



Nemko Test Report: 6L0209RUS1

Applicant: RF Monolithics, Inc.
4441 Sigma Road
Dallas, TX 75244
USA

Equipment Under Test: BTR-1
(E.U.T.)

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

Tested By: Nemko USA Inc.
802 N. Kealy
Lewisville, Texas 75057-3136

Authorized By:

A handwritten signature in black ink, appearing to read "Kevin Rose".

Kevin Rose Wireless Engineer

Date: June 2, 2006

*EQUIPMENT: BTR-1***Table Of Contents**

Section 1.	Summary Of Test Results	3
Section 2.	General Equipment Specification	5
Section 3.	Powerline Conducted Emissions	7
Section 4.	Radiated Emissions.....	11
Section 5.	Test Equipment List.....	15
ANNEX A	TEST DIAGRAMS	16

*EQUIPMENT: BTR-1***Section 1. Summary Of Test Results**

Manufacturer: RF Monolithics, Inc.

Model No.: BTR-1

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 C63.4-2003. Radiated Emissions were made on an open area test site.



New Submission



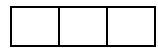
Production Unit



Class II Permissive Change



Pre-Production Unit



Equipment Code

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: 100426-0**

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FCC PART 15, SUBPART C
FOR 900 MHz TRANSMITTERS
REPORT NO.: 6L0209RUS1

EQUIPMENT: BTR-1

Summary Of Test Data

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

Footnotes For N/A's:

*EQUIPMENT: BTR-1***Section 2. General Equipment Specification**

Frequency Range:	Single	
Operating Frequency(ies) of Sample:	904 MHz	
Tunable Bands:	N/A	
Number of Channels:	One	
Channel Spacing:	NA	
User Frequency Adjustment:	None	
Integral Antenna	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

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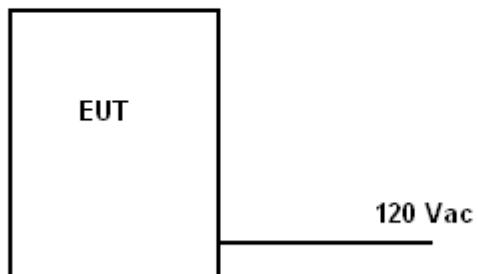
FCC PART 15, SUBPART C
FOR 900 MHz TRANSMITTERS
REPORT NO.: 6L0209RUS1

EQUIPMENT: BTR-1

Description of EUT

Wireless MESH network that allows data to be transmitted and received on 904 MHz.

System Diagram



*EQUIPMENT: BTR-1***Section 3. Powerline Conducted Emissions**

NAME OF TEST: Powerline Conducted Emissions	PARA. NO.: 15.207
TESTED BY: David Light	DATE: 5/17/06

Minimum Standard: Paragraph No. 15.207

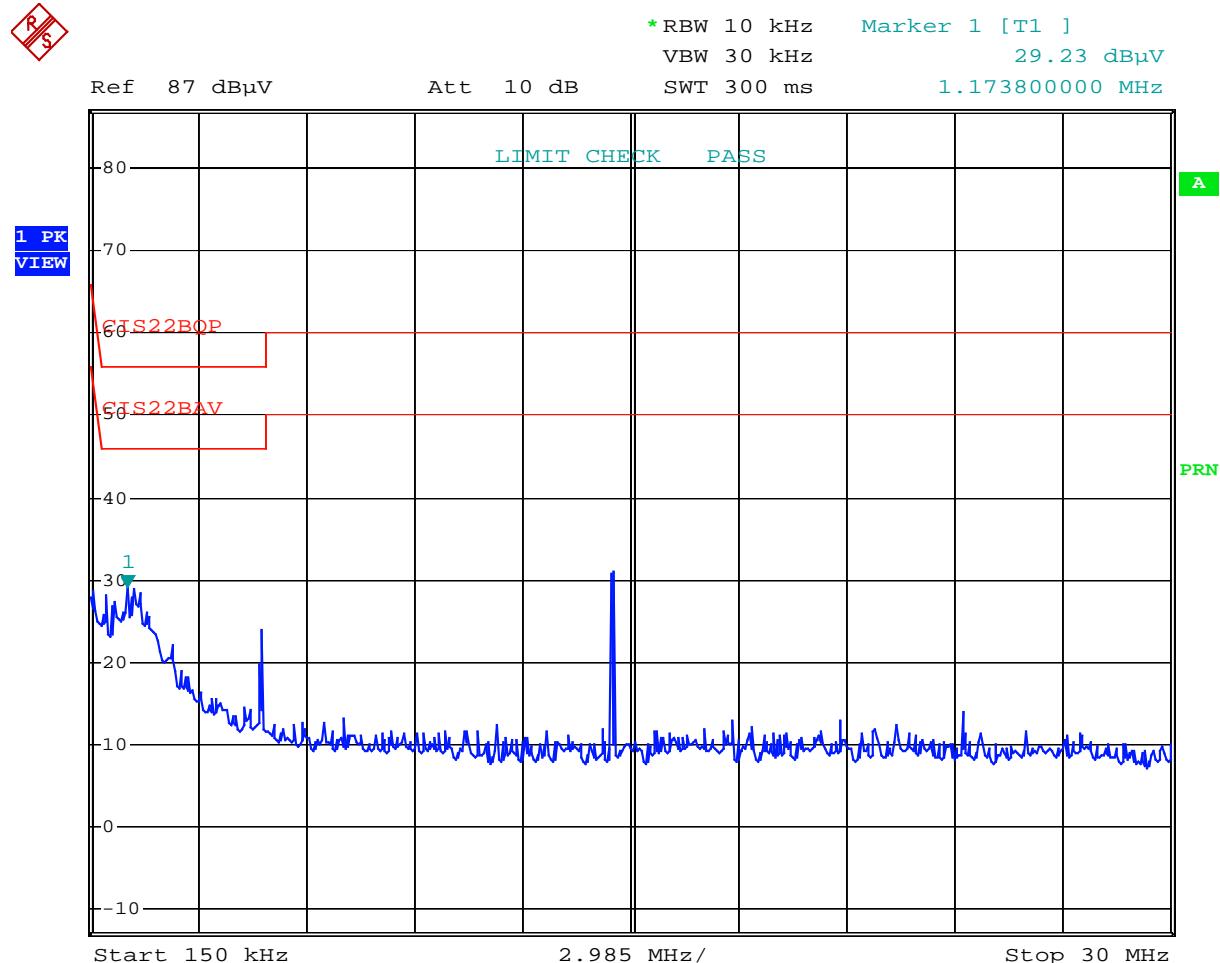
Frequency of Conducted Emission (MHz)	Limit (dBmV) Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

Test Results: Complies. The worst case emission is 32.94 dB μ V at 1.59 MHz on L2. This is 13.06 dB below the average limit of 46 dB μ V. This is a PEAK measurement.**Measurement Data:** See attached plots.**Equipment Used:** 1258-1112-704-1659-813**Measurement Uncertainty:** +/- 1.7 dB**Temperature:** 22 °C**Relative Humidity:** 40 %

EQUIPMENT: BTR-1**Test Data – Powerline Conducted Emissions**

Line 1



Date: 17.MAY.2006 14:40:05

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FCC PART 15, SUBPART C
FOR 900 MHz TRANSMITTERS
REPORT NO.: 6L0209RUS1

EQUIPMENT: BTR-1

Test Data – Powerline Conducted Emissions

Line 2

Ref 87 dB μ V Att 10 dB SWT 300 ms 1.591700000 MHz

LIMIT CHECK PASS

1 PK VIEW

CTS22BOP

CTS22BAV

PRN

1

Date: 17.MAY.2006 14:50:58

EQUIPMENT: BTR-1

Conducted Photographs



*EQUIPMENT: BTR-1***Section 4. Radiated Emissions**

NAME OF TEST: Radiated Emissions	PARA. NO.: 15.249
TESTED BY: David Light	DATE: 6/17/06

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) ...for frequencies above 1000 MHz, the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

Test Results: Complies**Measurement Data:** See attached table.

EQUIPMENT: BTR-1

Test Data - Radiated Emissions

Radiated Emissions Data											
Complete	X							Job #:	6L0209	Test #:	Radiated 1
Preliminary								Page	1	of	1
Client Name:	RF Monolithics										
EUT Name:	BTR-1										
EUT Model #:	None										
EUT Part #:	None										
EUT Serial #:	None										
EUT Config.:	Tx ON										
Specification:	15.249						Reference:				
Rod. Ant. #:		Temp. (deg. C):	22				Date:	05/17/06			
Bicon Ant. #:	760	Humidity (%):	40				Time:	1:00			
Log Ant. #:	759	EUT Voltage:	120				Staff:	David Light			
Horn Ant. #:	993	EUT Frequency:	60				Photo ID:	NA			
Cable 1. #:	1484	Phase:	1				Peak Bandwidth <1GHz:	100 KHz			
Cable 2. #:	1514	Location:	D OATS				Video Bandwidth <1GHz:	100 KHz			
Preamp 1. #:	762	Distance:	3				Peak Bandwidth >1GHz:	1 MHz			
Preamp 2. #:	na						Video Bandwidth >1GHz:	1 MHz			
Atten #:	1465										
Detector #:	1464										
Meas. Freq. (MHz)	Ant. Pol. (H/V)	Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	QP readings Comment
											6L0209
904	V	0	87.7	23.6	9.2	27.9	92.6	94.0	-1.4	Pass	Peak / Carrier
904	H	0	78.1	23.6	9.2	27.9	83.0	97.0	-14.0	Pass	Peak / Carrier
1808	V	10	45.5	27	2.7	31.8	53.4	74.0	-20.6	Pass	Peak
1808	V	10	37.8	27	2.7	31.8	45.7	54.0	-8.3	Pass	Average
2712	V	0	51.7	29.3	3.6	32.5	52.1	74.0	-21.9	Pass	Peak
2712	V	0	48.3	29.3	3.6	32.5	48.7	54.0	-5.3	Pass	Average
3616	V	0	45.5	30.3	3.6	31.8	47.6	74.0	-26.4	Pass	Peak
3616	V	0	37.2	30.3	3.6	31.8	39.3	54.0	-14.7	Pass	Average
4520	V	0	44.7	32.1	4.1	31.0	49.9	54.0	-4.1	Pass	Peak
5424	V	0	45	33.6	4.7	28.6	54.7	74.0	-19.3	Pass	Peak
5425	V	0	39.7	33.6	5.7	28.6	50.4	55.0	-4.6	Pass	Average
6328	V	0	42	34.9	4.7	31.7	49.9	54.0	-4.1	Pass	Peak
7232	V	0	40.7	35.8	5.1	34.0	47.6	54.0	-6.4	Pass	Peak
8136	V	0	41	37.5	5.7	33.0	51.2	54.0	-2.8	Pass	Peak
9040	V	0	40.2	37	5.7	33.3	49.6	54.0	-4.4	Pass	Peak
1808	H	10	43.8	27	2.7	31.8	51.7	54.0	-2.3	Pass	Peak
2712	H	0	46.5	29.3	3.6	32.5	46.9	54.0	-7.1	Pass	Peak
3616	H	0	44.7	30.3	3.6	31.8	46.8	54.0	-7.2	Pass	Peak
4520	H	0	43	32.1	4.1	31.0	48.2	54.0	-5.8	Pass	Peak
5424	H	0	45.2	33.6	4.7	28.6	54.9	74.0	-19.1	Pass	Peak
5425	H	0	39.3	33.6	4.7	28.6	49.0	54.0	-5.0	Pass	Average
6328	H	0	40.5	34.9	4.7	31.7	48.4	54.0	-5.6	Pass	Peak
7232	H	0	37.8	35.8	5.1	34.0	44.7	54.0	-9.3	Pass	Peak
8136	H	0	39.2	37.5	5.7	33.0	49.4	54.0	-4.6	Pass	Peak
9040	H	0	39.5	37	5.7	33.3	48.9	54.0	-5.1	Pass	Peak

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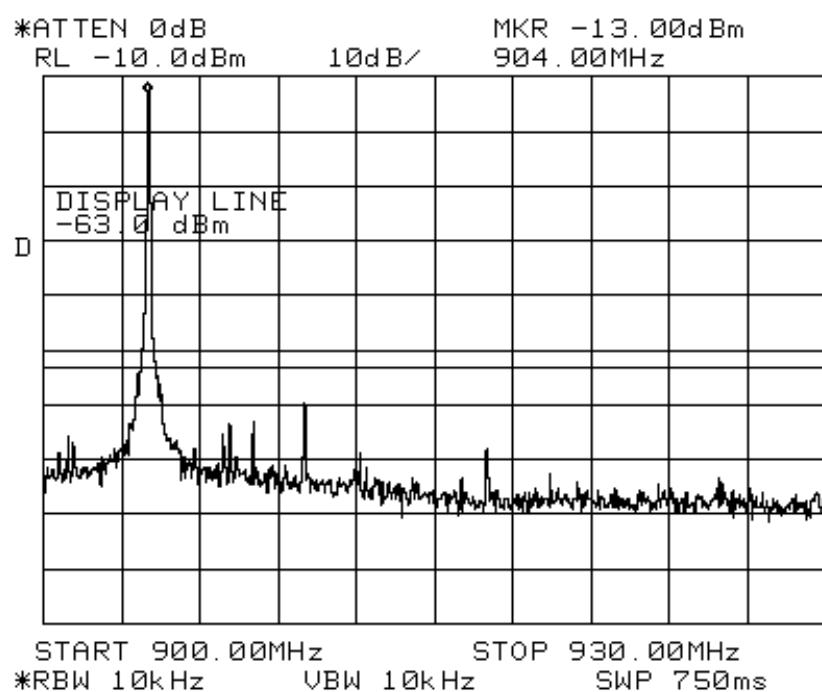
- 1) The spectrum was searched from 30 MHz to the tenth harmonic of the carrier. All readings within 20 dB of the specification limit are reported.
- 2) The device was tested at +/- 15% supply voltage with no change in output power
- 3) Average measurements were made using 10 kHz VBW

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FCC PART 15, SUBPART C
FOR 900 MHz TRANSMITTERS
REPORT NO.: 6L0209RUS1

EQUIPMENT: BTR-1

Bandedges



EQUIPMENT: BTR-1
Radiated Photographs



*EQUIPMENT: BTR-1***Section 5. Test Equipment List**

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
1258	LISN .15mhz-30mhz	EMCO 0	1305	04/19/06	04/19/07
1112	Cable 1.1m	Nemko USA, Inc. RG223	0	04/20/06	04/20/07
704	FILTER, HIGH PASS, 5 KHz	SOLAR 7930-5.0	933126	04/20/06	04/20/07
1659	Spectrum Analyzer	Rhode & Schwarz FSP	973353	01/10/06	01/10/07
813	CABLE, 5.7m	Nemko USA, Inc. RG223	N/A	03/09/06	03/09/07
760	Antenna biconical	Electro Metrics MFC-25	477	08/04/05	08/04/06
759	ANTENNA, LOG PERIODIC	A.H. SYSTEMS SAS-200/510	556	02/13/06	02/13/07
1484	Cable 2.0-18.0 Ghz	Storm PR90-010-072	N/A	08/26/05	08/26/06
1485	Cable 2.0-18.0 Ghz	Storm PR90-010-216	N/A	08/26/05	08/26/06
1465	10 db Attenuator DC 8.0 Ghz	Midwest Microwave 292/10db	NONE	CBU	N/A
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	04/20/06	04/20/07
791	PREAMP, 25dB	Nemko USA, Inc. LNA25	398	04/20/06	04/20/07
1464	Spectrum analyzer	Hewlett Packard 8563E	3551A04428	01/14/05	01/15/07
1481	Microwave Highpass Filter	K & L 3DH1-2000/T8000-0/0	4	Cal B4 Use	N/A
993	Horn antenna	A.H. Systems SAS-200/571	XXX	08/01/05	08/02/07

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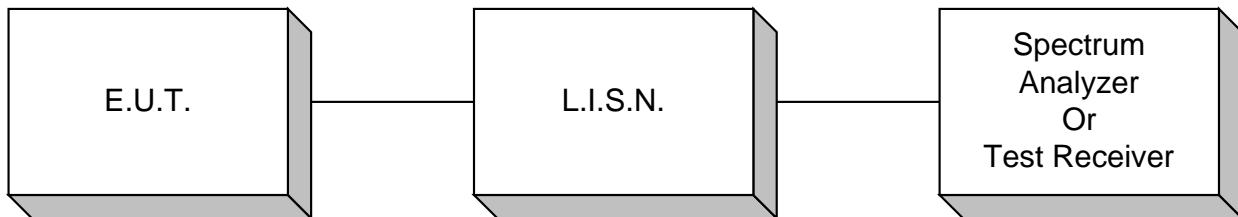
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FCC PART 15, SUBPART C
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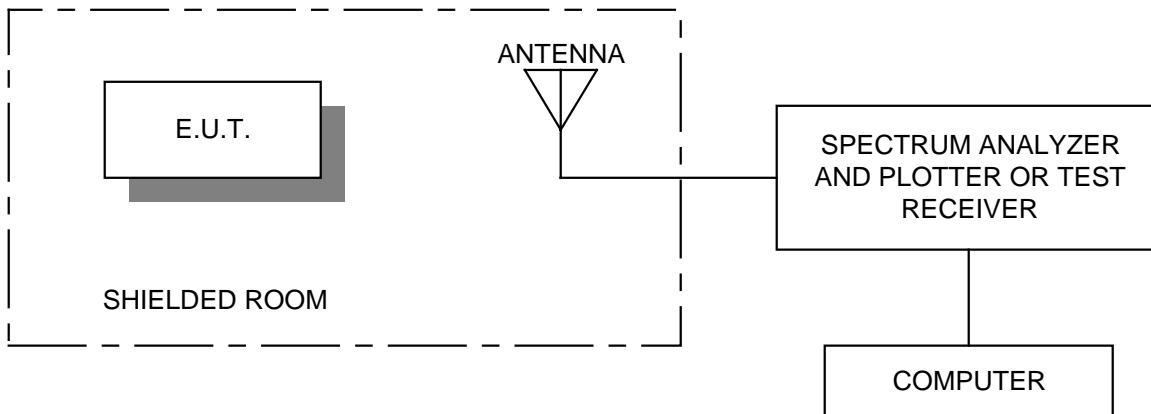
ANNEX A

TEST DIAGRAMS

EQUIPMENT: BTR-1
Conducted Emissions



Radiated Prescan



EQUIPMENT: BTR-1

Test Site For Radiated Emissions

