TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

Supplier's Declaration of Conformity (SDoC) Testing

in accordance with the requirements of

TIA-968-B, TIA-968-B-1, TIA-968-B-2, TIA-968-B-3, and 47 CFR 68.318

for

Wurtec, Inc.
6200 Brent Drive
Toledo, Ohio 43611
(419) 726-1066

of

PBX for Elevator Industry
S3 Command Center

on

December 13, 2018

Tested by

Mark R. McSweeney

Reviewed by:

Larry K. Stillings

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Declaration and Terminal Equipment Information

I, the undersigned, Mark R. McSweeney
Compliance Worldwide, Inc.
357 Main Street
Sandown, NH 03873
hereby attest:

That the information contained in this submission for terminal equipment (listed below) certification is, to the best of my knowledge, complete and accurate. The equipment has been evaluated in all applicable conditions and complies with all the technical requirements of the document(s) for which approval is sought.

Trade Name / **Model Number**: PBX for Elevator Industry / S3 Command Center

Connecting Method: RJ 11C

Ringer Equivalence Number: 0.1A

Description: The PBX for Elevator Industry S3 Command Center is a PBX system deployed in the elevator and security industries utilizing plug in cards configured in FXS or FXO modes.

Signed this 20th day of December 2019

Mark R. McSweeney

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1 - Scope

This standard specifies technical criteria for terminal equipment approved in accordance with 47 CFR 68 for direct connection to the public switched telephone network, including private line services provided over wireline facilities owned by providers of wireline telecommunications. These technical criteria are intended to protect the telephone network from the harms defined in 47 CFR 68.3. Conformance to the technical criteria in this standard will not assure compatibility with wireline carrier services.

TE that is modified shall be re-approved under the requirements in effect at the time of the modification, not necessarily those requirements in effect at the time of the prior approval. Except as otherwise specified herein, a modification is any change that affects the compliance of TE to this standard. Repair to TE, where no modification has occurred, does not require re-approval.

Note: This report has been compiled to document PBX for Elevator Industry S3 Command Center testing results in comparison to the requirements as specified in TIA-968-B, TIA-968-B-1, TIA-968-B-2, TIA-968-B-3, and 47 CFR 68.318. All results are based on a test of one sample, only in as much as that sample represents other production units. If any significant changes are made to the unit, the changes shall be evaluated and a retest may be required.

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2 - Product details

2.1 - Equipment description

Trade Name: PBX for Elevator Industry

Model Number: S3 Command Center

Serial Number: n/a

Input Power: 24 VDC

Description: The PBX for Elevator Industry S3 Command Center is a PBX system deployed in the elevator and security industries utilizing plug in cards configured in FXS or FXO modes.

3 - Test parameters

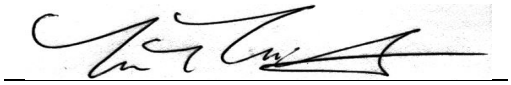
3.1 - Laboratory environment

Ambient Temperature	15 - 25	°C	Relative Humidity	30 - 75	%

3.2 - Results analysis

Based on this analysis the PBX for Elevator Industry S3 Command Center complies with TIA-968-B, TIA-968-B-1, TIA-968-B-2, TIA-968-B-3, and 47 CFR 68.318 requirements.

Please see following data for complete results of testing with comparisons the required limit.

Test Engineer: 

Mark R. McSweeney
December 13, 2018

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3.3 - Test equipment list

Asset #	Manufacturer	Device	Model	Serial #
011	Compliance Design	Balance Analyzer	BA-100	3376
015	Compliance Design	Plug-in module	CDI 1500V 200A	n/a
016	Compliance Design	Plug-in module	CDI 2.5kV 1kA	n/a
017	Compliance Design	Plug-in module	CDI 800V 100A	n/a
018	Compliance Design	Surge Generator	CDI-1000i	3190
019	Compliance Design	AC Stress Analyzer	HVC-100	3166
021	Compliance Design	Network Analyzer	NA-100	3363
023	Compliance Design	Wideband Receiver	WBR-100	3053
040	Fluke	Multi-meter	45	5275215
041	Fluke	Multi-meter	45	4804030
044	Haefely	Surge Generator	P-Surge 4.1	083-061-06
048	Hewlett-Packard	Function Generator	33120A	US36018408
051	Hewlett-Packard	Digital Multimeter	34401A	US36047149
057	Hewlett-Packard	Oscilloscope	54610B	US37340501
066	Krohn-Hite	Programmable Filter	3945	5123
076	Stanford Research Systems	Network Signal Analyzer	SR780	31569

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4 - Test program

4.1 - Test requirements matrix

4.1.1 - Results key

C	Complies with requirement
D	Does not Comply with requirement
O	Outside scope of this report
N/A	Not Applicable

4.1.2 - TIA-968-B requirements

445-18 Reference	TIA-968-B Reference	Description	Result	Notes
5.1	4	Common requirements		Informative
5.1.1	4.1	Environmental simulation		Informative
5.1.1.1	4.1.1	Mechanical shock	C	
5.1.1.2	4.1.2	Type A voltage surges		Informative
5.1.1.2.1	4.1.2.1	Metallic	C	
5.1.1.2.2	4.1.2.2	Longitudinal	C	
5.1.1.3	4.1.3	Type B voltage surges		Informative
5.1.1.3.1	4.1.3.1	Metallic	C	
5.1.1.3.2	4.1.3.2	Longitudinal	C	
5.1.1.4	4.1.4	Power line surge		Informative
5.1.1.4.1	4.1.4.1	Phase-neutral surge	C	
5.1.2	4.2	Leakage current limitations	C	
5.1.3	4.3	Hazardous voltage limitations		Informative
5.1.3.1	4.3.1	General requirement	C	
5.1.3.2	4.3.2	Connection of non-approved equipment to approved TE	C	
5.1.3.3	4.3.3	Non-hazardous voltage source	C	

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445-18 Reference	TIA-968-B Reference	Description	Result	Notes
5.1.3.4	4.3.4	Intentional paths to ground		Informative
5.1.3.4.1	4.3.4.1	Connections with operational paths to ground	C	
5.1.3.4.2	4.3.4.2	Connections with protective paths to ground	C	
5.1.4	4.4	Billing protection		Informative
5.1.4.1	4.4.1	Call duration requirements		Informative
5.1.4.1.1	4.4.1.1	Protective circuitry	N/A	1
5.1.4.1.2	4.4.1.2	Terminal equipment for data applications	C	
5.1.4.2	4.4.2	On hook signal requirements		Informative
5.1.4.2.1	4.4.2.1	Total on hook power	C	
5.1.4.3	4.4.3	Signaling interference requirements		Informative
5.1.4.3.1	4.4.3.1	SF/guard band limitations	C	
5.1.5	4.5	Encoded analog content	N/A	2
5.1.6	4.6	Connectors and wiring configurations		Informative
5.1.6.1	4.6.1	Introduction	C	
5.1.6.2	4.6.2	Wiring configurations	C	
5.1.6.3	4.6.3	Multi-line, private branch exchange (PBX), and key telephone systems.	C	
5.1.7	4.7	Allowable net amplification between ports		Informative
5.1.7.1	4.7.1	General		Informative
5.1.7.2	4.7.2	Allowable net amplification between network interface ports	N/A	3
5.1.7.3	4.7.3	Allowable net amplification between ports for other approved TE and network interface ports	C	
5.1.7.4	4.7.4	Single frequency (SF) guard band	C	
5.1.7.5	4.7.5	SF cutoff	N/A	4
5.2	5	Interface requirements		Informative
5.2.1	5.1	Analog voice band interface requirements		Informative

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445-18 Reference	TIA-968-B Reference	Description	Result	Notes
5.2.1.1	5.1.1	General analog voice band signal power limits		Informative
5.2.1.2	5.1.2	Limitations on signals not intended for network control signaling	C	
5.2.1.3	5.1.3	Limitations on signals intended for network control signaling	C	
5.2.1.4	5.1.4	Limitations on non-approved signal sources	N/A	5
5.2.1.5	5.1.5	Through transmission limitations		Informative
5.2.1.5.1	5.1.5.1	DC conditions	C	
5.2.1.5.2	5.1.5.2	Data terminal equipment jack limitations	N/A	6
5.2.1.5.2	5.1.5.3	Allowable net amplification between ports	C	
5.2.1.5.4	5.1.5.4	Tie trunk interface limitations	N/A	7
5.2.1.6	5.1.6	Signal power in the 3995-4005 Hz band	C	
5.2.1.7	5.1.7	Longitudinal voltage at frequencies below 4 kHz	C	
5.2.1.8	5.1.8	Voltages from 4 - 30000 kHz		Informative
5.2.1.8.1	5.1.8.1	Metallic voltage 4 - 270 kHz	C	
5.2.1.8.2	5.1.8.2	Metallic voltage 270 - 30000 kHz	C	
5.2.1.8.3	5.1.8.3	Longitudinal voltage 4 - 270 kHz	C	
5.2.1.8.4.	5.1.8.4	Longitudinal voltage 270 - 6000 kHz	C	
5.2.1.9	5.1.9	Conditions for 5.1.7 and 5.1.8	C	
5.2.1.10	5.1.10	Analog voice band transverse balance limits	C	
5.2.1.11	5.1.11	Loop start interfaces		Informative
5.2.1.11.1	5.1.11.1	General requirements		Informative
5.2.1.11.2	5.1.11.2	Limitations on loop start interfaces		Informative
5.2.1.11.2.1	5.1.11.2.1	On hook resistance up to 100 V	C	
5.2.1.11.2.2	5.1.11.2.2	On hook resistance 100 - 200 V	C	
5.2.1.11.2.3	5.1.11.2.3	DC current during ringing	C	

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445-18 Reference	TIA-968-B Reference	Description	Result	Notes
5.2.1.11.2.4	5.1.11.2.4	Metallic ringing frequency impedance	C	
5.2.1.11.2.5	5.1.11.2.5	Longitudinal ringing frequency impedance	C	
5.2.1.11.2.6	5.1.11.2.6	REN calculation	C	
5.2.1.11.3	5.1.11.3	Transitioning to the off hook state	C	
5.2.1.11.4	5.1.11.4	Loop current requirements	C	

4.1.3 - CFR 47 Part 68.318 requirements

445-18 Reference	Part 68.318 Reference	Description	Result	Notes
5.3.1	68.318(b)	Terminal equipment with automatic dialing capability	C	
5.1.2	68.318(c)	Line seizure by automatic telephone dialing systems.	C	
5.1.3	68.318(d)	Telephone facsimile machines requirements	C	
5.1.4	68.318(e)	Equal access to common carriers requirements	C	

Notes:	
1	TE is not protective circuitry
2	TE does not include encoded analog content
3	TE does not support through transmission paths from network interface to network interface ports
4	TE does not support through transmission from voice band private line channels or voice band metallic channels to other network interface ports.
5	TE does not support connection of non-approved signal sources
6	TE does not support data jack connections
7	TE is not a tie trunk interface

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5 - Test results

5.1 - Common requirements

5.1.1 - Environmental simulation

5.1.1.1 - Mechanical shock

Test equipment used: n/a

Data:

Weight of TE - | > 5 | kg

Handheld items

| n/a | - (18) random 1.5m drops

Desk/Table Top Equipment:

| n/a | - (6) random 750mm drops

Notes: TE is neither handheld item nor desk/table top equipment < 5 kg.

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5.1.1.2 - Type A voltage surge

5.1.1.2.1 - Metallic voltage surge

Test equipment used: 017, 018, 041

Data:

Tip-ring surge - 6 surges - 800 V, 100 amp, 10x560uS

Off hook	X	X	On hook powered	X	X	On hook unpowered	X	X
	Pos	Neg		Pos	Neg		Pos	Neg

Notes: None

5.1.1.2.2 - Longitudinal voltage surge

Test equipment used: 017, 018, 041

Data:

T,R - ground surge - 6 surges - 1500 V, 200 amp, 10x160uS

Off hook	X	X	On hook powered	X	X	On hook unpowered	X	X
	Pos	Neg		Pos	Neg		Pos	Neg

T,R, - non-registered leads surge - 6 surges - 1500, 200 amp, 10x160uS

Off hook	X	X	On hook powered	X	X	On hook unpowered	X	X
	Pos	Neg		Pos	Neg		Pos	Neg

Notes: None

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5.1.1.3 - Type B voltage surge

5.1.1.3.1 - Metallic voltage surge

Test equipment used: 044

Data:

Tip-ring surge - 6 surges - 1000 V, 25 amp, 9x720uS

Off hook	X	X	On hook powered	X	X	On hook unpowered	X	X
	Pos	Neg		Pos	Neg		Pos	Neg

Notes: None

5.1.1.3.2 - Longitudinal voltage surge

Test equipment used: 044

Data:

T,R - ground surge - 6 surges - 1500 V, 37.5 amp, 9x720uS

Off hook	X	X	On hook powered	X	X	On hook unpowered	X	X
	Pos	Neg		Pos	Neg		Pos	Neg

T,R - non-registered leads surge - 6 surges - 1500 V, 37.5 amp, 9x720uS

Off hook	X	X	On hook powered	X	X	On hook unpowered	X	X
	Pos	Neg		Pos	Neg		Pos	Neg

Notes: None

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5.1.1.4 - Power line surge

5.1.1.4.1 - Phase to neutral surge

Test equipment used: 015, 041

Data:

Mains Power Surge (Phase-Neutral) - 18 Surges - 2500 V, 1000 amp, 2x10uS

Off hook:

Positive	X	X	X
Negative	X	X	X

On hook / Power Switch ON:

Positive	X	X	X
Negative	X	X	X

On hook / Power Switch OFF:

Positive	n/a	n/a	n/a
Negative	n/a	n/a	n/a

Notes: TE has no power switch.

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5.1.2 - Leakage current limitations

Test equipment used: 019, 041, 051

Data:

Leads	Voltage VAC	Pre surge mA	Post B surge mA	Post A surge mA	Limit mA
Telephone to Mains Power	1500	0.4	0.4	0.4	
Telephone to Surfaces	1000	0.4	0.4	0.4	
Telephone to Non-registered leads	1000	0.3	0.3	0.3	
Telephone to Aux leads	1000	n/a	n/a	n/a	
Telephone to E&M leads	1000	n/a	n/a	n/a	
Mains Power to Surfaces	1500	2.1	2.1	2.1	
Mains Power to Non-registered leads	1500	0.5	0.5	0.5	
Mains Power to Aux Leads	1500	n/a	n/a	n/a	< 10
Mains Power to E&M leads	1500	n/a	n/a	n/a	
Mains Power to PR, PC, CY1 and CY2 leads	1500	n/a	n/a	n/a	
Surfaces to Aux Leads	1500	n/a	n/a	n/a	
Surfaces to E&M leads	1000	n/a	n/a	n/a	
Non-registered to Aux Leads	1000	n/a	n/a	n/a	
Non-registered to E&M leads	1000	n/a	n/a	n/a	
Aux Leads to E&M leads	1000	n/a	n/a	n/a	

Notes: **If any lead has an intentional conducting path to ground it may be excluded from the leakage test. Leads excluded for this reason shall comply with the requirements of 4.2.3.3**

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5.1.3 - Hazardous voltage limitations

5.1.3.1 - General requirement

Test equipment used: 057

Data:

Condition	Leads	Voltage $Volts_{Peak}$	Duration mS	Limits	
				$Volts_{Peak}$	mS
Pre surge	Tip - Ring	< 70	< 1000	< 70	< 1000
	Tip - Ground	< 70	< 1000		
	Ring - Ground	< 70	< 1000		
Post B surge	Tip - Ring	< 70	< 1000		
	Tip - Ground	< 70	< 1000		
	Ring - Ground	< 70	< 1000		
Post A surge	Tip - Ring	< 70	< 1000		
	Tip - Ground	< 70	< 1000		
	Ring - Ground	< 70	< 1000		

Notes: None

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5.1.3.2 - Connection of non-approved equipment to approved TE

Test equipment used: n/a

Data:

Leads to telephone connections are reasonably physically separated and restrained from and are neither routed in the same cable as, nor use the same connector as, leads or metallic paths connecting power connections.

Leads to telephone connections are also reasonably physically separated and restrained from and neither routed in the same cable as, nor use adjacent pins on the same connector as, metallic paths that lead to non-approved equipment, when the voltage on such metallic paths exceed the non-hazardous voltage source limits of TIA-968

- Attention is called to the fact that Tip and Ring are routed away from mains power leads.
- A good physical separation is maintained between telephone leads and leads to non-certified equipment that has hazardous voltages (greater than 42.4 volts peak or 80V DC).
- Routing of leads is through back panel, then to the interface printed circuit board.

Additional Remarks: None

Notes: None

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5.1.3.3 - Non hazardous voltage source

Test equipment used: n/a

Data:

[X] - Unit is powered from non-hazardous (less than 42.4 volts peak or 80 VDC) supply voltages.

[ ] - TE is powered from mains power

[ ] - TE is battery powered (Please specify)

[ ] - TE is line powered -48 VDC

TE is powered from an external power supply as follows:

[ ]	12VAC	[ ]	12VDC
[ ]	9VAC	[ ]	9VDC
[ ]	6VAC	[ ]	6VDC
[ ]	Other	[X]	Other
	(Please specify)		(Please specify)

MANUFACTURER	MODEL NAME AND NUMBER
Qualtek Electronics Corporation	ATS065T-P240

Notes: None

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5.1.3.4 - Intentional paths to ground

5.1.3.4.1 - Connections with operational paths to ground

Test equipment used: 041, 051, 134

Data:

Condition	Applied Current mA	Test Points	Measured mVDC	Limit mVDC
Pre surge	1000	Tip – Ground	n/a	< 100
		Ring – Ground	n/a	
Post B surge		Tip – Ground	n/a	
		Ring – Ground	n/a	
Post A surge		Tip – Ground	n/a	
		Ring – Ground	n/a	

Notes: TE has no intentional operational paths to ground

5.1.3.4.2 - Connections with protective paths to ground

Test equipment used: 019, 041, 051

Data:

Condition	Applied Voltage VAC	Test Points	Measured mA	Limit mA
Pre surge	120	Tip – Ground	n/a	< 10
		Ring – Ground	n/a	
Post B surge		Tip – Ground	n/a	
		Ring – Ground	n/a	
Post A surge		Tip – Ground	n/a	
		Ring – Ground	n/a	

Notes: TE has no intentional protective paths to ground.

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5.1.4 - Billing protection

5.1.4.1 - Call duration requirements on data equipment

5.1.4.1.1 - Protective circuitry

Test equipment used: 023, 057

Data:

Condition	Parameter	Measured S	Limit S
Pre surge	Data transmission in first 2 seconds of answering call	n/a	> 2
Post B surge		n/a	
Post surge		n/a	

Notes: The TE is not classified as protective circuitry.

5.1.4.1.2 - Approved terminal equipment for data applications

Test equipment used: 023, 057

Data:

Condition	Parameter	Measured S	Limit S
Pre surge	Data transmission in first 2 seconds of answering call	> 2	> 2
Post B surge		> 2	
Post A surge		> 2	

Notes: None

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5.1.4.2 - On hook signal requirements

5.1.4.2.1 - Total on hook power

Test equipment used: 023, 040, 051, 066

Data:

Condition	Band Hz	Measured dBm		Limit dBm
		Positive	Negative	
Pre surge	200 - 4000	-101	-101	< -55
Post B surge		-102	-102	
Post A surge		-102	-102	

Notes: None

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5.1.4.3 - Signaling interference requirements

5.1.4.3.1 - SF/guard band limitations

Test equipment used: 023, 040, 051, 066

Data:

Condition	State		Band kHz	Level dBm		Limit dBm
	FXS	FXO		Positive	Negative	
Pre Surge	Off hook min	Off hook min	0.8-2.45	-75.9	-75.4	see below
			2.45-2.75	-85.1	-85.3	<0.8-2.45
		Off hook max	0.8-2.45	-75.8	-75.7	see below
			2.45-2.75	-85.0	-84.8	<0.8-2.45
	Off hook max	Off hook min	0.8-2.45	-75.3	-75.3	see below
			2.45-2.75	-85.1	-83.3	<0.8-2.45
		Off hook max	0.8-2.45	-74.8	-76.1	see below
			2.45-2.75	-85.7	-84.5	<0.8-2.45
Post B	Off hook min	Off hook min	0.8-2.45	-76.1	-75.0	see below
			2.45-2.75	-84.0	-84.9	<0.8-2.45
		Off hook max	0.8-2.45	-75.6	-75.6	see below
			2.45-2.75	-85.4	-84.8	<0.8-2.45
	Off hook max	Off hook min	0.8-2.45	-75.8	-75.3	see below
			2.45-2.75	-84.6	-83.4	<0.8-2.45
		Off hook max	0.8-2.45	-76.3	-75.4	see below
			2.45-2.75	-84.0	-84.4	<0.8-2.45
Post A	Off hook min	Off hook min	0.8-2.45	-74.5	-75.5	see below
			2.45-2.75	-84.5	-83.7	<0.8-2.45
		Off hook max	0.8-2.45	-75.6	-75.3	see below
			2.45-2.75	-85.3	-86.3	<0.8-2.45
	Off hook max	Off hook min	0.8-2.45	-74.7	-75.1	see below
			2.45-2.75	-82.6	-84.2	<0.8-2.45
		Off hook max	0.8-2.45	-75.0	-74.5	see below
			2.45-2.75	-83.3	-84.6	<0.8-2.45

Notes: None

5.1.5 - Encoded analog content

Test equipment used: n/a

Data:

TE contains no encoded analog content

Notes: None

5.1.6 - Connectors and wiring configurations

5.1.6.1 - Introduction

Test equipment used: n/a

Data:

X	Connection is made with a connector conforming with TIA-1096-A
	Connection is made by direct attachment

Notes:

5.1.6.2 - Wiring configurations

Test equipment used: n/a

Data:

OK	The supplied connector is wired in accordance with TIA-1096-A

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.1.7 - Allowable net amplification between ports

5.1.7.1 - General

Test equipment used: n/a

Data:

This section is informative in nature.

Notes: None

5.1.7.2 - Allowable net amplification between network interface ports

Test equipment used: 023, 048, 051, 066, 076

Data:

Condition	State		Gain (dB)		Limit dB
	Port 1	Port 2	Positive	Negative	
Pre surge	Min	Min	n/a	n/a	< 3
		Max	n/a	n/a	
	Max	Min	n/a	n/a	
		Max	n/a	n/a	
Post B	Min	Min	n/a	n/a	
		Max	n/a	n/a	
	Max	Min	n/a	n/a	
		Max	n/a	n/a	
Post A	Min	Min	n/a	n/a	
		Max	n/a	n/a	
	Max	Min	n/a	n/a	
		Max	n/a	n/a	

Notes: TE does not support network port to network port through transmission connections.

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.1.7.3 - Allowable net amplification between ports for other approved equipment and network interface ports

Test equipment used: 023, 048, 051, 066, 076

Data:

Condition	State		Gain (dB)		Limit dB
	FXS	FXO	Positive	Negative	
Pre surge	Min	Min	-5.2	-5.2	< 3
		Max	-5.2	-5.2	
	Max	Min	-5.2	-5.2	
		Max	-5.2	-5.2	
Post B	Min	Min	-5.2	-5.2	
		Max	-5.2	-5.2	
	Max	Min	-5.2	-5.2	
		Max	-5.2	-5.2	
Post A	Min	Min	-5.2	-5.2	
		Max	-5.2	-5.2	
	Max	Min	-5.2	-5.2	
		Max	-5.2	-5.2	

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.1.7.4 - Single frequency (SF) guard band

5.1.7.4.1 - Network interface port to network interface port insertion loss

Test equipment used: 023, 048, 051, 066, 076

Data:

Condition	State		Insertion Loss (dB)				Limit dB
	Port A	Port B	Min loss 2450-2750 Hz		Max loss 800-2450 Hz		
			Positive	Negative	Positive	Negative	
Pre surge	Min	Min	n/a	n/a	n/a	n/a	Insertion loss 800-2450 !> 1 dB insertion loss 2450-2750 Hz
		Max	n/a	n/a	n/a	n/a	
	Max	Min	n/a	n/a	n/a	n/a	
		Max	n/a	n/a	n/a	n/a	
Post B	Min	Min	n/a	n/a	n/a	n/a	
		Max	n/a	n/a	n/a	n/a	
	Max	Min	n/a	n/a	n/a	n/a	
		Max	n/a	n/a	n/a	n/a	
Post A	Min	Min	n/a	n/a	n/a	n/a	
		Max	n/a	n/a	n/a	n/a	
	Max	Min	n/a	n/a	n/a	n/a	
		Max	n/a	n/a	n/a	n/a	

Notes: TE does not support network port to network port through transmission connections

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.1.7.4.2 - Other connected TE to network interface port insertion loss

Test equipment used: 023, 048, 051, 066, 076

Data:

Condition	State		Insertion Loss (dB)				Limit dB
	FXS	FXO	Min loss 2450-2750 Hz		Max loss 800-2450 Hz		
			Positive	Negative	Positive	Negative	
Pre surge	Min	Min	-7.0	-7.0	-7.0	-7.0	Insertion loss 800-2450 !> 1 dB insertion loss 2450-2750 Hz
		Max	-7.0	-7.0	-7.0	-7.0	
	Max	Min	-7.0	-7.0	-7.0	-7.0	
		Max	-7.0	-7.0	-7.0	-7.0	
Post B	Min	Min	-7.0	-7.0	-7.0	-7.0	
		Max	-7.0	-7.0	-7.0	-7.0	
	Max	Min	-7.0	-7.0	-7.0	-7.0	
		Max	-7.0	-7.0	-7.0	-7.0	
Post A	Min	Min	-7.0	-7.0	-7.0	-7.0	
		Max	-7.0	-7.0	-7.0	-7.0	
	Max	Min	-7.0	-7.0	-7.0	-7.0	
		Max	-7.0	-7.0	-7.0	-7.0	

Notes: None

5.1.7.5 - SF cutoff

Test equipment used:

Test equipment used: 023, 048, 051, 066, 076

Data:

TE does not support through transmission from voice band private line channels or voice band metallic channels to other network interface ports.

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2 - Interface requirements

5.2.1 - Analog voice band interface requirements

5.2.1.1 - General analog voice band signal power limits

Test equipment used: n/a

Data:

This section is informative in nature

Notes: None

5.2.1.2 - Limitations on signals not intended for network control signaling

5.2.1.2.1 - Limitations on signals not intended for network control signaling, pre surge

Test equipment used: 023, 051, 066

Data:

State		Parameter	Measured dBm		Limit dBm
FXS	FXO		Positive	Negative	
Off hook min	Off hook min	Non-live voice	n/a	n/a	< -9
		Data signals	n/a	n/a	
		Other signals	-18.3	-18.3	
	Off hook max	Non-live voice	n/a	n/a	
		Data signals	n/a	n/a	
		Other signals	-18.3	-18.3	
Off hook max	Off hook min	Non-live voice	n/a	n/a	
		Data signals	n/a	n/a	
		Other signals	-18.3	-18.3	
	Off hook max	Non-live voice	n/a	n/a	
		Data signals	n/a	n/a	
		Other signals	-18.3	-18.3	

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.2.2 - Limitations on signals not intended for network control signaling, post B surge

Test equipment used: 023, 051, 066

Data:

State		Parameter	Measured dBm		Limit dBm
FXS	FXO		Positive	Negative	
Off hook min	Off hook min	Non-live voice	n/a	n/a	< -9
		Data signals	n/a	n/a	
		Other signals	-18.3	-18.3	
	Off hook max	Non-live voice	n/a	n/a	
		Data signals	n/a	n/a	
		Other signals	-18.3	-18.3	
Off hook max	Off hook min	Non-live voice	n/a	n/a	
		Data signals	n/a	n/a	
		Other signals	-18.3	-18.3	
	Off hook max	Non-live voice	n/a	n/a	
		Data signals	n/a	n/a	
		Other signals	-18.3	-18.3	

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.2.3 - Limitations on signals not intended for network control signaling, post A surge

Test equipment used: 023, 051, 066

Data:

State		Parameter	Measured dBm		Limit dBm
FXS	FXO		Positive	Negative	
Off hook min	Off hook min	Non-live voice	n/a	n/a	< -9
		Data signals	n/a	n/a	
		Other signals	-18.3	-18.3	
	Off hook max	Non-live voice	n/a	n/a	
		Data signals	n/a	n/a	
		Other signals	-18.3	-18.3	
Off hook max	Off hook min	Non-live voice	n/a	n/a	
		Data signals	n/a	n/a	
		Other signals	-18.3	-18.3	
	Off hook max	Non-live voice	n/a	n/a	
		Data signals	n/a	n/a	
		Other signals	-18.3	-18.3	

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.3 - Limitations signals intended for network control signaling

Test equipment used: 023, 051, 066

Data:

State	Digit	Low Freq Hz	High Freq Hz	Pre surge dBm	Post B surge dBm	Post A surge dBm	Limit dBm
Off hook min	0	932	1329	-11.3	-11.3	-11.3	< 0
	1	694	1210	-11.3	-11.3	-11.3	
	2	694	1329	-11.3	-11.3	-11.3	
	3	694	1467	-11.3	-11.3	-11.3	
	4	774	1210	-11.3	-11.3	-11.3	
	5	774	1329	-11.3	-11.3	-11.3	
	6	774	1467	-11.3	-11.3	-11.3	
	7	853	1210	-11.3	-11.3	-11.3	
	8	853	1329	-11.3	-11.3	-11.3	
	9	853	1467	-11.3	-11.3	-11.3	
	#	932	1467	-11.3	-11.3	-11.3	
	*	932	1210	-11.3	-11.3	-11.3	
Off hook max	0	932	1329	-11.3	-11.3	-11.3	
	1	694	1210	-11.3	-11.3	-11.3	
	2	694	1329	-11.3	-11.3	-11.3	
	3	694	1467	-11.3	-11.3	-11.3	
	4	774	1210	-11.3	-11.3	-11.3	
	5	774	1329	-11.3	-11.3	-11.3	
	6	774	1467	-11.3	-11.3	-11.3	
	7	853	1210	-11.3	-11.3	-11.3	
	8	853	1329	-11.3	-11.3	-11.3	
	9	853	1467	-11.3	-11.3	-11.3	
	#	932	1467	-11.3	-11.3	-11.3	
	*	932	1210	-11.3	-11.3	-11.3	

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.4 - Limitations on non-approved signal sources

Test equipment used: 023, 048, 051, 066, 076

Data:

State	Frequency Hz	Max Output dBm	Limit dBm
Pre surge	200	n/a	-9
	500	n/a	
	1000	n/a	
	2000	n/a	
	3000	n/a	
	4000	n/a	
Post B surge	200	n/a	
	500	n/a	
	1000	n/a	
	2000	n/a	
	3000	n/a	
	4000	n/a	
Post A surge	200	n/a	
	500	n/a	
	1000	n/a	
	2000	n/a	
	3000	n/a	
	4000	n/a	

Notes: TE does not connect non-approved signal sources to the PSTN within meaning of TIA-968-B.

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.5 - Through transmission limitations

5.2.1.5.1 - DC conditions

Test equipment used: 023, 048, 051, 066, 076

Data:

Parameter	Pre surge	Post B surge	Post A surge	Limit
Open circuit voltage	45.4	45.4	45.4	< 56.5 V
Short circuit current	29.7	29.7	29.7	< 140 mA
Current into 430 ohms	29.7	29.7	29.7	> 20 mA

Notes: None

5.2.1.5.2 - Data terminal equipment jack limitations

Test equipment used: 023, 048, 051, 066, 076

Data:

TE does not support through transmission equipment connection to data terminal equipment jacks.

Notes: None

5.2.1.5.3 - Allowable net amplification between ports

Test equipment used: 023, 048, 051, 066, 076

Data:

Net amplification between ports, if applicable, is covered in clause 5.1.7 of this report.

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.5.4 - Tie trunk interface limitations

Test equipment used: 023, 048, 051, 066, 076

Data:

TE is not classified as a tie trunk interface

Notes: None

5.2.1.6 - Signal power in the 3995-4005 Hz band

5.2.1.6.1 - Power from internal signal sources in approved TE

Test equipment used: 023, 051, 066

Data:

Condition	State		Measured dBm		Limit dBm
	FXS	FXO	Positive	Negative	
Pre surge	Off hook min	Off hook min	-64.1	-64.1	< -27
		Off hook max	-64.1	-64.1	
	Off hook max	Off hook min	-64.1	-64.1	
		Off hook max	-64.1	-64.1	
Post B surge	Off hook min	Off hook min	-65.1	-65.1	
		Off hook max	-65.1	-65.1	
	Off hook max	Off hook min	-65.1	-65.1	
		Off hook max	-65.1	-65.1	
Post A surge	Off hook min	Off hook min	-64.1	-64.1	
		Off hook max	-64.1	-64.1	
	Off hook max	Off hook min	-64.1	-64.1	
		Off hook max	-64.1	-64.1	

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.6.2 - TE with through transmission paths from other equipment

Test equipment used: 023, 051, 066

Data:

Condition	State		Difference between loss @ 4000 Hz and loss from 600-4000 Hz		Limit
	FXS	FXO	Positive	Negative	
Pre surge	Min	Min	-37.5	-37.5	Loss 600-4000 !> 3dB Loss 3995-4005**
		Max	-37.5	-37.5	
	Max	Min	-37.5	-37.5	
		Max	-37.5	-37.5	
Post B	Min	Min	-37.5	-37.5	
		Max	-37.5	-37.5	
	Max	Min	-37.5	-37.5	
		Max	-37.5	-37.5	
Post A	Min	Min	-37.5	-37.5	
		Max	-37.5	-37.5	
	Max	Min	-37.5	-37.5	
		Max	-37.5	-37.5	

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.7 - Longitudinal voltage at frequencies below 4 kHz

Test equipment used: 023, 051, 066

Data:

Condition	State		Measured dBV		Correction dB	Corrected dBV		Limit dBV
	FXS	FXO	Positive	Negative		Positive	Negative	
Pre surge	On hook	On hook	-95.1	-95.1		-92.0	-92.0	
	Off hook min	Off hook min	-90.3	-94.4		-87.2	-91.3	
		Off hook max	-93.5	-92.0		-90.4	-88.9	
	Off hook max	Off hook min	-94.1	-92.3		-91.0	-89.2	
		Off hook max	-93.5	-93.8		-90.4	-90.7	
Post B	On hook	On hook	-94.9	-95.9		-91.8	-92.8	
	Off hook min	Off hook min	-91.9	-91.4		-88.8	-88.3	
		Off hook max	-92.7	-92.5	+3.1	-89.6	-89.4	< -30
	Off hook max	Off hook min	-92.2	-91.6		-89.1	-88.5	
		Off hook max	-92.7	-92.2		-89.6	-89.1	
Post A	On hook	On hook	-94.7	-94.0		-91.6	-90.9	
	Off hook min	Off hook min	-92.7	-92.6		-89.6	-89.5	
		Off hook max	-93.1	-93.0		-90.0	-89.9	
	Off hook max	Off hook min	-92.7	-92.7		-89.6	-89.6	
		Off hook max	-93.1	-92.9		-90.0	-89.8	

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.8 - Voltages from 4 - 30000 kHz

5.2.1.8.1 - Metallic voltage 4 - 270 kHz

5.2.1.8.1.1 - Metallic voltage 4 - 270 kHz, pre surge

Test equipment used: 023, 051, 066

Data:

State		Band kHz	Measured dBV		Limit dBV
FXS	FXO		Positive	Negative	
On hook	On hook	4 - 12	-110.7	-111.0	-14 to -20*
		12 - 90	-113.9	-113.9	-20 to -55**
		90 - 270	-104.1	-103.8	< -55
Off hook min	Off hook min	4 - 12	-74.2	-74.7	-14 to -20*
		12 - 90	-102.4	-102.3	-20 to -55**
		90 - 270	-106.0	-104.1	< -55
	Off hook max	4 - 12	-74.0	-74.2	-14 to -20*
		12 - 90	-101.9	-101.3	-20 to -55**
		90 - 270	-105.8	-103.7	< -55
Off hook max	Off hook min	4 - 12	-74.1	-74.3	-14 to -20*
		12 - 90	-102.4	-102.2	-20 to -55**
		90 - 270	-106.0	-104.7	< -55
	Off hook max	4 - 12	-72.9	-74.1	-14 to -20*
		12 - 90	-102.1	-101.9	-20 to -55**
		90 - 270	-105.4	-104.1	< -55

Notes: * Limit from 4 kHz - 12 kHz = $-(6.4 + 12.6 \log f)$
** Limit from 12 kHz - 90 kHz = $(23 - 40 \log f)$

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.8.1.2 - Metallic voltage 4 - 270 kHz, post B surge

Test equipment used: 023, 051, 066

Data:

State		Band kHz	Measured dBV		Limit dBV
FXS	FXO		Positive	Negative	
On hook	On hook	4 - 12	-107.3	-106.6	-14 to -20*
		12 - 90	-109.1	-108.4	-20 to -55**
		90 - 270	-104.7	-104.4	< -55
Off hook min	Off hook min	4 - 12	-77.6	-77.6	-14 to -20*
		12 - 90	-101.7	-101.6	-20 to -55**
		90 - 270	-105.7	-103.9	< -55
	Off hook max	4 - 12	-77.5	-77.5	-14 to -20*
		12 - 90	-101.3	-100.4	-20 to -55**
		90 - 270	-105.0	-104.2	< -55
Off hook max	Off hook min	4 - 12	-77.5	-77.6	-14 to -20*
		12 - 90	-100.8	-101.1	-20 to -55**
		90 - 270	-104.6	-104.6	< -55
	Off hook max	4 - 12	-76.5	-75.9	-14 to -20*
		12 - 90	-101.5	-100.8	-20 to -55**
		90 - 270	-105.2	-103.6	< -55

Notes: * Limit from 4 kHz - 12 kHz = $-(6.4 + 12.6 \log f)$
** Limit from 12 kHz - 90 kHz = $(23 - 40 \log f)$

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.8.1.3 - Metallic voltage 4 - 270 kHz, post A surge

Test equipment used: 023, 051, 066

Data:

State		Band kHz	Measured dBV		Limit dBV
FXS	FXO		Positive	Negative	
On hook	On hook	4 - 12	-104.7	-104.4	-14 to -20*
		12 - 90	-101.4	-100.7	-20 to -55**
		90 - 270	-103.2	-103.3	< -55
Off hook min	Off hook min	4 - 12	-74.8	-74.7	-14 to -20*
		12 - 90	-99.6	-99.3	-20 to -55**
		90 - 270	-102.2	-101.4	< -55
	Off hook max	4 - 12	-74.5	-74.5	-14 to -20*
		12 - 90	-98.2	-99.3	-20 to -55**
		90 - 270	-101.8	-101.0	< -55
Off hook max	Off hook min	4 - 12	-74.7	-74.8	-14 to -20*
		12 - 90	-101.8	-100.7	-20 to -55**
		90 - 270	-102.2	-102.2	< -55
	Off hook max	4 - 12	-74.4	-74.4	-14 to -20*
		12 - 90	-99.6	-99.7	-20 to -55**
		90 - 270	-102.0	-101.6	< -55

Notes: * Limit from 4 kHz - 12 kHz = $-(6.4 + 12.6 \log f)$
** Limit from 12 kHz - 90 kHz = $(23 - 40 \log f)$

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.8.2 - Metallic voltage 270 - 30000 kHz

Test equipment used: 023, 057, 066

Data:

Condition	State		Measured dBV		Limit dBV
	FXS	FXO	Positive	Negative	
Pre surge	On hook	On hook	-44.3	-44.1	< -15
	Off hook min	Off hook min	-42.9	-42.9	
		Off hook max	-42.8	-42.6	
	Off hook max	Off hook min	-42.9	-42.8	
		Off hook max	-42.6	-42.5	
Post B	On hook	On hook	-47.6	-47.4	
	Off hook min	Off hook min	-47.1	-46.8	
		Off hook max	-46.8	-47.2	
	Off hook max	Off hook min	-47.1	-47.0	
		Off hook max	-47.0	-47.1	
Post A	On hook	On hook	-47.0	-47.0	
	Off hook min	Off hook min	-45.9	-46.5	
		Off hook max	-46.3	-46.1	
	Off hook max	Off hook min	-46.6	-47.2	
		Off hook max	-46.2	-46.2	

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.8.3 - Longitudinal voltage 4 - 270 kHz

5.2.1.8.3.1 - Longitudinal voltage 4 - 270 kHz, pre surge

Test equipment used: 023, 051, 066

Data:

State		Band kHz	Measured dBV		Correction dB	Corrected dBV		Limit dBV
FXS	FXO		Positive	Negative		Positive	Negative	
On hook	On hook	4 - 12	-107.3	-107.5	+1.4	-105.9	-106.1	-30 to -40 *
		12 - 42	-109.9	-110.2	+4.0	-105.9	-106.2	-40 to -62 **
		42 - 270	-102.7	-102.6	+4.0	-98.7	-98.6	< -62
Off hook min	Off hook min	4 - 12	-106.7	-106.9	+1.4	-105.3	-105.5	-30 to -40 *
		12 - 42	-109.6	-109.9	+4.0	-105.6	-105.9	-40 to -62 **
		42 - 270	-98.6	-98.7	+4.0	-94.6	-94.7	< -62
	Off hook max	4 - 12	-107.5	-106.9	+1.4	-106.1	-105.5	-30 to -40 *
		12 - 42	-109.9	-109.6	+4.0	-105.9	-105.6	-40 to -62 **
		42 - 270	-98.9	-99.1	+4.0	-94.9	-95.1	< -62
Off hook max	Off hook min	4 - 12	-106.9	-106.9	+1.4	-105.5	-105.5	-30 to -40 *
		12 - 42	-109.6	-110.2	+4.0	-105.6	-106.2	-40 to -62 **
		42 - 270	-98.6	-98.4	+4.0	-94.6	-94.4	< -62
	Off hook max	4 - 12	-106.6	-106.7	+1.4	-105.2	-105.3	-30 to -40 *
		12 - 42	-110.2	-109.9	+4.0	-106.2	-105.9	-40 to -62 **
		42 - 270	-98.7	-98.6	+4.0	-94.7	-94.6	< -62

Notes: * Limit from 4 kHz - 12 kHz = -(18.4 + 20 log f)
** Limit from 12 kHz - 42 kHz = (3.0 - 40 log f)

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.8.3.2 - Longitudinal voltage 4 - 270 kHz, post B surge

Test equipment used: 023, 051, 066

Data:

State		Band kHz	Measured dBV		Correction dB	Corrected dBV		Limit dBV
FXS	FXO		Positive	Negative		Positive	Negative	
On hook	On hook	4 - 12	-106.9	-107.5	+1.4	-105.5	-106.1	-30 to -40 *
		12 - 42	-108.9	-109.1	+4.0	-104.9	-105.1	-40 to -62 **
		42 - 270	-102.9	-102.3	+4.0	-98.9	-98.3	< -62
Off hook min	Off hook min	4 - 12	-106.6	-106.9	+1.4	-105.2	-105.5	-30 to -40 *
		12 - 42	-109.9	-109.4	+4.0	-105.9	-105.4	-40 to -62 **
		42 - 270	-96.8	-96.5	+4.0	-92.8	-92.5	< -62
	Off hook max	4 - 12	-107.5	-106.6	+1.4	-106.1	-105.2	-30 to -40 *
		12 - 42	-109.4	-109.6	+4.0	-105.4	-105.6	-40 to -62 **
		42 - 270	-96.8	-96.6	+4.0	-92.8	-92.6	< -62
Off hook max	Off hook min	4 - 12	-106.9	-107.1	+1.4	-105.5	-105.7	-30 to -40 *
		12 - 42	-110.2	-109.6	+4.0	-106.2	-105.6	-40 to -62 **
		42 - 270	-98.3	-98.7	+4.0	-94.3	-94.7	< -62
	Off hook max	4 - 12	-107.3	-106.7	+1.4	-105.9	-105.3	-30 to -40 *
		12 - 42	-109.9	-109.9	+4.0	-105.9	-105.9	-40 to -62 **
		42 - 270	-98.2	-98.6	+4.0	-94.2	-94.6	< -62

Notes: * Limit from 4 kHz - 12 kHz = -(18.4 + 20 log f)
** Limit from 12 kHz - 42 kHz = (3.0 - 40 log f)

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.8.3.3 - Longitudinal voltage 4 - 270 kHz, post A surge

Test equipment used: 023, 051, 066

Data:

State		Band kHz	Measured dBV		Correction dB	Corrected dBV		Limit dBV
FXS	FXO		Positive	Negative		Positive	Negative	
On hook	On hook	4 - 12	-107.5	-104.2	+1.4	-106.1	-102.8	-30 to -40 *
		12 - 42	-99.3	-106.9	+4.0	-95.3	-102.9	-40 to -62 **
		42 - 270	-104.7	-93.9	+4.0	-100.7	-89.9	< -62
Off hook min	Off hook min	4 - 12	-104.7	-104.3	+1.4	-103.3	-102.9	-30 to -40 *
		12 - 42	-106.2	-107.1	+4.0	-102.2	-103.1	-40 to -62 **
		42 - 270	-94.0	-93.7	+4.0	-90.0	-89.7	< -62
	Off hook max	4 - 12	-104.6	-104.3	+1.4	-103.2	-102.9	-30 to -40 *
		12 - 42	-106.6	-107.1	+4.0	-102.6	-103.1	-40 to -62 **
		42 - 270	-93.6	-93.7	+4.0	-89.6	-89.7	< -62
Off hook max	Off hook min	4 - 12	-104.6	-104.3	+1.4	-103.2	-102.9	-30 to -40 *
		12 - 42	-106.7	-106.4	+4.0	-102.7	-102.4	-40 to -62 **
		42 - 270	-95.1	-95.3	+4.0	-91.1	-91.3	< -62
	Off hook max	4 - 12	-104.3	-103.7	+1.4	-102.9	-102.3	-30 to -40 *
		12 - 42	-106.7	-106.9	+4.0	-102.7	-102.9	-40 to -62 **
		42 - 270	-95.1	-95.1	+4.0	-91.1	-91.1	< -62

Notes: * Limit from 4 kHz - 12 kHz = -(18.4 + 20 log f)
** Limit from 12 kHz - 42 kHz = (3.0 - 40 log f)

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.8.4- Longitudinal voltage 270 - 6000 kHz

Test equipment used: 023, 057, 066

Data:

Condition	State		Measured dBV		Correction dB	Corrected dBV		Limit dBV
	FXS	FXO	Positive	Negative		Positive	Negative	
Pre surge	On hook	On hook	-43.1	-43.1	+4.0	-39.1	-39.1	< -30
	Off hook min	Off hook min	-43.2	-42.9		-39.2	-38.9	
		Off hook max	-42.9	-43.1		-38.9	-39.1	
	Off hook min	Off hook min	-43.1	-43.2		-39.1	-39.2	
		Off hook max	-43.2	-43.2		-39.2	-39.2	
Post B	On hook	On hook	-47.4	-47.9		-43.4	-43.9	
	Off hook min	Off hook min	-47.9	-47.7		-43.9	-43.7	
		Off hook max	-47.5	-47.8		-43.5	-43.8	
	Off hook min	Off hook min	-47.9	-48.3		-43.9	-44.3	
		Off hook max	-47.9	-47.8		-43.9	-43.8	
Post A	On hook	On hook	-47.8	-47.7		-43.8	-43.7	
	Off hook min	Off hook min	-47.6	-47.5		-43.6	-43.5	
		Off hook max	-47.5	-46.9		-43.5	-42.9	
	Off hook min	Off hook min	-46.2	-47.2		-42.2	-43.2	
		Off hook max	-46.4	-47.5		-42.4	-43.5	

Notes: None

5.2.1.9 - Conditions for in and out of band voltage measurements

Test equipment used: n/a

Data:

OK	All of the metallic and longitudinal voltage measurements were made when the TE was connected to an appropriate termination specified in TIA-968-B and with the TE placed in all operating states except network control signalling.

Notes: None

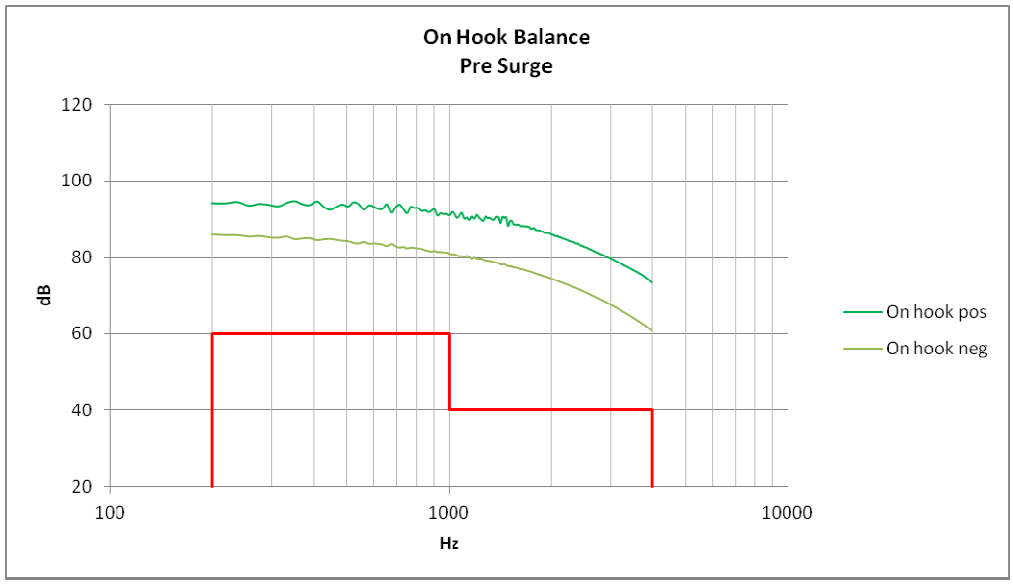
TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

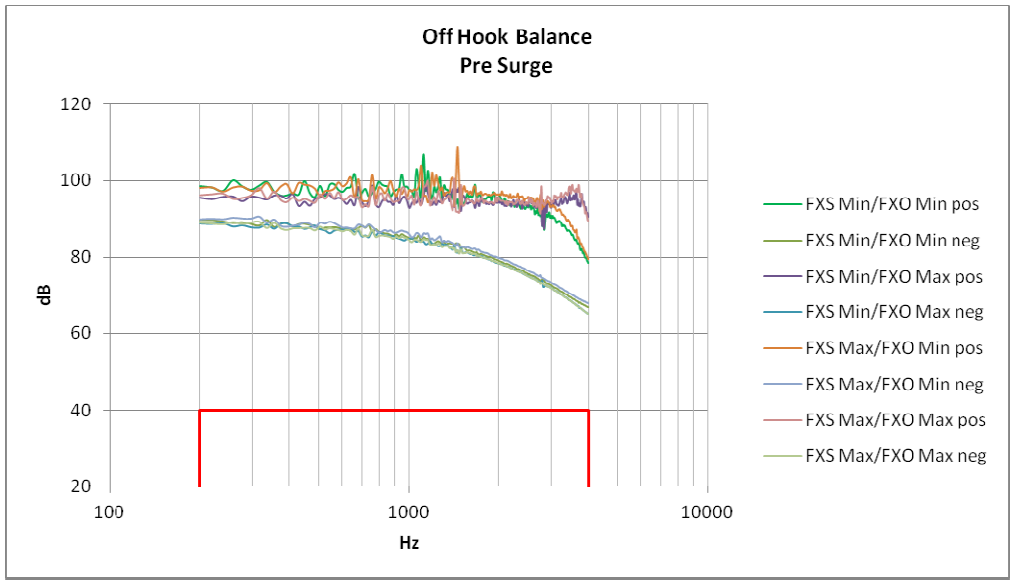
5.2.1.10 - Analog voice band transverse balance limits

5.2.1.10.1 - Transverse balance pre surge

Test equipment used: 011, 051, 066, 076

Data:





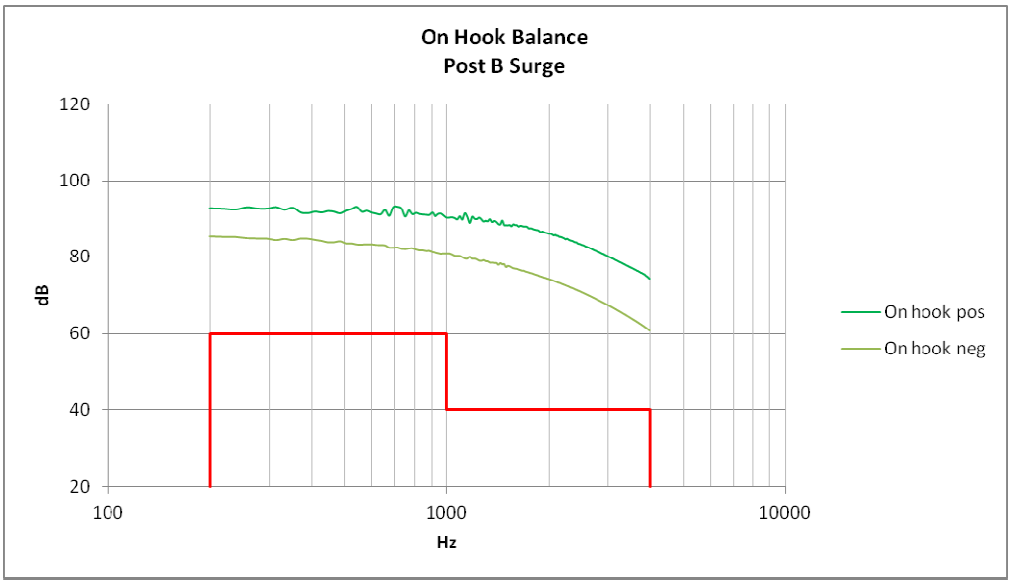
Notes: None

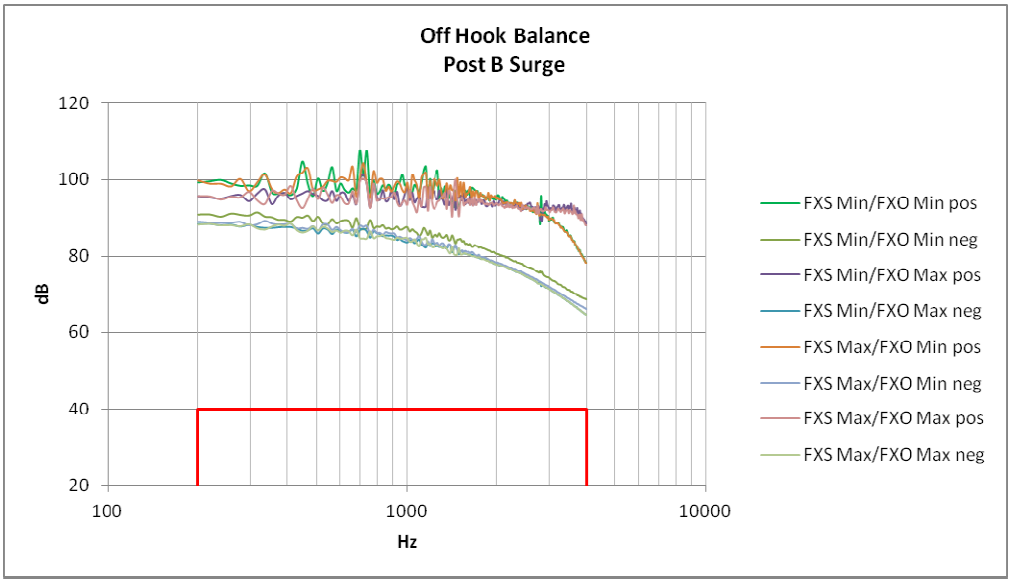
TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.10.2 - Transverse balance post B surge

Test equipment used: 011, 051, 066, 076

Data:





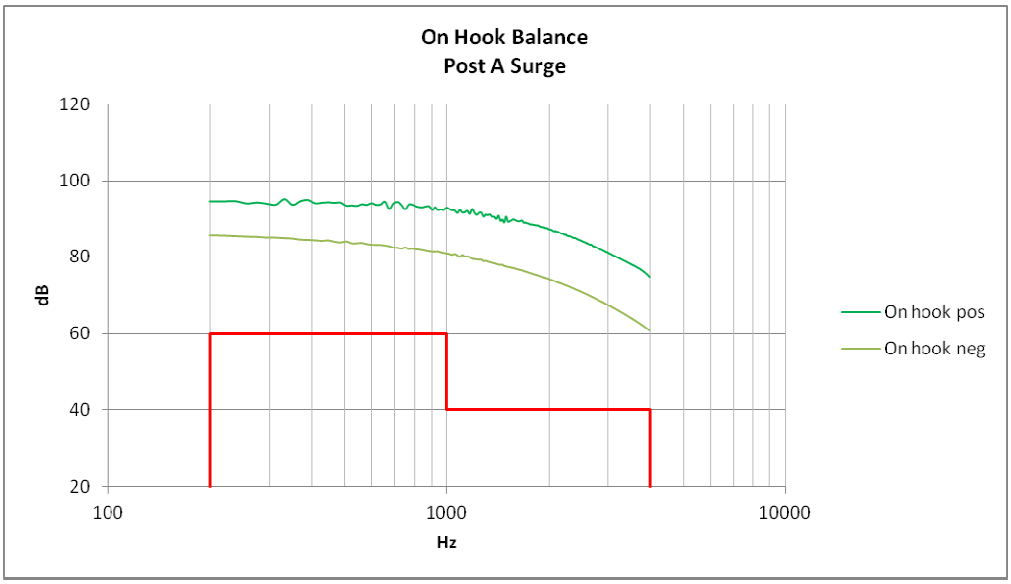
Notes: None

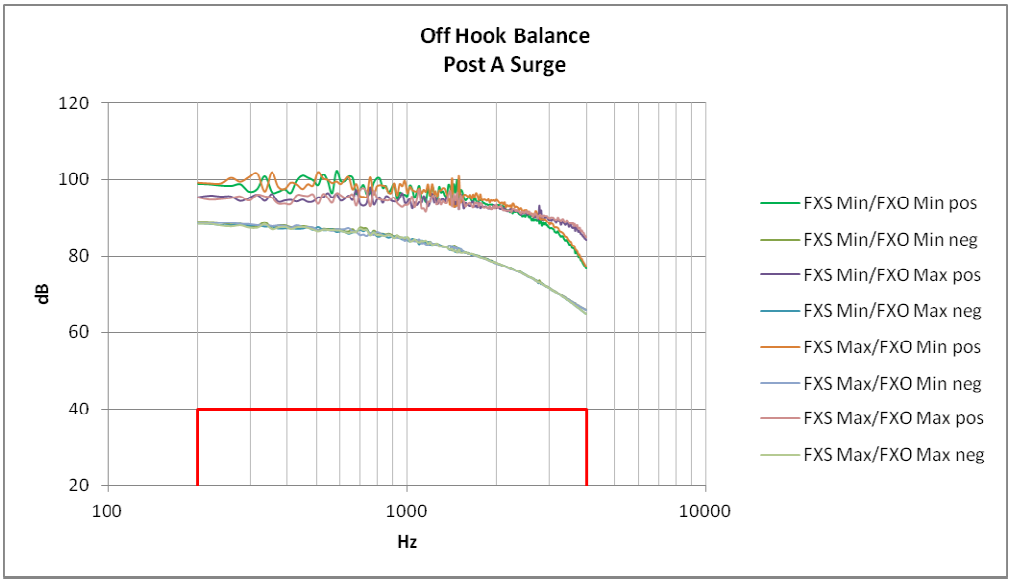
TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.10.3 - Transverse balance post A surge

Test equipment used: 011, 051, 066, 076

Data:





Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.11 - Loop start interfaces

5.2.1.11.1 - General

5.2.1.11.2 - Limitations on loop start interfaces

5.2.1.11.2.1 - On-hook resistance up to 100 V

5.2.1.11.2.1.1 - On-hook resistance up to 100 V - pre surge

5.2.1.11.2.1.1.1 - Metallic on-hook resistance up to 100 V - pre surge

Test equipment used: 021, 040, 051

Data:

Voltage VDC	Current T-R uA		Impedance T-R Mohms		Limit Mohms
	+	-	+	-	
1	< 0.1	< 0.1	> 10	> 10	
10	< 0.1	< 0.1	> 10	> 10	
20	1.0	1.0	20.0	20.0	
30	1.6	1.6	18.8	18.8	
40	2.1	2.1	19.0	19.0	
50	2.6	2.6	19.2	19.2	> 5.0
60	3.1	3.1	19.4	19.4	
70	3.5	3.5	20.0	20.0	
80	4.0	4.0	20.0	20.0	
90	4.5	4.5	20.0	20.0	
100	5.0	5.0	20.0	20.0	

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.11.2.1.1.2 - Longitudinal on-hook resistance up to 100 V - pre surge

Test equipment used: 021, 040, 051

Data:

Voltage VDC	Current T-Ground uA		Impedance T-Ground Mohms		Current R-Ground uA		Impedance R-Ground Mohms		Limit Mohms
	+	-	+	-	+	-	+	-	
1	< 0.1	< 0.1	> 10	> 10	< 0.1	< 0.1	> 10	> 10	
10	< 1.0	< 1.0	> 10	> 10	< 1.0	< 1.0	> 10	> 10	
20	< 1.0	< 1.0	> 20	> 20	< 1.0	< 1.0	> 20	> 20	
30	< 1.0	< 1.0	> 30	> 30	< 1.0	< 1.0	> 30	> 30	
40	< 1.0	< 1.0	> 40	> 40	< 1.0	< 1.0	> 40	> 40	
50	< 1.0	< 1.0	> 50	> 50	< 1.0	< 1.0	> 50	> 50	> 5.0
60	< 1.0	< 1.0	> 60	> 60	< 1.0	< 1.0	> 60	> 60	
70	< 1.0	< 1.0	> 70	> 70	< 1.0	< 1.0	> 70	> 70	
80	< 1.0	< 1.0	> 80	> 80	< 1.0	< 1.0	> 80	> 80	
90	< 1.0	< 1.0	> 90	> 90	< 1.0	< 1.0	> 90	> 90	
100	< 1.0	< 1.0	> 100	> 100	< 1.0	< 1.0	> 100	> 100	

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.11.2.1.2 - On-hook resistance up to 100 V - post B surge

5.2.1.11.2.1.2.1 - Metallic on-hook resistance up to 100 V - post B surge

Test equipment used: 021, 040, 051

Data:

Voltage VDC	Current T-R uA		Impedance T-R Mohms		Limit Mohms
	+	-	+	-	
1	< 0.1	< 0.1	> 10	> 10	
10	< 0.1	< 0.1	> 10	> 10	
20	1.0	1.0	20.0	20.0	
30	1.6	1.6	18.8	18.8	
40	2.1	2.1	19.0	19.0	
50	2.6	2.6	19.2	19.2	> 5.0
60	3.1	3.1	19.4	19.4	
70	3.5	3.5	20.0	20.0	
80	4.0	4.0	20.0	20.0	
90	4.5	4.5	20.0	20.0	
100	5.0	5.0	20.0	20.0	

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.11.2.1.2.2 - Longitudinal on-hook resistance up to 100 V - post B surge

Test equipment used: 021, 040, 051

Data:

Voltage VDC	Current T-Ground uA		Impedance T-Ground Mohms		Current R-Ground uA		Impedance R-Ground Mohms		Limit Mohms
	+	-	+	-	+	-	+	-	
1	< 0.1	< 0.1	> 10	> 10	< 0.1	< 0.1	> 10	> 10	
10	< 1.0	< 1.0	> 10	> 10	< 1.0	< 1.0	> 10	> 10	
20	< 1.0	< 1.0	> 20	> 20	< 1.0	< 1.0	> 20	> 20	
30	< 1.0	< 1.0	> 30	> 30	< 1.0	< 1.0	> 30	> 30	
40	< 1.0	< 1.0	> 40	> 40	< 1.0	< 1.0	> 40	> 40	
50	< 1.0	< 1.0	> 50	> 50	< 1.0	< 1.0	> 50	> 50	> 5.0
60	< 1.0	< 1.0	> 60	> 60	< 1.0	< 1.0	> 60	> 60	
70	< 1.0	< 1.0	> 70	> 70	< 1.0	< 1.0	> 70	> 70	
80	< 1.0	< 1.0	> 80	> 80	< 1.0	< 1.0	> 80	> 80	
90	< 1.0	< 1.0	> 90	> 90	< 1.0	< 1.0	> 90	> 90	
100	< 1.0	< 1.0	> 100	> 100	< 1.0	< 1.0	> 100	> 100	

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.11.2.1.3 - On-hook resistance up to 100 V - post A surge

5.2.1.11.2.1.3.1 - Metallic on-hook resistance up to 100 V - post A surge

Test equipment used: 021, 040, 051

Data:

Voltage VDC	Current T-R uA		Impedance T-R Mohms		Limit Mohms
	+	-	+	-	
1	< 0.1	< 0.1	> 10	> 10	
10	< 0.1	< 0.1	> 10	> 10	
20	1.0	1.0	20.0	20.0	
30	1.6	1.6	18.8	18.8	
40	2.1	2.1	19.0	19.0	
50	2.6	2.6	19.2	19.2	> 5.0
60	3.1	3.1	19.4	19.4	
70	3.5	3.5	20.0	20.0	
80	4.0	4.0	20.0	20.0	
90	4.5	4.5	20.0	20.0	
100	5.0	5.0	20.0	20.0	

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.11.2.1.3.2 - Longitudinal on-hook resistance up to 100 V - post A surge

Test equipment used: 021, 040, 051

Data:

Voltage VDC	Current T-Ground uA		Impedance T-Ground Mohms		Current R-Ground uA		Impedance R-Ground Mohms		Limit Mohms
	+	-	+	-	+	-	+	-	
1	< 0.1	< 0.1	> 10	> 10	< 0.1	< 0.1	> 10	> 10	
10	< 1.0	< 1.0	> 10	> 10	< 1.0	< 1.0	> 10	> 10	
20	< 1.0	< 1.0	> 20	> 20	< 1.0	< 1.0	> 20	> 20	
30	< 1.0	< 1.0	> 30	> 30	< 1.0	< 1.0	> 30	> 30	
40	< 1.0	< 1.0	> 40	> 40	< 1.0	< 1.0	> 40	> 40	
50	< 1.0	< 1.0	> 50	> 50	< 1.0	< 1.0	> 50	> 50	> 5.0
60	< 1.0	< 1.0	> 60	> 60	< 1.0	< 1.0	> 60	> 60	
70	< 1.0	< 1.0	> 70	> 70	< 1.0	< 1.0	> 70	> 70	
80	< 1.0	< 1.0	> 80	> 80	< 1.0	< 1.0	> 80	> 80	
90	< 1.0	< 1.0	> 90	> 90	< 1.0	< 1.0	> 90	> 90	
100	< 1.0	< 1.0	> 100	> 100	< 1.0	< 1.0	> 100	> 100	

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.11.2.2 - On-hook resistance 100 - 200 V

5.2.1.11.2.2.1 - Metallic on-hook resistance 100 - 200 V

Test equipment used: 021, 040, 051

Data:

Condition	Voltage VDC	Current T-R uA		Impedance T-R Mohms		Limit Mohms
		+	-	+	-	
Pre surge	150	7.5	7.5	20.0	20.2	> 0.030
	200	10.2	10.2	19.6	19.6	
Post A surge	150	7.5	7.5	20.0	20.2	
	200	10.2	10.2	19.6	19.6	
Post B surge	150	7.5	7.5	20.0	20.2	
	200	10.2	10.2	19.6	19.6	

Notes: None

5.2.1.11.2.2 - Longitudinal on-hook resistance 100 - 200 V

Test equipment used: 021, 040, 051

Data:

Condition	Voltage VDC	Current T-Ground uA		Impedance T-Ground Mohms		Current R-Ground uA		Impedance R-Ground Mohms		Limit Mohms
		+	-	+	-	+	-	+	-	
Pre surge	150	< 1.0	< 1.0	> 150	> 150	< 1.0	< 1.0	> 150	> 150	> 0.030
	200	< 1.0	< 1.0	> 200	> 200	< 1.0	< 1.0	> 200	> 200	
Post A surge	150	< 1.0	< 1.0	> 150	> 150	< 1.0	< 1.0	> 150	> 150	
	200	< 1.0	< 1.0	> 200	> 200	< 1.0	< 1.0	> 200	> 200	
Post B surge	150	< 1.0	< 1.0	> 150	> 150	< 1.0	< 1.0	> 150	> 150	
	200	< 1.0	< 1.0	> 200	> 200	< 1.0	< 1.0	> 200	> 200	

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.11.2.3 - DC current during ringing

Test equipment used: 021, 040, 048, 051

Data:

Condition	Voltage V_{rms}	Frequency Hz	Current mA		Limit mA
			+	-	
Pre surge	40	20	< 1.0	< 1.0	< 3.0
		30	< 1.0	< 1.0	
	130	20	< 1.0	< 1.0	
		30	< 1.0	< 1.0	
Post B surge	40	20	< 1.0	< 1.0	
		30	< 1.0	< 1.0	
	130	20	< 1.0	< 1.0	
		30	< 1.0	< 1.0	
Post A surge	40	20	< 1.0	< 1.0	
		30	< 1.0	< 1.0	
	130	20	< 1.0	< 1.0	
		30	< 1.0	< 1.0	

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.11.2.4 - Metallic ringing frequency impedance

Test equipment used: 021, 040, 048, 051

Data:

Condition	Voltage V_{rms}	Freq. Hz	Current mA		Impedance kohms		Limit kohms
			+ DC	- DC	+ DC	- DC	
Pre surge	40	20	< 0.1	< 0.1	> 400	> 400	> 1.400
		30	< 0.1	< 0.1	> 400	> 400	> 1.000
	130	20	< 0.1	< 0.1	> 1300	> 1300	> 1.400
		30	< 0.1	< 0.1	> 1300	> 1300	> 1.000
Post B Surge	40	20	< 0.1	< 0.1	> 400	> 400	> 1.400
		30	< 0.1	< 0.1	> 400	> 400	> 1.000
	130	20	< 0.1	< 0.1	> 1300	> 1300	> 1.400
		30	< 0.1	< 0.1	> 1300	> 1300	> 1.000
Post A Surge	40	20	< 0.1	< 0.1	> 400	> 400	> 1.400
		30	< 0.1	< 0.1	> 400	> 400	> 1.000
	130	20	< 0.1	< 0.1	> 1300	> 1300	> 1.400
		30	< 0.1	< 0.1	> 1300	> 1300	> 1.000

Notes: Use 400 000 ohms for REN calculation in Section 5.2.1.11.2.6

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

7474414152412.2.1.11.2.5 - Longitudinal ringing frequency impedance

Test equipment used: 021, 040, 048, 051

Data:

Condition	VAC	Ringing Frequency Hz	Current T-Ground uA		Impedance T-Ground kohms		Current R-Ground uA		Impedance R-Ground kohms		Limit kohms
			+ DC	- DC	+ DC	- DC	+ DC	- DC	+ DC	- DC	
Pre surge	40	20	< 0.1	< 0.1	> 400	> 400	< 0.1	< 0.1	> 400	> 400	> 100
		30	< 0.1	< 0.1	> 1300	> 1300	< 0.1	< 0.1	> 1300	> 1300	
	130	20	< 0.1	< 0.1	> 400	> 400	< 0.1	< 0.1	> 400	> 400	
		30	< 0.1	< 0.1	> 1300	> 1300	< 0.1	< 0.1	> 1300	> 1300	
Post B	40	20	< 0.1	< 0.1	> 400	> 400	< 0.1	< 0.1	> 400	> 400	
		30	< 0.1	< 0.1	> 1300	> 1300	< 0.1	< 0.1	> 1300	> 1300	
	130	20	< 0.1	< 0.1	> 400	> 400	< 0.1	< 0.1	> 400	> 400	
		30	< 0.1	< 0.1	> 1300	> 1300	< 0.1	< 0.1	> 1300	> 1300	
Post A	40	20	< 0.1	< 0.1	> 400	> 400	< 0.1	< 0.1	> 400	> 400	
		30	< 0.1	< 0.1	> 1300	> 1300	< 0.1	< 0.1	> 1300	> 1300	
	130	20	< 0.1	< 0.1	> 400	> 400	< 0.1	< 0.1	> 400	> 400	
		30	< 0.1	< 0.1	> 1300	> 1300	< 0.1	< 0.1	> 1300	> 1300	

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.11.2.6 - REN Calculation

Test equipment used: n/a

Data:

Minimum AC Impedance (from section 5. 2.1.11.2.4) 400 000 ohms

Ringer Type A Impedance Limitation 1400 ohms

Calculation:

(1400 * 5) ohms / 400 000 ohms = 0.018

Parameter	Calculated	Limit
REN	**0.1** A	< 5.0A

Notes: REN may not be less than 0.1.

5.2.1.11.3 - Transitioning to the off hook state

Test equipment used: 023, 051

Data:

OK	The TE does not by design leave the on-hook state by operations performed on tip and ring leads for any other purpose than to request service or answer an incoming call

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.2.1.11.4 - Loop current requirements

Test equipment used: 021, 057

Data:

Condition	Time S	Pre surge current mA		Post B current mA		Post A current mA	
		+	-	+	-	+	-
Low current	1	18.3	18.3	18.3	18.3	18.1	18.1
	2	18.3	18.3	18.3	18.3	18.1	18.1
	3	18.3	18.3	18.3	18.3	18.1	18.1
	4	18.3	18.3	18.3	18.3	18.1	18.1
	5	18.3	18.3	18.3	18.3	18.1	18.1
Medium current	1	28.1	28.1	28.3	28.3	28.1	28.1
	2	28.1	28.1	28.3	28.3	28.1	28.1
	3	28.1	28.1	28.3	28.3	28.1	28.1
	4	28.1	28.1	28.3	28.3	28.1	28.1
	5	28.1	28.1	28.3	28.3	28.1	28.1
High current	1	46.6	46.6	46.6	46.6	46.6	46.6
	2	46.6	46.6	46.6	46.6	46.6	46.6
	3	46.6	46.6	46.6	46.6	46.6	46.6
	4	46.6	46.6	46.6	46.6	46.6	46.6
	5	46.6	46.6	46.6	46.6	46.6	46.6

Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

5.3 - 47 CFR Part 68.318 requirements

5.3.1 - Automatic dialing capability

Test equipment used: 023, 057

Data:

TE does not support automatic dialing.

Notes: None

5.3.2 - Line seizure by automatic telephone dialing systems

Test equipment used: 023, 057

Data:

TE does not support automatic dialing.

Notes: None

5.3.3 - Telephone facsimile machine requirements

Test equipment used: n/a

Data:

TE is not classified as a facsimile machine within meaning of Part 68 rules.

Notes: None

5.3.4 - Equal access to common carriers requirements

Test equipment used: n/a

Data:

Customer will provide attestation to support requirements of this section upon request.

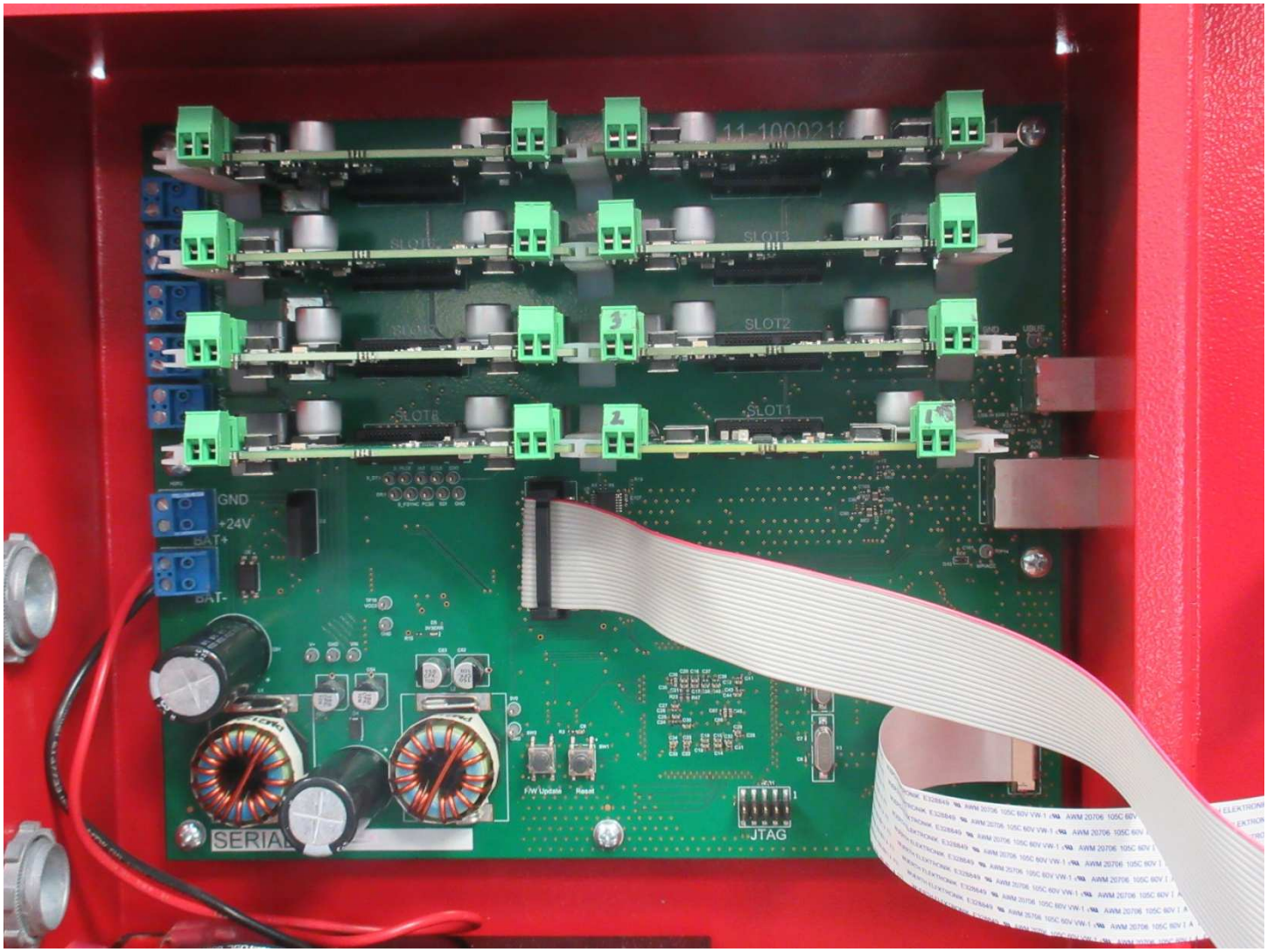
Notes: None

TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

6 - Photographs



TEST NUMBER: 445-18
MANUFACTURER: Wurtec, Inc.
EUT: PBX for Elevator Industry S3 Command Center

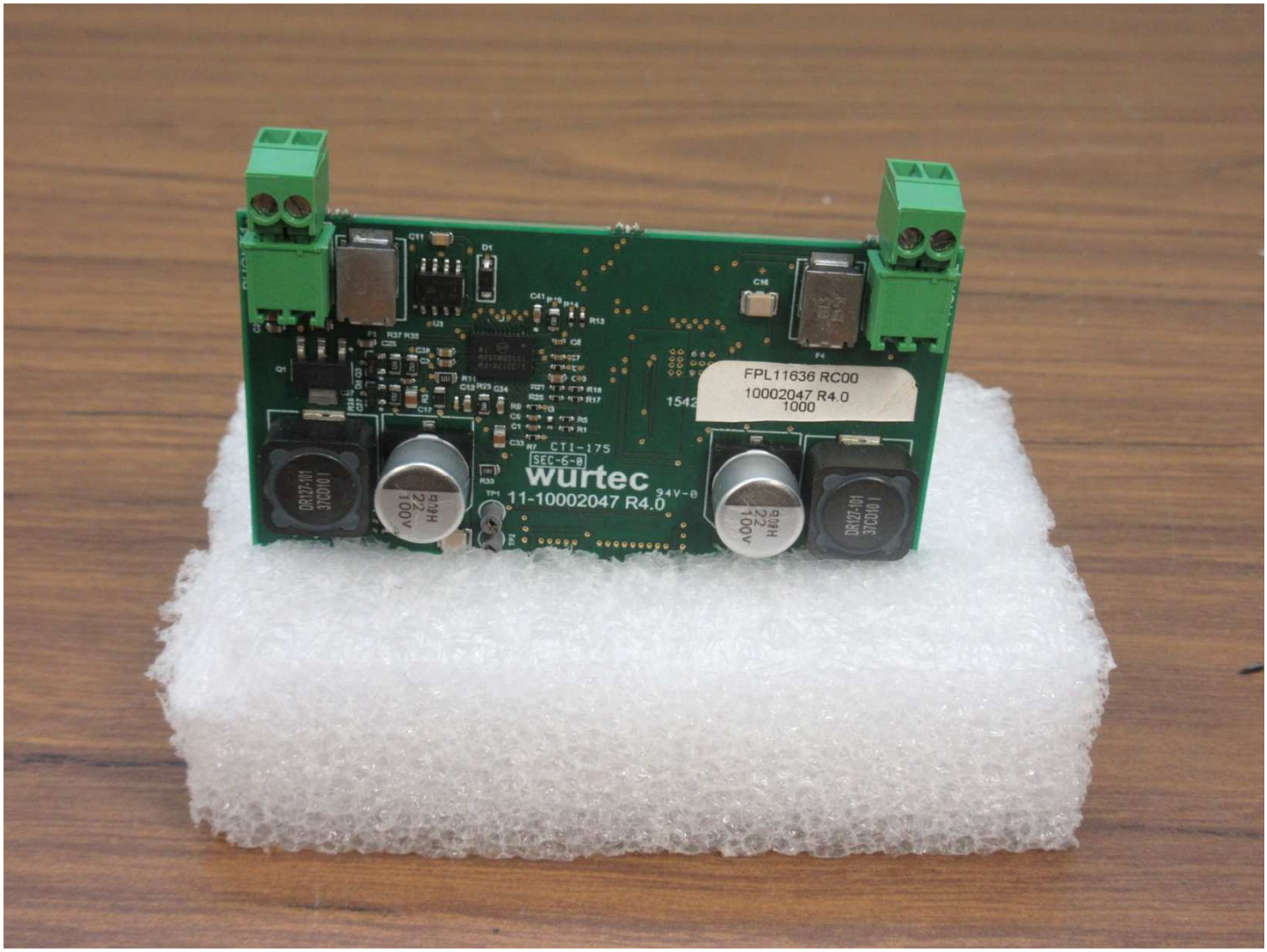




Component side of FXO module



Solder side of FXO module



Component side of FXS module



Solder side of FXS module