ENGINEERING TEST REPORT

ON: MODEL
Jaguar Communicator (Model 6498)

IN ACCORDANCE WITH:
TIA-968-B August 2009

REPORT NO.: 1026102TUS1

TESTED FOR:
BOSTON SCIENTIFIC CORPORATION
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ST. PAUL, MN 55117

TESTED BY:

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17-Nov-2011

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INTRODUCTION

This report provides results and analysis of tests performed in accordance with TIA-968-B, August 2009 on a representative sample of the model: Jaguar Communicator (Model:6498).

Test Procedures And Circuits

Test Procedures and Circuits for Equipment Evaluation in accordance with TIA-968-B, August 2009.

Engineer

These tests were performed in accordance with TIA-968- B, August 2009. In our engineering assessment, the Boston Scientific Corp. model: Jaguar Communicator (Model:6498).as tested meets and or exceeds all the applicable requirements of TIA-968- B, August 2009.

THIS REPORT APPLIES ONLY TO THE ITEM(S) TESTED AND DOES NOT CONSTITUTE ENDORSEMENT BY THE UNITED STATES OF AMERICA.

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

TESTED BY: Brian Boyea DATE: 17-Nov-2011
Brian Boyea, Senior Telecom Engineer

APPROVED BY: Michael Cantwell DATE: 28-Nov-2011
Mike Cantwell, General Manager

TEST MATRIX

EQUIPMENT DESCRIPTION : Modem
CLASSIFICATION: OT

TEST PROCEDURE	SECTION	REQUIRED	COMPLETED
MECHANICAL SHOCK	4.1.1	----	----
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 LIMITATIONS	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	----	----	----	----
ON-HOOK SIGNAL POWER	4.4.2	X	X	X	X
SIGNALLING INTERFERENCE REQUIREMENTS	4.4.3	X	X	X	X
SIGNAL POWER LIMITATIONS	5.1	----	----	----	----
GENERAL	5.1.1	----	----	----	----
VOICEBAND METALLIC SIGNAL POWER	5.1.2	X	X	X	X
INTERNAL SIGNAL SOURCES (NON NETWORK SIGNALING)	5.1.2.1	----	----	----	----
SIGNAL POWER LIMITIONS VOICEBAND (METALIC)	5.1.2.4	----	----	----	----
INTERNAL SIGNAL SOURCES (NETWORK SIGNALING)	5.1.3	X	X	X	X
SIGNAL POWER (NETWORK SIGNALING)	5.1.3.1	----	----	----	----
SIGNAL POWER (3995-4005 Hz BAND)	5.1.6	----	----	----	----
SIGNAL POWER (INTERNAL SIGNAL SOURCE)	5.1.6.1	----	----	----	----
LONGITUDINAL AC VOLTAGE BELOW 4 kHz	5.1.7	X	X	X	X
LONGITUDINAL VOLTAGES (100Hz to 4kHz)	5.1.7.1	X	X	X	X
VOLTAGES IN THE 4kHz TO 30MHz FREQUANCY RANGE	5.1.8	X	X	X	X
METALLIC VOLTAGE 4kHz to 270kHz	5.1.8.1	X	X	X	X
METALLIC VOLTAGE 270kHz to 30MHz	5.1.8.2	X	X	X	X
LONGITUDINAL VOLTAGE 4kHz to 270kHz	5.1.8.3	X	X	X	X
LONGITUDINAL VOLTAGE 270kHz to 6MHz	5.1.8.4	X	X	X	X
CONDITIONS FOR REQUIREMENTS in SUBCLAUSE 5.1.7 & 5.1.8	5.1.9	NOTED			

			COMPLETED		
		REQUIRED	**B.E.S.**	**A.B.S.**	**A.A.S**
TRANSVERSE BALANCE LIMITATIONS	5.1.10	X	X	X	X
TECHNICAL DESCRIPTION AND APPLICATION	5.1.10.1	----	----	----	----
TRANSVERSE BALANCE LIMITATIONS (ANALOG)	5.1.10.4	X	X	X	X
ON-HOOK IMPEDANCE LIMITATIONS	5.1.11	X	X	X	X
ON-HOOK IMPEDANCE (GENERAL)	5.1.11.1	X	X	X	X
ON-HOOK RESISTANCE (UP TO 100VDC)	5.1.11.2.1	X	X	X	X
ON-HOOK RESISTANCE (100 – 200 VDC)	5.1.11.2.2	X	X	X	X
DC CURRENT DURING RINGING	5.1.11.2.3	X	X	X	X
AC IMPEDANCE	5.1.11.2.4	X	X	X	X
RINGING FREQUENCY IMPEDANCE (LONGITUDINAL)	5.1.11.2.5	X	X	X	X
RINGER EQUIVALENCE DEFINITION	5.1.11.2.6	NOTED			
MAXIMUM RINGER EQUIVALENCE	5.1.11.2.8	NOTED			
LOOP CURRENT REQUIREMENTS	5.1.11.4	----	----	----	----
DS1 and ISDN PRI TERMINAL EQUIPMENT	5.2.4	----	----	----	----
TRANSVERSE BALANCE LIMITATIONS (DIGITAL)	5.2.4.7	----	----	----	----
HEARING AID COMPATIBILITY REQUIREMENTS	68.316 **	----	----	----	----
HEARING AID COMPATIBILTIY REQUIREMENTS (VOLUME CONTROL)	68.317 **	----	----	----	----
ADDITIONAL LIMITATIONS	68.318(b) **	----	----	----	----
ADDITIONAL LIMITATIONS	68.318(d) **	----	----	----	----

**** REFER TO FORM 730 INSTRUCTIONS.***
*** **REFER TO CFR 47 SPECIFICATION (Pt 68 SUBPART D)***

EQUIPMENT DESCRIPTION AND RATIONALE FOR CIRCUIT SELECTION

Features:

1 Loop Start Interface
Tel Set Thru Path
Tone and Pulse Network Addressing, Auto Answer

Remarks:

This report contains the continuing compliance test results for the Boston Scientific Corp. Model: 6498.The Jaguar Communicator Model:6498 is a single-line device. The unit is powered by AC power mains.

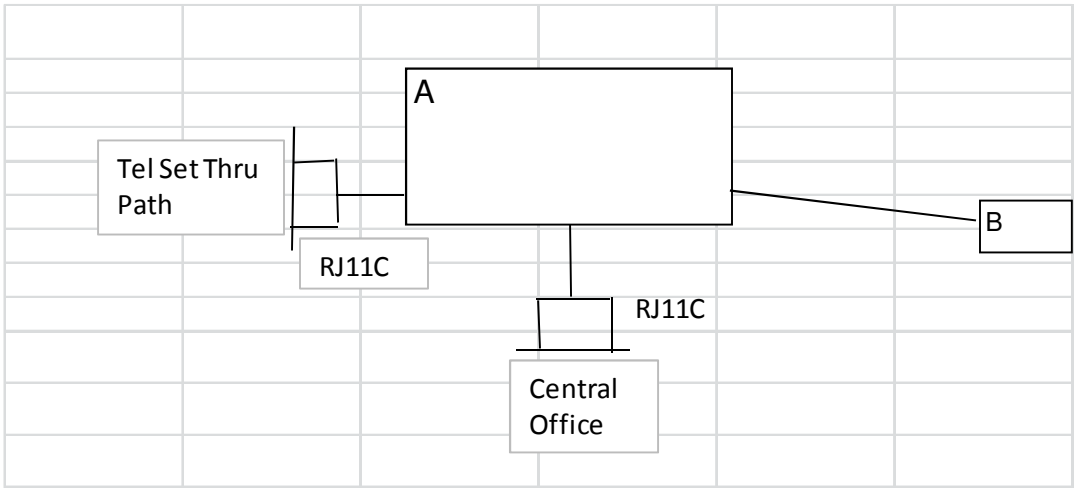
The Jaguar Communicator Model:6498 interfaces the PSTN network via RJ11C for the Loop Start Interface.

The Jaguar Communicator Model:6498 operated in a normal and satisfactory manner following the application of Environmental Simulation Surges.

Modifications Performed During Assessment: None

Equipment Software Revision: None Provided

BLOCK DIAGRAM OF TEST SET-UP:



Item	*	Generic Description	Manufacturer	Model No.
(A)	*	Jaguar Modem	BSI	6498
(B)	*	Transformer	BSI	Generic

4.1.1	ENVIRONMENTAL SIMULATION MECHANICAL SHOCK	4.1.1

MODEL: 6498
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

TEST RESULTS:

Hand-Held Items: *N/A*
The unit is not hand held equipment.

Table (Desk) Top Equipment 0-5 kg:
The unit operated in a normal and satisfactory manner following the application of Drop Stress

ANALYSIS/COMMENTS: Complies

4.1.2	ENVIRONMENTAL SIMULATION TELEPHONE LINE SURGE TYPE A	4.1.2

MODEL: 6498
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

Loop Start Interface,

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

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

ANALYSIS/COMMENT: Complies

4.1.3	**ENVIRONMENTAL SIMULATION TELEPHONE LINE SURGE TYPE B**	4.1.3

MODEL: 6498
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

Loop Start Interface,

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

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

ANALYSIS/COMMENTS: Complies

4.1.4	**ENVIRONMENTAL SIMULATION** **POWER LINE SURGE**	4.1.4

MODEL: 6498
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

Power On

4.1.4.1 Power Line Surge: The unit operated in a normal and satisfactory manner following the application of Power Line Stress.

ANALYSIS/COMMENTS: Complies

4.2 LEAKAGE CURRENT LIMITATIONS 4.2

MODEL: 6498
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

Loop Start Interface,

TEST RESULTS

TEST COMBINATION VOLTAGE CONNECTION 60 Hz POINTS	PEAK CURRENT			
	SPEC. MAX.	MEASURED (mA)		
RMS VOLTS	mA	B.E.S.	A.B.S.	A.A.S.
1500 (a) and (b)	10	0.3	0.3	0.3
1000 (a) and (c)	10	0.3	0.3	0.3
1000 (a) and (d)	10	0.3	0.3	0.3
1000 (a) and (e)	10	----	----	----
1000 (a) and (f)	10	----	----	----
1000 (a) and (g)	10	----	----	----
1500 (b) and (c)	10	0.3	0.3	0.3
1500 (b) and (d)	10	0.3	0.3	0.3
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

4.3	**HAZARDOUS VOLTAGE LIMITATIONS**	**4.3**

MODEL: 6498
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

On-hook State

4.3.1 General

The open circuit voltage on telephone connections exceed 70Vp after 1 sec.
Measured: 10.6 mV

ANALYSIS/COMMENTS: Complies

4.3.2	HAZARDOUS VOLTAGE LIMITATIONS	4.3.2

MODEL: 6498
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

TEST RESULTS

Connection to Non-Registered Equipment

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.

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 power 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 power leads.

ANALYSIS/COMMENTS: Complies

4.3.4	**INTENTIONAL PATHS TO GROUND**		**4.3.4**
MODEL: 6498			
TEST PERFORMED BY: Brian Boyea		DATE:	11/17/11

TEST RESULTS N/A

There was no intentional paths to ground.

4.4.2	**BILLING PROTECTION REQUIREMENTS**	4.4.2

MODEL: 6498
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

On-hook State

TEST RESULTS

4.4.2.1

SPEC. MAX. = -55 dBm

CONDITION	MEASURED (dBm)		
	B.E.S.	A.B.S.	A.A.S.
On-hook State	-75.0	-75.0	-75.0
COMPLIANCE	Yes	Yes	Yes

NOTE: Reading less than -75dBm are shown as -75dBm

ANALYSIS/COMMENTS: Complies

4.4.3	SIGNALING INTERFERENCE REQUIREMENTS	4.4.3

MODEL: 6498
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

TEST RESULTS

4.4.3.1 The signal power delivered to the network interface by the approved terminal equipment and from signal sources internal to approved protective circuitry in the 2450 Hz to 2750 Hz band shall be less than or equal to the power present simultaneously in the 800 Hz to 2450 Hz band for the first 2 seconds after going to the off-hook state.

	2450 to 2750 Hz Band			800 to 2450 Hz Band			Compliance		
CONDITION	B.E.S.	A.B.S.	A.A.S.	B.E.S.	A.B.S.	A.A.S.	B.E.S.	A.B.S.	A.A.S.
Handshake Tones	-71.2 dBm	-71.6 dBm	-71.0 dBm	-11.1 dBm	-11.0 dBm	-11.0 dBm	Yes	Yes	Yes

4.4.3.2 Approved terminal equipment for connection to subrate or 1.544 Mbps digital services shall not deliver digital signals to the telephone network with equivalent power in the 2450 to 2750 Hz band as derived by a zero level decoder conforming
N/A
The EUT is a Loop Start Interface.

4.7.2	**SIGNAL POWER LIMITATIONS THROUGH - PATH (VOICEBAND)**	**4.7.2**

MODEL: 6498
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

TEST RESULTS

4.7.2

PORTS		SPEC. MAX.	MEASURED dB		
FROM	TO	(dB)	B.E.S.	A.B.S.	A.A.S.
Station1	CO1	3.0	-0.4	-0.4	-0.4
CO1	Station1	3.0	-0.4	-0.4	-0.4
		COMPLIANCE:	Yes	Yes	Yes

ANALYSIS/COMMENTS: Complies

5.1.2	**SIGNAL POWER LIMITATIONS VOICEBAND (METALLIC)**	5.1.2

MODEL: 6498
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

Off-hook State

TEST RESULTS

CONDITION	AVERAGE OVER 3 SECONDS SPEC. MAX. dBm	MEASURED dBm		
		B.E.S.	A.B.S.	A.A.S.
Data Xmit	-9	-11.6	-11.7	-11.1
	COMPLIANCE:	Yes	Yes	Yes

ANALYSIS/COMMENTS: Complies

5.1.3	**SIGNAL POWER LIMITATIONS NETWORK CONTROL SIGNALING**	5.1.3

MODEL: 6498
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

Off-hook State
(Dialing)

TEST RESULTS

DIGIT	AVERAGE OVER 3 SECONDS	MEASURED (dBm)		
	SPEC. MAX. dBm	B.E.S.	A.B.S.	A.A.S.
1	0	-6.3	-6.2	-6.3
2	0	-6.3	-6.2	-6.3
3	0	-6.3	-6.2	-6.3
A	0	-----	-----	-----
4	0	-6.2	-6.2	-6.3
5	0	-6.2	-6.2	-6.3
6	0	-6.2	-6.2	-6.3
B	0	-----	-----	-----
7	0	-6.2	-6.2	-6.3
8	0	-6.2	-6.2	-6.3
9	0	-6.2	-6.2	-6.3
C	0	-----	-----	-----
0	0	-6.3	-6.3	-6.3
*	0	-6.3	-6.3	-6.3
#	0	-6.3	-6.3	-6.3
D	0	----	----	----
Any Other Signal	-9	----	----	----
	COMPLIANCE:	Yes	Yes	Yes

ANALYSIS/COMMENTS: Complies

5.1.5	SIGNAL POWER LIMITATIONS THROUGH - PATH (DC)	5.1.5

MODEL: 6498			
TEST PERFORMED BY:	Brian Boyea	DATE:	11/17/11
TEMP: 21	HUM:33		

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

$Station_1$ = Tel-set
CO_1 = Loop Start

TEST RESULTS

5.1.5.1 Current drawn through 200 ohms = 20mA
Current drawn through thru-path = 20mA

5.1.5.2 There is no programmed or universal data jack.

ANALYSIS/COMMENTS: Complies

5.1.7/5.1.8	LONGITUDINAL/METALLIC VOLTAGES	5.1.7/5.1.8

TIA/EIA/IS-968

TEST DATE:NOVEMBER 16, 2011
TESTED BY: BRIAN BOYEA
REPORT NO:
SAMPLE NO: 1

5.1.7 LONGITUDINAL SIGNAL POWER LIMITATIONS

ON-HOOK B.E.S.

FREQ. BAND (KHz)	SPEC. MAX. (dBV)	MEASURED (dBV)	NOISE FREQ. (KHz)
.1-4 KHz	-30	-90	
4-12 KHz	-(18.4+(20 log f))	-90	
12-42 KHz	3.00-(40 log f)	-90	
42-270 KHz	-62	-90	
0.27-6 MHz	-30	-88	

NOTE: ALL READINGS LESS THAN -90 dBV ARE SHOWN AS -90 dBV.

COMPLIANCE: YES

5.1.7 LONGITUDINAL SIGNAL POWER LIMITATIONS

OFF-HOOK DATA XMIT 70mA B.E.S.

FREQ. BAND (KHz)	SPEC. MAX. (dBV)	MEASURED (dBV)	NOISE FREQ. (KHz)
.1-4 KHz	-30	-90	
4-12 KHz	-(18.4+(20 log f))	-90	
12-42 KHz	3.00-(40 log f)	-90	
42-270 KHz	-62	-90	
0.27-6 MHz	-30	-82	

NOTE: ALL READINGS LESS THAN -90 dBV ARE SHOWN AS -90 dBV.

COMPLIANCE: YES

5.1.7/5.1.8	LONGITUDINAL/METALLIC VOLTAGES	5.1.7/5.1.8

TIA/EIA/IS-968

TEST DATE:NOVEMBER 16, 2011
TESTED BY: BRIAN BOYEA
REPORT NO:
SAMPLE NO: 1

5.1.7 LONGITUDINAL SIGNAL POWER LIMITATIONS

ON-HOOK A.B.S.

FREQ. BAND (KHz)	SPEC. MAX. (dBV)	MEASURED (dBV)	NOISE FREQ. (KHz)
.1-4 KHz	-30	-90	
4-12 KHz	-(18.4+(20 log f))	-90	
12-42 KHz	3.00-(40 log f)	-90	
42-270 KHz	-62	-90	
0.27-6 MHz	-30	-78	

NOTE: ALL READINGS LESS THAN -90 dBV ARE SHOWN AS -90 dBV.

COMPLIANCE: YES

5.1.7 LONGITUDINAL SIGNAL POWER LIMITATIONS

OFF-HOOK DATA XMIT 70mA A.B.S.

FREQ. BAND (KHz)	SPEC. MAX. (dBV)	MEASURED (dBV)	NOISE FREQ. (KHz)
.1-4 KHz	-30	-90	
4-12 KHz	-(18.4+(20 log f))	-90	
12-42 KHz	3.00-(40 log f)	-90	
42-270 KHz	-62	-90	
0.27-6 MHz	-30	-82	

NOTE: ALL READINGS LESS THAN -90 dBV ARE SHOWN AS -90 dBV.

COMPLIANCE: YES

5.1.7/5.1.8	LONGITUDINAL/METALLIC VOLTAGES	5.1.7/5.1.8

TIA/EIA/IS-968

TEST DATE: NOVEMBER 16, 2011
TESTED BY: BRIAN BOYEA
REPORT NO:
SAMPLE NO: 1

5.1.7 LONGITUDINAL SIGNAL POWER LIMITATIONS

ON-HOOK A.A.S.

FREQ. BAND (KHz)	SPEC. MAX. (dBV)	MEASURED (dBV)	NOISE FREQ. (KHz)
.1-4 KHz	-30	-90	
4-12 KHz	-(18.4+(20 log f))	-90	
12-42 KHz	3.00-(40 log f)	-90	
42-270 KHz	-62	-86	125
0.27-6 MHz	-30	-80	

NOTE: ALL READINGS LESS THAN -90 dBV ARE SHOWN AS -90 dBV.

COMPLIANCE: YES

5.1.7 LONGITUDINAL SIGNAL POWER LIMITATIONS

OFF-HOOK DATA XMIT 70mA A.A.S.

FREQ. BAND (KHz)	SPEC. MAX. (dBV)	MEASURED (dBV)	NOISE FREQ. (KHz)
.1-4 KHz	-30	-90	
4-12 KHz	-(18.4+(20 log f))	-90	
12-42 KHz	3.00-(40 log f)	-90	
42-270 KHz	-62	-85	125
0.27-6 MHz	-30	-83	

NOTE: ALL READINGS LESS THAN -90 dBV ARE SHOWN AS -90 dBV.

COMPLIANCE: YES

5.1.7/5.1.8	LONGITUDINAL/METALLIC VOLTAGES	5.1.7/5.1.8

TIA/EIA/IS-968

TEST DATE:NOVEMBER 16, 2011
TESTED BY: BRIAN BOYEA
REPORT NO:
SAMPLE NO: 1

5.1.8 METALLIC SIGNAL POWER LIMITATIONS

ON-HOOK B.E.S.

FREQ. BAND (KHz)	SPEC. MAX. (dBV)	MEASURED (dBV)	NOISE FREQ. (KHz)
4 KHz(+/-5 Hz)	-27	-90	
4-12 KHz	-(6.4+(12.6 log f))	-90	
12-90 KHz	23-(40 log f)	-90	
90-270 KHz	-55	-90	
0.27-6 MHz	-15	-87	

NOTE: ALL READINGS LESS THAN -90 dBV ARE SHOWN AS -90 dBV.

COMPLIANCE: YES

5.1.8 METALLIC SIGNAL POWER LIMITATIONS

OFF-HOOK DATA XMIT 70mA B.E.S.

FREQ. BAND (KHz)	SPEC. MAX. (dBV)	MEASURED (dBV)	NOISE FREQ. (KHz)
4 KHz(+/-5 Hz)	-27	-90	
4-12 KHz	-(6.4+(12.6 log f))	-90	
12-90 KHz	23-(40 log f)	-58	72
90-270 KHz	-55	-90	
0.27-6 MHz	-15	-77	

NOTE: ALL READINGS LESS THAN -90 dBV ARE SHOWN AS -90 dBV.

COMPLIANCE: YES

5.1.7/5.1.8	LONGITUDINAL/METALLIC VOLTAGES	5.1.7/5.1.8

TIA/EIA/IS-968

TEST DATE: NOVEMBER 16, 2011
TESTED BY: BRIAN BOYEA
REPORT NO:
SAMPLE NO: 1

5.1.8 METALLIC SIGNAL POWER LIMITATIONS

ON-HOOK A.B.S.

FREQ. BAND (KHz)	SPEC. MAX. (dBV)	MEASURED (dBV)	NOISE FREQ. (KHz)
4 KHz(+/-5 Hz)	-27	-90	
4-12 KHz	-(6.4+(12.6 log f))	-90	
12-90 KHz	23-(40 log f)	-86	26
90-270 KHz	-55	-90	
0.27-6 MHz	-15	-83	

NOTE: ALL READINGS LESS THAN -90 dBV ARE SHOWN AS -90 dBV.

COMPLIANCE: YES

5.1.8 METALLIC SIGNAL POWER LIMITATIONS

OFF-HOOK DATA XMIT 70mA A.B.S.

FREQ. BAND (KHz)	SPEC. MAX. (dBV)	MEASURED (dBV)	NOISE FREQ. (KHz)
4 KHz(+/-5 Hz)	-27	-90	
4-12 KHz	-(6.4+(12.6 log f))	-90	
12-90 KHz	23-(40 log f)	-86	26
90-270 KHz	-55	-90	
0.27-6 MHz	-15	-71	

NOTE: ALL READINGS LESS THAN -90 dBV ARE SHOWN AS -90 dBV.

COMPLIANCE: YES

5.1.7/5.1.8	LONGITUDINAL/METALLIC VOLTAGES	5.1.7/5.1.8

TIA/EIA/IS-968

TEST DATE:NOVEMBER 16, 2011
TESTED BY: BRIAN BOYEA
REPORT NO:
SAMPLE NO: 1

5.1.8 METALLIC SIGNAL POWER LIMITATIONS

ON-HOOK A.A.S.

FREQ. BAND (KHz)	SPEC. MAX. (dBV)	MEASURED (dBV)	NOISE FREQ. (KHz)
4 KHz(+/-5 Hz)	-27	-90	
4-12 KHz	-(6.4+(12.6 log f))	-90	
12-90 KHz	23-(40 log f)	-90	
90-270 KHz	-55	-90	
0.27-6 MHz	-15	-72	

NOTE: ALL READINGS LESS THAN -90 dBV ARE SHOWN AS -90 dBV.

COMPLIANCE: YES

5.1.8 METALLIC SIGNAL POWER LIMITATIONS

OFF-HOOK DATA XMIT 70mA A.A.S.

FREQ. BAND (KHz)	SPEC. MAX. (dBV)	MEASURED (dBV)	NOISE FREQ. (KHz)
4 KHz(+/-5 Hz)	-27	-90	
4-12 KHz	-(6.4+(12.6 log f))	-90	
12-90 KHz	23-(40 log f)	-90	
90-270 KHz	-55	-86	271
0.27-6 MHz	-15	-71	

NOTE: ALL READINGS LESS THAN -90 dBV ARE SHOWN AS -90 dBV.

COMPLIANCE: YES

5.1.10 TRANSVERSE BALANCE LIMITATIONS 5.1.10

MODEL: 6498
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

On-hook State
Off-hook State

TEST RESULTS

WORST CASE OFF-HOOK LOOP CURRENT 70 mA.

FREQUENCY	SPEC. MIN. (dB)		MEASURED (dB)					
			ON-HOOK			OFF-HOOK		
	ON-HOOK	OFF-HOOK	B.E.S.	A.B.S.	A.A.S..	B.E.S.	A.B.S.	A.A.S..
200	60	40	90.0	90.0	90.0	90.0	90.0	90.0
500	60	40	87.9	87.9	89.5	90.0	90.0	89.6
1000	40	40	80.4	80.4	81.6	86.9	87.1	83.9
2000	40	40	76.7	76.7	74.6	77.1	77.1	77.1
3000	40	40	68.4	68.4	69.3	69.3	69.3	69.3
4000	40	40	58.1	58.1	61.1	60.1	60.1	59.4
		COMPLIANCE:	Yes	Yes	Yes	Yes	Yes	Yes

NOTE: Readings greater than 90dB are shown as 90dB.

ANALYSIS/COMMENTS:Complies

5.1.11	**ON-HOOK IMPEDANCE LIMITATIONS dc RESISTANCE**	5.1.11

MODEL: 6498
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

On-hook State

TEST RESULTS SPEC. MIN. 5 MΩ

5.1.11.2.1

	Measured Max. (µA) **T - R**			Calculated (MΩ) **T - R**		
Voltage Volts	BES	ABS	AAS	BES	A.B.S	AAS
0-10	0.76	0.76	0.76	13.16	13.16	13.16
10-20	1.24	1.24	1.24	16.13	16.13	16.13
20-30	1.75	1.75	1.75	17.14	17.14	17.14
30-40	2.24	2.24	2.24	17.86	17.86	17.86
40-50	2.80	2.80	2.80	17.86	17.86	17.86
50-60	3.27	3.27	3.27	18.35	18.35	18.35
60-70	3.81	3.81	3.81	18.37	18.37	18.37
70-80	4.34	4.34	4.34	18.43	18.43	18.43
80-90	4.84	4.84	4.84	18.60	18.60	18.60
90-100	5.33	5.33	5.30	18.76	18.76	18.87
			COMPLIANCE	Yes	Yes	Yes

NOTE: Readings greater than 100 megohms are shown as 100 megohms.

ANALYSIS/COMMENTS: Complies

5.1.11	**ON-HOOK IMPEDANCE LIMITATIONS dc RESISTANCE**	5.1.11

MODEL: 6498)
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

On-hook State

TEST RESULTS SPEC. MIN. 5 MΩ

5.1.11.2.1

	Measured Max. (μA) **T- Gnd**			Calculated (MΩ) **T - Gnd**		
Voltage Volts	BES	ABS	AAS	BES	A.B.S	AAS
0-10	0.0	0.0	0.0	100	100	100
10-20	0.0	0.0	0.0	100	100	100
20-30	0.0	0.0	0.0	100	100	100
30-40	0.0	0.0	0.0	100	100	100
40-50	0.0	0.0	0.0	100	100	100
50-60	0.0	0.0	0.0	100	100	100
60-70	0.0	0.0	0.0	100	100	100
70-80	0.0	0.0	0.0	100	100	100
80-90	0.0	0.0	0.0	100	100	100
90-100	0.0	0.0	0.0	100	100	100
			COMPLIANCE	Yes	Yes	Yes

NOTE: Readings greater than 100 megohms are shown as 100 megohms.

ANALYSIS/COMMENTS: Complies

5.1.11	**ON-HOOK IMPEDANCE LIMITATIONS dc RESISTANCE**	5.1.11

MODEL: 6498
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

On-hook State

TEST RESULTS SPEC. MIN. 5 MΩ

5.1.11

	Measured Max. (µA) **R - Gnd**			Calculated (MΩ) **R - Gnd**		
Voltage Volts	BES	ABS	AAS	BES	A.B.S	AAS
0-10	0.0	0.0	0.0	100	100	100
10-20	0.0	0.0	0.0	100	100	100
20-30	0.0	0.0	0.0	100	100	100
30-40	0.0	0.0	0.0	100	100	100
40-50	0.0	0.0	0.0	100	100	100
50-60	0.0	0.0	0.0	100	100	100
60-70	0.0	0.0	0.0	100	100	100
70-80	0.0	0.0	0.0	100	100	100
80-90	0.0	0.0	0.0	100	100	100
90-100	0.0	0.0	0.0	100	100	100
			COMPLIANCE	Yes	Yes	Yes

NOTE: Readings greater than 100 megohms are shown as 100 megohms.

ANALYSIS/COMMENTS: Complies

5.1.11	ON-HOOK IMPEDANCE LIMITATIONS dc RESISTANCE	5.1.11

MODEL: 6498
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

On-hook State

TEST RESULTS

5.1.11.2.2

SPEC. MIN. = 30 KILOHMS

MEASURED FROM	VOLTAGE AT MAX. I (V)	MEASURED MAX. (mA)			CALC. MIN. RESIST. (kΩ)		
		B.E.S.	A.B.S.	A.A.S.	B.E.S.	A.B.S.	A.A.S.
T - R	100	0.0	0.0	0.0	1000	1000	1000
T - G	100	0.0	0.0	0.0	1000	1000	1000
R - G	100	0.0	0.0	0.0	1000	1000	1000
T - R	150	0.0	0.0	0.0	1000	1000	1000
T - G	150	0.0	0.0	0.0	1000	1000	1000
R - G	150	0.0	0.0	0.0	1000	1000	1000
T - R	200	0.0	0.0	0.0	1000	1000	1000
T - G	200	0.0	0.0	0.0	1000	1000	1000
R - G	200	0.0	0.0	0.0	1000	1000	1000
			COMPLIANCE:		Yes	Yes	Yes

NOTE: Readings greater than 1000 kilohms are shown as 1000 kilohms.

ANALYSIS/COMMENTS: Complies

5.1.11	**ON-HOOK IMPEDANCE dc CURRENT DURING RINGING (LS)**	**5.1.11**

MODEL: 6498
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

On-hook State (FXO Interface)

TEST RESULTS

5.1.11.2.3

Spec. Max. = 3.0mA

Measured with +56.5 Vdc and –56.5 Vdc bias

RINGING FREQ. Hz	VOLTAGE (VOLTS)	MEASURED (mA)		
		B.E.S.	A.B.S.	A.A.S.
15.3	40	0.0	0.0	0.0
15.3	130	0.0	0.0	0.0
20	40	0.0	0.0	0.0
20	130	0.0	0.0	0.0
35	62	0.0	0.0	0.0
35	130	0.0	0.0	0.0
50	62	0.0	0.0	0.0
50	150	0.0	0.0	0.0
68	62	0.0	0.0	0.0
68	150	0.0	0.0	0.0
	COMPLIANCE:	Yes	Yes	Yes

ANALYSIS/COMMENTS:Complies

5.1.11	**ON-HOOK IMPEDANCE** **METALLIC ac IMPEDANCE (LS)**	5.1.11

MODEL: 6498
TEST PERFORMED BY: Brian Boyea` DATE: 11/17/11

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

On-hook State

TEST RESULTS

5.1.11.2.4

Spec. Min. = 1.6 Kilohms

Measured with +56.5 Vdc and –56.5 Vdc bias

CONDITION	SIGNAL APPLIED		MEASURED					
	Freq.	Voltage	B.E.S.		A.B.S.		A.A.S.	
	(Hz)	(V)	mA	kΩ	mA	kΩ	mA	kΩ
T - R	15.3	40	0.01	4000.0	0.01	4000.0	0.01	4000.0
T - R	15.3	130	0.01	13000.0	0.01	13000.0	0.01	13000.0
T - R	20	40	0.01	4000.0	0.01	4000.0	0.01	4000.0
T - R	20	130	0.01	13000.0	0.01	13000.0	0.01	13000.0
T - R	35	62	0.01	6200.0	0.01	6200.0	0.01	6200.0
T - R	35	130	0.01	13000.0	0.01	13000.0	0.01	13000.0
T - R	50	62	0.01	6200.0	0.01	6200.0	0.01	6200.0
T - R	50	150	0.01	15000.0	0.01	15000.0	0.01	15000.0
T - R	68	62	0.01	6200.0	0.01	6200.0	0.01	6200.0
T - R	68	150	0.01	15000.0	0.01	15000.0	0.01	15000.0
		COMPLIANCE:		Yes		Yes		Yes

ANALYSIS/COMMENTS: Complies

5.1.11	**ON-HOOK IMPEDANCE** **LONGITUDINAL ac IMPEDANCE**	**5.1.11**

MODEL: 6498
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

On-hook State

TEST RESULTS

5.1.11.2.5

Spec. Min. = 100 Kilohms

Measured with +56.5 Vdc and –56.5 Vdc bias

CONDITION	SIGNAL APPLIED		MEASURED					
	Freq.	Voltage	B.E.S.		A.B.S.		A.A.S.	
	(Hz)	(V)	mA	kΩ	mA	kΩ	mA	kΩ
T - GND	15.3	40	0.0	1000	0.0	1000	0.0	1000
T - GND	15.3	130	0.0	1000	0.0	1000	0.0	1000
T - GND	20	40	0.0	1000	0.0	1000	0.0	1000
T - GND	20	130	0.0	1000	0.0	1000	0.0	1000
T - GND	35	62	0.0	1000	0.0	1000	0.0	1000
T - GND	35	130	0.0	1000	0.0	1000	0.0	1000
T - GND	50	62	0.0	1000	0.0	1000	0.0	1000
T - GND	50	150	0.0	1000	0.0	1000	0.0	1000
T - GND	68	62	0.0	1000	0.0	1000	0.0	1000
T - GND	68	150	0.0	1000	0.0	1000	0.0	1000
		COMPLIANCE:		Yes		Yes		Yes

NOTE: Readings greater than 1000 kilohms are shown as 1000 kilohms.

ANALYSIS/COMMENTS: Complies

5.1.11	ON-HOOK IMPEDANCE RINGER EQUIVALENCE (LOOP START)	5.1.11

MODEL: 6498
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

On-hook State

TEST RESULTS

5.1.11.2.6 Ringer Equivalence Definition

QUOTIENT (4.7.2.1)	25 megohms 18.76 megohms	=	1.33
QUOTIENT (4.7.2.1.1)	150 kilohms 1000 megohms	=	0.15
QUOTIENT (4.7.2.1.2)	0.0 milliamps 0.6 milliamps	=	0.00
QUOTIENT (4.7.2.1.3)	5 x 1600 kilohms (Ringing type B) 4000.0 kilohms	=	0.01

RINGER EQUIVALENCE NUMBER
R.E.N. (ac) = 0.0 B
R.E.N. (dc) = 1.3

5.1.11.2.8 Maximum Ringer Equivalence:

The sum of all such Ringer Equivalence on a given telephone line or loop shall not exceed 5. In some cases, a system that has a total Ringer Equivalence of 5 or more may not be usable on a given telephone line or loop.

ANALYSIS/COMMENTS: Complies

5.1.11 LOOP CURRENT REQUIREMENTS 5.1.11

MODEL: 6498
TEST PERFORMED BY: Brian Boyea DATE: 11/17/11

THE UNIT WAS TESTED IN THE FOLLOWING STATES OR MODES:

Off-hook State

TEST RESULTS

THE EQUIPMENT UNDER TEST MUST COMPLY WITH THE REQUIREMENTS OF EITHER (1) OR (2).
5.1.11.4(a)

	CURRENT THROUGH 200 OHM RESISTOR					
	B.E.S.		A.B.S.		A.A.S.	
	20 mA	70 mA	20 mA	70 mA	20 mA	70 mA
	19.2	----	----	----	----	----
		----	----	----	----	----
COMPLIANCE	NO	----	----	----	----	----

OR

5.1.11.4(b)

REQUIREMENT @ 20 mA	STATE	MEASURED			COMPLIANCE		
		mA	mA after 5 sec.	%	B.E.S.	A.B.S.	A.A.S.
Line current shall not decrease by more than 25% in the first 5 seconds	Off-hook State	19.2	19.2	0	Yes	-----	-----
	Off-hook State	19.2	19.2	0	-----	Yes	-----
	Off-hook State	19.1	19.1	0	-----	-----	Yes

ANALYSIS/COMMENTS: Complies

EUT PHOTO

Front Side View of 6498

