

***Electromagnetic Emissions Test Report
and
Request for Class II Permissive Change
pursuant to
FCC Part 15, Subpart C Specifications for an
Intentional Radiator on the
Netgear
Model: FVM318***

FCC ID: PY3-FVM318

GRANTEE: Netgear
4500 Great America Parkway
Santa Clara, CA 95054

TEST SITE: Elliott Laboratories, Inc.
684 W. Maude Avenue
Sunnyvale, CA 94086

REPORT DATE: August 5, 2003

FINAL TEST DATE: August 4, 2003



AUTHORIZED SIGNATORY: _____

Mark Briggs
Director of Engineering



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SCOPE

An electromagnetic emissions test has been performed on the Netgear model FVM318 pursuant to Subpart C of Part 15 of FCC Rules for intentional radiators. Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in ANSI C63.4-1992 as outlined in Elliott Laboratories test procedures.

The intentional radiator above has been tested in a simulated typical installation to demonstrate compliance with the relevant FCC performance and procedural standards.

Final system data was gathered in a mode that tended to maximize emissions by varying orientation of EUT, orientation of power and I/O cabling, antenna search height, and antenna polarization.

Every practical effort was made to perform an impartial test using appropriate test equipment of known calibration. All pertinent factors have been applied to reach the determination of compliance.

The test results recorded herein are based on a single type test of the Netgear model FVM318 and therefore apply only to the tested sample. The sample was selected and prepared by Mark Merrillof Netgear

OBJECTIVE

The primary objective of the manufacturer is compliance with Subpart C of Part 15 of FCC Rules for the radiated and conducted emissions of intentional radiators. Certification of these devices is required as a prerequisite to marketing as defined in Part 2 the FCC Rules.

Certification is a procedure where the manufacturer or a contracted laboratory makes measurements and submits the test data and technical information to the FCC. The FCC issues a grant of equipment authorization upon successful completion of their review of the submitted documents. Once the equipment authorization has been obtained, the label indicating compliance must be attached to all identical units subsequently manufactured.

STATEMENT OF COMPLIANCE

The tested sample of Netgear model FVM318 complied with the requirements of Subpart C of Part 15 of the FCC Rules for low power intentional radiators.

Maintenance of FCC compliance is the responsibility of the manufacturer. Any modification of the product which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

EMISSION TEST RESULTS

The following emissions tests were performed on the Netgear model FVM318. The actual test results are contained in an exhibit of this report.

LIMITS OF CONDUCTED INTERFERENCE VOLTAGE

No testing was performed. The proposed changes do not affect the AC conducted emissions measurements originally reported to the FCC for this device.

LIMITS OF ANTENNA CONDUCTED POWER

No testing was performed. The proposed changes do not affect the AC conducted emissions measurements originally reported to the FCC for this device.

LIMITS OF RADIATED INTERFERENCE FIELD STRENGTH

The EUT tested complied with the limits detailed in FCC Rules Part 15 Section 15.247 and 15.209 in the case of emissions falling within the frequency bands specified in Section 15.205.

The following measurement was extracted from the data recorded during the radiated electric field emissions scan and represents the highest amplitude emission relative to the specification limit. The actual test data and any correction factors are contained in an exhibit of this report.

Frequency MHz	Level dBuV/m	Pol v/h	FCC 15.247 / 15.209 Limit	Margin	Detector	Azimuth degrees	Height meters	Comments
2483.500	50.0	V	54.0	-4.0	Avg	-	-	Ch# 11 Band- edge

LIMITS OF POWER AND BANDWIDTH

No testing was performed. The proposed changes do not affect the measurements originally reported to the FCC for this device. The output power was verified prior to testing on each channel to ensure that it was at the level originally reported to the FCC.

MEASUREMENT UNCERTAINTIES

ISO Guide 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level and were calculated in accordance with NAMAS document NIS 81.

Measurement Type	Frequency Range (MHz)	Calculated Uncertainty (dB)
Conducted Emissions	0.15 to 30	± 2.4
Radiated Emissions	30 to 1000	± 3.6

EQUIPMENT UNDER TEST (EUT) DETAILS**GENERAL**

The Netgear model FVM318 is a 802.11b radio which is designed to provide wireless internet and networking access to multiple computers. Normally, the EUT would be placed on a tabletop during operation. The EUT was, therefore, treated as tabletop equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 120V, 60 Hz, 1.2 Amps.

The sample was received on August 4, 2003 and tested on August 4, 2003. The EUT consisted of the following component(s):

Manufacturer	Model	Description	Serial Number	FCC ID
Netgear	FVM318	DSL/Cable Networking wireless router	FVM8A2CAC000003	PY3-FVM318
Netgear	DV-151A-1	Power Supply	N/A	N/A

Antennas

Manufacturer	Model	Description	Gain (dBi)	Comments
SENAO	SAG-T1112	Omnidirectional triband Antenna	12	
SENAO	NAP-2405(N)	Ceiling Antenna	5	
SENAO	NAP-2418(N)	Patch Antenna	18	

ENCLOSURE

The EUT enclosure is primarily constructed of fabricated sheet metal. It measures approximately 25.3 cm wide by 18.1 cm deep by 3.5 cm high.

MODIFICATIONS

The EUT did not require modifications in order to comply with the emission specifications

SUPPORT EQUIPMENT

The following equipment was used as local support equipment for emissions testing:

Manufacturer	Model	Description	Serial Number	FCC ID
Hewlett Packard	Pavilion	Laptop	TW14227783	DoC
Hewlett Packard	HPF1781a	Power Supply	1413016	N/A

No remote support equipment was used during emissions testing.

EXTERNAL I/O CABLING

The I/O cabling configuration during emissions testing was as follows:

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
RF out	External Antenna	Coaxial	Shielded	1.5
DC input	AC outlet	Multiwire	Unshielded	1.8

Note: The Ethernet ports were not connected, as these are not required for normal function of the Radio portion.

TEST SOFTWARE

Transmitting at maximum output power in channels 1, 6, and 11.

PROPOSED MODIFICATION DETAILS**GENERAL**

This section details the modifications to the Netgear model FVM318 being proposed. All performance and construction deviations from the characteristics originally reported to the FCC are addressed

ANTENNAS

Netgear wish to add the following antennas to the system:

JOYMAX IW-144	Connection Method	2dBi Omnidirectional Antenna
ANTENNIQUES MCS-003A	Direct to rf connector	3dBi Omnidirectional Antenna
JOYMAX IW-152RS	Direct to rf connector	4dBi Omnidirectional Antenna
SENAO NAS-T0405(N)	Direct to rf connector	4dBi Omnidirectional Triband Stand Antenna
ANTENNIQUES MCS-004	Direct to rf connector	5dBi Omnidirectional Antenna
SENAO NAS-2405(N)	Direct to rf connector	5dBi Omnidirectional Stand Antenna
ANTENNIQUES MCS-004A	Direct to rf connector	7dBi Omnidirectional Antenna
SENAO SAG-T0909	1.5m cable	9dBi Omnidirectional triband Antenna
SENAO SAG-2409	1.5m cable	9dBi Omnidirectional Antenna
SENAO SAG-2412	1.5m cable	12dBi Omnidirectional Antenna
SENAO SAG-T1112	1.5m cable	12dBi Omnidirectional triband Antenna
SENAO NAP-2405(N)	Direct to rf connector	5dBi Ceiling Antenna
SENAO SAP-2412	1.5m cable	12dBi Patch Antenna
SENAO NAP-2418(N)	1.5m cable	18dBi Patch Antenna

All antenna use either a reverse gender SMA or a reverse gender N connector. Antennas provided with a male connector can connect directly to the radio. Those with a female connector have to be connected via a cable as noted in the table above. The shortest cable available is a 1.5m cable which has a loss of 1.4dB.

Radiated emissions was performed on the highest gain antenna of each type (Omnidirectional, Ceiling and Panel) at the maximum output power from the device. The shortest commercially-available cable (1.5m) was used with the antennas tested to ensure the signal levels to the antennas was at the maximum possible level.

All of the proposed configurations have an MPE distance of less than 20cm. The original application included the user's manual with appropriate wording for the minimum separation distance to be 20cm.

TEST SITE**GENERAL INFORMATION**

Final test measurements were taken on August 4, 2003 at the Elliott Laboratories Open Area Test Site #4 located at 684 West Maude Avenue, Sunnyvale, California. The test site contains separate areas for radiated and conducted emissions testing. Pursuant to section 2.948 of the Rules, construction, calibration, and equipment data has been filed with the Commission.

The FCC recommends that ambient noise at the test site be at least 6 dB below the allowable limits. Ambient levels are below this requirement with the exception of predictable local TV, radio, and mobile communications traffic. The test site contains separate areas for radiated and conducted emissions testing. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent FCC requirements.

CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions testing is performed in conformance with ANSI C63.4-1992. Measurements are made with the EUT connected to the public power network through a nominal standardized RF impedance, provided by a line impedance stabilization network, known as a LISN. A LISN is inserted in series with each current-carrying conductor in the EUT power cord.

RADIATED EMISSIONS CONSIDERATIONS

The FCC has determined that radiation measurements made in a shielded enclosure are not suitable for determining levels of radiated emissions. Radiated measurements are performed in an open field environment. The test site is maintained free of conductive objects within the CISPR defined elliptical area incorporated in ANSI C63.4 guidelines.

MEASUREMENT INSTRUMENTATION**RECEIVER SYSTEM**

An EMI receiver as specified in CISPR 16-1 is used for emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 2000 MHz. These receivers allow both ease of measurement and high accuracy to be achieved. The receivers have Peak, Average, and CISPR (Quasi-peak) detectors built into their design so no external adapters are necessary. The receiver automatically sets the required bandwidth for the CISPR detector used during measurements.

For measurements above the frequency range of the receivers, a spectrum analyzer is utilized because it provides visibility of the entire spectrum along with the precision and versatility required to support engineering analysis. Average measurements above 1000MHz are performed on the spectrum analyzer using the linear-average method with a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz.

INSTRUMENT CONTROL COMPUTER

The receivers utilize either a Rohde and Schwarz EZM Spectrum Monitor/Controller or contain an internal Spectrum Monitor/Controller to view and convert the receiver measurements to the field strength at an antenna or voltage developed at the LISN measurement port, which is then compared directly with the appropriate specification limit. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are printed in a graphic and/or tabular format, as appropriate. A personal computer is used to record all measurements made with the receivers.

The Spectrum Monitor provides a visual display of the signal being measured. In addition, the controller or a personal computer run automated data collection programs which control the receivers. This provides added accuracy since all site correction factors, such as cable loss and antenna factors are added automatically.

LINE IMPEDANCE STABILIZATION NETWORK (LISN)

Line conducted measurements utilize a fifty microhenry Line Impedance Stabilization Network as the monitoring point. The LISN used also contains a 250 uH CISPR adapter. This network provides for calibrated radio frequency noise measurements by the design of the internal low pass and high pass filters on the EUT and measurement ports, respectively.

POWER METER

A power meter and thermister mount are used for all direct output power measurements from transmitters as they provide a broadband indication of the power output.

FILTERS/ATTENUATORS

External filters and precision attenuators are often connected between the receiving antenna or LISN and the receiver. This eliminates saturation effects and non-linear operation due to high amplitude transient events.

ANTENNAS

A biconical antenna is used to cover the range from 30 MHz to 300 MHz and a log periodic antenna is utilized from 300 MHz to 1000 MHz. Narrowband tuned dipole antennas are used over the entire 30 to 1000 MHz range for precision measurements of field strength. Above 1000 MHz, a horn antenna is used. The antenna calibration factors are included in site factors, which are programmed into the test receivers.

ANTENNA MAST AND EQUIPMENT TURNTABLE

The antennas used to measure the radiated electric field strength are mounted on a non-conductive antenna mast equipped with a motor-drive to vary the antenna height.

ANSI C63.4 specifies that the test height above ground for table mounted devices shall be 80 centimeters. Floor mounted equipment shall be placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material from 3 to 12 mm if the device is normally used on a non-conductive floor. During radiated measurements, the EUT is positioned on a motorized turntable in conformance with this requirement.

INSTRUMENT CALIBRATION

All test equipment is regularly checked to ensure that performance is maintained in accordance with the manufacturer's specifications. All antennas are calibrated at regular intervals with respect to tuned half-wave dipoles. An exhibit of this report contains the list of test equipment used and calibration information.

TEST PROCEDURES**EUT AND CABLE PLACEMENT**

The FCC requires that interconnecting cables be connected to the available ports of the unit and that the placement of the unit and the attached cables simulate the worst case orientation that can be expected from a typical installation, so far as practicable. To this end, the position of the unit and associated cabling is varied within the guidelines of ANSI C63.4, and the worst case orientation is used for final measurements.

CONDUCTED EMISSIONS

Conducted emissions are measured at the plug end of the power cord supplied with the EUT. Excess power cord length is wrapped in a bundle between 30 and 40 centimeters in length near the center of the cord. Preliminary measurements are made to determine the highest amplitude emission relative to the specification limit for all the modes of operation. Placement of system components and varying of cable positions are performed in each mode. A final peak mode scan is then performed in the position and mode for which the highest emission was noted on all current carrying conductors of the power cord.

RADIATED EMISSIONS

Radiated emissions measurements are performed in two phases as well. A preliminary scan of emissions is conducted in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed from 30 MHz up to the frequency required by the regulation specified on page 1. One or more of these is with the antenna polarized vertically while the one or more of these are with the antenna polarized horizontally. During the preliminary scans, the EUT is rotated through 360°, the antenna height is varied and cable positions are varied to determine the highest emission relative to the limit.

A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

Final maximization is a phase in which the highest amplitude emissions identified in the spectral search are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. The azimuth which results in the highest emission is then maintained while varying the antenna height from one to four meters. The result is the identification of the highest amplitude for each of the highest peaks. Each recorded level is corrected in the receiver using appropriate factors for cables, connectors, antennas, and preamplifier gain. Emissions which have values close to the specification limit may also be measured with a tuned dipole antenna to determine compliance.

CONDUCTED EMISSIONS FROM ANTENNA PORT

Direct measurements are performed with the antenna port of the EUT connected to either the power meter or spectrum analyzer via a suitable attenuator and/or filter. These are used to ensure that the front end of the measurement instrument is not overloaded by the fundamental transmission.

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

The limits for conducted emissions are given in units of microvolts, and the limits for radiated emissions are given in units of microvolts per meter at a specified test distance. Data is measured in the logarithmic form of decibels relative to one microvolt, or dB microvolts (dBuV). For radiated emissions, the measured data is converted to the field strength at the antenna in dB microvolts per meter (dBuV/m). The results are then converted to the linear forms of uV and uV/m for comparison to published specifications.

For reference, converting the specification limits from linear to decibel form is accomplished by taking the base ten logarithm, then multiplying by 20. These limits in both linear and logarithmic form are as follows:

CONDUCTED EMISSIONS SPECIFICATION LIMITS, SECTION 15.207

Frequency Range (MHz)	Limit (uV)	Limit (dBuV)
0.450 to 30.000	250	48

RADIATED EMISSIONS SPECIFICATION LIMITS, SECTION 15.209

Frequency Range (MHz)	Limit (uV/m @ 3m)	Limit (dBuV/m @ 3m)
0.009-0.490	$2400/F_{\text{KHz}} @ 300\text{m}$	$67.6-20*\log_{10}(F_{\text{KHz}}) @ 300\text{m}$
0.490-1.705	$24000/F_{\text{KHz}} @ 30\text{m}$	$87.6-20*\log_{10}(F_{\text{KHz}}) @ 30\text{m}$
1.705 to 30	30 @ 30m	29.5 @ 30m
30 to 88	100	40
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

Receiver readings are compared directly to the conducted emissions specification limit (decibel form) as follows:

$$R_r - B = C$$

and

$$C - S = M$$

where:

R_r = Receiver Reading in dBuV

B = Broadband Correction Factor*

C = Corrected Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

* Broadband Level- Per ANSI C63.4, 13 dB may be subtracted from the quasi-peak level if it is determined that the emission is broadband in nature. If the signal level in the average mode is six dB or more below the signal level in the peak mode, the emission is classified as broadband.

SAMPLE CALCULATIONS - RADIATED EMISSIONS

Receiver readings are compared directly to the specification limit (decibel form). The receiver internally corrects for cable loss, preamplifier gain, and antenna factor. The calculations are in the reverse direction of the actual signal flow, thus cable loss is added and the amplifier gain is subtracted. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements. A distance factor, when used for electric field measurements, is calculated by using the following formula:

$$F_d = 20 * \text{LOG}_{10} (D_m/D_s)$$

where:

$$F_d = \text{Distance Factor in dB}$$

$$D_m = \text{Measurement Distance in meters}$$

$$D_s = \text{Specification Distance in meters}$$

Measurement Distance is the distance at which the measurements were taken and Specification Distance is the distance at which the specification limits are based. The antenna factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

The margin of a given emission peak relative to the limit is calculated as follows:

$$R_C = R_R + F_d$$

and

$$M = R_C - L_S$$

where:

$$R_R = \text{Receiver Reading in dBuV/m}$$

$$F_d = \text{Distance Factor in dB}$$

$$R_C = \text{Corrected Reading in dBuV/m}$$

$$L_S = \text{Specification Limit in dBuV/m}$$

$$M = \text{Margin in dB Relative to Spec}$$

EXHIBIT 1: Test Equipment Calibration Data

1 Page

Radiated Emissions, 1 - 25 GHz, 04-Aug-03**Engineer: jmartinez**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal interval</u>	<u>Last Calibrated</u>	<u>Cal Due</u>
EMCO	Horn antenna, D. Ridge 1-18GHz (SA40 system antenna)	3115	1142	12	3/27/2003	3/27/2004
Hewlett Packard	Spectrum Analyzer 30Hz - 40 GHz	8564E (84125C)	1148	12	4/2/2003	4/2/2004

Power Measurement, 04-Aug-03**Engineer: jmartinez**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal interval</u>	<u>Last Calibrated</u>	<u>Cal Due</u>
Rohde & Schwarz	Power Meter, Single Channel	NRVS	1290	12	4/8/2003	4/8/2004
Rohde & Schwarz	Power Sensor 100uW - 10 Watts	NRV-Z53	1236	12	8/15/2002	8/15/2003

EXHIBIT 2: Test Data Log Sheets

ELECTROMAGNETIC EMISSIONS

TEST LOG SHEETS

AND

MEASUREMENT DATA

T52159 21 Pages



EMC Test Data

Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
		Account Manager:	Christine Vu
Contact:	Patrick Rada		
Emissions Spec:	15.247 (Class II Permissive)	Class:	Radio
Immunity Spec:		Environment:	

EMC Test Data

For The

Netgear

Model

FVM318

Date of Last Test: 8/5/2003



EMC Test Data

Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
		Account Manager:	Christine Vu
Contact:	Patrick Rada		
Emissions Spec:	15.247 (Class II Permissive)	Class:	Radio
Immunity Spec:	Enter immunity spec on cover	Environment:	

EUT INFORMATION

General Description

The EUT is a 802.11b radio which is designed to provide wireless internet and networking access to multiple computers. Normally, the EUT would be placed on a table top during operation. The EUT was, therefore, treated as table-top equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 120V, 60 Hz, 1.2 Amps.

Equipment Under Test

Manufacturer	Model	Description	Serial Number	FCC ID
Netgear	FVM318	DSL/Cable Networking wireless router	FVM8A2CAC000003	PY3-FVM318
Netgear	DV-151A-1	Power Supply	N/A	N/A

Antenna

Manufacturer	Model	Description	Gain (dBi)	Comments
SENAO	SAG-T1112	Omnidirectional triband Antenna	12	
SENAO	NAP-2405(N)	Ceiling Antenna	5	
SENAO	NAP-2418(N)	Patch Antenna	18	

EUT Enclosure

The EUT enclosure is primarily constructed of fabricated sheet metal. It measures approximately 25.3 cm wide by 18.1 cm deep by 3.5 cm high.

Modification History

Mod. #	Test	Date	Modification
1			
2			
3			

Modifications applied are assumed to be used on subsequent tests unless otherwise stated as a further modification.



EMC Test Data

Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
		Account Manager:	Christine Vu
Contact:	Patrick Rada		
Emissions Spec:	15.247 (Class II Permissive)	Class:	Radio
Immunity Spec:	Enter immunity spec on cover	Environment:	

Test Configuration #1

Local Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
Hewlett Packard	Pavilion	Laptop	TW14227783	DoC
Hewlett Packard	HPF1781a	Power Supply	1413016	N/A

Remote Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
None				

Interface Cabling and Ports

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
RF out	External Antenna	Coaxial	Shielded	1.5
DC input	AC outlet	Multiwire	Unshielded	1.8

Note: The Ethernet ports were not connected as these are not required for normal function of the Radio portion.

EUT Operation During Emissions

Transmitting at maximum output power in channels 1, 6, and 11.

EMC Test Data

Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
Contact:	Patrick Rada	Account Manager:	Christine Vu
Spec:	15.247 (Class II Permissive)	Class:	N/A

Radiated Emissions-18 dBi Patch Antenna (M/N: SENAO NAP-2418(N))

Test Specifics

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 8/4/2003 Config. Used: 1
Test Engineer: jmartinez Config Change: None
Test Location: SVOATS #4 EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

When measuring the conducted emissions from the EUT's antenna port, the antenna port of the EUT was connected to the spectrum analyzer or power meter via a suitable attenuator to prevent overloading the measurement system. All measurements are corrected to allow for the external attenuators used.

Ambient Conditions: Temperature: 25 °C
 Rel. Humidity: 46 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1a	RE, 30 - 25,000 MHz - Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	-5.8dB @ 2390 MHz
1b	RE, 30 - 25,000 MHz - Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	-15.2dB @ 12184.01 MHz
1c	RE, 30 - 25,000 MHz - Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	-4.2dB @ 2483.5 MHz
2	Output Power	15.247(b)	Pass	10.9dBm (0.012W)

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

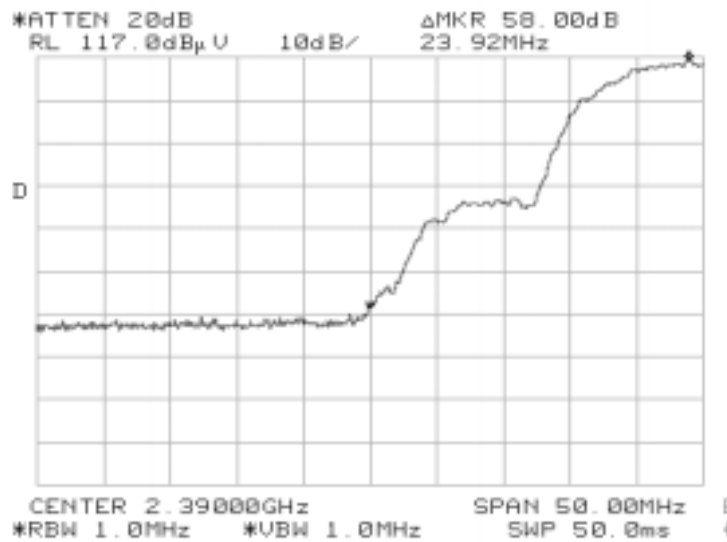
No deviations were made from the requirements of the standard.

EMC Test Data

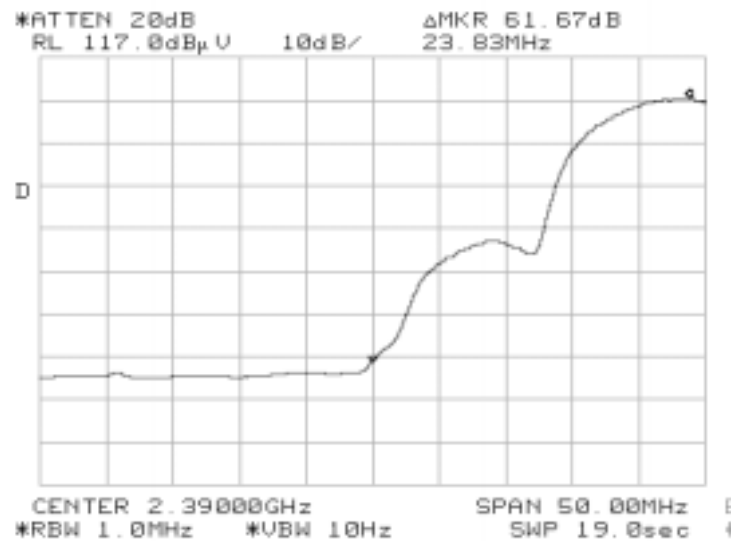
Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
Contact:	Patrick Rada	Account Manager:	Christine Vu
Spec:	15.247 (Class II Permissive)	Class:	N/A

Run #1a: Radiated Spurious Emissions, 30 - 25,000 MHz. Low Channel @ 2412 MHz

Peak Bandedge



Average Bandedge



EMC Test Data

Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
Contact:	Patrick Rada	Account Manager:	Christine Vu
Spec:	15.247 (Class II Permissive)	Class:	N/A

SENAO NAP-2418(N) Antenna

	H	V
Fundamental emission level @ 3m in 100kHz RBW:	99.6	117.9
Limit for emissions outside of restricted bands:	97.9 dBμV/m	

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2413.311	117.9	V	-	-	Pk	-	-	Fundamental Peak Measurement
2413.253	109.9	V	-	-	Avg	-	-	Fundamental Average Measurement
2413.176	99.6	H	-	-	Pk	-	-	Fundamental Peak Measurement
2413.300	92.1	H	-	-	Avg	-	-	Fundamental Average Measurement
2390.000	48.2	V	54.0	-5.8	Avg	-	-	Ch# 1 Average Bandedge
2390.000	59.9	V	74.0	-14.1	Pk	-	-	Ch# 1 Peak Bandedge
12061.90	38.9	H	54.0	-15.1	Avg	4	1.3	Restricted Harmonic, Note 2
12061.41	38.8	V	54.0	-15.2	Avg	85	0.0	Restricted Harmonic, Note 2
7237.957	35.1	V	54.0	-18.9	Avg	25	1.3	Restricted Harmonic, Note 2
7237.877	35.0	H	54.0	-19.0	Avg	352	1.3	Restricted Harmonic, Note 2
4824.851	33.4	V	54.0	-20.6	Avg	352	1.3	Restricted Harmonic, Note 2
4824.512	33.1	H	54.0	-20.9	Avg	25	1.4	Restricted Harmonic, Note 2
12061.66	51.4	V	74.0	-22.6	Pk	85	0.0	Restricted Harmonic, Note 2
12061.71	51.2	H	74.0	-22.8	Pk	4	1.3	Restricted Harmonic, Note 2
2390.000	30.4	H	54.0	-23.6	Avg	-	-	Ch# 1 Average Bandedge
7237.155	47.4	H	74.0	-26.6	Pk	352	1.3	Restricted Harmonic, Note 2
7236.973	47.2	V	74.0	-26.8	Pk	25	1.3	Restricted Harmonic, Note 2
4824.757	45.9	H	74.0	-28.1	Pk	25	1.4	Restricted Harmonic, Note 2
4824.893	45.5	V	74.0	-28.5	Pk	352	1.3	Restricted Harmonic, Note 2
2390.000	41.6	H	74.0	-32.4	Pk	-	-	Ch# 1 Peak Bandedge

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20 dB below the level of the fundamental.

Note 2: No other emissions detected after the 5th harmonic 20-dB of the limit

EMC Test Data

Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
Contact:	Patrick Rada	Account Manager:	Christine Vu
Spec:	15.247 (Class II Permissive)	Class:	N/A

Run #1b: Radiated Spurious Emissions, 30 - 25,000 MHz. Center Channel @ 2437 MHz

	H	V
Fundamental emission level @ 3m in 100kHz RBW:	98.9	117.5
Limit for emissions outside of restricted bands:	97.5 dBμV/m	

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
12184.00	38.8	V	54.0	-15.2	Avg	120	1.2	Restricted Harmonic, Note 2
12184.17	38.7	H	54.0	-15.3	Avg	98	1.0	Restricted Harmonic, Note 2
7311.124	35.0	H	54.0	-19.0	Avg	3	1.1	Restricted Harmonic, Note 2
7311.321	34.8	V	54.0	-19.2	Avg	45	1.0	Restricted Harmonic, Note 2
4873.139	33.2	V	54.0	-20.8	Avg	245	1.1	Restricted Harmonic, Note 2
4873.548	33.1	H	54.0	-20.9	Avg	125	1.1	Restricted Harmonic, Note 2
12184.24	52.1	V	74.0	-21.9	Pk	120	1.2	Restricted Harmonic, Note 2
12184.41	51.1	H	74.0	-22.9	Pk	98	1.0	Restricted Harmonic, Note 2
7311.359	47.8	H	74.0	-26.2	Pk	3	1.1	Restricted Harmonic, Note 2
7311.382	47.2	V	74.0	-26.8	Pk	45	1.0	Restricted Harmonic, Note 2
4874.509	46.1	V	74.0	-27.9	Pk	245	1.1	Restricted Harmonic, Note 2
4873.724	45.9	H	74.0	-28.1	Pk	125	1.1	Restricted Harmonic, Note 2

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental.

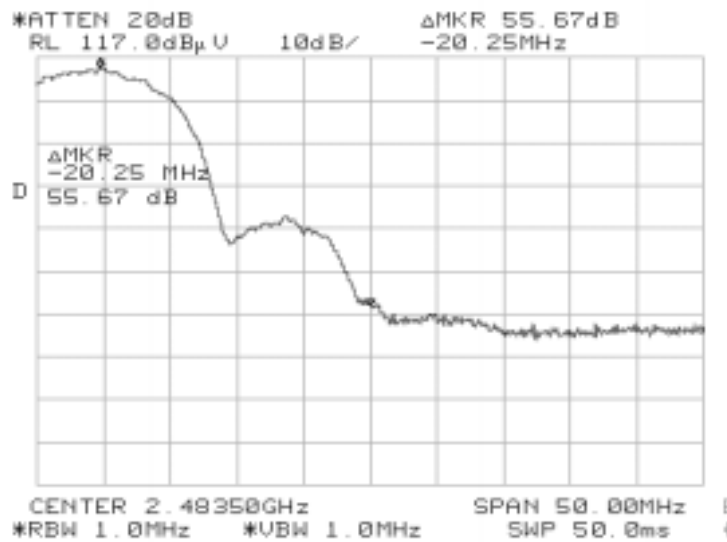
Note 2: No other emissions detected after the 5th harmonic 20-dB of the limit

EMC Test Data

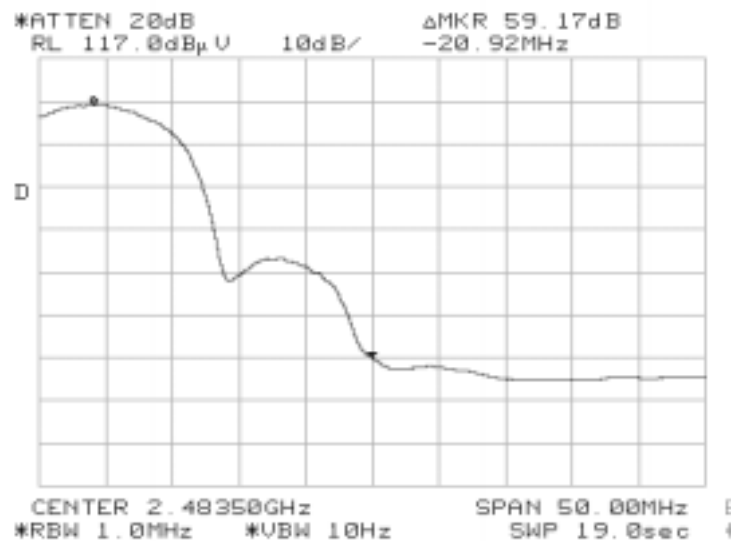
Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
Contact:	Patrick Rada	Account Manager:	Christine Vu
Spec:	15.247 (Class II Permissive)	Class:	N/A

Run #1c: Radiated Spurious Emissions, 30 - 25,000 MHz. High Channel @ 2462 MHz

Peak Bandedge



Average Bandedge



EMC Test Data

Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
Contact:	Patrick Rada	Account Manager:	Christine Vu
Spec:	15.247 (Class II Permissive)	Class:	N/A

	H	V
Fundamental emission level @ 3m in 100kHz RBW:	96.8	117
Limit for emissions outside of restricted bands:	97 dBμV/m	

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2463.262	117.0	V	-	-	Pk	-	-	Fundamental Peak Measurement
2463.319	109.0	V	-	-	Avg	-	-	Fundamental Average Measurement
2463.262	96.8	H	-	-	Pk	-	-	Fundamental Peak Measurement
2462.992	88.9	H	-	-	Avg	-	-	Fundamental Average Measurement
2483.500	49.8	V	54.0	-4.2	Avg	-	-	Ch# 11 Average Bandedge
2483.500	61.3	V	74.0	-12.7	Pk	-	-	Ch# 11 Peak Bandedge
12310.69	38.9	V	54.0	-15.1	Avg	25	1.3	Restricted Harmonic, Note 2
12311.71	38.9	H	54.0	-15.1	Avg	214	1.3	Restricted Harmonic, Note 2
7386.968	35.1	V	54.0	-18.9	Avg	360	1.3	Restricted Harmonic, Note 2
7387.254	35.0	H	54.0	-19.0	Avg	347	1.3	Restricted Harmonic, Note 2
4924.836	33.5	V	54.0	-20.5	Avg	245	1.3	Restricted Harmonic, Note 2
4925.882	33.4	H	54.0	-20.6	Avg	129	1.3	Restricted Harmonic, Note 2
12311.96	51.7	H	74.0	-22.3	Pk	214	1.3	Restricted Harmonic, Note 2
12310.94	50.9	V	74.0	-23.1	Pk	25	1.3	Restricted Harmonic, Note 2
2483.500	29.7	H	54.0	-24.3	Avg	-	-	Ch# 11 Average Bandedge
7386.822	47.8	V	74.0	-26.2	Pk	360	1.3	Restricted Harmonic, Note 2
7386.967	47.6	H	74.0	-26.4	Pk	347	1.3	Restricted Harmonic, Note 2
4925.075	46.0	V	74.0	-28.0	Pk	245	1.3	Restricted Harmonic, Note 2
4925.942	45.7	H	74.0	-28.3	Pk	129	1.3	Restricted Harmonic, Note 2
2483.500	41.1	H	74.0	-32.9	Pk	-	-	Ch# 11 Peak Bandedge

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental.

Note 2: No other emissions detected after the 5th harmonic 20-dB of the limit

Run #2: Output Power

Channel	Frequency (MHz)	Peak Output Power (dBm)	Comments
Low	2412	10.8	
Mid	2437	10.83	
High	2462	10.9	

EMC Test Data

Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
Contact:	Patrick Rada	Account Manager:	Christine Vu
Spec:	15.247 (Class II Permissive)	Class:	N/A

Radiated Emissions-5 dBi Ceiling Antenna (M/N: SENAO NAP-2418(N))

Test Specifics

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 8/4/2003

Config. Used: 1

Test Engineer: jmartinez

Config Change: None

Test Location: SVOATS #4

EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

When measuring the conducted emissions from the EUT's antenna port, the antenna port of the EUT was connected to the spectrum analyzer or power meter via a suitable attenuator to prevent overloading the measurement system. All measurements are corrected to allow for the external attenuators used.

Ambient Conditions:
Temperature: 25 °C
Rel. Humidity: 46 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1a	RE, 30 - 25,000 MHz - Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	-10.5dB @ 2390 MHz
1b	RE, 30 - 25,000 MHz - Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	-17.2dB @ 12184.12 MHz
1c	RE, 30 - 25,000 MHz - Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	-9.1dB @ 2483.5 MHz
2	Output Power	15.247(b)	Pass	10.9dBm

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

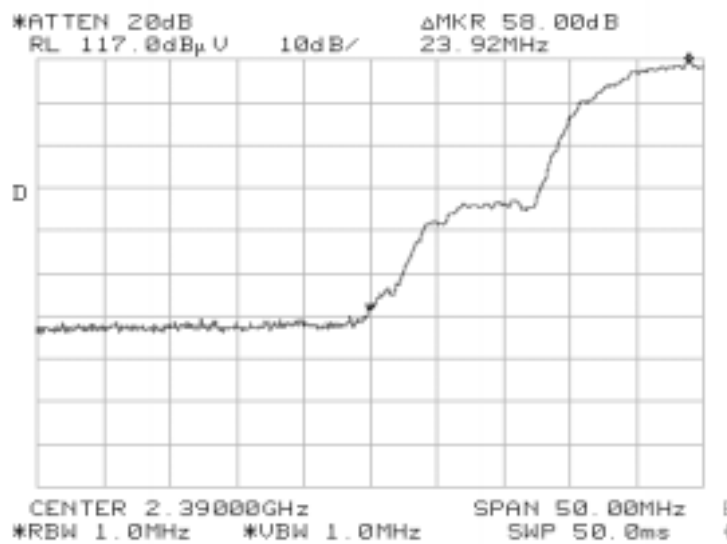
No deviations were made from the requirements of the standard.

EMC Test Data

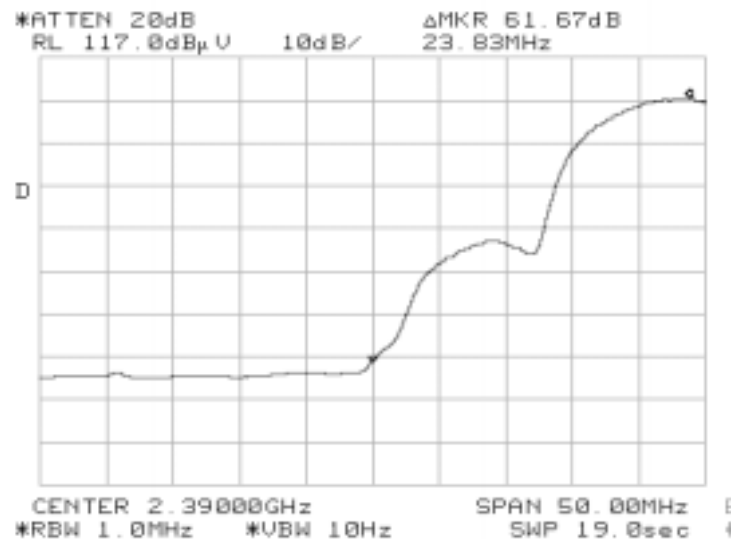
Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
Contact:	Patrick Rada	Account Manager:	Christine Vu
Spec:	15.247 (Class II Permissive)	Class:	N/A

Run #1a: Radiated Spurious Emissions, 30 - 25,000 MHz. Low Channel @ 2412 MHz

Peak Bandedge



Average Bandedge



EMC Test Data

Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
Contact:	Patrick Rada	Account Manager:	Christine Vu
Spec:	15.247 (Class II Permissive)	Class:	N/A

NAP-2405 Antenna

	H	V
Fundamental emission level @ 3m in 100kHz RBW:	105.9	112.7
Limit for emissions outside of restricted bands:	92.7 dB μ V/m	

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2413.191	105.9	H	-	-	Pk	-	-	Fundamental Peak Measurement
2413.183	98.2	H	-	-	Avg	-	-	Fundamental Average Measurement
2413.234	112.7	V	-	-	Pk	-	-	Fundamental Peak Measurement
2413.341	105.2	V	-	-	Avg	-	-	Fundamental Average Measurement
2390.000	43.5	V	54.0	-10.5	Avg	-	-	Ch# 1 Average Bandedge
12061.80	38.8	V	54.0	-15.2	Avg	0	1.2	Restricted Harmonic, Note 2
12061.45	38.7	H	54.0	-15.3	Avg	0	1.0	Restricted Harmonic, Note 2
2390.000	36.5	H	54.0	-17.5	Avg	-	-	Ch# 1 Average Bandedge
7237.930	35.0	H	54.0	-19.0	Avg	0	1.1	Restricted Harmonic, Note 2
7237.276	34.8	V	54.0	-19.2	Avg	0	1.0	Restricted Harmonic, Note 2
2390.000	54.7	V	74.0	-19.3	Pk	-	-	Ch# 1 Peak Bandedge
4825.665	33.2	V	54.0	-20.8	Avg	0	1.1	Restricted Harmonic, Note 2
4825.432	33.1	H	54.0	-20.9	Avg	0	1.1	Restricted Harmonic, Note 2
12062.04	52.1	V	74.0	-21.9	Pk	0	1.2	Restricted Harmonic, Note 2
12061.64	51.1	H	74.0	-22.9	Pk	0	1.0	Restricted Harmonic, Note 2
2390.000	47.9	H	74.0	-26.1	Pk	-	-	Ch# 1 Peak Bandedge
7238.180	47.8	H	74.0	-26.2	Pk	0	1.1	Restricted Harmonic, Note 2
7237.487	47.2	V	74.0	-26.8	Pk	0	1.0	Restricted Harmonic, Note 2
4825.865	46.1	V	74.0	-27.9	Pk	0	1.1	Restricted Harmonic, Note 2
4824.877	45.9	H	74.0	-28.1	Pk	0	1.1	Restricted Harmonic, Note 2

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20 dB below the level of the fundamental.

Note 2: No other emissions detected after the 5th harmonic 20-dB of the limit

EMC Test Data

Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
Contact:	Patrick Rada	Account Manager:	Christine Vu
Spec:	15.247 (Class II Permissive)	Class:	N/A

Run #1b: Radiated Spurious Emissions, 30 - 25,000 MHz. Center Channel @ 2437 MHz

	H	V
Fundamental emission level @ 3m in 100kHz RBW:	103	112
Limit for emissions outside of restricted bands:	92 dB μ V/m	

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
12184.00	36.8	H	54.0	-17.2	Avg	242	1.0	Restricted Harmonic, Note 2
12184.17	36.8	V	54.0	-17.2	Avg	32	1.0	Restricted Harmonic, Note 2
7311.321	35.7	H	54.0	-18.3	Avg	45	1.0	Restricted Harmonic, Note 2
7311.124	35.6	V	54.0	-18.4	Avg	125	1.4	Restricted Harmonic, Note 2
4873.139	33.4	H	54.0	-20.6	Avg	323	1.0	Restricted Harmonic, Note 2
4873.548	33.2	V	54.0	-20.8	Avg	212	1.2	Restricted Harmonic, Note 2
12184.24	49.1	H	74.0	-24.9	Pk	242	1.0	Restricted Harmonic, Note 2
12184.41	48.8	V	74.0	-25.2	Pk	32	1.0	Restricted Harmonic, Note 2
7311.382	48.3	H	74.0	-25.7	Pk	45	1.0	Restricted Harmonic, Note 2
7311.359	48.3	V	74.0	-25.7	Pk	125	1.4	Restricted Harmonic, Note 2
4874.509	46.1	H	74.0	-27.9	Pk	323	1.0	Restricted Harmonic, Note 2
4873.724	45.5	V	74.0	-28.5	Pk	212	1.2	Restricted Harmonic, Note 2

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental.

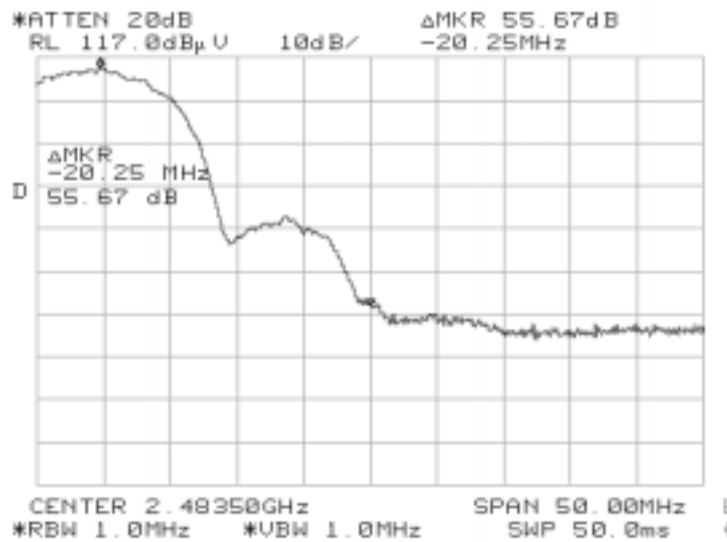
Note 2: No other emissions detected after the 5th harmonic 20-dB of the limit

EMC Test Data

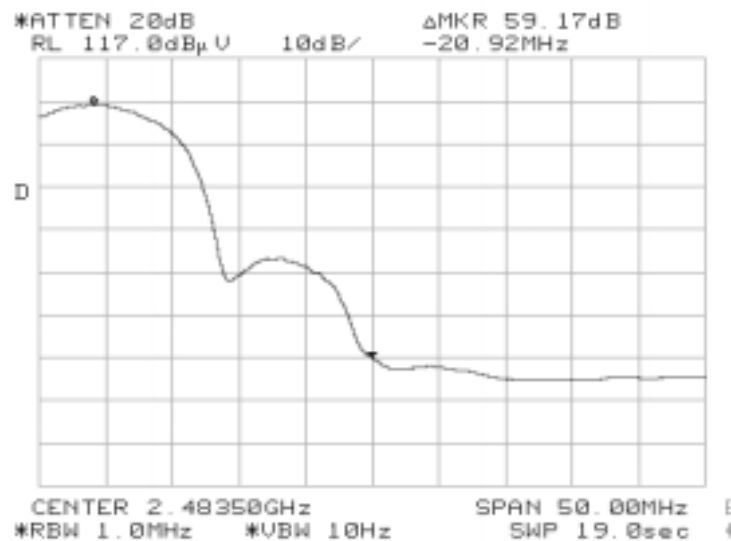
Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
Contact:	Patrick Rada	Account Manager:	Christine Vu
Spec:	15.247 (Class II Permissive)	Class:	N/A

Run #1c: Radiated Spurious Emissions, 30 - 25,000 MHz. High Channel @ 2462 MHz

Peak Bandedge



Average Bandedge



EMC Test Data

Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
Contact:	Patrick Rada	Account Manager:	Christine Vu
Spec:	15.247 (Class II Permissive)	Class:	N/A

	H	V
Fundamental emission level @ 3m in 100kHz RBW:	104.5	112
Limit for emissions outside of restricted bands:	92 dB μ V/m	

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2463.238	112.0	V	-	-	Pk	-	-	Fundamental Peak Measurement
2463.226	104.1	V	-	-	Avg	-	-	Fundamental Average Measurement
2463.613	104.5	H	-	-	Pk	-	-	Fundamental Peak Measurement
2463.369	96.8	H	-	-	Avg	-	-	Fundamental Average Measurement
2483.500	44.9	V	54.0	-9.1	Avg	-	-	Ch# 11 Average Bandedge
2483.500	37.6	H	54.0	-16.4	Avg	-	-	Ch# 11 Average Bandedge
12310.69	37.1	H	54.0	-16.9	Avg	32	1.0	Restricted Harmonic, Note 2
12311.71	36.6	V	54.0	-17.4	Avg	0	1.0	Restricted Harmonic, Note 2
2483.500	56.3	V	74.0	-17.7	Pk	-	-	Ch# 11 Peak Bandedge
7386.968	36.0	H	54.0	-18.0	Avg	358	1.0	Restricted Harmonic, Note 2
7387.254	35.3	V	54.0	-18.7	Avg	0	0.0	Restricted Harmonic, Note 2
4924.836	33.7	H	54.0	-20.3	Avg	0	1.0	Restricted Harmonic, Note 2
4925.882	33.0	V	54.0	-21.0	Avg	0	1.0	Restricted Harmonic, Note 2
12310.94	50.2	H	74.0	-23.8	Pk	32	1.0	Restricted Harmonic, Note 2
12311.96	49.3	V	74.0	-24.7	Pk	0	1.0	Restricted Harmonic, Note 2
2483.500	48.8	H	74.0	-25.2	Pk	-	-	Ch# 11 Peak Bandedge
7386.822	48.4	H	74.0	-25.6	Pk	358	1.0	Restricted Harmonic, Note 2
7386.967	47.9	V	74.0	-26.1	Pk	0	1.0	Restricted Harmonic, Note 2
4925.075	46.4	H	74.0	-27.6	Pk	0	1.0	Restricted Harmonic, Note 2
4925.942	45.4	V	74.0	-28.6	Pk	0	0.0	Restricted Harmonic, Note 2

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental.

Note 2: No other emissions detected after the 5th harmonic 20-dB of the limit

Run #2: Output Power

Channel	Frequency (MHz)	Peak Output Power (dBm)	Comments
Low	2412	10.8	
Mid	2437	10.83	
High	2462	10.9	

EMC Test Data

Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
Contact:	Patrick Rada	Account Manager:	Christine Vu
Spec:	15.247 (Class II Permissive)	Class:	N/A

Radiated Emissions-12dBi Omnidirectional triband Antenna (M/N: SENA0 SAG-T1112)

Test Specifics

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 8/4/2003

Config. Used: 1

Test Engineer: jmartinez

Config Change: None

Test Location: SVOATS #4

EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

When measuring the conducted emissions from the EUT's antenna port, the antenna port of the EUT was connected to the spectrum analyzer or power meter via a suitable attenuator to prevent overloading the measurement system. All measurements are corrected to allow for the external attenuators used.

Ambient Conditions: Temperature: 25 °C
Rel. Humidity: 46 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1a	RE, 30 - 25,000 MHz - Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	-7.2dB @ 2390 MHz
1b	RE, 30 - 25,000 MHz - Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	-15.7dB @ 12184.21 MHz
1c	RE, 30 - 25,000 MHz - Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	-4.0dB @ 2483.5 MHz
2	Output Power	15.247(b)	Pass	10.9dBm

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

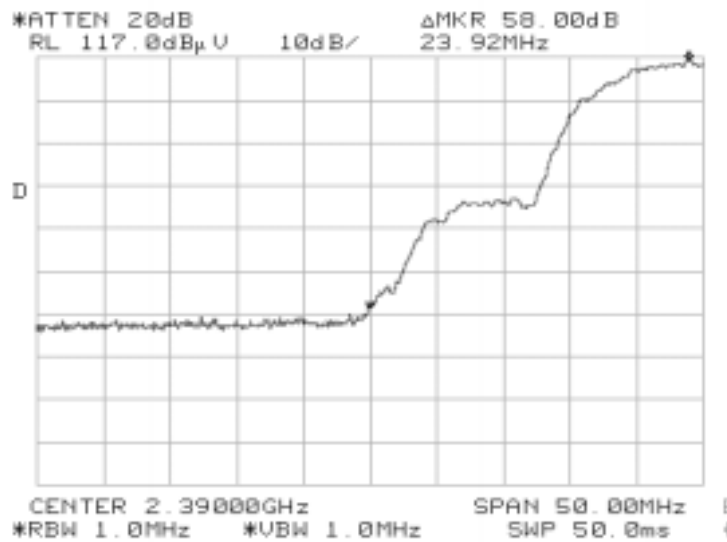
No deviations were made from the requirements of the standard.

EMC Test Data

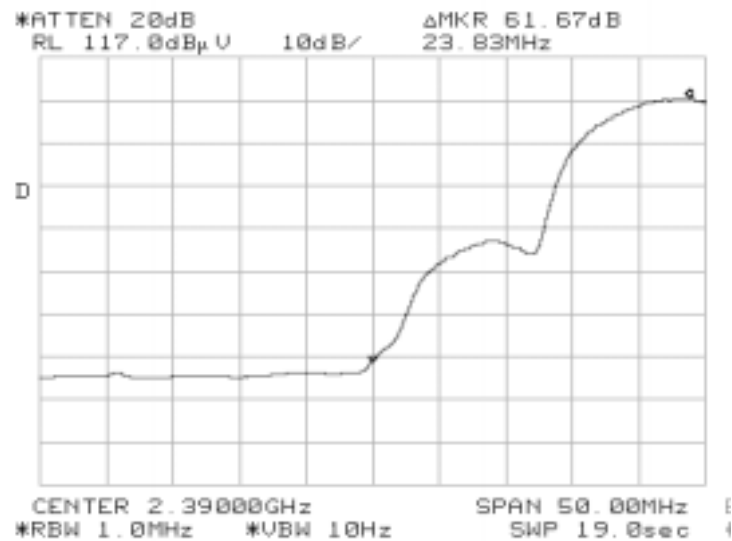
Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
Contact:	Patrick Rada	Account Manager:	Christine Vu
Spec:	15.247 (Class II Permissive)	Class:	N/A

Run #1a: Radiated Spurious Emissions, 30 - 25,000 MHz. Low Channel @ 2412 MHz

Peak Bandedge



Average Bandedge



EMC Test Data

Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
Contact:	Patrick Rada	Account Manager:	Christine Vu
Spec:	15.247 (Class II Permissive)	Class:	N/A

9 dBi Antenna (M/N: SAG-T1112)

	H	V
Fundamental emission level @ 3m in 100kHz RBW:	99.5	116.5
Limit for emissions outside of restricted bands:	96.5 dB μ V/m	

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2413.613	116.5	V	-	-	Pk	-	-	
2413.363	108.5	V	-	-	Avg	-	-	
2413.346	99.5	H	-	-	Pk	-	-	
2413.172	92.3	H	-	-	Avg	-	-	
2390.000	46.8	V	54.0	-7.2	Avg	-	-	Ch# 1 Average Bandedge
12059.89	38.9	H	54.0	-15.1	Avg	0	1.0	
12060.36	38.9	V	54.0	-15.1	Avg	12	1.2	
2390.000	58.5	V	74.0	-15.5	Pk	-	-	Ch# 1 Peak Bandedge
7236.320	35.3	V	54.0	-18.7	Avg	306	1.2	
7235.709	35.1	H	54.0	-18.9	Avg	40	1.0	
4823.624	33.8	H	54.0	-20.2	Avg	103	1.0	
4824.652	33.3	V	54.0	-20.7	Avg	24	1.2	
12060.53	51.5	V	74.0	-22.5	Pk	12	1.2	
12060.50	51.3	H	74.0	-22.7	Pk	0	1.0	
2390.000	30.6	H	54.0	-23.4	Avg	-	-	Ch# 1 Average Bandedge
7235.959	47.7	H	74.0	-26.3	Pk	40	1.0	
7236.427	47.5	V	74.0	-26.5	Pk	306	1.2	
4824.694	46.5	V	74.0	-27.5	Pk	24	1.2	
4823.937	46.1	H	74.0	-27.9	Pk	103	1.0	
2390.000	41.5	H	74.0	-32.5	Pk	-	-	Ch# 1 Peak Bandedge

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20 dB below the level of the fundamental.

EMC Test Data

Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
Contact:	Patrick Rada	Account Manager:	Christine Vu
Spec:	15.247 (Class II Permissive)	Class:	N/A

Run #1b: Radiated Spurious Emissions, 30 - 25,000 MHz. Center Channel @ 2437 MHz

	H	V
Fundamental emission level @ 3m in 100kHz RBW:	98.7	115.89
Limit for emissions outside of restricted bands:	95.89 dBμV/m	

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
12184.00	38.3	V	54.0	-15.7	Avg	336	1.2	
12184.17	38.3	H	54.0	-15.7	Avg	36	1.0	
7311.321	35.5	V	54.0	-18.5	Avg	24	1.1	
7311.124	35.5	H	54.0	-18.5	Avg	360	1.2	
4873.139	33.5	V	54.0	-20.5	Avg	360	1.0	
4873.548	33.2	H	54.0	-20.8	Avg	27	1.1	
12184.24	51.0	V	74.0	-23.0	Pk	336	1.2	
12184.41	50.8	H	74.0	-23.2	Pk	36	1.0	
7311.382	48.4	V	74.0	-25.6	Pk	24	1.1	
7311.359	48.3	H	74.0	-25.7	Pk	360	1.2	
4873.724	46.1	H	74.0	-27.9	Pk	27	1.1	
4874.509	45.5	V	74.0	-28.5	Pk	360	1.0	

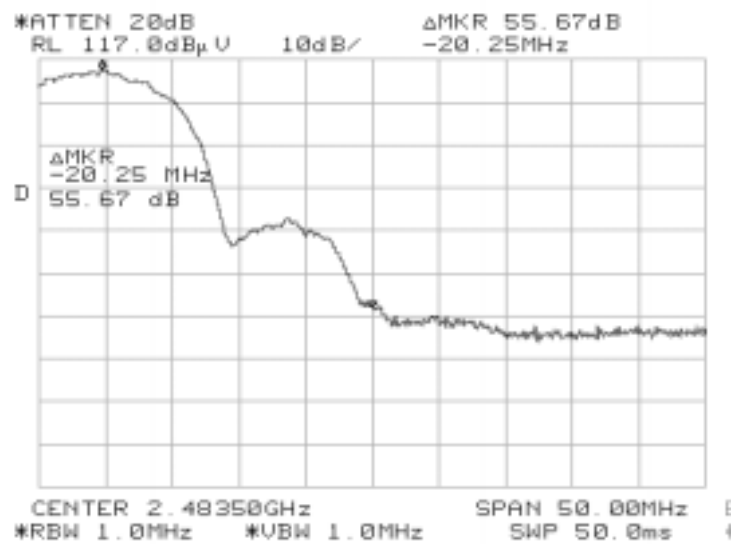
Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental.

EMC Test Data

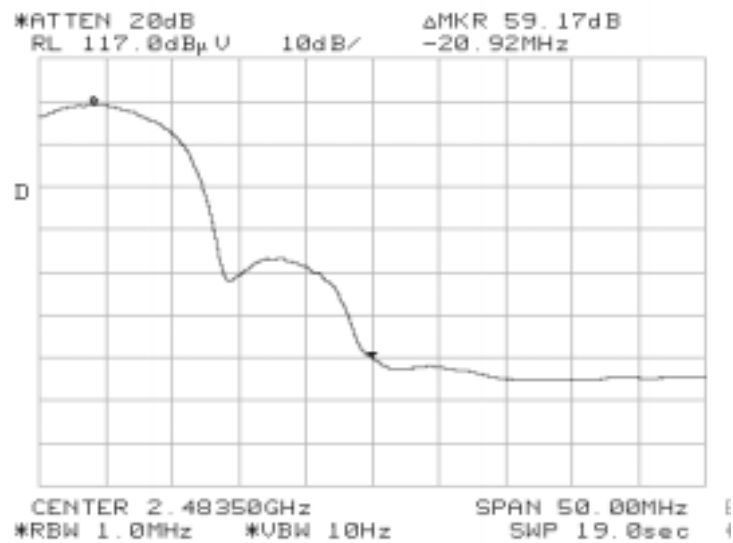
Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
Contact:	Patrick Rada	Account Manager:	Christine Vu
Spec:	15.247 (Class II Permissive)	Class:	N/A

Run #1c: Radiated Spurious Emissions, 30 - 25,000 MHz. High Channel @ 2462 MHz

Peak Bandedge



Average Bandedge



EMC Test Data

Client:	Netgear	Job Number:	J51783
Model:	FVM318	T-Log Number:	T52159
Contact:	Patrick Rada	Account Manager:	Christine Vu
Spec:	15.247 (Class II Permissive)	Class:	N/A

	H	V
Fundamental emission level @ 3m in 100kHz RBW:	99.2	116.8
Limit for emissions outside of restricted bands:	96.8 dBµV/m	

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2463.351	116.8	V	-	-	Pk	-	-	
2463.215	109.2	V	-	-	Avg	-	-	
2461.979	99.2	H	-	-	Pk	-	-	
2461.948	93.2	H	-	-	Avg	-	-	
2483.500	50.0	V	54.0	-4.0	Avg	-	-	Ch# 11 Average Bandedge
2483.500	61.1	V	74.0	-12.9	Pk	-	-	Ch# 11 Peak Bandedge
12309.28	36.8	H	54.0	-17.2	Avg	348	1.0	
12309.09	36.8	V	54.0	-17.2	Avg	24	1.0	
7386.191	35.7	H	54.0	-18.3	Avg	13	1.0	
7385.783	35.6	V	54.0	-18.4	Avg	312	1.4	
2483.500	34.0	H	54.0	-20.0	Avg	-	-	Ch# 11 Average Bandedge
4923.674	33.4	H	54.0	-20.6	Avg	331	1.0	
4923.184	33.2	V	54.0	-20.8	Avg	10	1.2	
12309.42	49.1	H	74.0	-24.9	Pk	348	1.0	
12309.34	48.8	V	74.0	-25.2	Pk	24	1.0	
7386.259	48.3	H	74.0	-25.7	Pk	13	1.0	
7385.771	48.3	V	74.0	-25.7	Pk	312	1.4	
4923.231	46.1	H	74.0	-27.9	Pk	331	1.0	
4923.317	45.5	V	74.0	-28.5	Pk	10	1.2	
2483.500	43.5	H	74.0	-30.5	Pk	-	-	Ch# 11 Peak Bandedge

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental.

Run #2: Peak Output Power (Conducted)

Channel	Frequency (MHz)	Peak Output Power (dBm)	Comments
Low	2412	10.8	
Mid	2437	10.83	
High	2462	10.9	

EXHIBIT 3: Test Configuration Photographs

EXHIBIT 4: Proposed FCC ID Label & Label Location

The proposed changes do not affect the labeling information provided to the FCC in the original application for this device.

EXHIBIT 5: Detailed Photographs of Netgear Model FVM318 Construction

The proposed changes do not affect the external and internal photographs provided to the FCC in the original application for this device.

Specifications and drawings for the new antennas are provided.

EXHIBIT 6: Operator's Manual for Netgear Model FVM318

The proposed changes do not affect the rf exposure separation distances or regulatory information provided to the FCC in the original application for this device.

EXHIBIT 7: Block Diagram of Netgear Model FVM318

The proposed changes do not affect the details of the block diagram provided to the FCC in the original application for this device.

EXHIBIT 8: Schematic Diagrams for Netgear Model FVM318

The proposed changes do not affect the schematics provided to the FCC in the original application for this device.

EXHIBIT 9: Theory of Operation for Netgear Model FVM318

The proposed changes do not affect the operational description provided to the FCC in the original application for this device.