

Nemko Test Report: 1L0620RUS1

Applicant: AFX Technology Group International, Inc.
4407 Beltwood Parkway, Suite 108
Dallas, Texas 75244

Equipment Under Test: MinionNet Telco Gateway
(E.U.T.)

In Accordance With: **FCC Part 15, Subpart C, 15.249**
For 900 MHz Transmitters

Tested By: NEMKO Dallas Inc.
802 N. Kealy Ave
Lewisville, TX 75057-3136

Authorized By:

A handwritten signature in blue ink, appearing to read "Tom Tidwell", is positioned above the printed name.

Tom Tidwell, EMC/Wireless Group Manager

Date: 11/27/01

Total Number of Pages: 18

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EQUIPMENT:MinionNet Telco Gateway

Section 1. Summary Of Test Results

Manufacturer: AFX Technology Group

Model No.: MinionNet Teleco Gateway

Serial No.: None

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 FCC Part 15.249. All tests were conducted using measurement procedure ANSI C63.4-1992. Radiated Emissions were made on an open area test site.



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.

See " Summary of Test Data".

**NVLAP LAB CODE: 100351-0**TESTED BY: Lance Walker DATE: 11/27/01

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EQUIPMENT:MinionNet Telco Gateway

Summary Of Test Data

NAME OF TEST	PARA. NO.	RESULT
Conducted Emissions	15.207	Complies
Radiated Emissions	15.249	Complies

Footnotes: None

EQUIPMENT:MinionNet Telco Gateway

Section 2. General Equipment Specification

Frequency Range:	Single fixed channel	
Operating Frequency(ies) of Sample:	915 MHz	
Tunable Bands:	N/A	
Number of Channels:	One	
Channel Spacing:	N/A	
User Frequency Adjustment:	N/A	
Integral Antenna	Yes ☒	No ☐

EQUIPMENT:MinionNet Telco Gateway

Description of Modification for Class II Permissive Change

Modifications Made During Testing

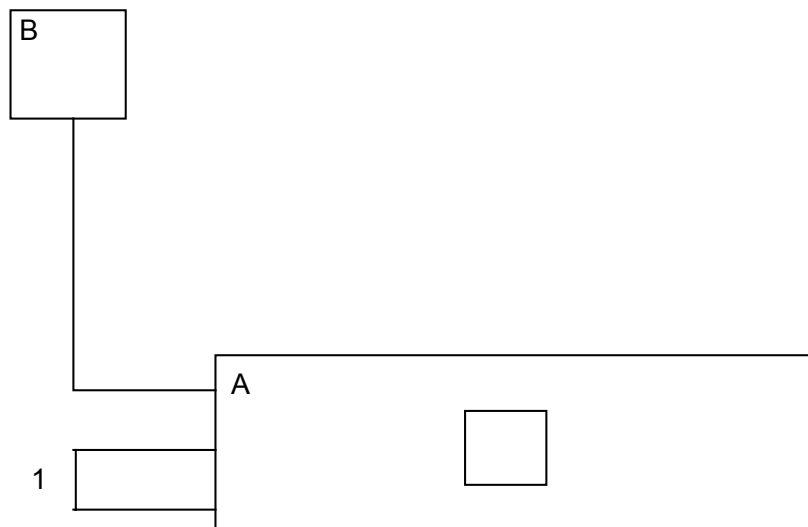
Not Applicable

EQUIPMENT:MinionNet Telco Gateway

Theory of Operation

The EUT is a short-range wireless device designed to provide a wireless connection to the PSTN for very short data bursts. The device could be used in a variety of applications

System Diagram



EQUIPMENT:MinionNet Telco Gateway

Section 3. Powerline Conducted Emissions

NAME OF TEST: Powerline Conducted Emissions	PARA. NO.: 15.207
TESTED BY: Clay Daniel	DATE: 11/26/01

Minimum Standard:

Frequency (MHz)	Maximum Powerline Conducted RF Voltage	
	(μ V)	(dB μ V)
0.45 - 30.0	250	48

Test Results: Complies. See attached data.**Measurement Data:** See attached data.**Method of Measurement:** (Procedure ANSI C63.4-1992)

Measurements were made using a spectrum analyzer with 10 kHz RBW, Peak Detector. Any emissions that are close to the limit are measured using a test receiver with 10 kHz bandwidth, CISPR Quasi-Peak Detector.

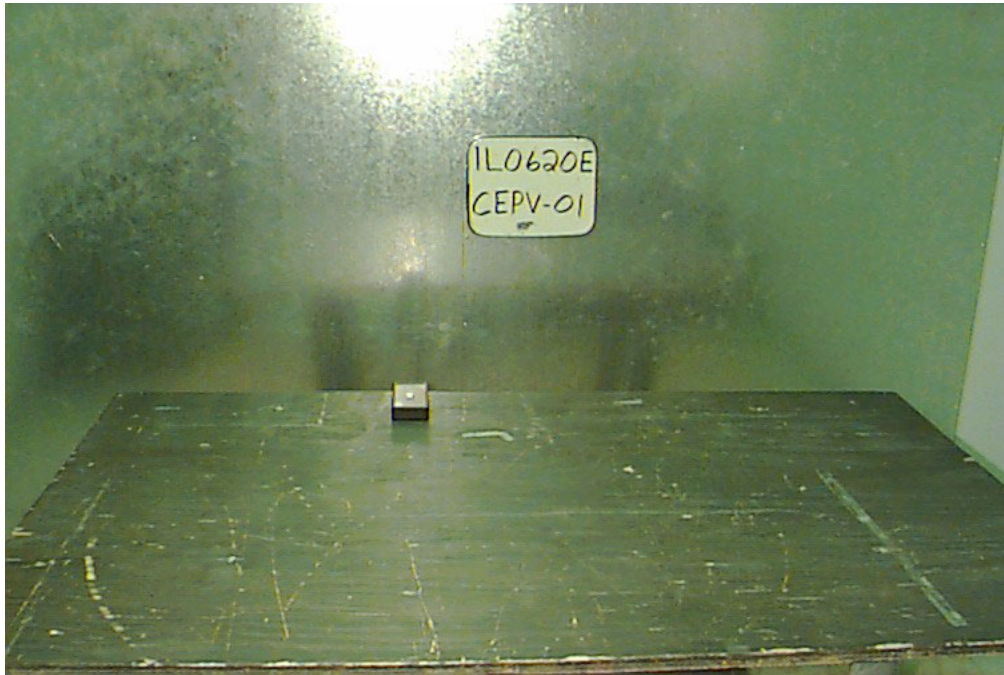
Nemko

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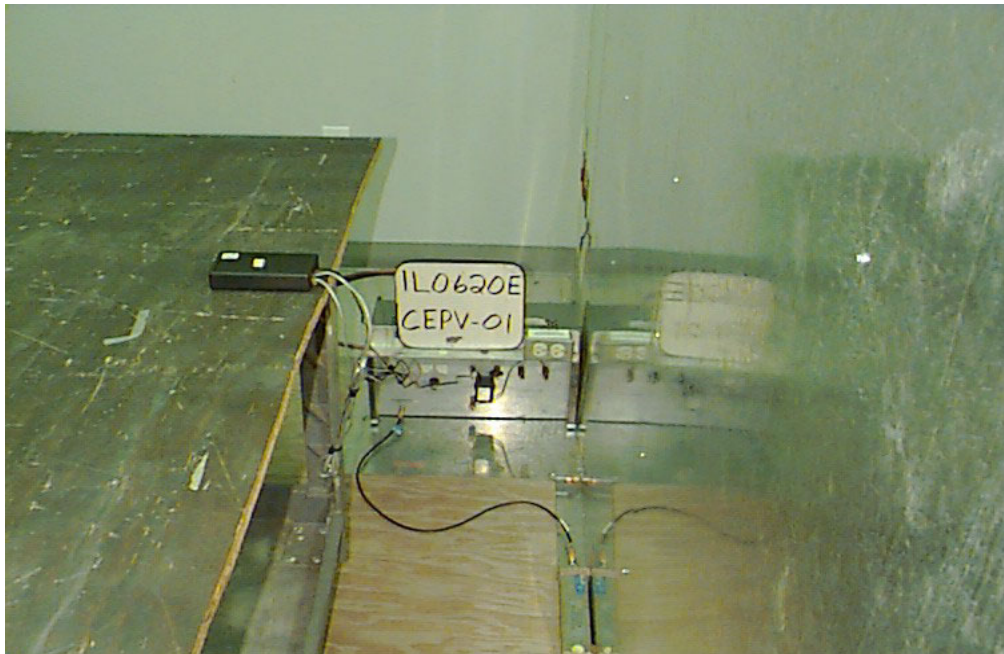
EQUIPMENT: MinionNet Telco Gateway

Conducted Photographs (Worst Case Configuration)

SIDE VIEW



FRONT VIEW



EQUIPMENT:MinionNet Telco Gateway

Section 4. Radiated Emissions

NAME OF TEST: Radiated Emissions	PARA. NO.: 15.249
TESTED BY: Lance Walker	DATE: November 27, 2001

Minimum Standard: Para no. 15.249

(a) The field strengths shall not exceed the following:

Fundamental (MHz)	Field Strength (mV/m)	Field Strength (dB μ V)	Harmonic (mV/m)	Harmonic (dB μ V)
902-928	50	94	0.5	54

(b) Field strength limits are specified at a distance of 3 metres.

(c) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated limits of 15.209 whichever is the less attenuation.

(d) The emission limits shown above are based on measurement instrumentation employing a CISPR quasi-peak detector below 1000 MHz and an averaging detector above 1000 MHz. However, the peak field strength of any emission shall not exceed the average limit by more than 20 dB.

Test Results: Complies**Measurement Data:** See attached table.**Maximizing Emission Levels:**

For hand held equipment or equipment that may be mounted in a variety of positions, the E.U.T. was tested on three orthogonal axis to determine orientation of worst-case emission levels.

The emission levels were checked with the supply voltage varied from -15% to +15% of nominal. No change in level was noted.

*EQUIPMENT:MinionNet Telco Gateway***Test Data - Radiated Emissions****Nemko Dallas, Inc.****Dallas Headquarters:**802 N. Kealy
Lewisville, TX 75057
Tel: (972) 436-9600
Fax: (972) 436-2667

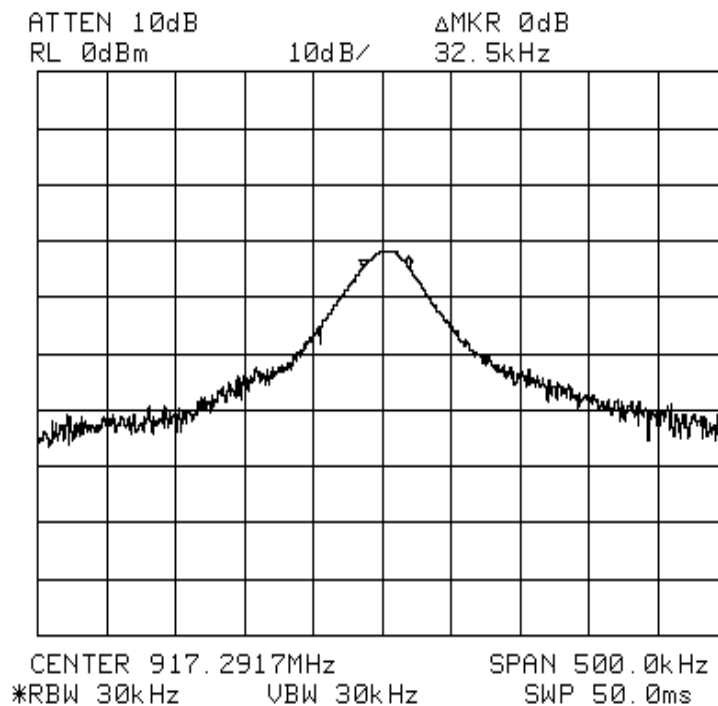
Radiated Emissions								
Page <u>1</u> of <u>1</u>								
Job No.: 1L0620R	Date: 12/19/01							
Specification: CFR 47, Part 15	Temperature(°C): 22							
Tested By: Lance Walker	Relative Humidity(%): 50							
E.U.T.: Minion 701								
Configuration: Always Transmitting								
Sample Number:								
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: 1481	Cable #2: 1485							
Receiver: #N/A	Cable #3: 1626							
Attenuator #1: #N/A	Cable #4: #N/A							
Attenuator #2: #N/A	Mixer: #N/A							
Additional equipment used:								
Measurement								
Uncertainty: +/- 1.6 dBuV								
Frequency (GHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-Amp Gain (dB)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Delta (dB)	Comment
0.917	42.2	23.7	2.1	0.0	68.0	94	-26.0	Vertical Fundamental
0.917	53.3	23.7	2.1	0.0	79.1	94	-14.9	Horizontal Fundamental
1.835	48.5	26.0	3.9	33.3	45.1	54	-8.9	Horizontal 2nd harm
1.835	36.8	26.0	3.9	33.3	33.4	54	-20.6	Vertical 2nd harmonic
2.752	46.5	29.0	3.6	33.5	45.6	54	-8.4	Horizontal 3rd harm
2.752	46.6	29.0	3.6	33.5	45.7	54	-8.3	Vert 3rd harm
3.670	45.0	30.8	3.8	33.7	45.9	54	-8.1	Horiz 4th
3.670	45.2	30.8	3.8	34.7	45.1	54	-8.9	Vert 4th
4.586	44.0	32.0	4.4	33.8	46.6	54	-7.4	Horiz 5th
4.586	44.0	32.0	4.4	33.8	46.6	54	-7.4	Vert 5th
5.504	42.2	34.1	4.6	33.5	47.4	54	-6.6	Horiz 6th NF
5.504	42.2	34.1	4.6	33.5	47.4	54	-6.6	Vert 6th NF
6.422	41.8	34.1	5.2	33.0	48.1	54	-5.9	Horiz 7th NF
6.422	41.8	34.1	5.2	33.0	48.1	54	-5.9	Vert 7th NF
7.339	41.5	35.2	5.9	33.0	49.6	54	-4.4	Horiz 8th NF
7.339	41.5	35.2	5.9	33.0	49.6	54	-4.4	Vert 8th NF
8.257	41.8	36.5	6.5	34.2	50.6	54	-3.4	Horiz 9th NF
8.257	41.8	36.5	6.5	34.2	50.6	54	-3.4	Vert 9th NF
9.174	43.5	37.2	6.8	35.3	52.2	54	-1.8	Horiz 10th NF
9.174	43.5	37.2	6.8	35.3	52.2	54	-1.8	Vert 10th NF
Notes: Took Peak Measurements with average limits applied								
Carrier was measured @ +/- 15% supply with no change in output power								

*EQUIPMENT:MinionNet Telco Gateway***Bandwidth Plot**

Nemko Dallas, Inc.

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

Data Plot		3 dB (99%) BW	
Page <u>1</u> of <u>1</u>		Complete <u>X</u>	
Job No.: 1L0620R	Date: 12/19/2001	Preliminary: _____	
Specification: N/A	Temperature(°C): 22		
Tested By: Lance Walker	Relative Humidity(%): 50		
E.U.T.: Telco Gateway			
Configuration: Normal with termination			
Sample Number: S01			
Location: AC 3	RBW: 30 kHz	Measurement	
Detector Type: Peak	VBW: 30 kHz	Distance: 3 m	
Test Equipment Used			
Antenna: 1304	Directional Coupler: _____		
Pre-Amp: 1016	Cable #1: 1484		
Filter: _____	Cable #2: 1485		
Receiver: 1464	Cable #3: 1626		
Attenuator #1: _____	Cable #4: _____		
Attenuator #2: _____	Mixer: _____		
Additional equipment used: _____			
Measurement Uncertainty: +/-1.7 dB			

**Notes:** radiated measurement taken at 3M showing the Bandwidth of 99% power

EQUIPMENT: MinionNet Telco Gateway

Radiated Photographs (Worst Case Configuration)

FRONT VIEW



REAR VIEW



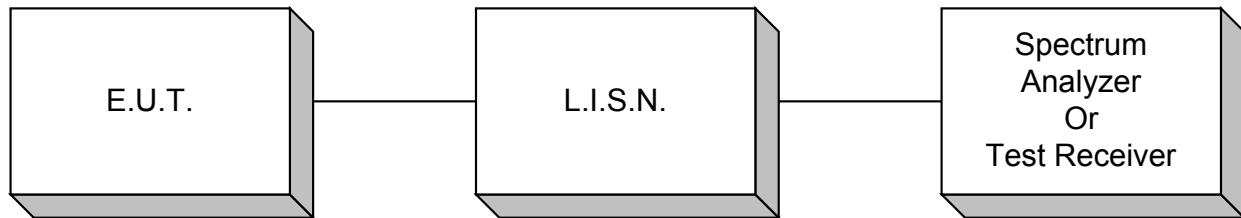
*EQUIPMENT:MinionNet Telco Gateway***Section 5. Test Equipment List**

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date
1304	HORN ANTENNA	ELECTRO METRICS RGA-60	6151	07/30/01
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	05/30/01
1481	Microwave Highpass Filter	K & L 3DH1-2000/T8000-0/0	4	Cal B4 Use
1484	Cable 2.0-18.0 Ghz	Storm PR90-010-072	N/A	06/01/01
1485	Cable 2.0-18.0 Ghz	Storm PR90-010-216	N/A	06/01/01
1626	CABLE, 5 ft	MEGAPHASE 10311 1GVT4	N/A	CBU
545	LISN	Schwarz Beck 8120	8120350	07/09/01
758	HIGH PASS FILTER	SOLAR 7930-5.0	197	07/18/01
1553	CABLE 1m	KTL RG223	N/A	08/06/01
970	CABLE, 14.8m	KTL RG223	N/A	05/29/01
1502	Quasi Peak Adapter	HP A208051	2521A00620	09/26/01
1022	Receiver	Polarad ESV-33	872149/28	01/23/01
1603	LIMITER	FISCHER FCC-450-1.25-N	447	11/10/01

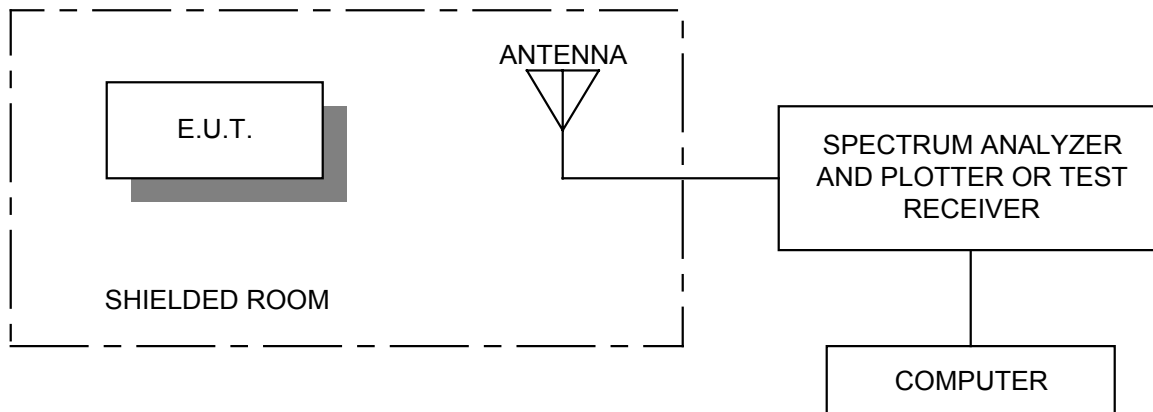
ANNEX A - TEST DIAGRAMS

EQUIPMENT: MinionNet Telco Gateway

Conducted Emissions



Radiated Prescan



EQUIPMENT: MinionNet Telco Gateway

Test Site For Radiated Emissions

