



Test Report No. 8612333921

Applicant: Alvarion Ltd.

Equipment Under Test:

Broadband Wireless Access

***BreezeACCESS VL 5.8 System and Point to
Point BreezeNET B system***

***From The Standards Institution
Of Israel***

Industry Division

Electronics & Telematics Laboratory

EMC Section



Certificate No.1487-01



Test Report No.: 8612333921

Page 1 of 46 Pages

Title: Test on Broadband Wireless Access

**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**

Applicant: Alvarion Ltd.

Address: 21A Habarzel str, Tel-Aviv, 69710, Israel

Sample for test selected by: The customer

The date of test: 22, 23/05, 5/06/2006

Description of Equipment

Under Test (EUT): BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system

Manufactured by: Alvarion Ltd.

Reference Documents:

- ❖ CFR 47 FCC: Rules and Regulations; Part 15. "Radio frequency devices"; Subpart C: "Intentional radiators" (2006).

Test Results: The EUT was found meeting with the relevant requirements of CFR 47 FCC Part 15 Sections: 15.205, 15.207, 15.209, 15.247.

This Test Report contains 46 Pages
and may be used only in full.

This Test Report applies only to the specimen tested and may not
be applied to other specimens of the same product.

**Test Report No.:** 8612333921

Page 2 of 46 Pages

Title: Test on Broadband Wireless AccessBreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system

Table of Contents

1. Scope	3
2. System content	4
2.1. BreezeACCESS VL system and BreezeNETB system	4
2.2. Applicant information	5
2.3. Test performance	5
3. Scope	6
4. General	6
4.1. Permissive change description	6
5. Test configuration:	11
6. Test specification, Methods and Procedures	12
7. Measurements, examinations and derived results	12
7.1. Location of the Test Site:	12
7.2. Normal test condition:	12
7.3. Conducted emission test (per Section 15.207):	13
7.4. Radiated emission test, general requirements (per section 15.209):	16
7.5. Radiated emission test on Radio Unit – spurious (per Section 15.209):	18
7.6. Radiated emission test on Radio Unit - restricted bands (per Section 15.205):	20
8. Conducted emission tests on Radio Unit:	26
8.1. Minimum bandwidth	26
8.2. Maximum peak output power	26
9. Compliance with specification:	39
10. Appendix 1: Test equipment used	40
11. Appendix 2 Antenna Factor and Cable Loss	40
12. Appendix 3: Test configuration illustration	43

**Test Report No.: 8612333921****Page 3 of 46 Pages****Title: Test on Broadband Wireless Access****BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**

1. Scope

Test item: BreezeACCESS VL 5.8 System and Point to Point BreezeNET B system .

Manufacturer: Alvarion LTD

Types (Models): Base Station

IDU:	BS-SH-VL (Generic) shelf
BS-AU-VL	Plugged-in card
BS-PS-AC-VL	AC Power supply
ODU: AU-D-BS-5.8-ODU	Radio unit

Subscribe unit:

SU-A-5.8-6/54-B/1D-VL Complete system

IDU: Universal indoor unit, Model: PS1065/1073

Base station Stand-alone unit and Subscriber unit are identical hardware units and system construction. The two configurations are distinguished by software application only.

BreezeNET B system hardware configuration and system construction is identical to the following BreezeAccess VL units:

BU-B14/28D-5.8 system configuration is identical to subscriber unit SU-A-5.8-6/54-B/1D-VL.

The two systems are distinguished by software application only.

RB-B14/28D-5.8 system configuration is identical to subscriber unit SU-A-5.8-6/54-B/1D-VL.

The two systems are distinguished by software application only.

**Test Report No.:** 8612333921**Page 4 of 46 Pages****Title:** Test on Broadband Wireless Access**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**

2. System content

2.1. BreezeACCESS VL system and BreezeNETB system

Base station	
AU-D-BS-5.8-90/120-VL	Complete system
BS-SH-VL (Generic)	Shelf
BS-PS-AC-VL	Power supply AC
BS-PS-DC-VL	Power supply DC
BS-AU-VL	Indoor card
AU-D-BS-5.8 -ODU-90/120	Outdoor unit with detached antenna
Base station Stand alone	
AU-D-SA-5.8-60/90/120-VL	Complete system with detached antenna
Subscriber unit	
SU-A-5.8-6/54-B/1D-VL	Complete system with integrated antenna
BreezeNETB p-to-p system	
RB-B14/28D-5.8 ¹	Remote bridge D: antenna detached
BU-B14/28D-5.8 ¹	Base unit D: antenna detached

Comments:

¹ D can be blank or D



Test Report No.: 8612333921

Page 5 of 46 Pages

Title: Test on Broadband Wireless Access

**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**

2.2. Applicant information

Company: Alvarion LTD
P.O.B.: 13139
Postal code: 61131
City: Tel Aviv
Country: Israel
Telephone number: +972 3 6456262
Telefax number: +972 3 6456222

2.3. Test performance

Location: SII EMC Section
Alvarion LTD
Purpose of test: Apparatus compliance verification in
according with
CFR 47 FCC Requirement
Test specification: CFR 47 FCC Part 15 Sections: 15.205,15.207,15.209,15.247

Test performed by: Mr. Michael Feldman, test technician

Test report approved by: Mr. Yuri Rozenberg, Head of EMC Branch

**Test Report No.: 8612333921****Page 6 of 46 Pages****Title: Test on Broadband Wireless Access****BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**

3. Scope

This test report contains results measured on BreezeACCESS VL 5.8 System and Point to Point BreezeNET B system FCC ID: LKT-VL-IF (permissive change) according to the relevant requirements of CFR 47 FCC Part 15 Subpart C.

4. General

4.1. Permissive change description

The BreezeACCESS VL 5.8 radio is based on the Atheros chip set (AR5112 - ROC and AR5212 - MAC). The permissive change is a modification of the outdoor unit metal enclosure (ODU box) and the layout to fit this new box. The changes are:

1. New metal enclosure (weight reduction, cost reduction).
2. New layout (changed dimensions to fit the new box):
 - repositioning of connectors, bar-graph display and LED indicators;
 - repositioning of power supply area on the board.
3. New configuration of the VVA to obtain better accuracy.
4. New integral antenna.

Basic frequency determining and stabilizing circuitry (including clock or data rates), frequency multiplication stages, basic modulator circuit, up- and down-converting circuits as well as spurious radiation suppression filters have not been changed.

BreezeACCESS VL 5.8GHz is a high capacity, IP services oriented Broadband Wireless Access system.

BA VL 5.8GHz is a digital modulated TDD system operating in the 5725MHz up to 5850MHz band.

The system is operating with software selectable bandwidth of 10MHz, 20MHz, and 40MHz.

The system contains a base station unit and a subscriber unit. The base station and subscriber radio are identical.

The basic system configuration is a two-box configuration that contains:

1. Indoor unit that contains a power supply and an Ethernet 10/100BaseT (RJ 45) interface.
2. Outdoor unit containing the entire radio and digital section.
3. A single CAT5 cable connecting the indoor and outdoor unit serves for carrying the data as well as for transferring power, management and control signals.

Test Report No.: 8612333921

Page 7 of 46 Pages

Title: Test on Broadband Wireless Access

BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system



Photo # 1. Radio Unit. Open cover

Test Report No.: 8612333921

Page 8 of 46 Pages

Title: Test on Broadband Wireless Access

BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system



Photo # 2. Radio unit, PCB print side

Test Report No.: 8612333921

Page 9 of 46 Pages

Title: Test on Broadband Wireless Access
BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system



Photo # 3. Radio Unit. PCB component side

Test Report No.: 8612333921

Page 10 of 46 Pages

Title: Test on Broadband Wireless Access

**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**

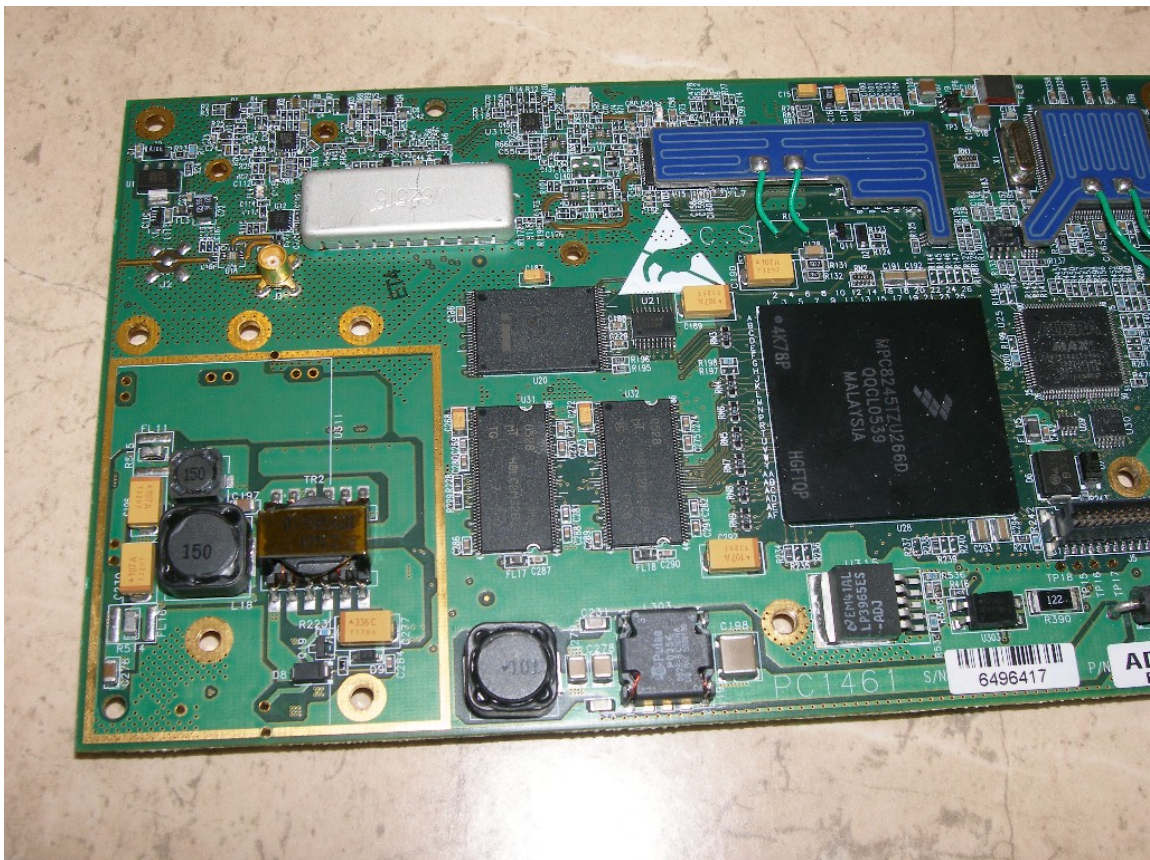


Photo # 4. Radio Unit. PCB component side

Test Report No.: 8612333921

Page 11 of 46 Pages

Title: Test on Broadband Wireless Access

**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**

5. Test configuration:

1. For Radiated emission measurements per sec. 15.209 requirements the Subscriber Unit and the Base Station Unit were configured for tests as shown in Figures 1, 2.
2. For Radiated emission measurements per sec. 15.205 requirements the Radio unit was tested with integral antenna.

Mnuf.	Freq. Range GHz	Gain dBi	Model	Type
MTI	5.15-5.875	20	AN1303	Flat panel

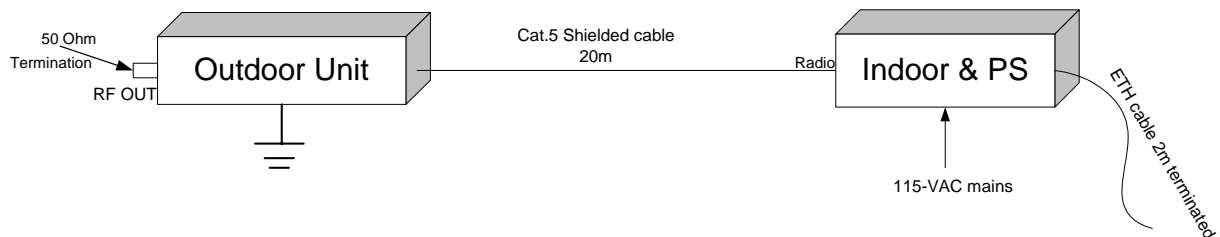


Figure 1. Subscriber Unit test setup

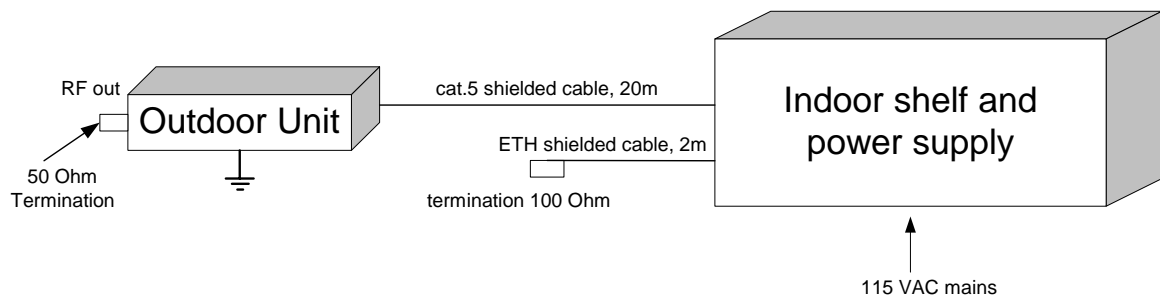


Figure 2. Base Station test setup



Test Report No.: 8612333921

Page 12 of 46 Pages

Title: Test on Broadband Wireless Access

BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system

6. Test specification, Methods and Procedures

Test Specification:

- ❖ CFR 47 FCC: Rules and Regulations; Part 15. "Radio frequency devices"; Subpart E: "Intentional radiators" (2006).

Methods and Procedures:

- ❖ ANSI C63/4/2003: "American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz".

7. Measurements, examinations and derived results

7.1. Location of the Test Site:

The tests were conducted in the EMC laboratory of the Standards Institution of Israel in Tel-Aviv and at open test site located at Kibbutz Native Halamed Hai in Emek HaEla, Israel.

7.2. Normal test condition:

Temperature: 22 °C

Humidity: 50 %

**Test Report No.:** 8612333921

Page 13 of 46 Pages

Title: Test on Broadband Wireless AccessBreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**7.3. Conducted emission test (per Section 15.207):****7.3.1. Requirements:**

The EUTs conducted emission within the band 150 kHz to 30 MHz shall not exceed value required in section 15.207 (a).

7.3.2. Tested units:

The measurements were performed on
Subscriber Unit (on Universal Indoor unit AC power adaptor PS 1065/1073).

7.3.3. Test procedure:

Each EUT was placed on a non-metallic table in a shielded chamber at a height of 80 cm from the floor and 40 cm from the nearest wall.

The EUT was operated to transmitting through the customer software.
First, initial scans were performed. Final measurements were performed at the frequencies where emission exceeded the tolerance limit.

Test equipment (EMI receiver) setup was as follow:

Initial scan:

Detector type	Peak
Mode	Max hold
Bandwidth	9 kHz
Step size	Continuous sweep
Sweep time	>100 msec

Measurements

Detector type	Quasi-peak, Avg (CISPR)
Bandwidth	9 kHz
Measurement time	200 seconds/MHz
Observation	>15 seconds

7.3.4. Test results:

Test results are shown in Plots #1, 2.



Test Report No.: 8612333921

Page 14 of 46 Pages

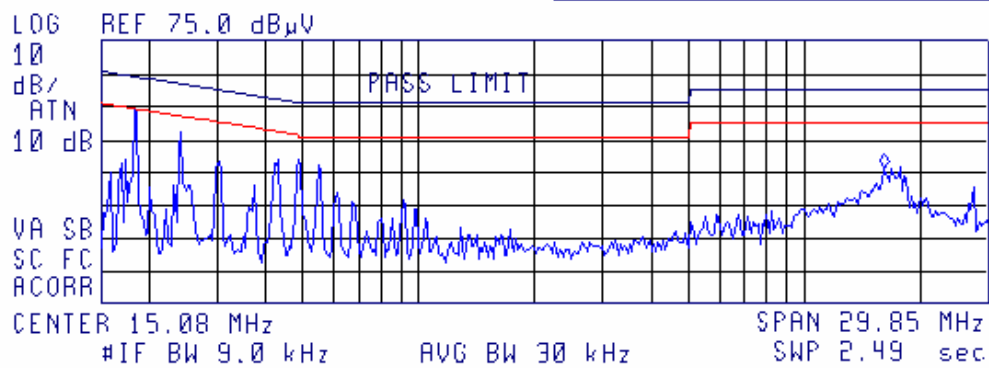
Title: Test on Broadband Wireless Access

BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system

18:54:57 JUN 04, 2006 FCC Line PH
ALVARION EUT-BA VL 5.8 GHz

Signal	Freq (MHz)	PK Amp	QP Amp	AV Amp	AV _Δ L2
1	0.185393	54.9	54.2	43.6	-10.6
2	0.246243	47.7	46.8	36.5	-15.5
3	0.432224	40.0	39.0	37.5	-9.7
4	0.491822	39.9	38.2	36.9	-9.3
5	0.554632	38.4	37.4	35.9	-10.1

FREQ 16.23 MHz
PEAK 38.3 dB μ V
QP 35.9 dB μ V
AVG 34.0 dB μ V



Plot # 1. Subscriber Unit
Conducted emissions measurement result
on 110 VAC power line: phase



Test Report No.: 8612333921

Page 15 of 46 Pages

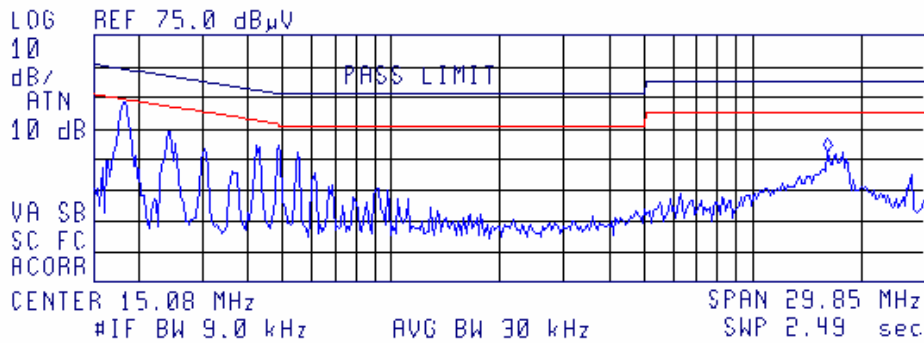
Title: Test on Broadband Wireless Access

BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system

19:00:06 JUN 04, 2006 FCC Line N
ALVARION EUT-BA VL 5.8 GHz

Signal	Freq (MHz)	PK Amp	QP Amp	AV Amp	AV Δ L2
1	0.185405	54.2	53.5	43.1	-11.2
2	0.246842	47.4	46.5	36.3	-15.6
3	0.430433	39.5	38.3	36.7	-10.6
4	0.491847	39.9	38.8	37.4	-8.8
5	0.554829	38.3	37.4	35.9	-10.1

FREQ	16.23 MHz
PEAK	38.0 dB μ V
QP	35.5 dB μ V
AVG	33.5 dB μ V



Plot # 2. Subscriber Unit
Conducted emissions measurement result
on 110 VAC power line: neutral

**Test Report No.:** 8612333921

Page 16 of 46 Pages

Title: Test on Broadband Wireless AccessBreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**7.4. Radiated emission test, general requirements (per section 15.209):****7.4.1. Requirements:**

The EUT's radiated emission shall not exceed value required in section 15.209.

7.4.2. Test description:

The measurements were performed at the Open Area Test Site.

The test configuration is shown in Fig.1, 2.

The EUT was arranged on a non-metallic table 0.8 m placed on the turn-table.

The measurements were performed at a 10 m measurement distance.

The Biconilog 30 MHz-2 GHz antenna was used.

The frequency range was investigated from 30 MHz to 2GHz.

The measurements were performed at each frequency at which the signal was 10 dB below the limit or less.

The level were maximized by initially rotating turntable through 360°, varying the antenna height between 1 m and 4 m, rerouting EUT cables and changing antenna polarization from vertical to horizontal. The measuring equipment settings were:

Initial scan:

Detector type	Peak
Mode	Max hold
Bandwidth	120 kHz
Step size	Continuous sweep
Sweep time	>1 seconds/MHz

Measurements:

Detector type	Quasi-peak (CISPR 16)
Bandwidth	120 kHz
Measurement time	20 seconds/MHz
Observation	>15 seconds

7.4.3. Radiated emission test results:

Test results are presented in Table 1.

**Test Report No.:** 8612333921

Page 17 of 46 Pages

Title: Test on Broadband Wireless AccessBreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**Table 1. Radiated emission test results
FCC Part 15 section 15.209**

Frequency (MHz)	Turn- table Angle (°)	Antenna Polariz.	Antenna Height (m)	Emission Level Note 1 (dB μ V/m)	Limit @ 3 m (dB μ V/m)	Margin Note 2 (dB)	Results
30.6	V	1.20	69	33.5	40.0	6.5	Complies
47.8	V	1.20	141	26.9	40.0	13.1	Complies
58.6	V	1.20	230	28.7	40.0	11.3	Complies
69	V	1.20	278	26.6	40.0	13.4	Complies
108	V	1.20	344	27.6	43.5	15.9	Complies
11.6	V	1.20	205	25.1	43.5	18.4	Complies

Note 1: Emission level = E Reading (dB μ V) + Cable loss (dB) + Antenna Factor (dB/m) + 10 dB
Where 10 dB is an extrapolation distance factor.
For Cable Loss and Antenna Factor refer to Appendix 2.

Note 2: Margin (dB) = Limit (dB μ V/m) – Emission level (dB μ V/m)

**Test Report No.:** 8612333921

Page 18 of 46 Pages

Title: Test on Broadband Wireless AccessBreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**7.5. Radiated emission test on Radio Unit – spurious (per Section 15.209):****7.5.1. Requirements:**

The levels of any unwanted emission shall not exceed value required in section 15.209.

7.5.2. EUT configuration:

The radio unit was tested with Sector antenna AN 1303

7.5.3. Test procedure:

The measurements were performed in the anechoic chamber.

The EUT was arranged on a non-metallic table 0.8 m placed on the turntable.

Measuring antennas used: Up to 18 GHz - Double Ridge **EMCO** model 3115
above 18 GHz - Alpha TRG model A361

Antenna height = 1 m.

Polarization: Vertical/Horizontal

Measurement distance = 1m.

The frequency range was investigated up to 40 GHz.

The measurements were performed in vertical and horizontal polarization, the maximum reading recorded.

Measuring detector function and bandwidths:

Detector type	Peak
Resolution bandwidth	1MHz
Video bandwidth	1 MHz

Detector type	Average
Resolution bandwidth	1MHz
Video bandwidth	3 kHz*

7.5.4. Radiated emission test results and calculation ratio:

The test results are shown in Table 2.

The emission level was calculated as:

E Reading (dB μ V) + measuring cable loss (dB) + measuring antenna factor (dB/m) + Distance correction factor

For measuring cable loss and measuring antenna factor refer to Appendix 2.

Distance correction factor = -9.5 dB (an extrapolation reading from 1 m measuring distance to 3m specified distance)



Test Report No.: 8612333921

Page 19 of 46 Pages

Title: Test on Broadband Wireless Access

**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**

Table 2. Spurious emissions test results

Antenna P/N: AN 1303

Frequency (GHz)	Emission Level (dB μ V/m)		Limit @ 1m (dB μ V/m)		Margin (dB)		Results
	Average	Peak	Average	Peak	Average	Peak	
<u>LOW 5.735 GHz</u>							
11.47	55.4	67.7	64	84	8.6	16.3	Complies
17.21	58.6	71.1			5.4	12.9	Complies
22.94	Noise floor	Noise floor			-	-	Complies
28.68	Noise floor	Noise floor			-	-	Complies
34.41	Noise floor	Noise floor			-	-	Complies
<u>MIDDLE 5.785 GHz</u>							
11.57	56.8	68.5	64	84	7.2	15.5	Complies
17.36	57.4	71.2			6.6	12.8	Complies
23.14	Noise floor	Noise floor			-	-	Complies
28.93	Noise floor	Noise floor			-	-	Complies
34.71	Noise floor	Noise floor			-	-	Complies
<u>HIGH 5.840 GHz</u>							
11.68	55.5	68.4	64	84	8.5	15.6	Complies
17.52	58.4	71.2			5.6	12.8	Complies
23.36	Noise floor	Noise floor			-	-	Complies
29.20	Noise floor	Noise floor			-	-	Complies
35.04	Noise floor	Noise floor			-	-	Complies

Test Report No.: 8612333921

Page 20 of 46 Pages

Title: Test on Broadband Wireless Access

BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system

7.6. Radiated emission test on Radio Unit - restricted bands (per Section 15.205):

7.6.1. Requirements:

Radiated emission in restricted bands should meet the requirements sec. 15.205.
The following frequency bands should be measured:

Frequency	Frequency, GHz	Restricted band, GHz
<u>LOW 5.735 GHz</u>	11.47	10.6-12.7
	22.94	22.01-23.12
<u>MIDDLE 5.785 GHz</u>	11.57	10.6-12.7
<u>HIGH 5.840 GHz</u>	11.68	10.6-12.7

7.6.2. EUT configuration:

The radio unit was tested with Sector antenna AN 1303

7.6.3. Test procedure:

The measurements were performed in the anechoic chamber.

The EUT was arranged on a non-metallic table 0.8 m placed on the turntable.

Measuring antennas used: Up to 18 GHz - Double Ridge **EMCO** model 3115
above 18 GHz - Alpha TRG model A361

Antenna height = 1 m.

Measurement distance = 1m.

Measuring detector function and bandwidths:

Detector type	Peak
RBW	1MHz
VBW	1 MHz

All measurements were taken with peak detector and the readings were compared with AVG limit line.

**Test Report No.:** 8612333921

Page 21 of 46 Pages

Title: Test on Broadband Wireless AccessBreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**7.6.4. Test results and calculation ratio:**

The test results are shown in Plots - as detailed in Table below:

Frequency	Frequency, GHz	Restricted band, GHz	Respective plot
<u>LOW 5.735 GHz</u>	11.477	10.6-12.7	Plot # 3
	22.956	22.01-23.12	Plot # 5
<u>MIDDLE 5.785 GHz</u>	12.506	10.6-12.7	Plot # 6
<u>HIGH 5.840 GHz</u>	11.61	10.6-12.7	Plot # 8

Notes: The AVG limit line 64 dB μ V/m (at 1m distance) is not shown in the plots.
All measurements in restricted bands on frequency ranges above not exceed the SA noise floor level.

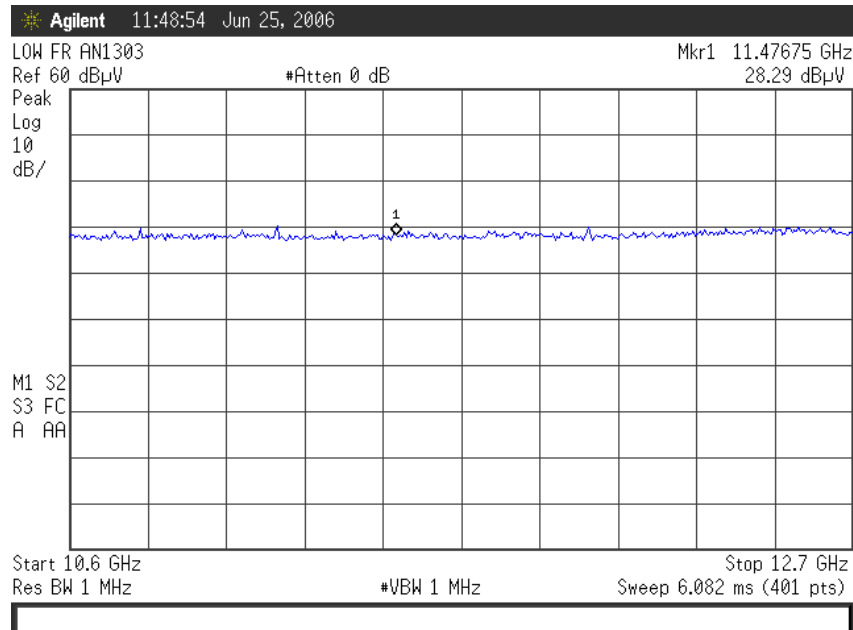


Test Report No.: 8612333921

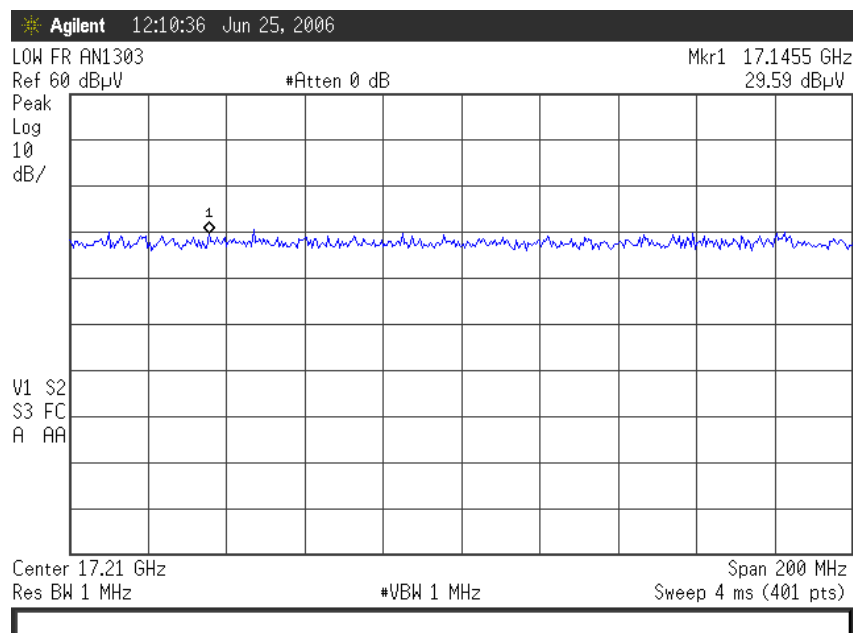
Page 22 of 46 Pages

Title: Test on Broadband Wireless Access

**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**



Plot # 3. Low frequency



Plot # 4. Low frequency

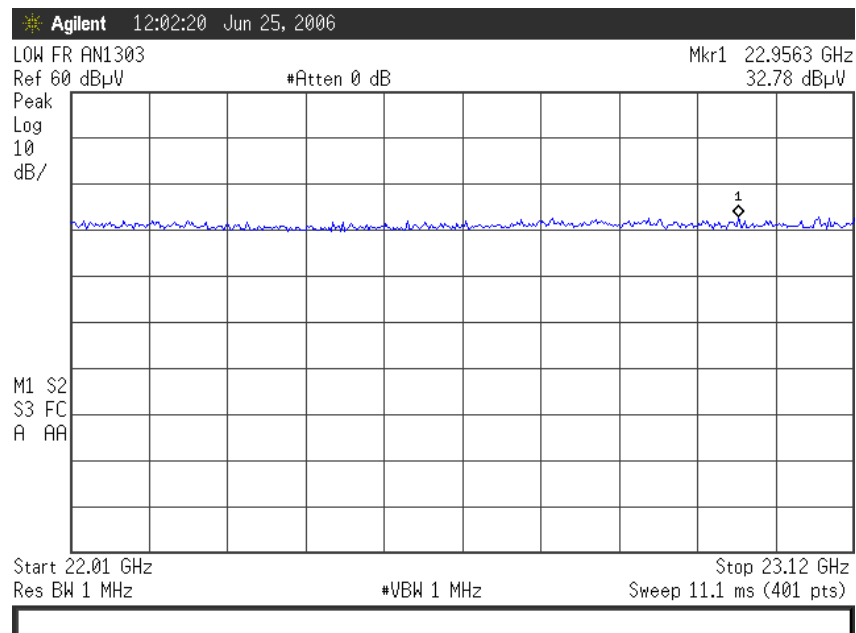


Test Report No.: 8612333921

Page 23 of 46 Pages

Title: Test on Broadband Wireless Access

**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**



Plot # 5. Low frequency

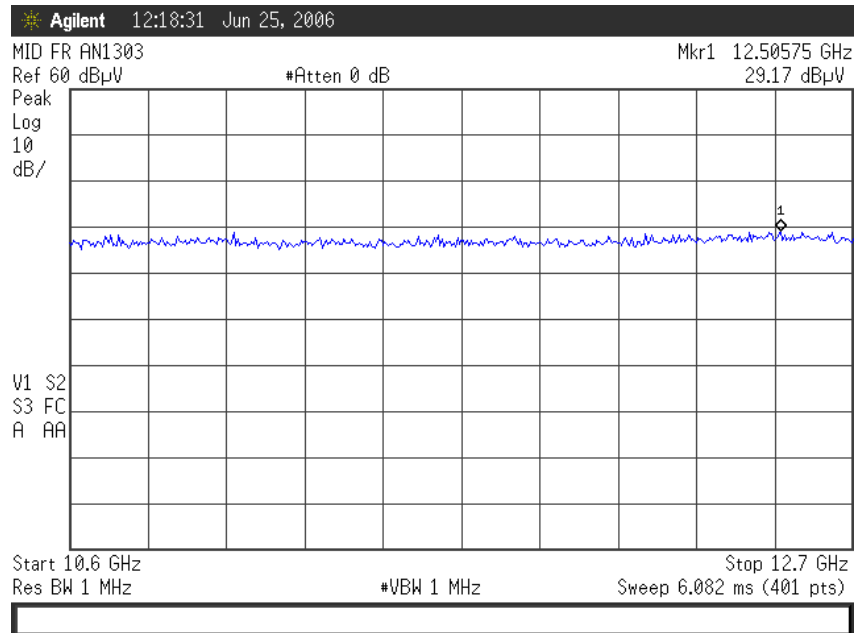


Test Report No.: 8612333921

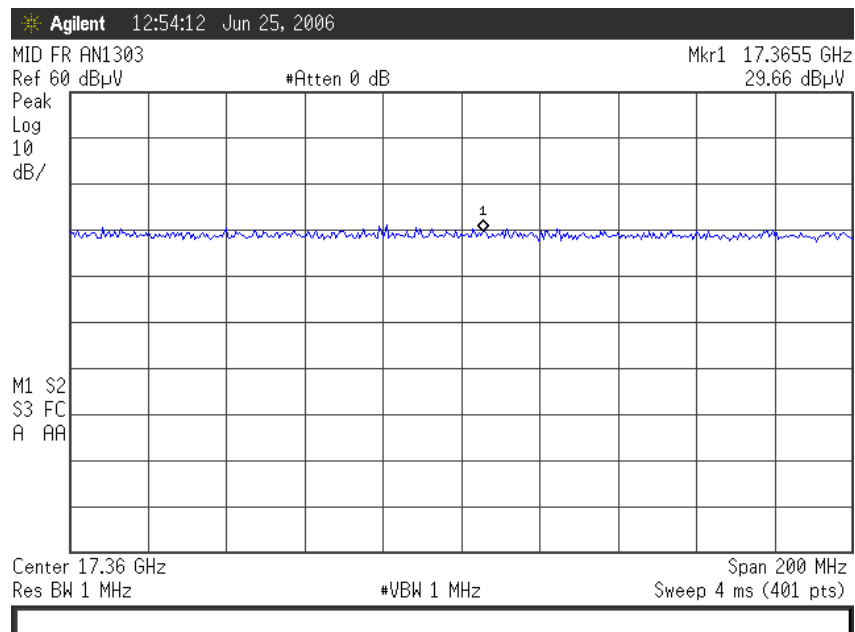
Page 24 of 46 Pages

Title: Test on Broadband Wireless Access

BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system



Plot # 6. Middle frequency



Plot # 7. Middle frequency

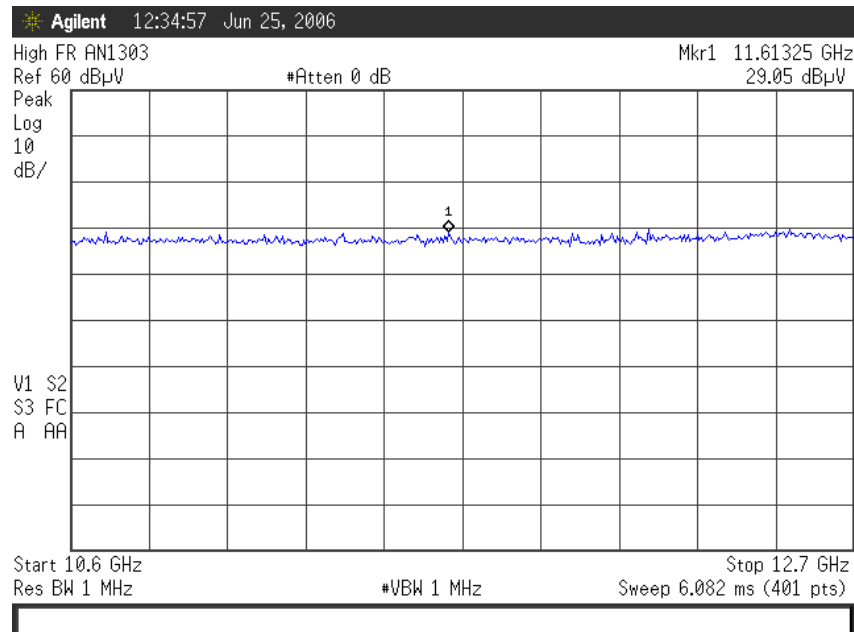


Test Report No.: 8612333921

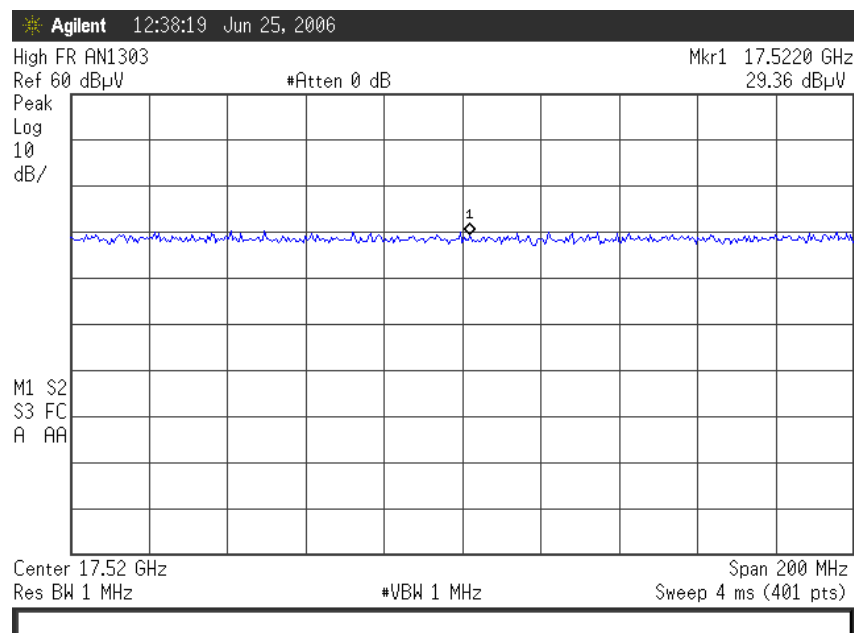
Page 25 of 46 Pages

Title: Test on Broadband Wireless Access

**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**



Plot # 8. High frequency



Plot # 9. High frequency



Test Report No.: 8612333921

Page 26 of 46 Pages

Title: Test on Broadband Wireless Access

BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system

8. Conducted emission tests on Radio Unit:

The radio can operate in 3 signal bandwidth: 10MHz, 20MHz and 40MHz.

8.1. *Minimum bandwidth*

8.1.1. Requirements:

The minimum 6dB bandwidth shall be at least 500KHz as required in sec. 15.247 (b) (2) Subpart C.

8.1.2. Test results:

The measured minimum bandwidth is shown in Plots #10 to #18.

The measurements results are summarized in

Table 3. The minimum measured bandwidth for all configuration is 8.52 MHz that is comply with standard required bandwidth.

8.2. *Maximum peak output power*

8.2.1. Requirements:

The maximum peak output power shall not exceed 1 Watt as required in sec. 15.247 (b) (1).

8.2.2. Test results:

The measurements were taken at three carrier frequencies, in the band 30 MHz – 26 GHz and in the band 26 GHz – 40 GHz.

8.2.3. Calculations:

1. Maximum setting of RBW=VBW is 1MHz
2. Measure the 6dB bandwidth @ RBW=VBW=1MHz.
3. Measure peak power using max hold function.
4. Calculate total peak power as $\text{peak_power}(3)+10*\log(\text{BW}(2))$

**Test Report No.:** 8612333921

Page 27 of 46 Pages

Title: Test on Broadband Wireless AccessBreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system

The table below summarizes the test results for low, middle and upper channel for the 10MHz, 20MHz and 40MHz bands.

Band-width	Measured results low channel		Total Peak power [dBm]	Measured results middle channel		Total Peak power [dBm]	Measured results high channel		Total Peak power [dBm]
	6dB points [MHz]	Peak power [dBm]		6dB points [MHz]	Peak power [dBm]		6dB points [MHz]	Peak power [dBm]	
10MHz	8.52	20.13	29.43	8.51	18.23	27.53	8.50	18.23	27.52
20MHz	16.53	15.9	28.08	16.53	16.18	28.36	16.51	15.16	27.33
40MHz	32.9	13.52	28.69	33.3	13.7	28.92	32.9	13.73	28.90

Table 3: Peak output power and 6dB bandwidth results

The measured results are shown in Plots #19 to #27.

The maximum peak output power in 5.725-5850 MHz band does not exceed 30 dBm (1 Watt).



Test Report No.: 8612333921

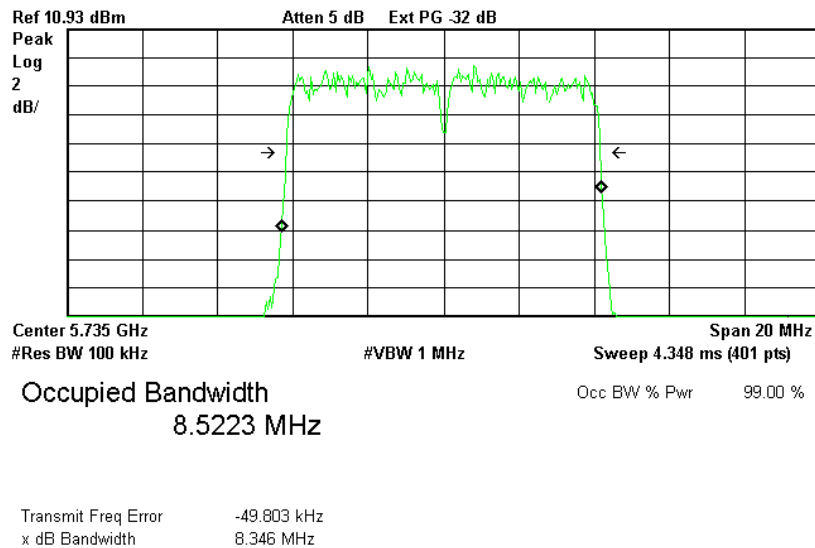
Page 28 of 46 Pages

Title: Test on Broadband Wireless Access

**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**

Agilent 12:20:02 22 May 2006

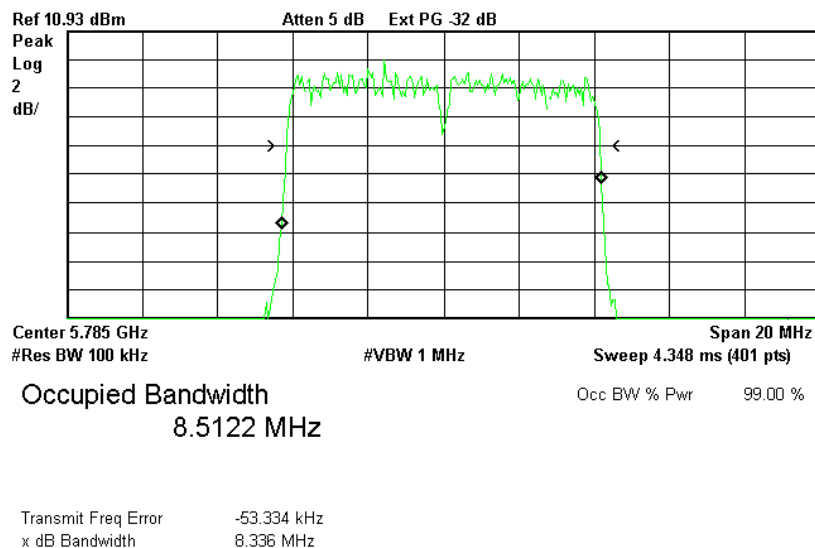
R T



Plot # 10. Minimum 6dB bandwidth 10MHz. Low channel

Agilent 12:20:55 22 May 2006

R T



Plot # 11. Minimum 6dB bandwidth 10MHz. Middle channel



Test Report No.: 8612333921

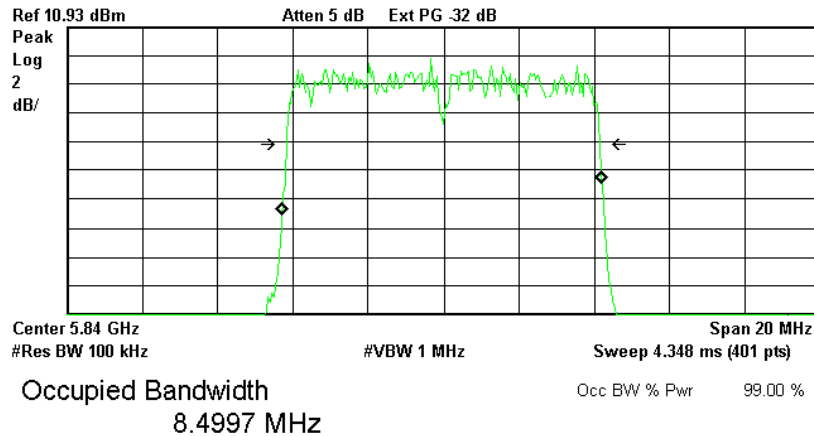
Page 29 of 46 Pages

Title: Test on Broadband Wireless Access

**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**

Agilent 12:21:58 22 May 2006

R T

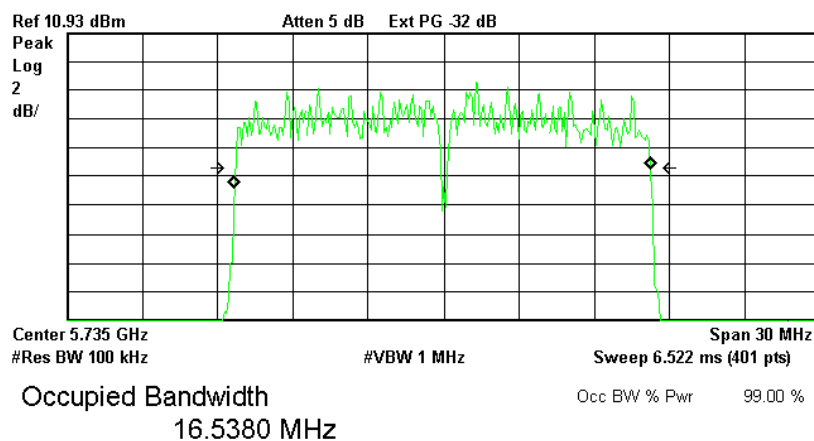


Transmit Freq Error -32.363 kHz
x dB Bandwidth 8.316 MHz

Plot # 12. Minimum 6dB bandwidth 10MHz. Upper channel

Agilent 12:18:34 22 May 2006

R T



Transmit Freq Error -26.416 kHz
x dB Bandwidth 16.514 MHz

Plot # 13. Minimum 6dB bandwidth 20MHz. Low channel



Test Report No.: 8612333921

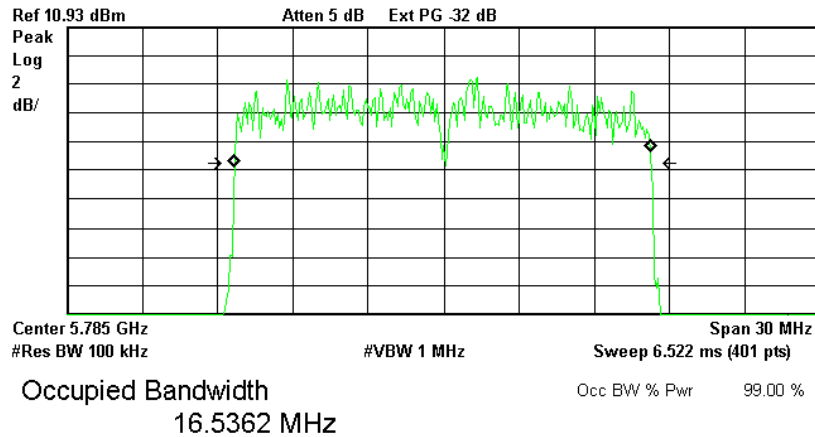
Page 30 of 46 Pages

Title: Test on Broadband Wireless Access

**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**

Agilent 12:17:25 22 May 2006

R T

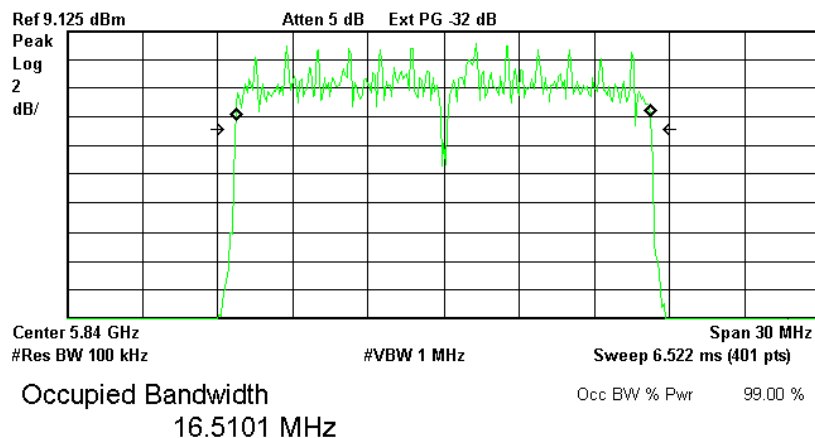


Transmit Freq Error -26.116 kHz
x dB Bandwidth 16.571 MHz

Plot # 14. Minimum 6dB bandwidth 20MHz. Middle channel

Agilent 12:15:54 22 May 2006

R T



Transmit Freq Error -8.306 kHz
x dB Bandwidth 16.559 MHz

Plot # 15. Minimum 6dB bandwidth 20MHz. Upper channel



Test Report No.: 8612333921

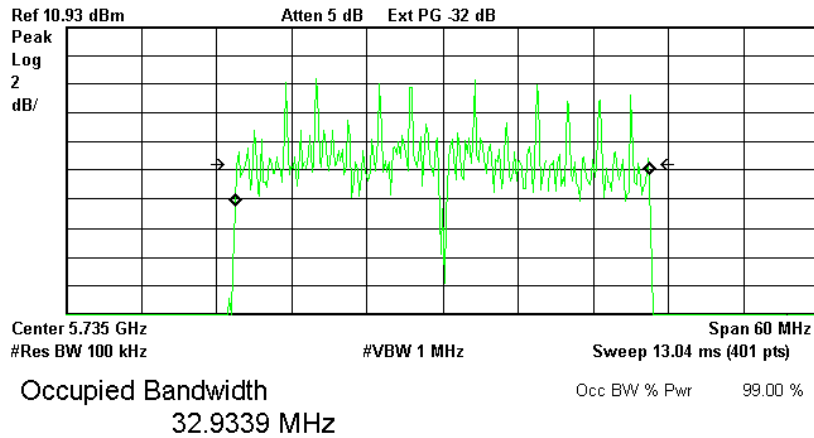
Page 31 of 46 Pages

Title: Test on Broadband Wireless Access

BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system

Agilent 12:26:04 22 May 2006

R T

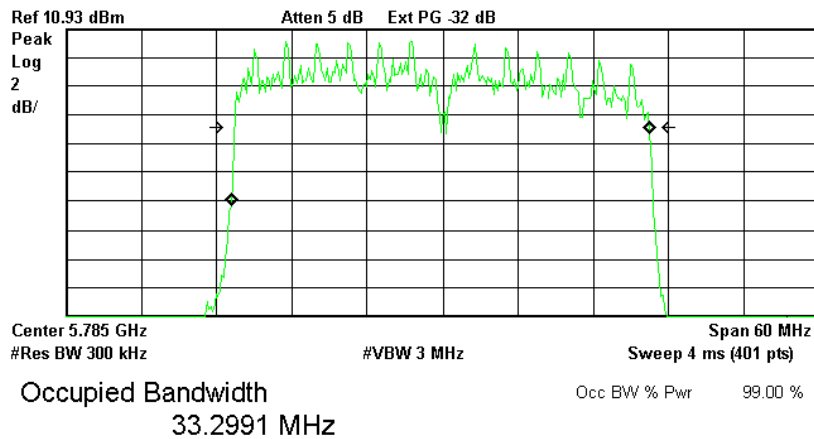


Transmit Freq Error -24.672 kHz
x dB Bandwidth 32.726 MHz

Plot # 16. Minimum 6dB bandwidth 40MHz. Low channel

Agilent 12:24:04 22 May 2006

R T



Transmit Freq Error -141.022 kHz
x dB Bandwidth 33.019 MHz

Plot # 17. Minimum 6dB bandwidth 40MHz. Middle channel



Test Report No.: 8612333921

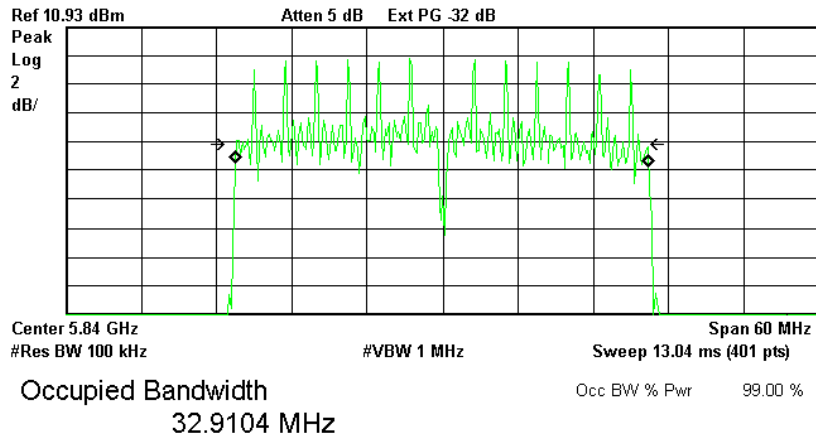
Page 32 of 46 Pages

Title: Test on Broadband Wireless Access

**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**

Agilent 12:23:09 22 May 2006

R T



Transmit Freq Error -33.553 kHz
x dB Bandwidth 32.052 MHz

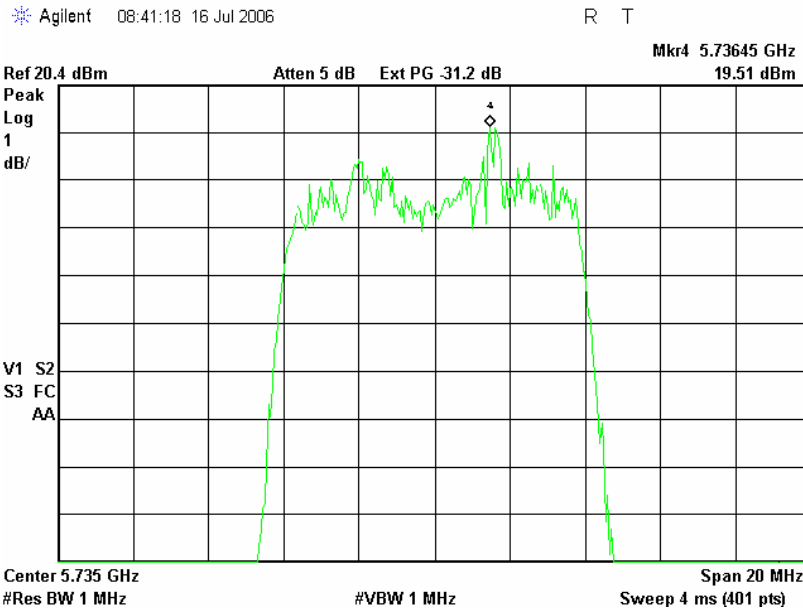
Plot # 18. Minimum 6dB bandwidth 40MHz. Upper channel



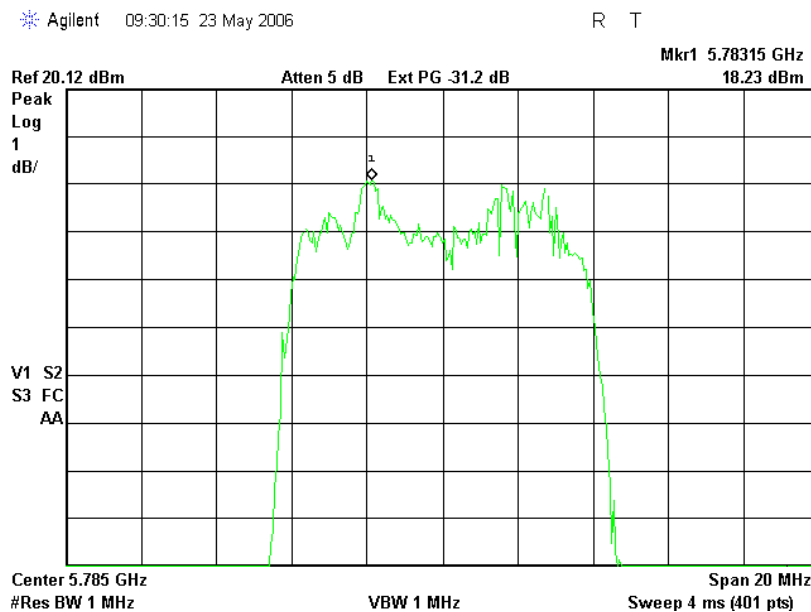
Test Report No.: 8612333921

Page 33 of 46 Pages

Title: Test on Broadband Wireless Access
BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system



Plot # 19. Peak output power. Bandwidth 10MHz. Lower channel



Plot # 20. Peak output power. Bandwidth 10MHz. Middle channel

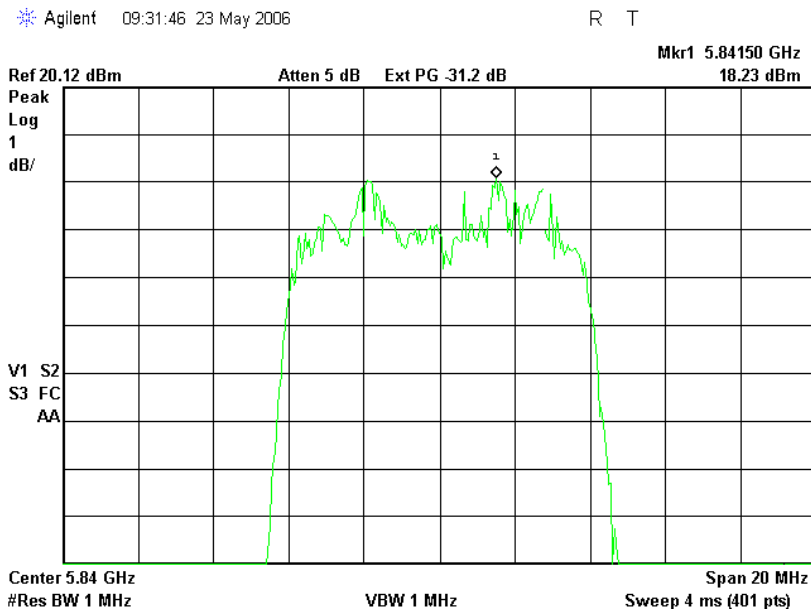


Test Report No.: 8612333921

Page 34 of 46 Pages

Title: Test on Broadband Wireless Access

**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**



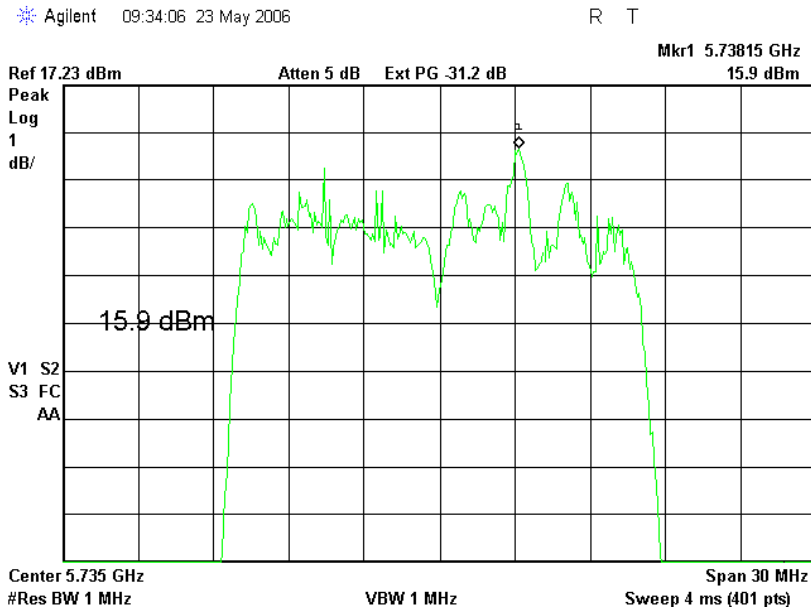
Plot # 21. Peak output power. Bandwidth 10MHz. Upper channel

Test Report No.: 8612333921

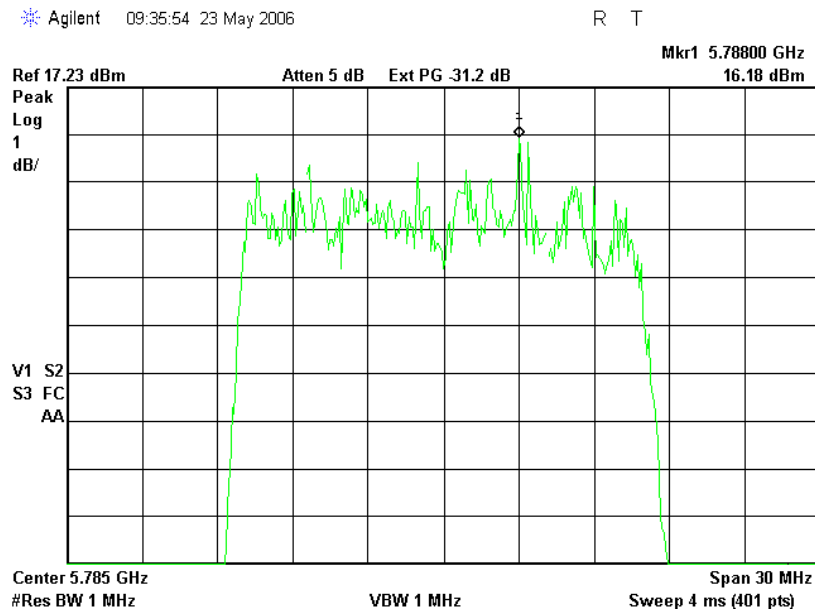
Page 35 of 46 Pages

Title: Test on Broadband Wireless Access

**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**



Plot # 22. Peak output power. Bandwidth 20MHz. Lower channel



Plot # 23. Peak output power. Bandwidth 20MHz. Middle channel

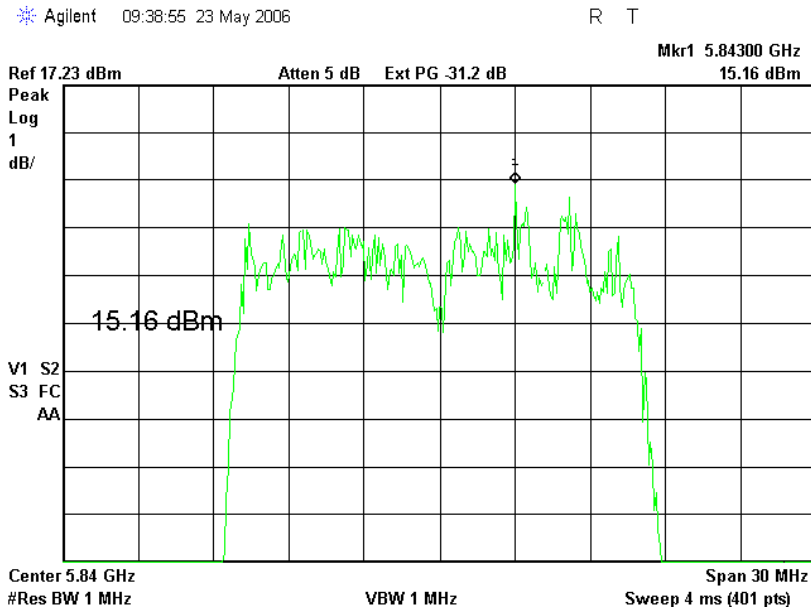


Test Report No.: 8612333921

Page 36 of 46 Pages

Title: Test on Broadband Wireless Access

**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**



Plot # 24. Peak output power. Bandwidth 20MHz. Upper channel



Test Report No.: 8612333921

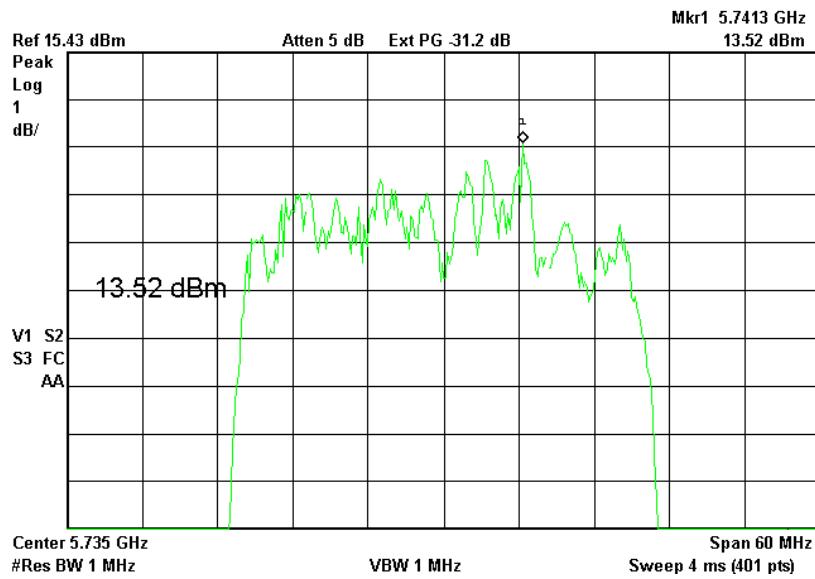
Page 37 of 46 Pages

Title: Test on Broadband Wireless Access

BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system

Agilent 09:42:52 23 May 2006

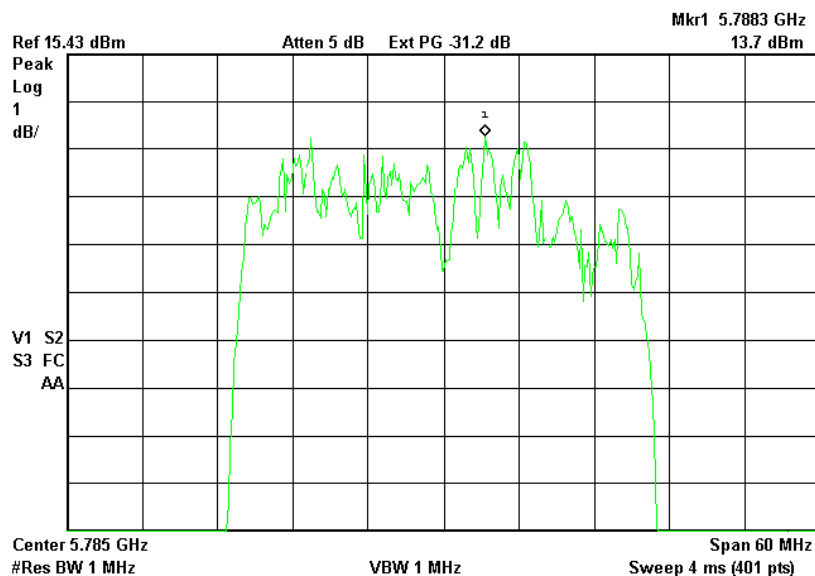
R T



Plot # 25. Peak output power. Bandwidth 40MHz. Lower channel

Agilent 09:44:00 23 May 2006

R T



Plot # 26. Peak output power. Bandwidth 40MHz. Middle channel

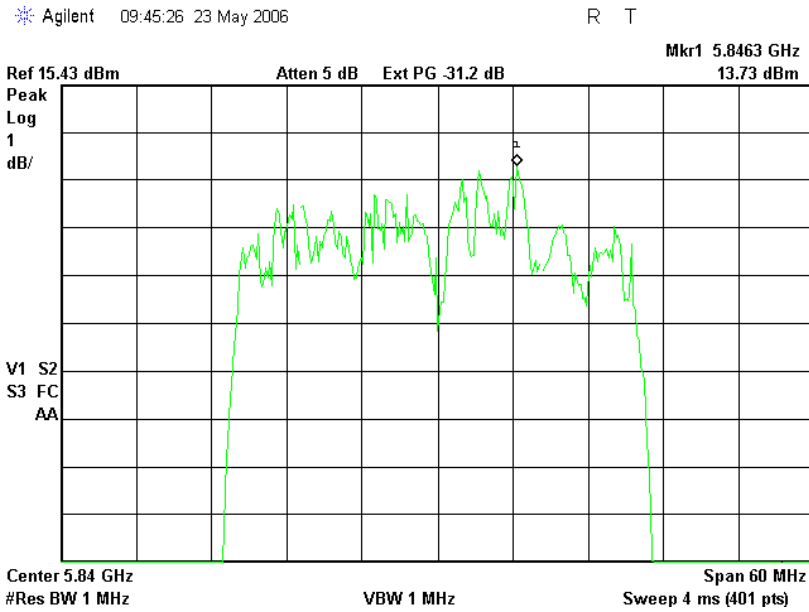


Test Report No.: 8612333921

Page 38 of 46 Pages

Title: Test on Broadband Wireless Access

**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**



Plot # 27. Peak output power. Bandwidth 40MHz. Upper channel

**Test Report No.:** 8612333921

Page 39 of 46 Pages

Title: Test on Broadband Wireless AccessBreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system

9. Compliance with specification:

Test	FCC Part 15	Test result
Radiated emissions in restricted bands	Sec.15.205	Complies
Conducted emission	Sec.15.207	Complies
Radiated emission – general requirements	Sec.15.209	Complies
Minimum bandwidth	Sec. 15.247 (a) (2)	Complies
Maximum peak output power	Sec.15.247 (b) (3)	Complies

Electronics and
Telematics Laboratory

2 July 2006

Name: Eng. Albert Herzenshtein

Position: Project Manager

Tested by: Michael Feldman

Position: Testing Technician

**Test Report No.: 8612333921****Page 40 of 46 Pages****Title: Test on Broadband Wireless Access****BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**

10. Appendix 1: Test equipment used

All measurements equipment is on SII calibration schedule with a recalibration interval not exceeding one year.

Instrument	Manufacturer	Model	Serial No.	Last calibration date	Next calibration date
Spectrum analyzer 10 KHz-26.5 GHz	HP	E7405a	SII 4944	02/05	02/07
Spectrum analyzer 9 KHz-50 GHz	HP	8565E	3517A00347	07/05	07/06
Antenna Double Ridge 1-18 GHz	EMCO	3115	SII4873	04/06	04/07
Antenna Standard Gain Horn 18-40 GHz	WILTRON	Alpha TRG A361	861A/590	01/06	01/07
LISN 9 kHz – 30 MHz	FCC	LISN- 50/250-32-4-16	SII 5023	02/05	02/07
Transient limiter 0.009-200 MHz	HP	11947A	31074A3105	01/06	01/07

11. Appendix 2 Antenna Factor and Cable Loss

Antenna Factor
Standard Gain Horn 26 – 40 GHz Alpha TRG Model A361

Point	Frequency (MHz)	Antenna Factor (dB/m)
1	26000	35.22
2	27000	35.40
3	28000	35.52
4	29000	35.64
5	30000	35.76
6	31000	35.90
7	32000	36.07
8	33000	36.16
9	34000	36.31
10	35000	36.46
11	36000	36.60
12	37000	36.74
13	38000	36.93
14	39000	37.21
15	40000	37.28

**Test Report No.: 8612333921****Page 41 of 46 Pages****Title: Test on Broadband Wireless Access****BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**

**Gain and Antenna factor for Double Ridged Guide Antenna
Manufactured by EMC Test Systems Model: 3115, S/N 5802
1 meter Separation / Horizontal Polarization**

Frequency (MHz)	Antenna Factor (dB/m)	Gain Numeric	Gain (dBi)
1,000.00	24.23	3.96	5.98
1,500.00	25.55	6.58	8.18
2,000.00	27.75	7.05	8.48
2,500.00	28.74	8.77	9.43
3,000.00	30.61	8.20	9.14
3,500.00	31.81	8.48	9.28
4,000.00	32.96	8.49	9.29
4,500.00	32.56	11.78	10.71
5,000.00	34.05	10.33	10.14
5,500.00	34.78	10.55	10.23
6,000.00	35.06	11.79	10.72
6,500.00	35.35	12.92	11.11
7,000.00	36.04	12.81	11.08
7,500.00	37.30	11.00	10.41
8,000.00	37.42	12.17	10.85
8,500.00	37.81	12.57	10.99
9,000.00	37.91	13.77	11.39
9,500.00	38.07	14.76	11.69
10,000.00	38.60	14.49	11.61
10,500.00	38.60	15.96	12.03
11,000.00	38.63	17.42	12.41
11,500.00	39.08	17.16	12.35
12,000.00	38.94	19.29	12.85
12,500.00	39.01	20.61	13.14
13,000.00	39.92	18.06	12.57
13,500.00	40.72	16.19	12.09
14,000.00	41.52	14.50	11.61
14,500.00	41.15	16.93	12.29
15,000.00	39.52	26.36	14.21
15,500.00	37.86	41.25	16.15
16,000.00	37.95	43.04	16.34
16,500.00	39.38	32.97	15.18
17,000.00	41.31	22.44	13.51
17,500.00	44.18	12.28	10.89
18,000.00	46.15	8.26	9.17

**Test Report No.: 8612333921****Page 42 of 46 Pages****Title: Test on Broadband Wireless Access****BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**

**Gain and Antenna factor for Double Ridged Guide Antenna
Manufactured by EMC Test Systems Model: 3115, S/N 5802
1 meter Separation / Vertical Polarization**

Frequency (MHz)	Antenna Factor (dB/m)	Gain Numeric	Gain (dBi)
1,000.00	24.27	3.93	5.94
1,500.00	25.66	6.42	8.07
2,000.00	27.94	6.75	8.29
2,500.00	29.02	8.22	9.15
3,000.00	30.77	7.91	8.98
3,500.00	32.02	8.08	9.07
4,000.00	33.11	8.21	9.15
4,500.00	32.84	11.05	10.43
5,000.00	34.13	10.15	10.06
5,500.00	34.88	10.33	10.14
6,000.00	35.04	11.83	10.73
6,500.00	35.37	12.88	11.10
7,000.00	36.44	11.68	10.67
7,500.00	37.46	10.59	10.25
8,000.00	37.56	11.77	10.71
8,500.00	38.09	11.77	10.71
9,000.00	38.41	12.25	10.88
9,500.00	38.44	13.56	11.32
10,000.00	38.75	14.00	11.46
10,500.00	38.75	15.42	11.88
11,000.00	39.06	15.77	11.98
11,500.00	39.37	16.06	12.06
12,000.00	39.29	17.81	12.51
12,500.00	39.31	19.22	12.84
13,000.00	40.25	16.74	12.24
13,500.00	41.17	14.62	11.65
14,000.00	41.66	14.04	11.47
14,500.00	41.38	16.07	12.06
15,000.00	39.83	24.58	13.91
15,500.00	38.19	38.22	15.82
16,000.00	38.20	40.62	16.09
16,500.00	39.71	30.57	14.85
17,000.00	41.49	21.53	13.33
17,500.00	44.67	10.96	10.40
18,000.00	46.16	8.23	9.15

Test Report No.: 8612333921

Page 43 of 46 Pages

Title: Test on Broadband Wireless Access

**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**

12. Appendix 3: Test configuration illustration



Photo # 5.
Subscriber Unit + Power Supply (IDU)
Radiated emission test on open site
Front / side / overall view

Test Report No.: 8612333921

Page 44 of 46 Pages

Title: Test on Broadband Wireless Access

**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**



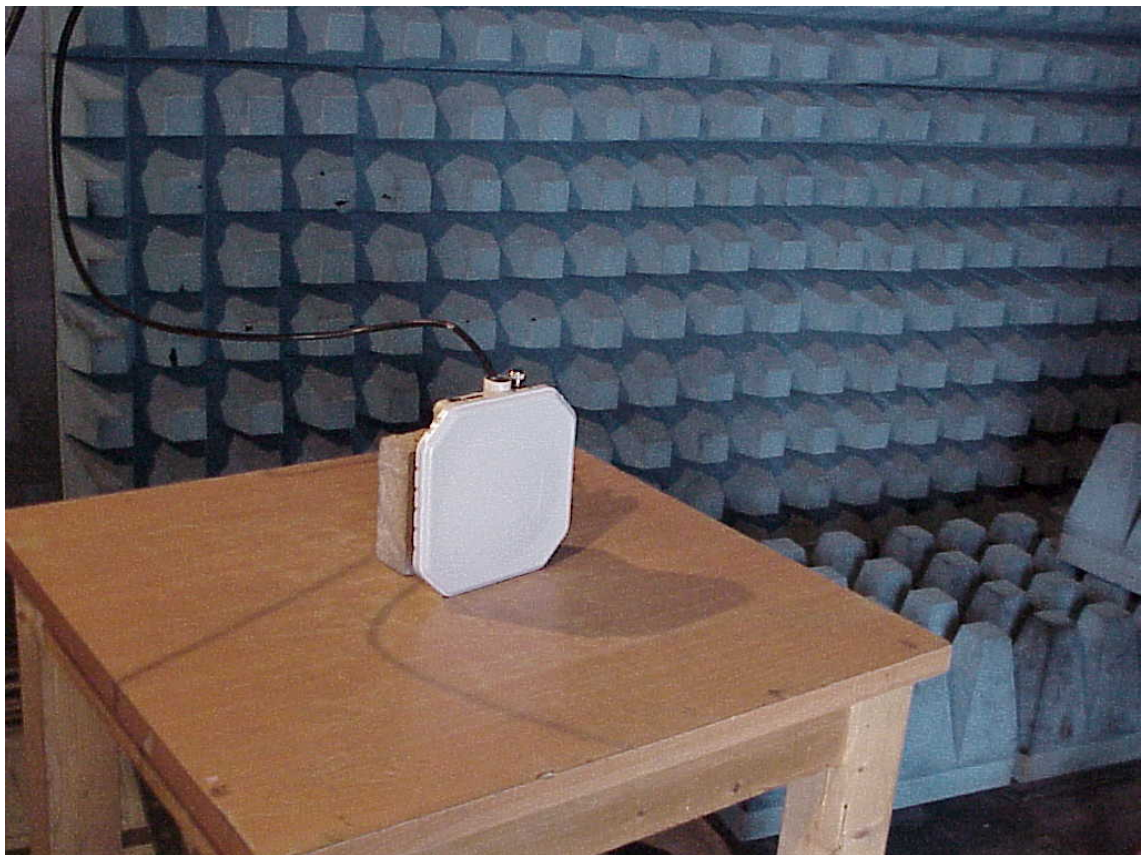
Photo # 6.
Subscriber Unit + Power Supply (IDU)
Radiated emission test on open site
Rear view

Test Report No.: 8612333921

Page 45 of 46 Pages

Title: Test on Broadband Wireless Access

**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**



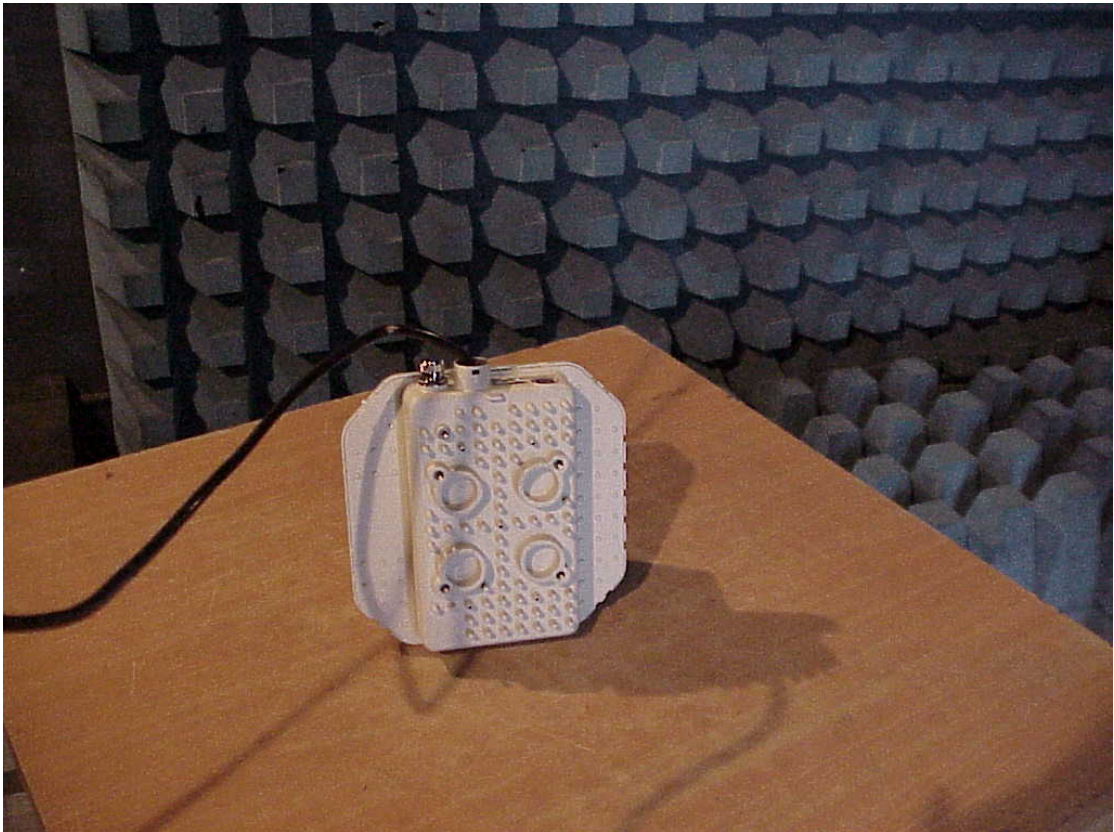
**Photo # 7.
Spurious emission test**

Test Report No.: 8612333921

Page 46 of 46 Pages

Title: Test on Broadband Wireless Access

**BreezeACCESS VL 5.8 System and Point to Point
BreezeNET B system**



**Photo # 8.
Spurious emission test**