

**Application for Certification
For an RF Power Amplifier**

**Paradigm Wireless Systems Inc.
1672 McGaw Ave.
Irvine, CA 92614**

RF Power Amplifier:

Part # MAF800-100S

FCC ID: OQ3MAF800-100S

REPORT # RC055097/28116

This report was prepared in accordance with the requirements of the FCC Rules and Regulations Part 2, Subpart J, 2.1031 through 2.1057, Part 22 and Part 90 and other applicable sections of the rules as indicated herein.

Prepared By:

Fred Gurule

**DNB Engineering, Inc.
3535 W. Commonwealth Ave.
Fullerton, CA 92833**

30 MAY 2002

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1.0 ADMINISTRATIVE DATA

1.1 Certifications and Qualifications

I certify that DNB Engineering, Inc conducted the tests performed in order to obtain the technical data presented in this application. Also, based on the results of the enclosed data, I have concluded that the equipment tested meets or exceeds the requirements of the Rules and Regulations governing this application.

1.2 Measurement Repeatability Information

The test data presented in this report has been acquired using the guidelines set forth in FCC Part 2.1031 through 2.1057, Part 22 and Part 90. The test results presented in this document are valid only for the equipment identified herein under the test conditions described. Repeatability of these test results will only be achieved with identical measurement conditions. These conditions include: The same test distance, EUT Height, Measurement Site Characteristics, and the same EUT System Components. The system must have the same Interconnecting Cables arranged in identical placement to that in the test set-up, with the system and/or EUT functioning in the identical mode of operation (i.e. software and so on) as on the date of the test. Any deviation from the test conditions and the environment on the date of the test may result in measurement repeatability difficulties.

All changes made to the EUT during the course of testing as identified in this test report must be incorporated into the EUT or identical models to ensure compliance with the FCC regulations.



Bryan Broaddus (Para. 1.1)
Manager, Test Dept.
DNB Engineering, Inc.
Tel. (714) 870-7781 FAX (714) 870-5081

2.1033 (C) (1) Application for Certification

Name of Applicant: Paradigm Wireless Systems Inc.
1672 McGaw Ave.
Irvine, CA 92614

Applicant is: X Manufacturer
 Vendor
 Licensee
 Prospective Licensee
 Other

Name of Manufacturer Paradigm Wireless Technology

Description: RF Power Amplifier

Part Number: MAF800-100S

Anticipated Production Quantity: Multiple Units

2.1033 (C) (2) FCC Identifier

FCC ID: OQ3MAF800-100S

2.1033 (C) 3) Installation and Operating Instructions

Please refer to Appendix A

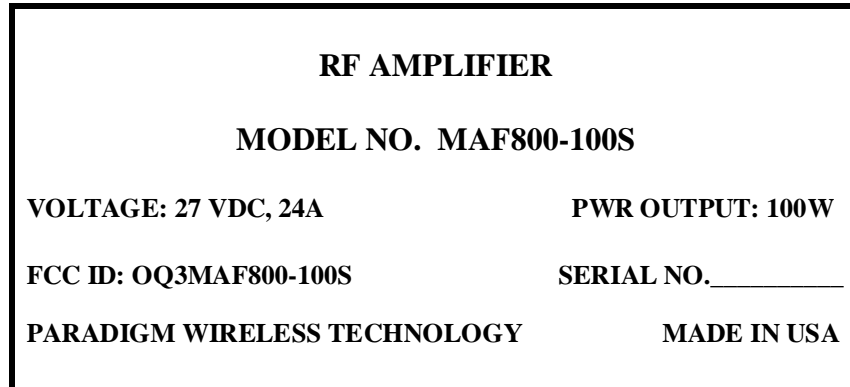
2.1033 (C) (4) Type of Emission

N/A (CDMA Modulation)

2.1033 (C) (10) Schematic Diagram and Circuit Description

Please refer to Appendix B

2.1033 (C) (11) Equipment Identification Plate



NOTES:

Label will be constructed of 0.02 inch aluminum as shown on the equipment with permanent adhesive.

All information on the label will be etched or stamped. Both methods will exceed the expected lifetime of the equipment.

The label will be large enough to allow all information to be legible.

2.1033 (C) (11) Equipment Photographs

Note: The Main Circuit Board shown in these photos has no components on the reverse side.

Photo 1	Main Circuit Board (Overall View Side A)
Photo 2	Detail View (Side A)
Photo 3	Detail View (Side A)
Photo 4	Detail View (Side A)
Photo 5	Detail View (Side A)
Photo 6	Detail View (Side A)
Photo 7	Overall View (Side B)
Photo 8	Detail View (Side B)
Photo 9	Detail View (Side B)
Photo 10	Detail View (Side B)
Photo 11	Detail View (Side B)
Photo 12	Detail View (Side B)
Photo 13	External Front, Back, and Side Views
Photo 14	External Front, Back, and Side Views
Photo 15	External Front, Back, and Side Views

Photo 1 Main Circuit Board (Overall View Side A)

Confidential

Photo 2 Detail View (Side A)

Confidential

Photo 3 Detail View (Side A)

Confidential

Photo 4 Detail View (Side A)

Confidential

Photo 5 Detail View (Side A)

Confidential

Photo 6 Detail View (Side A)

Confidential

Photo 7 Overall View (Side B)

Confidential

Photo 8 Detail View (Side A)

Confidential

Photo 9 Detail View (Side B)

Confidential

Photo 10 Detail View (Side B)

Confidential

Photo 11 Detail View (Side B)

Confidential

Photo 12 Detail View (Side B)

Confidential

Photo 13 External Front, Back and Side Views

Confidential

Photo 14 External Front, Back and Side Views

Confidential

Photo 15 External Front, Back and Side Views

Confidential

2.1033 (C) (13) Digital Modulation Techniques

Not Applicable

2.1033 (c) (14) Test Data

Refer to 2.1046 through 2.1057

2.1046 Measurement of RF Power Output

Definition: For RF Amplifiers.

Test Method: See FIGURE 1.

Output Power is measured across a precision 50 ohm load with a Spectrum Analyzer. For the power measurement, CW (no modulation) is used.

Test Results:

POWER OUTPUT MEASURED AT NOMINAL VOLTAGE WAS:

	<u>Frequency (MHz)</u>	<u>Power (dBm)</u>	<u>Power (W)</u>
4 carriers	880	48.5	71
2 carriers	880	49.6	91
1 carrier	880	50.4	110

(See Data Packages Herein for more Information)

2.1049 Measurement of Occupied Bandwidth

Definition:

Occupied Bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are equal to 0.5 percent of the total mean power radiated by a given emission.

Test Method: Connect the Equipment per FIGURE 1.

Measurements were made while modulation the driving source with a CDMA signal.

Test Results: See Plots in Data Packages (Back of Report).

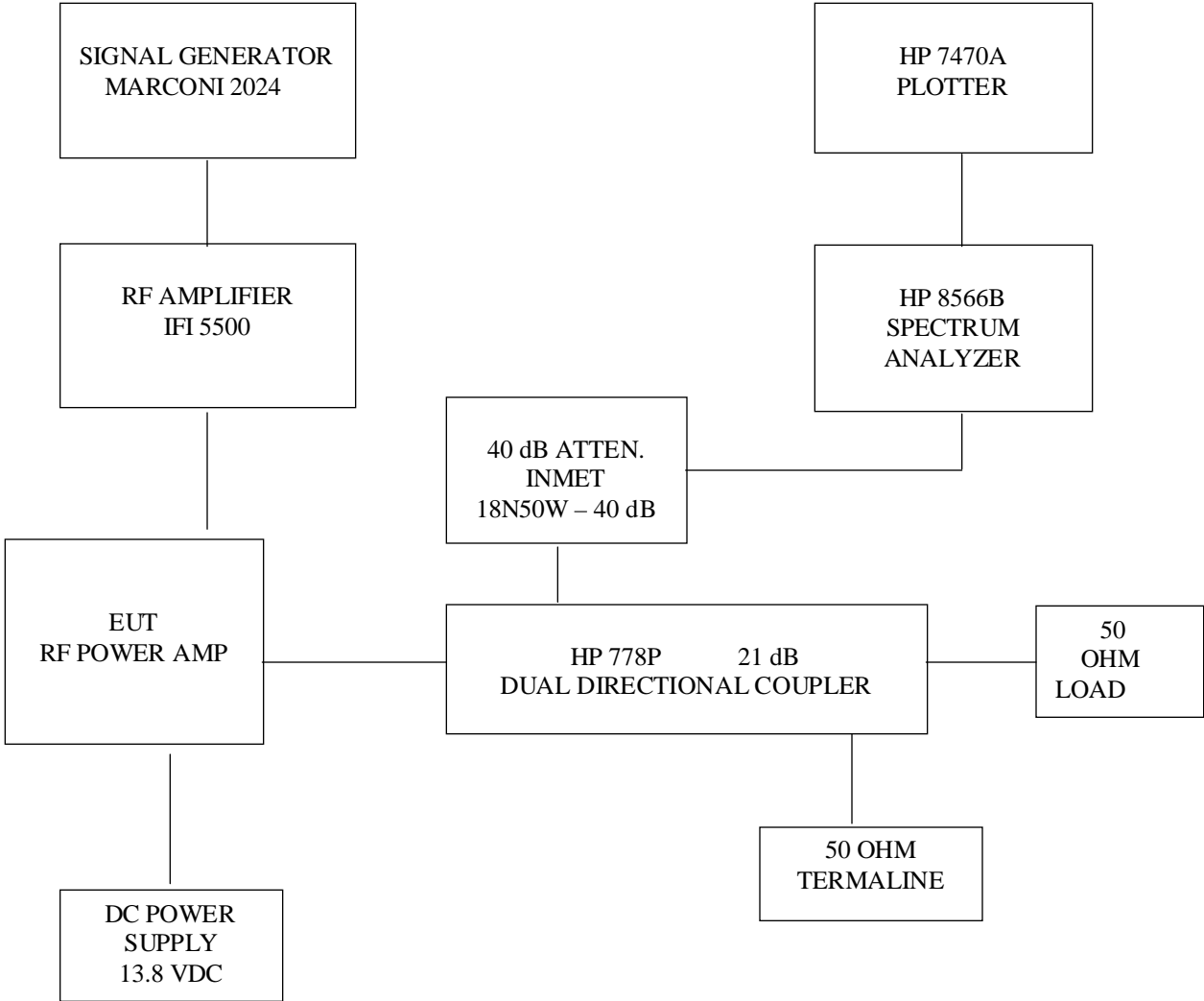
The center frequency of the signal did not shift with modulation. The Spectrum Bandwidth was well within the limits specified in the FCC Regulations.

Note:

This amplifier has the ability to transmit multiple carriers within the 869-894 MHz band. Therefore the emissions shall be contained within this band as stated in Part 22.901 (d) (2). Plots have been provided that show the lowest and highest useable frequencies with CDMA modulation. Operation between 871.65 MHz and 891.30 MHz will ensure emissions will be at or below $43 + 10 \log (P_o)$ at the band edges.

(See Data Packages Herein for more Information)

FIGURE 1: Block Diagram
(Occupied Bandwidth tests)



2.1033 (C) (5) Frequency Range

869 - 894 MHz

2.1033 (C) (6) Operating Power

100 Watts

2.1033 (C) (7) Maximum Power Allowed in Applicable Part(s) of the Rules

<u>RULES PART</u>	<u>MAXIMUM POWER (WATTS)</u>
Part 90.213	110

2.1033 (C) (8) Final RF Amplifier Input Power Characteristics

Please refer to Appendix A

2.1033 (C) (9) Tune Up Procedure

Please refer to Appendix A

2.1051 Spurious Emissions at Antenna Terminals

Definition:

Conducted Spurious Emissions are emissions at the antenna terminals on a frequency or frequencies which are outside an occupied band sufficient to ensure transmission of information of required quality for the class of communication desired. The reduction in the level of these spurious emissions will not affect the quality of the information being transmitted.

Conducted Spurious Emissions shall be attenuated below the maximum level of the carrier frequency in accordance with the following formula:

$$\text{Spurious attenuation in dB} = 43 + 10 \log_{10} P_o$$

Where P_o = Output in Watts (CW)

$$= 43 + 10 \log_{10} (70)$$

$$= 61.5 \text{ dB}$$

Test Method: Per EIA RS 152-B, Paragraph 4 as modified below.

Connect the equipment as shown in FIGURE 2.

Adjust the drive source to produce CDMA modulation. Adjust the Spectrum Analyzer to display the Modulated Carrier.

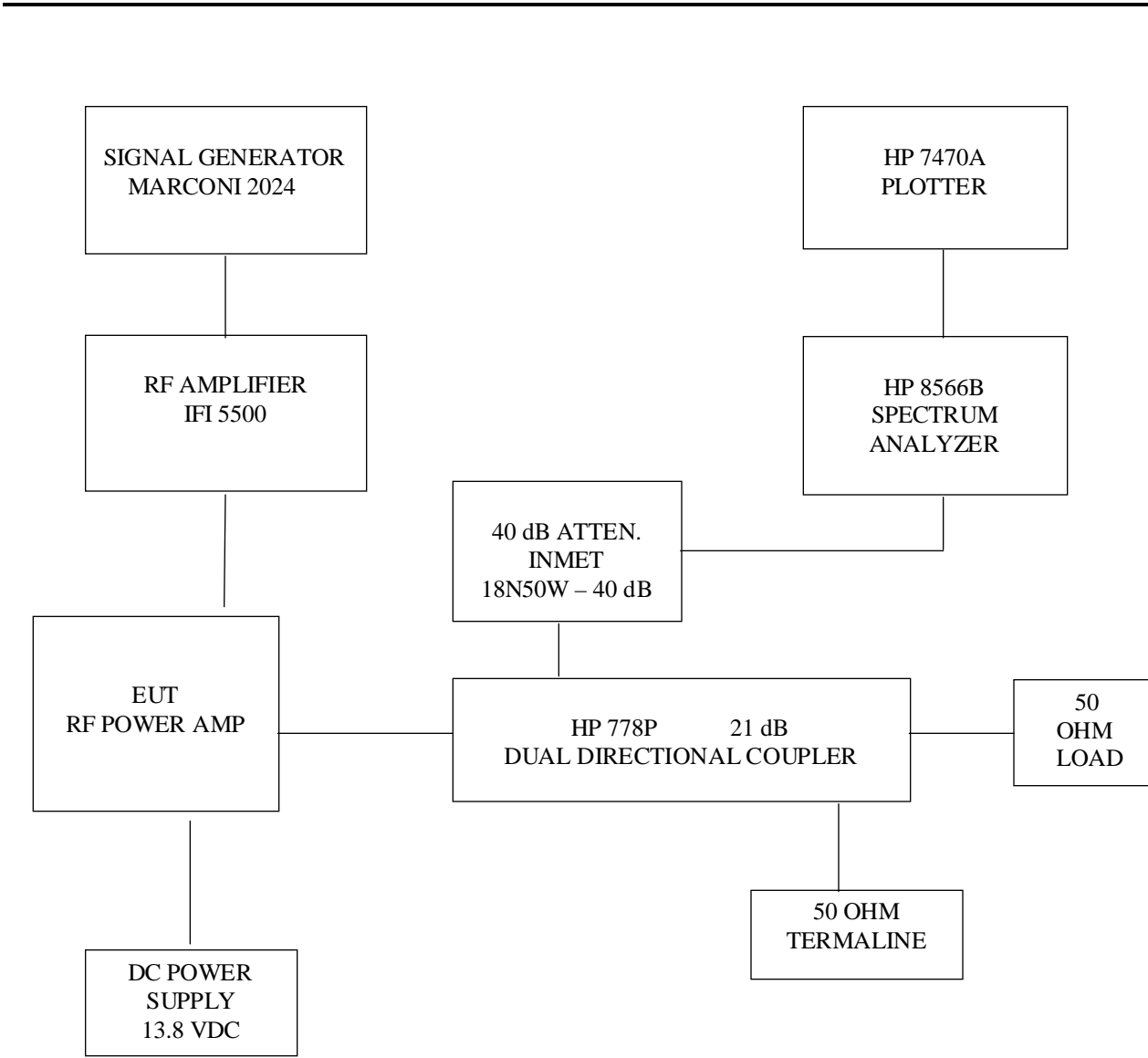
Scan the frequency spectrum from the lowest radio frequency generated in the equipment through the 10th harmonic of the carrier frequency.

Test Results: See Plots in Data Packages (Back of Report).

All spurious emissions at the antenna terminals are below the FCC specifications

(See Data Packages Herein for more Information)

FIGURE 2: Block Diagram
(Spurious Emissions tests)



2.1053 Field Strength of Spurious Radiation

Definition:

Emissions from the equipment when connected into a non-radiating load on a frequency or frequencies which are outside an occupied band sufficient to ensure transmission of information of required quality for the class of communication desired. The reduction in the level of these spurious emissions will not affect the quality of the information being transmitted.

Test Method: Per EIA RS 152-B.

Connect the equipment and follow the procedure described in paragraph 2.2.1.1 and paragraph 5.0. Measure the amplitude of each spurious radiated signal through the 10th harmonic. The level in dBuV/m is calculated on the following page. The spurious signals are then measured on the 3 meter range.

$$\text{Spurious attenuation dB} = 10 \log \frac{\text{Po Watts}}{\text{Calc. Spurious power}}$$

Test Results: See TABLE on following Page.

All radiated spurious emissions are below the FCC Specifications.

RF Exposure

The information contained in “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields”, OET Bulletin 65; August 1997 is applicable when a radiating antenna is connected to this amplifier. Paging stations that utilize this amplifier authorized under Part 22 (Subpart E) and Part 90 are subject to routine environmental evaluation for RF exposure if an antenna is located on a rooftop and if its ERP exceeds 1000 watts.

This product is certified to meet the RF exposure guidelines of OET-65 as a stand-alone RF power amplifier. The RF spurious emissions recorded when the antenna output connector is terminated into a non-radiating 50 ohm load do not exceed the 27.5 V/m limit specified for General Population/Uncontrolled Exposure in OET Bulletin 65.

(See Data Packages Herein for more Information)

Test Equipment Log

Equipment List

DNB Engineering
 5869 Robinson Avenue
 Riverside, CA 92503
 www.dnbneginc.com

Item No:	Description	Manufacturer	M/N	S/N	DNB Asset	Date Cal	Cal Due
59	Bicon Antenna	A.H. Systems Inc.	SAS-200/540	524	Need	3/2/99	3/2/00
4	Digital MultiMeter	Amprobe	AM-1250	330224	952	11/9/01	11/9/02
6	Digital MultiMeter	Amprobe	AM-1250	330139	957	8/22/01	8/22/02
15	AC/DC Current Probe	Amprobe	CT600	30301828	949	4/9/02	4/9/03
46	Insulation Tester	Amprobe	AMB-1A	340055	1510	11/9/01	11/9/02
40	Pressure Gauge	Ashcroft	0-30 PSI	1500	1500	9/21/01	9/22/02
41	Pressure Gauge	Ashcroft	0-30 PSI	1501	1501	9/21/01	9/22/02
42	Pressure Gauge	Ashcroft	0-30 PSI	1502	1502	9/21/01	9/22/02
13	Line Leakage Tester	Associated Research	510L	A130511	1215	4/19/02	4/19/03
14	Safety Compliance Analyzer	Associated Research	7564SA	A100601	1216	4/19/02	4/19/03
5	LCR Meter	B & K Precision	878	23702237	966	11/8/01	11/8/02
47	Hypot Tester	Beckman	P-2B	64989	1670	11/8/01	11/8/02
3	Digital MultiMeter	Chief Engineer	104	31220125	1092	9/10/01	9/10/02
2	Power Analyzer	Combinova	300	102	1093	9/25/01	9/25/02
51	L I S N	ComPower Corporation	L1-300	1331	998	5/25/01	5/25/02
52	L I S N	ComPower Corporation	L1-300	1373	997	5/25/01	5/25/02
53	Near Field Probe Kit	Credence Technologies	CTK015	None	need	Reference	Reference
21	Weather Station	Davis	7400	PC70804A01	1057	1/29/02	1/29/03
56	WeatherLink	Davis Instruments	7400	PC70804A04	1056	1/29/02	1/29/03
49	Digital MultiMeter	Di-Log	DL-297T	28702237	1210	11/18/00	11/18/01
57	Digital Multi Meter	DI-LOG	DL-297T	637652	Need	2/4/02	2/4/03
22	Safety Analyzer	Dynatech Nevada	431A	431A-1230	U-113	4/12/02	4/12/03
9	Impact Hammer	E.D. & D.	F22-50	9606235-3	972	11/6/00	11/6/02
7	Dial Caliper	General MG	ULTRATEST	CD56903	958	12/17/01	12/18/02
8	Micrometer	General MG	0-1"	N o S N #	959	12/17/01	12/17/02
30	ESD Power Supply/Gun	Haefely	PSD 25 B	083 427-05	858	3/27/02	3/27/03
31	ESD Contact Finger	Haefely	083 579-1	083 071-11	1671	3/28/01	3/28/02
33	Scale 300lb Capacity	Hanson	8930	1403	1403	6/19/01	6/19/02
34	Scale 25lb Capacity	Hanson	40	1402	1402	4/26/02	4/26/03
16	Data Acquisition Unit	Hewlett Packard	34970A	US37017024	1217	4/29/02	4/29/03
17	Data Acquisition Unit	Hewlett Packard	34970A	US37016877	1214	5/4/01	5/4/02
18	Input Multiplexer	Hewlett Packard	34901A	US37017773	1399	5/4/01	5/4/02
19	Input Multiplexer	Hewlett Packard	34901A	US37017729	1400	5/4/01	5/4/02

2.1055 Measurement of Frequency Stability

The EUT is a power amplifier and contains no circuitry for generating or stabilizing the RF signal. The driver will be responsible for this task.

2.1057 Frequency Spectrum to be Investigated

The Frequency was searched from the lowest radio frequency generated in the equipment through the 10th harmonic of the carrier frequency.