

# TLN WRO Specification type Document

< *Specification and Certification TV Wall Outlet* >



**telenet**

## Document Housekeeping

### Document Category and type

CAT	TYPE	DOC ID	Comment
TV	SPEC	TLN_WRO_TA_A_S_PAA A	<b>Specification type documents (-SPEC) are documents specifying logical / physical interfaces / protocols, etc., to which AO equipment/systems need to comply</b>

### Document Status

EDITION	DATE	STATUS
1.0	09.10.2013	Final

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## Table of Contents

1	Abstract .....	5
2	Wall Outlet Functional Description .....	6
3	Wall Outlet Functional Requirements .....	7
3.1	RF REQUIREMENTS.....	7
3.1.1	<i>Insertion Loss</i> .....	7
3.1.2	<i>Return Loss</i> .....	7
3.1.3	<i>TV to FM Signal Isolation</i> .....	7
3.1.4	<i>Group Delay</i> .....	7
3.1.5	<i>EMC Screening</i> .....	7
3.2	AO DEVICE MANAGEMENT BY TLN REQUIREMENTS.....	8
3.2.1	<i>Concept and purpose</i> .....	8
3.2.2	<i>Device management Functions</i> .....	8
3.2.3	<i>SNMP MIB specifications</i> .....	8
3.2.4	<i>Reset and Factory Reset specifications</i> .....	8
4	Wall Outlet Non - Functional Requirements .....	9
4.1	MECHANICAL REQUIREMENTS.....	9
4.1.1	<i>Housing</i> .....	9
4.1.2	<i>Diagnostic Leds</i> .....	9
4.1.3	<i>Labels</i> .....	9
4.1.4	<i>TV and FM Radio connectors</i> .....	9
4.2	ENVIRONMENTAL REQUIREMENTS.....	11
4.2.1	<i>Packaging</i> .....	11
4.2.2	<i>RoHS and WEEE compliancy</i> .....	11
4.2.3	<i>EU CoC compliancy</i> .....	11
4.3	SAFETY REQUIREMENTS .....	11
4.3.1	<i>Surge and Lightening protection</i> .....	11
4.3.2	<i>Temperature and Humidity</i> .....	11
4.3.3	<i>Fire resistance</i> .....	11
4.4	EU CONSUMER GOODS LABEL REQUIREMENTS .....	11
4.4.1	<i>CE - mark</i> .....	11
5	AO Equipment Wall Outlet Certification .....	13
5.1	INTRODUCTION .....	13
5.2	TEST SCORE CARD.....	13

## Table of Figures

Figure 3-1:	<i>Insertion Loss</i> .....	7
Figure 3-2:	<i>Return Loss</i> .....	7
Figure 3-3:	<i>TV to FM Signal Isolation</i> .....	7
Figure 3-4:	<i>Group Delay</i> .....	7
Figure 3-5:	<i>EMC Screening</i> .....	7

## List of Appendixes

This document may refer to further detailed documents that are added in Appendixes to this document.

A reference to an appendix is in this document highlighted with grey background.

The list with appendixes of this document:

None

## List of References

This document may refer to external documents or information sources.

A reference to an external document or information source is in this document highlighted with grey background.

The list of referred external documents or information sources in this document:

Reference 1: TLN\_WRO\_TA\_G\_C\_PAAA - General Certification Procedures

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Before conversion to PDF format for publication of the document, the information will be made unreadable by converting the background of the text box to black.

# 1 Abstract

This document describes functional specification, requirements and non-functional requirements for TLN Wall Outlet.

Generic sections specifying certification procedures applicable to all AO CPE or network equipment that will be connected to the TLN network are described in General Certification Procedures Document TLN\_WRO\_TA\_G\_C\_PAAA - General Specification Procedures.

## 2 Wall Outlet Functional Description

- (1) The wall outlet (WO) is the termination point of the inbound coax cable at customer home which provides physical connectivity for CPEs. It contains connection points for analogue TV's, digital STB's and FM radio's.
- (2) In a customer home where no active NIU is present, the WO also serves as the signal termination and transfer point between the "outside" network and the "in-home" coax network. The outside network is brought into the home via a "drop" cable which originates from the "tap" point on the outside Telenet coax plant and terminates on a WO. This particular WO, which is the first in line WO, terminates the drop cable, is the transfer or hand-over point between the outside Telenet network and the customer in home network. It is possible that more WO's are present in a customer's home that are daisy chained downstream from the main (hand-over) WO. Those types of WO's are not hand-over points and belong to the in-home network.
- (3) In some cases also a hand-over connector or hand-over device may be present, in which case this device is the formal termination and hand-over point. Also in this case a WO will have to be present after this hand-over connector / device, so for the sake of keeping the technical architecture documents of manageable complexity, the first in line WO will be referred as performing the role of signal transfer point for TV and radio signals.
- (4) In a customer home that is or will be enabled for interactive digital services requiring two way communications over the HFC network" a NIU is/will be present and as such the NIU is the termination and transfer point between the "outside" network and the "in-home" coax network. One or more WO's will be connected to the downstream ports of the NIU. STB's will be connected via a coax patch cord cable to such a WO as well as classical analogue TV sets or FM radio's.
- (5) All the different types of WO's discussed above are technically the same and need to be compliant to the specification

## 3 Wall Outlet Functional Requirements

### 3.1 RF Requirements

#### 3.1.1 Insertion Loss

(6) Insertion Loss Requirement for Wall Outlet is shown in below figure.

Parameter	Requirement
Insertion Loss IN → TV 5 -75 MHz	<1.0dB
Insertion Loss IN → TV 116 - 125 MHz	<3.0dB
Insertion Loss IN → TV 125 - 862 MHz	<1.0dB
Insertion Loss IN → FM 88 - 108 MHz	<3.0dB

Figure 3-1: Insertion Loss

#### 3.1.2 Return Loss

(7) Return Loss Requirement for Wall Outlet is shown in below figure.

Parameter	Requirement
Return Loss IN 5 - 862 MHz (65 - 88 MHz and 108 - 116 MHz not relevant)	>18dB - 1.5dB/oct. <sup>1</sup>
Return Loss TV 5 - 862 MHz(65 - 108 MHz not relevant)	>14dB - 1.5dB/oct. <sup>2</sup>
Return Loss FM 88 - 108 MHz	>10dB

Figure 3-2: Return Loss

#### 3.1.3 TV to FM Signal Isolation

(8) TV to FM Signal Isolation Requirement for Wall Outlet is shown in below figure.

Parameter	Requirement
Isolation TV → FM 5 -862 MHz (65 - 88 MHz and 108 - 116 MHz not relevant)	>10dB

Figure 3-3: TV to FM Signal Isolation

#### 3.1.4 Group Delay

(9) Group Delay Requirement for Wall Outlet is shown in below figure.

Parameter	Requirement
Group Delay 116 - 862 MHz IN → TV (8 MHz Band)	<50ns

Figure 3-4: Group Delay

#### 3.1.5 EMC Screening

(10) EMC Screening Requirement for Wall Outlet is shown in below figure.

Parameter	Requirement
Screening 5 - 862 MHz	>75dB

Figure 3-5: EMC Screening

## **3.2 AO Device Management by TLN Requirements**

### **3.2.1 *Concept and purpose***

(11)As this document describes the Wall Outlet Interface Specification, Concept and Purpose are not applicable.

### **3.2.2 *Device management Functions***

(12)As this document describes the Wall Outlet Interface Specification, Device Management Functions are not applicable.

### **3.2.3 *SNMP MIB specifications***

(13) As this document describes the Wall Outlet Interface Specification, SNMP MIB specifications are not applicable.

### **3.2.4 *Reset and Factory Reset specifications***

(14)As this document describes the Wall Outlet Interface Specification, Reset and Factory Reset specifications are not applicable.



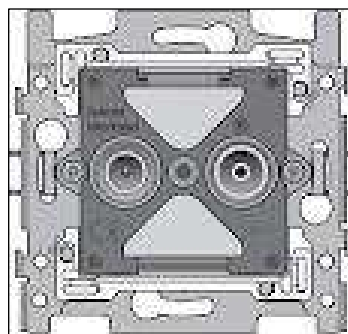
## 4 Wall Outlet Non - Functional Requirements

### 4.1 Mechanical Requirements

#### 4.1.1 Housing

(15) Full metal housing is required to be compliant with listed EMC screening requirements.

(16) The wall outlet's should be suitable for build-in (must fit 60mm build-in wall box) or alternatively for build up (surface mounting). TV & FM ports shall be placed on front of the WO cover plate and shall be clearly labeled. The figures below show, as an example a typical design for a build-in WO.



#### 4.1.2 Diagnostic Leds

(17) The Wall Outlet does not include any diagnostic leds for troubleshooting purposes.

#### 4.1.3 Labels

(18) Following labels must be printed on the Wall Outlet after TELENET-INTERKABEL certification.

- TV
- FM
- TELENET INTERNETKABEL

#### 4.1.4 TV and FM Radio connectors

(19) Below listed connector types are required for Wall Outlet- TV and FM Radio connections.

- TV port: coaxial output MALE - EN500083-4 HD 134.2 S2 male IEC 169-2
- FM port: coaxial output FEMALE - EN500083-4 HD 134.2 S2 female IEC 169-2



## 4.2 Environmental Requirements

### 4.2.1 Packaging

(20) TLN does not impose any requirements as this is the responsibility domain of the AO. However it is strongly advised to AO to follow industry standard practices

### 4.2.2 RoHS and WEEE compliancy

(21) RoHS is defined as the directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment on 2002/95/EC and the abbreviation for Restriction of Hazardous Substances. This directive is closely linked with Waste Electrical and Electronic Equipment Directive (WEEE) - 2002/96/EC.

(22) These directives are in the responsibility domain of AO, and TLN does not impose any requirements. AO is strongly advised to follow the standards and the requirements imposed by law about RoHS.

### 4.2.3 EU CoC compliancy

(23) TLN does not impose any requirements as this is the responsibility domain of the AO. However it is strongly advised to AO to follow industry standard practices and any requirements in this domain imposed by law should be met.

## 4.3 Safety Requirements

### 4.3.1 Surge and Lightning protection

(24) TLN requires that AO CPE devices are protected against over-voltages on their different interfaces. This is to guarantee customer safety under all conditions and to protect other CPE equipment.

### 4.3.2 Temperature and Humidity

(25) TLN does not impose any requirements as this is the responsibility domain of the AO. However it is strongly advised to AO to follow industry standard practices.

### 4.3.3 Fire resistance

(26) TLN requires AO to select equipment that has at least protection class 121, and has all parts halogen free / self-extinguishing.

(27) It should be noted however that being fully compliant with all legal requirements for CPE is the full and sole responsibility of the AO.

## 4.4 EU Consumer Goods label Requirements

### 4.4.1 CE - mark

(28) CE marking (originally EC mark) is a mandatory conformity mark for products placed on the market in the European Economic Area (EEA). With the CE marking on a product the manufacturer ensures that the product conforms to the essential requirements of the applicable EC directives. The letters "CE" stand for "Conformité Européenne" ("European

Conformity").

This conformity is in the responsibility domain of AO, and TLN does not impose any requirements. AO is strongly advised to follow the standards and the requirements imposed by law.

## 5 AO Equipment Wall Outlet Certification

### 5.1 Introduction

(30)The Wall outlet is a termination point for AO CPE's inbound coax cables. In some situations; such as NIU's non-existence; WO will be a demarcation point for AO and TLN interconnectivity on house-hold.

(31)Wall Outlet tests will cover all of the Functional Requirements, as part of TELENET-INTERKABEL certification.

### 5.2 Test score card

CONFORMANCE TEST SCORE CARD					
Conformance Test Score Card Number	TLN-WRO-TA-TSC-%-P%%%				
Test Identification					
Test Execution Date					
Test Run Type	Full / Reduced (without OOS cases)				
Device / Equipment / Interface Name					
Device / Equipment / Interface Type / Class					
AO Device / Equipment / Interface Identification					
Software Version					
Tested by					
Overall Result Status	Pass / Fail				
Applicability	Select 1 or more : ROTV / ROBB / AIDTV				
CONFORMANCE TEST ITEM LIST					
Test Cases Summary	FORMAT	IN SCOPE	MAN	PASS/FAIL	REM
			"Y/N"	"P/F"	(*xy)
<b>3. Wall Outlet Functional Requirements</b>	HO				
3.1. RF Requirements			Y		
3.2. AO Device Management by Telenet Requirements	NA				
<b>4. Wall Outlet Non Functional Requirements</b>	HO				
4.1. Mechanical Requirements			Y		
4.2. Environmental Requirements			Y		
4.3. Safety Requirements			Y		
4.4. EU Consumer Goods Label Requirements			Y		
<b>Remarks</b>					
(*xy) : "Remark explanation comes here"					