Nemko Test Report:	4L0701RUS1Rev1
Applicant:	Siemens Subscriber Networks, Inc.
Equipment Under Test: (E.U.T.)	SpeedStream 6520 / 6515
In Accordance With:	**FCC Part 15, Subpart C, 15.247** Spread Spectrum Transmitters
Tested By:	Nemko Dallas Inc. 802 N. Kealy Lewisville, Texas 75057-3136
Authorized By:	 Tom Tidwell, Frontline Manager
Date:	8 Dec. 2004

Table of Contents

Section 1. Summary of Test Results

Manufacturer: Siemens Subsciber Networks, Inc.

Model No.: SpeedStream 6520 (Model Tested)
SpeedStream 6515 (Variant)

Part No.: 060-N651-A01

REMARKS:

This report contains the test results for the Siemens Subscribers Networks Model Speedstream 6520/ Speedstream 6515. Power was provided by an external power adapter.

Model No's:	Part No's:
Speedstream 6520	060-N651-Axx
Speedstream 6515	060-N551-Axx

The Speedstream 6520 is the base model. Model Speedstream 6515 is identical except that the USB is removed.

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, Subpart C, Paragraph 15.247 for Direct Sequence Spread Spectrum devices. Radiated tests were conducted is accordance with ANSI C63.4-2001. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC.

☒ New Submission ☐ Production Unit

☐ Class II Permissive Change ☒ Pre-Production Unit

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE. NONE
See " Summary of Test Data".

NVLAP LAB CODE: 100426-0

Summary Of Test Data

NAME OF TEST	PARA. NO.	SPEC.	RESULT
Powerline Conducted Emissions	15.207(a)		Complies
Minimum 6 dB Bandwidth	15.247(a)(2)	>500 kHz	Complies
Maximum Peak Power Output	15.247(b)(1)	<1 Watt	Complies
Spurious Emissions (Antenna Conducted)	15.247(c)	-20 dBc/100kHz	Complies
Spurious Emissions (Restricted Bands)	15.247(c)	< 74 dBuV/m Peak < 54 dBuV/m Avg	Complies
Peak Power Spectral Density	15.247(d)	+8 dBm/3kHz	Complies

Footnotes:

Section 2. Equipment Under Test (E.U.T.)

General Equipment Information

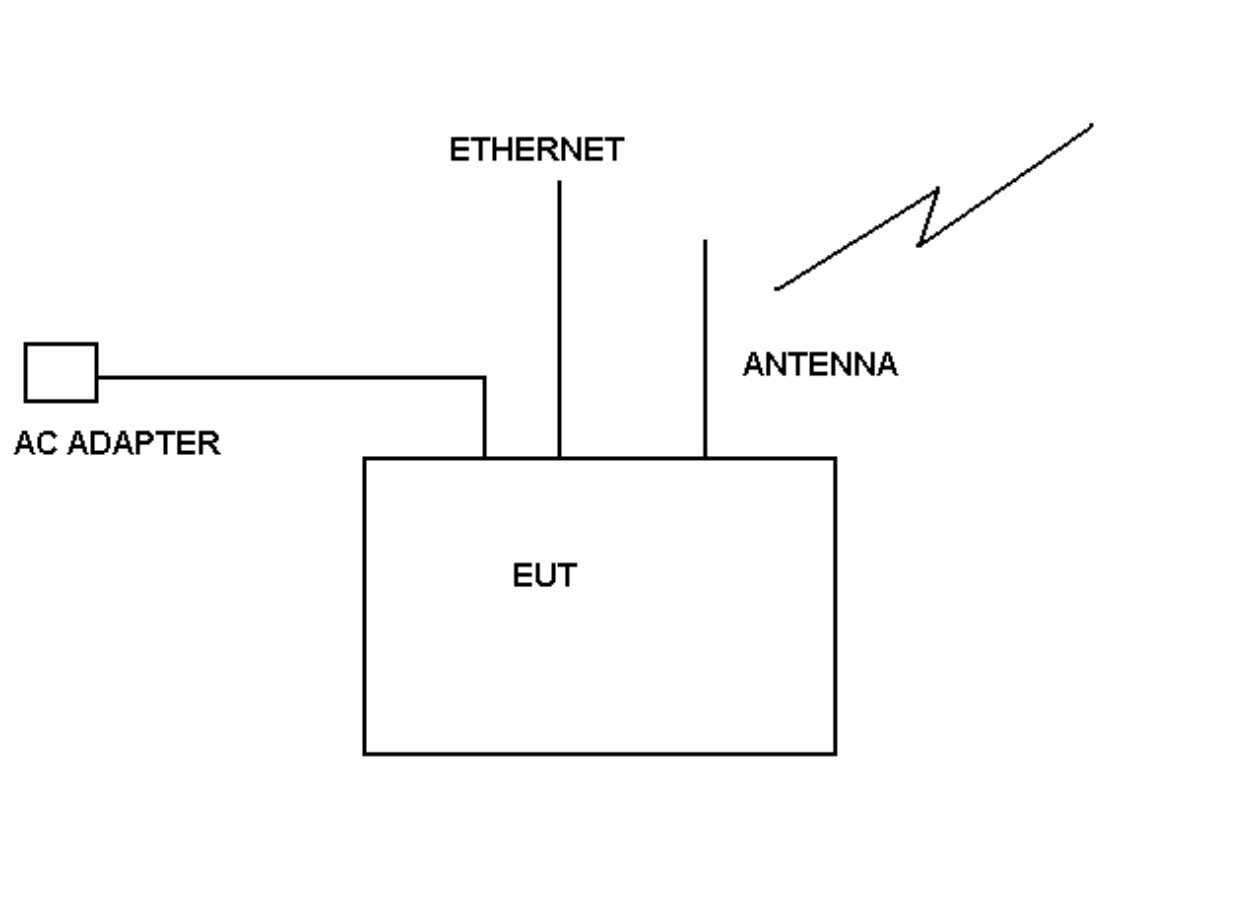
Frequency Band:	2412 to 2462 MHz
Channel Spacing:	5 MHz
User Frequency Adjustment:	Software controlled

Description of EUT

The device is a DSL/wireless 802.11b/g modem.

Power supply, GCI, model AM-1200800V, No S/N.
Input: 120 VAC, Output 12 VDC, 1.5 A

System Diagram



Section 3. Powerline Conducted Emissions

NAME OF TEST: Powerline Conducted Emissions	PARA. NO.: 15.207(a)
TESTED BY: Arturo Ruvalcaba	DATE: 11/18/04

Test Results: Complies.

Measurement Data: See attached plots.

Measurement Uncertainty: +/- 1.7 dB

Test Data – Powerline Conducted Emissions

NEMKO Dallas, Inc.

Dallas Headquarters:
802 N. Kealy
Lewisville, TX 75057
Tel: (972) 436-9600
Fax: (972) 436-2667

Conducted Emissions
Powerline Voltage Measurement

Complete X — Job # : 4L0701E — Test # : CEPV-01
Preliminary — Page 1 of 1

Client Name :	Siemens Subscriber Networks, Inc.				
EUT Name :	Compact Wireless Gateway				
EUT Model # :	SpeedStream 6520 / 6515 / 5450				
EUT Part # :	060-N651-AXX / 060-N551-AXX / 060-U451-AXX				
EUT Serial # :	MAE:00:0B:23:D0:79:E8				
EUT Config. :	EUT DSL connected to ADSL2+ (CO) suppor	EUT USB cable connected to USB support computer			
	EUT Ethernet cables (4) connected to support compute	EUT Wireless activated			
Specification :	CFR 47 Part 15, Subpart B, Class B		Reference :	CISPR 22	
Transducer # :	969	Temp. (deg. C) : 21		Date : 11/18/04	
HP Filter # :	1433	Humidity (%) : 35		Time : 11:15	
Cable 1 # :	1113	EUT Voltage : 115VAC		Staff : Art Ruvalcaba	
Cable 2 # :	1019	EUT Frequency : 60Hz		Location : Lab 6	
Detector 1 # :	966	Peak Bandwidth: 10kHz		Photo ID: 4L0701E CEPV-01	
Detector 2 # :	NA	QP Bandwidth 10kHz			
Limiter # :	NA	Avg. Bandwidth 10kHz			

Meas. Freq. (MHz)	EUT Test Point	Detector Type (P,QP, A)	Limit Type (QP, A)	Meter Reading (dBuV)	Path Loss (dB)	Transducer Factor (dB)	Corrected Reading (dBuV)	Spec.limit (dBuV) Q.P.	Spec.limit (dBuV) Avg.	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
0.15	N	QP	QP	49.5	0	0	49.5	66	56	-16.5	Pass	
0.15	N	A	A	11.0	0	0	11.0	66	56	-45.0	Pass	
0.252	N	QP	QP	46.0	0	0	46.0	61.69	51.691	-15.7	Pass	
0.252	N	A	A	9.0	0	0	9.0	61.69	51.691	-42.7	Pass	
0.309	N	QP	QP	44.0	0	0	44.0	60	49.998	-16.0	Pass	
0.309	N	A	A	10.0	0	0	10.0	60	49.998	-40.0	Pass	
0.367	N	QP	QP	42.0	0	0	42.0	58.57	48.569	-16.6	Pass	
0.367	N	A	A	9.0	0	0	9.0	58.57	48.569	-39.6	Pass	
0.425	N	QP	QP	40.0	0	0	40.0	57.35	47.35	-17.4	Pass	
0.425	N	A	A	8.0	0	0	8.0	57.35	47.35	-39.4	Pass	
0.483	N	QP	QP	38.5	0	0	38.5	56.29	46.288	-17.8	Pass	
0.483	N	A	A	7.0	0	0	7.0	56.29	46.288	-39.3	Pass	
0.155	H	QP	QP	50.0	0	0	50.0	65.73	55.728	-15.7	Pass	
0.155	H	A	A	11.0	0	0	11.0	65.73	55.728	-44.7	Pass	
0.252	H	QP	QP	46.0	0	0	46.0	61.69	51.691	-15.7	Pass	
0.252	H	A	A	9.0	0	0	9.0	61.69	51.691	-42.7	Pass	
0.309	H	QP	QP	44.0	0	0	44.0	60	49.998	-16.0	Pass	
0.309	H	A	A	9.0	0	0	9.0	60	49.998	-41.0	Pass	
0.367	H	QP	QP	42.0	0	0	42.0	58.57	48.569	-16.6	Pass	
0.367	H	A	A	9.0	0	0	9.0	58.57	48.569	-39.6	Pass	
0.425	H	QP	QP	40.0	0	0	40.0	57.35	47.35	-17.4	Pass	
0.425	H	A	A	8.0	0	0	8.0	57.35	47.35	-39.4	Pass	
23	H	P	A	38.0	0	0	38.0	60	50	-12.0	Pass	
											Scanned .150-30MHz	

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Photos – Powerline Conducted Emissions

Section 4. Minimum 6 dB Bandwidth

NAME OF TEST: Minimum 6 dB Bandwidth	PARA. NO.: 15.247(a)(2)
TESTED BY: David Light	DATE: 11/17/04

Test Results: Complies.

Measurement Data: See 6 dB BW plot

Measured 6 dB bandwidth:	16.6 MHz Max
Channel Separation:	5 MHz

Test Data – Occupied Bandwidth

Dallas Headquarters:
802 N. Kealy
Lewisville, TX 75057
Tel: (972) 436-9600
Fax: (972) 436-2667

Nemko Dallas, Inc.

Data Plot **Occupied Bandwidth**

Page 1 of 6 Complete X

Job No.: 4L0701 Date: 11/17/2004 Preliminary: ____

Specification: 15.247 Temperature(°C): 22

Tested By: David Light Relative Humidity(%) 65

E.U.T.: WIRELESS GATEWAY

Configuration: TX

Sample Number: 1

Location: Lab 2 RBW: 100 kHz Measurement

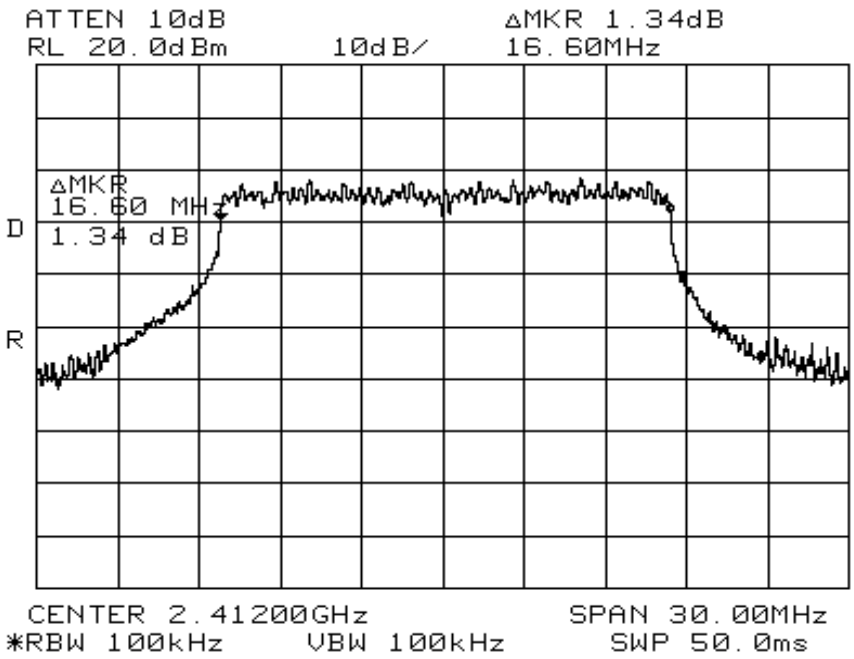
Detector Type: Peak VBW: 100 kHz Distance: NA m

Test Equipment Used

Antenna:		Directional Coupler:	
Pre-Amp:		Cable #1:	1973
Filter:		Cable #2:	
Receiver:		Cable #3:	
Attenuator #1	1477	Cable #4:	
Attenuator #2:		Mixer:	

Additional equipment used: HP8563E S/N 3611A04877 (RENTELCO) CAL DUE: 24 AUG 06

Measurement Uncertainty: +/-1.7 dB



Notes: **CHANNEL 1 - 54 Mbs**

Test Data – Occupied Bandwidth

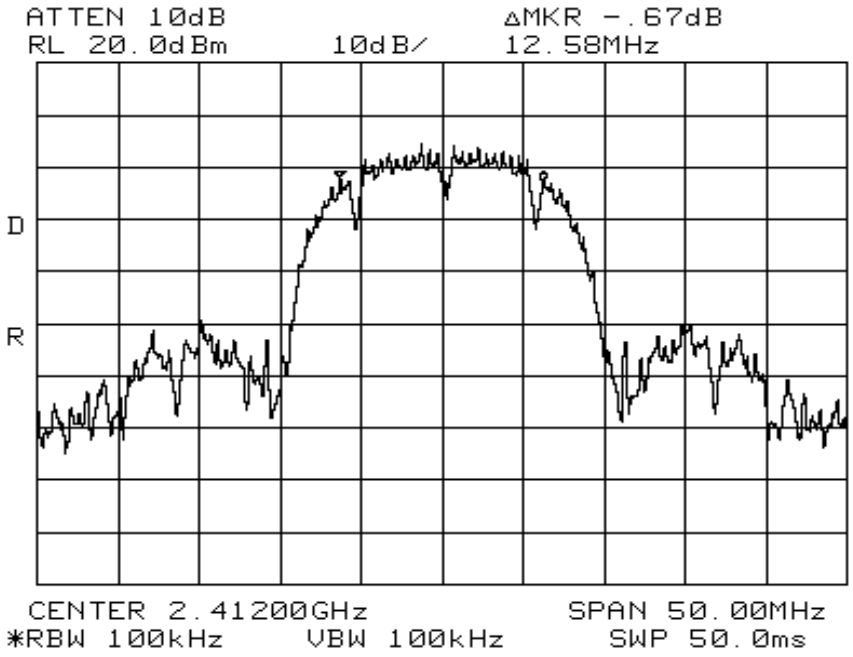
Dallas Headquarters:
802 N. Kealy
Lewisville, TX 75057
Tel: (972) 436-9600
Fax: (972) 436-2667

Nemko Dallas, Inc.

Data Plot — **Occupied Bandwidth**

Page 2 of 6

Job No.:	4L0701	Date:	11/17/2004
Specification:	15.2	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	65
E.U.T.:	WIRELESS GATEWAY		
Configuration:	TX		



Notes: **CHANNEL 1**
1 Mbs

Test Data – Occupied Bandwidth

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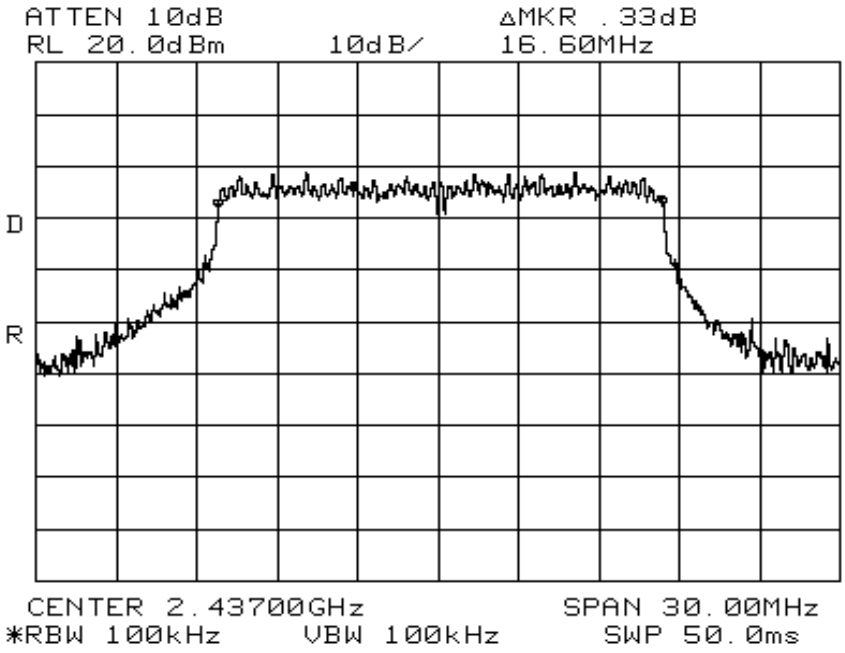
Data Plot **Occupied Bandwidth**

Page 3 of 6

Job No.:	4L0701	Date:	11/17/2004
Specification:	15.2	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	65
E.U.T.:	WIRELESS GATEWAY		
Configuration:	TX		



Notes: **CHANNEL 6**
54 Mbs

Test Data – Occupied Bandwidth

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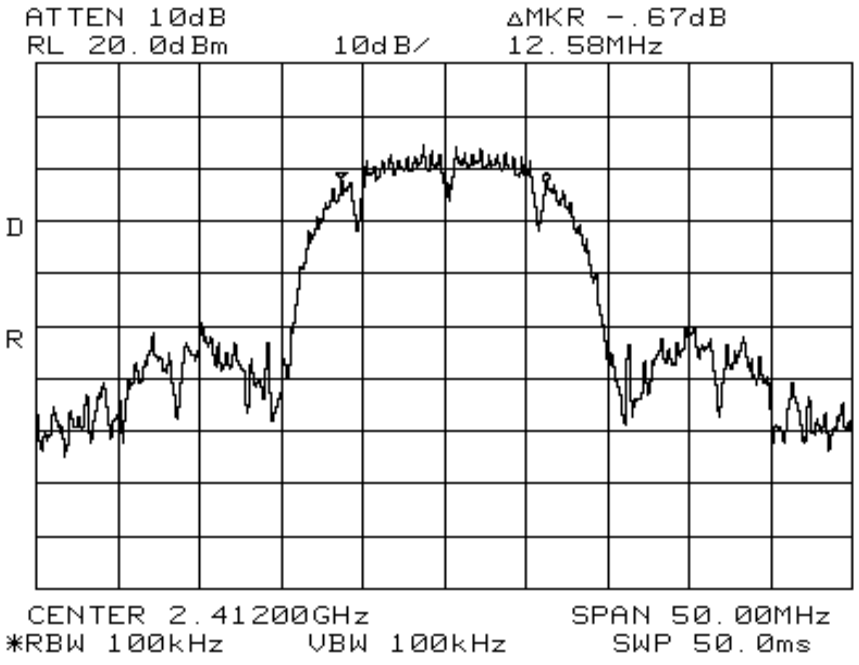
Data Plot **Occupied Bandwidth**

Page 4 of 6

Job No.:	4L0701	Date:	11/17/2004
Specification:	15.2	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	65
E.U.T.:	WIRELESS GATEWAY		
Configuration:	TX		



Notes: **CHANNEL 6**
1 Mbs

Test Data – Occupied Bandwidth

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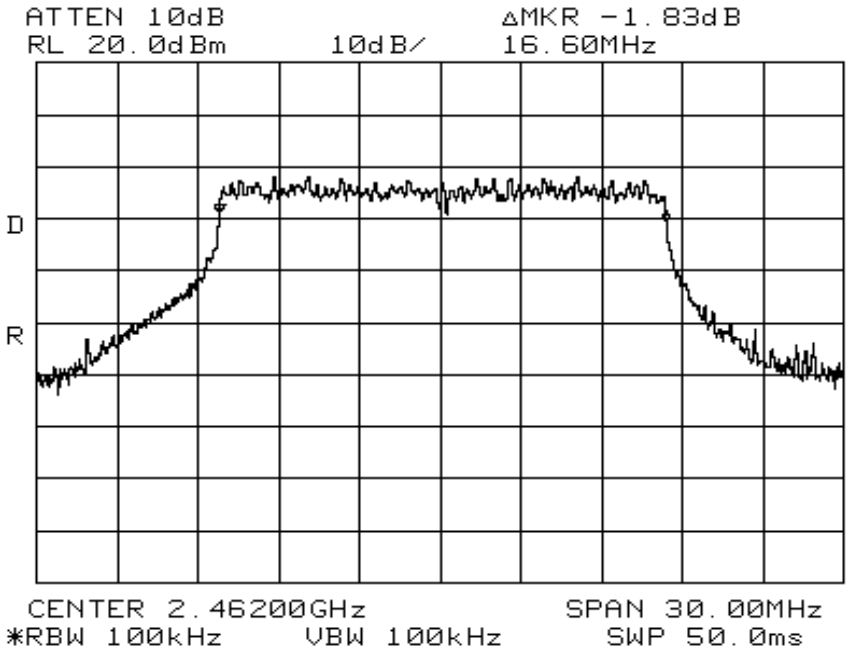
Nemko Dallas, Inc.

Data Plot **Occupied Bandwidth**

Page 5 of 6

Job No.:	4L0701	Date:	11/17/2004
Specification:	15.2	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%):	65
E.U.T.:	WIRELESS GATEWAY		
Configuration:	TX		



Notes: **CHANNEL 11**
54 Mbs

Test Data – Occupied Bandwidth

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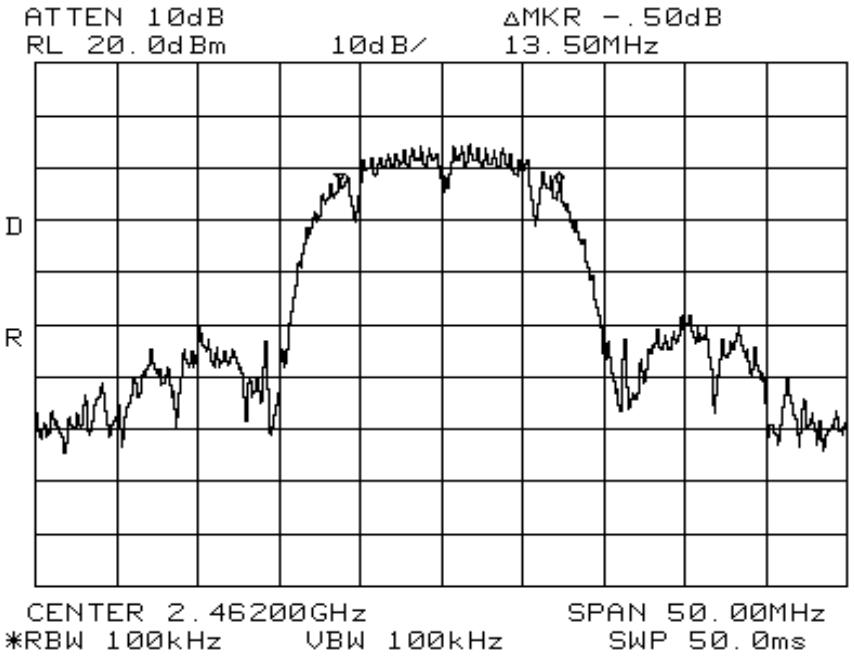
Nemko Dallas, Inc.

Data Plot **Occupied Bandwidth**

Page 6 of 6

Job No.:	4L0701	Date:	11/17/2004
Specification:	15.2	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	65
E.U.T.:	WIRELESS GATEWAY		
Configuration:	TX		



Notes: **CHANNEL 11**
1 Mbs

Section 5. Maximum Peak Output Power

NAME OF TEST: Maximum Peak Output power	PARA. NO.: 15.247(b)(1)
TESTED BY: David Light	DATE: 11/18/04

Test Results: Complies.

Measurement Data:

Antennas: **Monopole**

Frequency (MHz)	Data Rate (Bps)	Antenna Gain (dBi)	Peak Power (dBm)	Peak Power (mW)	EIRP (dBm)
2412	1	2	20.8	120	
2437	1	2	21.1	130	
2462	1	2	20.8	120	
2412	54	2	21.1	130	
2437	54	2	21.5	140	
2462	54	2	21.5	140	

Note: Emissions are made at the antenna port using a test connector. Measurements are Peak, measured with a Peak Power Meter.

Supply voltage was varied from 85% to 115% of nominal input voltage (102 – 138 VAC)

Equipment Used: 1029-1030-1477

Measurement Uncertainty: +/- 0.7 dB

Temperature: 22 °C

Relative Humidity: 45 %

Section 6. Spurious Emissions (conducted)

NAME OF TEST: Spurious Emissions (conducted)	PARA. NO.: 15.247(c)
TESTED BY: David Light	DATE: 11/17/04

Test Results: Complies.

Measurement Data: See attached plots.

Test Data – Spurious Emissions at Antenna Terminals

Dallas Headquarters:
802 N. Kealy
Lewisville, TX 75057
Tel: (972) 436-9600
Fax: (972) 436-2667

Nemko Dallas, Inc.

Data Plot — **Spurious Emissions at Antenna Terminals**

Page 1 of 6 — Complete X

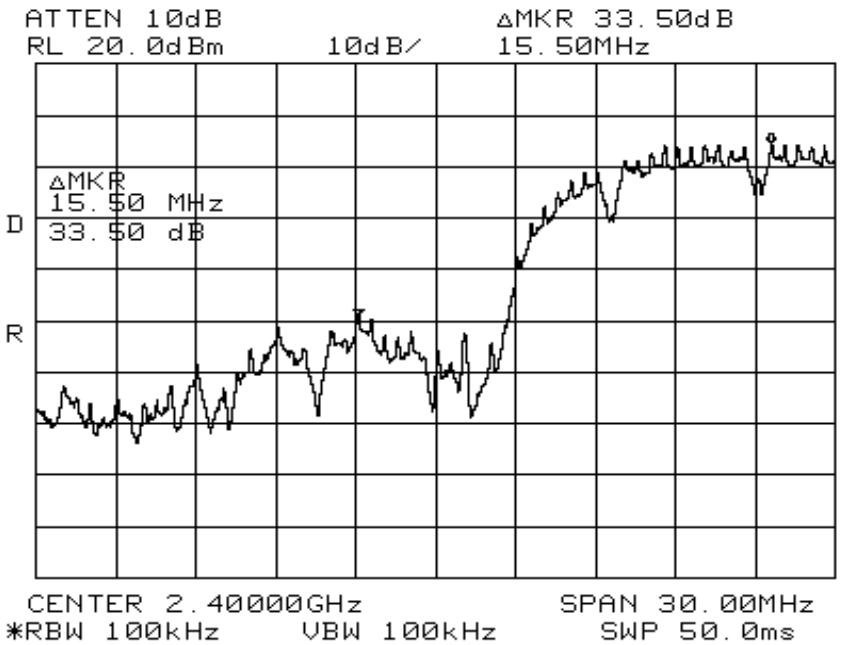
Job No.:	4L0701	Date:	11/17/2004	Preliminary:	
Specification:	15.247	Temperature(°C):	22		
Tested By:	David Light	Relative Humidity(%)	65		
E.U.T.:	WIRELESS GATEWAY				
Configuration:	TX				
Sample Number:	1				
Location:	Lab 2	RBW:	100 kHz	Measurement	
Detector Type:	Peak	VBW:	100 kHz	Distance:	NA m

Test Equipment Used

Antenna:		Directional Coupler:	
Pre-Amp:		Cable #1:	1973
Filter:		Cable #2:	
Receiver:		Cable #3:	
Attenuator #1	1477	Cable #4:	
Attenuator #2:		Mixer:	

Additional equipment used: HP8563E S/N 3611A04877 (RENTELCO) CAL DUE: 28 AUG 06

Measurement Uncertainty: +/-1.7 dB



Notes: **CHANNEL 1**
1 Mbs
Lower band edge

Test Data – Spurious Emissions at Antenna Terminals

Dallas Headquarters:
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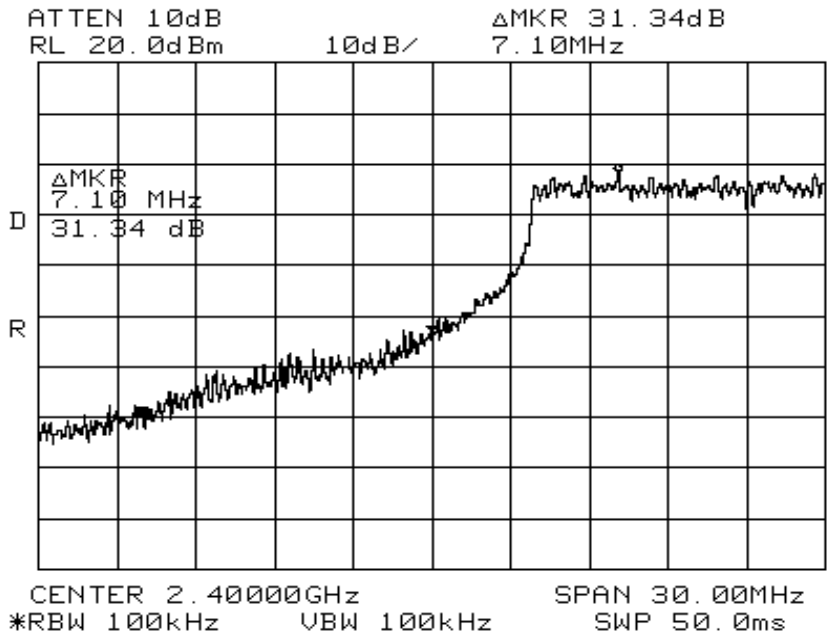
Nemko Dallas, Inc.

Data Plot **Spurious Emissions at Antenna Terminals**

Page 2 of 6

Job No.:	4L0701	Date:	11/17/2004
Specification:	15.2	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	65
E.U.T.:	WIRELESS GATEWAY		
Configuration:	TX		



Notes:
CHANNEL 1
54 Mbs
Lower band edge

Test Data – Spurious Emissions at Antenna Terminals

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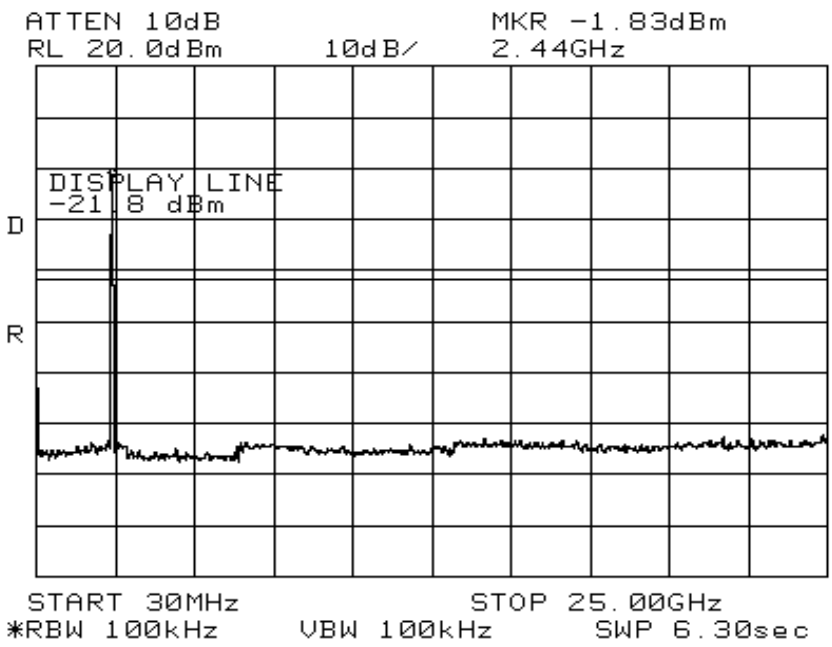
Nemko Dallas, Inc.

Data Plot **Spurious Emissions at Antenna Terminals**

Page 3 of 6

Job No.:	4L0701	Date:	11/17/2004
Specification:	15.2	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	65
E.U.T.:	WIRELESS GATEWAY		
Configuration:	TX		



Notes: **CHANNEL 1**
54 Mbs

Test Data – Spurious Emissions at Antenna Terminals

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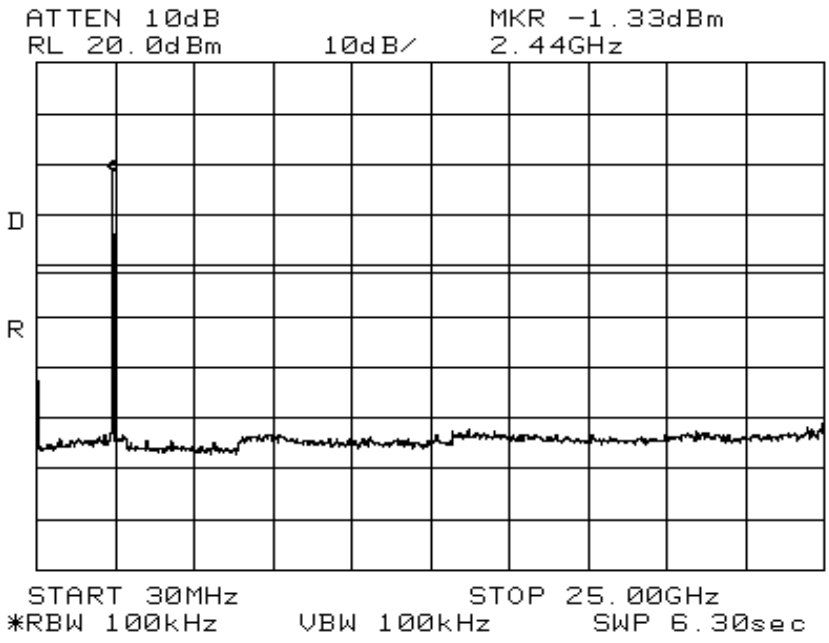
Nemko Dallas, Inc.

Data Plot **Spurious Emissions at Antenna Terminals**

Page 4 of 6

Job No.:	4L0701	Date:	11/17/2004
Specification:	15.2	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	65
E.U.T.:	WIRELESS GATEWAY		
Configuration:	TX		



Notes: **CHANNEL 6**
54 Mbs

Test Data – Spurious Emissions at Antenna Terminals

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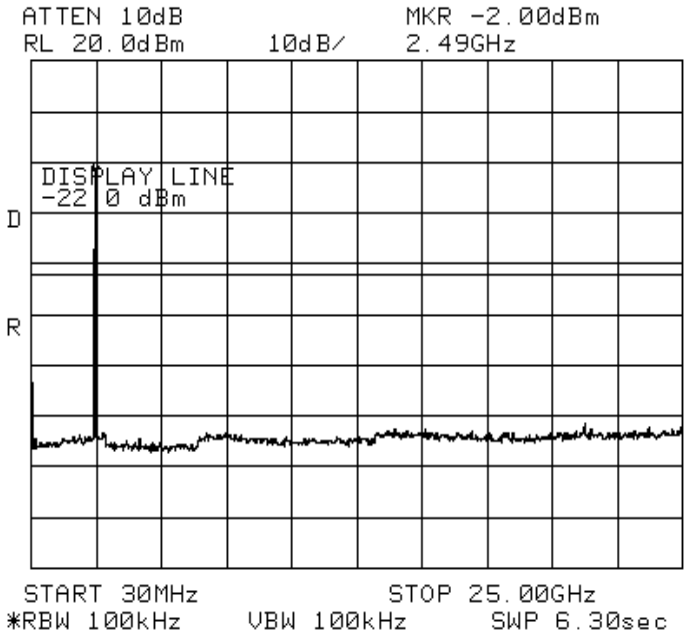
Nemko Dallas, Inc.

Data Plot **Spurious Emissions at Antenna Terminals**

Page 5 of 6

Job No.:	4L0701	Date:	11/17/2004
Specification:	15.2	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	65
E.U.T.:	WIRELESS GATEWAY		
Configuration:	TX		



Notes: **CHANNEL 11**
54 Mbs

Section 7. Spurious Emissions (Restricted Bands)

NAME OF TEST: Spurious Emissions (Restricted Bands)	PARA. NO.: 15.247 (c)
TESTED BY: David Light	DATE: 11/18/04

Test Results: Complies.

Measurement Data: See attached table.

Test Data – Radiated Emissions

Nemko Dallas, Inc.

Dallas Headquarters:
802 N. Kealy
Lewisville, TX 75057
Tel: (972) 436-9600
Fax: (972) 436-2667

Radiated Emissions

Page 1 of 1

Job No.: 4L0701r Date: 11/18/2004
Specification: 15.247/15.205 Temperature(°C): 20
Tested By: David Light Relative Humidity(%) 45
E.U.T.: Wireless Gateway
Configuration: TX in flat position (worst case)
Sample Number: 1
Location: AC 3 RBW: 1 MHz
Detector Type: Peak VBW: 1 MHz

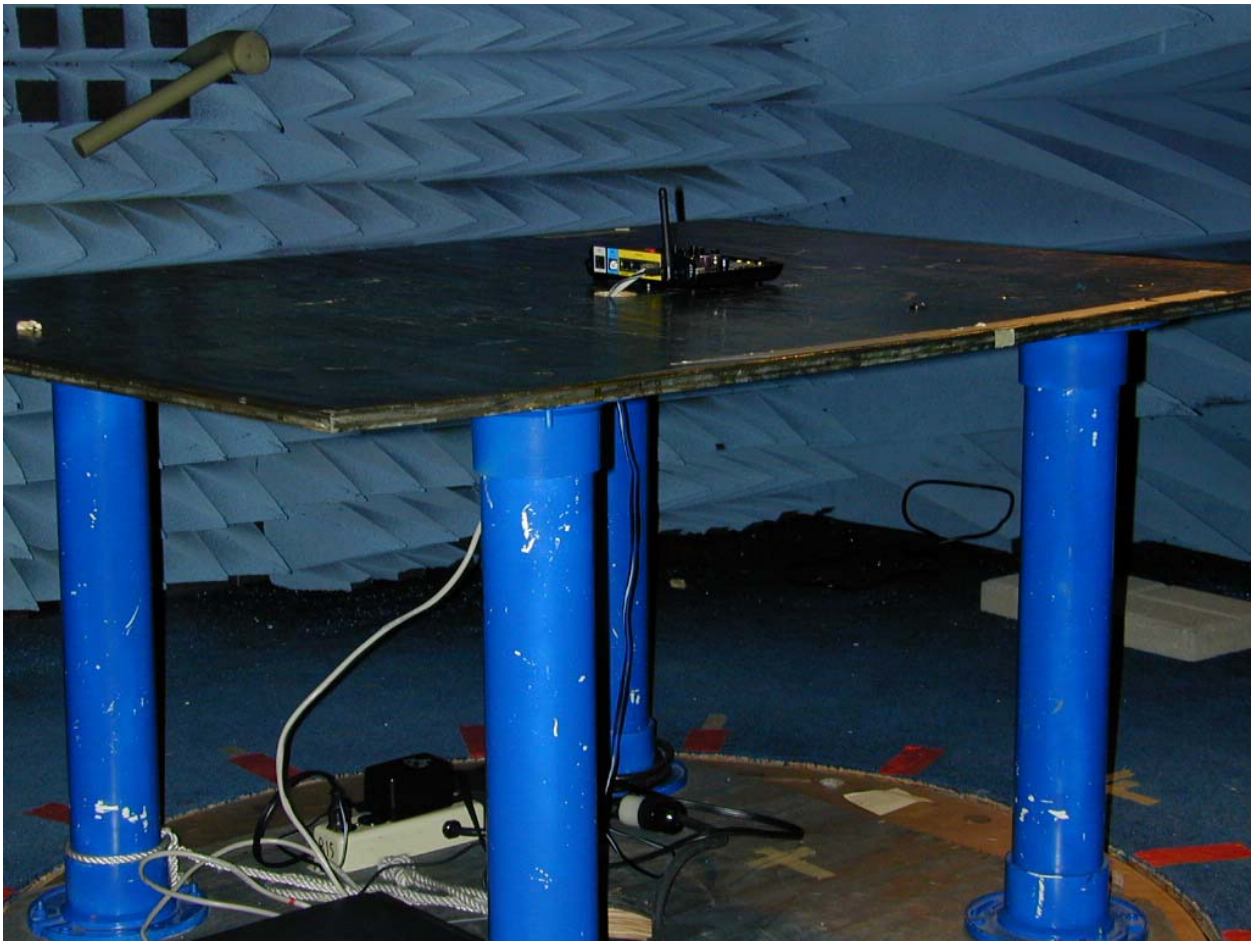
Test Equipment Used

Antenna: 1304 Directional Coupler: #N/A
Pre-Amp: 1016 Cable #1: 1484
Filter: 1482 Cable #2: 1485
Receiver: #N/A Cable #3: #N/A
Attenuator #1 #N/A Cable #4: #N/A
Attenuator #2: #N/A Mixer: #N/A
Measurement Uncertainty: +/- 3.6 dB

Frequency (GHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-Amp Gain (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector / Polarity
2.4835	35.7	28.2	3.1	0.0	67.0	74	54	Peak - / Vertical
2.4835	22.3	28.2	3.1	0.0	53.6	74	54	Average - NF / Vertical
2.484	32.2	28.2	3.1	0.0	63.5	74	54	Peak - / Horizontal
2.484	21.0	28.2	3.1	0.0	52.3	74	54	Average - NF / Horizontal

Notes:
The spectrum was searched to 25 GHz
The devive was tested in the two orientations that is meant for normal use.
The device was tested at 2.412, 2.437 and 2.462 MHz and no emissions were found above the noise floor.
Data presented is to demonstrate upper bandedge compliance on channle 11

Setup Photos



Section 8. Peak Power Spectral Density

NAME OF TEST: Peak Power Spectral Density	PARA. NO.: 15.247(d)
TESTED BY: David Light	DATE: 11/17/04

Test Results: Complies.

Measurement Data: See attached plots.

Test Data – Spectral Density

Dallas Headquarters:
802 N. Kealy
Lewisville, TX 75057
Tel: (972) 436-9600
Fax: (972) 436-2667

Nemko Dallas, Inc.

Data Plot **Peak Power Spectral Density**

Page 1 of 6 Complete X

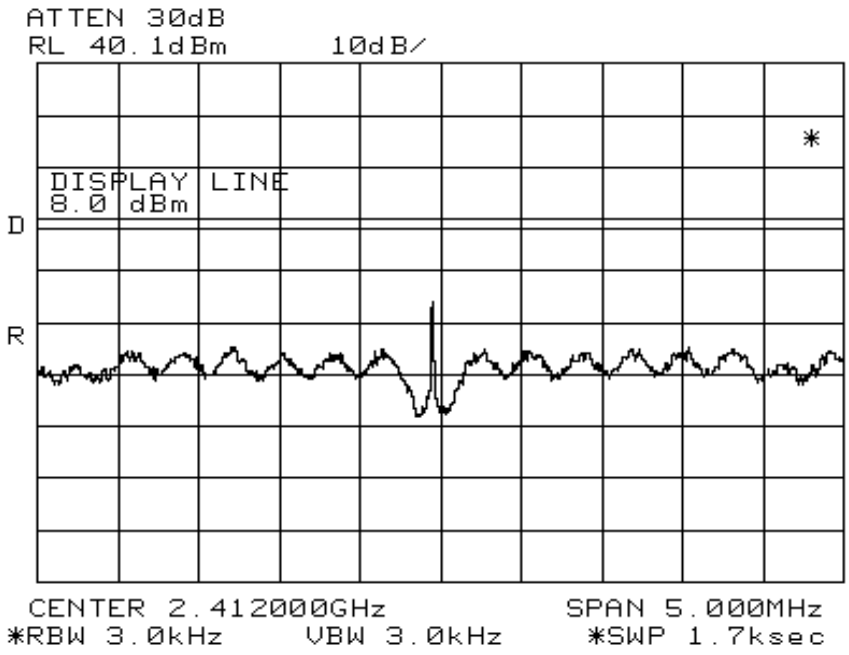
Job No.:	4L0701	Date:	11/17/2004	Preliminary:	
Specification:	15.247	Temperature(°C):	22		
Tested By:	David Light	Relative Humidity(%)	65		
E.U.T.:	WIRELESS GATEWAY				
Configuration:	TX				
Sample Number:	1				
Location:	Lab 2	RBW:	3 kHz	Measurement	
Detector Type:	Peak	VBW:	3 kHz	Distance:	NA m

Test Equipment Used

Antenna:		Directional Coupler:	
Pre-Amp:		Cable #1:	1973
Filter:		Cable #2:	
Receiver:		Cable #3:	
Attenuator #1	1477	Cable #4:	
Attenuator #2:		Mixer:	

Additional equipment used: HP8563E S/N 3611A04877 (RENTELCO) CAL DUE: 24 AUG 06

Measurement Uncertainty: +/-1.7 dB



Notes: **CHANNEL 1 - 54 Mbs**

Test Data – Spectral Density

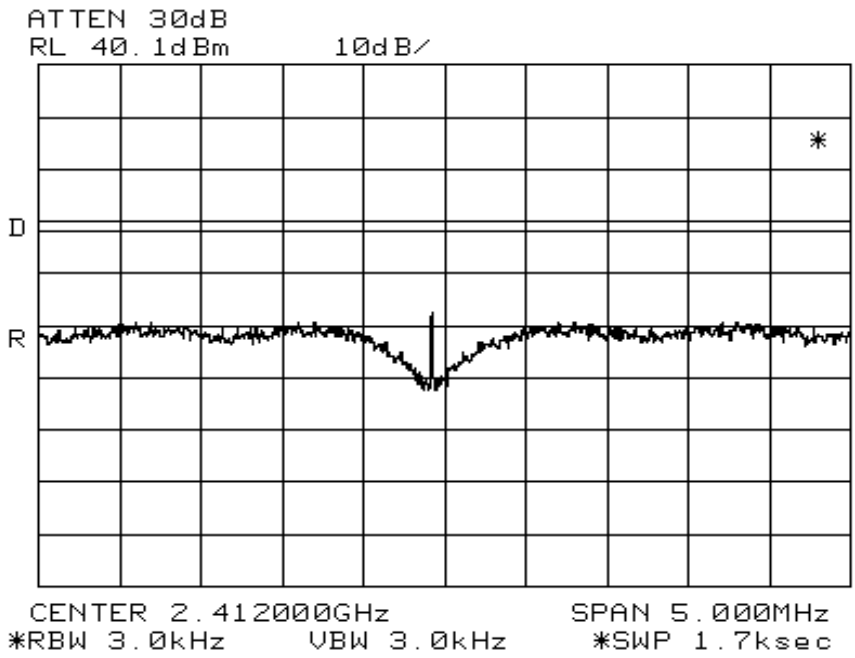
Dallas Headquarters:
802 N. Kealy
Lewisville, TX 75057
Tel: (972) 436-9600
Fax: (972) 436-2667

Nemko Dallas, Inc.

Data Plot **Peak Power Spectral Density**

Page 2 of 6

Job No.:	4L0701	Date:	11/17/2004
Specification:	15.2	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	65
E.U.T.:	WIRELESS GATEWAY		
Configuration:	TX		



Notes: **CHANNEL 1**
1 Mbs

Test Data – Spectral Density

Nemko

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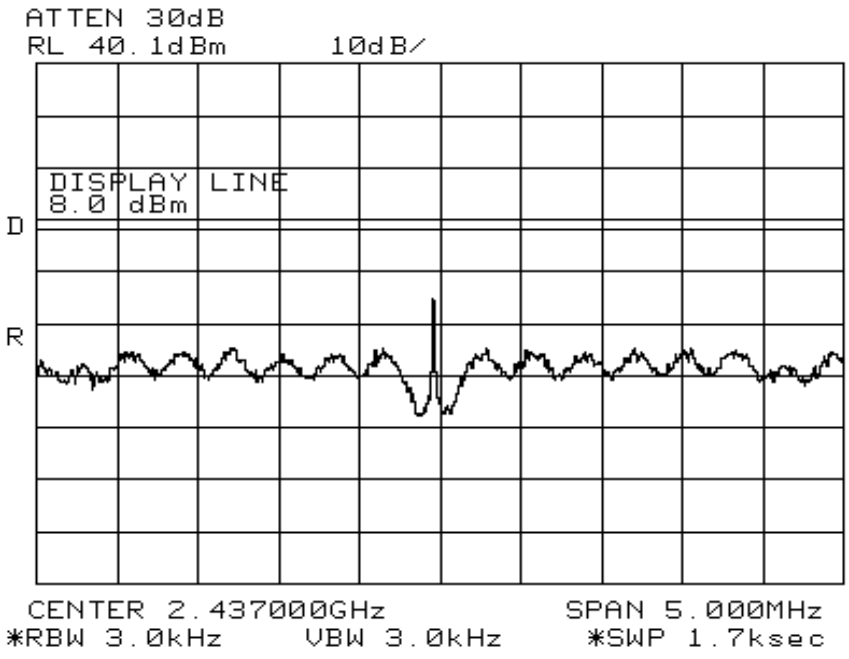
Data Plot **Peak Power Spectral Density**

Page 3 of 6

Job No.:	4L0701	Date:	11/17/2004
Specification:	15.2	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	65
E.U.T.:	WIRELESS GATEWAY		
Configuration:	TX		



Notes: **CHANNEL 6**
54 Mbs

Test Data – Spectral Density

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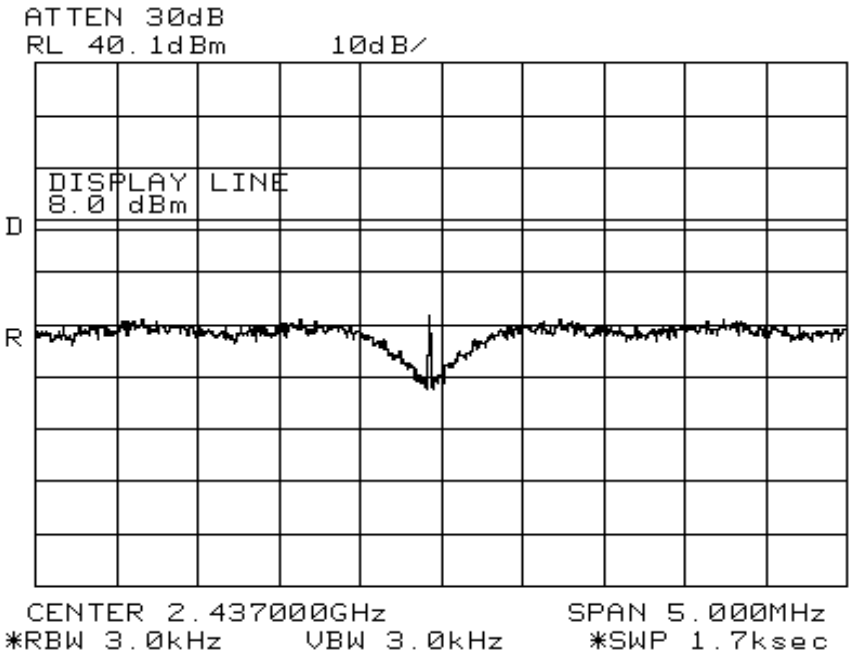
Nemko Dallas, Inc.

Data Plot **Peak Power Spectral Density**

Page 4 of 6

Job No.:	4L0701	Date:	11/17/2004
Specification:	15.2	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	65
E.U.T.:	WIRELESS GATEWAY		
Configuration:	TX		



Notes: **CHANNEL 6**
1 Mbs

Test Data – Spectral Density

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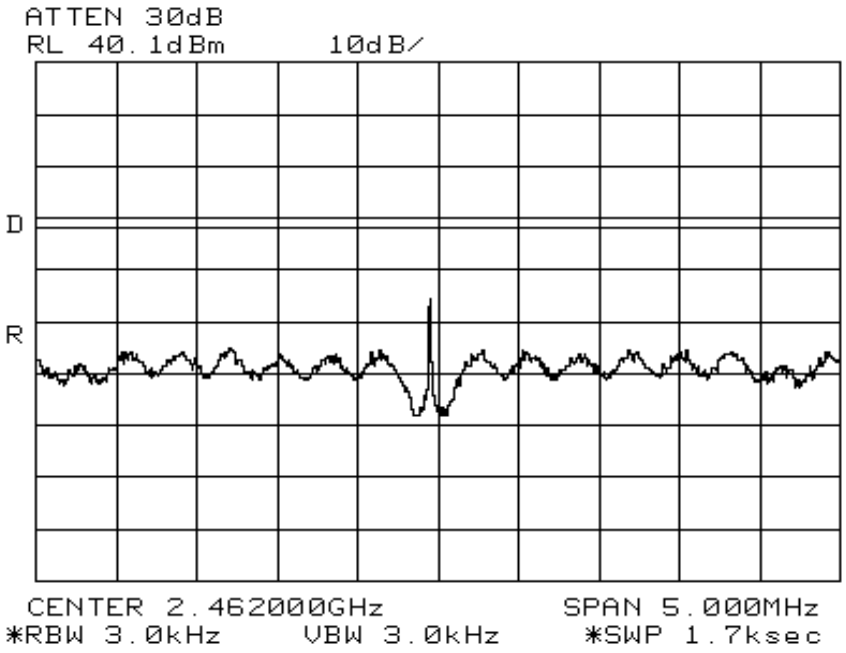
Nemko Dallas, Inc.

Data Plot **Peak Power Spectral Density**

Page 5 of 6

Job No.:	4L0701	Date:	11/17/2004
Specification:	15.2	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	65
E.U.T.:	WIRELESS GATEWAY		
Configuration:	TX		



Notes: **CHANNEL 11**
54 Mbs

Test Data – Spectral Density

Dallas Headquarters:
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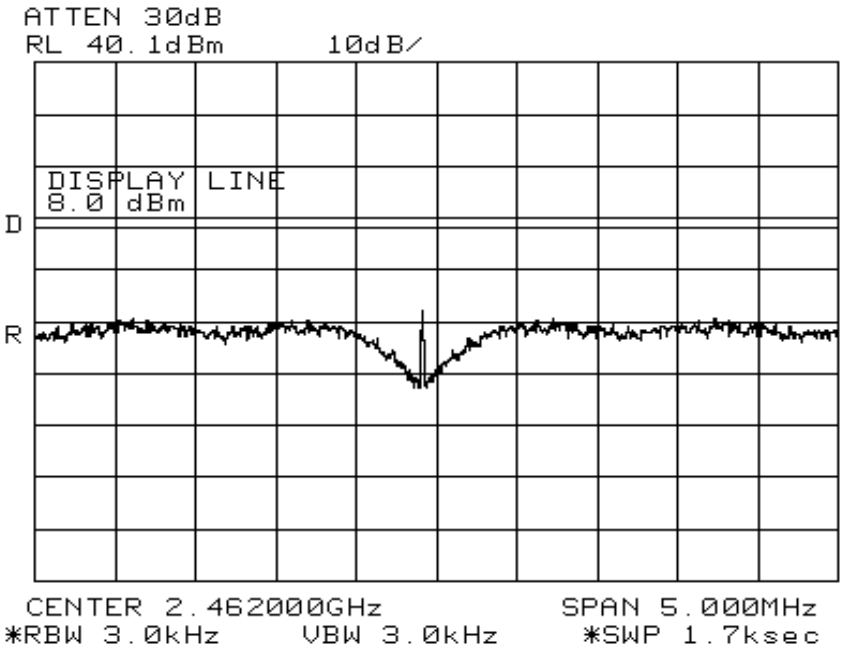
Lewisville, TX 75057
Tel: (972) 436-9600
Fax: (972) 436-2667

Nemko Dallas, Inc.

Data Plot **Peak Power Spectral Density**

Page 6 of 6

Job No.:	4L0701	Date:	11/17/2004
Specification:	15.2	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	65
E.U.T.:	WIRELESS GATEWAY		
Configuration:	TX		



Notes: **CHANNEL 11**
1 Mbs

Section 9. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
1304	HORN ANTENNA	ELECTRO METRICS RGA-60	6151	09/22/03	09/22/05
1484	Cable 2.0-18.0 Ghz	Storm PR90-010-072	N/A	08/26/04	08/26/05
1485	Cable 2.0-18.0 Ghz	Storm PR90-010-216	N/A	08/02/04	08/02/05
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	11/12/04	11/12/05
791	PREAMP, 25dB	ICC LNA25	398	11/12/04	11/12/05
759	ANTENNA, LOG PERIODIC	A.H. SYSTEMS SAS-200/510	556	07/23/04	07/23/05
760	Antenna biconical	Electro Metrics MFC-25	477	06/22/04	06/22/05
1983	CABLE	KTL Site A OATS	N/A	03/11/04	03/11/05
1477	20db Attenuator DC 18 Ghz	MCL Inc. BW-S20W5	NONE	CBU	N/A
1973	CABLE, 1m	KTL 0	N/A	08/02/04	08/02/05
Rentelco	Spectrum Analyzer	HP 8563E	3611A04877	08/26/04	08/26/06
1029	PEAK POWER METER	HP 8900D	3303U0012	12/23/03	12/22/04
1030	PEAK POWER SENSOR	HP 84811A	2539A03573	12/23/03	12/22/04

ANNEX A - TEST DETAILS

NAME OF TEST: Powerline Conducted Emissions	PARA. NO.: 15.207(a)

Minimum Standard: The R.F. that is conducted back onto the AC power line on any frequency within the band 0.45 to 30 MHz shall not exceed 250µV (48 dBµV) across 50 ohms.

NAME OF TEST: Minimum 6 dB bandwidth	PARA. NO.: 15.247(a)(2)

Minimum Standard: The minimum 6 dB bandwidth shall be at least 500 kHz

NAME OF TEST: Maximum Peak Output Power	PARA. NO.: 15.247(b)(1)

Minimum Standard: The maximum peak output power shall not exceed 1 watt.

If transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Systems operating in the 2400-2483.5 MHz band that are used exclusively for fixed, point to point operation may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceed 6 dBi.

Systems operating in the 5725 – 5850 MHz band that are used exclusively for fixed, point-to-point operation may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter peak output power.

Direct Measurement Method For Detachable Antennas:
If the antenna is detachable, a peak power meter is used to measure the power output with the transmitter operating into a 50 ohm load. The dBi gain of the antenna(s) employed shall be reported.

Calculation Of EIRP For Integral Antenna:
If the antenna is not detachable from the circuit then the Peak Power Output is derived from the peak radiated field strength of the fundamental emission by using the plane wave relation $GP/4\pi R^2 = E^2/120\pi$ and proceeding as follows:

$$P = \frac{E^2 R^2}{30G} = \frac{E^2 3^2}{30G}$$

where,

P = the equivalent isotropic radiated power in watts
E = the maximum measured field strength in V/m
R = the measurement range (3 meters)
G = the numeric gain of the transmit antenna in relation to an isotropic radiator

The RBW of the spectrum analyzer shall be set to a value greater than the measured 6 dB occupied bandwidth of the E.U.T.

Number of channels tested:

Tuning range	Number of channels tested	Channel location in band
1 MHz or less	1	middle
1 to 10 MHz	2	top and bottom
more than 10 MHz	3	top, middle, bottom

NAME OF TEST: Spurious Emissions(conducted) PARA. NO.: 15.247(c)

Minimum Standard: In any 100kHz bandwidth outside the frequency band in which the transmitter is operating, emissions shall be at least 20 dB below the fundamental emission or shall not exceed the following field strength limits. Emissions falling in the restricted bands of 15.205 shall not exceed the following field strength limits:

Frequency (MHz)	Field Strength (μV/m @ 3m)	Field Strength (dB @ 3m)
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above 960	500	54.0

THE SPECTRUM IS SEARCHED TO THE 10th HARMONIC OF THE HIGHEST FREQUENCY GENERATED IN THE EUT.

Method Of Measurement:

30 MHz - 10th harmonic plot
RBW: 100 kHz
VBW: 300 kHz
Sweep: Auto
Display line: -20 dBc

Lower Band Edge
RBW: At least 1% of span/div.
VBW: >RBW
Span: As necessary to display any spurious at band edge.
Sweep: Auto
Center Frequency: 902 MHz, 2400 MHz, or 5725 MHz
Marker: Peak of fundamental emission
Marker Δ: Peak of highest spurious level below center frequency.

Upper Band Edge
RBW: At least 1% of span/div.
VBW: >RBW
Span: As necessary to display any spurious at band edge.
Sweep: Auto
Center Frequency: 928 MHz, 2483.5 MHz, or 5850 MHz
Marker: Peak of fundamental emission
Marker Δ: Peak of highest spurious level above center frequency.

Number of channels tested:

Tuning range	Number of channels tested	Channel location in band
1 MHz or less	1	middle
1 to 10 MHz	2	top and bottom
more than 10 MHz	3	top, middle, bottom

NAME OF TEST: Radiated Spurious Emissions	PARA. NO.: 15.247(c)

Minimum Standard: In any 100kHz bandwidth outside the frequency band in which the transmitter is operating, emissions shall be at least 20 dB below the fundamental emission or shall not exceed the following field strength limits:

Emissions falling in the restricted bands of 15.205 shall not exceed the following field strength limits:

Frequency (MHz)	Field Strength (μV/m @ 3m)	Field Strength (dB @ 3m)
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above 960	500	54.0

THE SPECTRUM WAS SEARCHED TO THE 10th HARMONIC

15.205 Restricted Bands

MHz	MHz	MHz	GHz
0.09-0.11	16.42-16.423	399.9-410	4.5-5.25
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.125-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2655-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41	1718		

Number of channels tested:

Tuning range	Number of channels tested	Channel location in band
1 MHz or less	1	middle
1 to 10 MHz	2	top and bottom
more than 10 MHz	3	top, middle, bottom

NAME OF TEST: Transmitter Power Density	PARA. NO.: 15.247(d)

Minimum Standard: The transmitted power density averaged over any 1 second interval shall not be greater than +8 dBm in any 3 kHz bandwidth.

Method Of Measurement: The spectrum analyzer is set as follows:

RBW: 3 kHz
VBW: >3 kHz
Span: => measured 6 dB bandwidth
Sweep: Span(kHz)/3 (i.e. for a span of 1.5 MHz the sweep rate is 1500/3 = 500 sec.
LOG dB/div.: 2 dB

Note: For devices with spectrum line spacing =< 3 kHz, the RBW of the analyzer is reduced until the spectral lines are resolved. The measurement data is normalized to 3 kHz by summing the power of all the individual spectral lines within a 3 kHz band in linear power units.

For Devices With Integral Antenna:

For devices with non-detachable antennas, the received field strength is peaked and the spectrum analyzer is set as above. The peak emission level is then measured and converted to a field strength by adding the appropriate antenna factor and cable loss. This field strength is then converted to an equivalent isotropic radiated power using the same method as described for Peak Power output.

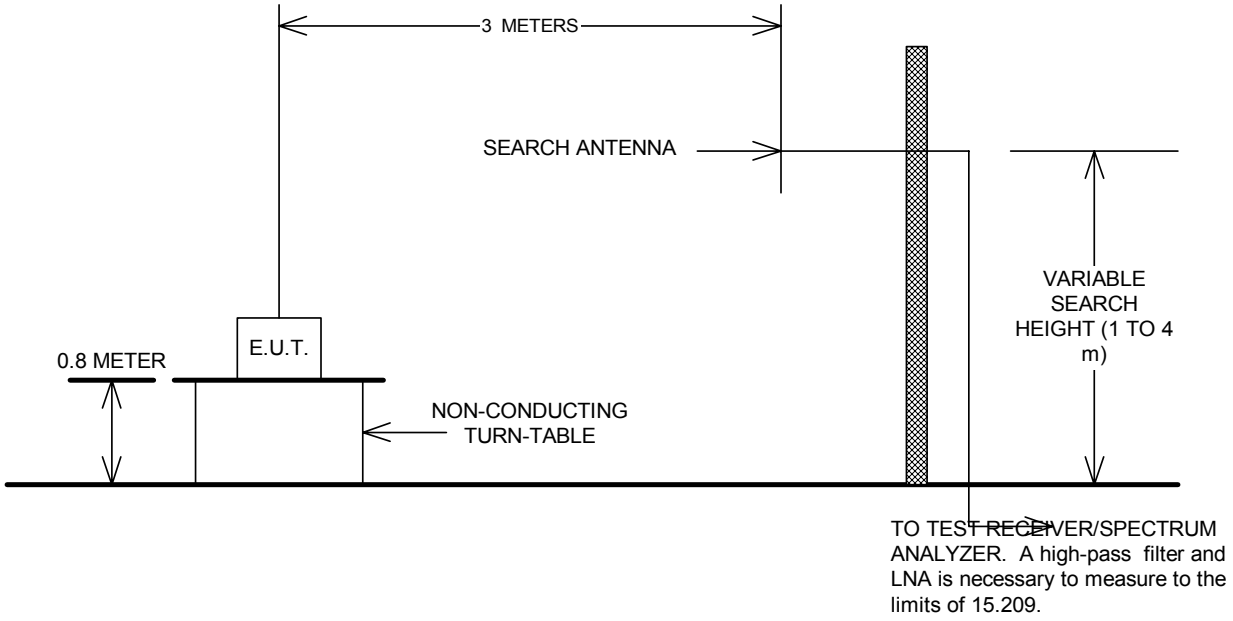
Number of channels tested:

Tuning Range	Number Of Channels Tested	Channel Location In Band
1 MHz or Less	1	Middle
1 to 10 MHz	2	Top And Bottom
More Than 10 MHz	3	Top, Middle, Bottom

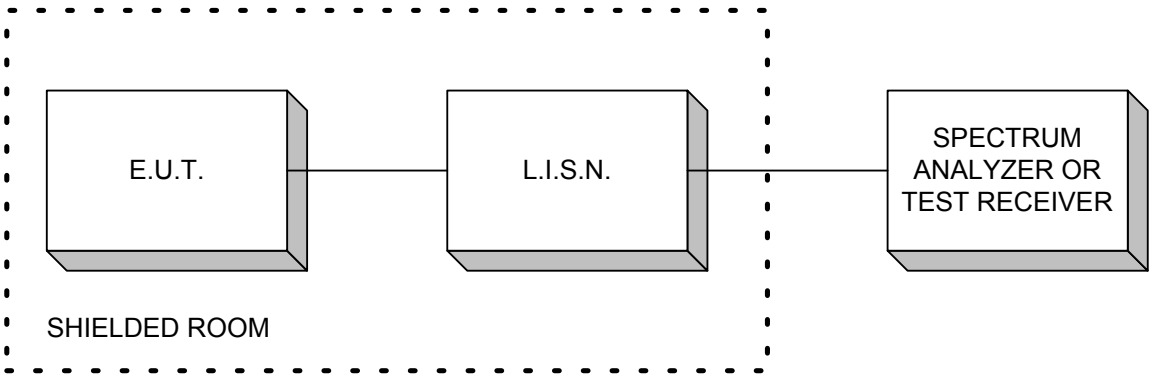
.

ANNEX B - TEST DIAGRAMS

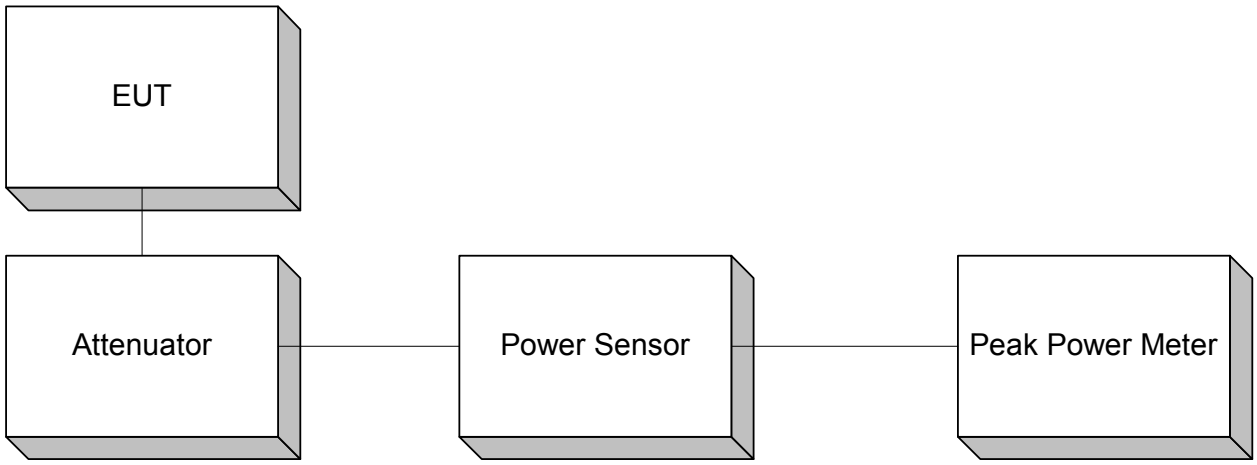
Test Site For Radiated Emissions



Conducted Emissions



Peak Power At Antenna Terminals



Minimum 6 dB Bandwidth
Peak Power Spectral Density
Spurious Emissions (conducted)