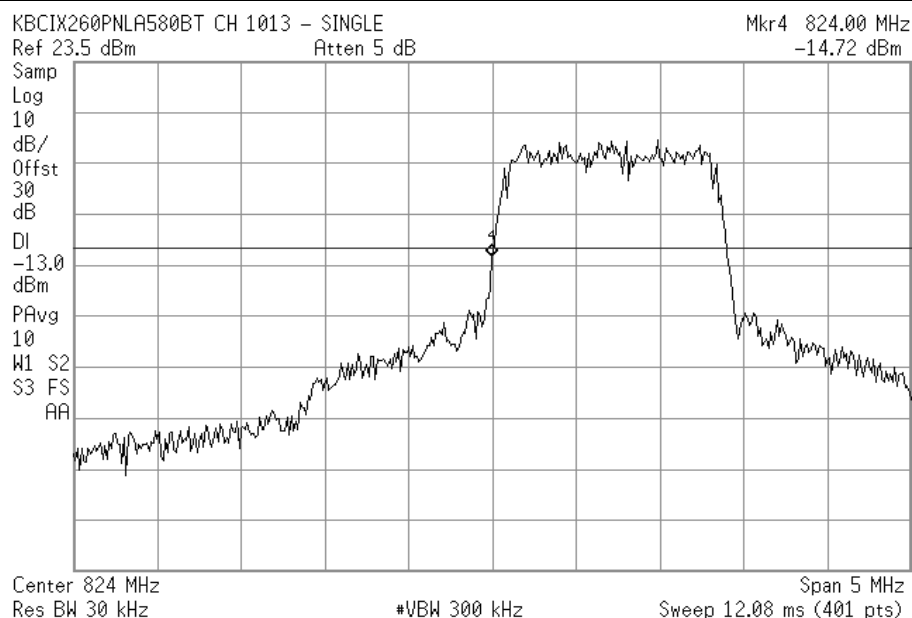


Figure C.8-4 - Channel 777 (848.31 MHz) Upper Cellular CDMA Band-edge at 849.0 MHz



Emission BW correction of $10 \cdot \log((1\% \cdot \text{EBW}) / \text{RBW})$ was added to the block-edge emission level
 BW Correction = $10 \cdot \log((1\% \cdot 1393 \text{ kHz}) / 10 \text{ kHz}) = 1.44 \text{ dB}$

Corrected Emission = $-16.56 \text{ dB} + 1.44 \text{ dB} = -15.12 \text{ dB}$

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

C.8.1. Result Summary

Channel	Center Frequency	Emission Bandwidth	Occupied Bandwidth	Band-edge Level	Band-edge Limit	Pass/Fail
	(MHz)	(MHz)	(MHz)	(dBm)	(dBm)	
1013	824.700	1.440	1.2503	-14.72	-13	Pass
777	848.310	1.393	1.2490	-15.12 (corrected)	-13	Pass

C.9. PASS/FAIL

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

FCC CFR 4 §22.917(a) Out of Band Emissions. The mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) on any frequency twice or more than twice the fundamental frequency by: at least $43 + 10 \log P$ dB.

The results set forth in this section meet the requirement with a maximum out-of-band emission, within 1 MHz of the edge, with a level of -14.72 dB at the lower block-edge and -15.12 dB at the upper block-edge.

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.



Russell Pipe
Senior Compliance Technologist
Celltech Labs Inc.

30Mar05

Date

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

Appendix D - Cellular Spurious Emissions at the Antenna Port Measurement

D.1. REFERENCES

Normative Reference Standard	FCC CFR 47 §22.917 (a)
Procedure Reference	FCC CFR 47 §22.917 (b)

D.2. LIMITS

FCC CFR 47 §2.917	(a) Out of Band Emissions. The mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) on any frequency twice or more than twice the fundamental frequency by: at least $43 + 10 \log P$ dB
-------------------	--

D.3. ENVIRONMENTAL CONDITIONS

Temperature	25.2 +/- 2 °C
Humidity	35 +/- 2 %
Barometric Pressure	96.34 kPa

D.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00015	Agilent	E4408B	Spectrum Analyzer	24Jan05	24Jan06
00008	Gigatronics	8652A	Power Meter	30Apr04	30Apr05
00011	Gigatronics	80701A	Power Sensor	08Oct04	08Oct05
00107	HP	8491C	Attenuator	n/a	n/a

*Cable and attenuator verified with power meter prior to use

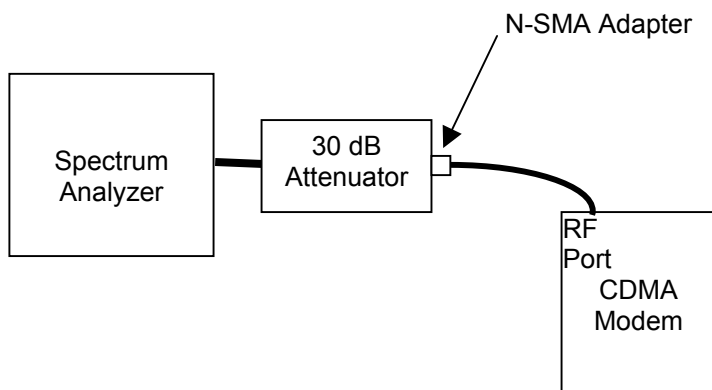
Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

D.5. MEASUREMENT EQUIPMENT SETUP

Measurement Equipment Connections	The equipment was connected as shown in the setup drawing in D.6.
Measurement Equipment Settings	Spectrum Analyzer Settings: Detector: Peak Resolution Bandwidth: 1 MHz* Video Bandwidth: 1 MHz Offset: Set to compensate for losses in through the 30 dB attenuator and attachment RF cable. * Pursuant to §22.917 (b), a RBW of 100 kHz or greater is to be employed.
Measurement Procedure	The conducted RF spurious emission level was measured using a spectrum analyzer connected to the RF output port through a 30 dB attenuator and RF cable. A power meter was used to determine the loss through the cable and attenuator prior to their use with the spectrum analyzer. This loss was offset with factors applied internally in the analyzer. To improve accuracy of measurement over the frequency range of 10 MHz to 10 GHz (10th harmonic of the carrier), sub-sub ranges were measured and the resulting spectrum analyzer displays recorded. The DUT test software was used to set the modem to transmit in the CDMA “always up” power control mode on each of the low, mid and high channels.

D.6. SETUP DRAWING

Figure D.6-1 - Setup Drawing



D.7. DUT OPERATING DESCRIPTION

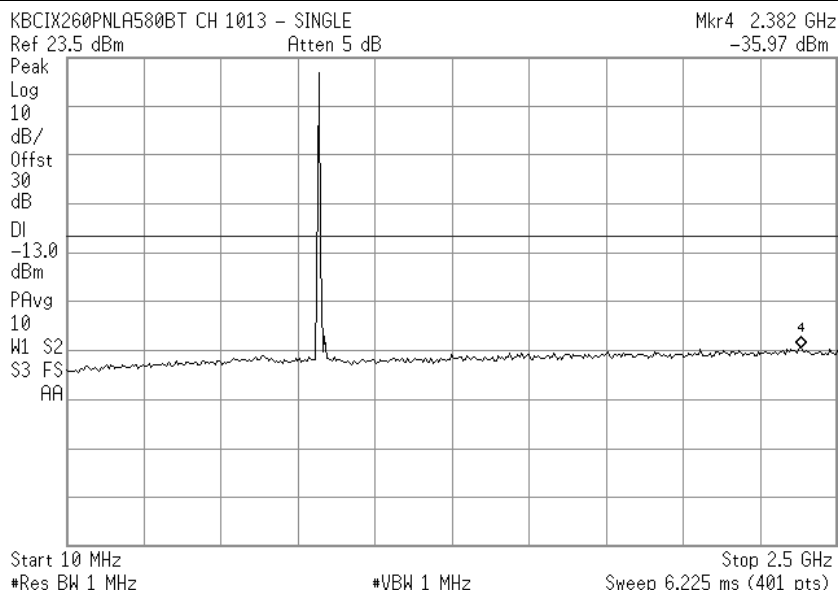
Spurious emission measurements were made of the low, mid and high channels within the cellular band, with the CDMA modem set appropriately as described in section 5.7.

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

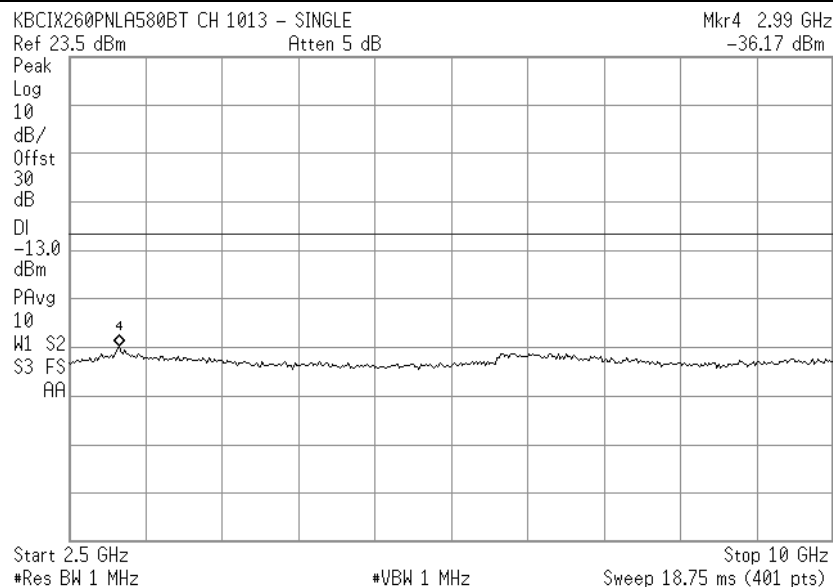
D.8. TEST RESULTS

D.8.1. Spurious Emissions

D.8.1.1 Spurious Emissions - Channel 1013 (Low) (10 MHz - 2.5 GHz Measurement Band)

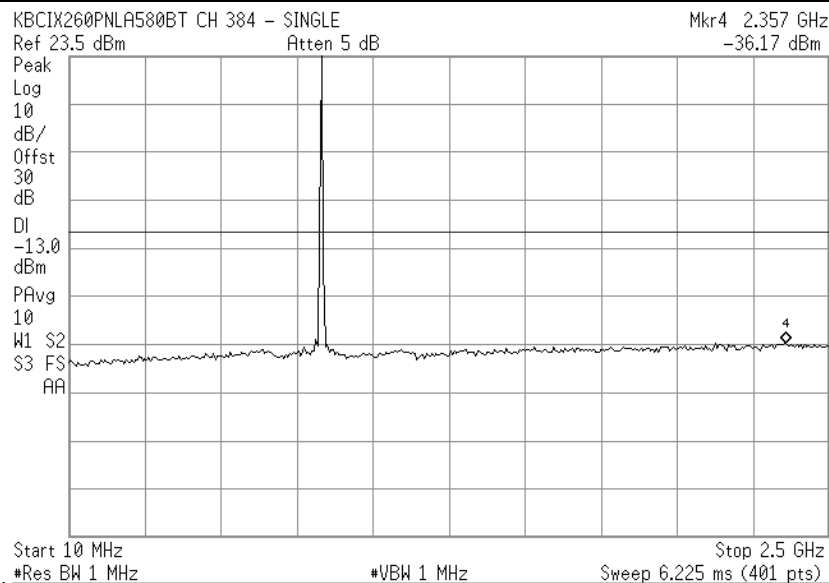


D.8.1.2 Spurious Emissions - Channel 1013 (Low) (2.5 GHz - 10 GHz Measurement Band)

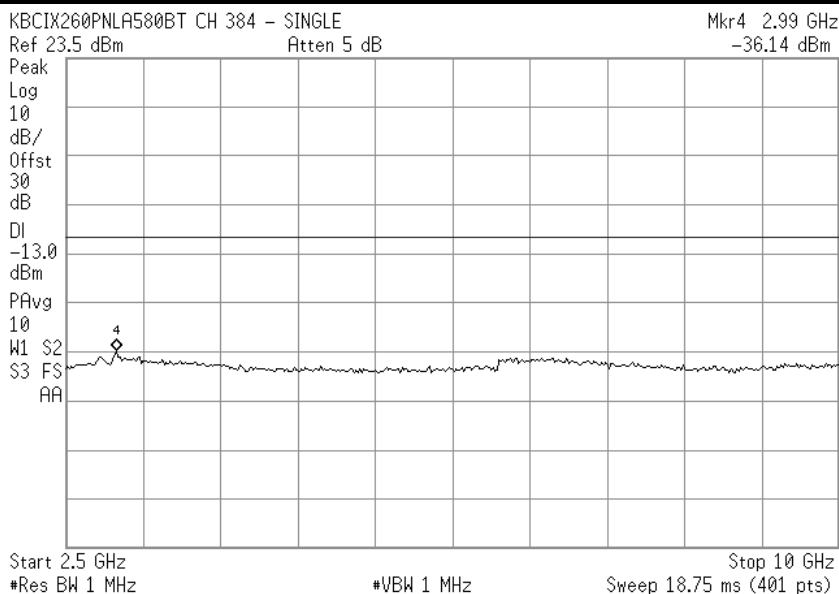


Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

D.8.1.3 Spurious Emissions - Channel 384 (Mid) (10 MHz - 2.5 GHz Measurement Band)

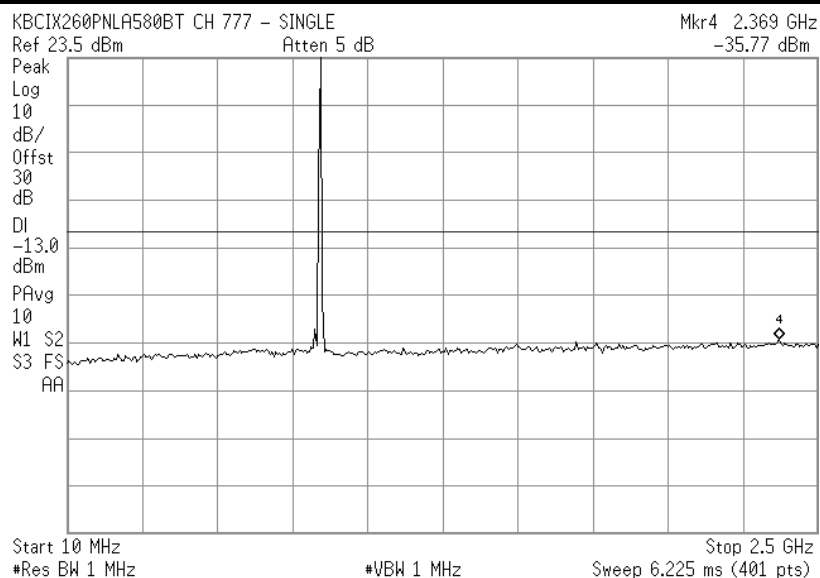


D.8.1.4 Spurious Emissions - Channel 384 (Mid) (2.5 GHz - 10 GHz Measurement Band)

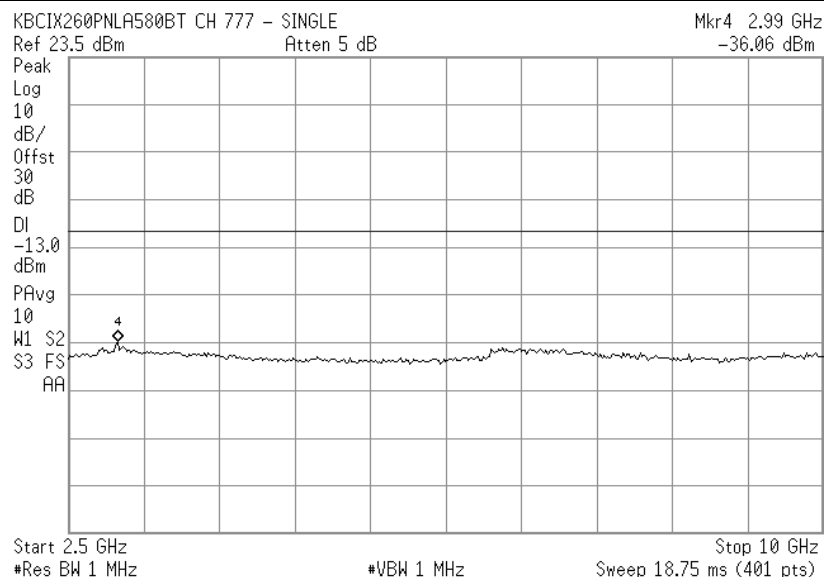


Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

D.8.1.5 Spurious Emissions - Channel 777 (High) (10 MHz - 2.5 GHz Measurement Band)



D.8.1.6 Spurious Emissions - Channel 777 (High) (2.5 GHz - 10 GHz Measurement Band)



Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

D.8.2. Result Summary

Channel	Center Frequency (MHz)	Maximum Emission between 10 MHz and 2.5 GHz		Maximum Emission between 2.5 GHz and 10 GHz		Limit (dBm)	Pass/Fail
		Frequency	Level	Frequency	Level		
		(MHz)	(dBm)	(MHz)	(dBm)		
1013	824.70	2382	-35.97	2990	-36.17	-13	Pass
364	836.52	2357	-36.17	2990	-36.14	-13	Pass
777	848.31	2369	-35.77	2990	-36.06	-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.

FCC CFR 4 §22.917(a) Out of Band Emissions. The mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) on any frequency twice or more than twice the fundamental frequency by: at least $43 + 10 \log P$ dB.

The results set forth in this section meet the requirement for out-of-band emission, greater than 1 MHz from the edge of the licensed band, with a maximum level of -35.77 dB measured at 2.382 GHz with the modem transmitting on Channel 777.

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.



Russell Pipe
Senior Compliance Technologist
Celltech Labs Inc.

30Mar05
Date

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

Appendix E - Cellular Frequency Stability / Temperature Variation Measurement

E.1. REFERENCES

Normative Reference Standard	FCC CFR 47 §22.355
Procedure Reference	ANSI/TIA/EIA-603-C, FCC CFR 47 §2.1055 (a) (1)

E.2. LIMITS

FCC CFR 47 §22.355	Except as otherwise provided in this part, the carrier frequency of each transmitter in the Public Mobile Service must be maintained within the tolerances given on Table C-1 of this section. Table C-1 – Frequency Tolerance for Transmitters in the Public Mobile Services:821 MHz to 896 MHz ... Mobile ≤ 3 watts2.5 ppm
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* Data presented in this section are referenced to the PCTEST measurement report serial no. 22/24.221125616.PNF section 8.1

E.3. ENVIRONMENTAL CONDITIONS

Temperature	n/a
Humidity	n/a
Barometric Pressure	n/a

E.4. EQUIPMENT LIST

* DATA PRESENTED IN THIS SECTION ARE REFERENCED TO THE PCTEST MEASUREMENT REPORT S/N 22/24.221125616.PNF SECTION 8.1

ID	ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
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* PCTEST measurement report serial no. 22/24.221125616.PNF section 10.1

E.5. MEASUREMENT EQUIPMENT SETUP

MEASUREMENT EQUIPMENT CONNECTIONS	* PCTEST measurement report serial no. 22/24.221125616.PNF section 10.1
MEASUREMENT EQUIPMENT SETTINGS	* PCTEST measurement report serial no. 22/24.221125616.PNF section 10.1

E.6. SETUP DRAWING

n/a

E.7. SETUP PHOTOGRAPHS

n/a

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

E.8. DUT OPERATING DESCRIPTION

na

E.9. TEST RESULTS

E.9.1. Frequency Stability Data - Channel 384 (mid)

OPERATING FREQUENCY: 836,520,003 Hz
CHANNEL: 384
REFERENCE VOLTAGE: 3.7 VDC
DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQ. (Hz)	Deviation (%)
100 %	3.70	+ 20 (Ref)	836,520,003	0.000000
100 %		- 30	836,519,903	0.000012
100 %		- 20	836,519,911	0.000011
100 %		- 10	836,519,919	0.000010
100 %		0	836,519,944	0.000007
100 %		+ 10	836,519,953	0.000006
100 %		+ 20	836,520,003	0.000000
100 %		+ 25	836,519,970	0.000004
100 %		+ 30	836,519,936	0.000008
100 %		+ 40	836,520,078	-0.000009
100 %		+ 50	836,520,087	-0.000010
100 %		+ 60	836,520,095	-0.000011
85 %	3.17	+ 20	836,520,003	0.000000
115 %	4.26	+ 20	836,520,003	0.000000
BATT. ENDPOINT	2.97	+ 20	836,520,003	0.000000

* Original data in PCTEST measurement report serial no. 22/24.221125616.PNF section 8.1

Maximum deviations are +0.000012% & -0.000011% or +0.12 ppm & -0.11 ppm

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

E.10. PASS/FAIL

In reference to the results outlined in E.9, the PCTEST measurement report states that the DUT passes the requirements as stated in the reference standards.

FCC CFR 4 §22.355 Except as otherwise provided in this part, the carrier frequency of each transmitter in the Public Mobile Service must be maintained within the tolerances given on Table C-1 of this section.
Table C-1 - Frequency Tolerance for Transmitters in the Public Mobile Services:821 MHz to 896 MHz ... Mobile < 3 watts
....2.5 ppm

The results set forth in the PCTEST measurement report indicate the DUT meets the requirement with maximum frequency deviations of +0.12 ppm and -0.11 ppm.

E.11. SIGN-OFF

* Data presented in this section is referenced to the PCTEST measurement report serial no. 22/24.221125616.PNF section 8.1

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

Appendix F - PCS Occupied Bandwidth and Block-Edge Measurement

F.1. REFERENCES

Normative Reference Standard	FCC CFR 47 §24.229, §24.232(a)
Procedure Reference	FCC CFR 47 §2.1049 (h), §24.232 (b)

F.2. LIMITS

FCC CFR 47 §24.232	(a) Out of Band Emissions. The mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) on any frequency twice or more than twice the fundamental frequency by: at least $43 + 10 \log P$ dB
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*Referenced to FCC CFR 47 §2.905 Channel Assignment for:

Block A ... 1850 MHz to 1865 MHz

Block B ... 1870 MHz to 1885 MHz

Block C.... 1895 MHz to 1910 MHz

F.3. ENVIRONMENTAL CONDITIONS

Temperature	25.2 +/- 2 °C
Humidity	35 +/- 2 %
Barometric Pressure	96.34 kPa

F.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00015	Agilent	E4408B	Spectrum Analyzer	24Jan05	24Jan06
00008	Gigatronics	8652A	Power Meter	30Apr04	30Apr05
00011	Gigatronics	80701A	Power Sensor	08Oct04	08Oct05
00107	HP	8491C	Attenuator	n/a	n/a

*Cable and attenuator verified with power meter prior to use

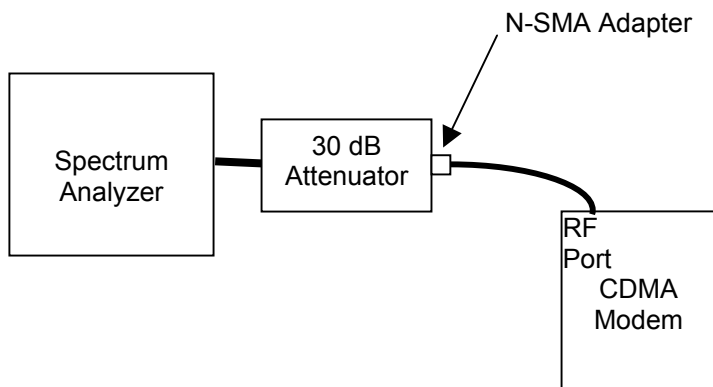
Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

F.5. MEASUREMENT EQUIPMENT SETUP

Measurement Equipment Connections	The equipment was connected as shown in the setup drawing in F.6.
Measurement Equipment Settings	Spectrum Analyzer Settings: Detector: Peak Resolution Bandwidth: 30 kHz or 10 kHz* Video Bandwidth: 30 kHz Offset: Set to compensate for losses in through the 30 dB attenuator and attachment RF cable. * Pursuant to §22.917 (b), the RBW used may be less than 1% of the EBW and the resulting emission level corrected with a factor equal to $10 * \log (1\%EBW/RBW)$
Measurement Procedure	The conducted RF emission level was measured using a spectrum analyzer connected to the RF output port through a 30 dB attenuator and RF cable. A power meter was used to determine the loss through the cable and attenuator prior to their use with the spectrum analyzer. This loss was offset with factors applied internally in the analyzer. The DUT test software was used to set the modem to transmit in the CDMA "always up" power control mode, on the channels closest to the edge of the licensed band.

F.6. SETUP DRAWING

Figure F.6-1 - Setup Drawing



F.7. DUT OPERATING DESCRIPTION

Occupied Bandwidth and Block-Edge measurements were made of the upper and lower channels within the PCS band, with the CDMA modem set appropriately as described in section 5.7.

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

F.8. TEST RESULTS

Figure F.8-1 - Channel 25 (1851.25 MHz) Lower PCS CDMA Occupied Bandwidth

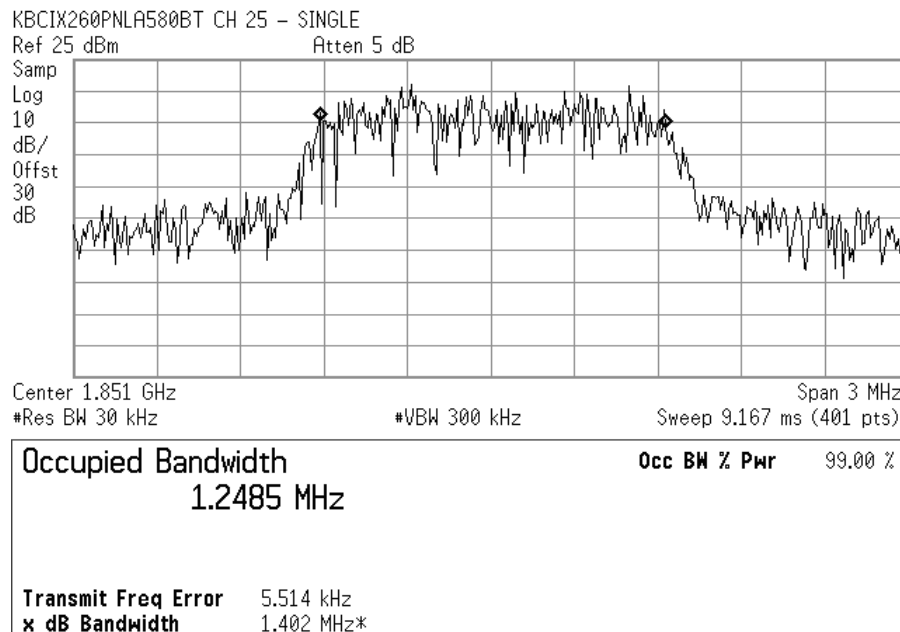
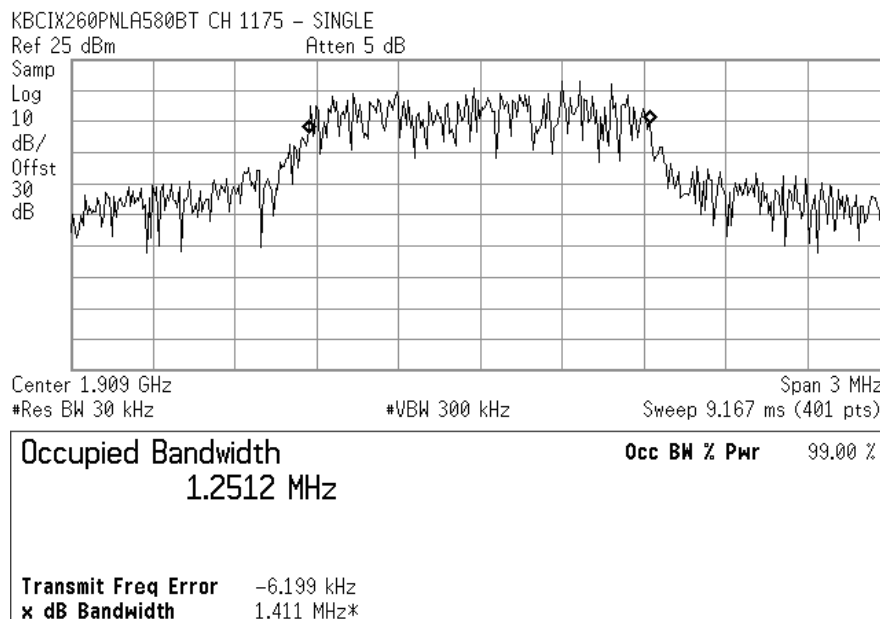


Figure F.8-2 - Channel 1175 (1908.75 MHz) Upper PCS CDMA Occupied Bandwidth



Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

Figure F.8-3 - Channel 25 (1851.25 MHz) Lower PCS CDMA Band-edge

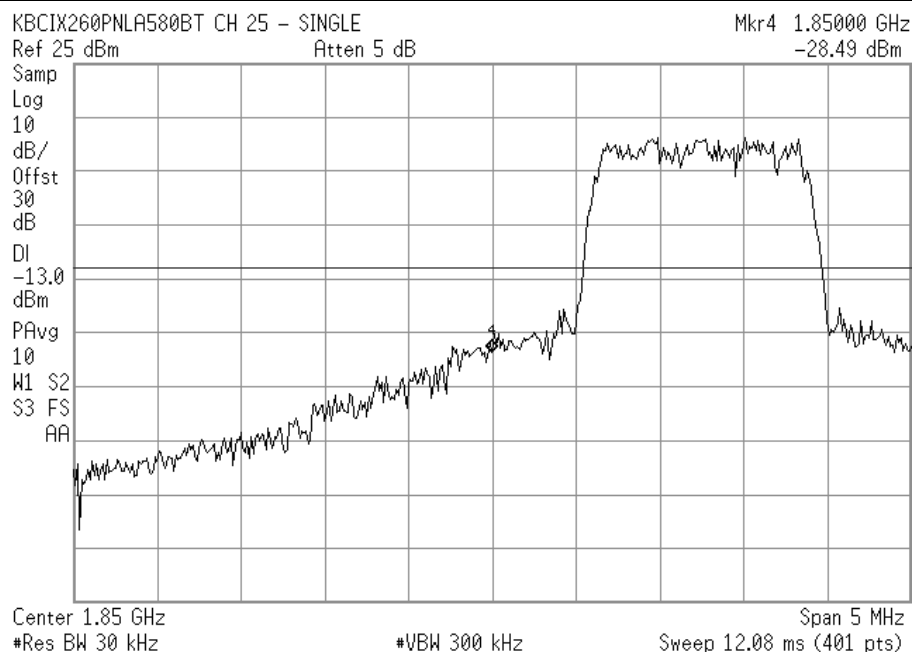
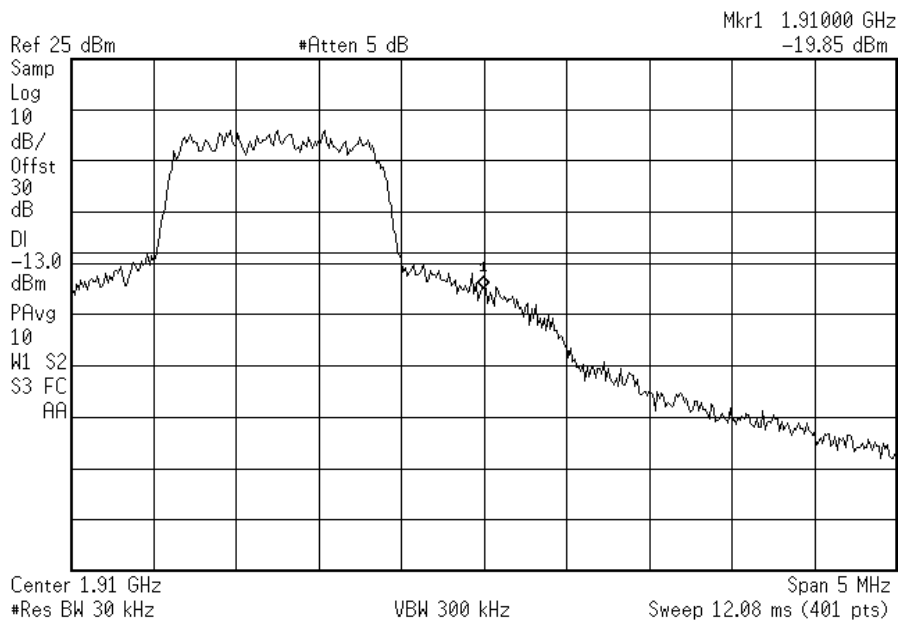


Figure F.8-4 - Channel 1175 (1908.75 MHz) Upper PCS CDMA Band-edge



Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

F.8.1. Result Summary

Channel	Center Frequency (MHz)	Emission Bandwidth (MHz)	Occupied Bandwidth (MHz)	Band-edge Level (dBm)	Band-edge Limit (dBm)	Pass/Fail
25	1851.25	1.402	1.2485	-28.49	-13	Pass
1175	1908.75	1.411	1.2512	-19.85	-13	Pass

F.9. PASS/FAIL

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

FCC CFR 4 §24.232(a) Out of Band Emissions. The mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) on any frequency twice or more than twice the fundamental frequency by: at least $43 + 10 \log P$ dB.

The results set forth in this section meet the requirement with a maximum out-of-band emission, within 1 MHz of the edge, with a level of -28.49 dB at the lower block-edge and -19.85 dB at the upper block-edge.

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.



Russell Pipe
Senior Compliance Technologist
Celltech Labs Inc.

30Mar05

Date

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

Appendix G - PCS Spurious Emissions at the Antenna Port Measurement

G.1. REFERENCES

Normative Reference Standard	FCC CFR 47 §24.232 (a)
Procedure Reference	ANSI/TIA/EIA-603-C, §2.1051 (h)

G.2. LIMITS

FCC CFR 47 §24.232	(a) Out of Band Emissions. The mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) on any frequency twice or more than twice the fundamental frequency by: at least $43 + 10 \log P$ dB
--------------------	--

G.3. ENVIRONMENTAL CONDITIONS

Temperature	25.2 +/- 2 °C
Humidity	35 +/- 2 %
Barometric Pressure	96.34 kPa

G.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00015	Agilent	E4408B	Spectrum Analyzer	24Jan05	24Jan06
00008	Gigatronics	8652A	Power Meter	30Apr04	30Apr05
00011	Gigatronics	80701A	Power Sensor	08Oct04	08Oct05
00107	HP	8491C	Attenuator	n/a	n/a

*Cable and attenuator verified with power meter prior to use

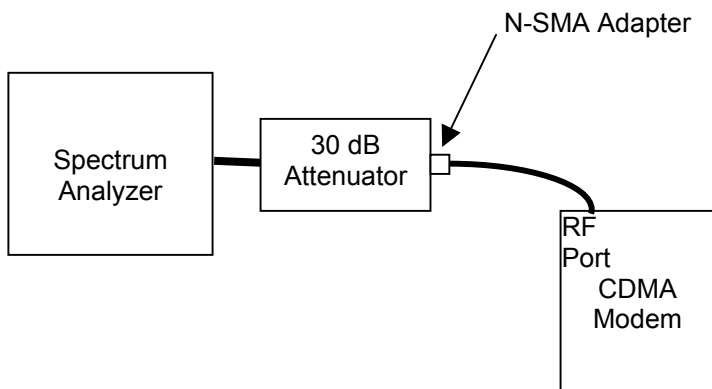
Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

G.5. MEASUREMENT EQUIPMENT SETUP

Measurement Equipment Connections	The equipment was connected as shown in the setup drawing in G.6.
Measurement Equipment Settings	Spectrum Analyzer Settings: Detector: Peak Resolution Bandwidth: 1 MHz Video Bandwidth: 1 MHz Offset: Set to compensate for losses in through the 30 dB attenuator and attachment RF cable.
Measurement Procedure	The conducted RF spurious emission level was measured using a spectrum analyzer connected to the RF output port through a 30 dB attenuator and RF cable. A power meter was used to determine the loss through the cable and attenuator prior to their use with the spectrum analyzer. This loss was offset with factors applied internally in the analyzer. To improve accuracy of measurement over the frequency range of 10 MHz to 20 GHz (10th harmonic of the carrier), sub-sub ranges were measured and the resulting spectrum analyzer displays recorded. The DUT test software was used to set the modem to transmit in the CDMA "always up" power control mode on each of the low, mid and high channels.

G.6. SETUP DRAWING

Figure G.6-1 - Setup Drawing



G.7. DUT OPERATING DESCRIPTION

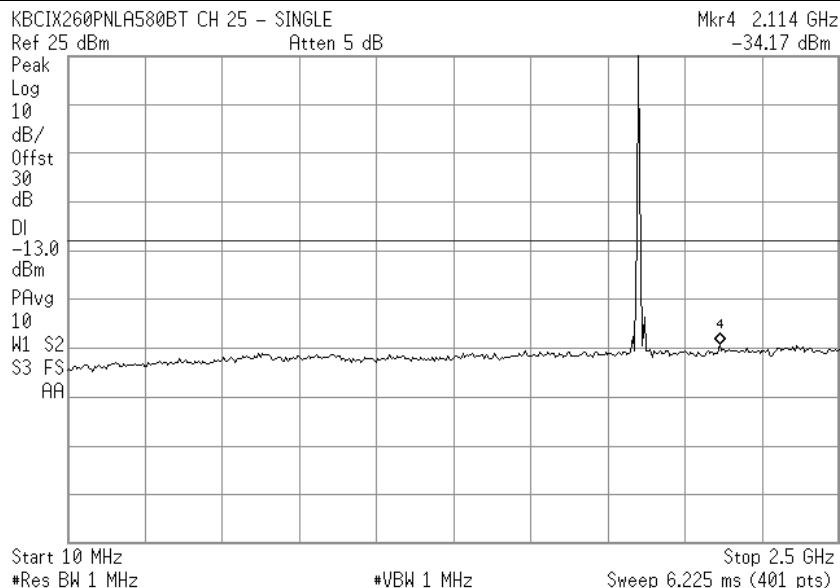
Spurious emission measurements were made of the low, mid and high channels within the PCS band, with the CDMA modem set appropriately as described in section 5.7.

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

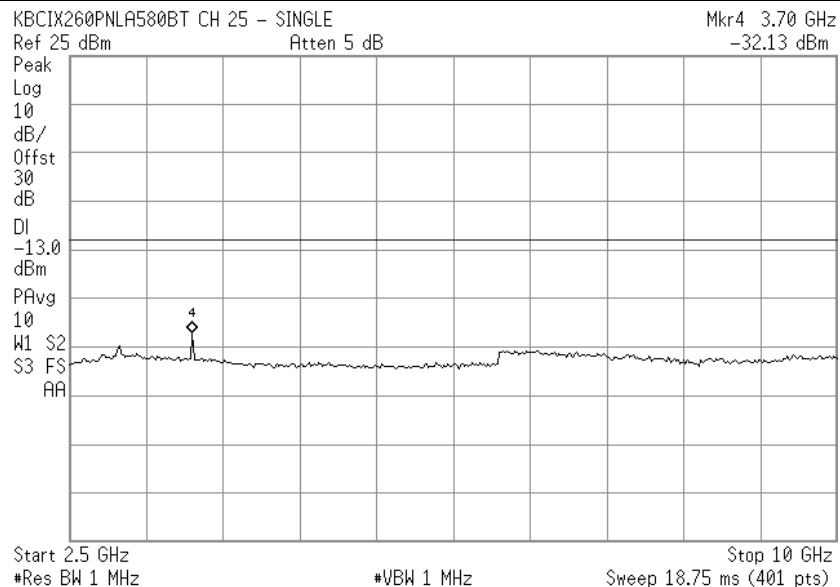
G.8. TEST RESULTS

G.8.1. Spurious Emissions

G.8.1.1 Spurious Emissions - Channel 25 (Low) (10MHz - 2.5GHz Measurement Band)

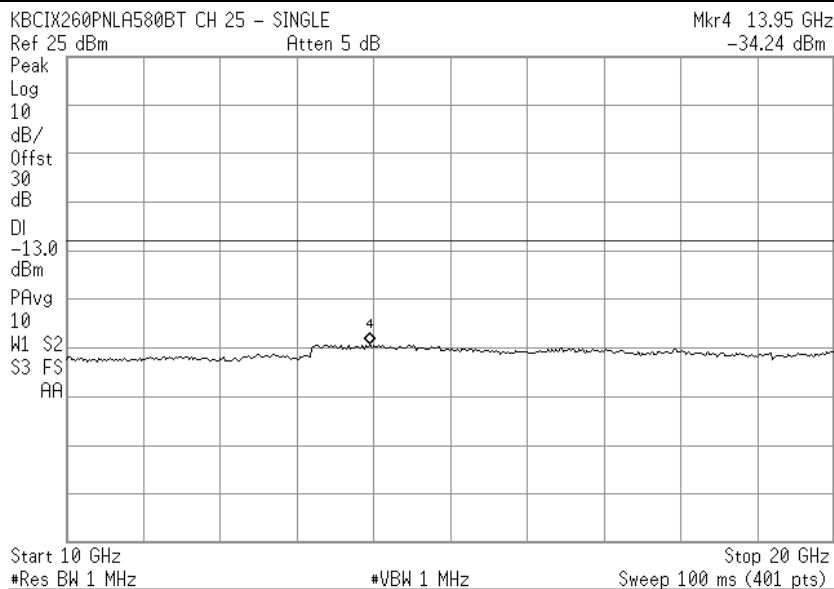


G.8.1.2 Spurious Emissions - Channel 25 (Low) (2.5 GHz - 10 GHz Measurement Band)

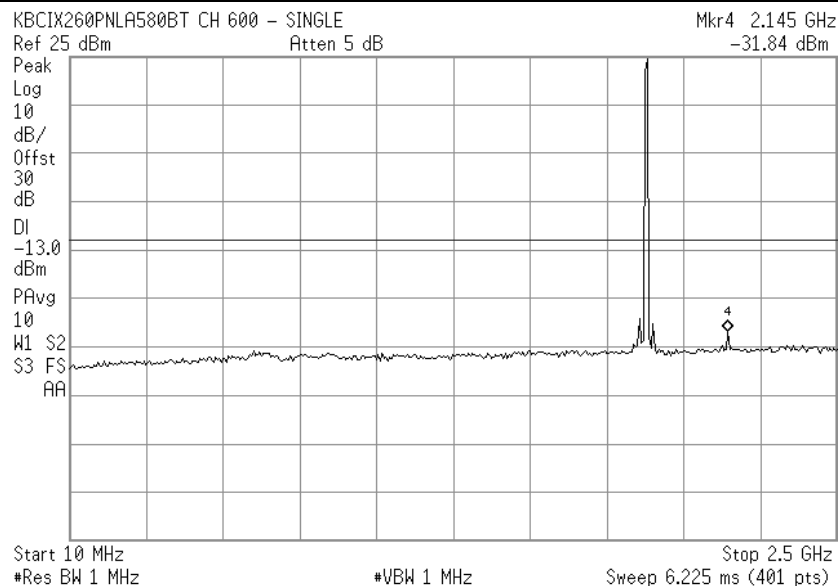


Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

G.8.1.3 Spurious Emissions - Channel 25 (Low) (10 GHz - 20 GHz Measurement Band)

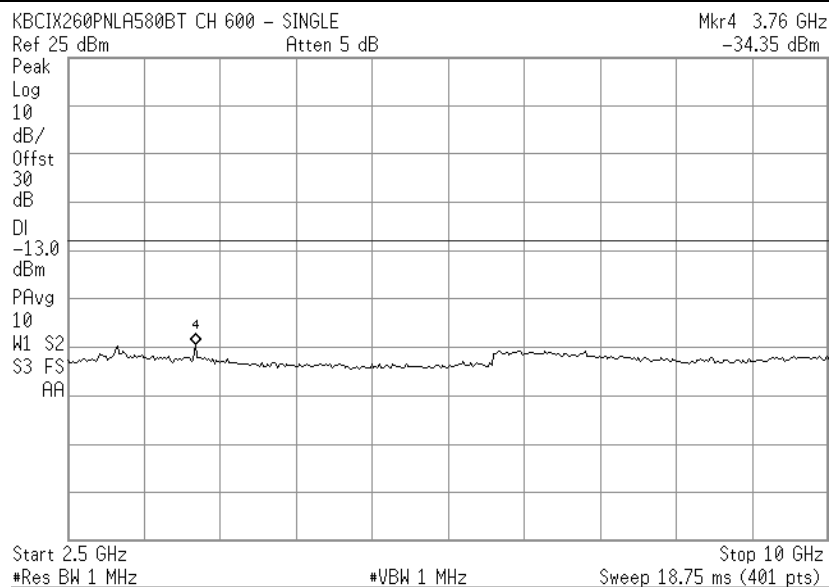


G.8.1.4 Spurious Emissions - Channel 600 (Mid) (10 MHz - 2.5 GHz Measurement Band)

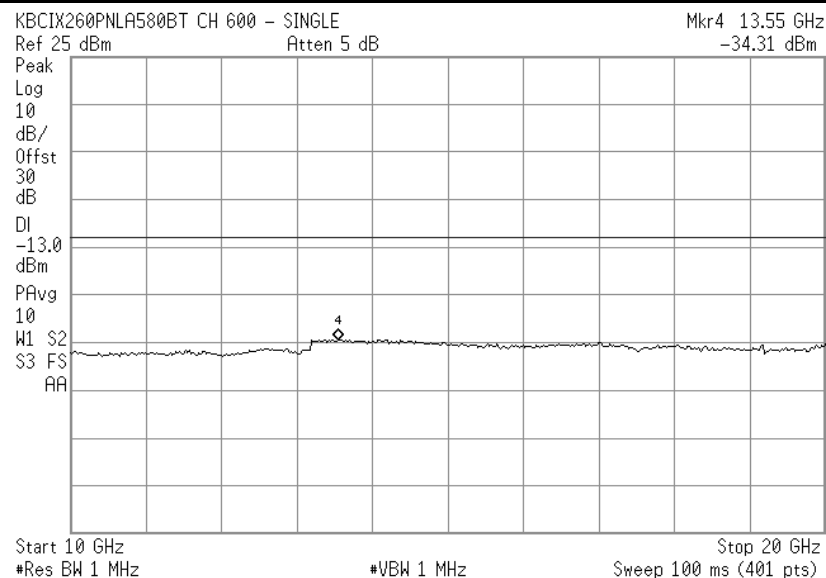


Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

G.8.1.5 Spurious Emissions - Channel 600 (Mid) (2.5 GHz - 10 GHz Measurement Band)

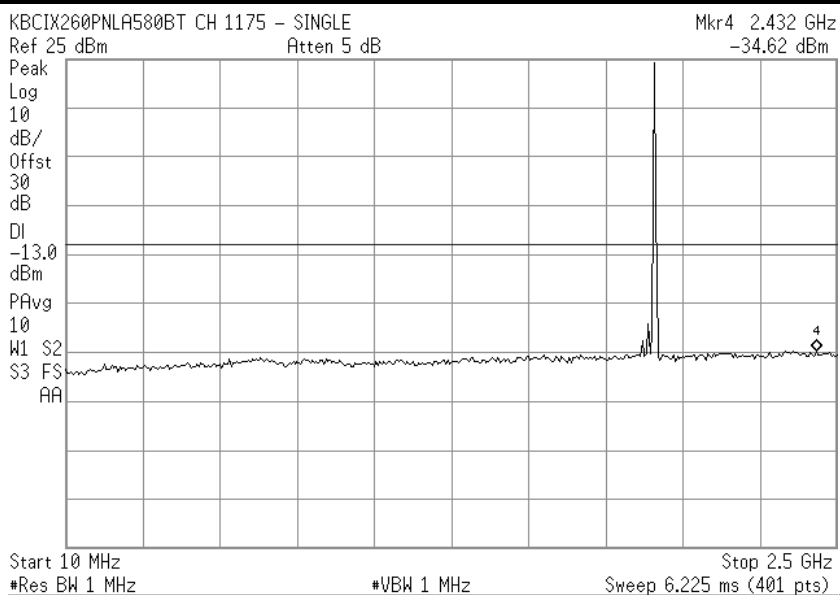


G.8.1.6 Spurious Emissions - Channel 600 (Mid) (10 GHz - 20 GHz Measurement Band)

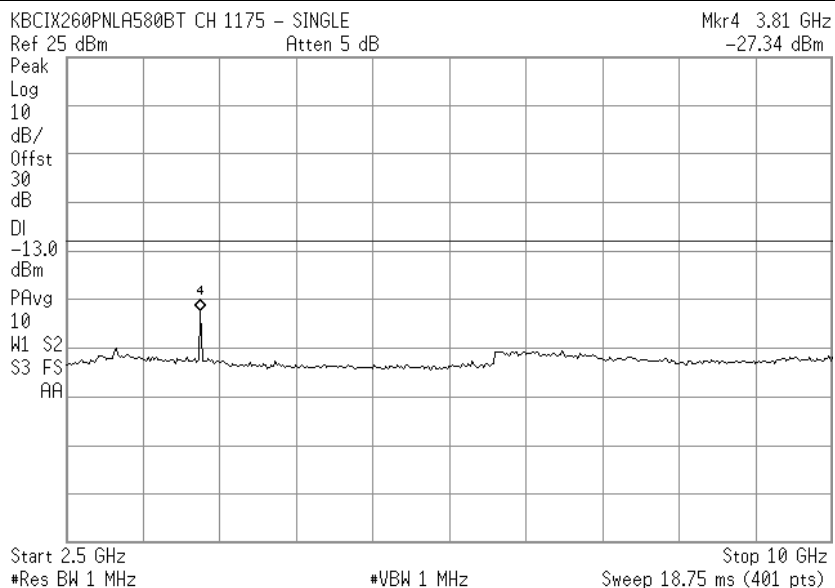


Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

G.8.1.7 Spurious Emissions - Channel 1175 (High) (10 MHz - 2.5 GHz Measurement Band)

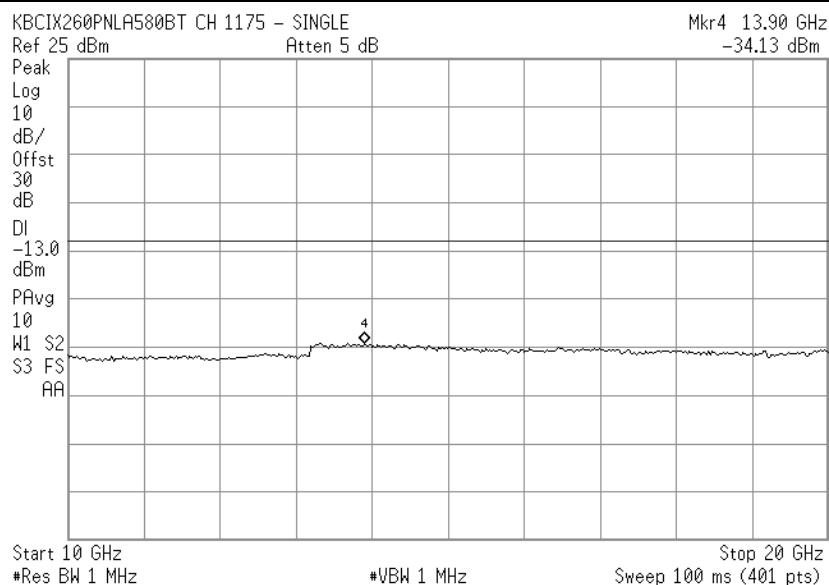


G.8.1.8 Spurious Emissions - Channel 1175 (High) (2.5 GHz - 10 GHz Measurement Band)



Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

G.8.1.9 Spurious Emissions - Channel 1175 (High) (10 GHz - 20 GHz Measurement Band)



G.8.2. Result Summary

Channel	Center Frequency (MHz)	Maximum Emission between 10 MHz and 2.5 GHz		Maximum Emission between 2.5 GHz and 10 GHz		Maximum Emission between 10 GHz and 20 GHz		Limit	Pass/Fail
		Frequency	Level	Frequency	Level	Frequency	Level		
		(MHz)	(dBm)	(MHz)	(dBm)	(MHz)	(dBm)		
25	1851.25	2114	-34.17	3700	-32.13	13950	-34.24	-13	Pass
600	1880.00	2145	-31.84	3760	-34.35	13550	-34.31	-13	Pass
1175	1908.75	2432	-34.62	3810	-27.34	13900	-34.13	-13	Pass

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

G.9. PASS/FAIL

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

FCC CFR 4 §24.232(a) Out of Band Emissions. The mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) on any frequency twice or more than twice the fundamental frequency by: at least $43 + 10 \log P$ dB.

The results set forth in this section meet the requirement for out-of-band emission, greater than 1 MHz from the edge of the licensed band, with a maximum level of -31.84 dB measured at 2.145 GHz with the modem transmitting on Channel 600.

G.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.



Russell Pipe
Senior Compliance Technologist
Celltech Labs Inc.

30Mar05
Date

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

Appendix H - PCS Frequency Stability / Temperature Variation Measurement

H.1. REFERENCES	
Normative Reference Standard	FCC CFR 47 §24.2355
Procedure Reference	ANSI/TIA/EIA-603-B, FCC CFR 47 §2.1055

H.2. LIMITS	
FCC CFR 47 §24.355	<i>The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. *the fundamental frequency of the channel closest to a block edge is separated from the edge by 1.25 MHz.</i>

* Data presented in this section are referenced to the PCTEST measurement report serial no. 22/24.221125616.PNF section 8.1

H.3. ENVIRONMENTAL CONDITIONS	
Temperature	n/a
Humidity	n/a
Barometric Pressure	n/a

H.4. EQUIPMENT LIST						
* DATA PRESENTED IN THIS SECTION ARE REFERENCED TO THE PCTEST MEASUREMENT REPORT S/N 22/24.221125616.PNF SECTION 8.1						
ID	ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
* PCTEST measurement report serial no. 22/24.221125616.PNF section 10.1						

H.5. MEASUREMENT EQUIPMENT SETUP	
MEASUREMENT EQUIPMENT CONNECTIONS	* PCTEST measurement report s/n 22/24.221125616.PNF section 10.1
MEASUREMENT EQUIPMENT SETTINGS	* PCTEST measurement report s/n 22/24.221125616.PNF section 10.1

H.6. SETUP DRAWING
n/a

H.7. SETUP PHOTOGRAPHS
n/a

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

H.8. DUT OPERATING DESCRIPTION

na

H.9. TEST RESULTS

H.9.1. Frequency Stability Data - Channel 600 (mid)

OPERATING FREQUENCY: 1,880,000,002 Hz
 CHANNEL: 600
 REFERENCE VOLTAGE: 3.7 VAC
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQ. (Hz)	Deviation (%)
100 %	3.70	+ 20 (Ref)	1,880,000,002	0.000000
100 %		- 30	1,879,999,814	0.000010
100 %		- 20	1,879,999,795	0.000011
100 %		- 10	1,879,999,852	0.000008
100 %		0	1,879,999,870	0.000007
100 %		+ 10	1,879,999,946	0.000003
100 %		+ 20	1,880,000,002	0.000000
100 %		+ 25	1,879,999,927	0.000004
100 %		+ 30	1,879,999,852	0.000008
100 %		+ 40	1,880,000,171	-0.000009
100 %		+ 50	1,880,000,190	-0.000010
100 %		+ 60	1,880,000,190	-0.000010
85 %	3.17	+ 20	1,880,000,002	0.000000
115 %	4.26	+ 20	1,880,000,002	0.000000
BATT. ENDPOINT	2.97	+ 20	1,880,000,002	0.000000

* Original data in PCTEST measurement report serial no. 22/24.221125616.PNF section 8.1

Maximum deviations are +0.000011% & -0.000010% or +205 Hz & -190 Hz

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

H.10. PASS/FAIL

In reference to the results outlined in H.9, the PCTEST measurement report states that the DUT passes the requirements as stated in the reference standards.

FCC CFR 4 §24.235 The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

*Based on the frequency separation between a block edge and the closest channel fundamental frequency, the limit would be 1.25 MHz.

The results set forth in the PCTEST measurement report indicate the DUT meets the requirement with maximum frequency deviations of +250 Hz and -190 Hz.

H.11. SIGN-OFF

* Data presented in this section is referenced to the PCTEST measurement report serial no. 22/24.221125616.PNF section 8.1

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

Appendix I - 800 MHz Cellular Receiver Spurious Emissions Measurement

I.1. REFERENCES

Normative Reference Standard	RSS-132 §6.6
Procedure Reference	ANSI/TIA/EIA-603-C, RSS-132 §6.6

I.2. LIMITS

RSS-132 §6.6 (b) ... 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.

I.3. ENVIRONMENTAL CONDITIONS

Temperature	25.2 +/- 2 °C
Humidity	35 +/- 2 %
Barometric Pressure	96.34 kPa

I.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00015	Agilent	E4408B	Spectrum Analyzer	24Jan05	24Jan06
00008	Gigatronics	8652A	Power Meter	30Apr04	30Apr05
00011	Gigatronics	80701A	Power Sensor	08Oct04	08Oct05
00107	HP	8491C	Attenuator	n/a	n/a

*Cable and attenuator verified with power meter prior to use

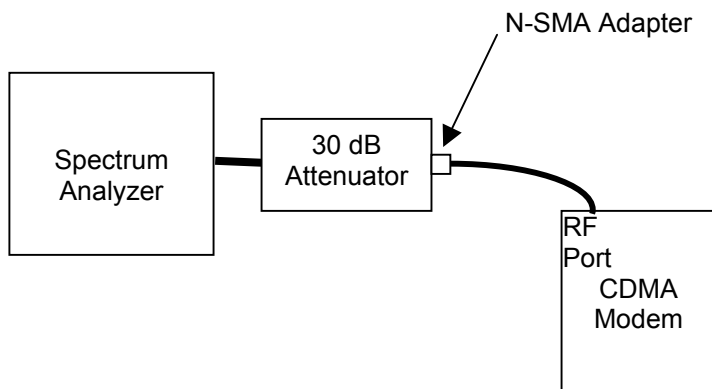
Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

I.5. MEASUREMENT EQUIPMENT SETUP

Measurement Equipment Connections	The equipment was connected as shown in the setup drawing in I.6.
Measurement Equipment Settings	Spectrum Analyzer Settings: Detector: Peak Resolution Bandwidth: 10 kHz* Video Bandwidth: 10 kHz Offset: Set to compensate for losses in through the 30 dB attenuator and attachment RF cable. *4 kHz RBW was not available on the instrumentation used, so 10 kHz RBW was used as a worst-case setting.
Measurement Procedure	The conducted RF receiver spurious emission level was measured using a spectrum analyzer connected to the RF output port through a 30 dB attenuator and RF cable. A power meter was used to determine the loss through the cable and attenuator prior to their use with the spectrum analyzer. This loss was offset with factors applied internally in the analyzer. To improve accuracy of measurement over the frequency range of 30 MHz to 3 GHz (3 th harmonic of the carrier), sub-sub ranges were measured and the resulting spectrum analyzer displays recorded.

I.6. SETUP DRAWING

Figure I.6-1 - Setup Drawing



I.7. DUT OPERATING DESCRIPTION

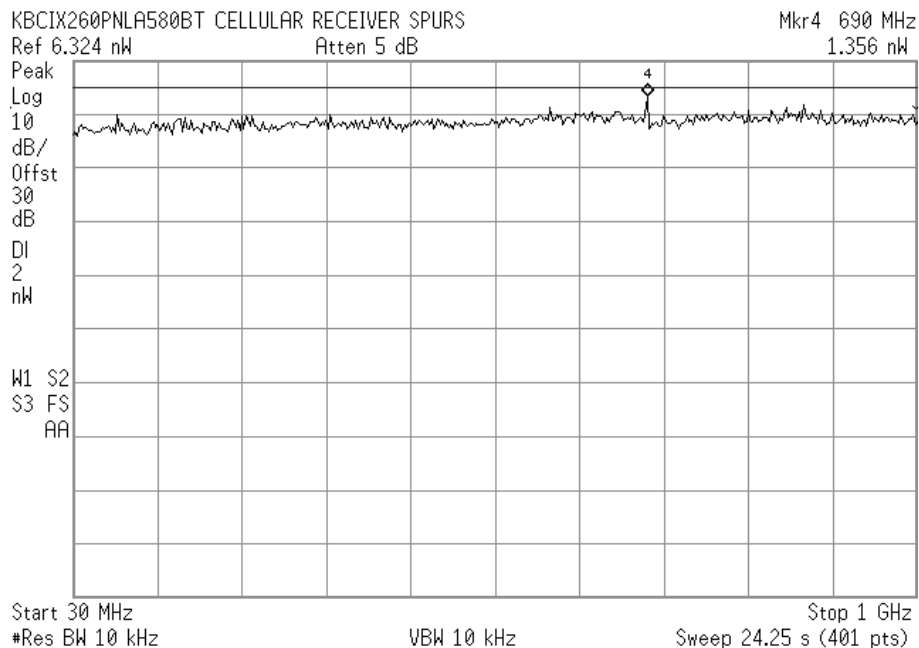
Spurious emission measurements were made of the mid channel within the cellular band, with the CDMA modem set in its receive only mode for the appropriate band.

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

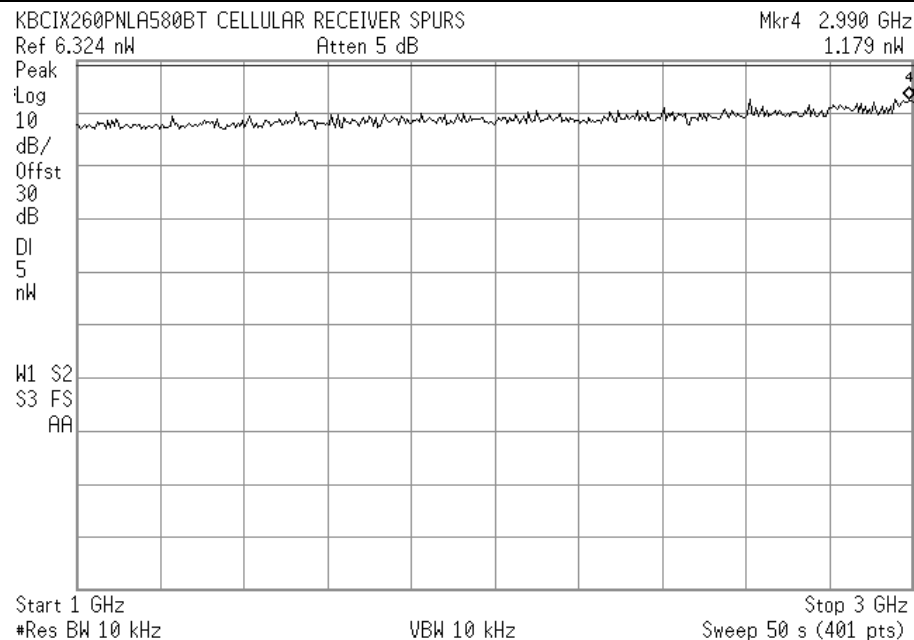
I.8. TEST RESULTS

I.8.1. Spurious Emissions

I.8.1.1 Spurious Emissions - Channel 384 (Mid) (30 MHz - 1 GHz Measurement Band)



I.8.1.2 Spurious Emissions - Channel 384 (Mid) (1 GHz - 3 GHz Measurement Band)



Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

I.8.2. Result Summary

Channel	384	Maximum Emission		Limit	Pass/Fail
Center Frequency	836.6 MHz	Frequency (MHz)	Level (nW/10kHz*)	Limit (nW/4kHz)	Pass
Measurement Band	30 MHz and 1 GHz	690	1.356	2	
	1 GHz and 3 GHz	2990	1.179	5	Pass

* 10 kHz RBW used as worst-case setting

I.9. PASS/FAIL

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

RSS-132 §6.6 (b) ... 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.

The results set forth in this section meet the requirement for conducted receiver spurious emission with a maximum level of 1.356 nW / 10 kHz band in the 30 – 1000 MHz frequency band and 1.179 nW / 10 kHz band above 1 GHz.

I.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.



Russell Pipe
Senior Compliance Technologist
Celltech Labs Inc.

30Mar05

Date

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

Appendix J - 2 GHz PCS Receiver Spurious Emissions

J.1. REFERENCES

Normative Reference Standard	RSS-133 §9
Procedure Reference	ANSI/TIA/EIA-603-C, RSS-132 §9

J.2. LIMITS

RSS-132 §9 (i) ... emission power in any 4 kHz shall not exceed 2 nanowatts in the band 30-1000 MHz or 5 nanowatts above 1 GHz.

J.3. ENVIRONMENTAL CONDITIONS

Temperature	25.2 +/- 2 °C
Humidity	35 +/- 2 %
Barometric Pressure	96.34 kPa

J.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00015	Agilent	E4408B	Spectrum Analyzer	24Jan05	24Jan06
00008	Gigatronics	8652A	Power Meter	30Apr04	30Apr05
00011	Gigatronics	80701A	Power Sensor	08Oct04	08Oct05
00107	HP	8491C	Attenuator	n/a	n/a

*Cable and attenuator verified with power meter prior to use

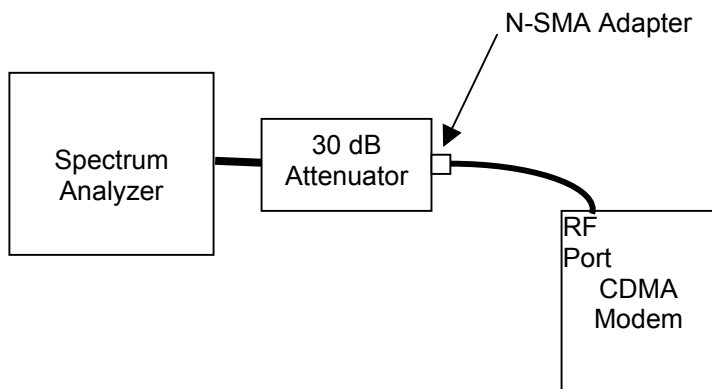
Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

J.5. MEASUREMENT EQUIPMENT SETUP

Measurement Equipment Connections	The equipment was connected as shown in the setup drawing in J.6.
Measurement Equipment Settings	Spectrum Analyzer Settings: Detector: Peak Resolution Bandwidth: 10 kHz* Video Bandwidth: 10 kHz Offset: Set to compensate for losses in through the 30 dB attenuator and attachment RF cable. *4 kHz RBW was not available on the instrumentation used; so 10 kHz RBW was used as a worst-case setting.
Measurement Procedure	The conducted RF receiver spurious emission level was measured using a spectrum analyzer connected to the RF output port through a 30 dB attenuator and RF cable. A power meter was used to determine the loss through the cable and attenuator prior to their use with the spectrum analyzer. This loss was offset with factors applied internally in the analyzer. To improve accuracy of measurement over the frequency range of 30 MHz to 6 GHz (3 th harmonic of the carrier), sub-sub ranges were measured and the resulting spectrum analyzer displays recorded.

J.6. SETUP DRAWING

Figure J.6-1 - Setup Drawing



J.7. DUT OPERATING DESCRIPTION

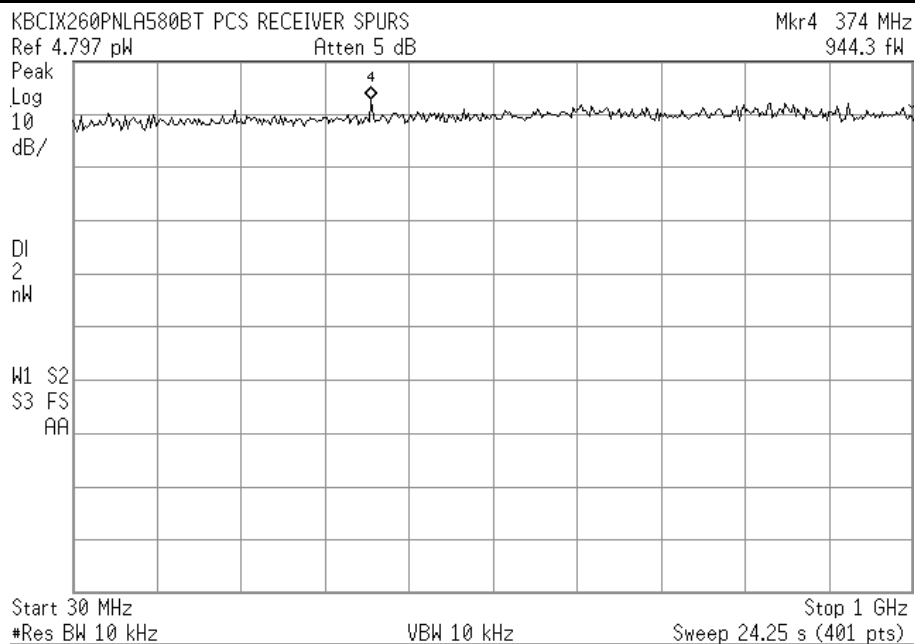
Spurious emission measurements were made of the mid channel within the PCS band, with the CDMA modem set in its receive only mode for the appropriate band.

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

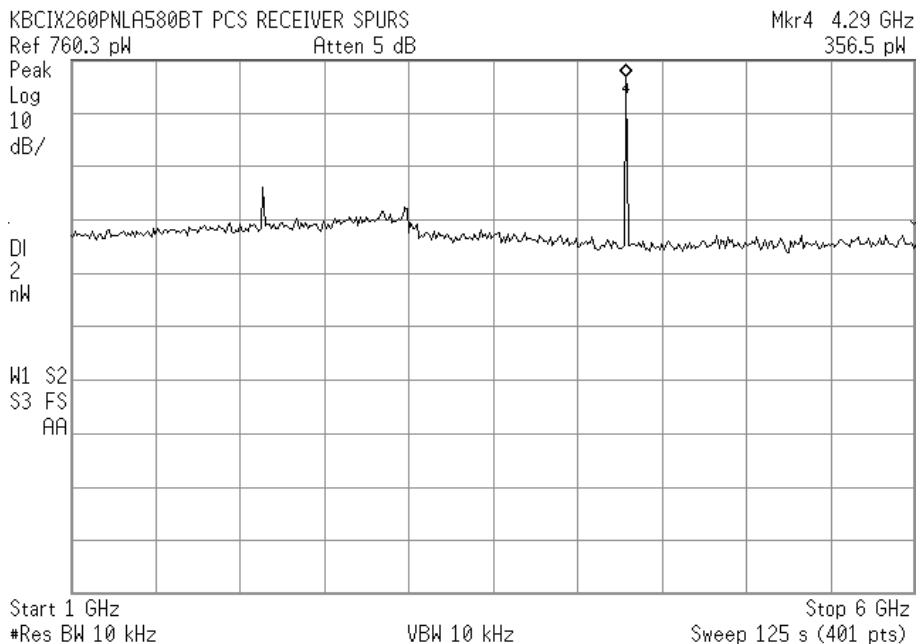
J.8. TEST RESULTS

J.8.1. Spurious Emissions

J.8.1.1 Spurious Emissions - Channel 600 (Mid) (30 MHz - 1 GHz Measurement Band)



J.8.1.2 Spurious Emissions - Channel 600 (Mid) (1 GHz - 6 GHz Measurement Band)



Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

J.8.2. Result Summary

Channel	600	Maximum Emission		Limit	Pass/Fail
Center Frequency	1880 MHz	Frequency (MHz)	Level (nW/10kHz*)	(nW/4kHz)	
Measurement Band	30 MHz and 1 GHz	374	.009443	2	Pass
	1 GHz and 6 GHz	4.29	.003565	5	Pass

* 10 kHz RBW used as worst-case setting

J.9. PASS/FAIL

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

RSS-132 §6.6 (b) ... 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.

The results set forth in this section meet the requirement for conducted receiver spurious emission with a maximum level of 0.009 nW / 10 kHz band in the 30 – 1000 MHz frequency band and 0.003 nW / 10 kHz band above 1 GHz.

J.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.



Russell Pipe
Senior Compliance Technologist
Celltech Labs Inc.

30Mar05

Date

Test Report Serial No.:	022305KBC-T616-M24C	Issue 1
Test Date(s):	30Mar05 - 30Mar05	
Test Type(s):	FCC §2, §22H, §24E	IC RSS-132/133
Lab Registration(s):	FCC #714830	IC Lab File #3874

END OF DOCUMENT