

**Nemko Test Report:** 1L0016RUS2

**Applicant:** Allen Telecom Systems

**Equipment Under Test:  
(E.U.T.)** MR803P-TR

**In Accordance With:** **FCC Part 90, Subpart I**  
Private Land Mobile Repeater

**Tested By:** Nemko Dallas Inc.  
802 N. Kealy  
Lewisville, TX 75057-3136

**Authorized By:**



Tom Tidwell, Wireless Group Manager

**Date:** 12/13/01

**Total Number of Pages:** 49



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**EQUIPMENT:** MR803P-TR

**PROJECT NO.:** 1L0016RUS2

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## **Section 1. Summary of Test Results**

Manufacturer: Allen Telecom

Model No.: MR803P-TR

Serial No.: 13

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 90, Subpart I.



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.**

See “ Summary of Test Data”.

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**EQUIPMENT: MR803P-TR**

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**Summary Of Test Data**

NAME OF TEST	PARA. NO.	SPEC.	RESULT
RF Power Output	90.205		
Audio Frequency Response	TIA EIA-603.3.2.6	N/A	N/A
Audio Low-Pass Filter Response	TIA EIA-603.3.2.6	N/A	N/A
Modulation Limiting	TIA EIA-603.3.2.6	N/A	N/A
Occupied Bandwidth	90.210	Plots	Complies
Spurious Emissions at Antenna Terminals	90.210	-13 dBm	Complies
Field Strength of Spurious Emissions	90.210	-13 dBm	Complies
Frequency Stability	90.213	N/A	N/A
Transient Frequency Behavior	90.214	N/A	N/A

**Footnotes For N/A's:**

- (1) Since the E.U.T. does not contain modulation circuitry modulation testing was not performed.
- (2) Since the E.U.T. is not a keyed carrier system, Transient Frequency Behavior was not performed.
- (3) The EUT is an F1-F1 repeater



## Section 2. General Equipment Specification

### Transmitter

Supply Voltage Input: 115 Vac

Frequency Range:	<b>Uplink</b>	806-824 MHz
	<b>Downlink</b>	851-869 MHz
Tunable Bands:		15 MHz

20 dB Passband:

Type(s) of Modulation:	<b>F3E (Voice)</b>	<b>F1D</b>	<b>F2D</b>	<b>D7W (QAM)</b>	<b>Other</b>
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Gain: 70 dB

Output Impedance: 50 ohms

RF Power Output (rated): **Single:** 34 dBm

Channel Spacing(s): 12.5 kHz

Operator Selection of Operating Frequency: Software

Power Output Adjustment Capability: Software

Frequency Translation:	<b>F1-F1</b>	<b>F1-F2</b>	<b>N/A</b>
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Band Selection:	<b>Software</b>	<b>Duplexer Change</b>	<b>Fullband Coverage</b>
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



**Nemko**  
**Dallas**

FCC PART 90, SUBPART I  
PRIVATE LAND MOBILE REPEATER

*EQUIPMENT:* **MR803P-TR**

PROJECT NO.: **1L0016RUS2**

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**Description of Modifications For Class II Permissive Change**

**Not Applicable**

**Modifications Made During Testing**

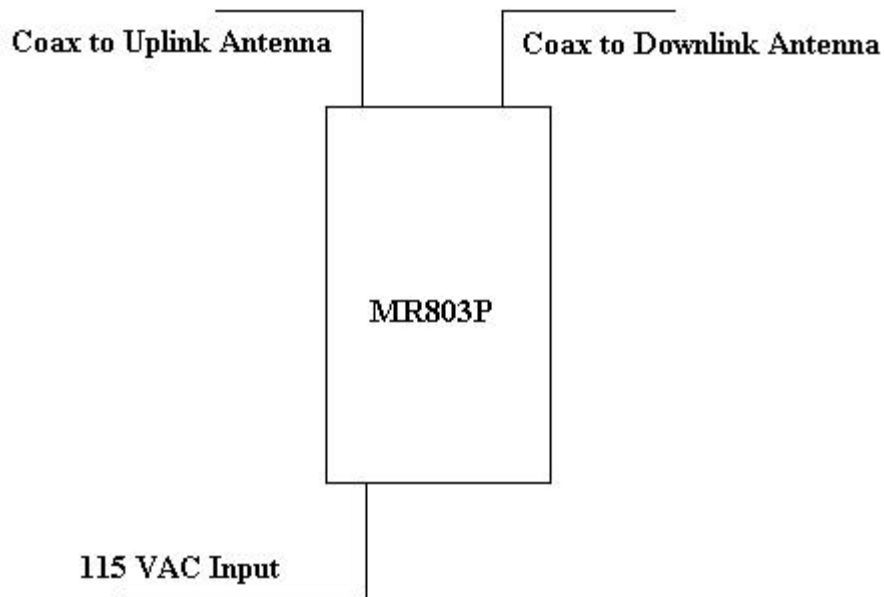
**Not Applicable**



## Theory of Operation

The repeater MRx03P is a band selective amplifier which bi-directionally amplifies signals between a base transceiver station and mobile stations in the corresponding network. It can provide highly selective amplification, thus enabling radio coverage in regions where satisfactory quality of communication is disabled.

## System Diagram





**EQUIPMENT:** MR803P-TR

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### Section 3. RF Power Output

NAME OF TEST: RF Power Output	PARA. NO.: 2.985
TESTED BY: David Light	DATE: 7/25/01

**Test Results:** Complies.

#### Measurement Data:

##### Downlink

Frequency (MHz)	Modulation	Measured Power (dBm)	Rated Power (dBm)	Measured/Rated (dB)
851.6	IDEN	33.4	34	0.98/1
861.6	IDEN	34.0	34	1/1
868.6	IDEN	33.3	34	0.98/1
851.6	Voice	34.0	34	1/1
861.6	Voice	34.5	34	1/1
868.6	Voice	34.3	34	1/1

##### Uplink

Frequency (MHz)	Modulation	Measured Power (dBm)	Rated Power (dBm)	Measured/Rated (dB)
806.6	IDEN	33.7	34	0.99/1
816.6	IDEN	34.1	34	1/1
823.6	IDEN	34.1	34	1/1
851.6	Voice	34.3	34	1/1
861.6	Voice	34.6	34	1/1
868.6	Voice	34.0	34	1/1



**Nemko**  
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FCC PART 90, SUBPART I  
PRIVATE LAND MOBILE REPEATER

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## **Section 4.        Occupied Bandwidth**

NAME OF TEST: Occupied Bandwidth	PARA. NO.: 2.989
TESTED BY: Chinda Poy	DATE: 7/11/01

**Test Results:**                      Complies.


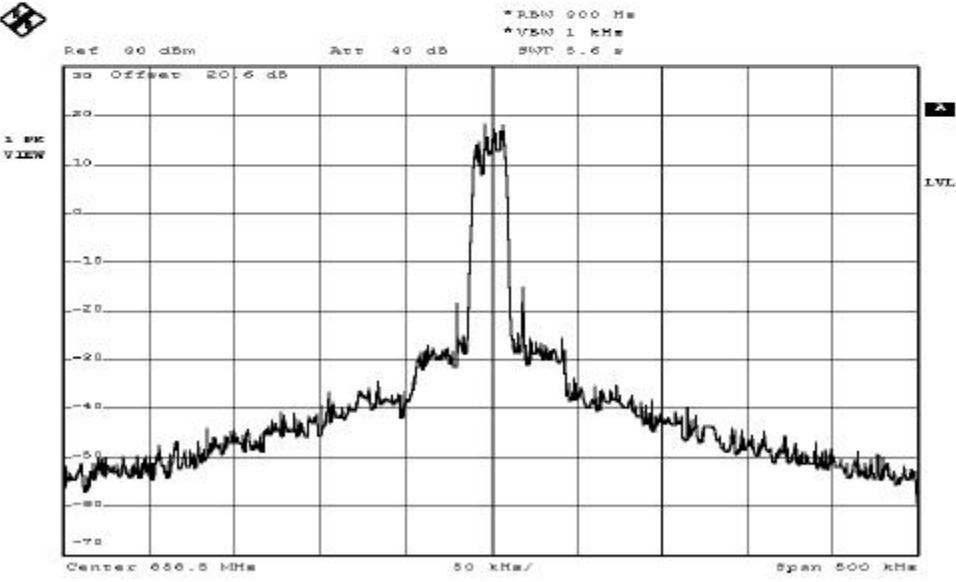
**Test Data:**                        See attached graph(s).



EQUIPMENT: MR803P-TR

PROJECT NO.: 1L0016RUS2

Test Data – Occupied Bandwidth

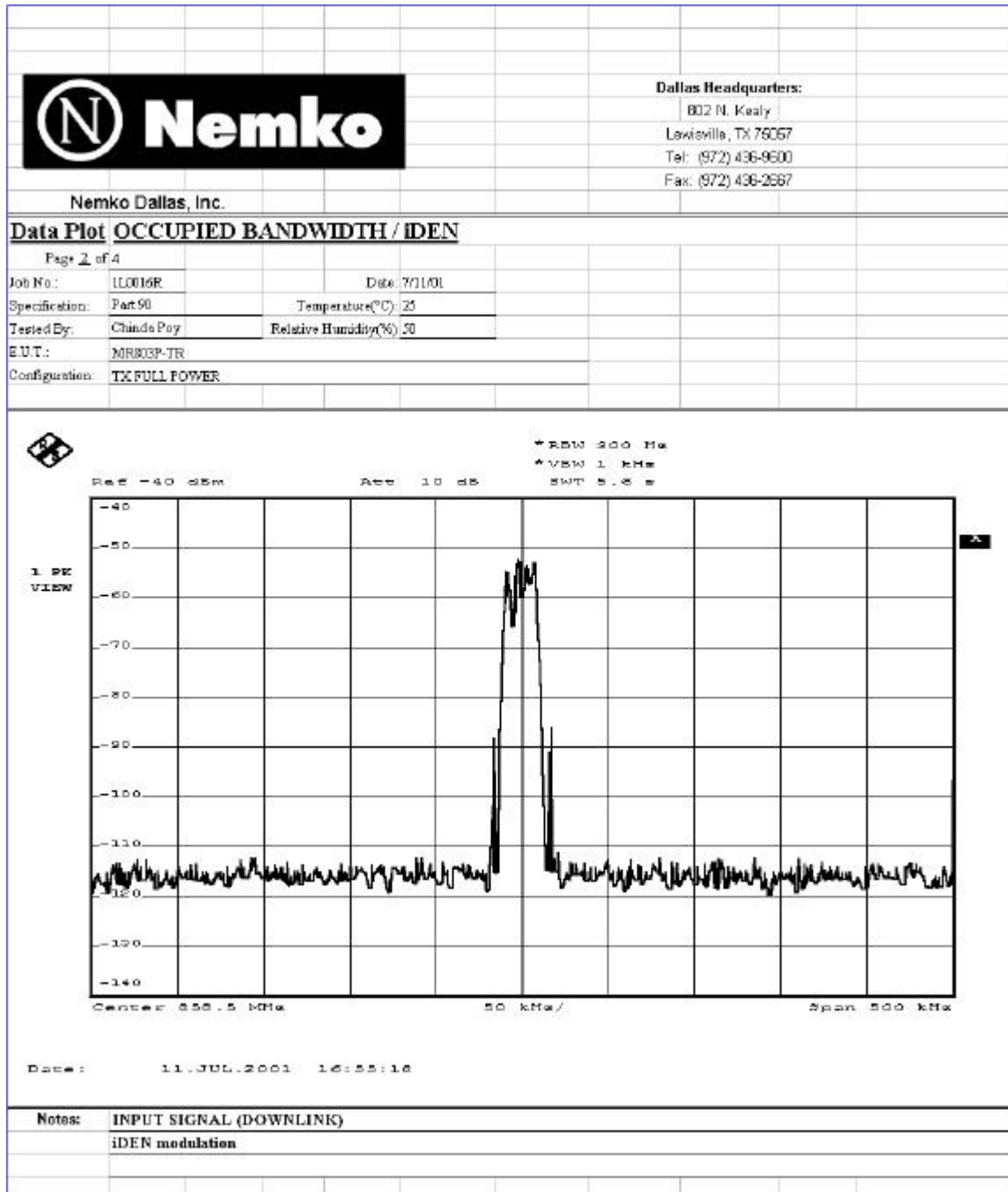
		Dallas Headquarters:	
		802 N. Keady Louisville, TX 75067 Tel: (972) 436-9800 Fax: (972) 436-2667	
Nemko Dallas, Inc.			
<b>Data Plot OCCUPIED BANDWIDTH / IDEN</b>			
Page 1 of 4		Complete	X
Job No:	1L0016R	Date:	7/11/01
Specification:	Part 90	Temperature (°C):	23
Tested By:	Chinda Fay	Relative Humidity (%):	50
EUT:	MR803P-TR		
Configuration:	TX FULL POWER		
Sample Number:	801		
Location:	Lab 1	RBW:	refer to plots
Detection Type:	Peak	VBW:	Refer to plots
<b>Test Equipment Used</b>			
Antenna:		Directional Coupler:	
Pre-Amp:		Cable #1:	1002
Filter:		Cable #2:	
Receiver:	3632P	Cable #3:	
Attenuator #1:	16dB	Cable #4:	
Attenuator #2:		Mixer:	
Additional equipment used:			
Measurement Uncertainty: $\pm 1.5$ dB			
			
Date: 11 JUL 2001 16:52:07			
Notes: OUTPUT SIGNAL (DOWNLINK)			
IDEN modulation			



EQUIPMENT: MR803P-TR

PROJECT NO.: 1L0016RUS2

Test Data – Occupied Bandwidth

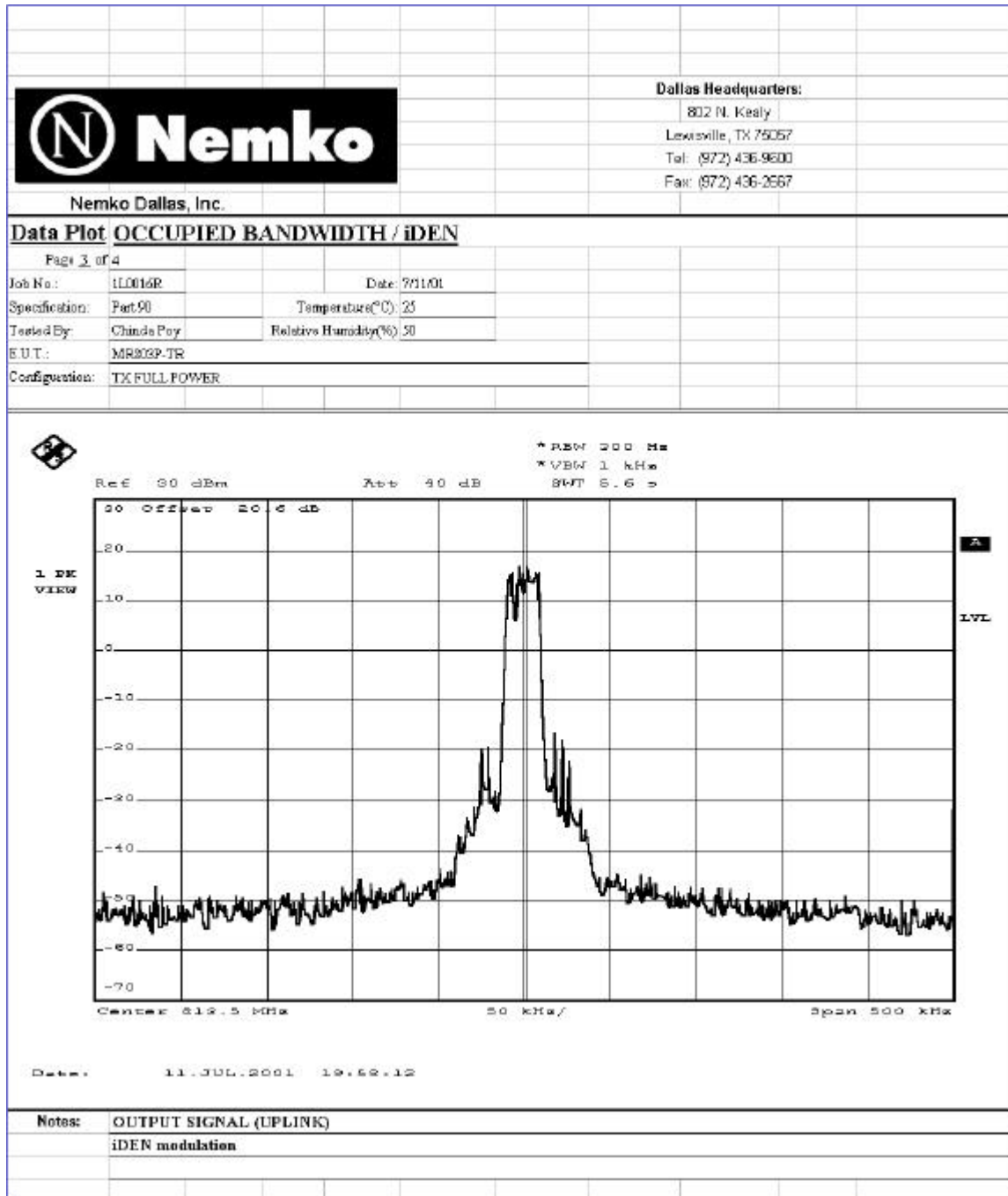




EQUIPMENT: MR803P-TR

PROJECT NO.: 1L0016RUS2

Test Data – Occupied Bandwidth

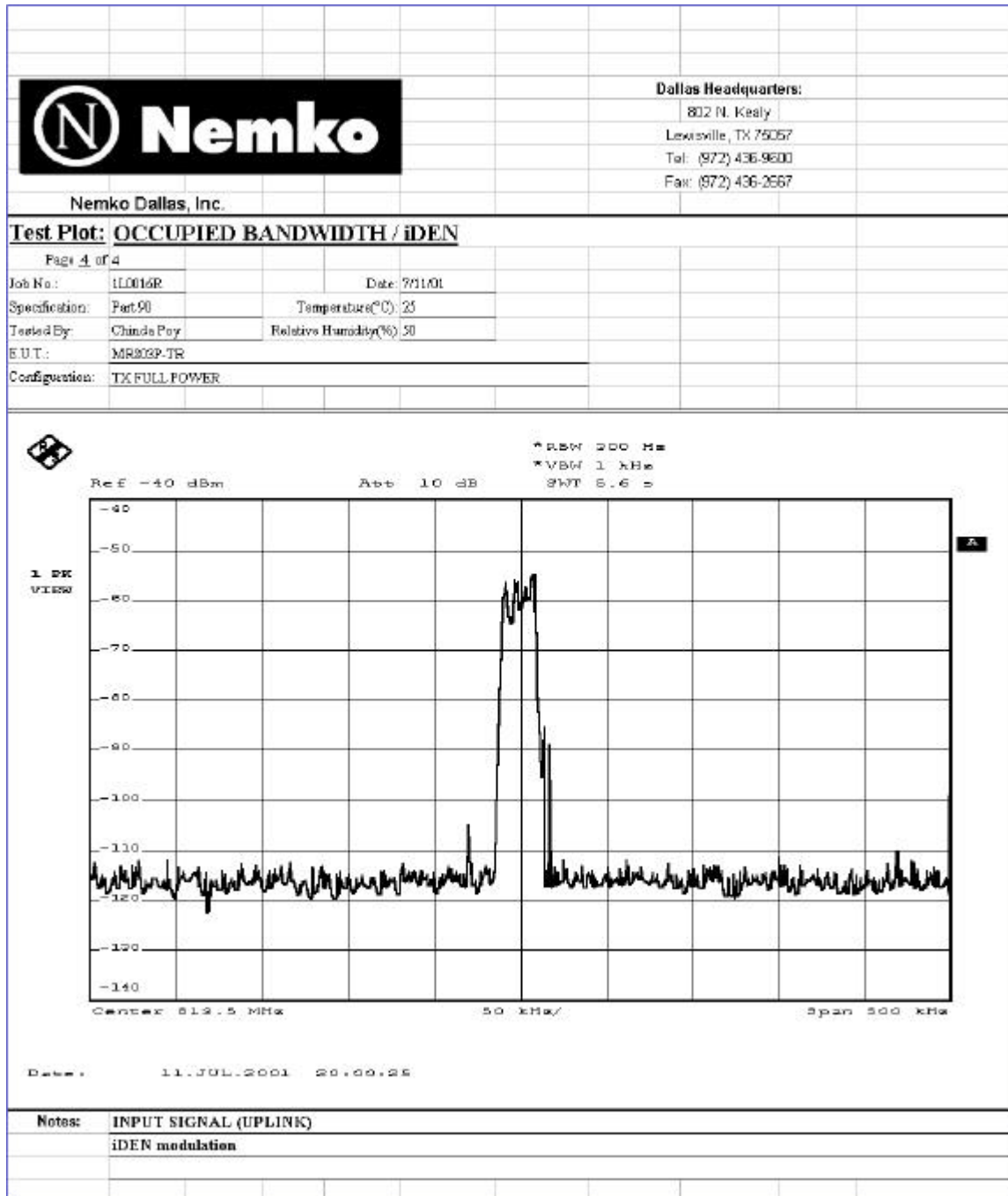




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PROJECT NO.: 1L0016RUS2

Test Data – Occupied Bandwidth


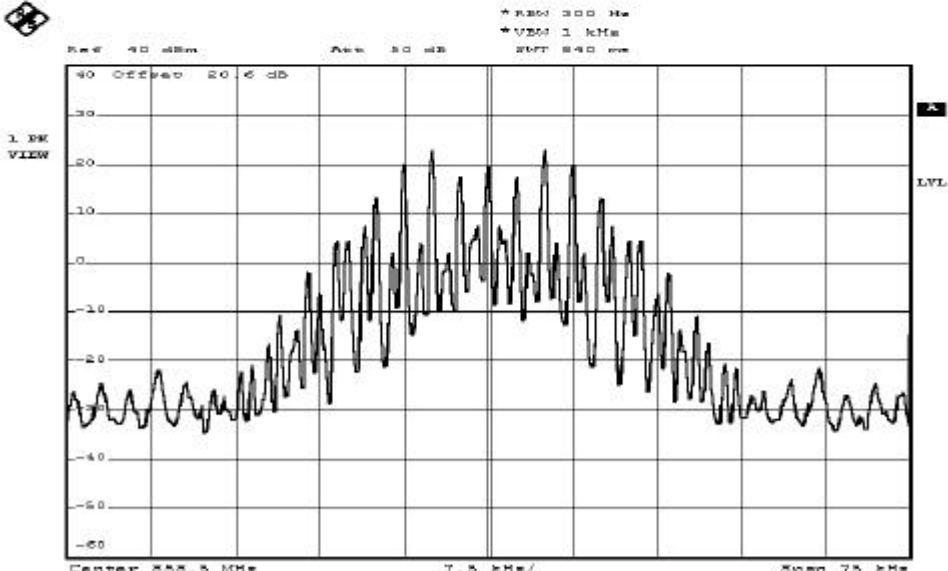




EQUIPMENT: MR803P-TR

PROJECT NO.: 1L0016RUS2

Test Data – Occupied Bandwidth

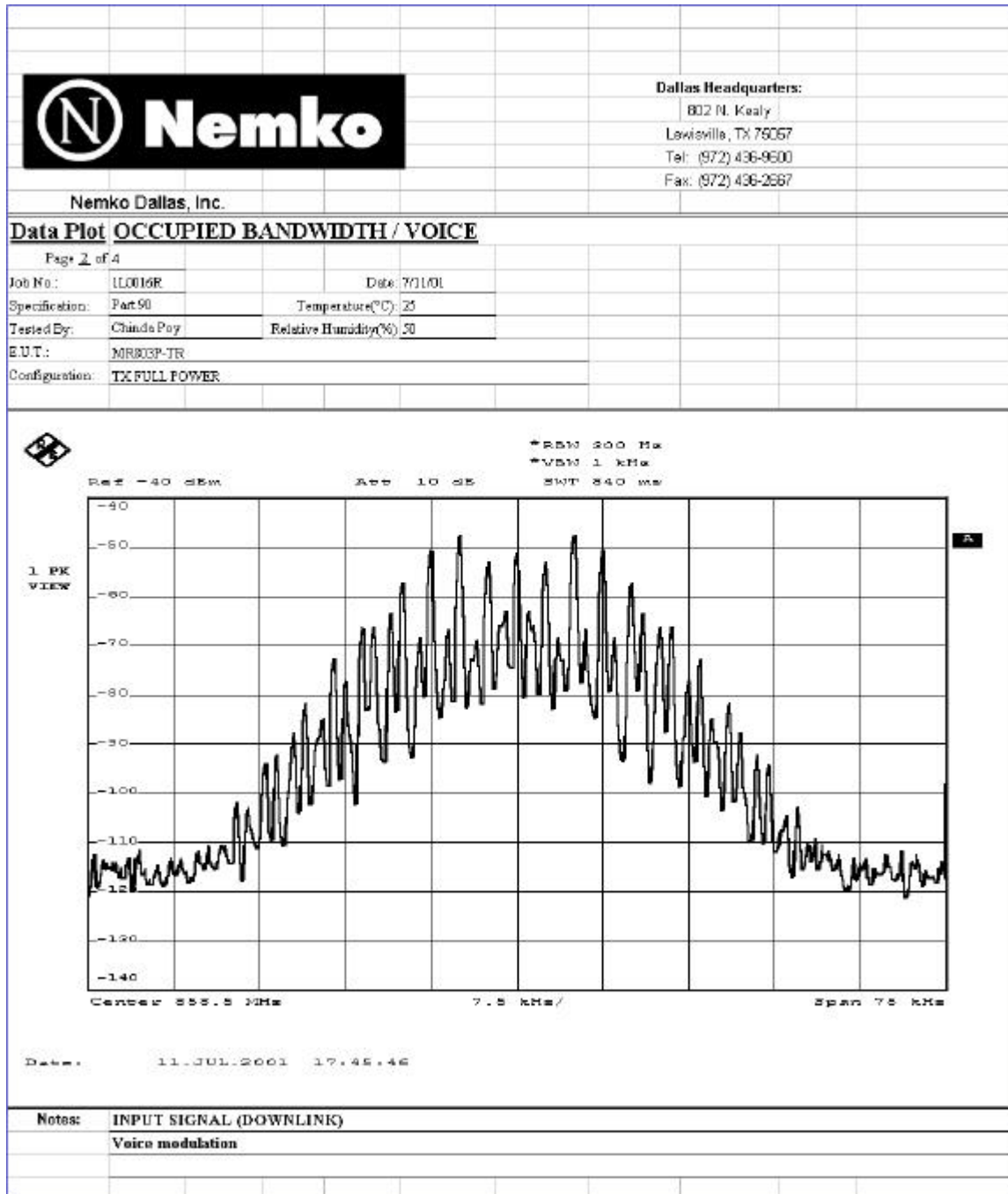
		Dallas Headquarters:	
		602 N. Keady Lewisville, TX 75057 Tel: (972) 435-9600 Fax: (972) 435-2667	
Nemko Dallas, Inc.			
<b>Data Plot OCCUPIED BANDWIDTH / VOICE</b>			
Page 1 of 4		Complete <input checked="" type="checkbox"/>	
Job No:	1L0016R	Date:	7/11/01
Specification:	Part 90	Temperature(°C):	25
Tested By:	ChindaFoy	Relative Humidity(%):	50
EUT:	MR803P-TR		
Configuration:	TX FULL POWER		
Sample Number:			
Location:	Lab 1	REFF:	Refer to plots
Detection Type:	Peak	VEFF:	Refer to plots
<b>Test Equipment Used</b>			
Antenna:		Directional Coupler:	
Pre-Amp:		Cable #1:	1062
Filter:		Cable #2:	
Receiver:	36329	Cable #3:	
Attenuator #1:	1604	Cable #4:	
Attenuator #2:		Mixer:	
Additional equipment used:			
Measurement Uncertainty:	±3.6 dB		
 <p>1.0W VIEW</p> <p>Center 855.5 MHz 7.5 kHz Span 75 kHz</p> <p>Date: 11-JUL-2001 17:25:25</p>			
Notes: OUTPUT SIGNAL (DOWNLINK) Voice modulation			



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PROJECT NO.: 1L0016RUS2

Test Data – Occupied Bandwidth





PROJECT NO.: 1L0016RUS2

Voice modulation

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Nemko Dallas, Inc.

Data Plot OCCUPIED BANDWIDTH / VOICE

Page 3 of 4

Job No.: 1L0016R Date: 7/11/01

Specification: Part 90 Temperature(°C): 23

Tested By: Chinda Poy Relative Humidity(%): 50

E.U.T.: MR903P-TR

Configuration: TX FULL POWER

\* RESW 200 Hz

\* VIEW 1 kHz

\* SWT 510 ms

Ref 10 dBm

Att 80 dB

Offset 20.5 dB

1 PK  
VIEW

LVL

The plot shows a noisy signal with a peak level of approximately 20 dBm and a bandwidth of 7.5 kHz. The signal is centered at 912.5 MHz. The plot is titled "1 PK VIEW" and "LVL". The x-axis is labeled "Center 912.5 MHz" and "7.5 kHz". The y-axis is labeled "LVL" and ranges from -60 to 20 dBm. The plot shows a noisy signal with a peak level of approximately 20 dBm and a bandwidth of 7.5 kHz. The signal is centered at 912.5 MHz. The plot is titled "1 PK VIEW" and "LVL".

Date: 11.JUL.2001 20:18:28

Notes: OUTPUT SIGNAL (UPLINK)

Voice modulation



EQUIPMENT: MR803P-TR

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Test Data – Occupied Bandwidth

