Nemko Test Report:	4L0360RUS1Rev1
Applicant:	Communication Components, Inc. 89 Leuning Street 2 <sup>nd</sup> Floor Hackensack, NJ 07606
Equipment Under Test: (E.U.T.)	DAC-850-125
In Accordance With:	FCC Part 22, Subpart H 850 MHz Cellular Band Amplifier
Tested By:	Nemko Dallas Inc. 802 N. Kealy
	Lewisville, TX 75057-3136

Tom Tidwell, Frontline Group Manager

Date:

June 2, 2004

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# Section 1. Summary of Test Results

Manufacturer: Communication Components, Inc.

Model No.: DAC-850-125

Serial No.: 005066

#### General: All measurements are traceable to national standards.

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 22, Subpart H.

$\boxtimes$	New Submission	$\boxtimes$	Production Unit
	Class II Permissive Change		Pre-Production Unit

#### THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

# THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE. NONE

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# Summary Of Test Data

NAME OF TEST	PARA. NO.	SPEC.	RESULT
RF Power Output	22.913(a)	500W ERP	Complies
Occupied Bandwidth	22.917(c)	Input/Output	Complies
Spurious Emissions at Antenna Terminals	22.917	-13 dBm	Complies
Field Strength of Spurious Emissions	22.917	-13 dBm E.I.R.P.	Complies
Frequency Stability	22.355	1.5 ppm	NA

#### Footnotes:

•

(1) Device does not demodulate input RF.

#### Measurement uncertainty for each test configuration is expressed to 95% probability.

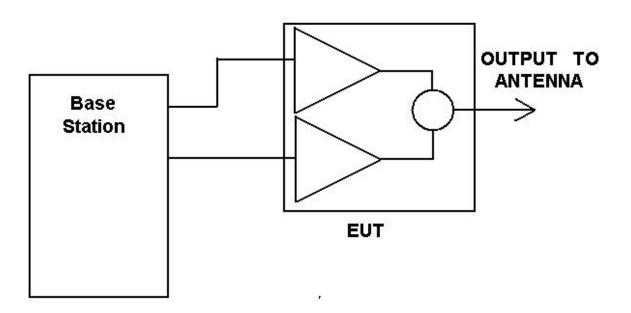
# Section 2. General Equipment Specification

Supply Voltage Input:							
Frequency Range:		869.2 to 893.8 MHz Note: At the highest and lowest channels, the power output must be reduced to 3 Watts for GSM and 5.8 Watts for EDGE modulations to achieve bandedge compliance.					
Type of Modulation and Designator:		CDMA GSM (F9W) (G7W		EDGE AMPS (G7W) (F8W, F1D)			
Output Impedance:		50 ohms					
<b>RF Output (Rated):</b>	Downlink:	Per Channel: Total:	62.5 W 125 W				
	Uplink:	Per Channel: Total:	NA W NA W				
Frequency Translation:		F1-F1	F1-F2	N/A			
Band Selection:		Software	Duplexer Change	Fullband Coverage			

# **Description of Operation**

The device is a base station amplifier operating in the 850 MHz cellular band utilizing GSM and GSM EDGE technology. Each input outputs 62.5 Watts single carrier only and input into a combiner prior to output. The device is rated at 125 Watts combined power.

#### System Diagram



# Section 3. RF Power Output

NAME OF TEST: RF Power Output	PARA. NO.: 2.1046
TESTED BY: David Light	DATE: 5/12/2004

**Test Results:** 

Complies.

#### **Test Data:**

Modulation Type	Per Channel Power Output (dBm)	Composite Power Output (dBm)	Per Channel Power Output (Watts)	Composite Power Output (Watts)
GSM	47.96	50.96	62.5	125
EDGE	47.96	50.96	62.5	125

Note: RF power output must be reduced at 869.2 and 893.8 MHZ to 3 Watts for GSM and 5.8 Watts for EDGE modulations to adhere to bandedge requirements.

**Equipment Used:** 1036-1604-1054-1629-

Measurement Uncertainty: +/- 1.7 dB

**Temperature:** 24 ?C

**Relative Humidity:** 45 %

# Section 4. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth	PARA. NO.: 2.1049
TESTED BY: David Light	DATE: 5/12/2004

**Test Results:** 

Complies.

**Test Data:** 

See attached plots

1	Nemko I	Dallas, Inc.	mk	0				Lev Tel	as Headquarte 802 N. Kealy visville, TX 7509 : (972) 436-96 (: (972) 436-26	57 00	
Data P	Plot			Occ	upied Ba	ndwidth					
Page Job No.: Specificatio Tested By:	e 1 of 4 4L03 on: PT 2 <u>Davi</u>	2 d Light			5/12/2004 24			Complete Preliminary:	X		
E.U.T.:		-850-125 FULL POWER IN	TOLOAD								
Configurati	-		TO LOAD								
	mber:				DDW A						
Location:		ab 1			RBW: 3			Measurement			
Detector T	ype: F	Peak			VBW: 3	KHZ		Distance:	<u>NA</u> n	1	
Antenna: Pre-Amp: Filter:	ipment U			Directio	Cable #2:	1629					
Receiver:	1	.036			Cable #3:						
Attenuator		.604			Cable #4:						
Attenuator					Mixer:						
	equipment u	-									
Measureme	ent Uncertain	nty: <u>+/-1.7 c</u>	B								
70- 50-	ef Lv 70 dBr 40.1	n 	861	1 [T1] 19. .651302	25 dBm 61 MHz		3 H 3 H 280 m ▼1 △1		F Att nIt 1931.65130 -0 94.58917	.35 dB	
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-20	booppon								- www.	<del>ŀ. (II.M/V·~</del>	"
	Center	881.5 M	Hz		100	kHz/			Sp.e	n 1 MHz	J
									هطد		
Dete:		12.MAY 2	2004 15	:36:06							
Notes	s: <u>20 d</u>	B Bandwidth									
	GSN	A carrier at 62.	5 Watts								
	Out	put									



Nemko Dallas, Inc.

Dallas Headquarters:
802 N. Kealy
Lewisville, TX 75057
Tel: (972) 436-9600
Fax: (972) 436-2667

**Data Plot Occupied Bandwidth** Page <u>2</u> of <u>4</u> Date: 5/12/2004 Job No.: 4L0360 PT 22 Specification: Temperature(°C): 24 Tested By: David Light Relative Humidity(%) 45 E.U.T.: DAC-850-125 Configuration: <u>TX FULL POWER INTO LOAD</u> RF Att RBW 60 dB Marker 1 [T1] Э kHz 🕅 Ref Lvj νви з кнг 10.18 dBm 70 dBm 881.63927866 MHz SMT 280 ms Шпіt dBm 70 40.1 dB Offset **v**1 ET 1 3 10.10 dBm A 1.63927856 MHz 88 60 94 dB Δ 8.55711 423 kHz -2 БΩ 40 1 V I E W 1 MA эπ WWWWWWWWWWWW 211 ۸. 10 μ П www \_ 1<u>1</u> inly. -20 -30 Center 881.5 MHz 100 KHZ/ 5pan 1 MHz 13.MAY 2004 10:01:16 ate: Notes: 20 dB Bandwidth GSM Input

		allas, Inc.	mk	0			Lew Tel:	as Headquarte 802 N. Kealy risville, TX 750: (972) 436-96 : (972) 436-26	57 00		
Data Plo	<u>ot</u>			Occ	upied Baı	ndwidth					
Page 3 Job No.: Specification: Tested By: E.U.T.: Configuration:	4L036 PT 22 David DAC-		Relative H	Date: <u>5/1</u> erature(°C): <u>24</u> umidity(%) <u>45</u>							
			Marker	1 [T1]		RBW	Эĸ	Hz RF	- Att	эо ав	
	Lv1				49 dBm	٧ВЫ	3 к				
45.1	5.1 d	Вп	861	.643268	67 MHz	SMT	28D m	e Ur	¬1t	dBn	1
49.1	0.1	dB Off∋€	ə t				▼1	(T1) 88	12 1.64328		
35									2.58517		
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1 V 2Б	IEW										15A
20					~ U	V	41				
15											
Б							ų,				
0			,A	Ń				4.			-
-4.9	ton	881.5 MH			100	kHz/		ML.		n 1 MHz	
Date:		12.MAY 2			100	R1127			ары		
Notes:	<u>20 dB</u>	Bandwidth E carrier at 62		:48:15							
	Julp	ui									

Nemko Dallas, Inc.	mko		Le Te	las Headquarters: 802 N. Kealy wisville, TX 75057 sl: (972) 436-9600 ix: (972) 436-2667	
<u>Test Plot:</u>	Occ	upied Bandwi	idth		
Page 4 of <u>4</u> ob No.: <u>41.0360</u> pecification: <u>PT 22</u> 'ested By: <u>David Light</u> .U.T.: <u>DAC-850-125</u> 'onfiguration: <u>TX FULL POWER IN</u>	Temperature(°C): <u>24</u> Relative Humidity(%) <u>45</u>				
	Merker i [Ti]			HZ RFATT	3D 9B
Ref L∨] 45.1 dBm	881.637274		VBW 34 5WT 280 r	≺Hz nga Un It	dBm
45.1 40.1 dB offs	et		▼1 △1	-	8.39 dBm 27455 MHz 0.21 dB
35				-276.6531	10621 KHz
эа 1 V I E W 25		<u>A</u>			1 MA
20		AN WILL W	1.1		
16					
10	↓ A		- Vory		
5					
a					
4.9		100 kHz		 5 <sub>F</sub>	pan 1 MHz
Notes: <u>20 dB Bandwidth</u> EDGE Input	2004 10:03:28				

# Section 5. Spurious Emissions at Antenna Terminals

NAME OF TEST: Spurious Emissions @ Antenna Terminals	PARA. NO.: 2.1051
TESTED BY: David Light	DATE: 5/12/2004

**Test Results:** 

Complies.

**Test Data:** 

See attached plots

## Test Data – Spurious Emissions at Antenna Terminals

Lowest channel at full power

									Dalla	as Headquarte 802 N. Kealy	ers:	
	$\wedge$			ШK	$\mathbf{\bullet}$				Lev	/isville, TX 750	57	
V	-									(972) 436-960		
										: (972) 436-266		
	Nem	ko Da	allas, Inc.									
Data 1	Plot			Spur	ious Emis	ssions at A	Antenna T	'erminal	S			
	ge <u>1</u> of	5		<u></u>						Х		
Job No.:	-	4L036	0		Date:	5/12/2004			Preliminary:			
Specificat		PT22	0	Tem	perature(°C):				T tenninary.			
Tested By		David	Light	-	Humidity(%)							
E.U.T.:			350-125									
Configura			LL POWER IN	TO LOAD								
Sample N												
Location:		Lat		<u> </u>		RBW: R	efer to plots		Measurement			
Detector 7	Гуре:	Pea	ık				efer to plots		Distance:	NA n	1	
	- ) F											
Test Eq	uipme	nt Us	ed									
Antenna:					Directio	onal Coupler:	1054					
Pre-Amp:						Cable #1:						
Filter:		10	60									
Receiver:		10	36			Cable #3:						
Attenuato	or #1	16	04			Cable #4:						
Attenuato	or #2:					Mixer:						
Additiona	ıl equipm	nent use		1055 1058								
Measuren	nent Unc	ertainty	/: +/-1.7	dB								
							RBW	3	KHZ R	- Att	50 dB	
<b>N N</b>	Ref	Lv]					VBW	Э	кHz			
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	Cent	er	869 MHz	:		200	kHz∕			Spa	п 2 MHz	:
Date:		1	2.MAY 2	2004 14	1:50:55							
Not	06.					Wa44a) 1	125 Watter					
NOT			869.3 and 87 MHz is lowe:		97 aBM (62.5	watts) each.	125 Watts com	iposite powe	er			
		669.5 GSM	IVITIZ IS IOWE	si channel								
1		GOM										

## Test Data – Spurious Emissions at Antenna Terminals

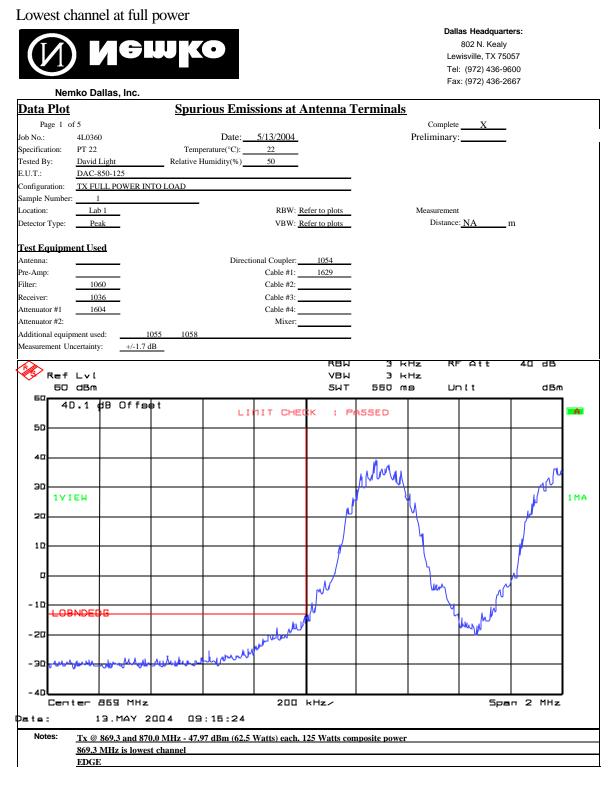
Highest channel at full power

Nemko Dallas, Inc.	mko		L	allas Headquart 802 N. Kealy ewisville, TX 750 fel: (972) 436-96 fax: (972) 436-26	57 600		
Data Plot Page -2 of 5	Spurious Emissions at	Antenna T	ermina	<u>s</u>			
Job No.: <u>4L0360</u> Specification: <u>PT22</u> Tested By: <u>David Light</u> E.U.T.: <u>DAC-850-125</u> Configuration: <u>TX FULL POWER INTO</u>	Date: <u>5/12/2004</u> Temperature(°C): <u>24</u> Relative Humidity(%) <u>45</u> DLOAD						
Ref Lv1 60.1 dBm		RBW VBW SWT		кнz	F Att	60 dB dBm	
<sup>60_1</sup> 40.1 dB Offse			ASSED				
	J. M.M.	NPEDG					
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-10	phil with						
-20		1 Comming	unumentik	Ju Junin	Monno	hours	
-30							
Genter 894 MHz Lenter 12.MAY 20		kHz/			<u> </u> 5pe	an 2 MHz	
	) MHz - 47.97 dBm (62.5 Watts) each.	125 Watts com	posite pow	er			

	Dallas, Inc.	mk	0			L	802 N. ewisville, el: (972)	•		
Data Plot		<u>Spur</u>	ious Emis	sions at A	ntenna T	erminal	<u>s</u>			
Specification: PT2   Tested By: Davi   E.U.T.: DAC	360 2 d Light 2-850-125 FULL POWER IN	Relative H	Date: <u>5/1</u> : erature(°C): <u>24</u> umidity(%) <u>45</u>							
Ref Lv 30 dB		Marker 883		29 dBm 47 MHz	RBW VBW SWT	1	MHz MHz MS	RF Att Unit	10 dB dBm	
30 40 - 1 20 10 10 10 10 1∨IEW -10 -20 -30 -40 -50 -60			MIHMAN	ulthrough	LM MIN M		lown			* 1 MA
_70				97 M	1Hz/			5	top 1 GHz	
	12 . MAY 2 rker indicates ca 2 carriers at 125 M	arrier (NOTC								

Ner	nko Dallas, Inc.	mko			Lev Tel:	as Headqua 802 N. Kealy visville, TX 75 (972) 436-5 (972) 436-2	/ 5057 9600		
Test Plot		<u>Spurious E</u>	missions at A	ntenna T	<u>'erminals</u>				
Page 4 c Job No.: Specification: Tested By: E.U.T.: Configuration:	4L0360 PT22 David Light DAC-850-125	Temperature(°C Relative Humidity(9	6) <u>45</u>						
~	L∨1 dBm		1] 14.76 dBm 52705 GHz	RBW VBW SWT	1 M 1 M 7.5 m	Hz	RFAtt Jnit	10 dB dBm	
30	5.2 dB offa				▼1 ⊽2		-14 1.76352 -14	.76 dBm 705 GHz .80 dBm 459 GHz	1MA
-20 -20 -30	-13 dBm	ummediae unter	week men	white	Makunk	www	Minchlamm	entalling	
-50									
5ta 5ta @ate:	rt 1 GHz 12.MAY 2	2004 15:22:4	эоо 46	MHz/			5tc	p 4 GHz	
Notes:	<u>Markers indicate h</u> <u>Tx 2 carriers at 125</u> <u>GSM</u>	ighest emissions 5 Watts composite pow	er						

Nen	) L'			<b>(</b> 0			Le Te	las Headq 802 N. Ke wisville, TX I: (972) 43 x: (972) 43	ealy 75057 6-9600		
<b>Fest Plot:</b>			Spi	irious Emi	ssions at A	Antenna T	erminals	<u>.</u>			
Page 5 of bb No.: pecification: ested By: .U.T.: onfiguration:	ification:     PT22       ed By:     David Light       T.:     DAC-850-125			Date: <u>5/</u> mperature(°C): <u>2-</u> e Humidity(%) <u>4</u>							
<b>*</b>	L∨1 dBm		Marker	1 [T1] 17- 6.48496!	.14 dBm	RBW VBW SWT	11 11 50 n		RF Att Un It	10 dB dBm	1
эа 48 2л — 1	dB Of	fset					▼1	[[]]		7.14 dBm 6994 GHz	A
□ 1 \ I - 1□	EW -13 dE	•m									1 MA
-20 М.М -30	Menne	kinn	when and	munulu	morene	uns on the	laberer with	kur ukhiji	Mall March 1		
-40 -50											
-60 -70 5 t Br	`t 4 G⊦	lz			500	MHz/			Sto	p 9 GHz	
Notes:	12 . 1 Marker ind	1AY 2 licates hi	ghest emiss	5 : 25 : 52 sion (Noise floo posite power	r)					·	



## Test Data – Spurious Emissions at Antenna Terminals

Highest channel at full power

(Į	Nemko Da			$\langle m{O}$				Dallas Head 802 N. I Lewisville, T Tel: (972) Fax: (972)	Kealy FX 75057 436-9600	1		
)ata I	<u>Plot</u>		Spur	ious Emis	sions at A	ntenna T	Termina	ls				
o No.: ecificatio sted By: J.T.:	David		Relative H	Date: <u>5/1</u> erature(°C): <u>22</u> Iumidity(%) <u>50</u>								
•	lef Lvi 60 dBm					RВW VBW 5WT		kHz kHz m <del>s</del>	RF Un 1	Att t	4D dB dBm	
	40.1	dB Offæ@	ət	LI	MIT CHE	СК : Р	ASSED					A
50 - 40 -	<b>h</b> k			a Mulan	UBAN	)EDG						
эа 20-	1 V 1 E M		h	μ <u></u>	h							1 M A
10-	-											
-10 -10-	{	M.	r		- Jwy							
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-30-						Munully	h-yesh	<del>~~~~~</del>	₩ <sup>A I</sup> <del>~</del> ~ood#	h <b>r</b> 4 <b>,011</b> 11	-uchan	
-40	Ienter	894 MHz			200	kHz/				Spa	un 2 MHz	
t⊖: Notes	s: <u>Tx @</u>	is highest cha	3.0 MHz - 47.9	: 22 : 52 7 dBm (62.5 )	Watts) each. 1	25 Watts con	nposite pov	ver				

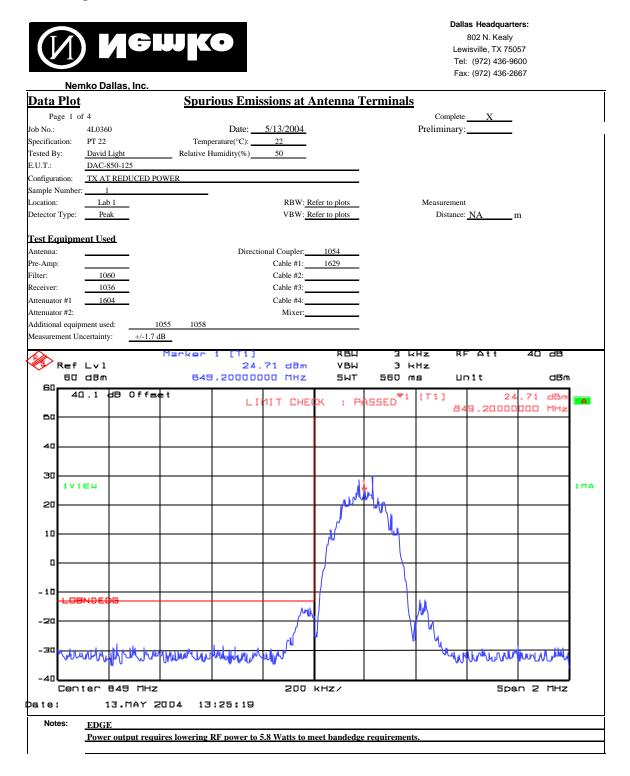
Nemko Dallas, Inc	emko		Dallas Headquarters: 802 N. Kealy Lewisville, TX 75057 Tel: (972) 436-9600 Fax: (972) 436-2667	
<u>Data Plot</u>	Spurious Emissions at	Antenna Termi	inals_	
Page 3 of <u>5</u> Job No.: <u>41.0360</u> Specification: <u>PT 22</u> Tested By: <u>David Light</u> E.U.T.: <u>DAC-850-125</u> Configuration: <u>TX FULL POWE</u>	Date: <u>5/13/2004</u> Temperature(°C): <u>22</u> Relative Humidity(%) <u>50</u> R INTO LOAD			
Ref Lvi 30 dBm	Marker 1 (71) -5.71 dBm 881.5000000 MHz	RBW VBW SWT	1 MHz RFAtt 1 MHz 5 ms Unlt	10 dB dBm
30 40.1 UB Of 20 10	Fset			5.71 dBm
-10 -01 -13 dBm- -20				1MA
-30 -40 -50	wanter	neneralise	manan Mhan M	
-50 -70 Start 30 MHz Date: 13.MAY		MHz/	Sti	op 1 GHz
	es carrier (NOTCHED) 125 Watts composite power			

Ner	nko Dallas, Inc.	mk	0			Lev Tel	as Headqua 802 N. Kea wisville, TX 7 I: (972) 436- x: (972) 436-	ly '5057 -9600		
Test Plot		<u>Spuri</u>	ous Emis	sions at A	ntenna T	'erminals				
Page 4 o Job No.: Specification: Tested By: E.U.T.: Configuration:	f <u>5</u> <u>41.0360</u> <u>PT 22</u> <u>David Light</u> <u>DAC-850-125</u> <u>TX FULL POWER IN</u>	Relative H	Date: <u>5/1</u> rature(°C): <u>22</u> umidity(%) <u>50</u>							
Ref 35	Lv1 1 dBm	Marker		32 dBm	RBW VBW TWE	ין 1 1 א 7.5 מ	1Hz	RF Att Unit	10 dB dBm	
36.1	<b>•</b>						1			
30 41 20 20	5.2 dB Offs	<del>-</del> ι				▼1	[T1]	 2_6472	7,32 dBm 9459 GHz	
10 <u>1 V I</u>	EW									1 MA
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-30 _30	ununahan	malan	James Martin	- All Marken	mun	Under	Juleun her	n - un h v	unartist	
-40 -50										
_60 _64_9										
	-t 1 GHz			ЭПО	riHz /			St	op 4 GHz	
Date: Notes:	13 . MAY 2 Markers indicate h Tx 2 carriers at 125 EDGE	ighest emission								

Ner	nko Dallas, Inc.	Dallas Headquarters:     802 N. Kealy     Lewisville, TX 75057     Tel: (972) 436-9600     Fax: (972) 436-2667										
Test Plot		<u>Spur</u>	ious Emiss	ions at A	Antenna T	erminals	<u>i</u>					
Page 5 o ob No.: Specification: Cested By: G.U.T.: Configuration:	4L0360 PT 22	Relative H	Date: <u>5/13</u> , erature(°C): <u>22</u> /umidity(%) <u>50</u>									
Ref		Marker	-17.0	19 dBm	RBU VBU	1 1		RF Att	10 dB			
37.9	.9 dBm	6	i.9759515	IO GHZ	5WT	50 1	ne T	Unit	dBr	1 7		
30	dB Offaet					▼1	[[]]	- 17 <u>6 - 97595</u>				
20 10												
1∨I □	EW									1 MA		
-10 -01	-13 dBm	الدم د	million	winder	J. M. when	total	mmul	wellow www	moking			
-30	nonen kon Muluk	Multin										
-411												
-60												
5 ta	-t 4 GHz			500	MHz/			510	p 9 GHz			
ate: Notes:	13.MAY 2 Marker indicates hi Tx 2 carriers at 125 EDGE	ghest emissio										

#### Test Data – Spurious Emissions at Antenna Terminals

Reduced power at lowest channel



## Test Data – Spurious Emissions at Antenna Terminals

Reduced power at highest channel

		allas, Inc.						ax: (972) 436	-2667		_
a Pl			<u>Spur</u>	ious Emi	ssions at A	Antenna '	<b>Fermina</b>	ls			
Page 2 o.: ication: By: : uration	David DAC	60	Relative l	Date: <u>5/</u> perature(°C): <u>22</u> Humidity(%) <u>50</u>							
ununon			Marker	1 [71]		RВИ	3	kHz F	RF Att	40 dB	
	f Lv] I JBn				05 dBm 17 MHz	VBW SWT		κHz	Jnīt	dBm	
	40.1	dB Offe	e t	LI	МІТ СНЕІ	CK : Pf	ASSED <sup>▼1</sup>	[T1] E	23 193 - 79356		-
_ 					UBAN	DEDG					
a 1 \	/IEW			• 1							11
a —					M						
a			M			M					
	timite		WWW W			- Jun	mindual	mthough	m r minu	trumpter	
	nter	894 MHz			200	kHz/			5pe	in 2 MHz	

# Test Data – Spurious Emissions at Antenna Terminals

Reduced power at lowest channel

	nko			Lev Tel	as Headquart 802 N. Kealy wisville, TX 750 1: (972) 436-96 x: (972) 436-26	957 600		
nta Plot	Spurious Emis	sions at A	ntenna T	erminals				
Page 3 of <u>4</u> No.: <u>41.0360</u> fication: <u>PT 22</u> d By:     David Light       F.: <u>DAC-850-125</u> iguration: <u>TX AT REDUCED POW</u>	Temperature(°C): <u>22</u> Relative Humidity(%) <u>50</u>							
Ref Lv] 6D dBm	arker 1 [T1] 22. 849.20D000	14 dBm DO MHz	RBW VBW SWT	Зк эк 560 m	Hz	- Att - It	40 dB dBm	1
60 40.1 dB Offset	LII	1IT CHEC	K : Pr	ASSED <sup>▼1</sup>	[T1] 84	22 19.20000	.14 dBm DOO MHz	
40								
30 1 V I E W				٨.				1 ٣
10			, NOM	1				
α				4				-
					٨.			
						unia maine di di ci	aniala an 179	
Center 849 MHz	-0-3	200	≺Hz∕				n 2 MHz	
e: 13.MAY 200	04 13:21:52							
Notes: <u>GSM</u> <u>Power output requires</u>	s lowering RF power to 3	.0 Watts to me	eet bandedge	e requirement	s.			

## Test Data – Spurious Emissions at Antenna Terminals

Reduced power at highest channel

Nemko Da	llas, Inc.	mk	$\mathbf{O}$			Lev Tel	as Headquar 802 N. Kealy wisville, TX 75 : (972) 436-9 k: (972) 436-2	057 600		
<u>'est Plot:</u>		Spuri	ious Emis	sions at A	ntenna T	erminals				
Page 4 of <u>4</u> No.: <u>4L0360</u> ecification: <u>PT 22</u> sted By: <u>David I</u> J.T.: <u>DAC-8</u> nfiguration: <u>TX AT</u>	) .ight	Relative H	Date: <u>5/1</u> erature(°C): <u>22</u> umidity(%) <u>50</u>							
Ref Lv] 60 dBm	ſ	Merker	16.		RВЫ VВЫ 5ЫТ	3 k 3 k 560 m	Hz	F Att nīt	40 di	3 3m
60,	B Offse		.800000					1	1	2
50		-				*1	[T1] 89	10 33.80000	5.60 dE 1000 MH	
40				UBAN	DEDG					
30										_
1 V I EW 20			ita	₩. .						1 MA
10			- prover							
a				- 4						
- 10										
-20		N	μ	<u> </u>	$\gamma_{\rm I}$					
-30	Mun hy aka h	Apr			- Hermer		Markan da se	milline	Laurin	ulu
-40 Genter (		Ť		200		* *	• • • • <b>v</b>			
	394 MHZ 3.MAY 20	174 13	:31:05	200				2 <b>7</b> 2	∎⊓ 2 MH	12
Notes: <u>GSM</u>	output require			3.0 Watts to m	eet bandedge	requirement	s.			

# Section 6. Field Strength of Spurious

RA. NO.: 2.1053
DATE:5/14/2004

**Test Results:** 

Complies.

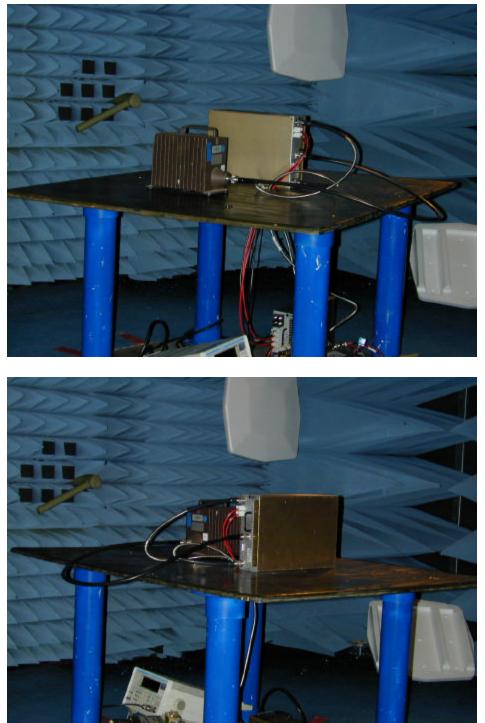
Test Data:

See attached table.

# Test Data – Field Strength of Spurious Emissions

Nem	hko Dallas	, Inc.	KO				Lew Tel:	as Headqua 802 N. Keal visville, TX 7 (972) 436-5 : (972) 436-2	y 5057 9600
			Е	RP Substitu	tion Met	hod			
D 1 .	£ 1		=		101011-10100	1100	Generaliste	v	
Page 1 o				544 10004			Complete	Х	-
Job No.:	PT 22			5/14/2004			Preliminary	-	-
Specification:	4L0360		Temperature(°C):						
Fested By:	David Light		Relative Humidity(%)	60					
E.U.T.:	DAC-850-1		5			-			
Configuration:	-	OWER INTO LOA	D			-			
Sample No:	1								
location:	AC 3				1 MHz	-	Measurement		
Detector Type:	Peak			VBW:	1 MHz	-	Distance:	3	m
<u> Fest Equipm</u>	ent Used								
Antenna:	1304		D	irectional Coupler:		_			
Pre-Amp:	1016				1484	-			
Filter:				Cable #2:	1485	-			
Receiver:	1464			Cable #3:		_			
Attenuator #1				Cable #4:		-			
Attenuator #2:				Mixer:		_			
Additional equip	ment used:					_			
Measurement Ur	ncertainty:	+/-1.7 dB				_			
Frequency	Meter	Substitution	Pre-Amp	Substitution	ERP	Limit	Margin	Polarity	Comments
	Reading	Level	Gain	Antenna Gain					
(MHz)	(dBm)	(dBm)	(dB)	(dBd)	(dBm)	(dBm)	(dB)		
(MHz)	(dBm)	(dBm)	(dB)	(dBd)	(dBm)	(dBm)	(dB)		Tx @ 881.5 MHz
(MHz)	( <b>dBm</b> ) -32.0	( <b>dBm</b> ) -33.9	(dB) 32.9	( <b>dBd</b> ) 7.3	( <b>dBm</b> ) -33.9	( <b>dBm</b> ) -13.0	(dB) -20.9000	V	Tx @ 881.5 MHz
								V V V	Tx @ 881.5 MHz
1763	-32.0	-33.9	32.9	7.3	-33.9	-13.0	-20.9000		Tx @ 881.5 MHz
1763 2644.5	-32.0 -26.0	-33.9 -23.5	32.9 33	7.3 8.0	-33.9 -23.5	-13.0 -13.0	-20.9000 -10.5000	V	Tx @ 881.5 MHz
1763 2644.5 3526	-32.0 -26.0 -48.7	-33.9 -23.5 -38.0	32.9 33 32.6	7.3 8.0 8.6	-33.9 -23.5 -38.0	-13.0 -13.0 -13.0	-20.9000 -10.5000 -24.9667	V V	Tx @ 881.5 MHz Noise floor
1763 2644.5 3526 4407.5	-32.0 -26.0 -48.7 -69.3	-33.9 -23.5 -38.0 -57.4	32.9 33 32.6 33.4	7.3 8.0 8.6 8.2	-33.9 -23.5 -38.0 -57.4	-13.0 -13.0 -13.0 -13.0	-20.9000 -10.5000 -24.9667 -44.3667	V V V	
1763 2644.5 3526 4407.5 5289	-32.0 -26.0 -48.7 -69.3 -73.0	-33.9 -23.5 -38.0 -57.4 -64.0	32.9 33 32.6 33.4 32.3	7.3 8.0 8.6 8.2 8.2 8.2	-33.9 -23.5 -38.0 -57.4 -64.0	-13.0 -13.0 -13.0 -13.0 -13.0 -13.0	-20.9000 -10.5000 -24.9667 -44.3667 -50.9667	V V V V	Noise floor
1763 2644.5 3526 4407.5 5289 6170.5	-32.0 -26.0 -48.7 -69.3 -73.0 -74.6	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7	32.9 33 32.6 33.4 32.3 31.6	7.3 8.0 8.6 8.2 8.2 9.6	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7	-13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0	-20.9000 -10.5000 -24.9667 -44.3667 -50.9667 -52.7000	V V V V V	Noise floor Noise floor
1763 2644.5 3526 4407.5 5289 6170.5 7052	-32.0 -26.0 -48.7 -69.3 -73.0 -74.6 -73.0	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3	32.9 33 32.6 33.4 32.3 31.6 32.1	7.3 8.0 8.6 8.2 8.2 9.6 8.8	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3	-13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0	-20.9000 -10.5000 -24.9667 -44.3667 -50.9667 -52.7000 -51.2667	V V V V V V	Noise floor Noise floor Noise floor Noise floor
1763 2644.5 3526 4407.5 5289 6170.5 7052 7933.5	-32.0 -26.0 -48.7 -69.3 -73.0 -74.6 -73.0 -72.0	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3 -63.1	32.9 33 32.6 33.4 32.3 31.6 32.1 32.9	7.3 8.0 8.6 8.2 9.6 8.8 9.2	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3 -63.1	-13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0	-20.9000 -10.5000 -24.9667 -44.3667 -50.9667 -52.7000 -51.2667 -50.0667	V V V V V V V	Noise floor Noise floor Noise floor Noise floor Noise floor
1763 2644.5 3526 4407.5 5289 6170.5 7052 7933.5	-32.0 -26.0 -48.7 -69.3 -73.0 -74.6 -73.0 -72.0	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3 -63.1	32.9 33 32.6 33.4 32.3 31.6 32.1 32.9	7.3 8.0 8.6 8.2 9.6 8.8 9.2	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3 -63.1	-13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0	-20.9000 -10.5000 -24.9667 -44.3667 -50.9667 -52.7000 -51.2667 -50.0667	V V V V V V V	Noise floor Noise floor Noise floor Noise floor Noise floor
1763 2644.5 3526 4407.5 5289 6170.5 7052 7933.5 8815	-32.0 -26.0 -48.7 -69.3 -73.0 -74.6 -73.0 -72.0 -72.0	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3 -63.1 -62.1	32.9 33 32.6 33.4 32.3 31.6 32.1 32.9 33.9	7.3 8.0 8.6 8.2 9.6 8.8 9.2 9.4	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3 -63.1 -62.1	-13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0	-20.9000 -10.5000 -24.9667 -44.3667 -50.9667 -52.7000 -51.2667 -50.0667 -49.0667	V V V V V V V V	Noise floor Noise floor Noise floor Noise floor Noise floor
1763 2644.5 3526 4407.5 5289 6170.5 7052 7933.5 8815 1763	-32.0 -26.0 -48.7 -69.3 -73.0 -74.6 -73.0 -72.0 -72.0 -73.0 -73.0 -73.0	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3 -63.1 -63.1 -62.1 -34.1	32.9 33 32.6 33.4 32.3 31.6 32.1 32.9 33.9 32.9	7.3 8.0 8.6 8.2 9.6 8.8 9.2 9.4 7.3	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3 -63.1 -62.1 -34.1	-13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0	-20.9000 -10.5000 -24.9667 -44.3667 -50.9667 -52.7000 -51.2667 -50.0667 -49.0667 -21.1000	V V V V V V V H	Noise floor Noise floor Noise floor Noise floor Noise floor
1763 2644.5 3526 4407.5 5289 6170.5 7052 7933.5 8815 1763 2644.5	-32.0 -26.0 -48.7 -69.3 -73.0 -74.6 -73.0 -72.0 -72.0 -73.0 -73.0 -73.0 -72.0 -73.0 -73.0 -73.0 -73.0	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3 -63.1 -62.1 -34.1 -23.1	32.9 33. 32.6 33.4 32.3 31.6 32.1 32.9 33.9 32.9 33.9 32.9 33.3	7.3 8.0 8.6 8.2 9.6 8.8 9.2 9.4 7.3 8.0	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3 -63.1 -62.1 -34.1 -23.1	-13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0	-20.9000 -10.5000 -24.9667 -44.3667 -50.9667 -52.7000 -51.2667 -50.0667 -49.0667 -21.1000 -10.1000	V V V V V V V H H	Noise floor Noise floor Noise floor Noise floor Noise floor
1763 2644.5 3526 4407.5 5289 6170.5 7052 7933.5 8815 1763 2644.5 3526	-32.0 -26.0 -48.7 -69.3 -73.0 -74.6 -73.0 -72.0 -73.0 -72.0 -73.0 -73.0 -72.0 -73.0 -74.6 -73.0 -73.0 -73.0 -74.6 -73.0 -74.6 -73.0 -73.0 -74.6	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3 -63.1 -63.1 -62.1 -34.1 -23.1 -43.3	32.9 33 32.6 33.4 32.3 31.6 32.1 32.9 33.9 32.9 33.9 32.9 33 32.6	7.3 8.0 8.6 8.2 9.6 8.8 9.2 9.4 7.3 8.0 8.6	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3 -63.1 -62.1 -34.1 -23.1 -43.3	-13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0	-20.9000 -10.5000 -24.9667 -44.3667 -50.9667 -52.7000 -51.2667 -50.0667 -49.0667 -21.1000 -10.1000 -30.3000	V V V V V V V H H H	Noise floor Noise floor Noise floor Noise floor Noise floor
1763 2644.5 3526 4407.5 5289 6170.5 7052 7933.5 8815 1763 2644.5 3526 4407.5	-32.0 -26.0 -48.7 -69.3 -73.0 -74.6 -73.0 -72.0 -73.0 -73.0 -73.0 -73.0 -73.0 -73.0 -73.0 -73.0 -73.0 -73.0 -73.0 -73.0 -73.0 -73.0 -73.0 -74.6 -73.0 -73.0 -74.6 -73.0 -73.0 -74.6 -73.0 -73.0 -74.6 -73.0 -74.6 -73.0 -74.6 -73.0 -74.6 -73.0 -74.6 -73.0 -74.6 -73.0 -74.6 -73.0 -74.6 -73.0 -74.6 -73.0 -74.6 -73.0 -74.6 -73.0 -74.6	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3 -63.1 -62.1 -34.1 -23.1 -43.3 -65.1	32.9 33 32.6 33.4 32.3 31.6 32.1 32.9 33.9 32.9 33.9 32.9 33 32.6 33.4	7.3 8.0 8.6 8.2 9.6 8.8 9.2 9.4 7.3 8.0 8.6 8.2	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3 -63.1 -62.1 -34.1 -23.1 -43.3 -65.1	-13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0	-20.9000 -10.5000 -24.9667 -50.9667 -52.7000 -51.2667 -50.0667 -49.0667 -21.1000 -10.1000 -30.3000 -52.0667	V V V V V V V H H H H	Noise floor Noise floor Noise floor Noise floor Noise floor
1763 2644.5 3526 4407.5 5289 6170.5 7052 7933.5 8815 1763 2644.5 3526 4407.5 5289	-32.0 -26.0 -48.7 -69.3 -73.0 -74.6 -73.0 -72.0 -73.0 -73.0 -73.0 -34.2 -25.6 -46.2 -66.5 -73.0	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3 -63.1 -62.1 -34.1 -23.1 -43.3 -65.1 -67.0	32.9 33 32.6 33.4 32.3 31.6 32.1 32.9 33.9 32.9 33.9 32.9 33.9 32.9 33.4 32.6 33.4 32.3	7.3       8.0       8.6       8.2       9.6       8.8       9.2       9.4       7.3       8.0       8.6       8.2       8.8       9.2       9.4       7.3       8.0       8.6       8.2       8.2       8.2	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3 -63.1 -62.1 -34.1 -23.1 -43.3 -65.1 -67.0	-13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0	-20.9000 -10.5000 -24.9667 -44.3667 -50.9667 -52.7000 -51.2667 -50.0667 -49.0667 -21.1000 -10.1000 -30.3000 -52.0667 -53.9667	V V V V V V V H H H H H	Noise floor Noise floor Noise floor Noise floor Noise floor Noise floor Noise floor
1763 2644.5 3526 4407.5 5289 6170.5 7052 7933.5 8815 1763 2644.5 3526 4407.5 5289 6170.5	-32.0 -26.0 -48.7 -69.3 -73.0 -74.6 -73.0 -72.0 -73.0 -73.0 -34.2 -25.6 -46.2 -66.5 -73.0 -74.6	-33.9 -33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3 -65.1 -62.1 -34.1 -23.1 -43.3 -65.1 -65.1 -67.0 -67.5 -64.8	32.9 33 32.6 33.4 32.3 31.6 32.1 32.9 33.9 32.9 33.9 32.9 33 32.6 33.4 32.3 31.6	7.3 8.0 8.6 8.2 9.6 8.8 9.2 9.4 9.4 7.3 8.0 8.6 8.2 8.2 8.2 9.6	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3 -63.1 -62.1 -34.1 -23.1 -43.3 -65.1 -67.0 -67.5 -64.8	-13.0 -13.0	-20.9000 -10.5000 -24.9667 -44.3667 -50.9667 -52.7000 -51.2667 -50.0667 -49.0667 -21.1000 -10.1000 -30.3000 -52.0667 -53.9667 -54.5333	V V V V V V V H H H H H H	Noise floor Noise floor Noise floor Noise floor Noise floor Noise floor Noise floor Noise floor
1763 2644.5 3526 4407.5 5289 6170.5 7052 7933.5 8815 1763 2644.5 3526 4407.5 5289 6170.5 7052	-32.0 -26.0 -48.7 -69.3 -73.0 -74.6 -73.0 -72.0 -73.0 -72.0 -73.0 -34.2 -25.6 -46.2 -66.5 -73.0 -74.6 -73.0	-33.9 -33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3 -65.1 -62.1 -34.1 -23.1 -43.3 -65.1 -67.0 -67.5	32.9 33 32.6 33.4 32.3 31.6 32.1 32.9 33.9 32.9 33.9 32.9 33 32.6 33.4 32.3 31.6 32.1 32.1 32.9 33 32.6 33.4 32.3 31.6 32.1	7.3       8.0       8.6       8.2       9.6       8.8       9.2       9.4       7.3       8.0       8.6       8.2       9.4       7.3       8.0       8.6       8.2       9.4	-33.9 -23.5 -38.0 -57.4 -64.0 -65.7 -64.3 -63.1 -63.1 -63.1 -23.1 -23.1 -43.3 -65.1 -67.0 -67.5	-13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0 -13.0	-20.9000 -10.5000 -24.9667 -44.3667 -50.9667 -52.7000 -51.2667 -50.0667 -49.0667 -21.1000 -10.1000 -30.3000 -52.0667 -53.9667 -54.5333 -51.7667	V V V V V V V H H H H H	Noise floor Noise floor Noise floor Noise floor Noise floor Noise floor Noise floor

# **Test Setup Photos**



# Section 7. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
1036	SPECTRUM ANALYZER	ROHDE & SCHWARZ FSEK30	830844/006	12/18/01	12/19/03
1060	TUNABLE NOTCH FILTER	K&L 3TNF-500/1000-N/N	162	CBU	N/A
1604	ATTENUATOR	NARDA 776B-20	NONE	CBU	N/A
1054	DUAL DIRECTIONAL COUPLER	NARDA 3020A	34366	CBU	N/A
1055	DUAL DIRECTIONAL COUPLER	NARDA 3022	73393	CBU	N/A
1058	DUAL DIRECTIONAL COUPLER	HEWLETT PACKARD 11692D	1212A03366	CBU	N/A
1629	CABLE, 6 ft	MEGAPHASE 10311 1GVT4	N/A	CBU	N/A
1464	Spectrum analyzer	Hewlett Packard 8563E	3551A04428	02/11/03	02/11/05
1484	Cable 2.0-18.0 Ghz	Storm PR90-010-072	N/A	07/24/03	07/23/04
1485	Cable 2.0-18.0 Ghz	Storm PR90-010-216	N/A	07/24/03	07/23/04
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	10/27/03	10/26/04
1304	HORN ANTENNA	ELECTRO METRICS RGA-60	6151	09/22/03	09/22/05
759	ANTENNA, LOG PERIODIC	A.H. SYSTEMS SAS-200/510	556	07/02/03	07/01/04
760	Antenna biconical	Electro Metrics MFC-25	477	06/05/03	06/04/04
791	PREAMP, 25dB	ICC LNA25	398	10/27/03	10/26/04

ANNEX A - TEST DETAILS

#### NAME OF TEST: RF Power Output

#### PARA. NO.: 2.1046

Minimum Standard: Para. No. 22.913(a). The maximum effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 watts.

#### Method of Measurement:

Detachable Antenna:

The peak power at antenna terminals is measured using an in-line peak power meter or a spectrum analyzer with sufficient bandwidth. Power output is measured with the maximum rated input level.

#### Integral Antenna:

TIA/EIA-603-1992, Section 2.2.12

The antenna substitution method was used to determine the equivalent radiated power at spurious frequencies. The spurious emissions were measured at a distance of 3 meters. The EUT was then replaced with a reference substitution antenna with a known gain referenced to a dipole. This antenna was fed with a signal at the spurious frequency. The level of the signal was adjusted to repeat the previously measured level. The resulting erp is the signal level fed to the reference antenna corrected for gain referenced to a dipole.

EQUIPMENT: DAC-850-125

#### NAME OF TEST: Occupied Bandwidth (Voice & SAT) PARA. NO.: 2.1049

Minimum Standard: Not defined by FCC. Input vs. Output.

#### Method Of Measurement:

Spectrum Analyzer Settings:

RBW: 300 Hz VBW: ? RBW Span: 100 kHz Sweep: Auto

Input Signal Characteristics (F3E/F3D):

RF level: Maximum recommended by manufacturer AF1 frequency: 6 kHz AF1 level: sufficient to produce 2 kHz deviation AF2 frequency: 2.5 kHz AF2 level: sufficient to produce 12 kHz deviation.

EQUIPMENT: DAC-850-125

#### NAME OF TEST: Occupied Bandwidth (WB Data) PARA. NO.: 2.1049

Minimum Standard: Not defined by FCC. Input vs. Output.

#### Method Of Measurement:

Spectrum Analyzer Settings: RBW: 300 Hz VBW: ? RBW Span: 200 kHz Sweep: Auto

Input Signal Characteristics: RF level: Maximum recommended by manufacturer AF1 frequency: 10 kHz, random bit sequence AF1 level: sufficient to produce 8 kHz deviation

#### NAME OF TEST: Occupied Bandwidth (ST)

#### PARA. NO.: 2.1049

Minimum Standard: Not defined by FCC. Input vs. Output.

#### Method Of Measurement:

Spectrum Analyzer Settings: RBW: 300 Hz VBW: ? RBW Span: 200 kHz Sweep: Auto

Input Signal Characteristics: RF level: Maximum recommended by manufacturer AF1 frequency: 10 kHz tone AF1 level: sufficient to produce 8 kHz deviation

EQUIPMENT: DAC-850-125

#### NAME OF TEST: Occupied Bandwidth (Digital Modulation) PARA. NO.: 2.1049

Minimum Standard: Not defined by FCC. Input vs. Output.

#### Method Of Measurement:

Spectrum Analyzer Settings: RBW: CDMA (30 kHz), GSM (30 kHz), NADC (1 kHz) and CDPD (1 kHz) VBW: ? RBW Span: As required Sweep: Auto

Input Signal Characteristics: RF level: Maximum recommended by manufacturer

#### NAME OF TEST: Spurious Emission at Antenna Terminals PARA. NO.: 2.1051

Minimum Standard:Para. No. 22.917(a). Out of bandemissions. The power of any emission outside of the authorizedoperating frequency ranges must be attenuated below the transmittingpower (P) by a factor of at least  $43 + 10 \log(P)$  dB. This is equivalentto -13 dBm absolute power.

#### Method Of Measurement:

Spectrum Analyzer Settings: RBW: 30 kHz (AMPS). As required for digital modulations. VBW: ? RBW Start Frequency: 0 MHz Stop Frequency: 10 GHz Sweep: Auto

#### NAME OF TEST: Field Strength of Spurious Radiation PARA. NO.: 2.1053

Minimum Standard:Para. No. 22.917(a). Out of bandemissions. The power of any emission outside of the authorizedoperating frequency ranges must be attenuated below the transmittingpower (P) by a factor of at least  $43 + 10 \log(P)$  dB. This is equivalentto -13 dBm absolute power.

#### **Test Method:**

TIA/EIA-603-1992, Section 2.2.12

The antenna substitution method was used to determine the equivalent radiated power at spurious frequencies. The spurious emissions were measured at a distance of 3 meters. The EUT was then replaced with a reference substitution antenna with a known gain referenced to a dipole. This antenna was fed with a signal at the spurious frequency. The level of the signal was adjusted to repeat the previously measured level. The resulting erp is the signal level fed to the reference antenna corrected for gain referenced to a dipole.

#### NAME OF TEST: Frequency Stability

#### PARA. NO.: 2.1055

**Minimum Standard:** Para. No. 22.355. The transmitter carrier frequency shall remain within the tolerances given in Table C-1.

	Table	eC-1	
Freq. Range (MHz)	Base, fixed	Mobile > 3 W	Mobile ? 3 W
821 to 896	1.5	2.5	2.5

Table C-1
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#### **Method Of Measurement:**

#### Frequency Stability With Voltage Variation:

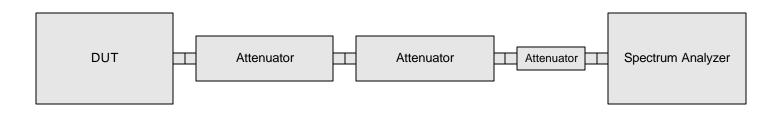
The E.U.T. is placed in an environmental chamber and allowed to stabilize at +20 degrees Celsius for at least 15 minutes. The frequency counter and signal generator are phase locked with the same 10 MHz reference frequency by connecting the 10 MHz ref. out of the counter to the 10 MHz ref, in of the signal generator. With the voltage input to the E.U.T. set to 85% S.T.V., the frequency is measured in 30 second intervals for a period of 5 minutes. This procedure is repeated at 100% S.T.V. and 115% S.T.V.

#### Frequency Stability With Temperature Variation:

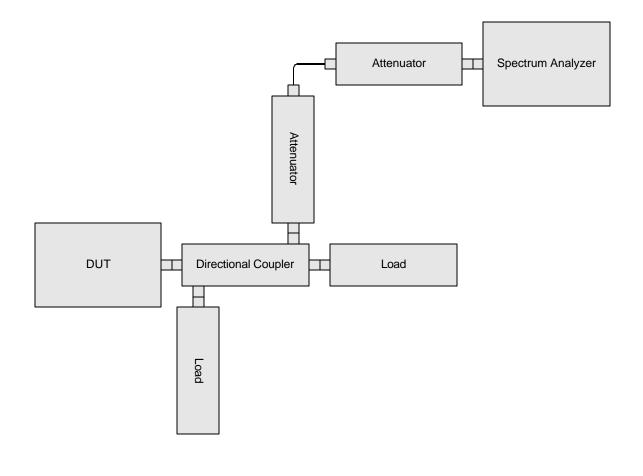
The input voltage to the E.U.T. is set to S.T.V. and the temperature of the environmental chamber is varied in 10 degree steps from -30 degrees C to +50 degrees C. The E.U.T. is allowed to stabilize at each temperature and the frequency is measured in 30 second intervals for a period of 5 minutes.

ANNEX B - TEST DIAGRAMS

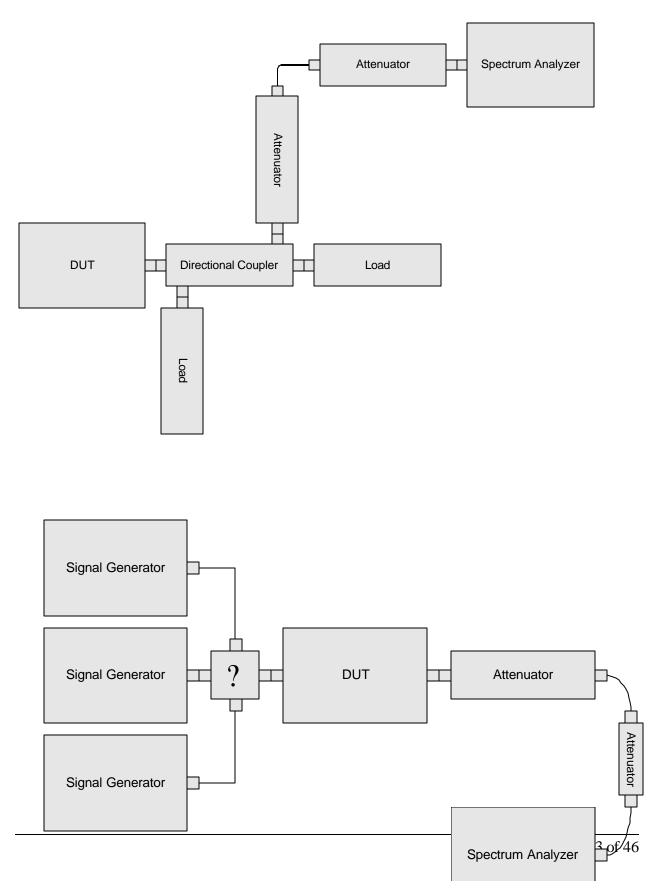
### Para. No. 2.1046 - R.F. Power Output



Para. No. 2.1049 - Occupied Bandwidth

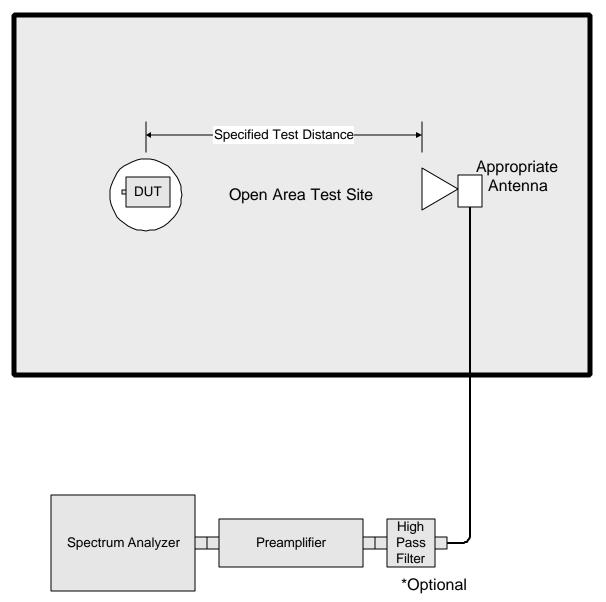


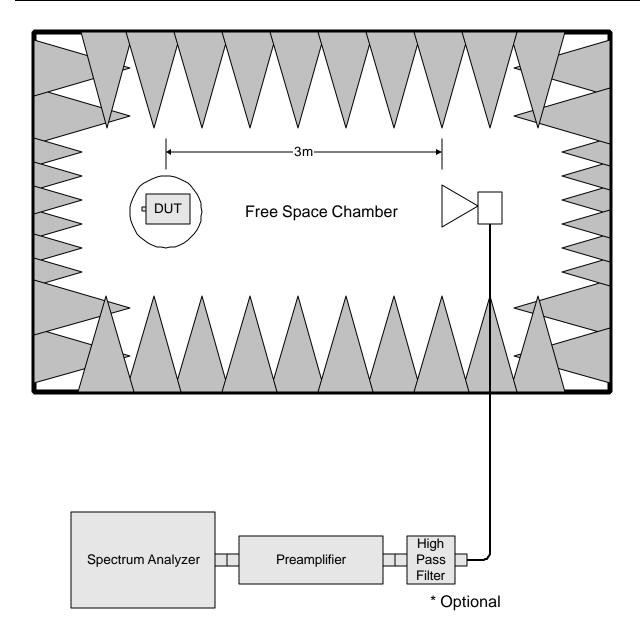
# Para. No. 2.1051 Spurious Emissions at Antenna Terminals



#### **Test Report No.:** 4L0360RUS1Rev1

### Para. No. 2.1053 - Field Strength of Spurious Radiation





# Para. No. 2.1055 - Frequency Stability

