



Nemko Test Report: 28428RUS1

Applicant: TeleAlarm SA
Rue du Pont 23
La Chaux-de-Fonds
CH-2300
Switzerland

**Equipment Under Test:
(E.U.T.)** MIYN46

FCC Identifier: W9N-MIYN46

In Accordance With: **FCC Part 15, Subpart C and RSS 210, Issue 7**
For Low Power Transmitters Operating Periodically
In The Band 40.66 - 40.77 MHz And Above 70 MHz

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

TESTED BY:

A handwritten signature in black ink, appearing to read 'David Light', written over a horizontal line.

David Light, Senior Wireless Engineer

DATE: 15 June 2009

APPROVED BY:

A handwritten signature in blue ink, appearing to read 'Tom Tidwell', written over a horizontal line.

Tom Tidwell, Telecom Direct

DATE: 15 June 2009

Total Number of Pages: 19

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Section 1. Summary of Test Results

Manufacturer: TeleAlarm SA

Model No.: MIYN46

Serial No.: 00000002 (original sample); 00000001 (continuous mode)

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 15.231. All tests were conducted using measurement procedure ANSI C63.4-2003. 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.

See "Summary of Test Data".



NVLAP Lab Code 100426-0

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This report applies only to the items tested.

Summary Of Test Data

Name of Test	Paragraph No.	Results
Transmission Requirements	15.231(a), RSS 210 A1.1.1	Complies
Radiated Emissions	15.231(b), RSS 210 A1.1.2	Complies
Occupied Bandwidth	15.231(c), RSS 210 A1.1.3	Complies
Frequency Tolerance	15.231(d)	NA
Alternate Field Strength Requirements	15.231(e)	NA
Powerline Conducted Emissions	15.207, RSS GEN 7.2.2	Complies

Footnotes:

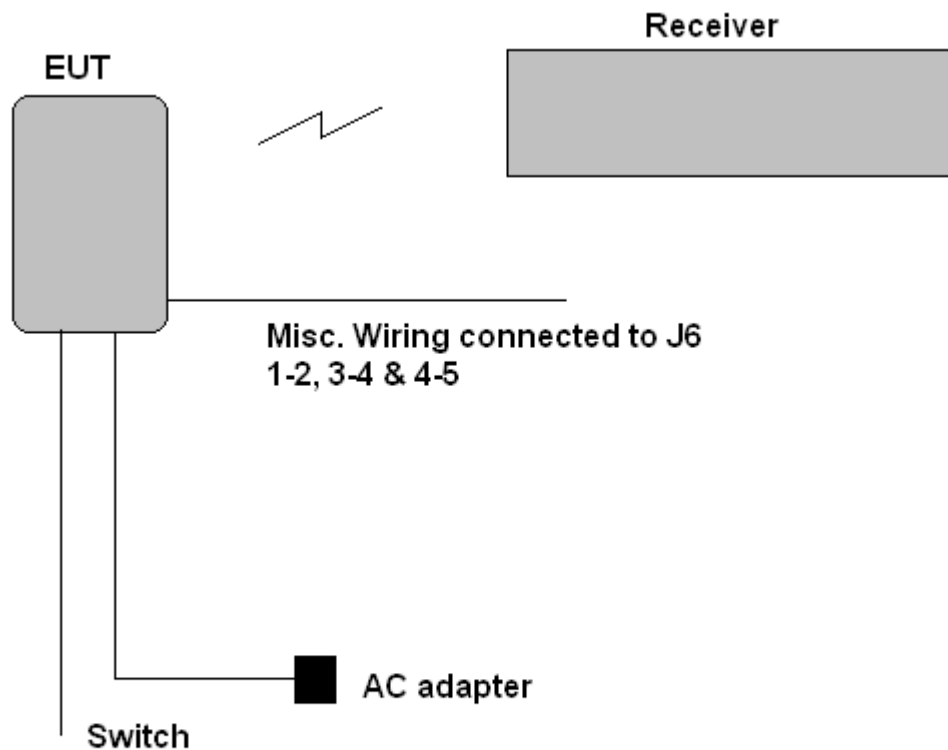
- 1) The radio does not operate in the 40.66-40.70 MHz band

Section 2. Equipment Under Test (E.U.T.)**General Equipment Information**

Frequency Range:	434.01 MHz
Operating Frequency(ies) of Sample:	434.01 MHz
Type of Emission:	FSK
Emission Designator:	10K9F1D
Supply Power Requirement:	3 Vdc battery or 10 to 24 Vdc external power source
Duty Cycle Correction Factor:	None

Description of E.U.T.

Push button periodic transmitter.

System Diagram

The device was tested with a generic AC adapter that is not supplied by the manufacturer.

AULT 120850-A000C

Input 120 Vac

Output 12 Vdc

Section 3. Transmission Requirements

NAME OF TEST: Transmission Requirements	PARA. NO.: 15.231(a)
TESTED BY: David Light	DATE: 15 June 2009

- Minimum Standard:** 15.231(a) Continuous transmissions such as voice, video or data transmissions are not permitted.
- 15.231(a)(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds after being released.
- 15.231(a)(2) A transmitter activated automatically shall cease transmission within 5 seconds of activation.
- 15.231(a)(3) Periodic transmissions at regular pre-determined intervals are not permitted. However polling or supervisory transmissions to determine system integrity of transmitters used in security or safety applications are allowed if the periodic rate of transmission does not exceed one transmission of not more than one second duration per hour for each transmitter.
- 15.231(a)(4) Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm.

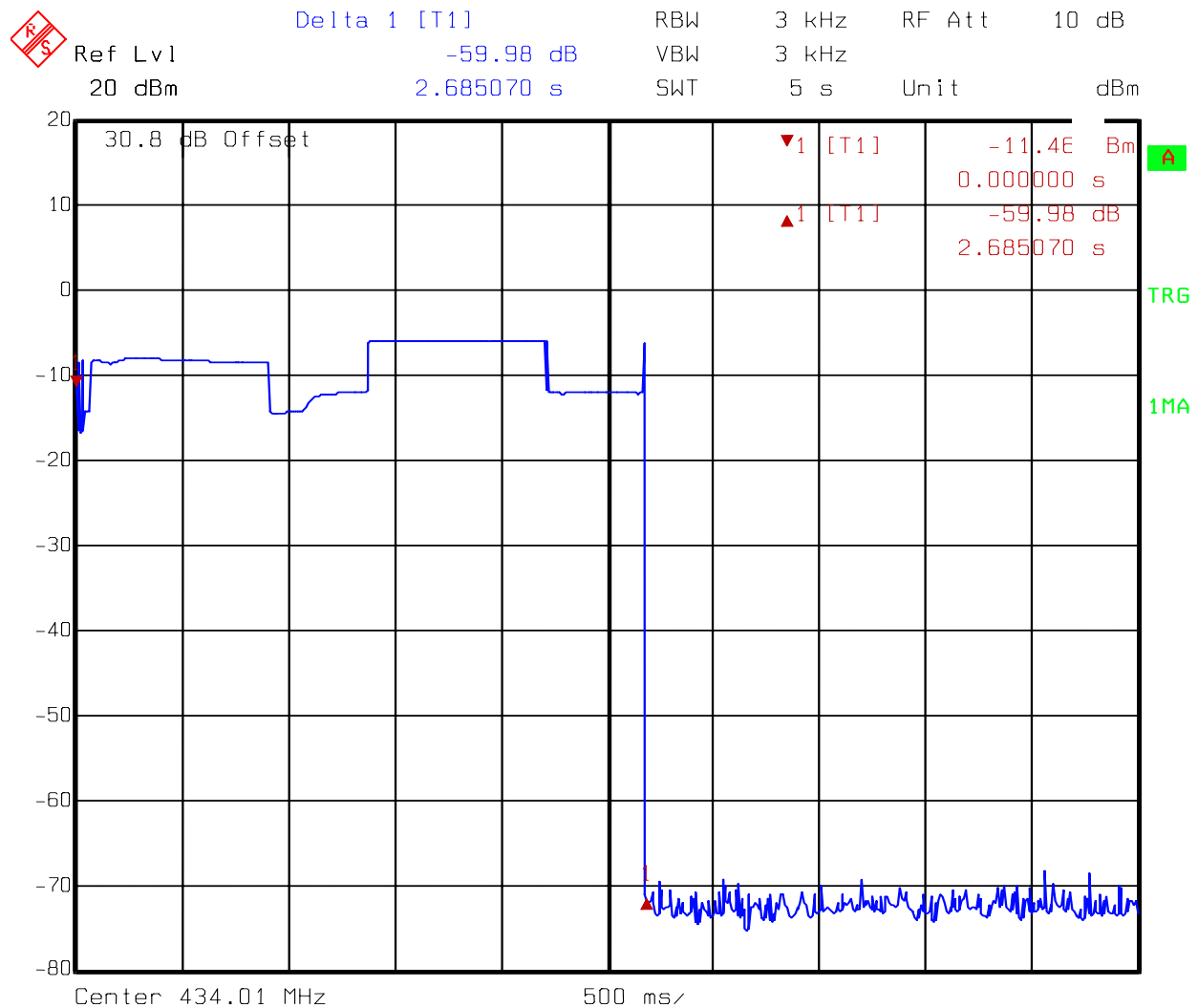
Test Results: [Complies.](#)

Test Data: [Compliance was determined by verification of technical specifications and a functional test on the equipment.](#)

Rationale for Compliance with Transmission Requirements

15.231(a)(1) 15.231(a)(2) :	<input checked="" type="checkbox"/> Manual activation	TX deactivation time: 2.5 msec.
	<input type="checkbox"/> Automatic activation	
15.231(a)(3) :	<input type="checkbox"/> Regular, predetermined transmissions	TX rate and duration: 1.7 sec. every 24 hours
	<input checked="" type="checkbox"/> Polling or supervisory transmissions	
15.231(a)(4) :	<input type="checkbox"/> Alarm device operating during the pendency of alarm condition	
	<input checked="" type="checkbox"/> Non-alarm device	

Test Data – Transmission Requirements



Date: 15.JUN.2009 10:53:12

Test Equipment: 1036-1082-802

Section 4. Radiated Emissions

NAME OF TEST: Radiated Emissions	PARA. NO.: 15.231(b)
TESTED BY: David Light	DATE: 15 June 2009

Minimum Standard:

Permissible Field Strength Limits (Momentarily Operated Devices)

Fundamental Frequency (MHz)	Field Strength of Fundamental Microvolts/Meter at 3 meters; (watts)	Field Strength of Unwanted Emissions Microvolts/Meter at 3 meters; (watts)
40.66 - 40.70	2,250	225
70-130	1, 250	125
130-174	1,250 to 3,750*	125 to 375
174-260 (note 1)	3,750	375
260-470 (note 1)	3,750 to 12,500*	375 to 1,250
Above 470	12,500	1,250

Notes:

Use quasi-peak or averaging meter.

* Linear interpolation with frequency F in MHz

For 130 - 174 MHz: $FS \text{ (microvolts/m)} = (56.82 \times F) - 6136$

For 260 - 470 MHz: $FS \text{ (microvolts/m)} = (41.67 \times F) - 7083$

Any emissions that fall within the restricted bands of 15.205 shall not exceed the following limits:

Frequency (MHz)	Field Strength ($\mu\text{V/m}$ @ 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

Test Results:

Complies. The worst-case emission level is 78.7 dB $\mu\text{V/m}$ @ 3m at 434.01 MHz. This is 2.1 dB below the specification limit.

Test Data:

See attached table.

Above 1 GHz a spectrum analyzer and low noise amplifier are used to measure emission levels. The spectrum analyzer resolution bandwidth was set to 1 MHz and video bandwidth was 3 MHz.

In the case of handheld equipment, the E.U.T. is rotated in three planes to obtain worst-case results.

Test Data - Radiated Emissions

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.	Comment
434	V	0	59.1	17	2.6	0.0	78.7	80.8	-2.1	Pass	Carrier
434	H	0	49.4	17	2.6	0.0	69.0	80.8	-11.8	Pass	Carrier
868	V	0	46.34	23	3.7	33.8	39.2	60.8	-21.6	Pass	
868	H	0	41	23	3.7	33.8	33.9	60.8	-26.9	Pass	
1302	H	0	37.8	24.8	3.0	33.8	31.8	54.0	-22.2	Pass	Noise floor
1736	H	0	36.71	24.8	3.0	34.3	30.2	60.8	-30.6	Pass	Noise floor
2170.1	H	0	35.5	28.6	3.3	34.3	33.1	60.8	-27.7	Pass	Noise floor
2604.1	H	0	37.2	28.9	3.5	34.3	35.3	60.8	-25.5	Pass	Noise floor
3038.1	H	0	35.6	29.9	4.0	34.4	35.1	60.8	-25.7	Pass	Noise floor
3472.1	H	0	35.6	29.8	4.3	34.4	35.3	60.8	-25.5	Pass	Noise floor
3906.1	H	0	35.3	31.4	4.3	34.5	36.5	54.0	-17.5	Pass	Noise floor
4340.1	H	0	35.3	32.2	5.2	34.5	38.2	54.0	-15.8	Pass	Noise floor
1302	V	0	37.84	24.8	3.0	33.8	31.8	54.0	-22.2	Pass	Noise floor
1736	V	0	36.44	24.8	3.0	34.3	29.9	60.8	-30.9	Pass	Noise floor
2170.1	V	0	36.65	28.6	3.3	34.3	34.3	60.8	-26.6	Pass	Noise floor
2604.1	V	0	36.37	28.9	3.5	34.3	34.5	60.8	-26.3	Pass	Noise floor
3038.1	V	0	35.2	29.9	4.0	34.4	34.7	60.8	-26.1	Pass	Noise floor
3472.1	V	0	35.72	29.8	4.3	34.4	35.4	60.8	-25.4	Pass	Noise floor
3906.1	V	0	36	31.4	4.3	34.5	37.2	54.0	-16.8	Pass	Noise floor
4340.1	V	0	35.02	32.2	5.2	34.5	37.9	54.0	-16.1	Pass	Noise floor

- 1) The spectrum was searched from 30 MHz to 5 GHz.
- 2) The device was tested with a fresh battery.
- 3) The device was tested on three axis'.
- 4) All readings are PEAK unless otherwise stated.

Analyzer Settings: <1000 MHz: RBW=VBW=100 kHz, Peak detector
>1000 MHz: RBW=VBW=1 MHz, Peak detector

Test Distance: 3 meters

Test Equipment: 1763-1783-1304-1785-1016-1767

The device was tested per system diagram on page 6 minus the receiver as the transmitter was operating in a test mode.

The voltage was varied 10.2 and 13.8 Vdc with no effect on output power.

Section 5. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth	PARA. NO.: 15.231(c)
TESTED BY: David Light	DATE: 15 June 2009

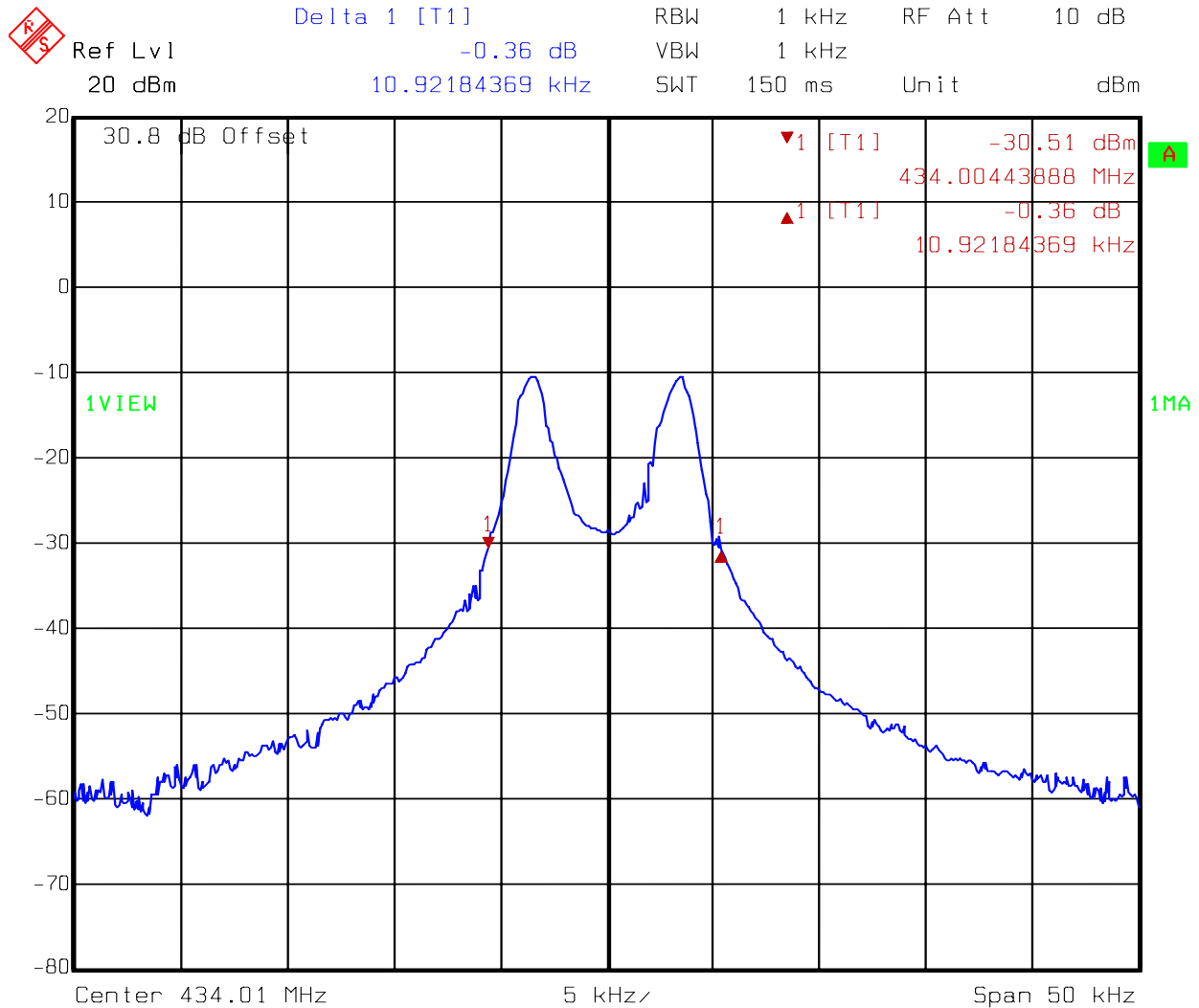
Minimum Standard: 15.231(c) The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

Test Results: [Complies. See attached graph.](#)

Test Data: See attached graph.

Test Equipment: 1036-802-1082

Test Data – Occupied Bandwidth



Date: 15.JUN.2009 10:49:45

Section 6. Powerline Conducted Emissions

NAME OF TEST: Powerline Conducted Emissions	PARA. NO.: 15.207(a)
TESTED BY: David Light	DATE: 02 July 2009

Test Results: Complies.

Measurement Data: See attached plots.

Measurement Uncertainty: +/- 1.7 dB

Test Equipment:

Analyzer Settings: RBW = 10 kHz
VBW = 100 kHz
Peak detector

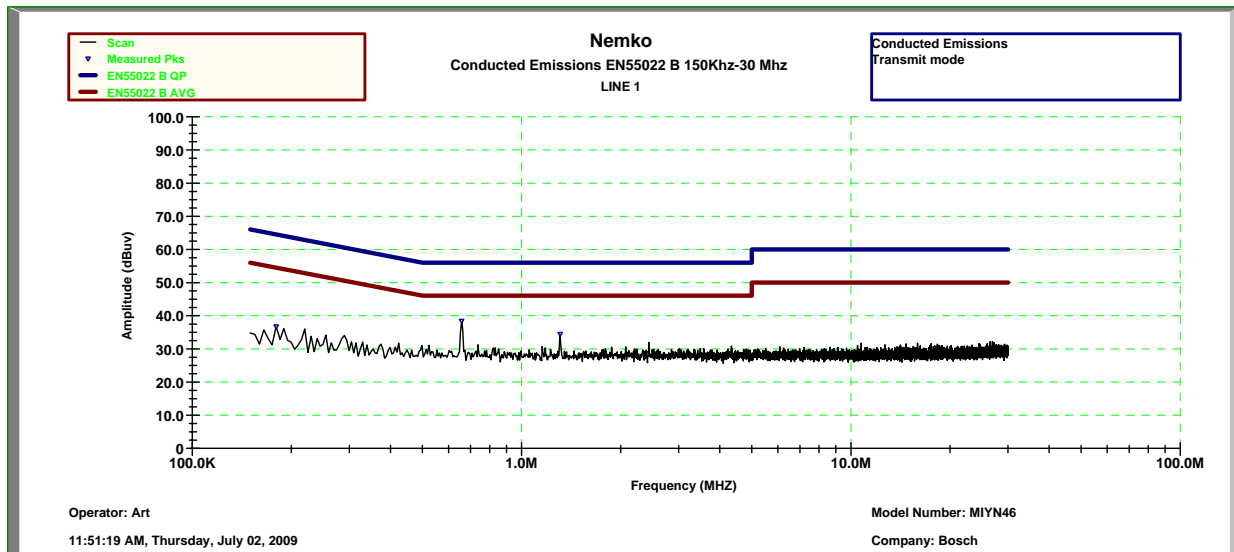
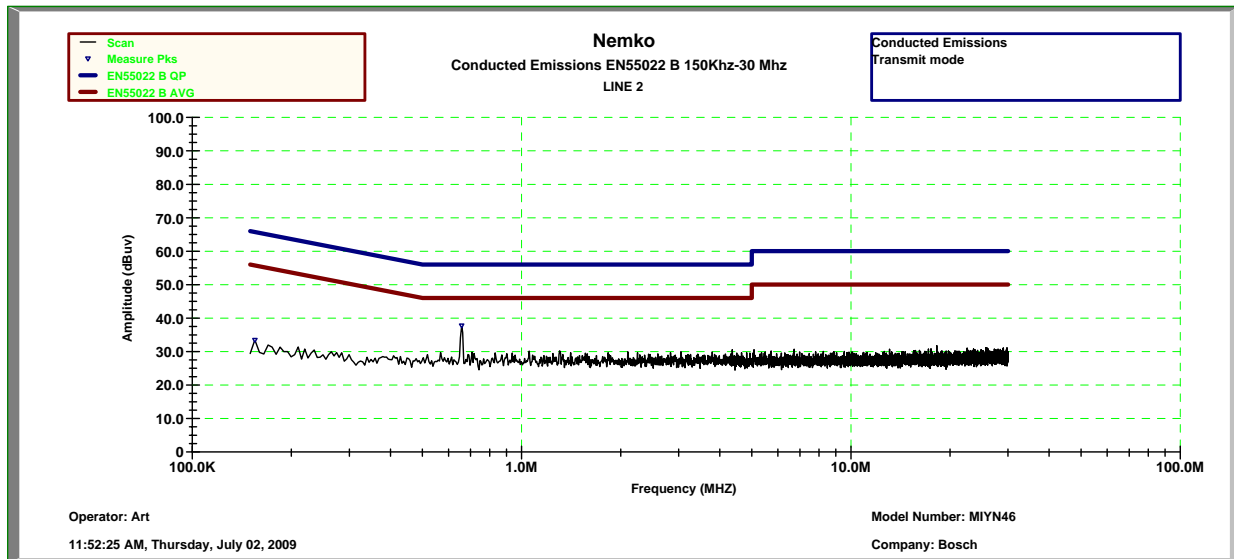
The device was tested with a generic AC adapter that is not supplied by the manufacturer.

AULT 120850-A000C

Input 120 Vac

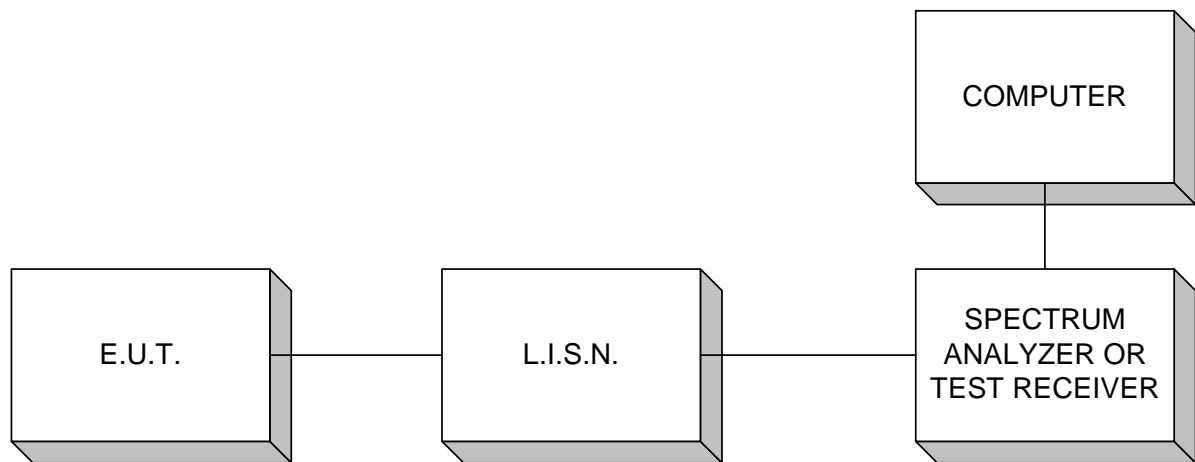
Output 12 Vdc

Test Data – Powerline Conducted Emissions

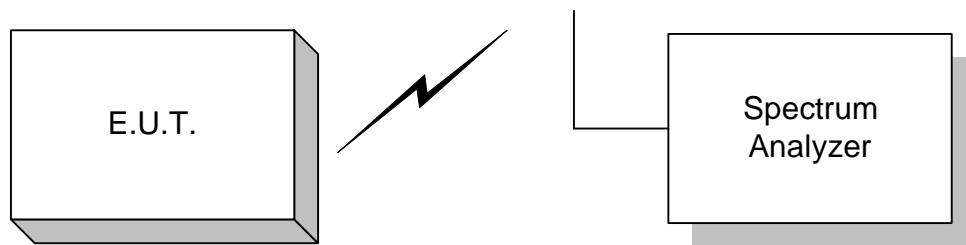


Section 7. Block Diagrams

Conducted Emissions

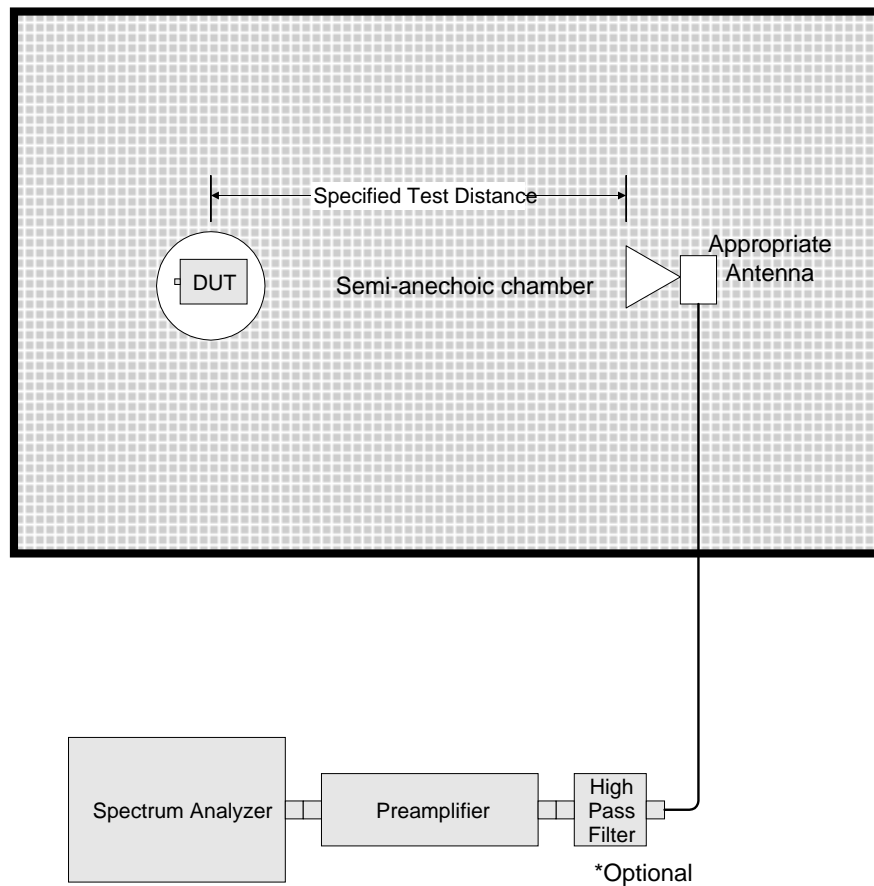


Occupied Bandwidth, Duty Cycle



Semi-anechoic chamber For Radiated Emissions**Radiated Emissions 30 MHz – 26.5 GHz**

The spectrum was searched up to the 10th harmonic of the fundamental frequency of operation.



Section 8. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
1082	CABLE 2m	Astrolab 32027-2-29094-72TC	N/A	CBU	N/A
802	Near Field Probe Set	EMCO 7405	103	N/A	N/A
1763	Bilog Antenna	Schaffner CBL 6111D	22926	11/04/08	11/04/09
1304	HORN ANTENNA	ELECTRO METRICS RGA-60	6151	09/09/08	09/10/10
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	05/07/08	05/07/09
1785	Preamplifier	A.H. SYSTEMS PAM-0126	143	04/06/09	04/06/10
1767	MI Test Receiver 20Hz - 26.5 GHz - 150 - +30 dBm LC	ROHDE & SCHWARZ ESIB26	837491/0002	09/20/07	09/20/09
1783	Cable	Nemko? 0	0	07/12/08	07/12/09
1258	LISN .15mhz-30mhz	EMCO 3825/2	1305	07/22/08	07/22/09
704	FILTER, HIGH PASS, 5 KHz	SOLAR 7930-5.0	933126	CBU	NA
1485	Cable	Storm PR90-010-216	N/A	06/23/09	06/23/10
1284	Spectrum Analyzer/Quasi-Peak Adapter	Hewlett Packard 8566B	1811A00223	06/01/09	06/01/10
674	LIMITER	HP 11947A	3107A02200	CBU	NA

ANNEX A - RESTRICTED BANDS

Annex A Restricted Bands of Operation

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42-16.423	399.9-410	4.5-5.15
0.49 - 0.51	16.69475-16.69525	608-614	5.35-5.46
2.1735 - 2.1905	16.80425-16.80475	960-1240	7.25-7.75
3.020 - 3.026	25.5-25.67	1300-1427	8.025-8.5
4.125 - 4.128	37.5-38.25	1435-1626.6	9.0-9.2
4.17725 - 4.17775	73-74.6	1645.5-1646.5	9.3-9.5
4.20725 - 4.20775	74.8-75.2	1660-1710	10.6-12.7
6.215 - 6.218	108-121.94	1718.8-1722.2	13.25-13.4
6.31175 - 6.31225	123-138	2220-2300	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			