Nemko Test Report No.:	2L0311RUS1
Applicant:	Decade Transmitters 3232 Richard St. Unit 04 Sherbrooke, QC J1L 1Y2
Equipment Under Test:	FM-800 Mono Transmitter FM-850 Stereo Transmitter
In Accordance With:	FCC Part 73, Subpart G FM Broadcast Transmitters
Tested By:	Nemko Dallas Inc. 802 N. Kealy Lewisville, Texas 75057-3136
Jon- Till	
Authorized By:	Tom Tidwell, RF Group Manager
Date:	6/19/02
Total Number of Pages:	35

EQUIPMENT: FM-800 & FM-850

REPORT NO.: **2L0311RUS1**

Table of Contents

Section 1.	Summary of Test Results	3
Section 2.	General Equipment Specification.	5
Section 3.	RF Power Output	7
Section 4.	Occupied Bandwidth	10
Section 5.	Spurious Emissions at Antenna Terminals	14
Section 6.	Field Strength of Spurious.	18
Section 7.	Powerline Conducted Emissions.	21
Section 8.	Test Equipment List	27
ANNEX A	- TEST DETAILS	28
ANNEX B	- TEST DIAGRAMS	33

FCC PART 73, SUBPART G FM Broadcast Transmitters

EQUIPMENT: FM-800 & FM-850 REPORT NO.: 2L0311RUS1

Section 1.	Summary of Test	Results	
Manufacturer:	Decade Transmitters		
Model No.:	FM-800 and FM-850		
Serial No.:	647 & S677		
General:	All measurements are t	traceable to nation	nal standards.
	re conducted on a sample of the the FCC Part 73, Subpart G.	equipment for the p	ourpose of demonstrating
	New Submission		Production Unit
	Class II Permissive Change		Pre-Production Unit

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE. NONE See "Summary of Test Data".

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

Nemko Dallas, Inc. authorizes the above named company to reproduce this report provided it is reproduced in its entirety and for use by the company's employees only.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Nemko Dallas, Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

This report applies only to the items tested.

Summary Of Test Data

NAME OF TEST	PARA. NO.	SPEC.	RESULT
RF Power Output	73.811	1 watt min.	Complies
Occupied Bandwidth	73.317	Mask	Complies
Spurious Emissions at Antenna Terminals	73.317	-13 dBm	Complies
Field Strength of Spurious Emissions	73.317	-13 dBm	Complies

	١	4 .	. 4	
н	$\boldsymbol{\Lambda}$	Tn	ΛΤΔΕΊ	•
T.	vv	u	otes	•

Measurement uncertainty is expressed to a confidence level of 95%.

Section 2. General Equipment Specification

Supply Voltage Input:	115 Vac
Operating Frequency:	87.9 to 107.9 MHz
Channel Spacing:	200 kHz
Number of Channels:	100
Type of Modulation and Designator:	180KF3E Frequency Modulation
Output Impedance:	50 ohms
RF Output (Rated):	1.8 Watts at antenna terminals.
Frequency Selection:	Software Manual

2L0311RUS1

FM Broadcast Transmitters

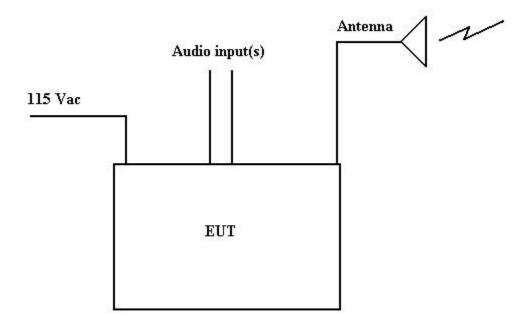
REPORT NO.:

EQUIPMENT: FM-800 & FM-850

System Description

The DecadeFM-800 Mono transmitter and the FM-850 Stereo transmitter are transmitters designed to operate in commercial FM broadcast band, LP10 Services.

System Diagram



FM Broadcast Transmitters

EQUIPMENT: FM-800 & FM-850 REPORT NO.: 2L0311RUS1

Section 3. RF Power Output

NAME OF TEST: RF Power Output PARA. NO.: 73.267(b)(2)

TESTED BY: David Light DATE: 6/6/2002

Test Results: Complies.

Measurement Data:

EUT	Measured Output Power (dBm)	Measured Output Power (W)	Measured/Rated Output Power (dB)
FM-800	32.32	1.706	0.948
FM-850	32.55	1.799	0.999

Equipment Used: 1036-1064-1065-1045

Measurement Uncertainty: +/- 1.6 dB

Test Plots – RF Power Output



Dallas Headquarters:

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

Nemko Dallas, Inc. Data Plot **RF Power Output** Complete X Page 1 of 2 Job No.: 2L0311 Date: 6/6/2002 Preliminary: Specification: 73.267(b)(2) Temperature(°C): Tested By: David Light Relative Humidity(%) Decade transmitters E.U.T.: Configuration: Tx FULL POWER Sample Number: 1 & 2 RBW: 2 kHz Location: Lab 1 Measurement VBW: 2 kHz Detector Type: Peak Distance: NA Test Equipment Used Antenna: Directional Coupler: Pre-Amp: Cable #1: Filter: Cable #2: 1036 Cable #3: Receiver: Attenuator #1 1064 Cable #4: Attenuator #2: 1065 Mixer: Additional equipment used: Measurement Uncertainty: +/-1.7 dB dВ Ref Lvl 32.55 dBm VBW 2 kHz 42.6 dBm 98.50012525 MHz SWT 80 ms Unit dBm 42.E Α 8.50012 525 MHz 30 8.56250 OOO MHz 20 10 1 MA - 10 -20 -30 Mohrman -40 -50 Center 98.5 MHz 12.5 kHz/ Span 125 kHz 06.JUN.2002 09:14:17 ate: FM-850 Notes:

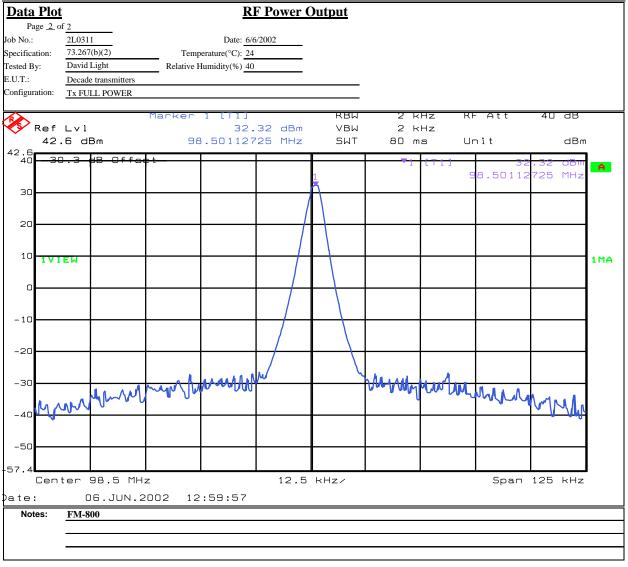
Test Plots – RF Power Output



Dallas Headquarters:

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

Nemko Dallas, Inc.



FCC PART 73, SUBPART G FM Broadcast Transmitters

EQUIPMENT: FM-800 & FM-850 REPORT NO.: 2L0311RUS1

Section 4. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth PARA. NO.: 73.317

TESTED BY: David Light DATE: 6/6/2002

Test Results: Complies.

Test Data: See attached plot(s).

All occupied bandwidth measurements were made with the transmitter deviation set to \pm 475 kHz.

Measurement Uncertainty: +/- 1.6 dB

Test Plots -Occupied Bandwidth



Dallas Headquarters:

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

Fax: (972) 436-2667 Nemko Dallas, Inc. Data Plot **Occupied Bandwidth** Page <u>1</u> of <u>6</u> Complete _ Job No.: 2L0311 Date: 6/6/2002 Preliminary: Specification: 73.317 Temperature(°C): 24 Tested By: Relative Humidity(%) David Light E.U.T.: DECADE FM TRANSMITTERS Configuration: TX AUDIO SIGNAL FULL POWER Sample Number: 1 & 2 Location: RBW: 5 kHz Measurement Lab 1 Detector Type: Peak VBW: 5 kHz Distance: Test Equipment Used Directional Coupler: 1045 Pre-Amp: Cable #1: Filter: Cable #2: 1036 Cable #3: Receiver: Attenuator #1 1064 Cable #4: Attenuator #2: 1065 Mixer: Additional equipment used: Measurement Uncertainty: +/-1.7 dB RBW 30 aB Ref Lvl 32.07 dBm VBW 5 kHz 32.6 dBm 98.50000000 MHz SWT 200 ms Unit dBm A 20 10 1MA -10John Jander Jander -20 -30 My why have -40 -50 -60 200 kHz/ Center 98.5 MHz Span 2 MHz 06.JUN.2002 09:01:20 bate: FM-850 STEREO TRANSMITTER Notes: STEREO OPERATION

Test Plots -Occupied Bandwidth



Dallas Headquarters:

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

Nemko Dallas, Inc. **Occupied Bandwidth Data Plot** Page 2 of 6 2L0311 Date: 6/6/2002 Job No.: Specification: 73.3 Temperature(°C): 24 Tested By: David Light Relative Humidity(%) 40 E.U.T.: DECADE FM TRANSMITTERS Configuration: TX AUDIO SIGNAL FULL POWER RBW 30 dB kHz Ref Lvl 33.10 dBm VBW 5 kHz 32.6 dBm 98.50000000 MHz SWT 200 ms Unit dBm Α 20 10 1MA - 1C -20 -30 -40 tophend we were the tophend -50 -60 67.4 200 kHz/ Center 98.5 MHz Span 2 MHz ate: 06.JUN.2002 09:03:12 Notes: FM-850 STEREO TRANSMITTER MONO OPERATION

Test Plots -Occupied Bandwidth



Dallas Headquarters:

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

Nemko Dallas, Inc. **Test Plot: Occupied Bandwidth** Page <u>5</u> of <u>6</u> Job No.: 2L0311 Date: 6/6/2002 Specification: 73.317 Temperature(°C): 24 Tested By: David Light Relative Humidity(%) 40 E.U.T.: DECADE FM TRANSMITTERS Configuration: TX AUDIO SIGNAL FULL POWER 30 dB Ref Lvl 5 kHz 32.74 dBm VBW 32.6 dBm 98.50000000 MHz SWT 10 s Unit dBm 32.6 30 Α 98.50000 000 MHz 20 1 MA -20 -30 -40 -60 67.4 Center 98.5 MHz 200 kHz/ Span 2 MHz 06.JUN.2002 13:16:27 bate: FM-800 Notes:

Section 5. Spurious Emissions at Antenna Terminals

NAME OF TEST: Spurious Emissions @ Antenna Terminals PARA. NO.: 73.371

TESTED BY: David Light DATE: 6/6/2002

Test Results: Complies.

Test Data:

Equipment Used: 1036-1064-1065-1042

Measurement Uncertainty: +/- 1.6 dB

Test Plots – Spurious Emissions at Antenna Terminals



Dallas Headquarters:

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

Nemko Dallas, Inc. Data Plot **Occupied Bandwidth** Page 3 of 6 2L0311 Date: 6/6/2002 Job No.: Specification: 73.317 Temperature(°C): 24 Tested By: David Light Relative Humidity(%) 40 E.U.T.: DECADE FM TRANSMITTERS Configuration: TX AUDIO SIGNAL FULL POWER КВЬ 30 aB Ref Lv1 33.23 dBm VBW 100 kHz 32.6₁ dBm 98.03607214 MHz SWT 245 ms Unit dBm 32.6 30 Α 8.0360 214 MHz 20 7.17434 870 MHz 1 C 1MA -D 1 dBm -20 -30 and harman with the work when we have the same of the -40 -50 -60 67.4 Start 30 MHz 97 MHz/ Stop 1 GHz 06.JUN.2002 09:09:51 Date: FM-850 STEREO TRANSMITTER Notes: STEREO OPERATION MARKER 1 INDICATES CARRIER, MARKER 2 INDICATES HIGHEST EMISSION

Test Plots – 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: Occupied Bandwidth** Page <u>4</u> of 6 2L0311 Date: 6/6/2002 Job No.: Specification: 73.317 Temperature(°C): 24 Tested By: David Light Relative Humidity(%) 40 E.U.T.: DECADE FM TRANSMITTERS Configuration: TX AUDIO SIGNAL FULL POWER кви 30 aB Ref Lvl 33.23 dBm VBW 100 kHz 32.6₁ dBm 98.03607214 MHz SWT 245 ms Unit dBm 32.6 30 Α 8.0360 214 MHz 20 970 MHz 10 1 MA - 1 C -D 1 dBm -20 -30 -40 -50 -60 97 MHz/ Stop 1 GHz Start 30 MHz 06.JUN.2002 09:11:21 ate: FM-850 STEREO TRANSMITTER Notes: MONO OPERATION MARKER 1 INDICATES CARRIER, MARKER 2 INDICATES HIGHEST EMISSION

Test Plots – 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: Occupied Bandwidth** Page $\underline{6}$ of 6 2L0311 Date: 6/6/2002 Job No.: Specification: 73.317 Temperature(°C): 24 Tested By: David Light Relative Humidity(%) 40 E.U.T.: DECADE FM TRANSMITTERS Configuration: TX AUDIO SIGNAL FULL POWER 30 aB Ref Lvl -23.95 dBm VBW 100 kHz 32.6 dBm 197.17434870 MHz SWT 10 s Unit dBm 32.6 Α 370 MHz 20 8.03607 214 MHz 1 🗆 1MA - 1 C -D 1 dBm -20 -30 -40 -50 -60 67.4 Start 30 MHz Stop 1 GHz 97 MHz/ 06.JUN.2002 ate: 13:18:24 FM-800 Notes: MARKER 1 INDICATES CARRIER MARKER 2 INDICATES HIGHEST EMISSION

Section 6. Field Strength of Spurious

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

TESTED BY: David Light DATE: 6/6/2002

Test Results: Complies.

Test Data: See attached table.

Equipment Used: 1464-791-1485-1484-1304-1480

Measurement Uncertainty: +/- 1.6 dB

Test Data - Radiated Emissions

(N) Nemko

Nemko Dallas, Inc.

Dalla	e Has	dans	rters:

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

		ERP Substit	tution Me	<u>thod</u>
Page 1 o	of <u>1</u>			Complete X
Job No.:	210311	Date: 6/7/2002		Preliminary
Specification:	Pt 73	Temperature(°C): 24	_	
Tested By:	Tom Tidwell	Relative Humidity(%) 40	_	
E.U.T.:	FM-800 & FI	M-850		_
Configuration:	Tx at 98.5 M	Hz full power into load		_
Sample No:	1&2			
Location:	AC 3	RBW	: 100 kHz	Measurement
Detector Type:	Peak	VBW	: 30 kHz	Distance: 3m m
Test Equipm	ent Used			
Antenna:	1304	Directional Coupler	:	_
Pre-Amp:	791	Cable #1	:1484	_
Filter:		Cable #2	: 1485	
Receiver:	1036	Cable #3	: <u></u>	_
Attenuator #1		Cable #4	:	
Attenuator #2:		Mixer	:	_
Additional equip	ment used:	1480		
Measurement Ui	ncertainty:	+/-3.6 dB		

Frequency	Meter	Correction	Pre-Amp	Substitution		ERP	ERP	Polarity	Comments
	Reading	Factor	Gain	Antenna Gain	Limit				
(MHz)	(dBm)	(dB)	(dB)	(dBd)	(dBm)	(dBm)	(mW)		
197	-43.0	-2.5	0	0.0	-13	-45.5	0.0000	V	
295.5	-52.0	3.0	0	0.0	-13	-49.0	0.0000	V	
394	-44.2	4.7	0	0.0	-13	-39.5	0.0001	V	
492.5	-53.7	6.2	0	0.0	-13	-47.5	0.0000	V	
591	-48.0	2.0	0	0.0	-13	-46.0	0.0000	V	
689.5	-53.2	9.7	0	0.0	-13	-43.5	0.0000	V	
788	-47.5	36.0	24.6	-0.7	-13	-36.8	0.0002	V	
886.5	-54.8	32.2	24.8	4.9	-13	-42.6	0.0001	V	
985	-51.0	29.3	24.7	5.0	-13	-41.4	0.0001	V	
197	-48.2	-0.3	0	0.0	-13	-48.5	0.0000	Н	
295.5	-56.2	3.2	0	0.0	-13	-53.0	0.0000	H	
394	-53.2	2.7	0	0.0	-13	-50.5	0.0000	Н	
492.5	-60.5	3.0	0	0.0	-13	-57.5	0.0000	H	
591	-55.7	8.7	0	0.0	-13	-47.0	0.0000	H	
689.5	-57.8	8.8	0	0.0	-13	-49.0	0.0000	Н	
788	-54.8	39.2	24.6	-0.7	-13	-40.9	0.0000	Н	
886.5	-54.8	30.3	24.8	4.9	-13	-46.6	0.0001	H	
985	-55.2	31.0	24.8	5.0	-13	-40.0	0.0000	Н	
900	-33.2	31.0	24.7	3.0	-13	-43.9	0.0000	П	
						-			

EQUIPMENT: **FM-800 & FM-850** REPORT NO.:

2L0311RUS1

Photographs of Test Setup

FRONT VIEW



REAR VIEW



Section 7. Powerline Conducted Emissions

NAME OF TEST: Powerline Conducted Emissions PARA. NO.: 15.207

TESTED BY: David Light DATE:6/6/2002

Test Results: Complies

Limit:

Frequency	Limit	Limit
	μV/m	dBμV/m
0.450 to 30 MHz	250	48

Results:

FM-800

The worst case emission was 23.4 dB μ V/m on Neutral line. This is 24.6 dB below the quasi-peak limit of 48 dB μ V/m.

FM-850

The worst case emission was 22.23 dB μ V/m on Neutral line. This is 25.77 dB below the quasi-peak limit of 48 dB μ V/m.

Test Plots – Powerline Conducted Emissions



Dallas Headquarters:

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

Nemko Dallas, Inc.

Data P			143, 1110.		P	owerlin	e Conduct	ted Emiss	ions				
Page	1 of 4									Comp	lete	_	
Job No.:	2	L0311				Date:	6/8/2002			Prelimina	ry:	<u>-</u>	•
Specification	on: P	T15		T	emper	rature(°C):	25					-	
Tested By:		avid Li	ght		-	midity(%)	40						
E.U.T.:	_		& FM-850 TR	_									
Configurati	_		L POWER										
Sample Nu	_	1 & 2						•					
Location:	_	Lab 4					RBW: 10	kHz		Measuren	nent		
Detector Ty	wne:	Peak					VBW: 10			Dista		m	
Detector 1	, pc	1 Cun	·				VB W. 10	KIIZ		21544			
Test Equ	iipmen	t Used	<u>l</u>										
Antenna:	_						L.I.S.N.	1258					
Limiter	_	674					Cable #1:	1526					
Filter:	_	1555	<u>: </u>				Cable #2:	1114					
Receiver:		1036	i				Cable #3:						
Attenuator	#1						Cable #4:						
Attenuator	#2:						Mixer:						
Additional	equipme	nt used	:										
Measureme			+/-1.7 dI	3									
			,										
/S				Mark	er	1 [T1]		RB₩	10 k	Hz	RF Att	10 dB	
V \$/	Ref	∟∨l				22.2	$29 \text{ dB}\mu\text{V}$	VBW	10 k	Hz			
	87	$dB\mu$	/		19	.992084	417 MHz	SWT	740 m	ıs	Unit	$dB\mu$ \	/
87	1 0	dВ	Offset						▼ 1	[T1]	22	.29 dBµV	Α
80											-1 9.9920	9 <mark>417 MHz</mark>	
70													
70					ĺ								1
60					\dashv								-
	1 V I I	EΜ											1MA
50	− D1	48	dΒμV——										1
40													4
30													
30					ĺ								1
									1				
20	~₩~	Word	- WILLIAM	while	~~	May May 1	- When wh	topo and the	- Limber	the Company	Married Marrie	wwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwww	
10													
10													
0							-				_		1
-10													
-10 -13]
		t 45	50 kHz				2.955	MHz/			Stop	o 30 MHz	
Date:			8.JUN.2	002	1 1	:14:56							
Notes		<u></u>											
1,10165	-		TRANSMIT	TER									
1	<u>r</u>	141-00(TIMENIA	LILK									

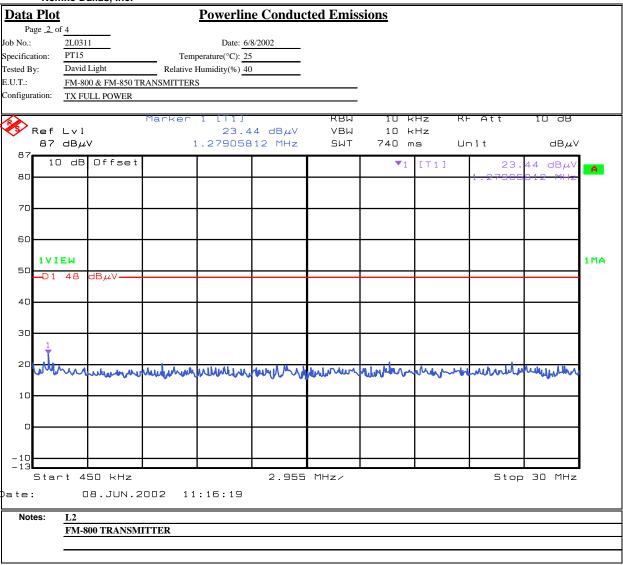
Test Plots – Powerline Conducted Emissions



Dallas Headquarters:

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

Nemko Dallas, Inc.



Test Plots – Powerline Conducted Emissions



Dallas Headquarters:

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

Nemko Dallas, Inc. Data Plot **Powerline Conducted Emissions** Page 3 of 4 Job No.: 2L0311 Date: 6/8/2002 Specification: PT15 Temperature(°C): 25 Tested By: David Light Relative Humidity(%) 40 E.U.T.: FM-800 & FM-850 TRANSMITTERS Configuration: TX FULL POWER 10 dB Ref Lvl $22.23 \text{ dB}\mu\text{V}$ VBW 10 kHz 87 dB \(\mu \neq \) 1.27905812 MHz SWT 740 ms Unit $dB\mu V$ 87 10 dB Offset [T1] dBμ\ Α 80 70 60 **1VIEW** 1MA 50 $\mathsf{dB}\mu\mathsf{V}$ 40 30 20 which probability when were him ha per letter all for more than the forest was restricted to 10 -10 -13 2.955 MHz/ Stop 30 MHz 08.JUN.2002 11:18:33 ate: Notes: L1 FM-850 TRANSMITTER

Test Plots – Powerline Conducted Emissions



Dallas Headquarters:

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

Nemko Dallas, Inc. **Test Plot: Powerline Conducted Emissions** Page $\underline{4}$ of 4 2L0311 Date: 6/8/2002 Job No.: Specification: PT15 Temperature(°C): 25 Tested By: David Light Relative Humidity(%) 40 E.U.T.: FM-800 & FM-850 TRANSMITTERS Configuration: TX FULL POWER кви 10 dB Ref Lvl $21.86 \text{ dB}\mu\text{V}$ VBW 10 kHz 87 dBµV 1.39749499 MHz SWT 740 ms Unit $dB\mu V$ 87 10 dB Offset [T1] 16 dB_µ\ A 80 70 60 1 V I E W 1MA 50 $dB\mu V$ 40 30 20 Mileton Marin and the market market market market and the hold wall for all when below the half be now any level from how the form of the 10 -10 -13 Start 450 kHz 2.955 MHz/ Stop 30 MHz 08.JUN.2002 11:19:37 Notes: L2 FM-850 TRANSMITTER

Test Setup – Powerline Conducted Emissions





Section 8. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date
1036	SPECTRUM ANALYZER	ROHDE & SCHWARZ FSEK30	830844/006	12/18/01
1042	CABLE, 4M	STORM PR90-010-144	N/A	06/14/02
674	LIMITER	HP 11947A	3107A02200	11/04/00
1555	Filter high pass 5KHz	Solar Electronics 7930-5.0	933125	06/06/02
1258	LISN .15mhz-30mhz	EMCO 0	1305	04/04/01
1526	Cable, .6m	KTL RG223	NA	08/06/01
1114	CABLE, 7m	KTL RG223	N/A	06/06/02
1304	HORN ANTENNA	ELECTRO METRICS RGA-60	6151	07/30/01
791	PREAMP, 25dB	ICC LNA25	398	08/16/01
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
1064	ATTENUATOR	NARDA 776B-20	NONE	09/13/01
1065	ATTENUATOR	NARDA 776B-10	NONE	09/13/01

ANNEX A - TEST DETAILS

NAME OF TEST: RF Power Output PARA. NO.: 73.267

Determining operating power.

- (a) The operating power of each FM station is to be determined by either the direct or indirect method.
- (b) Direct method. The direct method of power determination for an FM station uses the indications of a calibrated transmission line meter (responsive to relative voltage, current, or power) located at the RF output terminals of the transmitter. This meter must be calibrated whenever there is any indication that the calibration is inaccurate or whenever any component of the metering circuit is repaired or replaced. The calibration must cover, as a minimum, the range from 90% to 105% of authorized power. The meter calibration may be checked by measuring the power at the transmitter terminals while either:
- (1) operating the transmitter into the transmitting antenna, and determining actual operating power by the indirect method described in §73.267(c); or
- (2) operating the transmitter into a load (of substantially zero reactance and a resistance equal to the transmission line characteristic impedance) and using an electrical device (within $\pm 5\%$ accuracy) or temperature and coolant flow indicator (within $\pm 4\%$ accuracy) to determine the power.
- (c) Indirect method. The operating power is determined by the indirect method by applying an appropriate factor to the input power to the last radio-frequency power amplifier stage of the transmitter, using the following formula:

Transmitter output power = Ep x Ip x F

Where:

Ep = DC input voltage of final radio stage.

Ip = Total DC input current of final radio stage.

F = Efficiency factor.

(1) If the above formula is not appropriate for the design of the transmitter final amplifier, use a formula specified by the transmitter manufacturer with other appropriate operating parameters.

Nemko Dallas

FCC PART 73, SUBPART G FM Broadcast Transmitters

EQUIPMENT: FM-800 & FM-850 REPORT NO.: 2L0311RUS1

(2) The value of the efficiency factor, F, established for the authorized transmitter output power is to be used for maintaining the operating power, even though there may be some variation in F over the power operating range of the transmitter.

- (3) The value of F is to be determined and a record kept thereof by one of the following procedures listed in order of preference:
- (i) Using the most recent measurement data for calibration of the transmission line meter according to the procedures described in paragraph (b) of this section or the most recent measurements made by the licensee establishing the value of F. In the case of composite transmitters or those in which the final amplifier stages have been modified pursuant to FCC approval, the licensee must furnish the FCC and also retain with the station records the measurement data used as a basis for determining the value of F.
- (ii) Using measurement data shown on the transmitter manufacturer's test data supplied to the licensee; provided that measurements were made at the authorized frequency and transmitter output power.
- (iii) Using the transmitter manufacturer's measurement data submitted to the FCC for type acceptance and as shown in the instruction book supplied to the licensee.

NAME OF TEST: Occupied Bandwidth PARA. NO.: 73.317

FM transmission system requirements.

- (a) FM broadcast stations employing transmitters authorized after January 1, 1960, must maintain the bandwidth occupied by their emissions in accordance with the specification detailed below. FM broadcast stations employing transmitters installed or type accepted before January 1, 1960, must achieve the highest degree of compliance with these specifications practicable with their existing equipment. In either case, should harmful interference to other authorized stations occur, the licensee shall correct the problem promptly or cease operation.
- (b) Any emission appearing on a frequency removed from the carrier by between 120 kHz and 240 kHz inclusive must be attenuated at least 25 dB below the level of the unmodulated carrier. Compliance with this requirement will be deemed to show the occupied bandwidth to be 240 kHz or less.
- (c) Any emission appearing on a frequency removed from the carrier by more than 240 kHz and up to and including 600 kHz must be attenuated at least 35 dB below the level of the unmodulated carrier.
- (d) Any emission appearing on a frequency removed from the carrier by more than 600 kHz must be attenuated at least 43 + 10 Log10 (Power, in watts) dB below the level of the unmodulated carrier, or 80 dB, whichever is the lesser attenuation.
- (e) Preemphasis shall not be greater than the impedance-frequency characteristics of a series inductance resistance network having a time constant of 75 microseconds. (See upper curve of Figure 2 of §73.333.)

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

Minimum Standard: Para. No.73.317(d). Any emission appearing on a frequency

removed from the carrier by more than 600 kHz must be attenuated at least 43 + 10 Log10 (Power, in watts) dB below the level of the unmodulated carrier, or 80 dB,

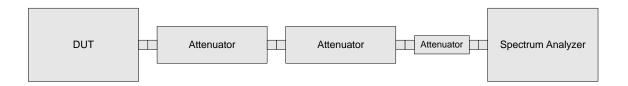
whichever is the lesser attenuation.

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.

ANNEX B - TEST DIAGRAMS

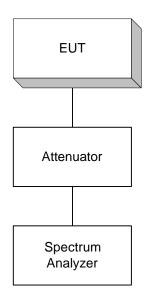
Para. No. 2.985 - R.F. Power Output



Para. No. 2.989 - Occupied Bandwidth



Para. No. 2.991 Spurious Emissions at Antenna Terminals



Para. No. 2.993 - Field Strength of Spurious Radiation

