



**WILSON ELECTRONICS TEST REPORT**  
**FOR THE**  
**BIDIRECTIONAL AMPLIFIER, 271240**  
**FCC PART 22 AND RSS-131 ISSUE 2**  
**TESTING**

**DATE OF ISSUE: FEBRUARY 14, 2008**

**PREPARED FOR:**

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

P.O. No.: DWB271240-1  
W.O. No.: 87310

**PREPARED BY:**

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

Date of test: January 25 - February 1, 2008

**Report No.: FC08-011**

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**ADMINISTRATIVE INFORMATION**

**DATE OF TEST:** January 25 - February 1, 2008

**DATE OF RECEIPT:** January 25, 2008

**REPRESENTATIVE:** Riki Kline

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

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

**FREQUENCY RANGE TESTED:** 9 kHz-20 GHz

**TEST METHOD:** FCC Part 22, RSS-131 Issue 2 and RSS GEN Issue 2

**PURPOSE OF TEST:** To perform the testing of the Bidirectional Amplifier, 271240 with the requirements for FCC Part 22 and RSS-131 devices.

**APPROVALS**

Steve Behm, Director of Engineering Services

**QUALITY ASSURANCE:**

**TEST PERSONNEL:**

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Randy Clark, EMC Engineer

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Mike Wilkinson, EMC Engineer/Lab Manager



## **EQUIPMENT UNDER TEST (EUT) DESCRIPTION**

The customer declares the EUT tested by CKC Laboratories was representative of a production unit.

## **EQUIPMENT UNDER TEST**

### **Bidirectional Amplifier**

Manuf: Wilson Electronics  
Model: 271240  
Serial: 00001  
FCC ID: PWO271240SA  
IC ID: 4726A-1240SA

## **PERIPHERAL DEVICES**

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

### **Signal Generator (2 each)**

Manuf: Agilent  
Model: E4437B  
Serial: MY41000126 &  
US39261021

### **DC Power Supply**

Manuf: Topward Electric Instruments Co., Ltd  
Model: TPS-2000  
Serial: 920027

## SUMMARY OF RESULTS

<b>Test</b>	<b>Specification/Method</b>	<b>Results</b>
RF Power Output	FCC Part 22.913/ TIA/EIA 603	Pass
Occupied Bandwidth	TIA/EIA 603	Pass
Spurious Emissions – Antenna Terminal	FCC Part 22.917/TIA/EIA 603	Pass
Spurious Emissions – Field Strength	FCC Part 22.917/TIA/EIA 603	Pass
Block Edge	FCC 2.1053/TIA/EIA 603	Pass
Input vs Output Plots	RBW ~1% OBS	Pass
Intermodulation Attenuation	FCC 2.1051/TIA/EIA 603	Pass
Out of Band Rejection	FCC 2.1051/TIA/EIA 603	Pass
Block Edge	FCC 2.1053/TIA/EIA 603	Pass
Passband Gain and Bandwidth	RSS-131 Section 6.1	Pass
Output Power	RSS-131 Section 6.2	Pass

### CONDITIONS DURING TESTING

No modifications to the EUT were necessary during testing.



### **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**

GXW, G7W, F9W

### **FCC 2.1033 (c)(5) FREQUENCY RANGE**

Uplink 824-840 MHz and Downlink 869-891 MHz.

### **FCC 2.1033 (c)(6) OPERATING POWER**

Uplink 338.8 mW and Downlink 19.5 mW.

### **FCC 2.1033 (c)(8) DC VOLTAGES**

The necessary information is contained in a separate document.

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

The necessary information is contained in a separate document.

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

The necessary information is contained in a separate document.

### **FCC 2.1033(c)(11) LABEL AND PLACEMENT**

The necessary information is contained in a separate document.

### **FCC 2.1033(c)(12) SUBMITTAL PHOTOS**

The necessary information is contained in a separate document.

### **FCC 2.1033 (c)(13) MODULATION INFORMATION**

CDMA, EDGE, GSM, WCDMA. The base interface CDMA2000 and WCDMA modulation types tested are intended to additionally demonstrate compliance with 1xEVDO and HSPA extensions. Reference: FCC KDB Publication 935210.

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

**Test Setup Photos**



**Downlink**



**Uplink**



**Test Data Sheets**

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

Customer: **Wilson Electronics**  
 Specification: **FCC 22.917**  
 Work Order #: **87310** Date: 1/29/2008  
 Test Type: **Conducted Emissions** Time: 13:08:56  
 Equipment: **Bidirectional Amplifier** Sequence#: 1  
 Manufacturer: Wilson Electronics Tested By: Randal Clark  
 Model: 271240 8 VDC  
 S/N: 00001

**Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
Cable, Astrolab 24"	NA	01/15/2008	01/15/2010	03011
Weinchel 6dB attenuator	J7614	11/30/2006	11/30/2008	P01950
Weinchel 10dB attenuator	C8597	11/30/2006	11/30/2008	P02139

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

Function	Manufacturer	Model #	S/N
Bidirectional Amplifier*	Wilson Electronics	271240	00001

**Support Devices:**

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4437B	US39261021
Signal Generator	Agilent	E4437B	MY41000126
DC Power Supply	Topward Electric Instruments Co., Ltd	TPS-2000	920027

**Test Conditions / Notes:**

The EUT is a dual-band bi-directional amplifier for enhancing the range of cell phones and data communication devices (computers, PDAs, etc.) in both mobile (vehicular) and in-building environments. EUT operating frequency ranges are 824-849 MHz and 1850-1910 MHz for uplink path and 869-894 MHz and 1930-1990 MHz for downlink path. EUT is connected directly to a spectrum analyzer via suitable attenuation.

Reported power levels indicate one of the following: 1) measurements in compliance with intermodulation requirements for multi-channel operation; the maximum compliant power output is reported as a function of the input power supply voltage since the final amplifier for the uplink path is unregulated, or 2) the maximum output power just measured at an input level just below that which will cause the EUT to automatically attenuate the input signal level.

Frequency Range Investigated: Carrier  
 Temperature: 21°C  
 Relative Humidity: 30%

GSM/EDGE RBW = 1MHz  
 CDMA RBW = 3 MHz  
 WCDMA RBW = 8 MHz  
 VBW = 3 x RBW



<b>Uplink</b>	<b>Part</b>	<b>Frequency</b>	<b>5V dBm</b>	<b>8V dBm</b>	<b>5V mW</b>	<b>8V mW</b>
GSM Low	22	824.85	21.8	25.2	151.4	331.1
GSM High	22	848.17	20.6	22.2	114.8	166.0
EDGE Low	22	824.82	21.9	25.3	154.9	338.8
EDGE High	22	848.73	20.7	22.7	117.5	186.2
CDMA Low	22	825.27	22.1	24.6	162.2	288.4
CDMA High	22	845.27	20.8	23.2	120.2	208.9
WCDMA Low	22	838.50	22.2	22.4	166.0	173.8
WCDMA High	22	840.17	21.9	23	154.9	199.5

<b>Downlink</b>	<b>Part</b>	<b>Frequency</b>	<b>dBm</b>	<b>mW</b>
GSM Low	22	869.59	12.1	16.2
GSM High	22	893.46	7.3	5.4
EDGE Low	22	869.53	12.0	15.8
EDGE High	22	893.47	7.8	6.0
CDMA Low	22	872.30	12.9	19.5
CDMA High	22	892.06	9.7	9.3
WCDMA Low	22	878.05	10.3	10.7
WCDMA High	22	890.85	8.7	7.4



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

**Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
Cable, Astrolab 24"	NA	01/15/2008	01/15/2010	03011
Weinchel 6dB attenuator	J7614	11/30/2006	11/30/2008	P01950
Weinchel 10dB attenuator	C8597	11/30/2006	11/30/2008	P02139

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

Function	Manufacturer	Model #	S/N
Bidirectional Amplifier*	Wilson Electronics	271240	00001

**Support Devices:**

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4437B	MY41000126
DC Power Supply	Topward Electric Instruments Co., Ltd	TPS-2000	920027

**Test Conditions / Notes:**

The EUT is a dual-band bi-directional amplifier for enhancing the range of cell phones and data communication devices (computers, PDAs, etc.) in both mobile (vehicular) and in-building environments. EUT operating frequency ranges are 824-849 MHz and 1850-1910 MHz for uplink path and 869-894 MHz and 1930-1990 MHz for downlink path. EUT is connected directly to a spectrum analyzer via suitable attenuation. Input signal level is set such that the amplifier employs maximum amplification gain.  
 Frequency Range Investigated: Carrier Mid Channel  
 Temperature: 21°C, Relative Humidity: 30% +8VDC

Mode	Frequency (MHz)	Modulation	99% BW (kHz)	20dB BW (kHz)
Downlink	881.5	WCDMA	4171	4627
Downlink	881.5	CDMA	1254	1351
Downlink	881.5	GSM	245.8	280.6
Downlink	881.5	EDGE	251.8	295.9
Uplink	836.5	WCDMA	4143	4588
Uplink	836.5	CDMA	1283	1401
Uplink	836.5	GSM	244.4	287.5
Uplink	836.5	EDGE	242.2	277.7

**Test Setup Photos**



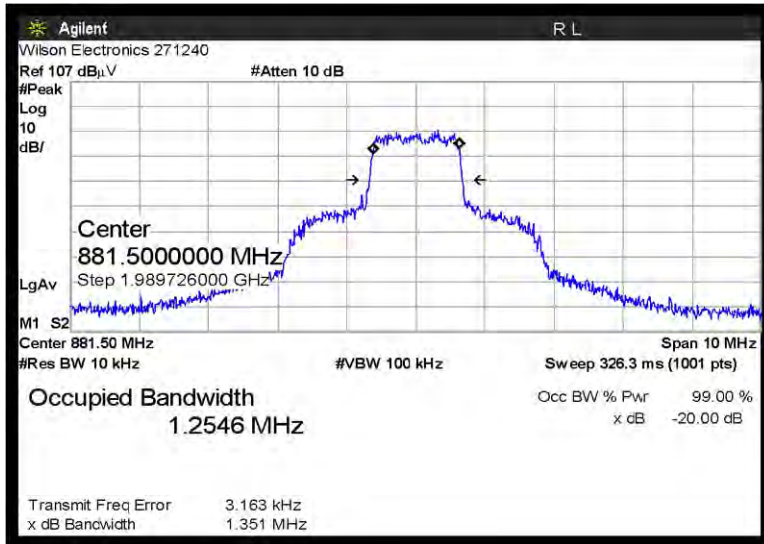
Downlink



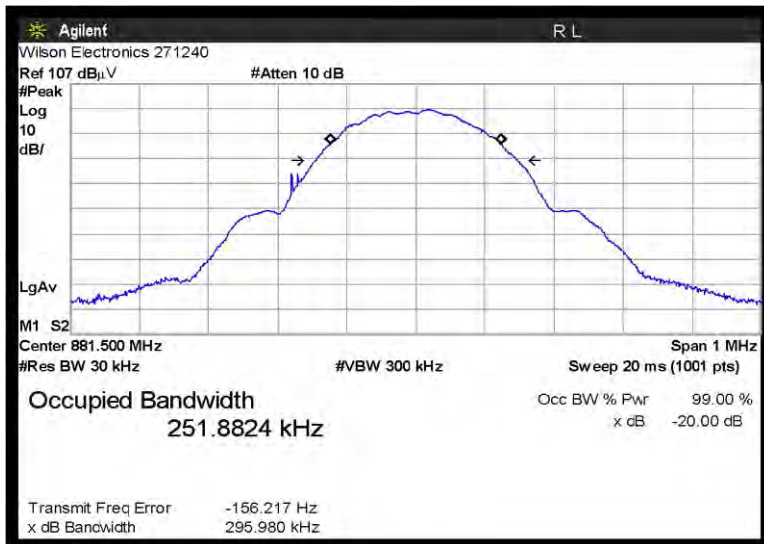
Uplink

## Test Plots

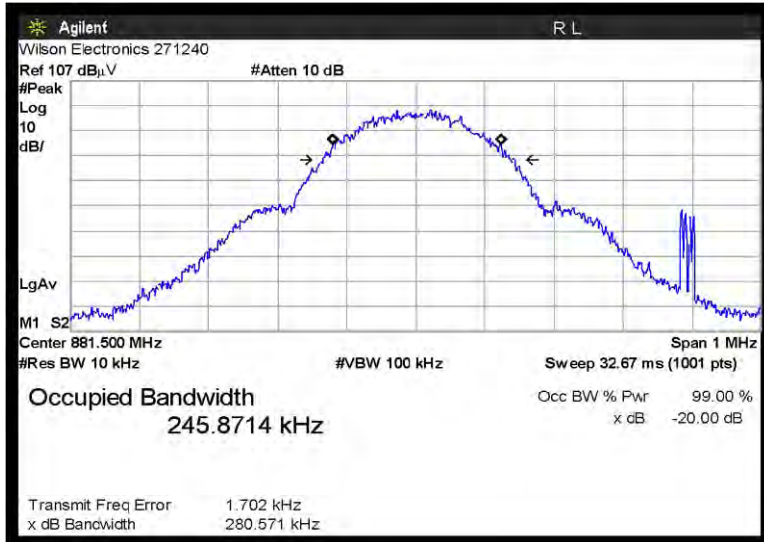
### 99% BANDWIDTH - DOWNLINK CDMA MID



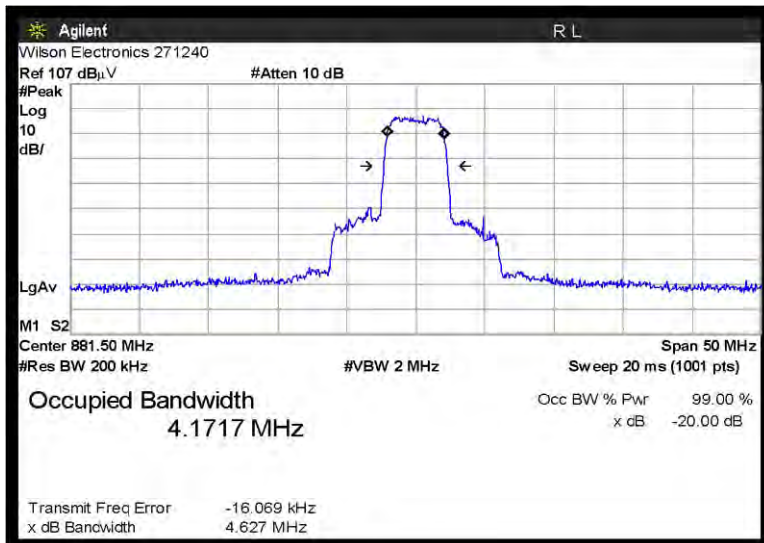
### 99% BANDWIDTH - DOWNLINK EDGE MID



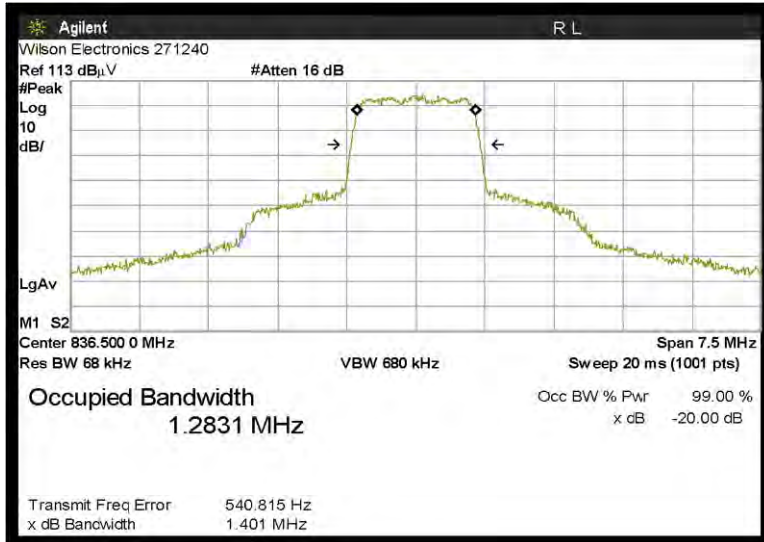
### 99% BANDWIDTH - DOWNLINK GSM MID



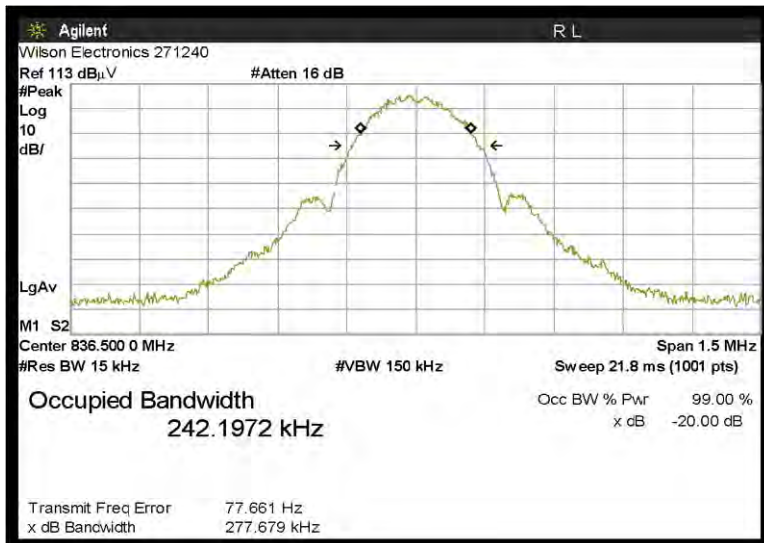
### 99% BANDWIDTH - DOWNLINK WCDMA MID



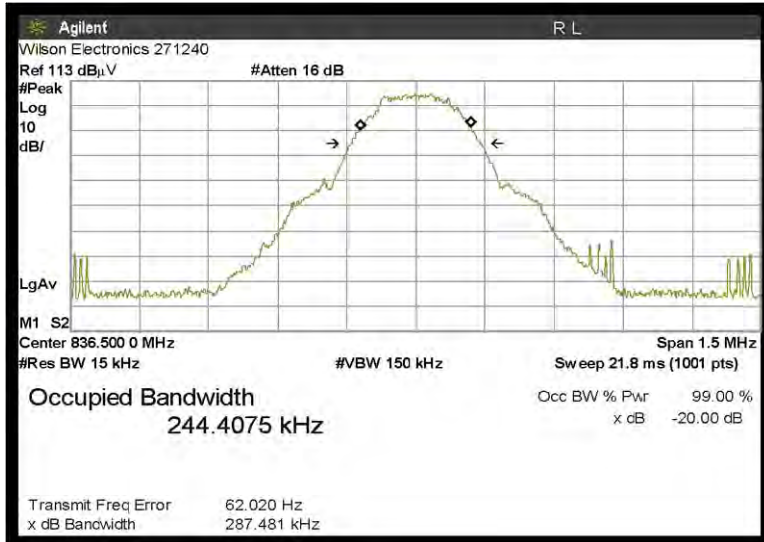
### 99% BANDWIDTH - UPLINK CDMA MID CHANNEL



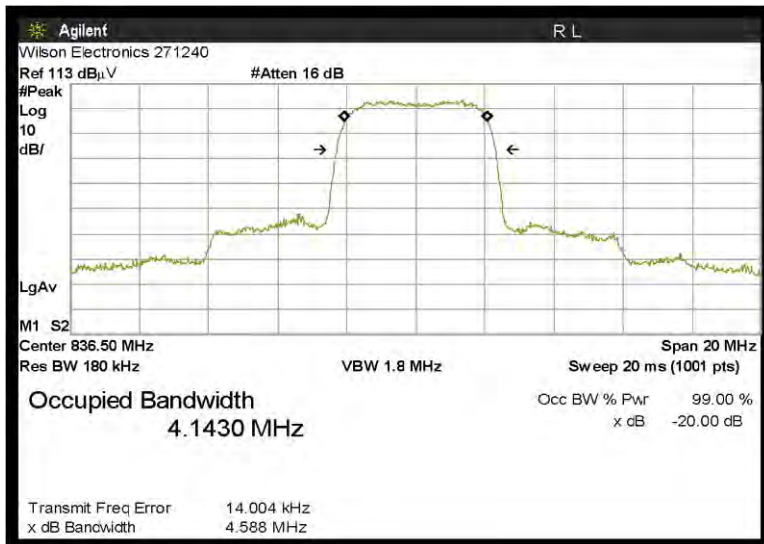
### 99% BANDWIDTH - UPLINK EDGE MID CHANNEL



**99% BANDWIDTH - UPLINK GSM MID CHANNEL**



**99% BANDWIDTH - UPLINK WCDMA MID CHANNEL**



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

**Test Setup Photos**



Downlink



Uplink





**Test Data Sheets**

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

Customer: **Wilson Electronics**  
 Specification: **FCC 22.917**  
 Work Order #: **87310** Date: 1/30/2008  
 Test Type: **Conducted Emissions** Time: 12:06:54  
 Equipment: **Bidirectional Amplifier** Sequence#: 12  
 Manufacturer: Wilson Electronics Tested By: Mike Wilkinson  
 Model: 271240 8 VDC  
 S/N: 00001

**Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
Cable, Astrolab 24"	NA	01/15/2008	01/15/2010	03011
Weinchel 6dB attenuator	J7614	11/30/2006	11/30/2008	P01950
Weinchel 10dB attenuator	C8597	11/30/2006	11/30/2008	P02139

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

Function	Manufacturer	Model #	S/N
Bidirectional Amplifier*	Wilson Electronics	271240	00001

**Support Devices:**

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4437B	MY41000126
DC Power Supply	Topward Electric Instruments Co., Ltd	TPS-2000	920027

**Test Conditions / Notes:**

The EUT is a dual-band bi-directional amplifier for enhancing the range of cell phones and data communication devices (computers, PDAs, etc.) in both mobile (vehicular) and in-building environments. EUT operating frequency ranges are 824-849 MHz and 1850-1910 MHz for uplink path and 869-894 MHz and 1930-1990 MHz for downlink path. EUT is connected directly to a spectrum analyzer via suitable attenuation. Input signal level is set such that the amplifier employs maximum amplification gain. Frequency Range Investigated: 9kHz - 20GHz. Temperature: 21°C, Relative Humidity: 30%. Downlink Path +8VDC Input. Bandwidth settings 100kHz.

**Transducer Legend:**

T1=CAB-AN03011-40GHZ-2FT	T2=ATT 10d B AN02139
T3=ATT 6d B P01950	

**Measurement Data:**

#	Freq MHz	Rdng dBµV	Reading listed by margin.			Dist dB	Table	Corr dBµV	Spec dBµV	Margin dB	Polar Anten
			T1 dB	T2 dB	T3 dB						
1	1738.560M	30.0	+0.4	+9.9	+5.7	+0.0	46.0	94.0	-48.0	Anten	
Downlink EDGE Low											
2	1762.936M	29.2	+0.4	+9.9	+5.7	+0.0	45.2	94.0	-48.8	Anten	
Downlink EDGE Mid											
3	2607.910M	28.7	+0.4	+9.9	+5.7	+0.0	44.7	94.0	-49.3	Anten	
Downlink EDGE Low											

4	1738.560M	28.3	+0.4	+9.9	+5.7	+0.0	44.3	94.0	-49.7	Anten
								Downlink GSM Low		
5	1763.004M	27.9	+0.4	+9.9	+5.7	+0.0	43.9	94.0	-50.1	Anten
								Downlink GSM Mid		
6	2644.512M	27.6	+0.4	+9.9	+5.7	+0.0	43.6	94.0	-50.4	Anten
								Downlink EDGE Mid		
7	1740.492M	27.5	+0.4	+9.9	+5.7	+0.0	43.5	94.0	-50.5	Anten
								Downlink CDMA Low		
8	2610.860M	27.1	+0.4	+9.9	+5.7	+0.0	43.1	94.0	-50.9	Anten
								Downlink CDMA Low		
9	1787.450M	26.5	+0.4	+9.9	+5.7	+0.0	42.5	94.0	-51.5	Anten
								Downlink GSM High		
10	1762.680M	26.1	+0.4	+9.9	+5.7	+0.0	42.1	94.0	-51.9	Anten
								Downlink CDMA Mid		
11	1787.412M	26.1	+0.4	+9.9	+5.7	+0.0	42.1	94.0	-51.9	Anten
								Downlink EDGE High		
12	1748.410M	26.0	+0.4	+9.9	+5.7	+0.0	42.0	94.0	-52.0	Anten
								Downlink WCDMA Low		
13	2644.210M	25.9	+0.4	+9.9	+5.7	+0.0	41.9	94.0	-52.1	Anten
								Downlink CDMA Mid		
14	2607.840M	25.7	+0.4	+9.9	+5.7	+0.0	41.7	94.0	-52.3	Anten
								Downlink GSM Low		
15	2678.260M	25.1	+0.4	+9.9	+5.7	+0.0	41.1	94.0	-52.9	Anten
								Downlink CDMA High		
16	2620.660M	25.0	+0.4	+9.9	+5.7	+0.0	41.0	94.0	-53.0	Anten
								Downlink WCDMA Low		
17	2681.164M	24.9	+0.4	+9.9	+5.7	+0.0	40.9	94.0	-53.1	Anten
								Downlink GSM High		
18	2668.500M	24.8	+0.4	+9.9	+5.7	+0.0	40.8	94.0	-53.2	Anten
								Downlink WCDMA High		
19	2681.136M	24.4	+0.4	+9.9	+5.7	+0.0	40.4	94.0	-53.6	Anten
								Downlink EDGE High		

20	2644.504M	24.3	+0.4	+9.9	+5.7	+0.0	40.3	94.0	-53.7	Anten
								Downlink GSM Mid		
21	1785.540M	24.2	+0.4	+9.9	+5.7	+0.0	40.2	94.0	-53.8	Anten
								Downlink CDMA High		
22	1779.000M	24.1	+0.4	+9.9	+5.7	+0.0	40.1	94.0	-53.9	Anten
								Downlink WCDMA High		
23	1753.220M	23.8	+0.4	+9.9	+5.7	+0.0	39.8	94.0	-54.2	Anten
								Downlink WCDMA Mid		
24	2634.940M	23.0	+0.4	+9.9	+5.7	+0.0	39.0	94.0	-55.0	Anten
								Downlink WCDMA Mid		



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

Customer: **Wilson Electronics**  
 Specification: **FCC 22.917**  
 Work Order #: **87310** Date: 1/30/2008  
 Test Type: **Conducted Emissions** Time: 10:16:57  
 Equipment: **Bidirectional Amplifier** Sequence#: 10  
 Manufacturer: Wilson Electronics Tested By: Randal Clark  
 Model: 271240 5 VDC  
 S/N: 00001

**Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
Cable, Astrolab 24"	NA	01/15/2008	01/15/2010	03011
Weinchel 6dB attenuator	J7614	11/30/2006	11/30/2008	P01950
Weinchel 10dB attenuator	C8597	11/30/2006	11/30/2008	P02139

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

Function	Manufacturer	Model #	S/N
Bidirectional Amplifier*	Wilson Electronics	271240	00001

**Support Devices:**

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4437B	MY41000126
DC Power Supply	Topward Electric Instruments Co., Ltd	TPS-2000	920027

**Test Conditions / Notes:**

The EUT is a dual-band bi-directional amplifier for enhancing the range of cell phones and data communication devices (computers, PDAs, etc.) in both mobile (vehicular) and in-building environments. EUT operating frequency ranges are 824-849 MHz and 1850-1910 MHz for uplink path and 869-894 MHz and 1930-1990 MHz for downlink path. EUT is connected directly to a spectrum analyzer via suitable attenuation. Input signal level is set such that the amplifier is at 3dB compression. Frequency Range Investigated: 9kHz - 20GHz. Temperature: 21°C, Relative Humidity: 30%. Uplink Path +5VDC Input. Bandwidth settings 100kHz.

**Transducer Legend:**

T1=CAB-AN03011-40GHZ-2FT	T2=ATT 10d B AN02139
T3=ATT 6d B P01950	

**Measurement Data:**

Reading listed by margin.

Test Lead: Antenna Port

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	Dist dB	Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	3297.132M	77.4	+0.5	+10.0	+5.7	+0.0	93.6	94.0	-0.4	Anten	
Uplink GSM Low											
2	3297.123M	76.2	+0.5	+10.0	+5.7	+0.0	92.4	94.0	-1.6	Anten	
Uplink EDGE Low											
3	3345.985M	73.0	+0.5	+10.0	+5.7	+0.0	89.2	94.0	-4.8	Anten	
Uplink EDGE Mid											
4	3346.000M	72.6	+0.5	+10.0	+5.7	+0.0	88.8	94.0	-5.2	Anten	
Uplink GSM Mid											
5	2472.852M	67.5	+0.4	+9.9	+5.7	+0.0	83.5	94.0	-10.5	Anten	
Uplink EDGE Low											

6	2509.509M	66.4	+0.4	+9.9	+5.7	+0.0	82.4	94.0	-11.6	Anten
								Uplink GSM Mid		
7	2509.491M	66.3	+0.4	+9.9	+5.7	+0.0	82.3	94.0	-11.7	Anten
								Uplink EDGE Mid		
8	3345.990M	65.5	+0.5	+10.0	+5.7	+0.0	81.7	94.0	-12.3	Anten
								Uplink CDMA Mid		
9	2472.843M	65.3	+0.4	+9.9	+5.7	+0.0	81.3	94.0	-12.7	Anten
								Uplink GSM Low		
10	3313.990M	62.1	+0.5	+10.0	+5.7	+0.0	78.3	94.0	-15.7	Anten
								Uplink WCDMA Low		
11	3394.883M	60.4	+0.5	+10.0	+5.7	+0.0	76.6	94.0	-17.4	Anten
								Uplink EDGE High		
12	3346.010M	58.7	+0.5	+10.0	+5.7	+0.0	74.9	94.0	-19.1	Anten
								Uplink WCDMA Mid		
13	3301.010M	58.7	+0.5	+10.0	+5.7	+0.0	74.9	94.0	-19.1	Anten
								Uplink CDMA Low		
14	3394.877M	57.4	+0.5	+10.0	+5.7	+0.0	73.6	94.0	-20.4	Anten
								Uplink GSM High		
15	2546.151M	56.8	+0.4	+9.9	+5.7	+0.0	72.8	94.0	-21.2	Anten
								Uplink EDGE High		
16	2509.510M	56.7	+0.4	+9.9	+5.7	+0.0	72.7	94.0	-21.3	Anten
								Uplink CDMA Mid		
17	3390.980M	53.3	+0.5	+10.0	+5.7	+0.0	69.5	94.0	-24.5	Anten
								Uplink CDMA High		
18	3378.000M	53.0	+0.5	+10.0	+5.7	+0.0	69.2	94.0	-24.8	Anten
								Uplink WCDMA High		
19	2546.157M	48.3	+0.4	+9.9	+5.7	+0.0	64.3	94.0	-29.7	Anten
								Uplink GSM High		
20	1648.548M	46.5	+0.3	+9.9	+5.7	+0.0	62.4	94.0	-31.6	Anten
								Uplink EDGE Low		
21	1648.578M	46.3	+0.3	+9.9	+5.7	+0.0	62.2	94.0	-31.8	Anten
								Uplink GSM Low		
22	2543.130M	45.1	+0.4	+9.9	+5.7	+0.0	61.1	94.0	-32.9	Anten
								Uplink CDMA High		
23	2475.690M	42.3	+0.4	+9.9	+5.7	+0.0	58.3	94.0	-35.7	Anten
								Uplink CDMA Low		
24	2509.870M	40.9	+0.4	+9.9	+5.7	+0.0	56.9	94.0	-37.1	Anten
								Uplink WCDMA Mid		
25	2485.620M	40.0	+0.4	+9.9	+5.7	+0.0	56.0	94.0	-38.0	Anten
								Uplink WCDMA Low		
26	4121.406M	39.7	+0.5	+10.0	+5.7	+0.0	55.9	94.0	-38.1	Anten
								Uplink EDGE Low		

27	4121.421M	39.6	+0.5	+10.0	+5.7	+0.0	55.8	94.0	-38.2	Anten
								Uplink GSM Low		
28	2533.680M	39.3	+0.4	+9.9	+5.7	+0.0	55.3	94.0	-38.7	Anten
								Uplink WCDMA High		
29	4182.497M	36.8	+0.6	+10.0	+5.8	+0.0	53.2	94.0	-40.8	Anten
								Uplink GSM Mid		
30	4182.479M	36.3	+0.6	+10.0	+5.8	+0.0	52.7	94.0	-41.3	Anten
								Uplink EDGE Mid		
31	1672.994M	36.3	+0.4	+9.9	+5.7	+0.0	52.3	94.0	-41.7	Anten
								Uplink GSM Mid		
32	1672.988M	35.6	+0.4	+9.9	+5.7	+0.0	51.6	94.0	-42.4	Anten
								Uplink EDGE Mid		
33	1650.460M	34.4	+0.4	+9.9	+5.7	+0.0	50.4	94.0	-43.6	Anten
								Uplink CDMA Low		
34	1697.431M	32.5	+0.4	+9.9	+5.7	+0.0	48.5	94.0	-45.5	Anten
								Uplink EDGE High		
35	1697.410M	32.1	+0.4	+9.9	+5.7	+0.0	48.1	94.0	-45.9	Anten
								Uplink GSM High		
36	1657.080M	31.9	+0.4	+9.9	+5.7	+0.0	47.9	94.0	-46.1	Anten
								Uplink WCDMA Low		
37	4243.588M	31.3	+0.6	+10.0	+5.8	+0.0	47.7	94.0	-46.3	Anten
								Uplink EDGE High		
38	1672.940M	29.6	+0.4	+9.9	+5.7	+0.0	45.6	94.0	-48.4	Anten
								Uplink CDMA Mid		
39	4126.240M	28.6	+0.5	+10.0	+5.7	+0.0	44.8	94.0	-49.2	Anten
								Uplink CDMA Low		
40	1695.460M	28.4	+0.4	+9.9	+5.7	+0.0	44.4	94.0	-49.6	Anten
								Uplink CDMA High		



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

Customer: **Wilson Electronics**  
 Specification: **FCC 22.917**  
 Work Order #: **87310** Date: 1/31/2008  
 Test Type: **Conducted Emissions** Time: 11:12:15  
 Equipment: **Bidirectional Amplifier** Sequence#: 14  
 Manufacturer: Wilson Electronics Tested By: Randal Clark  
 Model: 271240 5 VDC  
 S/N: 00001

**Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
Cable, Astrolab 24"	NA	01/15/2008	01/15/2010	03011
Weinchel 6dB attenuator	J7614	11/30/2006	11/30/2008	P01950
Weinchel 10dB attenuator	C8597	11/30/2006	11/30/2008	P02139

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

Function	Manufacturer	Model #	S/N
Bidirectional Amplifier*	Wilson Electronics	271240	00001

**Support Devices:**

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4437B	MY41000126
DC Power Supply	Topward Electric Instruments Co., Ltd	TPS-2000	920027

**Test Conditions / Notes:**

The EUT is a dual-band bi-directional amplifier for enhancing the range of cell phones and data communication devices (computers, PDAs, etc.) in both mobile (vehicular) and in-building environments. EUT operating frequency ranges are 824-849 MHz and 1850-1910 MHz for uplink path and 869-894 MHz and 1930-1990 MHz for downlink path. EUT is connected directly to a spectrum analyzer via suitable attenuation. Input signal level is set such that the amplifier employs maximum amplification gain. Frequency Range Investigated: 9kHz - 20GHz. Temperature: 21°C, Relative Humidity: 30%. Uplink Path +8VDC Input. Bandwidth settings 100kHz.

**Transducer Legend:**

T1=CAB-AN03011-40GHZ-2FT	T2=ATT 10d B AN02139
T3=ATT 6d B P01950	

**Measurement Data:** Reading listed by margin. Test Lead: Antenna Port

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	Dist dB	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	3297.120M	72.8	+0.5	+10.0	+5.7	+0.0	89.0	94.0	-5.0	Anten
Uplink EDGE Low										
2	3301.500M	68.1	+0.5	+10.0	+5.7	+0.0	84.3	94.0	-9.7	Anten
Uplink CDMA Low										
3	3297.128M	65.4	+0.5	+10.0	+5.7	+0.0	81.6	94.0	-12.4	Anten
Uplink GSM Low										
4	3314.010M	61.2	+0.5	+10.0	+5.7	+0.0	77.4	94.0	-16.6	Anten
Uplink WCDMA Low										

5	3346.008M	61.2	+0.5	+10.0	+5.7	+0.0	77.4	94.0	-16.6	Anten
								Uplink GSM Mid		
6	3346.000M	60.6	+0.5	+10.0	+5.7	+0.0	76.8	94.0	-17.2	Anten
								Uplink EDGE Mid		
7	3346.520M	60.2	+0.5	+10.0	+5.7	+0.0	76.4	94.0	-17.6	Anten
								Uplink CDMA Mid		
8	3346.000M	59.1	+0.5	+10.0	+5.7	+0.0	75.3	94.0	-18.7	Anten
								Uplink WCDMA Mid		
9	2509.500M	55.1	+0.4	+9.9	+5.7	+0.0	71.1	94.0	-22.9	Anten
								Uplink EDGE Mid		
10	2472.840M	54.7	+0.4	+9.9	+5.7	+0.0	70.7	94.0	-23.3	Anten
								Uplink EDGE Low		
11	2545.976M	54.2	+0.4	+9.9	+5.7	+0.0	70.2	94.0	-23.8	Anten
								Uplink GSM High		
12	2546.170M	54.2	+0.4	+9.9	+5.7	+0.0	70.2	94.0	-23.8	Anten
								Uplink GSM High		
13	2546.160M	53.2	+0.4	+9.9	+5.7	+0.0	69.2	94.0	-24.8	Anten
								Uplink EDGE High		
14	3394.880M	52.9	+0.5	+10.0	+5.7	+0.0	69.1	94.0	-24.9	Anten
								Uplink EDGE High		
15	3374.140M	52.3	+0.5	+10.0	+5.7	+0.0	68.5	94.0	-25.5	Anten
								Uplink WCDMA High		
16	3395.100M	52.1	+0.5	+10.0	+5.7	+0.0	68.3	94.0	-25.7	Anten
								Uplink GSM High		
17	3390.605M	51.2	+0.5	+10.0	+5.7	+0.0	67.4	94.0	-26.6	Anten
								Uplink CDMA High		
18	2472.846M	50.5	+0.4	+9.9	+5.7	+0.0	66.5	94.0	-27.5	Anten
								Uplink GSM Low		
19	1648.560M	49.3	+0.3	+9.9	+5.7	+0.0	65.2	94.0	-28.8	Anten
								Uplink EDGE Low		
20	2509.500M	48.3	+0.4	+9.9	+5.7	+0.0	64.3	94.0	-29.7	Anten
								Uplink CDMA Mid		
21	2543.280M	47.5	+0.4	+9.9	+5.7	+0.0	63.5	94.0	-30.5	Anten
								Uplink CDMA High		
22	1648.564M	47.4	+0.3	+9.9	+5.7	+0.0	63.3	94.0	-30.7	Anten
								Uplink GSM Low		
23	2512.580M	45.5	+0.4	+9.9	+5.7	+0.0	61.5	94.0	-32.5	Anten
								Uplink WCDMA Mid		
24	2530.380M	44.5	+0.4	+9.9	+5.7	+0.0	60.5	94.0	-33.5	Anten
								Uplink WCDMA High		
25	2488.660M	43.1	+0.4	+9.9	+5.7	+0.0	59.1	94.0	-34.9	Anten
								Uplink WCDMA Low		



26	1650.470M	40.8	+0.4	+9.9	+5.7	+0.0	56.8	94.0	-37.2	Anten
								Uplink CDMA Low		
27	1655.070M	37.3	+0.4	+9.9	+5.7	+0.0	53.3	94.0	-40.7	Anten
								Uplink WCDMA Low		
28	4125.395M	35.9	+0.5	+10.0	+5.7	+0.0	52.1	94.0	-41.9	Anten
								Uplink CDMA Low		
29	1673.000M	35.4	+0.4	+9.9	+5.7	+0.0	51.4	94.0	-42.6	Anten
								Uplink EDGE Mid		
30	4121.400M	35.2	+0.5	+10.0	+5.7	+0.0	51.4	94.0	-42.6	Anten
								Uplink EDGE Low		
31	4121.410M	35.0	+0.5	+10.0	+5.7	+0.0	51.2	94.0	-42.8	Anten
								Uplink GSM Low		
32	1673.004M	34.5	+0.4	+9.9	+5.7	+0.0	50.5	94.0	-43.5	Anten
								Uplink GSM Mid		
33	1697.440M	32.1	+0.4	+9.9	+5.7	+0.0	48.1	94.0	-45.9	Anten
								Uplink GSM High		
34	4182.500M	31.7	+0.6	+10.0	+5.8	+0.0	48.1	94.0	-45.9	Anten
								Uplink EDGE Mid		
35	4182.510M	31.5	+0.6	+10.0	+5.8	+0.0	47.9	94.0	-46.1	Anten
								Uplink GSM Mid		
36	1697.440M	31.7	+0.4	+9.9	+5.7	+0.0	47.7	94.0	-46.3	Anten
								Uplink EDGE High		
37	1686.960M	30.3	+0.4	+9.9	+5.7	+0.0	46.3	94.0	-47.7	Anten
								Uplink WCDMA High		
38	5019.000M	29.6	+0.6	+10.0	+5.8	+0.0	46.0	94.0	-48.0	Anten
								Uplink EDGE Mid		
39	1673.000M	29.8	+0.4	+9.9	+5.7	+0.0	45.8	94.0	-48.2	Anten
								Uplink CDMA Mid		
40	1671.420M	29.7	+0.4	+9.9	+5.7	+0.0	45.7	94.0	-48.3	Anten
								Uplink WCDMA Mid		
41	5855.500M	29.0	+0.6	+10.0	+5.8	+0.0	45.4	94.0	-48.6	Anten
								Uplink EDGE Mid		
42	1695.520M	29.3	+0.4	+9.9	+5.7	+0.0	45.3	94.0	-48.7	Anten
								Uplink CDMA High		

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

**Test Setup Photos**





## Test Data Sheets

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

Customer: **Wilson Electronics**  
 Specification: **FCC 22.917**  
 Work Order #: **87310** Date: 2/1/2008  
 Test Type: **Radiated Scan** Time: 10:08:36  
 Equipment: **Bidirectional Amplifier** Sequence#: 16  
 Manufacturer: Wilson Electronics Tested By: Mike Wilkinson  
 Model: 271240  
 S/N: 00001

### Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
EMCO Loop Antenna	1074	05/01/2007	05/01/2009	00226
Chase CBL6111C Bilog	2456	12/30/2006	12/30/2008	01991
Horn Antenna	01005	11/27/2006	11/27/2008	02046
HP 8447D Preamp	1937A02604	03/14/2007	03/14/2009	00099
HP 8449B Preamp	3008A00301	12/13/2006	12/13/2008	2010
3M SITE CABLE 2GHZ	NA	03/23/2006	03/23/2008	SITED3M
3M SITE CABLE 20GHZ	NA	03/23/2006	03/23/2008	SITED3M1
Cable 2' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03008
Cable 2' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03011
Cable 10' 40 GHz Gore	NA	04/23/2007	04/23/2009	ANP04290
Antenna, Horn	4085	03/19/2007	03/19/2009	AN00656

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

Function	Manufacturer	Model #	S/N
Bidirectional Amplifier*	Wilson Electronics	271240	00001

### Support Devices:

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4437B	MY41000126
DC Power Supply	Topward Electric Instruments Co., Ltd	TPS-2000	920027

### Test Conditions / Notes:

The EUT is a dual-band bi-directional amplifier for enhancing the range of cell phones and data communication devices (computers, PDAs, etc.) in both mobile (vehicular) and in-building environments. EUT operating frequency ranges are 824-849 MHz and 1850-1910 MHz for uplink path and 869-894 MHz and 1930-1990 MHz for downlink path. EUT antenna port is terminated into 50 Ohms. Input signal level is set such that the amplifier employs maximum amplification gain. Frequency Range Investigated: 9kHz - 20GHz Temperature: 21°C, Relative Humidity: 30%. DownlinkPath. Low, Mid and High channels tested as noted in the data. Worst case modulation used = GSM. Worst case position used = Vertical Measurement Res BW = 100 kHz Vid BW = 1 MHz. +5VDC Input.

Operating Frequency: 824-840 MHz & 869-891 MHz

Channels: Uplink and Downlink

Highest Measured Output Power: 54.60 ERP(dBm)= 288.4 ERP(mWatts)

Distance: 3 meters

Limit:  $43+10\text{Log}(P)$  67.60 dBc

Freq. (MHz)	Reference Level (dBm)	Antenna Polarity (H/V)	dBc
3,346.27	-19	Horiz	73.60
3,346.27	-20.9	Vert	75.50
3,297.39	-21.3	Vert	75.90
3,297.39	-25.5	Horiz	80.10
2,472.65	-28.2	Vert	82.80
3,395.15	-30.6	Horiz	85.20
1,648.43	-31.5	Vert	86.10
2,473.04	-32.6	Vert	87.20
1,648.43	-32.9	Vert	87.50
1,672.87	-33.2	Vert	87.80
2,509.70	-34.5	Vert	89.10
3,395.15	-35	Vert	89.60
1,673.14	-35.1	Horiz	89.70
1,697.33	-35.4	Vert	90.00
2,509.70	-37	Horiz	91.60
4,182.83	-39	Horiz	93.60
1,697.58	-39.2	Horiz	93.80
4,182.17	-42.2	Vert	96.80
5,018.60	-44.7	Horiz	99.30
5,019.38	-47.9	Vert	102.50
2,545.93	-49.1	Horiz	103.70
4,243.24	-50.1	Horiz	104.70
4,243.97	-51.2	Vert	105.80
2,546.36	-51.4	Vert	106.00
4,121.74	-51.8	Vert	106.40
3,297.39	-26.8	Horiz	81.40
3,346.28	-27.4	Horiz	82.00
1,648.69	-27.4	Vert	82.00
1,648.70	-28.2	Horiz	82.80
1,673.13	-31	Vert	85.60
3,297.39	-32.9	Vert	87.50
1,673.13	-33.7	Horiz	88.30
3,394.62	-35.1	Horiz	89.70
1,697.30	-36.5	Vert	91.10
3,394.62	-37.2	Vert	91.80

2,473.03	-39.6	Vert	94.20
1,697.30	-40.2	Horiz	94.80
4,121.74	-43.4	Horiz	98.00
4,121.05	-44.5	Vert	99.10
2,509.31	-47.9	Horiz	102.50
4,946.07	-48.5	Vert	103.10
2,509.70	-48.7	Vert	103.30
2,546.37	-48.8	Vert	103.40
4,182.17	-49	Vert	103.60
2,472.84	-49.1	Horiz	103.70
4,946.08	-49.4	Horiz	104.00
4,243.24	-49.5	Horiz	104.10
2,546.35	-49.7	Horiz	104.30
4,243.25	-50.4	Vert	105.00
4,182.85	-50.8	Horiz	105.40
3,476.85	-30.1	Vert	84.70
6,255.56	-30.8	Horiz	85.40
6,170.02	-34.8	Horiz	89.40
5,361.91	-35.3	Horiz	89.90
3,476.85	-35.8	Horiz	90.40
7,934.12	-37.4	Vert	92.00
3,526.00	-37.4	Horiz	92.00
7,934.12	-39.3	Horiz	93.90
3,525.73	-39.5	Vert	94.10
3,575.15	-40	Horiz	94.60
8,042.90	-40.1	Horiz	94.70
5,361.92	-40.4	Horiz	95.00
7,822.95	-41.1	Vert	95.70
6,256.53	-41.2	Horiz	95.80
3,574.60	-41.2	Horiz	95.80
8,044.09	-42.2	Horiz	96.80
6,084.48	-43	Horiz	97.60
4,468.28	-43.1	Horiz	97.70
6,170.03	-43.5	Vert	98.10
2,644.28	-44.8	Vert	99.40
6,084.51	-45.1	Vert	99.70
5,289.00	-45.1	Horiz	99.70
1,738.56	-46.4	Vert	101.00
1,787.57	-46.6	Horiz	101.20
2,644.50	-46.9	Horiz	101.50
2,680.95	-47	Horiz	101.60
5,289.39	-47.2	Vert	101.80
4,468.93	-47.5	Horiz	102.10
2,680.96	-48.2	Horiz	102.80
1,762.87	-48.2	Vert	102.80
5,216.12	-48.7	Vert	103.30
4,346.73	-49.1	Horiz	103.70

## INPUT AND OUTPUT PLOTS

***Test Equipment:***

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
Cable, Astrolab 24"	NA	01/15/2008	01/15/2010	03011
Weinchel 6dB attenuator	J7614	11/30/2006	11/30/2008	P01950
Weinchel 10dB attenuator	C8597	11/30/2006	11/30/2008	P02139

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

Function	Manufacturer	Model #	S/N
Bidirectional Amplifier*	Wilson Electronics	271240	00001

***Support Devices:***

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4437B	MY41000126
DC Power Supply	Topward Electric Instruments Co., Ltd	TPS-2000	920027

***Test Conditions / Notes:***

The EUT is a dual-band bi-directional amplifier for enhancing the range of cell phones and data communication devices (computers, PDAs, etc.) in both mobile (vehicular) and in-building environments. EUT operating frequency ranges are 824-849 MHz and 1850-1910 MHz for uplink path and 869-894 MHz and 1930-1990 MHz for downlink path. Input and output plots do not provide information regarding amplifier gain and the signal levels used vary significantly.

For output plots, EUT is connected directly to a spectrum analyzer via suitable attenuation. Input signal level is set such that the amplifier employs maximum amplification gain.

For input plots, signal generator is connected directly to spectrum analyzer without external attenuation. The signal generator level is adjusted to provide appropriate display of input signal spectral characteristics.

Frequency Range Investigated: Carrier Mid Channel  
Temperature: 21°C, Relative Humidity: 30% +8VDC

**Test Setup Photos**



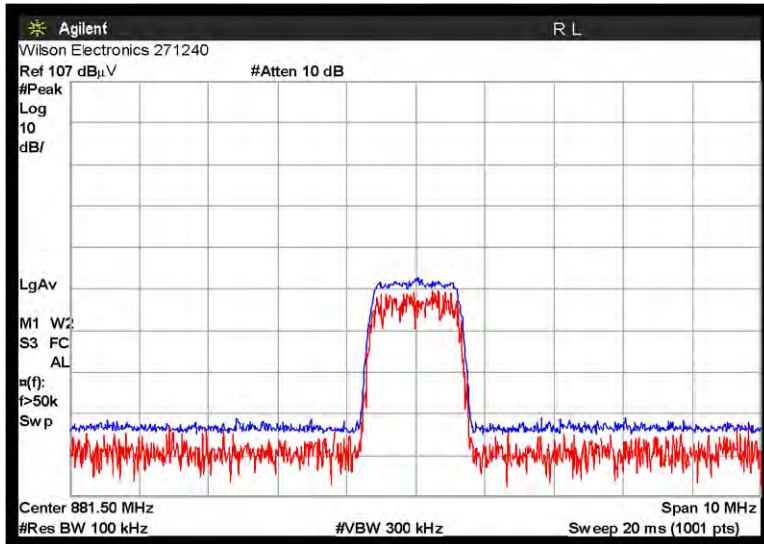
Downlink



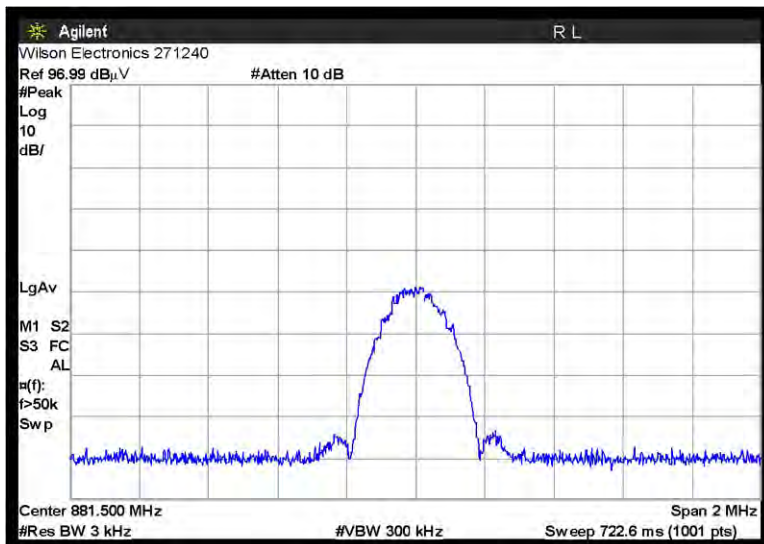
Uplink

## Test Plots

### INPUT - DOWNLINK CDMA MID CHANNEL

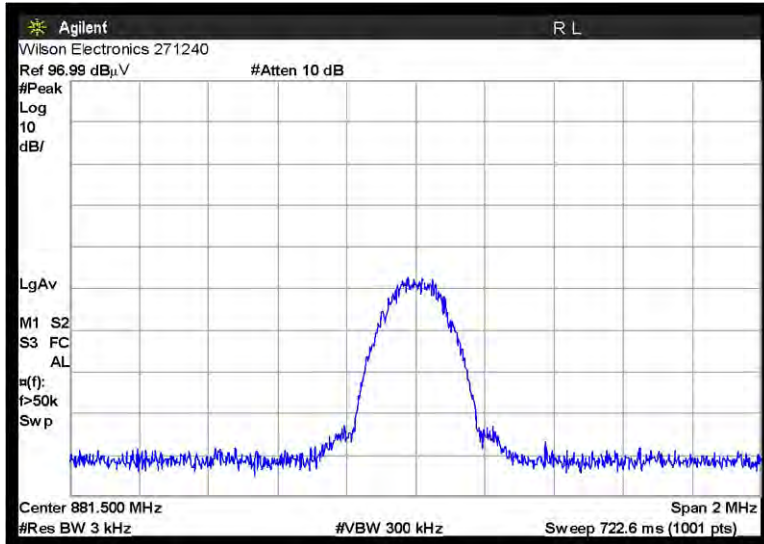


### INPUT - DOWNLINK EDGE MID CHANNEL

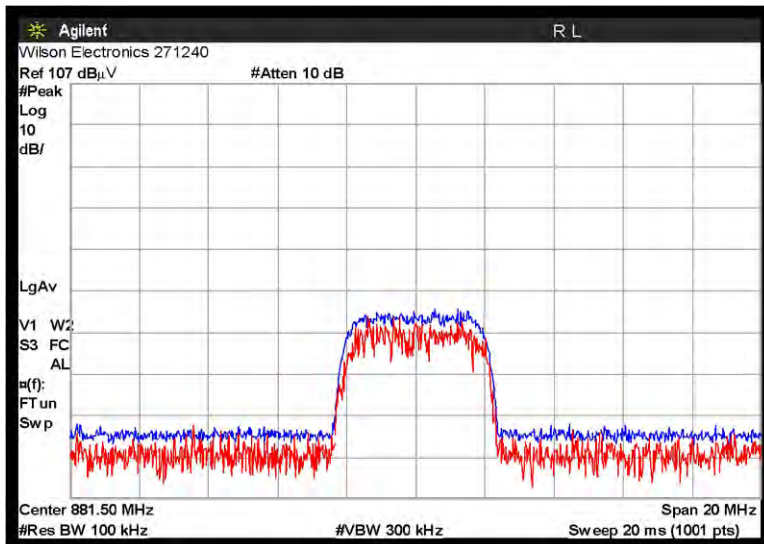




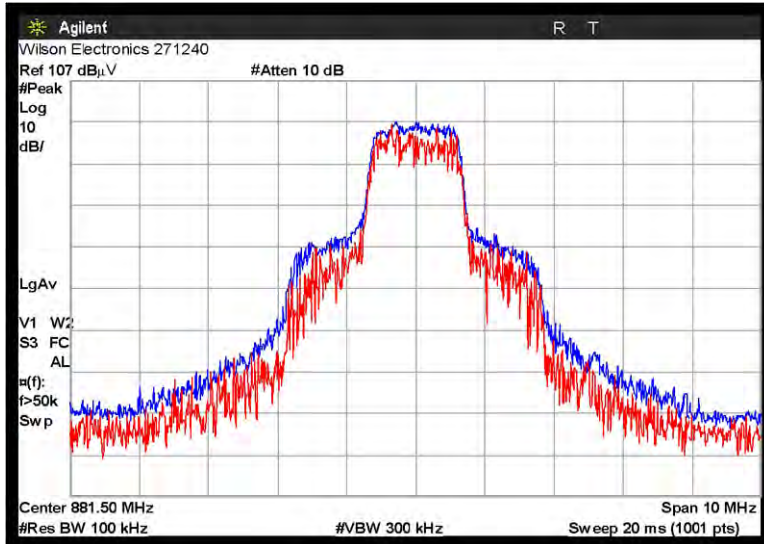
**INPUT - DOWNLINK GSM MID CHANNEL**



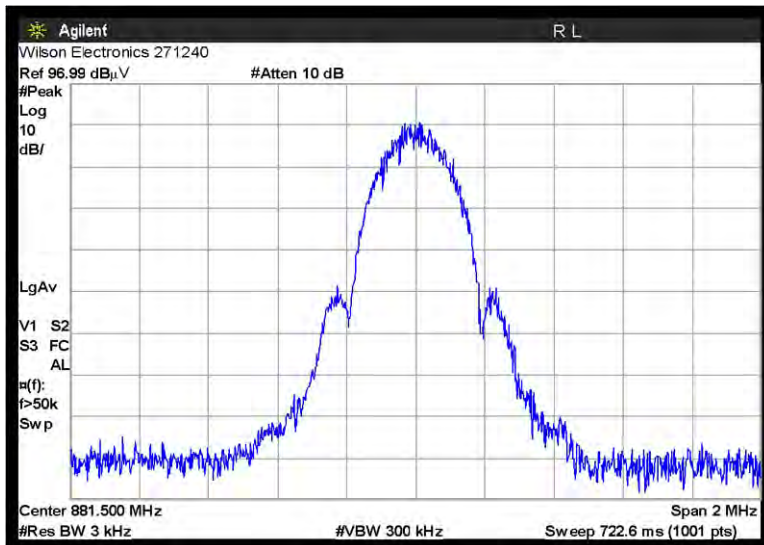
**INPUT - DOWNLINK WCDMA MID CHANNEL**



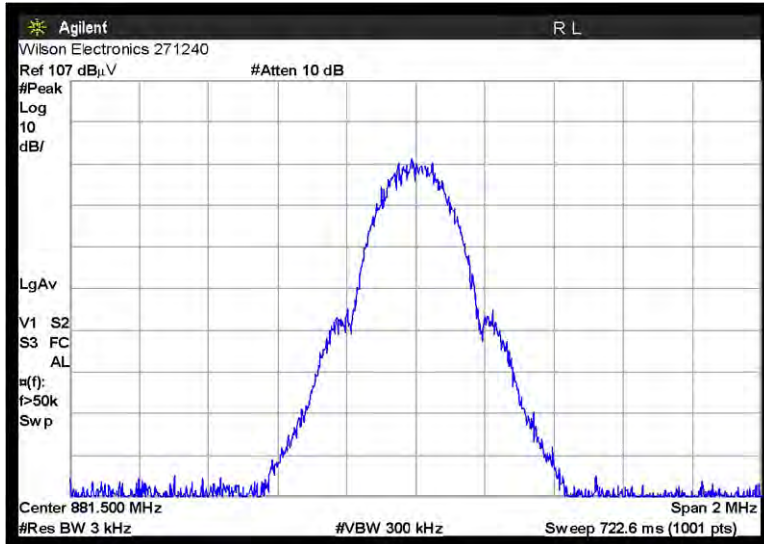
### OUTPUT - DOWNLINK CDMA MID CHANNEL



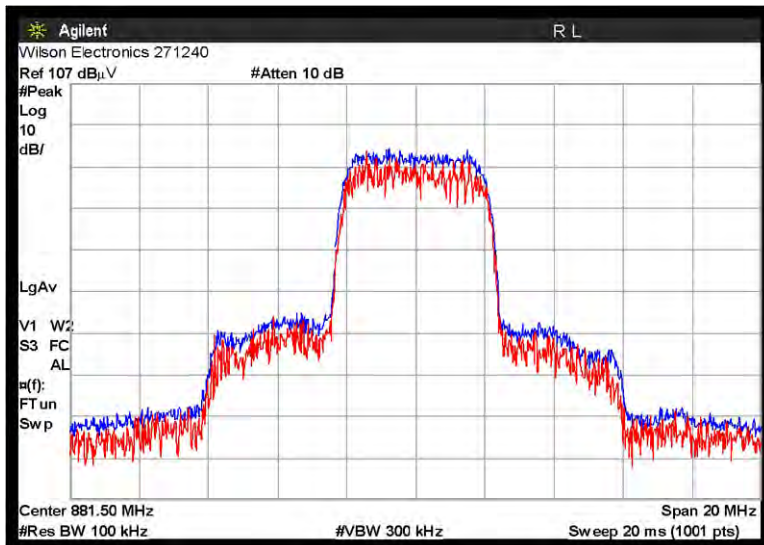
### OUTPUT - DOWNLINK EDGE MID CHANNEL



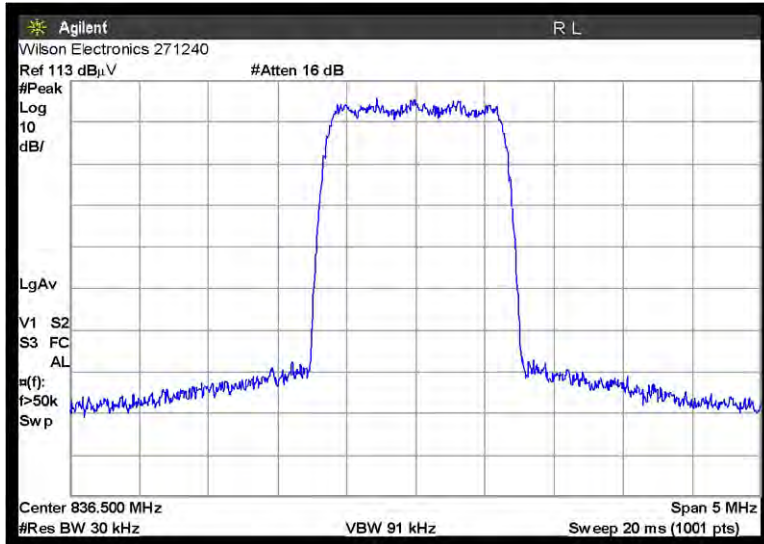
### OUTPUT - DOWNLINK GSM MID CHANNEL



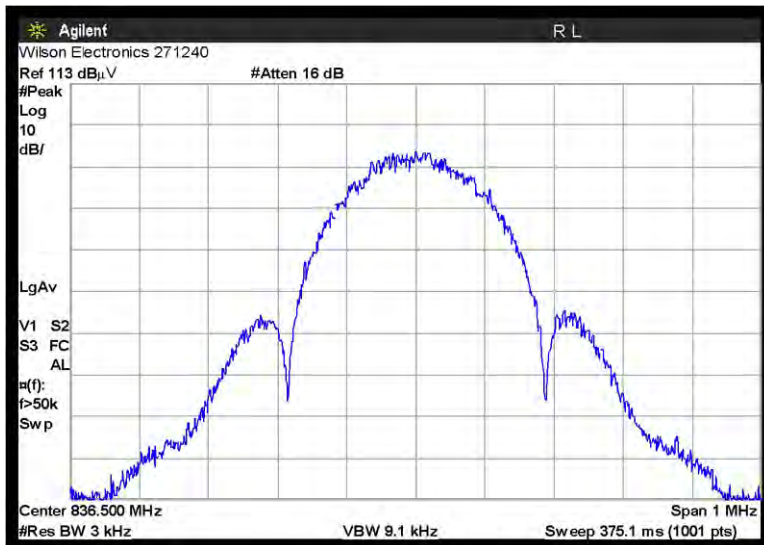
### OUTPUT - DOWNLINK WCDMA MID CHANNEL



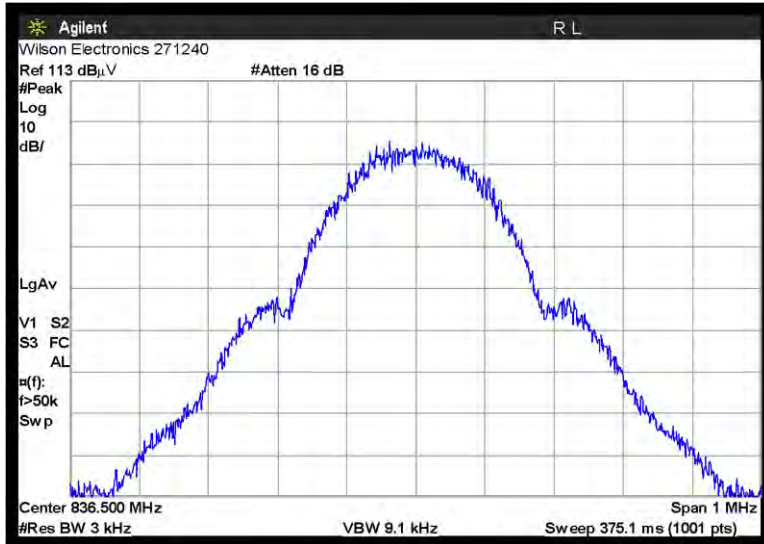
### INPUT - UPLINK CDMA



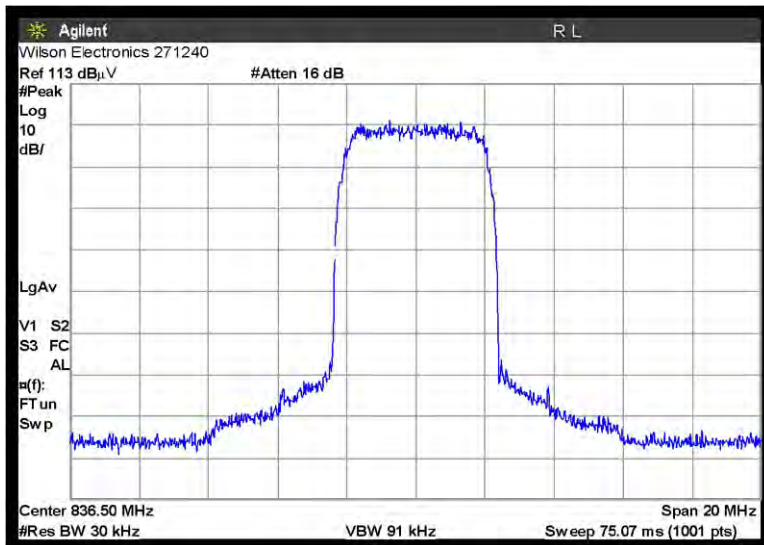
### INPUT - UPLINK EDGE



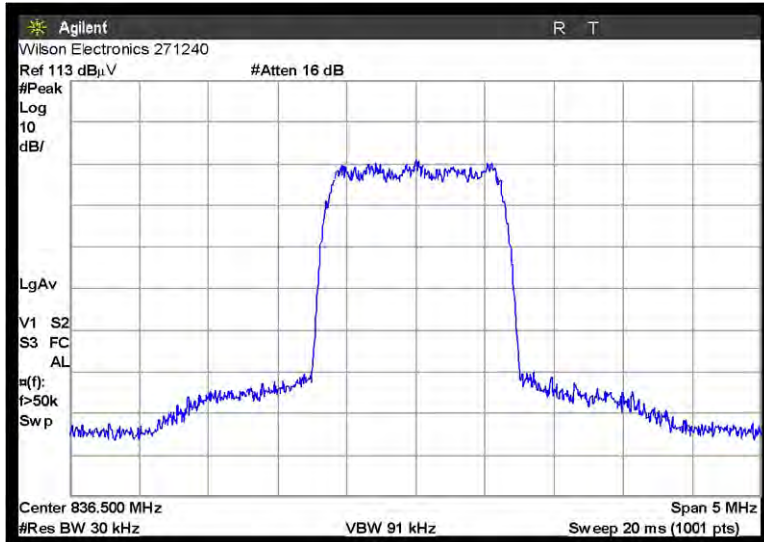
### INPUT - UPLINK GSM



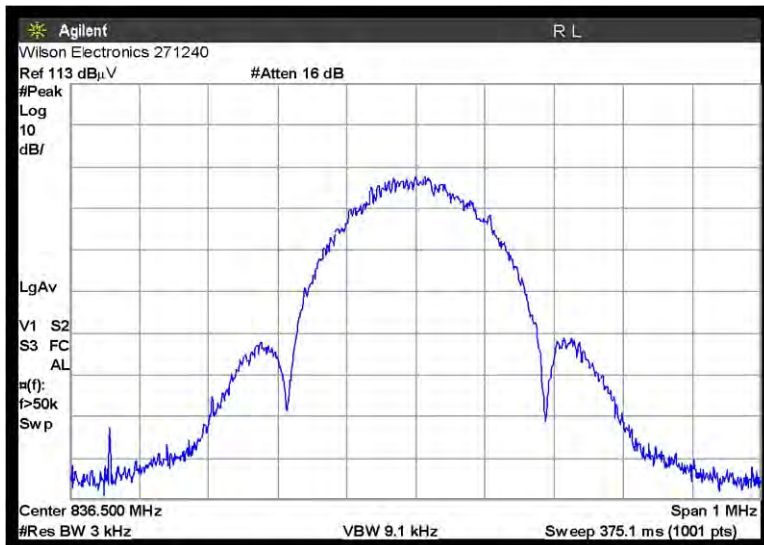
### INPUT - UPLINK WCDMA



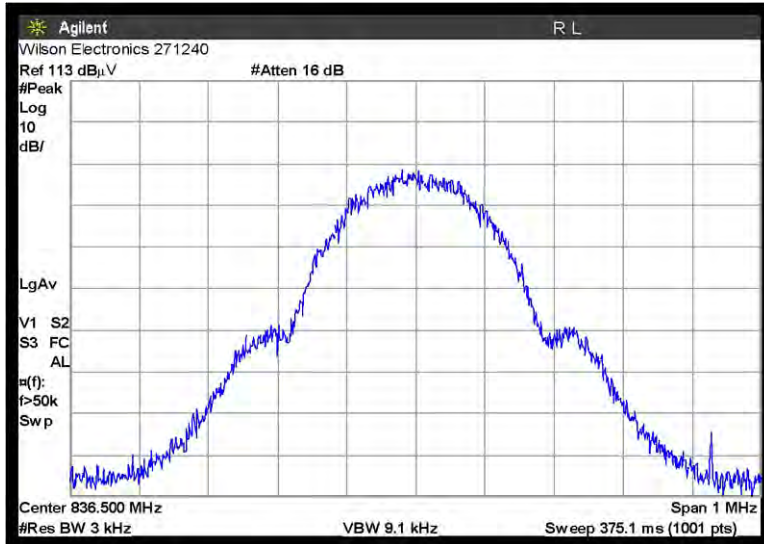
## OUTPUT - UPLINK CDMA



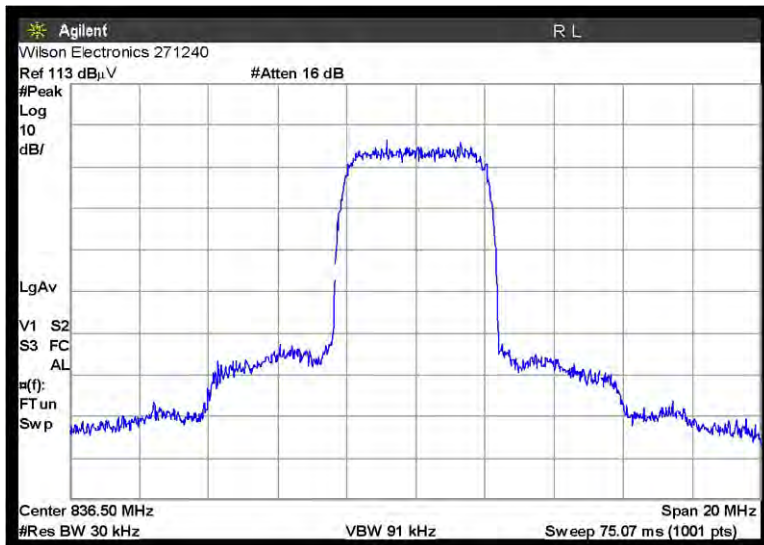
## OUTPUT - UPLINK EDGE



## OUTPUT - UPLINK GSM



## OUTPUT - UPLINK WCDMA



**FCC 2.1051 INTERMODULATION ATTENUATION**

**Test Setup Photos**



**Test Data**

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

Customer: **Wilson Electronics**

Specification: **FCC 22.917**

Work Order #: **87310**

Date: 1/29/2008

Test Type: **Conducted Emissions**

Time: 10:49:22

Equipment: **Bidirectional Amplifier**

Sequence#: 6

Manufacturer: Wilson Electronics

Tested By: Randal Clark

Model: 271240

5 VDC

S/N: 00001

***Test Equipment:***

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
Cable, Astrolab 24"	NA	01/15/2008	01/15/2010	03011
Weinchel 6dB attenuator	J7614	11/30/2006	11/30/2008	P01950
Weinchel 10dB attenuator	C8597	11/30/2006	11/30/2008	P02139

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

Function	Manufacturer	Model #	S/N
Bidirectional Amplifier*	Wilson Electronics	271240	00001

***Support Devices:***

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4437B	US39261021
Signal Generator	Agilent	E4437B	MY41000126
DC Power Supply	Topward Electric Instruments Co., Ltd	TPS-2000	920027



**Test Conditions / Notes:**

The EUT is a dual-band bi-directional amplifier for enhancing the range of cell phones and data communication devices (computers, PDAs, etc.) in both mobile (vehicular) and in-building environments. EUT operating frequency ranges are 824-849 MHz and 1850-1910 MHz for uplink path and 869-894 MHz and 1930-1990 MHz for downlink path. EUT is connected directly to a spectrum analyzer via suitable attenuation. Frequency Range Investigated: 9kHz - 20 GHz. Temperature: 21°C, Relative Humidity: 30%. Downlink Path.

**Transducer Legend:**

T1=CAB-AN03011-40GHZ-2FT	T2=ATT 10d B AN02139
T3=ATT 6d B P01950	

Measurement Data:			Reading listed by margin.				Test Lead: Antenna Port				
#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	Dist dB	Table	Corr dBμV	Spec dBμV	Margin dB	Polar Anten
1	868.720M	65.2	+0.3	+9.9	+5.7		+0.0	81.1	94.0	-12.9	Anten
									GSM Low		
2	868.710M	62.9	+0.3	+9.9	+5.7		+0.0	78.8	94.0	-15.2	Anten
									EDGE Low		
3	867.640M	62.9	+0.3	+9.9	+5.7		+0.0	78.8	94.0	-15.2	Anten
									CDMA Low		
4	894.270M	56.0	+0.3	+9.9	+5.7		+0.0	71.9	94.0	-22.1	Anten
									GSM High		
5	865.600M	54.4	+0.3	+9.9	+5.7		+0.0	70.3	94.0	-23.7	Anten
									WCDMA Low		
6	895.180M	52.9	+0.3	+9.9	+5.7		+0.0	68.8	94.0	-25.2	Anten
									WCDMA Low		
7	898.450M	49.2	+0.3	+9.9	+5.7		+0.0	65.1	94.0	-28.9	Anten
									WCDMA High		
8	894.275M	47.3	+0.3	+9.9	+5.7		+0.0	63.2	94.0	-30.8	Anten
									EDGE High		



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

Customer: **Wilson Electronics**  
 Specification: **FCC 22.917**  
 Work Order #: **87310** Date: 1/29/2008  
 Test Type: **Conducted Emissions** Time: 13:21:32  
 Equipment: **Bidirectional Amplifier** Sequence#: 1  
 Manufacturer: Wilson Electronics Tested By: Randal Clark  
 Model: 271240 8 VDC  
 S/N: 00001

**Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
Cable, Astrolab 24"	NA	01/15/2008	01/15/2010	03011
Weinchel 6dB attenuator	J7614	11/30/2006	11/30/2008	P01950
Weinchel 10dB attenuator	C8597	11/30/2006	11/30/2008	P02139

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

Function	Manufacturer	Model #	S/N
Bidirectional Amplifier*	Wilson Electronics	271240	00001

**Support Devices:**

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4437B	US39261021
Signal Generator	Agilent	E4437B	MY41000126
DC Power Supply	Topward Electric Instruments Co., Ltd	TPS-2000	920027

**Test Conditions / Notes:**

The EUT is a dual-band bi-directional amplifier for enhancing the range of cell phones and data communication devices (computers, PDAs, etc.) in both mobile (vehicular) and in-building environments. EUT operating frequency ranges are 824-849 MHz and 1850-1910 MHz for uplink path and 869-894 MHz and 1930-1990 MHz for downlink path. EUT is connected directly to a spectrum analyzer via suitable attenuation. Frequency Range Investigated: 9kHz - 20GHz. Temperature: 21°C, Relative Humidity: 30%. Uplink Path

**Transducer Legend:**

T1=CAB-AN03011-40GHZ-2FT	T2=ATT 10d B AN02139
T3=ATT 6d B P01950	

**Measurement Data:**

Reading listed by margin.

Test Lead: Antenna Port

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	Dist dB	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	819.750M	78.1	+0.2	+9.9	+5.6	+0.0	93.8	94.0	-0.2	Anten
Uplink WCDMA										
2	823.705M	78.0	+0.2	+9.9	+5.6	+0.0	93.7	94.0	-0.3	Anten
GSM Low										
3	823.710M	78.0	+0.2	+9.9	+5.6	+0.0	93.7	94.0	-0.3	Anten
EDGE Low										
4	853.170M	75.7	+0.3	+9.9	+5.7	+0.0	91.6	94.0	-2.4	Anten
Uplink WCDMA										

5	849.265M	74.2	+0.3	+9.9	+5.7	+0.0	90.1	94.0	-3.9	Anten
								GSM High		
6	849.275M	71.9	+0.3	+9.9	+5.7	+0.0	87.8	94.0	-6.2	Anten
								CDMA Low		
7	849.275M	71.8	+0.3	+9.9	+5.7	+0.0	87.7	94.0	-6.3	Anten
								EDGE High		
8	850.300M	70.8	+0.3	+9.9	+5.7	+0.0	86.7	94.0	-7.3	Anten
								CDMA High		



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

Customer: **Wilson Electronics**  
 Specification: **FCC 22.917**  
 Work Order #: **87310** Date: 1/28/2008  
 Test Type: **Conducted Emissions** Time: 11:38:40  
 Equipment: **Bidirectional Amplifier** Sequence#: 1  
 Manufacturer: Wilson Electronics Tested By: Randal Clark  
 Model: 271240 8 VDC  
 S/N: 00001

**Test Equipment:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
Cable, Astrolab 24"	NA	01/15/2008	01/15/2010	03011
Weinchel 6dB attenuator	J7614	11/30/2006	11/30/2008	P01950
Weinchel 10dB attenuator	C8597	11/30/2006	11/30/2008	P02139

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

Function	Manufacturer	Model #	S/N
Bidirectional Amplifier*	Wilson Electronics	271240	00001

**Support Devices:**

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4437B	US39261021
Signal Generator	Agilent	E4437B	MY41000126
DC Power Supply	Topward Electric Instruments Co., Ltd	TPS-2000	920027

**Test Conditions / Notes:**

The EUT is a dual-band bi-directional amplifier for enhancing the range of cell phones and data communication devices (computers, PDAs, etc.) in both mobile (vehicular) and in-building environments. EUT operating frequency ranges are 824-849 MHz and 1850-1910 MHz for uplink path and 869-894 MHz and 1930-1990 MHz for downlink path. EUT is connected directly to a spectrum analyzer via suitable attenuation. Frequency Range Investigated: 9kHz - 20GHz. Temperature: 21°C, Relative Humidity: 30%. Uplink Path +8VDC Input.

**Transducer Legend:**

T1=CAB-AN03011-40GHZ-2FT	T2=ATT 10d B AN02139
T3=ATT 6d B P01950	

**Measurement Data:**

Reading listed by margin.

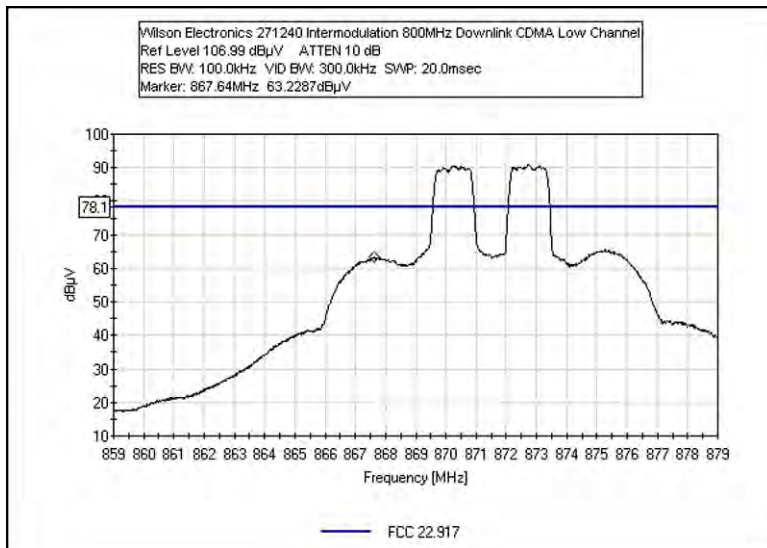
Test Lead: Antenna Port

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	Dist dB	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	823.725M	76.3	+0.2	+9.9	+5.6	+0.0	92.0	94.0	-2.0	Anten
Uplink GSM Low										
2	823.715M	73.6	+0.2	+9.9	+5.6	+0.0	89.3	94.0	-4.7	Anten
Uplink EDGE Low										
3	822.680M	72.7	+0.2	+9.9	+5.6	+0.0	88.4	94.0	-5.6	Anten
Uplink CDMA Low										
4	819.400M	69.2	+0.2	+9.9	+5.6	+0.0	84.9	94.0	-9.1	Anten
Uplink WCDMA Low										

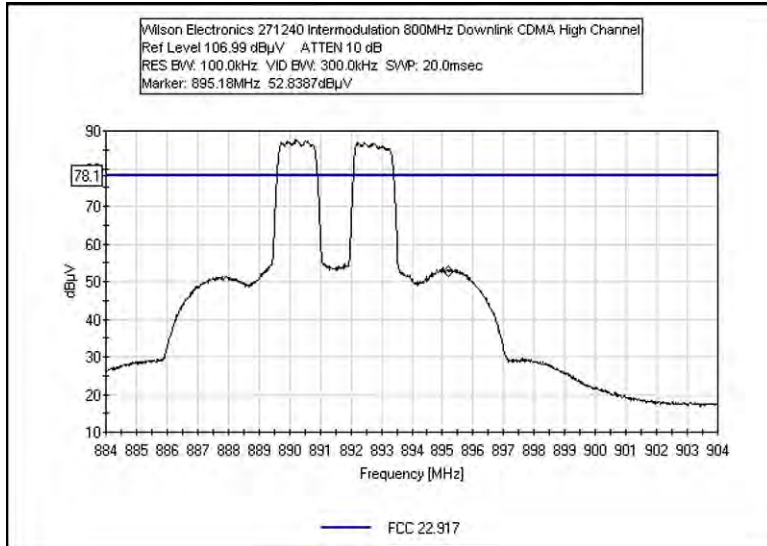
5	850.360M	65.8	+0.3	+9.9	+5.7	+0.0	81.7	94.0	-12.3	Anten
								Uplink CDMA High		
6	852.700M	64.3	+0.3	+9.9	+5.7	+0.0	80.2	94.0	-13.8	Anten
								Uplink WCDMA High		
7	849.245M	62.4	+0.3	+9.9	+5.7	+0.0	78.3	94.0	-15.7	Anten
								Uplink GSM High		
8	849.285M	60.9	+0.3	+9.9	+5.7	+0.0	76.8	94.0	-17.2	Anten
								Uplink EDGE High		

### Test Plots

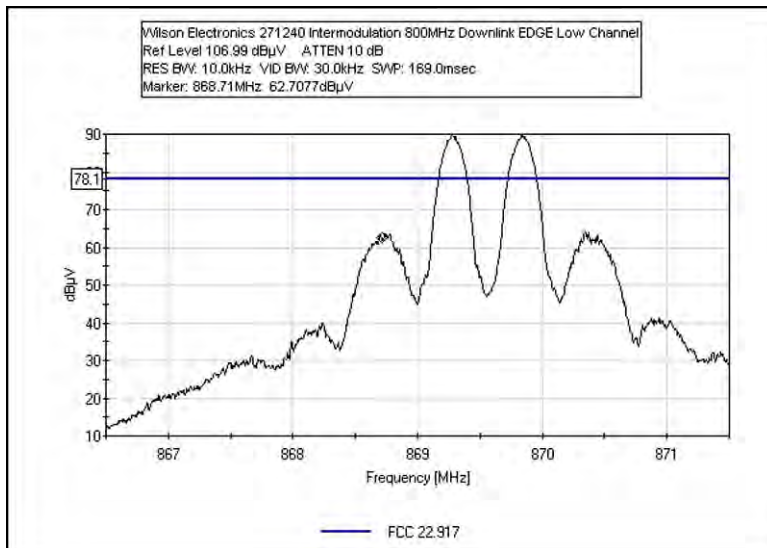
#### INTERMODULATION - DOWNLINK CDMA LOW



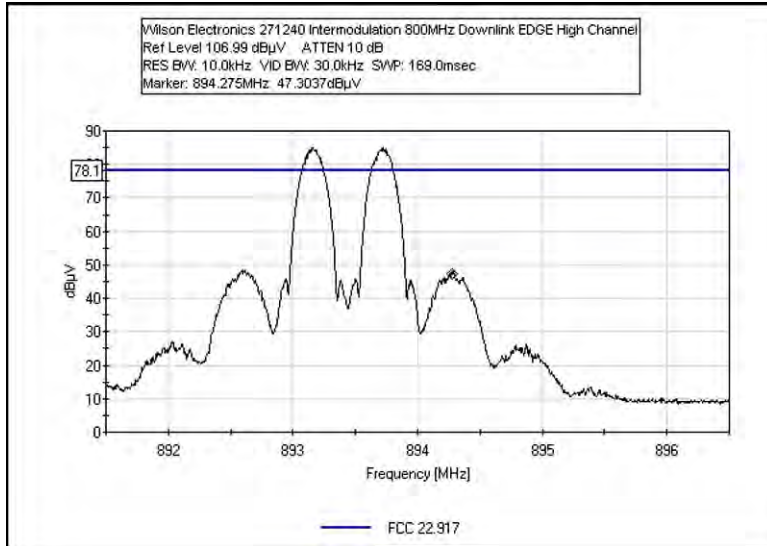
### INTERMODULATION - DOWNLINK CDMA HIGH



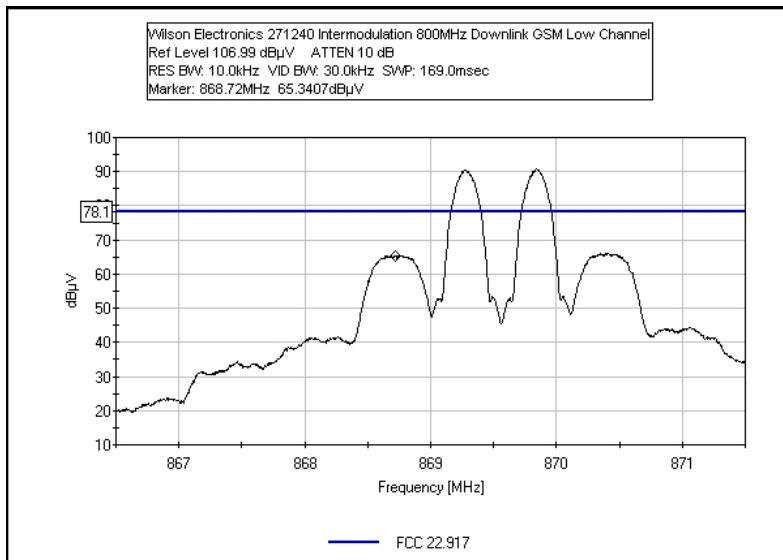
### INTERMODULATION - DOWNLINK EDGE LOW



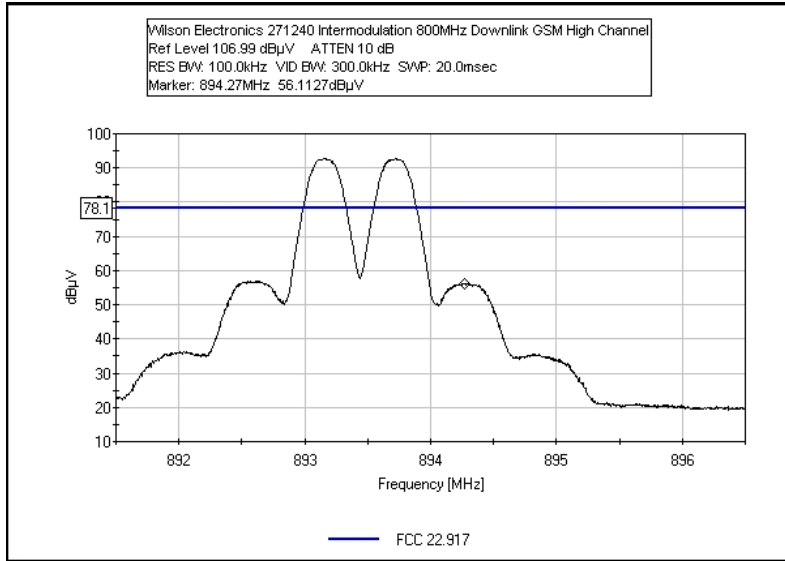
### INTERMODULATION - DOWNLINK EDGE HIGH



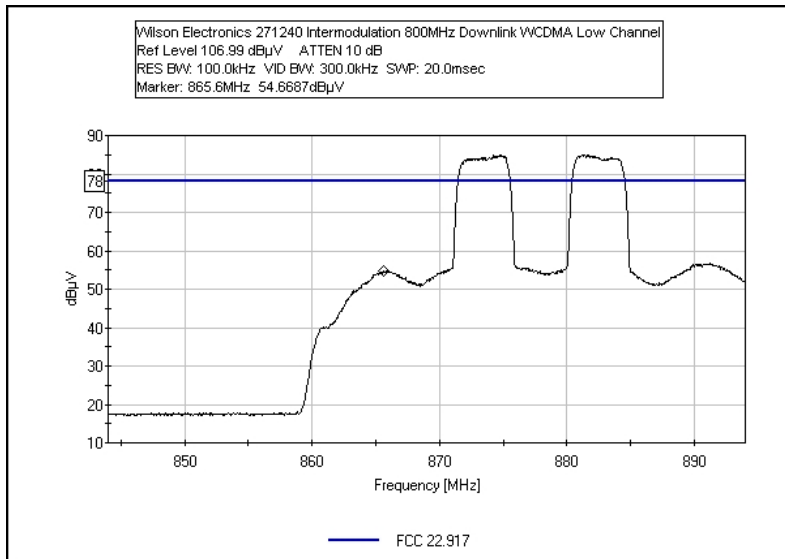
### INTERMODULATION - DOWNLINK GSM LOW CHANNEL



### INTERMODULATION - DOWNLINK GSM HIGH CHANNEL

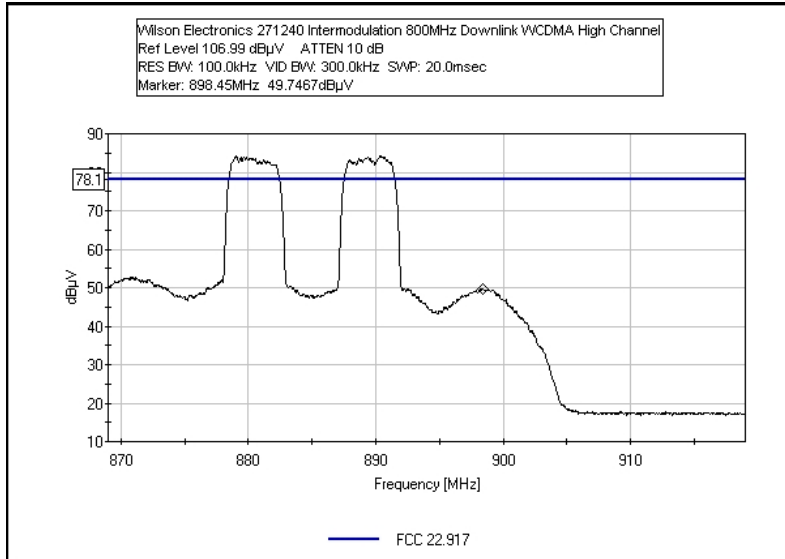


### INTERMODULATION - DOWNLINK WCDMA LOW CHANNEL

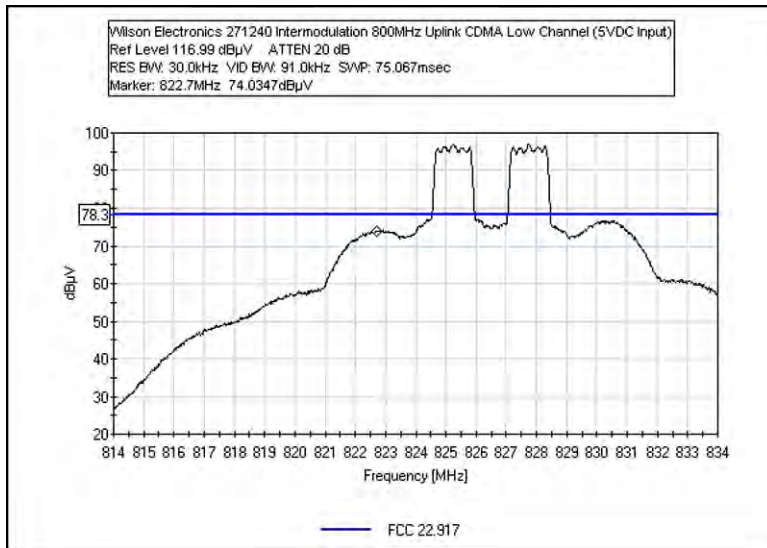




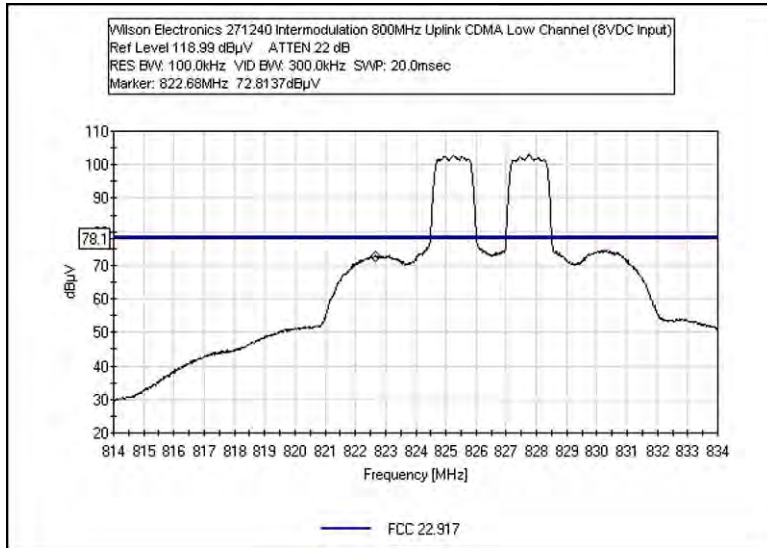
### INTERMODULATION - DOWNLINK WCDMA HIGH CHANNEL



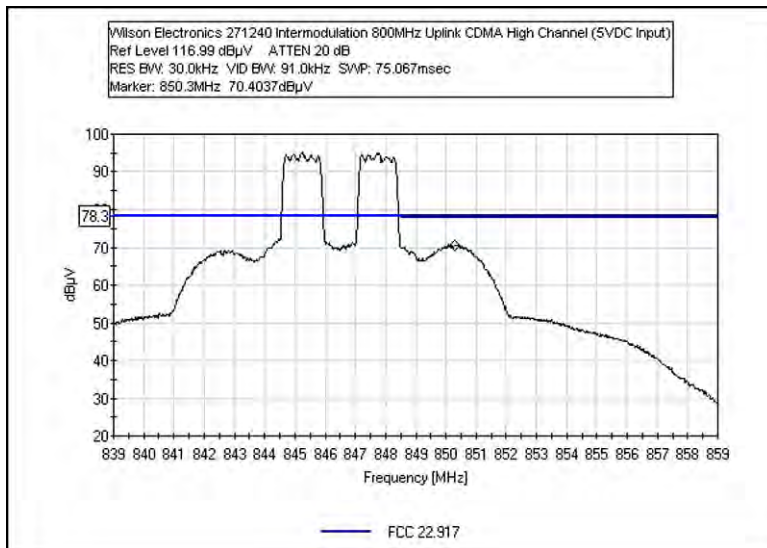
### INTERMODULATION - UPLINK CDMA LOW CHANNEL



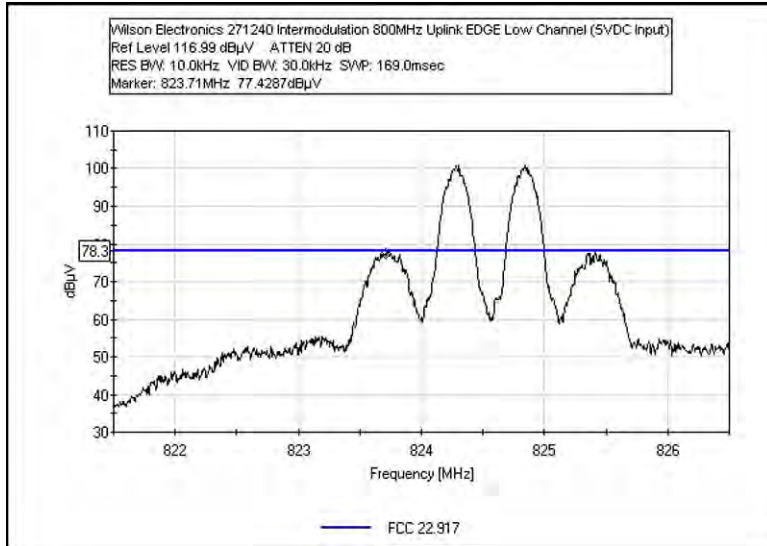
### INTERMODULATION - UPLINK CDMA LOW CHANNEL



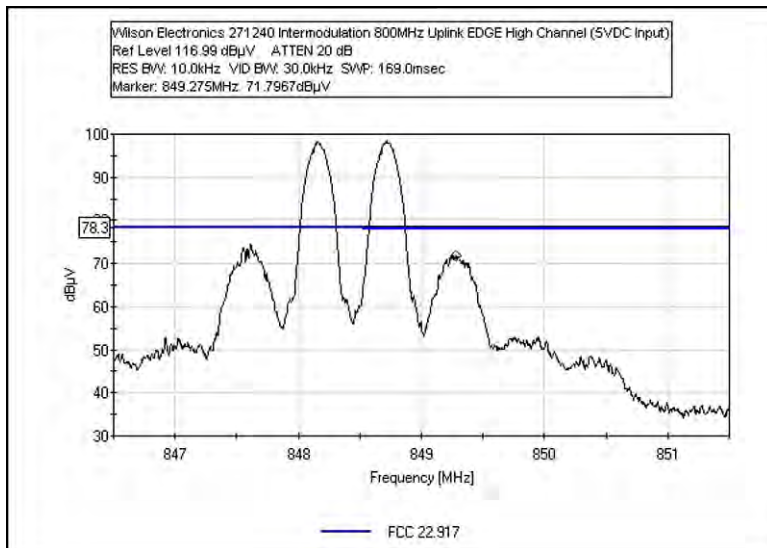
### INTERMODULATION - UPLINK CDMA HIGH CHANNEL



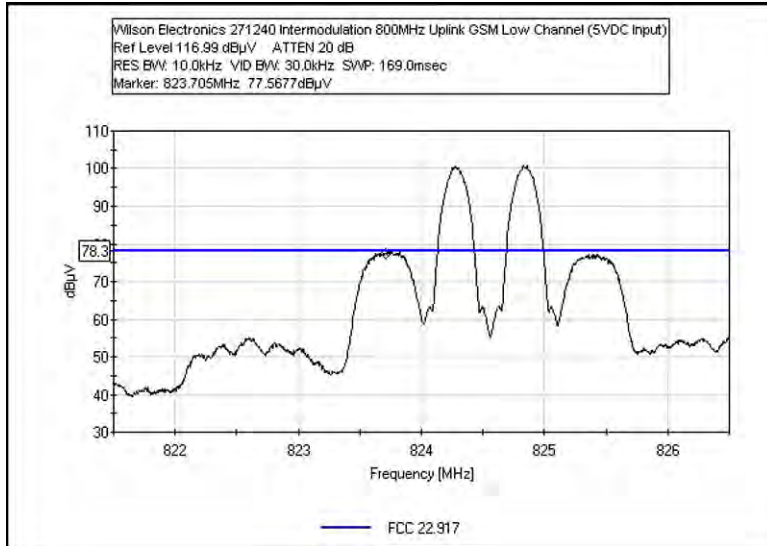
### INTERMODULATION - UPLINK EDGE LOW CHANNEL



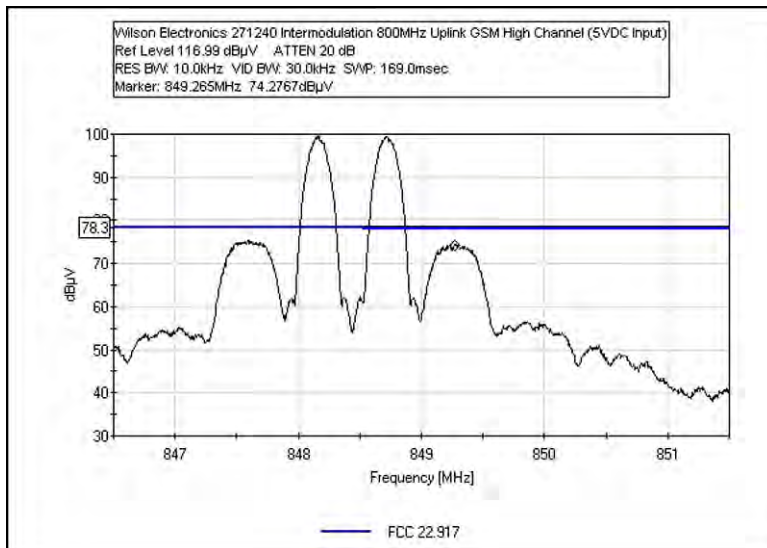
### INTERMODULATION - UPLINK EDGE HIGH CHANNEL



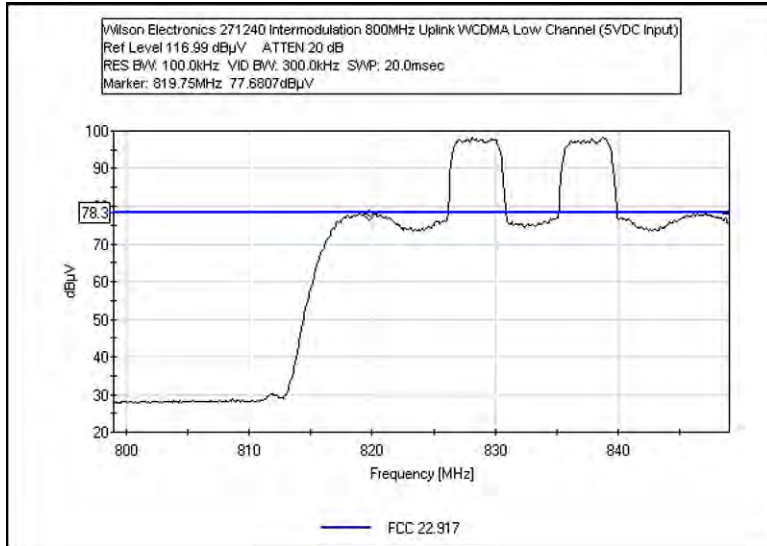
### INTERMODULATION - UPLINK GSM LOW CHANNEL



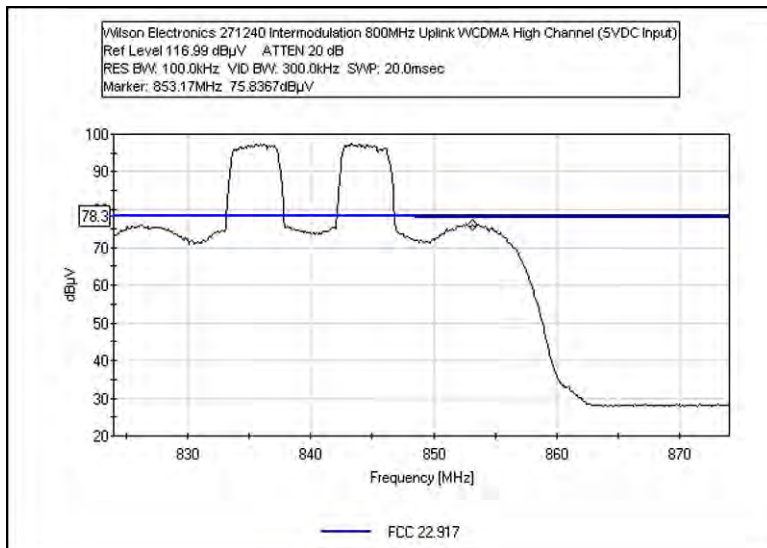
### INTERMODULATION - UPLINK GSM HIGH CHANNEL



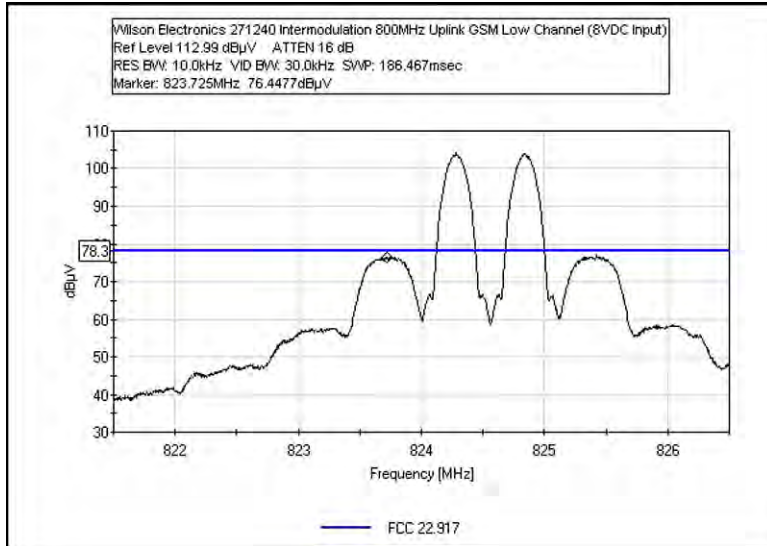
### INTERMODULATION - UPLINK WCDMA LOW CHANNEL



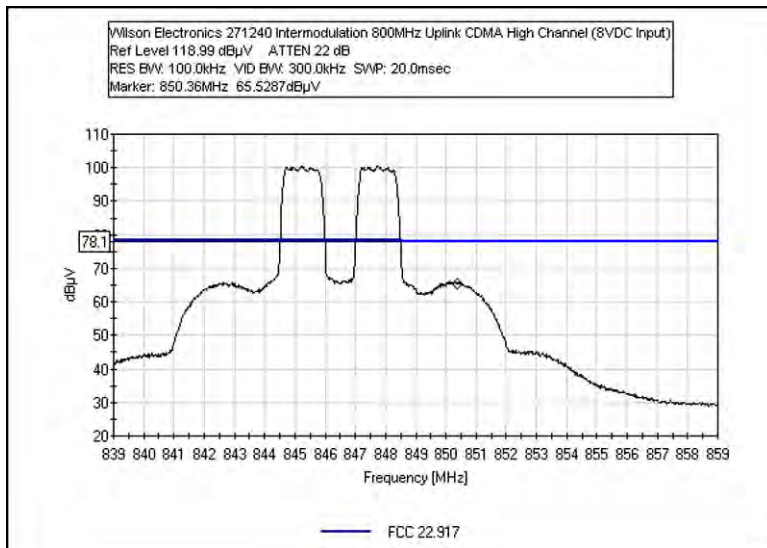
### INTERMODULATION - UPLINK WCDMA HIGH CHANNEL



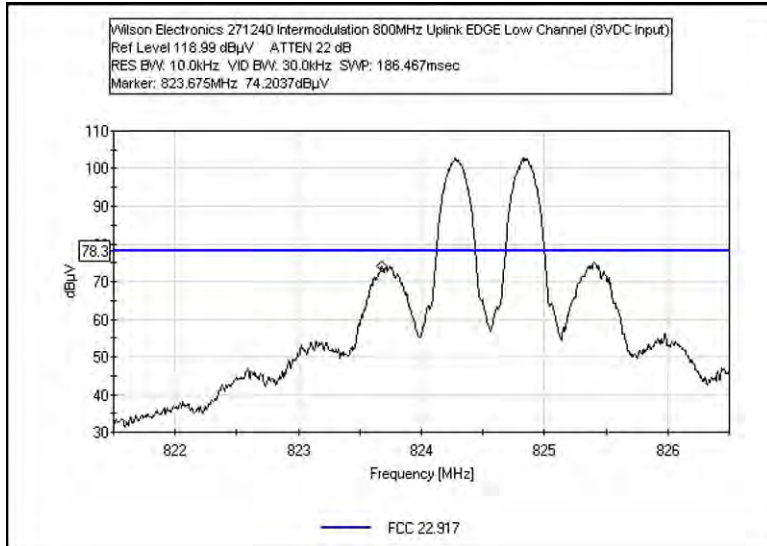
### INTERMODULATION - UPLINK GSM LOW CHANNEL



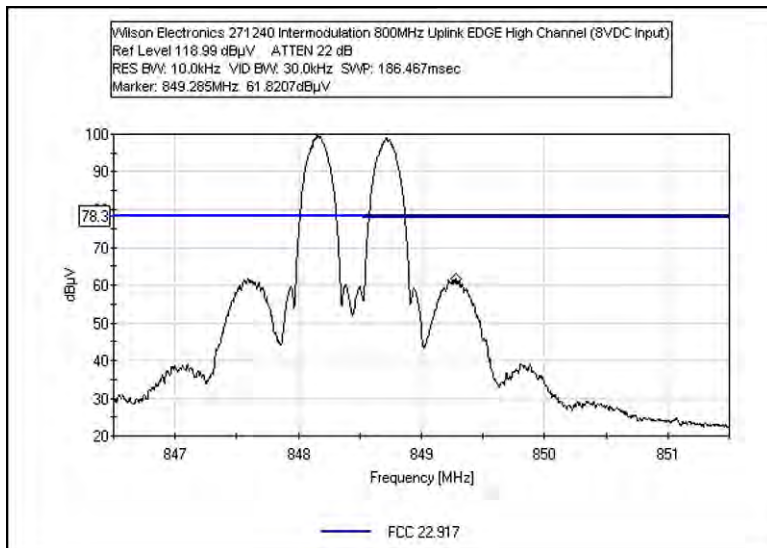
### INTERMODULATION - UPLINK CDMA HIGH CHANNEL



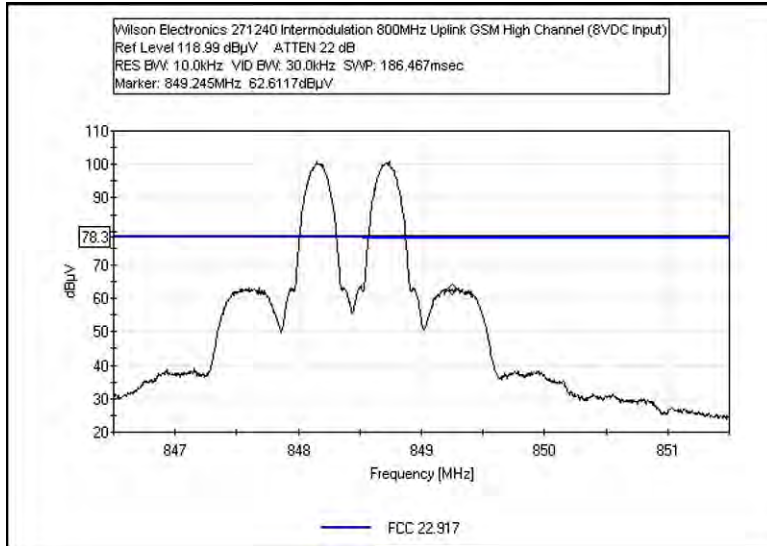
### INTERMODULATION - UPLINK EDGE LOW CHANNEL



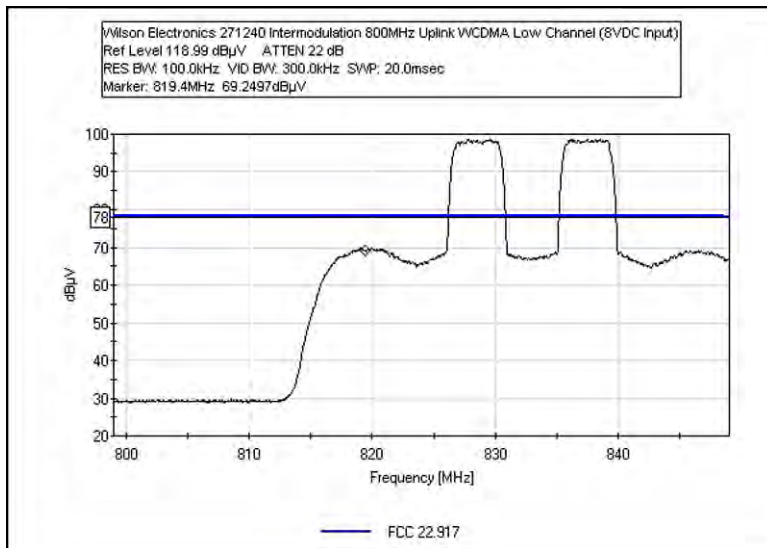
### INTERMODULATION - UPLINK EDGE HIGH CHANNEL



### INTERMODULATION - UPLINK GSM HIGH CHANNEL

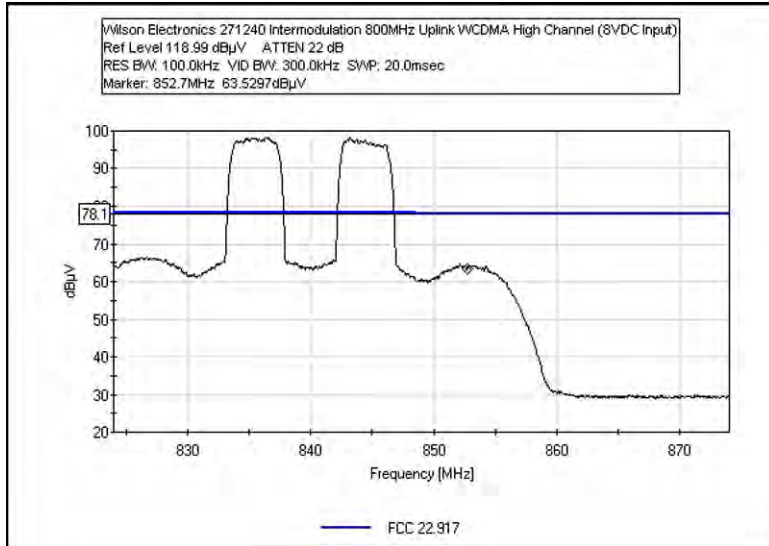


### INTERMODULATION - UPLINK WCDMA LOW CHANNEL





### INTERMODULATION - UPLINK WCDMA HIGH CHANNEL



**FCC 2.1051 OUT OF BAND REJECTION**

***Test Equipment:***

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
Cable, Astrolab 24"	NA	01/15/2008	01/15/2010	03011
Weinchel 6dB attenuator	J7614	11/30/2006	11/30/2008	P01950
Weinchel 10dB attenuator	C8597	11/30/2006	11/30/2008	P02139

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

Function	Manufacturer	Model #	S/N
Bidirectional Amplifier*	Wilson Electronics	271240	00001

***Support Devices:***

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4437B	MY41000126
DC Power Supply	Topward Electric Instruments Co., Ltd	TPS-2000	920027

***Test Conditions / Notes:***

The EUT is a dual-band bi-directional amplifier for enhancing the range of cell phones and data communication devices (computers, PDAs, etc.) in both mobile (vehicular) and in-building environments. EUT operating frequency ranges are 824-849 MHz and 1850-1910 MHz for uplink path and 869-894 MHz and 1930-1990 MHz for downlink path. EUT is connected directly to a spectrum analyzer via suitable attenuation. Input signal level is set such that the amplifier employs maximum amplification gain. Signal generator input signal used is WCDMA and is swept to provide out of band and passband spectrum characteristics..

Frequency Range Investigated: See provided plots (frequency spectrum investigated up to three times the indicated span)

Temperature: 21°C, Relative Humidity: 30% +8VDC

**Test Setup Photos**



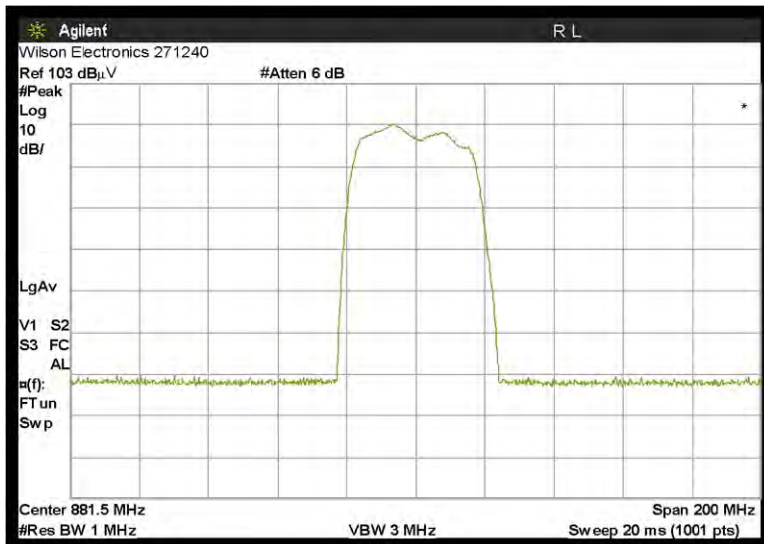
Downlink



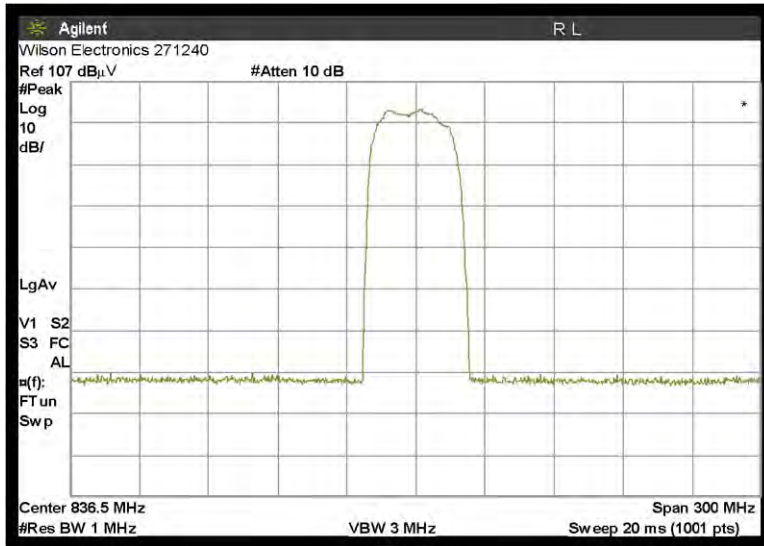
Uplink

### Test Plots

### OUT OF BAND REJECTION - DOWNLINK



## OUT OF BAND REJECTION - UPLINK





**RSS-131 SECTION 6.1 PASSBAND GAIN AND BANDWIDTH**

***Test Equipment:***

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
Cable, Astrolab 24"	NA	01/15/2008	01/15/2010	03011
Weinchel 6dB attenuator	J7614	11/30/2006	11/30/2008	P01950
Weinchel 10dB attenuator	C8597	11/30/2006	11/30/2008	P02139

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

Function	Manufacturer	Model #	S/N
Bidirectional Amplifier*	Wilson Electronics	271240	00001

***Support Devices:***

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4437B	MY41000126
DC Power Supply	Topward Electric Instruments Co., Ltd	TPS-2000	920027

***Test Conditions / Notes:***

The EUT is a dual-band bi-directional amplifier for enhancing the range of cell phones and data communication devices (computers, PDAs, etc.) in both mobile (vehicular) and in-building environments. EUT operating frequency ranges are 824-849 MHz and 1850-1910 MHz for uplink path and 869-894 MHz and 1930-1990 MHz for downlink path. EUT is connected directly to a spectrum analyzer via suitable attenuation. Input signal level is set such that the amplifier employs maximum amplification gain. Signal generator input signal used is WCDMA and is swept to provide amplification and bandwidth plots.

Amplifier Gain is measured from the maximum output level to the input signal level. The input signal level is adjusted 3dB below the point at which the amplifier attenuates an input signal in the midband of the amplifier path.

Passbandwidth is measured 20dBc from the maximum output level using the same settings as listed above.

Frequency Range Investigated: See provided plots (frequency spectrum investigated up to three times the indicated span)

Temperature: 21°C, Relative Humidity: 30% +8VDC

**Test Setup Photos**



**Downlink**



**Uplink**

## Test Plots

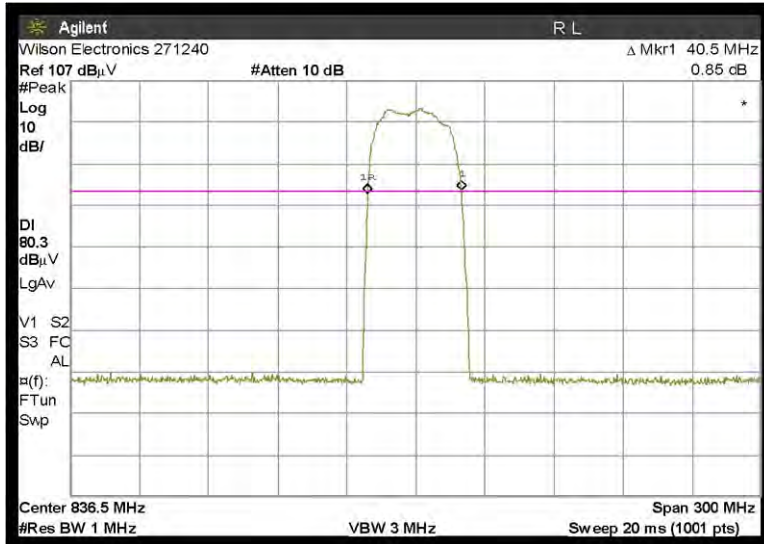
### RSS-131 BANDWIDTH - DOWNLINK



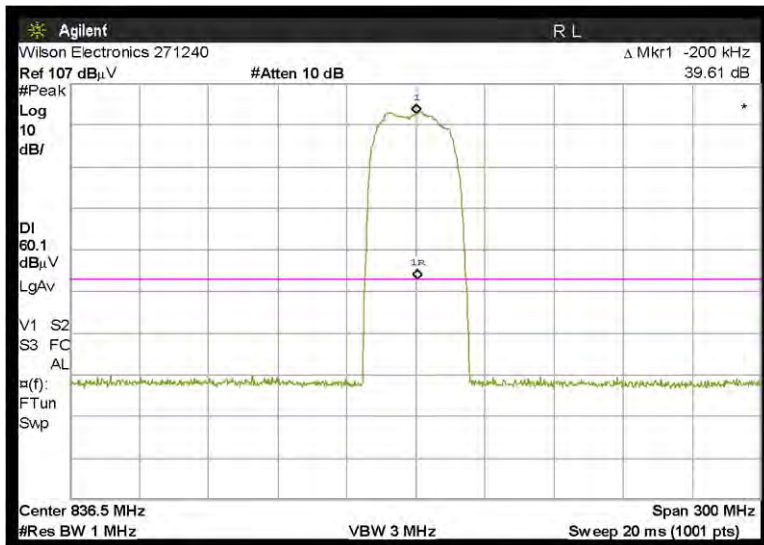
### RSS-131 PASSBAND GAIN - DOWNLINK



### RSS-131 BANDWIDTH - UPLINK



### RSS-131 PASBAND GAIN - UPLINK







**RSS-131 SECTION 6.2 OUTPUT POWER**

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

Customer: **Wilson Electronics**  
 Specification: **RSS 131**  
 Work Order #: **87310** Date: 1/28/2008  
 Test Type: **Conducted Emissions** Time: 13:10:49  
 Equipment: **Bidirectional Amplifier** Sequence#: 5  
 Manufacturer: Wilson Electronics Tested By: Randal Clark  
 Model: 271240 8 VDC  
 S/N: 00001

***Test Equipment:***

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
Cable, Astrolab 24"	NA	01/15/2008	01/15/2010	03011
Weinchel 6dB attenuator	J7614	11/30/2006	11/30/2008	P01950
Weinchel 10dB attenuator	C8597	11/30/2006	11/30/2008	P02139

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

Function	Manufacturer	Model #	S/N
Bidirectional Amplifier*	Wilson Electronics	271240	00001

***Support Devices:***

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4437B	US39261021
Signal Generator	Agilent	E4437B	MY41000126
DC Power Supply	Topward Electric Instruments Co., Ltd	TPS-2000	920027

***Test Conditions / Notes:***

The EUT is a dual-band bi-directional amplifier for enhancing the range of cell phones and data communication devices (computers, PDAs, etc.) in both mobile (vehicular) and in-building environments. EUT operating frequency ranges are 824-849 MHz and 1850-1910 MHz for uplink path and 869-894 MHz and 1930-1990 MHz for downlink path. EUT is connected directly to a spectrum analyzer via suitable attenuation. Input signals are CW for Multi-Carrier Operation in accordance with RSS 131. Frequency Range Investigated: Carrier. Temperature: 21°C, Relative Humidity: 30%. Uplink and Downlink Path.

Band	Frequency (MHz)	Power (dBm)	Po+3dB (dBm)	Rated Power (W)
Uplink (5V)	824.5	15.33	18.33	0.068
Uplink (5V)	825.0	15.33	18.33	0.068
Uplink (5V)	848.0	14.89	17.89	0.062
Uplink (5V)	848.5	14.89	17.89	0.062
Uplink (8V)	824.5	18.41	21.41	0.138
Uplink (8V)	825.0	18.42	21.42	0.139
Uplink (8V)	848.0	16.87	19.87	0.097
Uplink (8V)	848.5	16.86	19.86	0.097
Downlink	869.5	7.49	10.49	0.011
Downlink	870.0	7.48	10.48	0.011
Downlink	893.0	2.70	5.70	0.004
Downlink	893.5	2.74	5.74	0.004

**Test Setup Photos**



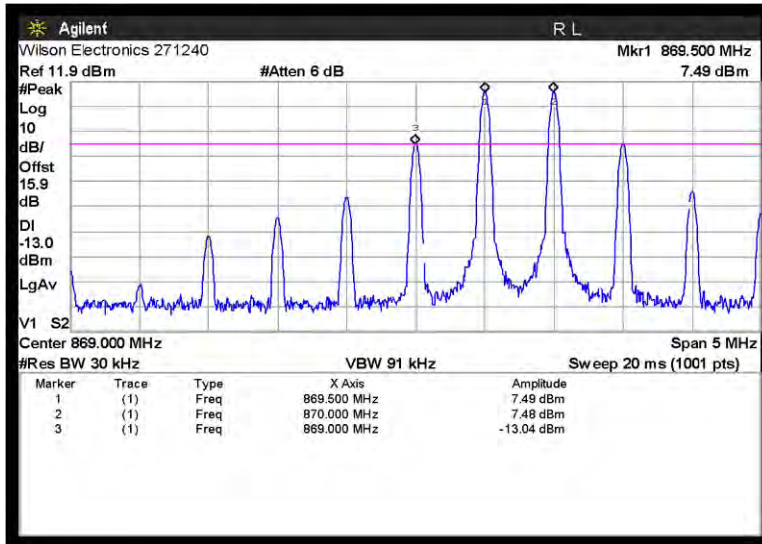
Downlink



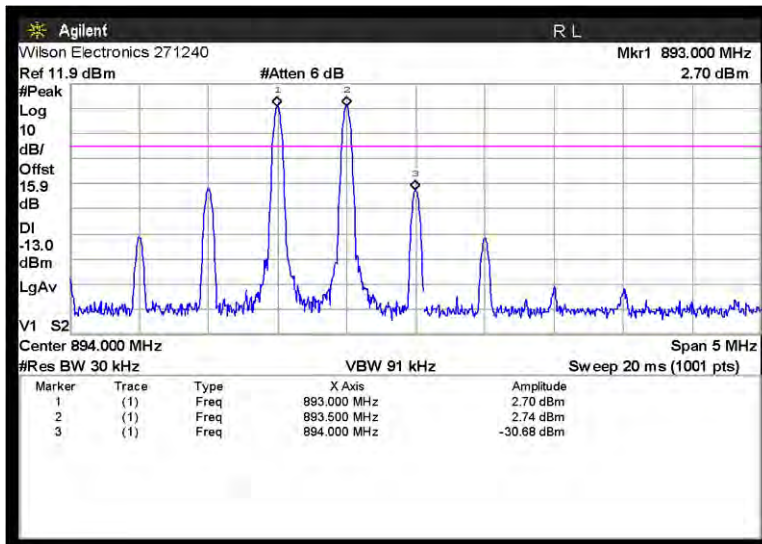
Uplink

## Test Plots

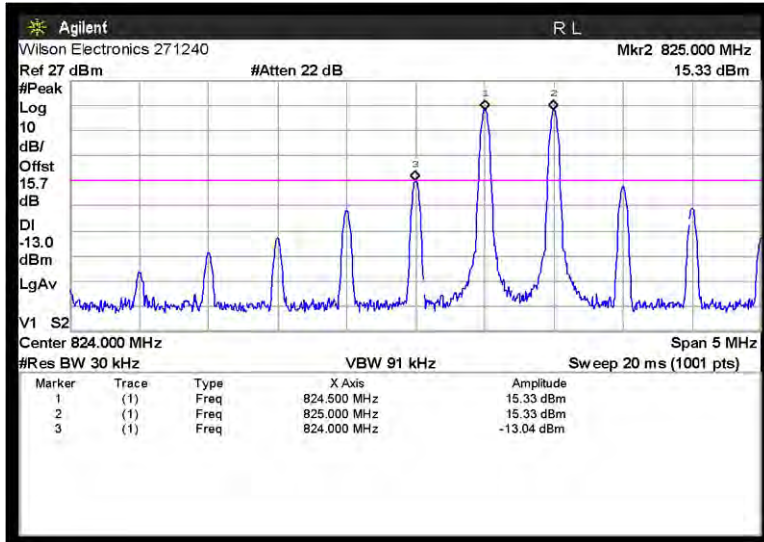
### RSS-131 POWER - DOWNLINK LOW CHANNEL



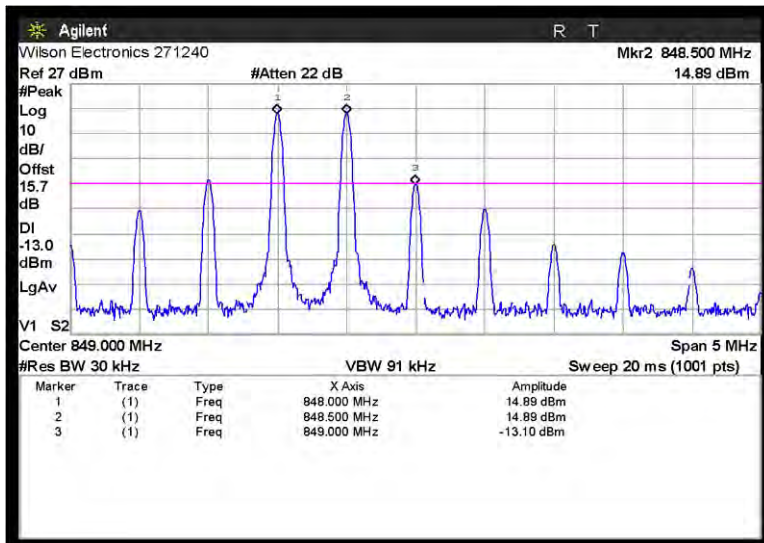
### RSS-131 POWER - DOWNLINK HIGH CHANNEL



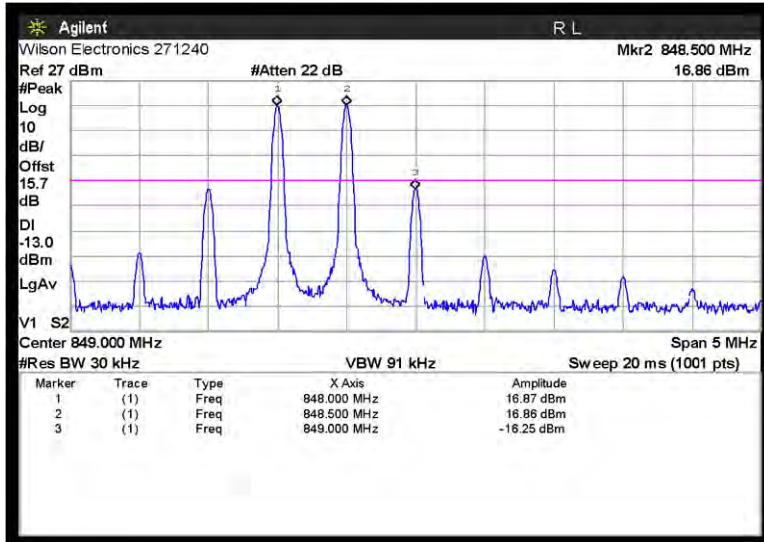
### RSS-131 POWER - UPLINK LOW CHANNEL



### RSS-131 POWER - UPLINK HIGH CHANNEL



### RSS-131 POWER - UPLINK HIGH CHANNEL



### RSS-131 POWER - UPLINK LOW CHANNEL

