

FCC ID: PQS-BM28001

Exhibit 2a

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

Wavenet Technologies Pty Ltd.



August 2002

APREL Project No.:WVTB-BoomerII-Modem-3922-1

51 Spectrum Way Nepean ON K2R 1E6
Tel: (613) 820-2730 Fax: (613) 820-4161
email: info@aprel.com

Engineering Report

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

FCC ID: PQS-BM28001

Equipment: Wireless OEM Modem Module

Model: BOOMER II

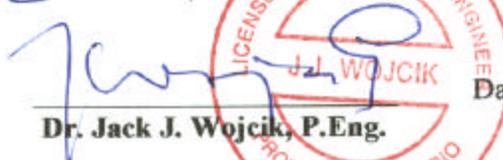
Client: Wavenet Technologies Pty Ltd.
140 Burswood Rd
Burswood, Perth, WA 6100
AUSTRALIA

Project #: WVTB-BoomerII-Modem-3922-1

Prepared By: APREL Laboratories,
Regulatory Compliance Division
51 Spectrum Way
Nepean, Ontario
K2R 1E6

Approved by:  Date: Sept. 12, 2002
Jay Sarkar
Technical Director, Standards & Certification

Submitted by:  Date: Sept. 12, 2002
Jay Sarkar
Technical Director, Standards & Certification

Released by:  Date: Sept 12/02
Dr. Jack J. Wojcik, P.Eng.



FCC ID: PQS-BM28001
Applicant: Wavenet Technologies Pty Ltd.
Equipment: Wireless OEM Modem Module
Model: BOOMER II
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**. 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.

The Wireless OEM Module is an 800 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 two available bands: a) 806-821 MHz and b) 821-824 MHz. The bands are software controlled and can not be switched by the user.

This report presents test data for both frequency bands, 806-821 MHz (Mask G) and 821-824 MHz (Mask H).

Wavenet Boomer II was tested for ERP at high, middle and low frequencies at each band, thus covering both bands. The measurements were performed at 806 MHz, 815 MHz, 821 MHz, 822 MHz and 824 MHz. The highest ERP in the frequency band 806-821 MHz is 1.828 W at 806 MHz. The highest ERP in the frequency band 821-824 MHz is 1.496 W at 821 MHz.

(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**.

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-BM28001

Equipment (type): **Wireless OEM Modem Module**
As Marketed

Model: **BOOMER II**

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-BM28001

Equipment Type: Wireless OEM Modem Module

Model: BOOMER II

Reference: FCC Rules and Regulations Parts 2 and Part 90

Manufacturer: Wavenet Technologies Pty Ltd

Development Stage of Unit: Production

GENERAL SPECIFICATIONS

1. Frequency Range: a) 806.00 to 821.00 MHz (Transmitter)
b) 821.00 to 824.00 MHz (Transmitter)
2. Measured ERP a) 1.828 W (32.62 dBm) at frequency 806 MHz for band 806-821 MHz
b) 1.496 W (31.61 dBm) at frequency 821 MHz for band 821-824 MHz
3. Emission Designators Per 47 CFR § 2.201 and §2.202
a) 806.00 to 821.00 MHz: 20K0F1D
b) 821.00 to 824.00 MHz: 12K6F1D
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 measurements were carried out at frequencies 806 MHz, 815 MHz, 821 MHz, 822 MHz, and 824 MHz covering frequency bands, 821-824 MHz and 821-824 MHz. Common to both bands is 821 MHz.

Results: See Table 1

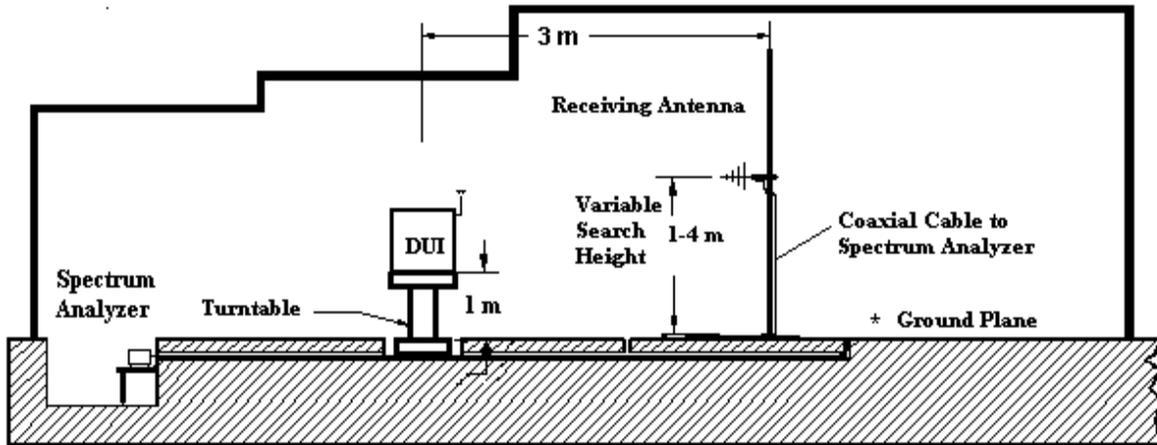
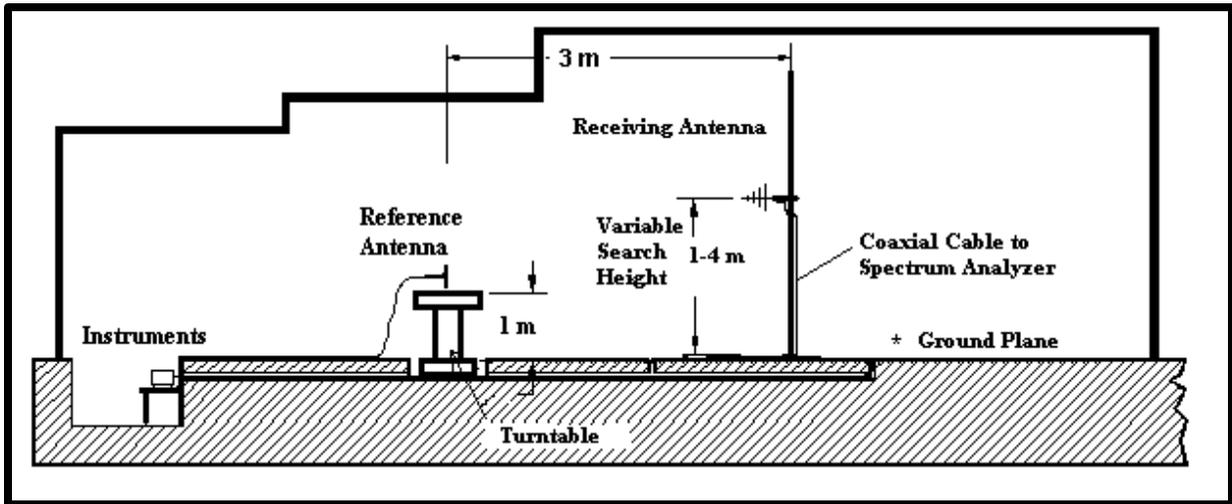


Figure 1.a Test set up for the Radiated Power (ERP) Measurement in OATS (not to scale)



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
806.00 to 821.00 MHz band and 821.00 to 826.00 MHz band

Frequency (MHz)	Conducted RF Power @ Antenna Port (dBm)	Effective Radiated Power ERP (dBm)	Effective Radiated Power ERP (W)
806.00	32.82	32.62	1.828
815.00	32.74	31.52	1.419
821.00	32.69	31.75	1.496
822.50	32.67	31.31	1.352
824.00	32.67	31.61	1.449

Test performed by: LuChae Polimon Date: August, 2002

APPENDIX A

List of Test Equipment

List of Equipment used

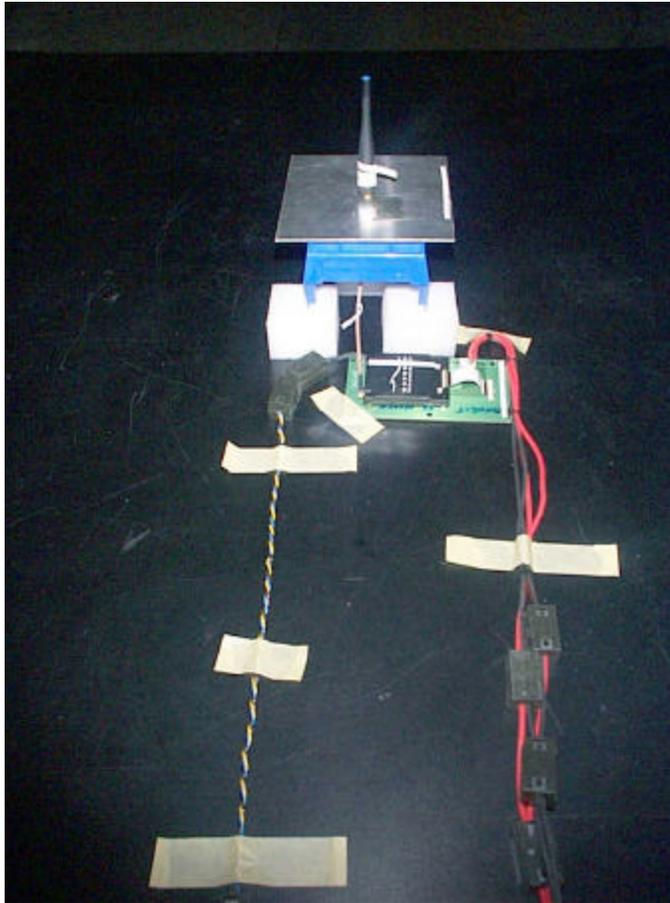
Description	Manufacturer	Model #	Asset #	Calibration Due Data
Spectrum Analyzer	Anritsu	MS2667C	301436	Sept. 2002
Power Meter	Rhode & Schwarz	NRVS	100851	Oct. 2002
20 dB Attenuator	NARDA	4774-20	301533	CBT
Signal Generator	Hewlett-Packard	HP 8340B	100955	Oct 5, 2002
RF Power Amplifier	Amplifier Research	25W100M	100735	CBT
Reference Half wave Dipole	APREL Inc.	D-8355	301482	N/A
Log Periodic Antenna	Eaton	ALP-1	100063	July 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	N/A

APPENDIX B

PHOTOGRAPHS OF TESTING SETUPS



**WaveNet BOOMER II
Wireless OEM Modem Module**



WaveNet BOOMER II tested for ERP



WaveNet BOOMER II tested for ERP



Reference Dipole Antenna Used for ERP Measurement

FCC ID: PQS-BM26001

Exhibit 2b

Engineering Report on
Radiated Spurious Emissions (2.1053)

Assessment of Compliance

for

Measurement of Field Strength of Spurious Radiation in accordance
with the FCC Rules & Regulations Part 2.1053 and 90

Wireless OEM Modem Module BOOMER II

Wavenet Technologies Pty Ltd.



August 2002

APREL Project No.:WVTB-BoomerII-Modem-3922-1

51 Spectrum Way Nepean ON K2R 1E6
Tel: (613) 820-2730 Fax: (613) 820-4161
email: info@aprel.com

Engineering Report

Subject: Measurement of Field Strength of Spurious Radiation in accordance with the FCC Rules & Regulations Part 2.1053 and 90

FCC ID: PQS-BM28001

Equipment: Wireless OEM Modem Module

Model: BOOMER II

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

Project #: WWTB-BoomerII-Modem-3922-1

Prepared By: APREL Laboratories,
Regulatory Compliance Division
51 Spectrum Way
Nepean, Ontario
K2R 1E6

Approved by:


Jay Sarkar:
Technical Director, Standards & Certification

Date:

Sept. 16, 2002

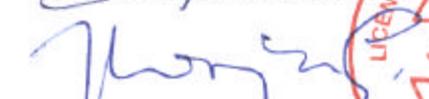
Submitted by:


Jay Sarkar:
Technical Director, Standards & Certification

Date:

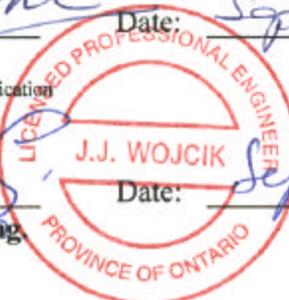
Sept. 16, 2002

Released by:


Dr. Jack J. Wojcik, P.Eng.

Date:

Sept 16/02



FCC ID: PQS-BM28001
Applicant: Wavenet Technologies Pty Ltd.
Equipment: Wireless OEM Modem Module
Model: BOOMER II
Standard: FCC Rules and Regulations Part 2.1053 and 90

ENGINEERING SUMMARY

This report contains the results of Field Strength of Spurious Radiation measurement performed on a Wavenet Wireless OEM Modem Module attachment, for model BOOMER II, in accordance with the FCC Rules and Regulations Part 2.1053 and 90. The measurements were carried out using direct method and substitution method both as radiated.

The product was evaluated for spurious radiation when it was set at the highest ERP. The Wireless OEM Module is an 800 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 two available bands: a) 806-821 MHz and b) 821-824 MHz. The bands are firmware controlled and can not be switched by the user.

Test configuration: BOOMER II 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. The test jig was located below the turntable to minimise the interference during the spurious measurements as shown in the photographs at the appendix B. Cables connecting BOOMER II modem to the testing jig were fitted with ferrite bids to reduce any possible radiation coming from the jig.

This report presents test data for both frequency bands, 806-821 MHz (Mask G) and 821-824 MHz (Mask H).

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
Field Strength of Spurious Radiation Ref. Paragraph 2.1053 and 90	8	1	Passed

INTRODUCTION

General

This report describes the results of the Field Strength of Spurious Radiation measurement conducted on a Wavenet Wireless OEM Modem Module, model BOOMER II.

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 and recognised by the Federal Communications Commissions (FCC).

Standard

The evaluation and analysis were conducted in accordance with FCC Rules and Regulations Parts 2.1053 and the appropriate limits (90).

Personnel: The equipment was tested by Roman Kuleba, EMC Engineer, methodology developed and the report was written by Jayanta (Jay) K. Sarkar, Technical Director, Standards and Certification.

Test Equipment

The test equipment used during the evaluation is listed in Appendix A with calibration due dates.

Environmental Conditions

Measurements were conducted in open area test site. Temperature: $24^{\circ}\text{C} \pm 2$,
Relative Humidity: 30 - 50 % , Air Pressure: 101 kPa ± 3 .

FCC SUBMISSION INFORMATION

FCC ID: **PQS-BM28001**

Equipment type: **Wireless OEM Modem Module**

Model: **BOOMER II**

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:	PQS-BM28001
Equipment Type:	Wireless OEM Modem Module
Model:	BOOMER II
Reference:	FCC Rules and Regulations Parts 2 and Part 90
Manufacturer:	Wavenet Technologies Pty Ltd
Development Stage of Unit:	Production

GENERAL SPECIFICATIONS

- Frequency Range:
 - 806.00 to 821.00 MHz (Transmitter)
 - 821.00 to 824.00 MHz (Transmitter)
- Measured ERP
 - 1.828 W (32.62 dBm) at frequency 806 MHz for band 806-821 MHz
 - 1.496 W (31.61 dBm) at frequency 821 MHz for band 821-824 MHz
- Emission Designators Per 47 CFR § 2.201 and §2.202
 - 806.00 to 821.00 MHz: 20K0F1D
 - 821.00 to 824.00 MHz: 12K6F1D
- Antenna Impedance: 50 Ohms

Test: Field Strength of Spurious Radiation

Ref: FCC Parts 2.1053 and 90.210

Criteria:

Frequency Band: 806-821 MHz

Emission Mask G: The power of emissions must be attenuated below the power of the unmodulated carrier (P) on any frequency removed from the centre of the authorized bandwidth by more than 250 percent of the authorized bandwidth: At least $43 + 10 \log (P)$ dB.

Frequency Band: 821-824 MHz

Emission Mask H: In any frequency removed from the centre of the authorized bandwidth by more than 25 KHz: At least $43 + \log (P)$ dB.

Set-up: See Figure 1.a

Conditions: Voltage Supply: DC Battery

Equipment: See Appendix A.

Procedure: **A. Direct Method as Radiated (See Section B for Substitution Method).**

The final measurements were taken at APREL Laboratory's open area test site (OATS) measurement facility. 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 requirements of Section 2.948 of the Commissions rules and regulations.
(FCC Registration No.:90416).

The **DUI** was configured to operate at maximum power with appropriate modulation. Special software was employed in order that the transmitter was processing data in a normal manner.

Prior to final measurement in the OATS, preliminary radiated spurious emissions were

scanned in a shielded enclosure at a distance of 1 m using biconical, log-periodic and horn antennas in order to determine the characteristic frequencies of the field strength of spurious emissions. Based on this information, measurements were performed in the OATS at these characteristic frequencies using calibrated antennas

All field strength measurements were made with a spectrum analyser and the appropriate calibrated antenna for the frequency range from 9 kHz up to 10th harmonics of the transmit frequency (see equipment list for the calibrated antenna used).

Test configuration: BOOMER II 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. The test jig was located below the turntable to minimise the interference during the spurious measurements as shown in the photographs at the appendix B. Cables connecting BOOMER II modem to the testing jig were fitted with ferrite beads to reduce any possible radiation coming from the jig.

The BOOMER II was placed on a turntable positioned 3 meters away from the calibrated receiving antenna, which in turn was connected to the spectrum analyzer. For each identified frequency, the received signal was maximised by the positioning of the turntable and the height of the antenna. The process was repeated for both horizontal and vertical polarisation.

Information submitted includes the relative radiated power of each spurious emissions with reference to the calculated 84.6 dBµV/m limit per 90.210 assuming all emissions are radiated from half-wave dipole antenna.

Measurements given in the spurious emissions test result tables contain: analyzer reading, correction factor, and final reading. The final field strength level are derived from the analyzer measurement and the correction factor (antenna factor and cable loss) as shown in the following example:

Sample Calculation for direct method

A. Spectrum analyzer reading

At 1612.00 MHz, a spurious level of 44.2 dBµV @ 3 meters is measured.

B. Correction factor (antenna factor and cable loss)

Cable loss: 2.0 dB

Antenna Factor: 26.9 dB

Total Correction Factor: $2.0 + 26.9 = 28.9$ dB/m

C. Final reading (Field Strength of spurious emission):

$$C = A + B$$

$$C = 44.2 \text{ dB}\mu\text{V} + 28.9 \text{ dB}$$

$$C = \underline{73.1 \text{ dB}\mu\text{V/m @ 3 meters}}$$

D. The criteria level.

The field intensity, which would be produced by the transmitter carrier operating into a half-wave dipole antenna (gain of 1.64), at a distance of 3 m, was calculated using the following formula:

$$\text{Field Strength of Carrier (dB}\mu\text{V/m)} = 10 \log_{10} (P_t \cdot G / (4 \cdot \pi \cdot r^2)) + 146 \text{ dB Where:}$$

P_t is transmitter carrier power = 1.828 W (ERP)

G is gain, 1.64

R is distance, 3 meters

Criteria at 3 meters from 1.828 Watt (ERP) into a half-wave dipole antenna is 84.6 dBmV/m for direct method in the frequency band 806-821 MHz, MASK G. It can also be shown that the criteria for direct method in the frequency band 821-824 MHz, MASK H is also 84.6 dBmV.

E = Margin (spurious emission below the reference level)

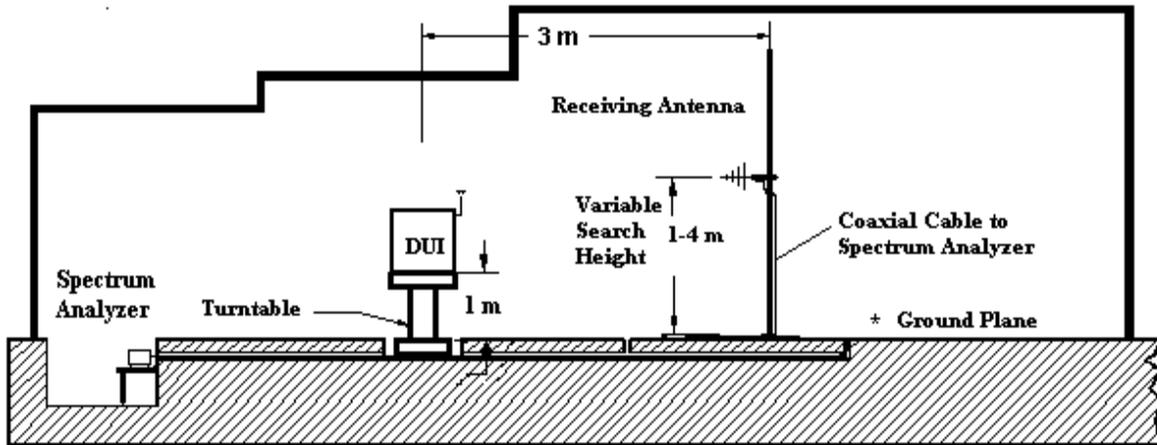
$$E = D - C$$

$$E = 84.6 \text{ dB}\mu\text{V/m} - 73.1 \text{ dB}\mu\text{V/m}$$

$$E = 11.5 \text{ dB (direct method)}$$

B: Substitution Method (Radiated)

The BOOMER II was also tested for spurious radiated emissions using the substitution method with a procedure similar to that used in the ERP measurement and described in the ERP measurement portion of the Test Report. A set of three reference dipoles, a horn antenna and a signal generator to duplicate the signal were used. Signals radiated from the BOOMER II on the fundamental frequency as well as second and third harmonic were evaluated by comparing to the signals transmitted from the reference dipoles. For testing the higher frequencies, fourth to 8th harmonics, a calibrated horn antenna with known gain



**Figure 1.a Test set up for the Field Strength of Spurious Radiation Measurement in OATS
(Not to scale)**



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

Table 1
Field Strength of Spurious Radiation
 WaveNet BOOMER II Wireless OEM Modem Module
 MASK G, Modulation: RD-LAP 19.2 kbps
 Antenna Polarization: **Vertical**
 Resolution Bandwidth:
 10 kHz (below 1 GHz)
 100 kHz (above 1 GHz)
Direct Method as Radiated

Frequency (MHz)	Measured Level (dBµV)	Correction Factor (dB/m)	Field Strength (dBµV/m)	Criteria Level (dBµV/m)	Margin (dB)
	“A”	“B”	“C”	“D”	“E”
Low Channel - Transmitting Frequency: 806.00 MHz					
806.0	108.1	22.1	130.2	-	-
1612.0	44.2	28.9	73.1	84.6	11.5
2418.0	37.7	31.9	69.6	84.6	15.0
3224.0	12.2 noise floor	34.4	46.6	84.6	38.0
Medium Channel - Transmitting Frequency: 815.00 MHz					
815.0	106.7	22.2	128.9	-	-
1630.0	42.6	29.0	71.6	84.6	13.0
2445.0	35.1	31.9	67.0	84.6	17.6
3260.0	11.3 noise floor	34.5	45.8	84.6	38.8
High Channel - Transmitting Frequency: 821.00 MHz					
821.0	106.3	22.3	128.6	-	-
1642.0	40.7	29.1	69.8	84.6	14.8
2463.0	33.3	31.9	65.2	84.6	19.4
3284.0	10.6 noise floor	34.6	45.2	84.6	39.4

C = a+b, e = d-c

Table 2
Field Strength of Spurious Radiation
 WaveNet BOOMER II Wireless OEM Modem Module
 MASK G, Modulation: RD-LAP 19.2 kbps
 Antenna Polarization: **Horizontal**
 Resolution Bandwidth:
 10 kHz (below 1 GHz)
 100 kHz (above 1 GHz)
Direct Method as Radiated

Frequency (MHz)	Measured Level (dBμV) “A”	Correction Factor (dB/m) “B”	Field Strength (dBμV/m) “C”	Criteria Level (dBμV/m) “D”	Margin (dB) “E”
Low Channel - Transmitting Frequency: 806.00 MHz					
806.0	86.2	22.1	108.3	-	-
1612.0	14.8	28.9	43.7	84.6	40.9
2418.0	13.7 noise floor	31.9	45.6	84.6	39.0
3224.0	11.6 noise floor	34.4	46.0	84.6	38.6
Medium Channel - Transmitting Frequency: 815.00 MHz					
815.0	86.7	22.2	108.9	-	-
1630.0	14.6	29.0	43.6	84.6	41.0
2445.0	12.4 noise floor	31.9	44.3	84.6	40.3
3260.0	11.3 noise floor	34.5	45.8	84.6	38.8
High Channel - Transmitting Frequency: 821.00 MHz					
821.0	83.9	22.3	106.2	-	-
1642.0	12.6	29.1	41.7	84.6	42.9
2463.0	12.9 noise floor	31.9	44.8	84.6	39.8
3284.0	10.7 noise floor	34.6	45.3	84.6	39.3

C = a+b, e = d-c

Table 3
Field Strength of Spurious Radiation
 WaveNet BOOMER II Wireless OEM Modem Module
 MASK H, Modulation: RD-LAP 9.6 kbps
 Antenna Polarization: **Vertical**
 Resolution Bandwidth:
 10 kHz (below 1 GHz)
 100 kHz (above 1 GHz)
Direct Method as Radiated

Frequency (MHz)	Measured Level (dBµV) “A”	Correction Factor (dB/m) “B”	Field Strength (dBµV/m) “C”	Criteria Level (dBµV/m) “D”	Margin (dB) “E”
Low Channel - Transmitting Frequency: 821.00 MHz					
821.0	106.2	22.3	128.5	-	-
1642.0	40.6	29.1	69.7	84.6	14.9
2463.0	33.3	31.9	65.2	84.6	19.4
3284.0	11.7 noise floor	34.6	46.3	84.6	38.3
Medium Channel - Transmitting Frequency: 822.50 MHz					
822.5	106.2	22.3	128.5	-	-
1645.0	40.3	29.1	69.4	84.6	15.2
2467.5	33.0	32.0	65.0	84.6	19.6
3290.0	10.9 noise floor	34.7	45.6	84.6	39.0
High Channel - Transmitting Frequency: 824.00 MHz					
824.0	106.3	22.3	128.6	-	-
1648.0	40.2	29.2	69.4	84.6	15.2
2472.0	33.1	32.0	65.1	84.6	19.5
3296.0	11.2 noise floor	34.7	45.9	84.6	38.8

C = a+b, e = d-c

Table 4
Field Strength of Spurious Radiation
 WaveNet BOOMER II Wireless OEM Modem Module
 MASK H, Modulation: RD-LAP 9.6 kbps
 Antenna Polarization: **Horizontal**
 Resolution Bandwidth:
 10 kHz (below 1 GHz)
 100 kHz (above 1 GHz)
Direct Method as Radiated

Frequency (MHz)	Measured Level (dBµV) “A”	Correction Factor (dB/m) “B”	Field Strength (dBµV/m) “C”	Criteria Level (dBµV/m) “D”	Margin (dB) “E”
Low Channel - Transmitting Frequency: 821.00 MHz					
821.0	83.9	22.3	106.2	-	-
1642.0	14.1	29.1	43.2	84.6	41.4
2463.0	13.5 noise floor	31.9	45.4	84.6	39.2
3284.0	11.4 noise floor	34.6	46.0	84.6	38.6
Medium Channel - Transmitting Frequency: 822.50 MHz					
822.5	83.8	22.3	106.1	-	-
1645.0	13.7	29.1	42.8	84.6	41.8
2467.5	12.7 noise floor	32.0	44.7	84.6	39.9
3290.0	11.0 noise floor	34.7	45.7	84.6	39.0
High Channel - Transmitting Frequency: 824.00 MHz					
824.0	84.0	22.3	106.3	-	-
1648.0	11.9 noise floor	29.2	41.1	84.6	43.5
2472.0	13.9 noise floor	32.0	45.9	84.6	38.7
3296.0	10.7 noise floor	34.7	45.4	84.6	39.2

C = a+b, e = d-c

Table 5
Field Strength of Spurious Radiation
 WaveNet BOOMER II Wireless OEM Modem Module
 MASK G, Modulation: RD-LAP 19.2 kbps
 Antenna Polarization: **Vertical**
Substitution Method as Radiated

Frequency	ERP_v	Limit	Margin
MHz	dBm	dBm	dB
Low Channel - Transmitting Frequency: 806.00 MHz			
806.0	32.6	-	-
1612.0	-26.5	-13.0	13.5
2418.0	-30.1	-13.0	17.1
3224.0	-53.8 noise floor	-13.0	40.8
Medium Channel - Transmitting Frequency: 815.00 MHz			
815.0	31.5	-	-
1630.0	-27.1	-13.0	14.1
2445.0	-32.5	-13.0	19.5
3260.0	-54.7 noise floor	-13.0	41.7
High Channel - Transmitting Frequency: 821.00 MHz			
821.0	31.6	-	-
1642.0	-28.7	-13.0	15.7
2463.0	-34.6	-13.0	21.6
3284.0	-55.3 noise floor	-13.0	42.3

Table 6
Field Strength of Spurious Radiation
 WaveNet BOOMER II Wireless OEM Modem Module
 MASK G, Modulation: RD-LAP 19.2 kbps
 Antenna Polarization: **Horizontal**
Substitution Method as Radiated

Frequency	ERP_H	Limit	Margin
MHz	dBm	dBm	dB
Low Channel - Transmitting Frequency: 806.00 MHz			
806.0	10.9	-	-
1612.0	-55.2	-13.0	42.2
2418.0	-53.8 noise floor	-13.0	40.8
3224.0	-54.5 noise floor	-13.0	41.5
Medium Channel - Transmitting Frequency: 815.00 MHz			
815.0	11.5	-	-
1630.0	-55.0	-13.0	42.0
2445.0	-55.3 noise floor	-13.0	42.3
3260.0	-54.6 noise floor	-13.0	41.6
High Channel - Transmitting Frequency: 821.00 MHz			
821.0	8.8	-	-
1642.0	-56.8	-13.0	43.8
2463.0	-54.6 noise floor	-13.0	41.6
3284.0	-55.1 noise floor	-13.0	42.1

Table 7
Field Strength of Spurious Radiation
 WaveNet BOOMER II Wireless OEM Modem Module
 MASK H, Modulation: RD-LAP 9.6 kbps
 Antenna Polarization: **Vertical**
Substitution Method as Radiated

Frequency	ERP_v	Limit	Margin
MHz	dBm	dBm	dB
Low Channel - Transmitting Frequency: 821.00 MHz			
821.0	31.4	-	-
1642.0	-28.9	-13.0	15.9
2463.0	-34.5	-13.0	21.5
3284.0	-54.1 noise floor	-13.0	41.1
Medium Channel - Transmitting Frequency: 822.50 MHz			
822.5	31.3	-	-
1645.0	-29.1	-13.0	16.1
2467.5	-34.8	-13.0	21.8
3290.0	-54.9 noise floor	-13.0	41.9
High Channel - Transmitting Frequency: 824.00 MHz			
824.0	31.5	-	-
1648.0	-29.4	-13.0	16.4
2472.0	-34.4	-13.0	21.4
3296.0	-54.7 noise floor	-13.0	41.7

Table 8
Field Strength of Spurious Radiation
 WaveNet BOOMER II Wireless OEM Modem Module
 MASK H, Modulation: RD-LAP 9.6 kbps
 Antenna Polarization: **Horizontal**
 Substitution Method as Radiated

Frequency MHz	ERP _H dBm	Limit dBm	Margin dB
Low Channel - Transmitting Frequency: 821.00 MHz			
821.0	8.8	-	-
1642.0	-55.6	-13.0	42.6
2463.0	-54.1 noise floor	-13.0	41.1
3284.0	-54.6	-13.0	41.6
Medium Channel - Transmitting Frequency: 822.5 MHz			
822.5	8.7	-	-
1645.0	-56.4	-13.0	43.4
2467.5	-55.4 noise floor	-13.0	42.4
3290.0	-54.7 noise floor	-13.0	41.7
High Channel - Transmitting Frequency: 824.00 MHz			
824.0	8.9	-	-
1648.0	-57.3 noise floor	-13.0	44.3
2472.0	-53.9 noise floor	-13.0	40.9
3296.0	-55.1 noise floor	-13.0	42.1

Test performed by: K. C. Ba. Polman

Date: August, 2002

APPENDIX A

List of Test Equipment

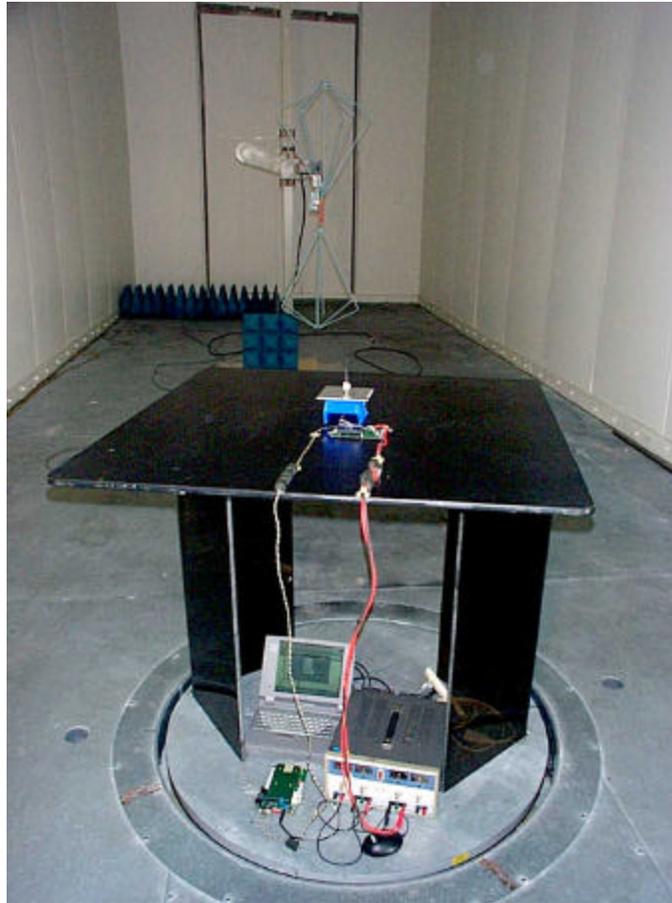
**Radiated Spurious Emissions
List of Equipment**

Description	Range	Manufacturer	Model #	APREL Asset #	Cal. Due Date
Spectrum Analyzer	9 kHz - 3 GHz	Anritsu	MS2661C	301330	Sept.11, 2003
Spectrum Analyzer	9 kHz - 30 GHz	Anritsu	MS2667C	301386	Sept. 5, 2003
RF Signal Generator	10 MHz – 26.5 GHz	Hewlett Packard	HP 8340 B	100955	Oct 5, 2002
Low Noise Antenna Pre-amplifier	30-1000 MHz	APREL Inc.	LNA-1	301415	August 27,2003
Attenuator	20 dB	NARDA	9779-20	301533	CBT
Notch Filter	DC - 6 GHz	Microwavefilter Co.	6367	301055	CBT
RF Power Meter	10 MHz - 18 GHz	Rhodes & Schwarz	NRVS	100851	Oct. 10, 2002
Biconical Antenna	20 MHz - 200 MHz	Eaton	94455-1	100890	July 18, 2003
Log - Periodic Antenna	200 MHz -1.0 GHz	Eaton	ALP-1	100063	July 31, 2002
Horn Antenna	1 – 18 GHz	APREL Inc.	AA – 118	100400	June 17, 2002
Anechoic Shielded Room	10 kHz - 10 GHz	APREL Inc.	–	301329	N/A
Reference Half -wave Dipole Antenna	815.00 MHz	APREL Inc.	–	301482	N/A
Reference Half -wave Dipole Antenna	1630.00 MHz	APREL Inc.	–	301549	N/A
Reference Half -wave Dipole Antenna	2500.00 MHz	APREL Inc.	–	301550	N/A
OATS	30 MHz – 1 GHz	APREL Inc.	3 m & 10 m	N/A	April 4, 2003
Mast with the Controller	1 m – 4 m	EMCO	1051 – 12	100507	N/A
Turntable with the Controller	0° - 360°	EMCO	1060 – 1.241	100506	N/A

APPENDIX B PHOTOGRAPHS



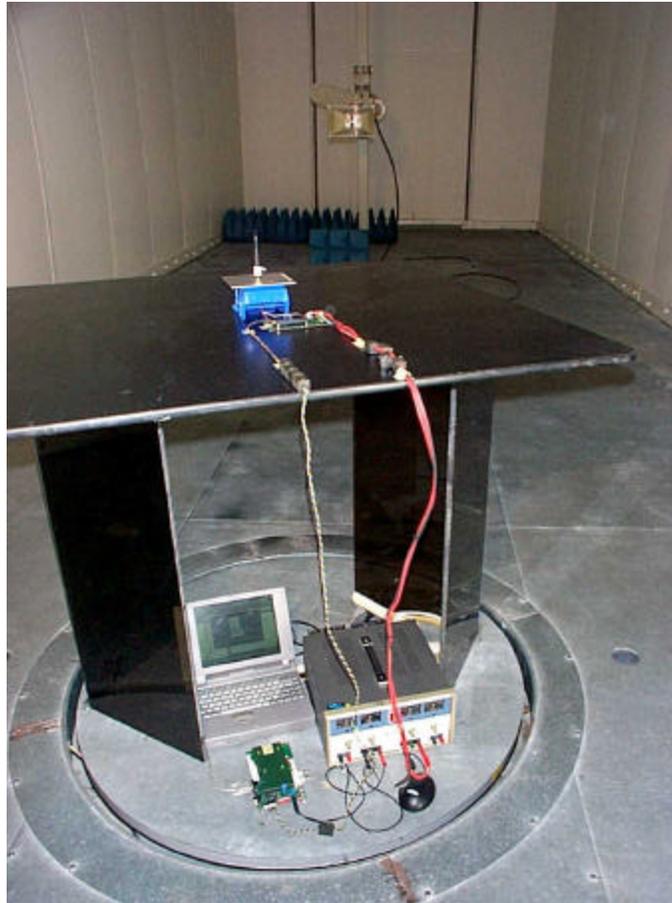
Wavenet BOOMER II Wireless OEM Modem Module



**WaveNet BOOMER II Wireless OEM Modem Module
Testing for Spurious Emissions from Transmitter
Frequency Range: 30 MHz – 200 MHz**



**WaveNet BOOMER II Wireless OEM Modem Module
Testing for Spurious Emissions from Transmitter
Frequency Range: 200 MHz – 1 GHz**



**Wavenet BOOMER II Wireless OEM Modem Module
tested for Spurious Emissions from Transmitter
Frequency Range: 1 GHz – 18 GHz**

FCC ID: PQS-BM28001

Exhibit 2c

Engineering Report on

Bandwidth (2.1049) Modulation Characteristics (2.1047)

Assessment of Compliance

for

Measurement of Modulation Characteristics/Occupied Bandwidth in
accordance with the FCC Rules & Regulations Part 2.1047/49 and
90

Wireless OEM Modem Module Boomer II

Wavenet Technologies Pty Ltd.



August 2002

APREL Project No.:WVTB-BoomerII-Modem-3922-1

51 Spectrum Way Nepean ON K2R 1E6
Tel: (613) 820-2730 Fax: (613) 820-4161
email: info@aprel.com

Engineering Report

Subject: Measurements of Modulation Characteristics/
Occupied Bandwidth in accordance with the
FCC Rules & Regulations Part 2.1047/49 and 90

FCC ID: PQS-BM28001

Equipment: Wireless OEM Modem Module

Model: BOOMER-II

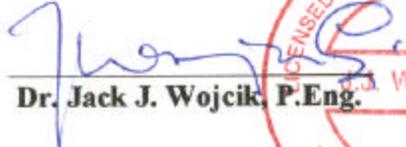
Client: Wavenet Technologies Pty Ltd.
140 Burswood Rd.
Burswood, Perth, WA 6100
AUSTRALIA

Project #: WVTB-BoomerII-Modem-3922-1

Prepared By: APREL Laboratories,
Regulatory Compliance Division
51 Spectrum Way
Nepean, Ontario
K2R 1E6

Approved by:  Date: Sept. 12, 2002
Jay Sarkar
Technical Director, Standards & Certification

Submitted by:  Date: Sept 12, 2002
Jay Sarkar
Technical Director, Standards & Certification

Released by:  Date: Sept 12/02
Dr. Jack J. Wojcik, P.Eng.



FCC ID: PQS-BM28001
Applicant: Wavenet Technologies Pty Ltd.
Equipment: Wireless OEM Modem Module
Model: BOOMER-II
Standard: FCC Rules and Regulations Part 2.1047/49 and 90

ENGINEERING SUMMARY

This report contains the results of the Occupied Bandwidth/Bandwidth Limitation measurement performed on a **Wavenet Wireless OEM Modem Module** model BOOMER-II. The measurements were carried out in accordance with the FCC Rules and Regulations Part 2.1049. The product was evaluated for bandwidth when it was set at the maximum power level.

The Wireless OEM Modem Module is an 800 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 two available bands: 806-821 MHz and 821-824 MHz. The bands are software controlled and can not be switched by user.

This report presents test data for both frequency bands, 806-821 MHz (Mask G) and 821-824 MHz (Mask H).

Modulation Characteristics (FCC Rule PART 2.1047): This test is not applicable, as the device is not capable of voice transmission.

This modem has two different profiles type with appropriate settings for data rate, deviation, modulation shaping set for 806-821 MHz G Spectral Mask (MDC 48003, RDLAP 9.6 and RDLAP 19.2) and 821-824 MHz H Spectral mask (RDLAP 9.6).

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
Bandwidth/bandwidth Limitation Ref. Paragraph 2.1049 and 90	8	1	Passed

INTRODUCTION

General

This report describes the results of the occupied bandwidth measurement conducted on a Wavenet Wireless OEM Modem Module, model BOOMER-II.

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 Commission's 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 2.1049/47.

Personnel: The equipment was tested by Roman Kuleba, EMC Engineer. Methodology was developed and the report written by Jayanta (Jay) K. Sarkar, Technical Director, Standards and Certification.

Test Equipment

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

Environmental Conditions

Measurements were conducted in the EMC Laboratory.

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

FCC SUBMISSION INFORMATION

FCC ID: **PQS-BM28001**

Equipment (type): **Wireless OEM Modem Module**
As Marketed

Model: **BOOMER-II**

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

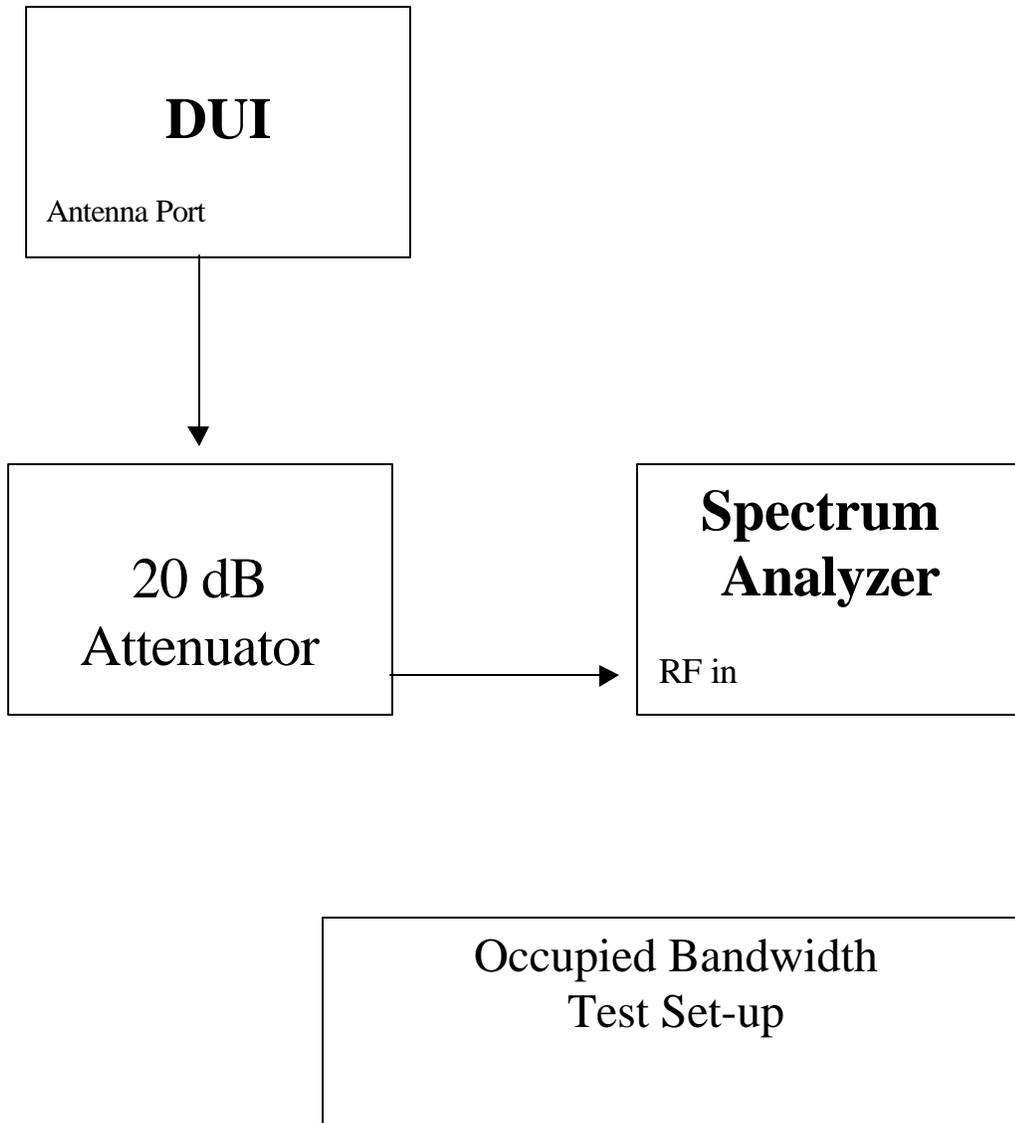
Evaluated by: **APREL Laboratories**
51 Spectrum Way
Nepean, Ontario
Canada K2R 1E6

MANUFACTURER'S DATA

FCC ID No:	PQS-BM28001
Equipment Type:	Wireless OEM Modem Module
Model:	BOOMER-II
Reference:	FCC Rules and Regulations Parts 2 and Part 90
Manufacturer:	Wavenet Technologies Pty Ltd
Development Stage of Unit:	Production

GENERAL SPECIFICATIONS

- Frequency Range:
 - 806.00 to 821.00 MHz (Transmitter)
 - 821.00 to 824.00 MHz (Transmitter)
- Measured ERP
 - 1.828 W (32.62 dBm) at frequency 806 MHz for band 806-821 MHz
 - 1.496 W (31.61 dBm) at frequency 821 MHz for band 821-824 MHz
- Emission Designators Per 47 CFR § 2.201 and §2.202
 - 806.00 to 821.00 MHz: 20K0F1D
 - 821.00 to 824.00 MHz: 12K6F1D
- Antenna Impedance: 50 Ohms



Test: Occupied Bandwidth, Emission Mask G, 806 –821 MHz

Ref: FCC Part 90.210 (g) and 2.1049

Criteria: **806 –821 MHz**, Emission Mask G. For transmitters that are not equipped with an audio low-pass filter pursuant to 90.211(b), the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:

- (1) On any frequency removed from the centre of the authorized bandwidth by displacement frequency (f_d in kHz) of more than 5 kHz, but no more than 10 kHz: At least $83 \log (f_d/5)$ dB.
- (2) On any frequency removed from the centre of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 10 kHz, but no more than 250 percent of the authorized bandwidth: At least $116 \log f_d/6.1$ dB, or $50 + 10 \log (P)$ dB, or 70 dB, whichever is the lesser attenuation.
- (3) On any frequency removed from the centre of the authorized bandwidth by more than 250 percent of the authorized bandwidth: At least $43 + 10 \log (P)$ dB.

Below is the description of the mask for band 806-821 MHz: 1.828 Watts ERP transmitter (P= 1.828 W ERP)

Frequency (MHz)	Formula	Limit (dB)
-26500	$43+10 \log (P)$	45
-0.050	$43+10 \log (P)$	45
-0.050	$50+10 \log (P)$	52
-0.0175	$116 \log (f_d / 6.1)$	53
-0.010	$116 \log (f_d / 6.1)$ or $83 \log(f_d/5)$	25
-0.005	$83 \log(f_d/5)$	0
0.005	$83 \log(f_d/5)$	0
0.010	$116 \log (f_d / 6.1)$ or $83 \log(f_d/5)$	25
0.0175	$116 \log (f_d / 6.1)$	53
0.050	$50+10 \log (P)$	52
0.050	$43+10 \log (P)$	45
26500	$43+10 \log (P)$	45

Test: Occupied Bandwidth, Emission Mask H, 821 –824 MHz

Ref: FCC Part 90.210 (h) and 2.1049

Criteria: **821 –824 MHz**, Emission Mask H. For transmitters that are not equipped with an audio low-pass filter pursuant to 90.211(b), the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:

- (1) On any frequency removed from the centre of the authorized bandwidth by a displacement frequency (f_d in kHz) of 4 kHz or less: Zero dB.
- (2) On any frequency removed from the centre of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 4 kHz, but no more than 8.5 kHz: At least $107 \cdot \log(f_d/4)$ dB.
- (3) On any frequency removed from the centre of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 8.5 kHz, but no more than 15 kHz: At least $40.5 \cdot \log(f_d/1.16)$ dB.
- (4) On any frequency removed from the centre of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 15 kHz, but no more than 25 kHz: At least $116 \cdot \log(f_d/6.1)$ dB.
- (5) On any frequency removed from the centre of the authorized bandwidth by more than 25 kHz: At least $43 + 10 \cdot \log(P)$ dB.

Below is the description of the mask for band 821-824 MHz: 1.496 Watts ERP transmitter (P= 1.496 W ERP)

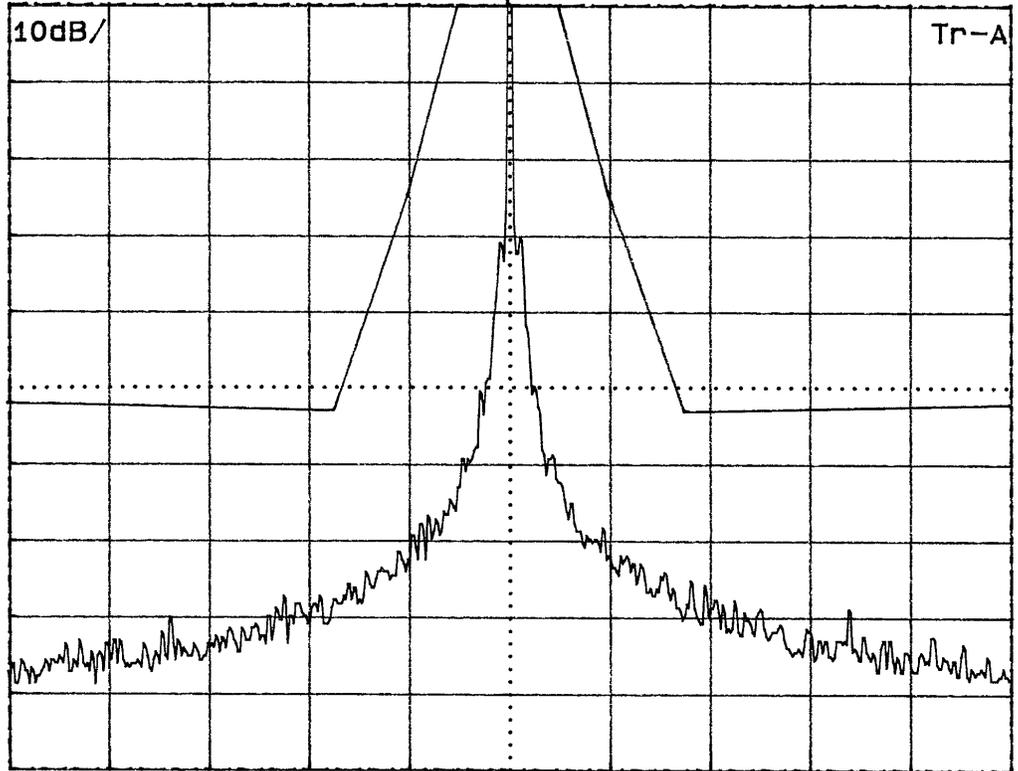
Frequency (MHz)	Formula	Limit (dB)
-26500	$43+10 \log(P)$	71
-0.0250	$116 \log(f_d / 6.1)$	71
-0.0150	$40.5 \log(f_d / 1.16)$ or $116 \log(f_d / 6.1)$	45
-0.0085	$107 \log(f_d / 4)$ or $40.5 \log(f_d / 1.16)$	35
-0.0040	$107 \log(f_d / 4)$	0
0.0000	0	0
0.0040	$107 \log(f_d / 4)$	0
0.0085	$107 \log(f_d / 4)$ or $40.5 \log(f_d / 1.16)$	35
0.0150	$40.5 \log(f_d / 1.16)$ or $116 \log(f_d / 6.1)$	45
0.0250	$116 \log(f_d / 6.1)$	71
26500	$43+10 \log(P)$	71

Occupied Bandwidth – Test Results

**Wireless OEM Modem Module
WaveNet BOOMER-II**

**806 – 821 MHz Frequency Band
Mask G**

MKR: 806.0002MHz WaweNet Boomer II
12.69dBm RB 100Hz# AT 30dB Band auto
RLV: 12.70dBm VB 3kHz# ST 30s

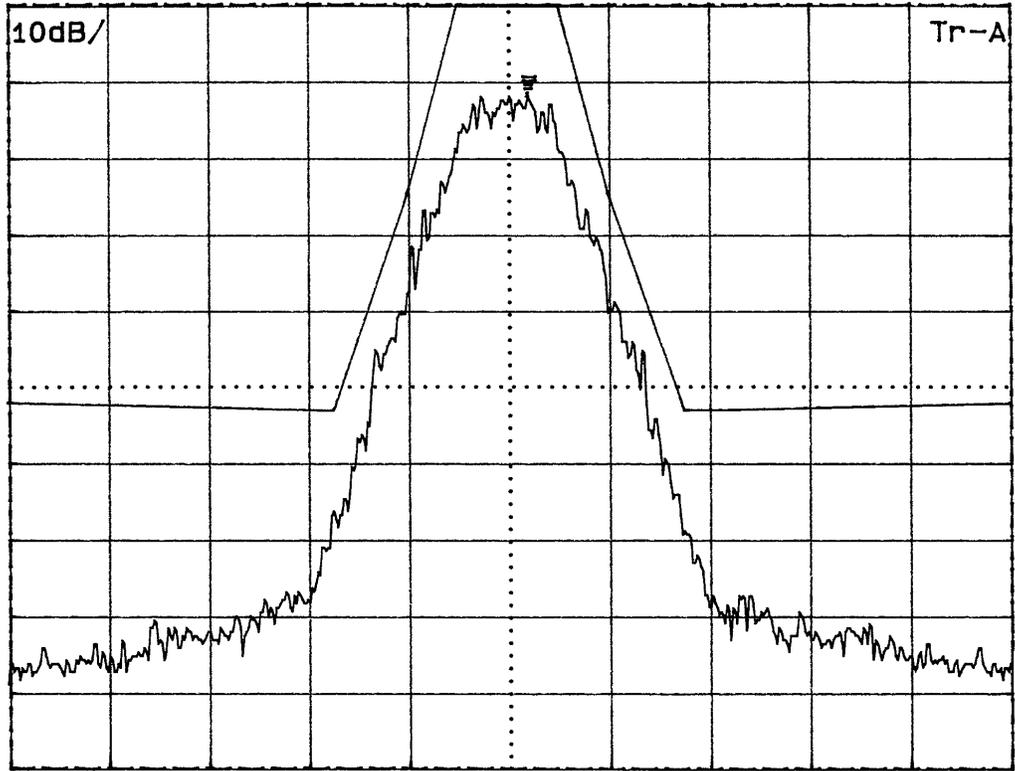


CF: 806.0000MHz

Span: 100kHz

**Occupied Bandwidth
Unmodulated Carrier
Mask G
Transmitting Frequency: 806 MHz**

MKR: 806.0020MHz WaweNet Boomer II
0.48dBm RB 100Hz# AT 30dB Band auto
RLV: 12.70dBm VB 3kHz# ST 30s

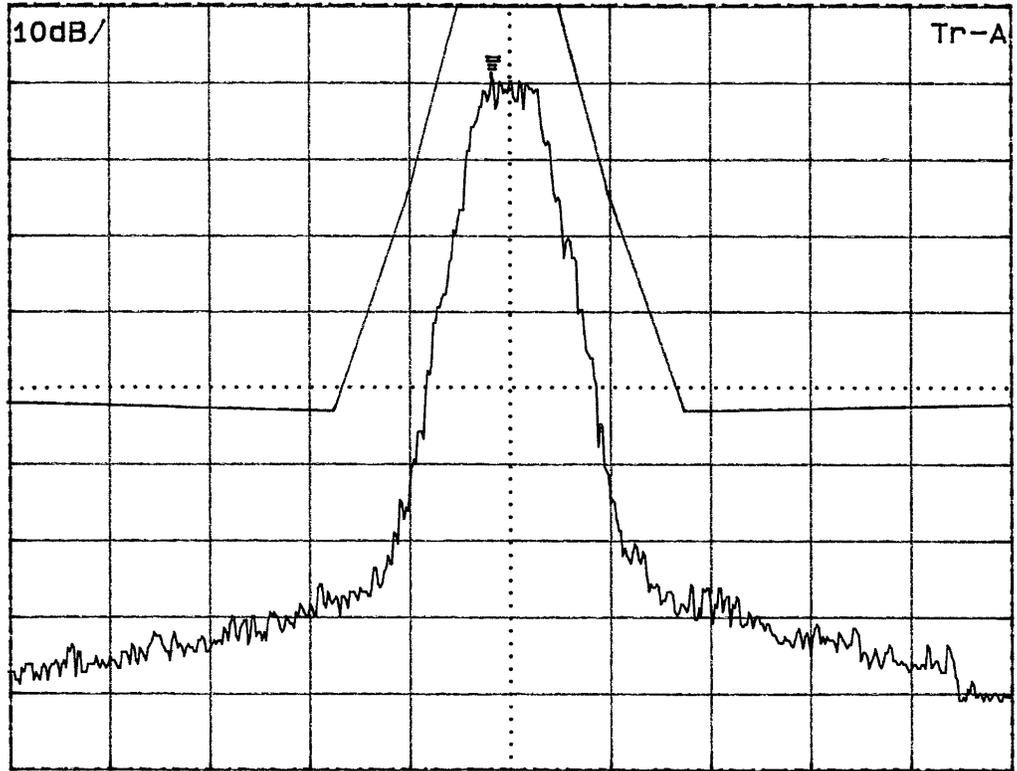


CF: 806.0000MHz

Span: 100kHz

Occupied Bandwidth
Modulated Carrier: RD-LAP 19.2 kbps
Mask G
Transmitting Frequency: 806 MHz

MKR: 805.9984MHz WaweNet Boomer II
2.87dBm RB 100Hz# AT 30dB Band auto
RLV: 12.70dBm VB 3kHz# ST 30s

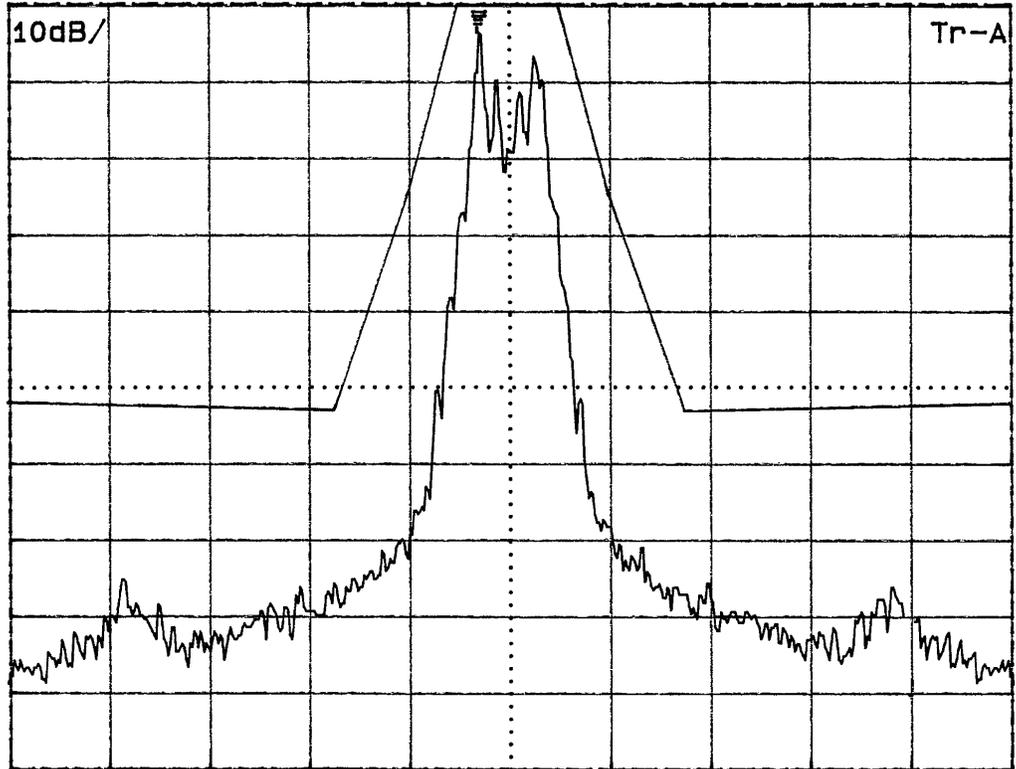


CF: 806.0000MHz

Span: 100kHz

Occupied Bandwidth
Modulated Carrier: RD-LAP 9.6 kbps
Mask G
Transmitting Frequency: 806 MHz

MKR: 805.9972MHz WaweNet Boomer II
8.72dBm RB 100Hz# AT 30dB Band auto
RLV: 12.70dBm VB 3kHz# ST 30s

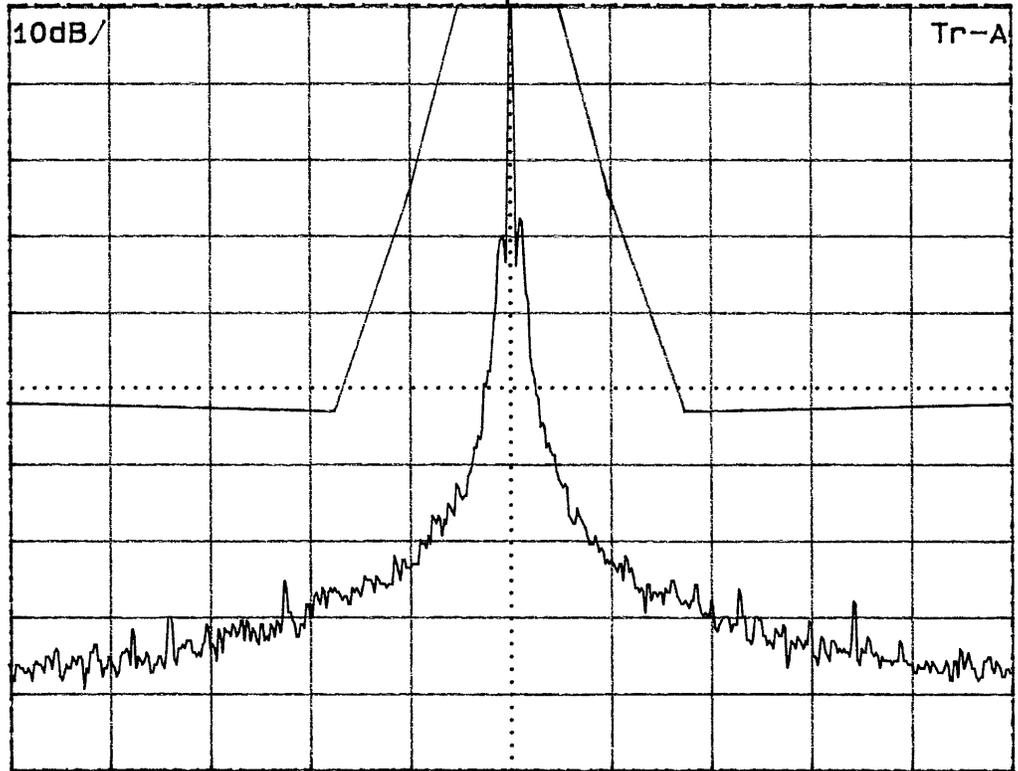


CF: 806.0000MHz

Span: 100kHz

Occupied Bandwidth
Modulated Carrier: MDC 4.8 kbps
Mask G
Transmitting Frequency: 806 MHz

MKR: 815.0002MHz WaweNet Boomer II
12.50dBm RB 100Hz# AT 30dB Band auto
ALV: 12.50dBm VB 3kHz# ST 30s

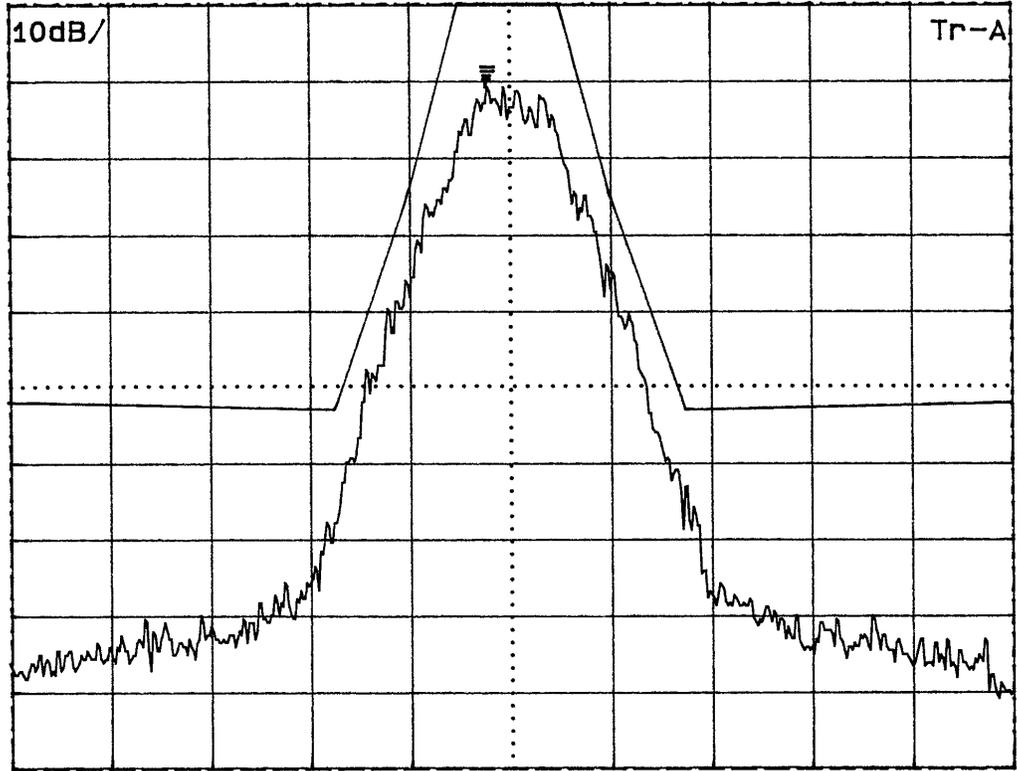


CF: 815.0000MHz

Span: 100kHz

**Occupied Bandwidth
Unmodulated Carrier
Mask G
Transmitting Frequency: 815 MHz**

MKR: 814.9980MHz WaweNet Boomer II
1.17dBm RB 100Hz# AT 30dB Band auto
RLV: 12.50dBm VB 3kHz# ST 30s

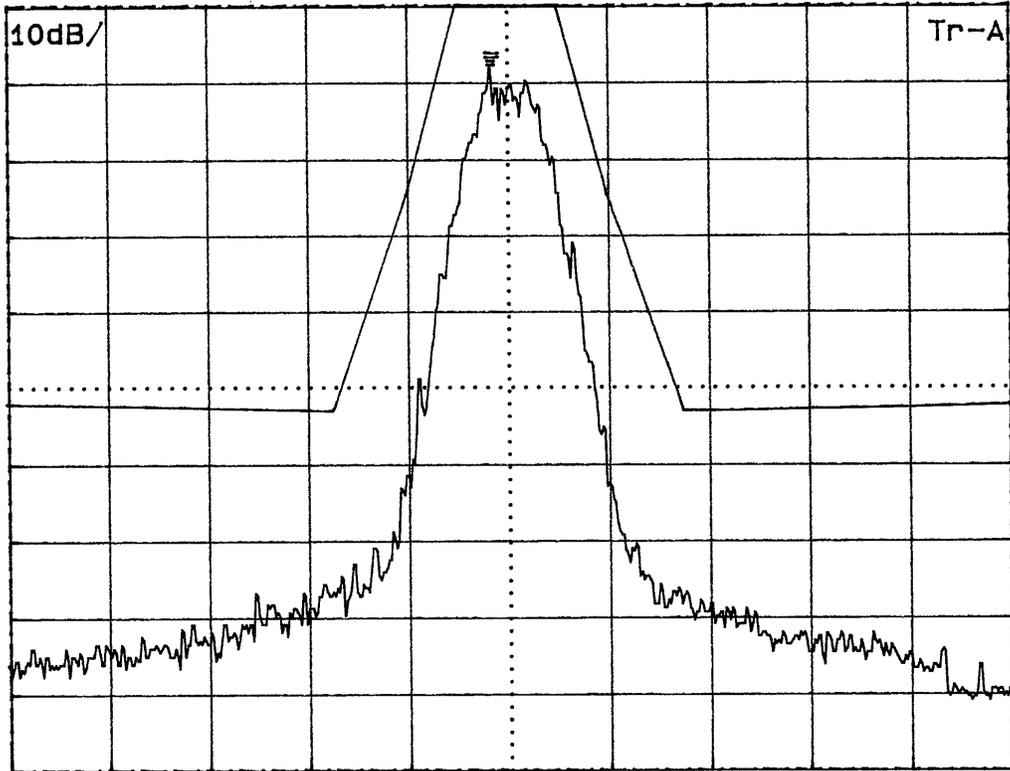


CF: 815.0000MHz

Span: 100kHz

Occupied Bandwidth
Modulated Carrier: RD-LAP 19.2 kbps
Mask G
Transmitting Frequency: 815 MHz

MKR: 814.9984MHz WaweNet Boomer II
3.28dBm RB 100Hz# AT 30dB Band auto
RLV: 12.50dBm VB 3kHz# ST 30s

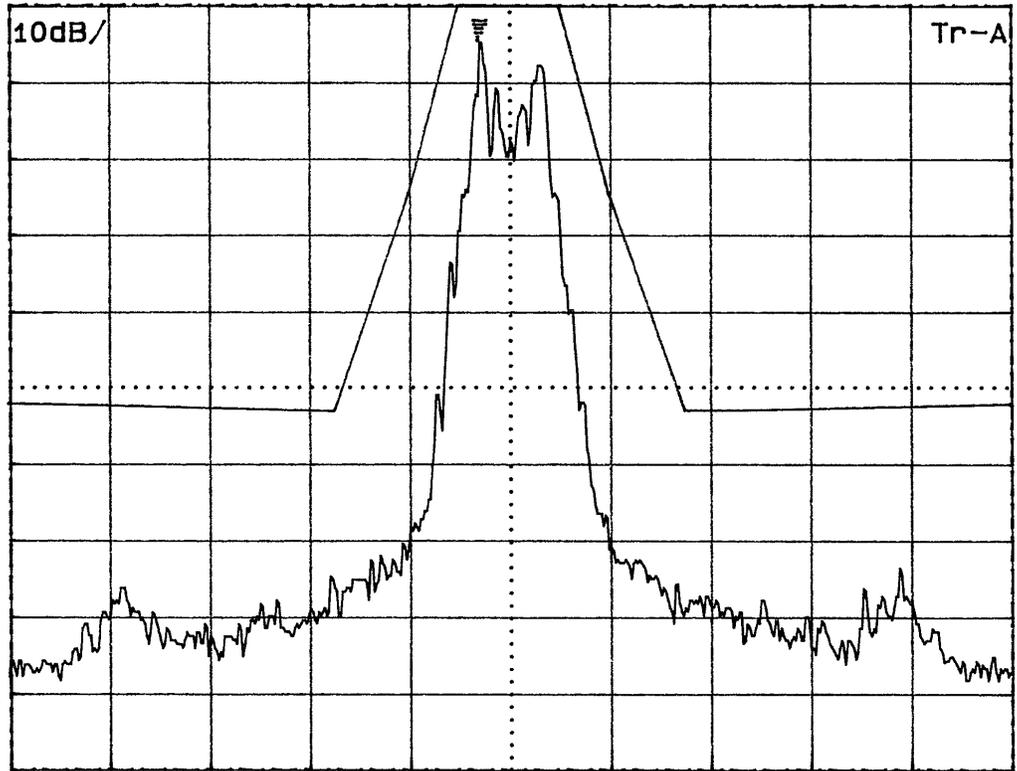


CF: 815.0000MHz

Span: 100kHz

Occupied Bandwidth
Modulated Carrier: RD-LAP 9.6 kbps
Mask G
Transmitting Frequency: 815 MHz

MKR: 814.9972MHz WaweNet Boomer II
7.33dBm RB 100Hz# AT 30dB Band auto
RLV: 12.50dBm VB 3kHz# ST 30s

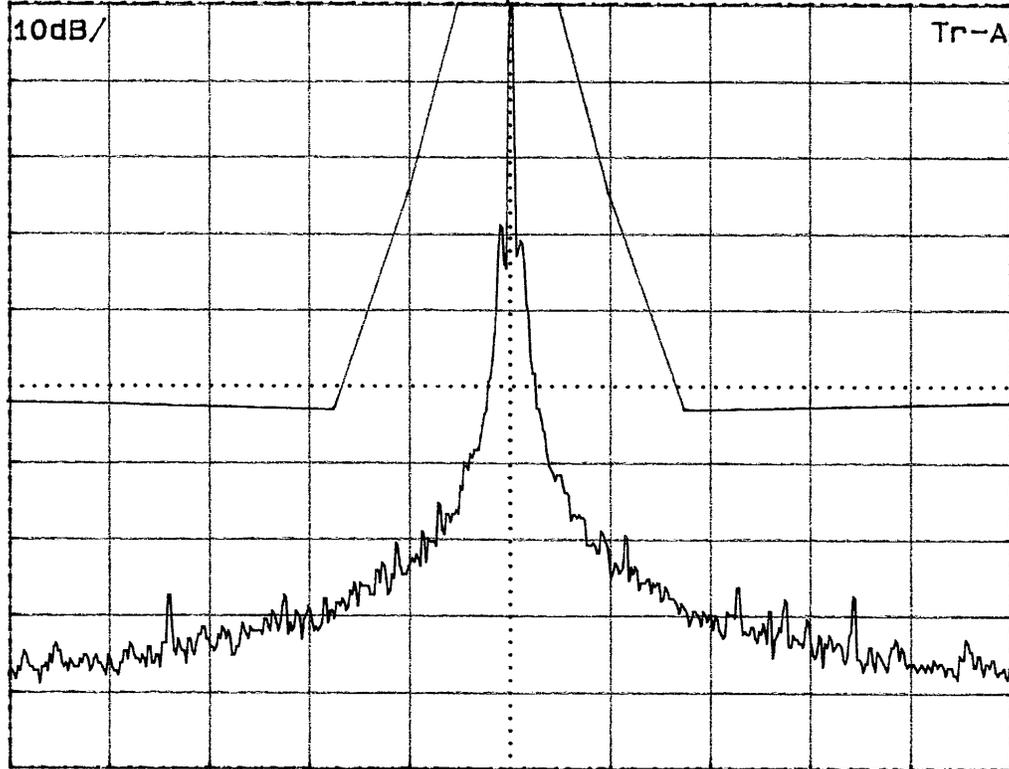


CF: 815.0000MHz

Span: 100kHz

Occupied Bandwidth
Modulated Carrier: MDC 4.8 kbps
Mask G
Transmitting Frequency: 815 MHz

MKR: 821.0002MHz WaweNet Boomer II
12.51dBm RB 100Hz# AT 30dB Band auto
RLV: 12.50dBm VB 3kHz# ST 30s

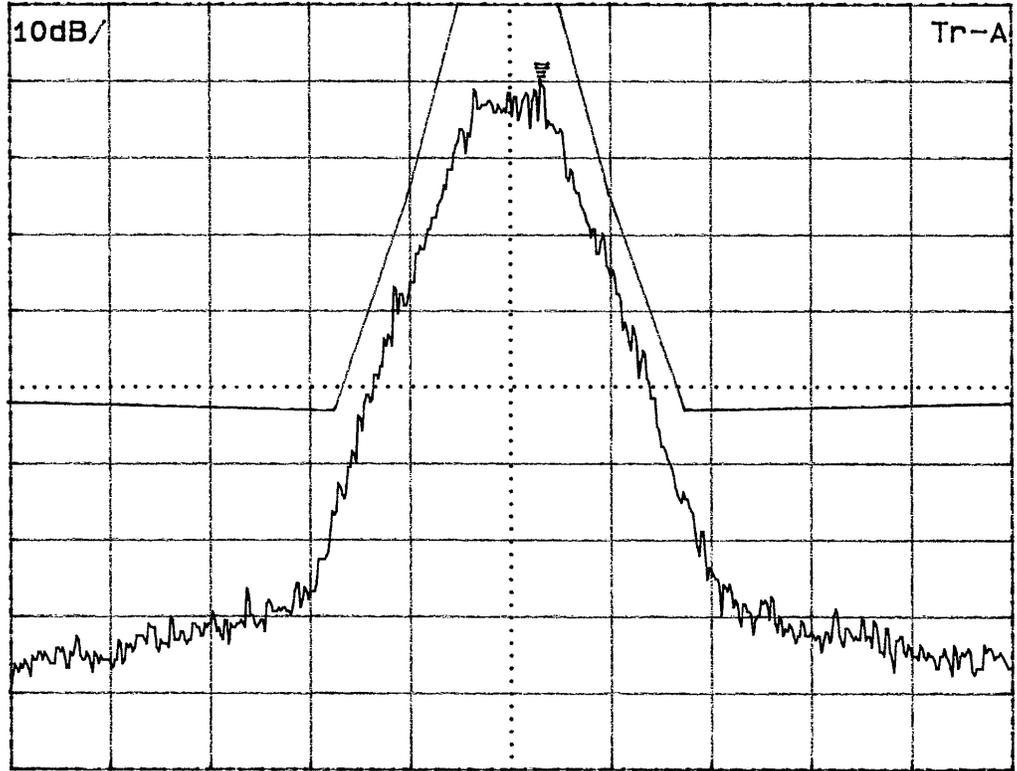


CF: 821.0000MHz

Span: 100kHz

Occupied Bandwidth
Unmodulated Carrier
Transmitting Frequency: 821 MHz
Mask G

MKR: 821.0034MHz WaweNet Boomer II
1.79dBm RB 100Hz# AT 30dB Band auto
RLV: 12.50dBm VB 3kHz# ST 30s

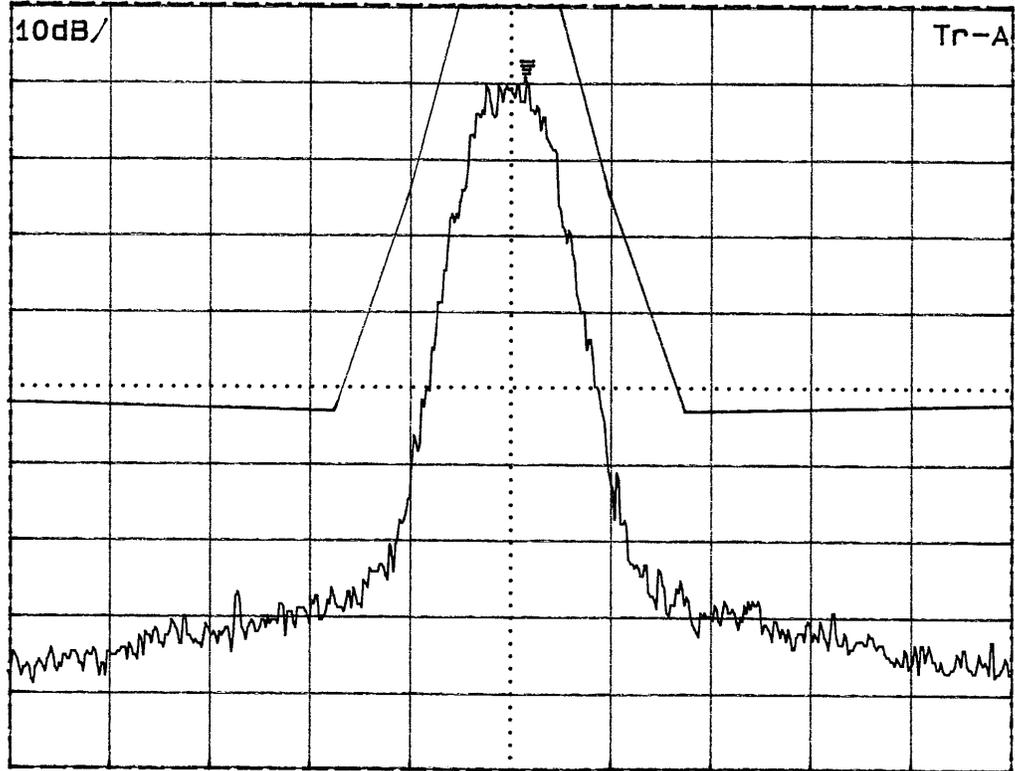


CF: 821.0000MHz

Span: 100kHz

Occupied Bandwidth
Modulated Carrier: RD-LAP 19.2 kbps
Transmitting Frequency: 821 MHz
Mask G

MKR: 821.0018MHz WaweNet Boomer II
2.20dBm RB 100Hz# AT 30dB Band auto
RLV: 12.50dBm VB 3kHz# ST 30s

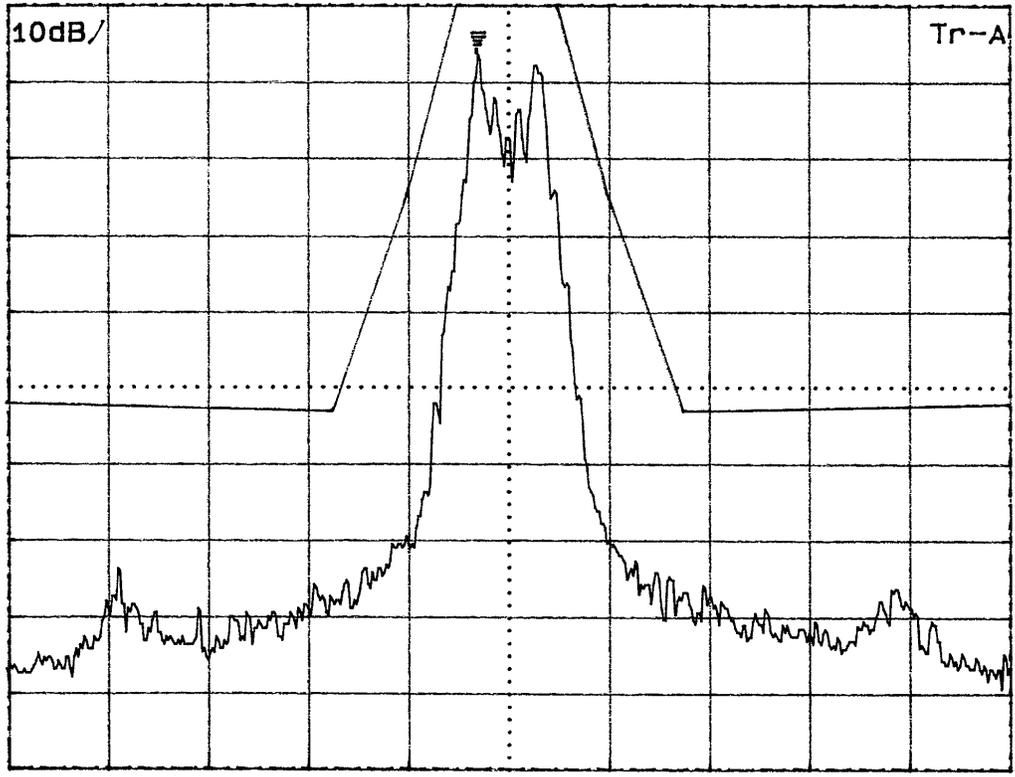


CF: 821.0000MHz

Span: 100kHz

Occupied Bandwidth
Modulated Carrier: RD-LAP 9.6 kbps
Transmitting Frequency: 821 MHz
Mask G

MKR: 820.9972MHz WaweNet Boomer II
5.86dBm RB 100Hz# AT 30dB Band auto
RLV: 12.50dBm VB 3kHz# ST 30s



CF: 821.0000MHz Span: 100kHz

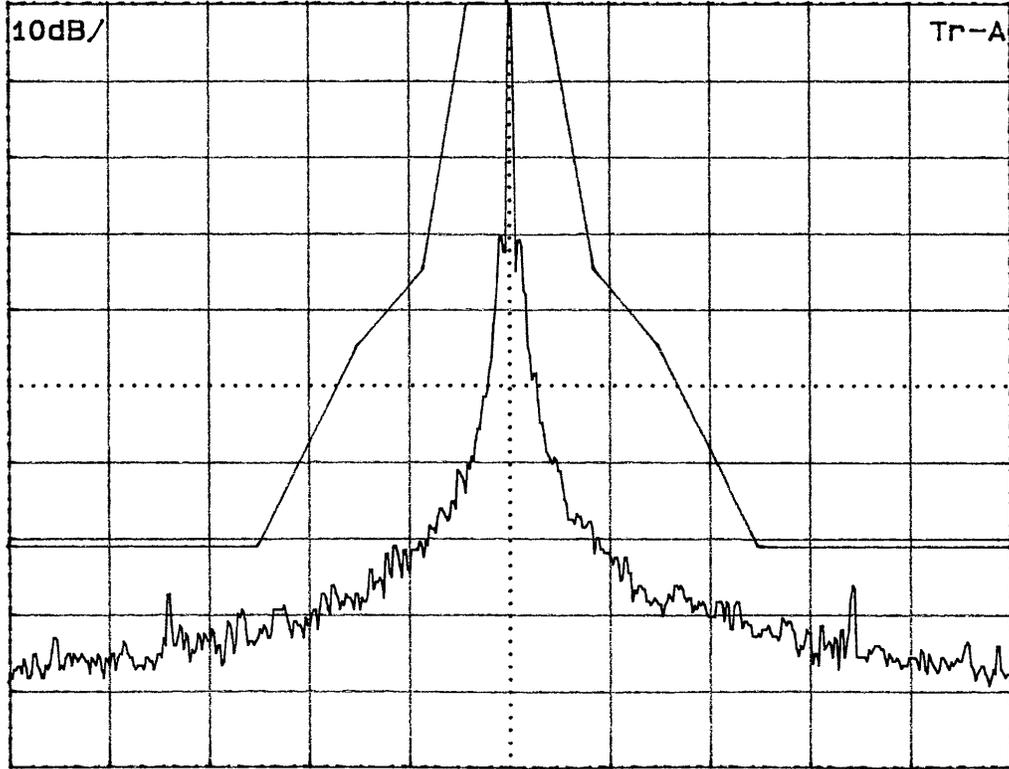
Occupied Bandwidth
Modulated Carrier: MDC 4.8 kbps
Transmitting Frequency: 821 MHz
Mask G

Occupied Bandwidth – Test Results

Wireless OEM Modem Module WaveNet BOOMER-II

821 – 824 MHz Frequency Band Mask H

MKR: 821.0002MHz WaweNet Boomer II
12.51dBm RB 100Hz# AT 30dB Band auto
RLV: 12.50dBm VB 3kHz# ST 30s

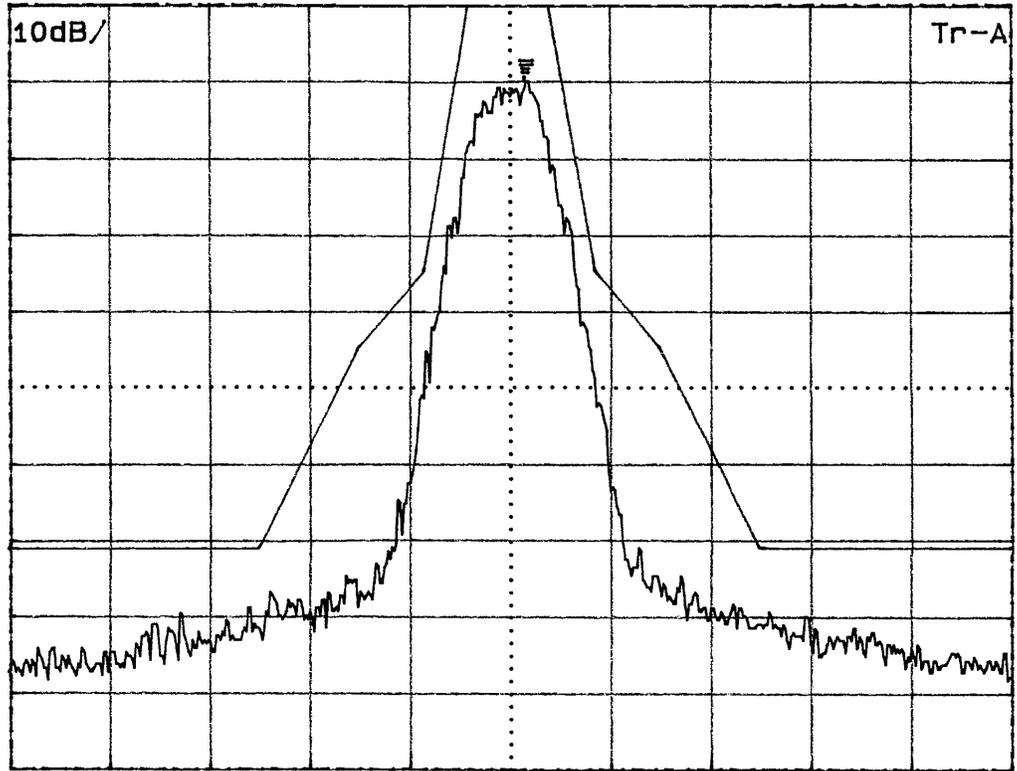


CF: 821.0000MHz

Span: 100kHz

**Occupied Bandwidth
Unmodulated Carrier
Transmitting Frequency: 821 MHz
Mask H**

MKR: 821.0018MHz WaweNet Boomer II
2.20dBm RB 100Hz# AT 30dB Band auto
RLV: 1 .50dBm VB 3kHz# ST 30s

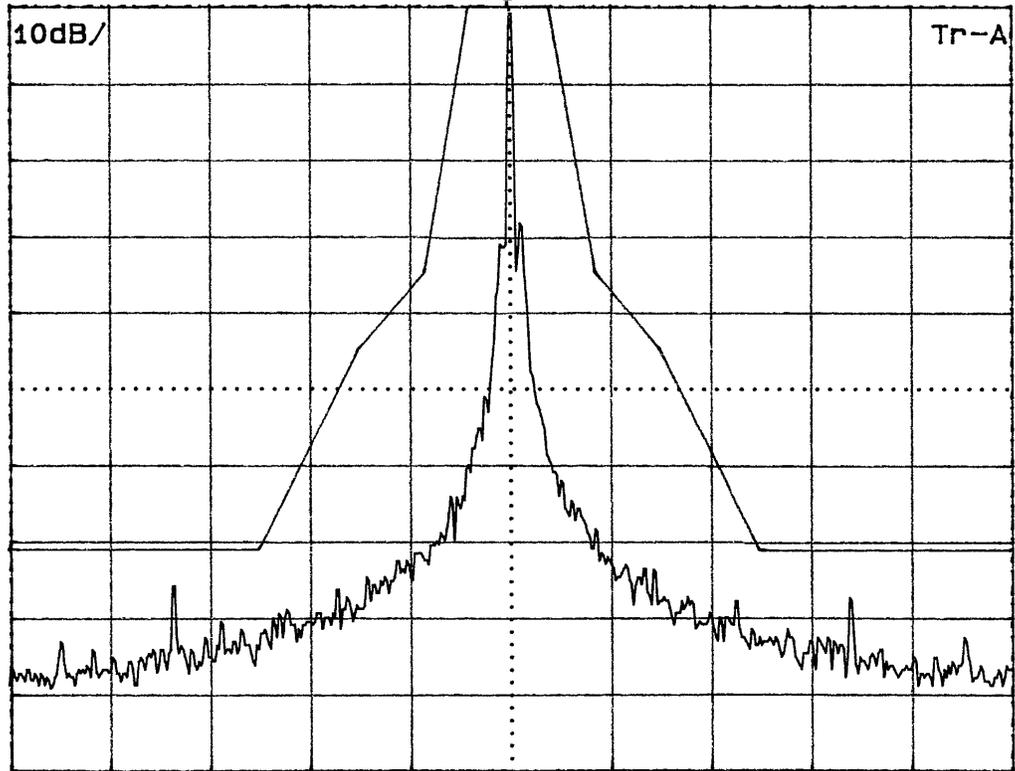


CF: 821.0000MHz

Span: 100kHz

Occupied Bandwidth
Modulated Carrier: RD-LAP 9.6 kbps
Transmitting Frequency: 821 MHz
Mask H

MKR: 822.5002MHz WaweNet Boomer II
12.51dBm RB 100Hz# AT 30dB Band auto
RLV: 12.50dBm VB 3kHz# ST 30s

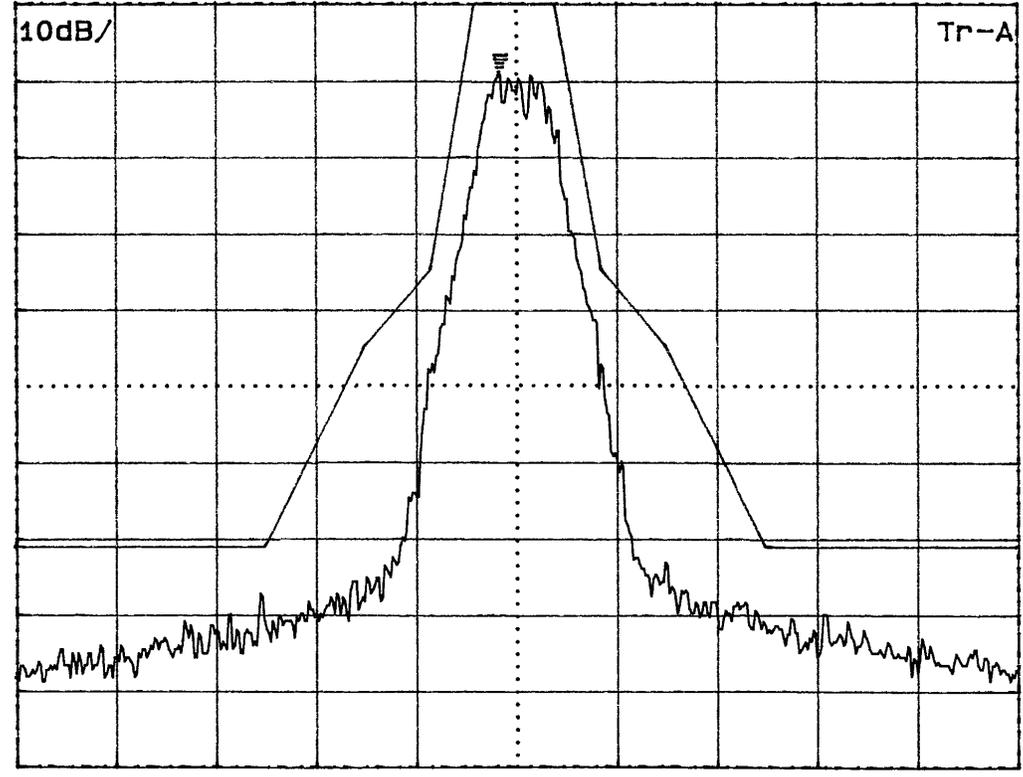


CF: 822.5000MHz

Span: 100kHz

Occupied Bandwidth
Unmodulated Carrier
Transmitting Frequency: 822.5 MHz
Mask H

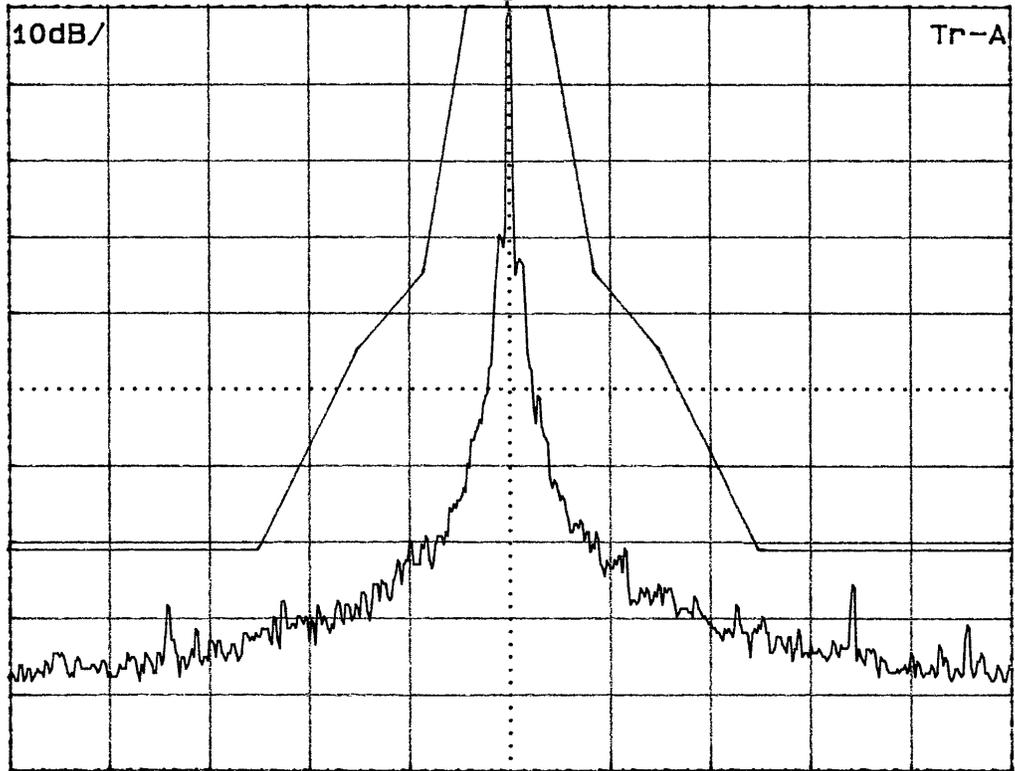
MKR: 822.4984MHz WaweNet Boomer II
2.94dBm RB 100Hz# AT 30dB Band auto
RLV: 12.50dBm VB 3kHz# ST 30s



CF: 822.5000MHz Span: 100kHz

Occupied Bandwidth
Modulated Carrier: RD-LAP 9.6 kbps
Transmitting Frequency: 822.5 MHz
Mask H

MKR: 824.0002MHz WaweNet Boomer II
12.48dBm RB 100Hz# AT 30dB Band auto
RLV: 12.50dBm VB 3kHz# ST 30s



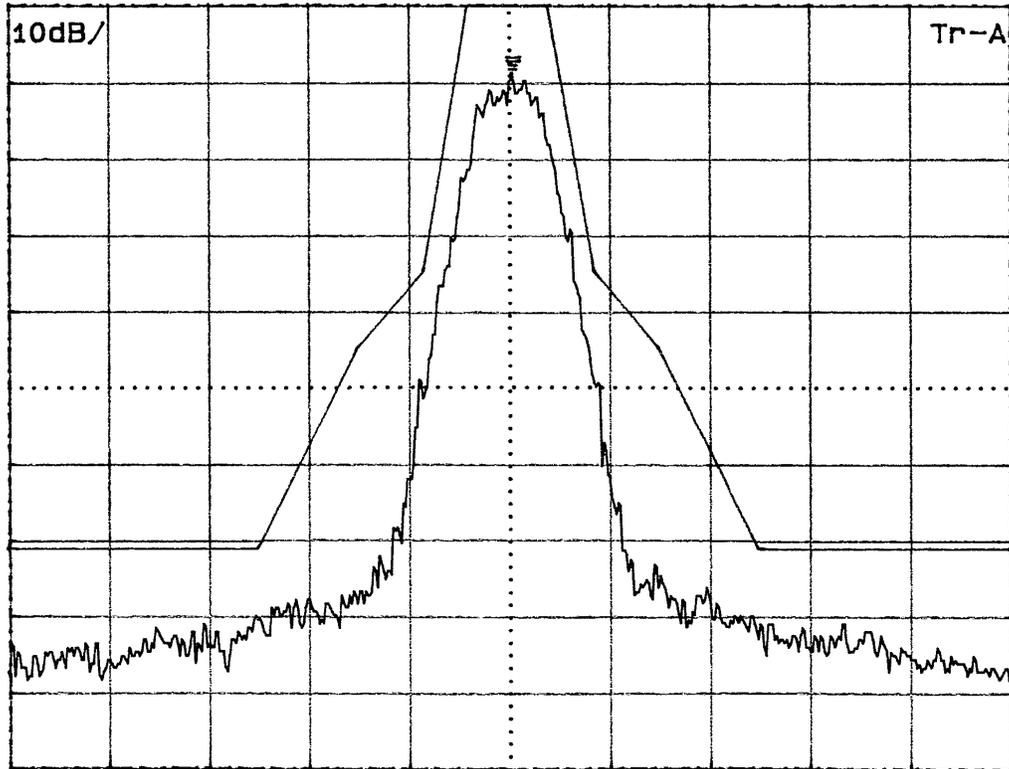
CF: 824.0000MHz

Span: 100kHz

Occupied Bandwidth

Unmodulated Carrier
Transmitting Frequency: 824 MHz
Mask H

MKR: 824.0004MHz WaweNet Boomer II
2.60dBm RB 100Hz# AT 30dB Band auto
RLV: 12.50dBm VB 3kHz# ST 30s



CF: 824.0000MHz

Span: 100kHz

Occupied Bandwidth
Modulated Carrier: RD-LAP 9.6 kbps
Transmitting Frequency: 824 MHz
Mask H

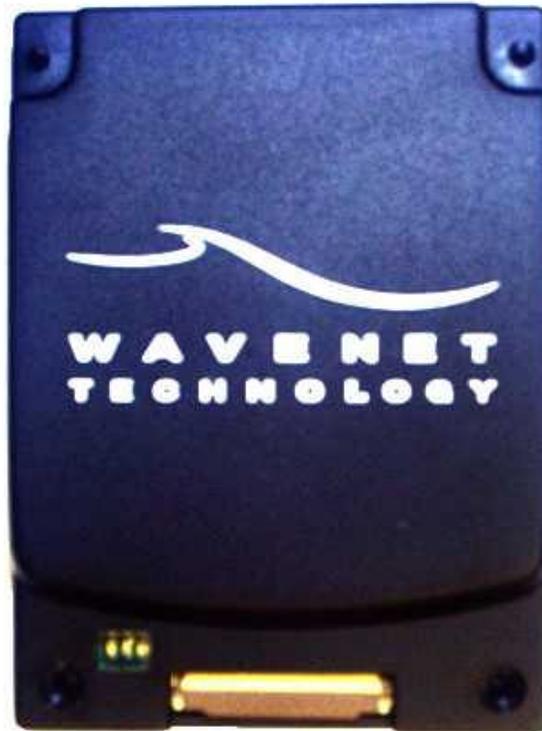
Test Equipment

List of Equipment used

Description	Manufacturer	Model #	Asset #	Calibration Due Data
Spectrum Analyzer	Anritsu	MS2667C	301436	Sep, 2002
Power Meter	Rhode & Schwarz	NRVS	100851	Oct, 2002
20 dB Attenuator	Narda	4774-20	301533	CBT

Appendix

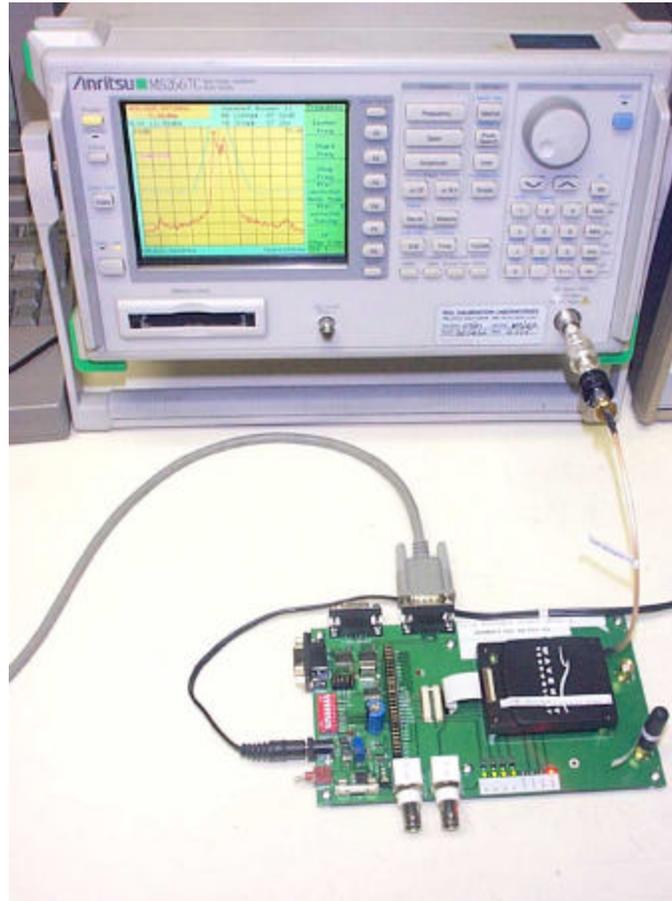
Photographs



**Wireless OEM Modem Module
WaveNet BOOMER-II**



Occupied Bandwidth – Testing Setup



**Testing Occupied Bandwidth on
Wireless OEM Modem Module
WaveNet BOOMER-II**

FCC ID: PQS-BM28001

Exhibit 2d

Engineering Report on

Spurious Emissions at Antenna Terminal (2.1051)