

Technical Specification for the DexCrimp CWI8A Discrete Wire Connector



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1.0 Description

1.1 Use

The CWI8A Wire Connector has unique insulation displacement technology to allow efficient splicing of telephone cable conductors without stripping the insulation. The CWI8A will accommodate conductors from 0.4mm through to 0.9mm. This single wire connector referred to as a discrete connector can be used to splice two wires.

The CWI8A Wire connector has been designed for applications covering aerial, buried and underground construction which are exposed to a full range of temperature, humidity and pollutants as well as craftsman applied chemicals.

Metal components are resistant to or protected against general corrosion and various forms of localized corrosion, including stress corrosion cracking and pitting.

The CWI8A will not produce galvanic corrosion effects, in wet or humid conditions, on other metals likely to be present in aerial, buried or underground installations.

The polypropylene plastic parts is resistant to fungi, heat, solvents and stress cracking agents and compatible with metals and other materials such as conductor insulation and filling compounds used in the manufacture of cable. The plastic material is noncorrosive to metals and has excellent properties to resist deterioration when exposed to chemical pollutants and sunlight.

DIMENSIONAL INFORMATION

Number	Feature In Product	Parameter	Dimensions (mm)
1	Pre-crimp	Body Dimension	7.88 +0/-0.05
2		Cover Dimension	8.3 +0.05/-0
3		Insertion Force	hand
4	Wire travel length	Cable relief in body	14.30±0.1
5	Wire travel length past the last IDC blade	Jointer compliance	4.8 Max
6	Functionality check using 0.4 mm & 0.9mm wire for crimping	Height of connector after crimping closed condition	6.10±0.1 (by design)
7	BT Product spec. LN363C Compliant.	Length of connector	15.5 Max
8		Height of connector open	9.5 Max
9		Height of connector closed	5.6 ~ 6.3
10		Width of connector	10 Max

1.0 Description

1.2 Fitting

Single wire connectors can be installed as loose pieces using parallel jaw pliers or other supplier recommended tools. **A hand operated pre-crimp facility is available on the CWI8A.**

1.3 Evaluation & Approval

This document outlines the product features and benefits together with detailing the test results with specific references to the BT Openreach product specification LN363C and the Telcordia [Bell Core] Technical Reference TR-NWT-000979 Issue 1, June 1991 Generic Requirements for Wire Connectors.

2.0 Features

2.1 Main Features

- The purpose of BT specification is two fold, **the initial type approval product** qualification tests provide assurances on the products long term performance in network. **Ongoing batch testing** to ensure consistent product quality is delivered through out the contractual period of supply.
- **Full compliance** to the BT Openreach Specification LN363C.
- Long term **contract** with BT Openreach secured.
- **Test probe facility** to facilitate testing of the IDC/connection without cutting conductor insulation.
- **Pre-crimp facility**- this allows the compression of the connector cap by fingers to speed up installation. (Always finish installation using the specified crimping tool)
- **Traceability** – QA traceability on every package as well as month and year stamped on IDC.
- **The 8A body is made from polypropylene**, which has better scope/performance than polycarbonate over a wide range of temperature bands. It offers good chemical resistance to stress cracking, impact resistance, and provides high clarity for visual inspection of crimped termination.
- **Unique design of the IDC** accepts conductor sizes 0.4 through to 0.9mm. The unique feature of this IDC provides excellent strain relief and IDC contact for both Copper and Aluminium conductors. The entry ports of the connector will accept a maximum insulation diameter of 2.1mm.
- The construction of the body of the connector allows a minimum of **4mm free travel past the last blade IDC contact**.
- Our design offers **better performance** versus any other connector on the market. Frequency testing verifies our statement.
- **The filling compound** has been carefully selected to provide **maximum environmental protection** throughout the connector's life in service. **Passing the 8 week water immersion** substantiates our statement.
- The BT Openreach **thermal shock test** places the connector under considerable stress and passing these specific test parameters is a credit to our design.

2.0 Features

The connector is capable of connecting any wire types and sizes as follows:

INSULATED COPPER WIRE

Conductor Dia.mm	Cable Type	Specification No.
0.5, 0.6 & 0.9	Polyethene twin CW 1128	
0.4	Polyethene twin CW 1218	
0.5, 0.63 & 0.9	Polyethene unit twin	CW 1171
0.6	Polyethene unit twin	CW 1313
0.5	Jumper Wire	CW 1257

INSULATED ALUMINIUM ALLOY

Conductor Dia.mm	Cable Type	Specification No.
0.5	Cellular Poly	CW 1171

3.0 Test Programme

Unless otherwise stated each test in section 3 is carried out with the following conductor sizes:

- (a) For CWI8A - 10 connectors with 0.4 mm copper conductor in each port.
- (b) For CWI8A - 10 connectors with a 0.4 mm copper conductor in one port and a 0.9mm copper conductor in the other.
- (c) For CWI8A - 10 connectors with a 0.9 mm copper conductor in each port.
- (d) For CWI8A - 10 connectors with a 0.5 mm aluminium conductor in each port.

The test programme to be applied includes the following tests:

- (a) **Stability of connection resistance under conditioning by:**
 - Thermal shock
 - Vibration
 - Voltage proof
- (b) **Mechanical stability of the terminations:**
 - Conductor flexing
 - Conductor retention force
 - Visual Inspection
- (c) **Stability of connector resistance:**
 - High voltage surge
- (d) **Water immersion:**
 - Leakage current

3.0 Test Programme

The test schedule performed:

3.1 Measurement of Contact Resistance (Ref: DXG103)

The recommended method of measuring the contact resistance for a circuit (a circuit is taken to be a pair of wires which might include two connections) is given in the appendices (Ref: DXG113). At each measurement point after the initial contact resistance has been taken any increase in resistance above 2.5 milliohms is deemed to be a failure. This is at the discretion of the Dexgreen Specifying Authority.

3.2 Thermal Shock, Vibration

3.2.1 Thermal Shock

- (a) Resistance measurements is as detailed in Section 3.1.
- (b) The test is 5 cycles. Each cycle consisting of 30 min at +105°C +/-2°C followed by 15 min in ice water at 0°C. The transition from oven to ice water will not take longer than 30 seconds.
- (c) The connectors is then subjected to 10 days exposure to a corrosive atmosphere of mixed flowing gas.

3.2.2 Vibration

- (a) These tests are to BS 2011 Part 2.1 Fc 1983 [AMD 2].
Frequency Range: 10-150 Hz
- (b) Resistance measured as detailed in section 3.1.
 - Vibration Amplitude: 1mm displacement/10g.
 - Type and duration: 20 sweep cycles in each of 3 mutually perpendicular planes sweeping at 1 octave/min.
 - Test and stages are performed in sequence: No dynamic measurements.
 - Functioning and functional checks: None
 - Final measurements: Contact resistance
 - Measuring points: Single point control used as a reference point sighted close to connectors under test.
 - Special Crossover Frequency: 50 Hz

3.0 Test Programme

The mounting arrangements allow the vibration to be applied in all three attitudes. The fixture is of sufficiently rigid construction to ensure the efficient transmission of the vibrating frequencies from machine to connectors.

The monitoring/control transducer is placed as near as possible to the connector modules.

It should be noted that the free ends of the wires and the connector itself are rigidly fixed to the vibrating table. Measurement of connection resistance's (Recommended method in the appendices (Ref: DXG103). Increase from original measurements in 3.1 not to exceed 2.5 milliohms for any circuit.

3.3 Voltage Proof (Ref: DXG106)

A proof voltage of $1050 \pm 50V$ dc or ac peak is applied in accordance with BS9520. The connector is mounted on a metal plate which exceeds the contour of the specimen. The voltage is applied between each connector and the case and /or mounting for a period of 60 ± 5 seconds. There is no breakdown or flash over.

3.4 Conductor Flexing

3.4.1

Test to be carried out with the connectors detailed in the Appendix (Ref: DXG105), except for the aluminium.

3.4.2

Individual conductors are subjected to a constant tension as listed in Table 1. The conductor is flexed from normal entry direction to $+90^\circ$, back to 0° and through to -90° , in the other direction in the same plane, and then back to 0° . This constitutes one cycle. Each conductor is subjected to four cycles in this plane and also four cycles in a plane at right angles to the first plane, both planes containing the line of entry of the conductor.

TENSION REQUIRED FOR CABLE FLEXING TESTS

Copper conductor dia mm	Tension (N)
0.4	1
0.5	1.5
0.6	2
0.63	2
0.9	3.5

3.4.3

The conductor is not dislodged or broken.

3.0 Test Programme

3.5 Terminal Retention Force (Ref: DXG104)

Testing of a complete joint is required to ensure that the conductors are firmly held by a connector and that there is no weakness due to cutting of conductors within the connector.

The connector is clamped in a tensile testing device and the conductor then subjected to an axial pull at a rate of pull between 25 and 75 mm/min until breakage occurs. The breaking loads is not less than the appropriate figures quoted in the following table, each conductor being pulled individually.

TABLE OF TENSILE STRENGTH OF JOINTS FOR NOMINAL CONDUCTOR DIAMETER

Copper conductor dia mm	Minimum Breaking Load(N)
0.4	24
0.5	38
0.6	42
0.63	45
0.9	118
Aluminium alloy conductor diameter 0.5	16

3.6 Visual Inspection

Visual examination to check dimensional stability. No parts are distorted such as to impair specified connector performance.

3.7 High Voltage Surge (Ref: DXG107)

Please refer to Ref: DXG107 in the Appendix for more details.

3.8 Water Immersion Leakage Test (Ref: DXG101)

The test is carried out with the following conductor sizes:

- (a) 10 connectors with 0.4mm copper conductor in each port.
- (b) 10 connectors with a 0.9mm copper conductor in each port.

This test is carried out by submerging the connectors in water. Care should be taken to submerge only the connectors and the absolute minimum of wire, see the appendices (Ref: DXG101).

3.0 Test Programme

Initial contact resistance measurements are taken, from conductor to conductor through the IDC, before commencing the leakage tests. At the end of the 8 week test period a further set of contact resistance readings is taken. The final contact resistance value must not change from the initial value by more than 2.5 milliohm.

A constant 50 volts DC is applied between the conductors and the copper or aluminium plate for the test period of 8 weeks. The leakage current is monitored at one hour intervals throughout the test period, should the leakage current exceed 100 micro Amperes. The monitoring frequency is increased to 15 minute intervals. The leakage of any one conductor does not exceed 200 micro Amperes after 8 weeks.

Before carrying out this test the resistance of the leakage path through the water is checked. When 50 volts DC is applied between a test probe and the ground plate the leakage current is not less than 10 micro Amperes.

4.0 Connector Wire Installation Guide (Ref: DXG113)

Please refer to Ref: DXG113 in the Appendix for more details.

5.0 Coshh Assessment (Ref: DXG111)

Please refer to MSDS sheet on the CN-9 Filling compound (Ref: DXG111) . Fully compliant to BT Openreach standard LN363C product specification and Health and Safety requirements.

6.0 Frequency Performance (Ref: DXG109)

High speed data requirements of GR-3111-CORE Generic Requirements for Transmission Characteristics for Outside Plant Passive Copper Components Issue 1, January 2009.

Test method for conducting Insertion Loss and Return Loss for Wire Connectors.

Test equipment: Network Analyzer capable of measuring S-parameters and covering the frequency range of 300kHz to 30MHz.

50 ohm unbalanced to 100 ohm balanced baluns spec'd between 300kHz and 30MHz.

Begin by preparing 30 samples, 10 for +65C, 10 for -40C and 10 for +23C.

Place samples in oven at temperature and let soak for 2 hours before performing the tests.

Zero out the balun and interconnecting wires by connecting the balun and wires to the network analyzer and making forward and reverse transmission measurements as per the calibration procedure.

Next, insert the wire connector between the baluns and using a 0 dBm test signal, measure the forward (insertion loss) and reverse (return loss) transmission characteristics over the frequency range of 300kHz to 30MHz.



8A Wire connector setup with 19AWG to baluns

Appendices

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DXG101 - Water Immersion Test Report



Report For Dexgreen

On Testing of

Connector Wire Insulated 8A

to BT Specification LN363C

Author: Roger Springett J.P. Ieng (CEI) MIET

Sign off: Tom Leaver

DXG101 - Water Immersion Test Report

1 Preamble

British Telecommunications trading as BT use as their main copper connection system either Connector Wire Insulated (CWI) 8 series, CWI11A or a modular jointing system.

The CWI 8A shall be capable of jointing any two insulated wires within a range of 0.4mm to 0.9mm conductor size. The conductors can be made of either copper or aluminium alloy. The connector must, if an idc is used, have a travel of greater or equal to 0.4mm past the last idc blade, this is to ensure that any drawback of the wire inside the insulation still allows a good contact to be made between the wire and the idc. The connector should be capable of being crimped with standard BT hand tools, a hand operated pre-crimp facility must be available.

Dexgreen need to confirm pre-production CWI8A connector samples, made using new moulding tools, meet the test conditions of BT Specification LN363C Clause 5.8 Water Immersion Leakage Test. The successful completion of this particular test is considered vital before further investment is made in completing the test programme.

BT have indicated that because the idc is to a previous design and the tool for making the idc's is made to the same specification and drawings that they would be willing to give interim conditional approval to an 8A connector if it passed the Water Immersion Leakage test .

Minimax's role consists of providing consultancy and conducting the test procedure on the following activities:

- (a) Providing a practical test circuit design.
- (b) Providing a list of components, power supplies and measurement equipment to construct the test apparatus.
- (c) Construct and run a test rig.
- (d) Inspect the test rig daily.
- (e) Take measurements as required.
- (f) Provide a report of the results.

2 Measurement Discussion

The test equipment was set up at a location in Enfield prior to the measurements starting on Wednesday the 19th April 2010. Before starting any testing the water conductivity current was checked. Enfield, being in a hard water area, the leakage current flow from a 50 volt source was found to be 90mA which is 9 times the required value of greater then or equal to 10mA. See Ref: WITR101 for detailed description of the test set-up.

The tested connectors were set up as listed:

- (a) 10 connectors with 0.4mm insulated wires in one port and 10 connectors with 0.4mm insulated wires in the other port.
- (b) 10 connectors with 0.4mm insulated wires in one port and 10 connectors with 0.9mm insulated wires in the other port.
- (c) 10 connectors with 0.9mm insulated wires in one port and 10 connectors with 0.9mm insulated wires in the other port.

DXG101 - Water Immersion Test Report

It was considered that this range of testing sizes would cover all of the requirements of wire size and give the largest variation for the connector.

The test results are kept in our Enfield office. The measurements were taken on a daily basis and if any connectors failed (greater than or equal to 200 μ A leakage current) then the wires and connectors removed from the water tank.

3 Results at the end of the 8 week period

(Failure is greater than 20 volts across the 100kohm resistor this equates to 200 μ amps leakage current)

Connector Numbers	Conductor Diameter	Conductor Diameter	Voltage Across 100 Kohm Resistor At The End Of Week 8 (Volts)
1	0.4mm	0.4mm	0.14
2	0.4mm	0.4mm	0.25
3	0.4mm	0.4mm	0.07
4	0.4mm	0.4mm	0
5	0.4mm	0.4mm	0
6	0.4mm	0.4mm	0
7	0.4mm	0.4mm	1.83
8	0.4mm	0.4mm	0.38
9	0.4mm	0.4mm	0.03
10	0.4mm	0.4mm	0.9

Connector Numbers	Conductor Diameter	Conductor Diameter	Voltage Across 100 Kohm Resistor At The End Of Week 8 (Volts)
1	0.4mm	0.9mm	0
2	0.4mm	0.9mm	0.09
3	0.4mm	0.9mm	0.93
4	0.4mm	0.9mm	0
5	0.4mm	0.9mm	0.36
6	0.4mm	0.9mm	6.89
7	0.4mm	0.9mm	0.14
8	0.4mm	0.9mm	0
9	0.4mm	0.9mm	0
10	0.4mm	0.9mm	6.6

DXG101 - Water Immersion Test Report

Connector Numbers	Conductor Diameter	Conductor Diameter	Voltage Across 100 Kohm Resistor At The End Of Week 8 (Volts)
1	0.9mm	0.9mm	0.04
2	0.9mm	0.9mm	10.6
3	0.9mm	0.9mm	0
4	0.9mm	0.9mm	9.56
5	0.9mm	0.9mm	0.09
6	0.9mm	0.9mm	0.06
7	0.9mm	0.9mm	0
8	0.9mm	0.9mm	0.15
9	0.9mm	0.9mm	0
10	0.9mm	0.9mm	0.14

4 Observations

No failures occurred, the levels of leakage at the end of the 8 week period on some connectors are similar to those found on many types of connector tested and passed previously by BT. The BT 8 week test is more severe than any other Telecomms company in the world require and was deliberately set to fail greases and connectors that were not up to an excellent standard.

5 Summary

Connectors designed and manufactured by Dexgreen were supplied to Minimax for testing to BT Specification LN363C for Connector Wire Insulated 8A, 8B and 8C. From the results presented in this report the Dexgreen connectors filled with grease supplied by SAVITA POLYMERS LTD have passed the BT water immersion test.

In support of the Dexgreen Business Recovery plan, a second supplier of grease, Petronas of Spain, is being used on an additional batch of connectors that will be tested. Both manufacturers consider their products to be fit for purpose.

DXG101 - Water Immersion Test Report

Ref: WITR101

BT specification LN363C for Connector Wire Insulated 8A(CWI8A) requires a water immersion test on 10 samples terminated with 0.4mm insulated conductor in each port, 10 with 0.9mm in each port and 10 with 0.4mm in one port and 0.9mm in the other report. 30 connectors need to be under test at the same time. The test regime of LN363C is one of many ways of carrying out the necessary test.

For a small amount of testing, for instance when only 1 type of connector is required to be tested then the circuitry shown in the specification is very specific. A simpler way of carrying out the required test regime is detailed below.

Every device under test (dut) has one wire connected from a 50 volt DC rail through a 100kohm resistor to the dut submerged in water. The other wire from the dut comes out of the water and is kept insulated. The return circuit to the 50volt DC power supply is via an aluminium plate submerged in the water and connected from the plate to the power supply.

The equivalent circuit for each dut becomes 50volt DC through a 100kohm resistor then the dut through the water (less than 5kohms) then back to earth of the power supply unit. If the dut resistance to water is infinite then there will be no current flow through the resistor and thus no voltage measured across it with a high impedance volt meter. If the dut fails then the current flow from it to the water is limited by the 100kohm resistor to 500microamps (well above the specification failure of 200 micro amps). For a failure of 200microamps the voltage across the 100kohm resistor is 20volts and for 100microamps 10 volts is measured across the limiting resistor.

Each dut has been regularly monitored and recorded using the equipment detailed below:

- (a) TTI multimode power supply unit EX752M.
- (b) TTI RMS high impedance programmable multimeter 1705.
- (c) Resistors 100kohm ¼ watt 5%.

DXG102 - Thermal Shock Test Report

Specification No: LN 363 Issue 4									
For Connector Wire Insulated No. 8A									
Product: 8A Connector				Manufactured By : DexGreen/TEK COMPONENTS PVT.LTD					
Test: Thermal Shock		Clause No: 5.2.1		Starting Date: 12/06/2010			Completion Date: 22/06/2010		
SR No.	Connection Resistance Before (30 minutes at + 105°C± 2°C Followed 15 minutes in ice water at 0°C - 5 Cycles)			Connection Resistance After (30 minutes at + 105°C± 2°C Followed 15 minutes in ice water at 0°C - 5 Cycles)			Connection Resistance After (30 minutes at + 105°C± 2°C Followed 15 minutes in ice water at 0°C - 5 Cycles & Salt Spray for 10 days)		
	Crimped Resistance	Wire Resistance	Connection Resistance	Crimped Resistance	Wire Resistance	Connection Resistance	Crimped Resistance	Wire Resistance	Connection Resistance
	0.4mm			0.4 mm			0.4 mm		
1	16.6	15.7	0.9	16.4	15.7	0.7	16.6	15.7	0.9
2	16.5	15.7	0.8	16.5	15.7	0.8	17.2	15.7	1.5
3	16.2	15.7	0.5	16.1	15.7	0.4	17.2	15.7	1.5
4	16.3	15.7	0.6	16.5	15.7	0.8	16.6	15.7	0.9
5	16.6	15.7	0.9	16.6	15.7	0.9	16.6	15.7	0.9
	0.5mm			0.5mm			0.5mm		
1	10.8	9.6	1.2	10.9	9.6	1.3	10.9	9.6	1.3
2	10.3	9.6	0.7	10.2	9.6	0.6	11.4	9.6	1.8
3	10.8	9.6	1.2	10.8	9.6	1.2	11.1	9.6	1.5
4	10.7	9.6	1.1	10.9	9.6	1.3	11.2	9.6	1.6
5	10.4	9.6	0.8	10.5	9.6	0.9	10.6	9.6	1
	0.63mm			0.63mm			0.63mm		
1	7.1	6.5	0.6	7.1	6.5	0.6	7.5	6.5	1
2	7	6.5	0.5	7.3	6.5	0.8	7.5	6.5	1
3	7.3	6.5	0.8	7.3	6.5	0.8	7.6	6.5	1.1
4	7.2	6.5	0.7	7.3	6.5	0.8	7.4	6.5	0.9
5	7.1	6.5	0.6	7.2	6.5	0.7	7.3	6.5	0.8
	0.8mm			0.8mm			0.8mm		
1	4	3.9	0.1	4.1	3.9	0.2	4.6	3.9	0.7
2	4.1	3.9	0.2	4.1	3.9	0.2	4.6	3.9	0.7
3	4	3.9	0.1	4	3.9	0.1	4.4	3.9	0.5
4	4.3	3.9	0.4	4.2	3.9	0.3	4.5	3.9	0.6
5	4	3.9	0.1	4.3	3.9	0.4	4.4	3.9	0.5
Remarks: All the readings are as per the requirement (Not more than 2.5 milli ohms) ACCEPTED Min - 0.1 milli ohms and Max - 1.8 milli ohms. Specification : 2.5 Milli Ohms Maximum									

DXG103 - Contact Resistance Testing

Specification No: LN 363 Issue 4						
For Connector Wire Insulated No. 8A						
Manufactured By	TEK Components PVT Ltd			Clouse		7.2
Product	8A Connector			Starting Date		24/04/2010
Test: Connection Resistance				Completion Date		24/04/2010
SR No.	0.4mm			0.5mm		Remarks
1	16.7	15.7	1	10.8	9.6	1.2
2	16.5	15.7	0.8	10.3	9.6	0.7
3	16.2	15.7	0.5	10.8	9.6	1.2
4	16.3	15.7	0.6	10.7	9.6	1.1
5	16.6	15.7	0.9	10.4	9.6	0.8
SR No.	0.63mm			0.8mm		Remarks
1	7.1	6.5	0.6	4	3.9	0.1
2	7	6.5	0.5	4.1	3.9	0.2
3	7.3	6.5	0.8	4	3.9	0.1
4	7.2	6.5	0.7	4.3	3.9	0.4
5	7.1	6.5	0.6	4	3.9	0.1
SR No.	0.9mm					Remarks
1	3.3	2.8	0.5			Accepted
2	3.3	2.8	0.5			
3	3.5	2.8	0.7			
4	3.4	2.8	0.6			
5	3.4	2.8	0.6			
Specification: 2.5 Milli Ohms Maximum						

DXG104 - Terminal Retention Force Testing

Specification No: LN 363 Issue 4					
For Connector Wire Insulated No. 8A					
Connector: DexCrimp 8A					
Product	8A Connector			Date	24/04/2010
Test: Terminal Retention Force				Clause No.	5.5
SR No.	0.4mm Kgf.	0.5mm Kgf.	0.63mm Kgf.	0.8mm Kgf.	Remarks
1	3.748	5.928	7.594	12.754	All the readings are as per the requirement Accepted
2	3.618	5.9	7.76	13.21	
3	3.604	5.756	7.822	13.03	
4	3.622	6.388	7.7	12.85	
5	3.528	5.576	7.536	13.168	
6	3.724	3.388	7.554	12.806	
7	3.684	5.42	7.554	12.806	
8	3.636	5.966	7.712	13.004	
9	3.586	5.592	7.598	12.752	
10	3.678	5.658	7.748	13.108	
Specification : Average wire breaking should be greater than below specified value					
SR No.	Cable Wire			Breaking Strength	
1	0.4mm			2.4	
2	0.5mm			3.8	
3	0.63mm			4.5	
4	0.9mm			11.8	

DXG105 - Conductor Flexing Test Report

Specification No: LN 363 Issue 4						
For Connector Wire Insulated No. 8A						
Manufactured By: TEK Components PVT. Ltd.						
Product	8A Connector			Starting Date Completion Date		27/05/2010 27/05/2010
Test: Conductor Flexing				Clause No.		5.4
SR No.	0.4mm	0.5mm	0.63mm	0.8mm	0.9mm	Remarks
1	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	Accepted
2	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	
3	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	
4	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	
5	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	
6	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	
7	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	
8	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	
9	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	
10	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	4 +4 Cycle	
Specification : 4 + 4 Cycle without any damage						

DXG106 - Voltage Proof

For Connector Wire Insulated No. 8A						
Manufactured By	TEK COMPONENTS PVT.LTD			Clause		5.3
Product	8A Connector			Starting Date		21/04/2010
Test: Voltage Proof				Completion Date		21/04/2010
SR No.	0.4mm	0.5mm	0.63mm	0.8mm	0.9mm	Remarks
1	1050 V dc	1050 V dc	1050 V dc	1050 V dc	1050 V dc	Accepted
2	1050 V dc	1050 V dc	1050 V dc	1050 V dc	1050 V dc	
3	1050 V dc	1050 V dc	1050 V dc	1050 V dc	1050 V dc	
4	1050 V dc	1050 V dc	1050 V dc	1050 V dc	1050 V dc	
5	1050 V dc	1050 V dc	1050 V dc	1050 V dc	1050 V dc	
6	1050 V dc	1050 V dc	1050 V dc	1050 V dc	1050 V dc	
7	1050 V dc	1050 V dc	1050 V dc	1050 V dc	1050 V dc	
8	1050 V dc	1050 V dc	1050 V dc	1050 V dc	1050 V dc	
9	1050 V dc	1050 V dc	1050 V dc	1050 V dc	1050 V dc	
10	1050 V dc	1050 V dc	1050 V dc	1050 V dc	1050 V dc	
Specification : 1050 V dc for 60 seconds +- 5 seconds						

DXG107 - Surge Current Test

Document Title:	Test Report- Surge Current Test
Product:	CWI 8A1 discrete connector
Report Date:	24/02/2011
Specification Reference:	BT LN363C
Test completed by:	Gavin Mulroy, Quality Manager, Dexgreen Ltd.
Report completed by:	Gavin Mulroy, Quality Manager, Dexgreen Ltd.
Distribution list:	BT Openreach-Clive Owens, In life Access Engineering Manager- copper. Dexgreen Ltd – Billy Horgan, Managing Director, Keith Coates, Export Sales Manager.

Test Specification

A surge, to simulate lightning, shall be applied between the wires. The wave-shape shall be $8\text{ }\mu\text{s}$ x $20\text{ }\mu\text{s}$, and have a short-circuit current of 5kA peak. This shall be applied 10 times for each test option, with a maximum time between applications of 1 minute.

The test shall be applied between the wires entering the connector.

All wire gauges shall be tested appropriate to the connector.

The length of the wires used in the test shall not be greater than 5cm each. They should not be twisted together.

The resistance between the wires entering the connector shall be measured before the surge is applied and after the surge is applied. It shall not increase by more than 0.05 Ohm.

Equipment Used

- Genrad 1658 RLC Digibridge.
- Scope: Tektronix TDS380 10# 0003

DXG107 - Surge Current Test

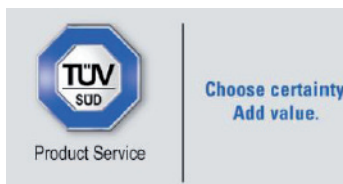
Test Results

Sample Number	Resistance before Surge (mΩ)	Resistance after 10 surges (mΩ)	Resistance Change (mΩ)	Result
1 (26 AWG)	86.1	71	-15.1	Pass
2 (26 AWG)	83.3	101.1	17.8	Pass
3 (22AWG)	71	99.6	28.6	Pass
4 (22 AWG)	78.6	96.9	18.3	Pass

Discussion

Changes in resistance measured before and after the surge was applied do not exceed 0.05 Ohm. The connector complies with clause 5.7 of BT LN636C.

GJM 24.02.2011



DXG108 - Vibration Report

TEST HOUSE CERTIFICATE

Client Address: Dexgreen Limited,
Unit 2 Pinnacle Business Park,
Ballytrasna, Little Island,
Co. Cork, Ireland.

Document: 75910446 TCH 07 Issue 1
Client's Order #: 0000001854

Date Of Receipt: 22nd July 2010
Equipment Under Test (EUT): Connector CW1 8A DEX
Number of Items Tested: 30
Model / Part Number(s): Not Supplied
Serial Number(s): Not Supplied
Test Plan / Issue / Date: BT LN363C, Clause 5.2.2, Vibration
Test Specification / Issue / Date: EN 60068-2-6, Test FC
Deviations From The Standard: None
Date Of Test: 26th to 29th July 2010
Test Description: Vibration

The following test was required by the specification:

Freq: 10Hz to 150Hz
Level: 1mm(pk-pk)
Sweep Rate: 1 Oct/min
Duration: 20 Sweep cycles in each of 3 axes

Results of test:

This Certificate relates only to the EUT tested.

The testing was conducted to the requirement satisfactorily.

No damage or deterioration was observed during and upon completion of the test.

Pre and post test measurements are detailed on the next page

Approved by

G M Stephens
Authorised Signatory



Date 17 August 2010

DXG108 - Vibration Report

Document: 75910446 TCH 07 Issue 1

Results of Test (Continued)

PRE TEST - Functional Test Results

ID Number	M ohm	ID Number	M ohm	ID Number	M ohm
A1	8.15	B1	1.25	C1	2.29
A2	7.71	B2	12.7	C2	2.28
A3	8.24	B3	14.18	C3	2.44
A4	7.34	B4	13.04	C4	2.28
A5	8.48	B5	11.13	C5	1.43

ID Number	M ohm	ID Number	M ohm	ID Number	M ohm
D1	12.23	E1	0.89	F1	7.85
D2	14.64	E2	2.34	F2	7.61
D3	13.6	E3	1.62	F3	7.46
D4	10.74	E4	2.42	F4	7.52
D5	11.4	E5	2.36	F5	7.62

POST TEST - Functional Test Results

ID Number	M ohm	ID Number	M ohm	ID Number	M ohm
A1	8.37	B1	3.66	C1	2.32
A2	7.88	B2	12.9	C2	2.33
A3	8.33	B3	14.4	C3	2.4
A4	7.36	B4	13.11	C4	2.3
A5	8.61	B5	13.3	C5	2.39

ID Number	M ohm	ID Number	M ohm	ID Number	M ohm
D1	13.84	E1	1.54	F1	7.93
D2	14.74	E2	2.46	F2	7.1
D3	13.88	E3	2.04	F3	7.48
D4	10.9	E4	2.47	F4	7.6
D5	11.56	E5	2.36	F5	7.26

The conductor diameters were as follows:

ID Number	Conductor Diameter	ID Number	Conductor Diameter
A1 - A5	0.4mm to 0.9mm	B1 - B5	0.4mm to 0.4mm
C1 - C5	0.9mm to 0.9mm	D1 - D5	0.4mm to 0.4mm
E1 - E5	0.9mm to 0.9mm	F1 - F5	0.4mm to 0.9mm

DXG109 - Frequency Performance



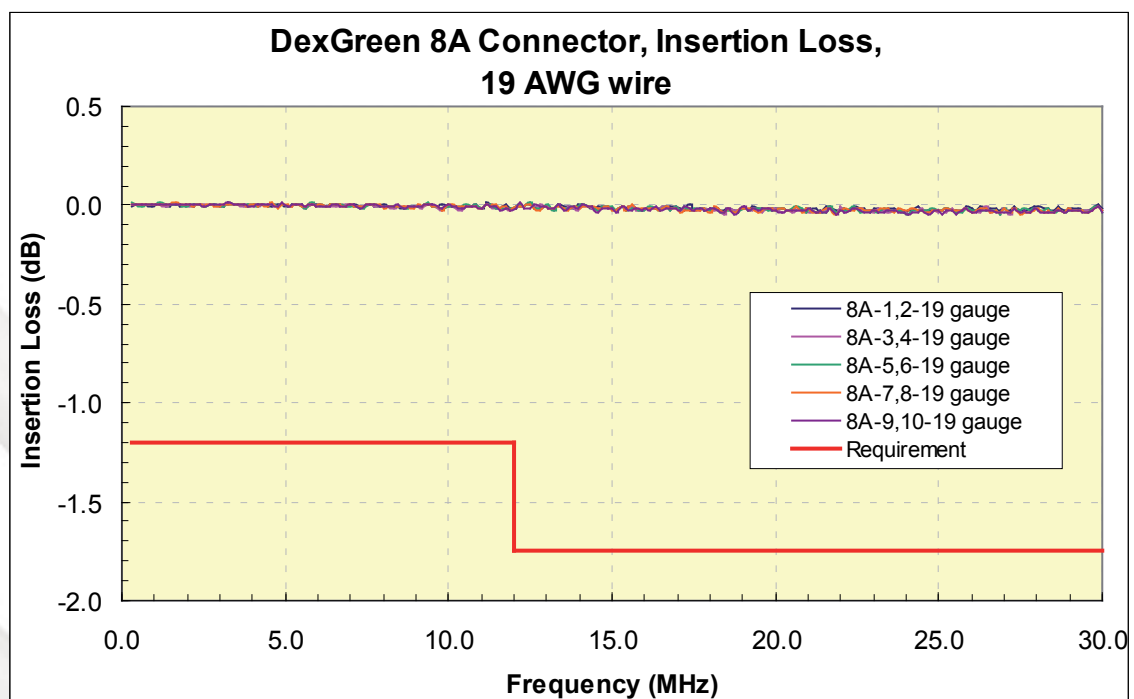
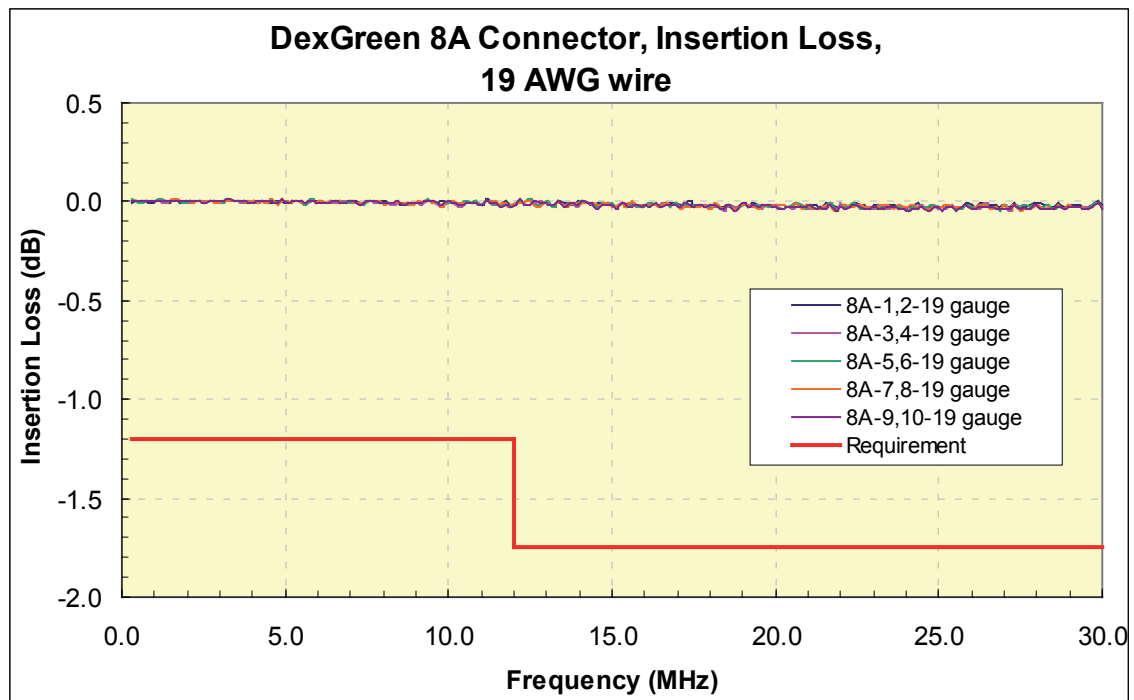
DexGreen

GR-3111

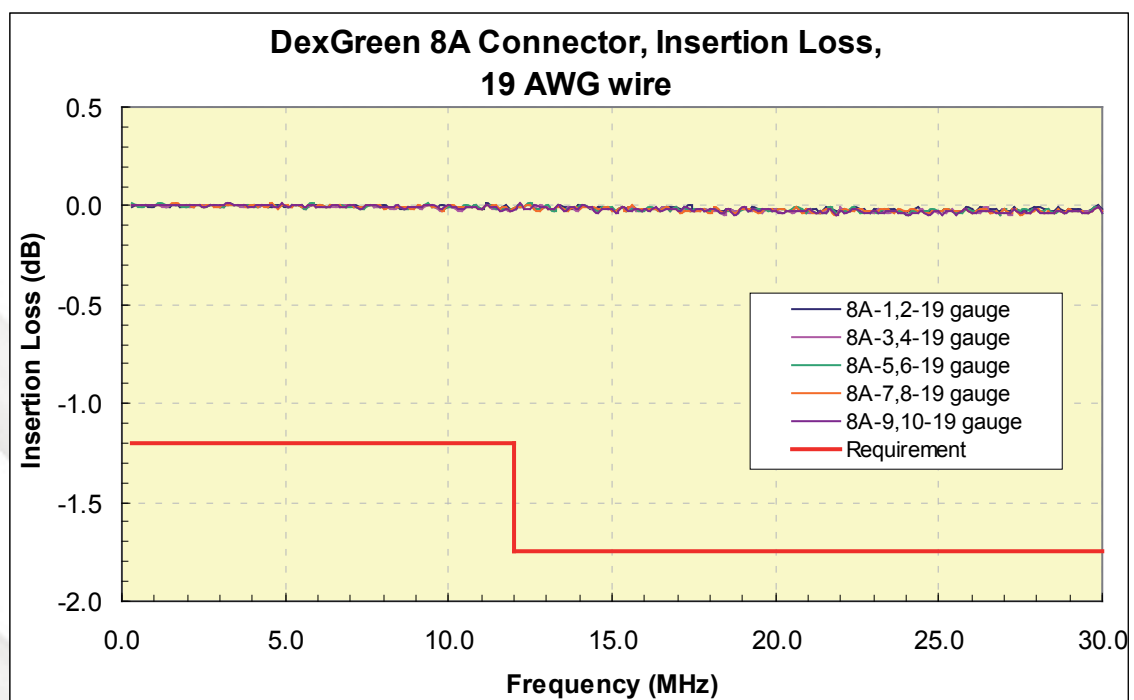
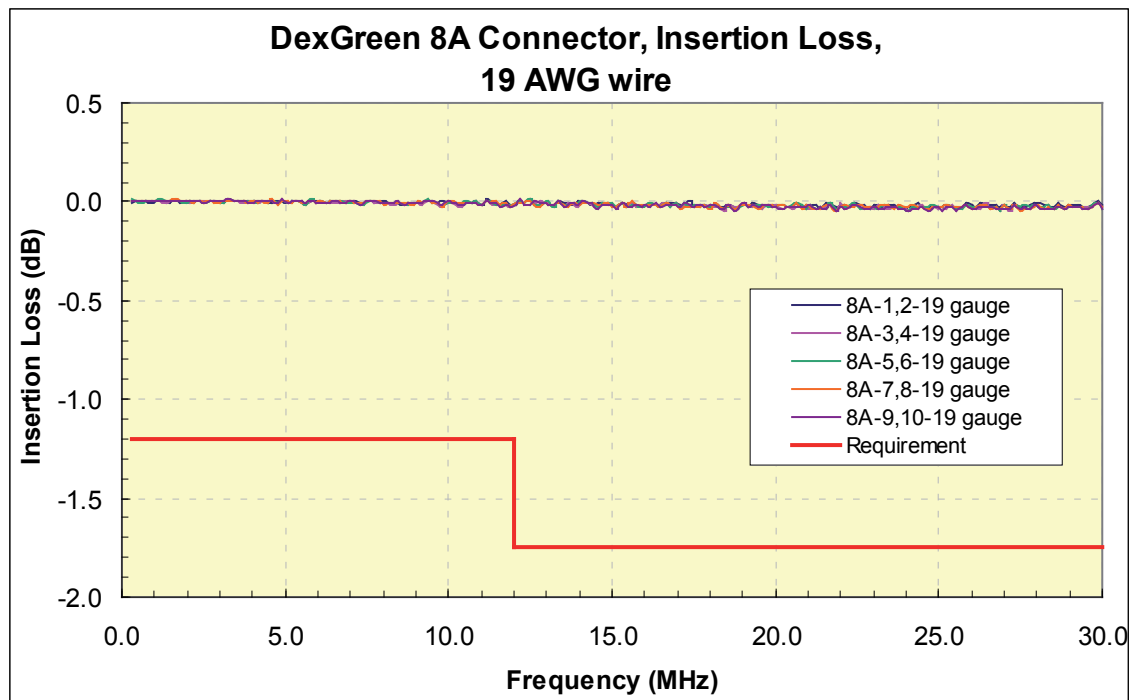
8A Connectors, IL, RL and LB Graphs

March 28, 2011

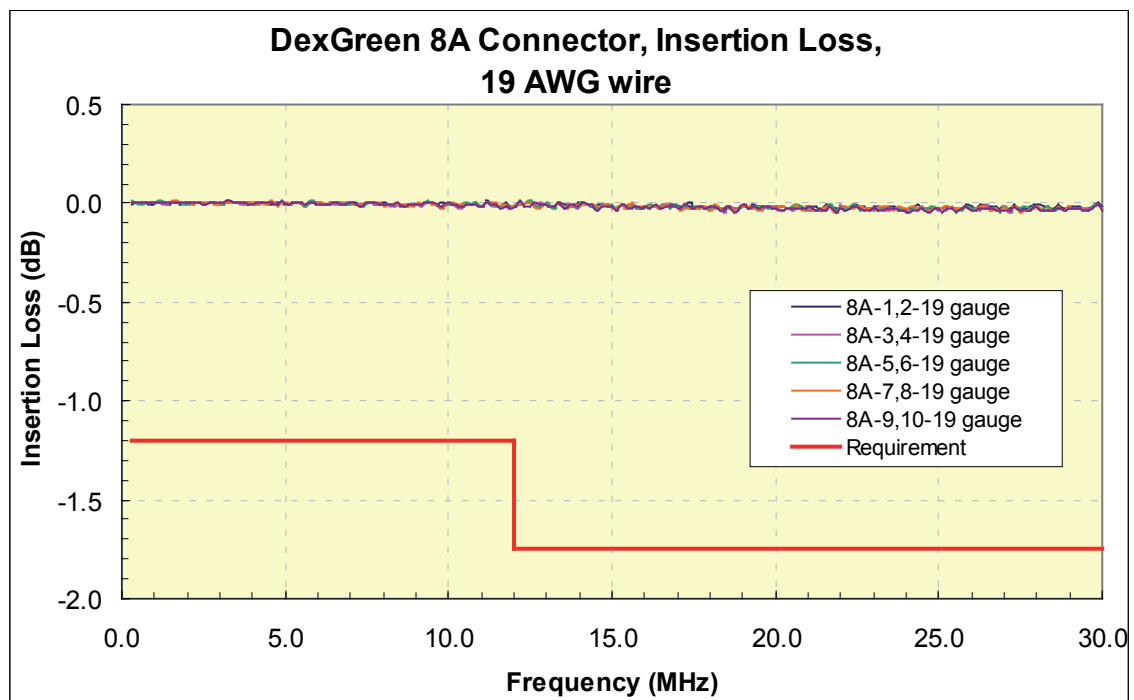
DXG109 - Frequency Performance



DXG109 - Frequency Performance



DXG109 - Frequency Performance



DXG110 - CN-9 Filling Compound Specification

Certificate of Analysis

Name of customer: Dexgreen
 Name of the product: Connector's Compound - CN-9M
 Batch Number: 30/10
 Quantity: 600 Kgs (10 X 60 Kgs)

SR No.	Test Parameter	Specification	Values
1	Homogeneity	No undissolved particles or lumps	Pass
2	Air Entrapment	No bubble, formation on surface of compound after 2 hrs. at 65° C	Pass
3	Cone Penetration @ 25° C	-----	291
4	Stability	No phase separation at 65° C, 24 hrs.	Pass
5	Dry Heat Ageing	Shall not crack or dry at 65° C for 7 days	Pass
6	Connector Stress Cracking	No cracks on connector's after 14 days at 65° C.	Pass
7	DC Volume Resistivity	$> 1 \times 10^{10}$	$> 10^{15}$
8	Copper Corrosion	No blackening of copper after 7 days at 65° C.	Pass
9	Water Absorption	No resistivity change after 7 days in water	Pass
10	Colour	W/White	W/White
11	Drop Point C	-----	>200

DXG111 - Material Safety Data Sheet CN-9

1. Identification of the chemical product and the company

Identification of the preparation:	connectors' filling compound for cwi8a.
Use of product:	protective grease
Supplier:	savita polymers ltd., Mahad, india
Emergency telephone number:	point of contact dexgreen ltd, cork, ireland, tel: +353 21 4317955.

2. Composition / information on ingredients

Ingredients	%	
White mineral oil	80-90	(cas no. 8042-47-5)
Silicon dioxide	10 – 20	(cas no. 7631-86-9)
B.H.T.	0.3	(Cas no. 128-37-0)

3. Possible Hazards

The product does not present any risks if used appropriately. It is advisable to avoid repeated contact and breathing the vapours and mist. The product is not biodegradable. In the event of accidental spillage, it could lead to contamination of the soil, water courses and aquifers.

4. First aid measures

Inhalation:	in the event of exposure to high concentrations of vapours and mists, remove the affected person from the contaminated area to a well ventilated place. Seek medical advice if necessary.
Ingestion:	do not induce vomiting so as to prevent the risk of breathing in through the respiratory system. Seek medical advice.
Contact with skin:	take off all contaminated clothing and immediately wash with plenty of soap and water.
Contact with eyes:	immediately wash eyes with plenty of water for at least 15 minutes. Seek medical advice if the pain or irritation persists.

DXG111 - Material Safety Data Sheet CN-9

5. Fire-fighting measures

Extinguishing methods:	the product does not present any particular fire hazards. In case of fire, use fire extinguishers, carbon dioxide, powder, sprinkled water, sand. Avoid the direct use of water. Use water only to cool surfaces exposed to the fire.
Personal precautions:	avoid breathing in the combustion smoke, as dangerous compounds may be formed. A full protection suit and breathing apparatus are required.
Dangerous combustion products:	gases; carbon oxides; sulphur, nitrogen compounds; incombustible hydrocarbons and other derivatives.

6. Accidental release measures

Personal precautions:	avoid contact with the skin and eyes. Use protective clothing.
Environmental precautions:	prevent the product from spreading, flowing into the soil or into surface or ground water. If necessary, inform the relevant local authorities.
Cleaning methods:	collect up the spilled product and any impregnated waste with absorbent materials. Dispose of in accordance with the currently applicable laws and regulations.

7. Handling and storage

Handling:	avoid direct and prolonged contact with skin and eyes. Avoid the formation of vapours or mists.
Storage:	keep the product in the original containers which must be tightly closed and stored in a protected place in accordance with current safety standards. Store in cool places away from sources of heat.

8. Exposure controls/personal protection

Exposure threshold limits:

Exposure controls:	avoid the production and spread of mists and aerosols. Use localised ventilation/extraction or other procedures considered necessary to prevent the product from spreading into the atmosphere.
Respiratory protection:	not necessary in normal conditions of use. If the recommended exposure limit is exceeded, use a mask with a cartridge for organic vapours and mists (active carbon mask).
Skin protection:	use work gloves that are resistant to mineral oils (neoprene, nitril, pvc).
Eye protection:	use safety goggles if there is any possibility of contact with the product.

DXG111 - Material Safety Data Sheet CN-9

9. Physical and chemical properties

Exposure threshold limits:

Appearance:	greasy white
Flash point:	(base oil) > 200 ° c (astm d 92)
Dropping point:	> 200° c
Solubility in water:	insoluble
Density:	g/cm3 at 20° c 0.900 (Astm d 1298)

10. Stability and reactivity

Stability:	stable in normal use conditions.
Materials to be avoided:	strongly oxidising substances, bases and strong acids.
Conditions to be avoided:	keep the product well away from sources of heat. Make sure that under no circumstances does the temperature rise above the flash point.
Hazardous decomposition products:	carbon oxides; sulphur, and nitrogen compounds

11. Toxicological information

Inhalation:	prolonged exposure to product vapours and mists may cause irritation of the respiratory system.
Contact with skin:	frequent or prolonged contact may in some cases cause irritation and dermatitis.
Contact with eyes:	possibility of slight irritation in case of contact.
Ingestion:	if the product is ingested, it may cause irritation to the digestive system.

12. Ecological information

The product is not easily biodegradable. It is insoluble in water and constitutes a potential source of contamination of the soil, watercourses and aquifers.

13. Disposal considerations

This product and its containers must not be disposed of in sewers, drains or dumps. Disposal must be in accordance with current legislation.

DXG111 - Material Safety Data Sheet CN-9

14. Transport information

The product is not considered hazardous for transport according to the rid/adr, icao/iata and imdg standards.

15. Regulations

Classification: not classified

16. Other information

The information supplied in this document has been compiled on the basis of the best existing sources and the best available knowledge and in accordance with the legal requirements currently in force in regard to information, packaging and labelling of hazardous preparations. However, this does not mean that the information is complete in all cases. It is the user's responsibility to decide whether this safety data sheet meets the requirements for the specific application to which the user puts it. This product must be stored, handled and used in accordance with good industrial hygiene practice and in accordance with the currently applicable legislation. The current version of this safety data sheet supersedes all previous safety data sheets on all points.

DXG112 - Testimonial Document



Testimonial

Regarding Connector Wire Insulated 8A testing to BT specification LN363C

Consultants Biography

When employed by BT, Roger Springett was the BT Design Authority for copper connections systems. After leaving BT he has continued acting as a consultant working on British and International Standards committees as well as providing his services to individual communication and manufacturing companies.

Background to Testimonial

British Telecommunications trading as BT use Connector Wire Insulated (CWI) 8 series, CWI11A or a modular joining system as the preferred connector systems for use in their metallic network.

The CWI8A connector has been tested to BT specification LN363C before being permitted to be used in the network.

CWI 8A requirements

The CWI 8A is capable of joining any two insulated wires within a range of 0.4mm to 0.9mm conductor size. The conductors can be either copper or aluminium alloy. The connector must, if an IDC is used, have a travel of equal or greater than 4mm past the last IDC blade, this is to ensure that any drawback of the wire inside the insulation still allows a good contact to be made between the wire and the IDC.

The connector should be capable of being crimped with the standard BT hand tools; a hand operated pre-crimp facility must be available.

Measurement Discussion

It is the considered opinion of the consultant that connectors that have been tested to the Bellcore or BT specifications and have passed are suitable to be used in networks regardless of local conditions.

The specific test called for by Turk Telekom does not in the consultants view provide any additional information that is not already available by reference to the above mentioned specifications.

DXG112 - Testimonial Document



Conclusion

The CW18A connector has been in service with BT for more than 30 years. This has demonstrated that the Bellcore and BT specifications, which were employed in the development of the connector, are of sufficient rigour to identify failings in the design from individual suppliers.

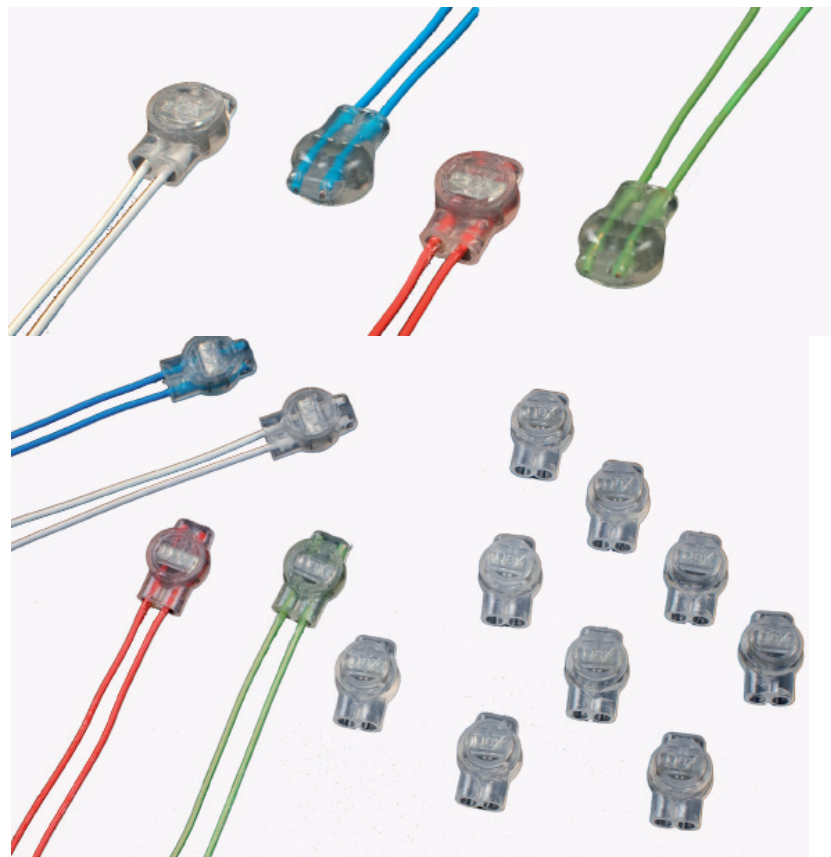
It is the consultants' conclusion that any connector that has passed the Bellcore or the BT specifications for Insulation Displacement Connectors will meet the criteria required by Turk Telekom.

15 April 2011

Roger Springett JP IENG MIET
Consultant Engineer
Minimax Marketing
PO Box 169
Woodbridge
Suffolk
IP12 1WE

roger@mmm-minimax.co.uk

DXG113 - Data Sheet



Description.

DexGreen's DexCrimp Connector Wire Insulated 8A/1 is capable of jointing any two wires shown in the information detailed below. DexCrimp provides reliable means of connecting copper or aluminium telephone conductors PE or PVC insulated with no requirement to strip the insulation. The new DexCrimp 8A/1 connector is constructed so that when the idc is used there is a minimum of 4mm clear wire travel past the last idc blade.

DXG113 - Data Sheet

Benefits and Features DexGreen DexCrimp 8A/1

- Full compliance to the BTLN 363C specification to be undertaken and verified by BT openreach.
- The cable entry ports are designed to accommodate and retain a customised test probe. This test probe can be inserted in every box 500 issued to the field.
- Specially designed cable entry ports enables a 0.9mm poorly cut wire with flattened insulation to be inserted easily into the connector.
- Adopting and establishing a working practise to use and encourage the use of test probes rather than using crocodile clips or nicking the cable insulation to test will significantly reduce Shiners.
- Long term the reduction in Shiners will improve Network Reliability and significantly reduce Truck Rolls.
- The Polypropylene material for the base and cover has excellent properties, high tensile strength, good chemical resistance and resistance to cracking in low working temperatures, good impact resistance and finally high clarity for visual inspection of the crimped splice.
- The maximum diameter measured over the insulation is 2.06mm and the conductor range for the connector is 0.4 to 0.9mm or 26 to 19AWG.
- The connectors are filled with a high quality sealant that ensures excellent insulation resistance and electrical performance in the most stringent environmental conditions.
- Full manufacturing tractability on packaging and the component..
- Conductor type solid copper or aluminium alloy
- Capable of being used with paper, solid polyethylene, or cellular polyethylene insulation.

Test reports available on request.

Dimensional information		Ordering information	
Dimensions		Part No.	Description
Length (max)	15.5mm	DexCrimp 8A/1	2 wire insulated connector. Standard
Height open (max)	9.5mm	DexCrimp Pliers	Crimping pliers with wire cutter.
Height closed (max)	0.4mm	DexCrimp Test Probe	Stainless steel test probe.
Height closed (min)	5.6mm		
Width (max)	10mm		

DXG113 - Data Sheet

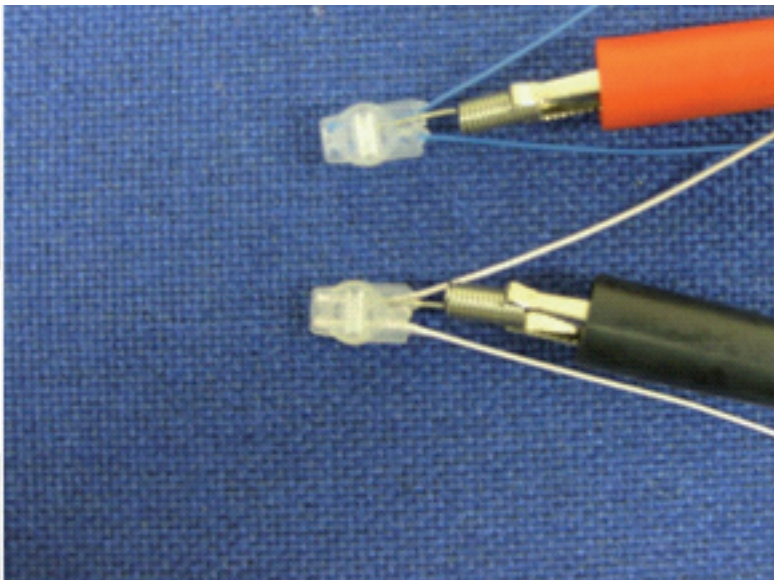
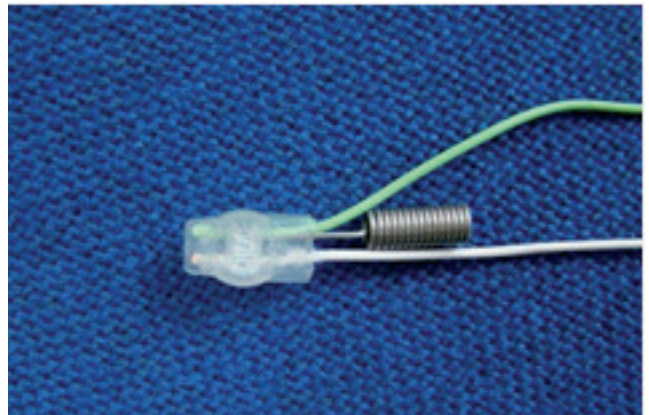
Packaging information



Test Probe



Using single probe as in test for earths



Test leads connect to pair via probes for monitoring or test purposes

DXG113 - Data Sheet - DexCrimp 8A/1 Packaging Specification

