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ENGINEERING TEST REPORT

ON: MODEL ATH-1VDSL2

IN ACCORDANCE WITH:
TIA-968-B AUG-2009 + TIA-968-B-1 Jun-2012

REPORT NO.: 10243887TUS1

TESTED FOR:
Teldat Company
Parque Tecnologico de Madrid
Tres Cantos
Madrid, Spain 28760

TESTED BY:

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DATE: 28-June-2013

This document contains 17 pages including this one.

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EQUIPMENT: DSL Interface

INTRODUCTION

This report provides results and analysis of tests performed in accordance with TIA-968 & TIA/EIA/IS-883 on a representative sample of the Model ATH-1VDSL2.

Test Procedures And Circuits

A separately bound manual - Test Procedures and Circuits for Equipment Evaluation in accordance with TIA-968 & TIA/EIA/IS-883 has been submitted to the ACTA (August 24, 2001).

Engineer

These tests were performed in accordance with TIA/EIA/IS-968. In our engineering assessment the Teldat Company Model ATH-1VDSL2.VDSL Interface, as tested, meets or exceeds the requirements of TIA-968.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATION HAVE BEEN MADE: NONE.

TESTED BY: Brian Boyea DATE: 7-June-2013
Brian Boyea, Telecom Engineer

APPROVED BY: Michael Cantwell DATE: 28-June-2013
Mike Cantwell, Reviewer

TEST MATRIX

EQUIPMENT DESCRIPTION : DSL __
CLASSIFICATION: OT

TEST PROCEDURE	SECTION	REQUIRED	COMPLETED
MECHANICAL SHOCK	4.1.1	X	X
TYPE A SURGE	4.1.2	X	X
TYPE B SURGE	4.1.3	X	X
POWER LINE SURGE	4.1.4	X	X

			COMPLETED		
		REQUIRED	B.E.S.	A.B.S.	A.A.S
LEAKAGE CURRENT	4.2	X	X	X	X
HAZARDOUS VOLTAGE LIMITATIONS	4.3	----	----	----	----
CONNECTION OF NON-APPROVED EQUIPMENT	4.3.2	X	X	X	X
NON-HAZARDOUS VOLTAGE SOURCES	4.3.3	----	----	----	----
INTENTIONAL PATHS TO GROUND	4.3.4	----	----	----	----
SIGNAL POWER LIMITATIONS	5.3	----	----	----	----
TOTAL SIGNAL POWER	5.3.8.1	X	X	X	X
POWER SPECTRAL DENSITY	5.3.8.1	X	X	X	X
TRANSVERSE BALANCE LIMITATIONS	5.3.8.2	X	X	X	X
LONGITUDINAL OUTPUT VOLTAGE LIMITATIONS	5.3.8.3	X	X	X	X

EQUIPMENT DESCRIPTION AND RATIONALE FOR CIRCUIT SELECTION

Features:

1 VDSL Interface

Remarks:

This report contains the test results for the Teldat Company Model ATH-1VDSL2. The Teldat Company Model ATH-1VDSL2 is a single-line device. The unit is powered by SELV from the host chassis.

The Teldat Company Model ATH-1VDSL2 interfaces the PSTN network via RJ11C for the Loop Start Interface.

The Teldat Company Model ATH-1VDSL2 operated in a normal and satisfactory manner following the application of Environmental Simulation Surges.

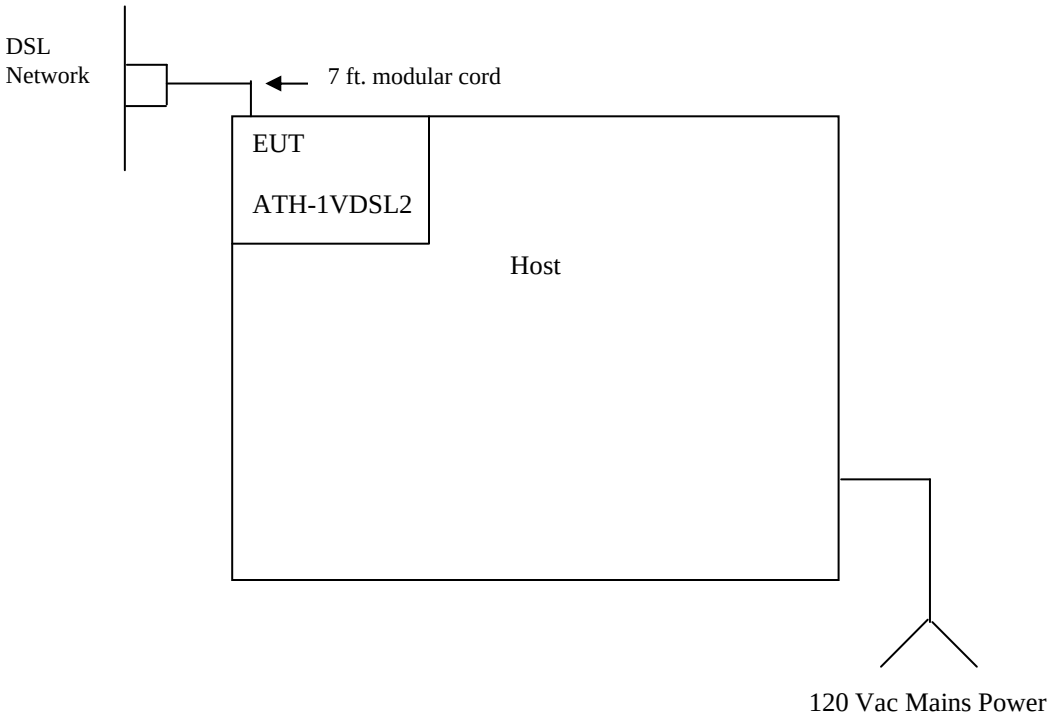
Modifications Performed During Assessment: None

Equipment Software Revision: None Provided

ENGINEERING ANALYSIS

The equipment employs type a in fusible resistor for supplementary protection.

BLOCK DIAGRAM OF TEST SET-UP:



4.2.1	ENVIRONMENTAL SIMULATION MECHANICAL SHOCK	4.2.1

MODEL: ATH-1VDSL2
TEST PERFORMED BY: Brian Boyea DATE: 6-June-2013

TEST RESULTS:

Hand-Held Items: N/A

The unit is not hand-held equipment.

Table (Desk) Top Equipment 0-5 kg: N/A

The unit is not table top equipment.

ANALYSIS/COMMENTS:

4.2.2	**ENVIRONMENTAL SIMULATION TELEPHONE LINE SURGE TYPE A**	4.2.2

MODEL: ATH-1VDSL2
TEST PERFORMED BY: Brian Boyea DATE: 6-June-2013

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

On-hook state
Off-hook state

(b)(1) Metallic: The unit operated in a normal and satisfactory manner following the application of Metallic Voltage Stress (Type A).

(b)(2) Longitudinal: The unit operated in a normal and satisfactory manner following the application of Longitudinal Voltage Stress (Type A).

ANALYSIS/COMMENT: Complies

4.2.3	**ENVIRONMENTAL SIMULATION TELEPHONE LINE SURGE TYPE B**	4.2.3

MODEL: ATH-1VDSL2
TEST PERFORMED BY: Brian Boyea DATE: 6-June-2013

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

On-hook state
Off-hook state

(c)(1) Metallic: The unit operated in a normal and satisfactory manner following the application of Metallic Voltage Stress (Type B).

(c)(2) Longitudinal: The unit operated in a normal and satisfactory manner following the application of Longitudinal Voltage Stress (Type B).

ANALYSIS/COMMENTS: Complies

4.2.4	**ENVIRONMENTAL SIMULATION** **POWER LINE SURGE**	4.2.4

MODEL: ATH-1VDSL2			
TEST PERFORMED BY: Brian Boyea		DATE:	6-June-2013

(d) Power Line Surge:

N/A

The unit is powered by the SELV (Safety Extra Low Voltage) from the host chassis.

ANALYSIS/COMMENTS:

4.3 LEAKAGE CURRENT LIMITATIONS 4.3

MODEL: ATH-1VDSL2
TEST PERFORMED BY: Brian Boyea DATE: 6-June-2013

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

Idle state

TEST RESULTS

TEST COMBINATION VOLTAGE CONNECTION 60 Hz POINTS RMS VOLTS	PEAK CURRENT SPEC. MAX. mA	MEASURED (mA) B.E.S.	A.B.S.	A.A.S.
1500 (a) and (b)	10	0.2	0.2	0.1
1000 (a) and (c)	10	0.2	0.2	0.1
1000 (a) and (d)	10	0.2	0.2	0.1
1000 (a) and (e)	10			
1000 (a) and (f)	10			
1000 (a) and (g)	10			
1500 (b) and (c)	10	0.2	0.2	0.2
1500 (b) and (d)	10	0.2	0.2	0.2
1500 (b) and (e)	10			
1500 (b) and (f)	10			
1500 (b) and (g)	10			
1000 (c) and (e)	10			
1000 (c) and (f)	10			
1000 (d) and (e)	10			
1000 (d) and (f)	10			
1000 (e) and (f)	10			
COMPLIANCE:		Yes	Yes	Yes

ANALYSIS/COMMENTS: Complies

4.4.2	**HAZARDOUS VOLTAGE LIMITATIONS**	**4.4.2**

MODEL: ATH-1VDSL2
TEST PERFORMED BY: Brian Boyea DATE: 6-June-2013

TEST RESULTS

(b) Connection to Non-Registered Equipment

(1) Are there any power leads? Yes

If yes
Network leads adequately separated from power leads? Yes

The network leads are a totally separate set of leads from the power leads.

Network leads not routed in the same cable and do not use the same connector as power leads? Yes

The network leads are a totally separate set of leads from the power leads.

(2) Are there any leads to non-registered equipment? Yes

If yes
Network leads adequately separated from non-registered equipment? Yes

The network leads are a totally separate set of leads from the non-registered equipment leads.

Network leads not routed in the same cable and do not use the same connector as non-registered equipment? Yes

The network leads are a totally separate set of leads from the non-registered equipment leads.

ANALYSIS/COMMENTS: Complies

5.3.8.2	**TRANSVERSE BALANCE LIMITATIONS**	5.3.8.2

MODEL: ATH-1VDSL2
TEST PERFORMED BY: Brian Boyea DATE: 6-June-2013

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:
Idle State

Frequency (kHz)	Spec. Minimum (dB)	Measured (dB)	
		B.E.S.	A.E.S.
0.2	40	88.3	88.9
10.0	40	84.9	83.9
13.0	35	77.6	87.6
16.0	35	77.1	79.1
18.0	35	74.8	74.8
20.0	35	70.3	71.3
25.0	35	68.4	68.4
32.0	35	66.4	66.4
40.0	35	60.9	60.9
50.0	35	61.3	61.6
64.0	35	57.6	57.6
80.0	35	55.8	55.8
100.0	35	51.3	52.3
125.0	35	49.6	49.6
160.0	35	50.7	50.7
180.0	35	47.6	48.6
200.0	35	45.3	45.3
250.0	35	44.2	44.2
320.0	35	46.2	46.2
400.0	35	41.0	41.3
500.0	35	39.6	39.6
640.0	35	42.5	42.5
800.0	35	41.3	41.3
1000.0	35	39.8	39.8
1152.0	35	41.3	42.3
1544.0	35	38.6	38.6
2500.0	30	40.2	40.2
3630.0	30	37.6	37.6
5000.0	30	38.9	38.9
10000.0	30	36.7	36.7
15000.0	25	35.9	35.9
20000.0	25	34.8	34.8
30000.0	25	33.3	32.3
	COMPLIANCE	Yes	Yes

5.3.8.1	**SIGNAL POWER LIMITATIONS**	**5.3.8.1**

MODEL: ATH-1VDSL2
TEST PERFORMED BY: Brian Boyea DATE: 6-June-2013

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

Transmitting State
(upstream)

MEASUREMENT ACCURACY: ± 1%

Total Signal Power

ATU-R

Spec. Limit (Max) = +14.5 dBm
Measured = +10.6 dBm

Compliance: Yes

ANALYSIS/COMMENTS: Complies

5.3.8.1	**SIGNAL POWER LIMITATIONS**	**5.3.8.1**

MODEL: ATH-1VDSL2
TEST PERFORMED BY: Brian Boyea DATE: 6-June-2013

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

Transmitting State
(upstream)

MEASUREMENT ACCURACY: ± 1%

Power Spectral Density

Freq. (kHz)	**Spec. (dBm/Hz)**	**Measured**
0.2	-97.5	-99.6
4	-97.5	-100.4
4	-92.5	-95.3
25.875	PSD1	-41.3
fOH	PSD1	-53.6
F_int	PSD_int	-100.2
686	-100	-106.3
3575	-100	-106.9
3750	-80	-85.6
3750	-49.5	-65.6
5200	-49.5	-68.4
5200	-80	-88.4
5375	-100	-101.2
8375	-100	-106.3
8500	-100	-106.7
12000	-100	-110.6
12175	-100	-112.3
22825	-100	-112.9
23000	-100	-113.8
30000	-100	-115.3

ANALYSIS/COMMENTS: Complies

5.3.8.3	**LONGITUDINAL OUTPUT VOLTAGE LIMITATIONS**	5.3.8.3

MODEL: ATH-1VDSL2
TEST PERFORMED BY: Brian Boyea DATE: 6-June-2013

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

Idle State

TEST RESULTS

Frequency Band (kHz)	Max Voltage (dBVrms)	Measured Voltage	Compliance
f_a (note 1) to f_b (note 2)	-50	-52.5	Yes
f_b (note 2) to 3,750	-80	-84.3	Yes
3,750 to 5,200	-50	-55.6	Yes
5,200 to 8,500	-80	-84.9	Yes
8,500 to 12,000	-80	-90.3	Yes

NOTE 1 – Frequency f_a is 0.1 kHz for all digital modes and 12 kHz for operating modes designed to work on the same loop as a voice band service such as POTS.

NOTE 2 – Frequency f_b is the frequency at which the PSD mask is approximately 30 dB below the peak mask value. The f_b values for various VDSL2 upstream PSD masks are given in table 64.

ANALYSIS/COMMENTS: Complies