FCC PART 90, SUBPART I PRIVATE LAND MOBILE REPEATER

EQUIPMENT: MR803P-TR PROJECT NO.: 1L0016RUS2

Section 5. Spurious Emissions at Antenna Terminals

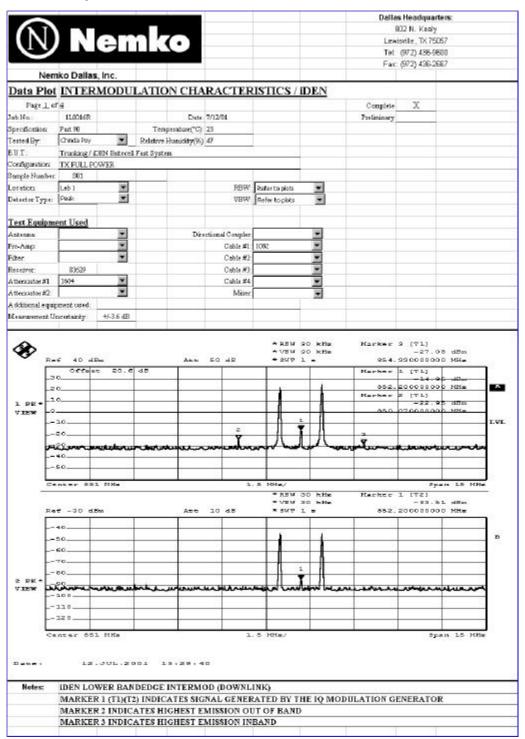
NAME OF TEST: Spurious Emissions @ Antenna Terminals PARA. NO.: 2.991

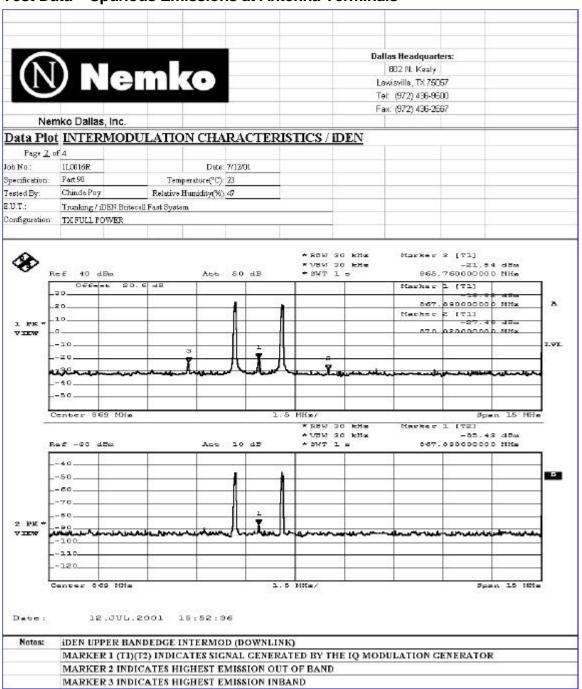
TESTED BY: Chinda Poy Date: 7/12/01

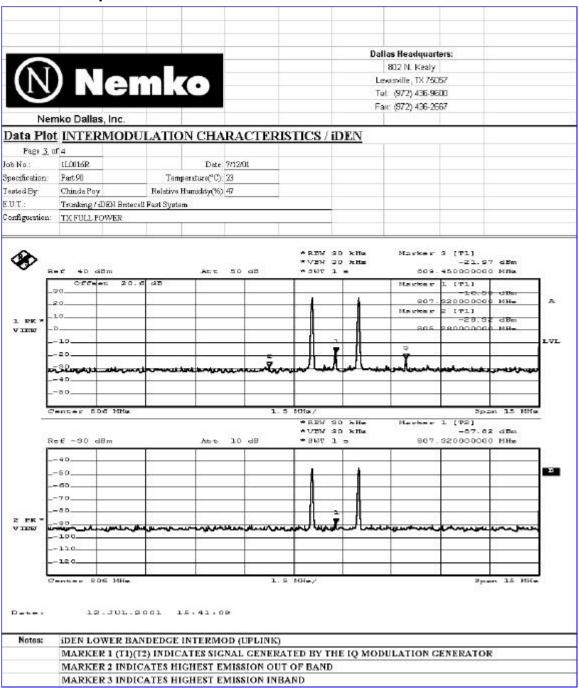
Test Results: Complies.

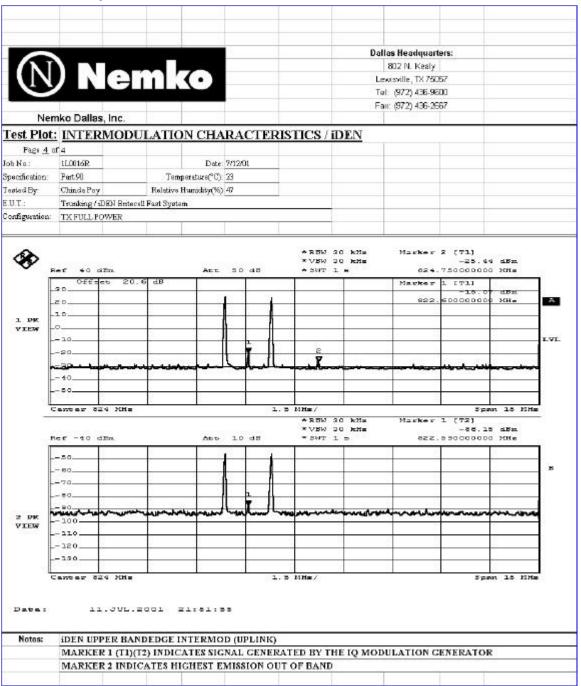
Test Data: See attached graph(s).

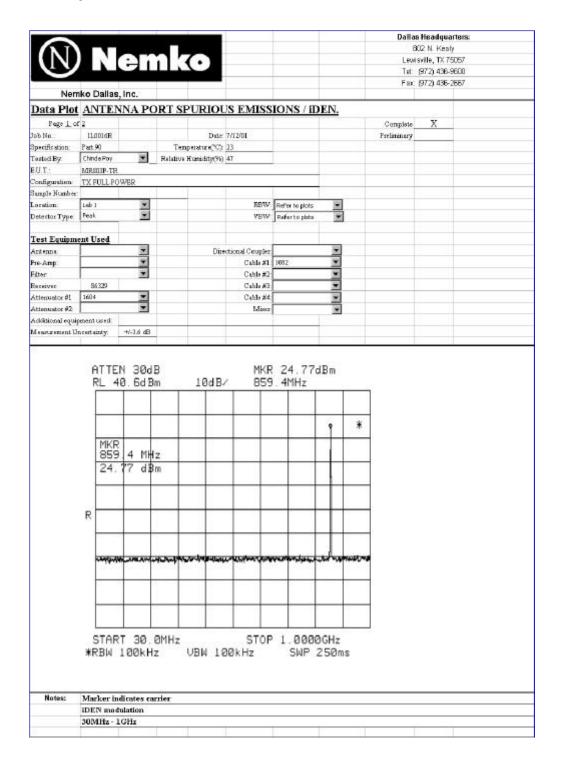
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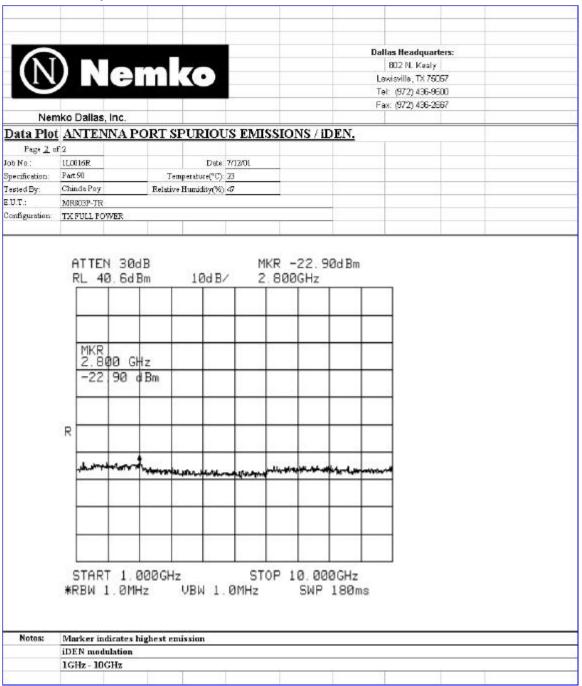


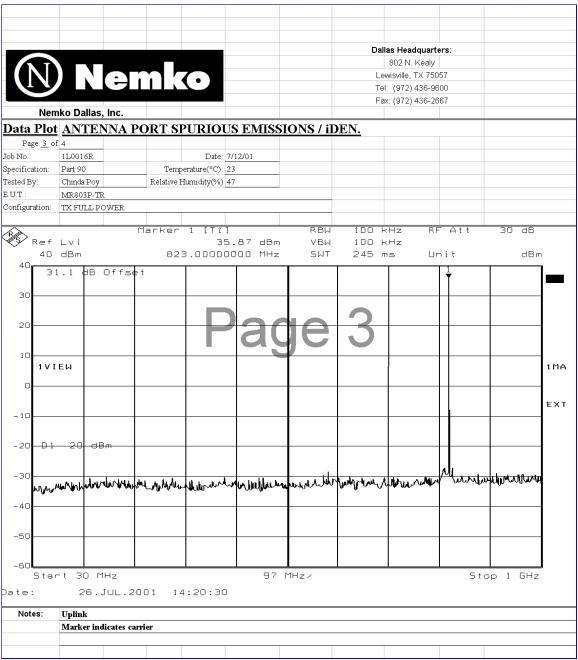


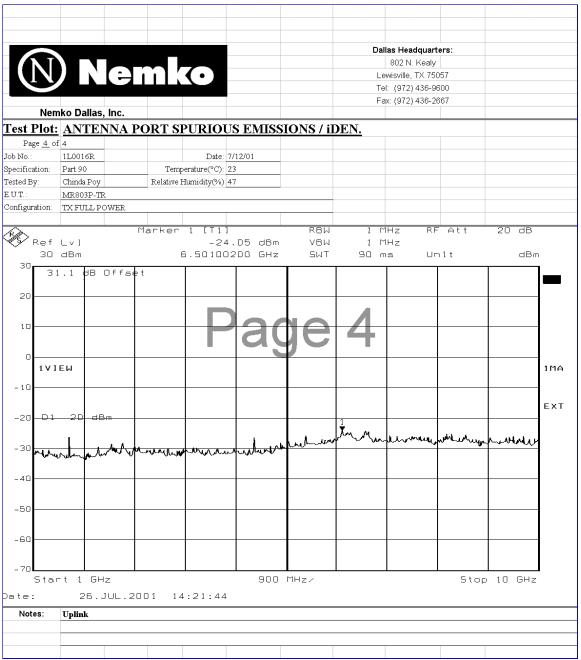


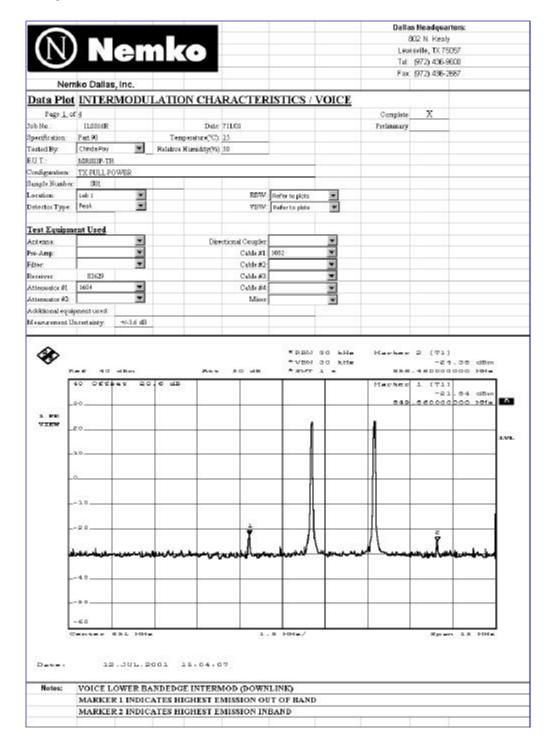


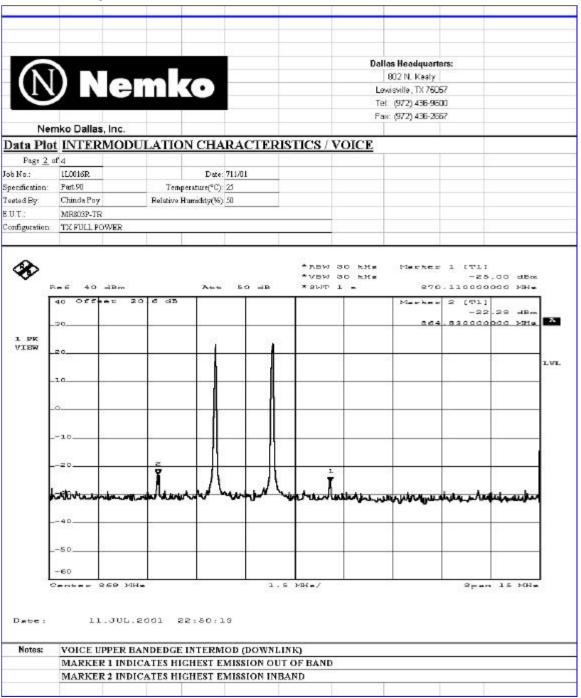


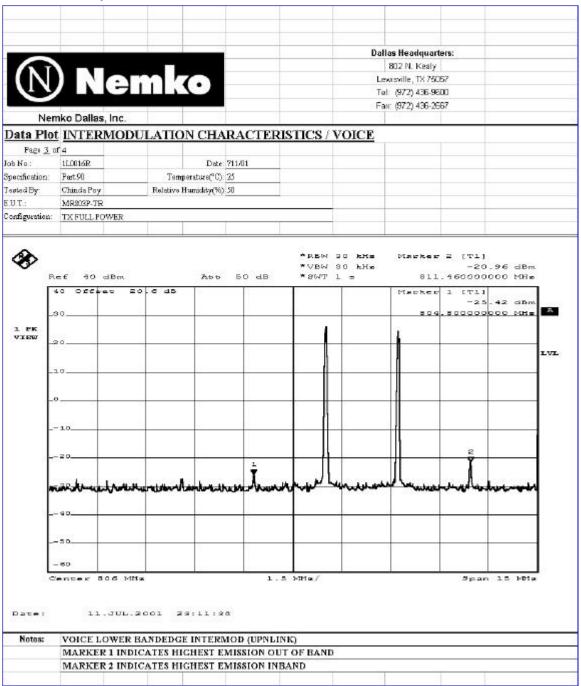


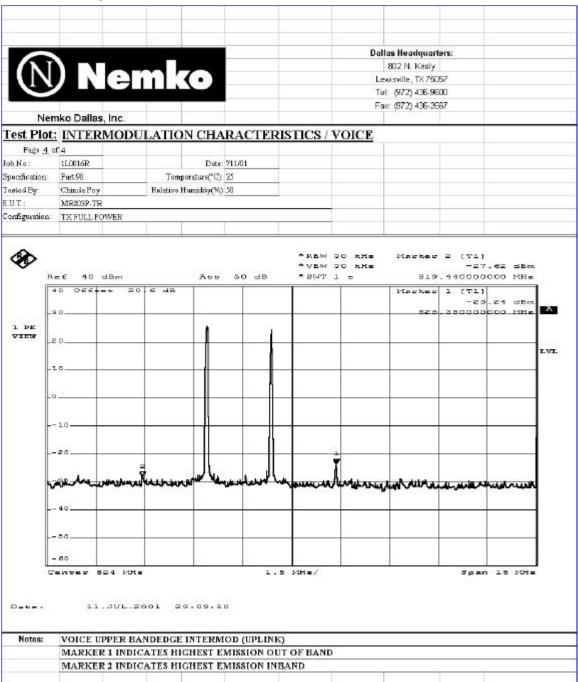


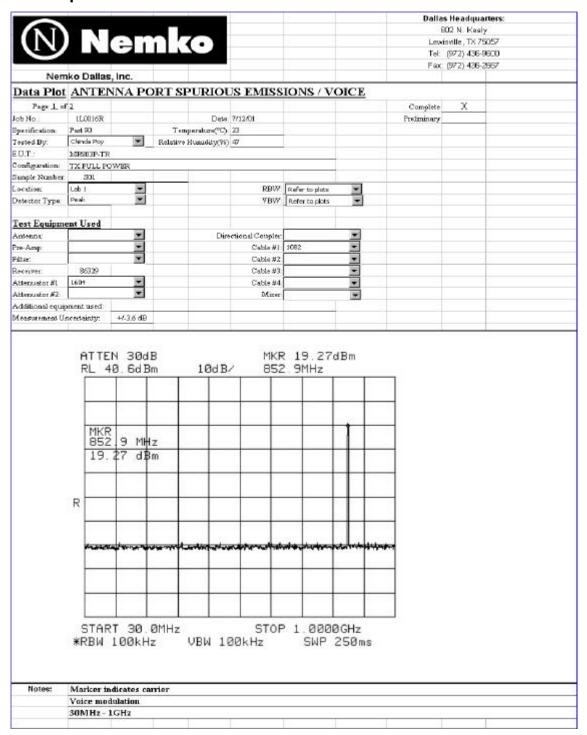


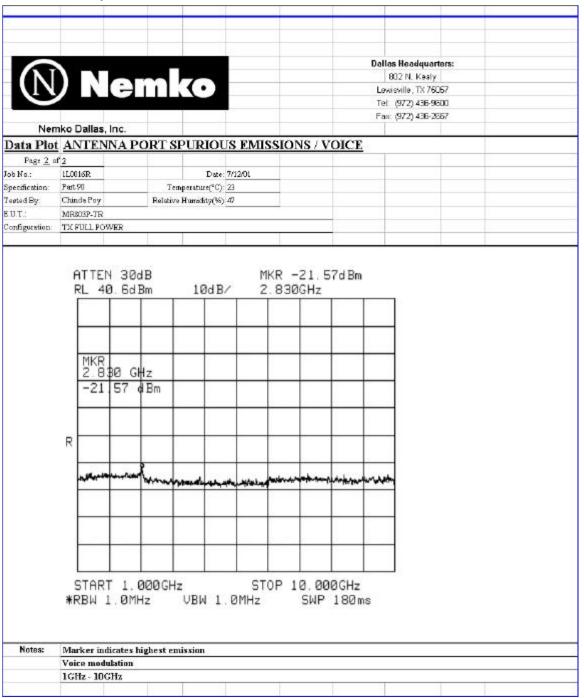


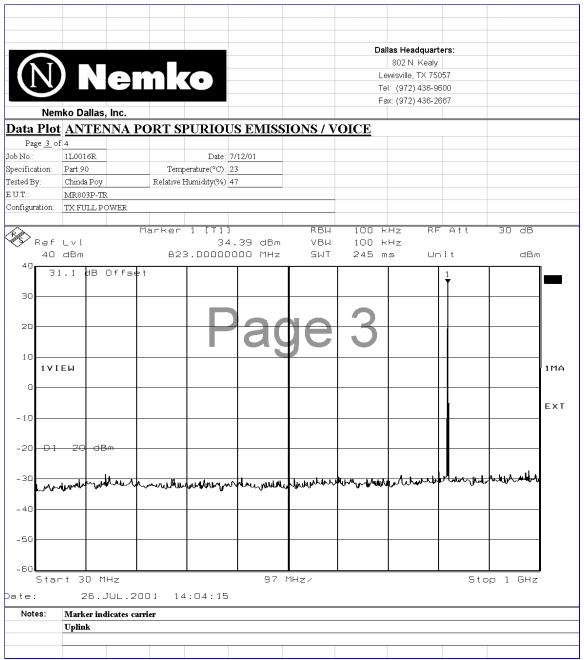


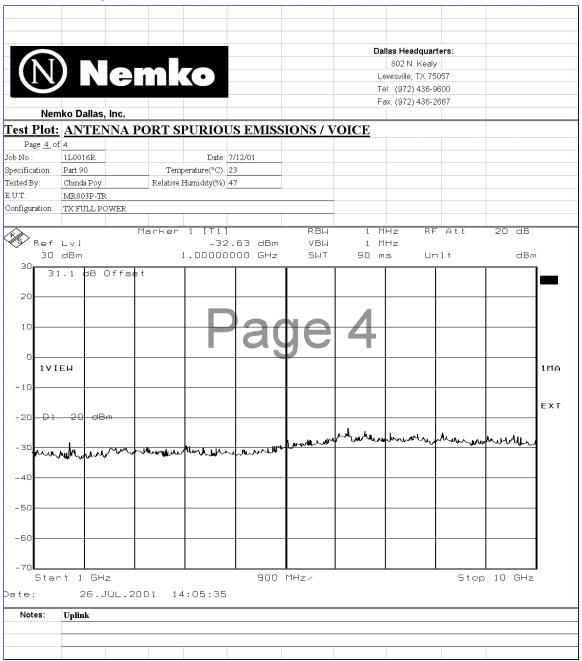












FCC PART 90, SUBPART I PRIVATE LAND MOBILE REPEATER

EQUIPMENT: MR803P-TR PROJECT NO.: 1L0016RUS2

Section 6. Field Strength of Spurious Emissions

NAME OF TEST: Field Strength of Spurious Emissions PARA. NO.: 2.993

TESTED BY: Chinda Poy DATE: 7/12/01

Test Results: Complies.

Test Data: See attached table.

Test Data - Radiated Emissions

D 1	e i		Shadhababababa	Strength of				5 X22	T
Page 1 o	The second section is a second section of		75.00	20004			Complete	×	
ob No.:	130016R			37084			Probininary		
pecification	Part 90		Temperature(*C)						
ested By:	Chinda Poy		Relative Humidity(%)	47					
U.T.	MR203P-TR								
configuration:	TX FULL PO	WER							
emple No:	501	-							
nestion.	AC3	•		REW	1 MHz	-	Mountement		
etector Type:	Peak.	7		VBW:	1 MHz	*	Distance		m
est Equipm	ont Used								
intenni:	993			izertional Couples:		129			
re-Amp:	772	*	<u> </u>	Cable #1	1082	•			
iber:	-	-		Cable AZ	1484	-			
tereiver:	Leev	-		Cable #3:	1485	-			
	1036	-			- 100	•			
Attenuator #1				Cable #4:		•			
tieraustor 07:	1	M		Misse					
dditional equip		4/30.00							
Ceasusment U	neartainty:	#/-3.6 dB							
Frequency	Meter Reading	Correction Factor	Pre-Amp Cain	Substitution Antenna Cain	Direction	ERP	ERF	Polarity	Comparents
(MHs)	(dBm)	(AB)	(dB)	(iBd)		(dBm)	(mW)		
1633	-60.0	29.9	328	6.4	Uplink	-56.6	0.000002	V	Noise Floor
2449.5	-59.7	34.1	33.8	6.9	Uplink	-52 6	0.000006	V	Noise Floor
3266	-61.0	37.1	338	100	UyER.	-49.6	0.000011	V	Noise Floor
4082.5	-61.0	42.8	33.3	C73	Uptest	-48 6	0.000044	V	Noise Floor
4899	-62.0	41.2	33.7	9.2	Uplink	424	0.000029	V	Noise Floor
5715.5	-62.0	38.5	33.3	9.1	Uplink	47.7	0.000017	V	Noise Floor
8532	-62.0	38.3	33	10.1	Uplink	46.6	0.000022	A	Noise Floor
7348.5	-62.3	39.4	33	10.0	Uplink	45.9	0.000028	V	Noise Floor
8165	-61.7	41.6	33.7	9.7	Uplink	-44.D	0.000040	v	Noise Floor
1633	-59.7	32.7	32.8	6.4	Uplink	-53.4	0.000005	H	Noise Floor
2449.5	-60.0	36.7	33.8	6.9	Uplink	-50.3	0.000008	H	Noise Floor
3266	-60.5	35.8	33.8	3.1	Uplink	-50.4	0.000009	H	Noise Floor
4082.5	-61.7	35.2	33.3	7.9	Uplink	-51.9	0.000008	H	Noise Floor
4899	-62.2	35.5	33.7	9.2	Uplink	-51.2	0.000000	H	Noise Floor
5715.5	-62.5	36.0	33.3	9.1	Uplink	-50.7	0.000008	H	Noise Floor
8532	-61.5	37.8	33	10.1	Uplink	46.5	0.000022	H	Noise Floor
7348.5	-61.5	38.7	33	10.0	Uplink	45.8	0.000028	H	Noise Floor
8165	-62.0	42.2	33.7	9.7	Uplink	43.8	0.000042	H	Noise Floor
1723	-59.8	32.7	33.7	6.4	Downlink	-54.1	0.0000042	H	Noise Floor
2594.5	-60.7	34.6	33.8	8.0	Downlink	-51.9	0.000004	H	Noise Floor
3446	-60.7	35.8	33.6	8.1	Downlink	-50.4	0.0000089	H	Noise Floor
4307.5	-61.7	35.2	33.5	7.9	Downlink	-52.1		H	
					Downlink Downlink		0.000008		Noise Floor
5169 6030.5	-62.7 -61.7	36.3 36.6	33.5 32.7	9.1	Downlink	-50.8 -48.3	0.000008	H	Noise Floor
	-62.7	37.8	32.8	10.1	Downlink	47.5			Noise Floor
8892		270,007	1505000				0.000018	H	Noise Floor
7753.5	-61.5	39.8	33.3	9.4	Downlink	-45.6	0.000028	H	Noise Floor
8615	-62.0	41.8	34.3	10000	Downlink	-44.5	0.000035	H	Noise Floor
1723	-60.3	29.9	33.3	6.4	Downlink	-57.4	0.000002	V	Noise Floor
2584.5	-61.0	35.6	33.8	8.0	Downlink	-51.3	0.0000007	V	Noise Floor
3446	-62.0	37.1	33.6	3.1	Downlink	-50.4	0.0000009	V	Noise Floor
4307.5	-61.7	42.8	33.5	7.9	Downlink	-44.4	0.000036	V	Noise Floor
5169	-62.5	40.6	33.5	9.1	Downlink	-46.3	0.000023	V	Noise Floor
6030.5	-62.8	37.9	32.7	9.5	Downlink	48.2	0.000015	V	Noise Floor
8892	-62.0	38.3	32.8	10.1	Downlink	46.4	0.000023	V	Noise Floor
		40.4	33.3	9.4	Downlink	-44.4	0.000036	V	Noise Floor
7753.5 8615	-61.0 -62.8	40.3	22,2	9.9	7	-46.9	0.000020	V	Noise Floor

EQUIPMENT: MR803P-TR

PROJECT NO.: 1L0016RUS2

Photographs of Test Setup

FRONT VIEW



REAR VIEW



FCC PART 90, SUBPART I PRIVATE LAND MOBILE REPEATER

MR803P-TR PROJECT NO.: 1L0016RUS2 EQUIPMENT:

Section 7. Frequency Stability

NAME OF TEST: Frequency Stability PARA. NO.: 2.995

TESTED BY: DATE:

Test Results:

Measurement Data:

Not Applicable

Section 8. Test Equipment List

ASSET	Description	Manufacturer Model Number	Serial Number	Cal. Date	Cal. Due
1604	ATTENUATOR	NARDA 776B-20	NONE	CBU	N/A
1082	CABLE 2m	Astrolab 32027-2-29094-72TC	N/A	06/01/01	06/01/02
1036	SPECTRUM ANALYZER	ROHDE & SCHWARZ FSEK30	830844/006	09/17/01	09/18/03
993	Horn antenna	A.H. Systems SAS-200/571	XXX	07/16/99	07/16/01
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	05/30/01	05/30/02
1082	CABLE 2m	Astrolab 32027-2-29094-72TC	N/A	06/01/01	06/01/02
1484	Cable 2.0-18.0 Ghz	Storm PR90-010-072	N/A	06/01/01	06/01/02
1485	Cable 2.0-18.0 Ghz	Storm PR90-010-216	N/A	06/01/01	06/01/02
86329	SPECTRUM ANALYZER	ROHDE & SCWARZ FSP7	100124	04/09/01	04/09/02

FCC PART 90, SUBPART I PRIVATE LAND MOBILE REPEATER

EQUIPMENT: MR803P-TR PROJECT NO.: 1L0016RUS2

ANNEX A - TEST METHODOLOGIES

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NAME OF TEST: RF Power Output PARA. NO.: 2.985

Minimum Standard: Para. No. 90.205(a). The maximum allowable station ERP is

dependent upon the stations HAAT and required service area and

will be authorized in accordance with Table 1 of 90.205(d).

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

FCC PART 90, SUBPART I PRIVATE LAND MOBILE REPEATER

EQUIPMENT: MR803P-TR PROJECT NO.: 1L0016RUS2

NAME OF TEST: Spurious Emissions at Antenna Terminals PARA. NO.: 2.991

Test Method: RBW: 1% of emission bandwidth in the 0 - 1 GHz range.

1 MHz at frequencies above 1 GHz.

 $VBW: \Rightarrow RBW$

The spectrum is searched up to 10 times the fundamental frequency.

Page 42 of 49

NAME OF TEST: Occupied Bandwidth PARA. NO.: 2.989

Minimum Standard: Para. No. 90.210, see table 1 below for applicable mask.

Table 1

Frequency Band (MHz)	Mask for equipment with Low Pass Filter	Mask for equipment without Low Pass Filter
Below 25	A or B	A or C
25 - 50	В	С
72 - 76	В	С
150 - 174	B, D or E	C, D or E
150 Paging only	В	С
220 - 222	F	F
421 - 512	B, D or E	C, D or E
450 paging only	В	Н
806 - 821/851 - 866	В	G
821 - 824/ 866 - 869	В	Н
896 - 901/ 935 - 940	I	J
902 - 928	K	K
929 - 930	В	G
Above 940	В	С
All other bands	В	С

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FCC PART 90, SUBPART I PRIVATE LAND MOBILE REPEATER

EQUIPMENT: MR803P-TR PROJECT NO.: 1L0016RUS2

NAME OF TEST: Field Strength of Spurious PARA. NO.: 2.993

Minimum Standard: Para. No. 90.210, see table 1 for applicable mask.

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.

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NAME OF TEST: Frequency Stability PARA. NO.: 2.995

Minimum Standard: Para. No. 990.213. The transmitter carrier frequency shall remain

within the assigned frequency below in ppm.

Table 2

Frequency Band	Fixed And Base	Mobile Stations			
(MHz)	Stations	> 2 Watts o/p pwr	< 2 Watts o/p pwr		
Below 25	100	100	200		
25 - 50	20	20	50		
72 - 76	5	-	50		
150 - 174	5	5	5		
220 - 222	0.1	1.5	1.5		
421 - 512	2.5	5	5		
806 - 821	1.5	2.5	2.5		
821 - 824	1.0	1.5	15		
851 - 866	1.5	2.5	2.5		
866 - 869	1.0	1.5	1.5		
869 - 901	0.1	1.5	1.5		
902 - 928	2.5	2.5	2.5		
929 - 930	1.5	-	-		
935 - 940	0.1	1.5	1.5		
1427 - 1435	300	300	300		
Above 2450	-	-	-		

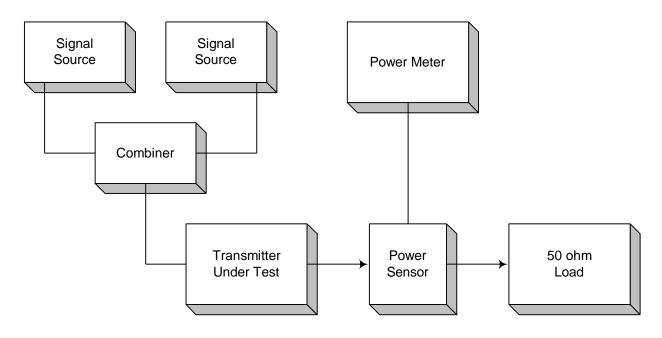
FCC PART 90, SUBPART I PRIVATE LAND MOBILE REPEATER

EQUIPMENT: MR803P-TR PROJECT NO.: 1L0016RUS2

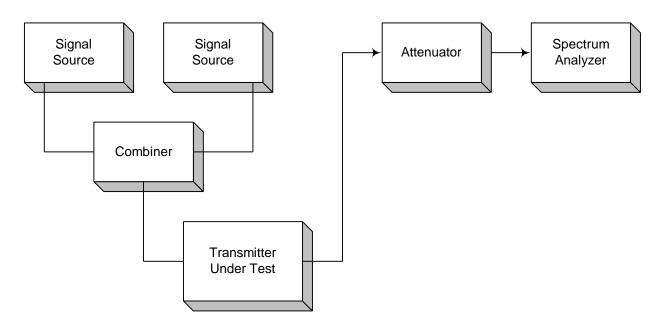
ANNEX B - TEST DIAGRAMS

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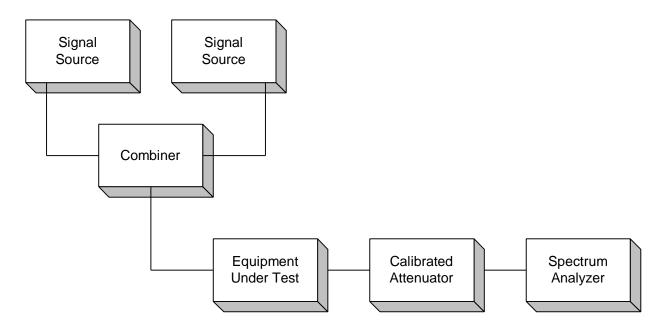
Para. No. 2.985 - R.F. Power Output



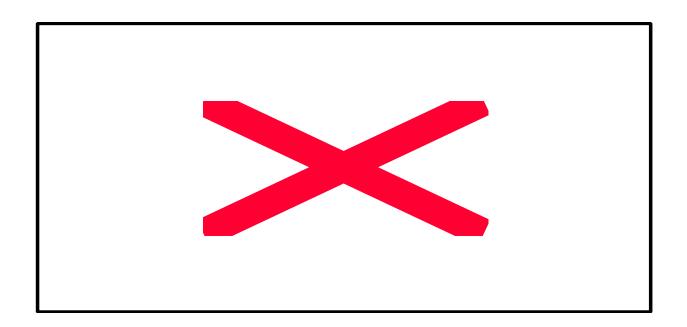
Para. No. 2.989 - Occupied Bandwidth



Para. No. 2.991 - Spurious Emissions at Antenna Terminals



Para. No. 2.993 - Field Strength of Spurious Radiation



EQUIPMENT: MR803P-TR

PROJECT NO.: 1L0016RUS2

Para. No. 2.995 - Frequency Stability

