CKC LABORATORIES, INC. Testing the Future

ACCREDITED
Certicate Numbers
803.01 - 803.06
EMC/SAFETY

ADDENDUM TO WILSON ELECTRONICS, INC. TEST REPORT FC04-002

FOR THE

IN-BUILDING BIDIRECTIONAL AMPLIFIER, 801104

FCC PART 22 AND RSS 131

COMPLIANCE

DATE OF ISSUE: MARCH 4, 2004

PREPARED FOR:

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

W.O. No.: 81646

PREPARED BY:

Mary Ellen Clayton
CKC Laboratories, Inc.
5473A Clouds Rest
Mariposa, CA 95338

Date of test: December 30, 2003 –
January 5, 2004

Report No.: FC04-002A

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ADMINISTRATIVE INFORMATION

DATE OF TEST:	December 30, 2003 - January 5, 2004
DATE OF RECEIPT:	December 30, 2003
PURPOSE OF TEST:	To demonstrate the compliance of the In-Building Bidirectional Amplifier, 801104 with the requirements for FCC Part 22 and RSS 131 devices. **Addendum A** is to update the calibration due dates on pages 94 & 96.
TEST METHOD:	FCC Part 22 and RSS 131
FREQUENCY RANGE TESTED:	30 MHz - 10 GHz
MANUFACTURER:	Wilson Electronics, Inc. 3301 East Deseret Drive St. George, UT 84790
REPRESENTATIVE:	Patrick Cook
TEST LOCATION:	CKC Laboratories, Inc. 5473A Clouds Rest, Mariposa, CA 95338 1120 Fulton Place, Fremont, CA 94539

SUMMARY OF RESULTS

As received, the Wilson Electronics, Inc. In-Building Bidirectional Amplifier, 801104 was found to be fully compliant with the following standards and specifications:

FCC Standard	FCC Section	Canadian Standard	Canadian Section	Test Description
N/A	N/A	RSS 131	5.4	External Controls
47 CFR	2.1091	RSS 131	5.5	RF Exposure
N/A	N/A	RSS 131	6.1	Passband Gain and Bandwidth
47 CFR	22.913	RSS 131	6.2	RF Power Output
TIA/EIA	603	RSS 131	6.3	Non-Linearity (Intermodulation Attenuation)
47 CFR	22.917	RSS 131	6.4	Spurious Emissions Limitations
N/A	N/A	RSS 131	6.5	Frequency Stability (Band Translators)
	803.01 & 803.06		IC 3082-B	Site Filing No.

CONDITIONS FOR COMPLIANCE
No modifications to the EUT were necessary to comply.

APPROVALS

Steve Behm, Director of Engineering Services

QUALITY ASSURANCE:

Joyce Walker, Quality Assurance Administrative Manager

TEST PERSONNEL:

Matthew Pettersen, EMC Test Engineer

Randy Clark, EMC Engineer

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The EUT tested by CKC Laboratories was a production unit

EQUIPMENT UNDER TEST

Amplifier Power Supply

Manuf: Wilson Electronics, Inc.
Model: JOD-48U-36
Serial: NA
FCC ID: UL

In-building Bidirectional Amplifier

Manuf: Wilson Electronics, Inc.
Model: 801104
Serial: 001
FCC ID: pending

PERIPHERAL DEVICES

The EUT was not tested with peripheral devices.

MEASUREMENT UNCERTAINTY

TEST	HIGHEST UNCERTAINTY
Radiated Emissions	+/- 2.94 dB
Conducted Emissions	+/- 1.56 dB

Note: Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Statements of compliance are based on the nominal values only.

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
F1D, FXW, GXW, F9W.

FCC 2.1033 (c)(5) FREQUENCY RANGE
824-894 MHz.

FCC 2.1033 (c)(6) OPERATING POWER
3 Watts.

FCC 2.1033 (c)(7) MAXIMUM POWER RATING
500 Watts.

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
AMPS, CDMA, TDMA(CDPD), TDMA(GSM).

FCC 2.1033(c)(14)/2.1046/22.913 - RF POWER OUTPUT

EUT is an in-building bi-directional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849MHz. Downlink frequency range 869 - 894MHz. Downlink band is designed for direct connection to a cellular telephone. Uplink band is designed for connection to a specified antenna. A specific antenna could be connected to either end of the amplifier at the same time.

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.

Uplink Output Ratings:
CDMA and TDMA formats: 3Watts
AMPS: 1Watt

Downlink Output Ratings:
All: 10mW

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

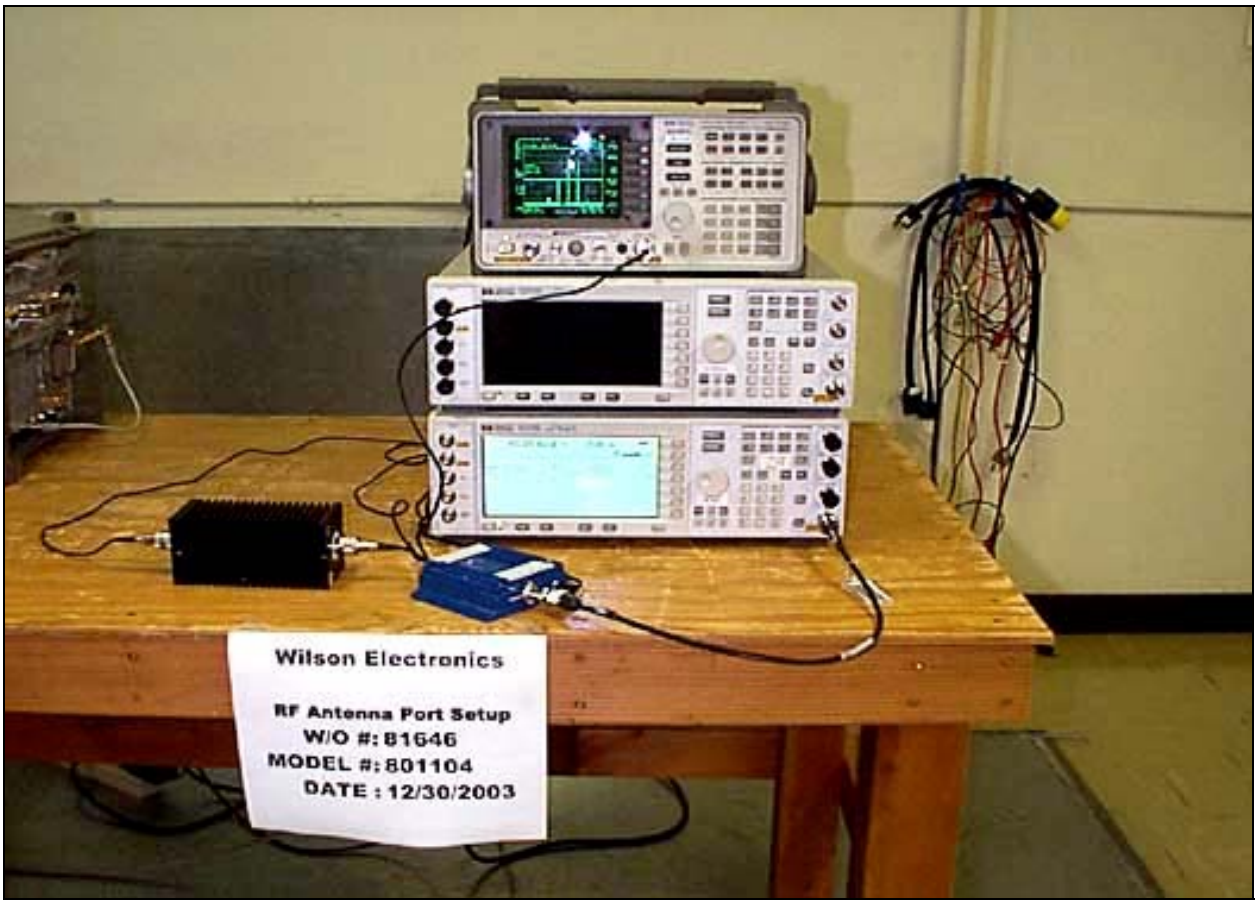
Downlink

Frequency (MHz)	*Modulation*	*Power Output (milliWatts)*
869.62	CDMA	2.52
881.77	CDMA	9.97
893.04	CDMA	3.97
893.04	GSM	6.90
881.97	GSM	9.86
870.02	GSM	1.74
892.97	CDPD	2.25
881.97	CDPD	9.97
869.96	CDPD	1.75
869.96	AMPS	1.77
882.04	AMPS	9.98
892.97	AMPS	2.23

Uplink

Frequency (MHz)	*Modulation*	*Power Output (Watts)*
824.69	CDMA	2.15
831.98	CDMA	2.84
848.11	CDMA	1.83
824.55	GSM	1.56
832.11	GSM	2.64
847.97	GSM	1.58
824.48	CDPD	1.99
832.04	CDPD	2.57
847.97	CDPD	1.81
825.10	AMPS	1.0
832.00	AMPS	1.0
848.10	AMPS	1.0

PHOTOGRAPH SHOWING DIRECT CONNECT



***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

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)/2.1051 - INTERMODULATION ATTENUATION

Bandwidth settings used: RBW=1MHz, VBW=1MHz.

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 2.1051 Intermodulation Attenuation Low Edge**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 10:52:35
Equipment: **In-building Bidirectional Amplifier** Sequence#: 3
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Signal Generator E4432B	US38330168	10/03/2003	10/03/2004	0

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. RF Power Output Test: Two signals are input to the amplifier. The inputs from the signal generators are 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Intermodulation Attenuation. Two Signal Method.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	882.120M	81.4	+30.3				+0.0	111.7	113.0 AMPS	-1.3	Direc
2	882.120M	80.7	+30.3				+0.0	111.0	113.0 TDMA(CDPD)	-2.0	Direc

3	895.120M	61.4	+30.3	+0.0	91.6	94.0 TDMA(CDPD)	-2.4	Direc
4	882.000M	80.3	+30.3	+0.0	110.6	113.0 TDMA(GSM)	-2.4	Direc
5	895.120M	60.7	+30.3	+0.0	91.0	94.0 AMPS	-3.0	Direc
6	895.250M	60.1	+30.3	+0.0	90.4	94.0 TDMA(GSM)	-3.6	Direc
7	882.120M	74.1	+30.3	+0.0	104.4	113.0 CDMA	-8.6	Direc
8	894.120M	52.9	+30.3	+0.0	83.2	94.0 CDMA	-10.8	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 2.1051 Intermodulation Attenuation Low Edge**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 11:05:34
Equipment: **In-building Bidirectional Amplifier** Sequence#: 4
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Signal Generator E4432B	US38330168	10/03/2003	10/03/2004	0

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. RF Power Output Test: Two signals are input to the amplifier. The inputs from the signal generators are 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Intermodulation Attenuation. Two Signal Method.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	869.000M	78.5	+30.3				+0.0	108.8	113.0 TDMA(CDPD)	-4.2	Direc
2	865.010M	58.9	+30.3				+0.0	89.2	94.0 TDMA(CDPD)	-4.8	Direc
3	869.110M	76.8	+30.3				+0.0	107.1	113.0 TDMA(GSM)	-5.9	Direc

4	869.000M	76.8	+30.3	+0.0	107.1	113.0 AMPS	-5.9	Direc
5	869.840M	76.1	+30.3	+0.0	106.4	113.0 CDMA	-6.6	Direc
6	865.010M	54.3	+30.3	+0.0	84.6	94.0 AMPS	-9.4	Direc
7	865.120M	54.0	+30.3	+0.0	84.3	94.0 TDMA(GSM)	-9.7	Direc
8	866.270M	53.4	+30.3	+0.0	83.6	94.0 CDMA	-10.4	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 2.1051 Intermodulation Attenuation High Edge**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 11:47:37
Equipment: **In-building Bidirectional Amplifier** Sequence#: 5
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Signal Generator E4432B	US38330168	10/03/2003	10/03/2004	0

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. RF Power Output Test: Two signals are input to the amplifier. The inputs from the signal generators are 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Intermodulation Attenuation. Two Signal Method.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	870.000M	63.4	+30.3				+0.0	93.7	94.0 AMPS	-0.3	Direc
2	870.000M	63.4	+30.3				+0.0	93.7	94.0 TDMA(CDPD)	-0.3	Direc
3	870.000M	63.1	+30.3				+0.0	93.4	94.0 TDMA(GSM)	-0.6	Direc

4	882.000M	80.6	+30.3	+0.0	110.9	113.0 TDMA(GSM)	-2.1	Direc
5	882.000M	80.6	+30.3	+0.0	110.9	113.0 TDMA(CDPD)	-2.1	Direc
6	882.000M	80.5	+30.3	+0.0	110.8	113.0 AMPS	-2.2	Direc
7	882.120M	78.1	+30.3	+0.0	108.4	113.0 CDMA	-4.6	Direc
8	871.120M	58.2	+30.3	+0.0	88.5	94.0 CDMA	-5.5	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 2.1051 Intermod Atten Low Edge-Uplink**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 12:06:38
Equipment: **In-building Bidirectional Amplifier** Sequence#: 6
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Signal Generator E4432B	US38330168	10/03/2003	10/03/2004	0

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. RF Power Output Test: Two signals are input to the amplifier. The inputs from the signal generators are 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequencies Tested: Uplink Low - 825.25 MHz Mid - 836 MHz High - 847.75 MHz Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Intermodulation Attenuation. Two Signal Method.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	848.060M	62.7	+30.4				+0.0	93.1	94.0 AMPS	-0.9	Direc
2	847.530M	59.2	+30.4				+0.0	89.6	94.0 CDMA	-4.4	Direc
3	848.060M	58.1	+30.4				+0.0	88.5	94.0 TDMA(GSM)	-5.5	Direc
4	848.060M	57.6	+30.4				+0.0	88.0	94.0 TDMA(CDPD)	-6.0	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 2.1051 Intermod Atten Low Close Edge**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 12:22:06
Equipment: **In-building Bidirectional Amplifier** Sequence#: 7
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Signal Generator E4432B	US38330168	10/03/2003	10/03/2004	0

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. RF Power Output Test: Two signals are input to the amplifier. The inputs from the signal generators are 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequencies Tested: Uplink Low - 825.25 MHz Mid - 836 MHz High - 847.75 MHz Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Intermodulation Attenuation. Two Signal Method.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	833.670M	57.8	+30.4				+0.0	88.2	94.0 TDMA(CDPD)	-5.8	Direc
2	833.670M	57.0	+30.4				+0.0	87.4	94.0 AMPS	-6.6	Direc

3	830.030M	56.5	+30.4	+0.0	86.9	94.0	-7.1	Direc
						TDMA(GSM)		
4	823.940M	51.6	+30.4	+0.0	82.0	94.0	-12.0	Direc
						CDMA		
5	828.000M	95.6	+30.4	+0.0	126.0	141.7	-15.7	Direc
						TDMA(CDPD)		
6	828.000M	95.2	+30.4	+0.0	125.6	141.7	-16.1	Direc
						AMPS		
7	828.000M	88.9	+30.4	+0.0	119.3	141.7	-22.4	Direc
						TDMA(GSM)		
8	826.570M	84.1	+30.4	+0.0	114.5	141.7	-27.2	Direc
						CDMA		

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 2.1051 Intermod Attenuation High Edge**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 12:33:42
Equipment: **In-building Bidirectional Amplifier** Sequence#: 8
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Signal Generator E4432B	US38330168	10/03/2003	10/03/2004	0

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. RF Power Output Test: Two signals are input to the amplifier. The inputs from the signal generators are 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequencies Tested: Uplink Low - 825.25 MHz Mid - 836 MHz High - 847.75 MHz Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Intermodulation Attenuation. Two Signal Method.

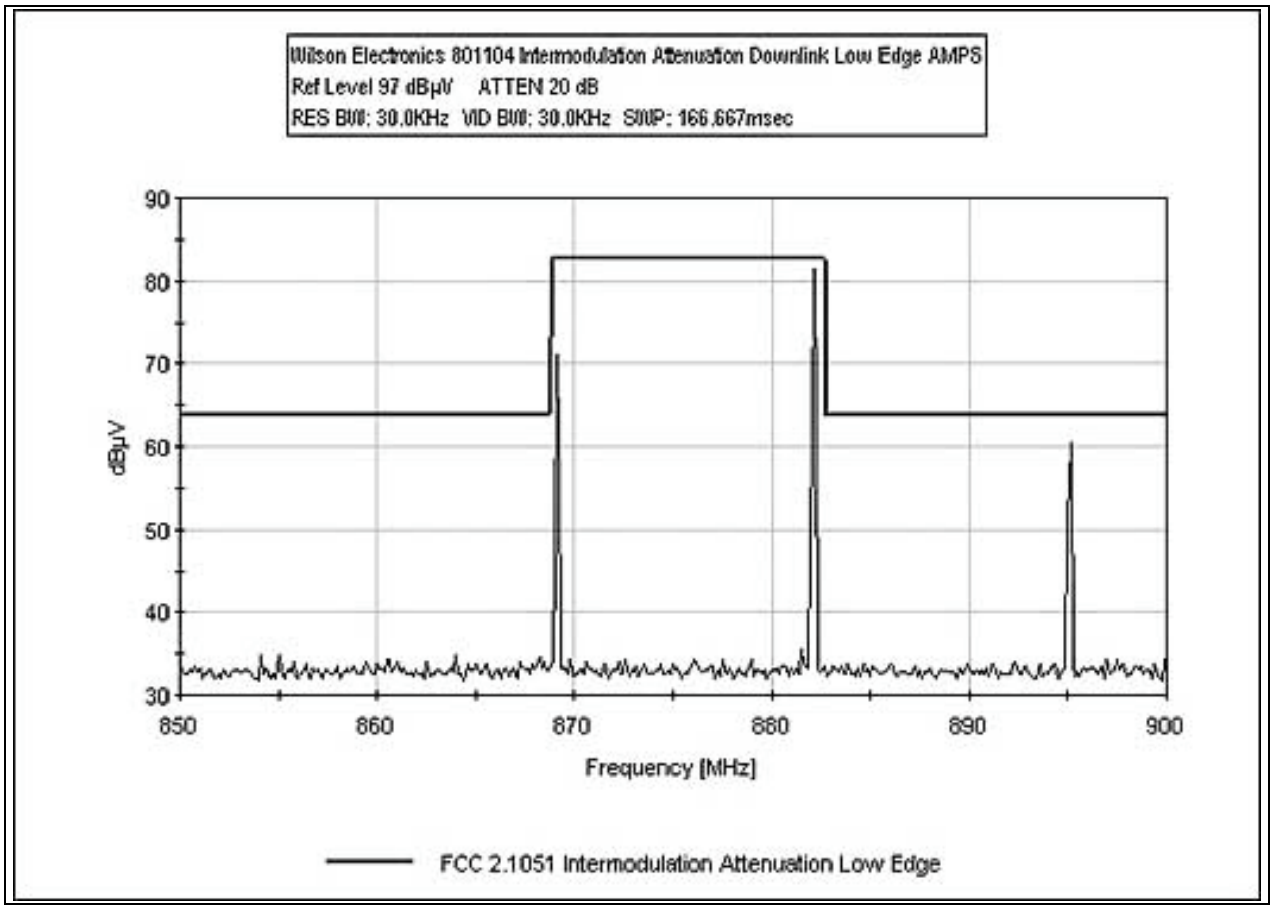
Transducer Legend:

T1=Pad 30dB

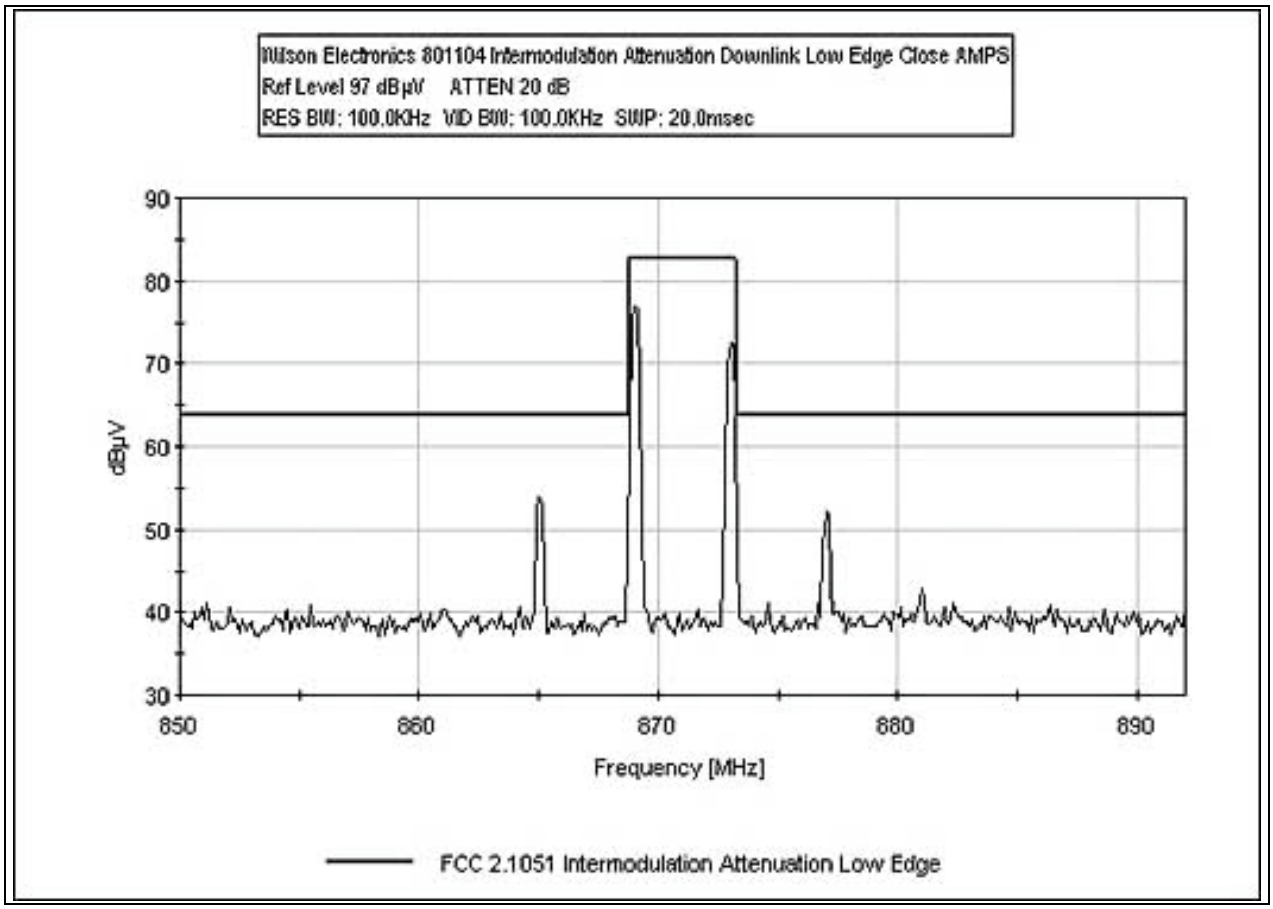
Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	824.200M	62.5	+30.4				+0.0	92.9	94.0 AMPS	-1.1	Direc
2	824.200M	60.7	+30.4				+0.0	91.1	94.0 TDMA(CDPD)	-2.9	Direc
3	824.200M	56.7	+30.4				+0.0	87.1	94.0 TDMA(GSM)	-6.9	Direc
4	824.500M	50.2	+30.4				+0.0	80.6	94.0 CDMA	-13.4	Direc

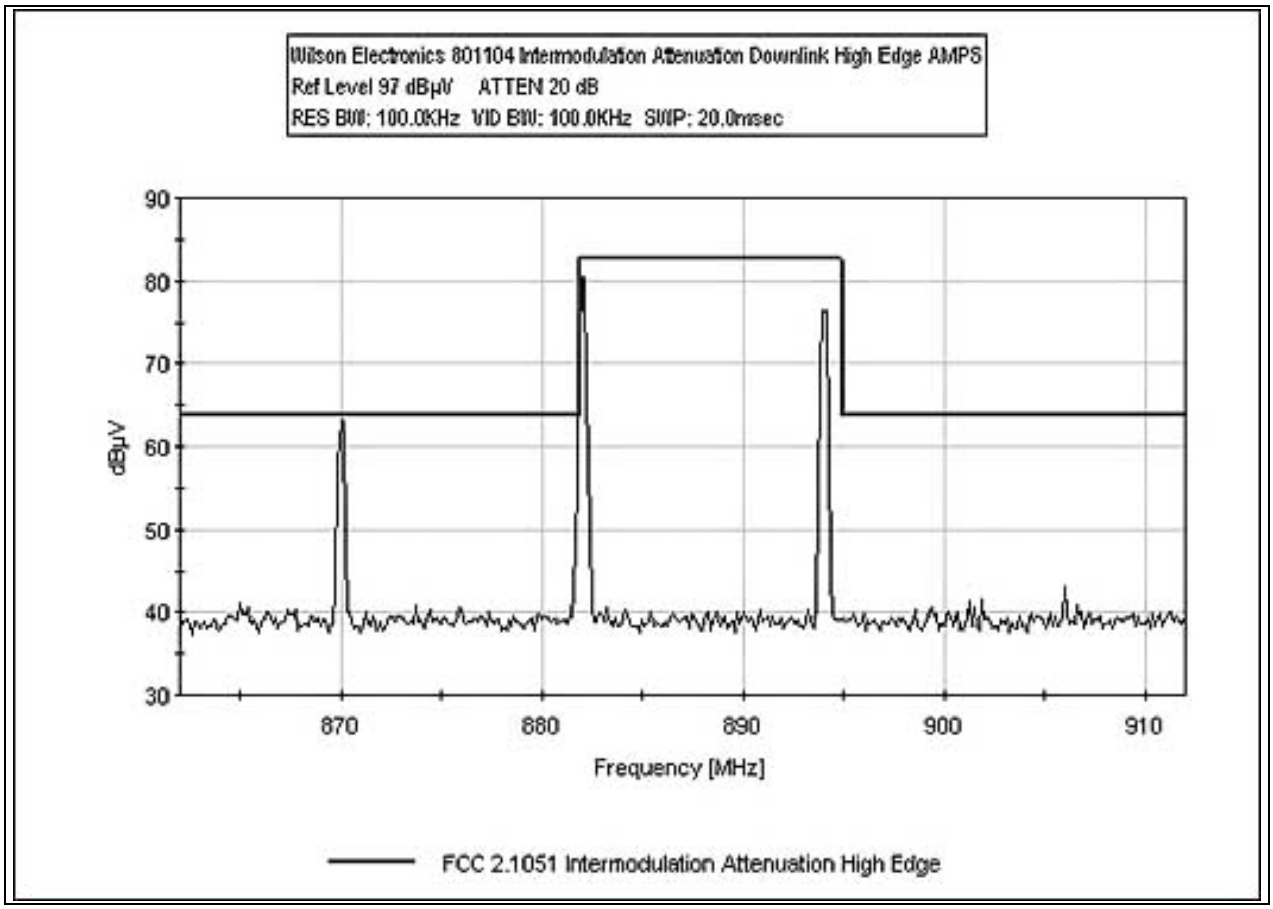
Downlink Intermodulation Attenuation AMPS Low



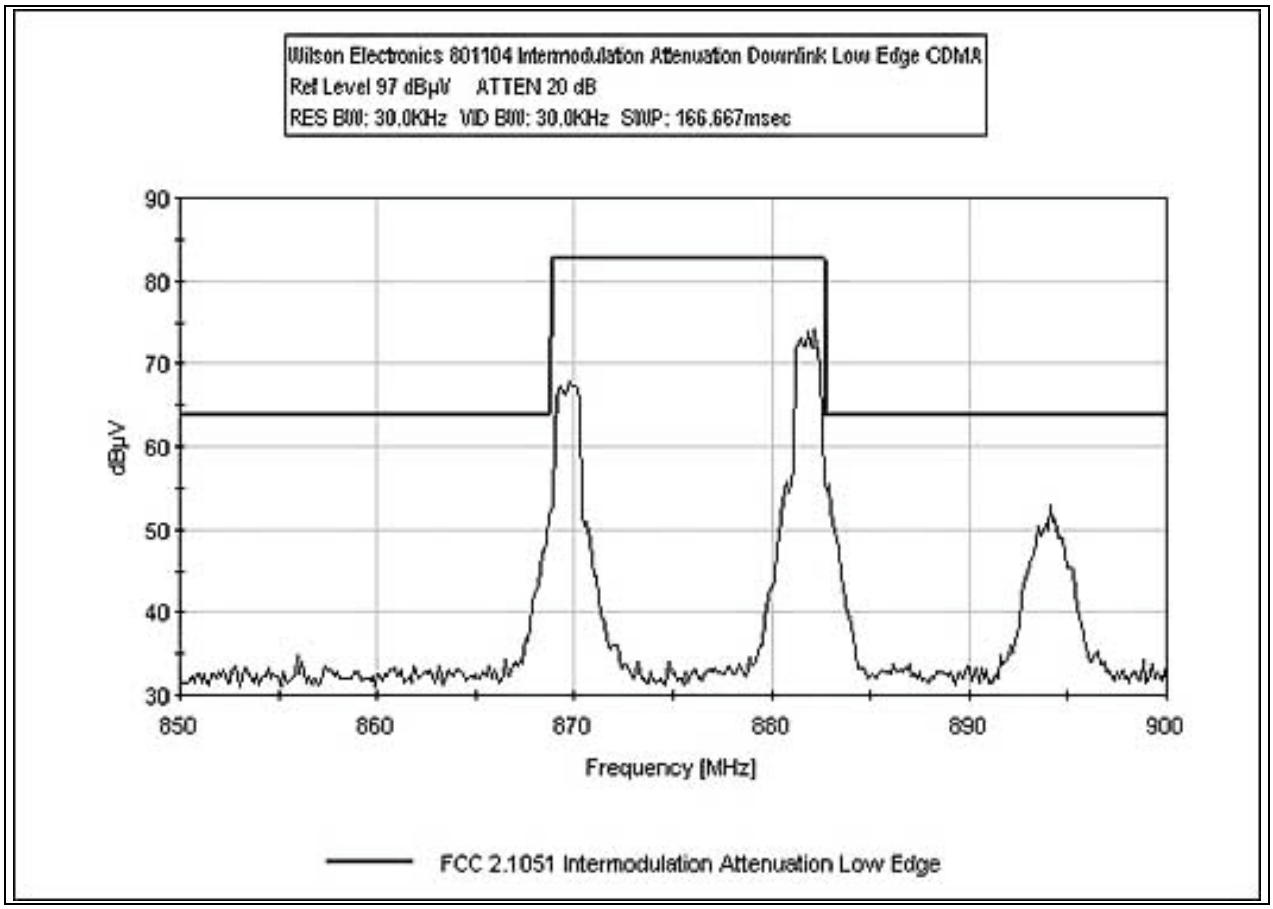
Downlink Intermodulation Attenuation AMPS Low Close



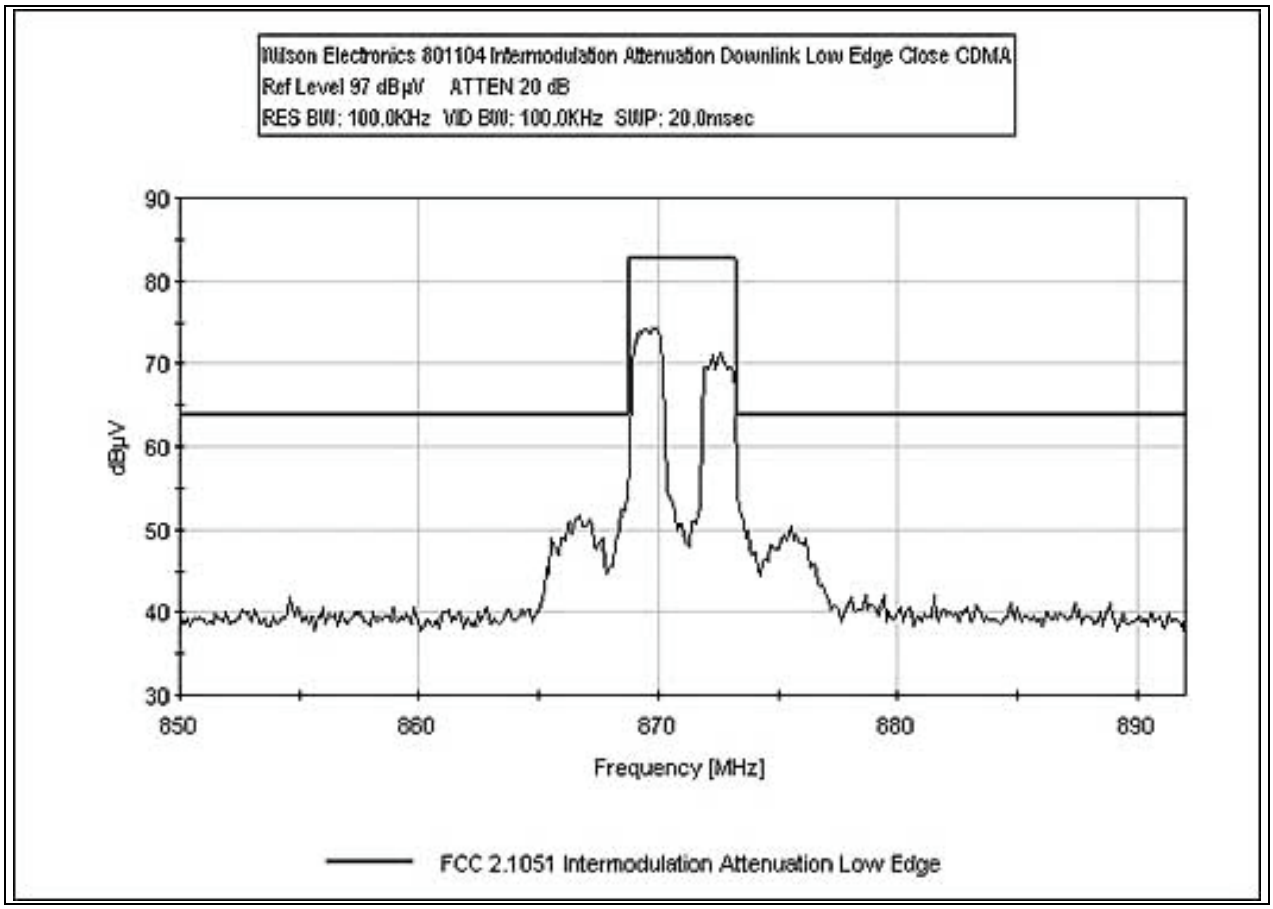
Downlink Intermodulation Attenuation AMPS High



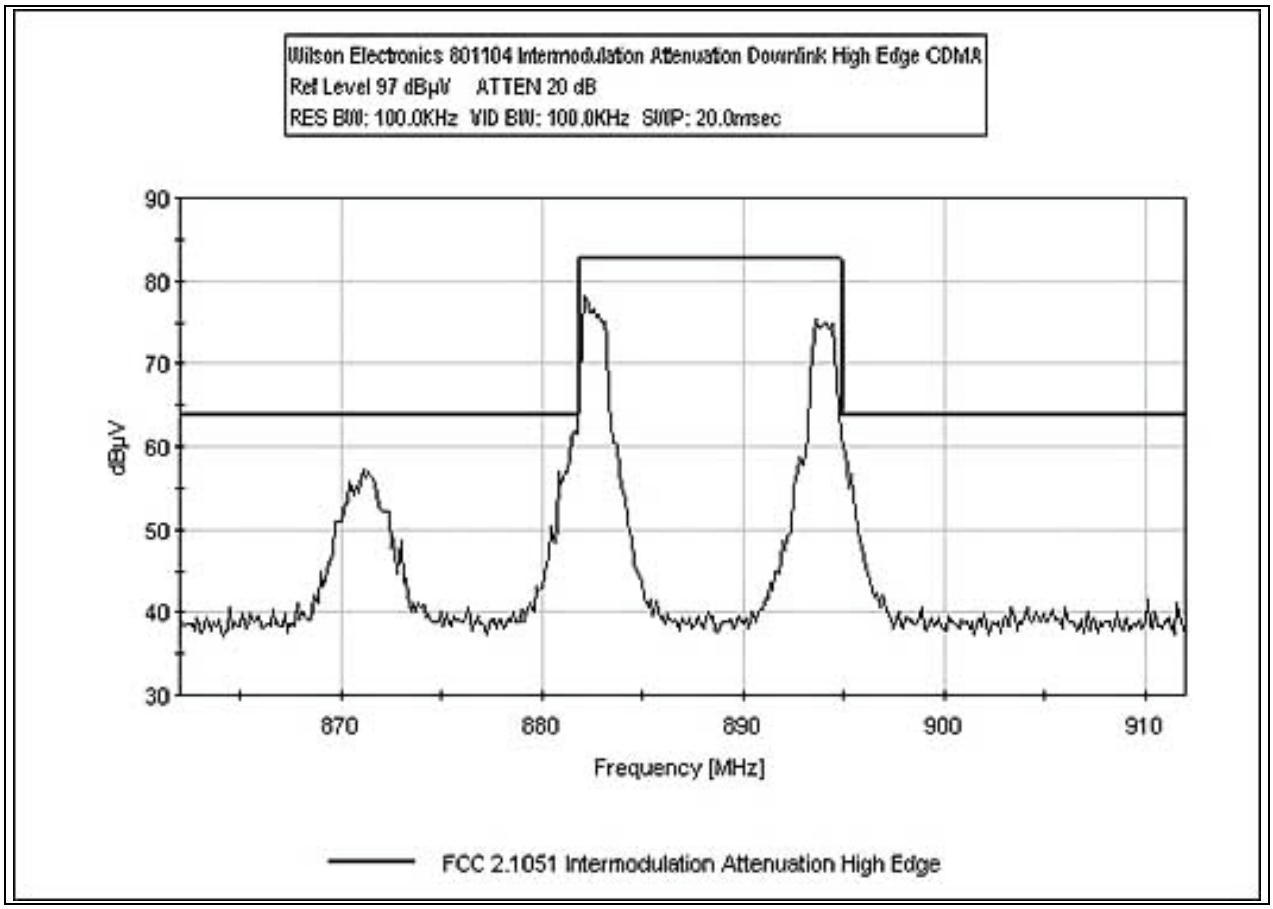
Downlink Intermodulation Attenuation CDMA Low



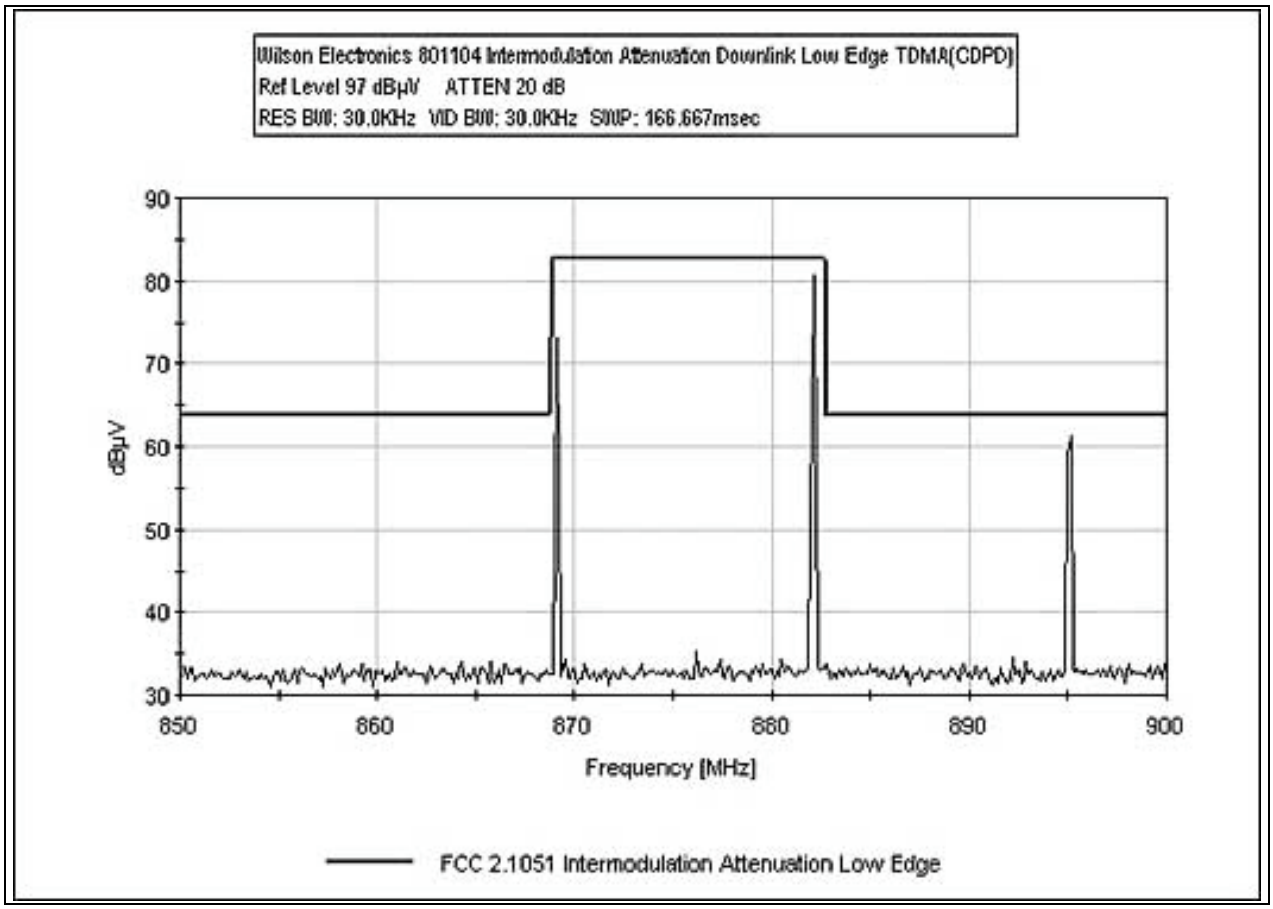
Downlink Intermodulation Attenuation CDMA Low Close



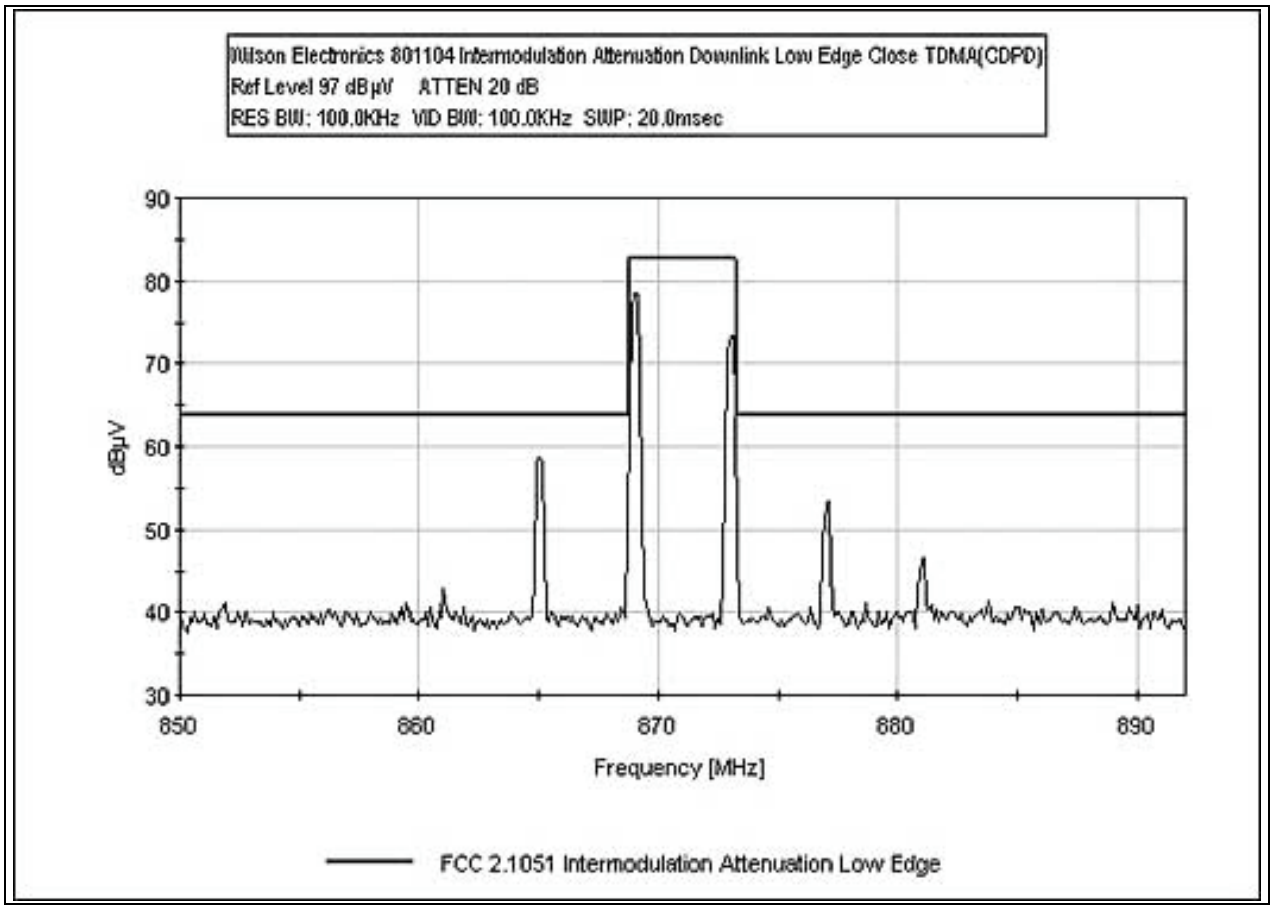
Downlink Intermodulation Attenuation CDMA High



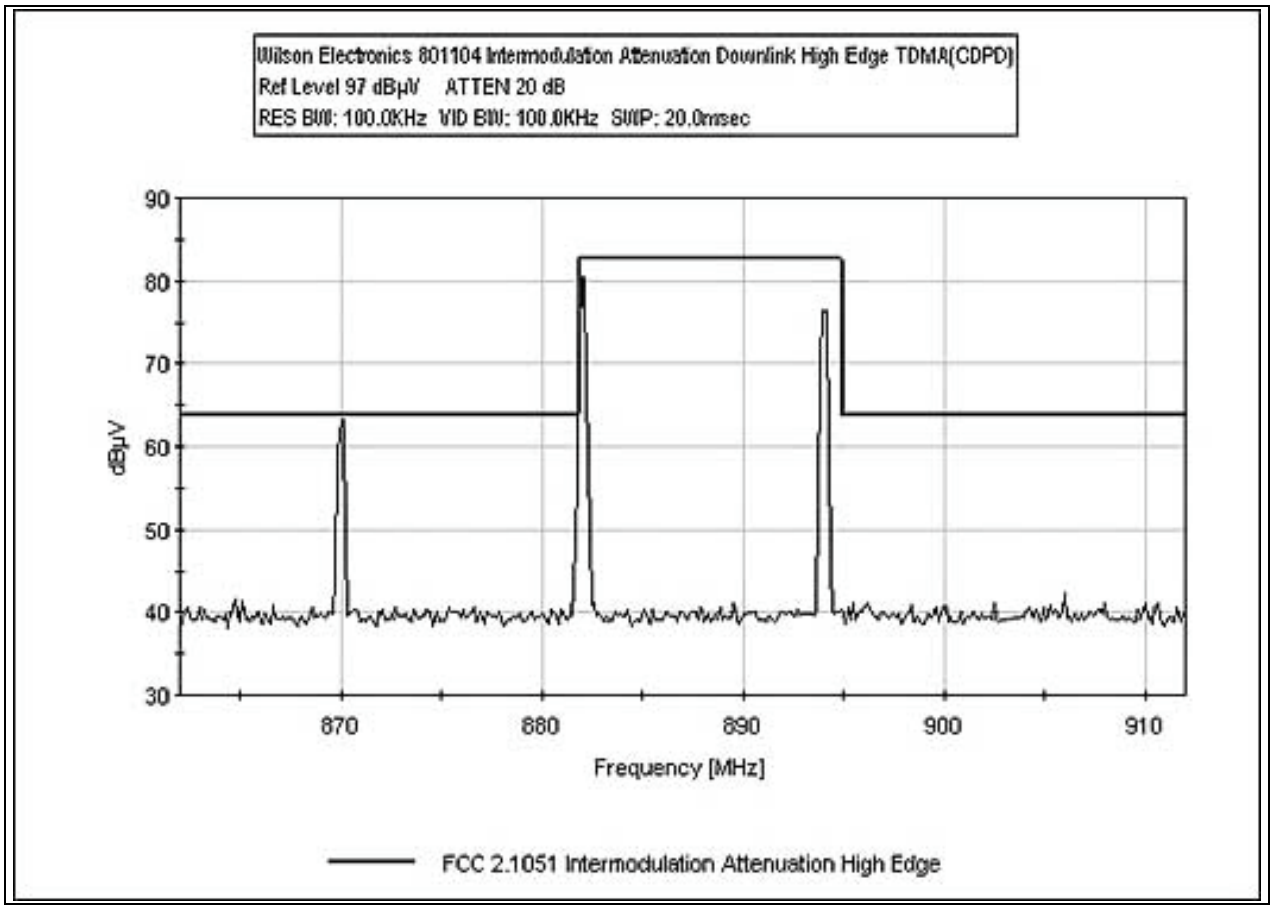
Downlink Intermodulation Attenuation TDMA(CDPD) Low



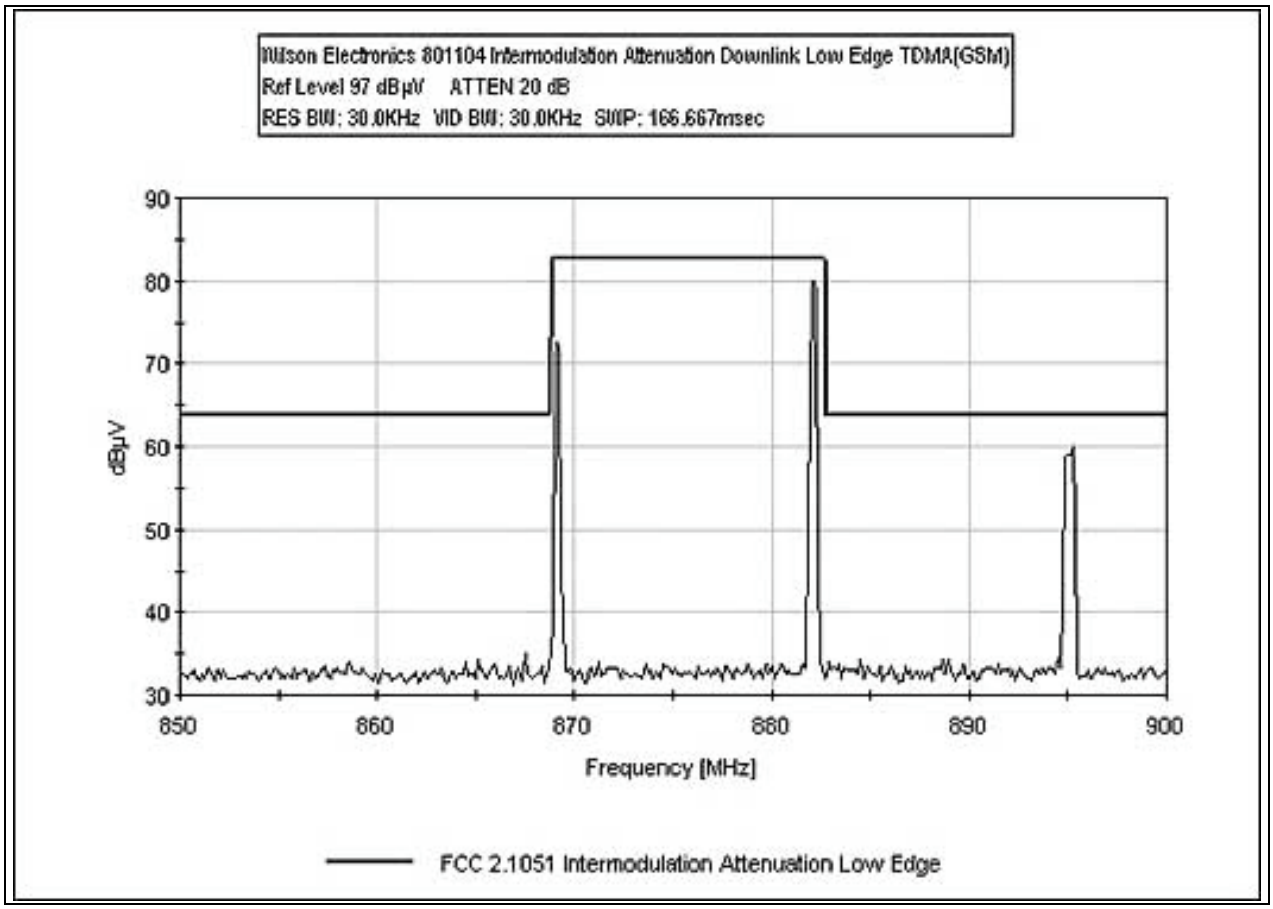
Downlink Intermodulation Attenuation TDMA(CDPD) Low Close



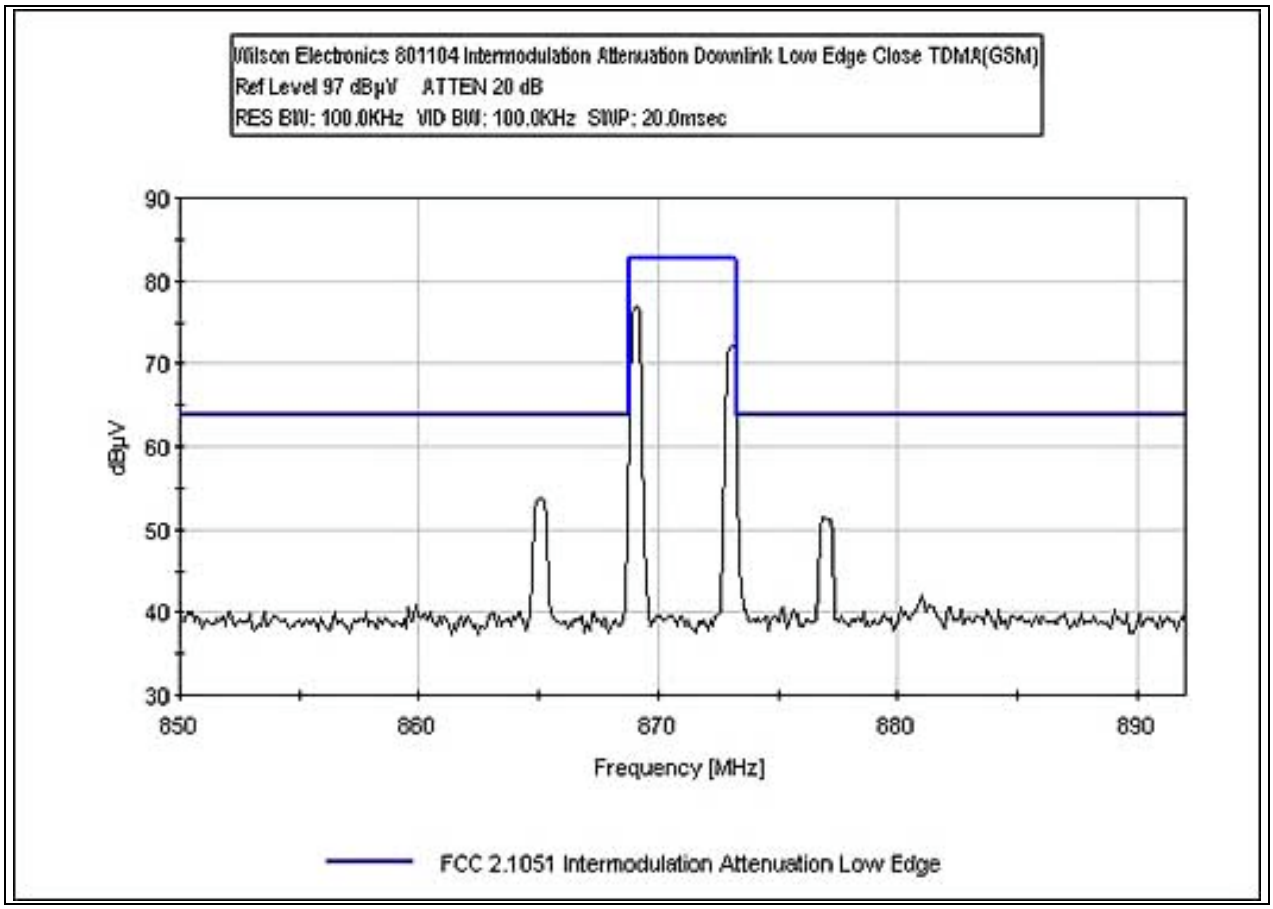
Downlink Intermodulation Attenuation TDMA(CDPD) High



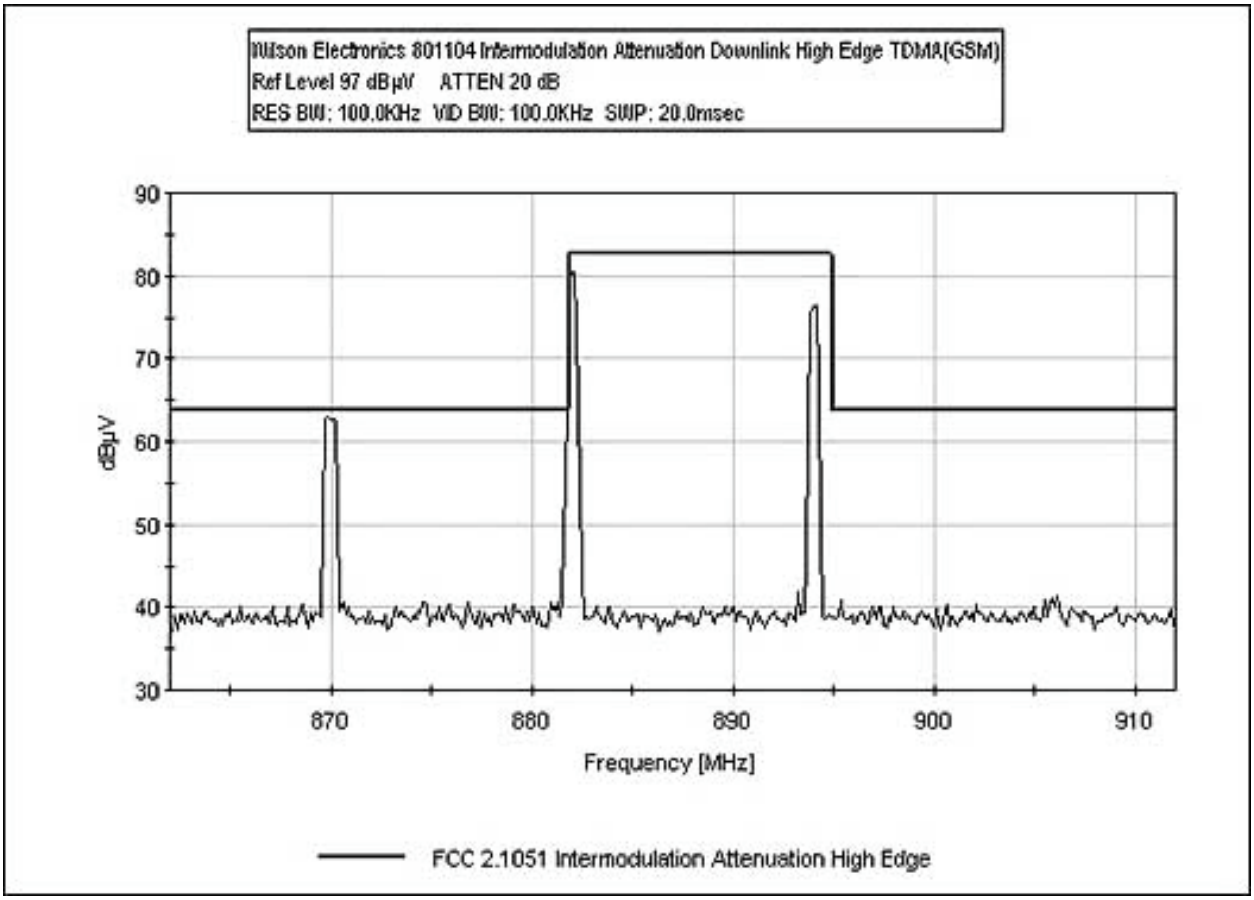
Downlink Intermodulation Attenuation TDMA(GSM) Low



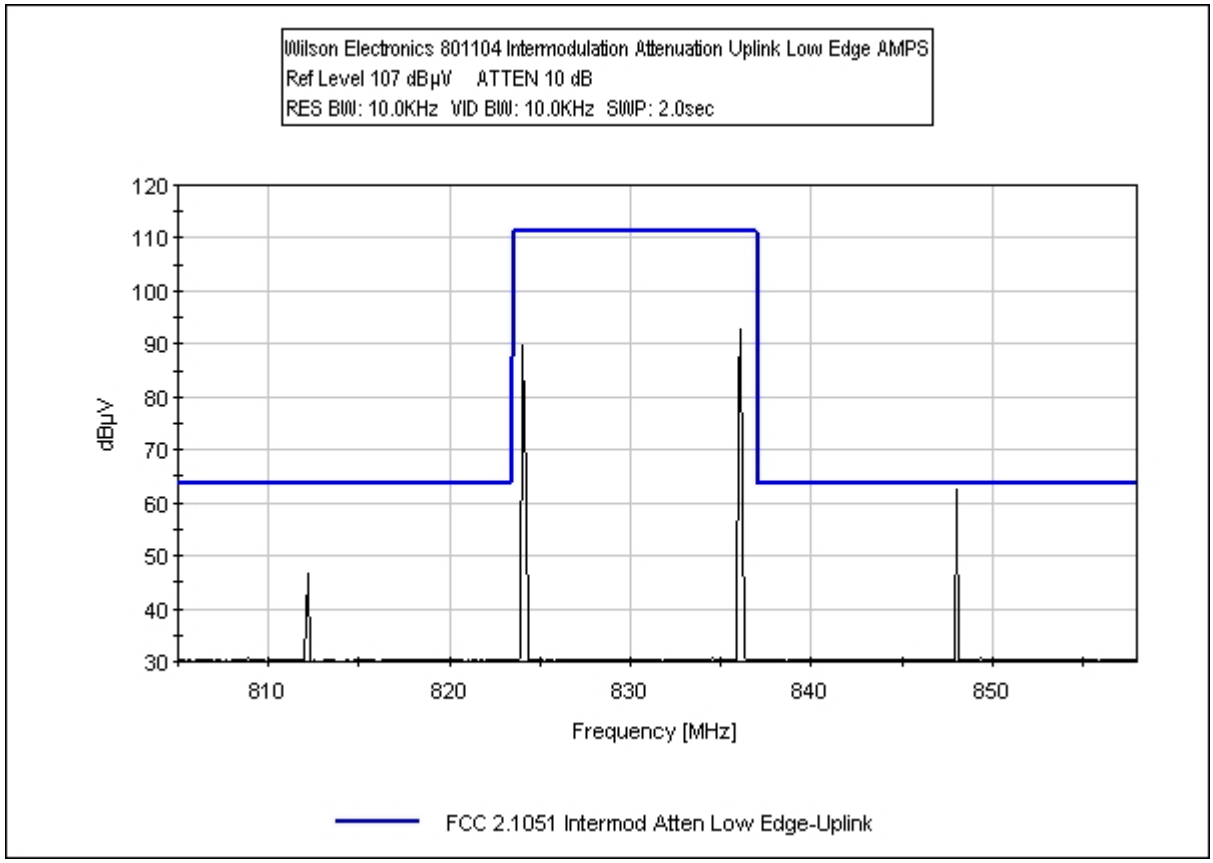
Downlink Intermodulation Attenuation TDMA(GSM) Low Close



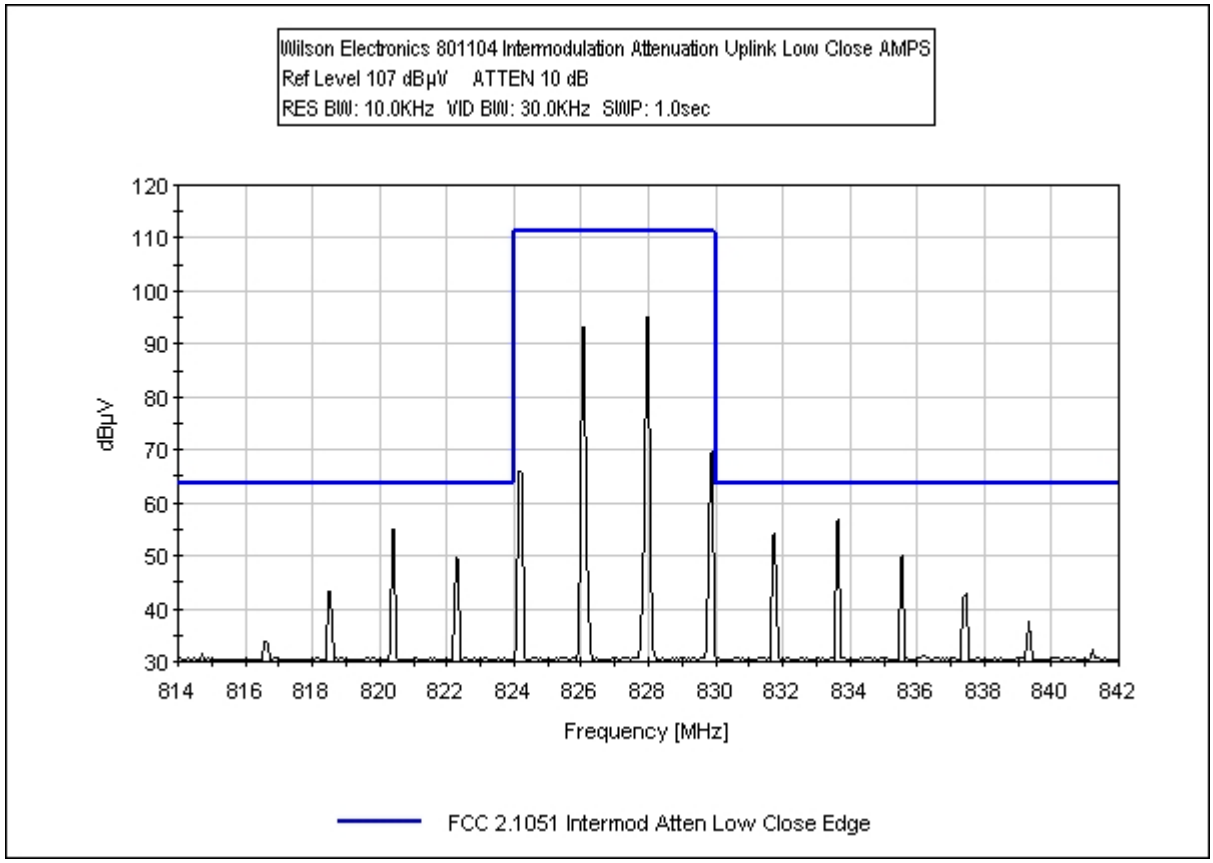
Downlink Intermodulation Attenuation TDMA(GSM) High



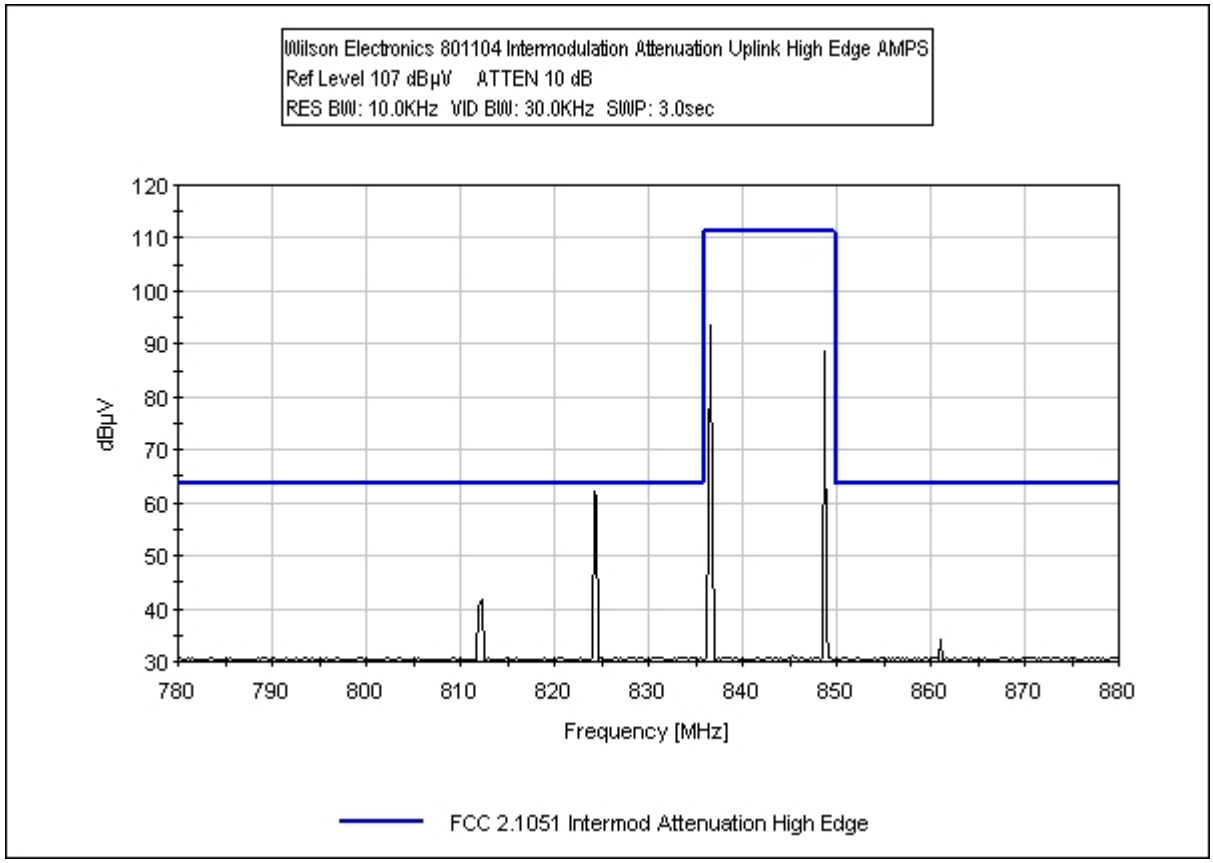
Uplink Intermodulation Attenuation AMPS Low



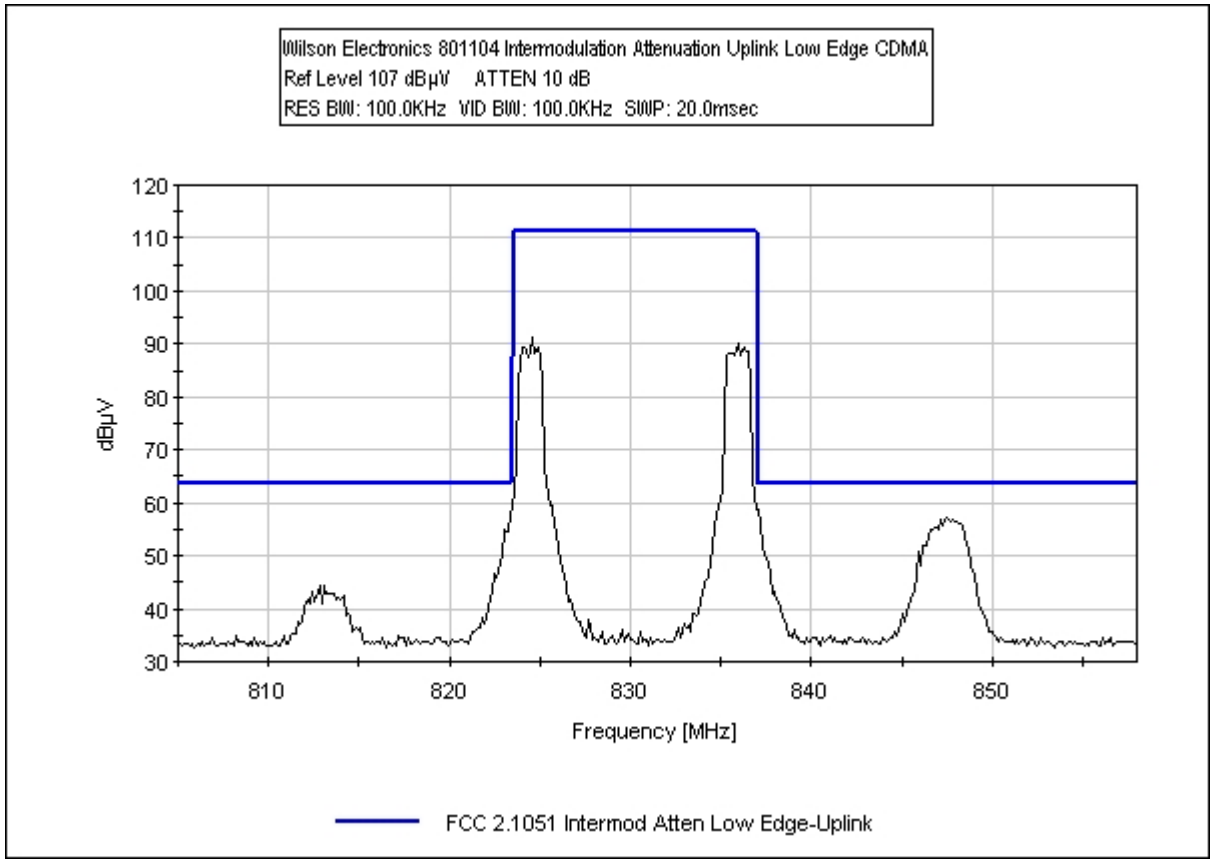
Uplink Intermodulation Attenuation AMPS Low Close



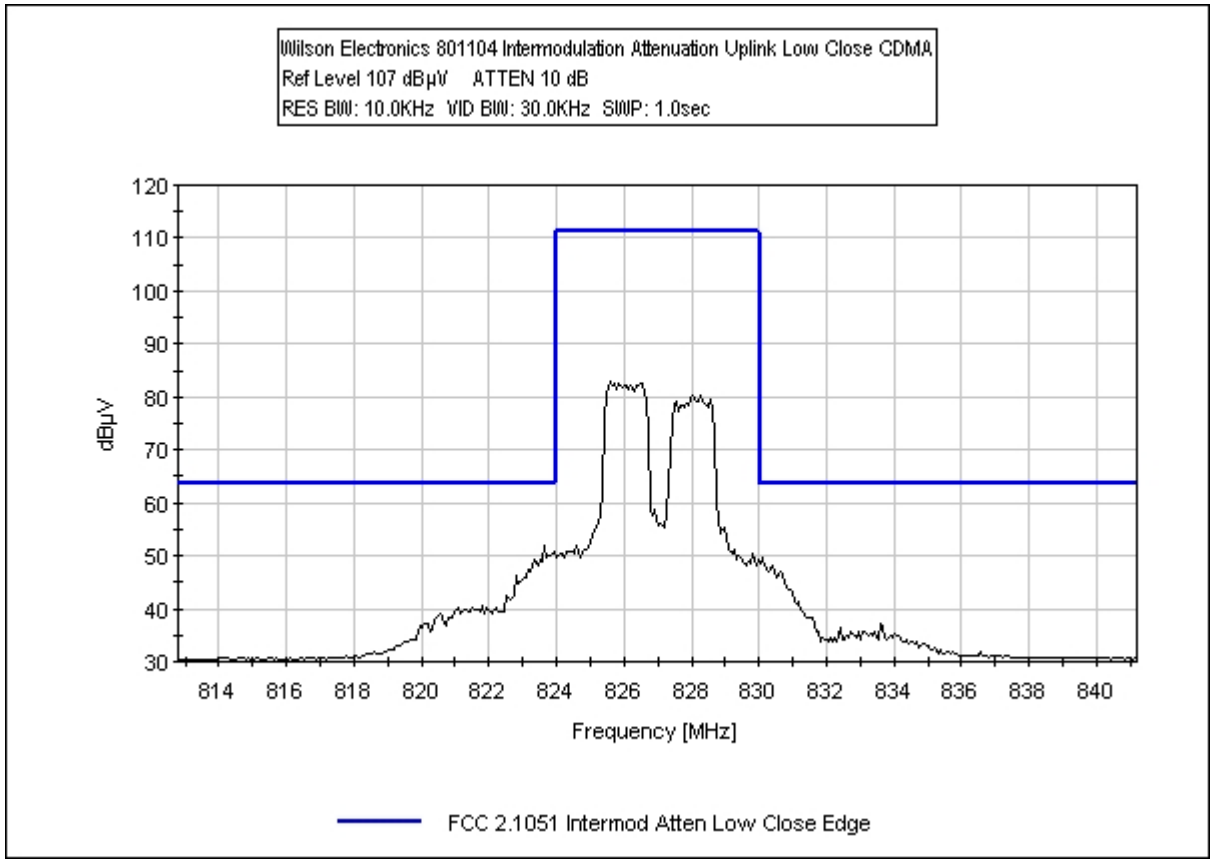
Uplink Intermodulation Attenuation AMPS High



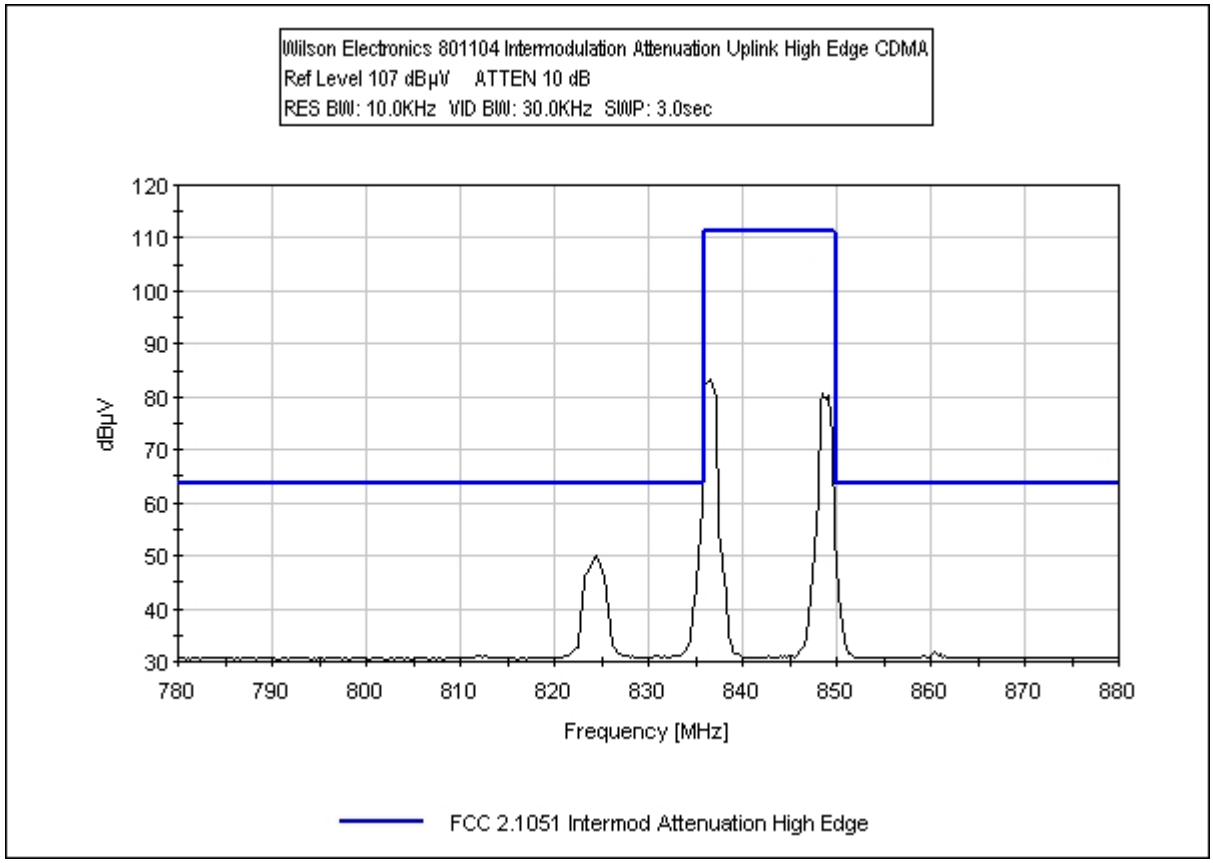
Uplink Intermodulation Attenuation CDMA Low



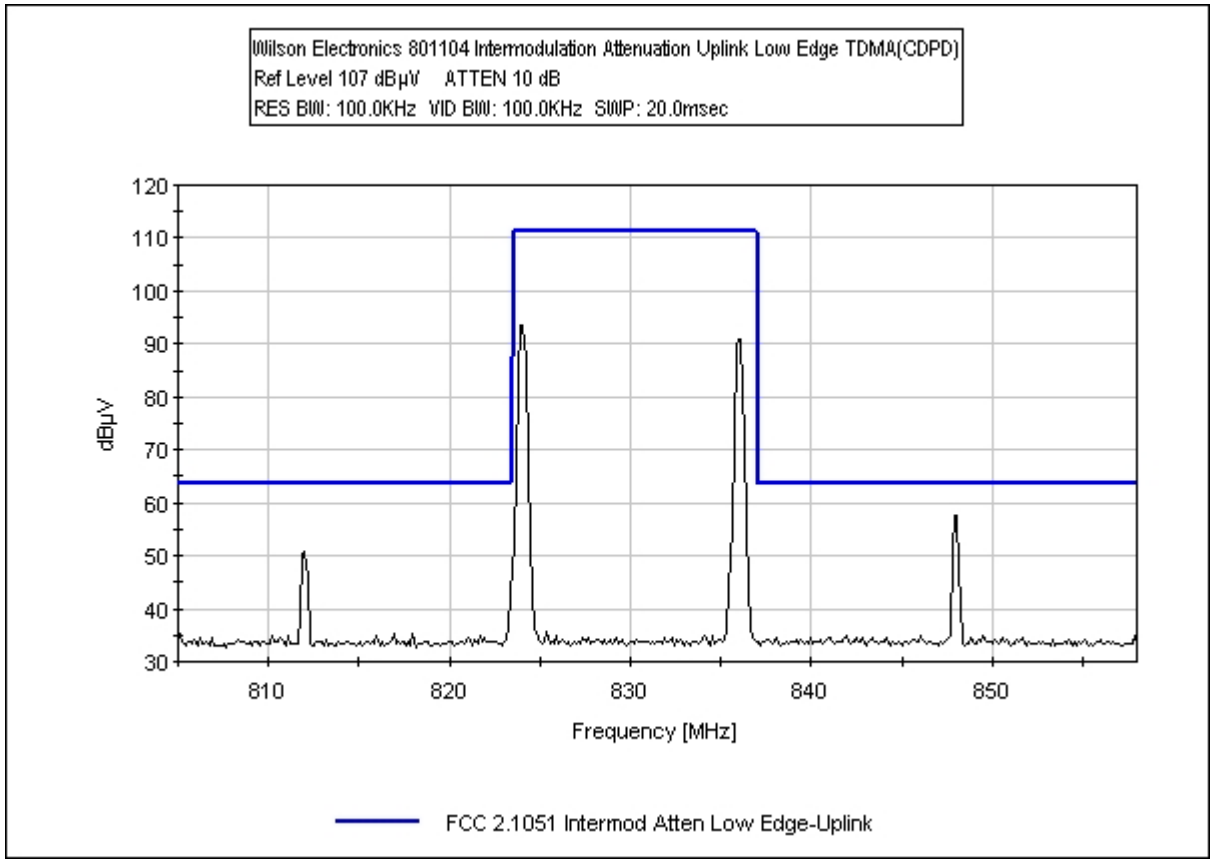
Uplink Intermodulation Attenuation CDMA Low Close



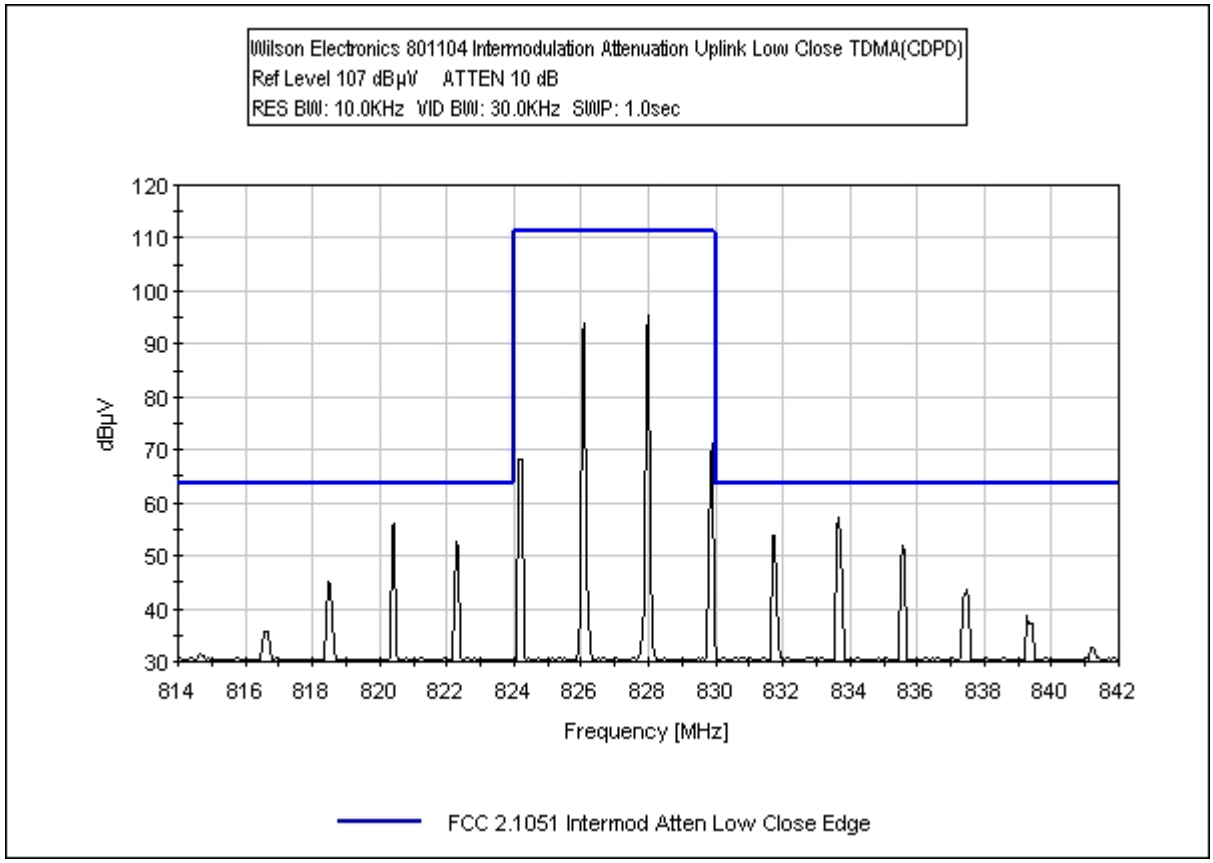
Uplink Intermodulation Attenuation CDMA High



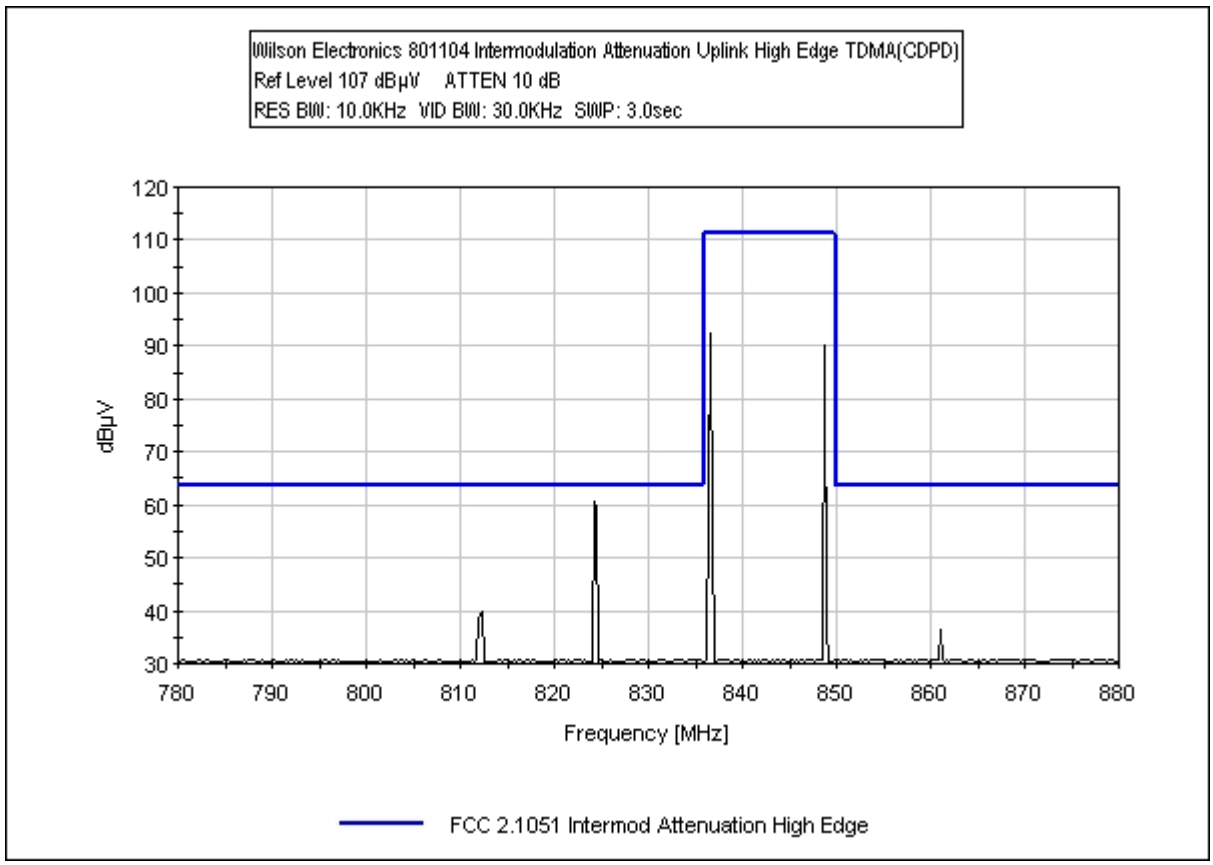
Uplink Intermodulation Attenuation TDMA(CDPD) Low



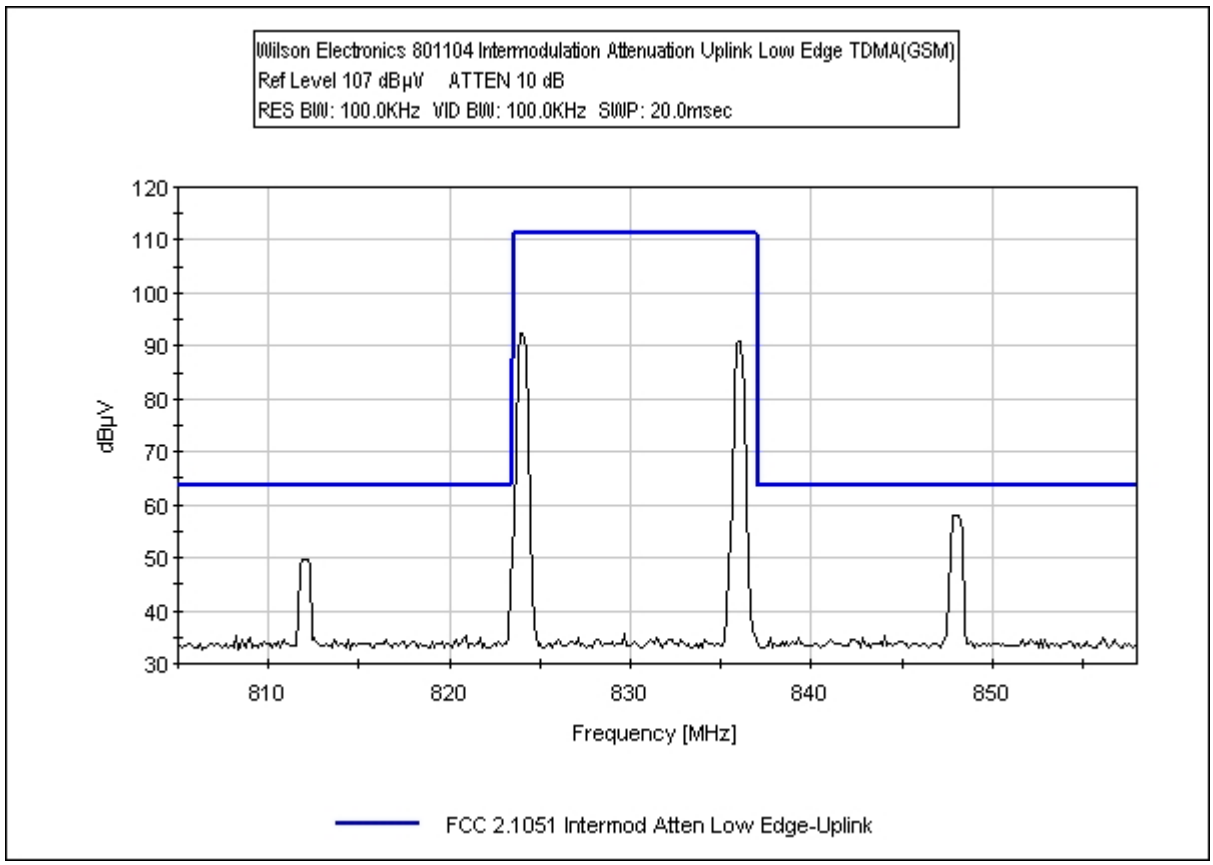
Uplink Intermodulation Attenuation TDMA(CDPD) Low Close



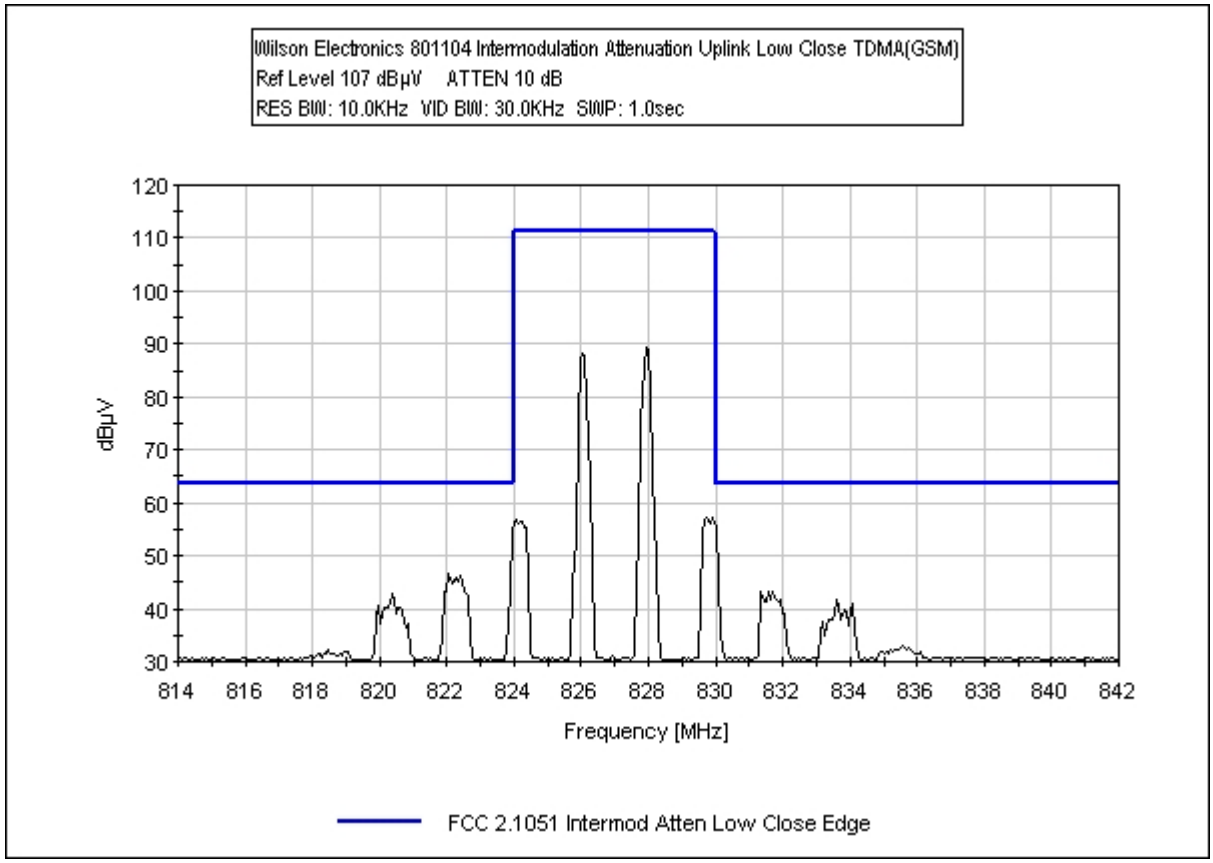
Uplink Intermodulation Attenuation TDMA(CDPD) High



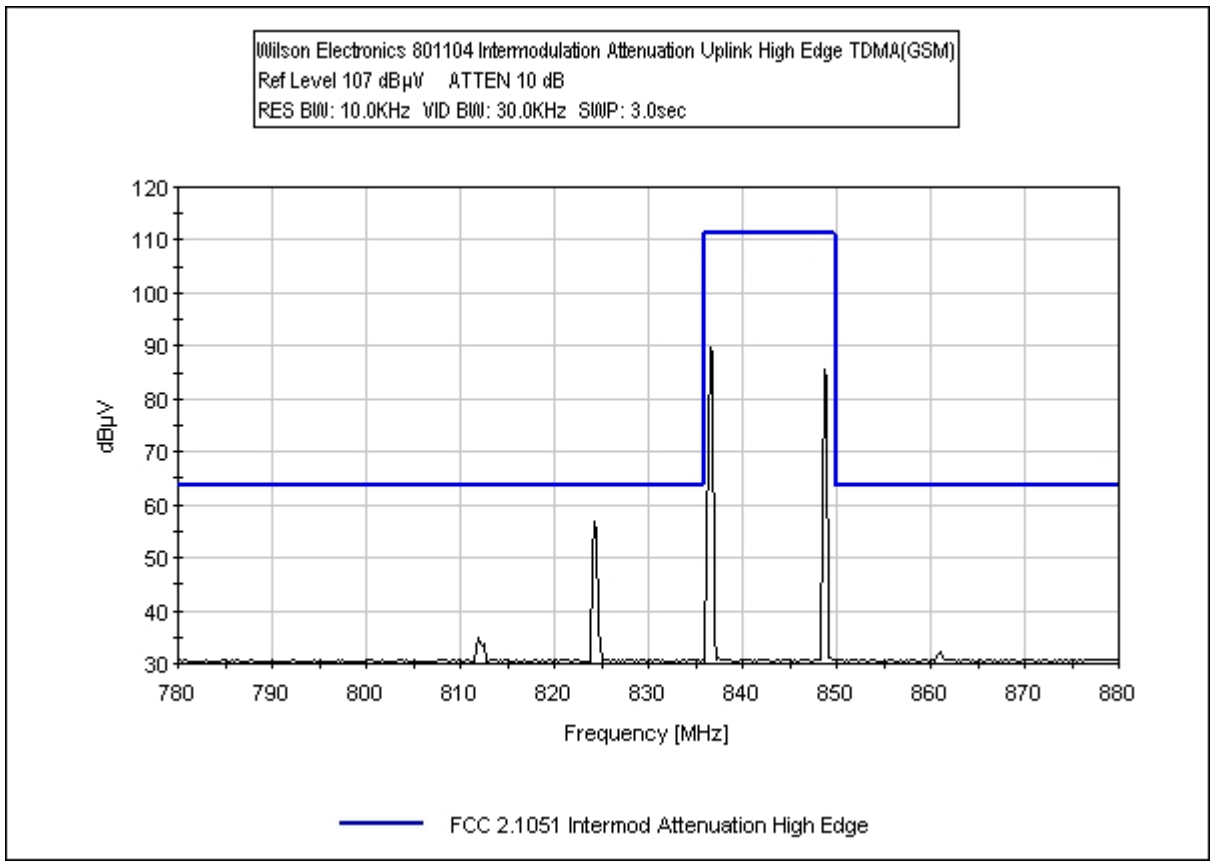
Uplink Intermodulation Attenuation TDMA(GSM) Low



Uplink Intermodulation Attenuation TDMA(GSM) Low Close



Uplink Intermodulation Attenuation TDMA(GSM) High



PHOTOGRAPH SHOWING INTERMODULATION ATTENUATION

FCC 2.1033(c)(14)/2.1051/22.917 - SPURIOUS EMISSIONS AT ANTENNA TERMINAL

Test Conditions: Block edges were investigated and where emissions were found are recorded in the tabular data. Bandwidth setting used: 100 kHz.

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer:	**Wilson Electronics**		
Specification:	**FCC 22.917**		
Work Order #:	**81646**	Date:	12/30/2003
Test Type:	**Spurious Emissions Antenna Terminals**	Time:	4:14:23 PM
Equipment:	**In-building Bidirectional Amplifier**	Sequence#:	20
Manufacturer:	Wilson Electronics	Tested By:	Matthew Pettersen
Model:	801104		
S/N:	001		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Downlink AMPS Low Channel 870.25MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	869.181M	80.0	+30.3				+0.0	110.3	117.0	-6.7	Direc

2	2608.814M	29.8	+29.9	+0.0	59.7	94.0	-34.3	Direc
3	2334.306M	28.2	+30.2	+0.0	58.4	94.0	-35.6	Direc
4	676.306M	27.5	+30.4	+0.0	57.9	94.0	-36.1	Direc
5	6657.419M	29.9	+27.2	+0.0	57.1	94.0	-36.9	Direc
6	310.213M	26.3	+30.5	+0.0	56.8	94.0	-37.2	Direc
7	189.740M	26.0	+30.4	+0.0	56.4	94.0	-37.6	Direc
8	86.828M	25.6	+30.5	+0.0	56.1	94.0	-37.9	Direc
9	50.808M	25.3	+30.5	+0.0	55.8	94.0	-38.2	Direc
10	10000.000 M	31.7	+23.0	+0.0	54.7	94.0	-39.3	Direc
11	880.871M	28.6	+30.3	+0.0	58.9	117.0	-58.1	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 4:09:10 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 19
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Downlink AMPS Mid Channel 880MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	879.410M	84.2	+30.3				+0.0	114.5	117.0	-2.5	Direc
2	2633.788M	30.4	+29.9				+0.0	60.3	94.0	-33.7	Direc

3	1669.822M	28.4	+30.2	+0.0	58.6	94.0	-35.4	Direc
4	6541.268M	29.8	+27.2	+0.0	57.0	94.0	-37.0	Direc
5	191.450M	26.2	+30.4	+0.0	56.6	94.0	-37.4	Direc
6	104.198M	25.8	+30.5	+0.0	56.3	94.0	-37.7	Direc
7	355.453M	25.9	+30.4	+0.0	56.3	94.0	-37.7	Direc
8	57.691M	25.5	+30.5	+0.0	56.0	94.0	-38.0	Direc
9	10000.000 M	31.5	+23.0	+0.0	54.5	94.0	-39.5	Direc
10	9999.999M	31.1	+23.0	+0.0	54.1	94.0	-39.9	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 4:03:12 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 18
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Downlink AMPS High Channel 892.75MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	893.119M	80.9	+30.3				+0.0	111.2	117.0	-5.8	Direc
2	2678.695M	34.9	+29.8				+0.0	64.7	94.0	-29.3	Direc

3	1668.036M	28.0	+30.2	+0.0	58.2	94.0	-35.8	Direc
4	7066.513M	30.4	+26.9	+0.0	57.3	94.0	-36.7	Direc
5	210.901M	26.5	+30.4	+0.0	56.9	94.0	-37.1	Direc
6	602.775M	26.3	+30.4	+0.0	56.7	94.0	-37.3	Direc
7	294.208M	26.0	+30.5	+0.0	56.5	94.0	-37.5	Direc
8	110.269M	25.9	+30.5	+0.0	56.4	94.0	-37.6	Direc
9	51.314M	25.5	+30.5	+0.0	56.0	94.0	-38.0	Direc
10	45.706M	25.3	+30.5	+0.0	55.8	94.0	-38.2	Direc
11	3574.501M	25.9	+29.8	+0.0	55.7	94.0	-38.3	Direc
12	881.955M	29.4	+30.3	+0.0	59.7	117.0	-57.3	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 3:00:22 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 9
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Downlink CDMA Low Channel 870.25MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	891.879M	77.4	+30.3				+0.0	107.7	117.0	-9.3	Direc
2	2678.695M	32.5	+29.8				+0.0	62.3	94.0	-31.7	Direc

3	1668.036M	28.0	+30.2	+0.0	58.2	94.0	-35.8	Direc
4	602.775M	27.2	+30.4	+0.0	57.6	94.0	-36.4	Direc
5	7097.284M	30.2	+26.9	+0.0	57.1	94.0	-36.9	Direc
6	121.822M	26.0	+30.5	+0.0	56.5	94.0	-37.5	Direc
7	239.141M	26.0	+30.4	+0.0	56.4	94.0	-37.6	Direc
8	3985.816M	26.7	+29.6	+0.0	56.3	94.0	-37.7	Direc
9	297.659M	25.4	+30.5	+0.0	55.9	94.0	-38.1	Direc
10	31.148M	25.2	+30.5	+0.0	55.7	94.0	-38.3	Direc
11	52.995M	24.9	+30.5	+0.0	55.4	94.0	-38.6	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 3:09:03 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 10
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Downlink CDMA Mid Channel 880MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	879.473M	81.3	+30.3				+0.0	111.6	117.0	-5.4	Direc
2	1670.140M	28.7	+30.2				+0.0	58.9	94.0	-35.1	Direc

3	2115.097M	28.7	+30.2	+0.0	58.9	94.0	-35.1	Direc
4	6625.464M	30.3	+27.2	+0.0	57.5	94.0	-36.5	Direc
5	218.279M	26.7	+30.4	+0.0	57.1	94.0	-36.9	Direc
6	316.210M	26.0	+30.5	+0.0	56.5	94.0	-37.5	Direc
7	444.756M	26.2	+30.3	+0.0	56.5	94.0	-37.5	Direc
8	136.976M	25.7	+30.5	+0.0	56.2	94.0	-37.8	Direc
9	9046.104M	31.0	+25.2	+0.0	56.2	94.0	-37.8	Direc
10	83.963M	25.6	+30.5	+0.0	56.1	94.0	-37.9	Direc
11	49.724M	25.2	+30.5	+0.0	55.7	94.0	-38.3	Direc
12	3641.038M	25.8	+29.7	+0.0	55.5	94.0	-38.5	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 3:14:56 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 11
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Downlink CDMA High Channel 892.75MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	893.119M	77.8	+30.3				+0.0	108.1	117.0	-8.9	Direc
2	2675.128M	30.2	+29.8				+0.0	60.0	94.0	-34.0	Direc

3	1514.474M	28.4	+30.2	+0.0	58.6	94.0	-35.4	Direc
4	6615.208M	30.3	+27.2	+0.0	57.5	94.0	-36.5	Direc
5	83.609M	26.0	+30.5	+0.0	56.5	94.0	-37.5	Direc
6	364.961M	26.1	+30.4	+0.0	56.5	94.0	-37.5	Direc
7	117.471M	25.9	+30.5	+0.0	56.4	94.0	-37.6	Direc
8	154.419M	25.9	+30.5	+0.0	56.4	94.0	-37.6	Direc
9	506.940M	25.8	+30.4	+0.0	56.2	94.0	-37.8	Direc
10	41.218M	25.1	+30.5	+0.0	55.6	94.0	-38.4	Direc
11	3719.671M	25.7	+29.7	+0.0	55.4	94.0	-38.6	Direc
12	881.955M	30.0	+30.3	+0.0	60.3	117.0	-56.7	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 3:42:24 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 15
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Downlink TDMA(CDPD) Low Channel 870.25MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	870.790M	80.0	+30.3				+0.0	110.3	117.0	-6.7	Direc
2	2610.921M	29.1	+29.9				+0.0	59.0	94.0	-35.0	Direc

3	1388.259M	28.1	+30.2	+0.0	58.3	94.0	-35.7	Direc
4	6912.659M	30.3	+27.1	+0.0	57.4	94.0	-36.6	Direc
5	576.439M	26.9	+30.4	+0.0	57.3	94.0	-36.7	Direc
6	279.971M	26.2	+30.5	+0.0	56.7	94.0	-37.3	Direc
7	84.051M	25.7	+30.5	+0.0	56.2	94.0	-37.8	Direc
8	47.323M	25.6	+30.5	+0.0	56.1	94.0	-37.9	Direc
9	241.685M	25.6	+30.4	+0.0	56.0	94.0	-38.0	Direc
10	145.228M	25.4	+30.5	+0.0	55.9	94.0	-38.1	Direc
11	3949.524M	26.2	+29.6	+0.0	55.8	94.0	-38.2	Direc
12	9046.104M	30.4	+25.2	+0.0	55.6	94.0	-38.4	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 3:49:46 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 16
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Downlink TDMA(CDPD) Mid Channel 880MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	879.473M	84.2	+30.3				+0.0	114.5	117.0	-2.5	Direc
2	2639.457M	30.8	+29.9				+0.0	60.7	94.0	-33.3	Direc

3	674.469M	28.5	+30.4	+0.0	58.9	94.0	-35.1	Direc
4	1653.311M	27.8	+30.2	+0.0	58.0	94.0	-36.0	Direc
5	6687.006M	30.1	+27.2	+0.0	57.3	94.0	-36.7	Direc
6	184.950M	26.4	+30.4	+0.0	56.8	94.0	-37.2	Direc
7	252.360M	26.1	+30.4	+0.0	56.5	94.0	-37.5	Direc
8	91.065M	25.8	+30.5	+0.0	56.3	94.0	-37.7	Direc
9	74.496M	25.6	+30.5	+0.0	56.1	94.0	-37.9	Direc
10	8984.563M	31.0	+25.1	+0.0	56.1	94.0	-37.9	Direc
11	37.566M	25.0	+30.5	+0.0	55.5	94.0	-38.5	Direc
12	3526.111M	25.7	+29.8	+0.0	55.5	94.0	-38.5	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 3:56:47 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 17
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Downlink TDMA(CDPD) High Channel 892.75MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	893.119M	80.9	+30.3				+0.0	111.2	117.0	-5.8	Direc
2	2678.695M	35.0	+29.8				+0.0	64.8	94.0	-29.2	Direc

3	2321.987M	30.3	+30.2	+0.0	60.5	94.0	-33.5	Direc
4	1962.538M	27.8	+30.3	+0.0	58.1	94.0	-35.9	Direc
5	602.775M	27.6	+30.4	+0.0	58.0	94.0	-36.0	Direc
6	6656.235M	30.0	+27.2	+0.0	57.2	94.0	-36.8	Direc
7	293.777M	26.1	+30.5	+0.0	56.6	94.0	-37.4	Direc
8	132.475M	26.0	+30.5	+0.0	56.5	94.0	-37.5	Direc
9	83.521M	25.6	+30.5	+0.0	56.1	94.0	-37.9	Direc
10	156.709M	25.4	+30.5	+0.0	55.9	94.0	-38.1	Direc
11	3604.745M	25.8	+29.8	+0.0	55.6	94.0	-38.4	Direc
12	48.889M	24.8	+30.5	+0.0	55.3	94.0	-38.7	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 3:35:48 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 14
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Downlink TDMA(GSM) Low Channel 870.25MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	869.549M	79.8	+30.3				+0.0	110.1	117.0	-6.9	Direc
2	1899.431M	28.8	+30.3				+0.0	59.1	94.0	-34.9	Direc

3	2318.420M	28.9	+30.2	+0.0	59.1	94.0	-34.9	Direc
4	602.775M	27.1	+30.4	+0.0	57.5	94.0	-36.5	Direc
5	44.453M	26.4	+30.5	+0.0	56.9	94.0	-37.1	Direc
6	6687.006M	29.6	+27.2	+0.0	56.8	94.0	-37.2	Direc
7	115.671M	26.1	+30.5	+0.0	56.6	94.0	-37.4	Direc
8	243.975M	26.2	+30.4	+0.0	56.6	94.0	-37.4	Direc
9	313.622M	26.1	+30.5	+0.0	56.6	94.0	-37.4	Direc
10	58.392M	25.4	+30.5	+0.0	55.9	94.0	-38.1	Direc
11	3659.184M	26.2	+29.7	+0.0	55.9	94.0	-38.1	Direc
12	880.714M	28.5	+30.3	+0.0	58.8	117.0	-58.2	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 3:28:35 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 13
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Downlink TDMA(GSM) Mid Channel 880MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	879.473M	84.0	+30.3				+0.0	114.3	117.0	-2.7	Direc
2	2639.457M	30.3	+29.9				+0.0	60.2	94.0	-33.8	Direc

3	674.469M	28.6	+30.4	+0.0	59.0	94.0	-35.0	Direc
4	1966.745M	28.6	+30.3	+0.0	58.9	94.0	-35.1	Direc
5	404.221M	26.9	+30.3	+0.0	57.2	94.0	-36.8	Direc
6	7138.312M	30.2	+26.8	+0.0	57.0	94.0	-37.0	Direc
7	67.594M	26.2	+30.5	+0.0	56.7	94.0	-37.3	Direc
8	159.508M	26.1	+30.5	+0.0	56.6	94.0	-37.4	Direc
9	9220.472M	31.4	+25.0	+0.0	56.4	94.0	-37.6	Direc
10	116.721M	25.8	+30.5	+0.0	56.3	94.0	-37.7	Direc
11	41.792M	25.6	+30.5	+0.0	56.1	94.0	-37.9	Direc
12	3641.038M	25.8	+29.7	+0.0	55.5	94.0	-38.5	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 3:21:02 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 12
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Downlink TDMA(GSM) High Channel 892.75MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	891.879M	80.8	+30.3				+0.0	111.1	117.0	-5.9	Direc
2	2678.695M	35.3	+29.8				+0.0	65.1	94.0	-28.9	Direc

3	1815.287M	27.8	+30.3	+0.0	58.1	94.0	-35.9	Direc
4	6512.638M	30.2	+27.2	+0.0	57.4	94.0	-36.6	Direc
5	699.342M	26.4	+30.4	+0.0	56.8	94.0	-37.2	Direc
6	173.247M	26.3	+30.4	+0.0	56.7	94.0	-37.3	Direc
7	286.011M	26.1	+30.5	+0.0	56.6	94.0	-37.4	Direc
8	74.761M	25.5	+30.5	+0.0	56.0	94.0	-38.0	Direc
9	3816.451M	26.1	+29.7	+0.0	55.8	94.0	-38.2	Direc
10	32.818M	25.1	+30.5	+0.0	55.6	94.0	-38.4	Direc
11	89.864M	25.1	+30.5	+0.0	55.6	94.0	-38.4	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 4:22:14 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 21
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. RF Power Output Test: Two signals are input to the amplifier. The inputs from the signal generators are 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequencies Tested: Uplink Low - 825.25 MHz Mid - 836 MHz High - 847.75 MHz Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Uplink AMPS Low Channel 825.25 MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	825.346M	99.4	+30.4				+0.0	129.8	141.7	-11.9	Direc
2	1793.657M	48.1	+30.3				+0.0	78.4	94.0	-15.6	Direc

3	2458.972M	47.5	+30.1	+0.0	77.6	94.0	-16.4	Direc
4	6760.665M	49.7	+27.1	+0.0	76.8	94.0	-17.2	Direc
5	91.294M	45.5	+30.5	+0.0	76.0	94.0	-18.0	Direc
6	264.973M	45.4	+30.4	+0.0	75.8	94.0	-18.2	Direc
7	170.932M	45.2	+30.5	+0.0	75.7	94.0	-18.3	Direc
8	61.853M	44.8	+30.5	+0.0	75.3	94.0	-18.7	Direc
9	10000.000 M	50.3	+23.0	+0.0	73.3	94.0	-20.7	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 4:27:44 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 22
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. RF Power Output Test: Two signals are input to the amplifier. The inputs from the signal generators are 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequencies Tested: Uplink Low - 825.25 MHz Mid - 836 MHz High - 847.75 MHz Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Uplink AMPS Mid Channel 836 MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	836.296M	102.1	+30.4				+0.0	132.5	141.7	-9.2	Direc
2	2011.125M	48.6	+30.3				+0.0	78.9	94.0	-15.1	Direc

3	2458.972M	47.4	+30.1	+0.0	77.5	94.0	-16.5	Direc
4	6773.570M	49.7	+27.1	+0.0	76.8	94.0	-17.2	Direc
5	126.036M	45.8	+30.5	+0.0	76.3	94.0	-17.7	Direc
6	314.454M	45.8	+30.5	+0.0	76.3	94.0	-17.7	Direc
7	180.165M	45.8	+30.4	+0.0	76.2	94.0	-17.8	Direc
8	33.762M	45.2	+30.5	+0.0	75.7	94.0	-18.3	Direc
9	9999.999M	50.3	+23.0	+0.0	73.3	94.0	-20.7	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 4:33:06 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 23
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. RF Power Output Test: Two signals are input to the amplifier. The inputs from the signal generators are 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequencies Tested: Uplink Low - 825.25 MHz Mid - 836 MHz High - 847.75 MHz Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Uplink AMPS High Channel 847.75 MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	847.264M	99.3	+30.4				+0.0	129.7	141.7	-12.0	Direc
2	1838.963M	48.5	+30.3				+0.0	78.8	94.0	-15.2	Direc

3	2402.781M	47.6	+30.1	+0.0	77.7	94.0	-16.3	Direc
4	6992.968M	49.3	+27.1	+0.0	76.4	94.0	-17.6	Direc
5	9032.070M	50.9	+25.2	+0.0	76.1	94.0	-17.9	Direc
6	223.937M	45.4	+30.4	+0.0	75.8	94.0	-18.2	Direc
7	72.600M	45.2	+30.5	+0.0	75.7	94.0	-18.3	Direc
8	289.713M	45.2	+30.5	+0.0	75.7	94.0	-18.3	Direc
9	58.331M	44.7	+30.5	+0.0	75.2	94.0	-18.8	Direc
10	9999.999M	50.5	+23.0	+0.0	73.5	94.0	-20.5	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 4:46:01 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 26
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. RF Power Output Test: Two signals are input to the amplifier. The inputs from the signal generators are 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequencies Tested: Uplink Low - 825.25 MHz Mid - 836 MHz High - 847.75 MHz Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Uplink CDMA Low Channel 825.25 MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	825.026M	97.0	+30.4				+0.0	127.4	141.7	-14.3	Direc
2	1825.010M	47.7	+30.3				+0.0	78.0	94.0	-16.0	Direc

3	6728.285M	50.2	+27.2	+0.0	77.4	94.0	-16.6	Direc
4	223.296M	46.2	+30.4	+0.0	76.6	94.0	-17.4	Direc
5	70.054M	45.3	+30.5	+0.0	75.8	94.0	-18.2	Direc
6	122.215M	44.8	+30.5	+0.0	75.3	94.0	-18.7	Direc
7	4324.892M	45.7	+29.0	+0.0	74.7	94.0	-19.3	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 4:42:27 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 25
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. RF Power Output Test: Two signals are input to the amplifier. The inputs from the signal generators are 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequencies Tested: Uplink Low - 825.25 MHz Mid - 836 MHz High - 847.75 MHz Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Uplink CDMA Mid Channel 836 MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	835.574M	98.9	+30.4				+0.0	129.3	141.7	-12.4	Direc
2	2180.267M	48.6	+30.2				+0.0	78.8	94.0	-15.2	Direc

3	2471.459M	48.7	+30.1	+0.0	78.8	94.0	-15.2	Direc
4	6760.665M	49.6	+27.1	+0.0	76.7	94.0	-17.3	Direc
5	104.364M	45.5	+30.5	+0.0	76.0	94.0	-18.0	Direc
6	431.088M	45.5	+30.3	+0.0	75.8	94.0	-18.2	Direc
7	142.549M	45.2	+30.5	+0.0	75.7	94.0	-18.3	Direc
8	41.525M	45.0	+30.5	+0.0	75.5	94.0	-18.5	Direc
9	9999.999M	50.2	+23.0	+0.0	73.2	94.0	-20.8	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 4:38:57 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 24
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. RF Power Output Test: Two signals are input to the amplifier. The inputs from the signal generators are 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequencies Tested: Uplink Low - 825.25 MHz Mid - 836 MHz High - 847.75 MHz Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Uplink CDMA High Channel 847.75 MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	848.725M	96.4	+30.3				+0.0	126.7	141.7	-15.0	Direc
2	1669.822M	47.8	+30.2				+0.0	78.0	94.0	-16.0	Direc

3	2758.656M	48.3	+29.7	+0.0	78.0	94.0	-16.0	Direc
4	6631.607M	50.0	+27.2	+0.0	77.2	94.0	-16.8	Direc
5	429.674M	45.9	+30.3	+0.0	76.2	94.0	-17.8	Direc
6	7676.971M	50.7	+25.4	+0.0	76.1	94.0	-17.9	Direc
7	170.248M	45.2	+30.5	+0.0	75.7	94.0	-18.3	Direc
8	39.604M	45.0	+30.5	+0.0	75.5	94.0	-18.5	Direc
9	106.184M	45.0	+30.5	+0.0	75.5	94.0	-18.5	Direc
10	10000.000 M	50.4	+23.0	+0.0	73.4	94.0	-20.6	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 5:05:56 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 32
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. RF Power Output Test: Two signals are input to the amplifier. The inputs from the signal generators are 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequencies Tested: Uplink Low - 825.25 MHz Mid - 836 MHz High - 847.75 MHz Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Uplink TDMA(CDPD) Low Channel 825.25 MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	825.026M	99.7	+30.4				+0.0	130.1	141.7	-11.6	Direc
2	2325.542M	48.3	+30.2				+0.0	78.5	94.0	-15.5	Direc

3	6759.296M	49.8	+27.1	+0.0	76.9	94.0	-17.1	Direc
4	436.466M	46.3	+30.3	+0.0	76.6	94.0	-17.4	Direc
5	174.788M	45.8	+30.4	+0.0	76.2	94.0	-17.8	Direc
6	65.399M	44.8	+30.5	+0.0	75.3	94.0	-18.7	Direc
7	3813.202M	44.8	+29.7	+0.0	74.5	94.0	-19.5	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 5:02:58 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 31
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. RF Power Output Test: Two signals are input to the amplifier. The inputs from the signal generators are 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequencies Tested: Uplink Low - 825.25 MHz Mid - 836 MHz High - 847.75 MHz Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Uplink TDMA(CDPD) Mid Channel 836 MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	836.931M	101.8	+30.4				+0.0	132.2	141.7	-9.5	Direc
2	2455.092M	48.0	+30.1				+0.0	78.1	94.0	-15.9	Direc

3	1370.508M	47.4	+30.2	+0.0	77.6	94.0	-16.4	Direc
4	6526.710M	49.5	+27.2	+0.0	76.7	94.0	-17.3	Direc
5	80.608M	45.8	+30.5	+0.0	76.3	94.0	-17.7	Direc
6	49.231M	45.3	+30.5	+0.0	75.8	94.0	-18.2	Direc
7	362.578M	45.3	+30.4	+0.0	75.7	94.0	-18.3	Direc
8	3952.754M	45.1	+29.6	+0.0	74.7	94.0	-19.3	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 5:00:08 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 30
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. RF Power Output Test: Two signals are input to the amplifier. The inputs from the signal generators are 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequencies Tested: Uplink Low - 825.25 MHz Mid - 836 MHz High - 847.75 MHz Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Uplink TDMA(CDPD) High Channel 847.75 MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	847.389M	98.7	+30.4				+0.0	129.1	141.7	-12.6	Direc
2	2078.220M	47.9	+30.3				+0.0	78.2	94.0	-15.8	Direc

3	1379.633M	47.2	+30.2	+0.0	77.4	94.0	-16.6	Direc
4	6774.802M	49.6	+27.1	+0.0	76.7	94.0	-17.3	Direc
5	125.440M	45.8	+30.5	+0.0	76.3	94.0	-17.7	Direc
6	458.548M	45.8	+30.4	+0.0	76.2	94.0	-17.8	Direc
7	65.154M	44.6	+30.5	+0.0	75.1	94.0	-18.9	Direc
8	3813.202M	44.9	+29.7	+0.0	74.6	94.0	-19.4	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 4:48:57 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 27
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. RF Power Output Test: Two signals are input to the amplifier. The inputs from the signal generators are 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequencies Tested: Uplink Low - 825.25 MHz Mid - 836 MHz High - 847.75 MHz Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Uplink TDMA(GSM) Low Channel 825.25 MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	825.026M	99.8	+30.4				+0.0	130.2	141.7	-11.5	Direc
2	2154.772M	49.4	+30.2				+0.0	79.6	94.0	-14.4	Direc

3	171.240M	46.0	+30.5	+0.0	76.5	94.0	-17.5	Direc
4	415.234M	45.8	+30.3	+0.0	76.1	94.0	-17.9	Direc
5	6743.791M	48.8	+27.2	+0.0	76.0	94.0	-18.0	Direc
6	59.030M	44.7	+30.5	+0.0	75.2	94.0	-18.8	Direc
7	3906.236M	45.5	+29.6	+0.0	75.1	94.0	-18.9	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 4:51:44 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 28
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. RF Power Output Test: Two signals are input to the amplifier. The inputs from the signal generators are 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequencies Tested: Uplink Low - 825.25 MHz Mid - 836 MHz High - 847.75 MHz Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Uplink TDMA(GSM) Mid Channel 836MHz.

Transducer Legend:

T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	836.931M	101.7	+30.4				+0.0	132.1	141.7	-9.6	Direc
2	2325.542M	48.2	+30.2				+0.0	78.4	94.0	-15.6	Direc

3	442.411M	46.4	+30.3	+0.0	76.7	94.0	-17.3	Direc
4	6619.744M	49.5	+27.2	+0.0	76.7	94.0	-17.3	Direc
5	172.207M	46.0	+30.5	+0.0	76.5	94.0	-17.5	Direc
6	66.869M	45.2	+30.5	+0.0	75.7	94.0	-18.3	Direc
7	3813.202M	44.6	+29.7	+0.0	74.3	94.0	-19.7	Direc

Test Location: CKC Laboratories, Inc. •1100 Fulton Place • Fremont, CA. 94538 • 510-249-1170

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/30/2003
Test Type: **Spurious Emissions Antenna Terminals** Time: 4:54:33 PM
Equipment: **In-building Bidirectional Amplifier** Sequence#: 29
Manufacturer: Wilson Electronics Tested By: Matthew Pettersen
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
In-building Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. RF Power Output Test: Two signals are input to the amplifier. The inputs from the signal generators are 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. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequencies Tested: Uplink Low - 825.25 MHz Mid - 836 MHz High - 847.75 MHz Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Spurious Emissions Antenna Terminals Uplink TDMA(GSM) High Channel 847.75 MHz.

Transducer Legend:

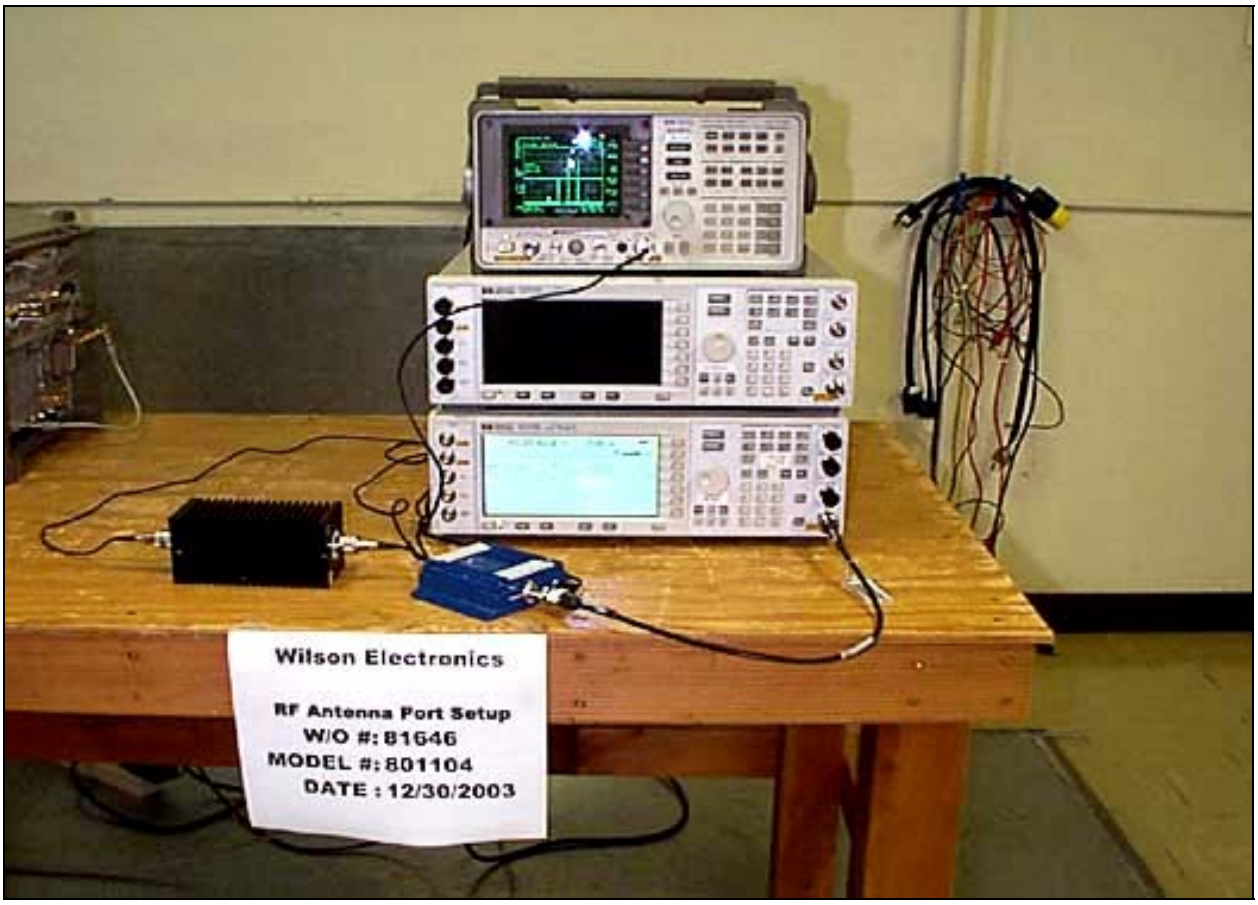
T1=Pad 30dB

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	847.389M	98.6	+30.4				+0.0	129.0	141.7	-12.7	Direc
2	1948.671M	48.0	+30.3				+0.0	78.3	94.0	-15.7	Direc

3	6728.285M	49.4	+27.2	+0.0	76.6	94.0	-17.4	Direc
4	309.923M	45.9	+30.5	+0.0	76.4	94.0	-17.6	Direc
5	41.024M	45.2	+30.5	+0.0	75.7	94.0	-18.3	Direc
6	146.405M	45.0	+30.5	+0.0	75.5	94.0	-18.5	Direc
7	3890.731M	45.0	+29.6	+0.0	74.6	94.0	-19.4	Direc

PHOTOGRAPH SHOWING DIRECT CONNECT



FCC 2.1033(c)(14)/2.1053/22.917 - FIELD STRENGTH OF SPURIOUS RADIATION

Bandwidth settings used: RBW=VBW=300 Hz for frequencies less than 60 kHz removed from the carrier. RBW=VBW=30 kHz for frequencies greater than 60 kHz removed from the carrier.

Test Location: CKC Laboratories, Inc. •5473A Clouds Rest • Mariposa CA 95338 • 800-500-4EMC (4362)

Customer:	**Wilson Electronics**		
Specification:	**FCC 22.917**		
Work Order #:	**81646**	Date:	12/31/2003
Test Type:	**Maximized Emissions**	Time:	15:12:48
Equipment:	**Bidirectional Amplifier**	Sequence#:	71
Manufacturer:	Wilson Electronics	Tested By:	Randal Clark
Model:	801104		
S/N:	001		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Cable, SemiFlex	58758-23	01/21/2003	01/21/2004	P01403
Cable H&S 35'	90148402	01/21/2003	01/21/2004	P01352
Cable, WL Gore 2'	149047	04/10/2003	04/10/2004	P01527
Cable, Andrews Hardline	NA	06/04/2003	06/04/2005	P00740
Chase CBL6111C Bilog	2456	12/13/2002	12/13/2004	01991
EMCO 3115 Horn Antenna	9006-3413	04/25/2003	04/25/2005	327
HP 8447D Preamp	1937A02604	03/07/2003	03/07/2004	00099
HP 8449B Preamp	3008A00301	10/21/2002	10/18/2004	2010
HP 8566B SA	2209A01404	02/26/2003	02/26/2004	00490
HP 8566B SA Display	2403A08241	02/26/2003	02/26/2004	00489
HP 85650A QPA	2811A01267	02/26/2003	02/26/2004	00478

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N
Signal Generator	HP	E4432B	US40052283

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. Radiated Spurious Emissions Test: Two Signals are is input to the amplifier. Both signals are generated via support ESG. 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. RF output is terminated into a shielded resistive load. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequencies Tested: Uplink Low - 825.25 MHz Mid - 836 MHz High - 847.75 MHz Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Radiated Spurious Emissions - Downlink CDMA CDMA was determined to be the worst case modulation - data is representative of all modulations for high middle and low channels. **No EUT Emissions detected within 20dBc of the limit.**

Transducer Legend:

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

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

Test Location: CKC Laboratories, Inc. •5473A Clouds Rest • Mariposa CA 95338 • 800-500-4EMC (4362)

Customer: **Wilson Electronics**
Specification: **FCC 22.917**
Work Order #: **81646** Date: 12/31/2003
Test Type: **Maximized Emissions** Time: 15:35:11
Equipment: **Bidirectional Amplifier** Sequence#: 74
Manufacturer: Wilson Electronics Tested By: Randal Clark
Model: 801104
S/N: 001

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Cable, SemiFlex	58758-23	01/21/2003	01/21/2004	P01403
Cable H&S 35'	90148402	01/21/2003	01/21/2004	P01352
Cable, WL Gore 2'	149047	04/10/2003	04/10/2004	P01527
Cable, Andrews Hardline	NA	06/04/2003	06/04/2005	P00740
Chase CBL6111C Bilog	2456	12/13/2002	12/13/2004	01991
EMCO 3115 Horn Antenna	9006-3413	04/25/2003	04/25/2005	327
HP 8447D Preamp	1937A02604	03/07/2003	03/07/2004	00099
HP 8449B Preamp	3008A00301	10/21/2002	10/18/2004	2010
HP 8566B SA	2209A01404	02/26/2003	02/26/2004	00490
HP 8566B SA Display	2403A08241	02/26/2003	02/26/2004	00489
HP 85650A QPA	2811A01267	02/26/2003	02/26/2004	00478

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Amplifier Power Supply	Wilson Electronics	JOD-48U-36	NA
Bidirectional Amplifier*	Wilson Electronics	801104	001

Support Devices:

Function	Manufacturer	Model #	S/N
Signal Generator	HP	E4432B	US40052283

Test Conditions / Notes:

EUT is an in-building bidirectional amplifier for the 824 to 894 MHz band. Uplink frequency range 824 - 849 MHz. Downlink frequency range 869 - 894 MHz. Radiated Spurious Emissions Test: Two Signals are is input to the amplifier. Both signals are generated via support ESG. 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. RF output is terminated into a shielded resistive load. Frequencies Tested: Downlink Low - 870.25 MHz, Mid - 880 MHz, High - 892.75 MHz. Frequencies Tested: Uplink Low - 825.25 MHz Mid - 836 MHz High - 847.75 MHz Frequency Range Investigated: 30 MHz - 10 GHz. Uplink Output Ratings: TDMA and CDMA formats: 3Watts, AMPS: 1Watt, Downlink Output Ratings: All: 10mW. Radiated Spurious Emissions - Uplink CDMA CDMA was determined to be the worst case modulation - data is representative of all modulations for high middle and low channels. **No EUT Emissions detected within 20dBc of the limit.**

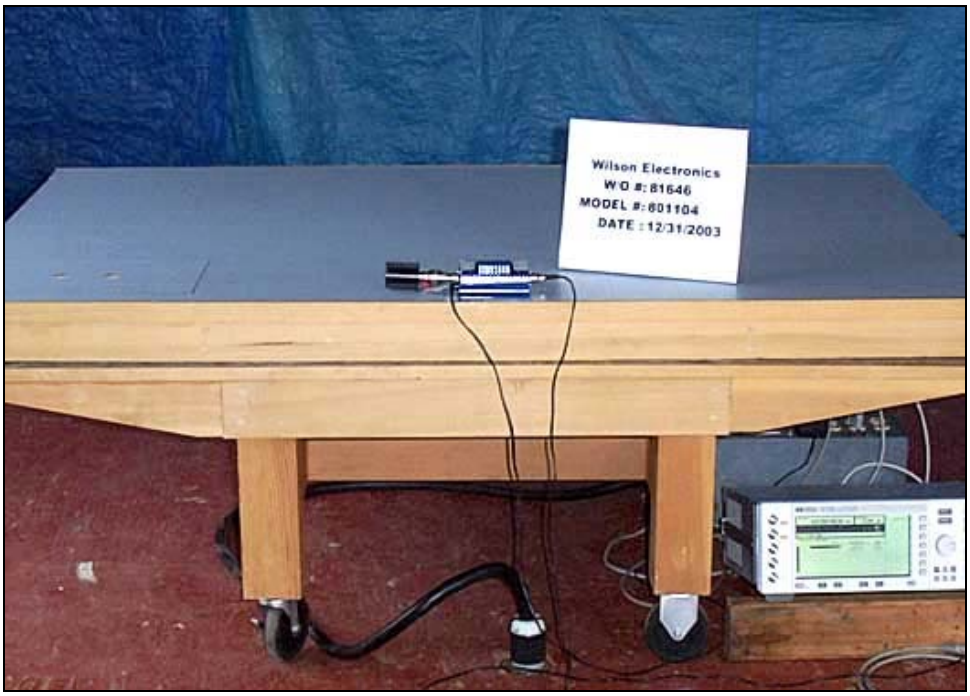
Transducer Legend:

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

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

PHOTOGRAPH SHOWING RADIATED EMISSIONS

Radiated Emissions - Front View



Radiated Emissions - Back View

FCC 2.1091 – MPE CALCULATIONS

Date of Report: January 5, 2004

Calculations prepared for:

Calculations prepared by:

Randal Clark
CKC Laboratories, Inc.
5473A Clouds Rest Road
Mariposa, CA 95338

Model Number: 801104

Fundamental Operating Frequency: 869-894 Downlink

Antenna Gain and Type: +5.12dBi Omni-Directional Whip
Maximum Radiated Output Power: 15.11 dBm (EIRP)
Measured Output Power: 9.99 dBm
Note EIRP calculated with the highest gain antenna of this type used with this device.

MPE Limit in accordance with 1.1310(b): Limits for general population/uncontrolled exposure

$$\text{MPE Limit} = f / 1500 \ (mW/cm^2)$$
$$= 869 / 1500$$
$$= 0.57933 \sim 0.58 \ (mW/cm^2)$$

Note: Limit is calculated from the lower edge of the operating band

EIRP (mW)	Distance (cm)	Power Density (mW/cm^2)	Result
32.43	2.11	0.580	Pass

$$PowerDensity(mW/cm^2) = \frac{EIRP}{4\pi d^2}$$ Given: **EIRP** in *mW* and **d** in *cm*

As can be seen from the MPE results, this device passes the limits specified in 1.1310 at a distance of less than 20 cm and at a output power of 32.43 mW. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

Maximum Permissible Exposure Calculations
Date of Report: January 5, 2004

Calculations prepared for:

Calculations prepared by:

Randal Clark
CKC Laboratories, Inc.
5473A Clouds Rest Road
Mariposa, CA 95338

Model Number: 801104

Fundamental Operating Frequency: 824-849 Uplink

Antenna Gain and Type: +13 dBi Yagi
Maximum Radiated Output Power: 47.53 dBm (ERP)
Measured Output Power: 34.53 dBm

MPE Limit in accordance with 1.1310(b): Limits for general population/uncontrolled exposure

$$\text{MPE Limit} = f / 1500 \ (mW/cm^2)$$
$$= 824 / 1500$$
$$= 0.54933 \sim 0.55 \ (mW/cm^2)$$

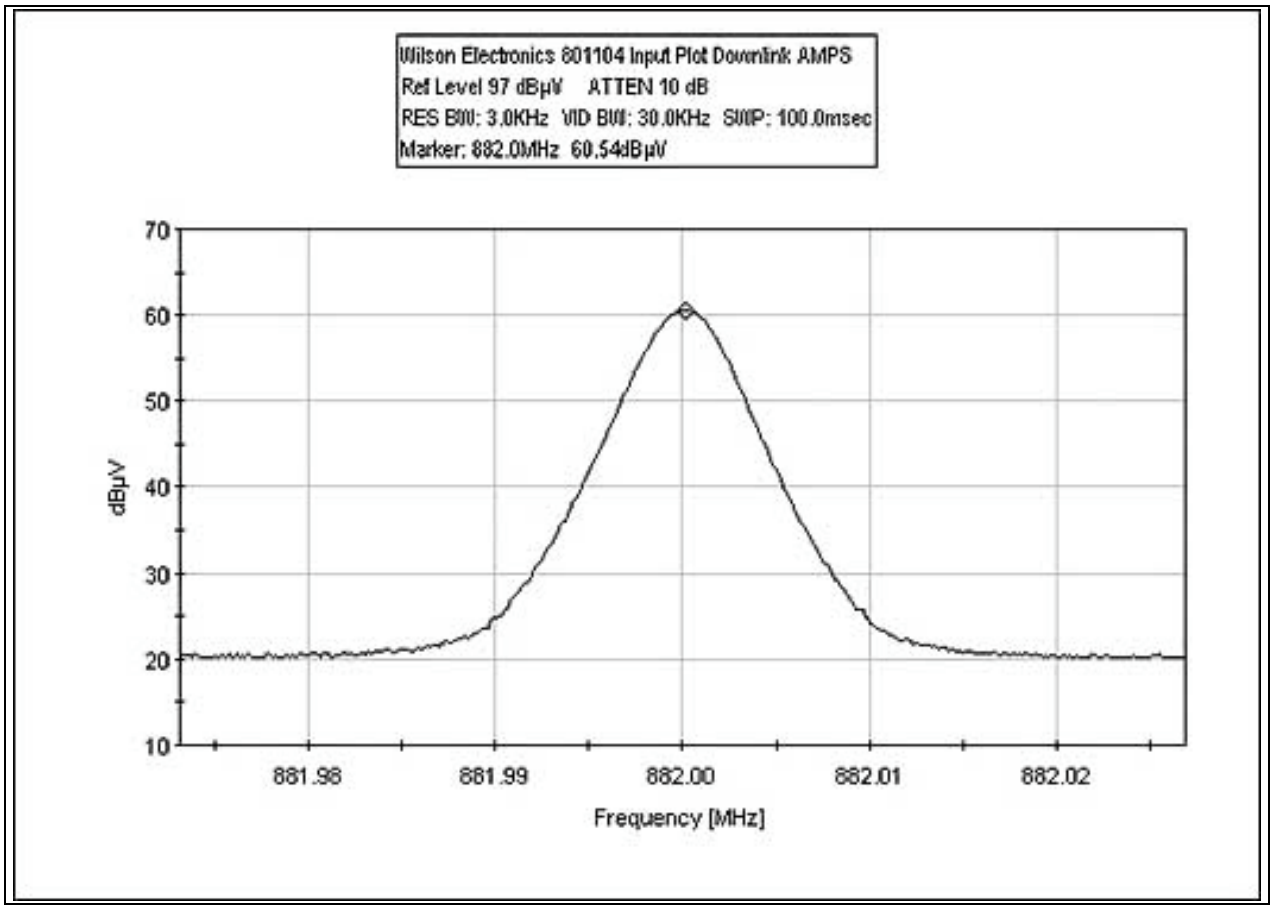
Note: Limit is calculated from the lower edge of the operating band

EIRP (mW)	Distance (cm)	Power Density (mW/cm^2)	Result
56623.93	90.51	0.550	Pass

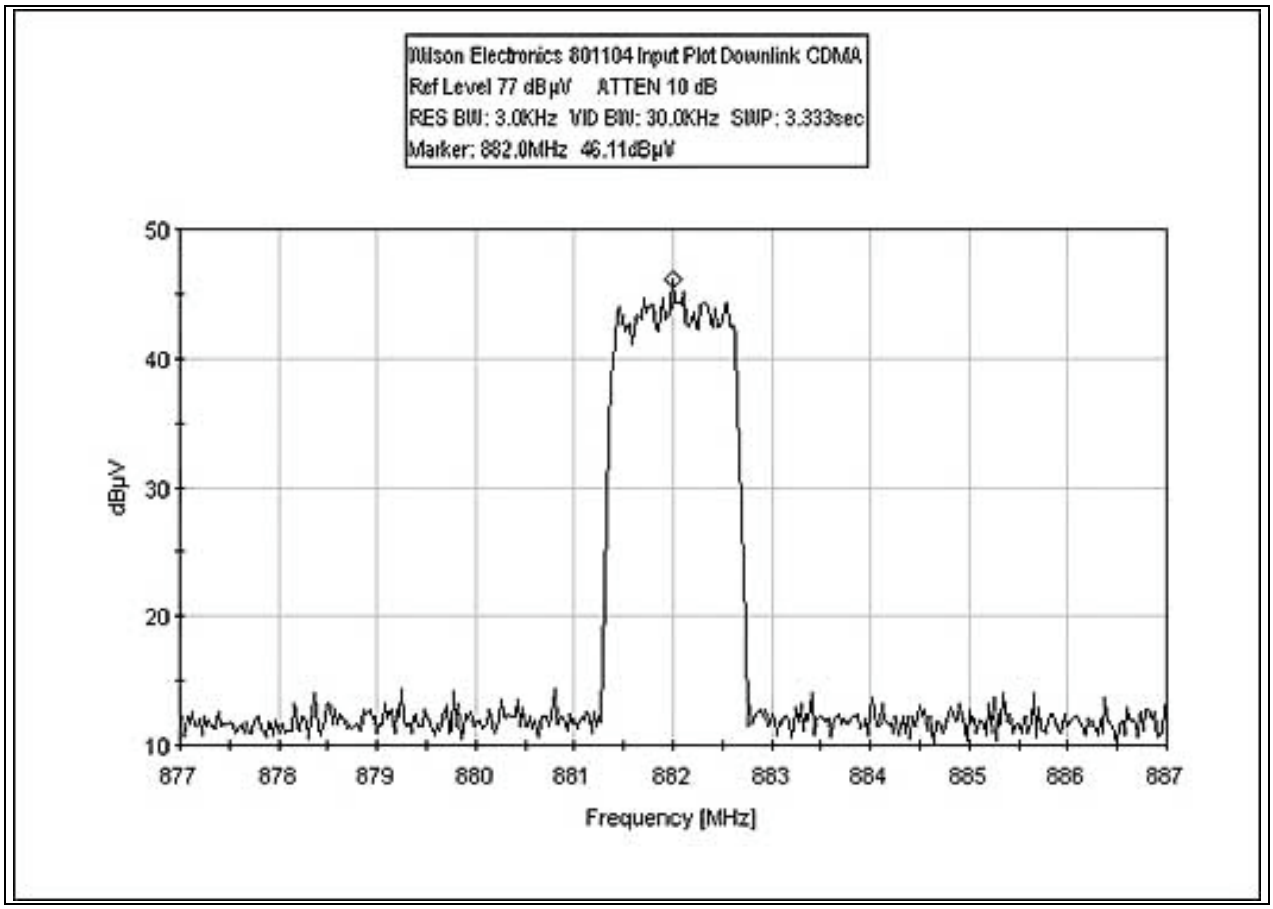
$$PowerDensity(mW/cm^2) = \frac{EIRP}{4\pi d^2}$$ Given: **EIRP** in *mW* and **d** in *cm*

As can be seen from the MPE results, this device passes the limits specified in 1.1310 at a distance of 90.51 cm and at a output power of 56624 mW. Antenna used for uplink frequencies must be mounted on outdoor permanent structures. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

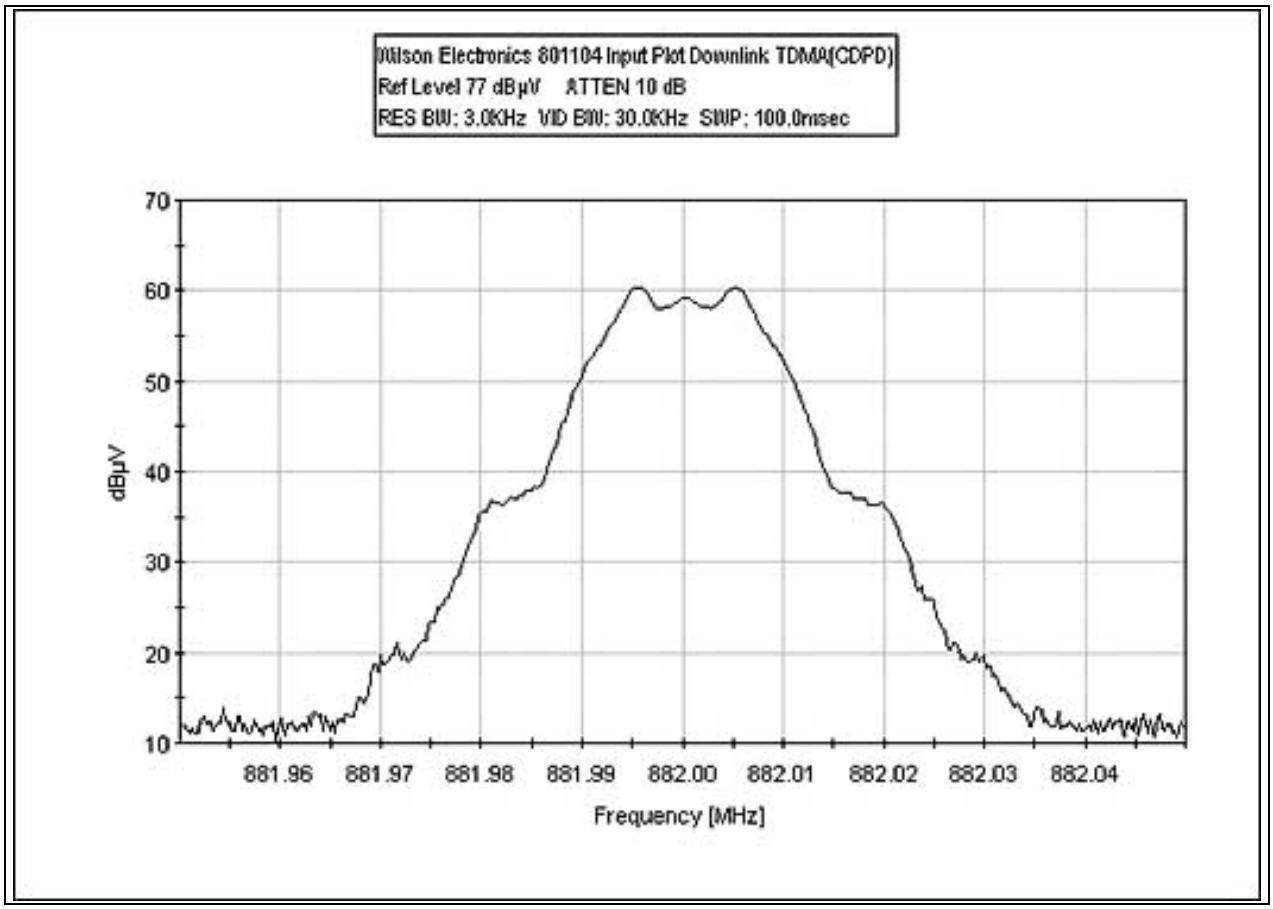
Downlink Input AMPS



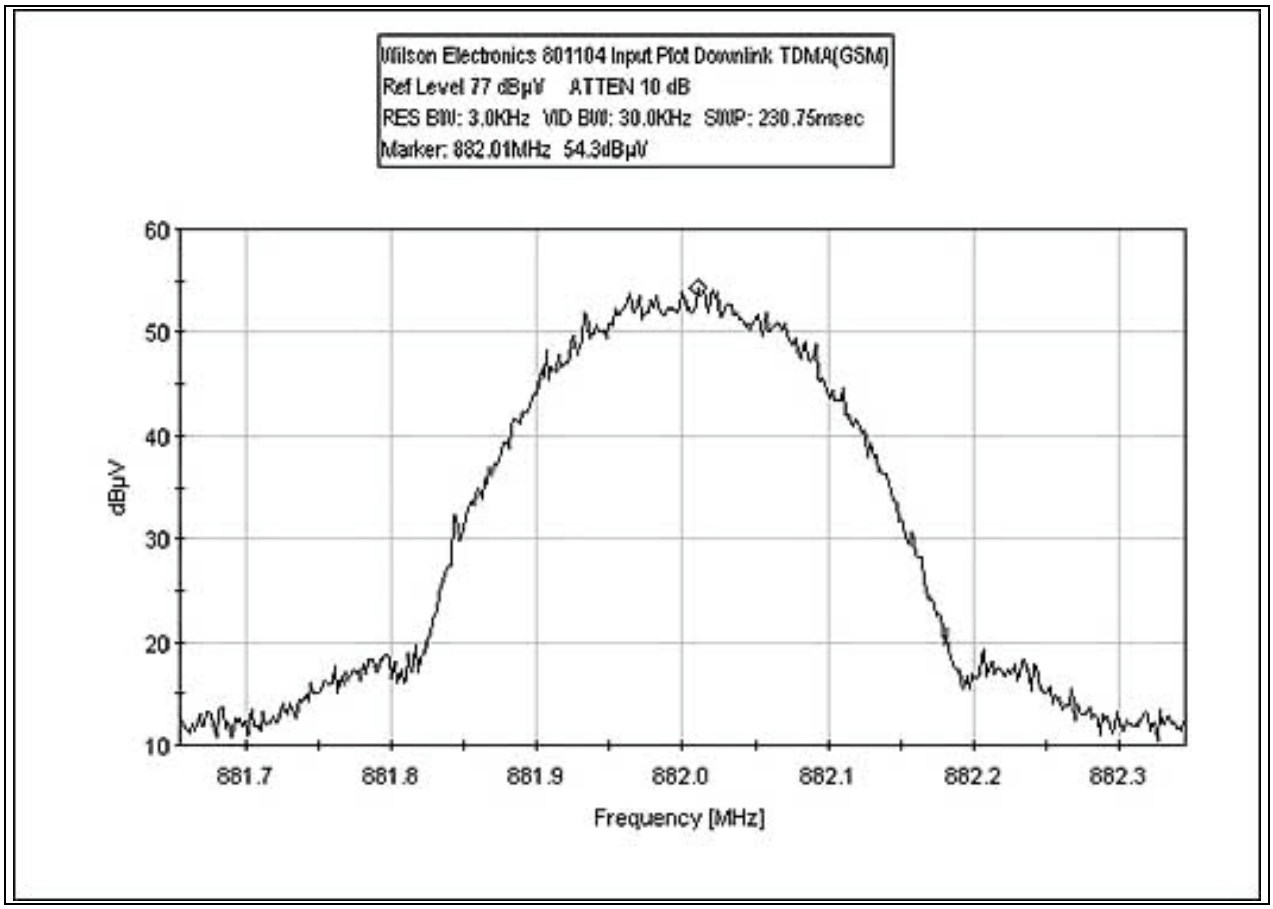
Downlink Input CDMA



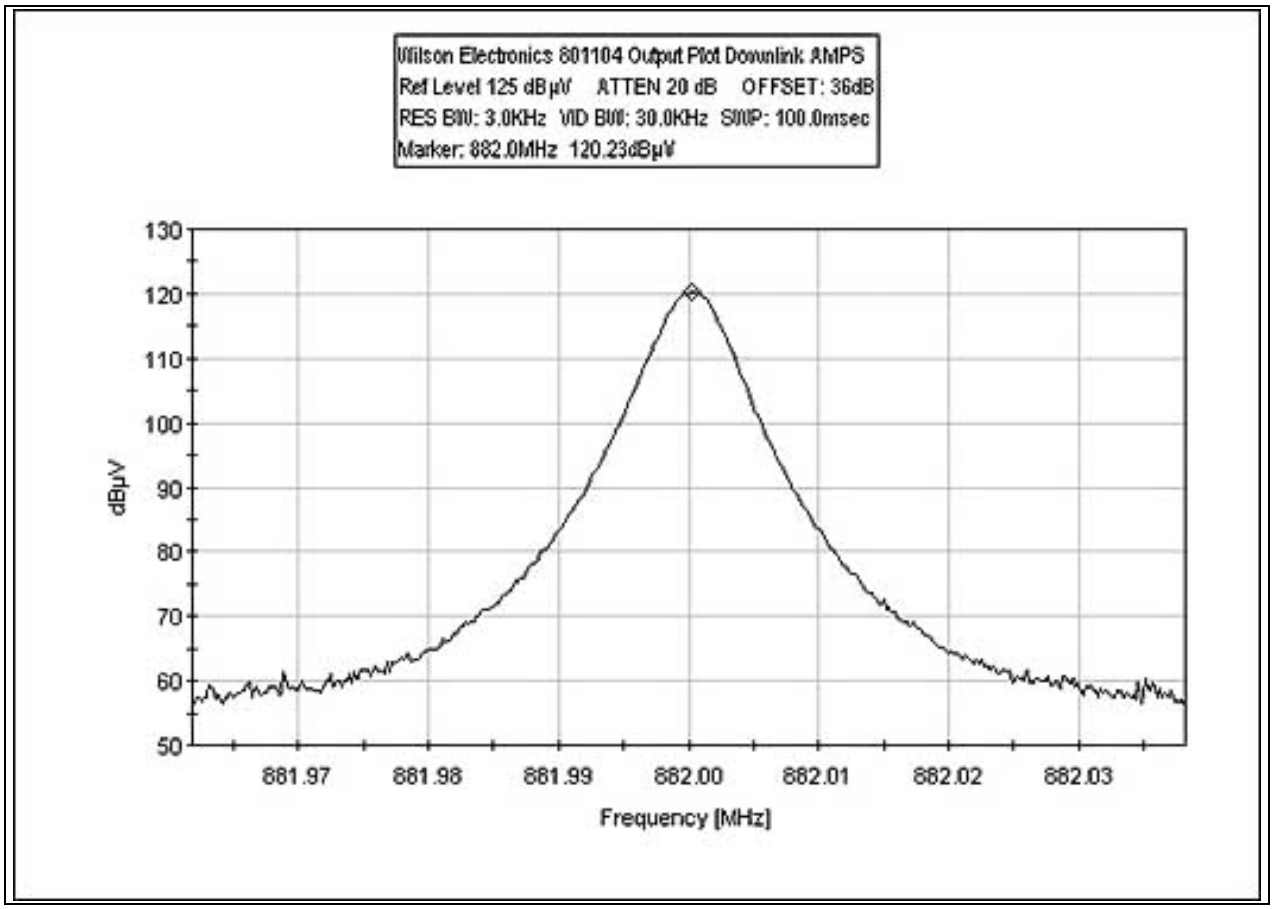
Downlink Input TDMA(CDPD)



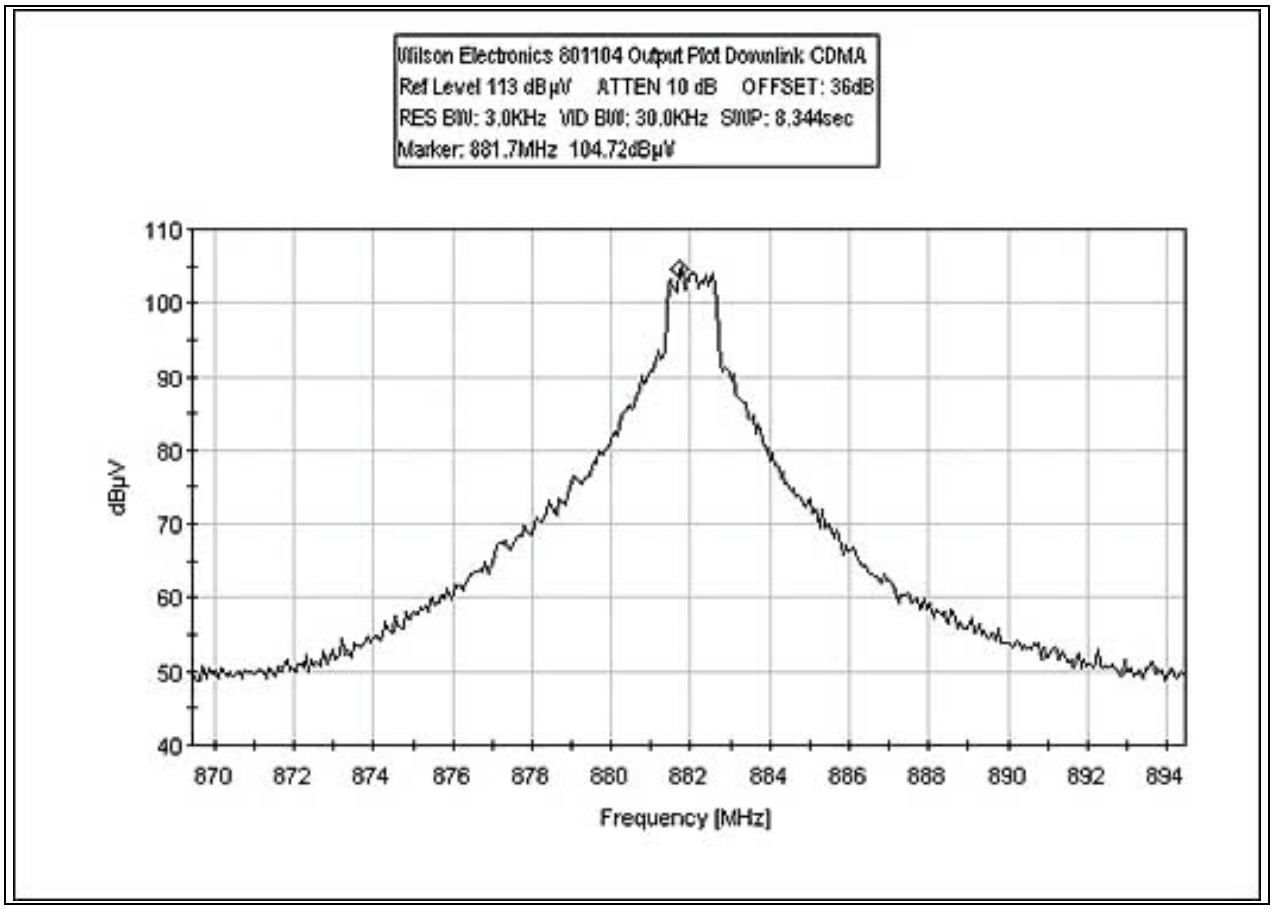
Downlink Input TDMA(GSM)



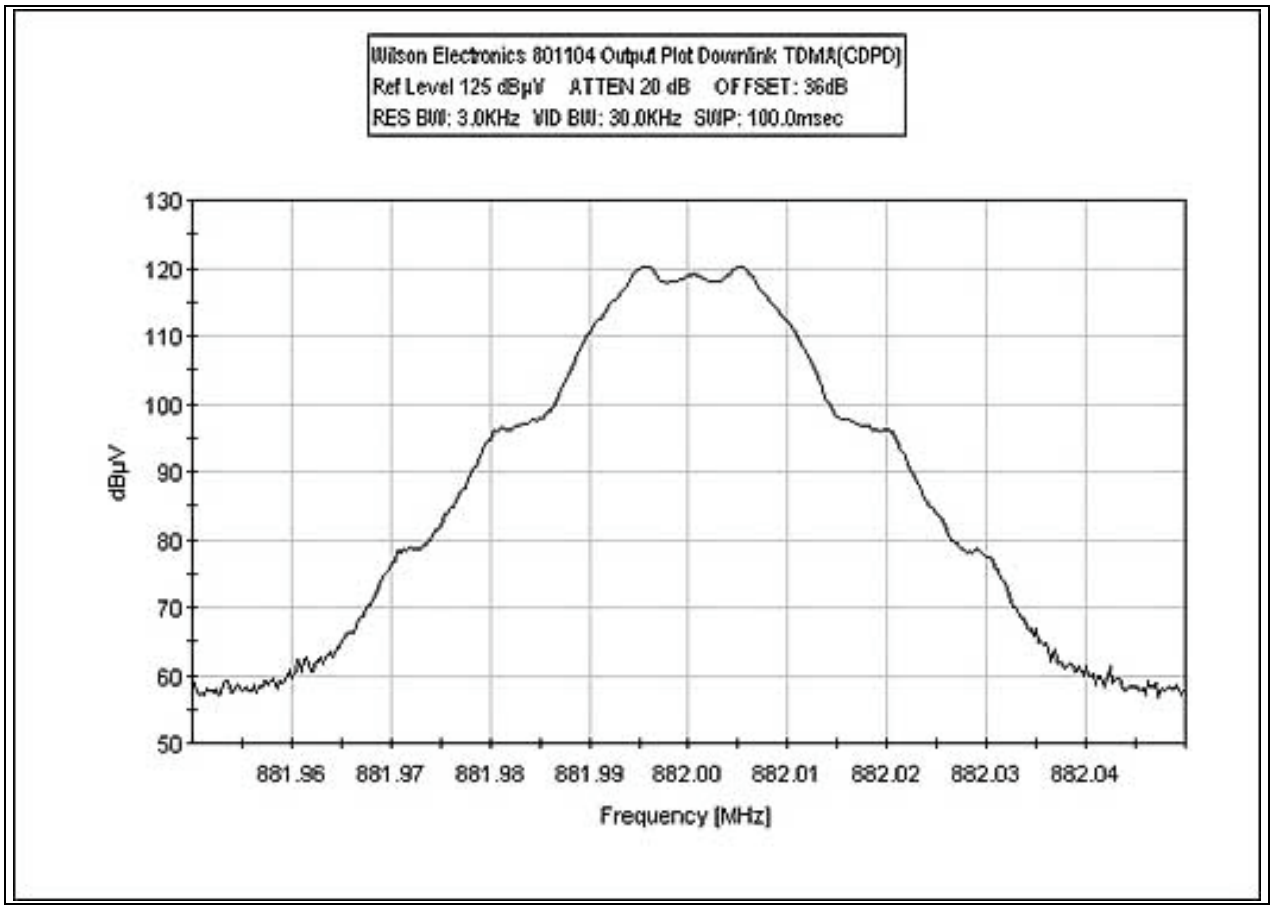
Downlink Output AMPS



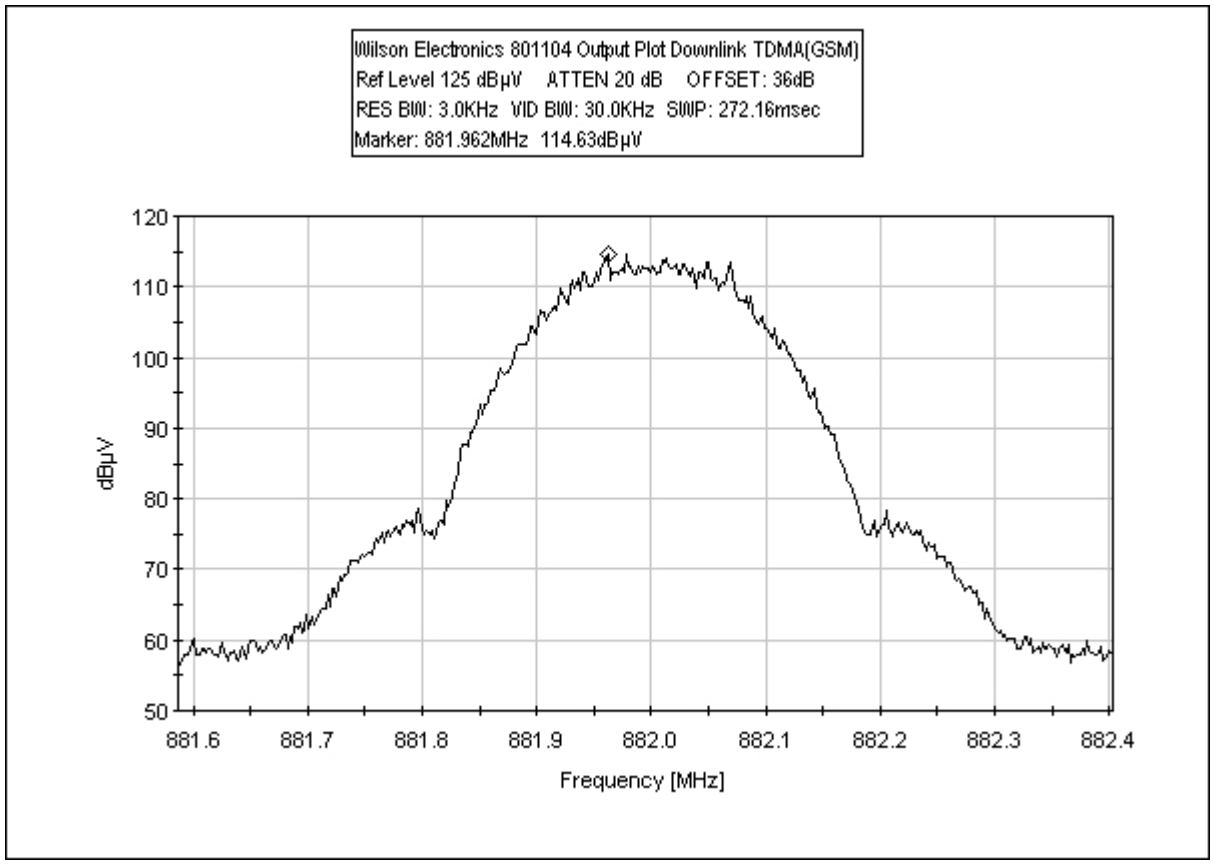
Downlink Output CDMA



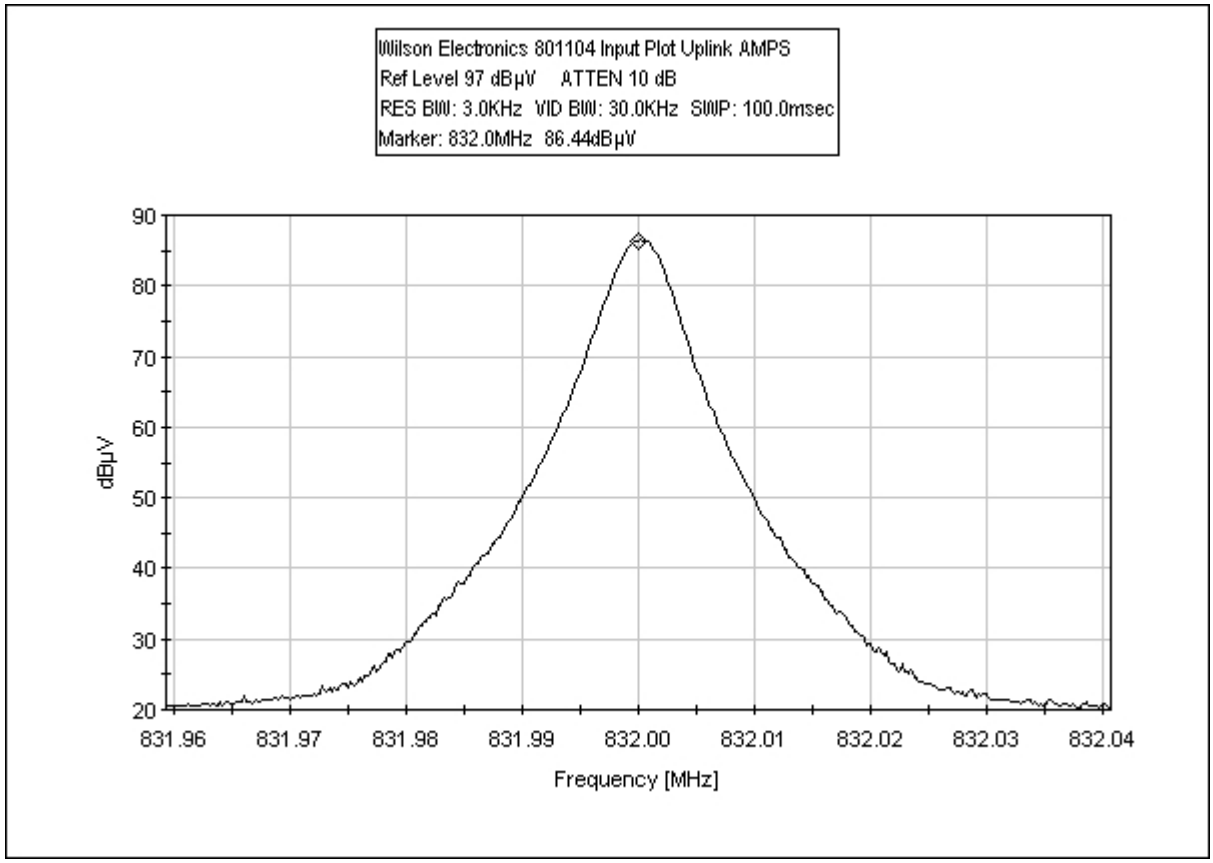
Downlink Output TDMA(CDPD)



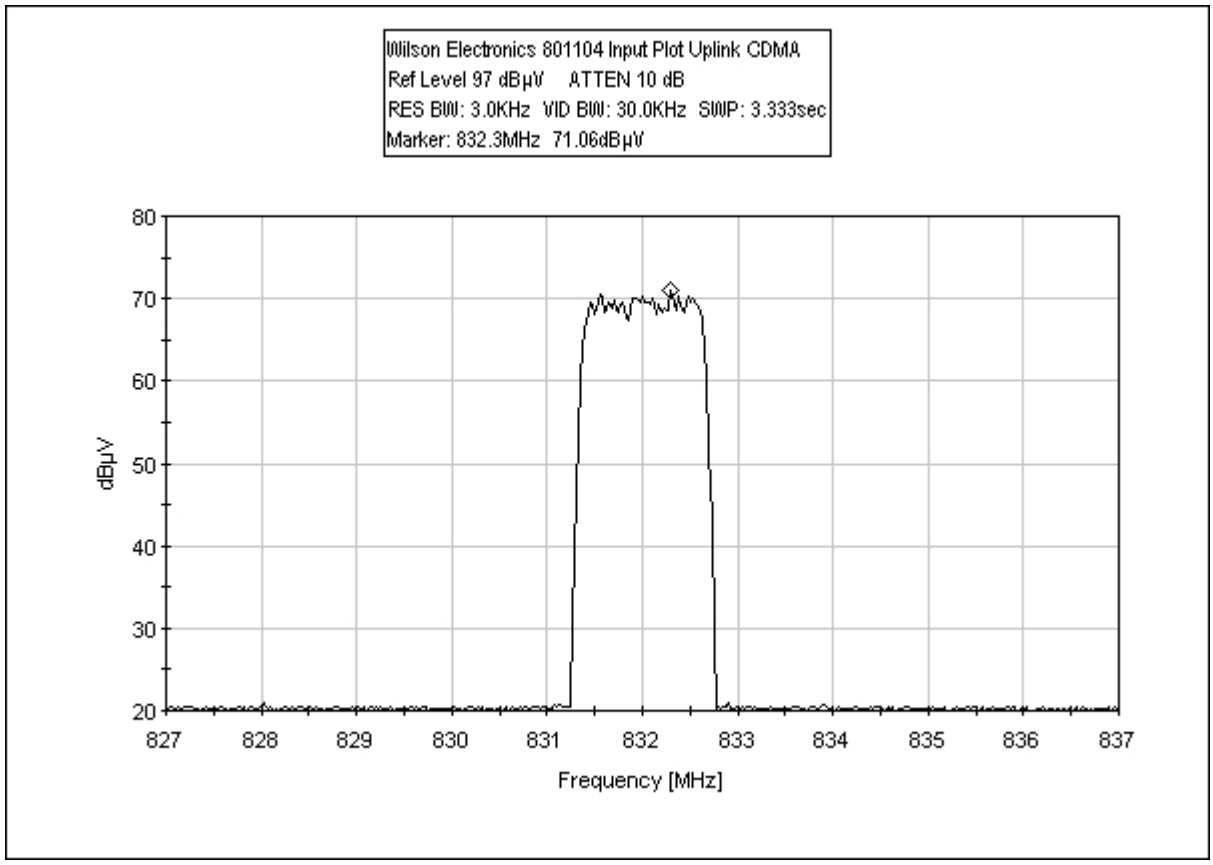
Downlink Output TDMA(GSM)



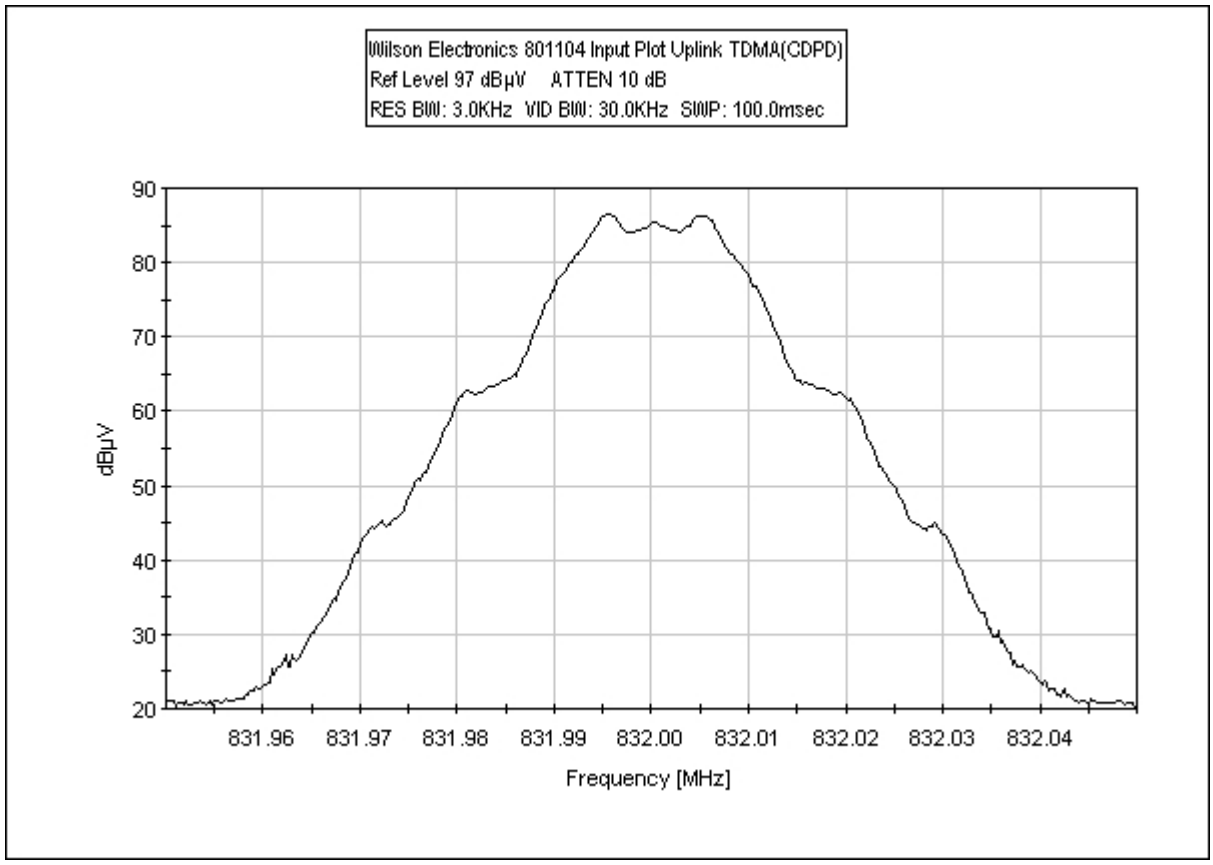
Uplink Input AMPS



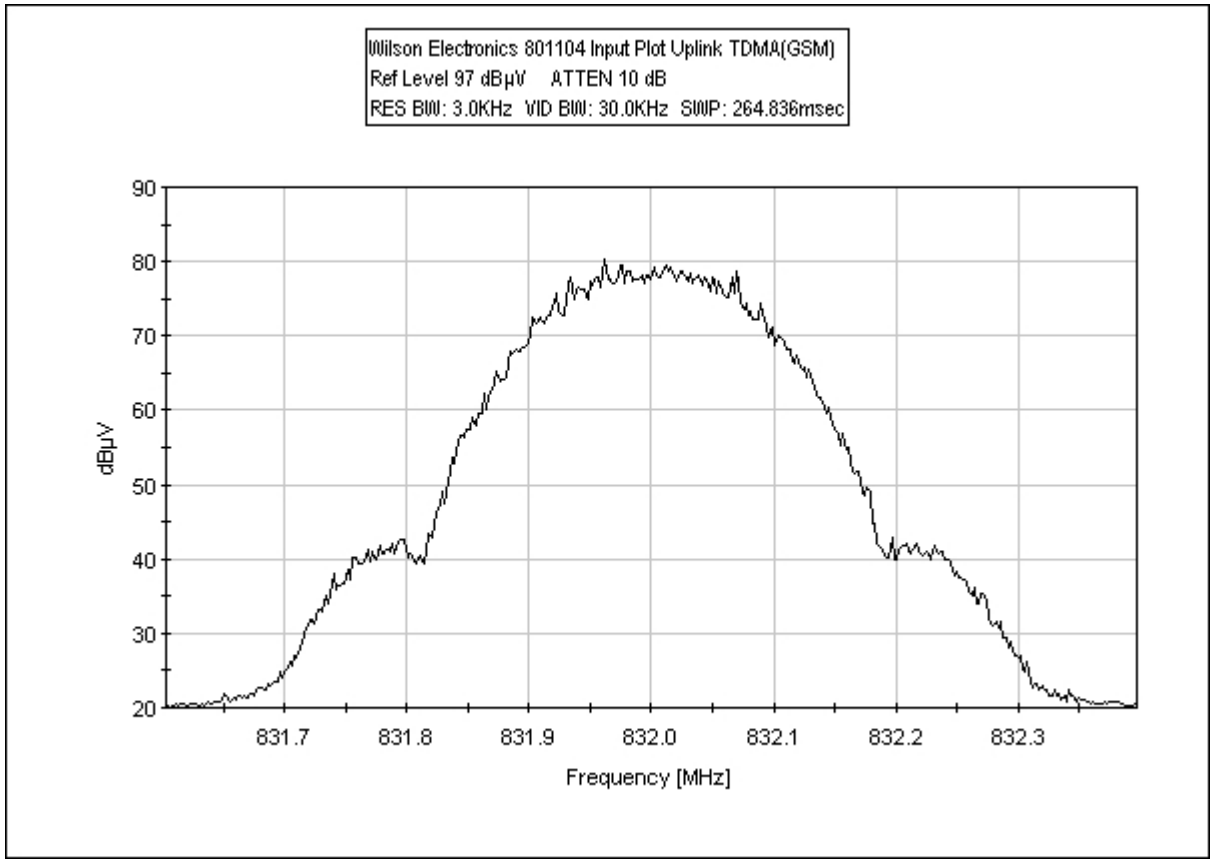
Uplink Input CDMA



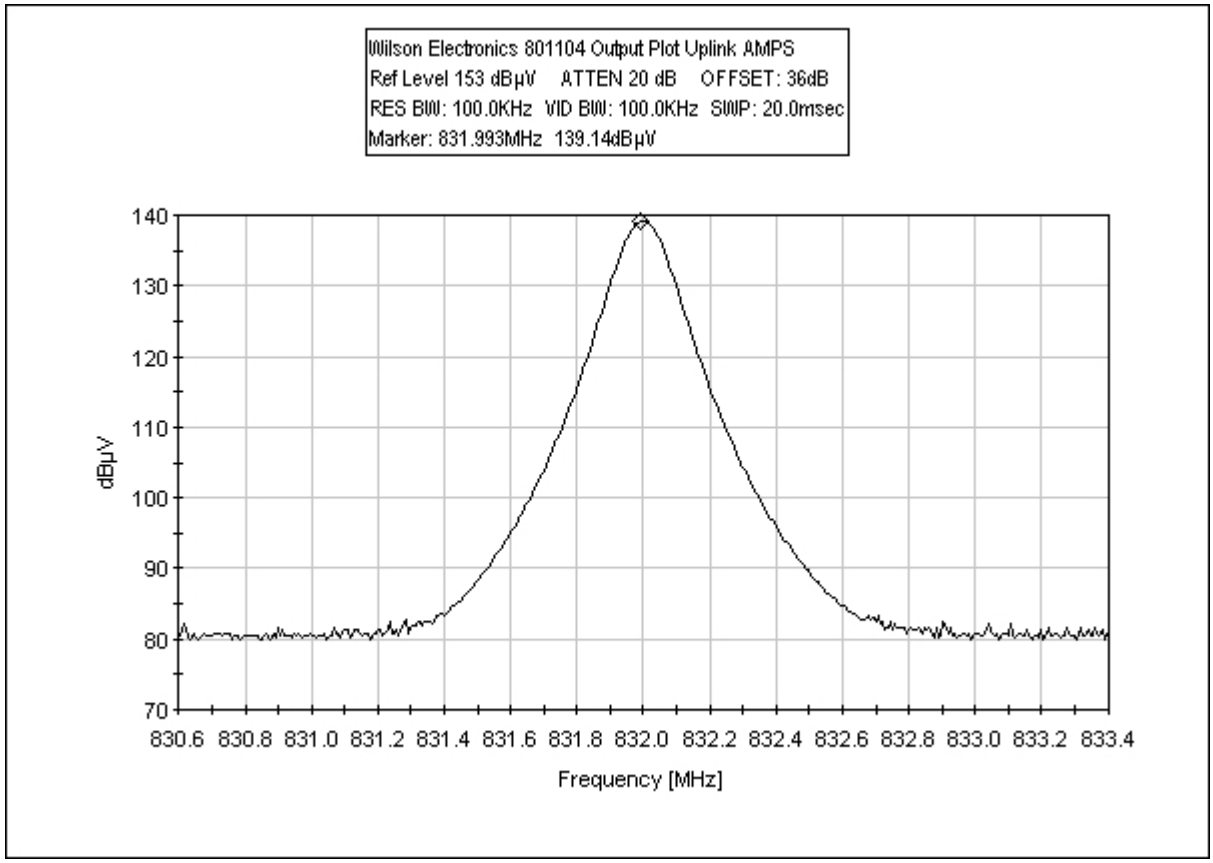
Uplink Input TDMA(CDPD)



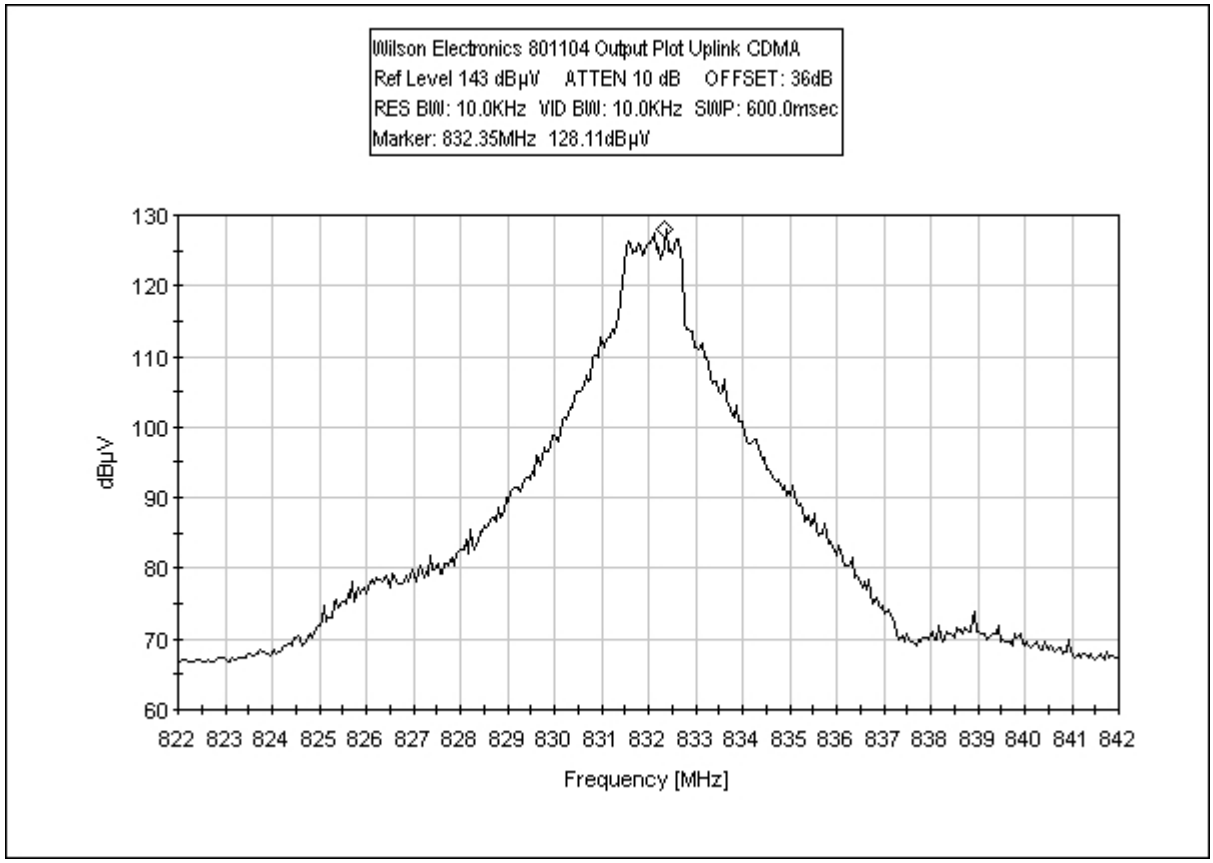
Uplink Input TDMA(GSM)



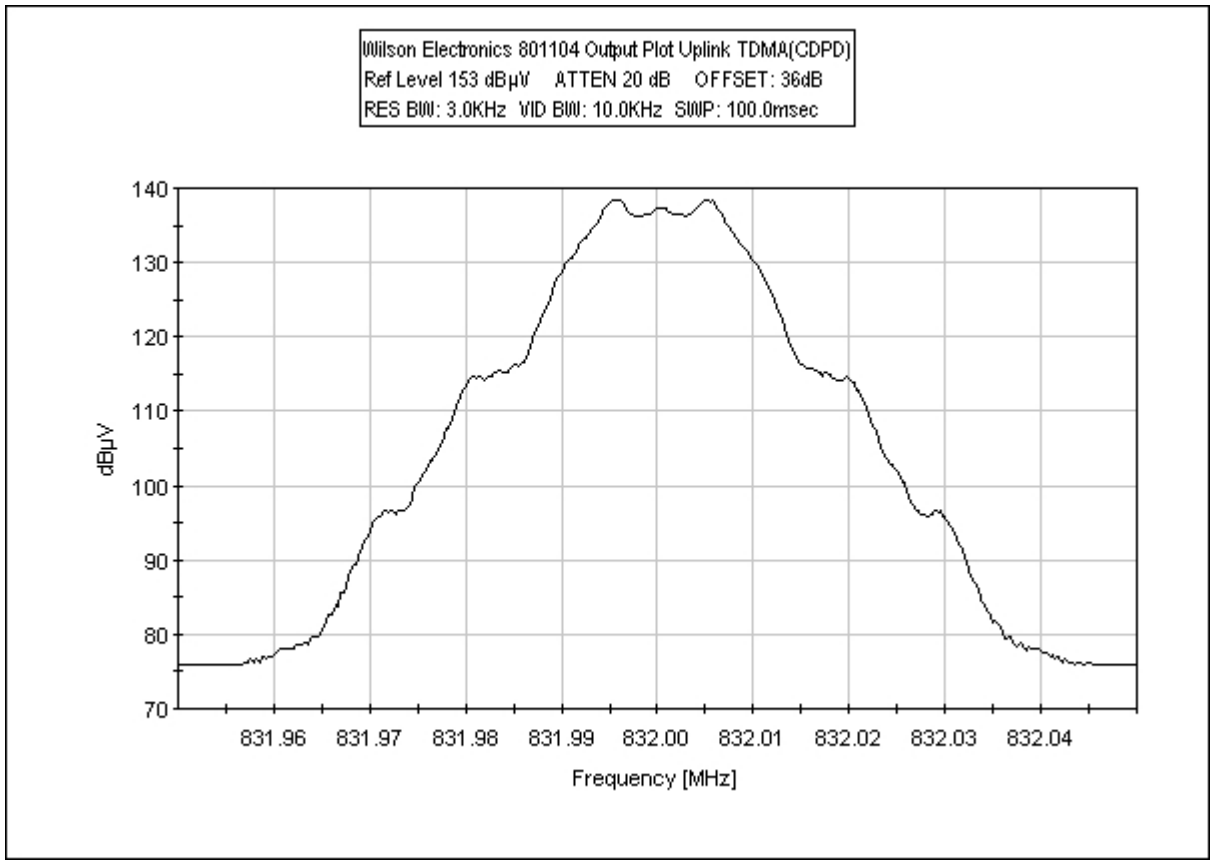
Uplink Output AMPS



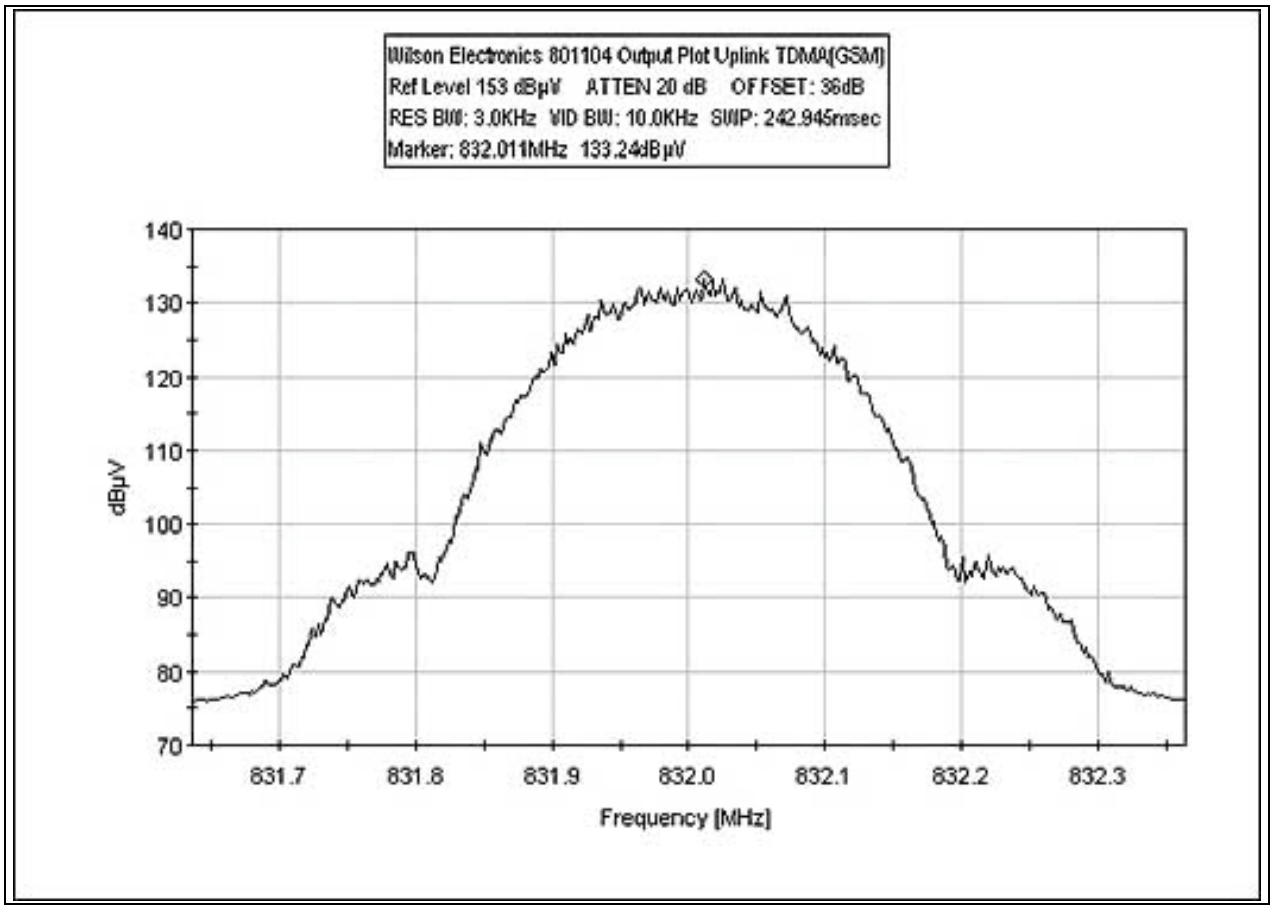
Uplink Output CDMA



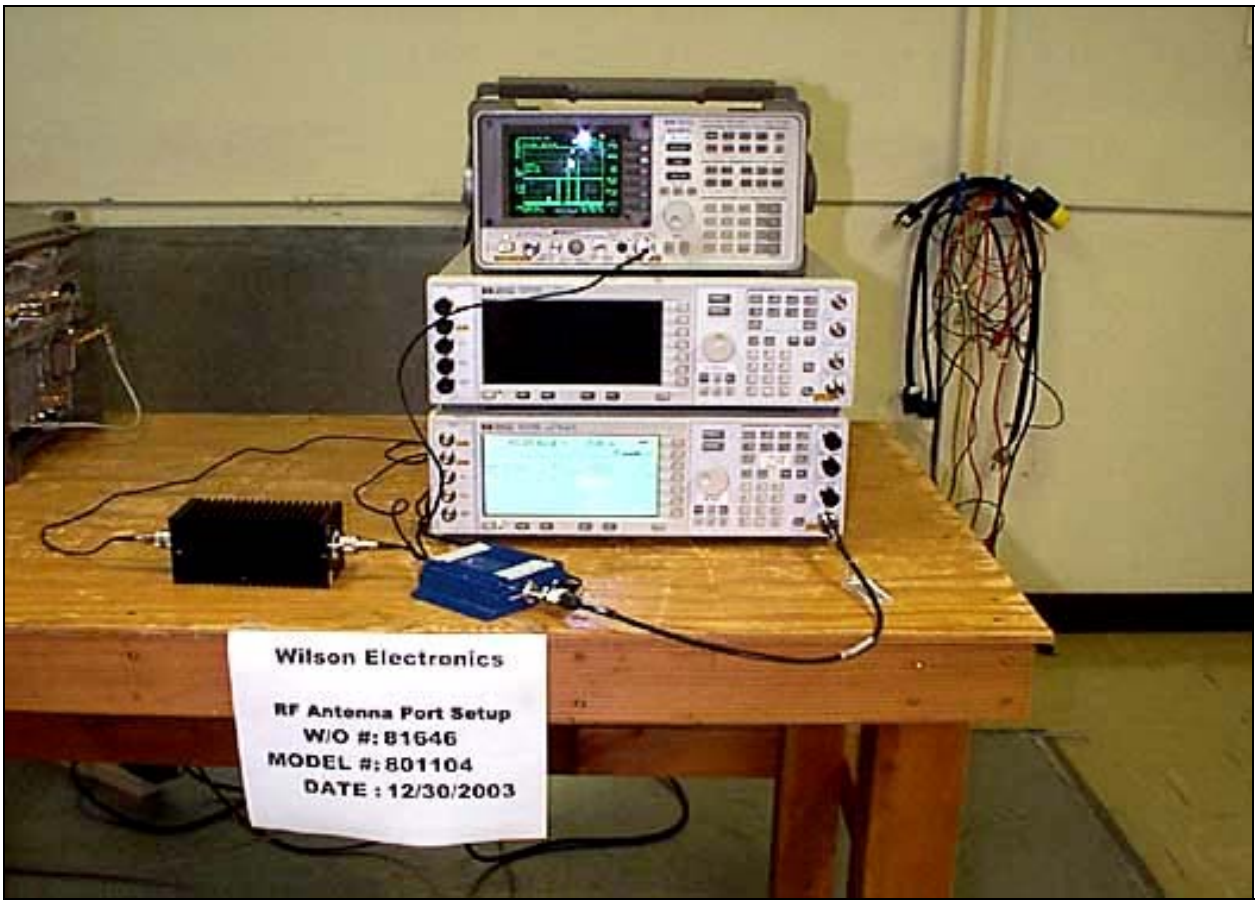
Uplink Output TDMA(CDPD)



Uplink Output TDMA(GSM)



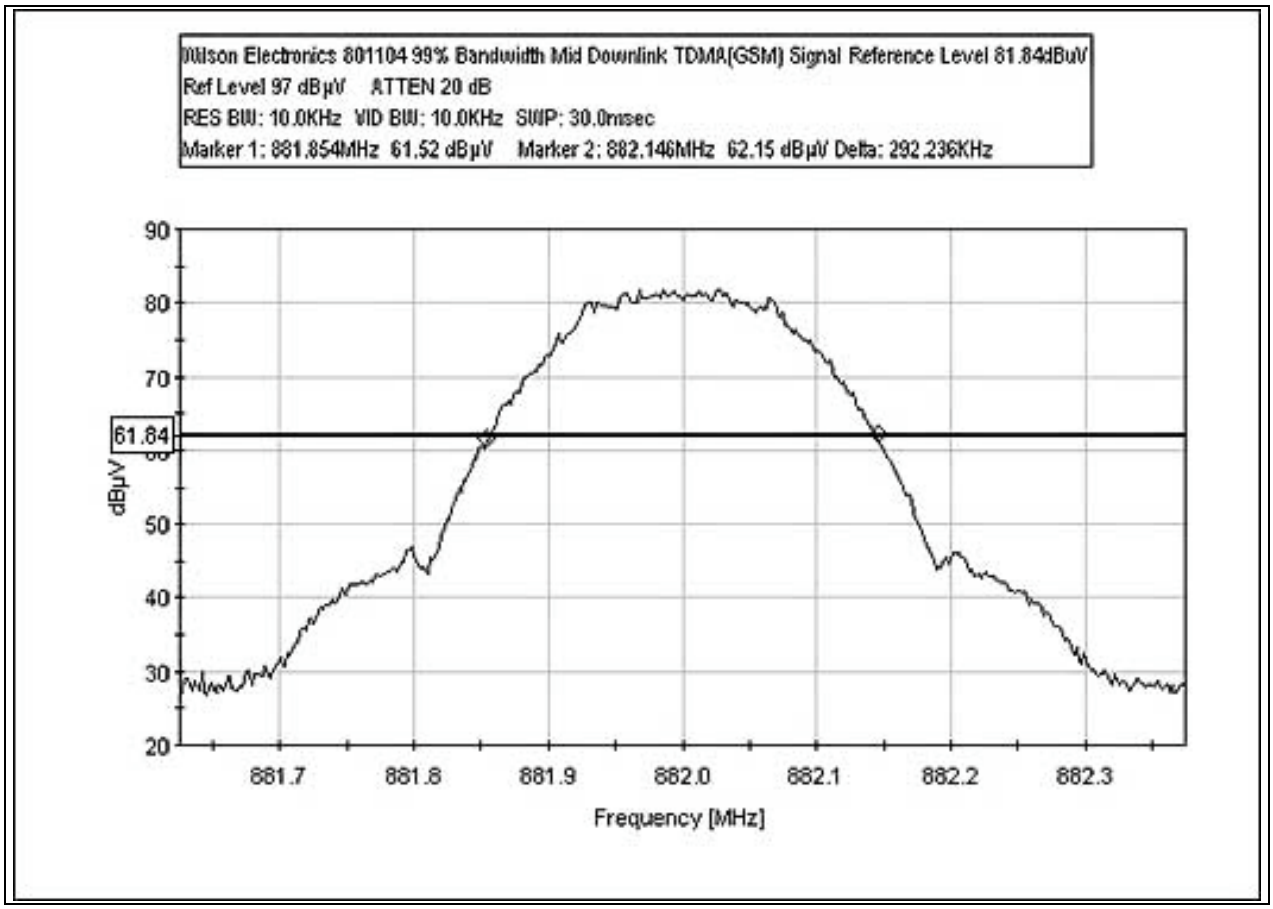
PHOTOGRAPH SHOWING DIRECT CONNECT



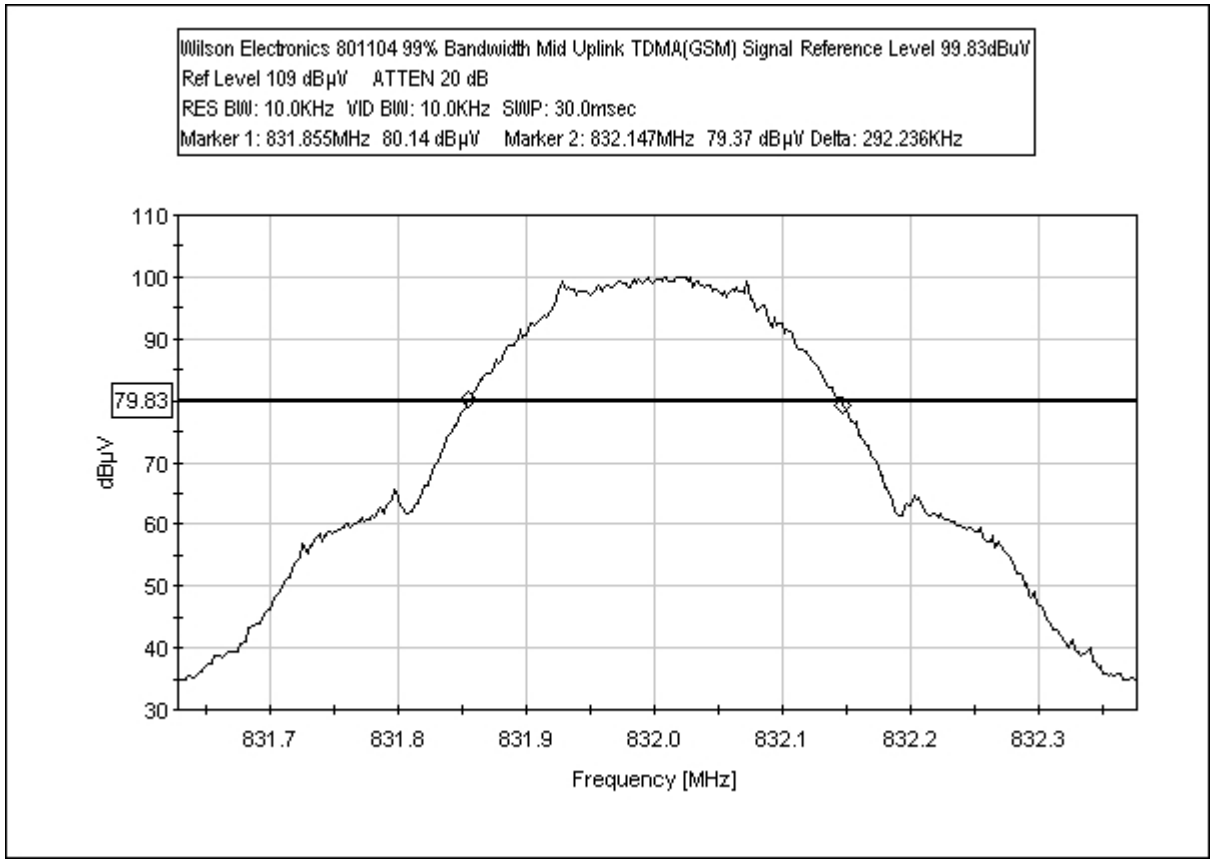
***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP Spectrum Analyzer 8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator E4432B	US40052283	03/01/2002	03/01/2004	0
Bird Attenuator 25-A-MFN-30	9724	05/08/2003	05/08/2005	0
Directional Coupler	3804	10/16/2003	10/16/2004	744
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

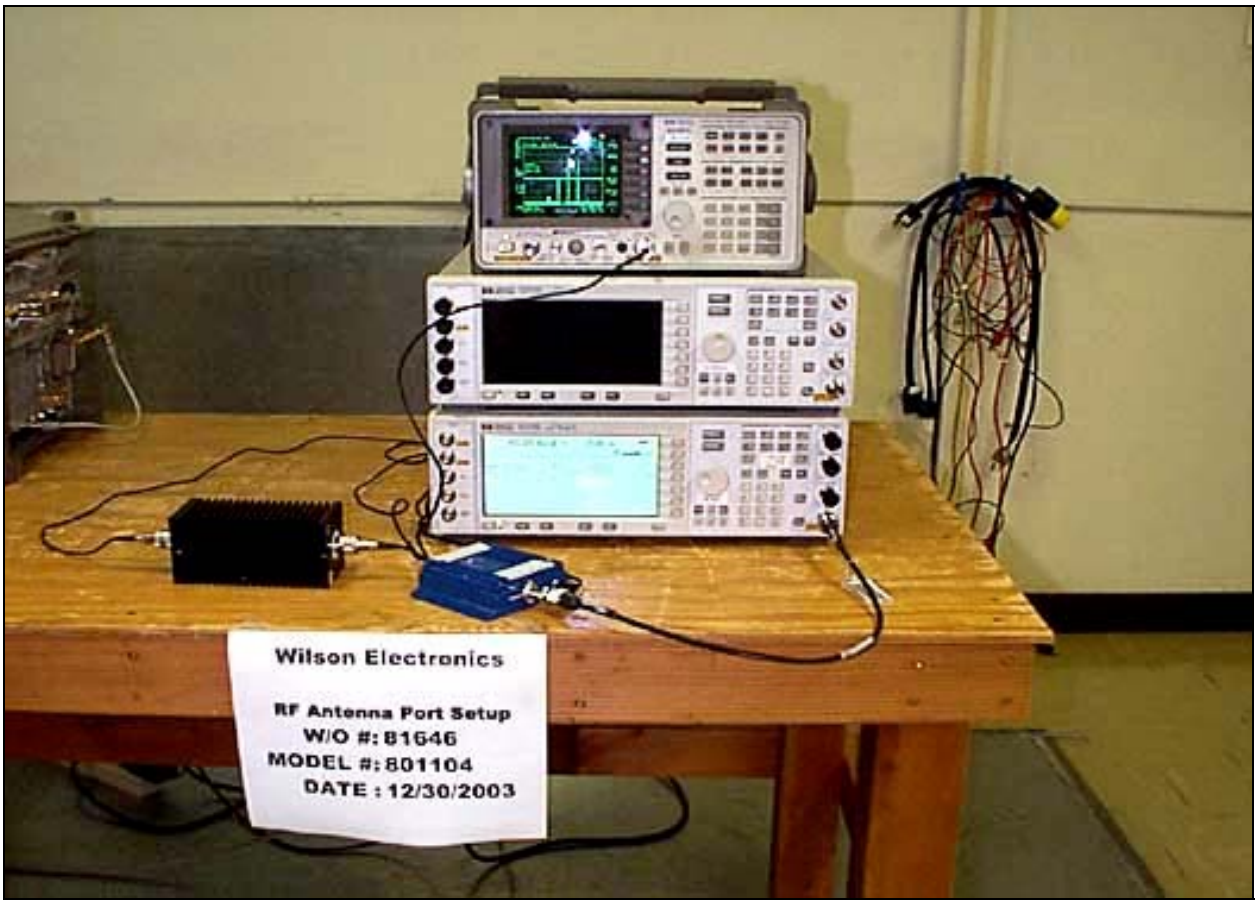
RSS 131 Downlink 99% Bandwidth Plot



RSS 131 Uplink 99% Bandwidth Plot



PHOTOGRAPH SHOWING DIRECT CONNECT



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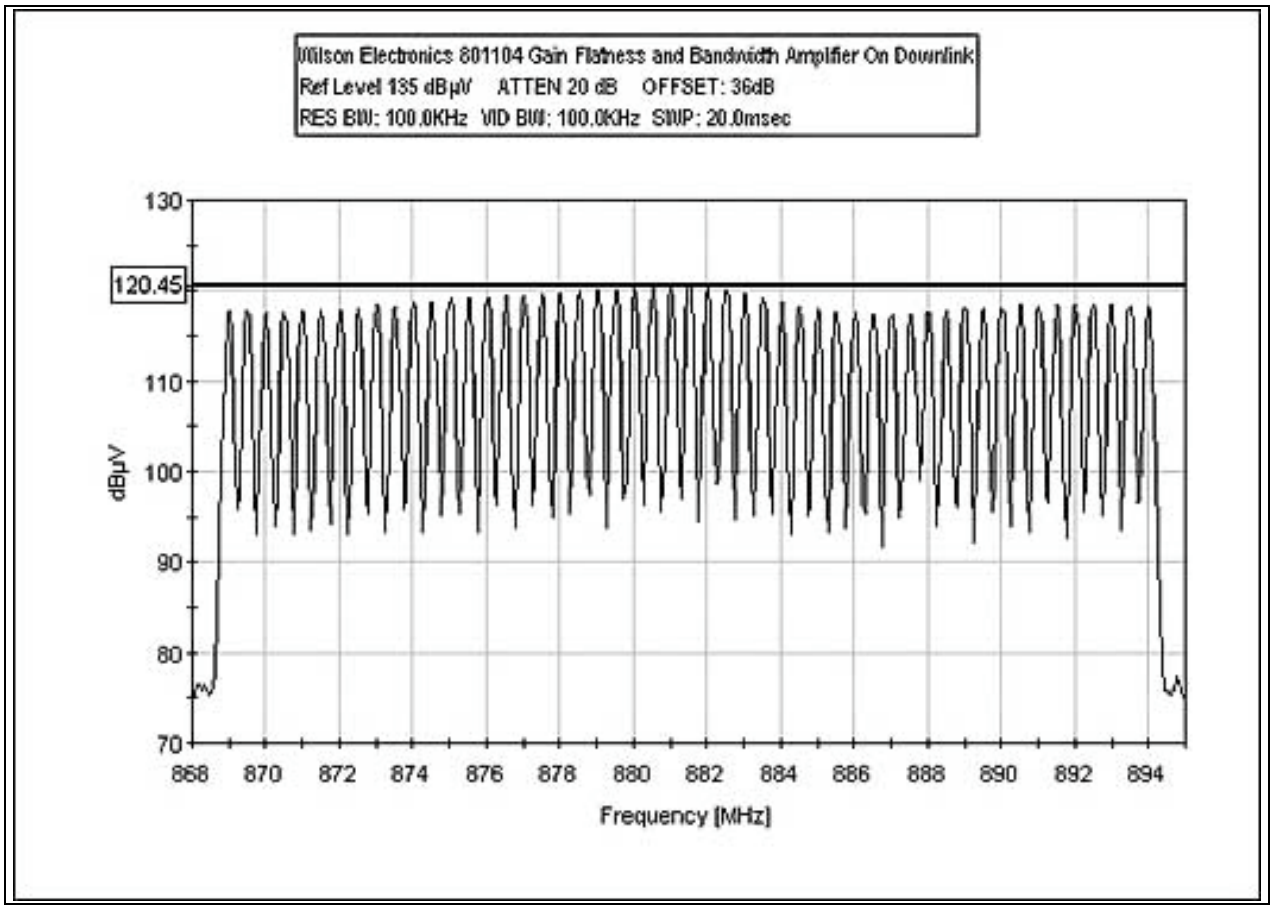
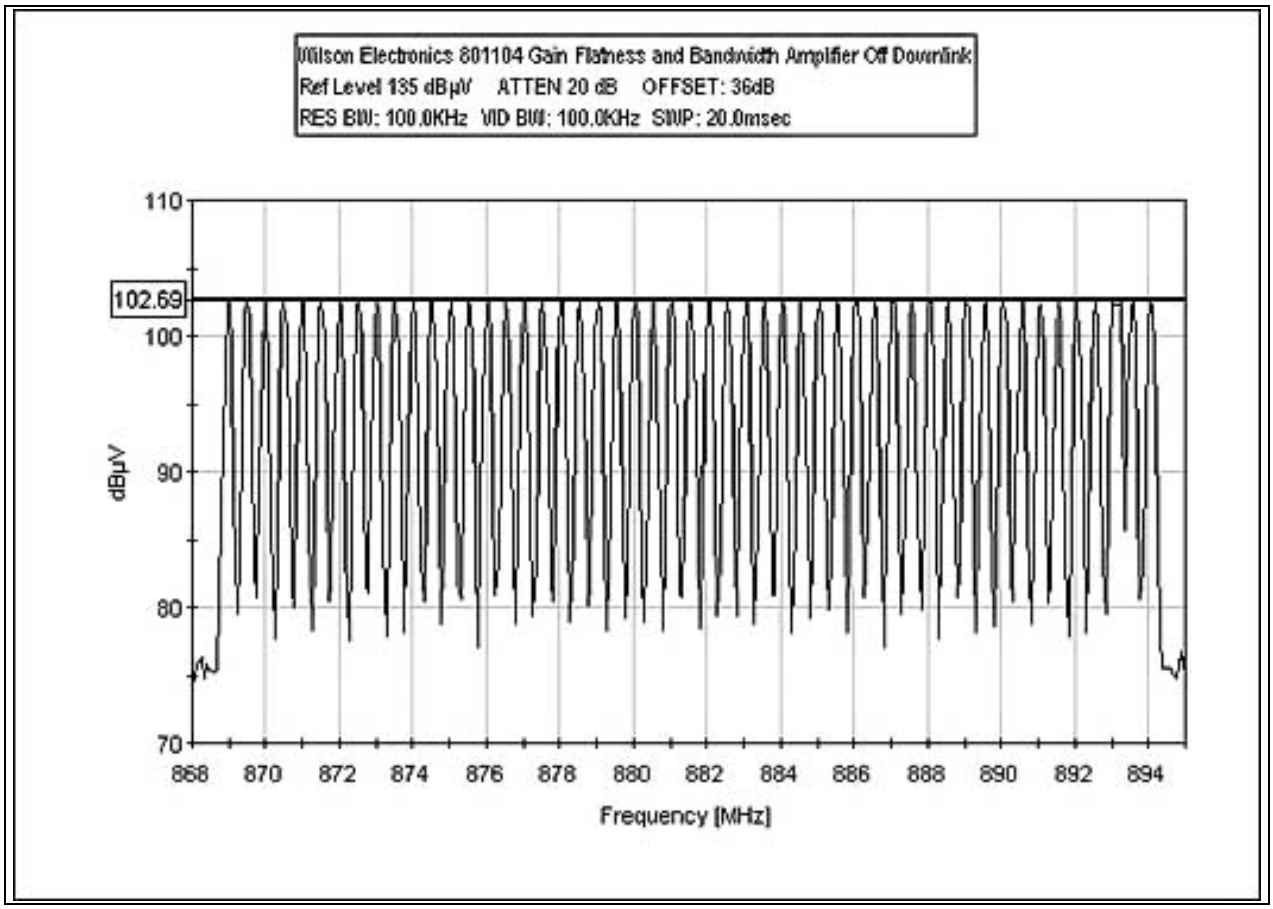
AR Amplifier 30W1000M7	18694	07/16/2003	07/16/2004	1368

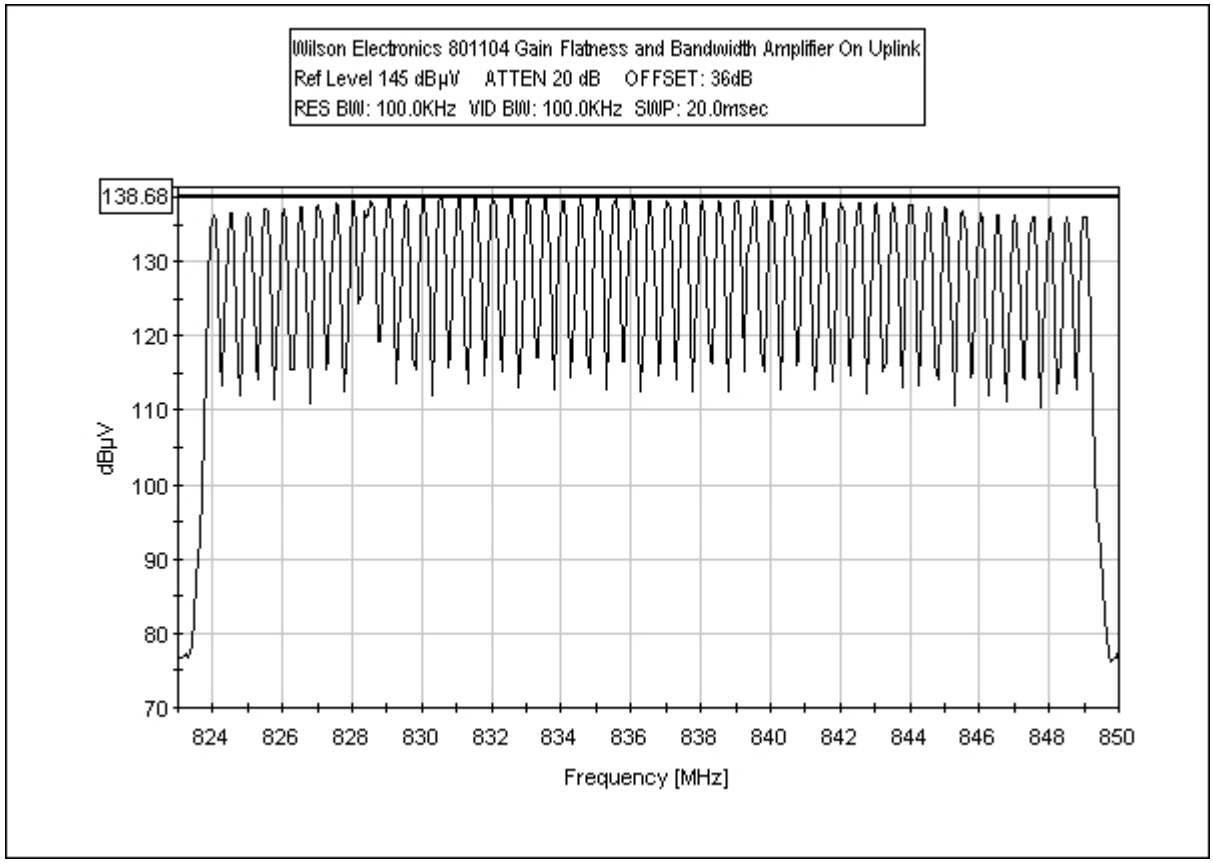
RSS 131 Downlink Gain Flatness and Bandwidth, Amplifier On



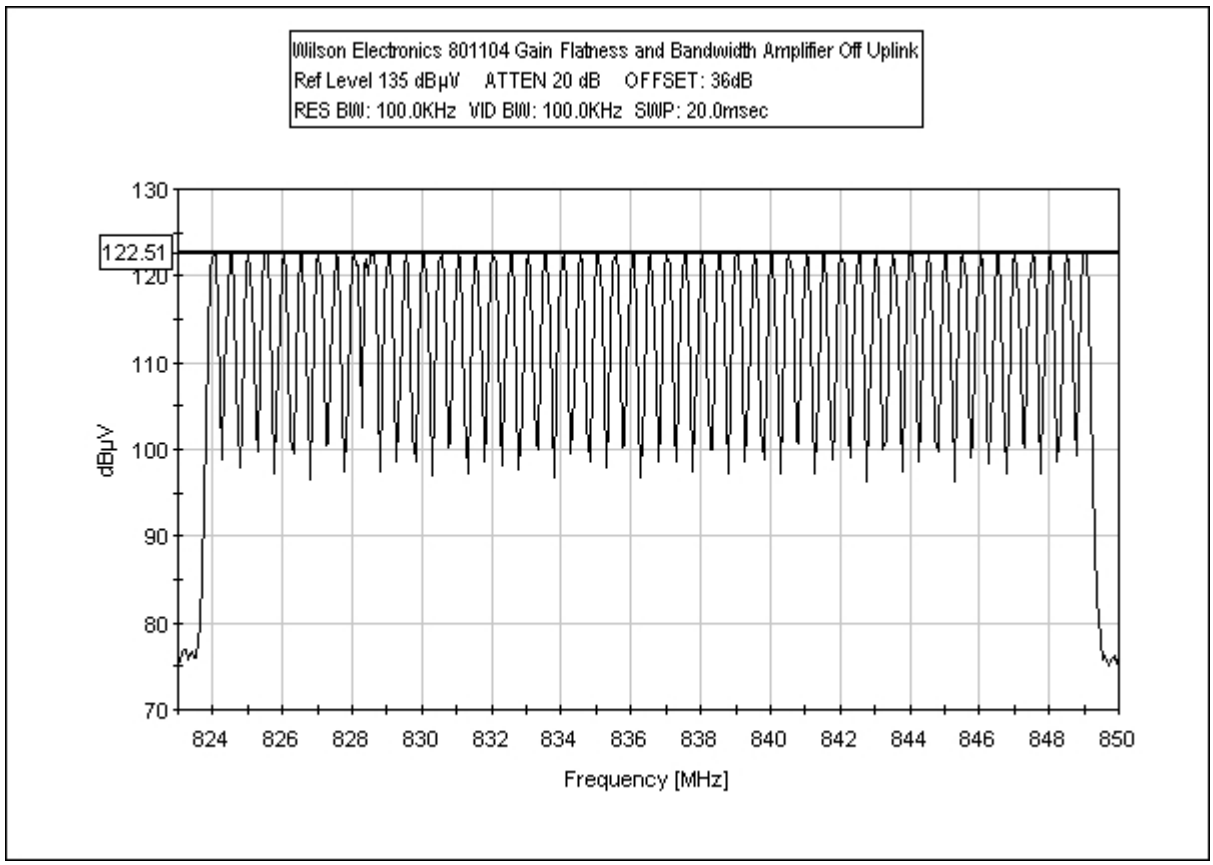
RSS 131 Downlink Gain Flatness and Bandwidth, Amplifier Off



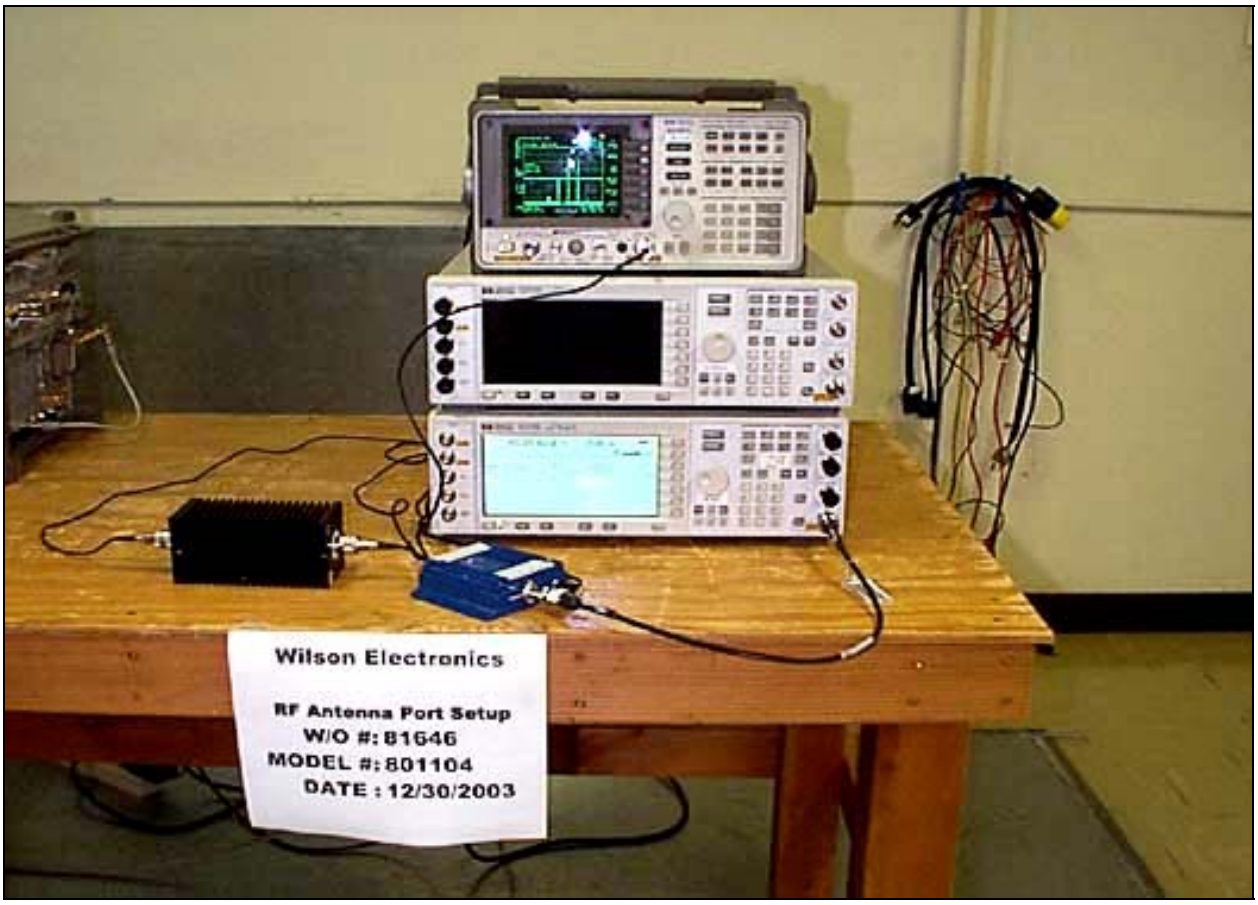
RSS 131 Uplink Gain Flatness and Bandwidth, Amplifier On



RSS 131 Uplink Gain Flatness and Bandwidth, Amplifier Off



PHOTOGRAPH SHOWING DIRECT CONNECT



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