FCC ID: PQS-BM29001

Exhibit 2a for Boomer II 900 MHz

Engineering Report on

ERP (2.1046)

Assessment of Compliance

for

Measurement of Effective Radiated Power (ERP) in accordance with the FCC Rules & Regulations Part 2.1046 and 90

Wireless OEM Modem Module
Boomer II 900 MHz

Wavenet Technologies Pty Ltd.

October 2002

APREL Project No.:WVTB-BoomerII-Modem-3922-2

51 Spectrum Way Nepean ON K2R 1E6
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Engineering Report

Subject: **Measurement of Effective Radiated Power (ERP) in accordance with the FCC Rules & Regulations Part 2.1046 and 90**

FCC ID: **PQS-BM29001**

Equipment: **Wireless OEM Modem Module**

Model: **BOOMER II (900 MHz)**

Client: **Wavenet Technologies Pty Ltd.**
140 Burswood Rd
Burswood, Perth, WA 6100
AUSTRALIA

Project #: WVTB-BoomerII-Modem-3922-2

Prepared By: **APREL Laboratories,**
Regulatory Compliance Division
51 Spectrum Way
Nepean, Ontario
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Approved by: _____ Date: Oct. 18, 2002
Jay Sarkar
Technical Director, Standards & Certification

Submitted by: _____ Date: Oct. 18, 2002
Jay Sarkar
Technical Director, Standards & Certification

Released by: _____ Date: Oct 18/02
Dr. Jack J. Wojcik, P.Eng.

LICENSED PROFESSIONAL ENGINEER J.J. WOJCIK PROVINCE OF ONTARIO

FCC ID: **PQS-BM29001**
Applicant: Wavenet Technologies Pty Ltd.
Equipment: Wireless OEM Modem Module
Model: BOOMER II (900 MHz)
Standard: FCC Rules and Regulations Part 2.1046 and 90

ENGINEERING SUMMARY

This report contains the results of the effective radiated power (ERP) measurement performed on a **Wavenet OEM Wireless Modem, model BOOMER II 900 MHz**. The measurements were carried out in accordance with the FCC Rules and Regulations Part 2.1046 and 90. The product was evaluated for ERP when it was set at the maximum power level as a stand-alone unit.

The Wireless OEM Module is a 900 MHz OEM product for integration into customer end user equipment as an OEM modem and interfaces to it via the data interface port. The modem provides 900MHz single band covering 896 ~ 901MHz.

Test configuration: BOOMER II (900 MHz) was tested as a stand-alone unit. It was tested using a whip standard ¼ wave portable antenna mounted on a ground plane and the unit connected to a test jig as shown in the photographs at the appendix B. Cables connecting BOOMER II modem to the testing jig were wrapped with ferrite bids to eliminate any possible radiation coming from the jig.

Wavenet Boomer II (900 MHz) was tested for ERP at high, middle and low frequencies. The highest ERP was obtained at frequency 901 MHz, 1.556 W (31.92 dBm).

(The results presented in this report relate only to the sample tested.)

Summary of the Results

Test Description	Page No.	Test Set-up Figure No.	Results Summary
RF Power Output as Radiated Ref. Paragraph 2.1046 and 90	8	1	**Passed**

INTRODUCTION

General

This report describes the results of the effective radiated power (ERP) measurement conducted on a Wavenet Wireless OEM Modem Module, model **BOOMER II 900 MHz.**

Test Facility

The tests were performed for Wavenet Technologies Pty Ltd**.** by APREL Laboratories at APREL's EMI facility located in Nepean, Ontario, Canada. The laboratory operates an (3m and 10m) Open Area Test Site (OATS). The measurement facility is calibrated in accordance with ANSI C63.4-1992.

A description of the measurement facility in accordance with the radiated and AC line conducted test site criteria per ANSI C63.4-1992 is on file with the Federal Communications Commission and is in compliance with the requirements of Section 2.948 of the Commissions rules and regulations. ***APREL's registration number is: 90416***

APREL is accredited by Standard Council of Canada. APREL is also accredited by Industry Canada.

Standard

The evaluation and analysis were conducted in accordance with FCC Rules and Regulations Parts 2.1046 and the appropriate limits (90).

Test Equipment

The test equipment used during the evaluation is listed in Appendix A.

Environmental Conditions

Measurements were conducted in open area test site.

Temperature: 25 °C ± 2- **Relative Humidity**:30 - 50 % **Air Pressure**:101 kPa ± 3

Personnel: The equipment was tested by Roman Kuleba, EMC Engineer and the report was written by Jay Sarkar, Technical Director, Standards and Certification.

FCC SUBMISSION INFORMATION

FCC ID:	**PQS-BM29001**
Equipment (type): As Marketed	**Wireless OEM Modem Module**
Model:	**BOOMER II 900 MHz**
For:	Certification
Applicant:	**Wavenet Technologies Pty Ltd.** 140 Burswood Rd Burswood, Perth, WA 6100 AUSTRALIA
Manufacturer:	**Wavenet Technologies Pty Ltd.** 140 Burswood Rd Burswood, Perth, WA 6100 AUSTRALIA
Evaluated by:	**APREL Laboratories** 51 Spectrum Way Nepean, Ontario Canada K2R 1E6

MANUFACTURER'S DATA

FCC ID No: **PQS-BM29001**

Equipment Type: Wireless OEM Modem Module

Model: **BOOMER II 900 MHz**

Reference: FCC Rules and Regulations Parts 2 and Part 90

Manufacturer: Wavenet Technologies Pty Ltd

Development Stage of Unit: Prototype

GENERAL SPECIFICATIONS

1. Frequency Range: 896 ~ 901MHz
2. Measured ERP: 1.556 W (31.92 dBm)
3. Emission Designator: Per 47 CFR § 2.201 and §2.202 9K8F1D
4. Antenna Impedance: 50 Ohms

Test: **RF Power Output as Radiated (ERP)**

Ref.: **FCC Part 2 paragraph 2.1046 and 90**

Criteria: N/A

Set-up: See Figure No. 1.

Equipment: See Appendix A.

Methodology: RF Power Measurement by Substitution Method:

Test site: The radiated RF power measurement was taken at APREL Laboratory's open area test site (OATS). This open area test site is calibrated to ANSI C63.4 document and a description of the measurement facility is on file with the Federal Communications Commission and is in compliance with the requirement of Section 2.948 of the Commissions rules and regulations. (FCC File No.: 90416)

The test was set-up as illustrated in Fig.1. The Wireless Module was configured to operate at maximum power. The equipment under test was placed on a turntable positioned 3 m away from the calibrated receiving antenna, which in turn was connected to the spectrum analyzer.

For each transmitter frequency, the received signal was **maximised** by rotating the turntable and adjusting the height of the receiving antenna. To obtain the actual ERP, the DUI was replaced by a vertically polarised half-wave dipole antenna resonant to that frequency and fed by a RF power amplifier and signal generator. The center of the dipole antenna was placed precisely in the same location as the DUI. It was ensured that the orientation of the rotating table and the height of the receiving antenna were unmoved. The signal generator level was adjusted until the peak reading on the spectrum analyzer was identical to that obtained when the DUI was on the turntable. The two signals were matched by superimposing one signal to the other on the spectrum analyzer screen. The output of power amplifier was disconnected from the substitute dipole antenna and connected to a RF power meter. The effective radiated power was read directly from the power meter.
The process was repeated for two more channels

Results: See Table 1

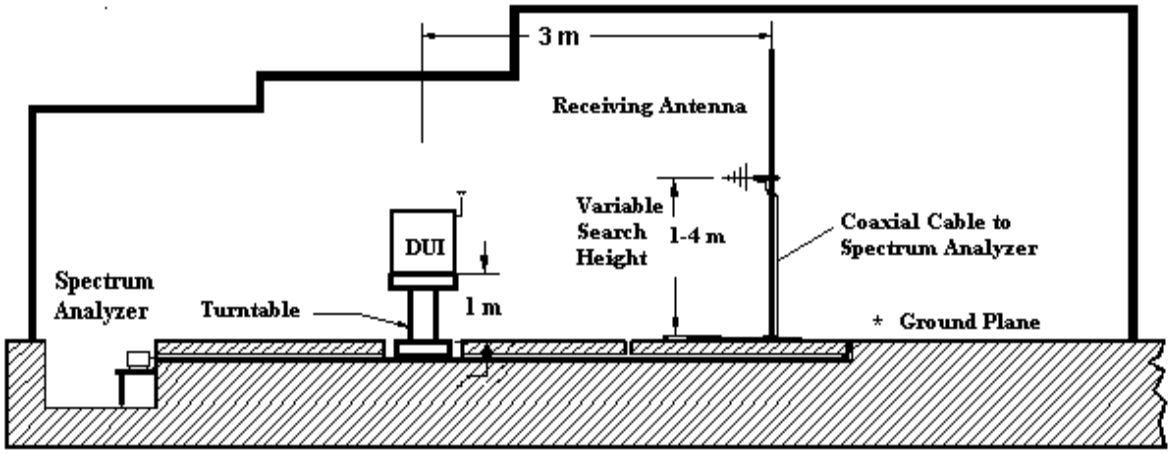


Figure 1.a Test set up for the Radiated Power (ERP) Measurement in OATS (not to scale)

Fig. 1.b APREL's OATS (Open Area Test Site)

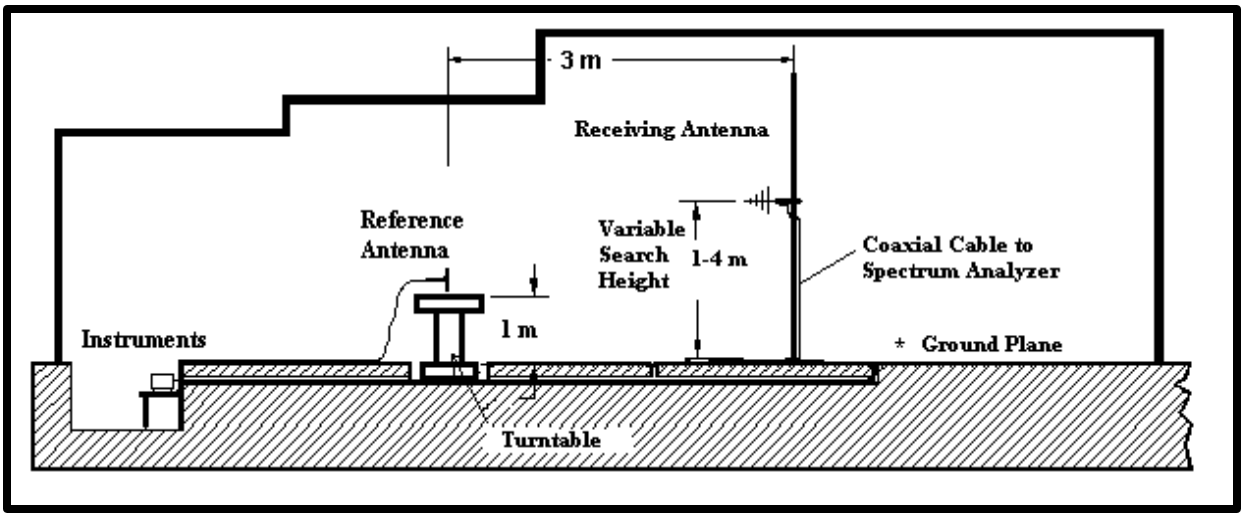


Figure 1.c Test set up for the Radiated Power (ERP) Measurement in OATS (not to scale) The DUI is replaced by Reference Dipole Antenna.

Table 1.
RF Output Power Measurement
Maximum ERP tested by the Substitution Method

Frequency (MHz)	Conducted RF Power @ Antenna Port (dBm)	Effective Radiated Power ERP (dBm)	Effective Radiated Power ERP (W)
896	32.36	31.77	1.503
899	32.39	31.70	1.479
901	32.40	31.92	1.556

Test performed by: Kimberly Robinson **Date:** October, 2002

APPENDIX A

List of Test Equipment

ERP
List of Equipment used

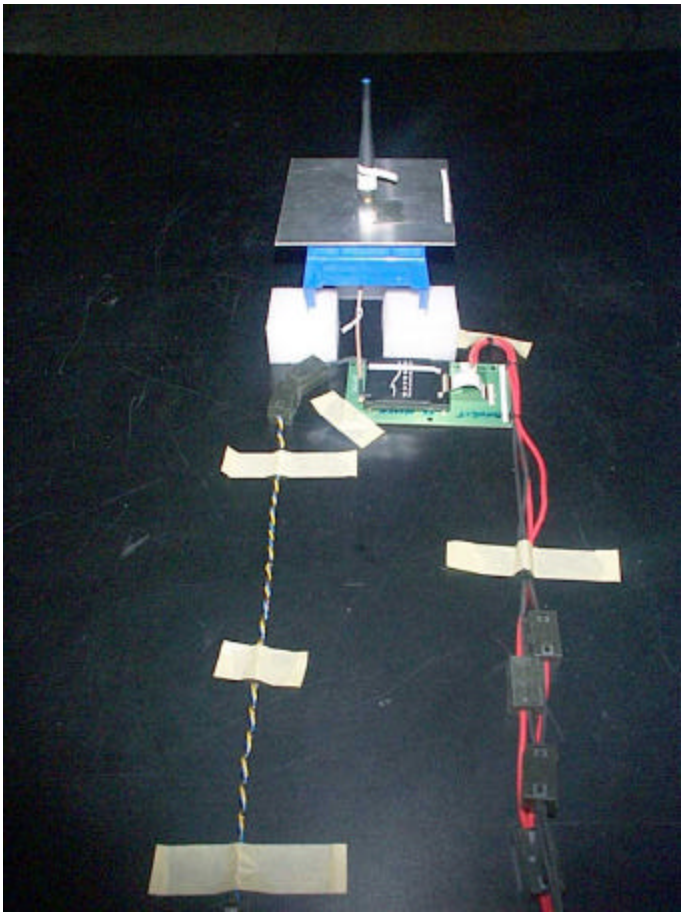
Description	Manufacturer	Model #	Asset #	Calibration Due Data
Spectrum Analyzer	Anritsu	MS2667C	301386	Sept. 5, 2003
Power Meter	Hewlett Packard	438A	301417	Sept. 5, 2003
Power Sensor	Hewlett Packard	8481A	100999	Sept. 5, 2003
Attenuator	NARDA	4774-20	301533	Oct. 15, 2002
Signal Generator	Hewlett-Packard	HP 8657A	301390	Aug. 2, 2003
RF Power Amplifier	APREL Inc.	N/A	100995	CNR
Reference Half wave Dipole	APREL Inc.	D-910M	301558	July 3, 2003
Log Periodic Antenna	APREL Inc.	ALP-1	100063	July 31, 2003
Turntable with Controller	EMCO	1060-1.241	100506	CNR
Computer Controlled Antenna Position Mast	EMCO	1051-12	100507	CNR
OATS	APREL Inc.	3m & 10m	N/A	FCC: April 4, 2003 IC: Sept. 18, 2005

*CBT: Calibrate Before Test, in this instance October 8, 2002

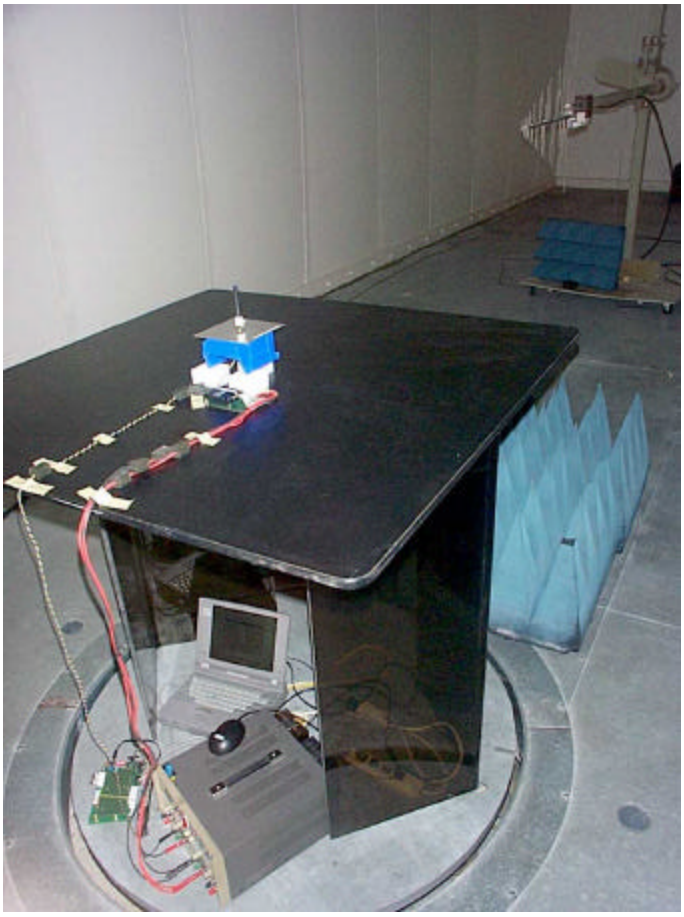
APPENDIX B

PHOTOGRAPHS OF TESTING SETUPS

WaveNet BOOMER II (900 MHz)
Wireless OEM Modem Module
900 MHz Band



WaveNet BOOMER II tested for ERP
900 MHz band



WaveNet BOOMER II tested for ERP
900 MHz band

Reference Dipole Antenna Used for ERP Measurement