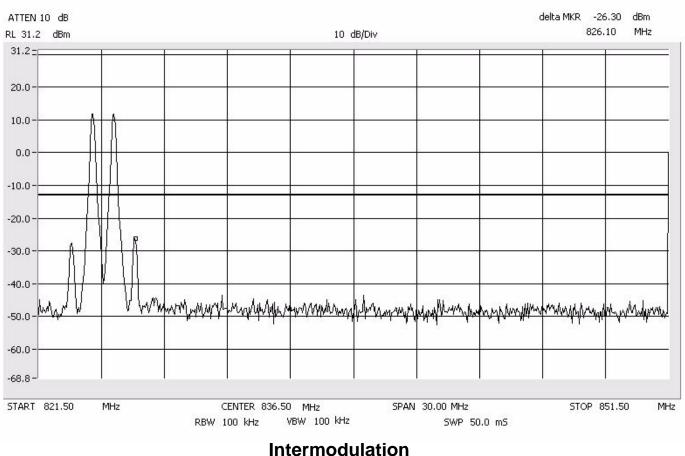
Inter-Modulation Test for ADC Inc Bi-Directional Amplifier – Cellular Model Number RPT-SBAAA12000

Back

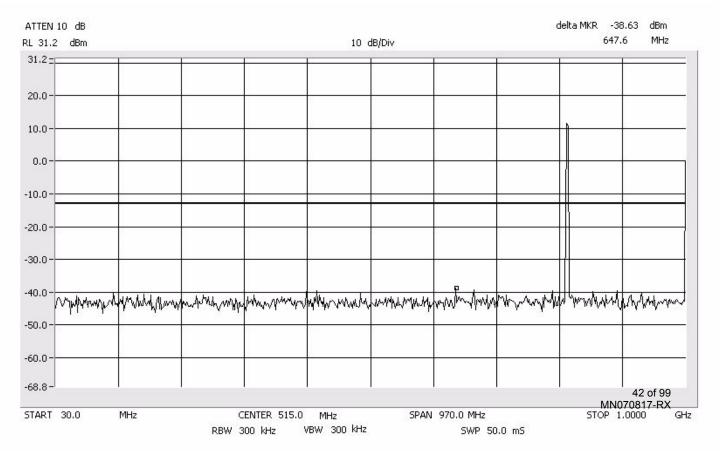
The inter-modulation products test was performed for the EUT. Three tests were preformed with the modulation type. Test 1 was with 2 signals input to the EUT at lower end channels. Test 2 was with 2 signals input to the EUT at upper end channels. Test 3 was with 2 signals input to the EUT at upper and lower end channels. The modulation types tested were FM, TDMA, GSM, EDGE, CDMA, EVDO, and W-CDMA. An investigation was made from 30 MHz to the 10th Harmonic of the highest fundamental frequency (~10 GHz). The following plots show the results. Modulation types EVDO and CDMA have the same mask and intermodulation properties.

Results: (See Plots)

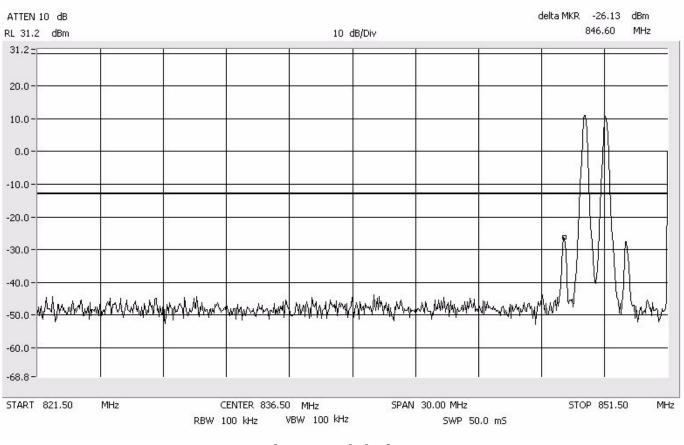


FM

Intermodulation Close - Lower Cellular 800 MHz

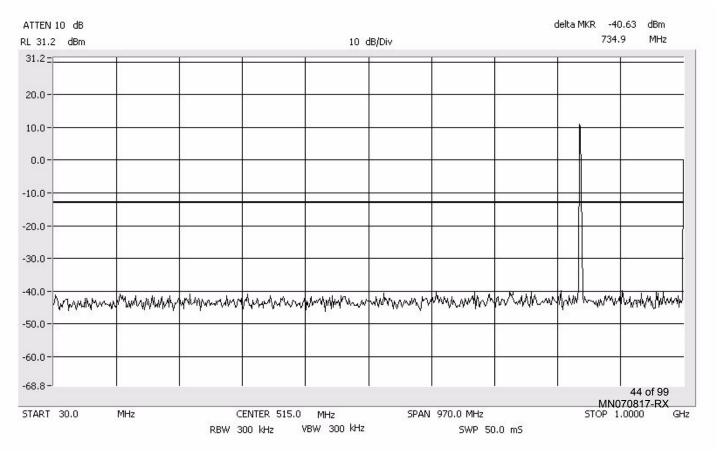


ATTEN RL 31.2	10 dB 2 dBm				10 /	dB/Div		3	delta MKR -3 2.24	
31.2 =		1						<i>i</i>	1	1
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-10.0 -			-	8					2	
-20.0-	0		2		2			2		
-30.0-				7.				1 10 100		
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-50.0-										
-60.0-		2	2	22	28					<u> </u>
-68,8-										
START	1.000	GHz		ENTER 5.500 .0 MHz V	GHz 'BW 1.0 MHz		9.000 GHz SWP 18	:0 mS	STOP :	10.000 GHz

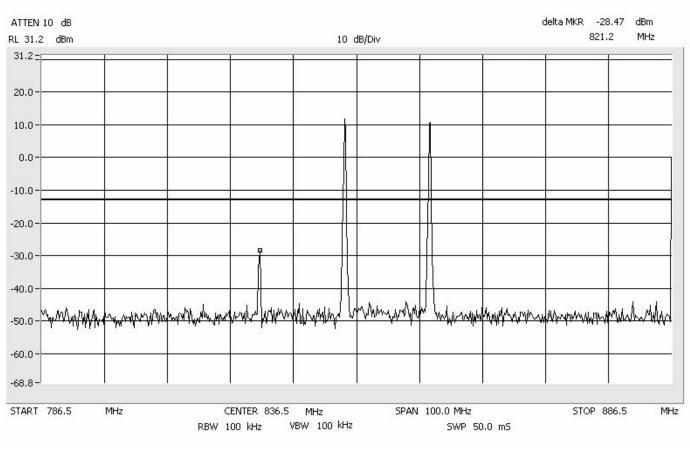


FM

Intermodulation Close - Upper Cellular 800 MHz



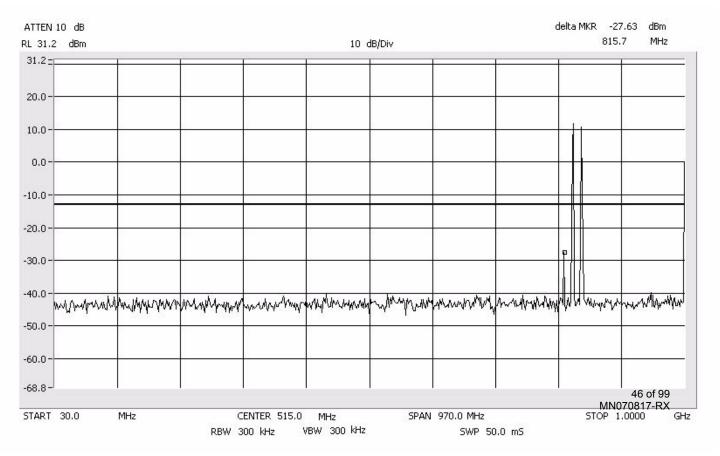
ATTEN RL 31.2	10 dB 2 dBm				10	dB/Div		c.	delta MKR -3: 8.20	
31.2 =					10 .				1	T
20.0-		-22	12 S	1 ⁵	2.9			.,		r,
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-10.0-			8							
-20.0-			2		2		-			
-30.0-				-						
-40.0-	myhmynnyny	hermonthe	murphurch	Monnadar	wwwwww	mmunu	nalaharayaa An	nimmun	monum	monorm
-50.0-			ż.		ė.					
-60.0-		2	22	23	23					<u></u>
-68,8-										
START	1.000	GHz		ENTER 5.500 .0 MHz V	GHz 'BW 1.0 MHz		9.000 GHz SWP 18	0 mS	STOP 1	0.000 GHz



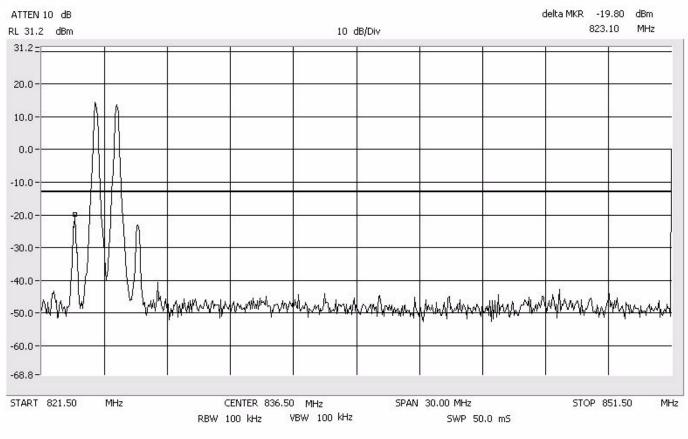
FM

FM

Intermodulation Apart Cellular 800 MHz

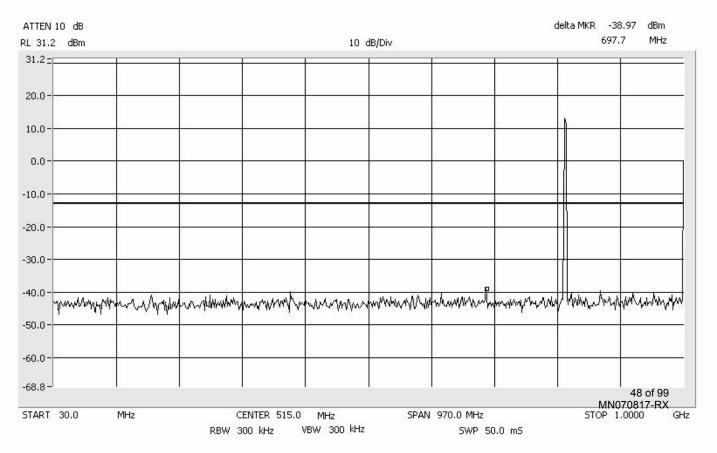


ATTEN	10 dB 2 dBm				10 4	B/Div		3	delta MKR -3 7.8:	
31.2 =		F			10 0			-	1	F
20.0-			N		210 1					, ,
10.0-	<u> </u>									
0.0-									<u>.</u>	-
10.0-										
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50.0-				9				ç	2	
60.0-	<u></u>	5-	2	22	22					
68.8-										
5TART	1.000	GHz		ENTER 5.500 .0 MHz \	GHz /BW 1.0 MHz		9.000 GHz SWP 18	80 mS	STOP 1	10.000 GH:

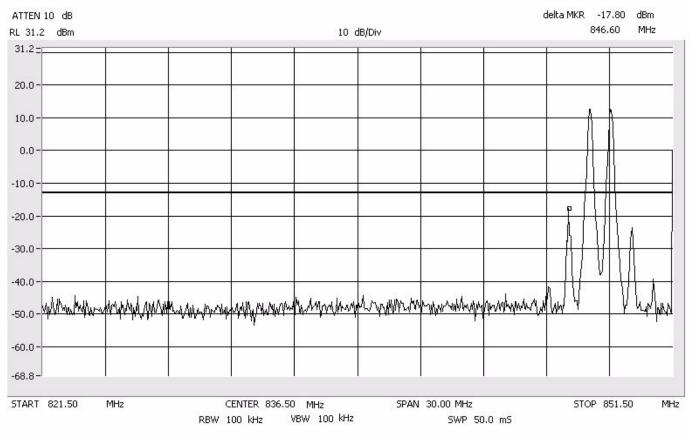


TDMA

Intermodulation Close - Lower Cellular 800 MHz

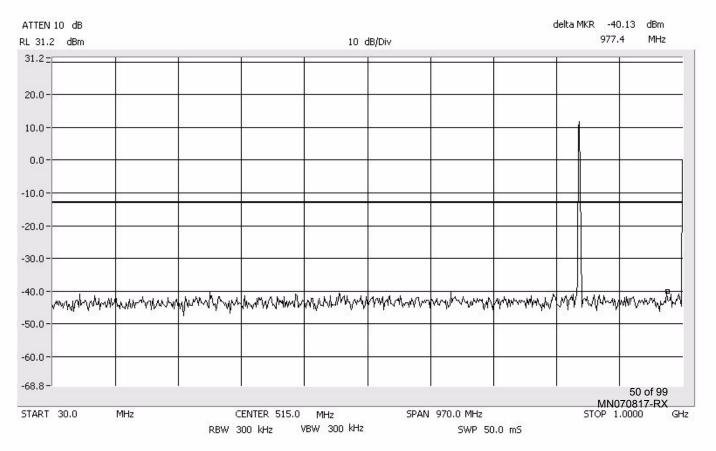


ATTEN 10								c	delta MKR -3	
RL 31.2	dBm				10 0	B/Div			2.63	35 GHz
31.2=										
20.0		69 · · · ·		115	15×		- 1	- j		· · · · · · · · · · · · · · · · · · ·
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-20.0			2						5	
-30.0-			s							
-40.0	lluurangnayeytusaya	h h-m - m - m - m - m - m - m - m - m -	many	mann	www.www.ww	Newsparter	where	entre and the	NM Walnut Manual Man Manual Manual	man
-50.0										
-60.0-			9	72. · · · · ·	12					<u>, </u>
-68.8-										
START 1	.000	GHz		ENTER 5.500 .0 MHz \	GHz /BW 1.0 MHz		9.000 GHz SWP 18	30 mS	STOP 1	0.000 GHz

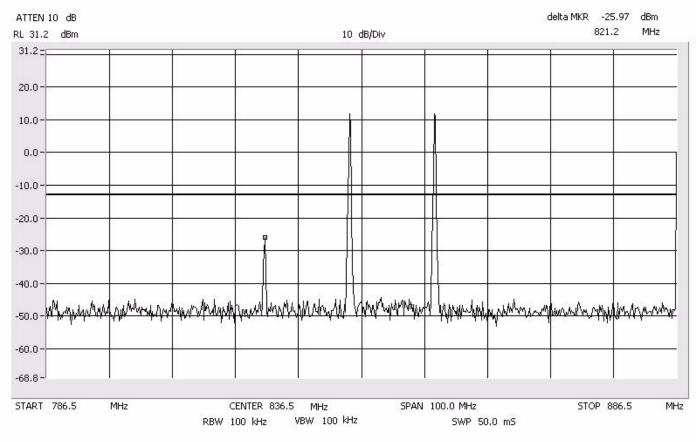


TDMA

Intermodulation Close - Upper Cellular 800 MHz

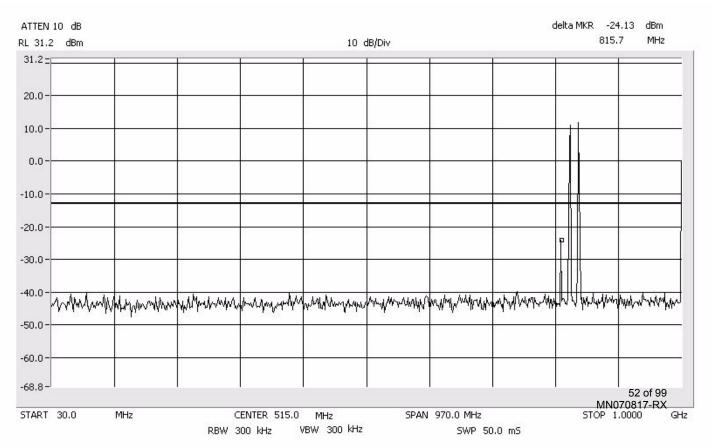


ATTEN RL 31.2	10 dB 2 dBm				10.7	B/Div		c	delta MKR -32 7.46	
31.2 =			<i></i>		10 (
20.0-		25 · · ·	la p		2 p 3					
10.0-	<u>.</u>									
0.0-	<u></u>									
10.0-	<u></u>	8		8	8		8	8		
20.0-	2			2						
30.0-	un the Advantitions of	adantikanan ya	h				an manual shouth me	with		a standing
40.0-	2	i i i ser i se	WWWWWY WW	hen wanten ala	muuum vaa	MANA MANA MANA MANA MANA MANA MANA MANA	ραφικτημ		. A dok i of AbMa	r Anne e r Andriken
50.0-	9			2						
50.0-	<u></u>		**************************************	32 · · · · ·	10.000					
68.8-										
TART	1.000	GHz		ENTER 5.500 .0 MHz \	GHz /BW 1.0 MHz		9.000 GHz SWP 18	30 mS	STOP 1	0.000 GH

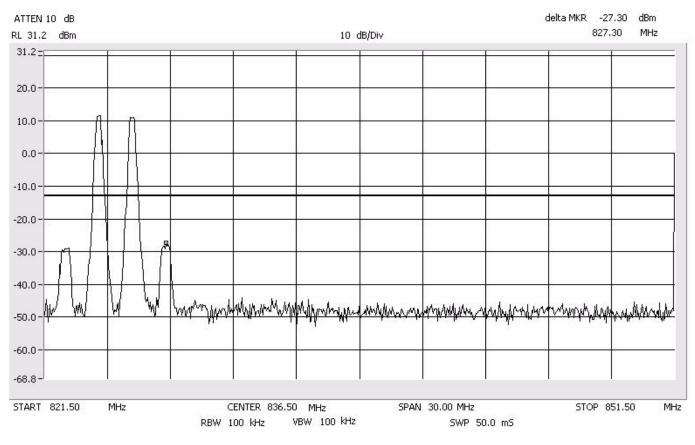


TDMA

Intermodulation Apart Cellular 800 MHz

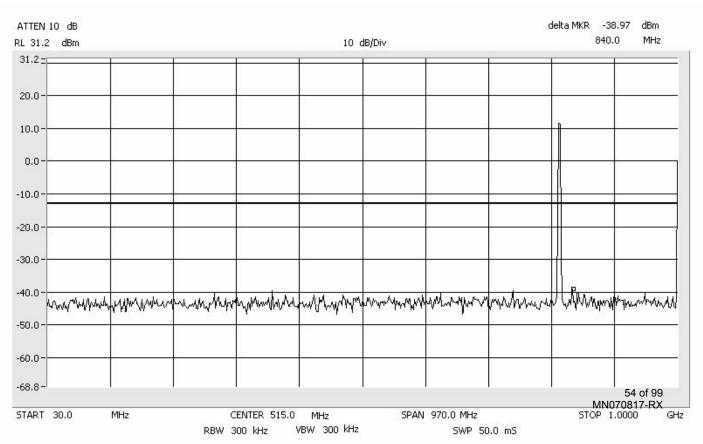


	10 dB							c	delta MKR -3	
RL 31.2	2 dBm				10 0	dB/Div			7.48	30 GHz
31.2 =		-								
20.0-			52	15	15×			-		
10.0-	8							2		
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-10.0 -		2	8	2						
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-50.0-	9	2								
-60.0 -	<u></u>	2	2	29	22					<u>.</u>
-68.8-										
START	1.000	GHz		ENTER 5.500 .0 MHz \	GHz /BW 1.0 MHz		9.000 GHz SWP 18	:0 mS	STOP 1	10.000 GHz

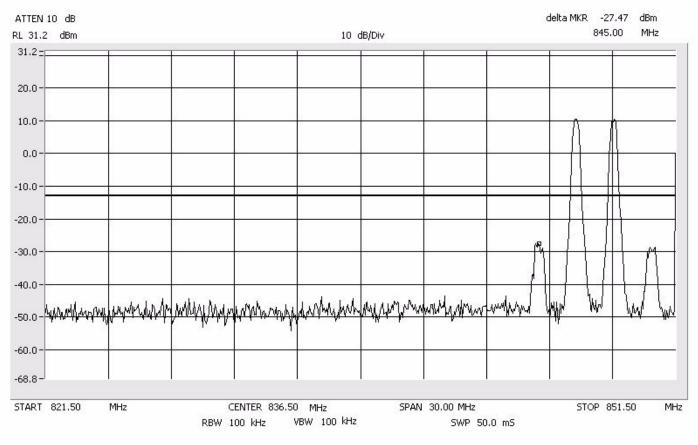


GSM

Intermodulation Close - Lower Cellular 800 MHz

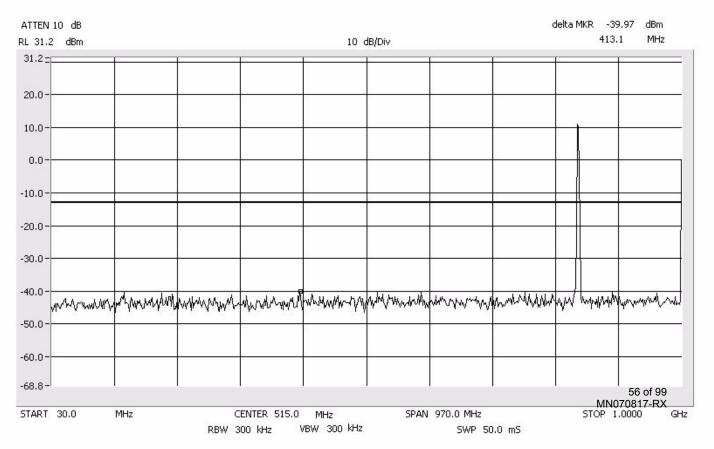


ATTEN RL 31.2	10 dB 2 dBm				10 -	B/Div		3	delta MKR -3: 1.66	
31.2 =		0		1	10 (6		
51.2 _	í l									
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10.0-		5 		1. 11						<u></u> :
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-10.0-										
-20.0-	0								-	
-30.0-										
-40.0-	Mr.m.M.	-rvvv/440-wrviwerw	Munnappin	whywww.	monorm	mm	awarnaward	M.M.	munnum	MANANAMA
-50.0-	0									
-60.0-	<u></u>		2-	23	22					
-68.8-										
START	1.000	GHz		ENTER 5.500 .0 MHz V	GHz /BW 1.0 MHz		9.000 GHz SWP 18	:0 mS	STOP 1	0.000 GHz

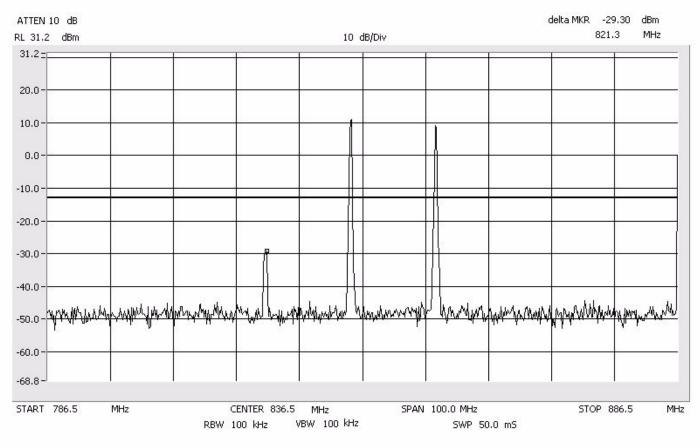


GSM

Intermodulation Close - Upper Cellular 800 MHz

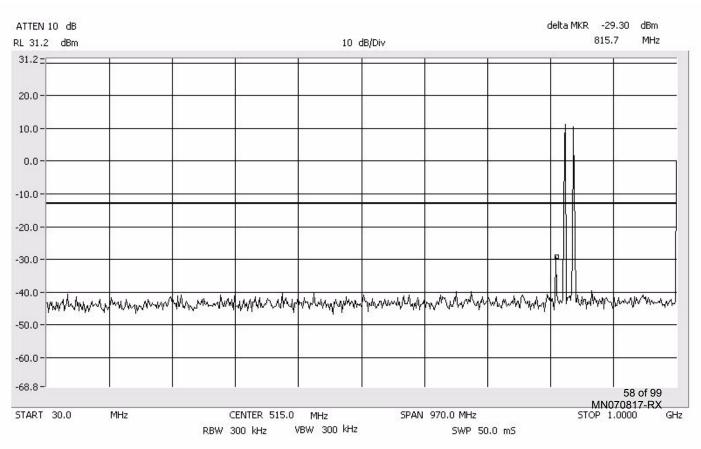


ATTEN RL 31.:	I10 dB 2 dBm				10 .	dB/Div		c	delta MKR -33 7.61	
31.2 =		-								
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0.0-	~									
10.0-										
20.0-					2		ç.			
30.0-			2		6			P		
40.0-	when your	A-hang-markation	Mananana	nnaderna	ᠰᡳ᠋᠋ᡎᢦᢐ᠋ᢦᠰᡳ᠋ᡫᠰᡪᡅ	mmunuh	dumphan	una all'Antorradora	whichthat	multunered
50.0-										
60.0-		2-1-	5	78	78					<u></u>
68.8-										
START	1.000	GHz		ENTER 5.500 .0 MHz \	GHz 'BW 1.0 MHz		9.000 GHz SWP 18	30 mS	STOP 1	0.000 GHz

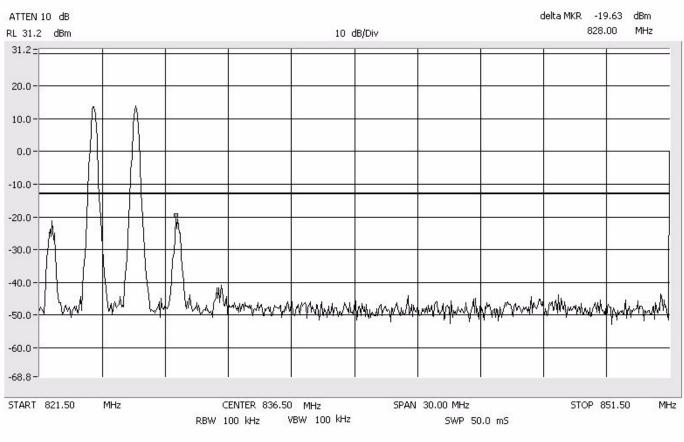


GSM

Intermodulation Apart Cellular 800 MHz

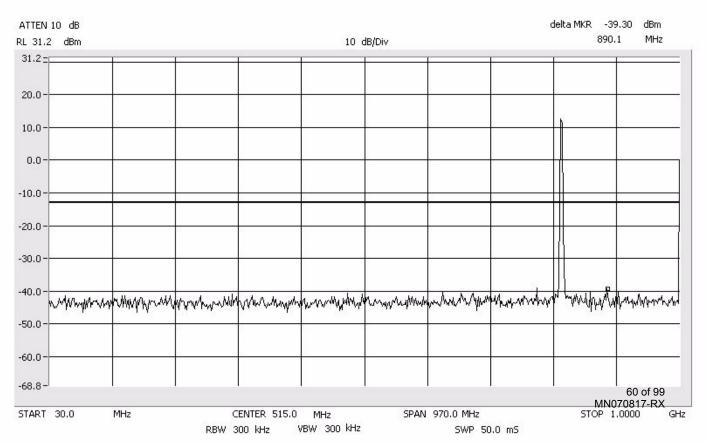


	10 dB							c	ielta MKR -3	
RL 31.2	2 dBm				10 0	JB/Di∨			2.41	LO GHz
31.2 =										
20.0-	<i>c.</i>	63	15	19	15×	-	-	-		e
10.0-										<u></u> s
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-10.0-				6						
-20.0-	8	21. 7.				8	8	8	ç.	
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-40.0-	VUNHAMMANA ARAA	LAN WALKARY	Mr. Marall	durin which	Munyulu	mahandariya	philippinal	allow white the	-hannonanananan	mmmmm
-50.0-	0	<i>.</i>			2	8	8 .	8	ç.	
-60.0-	e:		2							e i de la constancia de la
-68.8-										
START	1.000	GHz		ENTER 5.500 .0 MHz V	GHz /BW 1.0 MHz		9.000 GHz SWP 18	:0 mS	STOP 1	.0.000 GHz

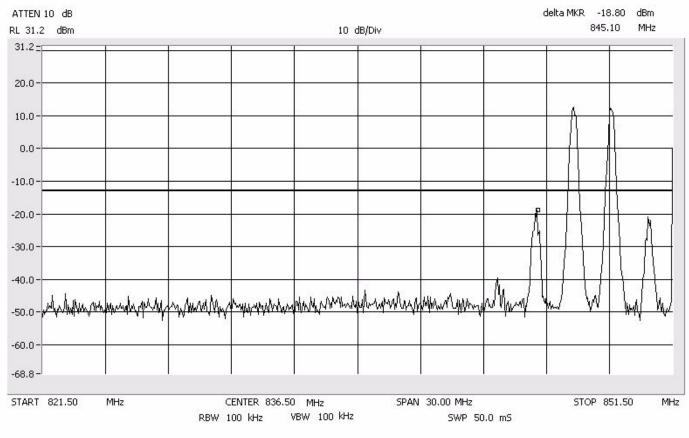


EDGE

Intermodulation Close - Lower Cellular 800 MHz

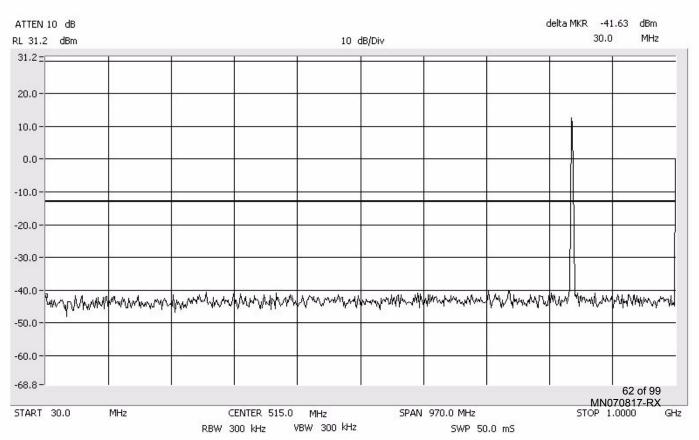


TTEN 10 di 31,2 dBi				10	dB/Div			delta MKR -3 1.18	
31.2				+			-		
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0.0									-
0.0-	(D)	5		35	201				
8.8-	I								
TART 1.00	0 GHz	Ri	CENTER 5.50 3W 1.0 MHz	0 GHz VBW 1.0 MH:		9.000 GHz SWP 18	30 mS	STOP 1	10.000 GH

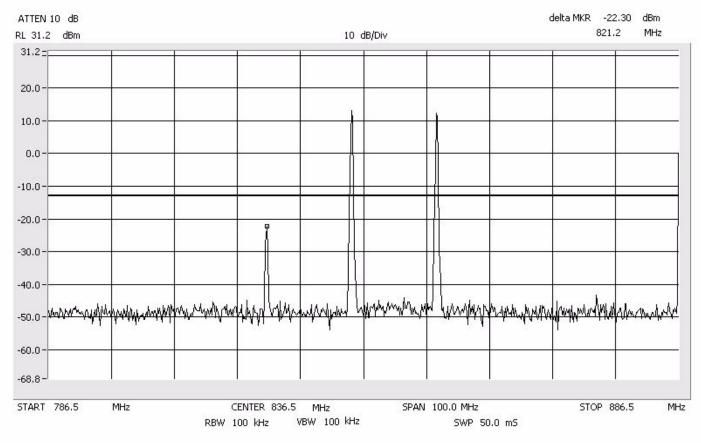


EDGE

Intermodulation Close - Upper Cellular 800 MHz

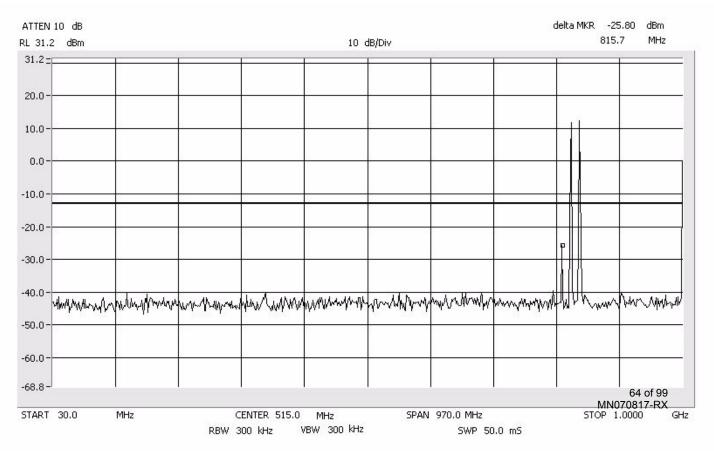


ATTEN : RL 31.2					10 (B/Div		c	ielta MKR -33 1.91	
31.2=		-						-		
20.0	6									
10.0-	3					:	ç			<u>;</u>
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-50.0	2									
-60.0	10	(D)		9	50					<u> </u>
-68.8 -]							
START	1.000	GHz		ENTER 5.500 .0 MHz \	GHz /BW 1.0 MHz		9.000 GHz SWP 18	0 mS	STOP 1	0.000 GHz

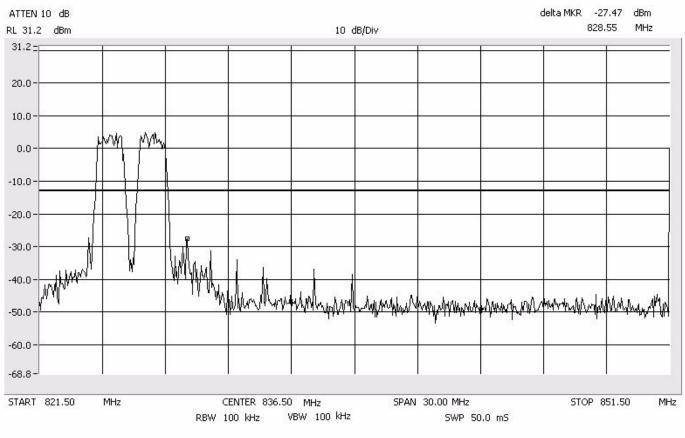


EDGE

Intermodulation Apart Cellular 800 MHz

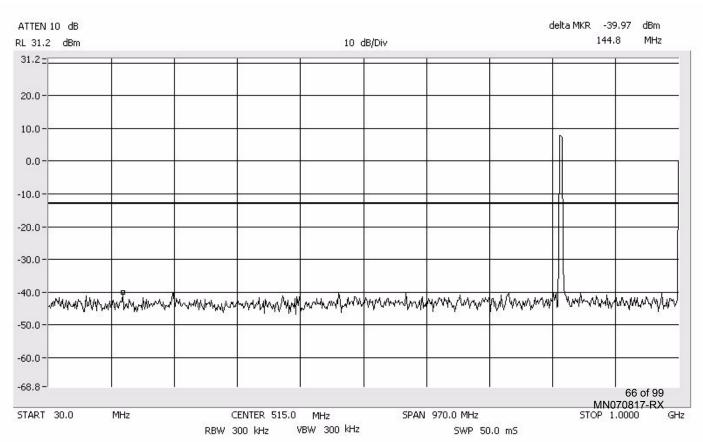


ATTEN RL 31.2	10 dB 2 dBm				10 .	lB/Div		c	delta MKR -32 8.08	
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20.0-		0	02	10	17 -	-				ļ
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0.0-	~									
10.0-										
20.0-	0	2		2	2		e	ç		
30.0-		waywhanghallow					المراجع والمراجع	10mm ~ 10mm	anter a che	
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50.0-	8	24 7-	61. 2	61. 2		3	ð	ĉ :		
60.0-	2	5	2	2						
68.8-										
START	1.000	GHz		ENTER 5.500 .0 MHz \	GHz /BW 1.0 MHz		9.000 GHz SWP 18	۰۰۰۰۰ ۱۰۰ mS	STOP 1	.0.000 GH:

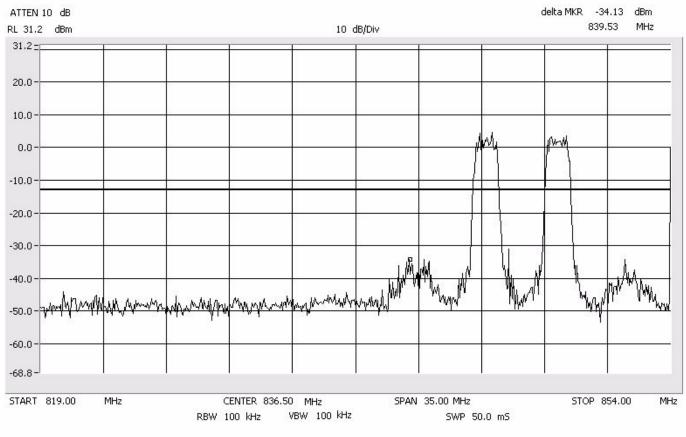


CDMA

Intermodulation Close - Lower Cellular 800 MHz

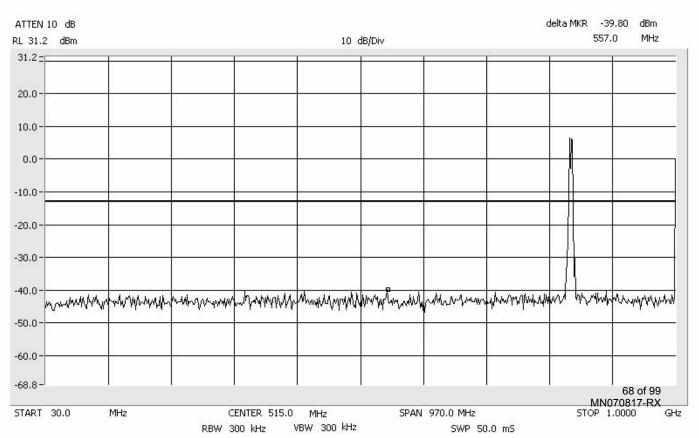


ATTEN L 31.2	10 dB 2 dBm		10 dB/Div						delta MKR -33.13 dBm 7.660 GHz		
31.2 =			2					é.			
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.0.0-	<u></u>						:				
0.0-	<u></u>			r	z			<u></u>			
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80.0-	had	e i . Alumetral	4					with where a	d		
+0.0-	14Mahubv-40-rak u	waterstand	Ummentalities	www.uhurdur	mound	nothelline where	mandan	New Invite 11	r war wyw.v	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
0.0-	2	2	8		2			8 .			
60.0-				12 p	15						
68.8-											
TART	1.000	GHz	C RBW 1	ENTER 5.500 .0 MHz V	GHz 'BW 1.0 MHz		9.000 GHz SWP 18	0 mS	STOP 1	0.000 GH	

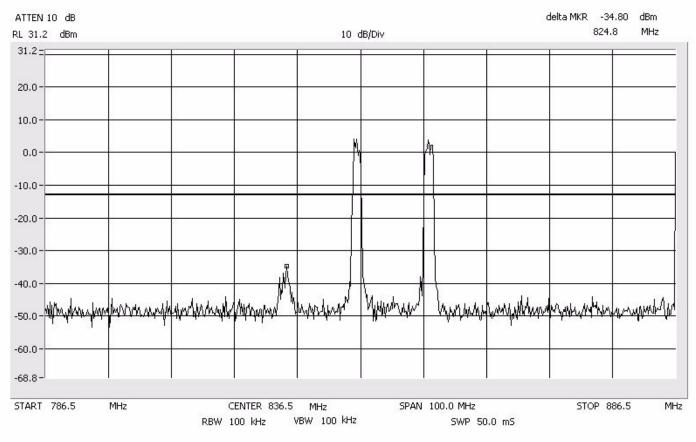


CDMA

Intermodulation Close - Upper Cellular 800 MHz

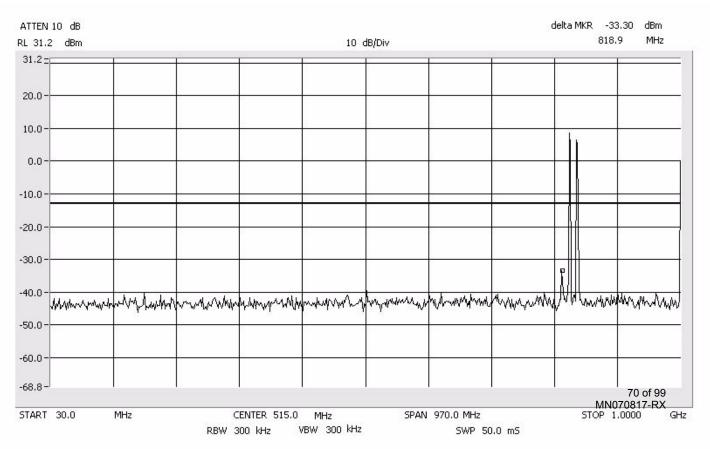


	10 dB								delta MKR -33.63 dBm 2.350 GHz		
RL 31.2					10 0	B/Div			2.3	ou GHZ	
31.2 =										[]	
20.0-	· 6	0	27	29 · · · ·	17 - 1						
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-20.0-	\$2.	e.					6		8		
-30.0-			0								
-40.0-	vi	www.www.www.mp	MANNAN	www.	HANNIN MANANANANANANANANANANANANANANANANANANA	nymmyten	rwwww	nhan mananan Ananan	Many Markan	mmunh	
-50.0-	Q	2.					8		8		
-60.0-	<u></u>	(5) · · · ·	5×	ş	(b					<u> </u>	
-68.8-											
START	1.000	GHz	C RBW 1	ENTER 5.500 .0 MHz V	GHz 'BW 1.0 MHz		9.000 GHz SWP 18	30 mS	STOP 1	10.000 GHz	



CDMA

Intermodulation Apart Cellular 800 MHz



ATTEN 10				10 dB/Div					delta MKR -33.63 dBm 2.230 GHz		
	dBm				10 (B/Div			2,2,		
31.2 =								v	0.		
20.0		22	10 10	25 -	3×						
10.0-										· · · · · · · · · · · · ·	
0.0-					-					1	
10.0-											
20.0-		2			2				8		
30.0	437 - 500	Π.	-								
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50.0		2						8	ĉ.		
60.0-		2	1		58					<u>e 1 - 6</u>	
68.8-											
START 1.	000	GHz	CI RBW 1	ENTER 5.500	GHz /BW 1.0 MHz		9.000 GHz SWP 18	80 mS	STOP 1	.0.000 GH:	

Occupied Bandwidth Modulation Test for ADC Inc. Bi-Directional Amplifier – Cellular Model Number RPT-SBAAA12000

Back

An input/output Occupied Bandwidth test was done with modulation types: FM, TDMA, GSM, EDGE, CDMA, EVDO, and W-CDMA. The purpose was to determine the amount of distortion added to different types of modulation schemes by the EUT. The following plots show input signals vs. output signals.

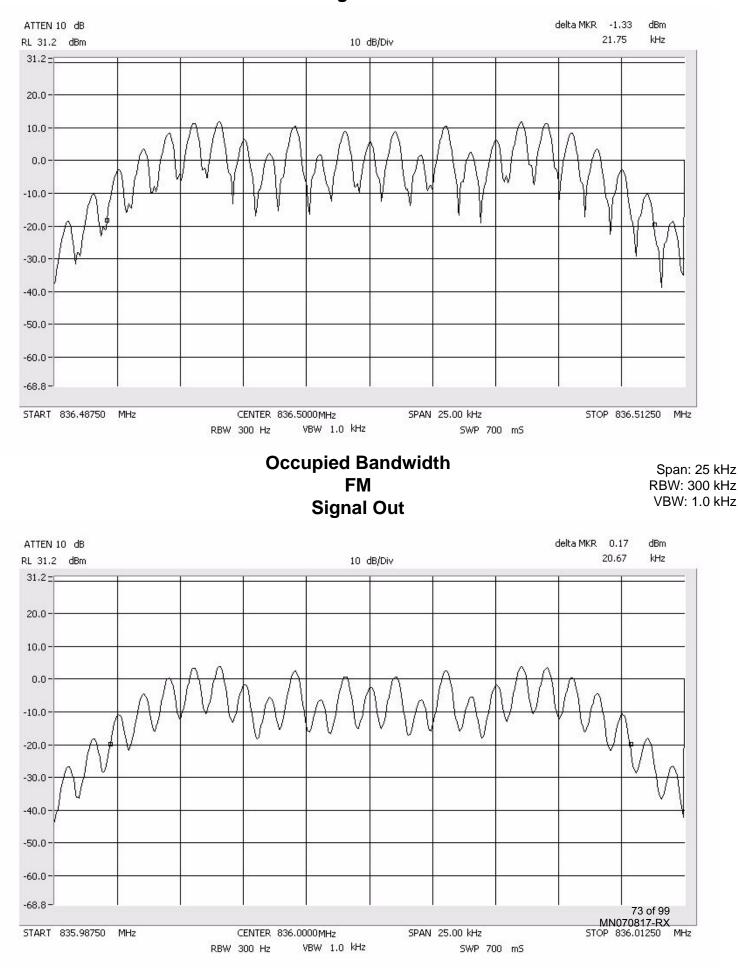
The resolution bandwidth is reduced to 1% of the estimated emission bandwidth and the video bandwidth is set to 3 times the resolution bandwidth. The markers are moved to the -20 dB points (from the previously established center frequency level) on either side of center frequency.

Results:

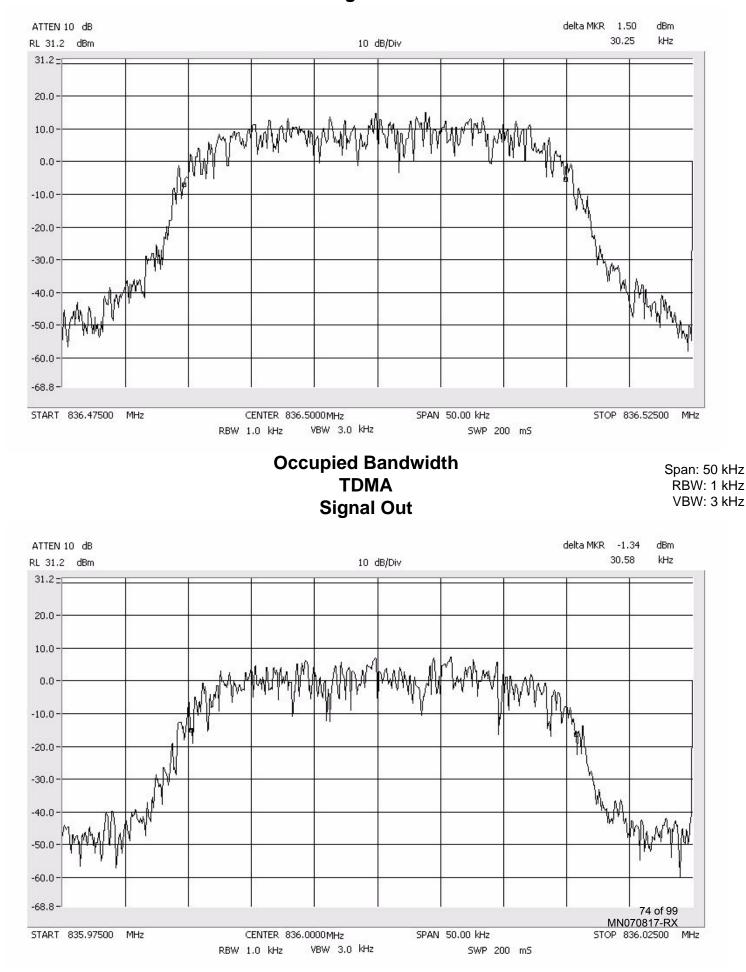
Pass (see plots)

Occupied Bandwidth FM Signal In

Span: 25 kHz RBW: 300 kHz VBW: 1.0 kHz

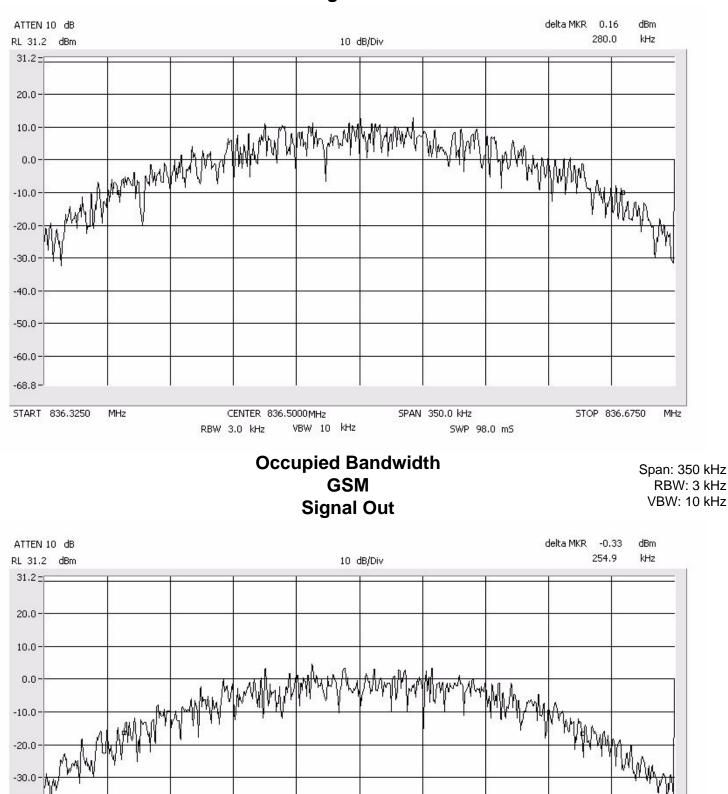


Occupied Bandwidth TDMA Signal In



Occupied Bandwidth GSM Signal In

75 of 99



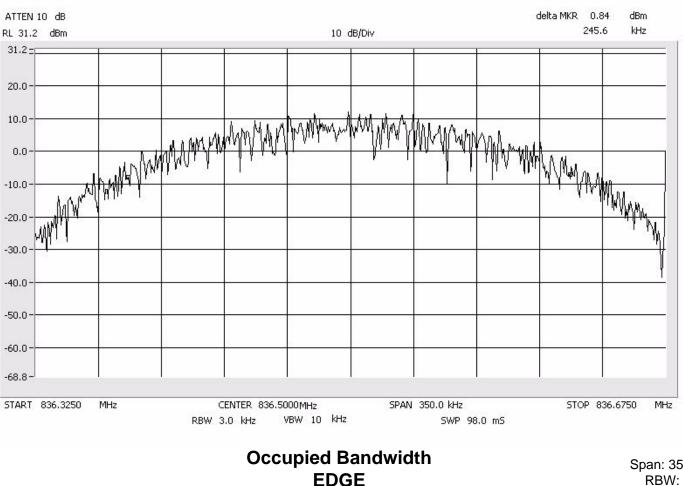
-40.0

-50.0

-60.0

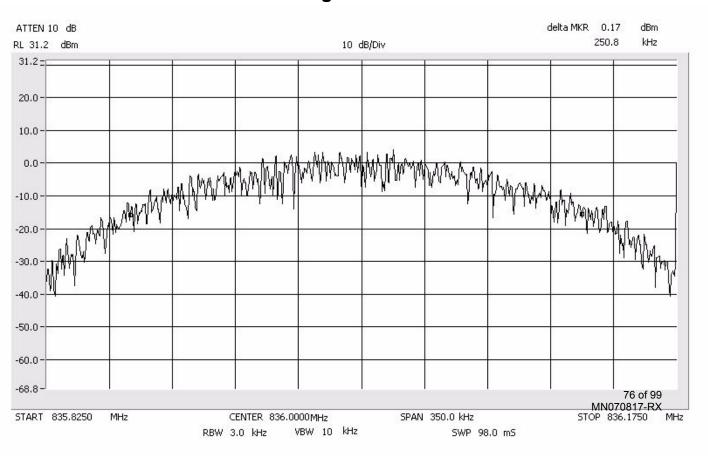
-68.8-

Occupied Bandwidth EDGE Signal In

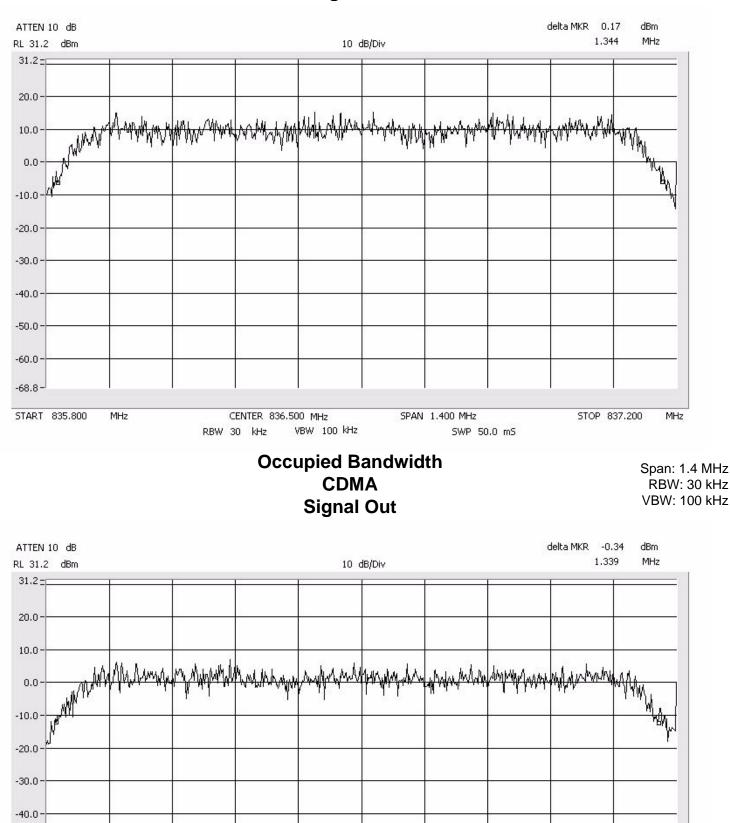


Signal Out

Span: 350 kHz RBW: 3 kHz VBW: 10 kHz



Occupied Bandwidth CDMA Signal In



CENTER 836.000 MHz RBW 30 kHz VBW 100 kHz

-50.0

-60.0

-68.8-

START 835.300

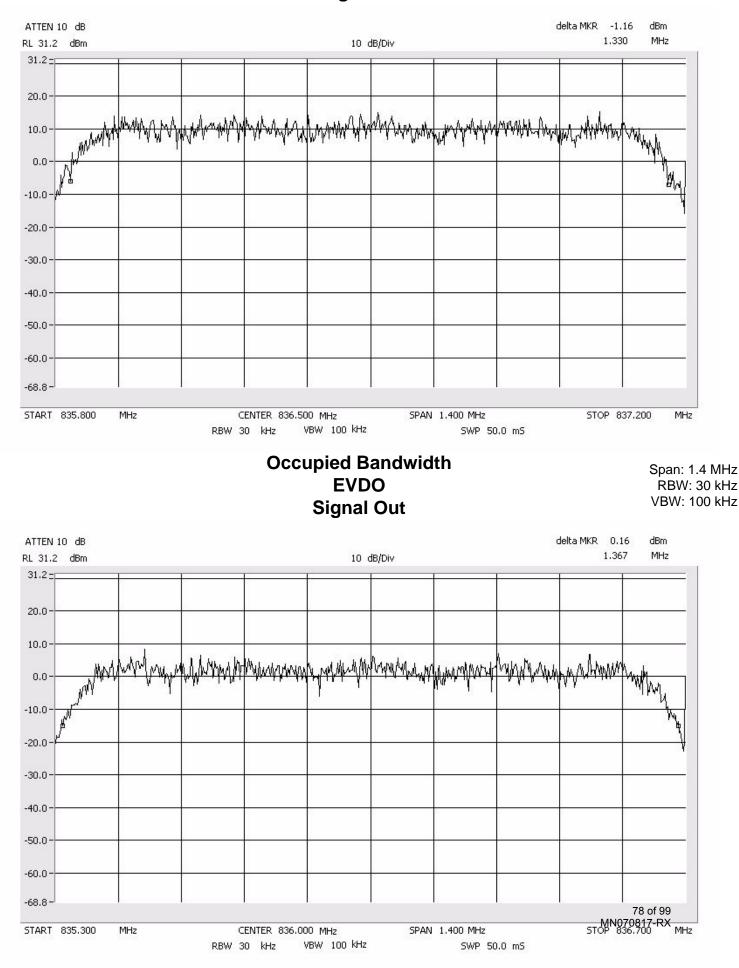
MHz

SPAN 1.400 MHz SWP 50.0 mS STOP 836.700

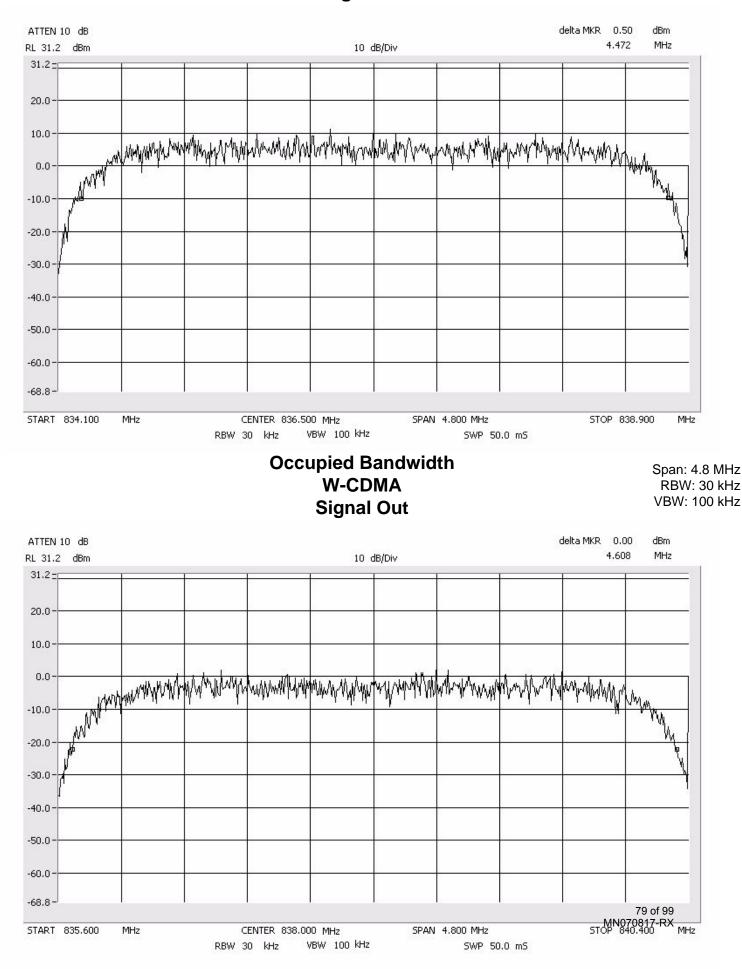
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MHz

Occupied Bandwidth EVDO Signal In



Occupied Bandwidth W-CDMA Signal In



Frequency Tolerance Test for ADC Inc. Bi-Directional Amplifier – Cellular Model Number RPT-SBAAA12000

The frequency stability shall be within \pm 1.5 parts per million (0.00015%).

EUT Cellular (800 MHz)

EUT				
Input Voltage	Input Voltage	Carrier Frequency	Measured Frequency	Meets Requirements?
100 VAC		824.200 MHz	824.200 MHz	Yes
170 VAC		824.200 MHz	824.200 MHz	Yes
240 VAC		824.200 MHz	824.200 MHz	Yes
100 VAC		836.500 MHz	836.500 MHz	Yes
170 VAC		836.500 MHz	836.500 MHz	Yes
240 VAC		836.500 MHz	836.500 MHz	Yes
100 VAC		848.800 MHz	848.800 MHz	Yes
170 VAC		848.800 MHz	848.800 MHz	Yes
240 VAC		848.800 MHz	848.800 MHz	Yes
Temperature		Carrier Frequency	Measured Frequency	Meets Requirements?
-5 Deg. C		824.200 MHz	824.200 MHz	Yes
10 Deg. C		824.200 MHz	824.200 MHz	Yes
20 Deg. C		824.200 MHz	824.200 MHz	Yes
30 Deg. C		824.200 MHz	824.200 MHz	Yes
40 Deg. C		824.200 MHz	824.200 MHz	Yes
45 Deg. C		824.200 MHz	824.200 MHz	Yes
-5 Deg. C		836.500 MHz	836.500 MHz	Yes
10 Deg. C		836.500 MHz	836.500 MHz	Yes
20 Deg. C		836.500 MHz	836.500 MHz	Yes
30 Deg. C		836.500 MHz	836.500 MHz	Yes
40 Deg. C		836.500 MHz	836.500 MHz	Yes
45 Deg. C		836.500 MHz	836.500 MHz	Yes
-5 Deg. C		848.800 MHz	848.800 MHz	Yes
10 Deg. C		848.800 MHz	848.800 MHz	Yes
20 Deg. C		848.800 MHz	848.800 MHz	Yes
30 Deg. C		848.800 MHz	848.800 MHz	Yes
40 Deg. C		848.800 MHz	848.800 MHz	Yes
45 Deg. C		848.800 MHz	848.800 MHz	Yes

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Intertek Test Data

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Test Engineer: Norman Shpilsher

Date: 7 September, 2007

Test Procedure:

Test measurements were made in accordance with ANSI C63.4-2003, Standard Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronics Equipment in the Range of 9 kHz to 40 GHz.

Test Site Location:

The test site is a 3 meter Semi-Anechoic Chamber, constructed by Panashield $^{\rm IM}$ Inc. and located

inside the building at 7250 Hudson Blvd. Suite 100, Oakdale, MN 55128.

Test Site Description:

The 3 meter Semi-Anechoic Chamber is constructed of Panabolt[™] modular RF shielding and self-supported with structural steel designed for the local seismic zone rating. The chamber has the nominal size of 20' wide x 29' long x 18' high. All walls and ceiling of the chamber are treated with FFG-1000 Ferrite Grid absorber which was developed specifically to meet international requirements for EMC anechoic chambers for emissions and immunity measurements. To meet high frequency testing white HY-35 hybrid absorber is mounted on the ferrites in specular regions of the chamber.

The chamber has a 2 meter diameter ANSI test volume area and meets the requirements of ANSI C63.4 (1992), EN55022, and FCC Part 15 standards for testing at a 3 meter path length.

FCC Registration Number: 90706 IC Registration Number: 4359



TEST DATA

Test Data Number: 3132442MIN-001 Project Number: 3132442

Testing performed on the **BDA-800**

to 47 CFR, Part 22:2006

For **ADC Telecommunications Inc.**

Test Performed by: Intertek Testing Services NA, Inc. 7250 Hudson Blvd., Suite 100 Oakdale, MN 55128

Prepared by: Norman Shpilsher

Test Authorized by: ADC Telecommunications Inc. 5341 12th Avenue East Shakopee, MN 55379

Date: September 7, 2007

Reviewed by: <u>Skhepe</u> Simon Khazon

Date: September 7, 2007

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2.1	Statement of the Measurement Uncertainty	
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1.0 DESCRIPTION OF THE SAMPLE (EUT)

Model:	BDA-800
Type of EUT:	Bi-Directional Amplifier
Serial Number:	N/A
Company:	ADC Telecommunications Inc.
Customer:	Mr. Mark Miska
Address:	1187 Park Place Shakopee, MN 55379
Phone:	952-403-8340
Fax:	952-403-8858
Test Standards:	 □ EN 55022:2006, Class □ EN 55011:1998 + A1:1999 + A2:2002, Group , Class □ 47 CFR, Part 15:2006, §15.107 and §15.109, Class □ 47 CFR, Part 22:2006 □ 47 CFR, Part 24:2006 □ EN 55014-1:2000 + A1:2001 + A2:2002 □ EN 61326-1:2006 □ Class for Radiated and Conducted Emissions □ EN 60601-1-2:2001 +A1:2006 □ Class Radiated and Conducted Emissions □ EN 61000-6-3:2001 □ EN 61000-6-3:2006 □ EN 61000-3-2:2006 □ EN 61000-3-3:1995 +A1:2001 +A2:2006



2.0 TEST SUMMARY

Referring to the performance criteria and the operating mode during the tests specified in this report, the equipment complies with the requirements according to the following standards.

TEST STANDARD	TEST	RESULT
Part 22	Spurious Enclosure Radiated Emissions	Pass

2.1 Statement of the Measurement Uncertainty

Note: The measured result in this report is within the specification limits by more than the measurement uncertainty; the measured result indicates that the product tested complies with the specification limit.

The expanded uncertainty (k = 2) for radiated emissions from 30 to 1000 MHz has been determined to be: ± 4 dB at 10m and ± 5.4 dB at 3m

The expanded uncertainty (k = 2) for conducted emissions from 150 kHz to 30 MHz has been determined to be:

±2.6 dB

General notes:

1. Test was performed with the EUT tuned to low channel (824MHz), middle channel (836.5MHz), and upper channel (849MHz) of the operating frequency.

Testing was performed in frequency range from 30MHz to 10GHz.

The Signal Generator – Support Equipment (HP ESG-2000A) was located outside of the test site.

3. The Spurious Radiated Power limits of -13dBm was correlated with field strength reference level of 82.2dBµV/m during field strength measurements at 3m measurement distance.

4. Substitution method measurements were not performed as the EUT passed Spurious Radiated Emissions with a margin of more than 20dB below the limits.



3.0 TEST RESULTS

Radiated Emissions from 30MHz to 1GHz

Date:

09/04-05/2007

Company:	ADC Telecommunications Inc.
Model:	BDA-800
Test Engineer:	Norman Shpilsher
Special Info:	
Standard:	FCC Part 22
Test Site:	3m Anechoic Chamber, 3m measurement distance
Note:	The table shows the worst case radiated emissions
	Measurements were taken using a Peak detector

Table # 1

Frequency	Ant.	Peak Reading	Ant.Factor	Total at 3m	QP Limit	Margin
	Polarity	dBµV	dB1/m	dBµV/m	dBµV/m	dB
		Operatin	g Frequency	824MHz		
30.561 MHz	V	15.2	18.7	33.9	82.2	-48.3
94.485 MHz	V	22.1	10.9	33.0	82.2	-49.2
100.3 MHz	V	22.6	12.2	34.8	82.2	-47.4
30.842 MHz	Н	15.0	18.5	33.5	82.2	-48.7
99.51 MHz	Н	20.4	12.0	32.4	82.2	-49.8
100.3 MHz	Н	22.0	12.2	34.1	82.2	-48.1
		Operating	Frequency	836.5MHz		
30.175 MHz	V	14.8	18.9	33.7	82.2	-48.5
44.704 MHz	V	25.6	10.8	36.4	82.2	-45.8
93.78 MHz	V	23.7	10.8	34.5	82.2	-47.7
30.491 MHz	Н	14.1	18.7	32.8	82.2	-49.4
93.692 MHz	Н	21.0	10.7	31.7	82.2	-50.5
100.3 MHz	Н	21.0	12.2	33.2	82.2	-49.0
		Operatin	g Frequency	849MHz		
30.281 MHz	V	15.1	18.8	33.9	82.2	-48.3
44.178 MHz	V	23.9	11.1	35.0	82.2	-47.2
89.373 MHz	V	24.4	9.8	34.3	82.2	-47.9
100.3 MHz	V	21.4	12.2	33.6	82.2	-48.6
159.67 MHz	V	21.0	11.8	32.9	82.2	-49.3
30.035 MHz	Н	14.2	19.0	33.2	82.2	-49.0
93.692 MHz	Н	20.8	10.7	31.6	82.2	-50.6
100.3 MHz	Н	20.5	12.2	32.7	82.2	-49.5

Note: Emissions at operating frequencies were removed from the Table



Radiated Emissions from 1 to 10GHz

Date:

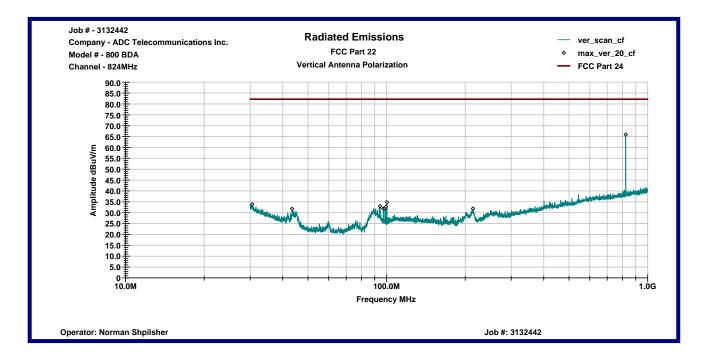
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09/05-06/2007
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Company:	ADC Telecommunications Inc.
Model:	BDA-800
Test Engineer:	Norman Shpilsher
Special Info:	
Standard:	FCC Part 22
Test Site:	3m Anechoic Chamber, 3m measurement distance
Note:	The table shows the worst case radiated emissions
	All measurements were taken using a Peak detector

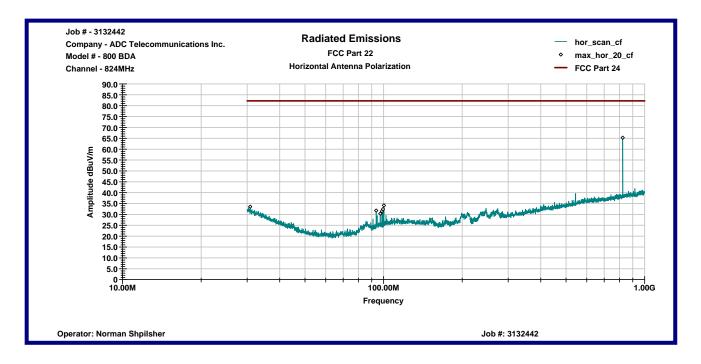
Frequency	Antenna	Reading	Total C.F.	Pre-Amp.	Total at 3m	QP Limit	Margin
MHz	Polarity	dBµV	dB1/m	Gain (dB)	dBµV/m	dBµV/m	dB
		Operating	Frequency	/ 824MHz		•	
5.3668 GHz	V	43.1	38.4	37.4	44.1	82.2	-38.1
5.68 GHz	V	44.2	38.9	37.0	46.1	82.2	-36.1
10.0 GHz	V	36.5	44.6	34.6	46.4	82.2	-35.8
2.2996 GHz	Н	44.9	31.1	38.1	37.9	82.2	-44.4
5.3668 GHz	Н	49.3	38.4	37.4	50.2	82.2	-32.0
5.68 GHz	Н	47.8	38.9	37.0	49.7	82.2	-32.5
9.4924 GHz	Н	37.2	43.8	34.9	46.0	82.2	-36.2
		Operating	Frequency	836.5MHz			
5.3668 GHz	V	44.1	38.4	37.4	45.1	82.2	-37.1
5.68 GHz	V	44.2	38.9	37.0	46.0	82.2	-36.2
9.6724 GHz	V	37.0	44.0	34.8	46.2	82.2	-36.0
2.2996 GHz	Н	45.0	31.1	38.1	37.9	82.2	-44.3
3.8404 GHz	Н	50.0	35.7	37.7	48.0	82.2	-34.2
5.3668 GHz	Н	49.0	38.4	37.4	50.0	82.2	-32.2
5.68 GHz	Н	47.6	38.9	37.0	49.4	82.2	-32.8
9.91 GHz	Н	36.3	44.4	34.7	46.0	82.2	-36.2
		Operating	Frequency	/ 849MHz			
9.9352 GHz	V	37.6	44.5	34.6	47.4	82.2	-34.8
2.2996 GHz	Н	45.1	31.1	38.1	38.0	82.2	-44.2
5.3668 GHz	Н	49.3	38.4	37.4	50.3	82.2	-31.9
5.68 GHz	Н	47.8	38.9	37.0	49.6	82.2	-32.6
9.964 GHz	Н	36.3	44.5	34.6	46.2	82.2	-36.1

Table # 2



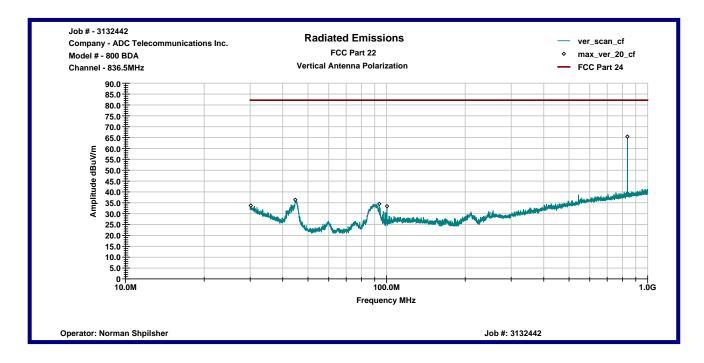




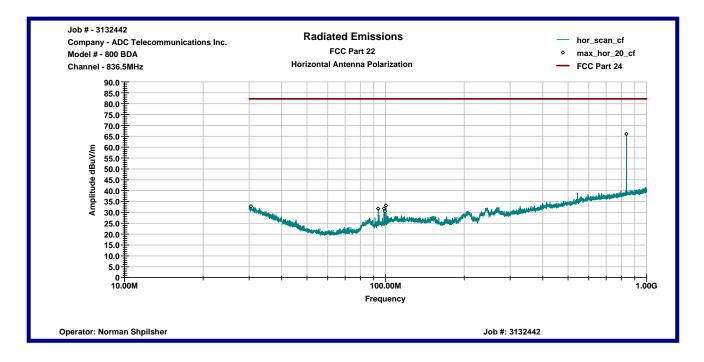






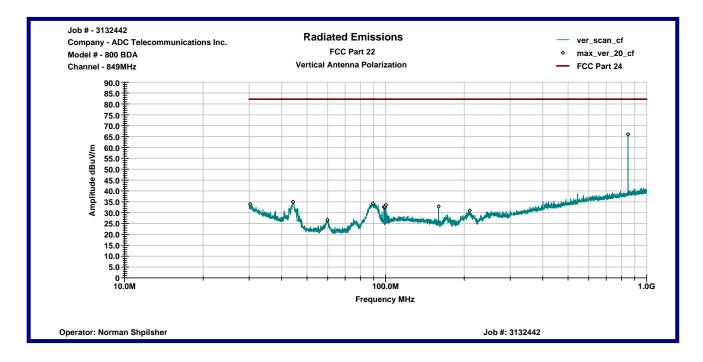




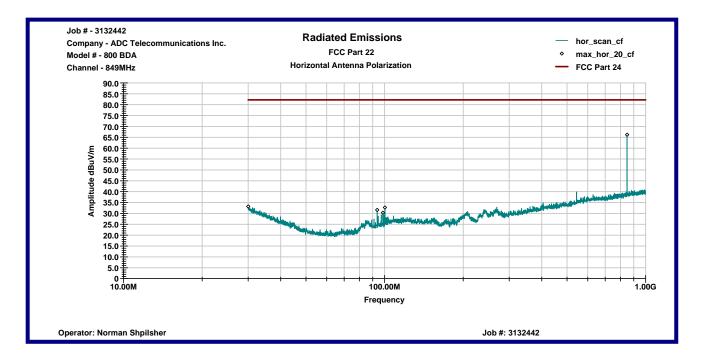






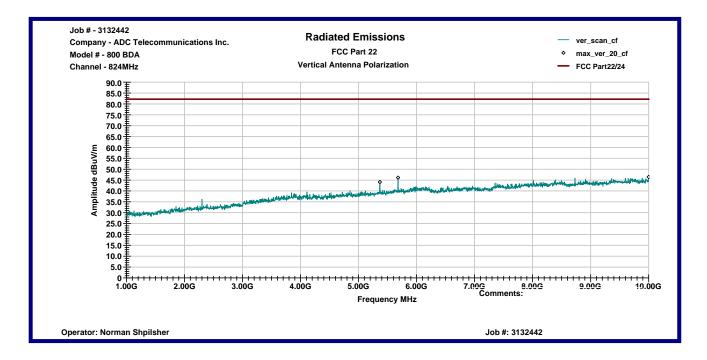




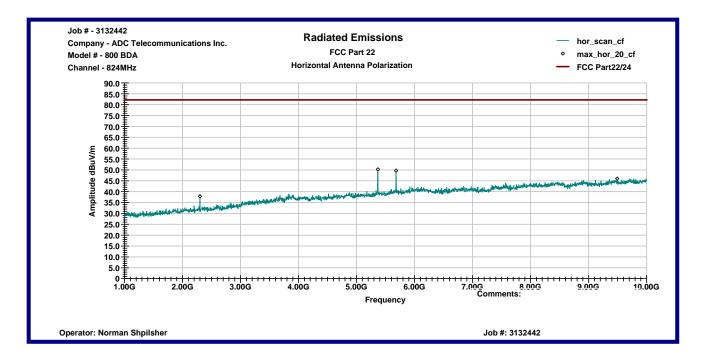






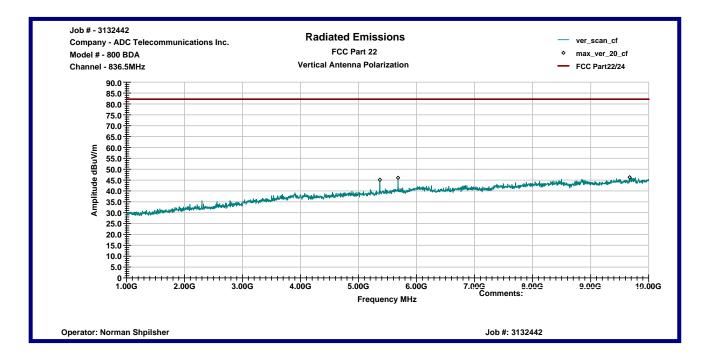




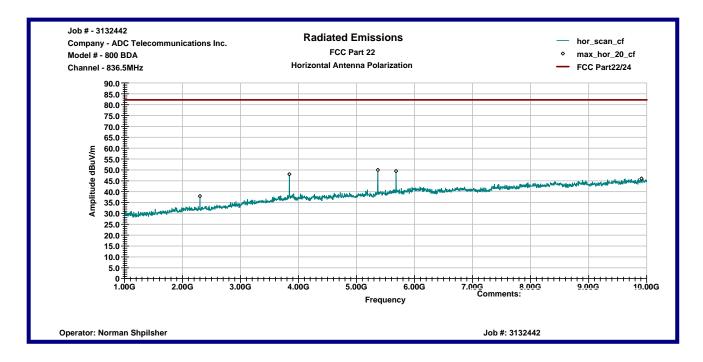






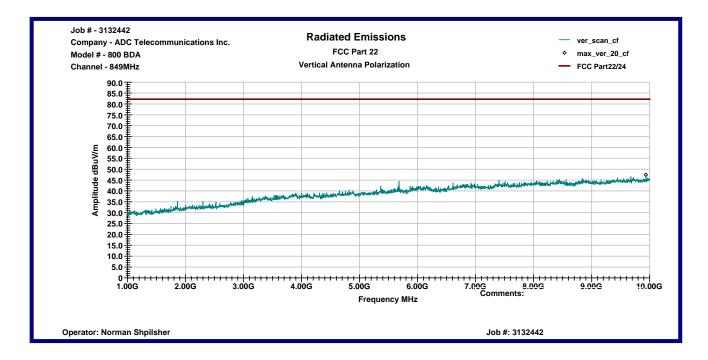




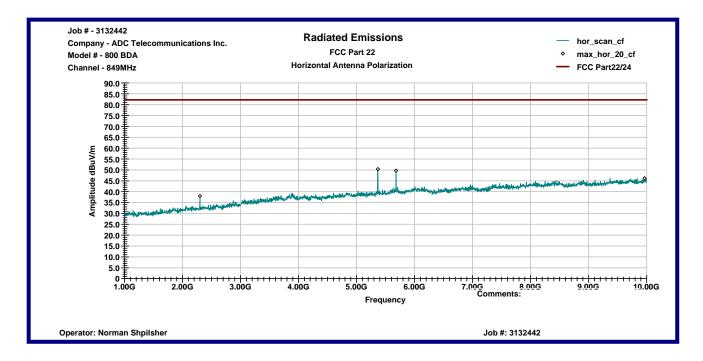
















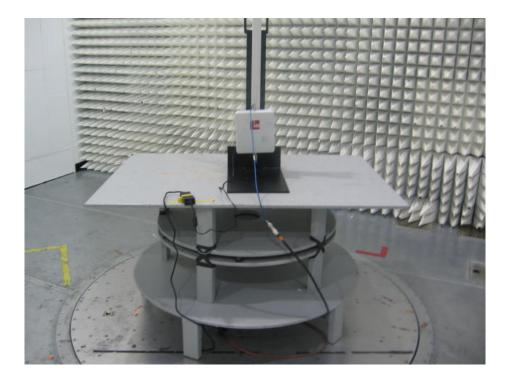
3.1 Environmental conditions

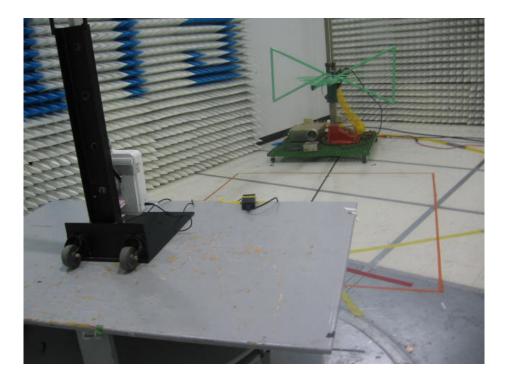
During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	86-106 kPa



4.0 PHOTOS





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5.0 TEST EQUIPMENT

DESCRIPTION	MANUFACTURER	MODEL	SERIAL NO.	CAL DUE	USED
Receiver RF Section	HP	85462A	3549A00306	02/27/2008	
RF Filter Section	HP	85460A	3448A00276	02/27/2008	
Spectrum Analyzer	R & S	FSP 40	100024	08/23/2008	\square
Spectrum Analyzer	R & S	ESCI	100358	04/27/2008	\square
Spectrum Analyzer	Advantest	R3271A	55050084	10/09/2007	
Spectrum Analyzer	Agilent	E7402A	MY44212200	10/10/2007	
Bicono-Log Antenna	Schaffner-Chase	CBL 6112 B	2468	07/30/2008	
Horn Antenna	EMCO	3115	9507-4513	01/09/2008	
Horn Antenna	EMCO	3115	6579	03/06/2008	
Waveguide Horn Antenna	EMCO	3116	9904-2423	07/20/2008	
Loop Antenna	A.H.Systems	SAS-200/562	215	05/04/2008	
Monopole Antenna	A.H.Systems	SAS-200/550-1	692	05/09/2008	
LISN	Fischer Custom Communications	FCC-LISN-50-25-2	2014	10/10/2007	
LISN	Fischer Custom Communications	FCC-LISN-50-50-4.02	07005	01/30/2008	
LISN	Fischer Custom Communications	FCC-TLISN-T4	15333.01	03/01/2008	
RF Current Probe	Fischer Custom Communications	F-33-2	330	03/07/2008	
Absorbing Clamp	Fischer Custom Communications	F-201	167	03/07/2008	
Absorbing Clamp	Fischer Custom Communications	F-201	213	11/09/2007	
Pre-Amplifier	MITEQ	AMF-5D-00501800-28- 13P	1122951	04/24/2008	\square
Pre-Amplifier	MITEQ	AMF-6F-16002600-25- 10P	1222383	09/15/2007	
Pre-Amplifier	HP	8447F OPT H64	3113A04974	03/07/2008	
System	TILE! Instrument Control		Ver. 3.4.K.29	VBU	
5001ix	California Instruments System	5001	55864, 55863, 55862, 72277	11/09/2007	
CTS 3.0.19	California Instruments Harmonic/Flicker Software	632		11/09/2007	

APPENDIX C

Measurement Protocol

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Measurement Protocol

Environmental conditions of the lab, (ADC)

Temperature: 21 - 26° C Relative Humidity: 21 - 24 % Atmospheric Pressure: 97.8 - 100.0 kPa

Test Methodology:

Emission testing is performed according to the procedures in ANSI C63.4-2003.

Measurement Uncertainty

The test system for conducted emissions is defined as the signal generator(s), the power meter, the spectrum analyzer and the coaxial cable. The equipment comprising the test systems is calibrated prior to testing the EUT.

Justification

The Equipment Under Test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral into its characteristic impedance or left un-terminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

Radiated Emissions

The final level, in dBuV/m, equals the reading from the spectrum analyzer (Level dBuV), adding the antenna correction factor and cable loss factor (Factor dB) to it, and subtracting the preamp gain (and duty cycle correction factor, if applicable). This result then has the limit subtracted from it to provide the Delta, which gives the tabular data as shown in the data sheets in Appendix B.

Example: FREQ (MHz)	LEVEL (dBuV)	CABLE/ANT/PREAMP FINAL (dB) (dB/m) (dB) (dBuV/m)	POL/HGT/AZ (m) (deg)	DELTA1
60.80	42.5Qp +	1.2 + 10.9 - 25.5 = 29.1	V 1.0 0.0	-10.9

Substitution Method

A cabinet (or enclosure) radiated emission scan was also made, at Intertek, with the EUT's antenna replaced with a termination to demonstrate case radiation compliance to the -13 dBm requirement. Radiated emissions from the EUT are measured in the frequency range of 30 to 20,000 MHz using a spectrum analyzer and appropriate broadband linearly polarized antennas. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimeters above the ground plane. Floor standing equipment is place directly on the turntable/ground plane. Interface cable that are closer than 40 centimeters to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimeters from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna is positioned 3 meters horizontally from the EUT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarizations and the EUT are rotated 360 degrees. The field strength levels were measured per ANSI C63.4. The EUT is then replaced with a tuned dipole antenna (below 1GHz) or horn antenna (above 1 GHz). The substitute antenna was placed in the same polarization as the test antenna. A signal generator was used to generate a signal level that matched the highest level measured from the EUT. The signal generator level minus the cable loss from the signal generator to the substitute antenna plus the substitute antenna gain equals the spurious power level.

Test Equipment

All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated according to internal procedure.