Nemko Test Report No.:	2L0101RUS1
Applicant:	Communication Components 89 Leuning Street 299 Forest Avenue Hackensack, NJ 07606
Equipment Under Test:	DAB-1819-100
In Accordance With:	FCC Part 24, Subpart E Broadband PCS Repeaters
Tested By:	Nemko Dallas Inc. 802 N. Kealy Lewisville, Texas 75057-3136
Jo- Till	
Authorized By:	Tom Tidwell, RF Group Manager
Date:	3/29/02
Total Number of Pages:	33

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**EQUIPMENT:** 

FCC PART 24, SUBPART E
BROADBAND PCS REPEATERS
PROJECT NO.: **2L0101RUS1** 

Section 1. Summary of Test Results

**DAB-1819-100** 

Manufacturer:	Communication Components, Inc.		
Model No.:	DAB-1819-100		
Serial No.:	None		
General:	All measurements are traceable to	nation	al standards.
	re conducted on a sample of the equipment f h FCC Part 24, Subpart E.	for the p	ourpose of demonstrating
	New Submission		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 See "Summary of Test Data".

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# **Summary Of Test Data**

NAME OF TEST	PARA. NO.	SPEC.	RESULT
RF Power Output	24.232	<100W	Complies
Occupied Bandwidth (CDMA)	24.238	Input/Output	N/A
Occupied Bandwidth (GSM)	24.238	Input/Output	Complies
Occupied Bandwidth (NADC)	24.238	Input/Output	N/A
Spurious Emissions at Antenna Terminals	24.238(a)	-13 dBm	Complies
Field Strength of Spurious Emissions	24.238(a)	-13 dBm	Complies
	24.236(a)	E.I.R.P.	Compiles
Frequency Stability	24.235	N/A	N/A

### **Footnotes:**

- (1) Modulation characteristics were not tested since the E.U.T. processes but does not produce a modulated waveform.
- (2) Since this is an amplifier and does not translate the rf input, frequency stability is not applicable.

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

# Section 2. General Equipment Specification

-					
Frequency Bands:	Downlink:	Block A:	1930 –	1945 MHz	
_		Block D:	1945 –	1950 MHz	
		Block B:	1950 –	1965 MHz	
		Block E:	1965 –	1970 MHz	
_		Block F:	1970 –	1975 MHz	
-		Block C:	1975 –	1990 MHz	
Frequency Bands:	Uplink:	Block A:	1850 –	1865 MHz	
		Block B:	1865 –	1870 MHz	
		Block C:	1870 –	1885 MHz	
		Block D:	1885 –	1890 MHz	
_		Block E:	1890 –	1895 MHz	
_		Block F:	1895 –	1910 MHz	
		CDMA		GSM	NADC
		(G7W)		(GXW)	(DXW)
System Gain:		10 dB			
Output Impedance:		50 ohms			
		Not tested. The coaxial connection			connected with
		Per channel:	100	W	
		Total:		W	
		F1-F1		F1-F2	N/A
		Software		Duplexer	Fullband

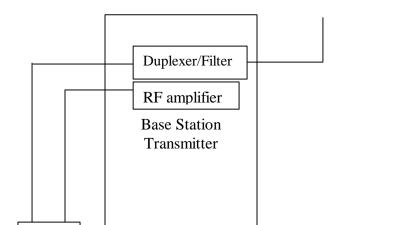
# **Description of Operation**

The EUT is an RF Amplifier to boost either a PCS or Cellular signal. The amplifier would be operated in an equipment rack and the antenna would be mounted on a pole or tower. The forward direction is wireless but the reverse direction is connected directly to a Base Station Transmitter via coaxial cables.

To fixed antenna

# **System Diagram**

**EUT** 



# Section 3. RF Power Output

NAME OF TEST: RF Power Output PARA. NO.: 2.1046

TESTED BY: D. Light DATE:3/14/02

**Test Results:** Complies.

**Measurement Data:** 

Frequency (MHz)	Modulation Type	Per Channel Output Power (dBm)	Composite Output Power (dBm)	Maximum Power Output Delivered to the Antenna (dBm)
1930.2*	GSM	34.7	** N/A	+33.9
1930.3	GSM	50.8	N/A	+50.0
1960	GSM	50.8	N/A	+50.0
1989.7	GSM	50.8	N/A	+50.0
1989.8*	GSM	33.6	N/A	+33.9
Intermodulation (Lower bandedge)	GSM	36.2	***39.2	+38.4
Intermodulation (Upper bandedge)	GSM	40.4	43.4	+42.6

<sup>\*</sup>Power must be reduced at the bandedges to meet emission requirements. Refer to plots in Section 5 of this document.

Footnote – The amplifier is rated at 100 watts(+50 dBm) but was tested at maximum level(+50.8 dBm) to compensate for any path loss between the amplifier and antenna. There will always be a duplexer and coaxial cable between the output of the EUT and the transmit antenna. The output of the transmitter is set so that a rf output power not exceeding 100 watts is delivered to the transmit antenna.

**Equipment Used:** 1036-1629-1055-1064

**Measurement Uncertainty:** +/- 1.7 dB

<sup>\*\*</sup> This is one carrier only.

<sup>\*\*\*</sup>This reading was measured with two carriers at each bandedge.

FCC PART 24, SUBPART E
BROADBAND PCS REPEATERS
PROJECT NO.: **2L0101RUS1** 

*EQUIPMENT:* **DAB-1819-100** 

FCC PART 24, SUBPART E
BROADBAND PCS REPEATERS
PROJECT NO.: **2L0101RUS1** 

# Section 4. Occupied Bandwidth

**EQUIPMENT: DAB-1819-100** 

NAME OF TEST: Occupied Bandwidth (GSM) PARA. NO.: 2.1049

TESTED BY: David Light DATE:3/14/2002

**Test Results:** Complies.

**Test Data:** See attached plot(s).

**Measurement Uncertainty:** +/- 1.6 dB

Dallas Headquarters:

802 N. Kealy

# **EQUIPMENT: DAB-1819-100**

# Test Data – Occupied Bandwidth



### Nemko Dallas, Inc.

Lewisville, TX 75057 Tel: (972) 436-9600 Fax: (972) 436-2667

Data F	Plot				OCCU	PIED BA	NDWIDT	<u>'H</u>				
	e <u>1</u> of 2	2							Complete	X		
Job No.:	2	2L0101	R		Date:	3/14/2002			Preliminary:			
Specification	on: 2	24.238		Temp	erature(°C):	22						
Tested By:	]	David I	Light	Relative F	Iumidity(%)	40						
E.U.T.:	_	PCS B	AND GSM BO		_							
Configurati			LL POWER									
Sample Nu	-	1										
Location:	-	Lab	1			RBW: 2	kHz		Measurement			
Detector T	ype:	Pea	ık			VBW: 2			Distance:	N/A r	n	
Test Equ	ıipmeı	ıt Use	ed									
Antenna:					Direction	onal Coupler:	1055					
Pre-Amp:	_					Cable #1:	1629					
Filter:	_					Cable #2:						
Receiver:	-	103	36			Cable #3:						
Attenuator	#1	106	54			Cable #4:						
Attenuator	-					Mixer:						
Additional		ent use	d:			_						
Measureme				dB								
r)				Marker	1 [1]		кви	2 k	Hz RF	Att	30 dB	
•	ef L					32 dBm	VBW	2 k				
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-50 <b>L</b> C	ente	er .	1.96 GH	z		200	kHz/			Spa	n 2 MHz	
ate:		1	4.MAR.2	2002 14	:40:13							
Notes	s: (	OUTF	UT GSM SI	GNAL AT FU	LL POWER	(+50.8 dBm)						
	-											

# Test Data - Occupied Bandwidth



#### Dallas Headquarters:

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

Nemko Dallas, Inc. **Data Plot** OCCUPIED BANDWIDTH Page 2 of 2 2L0101R Date: 3/14/2002 Job No.: Specification: 24.2 Temperature(°C): 22 Tested By: David Light Relative Humidity(%) 40 E.U.T.: PCS BAND GSM BOOSTER TX FULL POWER Configuration: 30 dB Ref Lvl 2 kHz 25.66 dBm VBW 50 dBm 1.95990982 GHz 1.25 s SWT Unit dBm 50 41.4 dB Offset ▼1 [T1] 25.66 dBm 1.95990<mark>982 GHz</mark> 40 -1.83 aв 172.34468938 kHz 30 20 1 V I E W 1MA 10 - 10 -20 -30 -4∩ -50 200 kHz/ Center 1.96 GHz Span 2 MHz 14.MAR.2002 14:46:16 ate:

Notes: INPUT GSM SIGNAL (+41.0 dBm)

FCC PART 24, SUBPART E
BROADBAND PCS REPEATERS
PROJECT NO.: **2L0101RUS1** 

# Section 5. Spurious Emissions at Antenna Terminals

NAME OF TEST: Spurious Emissions @ Antenna Terminals PARA. NO.: 2.1051

TESTED BY: David Light DATE: 2/26/2002

**Test Results:** Complies.

**EQUIPMENT: DAB-1819-100** 

**Test Data:** See attached plot(s).

**Measurement Uncertainty:** +/- 1.7 dB

Page 12 of33

### Test Data – Spurious Emissions at Antenna Terminals

(N)	Nem	(0

Nemko Dallas, Inc.

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

BANDEDGE DATA **Data Plot** Page <u>1</u> of <u>6</u> Complete Date: 2/26/2002 Job No.: 2L0101R Preliminary: Specification: 24.238 Temperature(°C): Tested By: David Light Relative Humidity(%) 50 E.U.T.: PCS BAND GSM BOOSTER Configuration: Sample Number: Location: Lab 1 RBW: 2 kHz Measurement Detector Type: VBW: 2 kHz Distance: N/A Peak m Test Equipment Used Antenna: Directional Coupler: Cable #1: Pre-Amp: Filter: Cable #2: 1036 Cable #3: Receiver: Cable #4: Attenuator #2: Mixer: Additional equipment used: +/-1.7 dB Measurement Uncertainty: dE Ref Lvl 2 kHz VBW 60.8 dBm SWT 400 ms Unit dBm dB Offs∉t 50 40 30 1 V I E W 1 MA 20 EXT 10 -20 -30 39.2 Center 1.93 GHz 62.5 kHz/ Span 625 kHz 26.FEB.2002 12:08:09 Date: LOWER BANDEDGE - FREQUENCY 1930.2 MHz Notes: OUTPUT POWER = 34.7 dBm

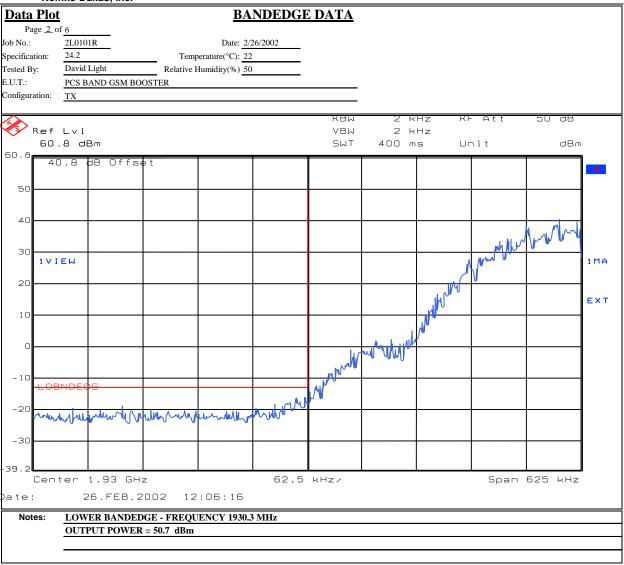
# **Test Data – Spurious Emissions at Antenna Terminals**



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Nemko Dallas, Inc.



# Test Data – Spurious Emissions at Antenna Terminals



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Nemko Dallas, Inc. **Data Plot BANDEDGE DATA** Page <u>3</u> of <u>6</u> 2L0101R Date: 2/26/2002 Job No.: Specification: 24.238 Temperature(°C): 22 Tested By: David Light Relative Humidity(%) 50 E.U.T.: PCS BAND GSM BOOSTER Configuration: TXRBW 2 kHz RF Att 50 dB Ref Lvl 2 kHz 5.24 dBm VBW 60.8 dBm 1.98968750 GHz SWT 400 ms Unit dBm 60.8 Α 50 40 30 1 V I E W 1 MA 20 EXT - 1 C John Michigan Michigan Carlot Company -20 -30 Center 1.99 GHz 62.5 kHz/ Span 625 kHz ate: 26.FEB.2002 12:12:38 UPPER BANDEDGE - CF = 1989.8 MHz Notes: **OUTPUT POWER = 33.6 dBm** 

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



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Nemko Dallas, Inc. **Test Plot: BANDEDGE DATA** Page <u>4</u> of <u>6</u> 2L0101R Date: 2/26/2002 Job No.: Specification: 24.238 Temperature(°C): 22 Tested By: David Light Relative Humidity(%) 50 E.U.T.: PCS BAND GSM BOOSTER Configuration: TX Ref Lvl 2 kHz 35.44 dBm VBW 60.8 dBm 1.98968750 GHz SWT 400 ms Unit dBm 60.8 40.8 Α 50 40 1 MA 20 EXT 1 C - 1C -20 -30 39.2 Center 1.99 GHz 62.5 kHz/ Span 625 kHz 26.FEB.2002 12:16:13 late: UPPER BANDEDGE - CF = 1989.7 MHz Notes: **OUTPUT POWER = 50.8 dBm** 

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



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Nemko Dallas, Inc. **Test Plot: BANDEDGE DATA** Page <u>5</u> of <u>6</u> 2L0101R Date: 2/26/2002 Job No.: Specification: 24.238 Temperature(°C): 22 David Light Tested By: Relative Humidity(%) 50 E.U.T.: PCS BAND GSM BOOSTER Configuration: TX 🥟 Ref Lvl 2 kHz -14.51 dBm VBW 60 dBm 1.92947395 GHz SWT 9.4 s Unit dBm 60 40.9 dB Offset 51 dBr Α .92947 GHz 50 40 30 1 V I E W 1 MA 20 10 - 10 dBm. -20 -30 Center 1.93 GHz 1.5 MHz/ Span 15 MHz 05.MAR.2002 15:23:01 Marker indicates highest emission Notes: RF output = 36.3 dBm Output/carrier (39.3 dBm total)

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



#### Dallas Headquarters:

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

Nemko Dallas, Inc. **Test Plot: BANDEDGE DATA** Page <u>6</u> of <u>6</u> 2L0101R Date: 2/26/2002 Job No.: Specification: 24.238 Temperature(°C): 22 David Light Tested By: Relative Humidity(%) 50 E.U.T.: PCS BAND GSM BOOSTER Configuration: TX Ref Lvl -15.11 dBm VBW 2 kHz 60 dBm 1.99100701 GHz SWT 9.4 s Unit dBm 40.9 dB Offset .11 dBi .99100701 GHz 40 1 V I E W 1MA dBm Center 1.99 GHz 1.5 MHz/ Span 15 MHz 05.MAR.2002 15:20:42 Notes: Marker indicates highest emission RF output = 40.4 dBm Output/carrier (43.4 dBm total)

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



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

Nemko Dallas, Inc.

Data Plot				SPUR	RIOUS EN	<b>MISSIONS</b>	<u>S</u>				
Page 1 of	f <u>2</u>							Complete	2 X		
Job No.:	2L0101R			Date:	2/26/2002			Preliminary	:		_
Specification:	24.238		Tempe	erature(°C):	22						
Tested By:	Lance Wa	lker	Relative H	umidity(%)	50						
E.U.T.:	PCS BAN	D GSM BOC	STER								
Configuration:	TX										
Sample Number:	1										
Location:	Lab 1				RBW: R	efer to plots		Measuremen	t		
Detector Type:	Peak				_	efer to plots		Distance	: N/A	m	
					_	•					
Test Equipme Antenna:	ent Used			Direction	onal Coupler:	1055					
Pre-Amp:					Cable #1:	1629					
Filter:		_			Cable #2:	1027					
Receiver:	1036	_			Cable #3:						
Attenuator #1	1064	_			Cable #4:						
Attenuator #2:	1004	_			Mixer:						
					Mixer.						
Additional equips		./17.0	D.								
Measurement Un	icertainty:	+/-1.7 d	<u> </u>								
ri de			Marker	1 [   1 ]		RBM	100	kHz RI	- Att	30 GB	
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Notes:											

# Test Data – Spurious Emissions at Antenna Terminals



#### Dallas Headquarters:

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Nemko Dallas, Inc. **Data Plot SPURIOUS EMISSIONS** Page 2 of 2 2L0101R Date: 2/26/2002 Job No.: 24.2 Specification: Temperature(°C): 22 Tested By: Lance Walker Relative Humidity(%) 50 E.U.T.: PCS BAND GSM BOOSTER Configuration: 10 dB Ref Lvl -14.09 dBm VBW 1 MHz 13.6 dBm 1.95190381 GHz 20 s SWT Unit dBm 13.E 43.6 dB Offset **V**1 10 381 GHz [T1] .29 dBm 749 GHz - 10 -20 1MA -30 -40 -50 -60 -70 -80 86.4 Start 1 GHz 1.9 GHz/ Stop 20 GHz ate: 05.MAR.2002 14:24:17 Notes: Marker 1 indicates Carrier (notched) Marker 2 indicates highest emission

FCC PART 24, SUBPART E
BROADBAND PCS REPEATERS
PROJECT NO.: **2L0101RUS1** 

EQUIPMENT: **DAB-1819-100** 

# Section 6. Field Strength of Spurious

NAME OF TEST: Field Strength of Spurious Emissions PARA. NO.: 2.1051

TESTED BY: David Light DATE: 2/26/2002

**Test Results:** Complies.

**Test Data:** See attached table.

**Measurement Uncertainty:** +/- 3.6 dB

FCC PART 24, SUBPART E
BROADBAND PCS REPEATERS
PROJECT NO.: **2L0101RUS1** 

**EQUIPMENT: DAB-1819-100** 

### **Test Data - Radiated Emissions - Downlink**



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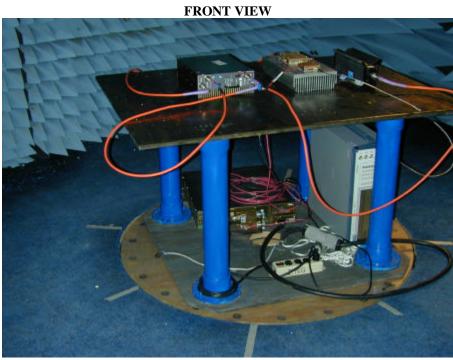
		Field Strength of S	purious	Emissions
Page 1 o	f <u>1</u>	-	_	Complete X
Job No.:	2L0101R	Date: 3/5/2002		Preliminary
Specification:	PT 24	Temperature(°C): 22		
Tested By:	David Light	Relative Humidity(%) 50		
E.U.T.:	120 WATT AMPLIFI	ER		_
Configuration:	TX FULL POWER IN	VTO DUMMY LOAD		_
Sample No:	1			_
Location:	AC 3	RBW:	1 MHz	Measurement
Detector Type:	Peak	VBW:	1 MHz	Distance: 3 m
Test Equipm	ent Used			
Antenna:	1304	Directional Coupler:		_
Pre-Amp:	1016	Cable #1:	1484	
Filter:		Cable #2:	1485	_
Receiver:	1464	Cable #3:		_
Attenuator #1		Cable #4:		_
Attenuator #2:		Mixer:		_
Additional equip	ment used:			
Measurement Ur	ncertainty: +/-3.6	dB		<del>-</del>

F	Meter	Correction	Pre-Amp	Substitution		ERP	ERP	Polarity	Comments
Frequency	Reading	Factor	Gain	Antenna Gain	Limit	EKP	EKP	Polarity	Comments
	Keauing	ractor	Gain	Antenna Gam	Liiiit				
(MHz)	(dBm)	(dB)	(dB)	(dBd)	(dBm)	(dBm)	(mW)		
3920	-37.5	35.5	33.3	8.6	-13	-26.8	0.0021	Н	
5880	-37.5	37.8	32.7	9.3	-13	-23.1	0.0049	Н	
7840	-35.0	41.5	33.7	9.2	-13	-18.1	0.0157	Н	
9800	-33.2	43.3	36	10.3	-13	-15.6	0.0274	Н	
11760	-46.5	47.0	35.5	10.5	-13	-24.6	0.0035	Н	
13720	-57.3	47.7	33.3	10.6	-13	-32.4	0.0006	Н	
15680	-57.0	45.5	33.2	12.9	-13	-31.8	0.0007	Н	
3920	-36.7	43.3	33.3	8.6	-13	-18.1	0.0154	V	
5880	-35.3	39.8	32.7	9.3	-13	-18.9	0.0128	V	
7840	-36.0	41.8	33.7	9.2	-13	-18.7	0.0134	V	
9800	-33.2	41.8	36	10.3	-13	-17.1	0.0194	V	
11760	-49.0	42.8	35.5	10.5	-13	-31.2	0.0008	V	

Notes: Scanned to the 10th harmonic

All emissions within 20 dB of the limit were recorded

# **Photographs of Test Setup**



**REAR VIEW** 



# Section 7. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date
1036	SPECTRUM ANALYZER	ROHDE & SCHWARZ FSEK30	830844/006	12/18/01
1055	DUAL DIRECTIONAL COUPLER	NARDA 3022	73393	CBU
1629	CABLE, 6 ft	MEGAPHASE 10311 1GVT4	N/A	CBU
1064	ATTENUATOR	NARDA 776B-20	NONE	09/13/01
1464	Spectrum analyzer	Hewlett Packard 8563E	3551A04428	01/02/01
1484	Cable 2.0-18.0 Ghz	Storm PR90-010-072	N/A	06/01/01
1485	Cable 2.0-18.0 Ghz	Storm PR90-010-216	N/A	06/01/01
1304	HORN ANTENNA	ELECTRO METRICS RGA-60	6151	07/30/01
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	05/30/01

FCC PART 24, SUBPART E
BROADBAND PCS REPEATERS
PROJECT NO.: **2L0101RUS1** 

**EQUIPMENT: DAB-1819-100** 

**ANNEX A - TEST DETAILS** 

NAME OF TEST: RF Power Output PARA. NO.: 2.1046

**Minimum Standard:** Para. No.24.232. Base stations are limited to 1640 watts peak

E.I.R.P. with an antenna height up to 300 meters HAAT. In no case may the peak output power of a base station transmitter exceed

100 watts.

### **Method Of Measurement:**

### Detachable Antenna:

The peak power at antenna terminals is measured using an in-line peak power meter. Power output is measured with the maximum rated input level.

### **Integral Antenna:**

If the antenna is not detachable from the circuit then the Peak Power Output is derived from the peak radiated field strength of the fundamental emission by using the plane wave relation  $GP/4\pi$   $R^2 = E^2/120\pi$  and proceeding as follows:

$$P = \frac{E^2 R^2}{30G} = \frac{E^2 3^2}{30G}$$

where,

P = the equivalent isotropic radiated power in watts

E =the maximum measured field strength in V/m

R =the measurement range (3 meters)

G = the numeric gain of the transmit antenna in relation to an isotropic radiator

*EQUIPMENT*: **DAB-1819-100** PROJECT NO.: **2L0101RUS1** 

NAME OF TEST: Occupied Bandwidth PARA. NO.: 2.1047

**Minimum Standard:** Para. No. 24.238(b). The emission bandwidth is defined as the

width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of

which all emissions are attenuated at least 26 dB.

### **Method Of Measurement:**

### <u>CDMA</u>

Spectrum analyzer settings:

RBW: 30 kHz VBW: ≥ RBW Span: 5 MHz Sweep: Auto

Mask: Set markers to -26 dB from peak of CW.

### **GSM**

RBW: 3 kHz VBW: ≥ RBW Span: 2 MHz Sweep: Auto

Mask: Set markers to -26 dB from peak of CW.

### NADC

RBW: 1 kHz VBW: ≥ RBW Span: 1 MHz Sweep: Auto

Mask: Set markers to -26 dB from peak of CW.

FCC PART 24, SUBPART E
BROADBAND PCS REPEATERS
PROJECT NO.: **2L0101RUS1** 

**EQUIPMENT: DAB-1819-100** 

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

**Minimum Standard:** Para. No.24.238(a). On any frequency outside a licensee's

frequency block, the power of any emission shall be attenuated below the transmitter power by at least  $43 + 10 \log (P) dB$ .

### **Method Of Measurement:**

Spectrum analyzer settings:

<u>CDMA</u> <u>GSM</u>

RBW: 1 MHz (> 1 MHz from Band Edge)
RBW: 1 MHz (> 1 MHz from Band Edge)
RBW: 3 kHz (< 1 MHz from Band Edge)
RBW: 3 kHz (< 1 MHz from Band Edge)

 $VBW: \ge RBW$   $VBW: \ge RBW$  Sweep: Auto Sweep: Auto

Video Avg: 6 Sweeps Video Avg: Disabled

### **NADC**

RBW: 1 MHz (> 1 MHz from Band Edge) RBW: 3 kHz (< 1 MHz from Band Edge)

VBW: ≥ RBW Sweep: Auto

Video Avg: Disabled

To demonstrate compliance at band edges the frequency of the input signal is set to the lowest and highest assigned channel and the center frequency of the spectrum analyzer is set to the upper and lower edges of the appropriate frequency block.

FCC PART 24, SUBPART E
BROADBAND PCS REPEATERS
PROJECT NO.: **2L0101RUS1** 

*EQUIPMENT:* **DAB-1819-100** 

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

**Minimum Standard:** Para. No.24.238(a). On any frequency outside a licensee's

frequency block, the power of any emission shall be attenuated below the transmitter power by at least  $43 + 10 \log (P) dB$ .

**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.

FCC PART 24, SUBPART E
BROADBAND PCS REPEATERS
PROJECT NO.: **2L0101RUS1** 

**EQUIPMENT: DAB-1819-100** 

NAME OF TEST: Frequency Stability PARA. NO.: 2.1055

**Minimum Standard:** Para. No. 24.235. The frequency stability shall be sufficient to

ensure that the fundamental emission stays within the authorized

frequency block.

### **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

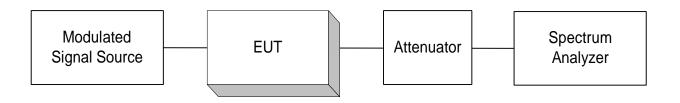
The input voltage to the E.U.T. is set to S.T.V. and the temperature of the environmental chamber is varied in 10 degree steps from -30 degrees C to +50 degrees C. The E.U.T. is allowed to stabilize at each temperature and the frequency is measured in 30 second intervals for a period of 5 minutes.

FCC PART 24, SUBPART E
BROADBAND PCS REPEATERS
PROJECT NO.: **2L0101RUS1** 

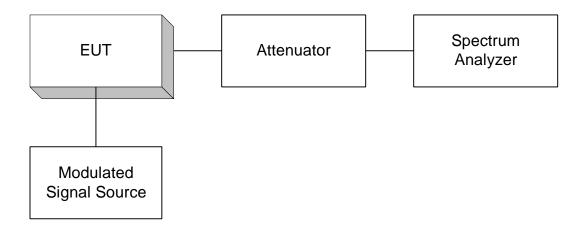
**EQUIPMENT: DAB-1819-100** 

**ANNEX B - TEST DIAGRAMS** 

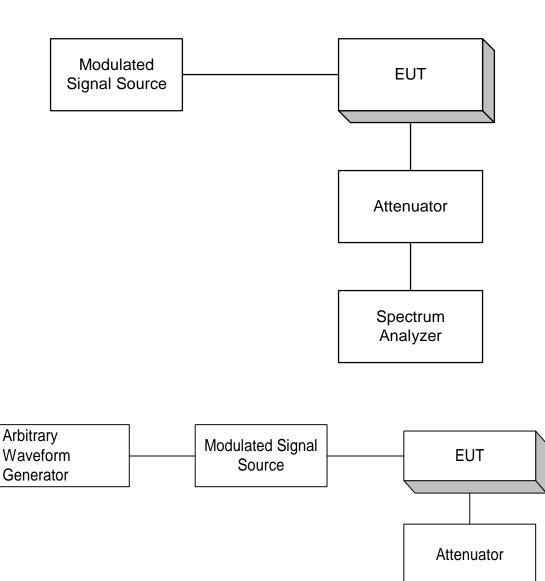
# Para. No. 2.985 - R.F. Power Output



# Para. No. 2.989 - Occupied Bandwidth



# Para. No. 2.991 Spurious Emissions at Antenna Terminals

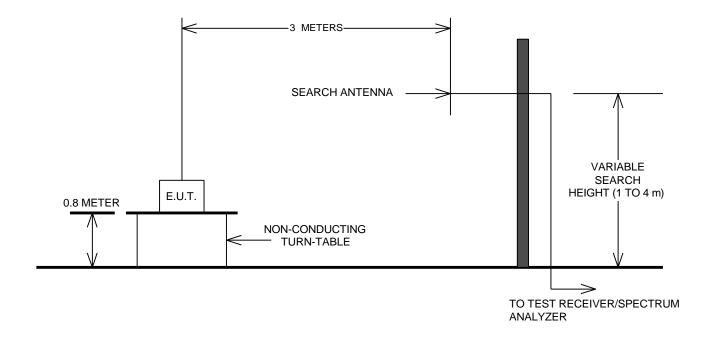


Spectrum Analyzer

BROADBAND PCS REPEATERS

B-1819-100 PROJECT NO.: 2L0101RUS1

Para. No. 2.993 - Field Strength of Spurious Radiation



Para. No. 2.995 - Frequency Stability

