



ADDENDUM C TO WILSON ELECTRONICS TEST REPORT FC04-022B

FOR THE

BIDIRECTIONAL CELLULAR AMPLIFIER REPEATER, 811210

FCC PART 24E AND RSS-131

COMPLIANCE

DATE OF ISSUE: NOVEMBER 8, 2006

PREPARED FOR:

Wilson Electronics
3301 East Deseret Drive
St. George, UT 84790

P.O. No.: DBP811210-1
W.O. No.: 85466

PREPARED BY:

Mary Ellen Clayton
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Date of test: August 30 - September 6, 2006

Report No.: FC04-022B

This report contains a total of 71 pages and may be reproduced in full only. Partial reproduction may only be done with the written consent of CKC Laboratories, Inc. The results in this report apply only to the items tested, as identified herein.

TABLE OF CONTENTS

Administrative Information	3
FCC to Canada Standard Correlation Matrix.....	4
Conditions for Compliance	4
Approvals.....	5
Equipment Under Test (EUT) Description	6
Equipment Under Test	6
Peripheral Devices	6
Temperature and Humidity During Testing.....	7
FCC 2.1033(c)(3) User's Manual	7
FCC 2.1033(c)(4) Type of Emissions.....	7
FCC 2.1033(c)(5) Frequency Range.....	7
FCC 2.1033(c)(6) Operating Power.....	7
FCC 2.1033(c)(7) Maximum Output Power Allowed by 24.232	7
FCC 2.1033(c)(8) DC Voltages	7
FCC 2.1033(c)(9) Tune-Up Procedure	7
FCC 2.1033(c)(10) Schematics and Circuitry Description.....	7
FCC 2.1033(c)(11) Label and Placement	7
FCC 2.1033(c)(12) Submittal Photos	7
FCC 2.1033(c)(13) Modulation Information	7
FCC 2.1033(c)(14)/2.1046/24.232 - RF Power Output	8
RSS-131 Power Output.....	11
FCC 2.1033(c)(14)/2.1047(b) - Audio Frequency Response.....	13
FCC 2.1033(c)(14)/2.1047(b) - Modulation Limiting Response.....	13
FCC 2.1033(c)(14)/2.1049(i) - Occupied Bandwidth.....	13
FCC 2.1033(c)(14)/2.1051/24.238 - Spurious Emissions at Antenna Terminal.....	18
FCC 2.1033(c)(14)/2.1053/24.238 - Field Strength of Spurious Radiation	37
Downlink Block Edge.....	39
Downlink Block Edge.....	40
Downlink Intermodulation Attenuation.....	48
Downlink Input Vs Output Plots	57
Downlink Out Of Band Rejection.....	62
Downlink Out Of Band Rejection.....	63
Uplink Out Of Band Rejection	64
RSS-131 Downlink Passband Gain	66
RSS-131 Downlink Passband Width	69

ADMINISTRATIVE INFORMATION

DATE OF TEST: August 30 - September 6, 2006

DATE OF RECEIPT: August 30, 2006

FREQUENCY RANGE TESTED: 30 MHz-20 GHz

MANUFACTURER: Wilson Electronics
3301 East Deseret Drive
St. George, UT 84790

REPRESENTATIVE: Riki Kline

TEST LOCATION: CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

TEST METHOD: FCC Part 24E, RSS-131 and RSS GEN

PURPOSE OF TEST: **Original Report:** To demonstrate the compliance of the Dual Band Bidirectional Amplifier, 811201 with the requirements for FCC Part 24E and RSS 131 devices.
Addendum A is to revise the data sheets on pages 20, 43 and 58.
Addendum B The EUT, 811210, is a derivative of the originally tested EUT, 811201. Refer to page 6 for further *EUT Description*. This addendum is to demonstrate the compliance of the Bidirectional Cellular Amplifier Repeater, 811210 with the requirements for FCC Part 24E and RSS-131 devices. Compliance is partially based upon the original compliance testing as explained on page 4 of this document under *Testing Justifications*.
Addendum C is to revise the data sheet on page 20 with no new testing.

FCC TO CANADA STANDARD CORRELATION MATRIX

Canadian Standard	Canadian Section	FCC Standard	FCC Section	Test Description
RSS 131	5.4	NA	NA	External Controls
RSS 131	5.5	47 CFR	1.1307	RF Exposure
RSS 131	6.1	NA	NA	Passband Gain and Bandwidth
RSS 131	6.2	NA	NA	RF Power Output
NA	NA	47 CFR	24.232	RF Power Output
RSS 131	6.3	TIA/EIA	603	Non-Linearity (Intermodulation Attenuation)
RSS 131	6.4	47 CFR	24.238	Spurious Emissions Limitations
RSS 131	6.5	NA	NA	Frequency Stability (Band Translators)
	3082A-1		784962	Site File No.

CONDITIONS FOR COMPLIANCE

No modifications to the EUT were necessary to comply.

Testing Justification: The following tests were performed at the uplink output port: RF Output Power and out of band rejection. Based on the scope of changes to the equipment, the manufacturer declares that the changes to the uplink path represent a Class I permissive change and as such limited testing was performed to ensure compliance with the relevant regulations. It was determined during testing that the power output measured was comparable to that previously measured and thus all previous reported measurements are representative of the modified product.

The following tests were performed at the downlink output port: All tests performed. Based on the scope of changes to the equipment, the manufacturer declares that these changes are significant enough to warrant re-testing in order to determine compliance. Since the output power has been reduced below the $\pm 0.5\text{dB}$ tolerance allowed by the FCC for a Class II permissive change, the manufacturer is required to file an application for a new FCC ID.

APPROVALS

Steve Behm, Director of Engineering Services

QUALITY ASSURANCE:



Joyce Walker, Quality Assurance Administrative Manager



Mike Wilkinson, Lab Manager

TEST PERSONNEL:



Randy Clark, EMC Engineer

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The customer declares the EUT tested by CKC Laboratories was representative of a production unit. The EUT is a dual-band (800 MHz and 1900 MHz), bi-directional cell phone amplifier. Coupling to the cell phone is by means of a small inductive coupler that is attached to the cell phone. This amplifier is a derivative of the previously certified model 811201, FCC ID: PWO819D, IC: 4762A-819D.

The EUT is identical to the previously certified amplifier (811201) except for the following changes:

One low-level MMIC (monolithic microwave integrated circuit) has been added to increase the downlink gain. The attenuation of passive attenuators has been reduced to increase the uplink gain. Both the layout of the circuit board and the external case have been changed to afford more efficient manufacturing.

Note: The above modifications in gain compensate for the additional losses incurred by using the inductive coupler. These low level changes are not expected to worsen the electrical characteristics relative to those already reported in the certification tests for the 811201 certificated amplifier.

EQUIPMENT UNDER TEST

Bidirectional Cellular Amplifier Repeater

Manuf: Wilson Electronics
Model: 811210
Serial: 8112100110000
FCC ID: PWO819DA (pending)
IC ID: 4762A-819DA

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

DC Power Supply

Manuf: Topward Electric Instruments Co., Ltd.
Model: TPS-2000
Serial: 920035

Digital Signal Generator

Manuf: Agilent
Model: E4432B
Serial: MY41000108

TEMPERATURE AND HUMIDITY DURING TESTING

The temperature during testing was within +15°C and + 35°C.
The relative humidity was between 20% and 75%.

FCC 2.1033(c)(3) USER'S MANUAL

The necessary information is contained in a separate document.

FCC 2.1033 (c)(4) TYPE OF EMISSIONS

F9W, GXW, G7W

FCC 2.1033 (c)(5) FREQUENCY RANGE

Uplink frequency range 1850 – 1910 MHz. Downlink frequency range 1930 – 1990 MHz.

FCC 2.1033 (c)(6) OPERATING POWER

Downlink 4.79 milliwatts, Uplink 1.07 Watts.

FCC 2.1033 (c)(7) MAXIMUM OUTPUT POWER ALLOWED BY 24.232

Mobile: 2 Watts EIRP

Fixed: 1640 Watts EIRP for HAAT up to 300 meters

FCC 2.1033 (c)(8) DC VOLTAGES

The necessary information is contained in a separate document.

FCC 2.1033 (c)(9) TUNE-UP PROCEDURE

The necessary information is contained in a separate document.

FCC 2.1033(c)(10) SCHEMATICS AND CIRCUITRY DESCRIPTION

The necessary information is contained in a separate document.

FCC 2.1033(c)(11) LABEL AND PLACEMENT

The necessary information is contained in a separate document.

FCC 2.1033(c)(12) SUBMITTAL PHOTOS

The necessary information is contained in a separate document.

FCC 2.1033 (c)(13) MODULATION INFORMATION

CDMA, EDGE, GSM

FCC 2.1033(c)(14)/2.1046/24.232 - RF POWER OUTPUT

Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Wilson Electronics**

Specification: **FCC 2.1046**

Work Order #: **81892**

Equipment: **Bidirectional Cellular Amplifier
Repeater**

Manufacturer: Wilson Electronics

Model: 811210

S/N: 8112100110000

Tested By: Randal Clark

12VDC

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Pasternack 36"	NA	02/08/2005	02/08/2007	P05202
Attenuator 30dB, Bird	9724	05/18/2005	05/18/2007	P01577
25A-MFN-30				

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Bidirectional Cellular Amplifier Repeater*	Wilson Electronics	811210	8112100110000

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric	TPS-2000	920035
Digital Signal Generator	Instruments Co., Ltd.		
	Agilent	E4432B	MY41000108

Test Conditions / Notes:

Equipment is a bi-directional cellular amplifier repeater operating on frequency range of 824 to 894 MHz and 1850-1990 MHz. Uplink frequency range 824 - 849 MHz and 1850 - 1910 MHz. Downlink frequency range 869 - 894 MHz and 1930-1990 MHz. Equipment is powered via 12VDC support power supply. Antenna port is terminated into spectrum analyzer through suitable attenuation. Peak detection used for all modulations.

CDMA – RBW=8MHz, VBW=8MHz

GSM and EDGE – RBW=1MHz, VBW=3MHz

AMPS – RBW=300kHz, VBW=910kHz

Frequency Range Investigated: Carrier

Temperature: 79°F

Relative Humidity: 35%

EUT is a bidirectional amplifier for the 1850 to 1990 MHz band. Uplink frequency range 1850 - 1910MHz. Downlink frequency range 1930 - 1990MHz

RF Power Output Test:

Only one signal is input to the amplifier. The input from the signal generator is set such that the maximum output is provided at the antenna terminals. The internal ALC of the amplifier limits the maximum power output to a factory set level. Power output is continuously variable and directly proportional to the supplied RF input. Minimum RF output power of 0.00 Watts is achieved with a 0.00 Watt RF input signal.

Uplink Output Ratings:

CDMA and TDMA (EDGE & GSM) formats: 3 Watts (Max 2Watts EIRP)

Downlink Output Ratings:

All: <10mW

RF power output of the amplifier is routed to a spectrum analyzer through suitable attenuation.

Downlink – Conducted Power

<i>Frequency (MHz)</i>	<i>Modulation</i>	<i>Power Output (milliWatts)</i>
1931.25	CDMA	3.09
1960.0	CDMA	3.02
1988.75	CDMA	4.79
1930.28	GSM	1.95
1960.0	GSM	2.75
1989.72	GSM	2.63
1930.28	EDGE	2.14
1960.0	EDGE	2.75
1989.72	EDGE	2.88

Uplink – Conducted Power

<i>Frequency (MHz)</i>	<i>Modulation</i>	<i>Power Output (Watts)</i>
1851.25	CDMA	0.85
1880.0	CDMA	0.66
1908.75	CDMA	0.22
1850.28	GSM	1.07
1880.0	GSM	0.78
1909.72	GSM	0.31
1850.28	EDGE	1.05
1880.0	EDGE	0.83
1909.72	EDGE	0.26

Uplink – EIRP Power

<i>Frequency (MHz)</i>	<i>Modulation</i>	<i>Power Output (Watts EIRP)</i>
1851.25	CDMA	0.74
1880.0	CDMA	0.58
1908.75	CDMA	0.20
1850.28	GSM	0.94
1880.0	GSM	0.68
1909.72	GSM	0.27
1850.28	EDGE	0.92
1880.0	EDGE	0.73
1909.72	EDGE	0.22

Note: EIRP calculated using highest gain mobile antenna sold with equipment. Antenna consists of a 6.12 dBi gain antenna and 6.7 dB cable loss as declared by the manufacturer.

PHOTOGRAPH SHOWING DIRECT CONNECT TEST SETUP



RSS-131 POWER OUTPUT

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Pasternack 36"	NA	02/08/2005	02/08/2007	P05202
Attenuator 30dB, Bird	9724	05/18/2005	05/18/2007	P01577
25A-MFN-30				

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Bidirectional Cellular Amplifier Repeater*	Wilson Electronics	811210	8112100110000

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035
Digital Signal Generator	Agilent	E4432B	MY41000108

EUT is a In Vehicle Wireless Dual Band Amplifier / Repeater
824 to 894 MHz AMPS band.

Uplink frequency range 824 - 849 MHz.

Downlink frequency range 869 - 894 MHz.

1850 to 1990 MHz PCS band.

Uplink frequency range 1850-1910 MHz

Downlink frequency range 1930-1990 MHz.

Setup: Two Signal generators are connected to a signal combiner. The output of the signal combiner is connected to the Indoor/Outdoor antenna port of the EUT. The mean power (p mean) is evaluated at the Outdoor/Indoor antenna port of the EUT with a spectrum analyzer via a directional coupler. Coupling Loss: 31.1 for 1900 MHz band.

Injection Frequencies (MHz)	Highest Measured Output Power (P dBm)	Mean Output Power (P + 3dB dBm)	Mean Output Power (Watts)
1851	30.3	N/A	1.07
1880	28.9	N/A	0.78
1909	24.9	N/A	0.31
1932 & 1933	-1.5	1.5	0.001413
1997 & 1998	-1.3	1.7	0.001479

PHOTOGRAPH SHOWING DIRECT CONNECT TEST SETUP



**FCC 2.1033(c)(14)/2.1047(a) - MODULATION CHARACTERISTICS - AUDIO
FREQUENCY RESPONSE**

Not applicable to this unit.

**FCC 2.1033(c)(14)/2.1047(b) MODULATION CHARACTERISTICS- Modulation
Limiting Response**

Not applicable to this unit.

FCC 2.1033(c)(14)/2.1049(i)- OCCUPIED BANDWIDTH

Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Wilson Electronics**
Specification: **FCC 2.1049 / RSS 131**
Work Order #: **81892**
Test Type: **Antenna Conducted**
Equipment: **Bidirectional Cellular Amplifier
Repeater**
Manufacturer: Wilson Electronics
Model: 811210
S/N: 8112100110000

Tested By: Randal Clark
12VDC

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Pasternack 36"	NA	02/08/2005	02/08/2007	P05202

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Bidirectional Cellular Amplifier Repeater*	Wilson Electronics	811210	8112100110000

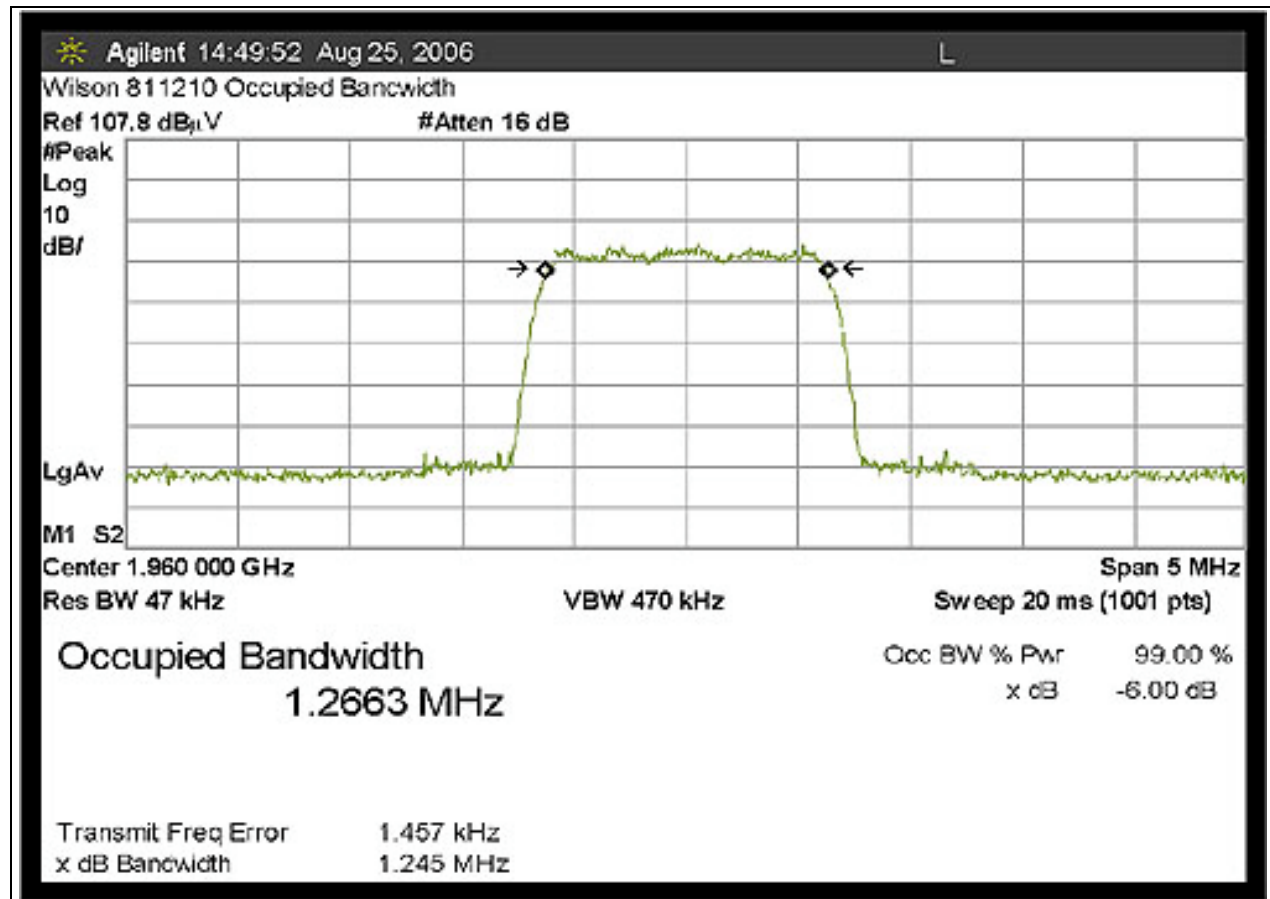
Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035
Digital Signal Generator	Agilent	E4432B	MY41000108

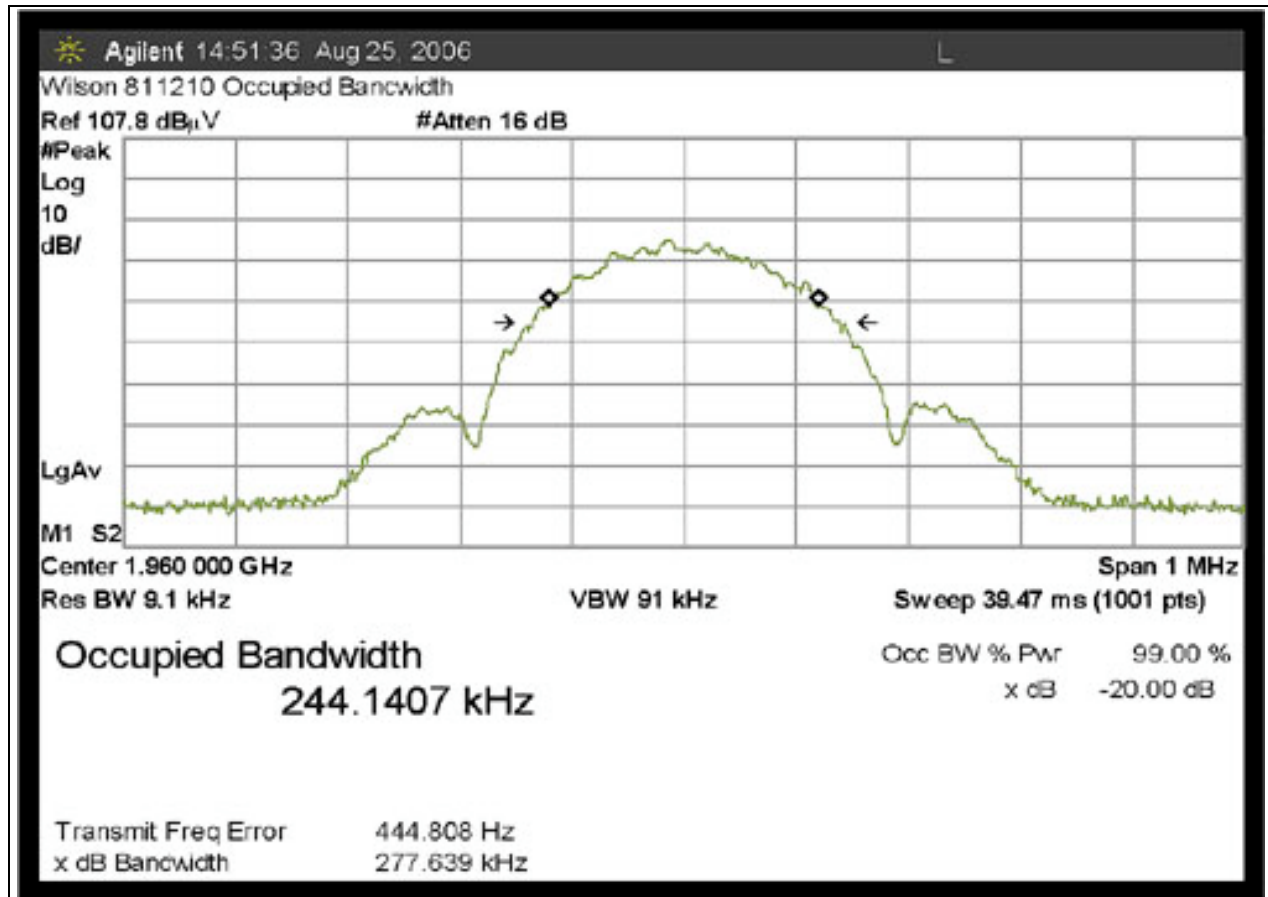
Test Conditions / Notes:

Equipment is a bi-directional cellular amplifier repeater operating on frequency range of 824 to 894 MHz and 1850-1990 MHz. Uplink frequency range 824 - 849 MHz and 1850 - 1910 MHz. Downlink frequency range 869 - 894 MHz and 1930-1990 MHz. Equipment is powered via 12VDC support power supply. Antenna port is terminated into spectrum analyzer.
Frequency Range Investigated: Carrier
Temperature: 79°F
Relative Humidity: 35%

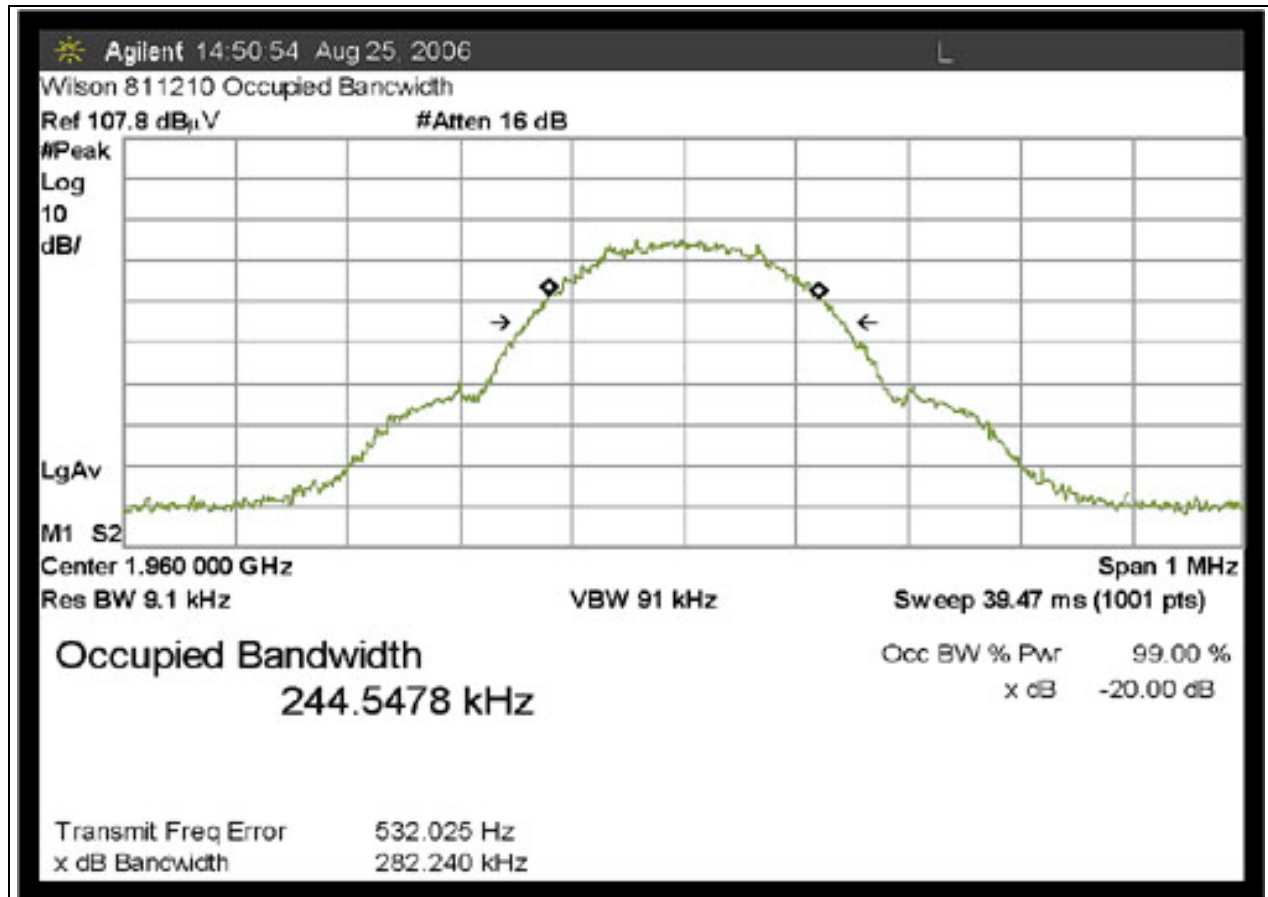
DOWNLINK OCCUPIED BANDWIDTH - CDMA



DOWNLINK OCCUPIED BANDWIDTH - EDGE



DOWNLINK OCCUPIED BANDWIDTH - GSM



PHOTOGRAPH SHOWING DIRECT CONNECT TEST SETUP



FCC 2.1033(c)(14)/2.1051/24.238 - SPURIOUS EMISSIONS AT ANTENNA TERMINAL

Bandwidth settings used: 1 MHz.

Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Wilson Electronics**

Specification: **FCC 2.1051**

Work Order #: **81892**

Date: 8/31/2006

Test Type: **Antenna Conducted**

Time: 12:05:12

Equipment: **Bidirectional Cellular Amplifier
Repeater**

Sequence#: 12

Manufacturer: Wilson Electronics

Tested By: Randal Clark

Model: 811210

12VDC

S/N: 8112100110000

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Pasternack 36"	NA	02/08/2005	02/08/2007	P05202

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Bidirectional Cellular Amplifier Repeater*	Wilson Electronics	811210	8112100110000

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035
Digital Signal Generator	Agilent	E4432B	MY41000108

Test Conditions / Notes:

Equipment is a bidirectional cellular amplifier repeater operating on frequency range of 824 to 894 MHz and 1850-1990 MHz. Uplink frequency range 824 – 849 MHz and 1850 - 1910 MHz. Downlink frequency range 869 – 894 MHz and 1930-1990 MHz. Equipment is powered via 12VDC support power supply. Frequency Range Investigated: 30 MHz - 20 GHz. Carrier Frequency: 1931.25 MHz. Modulation Type: CDMA Temperature: 79°F, Relative Humidity: 35%.

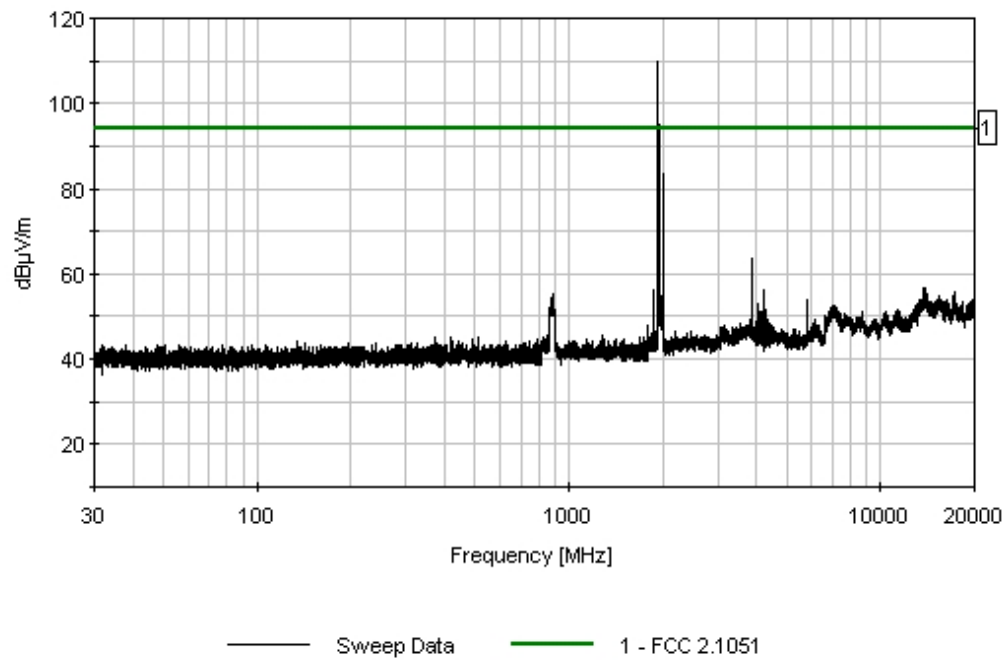
Transducer Legend:

T1=Cable 40 GHz 36"

Measurement Data: Reading listed by margin. Test Lead: RF Output Downlink

#	Freq MHz	Rdng dBμV	T1 dB				Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	1931.209M	109.5	+0.9				+0.0	110.4	110.4 Carrier	+0.0	RF Ou
2	3863.027M	63.0	+1.3				+0.0	64.3	94.0	-29.7	RF Ou
3	5794.566M	54.5	+1.6				+0.0	56.1	94.0	-37.9	RF Ou
4	7725.022M	52.2	+2.0				+0.0	54.2	94.0	-39.8	RF Ou

CKC Laboratories Date: 8/31/2006 Time: 12:05:12 Wilson Electronics WO#: 81892
FCC 2.1051 Test Lead: RF Output Downlink 12VDC Sequence#: 12
Wilson Electronics M/N 811210 1900MHz CDMA Downlink Low Channel



Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Wilson Electronics**

Specification: **FCC 2.1051**

Work Order #: **81892**

Date: 8/31/2006

Test Type: **Antenna Conducted**

Time: 12:11:07

Equipment: **Bidirectional Cellular Amplifier Repeater**

Sequence#: 13

Manufacturer: Wilson Electronics

Tested By: Randal Clark

Model: 811210

12VDC

S/N: 8112100110000

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Pasternack 36"	NA	02/08/2005	02/08/2007	P05202

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Bidirectional Cellular Amplifier Repeater*	Wilson Electronics	811210	8112100110000

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035
Digital Signal Generator	Agilent	E4432B	MY41000108

Test Conditions / Notes:

Equipment is a bidirectional cellular amplifier repeater operating on frequency range of 824 to 894 MHz and 1850-1990 MHz. Uplink frequency range 824 - 849 MHz and 1850 - 1910 MHz. Downlink frequency range 869 - 894 MHz and 1930-1990 MHz. Equipment is powered via 12VDC support power supply. Frequency Range Investigated: 30 MHz - 20 GHz. Carrier Frequency: 1960 MHz. Modulation Type: CDMA. Temperature: 79°F, Relative Humidity: 35%.

Transducer Legend:

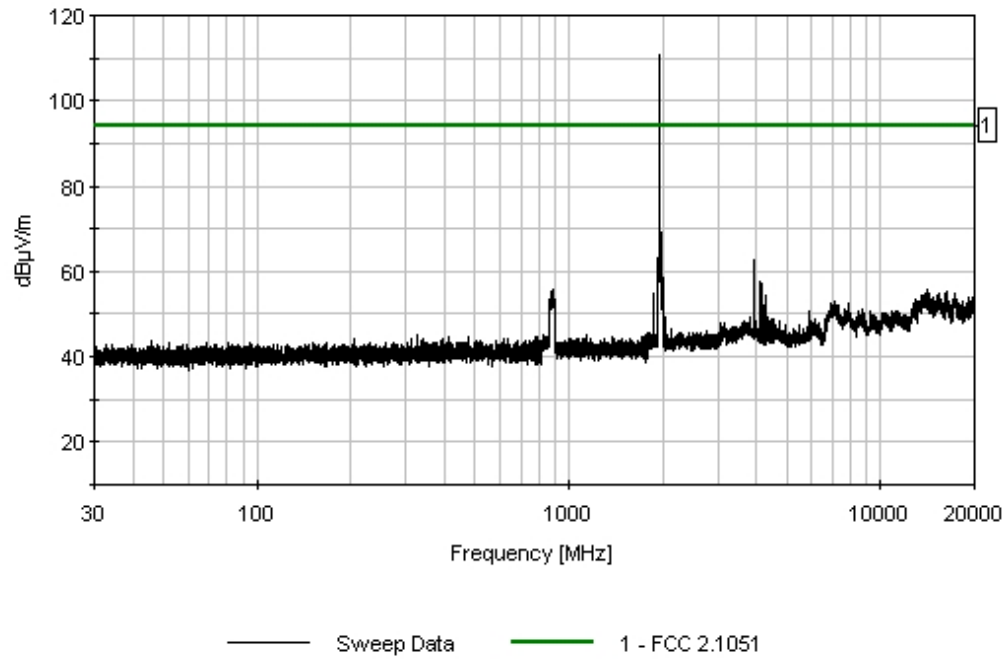
T1=Cable 40 GHz 36"

Measurement Data: Reading listed by margin.

Test Lead: RF Output Downlink

#	Freq MHz	Rdng dBμV	T1 dB				Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	1960.039M	110.3	+0.9				+0.0	111.2	111.2 Carrier	+0.0	RF Ou
2	3920.003M	65.0	+1.3				+0.0	66.3	94.0	-27.7	RF Ou
3	5879.766M	51.4	+1.6				+0.0	53.0	94.0	-41.0	RF Ou
4	7839.994M	50.9	+2.0				+0.0	52.9	94.0	-41.1	RF Ou

CKC Laboratories Date: 8/31/2006 Time: 12:11:07 Wilson Electronics W/O#: 81892
FCC 2.1051 Test Lead: RF Output Downlink 12VDC Sequence#: 13
Wilson Electronics M/N 811210 1900MHz CDMA Downlink Mid Channel



Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Wilson Electronics**

Specification: **FCC 2.1051**

Work Order #: **81892**

Date: 8/31/2006

Test Type: **Antenna Conducted**

Time: 12:18:51

Equipment: **Bidirectional Cellular Amplifier Repeater**

Sequence#: 14

Manufacturer: Wilson Electronics

Tested By: Randal Clark

Model: 811210

12VDC

S/N: 8112100110000

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Pasternack 36"	NA	02/08/2005	02/08/2007	P05202

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Bidirectional Cellular Amplifier Repeater*	Wilson Electronics	811210	8112100110000

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035
Digital Signal Generator	Agilent	E4432B	MY41000108

Test Conditions / Notes:

Equipment is a bidirectional cellular amplifier repeater operating on frequency range of 824 to 894 MHz and 1850-1990 MHz. Uplink frequency range 824 – 849 MHz and 1850 - 1910 MHz. Downlink frequency range 869 – 894 MHz and 1930-1990 MHz. Equipment is powered via 12VDC support power supply. Frequency Range Investigated: 30 MHz - 20 GHz. Carrier Frequency: 1988.75 MHz. Modulation Type: CDMA. Temperature: 79°F, Relative Humidity: 35%.

Transducer Legend:

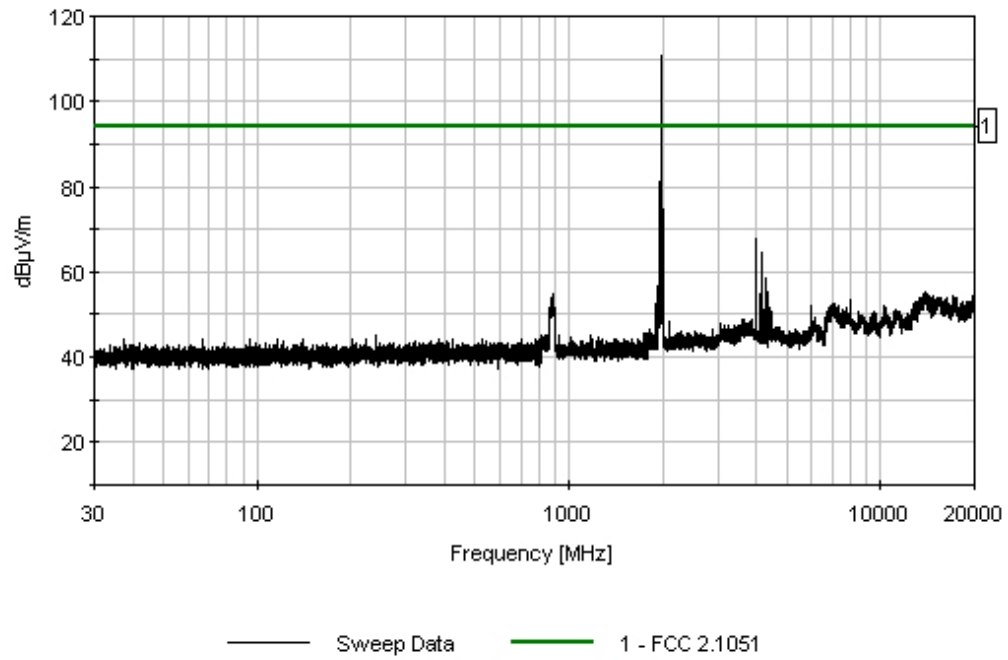
T1=Cable 40 GHz 36"

Measurement Data: Reading listed by margin.

Test Lead: RF Output Downlink

#	Freq MHz	Rdng dBμV	T1 dB				Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	1989.046M	109.8	+0.9				+0.0	110.7	110.7 Carrier	+0.0	RF Ou
2	3977.570M	68.9	+1.3				+0.0	70.2	94.0	-23.8	RF Ou
3	3977.500M	68.0	+1.3				+0.0	69.3	94.0	-24.7	RF Ou
4	4174.500M	66.6	+1.4				+0.0	68.0	94.0	-26.0	RF Ou
5	7955.002M	55.9	+2.0				+0.0	57.9	94.0	-36.1	RF Ou
6	5966.274M	53.5	+1.6				+0.0	55.1	94.0	-38.9	RF Ou

CKC Laboratories Date: 8/31/2006 Time: 12:18:51 Wilson Electronics WO#: 81892
FCC 2.1051 Test Lead: RF Output Downlink 12VDC Sequence#: 14
Wilson Electronics M/N 811210 1900MHz CDMA Downlink High Channel



Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Wilson Electronics**

Specification: **FCC 2.1051**

Work Order #: **81892**

Date: 8/31/2006

Test Type: **Antenna Conducted**

Time: 12:58:03

Equipment: **Bidirectional Cellular Amplifier Repeater**

Sequence#: 20

Manufacturer: Wilson Electronics

Tested By: Randal Clark

Model: 811210

12VDC

S/N: 8112100110000

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Pasternack 36"	NA	02/08/2005	02/08/2007	P05202

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Bidirectional Cellular Amplifier Repeater*	Wilson Electronics	811210	8112100110000

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035
Digital Signal Generator	Agilent	E4432B	MY41000108

Test Conditions / Notes:

Equipment is a bidirectional cellular amplifier repeater operating on frequency range of 824 to 894 MHz and 1850-1990 MHz. Uplink frequency range 824 – 849 MHz and 1850 - 1910 MHz. Downlink frequency range 869 – 894 MHz and 1930-1990 MHz. Equipment is powered via 12VDC support power supply. Frequency Range Investigated: 30 MHz - 20 GHz. Carrier Frequency: 1930.28 MHz. Modulation Type: EDGE. Temperature: 79°F, Relative Humidity: 35%.

Transducer Legend:

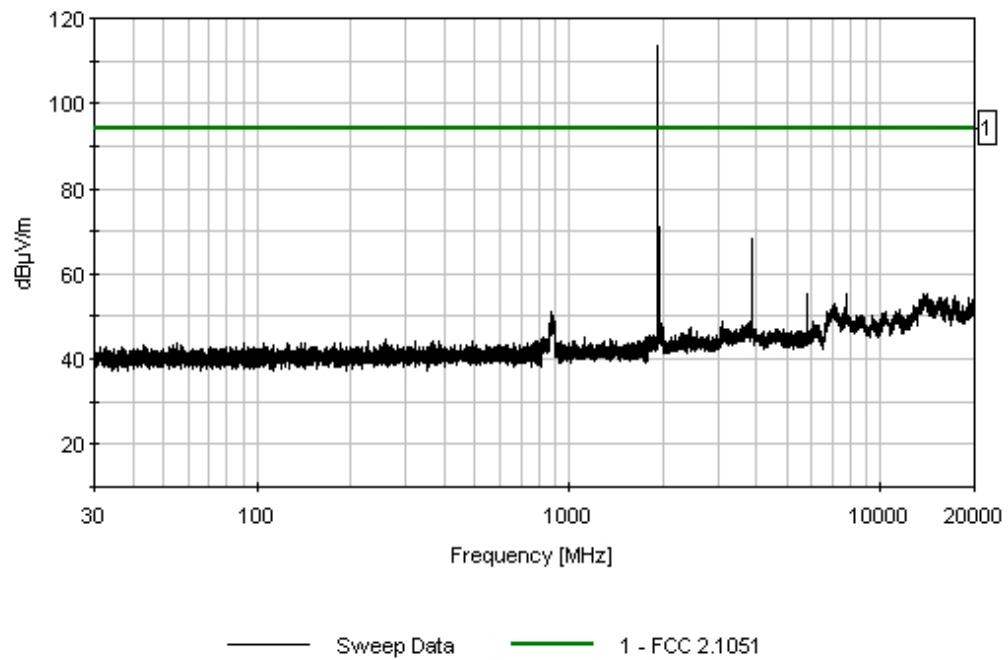
T1=Cable 40 GHz 36"

Measurement Data: Reading listed by margin.

Test Lead: RF Output Downlink

#	Freq MHz	Rdng dBμV	T1 dB				Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	1930.257M	112.6	+0.9				+0.0	113.5	113.5 Carrier	+0.0	RF Ou
2	3860.541M	69.5	+1.3				+0.0	70.8	94.0	-23.2	RF Ou
3	5790.810M	56.6	+1.6				+0.0	58.2	94.0	-35.8	RF Ou
4	7721.073M	54.2	+2.0				+0.0	56.2	94.0	-37.8	RF Ou
5	9651.351M	52.8	+2.2				+0.0	55.0	94.0	-39.0	RF Ou

CKC Laboratories Date: 8/31/2006 Time: 12:58:03 Wilson Electronics W/O#: 81892
FCC 2.1051 Test Lead: RF Output Downlink 12VDC Sequence#: 20
Wilson Electronics M/N 811210 1900MHz EDGE Downlink Low Channel



Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Wilson Electronics**

Specification: **FCC 2.1051**

Work Order #: **81892**

Date: 8/31/2006

Test Type: **Antenna Conducted**

Time: 12:55:01

Equipment: **Bidirectional Cellular Amplifier Repeater**

Sequence#: 19

Manufacturer: Wilson Electronics

Tested By: Randal Clark

Model: 811210

12VDC

S/N: 8112100110000

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Pasternack 36"	NA	02/08/2005	02/08/2007	P05202

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Bidirectional Cellular Amplifier Repeater*	Wilson Electronics	811210	8112100110000

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035
Digital Signal Generator	Agilent	E4432B	MY41000108

Test Conditions / Notes:

Equipment is a bidirectional cellular amplifier repeater operating on frequency range of 824 to 894 MHz and 1850-1990 MHz. Uplink frequency range 824 – 849 MHz and 1850 - 1910 MHz. Downlink frequency range 869 – 894 MHz and 1930-1990 MHz. Equipment is powered via 12VDC support power supply. Frequency Range Investigated: 30 MHz - 20 GHz. Carrier Frequency: 1960 MHz. Modulation Type: EDGE. Temperature: 79°F, Relative Humidity: 35%.

Transducer Legend:

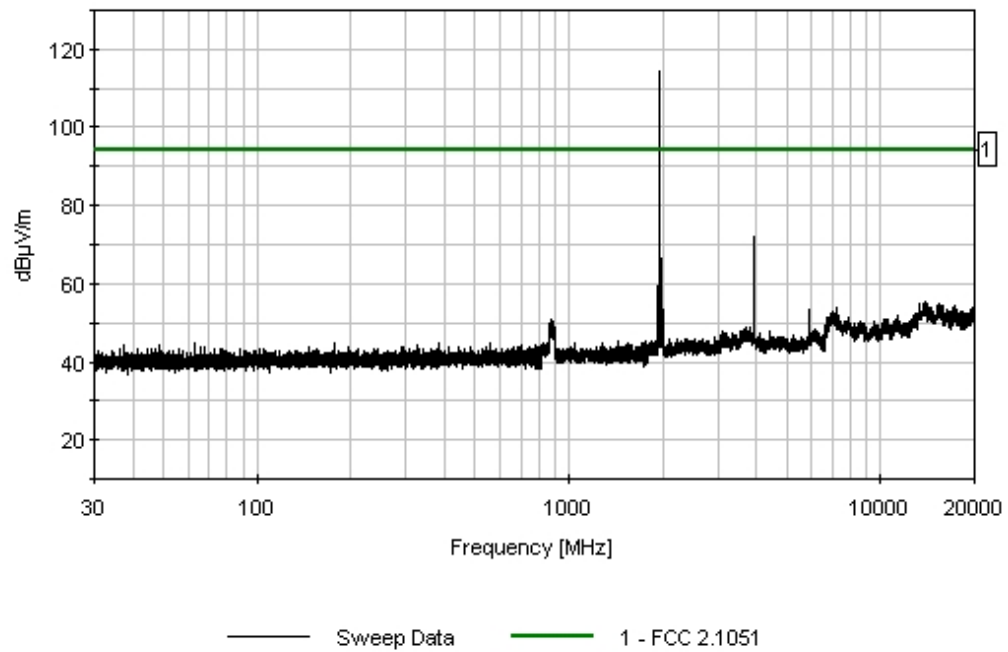
T1=Cable 40 GHz 36"

Measurement Data: Reading listed by margin.

Test Lead: RF Output Downlink

#	Freq MHz	Rdng dBμV	T1 dB				Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	1959.979M	113.7	+0.9				+0.0	114.6	114.6	+0.0	RF Ou
									Carrier		
2	3919.979M	72.8	+1.3				+0.0	74.1	94.0	-19.9	RF Ou
3	7839.949M	55.1	+2.0				+0.0	57.1	94.0	-36.9	RF Ou
4	5879.958M	54.8	+1.6				+0.0	56.4	94.0	-37.6	RF Ou
5	9799.925M	50.8	+2.2				+0.0	53.0	94.0	-41.0	RF Ou

CKC Laboratories Date: 8/31/2006 Time: 12:55:01 Wilson Electronics WO#: 81892
FCC 2.1051 Test Lead: RF Output Downlink 12VDC Sequence#: 19
Wilson Electronics M/N 811210 1900MHz EDGE Downlink Mid Channel



Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Wilson Electronics**

Specification: **FCC 2.1051**

Work Order #: **81892**

Date: 8/31/2006

Test Type: **Antenna Conducted**

Time: 12:48:30

Equipment: **Bidirectional Cellular Amplifier Repeater**

Sequence#: 18

Manufacturer: Wilson Electronics

Tested By: Randal Clark

Model: 811210

12VDC

S/N: 8112100110000

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Pasternack 36"	NA	02/08/2005	02/08/2007	P05202

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Bidirectional Cellular Amplifier Repeater*	Wilson Electronics	811210	8112100110000

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035
Digital Signal Generator	Agilent	E4432B	MY41000108

Test Conditions / Notes:

Equipment is a bidirectional cellular amplifier repeater operating on frequency range of 824 to 894 MHz and 1850-1990 MHz. Uplink frequency range 824 – 849 MHz and 1850 - 1910 MHz. Downlink frequency range 869 – 894 MHz and 1930-1990 MHz. Equipment is powered via 12VDC support power supply. Frequency Range Investigated: 30 MHz - 20 GHz. Carrier Frequency: 1989.72 MHz. Modulation Type: EDGE. Temperature: 79°F, Relative Humidity: 35%.

Transducer Legend:

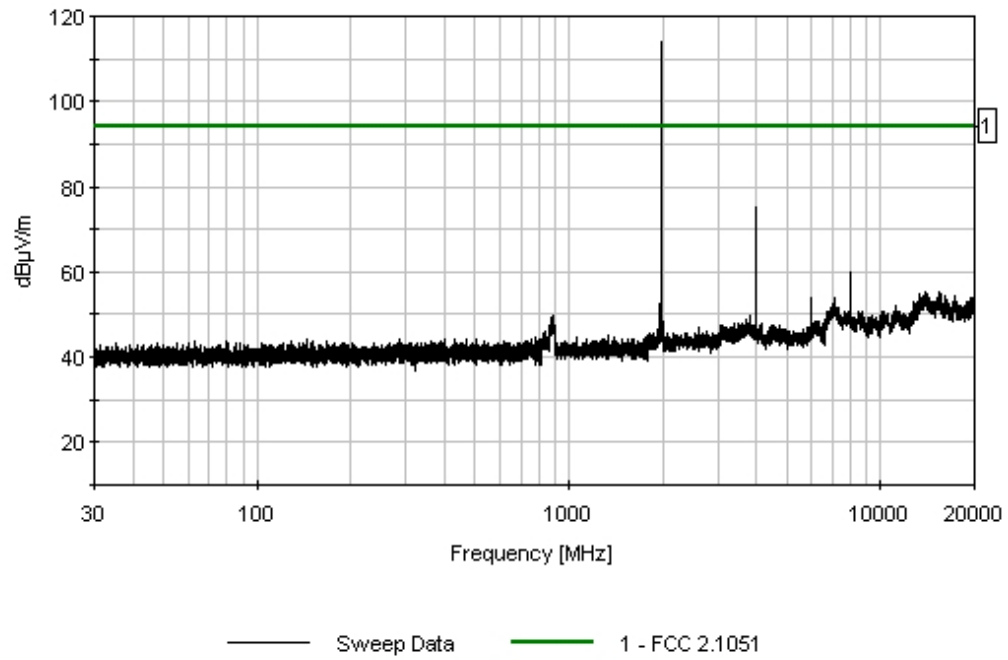
T1=Cable 40 GHz 36"

Measurement Data: Reading listed by margin.

Test Lead: RF Output Downlink

#	Freq MHz	Rdng dBμV	T1 dB				Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	1989.698M	113.4	+0.9				+0.0	114.3	114.3 Carrier	+0.0	RF Ou
2	3979.423M	76.2	+1.3				+0.0	77.5	94.0	-16.5	RF Ou
3	7958.738M	62.1	+2.0				+0.0	64.1	94.0	-29.9	RF Ou
4	5969.133M	57.6	+1.6				+0.0	59.2	94.0	-34.8	RF Ou
5	9948.499M	51.8	+2.3				+0.0	54.1	94.0	-39.9	RF Ou

CKC Laboratories Date: 8/31/2006 Time: 12:48:30 Wilson Electronics W/O#: 81892
FCC 2.1051 Test Lead: RF Output Downlink 12VDC Sequence#: 18
Wilson Electronics M/N 811210 1900MHz EDGE Downlink High Channel



Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Wilson Electronics**

Specification: **FCC 2.1051**

Work Order #: **81892**

Date: 8/31/2006

Test Type: **Antenna Conducted**

Time: 12:31:36

Equipment: **Bidirectional Cellular Amplifier Repeater**

Sequence#: 15

Manufacturer: Wilson Electronics

Tested By: Randal Clark

Model: 811210

12VDC

S/N: 8112100110000

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Pasternack 36"	NA	02/08/2005	02/08/2007	P05202

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Bidirectional Cellular Amplifier Repeater*	Wilson Electronics	811210	8112100110000

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035
Digital Signal Generator	Agilent	E4432B	MY41000108

Test Conditions / Notes:

Equipment is a bidirectional cellular amplifier repeater operating on frequency range of 824 to 894 MHz and 1850-1990 MHz. Uplink frequency range 824 - 849 MHz and 1850 - 1910 MHz. Downlink frequency range 869 - 894 MHz and 1930-1990 MHz. Equipment is powered via 12VDC support power supply. Frequency Range Investigated: 30 MHz - 20 GHz Carrier Frequency: 1930.28 MHz Modulation Type: GSM Temperature: 79°F, Relative Humidity: 35%.

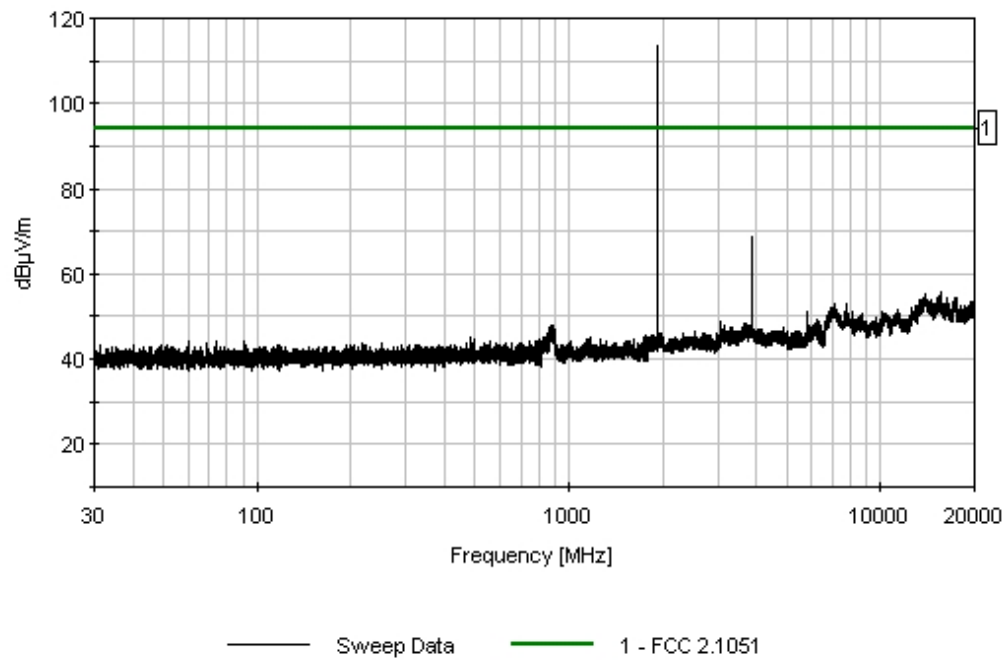
Transducer Legend:

T1=Cable 40 GHz 36"

Measurement Data: Reading listed by margin. Test Lead: RF Output Downlink

#	Freq MHz	Rdng dBμV	T1 dB				Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	1930.400M	112.5	+0.9				+0.0	113.4	113.4 Carrier	+0.0	RF Ou
2	3860.698M	68.2	+1.3				+0.0	69.5	94.0	-24.5	RF Ou
3	5791.038M	54.4	+1.6				+0.0	56.0	94.0	-38.0	RF Ou
4	7720.877M	52.9	+2.0				+0.0	54.9	94.0	-39.1	RF Ou
5	9651.112M	48.9	+2.2				+0.0	51.1	94.0	-42.9	RF Ou

CKC Laboratories Date: 8/31/2006 Time: 12:31:36 Wilson Electronics WO#: 81892
FCC 2.1051 Test Lead: RF Output Downlink 12VDC Sequence#: 15
Wilson Electronics M/N 811210 1900MHz GSM Downlink Low Channel



Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Wilson Electronics**

Specification: **FCC 2.1051**

Work Order #: **81892**

Date: 8/31/2006

Test Type: **Antenna Conducted**

Time: 12:37:11

Equipment: **Bidirectional Cellular Amplifier Repeater**

Sequence#: 16

Manufacturer: Wilson Electronics

Tested By: Randal Clark

Model: 811210

12VDC

S/N: 8112100110000

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Pasternack 36"	NA	02/08/2005	02/08/2007	P05202

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Bidirectional Cellular Amplifier Repeater*	Wilson Electronics	811210	8112100110000

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035
Digital Signal Generator	Agilent	E4432B	MY41000108

Test Conditions / Notes:

Equipment is a bidirectional cellular amplifier repeater operating on frequency range of 824 to 894 MHz and 1850-1990 MHz. Uplink frequency range 824 - 849 MHz and 1850 - 1910 MHz. Downlink frequency range 869 - 894 MHz and 1930-1990 MHz. Equipment is powered via 12VDC support power supply. Frequency Range Investigated: 30 MHz - 20 GHz. Carrier Frequency: 1960 MHz. Modulation Type: GSM. Temperature: 79°F, Relative Humidity: 35%.

Transducer Legend:

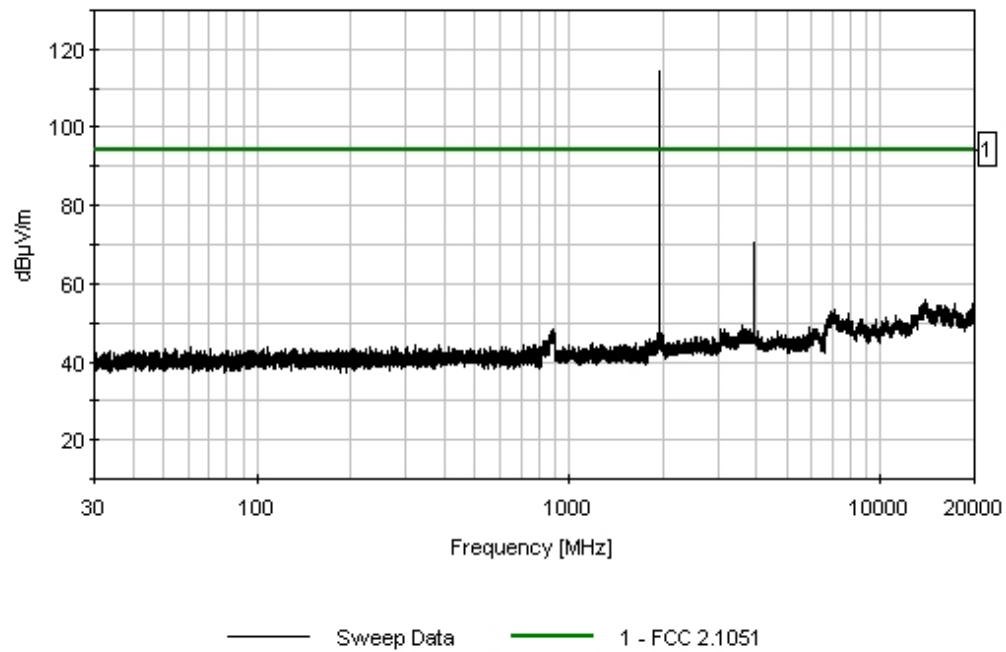
T1=Cable 40 GHz 36"

Measurement Data: Reading listed by margin.

Test Lead: RF Output Downlink

#	Freq MHz	Rdng dBμV	T1 dB				Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	1960.000M	113.7	+0.9				+0.0	114.6	114.6 Carrier	+0.0	RF Ou
2	3920.144M	69.5	+1.3				+0.0	70.8	94.0	-23.2	RF Ou
3	7840.288M	52.4	+2.0				+0.0	54.4	94.0	-39.6	RF Ou
4	5880.198M	50.4	+1.6				+0.0	52.0	94.0	-42.0	RF Ou

CKC Laboratories Date: 8/31/2006 Time: 12:37:11 Wilson Electronics W/O#: 81892
FCC 2.1051 Test Lead: RF Output Downlink 12VDC Sequence#: 16
Wilson Electronics M/N 811210 1900MHz GSM Downlink Mid Channel



Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Wilson Electronics**

Specification: **FCC 2.1051**

Work Order #: **81892**

Date: 8/31/2006

Test Type: **Antenna Conducted**

Time: 12:42:45

Equipment: **Bidirectional Cellular Amplifier Repeater**

Sequence#: 17

Manufacturer: Wilson Electronics

Tested By: Randal Clark

Model: 811210

12VDC

S/N: 8112100110000

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Pasternack 36"	NA	02/08/2005	02/08/2007	P05202

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Bidirectional Cellular Amplifier Repeater*	Wilson Electronics	811210	8112100110000

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035
Digital Signal Generator	Agilent	E4432B	MY41000108

Test Conditions / Notes:

Equipment is a bidirectional cellular amplifier repeater operating on frequency range of 824 to 894 MHz and 1850-1990 MHz. Uplink frequency range 824 - 849 MHz and 1850 - 1910 MHz. Downlink frequency range 869 - 894 MHz and 1930-1990 MHz. Equipment is powered via 12VDC support power supply. Frequency Range Investigated: 30 MHz - 20 GHz. Carrier Frequency: 1989.72 MHz. Modulation Type: GSM. Temperature: 79°F, Relative Humidity: 35%.

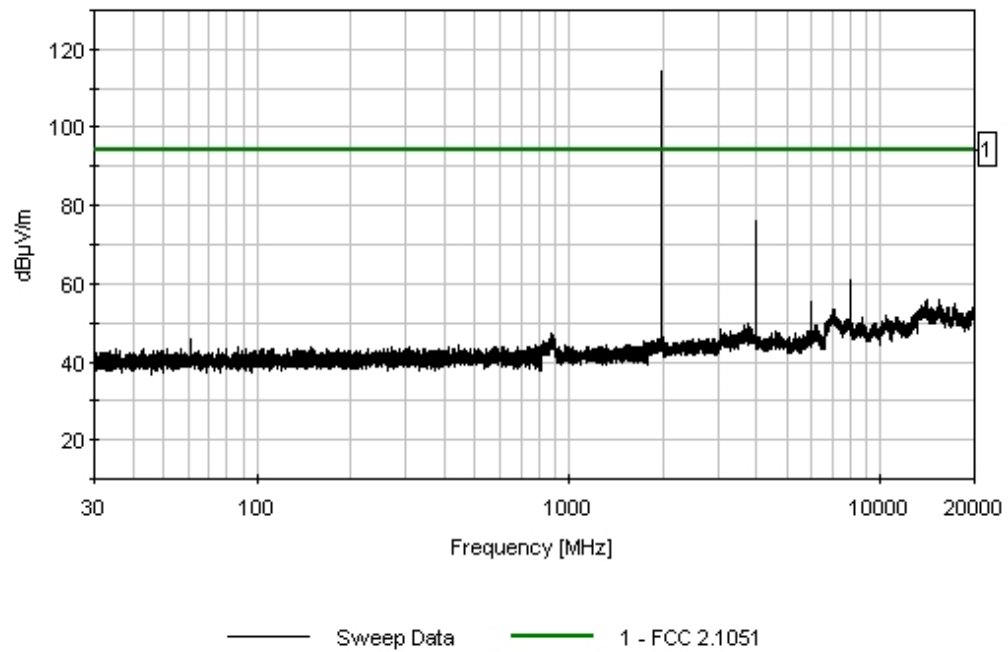
Transducer Legend:

T1=Cable 40 GHz 36"

Measurement Data: Reading listed by margin. Test Lead: RF Output Downlink

#	Freq MHz	Rdng dBμV	T1 dB				Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	1989.789M	113.5	+0.9				+0.0	114.4	114.4	+0.0	RF Ou
									Carrier		
2	3979.581M	75.9	+1.3				+0.0	77.2	94.0	-16.8	RF Ou
3	7959.153M	62.3	+2.0				+0.0	64.3	94.0	-29.7	RF Ou
4	5968.959M	56.1	+1.6				+0.0	57.7	94.0	-36.3	RF Ou
5	9948.270M	50.2	+2.3				+0.0	52.5	94.0	-41.5	RF Ou

CKC Laboratories Date: 8/31/2006 Time: 12:42:45 Wilson Electronics W/O#: 81892
FCC 2.1051 Test Lead: RF Output Downlink 12VDC Sequence#: 17
Wilson Electronics M/N 811210 1900MHz GSM Downlink High Channel



PHOTOGRAPH SHOWING DIRECT CONNECT TEST SETUP



FCC 2.1033(c)(14)/2.1053/24.238 - FIELD STRENGTH OF SPURIOUS RADIATION

Bandwidth settings used: 1 MHz.

Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)
Customer: **Wilson Electronics**
Specification: **FCC 2.1053**
Work Order #: **81892** Date: 9/6/2006
Test Type: **Maximized Emissions** Time: 13:11:26
Equipment: **Bidirectional Cellular Amplifier Repeater** Sequence#: 30
Manufacturer: Wilson Electronics Tested By: Randal Clark
Model: 811210
S/N: 8112100110000

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
EMCO Loop Antenna	1074	05/13/2005	05/13/2007	00226
Chase CBL6111C Bilog	2456	06/07/2005	06/07/2007	01991
EMCO 3115 Horn Antenna	9307-4085	04/29/2005	04/29/2007	00656
ARA MWH-1826/B Horn Antenna	1005	11/05/2004	11/05/2006	02046
HP 8447D Preamp	1937A02604	03/11/2005	03/11/2007	00099
HP 8449B Preamp	3008A00301	12/14/2004	12/14/2006	2010
Cable, Pasternack 36"	NA	02/08/2005	02/08/2007	P05202
Cable, Pasternack 48"	NA	02/08/2005	02/08/2007	P05203
Cable, Andrews Hardline	NA	05/27/2005	05/27/2007	P01012

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Bidirectional Cellular Amplifier Repeater*	Wilson Electronics	811210	8112100110000

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035
Digital Signal Generator	Agilent	E4432B	MY41000108

Test Conditions / Notes:

Equipment is a bidirectional cellular amplifier repeater operating on frequency range of 824 to 894 MHz and 1850-1990 MHz. Uplink frequency range 824 - 849 MHz and 1850 - 1910 MHz. Downlink frequency range 869 - 894 MHz and 1930-1990 MHz. Equipment is powered via 12VDC support power supply. Signal generator is input to the amplifier while output is terminated in a shielded characteristic load. Frequency Range Investigated: 30 MHz - 20 GHz. Carrier Frequency: Downlink Signal generator is set to worst case configuration for output power. Temperature: 79°F, Relative Humidity: 35%. **No EUT emissions detected within 20 dB of the limit.**

Transducer Legend:

--

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	dB	dB	dB	dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
---	-------------	--------------	----	----	----	----	---------------	----------------	----------------	--------------	--------------

PHOTOGRAPH SHOWING RADIATED EMISSIONS



DOWNLINK BLOCK EDGE

Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Wilson Electronics**

Specification: **FCC 2.1051**

Work Order #: **81892**

Date: 8/31/2006

Test Type: **Antenna Conducted**

Time: 11:29:13

Equipment: **Bidirectional Cellular Amplifier
Repeater**

Sequence#: 7

Manufacturer: Wilson Electronics

Tested By: Randal Clark

Model: 811210

12VDC

S/N: 8112100110000

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Pasternack 36"	NA	02/08/2005	02/08/2007	P05202

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Bidirectional Cellular Amplifier Repeater*	Wilson Electronics	811210	8112100110000

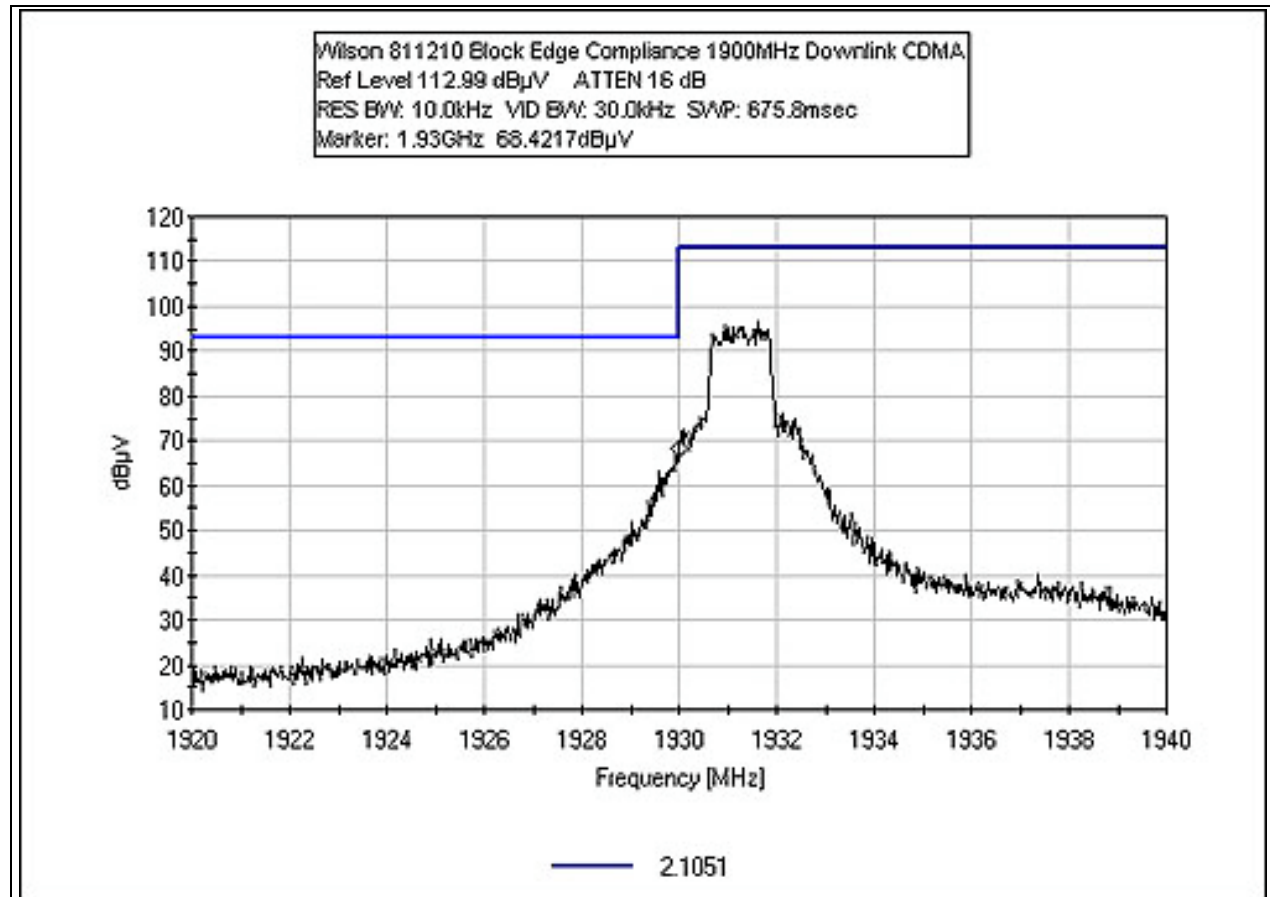
Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035
Digital Signal Generator	Agilent	E4432B	MY41000108

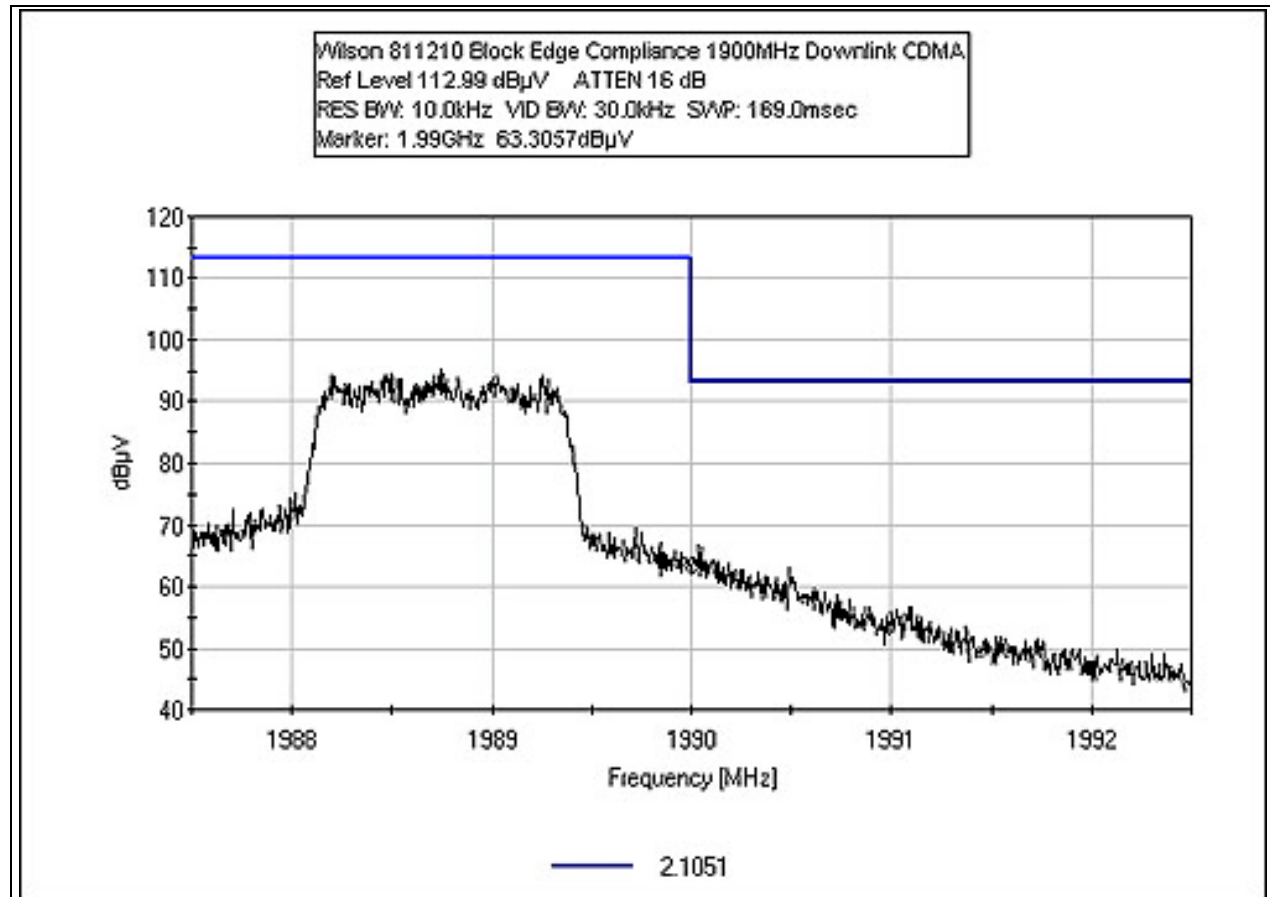
Test Conditions / Notes:

Equipment is a bi-directional cellular amplifier repeater operating on frequency range of 824 to 894 MHz and 1850-1990 MHz. Uplink frequency range 824 - 849 MHz and 1850 - 1910 MHz. Downlink frequency range 869 - 894 MHz and 1930-1990 MHz. Equipment is powered via 12VDC support power supply. Frequency Range Investigated: Block Edges. Temperature: 79°F, Relative Humidity: 35%.

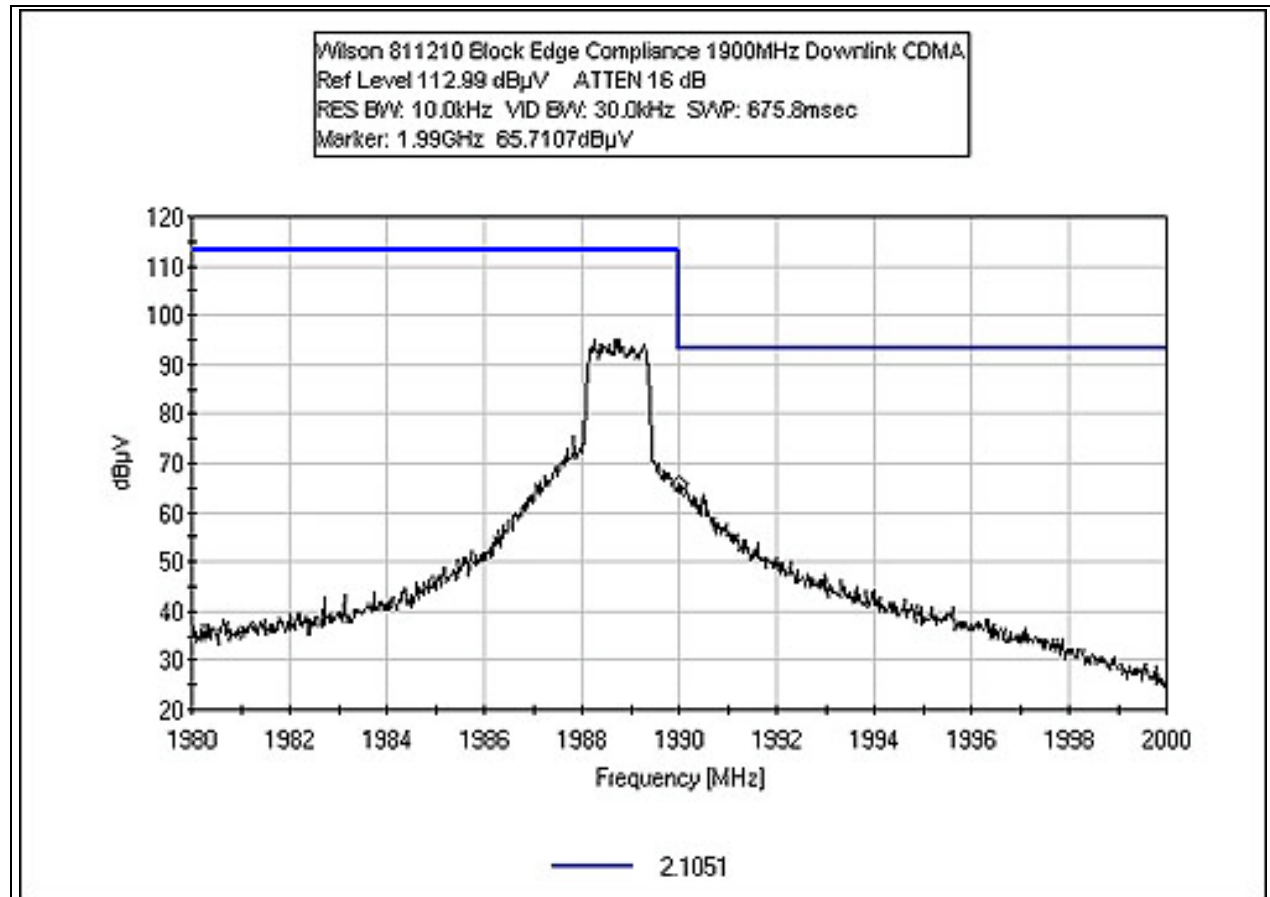
DOWNLINK BLOCK EDGE - CDMA LOW WIDE



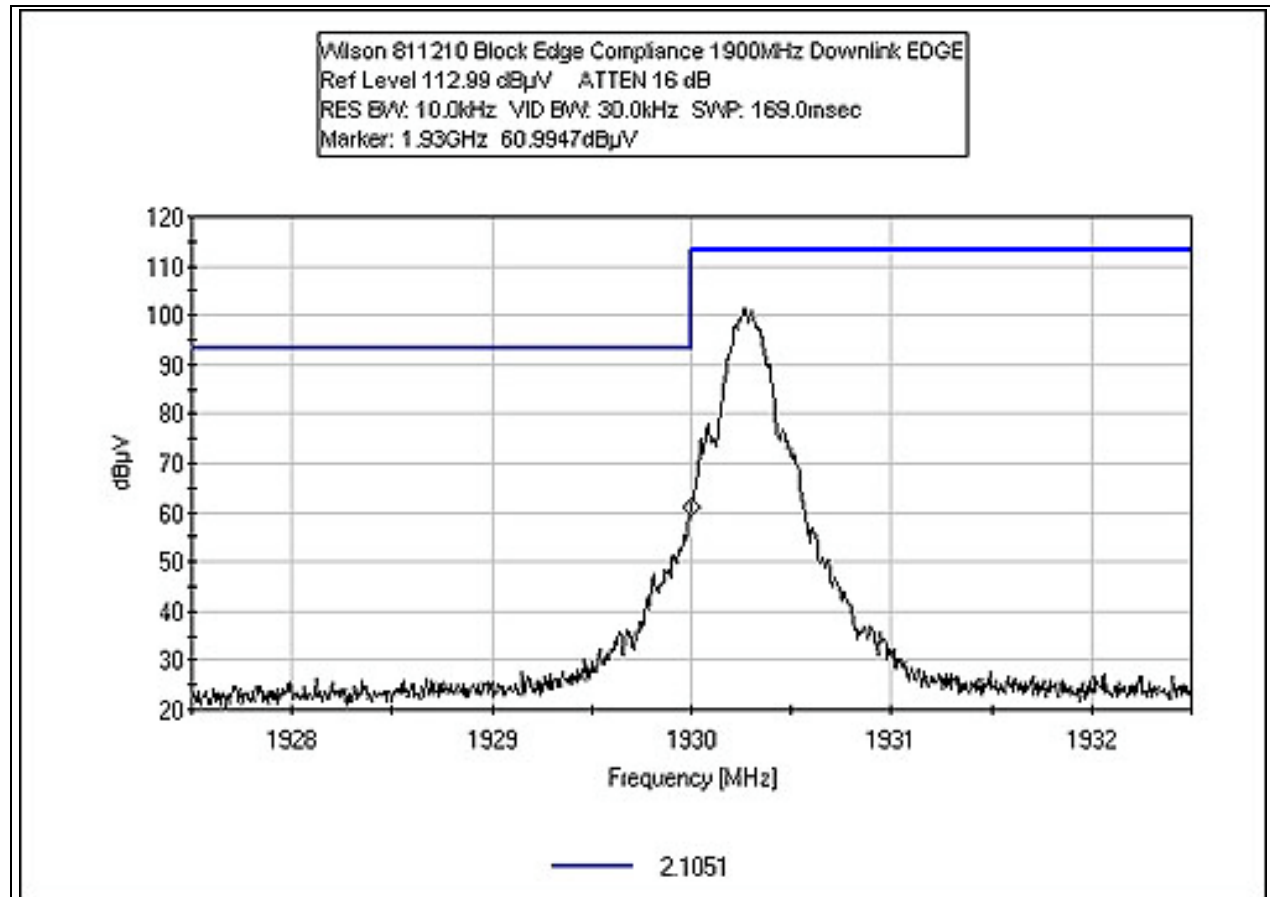
DOWNLINK BLOCK EDGE - CDMA HIGH



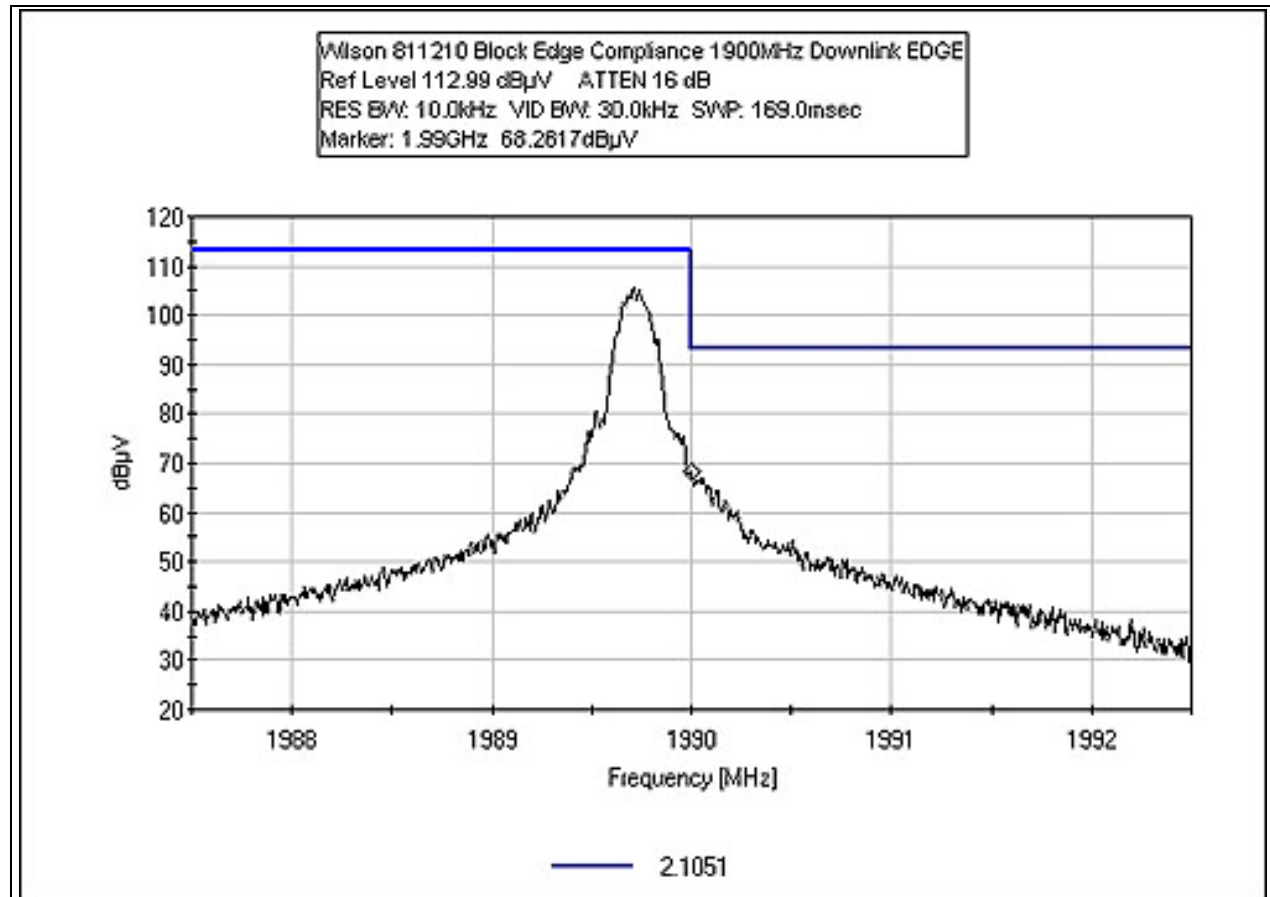
DOWNLINK BLOCK EDGE - CDMA HIGH WIDE



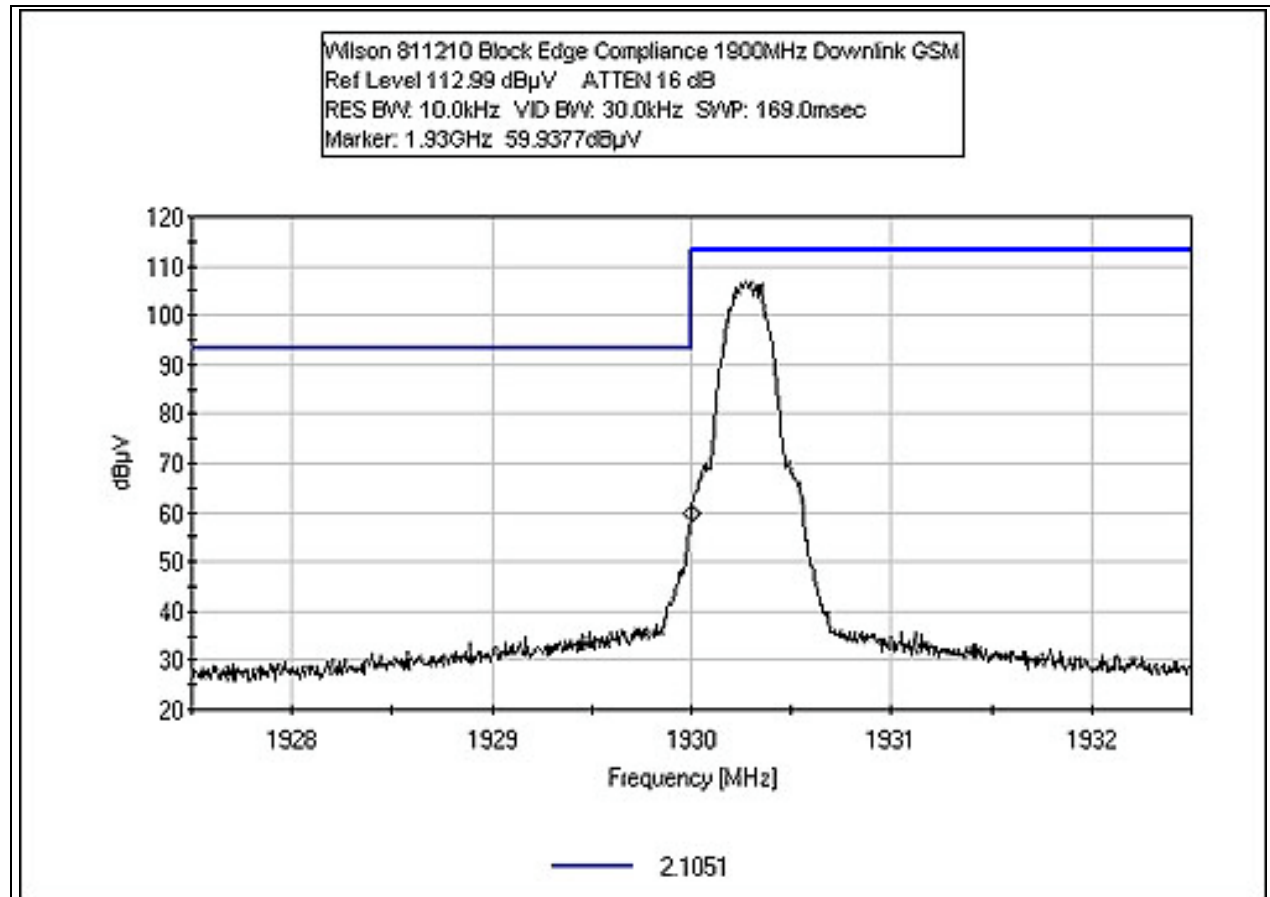
DOWNLINK BLOCK EDGE - EDGE LOW



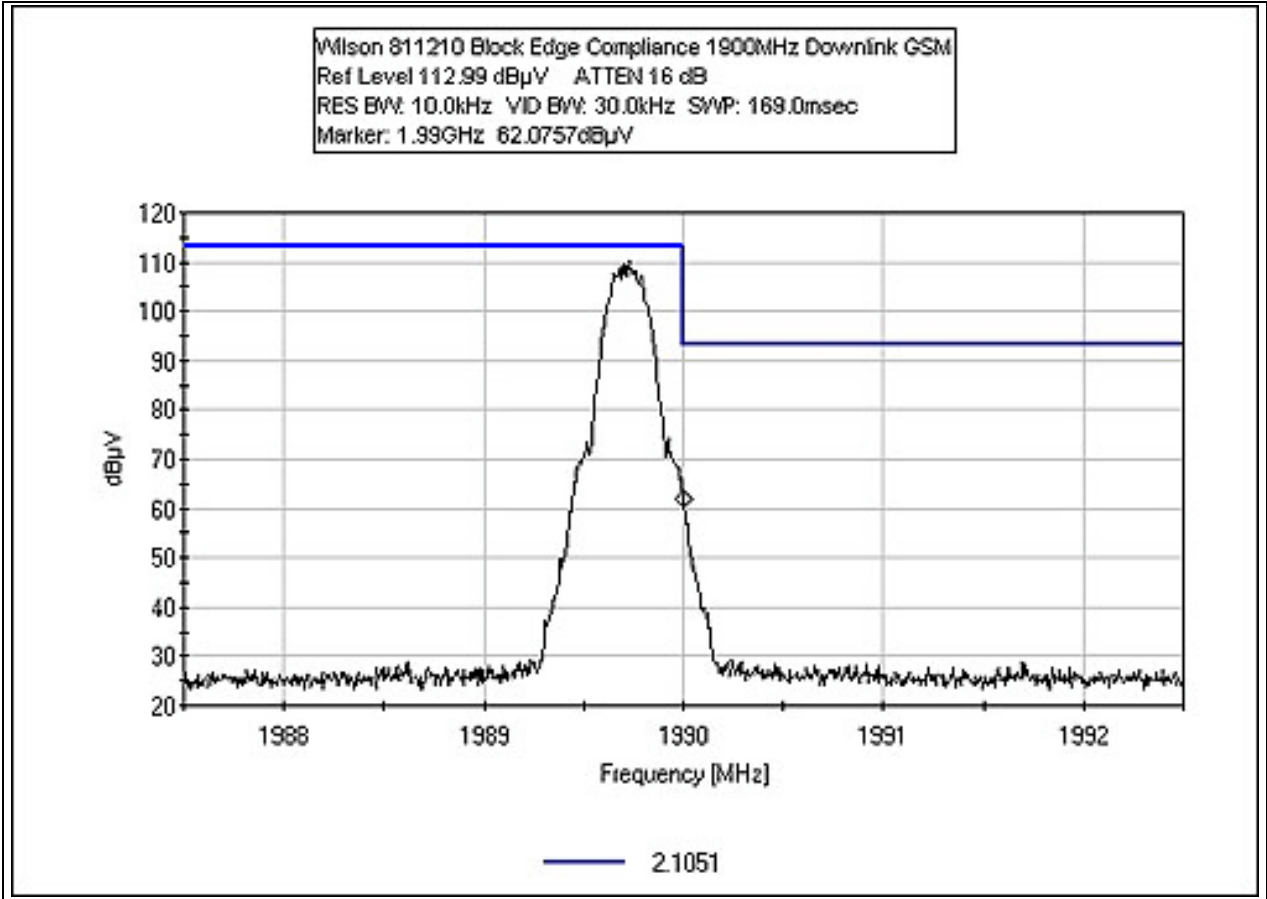
DOWNLINK BLOCK EDGE - EDGE HIGH



DOWNLINK BLOCK EDGE - GSM LOW



DOWNLINK BLOCK EDGE - GSM HIGH



PHOTOGRAPH SHOWING DIRECT CONNECT TEST SETUP



DOWNLINK INTERMODULATION ATTENUATION

Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Wilson Electronics**

Specification: **FCC 2.1051**

Work Order #: **81892**

Date: 9/1/2006

Test Type: **Antenna Conducted**

Time: 13:07:07

Equipment: **Bidirectional Cellular Amplifier Repeater**

Sequence#: 28

Manufacturer: Wilson Electronics

Tested By: Randal Clark

Model: 811210

12VDC

S/N: 8112100110000

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Pasternack 36"	NA	02/08/2005	02/08/2007	P05202

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Bidirectional Cellular Amplifier Repeater*	Wilson Electronics	811210	8112100110000

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035
Digital Signal Generator	Agilent	E4432B	MY41000108
Digital Signal Generator	Agilent	E4432B	MY41000111

Test Conditions / Notes:

Equipment is a bidirectional cellular amplifier repeater operating on frequency range of 824 to 894 MHz and 1850-1990 MHz. Uplink frequency range 824 - 849 MHz and 1850 - 1910 MHz. Downlink frequency range 869 - 894 MHz and 1930-1990 MHz. Equipment is powered via 12VDC support power supply. Frequency Range Investigated: 30 MHz - 20 GHz. Carrier Frequency: 1900 MHz Band As Listed. Modulation Type: As Listed. Temperature: 79°F, Relative Humidity: 35%. Intermodulation Attenuation.

Transducer Legend:

T1=Cable 40 GHz 36"

Measurement Data:

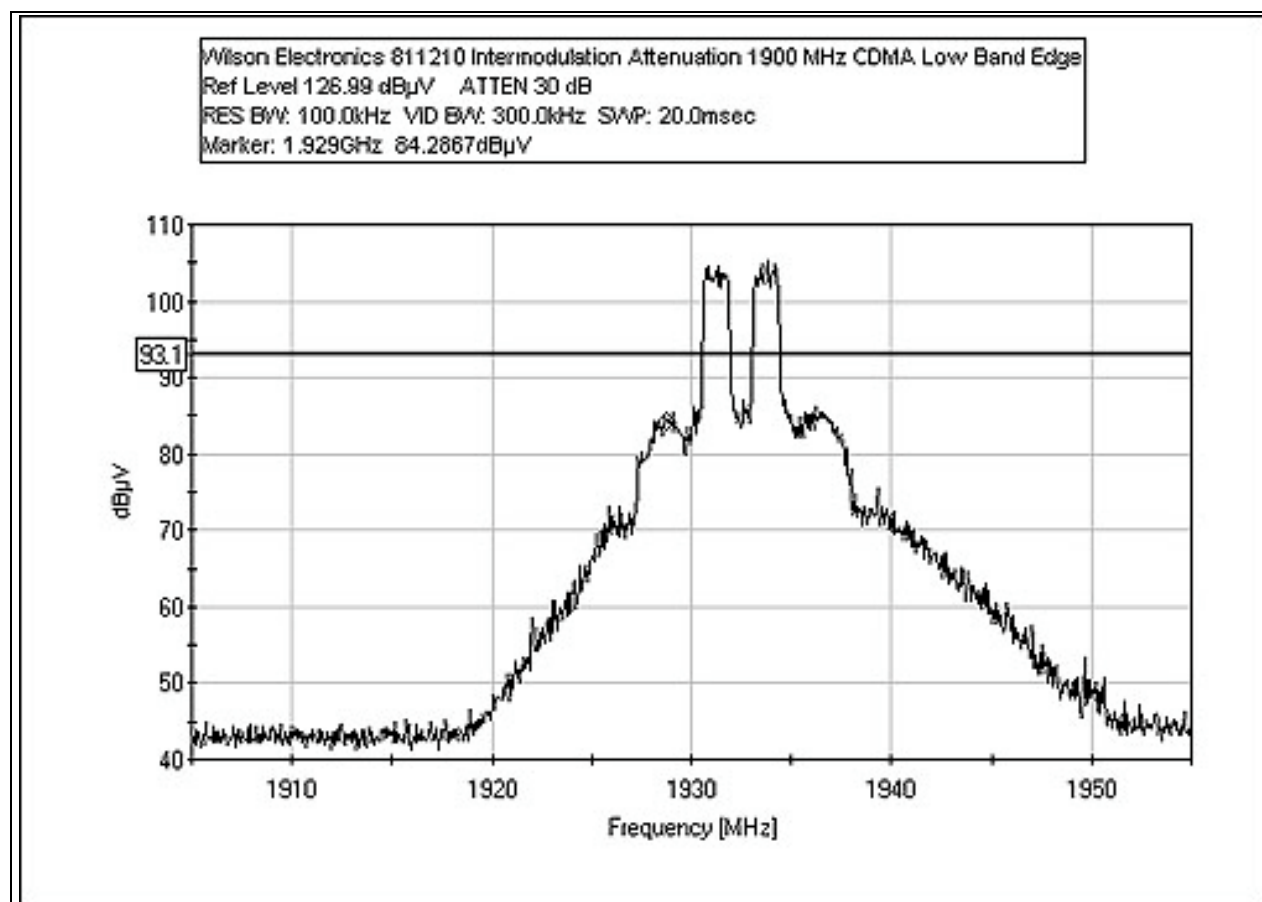
Reading listed by margin.

Test Lead: RF Output Downlink

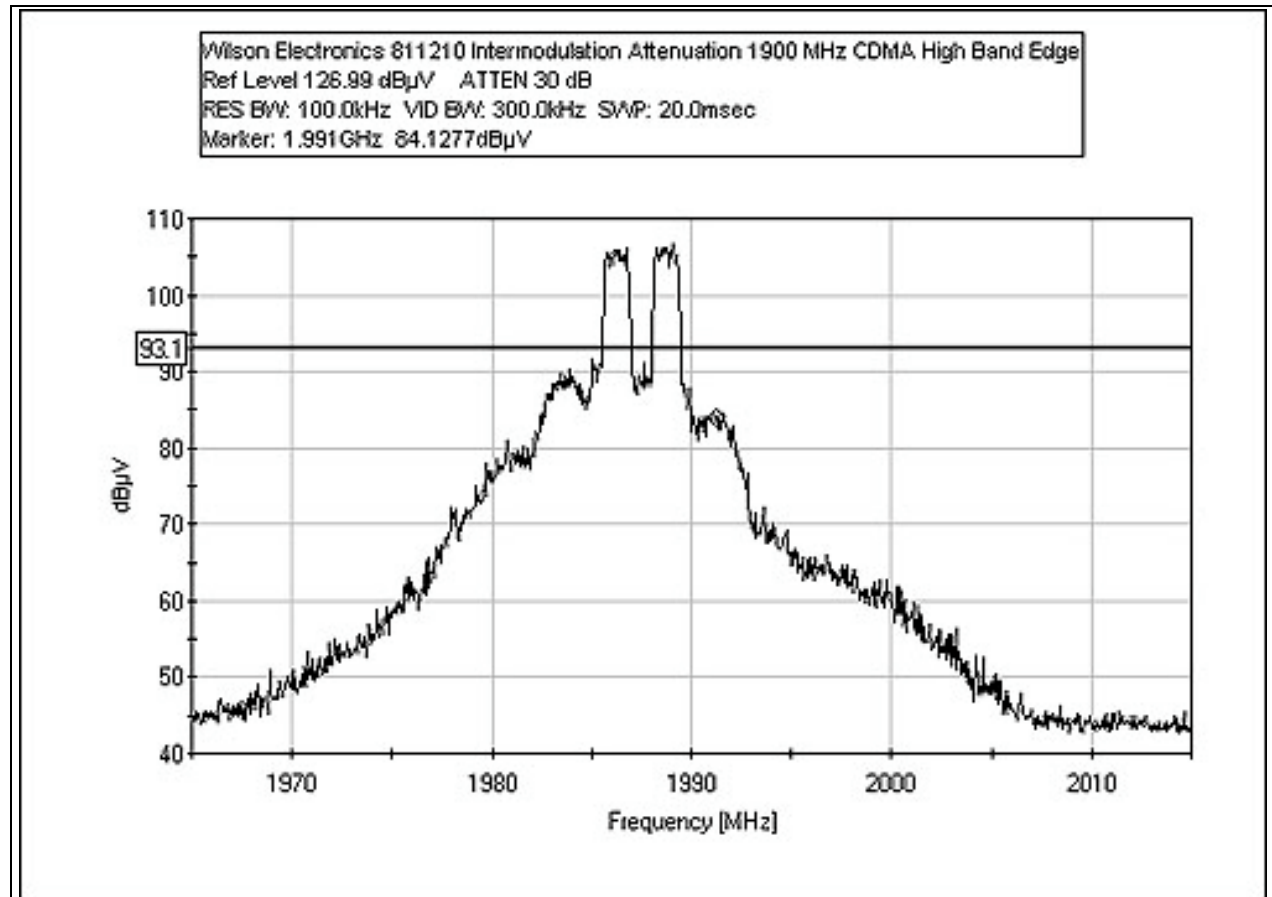
#	Freq MHz	Rdng dBμV	T1 dB				Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	1929.700M	91.1	+0.9				+0.0	92.0	94.0	-2.0	RF Ou
									EDGE Low		
2	1929.865M	85.4	+0.9				+0.0	86.3	94.0	-7.7	RF Ou
									GSM Low		
3	1928.800M	84.9	+0.9				+0.0	85.8	94.0	-8.2	RF Ou
									CDMA Low		
4	1991.350M	83.8	+0.9				+0.0	84.7	94.0	-9.3	RF Ou
									CDMA High		

5	1990.290M	83.5	+0.9	+0.0	84.4	94.0	-9.6	RF Ou
						GSM High		
6	3978.905M	58.4	+1.3	+0.0	59.7	94.0	-34.3	RF Ou
						GSM High		
7	3974.950M	57.4	+1.3	+0.0	58.7	94.0	-35.3	RF Ou
						CDMA High		
8	3861.140M	55.6	+1.3	+0.0	56.9	94.0	-37.1	RF Ou
						EDGE Low		
9	3861.035M	54.7	+1.3	+0.0	56.0	94.0	-38.0	RF Ou
						GSM Low		
10	5968.550M	49.8	+1.6	+0.0	51.4	94.0	-42.6	RF Ou
						GSM High		
11	3862.950M	50.0	+1.3	+0.0	51.3	94.0	-42.7	RF Ou
						CDMA Low		
12	5791.920M	47.7	+1.6	+0.0	49.3	94.0	-44.7	RF Ou
						GSM Low		
13	5791.965M	41.9	+1.6	+0.0	43.5	94.0	-50.5	RF Ou
						EDGE Low		

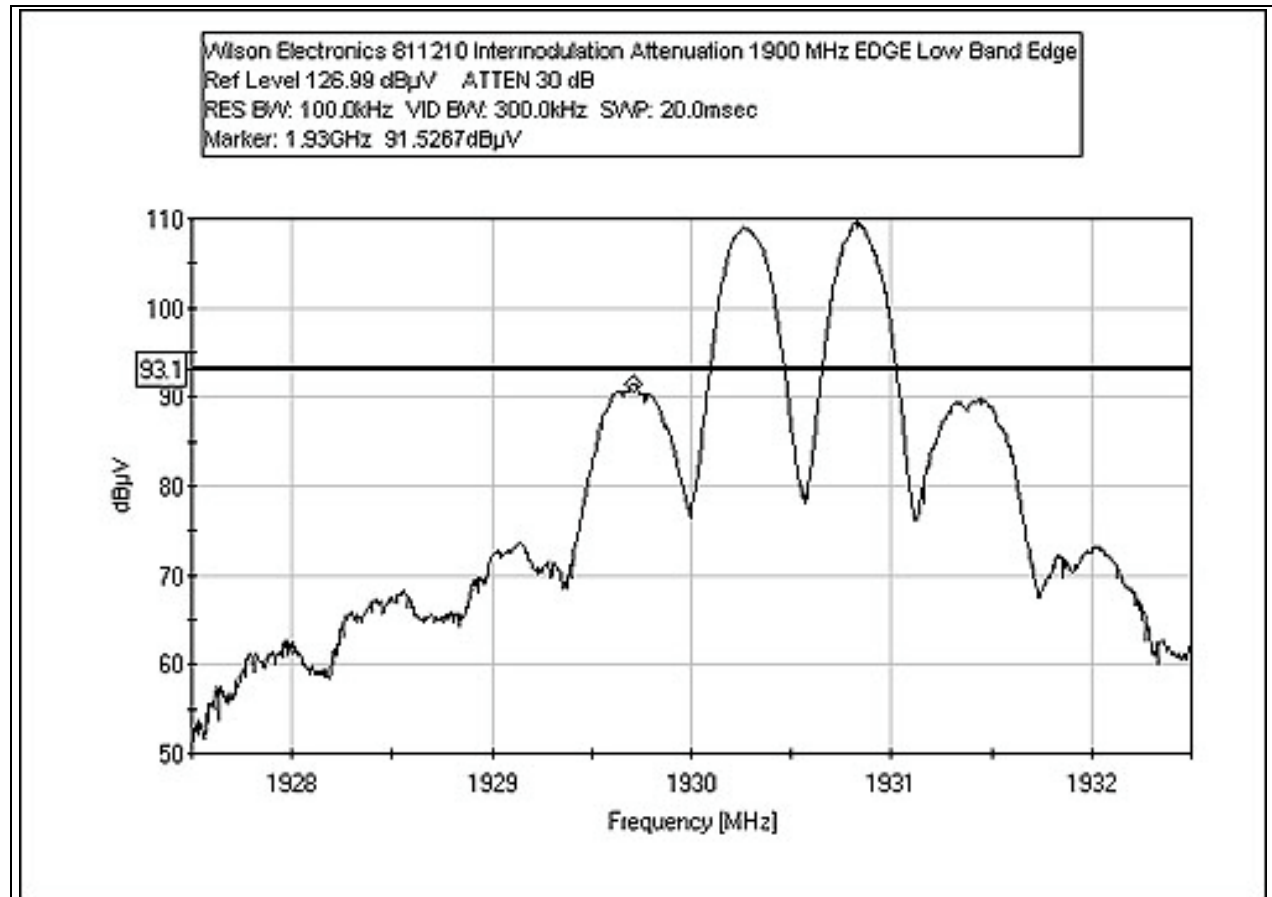
DOWNLINK INTERMODULATION ATTENUATION - CDMA LOW BAND EDGE



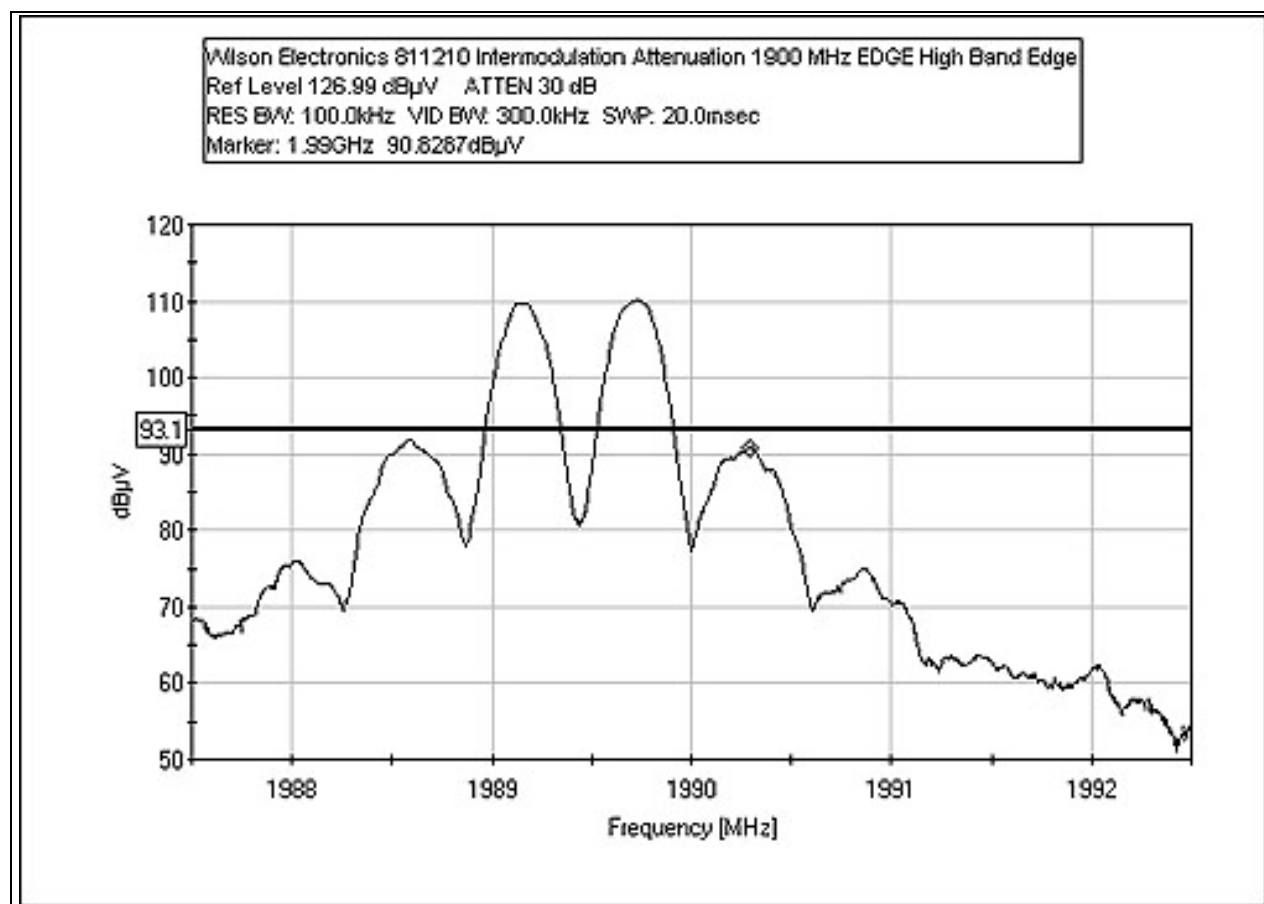
DOWNLINK INTERMODULATION ATTENUATION - CDMA HIGH BAND EDGE



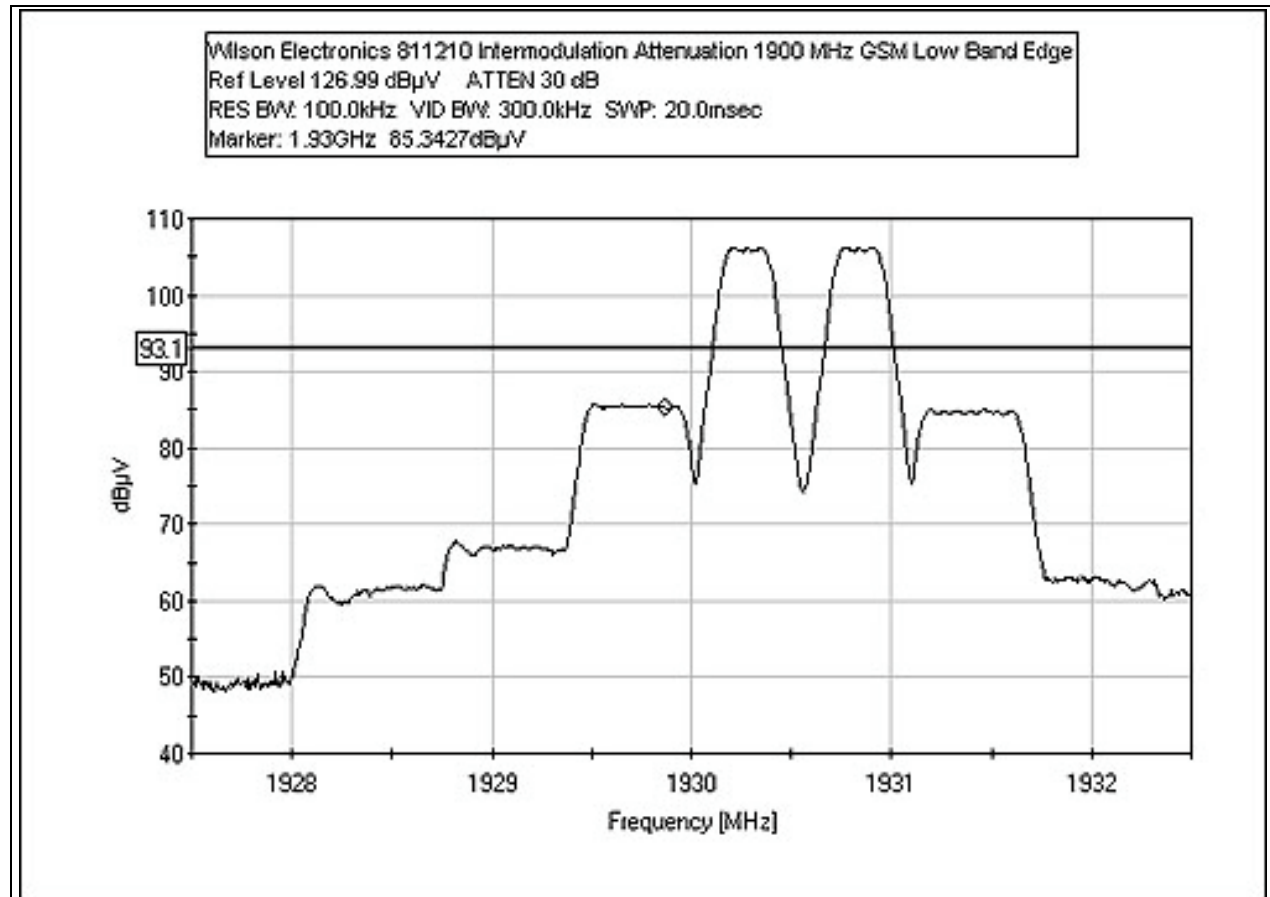
DOWNLINK INTERMODULATION ATTENUATION - EDGE LOW BAND EDGE



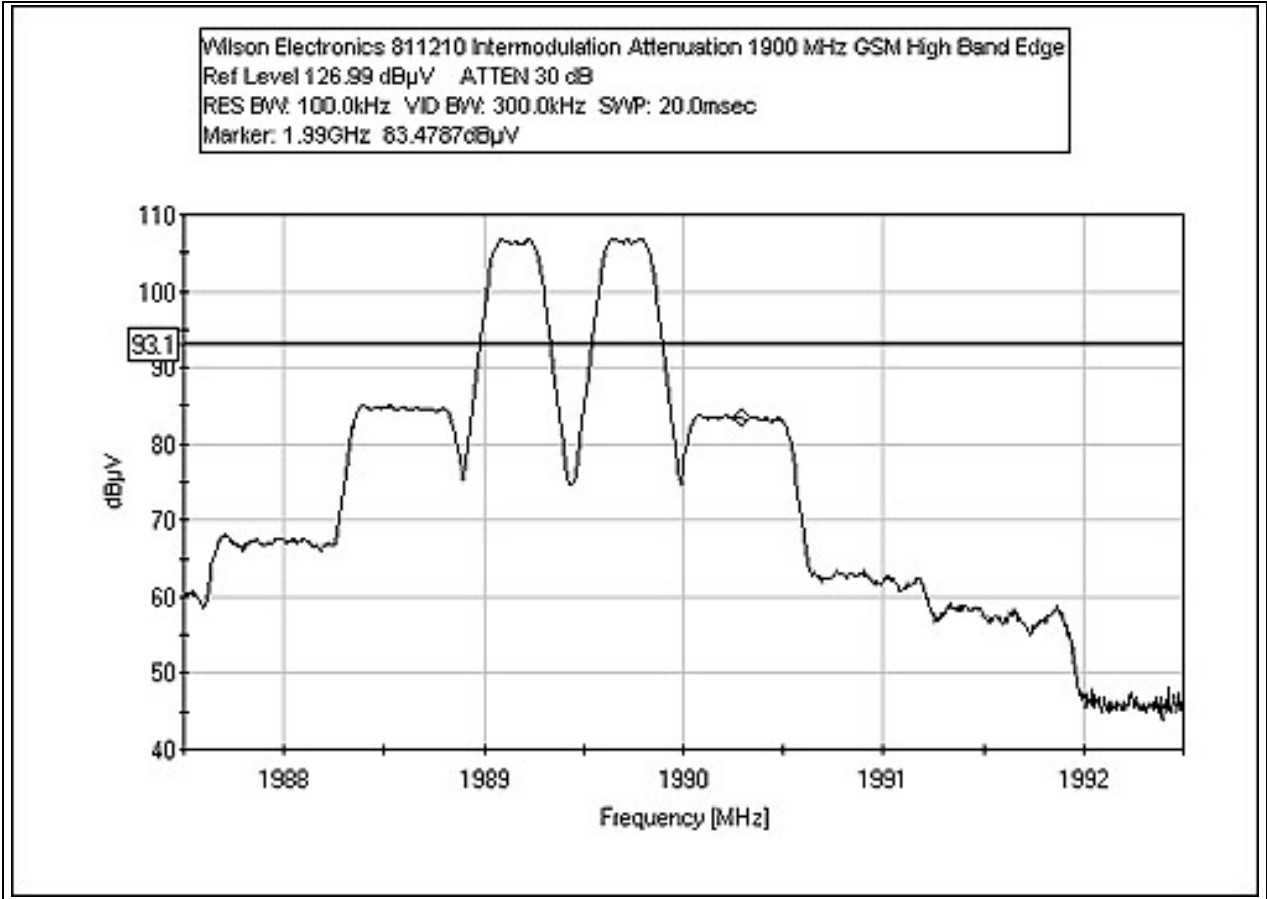
DOWNLINK INTERMODULATION ATTENUATION - EDGE HIGH BAND EDGE



DOWNLINK INTERMODULATION ATTENUATION - GSM LOW BAND EDGE



DOWNLINK INTERMODULATION ATTENUATION - GSM HIGH BAND EDGE



INTERMODULATION ATTENUATION



DOWNLINK INPUT VS OUTPUT

Test Location: CKC Laboratories • 4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Wilson Electronics**
Specification: **FCC 2.1049 / RSS 131**
Work Order #: **81892**
Test Type: **Antenna Conducted**
Equipment: **Bidirectional Cellular Amplifier Repeater**

Manufacturer: Wilson Electronics
Model: 811210
S/N: 8112100110000

Tested By: Randal Clark
12VDC

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Pasternack 36"	NA	02/08/2005	02/08/2007	P05202

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Bidirectional Cellular Amplifier Repeater*	Wilson Electronics	811210	8112100110000

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035
Digital Signal Generator	Agilent	E4432B	MY41000108

Test Conditions / Notes:

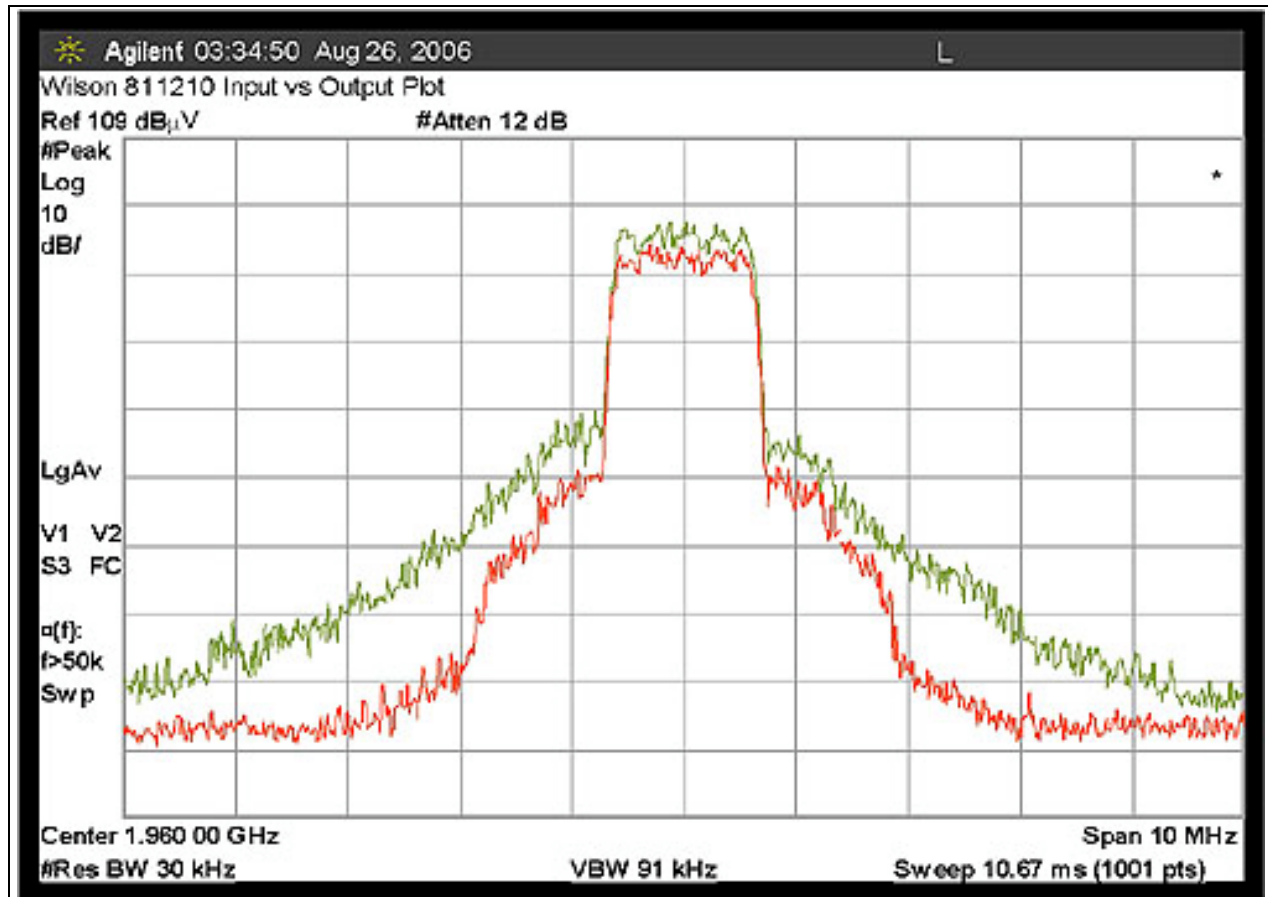
Equipment is a bi-directional cellular amplifier repeater operating on frequency range of 824 to 894 MHz and 1850-1990 MHz. Uplink frequency range 824 - 849 MHz and 1850 - 1910 MHz. Downlink frequency range 869 - 894 MHz and 1930-1990 MHz. Equipment is powered via 12VDC support power supply. Antenna port is terminated into spectrum analyzer. Signal generator levels are adjusted to show close comparison of modulation waveforms – plots do not represent amplifier gain.

Frequency Range Investigated: Carrier

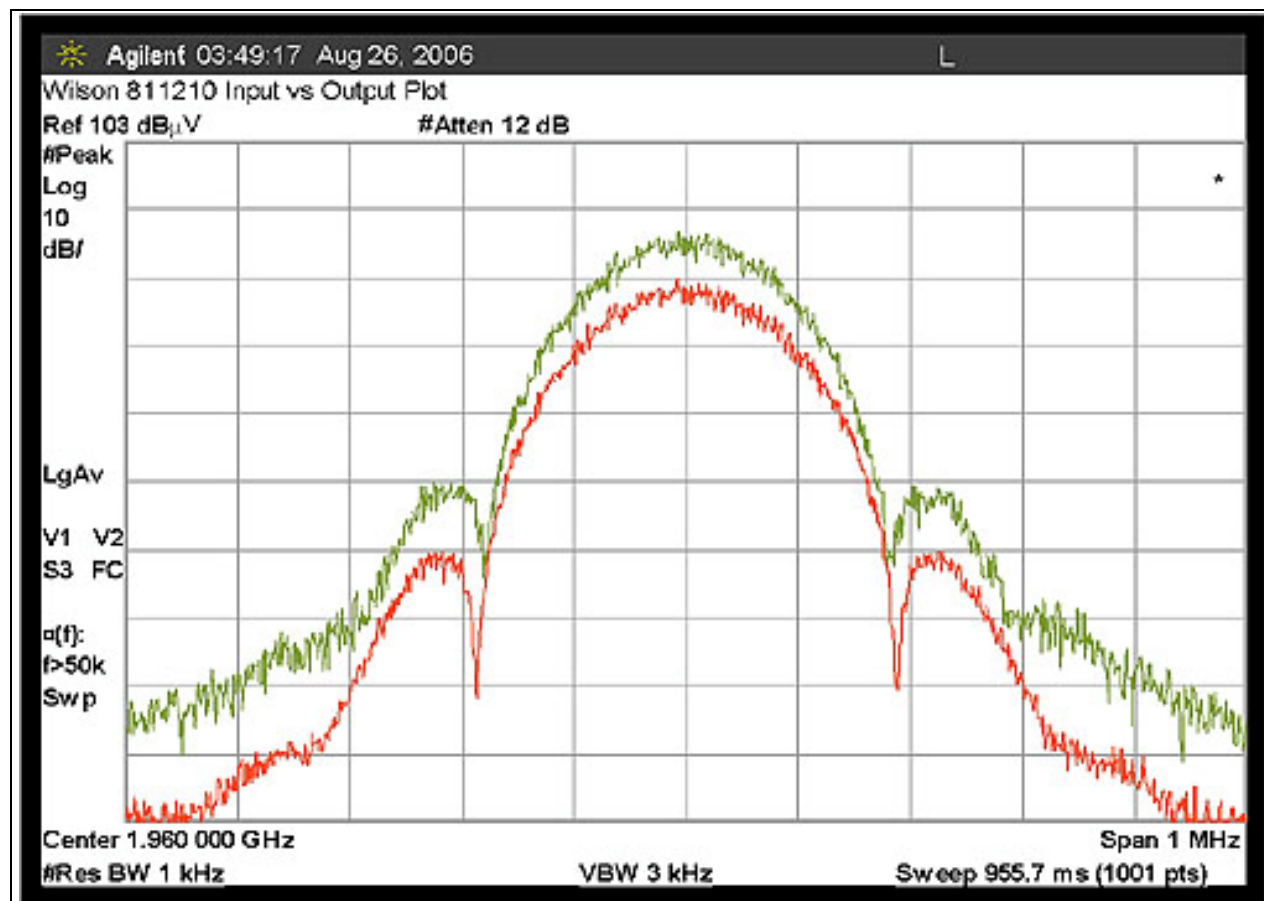
Temperature: 79°F

Relative Humidity: 35%

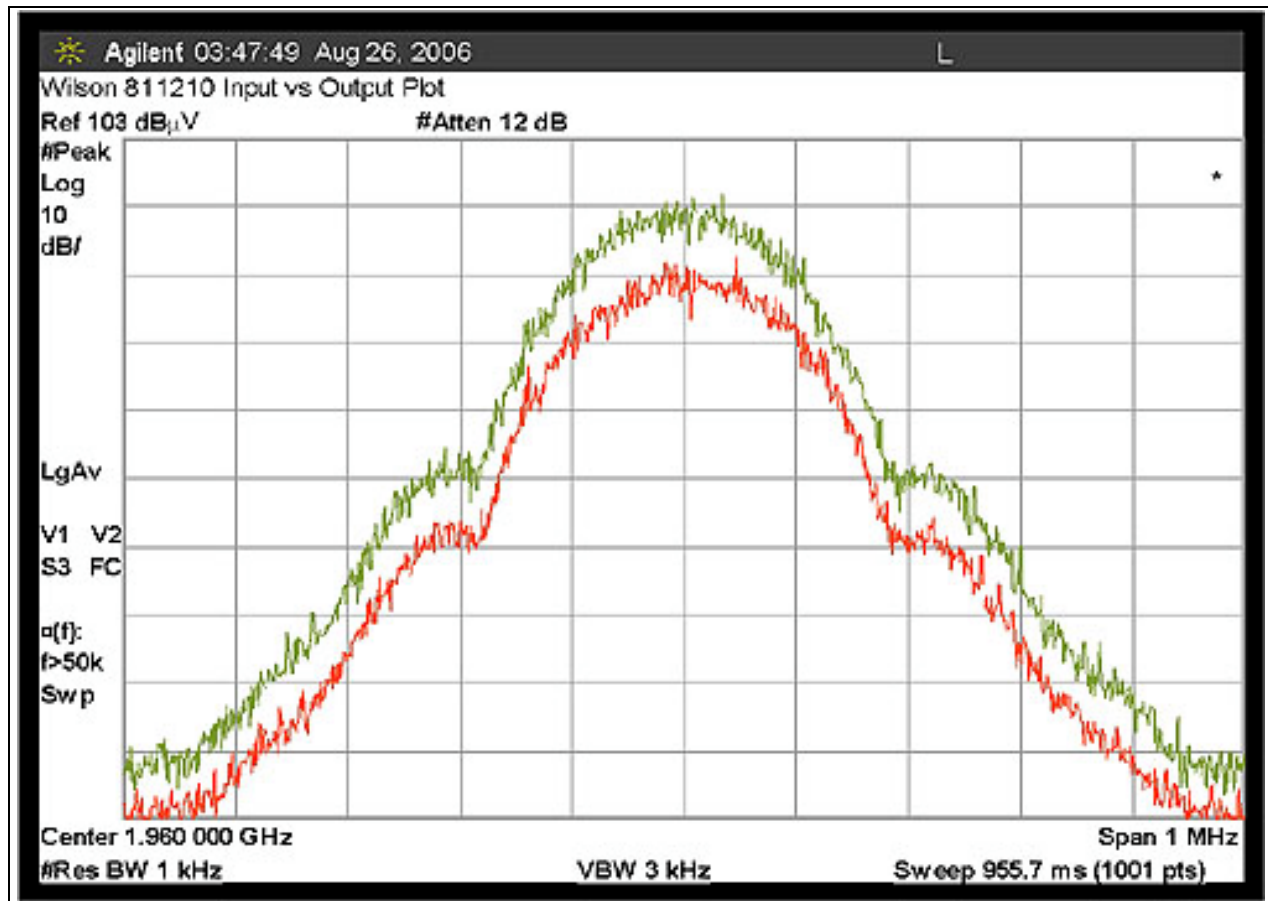
DOWNLINK INPUT VS OUTPUT PLOT - CDMA



DOWNLINK INPUT VS OUTPUT PLOT - EDGE



DOWNLINK INPUT VS OUTPUT PLOT - GSM



PHOTOGRAPH SHOWING DIRECT CONNECT TEST SETUP



OUT OF BAND REJECTION

Test Location: CKC Laboratories • 4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Wilson Electronics**
Specification: **FCC 2.1051**
Work Order #: **81892**
Test Type: **Antenna Conducted**
Equipment: **Bidirectional Cellular Amplifier Repeater**

Manufacturer: Wilson Electronics
Model: 811210
S/N: 8112100110000

Tested By: Randal Clark
12VDC

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Pasternack 36"	NA	02/08/2005	02/08/2007	P05202

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Bidirectional Cellular Amplifier Repeater*	Wilson Electronics	811210	8112100110000

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035
Digital Signal Generator	Agilent	E4432B	MY41000108

Test Conditions / Notes:

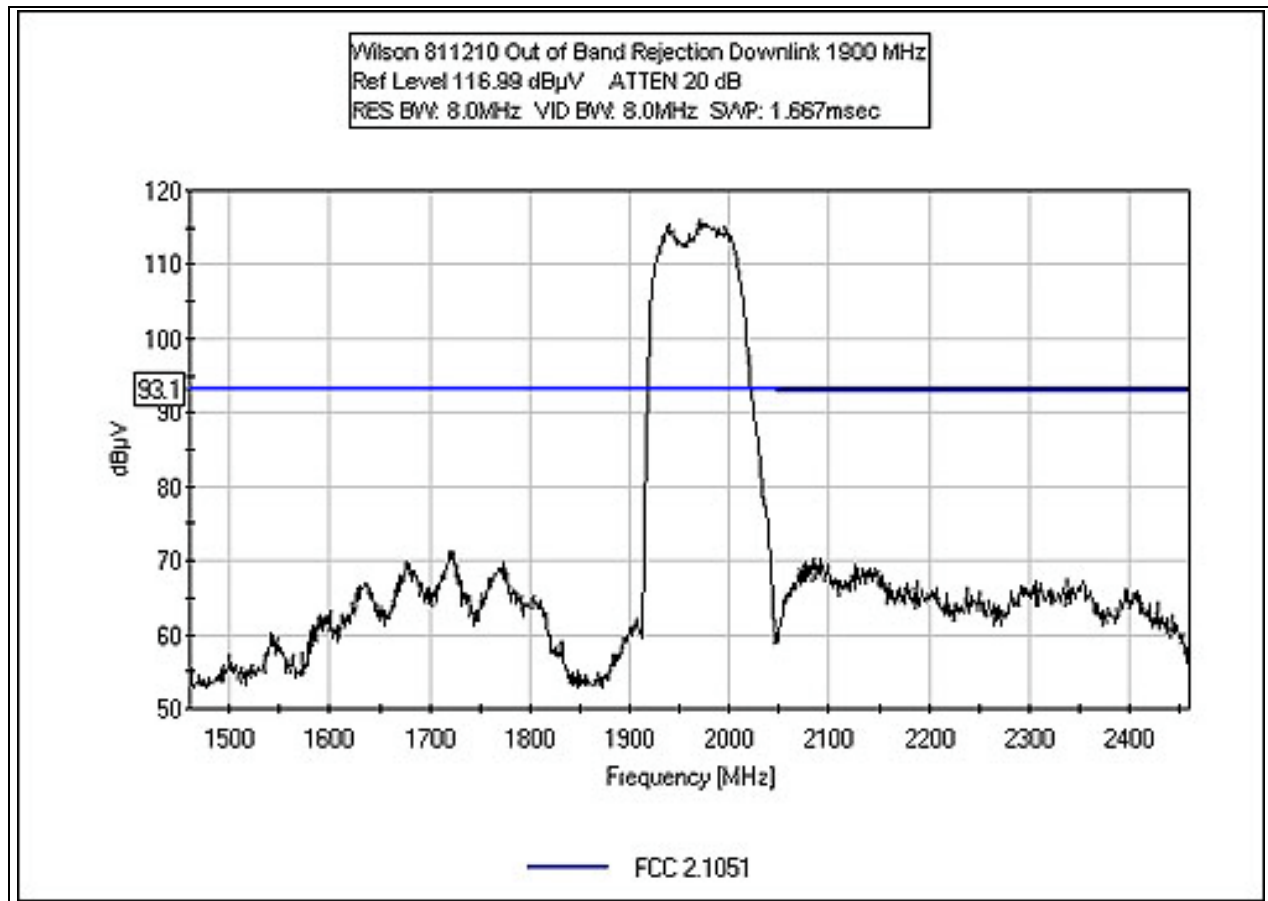
Equipment is a bi-directional cellular amplifier repeater operating on frequency range of 824 to 894 MHz and 1850-1990 MHz. Uplink frequency range 824 - 849 MHz and 1850 - 1910 MHz. Downlink frequency range 869 - 894 MHz and 1930-1990 MHz. Equipment is powered via 12VDC support power supply. Antenna port is terminated into spectrum analyzer. Input to amplifier is set at the 1 dB compression point of the amplifier's operating output range. The signal generator input is swept across a 1 GHz frequency range while a spectrum analyzer monitors the amplifier output.

Frequency Range Investigated: Carrier

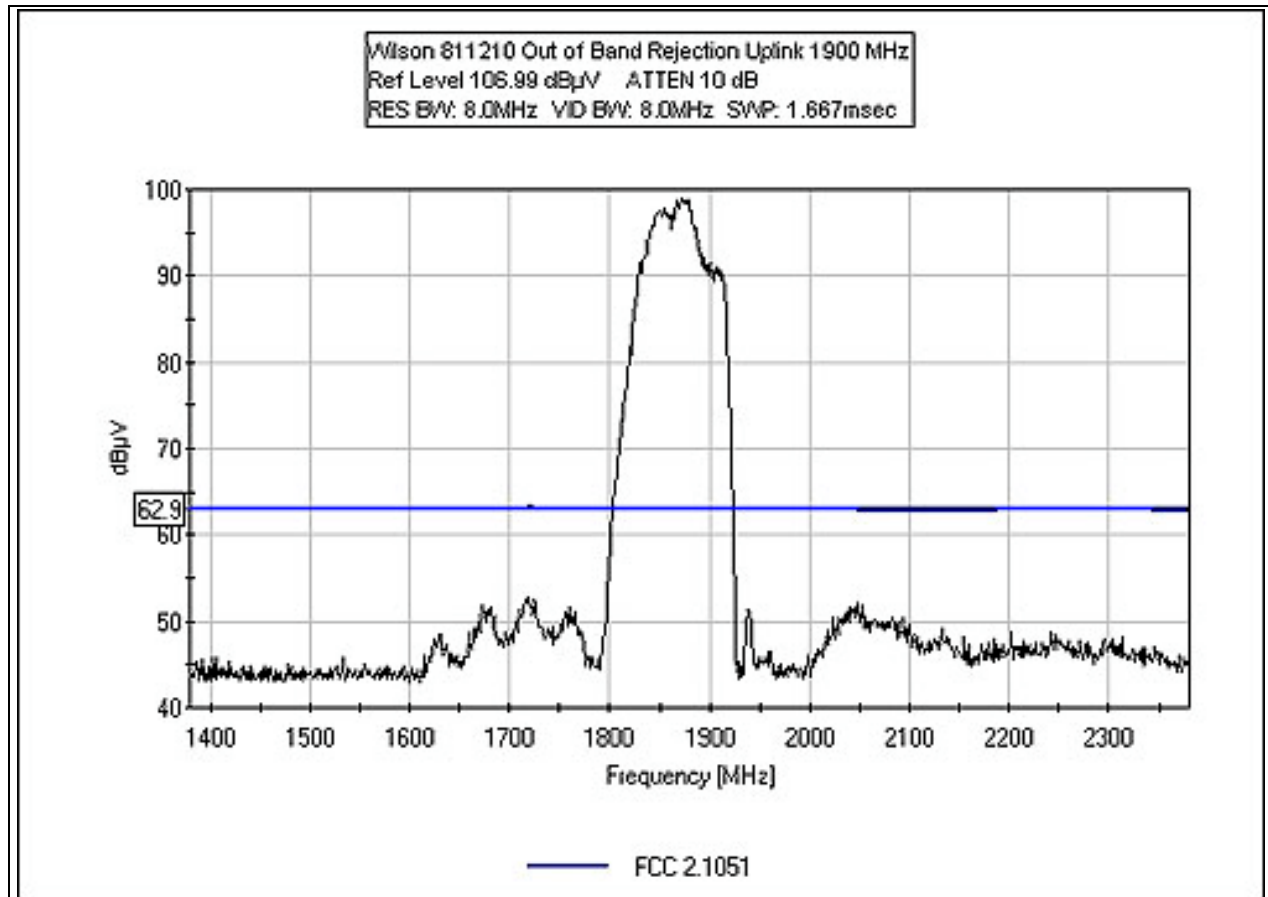
Temperature: 79°F

Relative Humidity: 35%

DOWNLINK OUT OF BAND REJECTION



UPLINK OUT OF BAND REJECTION



PHOTOGRAPH SHOWING DIRECT CONNECT TEST SETUP



RSS-131 DOWNLINK PASSBAND GAIN

Test Location: CKC Laboratories • 4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Wilson Electronics**

Specification: **RSS 131**

Work Order #: **81892**

Test Type: **Antenna Conducted**

Equipment: **Bidirectional Cellular Amplifier
Repeater**

Manufacturer: Wilson Electronics

Model: 811210

S/N: 8112100110000

Tested By: Randal Clark

12VDC

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Pasternack 36"	NA	02/08/2005	02/08/2007	P05202

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Bidirectional Cellular Amplifier Repeater*	Wilson Electronics	811210	8112100110000

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric	TPS-2000	920035
Digital Signal Generator	Instruments Co., Ltd. Agilent	E4432B	MY41000108

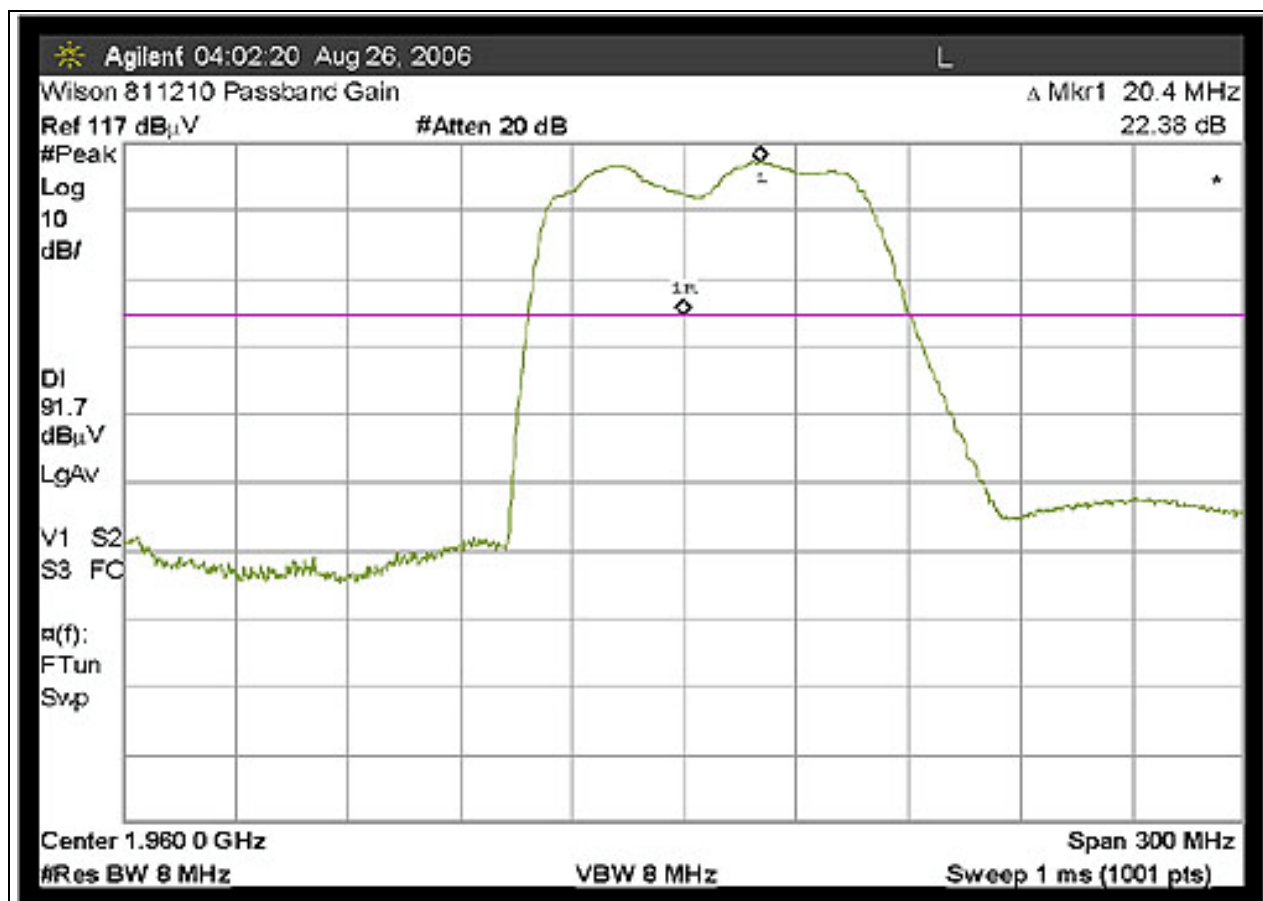
Test Conditions / Notes:

Equipment is a bi-directional cellular amplifier repeater operating on frequency range of 824 to 894 MHz and 1850-1990 MHz. Uplink frequency range 824 - 849 MHz and 1850 - 1910 MHz. Downlink frequency range 869 - 894 MHz and 1930-1990 MHz. Equipment is powered via 12VDC support power supply. Antenna port is terminated into spectrum analyzer. Input to amplifier is set within the linear range of the amplifier's operating output range.

Frequency Range Investigated: Carrier

Temperature: 79°F

Relative Humidity: 35%



PHOTOGRAPH SHOWING DIRECT CONNECT TEST SETUP



RSS-131 DOWNLINK PASSBAND WIDTH

Test Location: CKC Laboratories • 4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Wilson Electronics**
Specification: **RSS 131**
Work Order #: **81892**
Test Type: **Antenna Conducted**
Equipment: **Bidirectional Cellular Amplifier Repeater**

Manufacturer: Wilson Electronics
Model: 811210
S/N: 8112100110000

Tested By: Randal Clark
12VDC

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Pasternack 36"	NA	02/08/2005	02/08/2007	P05202

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Bidirectional Cellular Amplifier Repeater*	Wilson Electronics	811210	8112100110000

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035
Digital Signal Generator	Agilent	E4432B	MY41000108

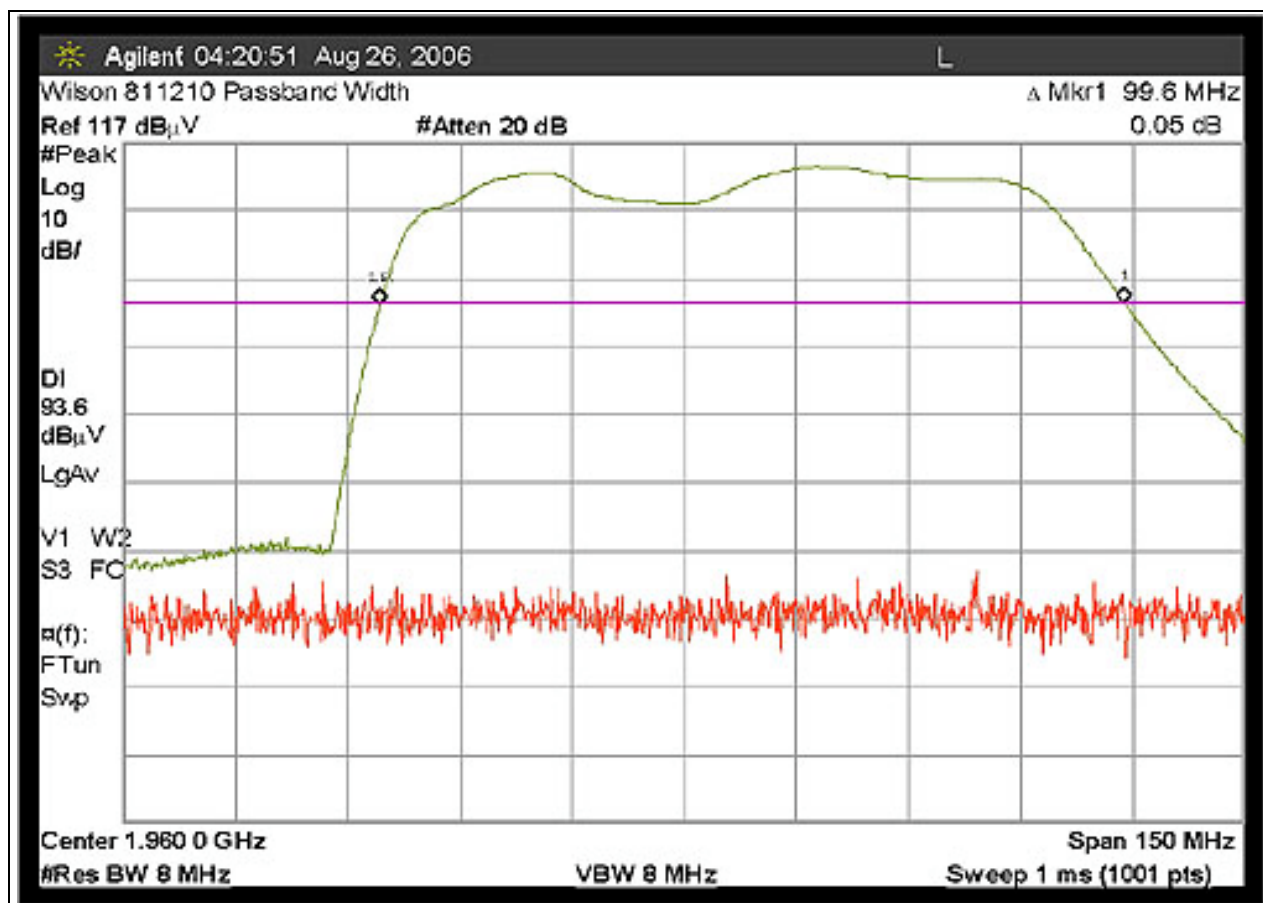
Test Conditions / Notes:

Equipment is a bi-directional cellular amplifier repeater operating on frequency range of 824 to 894 MHz and 1850-1990 MHz. Uplink frequency range 824 - 849 MHz and 1850 - 1910 MHz. Downlink frequency range 869 - 894 MHz and 1930-1990 MHz. Equipment is powered via 12VDC support power supply. Antenna port is terminated into spectrum analyzer. Input to amplifier is set within the linear range of the amplifier's operating output range.

Frequency Range Investigated: Carrier

Temperature: 79°F

Relative Humidity: 35%



PHOTOGRAPH SHOWING DIRECT CONNECT TEST SETUP

